



## VRB\_D-40W Series

### 40W, WIDE INPUT, ISOLATED & REGULATED SINGLE OUTPUT DC-DC CONVERTER

multi-country patent protection **RoHS**

#### FEATURES

- Efficiency up to 90%
- Wide (2:1) Input Range
- 1.5KVDC Input/Output Isolation
- Over Current Protection
- Over Temperature Protection
- Short Circuit Protection
- Over Voltage Protection
- Under Voltage Protection
- Remote Voltage Compensate
- Operating temperature: -40°C to +85°C
- MTBF>1,000,000 hours
- Internal SMD cConstruction
- Metal Shielding Package 2"×2"×0.42"
- Industry Standard Pinout

#### PRODUCT PROGRAM

Part Number	Input			Output			Efficiency (% Typ) ***
	Voltage (VDC)			Voltage (VDC)	Current (mA)	Capacitance (Max, uF) **	
	Nominal	Range	Max*				
VRB1203D-40W	12	9-18	20	3.3	8000	21000	86
VRB1205D-40W				5	8000	13600	86
VRB1212D-40W				12	3300	2360	86
VRB1215D-40W				15	2666	1510	87
VRB2403D-40W	24	18-36	40	3.3	8000	21000	87
VRB2405D-40W				5	8000	13600	89
VRB2412D-40W				12	3300	2360	88
VRB2415D-40W				15	2666	1510	89
VRB4803D-40W	48	36-75	80	3.3	8000	21000	88
VRB4805D-40W				5	8000	13600	90
VRB4812D-40W				12	3300	2360	90
VRB4815D-40W				15	2666	1510	90

\* Input voltage can't exceed this value, or will cause the permanent damage.

\*\* Test Conditions: Nominal input voltage, constant resistive load.

\*\*\*Nominal input, full load.

#### APPLICATIONS

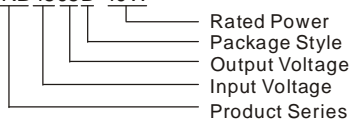
The VRB-D-40W series are particularly suited to data transfer equipments, battery operated equipments, tele-communication equipments, distributing power system, mix analog/digital system, remote control system, industrial robot system and other wide input voltage application fields.

#### INPUT SPECIFICATIONS

Item	Test Conditions	Min	Typ	Max	Units
Under Voltage protection	Nominal input (12V)	DC-DC Module ON	9		VDC
		DC-DC Module OFF	8		
	Nominal input (24V)	DC-DC Module ON	17.8		
		DC-DC Module OFF	16		
	Nominal input (48V)	DC-DC Module ON	36		
		DC-DC Module OFF	33		
Start-up time	Nominal input, constant resistive load		25		mS
CTRL	DC-DC Module ON	Open or 3.5V<Vc<12V			
	DC-DC Module OFF	Short 0V<Vc<1.2V			
		Input current<1mA			

#### MODEL SELECTION

VRB4805D-40W



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#### OUTPUT SPECIFICATIONS

Item	Test Conditions	Min	Typ	Max	Units
Output Power	Refer to Product Program		40		W
Output Voltage Accuracy	Refer to recommended circuit		1		%
Load Regulation	10% to 100% load		0.5		%
Voltage regulation	Input voltage from low to high		0.2		%
Temperature Drift(Vout)	Refer to recommended circuit		0.02		%/°C
Ripple& Noise	20MHz Bandwidth		75	150	mV
Transient response time	25% load change		200		us
Over current protection	Input voltage range	120-150%Po			
Over voltage protection	Input voltage range	110-130%Vo			
Over temp. protection	Input voltage range	115			°C
Short circuit protection	Input voltage range	Hiccup, automatics recovery			

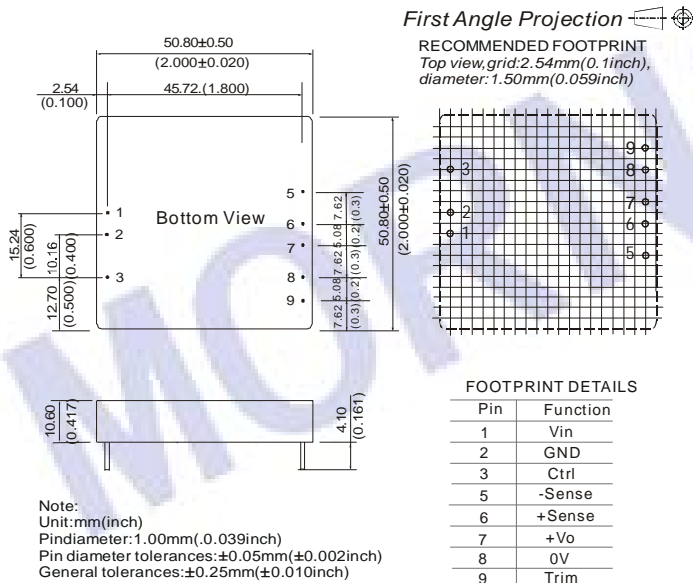
## COMMON SPECIFICATION

Item	Test Conditions	Min	Typ	Max	Units
Storage Humidity		5		95	%
Operating Temperature		-40		+85	°C
Storage Temperature		-55		+125	
Temp. Rise at Full Load			70		
Lead Temperature	1.5mm from case for 10 seconds			300	
Isolation voltage	Test for 1 minute and 1 mA max		1500		VDC
Isolation resistance	Test at 500VDC		1000		MΩ
Isolation capacitance	100KHz /0.1V		2000		pF
Switching Frequency	Nominal, full load		300		KHz
MTBF	MIL-HDBK-217F	1000			K hours
Weight			60		g
Cooling		Free Air Convection			
Case material	Nickel- coated copper(six-sided shield)				

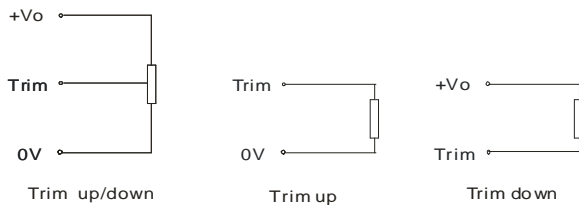
Note:

- All specifications are measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- The products cannot be used in parallel and in plug and play.
- The CTRL 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.

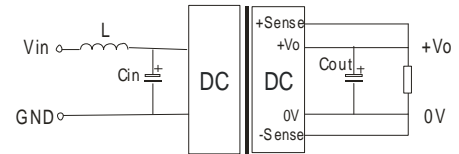
## OUTLINE DIMENSIONS & PIN CONNECTIONS



## OUTPUT VOLTAGE TRIM UP/DOWN



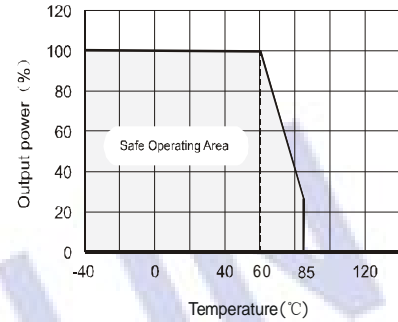
## RECOMMENDED CIRCUIT



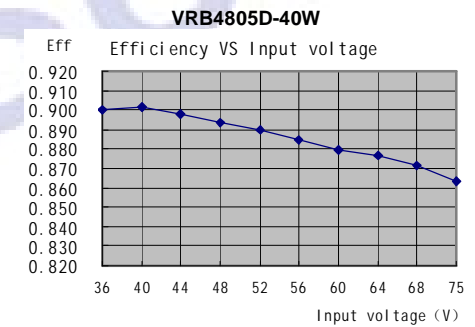
In order to obtain better performance for the DC/DC models, it's recommended that use input and output filters as Fig.1 shown.

## DERATING & EFFICIENCY CURVE

### ① Temperature derating curve



### ② Efficiency Vs Input voltage



### ③ Efficiency Vs Load

