

**SPECIFICATION**

**For**

**SWITCHING POWER SUPPLY**

**M/N: MPE-F065 (24V / 2.5A)**

**Peak Power Enhanced Flat Model**

## Revision History

| Version | Revise Date   | Change Items |
|---------|---------------|--------------|
| Rev. 01 | Jan. 13. 2022 | Established. |
|         |               |              |
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# MPE-F065

60W AC / DC



## FEATURES

- ✓ 120W Peak power for 3s at 230Vac ~ 264Vac.
- ✓ 60W with convection-cooled.
- ✓ size 2 x 4 inch, height 20mm
- ✓ Wide operating temperature -20~80°C.
- ✓ High efficiency up to 90%
- ✓ No-load power consumption < 0.1W.
- ✓ Class II, also class I with optional functional ground connected.
- ✓ EN 62368-1(LVD) approved, designed to meet IEC 62368-1, IEC 60335-1
- ✓ Meets EMI CISPR / FCC class B.
- ✓ 5,000m operation altitude.



## Models & Ratings

| Model Number | Wattage (Rated / Max ) | Output Voltage | Min. Current | Rated Current | Peak Current ( for 3.8s ) |
|--------------|------------------------|----------------|--------------|---------------|---------------------------|
| MPE-F065     | 60 W                   | +24 V          | 0 A          | 2.5 A (Note1) | 5A (Note1)                |

Output Power: 60W with convection cooling, Peak 120W .  
Note:

1. See the derating curves for the detail.
2. Model no. coding:

**M P E - F 0 6 5 - X**

①

| X=    | Connector Type                   |
|-------|----------------------------------|
| blank | JST Type Connector or equivalent |

①

## Input

| Characteristic            | Minimum  | Typical   | Maximum    | Units | Notes & Conditions  |
|---------------------------|--|-----------|------------|-------|---|
| Input Voltage             | 85   | 115 / 230 | 264        | VAC   | Continuous input range.   |
| Input Frequency           | 47   | 60 / 50   | 63         | Hz    | AC input.   |
| Input Current             |  |           | 1.5 / 0.75 | A     | Nominal AC Input Voltage (115VAC / 230VAC), rated load.                 |
| Inrush Current            |  |           | 30 / 60    | A     | Nominal AC Input Voltage (115VAC/230VAC), one cycle at 25°C cold start. |
| No-load power consumption |  |           | 0.1        | W     | Nominal AC Input Voltage (230VAC/50Hz).                                 |
| Switching Frequency       |  | 65        |            | KHz   |   |
| Input Protection          | One non-user serviceable internally located AC input line fuse. Fuse : 3.15A / 250V * 1pcs |           |            |       |   |

## Output

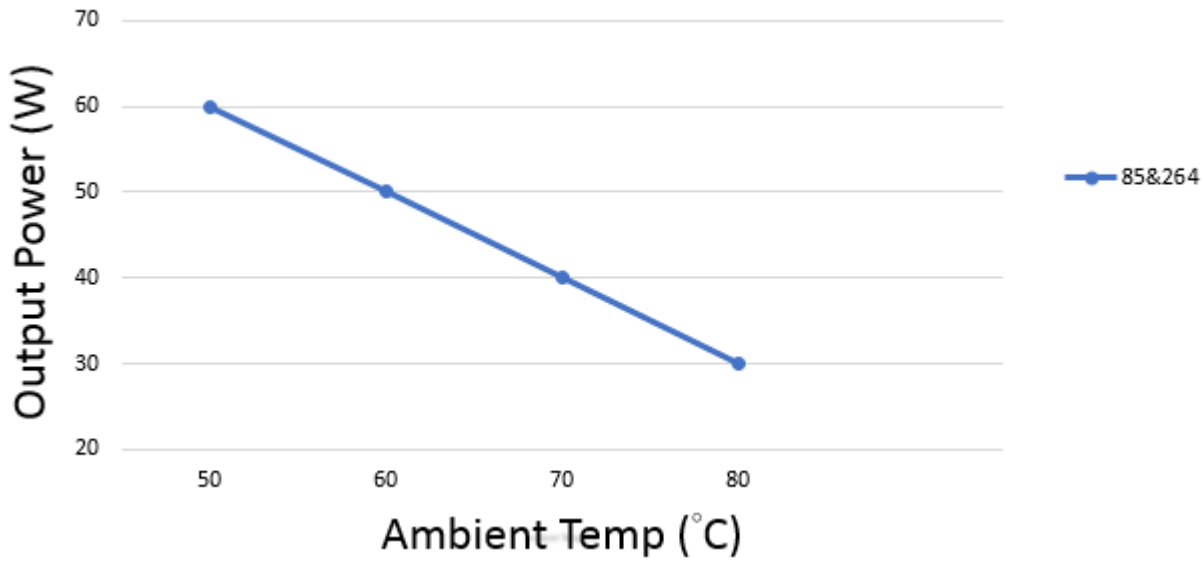
| Characteristic           | Minimum  | Typical    | Maximum   | Units | Notes & Conditions   |
|--------------------------|--|------------|-----------|-------|--|
| Output Voltage           |  | +24 V      |           | Vdc   |  |
| Efficiency               |  | 90         |           | %     | At input 230VAC, rated load, above 1hr. warm up.   |
| Initial Set Accuracy     |  |            | ±1.0      | %     | Initial setting accuracy is adjusted at input 115VAC and output at 60% rated load.   |
| Start Up Delay           |  |            | 0.5       | Sec   | Time required for initial output voltage stabilization.  |
| Hold Up Time             |  |            | 9 / 28    | mS    | Nominal AC Input Voltage (115VAC/230VAC), rated load.  |
| Line Regulation          |  |            | ±0.5      | %     | Less than ±1% at rated load with ±10% changing in input voltage 115VAC.  |
| Load Regulation          |  |            | ±1.0      | %     | Measured from 60% to 100% rated load and from 60% to 20% rated load (60% ±40% rated load).   |
| Ripple & Noise           |  |            | 120       | 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          |  |            | 100 / 300 | uA    | Functional Condition / Open Circuit Condition.   |
| Overvoltage Protection   | For some reason the power supply fails to control itself, the build-in over voltage protection circuit will Latch-off the outputs to prevent damaging external circuits, the trigger point is around <b>110%~140%</b> of output voltage. |            |           |       |  |
| Short Circuit Protection | Fully protected against output overload and short circuit. Automatic recovery upon of overload condition.  |            |           |       |  |
| Characteristic           | Minimum  | Rated Load | Peak Load | Units | Notes & Conditions   |
| Output Current           | 0  | 2.5        | 5         | A     | 5A(120W) peak power for 3s at 230Vac~264Vac.   |

## Environmental

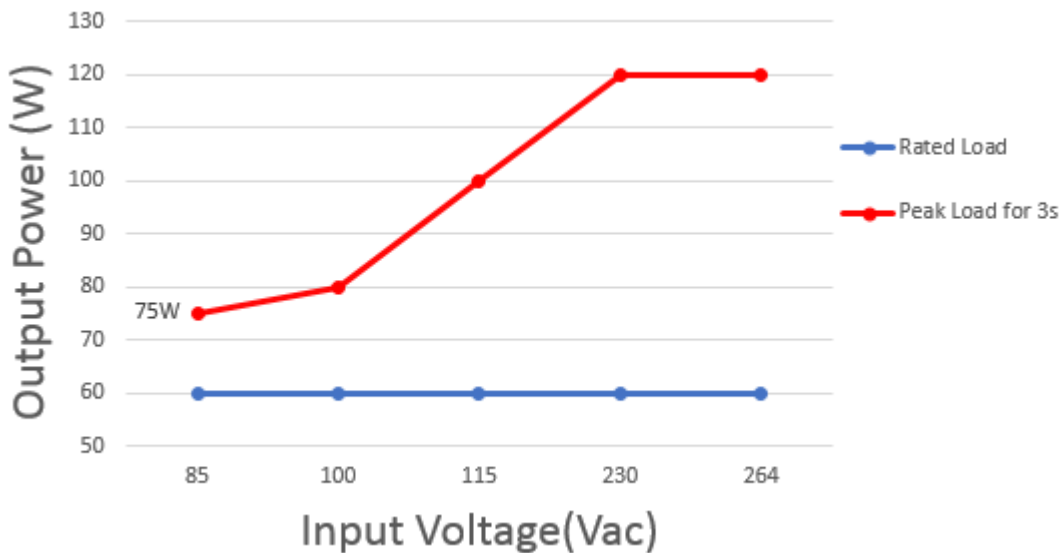
| Characteristic        | Minimum | Typical | Maximum | Units | Notes & Conditions                                   |
|-----------------------|---------|---------|---------|-------|--|
| Operating Temperature | -20     |         | +80     | °C    | See the following performance curves for the detail. |
| Storage Temperature   | -40     |         | +85     | °C    |  |
| Relative Humidity     | 5       |         | 95      | %RH   | Non-condensing.                                      |
| Operating Altitude    |         | 5000    |         | m     |  |

### Derating curve

#### 1. Output Power (W) versus Ambient Temp.(°C) Curve



#### 2. Output Power (W) versus Input Voltage(Vac) Curve



## EMC: Emissions

| Phenomenon       | Standard                                      | Class | Notes & Conditions   |
|------------------|---|-------|--|
| Conducted        | EN 55022 / EN 55032<br>CISPR 22 & FCC Part 15 | B     | Mounting holes should be connected to Ground to conform the EMI limit (Class II refers to Note 1). |
| Radiated         | EN 55022 / EN 55032<br>CISPR 22 & FCC Part 15 | B     |  |
| Harmonic Current | EN 61000-3-2                                  | A     | AC Input : 230VAC, Load : 60W  |
| Voltage Flicker  | EN 61000-3-3                                  | PASS  |  |

**Note:**

- For Class II radiation, recommend to add a 4 turns core at input. (part#: EROCORE A81280200160)

## EMC: Immunity

| Phenomenon             | Standard       | Criteria                     | Notes & Conditions   |
|------------------------|----------------|------------------------------|--|
| ESD                    | IEC 61000-4-2  | A                            | ±15KV air discharge, ±8KV 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                            | 30A/m  |
| Dips and Interruptions | IEC 61000-4-11 | A / B<br>A / B<br>A / B<br>B | DIP: >95%, 0.5 cycle <sup>(Note 2)</sup><br>DIP: 30%, 25 cycles <sup>(Note 2)</sup><br>DIP: 60%, 5 cycles <sup>(Note 2)</sup><br>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 mounting holes should be connected to each other to conform the EMI limit.

## Safety Approvals

| Characteristic |  | Minimum         | Typical | Maximum   | Units              | Notes & Conditions |
|----------------|--|-----------------|---------|---|--------------------|--------------------|
| Isolation      | IP to OP   | 3000            |         |   | VAC                |                    |
|                | IP to GND  | 1800            |         |   | VAC                |                    |
| Safety Agency  |  | Safety Standard |         |   | Notes & Conditions |                    |
| TUV            | EN 62368-1, 2 <sup>nd</sup> Edition  |                 |         | Designed to meet.<br>(LVD EN 62368-1 approved.) |                    |                    |
|                | EN 60335-1   |                 |         |   |                    |                    |
| CB             | IEC 62368-1, 2 <sup>nd</sup> Edition   |                 |         |   |                    |                    |
|                | IEC 60335-1  |                 |         |   |                    |                    |
| UL/cUL         | UL 62368-1, 2 <sup>nd</sup> Edition, CSA C22.2 No. 62368-1-14, 2 <sup>nd</sup> Edition |                 |         |   |                    |                    |
|                | UL 60335-1   |                 |         |   |                    |                    |

# MPE-F065

60W AC / DC

## Mechanical Details

Unit: mm

SIZE : 101.6(L) x 50.8(W) x 20.0 mm, Tolerance +/-0.5mm. Drawing TBD

## Performance

Input : 115Vac / 60Hz

Line frequency ripple

rated load

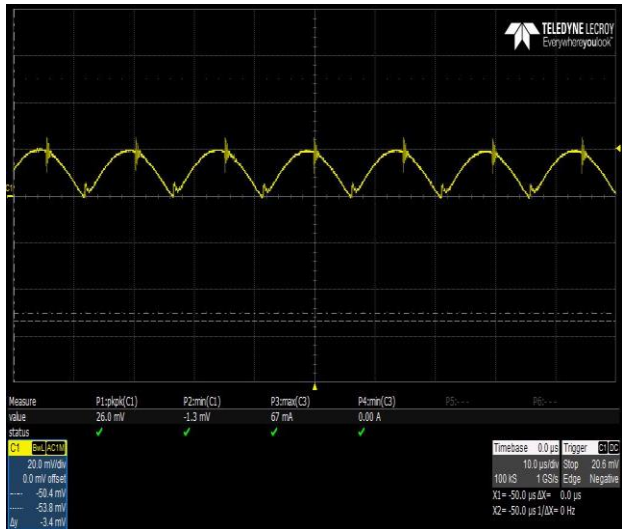


pk-pk:48.7mV

20mV/div, 10ms/div

Switching frequency ripple

rated load

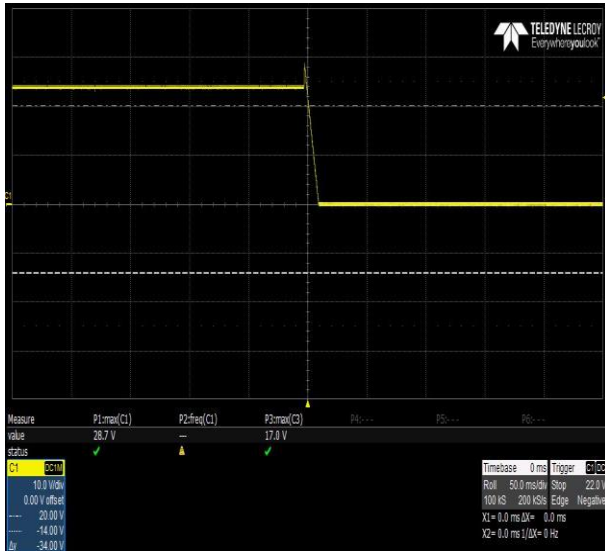


pk-pk:26mV

20mV/div, 10us/div

OVP

60% of rated load

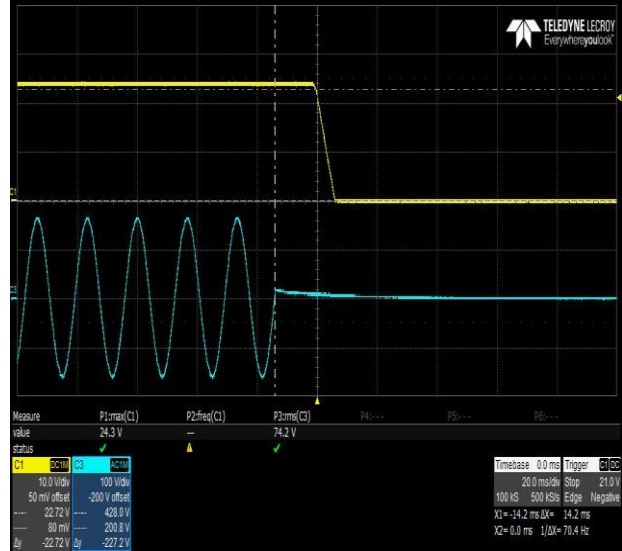


Max:28.7V

10V/div, 50ms/div

Hold Up Time

rated load



Hold Up Time : 14.2ms

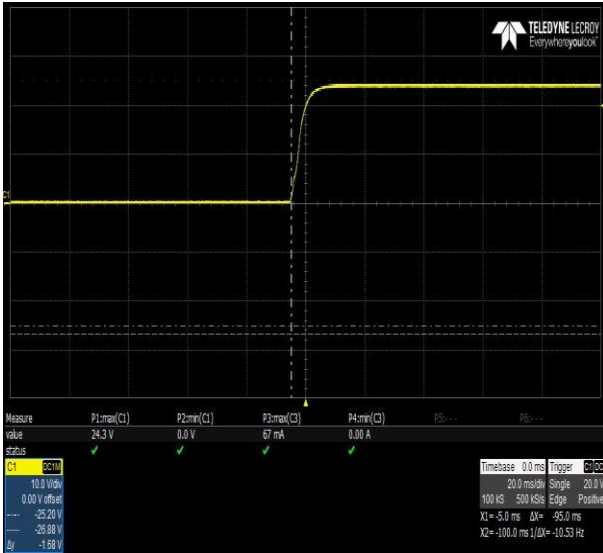
100V/div, 10V/div, 20ms/div

Output turn-on

rated load

Output turn-off

rated load



10V/div,20ms/div



10V/div,20ms/div

## Step response 20%~100% of rated load



Pk-pk : 413mV

100mV/div,5ms/div

## Thermal Considerations