36PVxx-27BxxR2-A4C DC-DC Converter Series

Up to 15 Watt

Features

- Input voltage up to 1000VDC
- Wide 10:1 input voltage range of 100 -1000VDC
- Industrial grade operating temperature -40℃ to +70℃
- High I/O isolation test voltage of 4000VAC
- High efficiency, low ripple & noise
- Input reverse polarity protection, output short circuit, over–voltage protection
- High reliability, long service life

Ideal Power's 36PVxx-27BxxR2-A4C 15W DIN Rail Mount DC/DC Power Supply Converter Series are certified to UKCA, CE, RoHS & EN62109-1, EN55032 Standards and comply with the relevant Efficiency Regulations. These are primarily used in Photovoltaic Industries and customised solutions are available upon request.

Models

Model No.	Output Power	Nominal Output Voltage and Current (Vo/Io)	Efficiency @ 600V DC (%) Typ.	Capacitive Load (µF)Max.
36PV05-27B05R2-A4C	90W	5V/1.00A	72	6000
36PV10-27B05R2 -A4C	10W	5V/2.00A	72	6000
36PV10-27B09R2 -A4C		9V/1.11A	76	4000
36PV10-27B24R2 -A4C		24V/0.42A	80	470
36PV15-27B12R2 -A4C	15W	12V/1.25A	77	2000
36PV15-27B15R2 -A4C		15V/1.00A	78	1200
36PV15-27B24R2 -A4C		24V/0.625A	80	470

Note: *Use suffix “A2C” for chassis mounting and suffix “A4C” for DIN-Rail mounting. The A4C and A4C suffix parts include CE certification.

Input Specifications

		Conditions	Min	Typ	Max	Unit
Input Voltage Range			100	--	1000	VDC
Input Current	PV05 model	200VDC	--	--	38	mA
		600VDC	--	--	15	
		1000VDC	--	--	10	
	PV10 model	200VDC	--	--	75	
		600VDC	--	--	25	
		1000VDC	--	--	16	
	PV15 model	200VDC	--	--	120	
		600VDC	--	--	40	
		1000VDC	--	--	22	
Inrush Current		200VDC	--	7	--	A
		600VDC	--	20	--	
		1000VDC	--	30	--	
External Input Fuse		PV05/ PV10 model	1A/1500VDC, required			
		PV15 model	2A/1500VDC, required			
Hot Plug			Unavailable			

Output Specifications

Parameter	Conditions		Min	Typ	Max	Unit
Voltage Accuracy			--	±2	--	%
Line Regulation			--	±1	--	
Load Regulation			--	±2	--	
Ripple & Noise*	20MHz bandwidth (peak-to-peak value)		--	--	300	mV
Temperature Coefficient			--	±0.02	--	%/℃
Over-voltage Protection	36PVxx-27B05R2-A4C		≤7.5VDC			
	36PVxx-27B09R2-A4C		≤12VDC			
	36PVxx-27B12R2-A4C		≤ 15VDC			
	36PVxx-27B15R2-A4C		≤ 19VDC			
	36PVxx-27B24R2-A4C		≤28VDC			
Short-circuit Protection			Continuous, self-recovery			
Over-current Protection			≥110%Io, hiccup, self-recovery			
Minimum Load			0	--	--	%
Start-up Delay Time	200-1000VDC	600VDC input	--	--	1	s

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

DC – DC

General Specifications

Parameter		Conditions		Min	Typ	Max	Unit
Isolation	Input - output	Electric Strength Test for 1min., leakage current ≤8mA		4000	--	--	VAC
Operating Temperature				-40	--	+70	℃
Storage Temperature				-40	--	+105	
Storage Humidity				--	--	95	%RH
Soldering Temperature		Wave-soldering		260±5℃; time:5 - 10s			
		Manual-welding		360±10℃; time:3 - 5s			
Switching Frequency				--	--	75	KHz
Power Derating		+50℃ to +70℃	36PV10/15-27BxxR2-A4C	2	--	--	%/℃
Safety Standard				EN62109-1			
MTBF				MIL-HDBK-217F@25℃≥ 300,000 h			

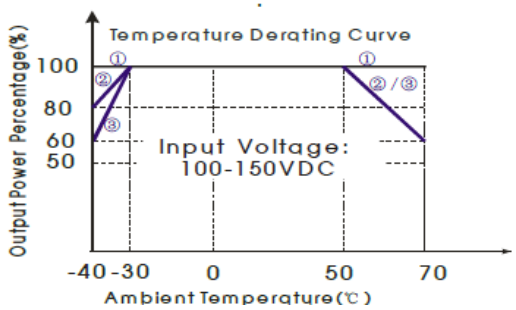
Mechanical Specifications

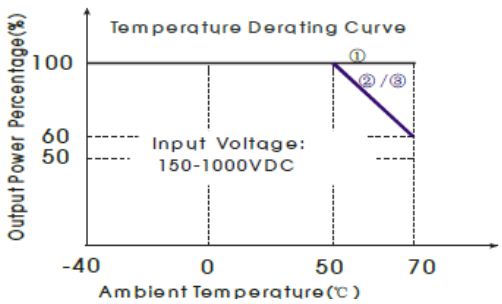
Case Material	Black flame-retardant and heat-resistant plastic (UL94V-0)	
Dimensions	Horizontal package	70.0 x 48.0 x 23.5 mm
	A2C chassis mounting	96.1 x 54.0 x 32.0 mm
	A4C DIN-Rail mounting	96.1 x 54.0 x 36.6 mm
Weight	Horizontal package	95g (Typ.)
	A4C chassis mounting	150g (Typ.)
	A4C DIN-Rail mounting	190g (Typ.)
Cooling method	Free air convection	

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 A
	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 B
	CS	IEC/EN61000-4-6	10Vr.m.s	perf. Criteria A

Characteristic Curve

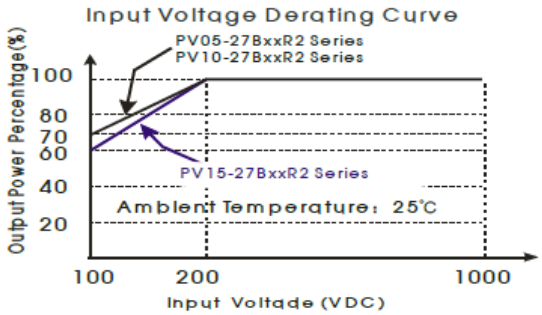




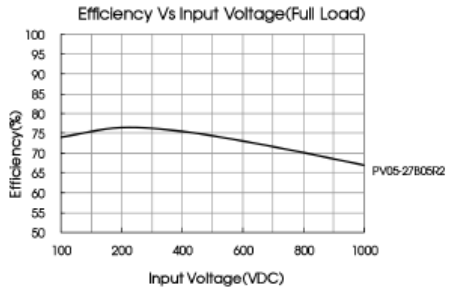
Note: The output power must be derated as per temperature derating curves
PV05-27BxxR2 models derating curve is line ①.
PV10-27BxxR2 models derating curve is line ②.
PV15-27BxxR2 models derating curve is line ③.

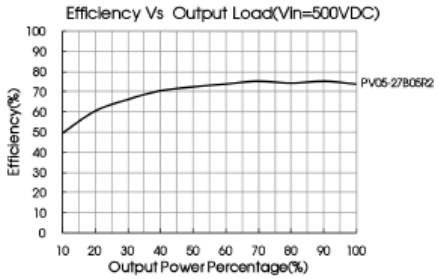
DC – DC

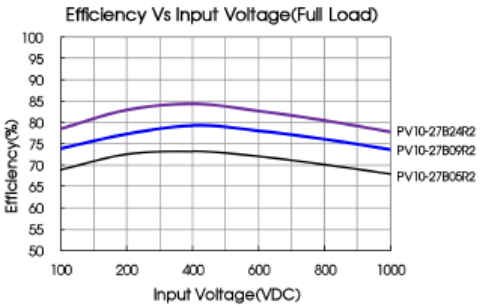
Characteristic Curve (Continued)

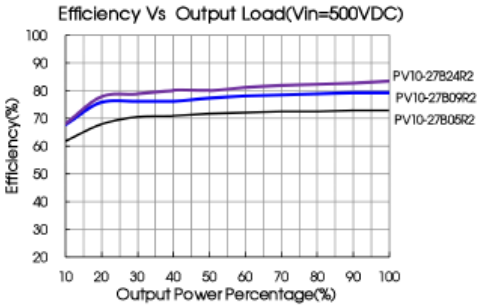


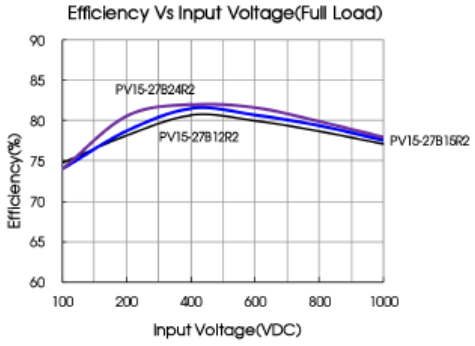
Note: Calculating the actual output power = Nominal output power x Temperature derating x Input voltage derating.

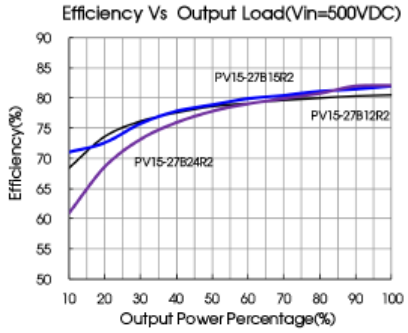












Design Reference

Typical Application.

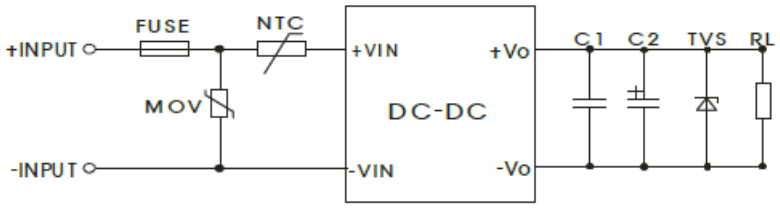


Fig. 1

Model	FUSE	MOV	NTC	C1(μF)	C2(μF)	TVS
36PV05-27B05R2-A4C	1A/1500VDC	S14K880	10D-11 (10Ω)	1uF/16V	220uF/16V	SMBJ7.0A
36PV10-27B05R2-A4C				1uF/16V	220uF/16V	SMBJ7.0A
36PV10-27B09R2-A4C				1uF/16V	120uF/16V	SMBJ12A
36PV10-27B24R2-A4C				1uF/35V	68uF/35V	SMBJ33A
36PV15-27B12R2-A4C	2A/1500VDC			1uF/25V	120uF/25V	SMBJ15A
36PV15-27B15R2-A4C				1uF/25V	120uF/25V	SMBJ20A
36PV15-27B24R2-A4C				1uF/35V	68uF/35V	SMBJ33A

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.

EMC compliance recommended circuit.

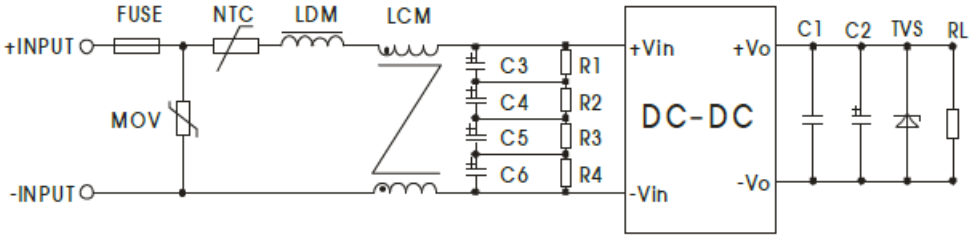
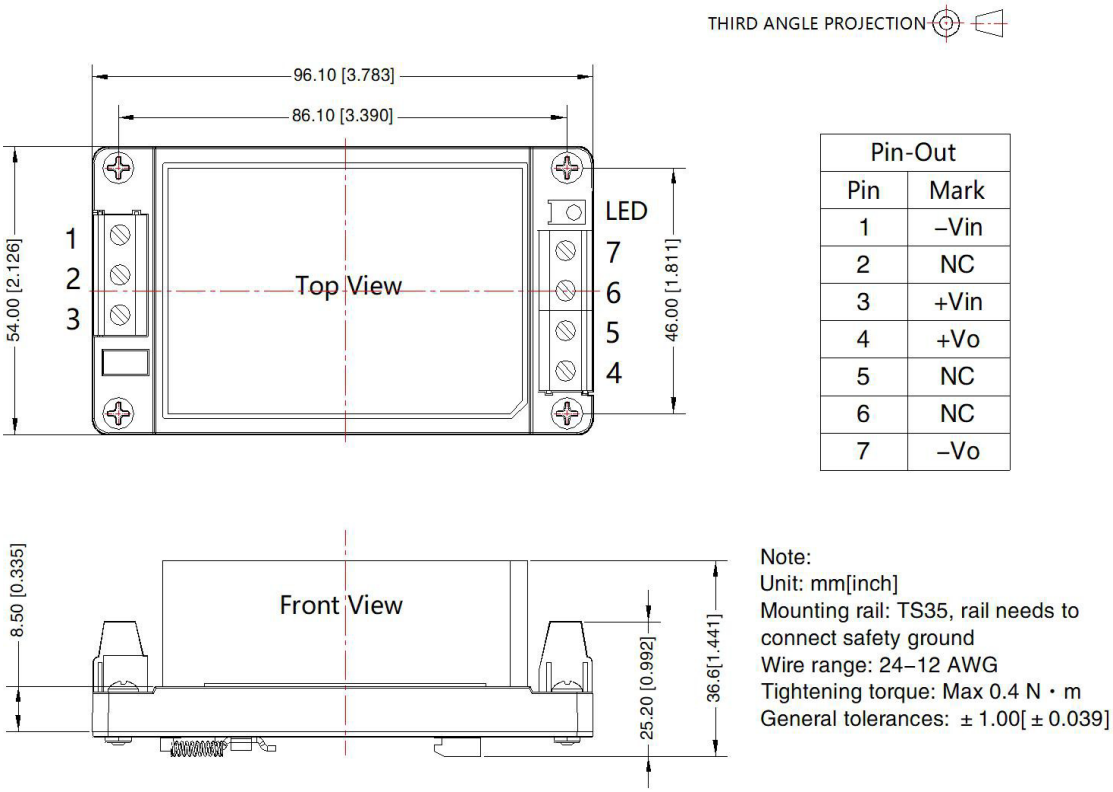


Fig. 2: EMC Recommended circuit (for output components also refer to typical application)

Component	Recommended value
MOV	S14K880
C3, C4, C5, C6	47μF/400VDC
R1, R2, R3, R4	1MΩ/2W
NTC	10D-11
LDM	4.7mH/0.38A
LCM	10mH, recommended to use MORNSUN's FL2D-Z5-103
FUSE	1A/1500VDC, required for PV05-27BxxR2/ PV10-27BxxR2
	2A/1500VDC, required for PV15-27BxxR2

Dimensions and Recommended Layout



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

Note:
Unit: mm[inch]
Mounting rail: TS35, rail needs to connect safety ground
Wire range: 24–12 AWG
Tightening torque: Max 0.4 N・m
General tolerances: ± 1.00[± 0.039]

Notes:

For additional information on Product Packaging please refer to www.Idealpower.co.uk.
Recommend using module with more than 5% load, if not, the ripple of the product may exceed the specification, but does not affect the reliability of the product.
The maximum capacitive load offered were tested at input voltage range and full load.
Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity<75%RH with nominal input voltage and rated output load.
All index testing methods in this datasheet are based on 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.