

Features:

- Low Power Consumption: 9uA (Typ.)
- High Output Current: 150mA
- Small Input-Output Differential:
900mV@150mA (Vout=3.3V)
- High input voltage (up to 24V)
- Highly Accuracy: $\pm 2\%$
- Output Current Limit

Applications:

- Battery Powered equipment
- Communication equipment
- Audio/Video equipment

General Description:

BL8551 series is a group of positive voltage output, high voltage input, low power consumption, low dropout voltage regulator. It can afford 150mA output current when input-output voltage differential drops to 900mV.

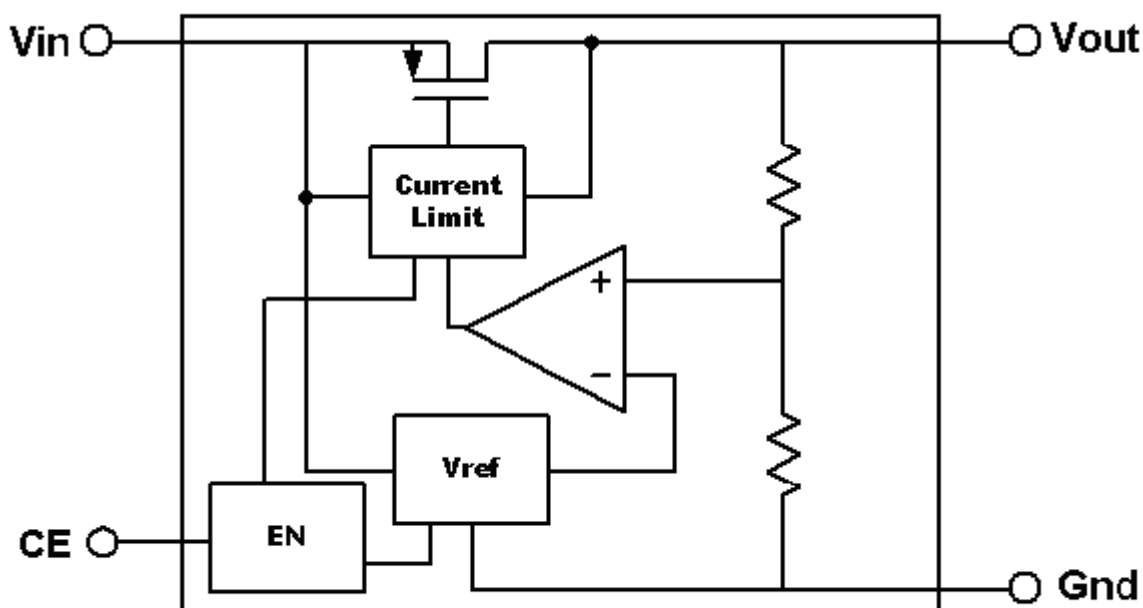
BL8551 can provide output value in the range of 2.5V~12V every 0.1V step. It also can be customized on command.

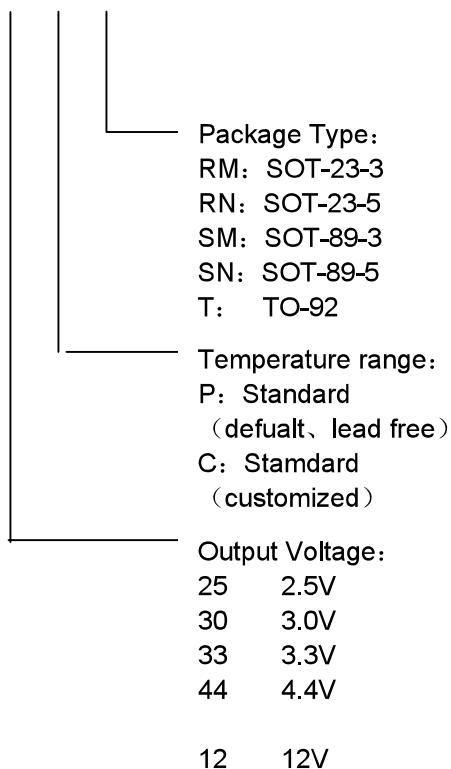
BL8551 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.


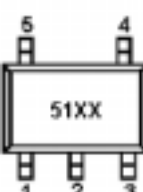
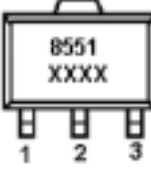


BL8551 has well load transient response and good temperature characteristic, which can assure the stability of chip and power system. And it uses trimming technique to guarantee output voltage accuracy within $\pm 2\%$.

BL8551 is available in SOT-89-5 with EN Pin and SOT-23-5、TO-92、SOT-89 -3、SOT-23-3 without EN Pin packages which is lead free.

Block Diagram:



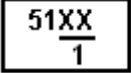
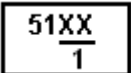
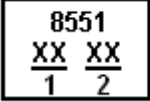
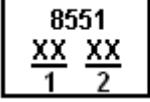
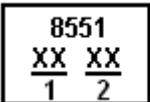
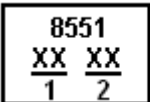
Selection Guide:
BL8551-XX X X

Pin Assignment:

Product Classification	Pin Configuration
BL8551-□□PRM	SOT-23-3 
BL8551-□□PRN	SOT-23-5 
BL8551-□□PSM	SOT-89-3 
BL8551-□□PSN	SOT-89-5 
BL8551-□□PT	TO-92 

Pin Description:

PIN NUMBER					PIN NAME	FUNCTION
SOT-23	SOT-25	SOT-89-3	SOT-89-5	TO-92		
1	1	1	2	1	Vss	Ground
3	2	2	5	2	Vin	Supply voltage input
2	3	3	1	3	Vout	Output Voltage
—	—	—	3	—	CE	Enable pin
—	—	—	4	—	NC	No connection

Product Classification:

Product Name	Output Voltage	Package Type	Package Marking
BL8551-25PRM	2.5V	SOT-23	 1 Output Voltage
BL8551-30PRM	3.0V	SOT-23	
BL8551-33PRM	3.3V	SOT-23	
BL8551-50PRM	5.0V	SOT-23	
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BL8551-12PRM	12V	SOT-23	 1 Output Voltage
BL8551-25PRN	2.5V	SOT-25	
BL8551-30PRN	3.0V	SOT-25	
BL8551-33PRN	3.3V	SOT-25	
BL8551-50PRN	5.0V	SOT-25	
-----	-----	-----	 1 Output Voltage 2 Lot NO.
BL8551-12PRN	12V	SOT-25	
BL8551-25PSM	2.5V	SOT-89-3	
BL8551-30PSM	3.0V	SOT-89-3	
BL8551-33PSM	3.3V	SOT-89-3	
BL8551-50PSM	5.0V	SOT-89-3	 1 Output Voltage 2 Lot NO.
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BL8551-12PSM	12V	SOT-89-3	
BL8551-25PSN	2.5V	SOT-89-5	
BL8551-30PSN	3.0V	SOT-89-5	
BL8551-33PSN	3.3V	SOT-89-5	 1 Output Voltage 2 Lot NO.
BL8551-50PSN	5.0V	SOT-89-5	
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BL8551-12PSN	12V	SOT-89-5	
BL8551-25PSN	2.5V	TO-92	
BL8551-30PSN	3.0V	TO-92	 1 Output Voltage 2 Lot NO.
BL8551-33PSN	3.3V	TO-92	
BL8551-50PSN	5.0V	TO-92	
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BL8551-12PSN	12V	TO-92	

Absolute Maximum Ratings:

Max input voltage	-----	26V
Junction Temperature (T _J)	-----	125°C
Ambient Temperature(T _A)	-----	-40°C~85°C
Power Dissipation		
SOT-23-3	-----	0.25W
SOT-23-5	-----	0.25W
SOT-89-3	-----	0.5W
SOT-89-5	-----	0.5W
TO-92	-----	0.2W
Storage Temperature(T _s)	-----	-45°C~150°C
Lead Temperature and Time	-----	260°C,10S

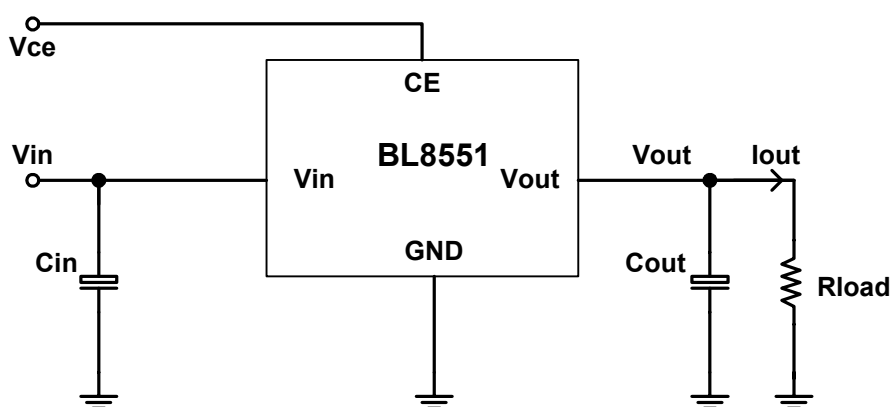
Recommended Work Conditions:

Item	Min	Recommended	Max	unit
Input Voltage Range			24	V
Ambient Temperature	-40		+125	°C

Electrical Characteristics:

 (Test Conditions: $C_{in}=1\mu F, C_{out}=1\mu F, T_A=25^\circ C$, Unless otherwise specified.)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
V_{in}	Input Voltage				24	V
V_{out}	Output Voltage	$V_{in}=V_{out}+2.0V$	$\times 0.98$		$\times 1.02$	V
$I_{out(Max.)}$	Maximum Output Current	$V_{in}-V_{out}=1.5V$	150			mA
Dropout Voltage	Input-Output Voltage Differential	$I_{out}=20mA$		270	500	mV
		$I_{out}=150mA$		900	1200	
$\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$	Line Regulation	$I_{out}=20mA$ $V_{out}+1V \leq V_{in} \leq 24V$		0.2	0.3	%/V
ΔV_{out}	Load Regulation	$V_{in}-V_{out}=2.0V$ $1mA \leq I_{out} \leq 40mA$		30	60	mV
I_q	Quiescent Current	$V_{in}-V_{out}=2.0V$ $V_{in}=V_{CE}$		9	15	μA
I_{lim}	Current Limit	$V_{in}-V_{out}=2.0V$	250			mA
V_{CEH}	CE "H" Input Voltage		1.5		V_{in}	V
V_{CEL}	CE "L" Input Voltage		0.0		0.3	V

Typical Application Circuit:

Application hints:

NOTE1: Input capacitor ($C_{in}=1\mu F$) is recommended in all application circuit. Tantalum capacitor is recommended.

NOTE2: Output capacitor ($C_{out}=1\mu F$) is recommended in all application to assure the stability of circuit. Tantalum capacitor is recommended.

Explanation:

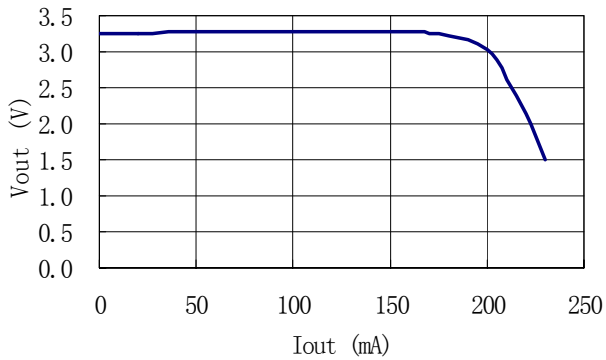
BL8551 is a series of low dropout voltage and low power consumption regulator. Its application circuit is very simple, which only needs two outside capacitors. It is composed of these modules: high accuracy voltage reference, current limit circuit, error amplifier, output driver and power transistor.

Current Limit module can keep chip and power system away from danger when load current is more than 150mA.

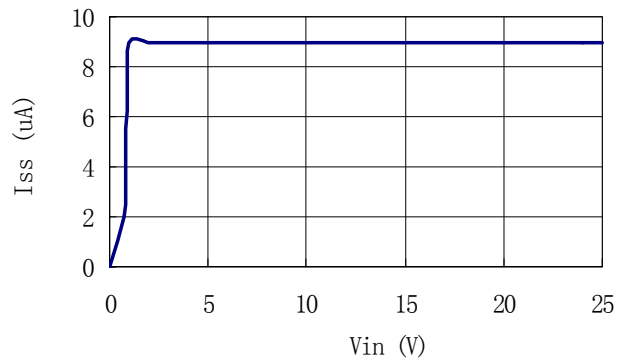
BL8551 uses trimming technique to assure the accuracy of output value within $\pm 2\%$.

Typical Performance Characteristics:

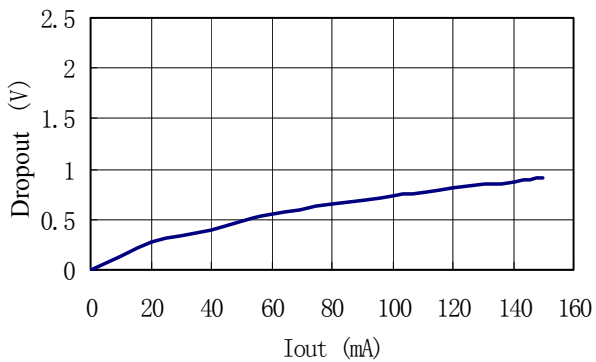
Vout vs Iout



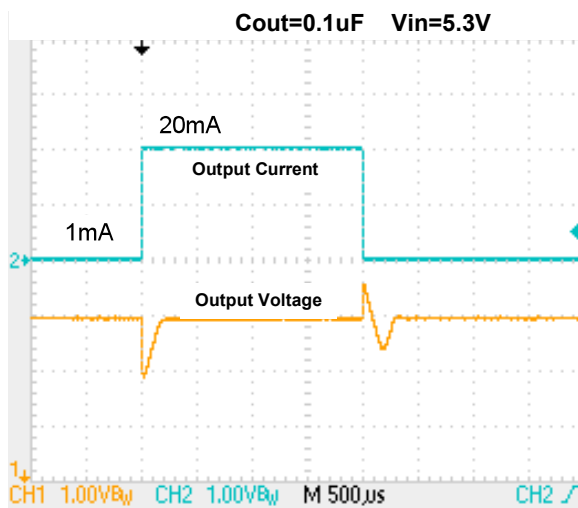
I_{ss} vs Vin



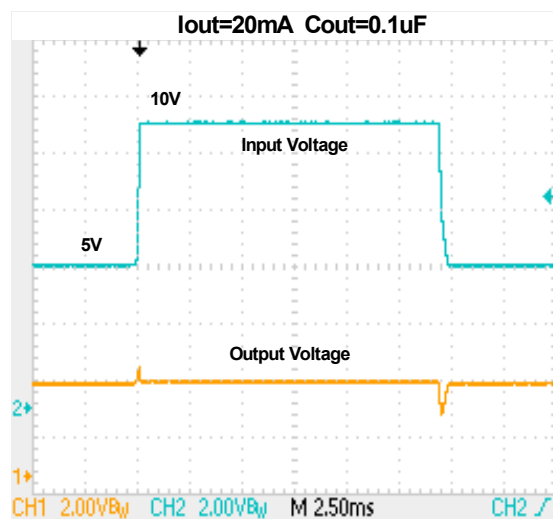
Dropout vs Iout



Load Transient Response

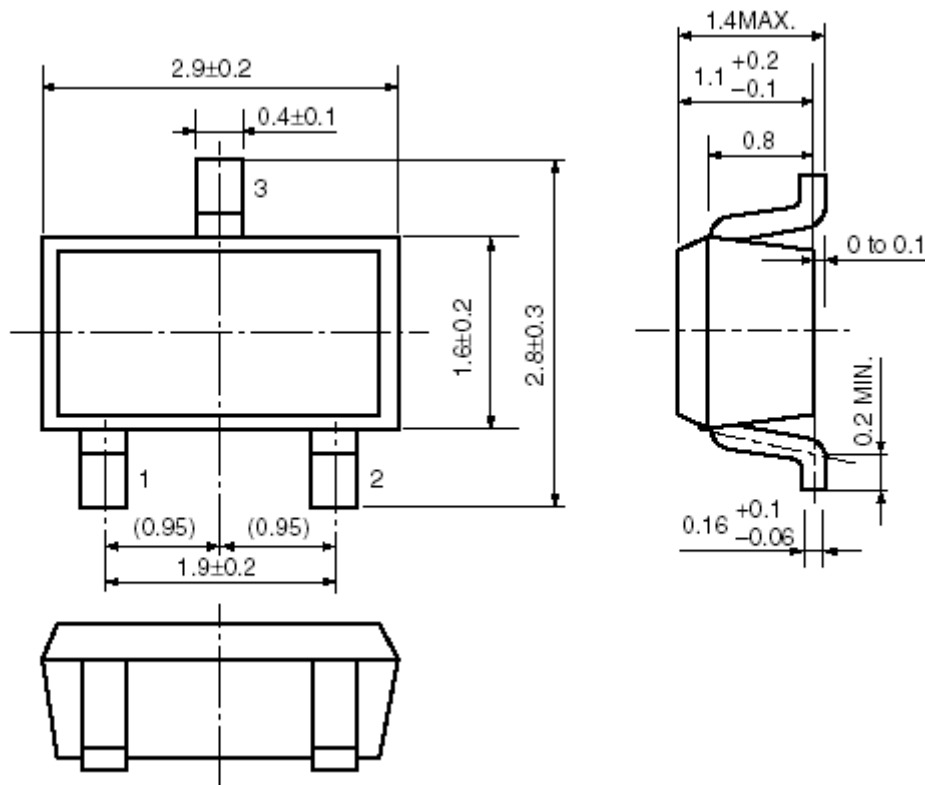
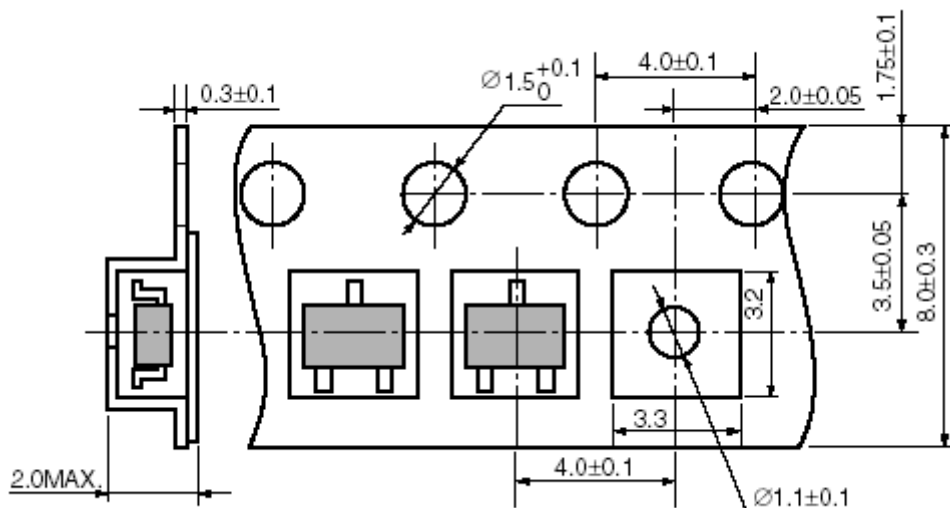


Input Transient Response

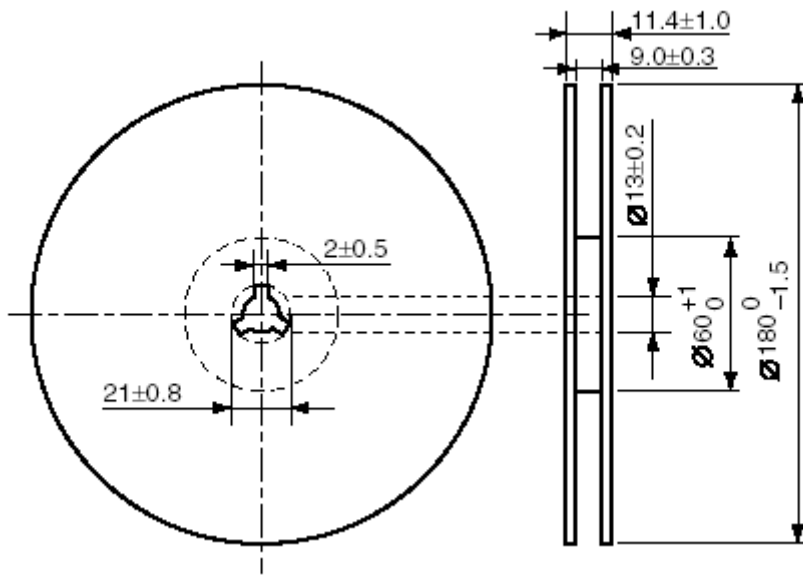


Package Outline:
SOT-23-3:

Package	SOT-23-3	Devices per reel	3000	Unit	mm
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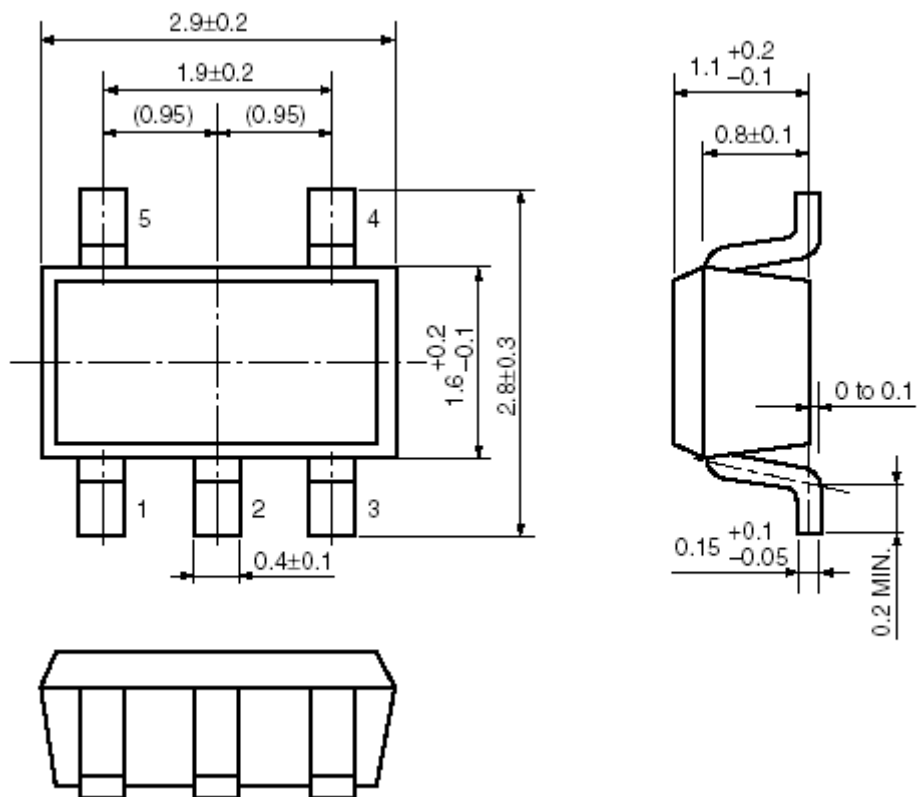
Package dimension:

Taping Specification:


Taping reel dimension:

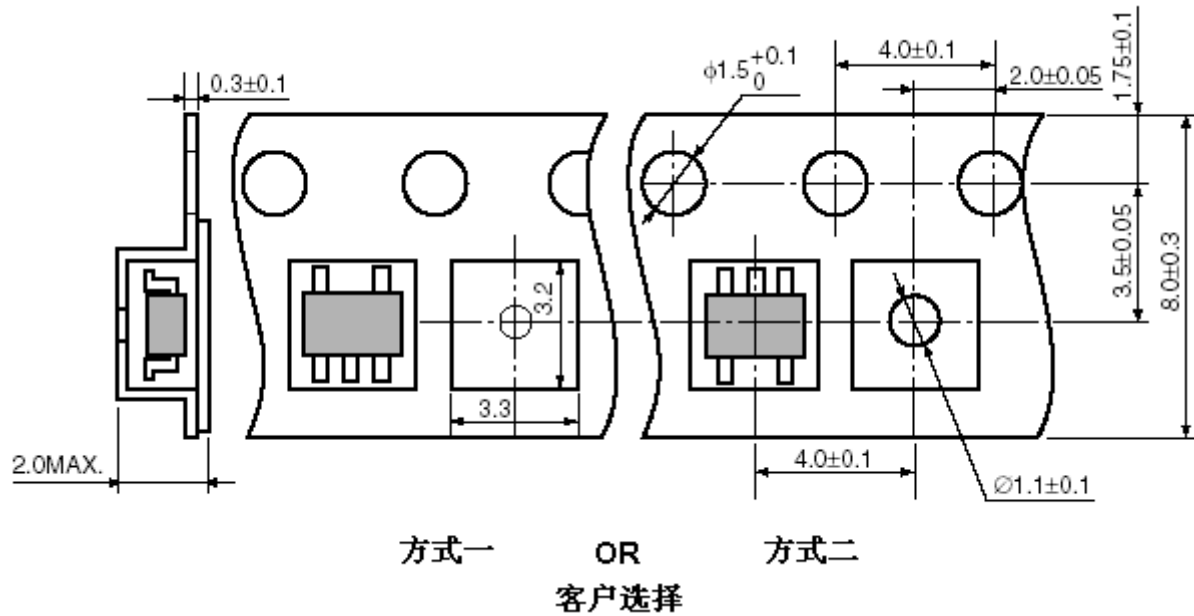

SOT-23-5:

Package	SOT-23-5	Devices per reel	3000	Unit	mm
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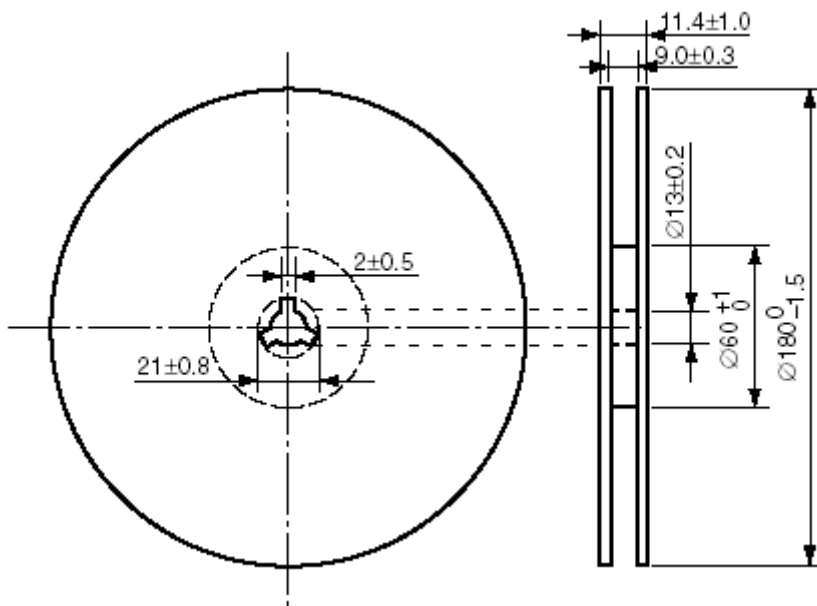
Package dimension:



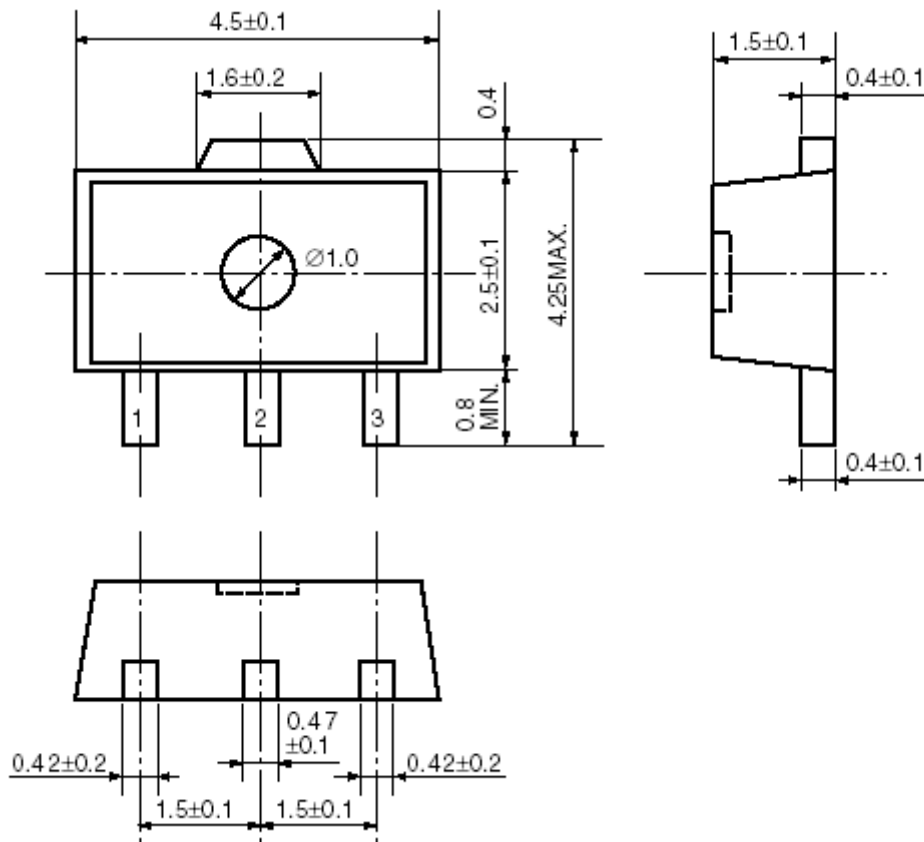
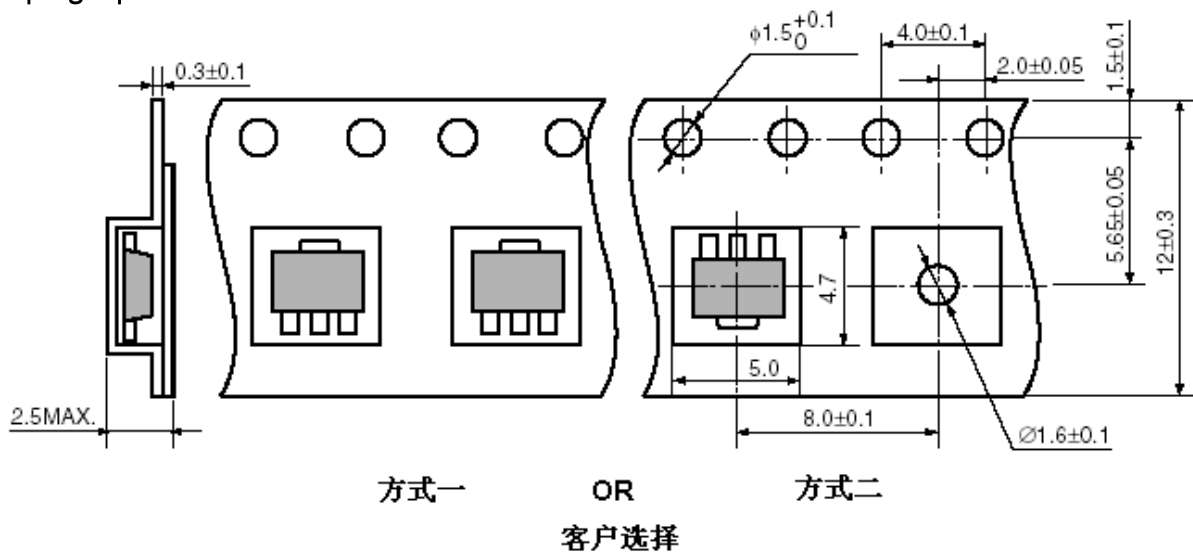
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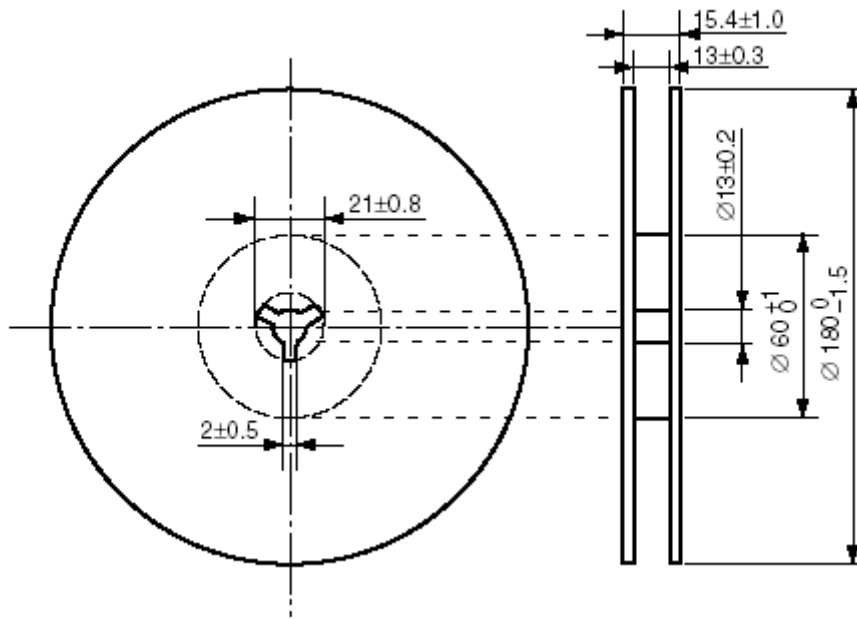
Taping reel dimension:



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

Taping Specification:


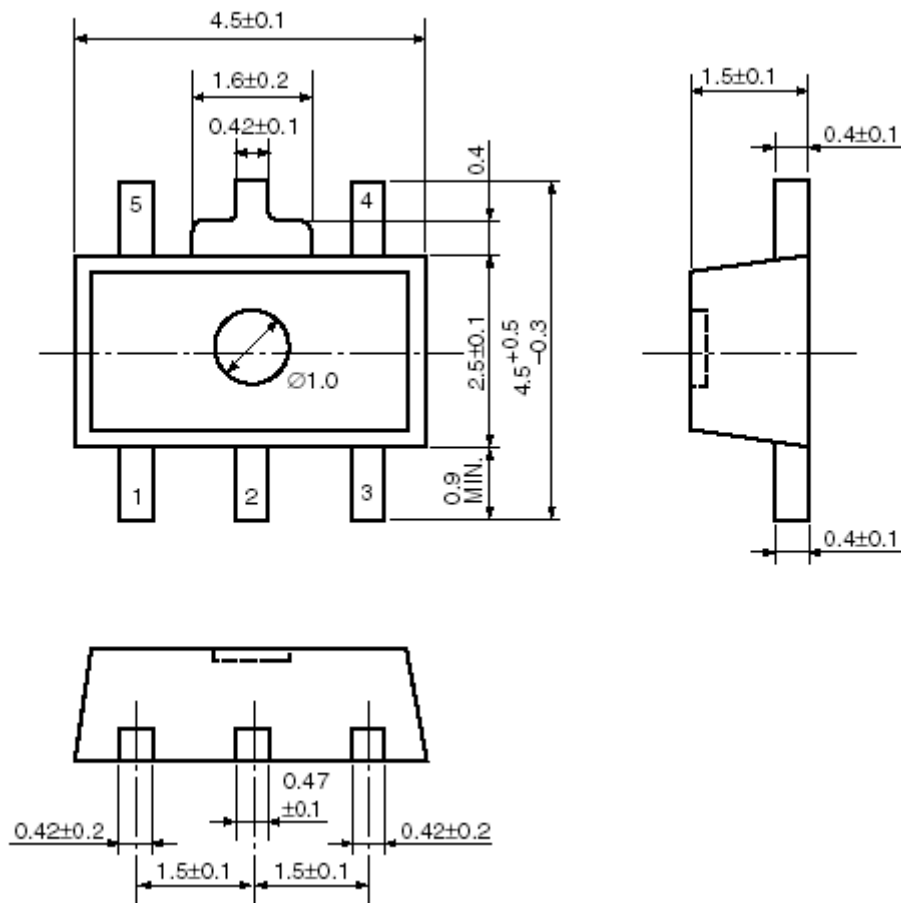
Taping reel dimension:



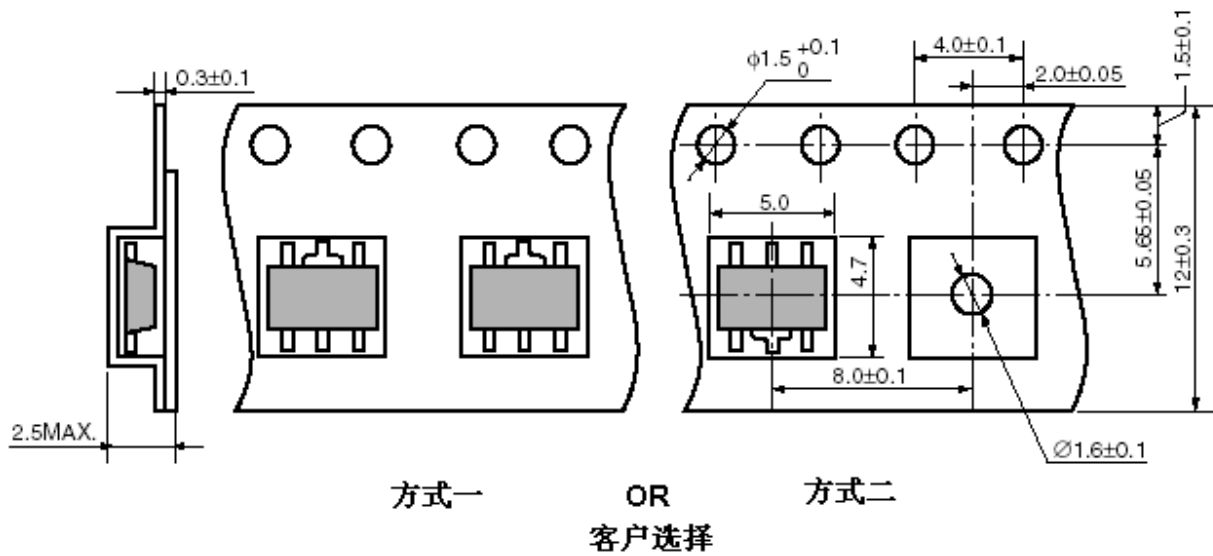
SOT-89-5:

Package	SOT-89-5	Devices per reel	1000	Unit	mm
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Package dimension:



Taping Specification:



Taping reel dimension:

