

DC/DC Converter

PV40-29A、BxxH Series

MORNSUN®

40W isolation DC-DC converter with ultra-wide, ultra-high 200 - 1500VDC Specialize for H-Bridge driver circuit



FEATURES

- Ultra-wide 200 - 1500VDC input voltage range
- Industrial grade operating temperature: -40 °C to +75 °C
- High I/O isolation voltage up to 4000VAC
- High efficiency, high reliability, low ripple & noise
- Input under-voltage protection, input reverse polarity protection, output short circuit, over-current, over-voltage protection
- Operating altitude up to 5000m
- Surge immunity meets Level 3, EFT immunity meets Level 4
- Design refer to UL1741, EN/BS EN62109

PV40-29A、BxxH series is regulated DC-DC converters with an ultra-wide DC input of 200-1500VDC. The products feature high efficiency, high reliability, high insulation and high level of safety. It is mainly used in SVG, photovoltaic inverter, high-voltage inverter and other H-bridge power-taking occasions. The converters provide multiple protection features and guarantee stable and safe operating environments even under abnormal working conditions.

Selection Guide

Part No.		Output Power (W)	Nominal Output Voltage and Current*		Efficiency at 900VDC (%) Typ.	Capacitive Load (μF) Max.
PV40-29A15H	Vo1	30	Vo1/Io1	15V/2A	86	2200
	Vo2	10	Vo2/Io2	15V/0.67A		1000
PV40-29B15H	Vo	40	Vo/Io	15V/2.67A		2200

Note: *For PV40-29A15H, the non-isolated $\pm 15V$ output can be achieved through external connection of -Vo1 and +Vo2 pin.

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Voltage Range			200	--	1500	VDC
Input Current	300VDC		--	--	0.18	A
	1500VDC		--	--	0.04	
Inrush Current	1500VDC	Cold start	--	--	100	
Input Under-voltage Protection	Under-voltage protection start		85	--	180	VDC
	Under-voltage protection release		120	--	200	
Input Reverse Polarity Protection	Available					
Start-up Delay Time			--	--	3	s
External Input Fuse Required	4A/1500VDC, required					
Hot Plug	Unavailable					

Output Specifications

Item	Operating Conditions			Min.	Typ.	Max.	Unit
Output Voltage Accuracy	All load range	PV40-29B15H		--	±1	±2	%
	Balanced load	PV40-29A15H	Vo1	--	±2	--	
			Vo2	--	±6	--	
Line Regulation	Rated load			--	±0.5	±1	
Load Regulation	0% - 100% load	PV40-29B15H		--	±0.5	±1	
	10% - 100% load	PV40-29A15H		--	±5	--	
Cross Regulation	10% - 100% load	PV40-29A15H		--	--	10	
Stand-by Power Consumption	900VDC			--	--	1	W
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)			--	--	200	mV
Temperature Coefficient				--	--	±0.02	%/°C

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Short Circuit Protection		Hiccup, continuous, self-recovery			
Over-current Protection		≥110%Io, hiccup, self-recovery			
Over-voltage Protection		≤18V	Output voltage clamp or hiccup		
Minimum Load	PV40-29B15H	0	--	--	%
	PV40-29A15H	10	--	--	
Note: *The “Tip and barrel method” and “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 < 4mA		4000	--	--	VAC
Insulation Resistance	Input - output	Test voltage: 500VDC		50	--	--	MΩ
Operating Temperature				-40	--	+75	℃
Storage Temperature				-40	--	+85	
Storage Humidity		Non-condensing		--	--	95	%RH
Soldering Temperature		Wave-soldering		260 ± 5℃; time: 5 - 10s			
		Manual- soldering		360 ± 10℃; time: 3 - 5s			
Power Derating		-40℃ to -10℃		1.33	--	--	%/℃
		+60℃ to +75℃	200 - 1200V	4.00	--	--	
		+45℃ to +60℃	1201-1500V	2.66	--	--	
		+60℃ to +75℃		2.00	--	--	
		200 - 300VDC		0.30	--	--	%/VDC
		2000m - 5000m		6.67	--	--	%/Km
Switching Frequency				--	65	--	kHz
Safety Standard				Design refer to UL1741, EN/BS EN62109-1			
MTBF		MIL-HDBK-217F@25℃		≥300,000 h			

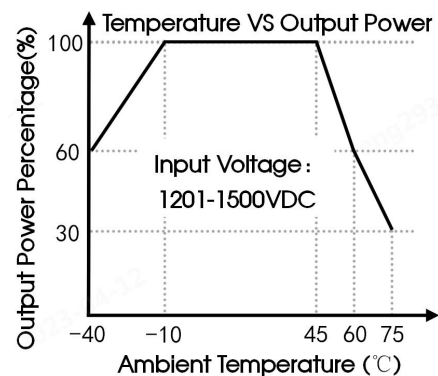
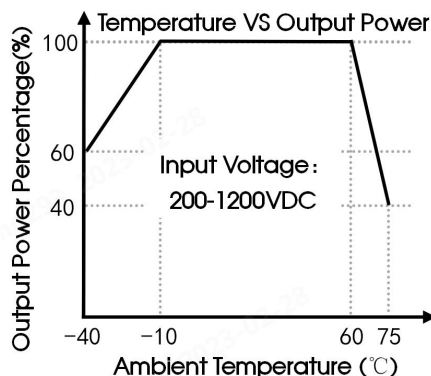
Mechanical Specifications

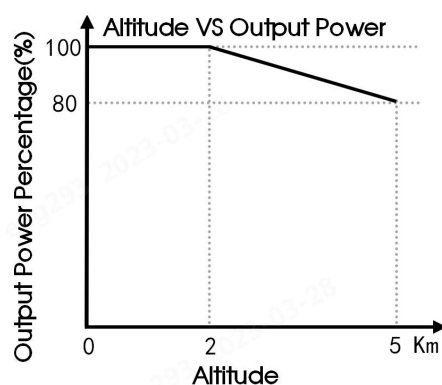
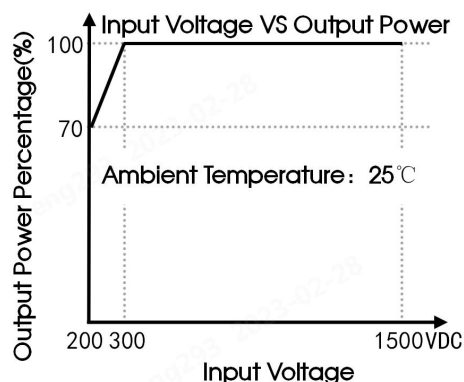
Case Material	Black plastic, flame-retardant and heat-resistant (UL94V-0)
Dimensions	89.00 x 63.50 x 25.00mm
Weight	190g (Typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

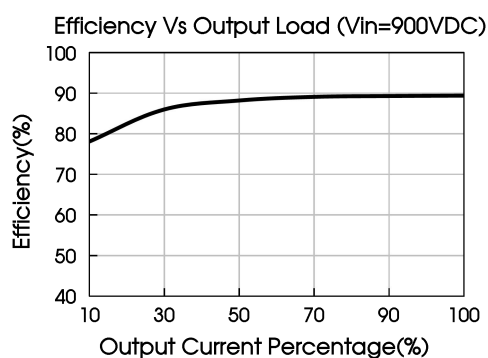
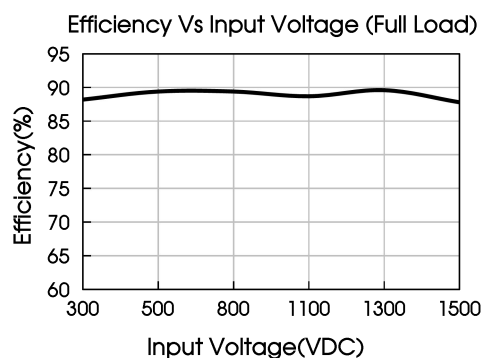
Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV/Air ±8KV	Perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	Perf. Criteria A
	EFT	IEC/EN61000-4-4	±4KV	Perf. Criteria B
	Surge	IEC/EN61000-4-5	Line to line ±1KV	Perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s	Perf. Criteria A

Product Characteristic Curve





Note: 1. With an DC input between 200-300VDC, the output power must be derated as per temperature derating curves;
2. This product is suitable for applications using natural free air convection; for applications in closed environment please consult Mornsun FAE.



Design Reference

1. Typical application

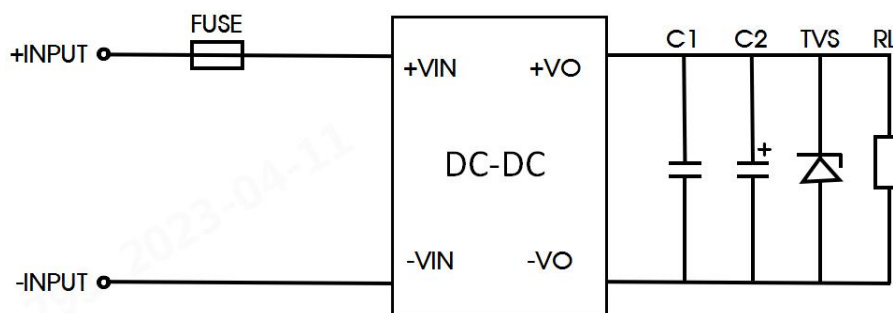


Fig. 1

Component	Recommended value
FUSE	4A/1500VDC, required
C1	1μF/35V
C2	120μF/25V
TVS	SMBJ20A

Output Filter Components:

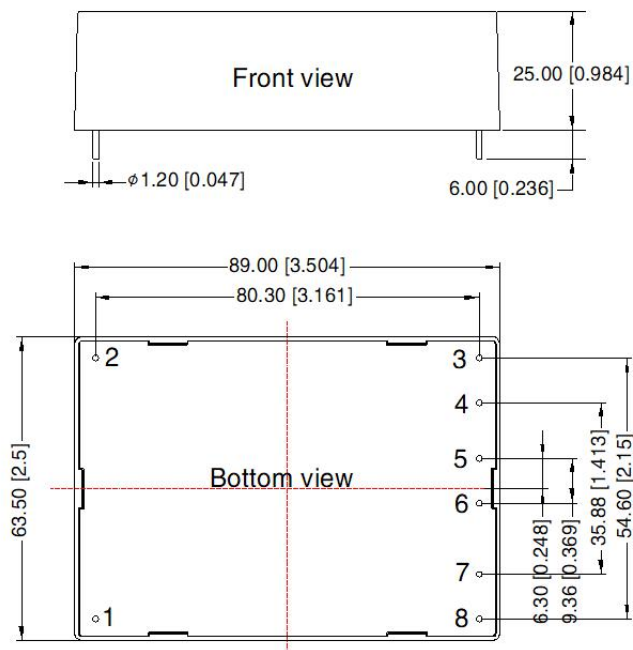
We recommend using an electrolytic capacitor with high frequency and low ESR rating for C2 (refer to manufacture's datasheet). Choose a capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor, used to filter high-frequency noise. TVS is a recommended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

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

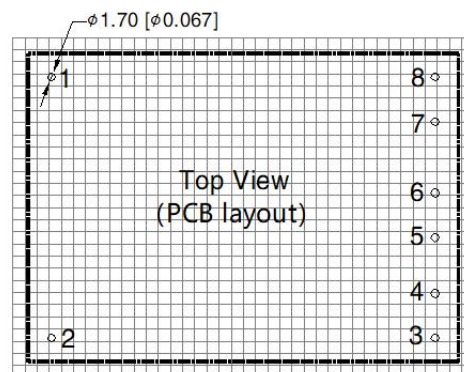
Dimensions and Recommended Layout

PV40-29A15H

THIRD ANGLE PROJECTION



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

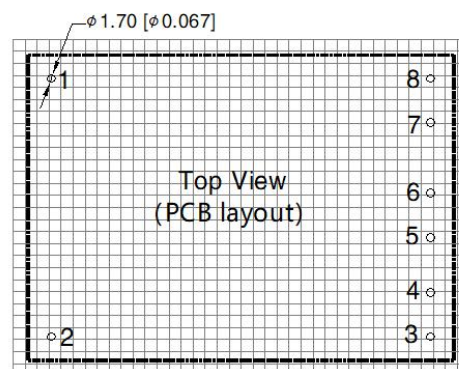
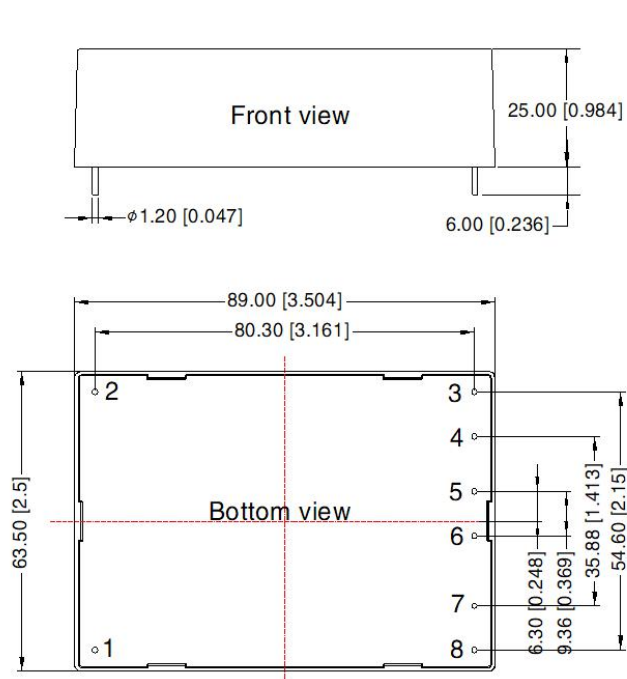


Note: Grid 2.54*2.54mm

Pin-Out	
Pin	Mark
1	-Vin
2	+Vin
3	+Vo2
4	-Vo2
5	No Pin
6	+Vo1
7	No Pin
8	-Vo1

PV40-29B15H

THIRD ANGLE PROJECTION 



Note: Grid 2.54*2.54mm

Pin-Out	
Pin	Mark
1	-Vin
2	+Vin
3	No Pin
4	No Pin
5	No Pin
6	+Vo1
7	No Pin
8	-Vo1

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

Note:

- For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58220021;
- 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;
- All index testing methods in this datasheet are based on our company corporate standards;
- We can provide product customization service, please contact our technicians directly for specific information;
- 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.

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