DC/DC Converter
SPV200-27Bxx Series

120-200W isolated DC-DC converter with Ultra-wide, ultra-high 200 - 1000V DC Input for renewable energy

FEATURES

- Ultra-wide 200 - 1000VDC input voltage range
- High I/O isolation test voltage of 4000VAC
- Industrial grade operating temperature -40℃ ~ +70℃
- High efficiency, low ripple & noise
- Input undervoltage protection, input reverse polarity protection, output short circuit, over-current, over-voltage protection
- High reliability, long lifespan
- EN62109 safety approval

SPV200-27Bxx series is a regulated DC-DC converter with an ultra-wide DC input range. The product features high efficiency, high reliability, high insulation and a high level of safety protection. This type of power supply is widely used in renewable energy industries such photo voltaic, power generation, energy storage, inverters and high voltage DC conversions. The converters provide multiple protection features and guarantee stable and safe operating environments even under abnormal working conditions.

Selection Guide

Certification	Part No.	Output Power	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 600VDC (%) Typ.	Capacitive Load (μF) Max.
CE	SPV200-27B12	120W	12V/10A	86	6000
	SPV200-27B15	150W	15V/10A	87	4000
	SPV200-27B24	200W	24V/8.333A	87	2000
	SPV200-27B26		26V/7.692A	87	2000
	SPV200-27B48		48V/4.166A	87	1000

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range	SPV200-27B12/15		200	--	1000	VDC
	SPV200-27B24/26/48		250	--	1000	
Input Current	SPV200-27B12/15	250VDC	--	--	0.8	A
		600VDC	--	--	0.4	
	SPV200-27B24/26/48	250VDC	--	--	1.0	
		600VDC	--	--	0.5	
Inrush Current	600VDC		--	100	--	
	1000VDC		--	180	--	
Input Undervoltage Protection	SPV200-27B12/15	Lockout activation range	155	--	185	VDC
		Lockout deactivation range	180	--	200	
	SPV200-27B24/26/48	Lockout activation range	205	--	230	
		Lockout deactivation range	230	--	250	
External input fuse			10A/1000VDC, 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	--	±2	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	--	200	mV
Temperature Coefficient		--	±0.02	--	%/℃
Short Circuit Protection		Hiccup, continuous, self-recovery			
Over-current Protection		⩾110%Io, hiccup, self-recovery			

Over-voltage Protection	12V output		≤20VDC or hiccup protection			
	15V output		≤25VDC or hiccup protection			
	24V output		≤33VDC or hiccup protection			
	26V output		≤35VDC or hiccup protection			
	48V output		≤60VDC or hiccup protection			
Minimum Load			0	--	--	%
Trim Range	Output power constant		--	--	±10	
Hold-up Time	Room temperature, Full load	600VDC input	--	8	--	ms
		1000VDC input	--	20	--	

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 Test	Input - output	Electric Strength Test for 1min., leakage current ≤5mA		4000	--	--	VAC
	Input - PE	Electric Strength Test for 1min., leakage current ≤10mA		2000	--	--	
	Output - PE	Electric Strength Test for 1min., leakage current ≤5mA		2000	--	--	VDC
Operating Temperature				-40	--	+70	℃
Storage Temperature				-40	--	+85	
Storage Humidity				--	--	95	%RH
Power Derating		-40℃ ~ -25℃		1.0	--	--	%/℃
		+50℃ ~ +70℃	SPV200-27B12/15	2.0	--	--	
		+50℃ ~ +70℃	SPV200-27B24/26/48	2.5	--	--	
		200VDC-250VDC	SPV200-27B12/15	0.45	--	--	%/VDC
		250VDC-300VDC	SPV200-27B24/26/48	1.5	--	--	
Switching Frequency				--	65	--	kHz
Safety Certification				EN62109			
MTBF				MIL-HDBK-217F@25℃≥ 300,000 h			

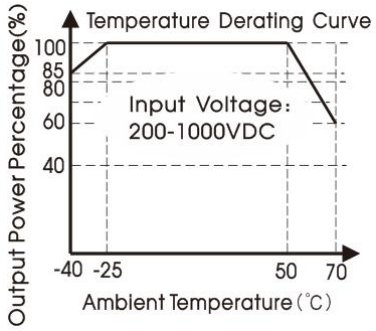
Mechanical Specifications

Case Material	Metal
Dimensions	168.0 x 121.35 x 42.5 mm
Weight	1000g (Typ.)
Cooling method	Free air convection

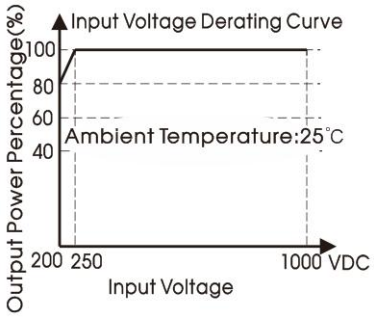
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS A	
	RE	CISPR32/EN55032 CLASS A	
Immunity	ESD	IEC/EN61000-4-2 Contact ±6KV/Air ±8KV	Perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 ±2KV	perf. Criteria B
	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

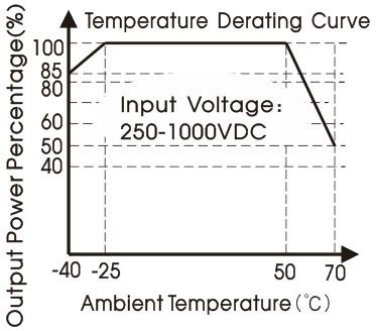
Product Characteristic Curve



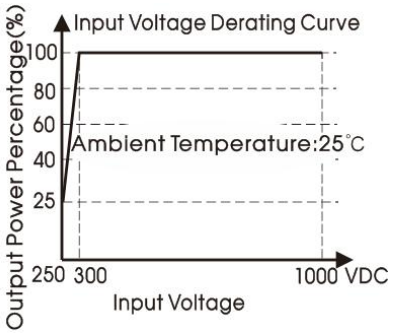
SPV200-27B12/15



SPV200-27B12/15



SPV200-27B24/26/48



SPV200-27B24/26/48

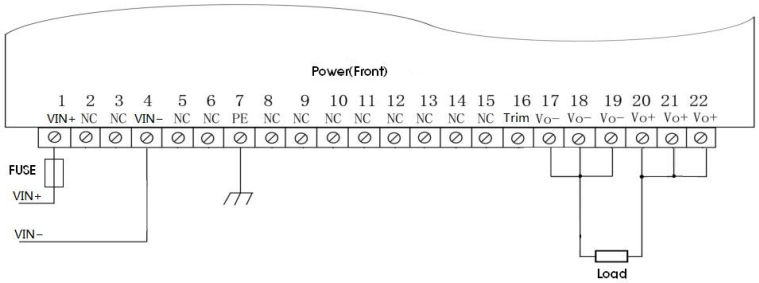
Note: ① With an input between 200-250VDC for SPV200-27B12/15 and 250-300VDC for SPV200-27B24/26/48, the output power must be derated as per temperature derating curves;
② This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.

Wiring Description

1.Terminal Definition

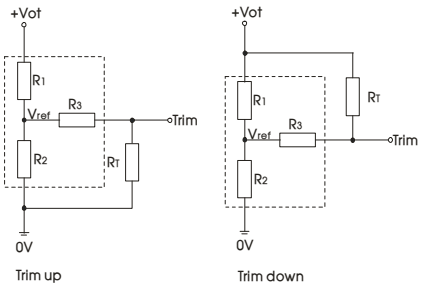
Terminal No.	Terminal name	Definition	Terminal No.	Terminal name	Definition	Terminal No.	Terminal name	Definition
1	VIN+	Input (+)	9	NC	No electrical connection	17	Vo-	Load output (-)
2	NC	No electrical connection	10	NC	No electrical connection	18	Vo-	Load output (-)
3	NC	No electrical connection	11	NC	No electrical connection	19	Vo-	Load output (-)
4	VIN-	Input (-)	12	NC	No electrical connection	20	Vo+	Load output (+)
5	NC	No electrical connection	13	NC	No electrical connection	21	Vo+	Load output (+)
6	NC	No electrical connection	14	NC	No electrical connection	22	Vo+	Load output (+)
7	PE	Protective grounding	15	NC	No electrical connection			
8	NC	No electrical connection	16	Trim	Adjustable Output Voltage			

2.Wiring diagram



Design Reference

1. Trim Function for Output Voltage Adjustment (open if unused)



TRIM resistor connection (dashed line shows internal resistor network)

Calculating Trim resistor values:

$$\text{up: } R_T = \frac{aR_2}{R_2 - a} - R_3 \qquad a = \frac{V_{ref}}{V_{ot} - V_{ref}} \cdot R_1$$

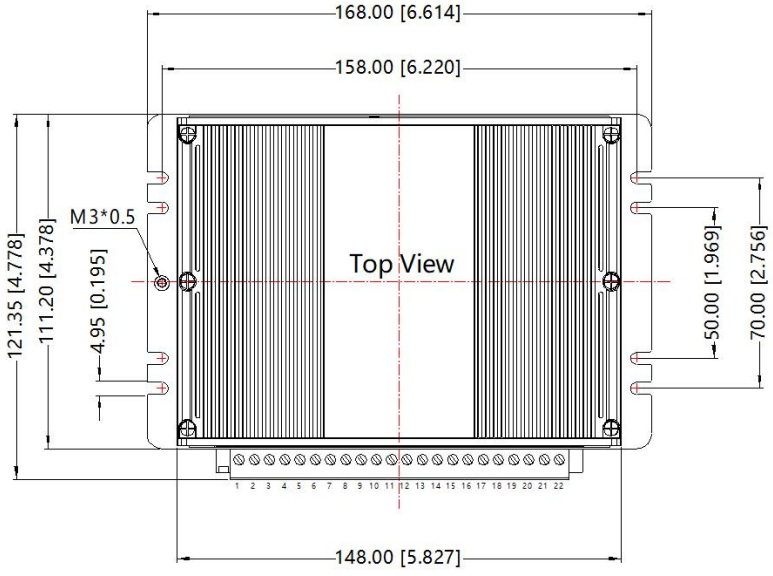
$$\text{down: } R_T = \frac{aR_1}{R_1 - a} - R_3 \qquad a = \frac{V_{ot} - V_{ref}}{V_{ref}} \cdot R_2$$

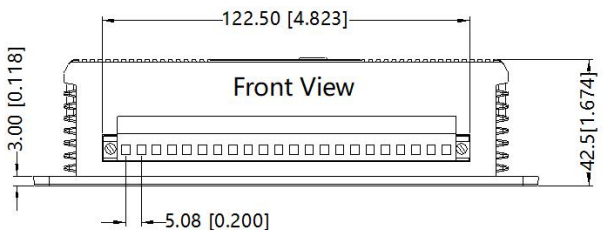
R_T = Trim Resistor value;
a = self-defined parameter;
Vot = desired output voltage

Vout	R1(KΩ)	R2(KΩ)	R3(KΩ)	Vref(V)	Vot(V)
12V	3.83	1	1	2.5	Output voltage after regulation, variation ⩽ ±10%
15V	7.5	1.5	1	2.5	
24V	8.66	1	1	2.5	
26V	8.66	0.91	1	2.5	
48V	33	1.8	1	2.5	

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION





Pin-Out			
Pin	Function	Pin	Function
1	Vin+	12	NC
2	NC	13	NC
3	NC	14	NC
4	Vin-	15	NC
5	NC	16	Trim
6	NC	17	Vo-
7	PE	18	Vo-
8	NC	19	Vo-
9	NC	20	Vo+
10	NC	21	Vo+
11	NC	22	Vo+

Note:
Unit: mm[inch]
Wire range: 28-12 AWG
Tightening torque: Max 0.4 N·m
General tolerances: ±1.00[±0.039]

Note:

1. Unless otherwise specified, data in this datasheet should be tested under the conditions of Ta=25° C, humidity<75% when inputting nominal voltage and outputting rated load;
2. All index testing methods in this datasheet are based on our company corporate standards;
3. We can provide product customization service, please contact our technicians directly for specific information;
4. Products are related to laws and regulations: see "Features" and "EMC";
5. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.