

# PCB Mount Power Supply AC To DC

multicomp<sup>PRO</sup>

RoHS  
Compliant



## Description

MPC20 series is super small size up to 2.07 × 1.08 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 Current/Over Voltage
- Super Small Design
- Low Ripple & Noise, high efficiency

## Model Information

Part Number	DC Voltage	Rated Current	Rated Power	Max. Capacitive Load
MPC20-5	5V	4A	20W	8000uF
MPC20-12	12V	1.67A	20.04W	4000uF
MPC20-15	15V	1.33A	19.95W	3000uF
MPC20-24	24V	0.83A	19.92W	1000uF

## Input

Voltage Range	85-305V AC, 100-430V DC
Frequency Range	47-440Hz
No Load Power Consumption(Typ.)	0.1W/277V AC, 50Hz
Average Efficiency(Typ.)	85% MPC20-5
	86% MPC20-12
	87% MPC20-15
	87% MPC20-24
AC Current (Typ.)	0.5A/115V AC, 0.3A/230V AC
Inrush Current(Typ.)	Cold Start 20A/115V AC
	Cold Start 45A/230V AC
Leakage Current	<0.1mA/277V AC, 50Hz

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### Output

Ripple & Noise(max.)	150mVp-p All Series
Voltage Tolerance	±1.5% All Series
Line Regulation	±0.5% All Series
Load Regulation	±1% All Series
Setup, Rise Time	1500ms, 40ms/230V AC at full load
	1500ms, 40ms/115V AC at full load
Hold Up Time (Typ.)	50ms/230V AC at full load
	8ms/115V AC at full load

### Protection

Over Current	≥110% 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	MPC20-5 : ≤7.5V DC
	MPC20-12 : ≤20V DC
	MPC20-15 : ≤20V DC
	MPC20-24 : ≤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)
Vibration	PCB mounting:10~ 500Hz, 2G 10min./1cycle, period for 60min. each along X, Y, Z axes
	Terminal Blocks:10~500Hz, 5G 10min./1cycle, period for 60min. each along X, Y, Z axes
Soldering Temperature	Wave soldering:260°C, 10s(max.); Manual soldering:360°C, 5s(max.)
Over Voltage Category	III; According to EN61558-1
Safety Protection	CLASS II
Altitude Application	5000m
MTBF	>1500K hrs min. MIL-HDBK-217F (25°C)

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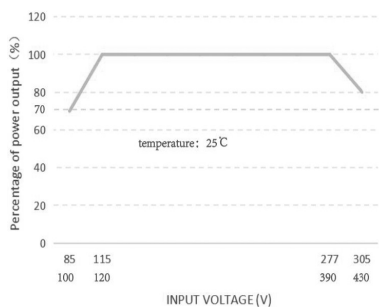
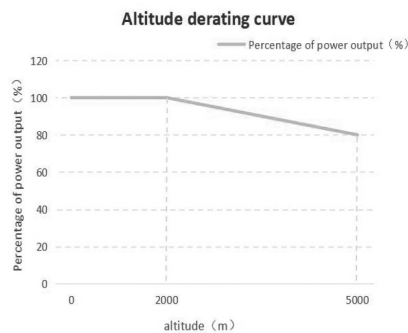
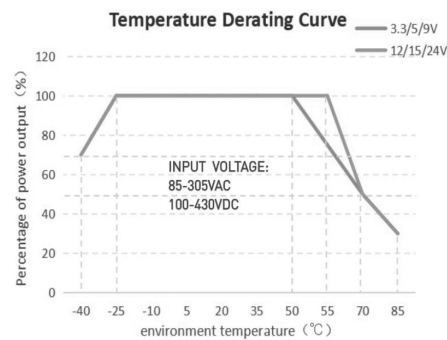


1. All parameters NOT specially mentioned are measured at 230V AC input, rated load and 25°C of ambient temperature.
2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 1µF & 10µF parallel capacitor.
3. Tolerance : includes set up tolerance, line regulation and load regulation.
4. -The ambient temperature derating of 3.5°C/1000m with fanless models and of 5°C/1000m with fan models for operating altitude higher than 2000m(6500ft).
5. The power supply is considered as an independent unit ,but the final equipment still need to re-confirm that the whole system complies with the EMC directives.

## Physical Property

Length × Width × Height	52.6 × 27.4 × 24.3mm PCB Mounting Style
	76 × 31.5 × 32.8mm Terminal Blocks Style
Weight	55g (PCB Mounting Style)
	75g (Terminal Blocks Style)
Cooling Method	Natural Air Cooling
Texture	Black flame retardant and heat resistant plastic

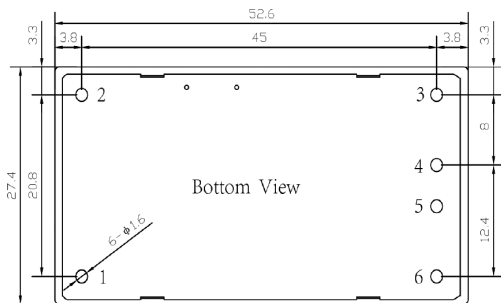
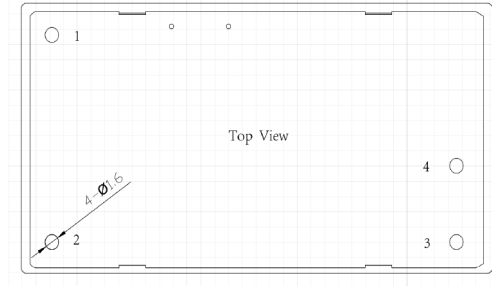
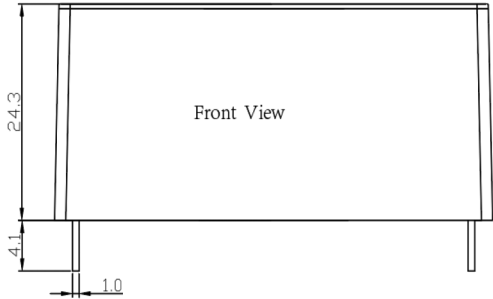
## Curve



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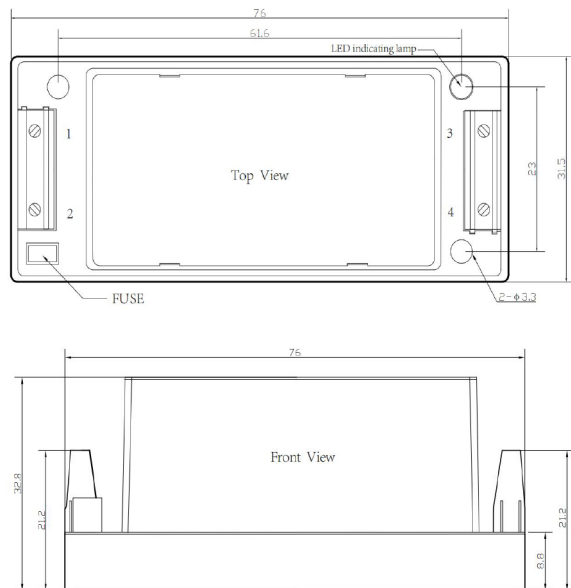
## Dimensions and Installation



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

annotation:  
unit of size:mm  
Pin diameter tolerances:±0.1  
General tolerances:±0.5

## Terminal Blocks 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  
Unmarked tolerance:±1

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## Typical application circuit

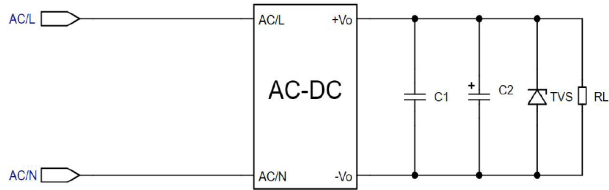


Figure 1: Typical application circuit

MODEL	C1	C2	TVS
MPC20-5	1uF/50V	10uF/16V	SMBJ7A
MPC20-12		10uF/25V	SMBJ20A
MPC20-15		10uF/25V	SMBJ20A
MPC20-24		10uF/35V	SMBJ30A

## EMC Solution - Recommended circuit

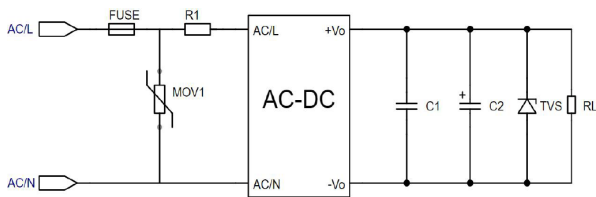


Figure 2: EMC Recommended circuits for higher requirements

Component Type	Recommended Value
FUSE	3.15A/300V Slow fuse, must be connected
MOV	14D561K
MOV	3Ω/3W(Winding resistor)

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## EMC Solution - Recommended circuit

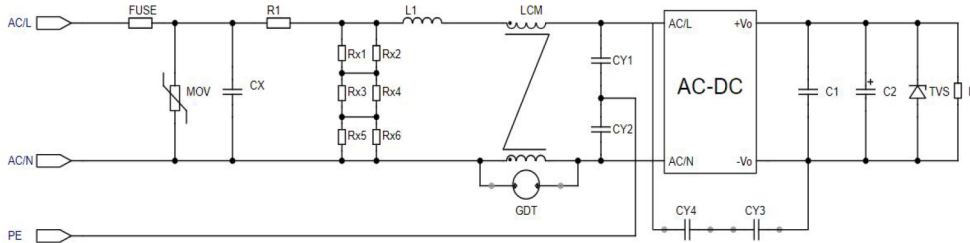


Figure 3 : category : device recommendation circuit

(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	3.15A/300V Slow fuse, must be connected
MOV	14D561K
CX	334K/305V AC
R1	6.8Ω/5W (Winding resistor)
L1	1.2mH/0.5A
CY1/CY2	2.2nF/400V AC
CY3/CY4	1nF/400V AC
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, 4A	MPC20-5
PCB Mount Power Supply, 12V, 1.67A	MPC20-12
PCB Mount Power Supply, 15V, 1.33A	MPC20-15
PCB Mount Power Supply, 24V, 0.83A	MPC20-24

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