

15W, AC/DC converter



RoHS

## FEATURES

- Universal Input: 85 - 264VAC, 50/60Hz
- Regulated output, Low ripple & noise
- High efficiency up to 80%
- Output short circuit, over-current, over-voltage protection
- Plastic case, meets UL94V-0

LH15-10D0512-09 is a compact AC-DC module power supply, which has advantages such as universal input voltage, accept either AC or DC input, high efficiency, high reliability, low power consumption and high safety isolation. It offers good EMC performance, meets IEC/EN61000-4, UL60950 and EN60950 standards. The series products are widely used in industries such as industrial control, office. Note: Please refer to Design Reference when module being used in a bad EMC environment.

## Selection Guide

Part No.	Output Power	Nominal Output Voltage and Current		Efficiency (230VAC, %/Typ.)	Max. Capacitive Load(μF)	
		(Vo1/Io1)	(Vo2/Io2)		Vo1	Vo2
LH15-10D0512-09	15.8W	5V/1000mA	12V/900mA	80	4000	2000

## 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	--	--	0.37	A
	230VAC	--	--	0.22	
Inrush current	115VAC	--	10	--	
	230VAC	--	20	--	
Leakage current		0.3mA RMS typ./230VAC/50Hz			
Recommended External Input Fuse		2A/250V, slow fusing			
Hot Plug		Unavailable			

## Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Primary output	--	±2	--	%
Line Regulation	Full load	Primary output	±0.5	--	
		Secondary output	±1.5	--	
Load Regulation	10%-100% load	Isolation dual output (Balance load)	±3	--	
		Secondary output	±5	--	
Ripple & Noise*	20MHz bandwidth (peak-peak value)	--	50	100	mV
Temperature Coefficient	Primary output	--	±0.02	--	%/°C
Short Circuit Protection		Continuous, self-recovery			
Over-current Protection		≥110%Io self-recovery			
Over-voltage Protection	Primary output	5VDC Output	≤7.5VDC		
Min. Load	Dual isolated output (Balance load)	10	--	--	%
Hold-up Time	115VAC input	--	15	--	ms
	230VAC input	--	80	--	

Note: \* Ripple and noise are measured by "parallel cable" method, please see AC-DC Converter Application Notes for specific operation.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output	3000	--	--	VAC
	Output-output	500	--	--	
Operating Temperature		-40	--	+70	°C
Storage Temperature		-40	--	+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		--	65	--	kHz
Power Derating	-40°C to -10°C	2.0	--	--	% / °C
	55°C to +70°C	3.75	--	--	
MTBF		MIL-HDBK-217F@25°C >300,000 h			

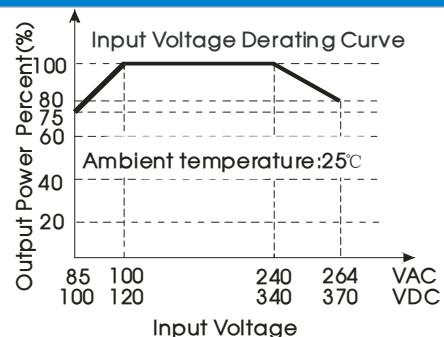
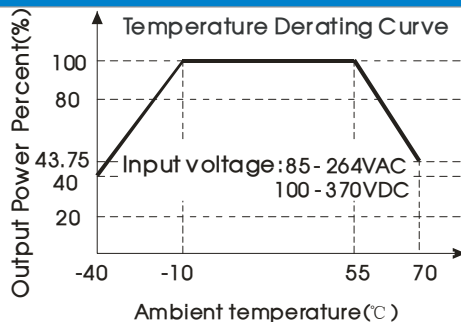
Physical Specifications

Casing Material	Black flame-retardant and heat-resistant plastic (UL94V-0)
Dimensions	62.00*45.00*22.50 mm
Weight	90g (Typ.)
Cooling Method	Free air convection

EMC Specifications

EMI	CE	CISPR22/EN55022	CLASS B	
	RE	CISPR22/EN55022	CLASS B	
EMS	ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV	Perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±2KV	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	perf. Criteria B
		IEC/EN61000-4-5	line to line ±2KV/line to ground ±4KV (See Fig. 2 for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s	perf. Criteria A
	PFM	IEC/EN61000-4-8	10A/m	perf. Criteria A
Voltage dips, short interruptions and voltage variations immunity		IEC/EN61000-4-11	0%,70%	perf. Criteria B

Product Characteristic Curve



Note: ① Input voltage should be derated based on temperature derating when it is 85-100VAC/240-264 VAC /100-120VDC/340-370 VDC;  
② This product is suitable for use in natural air cooling environments, if in a closed environment, please contact our company's FAE.

Design Reference

1. Typical application circuit

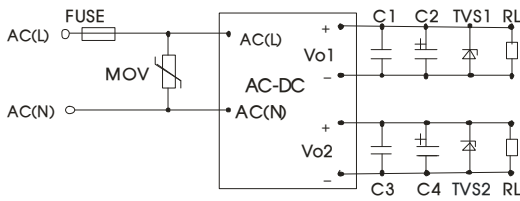


Fig. 1

FUSE	MOV	C2(μF)	C4(μF)	TVS1	TVS2
2A, slow fusing	S14K350	330	220	SMBJ7.0A	SMBJ20A

Note: Output filtering capacitor C2, C4 is electrolytic capacitor, it is recommended to apply electrolytic capacitor with high frequency and low resistance. For capacitance and current of capacitor please refer to manufacture's datasheet. C1, C3 is ceramic capacitor, which is used to filter high-frequency noise, recommended to use 1μF. Capacitor voltage reduced to at least 80%. TVS is a recommended component to protect post-circuits if converter fails.

2. EMC solution-recommended circuit

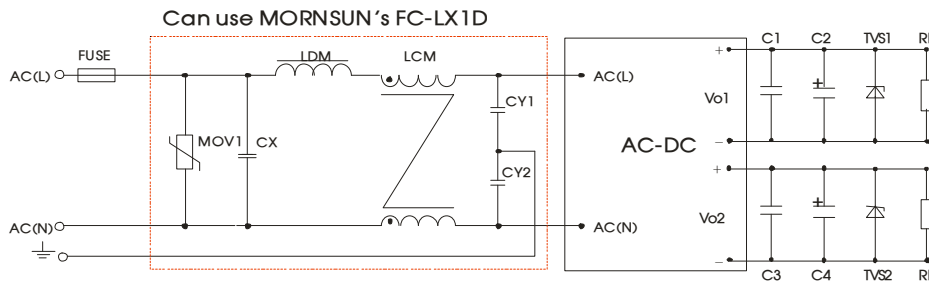


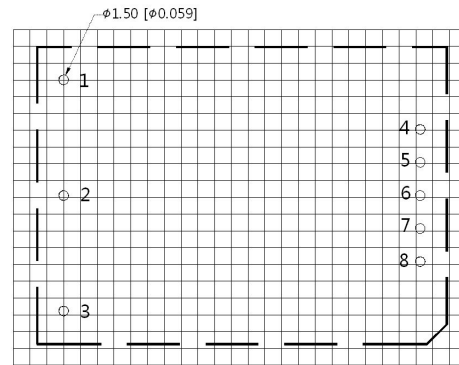
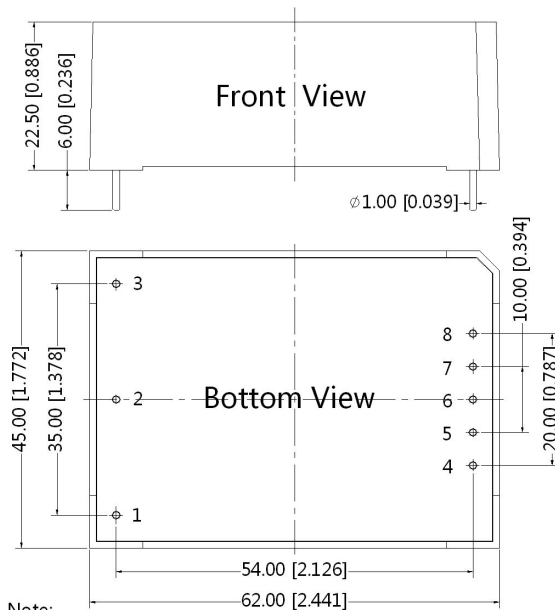
Fig 2 (Output external circuit refer to the typical application circuit)

Element model	Recommended value
MOV1	S14K350
CY1, CY2	1000pF/400VAC
CX	0.1μF/275VAC
LCM	10 mH, recommended to use MORNSUN's FL2D-Z5-103
LDM	4.7μH/2A
FC-LX1D	2KV/4KV EMC filter
FUSE	2A/250V, slow fusing

3. For more information Please find the application note on [www.mornsun-power.com](http://www.mornsun-power.com)

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



Note: Grid 2.54\*2.54mm

Pin-Out	
PIN	LH15-10D
1	No Pin
2	AC(N)
3	AC(L)
4	-Vo1
5	+Vo1
6	No Pin
7	-Vo2
8	+Vo2

Note:  
Unit:mm[inch]  
Pin diameter tolerances:±0.10[±0.004]  
General tolerances:±0.50[±0.020]

Notes:

1. Packing information please refer to Product Packing Information which can be downloaded from [www.mornsun-power.com](http://www.mornsun-power.com). Packing bag number: 58220006;
2. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of  $T_a=25^{\circ}\text{C}$ , humidity<75% with nominal input voltage and rated output load;
4. All index testing methods in this datasheet are based on our Company's corporate standards;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Specifications are subject to change without prior notice.

Mornsun Guangzhou Science & Technology Co., Ltd.

Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Luogang District, Guangzhou, P. R. China  
Tel: 86-20-38601850-8801 Fax: 86-20-38601272 E-mail: [info@mornsun.cn](mailto:info@mornsun.cn)