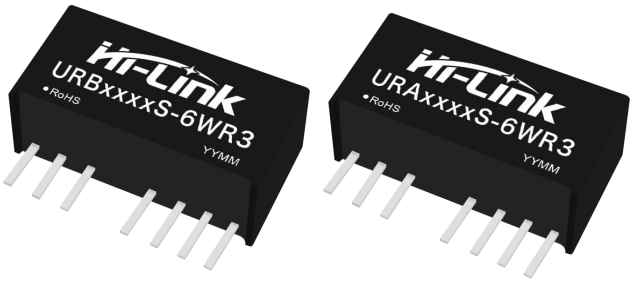
Typical Performance

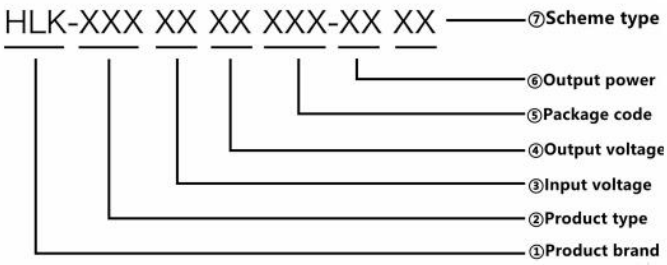
- Ultra-compact SIP8 package
- Ultra-wide input voltage range: 4:1
- Operating temperature range: -40°C to +85°C
- Isolation voltage 1500VDC
- Low ripple noise
- Short circuit protection (self-restoring)
- No-load power consumption as low as 0.12W
- Input undervoltage protection, output short circuit and overcurrent protection

6W, Ultra Wide Voltage Input, Isolated Regulated Positive and Negative Dual/Single Output, DC/DC Module Power Supply



The URB_S-6WR3 & URA_S-6WR3 series are isolated 6W DC-DC products with 4:1 input and regular voltage output. The products are smaller SIP-8 plastic pin package, high efficiency, meet -40°C to +85°C operating temperature, and have remote control and sustainable short circuit protection. The small size and cost-effective design make this converter an ideal solution for applications in communications equipment, instrumentation and industrial electronics.

Product Coding Rules



Product List

	Product model	Output voltage range (Vdc)	Output voltage/current		Ripple and noise	Efficiency @ full load	Max. capacitive load
		Nominal value (range value)	Output voltage (Vdc)	Output current (mA) (Max.Min.)	Full load (mVp-p) Typ./Max.	% (Min./ Typ.)	uF
	URB2403S-6WR3	24.0 (9.0~36.0)	3.3	1350	50/130	76/78	2200
	URB2405S-6WR3		5	1200	50/130	80/83	2200
	URB2409S-6WR3		9	667	50/130	83/85	680
	URB2412S-6WR3		12	500	50/130	84/86	680
	URB2415S-6WR3		15	400	50/130	85/87	470
	URB2424S-6WR3		24	250	50/130	85/87	330
	URA2403S-6WR3		±3.3	±625	50/130	76/78	1000
	URA2405S-6WR3		±5	±600	50/130	80/83	1000
	URA2409S-6WR3		±9	±333	50/130	83/85	1000
	URA2412S-6WR3		±12	±250	50/130	84/86	470
	URA2415S-6WR3		±15	±200	50/130	85/87	220

	URA2424S-6WR3		±24	±125	50/130	85/87	100
	*URB4803S-6WR3	48.0 (18.0~75.0)	3.3	1350	50/130	76/78	2200
	*URB4805S-6WR3		5	1200	50/130	80/83	2200
	*URB4809S-6WR3		9	667	50/130	83/85	680
	*URB4812S-6WR3		12	500	50/130	84/86	680
	*URB4815S-6WR3		15	400	50/130	85/87	470
	*URB4824S-6WR3		24	250	50/130	85/87	330
	*URA4803S-6WR3		±3.3	±625	50/130	76/78	1000
	*URA4805S-6WR3		±5	±600	50/130	80/83	1000
	*URA4809S-6WR3		±9	±333	50/130	83/85	1000
	*URA4812S-6WR3		±12	±250	50/130	84/86	470
	*URA4815S-6WR3		±15	±200	50/130	85/87	220
	*URA4824S-6WR3		±24	±125	50/130	85/87	100

Note: 1. Due to limited space, the above is only a typical product list, if you need products other than those listed, please contact our sales department.
2. Maximum capacitive load indicates the maximum capacitive load that can be connected to +Vo or -Vo. If the value is exceeded, the product will not start normally.
3. The models marked with * are not yet developed for 48V input;

Test Conditions: Unless otherwise specified, all parameters are measured at nominal input voltage, purely resistive rated load and room temperature of 25℃.

Input Features

Items	Working conditions		Min.	Typ.	Max.	Unit
Input current (full load/no load)	24V input series	3.3VDC output	--	238/5	245/12	mA
	24V input series	5VDC output	--	305/5	313/12	
	24V input series	Others	--	305/5	313/12	
	48V input series	3.3VDC output	--	119/3	123/6	
	48V input series	5VDC output	--	152/3	162/6	
	48V input series	Others	--	152/3	162/6	
Reflected ripple current			--	50	--	mA
Impulse voltage (1sec.max)	24V input series		-0.7	--	50	VDC
	48V input series		-0.7	--	100	
Start voltage	24V input series		-	-	9	
	48V input series		-	-	18	
Input under-voltage protection	24V input series		5.5	7.0	--	
	48V input series		13.0	16.0		
Input filter type			Capacitor filter			
Hot plug			Not support			
CNT (Ctrl)*	Module turned on		Ctrl terminal dangling or high (> 0.8V)			
	Module turned off		Ctrl connected low (< 0.6VDC)			

Note: * Please refer to the "Typical Application Reference Circuit" section in this manual for the remote control pin (Ctrl) function description.

Output Features

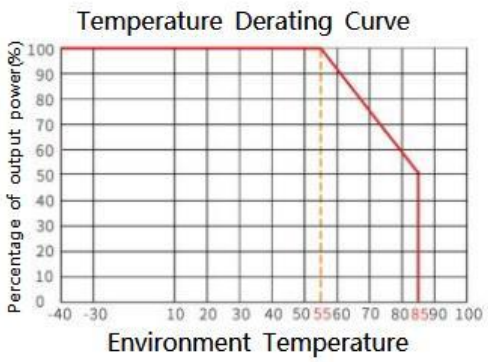
Items	Working and testing conditions		Min.	Typ.	Max.	Unit
Output voltage accuracy	5%~100% load, input voltage range	3.3V/5V output	--	±3.0	±5.0	%
		Others	--	±1.0	±2.0	%
Linear rate of adjustment	Full load, input voltage from low to high voltage		--	±0.5	±1.0	%
Load adjustment ratio	5%~100% load		--	±0.5	±1.5	%
Transient recovery time	25% load step change		--	±5	±8	mS
Transient response			--	±3	±5	%
Ripple & Noise	Pure resistive load,20MHz bandwidth,peak to peak		--	50	130	mVp-p
Temperature drift coefficient	Full load		--	±0.02	±0.03	%/°C
Output short circuit protection			Sustainable, self-recovery			

Note: Ripple and noise test method twisted pair test method.

General Features

Items	Working conditions	Min.	Typ.	Max.	Unit
Insulation voltage(E)	Input-output, test time:1m, leakage current < 1mA	1500	--	--	VDC
Insulation voltage(E3)	Input-output, test time:1m, leakage current < 1mA	3000	--	--	VDC
Insulation resistance	Input-output, insulation voltage: 500VDC	1000	--	--	MΩ
Isolation capacitance	Input-output, 100KHz/0.1V	--	120	--	pF
Working temperature	Use the reference temperature derating curve	-40	--	+85	℃
Storage temperature		-40	--	+125	
Shell temperature rise		--	25	--	
Storage humidity	No condensation	5	--	95	%RH
Pin soldering temperature	The solder joint is 1.5mm away from the shell, 10 seconds	--	--	+300	℃
Switching frequency	Full load, nominal voltage input	--	300	--	KHz
Vibration		10-55Hz, 10G, 30 Min. along X, Y and Z			
Shell material	Black flame retardant heat resistant plastic (UL94 V-0)				
MTBF	MIL-HDBK-217F@25℃	1000	--	--	KHrs

Product Characteristics Curve



Reference Circuit for Typical Applications (Recommended Parameters)

1. Typical application circuits:

All DC/DC converters of this series are tested in accordance with the recommended test circuit (Fig. 2) before leaving the factory.

If further reduction of input/output ripple is required, the input/output external capacitors Cin1, Cs and Cout can be appropriately enlarged or a capacitor with small series equivalent impedance value can be used, Cs is used to reduce the ripple, and there is no need to add Cs if the ripple has already met the demand. however, a suitable value of filtering capacitance should be used, as too large a capacitance is likely to cause start-up problems. For each output, the maximum capacitance of the filter capacitor must be less than the maximum capacitive load under the condition of ensuring safe and reliable operation.

Single

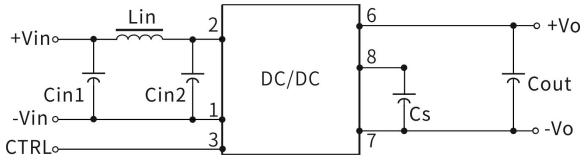


Figure 1

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

Dual

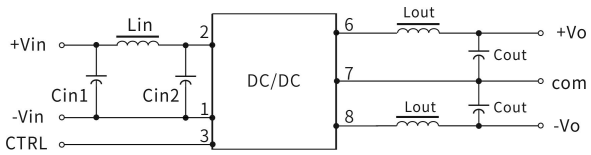


Figure 2

2.EMC typical application circuits

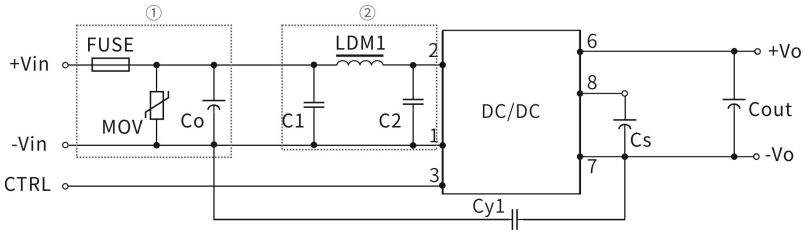


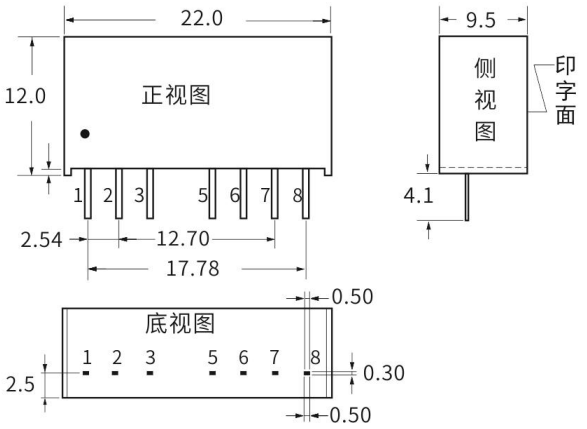
Figure 3

Device code	24V input products
FMSE fuses	Slow blow fuses, selected according to customer's actual input current
MOV piezoresistor	14D560K
LDM1 inductors	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: ① in Figure 3 is for EMS test; ② is for EMI filtering, which can be selected according to the demand; Output Load Requirement: When using the module, the minimum load of the module output should not be less than 5% of the rated load. In order to comply with the performance index of this technical manual, please connect a 5% dummy load in parallel with the output terminal, the dummy load is usually a resistor, please note that the resistor should be derated.

Package Size and Pin Function Diagram

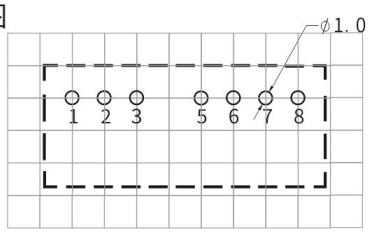
1)外观尺寸(单位：mm,公差：xx ±0.25)



2)引脚定义

引脚方式	1	2	3	4	5	6	7	8
单路	-Vin	+Vin	CTRL	NP	NC	+Vout	-Vout	CS
	输入负	输入正	遥控端	空脚	无电气	输出正	输出负	外接电容
正负双路	-Vin	+Vin	CTRL	NP	NC	+Vout	COM	-Vout
	输入负	输入正	遥控端	空脚	无电气	输出正	公共地	输出负

3)建议印刷版图



备注:栅格距离为：2.54*2.54mm

*Note: If the definition of each pin of the power supply module does not match with the selection manual, the labeling on the physical label should prevail.

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

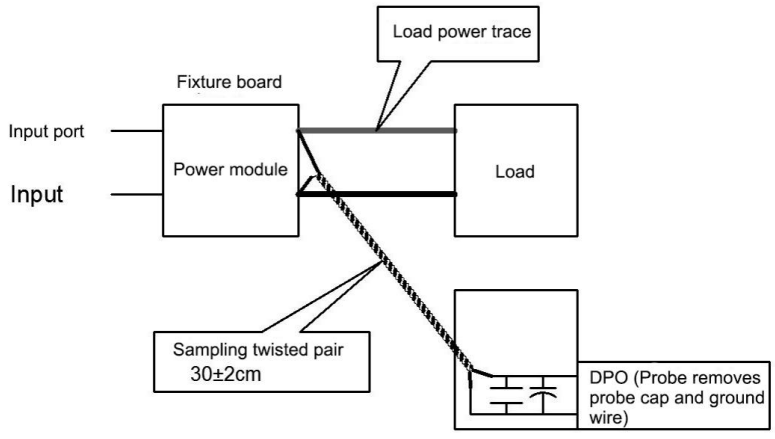
Ripple & Noise Test: (Twisted Pair Method 20MHZ Bandwidth)

Test method:

1. Ripple noise is the use of 12 # twisted pair connection, oscilloscope bandwidth is set to 20MHz, 100M bandwidth probe, and in parallel with the probe end of the 0.1uF polypropylene capacitors and 4.7uF high-frequency low-resistance electrolytic capacitors, the oscilloscope sampling Sample sampling mode.

2. Output ripple noise test diagram:

Connect the power input to the input power supply, the power output is connected to the electronic load through the fixture board, and the test is conducted with a 30cm±2 cm sampling line directly from the power output port. Power line according to the size of the output current to select the appropriate diameter of the wire with insulation.



Application Notes

1. It is recommended to use in more than 5% of the load, if less than 5% of the load, the product's ripple indicators may exceed the specifications, but does not affect the reliability of the product;
2. It is recommended that the load imbalance of the dual output module: ≤ ± 5%, if it exceeds ± 5%, it can not be guaranteed that the performance of the product meets all the performance indicators in this manual, the specific circumstances can be directly contacted with the technical staff of our company;
3. Maximum capacitive loads are tested in the input voltage range, full load conditions;
4. Unless otherwise specified, all indicators in this manual are measured at Ta=25℃, humidity <75%RH, nominal input voltage and output rated load;
5. The test methods of all indicators in this manual are based on the company's corporate standards;
6. Our company can provide product customization, specific needs can be directly contacted our technical staff;
7. Product specifications are subject to change without notice.

Contact

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