

DC/DC Converter

PV05(10) -27BxxR Series

MORNSUN®

5-10W Isolation DC-DC converter with
Ultra-wide, ultra-high 200-1200V DC input for
Renewable Energy



FEATURES

- Input voltage up to 1200VDC
- 6:1 ultra-wide input voltage range: 200 - 1200VDC
- Industrial grade operating temperature -25°C to +70°C
- High I/O isolation test voltage of 4000VDC
- High efficiency, low ripple & noise
- High reliability, long life
- Input against reverse, under input voltage protection (automatic recovery), output short circuit and over-voltage Protection (automatic recovery)

PV05(10)-27BxxR series are regulated DC-DC converters with an ultra-wide DC input of 200-1200VDC. The products feature high efficiency, high reliability, high insulation and high level of safety. 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. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

Selection Guide

Part No.	Output Power	Nominal Output Voltage and Current(Vo/Io)	Efficiency (%) Typ.	Capacitive Load (μF) Max.
PV05-27B05R	5W	5V/1.00A	73	10000
PV10-27B05R	10W	5V/2.00A	75	6000
PV10-27B24R		24V/0.42A	82	1500

Input Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range			200	--	1200	VDC
Input Current	PV05	200VDC	--	--	36	mA
		600VDC	--	--	13	
		1200VDC	--	--	8	
	PV10	200VDC	--	--	69	
		600VDC	--	--	24	
		1200VDC	--	--	14	
Inrush Current		200VDC	--	4	--	
		600VDC	--	12	--	
		1200VDC	--	25	--	
Input Under voltage Protection		Lockout activation range	175	--	185	V
		Lockout deactivation range	185	--	195	
External Input Fuse			1A , slow-blow			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		--	±1	±2	%
Line Regulation		--	±0.5	±1	
Load Regulation		--	±0.5	±1	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	80	150	mV
Temperature Coefficient		--	--	±0.02	%/°C
Short Circuit Protection		Continuous, self-recovery			
Over-current Protection		≥ 110% Io self-recovery			
Over-voltage Protection	PV05-27B05R	< 7.5V		(Feedback-clamp) Voltage limited	
	PV10-27B05R	< 7.5V			
	PV10-27B24R	< 29V			
Delay Time		--	--	500	ms

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

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General Specifications

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

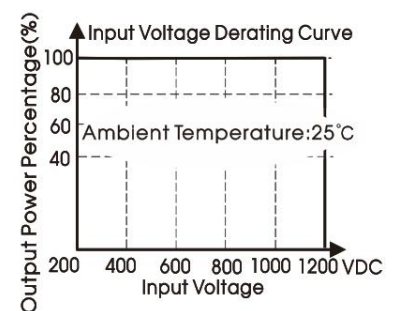
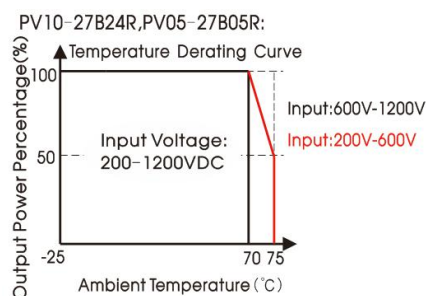
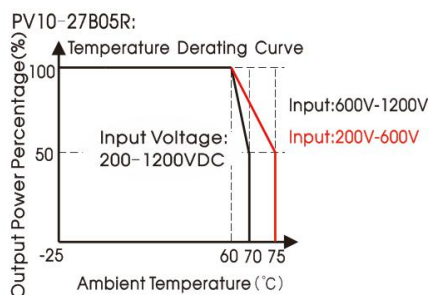
Mechanical Specifications

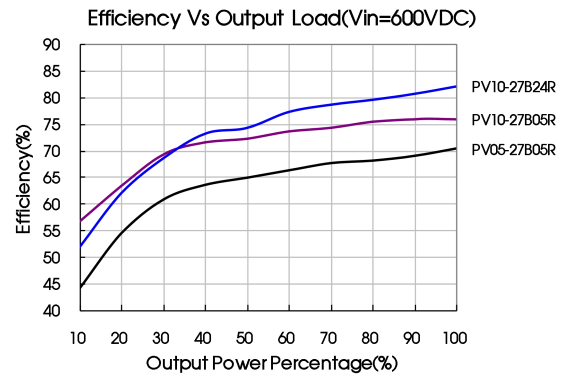
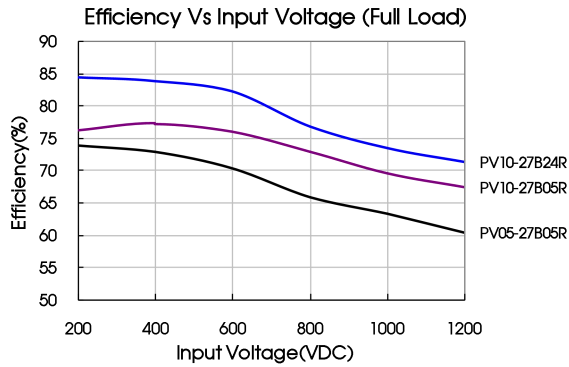
Case Material	Aluminum
Package Dimensions	74.00 x 52.00 x 28.00mm
Weight	195g(Typ.)
Cooling method	Free air convection

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	Contact ± 6kV/Air ± 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

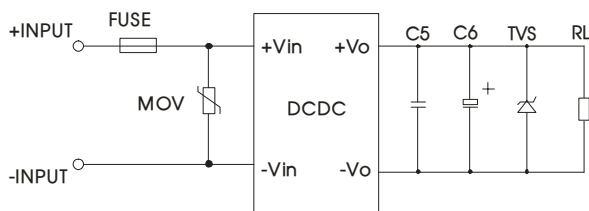
Product Characteristic Curve





Design Reference

1. Typical application circuit



Model	C5 (μF)	C6 (μF)	TVS	FUSE
PV05-27B05R	1	220	SMBJ7.0A	1A, slow-blow
PV10-27B05R			SMBJ30A	
PV10-27B24R		120	SMBJ30A	

Fig. 1: Typical application circuit

Note on filter components:

We recommend using an electrolytic capacitor with high frequency and low ESR rating for C6 (refer to manufacture's datasheet). Choose a capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C5 is 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

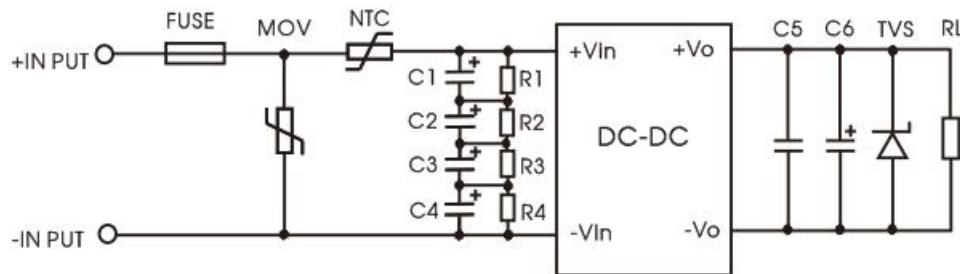
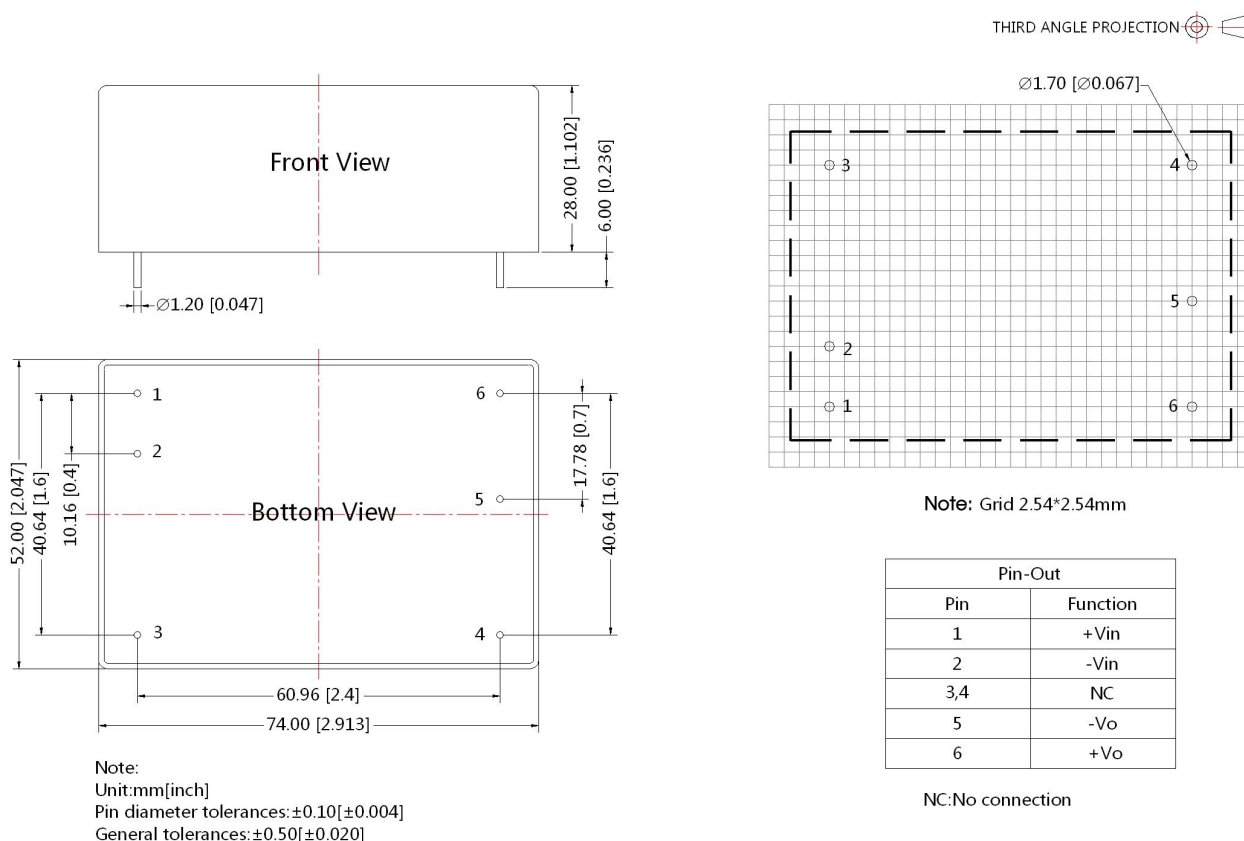


Fig 2: EMC application circuit with higher requirements

Component	Recommended value
MOV	S20K1000
C1, C2, C3, C4	47 μ F/450V
R1, R2, R3, R4	1MΩ/2W
NTC	5D-9
FUSE	1A, slow-blow, required

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

Dimensions and Recommended Layout



Note:

- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220192;
- 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;
- All index testing methods in this datasheet are based on our company corporate standards;
- The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, and please directly contact our technician for specific information;
- We can provide product customization service;
- Specifications of this product are subject to changes without prior notice;
- 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.

Mornsun Guangzhou Science & Technology Co., Ltd.

Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Huangpu District, Guangzhou, P. R. China
Tel: 86-20-38601850 Fax: 86-20-38601272 E-mail: info@mornsun.cn www.mornsun-power.com