

DC/DC Converter

PV20-27A15

MORNSUN®

15W isolated DC-DC converter with ultra-wide, ultra-high 200-1100V DC input for Renewable Energy



FEATURES

- Input voltage up to 1200VDC (Transient, duration: 60s)
- Wide input voltage range of 200 -1100VDC
- Industrial grade operating temperature -30℃ to +70℃
- High I/O isolation voltage up to 4000VAC
- High efficiency, low ripple & noise
- Input reverse polarity protection, output short circuit, over-current, over-voltage protection
- High reliability, long service life
- Meets 5000m altitude requirements

PV20-27A15 is regulated DC-DC converters with an ultra-wide and ultra-high DC input of 200-1100VDC. The products feature high efficiency, high reliability, high insulation and a high level of safety protection. 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

Certification	Part No.	Output Power	Nominal Output Voltage and Current		Efficiency at 200VDC (%) Typ.	Capacitive Load (μF) Max.
			(Vo1/Io1)	(Vo2/Io2)		
EN	PV20-27A15	20W	-15V/-667mA	+15V/667mA	81	470

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range		200	--	1100	VDC
	Transient (60s)	--	--	1200	
Input Current	200VDC	--	--	150	mA
	600VDC	--	--	50	
	1100VDC	--	--	25	
Inrush Current	200VDC	--	7	--	A
	600VDC	--	20	--	
	900VDC	--	30	--	
Input Under-voltage Protection	Lockout activation range	80	--	--	VDC
	Lockout deactivation range	--	--	180	
Input Reverse Polarity Protection		Available			
External Input Fuse		1500VDC/1A, required			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		--	±2	±3	%
Line Regulation		--	±0.5	±1.2	
Load Regulation		--	±1	±2	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)	--	100	200	mV
Temperature Drift Coefficient		--	±0.02	±0.03	%/℃
Short Circuit Protection		Hiccup, continuous, self-recovery			
Over-current Protection		≥110%Io, self-recovery			
Over-voltage Protection		≤25VDC (output voltage clamp or hiccup)			

MORNSUN®

MORNSUN Guangzhou Science & Technology Co., Ltd.

2025.07.02-A/2 Page 1 of 4

MORNSUN Guangzhou Science & Technology Co., Ltd. reserves the copyright and right of final interpretation

Minimum Load		10	--	--	%
Start-up Delay Time	200VDC	--	--	3	s
	600VDC	--	--	1	
	1100VDC	--	0.54	1	
Hold-up Time	Room temperature, full load	1100VDC input	--	10	ms

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

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input - output	Electric Strength Test for 1min., leakage current <5mA			
Insulation Resistance	Input - output	Testing voltage: 500VDC			
Operating Temperature		-30	--	+70	°C
Storage Temperature		-40	--	+105	
Storage Humidity		--	--	95	%RH
Soldering Temperature	Wave-soldering	260 ± 5°C; time: 5-10s			
	Manual-welding	360 ± 10°C; time: 3-5s			
Power Derating	+50°C to +70°C	2.5	--	--	%/°C
	900VDC- 1000VDC	0.25	--	--	%VDC
	1000VDC- 1100VDC	0.45	--	--	
	2000m - 5000m	6.68	--	--	%/Km
Safety Standard		Design refer to EN/BS EN62368-1			
Safety Class		Class II			
MTBF	MIL-HDBK-217F@25°C	> 300,000 h			

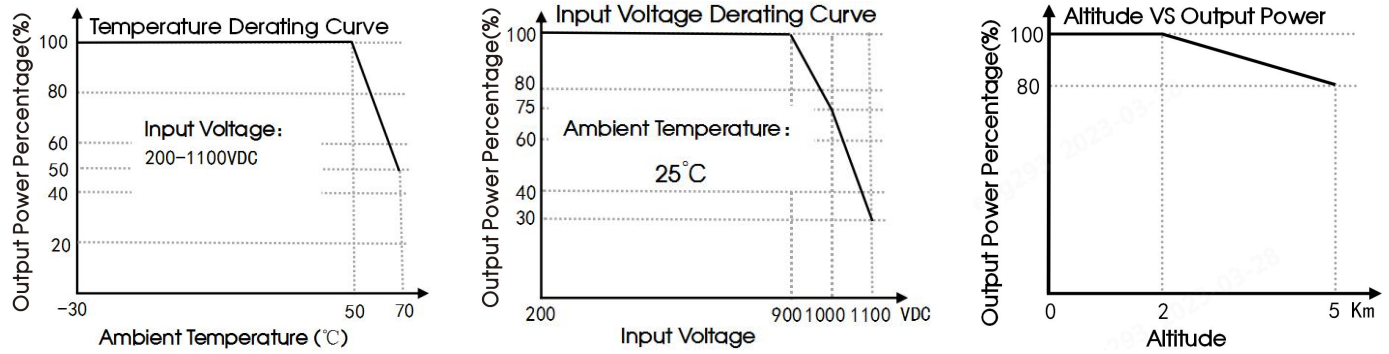
Mechanical Specifications

Case Material	Black flame-retardant and heat-resistant plastic (UL94V-0)
Dimensions	70.00 x 48.00 x 23.50mm
Weight	125g (Typ.)
Cooling Method	Free air convection

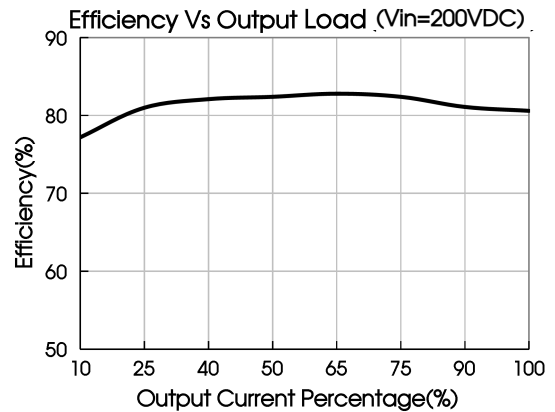
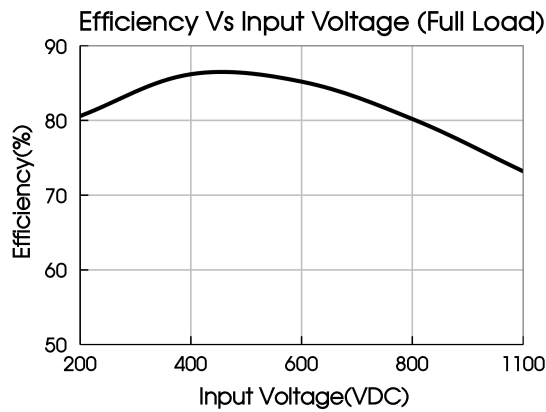
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS A (See Fig. 1 for recommended circuit)			
	RE	CISPR32/EN55032 CLASS A (See Fig. 1 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		Perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line ±1KV		Perf. Criteria B
		IEC/EN61000-4-5	line to line ±2KV (See Fig. 1 for recommended circuit)		Perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s		Perf. Criteria A

Product Characteristic Curve



Note: 1. With an input between 900 - 1100VDC, the output power of PV20-27A15 parts must be derated as per temperature derating curves;
2. This product is suitable for applications using natural air cooling; for applications in closed environment please consult Mornsun FAE.



Design Reference

1. EMC compliance recommended circuit

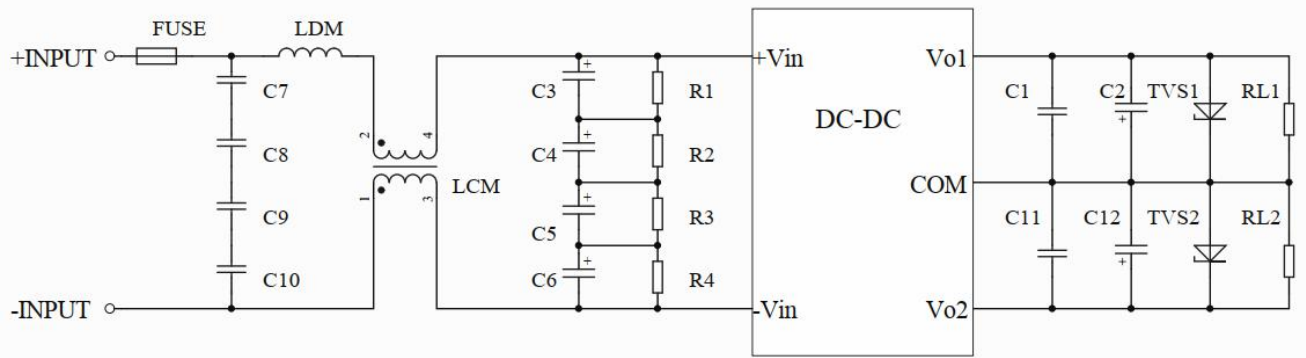


Fig 1: EMC application for higher compliance requirements (output parameters are show in Figure 1)

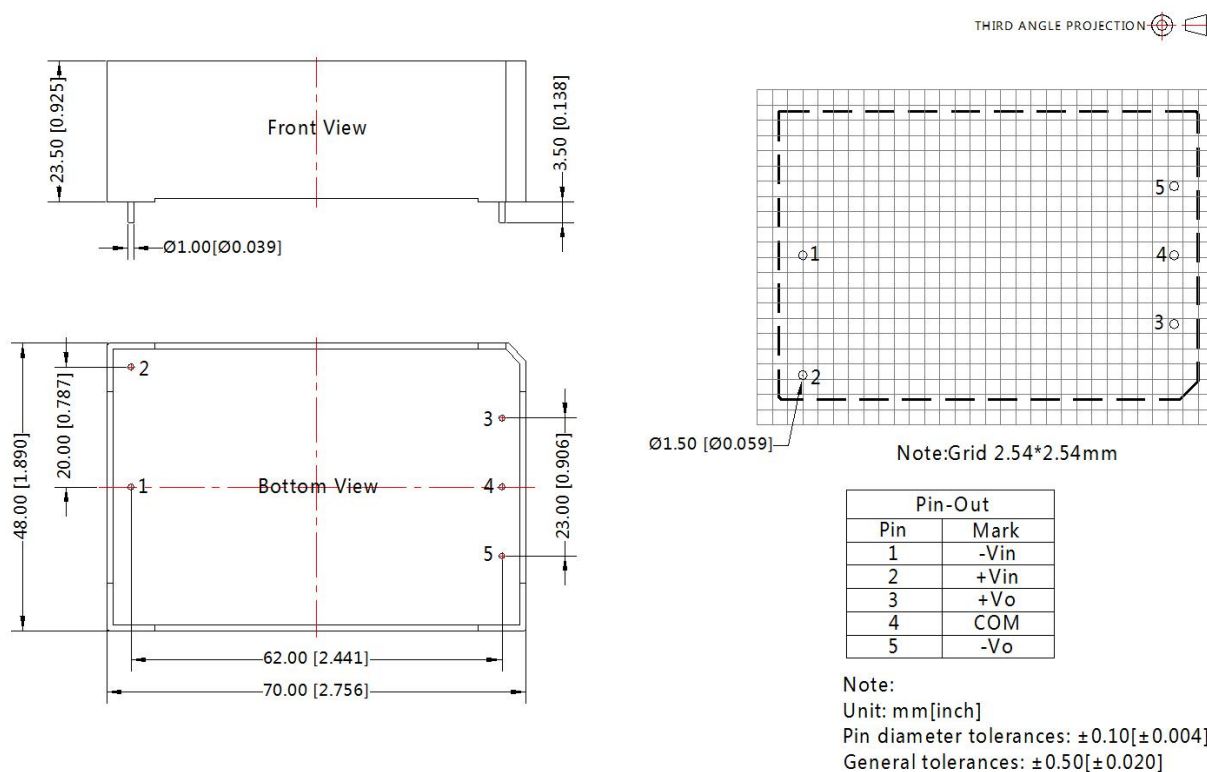
Component	Recommended value
C3/C4/C5/C6	10uF/400VDC
C7/C8/C9/C10	224K/275VAC
R1/R2/R3/R4	1MΩ/0.25W
LDM	1.2mH/0.38A
LCM	10mH (recommended to use MORNSUN's FL2D-10-103B)
FUSE	1500VDC/1A, required
C2/C12	100uF/25VDC
C1/C11	0.1uF/25VDC

Note on filter components:

We recommend using an electrolytic capacitor with high frequency and low ESR rating for C2, C12 (refer to manufacture's datasheet). Choose a capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1, C11 are ceramic capacitors, used to filter high-frequency noise. TVS is a recommended suppressor diode to protect the application in case of a converter failure.

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

Dimensions and Recommended Layout



Note:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220006;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, 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. We can provide product customization service, please contact our technicians directly for specific information;
5. Specifications are subject to change without prior notice.

Mornsun Guangzhou Science & Technology Co., Ltd.

Address: No.8 Nanyun 4th Road, Huangpu District, Guangzhou, China

Tel: 86-20-38601850

Fax: 86-20-38601272

E-mail: sales@mornsun.cn

www.mornsun-power.com