Typical performance

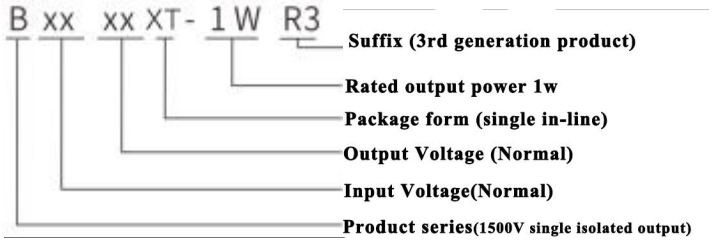
- Sustainable short circuit protection
- Isolated voltage 1500VDC
- No-load input current as low as 3mA
- Working environment temperature: -40℃～+85℃
- Efficiency up to 89%
- International standard pin mode
- Small SMD package

1W, constant voltage input,
isolated unregulated single output
DC-DC power module

Continuous short-circuit protection, RoHS

The B_XT-1WR3 series is specifically designed for applications in on-board power systems where a set of voltages isolated from the input power supply is required. This product is suitable for: pure digital circuits, general low-frequency analog circuits, relay drive circuits, data exchange circuits, etc.

Product Coding Rules



Product List

Certificate	Product Module number①	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.)	Full load (mVp-p) Typ/Max.	%, (Min/Typ)	uF
	B0303XT-1WR3	3.3 (2.97~3.63)	3.3	303/30	30/80	78/80	3000
	B0305XT -1WR3		5	200/20	30/80	79/82	3000
	B0309XT -1WR3		9	111/12	30/80	80/83	1200
	B0312XT -1WR3		12	84/9	30/80	81/84	820
	B0503XT -1WR3	5 (4.5-5.5)	3.3	303/30	30/80	80/82	3000
	B0505XT-1WR3		5	200/20	30/80	83/85	3000
	B0509XT-1WR3		9	111/12	30/80	83/86	1200

	B0512XT-1WR3		12	84/9	30/80	83/86	820
	B0515XT-1WR3		15	67/7	30/80	83/86	680
	B0524XT-1WR3		24	42/4	30/80	85/87	330
	B1203XT-1WR3	12 (10.8~13.2)	3.3	303/30	30/80	80/82	3000
	B1205XT-1WR3		5	200/20	30/80	83/85	3000
	B1209XT-1WR3		9	111/12	30/80	83/86	1200
	B1212XT-1WR3		12	84/9	30/80	83/86	820
	B1215XT-1WR3		15	67/7	30/80	83/86	680
	B1224XT-1WR3		24	42/4	30/80	86/88	330
	B1503XT-1WR3	15 (13.5~16.5)	3.3	303/30	30/80	81/84	3000
	B1505XT-1WR3		5	200/20	30/80	83/86	3000
	B1509XT-1WR3		9	111/12	30/80	83/86	1200
	B1512XT-1WR3		12	84/9	30/80	83/86	820
	B1515XT-1WR3		15	67/7	30/80	83/86	680
	B1524XT-1WR3		24	42/4	30/80	85/88	330
	B2403XT-1WR3	24 (21.6~26.4)	3.3	303/30	30/80	80/82	3000
	B2405XT-1WR3		5	200/20	30/80	83/85	3000
	B2409XT-1WR3		9	111/12	30/80	83/86	1200
	B2412XT-1WR3		12	84/9	30/80	84/87	820
	B2415XT-1WR3		15	67/7	30/80	84/87	680
	B2424XT-1WR3		24	42/4	30/80	86/88	330

Note: 1. Due to limited space, the above is just a list of typical products. If you need products other than the list, please contact the sales department of our company.

2. The maximum capacitive load indicates 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.

Test conditions: Without specified needs, all parameter tests are measured at nominal input voltage, purely resistive rated load and 25°C room temperature.

Input Characteristics

Items	Working conditions	Min.	Typ.	Max.	Unit
Input current (fully loaded/unloaded)	3.3VDC Input	--	370/3	--/17	mA
	5VDC Input	--	230/3	--/15	
	12VDC Input	--	99/3	--/15	
	15VDC Input	--	74/3	--/15	

	24VDC Input		51/3	--/15	
Reflected Ripple Current		--	15	--	mA
Impulse voltage (1sec.max)	3.3VDC Input	-0.7	--	5	VDC
	5VDC Input	-0.7	--	9	
	12VDC Input	-0.7	--	18	
	15VDC Input	-0.7	--	20	
	24VDC Input	-0.7	--	30	
Input filter type		Capacitive filtering			
Hot plug		Not available			

Output Characteristics

Items	Working and test conditions		Min.	Typ.	Max.	Unit
Output load	Load percentage		10	--	100	%
Output Voltage Accuracy	Refer to Error Envelope Curve		--	--	±15.0	%
Linear adjustment rate	Input voltage variation	3.3V Output	--	--	±1.5	%
		Others	--	--	±1.2	%
Load Regulation	10%~100% Load	3.3VDC Output	--	12	20	%
		5VDC Output	--	8	15	%
		9VDC Output	--	8	10	%
		12VDC Output	--	7	10	%
		15VDC Output	--	6	10	%
		24VDC Output	--	6	10	%
Ripple & Noise	Pure resistive load, 20MHz bandwidth, peak-to-peak		--	45	80	mVp-p
Temperature Drift Coefficient	Full load		--	--	±0.03	%/°C

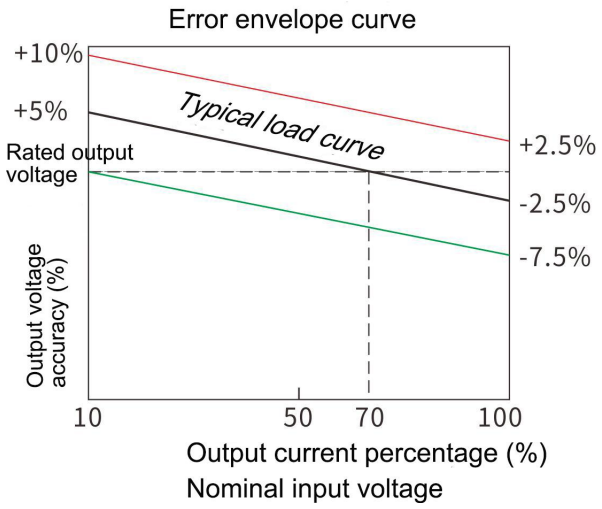
Note: ①The test method of ripple and noise is twisted pair test method.

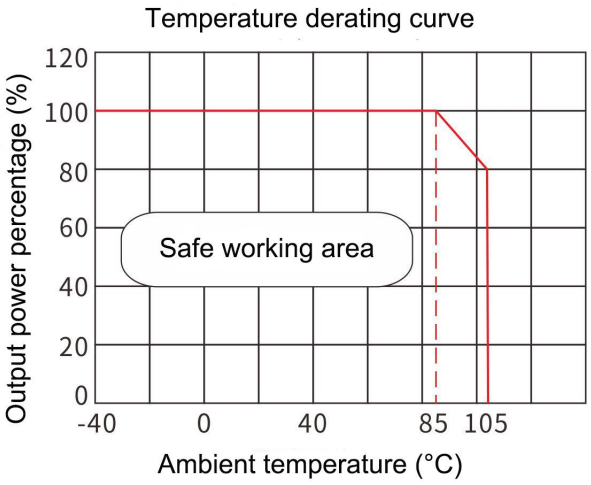
General Characteristics

Items	Working conditions	Min.	Typ.	Max.	Unit
Insulation voltage	Input-output, test time is 1 minute, leakage current is less than 1mA	1500	--	--	VDC

Insulation resistance	Input-output, insulation voltage 500VDC	1000	--	--	MΩ
Isolation capacitor	Input-output, 100KHz/0.1V	--	20	--	pF
Operating temperature	Refer to Temperature Derating Curve	-40	--	+85	℃
Storage temperature		-55	--	+125	
Shell temperature rise during operation		--	15	--	
Storage humidity	No condensation	5	--	95	%RH
Pin soldering temperature	The solder joint is 1.5mm away from the shell, 10 seconds	--	--	+300	℃
On-off level	Full load, nominal voltage input	--	220	--	KHz
Shock		10-55Hz, 10G, 30Min.alongX, YandZ			
Shell material		Black flame retardant heat resistant plastic (UL94V-0)			
Minimum time between failures	MIL-HDBK-217F@25℃	$3.5X10^6$	--	--	Hrs

Product characteristic curve





Typical Application Reference Circuit (Recommended Parameters)

1.**General application:** Details of recommended capacitive load values (Table 1)

Figure 1

If it is required to further reduce the input and output ripple, a capacitor filter network can be connected to the input and output ends, and the application circuit is shown in Figure 1.

However, attention should be paid to the selection of appropriate filter capacitors. If the capacitor is too large, it is likely to cause startup problems. For each output, under the condition of ensuring safe and reliable operation, the recommended capacitive load value is shown in Table 1.

Vin(Vdc)	Cin(uF)	Vo(Vdc)	Cout(uF)
3.3/5	4.7	3.3/5	10
12	2.2	9	4.7
15	2.2	12	2.2
24	1	15	1
-	-		

2. EMI typical application circuit

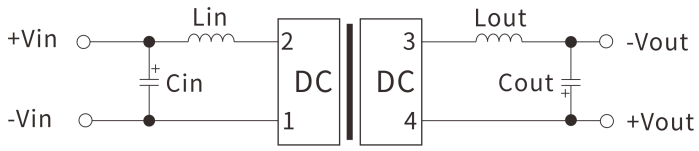


Figure 2

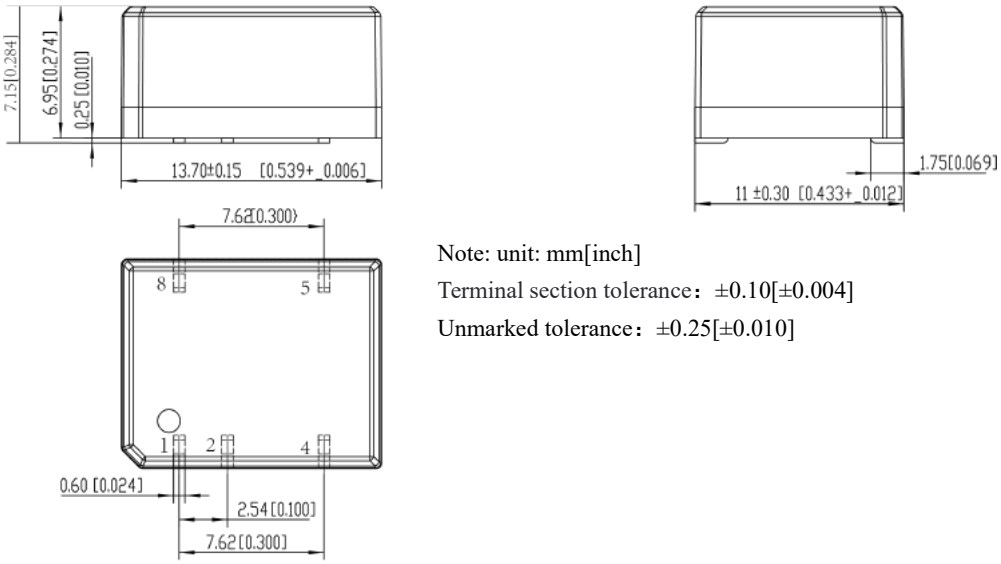
Recommended EMI Reference Circuit Values (Table 2)

Vin(Vdc)	3.3/5/12/15
Cin	4.7uF/50V
Cout	Refer to Table 1
Lin	4.7uH
Lout	4.7uH

3. Output load requirements

In order to ensure that the module can work efficiently and reliably, the minimum output load cannot be less than 10% of the rated load when in use. If the power you need is really small, please connect a resistor in parallel between the positive and negative poles of the output terminal (the sum of the actual power used by the resistor is greater than or equal to 10% of the rated power and the rated power of the selected resistor must be greater than 5 times the actual power used, otherwise the temperature of the resistor will be higher).

Package size and pin function diagram



Note: unit: mm[inch]
Terminal section tolerance：±0.10[±0.004]
Unmarked tolerance：±0.25[±0.010]

pin	function
1	GND
2	Vin
4	-Vo
5	+Vo
8	NC
NC: Cannot be connected to any external circuit	

Note: If the definition of each pin of the power module is inconsistent with the selection manual, the label on the physical label shall prevail.

Package description

Package code	LxWxH	
D	13.7x11.0x6.95mm	0.540×0.400×0.274inch

Test Application Reference

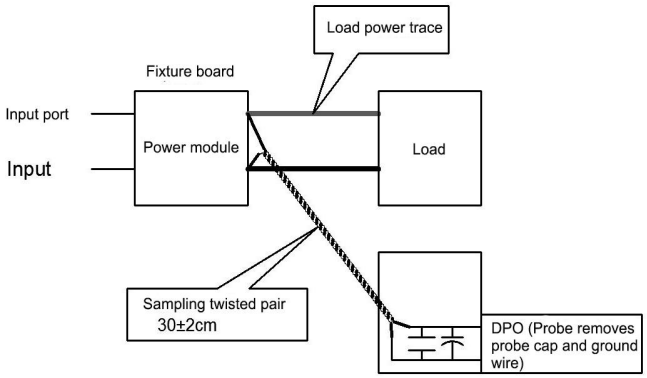
Ripple and noise test (Twisted pair method, 20MHZ bandwidth)

Testing method:

(1) Ripple noise is connected by 12# twisted pair. The oscilloscope bandwidth is set to 20MHz, 100M bandwidth probe, and 0.1uF polypropylene capacitor and 47uF high frequency low resistance electrolytic capacitor are connected in parallel on the probe end. The oscilloscope sampling uses Sample sampling mode.

(2) Schematic diagram of output ripple&noise test:

Connect the power input terminal to the input power supply terminal. The power output is connected to the electronic load through the fixture board. The test uses a 30cm ± 2 cm sampling line to sample directly from the power output port.The power line selects the insulated wire with the corresponding wire diameter according to the magnitude of the output current.



Product application considerations

1. Input requirements: Ensure that the output voltage fluctuation range of the power supply does not exceed the input requirements of the DC / DC module itself, and the output power of the input power supply must be greater than the output power of the DC / DC module.
2. One recommended circuit: For applications where ripple and noise requirements are normal, a filter capacitor can be connected in parallel at the input and output ends. The external circuit is shown in the following figure1 with the recommended value details of the filter capacitor. Output load requirements: Try to avoid no-load use. When the actual power consumption of the load is less than 10% of the rated output power of the module or there is no-load phenomenon, it is recommended that a dummy load be connected to the output end. The dummy load (resistance) can be calculated by 5~10% of the rated power of the module, resistance value = Uout / (1W * 10%).
3. Over-load protection: Under normal operating conditions, the output circuit of this product has no protection function against overload conditions. The easiest way is to connect a resettable fuse in series at the input end, or add a circuit breaker to the circuit.
4. The external capacitor of the output terminal should not be too large, otherwise it will easily cause over-current or poor start-up when the module starts.
5. If the product works below the minimum required load, the performance of the product cannot be guaranteed to meet all performance indications in this manual.
6. The maximum capacitive load is tested under the input voltage range and full load condition.
7. Unless special instructions, all indexes in this manual are measured at the condition, Ta = 25 ℃, humidity <75% RH, nominal input voltage and output rated load.
8. All index testing methods in this manual are based on the company's standards
9. Our company can provide product customization, and you can directly contact our technical staff for specific conditions
10. Product specifications are subject to change without notice.

Contact

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