MORNSUN®

WRA_ZP-6W & WRB_ZP-6W Series

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

Patent Protection RoHS

FEATURES

- Efficiency up to 86%
- 2:1 wide input range
- 1.5KVDC input/output isolation
- Short circuit protection
- Operating temperature: -40°C to +85°C
- Internal SMD construction
- Metal shielding package
- No heat sink required
- Industry standard pinout
- MTBF>1,000,000 hours
- RoHS Compliance

APPLICATIONS

The WRA_ZP-6W & WRB_ZP-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

WRB2405ZP-6W

- Rated Power
- Package Style
- Output Voltage
- Input Voltage
- Product Series

PRODUCT PROGRAM

Model	Input			Output			Efficiency (%, Typ.)
	Voltage (VDC)			Voltage (VDC)	Current (mA)		
	Nominal	Range	Max*		Max.	Min.	
WRA0505ZP-6W	5	4.5-9	11	±5	±600	±60	76
WRA0512ZP-6W				±12	±250	±25	80
WRA0515ZP-6W				±15	±200	±20	82
WRB0505ZP-6W				5	1200	120	76
WRB0512ZP-6W				12	500	50	80
WRB0515ZP-6W				15	400	40	82
WRA1205ZP-6W	12	9-18	20	±5	±600	±60	79
WRA1212ZP-6W				±12	±250	±25	82
WRA1215ZP-6W				±15	±200	±20	84
WRA1224ZP-6W				±24	±125	±13	82
WRB1203ZP-6W				3.3	1500	150	77
WRB1205ZP-6W				5	1200	120	79
WRB1209ZP-6W				9	667	67	80
WRB1212ZP-6W				12	500	50	82
WRB1215ZP-6W				15	400	40	84
WRA2405ZP-6W	24	18-36	40	±5	±600	±60	81
WRA2412ZP-6W				±12	±250	±25	84
WRA2415ZP-6W				±15	±200	±20	86
WRB2403ZP-6W				3.3	1500	150	78
WRB2405ZP-6W				5	1200	120	80
WRB2412ZP-6W				12	500	50	84
WRB2415ZP-6W				15	400	40	86
WRB2424ZP-6W				24	250	25	83
WRA4805ZP-6W	48	36-72	80	±5	±600	±60	80
WRA4812ZP-6W				±12	±250	±25	84
WRA4815ZP-6W				±15	±200	±20	83
WRB4805ZP-6W				5	1200	120	80
WRB4812ZP-6W				12	500	50	84
WRB4815ZP-6W				15	400	40	86

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

COMMON SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Units
Storage humidity				95	%
Operating temperature		-40		85	°C
Storage temperature		-55		125	
Lead temperature	1.5mm from case for 10 seconds			300	
Cooling		Free air convection			
Short circuit protection		Continuous			
Case material		Aluminum Alloy			
No-load power consumption			500		mW
MTBF		1000			K hours
Weight			13		g

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ISOLATION SPECIFICATIONS

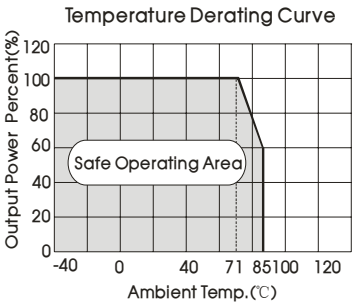
Item	Test Conditions	Min.	Typ.	Max.	Units
Isolation voltage	Tested for 1 minute and 1 mA max	1500			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

OUTPUT SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Units
Output power	Refer to 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		±0.02		%/°C
Ripple&Noise**	20MHz Bandwidth		50	150	
Switching Frequency	100% load, input voltage range		300		KHz

*Dual output models unbalanced load: ≤ ±5%.
** Ripple and noise tested with "parallel cable" method. See detailed operation instructions at *DC-DC application notes*.

TYPICAL CHARECTERISTICS



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 choose other lower output power products of our company.

2) Recommended Circuit

All the WRA_ZP-6W&WRB_ZP-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

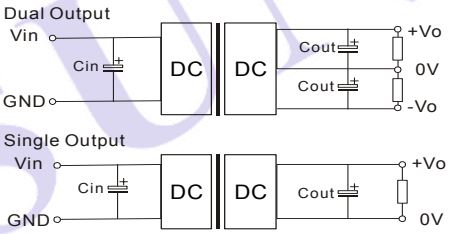
3) Input Current

When it is used in unregulated power supply, be sure that the fluctuating range of the powe 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 (See figure 2), General:

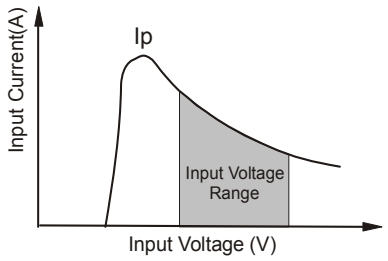
Ip ≤1.4*Iin-max

4) No parallel connection or plug and play

RECOMMENDED CIRCUIT



(Figure 1)

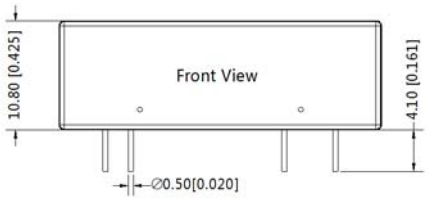


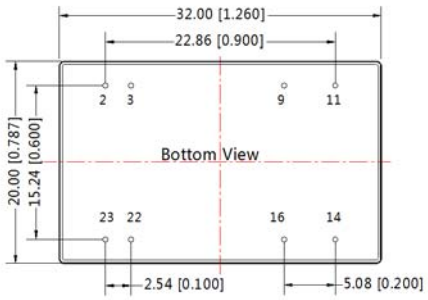
(Figure 2)

Output External Capacitor Table (Table 1)

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

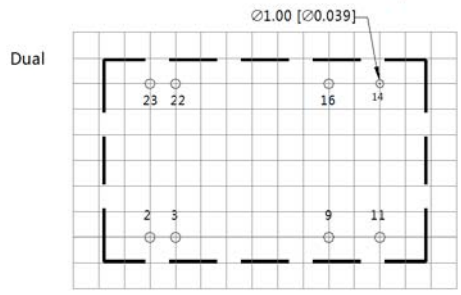
OUTLINE DIMENSIONS & PIN CONNECTIONS

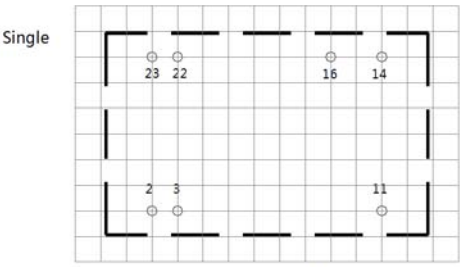




Note:
Unit :mm[inch]
Pin diameter tolerances :±0.10[±0.004]
General tolerances:±0.50[±0.020]

THIRD ANGLE PROJECTION





Note:Grid 2.54*2.54mm

Pin-Out		
Pin	Single	Dual
2,3	GND	GND
9	No Pin	0V
11	NC	-Vo
14	+Vo	+Vo
16	0V	0V
22,23	Vin	Vin

NC: No Connection

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.