

AC / DC Converter

multicomp PRO

**RoHS
Compliant**



Features

- Ultra-wide 85 - 305V AC and 100 - 430V DC input voltage range
- Operating ambient temperature range: -40°C to +85°C
- Up to 85% efficiency
- No-load power consumption < 0.1W
- 5000m altitude application
- OVCIII (meet EN61558-1)
- EMI performance meets CISPR32/EN55032 CLASS B, EN55014

Selection Guide

Part Number	Certification	Output Power	Nominal Output Voltage and Current	Efficiency at 230V AC (%) Typ.	Capacitive Load (µF) Max.
MP-LD10-23B15R2	UL/EN/IEC	10W	15V/660mA	84	820

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	-	305	V AC
	DC input	100	-	430	V DC
Input Frequency	-	47	-	63	Hz
Input Current	115V AC	-	-	0.23	A
	230V AC	-	-	0.15	
Inrush Current	115V AC	-	25	-	
	230V AC	-	40	-	
Leakage Current	277VAC/50Hz	0.1mA RMS Max.			
Hot Plug	-	Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Output Voltage Accuracy	-	-	±2	-	%	
Line Regulation	Full load	-	±0.5	-		
Load Regulation	0%-100% load	-	±1	-		
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)		-	50	100	mV
Stand-by Power Consumption	230V AC	15V	-	0.1	-	W
Temperature Coefficient	-	-	±0.02	-	%/°C	
Short Circuit Protection	-	Hiccup, continuous, self-recovery				
Over-current Protection	-	≥110% I _o , self-recovery				
Over-voltage Protection	15 V	≤20V DC (Output voltage clamp or hiccup)				

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Item	Operating Conditions	Min.	Typ.	Max.	Unit
Minimum Load	-	0	-	-	%
Hold-up Time	115V AC	-	8	-	ms
	230V AC	-	40	-	

Note: *The "Tip and barrel method" is used for ripple and noise test, output parallel 10 μ F electrolytic capacitor and 1 μ F ceramic capacitor, refer to AC-DC Converter Application Notes for specific information.

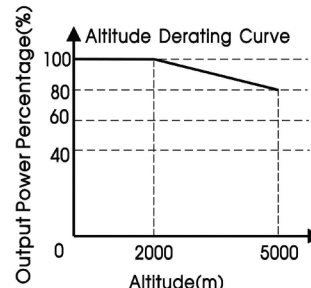
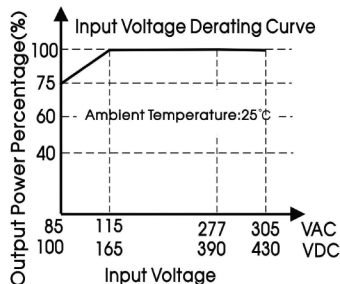
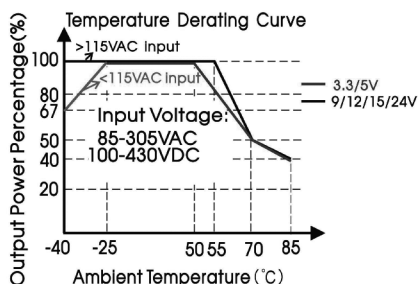
General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Isolation	Input-output	Electric Strength Test for 1min., leakage current <5mA		4000	-	V AC
Insulation Resistance	Input-output	At 500V DC		100	-	M Ω
Operating Temperature	-	-40	-	+85	°C	
Storage Temperature	-	-40	-	+85		
Storage Humidity	-	-	-	95	%RH	
Soldering Temperature	Wave-soldering	260 \pm 5°C; time: 5 - 10s				
	Manual-welding	360 \pm 10°C; time: 3 - 5s				
Switching Frequency	-	-	65	-	kHz	
Power Derating	-40°C to -25°C	85V AC to 115V AC	2.2	-	-	%/ $^{\circ}$ C
	+55°C to +70°C	15V	3.33	-	-	
	+70°C to +85°C		0.66	-	-	
	85V AC to 100V AC		0.83	-	-	%/V AC
	2000m - 5000m		6.7	-	-	%/km
MTBF			MIL-HDBK-217F@25°C >3,200,000 h			
Designed life	230V AC	Ta: 25°C 100% load	>130 \times 10 ³ h			
		Ta: 55°C 100% load	>20 \times 10 ³ h			
		Ta: 55°C 80% load	>27 \times 10 ³ h			

Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL94V-0)	
Dimensions	DIP package	40mm \times 25.4mm \times 21mm
Weight	DIP mounting	34g (typ.)
Cooling Method	Free Air Convection	

Product Characteristic Curve

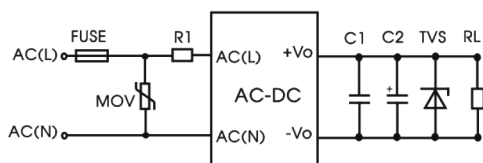


Note:

1. With an AC input between 85-115V AC and a DC input between 100-165V DC, the output power must be derated as per temperature derating curves;
2. This product is suitable for applications using natural air cooling.

Design Reference

Typical application circuit



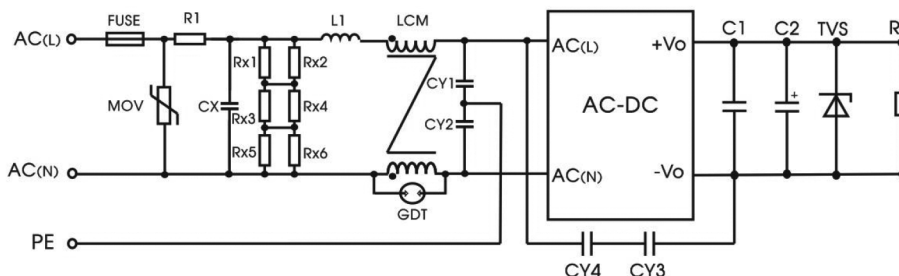
Typical circuit diagram

FUSE	MOV	R1	C1	C2	TVS
2A/300V, slow-blow, required	S14K350	6.8Ω/3W (wire-wound resistor, required)	1uF/50V	100uF/25V	SMBJ20A

Output Filter Components:

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2. Choose a Capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

EMC compliance recommended circuit



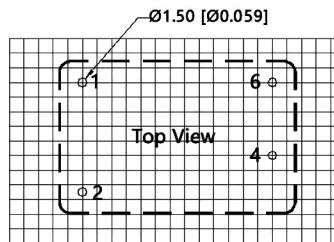
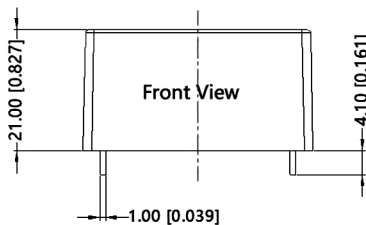
EMC application circuit with higher requirements

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

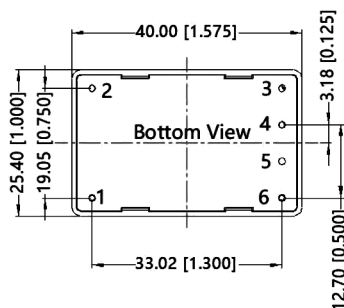
Component	Recommended value
FUSE	2A/300V, slow-blow, required
MOV	S14K350
CX	334K/305V AC
R1	12Ω/5W (wire-wound resistor, required)
L1	1.2mH/0.5A
CY1/CY2	2.2nF/400V AC
CY3/CY4	1nF/400V AC
GDT	300V/1KA
LCM	-20mH

Note: Rx1/Rx2/Rx3/Rx4/Rx5/Rx6 is the bleeder resistance of CX, and the recommended resistance value is 1.5MΩ/150V DC.

Diagram



Note: Grid 2.54*2.54mm



Pin-Out	
Pin	Function
1	AC (L)
2	AC (N)
3	No Pin
4	+Vo
5	No Pin
6	-Vo

Part Number Table

Dimensions : Millimetres (Inches)
 Pin Diameter Tolerances: ±0.1mm (±0.004")
 General Tolerances: ±0.5mm (±0.02")

Description	Part Number
AC / DC Converter, PCB Mount, 15V, 0.66A	MP-LD10-23B15R2

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