

DESCRIPTIONS

15W, DC/DC Converter



RoHS



Report



Report

EN62109-1

BS EN62109-1

FEATURES

- Input voltage up to 1600VDC (Transient, duration: 10s)
- Ultra wide input voltage range: 200 - 1500VDC
- Industrial grade operating temperature: -40°C to +70°C
- High I/O isolation voltage up to 4000VAC
- High efficiency, low ripple & noise
- Input under-voltage protection, input reverse polarity protection, output short circuit, over-current, over-voltage protection
- OVC II
- Reinforced insulation

APPLICATIONS

- Photovoltaic inverters
- Combiner box
- Storage

Selection Guide

Certification	Part No*	Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 800VAC (%) Typ.	Capacitive Load (uF) Max.
EN/BS EN	DPV15-15B-05	10	5V/2000mA	76	6000
	DPV15-15B-12	15	12V/1250mA	78	2000
	DPV15-15B-15		15V/1000mA	80	1200
	DPV15-15B-24		24V/625mA	83	470

Note: *Use suffix "D5" for chassis mounting and suffix "D6" for DIN-Rail mounting.

Specifications

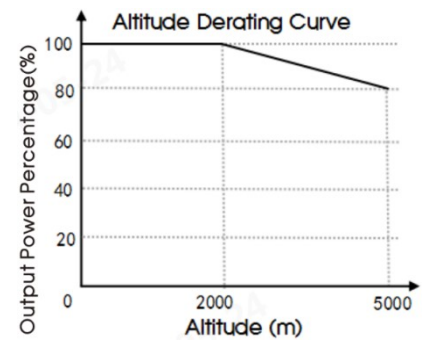
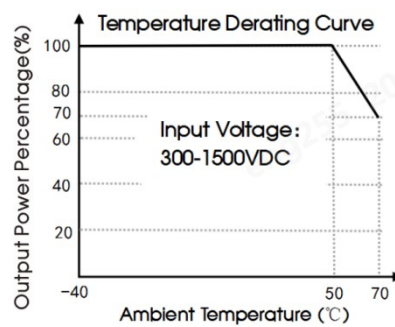
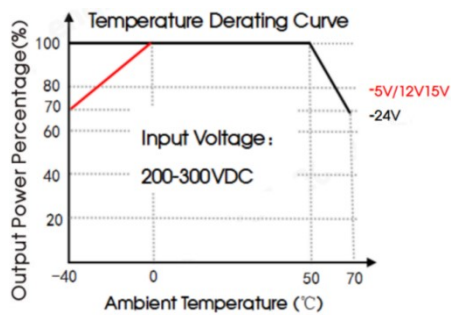
Product Specifications	Item		Operating Conditions		Min.	Typ.	Max.	Unit
Input Specifications	Input Voltage Range				200	800	1500	VDC
			Transient (10s)		--	--	1600	
	Input Current		200VDC		--	--	120	mA
			800VDC		--	--	30	
			1500VDC		--	--	16	
	Inrush Current		200VDC		--	30	--	A
			1500VDC		--	90	--	
	Under-voltage Protection				Lockout activation range: 130 - 175V Lockout deactivation range: 155 - 200V			
	Input Reverse Polarity Protection				Available			
	External Input Fuse Required				4A/1500VDC, required			
Hot Plug				Unavailable				
Output Specifications	Output Voltage Accuracy				--	±1.0	±1.5	%
	Line Regulation		Full load		--	±0.25	±0.5	
	Load Regulation		0% - 100% load		--	±0.25	±0.5	
	Ripple & Noise*		20MHz bandwidth (peak-to-peak value)		--	--	150	mV
	Temperature Coefficient				--	±0.02	±0.15	%/°C
	Minimum Load				0	--	--	%
	Hold-up Time		Room temperature, full load	800VDC input	--	20	--	ms
	Short Circuit Protection				Continuous, self-recovery			
	Over-current Protection				≥120%Io, self-recovery			
	Over-voltage Protection		DPV15-15B-05		≤8VDC			
			DPV15-15B-12		≤20VDC			
			DPV15-15B-15		≤20VDC			
			DPV15-15B-24		≤30VDC			
	Start-up Delay Time**		200 - 1500VDC		--	--	2	s
General Specifications	Isolation	Input - output	Electric Strength Test for 1min., leakage current <3mA		4000	--	--	VAC
	Operating Temperature				-40	--	+70	°C
	Storage Temperature				-40	--	+85	
	Storage Humidity				--	--	95	%RH
	Switching Frequency				--	65	--	kHz

General Specifications	Soldering	Wave-soldering			260 ± 5°C; time: 5 - 10s			
	Temperature	Manual-welding			360 ± 10°C; time: 3 - 5s			
	Power Derating	-40°C to 0°C	200 - 300VDC	5V/12V/15V	0.75	--	--	% /°C
		+50°C to +70°C			1.5	--	--	
		2000m - 5000m			6.7	--	--	%/Km
	Altitude				--	--	5000	m
	MTBF	MIL-HDBK-217F@25°C			≥300,000 h			
Mechanical Specifications	Case Material	Black flame-retardant and heat-resistant plastic (UL94V-0)						
	Dimensions	Horizontal package		89.00 x 63.50 x 25.00 mm				
		D5 chassis mounting		135.00 x 70.00 x 33.50 mm				
		D6 DIN-Rail mounting		135.00 x 70.00 x 39.00 mm				
	Weight	Horizontal package		200g (Typ.)				
		D5 chassis mounting		280g (Typ.)				
		D6 DIN-Rail mounting		350g (Typ.)				
	Cooling Method	Free air convection						
Note: *The "parallel cable" method is used for ripple and noise test; ** Full input voltage / output load range (The cooling-time between input power-off and power-on again is greater than 15s).								

Electromagnetic Compatibility (EMC)

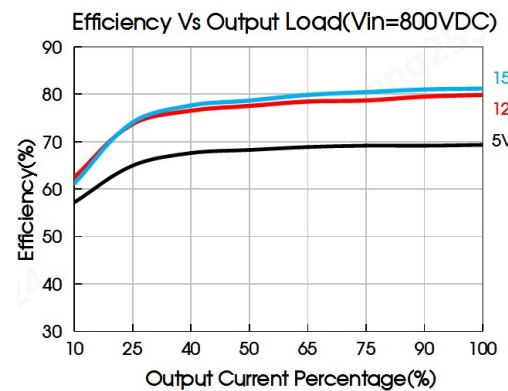
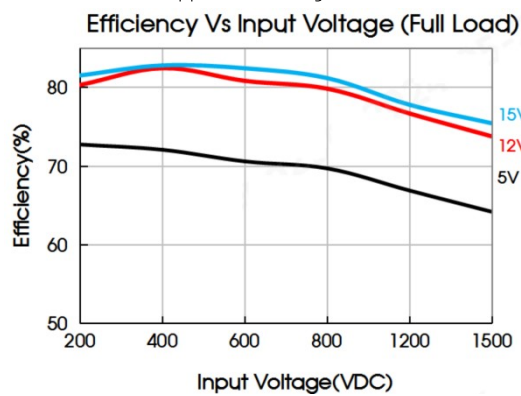
Electromagnetic Compatibility (EMC)	Emissions	CE	CISPR32/EN55032 CLASS A (See Fig. 2 for recommended circuit)			
		RE	CISPR32/EN55032 CLASS A (See Fig. 2 for recommended circuit)			
	Immunity	ESD	IEC/EN61000-4-2	Contact ±6KV / Air ±8KV		perf. Criteria B
		RS	IEC/EN61000-4-3	10V/m		perf. Criteria B
		EFT	IEC/EN61000-4-4	±2KV/±4KV (See Fig. 2 for recommended circuit)		perf. Criteria B
		Surge	IEC/EN61000-4-5	line to line ±1KV / line to line ±2KV (See Fig. 2 for recommended circuit)		perf. Criteria B
		CS	IEC/EN61000-4-6	10Vr.m.s		perf. Criteria A

Product Characteristic Curve



Note:

- ① For operation of this converter series in an altitude between 2000 - 5000m above sea level, the output power must be derated as per the altitude derating curve;
- ② This product is suitable for applications using natural free air convection.



Design Reference

1. Typical application

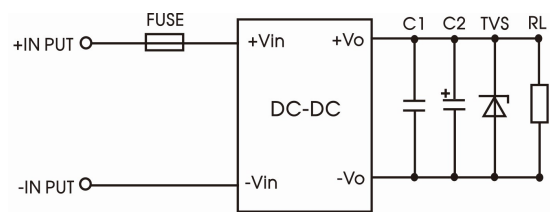


Fig. 1: Typical application circuit

Model	FUSE	C1(μ F)	C2(μ F)	TVS
DPV15-15B-05	4A/1500VDC, required	1 μ F/35V	120 μ F/35V	SMBJ7.0A
DPV15-15B-12			120 μ F/35V	SMBJ20A
DPV15-15B-15			120 μ F/35V	SMBJ20A
DPV15-15B-24			68 μ F/35V	SMBJ30A

Note on 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. EMC compliance recommended circuit

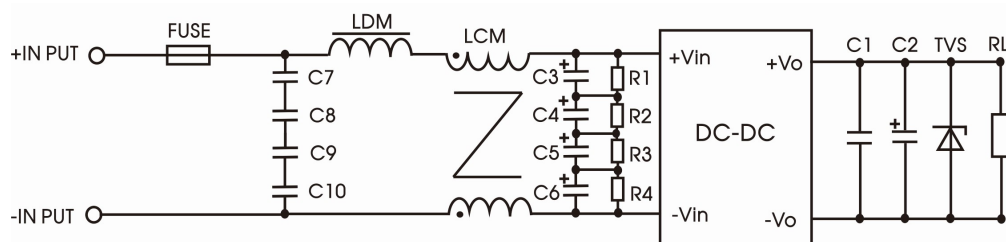
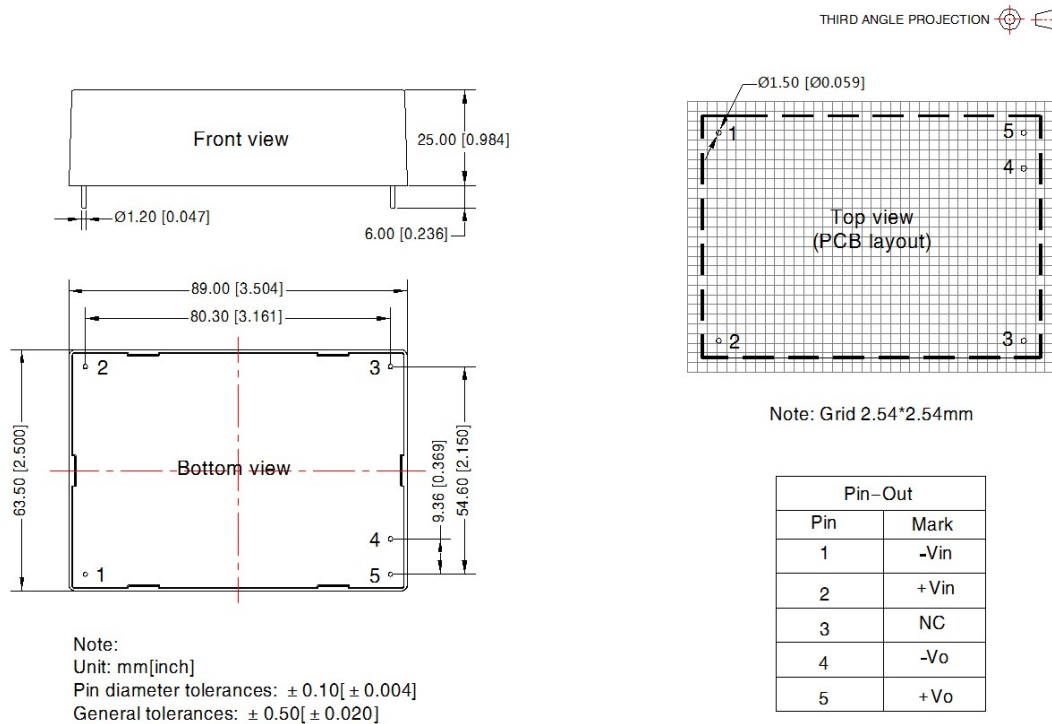


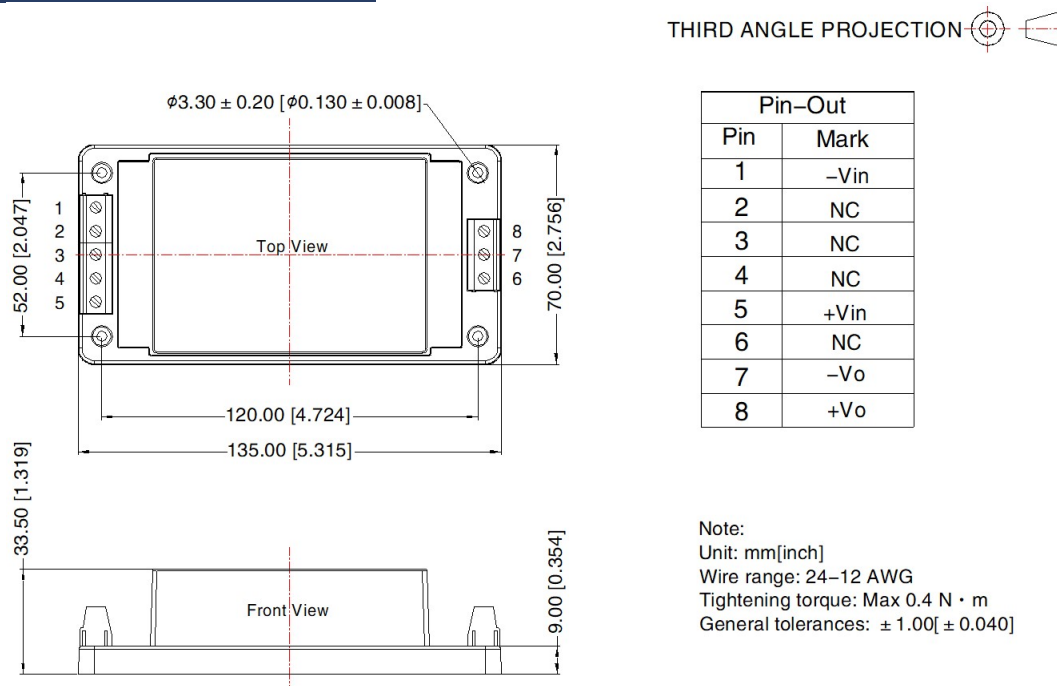
Fig 2: EMC application for higher compliance requirements (output parameters are show in Figure 1)

Component	Recommended value
C7, C8, C9, C10	Safety capacitor 104K/275VAC
C3, C4, C5, C6	10 μ F/450VDC
R1, R2, R3, R4	1M Ω /2W
LDM	330 μ H/1A
LCM	7mH/1A (three insulated wire)
FUSE	4A/1500VDC, required

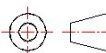
Dimensions and Recommended

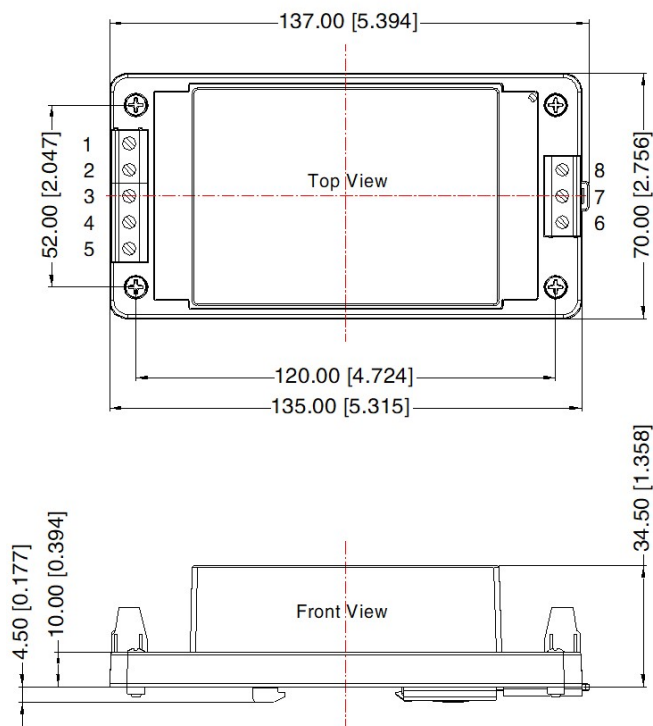


D5 Chassis Mounting Dimensions



D6 Din-Rail Mounting Dimensions

THIRD ANGLE PROJECTION 



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

Note:

Unit: mm[inch]

Wire range: 24-12 AWG

Tightening torque: Max 0.4 N · m

Mounting rail: TS35, rail needs to connect safety ground

General tolerances: $\pm 1.00[\pm 0.040]$

**WARNING:**

- CAUTION: "To reduce the risk of fire, connect only to a circuit provided with 4 amperes maximum branch-circuit over-current protection in accordance with the National Electrical Code, ANSI/NFPA70."
2. WARNING: REPLACE ONLY WITH THE SAME RATINGS AND TYPE OF FUSE.
 3. WARNING: SHOCK HAZARD. HORIZONTAL PACKAGE ONLY FOR MOUNTING IN A RACK OR ENCLOSURE FULLY ENCLOSING ALL LIVE PARTS.
 4. DANGER – HIGH VOLTAGE.

AVERTISSEMENT:

1. Avertissement: Pour réduire le risque d'incendie, veuillez connecter uniquement à des circuits de dérivation avec protection contre les surintensités conformes au code électrique national ANSI/ NFPA 70.
2. AVERTISSEMENT : N'UTILISER QUE DES FUSIBLES DE MÊME CALIBRE ET DE MÊME TYPE QUE LE FUSIBLE D'ORIGINE.
3. AVERTISSEMENT: PAQUET HORIZONTAL RISQUE D'ÉLECTROCUTION. UNIQUEMENT POUR LE MONTAGE DANS UN RACK OU UN ENCEINTE ENFERMANT ENTIÈREMENT TOUTES LES PIÈCES SOUS TENSION.
4. DANGER : HAUTE TENSION.

Note:

1. Unless otherwise specified, D5/D6 products performance are consistent with Horizontal package products;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°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. In order to improve the efficiency, there will be audible noise generated when working at input voltage higher than 1000 VDC, but it does not affect product performance and reliability;
5. The above are the performance indicators of the product models listed in this datasheet. Some indicators of non-standard models will exceed the above requirements. For details, please contact our technical staff;
6. We can provide product customization service;
7. Products are related to laws and regulations: see "Features" and "EMC";
8. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units;
9. If the final product application is connected to a photovoltaic array, the array needs to be grounded and The voltage between the positive and negative poles of the product shall not be greater than 1500Vdc;
10. Input short circuit current Max. 4A.