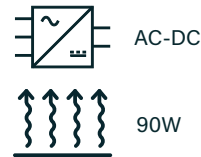
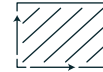


LD90-23BxxR2 SERIES



DIMENSIONS:



PCB: 3.425 x 2.047 x 0.039" (87 x 52 x 29.5mm)
 A2S: 5.315 x 2.756 x 1.492" (135 x 70 x 37.9mm)
 A4S: 5.394 x 2.756 x 1.492" (137 x 70 x 37.9mm)



85 - 305 VAC

-40 TO 85°C
OPERATION

4200 VAC ISOLATION

Part numbers

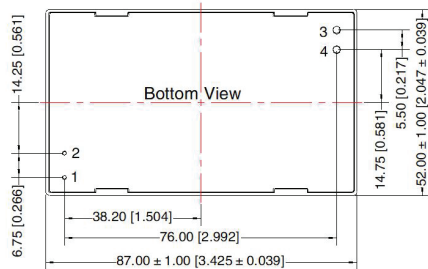
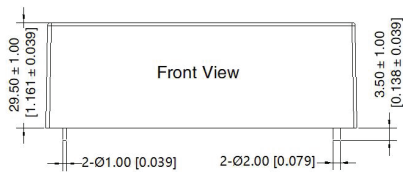
LD90	-23B	12	R2
Series	Input voltage	Output voltage	Version
	85-305VAC	12 = 12VDC 15 = 15VDC 24 = 24VDC 48 = 48VDC	

Key specifications

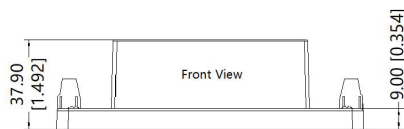
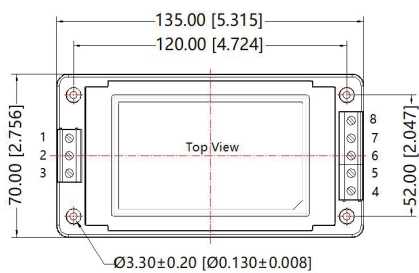
Input range	Safety certification	Efficiency	Environmental performance
85-305VAC	UL / EN 62368-1, Designed to meet IEC / EN 60335-1, CE	92-93%	-40 to 85°C

Mechanical

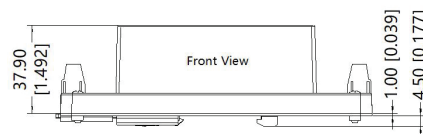
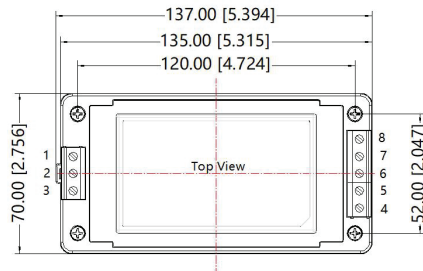
Through hole



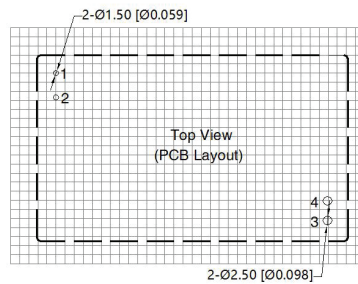
Chassis mount



DIN rail mount



THIRD ANGLE PROJECTION



Note: Grid 2.54*2.54mm

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

Notes

1. All dimensions shown in mm
2. Pin diameter ± 0.1 [± 0.004]
3. General tolerance ± 0.5 [± 0.02]

Pin	Function
1	AC IN (L)
2	NC
3	AC IN (N)
4	+VO
5	-VO
6	NC
7	NC
8	NC

Weight

Through hole	A2S	A4S
200g	280g	350g

LD90-23BxxR2 SERIES

Models & Ratings

Model Number (1)	Output Power	Output Voltage	Output current	Efficiency (2)	Max Capacitive Load
LD90-23B12R2	80.4W	12V	6700mA	92%	6800uF
LD90-23B15R2	85.05W	15V	5670mA	92.5%	4500uF
LD90-23B24R2	90W	24V	3750mA	93%	3000uF
LD90-23B48R2	90W	48V	1875mA	93%	470uF

1. Typical efficiency at 230VAC

2. Unless stated, figures are at 25°C <75RH and nominal line/ load

3. 20MHz BW 10uF and 1uF ceramic cap

Input

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Input voltage	85		305	VAC	100-430 VDC slow blow fuse required. See page 6 for derating curve
Input frequency	47		63	Hz	
Power factor					EN61000-3-2 class A
Input current	1.1		2	Arms	2A 115VAC / 1.1A at 230VAC
Inrush current	30		60	A	30A at 115VAC and 60A at 230VAC. Cold start at 25°C
No load input power		0.3	0.55	W	
Leakage current			0.25	mA	277VAC 50Hz
Built in fuse	3.15A / 300V slowblow				

Output

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Output voltage	12		48	VDC	See Models & Ratings table
Set point accuracy		±2		%	
Line regulation		±0.5		%	
Load regulation		±1		%	0 to 100% load
Minimum load	0			%	
Ripple and noise	120		240	mV pk-pk	All models measured with 10uF and 0.1uF capacitor. 20 MHz bandwidth
Hold up time	10		30	mS	10ms for 115VAC and 30ms for 230VAC

LD90-23BxxR2 SERIES

Protections

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Overload	110			%	Trip and restart. Automatic recovery
Short circuit					Trip and restart. Automatic recovery
Over voltage			16 25 35 60	VDC	12V units 15V units 24V units 48V units

Safety

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Safety standards	IEC/EN/UL62368-1/EN60335-1				
Isolation: Input to output	4200			VAC	

EMC: Immunity

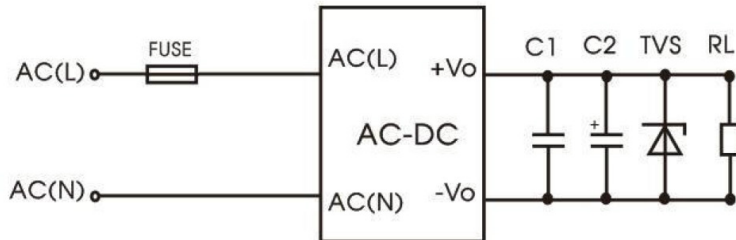
	Standard	Test level	Criteria	Notes/Conditions
ESD	EN61000-4-2	3	A	±6kV contact / ±8kV Air
Radiated	EN61000-4-3	3	A	10V/m
EFT	EN61000-4-4	3	A	±2kV Circuit 1
Surges	EN61000-4-5	Installation class 3	A	±2kV
	EN61000-4-5	Installation class 3	B	±2kV Line-Line, 4kV Line-Ground Circuit 2
Conducted	EN61000-4-6	2	A	10Vrms
PFMF	EN61000-4-8	4	A	30A/m
Voltage dips and interruptions	EN61000-4-11			0% interruptions 70% dips performance criteria B

EMC: Emissions

	Standard	Test level	Criteria	Notes/Conditions
Conducted	EN55032	B		
Radiated	EN55032	B		
Harmonic current	EN61000-3-2	Class A		
Voltage flicker	EN61000-3-3			

LD90-23BxxR2 SERIES

Application Notes



Typical Application: Circuit 1

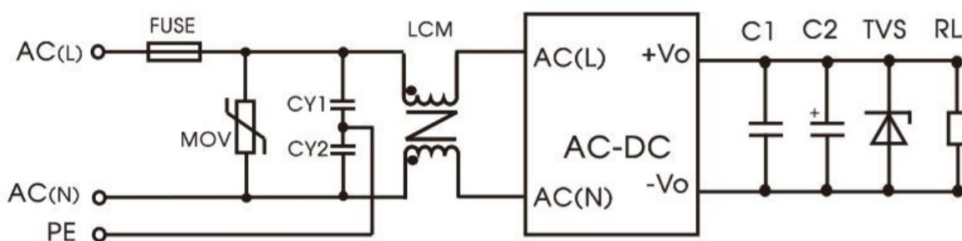
1. For a typical application we recommend placing these additional components close to the converter
2. In circuit 1, C1 should be a ceramic cap for HF noise and C2 an electrolytic with low ESR
3. Both caps should have a minimum 20% voltage margin on the output voltage
4. The TVR is placed to protect the load should the converter fail

Part no	Fuse	C1	C2	TVS
LD90-23B12R2	6.3A/300V slow blow required	1uF/100V	330uF/35V	SMBJ20A
LD90-23B15R2			330uF/35V	SMBJ20A
LD90-23B24R2			200uF/35V	SMBJ30A
LD90-23B48R2			100uF/63V	SMBJ64A

Suggested EMC: Circuit 2

1. The neighbouring circuit 2 is recommended to pass EMC emission and immunity.
2. Place components as close to the converter as possible
3. For better EMC performance fit MOV S14K350, 6.3A/300V fuse, 1nF/400V Y caps and 10mH LCM.

Component	Recommended value
Fuse	6.3A/300V slow blow
MOV	S14K350
CY 1/2	1nF/400VAC
LCM	10mH



Environmental

Parameter	Min	Typical	Max	Unit	Notes/Conditions
Operating temperature	-40		85	°C	See derating curve
Storage temperature	-40		85	°C	
Altitude	2000		5000	m	Derate 6.6% every km above 2km
Temperature coefficient			±0.02	%/°C	
Storage Humidity			95	% RH	

