multicomp PRO

10W, AC-DC converter

RoHS Compliant



Features

- Ultra-wide 85 305VAC and 100 430VDC 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
- EMI performance meets CISPR32/EN55032 CLASS B, EN55014
- IEC/EN/UL62368/EN60335/EN61558 safety approval

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Description

MP-LD10-23BxxR2 series AC-DC converters is one of new generation compact size power converter. It features ultra-wide AC input and at the same time accepts DC input voltage, low power consumption, low ripple & noise, high efficiency, high reliability, reinforced isolation. It offers good EMC performance compliant to IEC/EN61000-4 and CISPR32/EN55032 and meets IEC/EN/UL62368/EN60335/EN61558 standards. The converters are widely used in industrial, power, home appliances, instrumentation, communication and civil applications. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

Selection Guide				
Part Number	Output Power	Nominal Output Voltage and Current	Efficiency at 230VAC (%) Typ.	Capacitive Load (µF) Max.
MP-LD10-23B03R2	8.6W	3.3V/2600mA	74	6600
MP-LD10-23B05R2		5V/2000mA	79	5000
MP-LD10-23B09R2	10W	9V/1100mA	81	3600
MP-LD10-23B12R2		12V/830mA	84	2000
MP-LD10-23B24R2		24V/410mA	85	470

Input Specifications						
Item	Operating Conditions	Min.	Тур.	Max.	Unit	
Innut Voltage Dange	AC input	85		305	V AC	
Input Voltage Range	DC input	100	7	430	V DC	
Input Frequency		47	47 -		Hz	
Inner of Commont	115V AC		1	0.23		
Input Current	230V AC			0.15	Δ.	
Inrush Current	115V AC	–	15		A	
Inrush Current	230V AC		25			
Leakage Current	277V AC/50Hz		0.1mA RMS Max.			
Fuse(A2S/A4S package series include fuse)		2A/300V, slow-blow, required				
Hot Plug			Unavailable			





Item	Operat	ing Conditions	Min.	Тур.	Max.	Unit
Output Voltage Accuracy		-		±2	-	
Line Regulation	Full load			±0.5	-	%
Load Regulation	0%-100% load	1		±1	-	1
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)			50	100	mV
01 11 5 0 1	0001/40	3.3/5/9/12V		0.10	-	١٨,
Stand-by Power Consumption	230V AC	24V		0.12		l W
Temperature Coefficient	<u> </u>			±0.02	-	%/°C
Short-circuit Protection			Hiccup, continuous, self-recovery			
Over-current Protection				≥110%lo, s	elf-recovery	
	3.3/5V		≤7.5VD0	C (Output volt	age clamp o	r hiccup)
O	9V		≤15VDC (Output voltage clamp or hiccu			hiccup)
Over-voltage Protection	12V		≤20VDC (Output voltage clamp or hiccup)			
	24V		≤30VDC	Output volt	age clamp or	hiccup)
Minimum Load			0	_	-	%
Hald on Time	115V AC input		-	5	-	
Hold-up Time	230V AC input	t	-	50	-	ms

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

General Specifications

ľ	tem	Operat	ing Conditions	Min.	Тур.	Max.	Unit
Isolation	Input-Output	Electric Strength Te <5mA	Electric Strength Test for 1min, leakage current <5mA			-	V AC
Insulation Resistance	Input-Output	At 500V DC	At 500V DC			-	МΩ
Operating Te	mperature			40	-	.05	°C
Storage Tem	perature		,	-40	-	+85	
Storage Hum	nidity				-	+95	%RH
Soldering Temperature		Wave-soldering		260 ± 5°C; time: 5 - 10s			
		Manual-welding		360 ± 10°C; time: 3 - 5s			
Switching From	equency			-	65	-	kHz
		-40°C to -25°C	85V AC to 115V AC	2.2	-	-	
		+50°C to +70°C	3.3/5V	2.5	-	-	0/ /°C
Dawer Davet	·	+55°C to +70°C	9/12/24V	3.33	-	-	%/°C
Power Derating		+70°C to +85°C		0.66	-	-]
		85V AC - 100V AC		0.83	-	-	%/V AC
		2000m - 5000m		0.67	-		%/Km
Safety Stand	ard			IEC/EN	I/UL62368/I	EN60335/E	N61558





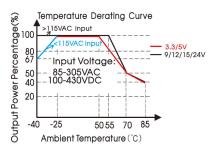
Item	Ope	Operating Conditions			Max.	Unit
Safety Certification					EN60335/EI	N61558
Safety Class					SS II	
MTBF					25°C > 320	0,000 h
		Ta:25°C 100% load		>130 >	< 10³ h	
Designed Life 230	230V AC	Ta: 55°C 100% load		>20 ×	10³ h	
		Ta: 55°C 80% load		>27 ×	10³ h	

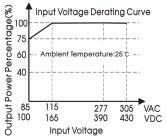
Mechanical Specifications					
Case Material		Black plastic; flame-retardant and heat-resistant (UL94 V-0)			
Dimensions	DIP package	40mm × 25.4mm × 21mm			
Weight	DIP mounting	34g (Typ.)			
Cooling Method		Free air convection			

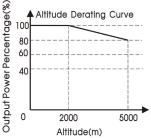
Electron	lectromagnetic Compatibility (EMC)						
	CE	CISPR32/EN55032	CLASS B				
Emissions	CE	EN55014-1					
EIIIISSIOIIS	RE	CISPR32/EN55032	CLASS B (see Fig. 5-2 for recommended circ	uit)			
	IXL	EN55014-1					
	FSD	IEC/EN61000-4-2	Contact ± 8KV/Air ±15KV	perf. Criteria B			
	ESD	EN55014-2		perf. Criteria B			
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A			
	110	EN55014-2		perf. Criteria A			
		IEC/EN61000-4-4	±2KV	perf. Criteria B			
	EFT	IEC/EN61000-4-4	±4KV (See Fig.2 for recommended circuit)	perf. Criteria B			
		EN55014-2		perf. Criteria B			
Immunity		IEC/EN61000-4-5	line to line ±1KV				
	Surge	IEC/EN61000-4-5	line to line ±2KV (See Fig.2 for recommended circuit)	perf. Criteria B			
		EN55014-2		perf. Criteria B			
	CS	IEC/EN61000-4-6	10Vr.m.s	perf. Criteria A			
	C3	EN55014-2		perf. Criteria A			
	Voltage dip, short	IEC/EN61000-4-11	0%, 70%	perf. Criteria B			
	interruption and voltage variation	EN55014-2		perf. Criteria B			



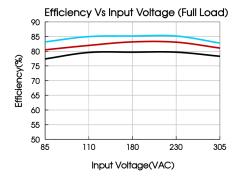
Product Characteristic Curve

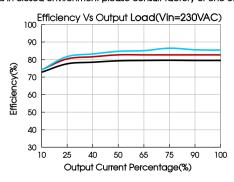






Note: ① With an AC input between 85-115VAC and a DC input between 100-165VDC, the output power must be derated as per temperature derating curves; ② This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.





Design Reference

1. Typical application

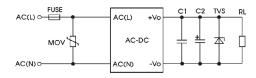


Fig. 1: Typical circuit diagram

Part Number	C1(µF)	C2(µF)	FUSE	TVS	MOV
MP-LD10-23B03R2		220µF/16V		SMBJ7A	
MP-LD10-23B05R2		_ 220μΕ/100	2A/300V.	SIVIDJ/A	
MP-LD10-23B09R2	1μF/50V		slow-blow,	SMBJ12A	S10K350
MP-LD10-23B12R2		100μF/25V	required	SMBJ20A	
MP-LD10-23B24R2				SMBJ30A	

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.



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2. EMC compliance recommended circuit

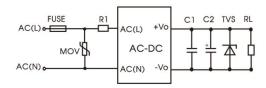
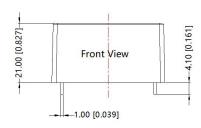


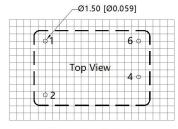
Fig 2: EMC application circuit with higher requirements

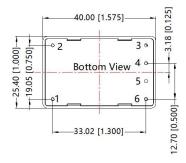
Component	Recommended value
MOV	S14K350
R1	6.8Ω/3W
FUSE	2A/300V, slow-blow, required

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION







Note: Grid 2.54*2.54mm

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

Note: Unit: mm[inch]

Pin diameter tolerances: $\pm 0.10[\pm 0.004]$ General tolerances: $\pm 0.50[\pm 0.020]$ Dimensions : Millimetres

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