MICRODC
Professional Power Module

WRA-YDV-3W&WRB-YDV-3W Series

3W, WIDE INPUT, ISOLATED&REGULATED DUAL/SINGLE OUTPUT DIP24 DC-DC CONVERTER

FEATURES

- Wide (2:1) input range
- Efficiency up to 82%
- Operating temperature: -40℃~ +85℃
- 1500VDC isolation
- Short circuit protection(Automatic recovery)
- Internal SMD construction
- No heat sink required
- No external component required
- UL94-V0 package
- Industry standard pinout
- MTBF>1,000,000 hours
- RoHS Compliance

MODEL SELECTION

WRA①24②05③Y④ DV⑤-3W⑥

①Product Series ②Input Voltage
③Output Voltage ④Wide (2:1) Input Range
⑤DIP24 V Layout ⑥Rated Power

APPLICATIONS

The WRA(B)-YDV-3W 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.

Part Number	Input			Output			Efficiency (%, Typ)	Certificate
	Voltage (VDC)			Voltage (VDC)	Current (mA)			
	Nominal	Range	Max.		Max.	Min.		
WRA0505YDV-3W	5	4.5-9	11	±5	±300	±30	68	
WRA0512YDV-3W	5	4.5-9	11	±12	±125	±12	72	
WRA0515YDV-3W	5	4.5-9	11	±15	±100	±10	73	
WRB0505YDV-3W	5	4.5-9	11	5	600	60	68	
WRB0509YDV-3W	5	4.5-9	11	9	333	33	70	
WRB0512YDV-3W	5	4.5-9	11	12	250	25	72	
WRB0515YDV-3W	5	4.5-9	11	15	200	20	73	
WRA1205YDV-3W	12	9-18	22	±5	±300	±30	76	
WRA1212YDV-3W	12	9-18	22	±12	±125	±12	79	
WRA1215YDV-3W	12	9-18	22	±15	±100	±10	80	
WRB1205YDV-3W	12	9-18	22	5	600	60	76	
WRB1209YDV-3W	12	9-18	22	9	333	33	78	
WRB1212YDV-3W	12	9-18	22	12	250	25	80	
WRB1215YDV-3W	12	9-18	22	15	200	20	81	
WRB1224YDV-3W	12	9-18	22	24	125	12	82	
WRA2405YDV-3W	24	18-36	40	±5	±300	±30	76	
WRA2412YDV-3W	24	18-36	40	±12	±125	±12	80	
WRA2415YDV-3W	24	18-36	40	±15	±100	±10	81	
WRB2403YDV-3W	24	18-36	40	3.3	909	90	74	UL
WRB2405YDV-3W	24	18-36	40	5	600	60	76	UL
WRB2409YDV-3W	24	18-36	40	9	333	33	78	UL
WRB2412YDV-3W	24	18-36	40	12	250	25	81	UL
WRB2415YDV-3W	24	18-36	40	15	200	20	80	UL
WRB2424YDV-3W	24	18-36	40	24	125	12	82	
WRA4805YDV-3W	48	36-72	80	±5	±300	±30	76	
WRA4812YDV-3W	48	36-72	80	±12	±125	±12	80	
WRA4815YDV-3W	48	36-72	80	±15	±100	±10	81	
WRB4803YDV-3W	48	36-72	80	3.3	909	90	74	
WRB4805YDV-3W	48	36-72	80	5	600	60	76	
WRB4809YDV-3W	48	36-72	80	9	333	33	78	
WRB4812YDV-3W	48	36-72	80	12	250	25	81	
WRB4815YDV-3W	48	36-72	80	15	200	20	80	
WRB4824YDV-3W	48	36-72	80	24	125	12	82	

Note: WRA_YDV-3W & WRB_YDV-3W series is Metal package style .

Absolute Maximum Ratings

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		80		pF

WRA-YDV-3W&WRB-YDV-3W Series

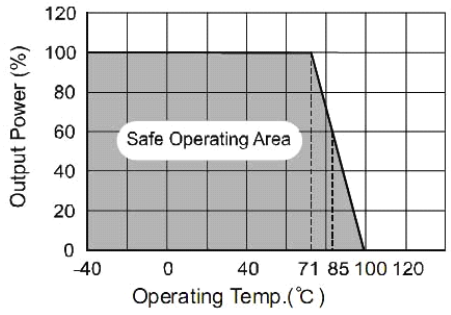
OUTPUT SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units
Output power	See below products program	0.3		3	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		±0.45	±1*	%
Line regulation	Input voltage from low to high		±0.2	±0.5	%
Temperature drift(Vout)	Refer to recommended circuit			±0.03	%/℃
Ripple & Noise**	20MHz Bandwidth		50	100	mVp-p
Switching frequency	100% load, nominal input voltage		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.

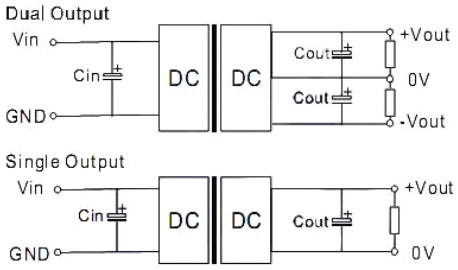
TYPICAL CHARACTERISTICS



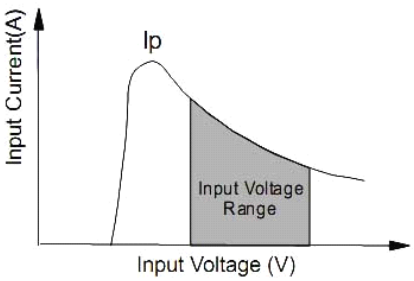
COMMON SPECIFICATIONS

Item	Test conditions	Min.	Typ.	Max.	Units
Storage humidity				95	%
Operating temperature		-40		85	℃
Storage temperature		-55		125	℃
Temp. rise at full load			15		℃
Lead temperature	1.5mm from case for 10 seconds			300	℃
No-load Power consumption			0.2		W
Cooling	Free air convection				
Short circuit protection	Continuous, Automatic Recovery				
Case material	D: Plastic (UL94-V0); MD: Steel, Nickel Coated				
MTBF		1000			K hours
Weight			15		g

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
9	680	±9	470
12	470	±12	330
15	330	±15	220
24	220	±24	100

APPLICATION NOTE

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.

Recommended Circuit

All the WRA_YDV-3W & WRB_YDV-3W 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). Generally: If you want to use the products in high EMI, please choose our metal packaged products (WRA_YDV-3W & WRB_YDV-3W). General:

Cin: 5V&12V 100μF
24V&48V 10μF-47μF

Cout: 10μF/100mA

Input Current

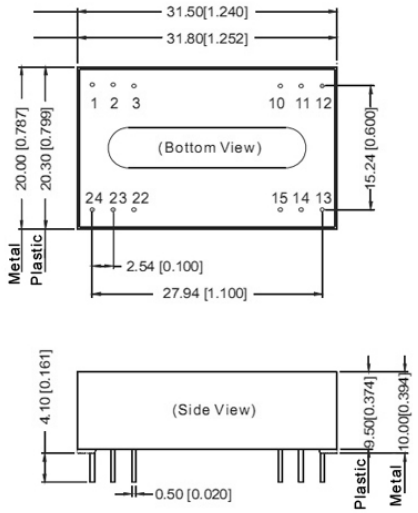
When it is used in unregulated power supply, be sure that the fluctuating range of the power supply and the rippled voltage do not exceed the module standard. Input current of power supply should afford the startup current of this kind of DC/DC module (See figure 2), General:

Ip ≤ 1.4*Iin-max

No parallel connection or plug and play

OUTLINE DIMENSIONS & FOOTPRINT DETAILS

MECHANICAL DIMENSIONS



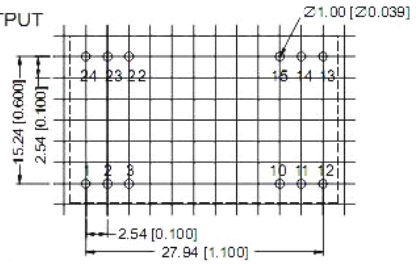
Note:
Unit:mm[inch]
Pin diameter tolerances:±0.10mm[±0.004inch]
General tolerances:±0.25mm[±0.010inch]

FOOTPRINT DETAILS		
Pin	Single	Dual
1,24	Vin	Vin
2,23	No Pin	-Vo
3,22	No Pin	0V
10,15	0V	0V
11,14	+Vo	+Vo
12,13	GND	GND

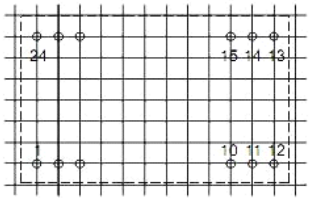
NC:No connection

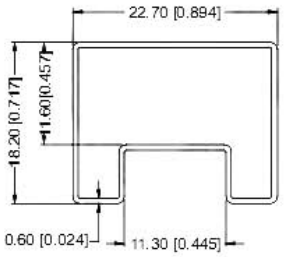
RECOMMENDED FOOTPRINT

DUAL OUTPUT



SINGLE OUTPUT





Note:
Unit :mm[inch]
General tolerances: ±0.50mm[±0.020inch]
L=530mm[20.866inch] Tube Quantity: 15pcs
L=220mm[8.661inch] Tube Quantity: 6pcs

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℃, 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.

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RoHS COMPLIANT INFORMATION

This series is compatible with RoHS soldering systems with a peak wave solder temperature of 300°C for 10 seconds. The pin termination finish on the SIP package type is Tin Plate, Hot Dipped over Matte Tin with Nickel Preplate. The DIP types are Matte Tin over Nickel Preplate. Both types in this series are backward compatible with Sn/Pb soldering systems.

REACH COMPLIANT INFORMATION

This series has proven that this product does not contain harmful chemicals, it also has harmful chemical substances through the registration, inspection and approval.