

MICRODC

Professional Power Module

WRB-YD -30W Series(2. 16)

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



FEATURES

- ◆ Wide (2:1) Input Range
- ◆ Short Circuit Protection(automatic recovery)
- ◆ 1500VDC Isolation
- ◆ Operating Temperature: -40°C ~ + 85°C
- ◆ Six sided metal shielding
- ◆ Over Voltage protection
- ◆ Internal SMD construction
- ◆ RoHS Compliance
- ◆ Industry Standard Pin Out
- ◆ MTBF>1000Khours

MODEL SELECTION

WRB^①24^②15^③Y^④D^⑤-30W^⑥

- ① Product Series ② Input Voltage
 ③ Output Voltage ④ Wide (2:1) Input Range
 ⑤ DIP Package Style
 ⑥ Rated Power

APPLICATIONS

The WRB_YD-30W 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 circuitboard.

These products apply to:

- 1) Where the voltage of the input power supply is wide range (Voltage ranges ≤ 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.

SELECTION GUIDE

| Order code | Input | | Output | | Efficiency (%.Typ.) | Capacitance (max,UF.) |
|----------------|--------------|-------|---------------|------------------|---------------------|-----------------------|
| | Voltage(VDC) | | Voltage (VDC) | Current (%.Typ.) | | |
| | Nominal | Range | | | | |
| WRB1203YD-30W | 12 | 9-18 | 3.3 | 6000 | 85 | 19000 |
| WRB1205YD-30W | 12 | 9-18 | 5 | 6000 | 88 | 10300 |
| WRB1212YD-30W | 12 | 9-18 | 12 | 2500 | 83 | 3340 |
| WRB1215YD-30W | 12 | 9-18 | 15 | 2000 | 82 | 1100 |
| WRB1224YD-30W | 12 | 9-18 | 24 | 1250 | 81 | 900 |
| WRB2403YD-30W | 24 | 18-36 | 3.3 | 6000 | 81 | 19500 |
| WRB2405YD-30W | 24 | 18-36 | 5 | 6000 | 88 | 10200 |
| WRB2412YD-30W | 24 | 18-36 | 12 | 2500 | 81 | 3300 |
| WRB2415YD-30W | 24 | 18-36 | 15 | 2000 | 83 | 1100 |
| WRB2424YD-30W | 24 | 18-36 | 24 | 1250 | 85 | 900 |
| WRB4803YD-30W | 48 | 36-75 | 3.3 | 6000 | 83 | 19500 |
| WRB4805YD-30W | 48 | 36-75 | 5 | 6000 | 81 | 10200 |
| WRB4812YD-30W | 48 | 36-75 | 12 | 2500 | 81 | 3300 |
| WRB4815YD-30W | 48 | 36-75 | 15 | 2000 | 84 | 1100 |
| WRB4824YD-30W* | 48 | 36-75 | 24 | 1250 | 81 | 900 |

*Designing...

COMMON SPECIFICATIONS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|-----------------------|---------------------------------|------|------|------|---------|
| Storage humidity | | 5 | | 95 | % |
| Operating temperature | | -40 | | 85 | °C |
| Storage temperature | | -55 | | 105 | °C |
| Lead temperature | 1.5mm from case for 10 seconds | | | 300 | °C |
| Case material | Steel,nickel coated, copper | | | | |
| Isolation voltage | Tested for 1 minute and 1mA max | | 1500 | | VDC |
| Isolation resistance | | | 1000 | | MΩ |
| Isolation Capacitance | 100KHz/1V | | 1000 | | pF |
| MTBF | | | 1000 | | K hours |
| Weight | | | 45 | | g |

INPUT SPECIFICATIONS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|--|------------------|---------------------------|--------|-------|-------|
| Start voltage/Under voltage shutdown | 12V input models | 8.6/8.1 | 8.8/8. | 9/8.5 | VDC |
| | 24V input models | 17.5/16 | 17.8/1 | 18/17 | VDC |
| | 48V input models | 34/32 | 35/33 | 36/34 | VDC |
| 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 | | | |



CE REACH

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TEMPERATURE CHARACTERISTICS

| Parameter | Conditions | Min. | Typ. | Max. | Units |
|--------------------------|--------------------------------|----------------------------|------|------|-------|
| Output voltage accuracy | Refer to recommended circuit | | ±1 | ±3 | % |
| Over load protection | Input voltage range | 120 | 130 | 150 | % |
| Output Short Circuit | Input voltage range | Hiccup, automatic recovery | | | |
| Load regulation | From 10% to 100% load | | ±0.5 | ±1 | % |
| Trim | | ±10%V0 | | | VDC |
| Temperature drift (Vout) | | 0.02 | | | %/°C |
| Line regulation | Input voltage from low to high | | ±0.2 | ±0.5 | % |
| Ripple & 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 voltage protection | 3.3V | 3.63 | | 4.29 | VDC |
| | 5V | 5.5 | | 6.5 | VDC |
| | 12V | 13.2 | | 15.6 | VDC |
| | 15V | 16.5 | | 19.5 | VDC |
| | 24V | 26.4 | | 31.2 | VDC |

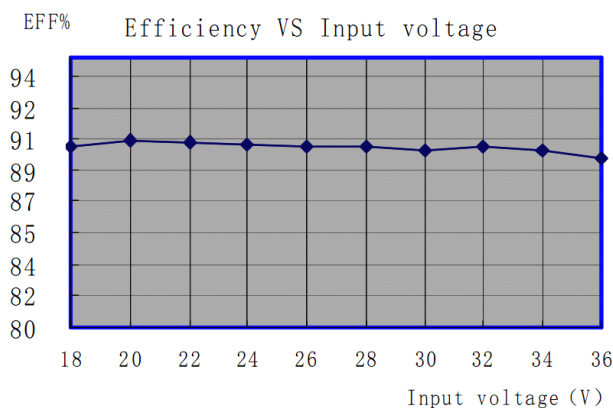
- Note:
- All specifications are measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
 - The CTRL control pin voltage is referenced to GND.
 - Typical efficiency value at nominal input voltage and full load.
 - Capacitor MAX load tested at nominal 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.

DERATING & EFFICIENCY CURVE

Requirement on output load

In order to ensure the product operate efficiently and reliably, in addition to a max load (namely full load), a minimum load is specified for this kind of DC/DC converter. Make sure the specified range of input voltage is not exceeded, the minimum output load **no less than 10% load**. If the actual load is less than the specified minimum load, the output ripple may increase sharply while its efficiency and reliability will reduce greatly. If the actual output power is very small, please add an appropriate resistor as extra loading, or contact our company for other lower output power products.

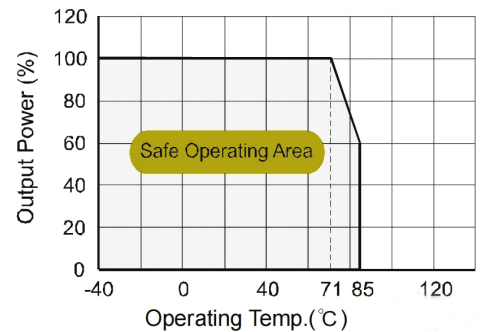
Curve of Efficiency VS Input Voltage WRB2424YD-30W



No parallel connection or plug and play

TYPICAL CHARACTERISTICS

Temperature Derating Graph



RECOMMENDED CIRCUIT

Output Graph

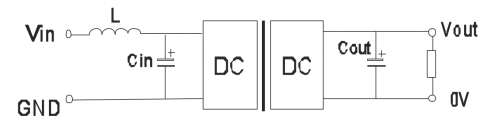


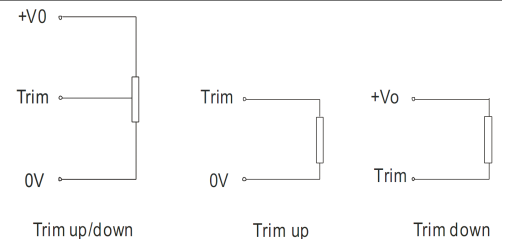
Figure.1

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

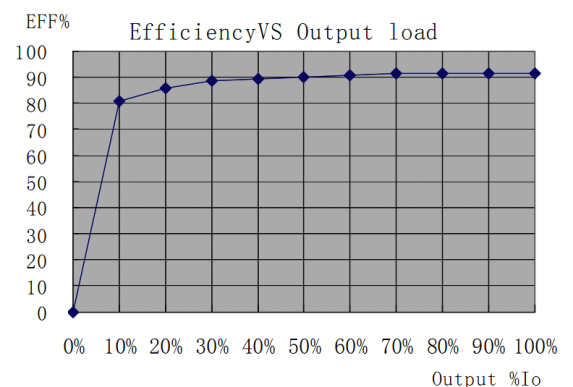
L:12uH C:100uF/100V

OUTPUT VOLTAGE TRIM

Output Graph

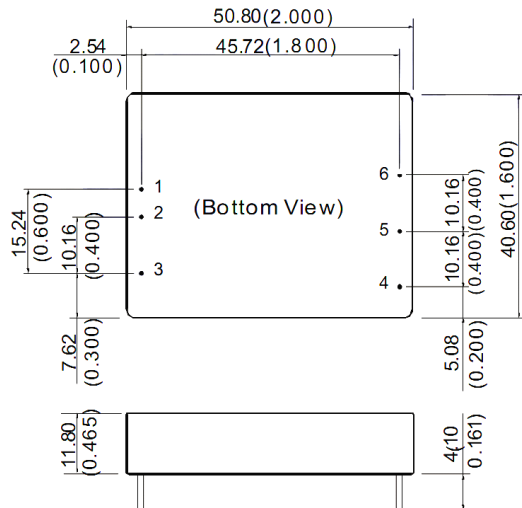


Curve of Efficiency VS output load WRB2424YD-30W



OUTLINE DIMENSIONS & FOOTPRINT DETAILS

MECHANICAL DIMENSIONS



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

FOOTPRINT DETAILS

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

Note: The CTRL control pin voltage is referenced to GND

When the environment temperature is higher than 71°C, the product output power should be less than 60% of the rated power.

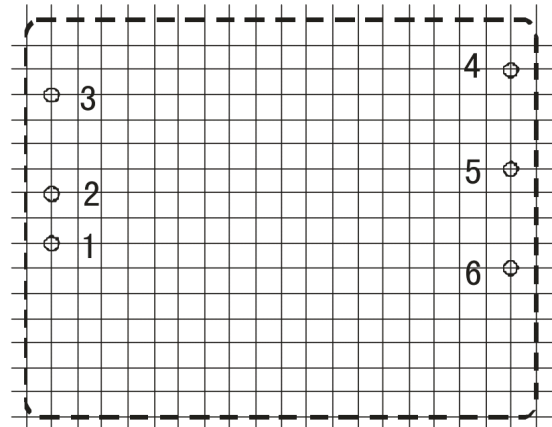
No parallel connection or plug and play.

Use dual output simultaneously,forbid pening output pin (0V) to use as single output.

Note:

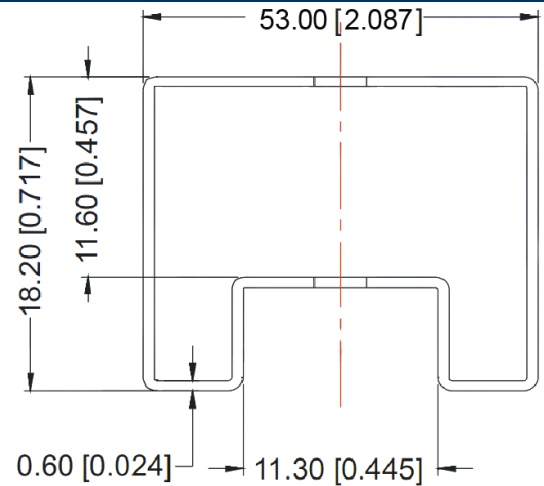
1. The CTRL control pin voltage is referenced to GND.
2. Typical efficiency value at nominal input voltage and full load.
3. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
4. In this datasheet, all the test methods of indications are based on corporate standards.
5. Capacitor MAX load tested at nominal input voltage and constant resistive load.

RECOMMENDED FOOTPRINT



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

TUBE OUTLINE DIMENSIONS



Note:

Unit :mm[inch]

General tolerances:±0.250mm[±0.010inch]