DBZ_XT1P

1W, FIXED INPUT, ISOLATED & UNREGULATED SINGLE OUTPUT

FEATURES

- Miniature SMD package
- 1500VDC isolation
- Operating temperature range: -40℃~+105℃
- Internal SMD construction
- No external component required
- Industry standard pinout
- continuous short circut protection

PART NUMBER SYSTEM

DBZ-0505-XT1P

- Rated Power
- Package
- Output Voltage
- Input Voltage
- Product Series

APPLICATIONS

The DBZ_XT1P Series are designed for application where isolated output is required from a distributed power system.

These products apply to where:

1. Input voltage variation ≤ ±10%;
2. 1.5KVDC input and output isolation;
3. Low ripple noise is not required.

Such as: digital circuit, low frequency analog circuit, 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(μF)	Efficiency (%, Typ.) @Max. Load
	Nominal (Range)		Max.	Min.	@Max. Load	@No Load			
DBZ-0303-XT1P	3.3 (2.97-3.63)	3.3	303	30	415	25	15	220	73
DBZ-0305-XT1P		5	200	20	388				78
DBZ-0503-XT1P	5 (4.5-5.5)	3.3	303	30	263	20			76
DBZ-0505-XT1P		5	200	20	250				80
DBZ-0509-XT1P		9	111	12	250				80
DBZ-0512-XT1P		12	84	9	250				80
DBZ-0515-XT1P		15	67	7	250				80
DBZ-0524-XT1P		24	42	4	250				80
DBZ-1203-XT1P	12 (10.8-13.2)	3.3	303	30	111	15			75
DBZ-1205-XT1P		5	200	20	104				80
DBZ-1209-XT1P		9	111	12	104				80
DBZ-1212-XT1P		12	84	9	103				81
DBZ-1215-XT1P		15	67	7	103				81
DBZ-1515-XT1P	15 (13.5-16.5)	15	67	7	82	10			81
DBZ-2405-XT1P	24 (21.6-26.4)	5	200	20	52	7			80
DBZ-2409-XT1P		9	110	11	52				80
DBZ-2415-XT1P		15	67	7	51				81
DBZ-2424-XT1P		24	42	4	51				81

INPUT SPECIFICATIONS

Item	Test Conditions	Min.	Typ.	Max.	Unit
Input Surge Voltage (1 sec. max.)	3.3VDC Input	-0.7	--	5	VDC
	5VDC Input	-0.7	--	9	
	12VDC Input	-0.7	--	18	
	15VDC Input	-0.7	--	21	
	24VDC Input	-0.7	--	30	
Input Filter		Capacitance Filter			

OUTPUT SPECIFICATIONS

Item	Test Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy			See tolerance envelope curve			
Line Regulation	For Vin change of±1%	3.3V output	--	--	±1.5	%
		Others	--	--	±1.2	
Load Regulation	10% to 100% load	3.3V output	--	18	--	
		5V output	--	12	--	
		9V output	--	8	--	
		12V output	--	7	--	
		15V output	--	6	--	
		24V output	--	5	--	
Temperature Drift	100% load		--	--	±0.03	%/°C
Ripple & Noise*	20MHz Bandwidth	Output Voltage ≤12V	--	30	--	mVp-p
		Output Voltage:15V, 24V	--	60	--	
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	--	--	MΩ
Isolation Capacitance	Inpu-Output,100KHz/0.1V	--	20	--	pF
Switching Frequency	Full load, nominal input	--	100	300	KHz
MTBF	MIL-HDBK-217F@25℃	3500	--	--	K hours
Case Material		Epoxy Resin (UL94-V0)			
Weight		--	1.5	--	g

ENVIRONMENTAL SPECIFICATIONS

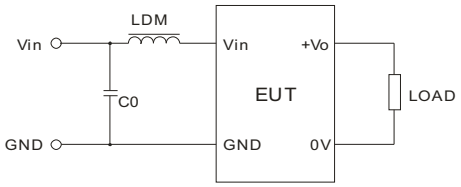
Item	Test Conditions	Min.	Typ.	Max.	Unit
Storage Humidity	Non condensing	--	--	95	%
Operating Temperature	Power derating (above100℃, see Figure 2)	-40	--	105	°C
Storage Temperature		-55	--	125	
Temp. rise at full load	Ta=25°C	--	25	--	
Lead Temperature	1.5mm from case for 10 seconds	--	--	300	
Cooling		Free air convection			

EMC SPECIFICATIONS

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

EMI RECOMMENDED CIRCUIT

EMI Typical Recommended Circuit(CLASS B):



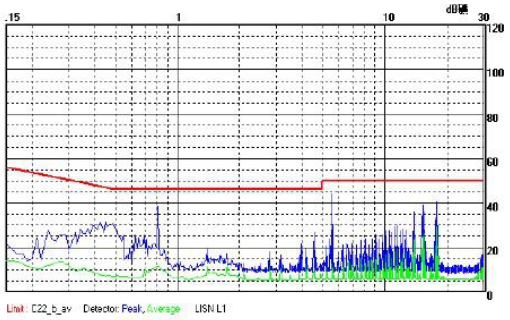
(Figure1)

Recommended external circuit parameters:

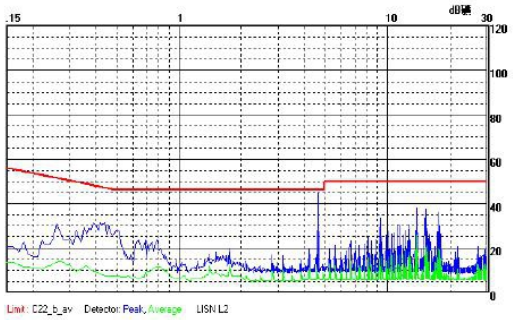
Vin(V)		3.3/5/12/15/24
EMI	C0	4.7μF /50V
	LDM	6.8μH

The models listed above is just for standard type. If you need the special specification product, please contact our service member by telephone presented in shortform cover or e-mail to : info@zimtec-electronics.de

EMI TEST WAVEFORM (RECOMMENDED CIRCUIT FINGURE 1)

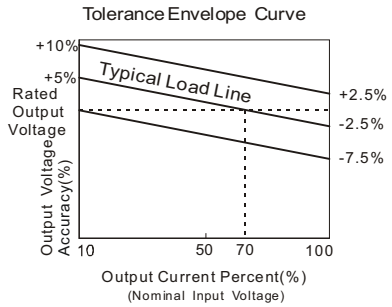


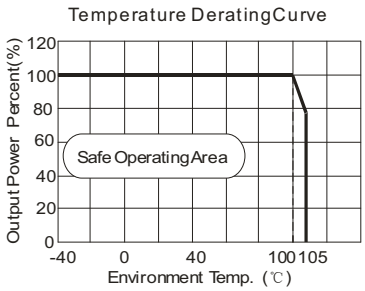
DBZ-0505-XT1P CE (Class B, Positive line)



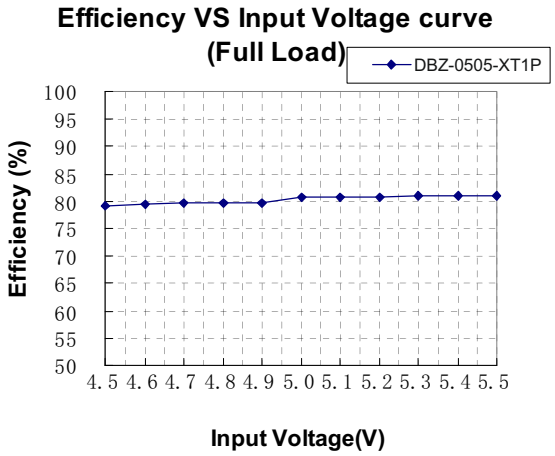
DBZ-0505-XT1P CE (Class B, Negative line)

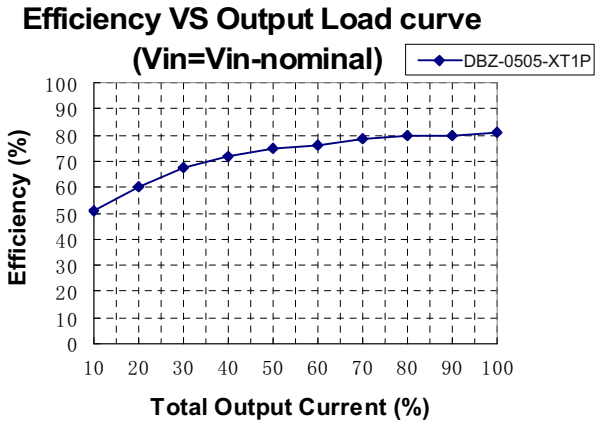
PRODUCT TYPICAL CURVE

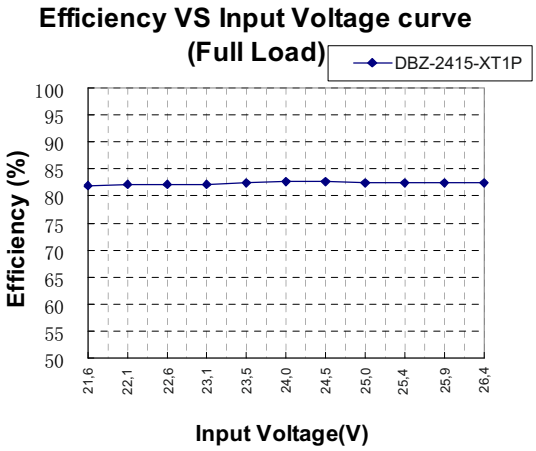


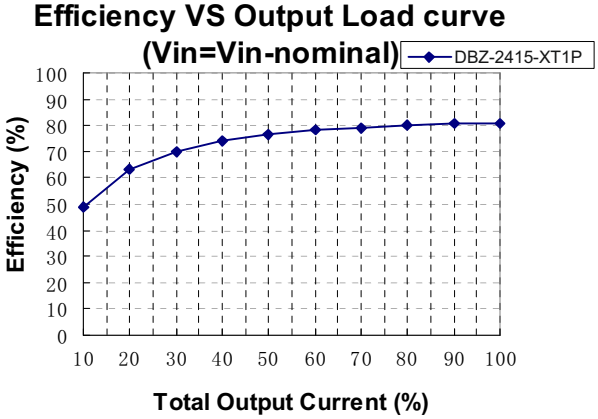


(Figure 2)









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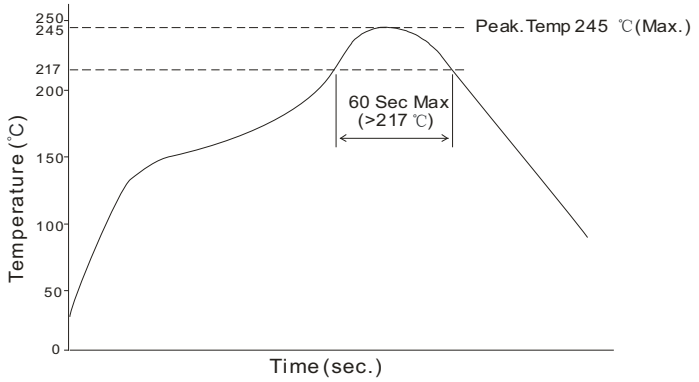
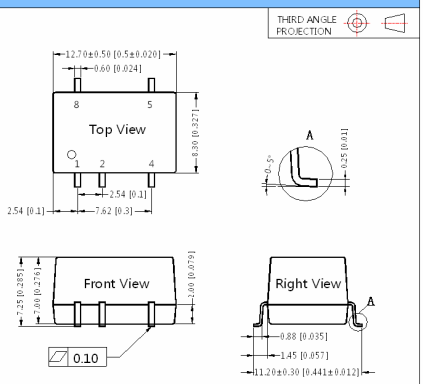
Recommended reflow soldering profile refer to IPC/JEDEC J-STD-020D standard, our products recommend reflow soldering profile as follows:



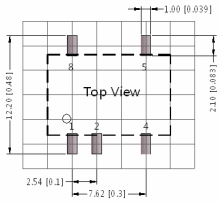
DIMENSIONS, RECOMMENDED FOOTPRINT & PACKAGING

MECHANICAL DIMENSIONS



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

RECOMMENDED FOOTPRINT DETAILS

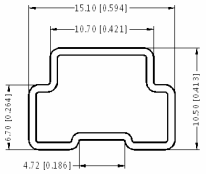


Note : Grid 2.54*2.54mm

PIN CONNECTION	
Pin	Function
1	GND
2	Vin
4	0V
5	+Vo
8	NC

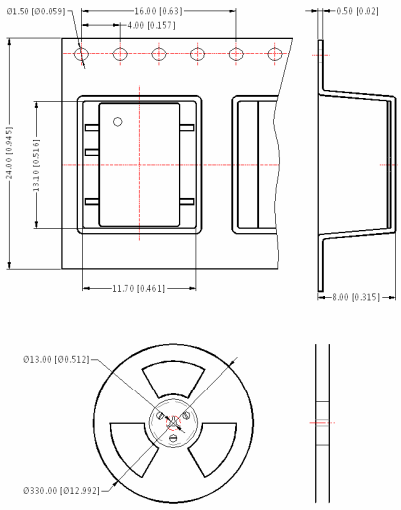
NC:No Connection

TUBE PACKAGING DIMENSIONS



Note:
Unit: mm[inch]
General tolerances:±0.50mm[±0.020inch]
L=530[20.866inch] Quantity:40pcs
L=220[8.661] Quantity:15pcs
Inner carton(S):L*W*H=255*170*80
Outer carton(S):L*W*H=375*280*270
Inner carton(L):L*W*H=580*200*100
Outer carton(L): L*W*H=600*215*220,2 inner cartons(L)
Outer carton(L): L*W*H=600*215*325,3 inner cartons(L)

REEL PACKAGING DIMENSIONS



Note:
Unit: mm[inch]
General tolerances:±0.50[±0.020]
Per reel of packing quantity:500pcs
Inner carton:L*W*H=365*350*105
Quantity:2000pcs
Outer carton:L*W*H=390*360*245
Quantity:4000pcs

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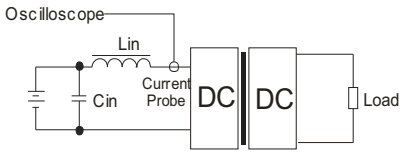
TEST CONFIGURATIONS

Input Reflected-Ripple Current Test Setup

Input reflected-ripple current is measured with an inductor Lin and Capacitor Cin to simulate source impedance.



Lin(4.7μH) Cin(220μF, ESR < 1.0Ω at 100 KHz)

DESIGN CONSIDERATIONS

1) Requirement on output load

To ensure this module can operate efficiently and reliably, During operation, 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 with proper resistance at the output end in parallel to increase the load.

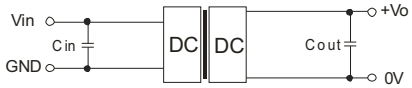
2) Overload Protection

Under normal operating conditions, the output circuit of these products has no protection against overload. The simplest method is to add a circuit breaker to 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, see (Figure 3).

It should also be noted that the capacitance of 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 recommended capacitance of its filter capacitor sees (Table 1).



(Figure 3)

EXTERNAL CAPACITOR TABLE (Table 1)

Vin (VDC)	Cin (μF)	Vo (VDC)	Cout (μF)
3.3	4.7	3.3	10
5	4.7	5	10
12	2.2	9	4.7
15	2.2	12	2.2
24	1	15	1
-	--	24	0.47

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

4) The input and the output of the product are recommended to be connected to ceramic capacitor or electrolytic capacitor. Using tantalum capacitor may cause risk of failure

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 Ta=25°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.
7. Specifications of this product are subject to changes without prior notice.

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