

New energy isolation converter with ultra wide input voltage of 200-1200VDC



RoHS

FEATURES

- Input voltage up to 1200V
- 6:1 ultra-wide input voltage range: 200 ~ 1200VDC
- Industrial grade operating temperature: -25°C ~ 70°C
- 4000VDC high isolation voltage
- high efficiency, Low ripple& noise
- Under input voltage protection (automatic recovery)
- Over output voltage protection(automatic recovery)
- Short circuit protection(automatic recovery)
- Input against reverse protection
- High reliability, long life, three years warranty

PV (R)series— are regulated DC-DC converters with features of 200-1200VDC ultra-high voltage input, high efficiency and high reliability. They can be widely used in photovoltaic power generation, high-voltage inverter and so on, which provide stable operating voltage to the equipment and improve the power and the load's safety performance with multiple protection when working under abnormal conditions.

Selection Guide

Model	Output Power	Nominal Output Voltage and Current(Vo/Io)	Efficiency (%Typ.)	Max. Capacitive Load(μF)
PV05-27B05R	5W	5V/1A	73	10000
PV10-27B05R	10W	5V/2A	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*	Under voltage protection range		175	--	185	V
	Under voltage release range		185	--	195	
External input fuse			1A , Slow fusing			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		--	±1	±2	
Linear Regulation		--	±0.5	±1	%
Load Regulation		--	±0.5	±1	
Output Ripple & Noise*	20MHz bandwidth (peak-peak value)	--	80	150	mV
Temperature Drift Coefficient		--	--	±0.02	%/°C
Short Circuit Protection		Continuous, self-recovery			
Over-current Protection		≥110%Io self-recovery			

Over-voltage Protection	PV05-27B05R	(Feedback-clamp) Voltage limited < 7.5V
	PV10-27B05R	(Feedback-clamp) Voltage limited < 7.5V
	PV10-27B24R	(Feedback-clamp) Voltage limited < 29V
Delay Time		-- -- 500 ms

Note: *Parallel line test method is adopted to test the ripple and noise, please see *DC-DC Product Application Notes* for specific operation methods.

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output	4000	--	--	VAC
Operating Temperature		-25	--	+70	°C
Storage Temperature		-25	--	+105	
Storage Humidity		--	--	95	%RH
Welding 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				

Physical Specifications

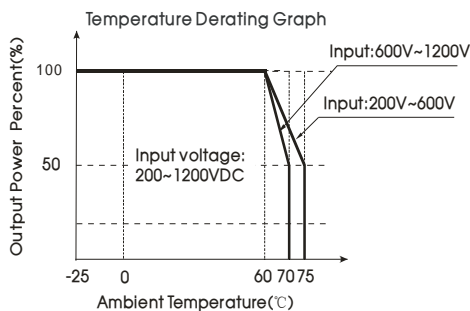
Casing Material	Aluminum
Package Dimensions	74.00*52.00*28.00mm
Weight	195g(Typ.)
Cooling method	Free air convection

EMC Specifications

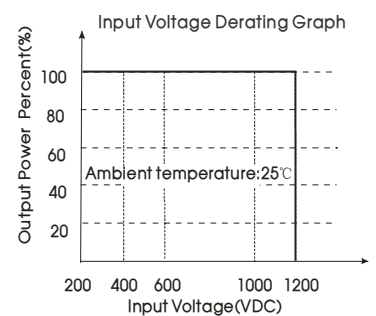
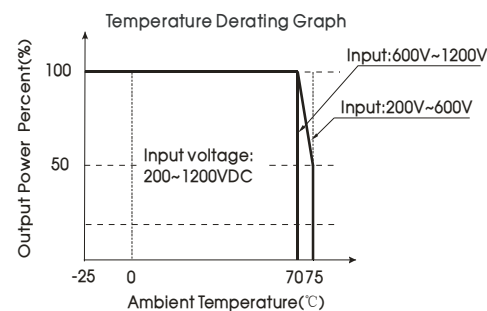
EMI	Conducted Disturbance	CISPR22/EN55022, CLASS A (See Fig. 2 for recommended circuit)	
	Radiated Emission	CISPR22/EN55022, CLASS A (See Fig. 2 for recommended circuit)	
EMS	Electrostatic Discharge	IEC/EN61000-4-2	±6KV/±8KV Perf. Criteria B
	Radiation Immunity	IEC/EN61000-4-3	10V/m perf. Criteria A
	EFT	IEC/EN61000-4-4	±4KV (See Fig. 2 for recommended circuit) perf. Criteria B
	Surge Immunity	IEC/EN61000-4-5	±2KV (See Fig. 2 for recommended circuit) perf. Criteria B
	Conducted Disturbance	IEC/EN61000-4-6	10 Vr.m.s perf. Criteria A
	Immunity for Power	IEC/EN61000-4-8	10A/m perf. Criteria A
	Immunities of voltage dip, drop and short interruption	IEC/EN61000-4-11	0%-70% perf. Criteria B

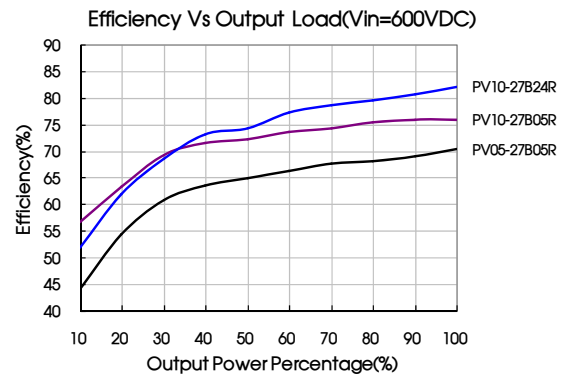
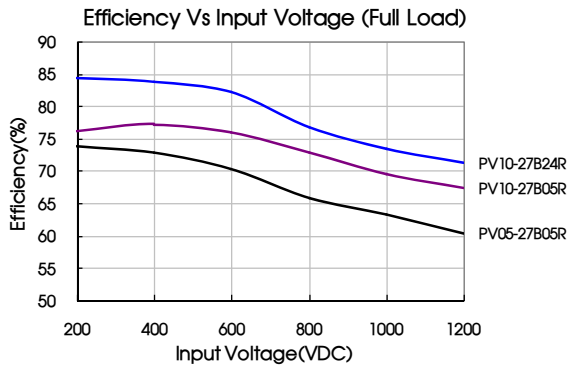
Product Characteristic Curve

PV 10-27B05R:



PV 10-27B24R, PV05-27B05R:





Design Reference

1. Typical application circuit

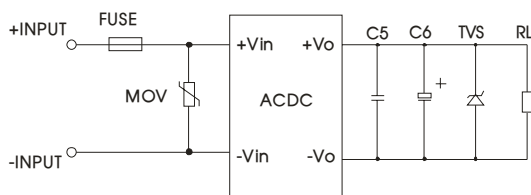


Fig. 1: Typical application circuit

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

Note:

Output filtering capacitor C6 is electrolytic capacitor, it is recommended to apply electrolytic capacitor with high frequency and low resistance. For capacitance and current of capacitor please refer to manufacture's datasheet. Capacitance withstand voltage derating should be 80% or above. C5 is ceramic capacitor, which is used to filter high-frequency noise. TVS is a recommended component to protect post-circuits if converter fails.

2. EMC solution-recommended circuit

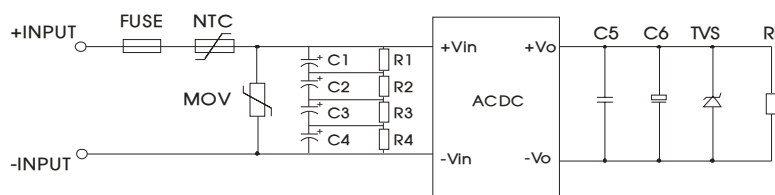


Fig 2: EMC application circuit with higher requirements

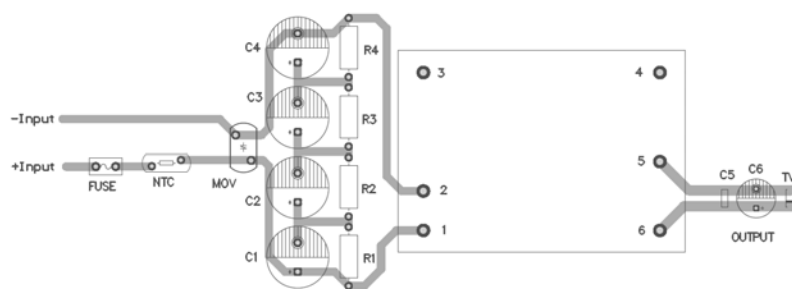


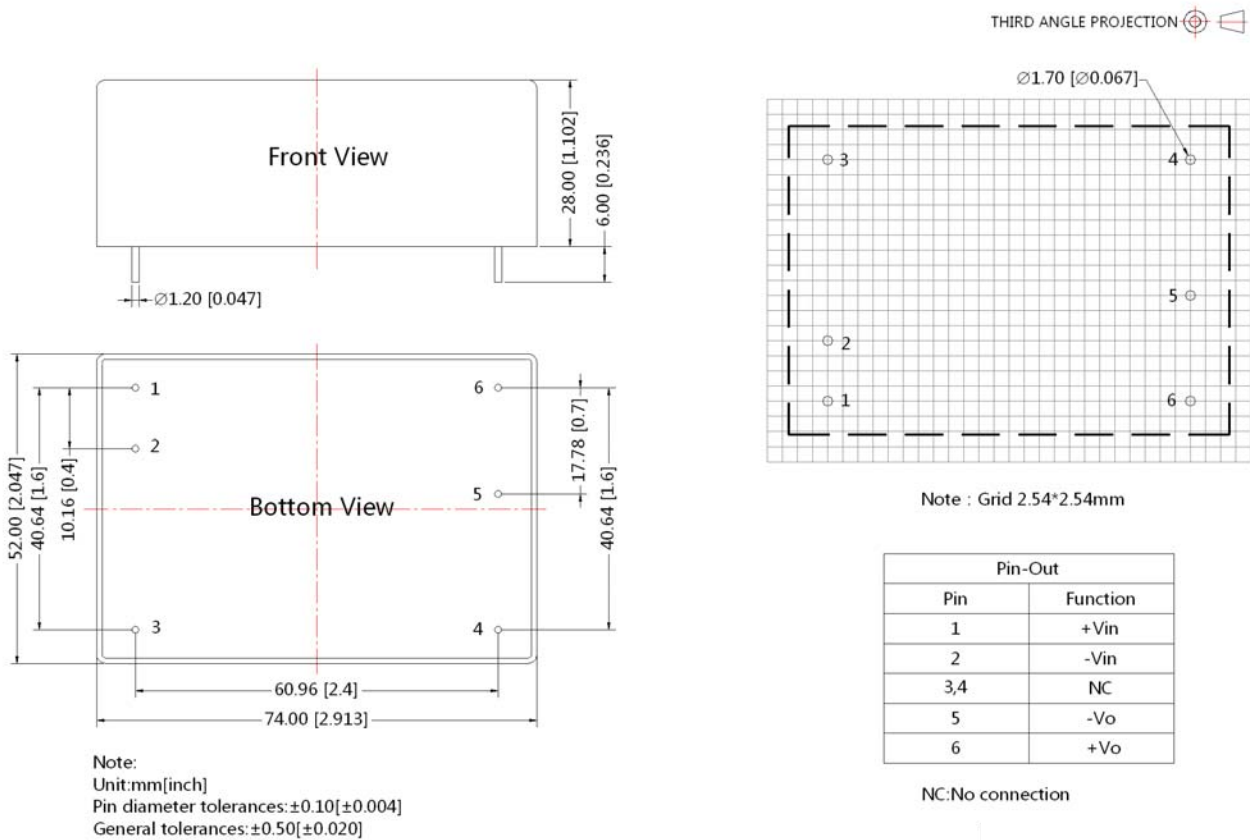
Fig 3: Recommended EMC circuit-PCB layout

Suggestions for safety regulation and wiring width: wire width $\geq 3\text{mm}$, distance between wires $\geq 6\text{mm}$, and distance between wire and ground $\geq 6\text{mm}$

Element model	Recommended value
MOV	S20K1000
C1, C2, C3, C4	47μF/450V
R1, R2, R3, R4	1MΩ/2W
NTC	5D-9
FUSE	1A/250V, slow fusing, necessary

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

Dimensions and Recommended Layout



Note:

1. Packing Information please refer to 'Product Packing Information'. Packing bag number: 58220010;
2. 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;
3. All index testing methods in this datasheet are based on our Company's corporate standards;
4. 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;
5. We can provide product customization service;
6. Specifications of this product are subject to changes without prior notice.

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