

Isolation, fixed voltage input, unregulated single output, SMD package

FEATURES

- International standard SMD package
- Isolation voltage 1500 VDC
- Sustainable short-circuit protection
- Low no-load input current
- High conversion efficiency
- Working temperature range:- 40~+105°C



D1-B_XT series is an international standard straight-through SMD package, primarily used in pure digital circuits, low-frequency analog circuits, relay drive circuits, data exchange circuits, etc

SELECTION TABLE

Model	Input voltage(VDC)		Output voltage (VDC)	Output current		Efficiency (%)	Capacitive load (uF)
	Typ	range		Min (mA)	Max(mA)		
D1-B0303XT			3.3	30	303	79	2400
D1-B0305XT			5	20	200	82	2400
D1-B0309XT	3.3	3.0~3.6	9	12	111	85	1000
D1-B0312XT			12	9	84	82	560
D1-B0315XT			15	7	67	82	560
D1-B0324XT			24	4	43	84	220
D1-B0503XT					3.3	30	303
D1-B0505XT			5	20	200	82	2400
D1-B0509XT	5	4.5~5.5	9	12	111	83	1000
D1-B0512XT			12	9	84	83	560
D1-B0515XT			15	7	67	83	560
D1-B0524XT			24	4	43	85	220
D1-B1203XT					3.3	30	303
D1-B1205XT			5	20	200	80	2400
D1-B1209XT	12	10.8~13.2	9	12	111	80	1000
D1-B1212XT			12	9	84	80	560
D1-B1215XT			15	7	67	81	560
D1-B1224XT			24	4	43	81	220
D1-B1503XT					3.3	30	303
D1-B1505XT			5	20	200	80	2400
D1-B1509XT	15	13.5~16.5	9	12	111	80	1000
D1-B1512XT			12	9	84	80	560
D1-B1515XT			15	7	67	81	560
D1-B1524XT			24	4	43	81	220
D1-B2403XT					3.3	30	303
D1-B2405XT			5	20	200	79	2400
D1-B2409XT	24	21.6~26.4	9	12	111	80	1000
D1-B2412XT			12	9	84	81	560
D1-B2415XT			15	7	67	81	560
D1-B2424XT			24	4	43	81	220

INPUT

Parameter	Conditions/description		Min	Typ	Max	Units
Input Current (Full Load/No Load)	3.3VDC input	3.3VDC Output	/	390/12	420/--	mA
		Other Outputs	/	360/12	390/--	
	5VDC input	3.3VDC Output	/	270/8	290/--	
		Other Outputs	/	240/8	255/--	
	12VDC input	3.3VDC Output	/	100/8	110/--	
	15VDC input	3.3VDC Output	/	80/8	108/--	
24VDC input	3.3VDC Output	/	50/8	58/--		
Refracted ripple current			/	15	/	
surge voltage	for maximum of 1 second	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	capacitance filter					
Hot Plug	Unavailable					

OUTPUT

Parameter	Conditions/description		Min	Typ	Max	Units	
Voltage accuracy	10% load to 100% load change		Refer to Output Error Envelope Curve Figure 2				
line regulation	Full load, input voltage variation ±1%	3.3V output	/	/	±1.5		
		Other output	/	/	±1.2		
load regulation	10% to 100% load change	3.3VDC input	3.3V output	/	15	20	%
			Other output	/	8	15	
		5VDC input	3.3V output	/	15	20	
			5V output	/	10	15	
	12/15/24VDC input	3.3V output	3.3V output	/	8	20	
			5V output	/	5	15	
		Other output	3.3V output	/	8	20	
			5V output	/	2	10	
Ripple and noise ¹	20MHz bandwidth (peak to peak)		/	80	/	mVp-p	
Temperature coefficient	100% load		/	±0.02	/	%/°C	
Short circuit protection	Continuous, self-recovery						

Notes: 1. ripple and noise are measured at 20 MHz BW by "parallel cable" method with 1 μF ceramic and 10 μF electrolytic capacitors on the output.

COMPREHENSIVE

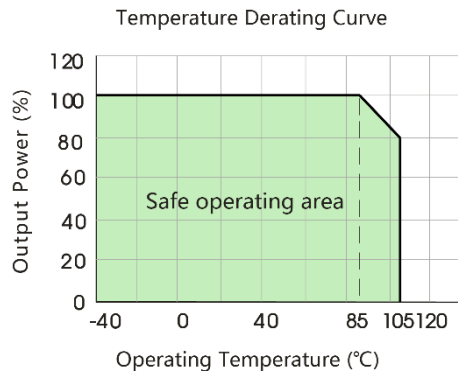
Parameter	Conditions/description	Min	Typ	Max	Units
Isolation voltage	input to output for 1 minute at 1 mA max.	1500	/	/	VDC
Isolation resistance	Input to output, insulation voltage 500 VDC	1000	/	/	MΩ
Isolation capacitor	Input-Output, 100 kHz/0.1 V	/	20	/	pF
Operating temperature	Use at reduced temperature ≥ 85°C. See the derating curve in Figure 1.	-40	/	105	
Storage temperature		-55	/	125	°C
Working temperature rise	at full load, Ta=25°C	/	25	/	
Welding Temperature	Manual-welding, Operation time 3-5 seconds	/	/	300	
	Wave soldering, Operation time 5-10 seconds	/	/	260	
Storage Humidity	non-condensing	/	/	95	%
Switching frequency	Nominal input voltage	/	240	/	kHZ
MTBF	MIL-HDBK-217F @ 25°C	3500	/	/	Khours
Cooling method	Natural air cooling				
Dimensions	13.2 x 11.4 x 7.25mm (0.520 x 0.449 x 0.285 inch)				
Weight	1.4g				
Case material	Black plastic; flame-retardant and heat-resistant plastic (UL94-V0)				

EMC

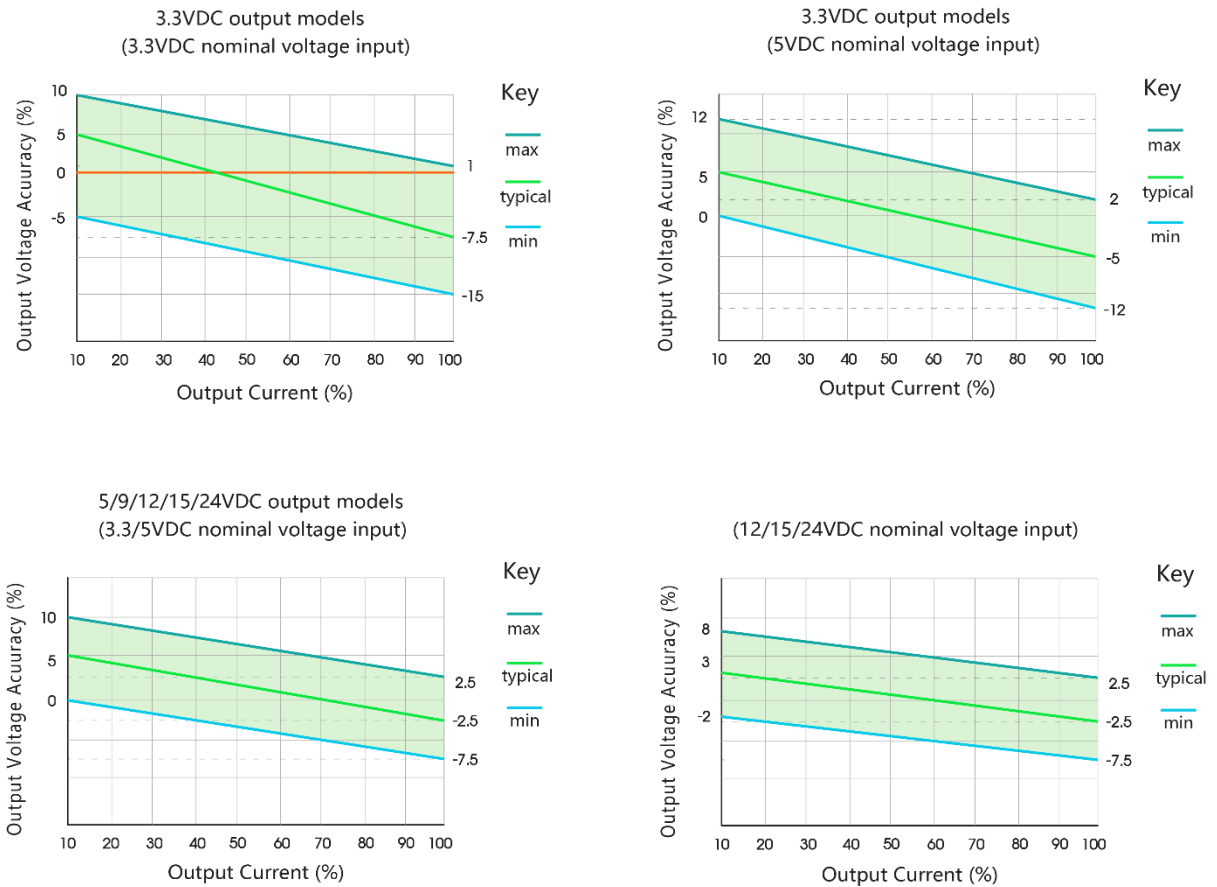
	Parameter	Conditions/description
Emissions	CE	CISPR32/EN55032 CLASS B (see Fig. 2 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig. 2 for recommended circuit)
Immunity	ESD	EC/EN61000-4-2 Air ±8kV, Contact ±6kV perf. Criteria B

Note: For EMC characteristic test circuits, see (Figure 4).

Product characteristic curve



(Figure 1) Temperature curve



(Figure 2) Error envelope curve

Design reference

1. General typical application circuits (as shown in the following figure)

If further reduction of input and output ripple is required, a filtering network can be connected at the input and output terminals, as shown in Figure 2. Choose a suitable filtering capacitor. If the capacitor is too large, it may cause startup problems. Under the condition of ensuring safe and reliable operation, the reference capacitance value is recommended in the table on the right. For applications with actual output power less than 0.5W, it is recommended not to connect external capacitors.

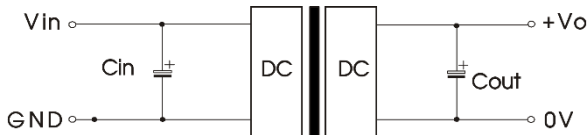


Figure 1

Input voltage (Vdc)	Capacitance Cin	Output voltage (Vdc)	Capacitance Cout
3.3	4.7uF/16V	3.3/5	10uF/16V
5	4.7uF/16V	9	2.2uF/16V
12	2.2uF/25V	12	2.2uF/16V
15	2.2uF/25V	15	1uF/25V
24	1uF/50V	24	1uF/50V

Table 1

2. EMC Recommended Application Circuits (For parameter details, see Table 2)

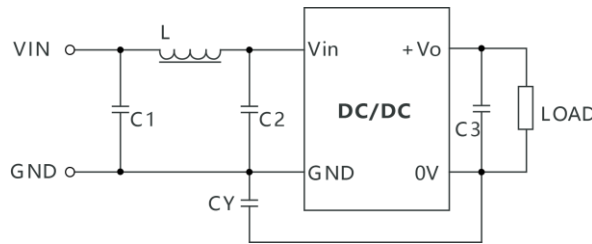
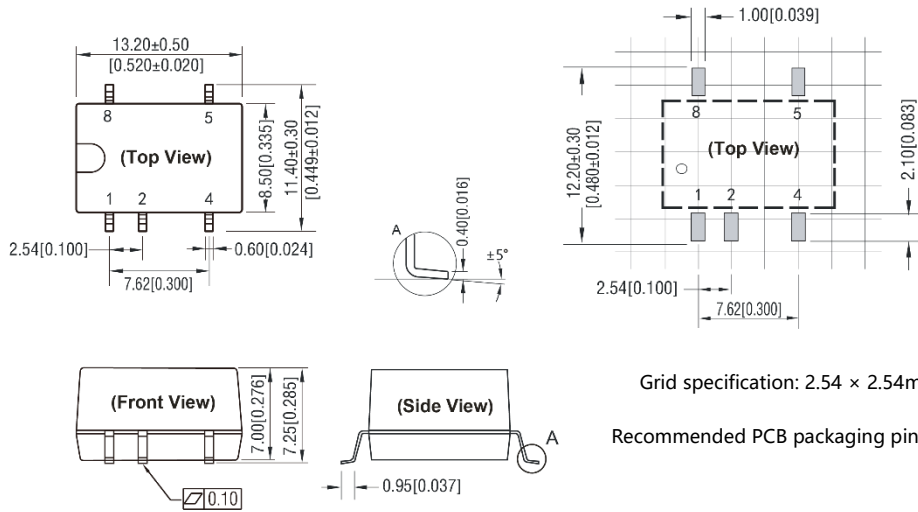


Figure 2

Input voltage (VDC)	3.3	5	12/15/24	Others
Output voltage (VDC)	/	3.3/5/9	12/15/24	/
C1/C2	4.7μF/16V	4.7μF/25V	4.7μF/25V	4.7μF/50V
CY	270pF/2kVdc	100pF/2kVdc	1nF/2kVdc	270pF/2kVdc
C3	Refer to Table 1 for Cout parameters			
L	6.8μH			

Table 2

MECHANICAL DRAWING



Grid specification: 2.54 × 2.54mm

Recommended PCB packaging pin positions

PIN CONNECTIONS	
1	GND
2	V _{in}
4	0V
5	+V _o
8	NC

NC: Does not connect to any external circuits

units: mm[inch]
tolerance: ±0.25[±0.010]
pin section tolerance: ±0.10[±0.004]

- Note:
1. Qituo technology reserves the right to change the product at any time without notice;
 2. The product shall be provided with a 3-year warranty period;
 3. Unless otherwise specified, the products in this manual are not authorized to be used for key components of equipment requiring high reliability, so as not to affect the safety or effectiveness of the device;
 4. All parameters in this manual are measured under indoor $t_a=25\text{ }^\circ\text{C}$, humidity <75%, nominal input voltage and output rated load;