

### GENERAL DESCRIPTION

BL8559 series are a group of positive voltage output, high precise, and low power consumption voltage regulator. Voltages are selectable in 100mV steps within a range of 1.2V to 3.6V. It also can be customized on command.

BL8559 series have excellent load and line transient response and good temperature characteristics, which can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within  $\pm 2\%$ .

BL8559 series are available in SOT-223 package, which is lead (Pb)- free.

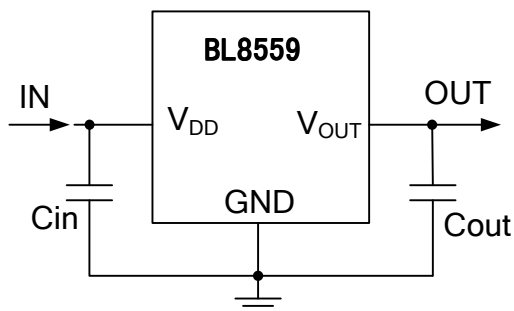
### FEATURES

- Low Quiescent Current: 26uA at 5V
- High PSRR: 60dB range to 1KHz
- Low Output Noise: 44uVRMS
- Low Dropout: 430mV at 1.5A load
- Maximum output current: 2.5A
- Highly Accurate:  $\pm 2\%$
- Low ESR Ceramic Capacitor Compatible

### APPLICATIONS

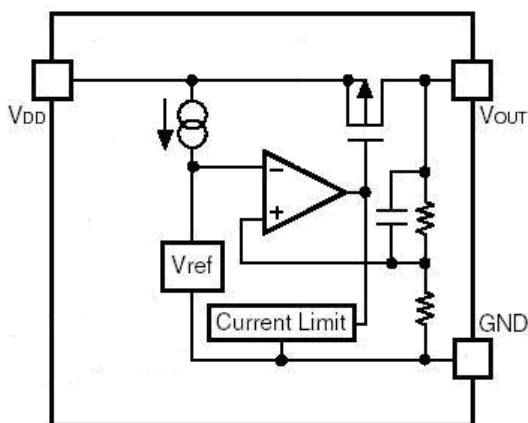
- Reference Voltage Source
- Battery Powered Equipment
- PC Peripherals
- Wireless Devices
- Instrumentation

### TYPICAL APPLICATION

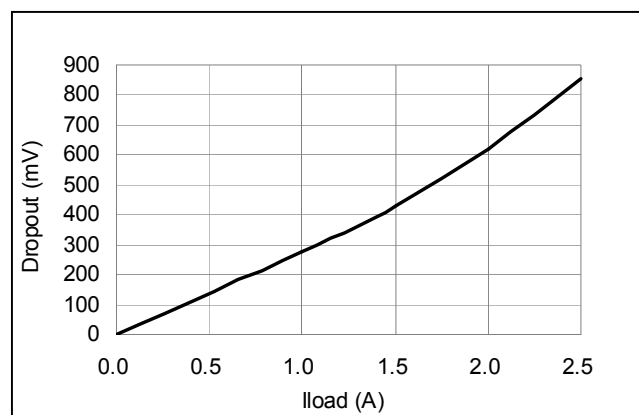


**NOTE:** Input capacitor ( $C_{in}=1\mu F$ ) and Output capacitor ( $C_{out}=4.7\mu F$ ) are recommended in all application circuit (Low ESR ceramic capacitor is available).

### BLOCK DIAGRAM



### Dropout Voltage vs Output Current



## MARKING DESCRIPTION

Product Classification	BL8559CLATR□□
JB: Product Code	
XX: Output Voltage	
A: A Type Pin Assignment	
LL: Lot. No.	
B: Fab Code	
YW: Date Code	
Product Classification	BL8559CLBTR□□
JB: Product Code	
XX: Output Voltage	
B: B Type Pin Assignment	
LL: Lot. No.	
B: Fab Code	
YW: Date Code	

XX: Output voltage code, e.g. 25=2.5V, 33=3.3V;  
 Y: The Year of manufacturing, "9" stands for year 2009, "0" stands for year 2010;  
 W: The week of manufacturing. "A" stands for week 1, "Z" stands for week 26, "A" stands for week 27, "Z" stands for week 52.

## ABSOLUTE MAXIMUM RATING

Parameter	Value
Max Input Voltage	8V
Operating Junction Temperature (T <sub>J</sub> )	125°C
Ambient Temperature (T <sub>A</sub> )	-40°C~85°C
Package Thermal Resistance:	SOT-223: 20°C/W
Storage Temperature (T <sub>S</sub> )	-40°C~150°C
Lead Temperature & Time	260°C, 10 Sec

Exceed these limits to damage to the device.  
 Exposure to absolute maximum rating conditions may affect device reliability.

## RECOMMENDED WORK CONDITIONS

Parameter	Value
Input Voltage Range	Max. 6V
Ambient Temperature	-40°C~85°C

## ORDERING INFORMATION

BL8559 [1](#) [2](#) [3](#) [4](#)

Code	Description
<a href="#">1</a>	Temperature & Rohs: C: -40~85°C, Pb Free Rohs Std.
<a href="#">2</a>	Package type: LA: SOT-223, A Type LB: SOT-223, B Type
<a href="#">3</a>	Packing type: TR: Tape&Reel (Standard)
<a href="#">4</a>	Output voltage: e.g. 25=2.5V; 33=3.3V;

## PIN CONFIGURATION

Items	Description
GND	Ground
V <sub>OUT</sub>	Output terminal
V <sub>DD</sub>	Input terminal and Supply pin for internal circuit.

## ELECTRICAL CHARACTERISTICS

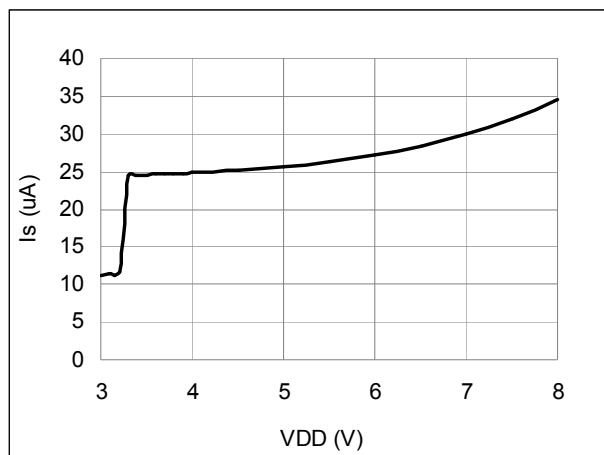
Test Conditions:  $C_{IN}=1\mu F, C_{OUT}=4.7\mu F, T_A=25^\circ C$ , unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
$V_{DD}$	Input Voltage				6	V
$V_{OUT}$	Output Voltage	$V_{DD}=\text{Set } V_{OUT}+1V$ $1mA \leq I_{OUT} \leq 10mA$	$\frac{V_{OUT}}{X0.98}$ $\frac{V_{OUT}}{-0.03}$	$V_{OUT}$	$\frac{V_{OUT}}{X1.02}$	V
					$\frac{V_{OUT}}{+0.03}$	
$I_{OUT}$ (Max.) Note 6	Maximum Output Current	$V_{DD}-V_{OUT}=1V$	2.5			A
$V_{DROP}$	Dropout Voltage	$I_{OUT}=1.5A$		430		mV
$\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$	Line Regulation	$I_{OUT}=10mA$ $4V \leq V_{DD} \leq 6V$		0.05	0.2	%/V
$\Delta V_{out}$	Load Regulation	$V_{DD}=\text{Set } V_{OUT}+1V$ $1mA \leq I_{OUT} \leq 2.5A$		15		mV
$I_s$	Supply Current	$V_{DD}=\text{Set } V_{OUT}+1V$ $V_{OUT}$ Floating		26	50	$\mu A$
$\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$	Output Voltage Temperature Coefficient	$I_{OUT}=10mA$		$\pm 100$		ppm/ $^\circ C$
PSRR	Ripple Rejection	$f=100Hz$ , Ripple=0.5Vp-p, $V_{DD}=\text{Set } V_{OUT}+1V$		60		dB
en	Output Noise	$BW=10Hz \sim 100KHz$		44		$\mu V_{rms}$

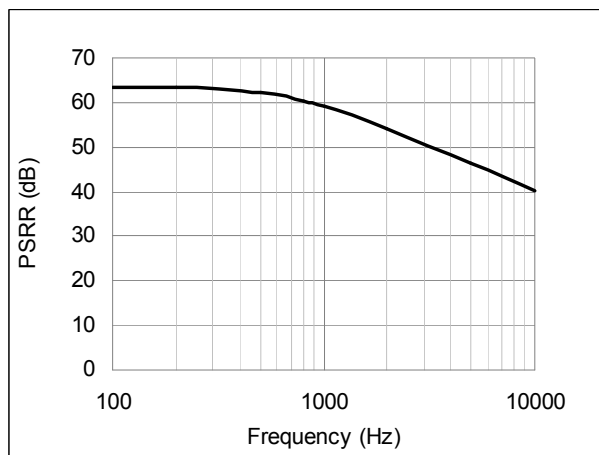
Note 6: The maximum power rating of each package is a constant, so along with the change of  $I_{LOAD}$ , the  $V_{DD}-V_{OUT}$  should be controlled to a certain range to ensure the normal operation.

## TYPICAL PERFORMANCE CHARACTERISTICS

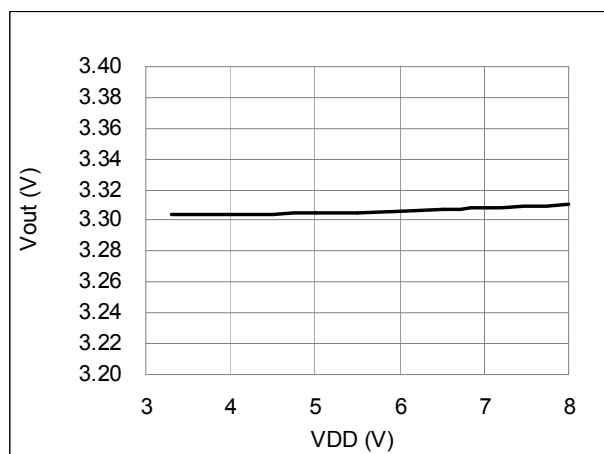
Supply Current vs. Input Voltage



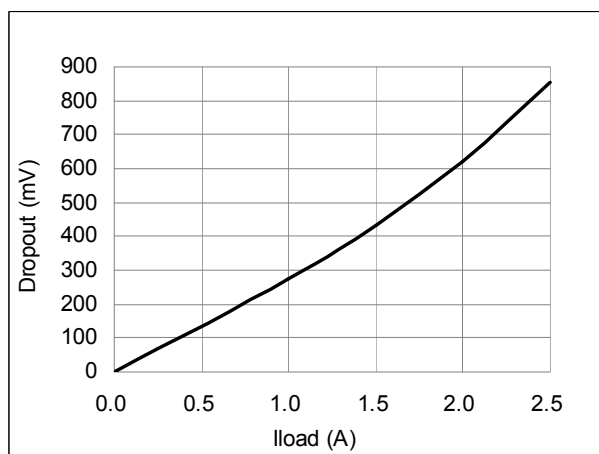
Ripple Rejection vs. Frequency



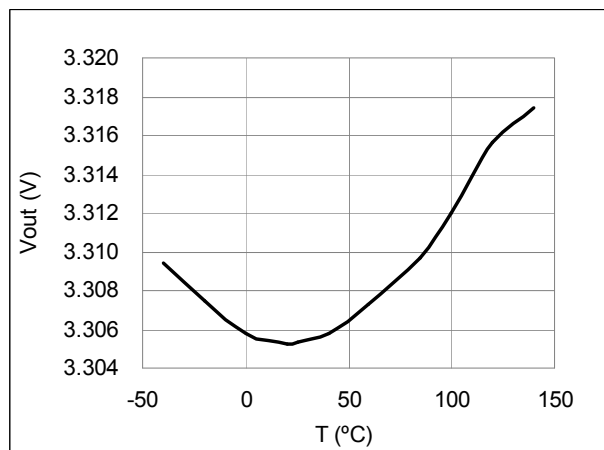
Output Voltage vs. Input Voltage



Dropout Voltage vs. Output Current

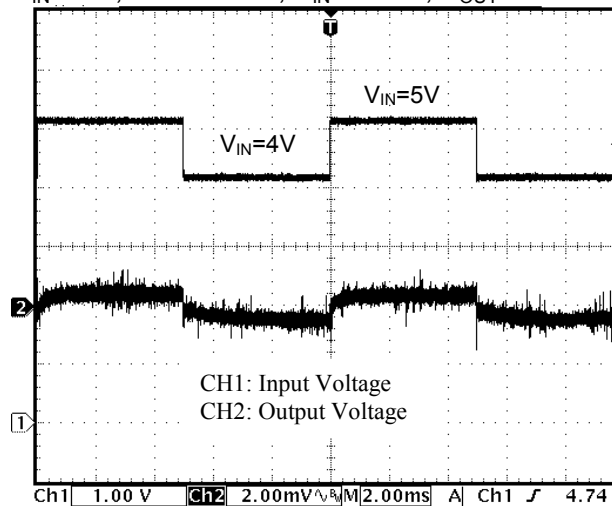


Output Voltage vs. Temperature

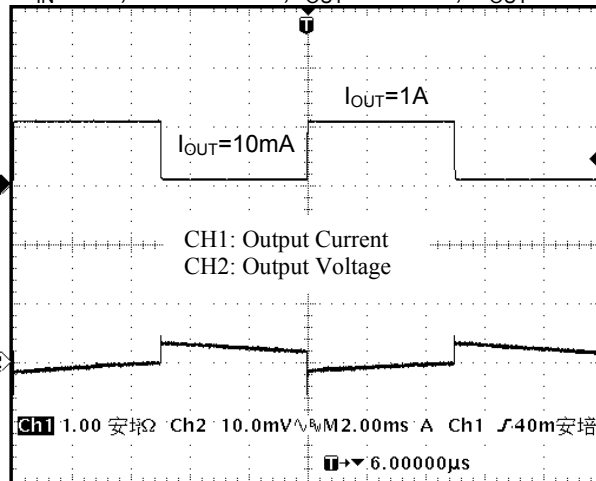


## TEST WAVEFORMS

Line Transient Response  
 $C_{IN}=1\mu F$ ,  $C_{OUT}=4.7\mu F$ ,  $V_{IN}=4\leftrightarrow 5V$ ,  $V_{OUT}=3V$



Load Transient Response  
 $C_{IN}=1\mu F$ ,  $C_{OUT}=4.7\mu F$ ,  $I_{OUT}=10\leftrightarrow 1A$ ,  $V_{OUT}=3V$



## PACKAGE LINE

Package	SOT-223	Devices per reel	2500Pcs	Unit	mm
---------	---------	------------------	---------	------	----

Package dimension:

