

B0505T-3W

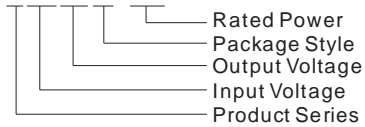
**3W, FIXED INPUT, ISOLATED & UNREGULATED
SINGLE OUTPUT
DC-DC CONVERTER**



Patent Protected RoHS

PART NUMBER SYSTEM

B0505T-3W



FEATURES

- | Miniature SMD package
- | Operating temperature range:
-40°C to +85°C
- | 1.5KVDC isolation
- | Continuous, automatic recovery
- | Low temperature rise
- | Internal SMD construction
- | Industry standard pinout

APPLICATIONS

The B_T-3W Series are designed for application where isolated output is required from a distributed power system.

These products apply to where:

- 1) Input voltage rang $\pm 10\%V_{in}$;
 - 2) 1.5KVDC input and output isolation;
 - 3) Regulated and low ripple noise is not required.
- Such as: digital circuits and low frequency analog circuits and relay drive circuit.

SELECTION GUIDE

Model	Input Voltage(VDC)	Output Voltage (VDC)	Output Current (mA)		Input Current (mA)(Typ.)		Reflected Ripple Current (mA, Typ.)	Max. Capacitive Load(μ F)	Efficiency (% , Typ.) @Max. Load
	Nominal (Range)		Max.	Min.	@Max. Load	@No Load			
B0505T-3W	5(4.5-5.5)	5	600	60	709	30	25	220	85

INPUT SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
Input Surge Voltage (1sec. max.)		-0.7	--	9	VDC
Input Filter		Capacitor			

OUTPUT SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		See tolerance envelope curve			
Line Regulation	For V_{in} change of $\pm 1\%$	--	--	± 1.2	%
Load Regulation	10% to 100% load	--	10	15	
Temperature coefficient	100% load	--	--	± 0.03	%/ $^{\circ}$ C
Ripple & Noise*	20MHz Bandwidth	--	100	--	mVp-p
Short Circuit Protection**		Continuous, automatic recovery			

Note:* Ripple and noise tested with "parallel cable" method. See detailed operation instructions at *DC-DC Application Notes*.

COMMON SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-Output, Tested for 1 minute and leakage current less than 1 mA	1500	--	--	VDC
Isolation Resistance	Input-Output, Test at 500VDC	1000	--	--	M Ω
Isolation Capacitance	Input-Output, 100KHz/1V	--	17	--	pF
Switching Frequency	100% Full load, nominal input	--	100	300	KHz
MTBF	MIL-HDBK-217F@25 $^{\circ}$ C	3500	--	--	K hours
Case Material		Epoxy Resin (UL94-V0)			
Weight		--	2.0	--	g

ENVIRONMENTAL SPECIFICATIONS

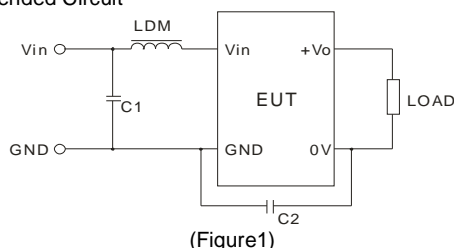
Item	Test Conditions	Min.	Typ.	Max.	Unit
Storage Humidity	Non condensing	--	--	95	%
Operating Temperature	Power derating (above 71°C, see Figure 2)	-40	--	85	°C
Storage Temperature		-55	--	125	
Temp. rise at full load	Ta=25°C	--	25	--	
Lead Temperature	1.5mm from case for 10 seconds	--	--	300	
Cooling		Free air convection			

EMC SPECIFICATIONS

EMI	CE	CISPR22/EN55022 CLASS B (External Circuit Refer to Figure1)
EMS	ESD	IEC/EN61000-4-2 Contact ±8KV perf. Criteria B

EMC RECOMMENDED CIRCUIT

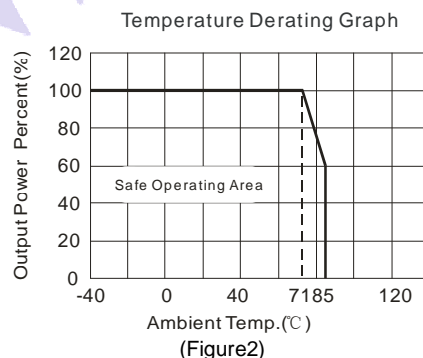
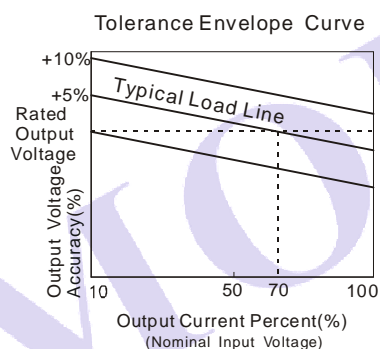
EMI Typical Recommended Circuit



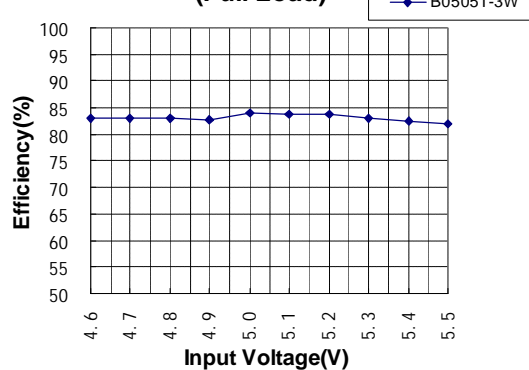
Recommended typical circuit parameters:

Vin (V)		5
EMI	C1	4.7μF /50V
	C2	470pF/2KV
	LDM	6.8μH

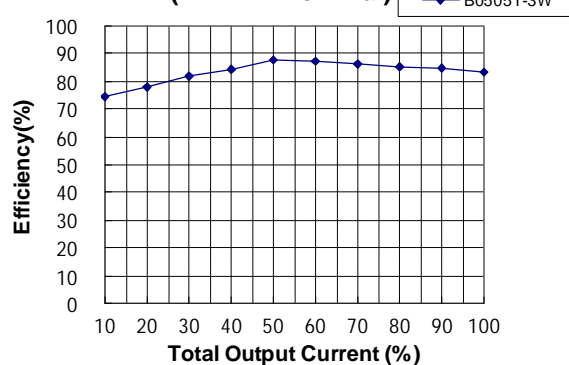
PRODUCT TYPICAL CURVE



Efficiency VS Input Voltage curve (Full Load)

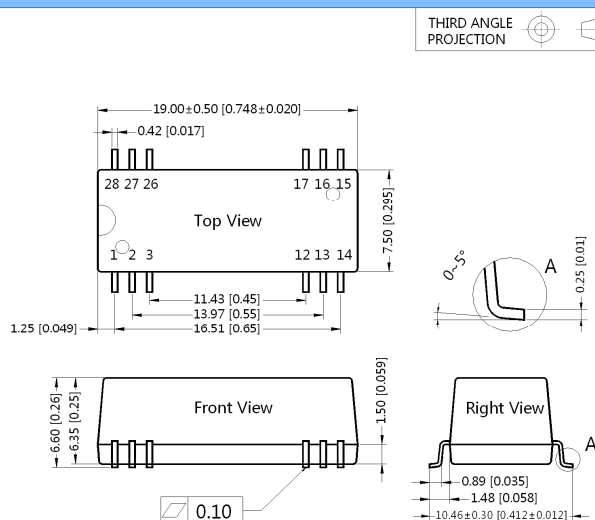


Efficiency VS Output Load curve (Vin=Vin-nominal)

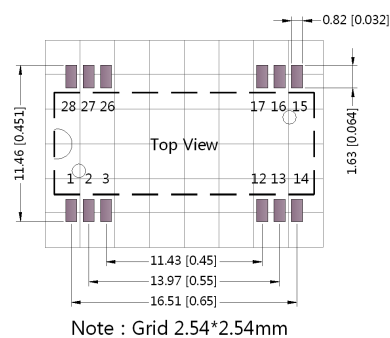


DIMENSIONS, RECOMMENDED FOOTPRINT & PACKAGING

MECHANICAL DIMENSIONS



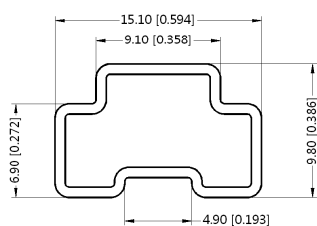
RECOMMENDED FOOTPRINT DETAILS



PIN CONNECTION	
Pin	Function
1	Vin
2	GND
3	GND
12	0V
13	Vo
14, 15, 16, 17	NC
26, 27, 28	NC

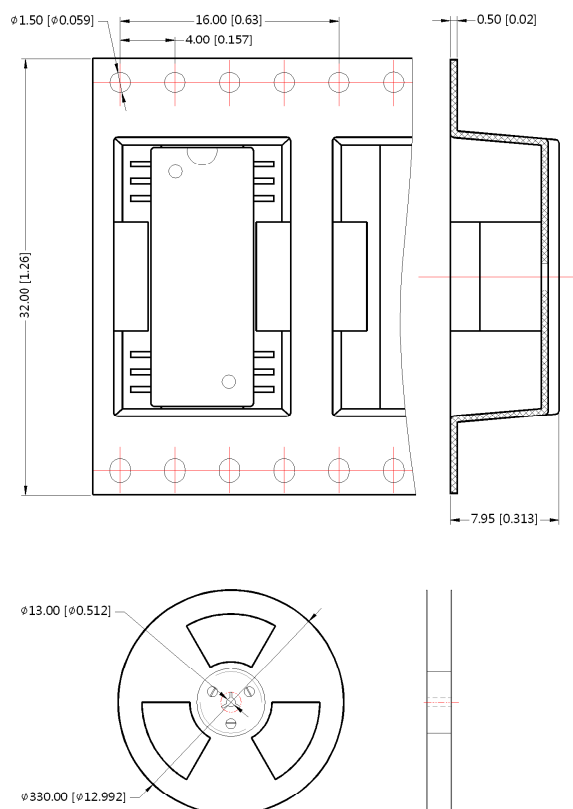
NC:No Connection

TUBE PACKAGING DIMENSIONS



Note:
Unit:mm[inch]
General tolerances: $\pm 0.50\text{mm}[\pm 0.020\text{inch}]$
L=530mm[20.866inch] Quantity:26pcs;
L=220mm[8.661inch] Quantity:10pcs;
Inner carton(S):L*W*H=255*170*80mm;
Outer carton(S):L*W*H=375*280*270mm;
Inner carton(L):L*W*H=580*200*100mm;
Outer carton(L):L*W*H=600*215*220mm,2 inner cartons(L);
Outer carton(L):L*W*H=600*215*325mm,3 inner cartons(L).

REEL PACKAGING DIMENSIONS

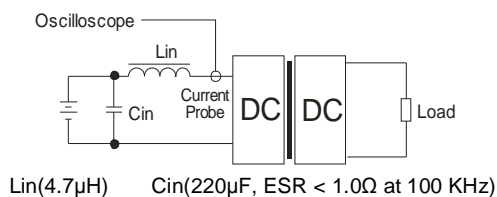


Note:
Unit:mm[inch]
General tolerances: $\pm 0.50\text{mm}[\pm 0.020\text{inch}]$
Per reel of packing quantity:500pcs;
Inner carton:L*W*H=365*350*105mm
Quantity:1500pcs;
Outer carton:L*W*H=390*360*245mm
Quantity:3000pcs;

TEST CONFIGURATIONS

Input Reflected-Ripple Current Test Setup

Input reflected-ripple current is measured with an inductor L_{in} and Capacitor C_{in} to simulate source impedance.



DESIGN CONSIDERATIONS

1) Requirement for output load

To ensure this module operate efficiently and reliably, the minimum output load could not be less than 10% of the full load. If the actual output power is very small, please connect a resistor to the output in parallel to increase the load.

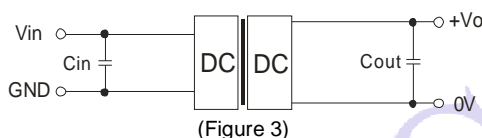
2) Overload Protection

Under normal operating conditions, the output circuit of these products have not overload protection. The simplest method is to add a breaker circuit in the circuit.

3) Recommended circuit

If you want to further decrease the input/output ripple, an capacitor filtering network may be connected to the input and output ends of the DC/DC converter, refer to Figure 3.

It should also be noted that the capacitance of the capacitor must be proper. If the capacitance is too large, a startup problem might arise. For ensuring every channel of output can provide a safe and reliable operation, the recommended capacitance of the capacitor refer to Table 1.



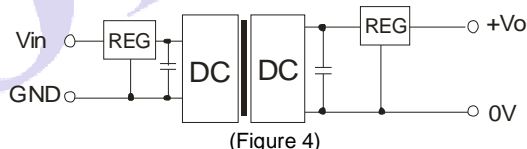
EXTERNAL CAPACITOR TABLE (Table 1)

Vin (VDC)	Cin (μF)	Vo (VDC)	Cout (μF)
5	4.7	5	10

It's not recommended to connect any external capacitor in the application field with less than 0.5 watt output.

4) Output Voltage Regulation and Over-voltage Protection Circuit

The simplest device for output voltage regulation, over-voltage and over-current protection is a linear regulator with overheat protection which is connected to the input or output in series (Figure 4) and an capacitor filtering network. the recommended capacitance of the capacitor refer to Table 1, linear regulator based on the actual voltage and current to make a reasonable selection.



5) It is not recommended to increase the output power capability by connecting two or more converters in parallel. The product is not hot-swappable

Note:

1. Operation under minimum load will not damage the converter; However, they may not meet all specifications.
2. Max. Capacitive Load is tested at nominal input voltage and full load.
3. Unless otherwise noted, All specifications are measured at $T_a=25^{\circ}\text{C}$, humidity<75%, nominal input voltage and rated output load.
4. In this datasheet, all test methods are based on our corporate standards.
5. All characteristics are for listed models, and non-standard models may perform differently. Please contact our technical support for more detail.
6. Please contact our technical support for any specific requirement.

Specifications of this product are subject to changes without prior notice

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