

## B\_(X)T-W2 Series

**0.25W, FIXED INPUT, ISOLATED & UNREGULATED  
SINGLE OUTPUT, SMD DC-DC CONVERTER**

multi-country patent protection **RoHS**

### FEATURES

Single Voltage Output  
SMD Package Style  
No Heat sink Required  
1KVDC Isolation  
Temperature Range: -40°C to +85°C  
Internal SMD construction  
No External Component Required  
Industry Standard Pinout  
RoHS Compliance

### APPLICATIONS

The B\_(X)T-W2 Series are specially designed for applications where a group of polar power supplies are isolated from the input power supply in a distributed power supply system on a circuit board.

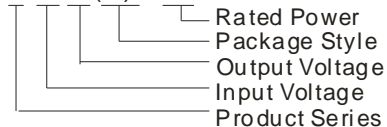
These products apply to:

- 1) Where the voltage of the input power supply is fixed (voltage variation  $\leq \pm 10\%$ );
- 2) Where isolation is necessary between input and output (isolation voltage  $\leq 1000\text{VDC}$ );
- 3) Where the regulation of the output voltage and the output ripple noise are not demanding.

Such as: purely digital circuits, ordinary low frequency analog circuits, and IGBT power device driving circuits.

### MODEL SELECTION

B0505(X)T-W2



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### PRODUCT PROGRAM

Part Number	Input		Output			Efficiency (% , Typ.)
	Voltage (VDC)		Voltage (VDC)	Current (mA)		
	Nominal	Range		Max	Min	
B0503(X)T-W2	5	4.5-5.5	3.3	76	8	62
B0505(X)T-W2			5	50	5	64
B0509(X)T-W2			9	28	3	65
B0512(X)T-W2			12	21	2	67
B0515(X)T-W2			15	17	2	66
B1205(X)T-W2	12	10.8-13.2	5	50	5	65
B1209(X)T-W2			9	28	3	64
B1212(X)T-W2			12	21	2	63
B1215(X)T-W2			15	17	2	64
B2405(X)T-W2	24	21.6-26.4	5	50	5	60
B2409(X)T-W2			9	28	3	61
B2412(X)T-W2			12	21	2	63
B2415(X)T-W2			15	17	2	65

Note: The B\_XT-W2 series have no 3,6,7 pin. For example B0505XT-W2.

### ISOLATION SPECIFICATIONS

Item	Test Conditions	Min	Typ.	Max	Units
Isolation voltage	Tested for 1 minute and 1mA max	1000			VDC
Isolation resistance	Test at 500VDC	1000			MΩ

### OUTPUT SPECIFICATIONS

Item	Test Conditions	Min	Typ.	Max	Units
Output power				0.25	W
Line regulation	For Vin change of 1%(3.3V output)			$\pm 1.5$	%
	For Vin change of 1%(Others output)			$\pm 1.2$	
Load regulation	10% to 100% load (3.3V output)		15	20	
	10% to 100% load (5V output)		12.8	15	
	10% to 100% load (9V output)		8.3	10	
	10% to 100% load (12V output)		6.8	10	
10% to 100% load (15V output)		6.3	10		
Output voltage accuracy		See tolerance envelope graph			
Temperature drift	100% full load			0.03	%/°C
Output ripple & Noise*	20MHz Bandwidth		50	75	mVp-p
Switching frequency	Full load, nominal input(24V input)		500		KHz
	Full load, nominal input (others input)		110		

\*Test ripple and noise by "parallel cable" method. See detailed operation instructions at Testing of Power Converter section, application notes.

Note:

1. All specifications measured at  $T_A=25^\circ\text{C}$ , humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. See below recommended circuits for more details.

## COMMON SPECIFICATION

Item	Test Conditions	Min	Typ.	Max	Units
Storage humidity				95	%
Operating temperature		-40		85	°C
Storage temperature		-55		125	
Temp. rise at full load			15	25	
Lead temperature	1.5mm from case for 10 seconds			260	
Cooling		Free air convection			
Case material		Plastic(UL94-V0)			
Short circuit protection*				1	s
MTBF		3500			K hours
Weight			1.35		g

\*Supply voltage must be discontinued at the end of short circuit duration.

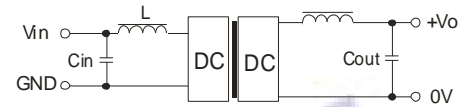
## APPLICATION NOTE

### Requirement on output load

To ensure this module can operate efficiently and reliably, During operation, the minimum output load is **not less than 10%** of the full load, and that **this product should never be operated under no load!** If the actual output power is very small, please connect a resistor with proper resistance at the output end in parallel to increase the load.

### Recommended circuit

If you want to further decrease the input/output ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, see (Figure 1).

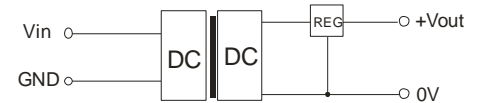
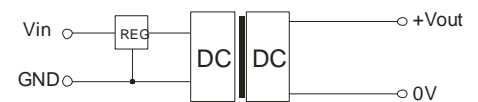


(Figure 1)

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. It's not recommended to connect any external capacitor in the application field.

### Output Voltage Regulation and Over-voltage Protection Circuit

The simplest device for output voltage regulation, over-voltage and over-current protection is a linear voltage regulator with overheat protection that is connected to the input or output end in series (Figure2).



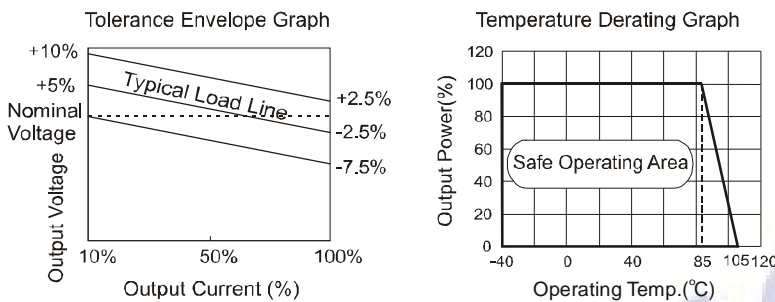
(Figure2)

### Overload Protection

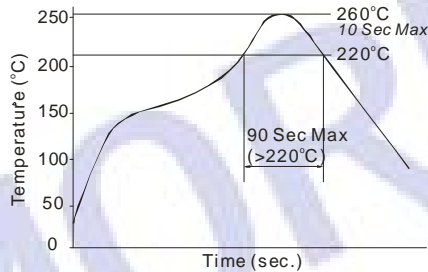
Under normal operating conditions, the output circuit of these products has no protection against over-current and short-circuits. The simplest method is to connect a self-recovery fuse in series at the input end or add a circuit breaker to the circuit.

**No parallel connection or plug and play.**

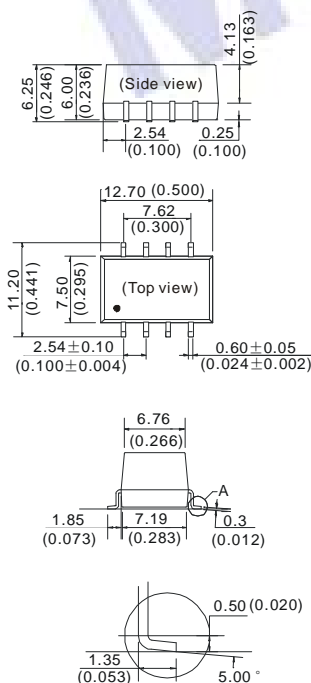
## TYPICAL CHARACTERISTICS



## RECOMMENDED REFLOW SOLDERING PROFILE

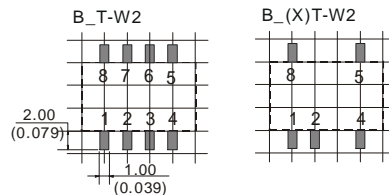


## OUTLINE DIMENSIONS & FOOTPRINT DETAILS



First Angle Projection

RECOMMENDED FOOTPRINT  
Top view, grid: 2.54\*2.54mm(0.1\*0.1inch)



### FOOTPRINT DETAILS

Pin	Function(T)	Function(XT)
1	GND	GND
2	Vin	Vin
4	0V	0V
5	+Vo	+Vo
3,6,7	NC	No Pin
8	NC	NC

NC:No Connection

Note:  
Unit:mm(inch)  
Pin section:0.60\*0.25mm(0.024\*0.010inch)  
Pin section tolerances:±0.10mm(±0.004inch)  
General tolerances:±0.15mm(±0.006inch)