

ORIENT

(주) 오리엔트 전자

Order Catalogue 2013/2014



FINE SUNTRONIX

For the Switching Mode Power Supply

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Discrete Semiconductors

Our values

Client focus. Commitment to personal development. International mentality.




Our vision

Brand image leader (confidence, Innovation, Quality and Service). International leadership. A solid business with good results. A socially responsible company.





S.M.P.S (Single Output)

| Type | Output Channel | Input Voltage Range | Universal Input Voltage Range | Manual(User) Selectable | Auto Selectable | PFC | RoHS | Distinctive | Series name | Model | |
|-----------|----------------|---------------------|-------------------------------|-------------------------|-----------------|-----|-----------------------|---|--|---|---|
| Unit Type | Single Output | AC90V~264V | • | | | | • | Din-rail type | FDR SERIES |   | |
| | | AC90V~264V | • | | | | • | Universal input voltage IP 65-67 | HSF SERIES |   | |
| | | AC85V~264V | • | | | | • | Universal input voltage LED Power only | LSP SERIES |   | |
| | | AC85V~264V | • | | | • | • | Universal input, small size and low cost | CSF SERIES |  | |
| | | AC120V~240V | | | • | | • | Auto selectable input, small size and low cost | | | |
| | | AC85V~264V | • | | | • | • | Harmonic attenuator, universal Input, small size and low cost | | | |
| | | AC85V~264V | • | | | | • | • | Harmonic attenuator, universal input, small size | PSF SERIES |  |
| | | AC88V~264V | • | | | | | • | Universal input, voltage low cost | JSF SERIES |   |
| | | AC120V / 240V | | • | | | • | User selectable input | | | |
| | | AC85V~264V | • | | | | | • | Universal input | VSF SERIES |  |
| | AC120V / 240V | | • | | | • | User selectable input | | | | |
| | AC120V / 240V | | • | | | • | User selectable input | | | | |
| | AC120V / 240V | | • | | | • | User selectable input | | | | |
| | AC85V~264V | • | | | | | • | Universal input | MSF SERIES |  | |
| | AC120V/240V | | • | | | • | User selectable input | | | | |
| | AC120V / 240V | | • | | | | • | User selectable input | ESF SERIES |  | |
| | PCB Type | AC85V~264V | • | | | | | • | User input, PCB type and low cost | ESFL/H SERIES |  |
| | | AC85V~264V | • | | | | | • | User input, PCB type and low cost | | |
| | | AC110V | | | | | • | PCB type and low cost | | | |
| | | AC220 | | | | | • | PCB type and low cost | | | |

S.M.P.S (Dual Output)

| Type | Output Channel | Input Voltage Range | Universal Input Voltage Range | Manual(User) Selectable | Auto Selectable | PFC | RoHS | Distinctive | Series name | Model |
|-----------|----------------|---------------------|-------------------------------|-------------------------|-----------------|-----|-----------------------|--|------------------------|--|
| Unit Type | Dual Output | AC85V~264V | • | | | | • | Universal input small size and low cost | CSF DUAL SERIES |  |
| | | AC120V / 240V | | | • | | • | Auto selectable input small size and low cost | | |
| | | AC85V~264V | • | | | | • | Harmonic attenuator universal input, small size and low cost | VSF DUAL SERIES |  |
| | | AC120V/240V | | • | | • | User selectable input | | | |
| | | AC85V~264V | • | | | | • | Universal input | MSF DUAL SERIES |  |
| | | AC120V/240V | | • | | • | User selectable input | | | |




S.M.P.S (Triple Output)

| Type | Output Channel | Input Voltage Range | Universal Input Voltage Range | Manual(User) Selectable | Auto Selectable | PFC | RoHS | Distinctive | Series name | Model |
|--------------|----------------|---------------------|-------------------------------|-------------------------|-----------------|-----|-----------------------|--|--------------------------|---|
| Unit Type | Triple Output | AC85V~264V | • | | | | • | Universal Input, small size and low cost | CSF TRIPLE SERIES |  |
| | | AC120V / 240V | | | • | | • | Universal input, small size and low cost | | |
| | | AC85V~264V | • | | | | • | Universal input | VSF TRIPLE SERIES |  |
| | | AC120V / 240V | | • | | • | User selectable input | | | |
| | | AC85V~264V | • | | | | • | Universal input | MSF TRIPLE SERIES |  |
| | | AC120V / 240V | | • | | • | User selectable input | | | |
| Modular Type | Multi Output | AC85V~264V | • | | | • | • | Harmonic attenuator universal input | MP SERIES |  |



| Output Power[W] | | | | | | | | | | | | | | | | | | | | Safety | Warranty (year) | | | | | |
|-----------------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|-----------------|------|------|------|----------------|---|
| 15 | 25 | 30 | 35 | 50 | 60 | 75 | 80 | 100 | 150 | 200 | 220 | 240 | 300 | 400 | 500 | 600 | 650 | 850 | 900 | | | 1000 | 1250 | 1500 | | |
| • | | • | | • | | | | | | | | | | | | | | | | | | | | | CE RoHS | 4 |
| | | | | | | | • | | • | | | | | | | | | | | | | | | | CE RoHS | 4 |
| • | | • | | | | | | | | | | | | | | | | | | | | | | | RoHS | 3 |
| | | | | • | | • | | • | | • | | | | | | | | | | | | | | | CE RoHS | 3 |
| | • | | • | • | • | | | | | | | | | | | | | | | | | | | | cUL US CE RoHS | 3 |
| | | | | | | | | • | | • | | | | | | | | | | | | | | | cUL US CE RoHS | 3 |

| Output Power[W] | | | | | | | | | | | | | | | | | | | | Safety | Warranty (year) | | | | | |
|-----------------|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|-----------------|------|------|------|----------------|---|
| 15 | 25 | 30 | 35 | 50 | 60 | 75 | 80 | 100 | 150 | 200 | 220 | 240 | 300 | 400 | 500 | 600 | 650 | 850 | 900 | | | 1000 | 1250 | 1500 | | |
| • | | • | | • | | | | | | | | | | | | | | | | | | | | | RoHS | 4 |
| | | | | | | | • | | • | | | | | | | | | | | | | | | | RoHS | 4 |
| • | | • | | | | | | | | | | | | | | | | | | | | | | | RoHS | 3 |
| | | | | • | | • | | • | | • | | | | | | | | | | | | | | | CE RoHS | 3 |
| | • | | • | • | • | | | | | | | | | | | | | | | | | | | | cUL US CE RoHS | 3 |
| | | | | | | | | • | | • | | | | | | | | | | | | | | | cUL US CE RoHS | 3 |
| | | | | | | | | | | | | | • | | • | • | | | | | • | | | | RoHS | 3 |

DC-DC Converter (Single Output)

| Type | Output Channel | Input Voltage Range | DC 5V | DC 12V | DC 24V | DC 48V | RoHS | Distinctive | Series name | Model |
|---------------|----------------|-----------------------------------|-------|--------|--------|--------|------|-------------------------------|-------------|---|
| On Board Type | Single Output | DC5V DC12V DC24V DC48V | • | • | • | • | • | Compact and shield metal case | PSC SERIES |  |
| | | DC5V DC12V DC24V DC48V | • | • | • | • | | Shield metal case | PS SERIES |  |
| | | DC12V DC24V DC48V | | • | • | • | | Shield metal case | | |
| Unit Type | Single Output | DC12V DC24V DC48V DC110V | • | • | • | • | | Unit type | DS SERIES |  |

DC-DC Converter (Dual Output)

| Type | Output Channel | Input Voltage Range | DC 5V | DC 12V | DC 24V | DC 48V | RoHS | Distinctive | Series name | Model |
|---------------|----------------|---------------------------------|-------|--------|--------|--------|------|-------------------------------|-------------|---|
| On Board Type | Dual Output | DC5V DC12V DC24V DC48V | • | • | • | • | • | Compact and shield metal case | PDC SERIES |  |
| | | DC5V DC12V DC24V DC48V | | • | • | • | | Shield metal case | PD SERIES |  |
| | | DC12V DC24V DC48V | | • | • | • | | Shield metal case | | |

| Output Power[W] | | | | | | | | Safety | Warranty (year) |
|-----------------|---|---|----|----|----|----|-----|--------|-----------------|
| 1.5 | 3 | 6 | 10 | 15 | 25 | 50 | 100 | | |
| • | • | • | | | | | | RoHS | 2 |
| • | • | • | • | | | | | RoHS | 2 |
| | | | | • | • | | | RoHS | 2 |
| | | | | | | • | • | RoHS | 2 |

| Output Power[W] | | | | | | | | Safety | Warranty (year) |
|-----------------|---|---|----|----|----|----|-----|--------|-----------------|
| 1.5 | 3 | 6 | 10 | 15 | 25 | 50 | 100 | | |
| • | • | • | | | | | | RoHS | 2 |
| • | • | • | • | | | | | RoHS | 2 |
| | | | | • | • | | | RoHS | 2 |



Orient and the Environment ECO System

Orient S.M.P.S

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Company

| | |
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General Information

Company History



Orient

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Orient 21 (S.M.P.S) 가
 Orient 2015 Global Top3 가
 가 가
 'Great Company Great People'
 Fast Innovation Fast Growth 가
 Market Leadership, Product Leadership, 1 가
 People Leadership 가
 /
 Switching Mode
 Power Supply 1
 System Leadership
 가 Top Brand /
 Orient

Orient 2010
 'New'



Milestones

VSF Series

1988



ESF Series

1997



MSF Series

2000



CSF Series

2007



JSF Series (2010)

1979 Orient
 ISO 9001 UL,
 CSA, CE, EM
 (S.M.P.S) ESF Series,
 VSF Series, MSF Series
 DC/DC Converter 600 (Standard)
 1000
 Solid State Relay, Noise Filter





Research & Development

S.M.P.S

ISO-9001

R&D
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S.M.P.S

Orient

Orient

Open Innovation

Insight



US



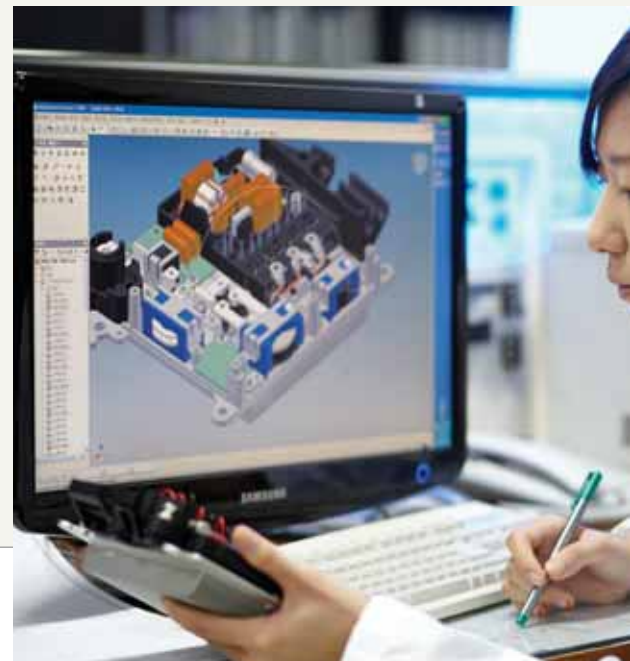
Orient Award



ISO 14001:2004



ISO 9001:2000



Product Quality

Orient

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Product Quality

A.

Factor

B. Cycle

Cycle

C.

Cycle

D. THB

E. PRESSURE COOKER TEST

F.

G.

H.



1. CB - Certification
2. KQA
3. Q Level3 OTIS

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PRODUCT 16
PRESENTATION



FDR-S SERIES **NEW**

- Low cost
- Compact dimensions
- Universal AC input full range
- Installation on DIN rail 30mm only
- PFC as standard(180W, 240W)
- Over voltage protection
- Over current protection
- LED indicator for DC power ON
- LED indicator for DC low
- Paralled connection
- 3 years warranty



JSF SERIES **NEW**

- Very low cost
- Inrush current limit
- Wide input voltage range (Universal input voltage or user selectable voltage)
- Over voltage protection
- Over Current protection
- 3 years warranty



HSF-S SERIES **NEW**

- A, AD Type = IP, NONE, D type = IP 67
- Built in PFC function(Active PFC)
- Inrush current Limit
- Wide input voltage range(Universal input voltage)
- Over voltage protection
- Over current protection
- Outdoor LED Lighting
- LED Street Ligting
- 5 years warranty



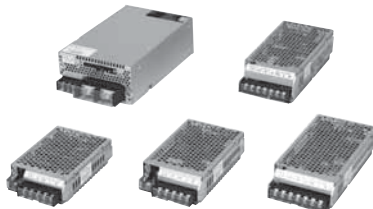
LSP-S SERIES **NEW**

- Slim type
- Fully isolated plastic case
- Indoor LED Ligting
- LED Displays
- 3 years warranty



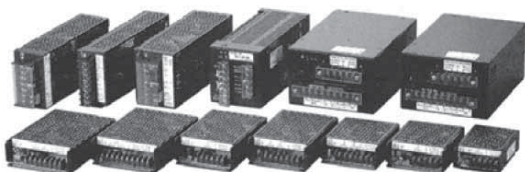
CSF SERIES(NEW PRODUCT)

- Low Cost
- Small size(Height 82mm(2U), 15W~150W)
- Built-in inrush current protection
- Short circuit protection
- Over voltage protection
- Over current protection
- Built to meet FCC class A
- Unit type(top case option)
- 4 years warranty



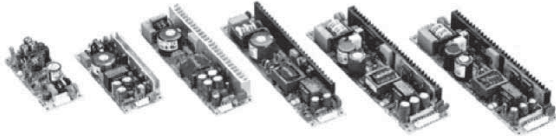

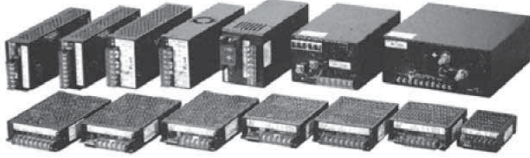



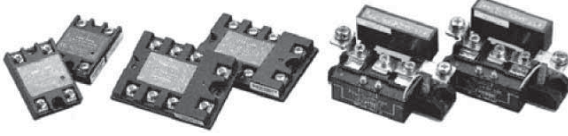


PSF SERIES(NEW PRODUCT)

- Power factor correction
- Small size(Height 82mm(2U), 50W~150W)
- Built-in inrush current protection
- Short circuit protection
- Over voltage protection
- Over current protection
- Built to meet FCC class B
- Unit type(top case option)
- 5 years warranty



VSF SERIES

- Small size
- Built-in inrush current protection
- Short circuit protection
- Over voltage protection
- Over current protection(30W~400W)
- Complies FCC class A
- 3 years warranty

| | | |
|---|--|-----------------------------|
|  | <p>ESFL/H SERIES</p> <ul style="list-style-type: none"> • Low Cost • Built-in inrush current protection • Short circuit protection • Over voltage protection • Over current protection(50W~150W) • PCB type(unit type option) • 2 years warranty | General Information |
|  | <p>ESF SERIES</p> <ul style="list-style-type: none"> • Low Cost • Small size • Built-in inrush current protection • Short circuit protection • Over voltage protection • Over current protection(150W~1500W) • Built to meet FCC class A • Case type • 2 years warranty | Switching Mode Power Supply |
|  | <p>MSF SERIES</p> <ul style="list-style-type: none"> • Small size • High pot 3.0kV • Short circuit protection • Over voltage protection • Over Current protection • Approved UL/C-UL, CE and TUV-UL1950, CSA C22,2 EN60950 • Complies FCC-A • 3 years warranty | DC-DC Converter |
|  | <p>MP SERIES</p> <ul style="list-style-type: none"> • Flexible modular system architecture provides various output configuration • Harmonic attenuator (complied with IEC61000-3-2) • Complied with UL60950, C-UL,EN50178 • Complied with FCC-B, CISPR22-B, EN55022-B, VCCI-B • Remote ON/OFF control, alarm • 3 years warranty | Noise Filter |
|  | <p>DC-DC CONVERTER PSC/PS/PDC/PD SERIES</p> <ul style="list-style-type: none"> • Small, compact size • High quality and reliability • Isolated output • Over Current protection • 2 years warranty | Solid State Relay |
|  | <p>NOISE FILTER</p> <ul style="list-style-type: none"> • Remarkable attenuation high voltage impulse • Suitable for the products that must conform to FCC, FTZ • Industrial & medical equipments • Personal computer & peripherals • 3 years warranty | AC FAN Motor |
|  | <p>SSR</p> <ul style="list-style-type: none"> • Compact size, Light • CR Snubber and Zero cross • Steady Operation in wide temp • Factory Automation • Office Automation • Lighting • 2 year warranty | Power Module |
|  | <p>AC FAN Motor</p> <ul style="list-style-type: none"> • AXIAL AC FAX • Ball Bearing (B): 60,000 Hours at 20°C • Sleeve Bearing (S): 30,000 Hours at 20°C • Ball/Sleeve Bearing | Discrete Semiconductors |
|  | <p>POWER MODULE</p> <ul style="list-style-type: none"> • DIODE • THYRISTOR • POWER SEMICONDUCTORS | |

For the Switching Model Power Supply

Switching Mode Power Supply



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| | |
|----------------------|-----------|
| 1. FDR SERIES | 20 |
| 2. JSF SERIES | 30 |
| 3. HSF SERIES | 42 |
| 4. LSP SERIES | 50 |
| 5. CSF SERIES | 58 |
| 6. PSF SERIES | 80 |
| 7. VSF SERIES | 88 |
| 8. ESF SERIES | 112 |
| 9. MSF SERIES | 134 |
| 10. MP SERIES | 162 |



ORDERING INFORMATION



FDR 15-24

Series name

Total output wattage

Output voltage combination

- Low cost
- Compact Size
- Universal AC input full range
- Installation on DIN rail 30mm only
- PFC as standard(180W, 240W)
- Over voltage protection
- Over current protection
- LED indicator for DC power ON
- LED indicator for DC low
- 3 years warranty

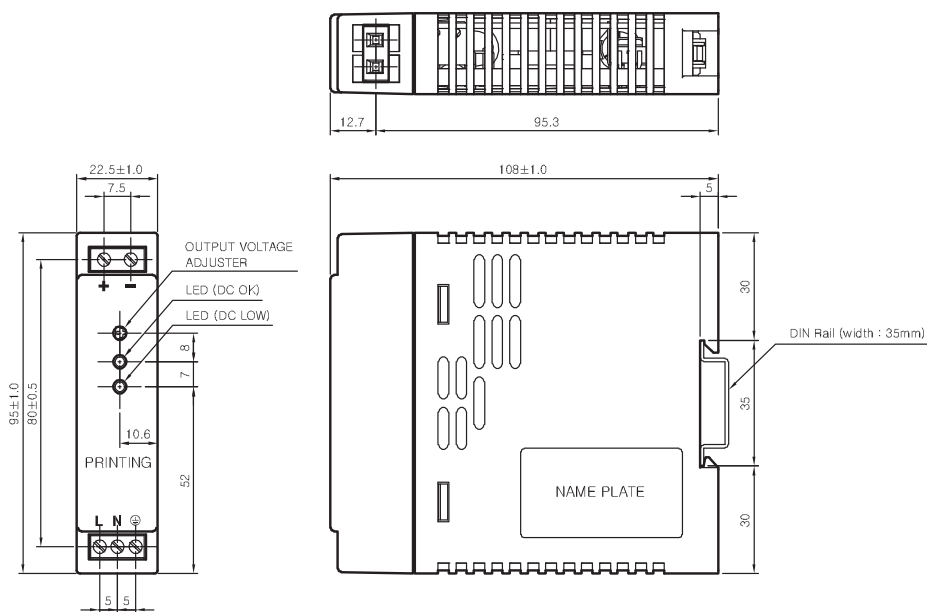


FDR15-S SPECIFICATIONS



| | MODEL | | FDR15-05 | FDR15-12 | FDR15-24 |
|-----------------------|----------------------------|--|---|-----------------------------|------------------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-240V (AC 90 ~ 264V or DC 127 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | | |
| | CURRENT | [A] | 110V | 0.45 (I _o =100%) | |
| | | | 220V | 0.3 (I _o =100%) | |
| | EFFICIENCY | [%] | 110V | 74 typ | 79 typ |
| 220V | | | 72 typ | 77 typ | 79 typ |
| | INRUSH CURRENT | | 20A typ (AC IN 110V, I _o =100%), 40A typ (AC IN 220V, I _o =100%) at cold start. | | |
| OUTPUT | VOLTAGE | [V] | 5 | 12 | 24 |
| | CURRENT | [A] | 2 | 1.2 | 0.65 |
| | VOLTAGE ADJUSTMENT RANGE | [V] | 4.5 ~ 5.5 | 10.8 ~ 13.2 | 21.6 ~ 26.4 |
| | REGULATION, LINE | [mV] | 25 | 60 | 120 |
| | REGULATION, LOAD | [mV] | 50 | 120 | 240 |
| | RIPPLE, NOISE MAX | [mV] | 120 | 150 | 150 |
| | TEMPERATURE DRIFT | [mV] | 75 | 180 | 360 |
| | RISE TIME | [ms] | 560 Max (AC IN 110V I _o =100%) | | |
| HOLDING TIME | [ms] | 20 typ (AC IN 110V I _o =100%) | | | |
| FUNCTION | OVER CURRENT PROTECTION | [A] | Works at over 110 ~ 150% of rating and recovers automatically | | |
| | OVER VOLTAGE PROTECTION | [V] | Works at 115 ~ 140% of rating | | |
| | DC_OK LAMP | - | LED (GREEN) | | |
| | DC_LOW LAMP | - | LED (RED) | | |
| | PARALLEL / SERIES OPERATON | - | - | | |
| | Cooling / O.T.P | - | Convention Coling | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | |
| | INPU-FG | | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | |
| | OUTPUT-FG | | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | | -25 ~ +70°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | |
| | STORAGE TEMP AND HUMID | | -40 ~ +85°C, 20 ~ 90% RH (Non condensing) | | |
| | VIBRATION | | 10 ~ 55Hz at 2G, 1 minutes period, 1 hour along X, Y and Z axis | | |
| SAFETY | SAFETY REGULATION | | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB |
| EMISSION | CONDUCTED EMISSION | | Complied with FCC Part 15 ClassB, VCCI-B, CLSPR22-B, EN55022-B | | |

FDR15-S EXTERNAL VIEW



- * Weight : 200g
- * Tolerance : ± 1
- * Dimensions in mm

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

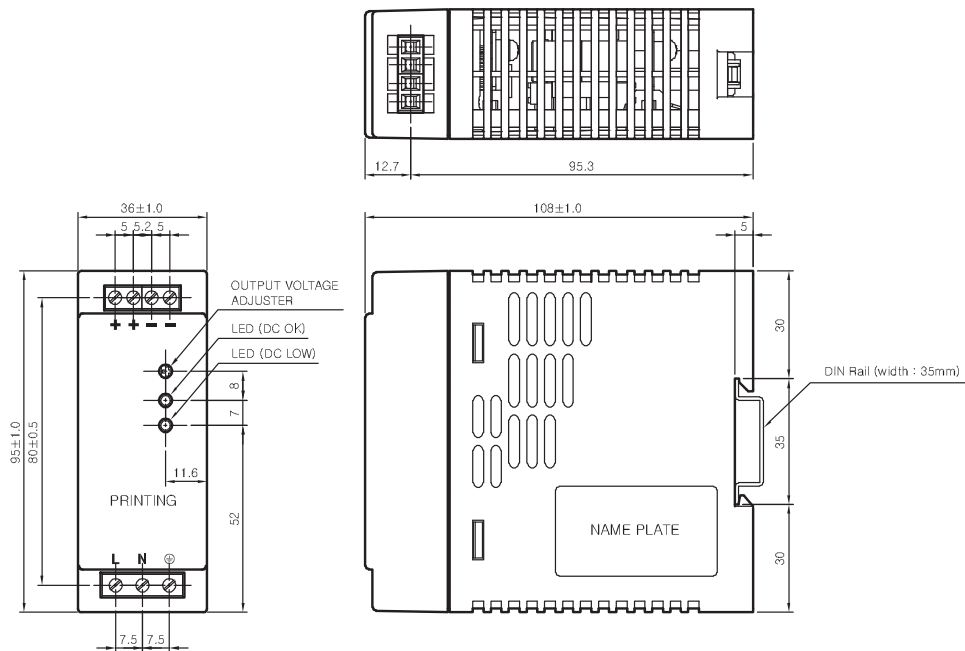
Discrete Semiconductors

FDR30-S SPECIFICATIONS



| MODEL | | FDR30-12 | FDR30-24 | |
|-----------------------|---|--|----------------------------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 90 ~ 264V or DC 127 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | | |
| | CURRENT [A] | 110V | 0.9 (I _o =100%) | |
| | | 220V | 0.6 (I _o =100%) | |
| | EFFICIENCY [%] | 110V | 82 typ | 84 typ |
| | | 220V | 84 typ | 84 typ |
| INRUSH CURRENT | 20A typ (AC IN 110V, I _o =100%), 40A typ (AC IN 220V, I _o =100%) at cold start. | | | |
| OUTPUT | VOLTAGE [V] | 12 | 24 | |
| | CURRENT [A] | 2.5 | 1.3 | |
| | VOLTAGE ADJUSTMENT RANGE [V] | 10.8 ~ 13.2 | 21.6 ~ 26.4 | |
| | REGULATION, LINE [mV] | 60 | 120 | |
| | REGULATION, LOAD [mV] | 120 | 240 | |
| | RIPPLE, NOISE MAX [mV] | 150 | 150 | |
| | TEMPERATURE DRIFT [mV] | 180 | 360 | |
| | RISE TIME [ms] | 560 Max (AC IN 110V I _o =100%) | | |
| | HOLDING TIME [ms] | 20 typ (AC IN 110V I _o =100%) | | |
| FUNCTION | OVER CURRENT PROTECTION [A] | Works at over 110 ~ 150% of rating and recovers automatically | | |
| | OVER VOLTAGE PROTECTION [V] | Works at 115 ~ 140% of rating | | |
| | DC_OK LAMP | LED (GREEN) | | |
| | DC_LOW LAMP | LED (RED) | | |
| | PARALLEL / SERIES OPERATOR | - | | |
| Cooling / O.T.P | Convention Coling | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -25 ~ +70°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 90% RH (Non condensing) | | |
| | VIBRATION | 10 ~ 55Hz at 2G, 1 minutes period, 1 hour along X, Y and Z axis | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | UL, C-UL, CE, CB | |
| EMISSION | CONDUCTED EMISSION | Complied with FCC Part 15 ClassB, VCCI-B, CLSFR22-B, EN55022-B | | |

FDR30-S EXTERNAL VIEW



- * Weight : 250g
- * Tolerance : ±1
- * Dimensions in mm

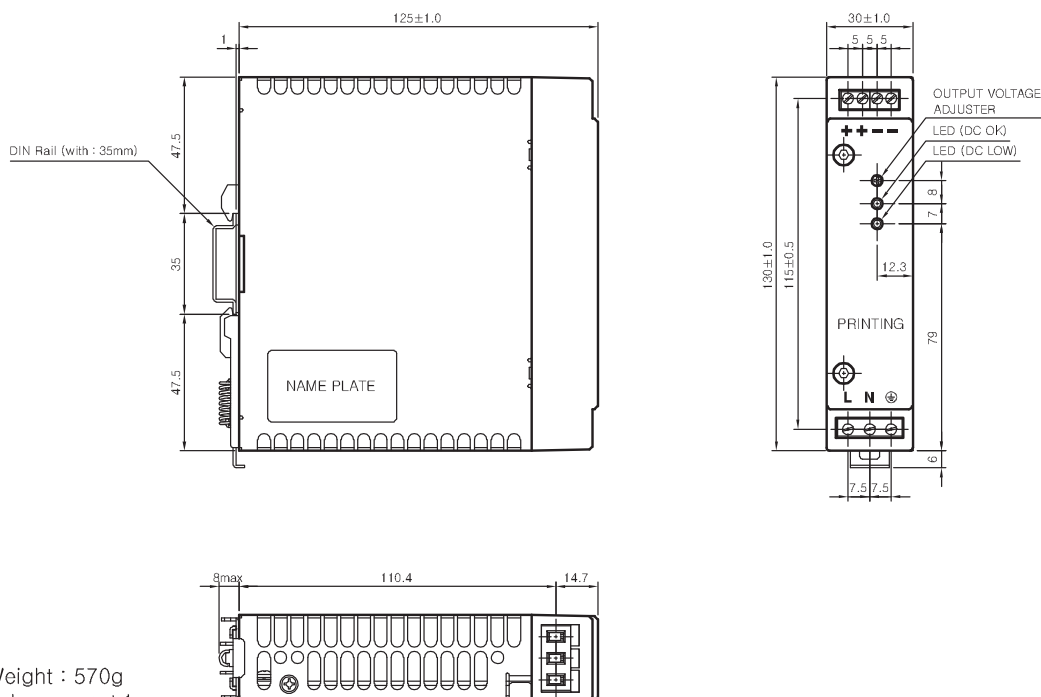
FDR50-S SPECIFICATIONS



| MODEL | | FDR50-24 | FDR50-48 |
|-----------------------|------------------------------|---|----------------------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 90 ~ 264V or DC 127 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | |
| | CURRENT [A] | 110V | 1.0 (I _o =100%) |
| | | 220V | 0.6 (I _o =100%) |
| | EFFICIENCY [%] | 110V | 86 typ |
| 220V | | 88 typ | 88 typ |
| INRUSH CURRENT | | 20A typ (AC IN 110V, I _o =100%), 40A typ (AC IN 220V, I _o =100%) at cold start. | |
| OUTPUT | VOLTAGE [V] | 24 | 48 |
| | CURRENT [A] | 2.2 | 1.1 |
| | VOLTAGE ADJUSTMENT RANGE [V] | 22.5 ~ 28.5 | 45 ~ 55 |
| | RATED POWER [W] | 240 | 240 |
| | REGULATION, LINE [mV] | 120 | 240 |
| | REGULATION, LOAD [mV] | 240 | 480 |
| | RIPPLE, NOISE MAX [mV] | 100 | 120 |
| | TEMPERATURE DRIFT [mV] | 360 | 720 |
| | RISE TIME [ms] | 560 Max (AC IN 110V I _o =100%) | |
| | HOLDING TIME [ms] | 20 typ (AC IN 110V I _o =100%) | |
| FUNCTION | OVER CURRENT PROTECTION [A] | Works at over 110 ~ 150% of rating, current limiting | |
| | OVER VOLTAGE PROTECTION [V] | 30 ~ 35 | 60 ~ 65 |
| | DC_OK LAMP | LED (GREEN) | |
| | DC_LOW LAMP | LED (RED) | |
| | PARALLEL / SERIES OPERATON | Series operations is possible | |
| | Cooling / O.T.P | Convention Coling | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -25 ~ +70°C(Required Derating), 20 ~ 90% RH (Non Condensing) | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 90% RH (Non condensing) | |
| | VIBRATION | 10 ~ 55Hz at 2G, 1 minutes period, 1 hour along X, Y and Z axis | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | UL, C-UL, CE, CB |
| EMISSION | CONDUCTED EMISSION | Complied with EN55011 / EN55022-B, FCC-B | |
| PFHC | HARMONIC CURRENT | Complied with EN61000-3-2 (Class-A) | |

NOTE1 : Terminated with 0.1uF & 47uF parallel capacitor [Bandwidth = 20MHz], Ta = 0°C ~ 70°C

FDR50-S EXTERNAL VIEW



- * Weight : 570g
- * Tolerance : ±1
- * Dimensions in mm

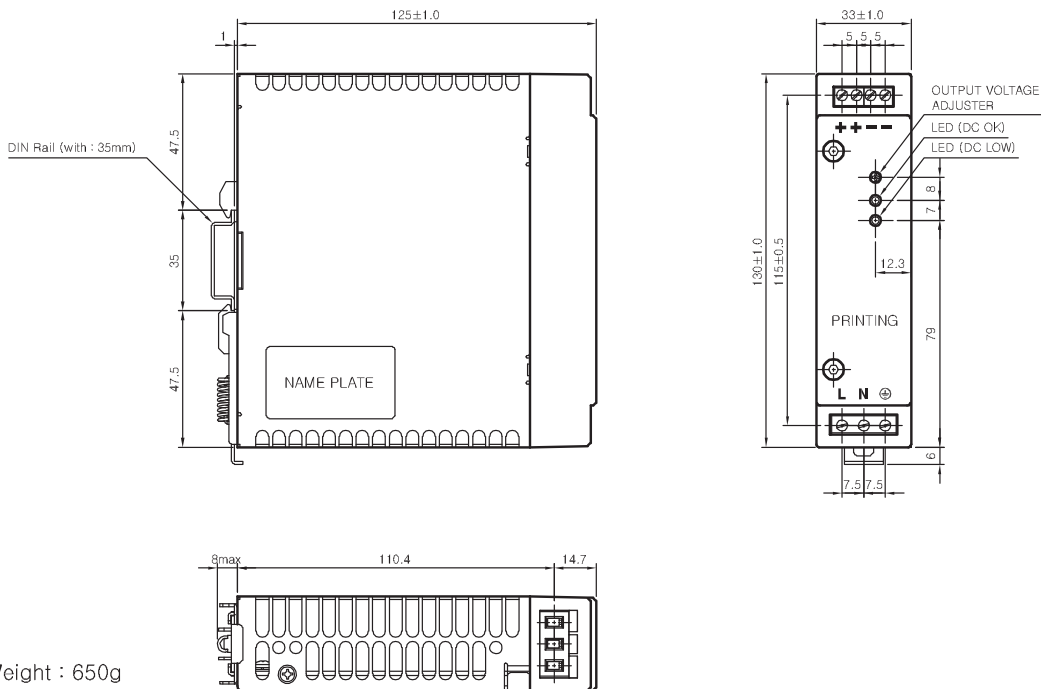
FDR70-S SPECIFICATIONS



| MODEL | | FDR70-24 | FDR70-48 | |
|-----------------------|---|--|----------------------------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 90 ~ 264V or DC 127 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | | |
| | CURRENT [A] | 110V | 1.5 (I _o =100%) | |
| | | 220V | 1.0 (I _o =100%) | |
| | EFFICIENCY [%] | 110V | 86 typ | 87 typ |
| | | 220V | 88 typ | 89 typ |
| INRUSH CURRENT | 20A typ (AC IN 110V, I _o =100%), 40A typ (AC IN 220V, I _o =100%) at cold start. | | | |
| OUTPUT | VOLTAGE [V] | 24 | 48 | |
| | CURRENT [A] | 3 | 1.5 | |
| | VOLTAGE ADJUSTMENT RANGE [V] | 22.5 ~ 28.5 | 45 ~ 55 | |
| | RATED POWER [W] | 240 | 240 | |
| | REGULATION, LINE [mV] | 120 | 240 | |
| | REGULATION, LOAD [mV] | 240 | 480 | |
| | RIPPLE, NOISE (pk-pk) *NOTE1 [mV] | 100 | 120 | |
| | TEMPERATURE DRIFT [mV] | 360 | 720 | |
| | RISE TIME [ms] | 560 Max (AC IN 110V I _o =100%) | | |
| | HOLDING TIME [ms] | 20 typ (AC IN 110V I _o =100%) | | |
| FUNCTION | OVER CURRENT PROTECTION [A] | Works at over 110 ~ 150% of rating, current limiting | | |
| | OVER VOLTAGE PROTECTION [V] | 30 ~ 35 | 60 ~ 65 | |
| | DC_OK LAMP | LED (GREEN) | | |
| | DC_LOW LAMP | LED (RED) | | |
| | PARALLEL / SERIES OPERATON | Series operations is possible | | |
| | Cooling / O.T.P | Convention Coling | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -25 ~ +70°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 90% RH (Non condensing) | | |
| | VIBRATION | 10 ~ 55Hz at 2G, 1 minutes period, 1 hour along X, Y and Z axis | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | UL, C-UL, CE, CB | |
| EMISSION | CONDUCTED EMISSION | Complied with EN55011 / EN55022-B, FCC-B | | |
| PFHC | HARMONIC CURRENT | Complied with EN61000-3-2 (Class-A) | | |

NOTE1 : Terminated with 0.1uF & 47uF parallel capacitor (Bandwidth = 20MHz), Ta = 0°C - 70°C

FDR70-S EXTERNAL VIEW



- * Weight : 650g
- * Tolerance : ±1
- * Dimensions in mm

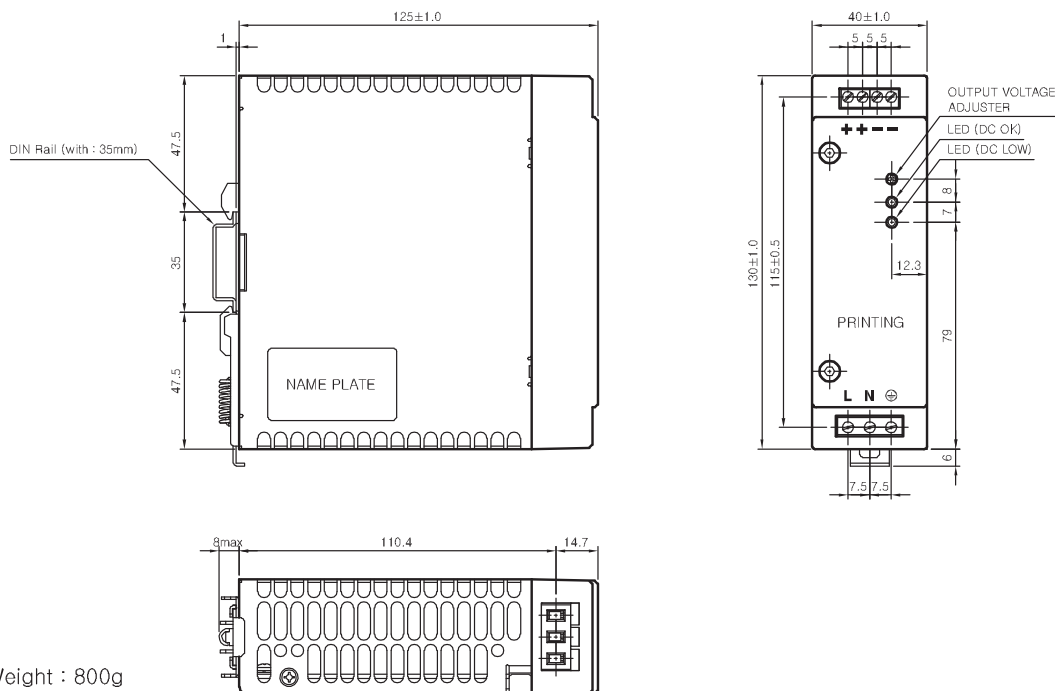
FDR120-S SPECIFICATIONS



| MODEL | | FDR120-24 | FDR120-48 |
|-----------------------|-----------------------------------|---|----------------------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 90 ~ 264V or DC 127 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | |
| | CURRENT [A] | 110V | 2.4 (I _o =100%) |
| | | 220V | 1.4 (I _o =100%) |
| | EFFICIENCY [%] | 110V | 85 typ |
| 220V | | 87 typ | 88 typ |
| INRUSH CURRENT | | 20A typ (AC IN 110V, I _o =100%), 40A typ (AC IN 220V, I _o =100%) at cold start. | |
| OUTPUT | VOLTAGE [V] | 24 | 48 |
| | CURRENT [A] | 2.2 | 1.1 |
| | VOLTAGE ADJUSTMENT RANGE [V] | 22.5 ~ 28.5 | 45 ~ 55 |
| | RATED POWER [W] | 240 | 240 |
| | REGULATION, LINE [mV] | 120 | 240 |
| | REGULATION, LOAD [mV] | 240 | 480 |
| | RIPPLE, NOISE (pk-pk) *NOTE1 [mV] | 100 | 120 |
| | TEMPERATURE DRIFT [mV] | 360 | 720 |
| | RISE TIME [ms] | 560 Max (AC IN 110V I _o =100%) | |
| | HOLDING TIME [ms] | 20 typ (AC IN 110V I _o =100%) | |
| FUNCTION | OVER CURRENT PROTECTION [A] | Works at over 110 ~ 150% of rating, current limiting | |
| | OVER VOLTAGE PROTECTION [V] | 30 ~ 35 | 60 ~ 65 |
| | DC_OK LAMP | LED (GREEN) | |
| | DC_LOW LAMP | LED (RED) | |
| | PARALLEL / SERIES OPERATON | Series operations is possible | |
| Cooling / O.T.P | Convention Coling | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -25 ~ +70°C(Required Derating), 20 ~ 90% RH (Non Condensing) | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 90% RH (Non condensing) | |
| | VIBRATION | 10 ~ 55Hz at 2G, 1 minutes period, 1 hour along X, Y and Z axis | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | UL, C-UL, CE, CB |
| EMISSION | CONDUCTED EMISSION | Complied with EN55011 / EN55022-B, FCC-B | |
| PFHC | HARMONIC CURRENT | Complied with EN61000-3-2 (Class-A) | |

NOTE1 : Terminated with 0.1uF & 47uF parallel capacitor [Bandwidth = 20MHz], Ta = 0°C ~ 70°C

FDR120-S EXTERNAL VIEW



- * Weight : 800g
- * Tolerance : ±1
- * Dimensions in mm

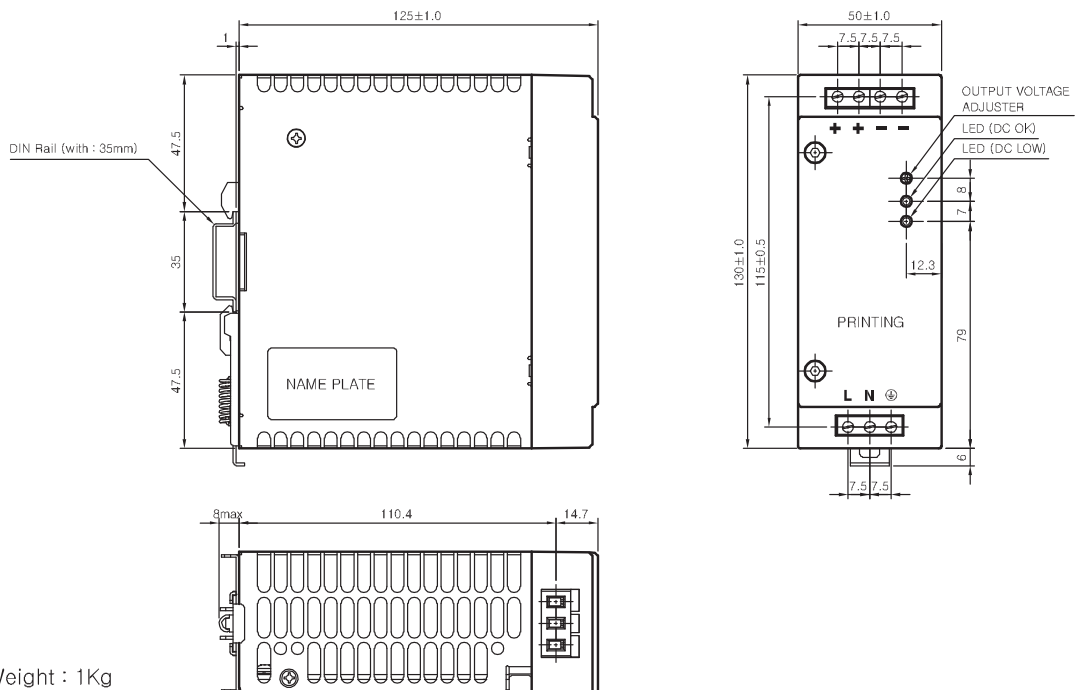
FDR180-S SPECIFICATIONS



| | MODEL | FDR7180-24 | FDR180-48 | |
|-----------------------|--|---|----------------------------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 90 ~ 264V or DC 127 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | | |
| | CURRENT [A] | 110V | 2.0 (I _o =100%) | |
| | | 220V | 1.0 (I _o =100%) | |
| | EFFICIENCY [%] | 110V | 88 typ | 90 typ |
| | | 220V | 90 typ | 92 typ |
| | POWER FACTOR | 110V | 0.98 typ | |
| 220V | | 0.93 typ | | |
| INRUSH CURRENT | 50A typ (AC IN 110V / 220V, I _o =100%) at cold start. | | | |
| OUTPUT | VOLTAGE [V] | 24 | 48 | |
| | CURRENT [A] | 7.5 | 3.8 | |
| | VOLTAGE ADJUSTMENT RANGE [V] | 22.5 ~ 28.5 | 45 ~ 55 | |
| | RATED POWER [W] | 240 | 240 | |
| | REGULATION, LINE [mV] | 120 | 240 | |
| | REGULATION, LOAD [mV] | 240 | 480 | |
| | RIPPLE, NOISE (pk-pk) *NOTE1 [mV] | 100 | 120 | |
| | TEMPERATURE DRIFT [mV] | 360 | 720 | |
| | RISE TIME [ms] | 3600 Max (AC IN 110V I _o =100%) | | |
| HOLDING TIME [ms] | 20 typ (AC IN 110V I _o =100%) | | | |
| FUNCTION | OVER CURRENT PROTECTION [A] | Works at over 110 ~ 150% of rating, current limiting, current limiting with auto-recovery | | |
| | OVER VOLTAGE PROTECTION [V] | 30 ~ 35 | 60 ~ 65 | |
| | DC_OK LAMP | LED (GREEN) | | |
| | DC_LOW LAMP | LED (RED) | | |
| | PARALLEL / SERIES OPERATON | Series operations is possible | | |
| Cooling / O.T.P | Convention Coling | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -25 ~ +70°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 90% RH (Non condensing) | | |
| | VIBRATION | 10 ~ 55Hz at 2G, 1 minutes period, 1 hour along X, Y and Z axis | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | UL, C-UL, CE, CB | |
| EMISSION | CONDUCTED EMISSION | Complied with EN55011 / EN55022-B, FCC-B | | |
| PFHC | HARMONIC CURRENT | Complied with EN61000-3-2 (Class-A) | | |

NOTE1 : Terminated with 0.1uF & 47uF parallel capacitor (Bandwidth = 20MHz), Ta = 0°C - 70°C

FDR180-S EXTERNAL VIEW



- * Weight : 1Kg
- * Tolerance : ±1
- * Dimensions in mm

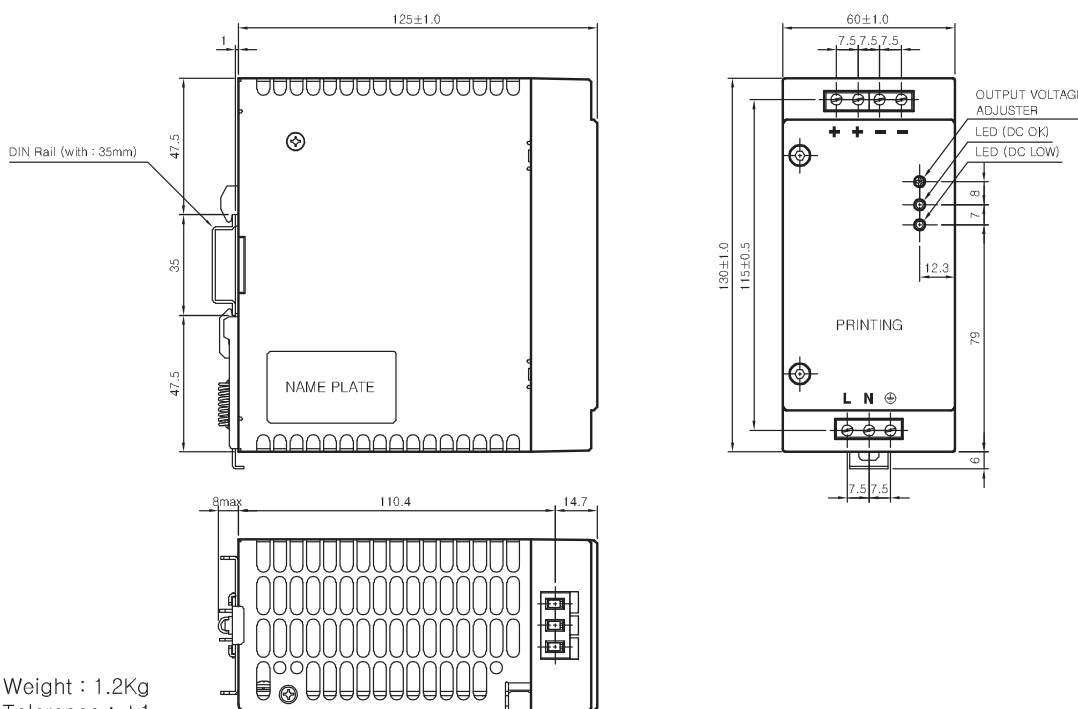
FDR240-S SPECIFICATIONS



| MODEL | | FDR240-24 | FDR240-48 | |
|-----------------------|--|---|-----------------------------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 90 ~ 264V or DC 127 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | | |
| | CURRENT [A] | 110V | 2.5 (I _o =100%) | |
| | | 220V | 1.25 (I _o =100%) | |
| | EFFICIENCY [%] | 110V | 89 typ | 90 typ |
| | | 220V | 91 typ | 92 typ |
| | POWER FACTOR | 110V | 0.98 typ | |
| 220V | | 0.93 typ | | |
| INRUSH CURRENT | 50A typ (AC IN 110V / 220V, I _o =100%) at cold start. | | | |
| OUTPUT | VOLTAGE [V] | 24 | 48 | |
| | CURRENT [A] | 10 | 5 | |
| | VOLTAGE ADJUSTMENT RANGE [V] | 22.5 ~ 28.5 | 45 ~ 55 | |
| | RATED POWER [W] | 240 | 240 | |
| | REGULATION, LINE [mV] | 120 | 240 | |
| | REGULATION, LOAD [mV] | 240 | 480 | |
| | RIPPLE, NOISE (pk-pk) *NOTE1 [mV] | 100 | 120 | |
| | TEMPERATURE DRIFT [mV] | 360 | 720 | |
| | RISE TIME [ms] | 3600 Max (AC IN 110V I _o =100%) | | |
| | HOLDING TIME [ms] | 20 typ (AC IN 110V I _o =100%) | | |
| FUNCTION | OVER CURRENT PROTECTION [A] | Works at over 110 ~ 150% of rating, current limiting, current limiting with auto-recovery | | |
| | OVER VOLTAGE PROTECTION [V] | 30 ~ 35 | 60 ~ 65 | |
| | DC_OK LAMP | - | LED (GREEN) | |
| | DC_LOW LAMP | - | LED (RED) | |
| | PARALLEL / SERIES OPERATON | Series operations is possible | | |
| | Cooling / O.T.P | Convention Coling | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -25 ~ +70°C (Required Derating), 20 ~ 90% RH (Non Condensing) | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 90% RH (Non condensing) | | |
| | VIBRATION | 10 ~ 55Hz at 2G, 1 minutes period, 1 hour along X, Y and Z axis | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | UL, C-UL, CE, CB | |
| EMISSION | CONDUCTED EMISSION | Complied with EN55011 / EN55022-B, FCC-B | | |
| PFHC | HARMONIC CURRENT | Complied with EN61000-3-2 (Class-A) | | |

NOTE1 : Terminated with 0.1uF & 47uF parallel capacitor [Bandwidth = 20MHz], Ta = 0°C ~ 70°C

FDR240-S EXTERNAL VIEW



- * Weight : 1.2Kg
- * Tolerance : ±1
- * Dimensions in mm

For the Switching Model Power Supply

Switching Mode Power Supply



ORIENT

ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

| | |
|----------------------|-----------|
| 1. FDR SERIES | 20 |
| 2. JSF SERIES | 30 |
| 3. HSF SERIES | 42 |
| 4. LSP SERIES | 50 |
| 5. CSF SERIES | 58 |
| 6. PSF SERIES | 80 |
| 7. VSF SERIES | 88 |
| 8. ESF SERIES | 112 |
| 9. MSF SERIES | 134 |
| 10. MP SERIES | 162 |

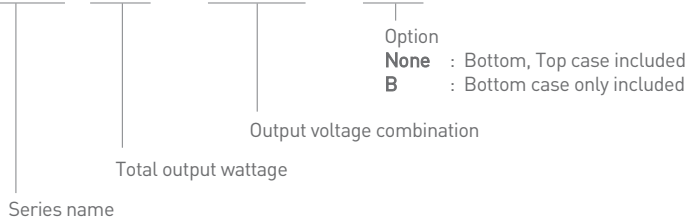


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ORDERING INFORMATION



JSF25-3R3-□



- Very low cost
- Inrush current limit
- Wide input voltage range(Universal input voltage or user selectable voltage)
- Over voltage protection
- Overcurrent protection.
- 3 years warranty

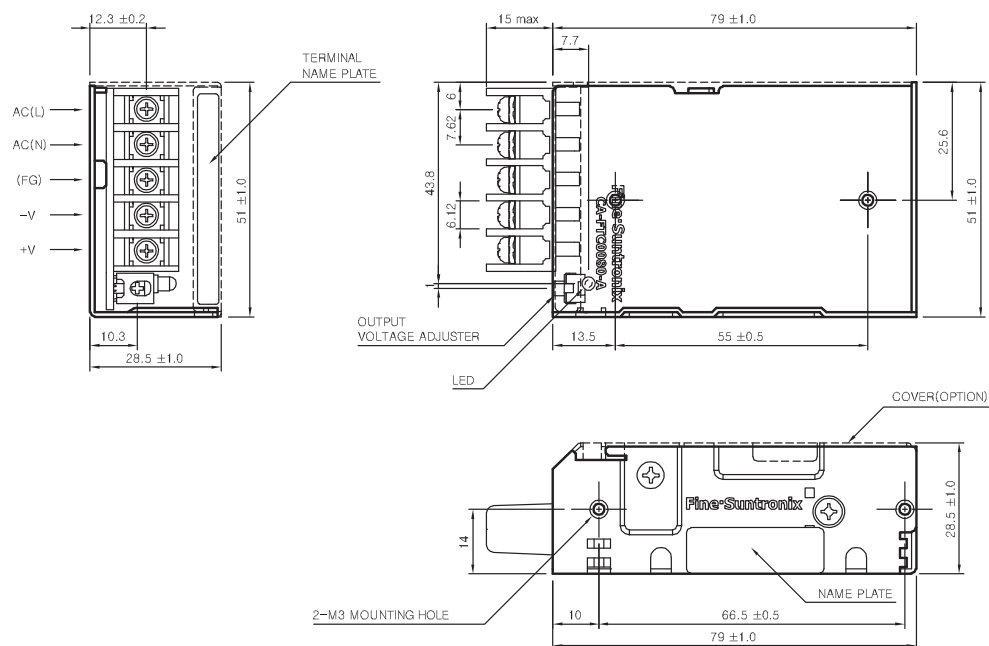


JSF25-S SPECIFICATIONS



| | MODEL | JSF25-3R3 | JSF25-05 | JSF25-09 | JSF25-12 | JSF25-15 | JSF25-24 | JSF25-48 | |
|-----------------------|--------------------------------|--|------------------|------------------|------------------|------------------|------------------|------------------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC88 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal input voltage | | | | | | | |
| | CURRENT [A] | 110V | 0.45 (Io=100%) | | 0.70 (Io=100%) | | | | |
| | | 220V | 0.30 (Io=100%) | | 0.40 (Io=100%) | | | | |
| | EFFICIENCY [%] | 110V | 74 typ | 79 typ | 81 typ | 82 typ | 82 typ | 84 typ | 85 typ |
| 220V | | | | | | | | | |
| | INRUSH CURRENT | 15A typ(AC IN 110V, Io=100%), 30A typ(AC IN 220V, Io=100%) at cold start. | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 | |
| | CURRENT [A] | 6 | 5 | 2.8 | 2.1 | 1.7 | 1.1 | 0.57 | |
| | REGULATION, LINE [mV] | 17 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 66 Max | 75 Max | 50 Max | 60 Max | 75 Max | 120 Max | 240 Max | |
| | RIPPLE, NOTE 1 [mVp-p] | 50 Max | 50 Max | 100 Max | 100 Max | 100 Max | 100 Max | 180 Max | |
| | RIPPLE, NOISE NOTE 1 [mVp-p] | 80 Max | 80 Max | 120 Max | 120 Max | 120 Max | 120 Max | 200 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max | |
| | RISE TIME [ms] | 1200 Max (AC IN 100V, Io=100%) | | | | | | | |
| HOLDING TIME [ms] | 14 typ (AC IN 100V, Io=100%) | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Short Protection | | | | | | | |
| | OVER VOLTAGE PROTECTION | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -25 ~ +70°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMPAND HUMID | -40 ~ +85°C, 10 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10~55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | |
| | LINE CONDUCTED RF VOLTAGE | Complied with EN55011/EN55022-B, FCC-B | | | | | | | |

JSF25-S EXTERNAL VIEW



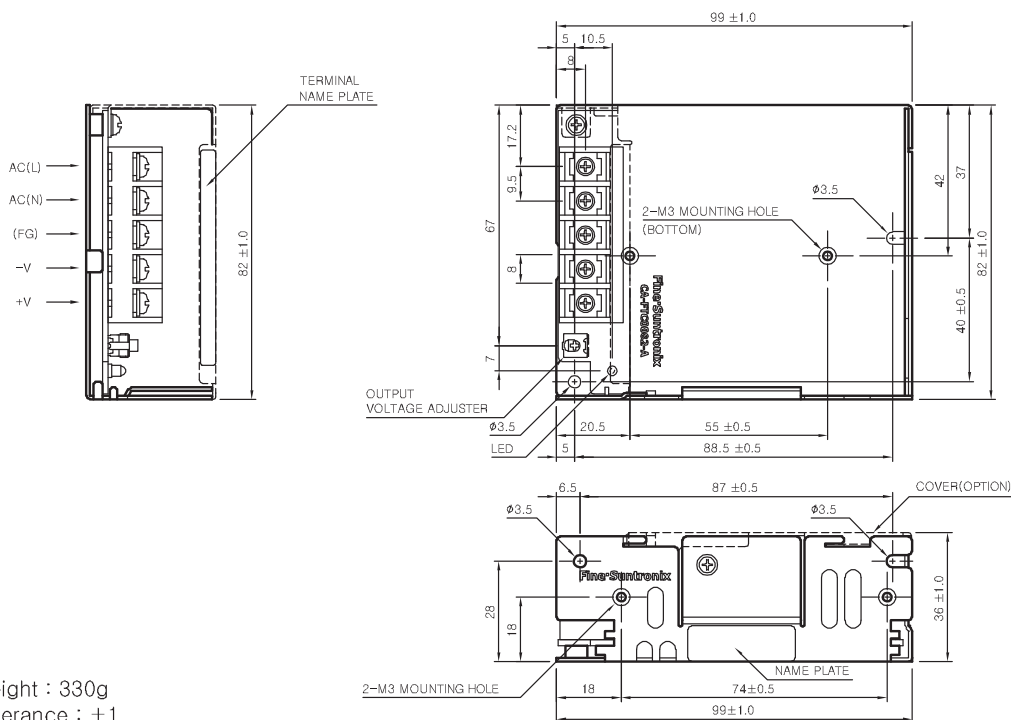
- * Weight : 200g
- * Tolerance : ±1
- * Dimensions in mm

JSF35-S SPECIFICATIONS



| MODEL | | JSF35-3R3 | JSF35-05 | JSF35-09 | JSF35-12 | JSF35-15 | JSF35-24 | JSF35-48 |
|-----------------------|--------------------------------|--|------------------|------------------|------------------|------------------|------------------|------------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC88 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal input voltage | | | | | | |
| | CURRENT [A] | 110V | 0.8 (Io=100%) | | | | | |
| | | 220V | 0.55 (Io=100%) | | | | | |
| | EFFICIENCY [%] | 110V | 75 typ | 78 typ | 81 typ | 82 typ | 83 typ | 84 typ |
| | 220V | | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, Io=100%), 40A typ(AC IN 220V, Io=100%) at cold start. | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 7 | 7 | 4 | 3 | 2.4 | 1.5 | 0.8 |
| | REGULATION, LINE [mV] | 17 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 66 Max | 75 Max | 50 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | RIPPLE, NOTE 1 [mVp-p] | 50 Max | 50 Max | 100 Max | 100 Max | 100 Max | 100 Max | 180 Max |
| | RIPPLE, NOISE NOTE 1 [mVp-p] | 80 Max | 80 Max | 120 Max | 120 Max | 120 Max | 120 Max | 200 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max |
| | RISE TIME [ms] | 1200 Max (AC IN 100V, Io=100%) | | | | | | |
| | HOLDING TIME [ms] | 15 typ (AC IN 100V, Io=100%) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -25 ~ +70°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | |
| | STORAGE TEMPAND HUMID | -40 ~ +85°C, 10 ~ 90% RH(Non Condensing) | | | | | | |
| | VIBRATION | 10~55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB |
| | LINE CONDUCTED RF VOLTAGE | Complied with EN55011/EN55022-B, FCC-B | | | | | | |

JSF35-S EXTERNAL VIEW



- * Weight : 330g
- * Tolerance : ±1
- * Dimensions in mm

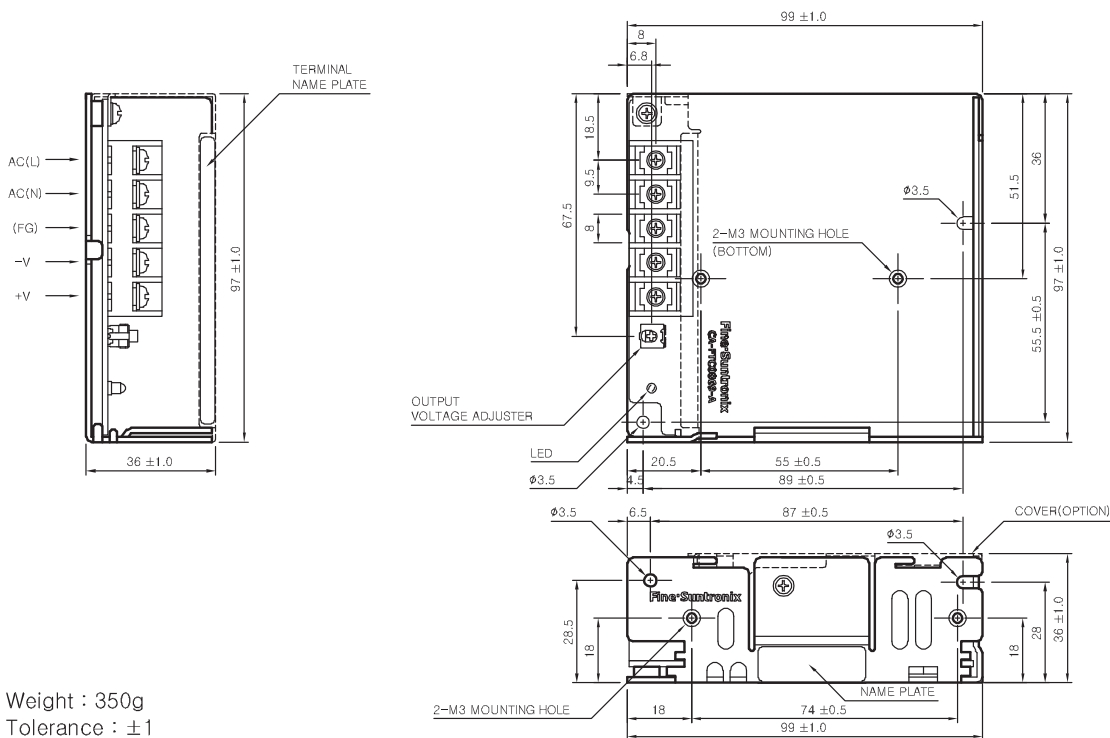
JSF50-S SPECIFICATIONS



| MODEL | | JSF50-3R3 | JSF50-05 | JSF50-09 | JSF50-12 | JSF50-15 | JSF50-24 | JSF50-48 |
|-----------------------|--------------------------------|--|------------------|------------------|------------------|------------------|------------------|------------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC88 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal input voltage | | | | | | |
| | CURRENT [A] | 110V | 1.3 (Io=100%) | | | | | |
| | | 220V | 0.8 (Io=100%) | | | | | |
| | EFFICIENCY [%] | 110V | 75 typ | 80 typ | 81 typ | 84 typ | 86 typ | 86 typ |
| 220V | | | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, Io=100%), 40A typ(AC IN 220V, Io=100%) at cold start. | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 10 | 10 | 5.6 | 4.2 | 3.4 | 2.2 | 1.1 |
| | REGULATION, LINE [mV] | 17 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 66 Max | 50 Max | 90 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | RIPPLE, NOTE 1 [mVp-p] | 50 Max | 50 Max | 100 Max | 100 Max | 100 Max | 100 Max | 180 Max |
| | RIPPLE, NOISE NOTE 1 [mVp-p] | 80 Max | 80 Max | 120 Max | 120 Max | 120 Max | 120 Max | 200 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max |
| | RISE TIME [ms] | 1200 Max (AC IN 100V, Io=100%) | | | | | | |
| | HOLDING TIME [ms] | 14 typ (AC IN 100V, Io=100%) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | |
| | VIBRATION | 10~55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB |
| | LINE CONDUCTED RF VOLTAGE | Complied with EN55011/EN55022-B, FCC-B | | | | | | |

NOTE1 : Ripple & Noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor

JSF50-S EXTERNAL VIEW



- * Weight : 350g
- * Tolerance : ±1
- * Dimensions in mm

General Information
Switching Mode Power Supply
DC-DC Converter
Noise Filter
Solid State Relay
AC FAN Motor
Power Module
Discrete Semiconductors

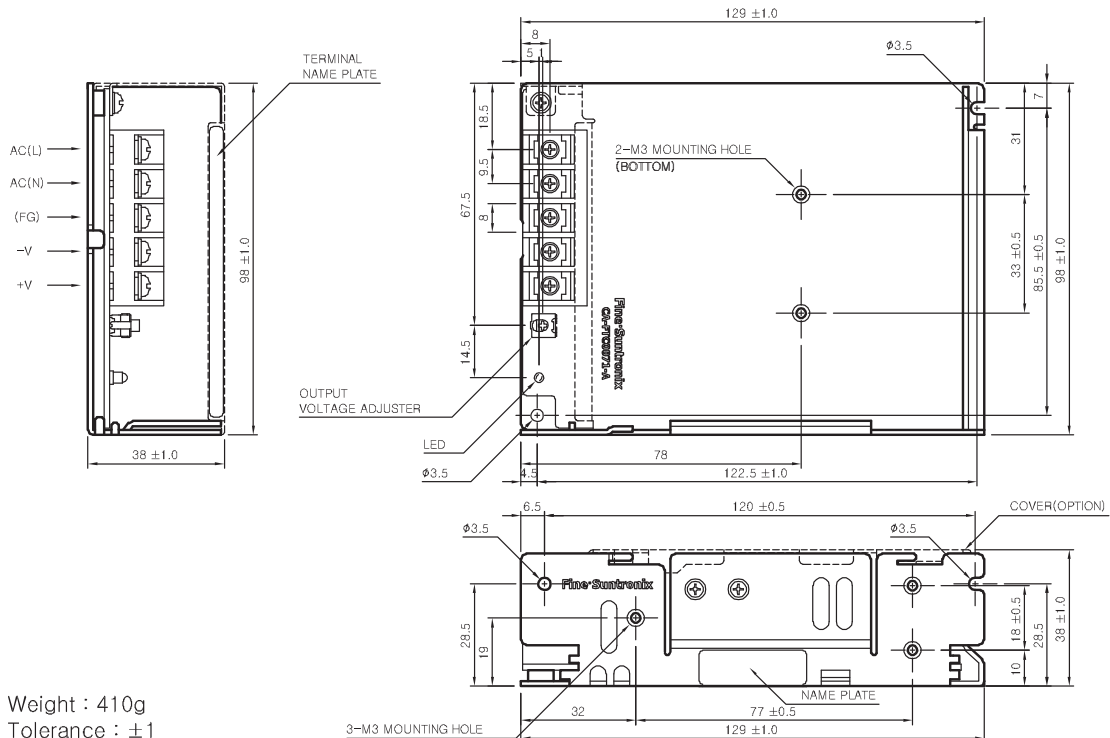
JSF75-S SPECIFICATIONS



| MODEL | | JSF75-3R3 | JSF75-05 | JSF75-09 | JSF75-12 | JSF75-15 | JSF75-24 | JSF75-48 |
|-----------------------|--------------------------------|---|----------------------------|------------------|------------------|------------------|------------------|------------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 88 ~ 264V or DC 125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal input voltage | | | | | | |
| | CURRENT [A] | 110V | 1.6 (I _o =100%) | | | | | |
| | | 220V | 1.0 (I _o =100%) | | | | | |
| | EFFICIENCY [%] | 110V | 74 typ | 78 typ | 79 typ | 83 typ | 84 typ | 85 typ |
| 220V | | | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 15 | 12 | 8 | 6 | 5 | 3.2 | 1.6 |
| | REGULATION, LINE [mV] | 17 max | 25 max | 40 max | 60 max | 75 max | 120 max | 240 max |
| | REGULATION, LOAD [mV] | 66 max | 50 max | 90 max | 60 max | 75 max | 120 max | 240 max |
| | RIPPLE, NOTE 1 [mVp-p] | 50 max | 50 max | 100 max | 100 max | 100 max | 100 max | 180 max |
| | RIPPLE, NOISE NOTE 1 [mVp-p] | 80 max | 80 max | 120 max | 120 max | 120 max | 120 max | 200 max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 max | 75 max | 135 max | 180 max | 225 max | 360 max | 720 max |
| | RISE TIME [ms] | 1500 Max (AC IN 100V, I _o =100%) | | | | | | |
| | HOLDING TIME [ms] | 14 typ (AC IN 100V, I _o =100) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20~90% RH(Non Condensing) | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20~90% RH(Non Condensing) | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB |
| | LINE CONDUCTED RF VOLTAGE | Complied with EN55011/EN55022-B, FCC-B | | | | | | |

NOTE1 : Ripple & Noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor

JSF75-S EXTERNAL VIEW



- * Weight : 410g
- * Tolerance : ± 1
- * Dimensions in mm

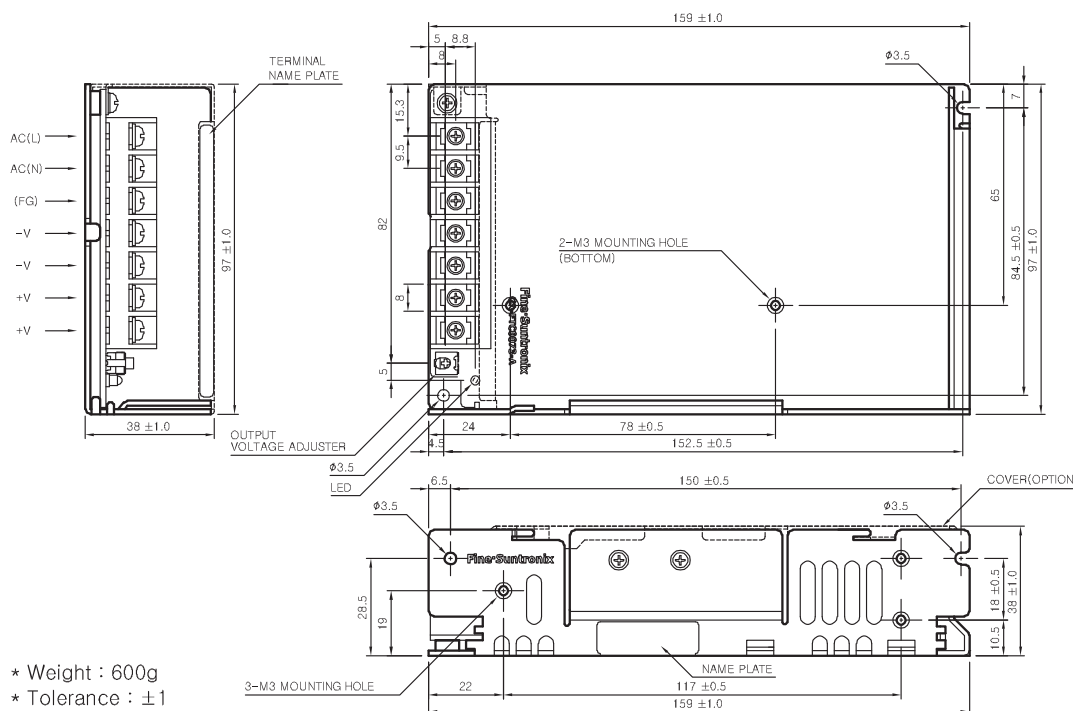
JSF100-S SPECIFICATIONS



| MODEL | | JSF100-3R3 | JSF100-05 | JSF100-09 | JSF100-12 | JSF100-15 | JSF100-24 | JSF100-48 |
|-----------------------|--------------------------------|---|----------------------------|------------------|------------------|------------------|------------------|------------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 88 ~ 264V or DC 125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal input voltage | | | | | | |
| | CURRENT [A] | 110V | 2.2 (I _o =100%) | | | | | |
| | | 220V | 1.2 (I _o =100%) | | | | | |
| | EFFICIENCY [%] | 110V | 74 typ | 79 typ | 80 typ | 82 typ | 85 typ | 86 typ |
| 220V | | | | | | | | |
| INRUSH CURRENT | | 30A typ(AC IN 110V, I _o =100%), 60A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 20 | 16 | 11 | 8.5 | 7 | 4.5 | 2.3 |
| | REGULATION, LINE [mV] | 17 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 66 Max | 50 Max | 90 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | RIPPLE, NOTE 1 [mVp-p] | 50 Max | 50 Max | 100 Max | 100 Max | 100 Max | 100 Max | 180 Max |
| | RIPPLE, NOISE NOTE 1 [mVp-p] | 80 Max | 80 Max | 120 Max | 120 Max | 120 Max | 120 Max | 200 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max |
| | RISE TIME [ms] | 1000 Max (AC IN 100V, I _o =100%) | | | | | | |
| | HOLDING TIME [ms] | 14 typ (AC IN 100V, I _o =100) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20~90% RH(Non Condensing) | | | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 10 ~ 95% RH(Non Condensing) | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB |
| | LINE CONDUCTED RF VOLTAGE | Complied with EN55011/EN55022-B, FCC-B | | | | | | |

NOTE1 : Ripple & Noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor

JSF100-S EXTERNAL VIEW



- * Weight : 600g
- * Tolerance : ±1
- * Dimensions in mm

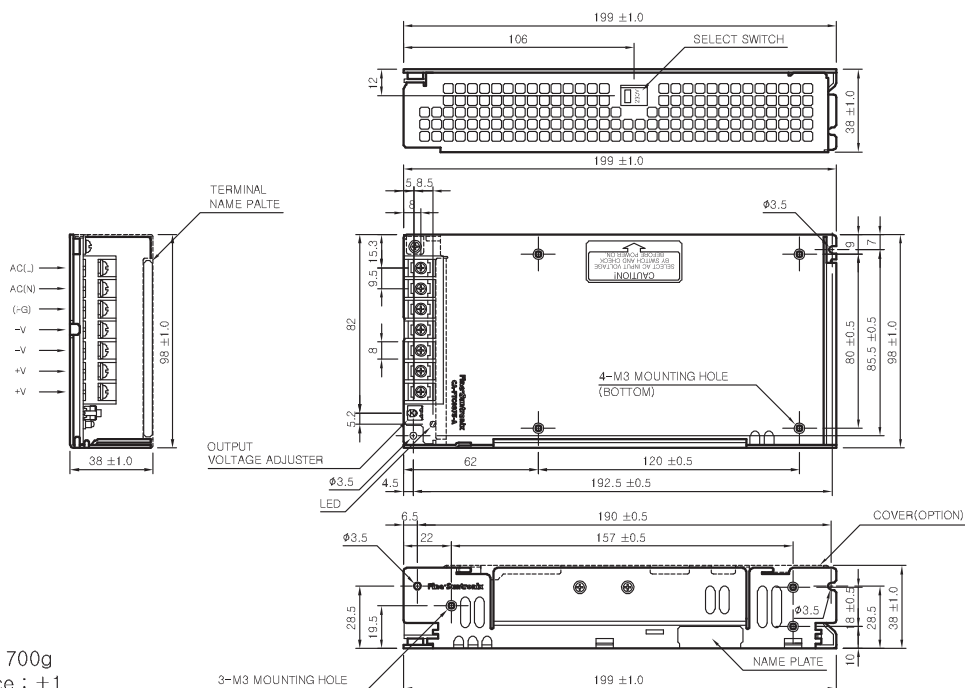
JSF150-S SPECIFICATIONS



| MODEL | | JSF150-3R3 | JSF150-05 | JSF150-09 | JSF150-12 | JSF150-15 | JSF150-24 | JSF150-48 | |
|-----------------------|--------------------------------|---|----------------------------|------------------|------------------|------------------|------------------|------------------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120 / 200-240V(AC 88 ~ 132/176 ~ 264V) or DC 248 ~ 370V, 50/60Hz (47 ~ 440Hz) User-Selectable | | | | | | | |
| | CURRENT [A] | 110V | 3.5 (I _o =100%) | | | | | | |
| | | 220V | 2.0 (I _o =100%) | | | | | | |
| | EFFICIENCY [%] | 110V | 74 typ | 78 typ | 80 typ | 83 typ | 85 typ | 85 typ | 87 typ |
| | 220V | | | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 | |
| | CURRENT [A] | 30 | 26 | 16.5 | 12.5 | 10 | 6.5 | 3.3 | |
| | REGULATION, LINE [mV] | 17 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 250 Max | |
| | REGULATION, LOAD [mV] | 66 Max | 50 Max | 90 Max | 60 Max | 75 Max | 120 Max | 240 Max | |
| | RIPPLE, NOTE1 [mVp-p] | 50 Max | 50 Max | 100 Max | 100 Max | 100 Max | 100 Max | 180 Max | |
| | RIPPLE, NOISE NOTE 1 [mVp-p] | 80 Max | 80 Max | 120 Max | 120 Max | 120 Max | 120 Max | 200 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max | |
| | RISE TIME [ms] | 1500 Max (AC IN 100V, I _o =100%) | | | | | | | |
| | HOLDING TIME [ms] | 14 typ (AC IN 100V, I _o =100%) | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 10 ~ 95% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | |
| | LINE CONDUCTED RF VOLTAGE | Complied with EN55011/EN55022-B, FCC-B | | | | | | | |

NOTE1 : Ripple & Noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor

JSF150-S EXTERNAL VIEW



- * Weight : 700g
- * Tolerance : ±1
- * Dimensions in mm

JSF240-S SPECIFICATIONS

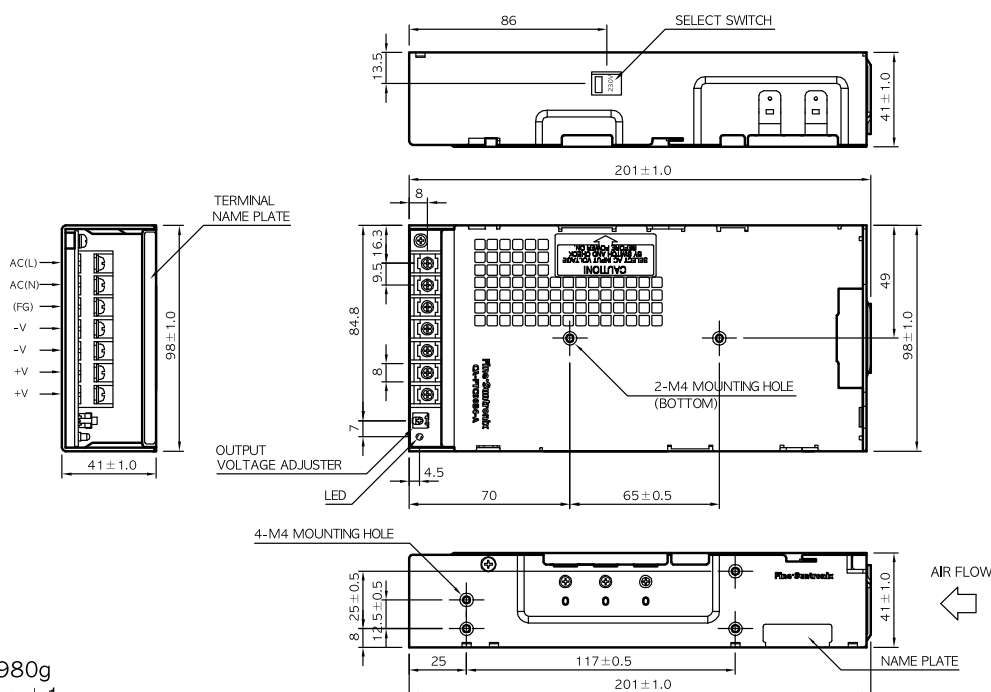


| MODEL | | JSF240-3R3 | JSF240-05 | JSF240-09 | JSF240-12 | JSF240-15 | JSF240-24 | JSF240-48 |
|-----------------------|--------------------------------|--|------------------|------------------|------------------|------------------|------------------|------------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC88 ~ 132V / 176~264V), 50/60Hz (47 ~ 440Hz) or DC240~370V User-Selectable | | | | | | |
| | CURRENT [A] | 110V | 5.5 (Io=100%) | | | | | |
| | | 220V | 2.0 (Io=100%) | | | | | |
| | EFFICIENCY [%] | 110V | 73 typ | 78 typ | 83 typ | 83 typ | 83 typ | 86 typ |
| 220V | | | | | | | | |
| INRUSH CURRENT | | 40A typ(AC IN 110V, Io=100%), 40A typ(AC IN 220V, Io=100%) at cold start. | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 48 | 48 | 26.7 | 20 | 16 | 10 | 5 |
| | REGULATION, LINE [mV] | 20 Max | 20 Max | 48 Max | 60 Max | 60 Max | 96 Max | 192 Max |
| | REGULATION, LOAD [mV] | 40 Max | 40 Max | 96 Max | 120 Max | 120 Max | 192 Max | 384 Max |
| | RIPPLE, NOTE 1 [mVp-p] | 120 Max | 120 Max | 150 Max | 150 Max | 150 Max | 150 Max | 250 Max |
| | RIPPLE, NOISE NOTE 1 [mVp-p] | 120 Max | 120 Max | 150 Max | 150 Max | 150 Max | 150 Max | 250 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 150 Max | 240 Max | 480 Max |
| | RISE TIME [ms] | 1500 Max (AC IN 100V, Io=100%) | | | | | | |
| | HOLDING TIME [ms] | 15 typ (AC IN 100V, Io=100%) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -25 ~ +70°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 10 ~ 90% RH(Non Condensing) | | | | | | |
| | VIBRATION | 10~55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB |
| | LINE CONDUCTED RF VOLTAGE | Complied with EN55011/EN55022-B, FCC-B | | | | | | |

(*1) rated Load and Rated Input Voltage, Ta = 25°C

(*2) Ripple & noise are measured at 20MHz by using a 300mm twisted pair of load wires terminated with a 0.1uF film capacitor and a 47uF electrolytic capacitor

JSF240-S EXTERNAL VIEW



- * Weight : 980g
- * Tolerance : ± 1
- * Dimensions in mm

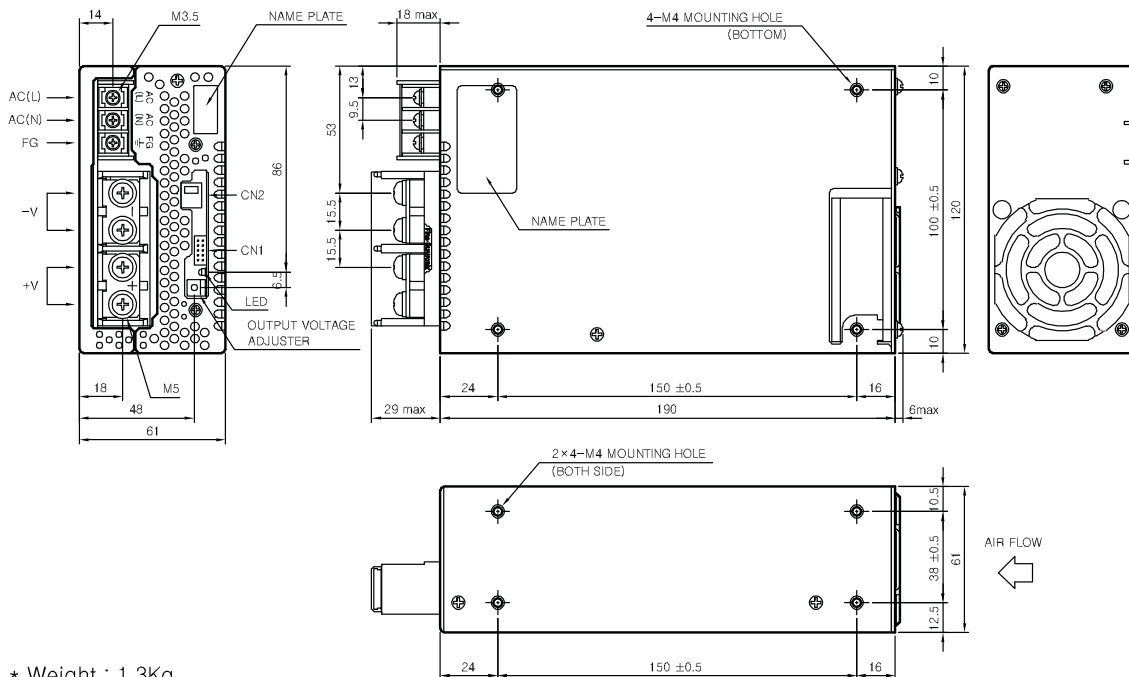
JSF500-S SPECIFICATIONS



| MODEL | | JSF500-3R3 | JSF500-05 | JSF500-09 | JSF500-12 | JSF500-15 | JSF500-24 | JSF500-36 | JSF500-48 |
|-----------------------|---|---|----------------------------|------------------|----------------------------|------------------|------------------|-----------|------------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120 / 200-240V(AC 88 ~ 132 / 176 ~ 264V) or DC 248 ~ 370V, 50/60Hz (47 ~ 440Hz) User-Selectable | | | | | | | |
| | CURRENT [A] | 110V | 8.0 (I _o =100%) | | 3.5 (I _o =100%) | | | | |
| | | 220V | 4.0 (I _o =100%) | | 2.0 (I _o =100%) | | | | |
| | EFFICIENCY [%] | 110V | 77 typ | 77 typ | 79 typ | 81 typ | 83 typ | 85 typ | 85 typ |
| 220V | | | | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 36 | 48 |
| | CURRENT [A] | 90 | 90 | 50 | 37.5 | 30 | 18.8 | 12.5 | 9.4 |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 180 Max | 240 Max |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 360 Max | 480 Max |
| | RIPPLE, NOTE 1 [mVp-p] | 80 Max | 80 Max | 120 Max | 120 Max | 120 Max | 120 Max | 150 Max | 150 Max |
| | RIPPLE, NOISE NOTE 1 [mVp-p] | 120 Max | 120 Max | 150 Max | 150 Max | 150 Max | 150 Max | 250 Max | 250 Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 540 Max | 720 Max |
| | RISE TIME [ms] | 600 Max (AC IN 100V, I _o =100%) | | | | | | | |
| HOLDING TIME [ms] | 14 typ (AC IN 100V, I _o =100%) | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 10 ~ 95% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | UL, C-UL, CE, CB | - | UL, C-UL, CE, CB |
| | LINE CONDUCTED RF VOLTAGE | Complied with with FCC Part 15, VCCI-A, CISPR22-A, EN55022-A | | | | | | | |

NOTE1 : Ripple & Noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor

JSF500-S EXTERNAL VIEW



- * Weight : 1.3Kg
- * Tolerance : ±1
- * Dimensions in mm



ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

Discrete Semiconductors

For the Switching Model Power Supply

Switching Mode Power Supply

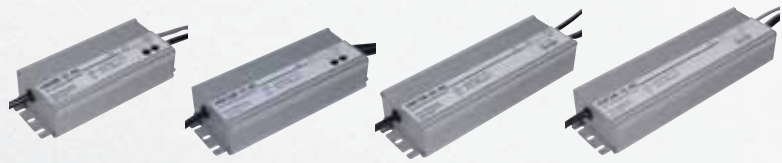


ORIENT

ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

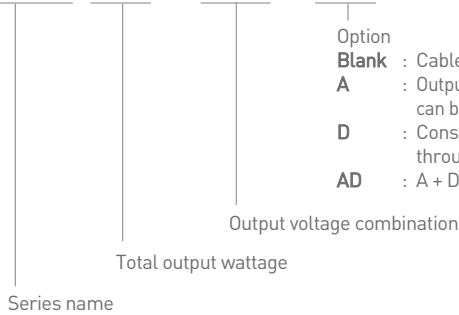
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|----------------------|-----------|
| 1. FDR SERIES | 20 |
| 2. JSF SERIES | 30 |
| 3. HSF SERIES | 42 |
| 4. LSP SERIES | 50 |
| 5. CSF SERIES | 58 |
| 6. PSF SERIES | 80 |
| 7. VSF SERIES | 88 |
| 8. ESF SERIES | 112 |
| 9. MSF SERIES | 134 |
| 10. MP SERIES | 162 |



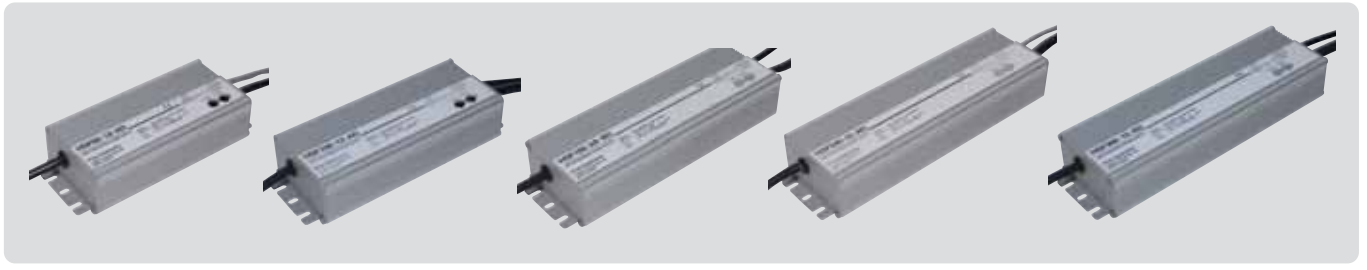
  **RoHS**

ORDERING INFORMATION **NEW**

HSF60-12-□



- A, AD Type = IP66, NONE, D Type = IP67
- Built in PFC function(Active)
- Inrush current limit
- Wide input voltage(Universal input voltage)
- Over voltage protection
- Over current protection
- Outdoor LED Lighting
- LED Street Lighting
- 5 years warranty



HSF60-S SPECIFICATIONS



| MODEL | | HSF60-12 | HSF60-24 | HSF60-36 | HSF60-48 | |
|-----------------------|--------------------------------|---|----------------------------|------------|------------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 90 ~ 264V or DC 127 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | | | | |
| | CURRENT [A] | 110V | 0.8 (I _o =100%) | | | |
| | | 220V | 0.4 (I _o =100%) | | | |
| | EFFICIENCY [%] | 110V | 84 typ | 85 typ | 85 typ | 85 typ |
| | | 220V | 86 typ | 88 typ | 88 typ | 88 typ |
| | POWER FACTOR | 110V | 0.97 typ | | | |
| 220V | | 0.93 typ | | | | |
| INRUSH CURRENT | | 25A typ (AC IN 110V, I _o =100%), 45A typ (AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 12 | 24 | 36 | 48 | |
| | VOLTAGE ADJ RANGE *NOTE1 [V] | 10.8 ~ 13.5 | 22 ~ 27 | 33 ~ 40 | 43 ~ 53 | |
| | CURRENT [A] | 5 | 2.5 | 1.7 | 1.3 | |
| | CURRENT ADJ RANGE *NOTE1 [A] | 2.5 ~ 5 | 1.25 ~ 2.5 | 0.85 ~ 1.7 | 0.65 ~ 1.3 | |
| | REGULATION, LINE [mV] | 120 Max | 120 Max | 180 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 120 Max | 120 Max | 180 Max | 240 Max | |
| | RIPPLE MAX [mV] | 120 Max | 120 Max | 180 Max | 240 Max | |
| | RIPPLE NOISE MAX 1 [mV] | 150 Max | 150 Max | 250 Max | 150 Max | |
| | RIPPLE NOISE MAX 2 *NOTE1 [mV] | 400 Max | 400 Max | 600 Max | 600 Max | |
| | TEMPERATURE DRIFT [mV] | 180 Max | 360 Max | 540 Max | 720 Max | |
| | RISE TIME [ms] | 600 Max (AC IN 100V I _o =100%) | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 100V I _o =100%) | | | | |
| FUNCTION | OVER CURRENT PROTECTION [A] | Works at 95 ~ 110% of rating | | | | |
| | OVER VOLTAGE PROTECTION [V] | 14 ~ 17 | 28 ~ 34 | 41 ~ 46 | 54 ~ 60 | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -25 ~ +70°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH (Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axi | | | | |
| SAFETY | SAFETY REGULATION | CE, KC | CE, KC | CE, KC | CE, KC | |
| | CONDUCTED EMISSION | Built to meet EN55015 | | | | |

NOTE 1 : Type A, AD only

NOTE 2 : Frequency 50 / 60Hz

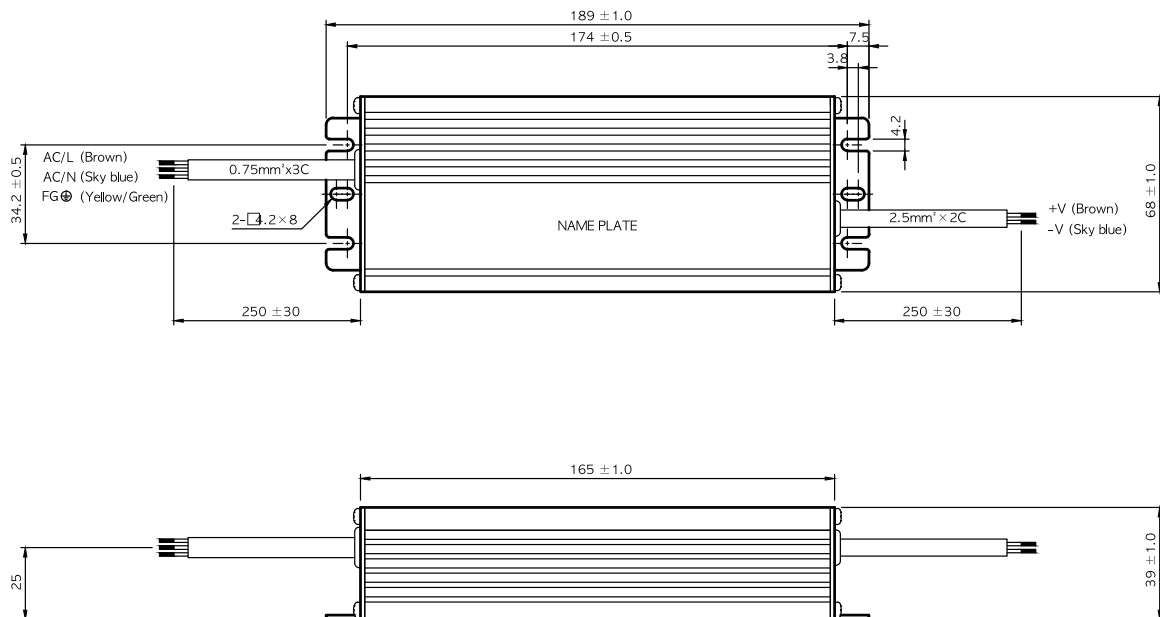
HSF100-S SPECIFICATIONS



| MODEL | | HSF100-12 | HSF100-24 | HSF100-36 | HSF100-48 | |
|-----------------------|--------------------------------|---|----------------------------|-------------|-----------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 90 ~ 264V or DC 127 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | | | | |
| | CURRENT [A] | 110V | 1.4 (I _o =100%) | | | |
| | | 220V | 0.7 (I _o =100%) | | | |
| | EFFICIENCY [%] | 110V | 84 typ | 85 typ | 85 typ | 85 typ |
| | | 220V | 86 typ | 88 typ | 88 typ | 88 typ |
| | POWER FACTOR | 110V | 0.97 typ | | | |
| 220V | | 0.93 typ | | | | |
| INRUSH CURRENT | | 30A typ (AC IN 110V, I _o =100%), 60A typ (AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 12 | 24 | 36 | 48 | |
| | VOLTAGE ADJ RANGE *NOTE1 [V] | 10.8 ~ 13.5 | 22 ~ 27 | 33 ~ 40 | 43 ~ 53 | |
| | CURRENT [A] | 6.4 | 4 | 2.65 | 2 | |
| | CURRENT ADJ RANGE *NOTE1 [A] | 4.16 ~ 6.4 | 2.6 ~ 4 | 1.72 ~ 2.65 | 1.3 ~ 2 | |
| | REGULATION, LINE [mV] | 120 Max | 120 Max | 180 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 120 Max | 120 Max | 180 Max | 240 Max | |
| | RIPPLE MAX [mV] | 120 Max | 120 Max | 150 Max | 150 Max | |
| | RIPPLE NOISE MAX 1 [mV] | 150 Max | 150 Max | 250 Max | 250 Max | |
| | RIPPLE NOISE MAX 2 *NOTE1 [mV] | 400 Max | 400 Max | 600 Max | 600 Max | |
| | TEMPERATURE DRIFT [mV] | 180 Max | 360 Max | 540 Max | 720 Max | |
| | RISE TIME [ms] | 1000 Max (AC IN 100V I _o =100%) | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 100V I _o =100%) | | | | |
| FUNCTION | OVER CURRENT PROTECTION [A] | Works at 95 ~ 110% of rating | | | | |
| | OVER VOLTAGE PROTECTION [V] | 14 ~ 19 | 28 ~ 38 | 41 ~ 58 | 54 ~ 77 | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -25 ~ +70°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH (Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | CE, KC | CE, KC | CE, KC | CE, KC | |
| | CONDUCTED EMISSION | Built to meet EN55015 | | | | |

NOTE 1 : Type A. AD only NOTE 2 : Frequency 50 / 60Hz

HSF100-S EXTERNAL VIEW



- * Weight : 830g
- * Tolerance : ± 1
- * Dimensions in mm

HSF150-S SPECIFICATIONS



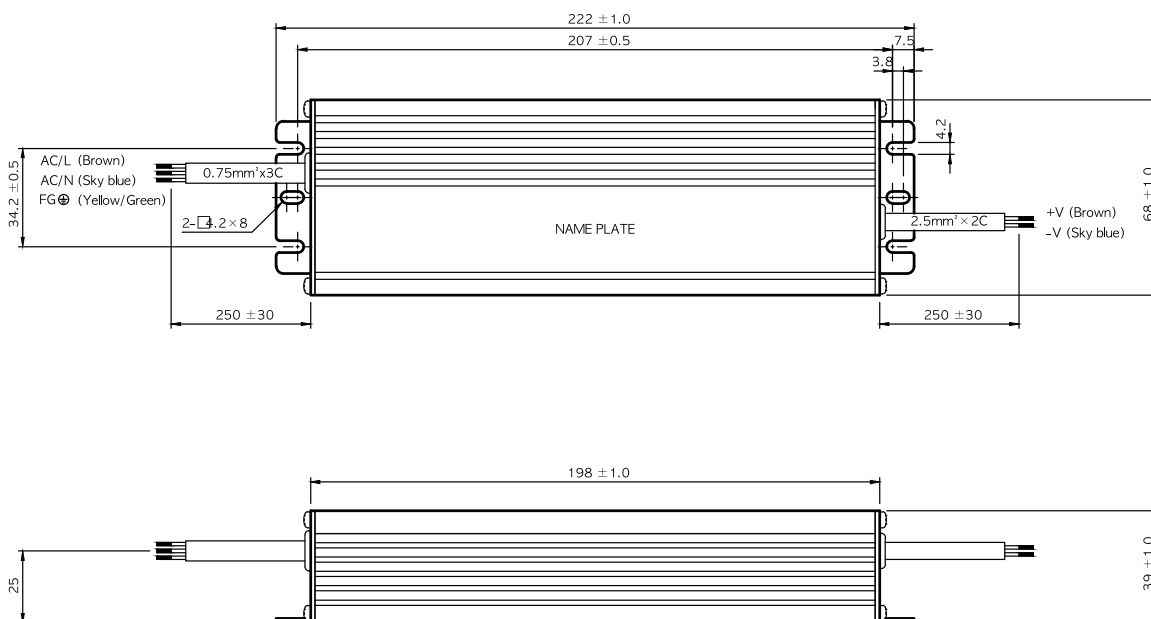
| MODEL | | HSF150-12 | HSF150-24 | HSF150-36 | HSF150-48 | |
|-----------------------|--------------------------------|---|----------------------------|-----------|-----------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 90 ~ 264V or DC 127 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | | | | |
| | CURRENT [A] | 110V | 3.0 (I _o =100%) | | | |
| | | 220V | 1.5 (I _o =100%) | | | |
| | EFFICIENCY [%] | 110V | 87 typ | 88 typ | 89 typ | 90 typ |
| | | 220V | 90 typ | 92 typ | 92.5 typ | 93 typ |
| | POWER FACTOR | 110V | 0.99 typ | | | |
| 220V | | 0.98 typ | | | | |
| INRUSH CURRENT | | 25A typ (AC IN 110V, I _o =100%), 45A typ (AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 12 | 24 | 36 | 48 | |
| | VOLTAGE ADJ RANGE *NOTE1 [V] | 10.8 ~ 13.5 | 22 ~ 27 | 33 ~ 40 | 43 ~ 53 | |
| | CURRENT [A] | 12.5 | 6.3 | 4.2 | 3.2 | |
| | CURRENT ADJ RANGE *NOTE1 [A] | 6.25 ~ 12.5 | 3.15 ~ 6.3 | 2.1 ~ 4.2 | 1.6 ~ 3.2 | |
| | REGULATION, LINE [mV] | 120 Max | 120 Max | 180 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 120 Max | 120 Max | 180 Max | 240 Max | |
| | RIPPLE MAX [mV] | 120 Max | 120 Max | 150 Max | 150 Max | |
| | RIPPLE NOISE MAX 1 [mV] | 150 Max | 150 Max | 250 Max | 250 Max | |
| | RIPPLE NOISE MAX 2 *NOTE3 [mV] | 600 Max | 600 Max | 800 Max | 800 Max | |
| | TEMPERATURE DRIFT [mV] | 180 Max | 360 Max | 540 Max | 720 Max | |
| | RISE TIME [ms] | 1000 Max (AC IN 100V I _o =100%) | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 100V I _o =100%) | | | | |
| FUNCTION | OVER CURRENT PROTECTION [A] | Works at 95 ~ 110% of rating | | | | |
| | OVER VOLTAGE PROTECTION [V] | 14 ~ 17 | 28 ~ 34 | 41 ~ 46 | 54 ~ 60 | |
| | DIMMING *NOTE2 [A] | 1 ~ 10V(Percentage or rated current : 10% ~ 100%) | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -25 ~ +70°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +75°C, 20 ~ 90% RH (Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | CE, KC | CE, KC | CE, KC | CE, KC | |
| | CONDUCTED EMISSION | Built to meet EN55015 | | | | |

NOTE 1 : TYPE A, AD ONLY

NOTE 2 : TYPE D, AD ONLY

NOTE 3 : FREQUENCY 50 / 60Hz

HSF150-S EXTERNAL VIEW



- * Weight : 980g
- * Tolerance : ± 1
- * Dimensions in mm

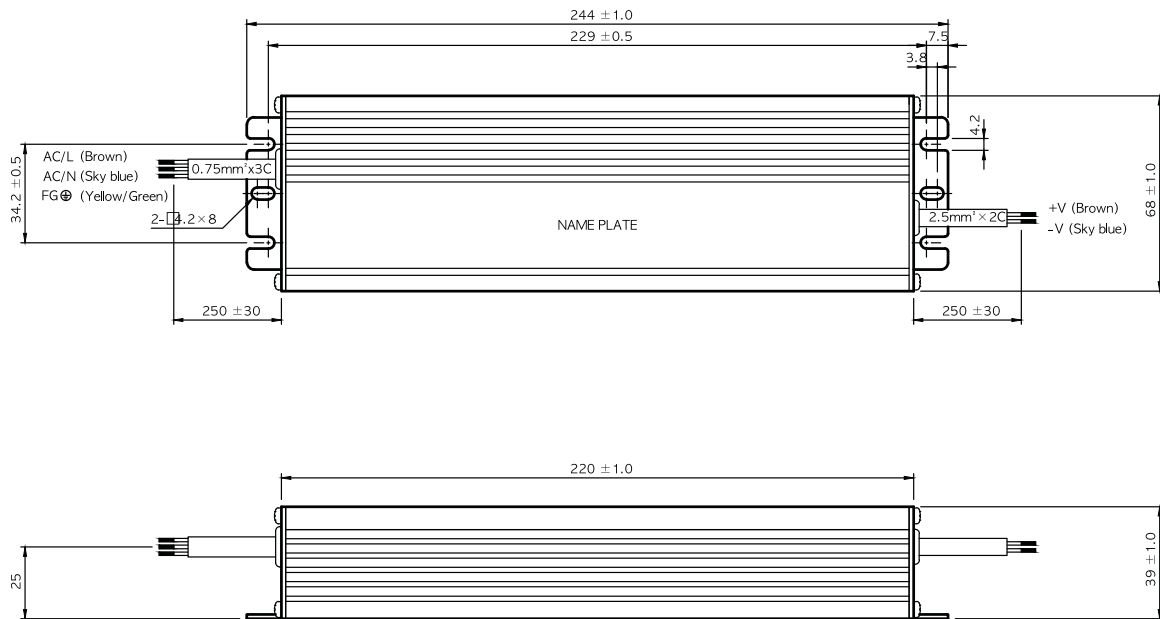
HSF240-S SPECIFICATIONS



| MODEL | | HSF240-12 | HSF240-24 | HSF240-36 | HSF240-48 | |
|-----------------------------|--------------------------------|---|------------------------------|------------|-----------|----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 90 ~ 264V or DC 127 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | | | | |
| | CURRENT [A] | 110V | 4.0 (I _o =100%) | | | |
| | | 220V | 2.0 (I _o =100%) | | | |
| | EFFICIENCY [%] | 110V | 87 typ | 88 typ | 89 typ | 90 typ |
| | | 220V | 90 typ | 92 typ | 93 typ | 93.5 typ |
| | POWER FACTOR | 110V | 0.99 typ | | | |
| 220V | | 0.98 typ | | | | |
| INRUSH CURRENT | | 25A typ (AC IN 110V, I _o =100%), 45A typ (AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 12 | 24 | 36 | 48 | |
| | VOLTAGE ADJ RANGE *NOTE1 [V] | 10.8 ~ 13.5 | 22 ~ 27 | 33 ~ 40 | 43 ~ 53 | |
| | CURRENT [A] | 16 | 10 | 6.7 | 5 | |
| | CURRENT ADJ RANGE *NOTE1 [A] | 8 ~ 16 | 5 ~ 10 | 3.35 ~ 6.7 | 2.5 ~ 5.0 | |
| | REGULATION, LINE [mV] | 120 Max | 120 Max | 180 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 120 Max | 120 Max | 180 Max | 240 Max | |
| | RIPPLE MAX [mV] | 120 Max | 120 Max | 150 Max | 150 Max | |
| | RIPPLE NOISE MAX 1 [mV] | 150 Max | 150 Max | 250 Max | 250 Max | |
| | RIPPLE NOISE MAX 2 *NOTE3 [mV] | 600 Max | 600 Max | 800 Max | 800 Max | |
| | TEMPERATURE DRIFT [mV] | 180 Max | 360 Max | 540 Max | 720 Max | |
| | RISE TIME [ms] | 1000 Max (AC IN 100V I _o =100%) | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 100V I _o =100%) | | | | |
| | FUNCTION | OVER CURRENT PROTECTION [A] | Works at 95 ~ 110% of rating | | | |
| OVER VOLTAGE PROTECTION [V] | | 14 ~ 17 | 28 ~ 34 | 41 ~ 46 | 54 ~ 60 | |
| DIMMING *NOTE2 [A] | | 1 ~ 10V (Percentage or rated current : 10% ~ 100%) | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -25 ~ +70°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +75°C, 20 ~ 90% RH (Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axi | | | | |
| SAFETY | SAFETY REGULATION | CE, KC | CE, KC | CE, KC | CE, KC | |
| | CONDUCTED EMISSION | Built to meet EN55015 | | | | |

NOTE 1 : Type A. AD only NOTE 2 : Type D. AD only NOTE 3 : Frequency 50/60Hz

HSF240-S EXTERNAL VIEW



- * Weight : 1.3kg
- * Tolerance : ± 1
- * Dimensions in mm

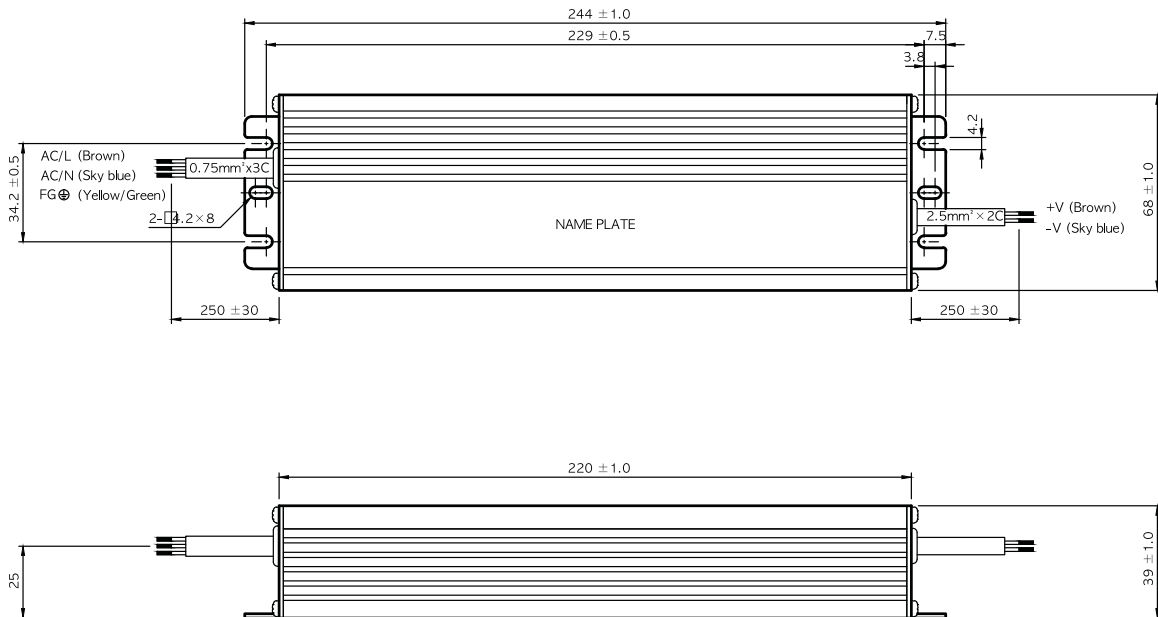
HSF300-S SPECIFICATIONS



| MODEL | | HSF300-12 | HSF300-24 | HSF300-36 | HSF300-48 | |
|-----------------------------|--------------------------------|---|------------------------------|-------------|-------------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 90 ~ 264V or DC 127 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | | | | |
| | CURRENT [A] | 110V | 4.0 (I _o =100%) | | | |
| | | 220V | 2.5 (I _o =100%) | | | |
| | EFFICIENCY [%] | 110V | 86 typ | 88 typ | 89 typ | 90 typ |
| | | 220V | 89 typ | 91 typ | 92 typ | 92 typ |
| | POWER FACTOR | 110V | 0.99 typ | | | |
| 220V | | 0.98 typ | | | | |
| INRUSH CURRENT | | 25A typ (AC IN 110V, I _o =100%), 45A typ (AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 12 | 24 | 36 | 48 | |
| | VOLTAGE ADJ RANGE *NOTE1 [V] | 10.8 ~ 13.2 | 21.6 ~ 26.4 | 32.4 ~ 49.8 | 43.2 ~ 51.5 | |
| | CURRENT [A] | 20 | 12.5 | 8.3 | 6.25 | |
| | CURRENT ADJ RANGE *NOTE1 [A] | 10 ~ 20 | 6.25 ~ 12.5 | 4.16 ~ 8.3 | 3.12 ~ 6.25 | |
| | REGULATION, LINE [mV] | 120 Max | 120 Max | 180 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 120 Max | 120 Max | 180 Max | 240 Max | |
| | RIPPLE MAX [mV] | 120 Max | 120 Max | 150 Max | 150 Max | |
| | RIPPLE NOISE MAX 1 [mV] | 150 Max | 150 Max | 250 Max | 250 Max | |
| | RIPPLE NOISE MAX 2 *NOTE3 [mV] | 600 Max | 600 Max | 800 Max | 800 Max | |
| | TEMPERATURE DRIFT [mV] | 180 Max | 360 Max | 540 Max | 720 Max | |
| | RISE TIME [ms] | 1500 Max (AC IN 100V I _o =100%) | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 100V I _o =100%) | | | | |
| | FUNCTION | OVER CURRENT PROTECTION [A] | Works at 95 ~ 110% of rating | | | |
| OVER VOLTAGE PROTECTION [V] | | 14 ~ 17 | 28 ~ 34 | 41 ~ 46 | 54 ~ 60 | |
| DIMMING *NOTE2 [A] | | 1 ~ 10V(Percentage or rated current : 10% ~ 100%) | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -40 ~ +70°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 10 ~ 90% RH (Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | CE, KC | CE, KC | CE, KC | CE, KC | |
| | CONDUCTED EMISSION | Built to meet EN55015 | | | | |

NOTE 1 : TYPE A, AD ONLY NOTE 2 : TYPE D, AD ONLY NOTE 3 : FREQUENCY 50 / 60Hz

HSF300-S EXTERNAL VIEW



- * Weight : 1.3kg
- * Tolerance : ± 1
- * Dimensions in mm

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

Discrete Semiconductors

For the Switching Model Power Supply

Switching Mode Power Supply



ORIENT

ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

| | |
|----------------------|-----------|
| 1. FDR SERIES | 20 |
| 2. JSF SERIES | 30 |
| 3. HSF SERIES | 42 |
| 4. LSP SERIES | 50 |
| 5. CSF SERIES | 58 |
| 6. PSF SERIES | 80 |
| 7. VSF SERIES | 88 |
| 8. ESF SERIES | 112 |
| 9. MSF SERIES | 134 |
| 10. MP SERIES | 162 |



RoHS

ORDERING INFORMATION

NEW

LSP10-24

Series name

Total output wattage

Output voltage combination

- Slim type
- Fully isolated plastic case
- Indoor LED Lighting
- Over Current Protection
- LED Displays
- 3 years warranty

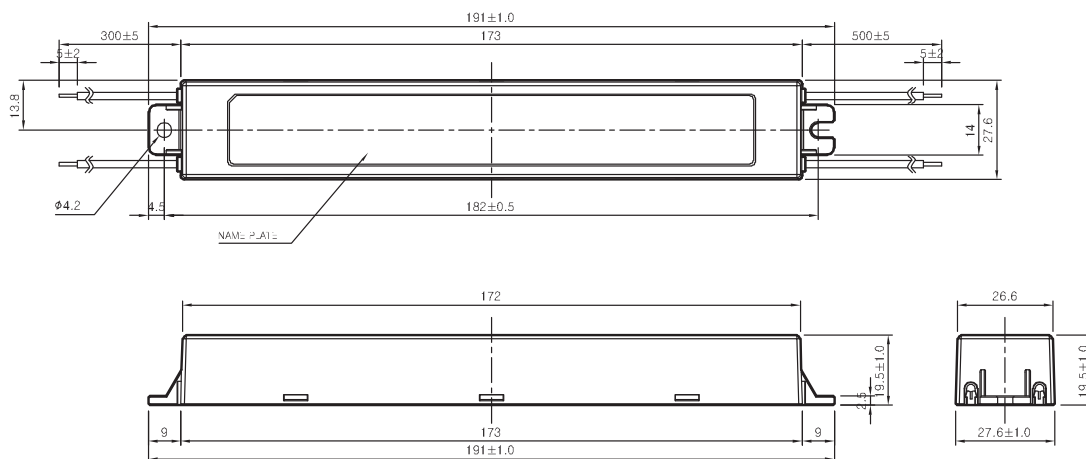


LSP10-S SPECIFICATIONS

| MODEL | | 24 | 36 | 48 | |
|-----------------------|--|---|-----------------------------|------------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 85 ~ 264V or DC 125 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | | | |
| | CURRENT [A] | 110V | 0.1 (I _o =100%) | | |
| | | 220V | 0.06 (I _o =100%) | | |
| | EFFICIENCY [%] | 110V | 85 typ | 85 typ | 85 typ |
| | | 220V | 80 typ | 80 typ | 80 typ |
| INRUSH CURRENT | | 10A typ (AC IN 110V, I _o =100%), 10A typ (AC IN 220V, I _o =100%) at cold start. | | | |
| OUTPUT | VOLTAGE *NOTE1 [V] | 24(★) | 36(★) | 48(★) | |
| | CURRENT [A] | 0.41 | 0.27 | 0.21 | |
| | CURRENT ADJ RANGE [A] | 0.2 ~ 0.41 | 0.13 ~ 0.27 | 0.1 ~ 0.21 | |
| | LED FORWARD VOLTAGE Setting Range *NOTE2 [V] | 21.6 ~ 24 | 32.4 ~ 36 | 43.2 ~ 48 | |
| | REGULATION, LINE [mV] | 20 Max | 15 Max | 15 Max | |
| | REGULATION, LOAD [mV] | - | - | - | |
| | RIPPLE MAX [mV] | 14 Max | 14 Max | 39 Max | |
| | RIPPLE NOISE MAX [mV] | 26 Max | 26 Max | 55 Max | |
| | TEMPERATURE DRIFT [mV] | - | - | - | |
| | RISE TIME [ms] | 1000 Max (AC IN 110V I _o =100%) | | | |
| | HOLDING TIME [ms] | 8 typ (AC IN 110V I _o =100%) | | | |
| FUNCTION | OVER CURRENT PROTECTION [A] | Works at 95 ~ 110% of rating | | | |
| | OVER VOLTAGE PROTECTION [V] | - | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,750V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | INPUT-CASE, FG | - | | | |
| | OUTPUT-CASE, FG | - | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH (Non condensing) | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axi | | | |
| SAFETY | - | Complied with UL, C-UL, CE | | | |
| | CONDUCTED EMISSION | Complied EMI meets FCC CLASS B | | | |

NOTE 1 : Output voltage LED VF
NOTE 2 : LED VF Normal Voltage

LSP10-S EXTERNAL VIEW



- * Weight : 104.5g
- * Tolerance : ± 1
- * Dimensions in mm

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

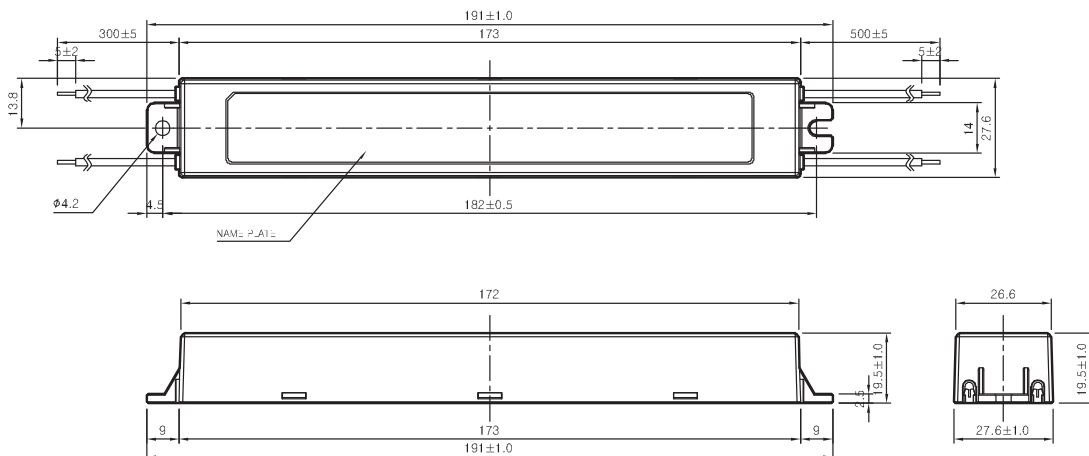
Discrete Semiconductors

LSP18-S SPECIFICATIONS

| MODEL | | 24 | 36 | 48 | |
|-----------------------|---|--|----------------------------|-------------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 85 ~ 264V or DC 125 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | | | |
| | CURRENT [A] | 110V | 0.2 (I _o =100%) | | |
| | | 220V | 0.1 (I _o =100%) | | |
| | EFFICIENCY [%] | 110V | 85 typ | 85 typ | 85 typ |
| | | 220V | 85 typ | 85 typ | 85 typ |
| INRUSH CURRENT | 10A typ (AC IN 110V, I _o =100%), 10A typ (AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE *NOTE1 [V] | 24(★) | 36(★) | 48(★) | |
| | CURRENT [A] | 0.75 | 0.5 | 0.37 | |
| | CURRENT ADJ RANGE [A] | 0.37 ~ 0.75 | 0.25 ~ 0.5 | 0.18 ~ 0.37 | |
| | LED FORWARD VOLTAGE Setting Range *NOTE2 [V] | 21.6 ~ 24 | 32.4 ~ 36 | 43.2 ~ 48 | |
| | REGULATION, LINE [mV] | 25 Max | 20 Max | 20 Max | |
| | REGULATION, LOAD [mV] | - | - | - | |
| | RIPPLE MAX [mV] | 14 Max | 14 Max | 39 Max | |
| | RIPPLE NOISE MAX [mV] | 26 Max | 26 Max | 55 Max | |
| | TEMPERATURE DRIFT [mV] | - | - | - | |
| | RISE TIME [ms] | 1000 Max (AC IN 110V I _o =100%) | | | |
| | HOLDING TIME [ms] | 8 typ (AC IN 110V I _o =100%) | | | |
| FUNCTION | OVER CURRENT PROTECTION [A] | Works at 95 ~ 110% of rating | | | |
| | OVER VOLTAGE PROTECTION [V] | - | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,750V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | INPUT-CASE, FG | - | | | |
| | OUTPUT-CASE, FG | - | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH (Non condensing) | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | |
| SAFETY | - | Complied with UL, C-UL, CE | | | |
| | CONDUCTED EMISSION | Complied EMI meets FCC CLASS B | | | |

NOTE 1 : Output voltage LED VF
NOTE 2 : LED VF Normal Voltage

LSP18-S EXTERNAL VIEW



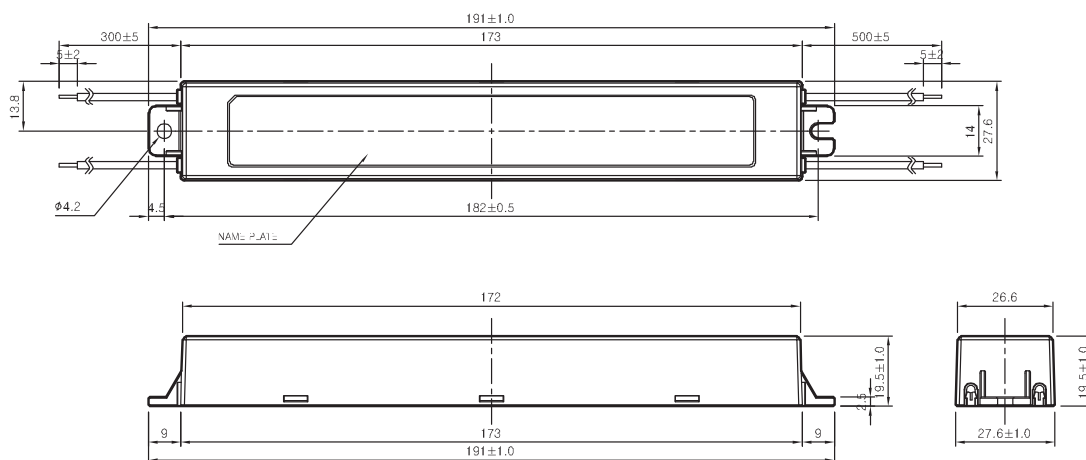
- * Weight : 104.5g
- * Tolerance : ±1
- * Dimensions in mm

LSP20-S SPECIFICATIONS

| | | MODEL | 24 | 36 | 48 |
|-----------------------|--|---|--|-------------|------------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-240V (AC 85 ~ 264V or DC 125 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | | |
| | CURRENT | [A] | 0.22 (I _o =100%) | | |
| | | | 0.12 (I _o =100%) | | |
| | EFFICIENCY | [%] | 110V | 85 typ | 85 typ |
| | | 220V | 85 typ | 85 typ | 85 typ |
| INRUSH CURRENT | | 10A typ (AC IN 110V, I _o =100%), 10A typ (AC IN 220V, I _o =100%) at cold start. | | | |
| OUTPUT | VOLTAGE *NOTE1 | [V] | 24(★) | 36(★) | 48(★) |
| | CURRENT | [A] | 0.83 | 0.55 | 0.41 |
| | CURRENT ADJ RANGE | [A] | 0.41 ~ 0.83 | 0.27 ~ 0.55 | 0.2 ~ 0.41 |
| | LED FORWARD VOLTAGE Setting Range *NOTE2 | [V] | 21.6 ~ 24 | 32.4 ~ 36 | 43.2 ~ 48 |
| | REGULATION, LINE | [mV] | 30 Max | 20 Max | 20 Max |
| | REGULATION, LOAD | [mV] | - | - | - |
| | RIPPLE MAX | [mV] | 14 Max | 14 Max | 39 Max |
| | RIPPLE NOISE MAX | [mV] | 26 Max | 26 Max | 55 Max |
| | TEMPERATURE DRIFT | [mV] | - | - | - |
| | RISE TIME | [ms] | 1000 Max (AC IN 110V I _o =100%) | | |
| HOLDING TIME | [ms] | 8 typ (AC IN 110V I _o =100%) | | | |
| FUNCTION | OVER CURRENT PROTECTION | [A] | Works at 95 ~ 110% of rating | | |
| | OVER VOLTAGE PROTECTION | [V] | - | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,750V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | INPUT-CASE, FG | - | | | |
| | OUTPUT-CASE, FG | - | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH (Non condensing) | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | |
| SAFETY | - | Complied with UL, C-UL, CE | | | |
| | CONDUCTED EMISSION | Complied EMI meets FCC CLASS B | | | |

NOTE 1 : Output voltage LED VF
NOTE 2 : LED VF Normal Voltage

LSP20-S EXTERNAL VIEW



- * Weight : 104.5g
- * Tolerance : ±1
- * Dimensions in mm

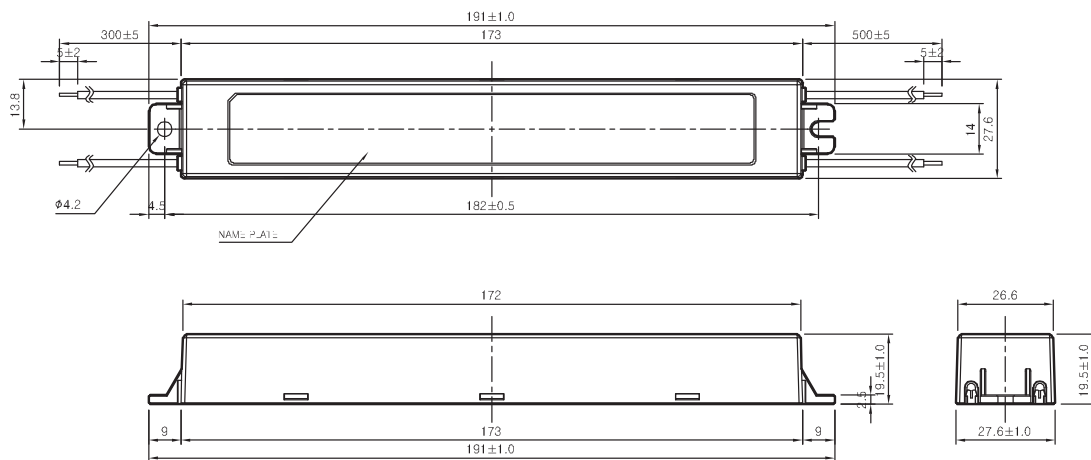
LSP24, 28-S SPECIFICATIONS



| MODEL | | 24 | 36 | 48 | LSP28-48 | |
|-----------------------|--|---|-----------------------------|------------|-------------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 85 ~ 264V or DC 127 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | | | | |
| | CURRENT [A] | 110V | 0.26 (I _o =100%) | | | |
| | | 220V | 0.14 (I _o =100%) | | | |
| | EFFICIENCY [%] | 110V | 86 typ | 86 typ | 86 typ | 86 typ |
| | | 220V | 85 typ | 85 typ | 85 typ | 85 typ |
| INRUSH CURRENT | | 10A typ (AC IN 110V, I _o =100%), 10A typ (AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE *NOTE1 [V] | 24(※) | 36(※) | 48(※) | 48(※) | |
| | CURRENT [A] | 1 | 0.66 | 0.5 | 0.57 | |
| | CURRENT ADJ RANGE [A] | 0.5 ~ 1 | 0.33 ~ 0.66 | 0.28 ~ 0.5 | 0.28 ~ 0.57 | |
| | LED FORWARD VOLTAGE Setting Range *NOTE2 [V] | 21.6 ~ 24 | 32.4 ~ 36 | 43.2 ~ 48 | 43.2 ~ 48 | |
| | REGULATION, LINE [mV] | 35 Max | 25 Max | 25 Max | 25 Max | |
| | REGULATION, LOAD [mV] | - | - | - | - | |
| | RIPPLE MAX [mV] | 18 Max | 18 Max | 39 Max | 39 Max | |
| | RIPPLE NOISE MAX [mV] | 32 Max | 32 Max | 55 Max | 55 Max | |
| | TEMPERATURE DRIFT [mV] | - | - | - | - | |
| | RISE TIME [ms] | 1000 Max (AC IN 110V I _o =100%) | | | | |
| HOLDING TIME [ms] | 8 typ (AC IN 110V I _o =100%) | | | | | |
| FUNCTION | OVER CURRENT PROTECTION [A] | Works at 95 ~ 110% of rating | | | | |
| | OVER VOLTAGE PROTECTION [V] | - | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,750V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | - | | | | |
| | OUTPUT-CASE, FG | - | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH (Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | |
| SAFETY | - | Complied with UL, C-UL, CE | | | KC | |
| | CONDUCTED EMISSION | Complied EMI meets FCC CLASS B | | | | |

NOTE 1 : Output voltage LED VF
NOTE 2 : LED VF Normal Voltage

LSP24, 28-S EXTERNAL VIEW



- * Weight : 104.5g
- * Tolerance : ±1
- * Dimensions in mm



ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

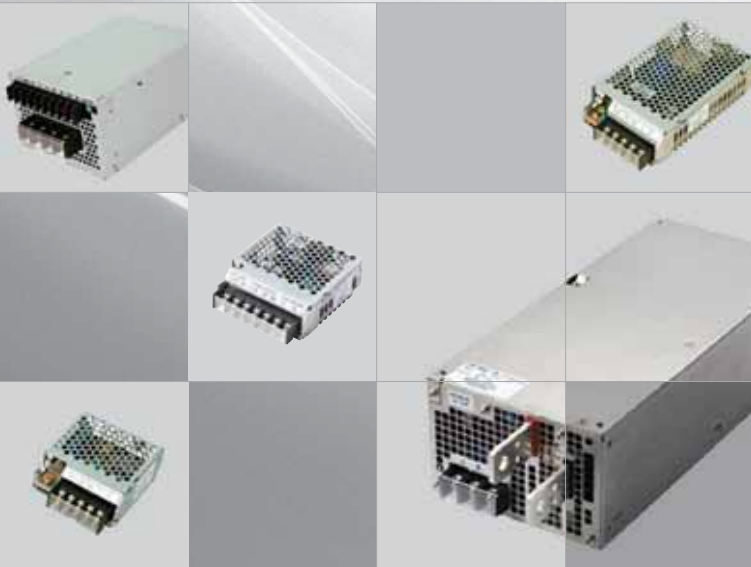
AC FAN Motor

Power Module

Discrete Semiconductors

For the Switching Model Power Supply

Switching Mode Power Supply



ORIENT

ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

| | |
|----------------------|-----------|
| 1. FDR SERIES | 20 |
| 2. JSF SERIES | 30 |
| 3. HSF SERIES | 42 |
| 4. LSP SERIES | 50 |
| 5. CSF SERIES | 58 |
| 6. PSF SERIES | 80 |
| 7. VSF SERIES | 88 |
| 8. ESF SERIES | 112 |
| 9. MSF SERIES | 134 |
| 10. MP SERIES | 162 |

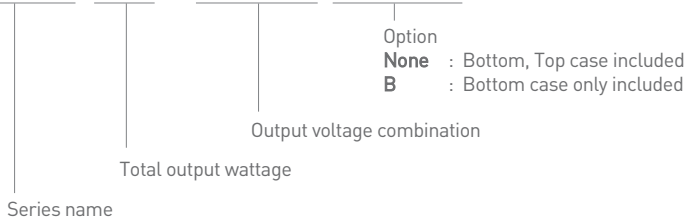


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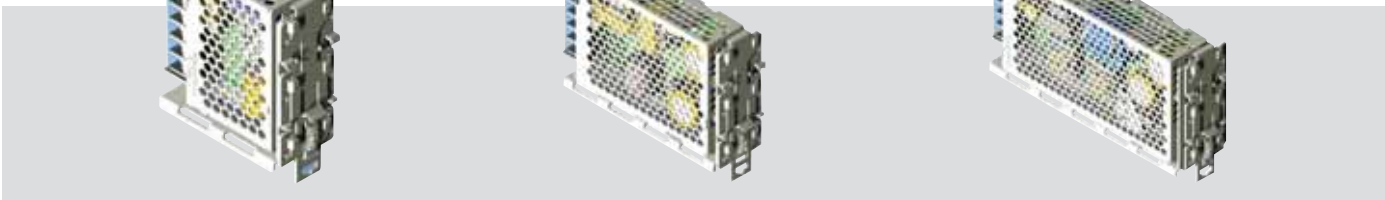
ORDERING INFORMATION

NEW

CSF15-3R3 □ □



- Small size(Height 82mm: (2U),15W~150W)
- Low cost
- Wide input voltage range (free voltage or auto selection)
- Over voltage protection(except for 15W)
- Over current protection
- 5 years warranty



DIN RAIL : FD-15-A
 SMPS : CSF15-S
 CSF30-S

DIN RAIL : FD-50-A
 SMPS : CSF50-S
 CSF75-S
 PSF50-S
 PSF75-S

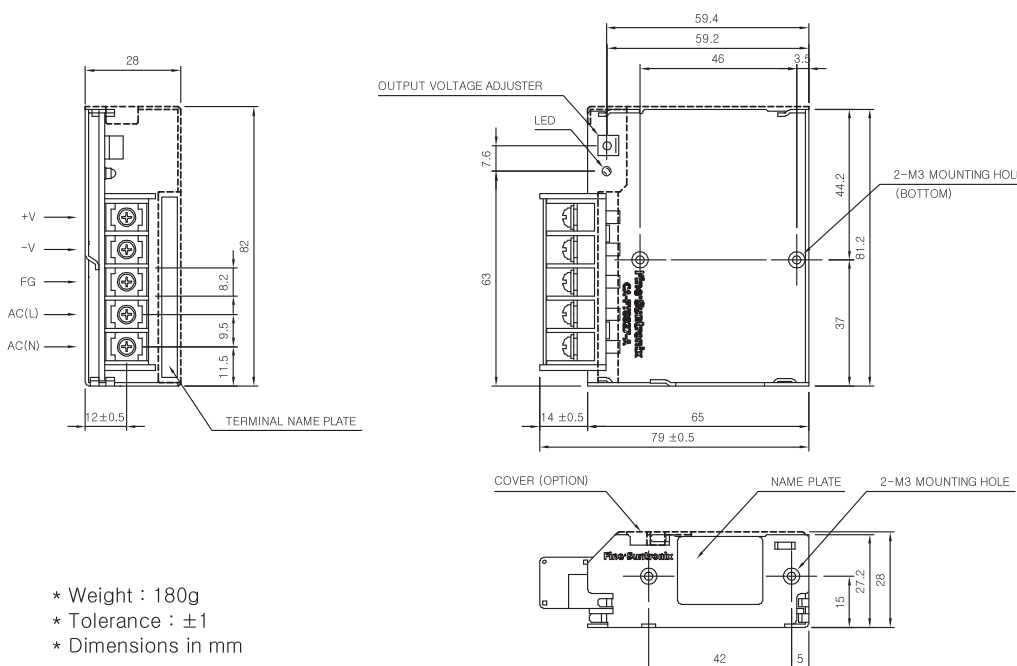
DIN RAIL : FD-100-A
 SMPS : CSF100-S
 CSF150-S
 PSF100-S
 PSF150-S

CSF15-S SPECIFICATIONS



| MODEL | | CSF15-3R3 | CSF15-05 | CSF15-09 | CSF15-12 | CSF15-15 | CSF15-24 | |
|-----------------------|---|---|-----------------------------|----------------------------|----------|----------|----------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264 or DC120 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input. | | | | | | |
| | CURRENT [A] | 110V | 0.3 (I _o =100%) | 0.4 (I _o =100%) | | | | |
| | | 220V | 0.15 (I _o =100%) | 0.2 (I _o =100%) | | | | |
| | EFFICIENCY [%] | 110V | 65 typ | 75 typ | 75 typ | 75 typ | 77 typ | 77 typ |
| | | 220V | 68 typ | 76 typ | 76 typ | 76 typ | 78 typ | 78 typ |
| INRUSH CURRENT | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | |
| | CURRENT [A] | 3 | 3 | 1.7 | 1.3 | 1 | 0.7 | |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | |
| | RIPPLE [mVp-p] | 80 Max | 80 Max | 120 Max | 120 Max | 120 Max | 120 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 150 Max | 150 Max | 150 Max | 150 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | |
| | RISE TIME [ms] | 200 Max (AC IN 100V, I _o =100%) | | | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 100V, I _o =100%) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | |
| | OVER VOLTAGE PROTECTION | - | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with EN55022-A | | | | | | |

CSF15-S EXTERNAL VIEW

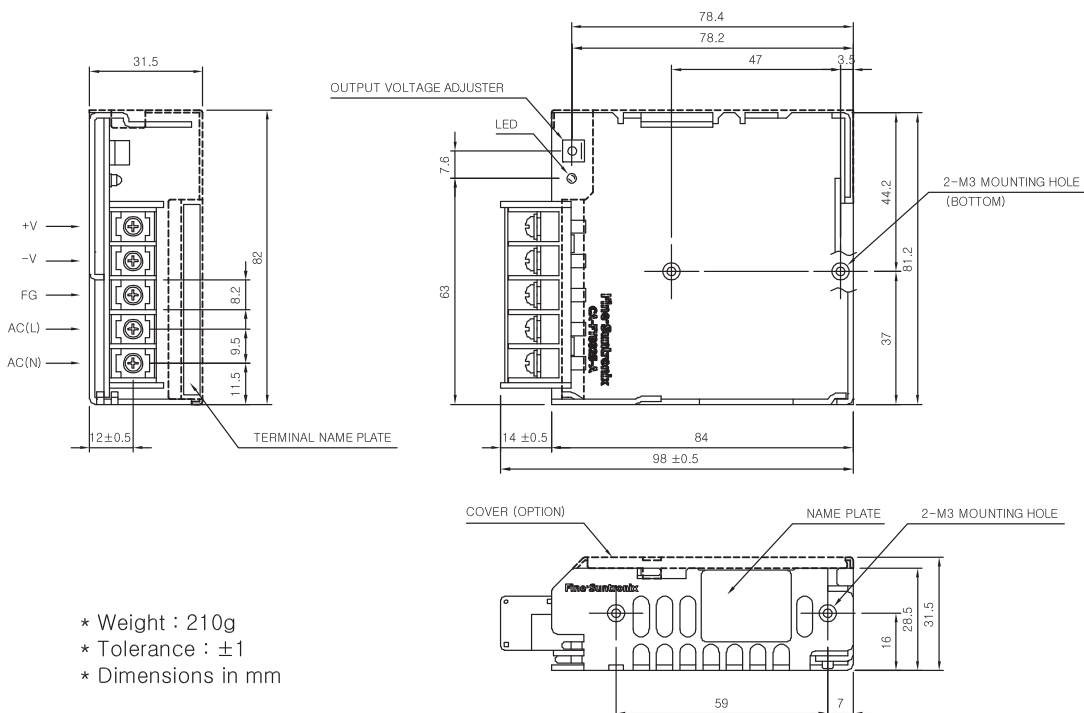


CSF30-S SPECIFICATIONS



| MODEL | | CSF30-3R3 | CSF30-05 | CSF30-09 | CSF30-12 | CSF30-15 | CSF30-24 | CSF30-48 | |
|-----------------------|--------------------------------|---|----------------------------|----------------------------|----------|----------|----------|----------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC 100-240V (AC 85 ~ 264V or DC 120 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input | | | | | | | |
| | CURRENT [A] | 110V | 0.6 (I _o =100%) | 0.8 (I _o =100%) | | | | | |
| | | 220V | 0.3 (I _o =100%) | 0.4 (I _o =100%) | | | | | |
| | EFFICIENCY [%] | 110V | 67 typ | 72 typ | 77 typ | 78 typ | 78 typ | 80 typ | 80 typ |
| 220V | | 66 typ | 73 typ | 76 typ | 77 typ | 77 typ | 80 typ | 80 typ | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 | |
| | CURRENT [A] | 6 | 6 | 3.4 | 2.5 | 2 | 1.3 | 0.63 | |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max | |
| | RIPPLE [mVp-p] | 80 Max | 80 Max | 120 Max | 120 Max | 120 Max | 120 Max | 150 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 150 Max | 150 Max | 150 Max | 150 Max | 250 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max | |
| | RISE TIME [ms] | 600 Max (AC IN 100V, I _o =100%) | | | | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 100V, I _o =100%) | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part 15 classA, VCCI-A, CISPR22-A, EN55022-A | | | | | | | |

CSF30-S EXTERNAL VIEW



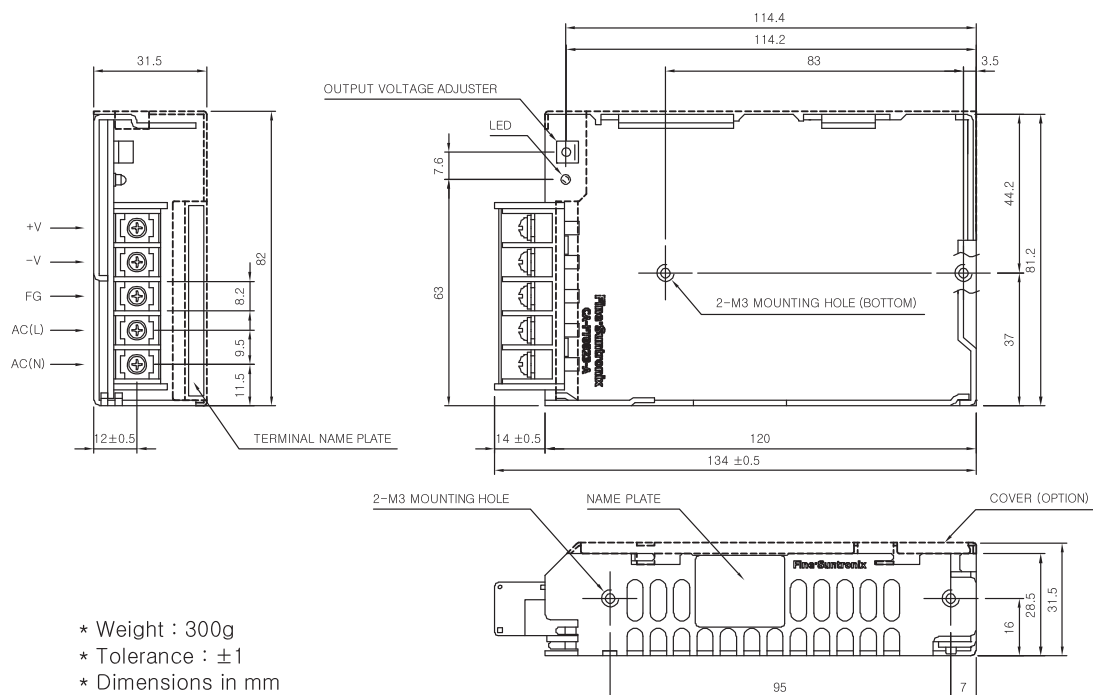
- * Weight : 210g
- * Tolerance : ±1
- * Dimensions in mm

CSF50-S SPECIFICATIONS



| MODEL | | CSF50-3R3 | CSF50-05 | CSF50-09 | CSF50-12 | CSF50-15 | CSF50-24 | CSF50-48 | |
|-----------------------|--------------------------------|---|----------------------------|----------|----------|----------|----------|----------|----------------------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC120 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input | | | | | | | |
| | CURRENT [A] | 110V | 0.7 (I _o =100%) | | | | | | 0.9 (I _o =100%) |
| | | 220V | 0.4 (I _o =100%) | | | | | | 0.6 (I _o =100%) |
| | EFFICIENCY [%] | 110V | 70 typ | 70 typ | 76 typ | 78 typ | 78 typ | 78 typ | 79 typ |
| 220V | | 70 typ | 70 typ | 75 typ | 75 typ | 75 typ | 75 typ | 75 typ | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 | |
| | CURRENT [A] | 10 | 10 | 5.6 | 4.3 | 3.5 | 2.2 | 1.1 | |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max | |
| | RIPPLE [mVp-p] | 80 Max | 80 Max | 120 Max | 120 Max | 120 Max | 120 Max | 150 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 150 Max | 150 Max | 150 Max | 150 Max | 250 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max | |
| | RISE TIME [ms] | 500 Max (AC IN 100V, I _o =100%) | | | | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 100V, I _o =100%) | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20~90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022-A | | | | | | | |

CSF50-S EXTERNAL VIEW

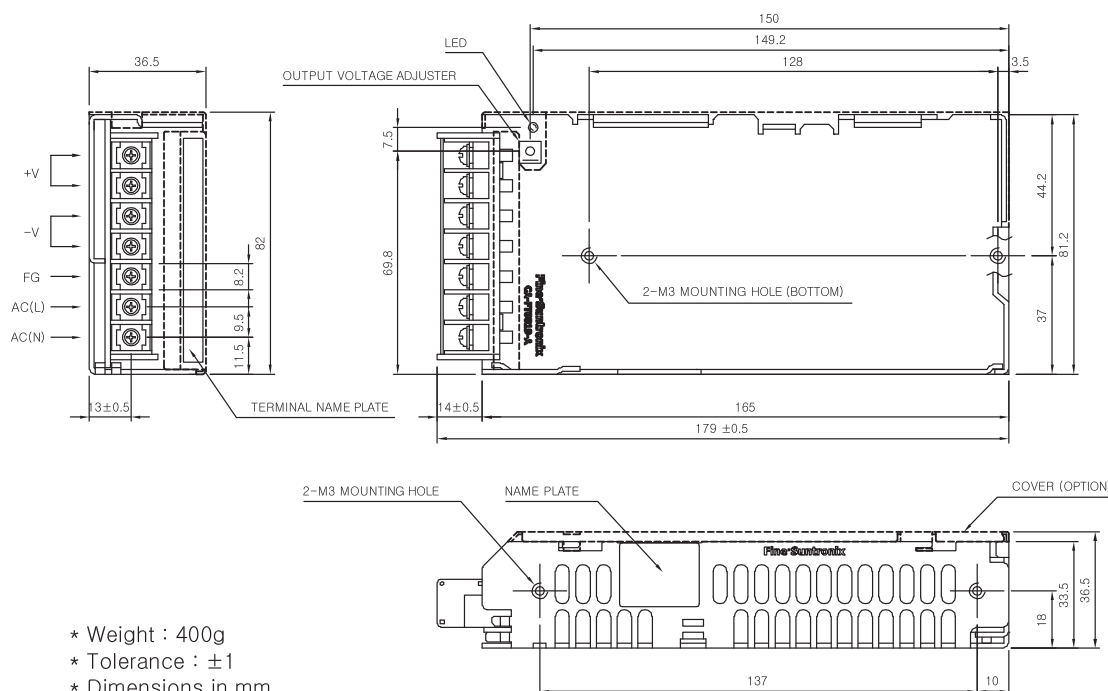


CSF100-S SPECIFICATIONS



| MODEL | | CSF100-3R3 | CSF100-05 | CSF100-09 | CSF100-12 | CSF100-15 | CSF100-24 | CSF100-48 | |
|-----------------------|--------------------------------|---|----------------------------|-----------|-----------|-----------|-----------|-----------|----------------------------|
| INPUT | VOLTAGE, FREQUENCY | AC 90V-132V / 180V-264V or DC 240V ~ 370V (Auto selectable), 50/60Hz (47 ~ 440Hz) | | | | | | | |
| | CURRENT [A] | 110V | 1.2 (I _o =100%) | | | | | | 2.0 (I _o =100%) |
| | | 220V | 0.9 (I _o =100%) | | | | | | 1.2 (I _o =100%) |
| | EFFICIENCY [%] | 110V | 73 typ | 81 typ | 81 typ | 83 typ | 83 typ | 83 typ | 83 typ |
| 220V | | 75 typ | 83 typ | 83 typ | 85 typ | 85 typ | 86 typ | 86 typ | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 | |
| | CURRENT [A] | 20 | 20 | 11 | 8.4 | 6.7 | 4.2 | 2.1 | |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max | |
| | RIPPLE [mVp-p] | 80 Max | 80 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 140 Max | 170 Max | 200 Max | 290 Max | 530 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max | |
| | RISE TIME [ms] | 600 Max (AC IN 85V, I _o =100%) | | | | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 85V, I _o =100%) | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN 55022-B | | | | | | | |

CSF100-S EXTERNAL VIEW



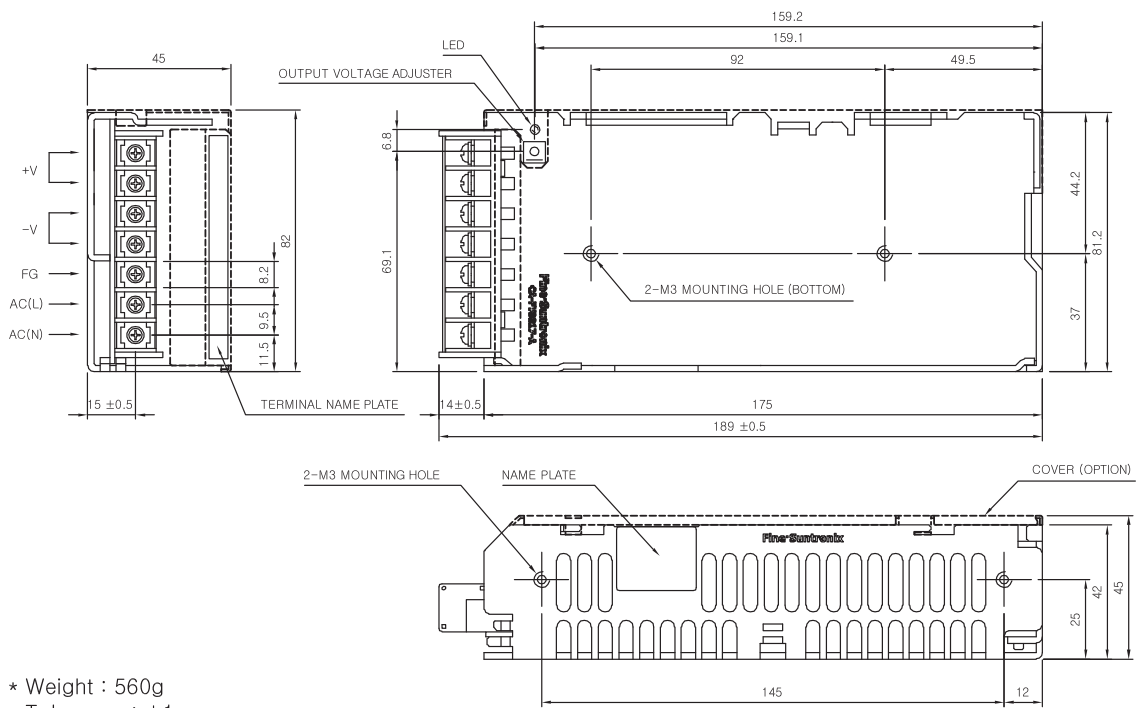
- * Weight : 400g
- * Tolerance : ±1
- * Dimensions in mm

CSF150-S SPECIFICATIONS



| MODEL | | CSF150-3R3 | CSF150-05 | CSF150-09 | CSF150-12 | CSF150-15 | CSF150-24 | CSF150-48 | |
|-----------------------|--------------------------------|---|----------------------------|-----------|----------------------------|-----------|-----------|-----------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC 90V-132V / 180V-264V or DC 240V ~ 370V (Auto selectable), 50/60Hz (47 ~ 440Hz) | | | | | | | |
| | CURRENT [A] | 110V | 2.5 (I _o =100%) | | 3.6 (I _o =100%) | | | | |
| | | 220V | 1.5 (I _o =100%) | | 2.0 (I _o =100%) | | | | |
| | EFFICIENCY [%] | 110V | 76 typ | 80 typ | 83 typ | 82 typ | 84 typ | 84 typ | 84 typ |
| | | 220V | 80 typ | 83 typ | 86 typ | 85 typ | 87 typ | 88 typ | 84 typ |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 | |
| | CURRENT [A] | 30 | 30 | 16.7 | 12.5 | 10 | 6.3 | 3.2 | |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max | |
| | RIPPLE [mVp-p] | 80 Max | 80 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 140 Max | 170 Max | 200 Max | 290 Max | 530 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max | |
| | RISE TIME [ms] | 200 Max (AC IN 100V, I _o =100%) | | | | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 100V, I _o =100%) | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022-B | | | | | | | |

CSF150-S EXTERNAL VIEW



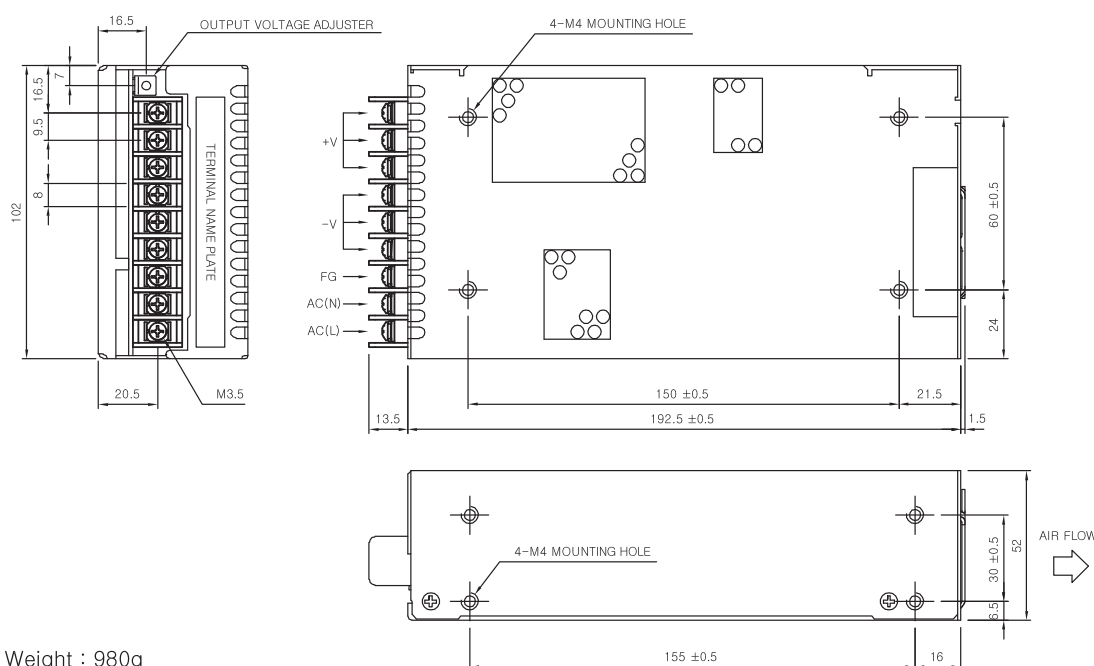
- * Weight : 560g
- * Tolerance : ±1
- * Dimensions in mm

CSF300-S SPECIFICATIONS



| MODEL | | CSF300-3R3 | CSF300-05 | CSF300-09 | CSF300-12 | CSF300-15 | CSF300-24 | CSF300-48 | |
|-----------------------|--------------------------------|---|----------------------------|-----------|-----------|-----------|-----------|-----------|----------------------------|
| INPUT | VOLTAGE, FREQUENCY | AC 100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 63Hz), Universal input | | | | | | | |
| | CURRENT [A] | 110V | 2.5 (I _o =100%) | | | | | | 3.6 (I _o =100%) |
| | | 220V | 1.3 (I _o =100%) | | | | | | 1.8 (I _o =100%) |
| | POWER FACTOR | 110V | 0.98 | | | | | | |
| | | 220V | 0.92 | | | | | | |
| EFFICIENCY [%] | 110V | 70 typ | 78 typ | 79 typ | 80 typ | 83 typ | 84 typ | 85 typ | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 | |
| | CURRENT [A] | 55 | 55 | 33.3 | 26 | 21 | 13 | 6.7 | |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max | |
| | RIPPLE [mVp-p] | 80 Max | 80 Max | 90 Max | 120 Max | 120 Max | 120 Max | 150 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 120 Max | 150 Max | 150 Max | 150 Max | 250 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max | |
| | RISE TIME [ms] | 500 Max (AC IN 85V, I _o =100%) | | | | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 85V, I _o =100%) | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +65°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part 15, VCCI-A, CISPR22-A, EN55022-A | | | | | | | |

CSF300-S EXTERNAL VIEW



- * Weight : 980g
- * Tolerance : ±1
- * Dimensions in mm

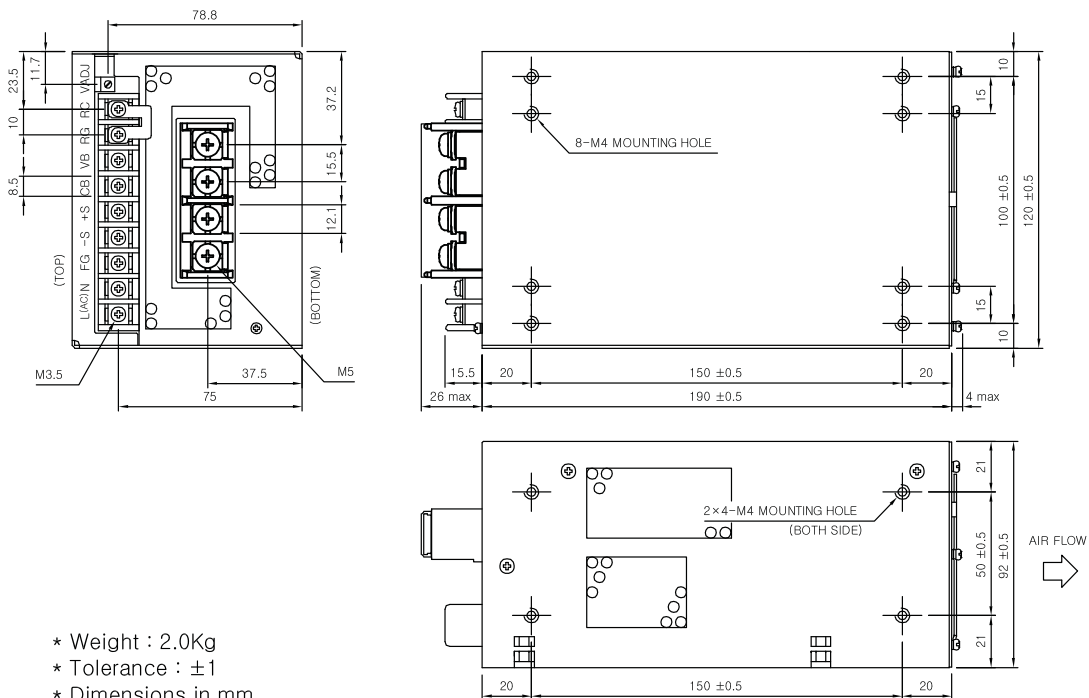
CSF600-S SPECIFICATIONS



| MODEL | | CSF600-3R3 | CSF600-05 | CSF600-09 | CSF600-12 | CSF600-15 | CSF600-24 | CSF600-48 |
|-----------------------|--------------------------------|---|----------------------------|----------------------------|----------------------------|-----------|-----------|-----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC120 ~ 370V), 50/60Hz (47 ~ 63Hz) Universal Input Voltage | | | | | | |
| | CURRENT | 110V | 4.3 (I _c =100%) | 6.6 (I _c =100%) | 7.2 (I _c =100%) | | | |
| | | 220V | 2.2 (I _c =100%) | 3.3 (I _c =100%) | 3.6 (I _c =100%) | | | |
| | POWER FACTOR | 110V | 0.98 | 0.98 | 0.99 | | | |
| | | 220V | 0.92 | 0.93 | 0.95 | | | |
| EFFICIENCY [%] | 110V | 69 typ | 74 typ | 76 typ | 78 typ | 79 typ | 81 typ | 82 typ |
| | 220V | 71 typ | 77 typ | 79 typ | 81 typ | 83 typ | 84 typ | 85 typ |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _c =100%), 40A typ(AC IN 220V, I _c =100%) at cold start. | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 100 | 100 | 66.5 | 50 | 40 | 25 | 12.5 |
| | PEAK CURRENT [A] | 120 | 120 | 66.5 | 50 | 40 | 25 | 12.5 |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE [mVp-p] | 80 Max | 80 Max | 120 Max | 120 Max | 120 Max | 120 Max | 150 Max |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 150 Max | 150 Max | 150 Max | 150 Max | 250 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max |
| | RISE TIME [ms] | 1000 Max (AC IN 110/220V, I _c =100%) | | | | | | |
| | HOLDING TIME [ms] | 20 typ (AC IN 110/220V, I _c =100%) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | INPUT-CASE, FG | AC2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | OUTPUT-CASE, FG | AC500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +65°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part 15, VCCI-A, CISPR22-A, EN55022-A | | | | | | |
| | HARMONIC ATTENUAOR | Complied with IEC61000-3-2 | | | | | | |

Peak current is less than 5 sec. (Duty ≤ 0.35)

CSF600-S EXTERNAL VIEW

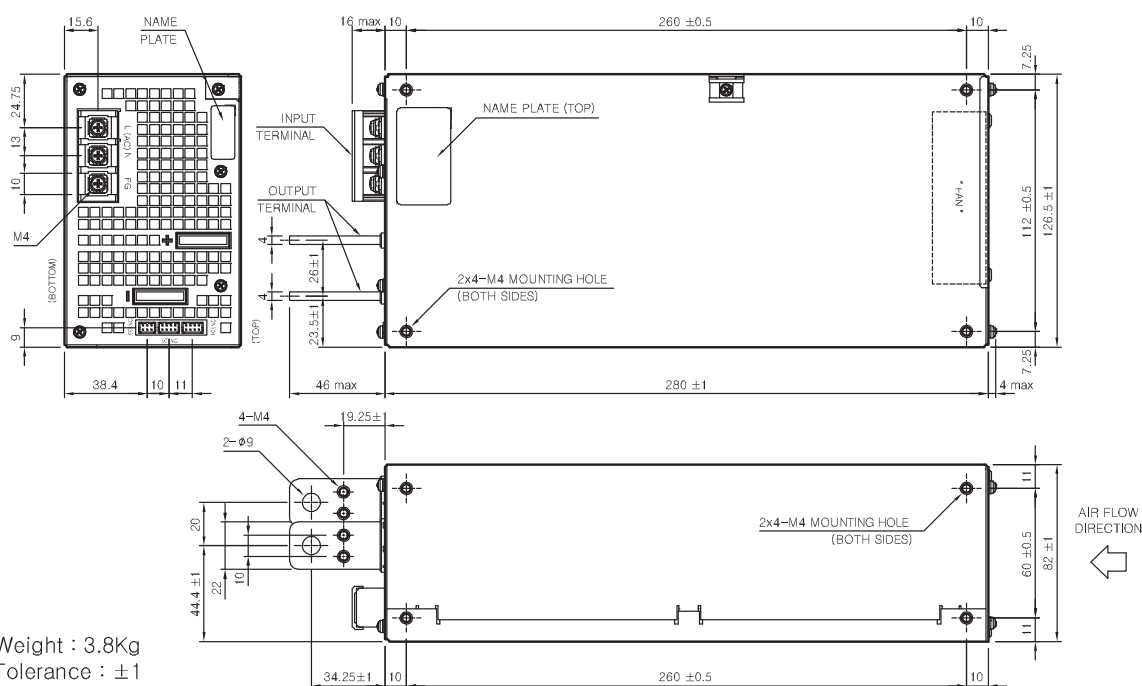


CSF1500-S SPECIFICATIONS



| MODEL | | CSF1500-05 | CSF1500-09 | CSF1500-12 | CSF1500-15 | CSF1500-24 | CSF1500-48 |
|-----------------------|--------------------------------|--|---------------------------|----------------------------|----------------------------|------------|------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC90 ~ 264V or DC127 ~ 370V), 50/60Hz (47 ~ 63Hz or DC), Universal input voltage | | | | | |
| | CURRENT [A] | 110V | 14 (I _c =100%) | 15 (I _c =100%) | 16 (I _c =100%) | | |
| | | 220V | 7 (I _c =100%) | 7.5 (I _c =100%) | 7.8 (I _c =100%) | | |
| | POWER FACTOR | 110V | 0.98 | | | | |
| | | 220V | 0.95 | | | | |
| EFFICIENCY [%] | 110V | 78 typ | 82 typ | 83 typ | 83 typ | 86 typ | 87 typ |
| | 220V | 80 typ | 85 typ | 87 typ | 87 typ | 90 typ | 91 typ |
| INRUSH CURRENT | | 30A typ(AC IN 110V, I _c =100%), 60A typ(AC IN 220V, I _c =100%) at cold start. | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 9 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 240 | 150 | 125 | 100 | 63 | 32 |
| | REGULATION, LINE [mV] | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 100 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | RIPPLE [mVp-p] | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 180 Max |
| | RIPPLE, NOISE [mVp-p] | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 200 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 740 Max |
| | RISE TIME [ms] | 1500 typ, 100 typ (AC IN 110/220V, I _c =100%) | | | | | |
| | HOLDING TIME [ms] | 10 typ (AC IN 110V, I _c =100%), 15 typ (AC IN 220V, I _c =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically Protection type: Constant current limiting unit will shut down o/p voltage after 5sec. Re-power on to recover | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115%~140% of rating Protection type : Shut down o/p voltage, re-power on to recover | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +85°C, 20 ~ 90% RH(Non Condensing) | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with EN55022-A | | | | | |

CSF1500-S EXTERNAL VIEW



- * Weight : 3.8Kg
- * Tolerance : ±1
- * Dimensions in mm

ORDERING INFORMATION

CSF15-BDW

Series name

Total output wattage

Output voltage combination

- Inrush current limit
- Short circuit protection
- Over voltage protection
- CH1 isolated from CH2
- Over current protection
- 4 years warranty

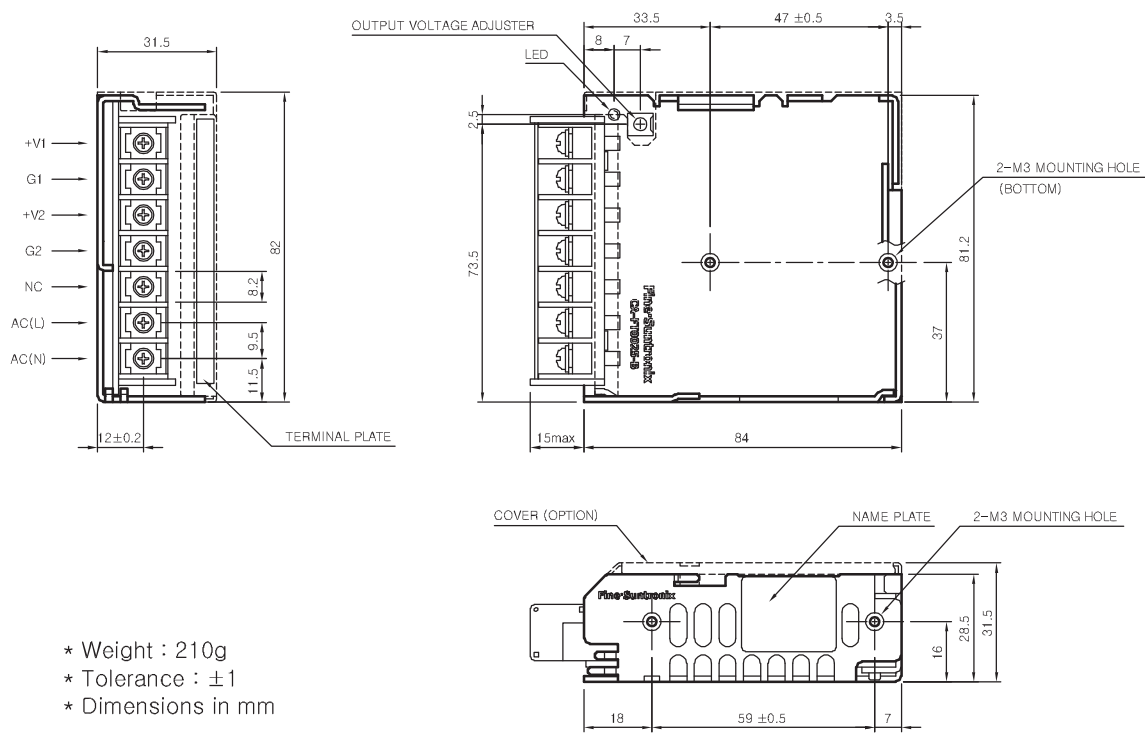


CSF15-DUAL SPECIFICATIONS



| MODEL | | CSF15-BDW | | CSF15-DDW | | CSF15-EEW | | |
|-----------------------|---------------------------|---|---|-----------------------------|-----------|-----------|-----------|---------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 85 ~ 264V or DC 120 ~ 370V), 50/60Hz (47 ~ 440Hz), Universal input | | | | | | |
| | CURRENT | [A] | 110V | 0.4 (I _o =100%) | | | | |
| | | | 220V | 0.25 (I _o =100%) | | | | |
| | EFFICIENCY | [%] | 110V | 68 typ | 70 typ | 70 typ | | |
| 220V | | | 67 typ | 79 typ | 69 typ | | | |
| INRUSH CURRENT | | 20A typ (AC IN 110V, I _o =100%), 40A typ (AC IN 220V, I _o =100%) at cold start. | | | | | | |
| OUTPUT | VOLTAGE | [V] | 5 | 12 | 12 | 12 | 15 | 15 |
| | CURRENT | [A] | 0.1 ~ 2 | 0.5 | 0.1 ~ 0.7 | 0.7 | 0.1 ~ 0.5 | 0.5 |
| | REGULATION, LINE | [mV] | 25 Max | 120 Max | 60 Max | 120 Max | 75 Max | 150 Max |
| | REGULATION, LOAD | [mV] | 50 Max | 120 Max | 120 Max | 120 Max | 150 Max | 150 Max |
| | RIPPLE | [mVp-p] | 80 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max |
| | RIPPLE, NOISE | [mVp-p] | 120 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max |
| | TEMPERATURE DRIFT 0~+50°C | [mV] | 75 Max | 180 Max | 180 Max | 180 Max | 225 Max | 225 Max |
| | RISE TIME | [ms] | 800 Max (AC IN 100V I _o =100%) | | | | | |
| HOLDING TIME | [ms] | 17 typ (AC IN 100V I _o =100%) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating (except for CH2) | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | INPU-FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | OUTPUT-FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH (Non condensing) | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | |
| SAFETY EMISSION PFHC | SAFETY REGULATION | CE, CB | | CE, CB | | CE, CB | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with EN55022-A, VL60950-1, EN60950-1 | | | | | | |

CSF15-DUAL EXTERNAL VIEW



- * Weight : 210g
- * Tolerance : ±1
- * Dimensions in mm

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

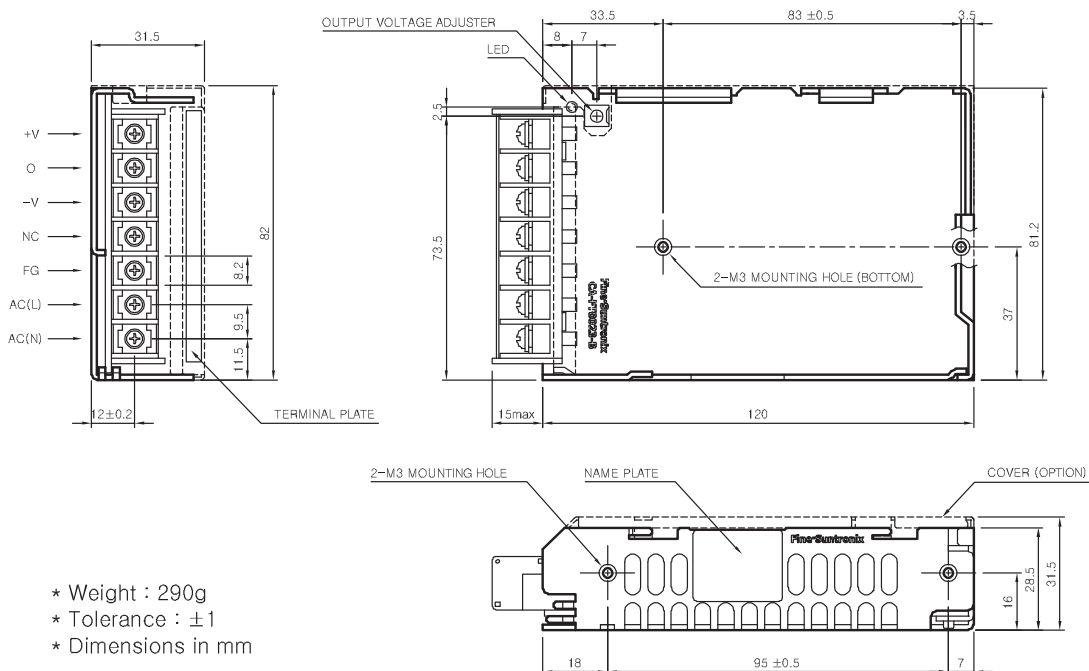
Discrete Semiconductors

CSF30-DUAL SPECIFICATIONS



| MODEL | | CSF30-BDW | CSF30-BHW | CSF30-BBW | CSF30-DDW | CSF30-EEW | | | | | | |
|-----------------------|--------------------------------|---|-----------------------------|-----------|-----------|-----------|---------|---------|---------|---------|---------|--|
| INPUT | VOLTAGE, FREQUENCY | AC 100-240V (AC 85 ~ 264V or DC120 ~ 370V), 50/60Hz (47 ~ 440Hz), Universal input | | | | | | | | | | |
| | CURRENT [A] | 110V | 0.65 (I _o =100%) | | | | | | | | | |
| | | 220V | 0.35 (I _o =100%) | | | | | | | | | |
| | EFFICIENCY [%] | 110V | 71 typ | 74 typ | 74 typ | 77 typ | 78 typ | | | | | |
| 220V | | 72 typ | 73 typ | 72 typ | 76 typ | 77 typ | | | | | | |
| INRUSH CURRENT | | 20A typ (AC IN 110V, I _o =100%), 40A typ (AC IN 220V, I _o =100%) at cold start. | | | | | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 5 | 24 | 5 | 5 | 12 | 12 | 15 | 15 | |
| | CURRENT [A] | 0.3 ~ 3 | 1.3 | 0.3 ~ 3 | 0.6 | 2 | 2 | 1.3 | 1.3 | 1 | 1 | |
| | REGULATION, LINE [mV] | 25 Max | 120 Max | 25 Max | 240 Max | 25 Max | 25 Max | 60 Max | 60 Max | 75 Max | 75 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 120 Max | 50 Max | 240 Max | 50 Max | 50 Max | 120 Max | 120 Max | 150 Max | 150 Max | |
| | RIPPLE [mVp-p] | 80 Max | 120 Max | 80 Max | 120 Max | 80 Max | 80 Max | 120 Max | 120 Max | 120 Max | 120 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 150 Max | 120 Max | 150 Max | 120 Max | 120 Max | 150 Max | 150 Max | 150 Max | 150 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 75 Max | 360 Max | 75 Max | 75 Max | 180 Max | 180 Max | 225 Max | 225 Max | |
| | RISE TIME [ms] | 800 Max (AC IN 100V I _o =100%) | | | | | | | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 100V I _o =100%) | | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | |
| | INPUT-FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | |
| | OUTPUT-FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | | | | | | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 20 ~ 90% RH (Non condensing) | | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | | | | | |
| SAFETY EMISSION PFHC | SAFETY REGULATION | CE, CB | CE, CB | CE, CB | CE, CB | CE, CB | CE, CB | CE, CB | CE, CB | CE, CB | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with EN55022-A | | | | | | | | | | |

CSF30-DUAL EXTERNAL VIEW

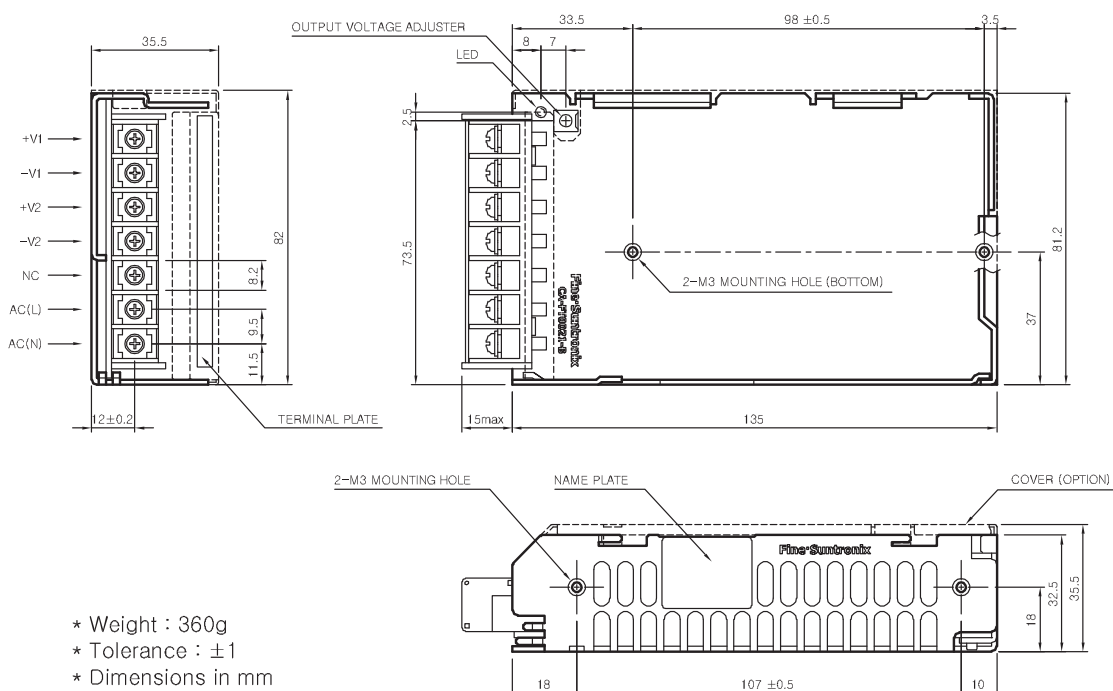


CSF50-DUAL SPECIFICATIONS



| MODEL | | CSF50-BDW | CSF50-BEW | CSF50-BHW | CSF50-DDW | CSF50-EEW | | | | | |
|-----------------------|----------------------------------|---|--------------------------|-----------|-----------|-----------|---------|-----------|---------|---------|---------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC120 ~ 370V), 50/60Hz (47 ~ 440Hz), Universal input | | | | | | | | | |
| | CURRENT [A] | 110V | 1.2A typ ($I_o=100\%$) | | | | | | | | |
| | | 220V | 0.7A typ ($I_o=100\%$) | | | | | | | | |
| | EFFICIENCY [%] | 110V | 75 typ | 76 typ | 77 typ | 77 typ | 77 typ | | | | |
| 220V | | | | | | | | | | | |
| INRUSH CURRENT | | 20A typ (AC IN 110V, $I_o=100\%$), 40A typ (AC IN 220V, $I_o=100\%$) at cold start. | | | | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 5 | 15 | 5 | 24 | 12 | 12 | 15 | 15 |
| | CURRENT [A] | 0.5 ~ 5 | 2 | 0.5 ~ 5 | 1.7 | 0.5 ~ 5 | 1 | 0.1 ~ 2.5 | 1.5 | 0.1 ~ 2 | 1.5 |
| | REGULATION, LINE [mV] | 50 Max | 120 Max | 50 Max | 150 Max | 50 Max | 240 Max | 120 Max | 120 Max | 150 Max | 150 Max |
| | REGULATION, LOAD [mV] | 100 Max | 240 Max | 100 Max | 210 Max | 100 Max | 480 Max | 240 Max | 240 Max | 300 Max | 300 Max |
| | RIPPLE [mVp-p] | 80 Max | 120 Max | 80 Max | 120 Max | 80 Max | 150 Max | 120 Max | 120 Max | 120 Max | 120 Max |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 150 Max | 120 Max | 150 Max | 120 Max | 250 Max | 150 Max | 150 Max | 150 Max | 150 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 75 Max | 225 Max | 75 Max | 360 Max | 180 Max | 180 Max | 225 Max | 225 Max |
| | RISE TIME [ms] | 1000 Max (AC IN 100V $I_o=100\%$) | | | | | | | | | |
| HOLDING TIME [ms] | 17 typ (AC IN 100V $I_o=100\%$) | | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| | INPUT-FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| | OUTPUT-FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH (Non condensing) | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | | | | |
| SAFETY EMISSION PFHC | SAFETY REGULATION | CE, CB | CE, CB | CE, CB | CE, CB | CE, CB | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022-B | | | | | | | | | |

CSF50-DUAL EXTERNAL VIEW



General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

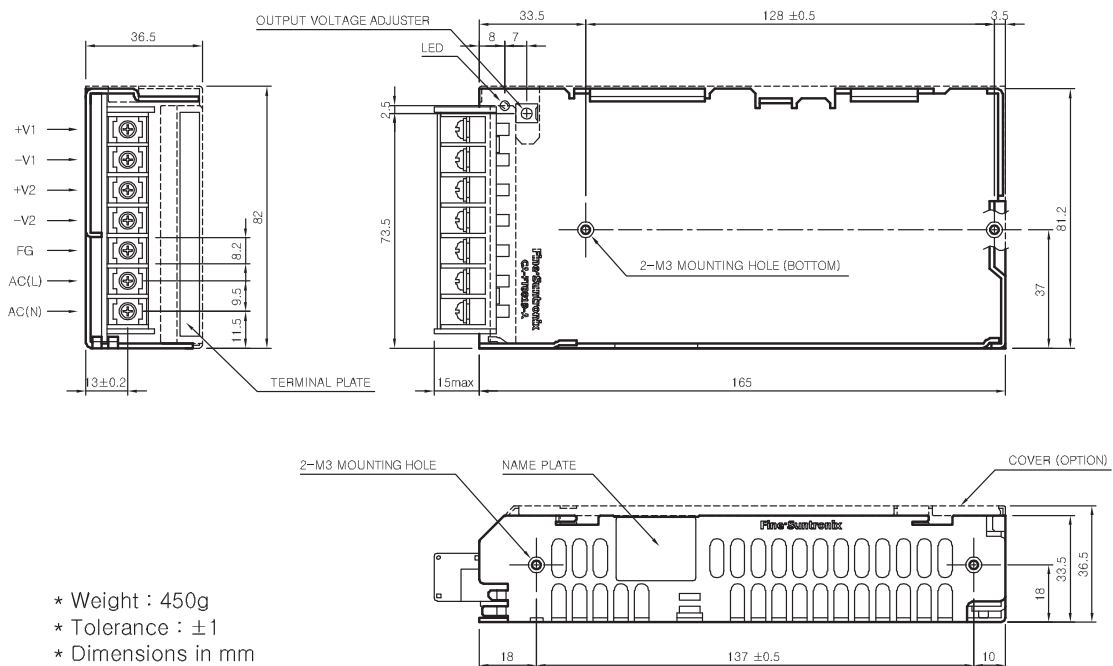
Discrete Semiconductors

CSF75-DUAL SPECIFICATIONS



| MODEL | | CSF75-BDW | | CSF75-BHW | | |
|-----------------------|--------------------------------|---|---|-----------|---------|--|
| INPUT | VOLTAGE, FREQUENCY | | AC85V ~ 132V / 180V ~ 264V or DC 240V ~ 370V, 50/60Hz (47 ~ 440Hz), Auto Selectable | | | |
| | CURRENT [A] | 110V | 1.8 (I _o =100%) | | | |
| | | 220V | 1.0 (I _o =100%) | | | |
| | EFFICIENCY [%] | 110V | 75 typ | | 75 typ | |
| 220V | | | | | | |
| INRUSH CURRENT | | 20A typ (AC IN 110V, I _o =100%), 40A typ (AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 5 | 24 | |
| | CURRENT [A] | 0.6 ~ 6.0 | 0 ~ 3.5 | 0.6 ~ 6.0 | 2.0 | |
| | REGULATION, LINE [mV] | 25 Max | 60 Max | 25 Max | 120 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 120 Max | 50 Max | 240 Max | |
| | RIPPLE [mVp-p] | 80 Max | 120 Max | 80 Max | 120 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 150 Max | 120 Max | 150 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 75 Max | 360 Max | |
| | RISE TIME [ms] | 500 Max (AC IN 100V IMQ=100%) | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 100V I _o =100%) | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating (except for CH1) | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH (Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | |
| SAFETY EMISSION PFHC | SAFETY REGULATION | CE, CB | | CE, CB | | |
| | LINE CONDUCTED RF VOLTAGE | | | | | |

CSF75-DUAL EXTERNAL VIEW

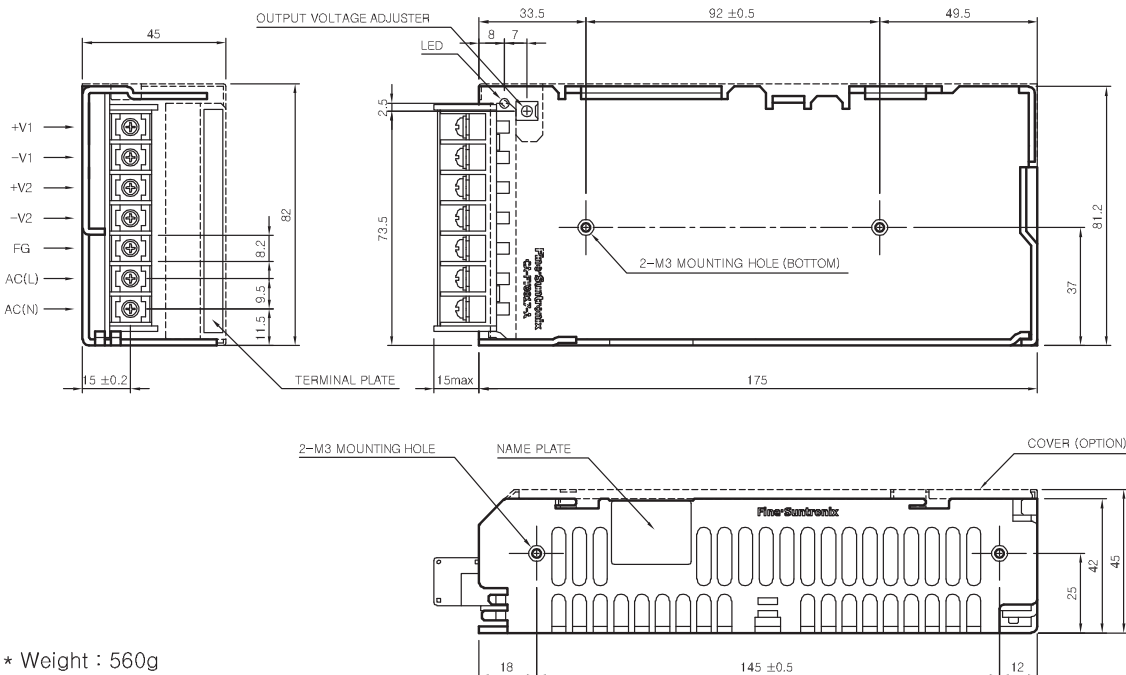


CSF100-DUAL SPECIFICATIONS



| MODEL | | CSF100-BDW | | CSF100-BHW | | |
|-----------------------|---------------------------|---|---|------------|---------|---------|
| INPUT | VOLTAGE, FREQUENCY | | AC85V ~ 132V / 180V ~ 264V or DC240V ~ 370V, 50/60Hz(440Hz), Auto Selectable | | | |
| | CURRENT | [A] | 2.4 (I _o =100%) | | | |
| | | | 1.4 (I _o =100%) | | | |
| | EFFICIENCY | [%] | 75 | | 75 | |
| | | 20A typ (AC IN 110V, I _o =100%), 40A typ (AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE | [V] | 5 | 12 | 5 | 24 |
| | CURRENT | [A] | 1 ~ 10 | 4 | 1 ~ 10 | 2 |
| | REGULATION, LINE | [mV] | 25 Max | 60 Max | 25 Max | 120 Max |
| | REGULATION, LOAD | [mV] | 50 Max | 120 Max | 50 Max | 240 Max |
| | RIPPLE | [mVp-p] | 80 Max | 120 Max | 80 Max | 120 Max |
| | RIPPLE, NOISE | [mVp-p] | 120 Max | 150 Max | 120 Max | 150 Max |
| | TEMPERATURE DRIFT 0~+50°C | [mV] | 75 Max | 180 Max | 75 Max | 360 Max |
| | RISE TIME | [ms] | 500 Max (AC IN 100V I _o =100%) | | | |
| | HOLDING TIME | [ms] | 17 typ (AC IN 100V I _o =100%) | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | | Works at over 110% of rating and recovers automatically | | | |
| | OVER VOLTAGE PROTECTION | | Works at 115 ~ 140% of rating (except for CH1) | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | INPUT-FG | | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | OUTPUT-FG | | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | | -10 ~ +70°C(Required Derating), 20 ~ 90% RH (Non Condensing) | | | |
| | STORAGE TEMPAND HUMID | | -20 ~ +75°C, 20 ~ 90% RH (Non condensing) | | | |
| | VIBRATION | | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | |
| | IMPACT | | 10G for 20ms, once on each X, Y and Z axis | | | |
| SAFETY EMISSION PFHC | SAFETY REGULATION | | CE, CB | | CE, CB | |
| | LINE CONDUCTED RF VOLTAGE | | | | | |

CSF100-DUAL EXTERNAL VIEW



- * Weight : 560g
- * Tolerance : ±1
- * Dimensions in mm

ORDERING INFORMATION

CSF15-DD

Series name

Total output wattage

Output voltage combination

- Inrush current limit
- Short circuit protection
- Over voltage protection
- CH1 isolated from CH2, 3
- Over current protection
- 4 years warranty

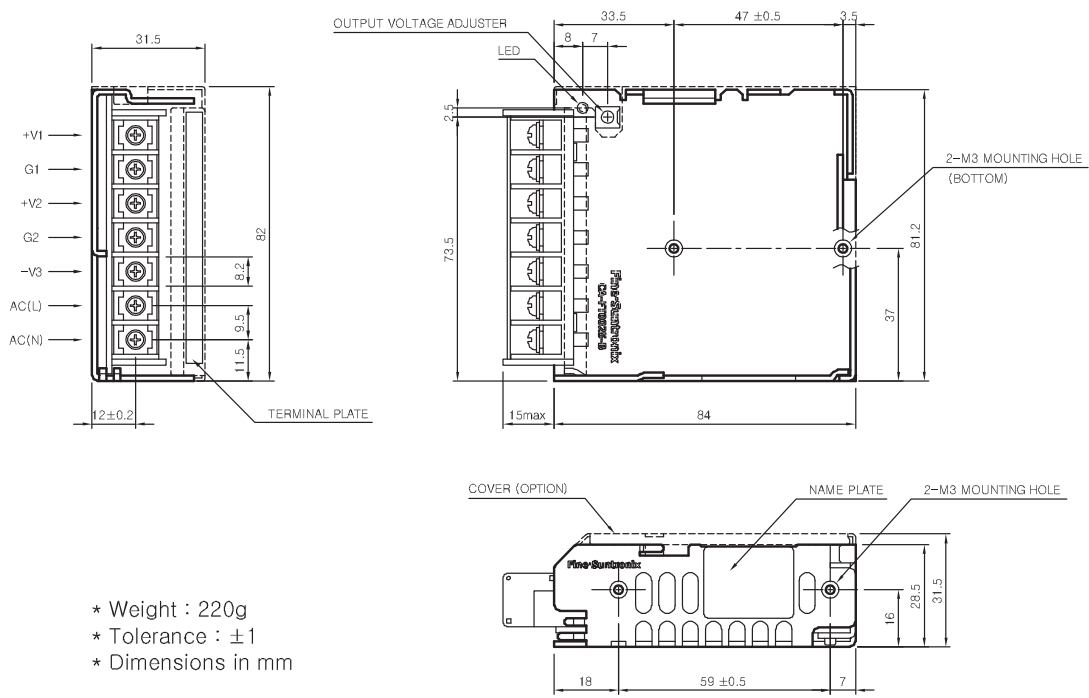


CSF15-TRIPLE SPECIFICATIONS



| | MODEL | CSF15-DD | | | CSF15-EE | | |
|-----------------------|---|--|-----------------------------|---------|----------|---------|---------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 85 ~ 264V or DC120 ~ 370V), 50/60Hz (47 ~ 440Hz or DC), Universal input voltage | | | | | |
| | CURRENT [A] | 110V | 0.4 (I _o =100%) | | | | |
| | | 220V | 0.25 (I _o =100%) | | | | |
| | EFFICIENCY [%] | 110V | 69 typ | | | 68 typ | |
| | | 220V | 67 typ | | | 67 typ | |
| INRUSH CURRENT | 20A typ (AC IN 110V, I _o =100%), 40A typ (AC IN 220V, I _o =100%) at cold start. | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 12 | 5 | 15 | 15 |
| | CURRENT [A] | 0.1 ~ 2 | 0.3 | 0.2 | 0.1 ~ 2 | 0.7 | 0.2 |
| | REGULATION, LINE [mV] | 25 Max | 120 Max | 120 Max | 25 Max | 150 Max | 150 Max |
| | REGULATION, LOAD [mV] | 50 Max | 120 Max | 120 Max | 50 Max | 150 Max | 150 Max |
| | RIPPLE [mVp-p] | 80 Max | 120 Max | 120 Max | 80 Max | 120 Max | 120 Max |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 150 Max | 150 Max | 120 Max | 150 Max | 150 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 180 Max | 75 Max | 225 Max | 225 Max |
| | RISE TIME [ms] | 800 Max (AC IN 110V I _o =100%) | | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 110V I _o =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating (except for CH2, CH3) | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | INPUT-FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | OUTPUT-FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C (Required Derating), 20 ~ 90% RH (Non Condensing) | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH (Non condensing) | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | |
| SAFETY EMISSION PFHC | SAFETY REGULATION | CE, CB | | | CE, CB | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with EN55022-A, VL60950-1, EN60950-1 | | | | | |

CSF15-TRIPLE EXTERNAL VIEW



- * Weight : 220g
- * Tolerance : ±1
- * Dimensions in mm

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

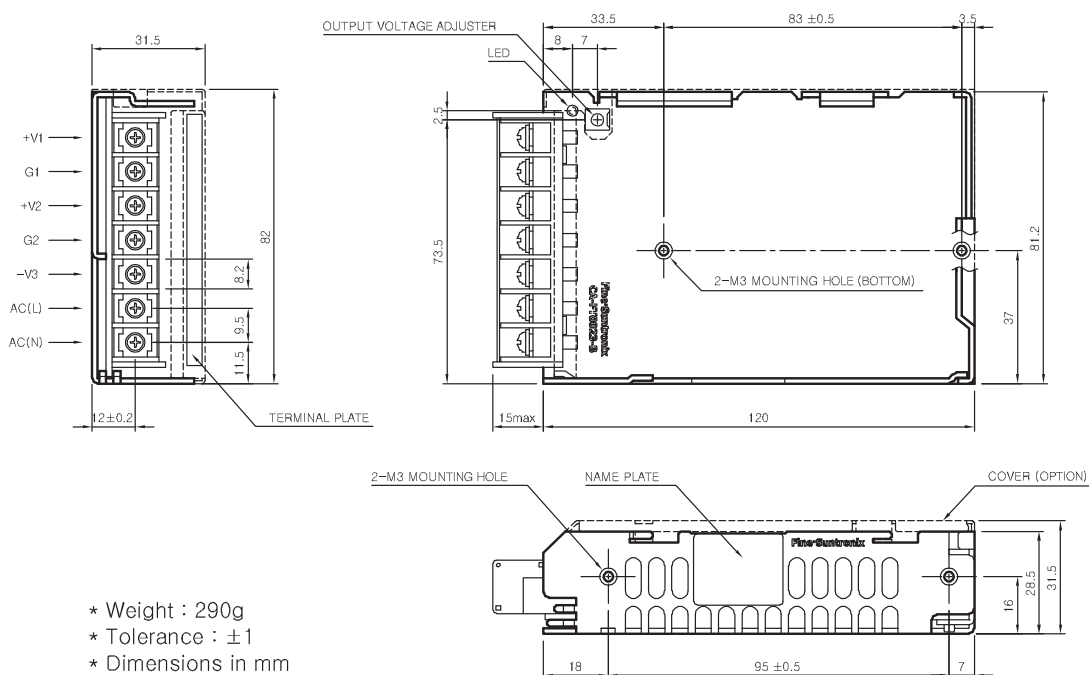
Discrete Semiconductors

CSF30-TRIPLE SPECIFICATIONS



| MODEL | | CSF30-DD | | | CSF30-EE | | |
|-----------------------|---|---|-----------------------------|---------|----------|---------|---------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC 85 ~ 264V or DC 120 ~ 370V), 50/60Hz (47 ~ 440Hz), Universal input voltage | | | | | |
| | CURRENT [A] | 110V | 0.65 (I _o =100%) | | | | |
| | | 220V | 0.35 (I _o =100%) | | | | |
| | EFFICIENCY [%] | 110V | 71 typ | | | 73 typ | |
| | | 220V | 71 typ | | | 73 typ | |
| INRUSH CURRENT | 20A typ (AC IN 110V, I _o =100%), 40A typ (AC IN 220V, I _o =100%) at cold start. | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 12 | 5 | 15 | 15 |
| | CURRENT [A] | 0.3 ~ 3 | 1.0 | 0.3 | 0.3 ~ 3 | 0.8 | 0.2 |
| | REGULATION, LINE [mV] | 25 Max | 120 Max | 120 Max | 25 Max | 150 Max | 150 Max |
| | REGULATION, LOAD [mV] | 50 Max | 120 Max | 120 Max | 50 Max | 150 Max | 150 Max |
| | RIPPLE [mVp-p] | 80 Max | 120 Max | 120 Max | 80 Max | 120 Max | 120 Max |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 150 Max | 150 Max | 120 Max | 150 Max | 150 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 180 Max | 75 Max | 225 Max | 225 Max |
| | RISE TIME [ms] | 800 Max (AC IN 100V I _o =100%) | | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 100V I _o =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | INPUT-FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | OUTPUT-FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C (Required Derating), 20 ~ 90% RH (Non Condensing) | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH (Non condensing) | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | |
| SAFETY EMISSION PFHC | SAFETY REGULATION | CE, CB | | | CE, CB | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with EN55022-A | | | | | |

CSF30-TRIPLE EXTERNAL VIEW

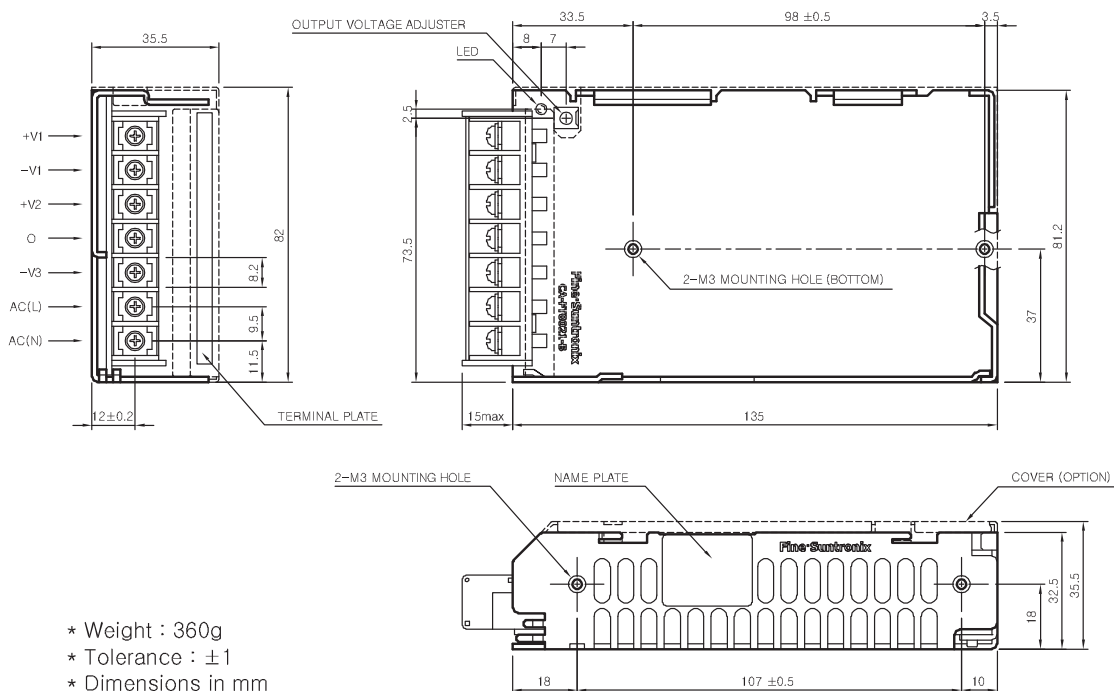


CSF50-TRIPLE SPECIFICATIONS



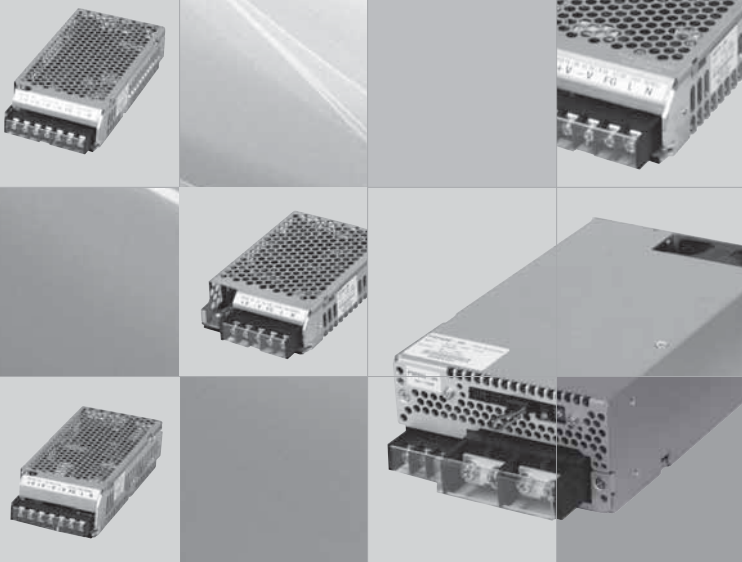
| MODEL | | CSF50-DD | | | CSF50-EE | | |
|-------------------------|--------------------------------|---|---|---------|----------|---------|---------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC120 ~ 370V), 50/60Hz (47 ~ 440Hz), Universal input voltage | | | | | |
| | CURRENT [A] | 110V | 1.2 (I _o =100%), | | | | |
| | | 220V | 0.7 (I _o =100%) | | | | |
| | EFFICIENCY [%] | 110V | 75 typ | | | 75 typ | |
| 220V | | | | | | | |
| INRUSH CURRENT | | 20A typ (AC IN 110V, I _o =100%), 40A typ (AC IN 220V, I _o =100%) at cold start. | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | -12 | 5 | 15 | -15 |
| | CURRENT [A] | 0.5 ~ 5 | 1.8 | 0.3 | 0.5 ~ 5 | 1.4 | 0.3 |
| | REGULATION, LINE [mV] | 50 Max | 120 Max | 120 Max | 50 Max | 150 Max | 150 Max |
| | REGULATION, LOAD [mV] | 100 Max | 240 Max | 240 Max | 100 Max | 300 Max | 300 Max |
| | RIPPLE [mVp-p] | 80 Max | 120 Max | 120 Max | 80 Max | 120 Max | 120 Max |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 150 Max | 150 Max | 120 Max | 150 Max | 150 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 180 Max | 75 Max | 225 Max | 225 Max |
| | RISE TIME [ms] | 1000 Max (AC IN 100V I _o =100%) | | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 100V I _o =100%) | | | | | |
| | PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | |
| OVER VOLTAGE PROTECTION | | Works at 115 ~ 140% of rating | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | INPUT-FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | OUTPUT-FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C (Required Derating), 20 ~ 90% RH (Non Condensing) | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH (Non condensing) | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | |
| SAFETY EMISSION PFHC | SAFETY REGULATION | CE, CB | | | CE, CB | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022-B | | | | | |

CSF50-TRIPLE EXTERNAL VIEW



For the Switching Model Power Supply

Switching Mode Power Supply



ORIENT

ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

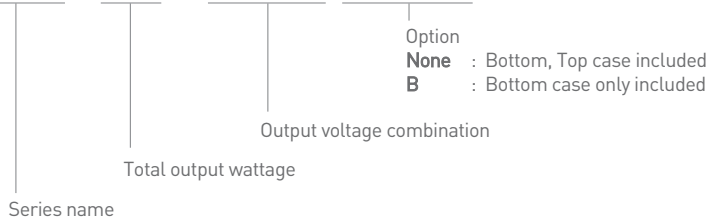
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|----------------------|-----------|
| 1. FDR SERIES | 20 |
| 2. JSF SERIES | 30 |
| 3. HSF SERIES | 42 |
| 4. LSP SERIES | 50 |
| 5. CSF SERIES | 58 |
| 6. PSF SERIES | 80 |
| 7. VSF SERIES | 88 |
| 8. ESF SERIES | 112 |
| 9. MSF SERIES | 134 |
| 10. MP SERIES | 162 |



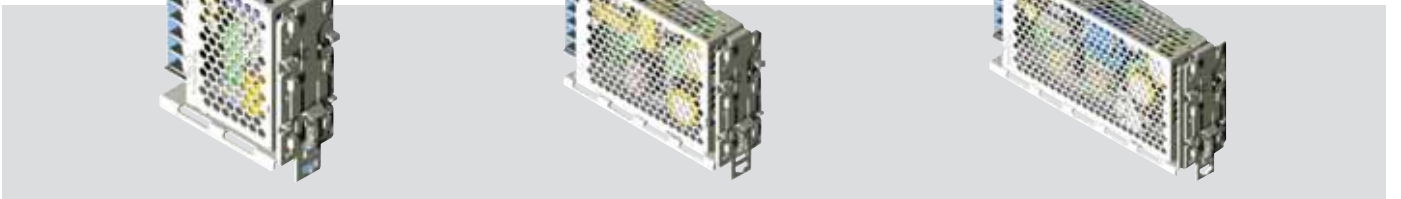
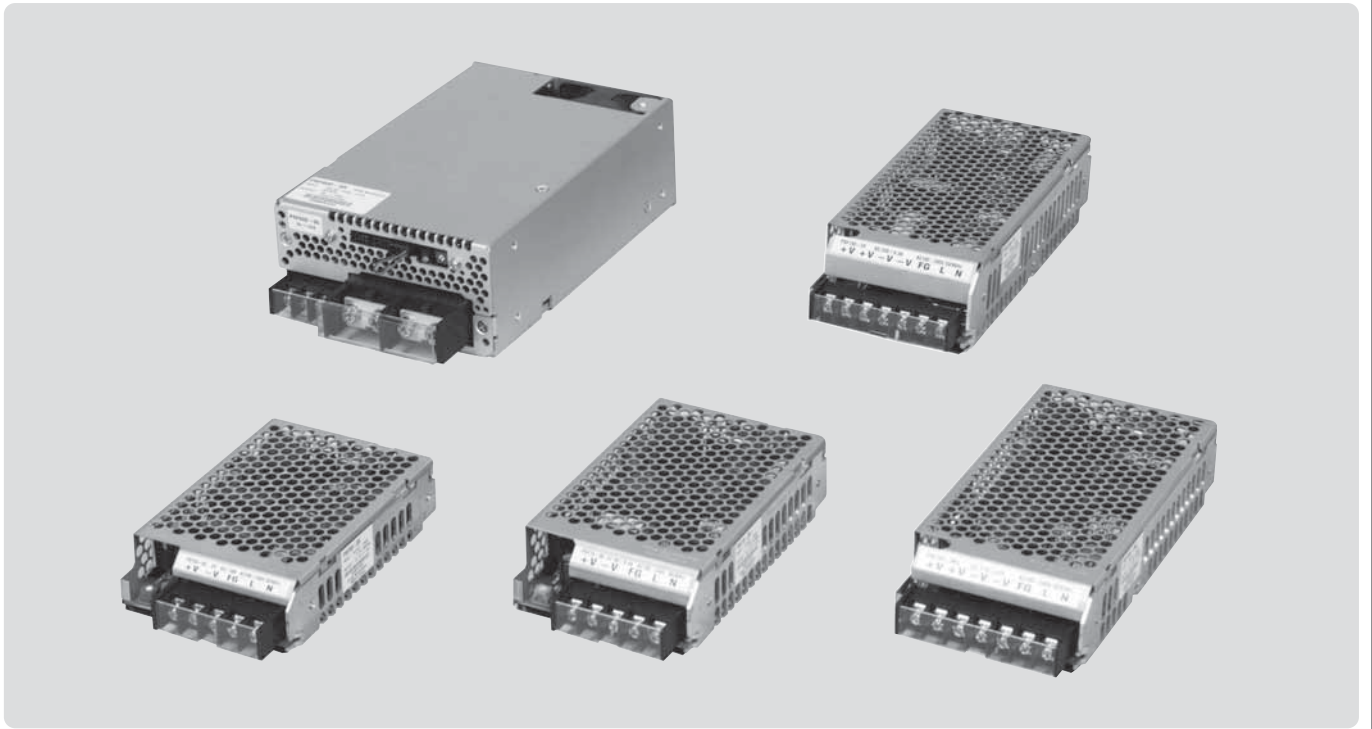
  

ORDERING INFORMATION

PSF50-3R3 □ □



- Small size(Height 82mm: (2U), (50W~150W)
- Wide input voltage range(free voltage)
- Over voltage protection
- Over current protection
- High power factor (Built-in PFC Circuit)
- 4 years warranty



DIN RAIL : FD-15-A
 SMPS : CSF15-S
 CSF30-S

DIN RAIL : FD-50-A
 SMPS : CSF50-S
 CSF75-S
 PSF50-S
 PSF75-S

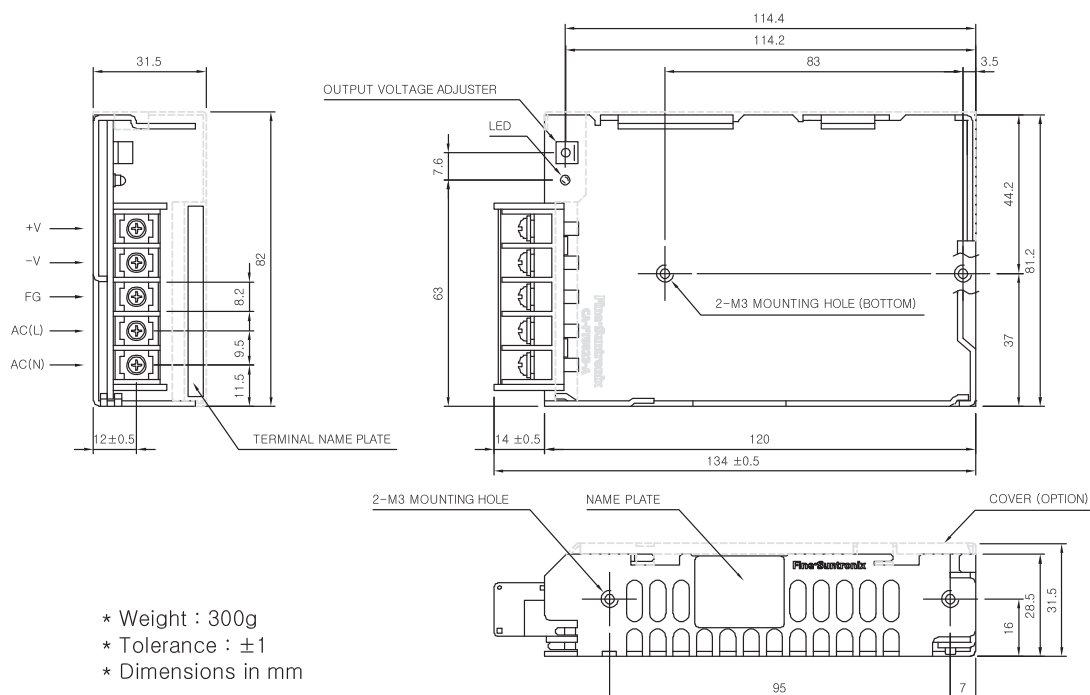
DIN RAIL : FD-100-A
 SMPS : CSF100-S
 CSF150-S
 PSF100-S
 PSF150-S

PSF50-S SPECIFICATIONS



| MODEL | | PSF50-3R3 | PSF50-05 | PSF50-09 | PSF50-12 | PSF50-15 | PSF50-24 | PSF50-48 | |
|-----------------------|--------------------------------|---|---------------------------|----------|---------------------------|----------|----------|----------|--|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC120 ~ 370V), 50/60Hz (47 ~ 63Hz) Universal Input Voltage. | | | | | | | |
| | CURRENT [A] | 110V | 0.5(I _o =100%) | | 0.7(I _o =100%) | | | | |
| | | 220V | 0.3(I _o =100%) | | 0.4(I _o =100%) | | | | |
| | POWER FACTOR | 110V | 0.98 | | 0.99 | | | | |
| | | 220V | 0.93 | | 0.95 | | | | |
| EFFICIENCY [%] | 110V | 77 typ | 81 typ | 79 typ | 80 typ | 81 typ | 82 typ | 83 typ | |
| | 220V | 78 typ | 82 typ | 81 typ | 82 typ | 83 typ | 84 typ | 85 typ | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 | |
| | CURRENT [A] | 10 | 10 | 5.6 | 4.3 | 3.5 | 2.2 | 1.1 | |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max | |
| | RIPPLE [mVp-p] | 80 Max | 80 Max | 90 Max | 120 Max | 150 Max | 200 Max | 480 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 140 Max | 170 Max | 200 Max | 290 Max | 530 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max | |
| | RISE TIME [ms] | 500 Max (AC IN 85V, I _o =100%) | | | | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 85V, I _o =100%) | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115~140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022-B | | | | | | | |
| | HARMONIC ATTENUATOR | Built to meet IEC61000-3-2 | | | | | | | |

PSF50-S EXTERNAL VIEW

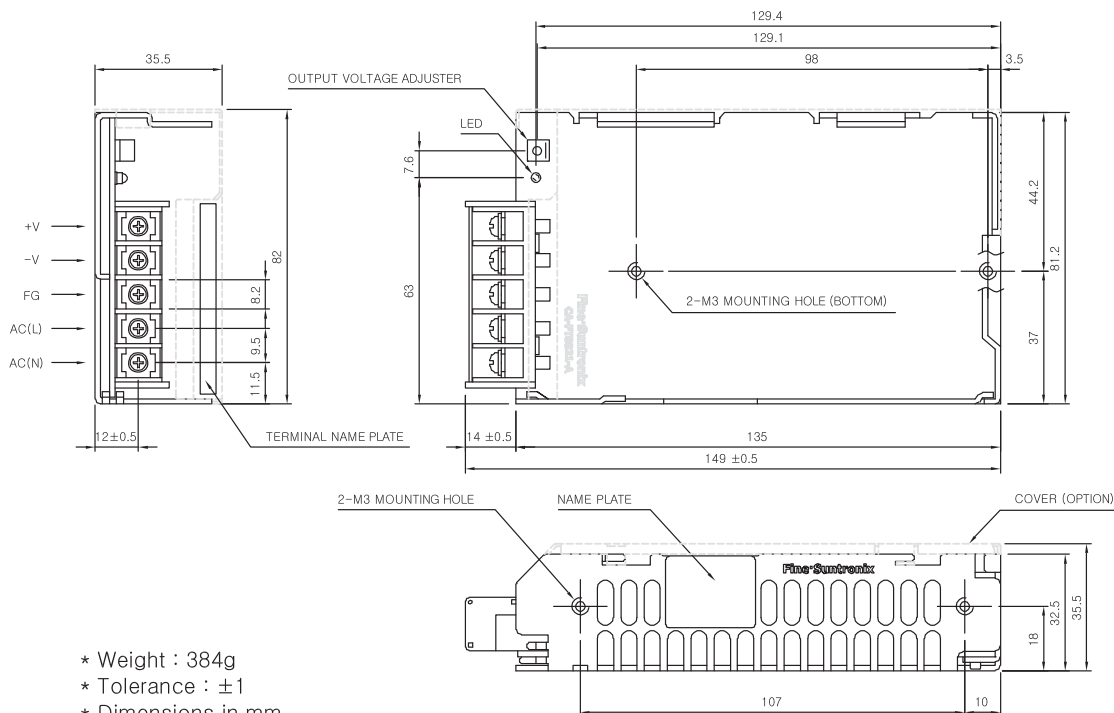


PSF75-S SPECIFICATIONS



| MODEL | | PSF75-3R3 | PSF75-05 | PSF75-09 | PSF75-12 | PSF75-15 | PSF75-24 | PSF75-48 | |
|-----------------------|--|---|---------------------------|----------|---------------------------|----------|----------|----------|--|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC120 ~ 370V), 50/60Hz (47~ 63Hz) Universal Input Voltage. | | | | | | | |
| | CURRENT [A] | 110V | 0.7(I _o =100%) | | 0.1(I _o =100%) | | | | |
| | | 220V | 0.4(I _o =100%) | | 0.5(I _o =100%) | | | | |
| | POWER FACTOR | 110V | 0.98 | | 0.99 | | | | |
| | | 220V | 0.94 | | 0.95 | | | | |
| EFFICIENCY [%] | 110V | 78 typ | 82 typ | 82 typ | 83 typ | 80 typ | 82 typ | 82 typ | |
| | 220V | 80 typ | 85 typ | 85 typ | 85 typ | 85 typ | 84 typ | 84 typ | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 | |
| | CURRENT [A] | 15 | 15 | 8.4 | 6.4 | 5 | 3.2 | 1.6 | |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max | |
| | RIPPLE [mVp-p] | 80 Max | 80 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 140 Max | 170 Max | 200 Max | 290 Max | 530 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max | |
| | RISE TIME [ms] | 600 Max (AC IN 85V, I _o =100%) | | | | | | | |
| HOLDING TIME [ms] | 17 typ (AC IN 85V, I _o =100%) | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022-B | | | | | | | |
| | HARMONIC ATTENUATOR | Built to meet IEC61000-3-2 | | | | | | | |

PSF75-S EXTERNAL VIEW



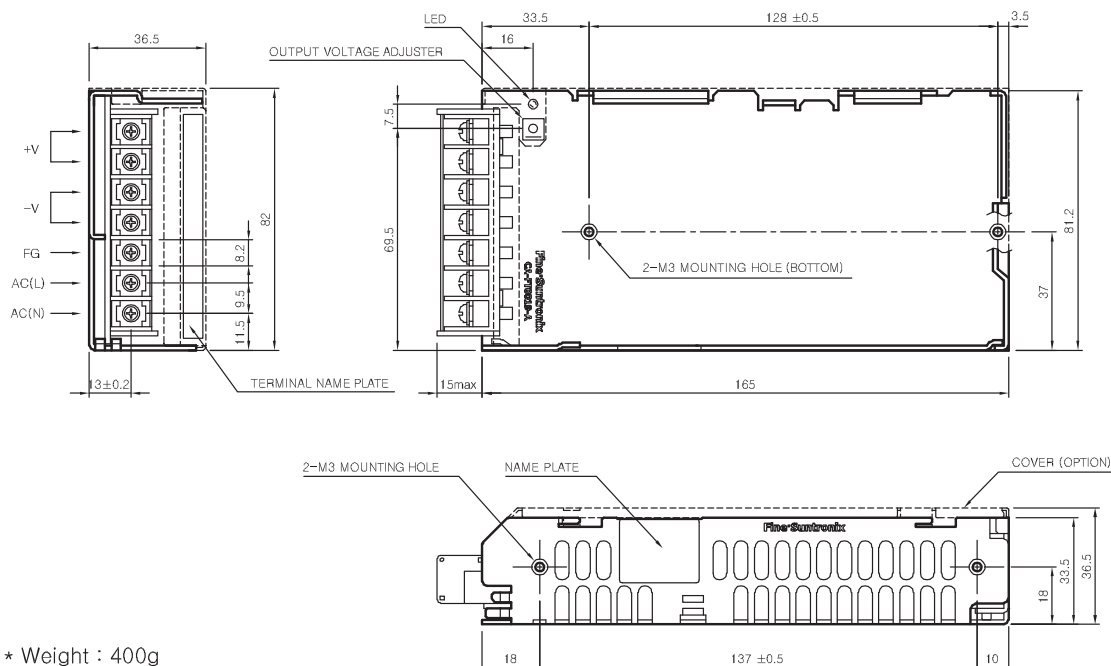
- * Weight : 384g
- * Tolerance : ±1
- * Dimensions in mm

PSF100-S SPECIFICATIONS



| | MODEL | PSF100-3R3 | PSF100-05 | PSF100-09 | PSF100-12 | PSF100-15 | PSF100-24 | PSF100-48 | |
|-----------------------|--------------------------------|---|----------------------------|-----------|----------------------------|-----------|-----------|-----------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC120 ~ 370V), 50/60Hz (47~ 63Hz) Universal Input Voltage. | | | | | | | |
| | CURRENT [A] | 110V | 0.9(I _o =100%) | | 1.3(I _o =100%) | | | | |
| | | 220V | 0.45(I _o =100%) | | 0.65(I _o =100%) | | | | |
| | POWER FACTOR | 110V | 0.99 | | | | | | |
| | | 220V | 0.95 | | | | | | |
| | EFFICIENCY [%] | 110V | 75 typ | 81 typ | 81 typ | 82 typ | 81 typ | 81 typ | 82 typ |
| 220V | | 80 typ | 83 typ | 85 typ | 85 typ | 85 typ | 85 typ | 85 typ | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 | |
| | CURRENT [A] | 20 | 20 | 11 | 8.4 | 6.7 | 4.2 | 2.1 | |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max | |
| | RIPPLE [mVp-p] | 80 Max | 80 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 140 Max | 170 Max | 200 Max | 290 Max | 530 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max | |
| | RISE TIME [ms] | 1000 Max (AC IN 85V, I _o =100%) | | | | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 85V, I _o =100%) | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +70°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms, once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022-B | | | | | | | |
| | HARMONIC ATTENUATOR | Built to meet IEC61000-3-2 | | | | | | | |

PSF100-S EXTERNAL VIEW



- * Weight : 400g
- * Tolerance : ±1
- * Dimensions in mm

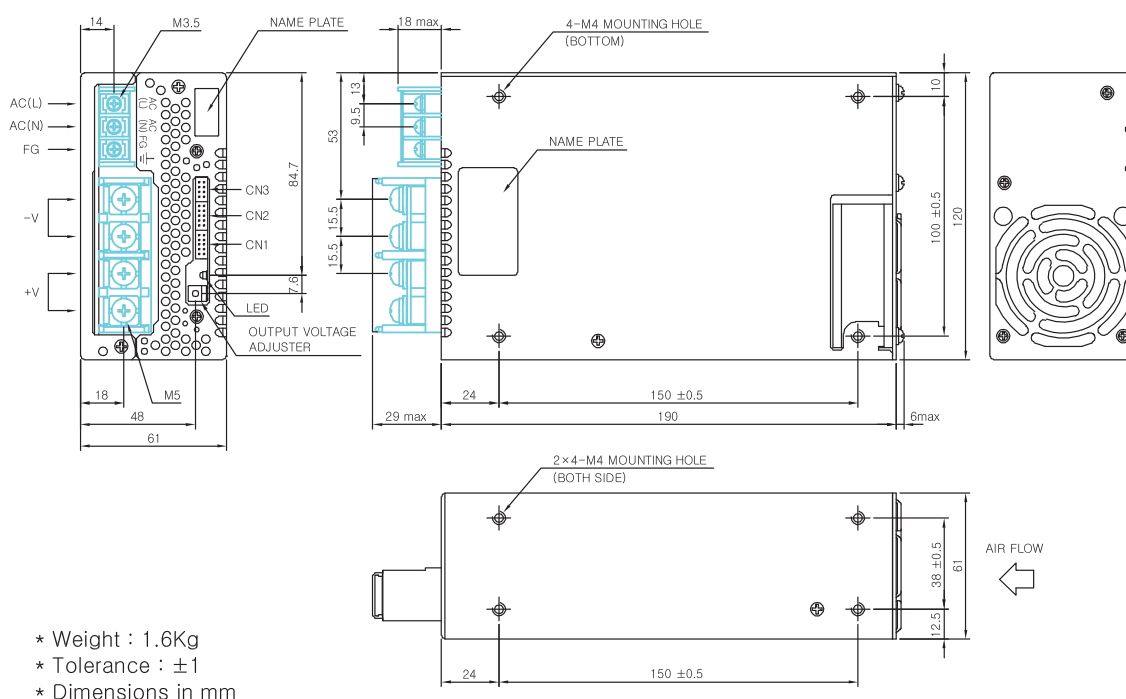
PSF600-S SPECIFICATIONS



| MODEL | | PSF600-3R3 | PSF600-05 | PSF600-09 | PSF600-12 | PSF600-15 | PSF600-24 | PSF600-48 | |
|-----------------------|--------------------------------|---|---------------------------|-----------|---------------------------|-----------|-----------|-----------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 63Hz or DC) | | | | | | | |
| | CURRENT [A] | 110V | 5.8(I _o =100%) | | 8.2(I _o =100%) | | | | |
| | | 220V | 3.0(I _o =100%) | | 4.1(I _o =100%) | | | | |
| | POWER FACTOR | 110V | 0.98 | | | | | | |
| | | 220V | 0.95 | | | | | | |
| | EFFICIENCY [%] | 110V | 70 typ | 75 typ | 76 typ | 79 typ | 79 typ | 81 typ | 81 typ |
| 220V | | 72 typ | 77 typ | 79 typ | 82 typ | 82 typ | 84 typ | 83 typ | |
| INRUSH CURRENT | | 20A typ(ACIN 110V, I _o =100%), 40A typ(ACIN 220V, I _o =100%) at cold start. | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 | |
| | CURRENT (PEAK) [A] | 120 | 120 | 67 | 53 | 43 | 27(31) | 13 | |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max | |
| | RIPPLE [mVp-p] | 80 Max | 80 Max | 120 Max | 120 Max | 120 Max | 120 Max | 150 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 150 Max | 150 Max | 150 Max | 150 Max | 250 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max | |
| | RISE TIME [ms] | 500 Max (AC IN 110V, I _o =100%) | | | | | | | |
| | HOLDING TIME [ms] | 20 typ (AC IN 110V, I _o =100%) | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 10mA, DC 500V 50MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 10mA, DC 500V 50MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 50MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ 71°C(Required Derating), 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms, Once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE, CB | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022-B | | | | | | | |
| | HARMONIC ATTENUATOR | Built to meet IEC61000-3-2 | | | | | | | |

*PEAK current is less than 10 sec.[Duty <= 0.35]

PSF600-S EXTERNAL VIEW



- * Weight : 1.6Kg
- * Tolerance : ±1
- * Dimensions in mm

For the Switching Model Power Supply

Switching Mode Power Supply



ORIENT

ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

| | |
|----------------------|-----------|
| 1. FDR SERIES | 20 |
| 2. JSF SERIES | 30 |
| 3. HSF SERIES | 42 |
| 4. LSP SERIES | 50 |
| 5. CSF SERIES | 58 |
| 6. PSF SERIES | 80 |
| 7. VSF SERIES | 88 |
| 8. ESF SERIES | 112 |
| 9. MSF SERIES | 134 |
| 10. MP SERIES | 162 |



ORDERING INFORMATION

VSF30-05

Series name

Total output wattage

Output voltage combination

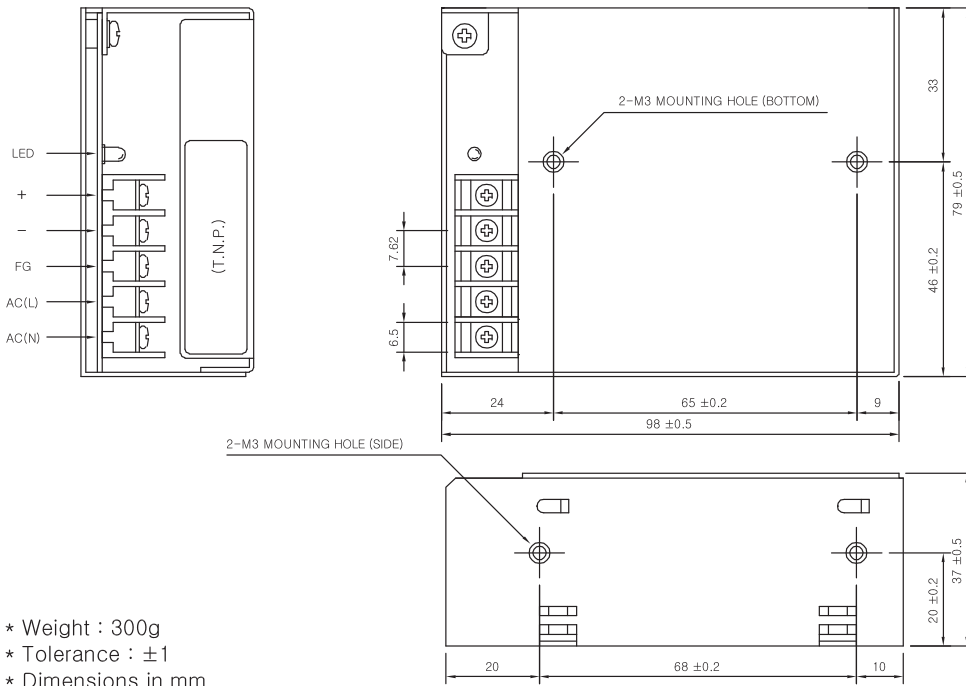
- Inrush current limit
- Over current protection
- Short circuit protection
- Remote control(VSF200~400)
- Remote sensing(VSF150~400)
- 3 years warranty



VSF30-S SPECIFICATIONS

| | MODEL | VSF30-05 | VSF30-09 | VSF30-12 | VSF30-15 | VSF30-24 |
|-----------------------|---|---|-----------------------------|----------|----------|----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input | | | | |
| | CURRENT [A] | 110V | 0.65 (I _o =100%) | | | |
| | | 220V | 0.35 (I _o =100%) | | | |
| | EFFICIENCY [%] | 110V | 70 typ | 70 typ | 70 typ | 70 typ |
| | 220V | | | | | |
| | INRUSH CURRENT | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 9 | 12 | 15 | 24 |
| | CURRENT [A] | 6 | 3.3 | 2.5 | 2 | 1.5 |
| | REGULATION, LINE [mV] | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max |
| | REGULATION, LOAD [mV] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE [mVp-p] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 140 Max | 180 Max | 190 Max | 290 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 135 Max | 180 Max | 255 Max | 360 Max |
| | RISE TIME [ms] | 100 Max (AC IN 85V I _o =100%) | | | | |
| HOLDING TIME [ms] | 10 typ (AC IN 85V I _o =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | Works at 110 ~ 140% of rating | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 30 ~ 90% RH(Non condensing) | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 2G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | - | | | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with EN 55022-A | | | | |

VSF30-S EXTERNAL VIEW



- * Weight : 300g
- * Tolerance : ±1
- * Dimensions in mm

VSF50-S SPECIFICATIONS

| | MODEL | VSF50-05 | VSF50-09 | VSF50-12 | VSF50-15 | VSF50-24 |
|-----------------------|---|---|----------------------------|----------|----------|----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC85 ~ 132V / AC170 ~ 264V or 245 ~ 370V), 50/60Hz (47~ 440Hz) User Selectable | | | | |
| | CURRENT [A] | 110V | 1.2 (I _o =100%) | | | |
| | | 220V | 0.6 (I _o =100%) | | | |
| | EFFICIENCY [%] | 110V | 70 typ | 71 typ | 72 typ | 75 typ |
| 220V | | 70 typ | 73 typ | 74 typ | 77 typ | 78 typ |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 9 | 12 | 15 | 24 |
| | CURRENT [A] | 10 | 5.5 | 4.2 | 3.3 | 2.1 |
| | REGULATION, LINE [mV] | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max |
| | REGULATION, LOAD [mV] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE [mVp-p] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 140 Max | 170 Max | 200 Max | 290 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max |
| | RISE TIME [ms] | 100 Max (AC IN 85V I _o =100%) | | | | |
| HOLDING TIME [ms] | 10 typ (AC IN 85V I _o =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 30 ~ 90% RH(Non condensing) | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 2G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | - | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN 55022-A | | | | |

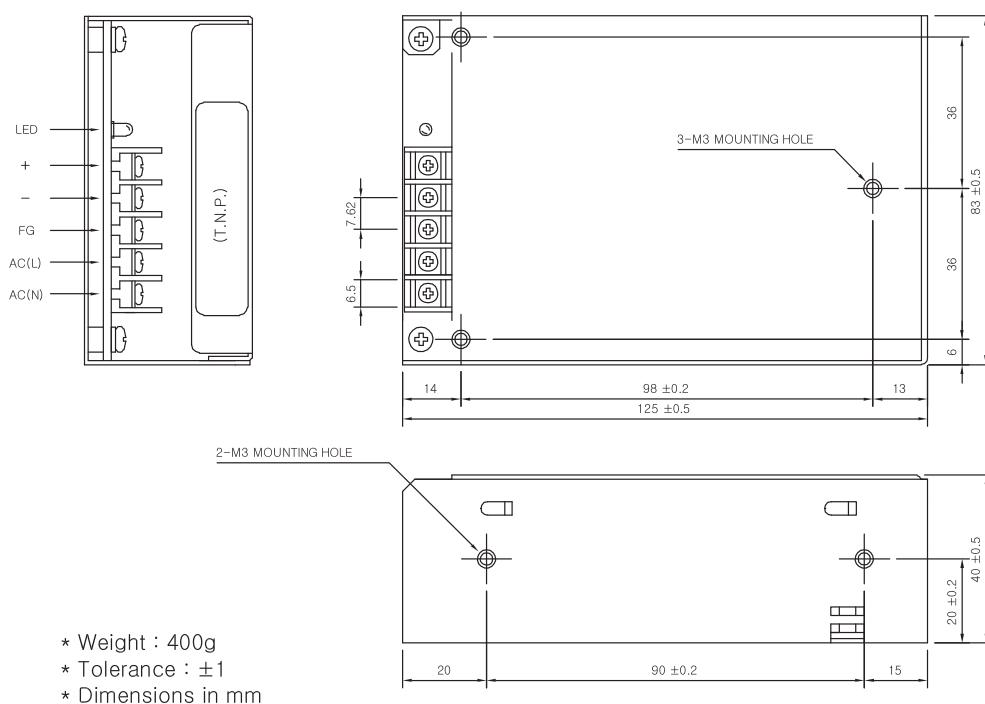
VSF50A-S SPECIFICATIONS

| | MODEL | VSF50A-05 | VSF50A-09 | VSF50A-12 | VSF50A-15 | VSF50A-24 |
|-----------------------|--|--|----------------------------|-----------|-----------|-----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | |
| | CURRENT [A] | 110V | 0.4 (I _o =100%) | | | |
| | | 220V | 0.2 (I _o =100%) | | | |
| | EFFICIENCY [%] | 110V | 70 typ | 73 typ | 74 typ | 77 typ |
| 220V | | 70 typ | 73 typ | 74 typ | 77 typ | 78 typ |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 9 | 12 | 15 | 24 |
| | CURRENT [A] | 10 | 5.6 | 4.2 | 3.3 | 2.1 |
| | REGULATION, LINE [mV] | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max |
| | REGULATION, LOAD [mV] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE [mVp-p] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 140 Max | 170 Max | 200 Max | 290 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max |
| | RISE TIME [ms] | 1000 Max (AC IN 110V/220V, I _o =100%) | | | | |
| HOLDING TIME [ms] | 10 typ (AC IN 110V/220V, I _o =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | Complied with UL60950-1, EN60950-1 | | | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15, VCCI-A, CISPR22-A, EN55022-A | | | | |

VSFL50-S SPECIFICATIONS

| MODEL | | VSFL50-05 | VSFL50-09 | VSFL50-12 | VSFL50-15 | VSFL50-24 |
|-----------------------|--------------------------------|---|----------------------------|-----------|-----------|-----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | |
| | CURRENT [A] | 110V | 1.2 (I _c =100%) | | | |
| | | 220V | 0.6 (I _c =100%) | | | |
| | EFFICIENCY [%] | 110V | 70 typ | 71 typ | 71 typ | 75 typ |
| 220V | | 70 typ | 73 typ | 73 typ | 77 typ | 78 typ |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _c =100%), 40A typ(AC IN 220V, I _c =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 9 | 12 | 15 | 24 |
| | CURRENT [A] | 10 | 5.5 | 4.2 | 3.3 | 2.1 |
| | REGULATION, LINE [mV] | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max |
| | REGULATION, LOAD [mV] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE [mVp-p] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 140 Max | 170 Max | 200 Max | 290 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 135 Max | 180 Max | 225 Max | 360Max |
| | RISE TIME [ms] | 600 Max (AC IN 110V/220V, I _c =100%) | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 110V/220V, I _c =100%) | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 30 ~ 90% RH(Non condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 2G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | Built to meet UL60950-1, EN 60950-1 | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN 55022-A | | | | |

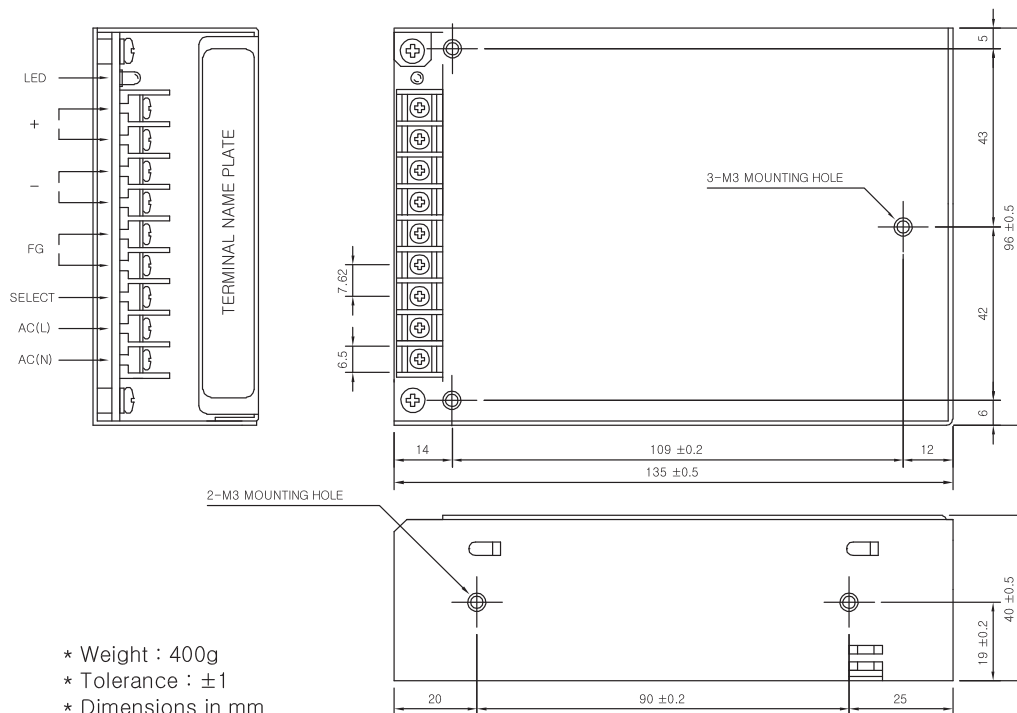
VSF50, 50A, L50-S EXTERNAL VIEW



VSF75-S SPECIFICATIONS

| MODEL | | VSF75-05 | VSF75-09 | VSF75-12 | VSF75-15 | VSF75-24 | VSF75-48 |
|-----------------------|--------------------------------|--|----------------------------|----------|----------|----------|----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | | |
| | CURRENT [A] | 110V | 1.8 (I _o =100%) | | | | |
| | | 220V | 1.0 (I _o =100%) | | | | |
| | EFFICIENCY [%] | 110V | 70 typ | 75 typ | 73 typ | 73 typ | 75 typ |
| 220V | | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 9 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 15 | 8.3 | 6.5 | 5 | 3.5 | 1.6 |
| | REGULATION, LINE [mV] | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE [mVp-p] | 50 Max | 90 Max | 120 Max | 170 Max | 240 Max | 480 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 140 Max | 170 Max | 200 Max | 290 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max |
| | RISE TIME [ms] | 600 Max (AC IN 110V/220V I _o =100%) | | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 110V/220V I _o =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -0 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | |
| SAFETY | SAFETY REGULATION | - | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part 15 and EN55022 Class A Limits | | | | | |

VSF75-S EXTERNAL VIEW

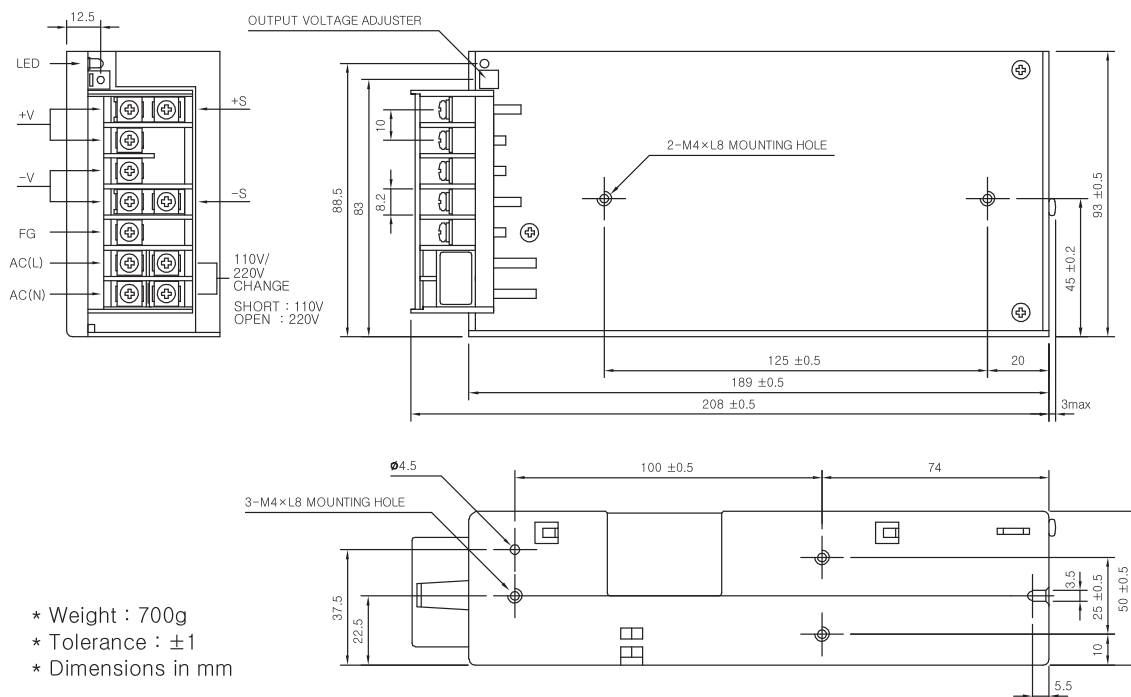




VSF100-S SPECIFICATIONS

| MODEL | | VSF100-05 | VSF100-09 | VSF100-12 | VSF100-15 | VSF100-24 |
|-----------------------|--------------------------------|--|----------------------------|-----------|-----------|-----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | |
| | CURRENT [A] | 110V | 2.5c(I _o =100%) | | | |
| | | 220V | 1.4c(I _o =100%) | | | |
| | EFFICIENCY [%] | 110V | 78 typ | 78 typ | 80 typ | 82 typ |
| 220V | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 9 | 12 | 15 | 24 |
| | CURRENT [A] | 20 | 11 | 8.5 | 7 | 4.5 |
| | REGULATION, LINE [mV] | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max |
| | REGULATION, LOAD [mV] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE [mVp-p] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 140 Max | 170 Max | 200 Max | 290 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max |
| | RISE TIME [ms] | 500 Max (AC IN 110V/220V I _o =100%) | | | | |
| | HOLDING TIME [ms] | 10 typ (AC IN 110V/220V I _o =100%) | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | CE | - | CE | CE | CE |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part 15, VCCI-A, CISPR22-A, EN55022 - A | | | | |

VSF100-S EXTERNAL VIEW



General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

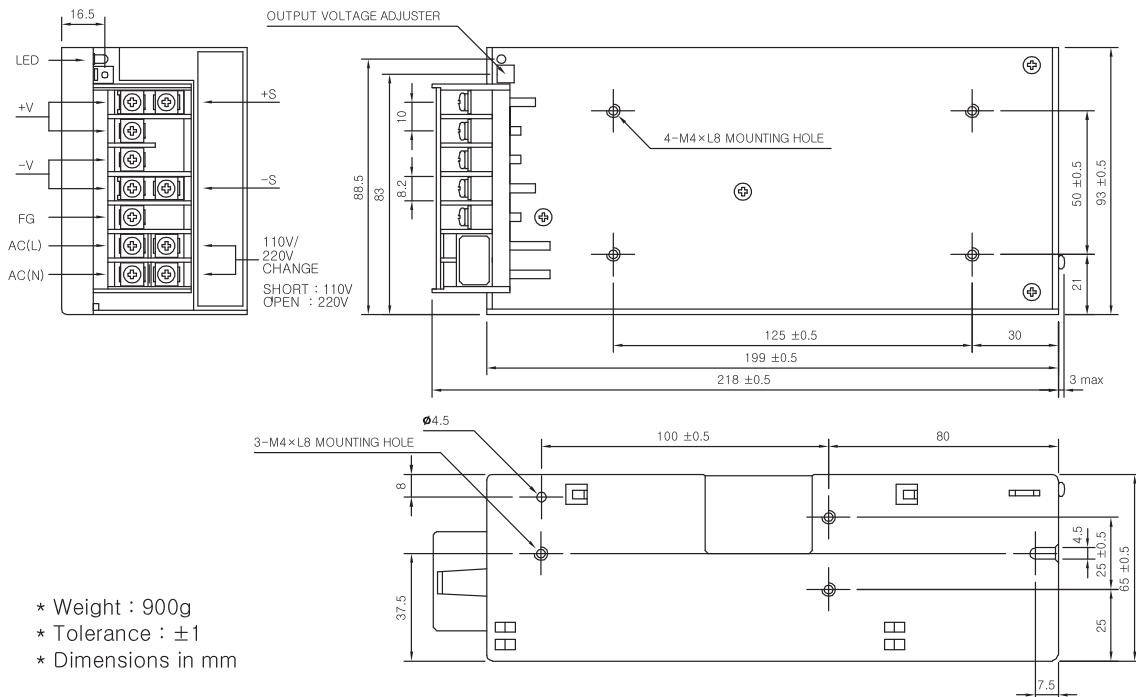
Discrete Semiconductors

VSF150-S SPECIFICATIONS



| MODEL | | VSF150-05 | VSF150-09 | VSF150-12 | VSF150-15 | VSF150-24 | VSF150-48 |
|-----------------------|----------------------------------|---|----------------------------|-----------|-----------|-----------|-----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47~ 440Hz) User Selectable | | | | | |
| | CURRENT [A] | 110V | 3.7 (I _b =100%) | | | | |
| | | 220V | 2.1 (I _b =100%) | | | | |
| | EFFICIENCY [%] | 110V | 78 typ | 80 typ | 80 typ | 83 typ | 85 typ |
| | 220V | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _b =100%), 40A typ(AC IN 220V, I _b =100%) at cold start. | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 9 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 30 | 17 | 13 | 10 | 6.5 | 3.1 |
| | REGULATION, LINE [mV] | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE [mVp-p] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 140 Max | 170 Max | 200 Max | 290 Max | 530 Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max |
| | RISE TIME [ms] | 500 Max (AC IN 110V / 220V I _b =100%) | | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 110V/220V, I _b =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | |
| SAFETY | SAFETY REGULATION | CE | - | CE | CE | CE | - |
| | LINE CONDUCTED RF VOLTAGE | - | | | | | |

VSF150-S EXTERNAL VIEW



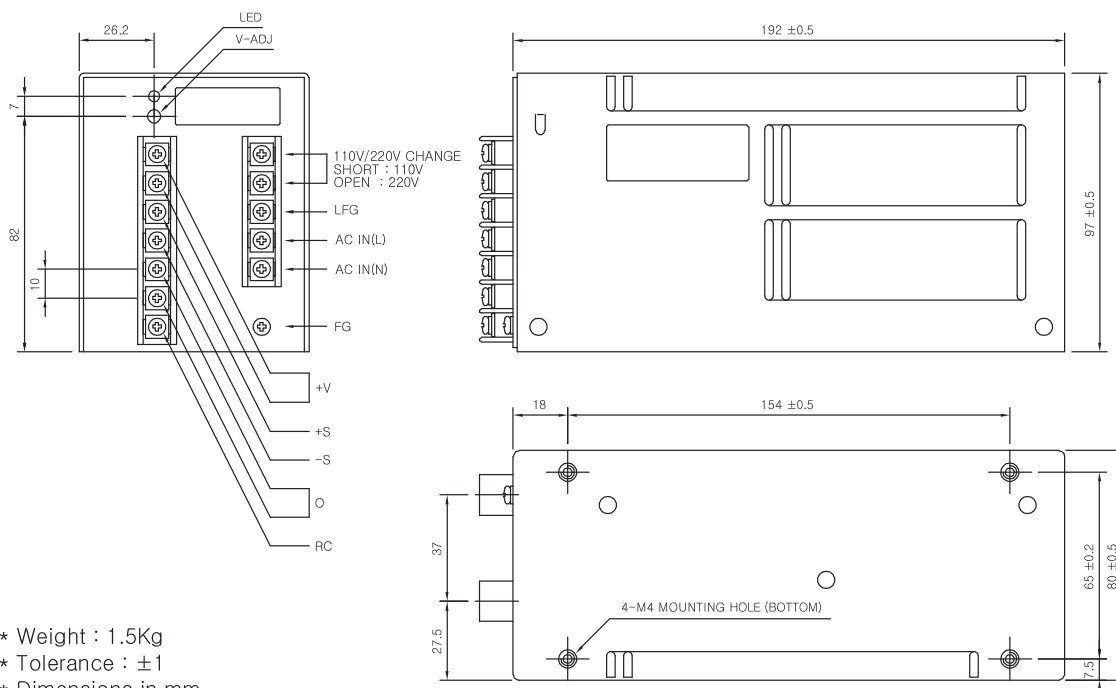
- * Weight : 900g
- * Tolerance : ±1
- * Dimensions in mm

VSF200, 220-S SPECIFICATIONS



| MODEL | | VSF200-05 | VSF220-12 | VSF220-13.8 | VSF220-15 | VSF220-24 | VSF220-48 |
|-----------------------|--------------------------------|--|----------------------------|-------------|-----------|------------|------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC255 ~ 370V), 50/60Hz (47 ~ 440Hz or DC) User Selectable | | | | | |
| | CURRENT [A] | 110V | 4.4 (I _o =100%) | | | | |
| | | 220V | 2.2 (I _o =100%) | | | | |
| | EFFICIENCY [%] | 110V | 75 typ | 75 typ | 75 typ | 75 typ | 77 typ |
| | 220V | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 13.8 | 15 | 24 | 48 |
| | CURRENT [A] | 40 | 18.5 | 16 | 15 | 9.5 | 4.5 |
| | REGULATION, LINE [mV] | 50 Max | 60 Max | 70 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 100 Max | 120 Max | 140 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE [mVp-p] | 100 Max | 120 Max | 140 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE, NOISE [mVp-p] | 150 Max | 170 Max | 190 Max | 200 Max | 290 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 150 Max | 170 Max | 190 Max | 200 Max | 360 Max | 720 Max |
| | RISE TIME [ms] | 600 Max (AC IN 110V/220V I _o =100%) | | | | | |
| | HOLDING TIME [ms] | 15 typ (AC IN 110V/220V I _o =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 110 ~ 150% of rating | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | VIBRATION | 10~55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | |
| SAFETY | SAFETY REGULATION | UL,C-UL,CE | UL,C-UL,CE | - | - | UL,C-UL,CE | UL,C-UL,CE |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part 15, VCCI-A, CISPR22-A, EN55022 - A | | | | | |

VSF200, 220-S EXTERNAL VIEW

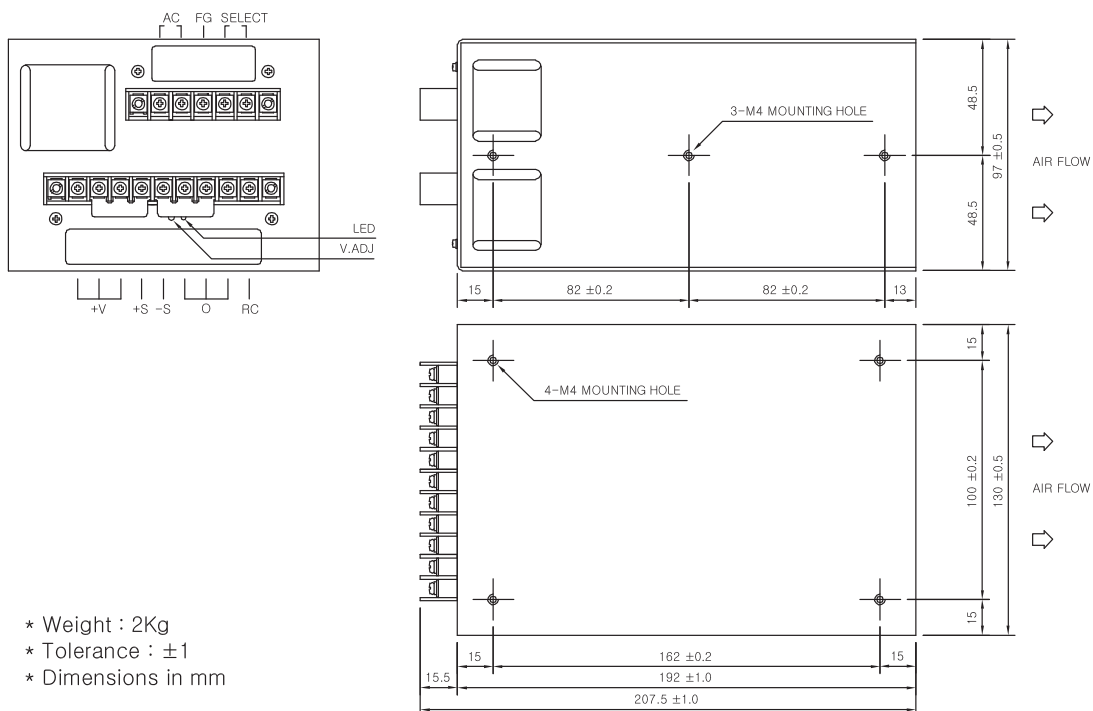


- * Weight : 1.5Kg
- * Tolerance : ±1
- * Dimensions in mm

VSF300-S SPECIFICATIONS

| MODEL | | VSF300-05 | VSF300-09 | VSF300-12 | VSF300-15 | VSF300-24 | VSF300-48 |
|-----------------------|--------------------------------|--|----------------------------|-----------|-----------|-----------|-----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC255 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | | |
| | CURRENT [A] | 110V | 5.5 (I _o =100%) | | | | |
| | | 220V | 3.5 (I _o =100%) | | | | |
| | EFFICIENCY [%] | 110V | 73 typ | 78 typ | 78 typ | 78 typ | 81 typ |
| | 220V | | | | | | |
| INRUSH CURRENT | | 30A typ(AC IN 110V, I _o =100%), 60A typ(AC IN 220V, I _o =100%) | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 9 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 60 | 30 | 25 | 20 | 13 | 6.5 |
| | REGULATION, LINE [mV] | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE [mVp-p] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 150 Max | 170 Max | 200 Max | 290 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 90 Max | 120 Max | 150 Max | 360 Max | 480 Max |
| | RISE TIME [ms] | 500 Max (AC IN 110V/220V I _o =100%) | | | | | |
| | HOLDING TIME [ms] | 20 typ (AC IN 110V/220V I _o =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 110 ~ 140% of rating | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | |
| SAFETY | SAFETY REGULATION | Complied with UL60950-1, EN60950-1 | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part 15, VCCI-A, CISPR2-A, EN55022 - A | | | | | |

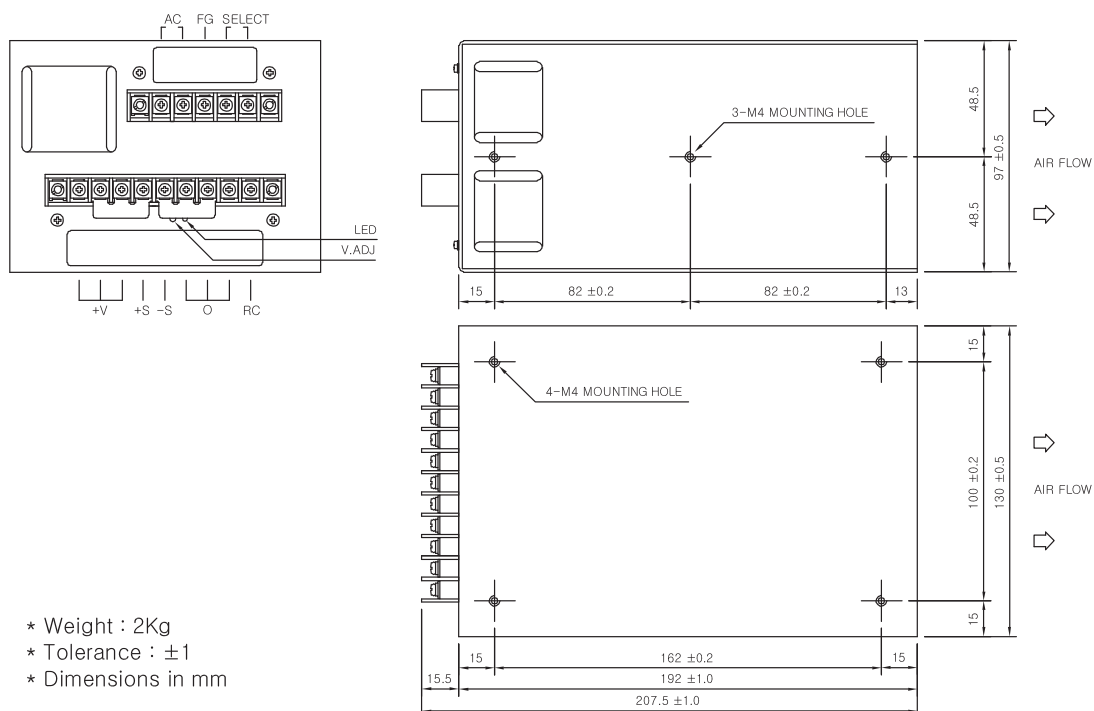
VSF300-S EXTERNAL VIEW



VSF400-S SPECIFICATIONS

| MODEL | | VSF400-05 | VSF400-12 | VSF400-15 | VSF400-24 | VSF400-48 |
|-----------------------|--------------------------------|--|----------------------------|-----------|-----------|-----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC255 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | |
| | CURRENT [A] | 110V | 8.2 (I _o =100%) | | | |
| | | 220V | 4.6 (I _o =100%) | | | |
| | EFFICIENCY [%] | 110V | 76 typ | 81 typ | 81 typ | 81 typ |
| 220V | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 70 | 32 | 26.4 | 16 | 8 |
| | REGULATION, LINE [mV] | 25 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 50 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 200 Max | 290 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 100 Max | 120 Max | 225 Max | 240 Max | 480 Max |
| | RISE TIME [ms] | 500 Max (AC IN 85V I _o =100%) | | | | |
| | HOLDING TIME [ms] | 20 typ (AC IN 85V I _o =100%) | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 145% of rating | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | Complied with UL60950-1, EN60950-1 | | | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part 15, VCCI-A, CISPR2-A, EN55022 - A | | | | |

VSF400-S EXTERNAL VIEW



- * Weight : 2Kg
- * Tolerance : ±1
- * Dimensions in mm

ORDERING INFORMATION

VSF15-BBW

Series name

Total output wattage

Output voltage combination

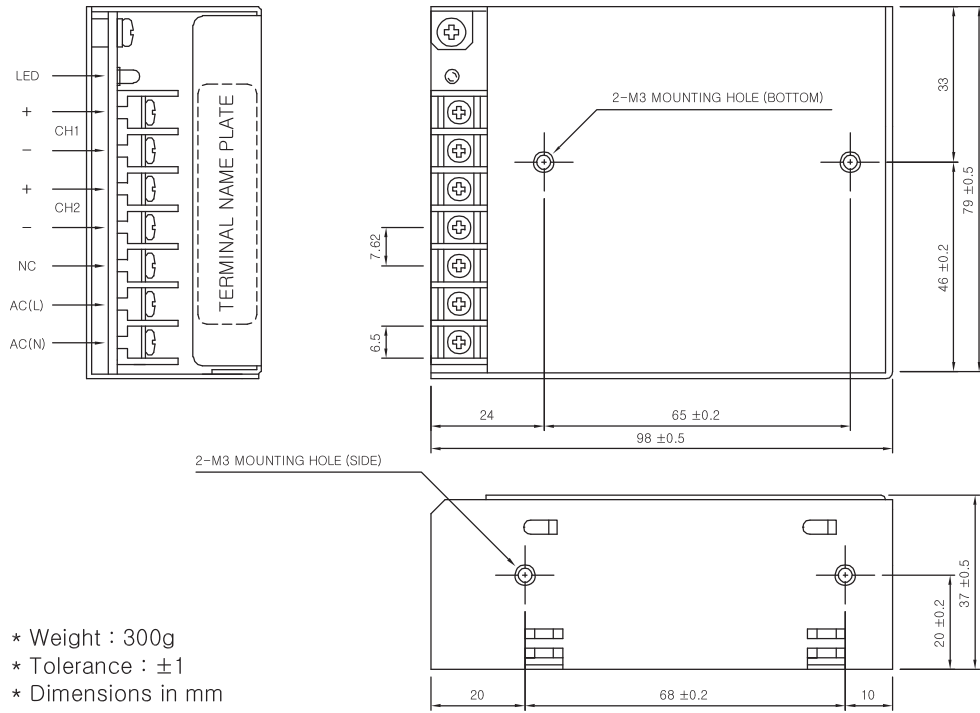
- Inrush current limit
- Short circuit protection
- Over voltage protection
- CH1 isolated from CH2
- Over current protection
- 3 years warranty



VSF15-DUAL SPECIFICATIONS

| | MODEL | VSF15-BBW | VSF15-BCW | VSF15-BDW | VSF15-DDW | VSF15-EEW | | | | | |
|-----------------------|--------------------------------|---|---------------------------|-----------|-----------|-----------|---------|-----------|---------|-----------|---------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input | | | | | | | | | |
| | CURRENT [A] | 110V | 0.4(I _o =100%) | | | | | | | | |
| | | 220V | 0.2(I _o =100%) | | | | | | | | |
| | EFFICIENCY [%] | 110V | 60 typ | 60 typ | 60 typ | 60 typ | 60 typ | | | | |
| | 220V | | | | | | | | | | |
| | INRUSH CURRENT | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 5 | 5 | 9 | 5 | 12 | 12 | 12 | 15 | 15 |
| | CURRENT [A] | 0.1 ~ 2 | 0.5 | 0.1 ~ 2 | 0.5 | 0.1 ~ 2 | 0.5 | 0.1 ~ 0.7 | 0.5 | 0.1 ~ 0.5 | 0.5 |
| | REGULATION, LINE [mV] | 25 Max | 45 Max | 25 Max | 45 Max | 25 Max | 60 Max | 60 Max | 60 Max | 75 Max | 75 Max |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 50 Max | 90 Max | 50 Max | 120 Max | 120 Max | 120 Max | 150 Max | 150 Max |
| | RIPPLE [mVp-p] | 50 Max | 50 Max | 50 Max | 90 Max | 50 Max | 120 Max | 120 Max | 120 Max | 150 Max | 150 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 100 Max | 100 Max | 140 Max | 100 Max | 170 Max | 170 Max | 170 Max | 200 Max | 200 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 25 Max | 25 Max | 75 Max | 135 Max | 75 Max | 180 Max | 180 Max | 180 Max | 225 Max | 225 Max |
| | RISE TIME [ms] | 100 Max (AC IN 110V I _o =100%) | | | | | | | | | |
| | HOLDING TIME [ms] | 10 typ (AC IN 110V I _o =100%) | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically. (CH2 I _o =100%) | | | | | | | | | |
| | OVER VOLTAGE PROTECTION | - | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | |
| SAFETY | SAFETY REGULATION | Built to meet UL60950-1, EN60950-1 | | | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022 - A | | | | | | | | | |

VSF15-DUAL EXTERNAL VIEW



- * Weight : 300g
- * Tolerance : ±1
- * Dimensions in mm

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

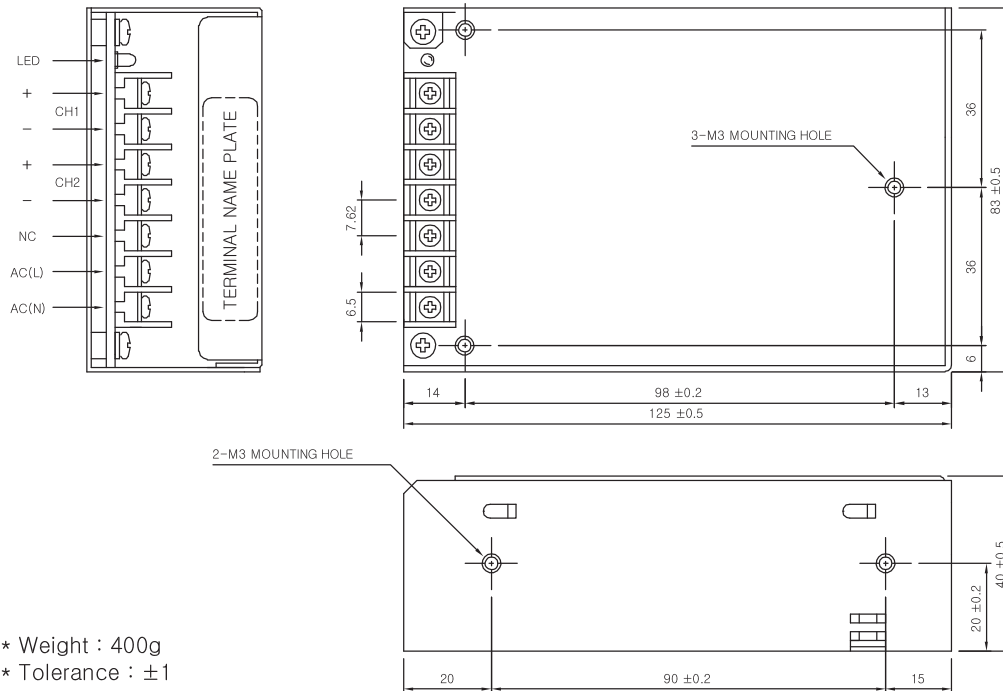
Power Module

Discrete Semiconductors

VSF30-DUAL SPECIFICATIONS

| MODEL | | VSF30-BBW | VSF30-BCW | VSF30-BDW | VSF30-BHW | VSF30-DDW | VSF30-EEW | | | | | | |
|-----------------------|--------------------------------|---|-----------------------------|-----------|-----------|-----------|-----------|---------|---------|------------|---------|---------|---------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input | | | | | | | | | | | |
| | CURRENT [A] | 110V | 0.65 (I _o =100%) | | | | | | | | | | |
| | | 220V | 0.35 (I _o =100%) | | | | | | | | | | |
| | EFFICIENCY [%] | 110V | 60 typ | 70 typ | 70 typ | 70 typ | 70 typ | 70 typ | | | | | |
| 220V | | | | | | | | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 5 | 5 | 9 | 5 | 12 | 5 | 24 | 12 | 12 | 15 | 15 |
| | CURRENT [A] | 0.1 ~ 3 | 1.2 | 0.3 ~ 3 | 1.6 | 0.3 ~ 3 | 1.2 | 0.3 ~ 3 | 0.6 | 0.12 ~ 1.2 | 1.2 | 0.1 ~ 1 | 1 |
| | REGULATION, LINE [mV] | 25 Max | 50 Max | 25 Max | 45 Max | 25 Max | 60 Max | 25 Max | 120 Max | 60 Max | 60 Max | 75 Max | 75 Max |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 50 Max | 90 Max | 50 Max | 120 Max | 50 Max | 240 Max | 120 Max | 120 Max | 150 Max | 150 Max |
| | RIPPLE [mVp-p] | 50 Max | 50 Max | 50 Max | 90 Max | 50 Max | 120 Max | 50 Max | 240 Max | 120 Max | 120 Max | 150 Max | 150 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 100 Max | 100 Max | 140 Max | 100 Max | 170 Max | 100 Max | 290 Max | 170 Max | 170 Max | 200 Max | 200 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 75 Max | 75 Max | 135 Max | 75 Max | 180 Max | 75 Max | 360 Max | 180 Max | 180 Max | 225 Max | 225 Max |
| | RISE TIME [ms] | 100 Max (AC IN 110V I _o =100%) | | | | | | | | | | | |
| | HOLDING TIME [ms] | 10 typ (AC IN 110V I _o =100%) | | | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115~140% of rating | | | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | | | |
| SAFETY | SAFETY REGULATION | Built to meet UL60950-1, EN60950-1 | | | | | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022 - A | | | | | | | | | | | |

VSF30-DUAL EXTERNAL VIEW

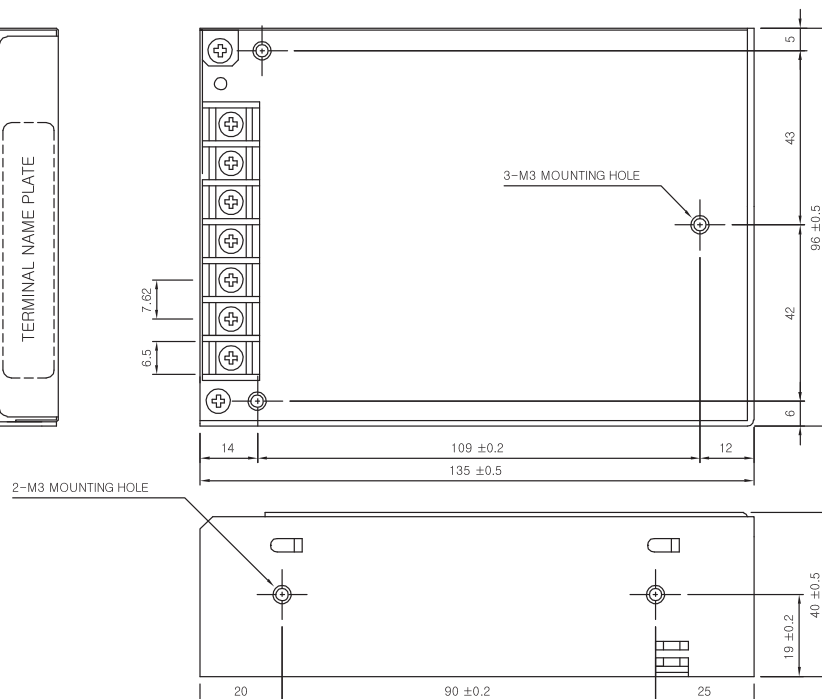
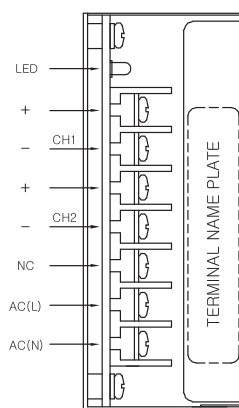


VSF50-DUAL SPECIFICATIONS



| MODEL | | VSF50-BBW | VSF50-BDW | VSF50-BHW | VSF50-DDW | VSF50-EEW | | | | | | |
|-----------------------|--------------------------------|--|----------------------------|-----------|-----------|-----------|---------|---------|---------|------------|---------|--|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input | | | | | | | | | | |
| | CURRENT | 110V | 1.2 (I _o =100%) | | | | | | | | | |
| | | 220V | 0.7 (I _o =100%) | | | | | | | | | |
| | EFFICIENCY (AC220V) | 110V | 75 typ | 75 typ | 75 typ | 77 typ | 77 typ | | | | | |
| | 220V | | | | | | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 5 | 5 | 12 | 5 | 24 | 12 | 12 | 15 | 15 | |
| | CURRENT [A] | 0.5 ~ 5 | 5 | 0.5 ~ 3 | 0 ~ 3 | 0.5 ~ 3 | 0 ~ 1.5 | 0.2 ~ 2 | 2 | 0.16 ~ 1.6 | 0 ~ 1.6 | |
| | REGULATION, LINE [mV] | 50 Max | 50 Max | 50 Max | 120 Max | 50 Max | 240 Max | 120 Max | 120 Max | 150 Max | 150 Max | |
| | REGULATION, LOAD [mV] | 100 Max | 100 Max | 100 Max | 240 Max | 100 Max | 480 Max | 240 Max | 240 Max | 300 Max | 300 Max | |
| | RIPPLE [mVp-p] | 50 Max | 50 Max | 50 Max | 120 Max | 50 Max | 240 Max | 120 Max | 120 Max | 150 Max | 150 Max | |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 100 Max | 100 Max | 170 Max | 100 Max | 290 Max | 170 Max | 170 Max | 200 Max | 200 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 75 Max | 75 Max | 180 Max | 75 Max | 360 Max | 180 Max | 180 Max | 225 Max | 225 Max | |
| | RISE TIME [ms] | 1000 Max (AC IN 85V/170V, I _o =100%) | | | | | | | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 85V/170V, I _o =100%) | | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | | |
| SAFETY | SAFETY REGULATION | CE | CE | CE | CE | CE | CE | CE | CE | CE | CE | |
| | LINE CONDUCTED RF VOLTAGE | - | | | | | | | | | | |

VSF50-DUAL EXTERNAL VIEW



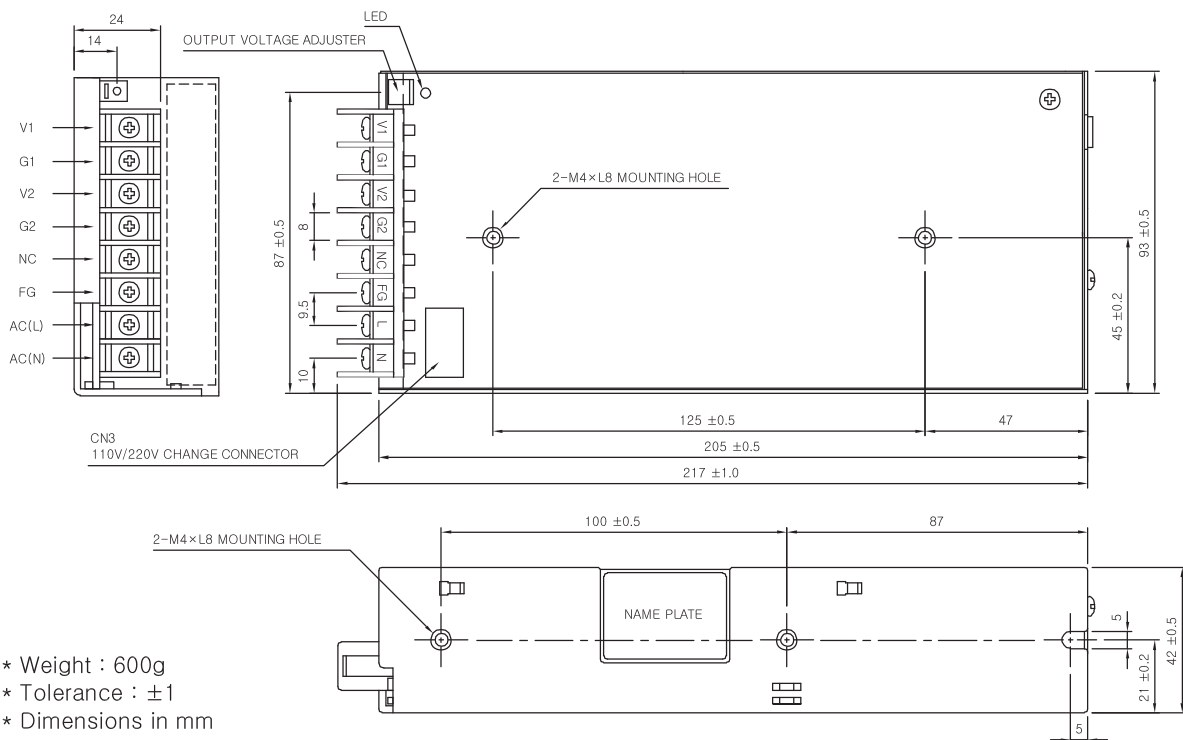
- * Weight : 500g
- * Tolerance : ±1
- * Dimensions in mm

VSF75-DUAL SPECIFICATIONS



| MODEL | | VSF75-BBW | VSF75-BDW | VSF75-BHW | | |
|-----------------------|---|--|----------------------------|-----------|---------|---------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | |
| | CURRENT [A] | 110V | 1.8 (I _c =100%) | | | 24 |
| | | 220V | 1.0 (I _c =100%) | | | 5 |
| | EFFICIENCY [%] | 110V 220V | 75 typ | | 75 typ | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _c =100%), 40A typ(AC IN 220V, I _c =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 5 | 5 | 12 | 5 |
| | CURRENT [A] | 1.5 ~ 8 | 5 | 1.5 ~ 6 | 3.5 | 1.5 ~ 6 |
| | REGULATION, LINE [mV] | 20 Max | 20 Max | 20 Max | 48 Max | 20 Max |
| | REGULATION, LOAD [mV] | 40 Max | 40 Max | 40 Max | 100 Max | 40 Max |
| | RIPPLE [mVp-p] | 80 Max | 80 Max | 80 Max | 120 Max | 80 Max |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 120 Max | 170 Max | 120 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 75 Max | 75 Max | 180 Max | 75 Max |
| | RISE TIME [ms] | 1500 Max (AC IN 110V, I _c =100%) | | | | |
| HOLDING TIME [ms] | 10 typ (AC IN 110V, I _c =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115~140% of rating (CH1) | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | - | CE | | CE | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022-B | | | | |

VSF75-DUAL EXTERNAL VIEW

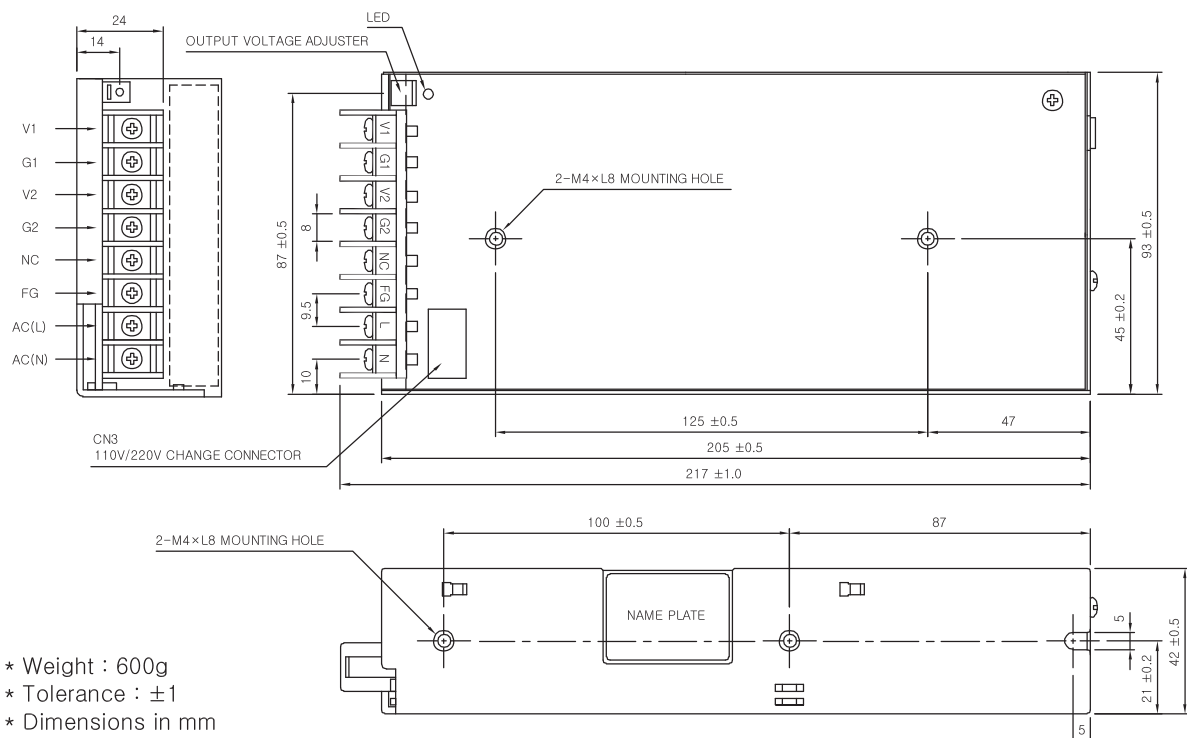


VSF100-DUAL SPECIFICATIONS



| | | MODEL | VSF100-BBW | VSF100-BDW | VSF100-BHW | | | |
|-------------------------|---------------------------|---|--|------------|------------|---------|----------|---------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | | |
| | CURRENT | [A] | 2.4 (I _o =100%) | | | | | |
| | | 110V | 1.4 (I _o =100%) | | | | | |
| | EFFICIENCY | 110V | 75 typ | | 75 typ | | 75 typ | |
| | | 220V | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | |
| OUTPUT | VOLTAGE | [V] | 5 | 5 | 5 | 12 | 5 | 24 |
| | CURRENT | [A] | 1.5 ~ 10 | 5 | 1.5 ~ 10 | 4 | 1.5 ~ 10 | 2 |
| | REGULATION, LINE | [mV] | 20 Max | 20 Max | 20 Max | 48 Max | 20 Max | 96 Max |
| | REGULATION, LOAD | [mV] | 40 Max | 40 Max | 40 Max | 100 Max | 40 Max | 150 Max |
| | RIPPLE | [mVp-p] | 80 Max | 80 Max | 80 Max | 120 Max | 80 Max | 240 Max |
| | RIPPLE, NOISE | [mVp-p] | 120 Max | 120 Max | 120 Max | 170 Max | 120 Max | 290 Max |
| | TEMPERATURE DRIFT 0~+50°C | [mV] | 75 Max | 75 Max | 75 Max | 180 Max | 75 Max | 360 Max |
| | RISE TIME | [ms] | 1500 Max (AC IN 110V, I _o =100%) | | | | | |
| | HOLDING TIME | [ms] | 10 typ (AC IN 110V, I _o =100%) | | | | | |
| | PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | |
| OVER VOLTAGE PROTECTION | | Works at 115 ~ 140% of rating (CH1) | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | |
| SAFETY | SAFETY REGULATION | - | | CE | | CE | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022-B | | | | | | |

VSF100-DUAL EXTERNAL VIEW



- * Weight : 600g
- * Tolerance : ±1
- * Dimensions in mm

ORDERING INFORMATION

VSF15-BDB

Series name

Total output wattage

Output voltage combination

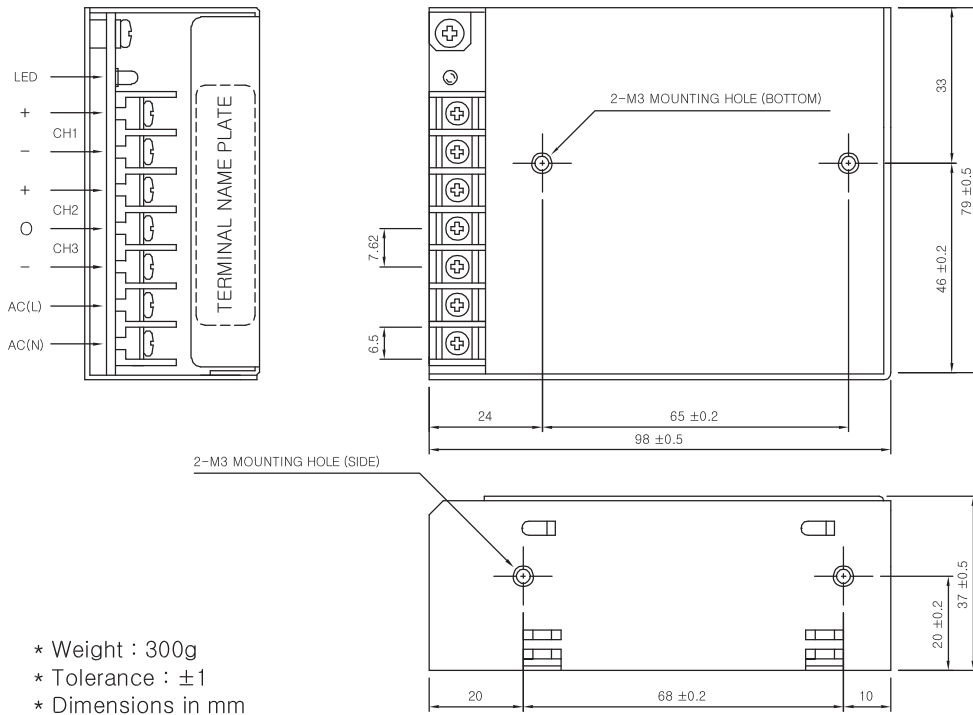
- Short Circuit protection
- Inrush current limit
- CH1 isolated from CH2 and CH3
- Over current protection
- 3 yeras warranty



VSF15-TRIPLE SPECIFICATIONS

| MODEL | | VSF15-BDB | | | VSF15-DD | | | VSF15-EE | | | |
|-----------------------|--------------------------------|---|----------------------------|---------|----------|---------|---------|----------|---------|---------|--|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input | | | | | | | | | |
| | CURRENT [A] | 110V | 0.4 (I _o =100%) | | | | | | | | |
| | | 220V | 0.2 (I _o =100%) | | | | | | | | |
| | EFFICIENCY [%] | 110V | 60 typ | | | 60 typ | | | 60 typ | | |
| 220V | | | | | | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | -5 | 5 | 12 | -12 | 5 | 15 | -15 | |
| | CURRENT [A] | 0.1 ~ 2 | 0.3 | 0.3 | 0.1 ~ 2 | 0.3 | 0.2 | 0.1 ~ 2 | 0.3 | 0.2 | |
| | REGULATION, LINE [mV] | 25 Max | 60 Max | 25 Max | 25 Max | 60 Max | 60 Max | 25 Max | 75 Max | 75 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 120 Max | 50 Max | 50 Max | 120 Max | 120 Max | 50 Max | 150 Max | 150 Max | |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 50 Max | 50 Max | 120 Max | 120 Max | 80 Max | 120 Max | 120 Max | |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 100 Max | 100 Max | 170 Max | 170 Max | 100 Max | 200 Max | 200 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 25 Max | 180 Max | 25 Max | 15 Max | 180 Max | 180 Max | 50 Max | 150 Max | 150 Max | |
| | RISE TIME [ms] | 100 Max (AC IN 110V I _o =100%) | | | | | | | | | |
| | HOLDING TIME [ms] | 10 typ (AC IN 110V I _o =100%) | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically. (CH2,3 I _o =100%) | | | | | | | | | |
| | OVER VOLTAGE PROTECTION | - | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | |
| SAFETY | SAFETY REGULATION | Built to meet UL60950-1, EN60950-1 | | | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022 | | | | | | | | | |

VSF15-TRIPLE EXTERNAL VIEW

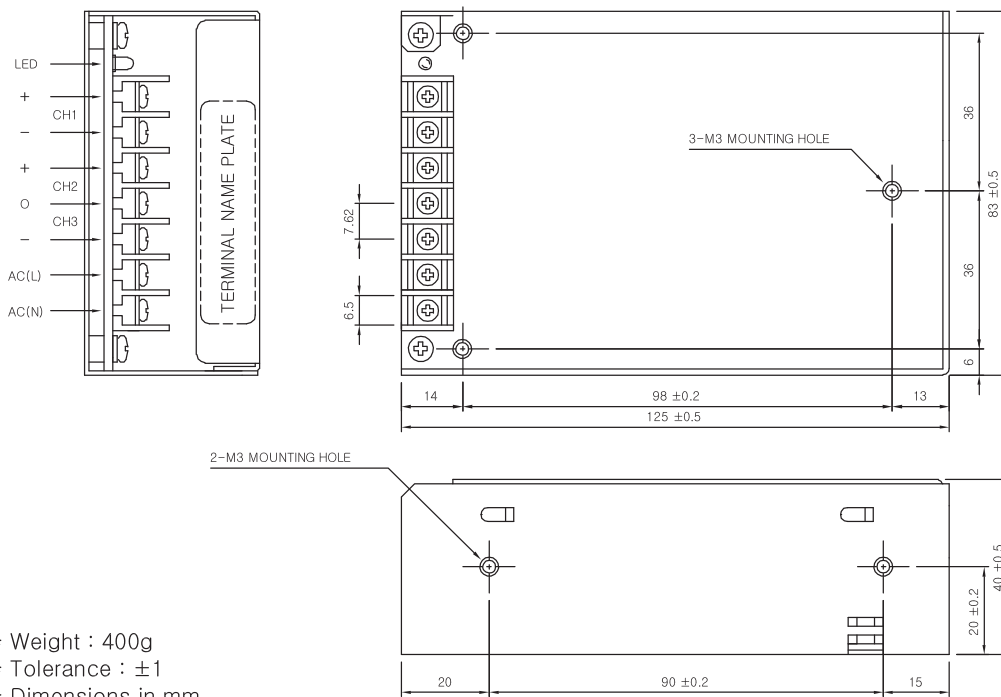


- * Weight : 300g
- * Tolerance : ±1
- * Dimensions in mm

VSF30-TRIPLE SPECIFICATIONS

| MODEL | | VSF30-BDB | VSF30-DD | VSF30-EE | | | | | | | |
|-----------------------|--------------------------------|---|-----------------------------|----------|---------|---------|---------|---------|---------|---------|--|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input | | | | | | | | | |
| | CURRENT | 110V | 0.65 (I _o =100%) | | | | | | | | |
| | | 220V | 0.35 (I _o =100%) | | | | | | | | |
| | EFFICIENCY | 110V | 66 typ | | | 66 typ | | | 66 typ | | |
| | | 220V | 66 typ | | | 66 typ | | | 66 typ | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | -5 | 5 | 12 | -12 | 5 | 15 | -15 | |
| | CURRENT [A] | 0.3 ~ 3 | 1 | 0.3 | 0.3 ~ 3 | 1.2 | 0.3 | 0.3 ~ 3 | 0.8 | 0.2 | |
| | REGULATION, LINE [mV] | 25 Max | 60 Max | 25 Max | 25 Max | 60 Max | 60 Max | 25 Max | 75 Max | 75 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 120 Max | 50 Max | 50 Max | 120 Max | 120 Max | 50 Max | 150 Max | 150 Max | |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 50 Max | 50 Max | 120 Max | 120 Max | 50 Max | 150 Max | 150 Max | |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 100 Max | 100 Max | 170 Max | 170 Max | 100 Max | 200 Max | 200 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 75 Max | 75 Max | 180 Max | 180 Max | 75 Max | 225 Max | 225 Max | |
| | RISE TIME [ms] | 100 Max (AC IN 110V I _o =100%) | | | | | | | | | |
| | HOLDING TIME [ms] | 10 typ (AC IN 110V I _o =100%) | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically(CH2,3 I _o =100%) | | | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | |
| SAFETY | SAFETY REGULATION | Built to meet UL60950-1, EN60950-1 | | | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022-A | | | | | | | | | |

VSF30-TRIPLE EXTERNAL VIEW



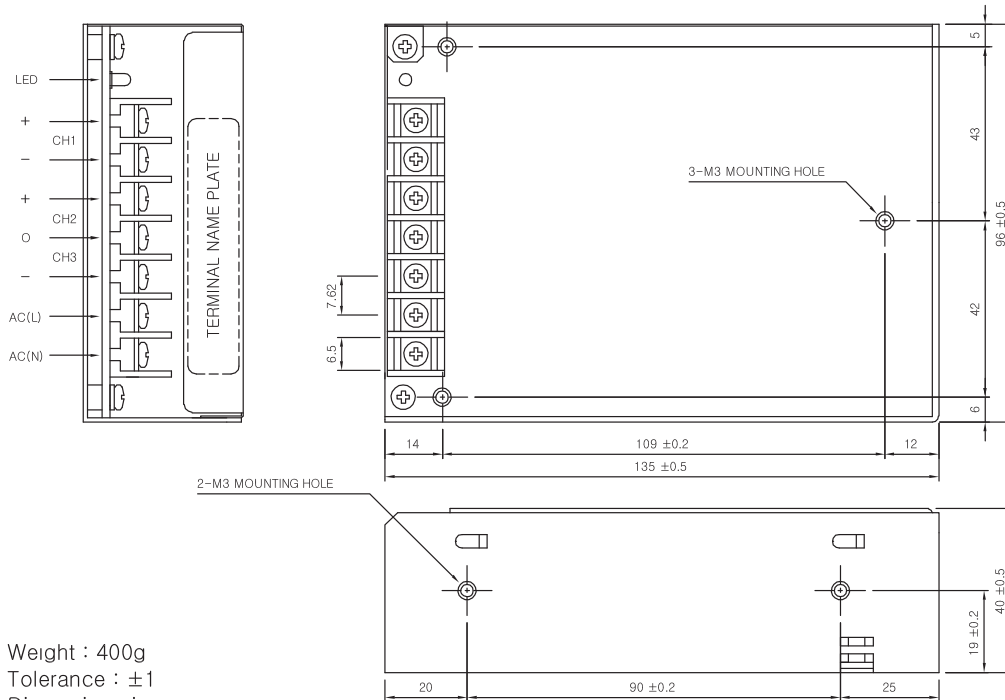
- * Weight : 400g
- * Tolerance : ±1
- * Dimensions in mm



VSF50-TRIPLE SPECIFICATIONS

| MODEL | | VSF50-BDB | | | VSF50-DD | | | VSF50-EE | | | |
|-----------------------|--------------------------------|---|--|---------|----------|---------|---------|----------|---------|---------|--|
| INPUT | VOLTAGE, FREQUENCY | | AC100-120V/200-240V (AC90 ~ 132V/180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | | | | | |
| | CURRENT | 110V | 1.2 (I _c =100%) | | | | | | | | |
| | | 220V | 0.7 (I _c =100%) | | | | | | | | |
| | EFFICIENCY (AC220V) | 110V | 77 typ | | | 77 typ | | | 77 typ | | |
| | | 220V | | | | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _c =100%), 40A typ(AC IN 220V, I _c =100%) at cold start. | | | | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | -5 | 5 | 12 | -12 | 5 | 15 | -15 | |
| | CURRENT [A] | 0.5 ~ 5 | 0 ~ 1.8 | 0 ~ 0.3 | 0.5 ~ 5 | 0 ~ 1.8 | 0 ~ 0.3 | 0.5 ~ 5 | 0 ~ 1.4 | 0 ~ 0.3 | |
| | REGULATION, LINE [mV] | 50 Max | 120 Max | 50 Max | 50 Max | 120 Max | 120 Max | 50 Max | 150 Max | 150 Max | |
| | REGULATION, LOAD [mV] | 100 Max | 240 Max | 100 Max | 100 Max | 240 Max | 240 Max | 100 Max | 300 Max | 300 Max | |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 50 Max | 50 Max | 120 Max | 120 Max | 50 Max | 150 Max | 150 Max | |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 100 Max | 100 Max | 170 Max | 170 Max | 100 Max | 200 Max | 200 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 75 Max | 75 Max | 180 Max | 180 Max | 75 Max | 225 Max | 225 Max | |
| | RISE TIME [ms] | 1000 Max (AC IN 85V / 170V I _c =100%) | | | | | | | | | |
| | HOLDING TIME [ms] | 10 typ (AC IN 85V / 170V I _c =100%) | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically(CH2,3 I _o =100%) | | | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | |
| SAFETY | SAFETY REGULATION | CE | | | CE | | | CE | | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with EN55022-A | | | | | | | | | |

VSF50-TRIPLE EXTERNAL VIEW



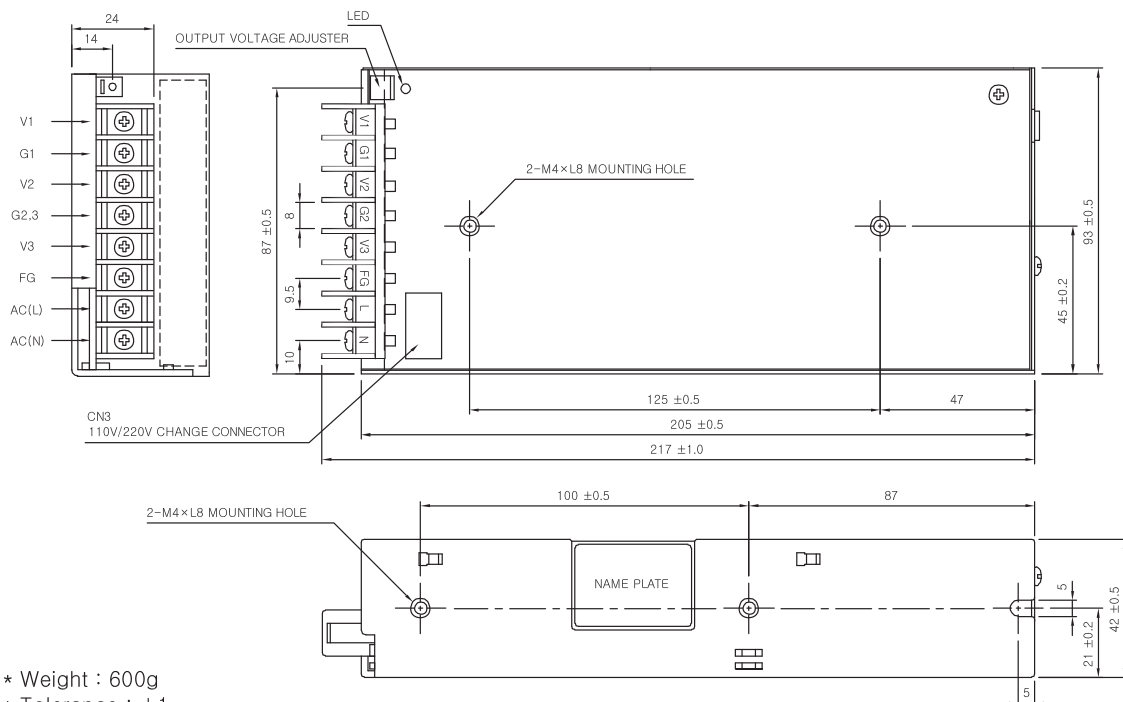
- * Weight : 400g
- * Tolerance : ±1
- * Dimensions in mm

VSF75-TRIPLE SPECIFICATIONS



| MODEL | | VSF75-BDB | VSF75-DD | | | VSF75-EE | | | | | |
|-----------------------|--------------------------------|--|----------------------------|---------|---------|----------|---------|---------|---------|---------|--|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | | | | | | |
| | CURRENT | 110V | 1.8 (I _c =100%) | | | | | | | | |
| | | 220V | 1.0 (I _c =100%) | | | | | | | | |
| | EFFICIENCY | 110V | 75 typ | | | 75 typ | | | 75 typ | | |
| 220V | | 75 typ | | | | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _c =100%), 40A typ(AC IN 220V, I _c =100%) at cold start. | | | | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | -5 | 5 | 12 | -12 | 5 | 15 | -15 | |
| | CURRENT [A] | 1.5 ~ 8 | 2.5 | 0.5 | 1.5 ~ 8 | 2.5 | 0.5 | 1.5 ~ 8 | 1.8 | 0.5 | |
| | REGULATION, LINE [mV] | 20 Max | 48 Max | 20 Max | 50 Max | 120 Max | 120 Max | 20 Max | 60 Max | 60 Max | |
| | REGULATION, LOAD [mV] | 40 Max | 100 Max | 40 Max | 100 Max | 240 Max | 240 Max | 40 Max | 120 Max | 150 Max | |
| | RIPPLE [mVp-p] | 80 Max | 120 Max | 80 Max | 80 Max | 120 Max | 120 Max | 80 Max | 150 Max | 150 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 170 Max | 120 Max | 120Max | 170 Max | 170 Max | 120 Max | 200 Max | 200 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 75 Max | 75 Max | 180 Max | 180 Max | 75 Max | 225 Max | 225 Max | |
| | RISE TIME [ms] | 1,500 Max (AC IN 110V, I _c =100%) | | | | | | | | | |
| | HOLDING TIME [ms] | 10 typ (AC IN 110V, I _c =100%) | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating (+5V) | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 50MΩ | | | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 50MΩ | | | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 50MΩ | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | |
| SAFETY | SAFETY REGULATION | - | | | CE | | | CE | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022-B | | | | | | | | | |

VSF75-TRIPLE EXTERNAL VIEW



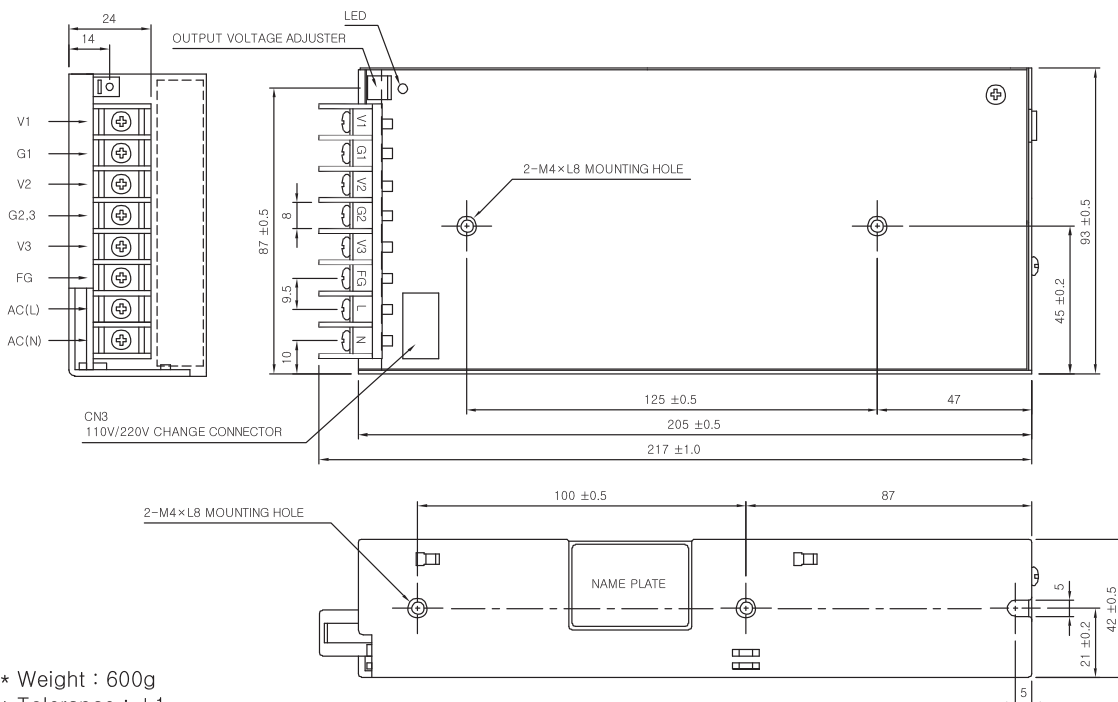
- * Weight : 600g
- * Tolerance : ±1
- * Dimensions in mm

VSF100-TRIPLE SPECIFICATIONS



| MODEL | | VSF100-BDB | | | VSF100-DD | | | VSF100-EE | | | |
|-----------------------|--------------------------------|--|----------------------------|---------|-----------|---------|---------|-----------|---------|---------|--|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | | | | | | |
| | CURRENT | 110V | 2.4 (I _o =100%) | | | | | | | | |
| | | 220V | 1.4 (I _o =100%) | | | | | | | | |
| | EFFICIENCY | 110V | 75 typ | | | 75 typ | | | 75 typ | | |
| | | 220V | 75 typ | | | 75 typ | | | 75 typ | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | -5 | 5 | 12 | -12 | 5 | 15 | -15 | |
| | CURRENT [A] | 1.5 ~ 13 | 2 | 1 | 1.5 ~ 13 | 2 | 1 | 1.5 ~ 13 | 1.5 | 1 | |
| | REGULATION, LINE [mV] | 20 Max | 48 Max | 20 Max | 20 Max | 48 Max | 48 Max | 20 Max | 60 Max | 60 Max | |
| | REGULATION, LOAD [mV] | 40 Max | 100 Max | 40 Max | 40 Max | 100 Max | 150 Max | 40 Max | 120 Max | 150 Max | |
| | RIPPLE [mVp-p] | 80 Max | 120 Max | 80 Max | 80 Max | 120 Max | 120 Max | 80 Max | 150 Max | 150 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 170 Max | 120 Max | 120 Max | 170 Max | 170 Max | 120 Max | 200 Max | 200 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 75 Max | 75 Max | 180 Max | 180 Max | 75 Max | 225 Max | 225 Max | |
| | RISE TIME [ms] | 1000 Max (AC IN 110V, I _o =100%) | | | | | | | | | |
| | HOLDING TIME [ms] | 10 typ (AC IN 110V, I _o =100%) | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating (CH1) | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 50MΩ | | | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 50MΩ | | | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 50MΩ | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | |
| SAFETY | SAFETY REGULATION | - | | | CE | | | CE | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022-B | | | | | | | | | |

VSF100-TRIPLE EXTERNAL VIEW



- * Weight : 600g
- * Tolerance : ±1
- * Dimensions in mm

For the Switching Model Power Supply

Switching Mode Power Supply



ORIENT

ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

| | |
|----------------------|------------|
| 1. FDR SERIES | 20 |
| 2. JSF SERIES | 30 |
| 3. HSF SERIES | 42 |
| 4. LSP SERIES | 50 |
| 5. CSF SERIES | 58 |
| 6. PSF SERIES | 80 |
| 7. VSF SERIES | 88 |
| 8. ESF SERIES | 112 |
| 9. MSF SERIES | 134 |
| 10. MP SERIES | 162 |



c  us  

ORDERING INFORMATION

ESF15-3R3



Series name

Total output wattage

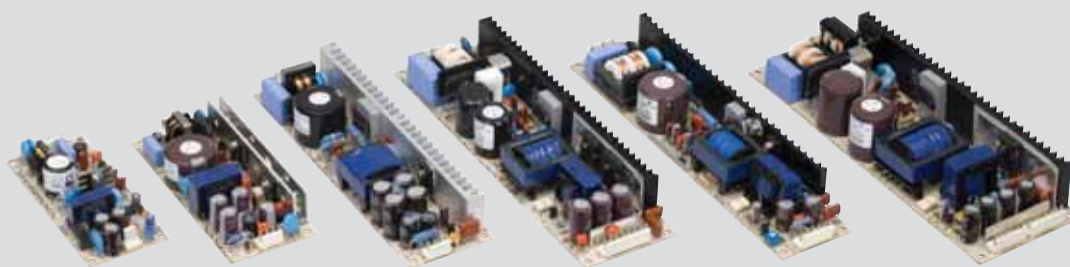
Output voltage combination(ex.3.3V)

Option

None : None case type

B : Bottom, Top case type

- Low cost
- Built-in inrush current protection
- Short circuit protection
- Over voltage protection
- Non-casing type
(only ESFL/H100-S is case type)
- 2 years warranty

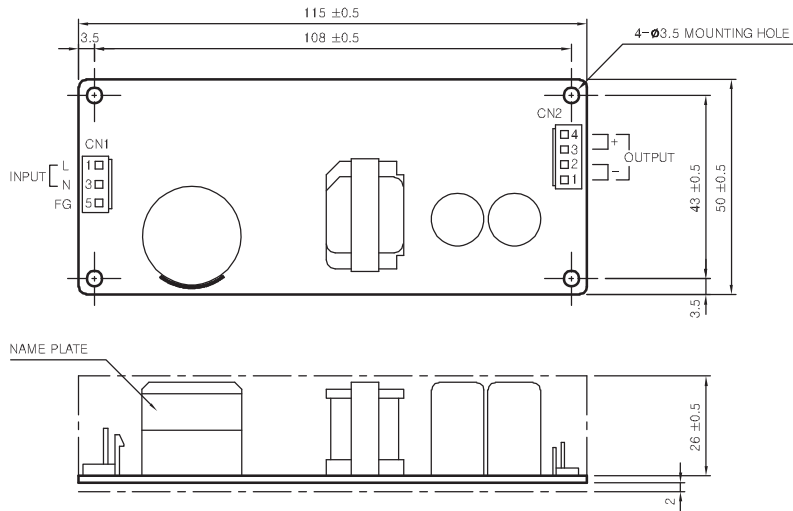


ESF15-S SPECIFICATIONS



| MODEL | | ESF15-3R3 | ESF15-05 | ESF15-09 | ESF15-12 | ESF15-15 | ESF15-24 |
|-----------------------|---|---|-----------------------------|--------------|--------------|--------------|--------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input | | | | | |
| | CURRENT | 110V | 0.37 (I _c =100%) | | | | |
| | | 220V | | | | | |
| | EFFICIENCY | 110V | 72 typ | 72 typ | 75 typ | 75 typ | 76 typ |
| 220V | | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _c =100%), 40A typ(AC IN 220V, I _c =100%) at cold start. | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 |
| | CURRENT [A] | 3 | 3 | 1.6 | 1.2 | 1 | 0.6 |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE [mVp-p] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 100 Max | 135 Max | 180 Max | 225 Max | 290 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 49.5 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max |
| | RISE TIME [ms] | 500 Max (AC IN 85V I _c =100%) | | | | | |
| HOLDING TIME [ms] | 10 typ (AC IN 85V I _c =100%) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works over 110% of rating and recovers automatically | | | | | |
| | OVER VOLTAGE PROTECTION | - | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +60°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE |
| | LINE CONDUCTED RF VOLTAGE | - | | | | | |

ESF15-S EXTERNAL VIEW



- * Weight : 200g
- * Tolerance : ± 1
- * PCB t=1.6
- * Dimensions in mm

| | | |
|-----|------|----------|
| CN1 | 1 | AC (L) |
| | 3 | AC (N) |
| | 5 | FG |
| CN2 | 1, 2 | OUTPUT - |
| | 3, 4 | OUTPUT + |

| | I/O Connector | Mating Connector | Terminal | Manufacturer |
|-----|---------------|------------------|----------|--------------|
| CN1 | YW396-05V | YH396-05V | YT396 | 연흥전자 |
| CN2 | 5045-04A | 5051-04 | 4809 | MOLEX |

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

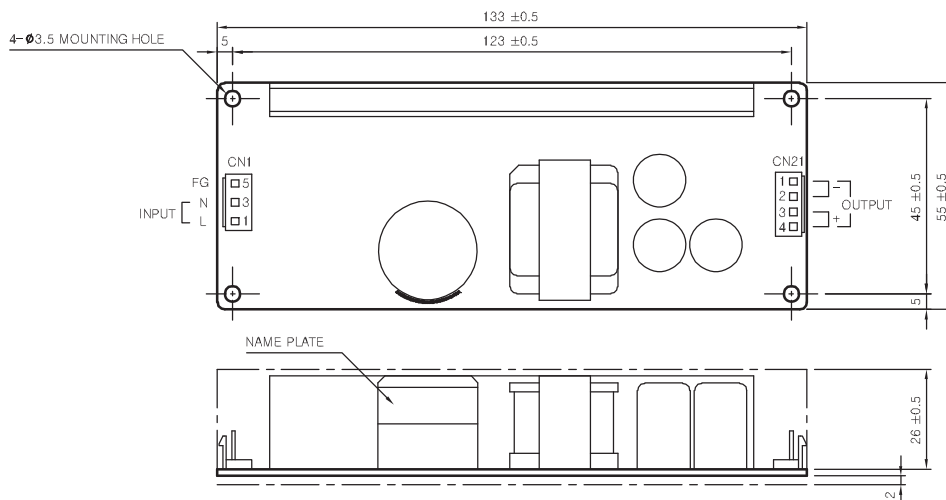
Power Module

Discrete Semiconductors

ESF30-S SPECIFICATIONS

| MODEL | | ESF30-05 | ESF30-09 | ESF30-12 | ESF30-15 | ESF30-24 |
|-----------------------|--------------------------------|---|-----------------------------|----------|----------|----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input | | | | |
| | CURRENT | 110V | 0.65 (I _b =100%) | | | |
| | | 220V | 0.35 (I _b =100%) | | | |
| | EFFICIENCY | 110V | 70 typ | 71 typ | 72 typ | 73 typ |
| 220V | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _b =100%), 40A typ(AC IN 220V, I _b =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 9 | 12 | 15 | 24 |
| | CURRENT [A] | 6 | 3.3 | 2.5 | 2 | 1.3 |
| | REGULATION, LINE [mV] | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max |
| | REGULATION, LOAD [mV] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE [mVp-p] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 140 Max | 170 Max | 200 Max | 290 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max |
| | RISE TIME [ms] | 100 Max (AC IN 85V I _b =100%) | | | | |
| | HOLDING TIME [ms] | 10 typ (AC IN 85V I _b =100%) | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | - | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10°C ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | - | | | | |
| | LINE CONDUCTED RF VOLTAGE | - | | | | |

ESF30-S EXTERNAL VIEW



- * Weight : 300g
- * Tolerance : ±1
- * PCB t=1.6
- * Dimensions in mm

| | | |
|------|------|----------|
| CN1 | 1 | AC (L) |
| | 3 | AC (N) |
| | 5 | FG |
| CN21 | 1, 2 | OUTPUT - |
| | 3, 4 | OUTPUT + |

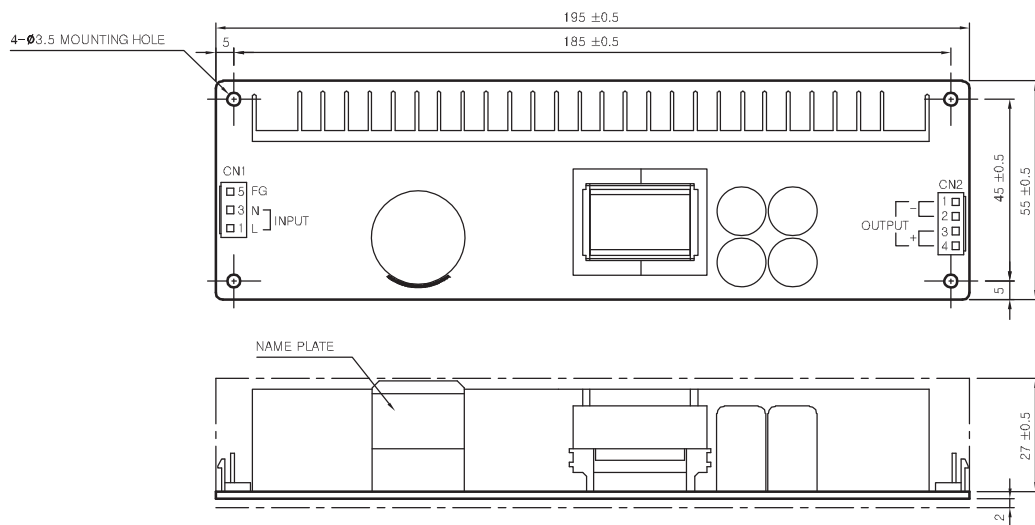
| | I/O Connector | Mating Connector | Terminal | Manufacturer |
|------|---------------|------------------|----------|--------------|
| CN1 | YW396-05V | YH396-05V | YT396 | 연호전자 |
| CN21 | YW396-04V | YH396-04V | YT396 | 연호전자 |

ESF50-S SPECIFICATIONS



| MODEL | | ESF50-3R3 | ESF50-05 | ESF50-09 | ESF50-12 | ESF50-15 | ESF50-24 |
|-----------------------|--------------------------------|---|-----------------------------|------------|------------|------------|------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input | | | | | |
| | CURRENT | 110V | 1.3A (I _o =100%) | | | | |
| | | 220V | 1.3A (I _o =100%) | | | | |
| | EFFICIENCY | 110V | 70 typ | 70 typ | 72 typ | 76 typ | 77 typ |
| 220V | | 70 typ | 70 typ | 72 typ | 76 typ | 77 typ | 80 typ |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 |
| | CURRENT [A] | 0.2~10 | 10 | 5 | 4.2 | 3.3 | 2.1 |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE [mVp-p] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 100 Max | 140 Max | 170 Max | 200 Max | 290 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max |
| | RISE TIME [ms] | 1500 Max (AC IN 110V/220V, I _o =100%) | | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 110V/220V, I _o =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Short circuit protection. Avoid operation in overload for more than 30sec | | | | | |
| | OVER VOLTAGE PROTECTION | Works at over 110% of rating and recovers automatically | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 50MΩ (At room temperature & Humidity) | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 50MΩ (At room temperature & Humidity) | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 50MΩ (At room temperature & Humidity) | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | |
| SAFETY | SAFETY REGULATION | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15, VCCI-A, CISPR22-A, EN55022-A | | | | | |

ESF50-S EXTERNAL VIEW



- * Weight : 450g
- * Tolerance : ±1
- * PCB t=1.6
- * Dimensions in mm

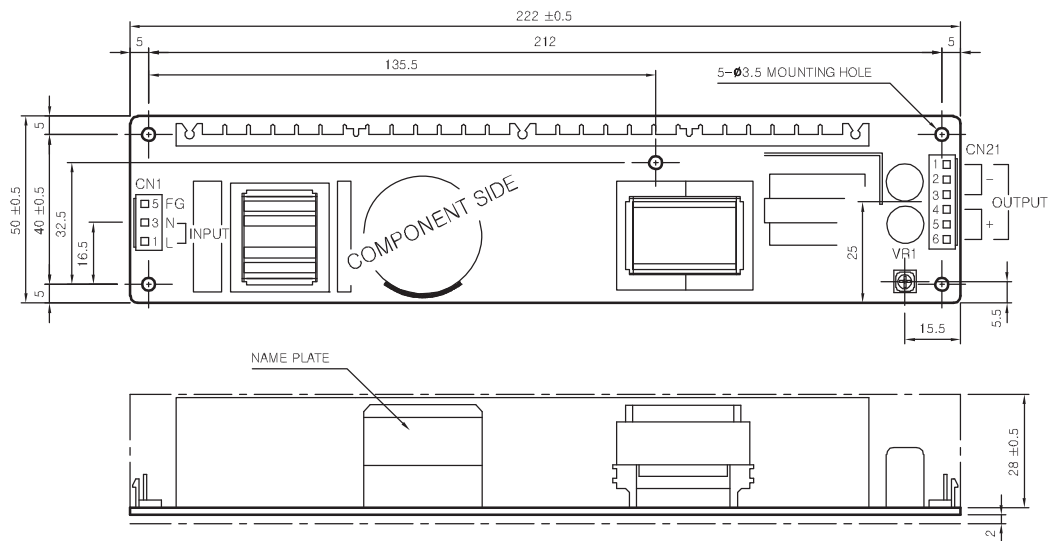
| CN1 | 1 | AC (L) |
|-----|------|----------|
| | 3 | AC (N) |
| | 5 | FG |
| CN2 | 1, 2 | OUTPUT - |
| | 3, 4 | OUTPUT + |

| | I/O Connector | Mating Connector | Terminal | Manufacturer |
|-----|---------------|------------------|----------|--------------|
| CN1 | YW396-05V | YH396-05V | YT396 | 연흥전자 |
| CN2 | YW396-04V | YH396-04V | YT396 | 연흥전자 |

ESFL75-S SPECIFICATIONS

| MODEL | | ESFL75-05 | ESFL75-12 | ESFL75-15 | ESFL75-24 | ESFL75-36 | ESFL75-48 |
|-----------------------|--------------------------------|---|-----------|-----------|-----------|-----------|-----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V (AC85 ~ 132V or DC120 ~ 186V), 50/60Hz (47 ~ 440Hz) | | | | | |
| | CURRENT [A] 110V | 2.0 (I ₀ =100%) | | | | | |
| | EFFICIENCY [%] 110V | 75 typ | 75 typ | 75 typ | 75 typ | 75 typ | 75 typ |
| | INRUSH CURRENT | 20A typ (AC IN 110V, I ₀ =100%) | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 15 | 24 | 36 | 48 |
| | CURRENT [A] | 15 | 6.3 | 5 | 3.2 | 2.1 | 1.6 |
| | REGULATION, LINE [mV] | 25 Max | 60 Max | 75 Max | 120 Max | 180 Max | 240 Max |
| | REGULATION, LOAD [mV] | 50 Max | 120 Max | 150 Max | 240 Max | 360 Max | 480 Max |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 150 Max | 240 Max | 360 Max | 480 Max |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 170 Max | 200 Max | 290 Max | 410 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 225 Max | 360 Max | 540 Max | 720 Max |
| | RISE TIME [ms] | 500 Max (AC IN 110V, I ₀ =100%) | | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 110V I ₀ =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115~140% of rating | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | |
| SAFETY | SAFETY REGULATION | Built to meet UL60950-1, EN60950-1 | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022-A | | | | | |

ESFL75-S EXTERNAL VIEW



- * Weight : 350g
- * Tolerance : ±1
- * PCB t=1.6
- * Dimensions in mm

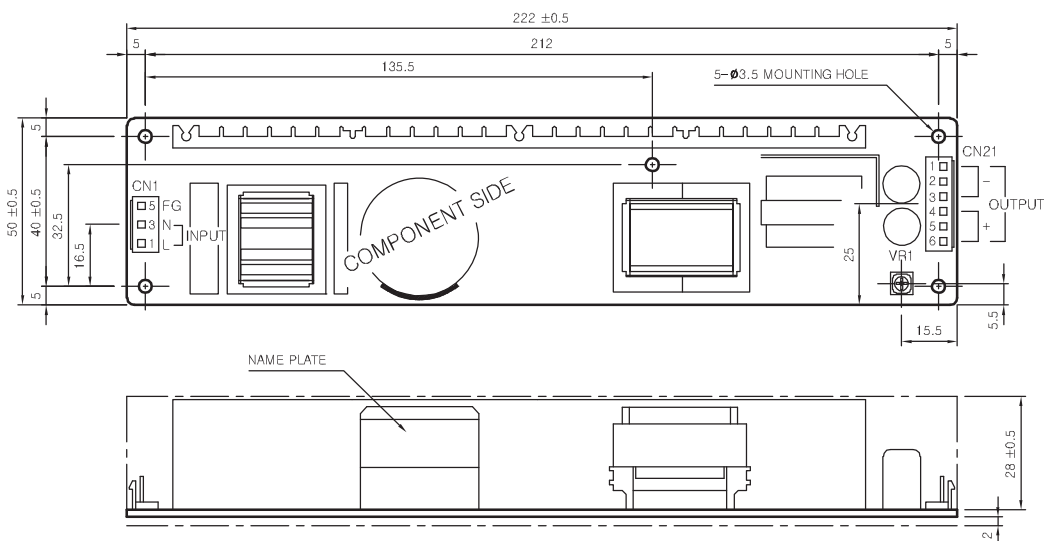
| | | |
|------|---------|----------|
| CN1 | 1 | AC (L) |
| | 3 | AC (N) |
| | 5 | FG |
| CN21 | 1, 2, 3 | OUTPUT - |
| | 4, 5, 6 | OUTPUT + |

| | I/O Connector | Mating Connector | Terminal | Manufacturer |
|------|---------------|------------------|----------|--------------|
| CN1 | YW396-05V | YH396-05V | YT396 | 연흥전자 |
| CN21 | YW396-06V | YH396-06V | YT396 | 연흥전자 |

ESFH75-S SPECIFICATIONS

| MODEL | | ESFH75-05 | ESFH75-12 | ESFH75-15 | ESFH75-24 | ESFH75-36 | ESFH75-48 | |
|-----------------------|--------------------------------|---|-----------|-----------|-----------|-----------|-----------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC200-240V (AC170 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) | | | | | | |
| | CURRENT [A] | 220V | 200V~1.2A | | | | | |
| | EFFICIENCY [%] | 220V | 75 typ | 75 typ | 75 typ | 75 typ | 75 typ | 75 typ |
| | INRUSH CURRENT | 40A typ (AC IN 220V, I _o =100%) | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 15 | 24 | 36 | 48 | |
| | CURRENT [A] | 15 | 6.3 | 5 | 3.2 | 2.1 | 1.6 | |
| | REGULATION, LINE [mV] | 25 Max | 60 Max | 75 Max | 120 Max | 180 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 120 Max | 150 Max | 240 Max | 360 Max | 480 Max | |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 150 Max | 240 Max | 360 Max | 480 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 170 Max | 200 Max | 290 Max | 410 Max | 530 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 225 Max | 360 Max | 540 Max | 720 Max | |
| | RISE TIME [ms] | 500 Max (AC IN 220V I _o =100%) | | | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 220V I _o =100%) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115~140% of rating | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | |
| SAFETY | SAFETY REGULATION | Built to meet UL60950-1, EN60950-1 | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN55022-A | | | | | | |

ESFH75-S EXTERNAL VIEW



- * Weight : 350g
- * Tolerance : ± 1
- * PCB t=1.6
- * Dimensions in mm

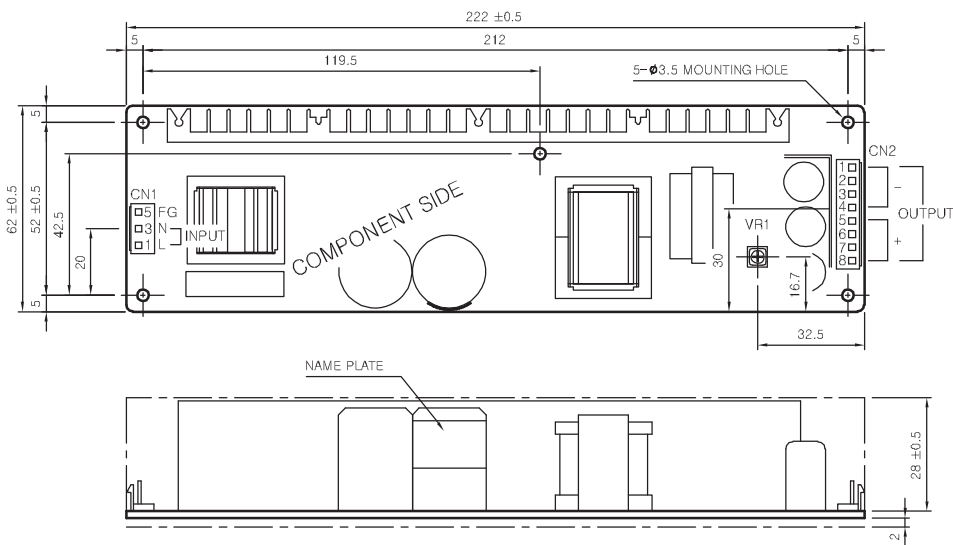
| | | |
|------|---------|----------|
| CN1 | 1 | AC (L) |
| | 3 | AC (N) |
| | 5 | FG |
| CN21 | 1, 2, 3 | OUTPUT - |
| | 4, 5, 6 | OUTPUT + |

| | I/O Connector | Mating Connector | Terminal | Manufacturer |
|------|---------------|------------------|----------|--------------|
| CN1 | YW396-05V | YH396-05V | YT396 | 연흥전자 |
| CN21 | YW396-06V | YH396-06V | YT396 | 연흥전자 |

ESFL100-S SPECIFICATIONS

| | MODEL | ESFL100-3R3 | ESFL100-05 | ESFL100-12 | ESFL100-15 | ESFL100-24 | ESFL100-36 | ESFL100-48 | |
|-----------------------|--|---|------------|------------|------------|------------|------------|------------|--|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V (AC85 ~ 132V or DC120 ~ 186V), 50/60Hz (47 ~ 440Hz) | | | | | | | |
| | CURRENT [A] | 110V 2.2A (I ₀ =100%) | | | | | | | |
| | EFFICIENCY [%] | 74 typ | 79 typ | 80 typ | 80 typ | 81 typ | 81 typ | 81 typ | |
| | INRUSH CURRENT | 20A typ (AC IN 110V, I ₀ =100%) | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 12 | 15 | 24 | 36 | 48 | |
| | CURRENT [A] | 20 | 20 | 8.5 | 7 | 4.3 | 3 | 2.2 | |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 60 Max | 75 Max | 120 Max | 180 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 120 Max | 150 Max | 240 Max | 360 Max | 480 Max | |
| | RIPPLE [mVp-p] | 50 Max | 50 Max | 120 Max | 150 Max | 240 Max | 360 Max | 480 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 170 Max | 200 Max | 290 Max | 410 Max | 530 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 180 Max | 225 Max | 360 Max | 540 Max | 720 Max | |
| | RISE TIME [ms] | 1,000 Max (AC IN 110V I ₀ =100%) | | | | | | | |
| HOLDING TIME [ms] | 17 typ (AC IN 110V I ₀ =100%) | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115~140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | - | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | - | | | | | | | |

ESFL100-S EXTERNAL VIEW



- * Weight : 420g
- * Tolerance : ±1
- * PCB t=1.6
- * Dimensions in mm

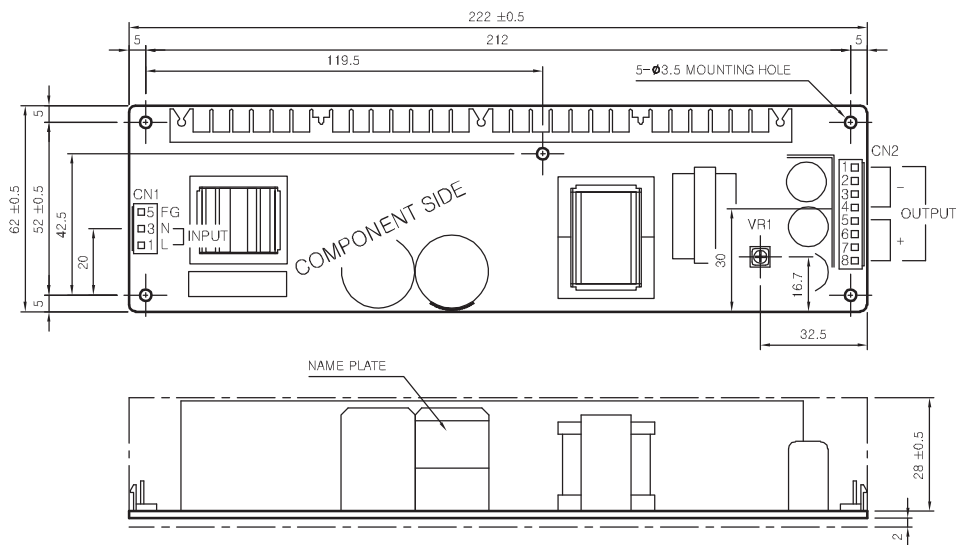
| | | |
|-----|------------|----------|
| CN1 | 1 | AC (L) |
| | 3 | AC (N) |
| | 5 | FG |
| CN2 | 1, 2, 3, 4 | OUTPUT - |
| | 5, 6, 7, 8 | OUTPUT + |

| | I/O Connector | Mating Connector | Terminal | Manufacturer |
|-----|---------------|------------------|----------|--------------|
| CN1 | YW396-05V | YH396-05V | YT396 | 연흥전자 |
| CN2 | YW396-08V | YH396-08V | YT396 | 연흥전자 |

ESFH100-S SPECIFICATIONS

| MODEL | | ESFH100-3R3 | ESFH100-05 | ESFH100-12 | ESFH100-15 | ESFH100-24 | ESFH100-36 | ESFH100-48 | |
|-----------------------|--------------------------------|---|------------|------------|------------|------------|------------|------------|--|
| INPUT | VOLTAGE, FREQUENCY | AC200-240V (AC170 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) | | | | | | | |
| | CURRENT [A] 220V | 1.4 (I _o =100%) | | | | | | | |
| | EFFICIENCY [%] 220V | 74 typ | 79 typ | 80 typ | 80 typ | 81 typ | 81 typ | 81 typ | |
| | INRUSH CURRENT | 40A typ (AC IN 220V, I _o =100%) | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 12 | 15 | 24 | 36 | 48 | |
| | CURRENT [A] | 20 | 20 | 8.5 | 7 | 4.3 | 3 | 2.2 | |
| | REGULATION, LINE [mV] | 25Max | 25 Max | 60 Max | 75 Max | 120 Max | 180 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 50Max | 50 Max | 120 Max | 150 Max | 240 Max | 360 Max | 480 Max | |
| | RIPPLE [mVp-p] | 50Max | 50 Max | 120 Max | 150 Max | 240 Max | 360 Max | 480 Max | |
| | RIPPLE, NOISE [mVp-p] | 120Max | 120 Max | 170 Max | 200 Max | 290 Max | 410 Max | 530 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50Max | 75 Max | 180 Max | 225 Max | 360 Max | 540 Max | 720 Max | |
| | RISE TIME [ms] | 1,000 Max (AC IN 220V I _o =100%) | | | | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 220V I _o =100%) | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | - | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | - | | | | | | | |

ESFH100-S EXTERNAL VIEW



| CN1 | 1 | AC (L) |
|-----|------------|----------|
| | 3 | AC (N) |
| 5 | FG | |
| CN2 | 1, 2, 3, 4 | OUTPUT - |
| | 5, 6, 7, 8 | OUTPUT + |

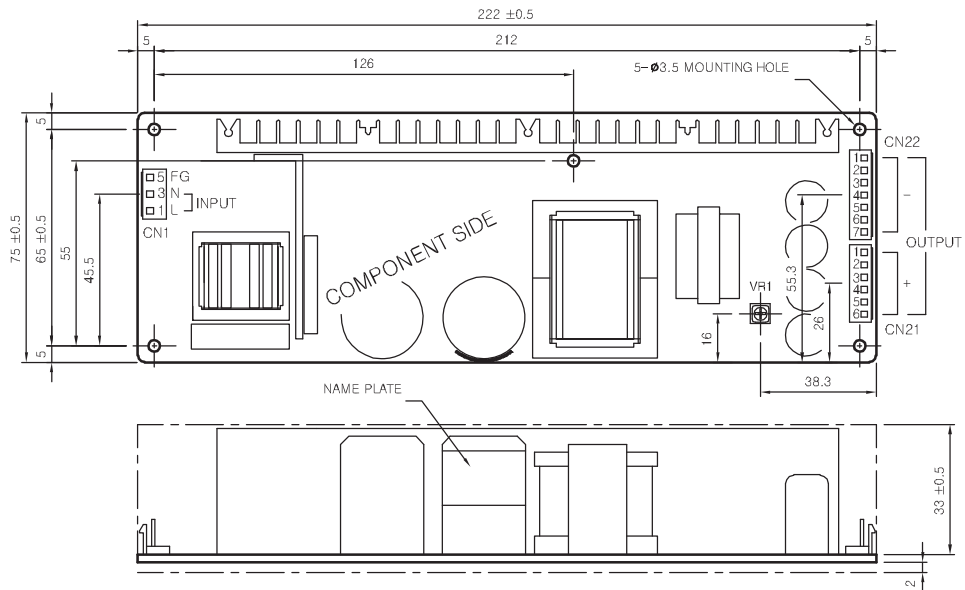
| | I/O Connector | Mating Connector | Terminal | Manufacturer |
|-----|---------------|------------------|----------|--------------|
| CN1 | YW396-05V | YH396-05V | YT396 | 연흥전자 |
| CN2 | YW396-08V | YH396-08V | YT396 | 연흥전자 |

- * Weight : 420g
- * Tolerance : ±1
- * PCB t=1.6
- * Dimensions in mm

ESFL150-S SPECIFICATIONS

| MODEL | | | ESFL150-3R3 | ESFL150-05 | ESFL150-12 | ESFL150-15 | ESFL150-24 | ESFL150-36 | ESFL150-48 |
|-----------------------|--|---|---|------------|------------|------------|------------|------------|------------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-120V (AC85 ~ 132V or DC120 ~ 186V), 50/60Hz (47 ~ 440Hz) | | | | | | |
| | CURRENT [A] | 110V | 3.2 (I _o =100%) | | | | | | |
| | EFFICIENCY [%] | 110V | 75 typ | 75 typ | 75 typ | 75 typ | 75 typ | 75 typ | 75 typ |
| | INRUSH CURRENT | | 20A typ (ACIN 110V, I _o =100%) | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 12 | 15 | 24 | 36 | 48 | |
| | CURRENT [A] | 30 | 30 | 12.5 | 10 | 6.3 | 4.2 | 3.2 | |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 60 Max | 75 Max | 120 Max | 180 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 120 Max | 150 Max | 240 Max | 360 Max | 480 Max | |
| | RIPPLE [mVp-p] | 100 Max | 100 Max | 120 Max | 150 Max | 240 Max | 360 Max | 480 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 170 Max | 200 Max | 290 Max | 410 Max | 530 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 180 Max | 225 Max | 360 Max | 540 Max | 720 Max | |
| | RISE TIME [ms] | 1,000 Max (AC IN 110V I _o =100%) | | | | | | | |
| HOLDING TIME [ms] | 16 typ (AC IN 110V I _o =100%) | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | | Works at over 110% of rating and recovers automatically | | | | | | |
| | OVER VOLTAGE PROTECTION | | Works at over 115% of rating | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | INPUT-CASE, FG | | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | OUTPUT-CASE, FG | | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | | | |
| | STORAGE TEMPAND HUMID | | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | |
| | VIBRATION | | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | |
| | IMPACT | | 10G for 20ms once on each X, Y and Z axis | | | | | | |
| SAFETY | SAFETY REGULATION | | Built to meet UL | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | | - | | | | | | |

ESFL150-S EXTERNAL VIEW



| CN1 | 1 | AC (L) |
|------|---------------------|----------|
| | 3 | AC (N) |
| | 5 | FG |
| CN21 | 1, 2, 3, 4, 5, 6 | OUTPUT + |
| CN22 | 1, 2, 3, 4, 5, 6, 7 | OUTPUT - |

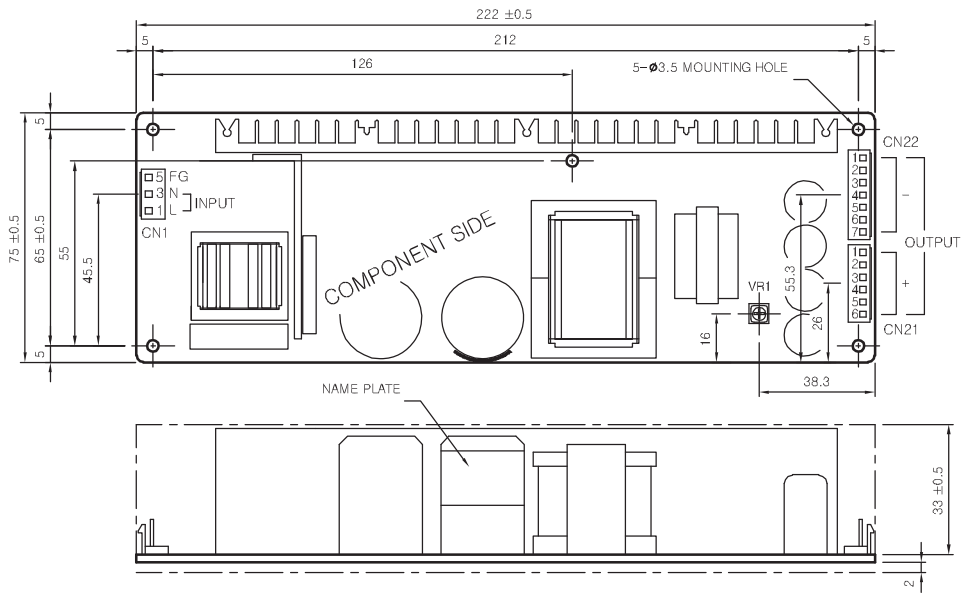
| | I/O Connector | Mating Connector | Terminal | Manufacturer |
|------|---------------|------------------|----------|--------------|
| CN1 | YW396-05V | YH396-05V | YT396 | 연호전자 |
| CN21 | YW396-06V | YH396-06V | YT396 | 연호전자 |
| CN22 | YW396-07V | YH396-07V | YT396 | 연호전자 |

- * Weight : 550g
- * Tolerance : ±1
- * PCB t=1.6
- * Dimensions in mm

ESFH150-S SPECIFICATIONS

| MODEL | | ESFH150-3R3 | ESFH150-05 | ESFH150-12 | ESFH150-15 | ESFH150-24 | ESFH150-36 | ESFH150-48 | |
|-----------------------|--------------------------------|---|------------|------------|------------|------------|------------|------------|--|
| INPUT | VOLTAGE, FREQUENCY | AC200-240V (AC170 ~ 264V or DC240 ~370V), 50/60Hz (47 ~ 440Hz) | | | | | | | |
| | CURRENT [A] | 220V 2.0 (I _o =100%) | | | | | | | |
| | EFFICIENCY [%] | 220V 75 typ 75 typ 75 typ 75 typ 75 typ 75 typ 75 typ | | | | | | | |
| | INRUSH CURRENT | 40A typ (AC IN 220V, I _o =100%) | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 12 | 15 | 24 | 36 | 48 | |
| | CURRENT [A] | 30 | 30 | 12.5 | 10 | 6.3 | 4.2 | 3.2 | |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 60 Max | 75 Max | 120 Max | 180 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 120 Max | 150 Max | 240 Max | 360 Max | 480 Max | |
| | RIPPLE [mVp-p] | 100 Max | 100 Max | 120 Max | 150 Max | 240 Max | 360 Max | 480 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 170 Max | 200 Max | 290 Max | 410 Max | 530 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 180 Max | 225 Max | 360 Max | 540 Max | 720 Max | |
| | RISE TIME [ms] | 1,000 Max (AC IN 220V I _o =100%) | | | | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 220V I _o =100%) | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at over 115% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes periods, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | - | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | - | | | | | | | |

ESFH150-S EXTERNAL VIEW



| CN1 | 1 | AC (L) |
|------|---------------------|----------|
| | 3 | AC (N) |
| | 5 | FG |
| CN21 | 1, 2, 3, 4, 5, 6 | OUTPUT + |
| | 1, 2, 3, 4, 5, 6, 7 | OUTPUT - |

| | I/O Connector | Mating Connector | Terminal | Manufacturer |
|------|---------------|------------------|----------|--------------|
| CN1 | YW396-05V | YH396-05V | YT396 | 연호전자 |
| CN21 | YW396-06V | YH396-06V | YT396 | 연호전자 |
| CN22 | YW396-07V | YH396-07V | YT396 | 연호전자 |

- * Weight : 550g
- * Tolerance : ±1
- * PCB t=1.6
- * Dimensions in mm

ORDERING INFORMATION

ESF100-05

Series name

Total output wattage

Output voltage combination

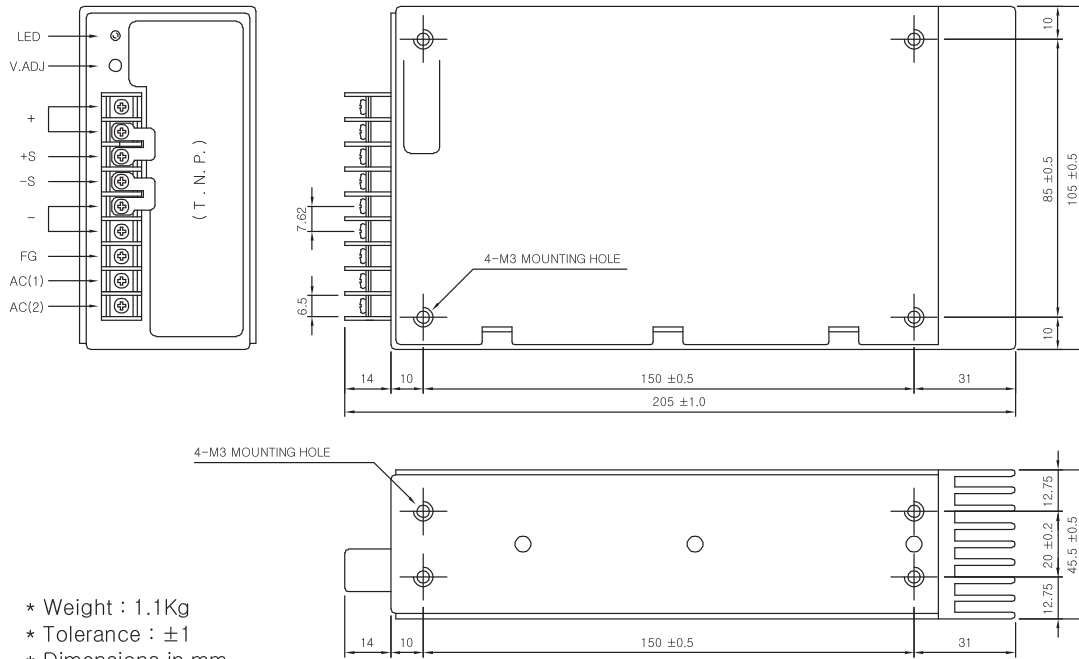
- Built-in inrush current protection
- Over voltage protection
- Over current protection
- Remote sensing
- 2 years warranty



ESF100-S, 150-S SPECIFICATIONS

| MODEL | | ESF100-05 | ESF150-09 | ESF150-12 | ESF150-15 | ESF150-24 |
|-----------------------|--|--|----------------------------|-----------|-----------|-----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | |
| | CURRENT | 110V | 2.2 (I _c =100%) | | | |
| | | 220V | 1.2 (I _c =100%) | | | |
| | EFFICIENCY | 110V | 70 typ | 75 typ | 75 typ | 75 typ |
| 220V | | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _c =100%), 40A typ(AC IN 220V, I _c =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 9 | 12 | 15 | 24 |
| | CURRENT [A] | 20 | 16.5 | 12 | 10 | 6 |
| | REGULATION, LINE [mV] | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max |
| | REGULATION, LOAD [mV] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE [mVp-p] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 140 Max | 170 Max | 170 Max | 290 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RISE TIME [ms] | 600 Max (AC IN 90V/180V I _c =100%) | | | | |
| HOLDING TIME [ms] | 10 typ (AC IN 90V/180V I _c =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 10mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | Built to meet UL 60950-1, EN 60950-1 | | | | |
| | LINE CONDUCTED RF VOLTAGE | Built to meet EN 55022-1 | | | | |

ESF100-S, 150-S EXTERNAL VIEW



- * Weight : 1.1Kg
- * Tolerance : ±1
- * Dimensions in mm

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

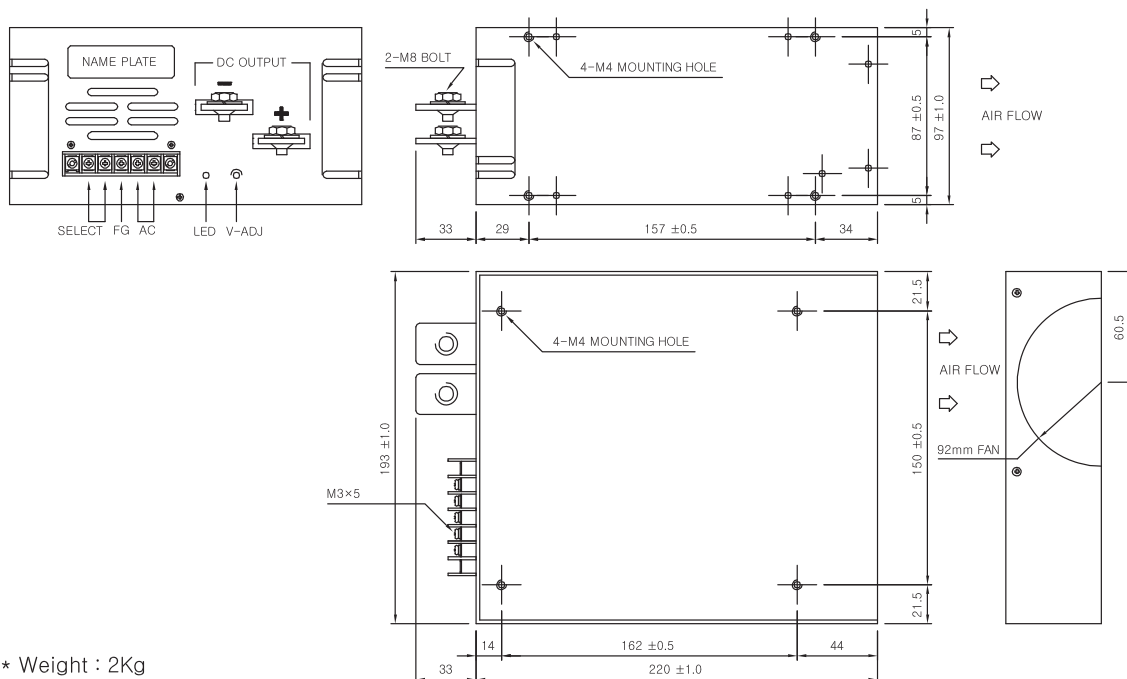
Power Module

Discrete Semiconductors

ESF600-S SPECIFICATIONS

| MODEL | | ESF600-3R3 | ESF600-05 | ESF600-09 | ESF600-12 | ESF600-15 | ESF600-24 | ESF600-48 |
|-----------------------|--------------------------------|--|----------------------------|-----------|-----------|-----------|-----------|-----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200~240V (AC90 ~ 132V / 180 ~ 264V or DC260 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | | | |
| | CURRENT [A] | 110V | 8.5 (I _o =100%) | | | | | |
| | | 220V | 5.2 (I _o =100%) | | | | | |
| | EFFICIENCY [%] | 110V | 70 typ | 75 typ | 78 typ | 82 typ | 83 typ | 85 typ |
| 220V | | | | | | | | |
| INRUSH CURRENT | | 30A typ(AC IN 110V, I _o =100%), 60A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 120 | 120 | 67 | 50 | 40 | 25 | 13 |
| | REGULATION, LINE [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | REGULATION, LOAD [mV] | 150 Max | 150 Max | 180 Max | 240 Max | 300 Max | 480 Max | 960 Max |
| | RIPPLE [mVp-p] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 100 Max | 140 Max | 170 Max | 200 Max | 290 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max |
| | RISE TIME [ms] | 500 Max (AC IN 110V/220V I _o =100%) | | | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 110V/220V I _o =100%) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating (In the case of 3.3V, it is 115~160%) | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | |
| SAFETY | SAFETY REGULATION | - | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | - | | | | | | |

ESF600-S EXTERNAL VIEW



- * Weight : 2Kg
- * Tolerance : ±1
- * Dimensions in mm

ESF850-S SPECIFICATIONS

| | MODEL | ESF850-3R3 | ESF850-05 | ESF850-09 | ESF850-12 | ESF850-15 | ESF850-24 | ESF850-48 | |
|-----------------------|--------------------------------|--|-----------------------------|-----------|-----------|-----------|-----------|-----------|-----------------------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | | | | |
| | CURRENT [A] | 110V | 14.0 (I _c =100%) | | | | | | 18.0 (I _c =100%) |
| | | 220V | 7.0 (I _c =100%) | | | | | | 9.0 (I _c =100%) |
| | EFFICIENCY [%] | 110V | 70 typ | 78 typ | 80 typ | 81 typ | 81 typ | 83 typ | 85 typ |
| 220V | | | | | | | | | |
| INRUSH CURRENT | | 30A typ(AC IN 110V, I _c =100%), 60A typ(AC IN 220V, I _c =100%) at cold start. | | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 | |
| | CURRENT [A] | 170 | 170 | 95 | 71 | 57 | 35.5 | 18 | |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max | |
| | RIPPLE [mVp-p] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max | |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 100 Max | 140 Max | 170 Max | 200 Max | 290 Max | 530 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 780 Max | |
| | RISE TIME [ms] | 800 Max (AC IN 110V/220V I _c =100%) | | | | | | | |
| | HOLDING TIME [ms] | 17 typ (AC IN 110V/220V I _c =100%) | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | - | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | - | | | | | | | |

ESF850A-S SPECIFICATIONS

| | MODEL | ESF850A-05 | ESF850A-12 | ESF850A-15 | ESF850A-24 | ESF850A-48 |
|-----------------------|---|--|-----------------------------|------------|------------|------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC255 ~ 370V), 50/60Hz (44~440Hz) User Selectable | | | | |
| | CURRENT [A] | 110V | 18.0 (I _c =100%) | | | |
| | | 220V | 9.0 (I _c =100%) | | | |
| | EFFICIENCY [%] | 110V | 78 typ | 81 typ | 81 typ | 83 typ |
| 220V | | | | | | |
| INRUSH CURRENT | | 30A typ(AC IN 110V, I _c =100%), 60A typ(AC IN 220V, I _c =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 170 | 71 | 57 | 36 | 18 |
| | REGULATION, LINE [mV] | 25 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 100 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE [mVp-p] | 100 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE, NOISE [mVp-p] | 150 Max | 170 Max | 190 Max | 290 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 120 Max | 150 Max | 240 Max | 430 Max |
| | RISE TIME [ms] | 800 Max (AC IN 110V/220V I _c =100%) | | | | |
| HOLDING TIME [ms] | 10 typ (AC IN 110V/220V I _c =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating Protection type: Shut down o/p voltage, re-power on to recover | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | - | | | | |
| | LINE CONDUCTED RF VOLTAGE | - | | | | |

ESF1000-S SPECIFICATIONS

| | | MODEL | ESF1000-3R3 | ESF1000-05 | ESF1000-09 | ESF1000-12 | |
|-------------------------|---------------------------|---|--|---|-----------------------------|------------|--------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | |
| | CURRENT | [A] | 110V | 16.0 (I _o =100%) | 22.0 (I _o =100%) | | |
| | | | 220V | 8.0 (I _o =100%) | 11.0 (I _o =100%) | | |
| | EFFICIENCY | [%] | 110V | 70 typ | 78 typ | 80 typ | 81 typ |
| | | | 220V | | | | |
| INRUSH CURRENT | | 30A typ(AC IN 110V, I _o =100%), 60A typ(AC IN 220V, I _o =100%) at cold start. | | | | | |
| OUTPUT | VOLTAGE | [V] | 3.3 | 5 | 9 | 12 | |
| | CURRENT | [A] | 200 | 200 | 111 | 83 | |
| | REGULATION, LINE | [mV] | 25 Max | 25 Max | 45 Max | 60 Max | |
| | REGULATION, LOAD | [mV] | 50 Max | 50 Max | 90 Max | 120 Max | |
| | RIPPLE | [mVp-p] | 50 Max | 50 Max | 90 Max | 120 Max | |
| | RIPPLE, NOISE | [mVp-p] | 100 Max | 100 Max | 140 Max | 170 Max | |
| | TEMPERATURE DRIFT 0~+50°C | [mV] | 75 Max | 75 Max | 135 Max | 180 Max | |
| | RISE TIME | [ms] | 800 Max (AC IN 110V/220V I _o =100%) | | | | |
| | HOLDING TIME | [ms] | 17 typ (AC IN 110V/220V I _o =100%) | | | | |
| | PROTECTION CIRCUIT | OVER CURRENT PROTECTION | | Works at over 110% of rating and recovers automatically | | | |
| OVER VOLTAGE PROTECTION | | Works at 115 ~140% of rating | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | VIBRATION | | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | | - | | | | |
| | LINE CONDUCTED RF VOLTAGE | | - | | | | |

ESF1000-S SPECIFICATIONS

| | | MODEL | ESF1000-15 | ESF1000-24 | ESF1000-28 | ESF1000-48 | |
|-------------------------|---------------------------|---|--|---|-----------------------------|------------|--------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | |
| | CURRENT | [A] | 110V | 16.0 (I _o =100%) | 22.0 (I _o =100%) | | |
| | | | 220V | 8.0 (I _o =100%) | 11.0 (I _o =100%) | | |
| | EFFICIENCY | [%] | 110V | 81 typ | 83 typ | 83 typ | 85 typ |
| | | | 220V | | | | |
| INRUSH CURRENT | | 30A typ(AC IN 110V, I _o =100%), 60A typ(AC IN 220V, I _o =100%) at cold start. | | | | | |
| OUTPUT | VOLTAGE | [V] | 15 | 24 | 28 | 48 | |
| | CURRENT | [A] | 67 | 42 | 36 | 21 | |
| | REGULATION, LINE | [mV] | 75 Max | 120 Max | 140 Max | 240 Max | |
| | REGULATION, LOAD | [mV] | 150 Max | 240 Max | 280 Max | 480 Max | |
| | RIPPLE | [mVp-p] | 150 Max | 240 Max | 280 Max | 480 Max | |
| | RIPPLE, NOISE | [mVp-p] | 200 Max | 290 Max | 330 Max | 530 Max | |
| | TEMPERATURE DRIFT 0~+50°C | [mV] | 225 Max | 360 Max | 420 Max | 720 Max | |
| | RISE TIME | [ms] | 800 Max (AC IN 110V/220V I _o =100%) | | | | |
| | HOLDING TIME | [ms] | 17 typ (AC IN 110V/220V I _o =100%) | | | | |
| | PROTECTION CIRCUIT | OVER CURRENT PROTECTION | | Works at over 110% of rating and recovers automatically | | | |
| OVER VOLTAGE PROTECTION | | Works at 115 ~ 140% of rating | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | VIBRATION | | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | | - | | | | |
| | LINE CONDUCTED RF VOLTAGE | | - | | | | |

ESF1000A-S SPECIFICATIONS

| MODEL | | ESF1000A-05 | ESF1000A-12 | ESF1000A-15 | ESF1000A-24 | ESF1000A-48 |
|-----------------------|--------------------------------|---|-----------------------------|-------------|-------------|-------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC255~370V), 50/60Hz (44~440Hz) User Selectable | | | | |
| | CURRENT [A] | 110V | 22.0 (I _c =100%) | | | |
| | | 220V | 11.0 (I _c =100%) | | | |
| | EFFICIENCY [%] | 110V | 78 typ | 81 typ | 81 typ | 83 typ |
| 220V | | | | | | |
| INRUSH CURRENT | | 30A typ(AC IN 110V, I _c =100%), 60A typ(AC IN 220V, I _c =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 200 | 83 | 65 | 42 | 21 |
| | REGULATION, LINE [mV] | 25 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 100 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE [mVp-p] | 100 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE, NOISE [mVp-p] | 150 Max | 170 Max | 190 Max | 290 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 120 Max | 150 Max | 240 Max | 430 Max |
| | RISE TIME [ms] | 800 Max (AC IN 110V/220V I _c =100%) | | | | |
| | HOLDING TIME [ms] | 10 typ (AC IN 110V/220V I _c =100%) | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating Protection type: Shut down o/p voltage, re-power on to recover | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +85°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | - | | | | |
| | LINE CONDUCTED RF VOLTAGE | - | | | | |

ESF1250-S SPECIFICATIONS

| MODEL | | ESF1250-3R3 | ESF1250-05 | ESF1250-09 | ESF1250-12 | |
|-----------------------|---|---|-----------------------------|-----------------------------|------------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240~370V), 50/60Hz (47~440Hz) User Selectable | | | | |
| | CURRENT [A] | 110V | 20.0 (I _c =100%) | 27.0 (I _c =100%) | | |
| | | 220V | 10.0 (I _c =100%) | 13.5 (I _c =100%) | | |
| | EFFICIENCY [%] | 110V | 70 typ | 78 typ | 80 typ | 81 typ |
| 220V | | | | | | |
| INRUSH CURRENT | | 30A typ(AC IN 110V, I _c =100%), 60A typ(AC IN 220V, I _c =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | |
| | CURRENT [A] | 250 | 250 | 139 | 104 | |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | |
| | RIPPLE [mVp-p] | 50 Max | 50 Max | 90 Max | 120 Max | |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 100 Max | 140 Max | 170 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 75 Max | 135 Max | 180 Max | |
| | RISE TIME [ms] | 800 Max (AC IN 110V/220V I _c =100%) | | | | |
| HOLDING TIME [ms] | 17 typ (AC IN 110V/220V I _c =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | - | | | | |
| | LINE CONDUCTED RF VOLTAGE | - | | | | |

ESF1250-S SPECIFICATIONS

| | | MODEL | ESF1250-15 | ESF1250-24 | ESF1250-28 | ESF1250-48 | |
|-----------------------|---------------------------|---|--|-----------------------------|------------|------------|--------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | |
| | CURRENT | [A] | 110V | 27.0 (I _c =100%) | | | |
| | | | 220V | 13.5 (I _c =100%) | | | |
| | EFFICIENCY | [%] | 110V | 81 typ | 83 typ | 83 typ | 85 typ |
| | | 220V | | | | | |
| INRUSH CURRENT | | 30A typ(AC IN 110V, I _c =100%), 60A typ(AC IN 220V, I _c =100%) at cold start. | | | | | |
| OUTPUT | VOLTAGE | [V] | 15 | 24 | 28 | 48 | |
| | CURRENT | [A] | 83 | 52 | 45 | 26 | |
| | REGULATION, LINE | [mV] | 75 Max | 120 Max | 140 Max | 240 Max | |
| | REGULATION, LOAD | [mV] | 150 Max | 240 Max | 280 Max | 480 Max | |
| | RIPPLE | [mVp-p] | 150 Max | 240 Max | 280 Max | 480 Max | |
| | RIPPLE, NOISE | [mVp-p] | 200 Max | 290 Max | 330 Max | 530 Max | |
| | TEMPERATURE DRIFT 0~+50°C | [mV] | 225 Max | 360 Max | 420 Max | 720 Max | |
| | RISE TIME | [ms] | 800 Max (AC IN 110V/220V I _c =100%) | | | | |
| | HOLDING TIME | [ms] | 17 typ (AC IN 110V/220V I _c =100%) | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | | Works at 115 ~ 140% of rating | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | VIBRATION | | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | | - | | | | |
| | LINE CONDUCTED RF VOLTAGE | | - | | | | |

ESF1250A-S SPECIFICATIONS

| | | MODEL | ESF1250A-05 | ESF1250A-12 | ESF1250A-15 | ESF1250A-24 | ESF1250A-48 |
|-----------------------|---------------------------|---|--|-----------------------------|-------------|-------------|-------------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC255 ~ 370V), 50/60Hz (44 ~ 440Hz) User Selectable | | | | |
| | CURRENT | [A] | 110V | 27.0 (I _c =100%) | | | |
| | | | 220V | 13.5 (I _c =100%) | | | |
| | EFFICIENCY | [%] | 110V | 78 typ | 81 typ | 81 typ | 83 typ |
| | | 220V | | | | | |
| INRUSH CURRENT | | 30A typ(AC IN 110V, I _c =100%), 60A typ(AC IN 220V, I _c =100%) at cold start. | | | | | |
| OUTPUT | VOLTAGE | [V] | 5 | 12 | 15 | 24 | 48 |
| | CURRENT | [A] | 250 | 104 | 83 | 52 | 26 |
| | REGULATION, LINE | [mV] | 25 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD | [mV] | 100 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE | [mVp-p] | 100 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE, NOISE | [mVp-p] | 150 Max | 170 Max | 190 Max | 290 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C | [mV] | 50 Max | 120 Max | 150 Max | 240 Max | 430 Max |
| | RISE TIME | [ms] | 800 Max (AC IN 110V/220V I _c =100%) | | | | |
| | HOLDING TIME | [ms] | 10 typ (AC IN 110V/220V I _c =100%) | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | | Works at 115 ~ 140% of rating Protection type: Shut down o/p voltage, re-power on to recover | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | VIBRATION | | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | | - | | | | |
| | LINE CONDUCTED RF VOLTAGE | | - | | | | |

ESF1500-S SPECIFICATIONS

| | | MODEL | ESF1500-3R3 | ESF1500-05 | ESF1500-09 | ESF1500-12 | |
|-----------------------|---------------------------|----------------|--|-----------------------------|-----------------------------|------------|--------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | |
| | CURRENT | [A] | 110V | 24.0 (I _o =100%) | 32.0 (I _o =100%) | | |
| | | | 220V | 12.0 (I _o =100%) | 16.0 (I _o =100%) | | |
| | EFFICIENCY | [%] | 110V | 70 typ | 78 typ | 80 typ | 81 typ |
| | | 220V | | | | | |
| | | INRUSH CURRENT | 30A typ(AC IN 110V, I _o =100%), 60A typ(AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE | [V] | 3.3 | 5 | 9 | 12 | |
| | CURRENT | [A] | 300 | 300 | 167 | 125 | |
| | REGULATION, LINE | [mV] | 25 Max | 25 Max | 45 Max | 60 Max | |
| | REGULATION, LOAD | [mV] | 50 Max | 50 Max | 90 Max | 120 Max | |
| | RIPPLE | [mVp-p] | 50 Max | 50 Max | 90 Max | 120 Max | |
| | RIPPLE, NOISE | [mVp-p] | 100 Max | 100 Max | 140 Max | 170 Max | |
| | TEMPERATURE DRIFT 0~+50°C | [mV] | 75 Max | 75 Max | 135 Max | 180 Max | |
| | RISE TIME | [ms] | 800 Max (AC IN 110V/220V I _o =100%) | | | | |
| | HOLDING TIME | [ms] | 17 typ (AC IN 110V/220V I _o =100%) | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | | Works at 115 ~ 140% of rating | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | VIBRATION | | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | | - | | | | |
| | LINE CONDUCTED RF VOLTAGE | | - | | | | |

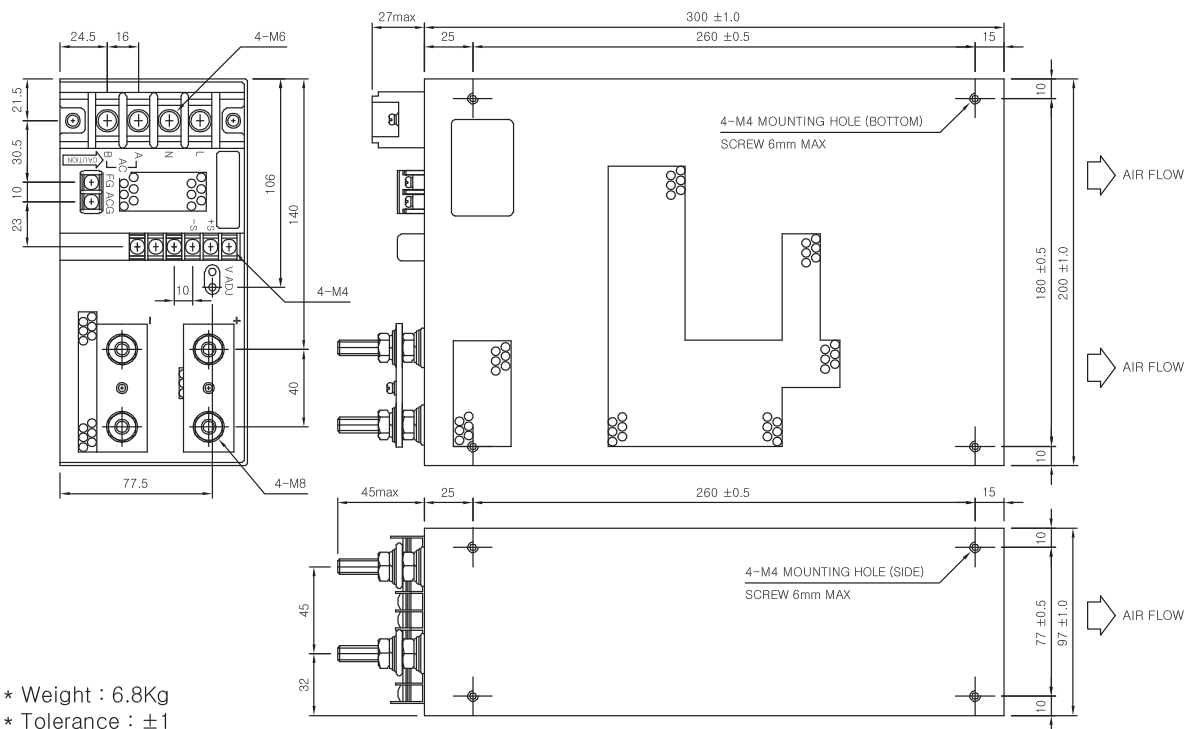
ESF1500-S SPECIFICATIONS

| | | MODEL | ESF1500-15 | ESF1500-24 | ESF1500-28 | ESF1500-48 |
|-----------------------|---------------------------|----------------|--|-----------------------------|------------|------------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | |
| | CURRENT | [A] | 110V | 32.0 (I _o =100%) | | |
| | | | 220V | 16.0 (I _o =100%) | | |
| | EFFICIENCY | [%] | 110V | 81 typ | 83 typ | 83 typ |
| | | 220V | | | | |
| | | INRUSH CURRENT | 30A typ(AC IN 110V, I _o =100%), 60A typ(AC IN 220V, I _o =100%) at cold start. | | | |
| OUTPUT | VOLTAGE | [V] | 15 | 24 | 28 | 48 |
| | CURRENT | [A] | 100 | 63 | 54 | 32 |
| | REGULATION, LINE | [mV] | 75 Max | 120 Max | 140 Max | 240 Max |
| | REGULATION, LOAD | [mV] | 150 Max | 240 Max | 280 Max | 480 Max |
| | RIPPLE | [mVp-p] | 150 Max | 240 Max | 280 Max | 480 Max |
| | RIPPLE, NOISE | [mVp-p] | 200 Max | 290 Max | 330 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C | [mV] | 225 Max | 360 Max | 420 Max | 720 Max |
| | RISE TIME | [ms] | 800 Max (AC IN 110V/220V I _o =100%) | | | |
| | HOLDING TIME | [ms] | 17 typ (AC IN 110V/220V I _o =100%) | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | | Works at over 110% of rating and recovers automatically | | | |
| | OVER VOLTAGE PROTECTION | | Works at 115 ~ 140% of rating | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | INPUT-CASE, FG | | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | OUTPUT-CASE, FG | | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | |
| | STORAGE TEMP AND HUMID | | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | |
| | VIBRATION | | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | |
| | IMPACT | | 10G for 20ms once on each X, Y and Z axis | | | |
| SAFETY | SAFETY REGULATION | | - | | | |
| | LINE CONDUCTED RF VOLTAGE | | - | | | |

ESF1500A-S SPECIFICATIONS

| MODEL | | ESF1500A-05 | ESF1500A-12 | ESF1500A-15 | ESF1500A-24 | ESF1500A-48 |
|-----------------------|--------------------------------|--|-----------------------------|-------------|-------------|-------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC255 ~ 370V), 50/60Hz (44 ~ 440Hz) User Selectable | | | | |
| | CURRENT [A] | 110V | 32.0 (I _c =100%) | | | |
| | | 220V | 16.0 (I _c =100%) | | | |
| | EFFICIENCY [%] | 110V | 78 typ | 81 typ | 81 typ | 83 typ |
| 220V | | | | | | |
| INRUSH CURRENT | | 30A typ(AC IN 110V, I _c =100%), 60A typ(AC IN 220V, I _c =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 300 | 125 | 100 | 62.5 | 32 |
| | REGULATION, LINE [mV] | 25 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 100 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE [mVp-p] | 100 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE, NOISE [mVp-p] | 150 Max | 170 Max | 190 Max | 290 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 120 Max | 150 Max | 240 Max | 430 Max |
| | RISE TIME [ms] | 800 Max (AC IN 110V/220V I _c =100%) | | | | |
| | HOLDING TIME [ms] | 10 typ (AC IN 110V/220V I _c =100%) | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115~140% of rating Protection type: Shut down o/p voltage, re-power on to recover | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | - | | | | |
| | LINE CONDUCTED RF VOLTAGE | - | | | | |

ESF850, 850A, 1000, 1000A 1250, 1250A, 1500 1500A EXTERNAL VIEW



- * Weight : 6.8Kg
- * Tolerance : ±1
- * Dimensions in mm

For the Switching Model Power Supply

Switching Mode Power Supply



ORIENT

ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

| | |
|----------------------|------------|
| 1. FDR SERIES | 20 |
| 2. JSF SERIES | 30 |
| 3. HSF SERIES | 42 |
| 4. LSP SERIES | 50 |
| 5. CSF SERIES | 58 |
| 6. PSF SERIES | 80 |
| 7. VSF SERIES | 88 |
| 8. ESF SERIES | 112 |
| 9. MSF SERIES | 134 |
| 10. MP SERIES | 162 |



UL US CE RoHS

ORDERING INFORMATION

MSF15-05

Series name

Total output wattage

Output voltage combination

- Approved by UL/C-UL, CE
- Over current protection
- Over voltage protection
- Complies with FCC Part15 and EN55022 Class A Limits
- Remote on/off Control (MSF300)
- Remote sensing (MSF150~300)
- Monitor Signal (MSF300)
- 3 years warranty

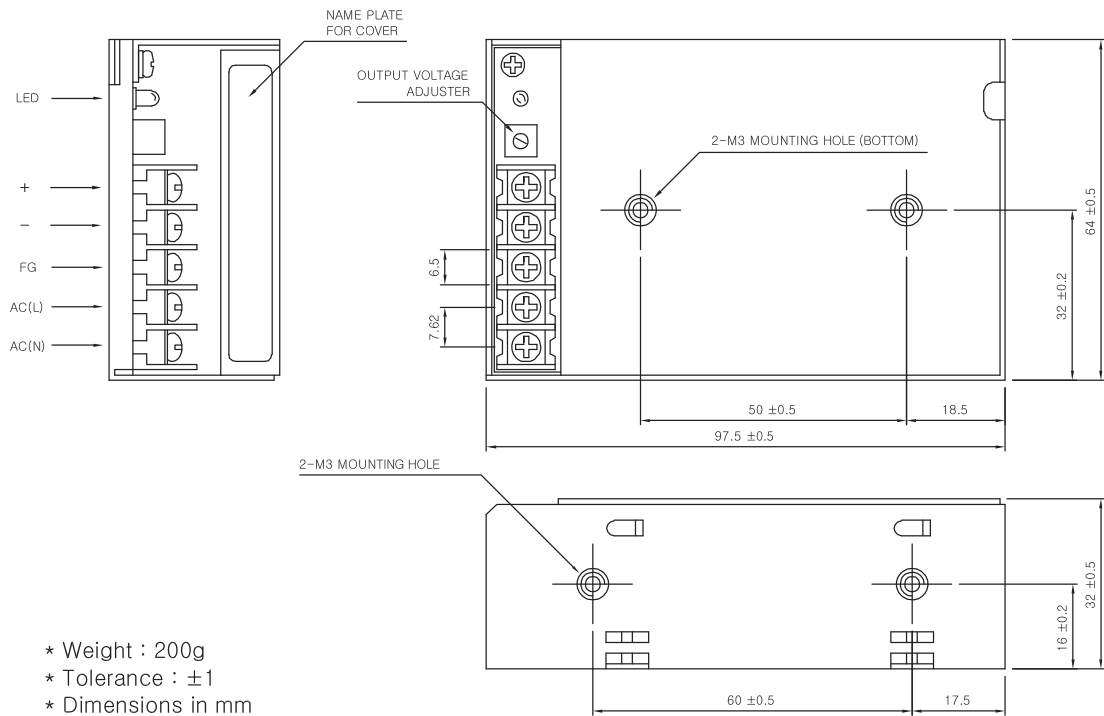


MSF15-S SPECIFICATIONS



| | MODEL | MSF15-3R3 | MSF15-05 | MSF15-09 | MSF15-12 | MSF15-15 | MSF15-24 |
|-----------------------|--------------------------------|--|---------------|--------------|--------------|--------------|--------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC120 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input. | | | | | |
| | CURRENT [A] | 110V | 0.4 (10=100%) | | | | |
| | | 220V | 0.2 (10=100%) | | | | |
| | EFFICIENCY [%] | 110V | 67 typ | 67 typ | 71 typ | 73 typ | 75 typ |
| | 220V | | | | | | |
| | INRUSH CURRENT | 20A typ (AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 |
| | CURRENT [A] | 3 | 3 | 1.67 | 1.25 | 1 | 0.62 |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE [mVp-p] | 35 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 85 Max | 100 Max | 140 Max | 170 Max | 200 Max | 290 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 85 Max | 90 Max | 162 Max | 216 Max | 270 Max | 432 Max |
| | RISE TIME [ms] | 500 max (AC IN 110V, I _o =100%) | | | | | |
| | HOLDING TIME [ms] | 20 typ (AC IN 110V, I _o =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | |
| | OVER VOLTAGE PROTECTION | Works at over 115% of rating (by zener diode clamping) | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | |
| SAFETY | SAFETY REGULATION | - | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | | | |

MSF15-S EXTERNAL VIEW



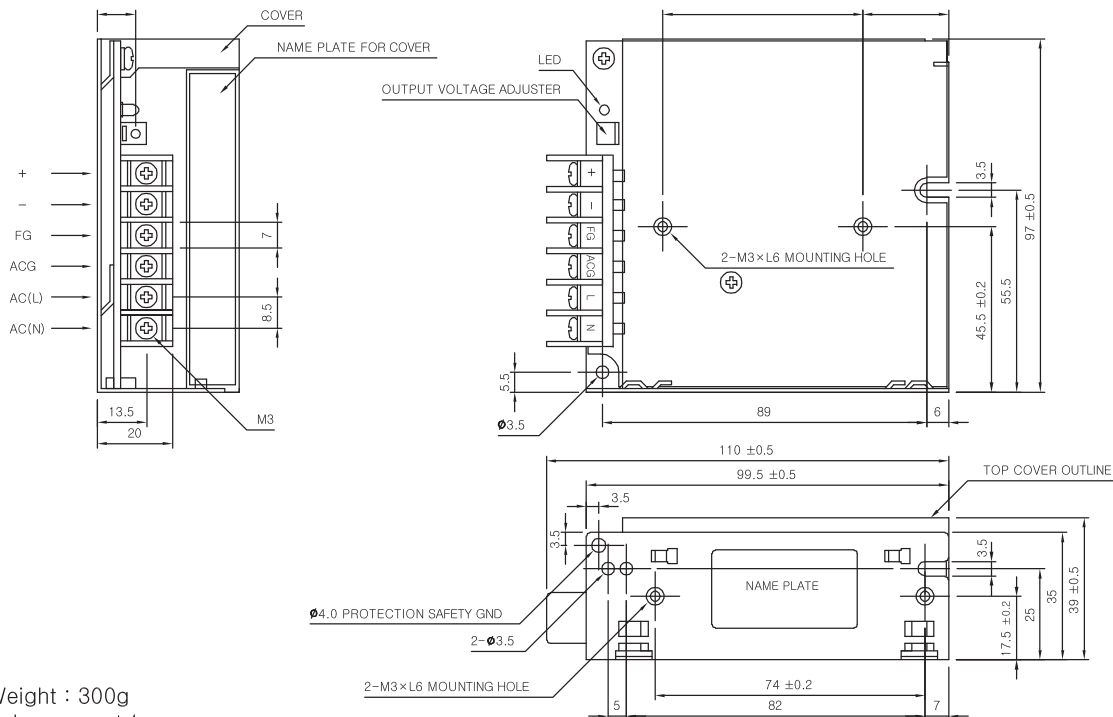
- * Weight : 200g
- * Tolerance : ±1
- * Dimensions in mm

MSF25-S SPECIFICATIONS



| MODEL | | MSF25-3R3 | MSF25-05 | MSF25-09 | MSF25-12 | MSF25-15 | MSF25-24 | MSF25-48 |
|-----------------------|--------------------------------|---|----------------------------|------------|------------|------------|------------|------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input. | | | | | | |
| | CURRENT [V] | 110V | 0.6 (I _o =100%) | | | | | |
| | | 220V | 0.3 (I _o =100%) | | | | | |
| | EFFICIENCY [%] | 110V | 60 typ | 70 typ | 70 typ | 75 typ | 75 typ | 75 typ |
| 220V | | | | | | | | |
| INRUSH CURRENT | | 20A typ (ACIN 110V, I _o =100%), 40A typ(ACIN 220, I _o =100%) Ta=(25°C of cold start). | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 5 | 5 | 2.7 | 2 | 1.6 | 1 | 0.5 |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE [mVp-p] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 100 Max | 140 Max | 170 Max | 200 Max | 290 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max |
| | RISE TIME [ms] | 500 max (AC IN 110V, I _o =100%) | | | | | | |
| | HOLDING TIME [ms] | 20 typ (AC IN 110V, I _o =100%) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating (In the case of 3.3V, it is 115 ~ 160%) | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | |
| SAFETY | SAFETY REGULATION | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | | | | |

MSF25-S EXTERNAL VIEW



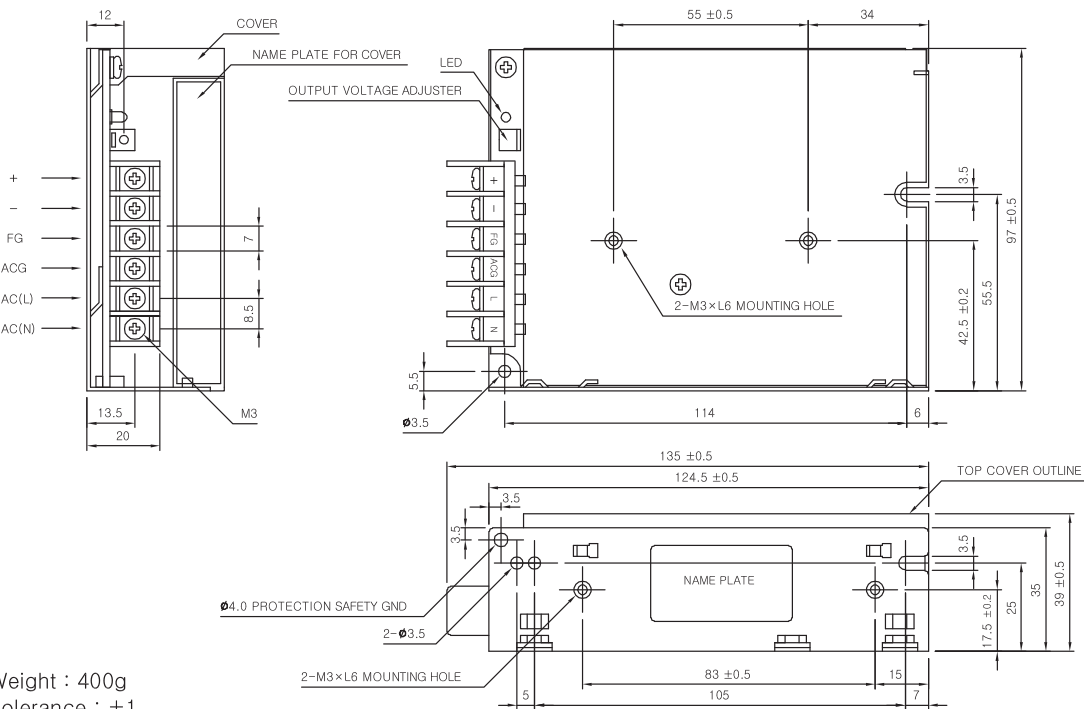
- * Weight : 300g
- * Tolerance : ±1
- * Dimensions in mm

MSF35-S SPECIFICATIONS



| MODEL | | MSF35-3R3 | MSF35-05 | MSF35-09 | MSF35-12 | MSF35-15 | MSF35-24 | MSF35-48 |
|-----------------------|--------------------------------|--|----------------------------|----------|----------------------------|------------|------------|------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input. | | | | | | |
| | CURRENT [V] | 110V | 0.8 (I _o =100%) | | 1.0 (I _o =100%) | | | |
| | | 220V | 0.4 (I _o =100%) | | 0.5 (I _o =100%) | | | |
| | EFFICIENCY [%] | 110V | 60 typ | 70 typ | 70 typ | 75 typ | 75 typ | 75 typ |
| 220V | | | | | | | | |
| INRUSH CURRENT | | 20A typ (AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) Ta=(25°C of cold start). | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 7 | 7 | 3.9 | 3 | 2.4 | 1.5 | 0.75 |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE [mVp-p] | 80 Max | 80 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 140 Max | 170 Max | 200 Max | 290 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max |
| | RISE TIME [ms] | 1500 max (AC IN 110V, I _o =100%) | | | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 110V, I _o =100%) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating (In the case of 3.3V, it is 115~160%) | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | |
| SAFETY | SAFETY REGULATION | UL,C-UL,CE | UL,C-UL,CE | - | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | | | | |

MSF35-S EXTERNAL VIEW



- * Weight : 400g
- * Tolerance : ±1
- * Dimensions in mm

MSF50-S SPECIFICATIONS



| MODEL | | MSF50-3R3 | MSF50-05 | MSF50-09 | MSF50-12 | MSF50-15 | MSF50-24 | MSF50-48 |
|-----------------------|--------------------------------|---|----------------------------|------------|------------|------------|------------|------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input. | | | | | | |
| | CURRENT [A] | 110V | 1.4 (I _o =100%) | | | | | |
| | | 220V | 0.7 (I _o =100%) | | | | | |
| | EFFICIENCY [%] | 110V | 63 typ | 70 typ | 73 typ | 75 typ | 75 typ | 78 typ |
| 220V | | | | | | | | |
| INRUSH CURRENT | | 20A typ(ACIN 110V, I _o =100%), 40A typ(ACIN 220V, I _o =100%) at cold start. | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 10 | 10 | 5.5 | 4.2 | 3.4 | 2.1 | 1 |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE [mVp-p] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 100 Max | 140 Max | 170 Max | 200 Max | 290 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max |
| | RISE TIME [ms] | 1000 max (AC IN 110V, I _o =100%) | | | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 110V, I _o =100%) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating (In the case of 3.3V, it is 115 ~ 160%) | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | |
| SAFETY | SAFETY REGULATION | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | | | | |

MSF60-S SPECIFICATIONS



| MODEL | | MSF60-3R3 | MSF60-05 | MSF60-09 | MSF60-12 | MSF60-15 | MSF60-24 | MSF60-48 |
|-----------------------|--------------------------------|---|-----------------------------|------------|------------|------------|------------|------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input. | | | | | | |
| | CURRENT [A] | 110V | 1.7 (I _o =100%) | | | | | |
| | | 220V | 0.85 (I _o =100%) | | | | | |
| | EFFICIENCY [%] | 110V | 67 typ | 72 typ | 75 typ | 78 typ | 78 typ | 80 typ |
| 220V | | | | | | | | |
| INRUSH CURRENT | | 20A typ(ACIN 110V, I _o =100%), 40A typ(ACIN 220V, I _o =100%) at cold start. | | | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 | 24 | 48 |
| | CURRENT [A] | 12 | 12 | 6.6 | 5 | 4 | 2.5 | 1.3 |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max | 120 Max | 240 Max |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE [mVp-p] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 240 Max | 480 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 100 Max | 140 Max | 170 Max | 200 Max | 290 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max | 360 Max | 720 Max |
| | RISE TIME [ms] | 1000 max (AC IN 110V, I _o =100%) | | | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 110V, I _o =100%) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating (In the case of 3.3V, it is 115 ~ 160%) | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | |
| SAFETY | SAFETY REGULATION | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE | UL,C-UL,CE |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | | | | |

MSF80-S SPECIFICATIONS



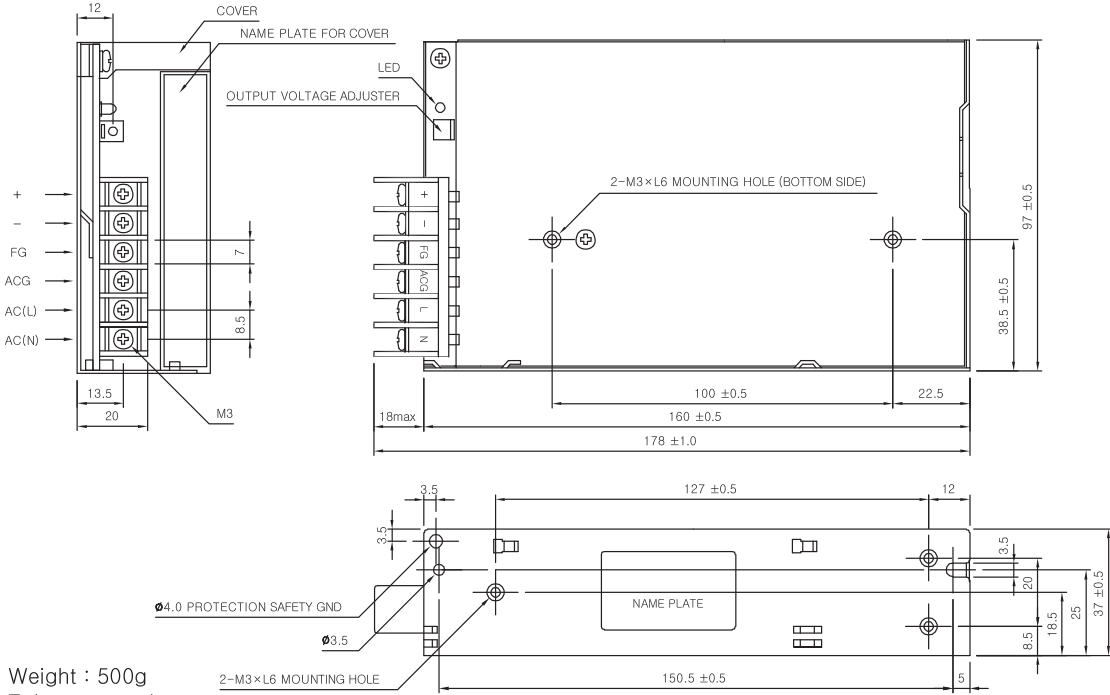
| MODEL | | MSF80-3R3 | MSF80-05 | MSF80-09 | MSF80-12 | MSF80-15 |
|-----------------------|--------------------------------|---|----------------------------|--------------|--------------|--------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable. | | | | |
| | CURRENT [A] | 110V | 2.5 (I _o =100%) | | | |
| | | 220V | 1.4 (I _o =100%) | | | |
| | EFFICIENCY [%] | 110V | 70 typ | 80 typ | 81 typ | 81 typ |
| 220V | | | | | | |
| INRUSH CURRENT | | 20A typ (AC IN 110V, I _o =100%), 40A typ (AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 |
| | CURRENT [A] | 20 | 20 | 11.1 | 8.3 | 6.7 |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max |
| | RIPPLE [mVp-p] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 100 Max | 140 Max | 170 Max | 200 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max |
| | RISE TIME [ms] | 500 max (AC IN 110V, I _o =100%) | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 110V, I _o =100%) | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | 0 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | | |

MSF80-S SPECIFICATIONS



| MODEL | | MSF80-24 | MSF80-28 | MSF80-36 | MSF80-48 |
|-----------------------|--------------------------------|---|----------------------------|--------------|--------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47~440Hz) User Selectable. | | | |
| | CURRENT [A] | 110V | 2.5 (I _o =100%) | | |
| | | 220V | 1.4 (I _o =100%) | | |
| | EFFICIENCY [%] | 110V | 82 typ | 82 typ | 82 typ |
| 220V | | | | | |
| INRUSH CURRENT | | 20A typ (AC IN 110V, I _o =100%), 40A typ (AC IN 220V, I _o =100%) at cold start. | | | |
| OUTPUT | VOLTAGE [V] | 24 | 28 | 36 | 48 |
| | CURRENT [A] | 4.2 | 3.5 | 2.8 | 2.1 |
| | REGULATION, LINE [mV] | 120 Max | 140 Max | 180 Max | 240 Max |
| | REGULATION, LOAD [mV] | 240 Max | 280 Max | 360 Max | 480 Max |
| | RIPPLE [mVp-p] | 240 Max | 280 Max | 360 Max | 480 Max |
| | RIPPLE, NOISE [mVp-p] | 290 Max | 330 Max | 410 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 360 Max | 420 Max | 540 Max | 720 Max |
| | RISE TIME [ms] | 500 max (AC IN 110V, I _o =100%) | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 110V, I _o =100%) | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | INPUT-CASE, FG | AC2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | OUTPUT-CASE, FG | AC500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | 0 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | |

MSF50, 60, 80-S EXTERNAL VIEW



- * Weight : 500g
- * Tolerance : ±1
- * Dimensions in mm

MSF100-S SPECIFICATIONS



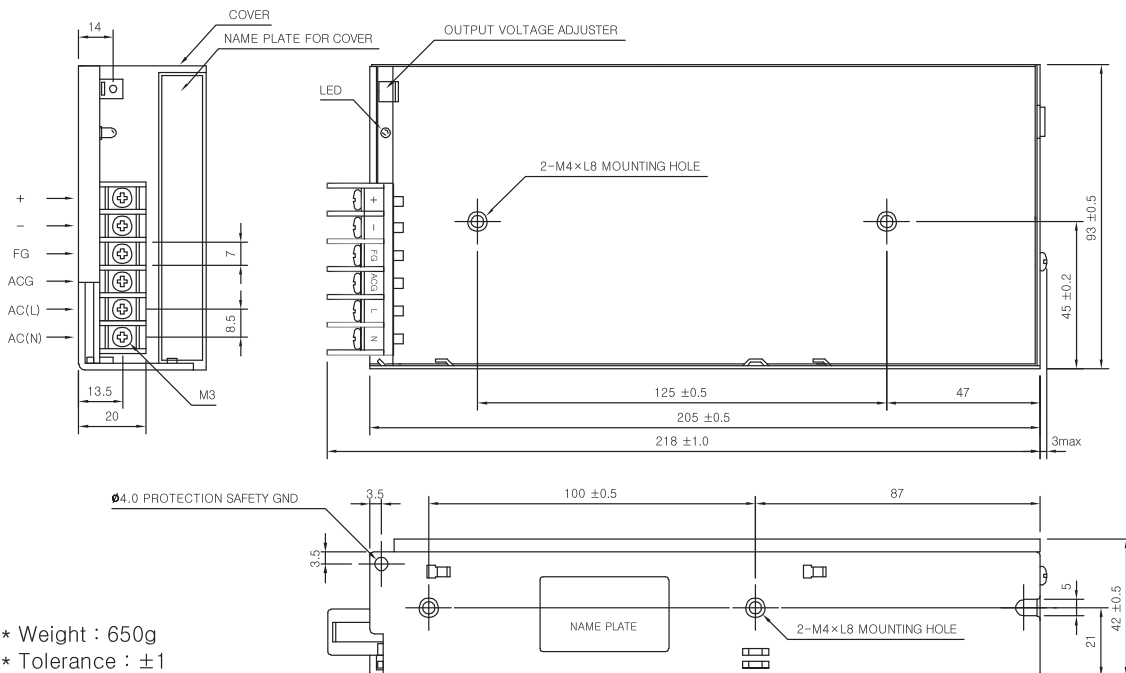
| MODEL | | MSF100-3R3 | MSF100-05 | MSF100-09 | MSF100-12 | MSF100-15 |
|-----------------------|---|---|----------------------------|--------------|--------------|--------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC85 ~ 132V / 170 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable. | | | | |
| | CURRENT [A] | 110V | 2.5 (I _o =100%) | | | |
| | | 220V | 1.4 (I _o =100%) | | | |
| | EFFICIENCY [%] | 110V | 70 typ | 80 typ | 81 typ | 81 typ |
| | 220V | | | | | |
| INRUSH CURRENT | | 20A typ (ACIN 110V, I _o =100%), 40A typ (ACIN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 9 | 12 | 15 |
| | CURRENT [A] | 20 | 20 | 11.1 | 8.3 | 6.7 |
| | REGULATION, LINE [mV] | 25 Max | 25 Max | 45 Max | 60 Max | 75 Max |
| | REGULATION, LOAD [mV] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max |
| | RIPPLE [mVp-p] | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 100 Max | 140 Max | 170 Max | 200 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 50 Max | 75 Max | 135 Max | 180 Max | 225 Max |
| | RISE TIME [ms] | 500 max (AC IN 110V, I _o =100%) | | | | |
| HOLDING TIME [ms] | 16 typ (AC IN 110V, I _o =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~140% of rating | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | | |

MSF100-S SPECIFICATIONS



| MODEL | | MSF100-24 | MSF100-28 | MSF100-36 | MSF100-48 |
|-----------------------|--------------------------------|---|----------------------------|--------------|--------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC85 ~ 132V / 170 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable. | | | |
| | CURRENT [A] | 110V | 2.5 (I _o =100%) | | |
| | | 220V | 2.5 (I _o =100%) | | |
| | EFFICIENCY [%] | 110V | 82 typ | 82 typ | 82 typ |
| 220V | | | | | |
| INRUSH CURRENT | | 20A typ(ACIN 110V, I _o =100%), 40A typ(ACIN 220V, I _o =100%) at cold start. | | | |
| OUTPUT | VOLTAGE [V] | 24 | 28 | 36 | 48 |
| | CURRENT [A] | 4.2 | 3.5 | 2.8 | 2.1 |
| | REGULATION, LINE [mV] | 120 Max | 140 Max | 180 Max | 240 Max |
| | REGULATION, LOAD [mV] | 240 Max | 280 Max | 360 Max | 480 Max |
| | RIPPLE [mVp-p] | 240 Max | 280 Max | 360 Max | 480 Max |
| | RIPPLE, NOISE [mVp-p] | 290 Max | 330 Max | 410 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 360 Max | 420 Max | 540 Max | 720 Max |
| | RISE TIME [ms] | 500 max (AC IN 110V, I _o =100%) | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 110V, I _o =100%) | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | |

MSF100-S EXTERNAL VIEW



* Weight : 650g
 * Tolerance : ±1
 * Dimensions in mm

MSF150-S SPECIFICATIONS



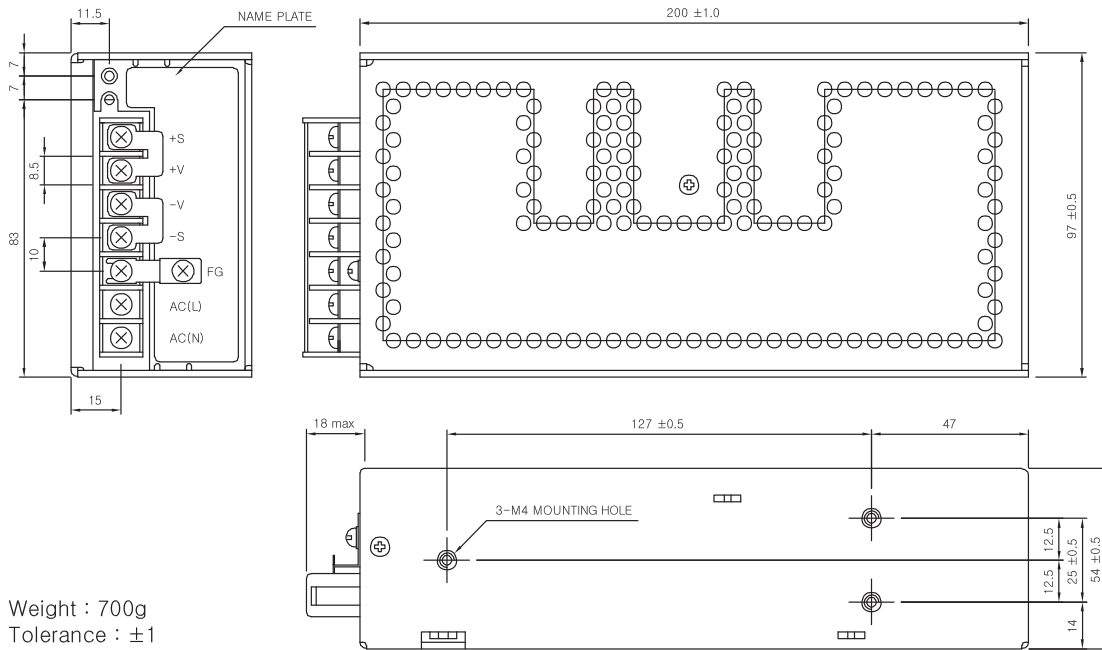
| MODEL | | MSF150-3R3 | MSF150-05 | MSF150-12 | MSF150-15 | |
|-----------------------|---------------------------|---|--|--------------|--------------|--------------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | |
| | CURRENT | [A] | 3.2 (I _o =100%) | | | |
| | | [A] | 1.7 (I _o =100%) | | | |
| | EFFICIENCY | [%] | 75 typ | 75 typ | 75 typ | 75 typ |
| [%] | | 15A typ(AC IN 110V, I _o =100%), 30A typ(AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE | [V] | 3.3 | 5 | 12 | 15 |
| | CURRENT | [A] | 30 | 29 | 12 | 10 |
| | REGULATION, LINE | [mV] | 25 Max | 25 Max | 60 Max | 75 Max |
| | REGULATION, LOAD | [mV] | 50 Max | 50 Max | 120 Max | 150 Max |
| | RIPPLE | [mVp-p] | 50 Max | 50 Max | 120 Max | 150 Max |
| | RIPPLE, NOISE | [mVp-p] | 100 Max | 100 Max | 170 Max | 200 Max |
| | TEMPERATURE DRIFT 0~+50°C | [mV] | 50 Max | 75 Max | 180 Max | 225 Max |
| | RISE TIME | [ms] | 800 max (AC IN 110V, I _o =100%) | | | |
| | HOLDING TIME | [ms] | 15 typ (AC IN 110V, I _o =100%) | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | | Works at over 110% of rating and recovers automatically | | | |
| | OVER VOLTAGE PROTECTION | | Works at 115 ~ 140% of rating | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | INPUT-CASE, FG | | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | OUTPUT-CASE, FG | | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | |
| | STORAGE TEMP AND HUMID | | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | |
| | VIBRATION | | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | |
| | IMPACT | | 10G for 20ms once on each X, Y and Z axis | | | |
| SAFETY | SAFETY REGULATION | | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE |
| | LINE CONDUCTED RF VOLTAGE | | Complied with FCC Part15 and EN55022 Class A Limits | | | |

MSF150-S SPECIFICATIONS



| MODEL | | MSF150-24 | MSF150-28 | MSF150-36 | MSF150-48 | |
|-----------------------|---------------------------|---|--|--------------|--------------|--------------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | |
| | CURRENT | [A] | 3.2 (I _o =100%) | | | |
| | | [A] | 1.7 (I _o =100%) | | | |
| | EFFICIENCY | [%] | 75 typ | 75 typ | 75 typ | 75 typ |
| [%] | | 15A typ(AC IN 110V, I _o =100%), 30A typ(AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE | [V] | 24 | 28 | 36 | 48 |
| | CURRENT | [A] | 6 | 5.5 | 4.1 | 3.2 |
| | REGULATION, LINE | [mV] | 120 Max | 140 Max | 180 Max | 240 Max |
| | REGULATION, LOAD | [mV] | 240 Max | 280 Max | 360 Max | 480 Max |
| | RIPPLE | [mVp-p] | 240 Max | 280 Max | 360 Max | 480 Max |
| | RIPPLE, NOISE | [mVp-p] | 290 Max | 330 Max | 410 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C | [mV] | 360 Max | 420 Max | 540 Max | 720 Max |
| | RISE TIME | [ms] | 800 max (AC IN 110V, I _o =100%) | | | |
| | HOLDING TIME | [ms] | 15 typ (AC IN 110V, I _o =100%) | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | | Works at over 110% of rating and recovers automatically | | | |
| | OVER VOLTAGE PROTECTION | | Works at 115 ~ 140% of rating | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | INPUT-CASE, FG | | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | OUTPUT-CASE, FG | | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | |
| | STORAGE TEMP AND HUMID | | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | |
| | VIBRATION | | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | |
| | IMPACT | | 10G for 20ms once on each X, Y and Z axis | | | |
| SAFETY | SAFETY REGULATION | | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE |
| | LINE CONDUCTED RF VOLTAGE | | Complied with FCC Part15 and EN55022 Class A Limits | | | |

MSF150-S EXTERNAL VIEW



- * Weight : 700g
- * Tolerance : ±1
- * Dimensions in mm

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

Discrete Semiconductors

MSF200-S SPECIFICATIONS



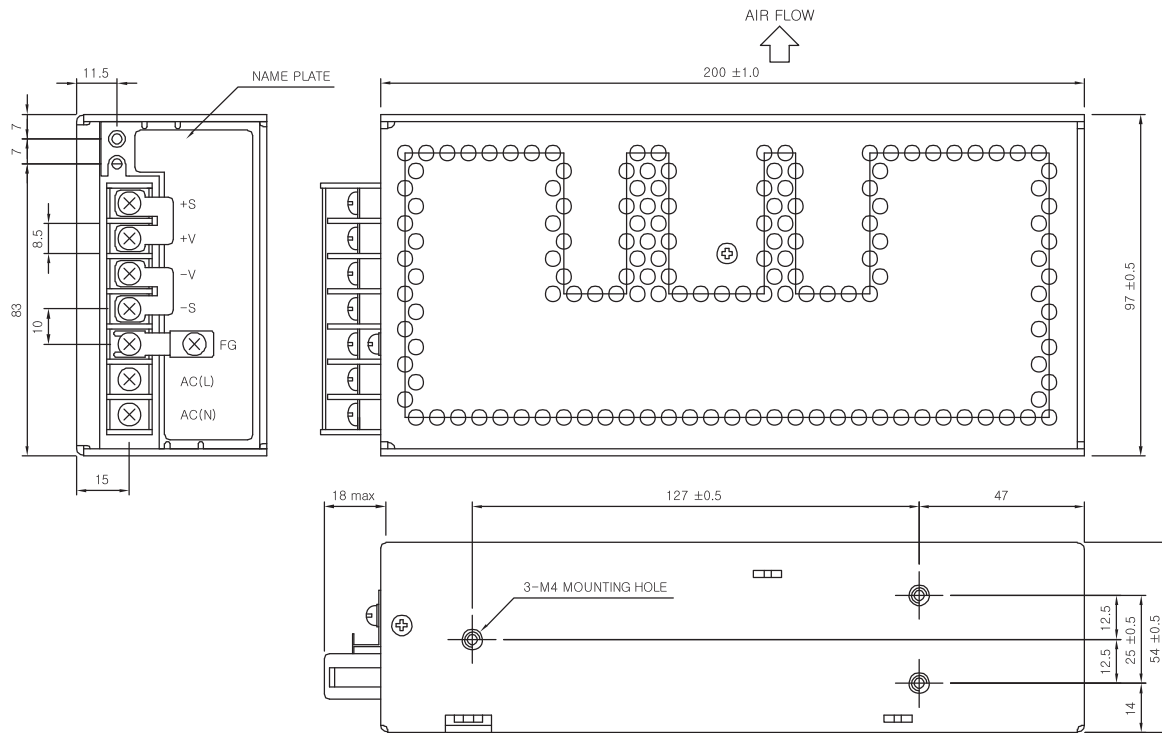
| | | MODEL | MSF200-3R3 | MSF200-5 | MSF200-12 | MSF200-15 | |
|-----------------------|---------------------------|----------------|--|----------------------------|----------------------------|--------------|--------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-120V / 200-240V (AC 90 ~ 132V / 180 ~ 264V or AC 255 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | |
| | CURRENT | [A] | 110V | 3.4 (I _c =100%) | 4.1 (I _c =100%) | | |
| | | | 220V | 4.1 (I _c =100%) | 2.0 (I _c =100%) | | |
| | EFFICIENCY | [%] | 110V | 75 typ | 75 typ | 80 typ | 80 typ |
| | | 220V | | | | | |
| | | INRUSH CURRENT | 15A typ(AC IN 110V, I _c =100%), 30A typ(AC IN 220V, I _c =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE | [V] | 3.3 | 5 | 12 | 15 | |
| | CURRENT | [A] | 40 | 40 | 17 | 13 | |
| | REGULATION, LINE | [mV] | 25 Max | 25 Max | 60 Max | 75 Max | |
| | REGULATION, LOAD | [mV] | 50 Max | 50 Max | 120 Max | 150 Max | |
| | RIPPLE | [mVp-p] | 50 Max | 50 Max | 120 Max | 150 Max | |
| | RIPPLE, NOISE | [mVp-p] | 100 Max | 100 Max | 170 Max | 200 Max | |
| | TEMPERATURE DRIFT 0~+50°C | [mV] | 50 Max | 75 Max | 180 Max | 225 Max | |
| | RISE TIME | [ms] | 800 max (AC IN 110V, I _c =100%) | | | | |
| | HOLDING TIME | [ms] | 15 typ (AC IN 110V, I _c =100%) | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | | Works at 115 ~ 140% of rating (In the case of 3.3V, it is 115 ~ 160%) | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | |
| | STORAGE TEMP AND HUMID | | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | |
| | VIBRATION | | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | |
| | LINE CONDUCTED RF VOLTAGE | | Complied with FCC Part15 and EN55022 Class A Limits | | | | |

MSF200-S SPECIFICATIONS



| | | MODEL | MSF200-24 | MSF200-28 | MSF200-36 | MSF200-48 |
|-----------------------|---------------------------|----------------|---|----------------------------|--------------|--------------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-120V / 200-240V (AC 90~ 132V / 180 ~ 264V or AC 225 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | |
| | CURRENT | [A] | 110V | 4.1 (I _c =100%) | | |
| | | | 220V | 2.0 (I _c =100%) | | |
| | EFFICIENCY | [%] | 110V | 80 typ | 80 typ | 82 typ |
| | | 220V | | | | |
| | | INRUSH CURRENT | 15A typ(ACIN 110V, I _c =100%), 30A typ(ACIN 220V, I _c =100%) at cold start. | | | |
| OUTPUT | VOLTAGE | [V] | 24 | 28 | 36 | 48 |
| | CURRENT | [A] | 8.3 | 7.1 | 5.5 | 4.1 |
| | REGULATION, LINE | [mV] | 120 Max | 140 Max | 180 Max | 240 Max |
| | REGULATION, LOAD | [mV] | 240 Max | 280 Max | 360 Max | 480 Max |
| | RIPPLE | [mVp-p] | 240 Max | 280 Max | 360 Max | 480 Max |
| | RIPPLE, NOISE | [mVp-p] | 290 Max | 330 Max | 410 Max | 530 Max |
| | TEMPERATURE DRIFT 0~+50°C | [mV] | 360 Max | 420 Max | 540 Max | 720 Max |
| | RISE TIME | [ms] | 800 max (AC IN 110V, I _c =100%) | | | |
| | HOLDING TIME | [ms] | 15 typ (AC IN 110V, I _c =100%) | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | | Works at over 110% of rating and recovers automatically | | | |
| | OVER VOLTAGE PROTECTION | | Works at 115 ~ 140% of rating | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | INPUT-CASE, FG | | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | OUTPUT-CASE, FG | | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | |
| | STORAGE TEMP AND HUMID | | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | |
| | VIBRATION | | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | |
| | IMPACT | | 10G for 20ms once on each X, Y and Z axis | | | |
| SAFETY | SAFETY REGULATION | | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE |
| | LINE CONDUCTED RF VOLTAGE | | Complied with FCC Part15 and EN55022 Class A Limits | | | |

MSF200-S EXTERNAL VIEW



General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

Discrete Semiconductors

MSF300-S SPECIFICATIONS



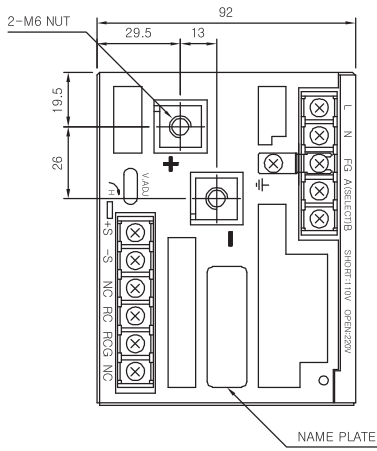
| MODEL | | MSF300-3R3 | MSF300-05 | MSF300-12 | MSF300-15 | | |
|-----------------------|---------------------------|---|--|----------------------------|----------------------------|---------|--------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC255 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | |
| | CURRENT | [A] | 110V | 6.5 (I _o =100%) | 7.0 (I _o =100%) | | |
| | | | 220V | 3.5 (I _o =100%) | 3.5 (I _o =100%) | | |
| | EFFICIENCY | [%] | 110V | 73 typ | 73 typ | 78 typ | 80 typ |
| | | | 220V | | | | |
| INRUSH CURRENT | | 30A typ(AC IN 110V, I _o =100%), 60A typ(AC IN 220V, I _o =100%) at cold start. | | | | | |
| OUTPUT | VOLTAGE | [V] | 3.3 | 5 | 12 | 15 | |
| | CURRENT | [A] | 60 | 60 | 25 | 20 | |
| | REGULATION, LINE | [mV] | 25 Max | 25 Max | 60 Max | 75 Max | |
| | REGULATION, LOAD | [mV] | 50 Max | 50 Max | 120 Max | 150 Max | |
| | RIPPLE | [mVp-p] | 50 Max | 50 Max | 120 Max | 150 Max | |
| | RIPPLE, NOISE | [mVp-p] | 100 Max | 100 Max | 170 Max | 200 Max | |
| | TEMPERATURE DRIFT 0~+50°C | [mV] | 50 Max | 75 Max | 180 Max | 225 Max | |
| | RISE TIME | [ms] | 500 max (AC IN 110V, I _o =100%) | | | | |
| | HOLDING TIME | [ms] | 16 typ (AC IN 110V, I _o =100%) | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | | | |

MSF300-S SPECIFICATIONS

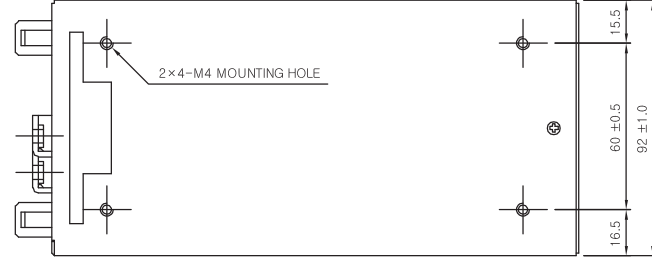
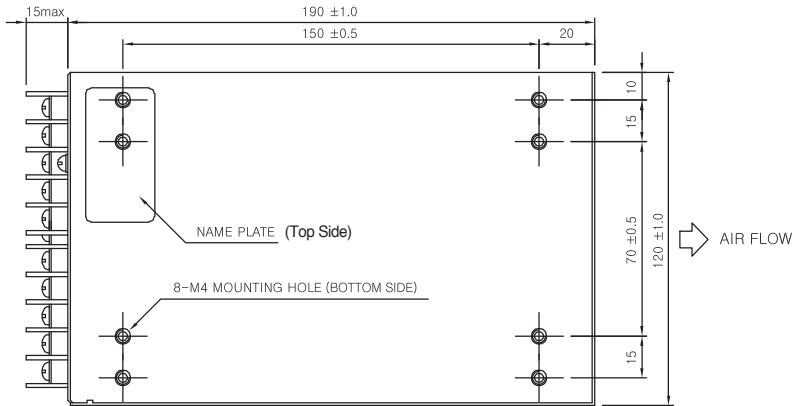


| MODEL | | MSF300-24 | MSF300-28 | MSF300-36 | MSF300-48 | | |
|-----------------------|---------------------------|---|--|----------------------------|--------------|---------|--------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC255 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable | | | | |
| | CURRENT | [A] | 110V | 7.0 (I _o =100%) | | | |
| | | | 220V | 3.5 (I _o =100%) | | | |
| | EFFICIENCY | [%] | 110V | 81 typ | 82 typ | 82 typ | 83 typ |
| | | | 220V | | | | |
| INRUSH CURRENT | | 30A typ(AC IN 110V, I _o =100%), 60A typ(AC IN 220V, I _o =100%) at cold start. | | | | | |
| OUTPUT | VOLTAGE | [V] | 24 | 28 | 36 | 48 | |
| | CURRENT | [A] | 13 | 11 | 8.5 | 6.5 | |
| | REGULATION, LINE | [mV] | 120 Max | 140 Max | 180 Max | 240 Max | |
| | REGULATION, LOAD | [mV] | 240 Max | 280 Max | 360 Max | 480 Max | |
| | RIPPLE | [mVp-p] | 240 Max | 280 Max | 360 Max | 480 Max | |
| | RIPPLE, NOISE | [mVp-p] | 290 Max | 330 Max | 410 Max | 530 Max | |
| | TEMPERATURE DRIFT 0~+50°C | [mV] | 360 Max | 420 Max | 540 Max | 720 Max | |
| | RISE TIME | [ms] | 500 max (AC IN 110V, I _o =100%) | | | | |
| | HOLDING TIME | [ms] | 20 typ (AC IN 110V, I _o =100%) | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | | | |

MSF300-S EXTERNAL VIEW



- * Weight : 2Kg
- * Tolerance : ±1
- * Dimensions in mm

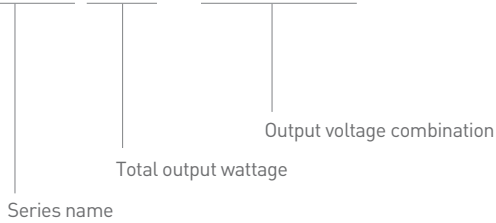


- General Information
- Switching Mode Power Supply
- DC-DC Converter
- Noise Filter
- Solid State Relay
- AC FAN Motor
- Power Module
- Discrete Semiconductors

ORDERING INFORMATION

NEW

MSF30-BDW



- Approve by UL/C-UL, CE
- Inrush current limit
- Over current protection
- Over voltage protection
- Complies with FCC Part15 and EN55022 Class A Limits
- 3 years warranty

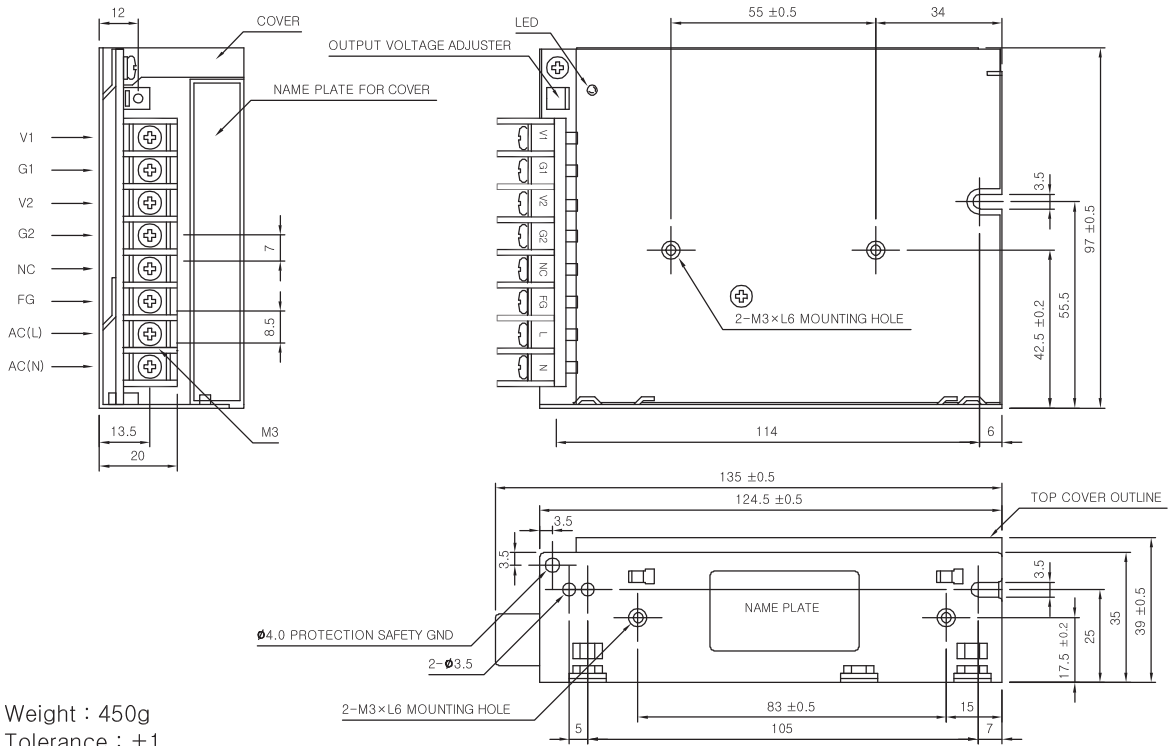


MSF30-DUAL SPECIFICATIONS



| | MODEL | MSF30-BDW | | MSF30-BHW | |
|-----------------------|--|--|----------------------------|--------------|-----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input | | | |
| | CURRENT [A] | 110V | 1.0 (I _c =100%) | | |
| | | 220V | 6.0 (I _c =100%) | | |
| | EFFICIENCY [%] | 110V | 70 typ | | 70 typ |
| 220V | | | | | |
| | INRUSH CURRENT | 20A typ (AC IN 110V, I _c =100%), 40A typ (AC IN 220, I _c =100%) at cold start. | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 5 | 24 |
| | CURRENT [A] | 0.6 ~ 3 | 0.36 ~ 1.2 | 0.6 ~ 3 | 0.2 ~ 0.7 |
| | REGULATIONS, LINE [mV] | 50 Max | 120 Max | 50 Max | 240 Max |
| | REGULATIONS, LOAD [mV] | 100 Max | 1200 Max | 100 Max | 2400 Max |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 50 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 100 Max | 290 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 75 Max | 360 Max |
| | RISE TIME [ms] | 1000 max (AC IN 85V, I _c =100%) | | | |
| HOLDING TIME [ms] | 16 min (AC IN 85V, I _c =100%) | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | INPUT-CASE, FG | AC2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | | UL, C-UL, CE | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | |

MSF30-DUAL EXTERNAL VIEW



- * Weight : 450g
- * Tolerance : ±1
- * Dimensions in mm

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

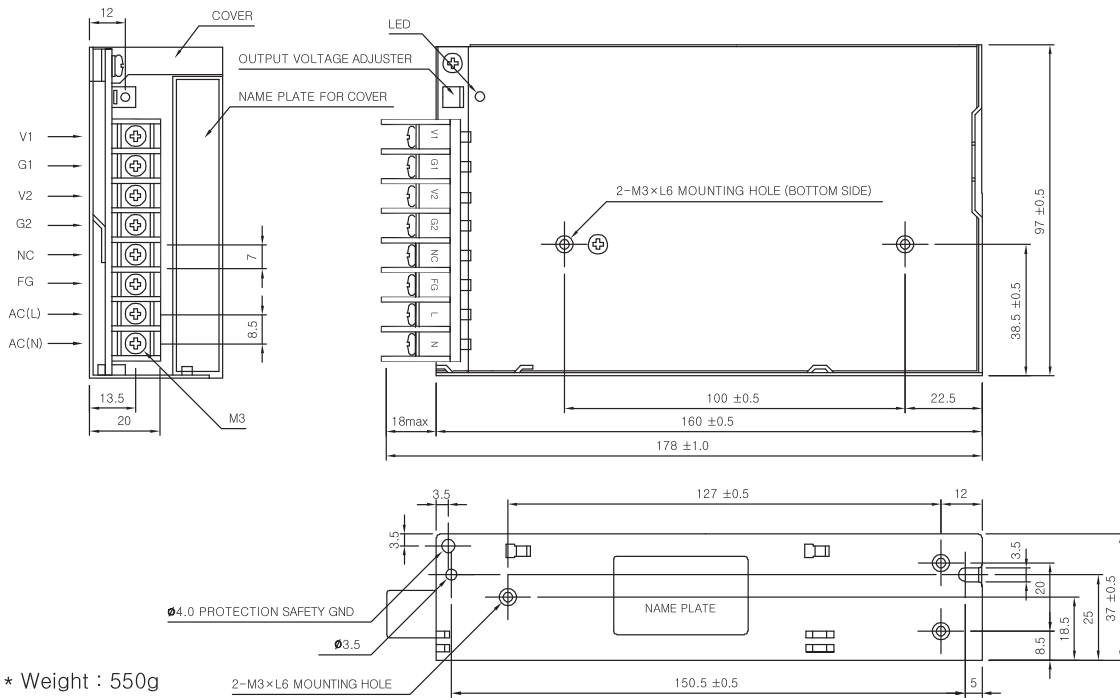
Discrete Semiconductors

MSF50-DUAL SPECIFICATIONS



| MODEL | | MSF50-BDW | | MSF50-BHW | |
|-----------------------|--------------------------------|---|-----------------------------|--------------|----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC110 ~ 370V), 50/60Hz (43 ~ 440Hz) Universal Input | | | |
| | CURRENT [A] | 110V | 1.5 (I _o =100%) | | |
| | | 220V | 0.75 (I _o =100%) | | |
| | EFFICIENCY [%] | 110V | 72 typ | | 72 typ |
| 220V | | | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 5 | 24 |
| | CURRENT [A] | 1.2 ~ 6 | 0.6 ~ 2 | 1.2 ~ 6 | 0.3 ~ 1 |
| | REGULATIONS, LINE [mV] | 100 Max | 1200 Max | 100 Max | 2400 Max |
| | REGULATIONS, LOAD [mV] | 100 Max | 1200 Max | 100 Max | 2400 Max |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 50 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 100 Max | 290 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 75 Max | 360 Max |
| | RISE TIME [ms] | 1000 max (AC IN 100V, I _o =100%) | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 100V, I _o =100%) | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10~ +50°C, 20 ~ 90% RH(Non condensing) | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | | UL, C-UL, CE | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | |

MSF50-DUAL EXTERNAL VIEW



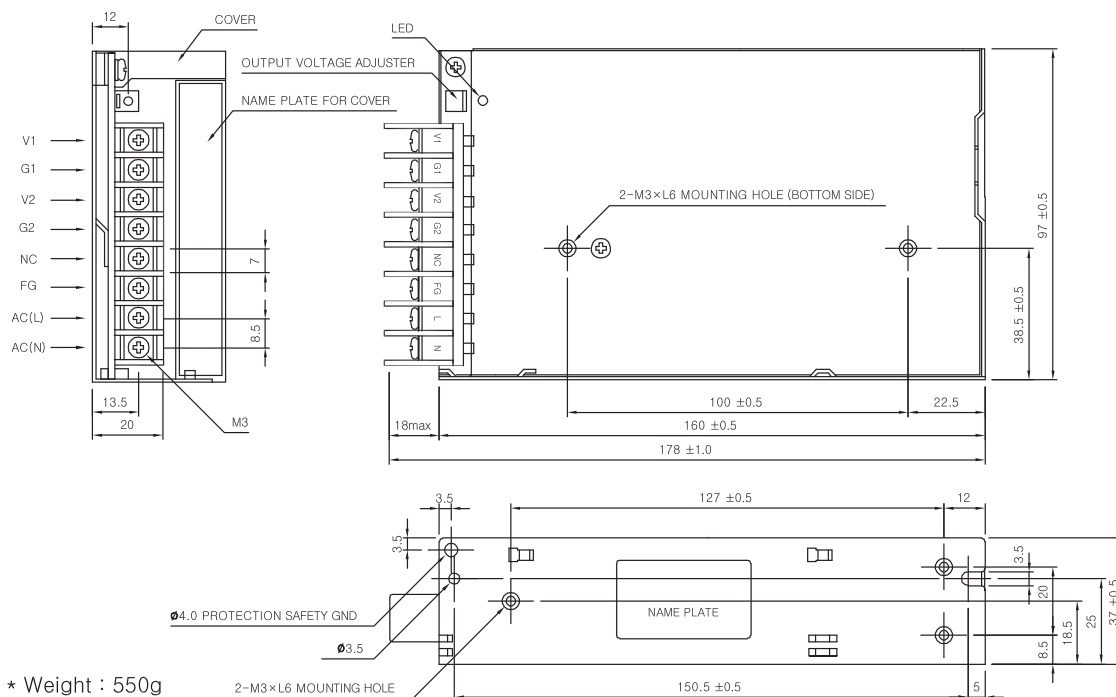
- * Weight : 550g
- * Tolerance : ±1
- * Dimensions in mm

MSF60-DUAL SPECIFICATIONS



| MODEL | | MSF60-BDW | MSF60-BHW | MSF60-ADW | | | |
|-----------------------|--------------------------------|---|----------------------------|--------------|------------|---------|----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC110 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input | | | | | |
| | CURRENT [A] | 110V | 1.8 (I _c =100%) | | | | |
| | | 220V | 0.9 (I _c =100%) | | | | |
| | EFFICIENCY [%] | 110V | 75 typ | 75 typ | 75 typ | | |
| 220V | | 20A typ(AC IN 110V, I _c =100%), 40A typ(AC IN 220V, I _c =100%) at cold start. | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 5 | 24 | 3.3 | 12 |
| | CURRENT [A] | 0.8 ~ 4 | 0.9 ~ 3 | 0.6 ~ 3 | 0.54 ~ 1.8 | 0.8 ~ 4 | 0.9 ~ 3 |
| | REGULATIONS, LINE [mV] | 100 Max | 1200 Max | 100 Max | 2400 Max | 100 Max | 1200 Max |
| | REGULATIONS, LOAD [mV] | 100 Max | 1200 Max | 100 Max | 2400 Max | 100 Max | 1200 Max |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 50 Max | 240 Max | 50 Max | 120 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 100 Max | 290 Max | 100 Max | 170 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 75 Max | 360 Max | 50 Max | 180 Max |
| | RISE TIME [ms] | 1000 max (AC IN 110V, I _c =100%) | | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 110V, I _c =100%) | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | | UL, C-UL, CE | | - | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | | | |

MSF60-DUAL EXTERNAL VIEW



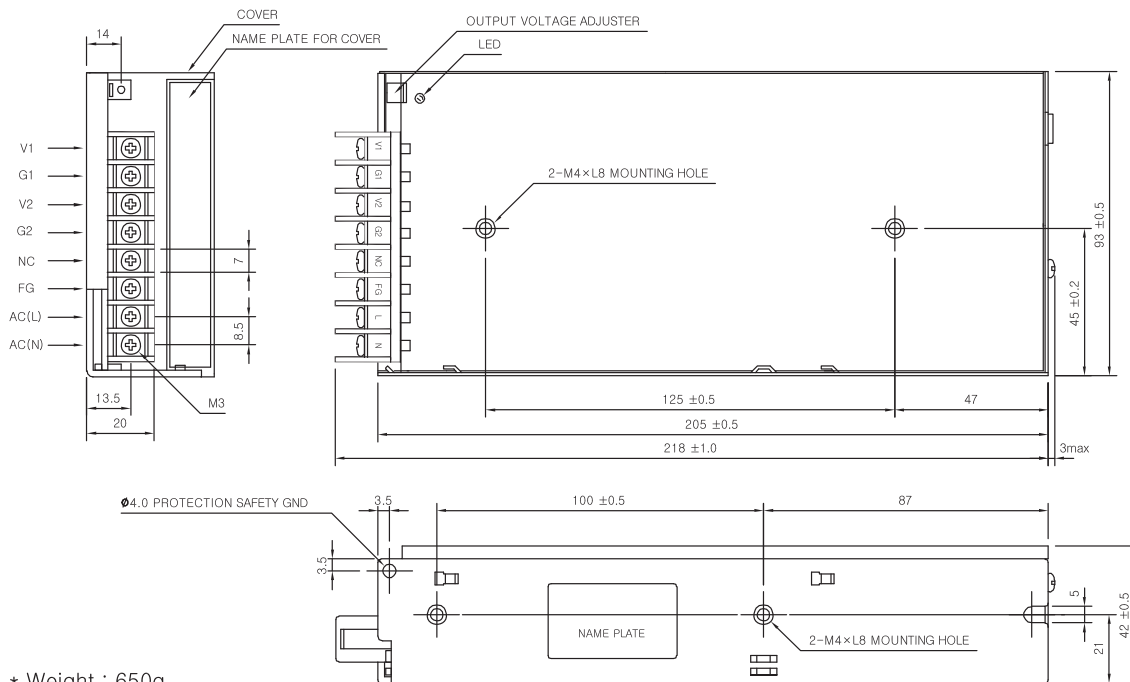
- * Weight : 550g
- * Tolerance : ±1
- * Dimensions in mm

MSF80-DUAL SPECIFICATIONS



| MODEL | | MSF80-BDW | | MSF80-BHW | |
|-----------------------|--------------------------------|---|----------------------------|--------------|------------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable. | | | |
| | CURRENT [A] | 110V | 2.0 (I _o =100%) | | |
| | | 220V | 1.0 (I _o =100%) | | |
| | EFFICIENCY [%] | 110V | 75 typ | | 75 typ |
| 220V | | | | | |
| INRUSH CURRENT | | 20A typ (AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 5 | 24 |
| | CURRENT [A] | 1.4 ~ 7 | 1 ~ 3.5 | 1.4 ~ 7 | 0.54 ~ 1.8 |
| | REGULATIONS, LINE [mV] | 100 Max | 1200 Max | 100 Max | 2400 Max |
| | REGULATIONS, LOAD [mV] | 100 Max | 1200 Max | 100 Max | 2400 Max |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 50 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 100 Max | 290 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 75 Max | 360 Max |
| | RISE TIME [ms] | 1000 max (AC IN 100V, I _o =100%) | | | |
| | HOLDING TIME [ms] | 10 typ (AC IN 100V, I _o =100%) | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | |
| | OVER VOLTAGE PROTECTION | Works at 120 ~ 150% of rating (CH1) | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | | UL, C-UL, CE | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | |

MSF80-DUAL EXTERNAL VIEW



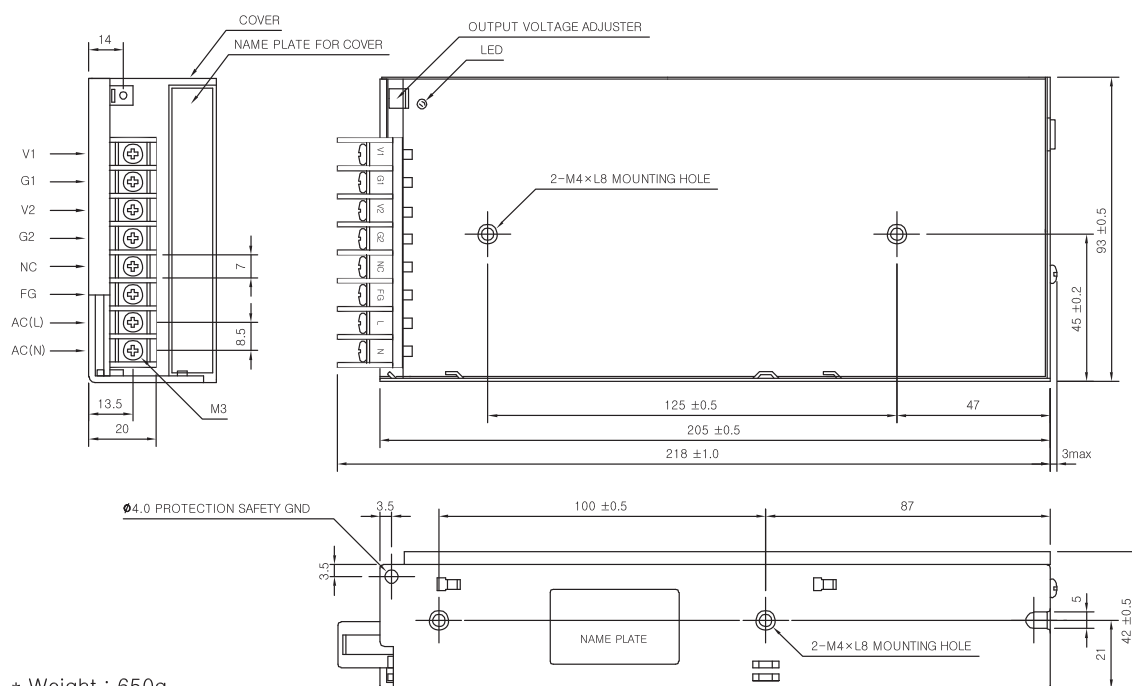
- * Weight : 650g
- * Tolerance : ±1
- * Dimensions in mm

MSF100-DUAL SPECIFICATIONS



| MODEL | | MSF100-BDW | | MSF100-BHW | | |
|-----------------------|---------------------------|--|---|------------|--------------|----------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable. | | | |
| | CURRENT | [A] | 2.4 (I _o =100%) | | | |
| | | | 1.4 (I _o =100%) | | | |
| | EFFICIENCY | [%] | 75 typ | | 75 typ | |
| | | 20A typ (AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | |
| OUTPUT | VOLTAGE | [V] | 5 | 12 | 5 | 24 |
| | CURRENT | [A] | 2 ~ 10 | 1.2 ~ 4 | 2 ~ 10 | 0.6 ~ 2 |
| | REGULATIONS, LINE | [mV] | 100 Max | 1200 Max | 100 Max | 2400 Max |
| | REGULATIONS, LOAD | [mV] | 100 Max | 1200 Max | 100 Max | 2400 Max |
| | RIPPLE | [mVp-p] | 50 Max | 120 Max | 50 Max | 240 Max |
| | RIPPLE, NOISE | [mVp-p] | 100 Max | 170 Max | 100 Max | 290 Max |
| | TEMPERATURE DRIFT 0~+50°C | [mV] | 75 Max | 180 Max | 75 Max | 360 Max |
| | RISE TIME | [ms] | 1000 max (AC IN 110V, I _o =100%) | | | |
| | HOLDING TIME | [ms] | 10 typ (AC IN 110V, I _o =100%) | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | |
| | OVER VOLTAGE PROTECTION | Works at 120 ~ 150% of rating (CH1) | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | |
| | STORAGE TEMPAND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | | | UL, C-UL, CE | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | | |

MSF100-DUAL EXTERNAL VIEW

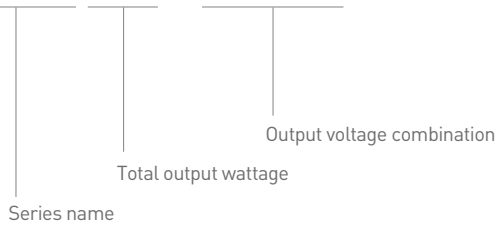


- * Weight : 650g
- * Tolerance : ±1
- * Dimensions in mm

ORDERING INFORMATION

NEW

MSF30-BDB



- Approved by UL/C-UL, CE
- Inrush current limit
- Over current protection
- Over voltage protection
- Complies with FCC Part15 and EN55022 Class A Limits
- 3 years warranty

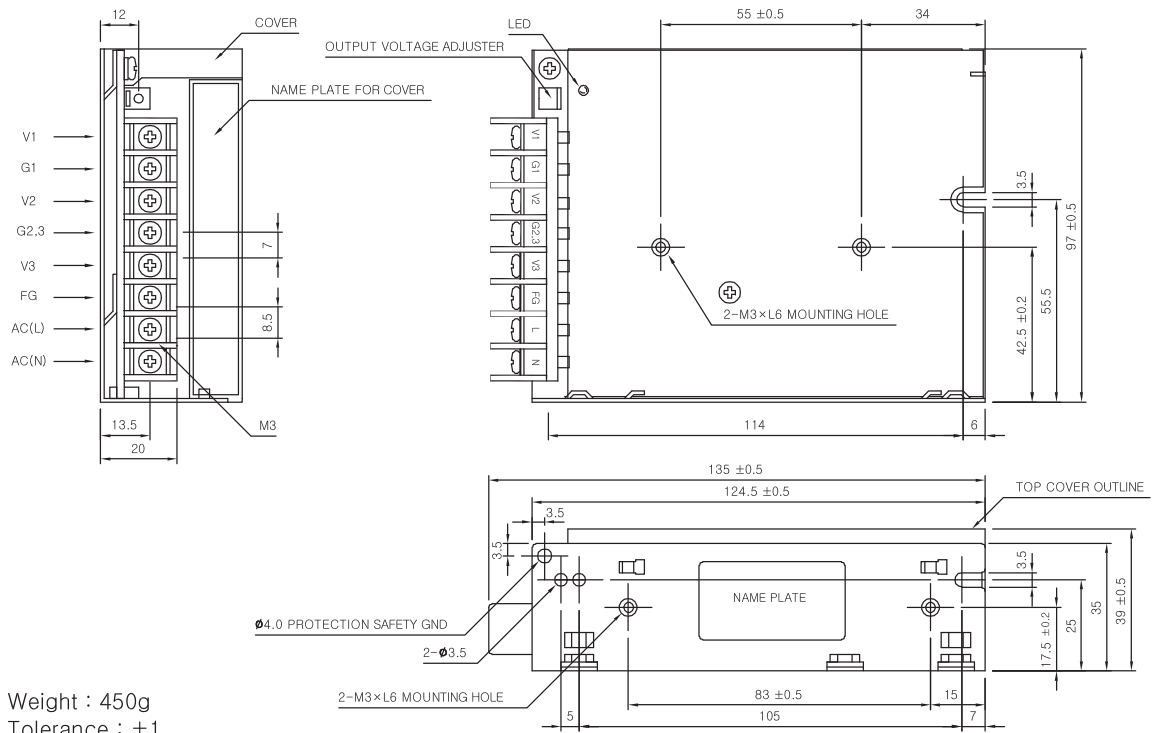


MSF30-TRIPLE SPECIFICATIONS



| MODEL | | MSF30-BDB | | | MSF30-DD | | | MSF30-EE | | | |
|-------------------------|--------------------------------|---|---|------------|--------------|----------|------------|--------------|------------|------------|--|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC125 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input. | | | | | | | | | |
| | CURRENT [A] | 110V | 1.0 (I _o =100%) | | | | | | | | |
| | | 220V | 0.6 (I _o =100%) | | | | | | | | |
| | EFFICIENCY [%] | 110V | 70 typ | | | 70 typ | | | 70 typ | | |
| 220V | | 70 typ | | | 70 typ | | | 70 typ | | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | -5 | 5 | 12 | -12 | 5 | 15 | -15 | |
| | CURRENT [A] | 0.6 ~ 3 | 0.3 ~ 1 | 0.15 ~ 0.5 | 0.6 ~ 3 | 0.3 ~ 1 | 0.15 ~ 0.5 | 0.6 ~ 3 | 0.15 ~ 0.5 | 0.15 ~ 0.5 | |
| | REGULATIONS [mV] | 50 Max | 120 Max | 50 Max | 50 Max | 120 Max | 120 Max | 50 Max | 150 Max | 150 Max | |
| | REGULATIONS [mV] | 100 Max | 1200 Max | 500 Max | 100 Max | 1200 Max | 1200 Max | 100 Max | 1500 Max | 1500 Max | |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 50 Max | 50 Max | 120 Max | 120 Max | 50 Max | 150 Max | 150 Max | |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 100 Max | 100 Max | 170 Max | 170 Max | 100 Max | 200 Max | 200 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 75 Max | 75 Max | 180 Max | 180 Max | 75 Max | 225 Max | 225 Max | |
| | RISE TIME [ms] | 1000 max (AC IN 85V, I _o =100%) | | | | | | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 85V, I _o =100%) | | | | | | | | | |
| | PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | | |
| OVER VOLTAGE PROTECTION | | Works at 115 ~ 140% of rating | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | | | UL, C-UL, CE | | | UL, C-UL, CE | | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | | | | | | | |

MSF30-TRIPLE EXTERNAL VIEW



- * Weight : 450g
- * Tolerance : ±1
- * Dimensions in mm

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

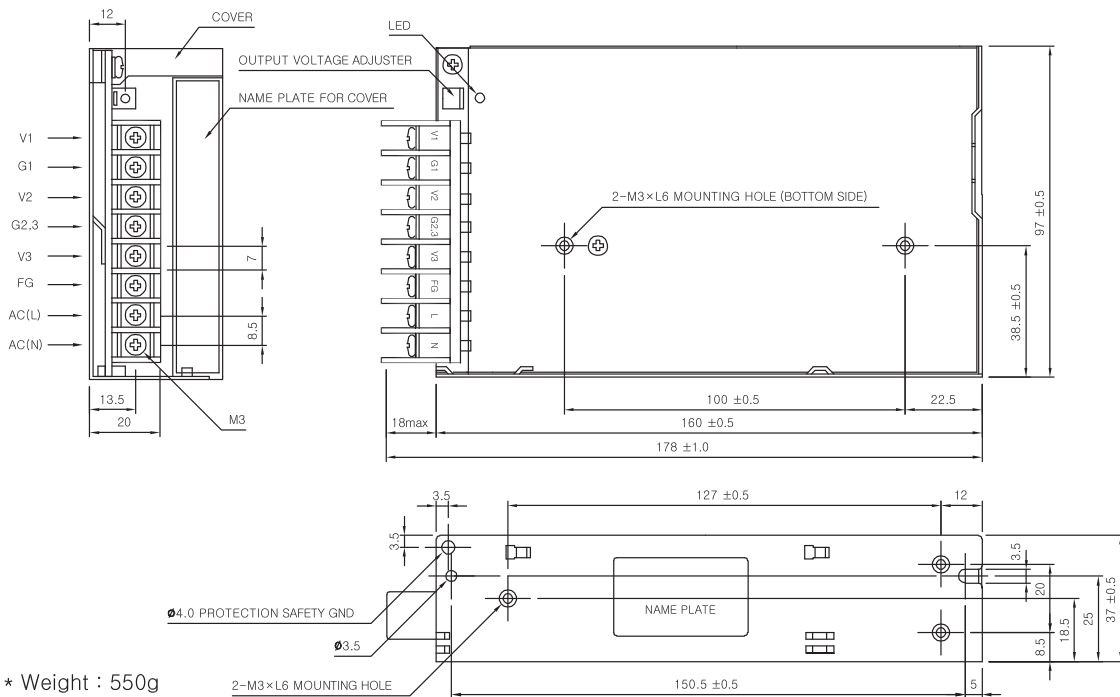
Discrete Semiconductors

MSF50-TRIPLE SPECIFICATIONS



| MODEL | | MSF50-BDB | | | MSF50-DD | | | MSF50-EE | | | MSF50-BDH | | |
|-----------------------|--------------------------------|---|---|------------|--------------|----------|----------|--------------|----------|----------|--------------|----------|----------|
| INPUT | VOLTAGE, FREQUENCY | | AC100-240V (AC85 ~ 264V or DC110 ~ 370V), 50/60Hz (43 ~ 440Hz) Universal Input. | | | | | | | | | | |
| | CURRENT [A] | 110V | 1.5 (I _o =100%) | | | | | | | | | | |
| | | 220V | 0.75 (I _o =100%) | | | | | | | | | | |
| | EFFICIENCY [%] | 110V | 72 typ | | | 72 typ | | | 72 typ | | | 72 typ | |
| 220V | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | -5 | 5 | 12 | -12 | 5 | 15 | -15 | 5 | 12 | 24 |
| | CURRENT [A] | 1.4 ~ 7 | 0.3 ~ 1 | 0.15 ~ 0.5 | 1 ~ 5 | 0.3 ~ 1 | 0.3 ~ 1 | 0.8 ~ 4 | 0.3 ~ 1 | 0.3 ~ 1 | 0.6 ~ 3 | 0.3 ~ 1 | 0.3 ~ 1 |
| | REGULATIONS, LINE [mV] | 100 Max | 1200 Max | 500 Max | 100 Max | 1200 Max | 1200 Max | 100 Max | 1500 Max | 1500 Max | 100 Max | 1200 Max | 2400 Max |
| | REGULATIONS, LOAD [mV] | 100 Max | 1200 Max | 500 Max | 100 Max | 1200 Max | 1200 Max | 100 Max | 1500 Max | 1500 Max | 100 Max | 1200 Max | 2400 Max |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 50 Max | 50 Max | 120 Max | 120 Max | 50 Max | 150 Max | 150 Max | 50 Max | 120 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 100 Max | 100 Max | 170 Max | 170 Max | 100 Max | 200 Max | 200 Max | 100 Max | 170 Max | 290 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 75 Max | 75 Max | 180 Max | 180 Max | 75 Max | 225 Max | 225 Max | 75 Max | 180 Max | 360 Max |
| | RISE TIME [ms] | 1000 max (AC IN 110V, I _o =100%) | | | | | | | | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 110V, I _o =100%) | | | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | | | |
| | VIBRATION | 10~55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | | | UL, C-UL, CE | | | UL, C-UL, CE | | | UL, C-UL, CE | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | | | | | | | | | |

MSF50-TRIPLE EXTERNAL VIEW



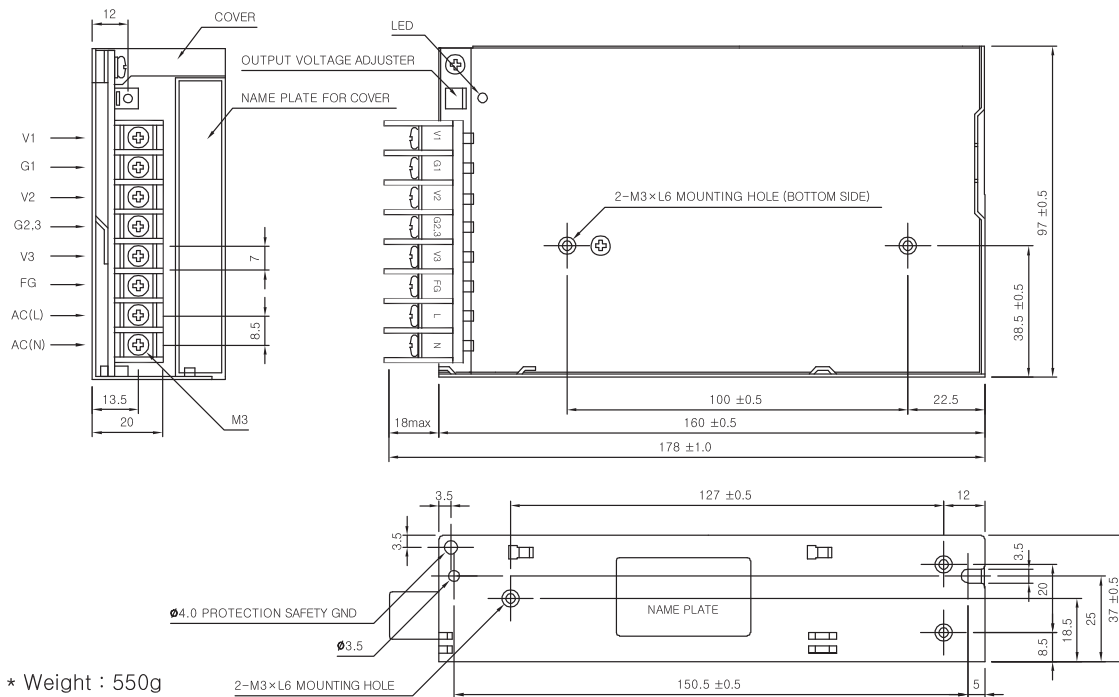
- * Weight : 550g
- * Tolerance : ±1
- * Dimensions in mm

MSF60-TRIPLE SPECIFICATIONS



| MODEL | | MSF60-BDB | | | MSF60-DD | | | MSF60-EE | | | MSF60-BDH | | | |
|-------------------------|--------------------------------|---|---|------------|--------------|------------|------------|--------------|----------|------------|--------------|----------|----------|--|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC110 ~ 370V), 50/60Hz (47 ~ 440Hz) Universal Input. | | | | | | | | | | | | |
| | CURRENT [A] | 110V | 1.9 (I _o =100%) | | | | | | | | | | | |
| | | 220V | 0.9 (I _o =100%) | | | | | | | | | | | |
| | EFFICIENCY [%] | 110V | 75 typ | | | 75 typ | | | 75 typ | | | 75 typ | | |
| | | 220V | 75 typ | | | 75 typ | | | 75 typ | | | 75 typ | | |
| INRUSH CURRENT | | 20A typ(AC IN 110V, I _o =100%), 40A typ(AC IN 220V, I _o =100%) at cold start. | | | | | | | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | -5 | 5 | 12 | -12 | 5 | 15 | -15 | 5 | 12 | 24 | |
| | CURRENT [A] | 1 ~ 5 | 0.75 ~ 2.5 | 0.15 ~ 0.5 | 1 ~ 5 | 0.75 ~ 2.5 | 0.15 ~ 0.5 | 1 ~ 5 | 0.6 ~ 2 | 0.15 ~ 0.5 | 1 ~ 5 | 0.3 ~ 1 | 0.3 ~ 1 | |
| | REGULATIONS, LINE [mV] | 100 Max | 1200 Max | 500 Max | 100 Max | 1200 Max | 1200 Max | 100 Max | 1500 Max | 1500 Max | 100 Max | 1200 Max | 2400 Max | |
| | REGULATIONS, LOAD [mV] | 100 Max | 1200 Max | 500 Max | 100 Max | 1200 Max | 1200 Max | 100 Max | 1500 Max | 1500 Max | 100 Max | 1200 Max | 2400 Max | |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 50 Max | 50 Max | 120 Max | 120 Max | 50 Max | 150 Max | 150 Max | 50 Max | 120 Max | 240 Max | |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 100 Max | 100 Max | 170 Max | 170 Max | 100 Max | 200 Max | 200 Max | 100 Max | 170 Max | 290 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 75 Max | 75 Max | 180 Max | 180 Max | 75 Max | 225 Max | 225 Max | 75 Max | 180 Max | 360 Max | |
| | RISE TIME [ms] | 1000 max (AC IN 110V, I _o =100%) | | | | | | | | | | | | |
| | HOLDING TIME [ms] | 16 typ (AC IN 110V, I _o =100%) | | | | | | | | | | | | |
| | PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | | | | | |
| OVER VOLTAGE PROTECTION | | Works at 115 ~ 140% of rating | | | | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | | | | | | |
| | IMPACT | 10G for 20ms, Once on each X, Y and Z axis | | | | | | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | | | UL, C-UL, CE | | | UL, C-UL, CE | | | UL, C-UL, CE | | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | | | | | | | | | | |

MSF60-TRIPLE EXTERNAL VIEW



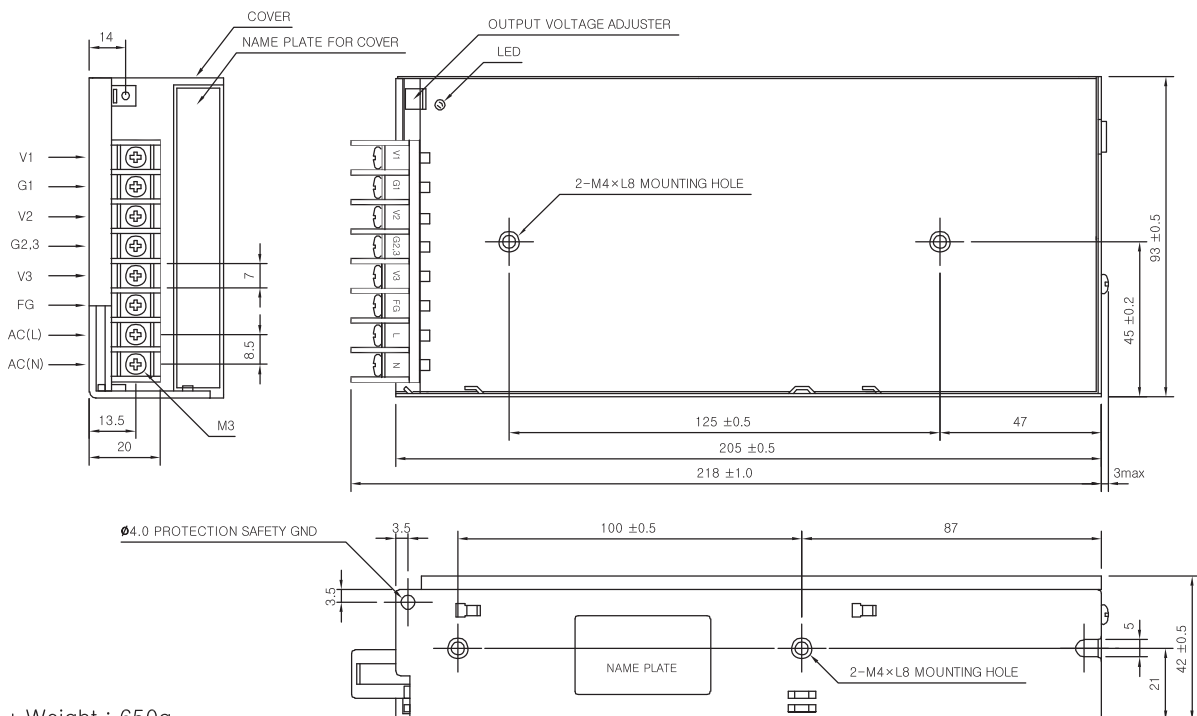
- * Weight : 550g
- * Tolerance : ±1
- * Dimensions in mm

MSF80-TRIPLE SPECIFICATIONS



| MODEL | | MSF80-BDB | MSF80-DD | MSF80-EE | MSF80-BHD | | | | | | | | |
|-------------------------|--------------------------------|---|---|--------------|--------------|----------|----------|-----------|------------|----------|---------|------------|----------|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200-240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable. | | | | | | | | | | | |
| | CURRENT [A] | 110V | 2.0 (I _c =100%) | | | | | | | | | | |
| | | 220V | 1.1 (I _c =100%) | | | | | | | | | | |
| | EFFICIENCY [%] | 110V | 75 typ | 75 typ | 75 typ | 75 typ | | | | | | | |
| 220V | | | | | | | | | | | | | |
| INRUSH CURRENT | | 20A typ (AC IN 110V, I _c =100%), 40A typ(AC IN 220V, I _c =100%) at cold start. | | | | | | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | -5 | 5 | 12 | -12 | 5 | 15 | -15 | 5 | 24 | 12 |
| | CURRENT [A] | 1.8 ~ 9 | 0.75 ~ 2.5 | 0.15 ~ 0.5 | 1.8 ~ 9 | 0.6 ~ 2 | 0.3 ~ 1 | 1.7 ~ 8.5 | 0.45 ~ 1.5 | 0.3 ~ 1 | 0.8 ~ 4 | 0.45 ~ 1.5 | 0.6 ~ 2 |
| | REGULATIONS, LINE [mV] | 100 Max | 1200 Max | 500 Max | 100 Max | 1200 Max | 1200 Max | 100 Max | 1500 Max | 1500 Max | 100 Max | 1200 Max | 2400 Max |
| | REGULATIONS, LOAD [mV] | 100 Max | 1200 Max | 500 Max | 100 Max | 1200 Max | 1200 Max | 100 Max | 1500 Max | 1500 Max | 100 Max | 1200 Max | 2400 Max |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 50 Max | 50 Max | 120 Max | 120 Max | 50 Max | 150 Max | 150 Max | 50 Max | 240 Max | 120 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 100 Max | 100 Max | 170 Max | 170 Max | 100 Max | 200 Max | 200 Max | 100 Max | 290 Max | 170 Max |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 75 Max | 75 Max | 180 Max | 180 Max | 75 Max | 225 Max | 225 Max | 75 Max | 360 Max | 180 Max |
| | RISE TIME [ms] | 1000 max (AC IN 110V, I _c =100%) | | | | | | | | | | | |
| | HOLDING TIME [ms] | 10 typ (AC IN 110V, I _c =100%) | | | | | | | | | | | |
| | PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | | | | |
| OVER VOLTAGE PROTECTION | | Works at 120~150% of rating | | | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | UL, C-UL, CE | | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | | | | | | | | | |

MSF80-TRIPLE EXTERNAL VIEW



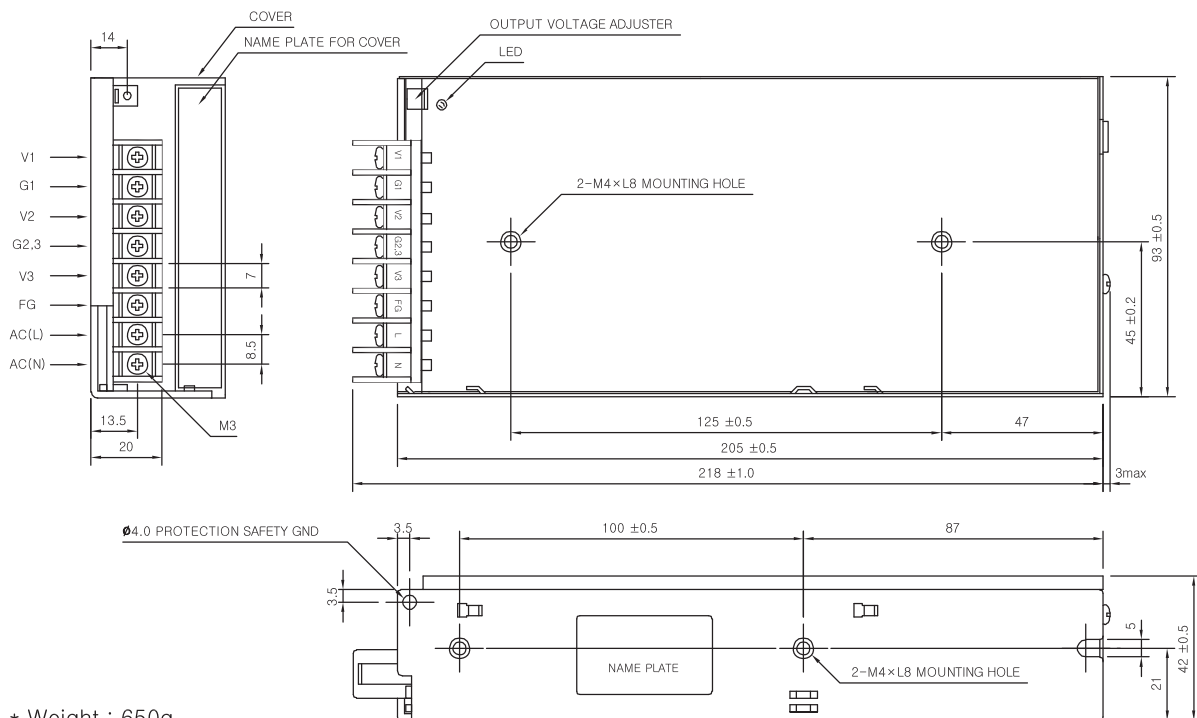
- * Weight : 650g
- * Tolerance : ±1
- * Dimensions in mm

MSF100-TRIPLE SPECIFICATIONS



| MODEL | | MSF100-BDB | MSF100-DD | | | MSF100-EE | | | MSF100-BHD | | | | | |
|-----------------------|--------------------------------|---|----------------------------|---------|--------------|-----------|----------|--------------|------------|----------|--------------|----------|----------|--|
| INPUT | VOLTAGE, FREQUENCY | AC100-120V / 200 ~ 240V (AC90 ~ 132V / 180 ~ 264V or DC240 ~ 370V), 50/60Hz (47 ~ 440Hz) User Selectable. | | | | | | | | | | | | |
| | CURRENT [A] | 110V | 2.4 (I _c =100%) | | | | | | | | | | | |
| | | 220V | 1.4 (I _c =100%) | | | | | | | | | | | |
| | EFFICIENCY [%] | 110V | 75 typ | 75 typ | 75 typ | 75 typ | 75 typ | 75 typ | 75 typ | 75 typ | 75 typ | 75 typ | 75 typ | |
| INRUSH CURRENT | | 20A typ (AC IN 110V, I _c =100%), 40A typ (AC IN 220V, I _c =100%) at cold start. | | | | | | | | | | | | |
| OUTPUT | VOLTAGE [V] | 5 | 12 | -5 | 5 | 12 | -12 | 5 | 15 | -15 | 5 | 24 | 12 | |
| | CURRENT [A] | 2.6 ~ 13 | 0.6 ~ 2 | 0.6 ~ 2 | 2.6 ~ 13 | 0.6 ~ 2 | 0.3 ~ 1 | 2.6 ~ 13 | 0.45 ~ 1.5 | 0.3 ~ 1 | 1.2 ~ 6 | 0.6 ~ 2 | 0.6 ~ 2 | |
| | REGULATIONS, LINE [mV] | 100 Max | 1200 Max | 500 Max | 100 Max | 1200 Max | 1200 Max | 100 Max | 1500 Max | 1500 Max | 100 Max | 1200 Max | 2400 Max | |
| | REGULATIONS, LOAD [mV] | 100 Max | 1200 Max | 500 Max | 100 Max | 1200 Max | 1200 Max | 100 Max | 1500 Max | 1500 Max | 100 Max | 1200 Max | 2400 Max | |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 50 Max | 50 Max | 120 Max | 120 Max | 50 Max | 150 Max | 150 Max | 50 Max | 240 Max | 120 Max | |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 100 Max | 100 Max | 170 Max | 170 Max | 100 Max | 200 Max | 200 Max | 100 Max | 290 Max | 170 Max | |
| | TEMPERATURE DRIFT 0~+50°C [mV] | 75 Max | 180 Max | 75 Max | 75 Max | 180 Max | 180 Max | 75 Max | 225 Max | 225 Max | 75 Max | 360 Max | 180 Max | |
| | RISE TIME [ms] | 1000 max (AC IN 110V, I _c =100%) | | | | | | | | | | | | |
| | HOLDING TIME [ms] | 10 typ (AC IN 110V, I _c =100%) | | | | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115~ 140% of rating | | | | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non condensing) | | | | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | | | | |
| SAFETY | SAFETY REGULATION | UL, C-UL, CE | | | UL, C-UL, CE | | | UL, C-UL, CE | | | UL, C-UL, CE | | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part15 and EN55022 Class A Limits | | | | | | | | | | | | |

MSF100-TRIPLE EXTERNAL VIEW



- * Weight : 650g
- * Tolerance : ±1
- * Dimensions in mm

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

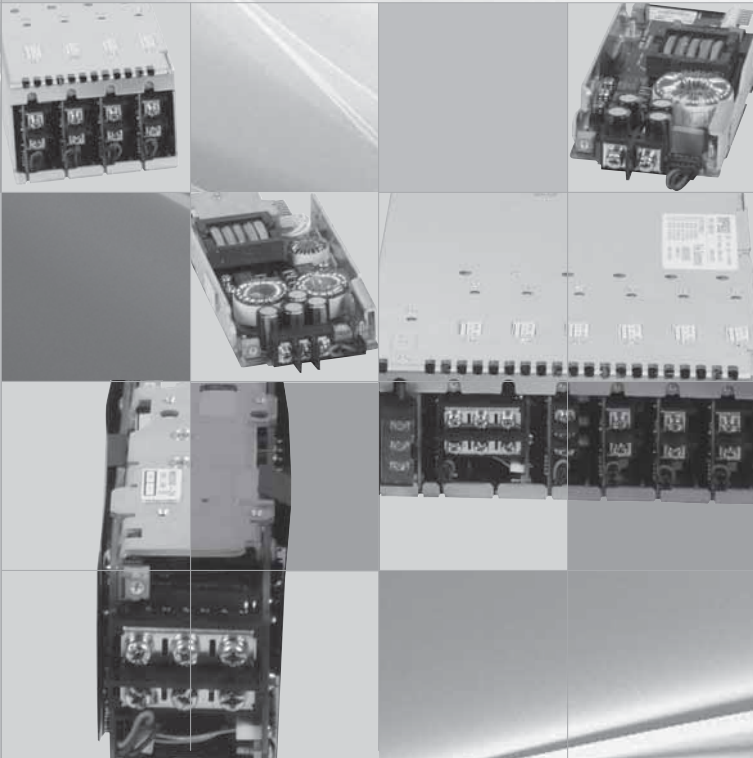
AC FAN Motor

Power Module

Discrete Semiconductors

For the Switching Model Power Supply

Switching Mode Power Supply



ORIENT

ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

| | |
|----------------------|------------|
| 1. FDR SERIES | 20 |
| 2. JSF SERIES | 30 |
| 3. HSF SERIES | 42 |
| 4. LSP SERIES | 50 |
| 5. CSF SERIES | 58 |
| 6. PSF SERIES | 80 |
| 7. VSF SERIES | 88 |
| 8. ESF SERIES | 112 |
| 9. MSF SERIES | 134 |
| 10. MP SERIES | 162 |



RoHS

ORDERING INFORMATION

MP4-BODEH -00-

Abbreviation type name of MP series

Abbreviation power of MP series

 3: MP300 4: MP450
 6: MP650 9: MP900

Slot 1 Output module

Slot 2 Output module

Slot 3 Output module

Slot 4 Output module

Slot 5 Output module

Slot 6 Output module

Parallel code

Option (series code)



MP-SERIES SPECIFICATIONS (For delivery, contact our office sales)

| | MODEL | MP300 | MP450 | MP650 | MP900 | |
|-----------------------|---|---|-----------|-------------------|-----------------------|--------|
| INPUT | VOLTAGE, FREQUENCY | AC100-240V (AC85 ~ 264V or DC120 ~ 370V), 50/60Hz (47 ~ 63Hz) Universal Input | | | | |
| | CURRENT [A] | 110V | 3.7 | 5.7 | 8.0 | 11.0 |
| | | 220V | 2.0 | 3.1 | 4.2 | 5.7 |
| | POWER FACTOR | 0.99 typ (AC IN 110V, I _o =100%) / 0.95 typ (AC IN 220V, I _o =100%) | | | | |
| | EFFICIENCY [%] | 110V | 74 typ | 75 typ | 77 typ | 77 typ |
| | | 220V | 78 typ | 78 typ | 80 typ | 80 typ |
| LEAKAGE CURRENT | 0.5A max(AC IN 110V, I _o =100%), 0.95A max(AC IN 220V, I _o =100%) | | | | | |
| INRUSH CURRENT | 15A typ(AC IN 110V, I _o =100%), 30A typ(AC IN 220V, I _o =100%) at cold start. | | | 20A typ / 40A typ | | |
| OUTPUT | NUMBER OF SLOTS | 4 | 5 | 5 | 6 | |
| | TOTAL POWER (110V/220V) [W] | 250 / 300 | 400 / 450 | 600 / 650 | 800 / 900 (Peak 1k) | |
| | RISE TIME [mS] | 500 Max (AC IN 100V I _o =100%) | | | | |
| | HOLDING TIME [mS] | 20 typ (AC IN 100V I _o =100%) | | | | |
| FUNCTION | AUXILIARY POWER (AUX) | 12V / 0.1A (Only used for remote ON/OFF function) | | | | |
| | ALARM (PR) | FAN alarm, LINE alarm | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 3,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | INPUT-CASE, FG | AC 2,000V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | |
| | VIBRATION | 10 ~ 55Hz at 2G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | |
| | IMPACT | 20G for 20ms, Once on each X, Y and Z axis | | | | |
| SAFETY | SAFETY REGULATION | Complied with UL 60950, C-UL, EN60950 | | | | |
| | LINE CONDUCTED RF VOLTAGE | Complied with FCC Part 15, VCCI-B, CISPR22-B, EN55022-B | | | | |
| | HARMONIC ATTENUATOR | Complied with IEC61000-3-2 | | | | |

MD150-SERIES SPECIFICATIONS (For delivery, contact our office sales)

| MODEL | | 1N | 1A | 1B | 1P | 1D | 1E | 1F | 1H | 1R | 1L |
|---------------------------------|---------|---|-----------|---------|---------|----------|-------------|-------------|-------------|-------------|-------------|
| VOLTAGE | [V] | 2 | 3.3 | 5 | 7.5 | 12 | 15 | 18 | 24 | 34 | 48 |
| OUTPUT VOLTAGE ADJUSTMENT RANGE | [V] | 1.6 ~ 2.6 | 2.6 ~ 3.6 | 4 ~ 5.5 | 6 ~ 8.2 | 9 ~ 13.2 | 13.2 ~ 16.5 | 16.5 ~ 19.2 | 19.2 ~ 26.4 | 27.2 ~ 37.4 | 38.4 ~ 52.8 |
| CURRENT | [A] | 26 | 26 | 26 | 18 | 13 | 10 | 8.5 | 6.5 | 4.5 | 3.2 |
| PEAK CURRENT | [A] | - | - | - | - | 14 | 12 | 10 | 8 | 5.5 | 4 |
| LINE REGULATION | [mV] | 20 Max | 20 Max | 20 Max | 36 Max | 48 Max | 60 Max | 72 Max | 96 Max | 120 Max | 192 Max |
| LOAD REGULATION | [mV] | 40 Max | 40 Max | 40 Max | 100 Max | 100 Max | 120 Max | 120 Max | 150 Max | 180 Max | 300 Max |
| RIPPLE | [mVp-p] | 80 Max | 80 Max | 80 Max | 120 Max | 120 Max | 150 Max | 180 Max | 240 Max | 300 Max | 480 Max |
| RIPPLE, NOISE | [mVp-p] | 120 Max | 120 Max | 120 Max | 150 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 150 Max |
| TEMPERATUR DRIFT 0~+50°C | [mV] | 50 Max | 110 Max | 50 Max | 90 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 350 Max |
| OVER CURRENT PROTECTION | [A] | Work over 110% for rated current and automatically recovery | | | | | | | | | |
| OVER VOLTAGE PROTECTION | [V] | Work at 115 ~ 140% of rated voltage | | | | | | | | | |
| FUNCTION | - | Remote sensing, Remote ON/OFF, Alarm (LV) | | | | | | | | | |

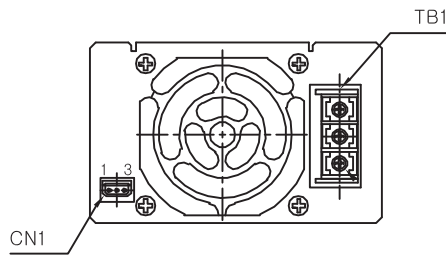
MD150-DW SERIES SPECIFICATIONS (For delivery, contact our office sales)

| MODEL | | 1U | | 1V | | 1W | | 1X | | 1Y | |
|---------------------------------|---------|---|-------------|-----------|---------------|-----------|---------------|-------------|---------------|-------------|---------------|
| VOLTAGE | [V] | 5 | -5 | 5 | -12 | 5 | -24 | 12 | -12 | 15 | -15 |
| OUTPUT VOLTAGE ADJUSTMENT RANGE | [V] | 4.5 ~ 5.5 | -5.5 ~ -4.5 | 4.5 ~ 5.5 | -13.2 ~ -10.8 | 4.5 ~ 5.5 | -26.4 ~ -21.6 | 10.8 ~ 13.2 | -13.2 ~ -10.8 | 13.5 ~ 16.5 | -16.5 ~ -13.5 |
| CURRENT | [A] | 15 | 15 | 15 | 6.3 | 15 | 3.2 | 6.3 | 6.3 | 5 | 5 |
| PEAK CURRENT | [A] | - | - | - | - | - | - | - | - | - | - |
| LINE REGULATION | [mV] | 25 Max | 25 Max | 25 Max | 60 Max | 25 Max | 120 Max | 60 Max | 60 Max | 75 Max | 75 Max |
| LOAD REGULATION | [mV] | 50 Max | 50 Max | 50 Max | 120 Max | 50 Max | 240 Max | 120 Max | 120 Max | 150 Max | 150 Max |
| RIPPLE | [mVp-p] | 100 Max | 100 Max | 100 Max | 120 Max | 100 Max | 240 Max | 120 Max | 120 Max | 150 Max | 150 Max |
| RIPPLE, NOISE | [mVp-p] | 150 Max | 150 Max | 150 Max | 170 Max | 150 Max | 290 Max | 170 Max | 170 Max | 200 Max | 200 Max |
| TEMPERATUR DRIFT 0~+50°C | [mV] | 75 Max | 75 Max | 75 Max | 180 Max | 75 Max | 360 Max | 180 Max | 180 Max | 225 Max | 225 Max |
| OVER CURRENT PROTECTION | [A] | Work over 110% for rated current and automatically recovery | | | | | | | | | |
| OVER VOLTAGE PROTECTION | [V] | Work at 115 ~ 140% of rated voltage | | | | | | | | | |
| FUNCTION | - | Alarm (LV) | | | | | | | | | |

MD300-SERIES SPECIFICATIONS (For delivery, contact our office sales)

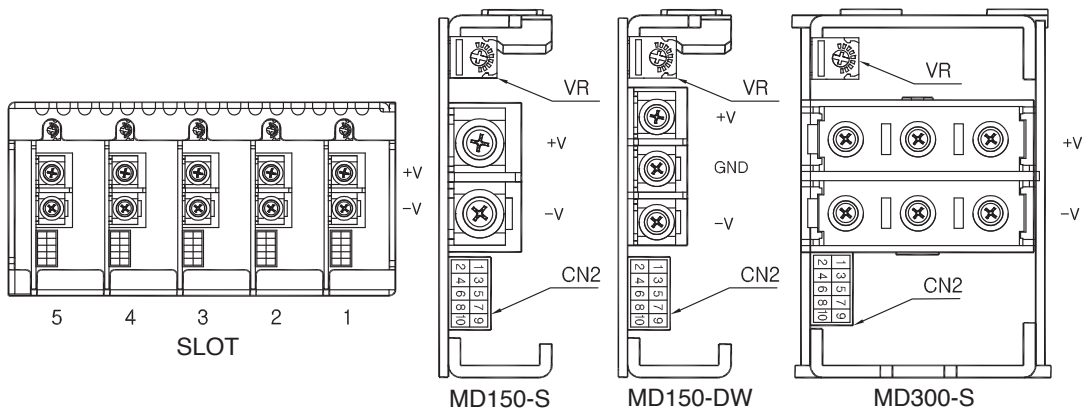
| MODEL | | 2N | 2A | 2B | 2P | 2D | 2E | 2F | 2H | 2R | 2L |
|---------------------------------|---------|---|-----------|---------|---------|----------|-------------|-------------|-------------|-------------|-------------|
| VOLTAGE | [V] | 2 | 3.3 | 5 | 7.5 | 12 | 15 | 18 | 24 | 34 | 48 |
| OUTPUT VOLTAGE ADJUSTMENT RANGE | [V] | 1.6 ~ 2.6 | 2.6 ~ 3.6 | 4 ~ 5.5 | 6 ~ 8.2 | 9 ~ 13.2 | 13.2 ~ 16.5 | 16.5 ~ 19.2 | 19.2 ~ 26.4 | 27.2 ~ 37.4 | 38.4 ~ 52.8 |
| CURRENT | [A] | 60 | 60 | 60 | 40 | 25 | 20 | 17 | 14 | 10 | 7 |
| PEAK CURRENT | [A] | - | - | - | - | - | - | - | - | - | - |
| LINE REGULATION | [mV] | 20 Max | 20 Max | 20 Max | 36 Max | 48 Max | 60 Max | 72 Max | 96 Max | 120 Max | 192 Max |
| LOAD REGULATION | [mV] | 40 Max | 40 Max | 40 Max | 100 Max | 100 Max | 120 Max | 120 Max | 150 Max | 180 Max | 300 Max |
| RIPPLE | [mVp-p] | 80 Max | 80 Max | 80 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 150 Max |
| RIPPLE, NOISE | [mVp-p] | 120 Max | 120 Max | 120 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 250 Max |
| TEMPERATUR DRIFT 0~+50°C | [mV] | 50 Max | 50 Max | 50 Max | 90 Max | 120 Max | 150 Max | 180 Max | 240 Max | 300 Max | 480 Max |
| OVER CURRENT PROTECTION | [A] | Work over 110% for rated current and automatically recovery | | | | | | | | | |
| OVER VOLTAGE PROTECTION | [V] | Work at 115~140% of rated voltage | | | | | | | | | |
| FUNCTION | - | Remote sensing, Remote ON/OFF, Alarm (LV) | | | | | | | | | |

MD150, 300-Series Side view and connector pin assignment(function)



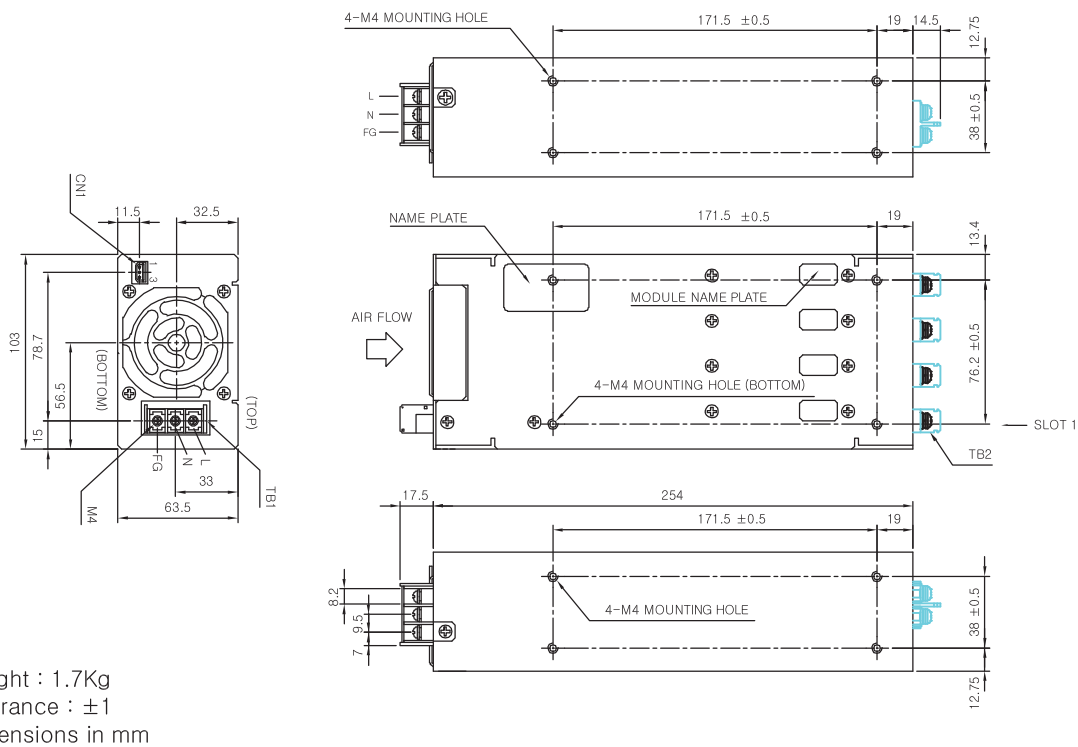
| PIN No. | |
|---------|---------------|
| 1 | G: Ground () |
| 2 | PR: PR Alarm |
| 3 | AUX: (+12V) |

| | | |
|---------------------------------|-----------------|-----------------|
| CN1 CONNECTOR (Maker: MOLEX) | 5268-3A(Header) | 5264-03(Hosing) |
| | 5263 (Terminal) | |



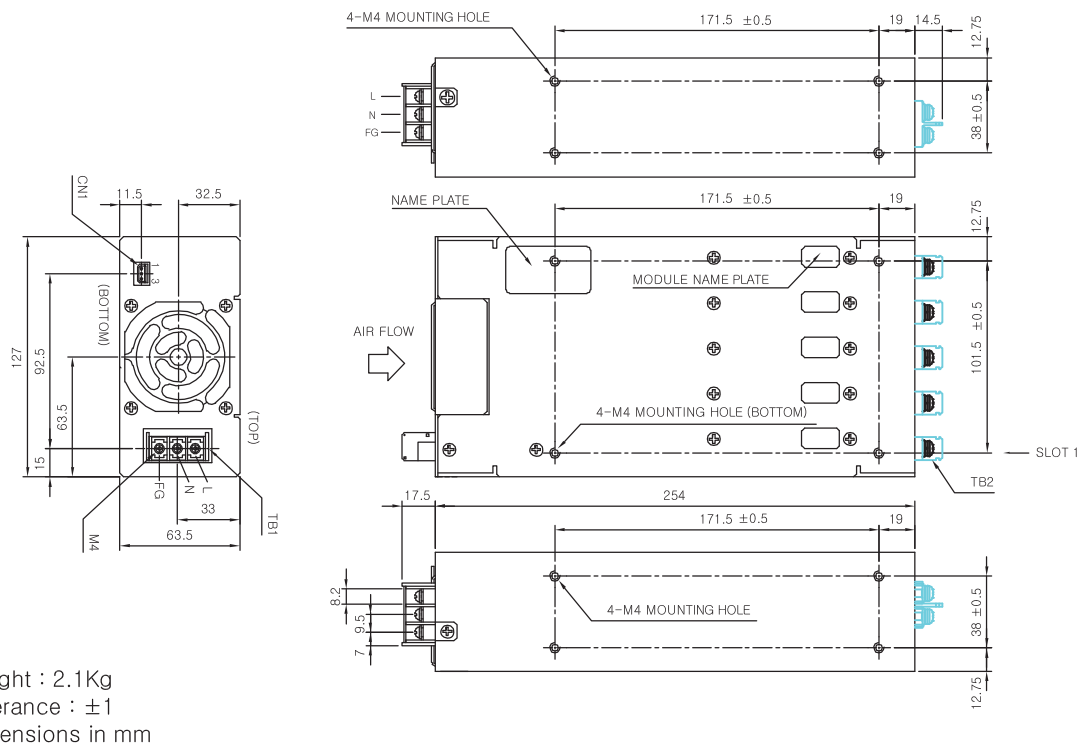
| PIN No. | MD150-S, MD300-S | MD150-DW |
|---------|-----------------------------------|----------------------|
| 1 | RC+: Remote ON/OFF + | RC+: Remote ON/OFF + |
| 2 | RC-: Remote ON/OFF - | RC-: Remote ON/OFF - |
| 3 | N/C: N.C | N/C: N.C |
| 4 | N/C: N.C | N/C: N.C |
| 5 | LV+: LV alarm(Low Voltage) | LV+: LV alarm |
| 6 | LV-: LV alarm ground(Low Voltage) | LV-: LV alarm ground |
| 7 | +M: +Output voltage monitoring | N/C: N.C |
| 8 | +S: +Remote sensing | N/C: N.C |
| 9 | -M: -Output voltage monitoring | N/C: N.C |
| 10 | -S: -Remote sensing | N/C: N.C |

MP300 EXTERNAL VIEW



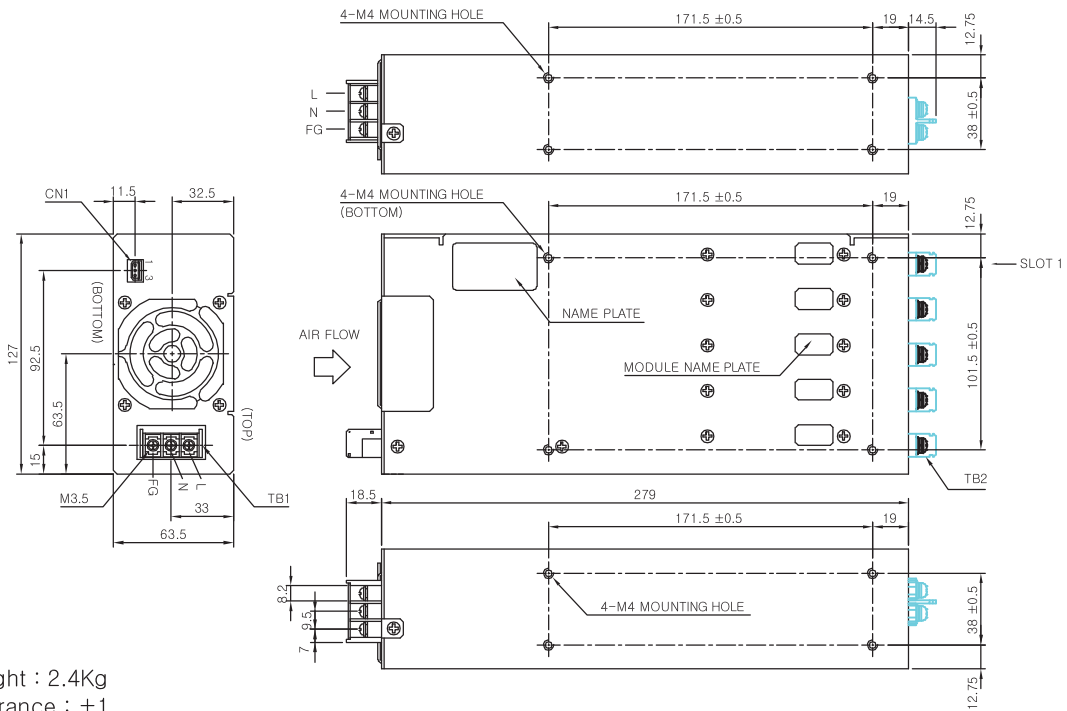
- * Weight : 1.7Kg
- * Tolerance : ±1
- * Dimensions in mm

MP450 EXTERNAL VIEW



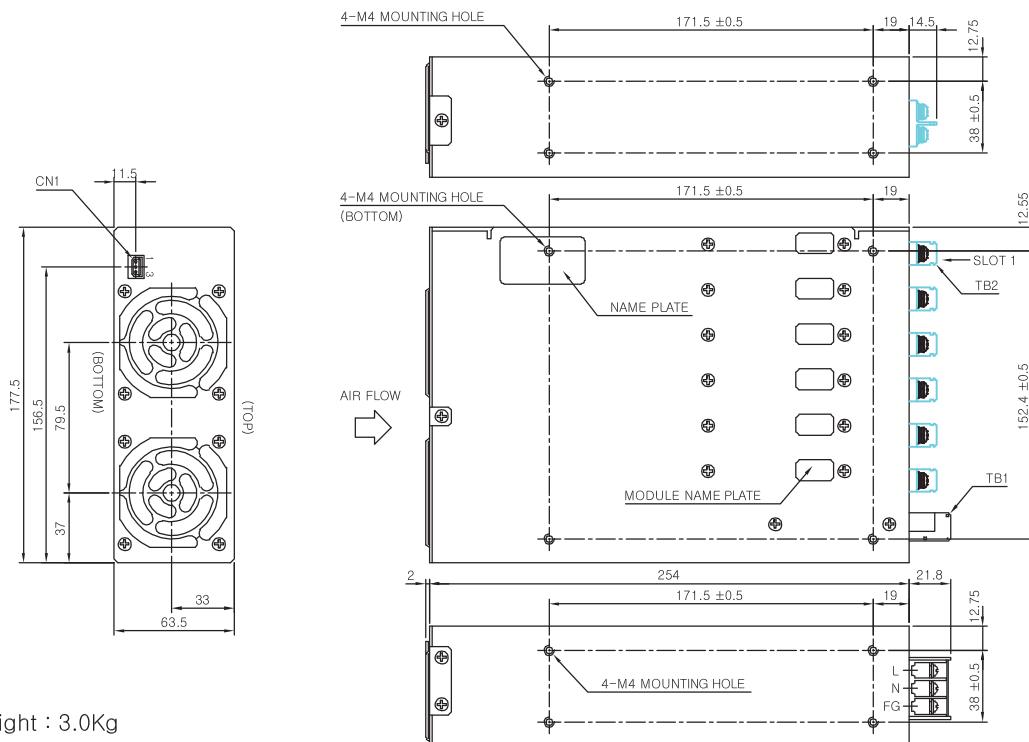
- * Weight : 2.1Kg
- * Tolerance : ±1
- * Dimensions in mm

MP650 EXTERNAL VIEW



- * Weight : 2.4Kg
- * Tolerance : ± 1
- * Dimensions in mm

MP900 EXTERNAL VIEW



- * Weight : 3.0Kg
- * Tolerance : ± 1
- * Dimensions in mm



ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

Discrete Semiconductors

For the Switching Model Power Supply

DC-DC Converter



ORIENT

ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

| | |
|---------------|-----|
| 1. PSC SERIES | 170 |
| 2. PDC SERIES | 174 |
| 3. PS SERIES | 178 |
| 4. PD SERIES | 186 |
| 5. DS SERIES | 194 |



RoHS

ORDERING INFORMATION

PSC1R5-053R3

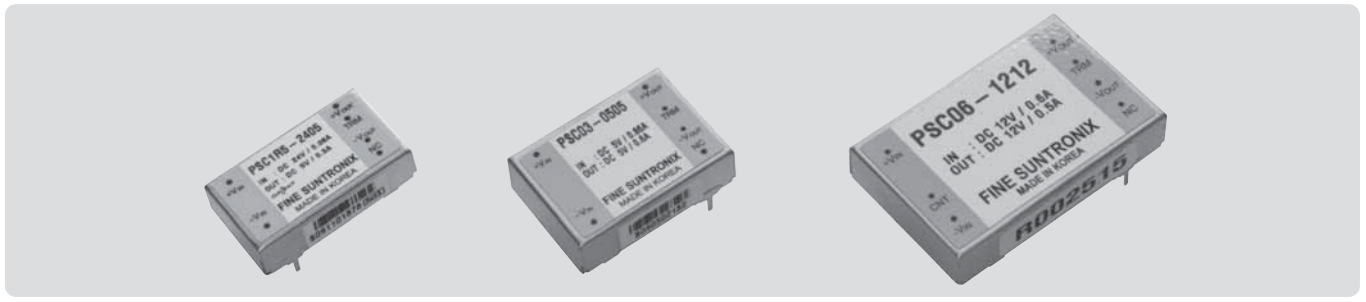
Series name

Total output wattage

Input voltage combination

Output voltage combination

- Compact DC-DC Module
- Isolated output
- Over current protection
- Adjustable output voltage
- Remote ON/OFF control (6W type)
- 3 years warranty

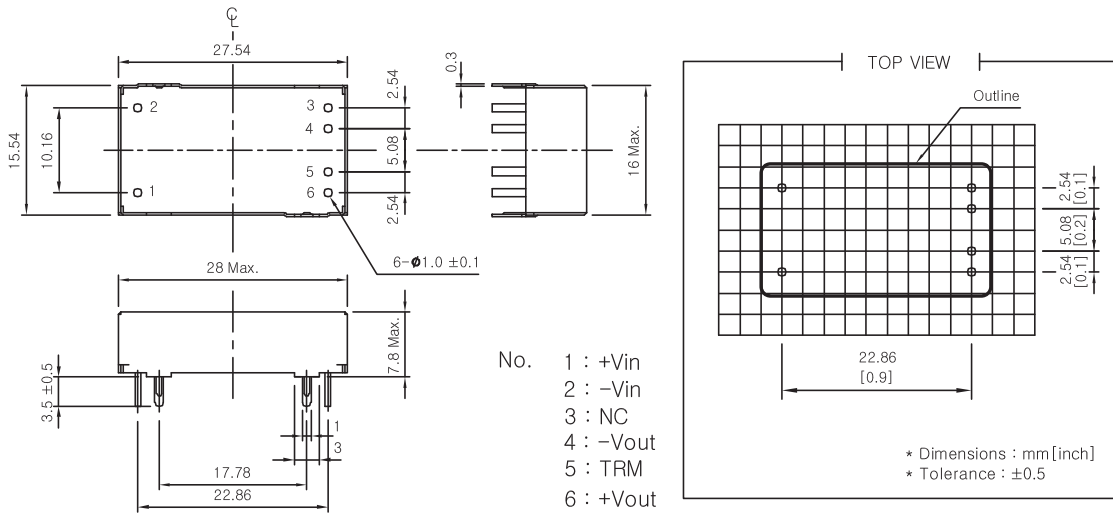


PSC1R5-S SPECIFICATIONS

| | MODEL | PSC1R5-053R3 | PSC1R5-0505 | PSC1R5-0512 | PSC1R5-0515* | PSC1R5-123R3 | PSC1R5-1205 | PSC1R5-1212 | PSC1R5-1215* | PSC1R5-243R3 | PSC1R5-2405 | PSC1R5-2412 | PSC1R5-2415* | PSC1R5-483R3 | PSC1R5-4805 | PSC1R5-4812 | PSC1R5-4815* |
|-----------------------|----------------------------------|--|-------------|-------------|--------------|------------------|-------------|-------------|--------------|-------------------|-------------|-------------|--------------|-------------------|-------------|-------------|--------------|
| INPUT | VOLTAGE | DC 5V (4.5 ~ 9V) | | | | DC 12V (9 ~ 18V) | | | | DC 24V (18 ~ 36V) | | | | DC 48V (36 ~ 72V) | | | |
| | EFFICIENCY | 66% | 69% | 71% | 70% | 70% | 73% | 75% | 73% | 70% | 75% | 76% | 75% | 70% | 73% | 76% | 75% |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 12 | 15 | 3.3 | 5 | 12 | 15 | 3.3 | 5 | 12 | 15 | 3.3 | 5 | 12 | 15 |
| | CURRENT [mA] | 40 | 30 | 12.5 | 10 | 40 | 30 | 12.5 | 10 | 40 | 30 | 12.5 | 10 | 40 | 30 | 12.5 | 10 |
| | REGULATION, LINE [mV] | 20 Max | 20 Max | 30 Max | 30 Max | 20 Max | 20 Max | 30 Max | 30 Max | 20 Max | 20 Max | 30 Max | 30 Max | 20 Max | 20 Max | 30 Max | 30 Max |
| | REGULATION, LOAD [mV] | 40 Max | 40 Max | 100 Max | 100 Max | 40 Max | 40 Max | 100 Max | 100 Max | 40 Max | 40 Max | 100 Max | 100 Max | 40 Max | 40 Max | 100 Max | 100 Max |
| | RIPPLE [mVp-p] | 80 Max | 80 Max | 120 Max | 120 Max | 80 Max | 80 Max | 120 Max | 120 Max | 80 Max | 80 Max | 120 Max | 120 Max | 80 Max | 80 Max | 120 Max | 120 Max |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 50 Max | 50 Max | 100 Max | 100 Max | 50 Max | 50 Max | 100 Max | 100 Max | 50 Max | 50 Max | 100 Max | 100 Max | 50 Max | 50 Max | 100 Max | 100 Max |
| | OUTPUT VOLTAGE SETTING [%] | ±5% Max (Output voltage is adjustable by the external potentiometer) | | | | | | | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +70°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 10G, 3 minutes period for 60 minutes each along X, Y and Z axis | | | | | | | | | | | | | | | |
| | IMPACT | 10G for 20ms once each along X, Y and Z axis | | | | | | | | | | | | | | | |

* TRM : By connecting TRM terminal to +Vout or -Vout, output voltage can be adjustable as the following range[3.3V : 2.84~3.67V, 5V : 4.3~6V, 12V : 12~15V][±5%]

PSC1R5-S EXTERNAL VIEW



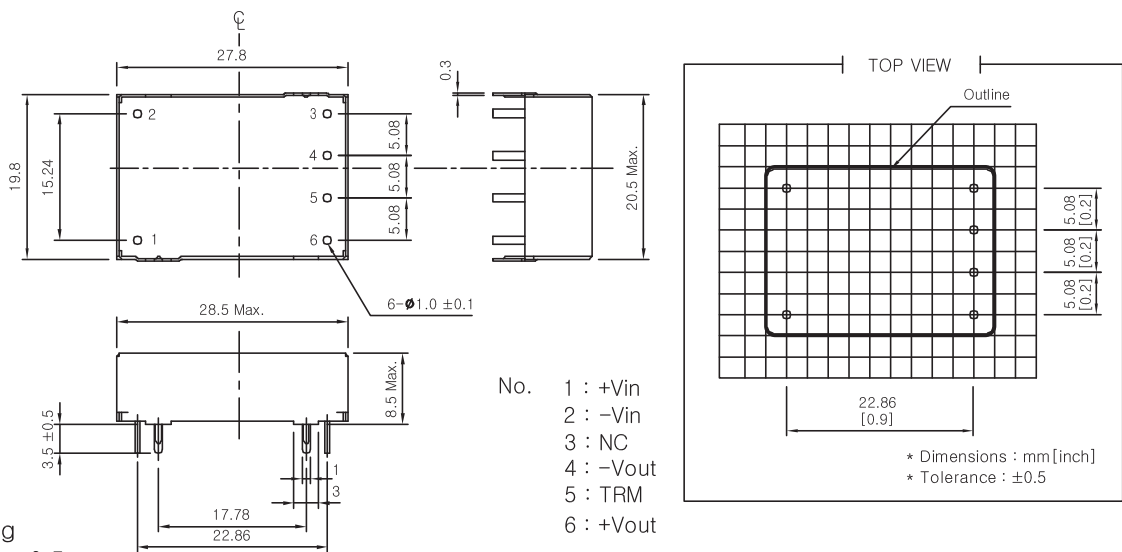
- * Weight : 15g
- * Tolerance : ±0.5
- * Dimensions in mm

PSC03-S SPECIFICATIONS

| | MODEL | PSC03-053R3 | PSC03-0505 | PSC03-0512 | PSC03-0515* | PSC03-123R3 | PSC03-1205 | PSC03-1212 | PSC03-1215* | PSC03-243R3 | PSC03-2405 | PSC03-2412 | PSC03-2415* | PSC03-483R3 | PSC03-4805 | PSC03-4812 | PSC03-4815* |
|-----------------------|----------------------------------|--|------------|------------|-------------|------------------|------------|------------|-------------|-------------------|------------|------------|-------------|-------------------|------------|------------|-------------|
| INPUT | VOLTAGE | DC 5V (4.5 ~ 9V) | | | | DC 12V (9 ~ 18V) | | | | DC 24V (18 ~ 36V) | | | | DC 48V (36 ~ 72V) | | | |
| | EFFICIENCY | 65% | 70% | 72% | 72% | 70% | 75% | 77% | 77% | 70% | 75% | 78% | 78% | 70% | 75% | 79% | 79% |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 12 | 15 | 3.3 | 5 | 12 | 15 | 3.3 | 5 | 12 | 15 | 3.3 | 5 | 12 | 15 |
| | CURRENT [mA] | 60 | 60 | 25 | 25 | 60 | 60 | 25 | 20 | 60 | 60 | 25 | 20 | 60 | 60 | 25 | 20 |
| | REGULATION, LINE [mV] | 20 Max | 20 Max | 30 Max | 30 Max | 20 Max | 20 Max | 30 Max | 30 Max | 20 Max | 20 Max | 30 Max | 30 Max | 20 Max | 20 Max | 30 Max | 30 Max |
| | REGULATION, LOAD [mV] | 40 Max | 40 Max | 100 Max | 100 Max | 40 Max | 40 Max | 100 Max | 100 Max | 40 Max | 40 Max | 100 Max | 100 Max | 40 Max | 40 Max | 100 Max | 100 Max |
| | RIPPLE [mVp-p] | 80 Max | 80 Max | 120 Max | 120 Max | 80 Max | 80 Max | 120 Max | 120 Max | 80 Max | 80 Max | 120 Max | 120 Max | 80 Max | 80 Max | 120 Max | 120 Max |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 50 Max | 50 Max | 100 Max | 100 Max | 50 Max | 50 Max | 100 Max | 100 Max | 50 Max | 50 Max | 100 Max | 100 Max | 50 Max | 50 Max | 100 Max | 100 Max |
| | OUTPUT VOLTAGE SETTING [%] | ±5% Max (Output voltage is adjustable by the external potentiometer) | | | | | | | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +70°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 10G, 3 minutes period for 60 minutes each along X, Y and Z axis | | | | | | | | | | | | | | | |
| | IMPACT | 10G for 20ms once each along X, Y and Z axis | | | | | | | | | | | | | | | |

* TRM : By connecting TRM terminal to +Vout or -Vout, output voltage can be adjustable as the following range(3.3V : 2.84~3.67V, 5V : 4.3~6V, 12V : 12~15V)(±5%)

PSC03-S EXTERNAL VIEW



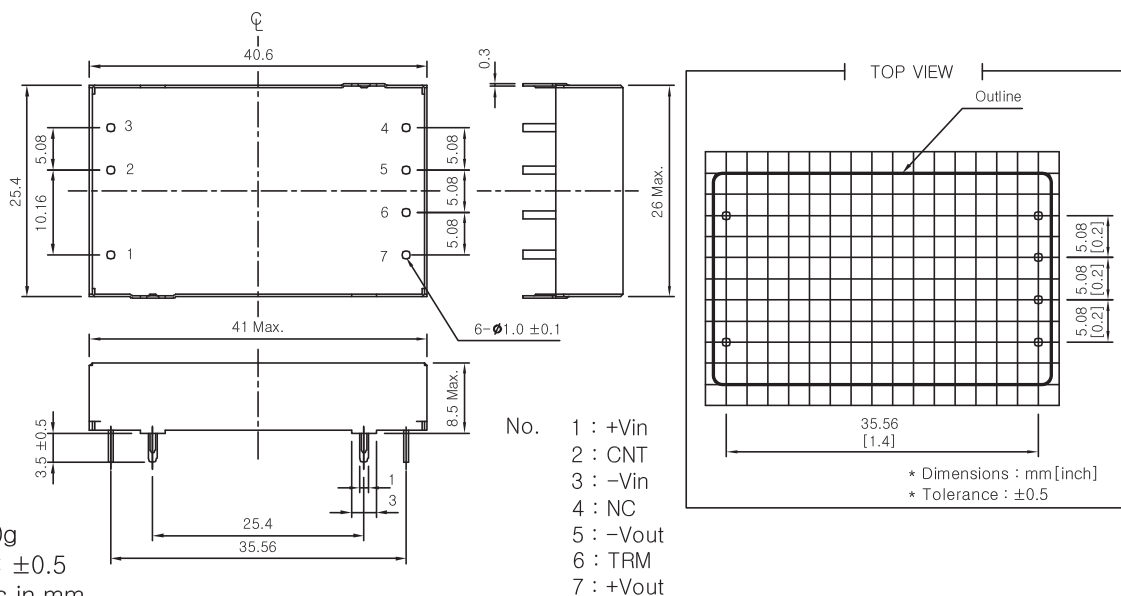
- * Weight : 25g
- * Tolerance : ±0.5
- * Dimensions in mm

PSC06-S SPECIFICATIONS

| MODEL | | PSC06-053R3 | PSC06-0505 | PSC06-0512 | PSC06-0515* | PSC06-123R3 | PSC06-1205 | PSC06-1212 | PSC06-1215* | PSC06-243R3 | PSC06-2405 | PSC06-2412 | PSC06-2415* | PSC06-483R3 | PSC06-4805 | PSC06-4812 | PSC06-4815* | |
|----------------------------|--|--|------------|------------|-------------|------------------|------------|------------|-------------|-------------------|------------|------------|-------------|-------------------|------------|------------|-------------|---------|
| INPUT | VOLTAGE | DC 5V (4.5 ~ 9V) | | | | DC 12V (9 ~ 18V) | | | | DC 24V (18 ~ 36V) | | | | DC 48V (36 ~ 72V) | | | | |
| | EFFICIENCY | 70% | 74% | 78% | 78% | 73% | 77% | 84% | 84% | 77% | 82% | 84% | 84% | 77% | 82% | 85% | 85% | |
| OUTPUT | VOLTAGE [V] | 3.3 | 5 | 12 | 15 | 3.3 | 5 | 12 | 15 | 3.3 | 5 | 12 | 15 | 3.3 | 5 | 12 | 15 | |
| | CURRENT [mA] | 120 | 100 | 50 | 40 | 150 | 120 | 50 | 40 | 150 | 120 | 50 | 40 | 150 | 120 | 50 | 40 | |
| | REGULATION, LINE [mV] | 20 Max | 20 Max | 30 Max | 30 Max | 20 Max | 20 Max | 30 Max | 30 Max | 20 Max | 20 Max | 30 Max | 30 Max | 20 Max | 20 Max | 30 Max | 30 Max | |
| | REGULATION, LOAD [mV] | 40 Max | 40 Max | 100 Max | 100 Max | 40 Max | 40 Max | 100 Max | 100 Max | 40 Max | 40 Max | 100 Max | 100 Max | 40 Max | 40 Max | 100 Max | 100 Max | |
| | RIPPLE [mVp-p] | 80 Max | 80 Max | 120 Max | 120 Max | 80 Max | 80 Max | 120 Max | 120 Max | 80 Max | 80 Max | 120 Max | 120 Max | 80 Max | 80 Max | 120 Max | 120 Max | |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 50 Max | 50 Max | 100 Max | 100 Max | 50 Max | 50 Max | 100 Max | 100 Max | 50 Max | 50 Max | 100 Max | 100 Max | 50 Max | 50 Max | 100 Max | 100 Max | |
| OUTPUT VOLTAGE SETTING [%] | ±5% Max (Output voltage is adjustable by the external potentiometer) | | | | | | | | | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +70°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 10G, 3 minutes period for 60 minutes each along X, Y and Z axis | | | | | | | | | | | | | | | | |
| | IMPACT | 10G for 20ms once each along X, Y and Z axis | | | | | | | | | | | | | | | | |

* TRM : By connecting TRM terminal to +Vout or -Vout, output voltage can be adjustable as the following range(3.3V : 2.84~3.67V, 5V : 4.3~6V, 12V : 12~15V) ±5%

PSC06-S EXTERNAL VIEW



* Weight : 40g
* Tolerance : ±0.5
* Dimensions in mm

ORDERING INFORMATION

PDC1R5-051212

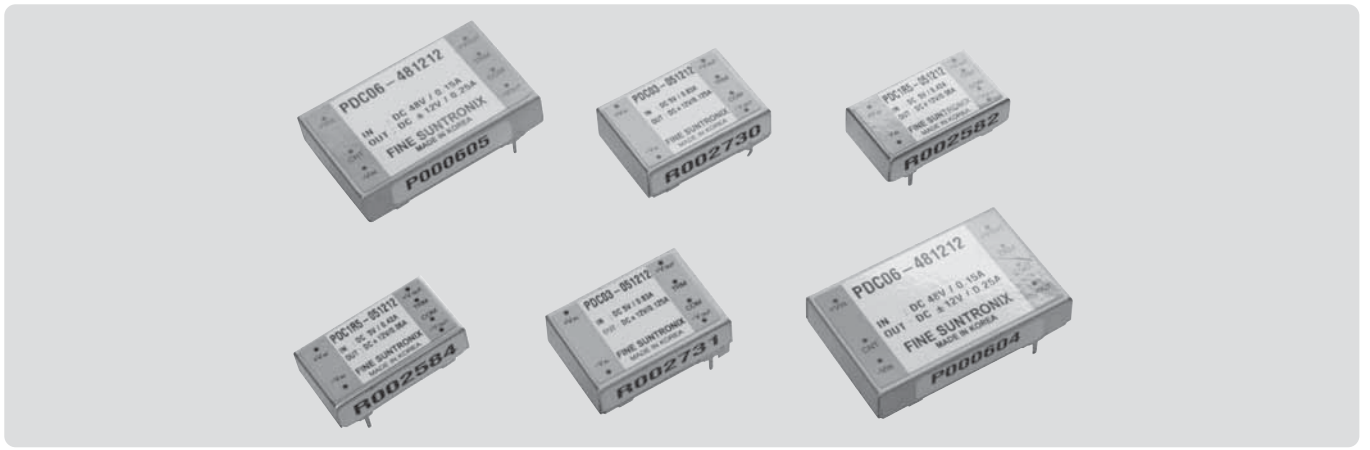
Series name

Total output wattage

Input voltage combination

Output voltage combination

- Compact DC-DC Module
- Isolated output
- Over current protection
- Adjustable output voltage
- Remote ON/OFF control (6W type)
- 3 years warranty

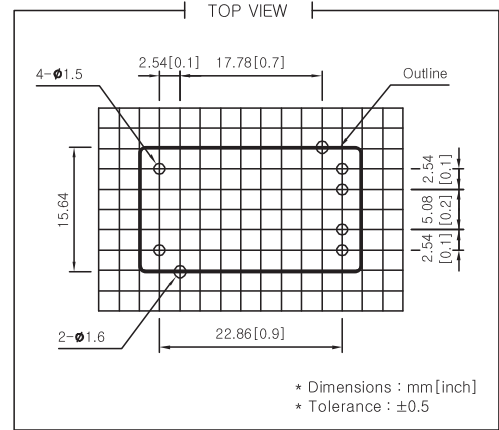
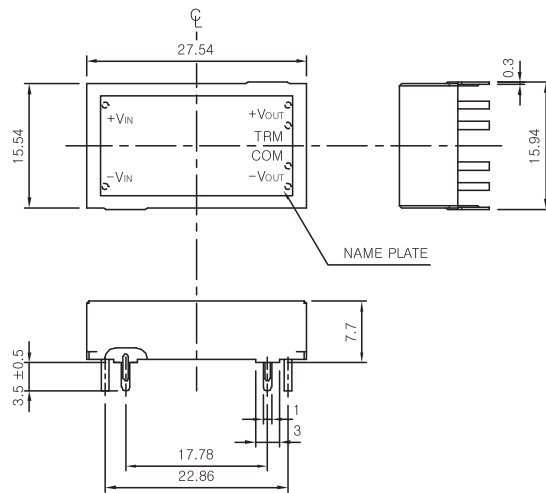


PDC1R5-S SPECIFICATIONS

| MODEL | | PDC1R5-051212 | | PDC1R5-051515* | | PDC1R5-121212 | | PDC1R5-121515* | | PDC1R5-241212 | | PDC1R5-241515* | | PDC1R5-481212 | | PDC1R5-481515* | |
|-----------------------|----------------------------------|--|---------|----------------|---------|------------------|---------|----------------|---------|-------------------|---------|----------------|---------|-------------------|---------|----------------|---------|
| INPUT | VOLTAGE | DC 5V (4.5 ~ 9V) | | | | DC 12V (9 ~ 18V) | | | | DC 24V (18 ~ 36V) | | | | DC 48V (36 ~ 72V) | | | |
| | EFFICIENCY | 69% | | 69% | | 73% | | 73% | | 75% | | 75% | | 75% | | 75% | |
| OUTPUT | VOLTAGE [V] | +12 | -12 | +15 | -15 | +12 | -12 | +15 | -15 | +12 | -12 | +15 | -15 | +12 | -12 | +15 | -15 |
| | CURRENT [mA] | 6 | 6 | 5 | 5 | 6 | 6 | 5 | 5 | 6 | 6 | 5 | 5 | 6 | 6 | 5 | 5 |
| | REGULATION, LINE [mV] | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max |
| | REGULATION, LOAD [mV] | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max |
| | RIPPLE [mVp-p] | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max |
| | OUTPUT VOLTAGE SETTING [%] | ±5% Max (Output voltage is adjustable by the external potentiometer) | | | | | | | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +70°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 10G, 3 minutes period for 60 minutes each along X, Y and Z axis | | | | | | | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | | | | | | | |

* TRM : By connecting TRM terminal to +Vout or -Vout, output voltage can be adjustable as the following range(3.3V : 2.84~3.67V, 5V : 4.3~6V, 12V : 12~15V) [±5%]

PDC1R5-S EXTERNAL VIEW



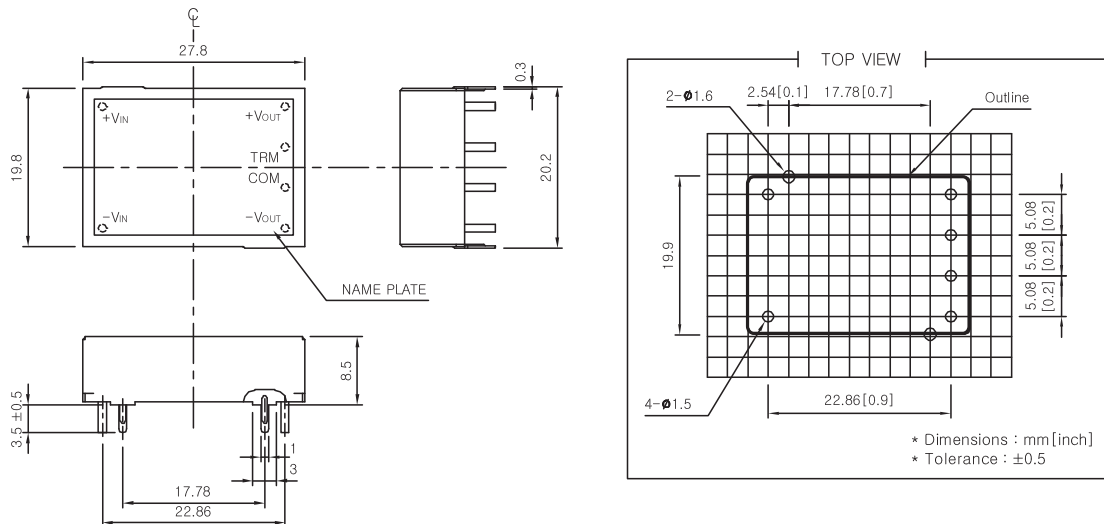
- * Weight : 6g
- * Tolerance : ±0.5
- * Dimensions in mm

PDC03-S SPECIFICATIONS

| MODEL | | PDC03 -051212 | | | | PDC03 -051515* | | | | PDC03 -121212 | | | | PDC03 -121515* | | | | PDC03 -241212 | | | | PDC03 -241515* | | | | PDC03 -481212 | | | | PDC03 -481515* | | | |
|-----------------------|----------------------------------|--|---------|---------|---------|----------------|---------|---------|---------|------------------|---------|---------|---------|----------------|---------|---------|---------|-------------------|---------|---------|---------|----------------|---------|---------|---------|-------------------|---------|---------|---------|----------------|---------|---------|---------|
| INPUT | VOLTAGE | DC 5V (4.5 ~ 9V) | | | | | | | | DC 12V (9 ~ 18V) | | | | | | | | DC 24V (18 ~ 36V) | | | | | | | | DC 48V (36 ~ 72V) | | | | | | | |
| | EFFICIENCY | 72% | | | | 72% | | | | 72% | | | | 72% | | | | 78% | | | | 78% | | | | 78% | | | | 78% | | | |
| OUTPUT | VOLTAGE [V] | 12 | -12 | 15 | -15 | 12 | -12 | 15 | -15 | 12 | -12 | 15 | -15 | 12 | -12 | 15 | -15 | 12 | -12 | 15 | -15 | 12 | -12 | 15 | -15 | 12 | -12 | 15 | -15 | 12 | -12 | 15 | -15 |
| | CURRENT [mA] | 12.5 | 12.5 | 10 | 10 | 12.5 | 12.5 | 10 | 10 | 12.5 | 12.5 | 10 | 10 | 12.5 | 12.5 | 10 | 10 | 12.5 | 12.5 | 10 | 10 | 12.5 | 12.5 | 10 | 10 | 12.5 | 12.5 | 10 | 10 | 12.5 | 12.5 | 10 | 10 |
| | REGULATION, LINE [mV] | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max |
| | REGULATION, LOAD [mV] | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max |
| | RIPPLE [mVp-p] | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max |
| | RIPPLE, NOISE [mVp-p] | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max |
| | OUTPUT VOLTAGE SETTING [%] | ±5% Max (Output voltage is adjustable by the external potentiometer) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +70°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 10G, 3 minutes period for 60 minutes each along X, Y and Z axis | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

* TRM : By connecting TRM terminal to +Vout or -Vout, output voltage can be adjustable as the following range(3.3V : 2.84~3.67V, 5V : 4.3~6V, 12V : 12~15V) ±5%

PDC03-S EXTERNAL VIEW



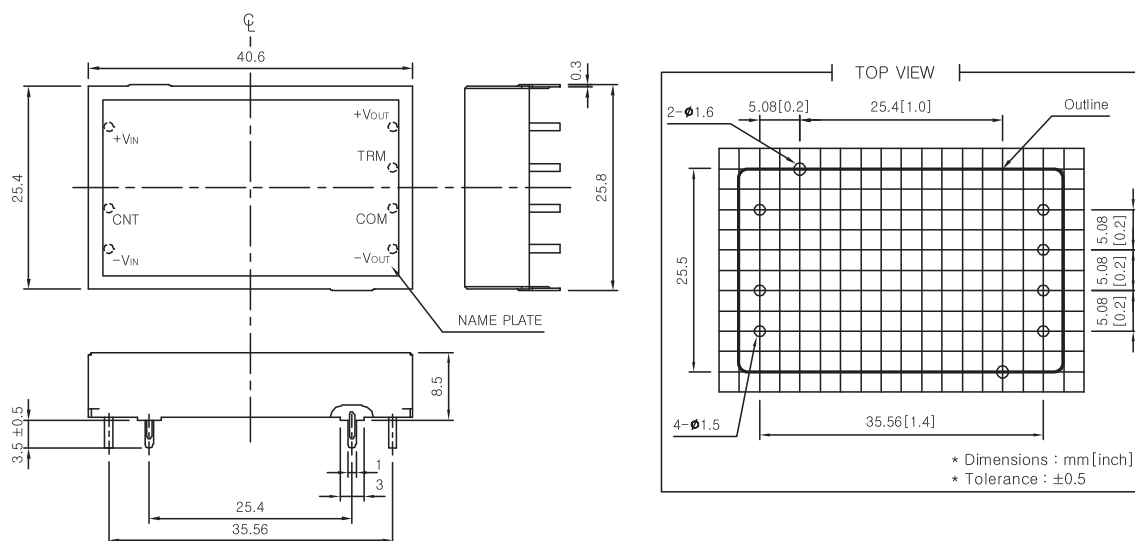
- * Weight : 10g
- * Tolerance : ±0.5
- * Dimensions in mm

PDC06-S SPECIFICATIONS

| MODEL | | PDC06-051212 | | PDC06-051515* | | PDC06-121212 | | PDC06-121515* | | PDC06-241212 | | PDC06-241515* | | PDC06-481212 | | PDC06-481515* | |
|----------------------------|--|--|---------|---------------|---------|------------------|---------|---------------|---------|-------------------|---------|---------------|---------|-------------------|---------|---------------|---------|
| INPUT | VOLTAGE | DC 5V (4.5 ~ 9V) | | | | DC 12V (9 ~ 18V) | | | | DC 24V (18 ~ 36V) | | | | DC 48V (36 ~ 72V) | | | |
| | EFFICIENCY | 75% | | 75% | | 82% | | 82% | | 83% | | 83% | | 83% | | 83% | |
| OUTPUT | VOLTAGE [V] | 12 | -12 | 15 | -15 | 12 | -12 | 15 | -15 | 12 | -12 | 15 | -15 | 12 | -12 | 15 | -15 |
| | CURRENT [mA] | 25 | 25 | 20 | 20 | 25 | 25 | 20 | 20 | 25 | 25 | 20 | 20 | 25 | 25 | 20 | 20 |
| | REGULATION, LINE [mV] | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max | 40 Max |
| | REGULATION, LOAD [mV] | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max | 600 Max |
| | RIPPLE [mV(p-p)] | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max |
| | RIPPLE, NOISE [mV(p-p)] | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max | 120 Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max | 150 Max |
| OUTPUT VOLTAGE SETTING [%] | ±5% Max (Output voltage is adjustable by the external potentiometer) | | | | | | | | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 20mA, DC500V More Than 50MΩ | | | | | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +70°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 10G, 3 minutes period for 60 minutes each along X, Y and Z axis | | | | | | | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | | | | | | | |

* TRM : By connecting TRM terminal to +Vout or -Vout, output voltage can be adjustable as the following range(3.3V : 2.84~3.67V, 5V : 4.3~6V, 12V : 12~15V)(±5%)

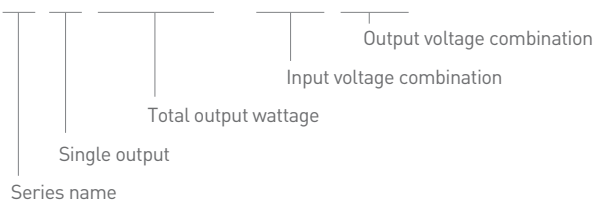
PDC06-S EXTERNAL VIEW



- * Weight : 17g
- * Tolerance : ±0.5
- * Dimensions in mm

ORDERING INFORMATION

PS1R5-0505



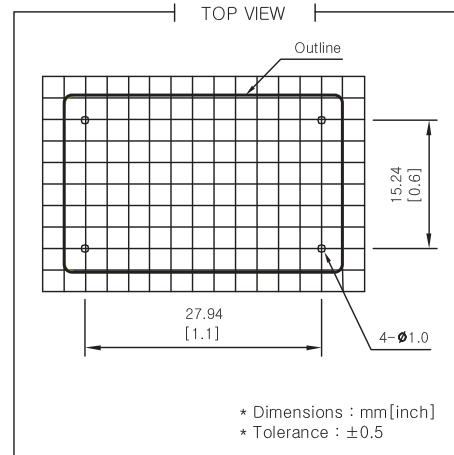
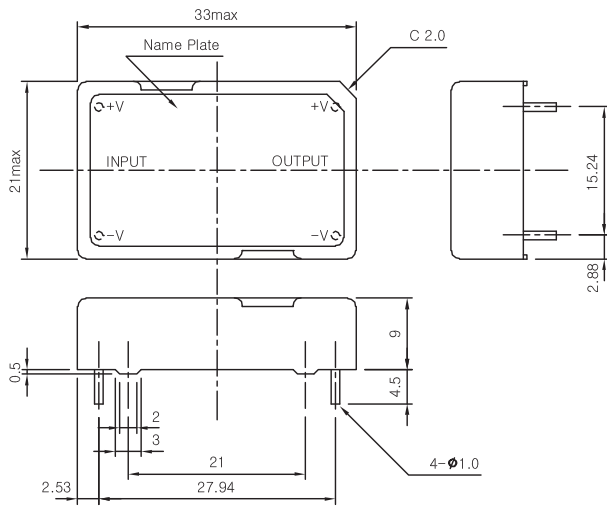
- High quality and reliability
- Thin profile(9.0mm thick)
- Isolated output
- Over current protection
- Over voltage protection(PS15, 25)
- 2 years warranty



PS1R5-S SPECIFICATIONS

| MODEL | | PS1R5-0505 | PS1R5-0512 | PS1R5-0515 | PS1R5-1205 | PS1R5-1212 | PS1R5-1215 | PS1R5-2405 | PS1R5-2412 | PS1R5-2415 | PS1R5-4805 | PS1R5-4812 | PS1R5-4815 |
|----------------------------|--|--|------------|------------|----------------|------------|------------|-----------------|------------|------------|-----------------|------------|------------|
| INPUT | VOLTAGE | DC5V(4.7 ~ 7.2V) | | | DC12V(9 ~ 18V) | | | DC24V(18 ~ 36V) | | | DC48V(36 ~ 72V) | | |
| | EFFICIENCY | 63% | 65% | 65% | 68% | 70% | 70% | 68% | 70% | 70% | 68% | 70% | 70% |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 |
| | CURRENT [mA] | 30 | 12 | 10 | 30 | 12 | 10 | 30 | 12 | 10 | 30 | 18 | 10 |
| | REGULATION, LINE [mV] | 20Max | 50Max | 60Max | 20Max | 50Max | 60Max | 20Max | 50Max | 60Max | 20Max | 50Max | 60Max |
| | REGULATION, LOAD [mV] | 30Max | 70Max | 90Max | 30Max | 70Max | 90Max | 30Max | 70Max | 90Max | 30Max | 70Max | 90Max |
| | RIPPLE [mVp-p] | 80Max | 120Max | 150Max | 80Max | 120Max | 150Max | 80Max | 120Max | 150Max | 80Max | 120Max | 150Max |
| | RIPPLE, NOISE [mVp-p] | 120Max | 150Max | 150Max | 120Max | 150Max | 150Max | 120Max | 150Max | 150Max | 120Max | 150Max | 150Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 90Max | 216Max | 270Max | 90Max | 216Max | 270Max | 90Max | 216Max | 270Max | 90Max | 216Max | 270Max |
| OUTPUT VOLTAGE SETTING [%] | ±5% Max (Output voltage is adjustable by the external potentiometer) | | | | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +70°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 10G, 3 minutes' period for 60 minutes each along X,Y and Z axis | | | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | | | |

PS1R5-S EXTERNAL VIEW

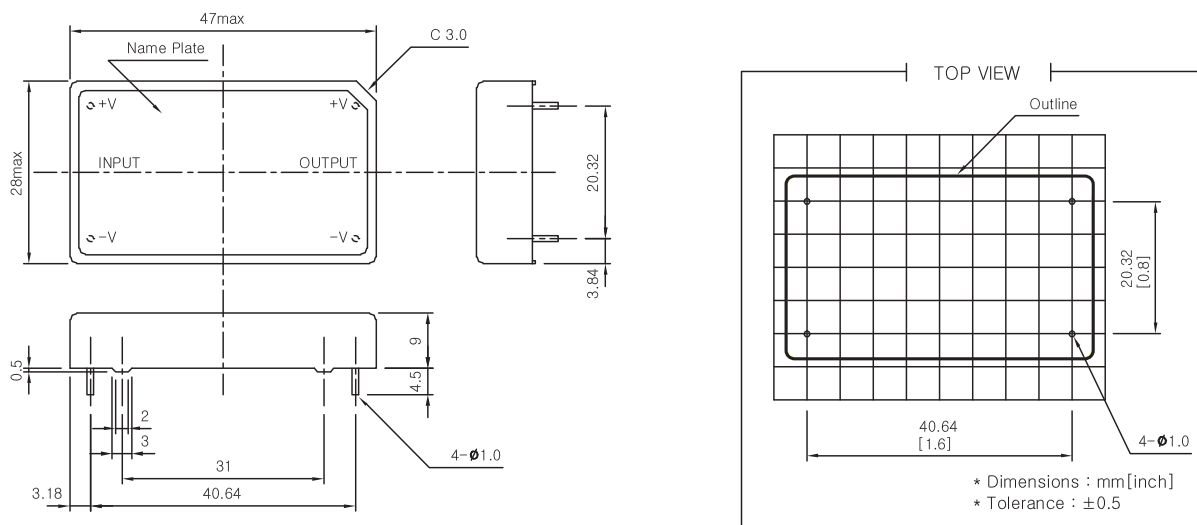


- * Weight : 15g
- * Tolerance : ±0.5
- * Dimensions in mm

PS03-S SPECIFICATIONS

| | MODEL | PS03-0505 | PS03-0512 | PS03-0515 | PS03-1205 | PS03-1212 | PS03-1215 | PS03-2405 | PS03-2412 | PS03-2415 | PS03-4805 | PS03-4809 | PS03-4812 | PS03-4815 |
|-----------------------|----------------------------------|--|-----------|-----------|--------------------|-----------|-----------|-----------------|-----------|-----------|-----------------|-----------|-----------|-----------|
| INPUT | VOLTAGE | DC5V(4.7 ~ 7.2V) | | | DC12V(8.5 ~ 16.5V) | | | DC24V(18 ~ 32V) | | | DC48V(32 ~ 63V) | | | |
| | EFFICIENCY | 68% | 70% | 70% | 73% | 75% | 75% | 73% | 75% | 75% | 73% | 78% | 75% | 75% |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 9 | 12 | 15 |
| | CURRENT [mA] | 60 | 24 | 20 | 60 | 24 | 20 | 60 | 24 | 20 | 60 | 28 | 24 | 20 |
| | REGULATION, LINE [mV] | 20Max | 50Max | 60Max | 20Max | 50Max | 60Max | 20Max | 50Max | 60Max | 20Max | 40Max | 50Max | 60Max |
| | REGULATION, LOAD [mV] | 30Max | 70Max | 90Max | 30Max | 70Max | 90Max | 30Max | 70Max | 90Max | 30Max | 60Max | 70Max | 90Max |
| | RIPPLE [mVp-p] | 80Max | 120Max | 150Max | 80Max | 120Max | 150Max | 80Max | 120Max | 150Max | 80Max | 90Max | 120Max | 150Max |
| | RIPPLE, NOISE [mVp-p] | 120Max | 150Max | 150Max | 120Max | 150Max | 150Max | 120Max | 150Max | 150Max | 120Max | 135Max | 150Max | 150Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 90Max | 216Max | 270Max | 90Max | 216Max | 270Max | 90Max | 216Max | 270Max | 90Max | 162Max | 216Max | 270Max |
| | OUTPUT VOLTAGE SETTING [%] | ±5% Max (Output voltage is adjustable by the external potentiometer) | | | | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +70°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 10G, 3 minutes' period for 60 minutes each along X,Y and Z axis | | | | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | | | | |

PS03-S EXTERNAL VIEW

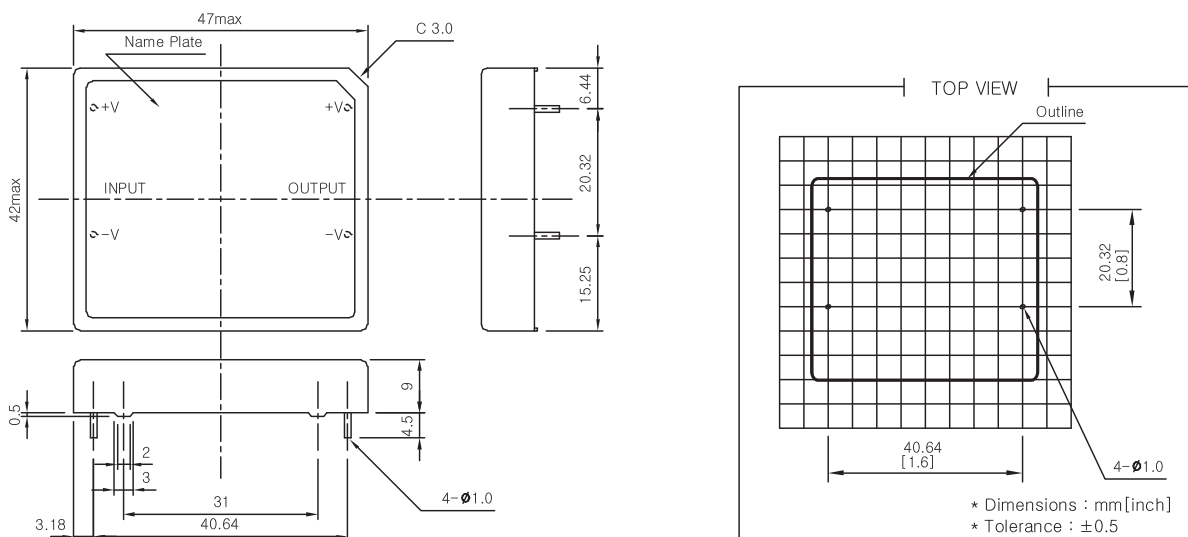


- * Weight : 25g
- * Tolerance : ±0.5
- * Dimensions in mm

PS06-S SPECIFICATIONS

| MODEL | | PS06-1205 | PS06-1212 | PS06-1215 | PS06-2405 | PS06-2412 | PS06-2415 | PS06-4805 | PS06-4812 | PS06-4824 |
|----------------------------|--|---|-----------|-----------|-----------------|-----------|-----------|-----------------|-----------|-----------|
| INPUT | VOLTAGE | DC12V(9 ~ 18V) | | | DC24V(18 ~ 36V) | | | DC48V(36 ~ 72V) | | |
| | EFFICIENCY | 73% | 76% | 76% | 73% | 76% | 76% | 73% | 76% | 76% |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 |
| | CURRENT [mA] | 120 | 50 | 40 | 120 | 50 | 40 | 120 | 50 | 40 |
| | REGULATION, LINE [mV] | 20Max | 50Max | 60Max | 20Max | 50Max | 60Max | 20Max | 50Max | 60Max |
| | REGULATION, LOAD [mV] | 30Max | 70Max | 90Max | 30Max | 70Max | 90Max | 30Max | 70Max | 90Max |
| | RIPPLE [mVp-p] | 80Max | 120Max | 150Max | 80Max | 120Max | 150Max | 80Max | 120Max | 150Max |
| | RIPPLE, NOISE [mVp-p] | 120Max | 150Max | 150Max | 120Max | 150Max | 150Max | 120Max | 150Max | 150Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 90Max | 216Max | 270Max | 90Max | 216Max | 270Max | 90Max | 216Max | 270Max |
| OUTPUT VOLTAGE SETTING [%] | ±5% Max (Output voltage is adjustable by the external potentiometer) | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +71°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 10G, 3 minutes' periode for 60 minutes each along X,Y and Z axis | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | |

PS06-S EXTERNAL VIEW

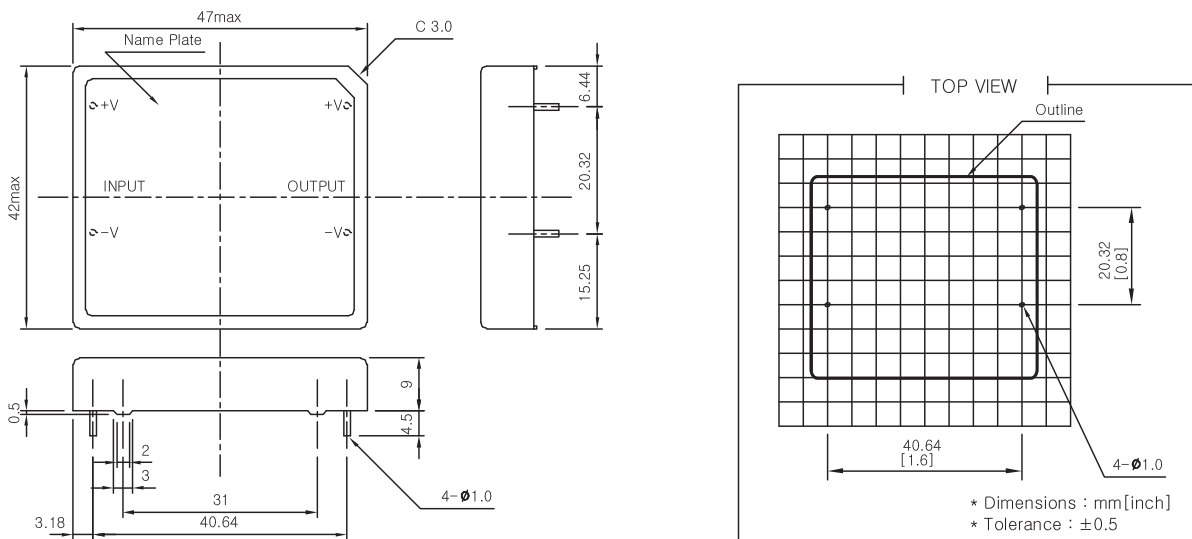


- * Weight : 40g
- * Tolerance : ±0.5
- * Dimensions in mm

PS10-S SPECIFICATIONS

| MODEL | | PS10 -1205 | PS10 -1212 | PS10 -1215 | PS10 -2405 | PS10 -2412 | PS10 -2415 | PS10 -4805 | PS10 -4812 | PS10 -4824 |
|-----------------------|----------------------------------|--|---------------|---------------|-----------------|---------------|---------------|-----------------|---------------|---------------|
| INPUT | VOLTAGE | DC12V(9 ~ 18V) | | | DC24V(18 ~ 36V) | | | DC48V(36 ~ 72V) | | |
| | EFFICIENCY | 80% | 80% | 80% | 81% | 81% | 81% | 81% | 81% | 81% |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 |
| | CURRENT [mA] | 200 | 90 | 70 | 200 | 90 | 70 | 200 | 90 | 70 |
| | REGULATION, LINE [mV] | 20Max | 50Max | 60Max | 20Max | 50Max | 60Max | 20Max | 50Max | 60Max |
| | REGULATION, LOAD [mV] | 30Max | 70Max | 90Max | 30Max | 70Max | 90Max | 30Max | 70Max | 90Max |
| | RIPPLE [mVp-p] | 80Max | 120Max | 150Max | 80Max | 120Max | 150Max | 80Max | 120Max | 150Max |
| | RIPPLE, NOISE [mVp-p] | 120Max | 150Max | 150Max | 120Max | 150Max | 150Max | 120Max | 150Max | 150Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 75Max | 180Max | 225Max | 75Max | 180Max | 225Max | 75Max | 180Max | 205Max |
| | OUTPUT VOLTAGE SETTING [%] | ±5% Max (Output voltage is adjustable by the external potentiometer) | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +71°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 10 ~ 90%RH (Non Condensing) | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 10G, 3 minutes' period for 60 minutes each along X,Y and Z axis | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | |

PS10-S EXTERNAL VIEW



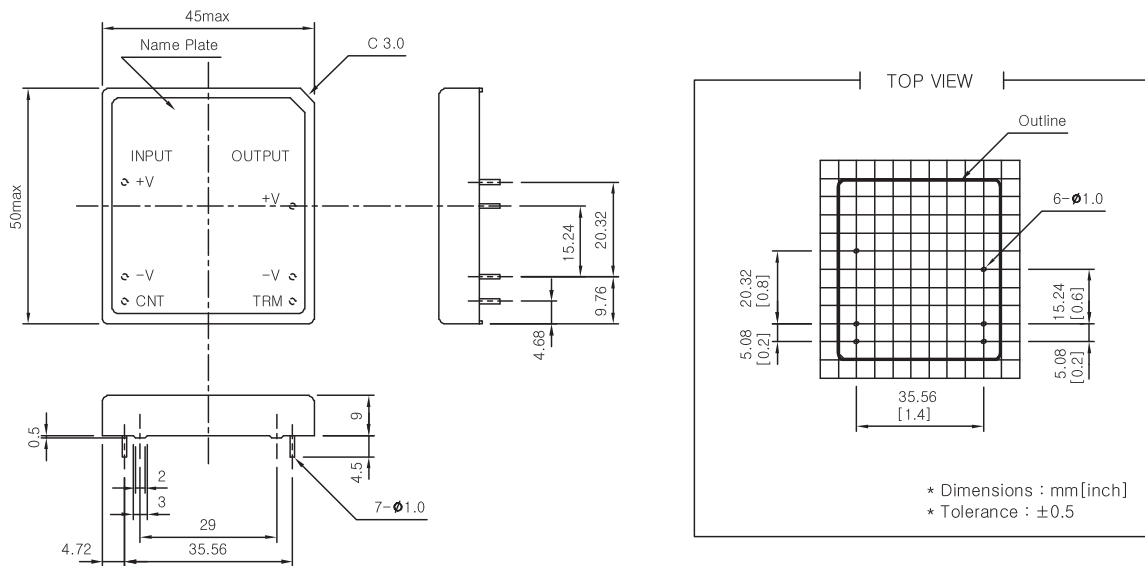
- * Weight : 40g
- * Tolerance : ±0.5
- * Dimensions in mm

PS15-S SPECIFICATIONS

| MODEL | | PS15-1205 | PS15-1212 | PS15-1215 | PS15-2405 | PS15-2412 | PS15-2415 | PS15-4805 | PS15-4812 | PS25-4815 |
|-----------------------|----------------------------------|---|-----------|-----------|-----------------|-----------|-----------|-----------------|-----------|-----------|
| INPUT | VOLTAGE | DC12V(9 ~ 18V) | | | DC24V(18 ~ 36V) | | | DC48V(36 ~ 72V) | | |
| | EFFICIENCY | 80% | 80% | 80% | 83% | 83% | 83% | 82% | 82% | 82% |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 15 | 5 | 12 | 15 | 5 | 12 | 15 |
| | CURRENT [mA] | 240 | 130 | 100 | 240 | 130 | 100 | 240 | 130 | 100 |
| | REGULATION, LINE [mV] | 20Max | 50Max | 60Max | 20Max | 50Max | 60Max | 20Max | 50Max | 60Max |
| | REGULATION, LOAD [mV] | 30Max | 70Max | 90Max | 30Max | 70Max | 90Max | 30Max | 70Max | 90Max |
| | RIPPLE [mVp-p] | 80Max | 120Max | 120Max | 80Max | 150Max | 120Max | 80Max | 120Max | 120Max |
| | RIPPLE, NOISE [mVp-p] | 120Max | 150Max | 150Max | 120Max | 1250Ma | 150Max | 120Max | 150Max | 150Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 90Max | 216Max | 270Max | 90Max | 216Max | 270Max | 90Max | 216Max | 270Max |
| | OUTPUT VOLTAGE SETTING [V] | 4.75 ~ 5.25 11.4 ~ 12.6 14.25 ~ 15.75 4.75 ~ 5.25 11.4 ~ 12.6 14.25 ~ 15.75 4.75 ~ 5.25 11.4 ~ 12.6 14.25 ~ 15.75 Internally fixed (±5% adjustable by external pot (TRM))* | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 115%~ 140% of rating. | | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at over 115%~ 140% of rating. | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +70°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3minutes period for 60 minutes each along X,Y and Z axis | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | |

* TRM : By connecting TRM terminal to +Vout or -Vout, output voltage can be adjustable as the following range(3.3V : 2.84~3.67V, 5V : 4.3~6V, 12V : 12~15V)(±5%)

PS15-S EXTERNAL VIEW



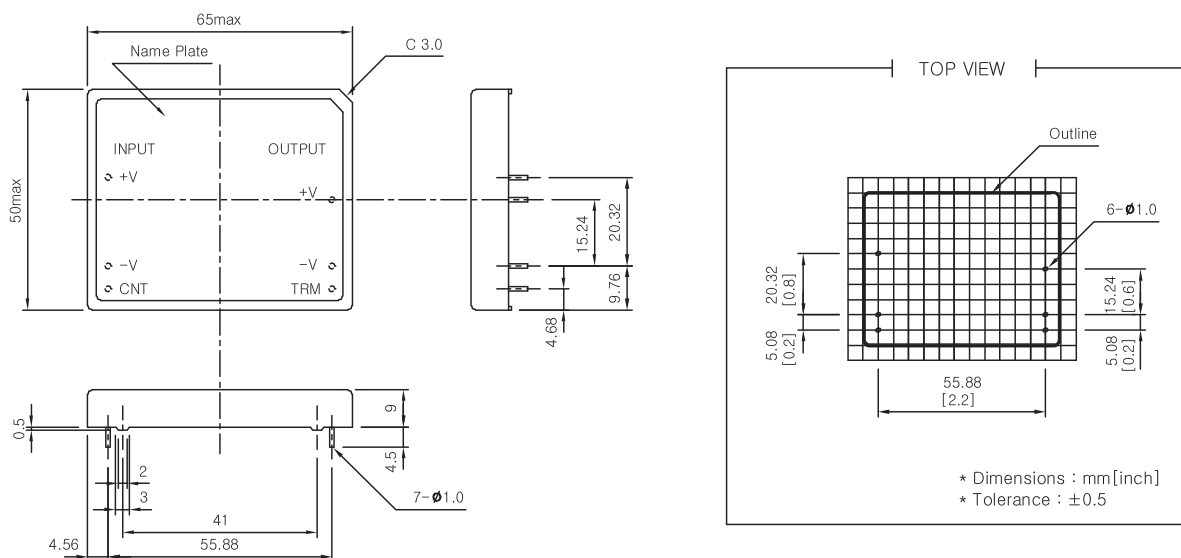
- * Weight : 55g
- * Tolerance : ±0.5
- * Dimensions in mm

PS25-S SPECIFICATIONS

| MODEL | | PS25-1205 | PS25-1212 | PS25-1215 | PS25-2405 | PS25-2409 | PS25-2412 | PS25-2415 | PS25-483R3 | PS25-4805 | PS25-4812 | PS25-4815 |
|-----------------------|----------------------------------|--|-----------|-----------|-----------------|-----------|-----------|-----------|-----------------|-----------|-----------|-----------|
| INPUT | VOLTAGE | DC12V(9 ~ 18V) | | | DC24V(18 ~ 36V) | | | | DC48V(36 ~ 72V) | | | |
| | EFFICIENCY | 82% | 85% | 85% | 82% | 83% | 85% | 85% | 80% | 82% | 85% | 85% |
| OUTPUT | VOLTAGE [V] | 5 | 12 | 15 | 5 | 9 | 12 | 15 | 3.3 | 5 | 12 | 15 |
| | CURRENT [mA] | 400 | 210 | 170 | 400 | 270 | 210 | 170 | 400 | 400 | 210 | 170 |
| | REGULATION, LINE [mV] | 20Max | 48Max | 60Max | 20Max | 40Max | 48Max | 60Max | 20Max | 20Max | 48Max | 60Max |
| | REGULATION, LOAD [mV] | 40Max | 96Max | 120Max | 40Max | 60Max | 96Max | 120Max | 40Max | 40Max | 96Max | 120Max |
| | RIPPLE [mVp-p] | 80Max | 120Max | 120Max | 80Max | 100Max | 120Max | 120Max | 80Max | 80Max | 120Max | 120Max |
| | RIPPLE, NOISE [mVp-p] | 120Max | 150Max | 150Max | 120Max | 150Max | 150Max | 150Max | 120Max | 120Max | 150Max | 150Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 90Max | 216Max | 270Max | 90Max | 216Max | 216Max | 270Max | 60Max | 90Max | 216Max | 270Max |
| | OUTPUT VOLTAGE SETTING [V] | Internally fixed (±5% adjustable by external pot (TRM))* | | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically. | | | | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at over 115% ~ 145% of rating. | | | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +70°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 10G, 3minutes period for 60 minutes each along X,Y and Z axis | | | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | | | |

* TRM : By connecting TRM terminal to +Vout or -Vout, output voltage can be adjustable as the following range(3.3V : 2.84~3.67V, 5V : 4.3~6V, 12V : 12~15V)(±5%)

PS25-S EXTERNAL VIEW



- * Weight : 55g
- * Tolerance : ±0.5
- * Dimensions in mm



ORIENT ELECTRONICS
<http://www.orientelec.co.kr>

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

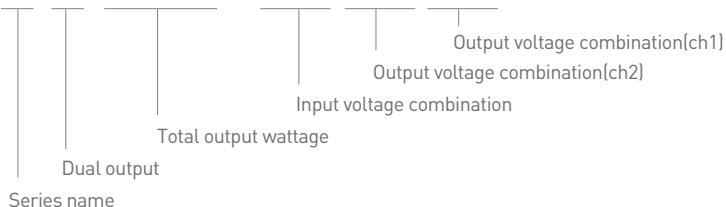
AC FAN Motor

Power Module

Discrete Semiconductors

ORDERING INFORMATION

PD1R5-051212



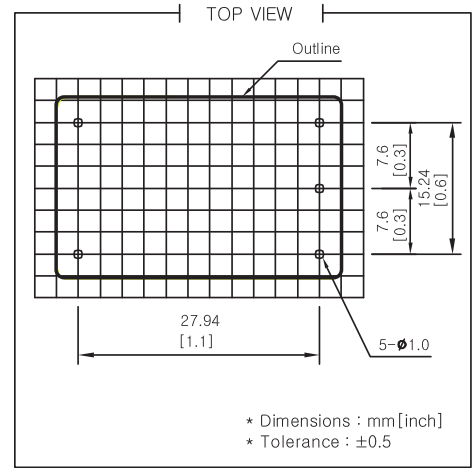
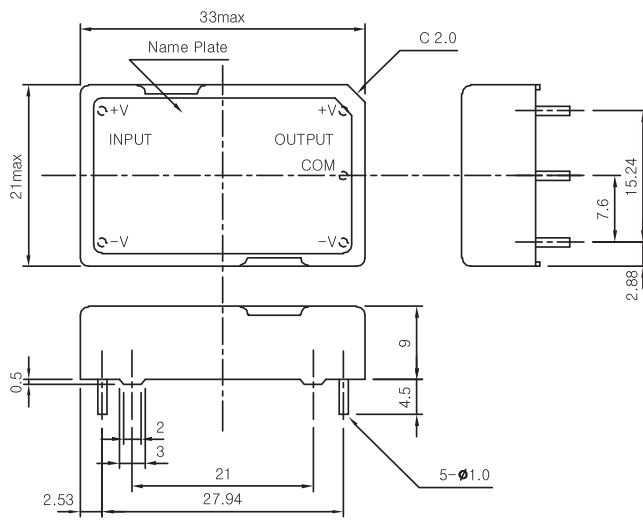
- High quality and reliability
- Thin profile(9.0mm thick)
 - Isolated output
 - Over current protection
 - Over voltage protection(PD15, 25)
 - Output pins can be connected in series to make a 24V/30V output
 - 2 years warranty



PD1R5-S SPECIFICATIONS

| MODEL | | PD1R5-051212 | PD1R5-051515 | PD1R5-121212 | PD1R5-121515 | PD1R5-241212 | PD1R5-241515 | PD1R5-481212 | PD1R5-481515 | |
|----------------------------|--|--|--------------|----------------|--------------|-----------------|--------------|-----------------|--------------|--|
| INPUT | VOLTAGE | DC5V(4.7 ~ 7.2V) | | DC12V(9 ~ 18V) | | DC24V(18 ~ 36V) | | DC48V(36 ~ 72V) | | |
| | EFFICIENCY | 60% | 60% | 60% | 60% | 60% | 60% | 60% | 60% | |
| OUTPUT | VOLTAGE [V] | ±12 | ±15 | ±12 | ±15 | ±12 | ±15 | ±12 | ±15 | |
| | CURRENT [mA] | 65 | 50 | 65 | 50 | 65 | 50 | 65 | 50 | |
| | REGULATION, LINE [mV] | 60Max | 75Max | 60Max | 75Max | 60Max | 75Max | 60Max | 75Max | |
| | REGULATION, LOAD [mV] | 600Max | 750Max | 600Max | 750Max | 600Max | 750Max | 600Max | 750Max | |
| | RIPPLE [mVp-p] | 120Max | 120Max | 120Max | 120Max | 120Max | 120Max | 120Max | 120Max | |
| | RIPPLE, NOISE [mVp-p] | 150Max | 150Max | 150Max | 150Max | 150Max | 150Max | 150Max | 150Max | |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 216Max | 270Max | 216Max | 270Max | 216Max | 270Max | 216Max | 270Max | |
| OUTPUT VOLTAGE SETTING [%] | ±5% Max (Output voltage is adjustable by the external potentiometer) | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +70°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 10G, 3 minutes' period for 60 minutes each along X,Y and Z axis | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | |

PD1R5-S EXTERNAL VIEW



- * Weight : 15g
- * Tolerance : ±0.5
- * Dimensions in mm

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

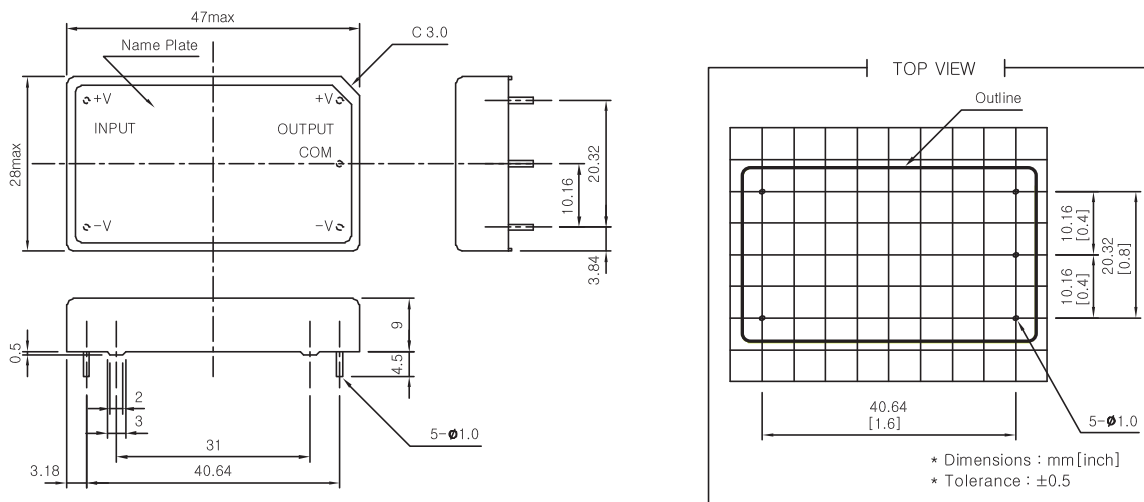
Power Module

Discrete Semiconductors

PD03-S SPECIFICATIONS

| MODEL | | PD03-051212 | PD03-051515 | PD03-121212 | PD03-121515 | PD03-241212 | PD03-241515 | PD03-481212 | PD03-481515 | |
|----------------------------|--|--|-------------|----------------|-------------|-----------------|-------------|-----------------|-------------|--|
| INPUT | VOLTAGE | DC5V(4.7 ~ 7.2V) | | DC12V(9 ~ 18V) | | DC24V(18 ~ 36V) | | DC48V(36 ~ 72V) | | |
| | EFFICIENCY | 68% | 68% | 72% | 72% | 74% | 74% | 75% | 75% | |
| OUTPUT | VOLTAGE [V] | ±12 | ±15 | ±12 | ±15 | ±12 | ±15 | ±12 | ±15 | |
| | CURRENT [mA] | 130 | 100 | 130 | 100 | 130 | 100 | 130 | 100 | |
| | REGULATION, LINE [mV] | 60Max | 75Max | 60Max | 75Max | 60Max | 75Max | 60Max | 75Max | |
| | REGULATION, LOAD [mV] | 600Max | 750Max | 600Max | 750Max | 600Max | 750Max | 600Max | 750Max | |
| | RIPPLE [mVp-p] | 120Max | 150Max | 120Max | 150Max | 120Max | 150Max | 120Max | 150Max | |
| | RIPPLE, NOISE [mVp-p] | 150Max | 150Max | 150Max | 150Max | 150Max | 150Max | 150Max | 150Max | |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 216Max | 270Max | 216Max | 270Max | 216Max | 270Max | 216Max | 270Max | |
| OUTPUT VOLTAGE SETTING [%] | ±5% Max (Output voltage is adjustable by the external potentiometer) | | | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +70°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 95%RH (Non Condensing) | | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 10G, 3 minutes' period for 60 minutes each along X,Y and Z axis | | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | | |

PD03-S EXTERNAL VIEW

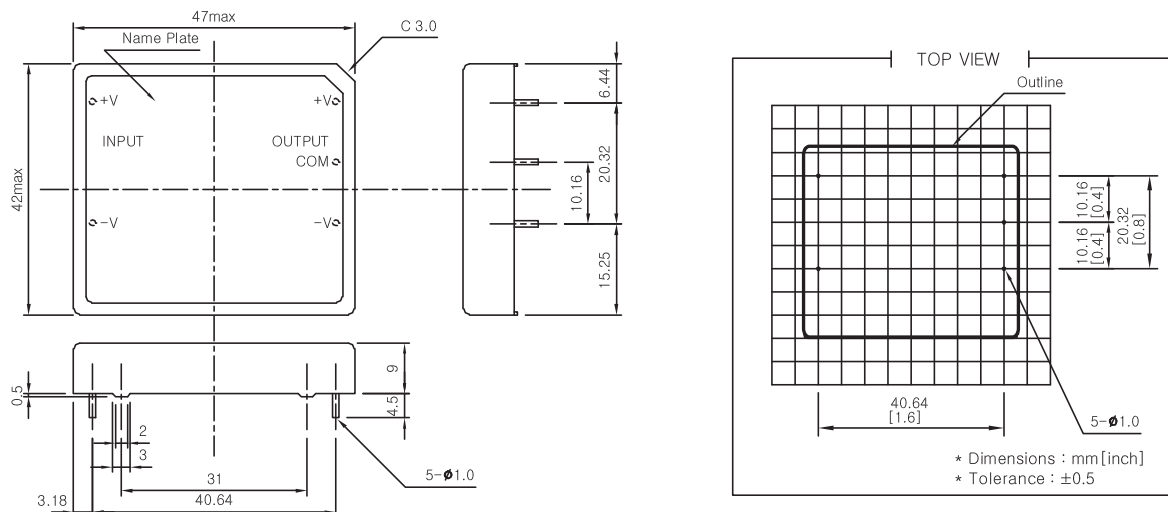


- * Weight : 25g
- * Tolerance : ±0.5
- * Dimensions in mm

PD06-S SPECIFICATIONS

| MODEL | | PD06-121212 | PD06-121515 | PD06-241212 | PD06-241515 | PD06-481212 | PD06-481515 |
|----------------------------|--|--|-------------|-----------------|-------------|-----------------|-------------|
| INPUT | VOLTAGE | DC12V(9 ~ 18V) | | DC24V(18 ~ 36V) | | DC48V(36 ~ 72V) | |
| | EFFICIENCY | 81% | 81% | 81% | 81% | 81% | 81% |
| OUTPUT | VOLTAGE [V] | ±12 | ±15 | ±12 | ±15 | ±12 | ±15 |
| | CURRENT [mA] | 250 | 200 | 250 | 200 | 250 | 200 |
| | REGULATION, LINE [mV] | 60Max | 75Max | 60Max | 75Max | 60Max | 75Max |
| | REGULATION, LOAD [mV] | 600Max | 750Max | 600Max | 750Max | 600Max | 750Max |
| | RIPPLE [mVp-p] | 120Max | 150Max | 120Max | 150Max | 120Max | 150Max |
| | RIPPLE, NOISE [mVp-p] | 150Max | 150Max | 150Max | 150Max | 150Max | 150Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 320Max | 410Max | 320Max | 410Max | 320Max | 410Max |
| OUTPUT VOLTAGE SETTING [%] | ±5% Max (Output voltage is adjustable by the external potentiometer) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +70°C, 20 ~ 95%RH (Non Condensing) | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 10 ~ 95%RH (Non Condensing) | | | | | |
| | VIBRATION | 10 ~ 55Hz at 10G, 3 minutes' period for 60 minutes each along X,Y and Z axis | | | | | |
| | IMPACT | 20G for 11ms once on each X, Y and Z axis | | | | | |

PD06-S EXTERNAL VIEW

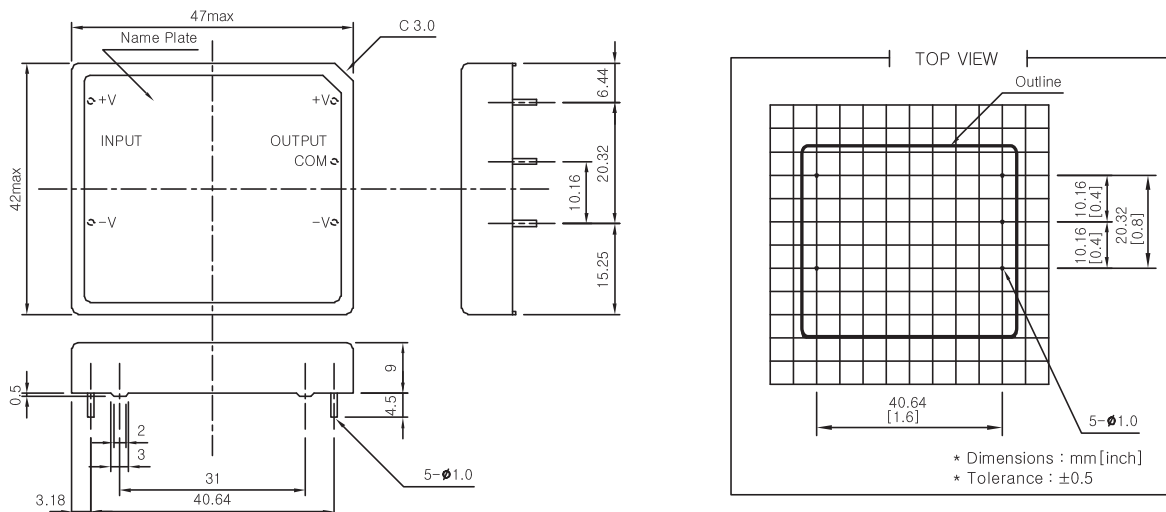


- * Weight : 40g
- * Tolerance : ±0.5
- * Dimensions in mm

PD10-S SPECIFICATIONS

| | MODEL | PD10-121212 | PD10-121515 | PD10-241212 | PD10-241515 | PD10-481212 | PD10-481515 |
|----------------------------|--|--|-------------|-----------------|-------------|-----------------|-------------|
| INPUT | VOLTAGE | DC12V(9 ~ 18V) | | DC24V(18 ~ 36V) | | DC48V(36 ~ 72V) | |
| | EFFICIENCY | 81% | 81% | 81% | 81% | 81% | 81% |
| OUTPUT | VOLTAGE [V] | ±12 | ±15 | ±12 | ±15 | ±12 | ±15 |
| | CURRENT [mA] | 450 | 350 | 450 | 350 | 450 | 350 |
| | REGULATION, LINE [mV] | 60Max | 75Max | 60Max | 75Max | 60Max | 75Max |
| | REGULATION, LOAD [mV] | 600Max | 750Max | 600Max | 750Max | 600Max | 750Max |
| | RIPPLE [mVp-p] | 120Max | 150Max | 120Max | 150Max | 120Max | 150Max |
| | RIPPLE, NOISE [mVp-p] | 150Max | 150Max | 150Max | 150Max | 150Max | 150Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 180Max | 225Max | 180Max | 225Max | 180Max | 225Max |
| OUTPUT VOLTAGE SETTING [%] | ±5% Max (Output voltage is adjustable by the external potentiometer) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +70°C, 20 ~ 95%RH (Non Condensing) | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 10 ~ 95%RH (Non Condensing) | | | | | |
| | VIBRATION | 10 ~ 55Hz at 10G, 3 minutes' period for 60 minutes each along X,Y and Z axis | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | |

PD10-S EXTERNAL VIEW

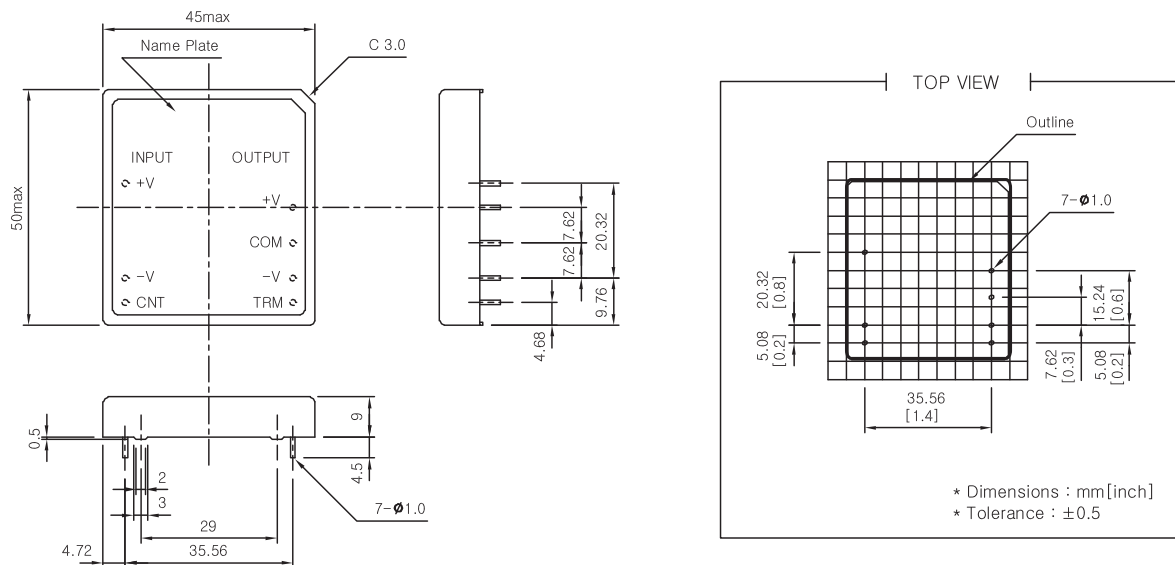


- * Weight : 40g
- * Tolerance : ±0.5
- * Dimensions in mm

PD15-S SPECIFICATIONS

| | | MODEL | PD15-121212 | PD15-121515 | PD15-240505 | PD15-241212 | PD15-241515 | PD15-481212 | PD15-481515 |
|----------------------------|----------------------------------|--|---|-------------|-----------------|-------------|-------------|-----------------|-------------|
| INPUT | VOLTAGE | | DC12V(9 ~ 18V) | | DC24V(18 ~ 36V) | | | DC48V(36 ~ 72V) | |
| | EFFICIENCY | | 80% | 80% | 78% | 82% | 82% | 84% | 84% |
| OUTPUT | VOLTAGE [V] | | ±12 | ±15 | ±5 | ±12 | ±15 | ±12 | ±15 |
| | CURRENT [mA] | | 650 | 500 | 1500 | 650 | 500 | 650 | 500 |
| | REGULATION, LINE [mV] | | 60Max | 75Max | 25Max | 60Max | 75Max | 60Max | 75Max |
| | REGULATION, LOAD [mV] | | 600Max | 750Max | 250Max | 600Max | 750Max | 600Max | 750Max |
| | RIPPLE [mVp-p] | | 120Max | 120Max | 50Max | 120Max | 120Max | 120Max | 120Max |
| | RIPPLE, NOISE [mVp-p] | | 150Max | 150Max | 100Max | 150Max | 150Max | 150Max | 150Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | | 216 Max | 270 Max | 90 Max | 216 Max | 270 Max | 216 Max | 270 Max |
| OUTPUT VOLTAGE SETTING [%] | | ±5% Max (Output voltage is adjustable by the external potentiometer) | | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | | Works at over 105% of rating and recovers automatically. | | | | | | |
| | OVER CURRENT PROTECTION | | Works at over 115% ~ 140% of rating. | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | |
| | INPUT-CASE | | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | |
| | OUTPUT-CASE | | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | | -20 ~ +70°C, 20 ~ 95%RH (Non Condensing) | | | | | | |
| | STORAGE TEMP AND HUMID | | -40 ~ +85°C, 20 ~ 95%RH (Non Condensing) | | | | | | |
| | VIBRATION | | 10 ~ 55Hz at 1G, 3minutes period for 60 minutes each along X,Y and Z axis | | | | | | |
| | IMPACT | | 10G for 20ms once on each X, Y and Z axis | | | | | | |

PD15-S EXTERNAL VIEW

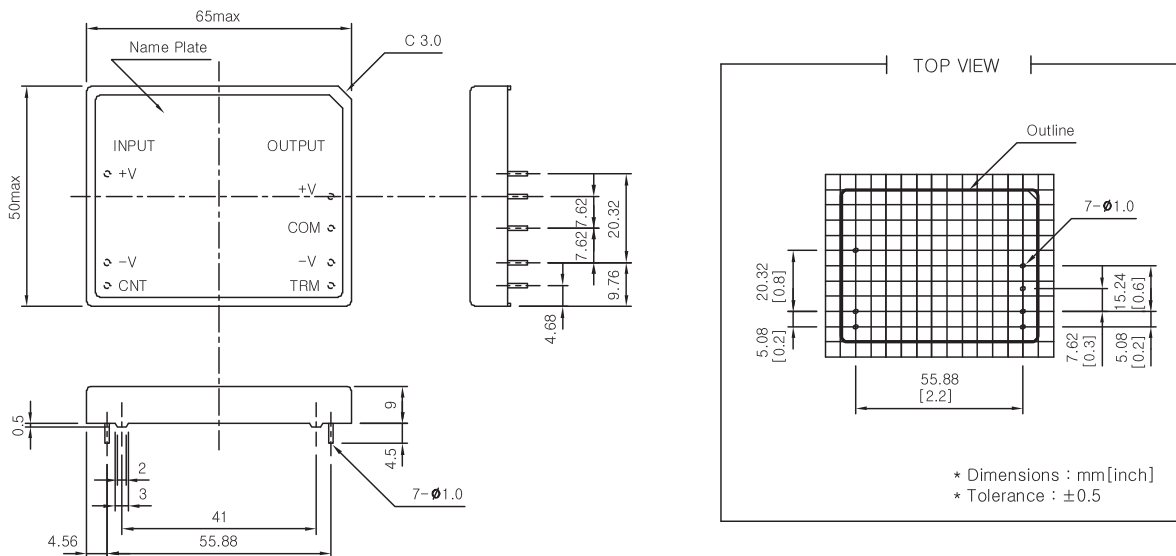


- * Weight : 55g
- * Tolerance : ±0.5
- * Dimensions in mm

PD25-S SPECIFICATIONS

| MODEL | | PD25-121212 | PD25-151515 | PD25-240512 | PD25-241212 | PD25-241515 | PD25-481212 | PD25-481515 |
|-----------------------|----------------------------------|--|-------------|-----------------|-------------|-------------|-----------------|-------------|
| INPUT | VOLTAGE | DC12V(9 ~ 18V) | | DC24V(18 ~ 36V) | | | DC48V(36 ~ 72V) | |
| | EFFICIENCY | 80% | 80% | 75% | 82% | 82% | 84% | 84% |
| OUTPUT | VOLTAGE [V] | ±12 | ±15 | +05/+12 | ±12 | ±15 | ±12 | ±15 |
| | CURRENT [mA] | 1050 | 850 | 2500 / 750 | 1050 | 850 | 1050 | 850 |
| | REGULATION, LINE [mV] | 60Max | 75Max | 20Max/60Max | 60Max | 75Max | 60Max | 75Max |
| | REGULATION, LOAD [mV] | 600Max | 750Max | 250Max/600Max | 600Max | 750Max | 600Max | 750Max |
| | RIPPLE [mVp-p] | 120Max | 120Max | 80Max/120Max | 120Max | 120Max | 120Max | 120Max |
| | RIPPLE, NOISE [mVp-p] | 150Max | 150Max | 120Max/150Max | 150Max | 150Max | 150Max | 150Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 216Max | 270Max | 90Max/216Max | 216Max | 270Max | 216Max | 270Max |
| | OUTPUT VOLTAGE SETTING [%] | ±5% Max (Output voltage is adjustable by the external potentiometer) | | | | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 105% of rating and recovers automatically. | | | | | | |
| | OVER CURRENT PROTECTION | Works at over 115% ~ 142% of rating. | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | |
| | INPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | |
| | OUTPUT-CASE | AC 500V 1 minute, current 10mA, DC500V More Than 100MΩ | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -20 ~ +70°C, 20 ~ 95%RH (Non Condensing) | | | | | | |
| | STORAGE TEMP AND HUMID | -40 ~ +85°C, 20 ~ 95%RH (Non Condensing) | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 10G, 3minutes period for 60 minutes each along X,Y and Z axis | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | |

PD25-S EXTERNAL VIEW



- * Weight : 55g
- * Tolerance : ±0.5
- * Dimensions in mm



ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

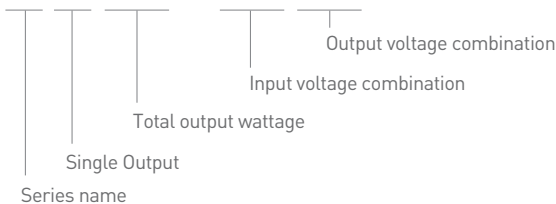
AC FAN Motor

Power Module

Discrete Semiconductors

ORDERING INFORMATION

DS50-1205



- Small size
- DC input voltage
- Over current protection
- Over voltage protection
- Input Polarity protection
- 2 years Warranty



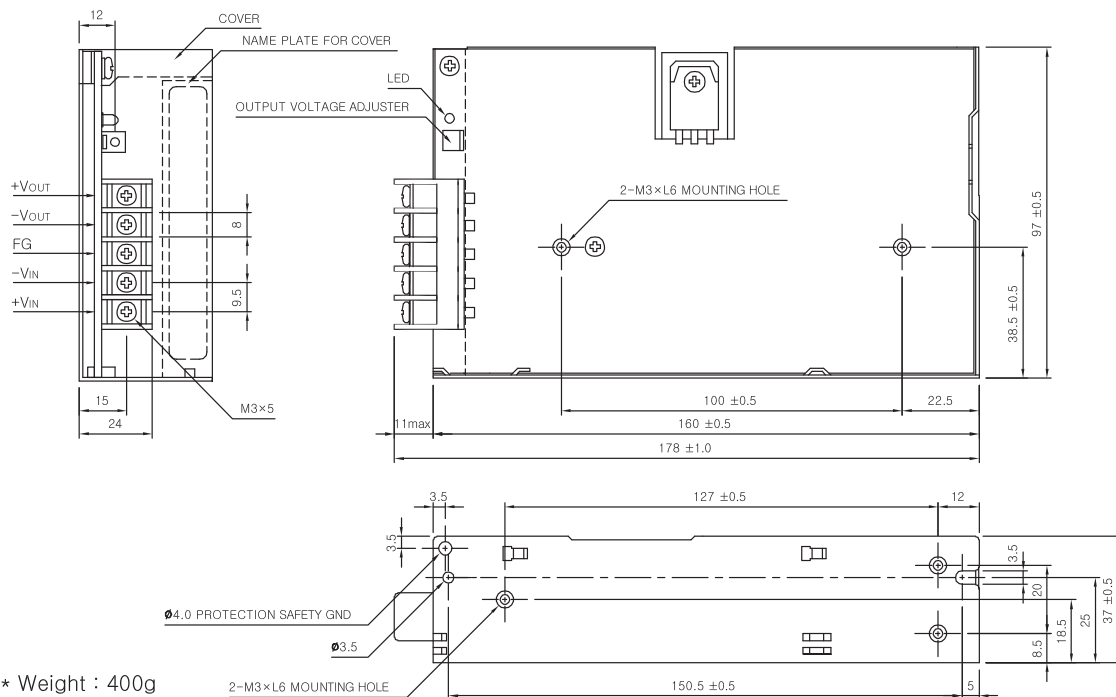
DS50-S SPECIFICATIONS

| | MODEL | DS50-01205 | DS50-01212 | DS50-01215 | DS50-01224 | DS50-02405 | DS50-02412 | DS50-02415 | DS50-02424 |
|-----------------------|----------------------------------|---|------------|------------|------------|-----------------------------------|------------|------------|------------|
| INPUT | VOLTAGE | DC12V (9 ~ 18V) / 8.0A | | | | DC24V (19 ~ 36V) / 3.8A | | | |
| | VOLTAGE [V] | 5 | 12 | 15 | 24 | 5 | 12 | 15 | 24 |
| OUTPUT | CURRENT [A] | 10 | 4.2 | 3.4 | 2.5 | 10 | 4.2 | 3.4 | 2.5 |
| | REGULATION, LINE [mV] | 25 Max | 60 Max | 75 Max | 120 Max | 25 Max | 60 Max | 75 Max | 120 Max |
| | REGULATION, LOAD [mV] | 50 Max | 120 Max | 150 Max | 240 Max | 50 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 150 Max | 240 Max | 50 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 200 Max | 290 Max | 100 Max | 170 Max | 200 Max | 290 Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 75 Max | 180 Max | 225 Max | 360 Max | 75 Max | 180 Max | 225 Max | 360 Max |
| | RISE TIME [ms] | 500 Max (DC IN 9V, $I_o=100\%$) | | | | 500 Max (DC IN 19V, $I_o=100\%$) | | | |
| | HOLDING TIME [ms] | 10 typ (DC IN 9V, $I_o=100\%$) | | | | 10 typ (DC IN 19V, $I_o=100\%$) | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | - | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | - | | | | | | | |

DS50-S SPECIFICATIONS

| | MODEL | DS50-4805 | DS50-4812 | DS50-4815 | DS50-4824 | DS50-11005 | DS50-11012 | DS50-11015 | DS50-11024 |
|-----------------------|----------------------------------|---|-----------|-----------|-----------|---|------------|------------|------------|
| INPUT | VOLTAGE | DC48V (38 ~ 63V) / 2.0A | | | | DC110V (85 ~ 160V) / 0.85A | | | |
| | VOLTAGE [V] | 5 | 12 | 15 | 24 | 5 | 12 | 15 | 24 |
| OUTPUT | CURRENT [A] | 10 | 4.2 | 3.4 | 2.5 | 10 | 4.2 | 3.4 | 2.5 |
| | REGULATION, LINE [mV] | 25 Max | 60 Max | 75 Max | 120 Max | 25 Max | 60 Max | 75 Max | 120 Max |
| | REGULATION, LOAD [mV] | 50 Max | 120 Max | 150 Max | 240 Max | 50 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 150 Max | 240 Max | 50 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 200 Max | 290 Max | 100 Max | 170 Max | 200 Max | 290 Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 75 Max | 180 Max | 225 Max | 360 Max | 75 Max | 180 Max | 225 Max | 360 Max |
| | RISE TIME [ms] | 500 Max (DC IN 38V, I _o =100%) | | | | 500 Max (DC IN 85V, I _o =100%) | | | |
| | HOLDING TIME [ms] | 10 typ (DC IN 38V, I _o =100%) | | | | 10 typ (DC IN 85V, I _o =100%) | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | - | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | - | | | | | | | |

DS50-S EXTERNAL VIEW

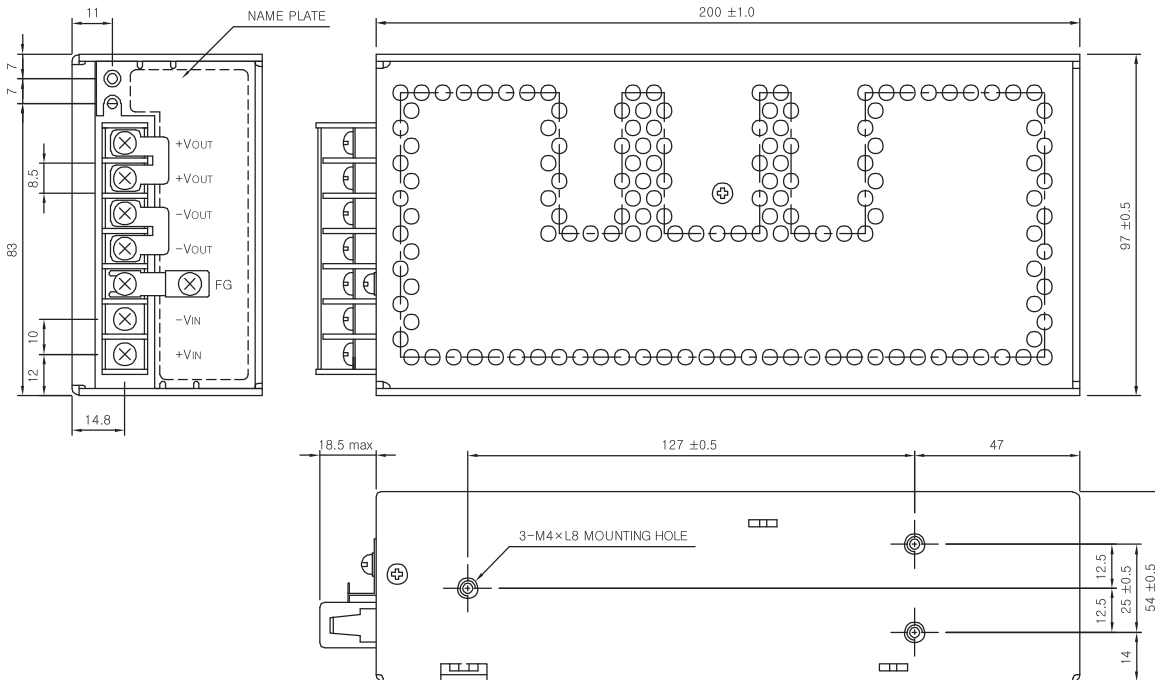


- * Weight : 400g
- * Tolerance : ± 1
- * Dimensions in mm

DS100-S SPECIFICATIONS

| MODEL | | DS100-1205 | DS100-1212 | DS100-1215 | DS100-1224 | DS100-2405 | DS100-2412 | DS100-2415 | DS100-2424 |
|-----------------------|----------------------------------|---|------------|------------|------------|---|------------|------------|------------|
| INPUT | VOLTAGE | DC12V (9 ~ 18V) / 15A | | | | DC24V (19V ~ 36V) / 10A | | | |
| | VOLTAGE [V] | 5 | 12 | 15 | 24 | 5 | 12 | 15 | 24 |
| OUTPUT | CURRENT [A] | 18 | 9 | 7 | 4.5 | 20 | 9 | 7 | 4.5 |
| | REGULATION, LINE [mV] | 25 Max | 60 Max | 75 Max | 120 Max | 25 Max | 60 Max | 75 Max | 120 Max |
| | REGULATION, LOAD [mV] | 50 Max | 120 Max | 150 Max | 240 Max | 50 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 150 Max | 240 Max | 50 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 200 Max | 290 Max | 100 Max | 170 Max | 200 Max | 290 Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 75 Max | 180 Max | 225 Max | 360 Max | 75 Max | 180 Max | 225 Max | 360 Max |
| | RISE TIME [ms] | 500 Max (DC IN 9V, I _o =100%) | | | | 500 Max (DC IN 19V, I _o =100%) | | | |
| | HOLDING TIME [ms] | 10 typ (DC IN 9V, I _o =100%) | | | | 10 typ (DC IN 19V, I _o =100%) | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115 ~ 140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | - | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | - | | | | | | | |

DS100-S EXTERNAL VIEW

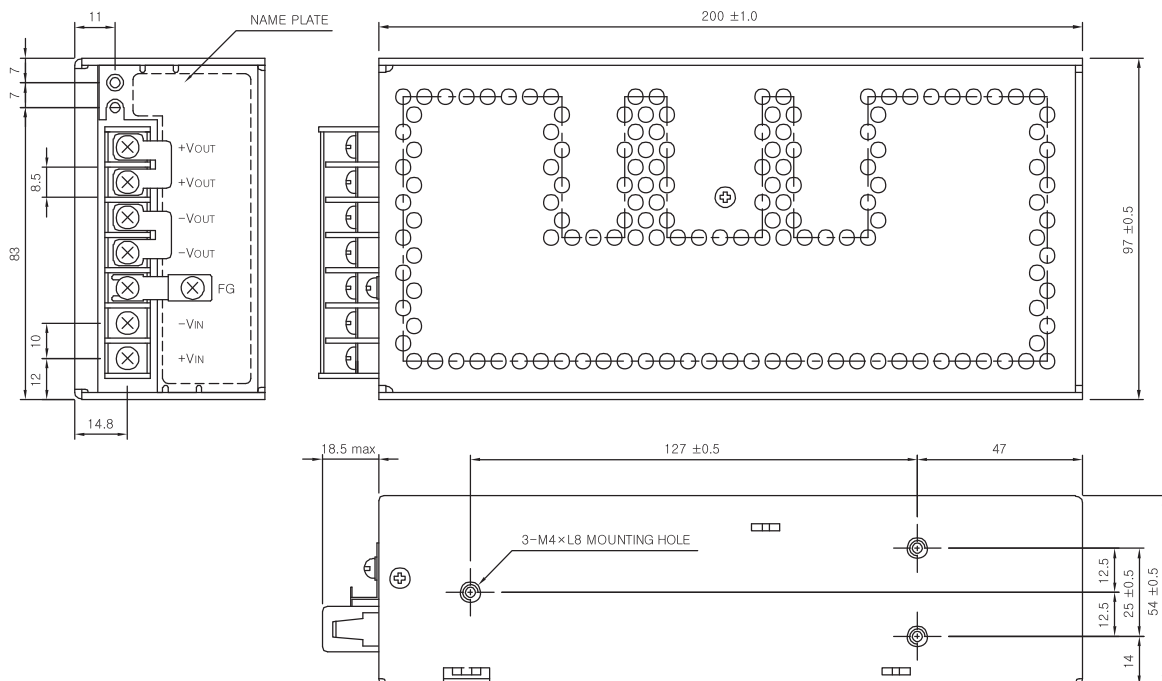


- * Weight : 700g
- * Tolerance : ±1
- * Dimensions in mm

DS100-S SPECIFICATIONS

| MODEL | | DS100-4805 | DS100-4812 | DS100-4815 | DS100-4824 | DS100-11005 | DS100-11012 | DS100-11015 | DS100-11024 |
|-----------------------|----------------------------------|---|------------|------------|------------|-----------------------------------|-------------|-------------|-------------|
| INPUT | VOLTAGE | DC48V (38 ~ 63V) / 4A | | | | DC110V (85 ~ 160V) / 1.4A | | | |
| | VOLTAGE [V] | 5 | 12 | 15 | 24 | 5 | 12 | 15 | 24 |
| OUTPUT | CURRENT [A] | 20 | 9 | 7 | 4.5 | 20 | 9 | 7 | 4.5 |
| | REGULATION, LINE [mV] | 25 Max | 60 Max | 75 Max | 120 Max | 25 Max | 60 Max | 75 Max | 120 Max |
| | REGULATION, LOAD [mV] | 50 Max | 120 Max | 150 Max | 240 Max | 50 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE [mVp-p] | 50 Max | 120 Max | 150 Max | 240 Max | 50 Max | 120 Max | 150 Max | 240 Max |
| | RIPPLE, NOISE [mVp-p] | 100 Max | 170 Max | 200 Max | 290 Max | 100 Max | 170 Max | 200 Max | 290 Max |
| | TEMPERATURE DRIFT -10~+50°C [mV] | 75 Max | 180 Max | 225 Max | 360 Max | 75 Max | 180 Max | 225 Max | 360 Max |
| | RISE TIME [ms] | 500 Max (DC IN 38V, $I_o=100\%$) | | | | 500 Max (DC IN 85V, $I_o=100\%$) | | | |
| | HOLDING TIME [ms] | 10 typ (DC IN 38V, $I_o=100\%$) | | | | 10 typ (DC IN 85V, $I_o=100\%$) | | | |
| PROTECTION CIRCUIT | OVER CURRENT PROTECTION | Works at over 110% of rating and recovers automatically | | | | | | | |
| | OVER VOLTAGE PROTECTION | Works at 115~140% of rating | | | | | | | |
| ELECTRICALLY ISOLATED | INPUT-OUTPUT | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | INPUT-CASE, FG | AC 1,500V 1 minute current 20mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| | OUTPUT-CASE, FG | AC 500V 1 minute current 100mA, DC 500V 100MΩ (At room temperature & Humidity) | | | | | | | |
| ENVIRONMENT | OPERATING TEMP AND HUMID | -10 ~ +50°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | STORAGE TEMP AND HUMID | -20 ~ +75°C, 20 ~ 90% RH(Non Condensing) | | | | | | | |
| | VIBRATION | 10 ~ 55Hz at 1G, 3 minutes period, 30 minutes along X, Y and Z axis | | | | | | | |
| | IMPACT | 10G for 20ms once on each X, Y and Z axis | | | | | | | |
| SAFETY | SAFETY REGULATION | - | | | | | | | |
| | LINE CONDUCTED RF VOLTAGE | - | | | | | | | |

DS100-S EXTERNAL VIEW



- * Weight : 700g
- * Tolerance : ± 1
- * Dimensions in mm

For the Switching Model Power Supply

Noise Filter



ORIENT

ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

| | |
|---------------|-----|
| 1. SN SERIES | 200 |
| 2. RNS SERIES | 205 |
| 3. RMSSERIES | 207 |
| 4. SPL SERIES | 209 |
| 5. TNS SERIES | 210 |
| 6. TMS SERIES | 212 |
| 7. FTN SERIES | 214 |
| 8. TES SERIES | 216 |
| 9. TAS SERIES | 217 |



c   

ORDERING INFORMATION

SN-E□□H-CM

Series name

Rated current

MODE(COMMON MODE)

FEATURE

- Good attenuation characteristics high voltage impulse
- Suitable for the products that must conform to FCC, FTZ
- Low leakage

APPLICATION

- Industrial equipments
- Personal computer & peripherals
- Digital equipments

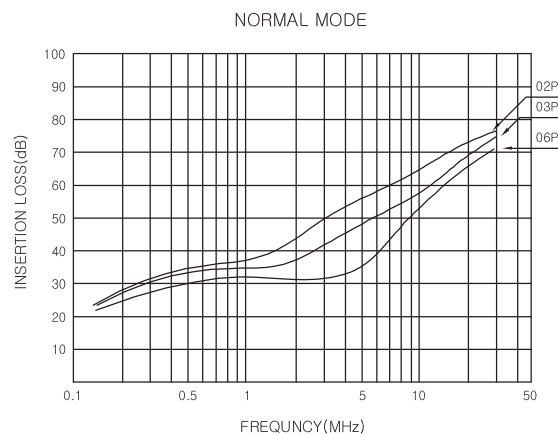
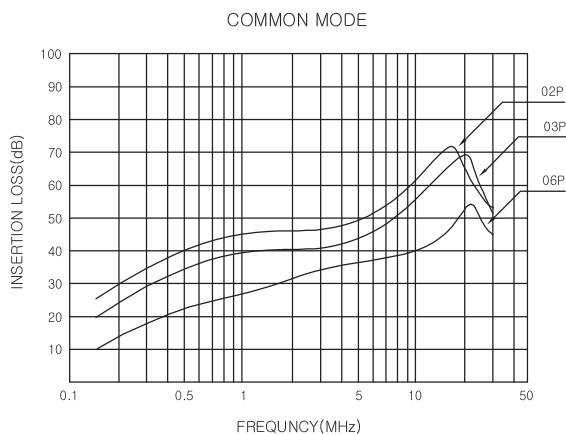


SN-P, M, E, SUP SPECIFICATIONS 1Ø

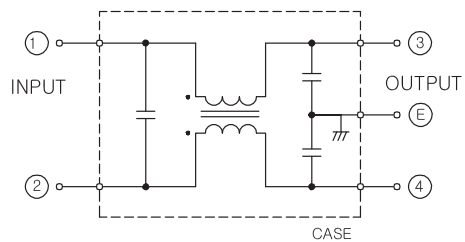
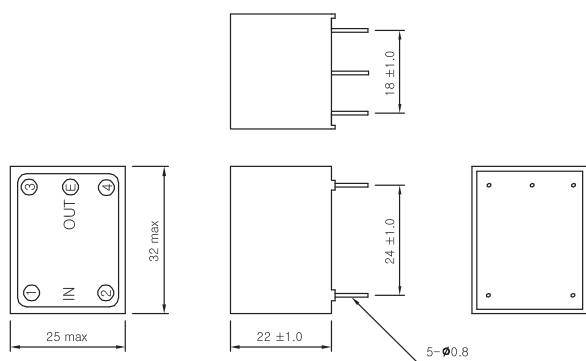


| MODEL | RATED VOLTAGE (AC/DC) | RATED CURRENT | LEAKAGE CURRENT (60Hz) | TEMPERATURE RISE | OPERATING TEMPERATURE RANGE | APPROVAL |
|-------------|-----------------------|---------------|------------------------|------------------|-----------------------------|------------|
| SN-02P | 250V Max | 2A | 0.5mA Max | 40°C Max | -25 ~ +85°C | UL,C-UL,CE |
| SN-03P | 250V Max | 3A | 0.5mA Max | 40°C Max | -25 ~ +85°C | UL,C-UL,CE |
| SN-06P | 250V Max | 6A | 0.5mA Max | 40°C Max | -25 ~ +85°C | UL,C-UL,CE |
| SN-M1H-CM | 250V Max | 1A | 0.5mA Max | 40°C Max | -25 ~ +85°C | UL,C-UL,CE |
| SN-M3H-CM | 250V Max | 3A | 0.5mA Max | 40°C Max | -25 ~ +85°C | UL,C-UL,CE |
| SN-M6H-CM | 250V Max | 6A | 0.5mA Max | 40°C Max | -25 ~ +85°C | UL,C-UL,CE |
| SN-E5H-CM | 250V Max | 5A | 0.5mA Max | 40°C Max | -25 ~ +85°C | UL,C-UL,CE |
| SN-E6H-CM | 250V Max | 6A | 0.5mA Max | 40°C Max | -25 ~ +85°C | UL,C-UL,CE |
| SN-E10H-CM | 250V Max | 10A | 0.5mA Max | 40°C Max | -25 ~ +85°C | UL,C-UL,CE |
| SN-E15H-CM | 250V Max | 15A | 0.5mA Max | 40°C Max | -25 ~ +85°C | UL,C-UL,CE |
| SN-E20H-CM | 250V Max | 20A | 0.5mA Max | 40°C Max | -25 ~ +85°C | UL,C-UL,CE |
| SUP-E30H-CM | 250V Max | 30A | 0.5mA Max | 40°C Max | -25 ~ +85°C | |
| SUP-E40H-CM | 250V Max | 40A | 0.5mA Max | 40°C Max | -25 ~ +85°C | |
| SUP-E50H-CM | 250V Max | 50A | 0.5mA Max | 40°C Max | -25 ~ +85°C | |
| SUP-E60H-CM | 250V Max | 60A | 0.5mA Max | 40°C Max | -25 ~ +85°C | |
| SUP-E70H-CM | 250V Max | 70A | 0.5mA Max | 40°C Max | -25 ~ +85°C | |

SN-P SERIES STATIC ATTENUATION CHARACTERISTICS

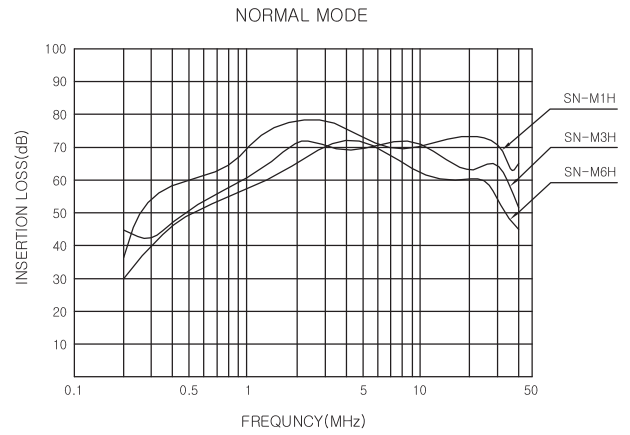
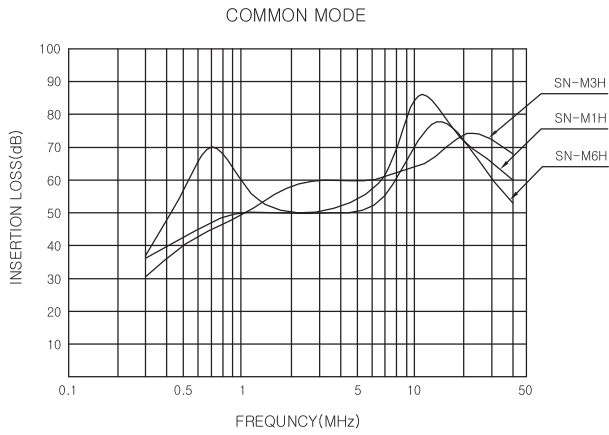


SN-P SERIES SHAPES & DIMENSION / CIRCUIT

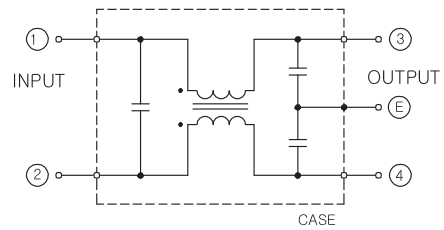
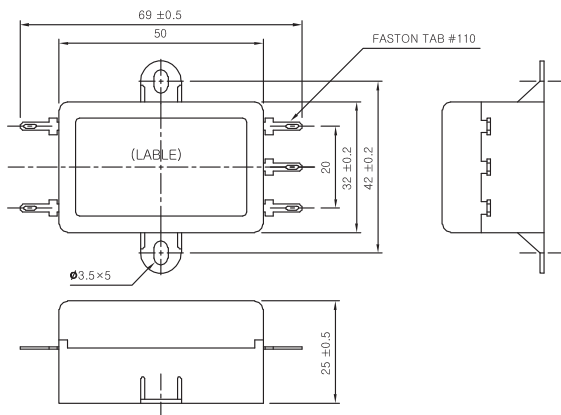


* Tolerance : ± 0.5
* Dimensions in mm

SN-M SERIES STATIC ATTENUATION CHARACTERISTICS

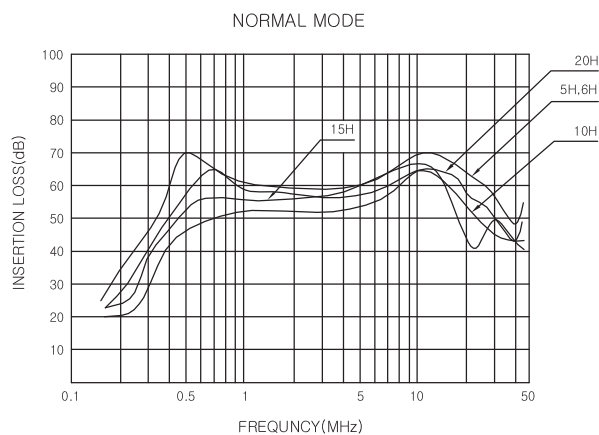
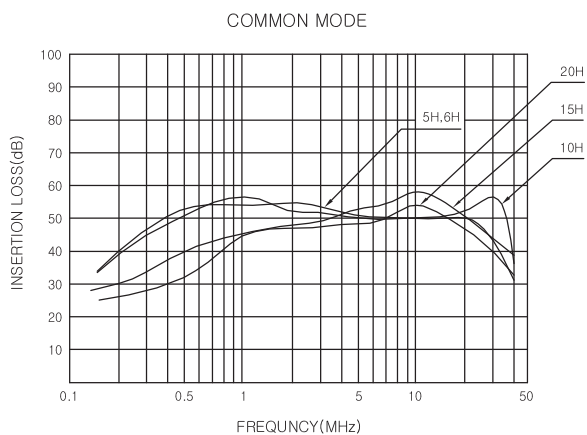


SN-M SERIES SHAPES & DIMENSION / CIRCUIT

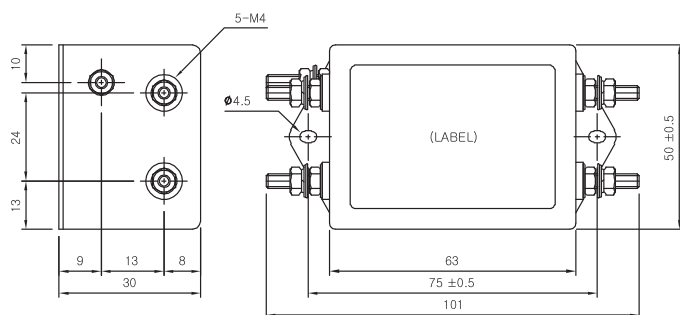


* Tolerance : ±0.5
* Dimensions in mm

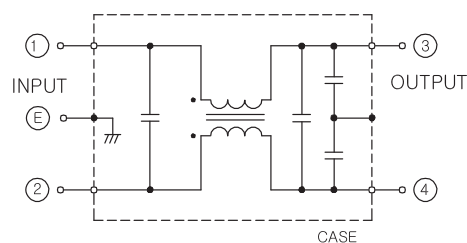
SN-E SERIES STATIC ATTENUATION CHARACTERISTICS



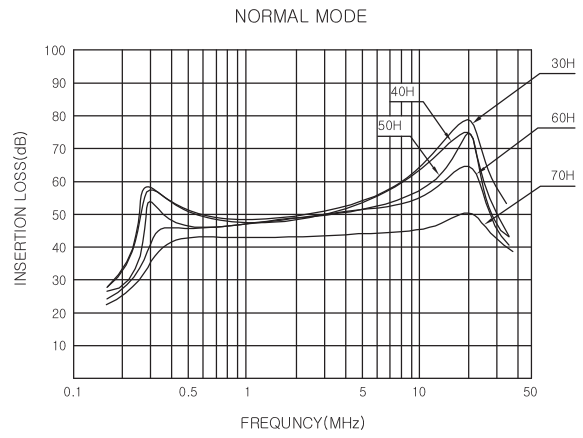
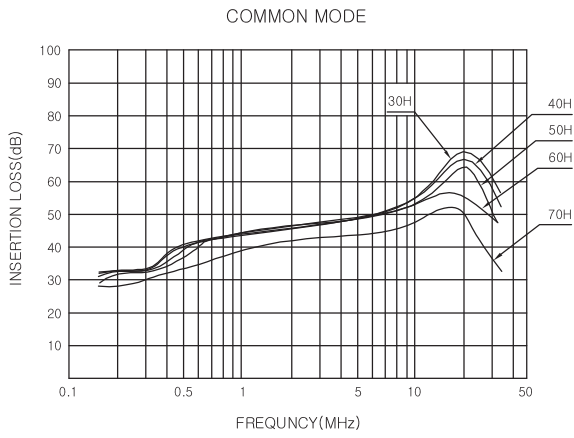
SN-E SERIES SHAPES & DIMENSION / CIRCUIT



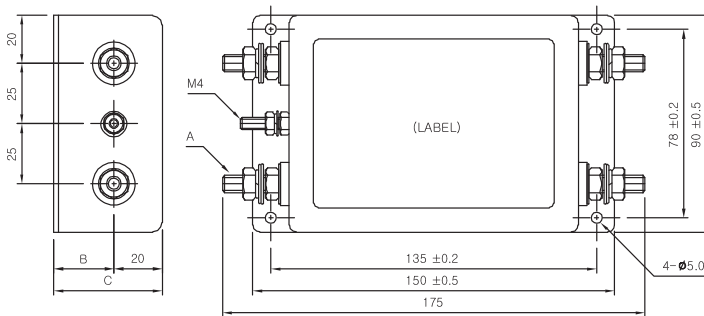
* Tolerance : ± 0.5
* Dimensions in mm



SUP SERIES STATIC ATTENUATION CHARACTERISTICS

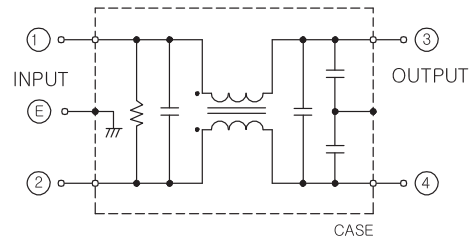


SUP SERIES SHAPES & DIMENSION / CIRCUIT



| MODEL | A | B | C |
|---------------------------------------|------|----|----|
| SUP-E30H-CM, SUP-E40H-CM | 4-M6 | 25 | 45 |
| SUP-E50H-CM, SUP-E60H-CM, SUP-E70H-CM | 4-M6 | 35 | 55 |

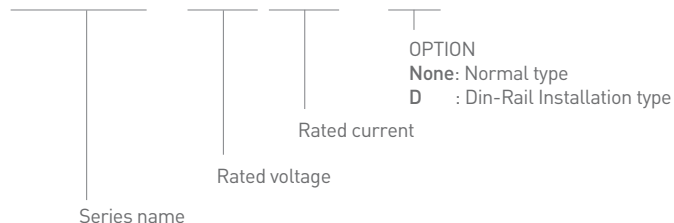
- * Tolerance : ± 0.5
- * Dimensions in mm



ORDERING INFORMATION



RNS-2006-□



FEATURE

- High attenuation characteristics(150kHz~1MHz)
- Single Phase
- 1-Stage filter
- Low leakage
- Quick and easy push-down terminal block
- Safety cover
- DIN rail mountable(Option)

APPLICATION

- Industrial equipments
- Personal computer & peripherals
- Digital equipments

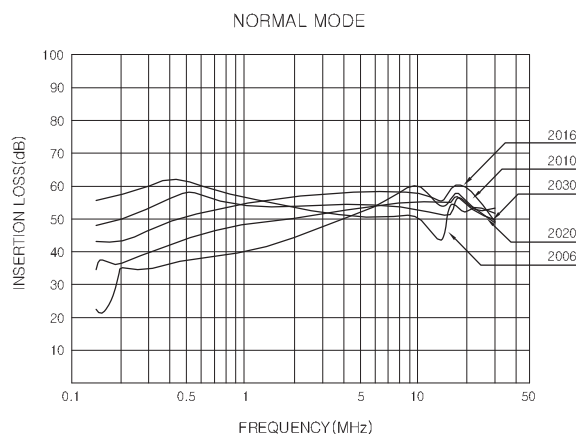
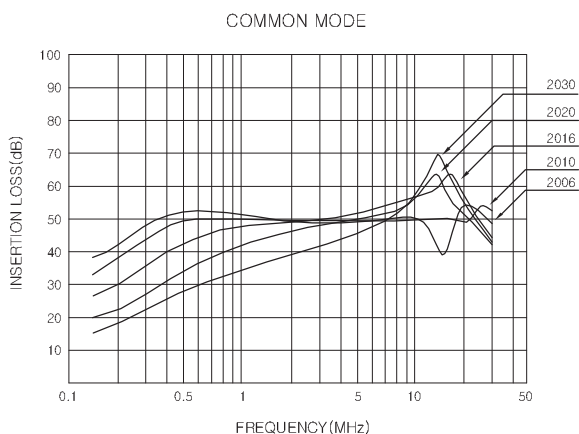


RNS SERIES SPECIFICATIONS 1Ø



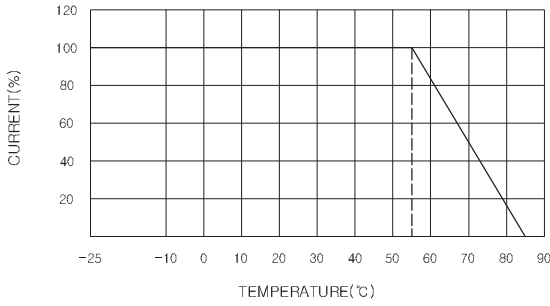
| MODEL | RATED VOLTAGE (AC/DC) | RATED CURRENT | LEAKAGE CURRENT (60Hz) | OPERATING TEMPERATURE RANGE | APPROVAL |
|--------------|-----------------------|---------------|------------------------|-----------------------------|--------------|
| RNS-2006 | 250V Max | 6A | 1.0mA Max | 50°C Max | UL, C-UL, CE |
| RNS-2006-DIN | 250V Max | 6A | 1.0mA Max | 50°C Max | UL, C-UL, CE |
| RNS-2010 | 250V Max | 10A | 1.0mA Max | 50°C Max | UL, C-UL, CE |
| RNS-2010-DIN | 250V Max | 10A | 1.0mA Max | 50°C Max | UL, C-UL, CE |
| RNS-2016 | 250V Max | 16A | 1.0mA Max | 50°C Max | UL, C-UL, CE |
| RNS-2016-DIN | 250V Max | 16A | 1.0mA Max | 50°C Max | UL, C-UL, CE |
| RNS-2020 | 250V Max | 20A | 1.0mA Max | 50°C Max | UL, C-UL, CE |
| RNS-2020-DIN | 250V Max | 20A | 1.0mA Max | 50°C Max | UL, C-UL, CE |
| RNS-2030 | 250V Max | 30A | 1.0mA Max | 50°C Max | UL, C-UL, CE |
| RNS-2030-DIN | 250V Max | 30A | 1.0mA Max | 50°C Max | UL, C-UL, CE |

RNS SERIES STATIC ATTENUATION CHARACTERISTICS

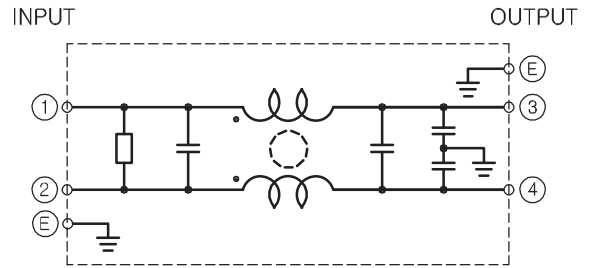


General Information
Switching Mode Power Supply
DC-DC Converter
Noise Filter
Solid State Relay
AC FAN Motor
Power Module
Discrete Semiconductors

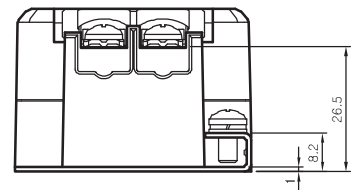
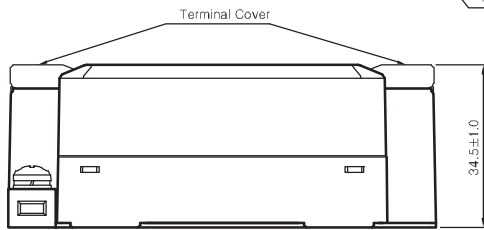
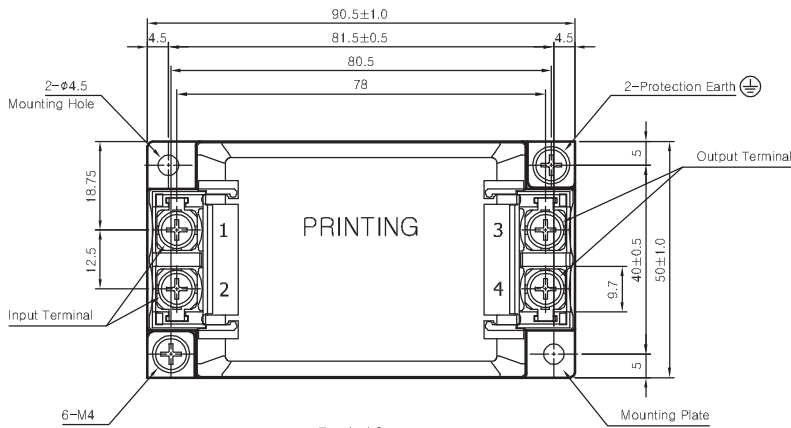
DERATING CURVE



CIRCUIT DIAGRAM

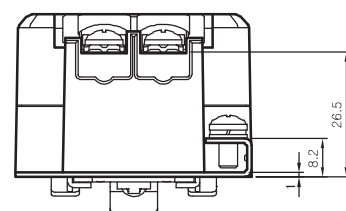
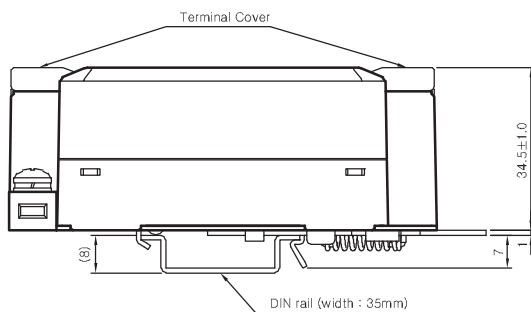


RNS SERIES SHAPES & DIMENSION / CUIT



- * Weight : 195g
- * Tolerance : ±1
- * Dimensions in mm

RNS DIN SHAPES & DIMENSION / CUIT

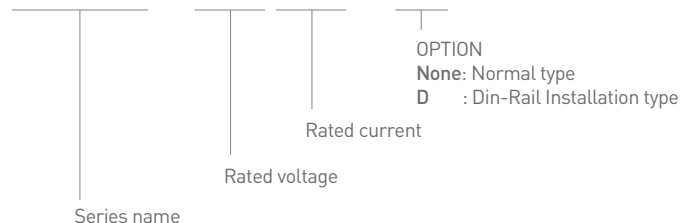


- * Weight : 205g
- * Tolerance : ±1
- * Dimensions in mm

ORDERING INFORMATION



RMS-2006-□



FEATURE

- High attenuation characteristics(150kHz~10MHz)
- Single Phase
- 2-Stage filter
- Low leakage
- Quick and easy push-down terminal block
- Safety cover

APPLICATION

- Industrial equipments
- Personal computer & peripherals
- Digital equipments

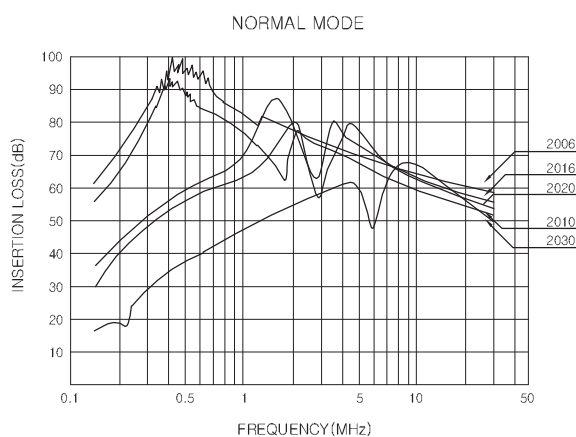
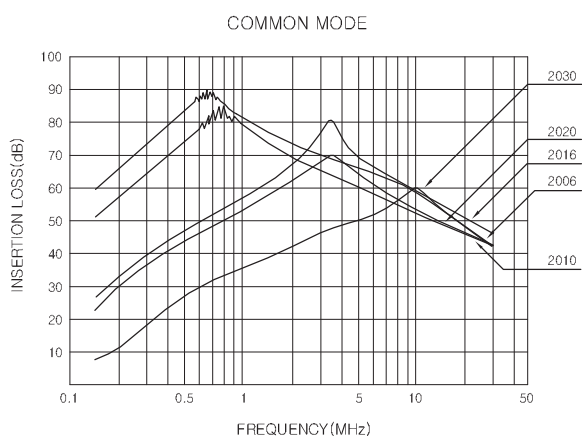


RMS SERIES SPECIFICATIONS 1Ø



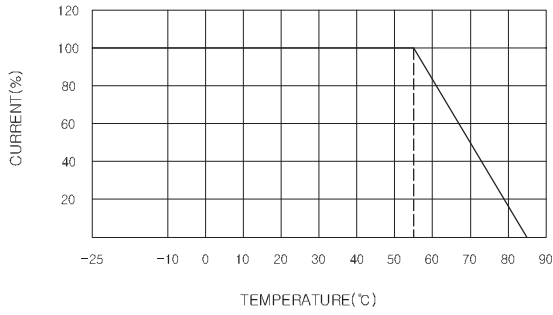
| MODEL | RATED VOLTAGE (AC/DC) | RATED CURRENT | LEAKAGE CURRENT (60Hz) | TEMPERATURE RISE | OPERATING TEMPERATURE RANGE | APPROVAL |
|--------------|-----------------------|---------------|------------------------|------------------|-----------------------------|--------------|
| RMS-2006 | 250V Max | 6A | 1.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| RMS-2006-DIN | 250V Max | 6A | 1.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| RMS-2010 | 250V Max | 10A | 1.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| RMS-2010-DIN | 250V Max | 10A | 1.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| RMS-2016 | 250V Max | 16A | 1.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| RMS-2016-DIN | 250V Max | 16A | 1.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| RMS-2020 | 250V Max | 20A | 1.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| RMS-2020-DIN | 250V Max | 20A | 1.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| RMS-2030 | 250V Max | 30A | 1.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| RMS-2030-DIN | 250V Max | 30A | 1.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |

RMS SERIES STATIC ATTENUATION CHARACTERISTICS

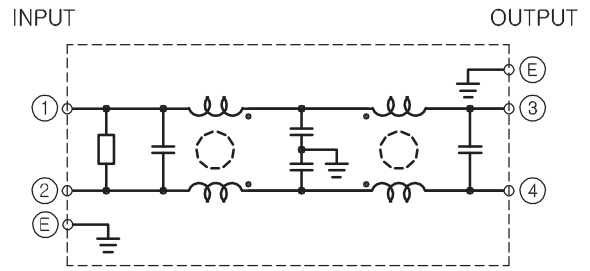


General Information
 Switching Mode Power Supply
 DC-DC Converter
 Noise Filter
 Solid State Relay
 AC FAN Motor
 Power Module
 Discrete Semiconductors

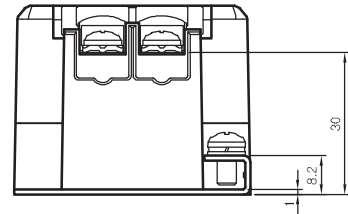
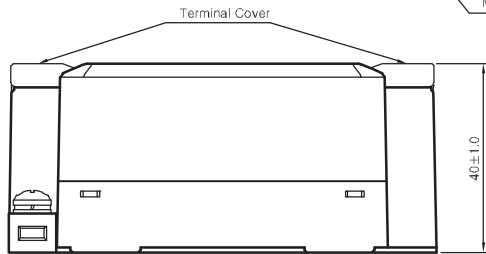
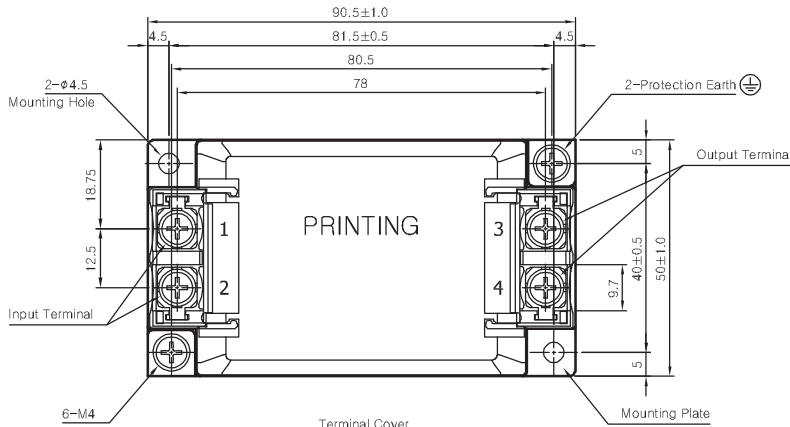
DERATING CURVE



CIRCUIT DIAGRAM

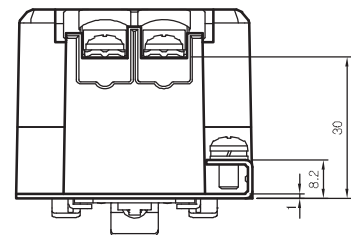
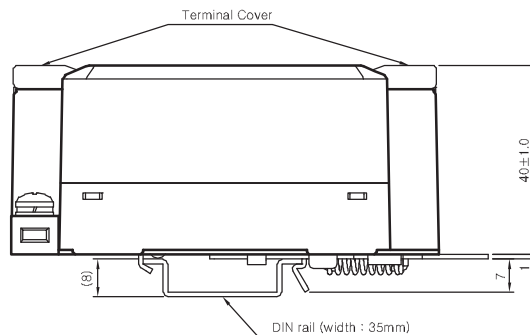


RMS SERIES SHAPES & DIMENSION / CUIT



- * Weight : 200g
- * Tolerance : ±1
- * Dimensions in mm

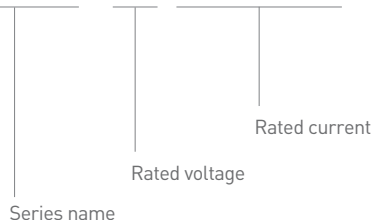
RMS DIN SHAPES & DIMENSION / CUIT



- * Weight : 210g
- * Tolerance : ±1
- * Dimensions in mm

ORDERING INFORMATION

SPL-2 02R5



FEATURE

- Small size & light weight
- Low leakage

APPLICATION

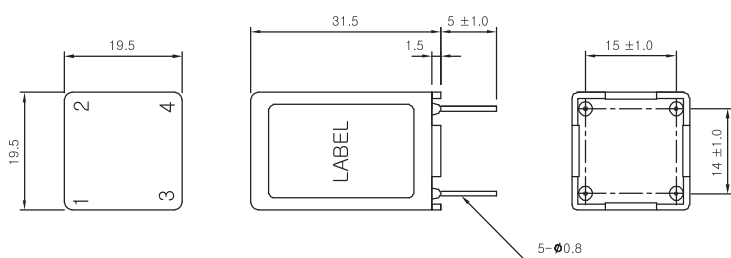
- Industrial equipments
- Digital equipments



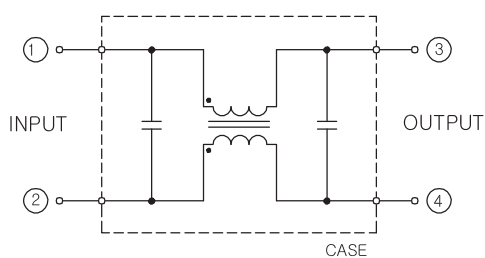
SPL SERIES SPECIFICATIONS 1Ø

| MODEL | RATED VOLTAGE (AC/DC) | RATED CURRENT | LEAKAGE CURRENT (60Hz) | TEMPERATURE RISE | OPERATING TEMPERATURE RANGE | APPROVAL |
|-----------|-----------------------|---------------|------------------------|------------------|-----------------------------|----------|
| SPL-2001 | 250V Max | 1A | 10mA Max | 40°C Max | -25~+85°C | |
| SPL-201R6 | 250V Max | 1.6A | 10mA Max | 40°C Max | -25~+85°C | |
| SPL-202R5 | 250V Max | 2.5A | 10mA Max | 40°C Max | -25~+85°C | |
| SPL-203R6 | 250V Max | 3.6A | 10mA Max | 40°C Max | -25~+85°C | |

SPL SERIES SHAPES & DIMENSION / CUIT



* Tolerance : ±0.5
* Dimensions in mm



General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

Discrete Semiconductors

ORDERING INFORMATION

TNS-5006-□

Series name

Rated voltage

Rated current

OPTION
None: Normal type
D : Din-Rail Installation type

FEATURE

- High attenuation characteristics (150KHz~1MHz)
- Three Phase
- 1-Stage Filter
- Plastic case / Safety cover
- Easy push-down Terminal Block
- DIN Rail mountable(option)

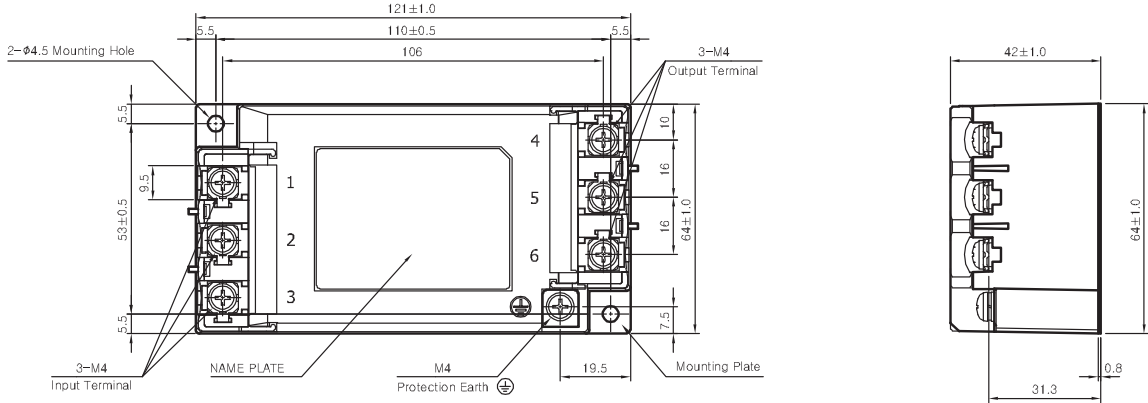


TNS SERIES SPECIFICATIONS

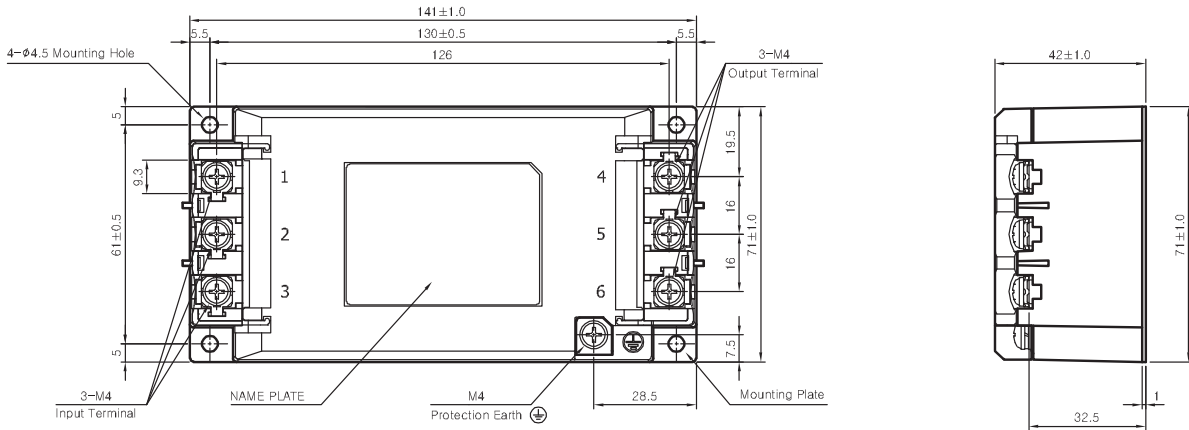


| MODEL | RATED VOLTAGE (AC/DC) | RATED CURRENT | LEAKAGE CURRENT (60Hz) | TEMPERATURE RISE | OPERATING TEMPERATURE RANGE | APPROVAL |
|--------------|-----------------------|---------------|------------------------|------------------|-----------------------------|--------------|
| TNS-5006 | 500V Max | 6A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| TNS-5006-DIN | 500V Max | 6A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| TNS-5010 | 500V Max | 10A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| TNS-5010-DIN | 500V Max | 10A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| TNS-5020 | 500V Max | 20A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| TNS-5020-DIN | 500V Max | 20A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| TNS-5030 | 500V Max | 30A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| TNS-5030-DIN | 500V Max | 30A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| TNS-5040 | 500V Max | 40A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| TNS-5050 | 500V Max | 50A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| TNS-5060 | 500V Max | 60A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |

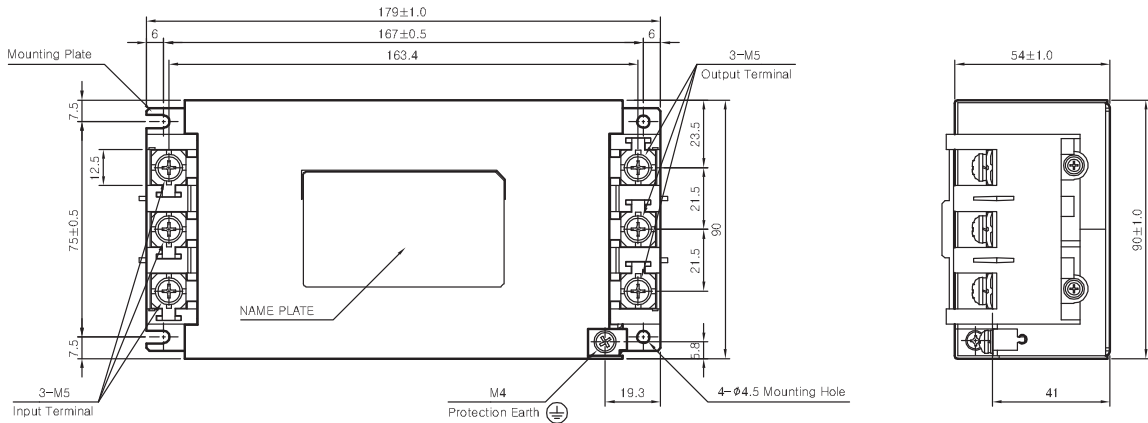
TNS A-TYPE (5006/5010)



TNS B-TYPE (5020/5030)



TNS C-TYPE (5040/5050/5060)



General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

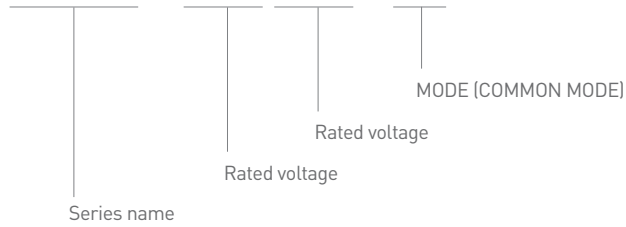
AC FAN Motor

Power Module

Discrete Semiconductors

ORDERING INFORMATION

TMS-5010-□



FEATURE

- High attenuation characteristics (150KHz~10MHz)
- Three Phase
- 2-Stage Filter
- Steel case / Safety cover
- Easy push-down Terminal Block

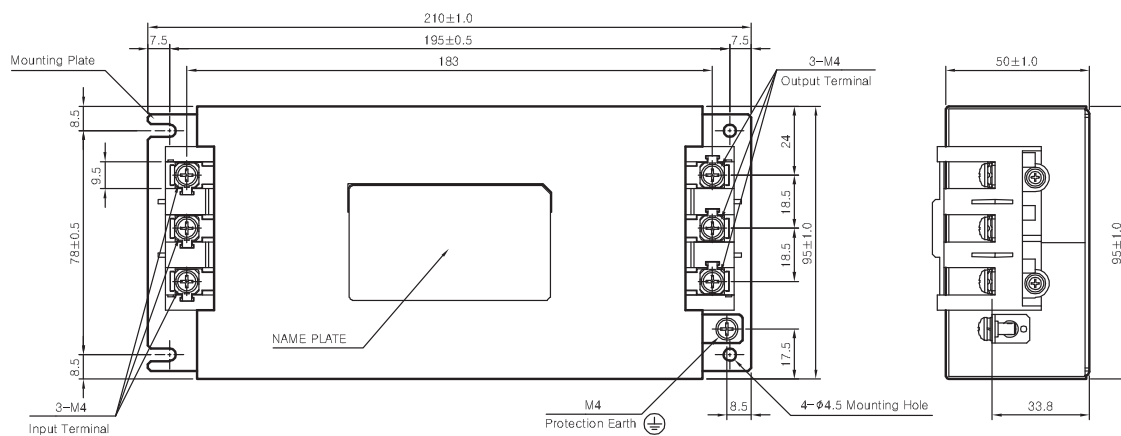


TMS SERIES SPECIFICATIONS

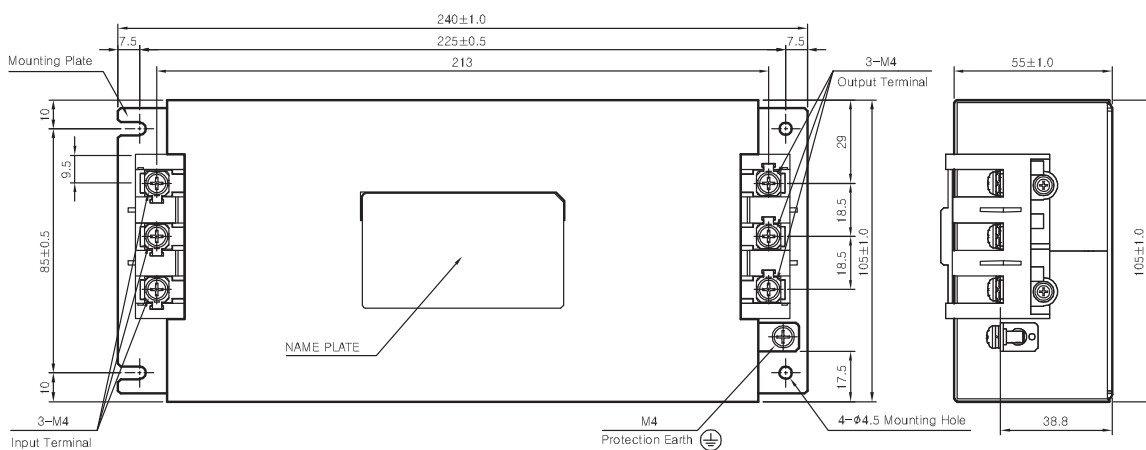


| MODEL | RATED VOLTAGE (AC/DC) | RATED CURRENT | LEAKAGE CURRENT (60Hz) | TEMPERATURE RISE | OPERATING TEMPERATURE RANGE | APPROVAL |
|----------|-----------------------|---------------|------------------------|------------------|-----------------------------|--------------|
| TMS-5006 | 500V Max | 6A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| TMS-5010 | 500V Max | 10A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| TMS-5020 | 500V Max | 20A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| TMS-5030 | 500V Max | 30A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| TMS-5040 | 500V Max | 40A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| TMS-5050 | 500V Max | 50A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |
| TMS-5060 | 500V Max | 60A | 5.0mA Max | 50°C Max | -25 ~ +85°C | UL, C-UL, CE |

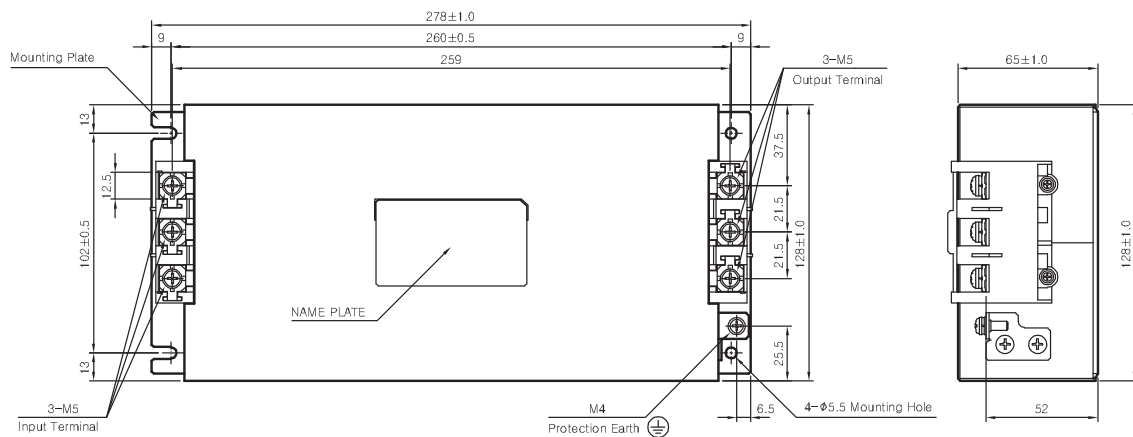
TMS A-TYPE (5006/5010)



TMS B-TYPE (5020/5030)



TMS C-TYPE (5040/5050/5060)



General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

Discrete Semiconductors

ORDERING INFORMATION

FTN-E□□H-CM

Series name

Rated voltage(2: 250V, 4: 450V)

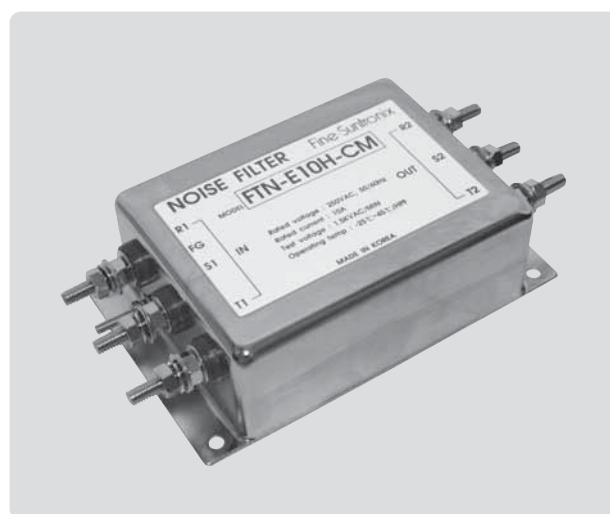
MODE (COMMON MODE)

FEATURE

- Good filtering characteristics with wide band frequency range for both normal mode and common mode noise.
- Double filtering stage for good attenuation characteristics.
- Suitable for the products that must conform to FCC, FTZ.

APPLICATION

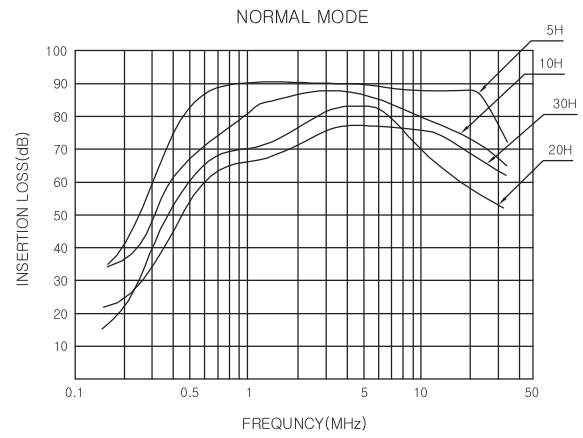
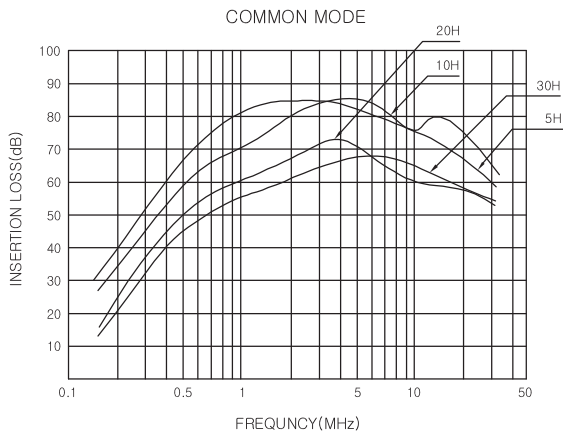
- Industrial equipments
- Personal computer & peripherals
- Digital equipments



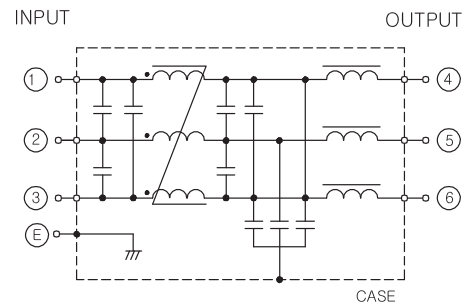
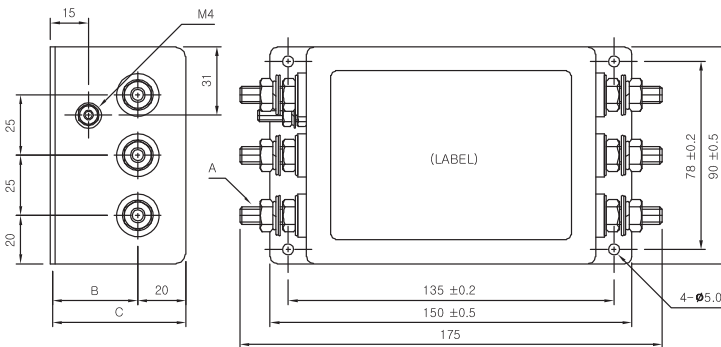
FTN SERIES SPECIFICATIONS 3Ø

| MODEL | RATED VOLTAGE (AC/DC) | RATED CURRENT | LEAKAGE CURRENT (60Hz) | TEMPERATURE RISE | OPERATING TEMPERATURE RANGE | APPROVAL |
|-------------|-----------------------|---------------|------------------------|------------------|-----------------------------|----------|
| FTN-E5H-CM | 250V Max | 5A | 0.5mA Max | 40°C Max | -25~+85°C | |
| FTN-E10H-CM | 250V Max | 10A | 0.5mA Max | 40°C Max | -25~+85°C | |
| FTN-E20H-CM | 250V Max | 20A | 0.5mA Max | 40°C Max | -25~+85°C | |
| FTN-E30H-CM | 250V Max | 30A | 0.5mA Max | 40°C Max | -25~+85°C | |

FTN SERIES STATIC ATTENUATION CHARACTERISTICS



FTN SERIES SHAPES & DIMENSION / CUIT



| MODEL | A | B | C |
|--|------|----|----|
| FTN-E5H-CM, FTN-E10H-CM, FTN-4005, FTN-4010 | 6-M6 | 20 | 45 |
| FTN-E20H-CM, FTN-E30H-CM, FTN-4020, FTN-4030 | 6-M6 | 35 | 55 |

* Tolerance : ±0.5
* Dimensions in mm

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

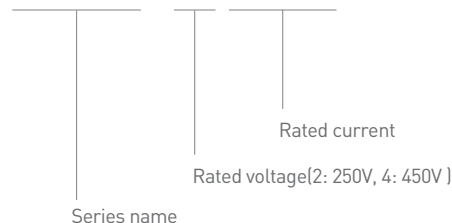
AC FAN Motor

Power Module

Discrete Semiconductors

ORDERING INFORMATION

TAS-4120



FEATURE

- Good attenuation characteristics high voltage impulse
- Suitable for the products that must conform to FCC, FTZ
- Low leakage
- Good shield effect by using metal case

APPLICATION

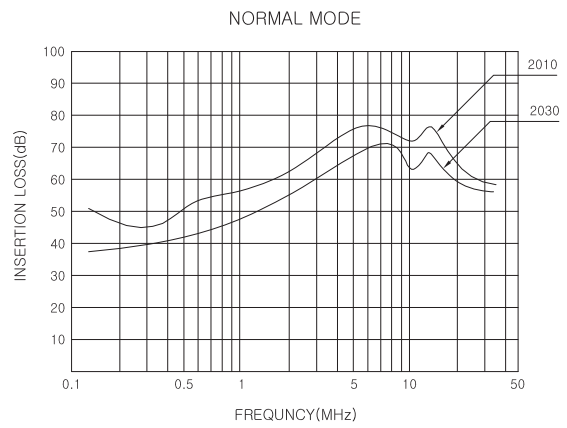
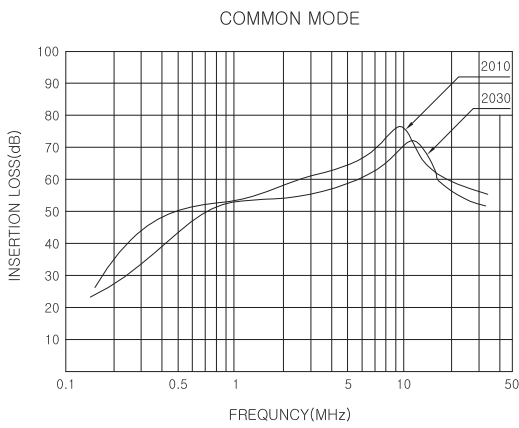
- Industrial equipments
- Personal computer & peripherals
- Digital equipments



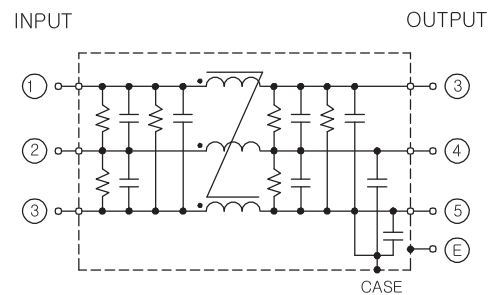
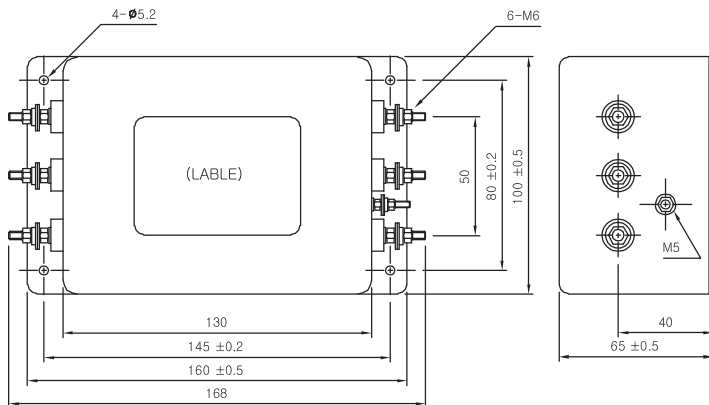
TES/TAS SERIES SPECIFICATIONS Ø

| MODEL | RATED VOLTAGE (AC/DC) | RATED CURRENT | LEAKAGE CURRENT (60Hz) | TEMPERATURE RISE | OPERATING TEMPERATURE RANGE | APPROVAL |
|----------|-----------------------|---------------|------------------------|------------------|-----------------------------|----------|
| TES-4005 | 450V Max | 5A | 2.0mA Max | 60°C Max | -25~+45°C | |
| TES-4010 | 450V Max | 10A | 2.0mA Max | 60°C Max | -25~+45°C | |
| TES-4020 | 450V Max | 20A | 2.0mA Max | 60°C Max | -25~+45°C | |
| TES-4030 | 450V Max | 30A | 2.0mA Max | 60°C Max | -25~+45°C | |
| TAS-4030 | 450V Max | 30A | 0.9mA Max | 80°C Max | -25~+45°C | |
| TAS-4040 | 450V Max | 40A | 0.9mA Max | 80°C Max | -25~+45°C | |
| TAS-4050 | 450V Max | 50A | 0.9mA Max | 80°C Max | -25~+45°C | |
| TAS-4060 | 450V Max | 60A | 0.9mA Max | 80°C Max | -25~+45°C | |
| TAS-4070 | 450V Max | 70A | 0.9mA Max | 80°C Max | -25~+45°C | |
| TAS-4080 | 450V Max | 80A | 0.9mA Max | 85°C Max | -25~+45°C | |
| TAS-4100 | 450V Max | 100A | 0.9mA Max | 85°C Max | -25~+45°C | |
| TAS-4120 | 450V Max | 120A | 0.9mA Max | 85°C Max | -25~+45°C | |

TES SERIES STATIC ATTENUATION CHARACTERISTICS

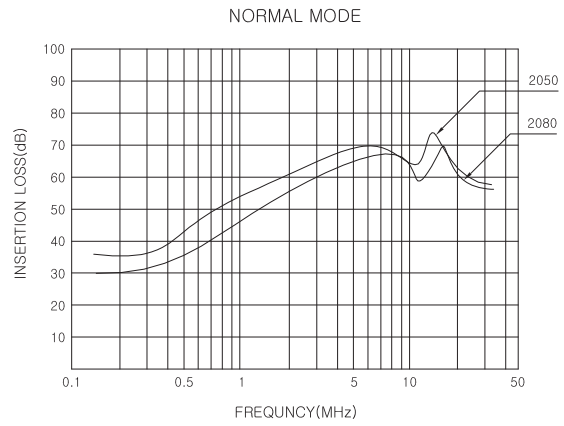
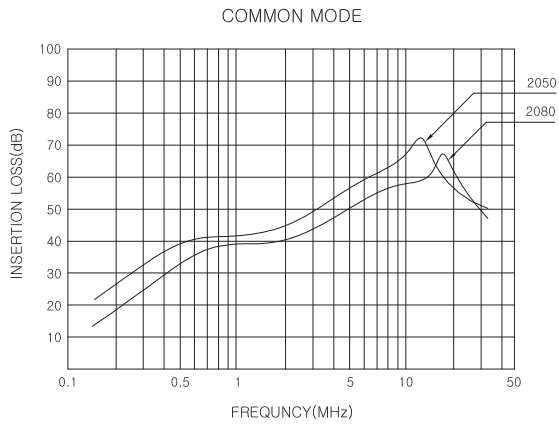


TES SERIES SHAPES & DIMENSION / CUIT

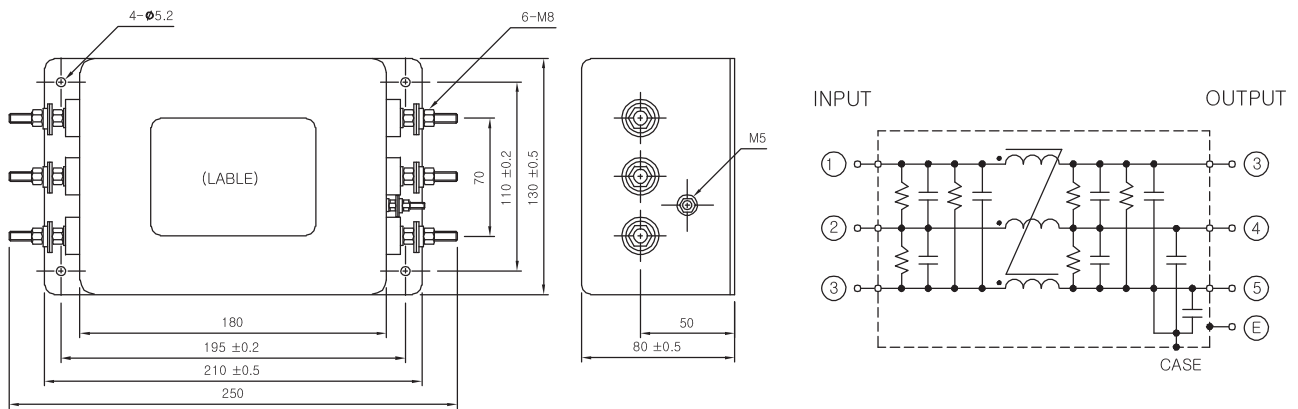


- * Tolerance : ± 0.5
- * Dimensions in mm

TAS SERIES STATIC ATTENUATION CHARACTERISTICS



TAS SERIES SHAPES & DIMENSION / CUIT



* Tolerance : ± 0.5
 * Dimensions in mm



ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

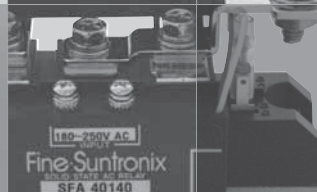
AC FAN Motor

Power Module

Discrete Semiconductors

For the Switching Model Power Supply

Solid State Relay



ORIENT

ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

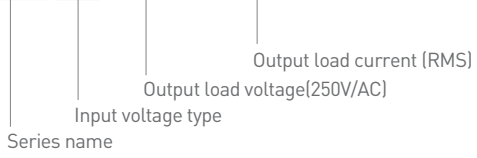
| | |
|----------------|-----|
| 1. SFA SERIES | 222 |
| 2. SFD SERIES | 224 |
| 3. FSA SERIES | 226 |
| 4. FSD SERIES | 227 |
| 5. FRD SERIES | 228 |
| 6. FDD SERIES | 229 |
| 7. 3FSD SERIES | 230 |
| 8. 3FSA SERIES | 231 |



RoHS

ORDERING INFORMATION

SFA25 □ □



- AC Input(Trigger), AC Output
- Input voltage(Trigger) 185~250V
- AC Load current 55A~170A
- Zero cross



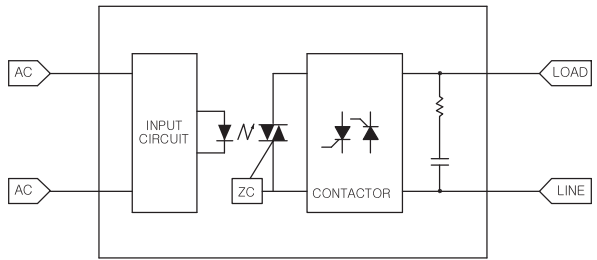
SFA25-SERIES SPECIFICATIONS

| | | SFA2555 | SFA2585 | SFA25110 | SFA25140 | SFA25170 | UNIT | |
|-------|---------------------------------------|----------------|---------|----------|----------|----------|------|----|
| LOAD | Maximum load current LOAD | 55 | 85 | 110 | 140 | 170 | ARMS | |
| | Load voltage | 85V ~ 250V AC | | | | | | V |
| | Surge on-state current (½cycle, 60Hz) | 1300 | 1750 | 1950 | 2300 | 2550 | | A |
| | Maximum off-state leakage current | 30 Max | | | | | | mA |
| | Maximum on-state voltage drop | 1.6 | | | | | | V |
| INPUT | Input voltage | 185V ~ 250V AC | | | | | | V |
| | Input impedance | 14 | | | | | | kΩ |
| | Drop-out voltage | 100 | | | | | | V |

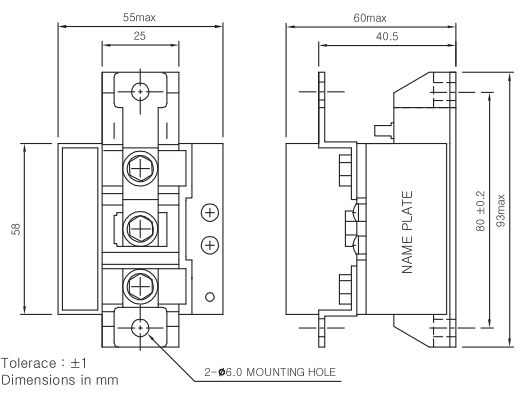
SFA25-SERIES CHARACTERISTICS

| | SFA2555 | SFA2585 | SFA25110 | SFA25140 | SFA25170 | UNIT | |
|-----------------------------|--|---------|----------|----------|----------|------|----|
| Operate time, max. | (½ cycle of voltage sine wave)+1 msec | | | | | | mS |
| Release time, max. | (½ cycle of voltage sine wave)+1 msec | | | | | | mS |
| Insulation resistance, min. | DC 500V 100MΩ between input, output and case | | | | | | MΩ |
| Insulation voltage | 2,500Vrms between input, output and case | | | | | | V |
| Ambient temperature | -30°C ~ +80°C | | | | | | °C |
| Storage temperature | -30°C ~ +80°C | | | | | | °C |
| Operational method | Zero-cross (Turn-on and Turn-off) | | | | | | |

SIMPLIFIED CIRCUIT

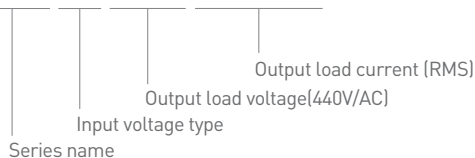


DIMENSION



ORDERING INFORMATION

SFA40 □ □



- AC Input(Trigger), AC Output
- Input voltage(Trigger) 185~250V
- AC Load current 40A~170A
- Zero cross



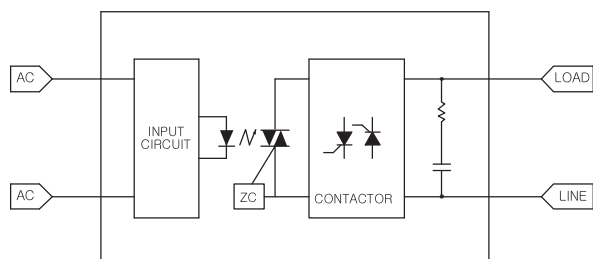
SFA40-SERIES SPECIFICATIONS

| | | SFA4040 | SFA4055 | SFA4085 | SFA40110 | SFA40140 | SFA40170 | UNIT |
|-------|---------------------------------------|----------------|---------|---------|----------|----------|----------|------|
| LOAD | Maximum load current | 40 | 55 | 85 | 110 | 140 | 170 | ARMS |
| | Load voltage | 85V ~ 440V AC | | | | | | V |
| | Surge on-state current (½cycle, 60Hz) | 580 | 1300 | 1750 | 1950 | 2300 | 2550 | A |
| | Maximum off-state leakage current | 30 Max | | | | | | mA |
| | Maximum on-state voltage drop | 1.6 | | | | | | V |
| INPUT | Input volage | 185V ~ 250V AC | | | | | | V |
| | Input impedance | 14 | | | | | | kΩ |
| | Drop-out voltage | 100 | | | | | | V |

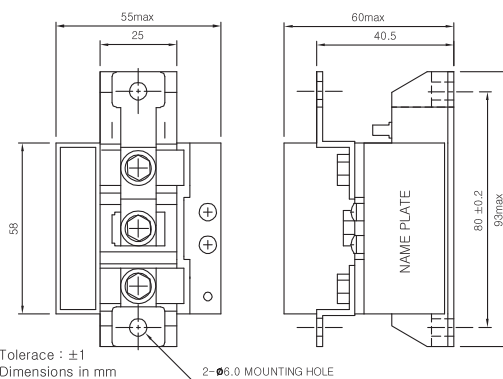
SFA40-SERIES CHARACTERISTICS

| | SFA4040 | SFA4055 | SFA4085 | SFA40110 | SFA40140 | SFA40170 | UNIT |
|-----------------------------|--|---------|---------|----------|----------|----------|------|
| Operate time, max. | (½ cycle of voltage sine wave)+1 msec | | | | | | mS |
| Release time, max. | (½ cycle of voltage sine wave)+1 msec | | | | | | mS |
| Insulation resistance, min. | DC 500V 100MΩ between input, output and case | | | | | | MΩ |
| Insulation voltage | 2,500Vrms between input, output and case | | | | | | V |
| Ambient temperature | -30°C ~ +80°C | | | | | | °C |
| Storage temperature | -30°C ~ +80°C | | | | | | °C |
| Operational method | Zero-cross (Turn-on and Turn-off) | | | | | | - |

SIMPLIFIED CIRCUIT



DIMENSION

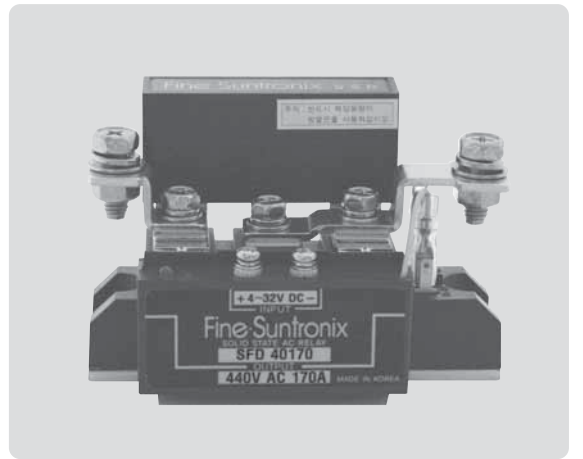


ORDERING INFORMATION

SFD25 □ □

Series name
Input voltage type
Output load voltage(250V/AC)
Output load current (RMS)

- DC Input(Trigger), AC Output
- Input voltage(Trigger) 4V~32V
- AC Load current 55A~170A
- Zero cross



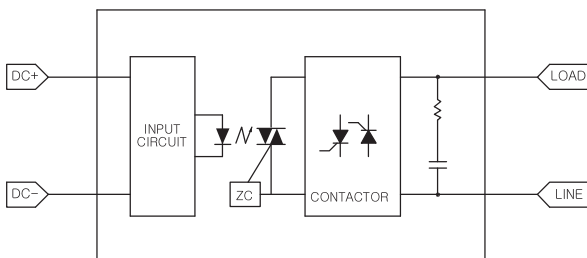
SFD25-SERIES SPECIFICATIONS

| | | SFD2555 | SFD2585 | SFD25110 | SFD25140 | SFD25170 | UNIT | |
|-------|---------------------------------------|---------------|---------|----------|----------|----------|------|----|
| LOAD | Maximum load current LOAD | 55 | 85 | 110 | 140 | 170 | ARMS | |
| | Load voltage | 85V ~ 250V AC | | | | | | V |
| | Surge on-state current (½cycle, 60Hz) | 1300 | 1750 | 1950 | 2300 | 2550 | A | |
| | Maximum off-state leakage current | 30 Max | | | | | | mA |
| | Maximum on-state voltage drop | 1.6 | | | | | | V |
| INPUT | Input volage | 4V ~ 32V DC | | | | | | V |
| | Input impedance | 0.4 | | | | | | kΩ |
| | Drop-out voltage | 2.5 | | | | | | V |

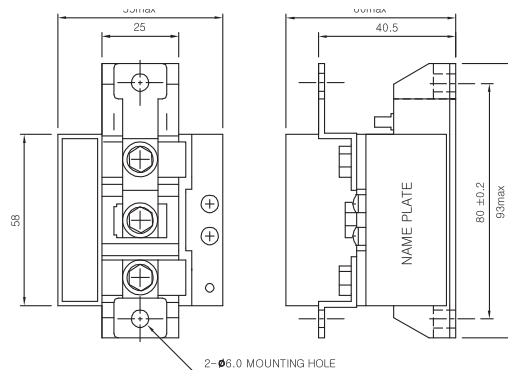
SFD25-SERIES CHARACTERISTICS

| | | SFD2555 | SFD2585 | SFD25110 | SFD25140 | SFD25170 | UNIT | |
|-----------------------------|--|--|---------|----------|----------|----------|------|----|
| Operate time, max. | | (½ cycle of voltage sine wave)+1 msec | | | | | | mS |
| Release time, max. | | (½ cycle of voltage sine wave)+1 msec | | | | | | mS |
| Insulation resistance, min. | | DC 500V 100MΩ between input, output and case | | | | | | MΩ |
| Insulation voltage | | 2,500Vrms between input, output and case | | | | | | V |
| Ambient temperature | | -30°C ~ +80°C | | | | | | °C |
| Storage temperature | | -30°C ~ +80°C | | | | | | °C |
| Operational method | | Zero-cross (Turn-on and Turn-off) | | | | | | - |

SIMPLIFIED CIRCUIT



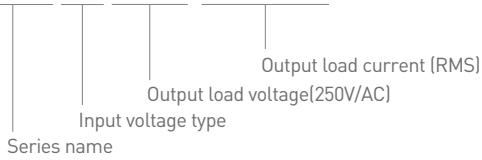
DIMENSION



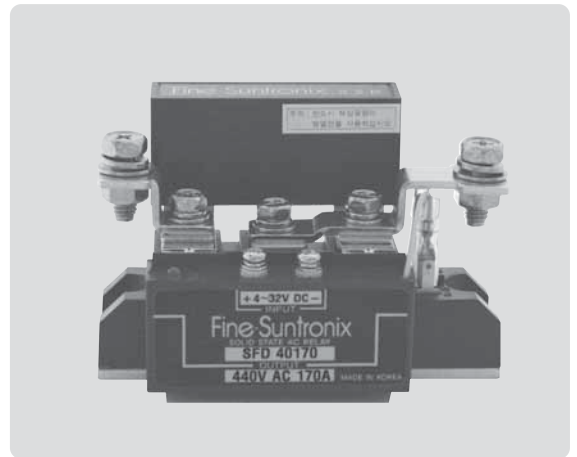
* Tolerance : ±1
* Dimensions in mm

ORDERING INFORMATION

SFD40 □ □



- AC Input(Trigger), AC Output
- Input voltage(Trigger) 4V~32V
- AC Load current 40A~170A
- Zero cross



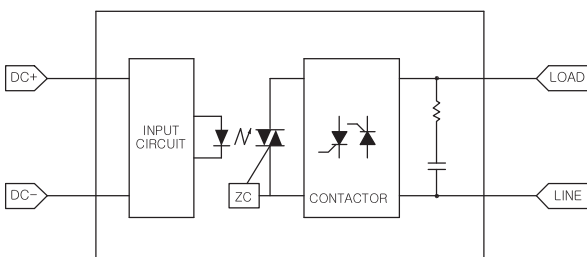
SFD40-SERIES SPECIFICATIONS

| | | SFD4040 | SFD4055 | SFD4085 | SFD40110 | SFD40140 | SFD40170 | UNIT |
|-------|---------------------------------------|---------------|---------|---------|----------|----------|----------|------|
| LOAD | Maximum load current LOAD | 40 | 55 | 85 | 110 | 140 | 170 | ARMS |
| | Load voltage | 85V ~ 440V AC | | | | | | V |
| | Surge on-state current (½cycle, 60Hz) | 580 | 1300 | 1750 | 1950 | 2300 | 2550 | A |
| | Maximum off-state leakage current | 30 Max | | | | | | mA |
| | Maximum on-state voltage drop | 1.6 | | | | | | V |
| INPUT | Input volage | 4V ~ 32V DC | | | | | | V |
| | Input impedance | 0.4 | | | | | | kΩ |
| | Drop-out voltage | 2.5 | | | | | | V |

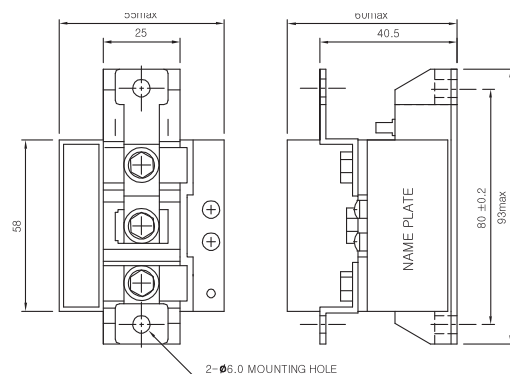
SFD40-SERIES CHARACTERISTICS

| | SFD4040 | SFD4055 | SFD4085 | SFD40110 | SFD40140 | SFD40170 | UNIT |
|-----------------------------|--|---------|---------|----------|----------|----------|------|
| Operate time, max. | (½ cycle of voltage sine wave) + 1 msec. | | | | | | mS |
| Release time, max. | (½ cycle of voltage sine wave) + 1 msec. | | | | | | mS |
| Insulation resistance, min. | DC 500V 100MΩ between input, output and case | | | | | | MΩ |
| Insulation voltage | 2,500Vrms between input, output and case | | | | | | V |
| Ambient temperature | -30°C ~ +80°C | | | | | | °C |
| Storage temperature | -30°C ~ +80°C | | | | | | °C |
| Operational method | Zero-cross (Turn-on and Turn-off) | | | | | | - |

SIMPLIFIED CIRCUIT



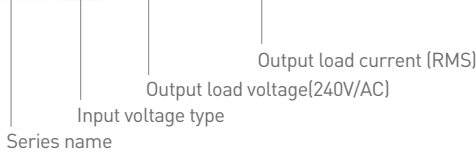
DIMENSION



* Tolerance : ±1
* Dimensions in mm

ORDERING INFORMATION

FSA24 □ □



- AC Input(Trigger), AC Output
- AC Load current 16A~40A
- Zero cross



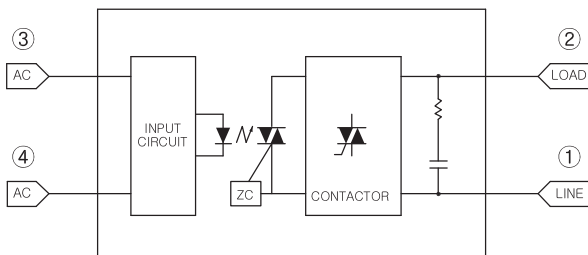
FSA24-SERIES SPECIFICATIONS

| | | FSA2416 | FSA2425 | FSA2440 | UNIT |
|-------|---------------------------------------|----------------|---------|---------|------|
| LOAD | Maximum load current LOAD | 16 | 25 | 40 | ARMS |
| | Load voltage | 85V ~ 240V AC | | | V |
| | Surge on-state current (½cycle, 60Hz) | 160 | 250 | 550 | A |
| | Maximum off-state leakage current | 10 Max. | 15 Max | 15 Max | mA |
| | Maximum on-state voltage drop | 1.5 | 1.6 | 1.8 | V |
| INPUT | Input volage | 180V ~ 240V AC | | | V |
| | Input impedance | 20 | | | KΩ |
| | Drop-out voltage | 50 | | | V |

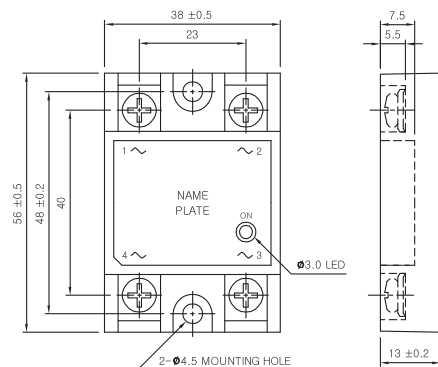
FSA24-SERIES CHARACTERISTICS

| | FSA2416 | FSA2425 | FSA2440 | UNIT |
|-----------------------------|--|---------|---------|------|
| Operate time, max. | (½ cycle of voltage sine wave)+1msec | | | mS |
| Release time, max. | (½ cycle of voltage sine wave)+1msec | | | mS |
| Insulation resistance, min. | DC 500V 100MΩ between input, output and case | | | MΩ |
| Insulation voltage | 2,500Vrms between input, output and case | | | V |
| Ambient temperature | -30°C ~ +80°C | | | °C |
| Storage temperature | -30°C ~ +80°C | | | °C |
| Operational method | Zero-cross (Turn-on and Turn-off) | | | - |

SIMPLIFIED CIRCUIT



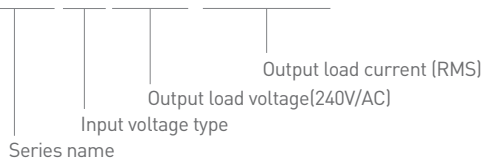
DIMENSION



* Tolerance : ±1
* Dimensions in mm

ORDERING INFORMATION

FSD24□□



- DC Input(Trigger), AC Output
- AC Load current 16A~40A
- Zero cross



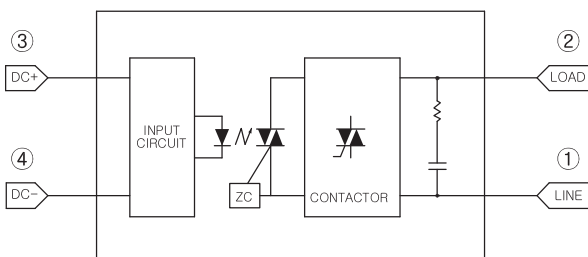
FSD24-SERIES SPECIFICATIONS

| | | FSD2416 | FSD2425 | FSD2440 | UNIT |
|-------|---|---------------|---------|---------|------|
| LOAD | Maximum load current LOAD | 16 | 25 | 40 | ARMS |
| | Load voltage | 85V ~ 240V AC | | | V |
| | Surge on-state current (1/2cycle, 60Hz) | 160 | 250 | 550 | A |
| | Maximum off-state leakage current | 10 Max. | 15 Max | 15 Max | mA |
| | Maximum on-state voltage drop | 1.5 | 1.6 | 1.8 | V |
| INPUT | Input voltage | 4V ~ 32V DC | | | V |
| | Input impedance | 666 | | | Ω |
| | Drop-out voltage | 2.5 | | | V |

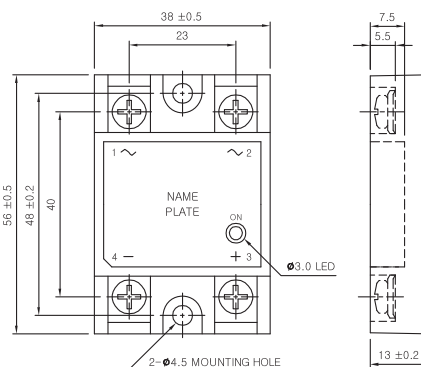
FSD24-SERIES CHARACTERISTICS

| | | FSD2416 | FSD2425 | FSD2440 | UNIT |
|-----------------------------|--|--|---------|---------|------|
| Operate time, max. | | (1/2 cycle of voltage sine wave)+1msec | | | mS |
| Release time, max. | | (1/2 cycle of voltage sine wave)+1msec | | | mS |
| Insulation resistance, min. | | DC 500V 100MΩ between input, output and case | | | MΩ |
| Insulation voltage | | 2,500Vrms between input, output and case | | | V |
| Ambient temperature | | -30°C ~ +80°C | | | °C |
| Storage temperature | | -30°C ~ +80°C | | | °C |
| Operational method | | Zero-cross (Turn-on and Turn-off) | | | - |

SIMPLIFIED CIRCUIT



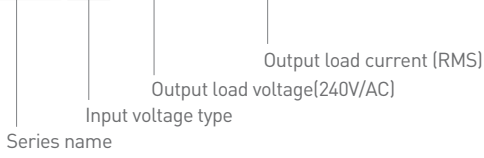
DIMENSION



* Tolerance : ±1
* Dimensions in mm

ORDERING INFORMATION

FRD24 □ □



- DC Input(Trigger), AC Output
- AC Load current 16A~40A
- Phase Control



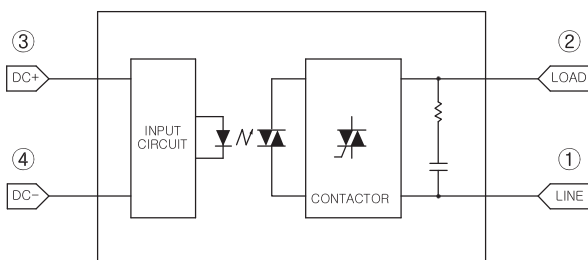
FRD24-SERIES SPECIFICATIONS

| | | FRD2416 | FRD2425 | SRD2440 | UNIT |
|-------|---|---------------|---------|---------|------|
| LOAD | Maximum load current LOAD | 16 | 25 | 40 | ARMS |
| | Load voltage | 85V ~ 240V AC | | | V |
| | Surge on-state current (1/2cycle, 60Hz) | 160 | 250 | 550 | A |
| | Maximum off-state leakage current | 10 Max. | 15 Max | | mA |
| | Maximum on-state voltage drop | 1.5 | 1.6 | 1.8 | V |
| INPUT | Input volage | 4V ~ 32V DC | | | V |
| | Input impedance | 666 | | | Ω |
| | Drop-out voltage | 2.5 | | | V |

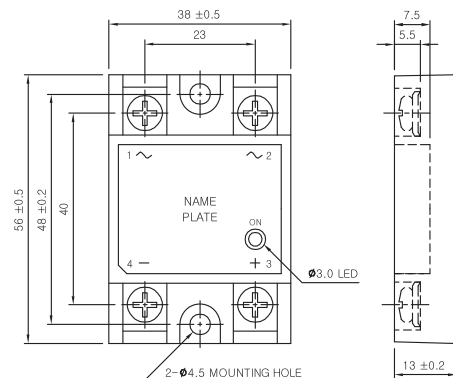
FRD24-SERIES CHARACTERISTICS

| | | FRD2416 | FRD2425 | FRD2440 | UNIT |
|-----------------------------|--|--|---------|---------|------|
| Operate time, max. | | 1msec. Max | | | mS |
| Release time, max. | | 1msec. Max | | | mS |
| Insulation resistance, min. | | DC 500V 100MΩ between input, output and case | | | MΩ |
| Insulation voltage | | 2,500Vrms between input, output and case | | | V |
| Ambient temperature | | -30°C ~ +80°C | | | °C |
| Storage temperature | | -30°C ~ +80°C | | | °C |
| Operational method | | Phase Control | | | |

SIMPLIFIED CIRCUIT



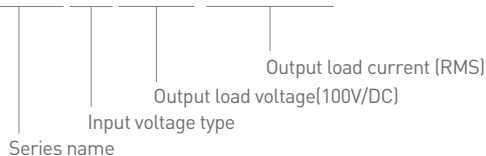
DIMENSION



* Tolerance : ±1
* Dimensions in mm

ORDERING INFORMATION

FDD25 □ □



- DC Input(Trigger), DC Output
- DC Load current 10A~30A



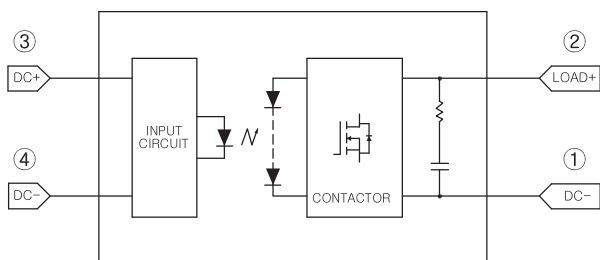
FDD25-SERIES SPECIFICATIONS

| | | FDD2510 | FDD2520 | FDD2530 | UNIT |
|-------|-----------------------------------|---------------|---------|---------|------|
| LOAD | Maximum load current LOAD | 10 | 20 | 30 | ARMS |
| | Load voltage | 10V ~ 100V DC | | | V |
| | Maximum off-state leakage current | 1mA Max | | | VmA |
| | Maximum on-state voltage drop | 1 | 1.1 | 1.3 | V |
| INPUT | Input voltage | 4V ~ 32V DC | | | V |
| | Input impedance | 670 | | | Ω |
| | Drop-out voltage | 2.5 | | | V |

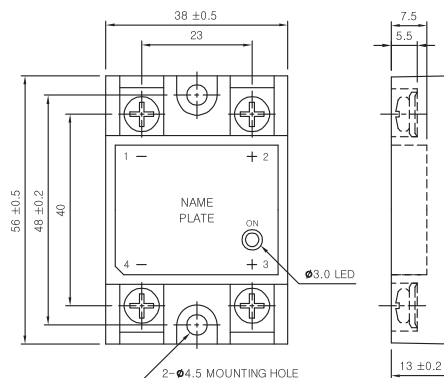
FDD25-SERIES CHARACTERISTICS

| | FDD2510 | FDD2520 | FDD2530 | UNIT |
|-----------------------------|--|---------|---------|------|
| Operate time, max. | 1msec. Max | | | mS |
| Release time, max. | 1msec. Max | | | mS |
| Insulation resistance, min. | DC 500V 100MΩ between input, output and case | | | MΩ |
| Insulation voltage | 2,500Vrms between input, output and case | | | V |
| Ambient temperature | -30°C ~ +80°C | | | °C |
| Storage temperature | -30°C ~ +80°C | | | °C |
| Operational method | 15 Max(Input-Output) | | | pF |

SIMPLIFIED CIRCUIT



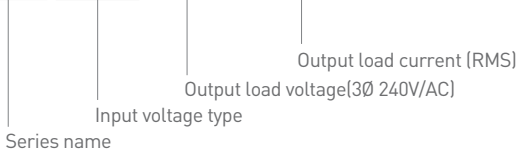
DIMENSION



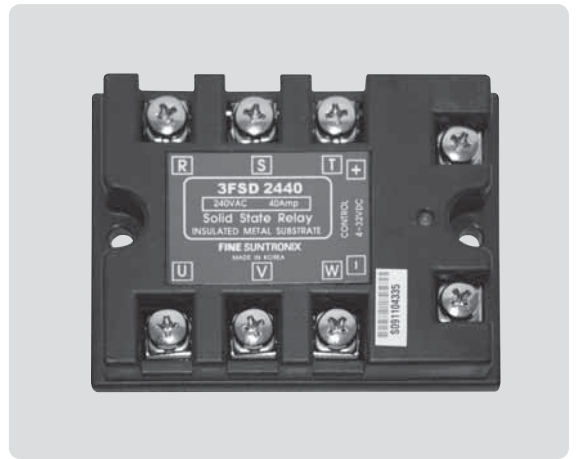
* Tolerance : ±1
* Dimensions in mm

ORDERING INFORMATION

3FSD24 □ □



- DC Input(Trigger), AC Output
- AC Load current 16A~40A
- 3 Phase 3 Pole Type
- Zero cross



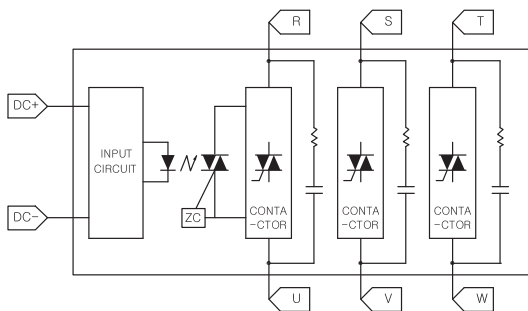
3FSD24-SERIES SPECIFICATIONS

| | | 3FSD2416 | 3FSD2425 | 3FSD2440 | UNIT |
|-------|---------------------------------------|------------------|----------|----------|------|
| LOAD | Maximum load current LOAD | 16 | 25 | 40 | ARMS |
| | Load voltage | 3Ø 85V ~ 250V AC | | | V |
| | Surge on-state current (½cycle, 60Hz) | 160 | 250 | 550 | A |
| | Maximum off-state leakage current | 10 | 15 | 15 | mA |
| | Maximum on-state voltage drop | 1.5 | 1.6 | 1.8 | V |
| INPUT | Input volage | 4V ~ 32V DC | | | V |
| | Input impedance | 650 | | | Ω |
| | Drop-out voltage | 2.5 | | | V |

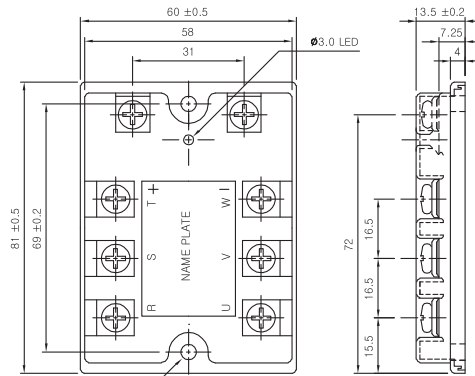
3FSD24-SERIES CHARACTERISTICS

| | | 3FSD2416 | 3FSD2425 | 3FSD2440 | UNIT |
|----------------------------|--|--|----------|----------|------|
| Operate time, max. | | (½ cycle of voltage sine wave)+1 msec | | | mS |
| Release time, max | | (½ cycle of voltage sine wave)+1 msec | | | mS |
| Insulation resistance, min | | DC 500V 100MΩ between input, output and case | | | MΩ |
| Insulation voltage | | 2,500Vrms between input, output and case | | | V |
| Ambient temperature | | -30°C ~ +80°C | | | °C |
| Storage temperature | | -30°C ~ +80°C | | | °C |
| Operational method | | Zero-cross (Turn-on and Turn-off) | | | - |

SIMPLIFIED CIRCUIT



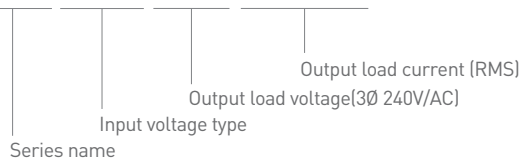
DIMENSION



* Tolerance : ±1
 * Dimensions in mm

ORDERING INFORMATION

3FSA24□□



- AC Input(Trigger), AC Output
- AC Load current 16A~40A
- 3 Phase 3 Pole Type
- Zero cross



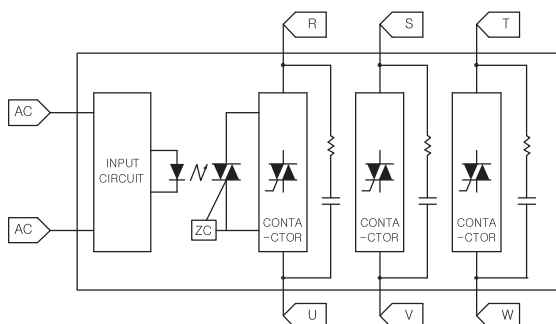
3FSA24-SERIES SPECIFICATIONS

| | | 3FSA2416 | 3FSA2425 | 3FSA2440 | UNIT |
|-------|---------------------------------------|------------------|----------|----------|------|
| LOAD | Maximum load current LOAD | 16 | 25 | 40 | ARMS |
| | Load voltage | 3Ø 85V ~ 250V AC | | | V |
| | Surge on-state current (½cycle, 60Hz) | 160 | 250 | 550 | A |
| | Maximum off-state leakage current | 10 | 15 | 15 | mA |
| | Maximum on-state voltage drop | 1.5 | 1.6 | 1.8 | V |
| INPUT | Input volage | 85V ~ 250V AC | | | V |
| | Input impedance | 15 | | | kΩ |
| | Drop-out voltage | 50 | | | V |

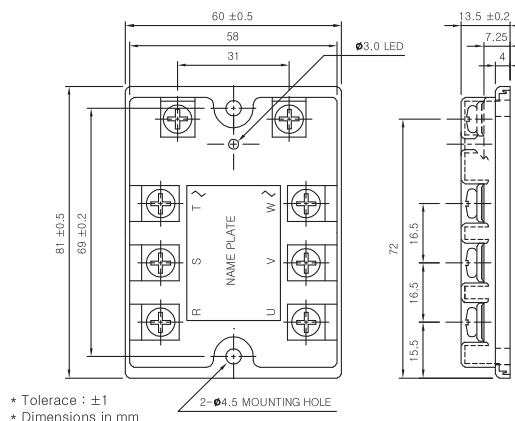
3FSA24-SERIES CHARACTERISTICS

| | 3FSA2416 | 3FSA2425 | 3FSA2440 | UNIT |
|----------------------------|--|----------|----------|------|
| Operate time, max | (½ cycle of voltage sine wave)+1 msec | | | mS |
| Release time, max | (½ cycle of voltage sine wave)+1 msec | | | mS |
| Insulation resistance, min | DC 500V 100MΩ between input, output and case | | | MΩ |
| Insulation voltage | 2,500Vrms between input, output and case | | | V |
| Ambient temperature | -30°C ~ +80°C | | | °C |
| Storage temperature | -30°C ~ +80°C | | | °C |
| Operational method | Zero-cross (Turn-on and Turn-off) | | | - |

SIMPLIFIED CIRCUIT



DIMENSION



For the Switching Model Power Supply

AC FAN Motor



ORIENT

ORIENT ELECTRONICS

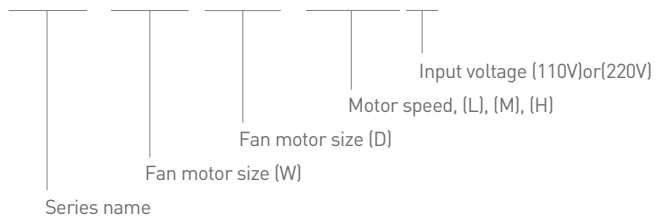
<http://www.orientelec.co.kr>



c  US  

ORDERING INFORMATION

SJ 12 38 HA2



Casting and Impeller Material

- Plastic (UL 94V-0)

Bearing system

- Ball Bearing (B)
- Sleeve Bearing (S)

Life Expectancy

- Ball Bearing (B): 60,000 Hours at 20°c
- Sleeve Bearing (S): 30,000 Hours at 20°c

Approved



AC FAN Motor

| MODEL | PART NO. Terminal Leadwire | BEARING SYSTEM | RATED VOLTAGE (V) | Freq (Hz) | AIR FLOW (CFM) | SPEED (rpm) | NOISE LEVEL (dB-A) | DIMENSIONS (mm) |
|-----------|----------------------------|----------------|-------------------|-----------|----------------|-------------|--------------------|-----------------|
| SJ8025HA1 | 8025HA1SAL | Sleeve | 110/120 | 50/60 | 26/33 | 2400/2900 | 29/33 | 80x80x25 |
| | 8025HA1BAL | Ball | 110/120 | 50/60 | 26/33 | 2400/2900 | 29/33 | |
| SJ8025HA2 | 8025HA2SAL | Sleeve | 220/240 | 50/60 | 26/33 | 2400/2900 | 29/33 | |
| | 8025HA2BAL | Ball | 220/240 | 50/60 | 26/33 | 2400/2900 | 29/33 | |
| SJ9225HA1 | 9225HA1SAT | Sleeve | 110/120 | 50/60 | 40/48 | 2300/2800 | 35/37 | 92x92x25 |
| | 9225HA1BAT | Ball | 110/120 | 50/60 | 40/48 | 2300/2800 | 35/37 | |
| SJ9225HA2 | 9225HA2SAT | Sleeve | 220/240 | 50/60 | 40/48 | 2300/2800 | 35/37 | |
| | 9225HA2BAT | Ball | 220/240 | 50/60 | 40/48 | 2300/2800 | 35/37 | |
| SJ1225HA1 | 1225HA1SAT | Sleeve | 110/120 | 50/60 | 60/76 | 2400/2700 | 40/44 | 120x120x25 |
| | 1225HA1BAT | Ball | 110/120 | 50/60 | 60/76 | 2400/2700 | 40/44 | |
| SJ1225HA2 | 1225HA2SAT | Sleeve | 220/240 | 50/60 | 60/76 | 2400/2700 | 40/44 | |
| | 1225HA2BAT | Ball | 220/240 | 50/60 | 60/76 | 2400/2700 | 40/44 | |
| SJ1238HA1 | 1238HA1SAT | Sleeve | 110/120 | 50/60 | 105/123 | 2750/3250 | 47/49 | 120x120x38 |
| | 1238HA1BAT | Ball | 110/120 | 50/60 | 105/123 | 2750/3250 | 47/49 | |
| SJ1238HA2 | 1238HA2SAT | Sleeve | 220/240 | 50/60 | 105/123 | 2750/3250 | 47/49 | |
| | 1238HA2BAT | Ball | 220/240 | 50/60 | 105/123 | 2750/3250 | 47/49 | |
| SJ1725HA1 | 1725HA1BAT | Ball | 110/220 | 50/60 | 210/240 | 2850/3400 | 50/57 | 172x150x51 |
| SJ1725HA2 | 1725HA2BAT | Ball | 220/240 | 50/60 | 210/240 | 2850/3400 | 50/57 | |
| SJ1538HA1 | 1538HA1BAL | Ball | 110/120 | 50/60 | 84/100 | 2600/3000 | 45/51 | 150x38 |
| SJ1538HA2 | 1538HA2BAL | Ball | 220/240 | 50/60 | 84/100 | 2600/3000 | 45/51 | |
| SJ2509HA1 | 2509HA1BAT | Ball | 110/220 | 50/60 | 510/600 | 1450/1850 | 45/56 | 250x89 |
| SJ2509HA2 | 2509HA2BAT | Ball | 220/240 | 50/60 | 510/600 | 1450/1850 | 45/56 | |

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

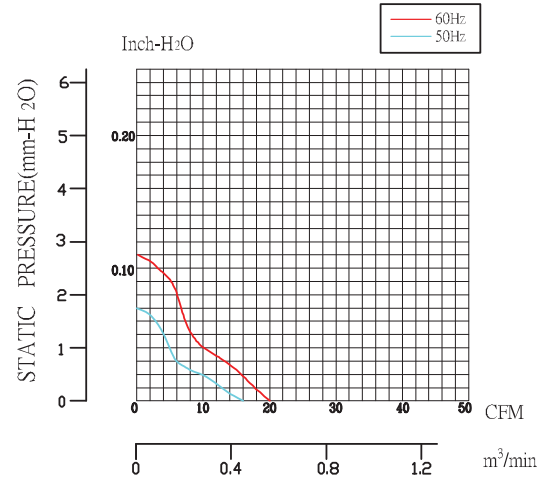
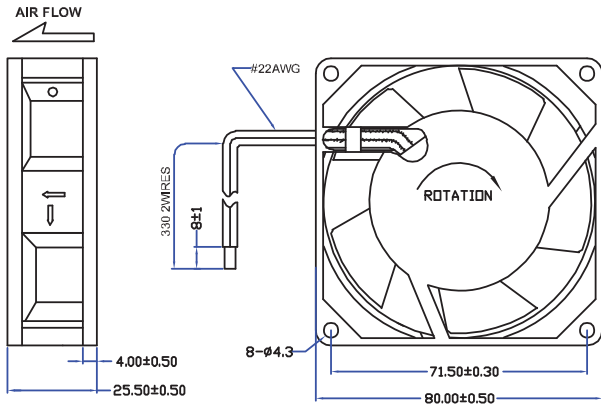
Solid State Relay

AC FAN Motor

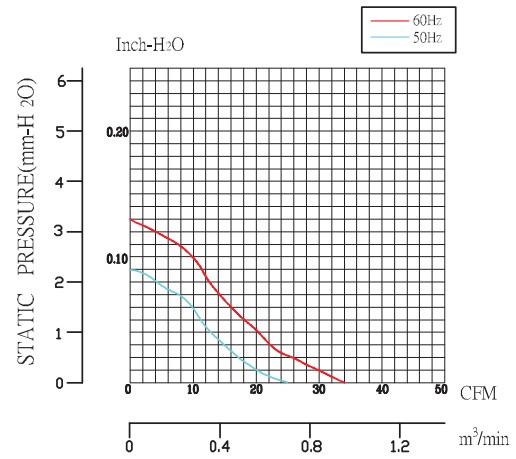
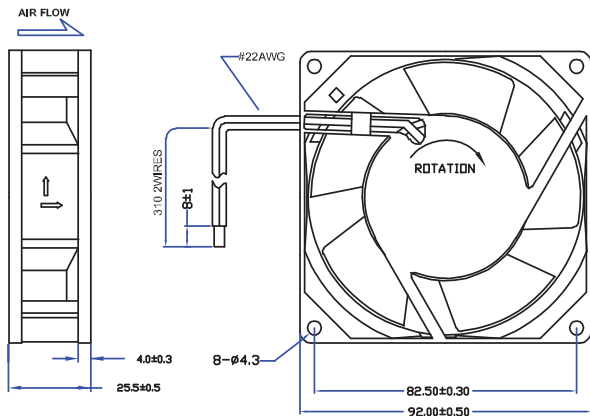
Power Module

Discrete Semiconductors

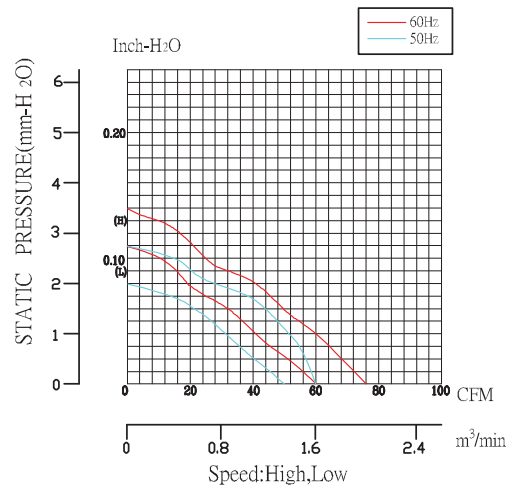
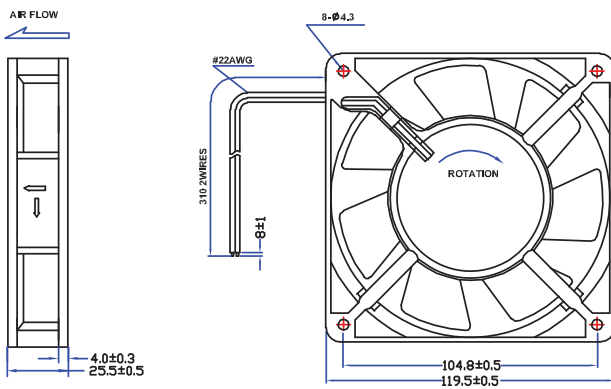
SJ8025 EXTERNAL VIEW



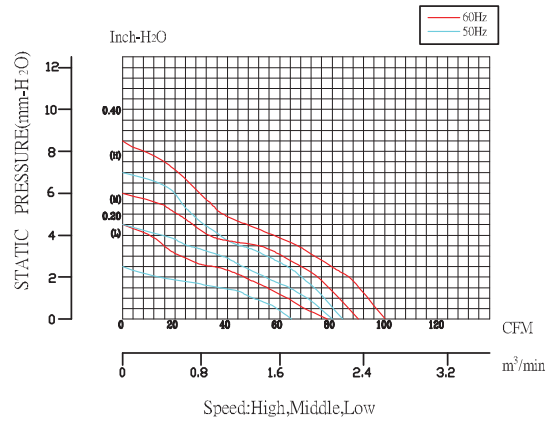
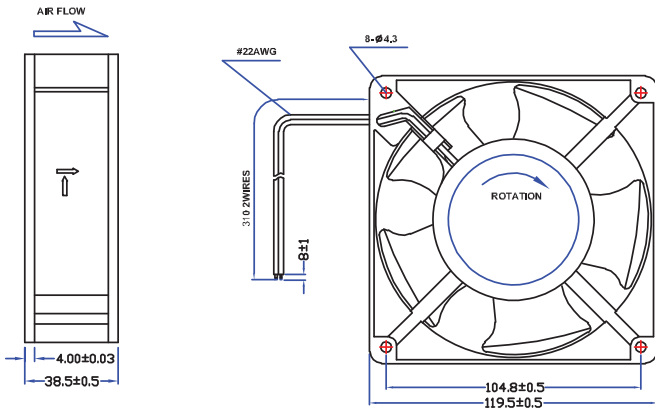
SJ9225 EXTERNAL VIEW



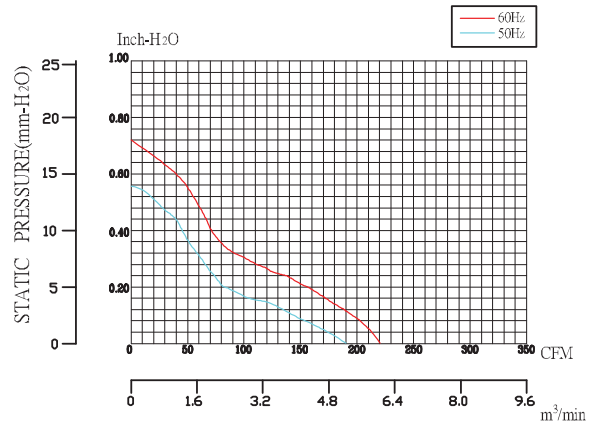
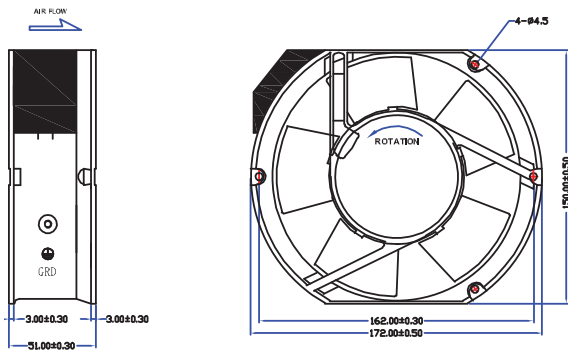
SJ1225 EXTERNAL VIEW



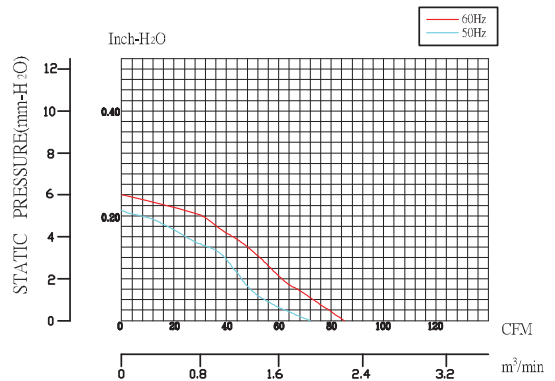
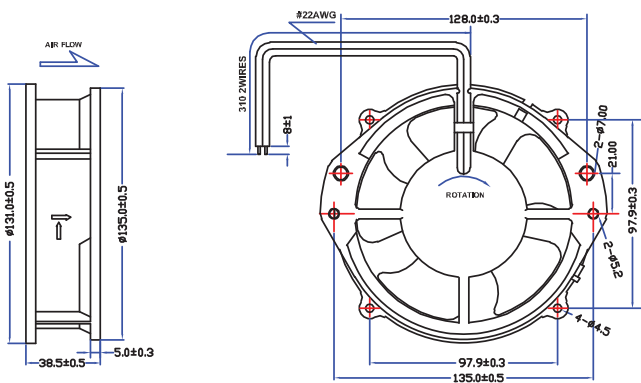
SJ1238 EXTERNAL VIEW



SJ1725 EXTERNAL VIEW



SJ1538 EXTERNAL VIEW



General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

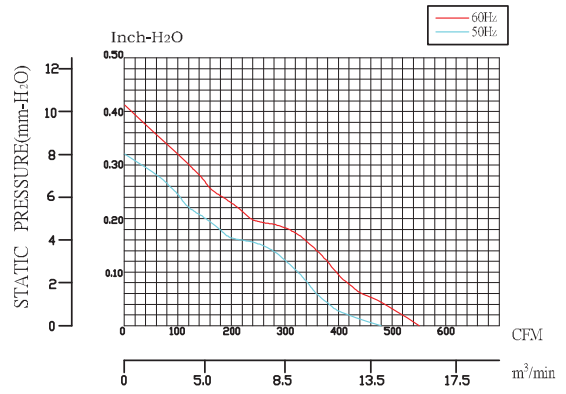
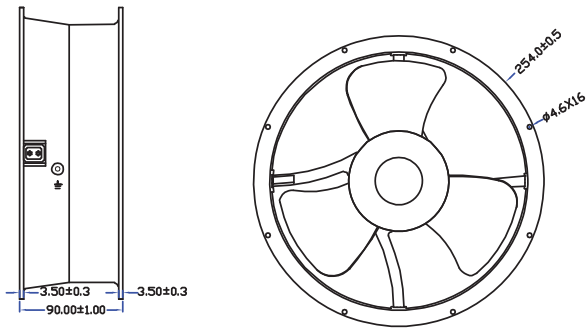
Solid State Relay

AC Fan Motor

Power Module

Discrete Semiconductors

SJ2509 EXTERNAL VIEW





ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

Discrete Semiconductors

For the Switching Model Power Supply

Power Module



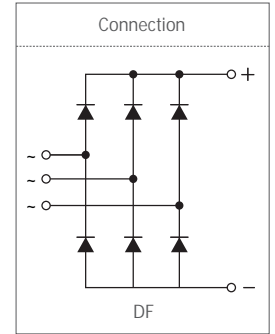
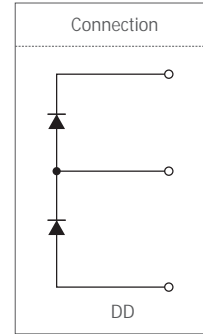
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ORIENT ELECTRONICS

<http://www.orientelec.co.kr>



RoHS



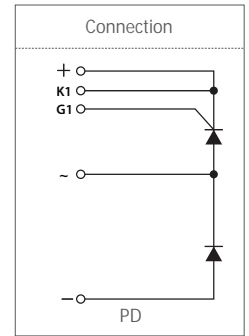
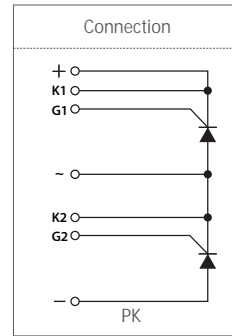
DIODE MODULE

Viso: 2500V (RMS)

| TYPE | V _{RRM} (V) | I _{F(AV)} | | I _{FSM} A(60Hz) | I ² _t A ² S | V _{FM} V(25°C) | I _{RRM} (mA) | T _J (°C) | R _{th(j-c)} °C/w | Fig. No. |
|---------|-------------------------|--------------------|-----|-----------------------------|---|----------------------------|--------------------------|------------------------|------------------------------|----------|
| | | A | °C | | | | | | | |
| DD25F | 400~1600 | 25 | 96 | 580 | 1400 | 1.55 | 10 | 125 | 0.78 | |
| DD30GB | 400, 800 | 30 | 118 | 600 | 1500 | 1.4 | 10 | 150 | 0.8 | |
| DD30HB | 1,200 1,600 | 30 | 115 | 600 | 1500 | 1.5 | 10 | 150 | 0.8 | |
| DD40F | 400~1600 | 40 | 96 | 1300 | 7200 | 1.4 | 15 | 125 | 0.55 | |
| DD55F | 400~1600 | 55 | 89 | 1750 | 12800 | 1.4 | 15 | 125 | 0.5 | |
| DD60GB | 400, 800 | 60 | 114 | 1200 | 6000 | 1.25 | 20 | 150 | 0.5 | |
| DD60HB | 1,200 1,600 | 60 | 111 | 1200 | 6000 | 1.35 | 20 | 150 | 0.5 | |
| DD70F | 400~1600 | 70 | 94 | 1950 | 16200 | 1.4 | 15 | 125 | 0.33 | |
| DD90F | 400~1600 | 90 | 93 | 2300 | 22000 | 1.4 | 20 | 125 | 0.27 | |
| DD100GB | 400, 800 | 100 | 115 | 2000 | 16500 | 1.25 | 30 | 150 | 0.3 | |
| DD100HB | 1,200 1,600 | 100 | 111 | 2000 | 16500 | 1.35 | 30 | 150 | 0.3 | |
| DD110F | 400~1600 | 110 | 88 | 2550 | 26500 | 1.45 | 20 | 125 | 0.25 | |
| DD130F | 400~1600 | 130 | 90 | 4400 | 80000 | 1.4 | 50 | 125 | 0.2 | |
| DD160F | 400~1600 | 160 | 87 | 5500 | 125000 | 1.42 | 50 | 125 | 0.18 | |
| DD200GB | 400, 800 | 200 | 96 | 5500 | 125000 | 1.4 | 50 | 150 | 0.18 | |
| DD200HB | 1,200 1,600 | 200 | 96 | 5500 | 125000 | 1.4 | 50 | 150 | 0.18 | |
| DD250GB | 400, 800 | 250 | 94 | 5500 | 125000 | 1.45 | 50 | 150 | 0.14 | |
| DD250HB | 1,200 1,600 | 250 | 94 | 5500 | 125000 | 1.45 | 50 | 150 | 0.14 | |

THREE PHASE DIODE MODULE(BRIDGE)

| TYPE | V _{RRM} V | I _{F(AV)} | | I _{FSM} A(60Hz) | V _{FM} V(25°C) | I _{RRM} mA(150°C) | R _{th(j-c)} °C/w | Fig. No. |
|---------|-----------------------|--------------------|-----|-----------------------------|----------------------------|-------------------------------|------------------------------|----------|
| | | A | °C | | | | | |
| DF40BA | 400, 800 | 40 | 119 | 700 | 1.2 | 4 | 0.32 | |
| DF40AA | 1,200 1,600 | 40 | 117 | 700 | 1.3 | 8 | 0.32 | |
| DF50BA | 400, 800 | 50 | 114 | 700 | 1.2 | 4 | 0.3 | |
| DF50AA | 1,200 1,600 | 50 | 114 | 700 | 1.2 | 8 | 0.3 | |
| DF60BA | 400, 800 | 60 | 115 | 1000 | 1.2 | 6 | 0.24 | |
| DF60AA | 1,200 1,600 | 60 | 112 | 1000 | 1.3 | 12 | 0.24 | |
| DF75BA | 400, 800 | 75 | 107 | 1000 | 1.2 | 10 | 0.24 | |
| DF75AA | 1,200 1,600 | 75 | 100 | 1000 | 1.4 | 10 | 0.24 | |
| DF100BA | 400, 800 | 100 | 102 | 1000 | 1.2 | 10 | 0.2 | |
| DF100AA | 1,200 1,600 | 100 | 102 | 1000 | 1.2 | 10 | 0.2 | |



THYRISTOR MODULE

VISO: 2500V(RMS) dv/dt:500V/μs T_J(max): 125°C

| TYPE | V _{DRM} / V _{RRM} V | I _{T(AV)} | | I _{T(RSM)} | | I _{TSM} A(60Hz) | I ² t A ² S | di/dt A/μs | IGT mA(25°C) | V _{GT} V(25°C) | V _{TM} V(25°C) | I _{DRM} I _{FRM} mA(125°C) | R _{th(j-c)} °C/w | Fig. No. |
|--------------------|--|--------------------|----|---------------------|----|-----------------------------|--------------------------------------|---------------|-----------------|----------------------------|----------------------------|---|------------------------------|----------|
| | | A | °C | A | °C | | | | | | | | | |
| PK(PD)25FG40,80 | 400, 800 | 25 | 81 | 39 | 81 | 700 | 2870 | 100 | 50 | 3 | 1.6 | 5 | 1.1 | |
| PK(PD)25FG120,160 | 1,200 1,600 | 25 | 81 | 39 | 81 | 700 | 2870 | 100 | 50 | 3 | 1.6 | 5 | 1.1 | |
| PK(PD)40FG40,80 | 400, 800 | 40 | 83 | 40 | 83 | 950 | 3760 | 100 | 50 | 3 | 1.6 | 10 | 0.65 | |
| PK(PD)40FG120,160 | 1,200 1,600 | 40 | 83 | 40 | 83 | 950 | 3760 | 100 | 50 | 3 | 1.6 | 10 | 0.65 | |
| PK(PD)55FG40,80 | 400, 800 | 55 | 81 | 86 | 81 | 1300 | 7040 | 100 | 50 | 3 | 1.6 | 15 | 0.5 | |
| PK(PD)55FG120,160 | 1,200 1,600 | 55 | 81 | 86 | 81 | 1300 | 7040 | 100 | 50 | 3 | 1.6 | 15 | 0.5 | |
| PK(PD)70FG40,80 | 400, 800 | 70 | 84 | 110 | 84 | 1600 | 10660 | 100 | 50 | 3 | 1.6 | 20 | 0.37 | |
| PK(PD)70FG120,160 | 1,200 1,600 | 70 | 84 | 110 | 84 | 1600 | 10660 | 100 | 50 | 3 | 1.6 | 20 | 0.37 | |
| PK(PD)90FG40,80 | 400, 800 | 90 | 82 | 140 | 82 | 2300 | 22040 | 100 | 50 | 3 | 1.6 | 25 | 0.3 | |
| PK(PD)90FG120,160 | 1,200 1,600 | 90 | 82 | 140 | 82 | 2300 | 22040 | 100 | 50 | 3 | 1.6 | 25 | 0.3 | |
| PK(PD)110FG40,80 | 400, 800 | 110 | 81 | 172 | 81 | 3000 | 37500 | 100 | 50 | 3 | 1.6 | 30 | 0.25 | |
| PK(PD)110FG120,160 | 1,200 1,600 | 110 | 81 | 172 | 81 | 3000 | 37500 | 100 | 50 | 3 | 1.6 | 30 | 0.25 | |
| PK(PD)130FG40,80 | 400, 800 | 130 | 83 | 205 | 83 | 2500 | 51040 | 100 | 50 | 3 | 1.6 | 35 | 0.2 | |
| PK(PD)130FG120,160 | 1,200 1,600 | 130 | 83 | 205 | 83 | 2500 | 51040 | 100 | 50 | 3 | 1.6 | 35 | 0.2 | |

THYRISTOR MODULE

| TYPE | V _{DRM} / V _{RRM} V | I _{T(AV)} | | I _{T(RSM)} | | I _{TSM} A(60Hz) | I ² t A ² S | di/dt A/μs | IGT mA(25°C) | V _{GT} V(25°C) | V _{TM} V(25°C) | I _{DRM} I _{FRM} mA(125°C) | R _{th(j-c)} °C/w | Fig. No. |
|--------------------|--|--------------------|----|---------------------|----|-----------------------------|--------------------------------------|---------------|-----------------|----------------------------|----------------------------|---|------------------------------|----------|
| | | A | °C | A | °C | | | | | | | | | |
| PK(PD)25F | 400~1600 | 25 | 96 | 39 | 96 | 580 | 1400 | 100 | 50 | 3 | 1.55 | 10 | 0.78 | |
| PK(PD)40F | 400~1600 | 40 | 96 | 62 | 96 | 1300 | 7200 | 150 | 70 | 3 | 1.4 | 15 | 0.55 | |
| PK(PD)55F | 400~1600 | 55 | 89 | 86 | 89 | 1750 | 12800 | 150 | 70 | 3 | 1.4 | 15 | 0.5 | |
| PK(PD)70F | 400~1600 | 70 | 94 | 110 | 94 | 1950 | 16200 | 150 | 70 | 3 | 1.4 | 15 | 0.33 | |
| PK(PD)90F | 400~1600 | 90 | 93 | 140 | 93 | 2300 | 22000 | 200 | 100 | 3 | 1.4 | 20 | 0.27 | |
| PK(PD)110F | 400~1600 | 110 | 88 | 172 | 88 | 2550 | 26500 | 200 | 100 | 3 | 1.45 | 20 | 0.25 | |
| PK(PD)130F | 400~1600 | 130 | 90 | 205 | 90 | 4400 | 8×10 ⁴ | 200 | 100 | 3 | 1.4 | 50 | 0.2 | |
| PK(PD)160F | 400~1600 | 160 | 87 | 250 | 87 | 5500 | 1.25×10 ⁵ | 200 | 100 | 3 | 1.42 | 50 | 0.18 | |
| PK(PD)200GB40,80 | 400, 800 | 200 | 72 | 310 | 72 | 5500 | 1.25×10 ⁵ | 200 | 100 | 3 | 1.5 | 50 | 0.18 | |
| PK(PD)200HB120,160 | 1,200 1,600 | 200 | 72 | 310 | 72 | 5500 | 1.25×10 ⁵ | 200 | 100 | 3 | 1.5 | 50 | 0.18 | |
| PK(PD)250GB40,80 | 400, 800 | 250 | 72 | 390 | 72 | 5500 | 1.25×10 ⁵ | 200 | 100 | 3 | 1.42 | 50 | 0.14 | |
| PK(PD)250HB120,160 | 1,200 1,600 | 250 | 72 | 390 | 72 | 5500 | 1.25×10 ⁵ | 200 | 100 | 3 | 1.42 | 50 | 0.14 | |



SOFT Recovery Diode (FRD)

VISO: 2500V (RMS)

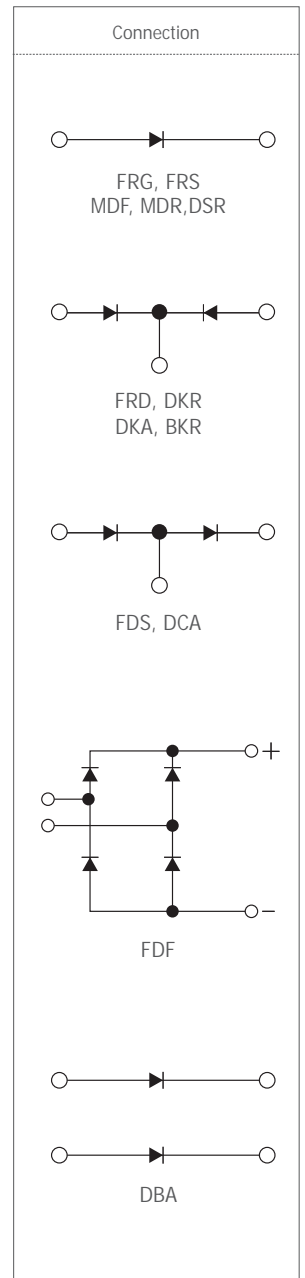
| TYPE | V _{RRM} (V) | I _F (AV) | | I _{FSM} A(60Hz) | I ² t A ² S | V _{FM} V(25°C) | I _{RRM} mA(15°C) | trr (ns) | T _j (°C) | R _{th(j-c)} °C/w |
|------------|-------------------------|---------------------|----|-----------------------------|--------------------------------------|----------------------------|------------------------------|-------------|------------------------|------------------------------|
| | | A | °C | | | | | | | |
| DCA100AA | 500, 600 | 100 | 85 | 2000 | 16700 | 1.3 | 100 | 300 | 150 | 0.5 |
| DCA150AA | 500, 600 | 150 | 72 | 2500 | 26000 | 1.3 | 150 | 300 | 150 | 0.4 |
| DKA200AA | 500, 600 | 100 | 85 | 2000 | 16700 | 1.3 | 100 | 300 | 150 | 0.5 |
| DKA300AA | 500, 600 | 150 | 72 | 2500 | 26000 | 1.3 | 150 | 300 | 150 | 0.4 |
| DSR200BA | 500, 600 | 200 | 85 | 3300 | 45000 | 1.3 | 200 | 300 | 150 | 0.25 |
| DSR300BA | 500, 600 | 300 | 72 | 4000 | 66400 | 1.3 | 300 | 300 | 150 | 0.2 |
| DBA100UA40 | 400 | 50 | 99 | 490 | 1000 | 1.2 | 100* | 130 | 150 | 0.85 |
| DBA100UA60 | 600 | 50 | 92 | 490 | 1000 | 1.35 | 100* | 200 | 150 | 0.85 |
| DBA200UA40 | 400 | 100 | 96 | 700 | 2100 | 1.2 | 100* | 130 | 150 | 0.45 |
| DBA200UA60 | 600 | 100 | 89 | 700 | 2100 | 1.35 | 100* | 250 | 150 | 0.45 |

T_J=150°C

FAST Recovery Diode (FRD)

| TYPE | V _{RRM} (V) | I _F (AV) | | I _{FSM} A(60Hz) | I ² t A ² S | V _{FM} V(25°C) | I _{RRM} mA(15°C) | trr (ns) | T _j (°C) | R _{th(j-c)} °C/w |
|----------------|-------------------------|---------------------|-------|-----------------------------|--------------------------------------|----------------------------|------------------------------|-------------|------------------------|------------------------------|
| | | A | °C | | | | | | | |
| FRG25BA | 600 | 25 | 94 | 450 | 840 | 1.3 | 30(150°C) | 100 | 150 | 1.6 |
| FRG25CA | 1200 | 25 | 78 | 400 | 660 | 1.8 | 1(150°C) | 200 | 150 | 1.6 |
| FDF25CA | 1200 | 25 | 114 | 400 | 660 | 1.8 | 2(150°C) | 200 | 150 | 0.4 |
| FDF60BA | 600 | 60 | 80 | 600 | 1490 | 1.6 | 60 | 100 | 150 | 0.36 |
| FRD/FDS100CA | 1200 | 100 | 78 | 2000 | 16600 | 1.8 | 5(150°C) | 300 | 150 | 0.4 |
| FRS150BA | 500 | 150 | 85 | 3000 | 37500 | 1.3 | 150 | 200 | 150 | 0.33 |
| MDF(R)150A-L/M | 200~400 | 150 | 94 | 3000 | 37500 | 1.3 | 50 | 450/550 | 150 | 0.3* |
| FRS200CA | 1200 | 200 | 78 | 3300 | 45000 | 1.8 | 10(150°C) | 350 | 150 | 0.2 |
| MDF(R)250A-L/M | 200~400 | 250 | 83/85 | 4500 | 84000 | 1.4/1.3 | 60 | 450/550 | 150 | 0.2* |
| FRS300BA | 500 | 300 | 85 | 4000 | 66600 | 1.3 | 300 | 200 | 150 | 0.165 |
| FRS300CA | 500 | 300 | 116 | 4000 | 66600 | 1.3 | 300 | 200 | 150 | 0.085 |
| FRS400BA | 600 | 400 | 94 | 4000 | 66640 | 1.3 | 400 | 200 | 150 | 0.1 |
| FRS400CA | 1200 | 400 | 78 | 4000 | 66640 | 1.8 | 20(150°C) | 400 | 150 | 0.1 |
| FRS400DA | 1000, 1200 | 400 | 38 | 4000 | 66640 | 2.8 | 20(150°C) | 200 | 150 | 0.1 |
| FRS400EA | 2000 | 400 | 79 | 5000 | 104000 | 2.2(125°C) | 100(150°C) | 700 | 150 | 0.08 |
| DKR200AB | 600 | 100 | 133 | 1800 | 13500 | 1.4 | 100 | 200 | 150 | 0.125* |
| DKR300AB | 600 | 150 | 124 | 1800 | 13500 | 1.4 | 100 | 200 | 150 | 0.125* |
| DKR400AB | 600 | 200 | 122 | 3000 | 37500 | 1.4 | 150 | 200 | 150 | 0.1* |

NON-ISO Type

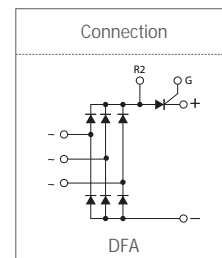




Three Phase Bridge + Thyristor

VISO: 2500V (RMS)

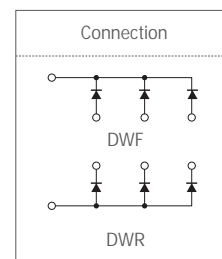
| TYPE | V _{RRM} (V) | IDC | | I _{FSM} A(60Hz) | I ² _t A ² S | V _{FM} V(25°C) | I _{RRM} mA(15°C) | V _{TM(THY)} V(25°C) | I _{RRM(THY)} (135°C) | R _{th(j-c)} °C/W |
|----------|-------------------------|-----|-----|-----------------------------|---|----------------------------|------------------------------|---------------------------------|----------------------------------|------------------------------|
| | | A | °C | | | | | | | |
| DFA 50BA | 800, 1600 | 50 | 117 | 800 | 2660 | 1.3 | 8 | 1.25 | 50 | 0.8 |
| DFA 75BA | 800, 1600 | 75 | 101 | 1000 | 4150 | 1.3 | 8 | 1.2 | 60 | 0.4 |
| DFA100BA | 800, 1600 | 100 | 98 | 1300 | 7030 | 1.3 | 12 | 1.2 | 70 | 0.36 |
| DFA150AA | 800, 1600 | 150 | 93 | 1600 | 10670 | 1.35 | 15 | 1.35 | 100 | 0.21 |
| DFA200AA | 800, 1600 | 200 | 96 | 2000 | 17000 | 1.35 | 20 | 1.15 | 50 | 0.18 |



Three Phase Bridge (Half Bridge)

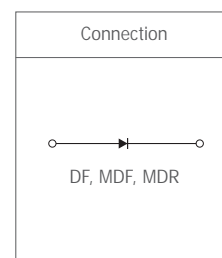
V_{FM}: 1.15V(25°C) T_{j(max)}: 150°C

| TYPE | V _{RRM} (V) | I _{F(AV)} | | I _{F(RMS)} | | I _{FSM} A(60Hz) | I ² _t A ² S | I _{RRM} (15°C) | VISO V(RMS) | R _{th(j-c)} °C/W |
|-------------|-------------------------|--------------------|-----|---------------------|-----|-----------------------------|---|----------------------------|----------------|------------------------------|
| | | A | °C | A | °C | | | | | |
| DWF(R) 40A | 300, 400 | 40 | 122 | 62 | 122 | 800 | 2700 | 8 | NON-ISO | 0.6 |
| DWF(R) 50A | 300, 400 | 40 | 122 | 78 | 122 | 1000 | 4150 | 10 | NON-ISO | 0.5 |
| DWF(R) 70A | 300, 400 | 70 | 119 | 110 | 119 | 1400 | 8100 | 12 | NON-ISO | 0.4 |
| DWF(R) 70BB | 300, 400 | 70 | 106 | 110 | 106 | 1400 | 8100 | 12 | 2500 | 0.55 |
| DWF(R) 100A | 300, 400 | 100 | 122 | 160 | 122 | 2000 | 16600 | 15 | NON-ISO | 0.25 |



Other Diode

| TYPE | V _{RRM} (V) | I _{F(AV)} | | I _{FSM} A(60Hz) | I ² _t A ² S | V _{FM} V(25°C) | I _{RRM} (15°C) | VISO V(RMS) | T _j (°C) | R _{th(j-c)} °C/W |
|-------------|-------------------------|--------------------|-----|-----------------------------|---|----------------------------|----------------------------|----------------|------------------------|------------------------------|
| | | A | °C | | | | | | | |
| DG 20AA | 400~1600 | 20 | 101 | 450 | 840 | 1.65 | 8 | 2500 | 150 | 1.6 |
| MDF(R) 100A | 300~500 | 100 | 109 | 2000 | 16700 | 1.15 | 6 | NON-ISO | 150 | 0.35 |
| MDF(R) 150A | 300~500 | 150 | 98 | 3000 | 37500 | 1.15 | 10 | NON-ISO | 150 | 0.3 |
| MDF(R) 200A | 300~500 | 200 | 92 | 4000 | 66600 | 1.15 | 13 | NON-ISO | 150 | 0.25 |
| MDF(R) 250A | 300~500 | 250 | 92 | 4500 | 84000 | 1.15 | 15 | NON-ISO | 150 | 0.2 |

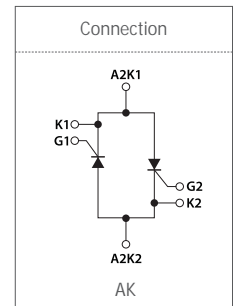




Anti-Parallel Thyristors Module

VISO: 2500V (RMS) dv/dt: 500u5 Tj: 125°C

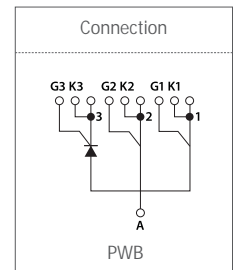
| TYPE | V _{DRM} /V _{RRM} (V) | I _T (AV) | | I _T (RMS) | | ITSM AA(60Hz) | I ² _t A ² S | IGT mA(25°C) | VGT V(25°C) | VTM V(25°C) | I _{DRM} I _{RRM} Ma(125°C) | R _{th(j-c)} °C/w |
|--------|---|---------------------|----|----------------------|----|------------------|---|-----------------|----------------|----------------|---|------------------------------|
| | | A | °C | °C | °C | | | | | | | |
| AK25GB | 400, 800 | 25 | 97 | 55 | 97 | 500 | 1000 | 50 | 3 | 1.5 | 8 | 0.8 |
| AK25HB | 1200, 1600 | 25 | 94 | 55 | 94 | 500 | 1000 | 50 | 2 | 1.6 | 8 | 0.8 |
| AK55GB | 400, 800 | 55 | 89 | 122 | 89 | 1100 | 5000 | 100 | 3 | 1.35 | 20 | 0.5 |
| AK55HB | 1200, 1600 | 55 | 85 | 122 | 85 | 1100 | 5000 | 100 | 2 | 1.5 | 20 | 0.5 |
| AK90GB | 400, 800 | 90 | 91 | 200 | 91 | 1800 | 15000 | 100 | 3 | 1.3 | 30 | 0.3 |
| AK90HB | 1200, 1600 | 90 | 88 | 200 | 88 | 1800 | 15000 | 100 | 2 | 1.4 | 30 | 0.3 |

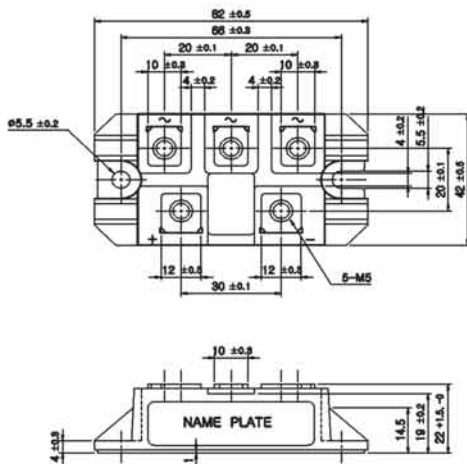
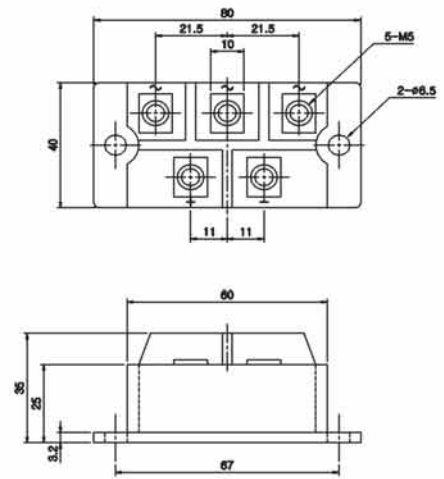
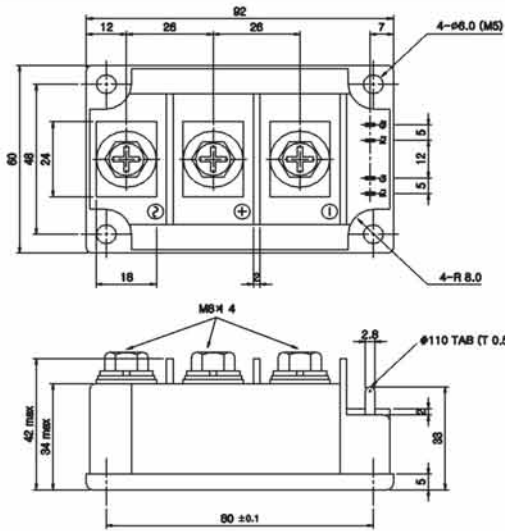
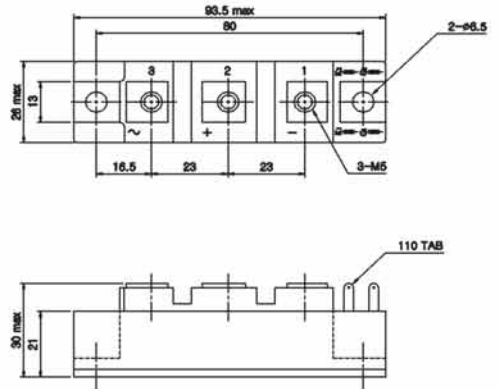
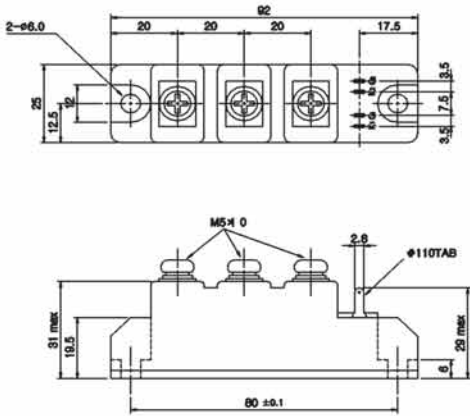


Three Phase Thyristors (Half Bridge)

NON-ISO dv/dt : 50A/Ms VGT:2V(25°C) Tj : 125°C

| TYPE | V _{DRM} /V _{RRM} (V) | I _T (AV) | | I _T (RMS) | | ITSM AA(60Hz) | I ² _t A ² S | dv/dt (V/ms) | IGT mA(25°C) | I _H mA(25°C) | VTM V(25°C) | I _{DRM} I _{RRM} Ma(125°C) | R _{th(j-c)} °C/w |
|-----------|---|---------------------|-----|----------------------|-----|------------------|---|-----------------|-----------------|----------------------------|----------------|---|------------------------------|
| | | A | °C | A | °C | | | | | | | | |
| PWB 60A | 300, 400 | 60 | 123 | 94 | 123 | 1800 | 13500 | 50 | 150 | 100 | 1.25 | 10 | 0.35 |
| PWB 80A | 300, 400 | 80 | 116 | 125 | 116 | 2500 | 26000 | 50 | 150 | 100 | 1.2 | 12 | 0.35 |
| PWB 100A | 300, 400 | 100 | 114 | 157 | 114 | 3500 | 51000 | 50 | 150 | 70 | 1.2 | 15 | 0.3 |
| PWB 130A | 300, 400 | 130 | 112 | 204 | 112 | 3500 | 51000 | 50 | 150 | 70 | 1.2 | 30 | 0.2 |
| PWB 200AA | 300, 400 | 200 | 121 | 314 | 121 | 6000 | 149940 | 200 | 150 | 70 | 1.2 | 60(150°C) | 0.12 |





General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

Discrete Semiconductors

THYRISTOR

| Symbol | Terminology |
|---------------|---|
| V_{RRM} | Repetitive peak reverse voltage |
| V_{RSM} | Non-repetitive peak reverse voltage |
| V_{DRM} | Repetitive peak off-state voltage |
| $I_T(AV)$ | Average on-state current |
| $I_T(RSM)$ | RSM on-state current |
| I_{TSM} | Surge on-state current |
| I^2t | Current-squared time integration |
| $PGM(AV)$ | Peak gate power dissipation |
| I_{FSM} | Peak gate forward current |
| V_{FSM} | Peak gate forward voltage |
| V_{RSM} | Peak gate reverse voltage |
| di/dt | Critical rate-of-rise of on-state current |
| T_j | Junction temperature |
| I_{DRM} | Repetitive peak off-state current |
| I_{RRM} | Repetitive peak reverse current |
| V_{TM} | On-state current |
| I_{GT} | Gate trigger current |
| V_{GT} | Gate trigger voltage |
| V_{GD} | Gate non-trigger voltage |
| t_{gt} | Turn-on time |
| dv/dt | Critical rate-of-rise of on-state voltage |
| I_H | Holding current |
| I_L | Latching current |
| $R_{th(j-c)}$ | Junction-to-case thermal impedance |

DIODE

| Symbol | Terminology |
|---------------|-------------------------------------|
| V_{RRM} | Repetitive peak reverse voltage |
| V_{RSM} | Non-repetitive peak reverse voltage |
| I_D | Output current |
| $I_F(AV)$ | Average forward current |
| $I_F(RSM)$ | RMS forward current |
| I_{FSM} | Surge forward current |
| I^2t | Current-squared time integration |
| T_j | Junction temperature |
| I_{RRM} | Repetitive peak reverse current |
| V_{FM} | Forward voltage |
| t_{rr} | Reverse recovery time |
| Q_{rr} | Reverse recovery charge |
| $R_{th(j-c)}$ | Junction-to-case thermal impedance |

For high reliability and performance of Suntronix Semiconductors, please pay attention to the following points.

1. Mounting and Thermal Consideration
2. Gate Trigger characteristics(Thyristor)
 - Temperature characteristics
 - Pulse characteristics
 - Gate trigger modes
3. Applicable frequency
4. Safe operating area
 - For more detailed information on each product, please refer to the relevant databooks.



ORIENT ELECTRONICS

<http://www.orientelec.co.kr>

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

Discrete Semiconductors

For the Switching Model Power Supply

Discrete Semiconductors

ORIENT

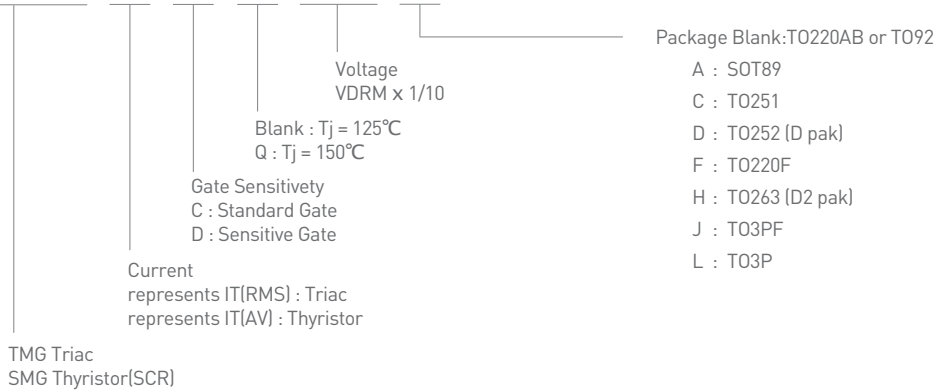
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RoHS

Nomenclature System (TMG, SMG)

TMG 8 C Q 60 F

Through Hold

• Standard

| Package | Type | V _{DRM} (V) | I _{T(RMS)} (A) | I _{DRM} (mA) | V _{TM} (V) | IGT(mA) | | VGT(mA) | | T _J (°C) | dv/dt _{lc} (V/ms) | -di/dt _{lc} (-A/ms) | R _{th(j-c)} °C/W |
|-----------|-------------|-------------------------|----------------------------|--------------------------|------------------------|--------------|------|--------------|------|------------------------|-------------------------------|---------------------------------|------------------------------|
| | | | | | | I+, I-, III- | III+ | I+, I-, III- | III+ | | | | |
| TO-251 | TMG2C60/80C | 600/800 | 2 | 1 | 1.6 | 15 | - | 1.5 | - | 125 | 3 | 1 | 5.8 |
| | TMG3C60/80C | 600/800 | 3 | 1 | 1.4 | 15 | - | 1.5 | - | 125 | 5 | 1.5 | 3.8 |
| | TMG5C60/80C | 600/800 | 5 | 1 | 1.4 | 20 | - | 1.5 | - | 125 | 5 | 2.5 | 3 |
| TO-220AB | TMG5C60/80 | 600/800 | 5 | 1 | 1.4 | 20 | - | 1.5 | - | 125 | 5 | 2.5 | 3 |
| | TMG8C60/80 | 600/800 | 8 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 4 | 2 |
| | TMG10C60/80 | 600/800 | 10 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 5 | 1.8 |
| | TMG12C60/80 | 600/800 | 12 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 6 | 1.8 |
| | TMG16C60/80 | 600/800 | 16 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 8 | 1.4 |
| TO-220AB2 | TMG20C60/80 | 600/800 | 20 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 8 | 1.1 |
| TO-220F | TMG2C60/80F | 600/800 | 2 | 1 | 1.6 | 15 | - | 1.5 | - | 125 | 3 | 1 | 7.5 |
| | TMG3C60/80F | 600/800 | 3 | 1 | 1.4 | 15 | - | 1.5 | - | 125 | 5 | 1.5 | 5 |
| | TMG5C60/80F | 600/800 | 5 | 1 | 1.4 | 20 | - | 1.5 | - | 125 | 5 | 2.5 | 4 |
| | TMG8C60/80F | 600/800 | 8 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 4 | 3.7 |
| | TMG10C60F | 600 | 10 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 5 | 3.5 |
| | TMG12C60F | 600 | 12 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 6 | 3.3 |
| | TMG12C80F | 800 | 12 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 6 | 3.3 |
| | TMG16C60F | 600 | 16 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 8 | 3 |
| | TMG16C80F | 800 | 16 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 8 | 3 |
| | TMG20C60F | 600 | 20 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 8 | 2.5 |
| TO-220F2 | TMG25C60F | 600 | 25 | 5 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 12.5 | 2.2 |
| | TMG25C80F | 800 | 25 | 5 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 12.5 | 2.2 |
| TO-3P | TMG16C60L | 600 | 16 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 8 | 1.3 |
| | TMG16C80L | 800 | 16 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 8 | 1.3 |
| | TMG25C60L | 600 | 25 | 5 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 12.5 | 1.2 |
| | TMG25C80L | 800 | 25 | 5 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 12.5 | 1.2 |
| TO-3PF | TMG16C60J | 600 | 16 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 8 | 1.8 |
| | TMG16C80J | 800 | 16 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 8 | 1.8 |
| | TMG25C60J | 600 | 25 | 5 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 12.5 | 1.4 |
| | TMG25C80J | 800 | 25 | 5 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 12.5 | 1.4 |

• Sensitive Gate

| Package | Type | V _{DRM} (V) | I _T (RMS) (A) | I _{DRM} (mA) | VTM (V) | IGT(mA) | | VGT(mA) | | T _J (°C) | dv/dt _{lc} (V/ms) | -di/dt _{lc} (-A/ms) | R _{th(j-c)} °C/W |
|-----------|-----------|-------------------------|-----------------------------|--------------------------|------------|--------------|------|--------------|------|------------------------|-------------------------------|---------------------------------|------------------------------|
| | | | | | | I+, I-, III- | III+ | I+, I-, III- | III+ | | | | |
| TO-92 | TMG1C60 | 600 | 1 | 1 | 1.6 | 5 | 10 | 1.8 | 2 | 125 | 2 | 0.5 | 50 |
| | TMG1C80 | 800 | 1 | 1 | 1.6 | 5 | 10 | 1.8 | 2 | 125 | 2 | 0.5 | 50 |
| TO-251 | TMG2D60C | 600 | 2 | 1 | 1.6 | 5 | 10 | 1.5 | 2 | 125 | 3 | 1 | 5.8 |
| | TMG2D80C | 800 | 2 | 1 | 1.6 | 5 | 10 | 1.5 | 2 | 125 | 3 | 1 | 5.8 |
| | TMG3D60C | 600 | 3 | 1 | 1.4 | 5 | 10 | 1.5 | 2 | 125 | 5 | 1.5 | 3.8 |
| | TMG3D80C | 800 | 3 | 1 | 1.4 | 5 | 10 | 1.5 | 2 | 125 | 5 | 1.5 | 3.8 |
| | TMG5D60C | 600 | 5 | 1 | 1.4 | 10 | - | 1.5 | - | 125 | 5 | 2.5 | 3 |
| | TMG5D80C | 800 | 5 | 1 | 1.4 | 10 | - | 1.5 | - | 125 | 5 | 2.5 | 3 |
| TO-220AB | TMG5D60 | 600 | 5 | 1 | 1.4 | 10 | - | 1.5 | - | 125 | 5 | 2.5 | 3 |
| | TMG5D80 | 800 | 5 | 1 | 1.4 | 10 | - | 1.5 | - | 125 | 5 | 2.5 | 3 |
| | TMG8D60 | 600 | 8 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 4 | 2 |
| | TMG8D80 | 800 | 8 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 4 | 2 |
| | TMG10D60 | 600 | 10 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 5 | 1.8 |
| | TMG10D80 | 800 | 10 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 5 | 1.8 |
| | TMG12D60 | 600 | 12 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 6 | 1.8 |
| | TMG12D80 | 800 | 12 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 6 | 1.8 |
| | TMG16D60 | 600 | 16 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 8 | 1.4 |
| TO-220AB2 | TMG20D60 | 600 | 20 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 8 | 1.1 |
| | TMG20D80 | 800 | 20 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 8 | 1.1 |
| TO-220F | TMG2D60F | 600 | 2 | 1 | 1.6 | 5 | 10 | 1.5 | 2 | 125 | 3 | 1 | 7.5 |
| | TMG2D80F | 800 | 2 | 1 | 1.6 | 5 | 10 | 1.5 | 2 | 125 | 3 | 1 | 7.5 |
| | TMG3D60F | 600 | 3 | 1 | 1.4 | 5 | 10 | 1.5 | 2 | 125 | 5 | 1.5 | 5 |
| | TMG3D80F | 800 | 3 | 1 | 1.4 | 5 | 10 | 1.5 | 2 | 125 | 5 | 1.5 | 5 |
| | TMG5D60F | 600 | 4 | 1 | 1.4 | 10 | - | 1.5 | - | 125 | 5 | 2.5 | 4 |
| | TMG5D80F | 800 | 4 | 1 | 1.4 | 10 | - | 1.5 | - | 125 | 5 | 2.5 | 4 |
| | TMG8D60F | 600 | 8 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 4 | 3.7 |
| | TMG8D80F | 800 | 8 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 4 | 3.7 |
| | TMG10D60F | 600 | 10 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 5 | 3.5 |
| | TMG10D80F | 800 | 10 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 5 | 3.5 |
| | TMG12D60F | 600 | 12 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 6 | 3.3 |
| | TMG12D80F | 800 | 12 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 6 | 3.3 |
| | TMG16D60F | 600 | 16 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 8 | 3 |
| | TMG16D80F | 800 | 16 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 8 | 3 |
| | TMG20D60F | 600 | 20 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 8 | 2.5 |
| | TMG20D80F | 800 | 20 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 8 | 2.5 |
| TO-220F2 | TMG25D60F | 600 | 25 | 5 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 12.5 | 2.2 |
| | TMG25D80F | 800 | 25 | 5 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 12.5 | 2.2 |
| TO-3P | TMG16D60L | 600 | 16 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 8 | 1.3 |
| | TMG16D80L | 800 | 16 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 8 | 1.3 |
| | TMG25D60L | 600 | 25 | 5 | 1.4 | 10 | - | 1.5 | - | 125 | 5 | 12.5 | 1.2 |
| | TMG25D80L | 800 | 25 | 5 | 1.4 | 10 | - | 1.5 | - | 125 | 5 | 12.5 | 1.2 |
| TO-3PF | TMG16D60J | 600 | 16 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 8 | 1.8 |
| | TMG16D80J | 800 | 16 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 8 | 1.8 |
| | TMG25D60J | 600 | 25 | 5 | 1.4 | 10 | - | 1.5 | - | 125 | 5 | 12.5 | 1.4 |
| | TMG25D80J | 800 | 25 | 5 | 1.4 | 10 | - | 1.5 | - | 125 | 5 | 12.5 | 1.4 |

General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

AC FAN Motor

Power Module

Discrete Semiconductors

• T_j=150°C

| Package | Type | V _{DRM} (V) | I _r (RMS) (A) | I _{DRM} (mA) | V _{TM} (V) | IGT(mA) | | VGT(mA) | | T _j (°C) | dv/dt _{ic} (V/ms) | -di/dt _{ic} (-A/ms) | R _{th(j-c)} °C/W |
|-----------|------------|-------------------------|-----------------------------|--------------------------|------------------------|--------------|------|--------------|------|------------------------|-------------------------------|---------------------------------|------------------------------|
| | | | | | | I+, I-, III- | III+ | I+, I-, III- | III+ | | | | |
| TO-92 | TMG1CQ60 | 600 | 1 | 1 | 1.6 | 5 | 10 | 1.8 | 2 | 150 | 1 | 0.5 | 50 |
| TO-251 | TMG2CQ60C | 600 | 2 | 1 | 1.6 | 15 | - | 1.5 | - | 150 | 1 | 1 | 5.8 |
| | TMG2DQ60C | 600 | 2 | 1 | 1.6 | 5 | 10 | 1.5 | 2 | 150 | 1 | 1 | 5.8 |
| | TMG3CQ60C | 600 | 3 | 2 | 1.4 | 15 | - | 1.5 | - | 150 | 2 | 1.5 | 3.8 |
| | TMG3DQ60C | 600 | 3 | 2 | 1.4 | 5 | 10 | 1.5 | 2 | 150 | 2 | 1.5 | 3.8 |
| | TMG5CQ60C | 600 | 5 | 2 | 1.4 | 15 | - | 1.5 | - | 150 | 2 | 1.5 | 3 |
| TO-220AB | TMG5CQ60 | 600 | 5 | 2 | 1.4 | 20 | - | 1.5 | - | 150 | 2 | 2.5 | 3 |
| | TMG8CQ60 | 600 | 8 | 2 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 4 | 2 |
| | TMG10CQ60 | 600 | 10 | 2 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 5 | 1.8 |
| | TMG12CQ60 | 600 | 12 | 2 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 6 | 1.8 |
| | TMG16CQ60 | 600 | 16 | 2 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 8 | 1.4 |
| TO-220AB2 | TMG20CQ60 | 600 | 20 | 3 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 10 | 1.1 |
| TO-220F | TMG2CQ60F | 600 | 2 | 1 | 1.6 | 15 | - | 1.5 | - | 150 | 1 | 1 | 7.5 |
| | TMG2DQ60F | 600 | 2 | 1 | 1.6 | 5 | 10 | 1.5 | 2 | 150 | 1 | 1 | 7.5 |
| | TMG3CQ60F | 600 | 3 | 2 | 1.4 | 15 | - | 1.5 | - | 150 | 2 | 1.5 | 5 |
| | TMG3DQ60F | 600 | 3 | 2 | 1.4 | 5 | 10 | 1.5 | 2 | 150 | 2 | 1.5 | 5 |
| | TMG5CQ60F | 600 | 5 | 2 | 1.4 | 20 | - | 1.5 | - | 150 | 2 | 2.5 | 4 |
| | TMG8CQ60F | 600 | 8 | 2 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 4 | 3.7 |
| | TMG10CQ60F | 600 | 10 | 2 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 5 | 3.5 |
| | TMG12CQ60F | 600 | 12 | 2 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 6 | 3.3 |
| | TMG16CQ60F | 600 | 16 | 3 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 8 | 3 |
| TO-220F2 | TMG20CQ60F | 600 | 20 | 3 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 10 | 2.5 |
| TO-220F2 | TMG25CQ60F | 600 | 25 | 5 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 12.5 | 2.2 |
| TO-3P | TMG16CQ60L | 600 | 16 | 3 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 8 | 1.3 |
| | TMG25CQ60L | 600 | 25 | 5 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 12.5 | 1.2 |
| TO-3PF | TMG16CQ60J | 600 | 16 | 3 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 8 | 1.8 |
| | TMG25CQ60J | 600 | 25 | 5 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 12.5 | 1.4 |

S.M.D (Surface Mount Device)

• Standard

| Package | Type | V _{DRM} (V) | I _r (RMS) (A) | I _{DRM} (mA) | V _{TM} (V) | IGT(mA) | | VGT(mA) | | T _j (°C) | dv/dt _{ic} (V/ms) | -di/dt _{ic} (-A/ms) | R _{th(j-c)} °C/W |
|--------------------|-----------|-------------------------|-----------------------------|--------------------------|------------------------|--------------|------|--------------|------|------------------------|-------------------------------|---------------------------------|------------------------------|
| | | | | | | I+, I-, III- | III+ | I+, I-, III- | III+ | | | | |
| TO-252 (D-pak) | TMG3C80D | 600 | 3 | 1 | 1.4 | 15 | - | 1.5 | - | 125 | 5 | 1.5 | 3.8 |
| | TMG3C80D | 800 | 3 | 1 | 1.4 | 15 | - | 1.5 | - | 125 | 5 | 1.5 | 3.8 |
| | TMG5C80D | 600 | 5 | 1 | 1.4 | 20 | - | 1.5 | - | 125 | 5 | 2.5 | 3 |
| | TMG5C80D | 800 | 5 | 1 | 1.4 | 20 | - | 1.5 | - | 125 | 5 | 2.5 | 3 |
| TO-263 (D2 pak) | TMG5C80H | 600 | 5 | 1 | 1.4 | 20 | - | 1.5 | - | 125 | 5 | 2.5 | 3 |
| | TMG5C80H | 800 | 5 | 1 | 1.4 | 20 | - | 1.5 | - | 125 | 5 | 2.5 | 3 |
| | TMG8C80H | 600 | 8 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 4 | 2 |
| | TMG8C80H | 800 | 8 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 4 | 2 |
| | TMG10C80H | 600 | 10 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 5 | 1.8 |
| | TMG10C80H | 800 | 10 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 5 | 1.8 |
| | TMG12C80H | 600 | 12 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 6 | 1.8 |
| | TMG12C80H | 800 | 12 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 6 | 1.8 |
| | TMG16C80H | 600 | 16 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 8 | 1.4 |
| TMG16C80H | 800 | 16 | 2 | 1.4 | 30 | - | 1.5 | - | 125 | 10 | 8 | 1.4 | |

• Sensitive Gate

| Package | Type | V _{DRM} (V) | I _T (RMS) (A) | I _{DRM} (mA) | V _{TM} (V) | IGT(mA) | | VGT(mA) | | T _J (°C) | dv/dt _{lc} (V/ms) | -di/dt _{lc} (-A/ms) | R _{th(j-c)} °C/W |
|--------------------|-----------|-------------------------|-----------------------------|--------------------------|------------------------|--------------|------|--------------|------|------------------------|-------------------------------|---------------------------------|------------------------------|
| | | | | | | I+, I-, III- | III+ | I+, I-, III- | III+ | | | | |
| SOT-89 | TMG1C60A | 600 | 1 | 0.5 | 1.6 | 5 | 10 | 1.8 | 2 | 125 | 2 | 0.5 | 65.0 |
| | TMG1C80A | 800 | 1 | 0.5 | 1.6 | 5 | 10 | 1.8 | 2 | 125 | 2 | 0.5 | 65.0 |
| TO-252 (D pak) | TMG2D60D | 600 | 2 | 1 | 1.6 | 5 | 10 | 1.5 | 2 | 125 | 3 | 1 | 5.8 |
| | TMG2D80D | 800 | 2 | 1 | 1.6 | 5 | 10 | 1.5 | 2 | 125 | 3 | 1 | 5.8 |
| | TMG3D60D | 600 | 3 | 1 | 1.4 | 5 | 10 | 1.5 | 2 | 125 | 5 | 1.5 | 3.8 |
| | TMG3D80D | 800 | 3 | 1 | 1.4 | 5 | 10 | 1.5 | 2 | 125 | 5 | 1.5 | 3.8 |
| | TMG5D60D | 600 | 5 | 1 | 1.4 | 10 | - | 1.5 | - | 125 | 5 | 1.5 | 3.8 |
| | TMG5D80D | 800 | 5 | 1 | 1.4 | 10 | - | 1.5 | - | 125 | 5 | 1.5 | 3.8 |
| TO-263 (D2 pak) | TMG5D60H | 600 | 5 | 1 | 1.4 | 10 | - | 1.5 | - | 125 | 5 | 2.5 | 3 |
| | TMG5D80H | 800 | 5 | 1 | 1.4 | 10 | - | 1.5 | - | 125 | 5 | 2.5 | 3 |
| | TMG8D60H | 600 | 8 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 4 | 2 |
| | TMG8D80H | 800 | 8 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 4 | 2 |
| | TMG10D60H | 600 | 10 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 5 | 1.8 |
| | TMG10D80H | 800 | 10 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 5 | 1.8 |
| | TMG12D60H | 600 | 12 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 6 | 1.8 |
| | TMG12D80H | 800 | 12 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 6 | 1.8 |
| | TMG16D60H | 600 | 16 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 8 | 1.4 |
| TMG16D80H | 800 | 16 | 2 | 1.4 | 10 | - | 1.5 | - | 125 | 10 | 8 | 1.4 | |

• T_J=150°C

| Package | Type | V _{DRM} (V) | I _T (RMS) (A) | I _{DRM} (mA) | V _{TM} (V) | IGT(mA) | | VGT(mA) | | T _J (°C) | dv/dt _{lc} (V/ms) | -di/dt _{lc} (-A/ms) | R _{th(j-c)} °C/W |
|--------------------|------------|-------------------------|-----------------------------|--------------------------|------------------------|--------------|------|--------------|------|------------------------|-------------------------------|---------------------------------|------------------------------|
| | | | | | | I+, I-, III- | III+ | I+, I-, III- | III+ | | | | |
| SOT-89 | TMG1CQ60A | 600 | 0.8 | 1 | 1.6 | 5 | 10 | 1.8 | 2 | 150 | 1 | 0.5 | 65 |
| TO-252 (D pak) | TMG2CQ60D | 600 | 2 | 1 | 1.6 | 15 | - | 1.5 | - | 150 | 1 | 1 | 5.8 |
| | TMG2DQ60D | 600 | 2 | 1 | 1.6 | 5 | 10 | 1.5 | 2 | 150 | 1 | 1 | 5.8 |
| | TMG3CQ60D | 600 | 3 | 2 | 1.4 | 15 | - | 1.5 | - | 150 | 2 | 1.5 | 3.8 |
| | TMG3DQ60D | 600 | 3 | 2 | 1.4 | 5 | 10 | 1.5 | 2 | 150 | 2 | 1.5 | 3.8 |
| | TMG5CQ60D | 600 | 5 | 2 | 1.4 | 20 | - | 1.5 | - | 150 | 2 | 2.5 | 3 |
| TO-263 (D2 pak) | TMG5CQ60H | 600 | 5 | 2 | 1.4 | 20 | - | 1.5 | - | 150 | 2 | 2.5 | 3 |
| | TMG8CQ60H | 600 | 8 | 2 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 4 | 2 |
| | TMG10CQ60H | 600 | 10 | 2 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 5 | 1.8 |
| | TMG12CQ60H | 600 | 12 | 2 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 6 | 1.8 |
| | TMG16CQ60H | 600 | 16 | 2 | 1.4 | 30 | - | 1.5 | - | 150 | 5 | 8 | 1.4 |

Fast-on package

• Standard

| Package | Type | V _{DRM} (V) | I _T (RMS) (A) | I _{DRM} (mA) | V _{TM} (V) | IGT(mA) | | VGT(mA) | | T _J (°C) | dv/dt _{lc} (V/ms) | -di/dt _{lc} (-A/ms) | R _{th(j-c)} °C/W |
|-----------|---------|-------------------------|-----------------------------|--------------------------|------------------------|--------------|------|--------------|------|------------------------|-------------------------------|---------------------------------|------------------------------|
| | | | | | | I+, I-, III- | III+ | I+, I-, III- | III+ | | | | |
| TO-3 base | TG25E40 | 400 | 25 | 5 | 1.4 | 50 | - | 3 | - | 125 | 6 | 15 | 1.6 |
| | TG25E60 | 600 | 25 | 5 | 1.4 | 50 | - | 3 | - | 125 | 6 | 15 | 1.6 |
| | TG25F40 | 400 | 25 | 5 | 1.4 | 50 | - | 3 | - | 125 | 6 | 15 | 1.6 |
| | TG25F60 | 600 | 25 | 5 | 1.4 | 50 | - | 3 | - | 125 | 6 | 15 | 1.6 |
| | TG35E40 | 400 | 35 | 5 | 1.4 | 50 | - | 3 | - | 125 | 5 | 15 | 1.5 |
| | TG35E60 | 600 | 35 | 5 | 1.4 | 50 | - | 3 | - | 125 | 5 | 15 | 1.5 |
| | TG35F40 | 400 | 35 | 5 | 1.4 | 50 | - | 3 | - | 125 | 5 | 15 | 1.5 |
| | TG35F60 | 600 | 35 | 5 | 1.4 | 50 | - | 3 | - | 125 | 5 | 15 | 1.5 |

Through Hold

• Standard

| Package | Type | V _{DRM} (V) | I _{T(AV)} (A) | I _{T(RMS)} (A) | I _{DRM} (mA) | V _{TM} (V) | IGT (mA) | VGT (mA) | T _J (°C) | R _{th(j-c)} °C/W |
|----------|-----------|-------------------------|---------------------------|----------------------------|--------------------------|------------------------|-------------|-------------|------------------------|------------------------------|
| TO-251 | SMG5C60C | 600 | 5 | 7.8 | 2 | 1.8 | 0.2 | 0.8 | 125 | 3 |
| TO-220AB | SMG5C60 | 600 | 5 | 7.8 | 2 | 1.5 | 10 | 1.4 | 125 | 3 |
| | SMG8C60 | 600 | 8 | 13 | 2 | 1.5 | 10 | 1.4 | 125 | 2 |
| | SMG12C60 | 600 | 12 | 19 | 2 | 1.5 | 30 | 1.4 | 125 | 1.8 |
| | SMG16C60 | 600 | 16 | 25 | 2 | 1.5 | 30 | 1.4 | 125 | 1.4 |
| TO-220F | SMG5C60F | 600 | 5 | 7.8 | 2 | 1.5 | 10 | 1.4 | 125 | 4 |
| | SMG8C60F | 600 | 8 | 13 | 2 | 1.5 | 10 | 1.4 | 125 | 3.7 |
| | SMG12C60F | 600 | 12 | 19 | 2 | 1.5 | 30 | 1.4 | 125 | 3.3 |
| | SMG16C60F | 600 | 16 | 25 | 2 | 1.5 | 30 | 1.4 | 125 | 3 |

• Sensitive Gate

| Package | Type | V _{DRM} (V) | I _{T(AV)} (A) | I _{T(RMS)} (A) | I _{DRM} (mA) | V _{TM} (V) | IGT (mA) | VGT (mA) | T _J (°C) | R _{th(j-c)} °C/W |
|---------|-----------|-------------------------|---------------------------|----------------------------|--------------------------|------------------------|-------------|-------------|------------------------|------------------------------|
| TO-92 | SMG04C60 | 600 | 0.4 | 0.63 | 0.5 | 1.2 | 0.1 | 0.8 | 125 | 50 |
| | SMG05C60 | 600 | 0.5 | 0.78 | 0.5 | 1.2 | 0.1 | 0.8 | 125 | 50 |
| | SMG05CB60 | 600 | 0.5 | 0.78 | 0.5 | 1.2 | 0.2 | 0.8 | 125 | 50 |
| TO-251 | SMG2D60C | 600 | 2 | 3.1 | 1 | 1.5 | 0.2 | 0.8 | 125 | 5.8 |
| | SMG3D60C | 600 | 3 | 4.7 | 1 | 1.5 | 0.2 | 0.8 | 125 | 3.8 |
| | SMG5D60C | 600 | 5 | 7.8 | 2 | 1.8 | 0.2 | 0.8 | 125 | 3 |

S.M.D (Surface Mount Device)

• Standard

| Package | Type | V _{DRM} (V) | I _{T(AV)} (A) | I _{T(RMS)} (A) | I _{DRM} (mA) | V _{TM} (V) | IGT (mA) | VGT (mA) | T _J (°C) | R _{th(j-c)} °C/W |
|--------------------|-----------|-------------------------|---------------------------|----------------------------|--------------------------|------------------------|-------------|-------------|------------------------|------------------------------|
| TO-252(D pak) | SMG5C60D | 600 | 5 | 7.8 | 2 | 1.8 | 0.2 | 0.8 | 125 | 3 |
| TO-263 (D2 pak) | SMG5C60H | 600 | 5 | 7.8 | 2 | 1.5 | 10 | 1.4 | 125 | 3 |
| | SMG8C60H | 600 | 8 | 13 | 2 | 1.5 | 10 | 1.4 | 125 | 2 |
| | SMG12C60H | 600 | 12 | 19 | 2 | 1.5 | 30 | 1.4 | 125 | 1.8 |
| | SMG16C60H | 600 | 16 | 25 | 2 | 1.5 | 30 | 1.4 | 125 | 1.4 |

• Sensitive Gate

| Package | Type | V _{DRM} (V) | I _{T(AV)} (A) | I _{T(RMS)} (A) | I _{DRM} (mA) | V _{TM} (V) | IGT (mA) | VGT (mA) | T _J (°C) | R _{th(j-c)} °C/W |
|-------------------|-----------|-------------------------|---------------------------|----------------------------|--------------------------|------------------------|-------------|-------------|------------------------|------------------------------|
| SOT-89 | SMG05C60A | 600 | 0.5 | 0.78 | 0.5 | 1.9 | 0.1 | 0.8 | 125 | 70 |
| | SMG08C60A | 600 | 0.8 | 1.3 | 0.5 | 1.5 | 0.1 | 0.8 | 125 | 65 |
| TO-252 (D pak) | SMG2D60D | 600 | 2 | 3.1 | 1 | 1.5 | 0.2 | 0.8 | 125 | 5.8 |
| | SMG3D60D | 600 | 3 | 4.7 | 1 | 1.5 | 0.2 | 0.8 | 125 | 3.8 |
| | SMG5D60D | 600 | 5 | 7.8 | 2 | 1.8 | 0.2 | 0.8 | 125 | 3 |

• Standard

| Package | Type | V _{DRM} (V) | I _{T(AV)} (A) | I _{T(RMS)} (A) | I _{DRM} (mA) | V _{TM} (V) | IGT (mA) | VGT (mA) | T _J (°C) | R _{th(j-c)} °C/W |
|-----------|----------|-------------------------|---------------------------|----------------------------|--------------------------|------------------------|-------------|-------------|------------------------|------------------------------|
| TO-3 base | SG16AA20 | 200 | 16 | 25 | 3 | 1.5 | 40 | 3 | 125 | 2 |
| | SG16AA40 | 400 | 16 | 25 | 3 | 1.5 | 40 | 3 | 125 | 2 |
| | SG16AA60 | 600 | 16 | 25 | 3 | 1.5 | 40 | 3 | 125 | 2 |
| | SG25AA20 | 200 | 25 | 39 | 5 | 1.4 | 40 | 3 | 125 | 1.6 |
| | SG25AA40 | 400 | 25 | 39 | 5 | 1.4 | 40 | 3 | 125 | 1.6 |



ORIENT ELECTRONICS

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General Information

Switching Mode Power Supply

DC-DC Converter

Noise Filter

Solid State Relay

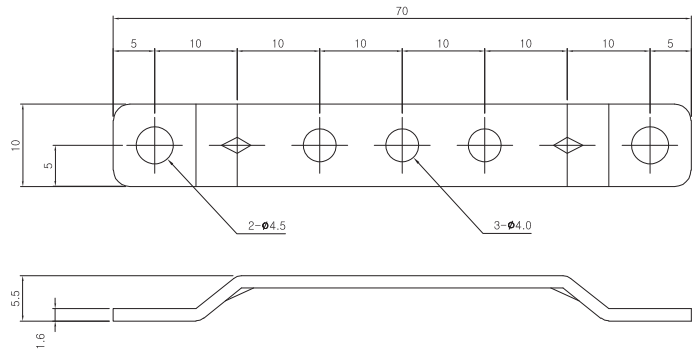
AC FAN Motor

Power Module

Discrete Semiconductors

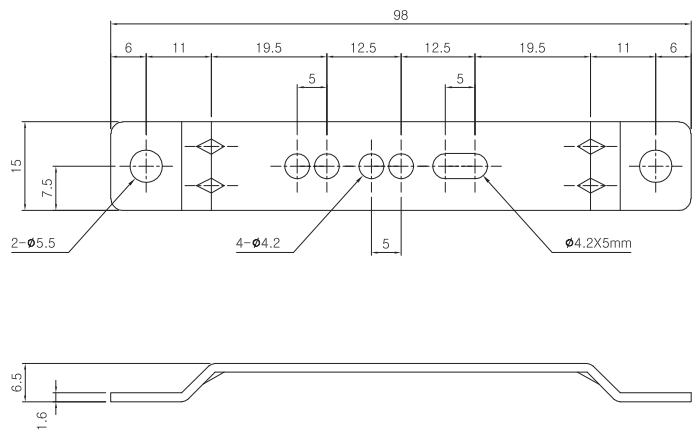
BRACKET-01

- ESF100-S, 150-SERIES
- VSF30-SERIES
- VSFL50-S, 75-SERIES
- MSF15-S, 25-S 35-S, 50-S, 60-S, 80-SERIES
- VSF30, 50, 75, 100-DUAL/TRIPLE SERIES
- MSF30, 50, 60, 80-DUAL/TRIPLE SERIES



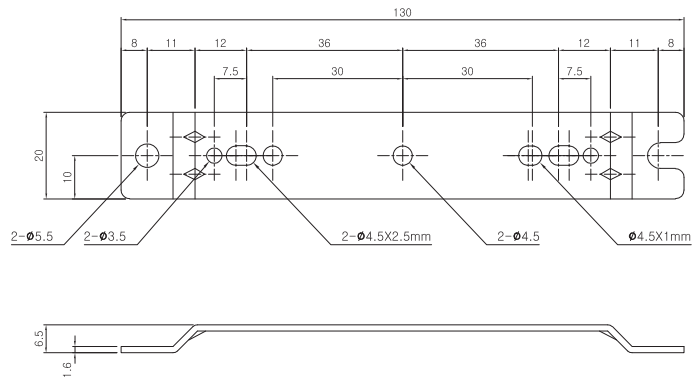
BRACKET-02

- VSF100-S, 150-SERIES
- MSF100-S, 150-SERIES
- MSF100-DUAL/TRIPLE SERIES



BRACKET-03

- ESF300-S, 600-S, 1000-S, 1500-SERIES
- VSF200-S 220-S, 300-S, 400-SERIES
- MSF200-S, 300-SERIES



S.M.P.S

| | | | |
|----|--------------------|----------------------------------|---------------------|
| 1 | | 가 AC220V ? 220V 110V AC110V ? | 220V 110V 220V 110V |
| 2 | 가 | F.G ? F.G ? | AC DC |
| 3 | | FUSE가 ? | FUSE가 |
| 4 | | (+V GND ?) | |
| 5 | () | SHORT ? | SHORT |
| 6 | | SCREW가 ? | SCREW |
| 7 | | V.R ? ? | OFF V.R ON 5 가 |
| 8 | 가 | SENSING (±S) SCREW가 ? | SCREW |
| 9 | | SENSING ? | |
| 10 | | SENSING ? | |
| 11 | 가 | 가 ? | |
| 12 | REMOTE CONTROL OFF | RC RCG (O)가 ? | RC RCG (O) |
| 13 | | RC RCG (O)가 ? | RC OPEN RCG (O) |
| 14 | 가 | 가 ? | 가 |
| 15 | | FAN FAN ? FAN ? | FAN 가 |
| 16 | | ? | |
| 17 | | ? | 가 가 |

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