



VRA_D-5W Series

WIDE INPUT ISOLATED & REGULATED
5W OUTPUT DUAL OUTPUT
DIP PACKAGE

RoHS

multi-country patent protection

FEATURES

- Wide (2:1) Input Range
- Efficiency to 85%
- Operating Temperature: -40°C~+85°C
- 1.5KVDC Isolation
- Dual Output
- Metal Shielding Package
- No Heat Sink Required
- Industry Standard Pin out
- MTBF>1,000,000 hours
- Custom Service Available
- RoHS Compliance

APPLICATIONS

The VRA_D-5W Series are specially designed for applications where a wide range input voltage power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

These products apply to:

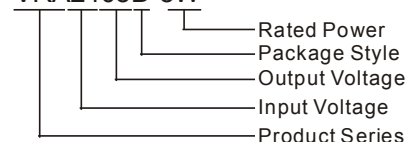
- 1) Where the voltage of the input power supply is wide range (voltage range: 2:1);
- 2) Where isolation is necessary between input and output (isolation voltage =1500VDC);
- 3) Where the regulation of the output voltage and the output ripple noise are demanded.

These products don't apply to:

- 1) Where the input voltage is required to be more than 2:1;
- 2) Where the isolation voltage between input and output is required to be >1500VDC;

MODEL SELECTION

VRA2405D-5W



PRODUCT PROGRAM

Part Number	Input			Output			Efficiency (% Typ)	Package Style
	Voltage (VDC)			Voltage (VDC)	Current (mA)			
	Nominal	Range	Max*		Max	Min**		
VRA1205D-5W	12	9~18VDC	22	±5	±500	±50	72	DIP
VRA1209D-5W	12	9~18VDC	22	±9	±278	±28	75	DIP
VRA1212D-5W	12	9~18VDC	22	±12	±210	±21	77	DIP
VRA1215D-5W	12	9~18VDC	22	±15	±166	±17	80	DIP
VRA1505D-5W	15	12~24VDC	30	±5	±500	±50	75	DIP
VRA1509D-5W	15	12~24VDC	30	±9	±278	±28	79	DIP
VRA1512D-5W	15	12~24VDC	30	±12	±210	±21	80	DIP
VRA1515D-5W	15	12~24VDC	30	±15	±166	±17	81	DIP
VRA2405D-5W	24	18~36VDC	40	±5	±500	±50	77	DIP
VRA2409D-5W	24	18~36VDC	40	±9	±278	±28	80	DIP
VRA2412D-5W	24	18~36VDC	40	±12	±210	±21	82	DIP
VRA2415D-5W	24	18~36VDC	40	±15	±166	±17	84	DIP
VRA4805D-5W	48	36~72VDC	80	±5	±500	±50	79	DIP
VRA4809D-5W	48	36~72VDC	80	±9	±278	±28	82	DIP
VRA4812D-5W	48	36~72VDC	80	±12	±210	±21	85	DIP
VRA4815D-5W	48	36~72VDC	80	±15	±166	±17	85	DIP

* Input voltage above it may cause permanent damage to the device.

** The load shouldn't be less than 10%, otherwise ripple will increase dramatically.

ISOLATION SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Flash tested for 60 seconds	1500			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

OUTPUT SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
5W output power	See below products program	0.5		5	W
Positive Voltage accuracy	Refer to recommended circuit		±1	±3	%
Negative Voltage accuracy	Refer to recommended circuit		±3	±5	
Load regulation	From 10% to 100% load		±0.1	±0.2	
Line regulation	Input voltage from low to high		±0.2	±0.5	
Temperature drift(Vout)	Refer to recommended circuit			0.03	%/°C
Ripple	20Hz-300KHz bandwidth		30	50	mVp-p
Noise	DC-20MHz bandwidth		80	150	
Switching frequency	100% load, nominal input voltage	80		200	KHz
	10% load, nominal input voltage	250		600	

Note:

1. All specifications measured at T_A=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. See below recommended circuits for more details.



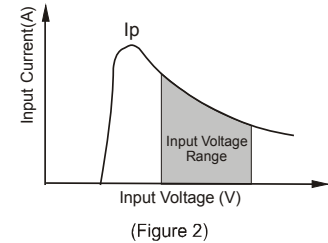
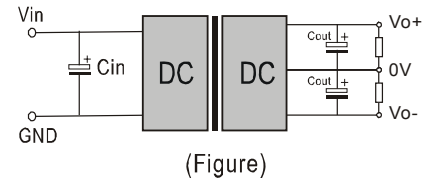
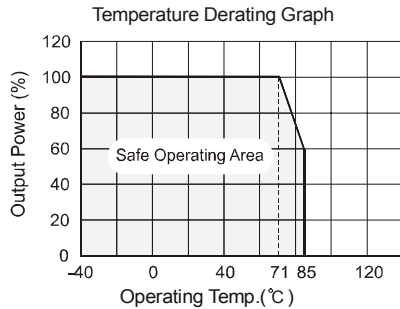
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COMMON SPECIFICATION

Output Short Circuit Protection	Continuous
Temperature Rise at Full Load	30°C (TYP)
Cooling	Free Air Convection
No-load Power Consumption	500mW (typical)
Operating Temperature Range	-40°C~+85°C
Storage Temperature Range	-55°C ~+125°C
Lead Temperature***	300°C (1.5mm from case for 10 seconds)
Storage Humidity Range	≤ 95%
Case Material	Metal
MTBF	>1,000,000 hours
***Lead Temperature 1.5mm from case for 10 seconds.	

TYPICAL CHARECTERISTICS



and the rippled voltage do not exceed the module standard. Input current of power supply should afford the startup current of this kind of DC/DC module. (See figure 2)

Requirement on Output Load

To ensure this module operate efficiently and reliably, a minimum load is specified for this kind of DC/DC converter in addition to a maximum load (namely full load). During operation, make sure the specified range of input voltage is not exceeded, the minimum out put load is not less than **10%** Of the full load, and that this product **should never be operated under no load!!!** If the actual load is less below the specified minimum load, the output ripple of this type of DC/DC converter will increase drastically and at the same time efficiency & reliability of the circuit will decrease deeply. If the actual output power from the load in your circuit is very small, please connect a resistor with proper resistance at the output end to in parallel to increase the load, or use our company's other products with a lower rated output power.

External Capacitor

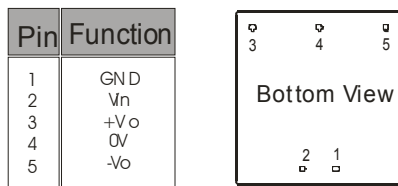
Although this series of DC/DC converter can work without external capacitor, in order to keep an optimum performance, however, it needs external capacitor. (See Table 1)

The products cannot be used in parallel and in plug and play.

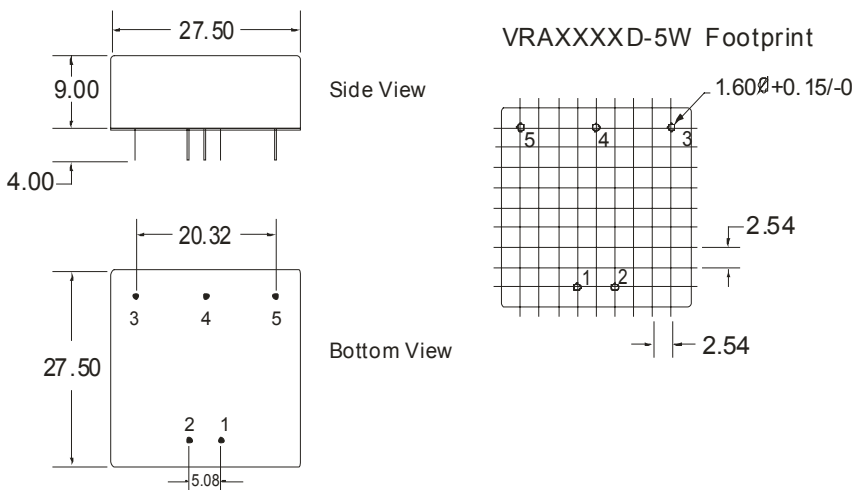
External Capacitor Table (Table 1)

Vin	Cin	Vout	Cout
12V	100uF	5V	100uF each 1A Current
24V	100uF	12V	
48V	100uF	15V	
		24V	

FOOTPRINT DETAILS



OUTLINE DIMENSIONS & RECOMMENDED FOOTPRINT



Note: All Pins on a 2.54mm pitch; All Pin diameters are 0.80 mm (Tolerance:±0.15); All dimensions in mm.

APPLICATION NOTE

Recommended Circuit

All the VRA_D-5W Series have been tested according to the following recommended testing circuit before leaving factory. This series should be tested under load. Never be tested under no load (See Figure 1 & 2). If you want to further decrease the input/output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance should not be too high.(See table 1).If you want to use the products in high EMI, please choose our metal packaged products.

Input Current

When it is used in unregulated power supply, be sure that the fluctuating range of the power supply



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