

PCB Mount Power Supply AC To DC

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**RoHS
Compliant**



Description

MPC5 series is super small size up to 1 × 1 inch, adopting the full range: 85-305V AC/100-430V DC input.

The series has extremely low no-load power consumption, high efficiency to reduce power loss.

The series cost-effective, high reliability, operates from -40°C to 85°C. A variety of appearance sizes are available for easy installation and use.

These converters offer excellent EMC performance and meet international standards. They are widely used in areas of industrial design, household appliances, communications, testing instruments.

Features

- Ultra-wide voltage input range
- Low no-load power consumption
- Protection: Short Circuit/Over Voltage
- Super Small Design
- Low Ripple & Noise, high efficiency

Model Information

Part Number	DC Voltage	Rated Current	Rated Power	Max. Capacitive Load
MPC5-5	5V	1A	5W	3000uF
MPC5-12	12V	0.416A	4.992W	1200uF
MPC5-24	24V	0.208A	4.992W	220uF

Input

Voltage Range	85-305V AC, 100-430V DC
Frequency Range	47-63Hz
Average Efficiency(Typ.)	77.5% MPC5-5
	80.5% MPC5-12
	81.5% MPC5-24
AC Current (Typ.)	0.13A/115V AC, 0.07A/230V AC
Inrush Current(Typ.)	Cold Start 15A/115V AC
	Cold Start 25A/230V AC
Leakage Current	<0.25mA/277V AC, 50Hz

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Output

Ripple & Noise(max.)	100mVp-p All Series
Voltage Tolerance	±2% Other
Line Regulation	±0.5% All Series
Load Regulation	±1% All Series
Setup,Rise Time	600ms, 30ms/230V AC at full load
	600ms, 30ms/115V AC at full load
Hold Up Time (Typ.)	50ms/230V AC at full load
	5ms/115V AC at full load

Protection

Over Current	≥130% Rated Output current
	Protection type: Shut down O/P voltage, recovers automatically after current goes down
Short Circuit	Protection type: Hiccup mode, allowing long short circuit mode, re-power on to recover
Over Voltage	MPC15-5 : ≤7.5V DC
	MPC15-12 : ≤16V DC
	MPC15-24 : ≤30V DC
	Protection type: Output voltage clamp or Hiccup mode

Environment

Working Temp.	-40°C to +85°C (Refer to "Derating Curve")
Working Humidity	20 ~ 95% RH Non-Condensing
Storage Temp, Humidity	-40°C~+85°C, 10 ~ 95% RH non-condensing
Temp. Coefficient	± 0.02%/°C(0~50°C)
MTBF	2602K hrs min. MIL-HDBK-217F (25°C)
Projected Lifetime	>130Kh/230V AC, 25°C at full load
	>20Kh/220V AC, 55°C at full load
	>27Kh/220V AC, 55°C at 80%load
Altitude Application	5000m

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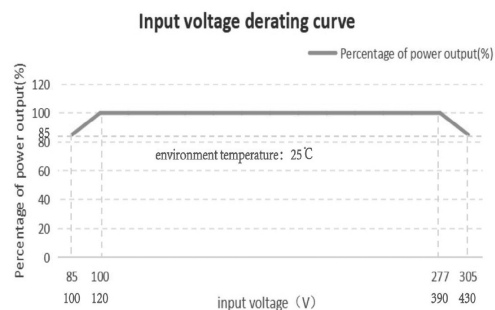
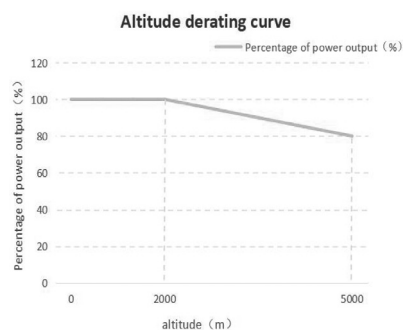
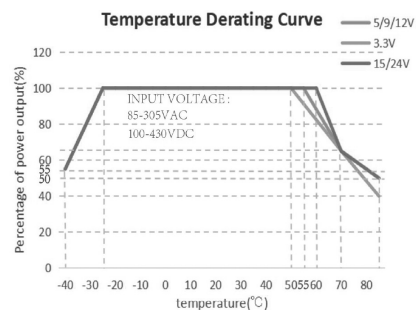
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1. All parameters without special description are measured under the conditions of input 230VAC, rated load, ambient temperature 25°C, and ambient humidity less than 75%.
2. Ripple & noise are measured from peak to peak with band width limit of 20MHz (0.1uF and 47uF /50V parallel capacitor under DC output full load, AC nominal input 25°C ambient temperature).
3. Tolerance :includes set up tolerance, line regulation and load regulation.
4. Derating may be needed under low input voltages. Please check the derating curve for more details.
5. The power supply is considered a component which will be installed into a final equipment. The final equipment must be re-confirmed that it still meets EMC directives. For guidance on how to perform these EMC tests, please refer to "EMI testing of component power supplies."
6. The ambient temperature derating of 3.5°C/1000m is needed for operating altitude greater than 2000m(6500ft).

Physical Property

Length × Width × Height	25.4× 25.4 × 17.6mm PCB Mounting Style
Weight	17.5g (PCB Mounting Style)
Cooling Method	Natural Air Cooling
Texture	Black flame retardant and heat resistant plastic

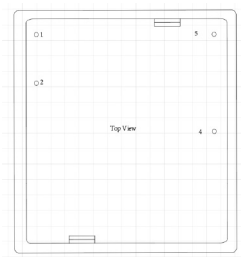
Curve



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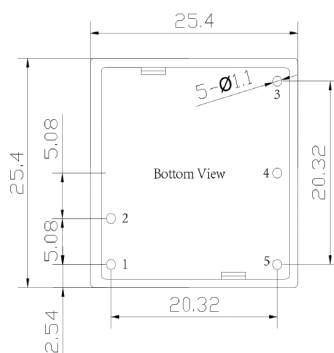
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Pin-Out	
Pin	Function
1	AC/L
2	AC/N
3	NO Pin
4	-VO
5	+VO

General tolerances:±0.5



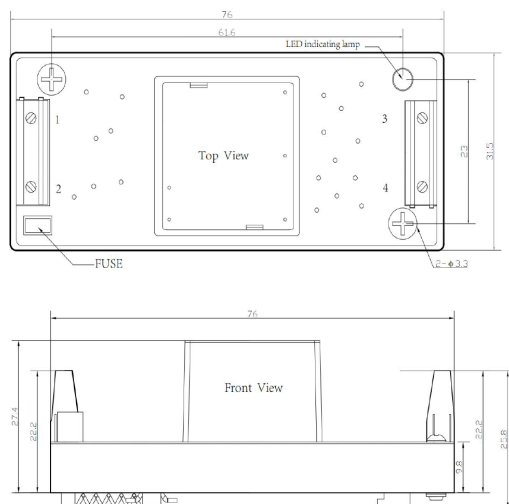
Pin-Mode	
Pin	Function
1	AC/N
2	AC/L
3	+VO
4	-VO

Unmarked tolerance:±1

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Din Rail Style External Dimension



Pin-Mode	
Pin	Function
1	AC/N
2	AC/L
3	+VO
4	-VO

annotation:

unit of size:mm

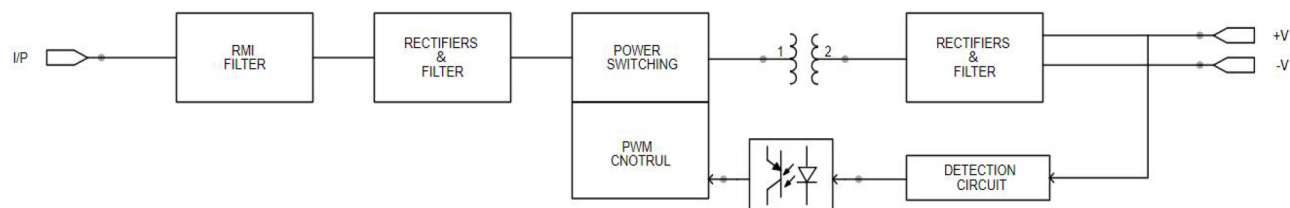
Connection Wire diameter :24-12AWG

tightening torque:Max 0.4 N.m

Guide type:TS35,Guide rails need to be grounded

Unmarked tolerance:±1.00

Functional Diagram



Typical application circuit

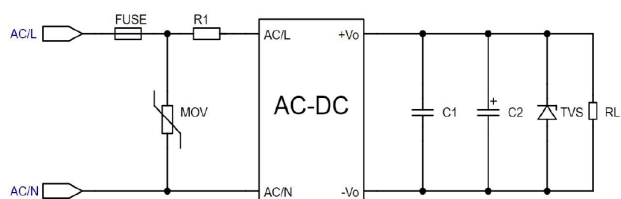


Figure 1:Typical application circuit

MODEL	C1(uF)	C2(uF)	FUSE	R1	TVS	MOV
MPC5-5	1	150	1A/300V Slow fuse, must be connected	12Ω/3W (Winding resistor, must be connected)	SMBJ7A	10D561K
MPC5-12		120			SMBJ20A	
MPC5-24		68			SMBJ30A	

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EMC Solution - Recommended circuit

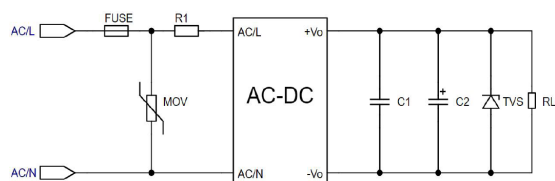


Figure 2: EMC Recommended circuits for higher requirements

Component Type	Recommended Value
MOV	14D561K
R1	33Ω/3W(Winding resistor ,must be connected)
FUSE	2A/300V Slow fuse, must be connected

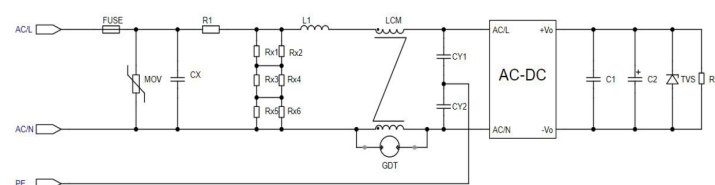


Figure 3 : I device recommendation circuit

(Recommended when the output end of the product needs to be connected to PE or connected to PE through a Y capacitor

Component Type	Recommended Value
FUSE	2A/300V Slow fuse, must be connected
MOV	14D561K
CX	334K/305V AC
R1	33Ω/3W(Winding resistor ,must be connected)
L1	1.2mH/0.3A
CY1/CY2	1nF/400VAC
GDT	300V/1KA
LCM	20mH

annotation: Rx1/Rx2/Rx3/Rx4/Rx5/Rx6 is the bleed resistance of CX, the recommended resistance value is 1.5MΩ/150VDC

Part Number Table

Description	Part Number
PCB Mount Power Supply, 5V, 1A	MPC5-5
PCB Mount Power Supply, 12V, 0.416A	MPC5-12
PCB Mount Power Supply, 24V, 0.208A	MPC5-24

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