

## LD01 & LD02 SERIES

### 1W/2W, ULTRA SMALL SIZE AC-DC CONVERTER

LD01 & LD02 Series are the compact size power converter offered by MORNSUN. It features compact size, 3000VAC safer isolation. It offers good EMC performance, meets IEC61000, UL60950 and IEC60950 standards, and widely used in industrial, electricity, instruments and civil applications. If want to used in electricity and other higher requirement to EMC applications, must connect typical application.

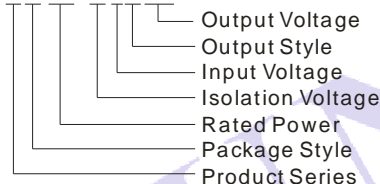


### PRODUCT FEATURES

1. Wide Input voltage Range: 85~305VAC/120~430VDC
2. AC and DC all in one (input from the same terminal)
3. Small size, low Ripple and Noise
4. EMC meets EN55022、EN55024
5. Low Standby Power, high efficiency, green power
6. Over output current protection, short circuit protection
7. Meet IEC61000, UL60950 and IEC60950 standards
8. 3 years warranty

### PART NUMBER SYSTEM

LD01-10B24



### SELECTION GUIDE

Approval	Model	Package	Power	Output (Vo/Io)	Max. Capacitive Load(μF)	Ripple and Noise (Typ)	Efficiency (% Typ)	Standby Power(Typ)
UL/CE	LD01-10B03	33.7x22.2x18mm	1W	3.3V/300mA	4000	100mV	63	0.1W
	LD01-10B05			5V/200mA	4000		68	
	LD01-10B09			9V/111mA	2200		72	
	LD01-10B12			12V/83mA	2200		73	
	LD01-10B15			15V/67mA	1000		74	
	LD01-10B24			24V/42mA	680		75	
	LD02-10B03		2W	3.3V/600mA	4000		65	
	LD02-10B05			5V/400mA	4000		70	
	LD02-10B09			9V/222mA	2200		72	
	LD02-10B12			12V/167mA	2200		76	
	LD02-10B15			15V/133mA	1000		76	
	LD02-10B24			24V/83mA	680		78	

### INPUT SPECIFICATIONS

Input Voltage Range		85~305VAC, 120~430VDC
Input Frequency		47~63Hz
Input Current	LD01 series LD02 series	110VAC 30mA, typ 44mA, typ
Inrush Current		110VAC 5A, typ
Leakage Current		230VAC 17mA, typ 25mA, typ
		230VAC 11A, typ
		0.15mA (max)

### OUTPUT SPECIFICATIONS

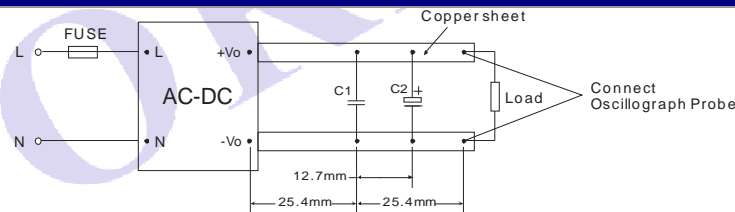
Output Voltage Accuracy(Max.)		±5% (max)	3.3V output ±6% (max)
Line Voltage Regulation(Max.)		±2% (max)	
Load Variation (10% to 100%)		±5% (max)	
Ripple & Noise(p-p)	20MHz Bandwidth	100mV(typ)	200mV(max)
Short Circuit Protection		Continuous, and auto resume	
Over Current Protection		≥ 110% I <sub>o</sub> can auto resume	

## COMMON SPECIFICATIONS

Temperature Ranges	Operating	-25°C ~ +70°C (55~70°C derating)		
	Power derating (above 55°C)	3.3% / °C		
	Storage	-40°C ~ +85°C		
Humidity	Operating Humidity	30~90%RH		
	Storage Humidity	20~95%RH		
Switching Frequency		100KHz(max)		
I/O-isolation Voltage (Input to Output)		3000VAC/1Min		
EMC	EMI	CE	CISPR22/EN55022, CLASS B	
		RE	CISPR22/EN55022, CLASS B	
	EMS	ESD	IEC/EN61000-4-2	Contact ±4KV / Air ±8KV perf. Criteria B
		RS	IEC/EN61000-4-3	10V/m perf. Criteria A
		EFT*	IEC/EN61000-4-4	±2KV perf. Criteria B
		Surge Immunity *	IEC/EN61000-4-5	±1KV/±2KV 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	
Safety approvals		UL60950/EN60950		
Safety Class		CLASS II		
Case Material		UL94V-0		
Install		PCB		
Cooling		Free air convection		
MTBF		>300,000h @25°C		
Weight		20g (typ)		

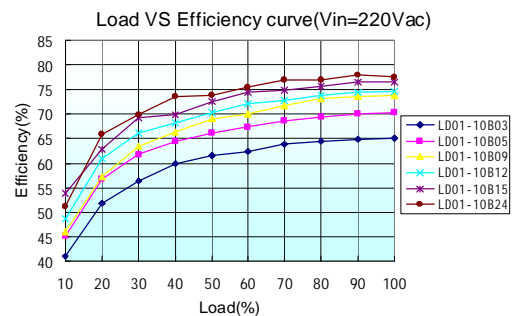
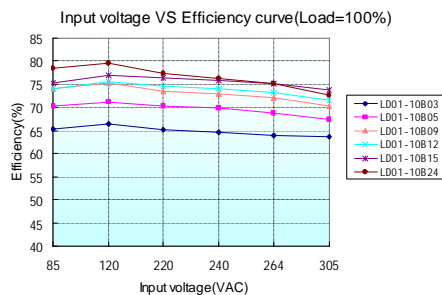
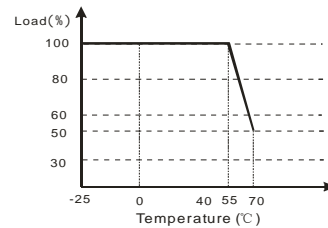
Note: 1.\* External circuit is required to models at inrush and electrical fast transients experiment, refer to typical application.  
 2. Models listed with strike-through text have been officially discontinued.  
 3. Unless otherwise specified, all specifications above are measured at rated input voltage and rated output load, TA=25°C, humidity < 75%.  
 4. All specifications stated in this datasheet are subject to the above listed models only. For specifications of non-standard models, please contact our technical support team.

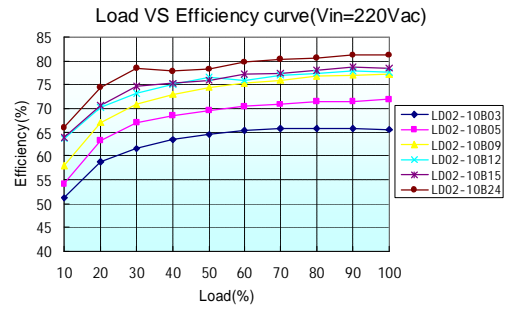
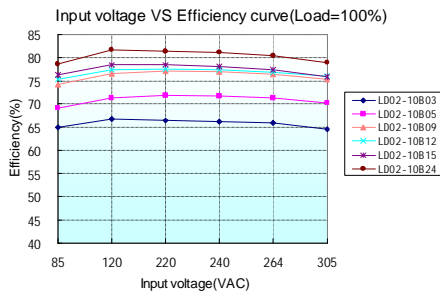
## PARALLEL LINES MEASURE



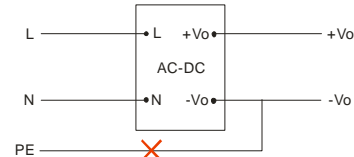
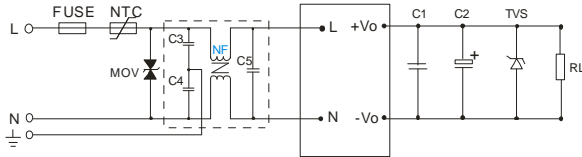
Note: C1: 1μF (ceramic capacitor) C2: 10μF (electrolytic capacitor)

## PRODUCT TYPICAL CURVE





## TYPICAL APPLICATIONS



Note: This application is not supported for this series.

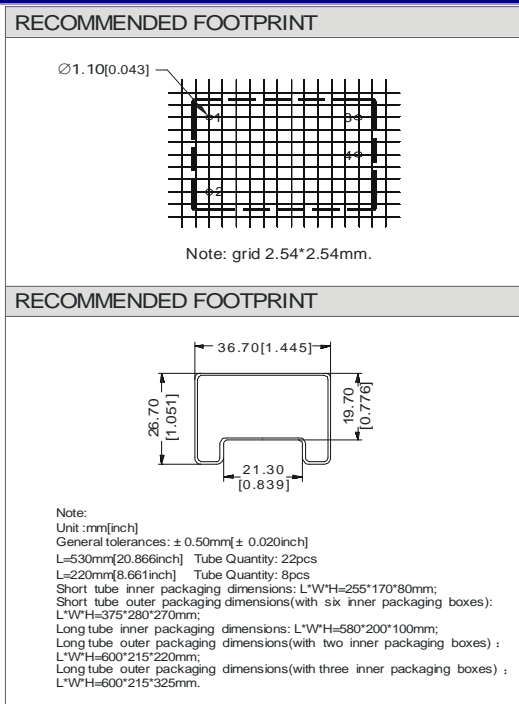
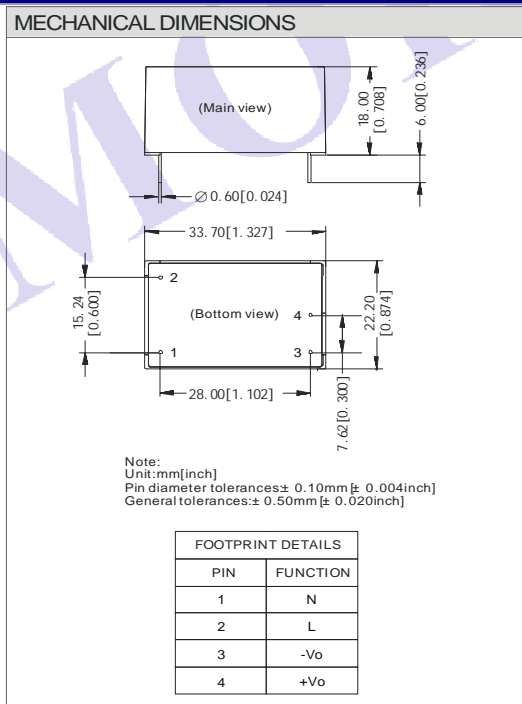
### EXTERNAL CAPACITORS TYPICAL VALUE (Unit: $\mu\text{F}$ )

Model	C1	C2	TVS
LD01/02-10B03	1 $\mu\text{F}$ /50V	220	SMBJ7.0A
LD01/02-10B05	1 $\mu\text{F}$ /50V	220	SMBJ7.0A
LD01/02-10B09	1 $\mu\text{F}$ /50V	120	SMBJ12A
LD01/02-10B12	1 $\mu\text{F}$ /50V	120	SMBJ20A
LD01/02-10B15	1 $\mu\text{F}$ /50V	120	SMBJ20A
LD01/02-10B24	1 $\mu\text{F}$ /50V	68	SMBJ30A

Note:

- C1 is ceramic capacitor, it is used to filter high frequency noise. C2 is electrolytic capacitor, 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. TVS is a recommended component to protect post-circuits (if converter fails).
- It is recommended to connect FUSE, the parameter is 0.5A/250V slow blow. NTC is recommended to use 5D-9.
- MOV: Varistor, model: 561KD14, it is used to protect the device under surge.  
C3,C4:Y capacitor, recommended parameter 2200pF/400V; C5:X capacitor, recommended parameter 0.1-0.33 $\mu\text{F}$ /300V;  
NF: common model choke, recommended inductance is about 15mH-30mH.

## OUTLINE DIMENSIONS, RECOMMENDED FOOTPRINT & PACKAGING



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Specifications subject to change without notice.  
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