

Datasheet

RS Pro LDE06-20Bxx / AC/DC Converter

6W, AC-DC converter



Features

- Universal 85 - 264V AC and wide 100 - 370V DC Input
- Operating ambient temperature range -40°C to +70°C
- High I/O isolation test voltage up to 4000VAC
- Regulated output, Low output ripple & noise
- Output short circuit, over-current, over-voltage protection
- High efficiency, high reliability
- Plastic case meets UL94V-0 flammability
- EMI performance meets CISPR32 / EN55032 CLASS B
- IEC62368, UL62368, EN62368 approval

UL US CE CB RoHS

LDE06-20Bxx series features a universal AC input and DC input voltage, low power consumption, high efficiency, high reliability and double or reinforced insulation. The converters meet CISPR32/EN55032, UL62368, EN62368, IEC62368 standards and are widely used in industrial, medical, instrumentation, telecommunications applications.

Selection Guide

Certification	RS Stock no. (Standard Pack)	RS Stock no. (Tube Pack 19pcs)	Part No	Output Power	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 230VAC (%) Typ.	Capacitive Load (μF) Max.
UL/CE/CB	1812189	1812145	LDE06-20B03	4.1W	3.3V/1250mA	70	4000
	1812192	1812146	LDE06-20B05	6W	5V/1200mA	76	4000
	1812193	1812147	LDE06-20B12		12V/500mA	77	820
	1812195	1812148	LDE06-20B15		15V/400mA	77	820
	1812197	1812149	LDE06-20B24		24V/250mA	80	330

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	--	--	0.15	A
	230VAC	--	--	0.10	
Inrush Current	115VAC	--	10	--	
	230VAC	--	20	--	
Recommended External Input Fuse		1A/250V Slow-blow required			
Hot Plug		Unavailable			

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Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	3.3V output	--	±3	--	%
	Other output	--	±2	--	
Line Regulation	Full load	--	±0.5	--	
Load Regulation	0%-100% load	--	±1	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	50	100	mV
Temperature Coefficient		--	±0.02	--	%/°C
Short Circuit Protection		Hiccup, continuous, self-recovery			
Over-current Protection		≥110%Io, self-recovery			
Over-voltage Protection	3.3/5VDC output	≤ 7.5V			
	9VDC output	≤ 15V			
	12/15 VDC output	≤ 20V			
	24 VDC output	≤ 30V			
Minimum Load		0	--	--	%
Hold-up Time	115VAC input	--	8	--	ms
	230VAC input	--	60	--	

Note: * The "parallel cable" method is used for Ripple and noise test, please refer to AC-DC Converter Application Notes for specific information.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-Output	4000	--	--	VAC
Operating Temperature		-40	--	+70	°C
Storage Temperature		-40	--	+105	
Storage Humidity		--	--	95	%RH
Soldering Temperature	Wave-soldering	260 ± 5°C; time: 5 - 10s			
	Manual-welding	360 ± 10°C; time: 3 - 5s			
Switching Frequency		--	100	--	kHz
Power Derating	-40°C to -25°C	2.66	--	--	% / °C
	+55°C to +70°C	2.66	--	--	
	85 - 100VAC	1.0	--	--	%/VAC
Safety Standard		IEC62368/EN62368/UL62368			
Safety Certification		IEC62368/EN62368/UL62368			
Safety Class		CLASS II			
MTBF		MIL-HDBK-217F@25°C > 300,000 h			

Mechanical Specifications

Case Material	Black plastic, flame-retardant and heat-resistant (UL94V-0)	
Dimension	DIP	50.80 x 25.40 x 15.36 mm
Weight	DIP	31g (Typ.)
Cooling Method	Free air convection	

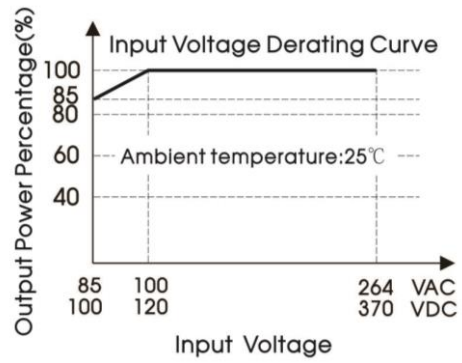
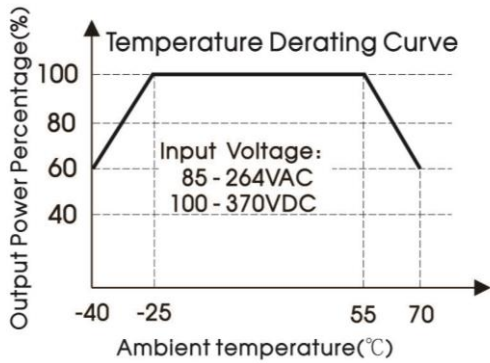
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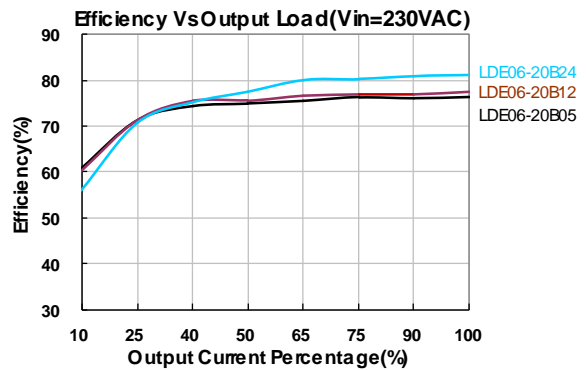
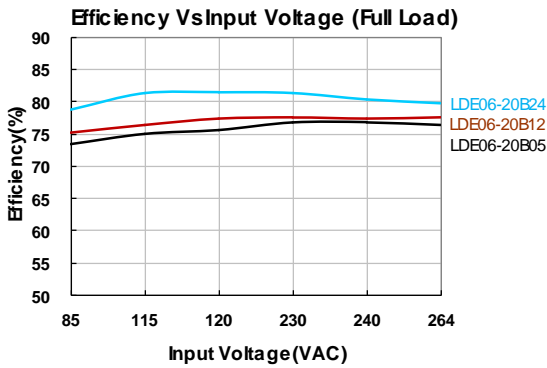
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS B		
	RE	CISPR32/EN55032	CLASS B		
Immunity	ESD	IEC/EN61000-4-2	Contact $\pm 6KV$ / Air $\pm 8KV$	perf. Criteria B	
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A	
	EFT	IEC/EN 61000-4-4	$\pm 2KV$		perf. Criteria B
		IEC/EN 61000-4-4	$\pm 4KV$ (See Fig. 2 for recommended circuit)		perf. Criteria B
	Surge	IEC/EN 61000-4-5	line to line $\pm 1KV$		perf. Criteria B
		IEC/EN 61000-4-5	line to line $\pm 2KV$ /line to ground $\pm 4KV$ (See Fig. 2 for recommended circuit)		perf. Criteria B
CS	IEC/EN61000-4-6	10Vr.m.s		perf. Criteria A	
Voltage dips, short interruption and voltage variations immunity	IEC/EN61000-4-11	0%, 70%		perf. Criteria B	

Product Characteristic Curve



Note: With an AC input between 85-100VAC and a DC input between 100-120VDC, the output power must be derated as per temperature derating curves;



Design Reference

Typical application

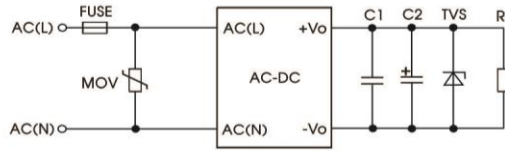


Fig. 1: Typical circuit diagram

Part No.	C1(μF)	C2(μF)	FUSE	MOV	TVS
LDE06-20B03	1	220	1A/250V, slow-blow required	S14K350	SMBJ7.0A
LDE06-20B05		220			SMBJ7.0A
LDE06-20B12		100			SMBJ20A
LDE06-20B15		100			SMBJ20A
LDE06-20B24		47			SMBJ30A

Output Filter Components:

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to manufacture’s datasheet). Choose a Capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor used for filtering high-frequency noise and the TVS provides optional supplementary overvoltage protection.

1.EMC compliance recommended circuit

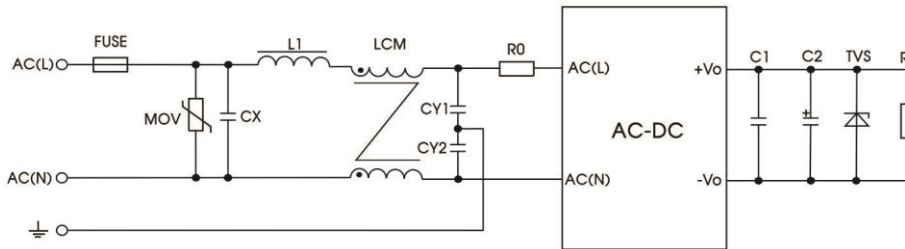
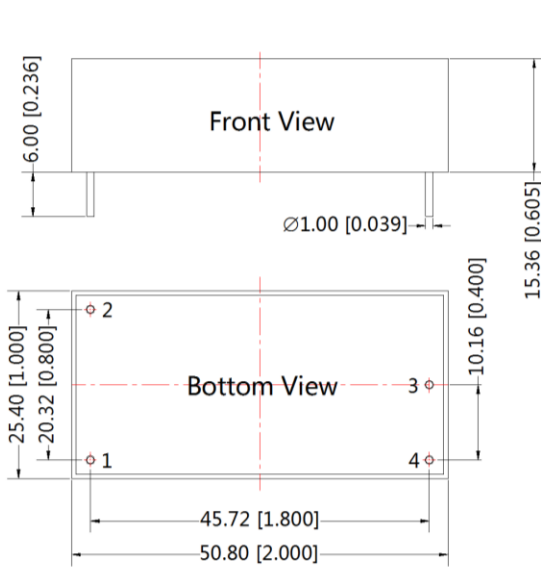


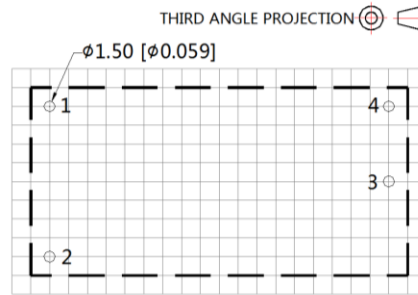
Fig 2: EMC circuit for harsh requirements

Component	Recommended value
MOV	S14K350
CX	0.1μF/275VAC
L1	4.7uH/2.0A
CY1	1nF/400VAC
CY2	1nF /400VAC
LCM	2.2mH, we recommend using part no. FL2D-10-222 (MORNSUN)
FUSE	2A/250V, slow-blow required
R0	33Ω/3W

Dimensions and Recommended Layout



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



Note:Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	AC(N)
2	AC(L)
3	-Vo
4	+Vo

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Note:

- 1.Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity<75% with nominal input voltage and rated output load;
- 2.All index testing methods in this datasheet are based on our Company's corporate standards.
- 3.Products are related to laws and regulations: see "Features" and "EMC".
- 4.Products are classified according to ISO14001 and related environmental laws and regulation.