



Patent Protection RoHS

WRA_SP-2W & WRB_SP-2W Series 2W, WIDE INPUT, DUAL & SINGLE OUTPUT DIP PACKAGE DC-DC CONVERTER

FEATURES

- 2:1 wide input voltage range
- Operating temperature: -40°C ~+85°C
- 1.5KVDC isolation
- Metal shielding package
- No heat sink required
- Short circuit protection
- Industry standard pinout
- MTBF>1,000,000 hours
- RoHS Compliance

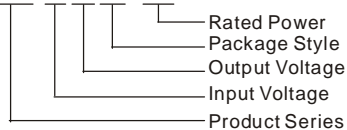
APPLICATIONS

The WRA_SP-2W & WRB_SP-2W 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

WRB0505SP-2W



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PRODUCT PROGRAM

Part Number	Input			Output			Efficiency (% Typ.)
	Voltage (VDC)			Voltage (VDC)	Current (mA)		
	Nominal	Range	Max.*		Max.	Min.	
WRA0505SP-2W	5	4.5-9	11	±5	±200	±20	68
WRA0512SP-2W				±12	±83	±8	72
WRA0515SP-2W				±15	±67	±6	73
WRB0505SP-2W				5	400	40	68
WRB0512SP-2W				42	467	46	72
WRA1205SP-2W	12	9-18	22	±5	±200	±20	74
WRA1212SP-2W				±12	±83	±8	78
WRA1215SP-2W				±15	±67	±6	79
WRB1205SP-2W				5	400	40	73
WRA2412SP-2W				±12	±83	±8	79
WRB2405SP-2W				5	400	40	77
WRB2424SP-2W				24	83	8	84
WRB4805SP-2W				5	400	40	77
WRB4815SP-2W				45	433	43	80

Note:

1. Models listed with strike-through text have been officially discontinued.
2. Input voltage can't exceed this value, or will cause the permanent damage.

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		47		pF

COMMON SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units
Storage humidity				95	%
Operating temperature		-40		85	°C
Storage temperature		-55		125	
Temp. rise at full load			15		
Lead temperature	1.5mm from case for 10 seconds			300	
No-load Power			0.15		W
Cooling		Free air convection			
Short circuit protection		Continuous, automatic recovery			
Case material		Copper, Nickel Plated			
MTBF		1000			K hours
Weight			14		g

OUTPUT SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units
Output power	See above products program	0.2		2	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	Input voltage from low to high		±0.2	±0.5	
Temperature drift(Vout)	Refer to recommended circuit			±0.03	%/°C
Ripple & 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

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_SP-2W & WRB_SP-2W series have been tested according to the following recommended testing circuit before leaving factory (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

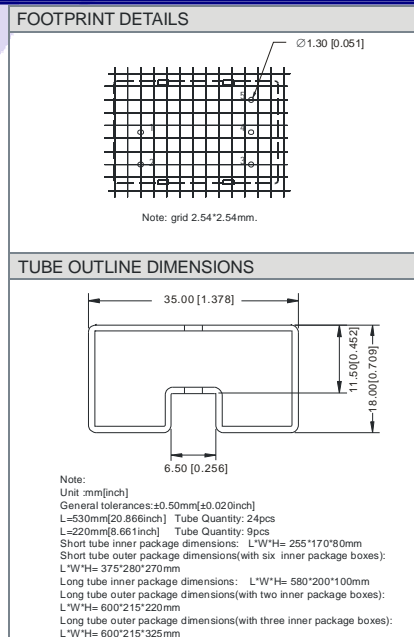
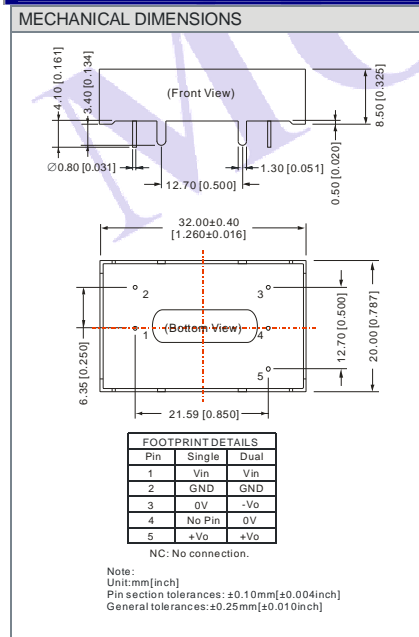
Cout: 10μF/100mA

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 (See figure 2), General: $I_p \leq 1.4 \cdot I_{in-max}$

4) No parallel connection or plug and play

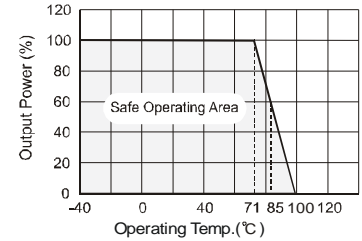
OUTLINE DIMENSIONS & PIN CONNECTIONS



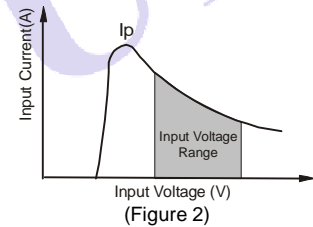
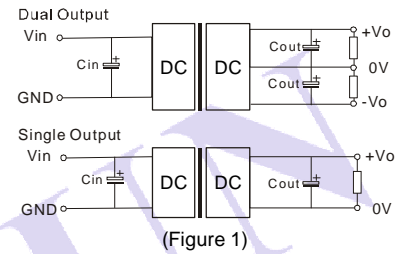
Note:

- The load shouldn't be less than 10%, otherwise ripple will increase dramatically.
- Operation under 10% load will not damage the converter; However, they may not meet all specification listed.
- All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- In this datasheet, all the test methods of indications are based on corporate standards.
- Only typical models listed, other models may be different, please contact our technical person for more details.

TYPICAL CHARACTERISTICS



RECOMMENDED CIRCUIT



Output External Capacitor Table(Table 1)

Single Vout (VDC)	Cout (μF)	Dual Vout (VDC)	Cout (μF)
5	1000	±5	680
12	470	±12	330
15	330	±15	220
24	220	-	-