



## FEATURES

- ◆ RoHS compliant
- ◆ Efficiency up to 86%
- ◆ 1"X1" DIP Package
- ◆ Wide temperature performance at full 20 Watt load, -40°C to 85°C
- ◆ UL 94V-0 package material
- ◆ No heat sink required
- ◆ Low ripple and good EMC Features
- ◆ Industry standard pinout
- ◆ Regulated Single Output
- ◆ 1500 VDC I/O Isolation
- ◆ Short Circuit Protection(automatic recovery)
- ◆ Metal case package
- ◆ MTBF>1000000 hours

## MODEL SELECTION

**WRB<sup>①</sup> 24<sup>②</sup> 05<sup>③</sup> Y<sup>④</sup> MD<sup>⑤</sup> -20W(4000)<sup>⑥</sup>**

- ① Product Series
- ② Input Voltage
- ③ Output Voltage
- ④ Wide (2:1) Input Range
- ⑤ package style
- ⑥ Rated Power(Output current)

## DESCRIPTION

The WRB\_YMD-20W 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.



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## SELECTION GUIDE

| order           | Watt     | Input Voltage | Output Voltage | Output Current Full Load | Efficiency | Capacitor Load |
|-----------------|----------|---------------|----------------|--------------------------|------------|----------------|
|                 | (Output) | (VDC)         | (VDC)          | (mA)                     | (%)        | (uF)           |
| WRB1203YMD-4500 | 14.85    | 9-18          | 3.3            | 4500                     | 85         | 2000           |
| WRB1205YMD-20W  | 20       | 9-18          | 5              | 4000                     | 89         | 2000           |
| WRB1212YMD-20W  | 20       | 9-18          | 12             | 1660                     | 88         | 470            |
| WRB1215YMD-20W  | 20       | 9-18          | 15             | 1330                     | 88         | 330            |
| WRB2403YMD-4500 | 14.85    | 18-36         | 3.3            | 4500                     | 86         | 2000           |
| WRB2405YMD-20W  | 20       | 18-36         | 5              | 4000                     | 89         | 2000           |
| WRB2412YMD-20W  | 20       | 18-36         | 12             | 1660                     | 89         | 470            |
| WRB2415YMD-20W  | 20       | 18-36         | 15             | 1330                     | 89         | 330            |
| WRB4803YMD-4500 | 14.85    | 36-72         | 3.3            | 4500                     | 84         | 2000           |
| WRB4805YMD-20W  | 20       | 36-72         | 5              | 4000                     | 88         | 2000           |
| WRB4812YMD-20W  | 20       | 36-72         | 12             | 1660                     | 89         | 470            |
| WRB4815YMD-20W  | 20       | 36-72         | 15             | 1330                     | 89         | 330            |

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

### Input Specifications

|               |                            |
|---------------|----------------------------|
| Voltage Range | 2:1 Wide Input (See Table) |
| Input Filter  | L-C Type                   |

### Output Specifications

|                              |  |
|------------------------------|--|
| Voltage Accuracy             | $\pm 2\%$                                |
| Short Circuit Protection     | Current Limit (Automatic Recovery)       |
| Over Power Protection        | Over 120% of Rating (Automatic Recovery) |
| Over Voltage Protection      | Zener Diode Clamp                        |
| Line Regulation (LL-HL)      | $\pm 0.5\%$ , typ.                       |
| Load Regulation (10% - 100%) | $\pm 1\%$ , typ.                         |
| Ripple                       | 75 - 100 mV pk-pk, max.                  |
| Noise                        | 100 - 125 mV, max.                       |
| Temperature Coefficient      | $\pm 0.02\%$ / °C, max.                  |

### General Specifications

|   |                      |
|---|----------------------|
| Efficiency                                  | See Table            |
| I/O Isolation Voltage (3 sec.)              | 1500 VDC             |
| I/O Isolation Resistance                    | 10 <sup>9</sup> Ohms |
| Switching Frequency                         | 300 - 450 kHz, typ.  |
| Humidity                                    | 95% rel H            |
| Reliability Calculated MTBF (MIL-HDBK-217F) | > 0.8 Mhrs           |

### Physical Specifications

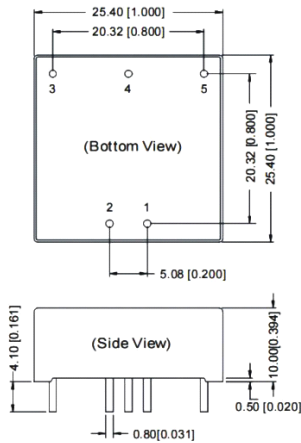
|               |   |
|---------------|---|
| Case Material | Six-side shielded Alu (non conductive Base) |
| Weight        | ~ 15 g, typ.                                |

### Environment Specifications

|                          |   |
|--------------------------|---|
| Operating Temperature    | -40 to +50° C (for 100% - See Derating Graph) |
| Maximum Case Temperature | 105° C  |
| Storage Temperature      | -55 to +105° C                                |
| Cooling                  | Free Air Convection (10mm distance required)  |
| RoHS Conform             | Soldering 260° C, max. (1.5mm from case 10s.) |

### Package / Pinning / Derating

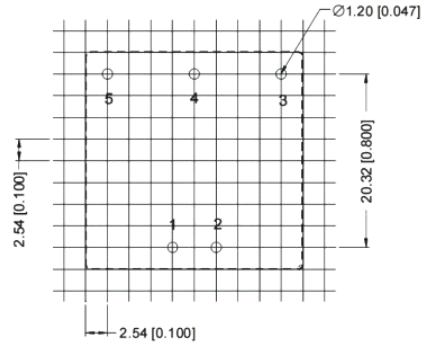
#### MECHANICAL DIMENSIONS



Note:  
Unit:mm[inch]  
Pin section tolerances:±0.10mm[±0.004inch]  
General tolerances:±0.25mm[±0.010inch]

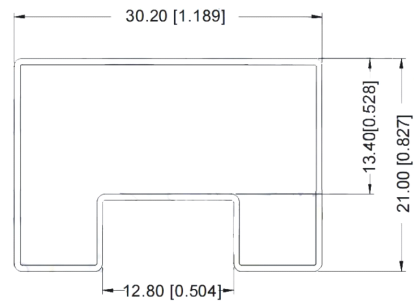
#### RECOMMENDED FOOTPRINT

Single Output



RECOMMENDED FOOTPRINT  
Top view,grid:2.54mm(0.1inch)  
diameter:1.00mm(0.039inch)

#### TUBE OUTLINE DIMENSIONS



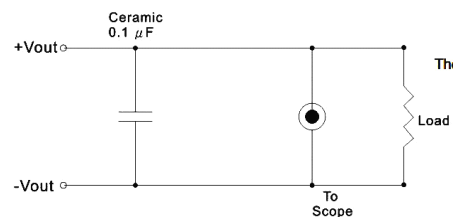
Note:  
Unit :mm[inch]  
General tolerances: ±0.50mm[±0.020inch]  
L=530mm[20.866inch] Tube Quantity: 19pcs  
L=220mm[8.661inch] Tube Quantity: 7pcs

**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 opening output pin (0V) to use as single output.**

Output Noise:



The output noise is measured with 0.1μF tantalum capacitor.

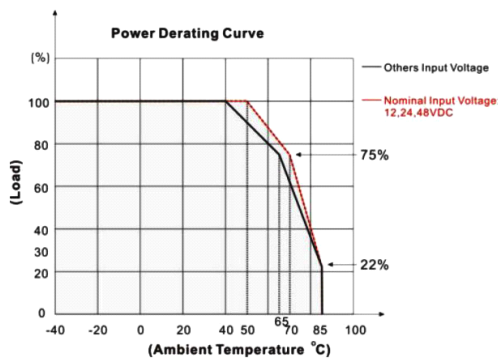
#### RoHS COMPLIANT INFORMATION

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300 °C for 10 seconds.  
The pin termination finish on the SIP package type is Tin Plate, Hot Dipped over Matte Tin with Nickel Preplate. The DIP types are Matte Tin over Nickel Preplate. Both types in this series are backward compatible with Sn/Pb soldering systems.

#### REACH COMPLIANT INFORMATION

This series has proven that this product does not contain harmful chemicals, it also has harmful chemical substances through the registration, inspection and approval.

#### Temperature derating curve



#### PIN CONNECTION

| # | SINGLE |
|---|--------|
| 1 | GND    |
| 2 | + Vin  |
| 3 | +Vout  |
| 4 | NC     |
| 5 | 0V     |

# MICRODC

Professional Power Module

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