

**SPECIFICATION**

**For**

**SWITCHING POWER SUPPLY**

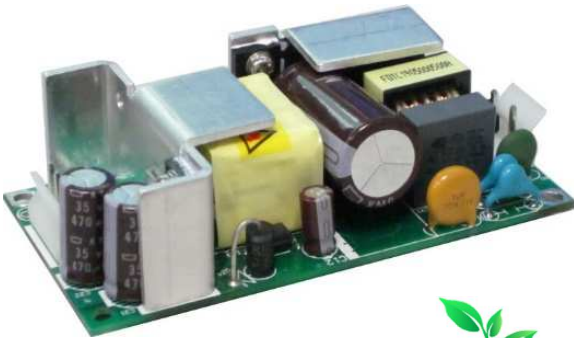
**M/N: MPE-S065-1(-SB)(-C)**

### Revision History

Version	Revise Date	Change Items
Rev. 01	Feb. 23. 2011	Established.
Rev. 02	Apr. 15. 2011	1. Added the EMI conditions. 2. Added the mechanical drawing. 3. Revised the initial setting accuracy of +5Vsb to $\pm 1.5\%$ .
Rev. 03	Jun. 1. 2011	Revised the mechanical drawing; updated the Dip test criteria.
Rev. 04	Jul. 14. 2011	Updated the safety approval status; Revised the mechanical drawing.
Rev. 05	Nov. 2. 2011	MPE-S065-SB have no-load power consumption < 0.5W capability.
Rev. 06	Apr. 6. 2012	Revised the dimensions of mounting holes.
Rev. 07	Jan. 3. 2013	Added second type of connector.
Rev. 08	July. 9. 2013	Add CCC safety approval logo and standard for only MPE-S065.
Rev. 09	May. 21. 2015	Changed the initial setting accuracy of +5Vsb from $\pm 1.5\%$ to $\pm 2.5\%$ .
Rev. 10	Nov. 5. 2015	1. Changed Molex Proposed Terminals from 5176 to 5167. 2. Added "or equivalent" after "Molex" and "JST".
Rev. 11	Jan. 19. 2016	1. Changed +5Vsb Rated Output Current 0.1A to "-", Max Output Current 0.1A to 0.5A. 2. Added note 6 at Description.
Rev. 12	Feb. 16. 2016	Added Molex model number for CN1, CN2, CN3.
Rev. 13	Nov. 2. 2017	1. Added performance curve with case. 2. Changed form.
Rev. 14	Feb. 27. 2018	Added EN 55032.
Rev. 15	May. 17. 2018	Changed mechanical drawing.

# MPE-S065-1(-SB)(-C)

60W AC / DC



## FEATURES

- ✓ 60W with convection-cooled and 80W with forced air cooling of single output power supply.
- ✓ Compact size 2 x 4 inch.
- ✓ Class II, also class I with optional functional ground connected.
- ✓ Meets EMI CISPR/FCC class B.
- ✓ No-load power consumption < 0.5W.
- ✓ Optional +5Vsb & Remote on/off function.



## Models & Ratings

Model Number	Wattage (Rated / Max)	Output Voltage		Min. Current	Rated Current	Max. Current
MPE-S065	60 W / 80 W	+36 V		0A	1.67 A	2.23 A
MPE-S065-SB	60 W / 80 W	V1	+36 V	0 A	1.67 A	2.23 A
		V2	+5Vsb (Note 1)	0 A	-	0.5 A

Total Output Power: Max. 80W with 7 CFM force air cooling<sup>(Note 2)</sup>; 60W convection cooled at 50°C environment temperature.

1. With optional +5Vsb combining remote on/off function, please refer to below Model no. coding.

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

3. MAX output current can be sustained if the total power doesn't exceed 60W.

4. Model no. coding:

## MPE-S065-1-X-Y-Z



1	X=	Output set
	blank	Single output
	SB	Dual output (with +5Vsb & remote on/off function)

2	Y=	Connector Type
	blank	Molex Type Connector or equivalent
	J	JST Type Connector or equivalent

3	Z=	Mechanical
	blank	Open frame
	C	Optional cover kit

## Summary

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Range	90	115 / 230	264	VAC	Continuous input range.
Input Frequency	47		63	Hz	AC input.
Efficiency	88	89		%	At input 230VAC, rated load, 0.5hr. warm up.
Operation Temperature	-20		+70	°C	Derate linearly above 50°C by 1% per °C to a maximum temperature of 70°C, with convection cooled.
Weight		72.3		g	-SB model is 76.6 g.
Dimensions	101.6 (L) x 50.8 (W) x 30.0 (H) mm, Tolerance +/- 0.4mm.				
EMC	EN 55022 / EN 55032, CISPR 22 & FCC Part 15, 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 60950-1, 2 <sup>nd</sup> Edition, EN 60950-1, 2 <sup>nd</sup> Edition, UL 60950-1, 2nd Edition, CSA C22.2 No. 60950-1-07, 2nd Edition				

### Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage	90	115 / 230	264	VAC	Continuous input range.
Input Frequency	47		63	Hz	AC input.
Input Current			1.5	A	Nominal AC Input Voltage (115VAC/230VAC), rated load.
Inrush Current			60	A	Nominal AC Input Voltage (115VAC/230VAC), one cycle at 25°C.
No-load power consumption			<0.5	W	Nominal AC Input Voltage (115VAC/230VAC).
Input Protection	One non-user serviceable internally located AC input line fuse. Fuse : 2A / 250VAC * 1pcs				

### Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage		+36 V		DC	
		+5Vsb			
Initial Set Accuracy		±1.0 <sup>(V1)</sup> ±2.5 <sup>(V2)</sup>		%	Initial setting accuracy is adjusted at input 110VAC and output at 60% rated load.
Minimum Load		0		A	
Start Up Delay		0.3		Sec	Time required for initial output voltage stabilization.
Hold Up Time	16			mS	Nominal AC Input Voltage (115VAC/230VAC), rated load.
Line Regulation		±1.0 <sup>(V1)</sup> ±1.0 <sup>(V2)</sup>		%	Less than ±1% at rated load with ±10% changing in input voltage 115VAC.
Load Regulation		±1.0 <sup>(V1)</sup> ±1.0 <sup>(V2)</sup>		%	Measured from 60% to 100% rated load and from 60% to 20% rated load (60% ±40% rated load).
Ripple & Noise		360 <sup>(V1)</sup> 50 <sup>(V2)</sup>		mV	Measured at rated road by a 20MHz bandwidth limited oscilloscope and the each output is connected with a 10µF Electrolytic Capacitor and a 0.1µF Ceramic Capacitor.
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.				
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.				

# MPE-S065-1(-SB)(-C)

60W AC / DC

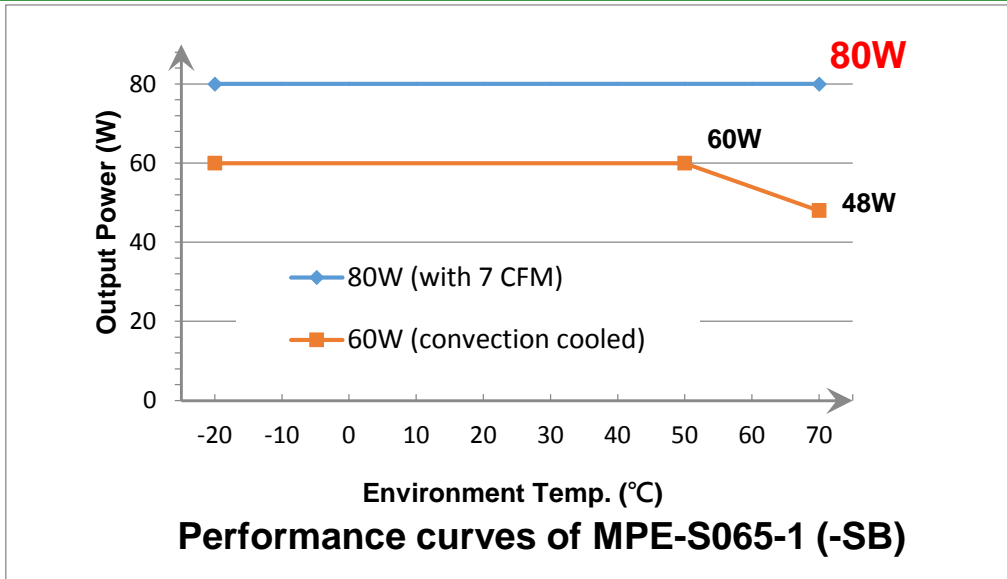
## General

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency	88	89		%	At input 230VAC, rated load, 0.5hr. warm up.
Isolation   IP to OP	3000			VAC	
Switching Frequency		65		KHZ	

## Environmental

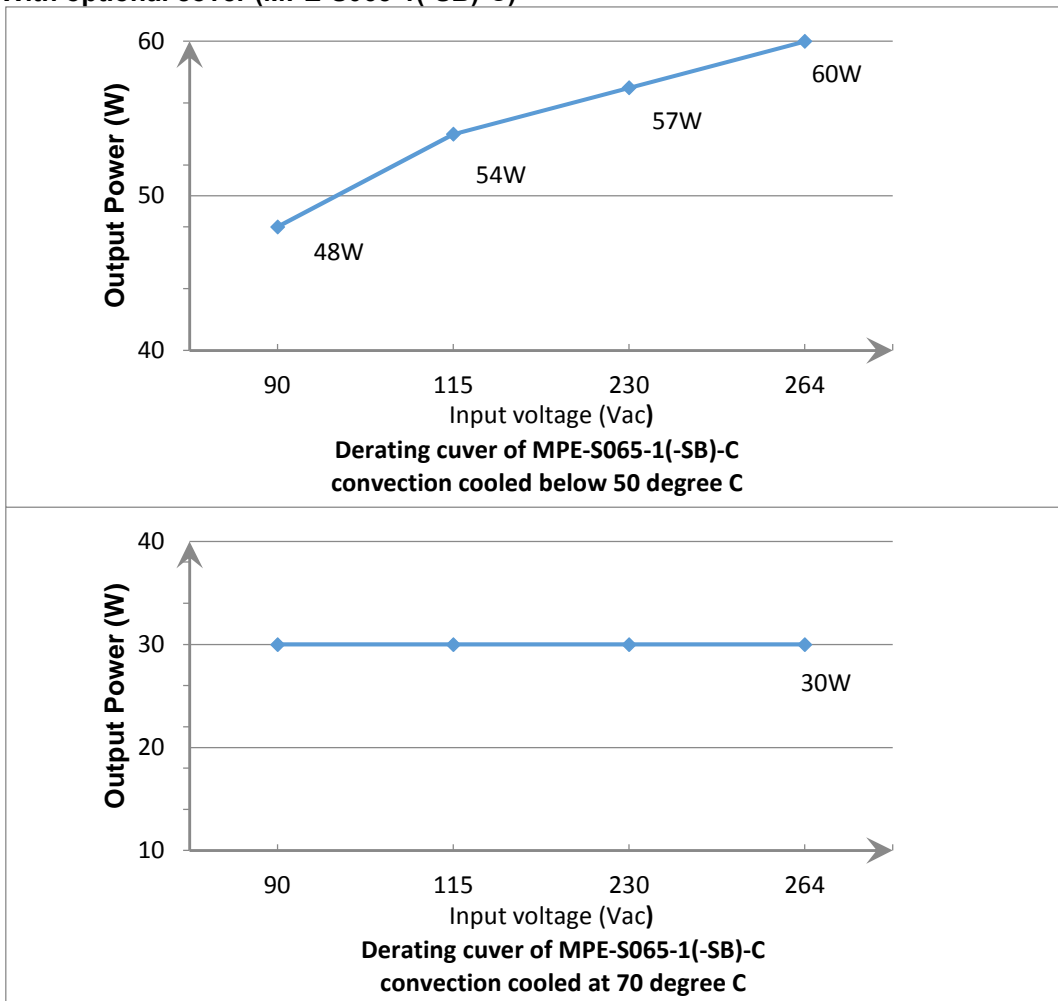
Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-20		+70	°C	Derate linearly above 50°C by 1% per °C to a maximum temperature of 70°C, with convection cooled.
Storage Temperature	-40		+85	°C	
Relative Humidity	5		95	%RH	Non-condensing.
Cooling	7			CFM	Forced-cooled when 60W~80W
Operating / Non-Operating Altitude		3000 / 4000		m	

### Derating curve



\* Test within horizontal installation, for other orientation, please confirm with us.

### With optional cover (MPE-S065-1(-SB)-C)



### EMC: Emissions

Phenomenon	Standard	Class	Notes & Conditions
Conducted	EN 55022 / EN 55032 CISPR 22 & FCC Part 15 EN 61204-3	B	
Radiated	EN 55022 / EN 55032 CISPR 22 & FCC Part 15 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 <sup>(Note 3)</sup> 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 mounting holes should be connected to each other to conform the EMI limit.
- The test result of input 240Vac / 100Vac is criteria A / B.

### Safety Approvals

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

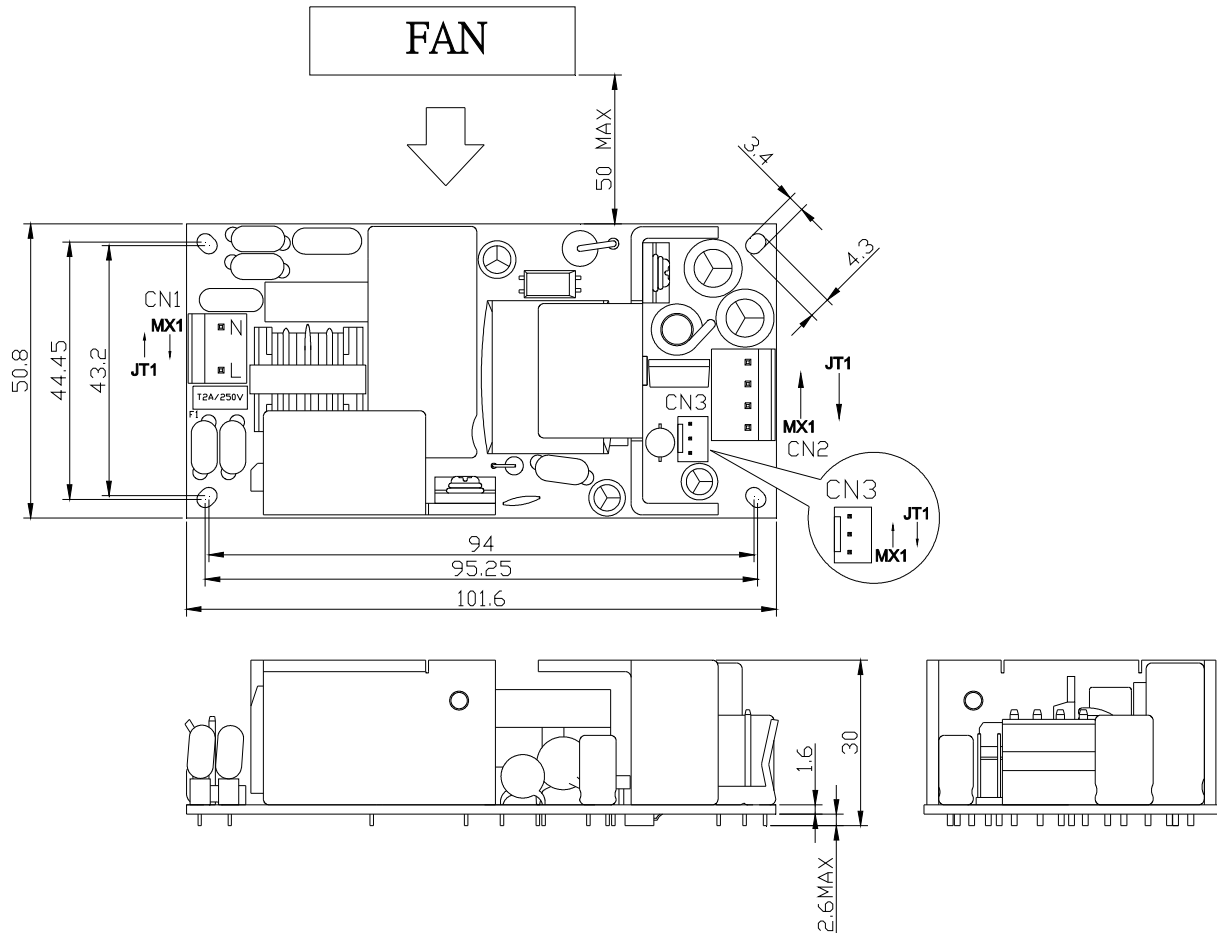
# MPE-S065-1(-SB)(-C)

60W AC / DC

## Mechanical Details

Unit: mm

SIZE : 101.6(L) x 50.8(W) x 30.0(H)mm, Tolerance +/-0.4mm.



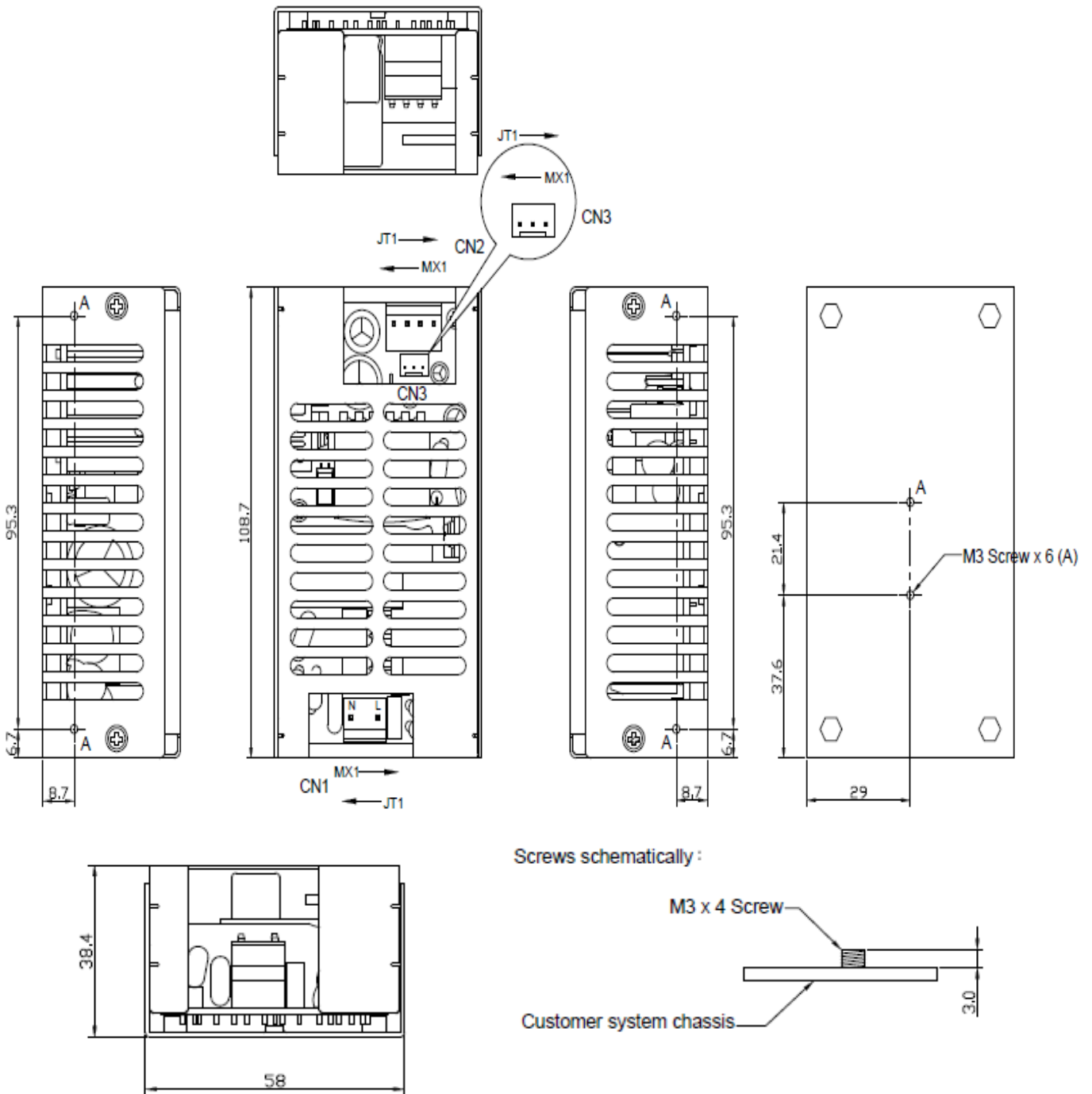
Note: The installation shall be kept in an isolation distance min. 2.8mm between the unit and the system chassis. There exist hazardous voltage in dotted area, keep insulating to avoid hazardous electric shock.



# MPE-S065-1(-SB)(-C)

60W AC / DC

For m/n: MPE-S065-1(-SB)-C  
Unit: mm Tolerance: +/- 0.4mm



# MPE-S065-1(-SB)(-C)

60W AC / DC

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 b. JST: VHR-3N or equivalent (Note 2)	a. MOLEX :5194 or 5225 2478, 2578,5167 or 5168 or equivalent b. JST: SVH-21T-P1.1 or equivalent
		MX2	JT1	AC in (L)		
	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 b. JST: VHR-4N or equivalent (Note 2)	a. MOLEX :5194 or 5225 2478, 2578,5167 or 5168 or equivalent b. JST: SVH-21T-P1.1 or equivalent
		MX2	JT3	0 V		
		MX3	JT2	+ V		
		MX4	JT1	+ V		
	CN3 (Note 3) molex 22-04-1031 or equivalent	MX1	JT3	+5Vsb	a. MOLEX : 22-01-1032 (5051-03) or 51191-0300 or equivalent b. JST: XHP-3 or equivalent (Note 2)	a. MOLEX :2759 or 5159 or 50802 or equivalent b. JST: SXH-001T-P0.6N, SXH-001T-P0.6 or SXH-002T-P0.6 or equivalent
		MX2	JT2	0 V		
		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 comparison in Model no. coding.
3. Exist with model no. suffixed -SB, please see the comparison in 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	120°C
D5	120°C
C2	105°C
C21	105°C