MORNSUN®

WRA_YMD-6W & WRB_YMD-6W Series

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

Patent Protection RoHS

FEATURES

- Efficiency up to 86%
- DIP package
- Operating temperature: -40°C to +85°C
- 1.5KVDC isolation
- Metal case package
- No heat sink required
- Industry standard pinout
- MTBF>1,000,000 hours
- RoHS Compliance

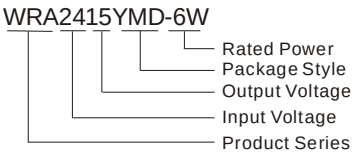
APPLICATIONS

The WRA_YMD-6W&WRB_YMD-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.

MODEL SELECTION



PRODUCT PROGRAM

Part Number	Input			Output			Efficiency (%, Typ.)
	Voltage (VDC)			Voltage (VDC)	Current (mA)		
	Nominal	Range	Max.*		Max.	Min.	
WRA0505YMD-6W	5	4.5-9	11	±5	±600	±60	76
WRA0512YMD-6W				±12	±250	±25	80
WRA0515YMD-6W				±15	±200	±20	82
WRA0524YMD-6W				±24	±125	±13	83
WRB0505YMD-6W				5	1200	120	76
WRB0512YMD-6W				12	500	50	80
WRB0515YMD-6W				15	400	40	82
WRA1205YMD-6W	12	9-18	20	±5	±600	±60	79
WRA1209YMD-6W				±9	±334	±33	80
WRA1212YMD-6W				±12	±250	±25	82
WRA1215YMD-6W				±15	±200	±20	84
WRB1205YMD-6W				5	1200	120	79
WRB1212YMD-6W				12	500	50	82
WRB1215YMD-6W				15	400	40	84
WRB1224YMD-6W				24	250	25	82
WRA2405YMD-6W	24	18-36	40	±5	±600	±60	81
WRA2412YMD-6W				±12	±250	±25	84
WRA2415YMD-6W				±15	±200	±20	84
WRA2424YMD-6W				±24	±125	±13	84
WRB2403YMD-6W				3.3	1500	150	78
WRB2405YMD-6W				5	1200	120	80
WRB2412YMD-6W				12	500	50	84
WRB2415YMD-6W				15	400	40	86
WRB2424YMD-6W				24	250	25	83
WRA4805YMD-6W	48	36-72	80	±5	±600	±60	80
WRA4812YMD-6W				±12	±250	±25	84
WRA4815YMD-6W				±15	±200	±20	85
WRB4803YMD-6W				3.3	1500	150	77
WRB4805YMD-6W				5	1200	120	80
WRB4812YMD-6W				12	500	50	84
WRB4815YMD-6W				15	400	40	86
WRB4824YMD-6W				24	250	25	85

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

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COMMON SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Units
Storage humidity range				95	%
Operating temperature		-40		85	°C
Storage temperature		-55		125	
Temp. rise at full load			40		
Lead temperature	1.5mm from case for 10 seconds			300	
No-load power consumption			500		mW
Cooling		Free air convection			
Short circuit protection		Continuous, automatic recovery			
Case material		Aluminum			
MTBF		1000			K hours
Weight			15		g

ISOLATION SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Units
Isolation voltage	Tested for 1 minute and 1mA max	1500			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation capacitance	Input/Output, 100KHz/1V		100		pF

OUTPUT SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Units
Output power	See above 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*	
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
Ripple**	20MHz Bandwidth		20	50	mVp-p
Noise**	20MHz Bandwidth		50	100	
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

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-6W & WRB_YMD-6W 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:

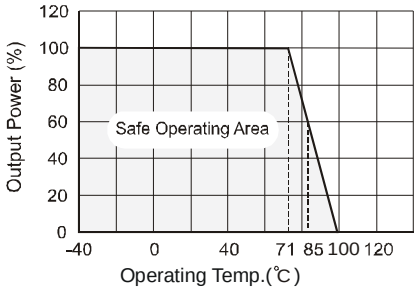
Cin: 5V&12V 100μF
24V&48V 10μF-47μF
Cout: 10μF/100mA

3) Input Current

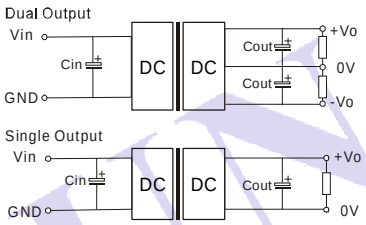
When it is used in unregulated power supply, be sure that the fluctuating range of the power supply and the rippled voltage do not exceed the module standard. Input current of power supply should afford the startup current of this kind of DC/DC module (Figure 2).
General: Ip ≤1.4*Iin-max

4) No parallel connection or plug and play

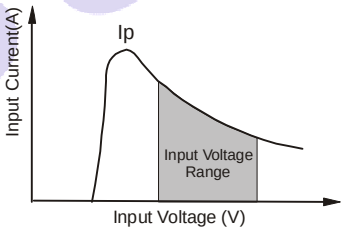
TYPICAL CHARECTERISTICS



RECOMMENDED CIRCUIT



(Figure 1)



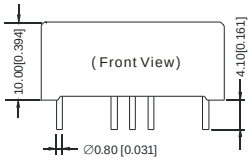
(Figure 2)

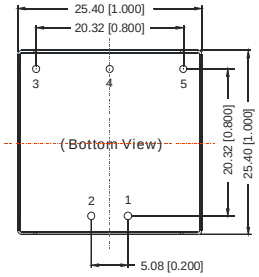
Output External Capacitor Table (Table 1)

Single Vout (VDC)	Cout (uF)	Dual Vout (VDC)	Cout (uF)
3.3	2200	±5	680
5	1000	±9	470
12	470	±12	330
15	330	±15	220
24	220	±24	100

OUTLINE DIMENSIONS & FOOTPRINT DETAILS

MECHANICAL DIMENSIONS



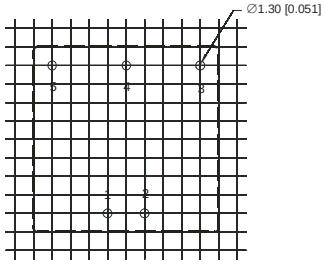


FOOTPRINT DETAILS		
Pin	SINGLE	DUAL
1	GND	GND
2	Vin	Vin
3	+Vo	+Vo
4	No Pin	0V
5	0V	-Vo

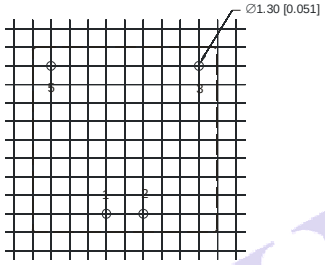
Note:
Unit: mm[inch]
Pin diameter tolerances: ±0.10mm[±0.004inch]
General tolerances: ±0.25mm[±0.010inch]

RECOMMENDED FOOTPRINT

DUAL

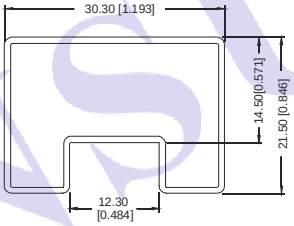


SINGLE



Note: grid 2.54*2.54mm.

TUBE OUTINE DIMENSIONS



Note:
Unit: mm[inch]
General tolerances: ±0.50mm[±0.020inch]
L=530mm[20.866inch] Devices per tube quantity: 19pcs
L=220mm[8.661inch] Devices per tube quantity: 7pcs
Short tube inner packaging dimensions:
L*W*H=255*170*80 mm;
Short tube outer packaging dimensions(with six inner packaging boxes):
L*W*H=375*280*270 mm;
Long tube inner packaging dimensions:L*W*H=580*200*100 mm;
Long tube outer packaging dimensions(with two inner packaging boxes):
L*W*H=600*215*220 mm;
Long tube outer packaging dimensions(with three inner packaging boxes):
L*W*H=600*215*325 mm.

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. Capacitor MAX load tested at input voltage range and full load.
4. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
5. In this datasheet, all the test methods of indications are based on corporate standards.
6. Only typical models listed, other models may be different, please contact our technical person for more details.