Descriptions

50W, DC-DC Converter



RoHS

3 Years Warranty

CE Report EN62109-1

UKCA Report BS EN62109-1

Features

- Ultra-wide input voltage range of 80 - 750VDC
- Industrial grade operating temperature -40℃ to +70℃
- High I/O isolation voltage up to 4000VAC
- High efficiency, low ripple & noise
- High reliability, long lifespan
- Input under-voltage protection, input reverse polarity protection, output short circuit, over-current, over-voltage protection
- Operating up to 5000m altitude

Applications

- Photovoltaic inverters
- Energy storage

Selection Guide

Certification	Part NO.	Output Power (W)	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 300VDC (%) Typ.	Capacitive Load (uF) Max.
EN/BS EN	DPV50-7B-12	50	12V/4170mA	83	820
	DPV50-7B-24		24V/2083mA	85	820

Note: The product picture is for reference only.For details, please refer to the actual product.

Specifications

Product Specifications	Item	Operating Conditions		Min.	Typ.	Max.	Unit
Input Specifications	Input Voltage Range			80	--	750	VDC
		Full load		150	--	650	
	Input Current	150VDC		--	--	0.41	A
		750VDC		--	--	0.3	
	Inrush Current	750VDC	12V	--	60	--	
			24V	--	80	--	
	Input Under-voltage Protection	Lockout activation range		60	--	70	VDC
		Lockout deactivation range		70	--	80	

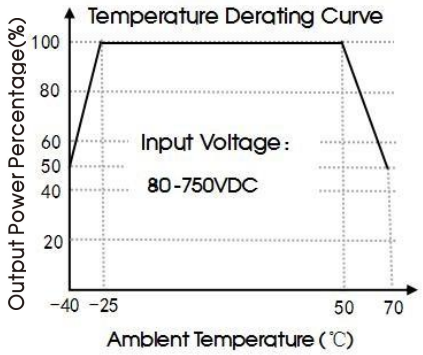
	External Input Fuse			3A/1000VDC, required			
	Hot Plug			Unavailable			
Output Specifications	Output Voltage Accuracy	All load range		--	±2	--	%
	Line Regulation	Rated load		--	±1	--	
	Load Regulation	0% - 100% load		--	±2	--	
	Ripple & Noise*	20MHz bandwidth (peak-to-peak value)		--	--	200	mV
	Stand-by Power Consumption	500VDC		--	0.6	1.2	W
		750VDC		--	1.5	3.0	
	Temperature Coefficient			--	±0.02	--	%/℃
	Minimum Load			0	--	--	%
	Hold-up Time	Room temperature, full load	750VDC input	--	10	--	ms
	Short Circuit Protection			Hiccup, continuous, self-recovery			
	Over-current Protection			≥110%Io, hiccup, self-recovery			
	Over-voltage Protection	DPV50-7B-12		≤16VDC (Output voltage clamp)			
		DPV50-7B-24		≤30VDC (Output voltage clamp)			
	Start-up Delay Time	Room temperature		--	--	3	s
General Specifications	Isolation	Input - output	Electric Strength Test for 1min., leakage current ＜10mA	4000	--	--	VAC
	Insulation Resistance	Input - output	500VDC	50	--	--	MΩ
	Operating Temperature			-40	--	+70	℃
	Storage Temperature			-40	--	+85	
	Storage Humidity			--	--	95	%RH
	Switching Frequency			--	65	--	kHz
	Soldering Temperature	Wave-soldering		260 ± 5℃; time: 5 - 10s			
		Manual-welding		360 ± 10℃; time: 3 - 5s			
	Power Derating	-40℃ to -25℃	DPV50-7B-12	3.33	--	--	%/℃
		-40℃ to -25℃	DPV50-7B-24	2.66	--	--	
		+50℃ to +70℃	DPV50-7B-12	2.5	--	--	
		+55℃ to +70℃	DPV50-7B-24	2.66	--	--	
		80VDC - 150VDC	DPV50-7B-12	0.667	--	--	%/VDC
		80VDC - 150VDC	DPV50-7B-24	0.714	--	--	
		650VDC - 750VDC		0.2	--	--	
		2000m - 5000m	DPV50-7B-12	10	--	--	%/Km
	MTBF	MIL-HDBK-217F@25℃		≥300,000 h			
Mechanical Specifications	Case Material	Black flame-retardant and heat-resistant plastic (UL94V-0)					
	Dimensions	109.00 x 58.50 x 30.00mm					
	Weight	260g (Typ.)					
	Cooling Method	Free air convection					

Note: "Tip and barrel method" is used for ripple and noise test.

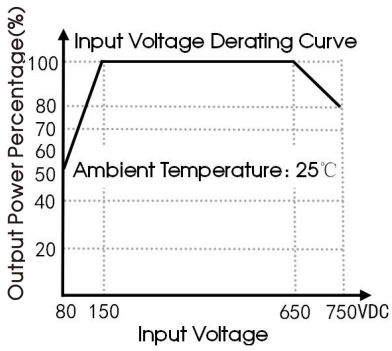
Electromagnetic Compatibility (EMC)

Electromagnetic Compatibility (EMC)	Emissions	CE	CISPR32/EN55032 CLASS A	
		RE	CISPR32/EN55032 CLASS A	
	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 ±2KV	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

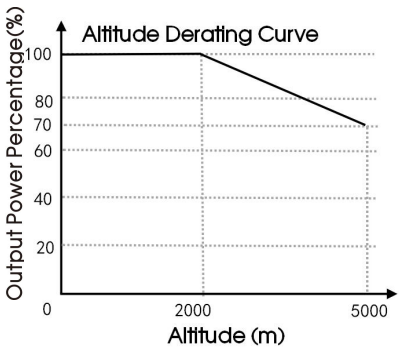
Product Characteristic Curve



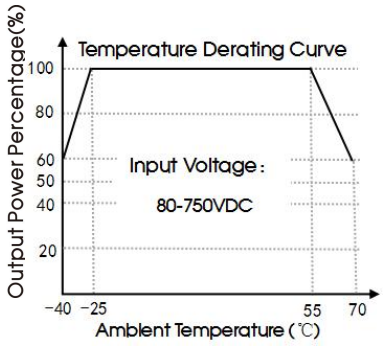
12V



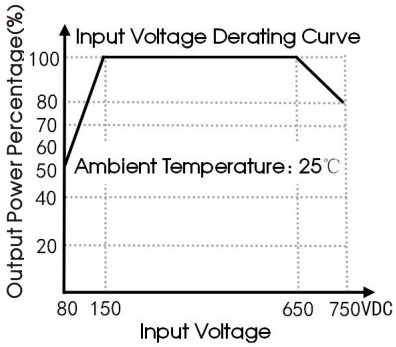
12V



12V



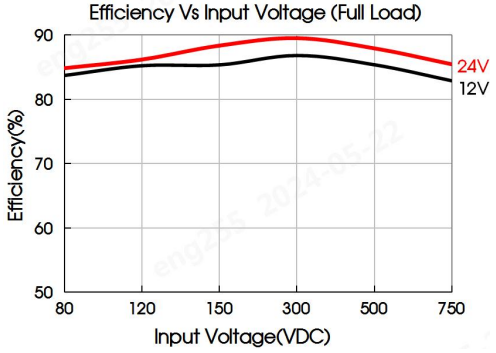
24V

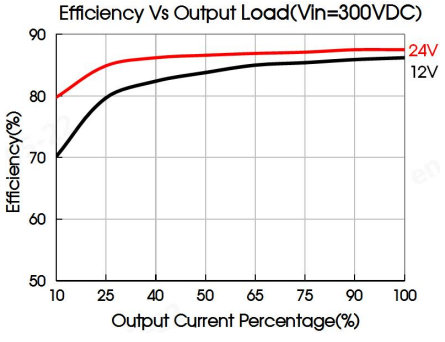


24V

Note: ① With an input between 80-150VDC/650 -750VDC, the output power of DPV50-7B-xx parts must be derated as per temperature derating curves;

② This product is suitable for applications using natural air cooling.





Design Reference

1. Typical application

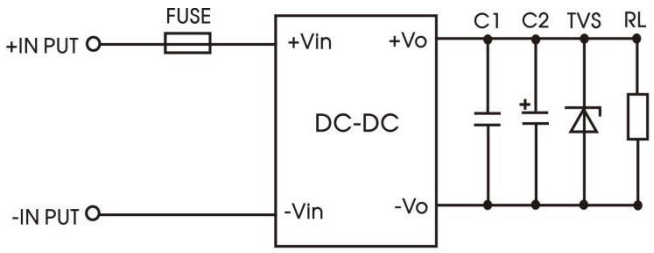


Fig. 1

Part No.	FUSE	C1	C2	TVS
DPV50-7B-12	3A/1000VDC, required	1uF/25V	10uF/25V	SMBJ20A
DPV50-7B-24	3A/1000VDC, required	1uF/50V	10uF/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

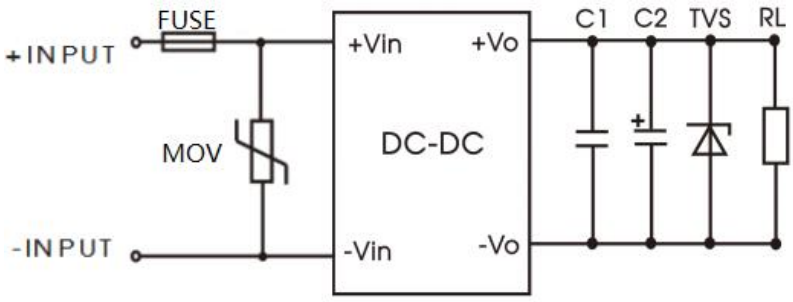


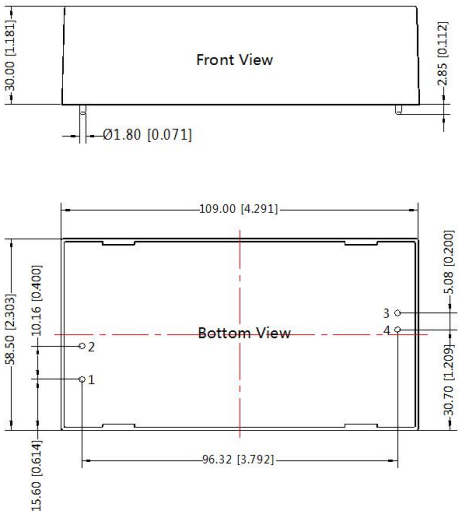
Fig. 2

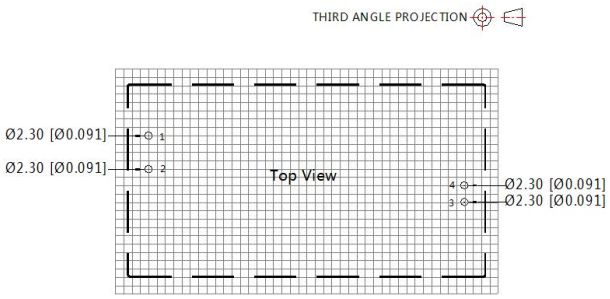
Part No.	FUSE	C1	C2	TVS	MOV
DPV50-7B-12	3A/1000VDC, required	1uF/25V	10uF/25V	SMBJ20A	10D102K
DPV50-7B-24	3A/1000VDC, required	1uF/50V	10uF/35V	SMBJ30A	10D102K

2. IMPORTANT SAFETY INSTRUCTIONS

Additional protective devices, such as lightning protector need to be added if there is an transient pulse voltage greater than 6KV at the input of products in system applications.

12V Dimension and Recommended



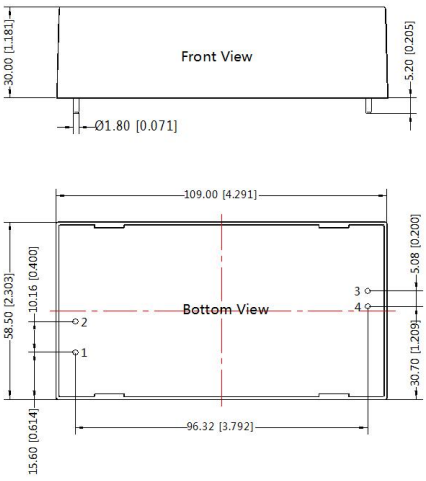


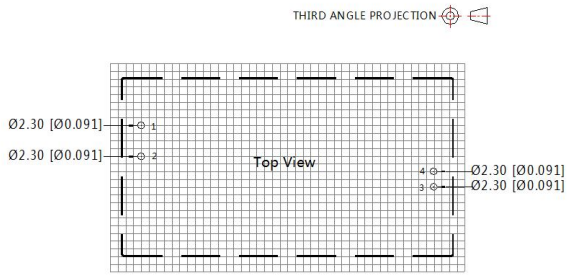
Note: Grid 2.54*2.54mm

Pin-Out	
Pin	Mark
1	-Vin
2	+Vin
3	-Vo
4	+Vo

Note:
Unit: mm[inch]
Pin1,2,3,4's diameter: 1.80[0.071]
Pin diameter tolerances: ±0.10[±0.004]
Pin tolerances(H): ±0.250[±0.010]
General tolerances: ±0.50[±0.020]

24V Dimension and Recommended





Note: Grid 2.54*2.54mm

Pin-Out	
Pin	Mark
1	-Vin
2	+Vin
3	-Vo
4	+Vo

Note:
Unit: mm[inch]
Pin1,2,3,4's diameter: 1.80[0.071]
Pin diameter tolerances: ±0.10[±0.004]
Pin tolerances(H): ±0.50[±0.020]
General tolerances: ±0.50[±0.020]

1.CAUTION: RISK OF ELECTRIC SHOCK. DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE.
1.ATTENTION: RISQUES D'ÉLECTROCUTION. NE PAS RETIRER LE COUVERCLE. NE CONTIENT AUCUNE PIÈCE POUVANT ÊTRE RÉPARÉE PAR L'UTILISATEUR.
2.CAUTION: DISCONNECT ALL SOURCES OF SUPPLY BEFORE SERVICING.
2.ATTENTION: COUPER TOUTES LES SOURCES D'ALIMENTATION AVANT DE FAIRE L'ENTRETIEN ET LESL RÉPARATIONS.
3.CAUTION: RISK OF ELECTRIC SHOCK FROM STORED ENERGY. WAIT 5 MIN AFTER DISCONNECTING ALL SOURCES OF SUPPLY BEFORE ACCESSING.
3.ATTENTION:RISQUE D'ÉLECTROCUTION EN RAISON DE L'ÉLECTRICITÉ EMMAGASINÉE. ATTENDRE 5 MINUTES APRÈS AVOIR DÉBRANCHÉ TOUTES LES SOURCES D'ALIMENTATION AVANT D'Y ACCÉDER.

Note:

1. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75% with nominal input voltage and rated output load;
2. All index testing methods in this datasheet are based on our company corporate standards;
3. We can provide product customization service, please contact our technicians directly for specific information;
4. Products are related to laws and regulations: see "Features" and "EMC";
5. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.
6. The image certification marks are for reference only; please refer to the selection table for actual specifications. Certification is based on the physical mark or packaging label.