

30W, AC/DC converter



RoHS



## FEATURES

- Wide input voltage range:  
85~264VAC/100~370VDC
- AC and DC all in one (input from the same terminal)
- Multiplexed output
- Low standby power consumption, high efficiency, 2K VAC safe isolation voltage
- Low ripple and noise
- Output short circuit, over-current, over-voltage protections
- EMC:IEC/EN61000-4, CISPR22/EN55022

LM30-00J0512-03E—a metal mask switching power supply offered by MORNSUN. It features universal input voltage, taking both DC and AC input voltage, multiplexed output, high efficiency, high reliability, low power consumption, safer isolation. It offers good EMC performance, certificate IEC/EN61000-4, CISPR22/EN55022 standards. The product is widely used in industrial control, office and other power industries. 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(Vo/Io)				Efficiency (230VAC, %/Typ.)	Max. Capacitive Load (μF)		
		(Vo1/Io1)	(Vo2/Io2)	(Vo3/Io3)	(Vo4/Io4)		Vo1	Vo2/ Vo3	Vo4
LM30-00J0512-03E	30W	5VDC/2A	12VDC/0.3A	-12VDC/0.3A	24VDC/0.5A	83	5000	650	900

## 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	--	--	0.65	A
	230VAC	--	--	0.40	
Inrush Current	115VAC	--	30	--	
	230VAC	--	50	--	
Hot Plug		Unavailable			



## Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Output Voltage Accuracy	Main circuit Vo1	--	--	±1	%	
	Auxiliary circuit Vo2, Vo3, Vo4	--	--	±5		
Line Regulation	Full load	Main circuit Vo1	--	--		±1
		Auxiliary circuit Vo2, Vo3, Vo4	--	--		±5
Load Regulation	10%-100% load	Main circuit Vo1	--	--	±1	
		Auxiliary circuit Vo2, Vo3, Vo4	--	--	±5	
Ripple & Noise*	20MHz bandwidth (peak-peak value)	Main circuit Vo1	--	--	100	mV
		Auxiliary circuit Vo2, Vo3	--	--	120	
		Auxiliary circuit Vo4	--	--	200	
Temperature Coefficient	Main circuit Vo1	--	±0.02	--	%/°C	
	Auxiliary circuit Vo2, Vo3, Vo4	--	±0.06	--		
Stand-by Power Consumption	230VAC	--	0.85	--	W	
Short Circuit Protection		Hiccup, continuous, self-recovery				
Over-current Protection		≥120%Io self-recovery				

Over-voltage Protection		Zener clamp diode			
Min. Load		0	--	--	%
Hold-up Time	115VAC input	--	15	--	ms
	230VAC input	--	115	--	

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	2000	--	--	VAC
	Input- 	2000	--	--	
	Output- 	1000	--	--	
	Output-output	500	--	--	
Test time: 1min					
Operating Temperature		-40	--	+70	°C
Storage Temperature		-40	--	+85	
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~-25°C	4.0	--	--	% / °C
	+50°C~+70°C	3.5	--	--	
Safety Standard		IEC60950			
Safety Class		CLASS I			
MTBF		MIL-HDBK-217F@25°C > 300,000 h			

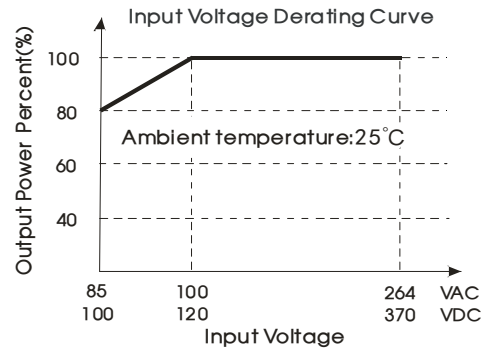
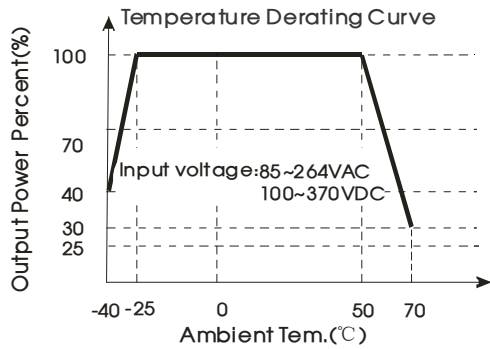
## Physical Specifications

Casing Material	Metal case
Dimension	109.00*58.50*30.00 mm
Weight	180g (Typ.)
Cooling Method	Free convection

## EMC Specifications

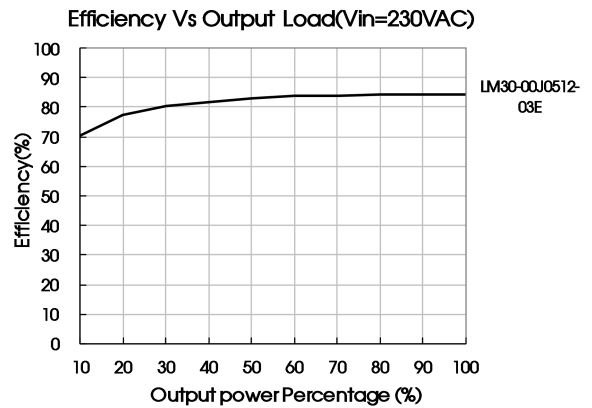
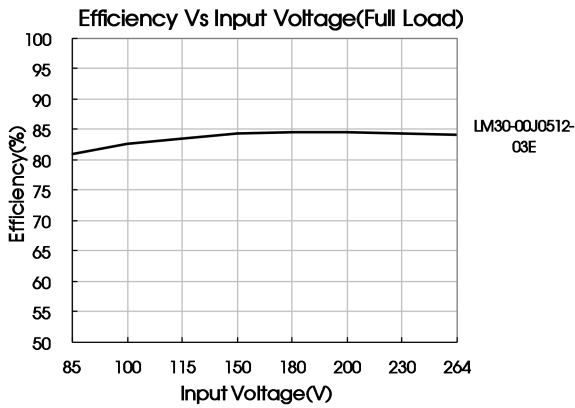
EMI	CE	CISPR22/EN55022, CLASS B		
	RE	CISPR22/EN55022, CLASS B		
EMS	ESD	IEC/EN61000-4-2	±6KV/8KV	Perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±4KV	perf. Criteria B
	Surge	IEC/EN61000-4-5	±2KV/4KV	perf. Criteria B
		IEC/EN61000-4-5	±4KV/6KV (See Fig. 2 for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6	10 Vr.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/100~120VDC;

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

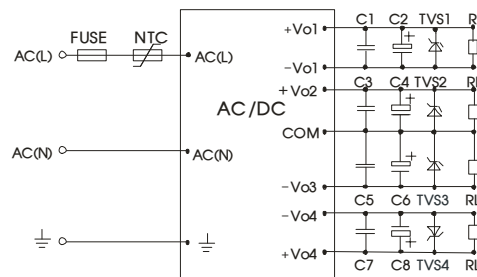


Fig. 1

Model	C1/C3/C5/C7(μF)	C2 (μF)	C4/C6(μF)	C8(μF)	TVS1	TVS2/ TVS3	TVS4
LM30-00J0512-03	1	680	220	120	SMBJ7.0A	SMBJ20A	SMBJ30A

Note: Output filtering capacitor C2/C4/C6/C8 is electrolytic capacitor, it is recommended to use high frequency and low impedance electrolytic capacitor. For capacitance and current of capacitor please refer to manufacture's datasheet. Capacitor withstand voltage derating should be 80% or above. C1/C3/C5/C7 is ceramic capacitor, which is used to filter high-frequency noise. TVS is a recommended component to protect post-circuits if converter fails.

2. EMC solution-recommended circuit

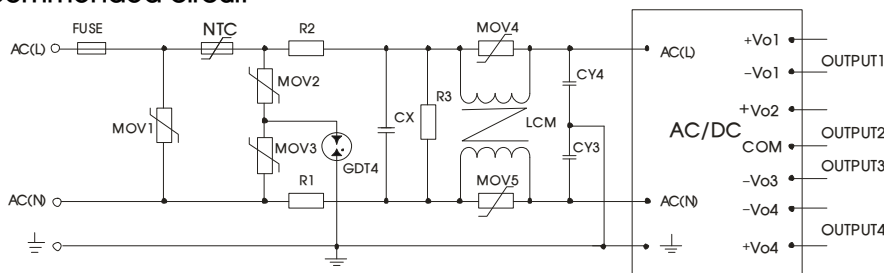


Fig 2

EMC solution-recommended circuit PCB layout

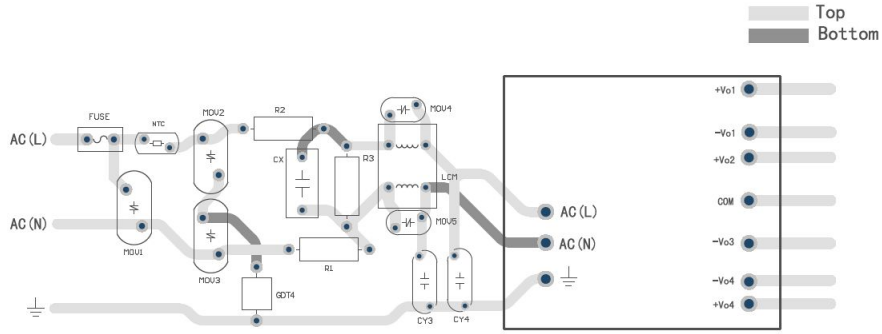


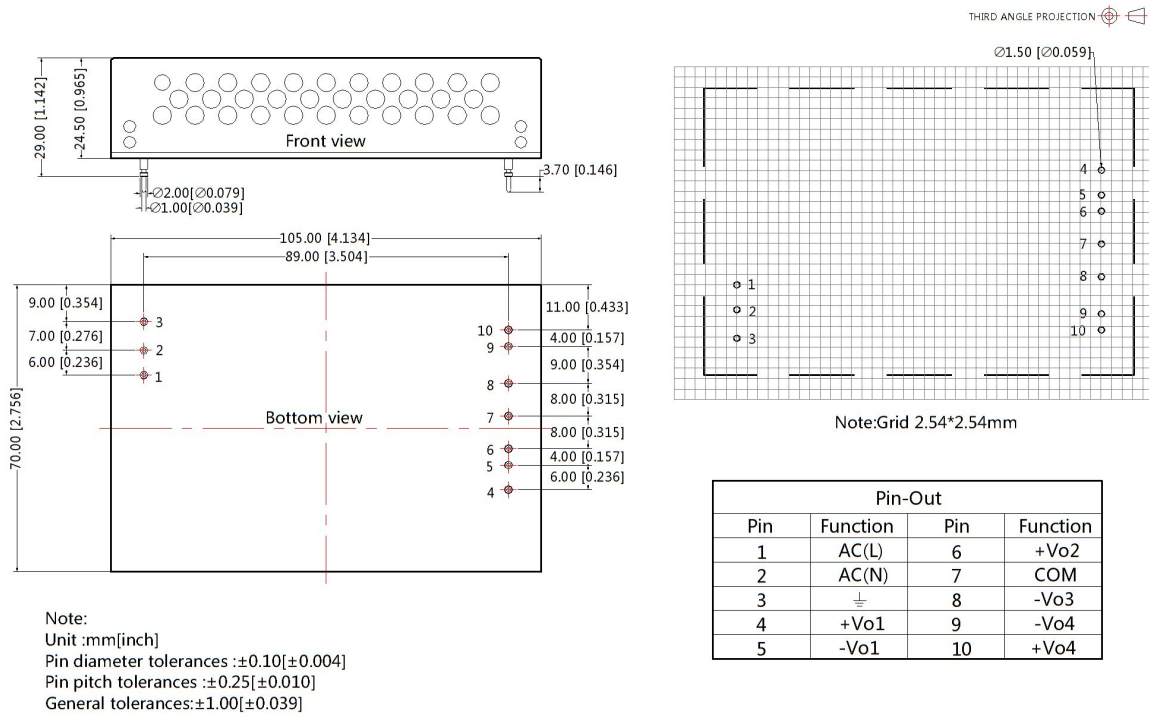
Fig 3

Note: Suggestions for safety regulation and wiring width: wire width  $\geq 3\text{mm}$ , distance between wires  $\geq 6\text{mm}$ , and distance between wire and ground  $\geq 6\text{mm}$

Element model	Recommended value
MOV1	S20K350
MOV2	S14K350
MOV3	S14K350
MOV4	S07K350
MOV5	S07K350
CX	0.15 $\mu\text{F}$ /300VAC
CY3/ CY4	2.2nF/400VAC
R1/R2	2 $\Omega$ /3W winding resistor
R3	1M $\Omega$ /2W
LCM	3.3 mH, recommended to use MORNSUN's FL2D-10-332
GDT4	B5G3600
NTC	5D-11
FUSE	3.15A/250V, slow fusing, necessary

3.For more information about Mornsun EMC Filter products, please visit [www.mornsun-power.com](http://www.mornsun-power.com) to download the Selection Guide of EMC Filter

Dimensions and Recommended Layout



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: 58220013;
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  $T_a=25\text{ }^\circ\text{C}$ , 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. The performance parameters of the product models listed in this manual are as above, but some parameters of non-standard model products may exceed the requirements mentioned above. Please contact our technicians directly for specific information;
6. We can provide product customization service;
7. 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