



VRA_D-5W & VRB_D-5W Series

**5W, 2:1 WIDE INPUT, ISOLATED & REGULATED
DUAL/SINGLE OUTPUT DC-DC CONVERTER**

multi-country patent protection **RoHS**

FEATURES

- 1.5KVDC Input/Output Isolation
- Operating Temperature: -40°C to +85°C
- Efficiency up to 86%
- Metal Shielding Package
- No Heat Sink Required
- Industry Standard Pinout
- MTBF>1,000,000 hours
- Continuous Short-Circuit Protection
- RoHS Compliance

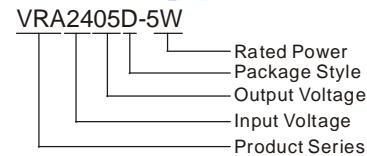
APPLICATIONS

The VRA_D-5W & VRB_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: $\leq 2:1$);
- 2) Where isolation is necessary between input and output(Isolation Voltage $\leq 1500\text{VDC}$);
- 3) Where the regulation of the output voltage and the output ripple noise are demanded.

MODEL SELECTION



MORNSUN Science& Technology co.,Ltd.

Address: 2th floor 6th building, Huangzhou Industrial District, Guangzhou, China
Tel: 86-20-38601850
Fax: 86-20-38601272
<http://www.mornsun-power.com>

PRODUCT PROGRAM

Part Number	Input			Output			Efficiency (% , Typ)
	Voltage (VDC)			Voltage (VDC)	Current (mA)		
	Nominal	Range	Max*		Max	Min	
VRA1205D-5W	12	9-18	20	±5	±500	±50	77
VRA1209D-5W				±9	±278	±27	80
VRA1212D-5W				±12	±210	±21	82
VRA1215D-5W				±15	±166	±17	80
VRA1224D-5W				±24	±105	±10	81
VRB1205D-5W				5	1000	100	78
VRB1209D-5W				9	556	55	80
VRB1212D-5W				12	420	42	82
VRB1215D-5W				15	330	33	82
VRB1224D-5W				24	200	20	83
VRA2405D-5W	24	18-36	40	±5	±500	±50	80
VRA2409D-5W				±9	±278	±27	82
VRA2412D-5W				±12	±210	±21	83
VRA2415D-5W				±15	±166	±17	83
VRA2424D-5W				±24	±105	±10	84
VRB2405D-5W				5	1000	100	80
VRB2409D-5W				9	556	55	82
VRB2412D-5W				12	420	42	84
VRB2415D-5W				15	330	33	84
VRB2424D-5W				24	200	20	85
VRA4805D-5W	48	36-75	80	±5	±500	±50	82
VRA4809D-5W				±9	±278	±55	81
VRA4812D-5W				±12	±210	±21	85
VRA4815D-5W				±15	±166	±17	85
VRA4824D-5W				±24	±105	±10	86
VRB4805D-5W				5	1000	100	82
VRB4809D-5W				9	556	55	81
VRB4812D-5W				12	420	42	85
VRB4815D-5W				15	330	33	85
VRB4824D-5W				24	200	20	86

*Input voltage can't exceed this value, or will cause the permanent damage.
Note: The load shouldn't be less than 10%, otherwise ripple will increase dramatically.

COMMON SPECIFICATION

Item	Test conditions	Min	Typ	Max	Units
Storage Humidity				95	%
Operating Temperature		-40		85	°C
Storage Temperature		-55		125	
Lead Temperature	1.5mm from case for 10 seconds			300	
Temp. Rise at Full Load			30		
No-load Power Consumption			500		mW
Cooling		Free Air Convection			
Case Material		Aluminous alloy			
Short Circuit Protection		Continuous, automatic recovery			
MTBF		1000			K hours
Weight			15		g

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
Isolation capacitance	Input/Output	150			pF

OUTPUT SPECIFICATIONS

Item	Test Conditions	Min	Typ	Max	Units
Output Power	See products program			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		±0.5	±2*	
Line Regulation(at full load)	Input voltage from low to high		±0.2	±0.5	
Temperature Drift (Vout)	Refer to recommended circuit		0.02		%/°C
Ripple**	20MHz bandwidth		30	50	mVp-p
Noise**	20MHz bandwidth		100	150	
Switching Frequency	100% load, nominal Input voltage		300		KHz

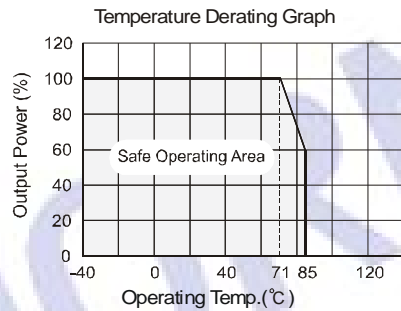
*Dual output models unbalanced load: ±5%.

**Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

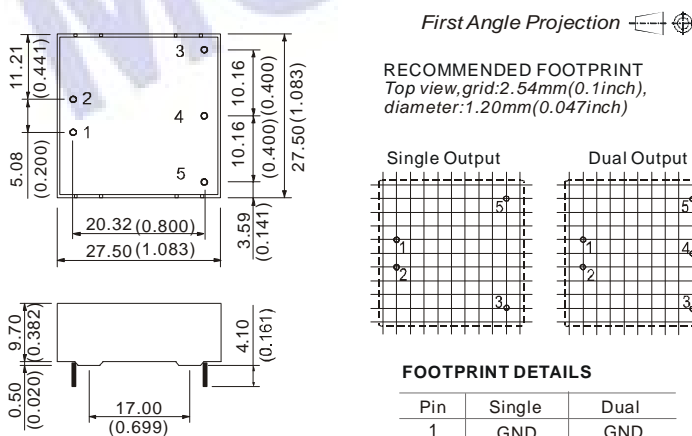
Note:

- All specifications measured at $T_A=25^{\circ}\text{C}$, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- See below recommended circuits for more details.

TYPICAL CHARECTERISTICS



OUTLINE DIMENSIONS & PIN CONNECTIONS



Note:

Unit:mm (inch)

Pin section: 0.80mm (0.031inch)

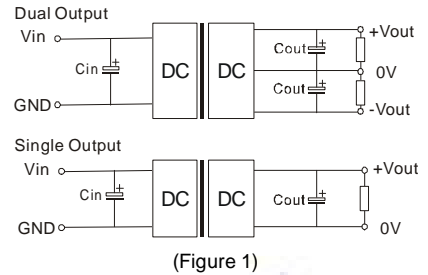
Pin section tolerances: ±0.05mm (±0.002inch)

General tolerances: ±0.25mm (±0.010inch)

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).



If you want to further decrease the output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance should not be too high. (Table 1).

External Capacitor Table (Table 1)

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