

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

**FEATURES**

- International standard SMD encapsulation
- Isolation voltage 1500 VDC
- Sustainable short-circuit protection
- Low no-load input current
- Conversion efficiency up to 85%
- Working temperature range:- 40~+105°C



D1-B\_T 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-B0303T	3.3	3.0~3.6	3.3	30	303	79	2400
D1-B0305T			5	20	200	82	2400
D1-B0503T	5	4.5~5.5	3.3	30	303	74	2400
D1-B0505T			5	20	200	82	2400
D1-B0509T			9	12	111	83	1000
D1-B0512T			12	9	84	83	560
D1-B0515T	12	10.8~13.2	15	7	67	83	560
D1-B1205T			5	20	200	80	2400
D1-B1209T			9	12	111	80	1000
D1-B1212T			12	9	84	80	560
D1-B1215T			15	7	67	81	560

**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	260/--	
Refracted ripple current	12VDC input	3.3VDC Output	/	100/8	110/--	
			/	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	
Input filter	capacitance filter					
Hot Plug	Unavailable					

**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	260/--	
	12VDC input	3.3VDC Output	/	100/8	110/--	
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	
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	/	12	%
			Other output	/	10	
	5VDC input	3.3V output	/	15	20	
		5V output	/	10	15	
	12VDC input	5V output	/	5	15	
		Other output	/	2	10	
Ripple and noise <sup>1</sup>	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**

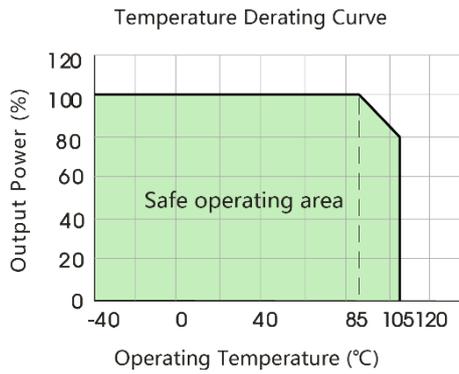
parameter	conditions/description	Min	Typ	Max	units
Isolation voltage	input to output for 1 minute at 1 mA max.	1500	/	/	VDC
Isolation resistance	Input to output, insulation voltage 500 VDC	1000	/	/	MΩ
Isolation capacitor	Input-Output, 100 kHz/0.1 V	/	20	/	pF
Operating temperature	Use at reduced temperature ≥ 85°C. See the derating curve in Figure 1.	-40	/	105	
Storage temperature		-55	/	125	
Working temperature rise	at full load, Ta=25°C	/	25	/	°C
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	1.3g				
Case material	Black plastic; flame-retardant and heat-resistant plastic (UL94-V0)				

**EMC**

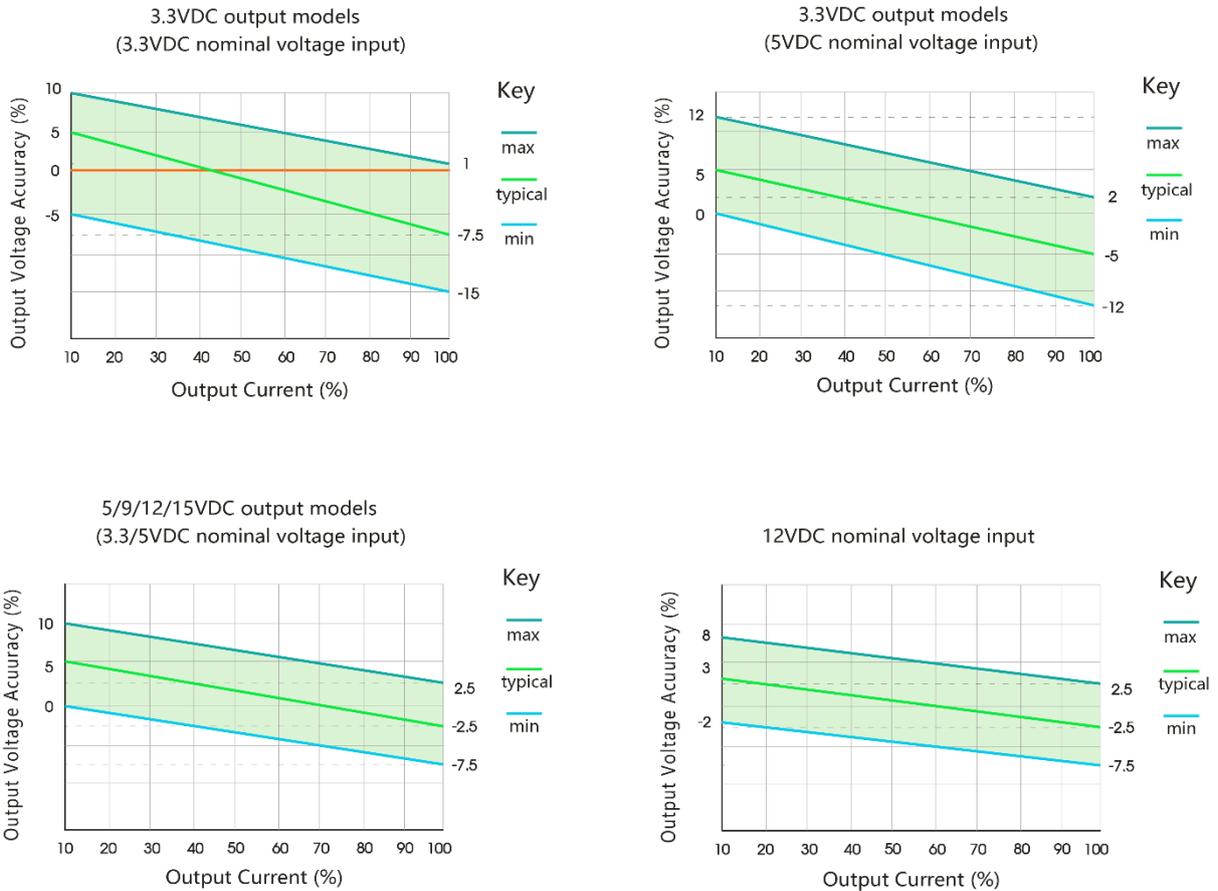
	parameter	conditions/description
Emissions	CE	CISPR32/EN55032 CLASS B (see Fig. 2 for recommended circuit)
	RE	CISPR32/EN55032 CLASS B (see Fig. 2 for recommended circuit)
Immunity	ESD	EC/EN61000-4-2 Air ±8kV, Contact ±6kV perf. Criteria B

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

**Product characteristic curve**



( Figure 1 ) Temperature curve

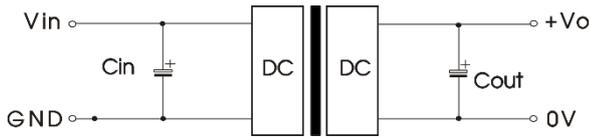


( Figure 2 ) Error envelope curve

**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.

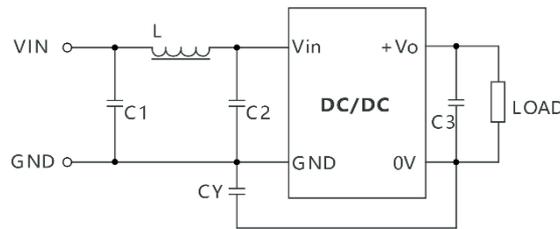


**Figure 1**

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

**Table 1**

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

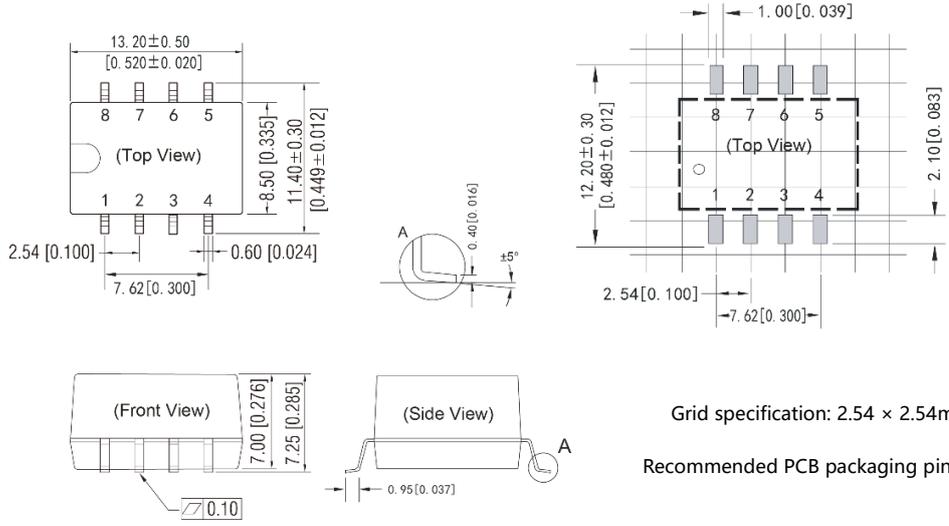


**Figure 2**

Input voltage (VDC)	5	Others
Output voltage (VDC)	3.3/5/9	12/15
C1/C2	4.7μF/25V	4.7μF/25V
CY	/	1nF/2kVdc
C3/4	Refer to Table 1 for Cout parameters	
L	6.8μH	

**Table 2**

**MECHANICAL DRAWING**



units: mm[inch]  
 tolerance:  $\pm 0.25[\pm 0.010]$   
 pin section tolerance:  $\pm 0.10[\pm 0.004]$

Grid specification: 2.54 × 2.54mm

Recommended PCB packaging pin positions (top view)

PIN CONNECTIONS	
1	GND
2	Vin
4	0V
5	+Vo
3,6,7,8	NC

NC: No connection to any circuits

- 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;