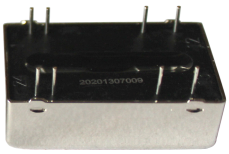
MICRODC
Professional Power Module

WRA-YD-6W & WRB-YD -6W Series

6W, WIDE INPUT, ISOLATED & REGULATED DUAL&SINGLE OUTPUT DC-DC CONVERTER



FEATURES

- ◆Wide (2:1) Input Range
- ◆Short Circuit Protection(automatic recovery)
- ◆1500VDC Isolation
- ◆Operating Temperature: -40℃～ + 85℃
- ◆Five sided metal shielding
- ◆No external component required
- ◆Internal SMD construction
- ◆RoHS Compliance
- ◆MTBF>1000Khours

MODEL SELECTION

WRB①24②15③Y④ D⑤-6W⑥

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

APPLICATIONS

The WRA_YD-6W&WRB_YD-6W 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≤1500VDC)
3) Where the regulation of the Output voltage and the output ripple noise are demanded.

PRODUCT ID DESCRIPTION

TOP BOTTOM

SELECTION GUIDE

Order code	Input			Output			Efficiency (%.Typ.)
	Voltage(VDC)			Voltage (VDC)	Current(mA)		
	Nominal	Range	Max*		Max.	Min.	
WRA0505YD-6W	5	4.5-9	11	±5	±600	±60	76
WRA0512YD-6W	5	4.5-9	11	±12	±250	±25	81
WRA0515YD-6W	5	4.5-9	11	±15	±200	±20	83
WRB0505YD-6W	5	4.5-9	11	5	1200	120	76
WRB0512YD-6W	5	4.5-9	11	12	500	50	81
WRB0515YD-6W	5	4.5-9	11	15	400	40	81
WRA1205YD-6W	12	9-18	22	±5	±600	±60	76
WRA1212YD-6W	12	9-18	22	±12	±250	±25	81
WRA1215YD-6W	12	9-18	22	±15	±200	±20	83
WRB1203YD-6W	12	9-18	22	3.3	1500	150	74
WRB1205YD-6W	12	9-18	22	5	1200	120	76
WRB1212YD-6W	12	9-18	22	12	500	50	81
WRB1215YD-6W	12	9-18	22	15	400	40	81
WRA2405YD-6W	24	18-36	40	±5	±600	±60	76
WRA2412YD-6W	24	18-36	40	±12	±250	±25	81
WRA2415YD-6W	24	18-36	40	±15	±200	±20	83
WRB2403YD-6W	24	18-36	40	3.3	1500	150	74
WRB2405YD-6W	24	18-36	40	5	1200	120	76
WRB2407YD-6W	24	18-36	40	7	857.1	85.71	78
WRB2412YD-6W	24	18-36	40	12	500	50	81
WRB2415YD-6W	24	18-36	40	15	400	40	81
WRA4805YD-6W	48	36-72	80	±5	±600	±60	85
WRA4812YD-6W	48	36-72	80	±12	±250	±25	83
WRA4815YD-6W	48	36-72	80	±15	±200	±20	85
WRB4803YD-6W	48	36-72	80	3.3	1500	150	74
WRB4805YD-6W	48	36-72	80	5	1200	120	78
WRB4812YD-6W	48	36-72	80	12	500	50	80
WRB4815YD-6W	48	36-72	80	15	400	40	80

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

COMMON SPECIFICATIONS

Parameter	Conditions	Min.	Typ.	Max.	Units
Storage humidity				95	%
Operating temperature		-40		85	℃
Storage temperature		-55		125	℃
Temp. rise at full load			40		℃
Lead temperature	1.5mm from case for 10 seconds			300	℃
No-load power			0.2		W
Cooling	Free Air Convection				
Short circuit protection	Continuous,automatic recovery				
Case material	Steel,nickel coated, copper				
Isolation voltage	Tested for1 minute and 1mA	1500			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation Capacitance	Input/Output		85		pF
MTBF		1000			K hours
Weight			17		g

RoHS MICRODC Green Technology

CE REACH

TEMPERATURE CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Output power	See below products program	0.6		6	W
Positive voltage accuracy	Refer to recommended circuit		±1	±3	%
Negative voltage accuracy	Refer to recommended circuit		±3	±5	%
Load regulation	From 10% to 100% load		±0.5	±1*	%
Ripple **	20MHz Bandwidth		20	50	mVp-p
Temperature drift (Vout)	Refer to recommended circuit		±0.02		%/℃
Line regulation	Input voltage from low to high		±0.2	±0.5	%
Noise**	20MHz Bandwidth		50	100	mVp-p
Switching frequency	100% load, input voltage range		300		KHz

* Dual output models unbalanced load: ±5%.

** Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

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 WRA_YD-6W&WRB_YD-6W 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: Cin: 5V&12V 100μF
24V&48V 100μF-47μF
Cout: 10μF/100mA

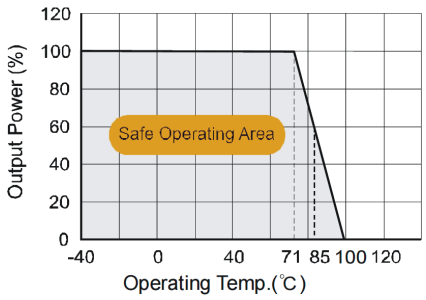
Input current

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:Ip≤1.4*Iin-max

No parallel connection or plug and play

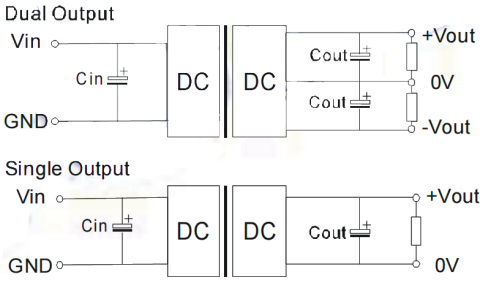
TYPICAL CHARACTERISTICS

Temperature Derating Graph

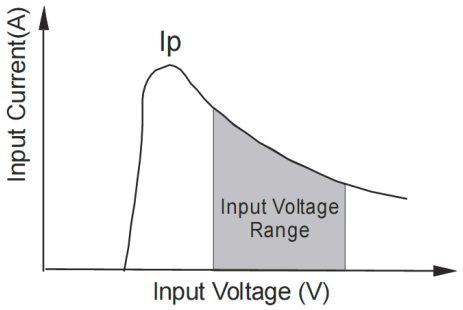


RECOMMENDED CIRCUIT

Output Graph



(Figure 1)



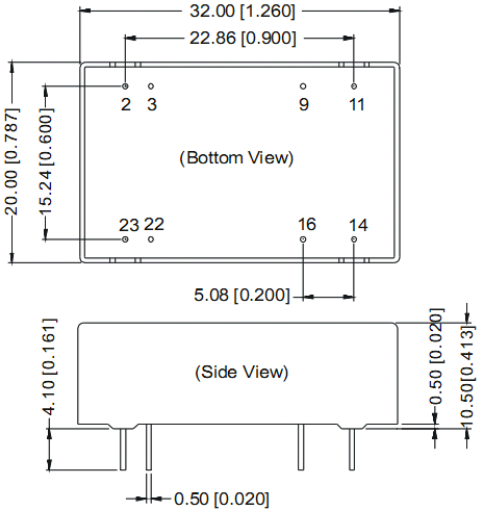
(Figure 2)

Output External Capacitor Table(Table 1)

Single Vout (VDC)	Cout (μF)	Dual Vout (VDC)	Cout (μF)
3.3	2200	±5	680
5	1000	±12	330
12	470	±15	220
15	330	--	--

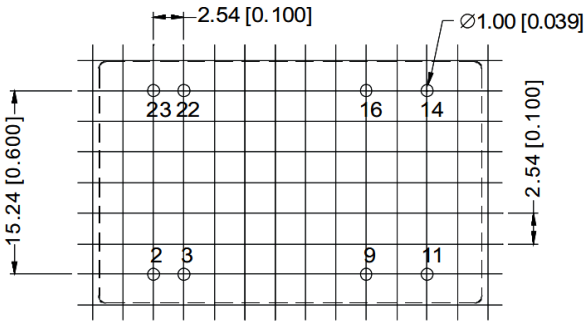
OUTLINE DIMENSIONS & FOOTPRINT DETAILS

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)

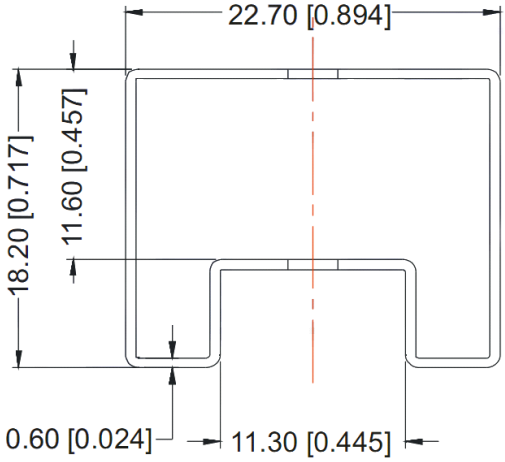
FOOTPRINT DETAILS

Pin	Single	Dual
2、3	GND	GND
9	NC	0V
11	NC	-Vo
14	+Vo	+Vo
16	0V	0V
22、23	Vin	Vin

NC:No connection

When the environment temperature is higher than 71℃, the product output power should be less then 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.

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

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.