DFZ_XT1P Series

1W, FIXED INPUT, ISOLATED & UNREGULATED SINGLE OUTPUT

FEATURES

- Miniature SMD package
- 3000VDC isolation
- Operating temperature range: -40℃~+105℃
- Efficiency up to 81%
- Internal SMD construction
- No external component required
- Industry standard pinout
- Continous short circuit protection

PART NUMBER SYSTEM

DFZ-0505-XT1P

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

APPLICATIONS

The DFZ_XT1P series are designed for application where isolatet output is required from a distributed power system.

These products apply to where:
1. Input Voltage rang:±10% Vin;
2. 3000 VDC Input and Output isolation;
3. Such as: digital circuit, low frequency analog circuit, and relay drive circuit.

SELECTION GUIDE

Model	Input Voltage(VDC) Nominal (Range)	Output Voltage (VDC)	Output Current (mA) Max.	Output Current (mA) Min.	Input Current (mA,Typ.) @Max. Load	Input Current (mA,Typ.) @No Load	Reflected Ripple Current (mA,Typ.)	Max. Capacitive Load(μF)	Efficiency (%, Typ.)
DFZ-0303-XT1P	3.3 (2.97-3.63)	3.3	303	30	415	25	15	220	73
DFZ-0305-XT1P		5	200	20	388				78
DFZ-0503-XT1P	5 (4.5-5.5)	3.3	303	30	263	20			76
DFZ-0505-XT1P		5	200	20	250				80
DFZ-0509-XT1P		9	111	12	250				80
DFZ-0512-XT1P		12	84	9	250				80
DFZ-0515-XT1P		15	67	7	250				80
DFZ-0524-XT1P		24	42	4	250				80
DFZ-1203-XT1P	12 (10.8-13.2)	3.3	303	30	111	15			75
DFZ-1205-XT1P		5	200	20	104				80
DFZ-1209-XT1P		9	111	12	104				80
DFZ-1212-XT1P		12	84	9	103				81
DFZ-1215-XT1P		15	67	7	103				81
DFZ-1515-XT1P	15 (13.5-16.5)	15	67	7	82	10			81
DFZ-2405-XT1P	24 (21.6- 26.4)	5	200	20	52	7			80
DFZ-2409-XT1P		9	110	11	52				80
DFZ-2415-XT1P		15	67	7	51				81
DFZ-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		Capacitor			

OUTPUT SPECIFICATIONS

Item	Test Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy			See tolerance envelope curve			
Line Regulation	For Vin change of ±1%	3.3VDC output	--	--	±1.5	%
		Others	--	--	±1.2	
Load Regulation	10% to 100% load	3.3VDC output	--	18	--	%
		5VDC output	--	12	--	
		9VDC output	--	8	--	
		12VDC output	--	7	--	
		15VDC output	--	6	--	
		24VDC output	--	5	--	
Temperature coefficient	100% load		--	--	±0.03	%/°C
Ripple & Noise*	20MHz Bandwidth	Output Voltage ≤12VDC	--	30	--	mVp-p
		Output Voltage :15VDC, 24VDC	--	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 1mA	3000	--	--	VDC
Isolation Resistance	Input-Output, test at 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-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

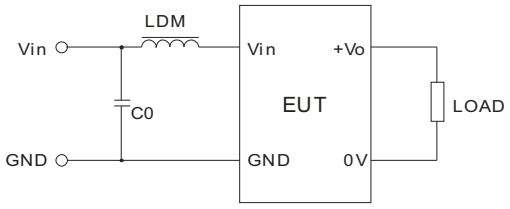
Item	Test Conditions	Min.	Typ.	Max.	Unit
Storage Humidity	Non condensing	--	--	95	%
Operating Temperature	Power derating (≥100℃, see Figure 2)	-40	--	105	°C
Storage Temperature		-55	--	125	
Temperature rise	Ta=25°C,100% Load	--	25	--	
Lead Temperature	1.5mm from case for 10 seconds	--	--	300	
Cooling		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

EMC RECOMMENDED CIRCUIT

EMI Typical Recommended Circuit(CLASS B):



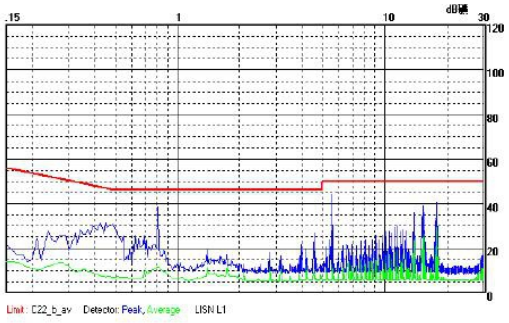
(Figure1)

Recommended typical circuit parameters:

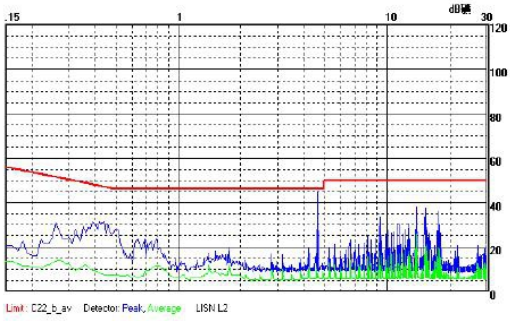
Vin(V)		3.3/5/12/15/24
EMI	C0	4.7μF /50V
	LDM	6.8μH

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 (CLASS B APPLY CIRCUIT)

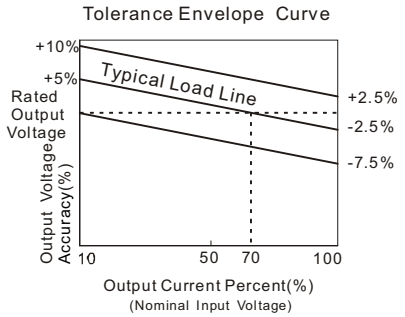


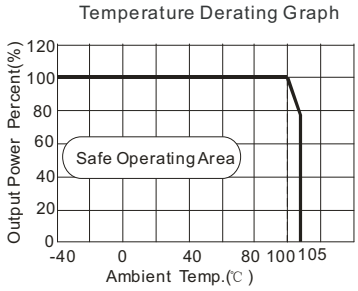
DFZ-0505-XT1P CE (ClassB, Positive line)



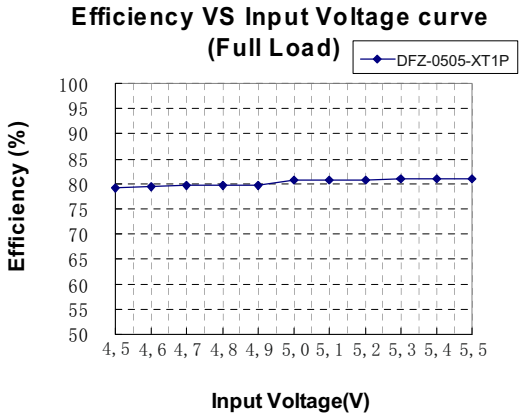
DFZ-0505-XT1P CE (ClassB, Negative line)

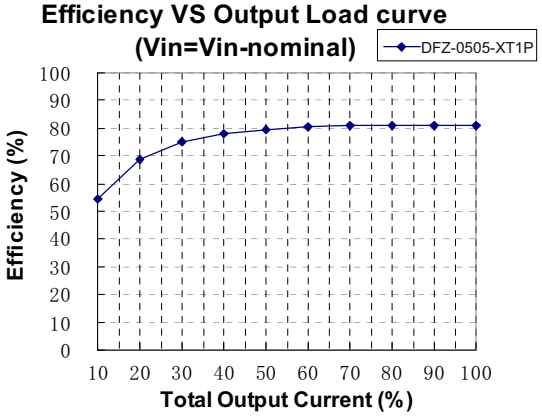
PRODUCT TYPICAL CURVE

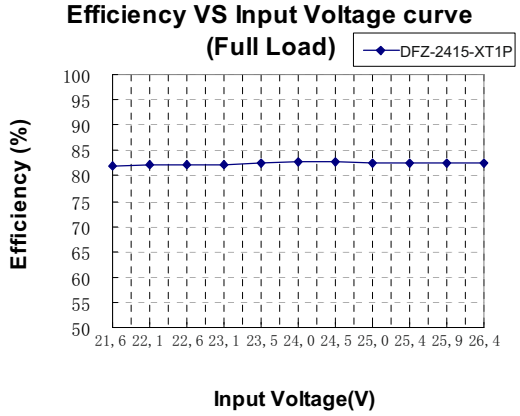


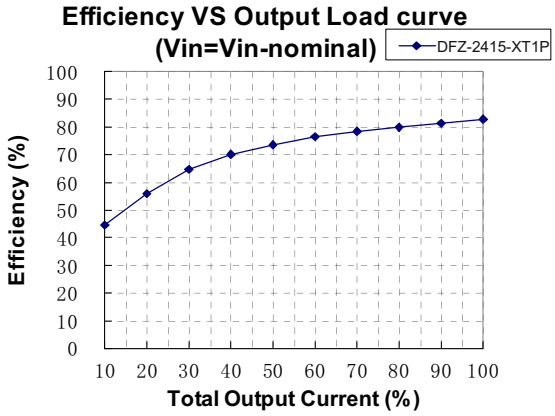


(Figure 2)









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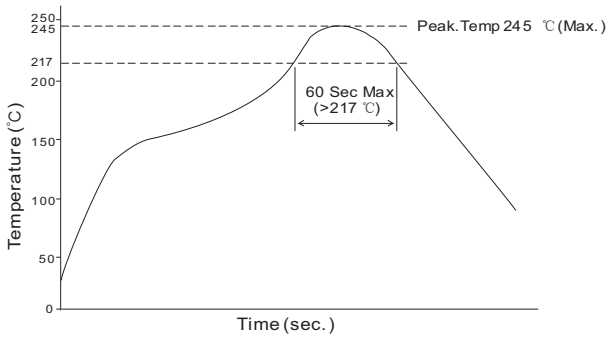
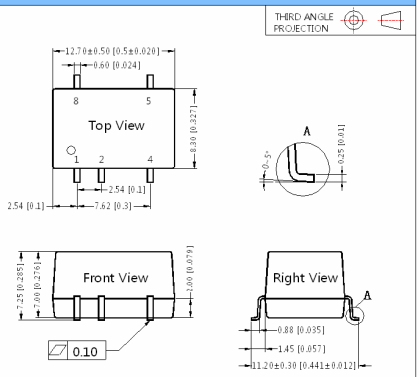
Recommended reflow soldering profile refer to IPC/JEDEC J-STD-020D standard, our products recommended reflow soldering profile as follow:



Note: The curve only applies to the hot air reflow soldering

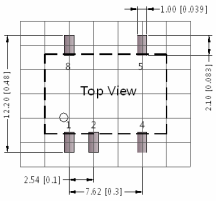
DIMENSIONS, RECOMMENDED FOOTPRINT & PACKAGING

MECHANICAL DIMENSIONS



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

RECOMMENDED FOOTPRINT DETAILS

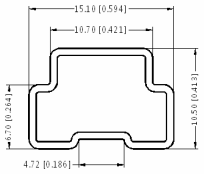


Note : Grid 2.54*2.54mm

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

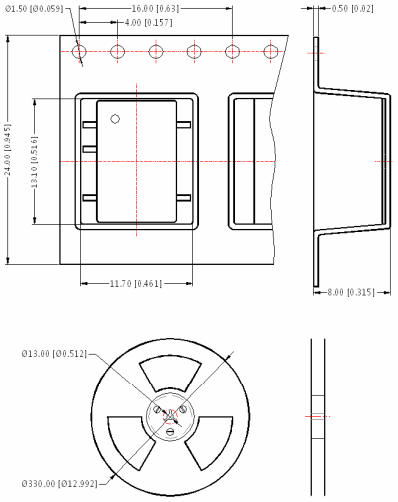
NC:No Connection

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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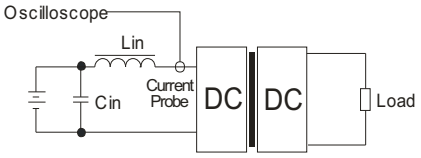
TEST CONFIGURATIONS

Input Reflected-Ripple Current Test Setup

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



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

DESIGN CONSIDERATIONS

1) Requirement for output load

To ensure this module can 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.

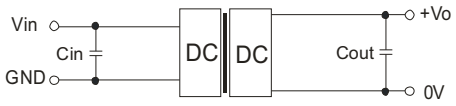
2) Overload Protection

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.



(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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