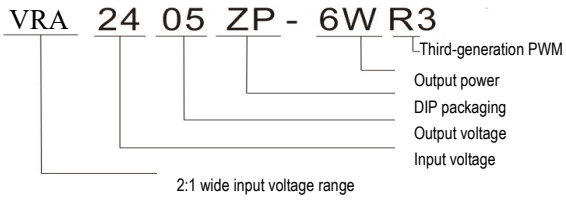
Luoding Ruilvte Electronic Technology Co., Ltd.

VRA****ZP-6WR3 Series

DC-DC Power Supply Module/1500V Isolation

Wide input voltage range/Regulated Dual Output

Numbering



Product features

2:1 wide input voltage range

Short circuit and overcurrent protection: resettable

Isolation Voltage: 1500Vdc isolation

Operating Temperature: -45℃-85℃

No additional components required

Stable performance, high reliability, MTBF≥1 million hours

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)	
VRA2403ZP-6WR3	24	18-36	±3. 3	±90	±900	80
VRA2405ZP-6WR3			±5	±60	±600	83
VRA2409ZP-6WR3			±9	±33	±330	83
VRA2412ZP-6WR3			±12	±25	±250	84
VRA2415ZP-6WR3			±15	±20	±200	84
VRA2424ZP-6WR3			±24	±12	±125	85
VRA2430ZP-6WR3			±30	±10	±100	85
VRA4803ZP-6WR3	48	36-72	±3. 3	±90	±900	80
VRA4805ZP-6WR3			±5	±60	±600	83
VRA4809ZP-6WR3			±9	±33	±330	83
VRA4812ZP-6WR3			±12	±25	±250	84
VRA4815ZP-6WR3			±15	±20	±200	84
VRA4824ZP-6WR3			±24	±125	±125	85

Input characteristics

	Item	Test conditions	Minimum value	Typical value	Maximum value	Unit
Input specifications	Maximum input voltage	24Vdc input (18-36Vdc)			40	Vdc
		48Vdc input (36-72Vdc)			80	
	Control pin (Ctrl)	When the module is enabled, Ctrl is left floating.				
		When the module is disabled, Ctrl is connected to low level.			1.2	
	Hot swap	Non hot-swap				

We reserve the right to change the above parameters. Final product specifications will be according to the specific product datasheet provided by our company.

General characteristics

Switching frequency	300KHz	Nominal input voltage, 100% load
Output short-circuit dVRAtion	DVRAble, resettable	
Casing's temperature rise during operation	35°C (Typ.)	
Temperature coefficient	0.03%/℃	100% full load
Pin soldering temperature	300℃	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℃	Operating ambient temperature
Storage temperature	-55～+125℃	
Storage humidity	<95%	Non-condensing
Cooling method	NatVRAl air cooling	
Weight	15g	Standard

Input characteristics

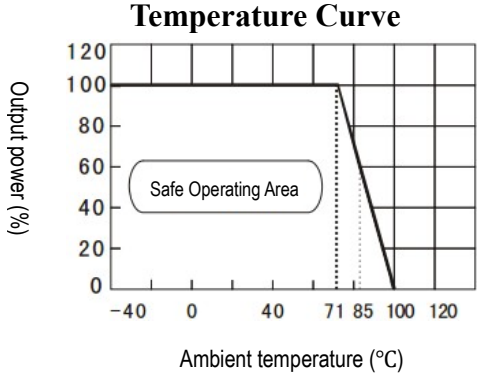
Input voltage (Vdc)		Maximum value (Vdc)	No-load current	
2:1				*The input voltage must not exceed this value, otherwise it may cause permanent damage to the module.
	18-36	40	10	
	36-72	80	5	

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 accVRAcy	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



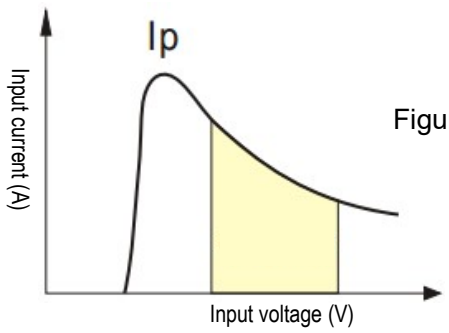


Figure 2

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Caution

1. Recommended circuit: If input and output ripple needs further reduction, connect an 'LC' filter network at the input and output ends with appropriate filter capacitors. It is recommended to use ceramic capacitors or high-frequency low-impedance electrolytic capacitors. Using tantalum capacitors may cause module damage. Excessive capacitance and low ESR values may cause instability in module operation, or lower current limit and output voltage. The recommended value for output capacitance is 220uF/A (the current here is the rated output current). For each output, the maximum capacitive load value, ensuring safe and reliable operating conditions, can be found in the Maximum Capacitive Load Value Table.
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 Ip (Figure 2), which is approximately 1.4 times the average input current, i.e., Ip ≤ 1.4 * Iin-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.

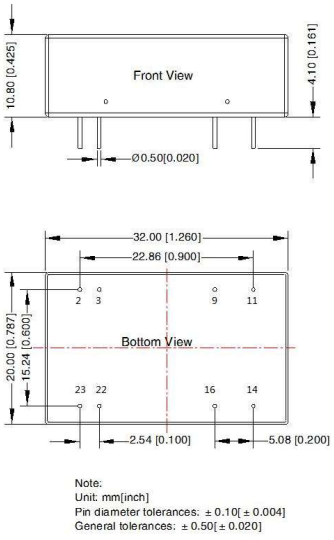
Recommended circuit for basic application

Figure 1

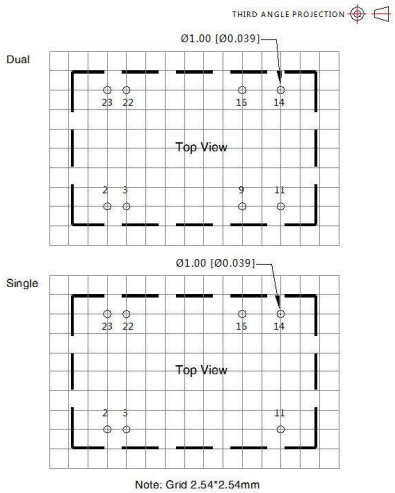
Maximum Capacitive Load

Single output (Vdc)	External capacitor	Dual output (Vdc)	External capacitor
3.3	2200	±5	680
5	1000	±9	470
12	470	±12	330
15	330	±15	220
24	220	±24	100

Dimensions and pinout



Recommended PCB layout



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: Pin to be isolated from circuit

