

LD10 SERIES 10W, AC-DC CONVERTER

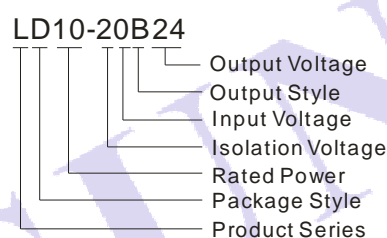
LD series ----is a compact size power converter offered by Mornsun for PCB mount installation applications. It features universal input voltage, taking both DC and AC input voltage, low power consumption, high efficiency, high reliability, safer isolation. It offers good EMC performance, meets IEC61000, UL60950 and IEC60950 standards, and is UL & CE certified, and widely used in industrial, medical, electricity, instruments, telecommunication and civil applications.



PRODUCT FEATURES

1. Universal Input :85 ~ 264VAC,50/60Hz
2. AC and DC all in one (input from the same terminal)
3. Low Ripple and Noise
4. Over output voltage protection , short circuit protection and thermal protection
5. High efficiency, High power density
6. Low loss, green power
7. Multiple models available
8. Industrial, medical level specifications

MODEL SELECTION



PRODUCT PROGRAM

Approval	Model	Package	Power	Output (Vo1/Io1)	Ripple and Noise (typ)	Efficiency (%) (typ)	Standby Power (typ)
UL/CE	LD10-20B03	53.5X28.5X19.0mm	6.6W	3.3V/2000mA	50mV	70	0.4W
	LD10-20B05			5V/2000mA		74	0.4W
	LD10-20B09			9V/1100mA		76	0.45W
	LD10-20B12			12V/900mA		76	0.4W
	LD10-20B15			15V/700mA		78	0.5W
	LD10-20B24			24V/450mA		80	0.6W

Remarks :

1. Ripple and Noise were measured by the method of parallel lines;
2. Unless otherwise specified, all specifications above are measured at rated input voltage and rated output load, TA=25°C, humidity < 75%.

INPUT SPECIFICATIONS

Input Voltage Range	85~264VAC, 120~370VDC
Input Frequency	47~440Hz
Input Current	110VAC 230mA, typ 230VAC 150mA, typ
Inrush Current	110VAC 10A, typ 230VAC 20A, typ
Leakage current	0.1mA (typ) @ Vin=230Vac
External input fuse(Recommended)	2A/250V Slow blow

OUTPUT SPECIFICATIONS

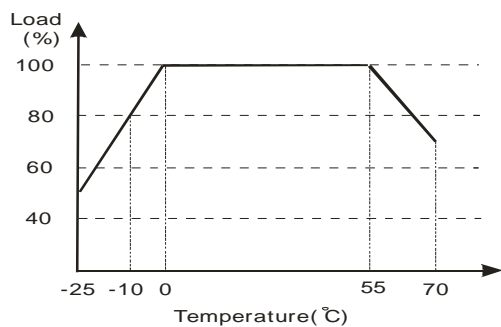
Voltage set accuracy	±2% (3.3V: ±3%)(typ)
Input variation	±0.5% (typ)
Load variation (10% to 100%)	±1% (typ)
Ripple& noise(p-p) (20MHz Bandwidth)	50mV(typ) 100mV(max)
Short circuit protection	Continuous, and auto resume
Over current protection	≥110% I _o

Maximum capacitive load (μF)	LD10-20B03	8000
	LD10-20B05	8000
	LD10-20B09	560
	LD10-20B12	1200
	LD10-20B15	1000
	LD10-20B24	200

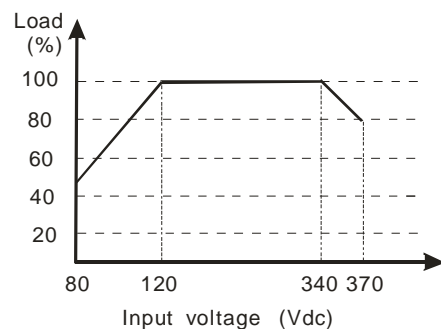
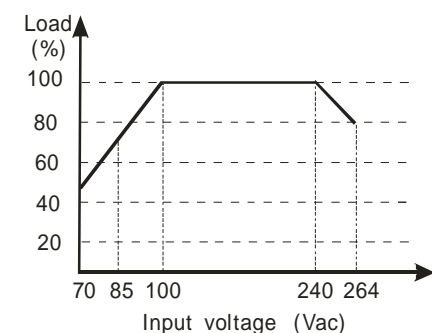
COMMON SPECIFICATIONS

Temperature ranges	Operating	-25°C ~ +70°C	
	Power derating	(above 55°C)	2%/°C
		(below 0°C)	2%/°C
	Storage:	-40°C ~ +105°C	
Case temperature:	+95°C max		
Hold-up time	($V_{in}=230\text{VAC}$)	50ms(typ)	
Humidity		95%(max)	
Temperature coefficient		0.02%/°C	
Switching frequency		60kHz(typ)	
Isolation voltage(Input-Output)		4000VAC/1Min	
*EMI/RFI conducted		EN55011, levelB	
EMC compliance	Electrostatic discharge ESD	IEC/EN 61000-4-2 level 4 8kV/15kV	
	RF field susceptibility	IEC/EN 61000-4-3	
	*Electrical fast transients/bursts on mainsline	IEC/EN 61000-4-4 level 4 4kV	
	*Surge	IEC/EN 61000-4-5 level 4 2kV/4kV	
Safety standards		IEC60601, EN60601, UL60950	
Safety approvals		EN60601, UL60950	
Safety Class		CLASS II	
Case material		UL94V-0	
Install		PCB	
MTBF		>300,000h @25°C	
Package		53.5X28.5X19mm	
Note: * EMC application circuit is required.			

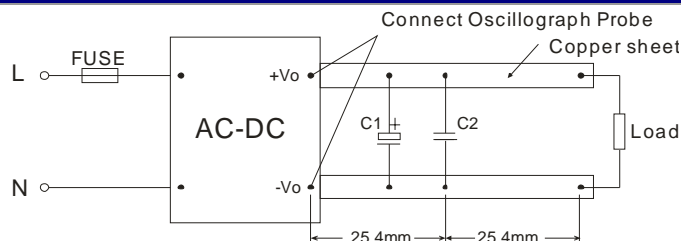
TEMPERATURE VS LOAD



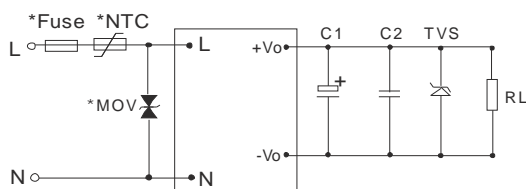
INPUT VOLTAGE VS LOAD



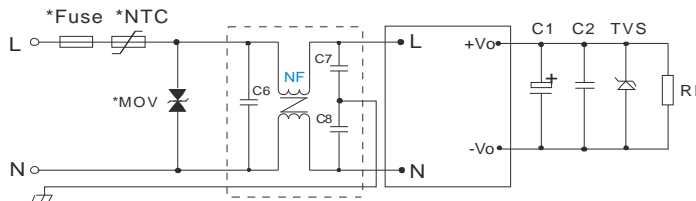
ANEAR MEASURE



TYPICAL APPLICATIONS



(Figure 1) LD10 EMC Application chart 1



(Figure 2) LD10 EMC Application chart 2

EXTERNAL CAPACITORS TYPICAL VALUE(Unit: μF)

Model	C1	C2	TVS
LD10-20B03	220 μF /10V	0.1 μF /50V	P6KE6.8A
LD10-20B05	220 μF /10V	0.1 μF /50V	P6KE6.8A
LD10-20B09	120 μF /25V	0.1 μF /50V	P6KE12A
LD10-20B12	120 μF /25V	0.1 μF /50V	P6KE20A
LD10-20B15	120 μF /25V	0.1 μF /50V	P6KE20A
LD10-20B24	68 μF /35V	0.1 μF /50V	P6KE30A

Note:

- Output filtering capacitors C1 is 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. C2 is ceramic capacitor, it is used to filter high frequency noise. TVS is a recommended component to protect post-circuits (if converter fails).
- MOV is required to LD10 models, model: 471KD07, it is used to protect the device under surge.
- It is recommended to connect FUSE, the parameter is 2A/250V slow blow. External input NTC model is recommended to use 5D-9.
- For common requirement to EMC performance (EN55011,Level A), refer to figure 1, if higher requirement to EMC performance (EN55011,Level B), refer to figure 2.

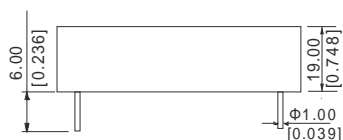
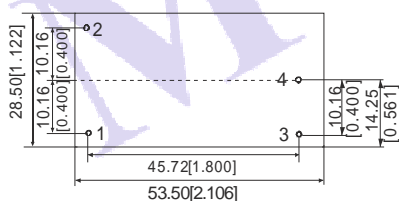
C6:X capacitor, recommended parameter 0.1 μF /275V;

C7,C8:Y capacitor, recommended parameter 2200pF/400V;

NF: common model choke, recommended inductance is about 10mH-30mH.

OUTLINE DIMENSIONS & PIN CONNECTIONS

PACKAGE DIAGRAM



Note:

First Angle Projection

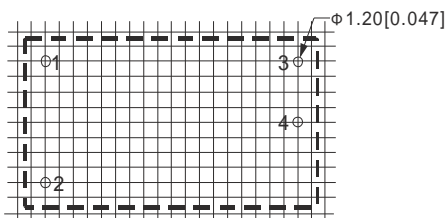
Unit: mm[inch]

Pin diameter: 1.00 \pm 0.10mm[0.039 \pm 0.004inch]

General tolerances: \pm 0.50mm[\pm 0.020inch]

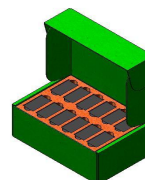
Weight: 50 \pm 3g

RECOMMENDED FOOTPRINT
Top view, grid: 2.54mm[0.100inch],



FOOTPRINT DETAILS

PIN	FUNCTION
1	N
2	L
3	+Vo
4	-Vo



Inner packaging box dimensions:

L*W*H=255*170*80mm

Packaging quantity: 24pcs

Outer packaging box dimensions:

L*W*H=405*380*305mm

Packaging quantity: 144pcs

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