

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

multi-country patent protection **RoHS**

FEATURES

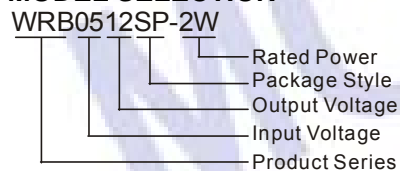
Wide (2:1) Input Range
Operating Temperature: -40°C to+85°C
1.5KVDC Isolation
Metal Shielding Package
No Heat Sink Required
Short Circuit Protection
Industry Standard Pin out
MTBF>1,000,000 hours
RoHS Compliance

APPLICATIONS

The WRB_SP-2W/ WRA_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



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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	70			
WRA0509SP-2W				±9	±111	±11	72			
WRA0512SP-2W				±12	±83	±8	74			
WRA0515SP-2W				±15	±66	±6	74			
WRB0503SP-2W				3.3	606	60	68			
WRB0505SP-2W				5	400	40	70			
WRB0509SP-2W				9	222	22	72			
WRB0512SP-2W				12	167	16	74			
WRB0515SP-2W				15	133	13	74			
WRB0524SP-2W				24	83	8	73			
WRA1205SP-2W				12	9-18	22	±5	±200	±20	77
WRA1209SP-2W							±9	±111	±11	79
WRA1212SP-2W	±12	±83	±8				81			
WRA1215SP-2W	±15	±66	±6				80			
WRB1203SP-2W	3.3	606	60				73			
WRB1205SP-2W	5	400	40				77			
WRB1209SP-2W	9	222	22				79			
WRB1212SP-2W	12	167	16				81			
WRB1215SP-2W	15	133	13				80			
WRB1224SP-2W	24	83	8				80			
WRA2405SP-2W	24	18-36	40				±5	±200	±20	77
WRA2409SP-2W							±9	±111	±11	80
WRA2412SP-2W				±12	±83	±8	81			
WRA2415SP-2W				±15	±66	±6	82			
WRB2403SP-2W				3.3	606	60	75			
WRB2405SP-2W				5	400	40	78			
WRB2409SP-2W				9	222	22	80			
WRB2412SP-2W				12	167	16	82			
WRB2415SP-2W				15	133	13	82			
WRB2424SP-2W				24	83	8	81			
WRA4805SP-2W				48	36-72	80	±5	±200	±20	76
WRA4809SP-2W							±9	±111	±11	80
WRA4812SP-2W	±12	±83	±8				81			
WRA4815SP-2W	±15	±66	±6				82			
WRB4803SP-2W	3.3	606	60				73			
WRB4805SP-2W	5	400	40				76			
WRB4809SP-2W	9	222	22				80			
WRB4812SP-2W	12	167	16				81			
WRB4815SP-2W	15	133	13				82			
WRB4824SP-2W	24	83	8				81			

* Input voltage over it may cause permanent damage to the device.

Note: Operation under 10% load will not damage the converter; However, they may not meet all specification listed.

ISOLATION SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Isolation voltage	Flash tested for 60 seconds	1500			VDC
Isolation resistance	Test at 500VDC	1000			MΩ
Isolation Capacitance	Input/Output		47		pF

OUTPUT SPECIFICATIONS

Item	Test conditions	Min	Typ	Max	Units
Output power	See above products program	0.2		2	W
Voltage accuracy	Refer to recommended circuit		±1	±3	%
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, nominal input voltage		80--550(PFM)		KHz

COMMON SPECIFICATIONS

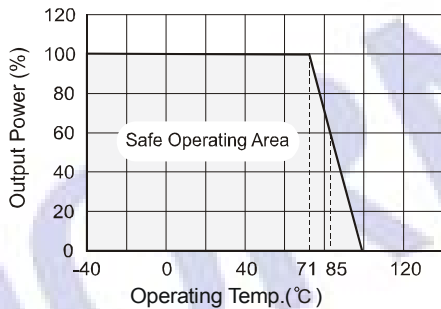
Item	Test Conditions	Min	Typ	Max	Units
Storage humidity				95	%
Operating temperature		-40		85	°C
Storage temperature		-55		125	
Lead temperature				300	
Temp. rise at full load	1.5mm from case for 10 seconds		15	35	
Cooling	Free air convection				
No-load Power			0.15		W
Short circuit protection	Short circuit protection	Continuous, Automatic Recovery			
Case material	Copper, Nickel Coated				
MTBF		1000			K Hours
Weigh			14		g

Note:

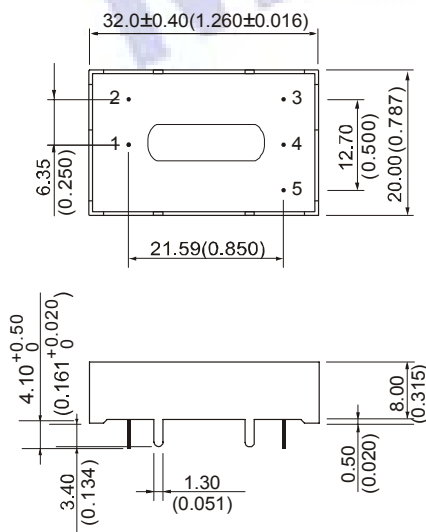
1.All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.

2.See below recommended circuits for more details.

TYPICAL CHARACTERISTICS



OUTLINE DIMENSIONS& PIN CONNECTIONS



First Angle Projection

FOOTPRINT DETAILS

Pin	Singles	Duals
1	V _{in}	V _{in}
2	GND	GND
3	0V	-V _o
4	No Pin	0V
5	+V _o	+V _o

Note:

Unit:mm(inch)

Pin diameter:0.80mm(0.031inch)

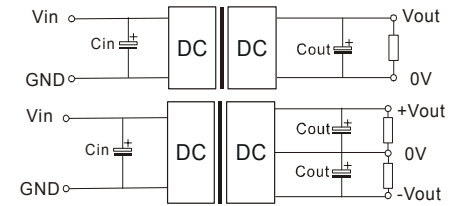
Pin tolerances:±0.05mm(±0.002inch)

General tolerances:±0.25mm(±0.010inch)

APPLICATION NOTE

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). This series should be tested under load.



(Figure 1)

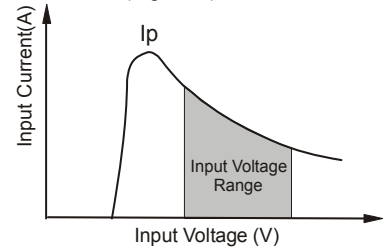
If you want to further decrease the input/output ripple, you can increase capacitance properly or choose capacitors with low ESR. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees (Table 1).

External Capacitor Table(Table 1)

Vin (VDC)	Cin (uF)	Single Vout (VDC)	Cout (uF)	Dual Vout (VDC)	Cout (uF)
5	100	3.3	1000	±5	470
12	100	5	1000	±9	220
24	10-47	9	470	±12	150
48	10-47	12	330	±15	120
-	-	15	220	-	-
-	-	24	100	-	-

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)



(Figure 2)

The products cannot be used in parallel and in plug and play.