

### 300mA Low Consumption Linear Regulator

# LR 8552

## GENERAL DESCRIPTION

LR8552 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.

LR8552 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  $\pm 2\%$ .

LR8552 series are available in SOT-23-3, SOT-23-5, SOT-89-3 and TO-92 packages, which are lead (Pb)- free.

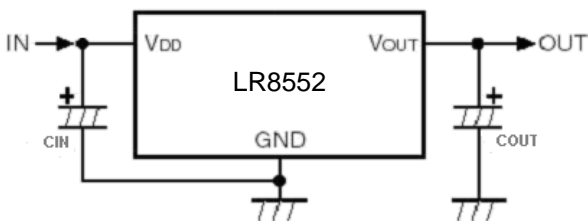
## FEATURES

- 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:  $\pm 2\%$

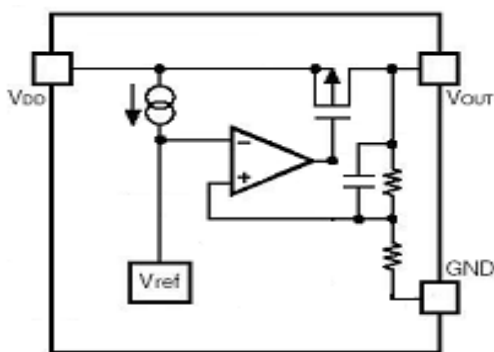
## APPLICATIONS

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

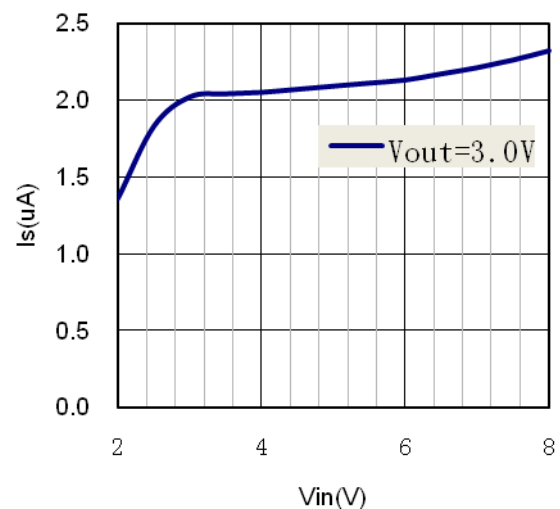
## TYPICAL APPLICATION



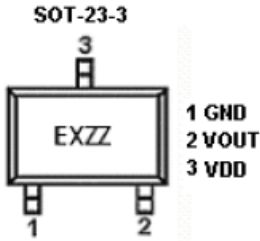
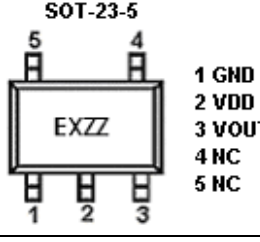
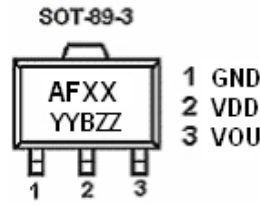
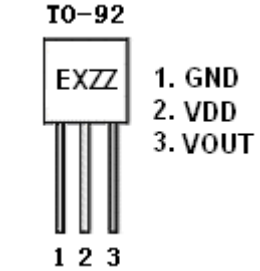
## BLOCK DIAGRAM



Supply Current vs. Input Voltage



**MARKING INFORMATION (Note 1)**

Product Classification		LR8552CB3TR□□
Marking		
EXZZ	E: Product Code	
	X: Output Voltage	
ZZ: Date Code		
Product Classification		LR8552CB5TR□□
Marking		
EXZZ	E: Product Code	
	X: Output Voltage	
ZZ: Date Code		
Product Classification		LR8552CC3TR□□
Marking		
AFXX YYBZZ	AF: Product Code	
	XX: Output Voltage	
	YY: LOT NO.	
	B: FAB Code	
ZZ: Date Code		
Product Classification		LR8552CHBG□□
Marking		
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	$\bar{0}$
1.3V	3	2.2V	$\bar{2}$	3.1V	$\bar{1}$
1.4V	4	2.3V	$\bar{3}$	3.2V	$\bar{2}$
1.5V	5	2.4V	$\bar{4}$	3.3V	$\bar{3}$
1.6V	6	2.5V	$\bar{5}$	3.4V	$\bar{4}$
1.7V	7	2.6V	$\bar{6}$	3.5V	$\bar{5}$
1.8V	8	2.7V	$\bar{7}$	3.6V	$\bar{6}$
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 "0" stands for year 2010.

Z: The week of manufacturing. "A" stands for week 1, "Z" stands for week 26, "A" stands for week 27, "Z" stands for week 52.

**ORDERING INFORMATION**

LR8552 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

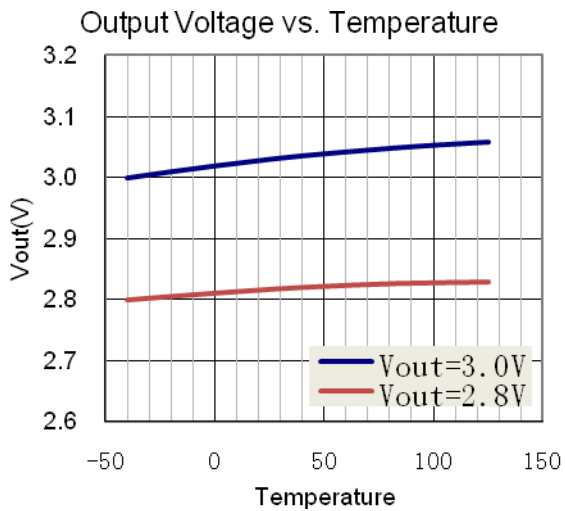
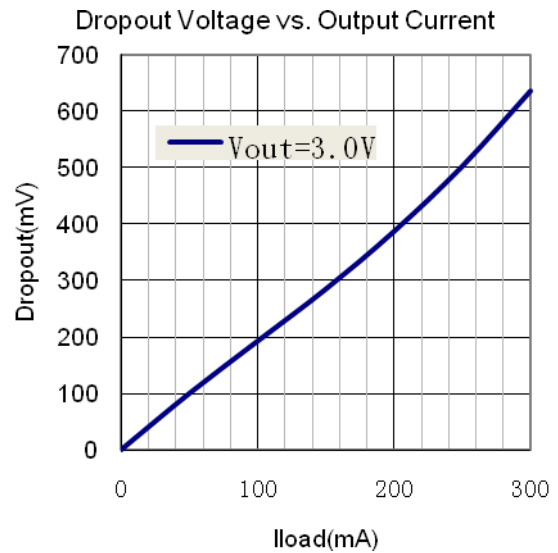
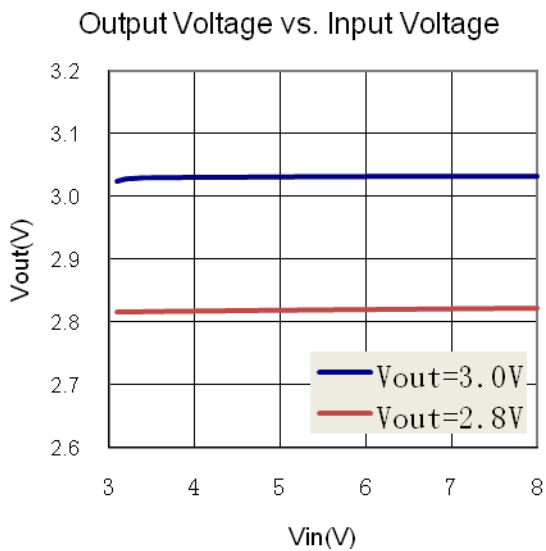
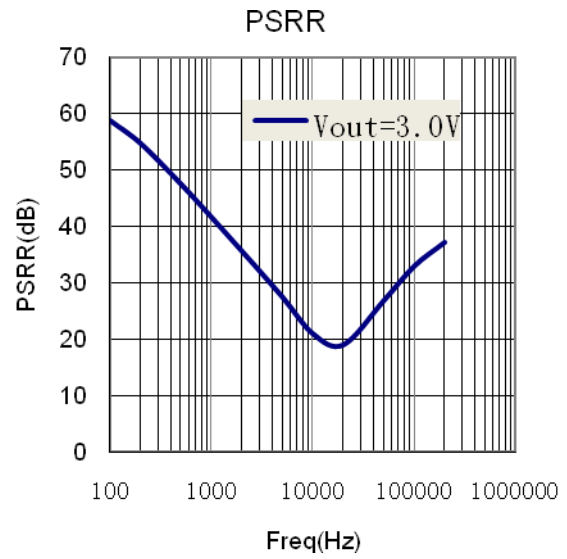
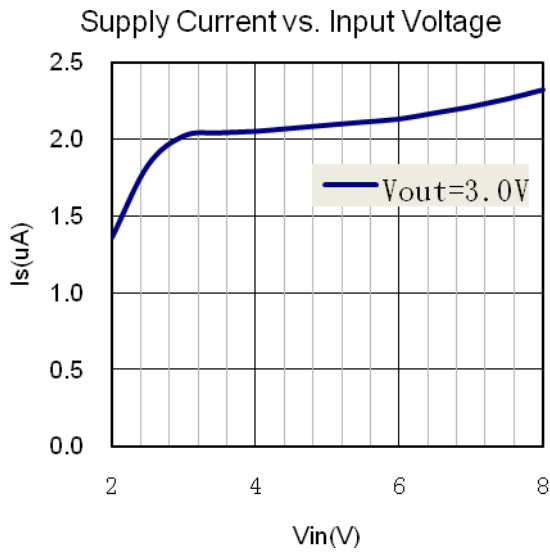
## ELECTRICAL CHARACTERISTICS

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.

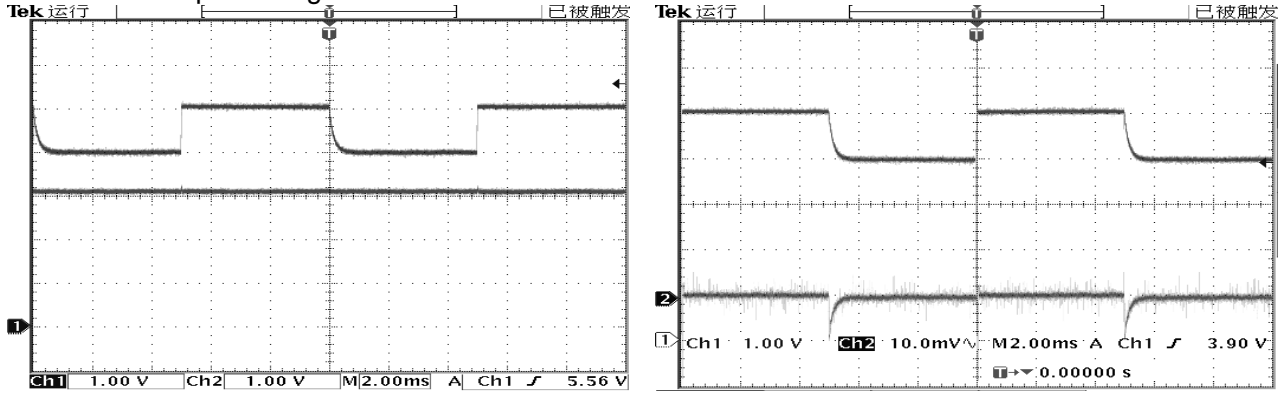
## TYPICAL PERFORMANCE CHARACTERISTICS



## TEST WAVEFORMS

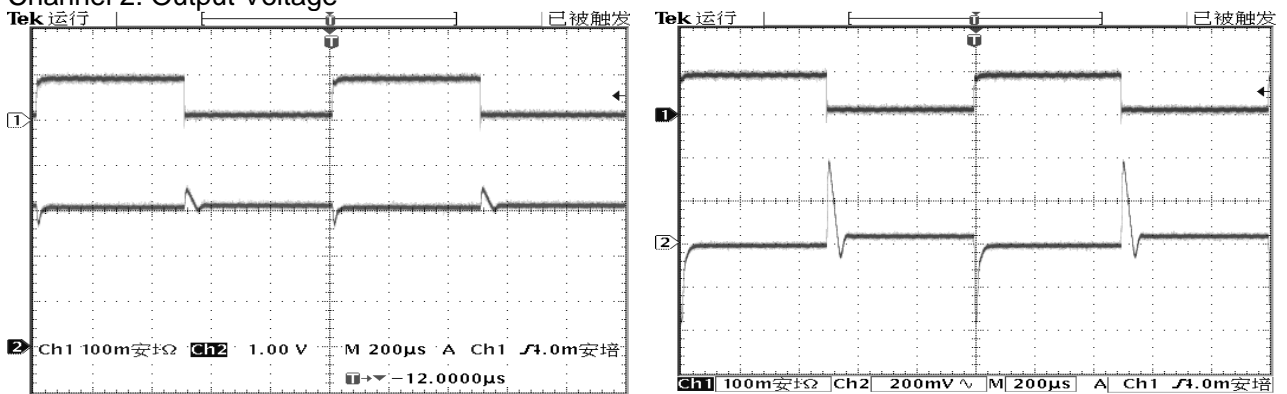
Line Transient Response ( $C_{IN}=C_{OUT}=1\mu F$ ,  $V_{IN}=4\leftrightarrow 5V$ ,  $V_{OUT}=3V$ )

Channel 1: Input Voltage  
Channel 2: Output Voltage

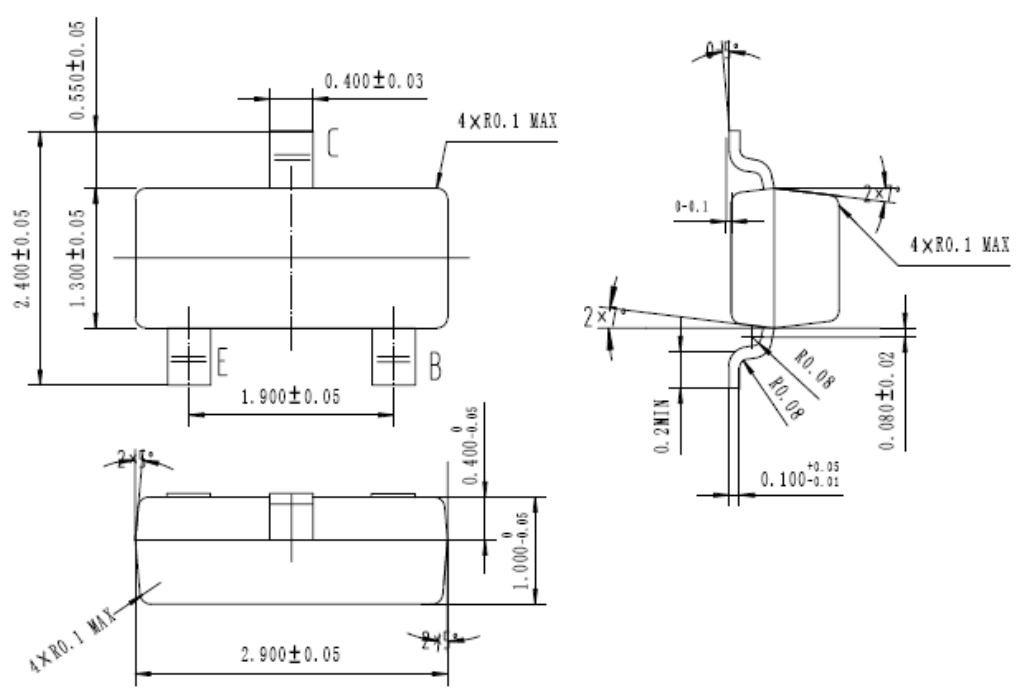


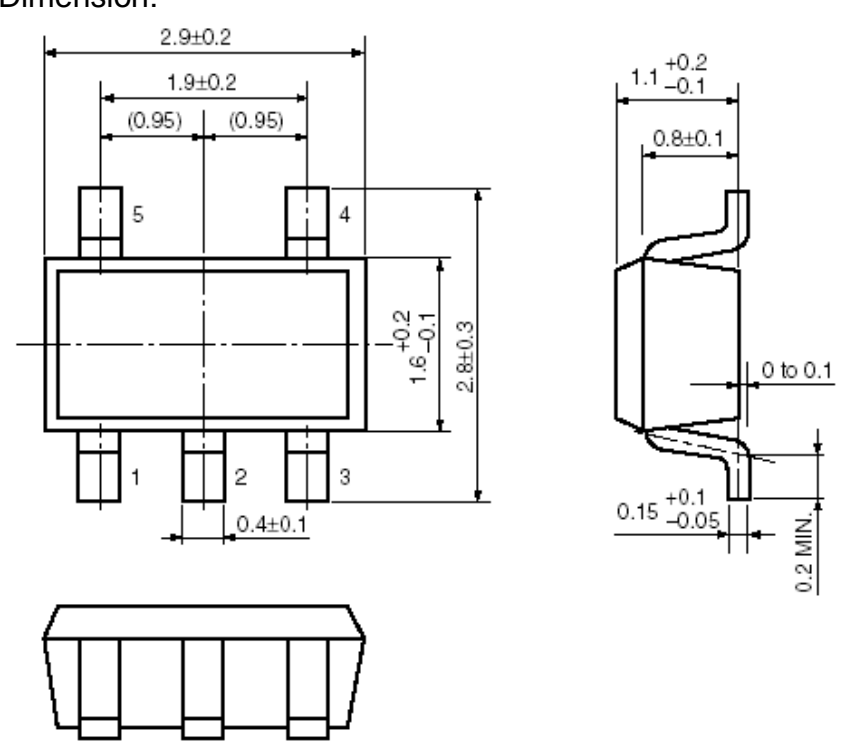
Load Transient Response ( $C_{IN}=C_{OUT}=1\mu F$ ,  $I_{OUT}=1\leftrightarrow 100mA$ ,  $V_{OUT}=3V$ )

Channel 1: Output Current  
Channel 2: Output Voltage

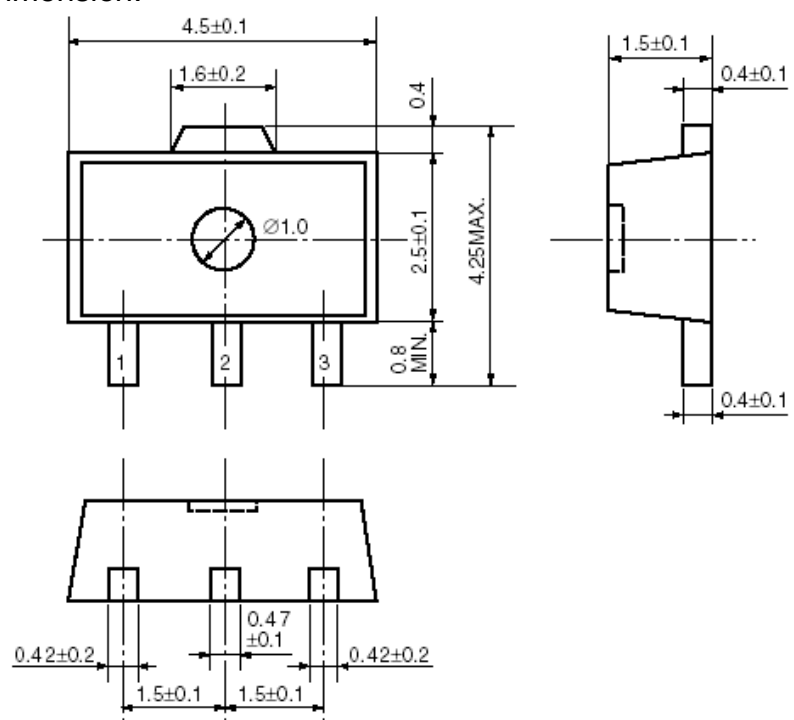


PACKAGE LINE

Package	SOT23-3	Devices per reel	3000Pcs	Unit	mm
Package dimension:					
 <p>Technical drawing of SOT23-3 package showing top, side, and cross-sectional views with dimensions:</p> <ul style="list-style-type: none"> <li>Top view: Overall width <math>2.400 \pm 0.05</math>, distance from top edge to lead center <math>0.550 \pm 0.05</math>, lead width <math>0.400 \pm 0.03</math>, lead length <math>1.300 \pm 0.05</math>, distance between lead centers <math>1.900 \pm 0.05</math>, lead thickness <math>0.400 \pm 0.05</math>, and lead radius <math>4 \times R0.1 \text{ MAX}</math>.</li> <li>Side view: Overall length <math>2.900 \pm 0.05</math>, lead length <math>1.000 \pm 0.05</math>, lead thickness <math>0.400 \pm 0.05</math>, and lead radius <math>4 \times R0.1 \text{ MAX}</math>.</li> <li>Cross-sectional view: Lead thickness <math>0.2 \text{ MIN}</math>, lead length <math>0.100 \pm 0.05</math>, lead radius <math>R0.08</math>, and lead thickness at base <math>0.080 \pm 0.02</math>.</li> </ul>					

Package	SOT-23-5	Devices per reel	3000Pcs	Unit	mm
Package Dimension:					
 <p>Technical drawing of SOT-23-5 package showing top, side, and perspective views with dimensions:</p> <ul style="list-style-type: none"> <li>Top view: Overall width <math>2.9 \pm 0.2</math>, distance between lead centers <math>1.9 \pm 0.2</math> (with <math>0.95</math> spacing), lead width <math>0.4 \pm 0.1</math>, lead length <math>1.6 \pm 0.1</math>, and overall height <math>2.8 \pm 0.3</math>. Leads are numbered 1, 2, 3, 4, 5.</li> <li>Side view: Lead length <math>1.1 \pm 0.2</math>, lead width <math>0.8 \pm 0.1</math>, lead thickness <math>0.15 \pm 0.1</math>, and lead radius <math>0.2 \text{ MIN}</math>.</li> <li>Perspective view: Shows the 3D structure of the package.</li> </ul>					

PACKAGE LINE(Continued)

Package	SOT-89-3	Devices per reel	1000Pcs	Unit	mm
Package Dimension:					
					

Package	TO-92	Devices per Bag	1000Pcs	Unit	mm
Package Dimension:					
