DC/DC Converter

PV15-27Bxx Series

MORNSUN®

New energy 100-1200VDC over wide and over high input voltage isolation converter

RoHS

FEATURES

- Input voltage up to 1200VDC
- 12:1 ultra-wide input voltage range: 100 ~ 1200VDC
- Industrial grade operating temperature: -25℃~70℃
- 4000VDC high isolation voltage
- High efficiency, Low ripple& noise
- Over output voltage protection(automatic recovery)
- Short circuit protection(automatic recovery)
- Input against reverse protection
- MTBF>300,000 hours
- High reliability, long life
- Offer custom products

PV15 series -----is 100-1200VDC input voltage regulated DC-DC converter. which has advantages such as high surge resistance, high efficiency, high reliability, low power consumption and high safety isolation. The series products are widely used in industries such as industrial control and electricity Application circuits should be referred to the conditions with weak electromagnetic compatibility.

Selection Guide

Model	Output Power	Nominal Output Voltage and Current(Vo/Io)	Efficiency (200VDC, %/Typ.)	Max. Capacitive Load(μF) (Normal temperature full load)
PV15-27B12	15W	12V/1.25A	78	2000
PV15-27B15		15V/1A	79	1200
PV15-27B24		24V/0.625A	80	680

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 Slow fusing			
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-peak value)	--	100	200	mV
Temperature Drift Coefficient		--	±0.02	--	%/°C
Short Circuit Protection		Continuous, self-recovery			
Over-voltage Protection	PV15-27B12	(Feedback-clamp) Voltage limited < 15V			
	PV15-27B15	(Feedback-clamp) Voltage limited < 19V			
	PV15-27B24	(Feedback-clamp) Voltage limited < 27V			
Min. Load		0	--	--	%
Delay Time	200~1200VDC	--	--	1	s

Note: * Ripple and noise are measured by "parallel cable" method, please see AC-DC Converter Application Notes for specific operation.

General Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output	Test time: 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°C to +70°C	3	--	--	%/°C
MTBF			MIL-HDBK-217F@25°C > 300,000 h			

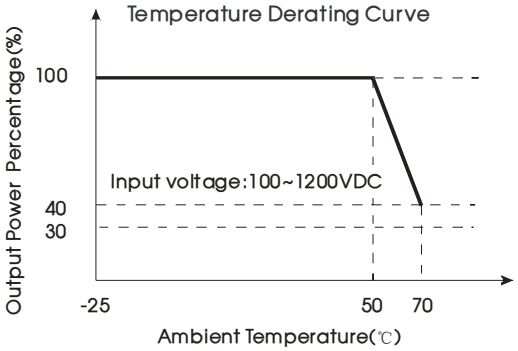
Physical Specifications

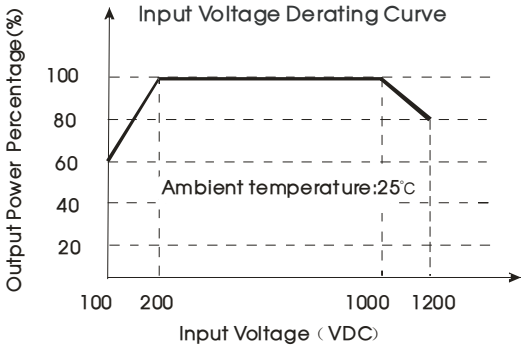
Casing Material		Black flame-retardant and heat-resistant plastic (UL94-V0)
Package Dimensions	Horizontal package	70.00*48.00*23.50 mm
	A2 chassis package	96.10*54.00*32.00 mm
	A3 chassis package	99.00*54.00*32.00 mm
	A4 rail package	96.10*54.00*36.60 mm
Weight	Horizontal package/ A2 chassis package/ A3 chassis package/ A4 rail package	113 g /170 g /170 g /210 g(Typ.)
Cooling method		Free convection

EMC Specifications

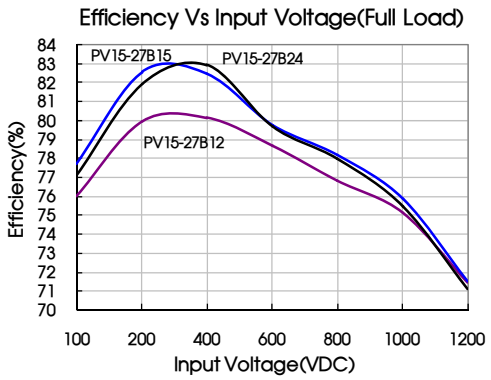
EMI	CE	CISPR22/EN55022, CLASS A(See Fig. 2 for recommended circuit)	
	RE	CISPR22/EN55022, CLASS A(See Fig. 2 for recommended circuit)	
EMS	ESD	IEC/EN61000-4-2 ±6KV/±8KV	Perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 ±4KV (See Fig. 2 for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5 ±2KV (See Fig. 2 for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6 10 Vr.m.s	perf. Criteria A
	PFM	IEC/EN61000-4-8 10A/m	perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11 0%-70%	perf. Criteria B

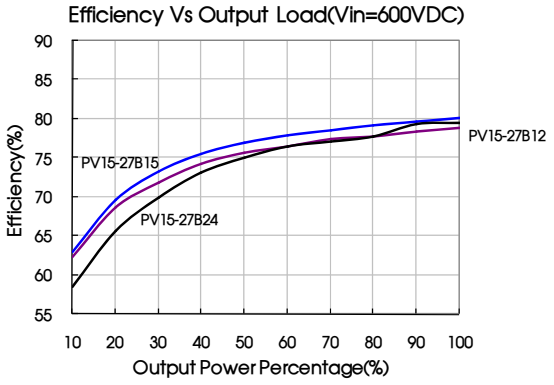
Product Characteristic Curve





Note: ①Input voltage should be derated based on temperature derating when it is 100~200 VDC,1000~1200VDC;
②This product is suitable for use in natural air cooling environments, if in a closed environment, please contact our company's FAE.





Design Reference

1. Typical application circuit

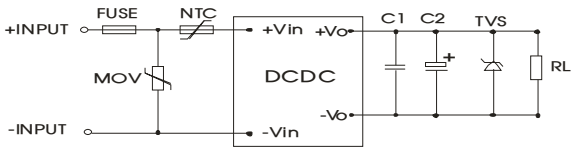


Fig. 1: Typical application circuit

Model	C1	C2	TVS tube
PV15-27B12	0.22μF/50V	120μF/25V	SMCJ15A
PV15-27B15	0.22μF/50V	120μF/25V	SMCJ20A
PV15-27B24	0.22μF/50V	68μF/35V	SMCJ33A

Note:
Output filtering capacitor C2 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. C1 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

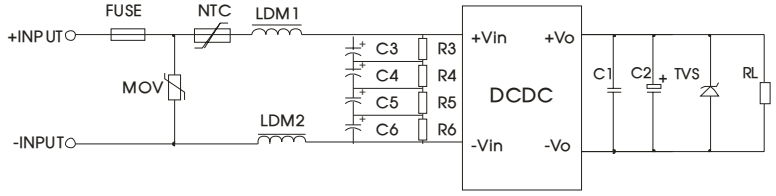


Fig 2: EMC application circuit with higher requirements

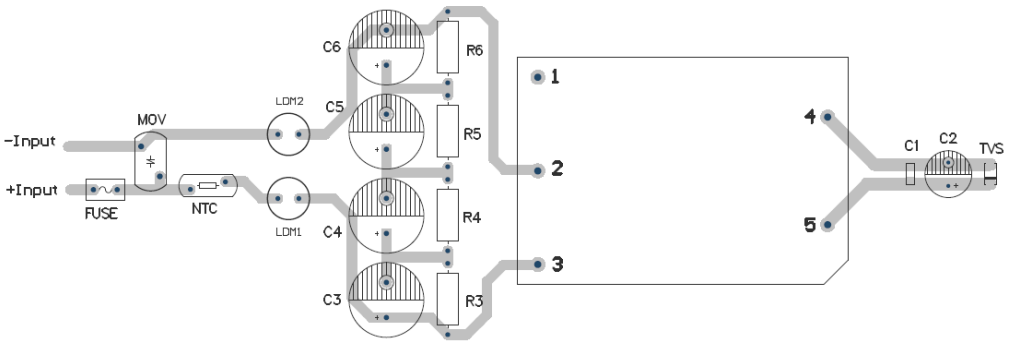


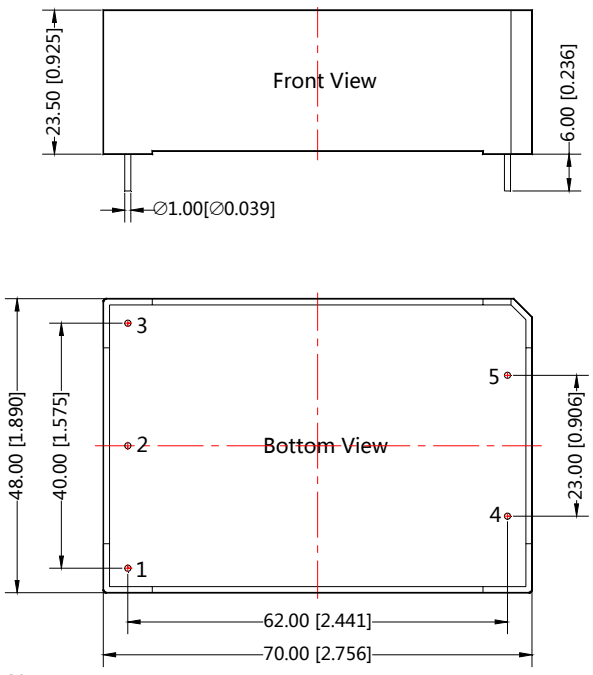
Fig 3: Recommended EMC circuit-PCB layout

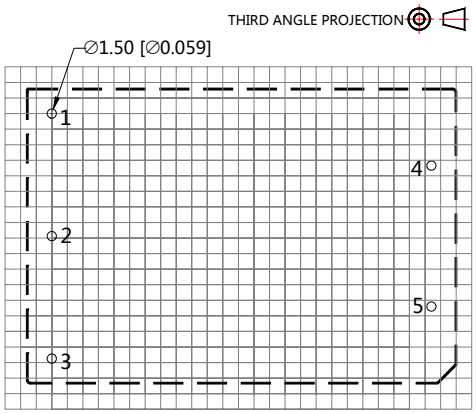
Suggestions for safety regulation and wiring width: wire width ≥3mm, distance between wires ≥6mm, and distance between wire and ground ≥6mm

Element model	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, Slow fusing, necessary

3. For more information about Mornsun EMC Filter products, please visit www.mornsun-power.com to download the Selection Guide of EMC Filter

Dimensions and Recommended Layout



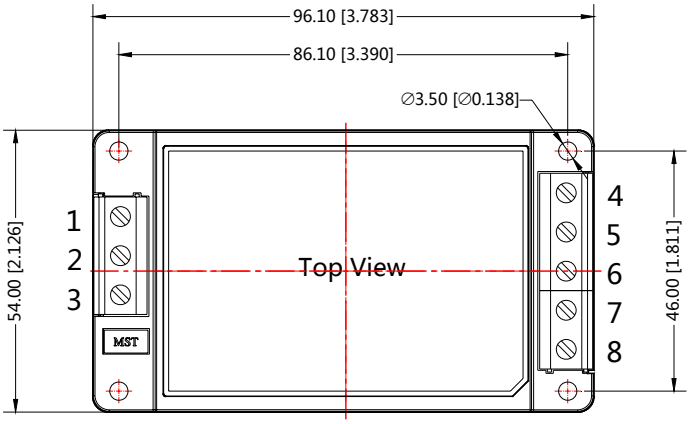


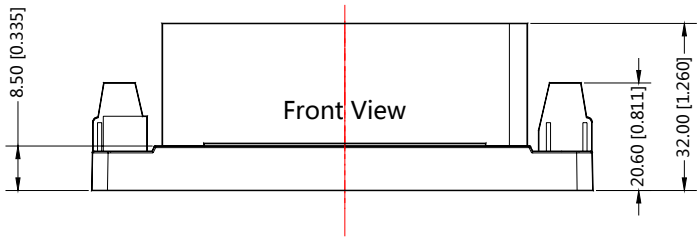
Note:Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	NC
2	-Vin
3	+Vin
4	-Vo
5	+Vo

Note:
Unit :mm[inch]
Pin diameter tolerances :±0.10[±0.004]
General tolerances:±0.50[±0.020]

PV15-27BxxA2 Dimensions



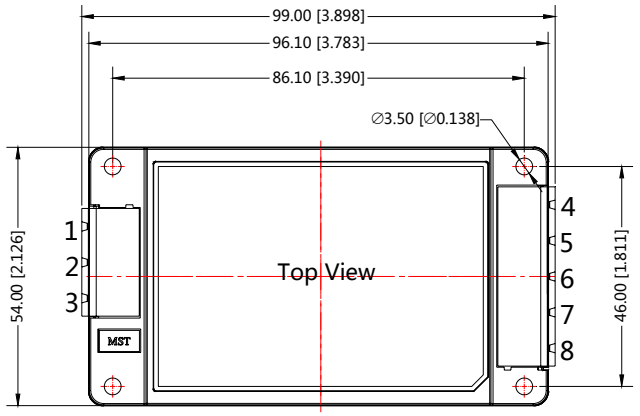


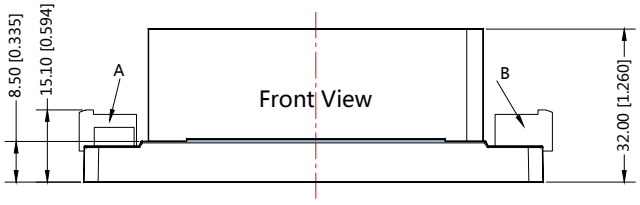
THIRD ANGLE PROJECTION

Pin-Out	
Pin	Function
1	-Vin
2	NC
3	+Vin
4	-Vo
5	NC
6	NC
7	NC
8	+Vo

Note:
Unit:mm[inch]
Wire range：24~12 AWG
General tolerances:±0.50[±0.020]

PV15-27BxxA3 Dimensions



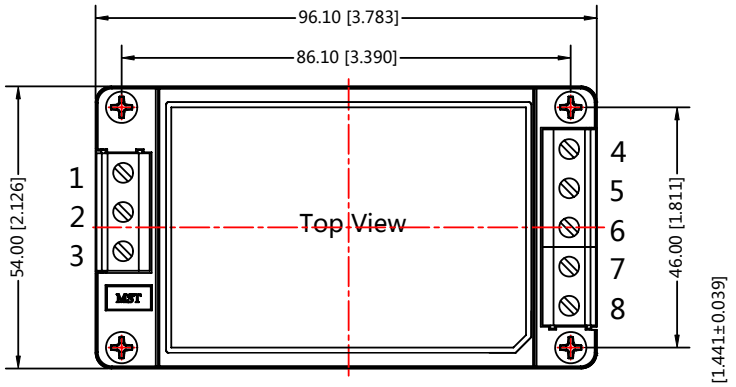


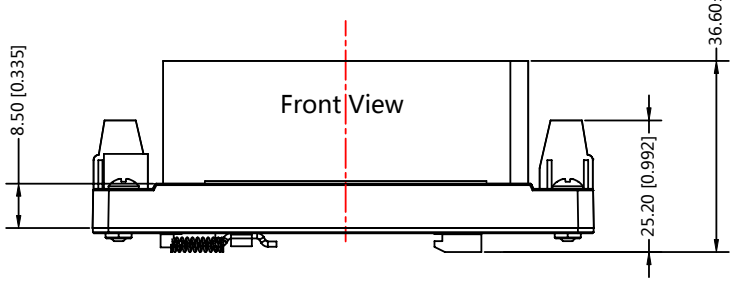
THIRD ANGLE PROJECTION

Pin	Function
1	-Vin
2	NC
3	+Vin
4	-Vo
5	NC
6	NC
7	NC
8	+Vo

Note:
Unit:mm[inch]
General tolerances:±0.50[±0.020]
A:DEGSON P/N:
2EDGRC-7.5-03P-14-100A (H)
B:DEGSON P/N:
2EDGRC-7.5-05P-14-100A (H)

PV15-27BxxA4 Dimensions





THIRD ANGLE PROJECTION

Pin	Function
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
General tolerances:±0.50[±0.020]

Note:

1. Packing Information please refer to 'Product Packing Information'. The Packing bag number of Horizontal package : 58220006, the Packing bag number of A2/A3/A4 package: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.

Mornsun Guangzhou Science & Technology Co., Ltd.
Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Luogang District, Guangzhou, P. R. China
Tel: 86-20-38601850-8801 Fax: 86-20-38601272 E-mail: info@mornsun.cn