



VRB_D-30W Series

**30W, WIDE INPUT, ISOLATED & REGULATED
DIP PACKAGE, SINGLE OUTPUT DC-DC CONVERTER**

multi-country patent protection **RoHS**

FEATURES

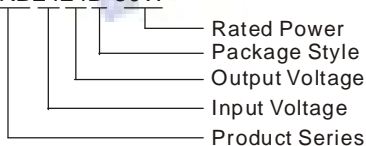
- Efficiency up to 90%
- Wide (2:1) Input Range
- 1.5KVDC Input/Output Isolation
- Over Voltage protection
- Output Short Circuit Protection
- Operating Temperature: -40°C to +85°C
- Internal SMD construction
- Metal Shielding Package
- Industry Standard Pin out
- MTBF>1,000,000 hours
- RoHS Compliance

Application

The VRB_D-30W series offer 30W of output, the VRB_D-30W 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

VRB2424D-30W



PRODUCT PROGRAM

| Part Number | Input | | Output | | Efficiency (% Typ) | capacitance (max,UF) |
|----------------|---------------|-------|---------------|--------------|--------------------|----------------------|
| | Voltage (VDC) | | Voltage (VDC) | Current (mA) | | |
| | Nominal | Range | | | | |
| VRB1203D-30W * | 12 | 9-18 | 3.3 | 6000 | 85 | 19500 |
| VRB1205D-30W | | | 5 | 6000 | 87 | 10200 |
| VRB1212D-30W | | | 12 | 2500 | 88 | 3240 |
| VRB1215D-30W * | | | 15 | 2000 | 88 | 1100 |
| VRB1224D-30W * | | | 24 | 1250 | 88 | 900 |
| VRB2403D-30W * | 24 | 18-36 | 3.3 | 6000 | 86 | 19500 |
| VRB2405D-30W | | | 5 | 6000 | 89 | 10200 |
| VRB2412D-30W | | | 12 | 2500 | 89 | 3300 |
| VRB2415D-30W * | | | 15 | 2000 | 89 | 1100 |
| VRB2424D-30W | | | 24 | 1250 | 89 | 900 |
| VRB4803D-30W * | 48 | 36-75 | 3.3 | 6000 | 87 | 19500 |
| VRB4805D-30W | | | 5 | 6000 | 89 | 10200 |
| VRB4812D-30W | | | 12 | 2500 | 87 | 3300 |
| VRB4815D-30W | | | 15 | 2000 | 90 | 1100 |
| VRB4824D-30W | | | 24 | 1250 | 90 | 900 |

*Designing.

COMMON SPECIFICATIONS

| Item | Test conditions | Min | Typ | Max | Units |
|-----------------------|--------------------------------|-----------------------|------|-----|---------|
| Operating Temperature | | -40 | | 85 | °C |
| Storage Temperature | | -55 | | 105 | |
| Storage Humidity | | 5 | | 95 | % |
| Isolation voltage | Test for 1 minute and 1 mA max | | 1500 | | VDC |
| Isolation resistance | | | 1000 | | MΩ |
| Isolation Capacitance | 100KHz / 1V | | 1000 | | pF |
| Switching frequency | Nominal, full load | | 300 | | KHz |
| MTBF | | | 1000 | | K hours |
| Weight | | | 45 | | g |
| Case Material | | Copper, Nickel plated | | | |

INPUT SPECIFICATIONS

| Item | Test conditions | Min | Typ | Max | Units |
|---|------------------|---------------------------|-----------|-------|-------|
| Start voltage/Under Voltage shutdown | 12V input models | 8.6/8.1 | 8.8/8.3 | 9/8.5 | VDC |
| | 24V input models | 17.5/16 | 17.8/16.5 | 18/17 | |
| | 48V input models | 34/32 | 35/33 | 36/34 | |
| Start up time | | | 20 | | MS |
| Input filter | | Pi | | | |
| Method of Remote (Reference point: GND) | on | 3.5-40VDC or open circuit | | | |
| | off | 0-1.2VDC | | | |

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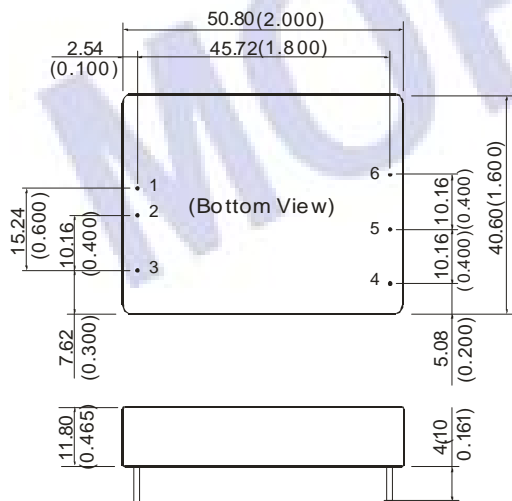
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| OUTPUT SPECIFICATIONS | | | | | |
|--------------------------|--------------------------------|-----------------------------|--------|------|-------|
| Item | Test conditions | Min | Typ | Max | Units |
| Output voltage accuracy | Refer to recommended 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 | |
| Ripple and noise | Tested under 20MHz band | 50 | 75 | 150 | mV |
| Transient recovery time | 25%load change | | 200 | 300 | us |
| Transient peak deviation | | | ±2 | ±3 | ±5 |
| Over load protection | Input voltage range | 120 | 130 | 150 | % |
| Output Short Circuit | Input voltage range | Hiccup, automatics 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 |

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 efficiency 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.

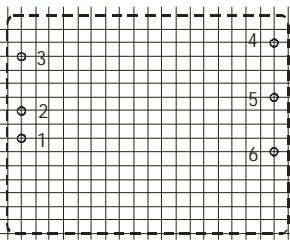
OUTLINE DIMENSIONS & FOOTPRINT DETAILS



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

First Angle Projection

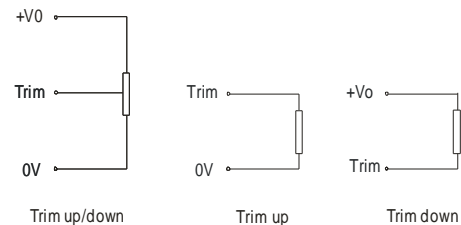
RECOMMENDED FOOTPRINT
 Top view, grid:2.54mm(0.1inch)
 diameter: 1.50mm(0.059inch)



FOOTPRINT DETAILS

| Pin | Function |
|-----|----------|
| 1 | Vin |
| 2 | GND |
| 3 | Ctrl |
| 4 | Trim |
| 5 | 0V |
| 6 | +Vo |

OUTPUT VOLTAGE TRIM



RECOMMENDED CIRCUIT

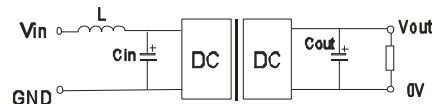


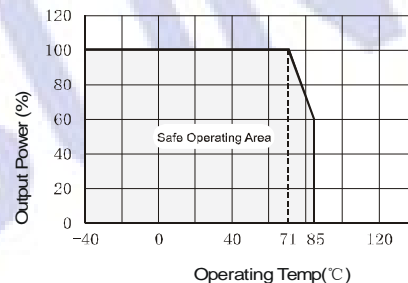
Figure.1

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

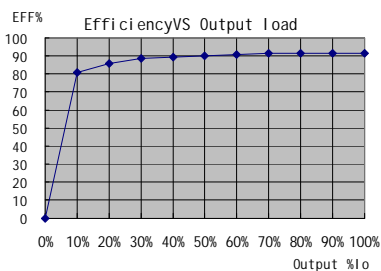
L:12uH C:100uF/100V

DERATING&EFFICIENCY CURVE

Temperature derating curve



Curve of Efficiency VS output load VRB2424D-30W



Curve of Efficiency VS input Voltage VRB2424D-30W

