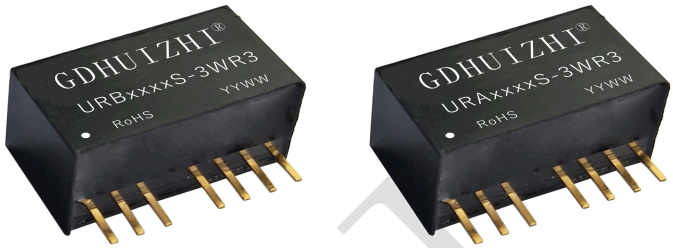
Typical Characteristics

- Ultra-small SIP-8 package
- Wide input range：4:1
- Working temperature：-40℃~+85℃
- Isolation voltage: 1500VDC
- Low ripple and noise
- Short-circuit protection (self-recovering)
- Low no-load power consumption: 0.12W
- Input undervoltage protection; output short-circuit and overcurrent protection

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



RoHS

URB_S-3WR3 and URB_S-3WR3 series products are 4:1 input, standard voltage output isolated 3W DC-DC products. This product comes in a compact SIP-8 plastic pin package, with high efficiency, suitable for operating temperatures from -40℃ to 85℃, and features remote control and continuous short-circuit protection. The small size and excellent cost design make this converter an ideal solution for communication equipment, instrumentation, and industrial electronics applications.

Model Number Description

xx x xx xx S - 3W R3

- R3 — Suffix (3rd-generation product)
- 3W — Output power (3W)
- S — Package dimension code (22 x 9.5 x 12.5 mm)
- xx — Output voltage (voltage VDC)
- xx — Input voltage (rated voltage VDC)
- x — No. of output channels (B: single, A: dual)
- xx — Product series (UR indicates 4:1 input, VR indicates 2:1 input)

Product selection table

Certification	Model number	Input voltage range (Vdc)	Output Voltage/Current		Ripple and Noise	Efficiency@ Full load	Maximum capacitive load
		Rated② (range)	Output V (Vdc)	Output I (mA) (Max. Min.)	Full load (mVp-p) (Typ. /Max	% (Min. / Typ.)	μF
	URB2403S-3WR3	24.0 (9.0~36.0)	3.3	600	50/100	70/78	2200
	URB2405S-3WR3		5	600	50/100	76/80	2200
	URB2409S-3WR3		9	333	50/100	78/80	680
	URB2412S-3WR3		12	250	50/100	78/80	680
	URB2415S-3WR3		15	200	50/100	78/80	470
	URB2424S-3WR3		24	125	50/100	79/81	330

	URA2403S-3WR3	24.0 (9.0~36.0)	±3.3	±300	50/100	70/78	1000
	URA2405S-3WR3		±5	±300	50/100	76/80	1000
	URA2409S-3WR3		±9	±167	50/100	78/80	1000
	URA2412S-3WR3		±12	±125	50/100	78/80	470
	URA2415S-3WR3		±15	±100	50/100	78/80	220
	URA2424S-3WR3		±24	±63	50/100	79/81	100
	URB4803S-3WR3	48.0 (18.0~75.0)	3.3	600	50/100	69/71	2200
	URB4805S-3WR3		5	600	50/100	70/73	2200
	URB4809S-3WR3		9	333	50/100	73/75	680
	URB4812S-3WR3		12	250	50/100	73/75	680
	URB4815S-3WR3		15	200	50/100	73/75	470
	URB4824S-3WR3		24	125	50/100	74/76	330
	URA4803S-3WR3	48.0 (18.0~75.0)	±3.3	±300	50/100	69/71	1000
	URA4805S-3WR3		±5	±300	50/100	70/73	1000
	URA4809S-3WR3		±9	±167	50/100	73/75	1000
	URA4812S-3WR3		±12	±125	50/100	73/75	470
	URA4815S-3WR3		±15	±100	50/100	73/75	220
	URA4824S-3WR3		±24	±63	50/100	74/76	100

Note: 1. Due to space limitations, the above is only a list of representative products. For products not included in this list, please contact our Sales Department.

2. The maximum capacitive load indicates the maximum capacitive load that can be connected to +Vo or -Vo. If this value is exceeded, the product will not start properly.

Test Conditions: Unless otherwise specified, all parameter measurements were taken at the nominal input voltage, with a purely resistive rated load, and at an ambient temperature of 25℃.

Input characteristics

Items	Working conditions	Min.	Typ.	Max.	Unit
Input Current (Full Load/No Load)	3.3VDC output	--	160/5	176/12	mA
	5VDC output	--	164/5	156/12	
	Others	--	156/10	160/16	
Reflected ripple current		--	50	--	
Impulse voltage		-0.7	--	50	VDC
Startup voltage		-	-	9	
Input undervoltage protection		5.5	6.5	--	
Input filter type		Capacitor filtering			
Hot swap	-	Not supported			
Remote control (Ctrl)*	Module on	Ctrl floating or high level（ ＞ 0.8V）			
	Module off	Ctrl connect a low level（＜ 0.6VDC）			

Note: *For a description of the remote control (Ctrl) function, please refer to the "Typical Application Reference Circuits" section of this manual.

Output characteristics

Items	Working and test conditions		Min.	Typ.	Max.	Unit
Output voltage accuracy	5%~100% load, input voltage range	3.3V/5V output	--	±3.0	±5.0	%
		Others	--	±1.0	±3.0	%
Line Regulation	Full load, input voltage from low to high		--	±0.5	±1.0	%
Load Regulation	5%~100% load		--	±0.5	±1.5	%
Transient recovery time	25% load step change		--	±5	±8	mS
Transient Response Bias			--	±3	±5	%
Ripple & Noise	Pure resistive load, 20 MHz bandwidth, peak-to-peak value		--	50	100	mVp-p
Temperature drift coefficient	Full load		--	±0.02	±0.03	%/° C
Output short-circuit protection			Sustainable, self-recovering			

Note: ① Test method for ripple and noise: Twisted-pair test method.

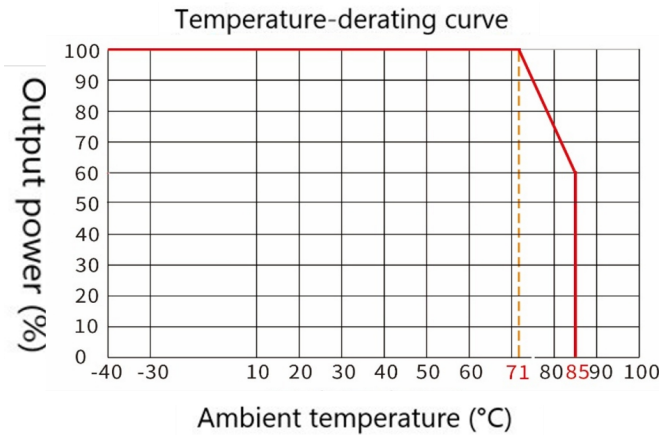
General characteristics

Items	Working conditions	Min.	Typ.	Max.	Unit
Insulation voltage	Input-output, test duration: 1 minute, leakage current less than 1 mA.	1500	--	--	VDC
Insulation resistance	Input-output, insulation voltage 500 VDC.	1000	--	--	MΩ
Isolation capacitor	Input-Output, 100 kHz/0.1 V	--	1000	--	pF
Working temperature	Use the reference temperature derating curve	-40	--	+85	℃
Storage temperature		-40	--	+125	
Maximum operating case temperature		--	25	--	
Storage humidity	No condensation	5	--	95	%RH
Pin soldering temperature resistance	The solder joint is 1.5 mm from the housing; 10 seconds	--	--	+300	℃
Switching frequency	Full load, rated voltage input	--	300	--	KHz
Vibration		10-55Hz, 10G, 30 Min. along X, Y and			
Housing material		Black flame-retardant, heat-resistant plastic (UL94 V-0)			

GDHUIZHI

Minimum mean time between failures	MIL-HDBK-217F@25℃	1000	--	--	KHrs

Temperature Characteristic Curve



Typical Application Reference Circuit (Recommended Parameters)

1. Typical application circuit:

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

If further reduction of input and output ripple is required, the external input and output capacitors (Cin1, Cs, and Cout) can be appropriately increased in value, or capacitors with low equivalent series impedance (ESL) can be selected. Cs is used to reduce ripple; if the ripple already meets the requirements, Cs need not be added. However, appropriate filter capacitor values must be selected; if the capacitance is too high, it is likely to cause startup issues. For each output channel, while ensuring safe and reliable operation, the maximum capacitance of the filter capacitor must be less than the maximum capacitive load.

Single

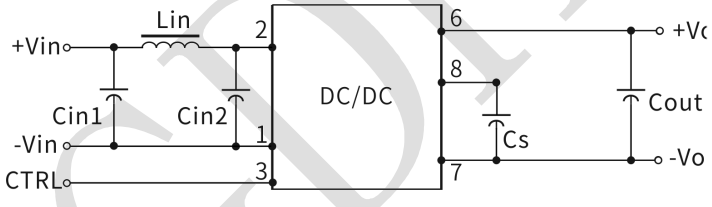


Figure 1

Dual

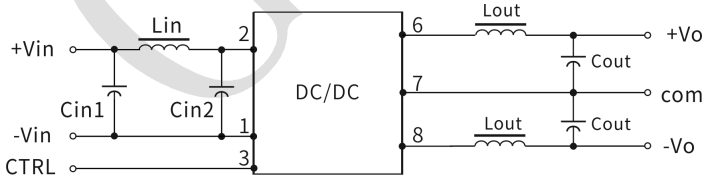


Figure 2

Input voltage	24VDC
Cin1	48uF
Cin2	22uF
Lin	4.7uH-12uH
Cs	10uF-22uF
Cout	100uF(Typ.)
Lout	2.2uH-10uH

2. EMC typical application circuit

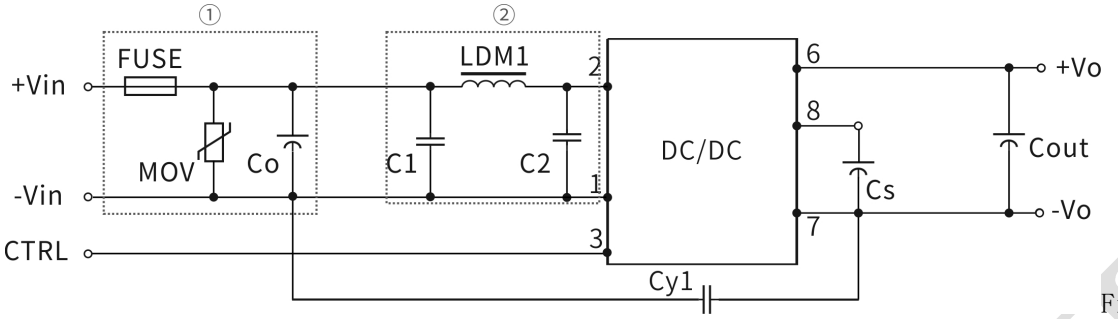


Figure 3

Component code	24V Input
FMSE fuse	Slow-blow fuses; select based on the customer's actual input current
MOV varistor	14D560K
LDM1 inductor	12 uH
Co electrolytic capacitor	220μF/50V
C1 ceramic capacitor	4.7μF/50V
C2 ceramic capacitor	4.7μF/50V
Cout ceramic capacitor	Refer to the Cout parameter in Figure 2
CY1 Safety capacitors	1nF/2KV

Note:

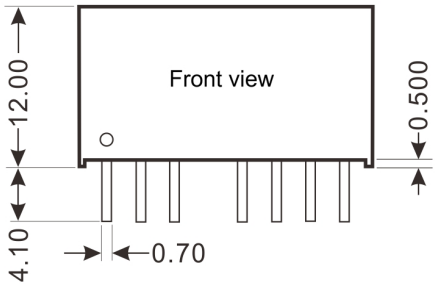
In Figure 3, Section ① is used for EMS testing; Section ② is used for EMI filtering and can be selected as needed;

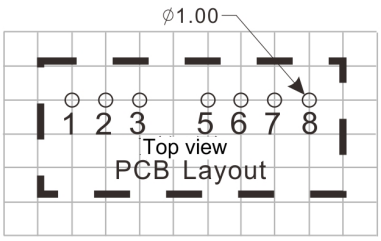
5. Output Load Requirements

During operation, the minimum output load must not be less than 5% of the rated load. To meet the performance specifications outlined in this technical manual, please connect a 5% dummy load in parallel at the output. The dummy load is typically a resistor; please note that the resistor must be derated.

Package Dimensions and Pin Function Diagram

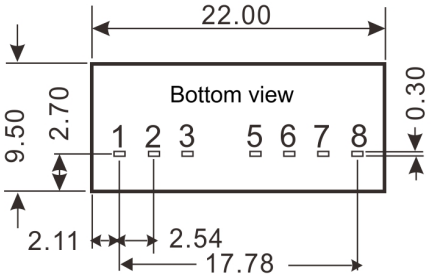
Third-angle projection





Notes:
Dimension unit: mm
Terminal cross-section tolerance: ±0.10 mm
Unspecified tolerance: ±0.50 mm

Note: grid distance: 2.54*2.54mm



Pin	1	2	3	4	5	6	7	8
Function	-Vin	+Vin	Ctrl	NP	NC	+Vo	-Vo	NC
URB	- input	+ input	R. Ctrl	No pin	No E.	+ output	- output	No E.
Function	-Vin	+Vin	Ctrl	NP	NC	+Vo1	COM	-Vo2
URA	- input	+ input	R. Ctrl.	No pin	No E.	+ output 1	Com. G	- output 2

NC: Can not connect to any external circuit

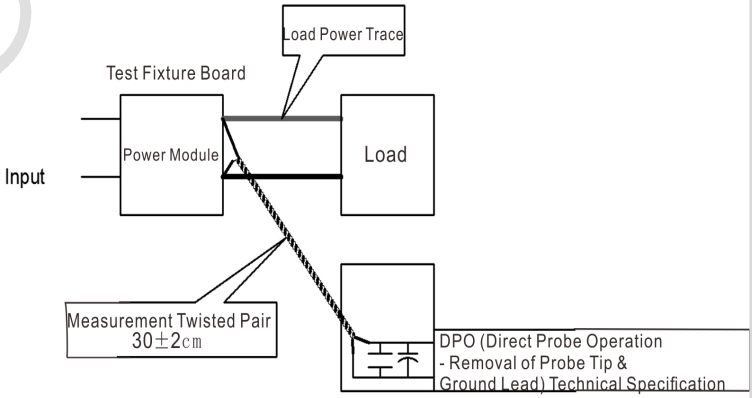
*Note: If the pin definitions of the power module differ from those in the selection guide, refer to the labels on the actual product.

Package Description

Package code	L x W x H	
URB/URA	22.0 x 9.5 x 12.0 mm	0.866 ×0.374 ×0.472inch

Test Application Reference

Ripple & Noise Testing: (Twisted-pair Method, 20 MHz Bandwidth)
Test Method:
1. For ripple and noise testing, use a Category 12 twisted-pair cable. Set the oscilloscope bandwidth to 20 MHz and use a 100 MHz bandwidth probe. Connect a 0.1μF polypropylene capacitor and a 4.7μF high-frequency, low-impedance electrolytic capacitor in parallel at the probe tip. Set the oscilloscope to "Sample" mode.
2. Schematic diagram for output ripple and noise testing:



Connect the power supply input to the input power source. Connect the power supply output to the electronic load via the fixture board. For testing, use a 30 cm ± 2 cm sampling lead to take a direct sample from the power supply output port. Select insulated wires with appropriate gauge based on the magnitude of the output current.

Application Precautions

1. We recommend using this product with a load of 5% or higher. If the load is less than 5%, the product's ripple performance may exceed specifications; however, this does not affect the product's reliability.
2. The recommended load imbalance for dual-output modules is ≤±5%. If the imbalance exceeds ±5%, we cannot guarantee that all product performance metrics will meet the specifications in this manual. Please contact our technical staff directly for specific guidance;
3. Maximum capacitive load values are tested within the input voltage range and under full-load conditions;
4. Unless otherwise specified, all specifications in this manual are measured at Ta = 25° C, humidity < 75% RH, nominal input voltage, and rated output load;
5. All test methods for the specifications in this manual are based on our company's corporate standards;
6. We offer product customization; please contact our technical staff directly for specific requirements;
7. Product specifications are subject to change without notice.

Contact

GDHUIZHI®
广东汇智电子技术有限公司
Guangdong Huizhi Electronic Technology Co.,Ltd.
地址：广东省肇庆市端州区 11 区肇庆大道北侧厂房、办公楼(二期)3 楼
Add.: 3rd floor, factory and office building (phase II) on the north side of Zhaoqing Avenue, District 11, Duanzhou District, Zhaoqing City, Guangdong Province, China
Homepage：www.huizhi-elec.com/www.chinaebizal.com
Tel：+86 -758 - 2566585
E-mail：sales@huizhi-elec.com

GDHUIZHI