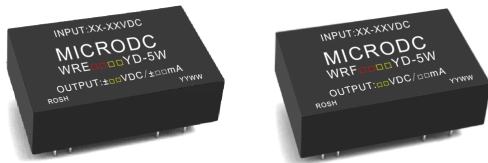


# MICRODC

Professional Power Module

## WRE-YD-5W&WRF-YD-5W Series

5W,2:1 WIDE INPUT,ISOLATED&REGULATED DUAL/SINGLE OUTPUT DIP24 DC/DC CONVERTER



### FEATURES

- ◆ 24-PIN DIP PACKAGE
- ◆ WIDE 2:1 INPUT RANGE
- ◆ HIGH EFFICIENCY UP TO 80%
- ◆ LOW PROFILE METAL PACKAGE
- ◆ INPUT/OUTPUT ISOLATION: 3000VDC
- ◆ CONTINUOUS SHORT CIRCUIT PROTECTION
- ◆ OPERATING TEMPERATURE: -40°C+85°C
- ◆ PIN - COMPATIBLE WITH MULTIPLE MANUFACTURERS

### MODEL SELECTION

**WRE<sup>①</sup> 24<sup>②</sup> 15<sup>③</sup> Y<sup>④</sup> D<sup>⑤</sup>-5W(167)<sup>⑥</sup>**

- ① Product Series
- ② Input Voltage
- ③ Output Voltage
- ④ Wide (2:1) Input Range
- ⑤ DIP24 Package Style
- ⑥ Rated Power(Output current)

### APPLICATIONS

The WRE\_YD-5W & WRF\_YD-5W 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≤2:1);
- 2) Where isolation is necessary between input and output (Isolation voltage≤3000VDC);
- 3) Where the regulation of the Output voltage and the output ripple noise are demanded.

### SELECTION GUIDE

Order code	Input Voltage	Output Voltage	Output Current
WRF1203YD-1250	9VDC - 18VDC	3.3VDC	1250mA
WRF1205YD-5W	9VDC - 18VDC	5VDC	1000mA
WRF1207YD-5W	9VDC - 18VDC	7.2VDC	694mA
WRF1209YD-5W	9VDC - 18VDC	9VDC	556mA
WRF1212YD-5W	9VDC - 18VDC	12VDC	417mA
WRF1215YD-5W	9VDC - 18VDC	15VDC	333mA
WRF1218YD-5W	9VDC - 18VDC	18VDC	278mA
WRF1224YD-5W	9VDC - 18VDC	24VDC	208mA
WRF2403YD-1250	18VDC - 36VDC	3.3VDC	1250mA
WRF2405YD-5W	18VDC - 36VDC	5VDC	1000mA
WRF2407YD-5W	18VDC - 36VDC	7.2VDC	694mA
WRF2409YD-5W	18VDC - 36VDC	9VDC	556mA
WRF2412YD-5W	18VDC - 36VDC	12VDC	417mA
WRF2415YD-5W	18VDC - 36VDC	15VDC	333mA
WRF2418YD-5W	18VDC - 36VDC	18VDC	278mA
WRF2424YD-5W	18VDC - 36VDC	24VDC	208mA
WRF4803YD-1250	36VDC - 72 VDC	3.3VDC	1250mA
WRF4805YD-5W	36VDC - 72 VDC	5VDC	1000mA
WRF4807YD-5W	36VDC - 72 VDC	7.2VDC	694mA
WRF4809YD-5W	36VDC - 72 VDC	9VDC	556mA
WRF4812YD-5W	36VDC - 72 VDC	12VDC	417mA
WRF4815YD-5W	36VDC - 72 VDC	15VDC	333mA
WRF4818YD-5W	36VDC - 72 VDC	18VDC	278mA
WRF4824YD-5W	36VDC - 72 VDC	24VDC	208mA
WRE1203YD-625	9VDC - 18VDC	±3.3VDC	±625mA
WRE1205YD-5W	9VDC - 18VDC	±5VDC	±500mA
WRE1207YD-5W	9VDC - 18VDC	±7.2VDC	±347mA
WRE1209YD-5W	9VDC - 18VDC	±9VDC	±278mA
WRE1212YD-5W	9VDC - 18VDC	±12VDC	±209mA
WRE1215YD-5W	9VDC - 18VDC	±15VDC	±167mA
WRE1218YD-5W	9VDC - 18VDC	±18VDC	±139mA
WRE1224YD-5W	9VDC - 18VDC	±24VDC	±104mA
WRE2403YD-625	18VDC - 36VDC	±3.3VDC	±625mA
WRE2405YD-5W	18VDC - 36VDC	±5VDC	±500mA
WRE2407YD-5W	18VDC - 36VDC	±7.2VDC	±347mA
WRE2409YD-5W	18VDC - 36VDC	±9VDC	±278mA
WRE2412YD-5W	18VDC - 36VDC	±12VDC	±209mA
WRE2415YD-5W	18VDC - 36VDC	±15VDC	±167mA
WRE2418YD-5W	18VDC - 36VDC	±18VDC	±139mA
WRE2424YD-5W	18VDC - 36VDC	±24VDC	±104mA
WRE4803YD-625	36VDC - 72VDC	±3.3VDC	±625mA
WRE4805YD-5W	36VDC - 72VDC	±5VDC	±500mA
WRE4807YD-5W	36VDC - 72VDC	±7.2VDC	±347mA
WRE4809YD-5W	36VDC - 72VDC	±9VDC	±278mA
WRE4812YD-5W	36VDC - 72VDC	±12VDC	±209mA
WRE4815YD-5W	36VDC - 72VDC	±15VDC	±167mA
WRE4818YD-5W	36VDC - 72VDC	±18VDC	±139mA
WRE4824YD-5W	36VDC - 72VDC	±24VDC	±104mA



**CE REACH**  
MICRODC reserves the copyright

Input Specifications	
Voltage range	12VDC, 9~18VDC
	24VDC, 18~36VDC
	48VDC, 36~72VDC
Filter	p(Pi) Network
Isolation Specifications	
Rated voltage (60 sec)	3000VDC
Resistance	> 1000MOhm
Capacitance	120pF, typ.
Environmental Specifications	
Operating temperature (ambient)	-40°C ... +85°C
Storage temperature	-55°C ... +125°C
Case temperature	+100°C, max.
Derating	None required
Humidity (non-condensing)	Up to 90%
Cooling	Free-air Convection

MTBF: > 1,009,000 hrs (MIL-HDBK-217F, Ground Benign,  $t=+25^{\circ}\text{C}$ )  
 Specifications are subject to change without notification

General Specifications	
Efficiency	74% to 80%
Switching Frequency	250KHz, typ. 100% load
Output Specifications	
Voltage accuracy	$\pm 1\%$ , max.
Voltage balance (Dual Output)	$\pm 1\%$
Ripple & noise (at 20MHz BW)	60mVp-p, max.
Short circuit protection	Continuous
Short circuit restart	Automatic
Line voltage regulation	$\pm 0.5\%$ , max.
Load voltage regulation	$\pm 0.5\%$ , max.
Temperature coefficient	$\pm 0.02\%/^{\circ}\text{C}$ , typ.
Physical Specifications	
Dimensions	31.75x20.32x10.16mm
	1.25x0.8x0.4inches
Weight	19g
Case material	Nickel-Coated Copper

### APPLICATION NOTE

#### 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.

#### Recommended Circuit

All the WRE\_YD-5W&WRE\_YD-5W Series have been tested according to the following recommended testing circuit before leaving factory. This series should be tested under load (See figure 1).

If you want to further decrease the input/output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees (Table 1).

General:  $C_{in}$ : 5V & 12V 100 $\mu\text{F}$   
 24V & 48V 100 $\mu\text{F}$ -47 $\mu\text{F}$   
 $C_{out}$ : 10 $\mu\text{F}$ /100mA

#### Input current

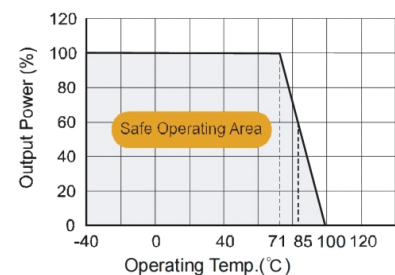
While using unstable power source, please ensure the output voltage and ripple voltage do not exceed indexes of the converter. Input current of power supply should afford the startup current of this kind of DC/DC module (See figure 2).

General:  $I_{ps} \leq 1.4 * I_{in-max}$

#### No parallel connection or plug and play

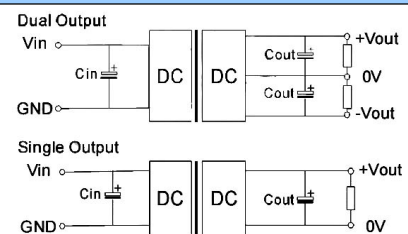
### TYPICAL CHARACTERISTICS

#### Temperature Derating Graph

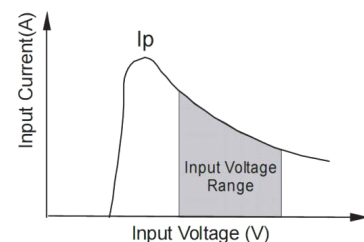


### RECOMMENDED CIRCUIT

#### Output Graph

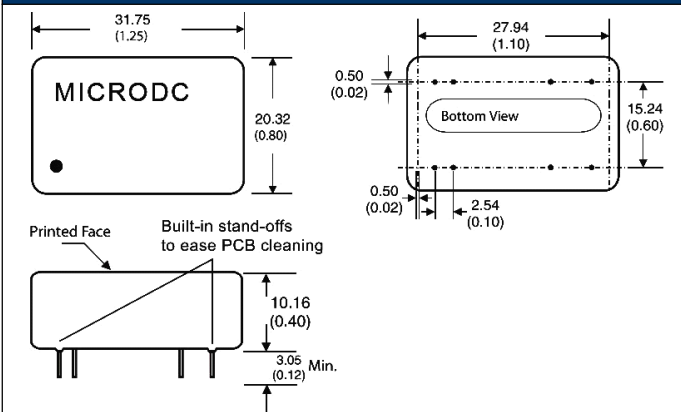


(Figure 1)



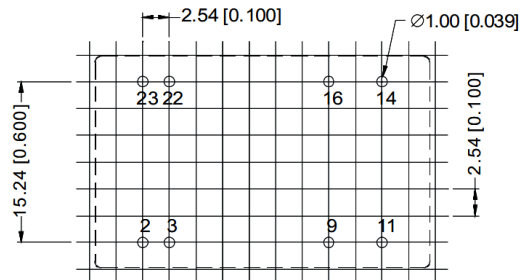
(Figure 2)

### MECHANICAL DIMENSIONS



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

### RECOMMENDED FOOTPRINT



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

### FOOTPRINT DETAILS

Pin	3000VDC	
	Single	Dual
2、3	-V Input	-V Input
9	N.C	Common
11	N.C	-V Output
14	+V Output	+V Output
16	-V Output	Common
22、23	+V Input	+V Input

NC:No connection

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

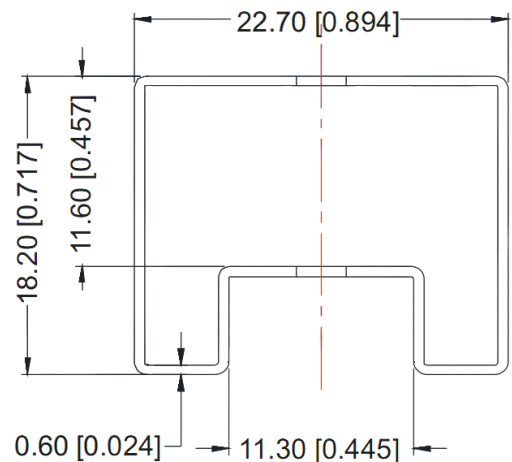
**No parallel connection or plug and play.**

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

Note:

1. The load shouldn't be less than 10%, otherwise ripple will increase dramatically.
2. Operation under 10% load will not damage the converter; However, they may not meet all specification listed.
3. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
4. In this data sheet, all the test methods of indications are based on corporate standards.
5. Only typical models listed, other models may be different, please contact our technical person for more details.

### TUBE OUTLINE DIMENSIONS



Note:

Unit :mm[inch]

General tolerances:±0.50mm[±0.020inch]

L=530mm[20.866inch] Tube Quantity: 15pcs

L=220mm[8.661inch] Tube Quantity: 6pcs