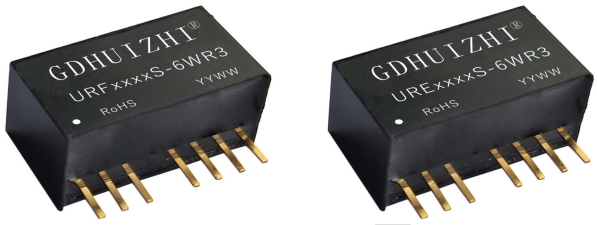
Typical Characteristics

- Ultra-small SIP-8 package
- Wide input range：4:1
- Working temperature：-40℃ to +85℃
- Isolation voltage: 3000VDC
- 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

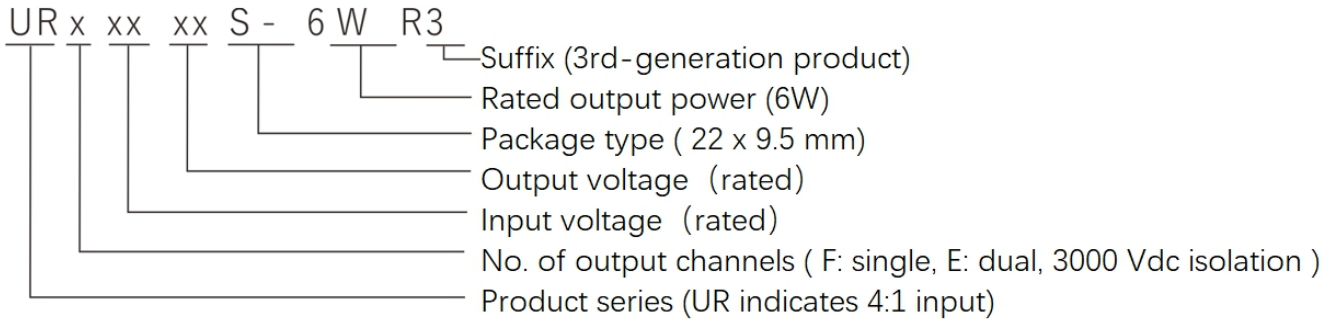
6W, ultra-wide voltage input, isolated regulated positive and negative dual/ single output, DC/DC power module



RoHS

URF_S-6WR3 and URE_S-6WR3 series are isolated 6W DC-DC converters with a 4:1 input-to-output ratio and standard voltage output. These products feature a compact SIP-8 plastic-lead package, high efficiency, an operating temperature range of -40° C to +85° C, and include remote control and continuous short-circuit protection. Their small size and cost-effective design make these converters an ideal solution for communications equipment, instrumentation, and industrial electronics applications.

Model Number Description



Product selection table

Certification	Model number	Input voltage range (Vdc)	Output Voltage/Current		Ripple and Noise	Efficiency@ Full load	Max. capacitive load
		Rated② (range)	Output V (Vdc)	Output I (mA) (Max. Min.)	Full load (mVp-p) (Typ. /Max	% (Min. / Typ.)	μF
	URF2403S-6WR3	24.0 (9.0~36.0)	3.3	1350	50/130	76/78	2200
	URF2405S-6WR3		5	1200	50/130	80/82	2200
	URF2409S-6WR3		9	667	50/130	82/84	680
	URF2412S-6WR3		12	500	50/130	83/85	680
	URF2415S-6WR3		15	400	50/130	82/84	470
	URF2424S-6WR3		24	250	50/130	83/85	330
	URE2403S-6WR3		±3.3	±625	50/130	76/78	1000
	URE2405S-6WR3		±5	±600	50/130	80/82	470

	URE2409S-6WR3		±9	±333	50/130	82/84	220
	URE2412S-6WR3		±12	±250	50/130	83/85	120
	URE2415S-6WR3		±15	±200	50/130	82/84	100
	URE2424S-6WR3		±24	±125	50/130	83/85	68
	URF4803S-6WR3	48.0 (18.0~75.0)	3.3	1350	50/130	76/78	1200
	URF4805S-6WR3		5	1200	50/130	80/82	680
	URF4809S-6WR3		9	667	50/130	82/84	330
	URF4812S-6WR3		12	500	50/130	83/85	330
	URF4815S-6WR3		15	400	50/130	82/84	150
	URF4824S-6WR3		24	250	50/130	83/85	68
	URE4803S-6WR3		±3.3	±625	50/130	76/78	1000
	URE4805S-6WR3		±5	±600	50/130	80/82	1000
	URE4809S-6WR3		±9	±333	50/130	82/84	1000
	URE4812S-6WR3		±12	±250	50/130	83/85	470
	URE4815S-6WR3		±15	±200	50/130	82/84	220
	URE4824S-6WR3		±24	±125	50/130	83/85	100

Note: 1. Due to space limitations, the above is only a list of representative products. If you require 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 normally.

3. Models marked with an asterisk (*) are 48V input models that have not yet been developed.

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° C.

Input characteristics

Items	Working conditions		Min.	Typ.	Max.	Unit
Input Current (Full Load/No Load)	24V input series	3.3VDC output	--	238/5	245/25	mA
	24V input series	5VDC output	--	305/5	313/25	
	24V input series	Others	--	305/5	313/25	
	48V input series	3.3VDC output	--	119/3	123/12	
	48V input series	5VDC output	--	152/3	162/12	
	48V input series	Others	--	152/3	162/12	
Reflected ripple current			--	50	--	mA
Impulse voltage (1sec. max.)	24V input series		-0.7	--	50	VDC
	48V input series		-0.7	--	100	
Startup voltage	24V input series		-	-	9	
	48V input series		-	-	18	
Input undervoltage protection	24V input series		5.5	7.0	--	
	48V input series		13.0	16.0		
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	±2.0	%
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	130	mVp-p
Temperature drift coefficient	Full load		--	±0.02	±0.03	%/° C
Output short-circuit protection			Sustainable, self-recovering			

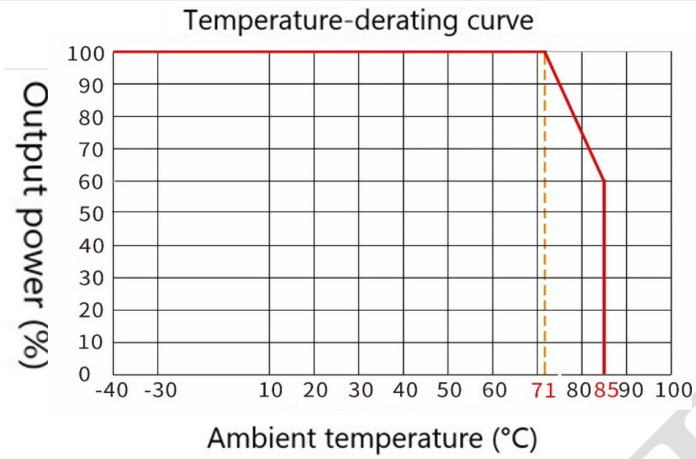
Note: ① Test method for ripple and noise: Twisted-pair test method.

General characteristics

Items	Working conditions	Min.	Typ.	Max.	Unit
Insulation voltage (E)	Input-output, test duration: 1 minute, leakage current less than 1 mA.	3000	--	--	VDC
Insulation voltage (E3)	Input-output, test duration: 1 minute, leakage current less than 1 mA.	3000	--	--	VDC
Insulation resistance	Input-output, insulation voltage 500 VDC.	1000	--	--	MΩ
Isolation capacitor	Input-Output, 100 kHz/0.1 V	--	120	--	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 Z			
Housing material		Black flame-retardant, heat-resistant plastic (UL94 V-0)			
Minimum mean time	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 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 filter capacitor values must be selected; if the capacitance is too large, 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

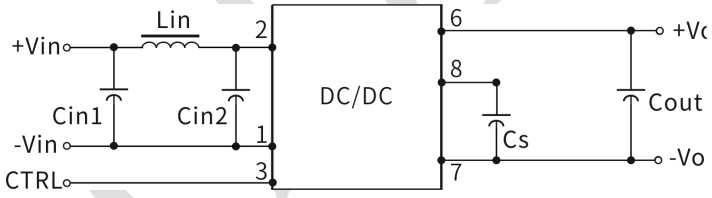


Figure 1

Dual

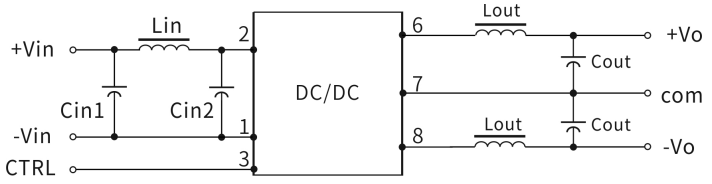


Figure 2

Input Voltage	24VDC	48VDC
Cin1	100uF	48uF
Cin2	47uF	22uF
Lin	4.7uH-12uH	4.7uH-12uH
Cs	10uF-22uF	10uF-22uF
Cout	100uF(Typ.)	100uF(Typ.)
Lout	2.2uH-10uH	2.2uH-10uH

2. EMC typical application circuit

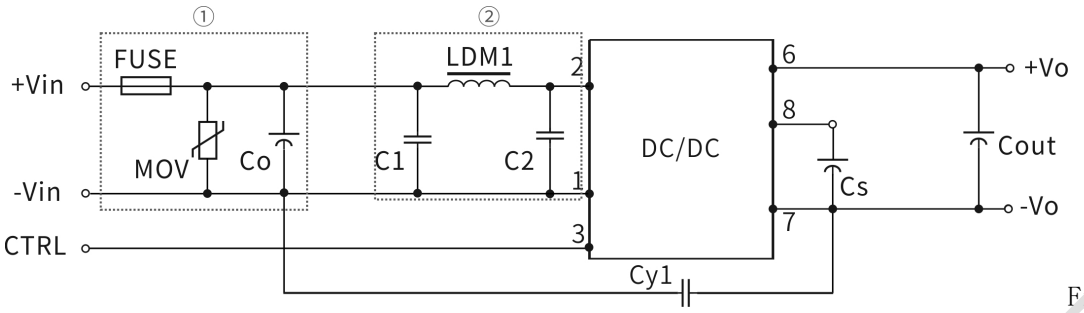


Figure 3

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	330μF/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

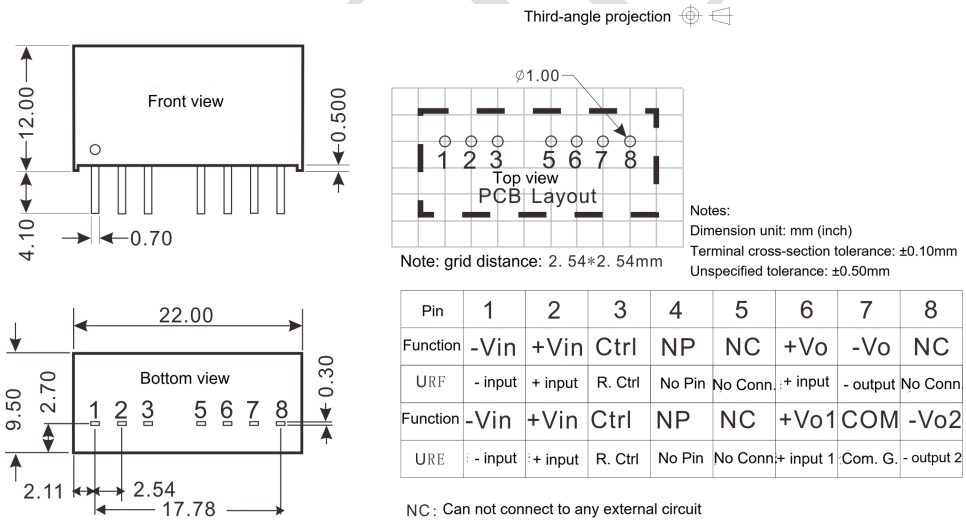
Note:

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

5. Output Load Requirements

During operation, the minimum output load of the module must not be less than 5% of the rated load. To meet the performance specifications 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



Pin	1	2	3	4	5	6	7	8
Function	-Vin	+Vin	Ctrl	NP	NC	+Vo	-Vo	NC
URF	- input	+ input	R. Ctrl	No Pin	No Conn.	+ input	- output	No Conn
Function	-Vin	+Vin	Ctrl	NP	NC	+Vo1	COM	-Vo2
URE	- input	+ input	R. Ctrl	No Pin	No Conn	+ input 1	Com. G.	- output 2

NC: Can not connect to any external circuit

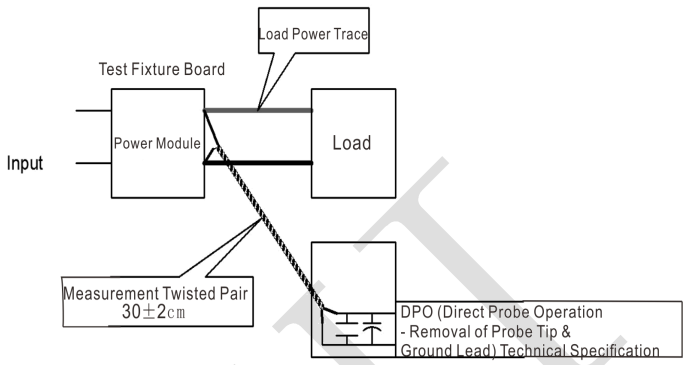
*Note: If the pin definitions of the power module differ from those in the selection guide, refer to the labels on the actual product.

Package Description

Package code	L x W x H	
URF/URE	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 0.1uF polypropylene capacitor and a 4.7uF 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’s input to the power source. Connect the power supply’s 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’s output port. Select insulated wires with an appropriate gauge based on the magnitude of the output current.

Application Precautions

1. It is recommended to use this product at a load of 5% or higher. If the load is below 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 the product’s performance will meet all performance specifications listed in this manual. For specific circumstances, please contact our technical staff directly;
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

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