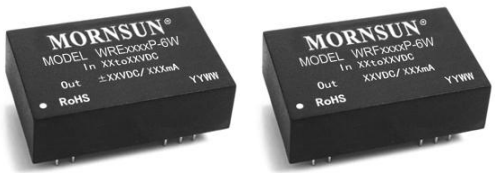
MORNSUN®

WRE_P-6W & WRF_P-6W Series

6W, 2:1 WIDE INPUT, ISOLATED & REGULATED DUAL/SINGLE OUTPUT DC-DC CONVERTER



Patent Protection **RoHS**

FEATURES

- Efficiency up to 86%
- Operating temperature: -40°C to +85°C
- 3KVDC input/output Isolation
- Short circuit protection (automatic recovery)
- Internal SMD construction
- No heat sink required
- Industry standard pinout
- MTBF>1,000,000 hours
- RoHS Compliance

APPLICATIONS

The WRE_P-6W & WRF_P-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≤3000VDC);
3) Where the regulation of the output voltage and the output ripple noise are demanded.

MODEL SELECTION

WRF2405P-6W

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

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PRODUCT PROGRAM

Part Number	Input			Output			Efficiency (%, Typ.)
	Voltage (VDC)			Voltage (VDC)	Current (mA)		
	Nominal	Range	Max.*		Max.	Min.	
WRE0505P-6W	5	4.5-9	11	±5	±600	±60	76
WRE0512P-6W				±12	±250	±25	80
WRE0515P-6W				±15	±200	±20	82
WRF0505P-6W				5	1200	120	76
WRF0512P-6W				12	500	50	80
WRF0515P-6W				15	400	40	82
WRE1205P-6W	12	9-18	20	±5	±600	±60	78
WRE1212P-6W				±12	±250	±25	82
WRE1215P-6W				±15	±200	±20	84
WRF1205P-6W				5	1200	120	78
WRF1212P-6W				12	500	50	82
WRF1215P-6W				15	400	40	84
WRE2405P-6W	24	18-36	40	±5	±600	±60	80
WRE2412P-6W				±12	±250	±25	84
WRE2415P-6W				±15	±200	±20	86
WRF2405P-6W				5	1200	120	80
WRF2412P-6W				12	500	50	84
WRF2415P-6W				15	400	40	86
WRE4805P-6W	48	36-72	80	±5	±600	±60	80
~~WRE4812P-6W~~				~~±12~~	~~±250~~	~~±25~~	~~84~~
WRE4815P-6W				±15	±200	±20	86
WRF4805P-6W				5	1200	120	80
WRF4812P-6W				12	500	50	84
~~WRF4815P-6W~~				~~15~~	~~400~~	~~40~~	~~86~~

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.

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			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		Plastic (UL94-V0)			
MTBF		1000			K hours
Weight			17		g

ISOLATION SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Units
Isolation voltage	Tested for 1 minute and 1mA max	3000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

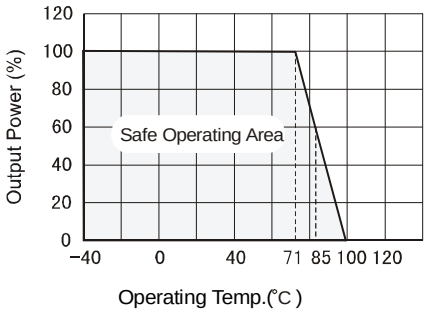
OUTPUT SPECIFICATIONS

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		±0.02		%/°C
Ripple**	20MHz Bandwidth		20	50	mVp-p
Noise**	20MHz Bandwidth		75	150	
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.

TYPICAL CHARECTERISTICS

Temperature Derating Graph



APPLICATION NOTE

1) Requirement 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 WRE_P-6W & WRF_P-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

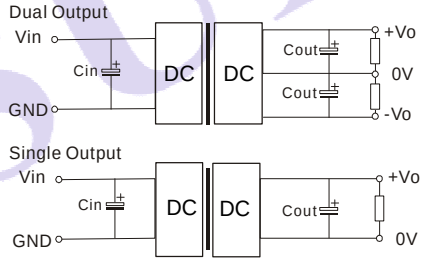
3) Input Current

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 (See figure 2), General:

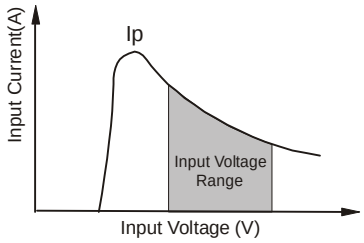
Ip ≤1.4*Iin-max

4) No parallel connection or plug and play

RECOMMENDED CIRCUIT



(Figure 1)

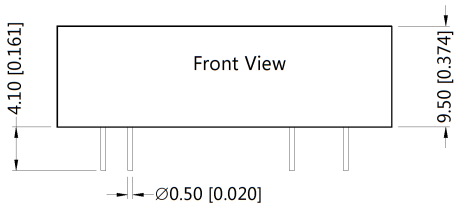


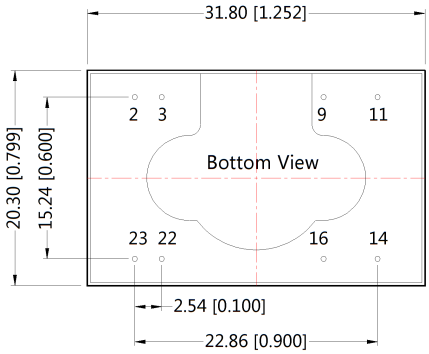
(Figure 2)

Output External Capacitor Table (Table 1)

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

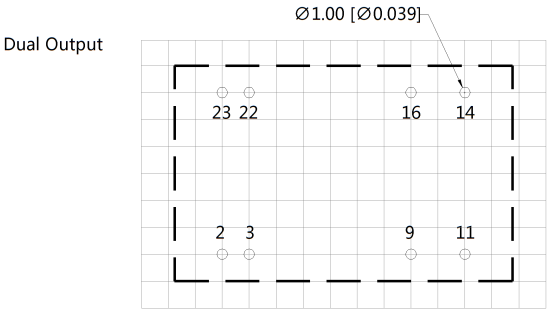
OUTLINE DIMENSIONS & PIN CONNECTIONS

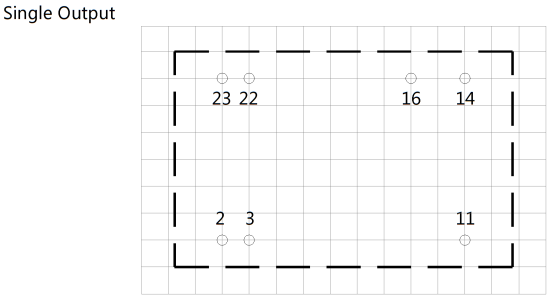




Note:
Unit :mm[inch]
Pin diameter tolerances :±0.10[±0.004]
General tolerances:±0.25[±0.010]

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.