

10W AC to DC Converter - PCB Mount

multicomp PRO

**RoHS
Compliant**



Features

- Universal 85 - 264V AC and wide 100 - 370V DC Input
- Operating ambient temperature range -40°C to +70°C
- High I/O isolation test voltage up to 4000V AC
- Regulated output, Low ripple & noise
- Output short circuit, overcurrent and overvoltage protection
- High efficiency, high reliability
- Plastic case meets flammability per UL94V-0
- EMI compliant to CISPR32 / EN55032 CLASS B
- IEC/EN/UL62368 and EN60335 safety approval



This is one compact size power converters. It features universal AC input and at the same time accepts DC input voltage, low power consumption, high efficiency, high reliability and double or reinforced insulation. It offers excellent EMC performance and for extremely harsh EMC environment, we recommend using the application circuit show in this datasheet. The converters meet IEC/EN61000-4, CISPR32/EN55032, UL62368, EN62368, EN60335, IEC62368 standards and are widely used in industrial, medical, electricity, instrumentation, telecommunications applications.

Selection Guide

Certification	Part No.*	Output Power	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 230V AC (%) Typ.	Max. Capacitive Load (µF)
UL/CE/CB	MP-LDE10-20B03	10W	3.3V/2000mA	71	26400
	MP-LDE10-20B05		5V/2000mA	76	9440
	MP-LDE10-20B09		9V/1100mA	80	3600
	MP-LDE10-20B12		12V/900mA	81	2000
	MP-LDE10-20B24		24V/450mA	83	370

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85		264	V DC
	DC input	100		370	
Input Frequency		47	-	63	Hz
Input Current	115V AC	-		0.23	A
	230V AC			0.15	
Inrush Current	115V AC	-	15	-	
	230V AC		30	-	
Recommended External Input Fuse		2A/250V Slow-Blow Required			
Hot Plug		Unavailable			

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Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	3.3V output	-	±3	-	%
	Other output		±2		
Line Regulation	Full load		±0.5		
Load Regulation	0%-100% load		±1		
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)		50	100	mV
Temperature Drift Coefficient			±0.02	-	%/°C
Short Circuit Protection		Hiccup, continuous, self-recovery			
Over-current Protection		110% - 300%Io self-recovery			
Over-voltage Protection	3.3V DC / 5V DC output	≤7.5VDC(Output voltage clamp or hiccup)			
	9V DC output	≤15VDC(Output voltage clamp or hiccup)			
	12V DC / 15V DC output	≤20VDC(Output voltage clamp or hiccup)			
	24V DC output	≤30VDC(Output voltage clamp or hiccup)			
Minimum Load		0	-	-	%
Hold-up Time	115V AC input	-	15	-	ms
	230V AC input		80		

Note: *The "parallel cable" method is used for Ripple and noise test, please 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
Operating Temperature		-40	-	+70	°C
Storage Temperature				+105	
Storage Humidity		-	-	95	%RH
Welding Temperature	Wave-Soldering	260 ± 5°C; time: 5 - 10s			
	Manual-Welding	360 ± 10°C; time: 3 - 5s			
Switching Frequency		-	100	-	KHz
Power Derating	-40°C to -25°C	4	-	-	% / °C
	+55°C to +70°C	2.5			
	85V AC to 100V AC	1			% / V AC
Safety Standard		UL62368/EN62368/EN60335/IEC62368			
Safety Certification		UL62368/EN62368/EN60335/IEC62368			
Safety Class		CLASS II			
MTBF		MIL-HDBK-217F@25°C > 300,000 h			

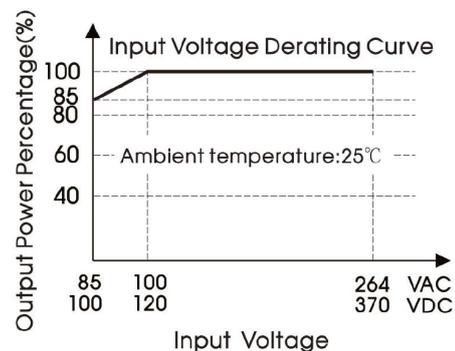
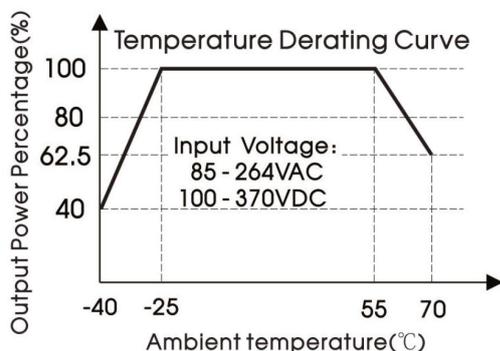
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Mechanical Specifications		
Casing Material	Black flame-retardant and heat-resistant plastic (UL94 V-0)	
Dimensions	DIP	53.8mm × 28.8mm × 19mm
	A2S chassis mounting	76mm × 31.5mm × 27.8mm
	A4S Din-Rail mounting	76mm × 31.5mm × 32.4mm
Weight	DIP	48g (Typ.)
	A2S chassis mounting	68g (Typ.)
	A4S Din-Rail mounting	88g (Typ.)
Cooling Method	Free air convection	

Electromagnetic Compatibility (EMC)			
Emissions	CE	CISPR32/EN55032	CLASS B
	RE	CISPR32/EN55032	CLASS B
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV/ Air ±8KV perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m perf. Criteria A
	EFT	IEC/EN 61000-4-4	± 2KV perf. Criteria B
		IEC/EN 61000-4-4	±4KV (See Fig. 2 for recommended circuit) perf. Criteria B
	Surge	IEC/EN 61000-4-5	line to line ±1KV (See Fig. 1 for typical application circuit) perf. Criteria B
		IEC/EN 61000-4-5	line to line ±2 KV/line to ground ±4 KV (See Fig. 2 for recommended circuit) perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s perf. Criteria A
Voltage dips, short interruptions and voltage variations		IEC/EN61000-4-11	0%,70% perf. Criteria B

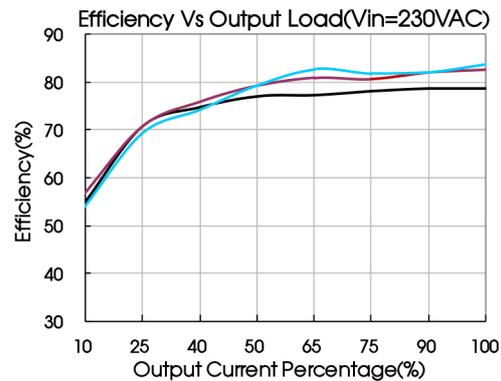
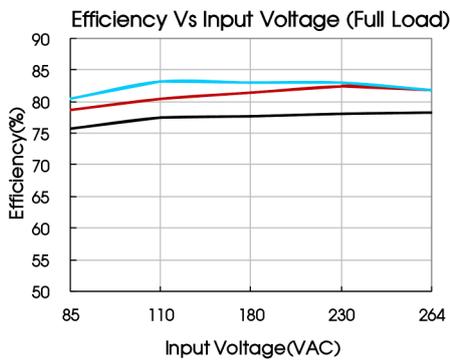
Product Characteristic Curve



Note: ① With an AC input between 85-100VAC and a DC input between 100-120VDC, the output power must be derated as per temperature derating curves;
 ② This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.

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Design Reference

1. Typical Application

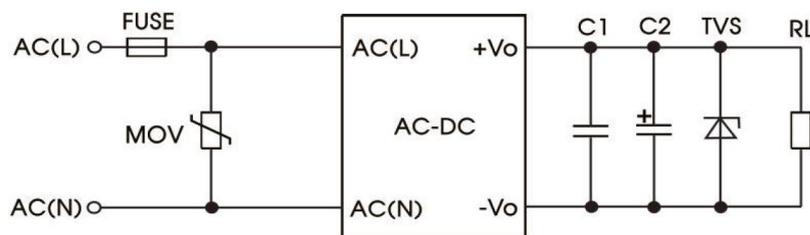


Fig. 1: Typical circuit diagram

Part No.	C1(μF)	C2(μF)	FUSE	MOV	TVS tube
MP-LDE10-20B03	1μF/50V	220μF /10V	2A/250V slow-blow required	S14K300	SMBJ7A
MP-LDE10-20B05					SMBJ12A
MP-LDE10-20B09		120μF /25V			SMBJ20A
MP-LDE10-20B12		68μF /35V			SMBJ30A
MP-LDE10-20B24					

Output Filter Components:

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to manufacture's datasheet). 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.

2. EMC solution-recommended circuit

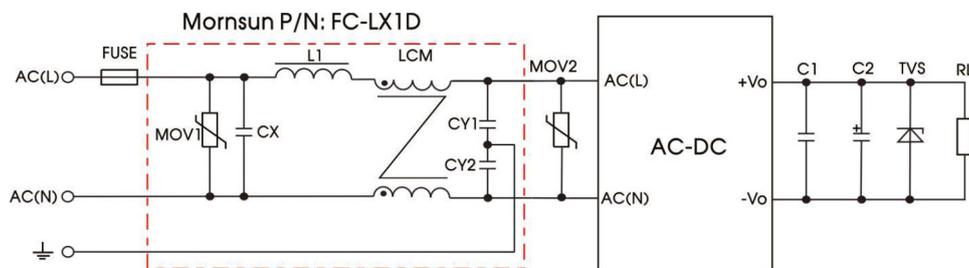


Fig 2

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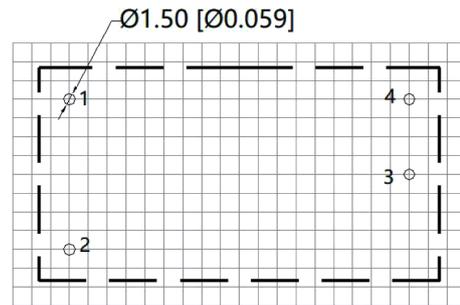
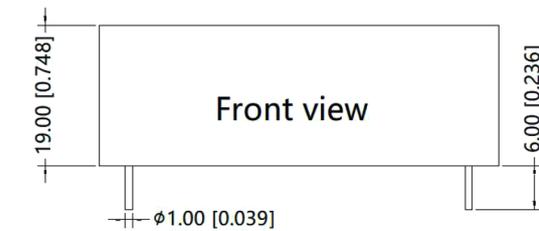
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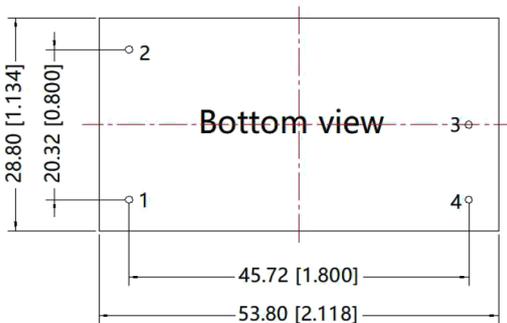
Component	Recommended value	
FUSE	3.15A/250V slow-blow required	
MOV1	FC-LX1D (2KV/4KV EMC Filter)	
CY1, CY2		1000pF/400V AC
CX		0.1uF/275V AC
L1		4.7uH/2A
LCM		10mH, recommended to use MORNSUN's FL2D-Z5-103
MOV2	S14K300	

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



Note : Grid 2.54*2.54mm



Note:
 Unit: mm[inch]
 Pin diameter tolerances: $\pm 0.10[\pm 0.004]$
 General tolerances: $\pm 0.50[\pm 0.020]$

Pin-Out	
Pin	Function
1	AC(N)
2	AC(L)
3	-Vo
4	+Vo

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