

Fixed input voltage, isolated & regulated single output



Patent Protection **RoHS**

FEATURES

- Continuous Short Circuit Protection
- Operating temperature range: -40°C to +105°C
- Isolation voltage: 1K VDC
- Ultra Compact SMD package
- Internal surface mounted design
- International standard pin-out

IB_(X)T-1W & IB_(X)T-W75 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: $\pm 5\%V_{in}$).
2. Where isolation is necessary between input and output (isolation voltage $\leq 1000VDC$).
3. Where has high requirement of line regulation, load regulation and the ripple & noise of the output voltage.

Selection Guide

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.)		
IB0305T-W75	3.3 (3.13~3.46)	5	150/15	63/67	220
IB0305XT-1W		5	200/20	60/64	
IB0505(X)T-W75	5 (4.75~5.25)	5	150/15	64/68	
IB0512(X)T-1W		12	83/9	65/69	
IB0515T-1W		15	67/7	65/69	
IB1205(X)T-W75	12 (11.4~12.6)	5	150/15	63/67	
IB1212(X)T-1W		12	83/9	65/69	
IB1215T-1W		15	67/8	66/70	

Note: 1. IB_XT-1W series have no 3,6,8,9 pin, for example IB0505XT-W75.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load / no-load)	3.3V input	--	500/40	--	mA
	5V input	--	300/30	--	
	12V input	--	130/20	--	
Surge Voltage (1sec. max.)	3.3V input	-0.7	--	5	VDC
	5V input	-0.7	--	9	
	12V input	-0.7	--	15	
Input Filter		Capacitor filter			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		See tolerance envelope graph (Fig. 1)			
Line Regulation	Input voltage change: $\pm 1\%$	--	--	± 1.2	%
Load Regulation	10%-100% load	--	12	--	
Ripple*	20MHz bandwidth	--	10	20	mVp-p
Noise*		--	50	100	
Temperature Drift Coefficient	100% load	--	--	± 0.03	%/°C
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	1000	--	--	VDC
Isolation Resistance	Input-output, Isolation voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100KHz/0.1V	--	40	--	pF
Operating Temperature	Derating if the temperature $\geq 71^{\circ}\text{C}$ (see Fig. 2)	-40	--	85	$^{\circ}\text{C}$
Storage Temperature		-55	--	125	
Casing Temperature Rise	$T_a=25^{\circ}\text{C}$	--	15	25	
Pin Welding Resistance Temperature	Welding spot is 1.5mm away from the casing, 10 seconds	--	--	260	
Reflow Soldering Temperature		Peak temp. $\leq 245^{\circ}\text{C}$, maximum duration time $\leq 60\text{s}$ at 217°C . 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	--	KHz
MTBF	MIL-HDFK-217F@ 25°C	3500	--	--	K hours

Physical Specifications

Casing Material	Black flame-retardant heat-proof epoxy resin (UL94-V0)
Package Dimensions	15.24*11.20*6.50 mm
Weight	1.7 g (Typ.)
Cooling Method	Free air convection

EMC Specifications

EMI	Conducted disturbance	CISPR22/EN55022	CLASS A (see Fig. 4 for recommended circuit)
EMS	Electrostatic discharge	IEC/EN61000-4-2	Contact $\pm 6\text{kV}$ perf. Criteria B

Product Characteristic Curve

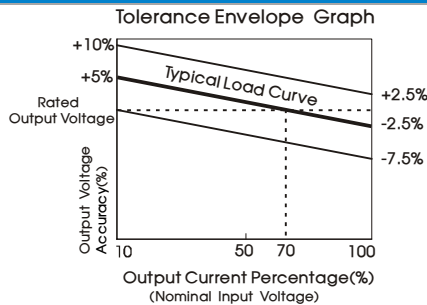


Fig. 1

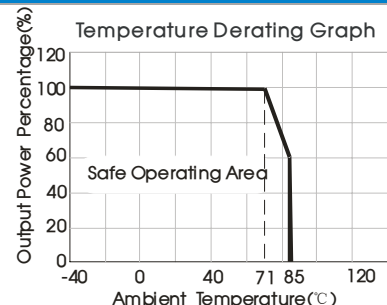


Fig. 2

Design Reference

1. Typical application

If it is required to further reduce input and output ripple, a "LC" filter capacitor can be connected to the input and output terminals, see Fig.3.

It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the DC/DC frequency to avoid mutual interference. However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees Table 1.

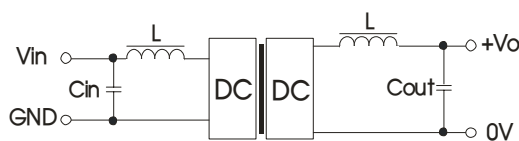


Fig.3

Recommended capacitive load value table (Table 1)

Vin (VDC)	Cin (μF)	Vout (VDC)	Cout (μF)
3.3	4.7	5	4.7
5	4.7	12	1
12	2.2	15	1

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

2. EMC typical recommended circuit

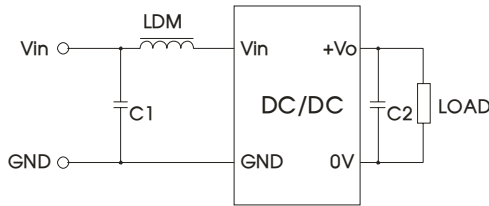


Fig. 4

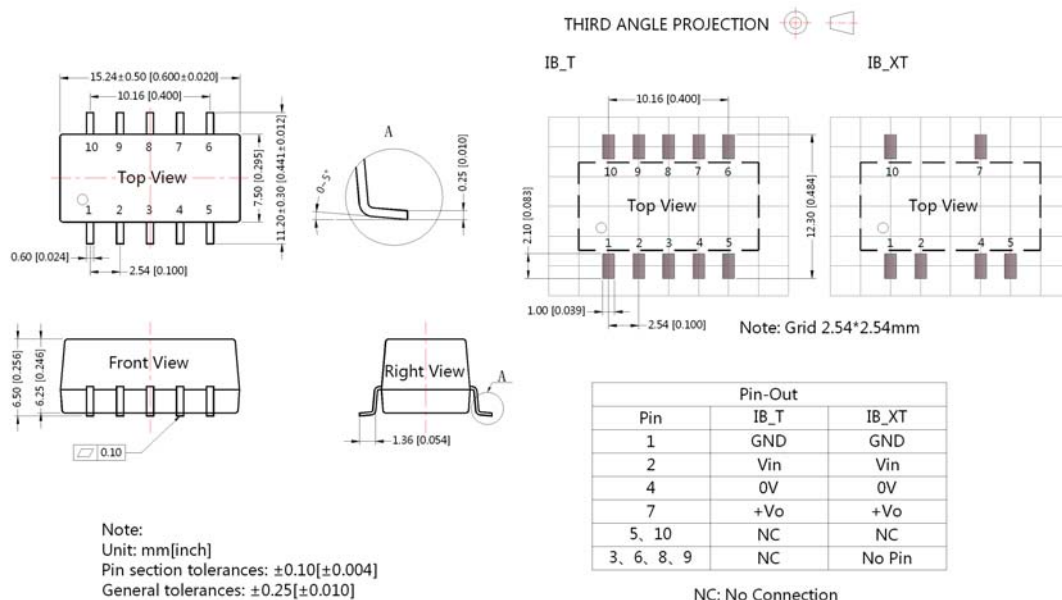
Input voltage (VDC)		3.3/5/12
EMI	C1	4.7μF /50V
	C2	Refer to the Cout in Fig.3
	LDM	6.8μH

3. Output load requirements

To ensure the module work efficiently and reliably, during the operation, the min. output load should be no less than 10% of the full load. If the actual output power is low, please connect a resistor to the output terminal in parallel, with a recommended resistance which is 10% of the rated power, and derating is required during operation.

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

Dimensions and Recommended Layout



Notes:

1. Packing Information please refer to 'Product Packing Information'. Packing bag number: 58200019;
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 datasheet should be tested under the conditions of Ta=25°C, humidity<75% 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;
8. Specifications of this product are subject to changes without prior notice.

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