DC/DC Converter

PV15-27Bxx Series

MORNSUN®

15W isolated DC-DC converter with ultra-wide, ultra-high 100-1200VDC input for Renewable Energy

3 years Warranty

RoHS

FEATURES

- Input voltage up to 1200VDC
- 12:1 ultra-wide input voltage range: 100 -1200VDC
- Operating ambient temperature range: -25℃ to 70℃
- High I/O isolation test voltage of 4000VDC
- High efficiency, low ripple& noise
- Output over-voltage protection (automatic recovery)
- Output short circuit protection (automatic recovery)
- Input reverse polarity protection
- MTBF>300, 000 hours
- High reliability, long life
- Customization is available

PV15 series are regulated DC-DC converters with an ultra-high DC input of 100-1200VDC. This type of power supply is widely used in renewable energy industries such as photovoltaic, 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

Model*	Output Power	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 200VDC (%) Typ.	Capacitive Load (uF) Max.
PV15-27B15	15W	15V/1.00A	79	1200
PV15-27B24 (A4)		24V/0.625A	80	680

Note: *Use suffix "A4/A4C" for DIN-Rail mounting.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range		100	--	1200	VDC
Input Current	200VDC	--	--	92	mA
	600VDC	--	--	31	
	1200VDC	--	--	17	
Inrush Current	200VDC	--	7	--	A
	600VDC	--	23	--	
	1200VDC	--	50	--	
External Input Fuse		3.15A, required			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		--	±1	±2	%
Line Regulation	Full load	--	±0.5	±1	
Load Regulation	10%-100% load	--	±0.5	±1	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	100	200	mV
Temperature Drift Coefficient		--	±0.02	--	%/°C
Short Circuit Protection		Continuous, self-recovery			
Over-voltage Protection	PV15-27B15	< 19V		(Feedback-clamp) Voltage limited	
	PV15-27B24	< 27V			
Minimum Load		0	--	--	%
Start-up Delay Time	200-1200VDC	--	--	1	s

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

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General Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input-output	Electric Strength Test for 1min.	4000	--	--	VDC
Operating Temperature			-25	--	+70	℃
Storage Temperature			-25	--	+105	
Storage Humidity			--	--	95	%RH
Welding Temperature		Wave-soldering	260 ± 5℃; time: 5 - 10s			
		Manual-welding	360 ±10℃; time: 3 - 5s			
Switching Frequency			--	65	--	kHz
Power Derating		+50℃ to +70℃	3	--	--	%/℃
MTBF			MIL-HDBK-217F@25℃ > 300,000 h			

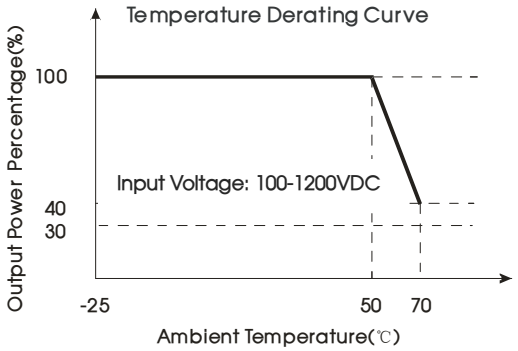
Mechanical Specifications

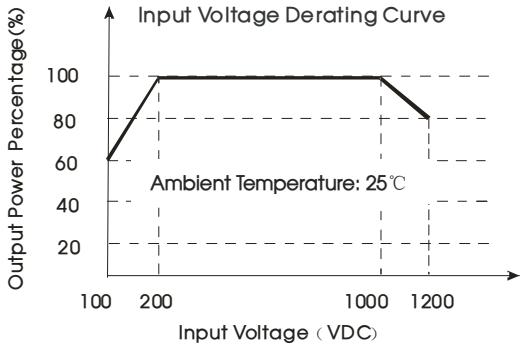
Case Material		Black flame-retardant and heat-resistant plastic (UL94V-0)
Package Dimensions	Horizontal package	70.00 x 48.00 x 23.50 mm
	A4 Din-Rail mounting	96.10 x 54.00 x 36.60 mm
Weight	Horizontal package/A4 Din-Rail mounting	113g/210g (Typ.)
Cooling method		Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS A (See Fig. 2 for recommended circuit)	
	RE	CISPR32/EN55032	CLASS A (See Fig. 2 for recommended circuit)	
Immunity	ESD	IEC/EN61000-4-2	±6KV/±8KV	Perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±4KV (See Fig. 2 for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5	±2KV (See Fig. 2 for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s	perf. Criteria A
	PFM	IEC/EN61000-4-8	10A/m	perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-29	100% dip 1 periods, 30% dip 25 periods, 100% interruptions 250 periods	perf. Criteria B

Product Characteristic Curve





Note: ① With an Input voltage between 100-200VDC or1000-1200VDC, the output power must be derated as per temperature derating curves;
②This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.

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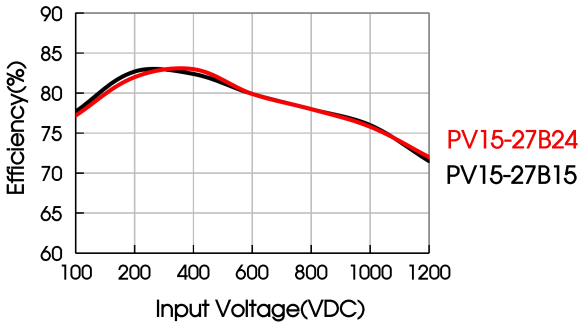
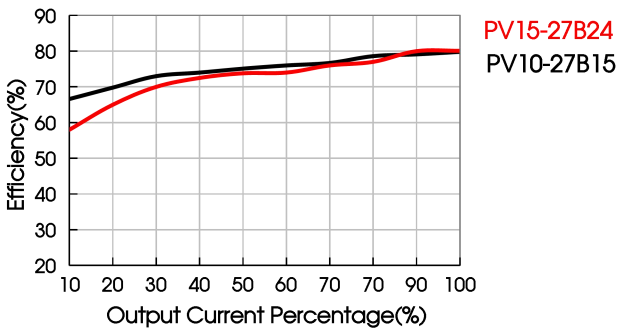
Efficiency Vs Input Voltage (Full Load)

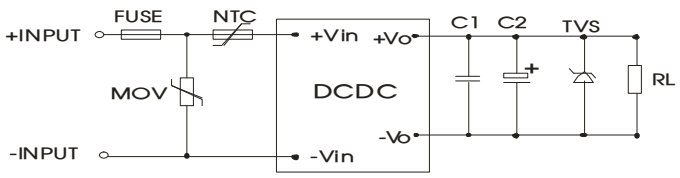


Efficiency Vs Output Load (Vin=600VDC)



Design Reference

1. Typical application circuit



Model	C1	C2	TVS tube
PV15-27B15	0.22μF/50V	120μF/25V	SMCJ20A
PV15-27B24	0.22μF/50V	68μF/35V	SMCJ33A

Fig. 1: Typical application circuit

Note on 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 1uF ceramic capacitor, used to filter high-frequency noise. TVS is a recommended suppressor diode to protect the application in case of a converter failure.

2. EMC compliance recommended circuit

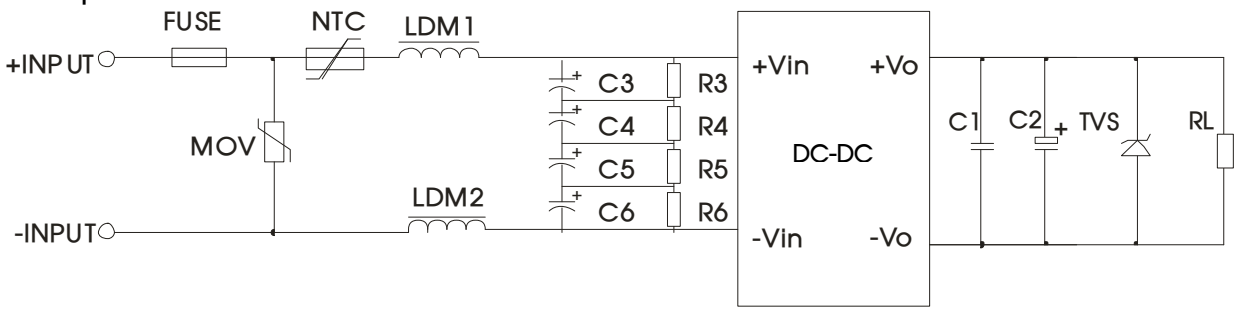


Fig 2: EMC application for higher compliance requirements (output parameters are show in Figure 1)

Component	Recommended value
MOV	S14K1000
C3, C4, C5, C6	22μF/400VDC
R3, R4, R5, R6	1MΩ/350V/2W
NTC	5D-9
LDM1, LDM2	1.2mH/0.5A
FUSE	3.15A, required

3. For additional information please refer to application notes on www.mornsun-power.com

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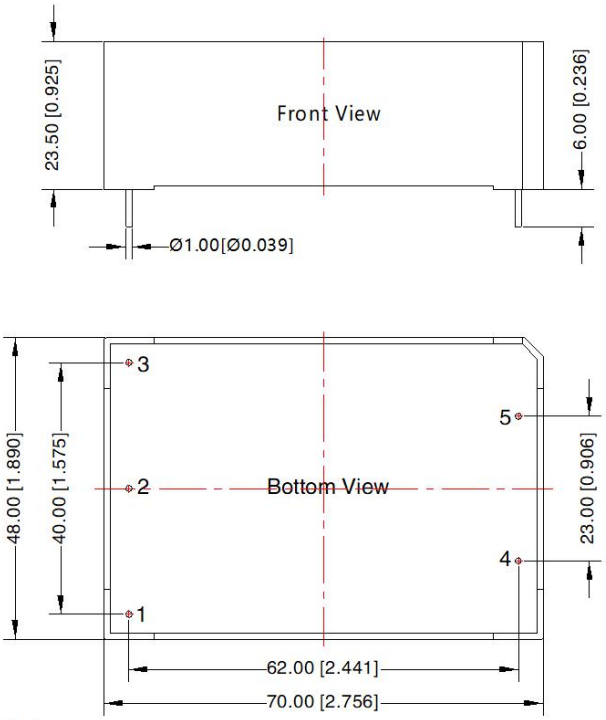
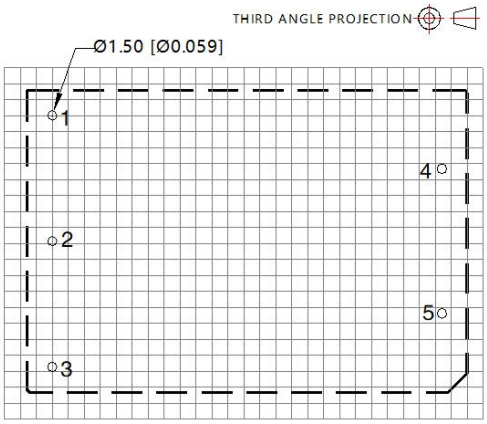
Dimensions and Recommended Layout



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	Mark
1	NC
2	-Vin
3	+Vin
4	-Vo
5	+Vo

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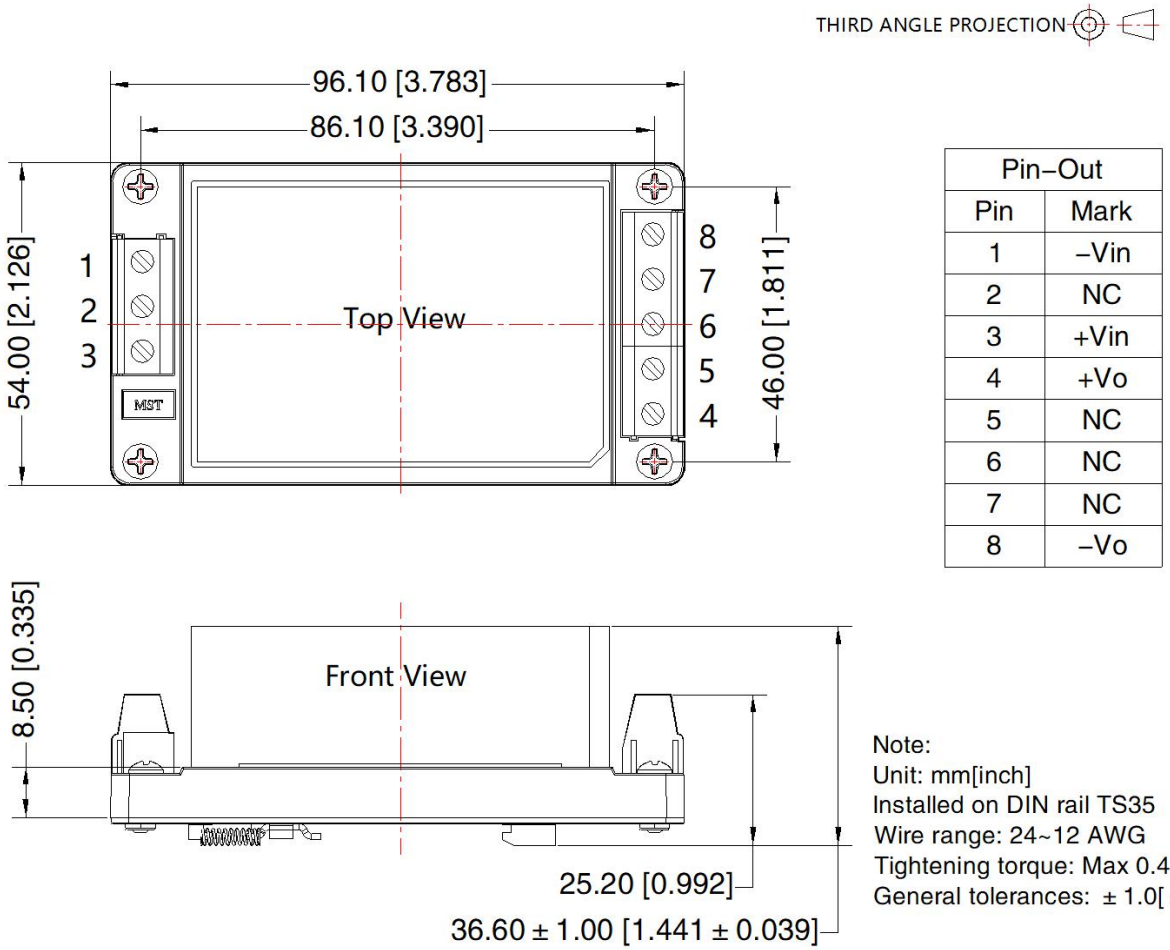
PV15-27B24A4 Dimensions



Pin–Out	
Pin	Mark
1	–Vin
2	NC
3	+Vin
4	+Vo
5	NC
6	NC
7	NC
8	–Vo

Note:
Unit: mm[inch]
Installed on DIN rail TS35
Wire range: 24~12 AWG
Tightening torque: Max 0.4 N・m
General tolerances: ± 1.0[± 0.039]

Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220006, the Packaging bag number of A4 package: 58220192;
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. The above are the performance indicators of the product models listed in this datasheet. Some indicators of non-standard models will exceed the above requirements. For details, please contact our technical staff;
5. We can provide product customization service;
6. Products are related to laws and regulations: see "Features" and "EMC";
7. 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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