

3W, AC-DC converter



RoHS

FEATURES

- 85 - 264V Universal AC or wide 100 - 370V DC Input
- Operating ambient temperature range: -25°C to +70°C
- High I/O isolation test voltage of up to 3000VAC
- Output short circuit, over-current protection
- High efficiency, high reliability
- Regulated output, Low ripple & noise
- EMI performance meets CISPR32 / EN55032 CLASS A
- 2 years warranty

LO03-10B12-C is one of Mornsun's compact size power converter. It features universal AC input and at the same time accepts DC input voltage, low power consumption, high efficiency, high reliability, reinforced isolation. It offers good EMC performance compliant to IEC/EN61000-4 and CISPR32/EN55032 and meets IEC/EN/UL62368 standards. The converters are widely used in industrial, office and civil applications. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

Selection Guide

Part No.	Output Power	Nominal Output Voltage and Current	Efficiency at 230VAC (%) Typ.	Capacitive Load (μF) Max.
LO03-10B12-C	3W	12V/250mA	75	1000

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	--	264	VAC
	DC input	100	--	370	VDC
Input Frequency		47	--	63	Hz
Input Current	115VAC	--	--	90	mA
	230VAC	--	--	55	
Inrush Current	115VAC	--	10	--	A
	230VAC	--	20	--	
Leakage Current	240VAC/50Hz	0.25mA RMS Max.			
Recommended External Input Fuse		1A/250V slow-blow required			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		--	±5	--	%
Line Regulation	Full load	--	±2.5	--	
Load Regulation	10% to 100% Load	--	±5	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	100	200	mV
Stand-by Power Consumption		--	--	0.5	W
Temperature Coefficient		--	±0.02	--	%/°C
Short Circuit Protection		Hiccup, continuous, self-recovery			
Over-current Protection		≥130%Io, self-recovery			
Minimum Load		10	--	--	%
Hold-up Time	115VAC input	--	5	--	ms
	230VAC input	--	20	--	

Note: * The "Tip and barrel 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	3000	--	--	VAC
Operating Temperature		-25	--	+70	°C	
Storage Temperature		-25	--	+85		
Storage Humidity		--	--	90	%RH	
Soldering Temperature	Wave-soldering	260 ± 5°C; time: 5 - 10s				
	Manual-welding	360 ± 10°C; time: 3 - 5s				
Switching Frequency		--	--	120	kHz	
Power Derating	-25°C to -10°C	1.0	--	--	% / °C	
	+50°C to +70°C	3.0	--	--		
	85VAC - 100VAC	1.67	--	--	%/VAC	
Safety Standard		IEC62368/UL62368/EN62368				
Safety Class		CLASS II				
MTBF		MIL-HDBK-217F@25°C > 300,000 h				

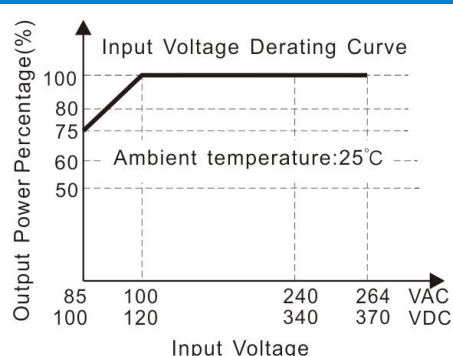
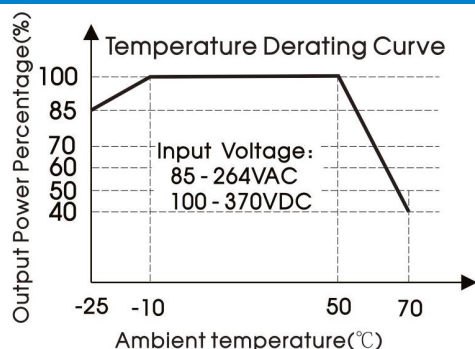
Mechanical Specifications

Dimension	41.00 x 18.00 x 20.00 mm
Weight	10g(Typ.)
Cooling method	Free air convection

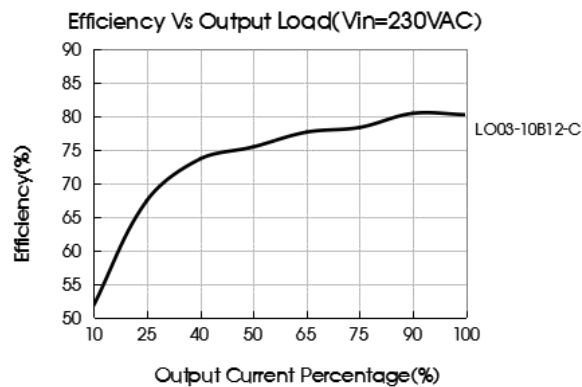
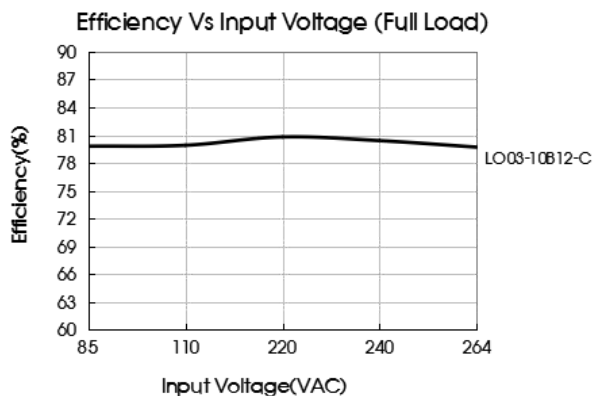
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS A	
	RE	CISPR32/EN55032	CLASS A	
Immunity	ESD	IEC/EN61000-4-2	Contact ±6 KV	perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	± 2KV	perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line ±1 KV	perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s	perf. Criteria A
	Voltage dips, short interruption 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.



Design Reference

1. Typical application

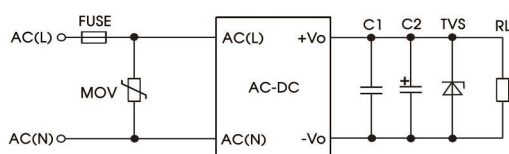


Fig. 1: Typical circuit diagram


Part no.	C1(μF)	C2(μF)	FUSE	MOV	TVS
LO03-10B12-C	1	120	1A/250V slow-blow required	S14K300	SMBJ20A

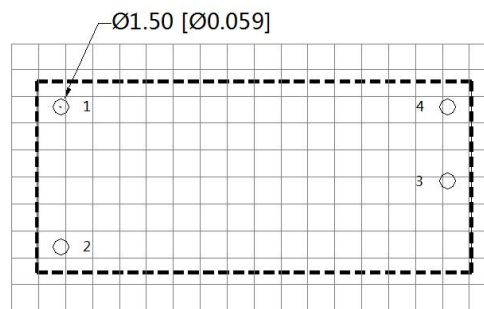
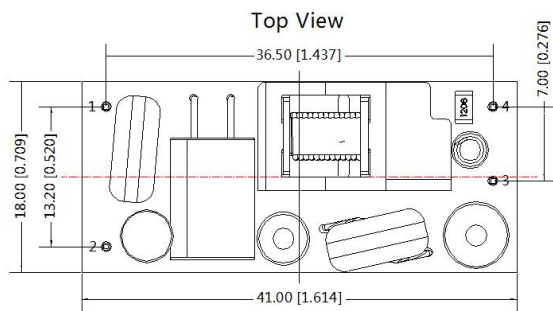
Output Filter Components:

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.

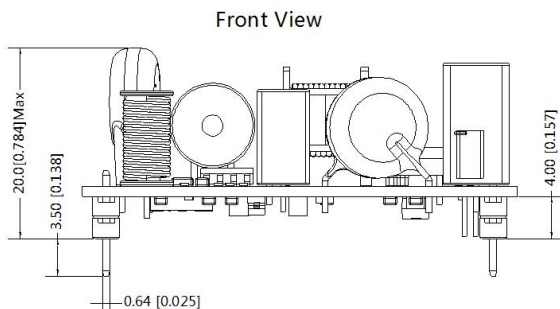
2. For additional information please refer to application notes on www.mornsun-power.com.

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION 



Note: Grid 2.54*2.54mm



Note:
Unit: mm[inch]
Connect pin size: □0.64[0.045]
Pin section tolerances: ±0.10[±0.004]
General tolerances: ±0.50[±0.020]

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

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220058;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C , humidity<75% with nominal input voltage and rated output load;
3. All index testing methods in this datasheet are based on our Company's corporate standards;
4. We can provide product customization service, please contact our technicians directly for specific information;
5. Products are related to laws and regulations: see "Features" and "EMC";
6. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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