

BSTSA28D12

DC/DC Converter

Data Sheet v.1.0

I. Product Features

BSTSA28D12 DC/DC converter is an isolated output DC/DC converter. This product has dual outputs, stable parameters, and good consistency. It features a fully sealed metal casing, making it robust and highly reliable.

II. Product Performance Indicators

Table 1

CHARACTERISTIC	SYMBOL	CONDITION (UNLESS OTHERWISE SPECIFIED) -55°C ≤ T _c ≤ 125°C V _i = 28 V ± 0.5V, C _L = 0.1μF)		GROUP A GROUPIN G	LIMIT VALUE		UNIT
					MINIMUM	MAXIMUM	
Output voltage	V _{O1}	I _{O1} = I _{O2} = 250mA, V _i = 15V ~ 50V		1	11.88	12.12	V
				2,3	11.82	12.18	
	V _{O2}			1	-12.20	-11.80	
				2,3	-12.48	-11.52	
Output current	I _{O1}	V _i = 15V ~ 50V		1,2,3	-	250	mA
	I _{O2}						
Output ripple voltage (Peak-to-peak value)	V _{RIP1}	I _{O1} = I _{O2} = 250mA BW ≤ 20MHz		1,2,3	-	65	mV
	V _{RIP2}						
Voltage regulation	S _{V1}	V _i = 15V → 50V, I _{O1} = I _{O2} = 250mA	12V circuit	1,2,3	-	25	mV
	S _{V2}		-12V circuit			100	
Current regulation	S _{I1}	I _{O1} = I _{O2} = 0mA → 250mA, both outputs change simultaneously.	12V circuit	1,2,3	-	50	mV
	S _{I2}		-12V circuit			100	
Cross adjustment degree	V _C	I _{O1} = 75mA I _{O2} = 75mA → 175mA; I _{O2} = 75mA I _{O1} = 75mA → 175mA	12V circuit	1,2,3	-	450	mV
			-12V circuit				
Input current	I _i	I _{O1} = I _{O2} = 0mA, disable the input ground terminal.	1,2,3	-	-	6	mA
		I _{O1} = I _{O2} = 0mA, prohibiting open circuit at the terminal.	1,2,3	-	-	60	
Input ripple current (Peak-to-peak value)	I _{RIP}	BW ≤ 20MHz I _{O1} = I _{O2} = 250mA		1,2,3	-	50	mA

CHARACTERISTIC	SYMBOL	CONDITION (UNLESS OTHERWISE SPECIFIED) -55°C ≤ T _c ≤ 125°C V _I = 28 V ± 0.5V, C _L = 0.1 μF)	GROUP A GROUPIN G	LIMIT VALUE		UNIT
				MINIMUM	MAXIMUM	
Efficiency	η	I _{O1} = I _{O2} = 250mA	1,2,3	73	-	%
Insulation resistance	R _I	DC between the input/output terminals or between any of the leads (except for the 8-pin terminal) and the casing.	1	100	-	MΩ
Short-circuit power consumption	P _D	Output short circuit	1,2,3	-	3	W
capacitive load ^a	C _{L1}	I _{O1} = I _{O2} = 250mA	4	-	500	μF
	C _{L2}					
Switching frequency	f _e	I _{O1} = I _{O2} = 250mA	4,5,6	350	500	kHz
Output voltage change (peak value) during load transients ^{bc}	V _{LOR1}	I _{O1} = I _{O2} = 125mA → 250mA or I _{O1} = I _{O2} = 250mA → 125mA, Each output has a balanced load.	4,5,6	-300	300	mV
	V _{LOR2}					
Recovery time of output voltage during load transients ^(bcd)	t _{LOR1}	I _{O1} = I _{O2} = 125mA → 250mA or I _{O1} = I _{O2} = 250mA → 125mA, Each output has a balanced load.	4,5,6	-	450	μs
	t _{LOR2}					
Output voltage change (peak value) during input voltage transients ^{be}	V _{VOR}	Input voltage V _I : 16V → 40V, I _{O1} = I _{O2} = 250mA Input voltage V _I : 40V → 16V, I _{O1} = I _{O2} = 250mA	4,5,6	-1200	1200	mV
Output voltage recovery time during input voltage transient ^{bde}	t _{VOR}	Input voltage V _I : 16V → 40V, I _{O1} = I _{O2} = 250mA	4,5,6	-	500	μs
		Input voltage V _I : 40V → 16V, I _{O1} = I _{O2} = 250mA				
Turn-off voltage ^b	V _{off}	I _{O1} = I _{O2} = 250mA	1,2,3	11	14.5	V
Start-up overshoot (peak value)	V _{TO1}	Input voltage V _I : 0V → 28V, I _{O1} = I _{O2} = 250mA	4, 5, 6	-	50	mV
	V _{TO2}					
Startup delay ^f	t _{TR1}	Input voltage V _I : 0V → 28V, I _{O1} = I _{O2} = 250mA	4,5,6	-	20	ms
	t _{TR2}					

- a. Capacitive load can be any value from 0 to the maximum limit, without affecting DC parameters;
b. This parameter is guaranteed by design and is only tested during the initial quality conformity inspection and design or process changes.
c. The jump time of the load should be greater than 10 μs;
d. The recovery time refers to the time from the start of the jump until the output voltage returns to within ±1% of the corresponding stable value;
e. The jump time of the input voltage should be greater than 10 μs;
f. The start-up delay time can be calculated either from the power supply transition or from when the grounded prohibition terminal is disconnected.

III. Shape and Dimensions

The outer casing shape should conform to the specifications in Figure 1.

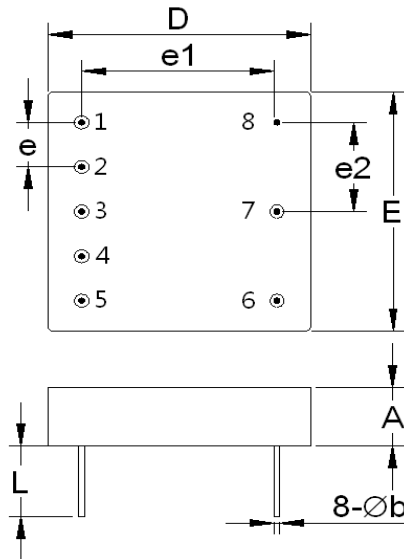


Figure 1. External dimensions

Table 2

The unit is millimeters

RULER INCH TALISMAN NUMBER	NUMERICAL VALUES		
	MINIMUM	NOMINAL	MAXIMUM
A	-	-	6.86
Φb	0.54	-	0.74
D	-	-	27.31
E	-	-	27.31
e	-	5.08	-
e ₁	-	20.32	-
e ₂	-	10.16	-
L	4.91	-	5.51

Notes: 1. Unspecified tolerances shall be in accordance with GB/T m-level execution in 1804-2000;
2. The interchangeability of e, e₁, and e₂ dimensions is guaranteed by the housing manufacturing process and is not subject to assessment requirements in this specification.

IV. Description of Lead-Out Pin Functions

The arrangement of the leads should conform to the specifications in Figure 2.

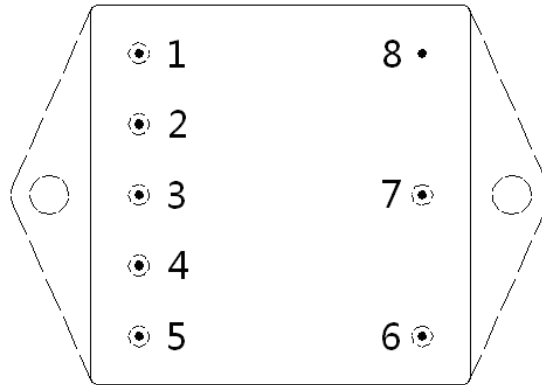


Figure 2. Arrangement of lead-out ends (top view)

Table 3

LEAD-OUT SERIAL NUMBER	SYMBOL	FUNCTION	LEAD-OUT SERIAL NUMBER	SYMBOL	FUNCTION
1	V_o	Output positive	5	INH	Inhibit
2	GND_o	Output common	6	IN	Input positive
3	V_{o2}	Output negative	7	GND_i	Input common
4	NC	N/C	8	GND_c	Case

V. Test Schematic Diagram

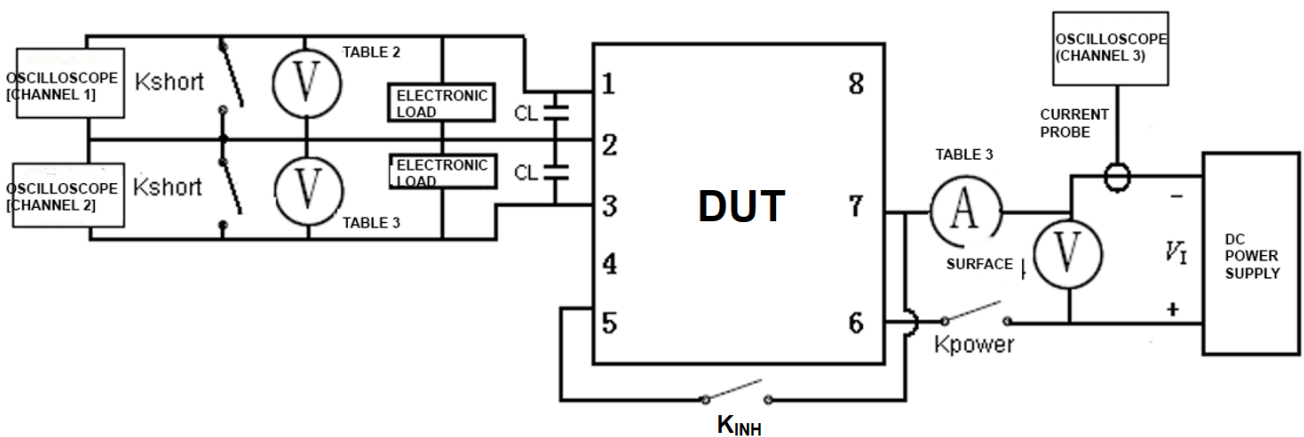


Figure 3

Multimeter 4 (voltmeter) measures its input voltage V_{in} , multimeter 1 (ammeter) measures its input current A_{IN} , and multimeters 2 and 3 (voltmeters) measure its output voltage V_o . The electronic load carries its 0.25 A output current load. The oscilloscope measures the output ripple voltage. To avoid interference, the ripple voltage test should be performed using a proximity measurement method whenever possible.

VI. Application

Power the corresponding modules in the system.

VII. Precautions

The following are precautions for hybrid circuits.

- Prevent the circuit from being bumped;
- Protect the glass insulators of the pins; do not bend or bump the pins.