

300mA Low Consumption Linear Regulator

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 and SOT-89-3 packages, which are lead (Pb)- free.

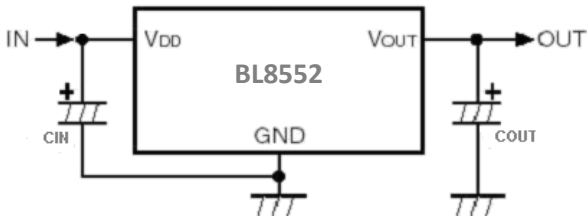
FEATURES

- 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: $\pm 2\%$

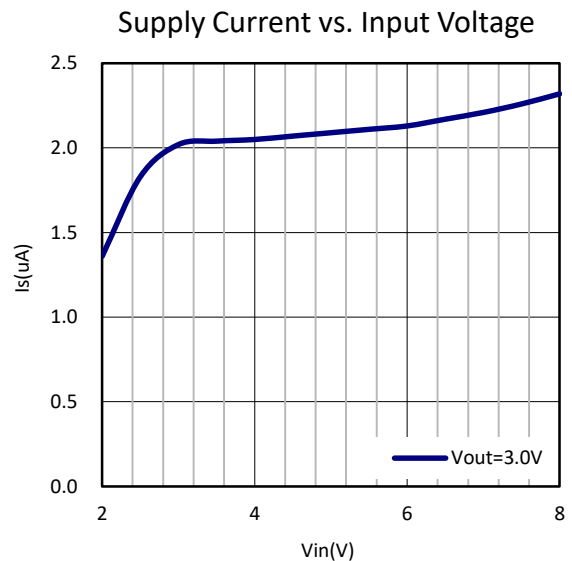
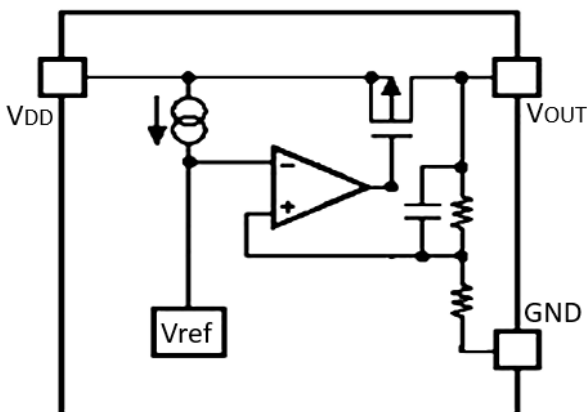
APPLICATIONS

- Reference voltage source
- Battery powered equipment
- Hand-hold equipment
- Wireless LAN
- GPS receivers

TYPICAL APPLICATION



BLOCK DIAGRAM



ORDERING INFORMATION

BL8552 1234

Code	Description
1	Temperature & Rohs: C: -40~85°C, Pb Free Rohs Std.
2	Package type: B3: SOT-23-3 B5: SOT-23-5 C3: SOT-89-3
3	Packing type: TR:Tape&Reel (Standard)
4	Output voltage: e.g. 12=1.2V 25=2.5V 36=3.6V

MARKING DESCRIPTON

E: Product code

X: Output voltage code

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

XX: Output voltage:

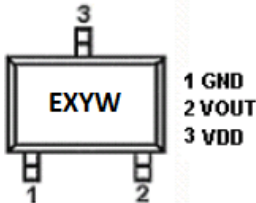
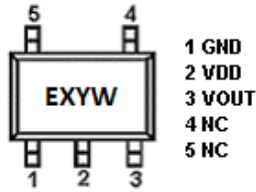
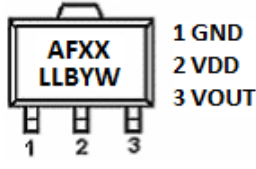
e.g. 12=1.2V, 25=2.5V, 36=3.6V.

Y: The Year of manufacturing, "1" stands for year 20X1, "2" stands for year 20X2, and "8" stands for year 20X8. (X=0,1,2,...9)

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.

The date code of the 53rd week is the same as that of the first week of the next year. For example, the date code of the 53rd week of 2017 is the same as that of the first week of 2018, which are 1801 and 8A.

MARKING INFORMATION

Product classification		BL8552CB3TR□□
Marking		SOT-23-3
EXYW	E: Product code	
	X: Output voltage	
	YW: Date code	
Product classification		BL8552CB5TR□□
Marking		SOT-23-5
EXYW	E: Product code	
	X: Output voltage	
	YW: Date code	
Product classification		BL8552CC3TR□□
Marking		SOT-89-3
AFXX LLBYW	AF: Product code	
	XX: Output voltage	
	LL: LOT NO.	
	B: FAB code	
	YW: Date code	
GND	Ground	
VOUT	Output voltage	
VDD	Supply voltage input	

ABSOLUTE MAXIMUM RATING

Parameter		Value
Max input voltage		10V
Operating junction temperature (T _J)		125°C
Ambient temperature (T _A)		-40°C~85°C
Power dissipation	SOT-23-3, SOT-23-5	250mW
	SOT-89-3	500mW
Storage temperature (T _S)		-40°C~150°C
Lead temperature & time		260°C, 10 Sec

Note:

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. 8V
Ambient temperature	-40°C~85°C

ELECTRICAL CHARACTERISTICS

Test conditions: C_{IN}=1uF, C_{OUT}=1uF, T_A=25°C, unless otherwise specified.

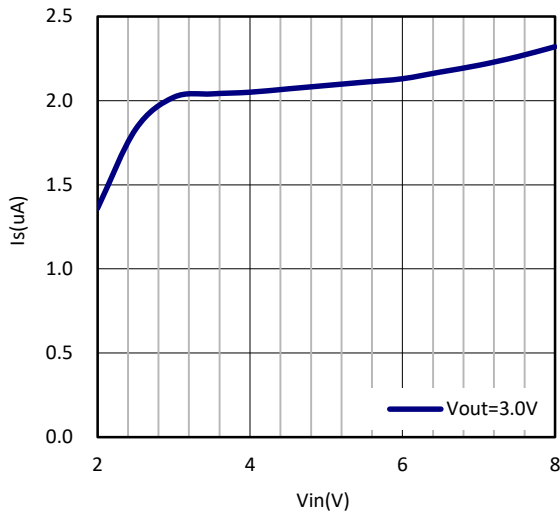
Symbol	Parameter	Conditions	Min	Typ	Max	Units	
V _{DD}	Input voltage				8	V	
V _{OUT}	Output voltage	V _{OUT} > 1.5V	V _{DD} =Set V _{OUT} +1V 1mA ≤ I _{OUT} ≤ 10mA	V _{OUT} X0.98	V _{OUT}	V _{OUT} X1.02	V
		V _{OUT} ≤ 1.5V		V _{OUT} - 0.03	V _{OUT}	V _{OUT} +0. 03	V
I _{OUT} (Max.) (Note 4)	Maximum output current	V _{DD} -V _{OUT} =1V	300			mA	
V _{DROP}	Dropout voltage	I _{OUT} =150mA V _{OUT} =3.0V		280		mV	
$\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$	Line regulation	I _{OUT} =10mA 4V ≤ V _{DD} ≤ 6V		0.05	0.2	%/V	
ΔV_{out}	Load regulation	V _{DD} =Set V _{OUT} +1V 1mA ≤ I _{OUT} ≤ 300mA		150		mV	
I _S	Supply current	V _{DD} =Set V _{OUT} +1V V _{OUT} floating		2	3	uA	
$\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$	Output voltage temperature coefficient	I _{OUT} =10mA		± 100		ppm/°C	
PSRR	Ripple rejection	f=100Hz, Ripple=0.5Vp-p, V _{DD} =Set V _{OUT} +1V		60		dB	
en	Output noise	BW=10Hz~100KHz		44		uVrms	

Note:

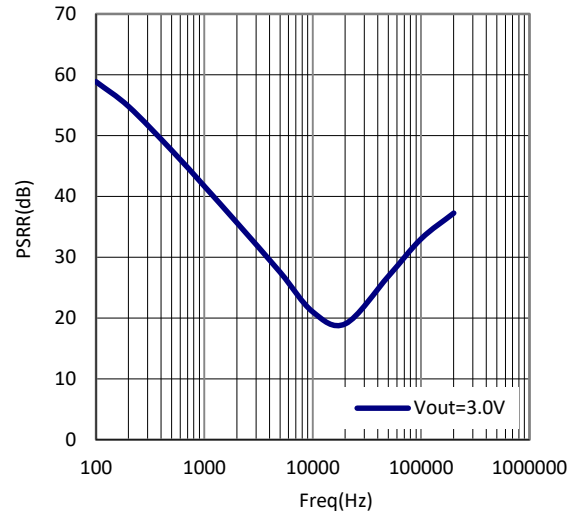
The maximum power rating of each package is a constant, so along with the change of I_{LOAD}, the V_{DD}-V_{OUT} should be controlled to a certain range to ensure the normal operation.

TYPICAL PERFORMANCE CHARACTERISTICS

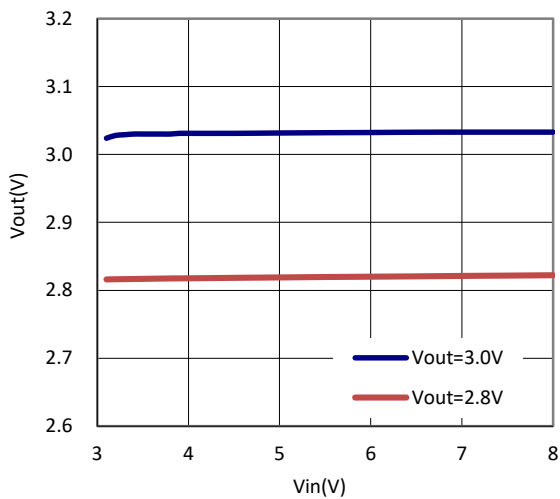
Supply Current vs. Input Voltage



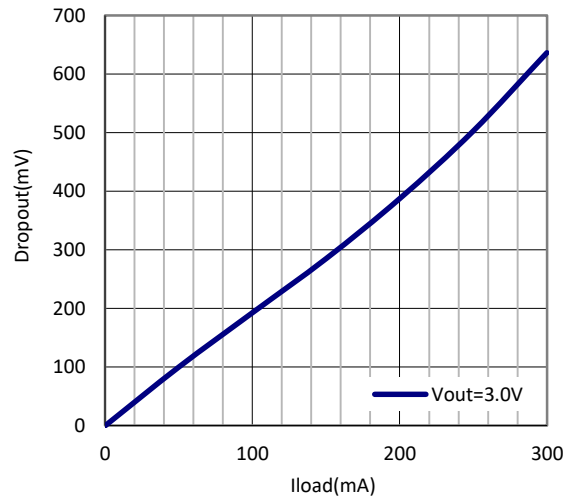
PSRR



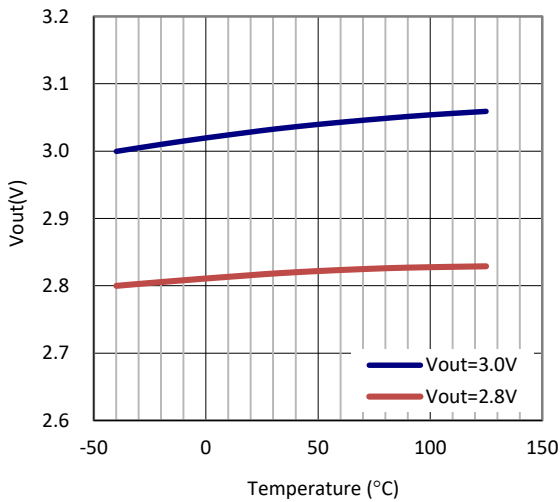
Output Voltage vs. Input Voltage



Dropout Voltage vs. Output Current



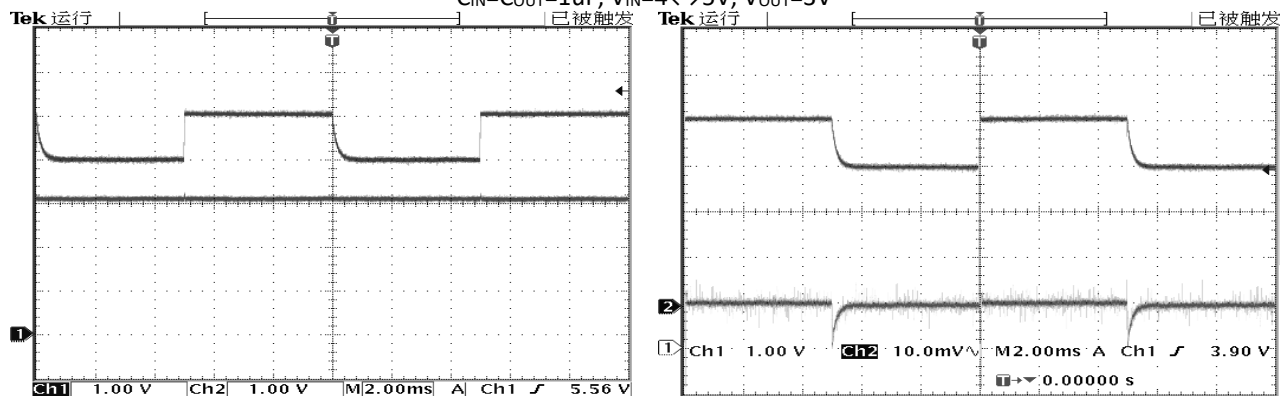
Output Voltage vs. Temperature



TEST WAVEFORMS

Line Transient Response

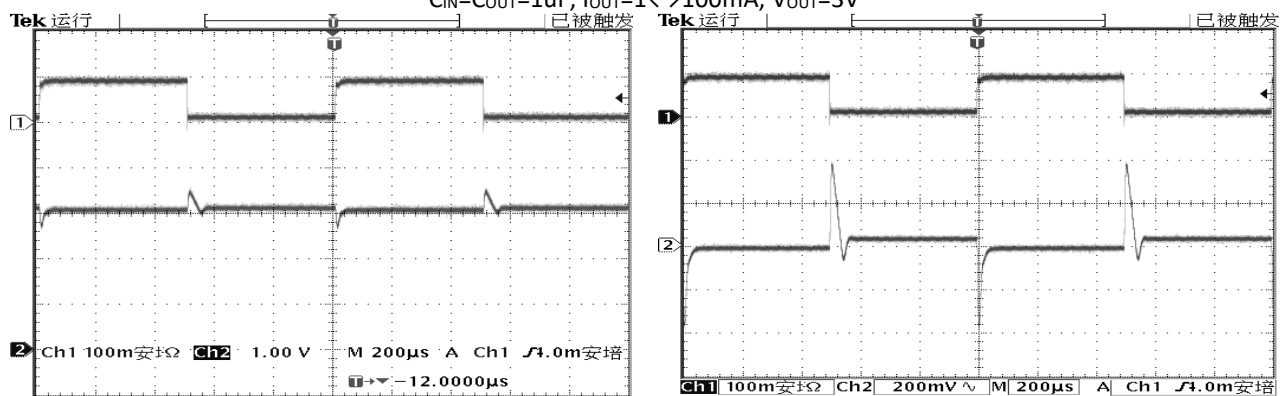
$C_{IN}=C_{OUT}=1\mu F$, $V_{IN}=4\leftrightarrow 5V$, $V_{OUT}=3V$



Ch1: Input Voltage, Ch2: Output Voltage

Load Transient Response

$C_{IN}=C_{OUT}=1\mu F$, $I_{OUT}=1\leftrightarrow 100mA$, $V_{OUT}=3V$

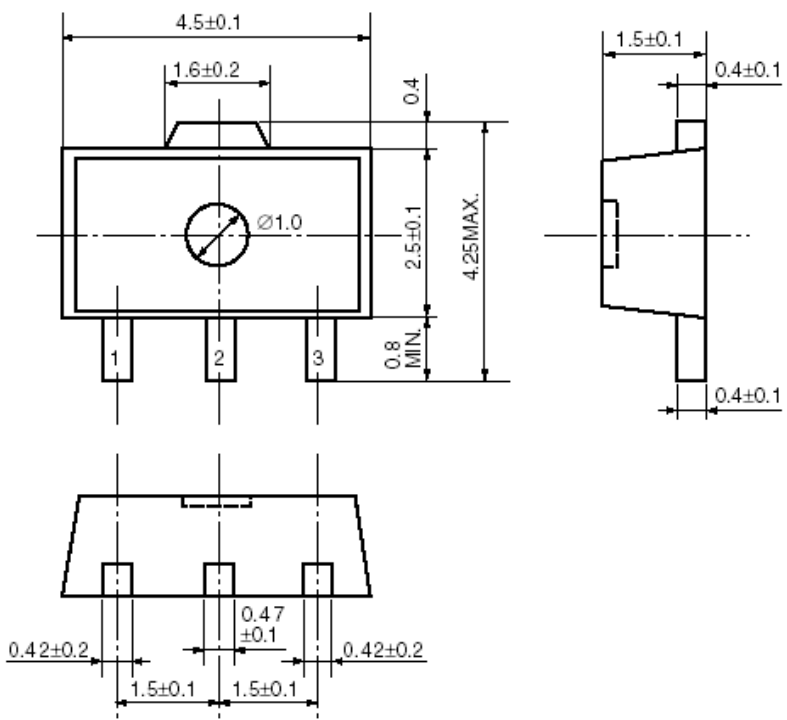


Ch1: Output Current, Ch2: Output Voltage

PACKAGE OUTLINE

Package	SOT23-3	Devices per reel	3000pcs
Package specification:			
<p>Technical drawing of the SOT23-3 package. It includes three views: a top view, a side view, and a cross-sectional view. Dimensions are provided in millimeters with tolerances. Key dimensions include: overall length 2.400 ± 0.05, overall width 1.900 ± 0.05, lead length 0.400 ± 0.03, lead thickness 0.080 ± 0.02, and lead width $0.100^{+0.05}_{-0.01}$. Lead radii are specified as $4 \times R0.1 \text{ MAX}$. Lead angles are $2 \times 7^\circ$. Other dimensions include 1.300 ± 0.05, 0.550 ± 0.05, 0.400 ± 0.05, $1.000^{+0}_{-0.05}$, 0.2 MIN, 0.2 MIN, 0.080 ± 0.02, $0.100^{+0.05}_{-0.01}$, and 0.080 ± 0.02.</p>			
Unit: mm			

Package	SOT23-5	Devices per reel	3000pcs
Package specification:			
<p>Technical drawing of the SOT23-5 package. It includes three views: a top view, a side view, and a perspective view. Dimensions are provided in millimeters with tolerances. Key dimensions include: overall length 2.9 ± 0.2, overall width 2.8 ± 0.3, lead length 0.4 ± 0.1, lead thickness $0.15^{+0.1}_{-0.05}$, and lead width 0.2 MIN. Lead radii are $R0.08$. Lead angles are $2 \times 7^\circ$. Other dimensions include 1.9 ± 0.2, 0.95, 0.95, $1.6^{+0.2}_{-0.1}$, 0.8 ± 0.1, $1.1^{+0.2}_{-0.1}$, and $0 \text{ to } 0.1$.</p>			
Unit: mm			

Package	SOT89-3	Devices per reel	1000pcs
Package specification:  <p>The drawing shows three views of the SOT89-3 package. The top view shows a rectangular body with a width of 4.5 ± 0.1 mm and a central circular feature with a diameter of $\varnothing 1.0$ mm. A trapezoidal feature is located at the top with a width of 1.6 ± 0.2 mm and a height of 0.4 mm. The body height is 2.5 ± 0.1 mm, and the total height including the trapezoid is 4.25 mm MAX. Three leads are shown at the bottom, labeled 1, 2, and 3, with a minimum height of 0.8 mm. The side view shows a trapezoidal top with a width of 1.5 ± 0.1 mm and a height of 0.4 ± 0.1 mm. The bottom view shows a trapezoidal base with a width of 1.5 ± 0.1 mm and a height of 0.47 ± 0.1 mm. The distance from the center to the edges is 0.42 ± 0.2 mm.</p>			
Unit: mm			

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