



## VRA\_D-20W & VRB\_D-20W Series

### 20W, WIDE INPUT, ISOLATED & REGULATED SINGLE&DUAL OUTPUT DC-DC CONVERTER

multi-country patent protection **RoHS**

#### FEATURES

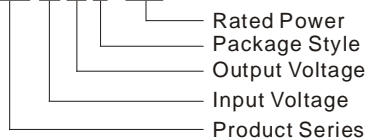
- Efficiency up to 87%
- Wide (2:1) Input Range
- 1.5KVDC Input/Output Isolation
- Over Voltage protection
- Output Short Circuit Protection
- Operating Temperature: -40°C to +71°C
- Internal SMD construction
- Metal Shielding Package
- Industry Standard Pin out
- MTBF>1,000,000 hours
- RoHS Compliance

#### Application

The VRA\_D-20W & VRB\_D-20W series offer 20W of output, the VRA\_D-20W & VRB\_D-20W series with 2:1 wide input voltage of 9-18,18-36 and 36-75VDC and features 1500VDC isolation, short-circuit and over current protection, as well as six sided shielding. All models are particularly suited to tele-communications, industrial, test equipments power.

#### MODEL SELECTION

VRB1203D-20W



#### PRODUCT PROGRAM

Part Number	Input		Output		Efficiency (% Typ)	capacitance (max,UF)		
	Voltage (VDC)		Voltage (VDC)	Current (mA)				
	Nominal	Range						
VRA1205D-20W	12	9-18	±5	±2000	80	±3400		
VRA1212D-20W			±12	±833	82	±680		
VRA1215D-20W			±15	±666	82	±450		
VRA1224D-20W *			±24	±416	83	±220		
VRB1203D-20W			3.3	5400	86	13000		
VRB1205D-20W			5	4000	79	6800		
VRB1212D-20W			12	1666	81	2200		
VRB1215D-20W			15	1333	82	755		
VRB1224D-20W			24	833	83	500		
VRA2405D-20W			24	18-36	±5	±2000	81	±3400
VRA2412D-20W					±12	±833	86	±680
VRA2415D-20W					±15	±666	86	±450
VRA2424D-20W *	±24	±416			86	±220		
VRB2403D-20W	3.3	5400			86	13000		
VRB2405D-20W	5	4000			81	6800		
VRB2412D-20W	12	1666			83	2200		
VRB2415D-20W	15	1333			85	755		
VRB2424D-20W	24	833			85	500		
VRA4805D-20W	48	36-75			±5	±2000	81	±3400
VRA4812D-20W					±12	±833	86	±680
VRA4815D-20W					±15	±666	86	±450
VRA4824D-20W *			±24	±416	86	±220		
VRB4803D-20W			3.3	5400	87	13000		
VRB4805D-20W			5	4000	83	6800		
VRB4812D-20W			12	1666	84	2200		
VRB4815D-20W			15	1333	84	755		
VRB4824D-20W	24	833	86	500				

\*Designing.

#### INPUT SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Start voltage	12Vinput models	8.6	8.8	9	VDC
	24Vinput models	17.5	17.8	18	
	48Vinput models	34	35	36	
Input filter		L-C			
Start up time			20		MS
Method of Remote (Reference point: GND)	on	3.5-40VDC or open circuit			
	off	GND or Low Voltage(<1.2V)			

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## OUTPUT SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Output voltage accuracy	Refer to recommended circuit		±1	±3	%
Load regulation	From 10% to 100% load		±0.5	±1	
Line regulation	Input voltage from low to high		±0.2	±0.5	
Cross regulation				±5	
Ripple and noise	Tested under 20MHz band	50	75	150	mV
Transient recovery time	25%load change		200	300	us
Transient peak deviation			±2	±5	%
Over load protection*	Input voltage range	120	130	150	%
Output Short Circuit		Hiccup, automatic recovery			
Over voltage protection	3.3V	3.63		4.29	VDC
	5V	5.5		6.5	
	12V	13.2		15.6	
	15V	16.5		19.5	
	24	26.4		31.2	
Temperature drift (Vout)			0.02		%/°C
Trim			±10%Vo		VDC

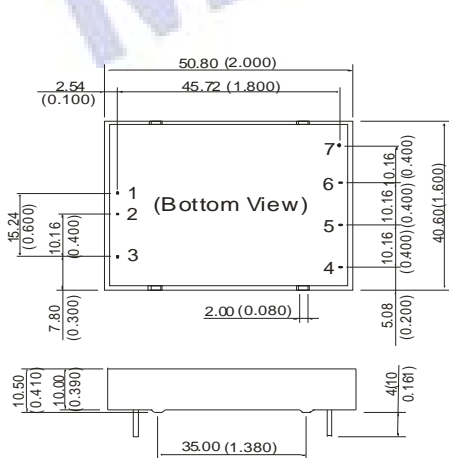
## COMMON SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Operating Temperature		-40		71	°C
Storage Temperature		-55		105	
Storage Humidity		5		95	
Isolation voltage	Test for 1 minute and 1 mA max		1500		VDC
Isolation resistance			500		MΩ
Isolation Capacitance	100KHz / 1V		1000		pF
Switching frequency	Nominal, full load		300		KHz
MTBF			100		K hours
Case Material		Aluminous alloy			
Weight			39		G

Note:

- All specifications are measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- The CTRL control pin voltage is referenced to GND.
- Typical Eff value at nominal input voltage and full load.
- Capacitor MAX load tested at nominal input voltage and constant resistive load.
- Refer to the diagram of Output Voltage trim up/down for trim applications.
- The products cannot be used in parallel and in plug and play.

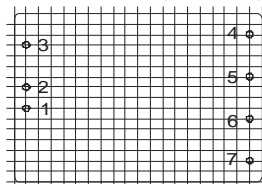
## OUTLINE DIMENSIONS & FOOTPRINT DETAILS



Note:  
 Unit:mm (inch)  
 Pin section: 1.00mm (0.039inch)  
 Pin section to tolerances: ±0.05mm (±0.002inch)  
 General tolerances: ±0.25mm (±0.010inch)

First Angle Projection

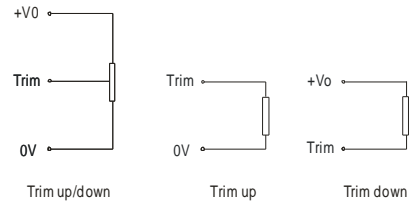
RECOMMENDED FOOTPRINT  
 Top view, grid: 2.54mm (0.1inch),  
 diameter: 1.50mm (0.059inch)



### FOOTPRINT DETAILS

Pin	Single	Dual
1	Vin	Vin
2	GND	GND
3	Ctrl	Ctrl
4	Trim	Trim
5	0V	-Vo
6	+Vo	Com
7	No pin	+Vo

## OUTPUT VOLTAGE TRIM



## RECOMMENDED CIRCUIT

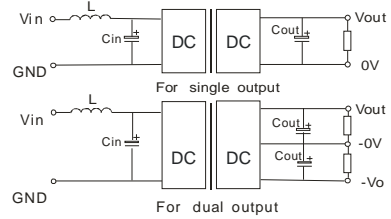
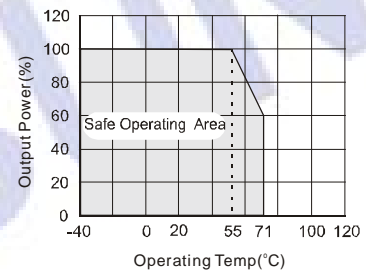


Fig.1

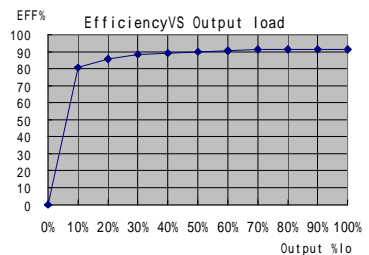
In order to obtain better performance for the DC/DC models, it's recommended that use input and output filters as Fig.1 shown..

## DERATING & EFFICIENCY CURVE

### Temperature derating curve



### Curve of Efficiency VS output load VRA2412D-20W



### Curve of Efficiency VS input Voltage VRA2412D-20W

