

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.

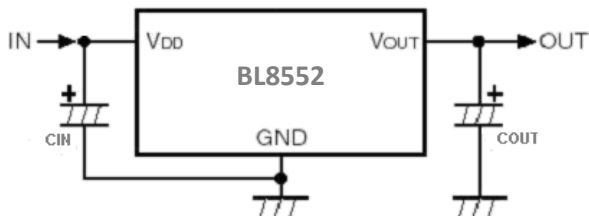
FEATURES

- 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: $\pm 2\%$

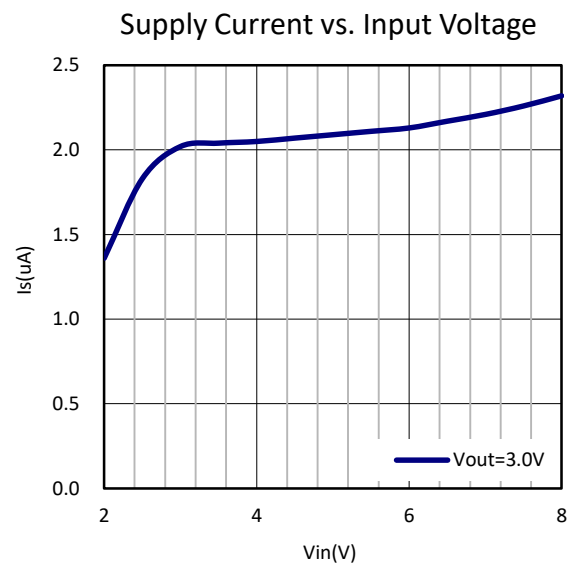
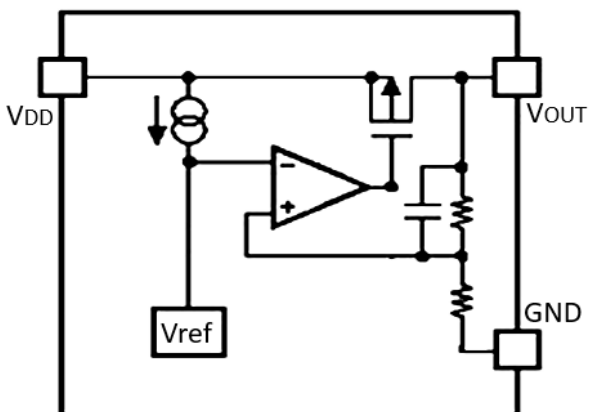
APPLICATIONS

- 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:

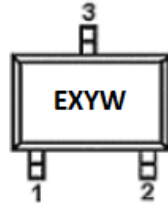
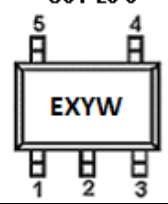
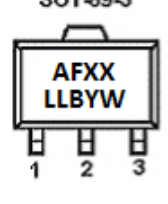
e.g. 12=1.2V, 25=2.5V, 36=3.6V.

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.

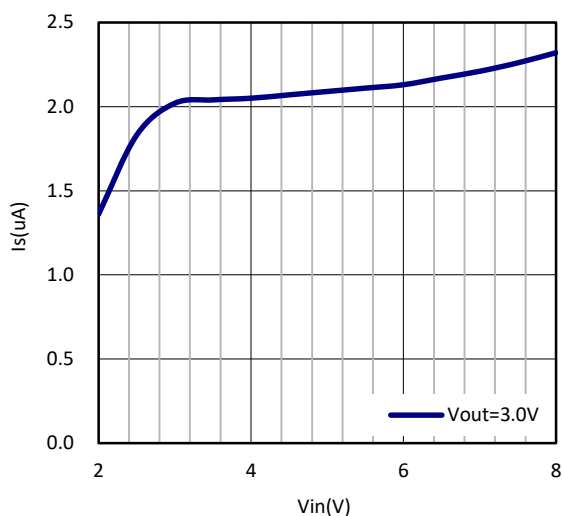
Symbol	Parameter		Conditions	Min	Typ	Max	Units
V _{DD}	Input voltage					8	V
V _{OUT}	Output voltage	V _{OUT} > 1.5V	V _{DD} =Set V _{OUT} +1V 1mA ≤ I _{OUT} ≤ 10mA	V _{OUT} X0.98	V _{OUT}	V _{OUT} X1.02	V
		V _{OUT} ≤ 1.5V		V _{OUT} - 0.03	V _{OUT}	V _{OUT} +0. 03	V
I _{OUT} (Max.) (Note 4)	Maximum 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:

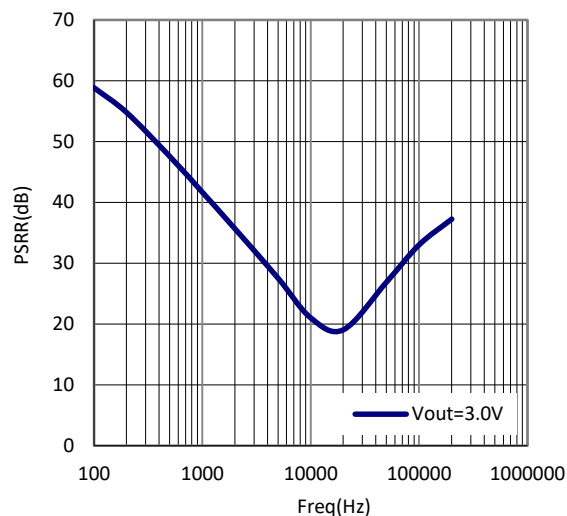
The maximum power rating of each package is a constant, so along with the change of I_{LOAD}, the V_{DD}-V_{OUT} should be controlled to a certain range to ensure the normal operation.

TYPICAL PERFORMANCE CHARACTERISTICS

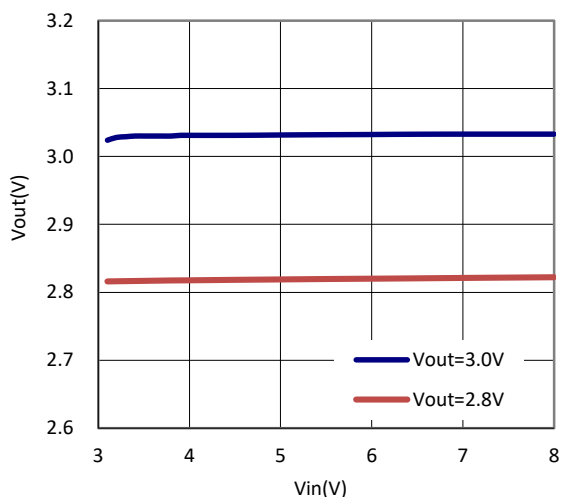
Supply Current vs. Input Voltage



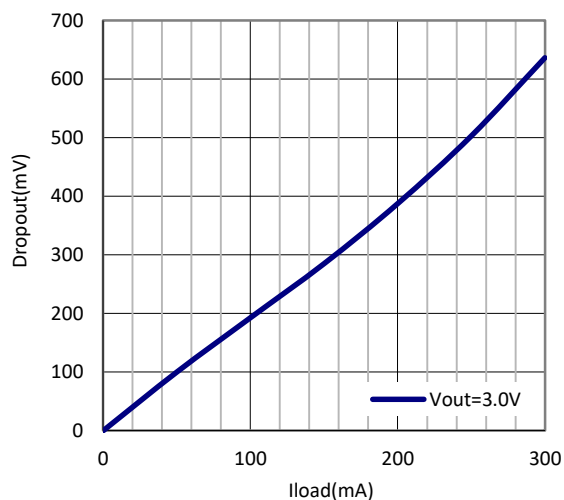
PSRR



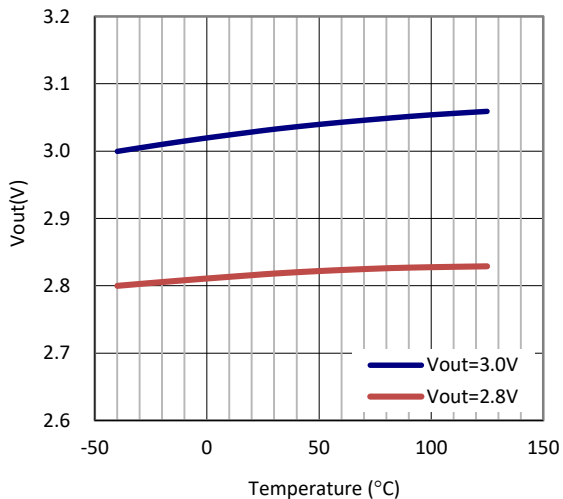
Output Voltage vs. Input Voltage



Dropout Voltage vs. Output Current



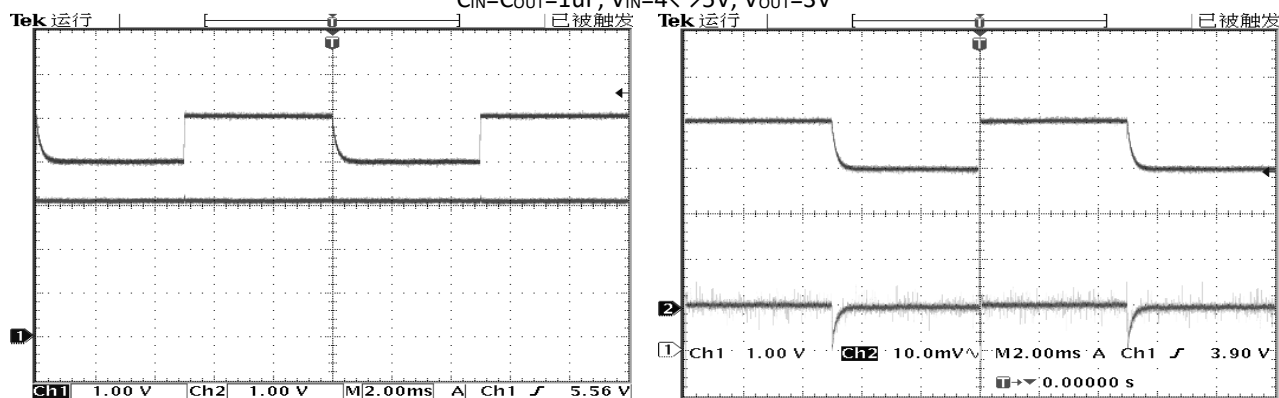
Output Voltage vs. Temperature



TEST WAVEFORMS

Line Transient Response

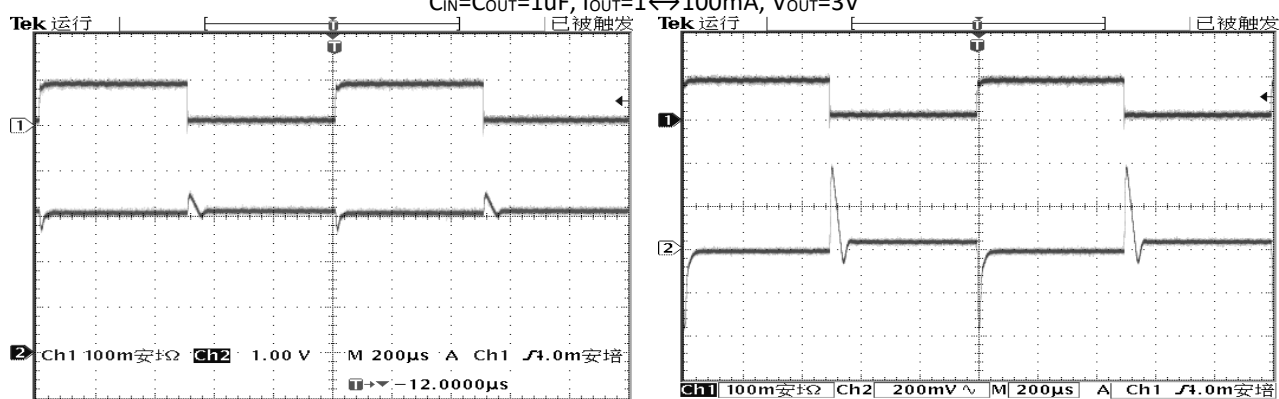
$C_{IN}=C_{OUT}=1\mu F$, $V_{IN}=4\leftrightarrow 5V$, $V_{OUT}=3V$



Ch1: Input Voltage, Ch2: Output Voltage

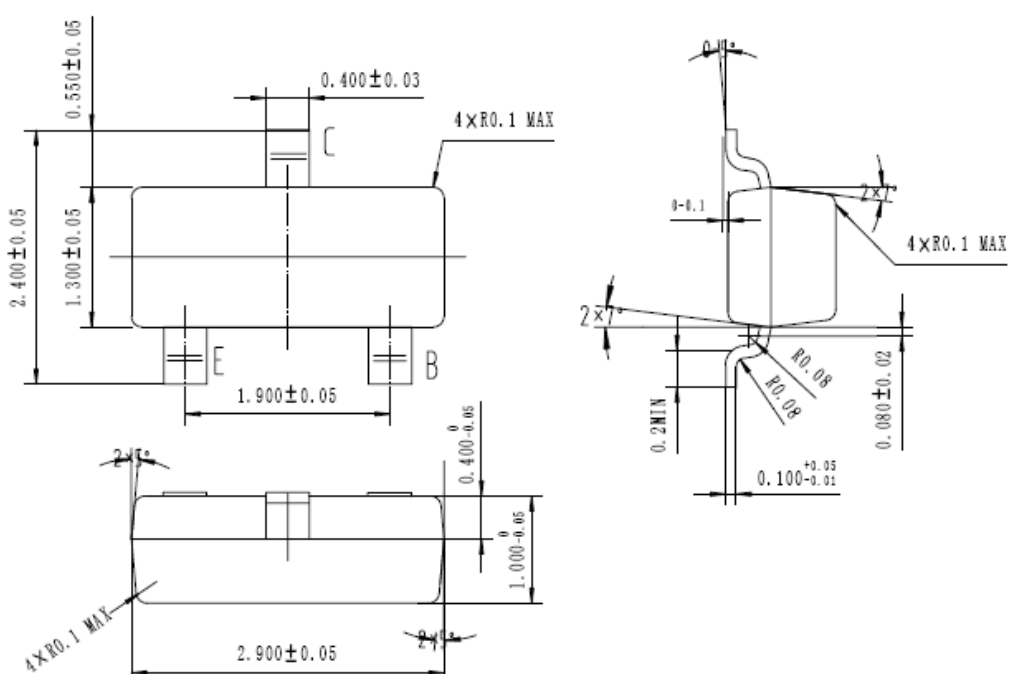
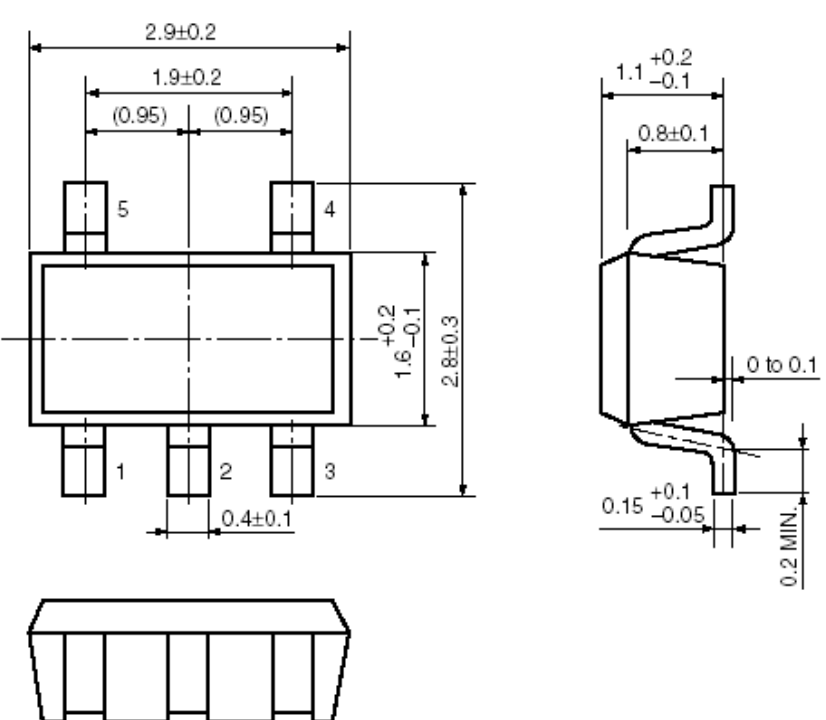
Load Transient Response

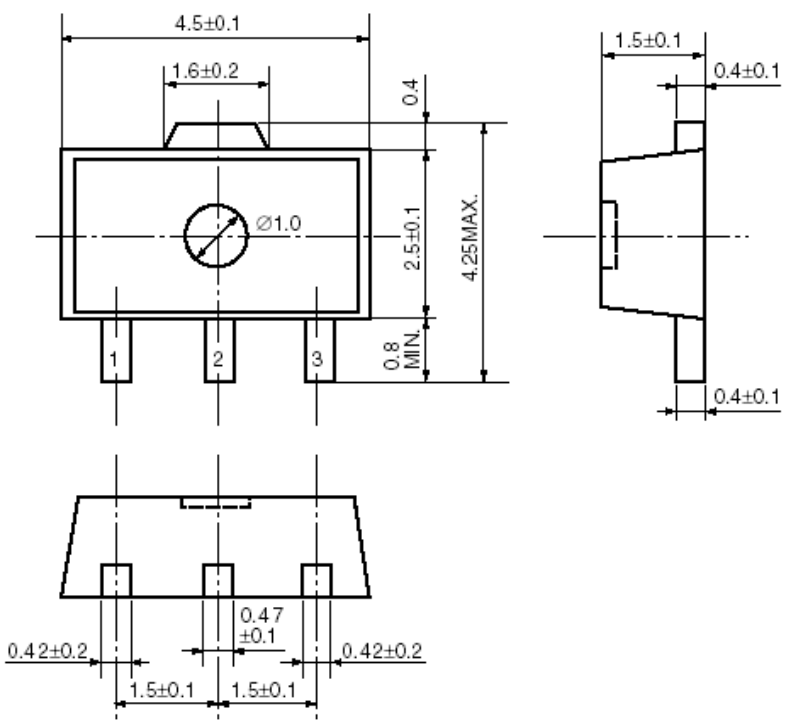
$C_{IN}=C_{OUT}=1\mu F$, $I_{OUT}=1\leftrightarrow 100mA$, $V_{OUT}=3V$



Ch1: Output Current, Ch2: Output Voltage

PACKAGE OUTLINE

Package	SOT23-3	Devices per reel	3000pcs
Package specification:			
 Technical drawing of the SOT23-3 package. The top view shows a rectangular body with a width of 1.900 ± 0.05 mm and a length of 2.900 ± 0.05 mm. The body has a maximum height of 2.400 ± 0.05 mm. The lead height is 0.550 ± 0.05 mm, and the lead width is 0.400 ± 0.03 mm. The lead angle is $4 \times R0.1$ MAX. The side view shows a maximum height of 1.300 ± 0.05 mm and a maximum width of 1.000 ± 0.05 mm. The cross-sectional view shows a maximum height of 0.080 ± 0.02 mm, a maximum width of 0.100 ± 0.01 mm, and a minimum lead length of 0.2 mm. The lead angle is $4 \times R0.1$ MAX.			
Unit: mm			
Package	SOT23-5	Devices per reel	3000pcs
Package specification:			
 Technical drawing of the SOT23-5 package. The top view shows a rectangular body with a width of 2.9 ± 0.2 mm and a length of 1.9 ± 0.2 mm. The body has a maximum height of 2.8 ± 0.3 mm. The lead height is 0.4 ± 0.1 mm, and the lead width is 0.15 ± 0.05 mm. The lead angle is $4 \times R0.1$ MAX. The side view shows a maximum height of 1.6 ± 0.1 mm and a maximum width of 1.000 ± 0.05 mm. The cross-sectional view shows a maximum height of 0.080 ± 0.02 mm, a maximum width of 0.100 ± 0.01 mm, and a minimum lead length of 0.2 mm. The lead angle is $4 \times R0.1$ MAX.			
Unit: mm			

Package	SOT89-3	Devices per reel	1000pcs
Package specification:			
 The mechanical drawing illustrates the SOT89-3 package in three views: top, side, and bottom. The top view shows a rectangular body with a central circular feature of diameter $\varnothing 1.0$. The overall width is 4.5 ± 0.1 mm, and the width of the central feature is 1.6 ± 0.2 mm. The height of the package is 2.5 ± 0.1 mm, with a maximum height of 4.25 mm. The distance from the top of the package to the top of the central feature is 0.4 mm. The distance from the bottom of the package to the bottom of the central feature is 0.8 mm. The bottom view shows the package with three pins labeled 1, 2, and 3. The distance between the centers of pins 1 and 2 is 1.5 ± 0.1 mm, and the distance between the centers of pins 2 and 3 is 1.5 ± 0.1 mm. The distance from the center of pin 2 to the center of the central feature is 0.47 ± 0.1 mm. The distance from the center of pin 1 to the center of the central feature is 0.42 ± 0.2 mm, and the distance from the center of pin 3 to the center of the central feature is 0.42 ± 0.2 mm. The side view shows the package with a width of 1.5 ± 0.1 mm and a height of 0.4 ± 0.1 mm. The distance from the center of the package to the center of the central feature is 0.4 ± 0.1 mm.			
Unit: mm			