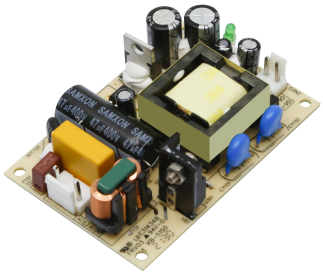
30W, AC-DC converter



UL62368-1 EN62368-1 IEC62368-1 BS EN 62368-1

FEATURES

- Universal 85-264VAC or 100-370VDC input voltage
- 3×2 inch high power density
- Operating ambient temperature range: -25℃ to +70℃
- Output short circuit, over-current, over-voltage protection
- High efficiency, high reliability
- Regulated output, low ripple & noise
- EMI performance meets CISPR32/EN55032 CLASS B
- Safety according to UL/EN60335

LO30-10Bxx series 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 UL/EN/IEC62368, EN/UL60335 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

Certification	Part No.	Output Power	Nominal Output Voltage and Current	Efficiency at 230VAC (%) Typ.	Capacitive Load (μF) Max.
UL/EN/IEC/ UKCA	LO30-10B03	13.5W	3.3VDC/4100mA	73	24000
	LO30-10B05	20.5W	5VDC/4100mA	78	12000
	LO30-10B09	30W	9VDC/3333mA	82	5600
	LO30-10B12		12VDC/2500mA	84	5400
	LO30-10B15		15VDC/2000mA	86	2400
	LO30-10B24		24VDC/1250mA	87	1440
	LO30-10B48		48VDC/625mA	88	600

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	--	60	Hz
Input Current	115VAC	--	--	750	mA
	230VAC	--	--	450	
Inrush Current	115VAC	--	20	--	A
	230VAC	--	40	--	
Leakage Current	240VAC/50Hz	0.25mA Max.			
Hot Plug		Unavailable			

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
Stand-by Power Consumption		--	--	0.5	W
Temperature Coefficient		--	±0.02	--	%/°C
Short Circuit Protection		Hiccup, continuous, self-recovery			

Over-current Protection		≥110%Io, self-recovery			
Over-voltage Protection	3.3VDC/5VDC output	≤7.5V	Output voltage clamp or hiccup		
	9VDC output	≤15V			
	12VDC/15VDC output	≤20V			
	24VDC output	≤30V			
	48VDC output	≤60V			
Minimum Load		0	--	--	%
Hold-up Time	115VAC input	--	10	--	ms
	230VAC input	--	30	--	
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	3000	--	--	VAC
Operating Temperature			-25	--	+70	°C
Storage Temperature			-25	--	+85	
Storage Humidity			--	--	90	%RH
Altitude			--	--	2000	m
Soldering Temperature		Wave-soldering	260 ± 5℃; time: 5 -10s			
		Manual-welding	360 ±10℃; time: 3 - 5s			
Switching Frequency			--	60	--	kHz
Power Derating		-25°C to -10°C	1.0	--	--	%/°C
		+50°C to +70°C	3.0	--	--	
		85VAC - 140VAC	0.55	--	--	%/VAC
Safety Standard			UL/IEC62368-1 safety approved & EN62368-1, BS EN 62368-1 (Report); Design refer to UL/EN60335-1			
Safety Class			CLASS I I			
MTBF			MIL-HDBK-217F@25°C > 300,000 h			

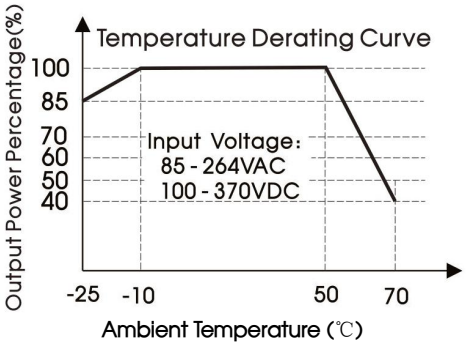
Mechanical Specifications

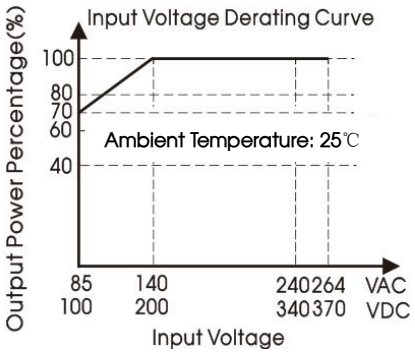
Dimension	76.20 x 50.80 x 27.00 mm
Weight	65g (Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

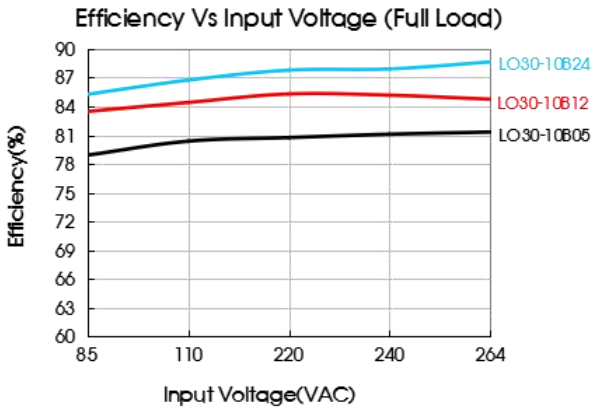
Emissions	CE	CISPR32/EN55032	CLASS B	
	RE	CISPR32/EN55032	CLASS B	
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV	Perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	Perf. Criteria A
	EFT	IEC/EN61000-4-4	±2KV	Perf. Criteria B
	Surge	IEC/EN61000-4-5	Line to line ±1KV	Perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s	Perf. Criteria A
	Voltage dips, short interruption and voltage variations	IEC/EN61000-4-11	100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods	Perf. Criteria B

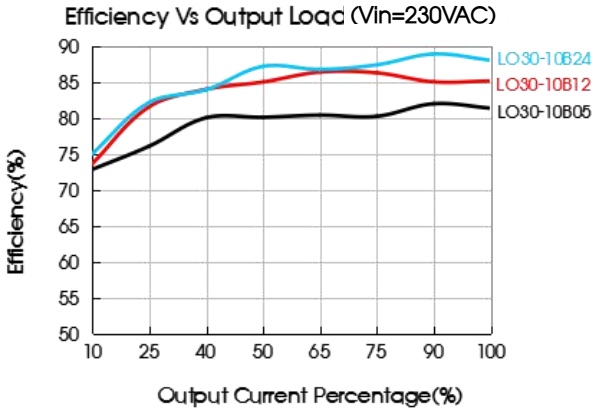
Product Characteristic Curve





Note: ① With an AC input between 85-140VAC and a DC input between 100-200VDC, 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 Mornsun FAE.





Design Reference

1. Typical application

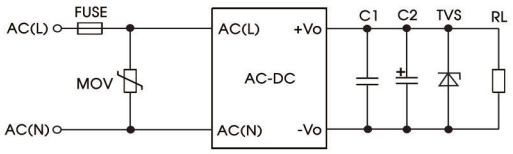


Fig. 1: Typical circuit diagram

Part No.	FUSE	MOV	C1 (μF)	C2 (μF)	TVS
LO30-10B03	2A/250V slow-blow	S14K300	0.1	22	SMBJ7.0A
LO30-10B05					SMBJ7.0A
LO30-10B09					SMBJ12A
LO30-10B12					SMBJ20A
LO30-10B15					SMBJ20A
LO30-10B24					SMBJ30A
LO30-10B48					SMBJ64A

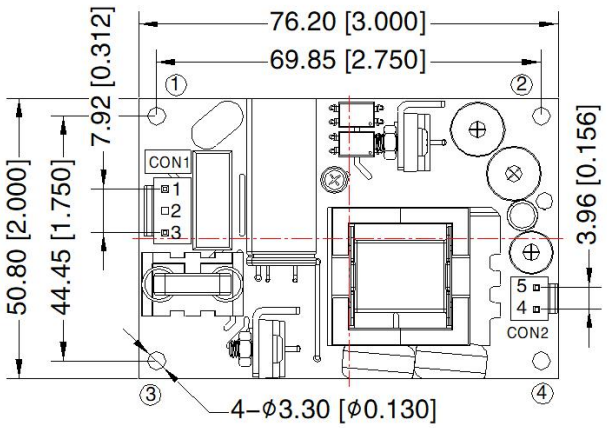
Output Filter Components:
We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to manufacture's datasheet). Choose a capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor used for filtering high-frequency 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

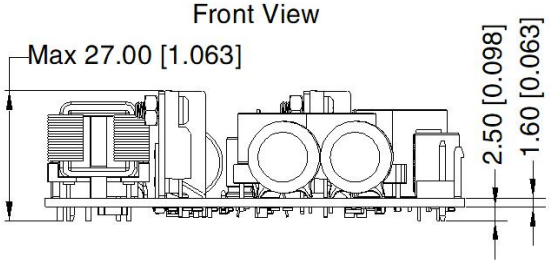
THIRD ANGLE PROJECTION

Top View

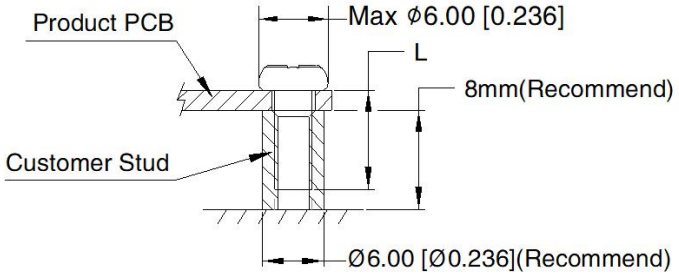


Pin–Out			
Connectors	Pin	Mark	Client Connectors
CON1	1	AC(L)	Housing: JST VHR Contact: JSTSVH–21T–P1.1 or equivalent
	2	NoPin	
	3	AC(N)	
CON2	4	–Vo	Housing: JST VHR Contact: JSTSVH–21T–P1.1 or equivalent
	5	+Vo	

Front View



Position	Screw Spec.	L(Recommend)	Torque(max)
① – ④	M3	6mm	0.4N · m



Note:
Unit: mm[inch]
General tolerances: ± 0.50[± 0.020]
The layout of the device is for reference only, please refer to the actual product

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220060;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% with nominal input voltage and rated output load;
3. All index testing methods in this datasheet are based on our company 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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