

BL8064

REV1.8-Revised OCT 2013

200mA Low Consumption Linear Regulator

DESCRIPTION

BL8064 series is a group of positive voltage output, low power consumption, low dropout voltage, three terminal regulator. It can provide 200mA output current when input / output voltage differential drops to 430mV ($V_{out} = 2.8V$), The very low power consumption of BL8064 ($I_q = 1.0\mu A$) can greatly improve natural life of batteries.

BL8064 can provide output value in the range of 1.1V~5.5V in 0.1V steps. It also can be customized on command.

BL8064 includes high accuracy voltage reference, error amplifier, current limit circuit and output driver module.

BL8064 has well load transient response and good temperature characteristic, And it uses trimming technique to guarantee output voltage accuracy within $\pm 2\%$.

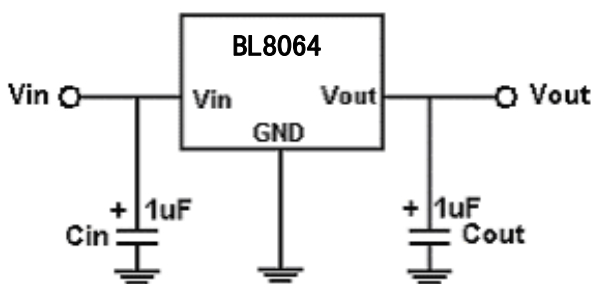
FEATURES

- Low Power Consumption: $1.0\mu A$ (Typ.)
- Maximum Output Current: 200mA
- Small Dropout Voltage
- 210mV@100mA ($V_{out} = 2.8V$)
- 430mV@200mA ($V_{out} = 2.8V$)
- Input Voltage Range: 1.5V~6V
- Output Voltage Range: 1.1V~5.5V (customized on command in 0.1V steps)
- Highly Accurate: $\pm 2\%$ ($\pm 1\%$ customized)
- Output Current Limit

APPLICATIONS

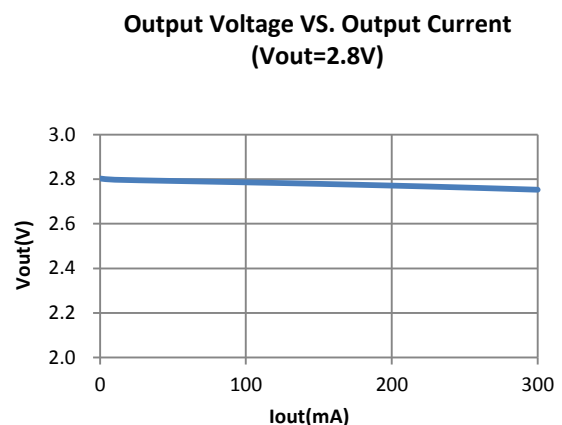
- Battery Powered equipment
- Power Management of MP3、PDA、DSC、Mouse、PS2 Games
- Reference Voltage Source Regulation after Switching Power

TYPICAL APPLICATION



Note: Input capacitor ($C_{in} = 1\mu F$) and Output capacitor ($C_{out} = 1\mu F$) are recommended in all application circuit. Ceramic capacitor is recommended.

ELECTRICAL CHARACTERISTICS



ORDERING INFORMATION

BL8064 1 2 3 4 5

Code	Description
1	Temperature&Rohs: C:-40~85°C ,Pb Free Rohs Std.
2	Package type: B3:SOT-23-3 B3A:TSOT-23 B5:SOT-23-5 C3:SOT-89-3 H:TO-92
3	Packing type: TR:Tape&Reel (Standard) BG:Bag (TO-92)
4	Output voltage: e.g. 11=1.1V 15=1.5V 55=5.5V
5	Voltage accuracy: 1=±1% Blank(default)=±2%

MARKING DEScriptON

Output Voltage Code

VOUT	Code	VOUT	Code	VOUT	Code
1.2V	2	3.0V	0	4.4V	4
1.3V	3	3.1V	1	4.5V	5
1.5V	5	3.2V	2	4.6V	6
1.8V	8	3.3V	3	4.7V	7
2.0V		3.4V	4	4.8V	8
2.1V		3.5V	5	4.9V	9
2.2V		3.6V	6	5.0V	0
2.3V		3.7V	7	5.1V	1
2.4V		3.8V	8	5.2V	2
2.5V		3.9V	9	5.3V	3
2.6V		4.0V	0	5.4V	4
2.7V		4.1V	1	5.5V	5
2.8V		4.2V	2		
2.9V		4.3V	3		

Y: The Year of manufacturing, "1" stands for year 2011, "2" stands for year 2012, and "8" stands for year 2018.
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.

PIN CONFIGURATION

Product Classification		BL8064CB3TR□□
Marking		SOT-23-3
NXYW	N:Product Code	
	X:Output Voltage	
	YW: Date Code	
Product Classification		BL8064CB3ATR□□
Marking		TSOT-23
NXYW	N:Product Code	
	X:Output Voltage	
	YW: Date Code	
Product Classification		BL8064CB5TR□□
Marking		SOT-23-5
NXYW	N:Product Code	
	X:Output Voltage	
	YW: Date Code	
Product Classification		BL8064CC3TR□□
Marking		SOT-89-3
NXX LLBYW	N:Product Code	
	XX:Output Voltage	
	LL:LOT NO.	
	B:FAB Code	
Product Classification		BL8064CHBG□□
Marking		TO-92
NXX LLBYW	N:Product Code	
	XX:Output Voltage	
	LL:LOT NO.	
	B:FAB Code	
GND		Ground Pin
Vin		Supply Voltage Input
Vout		Output Voltage
EN		Chip Enable
NC		No Connection

ABSOLUTE MAXIMUM RATING

Parameter		Value
Max Input Voltage		10V
Operating Junction Temperature(Tj)		125°C
Ambient Temperature(Ta)		-40°C -85°C
Power Dissipation	SOT-23-3	250mW
	TSOT-23	250mW
	SOT-23-5	250mW
	SOT-89-3	500mW
	TO-92	500mW
Storage Temperature(Ts)		-40°C -150°C
Lead Temperature & Time		260°C,10S

Note:

Exceed these limits to damage to the device.

Exposure to absolute maximum rating conditions may affect device reliability.

RECOMMENDED WORK CONDITIONS

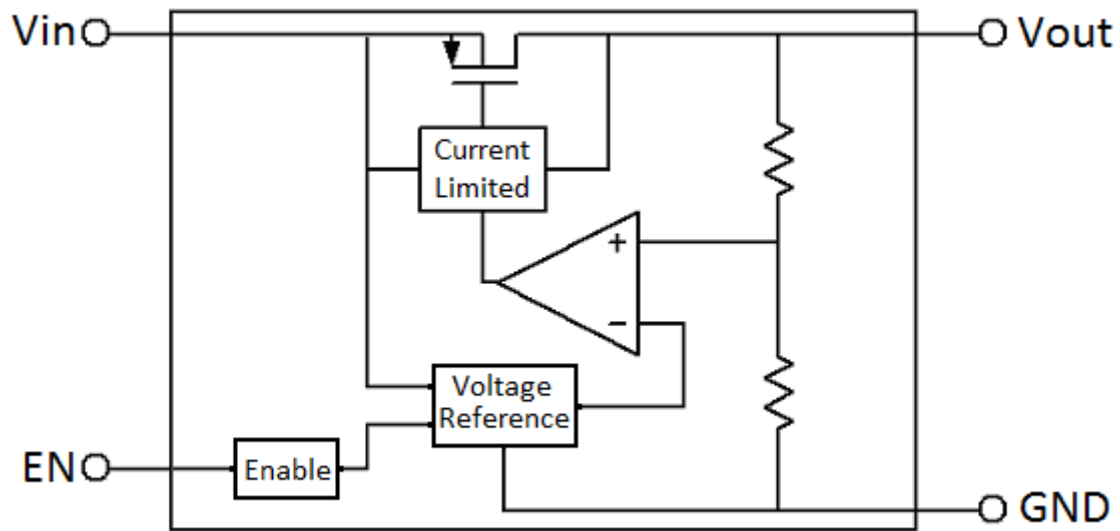
Item	Min	Recommended	Max.	Unit
Input Voltage Range			8	V
Ambient Temperature	-40		85	°C

ELECTRICAL CHARACTERISTICS

(Test Conditions: Cin=1uF, Cout=1uF, TA=25°C, Unless Otherwise Specified)

Symbol	Parameter	Conditions		Min	Type	Max	Units
Vin	Input Voltage					8	V
Vout	Output Voltage			Vout x0.98		Vout x1.02	V
Iout(Max.)	Maximum Output Current	Vin-Vout=1V		200			mA
Dropout Voltage	Input-Output Voltage Differential	Iout=100mA	Vout ≤ 1.8V		600	1000	mV
			Vout ≥ 1.8V		300	600	
$\frac{\Delta V_{out}}{\Delta V_{in} \cdot V_{out}}$	Line Regulation	Iout=10mA 1.5V≤Vin≤8V			0.2	0.3	%/V
ΔV_{out}	Load Regulation	Vin=Set Vout+1V 1mA≤Iout≤100mA			20	40	mV
Iq	Quiescent Current	Vin=Set Vout+1V			1.0	5.0	uA
$\frac{\Delta V_{out}}{\Delta T \cdot V_{out}}$	Output Voltage Temperature Coefficient	Iout=10mA			100		ppm/°C
Venh	CE Input Voltage “H”			1.5		Vin	V
Venl	CE Input Voltage “L”			0		0.2	V

BLOCK DIAGRAM



EXPLANATION

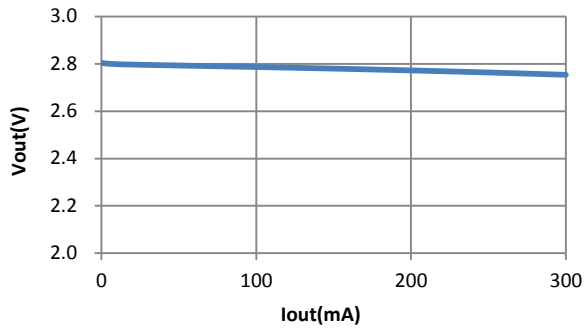
BL8064 is a series of low dropout voltage and low power consumption three pins regulator. Its application circuit is very simple, which only needs two outside capacitors. It is composed of these modules: high accuracy voltage reference, current limit circuit, error amplifier, output driver and power transistor.

Current Limit module can keep chip and power system away from danger when load current is more than 200mA.

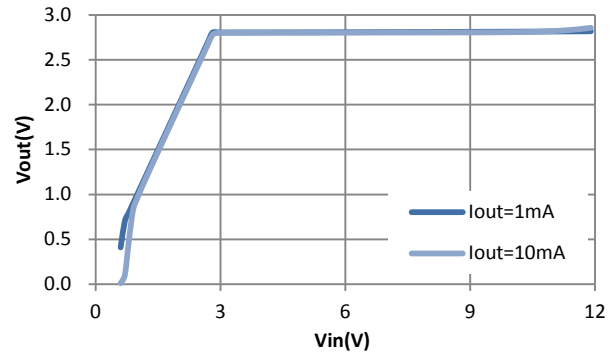
BL8064 uses trimming technique to assure the accuracy of output value within $\pm 2\%$, at the same time, temperature compensation is elaborately considered in this chip, which makes BL8064's temperature coefficient within 100ppm/ $^{\circ}\text{C}$.

TYPICAL PERFORMANCE CHARACTERISTICS

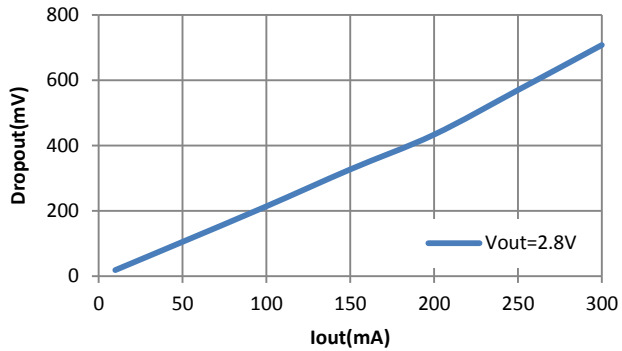
1. Load regulation ($V_{in}=4V$)



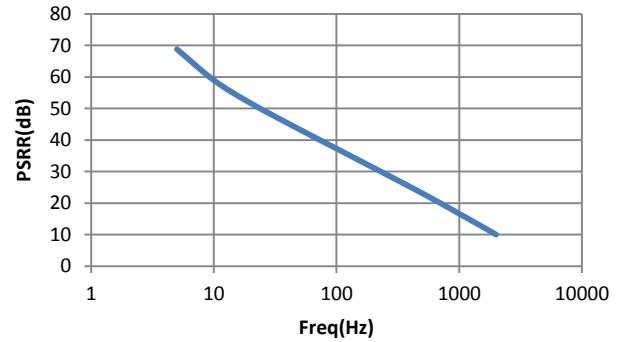
2. Line regulation



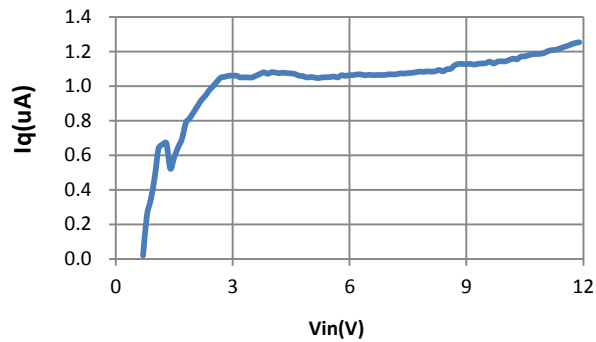
3. Dropout Voltage



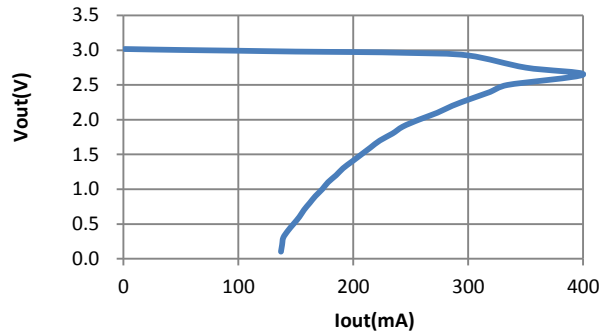
4. PSRR



5. I_q ($V_{out}=2.8V$)

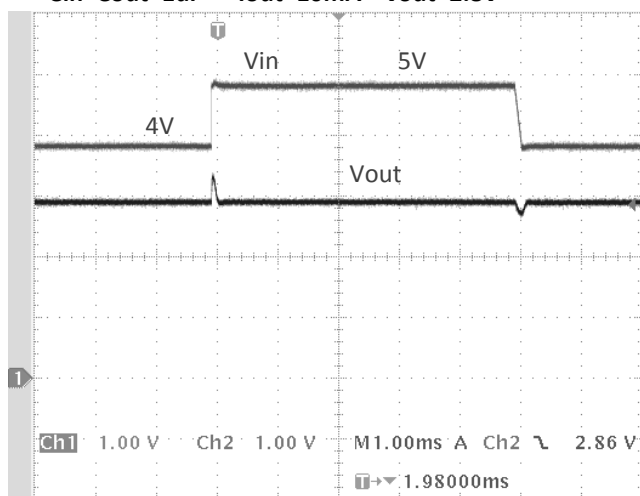


6. Current limit



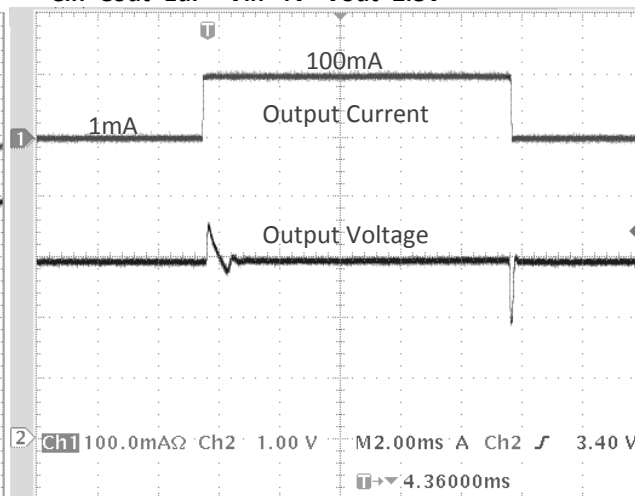
7. Line transient response

$C_{in}=C_{out}=1\mu F$ $I_{out}=10mA$ $V_{out}=2.8V$

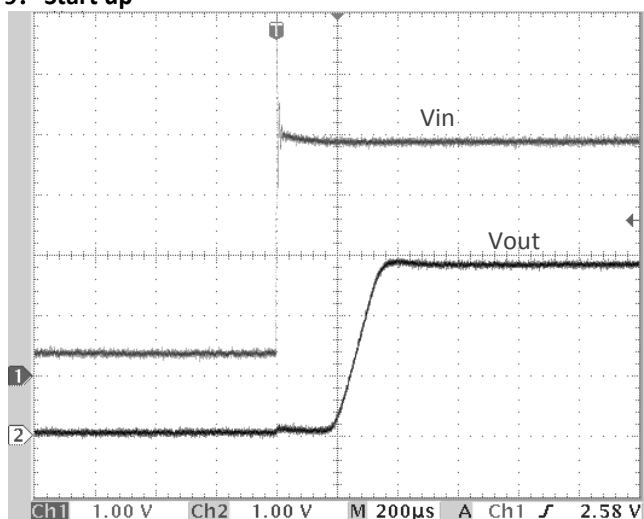


8. Load transient response

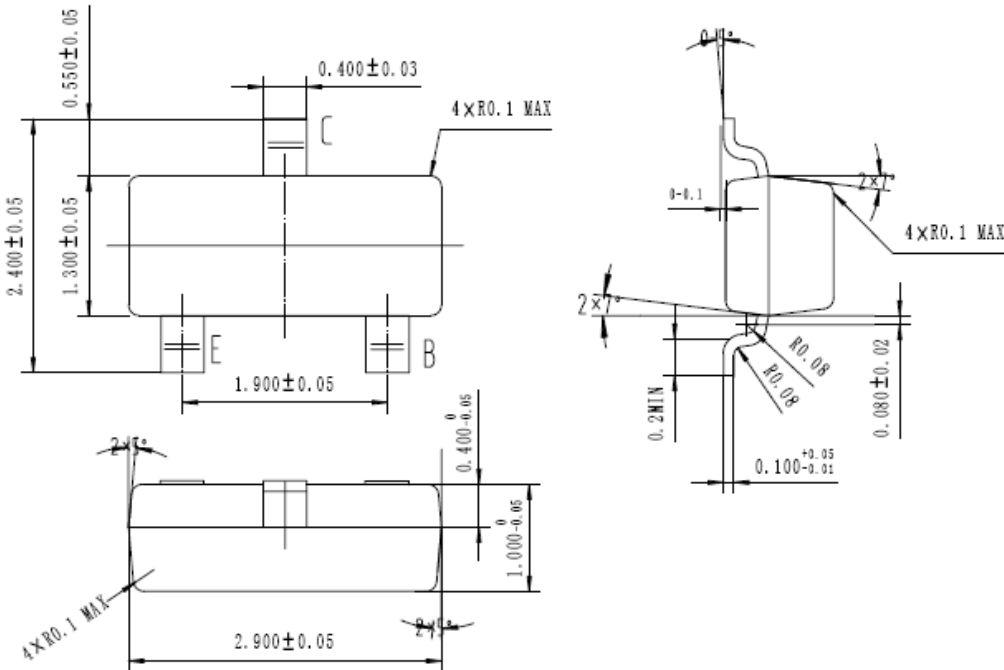
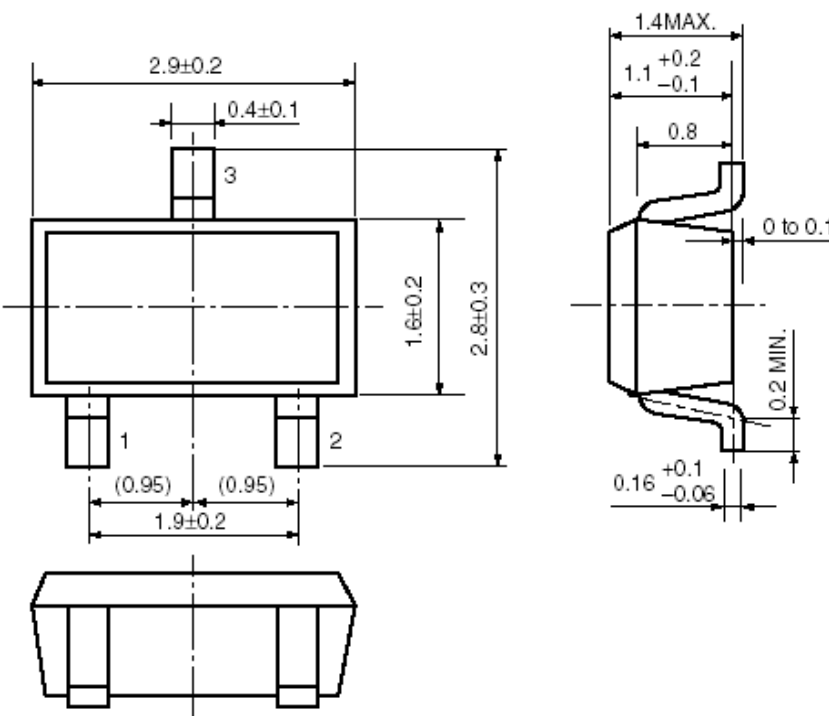
$C_{in}=C_{out}=1\mu F$ $V_{in}=4V$ $V_{out}=2.8V$

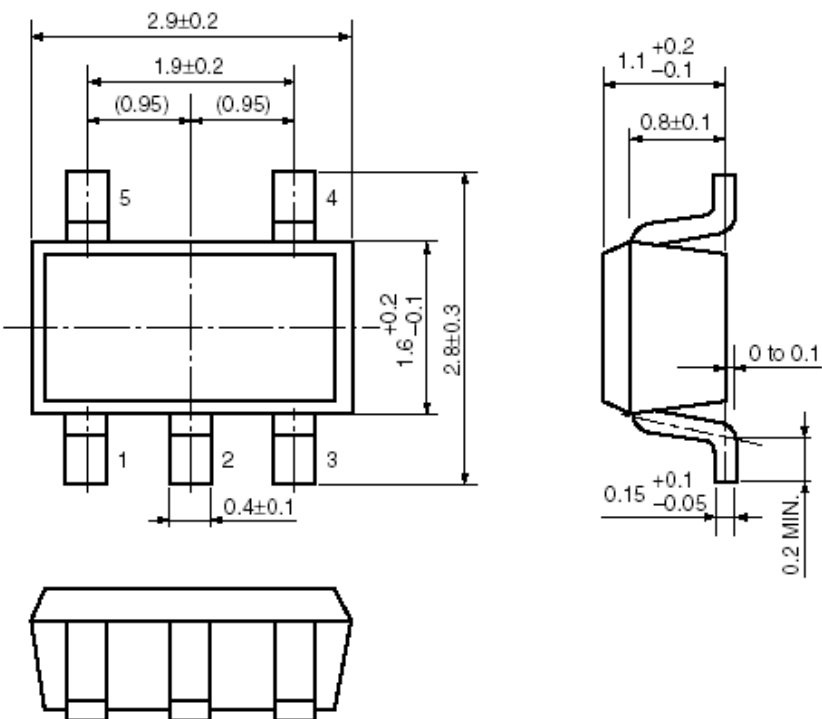
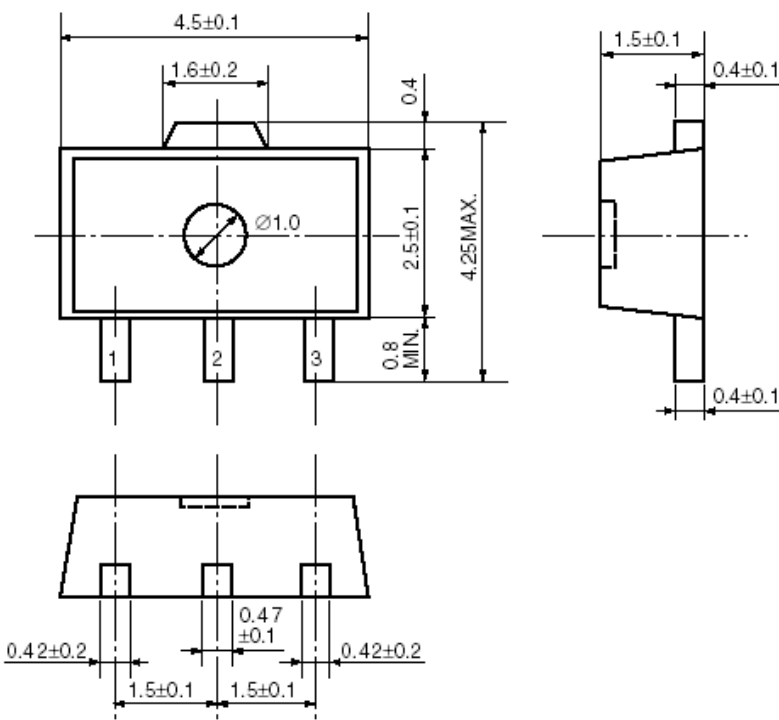


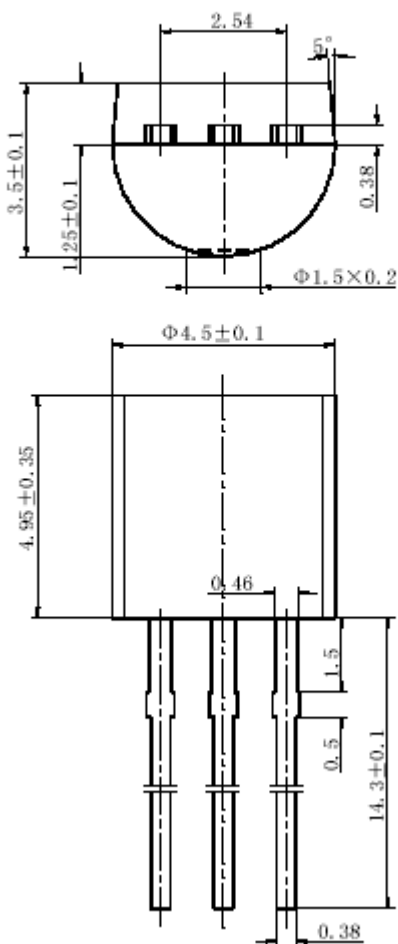
9. Start up



PACKAGE LINE

Package	TSOT-23	Devices per reel	3000Pcs	Unit	mm
Package dimension:  Technical drawing of the TSOT-23 package. The top view shows a rectangular body with a central notch. Dimensions include a total width of 2.900 ± 0.05 mm, a notch width of 0.400 ± 0.03 mm, and a notch depth of 0.550 ± 0.05 mm. The side view shows a height of 1.300 ± 0.05 mm and a body width of 1.900 ± 0.05 mm. The cross-sectional view shows a maximum lead height of $4 \times R0.1$ MAX, a lead thickness of 0.080 ± 0.02 mm, and a lead width of $0.100^{+0.05}_{-0.01}$ mm. Other dimensions include 0.2 MIN for the lead length, $0.400^{+0.05}_{-0.05}$ mm for the body thickness, and 2×7 for the lead angle.					
Package	SOT-23-3	Devices per reel	3000Pcs	Unit	mm
Package dimension:  Technical drawing of the SOT-23-3 package. The top view shows a rectangular body with a central notch. Dimensions include a total width of 2.9 ± 0.2 mm, a notch width of 0.4 ± 0.1 mm, and a notch depth of 0.4 ± 0.1 mm. The side view shows a height of 1.6 ± 0.2 mm and a body width of 1.9 ± 0.2 mm. The cross-sectional view shows a maximum lead height of 1.4 MAX, a lead thickness of $0.16^{+0.1}_{-0.06}$ mm, and a lead width of 0.2 MIN. Other dimensions include 0.8 for the lead length, 0 to 0.1 for the lead angle, and $1.1^{+0.2}_{-0.1}$ for the body thickness.					

Package	SOT-23-5	Devices per reel	3000Pcs	Unit	mm
Package Dimension:  The SOT-23-5 package is shown in three views: top, side, and bottom. 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 distance between the two side pins (pins 4 and 5) is 0.95 mm, and the distance between the two bottom pins (pins 1 and 2) is 0.4 ± 0.1 mm. The side view shows a maximum height of 2.8 ± 0.3 mm, with a body height of 1.6 ± 0.1 mm. The bottom view shows a width of 1.5 ± 0.1 mm and a distance of 0.42 ± 0.2 mm from the side pins to the center. The side pins have a height of 1.1 ± 0.2 mm and a width of 0.8 ± 0.1 mm. The bottom pins have a height of 0.15 ± 0.1 mm and a width of 0.2 mm minimum.					
Package	SOT-89-3	Devices per reel	1000Pcs	Unit	mm
Package Dimension:  The SOT-89-3 package is shown in three views: top, side, and bottom. The top view shows a rectangular body with a width of 4.5 ± 0.1 mm and a length of 1.6 ± 0.2 mm. The distance between the two side pins (pins 1 and 2) is 0.8 mm minimum. The side view shows a maximum height of 4.25 mm, with a body height of 2.5 ± 0.1 mm. The bottom view shows a width of 1.5 ± 0.1 mm and a distance of 0.42 ± 0.2 mm from the side pins to the center. The side pins have a height of 1.5 ± 0.1 mm and a width of 0.4 ± 0.1 mm. The bottom pins have a height of 0.4 ± 0.1 mm and a width of 0.4 ± 0.1 mm.					

Package	TO-92	Devices per Bag	1000Pcs	Unit	mm
Package Dimension: TO-92  The technical drawing illustrates the dimensions of a TO-92 package. The top view shows a circular body with a diameter of $\Phi 4.5 \pm 0.1$ mm. The distance between the centers of the three leads is 2.54 mm. The lead diameter is $\Phi 1.5 \times 0.2$ mm. The side view shows a total height of 3.5 ± 0.1 mm, with a base thickness of 1.25 ± 0.1 mm and a lead thickness of 0.38 mm. The lead length is 14.3 ± 0.1 mm, with a lead diameter of 0.5 mm and a lead width of 0.46 mm. The lead angle is 35°.					