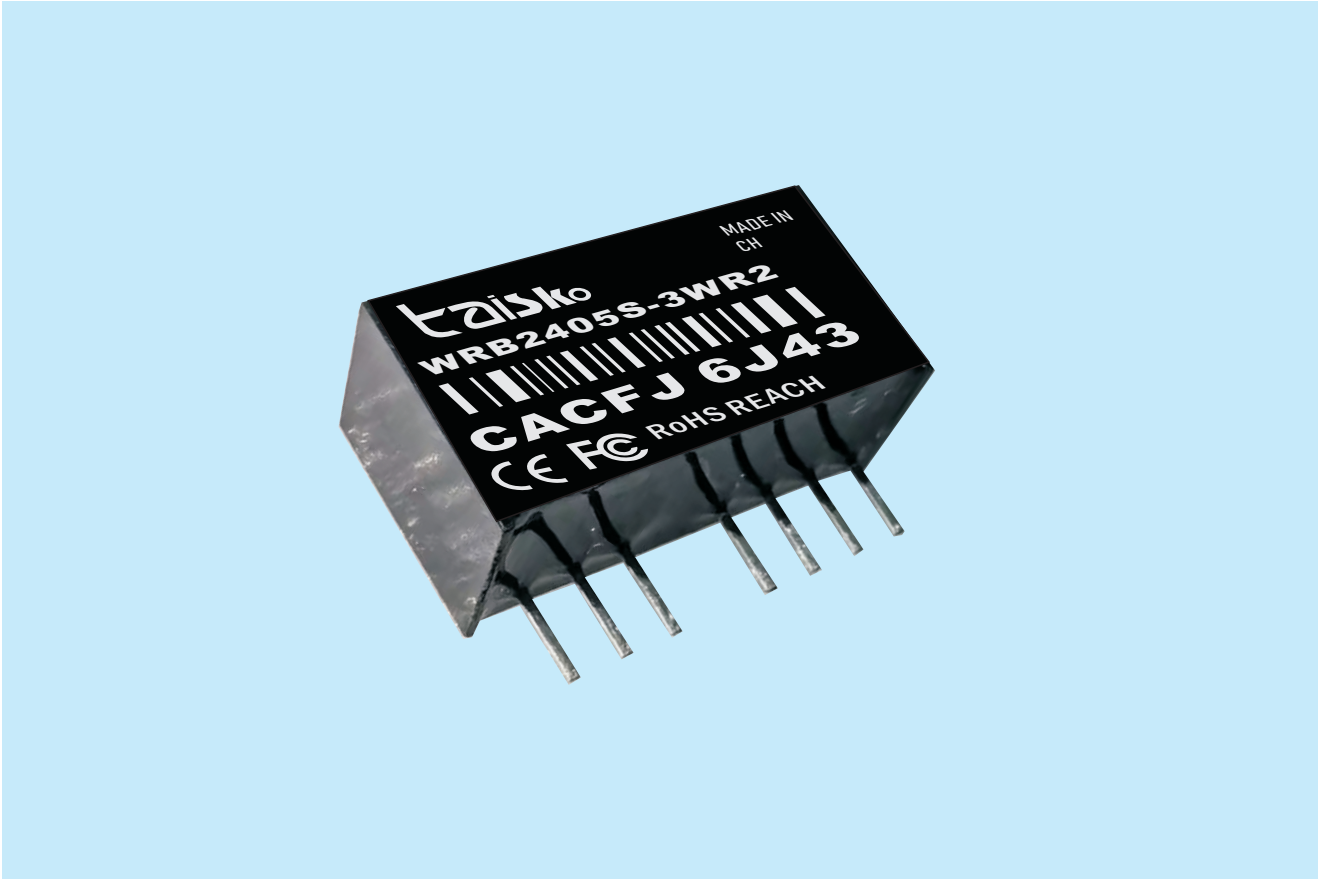
URBXXXXS-3WR2

Medical electric equipment | Power Factor Correction | World wide | Safety Approvals | EMI | Inrush current limiting | OCP | OVP | Remote ON/OFF | Parallel Operation | 1U

URB-series



Feature

DC-DC converters
Ideal for semiconductor,
analytical, medical,
and detector applications
Accuracy, reliability and stability
are critical for high voltage DC-DC
applications. manufacturers, with
over 20 years of experience providing
accurate and reliable compact solutions.
applications – allowing us to maximize
functionality in a compact environment

Safety agency approval

ENI 55032:2015/A1:2020
EN IEC 62368-1:2020+A11:2020
IEC 62321-1:2013IEC 62321-2:2021IEC 62321-3-1:2013,

Up to 5-year warranty (Refer to Instruction Manual)

CE FCC marking

Low Voltage Directive
RoHS Directive

ROHS REACH marking

Electrical Equipment Safety Regulations
RoHS Regulations

EMI

- PCA300F, PCA600F
  Complies with FCC-B, CISPR32-B, EN55011-B, EN55032-B, VCCI-B
- PCA1000F, PCA1500F
  Complies with FCC-A, CISPR32-A, EN55011-A, EN55032-A, VCCI-A

EMS Compliance : EN61204-3, EN61000-6-2

IEC60601-1-2 (2014), EN60601-1-2 (2015)

EN61000-4-2
EN61000-4-3
EN61000-4-4
EN61000-4-5
EN61000-4-6
EN61000-4-8
EN61000-4-11

3W，Ultra wide voltage input, isolated and stabilized positive and negative dual/single output ,DC/DC module power supply

Ultra small SIP-8 package

Ultra wide input voltage range: 2:1

Working temperature range: -40 ℃ to+85 ℃

Isolation voltage 1500VDC

Low ripple noise

Short circuit protection (self recovery)

Idle power consumption as low as 0.12W

Input undervoltage protection, output short circuit and overcurrent protection

The WRB_S-3WR2 and WRA_S-3WR2 series products are isolated 3WDC-DC products with 2:1 input and conventional voltage output.This product is a small volume SIP-8 plastic pin package with high efficiency, meeting the working temperature range of -40 ℃ to+85 ℃, and has remote control and sustainable short-circuit protection functions.The smaller size and excellent cost design make this converter an ideal solution for communication equipment, instrumentation, and industrial electronics applications.

Product Selection Table

authentication	PRODUCT MODEL①	Input voltage range (Vdc)	Output voltage/current		Ripple and noise	Efficiency @ Full Load	Maximum capacitive load
		Nominal value② (Range value)	Output voltage（Vdc）	output current（mA） (Max.Min.)	fully loaded（mVp-p） Typ./Max.	% (Min./ Typ.)	uF
	WRB0503S-3WR2	5.0 (4.5-9.0)	3.3	600	50/100	70/75	2200
	WRB0505S-3WR2		5	600	50/100	72/75	2200
	WRB0509S-3WR2		9	333	50/100	72/78	680
	WRB0512S-3WR2		12	250	50/100	72/78	680
	WRB0515S-3WR2		15	200	50/100	72/78	470
	WRB0524S-3WR2		24	125	50/100	72/78	330
	WRA0503S-3WR2		±3.3	±300	50/100	70/76	2200
	WRA0505S-3WR2		±5	±300	50/100	72/78	2200
	WRA0509S-3WR2		±9	±167	50/100	72/78	680
	WRA0512S-3WR2		±12	±125	50/100	72/78	680
	WRA0515S-3WR2		±15	±100	50/100	72/78	470
	WRA0524S-3WR2		±24	±63	50/100	72/78	330

	WRB1203S-3WR2	12.0 (9.0-18.0)	3.3	600	50/100	70/74	2200
	WRB1205S-3WR2		5	600	50/100	76/80	2200
	WRB1209S-3WR2		9	333	50/100	76/80	680
	WRB1212S-3WR2		12	250	50/100	76/80	680
	WRB1215S-3WR2		15	200	50/100	76/80	470
	WRB1224S-3WR2		24	125	50/100	76/80	330
	WRA1203S-3WR2		±3.3	±300	50/100	70/74	2200
	WRA1205S-3WR2		±5	±300	50/100	76/80	2200
	WRA1209S-3WR2		±9	±167	50/100	76/80	680
	WRA1212S-3WR2		±12	±125	50/100	76/80	680
	WRA1215S-3WR2		±15	±100	50/100	76/80	470
	WRA1224S-3WR2		±24	±63	50/100	76/80	330
	WRB2403S-3WR2	24.0 (18.0-36.0)	3.3	600	50/100	70/74	2200
	WRB2405S-3WR2		5	600	50/100	76/80	2200
	WRB2409S-3WR2		9	333	50/100	76/80	680
	WRB2412S-3WR2		12	250	50/100	76/80	680
	WRB2415S-3WR2		15	200	50/100	76/80	470
	WRB2424S-3WR2		24	125	50/100	76/80	330
	WRA2403S-3WR2		±3.3	±300	50/100	70/74	1000
	WRA2405S-3WR2		±5	±300	50/100	76/80	1000
	WRA2409S-3WR2		±9	±167	50/100	76/80	1000
	WRA2412S-3WR2		±12	±125	50/100	76/80	470
	WRA2415S-3WR2		±15	±100	50/100	76/80	220
	WRA2424S-3WR2		±24	±63	50/100	76/80	100
	WRB4803S-3WR2	48.0 (36.0-72.0)	3.3	600	50/100	70/74	2200
	WRB4805S-3WR2		5	600	50/100	76/80	2200
	WRB4809S-3WR2		9	333	50/100	76/80	680
	WRB4812S-3WR2		12	250	50/100	76/80	680
	WRB4815S-3WR2		15	200	50/100	76/80	470
	WRB4824S-3WR2		24	125	50/100	76/80	330
	WRA4803S-3WR2		±3.3	±300	50/100	70/74	1000
	WRA4805S-3WR2		±5	±300	50/100	76/80	1000
	WRA4809S-3WR2		±9	±167	50/100	76/80	1000
	WRA4812S-3WR2		±12	±125	50/100	76/80	470
	WRA4815S-3WR2		±15	±100	50/100	76/80	220
	WRA4824S-3WR2		±24	±63	50/100	76/80	100

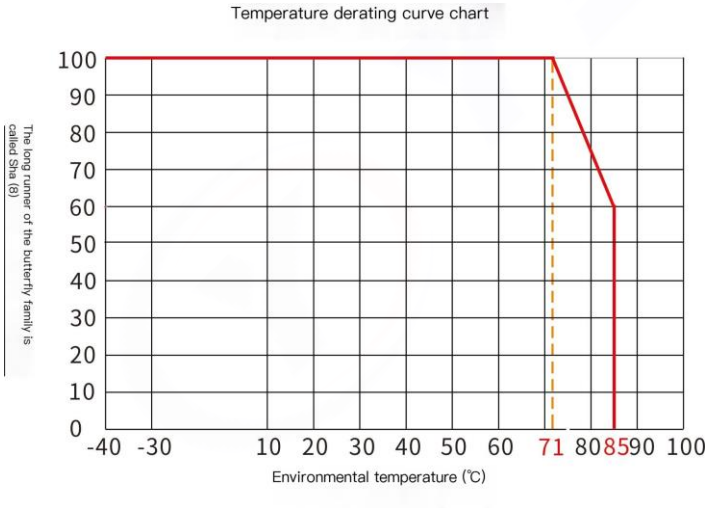
Note: 1. Due to limited space, the above is only a typical product list. If you need products outside the list, please contact our sales department.

2. The maximum capacitive load refers to the maximum capacitive load that can be connected to+Vo or - Vo. If it exceeds this value, the product will not be able to start normally.

General characteristics

project	working conditions	Min.	Typ.	Max.	unit
insulation voltage	Input **output,** test time 1 minute, leakage current less than 1mA	1500	--	--	VDC
insulation resistance	Input **output,** insulation voltage 500VDC	1000	--	--	MΩ
Isolation capacitor	Input **output,** 100KHz/0.1V	--	1000	--	pF
operation temperature	Use reference temperature derating curve chart	-40	--	+85	℃
storage temperature		-40	--	+125	
Temperature rise of the casing during operation		--	25	--	
Storage Humidity	No condensation	5	--	95	%RH
Pin soldering temperature resistance	Welding point distance from shell 1.5mm, 10 seconds	--	--	+300	℃
switching frequency	Full load, nominal voltage input	--	300	--	KHz
vibrate		10-55Hz, 10G, 30 Min. along X, Y and			
Housing material		Black flame retardant and heat-resistant plastic (UL94 V-0)			
mean time between failures	MIL-HDBK-217F@25℃	1000	--	--	KHrs

Product characteristic curve chart



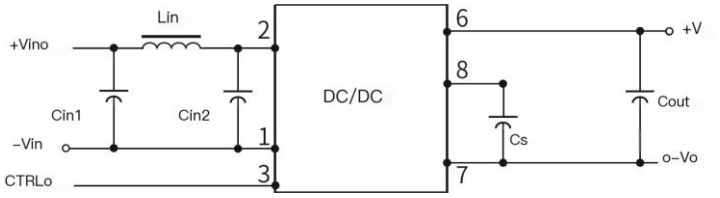
Typical Application Reference Circuit (Recommended Parameters)

1. Typical application circuit:

All DC/DC converters in this series are tested according to the recommended test circuit (Figure 2) before leaving the factory.

If further reduction of input-output ripple is required, external capacitors Cin1, Cs, and Cout can be appropriately increased or capacitors with lower series equivalent impedance can be selected. Cs is used to reduce ripple. If the ripple already meets the requirements, there is no need to add Cs. However, appropriate filtering capacitor values should be selected. If the capacitor is too large, it may cause startup problems.For each output, under the condition of ensuring safe and reliable operation, the maximum capacitance value of its filtering capacitor must be smaller than the maximum capacitive load.

one way



Dual path diagram 1

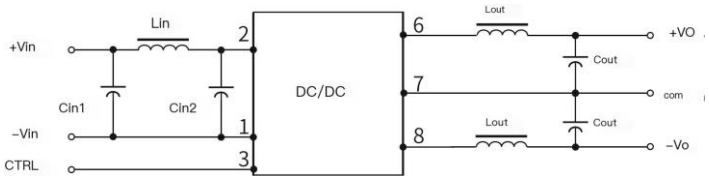


Figure 2

2. Typical EMC application circuits

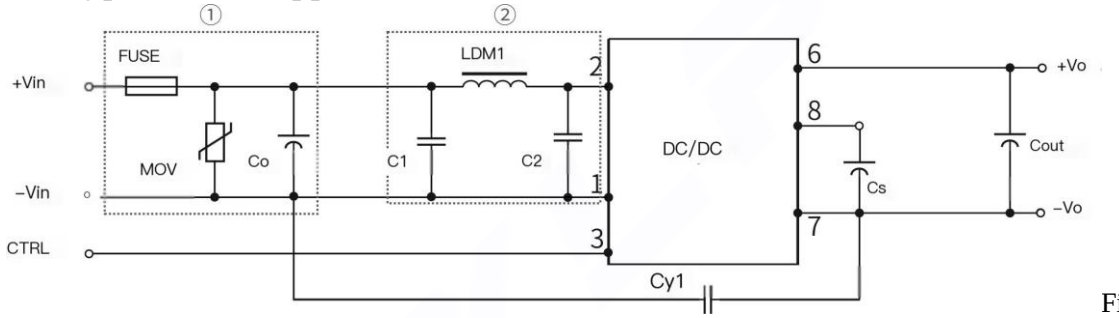


Figure 3

Device code	5V/12V/24V input products	48V input product
F M SE fuse	Slow melting fuse, selected based on the actual input current of the customer	
MOV varistor	14D560K	14D820K
LDM1 inductor	4.7 uH	12 uH
Co electrolytic capacitor	220μF/50V	100μF/100V
C1 ceramic capacitor	4.7μF/50V	4.7μF/100V
C2 ceramic capacitor	4.7μF/50V	4.7μF/100V
Cout ceramic capacitor	Refer to Cout parameters in Figure 2	Refer to Cout parameters in Figure 2
CY1 safety capacitor	1nF/2KV	1nF/2KV

Note:

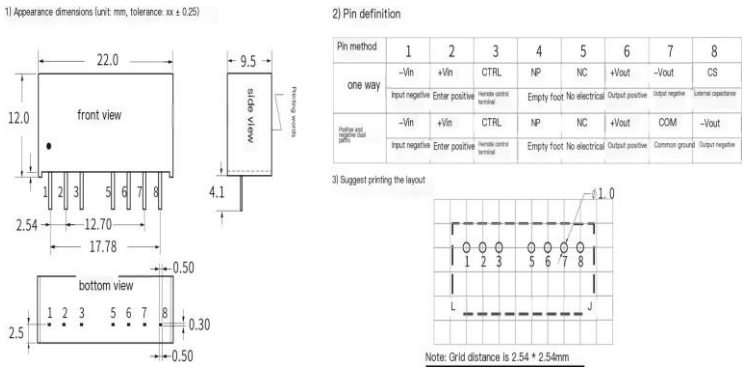
In Figure 3, the①Partially used for EMS testing;auxiliary word for ordinal numbers②Partially used for EMI filtering, can be selected according to requirements;

5. Output load requirements

When in use, the minimum output load of the module cannot be less than 5% of the rated load.To meet the performance indicators of this technical manual, please parallel a 5% dummy load at the output end. The dummy load is usually a resistor, please note that the resistor needs to be downgraded for use.

Package size and pin function diagram

INPUT VOLTAGE	5V/12V/24 VDC	48 V
Cin1	10uF-22uF	10uF-22uF
Cin2	10uF-22uF	10uF-22uF
Lin	4.7uH-12uH	10uH-22uH
Cs	10uF-22uF	10uF-22uF
Cout	100uF(Typ.)	100uF(Typ.)
Lout	2.2uH-10uH	2.2uH-10uH



*Attention: If the pin definitions of the power module do not match the selection manual, the markings on the physical label should prevail.

Package description

Packaging code	L x W x H	
WRB/WRA	22.0 x 9.5 x 12.0 mm	0.866 ×0.374 ×0.472inch

Test application reference

Ripple&Noise Test: (Twisted Pair Method 20MHz Bandwidth) Test Method:

1. Ripple noise is generated by connecting a 12 # twisted pair cable and setting the oscilloscope bandwidth to 20MHz, 100M bandwidth probe, and parallel 0.1uF polypropylene capacitor and 4.7uF high-frequency low resistance electrolytic capacitor, oscilloscope sampling uses Sample sampling mode.

2. Schematic diagram of output ripple noise test:

Connect the power input terminal to the input power supply, and connect the power output to the electronic load through the fixture board. Use a 30cm ± 2cm sampling line to directly sample from the power output port for testing.The power line selects insulated wires with corresponding wire diameters based on the magnitude of the output current.

