

## 300mA Low Consumption Linear Regulator

### GENERAL DESCRIPTION

BL8552 series are a group of positive voltage output, high precise, and high PSRR 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.

BL8552 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  $\pm 2\%$ .

BL8552 series are available in SOT-23-3, SOT-23-5, SOT-89-3 and TO-92 packages, which are lead (Pb)- free.

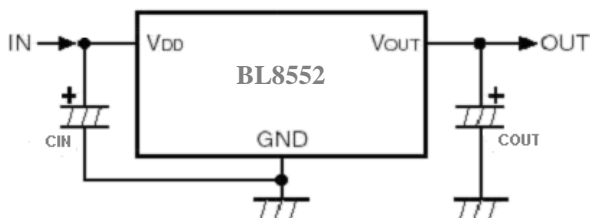
### FEATURES

- Low Quiescent Current: 2uA at 5V
- 60dB PSRR at 100Hz
- Low Output Noise: 44uVRMS
- Low Dropout: 280mV at 150mA load
- Low Temperature Coefficient:  $\pm 100\text{ppm}/^\circ\text{C}$
- Excellent Line Regulation: 0.05%/V
- Highly Accurate:  $\pm 2\%$

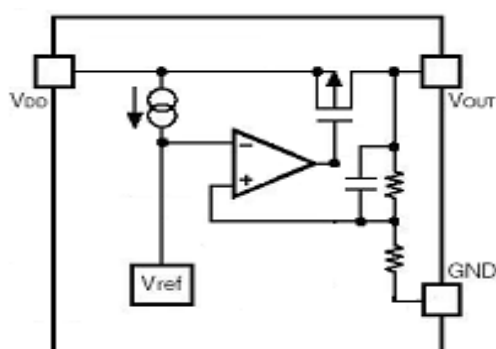
### APPLICATIONS

- Reference Voltage Source
- Battery Powered Equipment
- Hand-Hold Equipment
- Wireless LAN
- GPS Receivers

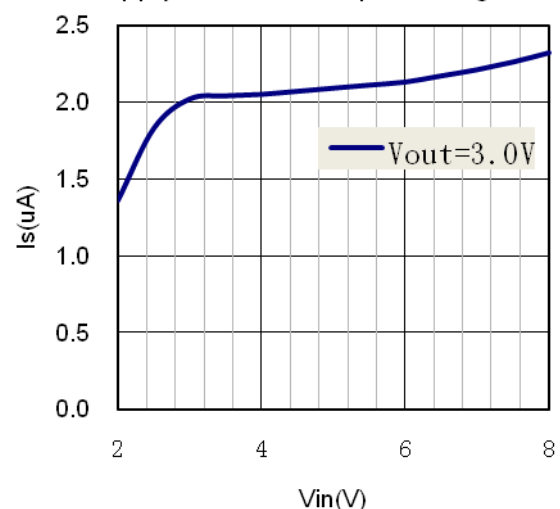
### TYPICAL APPLICATION



### BLOCK DIAGRAM



Supply Current vs. Input Voltage



## MARKING INFORMATION (Note 1)

Product Classification		BL8552CB3TR□□
Marking		<p>SOT-23-3</p> <p>1 GND 2 VOUT 3 VDD</p>
EXZZ	E: Product Code	
	X: Output Voltage	
ZZ: Date Code		
Product Classification		BL8552CB5TR□□
Marking		<p>SOT-23-5</p> <p>1 GND 2 VDD 3 VOUT 4 NC 5 NC</p>
EXZZ	E: Product Code	
	X: Output Voltage	
ZZ: Date Code		
Product Classification		BL8552CC3TR□□
Marking		<p>SOT-89-3</p> <p>1 GND 2 VDD 3 VOUT</p>
AFXX YYBZZ	AF: Product Code	
	XX: Output Voltage	
	YY: LOT NO.	
	B: FAB Code	
ZZ: Date Code		
Product Classification		BL8552CHBG□□
Marking		<p>TO-92</p> <p>1. GND 2. VDD 3. VOUT</p>
EXZZ	E: Product Code	
	X: Output Voltage	
ZZ: Date Code		
GND	Ground	
VOUT	Output Voltage	
VDD	Supply Voltage Input	

### Note 1

E: Product Code

X: Output Voltage Code

VOUT	Code	VOUT	Code	VOUT	Code
1.2V	2	2.1V	$\bar{1}$	3.0V	$\underline{0}$
1.3V	3	2.2V	$\bar{2}$	3.1V	$\underline{1}$
1.4V	4	2.3V	$\bar{3}$	3.2V	$\underline{2}$
1.5V	5	2.4V	$\bar{4}$	3.3V	$\underline{3}$
1.6V	6	2.5V	$\bar{5}$	3.4V	$\underline{4}$
1.7V	7	2.6V	$\bar{6}$	3.5V	$\underline{5}$
1.8V	8	2.7V	$\bar{7}$	3.6V	$\underline{6}$
1.9V	9	2.8V	$\bar{8}$		
2.0V	$\bar{0}$	2.9V	$\bar{9}$		

XX: Output voltage:

e.g. 12=1.2V, 25=2.5V, 36=3.6V.

Z: The Year of manufacturing, "7" stands for year 2007, "8" stands for year 2008, and " $\bar{0}$ " stands for year 2010.

Z: The week of manufacturing. "A" stands for week 1, "Z" stands for week 26, " $\bar{A}$ " stands for week 27, " $\bar{Z}$ " stands for week 52.

## ORDERING INFORMATION

BL8552 1 2 3 4

Code	Description
<span style="border: 1px solid black; padding: 0 2px;">1</span>	Temperature & Rohs: C: -40~85°C, Pb Free Rohs Std.
<span style="border: 1px solid black; padding: 0 2px;">2</span>	Package type: B3: SOT-23-3 B5: SOT-23-5 C3: SOT-89-3 H: TO-92
<span style="border: 1px solid black; padding: 0 2px;">3</span>	Packing type: TR:Tape&Reel (Standard) BG:Bag (TO-92)
<span style="border: 1px solid black; padding: 0 2px;">4</span>	Output voltage: e.g. 12=1.2V 25=2.5V 36=3.6V

## ABSOLUTE MAXIMUM RATING

Parameter	Value
Max Input Voltage	10V
Operating Junction Temperature (T <sub>J</sub> )	125°C
Ambient Temperature (T <sub>A</sub> )	-40°C~85°C
Power Dissipation	SOT-23-3, SOT-23-5
	SOT-89-3, TO-92
Storage Temperature (T <sub>S</sub> )	-40°C~150°C
Lead Temperature & Time	260°C, 10 Sec

**Note 2:** Exceed these limits to damage to the device.

**Note 3:** Exposure to absolute maximum rating conditions may affect device reliability.

## RECOMMENDED WORK CONDITIONS

Parameter	Value
Input Voltage Range	Max. 8V
Ambient Temperature	-40°C~85°C

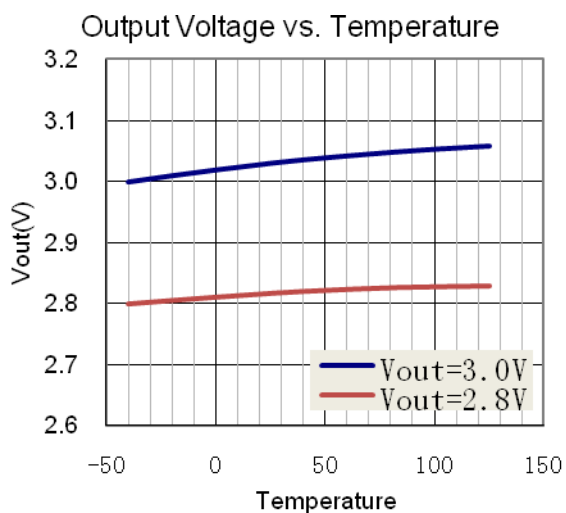
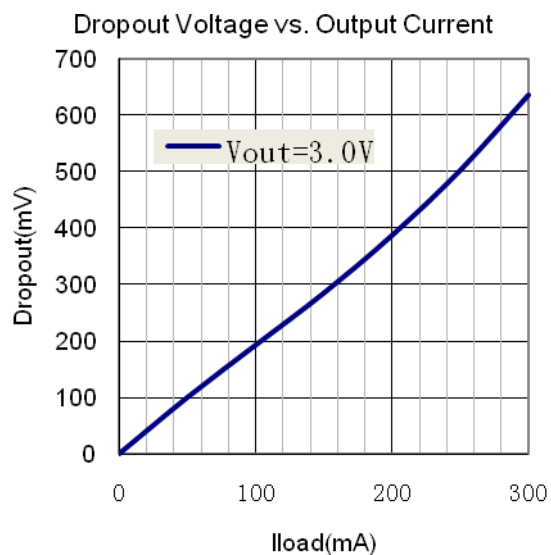
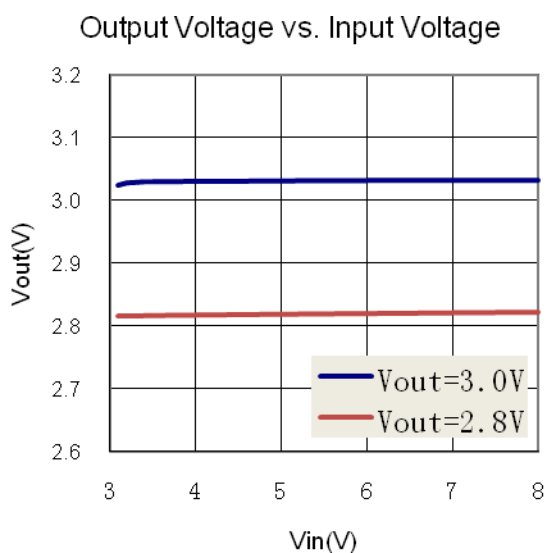
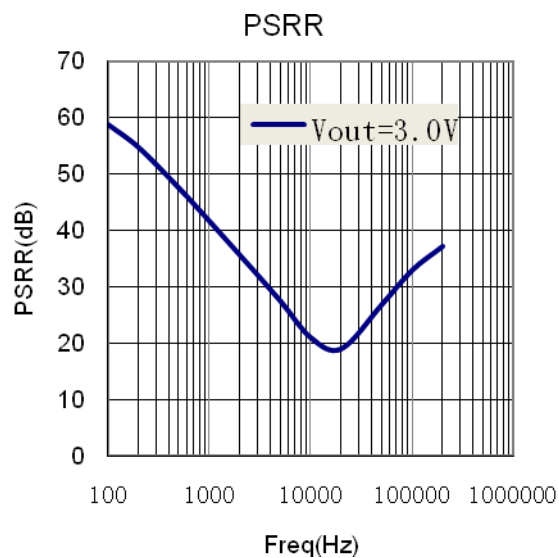
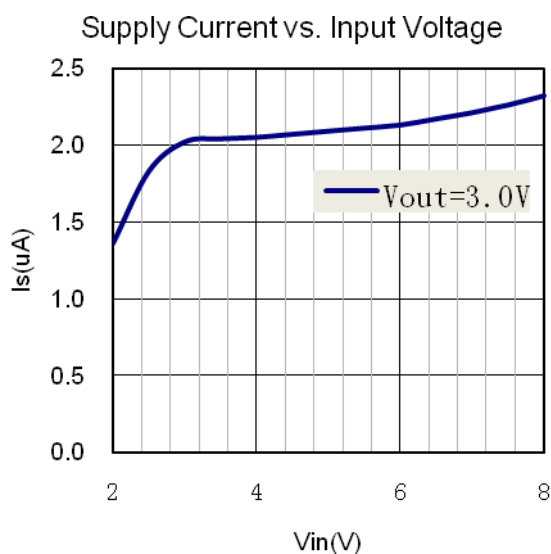
## ELECTRICAL CHARACTERISTICS

Test Conditions: C<sub>IN</sub>=1uF, C<sub>OUT</sub>=1uF, T<sub>A</sub>=25°C, unless otherwise specified.

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V <sub>DD</sub>	Input Voltage				8	V
V <sub>OUT</sub>	Output Voltage	V <sub>OUT</sub> > 1.5V	V <sub>DD</sub> =Set V <sub>OUT</sub> +1V 1mA ≤ I <sub>OUT</sub> ≤ 10mA	V <sub>OUT</sub> X0.98	V <sub>OUT</sub>	V <sub>OUT</sub> X1.02
		V <sub>OUT</sub> ≤ 1.5V		V <sub>OUT</sub> - 0.03	V <sub>OUT</sub>	V <sub>OUT</sub> + 0.03
I <sub>OUT</sub> (Max.) (Note 4)	Maximum Output Current	V <sub>DD</sub> -V <sub>OUT</sub> =1V	300			mA
V <sub>DROP</sub>	Dropout Voltage	I <sub>OUT</sub> =150mA V <sub>OUT</sub> =3.0V		280		mV
$\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$	Line Regulation	I <sub>OUT</sub> =10mA 4V ≤ V <sub>DD</sub> ≤ 6V		0.05	0.2	%/V
ΔV <sub>out</sub>	Load Regulation	V <sub>DD</sub> =Set V <sub>OUT</sub> +1V 1mA ≤ I <sub>OUT</sub> ≤ 300mA		150		mV
I <sub>S</sub>	Supply Current	V <sub>DD</sub> =Set V <sub>OUT</sub> +1V V <sub>OUT</sub> Floating		2	3	uA
$\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$	Output Voltage Temperature Coefficient	I <sub>OUT</sub> =10mA		± 100		ppm/°C
PSRR	Ripple Rejection	f=100Hz, Ripple=0.5Vp-p, V <sub>DD</sub> =Set V <sub>OUT</sub> +1V		60		dB
en	Output Noise	BW=10Hz~100KHz		44		uVrms

**Note 4:** The maximum power rating of each package is a constant, so along with the change of I<sub>LOAD</sub>, the V<sub>DD</sub>-V<sub>OUT</sub> should be controlled to a certain range to ensure the normal operation.

## TYPICAL PERFORMANCE CHARACTERISTICS

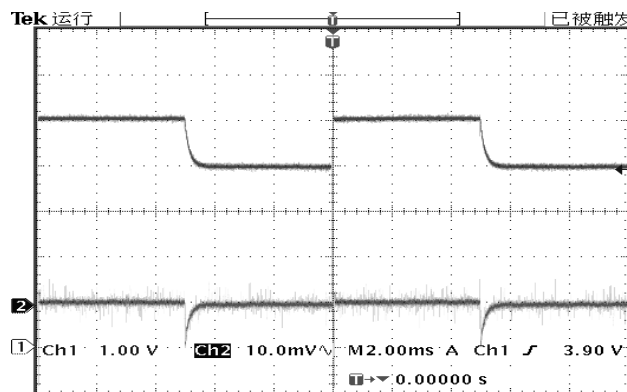
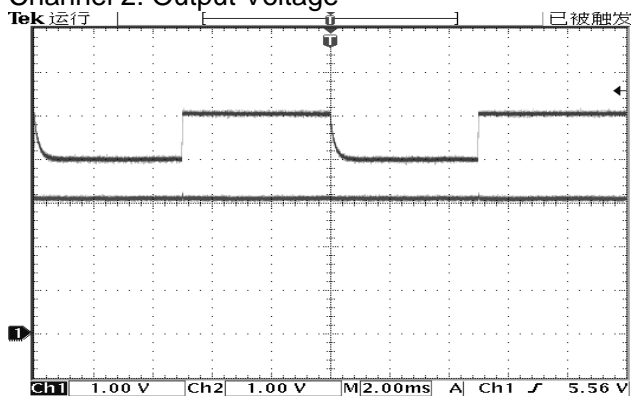


## TEST WAVEFORMS

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

Channel 1: Input Voltage

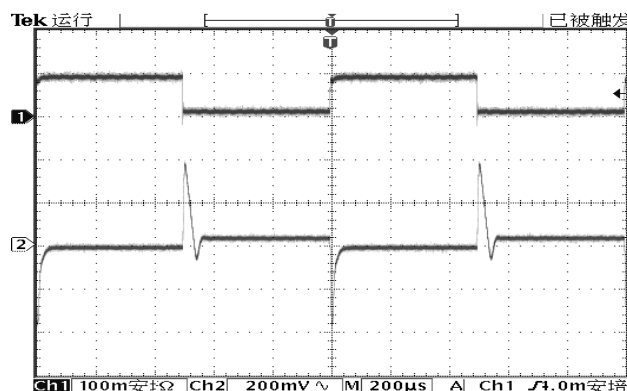
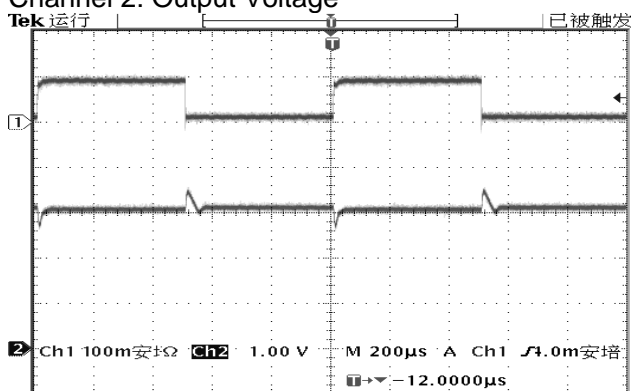
Channel 2: Output Voltage



Load Transient Response ( $C_{IN}=C_{OUT}=1\mu F$ ,  $I_{OUT}=1\leftrightarrow 100mA$ ,  $V_{OUT}=3V$ )

Channel 1: Output Current

Channel 2: Output Voltage



## PACKAGE LINE

Package	SOT23-3	Devices per reel	3000Pcs	Unit	mm
Package dimension:					
<p>Technical drawing of the SOT23-3 package. It includes three views: a top view, a side view, and a detail view of the lead. The top view shows a rectangular body with a width of <math>1.900 \pm 0.05</math> mm and a total length of <math>2.400 \pm 0.05</math> mm. The distance from the top edge to the top of the leads is <math>0.550 \pm 0.05</math> mm. The lead length is <math>0.400 \pm 0.03</math> mm. The distance between the leads is <math>1.300 \pm 0.05</math> mm. The distance from the center of the body to the lead edge is <math>0.400 \pm 0.05</math> mm. The lead width is <math>0.200 \pm 0.05</math> mm. The lead thickness is <math>0.080 \pm 0.02</math> mm. The lead radius is <math>4 \times R0.1</math> MAX. The side view shows a total length of <math>2.900 \pm 0.05</math> mm and a lead length of <math>1.000 \pm 0.05</math> mm. The lead thickness is <math>0.2</math> mm. The lead radius is <math>4 \times R0.1</math> MAX. The detail view shows a lead with a thickness of <math>0.100^{+0.05}_{-0.01}</math> mm and a radius of <math>R0.08</math>. The lead length is <math>0.2</math> mm. The lead thickness is <math>0.080 \pm 0.02</math> mm. The lead radius is <math>4 \times R0.1</math> MAX.</p>					

Package	SOT-23-5	Devices per reel	3000Pcs	Unit	mm
Package Dimension:					
<p>Technical drawing of the SOT-23-5 package. It includes three views: a top view, a side view, and a perspective view. The top view shows a rectangular body with a total length of <math>2.9 \pm 0.2</math> mm and a width of <math>1.6^{+0.2}_{-0.1}</math> mm. The distance between the leads is <math>1.9 \pm 0.2</math> mm. The lead length is <math>0.4 \pm 0.1</math> mm. The lead width is <math>0.95</math> mm. The lead thickness is <math>0.15^{+0.1}_{-0.05}</math> mm. The lead radius is <math>0.2</math> mm. The lead thickness is <math>0.2</math> mm. The side view shows a total length of <math>2.8 \pm 0.3</math> mm and a lead length of <math>1.1^{+0.2}_{-0.1}</math> mm. The lead thickness is <math>0.8 \pm 0.1</math> mm. The lead radius is <math>0</math> to <math>0.1</math> mm. The lead thickness is <math>0.2</math> mm. The perspective view shows the package from an isometric perspective.</p>					

## PACKAGE LINE(Continued)

Package	SOT-89-3	Devices per reel	1000Pcs	Unit	mm
Package Dimension:					
<p>Technical drawing of the SOT-89-3 package. The top view shows a rectangular body with a diameter of <math>\varnothing 1.0</math> and a width of <math>4.5 \pm 0.1</math>. The distance between the center of the body and the center of the mounting tab is <math>1.6 \pm 0.2</math>. The height of the body is <math>2.5 \pm 0.1</math>, with a maximum height of <math>4.25 \text{ MAX.}</math> and a minimum height of <math>0.8 \text{ MIN.}</math>. The mounting tab has a width of <math>1.5 \pm 0.1</math> and a height of <math>0.4 \pm 0.1</math>. The bottom view shows three mounting tabs with a width of <math>0.42 \pm 0.2</math> and a distance of <math>1.5 \pm 0.1</math> between the centers of adjacent tabs. The distance from the center of the body to the center of the mounting tab is <math>0.47 \pm 0.1</math>.</p>					

Package	TO-92	Devices per Bag	1000Pcs	Unit	mm
Package Dimension:					
<p>Technical drawing of the TO-92 package. The side view shows a cylindrical body with a diameter of <math>\varnothing 4.5 \pm 0.1</math> and a height of <math>4.95 \pm 0.35</math>. The distance between the center of the body and the center of the mounting tab is <math>0.46</math>. The mounting tab has a width of <math>1.5</math> and a height of <math>0.5</math>. The distance from the center of the body to the center of the mounting tab is <math>14.3 \pm 0.1</math>. The bottom view shows a semi-circular body with a diameter of <math>\varnothing 1.5 \times 0.2</math> and a height of <math>3.5 \pm 0.1</math>. The distance between the center of the body and the center of the mounting tab is <math>1.25 \pm 0.1</math>. The mounting tab has a width of <math>2.54</math> and a height of <math>0.38</math>.</p>					