

Luoding Ruilvte Electronic Technology Co., Ltd.

WRB****S-1WR2 Series

DC-DC Power Supply Module/1500V Isolation
Wide input voltage range/Regulated single output

Product features

2:1 wide input voltage range
Short circuit and overcurrent protection:
resettable
Isolation Voltage: 1500Vdc isolation
Operating Temperature: -45°C-85°C
No additional components required
Stable performance, high reliability,
MTBF≥1 million hours7
Metal packaging, six-sided shielding
Compliant with the RoHS Directive

Module selection guide

Model number	Input		Output			Conversion efficiency (%)
	Nominal voltage (V)	Voltage range (V)	Rated voltage (V)	Minimum current (A)	Maximum current (A)	
WRB1203S-1WR2	12	9-18	3.3	30	300	80
WRB1205S-1WR2			5	20	200	83
WRB1212S-1WR2			12	8	84	83
WRB1215S-1WR2			15	6	66	84
WRB1224S-1WR2			24	4	42	85
WRB2403S-1WR2	24	18-36	3.3	30	300	80
WRB2405S-1WR2			5	20	200	83
WRB2412S-1WR2			12	8	84	83
WRB2415S-1WR2			15	6	66	84
WRB1224S-1WR2			24	4	42	85
WRB4803S-1WR2	48	36-72	3.3	30	300	80
WRB4805S-1WR2			5	20	200	83
WRB4812S-1WR2			12	8	84	83
WRB4815S-1WR2			15	6	66	84
WRB1224S-1WR2			24	4	42	85
WRB****S-1WR2	* Tailored model based on client needs. *					

Input characteristics

	Item	Test conditions	Minimum value	Typical value	Maximum value	Unit
Input specifications	Control pin (Ctrl)	When the module is enabled, Ctrl end suspended or high resistance				Vdc
		When the module is disabled, Connect the high level (relative to the input ground) to make the current flowing into the Ctrl terminal 5-10mA.			12	
	Hot swap	Non hot-swap				

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General characteristics

Switching frequency	300KHz	Nominal input voltage, 100% load
Output short-circuit duration	Durable, resettable	
Casing's temperature rise during operation	35°C (Typ.)	
Temperature coefficient	0.03%/°C	100% full load
Pin soldering temperature	300°C	Soldering time≤3s
Isolation voltage (input and output)	1500VDC	Test time 1 minute, leakage current less than 1mA.
Insulation resistance	1000MΩ	Insulation voltage: 500V
Isolation capacitor	100pF(Typ.)	Input/Output 100KHz/V
No-load power consumption	500mW (Typ.)	
Operating temperature	-40~+85°C	Operating ambient temperature
Storage temperature	-55~+125°C	
Storage humidity	<95%	Non-condensing
Cooling method	Natural air cooling	
Weight	15g	Standard

Input characteristics

Input voltage (Vdc)		Maximum value (Vdc)	No-load current	*The input voltage must not exceed this value, otherwise it may cause permanent damage to the module.
2:1	4.5-9	12	35	
	9-18	20	25	
	18-36	40	15	
	36-72	80	5	
	72-140	110	160	

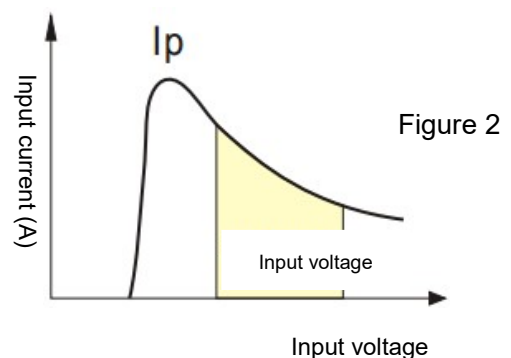
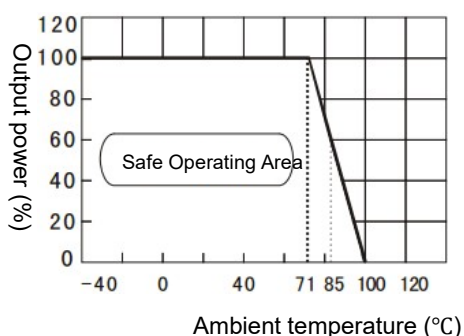
Output characteristics

Item	Test conditions	Typical value	Maximum value	
Linear voltage regulation rate	From the lowest to the highest input voltage	<0.2%	<0.5%	
Load regulation	10% to 100% load	<0.5%	<1.0%	
Output voltage accuracy	Specified input range and load	±1%	±3%	
Overcurrent protection	Full voltage input range	≥ 1.5 times the rated output current		
Ripple and noise	20MHz bandwidth	3.3V/5V/12V/15V	50mVp-p	100mVp-p
		24V	100mVp-p	150mVp-p

Unless otherwise specified, all parameters are tested under nominal input voltage, resistive load, and at room temperature of 25°C.

Curves for typical characteristics

Temperature Curve



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Caution

1. Recommended circuit: If further reduction of input-output ripple is required, external capacitors Cin1, Cin2, S, and Cout can be appropriately increased or capacitors with lower series equivalent impedance can be selected. S is used to reduce ripple. If the ripple already meets the requirements, there is no need to add S again. But a suitable filtering capacitor value should be selected, as if the capacitor is too large, it may cause startup problems. For each output, ensure safe and reliable operation

Under the given conditions, the maximum capacitance of the filtering capacitor must be smaller than the maximum capacitive load (Figure 1) .

2. Input current: When using an unstable power supply, please ensure that the power supply's fluctuation range and ripple voltage are within the module's input requirements. The input current of the power source must be sufficient to accommodate the DC/DC module's instantaneous start-up current I_p , which is approximately 1.4 times the average input current, i.e., $I_p \leq 1.4 * I_{in-max}$.

3. Load requirements: The minimum load should be no less than 10%. Otherwise, the output ripple will increase rapidly. If the product operates below the minimum required load, the module will not be damaged, but the performance specified in this datasheet cannot be guaranteed.

4. This product cannot be used in parallel and does not support hot swapping.

Recommended circuit for basic application

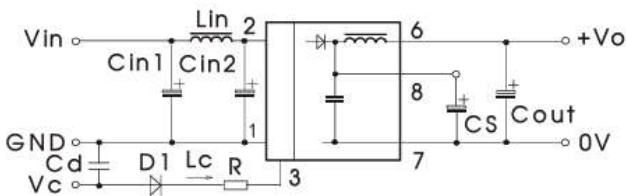


Figure 1

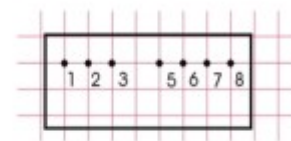
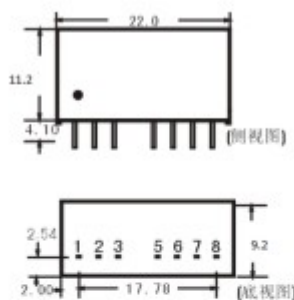
Maximum Capacitive Load

Input voltage	5VDC&12VDC	24VDC&48VDC
Cin1	100 μ F	10 μ F
Cin2	47 μ F	1 μ F
Lin	4.7 μ H-12 μ H	
Cs	10 μ F-22 μ F	
Cout	100 μ F(Typ.)	
Lout	2.2 μ H-10 μ H	
Cd	47nF/100V	

Grid: 2.54*2.54mm

Dimensions and pinout

Recommended PCB layout



(Unit: mm)

(Tolerance: ± 0.25)

引脚功能表:

GND	Vin	CTRL	NC	+VO	OV	CS
1	2	3	5	6	7	8

单位: mm

端子长度偏差: 0.2mm

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