DC/DC Module Power Supply

IB_XT-1WR2 series

MORNSUN®

1W, Fixed input voltage , isolated & regulated single output

Continuous Short Circuit Protection

FEATURES

- Continuous short circuit protection
- Efficiency up to 75%
- Operating temperature range: -40℃ to +85℃
- Isolation voltage: 1.5K VDC
- Miniature SMD package
- No external component required
- International standard pin-out
- EN60950 approval

CE Patent Protection RoHS

IB_XT-1WR2 series is specially designed for applications where an isolated voltage is required in a distributed power supply system.It is suitable for

1.Where the voltage of the input power supply is stable (voltage variation: ±5%Vin);

2.Where isolation is necessary between input and output (isolation voltage ≤1500VDC);

3.Where has high requirement of line regulation, load regulation and the ripple & noise of the output voltage.

Selection Guide

Certification.	Part No.	Input Voltage (VDC)	Output		Efficiency (%,Min./Typ.) @ Full Load	Max. Capacitive Load (μF)
		Nominal (Range)	Output Voltage (VDC)	Output Current (mA) (Max./Min.)		
CE	IB0503XT-1WR2	5 (4.75-5.25)	3.3	243/25	54/58	220
	IB0505XT-1WR2		5	200/20	68/72	
	IB0512XT-1WR2		12	84/9	69/73	
	IB0515XT-1WR2		15	67/7	70/74	
	IB1205XT-1WR2	12 (11.4-12.6)	5	200/20	69/73	
	IB1212XT-1WR2		12	84/9	69/73	
	IB1215XT-1WR2		15	67/7	71/75	
	IB2405XT-1WR2	24 (22.8-25.2)	5	200/20	69/73	
	IB2412XT-1WR2		12	84/9	69/73	

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	5V input	--	270/15	--	mA
	12V input	--	115/10	--	
	24V input	--	56/7	--	
Surge Voltage (1sec. max.)	5V input	-0.7	--	9	VDC
	12V input	-0.7	--	18	
	24V input	-0.7	--	30	
Reflected Ripple Current		--	15	--	mA
Input Filter		Capacitor filter			

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy	100% load		--	--	±3	%
Line Regulation	Input voltage change: ±1%		--	--	±0.25	
Load Regulation	10%-100% load	3.3VDC output	--	--	3	
		Other output	--	--	2	

Ripple*	20MHz bandwidth	--	10	--	mVp-p
Noise*		--	50	--	
Temperature Drift Coefficient	100% load	--	--	±0.03	%/℃
Output Short Circuit Protection		Continuous, self-recovery			
Note: * Ripple and noise tested with "parallel cable" method, please see *DC-DC Converter Application Notes* for specific operation methods.					

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output, with the test time of 1 minute and the leak current lower than 1mA	1500	--	--	VDC
Isolation Resistance	Input-output, isolationn voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	20	--	pF
Operating Temperature	Derating when operating temperature up to 71℃, (see Fig. 1)	-40	--	85	℃
Storage Temperature		-55	--	125	
Casing Temperature Rise	Ta =25℃	--	25	--	
Pin Welding Resistance Temperature	Welding spot is 1.5mm away from the casing, 10 seconds	--	--	300	
Reflow Soldering Temperature		Peak temp.≤245℃, maximum duration time≤60s at 217℃. For actual application, please refer to IPC/JEDEC J-STD-020D.1.			
Storage Humidity	Non-condensing	--	--	95	%
Switching Frequency	100% load, nominal input voltage	--	100	300	KHz
MTBF	MIL-HDBK-217F@25℃	3500	--	--	K hours

Physical Specifications

Casing Material	Black flame-retardant and heat-resistant Epoxy resin (UL94 V-0)
Package Dimensions	15.24*11.20*7.25 mm
Weight	2.0g (Typ.)
Cooling Method	Free air convection

EMC Specifications

EMI	CE	CISPR32/EN55032	CLASS B (see Fig. 3 for recommended circuit)
	RE	CISPR32/EN55032	CLASS B (see Fig. 3 for recommended circuit)
EMS	ESD	IEC/EN61000-4-2	Contact ±6KV perf. Criteria B

Product Characteristic Curve

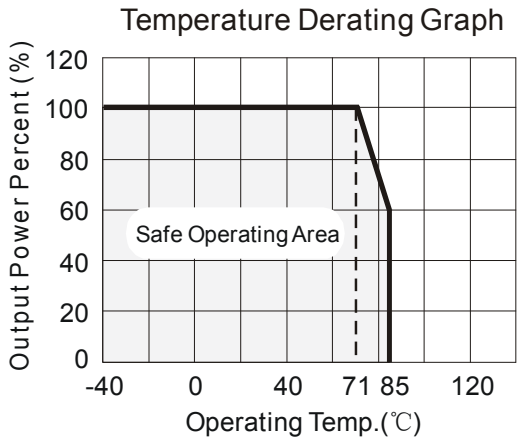
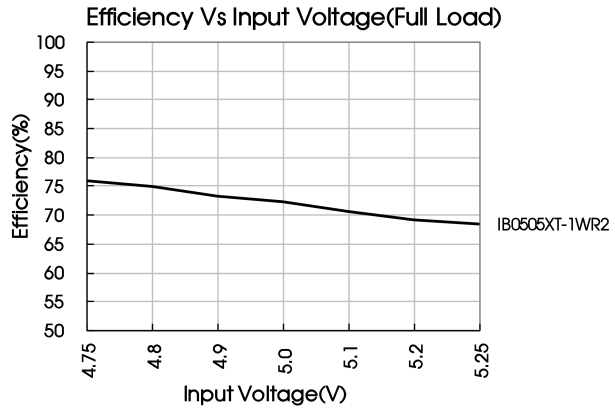
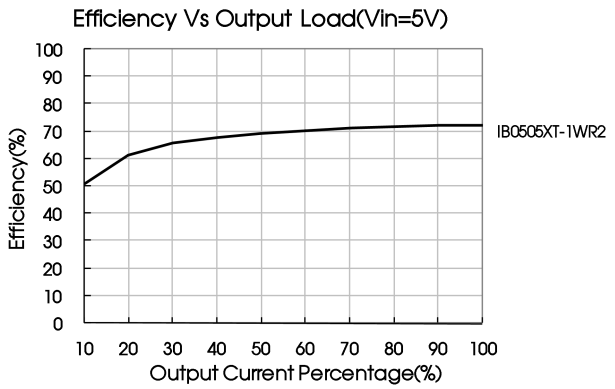
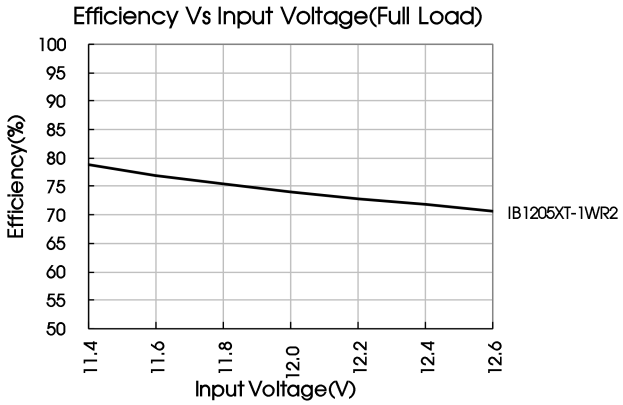
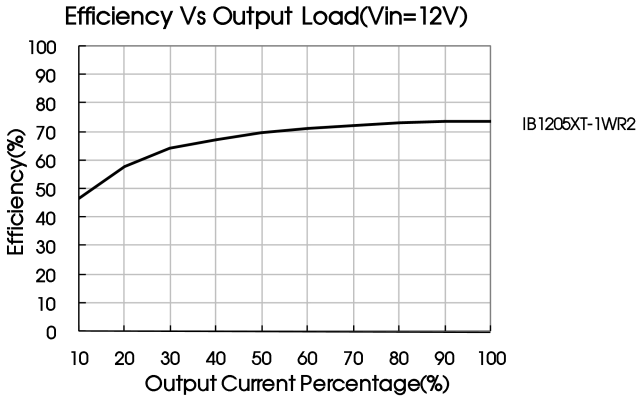


Fig. 1









Design Reference

1. Typical application

If it is required to further reduce input and output ripple, a filter capacitor can be connected to the input and output terminals, see Fig.2. Moreover, choosing suitable filter capacitor is very important , start-up problems may be caused by too large capacitance.To ensured the modules running well, the recommended capacitive load values as shown in Table 1.

Fig.2

Recommended capacitive load value table (Table 1)

Vin(VDC)	Cin(μF)	Vo (VDC)	Cout(μF)
5	4.7	3.3/5	10
12	2.2	12	2.2
24	1	15	1

It is not recommended to connect any external capacitor when output power is less than 0.5W.

2. EMC typical recommended circuit

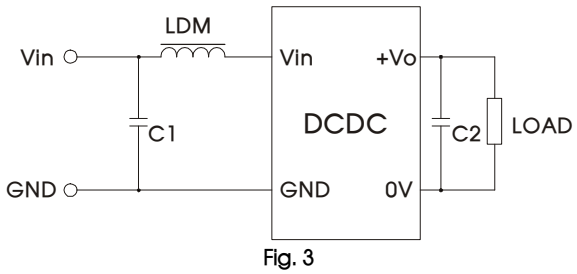


Fig. 3

Input voltage (V)		5/12/24
EMI	C1	4.7μF /50V
	C2	Refer to the Cout in Fig.2
	LDM	6.8μH

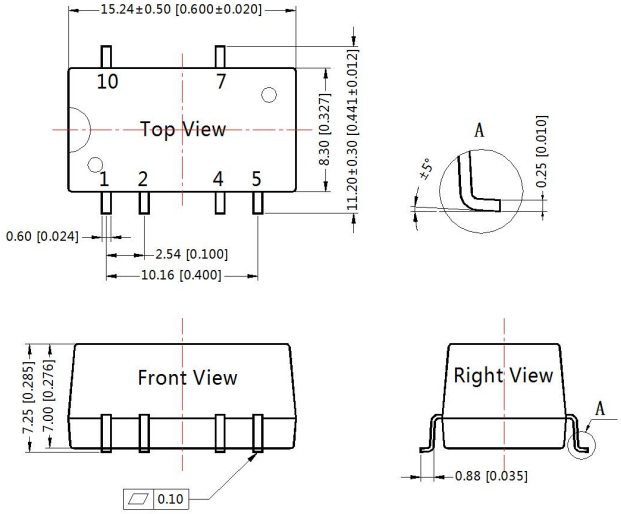
3. Output load requirements

In order to ensure the converter can work reliably with high efficiency, the minimum load should not less than 10% rated load when it is used. If the needed power is indeed small, please parallel a resistor on the output side (The sum of the efficient power and resistor consumption power is not less than 10%).

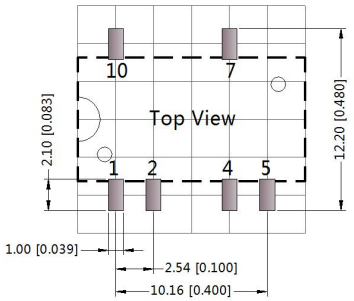
4. For more information please find the application notes on www.mornsun-power.com

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



Note:
Unit: mm[inch]
Pin section tolerances: ±0.10[±0.004]
General tolerances: ±0.25[±0.010]



Note: Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	GND
2	Vin
4	0V
5	0V
7	+Vo
10	NC

NC: Pin to be isolated from circuitry

Notes:

1. Packing Information please refer to 'Product Packing Information'. Packing bag number: 58210023;
2. If the product is operated under the min. required load, the product performance cannot be guaranteed to comply with all performance indexes in this datasheet;
3. The max. capacitive load should be tested within the input voltage range and under full load conditions;
4. Unless otherwise specified, data in this data sheet should be tested under the conditions of Ta=25°C, humidity<75%RH when inputting nominal voltage and outputting rated load;
5. All index testing methods in this datasheet are based on our Company's corporate standards;
6. The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, and please directly contact our technicians for specific information;
7. We can provide product customization service, please contact our technicians directly for specific information;
8. Products are related to laws and regulations: see "Features" and "EMC";
9. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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