DBZ_S1P & DBZ_D1P Series

1W, FIXED INPUT, ISOLATED & UNREGULATED SINGLE OUTPUT DC-DC CONVERTER

PART NUMBER SYSTEM

DBZ-0505-S1P

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

PRODUCT FEATURES

- Efficiency up to 82%
- Miniature SIP/DIP Package
- 1500VDC Isolation
- Operating Temperature Range: -40°C ~ +105°C
- No External Component Required
- PCB Mounting
- Industry Standard Pinout
- continuous short circut protection

APPLICATIONS

The DBZ_S1P & DBZ_D1P Series are designed for application where isolated output is required from a distributed power system.

These producs apply to where:

1) Input voltage rang: +- 10%Vin;
2) 1,5KVDC input and output isolation;
3) Regulated and low ripple noise is not required

Such as: digital circuits, low frequency analog circuits, 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.) @Max. Load
DBZ-0303-S/D1P	3.3 (2.97-3.63)	3.3	303	30	405	25	15	220	75
DBZ-0305-S/D1P		5	200	20	380				80
DBZ-0503-S/D1P	5 (4.5-5.5)	3.3	303	30	263	20			76
DBZ-0505-S/D1P		5	200	20	250				80
DBZ-0509-S/D1P		9	111	12	250				80
DBZ-0512-S/D1P		12	84	9	248				81
DBZ-0515-S/D1P		15	67	7	248				81
DBZ-0515-S/D1P		24	42	4	248				81
DBZ-1203-S/D1P	12 (10.8-13.2)	3.3	303	30	111	15			76
DBZ-1205-S/D1P		5	200	20	104				80
DBZ-1209-S/D1P		9	111	12	104				80
DBZ-1212-S/D1P		12	83	9	103				81
DBZ-1215-S/D1P		15	67	7	103				80
DBZ-1515-S/D1P	15 (13.5-16.5)	15	67	7	82	10			81
DBZ-2403-S/D1P	24 (21.6-26.4)	3.3	303	30	55	7			76
DBZ-2405-S/D1P		5	200	20	52				80
DBZ-2409-S/D1P		9	111	12	52				80
DBZ-2412-S/D1P		12	84	9	50				81
DBZ-2415-S/D1P		15	67	7	50				82
DBZ-2424-S/D1P		24	42	4	50				82

INPUT SPECIFICATIONS

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

OUTPUT SPECIFICATIONS

Item	Test Conditions		Min.	Typ.	Max.	Unit
Output Voltage Accuracy			See tolerance envelope curve			
Line Voltage 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 coefficient	100% load		--	--	±0.03	%/°C
Ripple & Noise*	20MHz Bandwidth	Output Voltage ≤12V	--	30	--	mVp-p
		Others	--	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	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		Plastic(UL94-V0)			
Weight	DBZ_S1P Series	--	1.2	--	g
	DBZ_D1P Series	--	1.8	--	

ENVIRONMENTAL SPECIFICATIONS

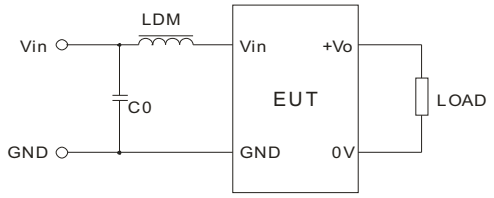
Item	Test Conditions	Min.	Typ.	Max.	Unit
Storage Humidity	Non condensing	--	--	95	%
Operating Temperature	Power derating (above 85℃ see Figure 2)	-40	--	105	°C
Storage Temperature		-55	--	125	
Temperature rise	Ta=25°C,100% Load	--	25	--	
Lead Temperature	1.5mm from case for 10 seconds	--	--	300	
Cooling		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）:



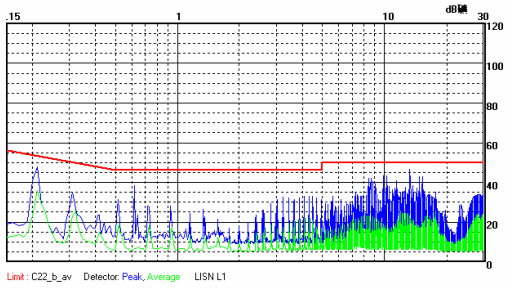
(Figure 1)

Recommended typical circuit parameters:

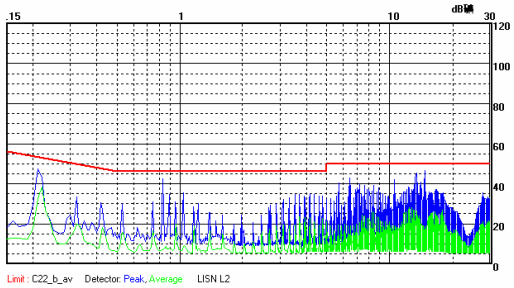
Vin(V)		3.3/5/12/15/24
EMI	C0	4.7μF /50V
	LDM	6.8μH

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

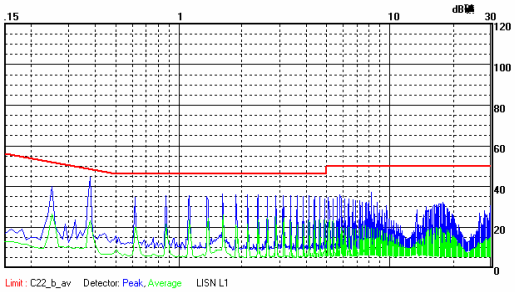
EMI TEST WAVEFORM (RECOMMENDED CIRCUIT FINGURE 1)



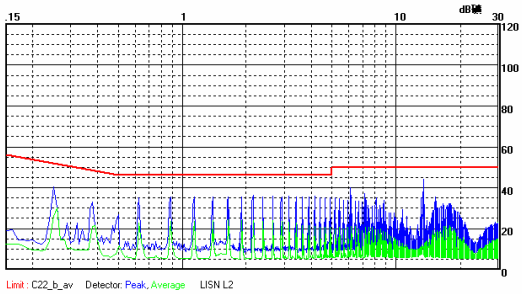
DBZ-0505-S1P CE (Class B, Positive line)



DBZ-0505-S1P CE (Class B, Negative line)

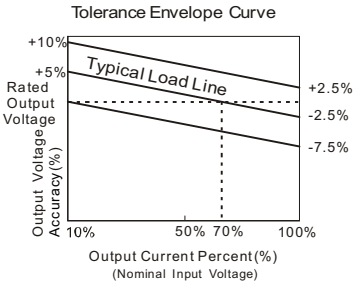


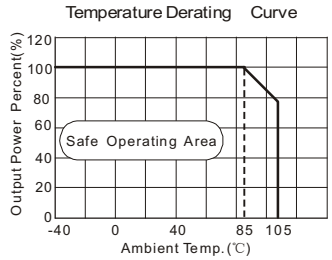
DBZ-0512-D1P CE (Class B, Positive line)



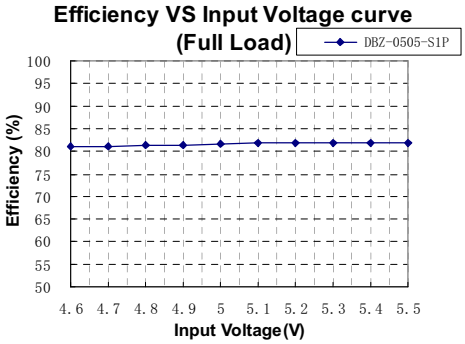
DBZ-0512-D1P CE (Class B, Negative line)

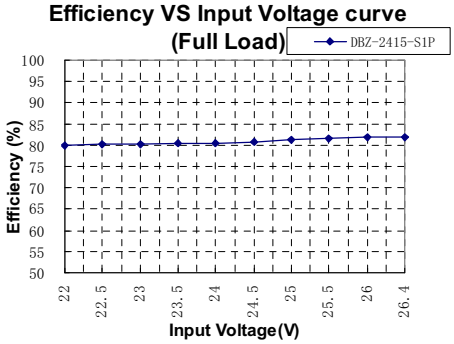
PRODUCT TYPICAL CURVE

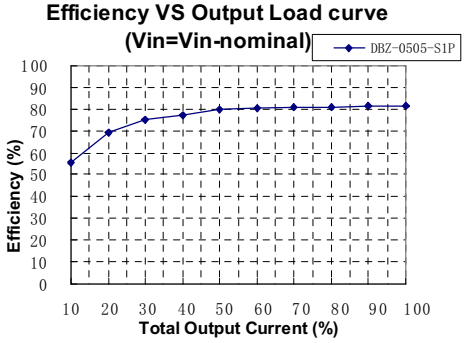


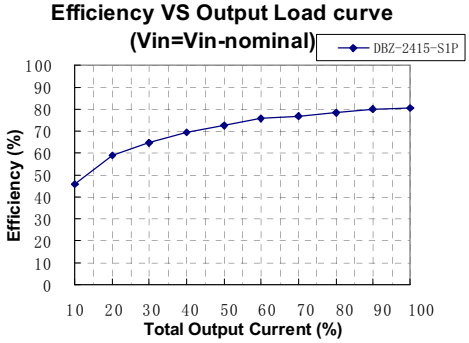


(Figure 2)









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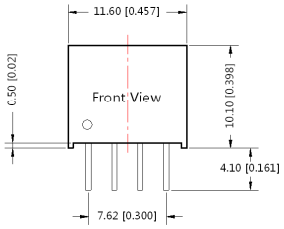
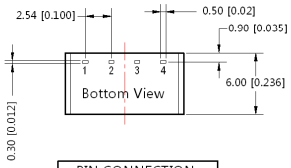
DIMENSIONS, RECOMMENDED FOOTPRINT & PACKAGING

DBZ_S1P

MECHANICAL DIMENSIONS



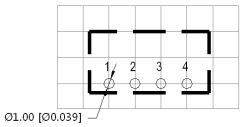


PIN CONNECTION	
Pin	B_S
1	GND
2	Vin
3	0V
4	+Vo

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

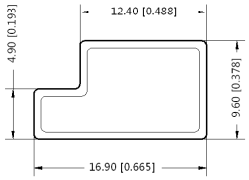
THIRD ANGLE PROJECTION

RECOMMENDED FOOTPRINT DETAILS



Note : Grid 2.54*2.54mm

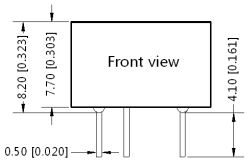
TUBE PACKAGING DIMENSIONS

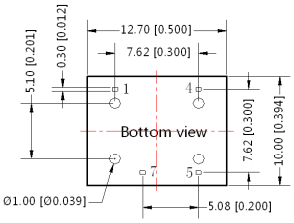


Note:
Unit :mm[inch]
General tolerances: ± 0.50[± 0.020]
L=220[8.661] Tube Quantity: 17pcs
L=530[20.866] Tube Quantity: 43pcs
Inner carton(S): L*W*H=255*170*80
Outer carton(S): L*W*H=375*280*270, 6 inner cartons(S)
Inner carton(L): L*W*H=580*200*100
Outer carton(L): L*W*H=600*215*220, 2 inner cartons(L)
Outer carton(L): L*W*H=600*215*325, 3 inner cartons(L)

DBZ_D1P

MECHANICAL DIMENSIONS



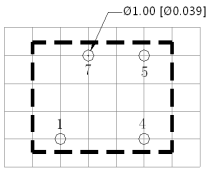


PIN CONNECTION	
Pin	B_D
1	GND
4	Vin
5	+Vo
7	0V

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

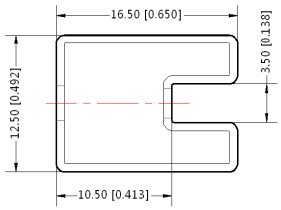
THIRD ANGLE PROJECTION

RECOMMENDED FOOTPRINT DETAILS



Note:Grid 2.54*2.54mm

TUBE PACKAGING DIMENSIONS



Note:
Unit :mm[inch]
General tolerances :±0.50[±0.020]
L=530[20.866] Tube Quantity:40pcs
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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)

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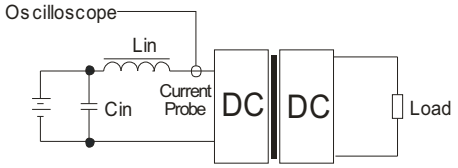
TEST CONFIGURATIONS

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 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.

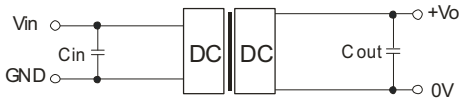
2) Overload Protection

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)
3.3/5	4.7	3.3/5	10
12	2.2	9	4.7
15	1	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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