

5W, AC-DC converter



RoHS



FEATURES

- Universal Input : 85 - 264VAC/100 - 370VDC
- Operating temperature range: -25°C to +65°C
- Regulated output, Low ripple & noise
- Output short circuit, over-current, over-voltage protection
- High efficiency, high reliability
- Plastic case, meets UL94V-0

LDE05-00A12— a compact size power converter offered by Mornsun. It features universal input voltage, taking both DC and AC input voltage, low power consumption, high reliability, safer isolation.

Note: Please refer to Design Reference when module being used in a bad EMC environment.

Selection Guide

Model	Output Power	Nominal Output Voltage and Current (Vo/Io)		Efficiency (230VAC/%, Typ.)	Max. Capacitive Load(μF)	
		(Vo1/Io1)	(Vo2/Io2)		Vo1	Vo2
LDE05-00A12	5W	+12.3V/203mA	-12.3V/203mA	78	220	220

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	--	--	130	mA
	230VAC	--	--	80	
Inrush current	115VAC	--	10	--	A
	230VAC	--	20	--	
Leakage current		0.1mA RMS typ. 230VAC/50Hz			
Recommended External Input Fuse		2A/250V, slow fusing, necessary			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Primary output	--	±2	--	
	Secondary output	--	±4	--	
Line Regulation	Full load	Primary output	--	±0.5	%
		Secondary output	--	±1.5	
Load Regulation	10% - 100% Load (balanced load)	Primary output	--	±1.5	%
		Secondary output	--	±3	
Ripple & Noise*	20MHz bandwidth (peak-peak value)	Primary output	--	50	mV
		Secondary output	--	50	
Temperature Drift Coefficient		--	±0.02	--	%/°C
Short Circuit Protection		Continuous, self-recovery			
Over-current Protection		≥ 110% Io self-recovery			
Over-voltage Protection	Primary output	≤ 20VDC			
	Secondary output	≤ 20VDC			
Min. Load		10	--	--	%
Power-off Holding Time	115VAC input	--	5	--	ms
	230VAC input	--	60	--	

Note: *Parallel line test method is adopted to test the ripple and noise, please see AC-DC Converter Application Notes for specific operation methods.

General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output	Test time: 1min	2500	--	--	VAC
Operating Temperature			-25	--	+65	°C
Storage Temperature			-40	--	+85	
Storage Humidity			--	--	85	%RH
Welding Temperature	Wave-soldering		260 ± 5°C; time: 5 - 10s			
	Manual-welding		360 ± 10°C; time: 3 - 5s			
Power Derating	85VAC - 100VAC		1.0	--	--	%/VAC
Safety Class			CLASS II			
MTBF			MIL-HDBK-217F@25°C > 300,000 h			

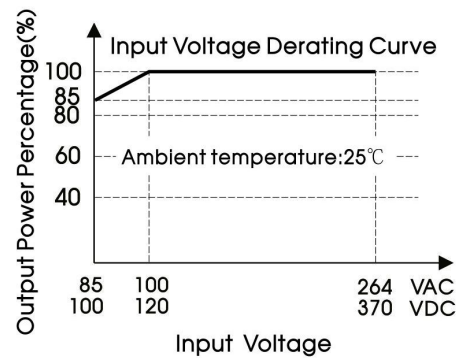
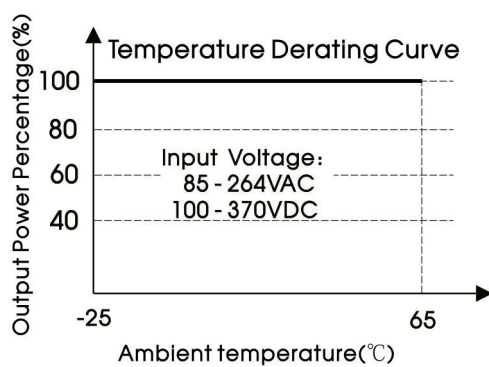
Physical Specifications

Casing Material	Black flame-retardant and heat-resistant plastic (UL94V-0)
Package Dimensions	37.00*24.50*18.00 mm
Weight	26g(Typ.)
Cooling method	Free air convection

EMC Specifications

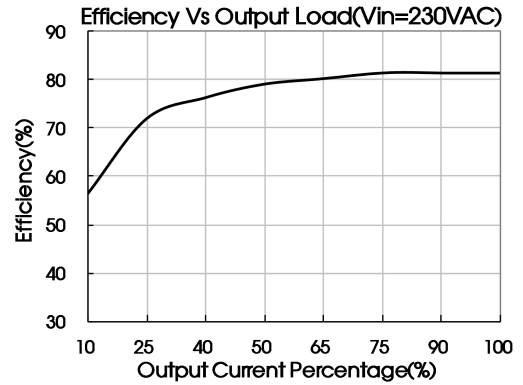
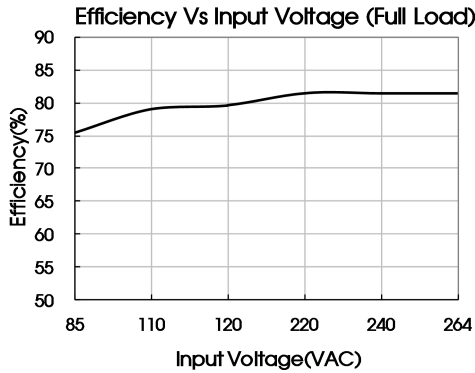
EMI	CE	CISPR32/EN55032	CLASS A	
		CISPR32/EN55032	CLASS B (See Fig. 2 for recommended circuit)	
	RE	CISPR32/EN55032	CLASS A	
		CISPR32/EN55032	CLASS B (See Fig. 2 for recommended circuit)	
EMS	ESD	IEC/EN61000-4-2	Contact ±4 KV	perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4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

Product Characteristic Curve



Note: ①When input 85-100VAC/100-120VDC, it need to be voltage derated on basis of temperature derating;

②This 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

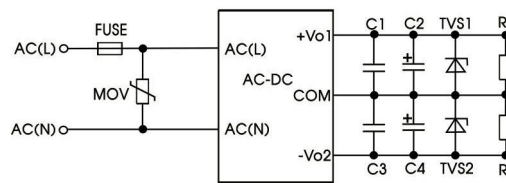


Fig. 1: Typical application circuit

Model	FUSE	MOV	C1/C3(μF)	C2/C4(μF)	TVS1/TVS2
LDE05-00A12	2A/250V, slow fusing, necessary	S14K350	0.1UF/50V	100UF/35V	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. Capacitor voltage reduced to at least 80%. C1/C3 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

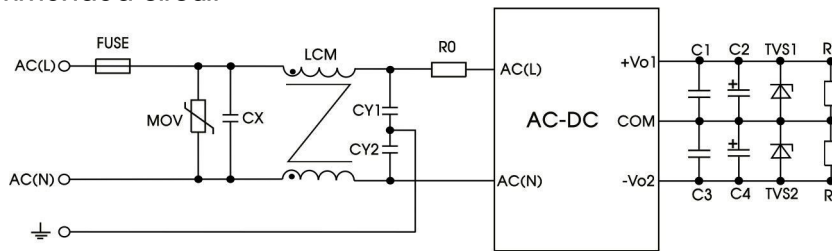


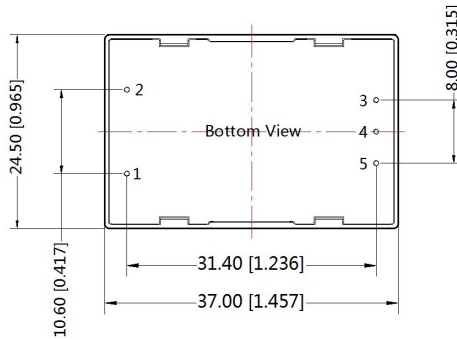
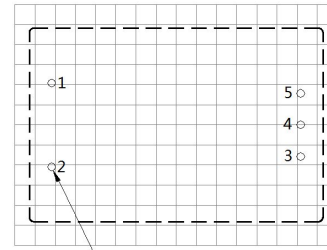
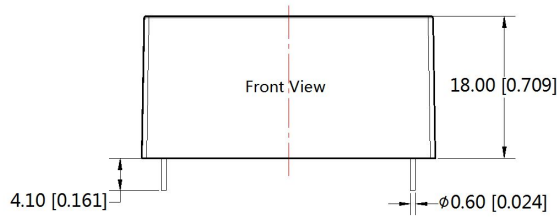
Fig 2: EMC application circuit with higher requirements

Element model	Recommended value
MOV	S14K350
CX	0.1μF/275VAC
LCM	10mH - 30mH, recommended to use MORNSUN's FL2D-Z5-103
CY1	1nF/400VAC
CY2	1nF/400VAC
FUSE	2A/250V, slow fusing, necessary
R0	33 Ω /3W

3. For more information please find the application note on www.mornsun-power.com

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



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

Pin-Out	
Pin	Function
1	AC(N)
2	AC(L)
3	+Vo1
4	COM
5	-Vo2

Note:

1. Packing information please refer to Product Packing Information which can be downloaded from www.mornsun-power.com. Packing bag number: 58200055;
2. 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;
3. All index testing methods in this datasheet are based on our Company's 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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