MICRODC
Professional Power Module

WRA-YMD-10W & WRB-YMD-10W Series

2:1 WIDE INPUT,ISOLATED&REGULATED Dual/Single Output DC/DC Converter

FEATURES

- ◆RoHS compliant
- ◆Efficiency up to 86%
- ◆DIP Package
- ◆Wide temperature performance at full 10 Watt load,-40°C to 85°C
- ◆UL 94V-0 package material
- ◆No heatsink required
- ◆ Industry standard pinout
- ◆ I/O Isolation 1500VDC
- ◆ Short Circuit Protection(automatic recovery)
- ◆ Metal shielding package
- ◆ MTBF>1000000 hours

MODEL SELECTION

WRB①24②05③Y④ M⑤D⑥-10W⑦

①Product Series
②Input Voltage
③Output Voltage
④Wide (2:1) Input Range
⑤Metal Shield
⑥DIP Package Style
⑦Rated Power

DESCRIPTION

The WRA_YMD-10W & WRB_YMD-10W series are specially designed for applications where a group of polar 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.

RoHS MICRODC Green Technology
CE REACH

SELECTION GUIDE

order code	Input			Output			Efficiency
	Voltage(VDC)			Current(MA)		Voltage (VDC)	(%,Typ)
	Nominal	Range	Max*	Max	Min		
WRA0505YMD-10W	5	4.5-9.0	11	±1000	±100	±5	75
WRA0509YMD-10W	5	4.5-9.0	11	±556	±56	±9	76
WRA0512YMD-10W	5	4.5-9.0	11	±416	±42	±12	80
WRA0515YMD-10W	5	4.5-9.0	11	±333	±33	±15	82
WRB0505YMD-10W	5	4.5-9.0	11	2000	200	5	76
WRB0509YMD-10W	5	4.5-9.0	11	1111	111	9	78
WRB0512YMD-10W	5	4.5-9.0	11	833	83	12	80
WRB0515YMD-10W	5	4.5-9.0	11	666	66	15	82
WRA1205YMD-10W	12	9.0-18.0	20	±1000	±100	±5	79
WRA1209YMD-10W	12	9.0-18.0	20	±556	±56	±9	84
WRA1212YMD-10W	12	9.0-18.0	20	±416	±42	±12	82
WRA1215YMD-10W	12	9.0-18.0	20	±333	±33	±15	84
WRB1203YMD-10W	12	9.0-18.0	20	2500	250	3.3	79
WRB1205YMD-10W	12	9.0-18.0	20	2000	200	5	79
WRB1209YMD-10W	12	9.0-18.0	20	1111	111	9	81
WRB1212YMD-10W	12	9.0-18.0	20	833	83	12	82
WRB1215YMD-10W	12	9.0-18.0	20	666	66	15	84
WRB1224YMD-10W	12	9.0-18.0	20	416	42	24	82
WRA2405YMD-10W	24	18.0-36.0	40	±1000	±100	±5	81
WRA2409YMD-10W	24	18.0-36.0	40	±556	±56	±9	79
WRA2412YMD-10W	24	18.0-36.0	40	±416	±42	±12	84
WRA2415YMD-10W	24	18.0-36.0	40	±333	±33	±15	86
WRB2403YMD-10W	24	18.0-36.0	40	2500	250	3.3	78
WRB2405YMD-10W	24	18.0-36.0	40	2000	200	5	80
WRB2409YMD-10W	24	18.0-36.0	40	1111	111	9	78
WRB2412YMD-10W	24	18.0-36.0	40	833	83	12	84
WRB2415YMD-10W	24	18.0-36.0	40	666	66	15	86
WRA4805YMD-10W	48	36.0-72.0	80	±1000	±100	±5	80
WRA4809YMD-10W	48	36.0-72.0	80	±556	±56	±9	80
WRA4812YMD-10W	48	36.0-72.0	80	±416	±42	±12	84
WRA4815YMD-10W	48	36.0-72.0	80	±333	±33	±15	85
WRB4803YMD-10W	48	36.0-72.0	80	2500	250	3.3	78
WRB4805YMD-10W	48	36.0-72.0	80	2000	200	5	80
WRB4809YMD-10W	48	36.0-72.0	80	1111	111	9	80
WRB4812YMD-10W	48	36.0-72.0	80	833	83	12	84
WRB4815YMD-10W	48	36.0-72.0	80	666	66	15	86

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

OUTPUT SPECIFICATIONS

Parameter	Test conditions	Min.	Typ.	Max.	Units
Output power	Refer to products program	1		10	W
Positive voltage accuracy	Refer to recommended circuit		±1.0	±3.0	%
Negative voltage accuracy	Refer to recommended circuit		±3.0	±5.0	%
Load regulation	From 10% to 100% full load		±0.5	±1.0*	%
Line regulation(at full load)	Input voltage from low to high		±0.2	±0.5	%
Temperature drift(Vout)	Refer to recommended circuit			±0.03	%/°C
Output Ripple**	20MHz Bandwidth		20	50	MV p-p
Output Noise**	20MHz Bandwidth		85	150	MV p-p
Switching frequency	100% Full load,input voltage range		300		Khz

* Dual output models unbalanced load (25/100%):±5%Max
* *Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

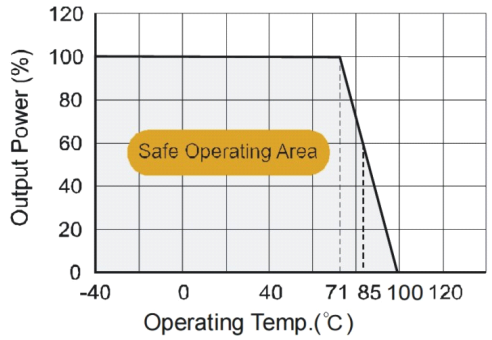
TEMPERATURE CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Storage humidity range				95	%
NO-load power consumption			500		MW
Operating temperature		-40		85	°C
Storage temperature		-55		125	°C
Lead temperature	1.5mm from case for 10 seconds			300	°C
Temp.rise at full load			40		°C
Cooling		Free air convection			
Case material		Plastic(UL94-V0)			
Short circuit protection*		Continuous,automatic recovery			
Case material		Aluminium alloy			
MTBF		1000			K hours
Weight			23.5		g

*Supply voltage must be discontinued at the end of short circuit duration.

TYPICAL CHARACTERISTICS

Temperature Derating Graph



ISOLATION SPECIFICATIONS

Parameter	Test conditions	Min.	Typ.	Max.	Units
Isolation test voltage	Flash tested for 1 minute and 1mA max	1500			VDC
Isolation resistance	Test at Viso=500VDC	1000			MΩ
Isolation capacitance	Input/Outpu		100		pF

APPLICATION NOTE

1) 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.

2) Recommended Circuit

All the WRA_YMD-10W & WRB_YMD-10W Series have been tested according to the following recommended testing circuit before leaving factory. This series should be tested under load. Never be tested under no 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 10μF-47μF
Cout: 10PF/100mA

3) Input current

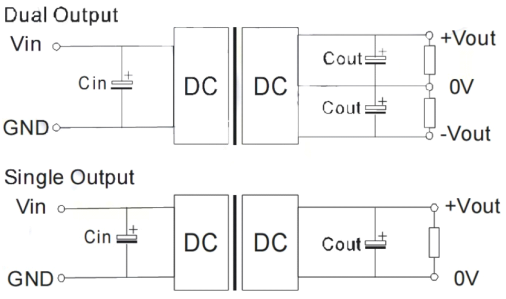
When it is used in unregulated power supply,be sure that the fluctuating range of the power supply and the rippled voltage do not exceed the module standard.Input current of power supply should afford the startup current of this kind of DC/DC module (Figure 2).

General: Ip≤1.4*Iin-max

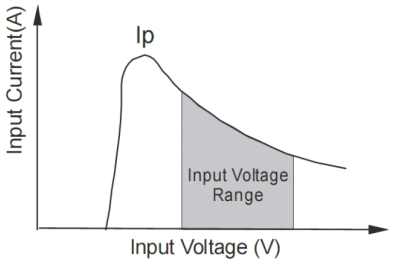
4) No parallel connection or plug and play

RECOMMENDED CIRCUIT

OUTPUT Graph



(Figure 1)



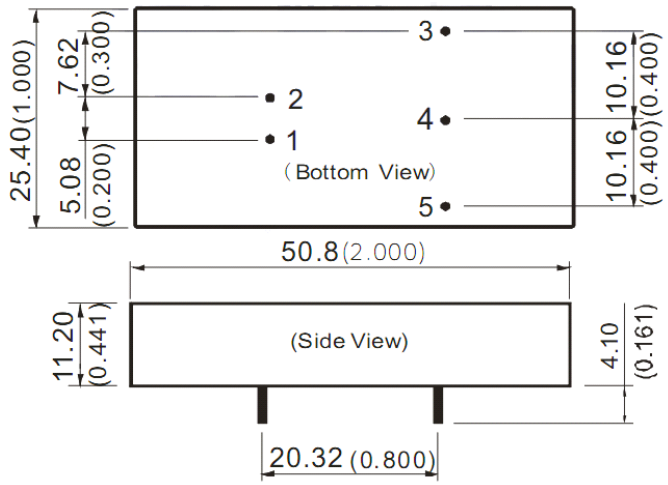
(Figure 2)

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	_	_
24	220	_	_

OUTLINE DIMENSIONS & FOOTPRINT DETAILS

MECHANICAL DIMENSIONS



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

FOOTPRINT DETAILS

Pin	Single	Dual
1	GND	GND
2	Vin	Vin
3	+Vo	+Vo
4	NC	COM
5	0V	-Vo

NC:No connection

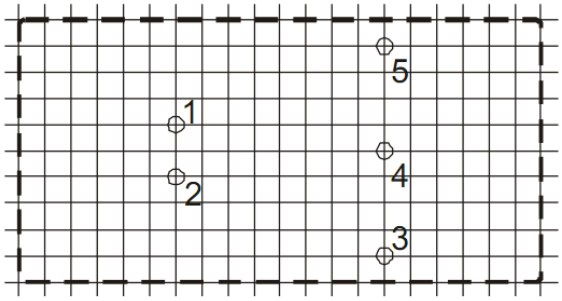
When the environment temperature is higher than 71℃, the product output power should be less then 60% of the rated power.

No parallel connection or plug and play.

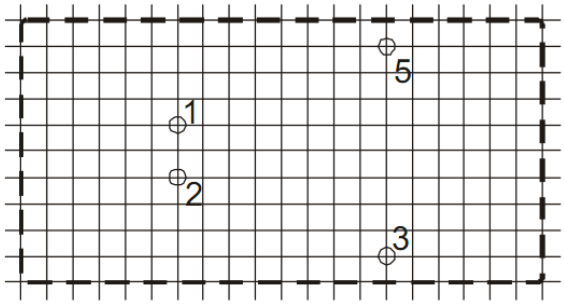
Use dual output simultaneously,forbid pening output pin (0V) to use as single output.

RECOMMENDED FOOTPRINT

Dual Output

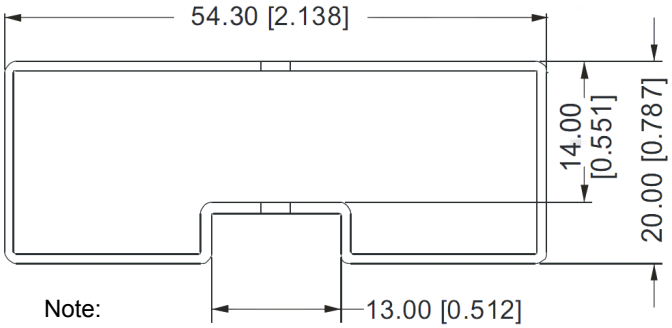


Single Output



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=230mm[9.055inch] Tube Quantity: 7pcs

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 datasheet, 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.