RHENXV
Your Vision, Our Solutions

DC-DC CONVERTERS

15 WATTS

DCWPV15W-xxV Series



CE Report RoHS 3 YEARS WARRANTY

FEATURES

- Input voltage up to 1600VDC(Transient, duration: 10s)
- Ultra wide input voltage range: 200- 1500VDC
- Industrial grade operating temperature: -40°Cto+70°C
- High I/O isolation voltage up to4000VAC
- 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
- 3 Years Warranty

DESCRIPTION

The DCWPV15W-xxV 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. 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.

MODEL NUMBERING

DCWPV15W-xxV

- Series
- Wattage
- Output Voltage

SELECTION GUIDE

Product Model	Output Power	Nominal Output Voltage and Current (Vo/Io)	Efficiency at 800VDC (%) Typ.	CapacitiveLoad(μF)Max.
DCWPV05W-15V	10W	5V/2000mA	68	6000
DCWPV12W-15V	15W	12V/1250mA	78	2000
DCWPV15W-15V		15V/1000mA	80	1200
DCWPV24W-15V		24V/625mA	83	470

INPUT CHARACTERISTICS

Parameter	Test Conditions	Min.	Typ.	Max.	Units
Input Voltage Range		200	800	1500	VDC
	Transient (60s)	--	--	1600	VDC
Input Current	200VDC	--	--	120	mA
	800VDC	--	--	30	mA
	1500VDC	--	--	16	mA
Inrush Current	200VDC	--	30	--	A
	1500VDC	--	90	--	A
Under-voltage Protection		Lockout activation range: 130- 175VLockout deactivation range: 155- 200V			
Input Reverse Polarity Protection		Available			
External Input Fuse		4A/1500VDC, required			

Remarks: This product does not support hot plug

OUTPUT CHARACTERISTICS

Parameter	Conditions		Min.	Typ.	Max.	Units
Output Voltage Accuracy			--	±1	±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	Full voltage range		--	±0.02	±0.15	%/°C
Short Circuit Protection			Continuous, self-recovery			
Over-current Protectio			≥120%Io, self-recovery			
Over-voltage Protection	DCWPV05W-15V		≤8VDC			
	DCWPV12W-15V		≤20VDC			
	DCWPV15W-15V		≤20VDC			
	DCWPV24W-15V		≤30VDC			
Minimum Load			0	--	--	%
Start-up Delay Time**	100-1000VDC		--	--	1	S
Hold-up Time	Room temperature, full load	800VDC input	--	10	--	ms

Note: *The "parallel cable" method is used for ripple and noise test, please refer to AC-DC Converter Application Notes for specific information;
** Full input voltage / output load range (The cooling-time between input power-off and power-on again is greater than 15s).

GENERAL CHARACTERISTIC

Parameter		Conditions			Min.	Typ.	Max.	Units
Isolation	Input - output	Electric Strength Test for 1min., leakage current <3mA			4000	--	--	VAC
Operating Temperature					-40	--	+70	°C
Storage Temperature					-40	--	+85	°C
Storage Humidity					--	--	95	%RH
Soldering Temperature		Wave-soldering			260 ± 5°C; time: 5 - 10s			
		Manual-welding			360 ± 10°C; time: 3 - 5s			
Power Derating		-40°C to 0°C	200 - 300VDC	DCWPV05W-15V/12/15	0.75	--	--	%/°C
		+50°C to +70°C		DCWPVxxW-15V	1.5	--	--	%/°C
		2000m - 5000m			6.7	--	--	%/Km
Switching Frequency					--	65	--	kHz
Altitude					--	--	5000	m
Safety Standard					Design refer to UL1741& EN62109-1, BS EN62109-1, CSA-C22.2 No.107.1-16			
MTBF		MIL-HDBK-217F@25°C			Design refer to UL1741, CSA-C22.2 No.107.1-16,EN62109-1			

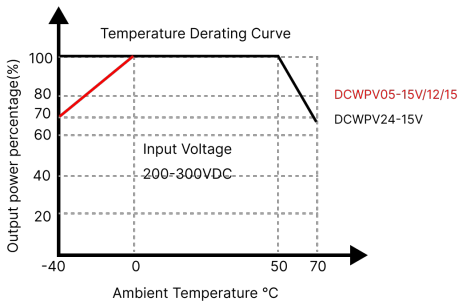
DIMENSION, WEIGHT & PACKING

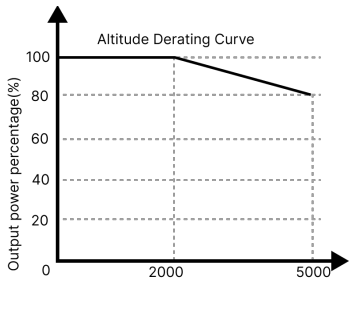
Parameter		Conditions
Housing Material		Black flame-retardant and heat-resistant plastic (UL94V-0)
Dimensions	Horizontal package	89.00 × 63.50 × 25.00 mm
	A5 chassis mounting	135.00 × 70.00 × 33.50 mm
	A6 DIN-Rail mounting	135.00 × 70.00 × 39.00 mm
Weight	Horizontal package	200g (Typ.)
	A5 chassis mounting	280g (Typ.)
	A6 DIN-Rail mounting	350g (Typ.)
Cooling Method		Free air convection

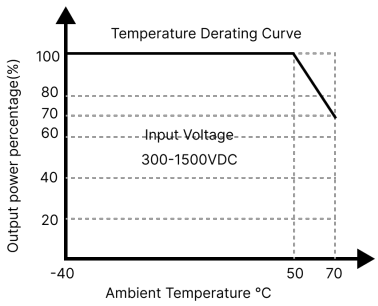
ELECTROMAGNETIC COMPATIBILITY (EMC)

Parameter		Units		
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 A
	RS	IEC/EN61000-4-3	10V/m	Perf. Criteria B
	EFT	IEC/EN61000-4-4	±4KV (See Fig. 2 for recommended circuit)	Perf. Criteria B
	SURGE	IEC/EN61000-4-5	line to line ±2KV (See Fig. 2 for recommended circuit)	Perf. Criteria A
	CS	IEC/EN61000-4-6	10Vr.m.s	Perf. Criteria A

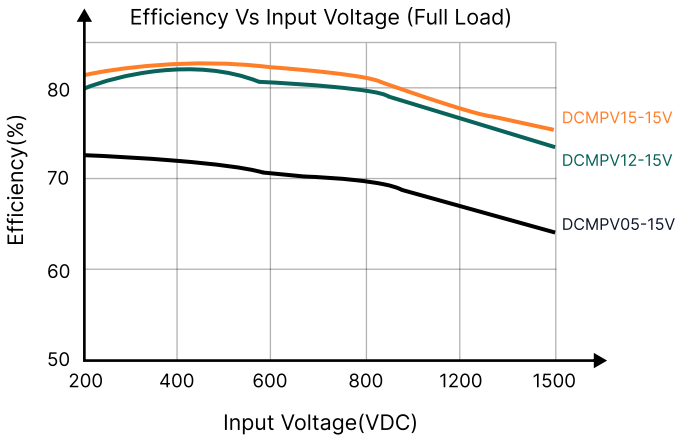
PRODUCT CHARACTERISTIC CURVE

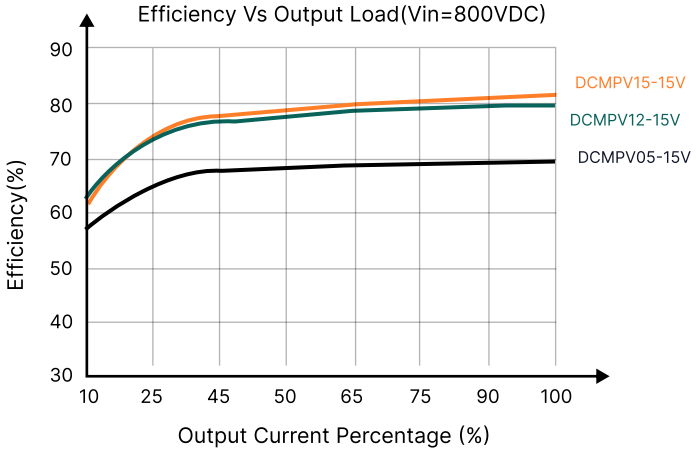






Note: ① For operation of this converter series in an altitude between 2000 - 5000m above sea level, the output power must be derated as per the altitude derating curve;
② This product is suitable for applications using natural free air convection; for applications in closed environment





CIRCUIT DESIGN AND APPLICATION

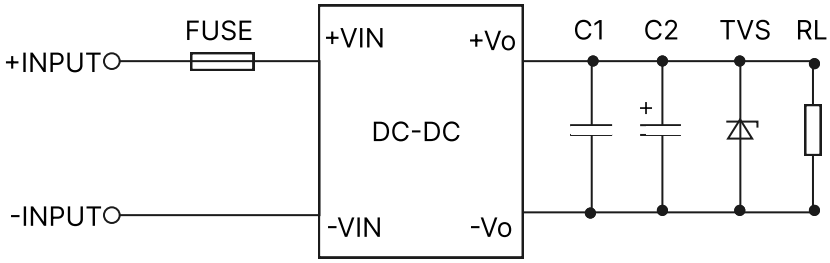


Fig. 1: Typical application circuit

Product Model	Fuse	C1(μF)	C2(μF)	TVS
DCWPV05-15V	4A/1500VDC, required	1μF/35V	120μF/35V	SMBJ7.0A
DCWPV12-15V			120μF/35V	SMBJ20A
DCWPV15-15V			120μF/35V	SMBJ20A
DCWPV24-15V			68μF/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

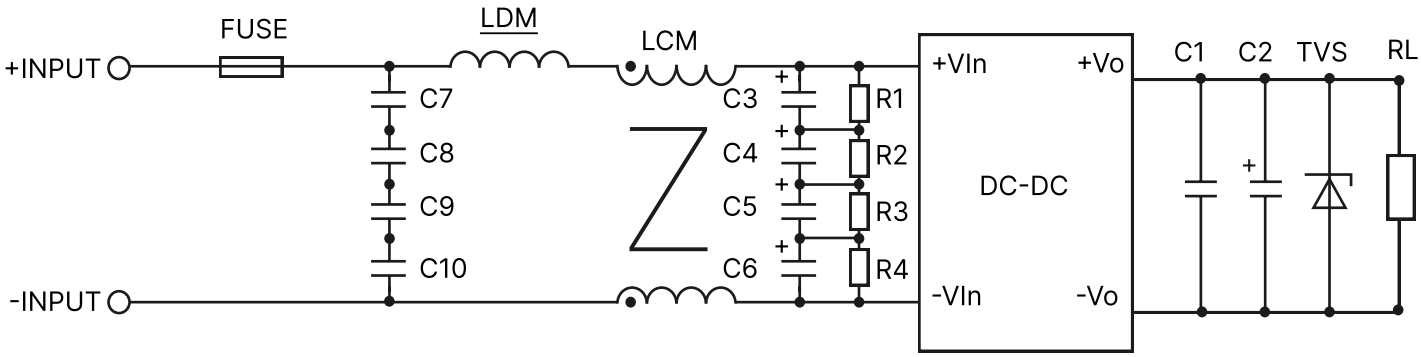
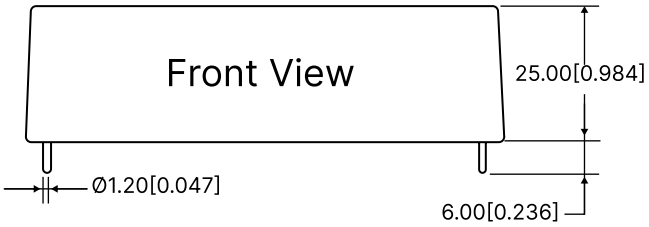
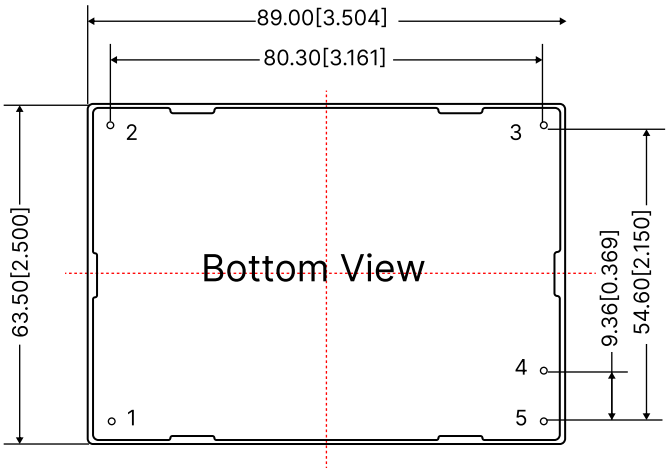


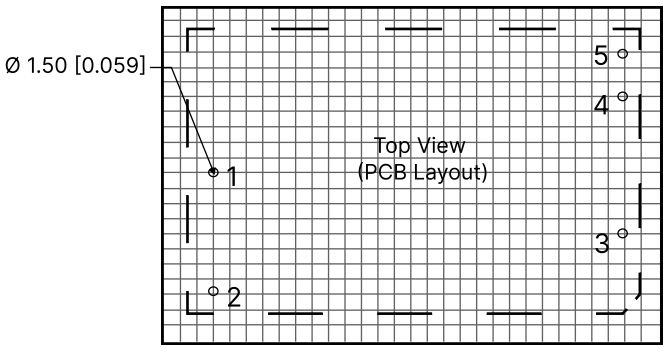
Fig 2: EMC application for higher compliance requirements (output parameters are show in Figure 1)

Component	Recommend Value
C7, C8, C9, C10	Safety capacitor 104K/275VAC
C3, C4, C5, C6	10uF/450VDC
R1/R2/R3/R4	1MΩ/2W
LDM	330uH/1A
LCM	7mH, three insulated wire
FUSE	4A/1500VDC, required

OVERALL DIMENSIONS AND PIN FUNCTIONS





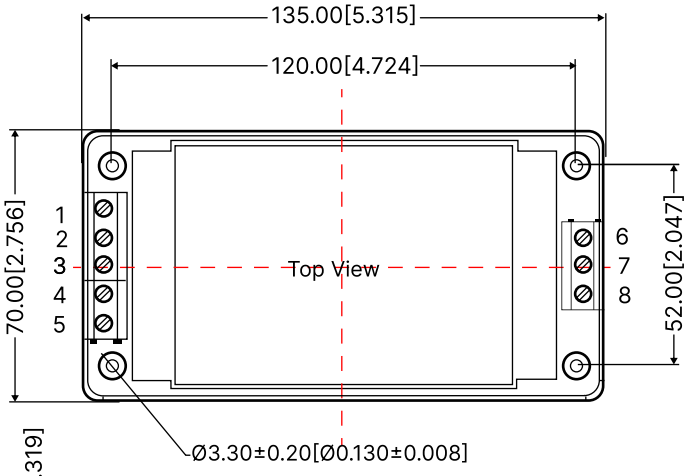


Note: Grid 2.54*2.54mm

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

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

A5 CHASSIS MOUNTING DIMENSIONS



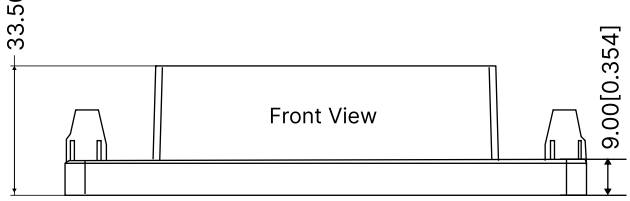


Table 4: Pin Function Table

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

Note:
Unit:mm[inch]
Wire range:24~12AWG
Tightening torque: Max 0.4N . m
General tolerances:±1.00[±0.040]

A6 DIN-RAIL MOUNTING DIMENSIONS

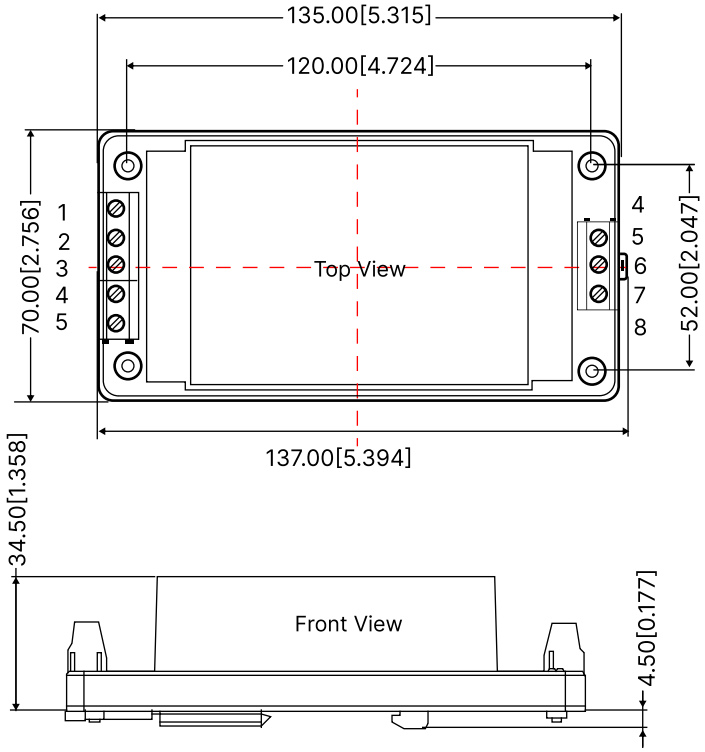
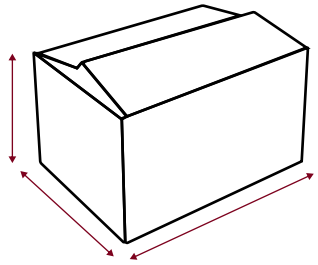


Table 4: Pin Function Table

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

Note:
Unit:mm[inch]
Wirerange:24~12AWG
Tightening torque: Max 0.4N . m
Mounting rail: TS35, rail needs to connect safety ground
General tolerances:±1.00[±0.040]

PACKAGING METHOD



500Pieces/Outer box

NOTES & INSTRUCTIONS

1.The input voltage shall not exceed the specified range value, otherwise permanent and unrecoverable damage maybe caused;

2. Unless otherwise specified,the parameters in this manual are measured at 25 °C,40%~75% humidity, input nominal voltage and output pure resistance mode under full load;

3.All index test methods are based on the company's enterprise standards.

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