

150W isolated DC-DC converter with ultra-wide , ultra-high 250 -1500VDC input for Renewable Energy



RoHS

FEATURES

- Input voltage up to 1700VDC (Transient, duration : 10s)
- Ultra-wide input voltage range of 250 - 1500VDC
- Industrial grade operating temperature -40°C to +70°C
- High I/O isolation test voltage of 4000VAC
- High efficiency, low ripple & noise
- High reliability, long lifespan
- Input undervoltage protection, reverse input voltage protection, output short circuit, over-current, over-voltage protection
- Operating up to 5000m altitude

PV150-29BxxL is a regulated DC-DC converter with an ultra-wide and ultra-high DC input of 250-1500VDC, which design based on standard of CSA-C22.2 No. 107.1, EN62109, UL1741. the products feature high efficiency, high reliability, high insulation and a high level of safety protection. It is widely used in renewable energy industries such as photovoltaic inverter, energy storage systems, charging pile, industrial control. The converters provide multiple protection features and guarantee stable and safe operating environments even under abnormal working conditions. 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	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 800VDC(%) Typ.	Capacitive Load (µF) Max.
/	PV150-29B24L	150W	24V/6250mA	89	2000
	PV150-29B28L		28V/5360mA	89	1500
	PV150-29B32L		32V/4690mA	89	1500

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range		250	--	1500	VDC
Input Current	250VDC	--	--	0.8	A
	800VDC	--	--	0.4	
Inrush Current	800VDC	--	--	100	
	1500VDC	--	--	200	
Input Undervoltage Protection	Lockout activation range	150	--	220	VDC
	Lockout deactivation range	180	--	250	
External Input fuse		4A/1500VDC, required			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Full load	--	±2	--	%
Line Regulation	Rated load	--	±1	--	
Load Regulation	0% - 100% load	--	±2	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	--	300	mV
Temperature Coefficient		--	±0.02	--	%/°C
Short Circuit Protection		Hiccup, continuous, self-recovery			
Over-current Protection		≥110%Io, hiccup, self-recovery			
Over-voltage Protection	24V output	≤32VDC	(Output voltage clamp or hiccup)		
	28V output	≤35VDC			
	32V output	≤45VDC			
Minimum Load		0	--	--	%

Hold-up Time	Room temperature, full load	800VDC input	--	10	--	ms
		1500VDC input	--	30	--	
Start-up Delay Time	Room temperature		--	--	3	s

Note: * The "Tip and barrel method" is used for ripple and noise test, please refer to PV 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
	Output - PE		4000	--	--	
	Input - PE		3000	--	--	
	Input - PE	Electric Strength Test for 1min., leakage current <10mA	4000	--	--	
Insulation Resistance	Input - output	500VDC	≥500x10 ⁶			Ω
Operating Temperature			-40	--	+70	°C
Storage Temperature			-40	--	+85	
Storage Humidity			--	--	95	%RH
Power Derating	-40°C to -25°C		3.33	--	--	% / °C
	+55°C to +70°C		2.4	--	--	
	250VDC - 300VDC		0.8	--	--	% / VDC
	1400VDC - 1500VDC		0.2	--	--	
	2000m - 5000m		6.67	--	--	% / Km
Switching Frequency			50	65	70	kHz
Safety Standard			Designed to meet CSA-C22.2 No.107.H6, EN62109-1, UL1741			
MTBF			MIL-HDBK-217F@25°C ≥ 300,000 h			

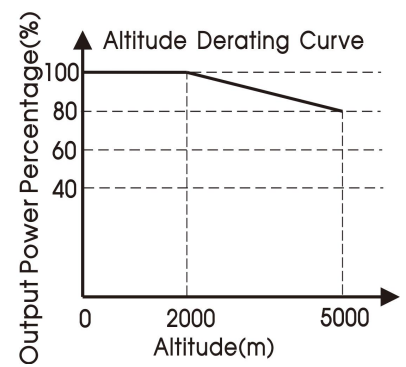
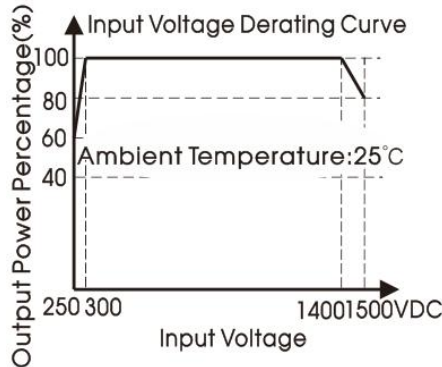
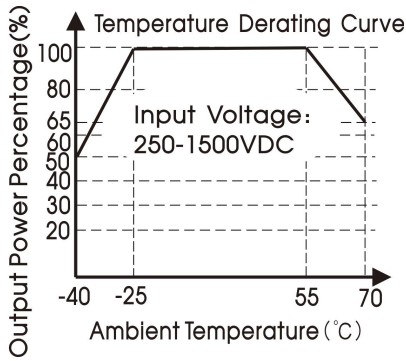
Mechanical Specifications

Case Material	Metal
Dimensions	201.00 x 70.00 x 42.00mm
Weight	550g (Typ.)
Cooling method	Free air convection

Electromagnetic Compatibility (EMC)

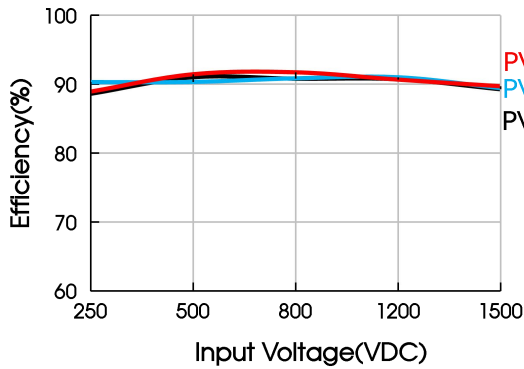
Emissions	CE	CISPR32/EN55032 CLASS A		
	RE	CISPR32/EN55032 CLASS A		
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV	Perf. Criteria A
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±4KV	perf. Criteria A
	Surge	IEC/EN61000-4-5	line to line ±1KV/line to ground±2KV	perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s	perf. Criteria A

Product Characteristic Curve

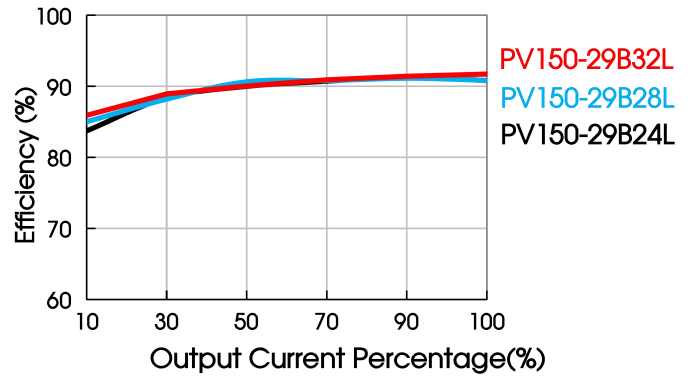


Note: ① With an input between 250 - 300VDC/1400 - 1500VDC, the output power of PV150-29BxxL parts must be derated as per temperature derating curves;
② This product is suitable for use in natural air cooling environments, if in a closed environment, please contact our company's FAE.

Efficiency Vs Input Voltage (Full Load)



Efficiency Vs Output Load (Vin=800VDC)



Design Reference

1. Typical application circuit

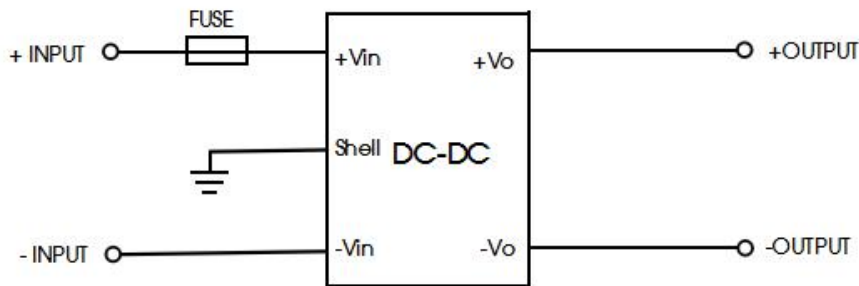
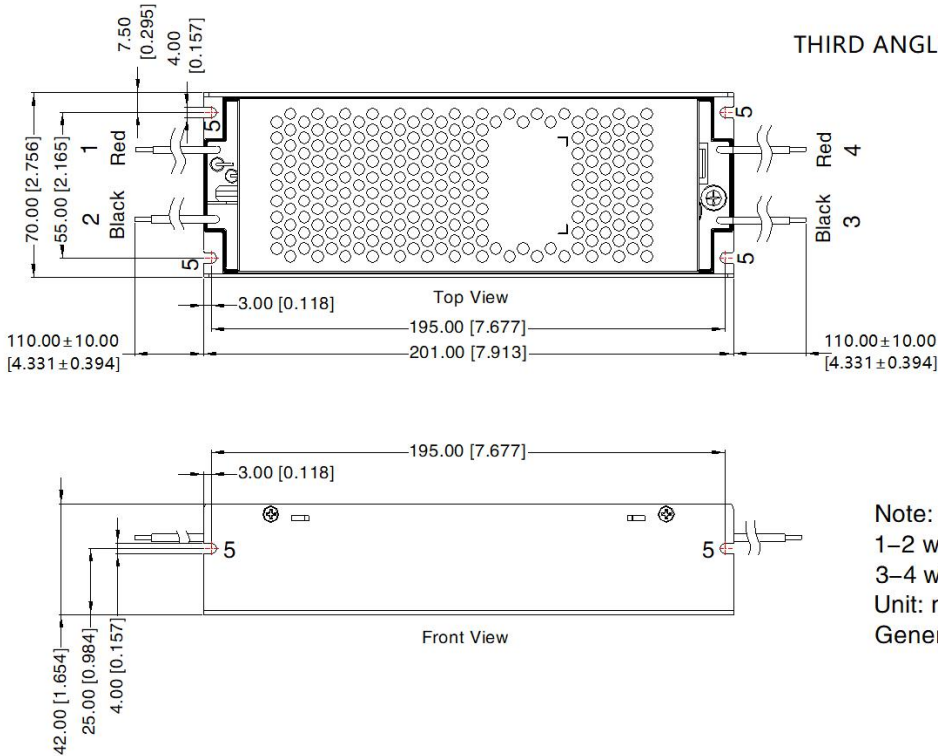


Fig. 1

Model	Recommended value
FUSE	4A/1500VDC, required

2. For more information Please find the application notes on www.mornsun-power.com.

Dimensions and Recommended Layout



Pin-Out	
Pin	Mark
1	+Vin
2	-Vin
3	-Vo
4	+Vo
5	PE

Note:
 1-2 wire spec.: UL3239 18AWG
 3-4 wire spec.: UL1015 14AWG
 Unit: mm[inch]
 General tolerances: $\pm 1.00 [\pm 0.039]$

- Note:
- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220211;
 - Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^\circ\text{C}$, humidity<75% with nominal input voltage and rated output load;
 - All index testing methods in this datasheet are based on our company corporate standards;
 - We can provide product customization service, please contact our technicians directly for specific information;
 - Products are related to laws and regulations: see "Features" and "EMC";
 - Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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