AC/DC Converter
SLD10-2WBxx Series

10W, AC-DC converter

RoHS

FEATURES

- Ultra-low, ultra-wide input voltage: 21.6 - 305VAC and 18 - 430VDC
- Operating ambient temperature range: -40℃ to +85℃
- High I/O isolation test voltage up to 4000VAC
- Up to 81% efficiency
- Output short circuit, over-current, over-voltage protection
- 5000m altitude application

SLD10-2WBxx series AC-DC converters is one ultra-low, ultra-wide input power converter. It features ultra-wide AC input and at the same time accepts DC input voltage, low power consumption, low ripple & noise, high efficiency, high reliability, reinforced isolation. It offers good EMC performance compliant to IEC/EN61000-4 and CISPR32/EN55032 and meets IEC/EN/UL62368/EN60335/EN61558 standards. The converters are compatible with a variety of common input voltage application environments such as 24VDC, 48VDC, 24VAC, 110VAC, 220VAC, 230VAC, 277VAC, and they are widely used in low voltage switch, industrial, power, instrumentation, communication and civil applications. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

Selection Guide

Certification	Part No.	Output Power(W)	Nominal Output Voltage and Current(Vo/Io)	Efficiency at 230VAC (%) Typ.	Capacitive Load (uF) Max.
EN (Pending)	SLD10-2WB05	10.00	5V/2000mA	76	5000
	SLD10-2WB09	9.90	9V/1100mA	78	3600
	SLD10-2WB12	9.96	12V/830mA	80	2000
	SLD10-2WB15	10.05	15V/670mA	80	820
	SLD10-2WB24	10.08	24V/420mA	81	400

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	21.6	--	305	VAC
	DC input	18	--	430	VDC
Input Frequency		47	--	63	Hz
Input Current	24VDC/24VAC	--	--	0.6	A
	115VAC	--	--	0.35	
	230VAC	--	--	0.25	
Inrush Current	115VAC	--	25	--	
	230VAC	--	40	--	
Leakage Current	277VAC/50Hz	0.1mA RMS Max.			
Recommended External Input Fuse		2A/300V, slow-blow, required			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		--	±2	--	%
Line Regulation	Full load	--	±0.5	--	
Load Regulation	0%-100% load	--	±1	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	--	100	mV
Stand-by Power Consumption	230VAC	--	--	0.5	W
Temperature Coefficient		--	±0.02	--	%/°C
Short Circuit Protection		Hiccup, continuous, self-recovery			
Over-current Protection		≥110%Io, self-recovery			
Over-voltage Protection	5VDC Output	≤7.5VDC (Hiccup)			
	9VDC Output	≤15VDC (Hiccup)			
	12VDC/15VDC Output	≤20VDC (Hiccup)			
	24VDC Output	≤35VDC (Hiccup)			

Minimum Load		0	--	--	%
Hold-up Time	115VAC input	--	8	--	ms
	230VAC input	--	40	--	

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	Input-output	Electric Strength Test for 1min., leakage current <5mA		4000	--	--	VAC
Insulation Resistance		At 500VDC		100	--	--	MΩ
Operating Temperature				-40	--	+85	℃
Storage Temperature				-40	--	+85	
Storage Humidity				--	--	95	%RH
Soldering Temperature		Wave-soldering		260 ± 5℃; time：5 - 10s			
		Manual-welding		360 ± 10℃; time：3 - 5s			
Power Derating		-40℃ to -25℃ （＜100VAC/140VDC input）		2.33	--	--	%/℃
		+50℃ to +70℃	5V	2.5	--	--	
		+55℃ to +70℃	9V/12V/15V/24V	3.33	--	--	
		+70℃ to +85℃		0.66	--	--	
		24VAC - 85VAC		0.66	--	--	%/VAC
		85VAC - 100VAC		1.33	--	--	
		18VDC-24VDC		1.67	--	--	
		24VDC-100VDC		0.39	--	--	
		100VDC-140VDC		0.5	--	--	
		2000m - 5000m		6.67	--	--	%/Km
Safety Standard				Design refer to IEC/EN/UL62368-1/ BS EN 62368-1/IS13252 (Patr1) /EN60335-1/ EN61558-1			
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	55.00 x 45.00 x 21.00 mm
Weight	65g (Typ.)
Cooling method	Free air convection

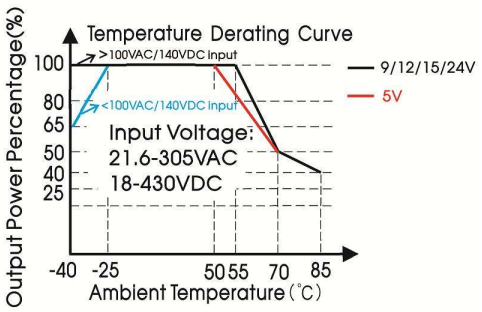
Electromagnetic Compatibility (EMC)

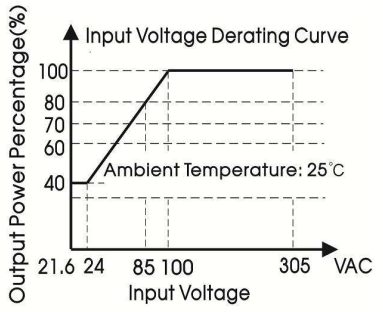
Emissions	CE	CISPR32/EN55032 CLASS A	
		CISPR32/EN55032 CLASS B (See Fig.2 for recommended circuit)	
	RE	CISPR32/EN55032 CLASS A	
		CISPR32/EN55032 CLASS B (See Fig.2 for recommended circuit)	
Immunity	ESD	IEC/EN 61000-4-2 Contact ±8KV / Air ±15KV	perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 ±2KV	perf. Criteria B
		IEC/EN61000-4-4 ±4KV (See Fig.3 for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5 line to line ±1KV	perf. Criteria B
		IEC/EN61000-4-5 line to line ±1KV/line to ground ±1KV (See Fig.3 for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6 10Vr.m.s	perf. Criteria A
	Voltage dip, short interruption and voltage variation	IEC/EN61000-4-11 0%, 70%	perf. Criteria B

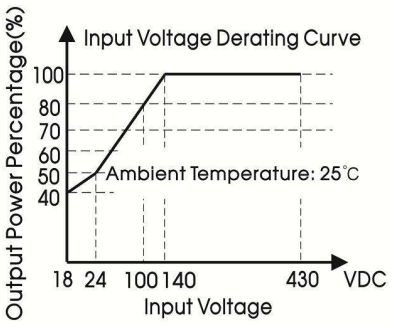
AC/DC Converter

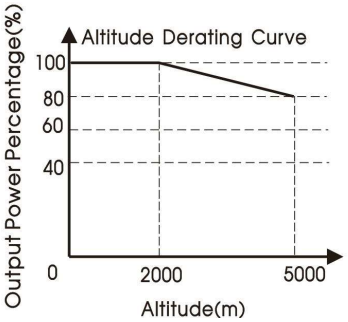
SLD10-2WBxx Series

Product Characteristic Curve

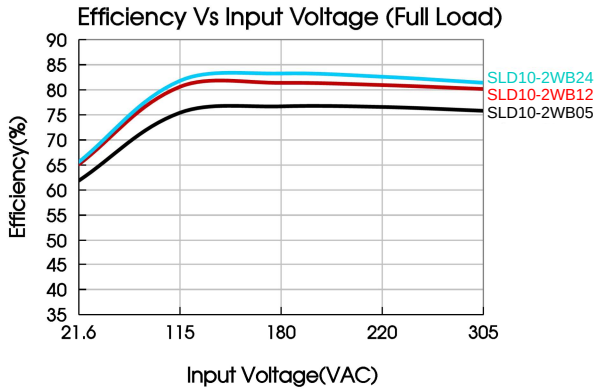


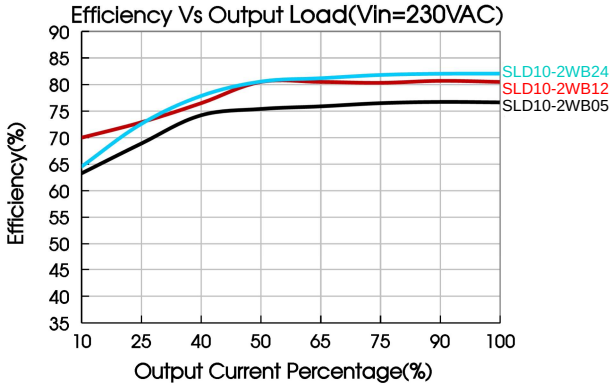






Note: ① With an AC input between 21.6-100VAC and a DC input between 18-140VDC, the output power must be derated as per temperature derating curves;
② This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.





Design Reference

1. Typical application

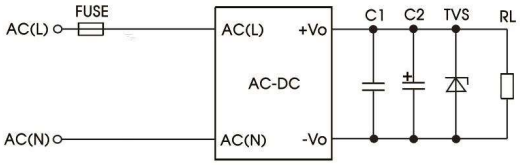


Fig. 1: Typical circuit diagram

Part No.	FUSE	C1	C2	TVS
SLD10-2WB05	2A/300V, slow-blow, required	1uF/50V	220uF/16V	SMBJ7.0A
SLD10-2WB09			100uF/25V	SMBJ12A
SLD10-2WB12			100uF/25V	SMBJ20A
SLD10-2WB15			100uF/25V	SMBJ20A
SLD10-2WB24			100uF/35V	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 TVS is a recommended suppressor diode to protect the application in case of a converter failure.

2. EMC compliance recommended circuit

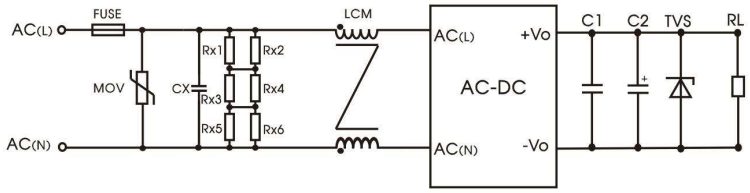


Fig. 2: EMC application circuit with higher requirements

Component	Recommended value
FUSE	2A/300V, slow-blow, required
MOV	S14K350
CX	0.33uF/310VAC
LCM	25uH/2A
Note: Rx1/Rx2/Rx3/Rx4/Rx5/Rx6 is the bleeder resistance of CX, and the recommended resistance value is 1MΩ/150VDC.	

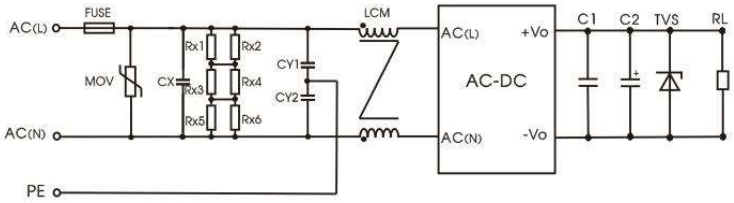
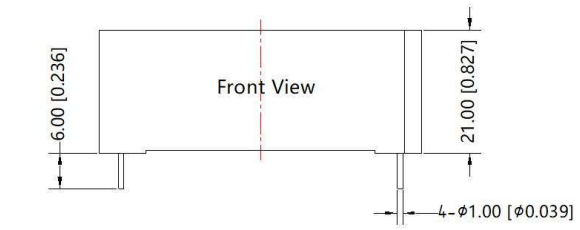


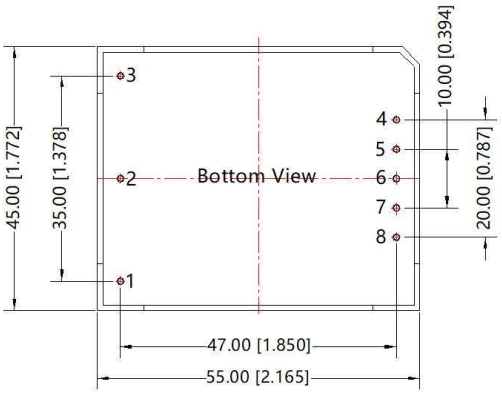
Fig 3: Recommended circuit for class Ⅰ equipment

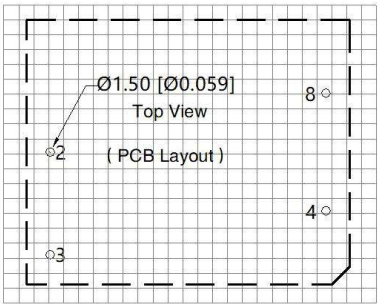
Component	Recommended value
FUSE	2A/300V, slow-blow, required
MOV	S14K350
CY1/CY2	1000pF/400VAC
CX	0.33uF/310VAC
LCM	25uH/2A
Note: Rx1/Rx2/Rx3/Rx4/Rx5/Rx6 is the bleeder resistance of CX, and the recommended resistance value is 1MΩ/150VDC.	

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION







Note: grid 2.54*2.54mm

Pin-Out	
Pin	Mark
1	No Pin
2	AC(N)
3	AC(L)
4	+Vo
5	No Pin
6	No Pin
7	No Pin
8	-Vo

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

Note:

1. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% with nominal input voltage and rated output load;
3. All index testing methods in this datasheet are based on our company 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.