

BST151-3.0

1. Product Overview

BST151-3.0 is an ultra-low noise (9 μ Vrms) low dropout linear regulator. The input voltage is 3.4V to 5.5V, and it consumes 120mV voltage difference when driving a maximum load current of 200mA, which is suitable for low power and high efficiency applications. BST151-3.0 can obtain excellent noise performance without adding external noise bypass capacitors. It also has high PSRR and linear and load adjustment characteristics, and can be well applied to noise-sensitive analog circuits and RF circuits. The input/output capacitors are 1 μ F ceramic to ensure system stability without introducing capacitor ESR. Overvoltage, overcurrent and overheating protection functions are integrated on the chip. Two packaging forms are provided: 5-pin ceramic CLCC5 and plastic DFN5 to meet various portable power applications. BST151-3.0 input and output are connected to at least 1 μ F ceramic capacitors. EN can be turned on after VIN is stable or powered on with VIN.

2. Product Features

- Input voltage range: 3.4V to 5.5V.
- Fixed output voltage: 3.0V.
- Output integrated RMS noise: 9 μ Vrms@10-100KHZ.
- Input/output 1 μ F ceramic capacitors to ensure stability.
- No external noise bypass capacitors required.
- Operating current without load current: 12 μ A.
- Quiescent current at 200mA load current: 350 μ A.
- Maximum drivable load current: 200mA.
- Minimum input - output voltage difference: 120 mV.
- $\pm 2\%$ Total Output Voltage Regulation Accuracy.
- Power supply rejection PSRR: 70dB@10KHZ.
- Overvoltage, overcurrent and overtemperature protection.
- 5-pin CLCC5 and DFN5 packages.

3. Functional Block Diagram

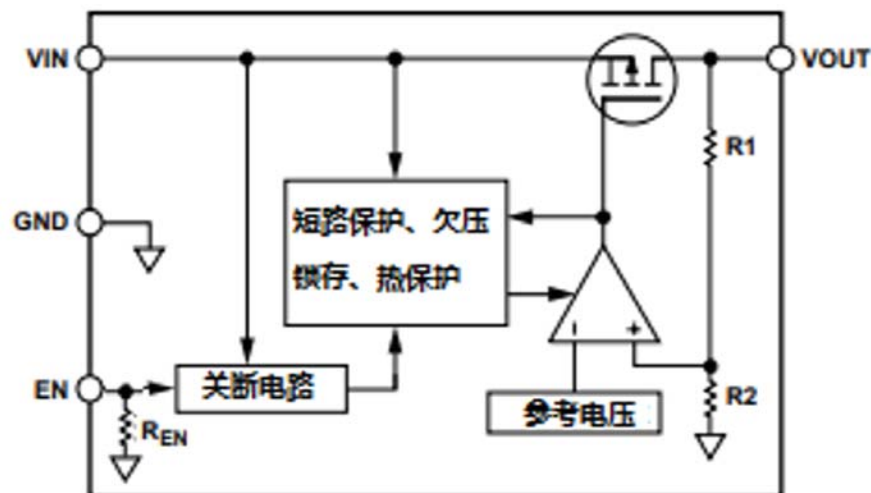


Figure 1. Functional block diagram

Pin Information

Pin Assignment Diagram

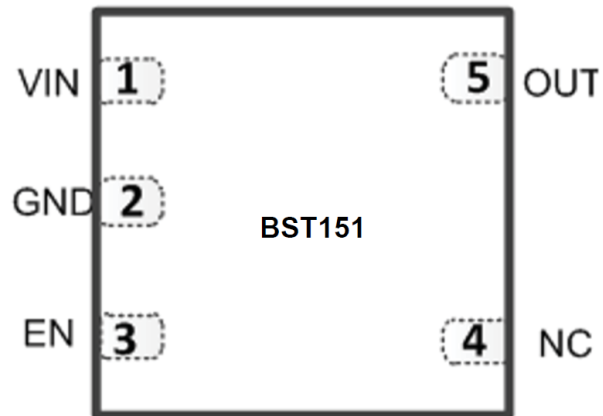


Figure 2 BST151-3.0 pinout

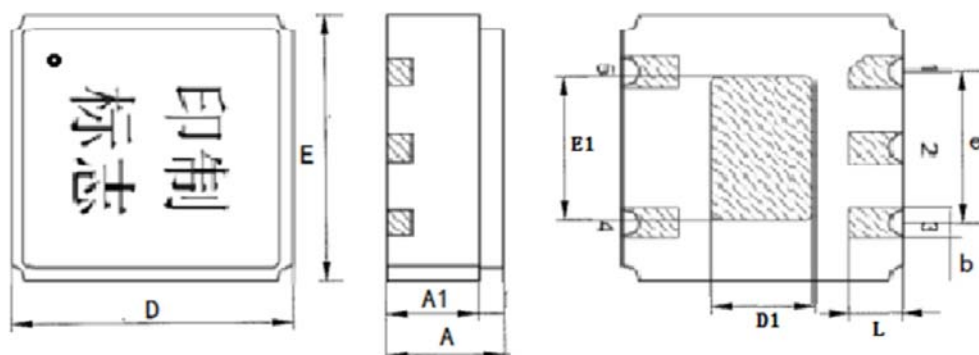
Table 1. Pin Description

Pin number	symbol	Function
1	VIN	Input voltage terminal, connect 1uF bypass capacitor to ground
2	GND	Ground pin
3	EN	Enable terminal, high level is effective
4	NC	Dangling
5	VOUT	Voltage output terminal, connect 1uF bypass capacitor to ground

Note: EN can be short-circuited with VIN and powered on together

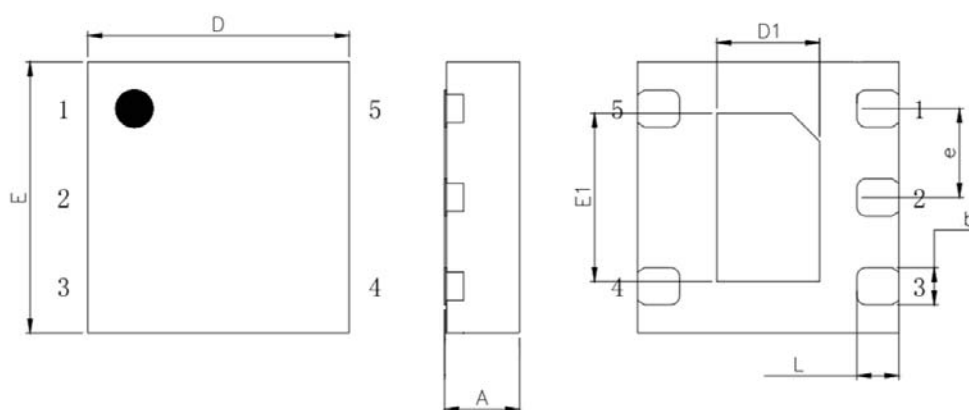
4. Product appearance

Ceramic CLCC5 package



Dimension symbols	Value (mm)		
	Minimum	Nominal	maximum
A	1.20	—	1.60
A1	0.9	—	1.20
b	—	0.40	—
L	—	0.65	—
e	—	1.90	—
D	3.10	—	3.50
E	3.10	—	3.50
D1	—	1.2	—
E1	—	1.8	—

Plastic DFN5 package



Dimension symbols	Value (mm)		
	Minimum	Nominal	maximum
A	0.70	—	0.90
b	—	0.40	—
L	—	0.45	—
e	—	0.95	—
D	2.70	2.80	2.90
E	2.80	2.90	3.00
D1	1.00	1.10	1.20
E1	1.70	1.80	1.90

5. Electrical Parameters

Table 2. Electrical properties

characteristic	symbol	Strip Item Unless otherwise specified $V_{IN} = (V_{OUT} + 0.4V) \sim 5.5V$, $-55^{\circ}C \leq T_A \leq 125^{\circ}C$	Limit value			unit
			Minimum	typical	maximum	
Input voltage range	V_{IN}		3.4	—	5.5	V
Output Current	I_{OUT}		200	—	—	mA
Shutdown current	I_{GND-SD}	EN = GND, $V_{IN} = 3.4V \sim 5.5V$	—	—	5	μA
Output voltage accuracy	V_{OUTA}	$I_{OUT} = 10mA$	-2	—	2	%
Voltage Regulation	$\Delta V_{OUT} / \Delta V_{IN}$		-0.1	—	0.1	%/V
Current Regulation	$\Delta V_{OUT} / \Delta I_{OUT}$	$I_{OUT} = 100\mu$ to 200mA	—	—	0.012	%/mA
Minimum input-output pressure difference	$V_{DROPOUT}$	25 °C, $I_{OUT} = 200mA$	—	0.12	0.28	V
		$I_{OUT} = 200mA$	—	—	0.3	
Minimum input-output pressure difference	$V_{DROPOUT}$	$I_{OUT} = 200mA$	—	—	0.23	V
Limiting threshold current	I_{LIMIT}		160	—	400	mA
Undervoltage lockout input rising voltage	UVLO R		—	—	1.96	V
Undervoltage lockout input falling voltage	UVLO F		1.28	—	—	V
Output voltage	V_{OUT}		2.91		3.09	V
Enable input high level voltage	V_I	$V_{IN} = 3.4V \sim 5.5V$	1.2	—	—	V
Enable input low level voltage	V_{IL}	$V_{IN} = 3.4V \sim 5.5V$	—	—	0.4	V
Quiescent Current	Q	$I_{OUT} = 200mA$	—	—	500	μA
Integrated RMS noise	OUT NOISE	$f_{IN} = 10Hz$ to 100kHz, $V_{IN} = 5.0V$	—	9	20	μV_{rms}
Power Supply Rejection Ratio	PSRR	1kHz, 25 °C, $I_{OUT} = 10mA$, $V_{IN} = 4.0V$	60	70		dB
Opening time	t_{start}	$V_{OUT} = 3.0V$	—	—	240	μs