

New energy 100-1200VDC overwide and overhigh input voltage isolation converter



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 K hours
- High reliability, long life, three years warranty
- Offer custom products

RoHS

LH60-series is a 60W efficient environmental-protection DC-DC module power supply, 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) (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			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		--	±1	±2	%
Linear Regulation	Full load	--	±0.5	±1	
Load Regulation	5%-100% load	--	±0.5	±1	
Output 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: *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	--	--	VDC
Operating Temperature		-25	--	+70	°C
Storage Temperature		-25	--	+105	
Storage Humidity		--	--	95	
Welding Temperature	Wave-soldering	260±5°C; time:5~10s			
	Manual-welding	360±10°C; time:3~5s			
Switching Frequency		--	65	--	kHz
Power Derating	+50°C to +70°C	3	--	--	%/°C
Hot Plug	Unavailable				
MTBF	MIL-HDBK-217F@25°C > 300,000 h				

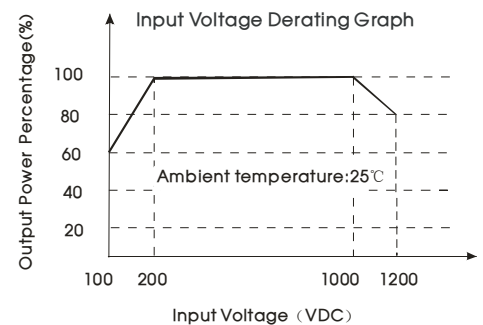
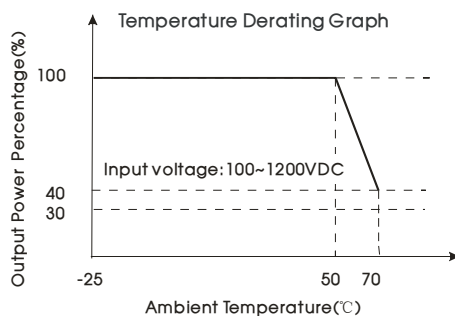
Physical Specifications

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

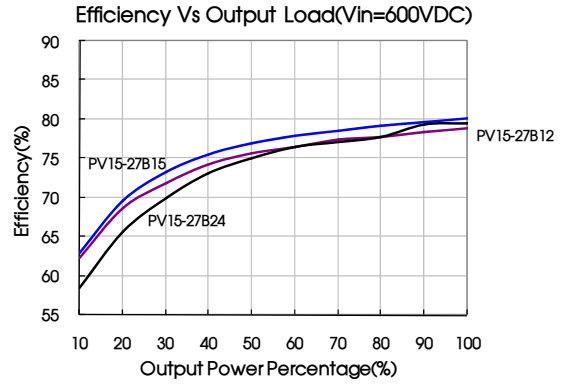
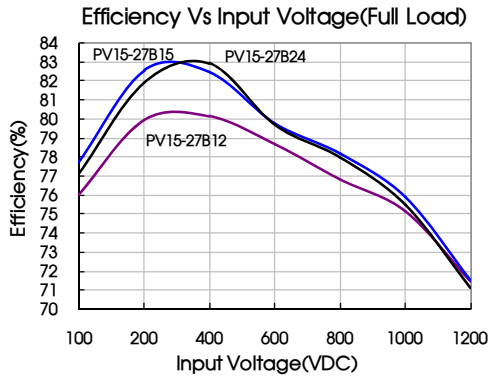
EMC Specifications

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 Immunity	IEC/EN61000-4-6	10 Vr.m.s	perf. Criteria A
	Immunity for Power frequency magnetic field	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



Note: Input voltage should be derated based on temperature derating when it is 100~1200VDC.



Design Reference

1. Typical application circuit

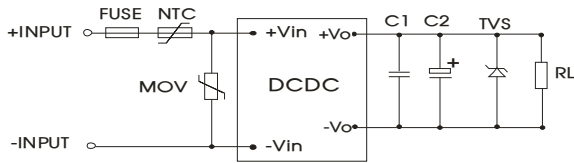


Fig. 1: Typical application circuit

Model	C1(μF)	C2(μF)	TVS tube
PV15-27B12	0.22MF/50V	120μF/25	SMCJ15A
PV15-27B15	0.22μF/50V	120MF/2	SMCJ20A
PV15-27B24	0.22μF/50V	68MF/35	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

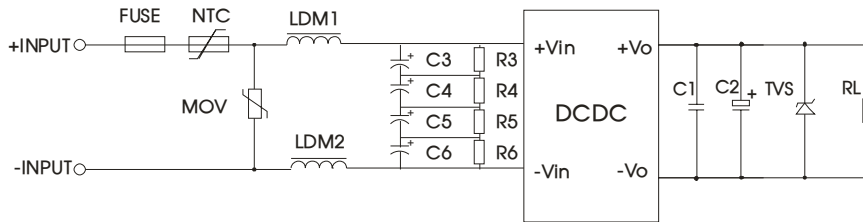


Fig 2: EMC application circuit with higher requirements

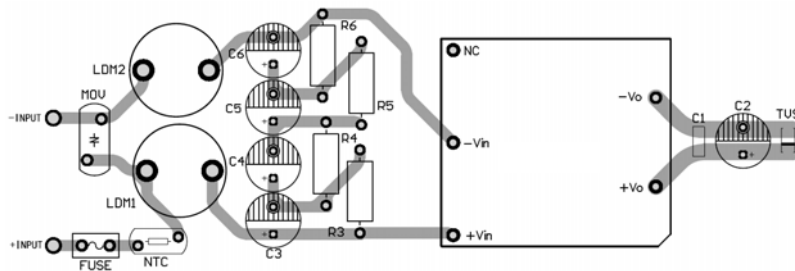


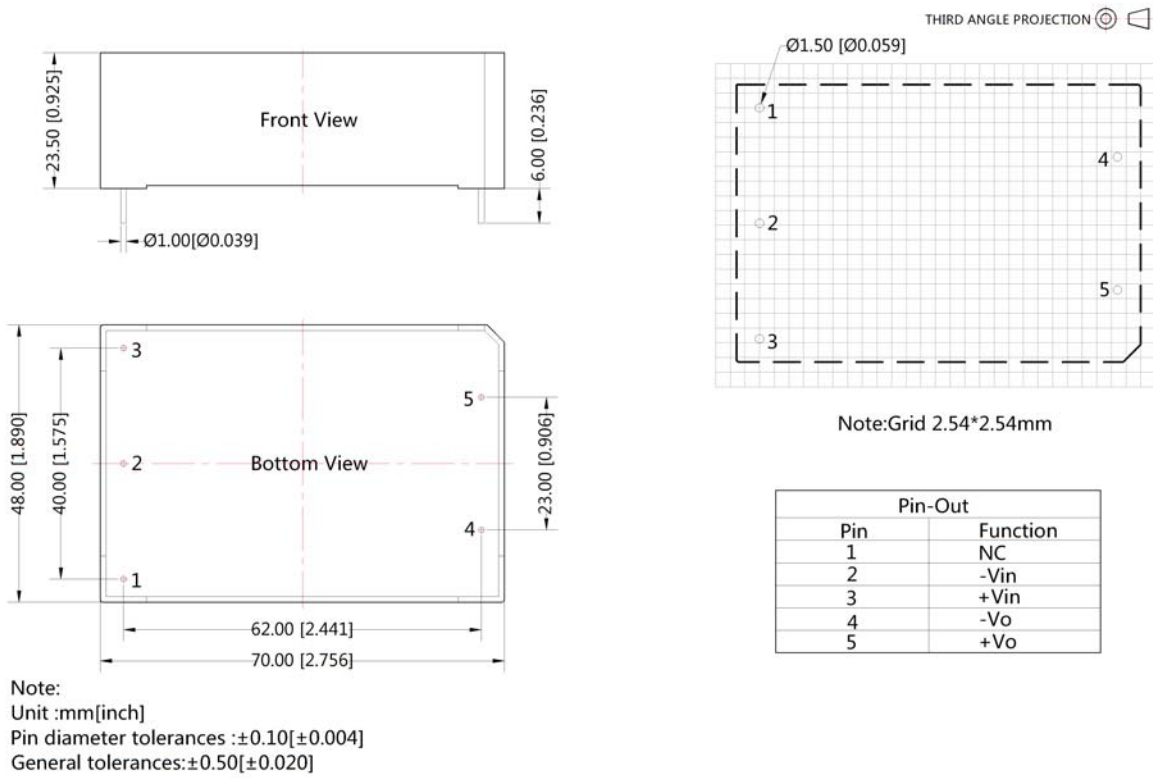
Fig 3: Recommended EMC circuit-PCB layout

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

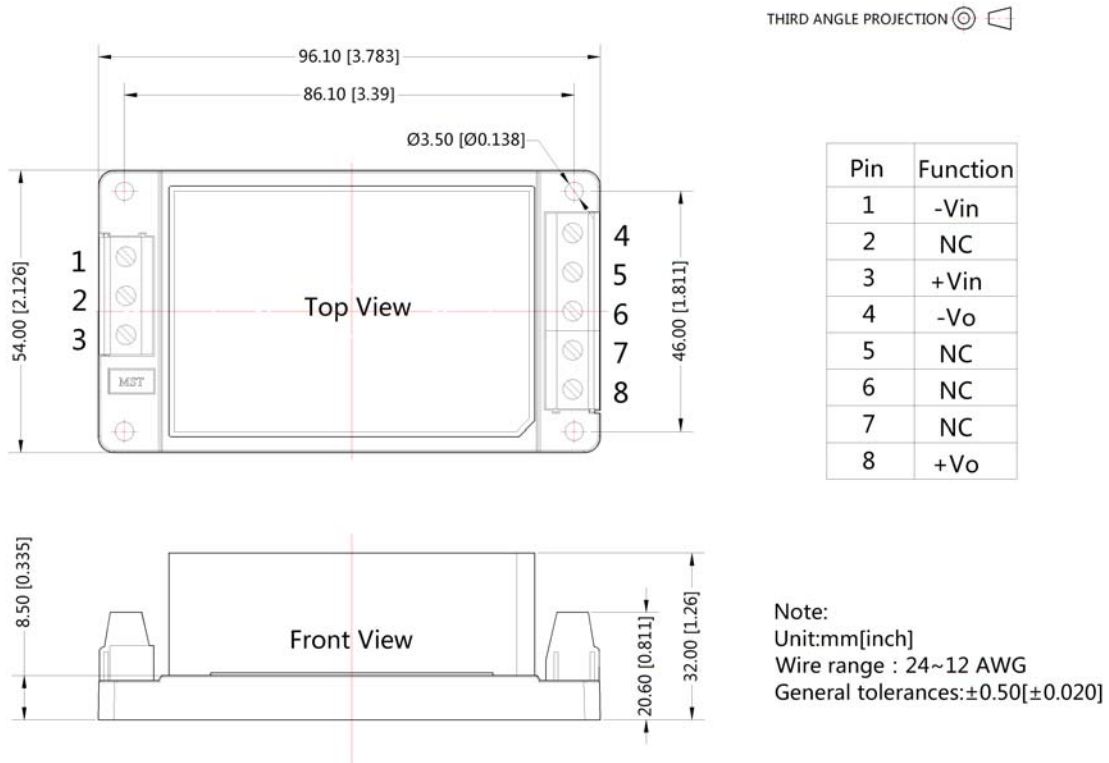
Element model	Recommended value
MOV	S14K1000
C3, C4, C5, C6	22μF/400VDC
R3, R4, R5, R6	1MΩ/2W
NTC	5D-9
LDM1, LDM2	1.2mH/0.5A
FUSE	3.15A, necessary

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

Dimensions and Recommended Layout

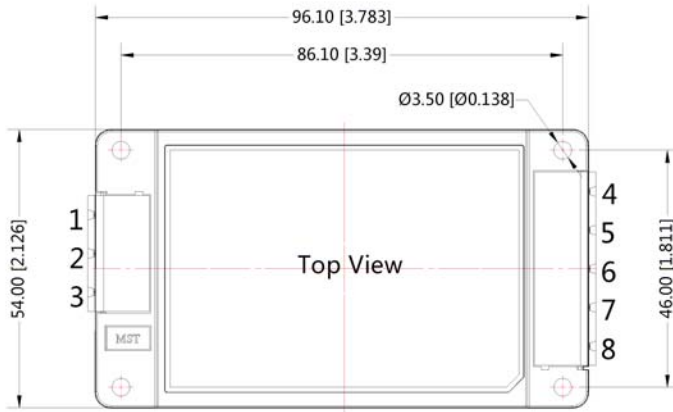


PV15XA2 Dimensions

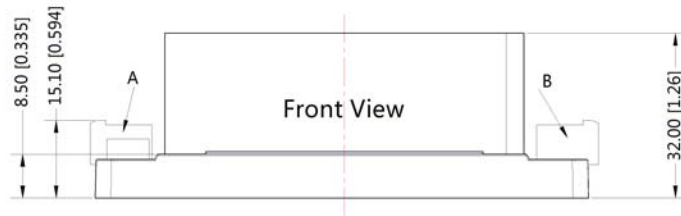


PV15XA3 Dimensions

THIRD ANGLE PROJECTION



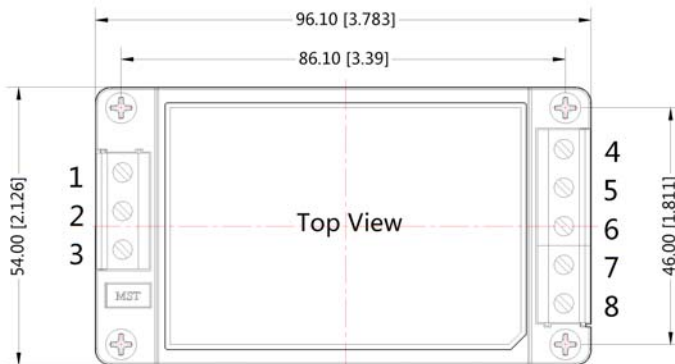
Pin	Function
1	-Vin
2	NC
3	+Vin
4	-Vo
5	NC
6	NC
7	NC
8	+Vo



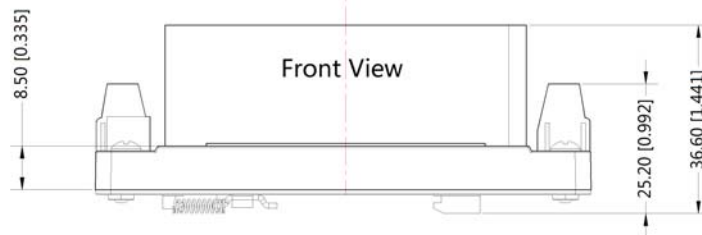
Note:
Unit:mm[inch]
General tolerances:±0.50[±0.020]
A:DEGSON P/N:
2EDGRC-7.5-03P-14-100A (H)
B:DEGSON P/N:
2EDGRC-7.5-05P-14-100A (H)

PV15XA4 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 $T_a=25^{\circ}\text{C}$, 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