

MORNSUN®

LM30-00J0512-03E 30W,AC-DC CONVERTER

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/EN55022standards, and is widely used in industrial, office and electricity applications.



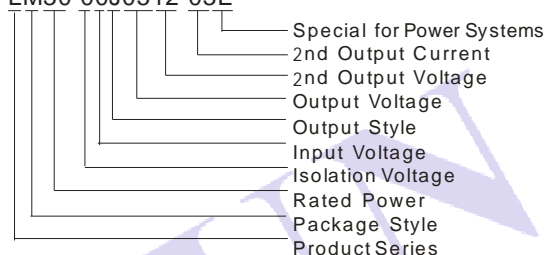
RoHS

PRODUCT FEATURES

1. Universal input range:85~264VAC 50/60HZ
2. AC and DC all in one (input from the same terminal)
3. Multiplexed output
4. Low Standby Power, high efficiency,2000VAC safe isolation
5. Low ripple and noise
6. Output short circuit, over-current, over-voltage protection
7. EMC:IEC/EN61000-4,CISPR22/EN55022
8. 3 years warranty

PART NUMBER SYSTEM

LM30-00J0512-03E



SELECTION GUIDE

Model	power (W)	Output Voltage/ Output Current				Efficiency (%) (230VAC,Typ)	Standby Power Consumption (230VAC,Typ)
		(Vo1/Io1)	(Vo2/Io2)	(Vo3/Io3)	(Vo4/Io4)		
LM30-00J0512-03E	30	5VDC/2A	12VDC/0.3A	-12VDC/0.3A	24VDC/0.5A	83	0.85W

INPUT SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit	
Input Voltage Range	AC Input	85	--	264	V	
	DC Input	90	--	370		
Input Under Voltage Protection	Start-up Voltage AC Input	--	--	--		
	DC Input	--	--	--		
	Shutdown Voltage	AC Input	--	--		--
		DC Input	--	--		--
Input Frequency		47	--	63	Hz	
Input Current	115VAC	--	--	0.55	A	
	230VAC	--	--	0.30		
Inrush Current	115VAC	--	30	--		
	230VAC	--	50	--		

OUTPUT SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Vo1 (Main output)	--	--	±1	%
	Vo2,Vo3,Vo4(Secondary output)	--	--	±5	
Line Regulation(full load)	Vo1 (Main output)	--	--	±1	
	Vo2,Vo3,Vo4(Secondary output)	--	--	±5	
Load Regulation (10% to 100%)	Vo1 (Main output)	--	--	±1	
	Vo2,Vo3,Vo4(Secondary output)	--	--	±5	
Ripple& Noise(p-p)	20MHz bandwidth	Vo1 (Main output)	--	--	100
		Vo2,Vo3(Secondary output)	--	--	120
		Vo4(Secondary output)	--	--	200
Min Load		0	--	--	%
Trim		--	--	--	

Hold-up Time	115VAC	--	15	--	ms
	230VAC	--	115	--	
Short Circuit Protection	Continuous, and auto recovery				
Over Current Protection	>120% Io auto-recovery				
Over Voltage Protection	Zener diode clamp				

COMMON SPECIFICATIONS

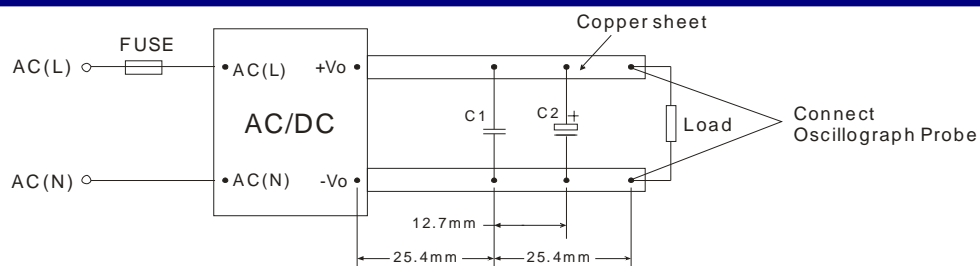
Item	Test Conditions	Min.	Typ.	Max.	Unit	
Operating Temperature		-40	--	+70	°C	
Storage Temperature		-40	--	+85		
Storage Humidity		5	--	95	%RH	
Temperature coefficient	Vo1(Main output)	--	±0.02	--	% / °C	
	Vo2,Vo3,Vo4(Secondary output)	--	±0.06	--		
Power derating	-40°C ~ -25°C	4.0	--	--		
	+50°C ~ +70°C	3.5	--	--		
Isolation Resistance		100	--	--	MΩ	
Isolation Voltage	Input-Output	Tested for 1 minute	2000	--	--	VAC
	Input-Ground		2000	--	--	
	Output-Ground		1000	--	--	
	Output-Output		500	--	--	
Altitude		--	--	9000	m	
Switching Frequency		--	65	--	kHz	
Weight		--	190	--	g	
Safety approvals		--				
Safety Class		CLASS I				
Safety standards		IEC60950				
Hot swap		Forbid				
Install		PCB				
Cooling		Free air convection				
MTBF		>300,000 hours @ 25°C				

Note: 1. Ripple and Noise are measured by the method of parallel lines;
2. The power of multiplexed output will make other groups of output voltage drop at the same time after any way output over current protection, Enter the hiccup type protection condition, recover to the normal working state when faults remove;
3. Unless otherwise specified, all specifications above are measured at rated input voltage and rated output load, Ta=25°C, humidity < 75%.

EMC SPECIFICATIONS

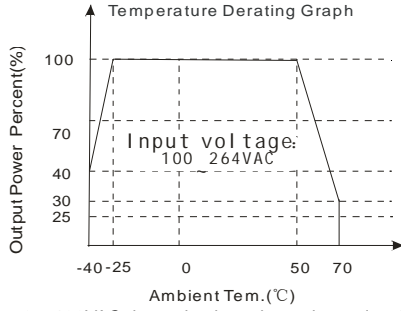
EMI	CE	CISPR22/EN55022, CLASS B(Without External Circuit)		
	RE	CISPR22/EN55022, CLASS B(Without External Circuit)		
EMS	ESD	IEC/EN61000-4-2	±6kV/8KV	perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±4KV (Without External Circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5	±2KV/4KV (Without External Circuit)	perf. Criteria B
		IEC/EN61000-4-5	±4KV/6KV (External Circuit Refer to Figure 3)	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 and interruptions immunity		IEC/EN61000-4-11	0%-70%	perf. Criteria B

PARALLEL LINES MEASURE

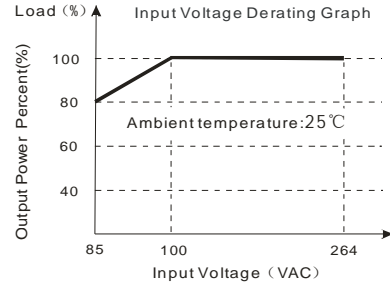


Note: C1: 1µF (Ceramic capacitor) C2: 10µF (Electrolytic capacitor)

PRODUCT TYPICAL CURVE

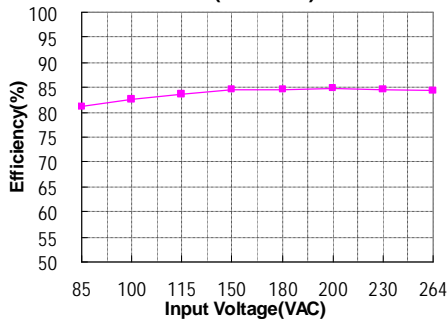


Note: When input 85-100VAC, it need to be voltage derated on basis of temperature derating.

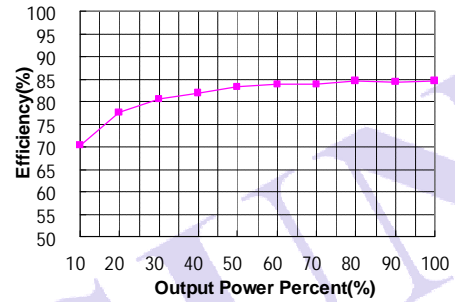


Note: When input DC, $V_{DC} = 1.414 \cdot V_{AC-20}$.

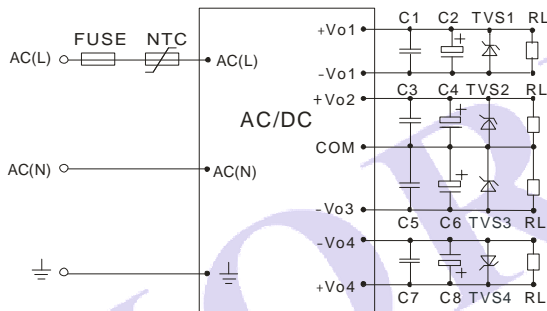
Efficiency VS Input Voltage curve (Full Load)



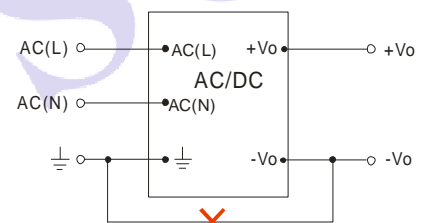
Efficiency VS Output Load curve (Vin=230VAC)



TYPICAL APPLICATIONS

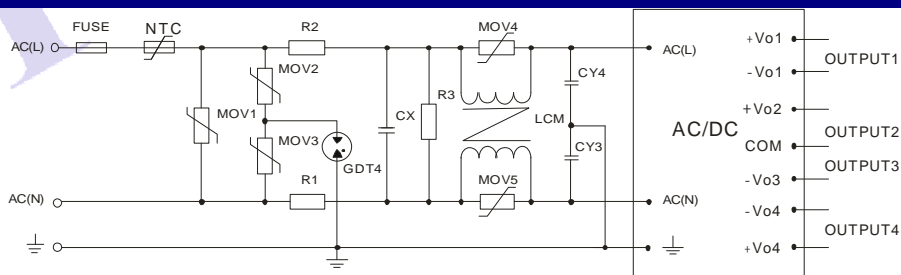


(Figure 1): Typical application circuit for LM30-00J0512-03E



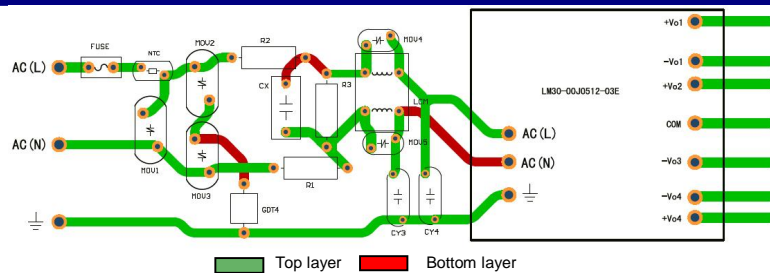
Note: This application is not available for this series. If you have such application, please consult to our FAE department (Figure 2): LM30-00J0512-03E

EMC RECOMMENDED CIRCUIT



(figure 3): LM30-00J0512-03E recommended circuit for applications which require higher EMC standard (external circuit output is the same as figure 1)

EMC RECOMMENDED CIRCUIT PCB LAYOUT



(figure 4): EMC application circuit PCB layout

Safety and recommend wiring: linewidth $\geq 3\text{mm}$, line-line distance $\geq 6\text{mm}$, line-ground distance $\geq 6\text{mm}$

EXTERNAL CIRCUIT PARAMETERS

Model	C1,C3,C5,C7(μF)	C2(μF)	C4,C6(μF)	C8(μF)	TVS1	TVS2 ,TVS3	TVS4
LM30-00J0512-03E	1	470	220	120	SMBJ7.0A	SMBJ20A	SMBJ30A

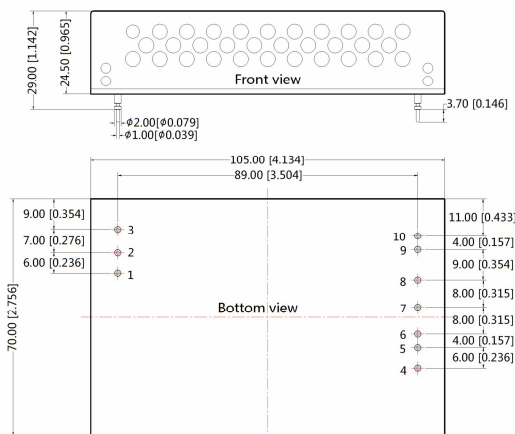
Note:

- Output filtering capacitors C2,C4,C6,C8 are electrolytic capacitors, It is recommended to use high frequency and low impedance electrolytic capacitors. For capacitance and current of capacitor please refer to manufacture's datasheet. Voltage derating of capacitor should be 80% or above. C1,C3,C5,C7 are ceramic capacitor, it is used to filter high frequency noise, recommended to use 1μF. TVS is a recommended component to protect post-circuits (if converter fails).
- For standard EMC requirement, please refer to figure 1 .If higher EMC requirement ,please refer to figure 3, recommended parameters are shown in the table below.

Recommend Parameter For Higher EMC Standard Circuit	
Components	Recommend Parameter
MOV1	S20K350
MOV2	S14K350
MOV3	S14K350
MOV4	S07K350
MOV5	S07K350
CX	0.15μF/300VAC
CY3	2.2nF/400VAC
CY4	2.2nF/400VAC
R1,R2	2Ω/3W winding resistor
R3	1MΩ/2W
LCM	3.3mH, recommended to use MORNSUN's FL2D-10-332
GDT4	B5G3600
NTC	5D-14
FUSE	3.15A/250V, slow blow, it must be connected to FUSE

OUTLINE DIMENSIONS, RECOMMENDED FOOTPRINT & PACKAGING

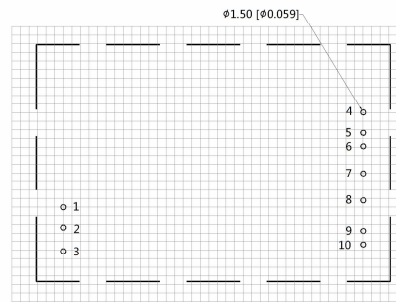
MECHANICAL DIMENSIONS



PIN CONNECTION			
Pin	Function	Pin	Function
1	AC(L)	6	+Vo2
2	AC(N)	7	COM
3	⊥	8	-Vo3
4	+Vo1	9	-Vo4
5	-Vo1	10	+Vo4

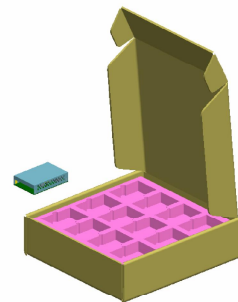
Note:
 Unit :mm[inch]
 Pin diameter tolerances :±0.10mm[±0.004inch]
 Pin pitch tolerances :±0.25mm[±0.010inch]
 General tolerances:±1.00mm[±0.039inch]

RECOMMENDED FOOTPRINT DETAILS



Note:Grid 2.54*2.54mm

PACKAGE DIAGRAM



Note:
 Unit :mm[inch]
 General tolerances: ± 0.50mm[± 0.020inch]
 Inner carton dimensions L*W*H=365*350*105mm
 Packaging quantity : 24 PCS
 Outer carton dimensions: L*W*H=390*360*245mm
 Packaging quantity : 48 PCS

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