

SPECIFICATION

For

SWITCHING POWER SUPPLY

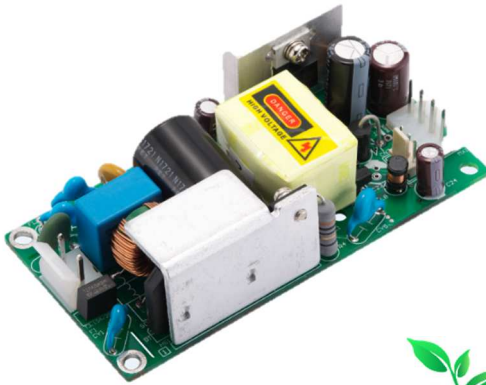
M/N: MPE-S085(-SB)(-C)

Revision History

| Version | Revise Date | Change Items |
|---------|---------------|--|
| Rev. 01 | Jan. 16. 2019 | Established. |
| Rev. 02 | May. 21. 2020 | Changed Isolation" IP to GND" to 1800 VAC. |
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MPE-S085(-SB)(-C)

80W AC / DC



FEATURES

- ✓ 80W fan cooling, 65W with convection-cooled of single output power supply.
- ✓ Compact size 2 x 4 inch and low profile.
- ✓ No-load power consumption < 0.5W.
- ✓ Optional +5Vsb and remote on/off function.
- ✓ Operable at 80°C.
- ✓ Compliant with CLASS I & CLASS II meets EMI CISPR/FCC class B.
- ✓ ITE safety standard IEC62368-1, UL62368-1 approved.



Models & Ratings

| Model Number | Wattage (Rated / Max) | Output Voltage | | Min. Current | Rated Current | Max. Current |
|--------------|-----------------------|----------------|-------|--------------|---------------|--------------|
| MPE-S085 | 65 W / 80 W | +24 V | | 0 A | 2.7 A | 3.3 A |
| MPE-S085-SB | 65 W / 80 W | V1 | +24 V | 0 A | 2.7 A | 3.3 A |
| | | V2 | +5 V | 0 A | 0.1 A | 0.5 A |

The 65W rated load is natural convection cooling, maximum load 80W is at 50°C with 7 CFM fan convection cooling. please see the derating curve.

Model no. coding:

MPE-S085-X-Y-Z



| | | | | | | | | |
|---|-------|---|---|-------|------------------------------------|---|-------|--------------------|
| ① | X= | Output set | ② | Y= | Connector Type | ③ | Z= | Mechanical |
| | blank | Single output | | blank | Molex Type Connector or equivalent | | blank | Open frame |
| | SB | Dual output (with +5Vsb & remote on/off function) | | J | JST Type Connector or equivalent | | C | Optional cover kit |

Summary

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|-----------------------|--|-----------|---------|-------|--|
| Input Range | 85 | 115 / 230 | 264 | VAC | Continuous input range. |
| Input Frequency | 47 | 50 / 60 | 63 | Hz | AC input. |
| Efficiency | 88 | 90 | | % | At input 230VAC, rated load, above 1hr. warm up. |
| Operation Temperature | -20 | | +80 | °C | See the following performance curves for the detail. |
| Weight | | 85 | | g | -SB model is 86.5 g. |
| Dimensions | 101.6 (L) x 50.8 (W) x 30 (H) mm, Tolerance +/- 0.4mm. | | | | |
| EMC | EN 55032, CISPR 32 & FCC Part 15, EN 61000-3-2, EN 61000-3-3, EN 61204-3, IEC 61000-4-2, IEC 61000-4-3, IEC 61000-4-4, IEC 61000-4-5, IEC 61000-4-6, IEC 61000-4-8, IEC 61000-4-11 | | | | |
| Safety Approvals | IEC 62368-1, UL 62368-1, 2 nd Edition, CSA C22.2 No. 62368-1-14, 2 nd Edition IEC 60950-1, UL 60950-1, 2 nd Edition, CSA C22.2 No. 60950-1-07, 2 nd Edition | | | | |

Input

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|---------------------------|--|-----------|---------|-------|---|
| Input Voltage | 85 | 115 / 230 | 264 | VAC | Continuous input range. |
| Input Frequency | 47 | 50 / 60 | 63 | Hz | AC input. |
| Input Current | | | 3 | A | Nominal AC Input Voltage (115VAC), rated load. |
| Inrush Current | | | 30 / 60 | A | Nominal AC Input Voltage (115VAC/230VAC), one cycle at 25°C cold start. |
| No-load power consumption | | | <0.5 | W | Nominal AC Input Voltage (115VAC/230VAC). Only with model MPE-S085. |
| Input Protection | One non-user serviceable internally located AC input line fuse. Fuse : 3.15A / 250VAC * 1pcs | | | | |

Output

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|--------------------------|---|--|---------|-------|--|
| Output Voltage | | +24 V | | DC | |
| | | +5Vsb | | | |
| Output Current | | 2.7 ^(V1) | 3.3 | A | |
| | | 0.1 ^(V2) | 0.5 | A | |
| Initial Set Accuracy | | ±1.0 ^(V1) ±2.5 ^(V2) | | % | Initial setting accuracy is adjusted at input 115VAC and output at 60% rated load. |
| Minimum Load | | 0 | | A | |
| Start Up Delay | | 0.5 | 1 | Sec | Time required for initial output voltage stabilization. |
| Hold Up Time | 16 / 80 | | | mS | Nominal AC Input Voltage (115VAC/230VAC), rated load. |
| Line Regulation | | ±1.0 ^(V1) ±1.0 ^(V2) | | % | Less than ±1% at rated load with ±10% changing in input voltage 115VAC. |
| Load Regulation | | ±1.0 ^(V1) ±1.0 ^(V2) | | % | Measured from 60% to 100% rated load and from 60% to 20% rated load (60% ±40% rated load). |
| Ripple & Noise | | 150 ^(V1) 50 ^(V2) | | mV | Measured at rated load and Nominal AC Input Voltage (115VAC/230VAC) by a 20MHz bandwidth limited oscilloscope and the each output is connected with a 10µF Electrolytic Capacitor and a 0.1µF Ceramic Capacitor. |
| Leakage Current | | | 0.25 | mA | At input 264VAC, 63Hz, rated load. |
| Overvoltage Protection | For some reason the power supply fails to control itself, the build-in over voltage protection circuit will auto recovery the outputs to prevent damaging external circuits, the trigger point is around 110%~135% of output voltage. | | | | |
| Short Circuit Protection | Fully protected against output overload and short circuit. Automatic recovery upon of overload condition. | | | | |
| Remote On / Off | The power supply will be turned on when the power On/Off pin is connected to secondary GND. This function exists only with optional +5Vsb. | | | | |

General

| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|---------------------|-----------|---------|---------|-------|--|
| Efficiency | 88 | 90 | | % | At input 230VAC, rated load, above 1hr. warm up. |
| Isolation | IP to OP | 3000 | | VAC | |
| | IP to GND | 1800 | | VAC | |
| Switching Frequency | | 65 | | KHZ | |

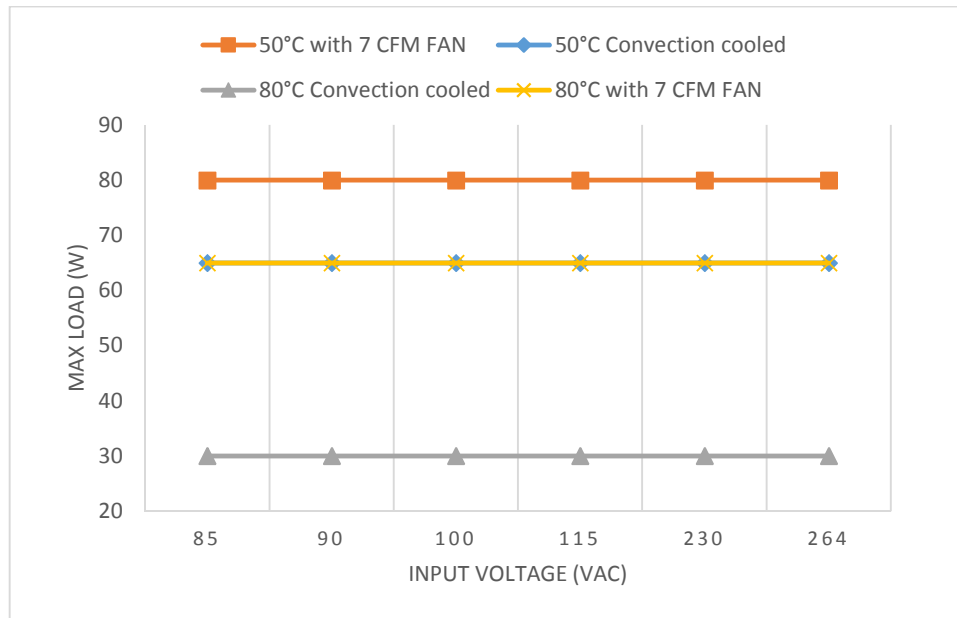
Environmental

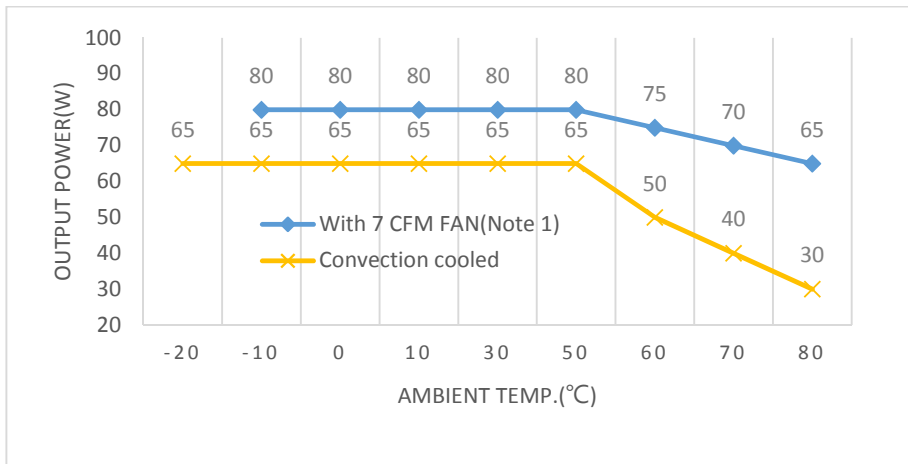
| Characteristic | Minimum | Typical | Maximum | Units | Notes & Conditions |
|------------------------------------|---------|---------|---------|-------|--|
| Operating Temperature | -20 | | +80 | °C | See the following performance curves for the detail. |
| Storage Temperature | -40 | | +85 | °C | |
| Relative Humidity | 5 | | 95 | %RH | Non-condensing. |
| Cooling | 7 | | | CFM | Forced-cooled when 65W~80W. |
| Operating / Non-Operating Altitude | | 5000 | | m | |

Note:

- 1.The temperature test is 100mm from the center of the top of the Power.
2. -20 °C low temperature start at 65W load

Derating curve

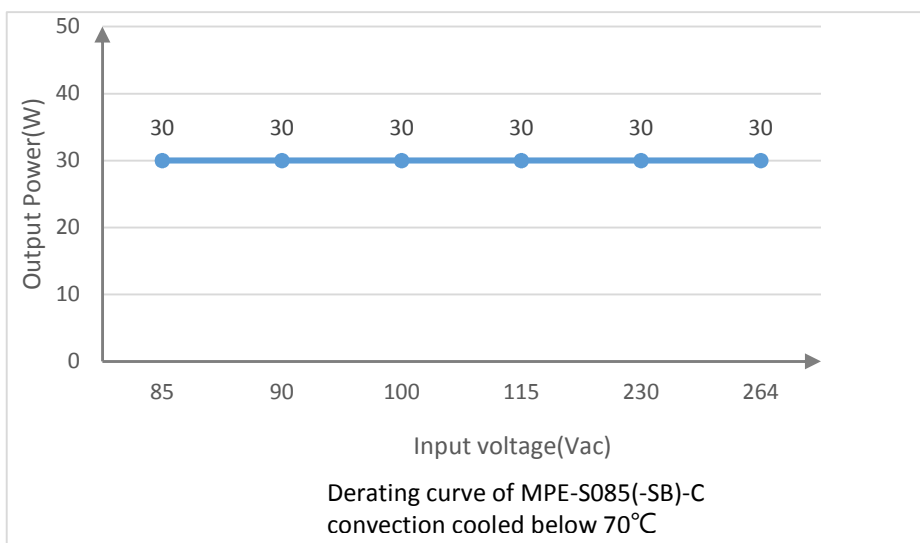
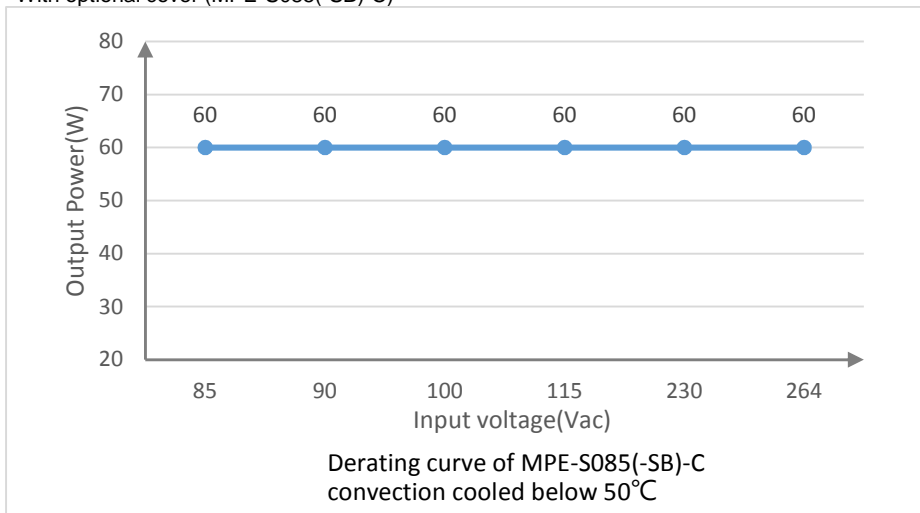




Note:

1. Air flow from IC3 to the body of PSU with distance 50mm maximum.

With optional cover (MPE-S085(-SB)-C)



EMC: Emissions

| Phenomenon | Standard | Class | Notes & Conditions |
|----------------------|------------------------------------|-------|---|
| Conducted | EN 55032 CISPR 32 & FCC Part 15 | B | Compliant with CLASS I & CLASS II EMI (Note 3.) |
| Radiated | EN 55032 CISPR 32 & FCC Part 15 | B | |
| Harmonic Current | EN 61000-3-2 | A | |
| Voltage Fluctuations | EN 61000-3-3 | | |
| Voltage Flicker | EN 61204-3 | B | |

EMC: Immunity

| Phenomenon | Standard | Criteria | Notes & Conditions |
|------------------------|----------------|----------------------|--|
| ESD | IEC 61000-4-2 | A | ±8KV air discharge, ±6KV contact discharge |
| Radiated | IEC 61000-4-3 | A | 10V/m |
| EFT | IEC 61000-4-4 | A | ±2KV Line & PE |
| Surges | IEC 61000-4-5 | A | L-N:±1KV, L/N-PE:±2KV |
| Conducted | IEC 61000-4-6 | A | 10V |
| Power Magnetic | IEC 61000-4-8 | A | 10A/m |
| Dips and Interruptions | IEC 61000-4-11 | A A A / B B | DIP: >95%, 0.5 cycle DIP: 30%, 25 cycles DIP: 60%, 5 cycles (Note 2.) INT: >95%, 250 cycles |

Note:

- As a build-in type power supply, the power supply needs to be installed in a suitable enclosure to pass the EMI/EMC tests. The final assembly has to comply with the valid EMI/EMC and safety.
- The test result of input 240Vac / 100Vac is criteria A / B.
- The Class I mounting holes should be connected to each other to conform the EMI limit ; Class II AC input radiation needs to be wound around the A81280200160 core 4 turns.
- Pass EMI with or without a metal plate below the power supply. If you want to use a metal plate under this power, the distance in between accessible metal part needs to add at least 6mm to meet Class II.

Safety Approvals

| Safety Agency | Safety Standard | Notes & Conditions |
|---------------|--|----------------------|
| TUV | EN 62368-1, 2 nd Edition(Design to meet) | CE(LVD) declaration. |
| | EN 60950-1, 2 nd Edition(Design to meet) | |
| CB | IEC 62368-1, 2 nd Edition | |
| | IEC 60950-1, 2 nd Edition | |
| UL/cUL | UL 62368-1, 2 nd Edition, CSA C22.2 No. 62368-1-14, 2nd Edition | UL, cUL approved. |
| | UL 60950-1, 2 nd Edition, CSA C22.2 No. 60950-1-07, 2nd Edition | |

MPE-S085(-SB)(-C)

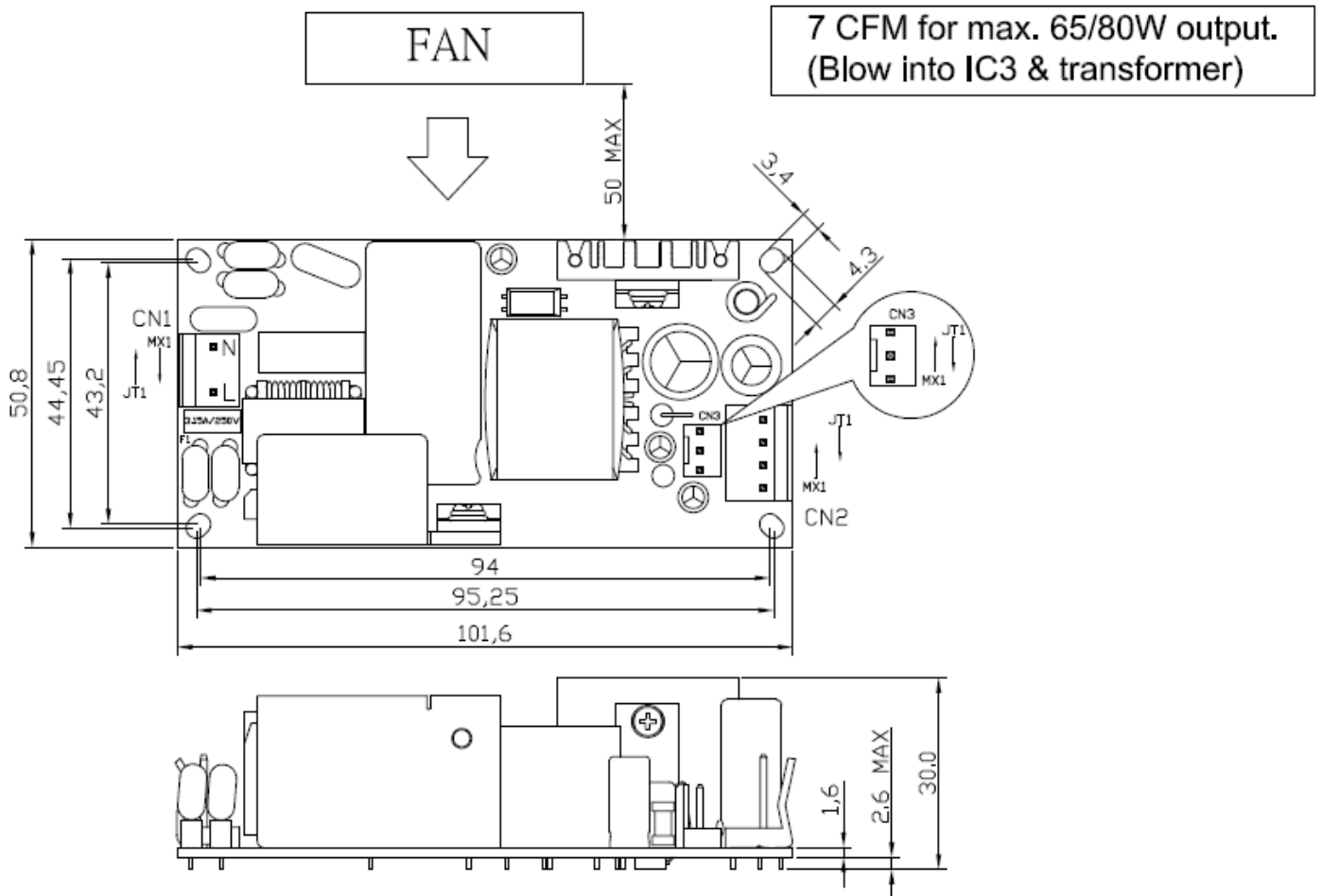
80W AC / DC

Mechanical Details

M/N: MPE-S085-SB

Unit: mm

SIZE : 101.6(L) x 50.8(W) x 30(H)mm, Tolerance +/-0.4mm.

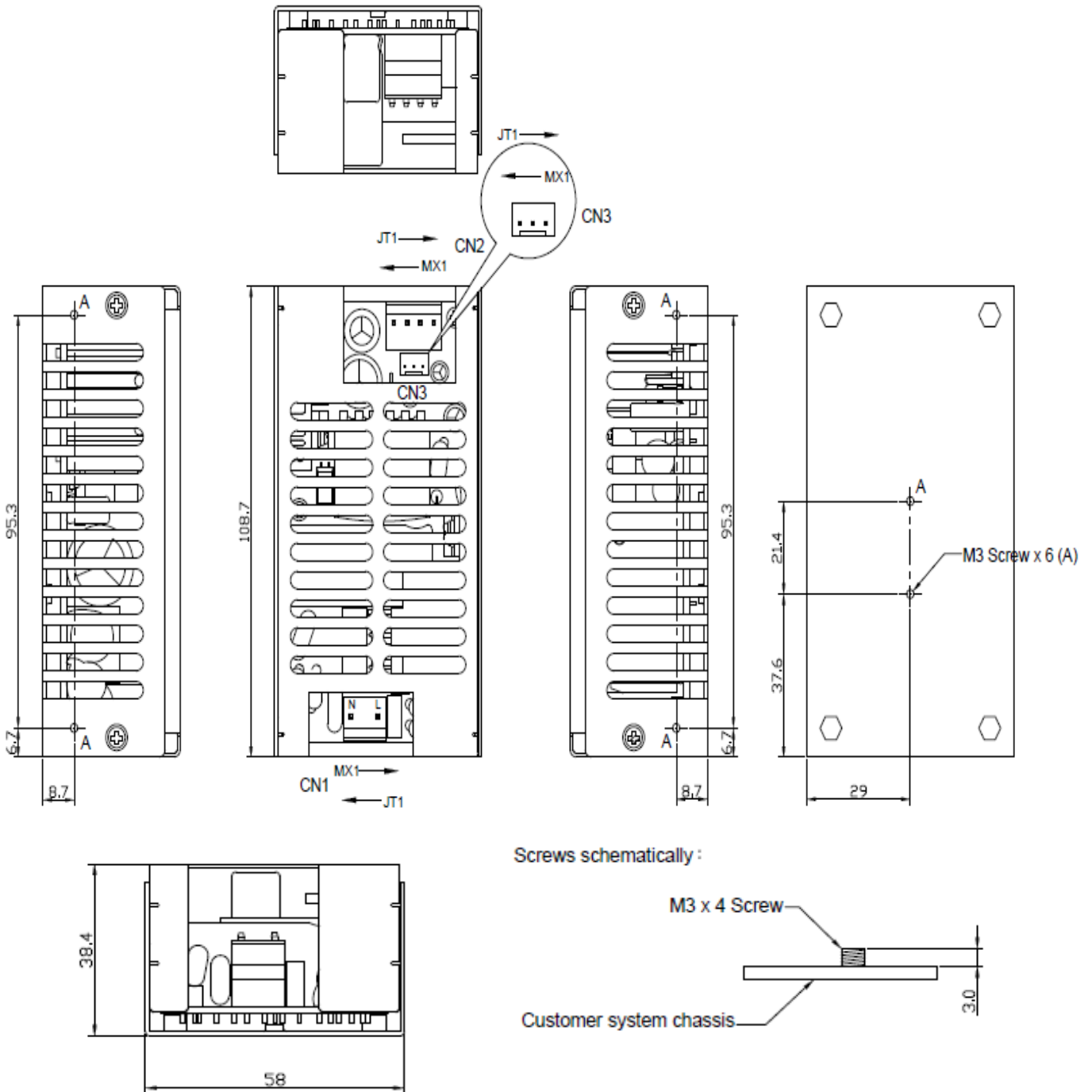


Note: The installation shall be kept in an isolation distance min. 2.8mm between the unit and the system chassis. There exist hazardous voltage in dotted area, keep insulating to avoid hazardous electric shock.

MPE-S085(-SB)(-C)

80W AC / DC

For m/n: MPE-S085(-SB)-C
Unit: mm Tolerance: +/- 0.4mm



| Parameter | Conditions/Description | | | | | |
|---|---|--------------|-------|--|--|--|
| Dimension | 101.6 (L) x 50.8 (W) x 30 (H) mm, Tolerance +/- 0.4mm. | | | | | |
| Connector & Pin Assignment | Location | Pin (Note 1) | | Assignment | Proposed Housing | Proposed Terminals |
| | CN1(Input) molex 09-65-2038 or equivalent (remove the middle pin) | MX1 | JT2 | AC in (N) | a. MOLEX: 09-50-1031 (5195-03) or 09-52-4034 (5239-03) or equivalent | a. MOLEX :5194 or 5225 2478, 2578,5167 or 5168 or equivalent |
| | | MX2 | JT1 | AC in (L) | b. JST: VHR-3N or equivalent (Note 2) | b. JST: SVH-21T-P1.1 or equivalent |
| | CN2(Output) molex 09-65-2048 or equivalent | MX1 | JT4 | 0 V | a. MOLEX: 09-50-1041 (5195-04) or 09-52-4044 (5239-04) or equivalent | a. MOLEX:5194 or 5225 2478, 2578,5167 or 5168 or equivalent |
| | | MX2 | JT3 | 0 V | | |
| MX3 | | JT2 | + V | b. JST: VHR-4N or equivalent (Note 2) | b. JST: SVH-21T-P1.1 or equivalent | |
| CN3(Note 3) molex 22-04-1031 or equivalent | MX4 | JT1 | + V | a. MOLEX: 22-01-1032 (5051-03) or 51191-0300 or equivalent | a. MOLEX:2759 or 5159 or 50802 or equivalent | |
| | MX1 | JT3 | +5Vsb | | | |
| | MX2 | JT2 | 0 V | b. JST: XHP-3 or equivalent (Note 2) | b. JST: SXH-001T-P0.6N, SXH-001T-P0.6 or SXH-002T-P0.6 or equivalent | |
| | MX3 | JT1 | RC | | | |

Note:1. The pin assignment "MX" for Molex type connector or equivalent, "JT" for JST type connector.

2. Exist with model no. suffixed -J, please see the Model no. coding.
3. Exist with model no. suffixed -SB, please see the Model no. coding.

Thermal Considerations

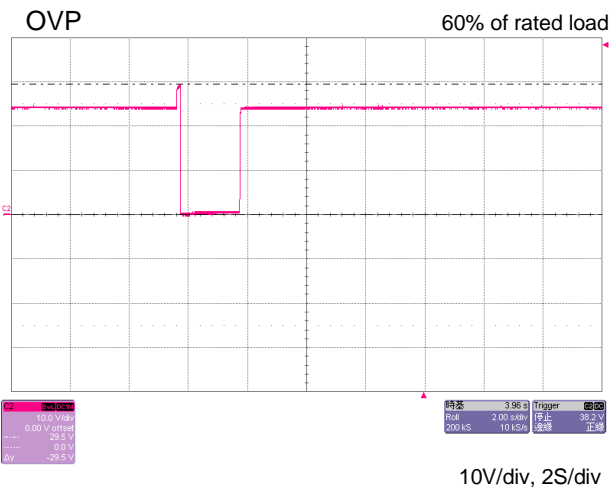
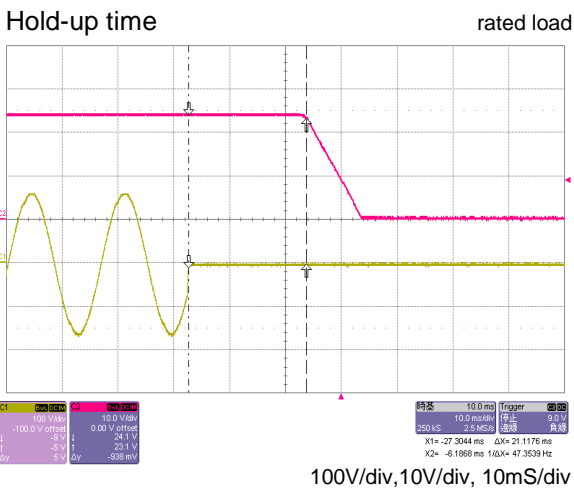
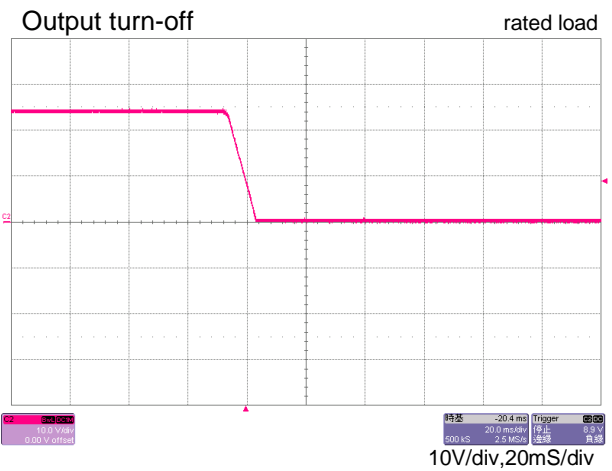
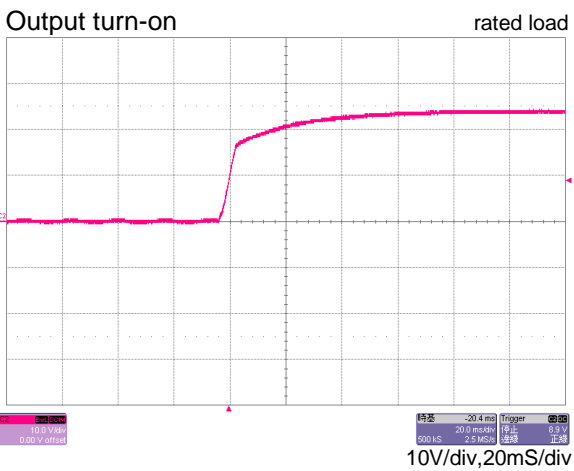
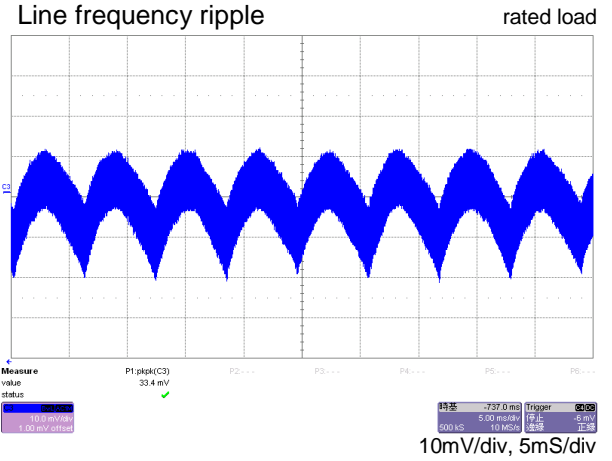
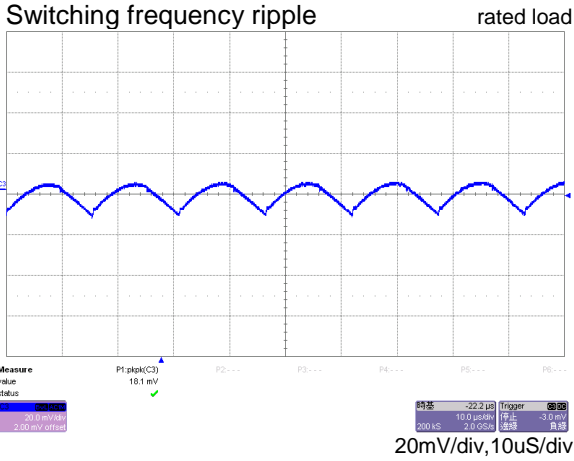
In order to ensure safe operation of the PSU in the end-use equipment, the temperature of the components listed in the table below must not be exceeded.

Temperature should be monitored using J type thermocouples placed on the hottest part of the component (out of any direct air flow). See Mechanical Details for component locations.

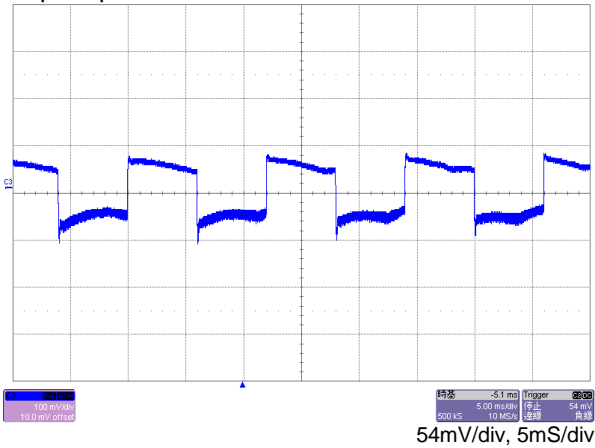
| Temperature Measurements at max. amb. | |
|---------------------------------------|-----------------|
| Component | Max Temperature |
| T1 | 110°C |
| Q1 | 130°C |
| D6 | 130°C |
| C2 | 105°C |
| C21 | 105°C |

Performance

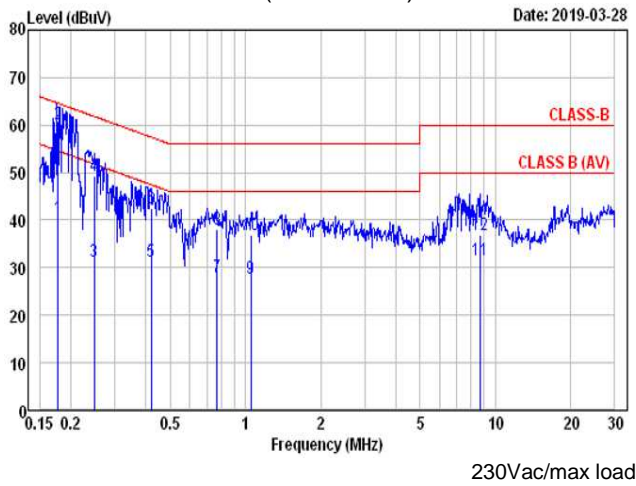
(Input voltage: 115Vac)



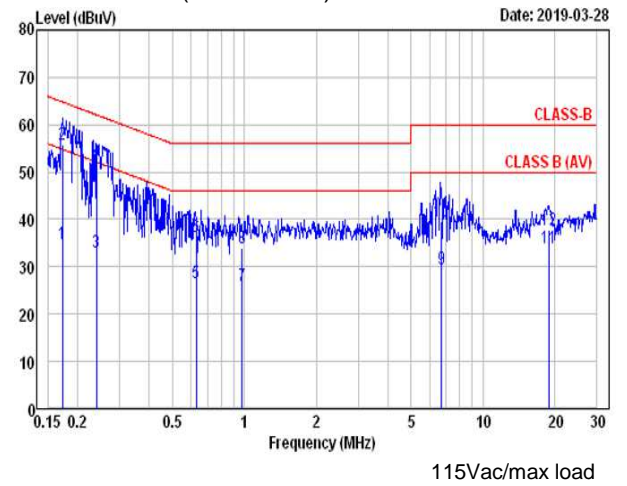
Step response 20%~100% of rated load



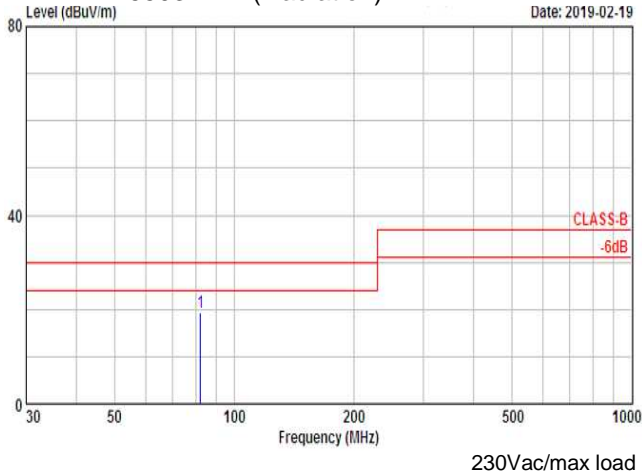
EMI: EN55032 "B" (Conduction)



EMI: FCC "B" (Conduction)



EMI: EN55032 "B" (Radiation)



EMI: FCC "B" (Radiation)

