

# 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<sup>①</sup>24<sup>②</sup>15<sup>③</sup>Y<sup>④</sup>D<sup>⑤</sup>-30W<sup>⑥</sup>**

- 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:

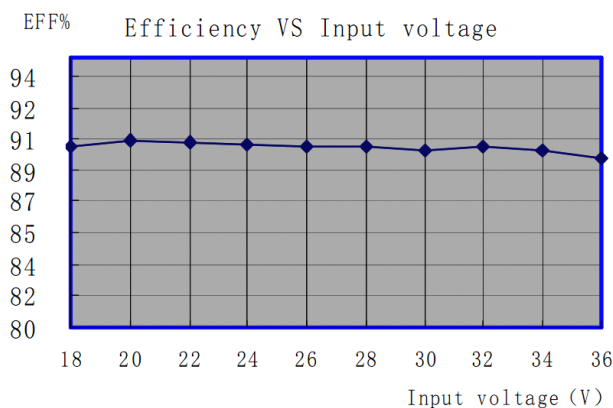
- All specifications are measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- The CTRL control pin voltage is referenced to GND.
- Typical efficiency value at nominal input voltage and full load.
- Capacitor MAX load tested at nominal input voltage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

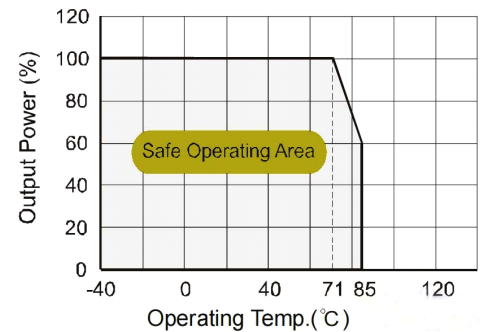
#### Curve of Efficiency VS Input Voltage WRB2424YD-30W



#### No parallel connection or plug and play

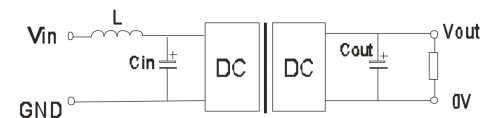
### TYPICAL CHARACTERISTICS

#### Temperature Derating Graph



### RECOMMENDED CIRCUIT

#### Output Graph

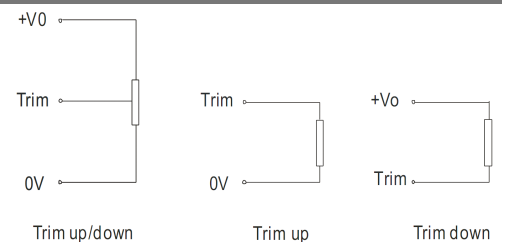


In order to obtain better performance for the DC/DC models, it's recommended that use input and output filters as Fig.1 shown.

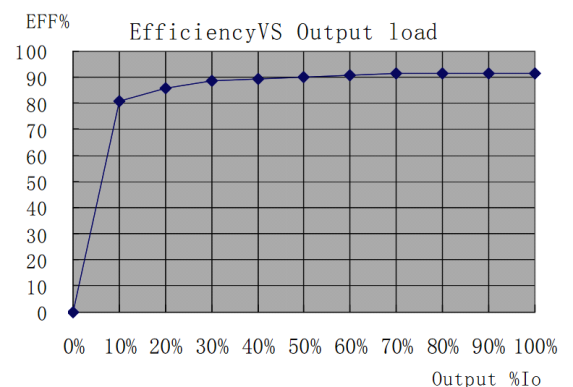
L:12uH C:100uF/100V

### OUTPUT VOLTAGE TRIM

#### Output Graph

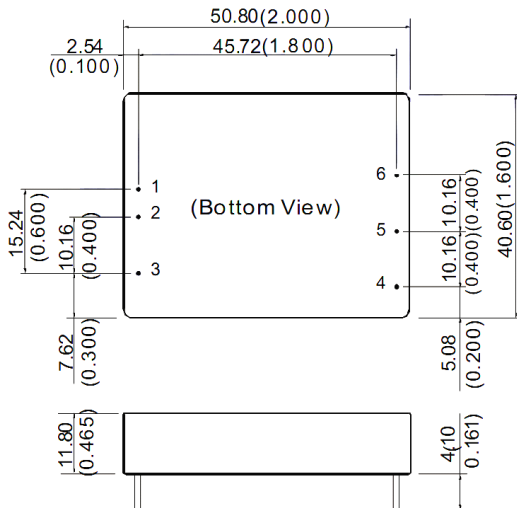


#### Curve of Efficiency VS output load WRB2424YD-30W



### OUTLINE DIMENSIONS & FOOTPRINT DETAILS

#### MECHANICAL DIMENSIONS



Note:  
 Unit:mm[inch]  
 Pin diameter:1.00mm[0.039inch]  
 Pin diameter tolerances: $\pm 0.05\text{mm}[\pm 0.002\text{inch}]$   
 General tolerances: $\pm 0.25\text{mm}[\pm 0.010\text{inch}]$

#### 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.**

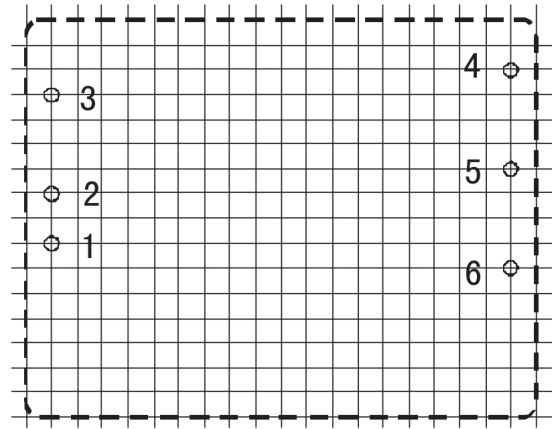
**No parallel connection or plug and play.**

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

Note:

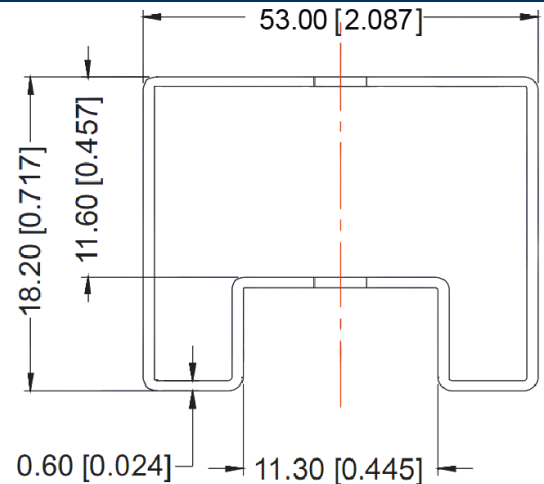
1. The CTRL control pin voltage is referenced to GND.
2. Typical efficiency value at nominal input voltage and full load.
3. All specifications measured at  $T_a=25^\circ\text{C}$ , humidity<75%, nominal input voltage and rated output load unless otherwise specified.
4. In this datasheet, all the test 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: $\pm 0.250\text{mm}[\pm 0.010\text{inch}]$