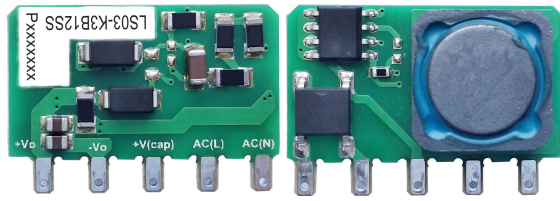


1W/3W, AC/DC converter



RoHS



FEATURES

- Ultra-wide 85 - 305VAC and 70 - 430VDC input voltage Range
- Compact size open frame
- High reliability, green power
- Industrial-grade design
- Flexible selection of EMC additional circuits, simplify customer PCB layout
- Output short circuit, overcurrent protection
- Designed to meet IEC/UL/EN62368 safety standards

LSxx-K3BxxSS series is one of Mornsun's highly efficient green power AC-DC Converter series. They feature ultra-wide wide input range accepting either AC or DC voltage, high reliability and low power consumption. All models are particularly suitable for industrial control, electric power, instrumentation and smart home type applications, UL/CE certification required and which do not have high levels of EMC requirement. We recommend using external components as shown in design reference for enhanced EMC performance in harsh environmental conditions.

Selection Guide

Certification	Part No.	Output Power	Nominal Output Voltage and Current(Vo/Io)	Efficiency at 230VAC (%) Typ.	Capacitive Load (μF) Max.
CE (Pending)	LS01-K3B05SS	1W	5V/200mA	57	500
	LS03-K3B12SS	3W	12V/250mA	73	330

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
	AC input	DC input				
Input Voltage Range			85	--	305	VAC
			70	--	430	VDC
Input frequency			47	--	63	Hz
Input current	115VAC		--	--	0.12	A
	277VAC		--	--	0.06	
Inrush current	115VAC		--	15	--	
	277VAC		--	25	--	
Recommended External Input Fuse	1A/300V, slow-blow, required					
Hot Plug	Unavailable					

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
	10% - 100% load					
Output Voltage Accuracy		5V	--	±4	-7~+3	%
		12V	--	±5	-5~+8	
Line Regulation	Rated load	5V	--	±1.5	--	
		12V	--	±1	--	
Load Regulation	5V		--	±2.5	±5	
	12V		--	±2	±4	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)		--	80	150	mV
Temperature Coefficient			--	±0.12	--	%/°C
Stand-by Power Consumption	230VAC input	5V	--	--	0.3	W
		12V	--	--	0.4	
Short Circuit Protection	Hiccup, continuous, self-recovery					
Overcurrent Protection	≥110% Io, self-recovery					
Min. Load			10	--	--	%

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
Operating Temperature		-40	--	+85	°C
Storage Temperature		-40	--	+105	
Storage Humidity		--	--	95	%RH
Power Derating	-40°C to -20°C	2	--	--	% / °C
	+70°C to +85°C	2.67	--	--	
	85VAC - 110VAC	0.8	--	--	% / VAC
	277VAC - 305VAC	1.1	--	--	
Safety Standard		IEC62368/EN62368/UL62368			
Safety Certification		EN62368 (Pending)			
MTBF	MIL-HDBK-217F@25°C	>300,000 h			

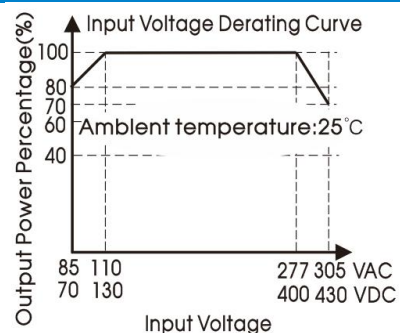
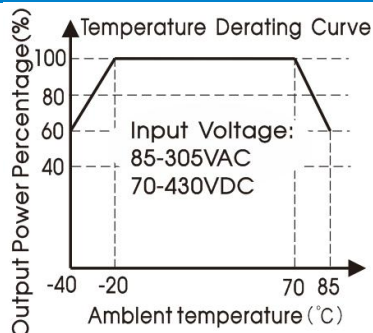
Mechanical Specifications

Dimension	25.21x17.43 x 9.50 mm
Weight	4.5g (Typ.)
Cooling method	Free air convection

Electromagnetic Compatibility (EMC)

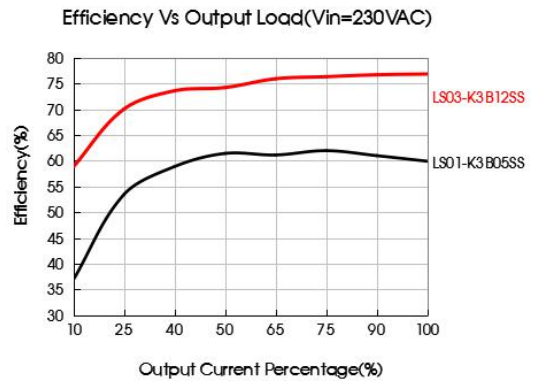
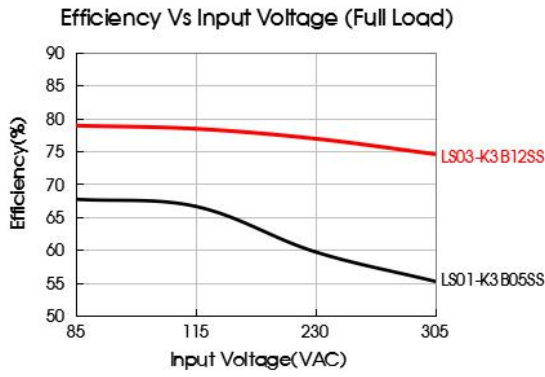
Emissions	CE	CISPR32/EN55032	CLASS A (See Fig. 1 for typical application circuit)	
		CISPR32/EN55032	CLASS B (See Fig. 2 for recommended circuit)	
	RE	CISPR32/EN55032	CLASS A (See Fig. 1 for typical application circuit)	
		CISPR32/EN55032	CLASS B (See Fig. 2 for recommended circuit)	
Immunity	ESD	IEC/EN61000-4-2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

Product Characteristic Curve



Note:

- ① With an AC input between 85 - 110VAC/277 - 305VAC and a DC input between 70 - 130VDC/400 - 430VDC, 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 circuit

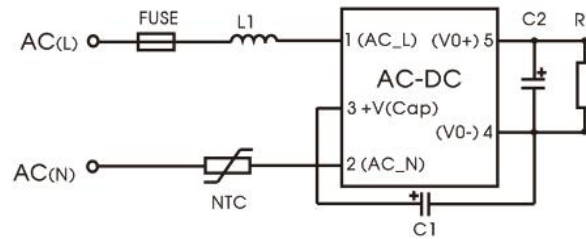


Fig. 1

Model	FUSE (required)	C1 (required)	NTC (required)	C2 (required)	L1 (required)
LS01-K3B05SS	1A/300V	10μF/450V	5D-9	220uF/16V	1.2mH
LS03-K3B12SS					

Note:
C1 is used as filter capacitor(required);
Output filter: We recommend using an electrolytic capacitor with high frequency, high ripple current and low ESR rating for C2 refer to manufacture's datasheet). Combined with L1, they form a pi-type filter circuit. Choose a Capacitor voltage rating with at least 20% margin, in other words not exceeding 80%.

2. EMC compliance recommended circuit

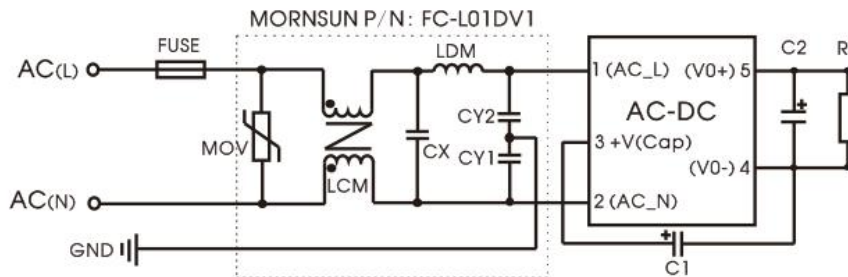


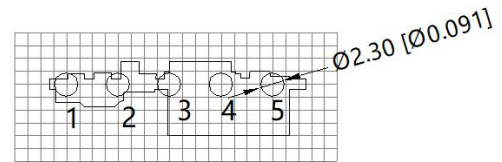
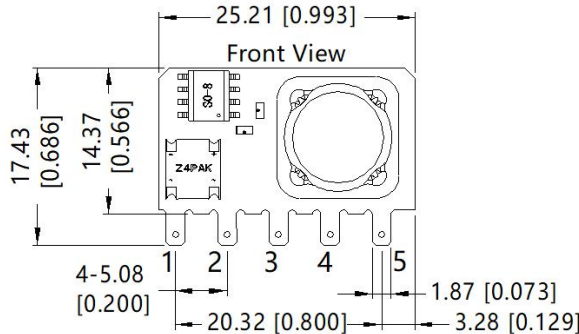
Fig 2

Components	Recommend Parameter
MOV	S14K350
CY1/CY2	561K/400VAC
CX	0.1μF/310VAC
LCM	3.5mH
LDM	0.33mH
FUSE (required)	1A/300V, slow-blow fuse

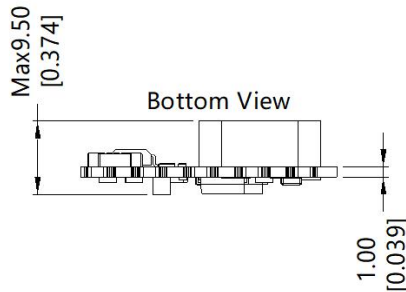
3. For additional information please refer to application notes on www.mornsun-power.com.

LS03-K3BxxSS Dimensions and Recommended Layout

THIRD ANGLE PROJECTION 



Note: Grid 2.54*2.54mm



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

Note:
Unit: mm[inch]
General tolerances: $\pm 1.00[\pm 0.039]$
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: 58220075;
2. External electrolytic capacitors are required to modules, more details refer to typical applications;
3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^\circ\text{C}$, humidity<75%, nominal input voltage (115Vac and 230Vac) and rated output load;
4. In order to improve the efficiency at light load, there will be audible noise generated, but it does not affect product performance and reliability.
5. The module needs to be glued and fixed after assembly.
6. All index testing methods in this datasheet are based on our Company's corporate standards;
7. We can provide product customization service, please contact our technicians directly for specific information;
8. Products are related to laws and regulations: see "Features" and "EMC";
9. 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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