XC6206 series

Linear regulator

■ Product Introduction

XC6206 It is a series of high ripple rejection ratio, low power consumption, low dropout voltage regulator having a CMOS step overcurrent and short circuit protection. These ones **The device has a very low quiescent current (6.0 μA Typ.), Which provides an output current of 250mA in the case where the input and output voltage difference is only small, and still** maintain good regulation. Since the voltage difference is small and quiescent bias current between input and output is small, these devices are particularly suited desirable to extend battery life for battery-powered products, such as computers, consumer products and industrial equipment.

■ Features

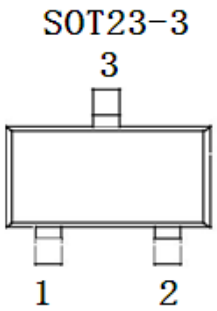
- Highly accurate output voltage A file: ± 1%, B file: ± 2.5%
- Output voltage: 1.5V ~ 5.0V (0.1V steps)
- **Very low quiescent current (Typ. = 6.0 μ A)**
- Low temperature adjustment coefficient
- Maximum input voltage up to 8V
- Strong load capacity: When Vin = 4.3V and Vout = 3.3V, Iout = 250mA
- Can be used as the reference voltage regulator and
- Good stability of the input:. Typ 0.03% / V
- Package: SOT89-3, SOT23-3

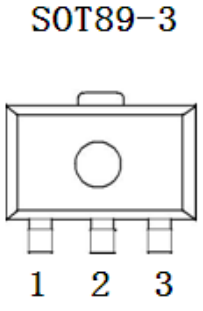
■ Product Usage

- Battery-powered systems
- Cordless telephone equipment
- Wireless Control System
- Portable / handheld computers
- Portable consumer devices
- Portable Instruments
- Automotive electronics
- voltage reference source

■ Package pin definitions and functions

Pin Number			Pin Custom Function Description
package M3	Package P3	Package P1	
SOT23-3	SOT89-3	SOT89-3	
1	1	2	Chip ground terminal VSS
2	3	1	Chip output terminal VOUT
3	2	3	VIN enable input





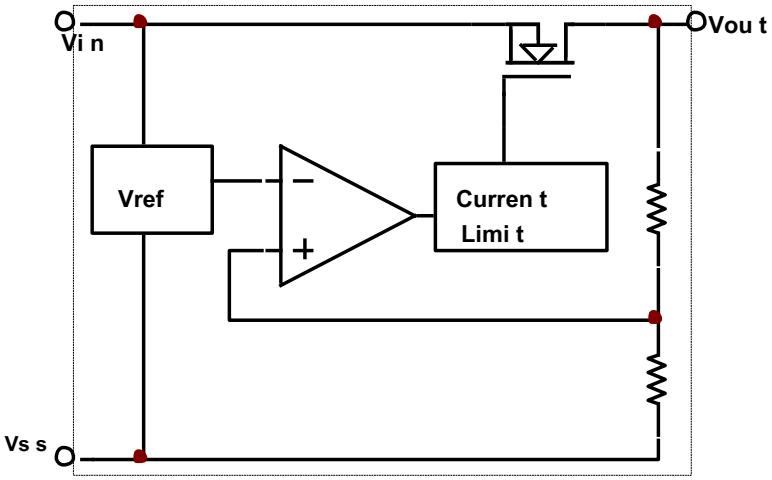
Model selection

name	model	Maximum input voltage (V)	The output voltage(V)	Tolerance	Package
XC6206XXX	XC6206Pxx	8	1.5 , 1.8 , 2.5 , 2.7 , 3.0 , 3.3 , 3.6 , 4.4 , 5.0	±3%	TO92 SOT89-3 SOT23-3

Model selection Description: XXX- The first 1 More " X "Package, P , M3 , P1 ; First 2 More " XX "Output voltage.

Such as: XC6206P30 It is 3.0V The output voltage, SOT23-3 Package.

Functional Block Diagram



Limit parameters

project	symbol	parameter	Limit	unit
Voltage	Vin	Input voltage	9	V
	Vout	The output voltage	Vss-0.3 ~ Vout + 0.3	V
Electric current	Iout	Output current	500	mA
Power	PD	SOT23 maximum allowable power	300	mW
		SOT89-3	500	
temperature	Tw	Operating temperature	--25 + 80	℃
	Tc	storage temperature	- 40 ~ + 125	℃
	Th	Welding temperature	260	℃, 10s

■ Electrical characteristics (Cin = Cout = 10uF, Ta = 25o C Except where otherwise specified)

characteristic	symbol	condition		Min	Typ	Max	unit
The output voltage	$V_{OUT(E)}$	I_{OUT} = 1mA, V_{IN} = $V_{OUT(T)}$ + 1V		$V_{OUT(T)}$ * 0.98	$V_{OUT(T)}$	$V_{OUT(T)}$ * 1.02	V
Maximum output current	$I_{OUT(max)}$	V_{IN} = $V_{OUT(T)}$ + 1V		100			mA
Pressure drop	Vdrop	I_{OUT} = 50mA	1.5V≤$V_{OUT(T)}$ ≤2.5V		200	280	mV
			2.6V≤$V_{OUT(T)}$ ≤3.3V		160	240	
			3.4V≤$V_{OUT(T)}$ ≤5.5V		120	200	
Quiescent Current	I_{SS}	V_{IN} = $V_{OUT(T)}$ + 1V			7		μA
Load Regulation	ΔV_{OUT}	V_{IN} = $V_{OUT(T)}$ + 1V, 1mA≤I_{OUT} ≤80mA			20		mV
Line regulation $\Delta V_{OUT}/(\Delta V_{IN} \cdot V_{OUT})$		I_{OUT} = 1mA, $V_{OUT(T)}$ + 0.5V ≤V_{IN} ≤5.5V			0.1	0.2% / V	
Output voltage temperature coefficient	$\Delta V_{OUT}/(\Delta Ta \cdot V_{OUT})$	V_{IN} = $V_{OUT(T)}$ + 1V, I_{OUT} = 10mA - 40 ℃ ≤Ta≤85 ℃			± 100		ppm / ℃
Input voltage	V_{IN}			1.8	- -	8.0	V
Ripple Rejection	PSRR	V_{IN} = [$V_{OUT(T)}$ +1] V + 1Vp-pAC I_{OUT} = 10mA, f = 1kHz			40		dB
Short circuit current	Ishort	V_{IN} = $V_{OUT(T)}$ + 1.5V, V_{OUT} = Vss			30		mA
Over-current protection	Ilimt	V_{IN} = $V_{OUT(T)}$ + 1.5V			380		mA

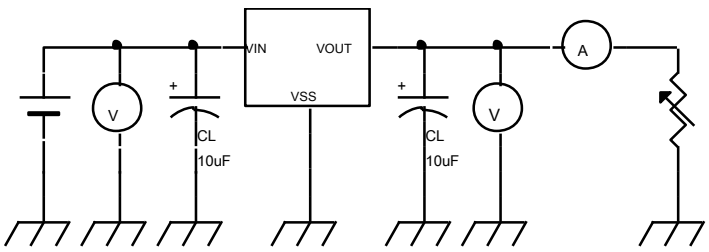
Note:

1, $V_{OUT(T)}$: the output voltage predetermined. 2, $V_{OUT(E)}$: effective output voltage (i.e., when I_{OUT} Holding a certain value, V_{IN}=($V_{OUT(T)}$ + output voltage at 1.0V)). 3, $I_{OUT(max)}$: V_{IN} = $V_{OUT(T)}$ + 1V, slowly increase the output current, when the output voltage ≤$V_{OUT(E)}$ * 95% of the current value. 4, Vdrop = V_{IN}-$V_{OUT(E)}$ s: V_{IN} = Gradually decreasing the input voltage, the output voltage is reduced to $V_{OUT(E)}$ 1 to 98% when the input voltage is.

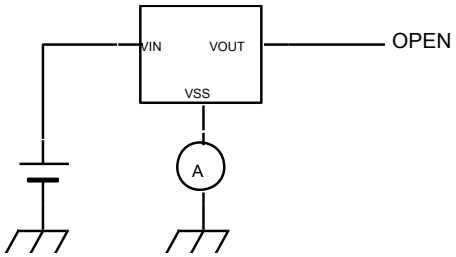
$V_{OUT(E)}$ s = $V_{OUT(E)}$ * 98%

$V_{OUT(E)}$ 1 = V when V_{IN} = $V_{OUT(T)}$ + 1V, the output voltage value of Iout = a certain value.

■ The test circuit



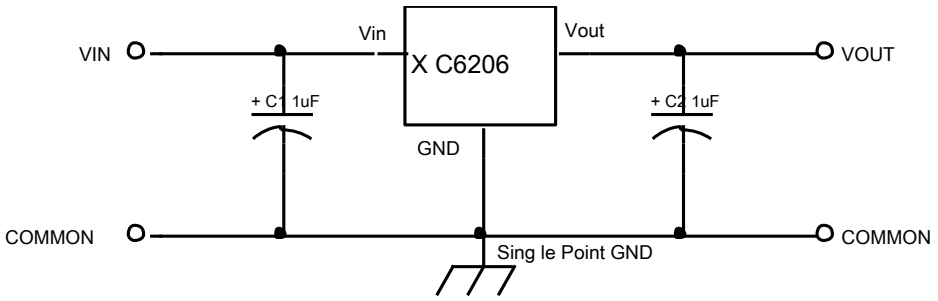
Map 1



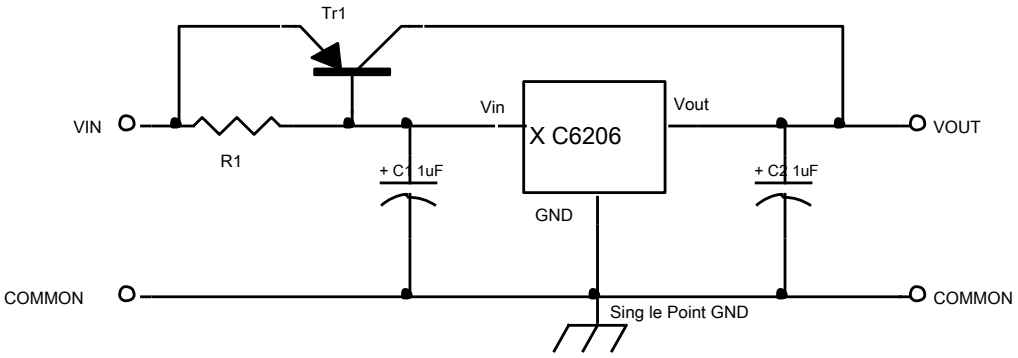
Map 2

■ Application Circuit

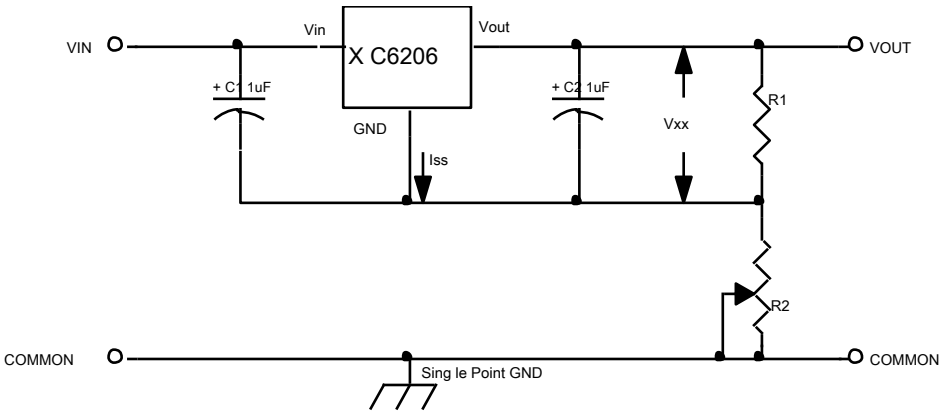
1 , Basic circuit



2 , The output current is large positive voltage regulator

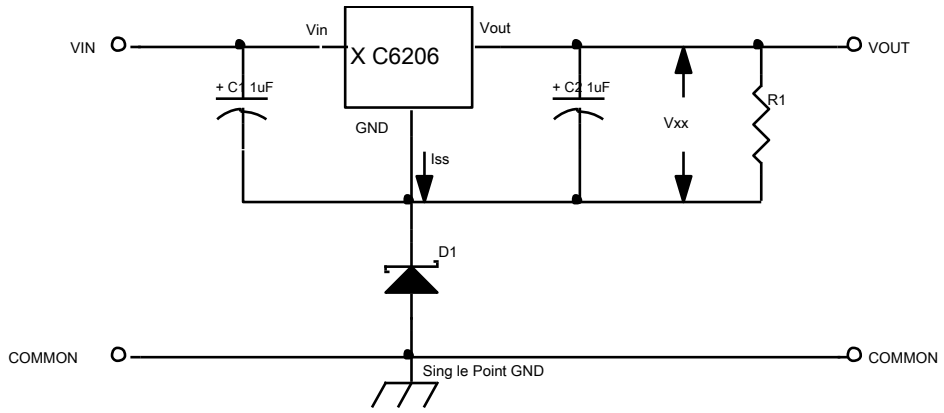


3 , Increasing the output voltage value circuit (1)



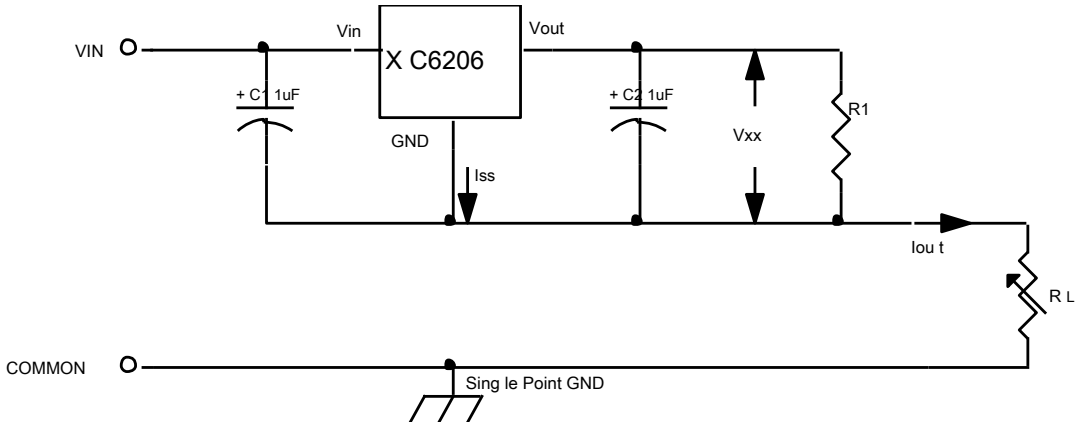
Vout = Vxx (1+ R2 / R1) + IssR2

4 , To increase the output voltage of the circuit (2)



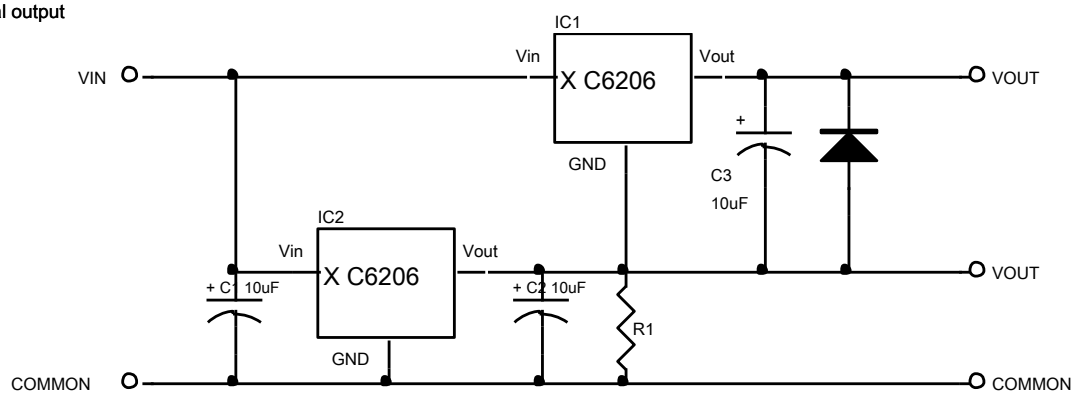
$$Vout = Vxx + V_{D1}$$

5 Constant current regulator



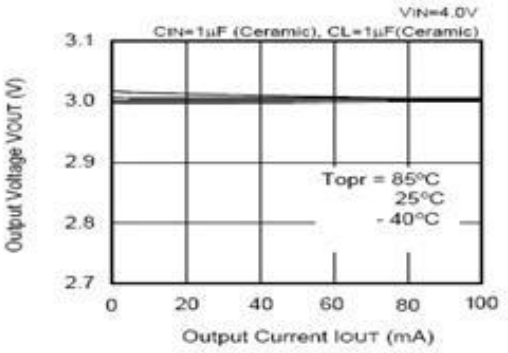
$$Iout = Vxx / R_A + Iss$$

6 , Dual output

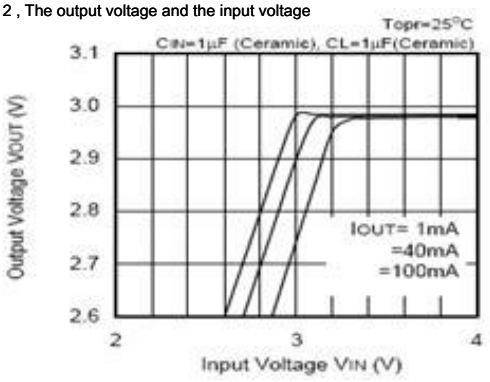


■ FIG characteristic

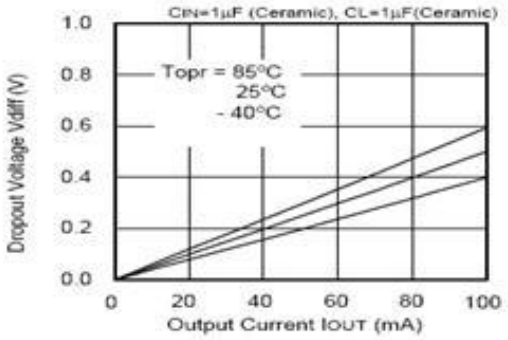
1 , The output voltage - output current (load current is increased)



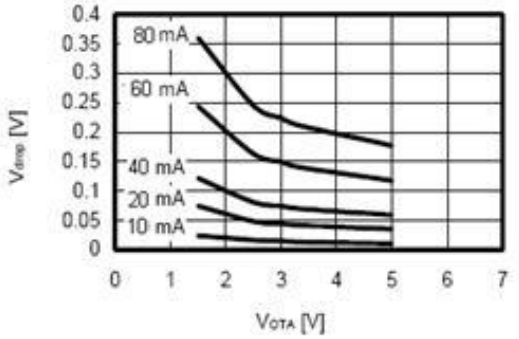
2 , The output voltage and the input voltage



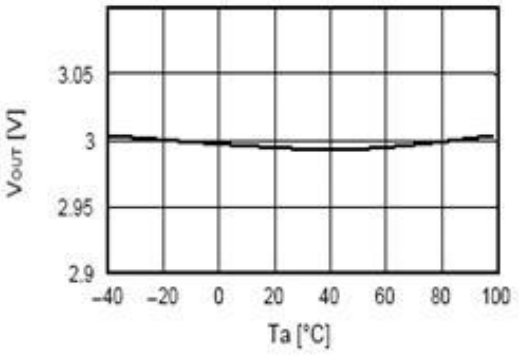
3 , Dropout Voltage and output current



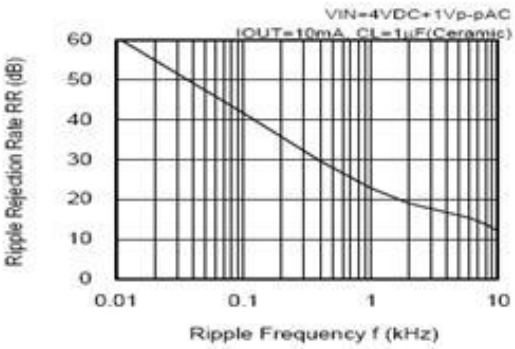
4 , Dropout And output voltages



5 Output voltage and temperature

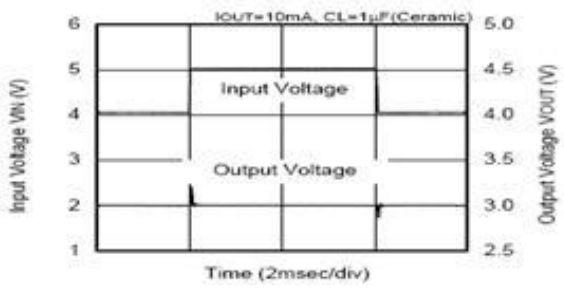


6 , Ripple rejection

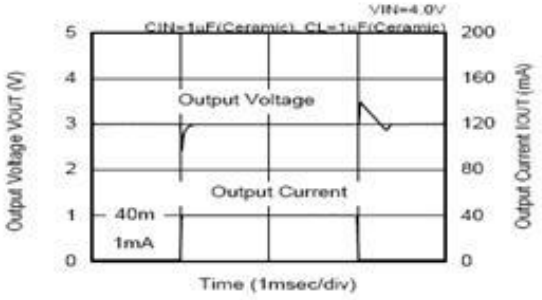


7 Transient response

Input transient response characteristics

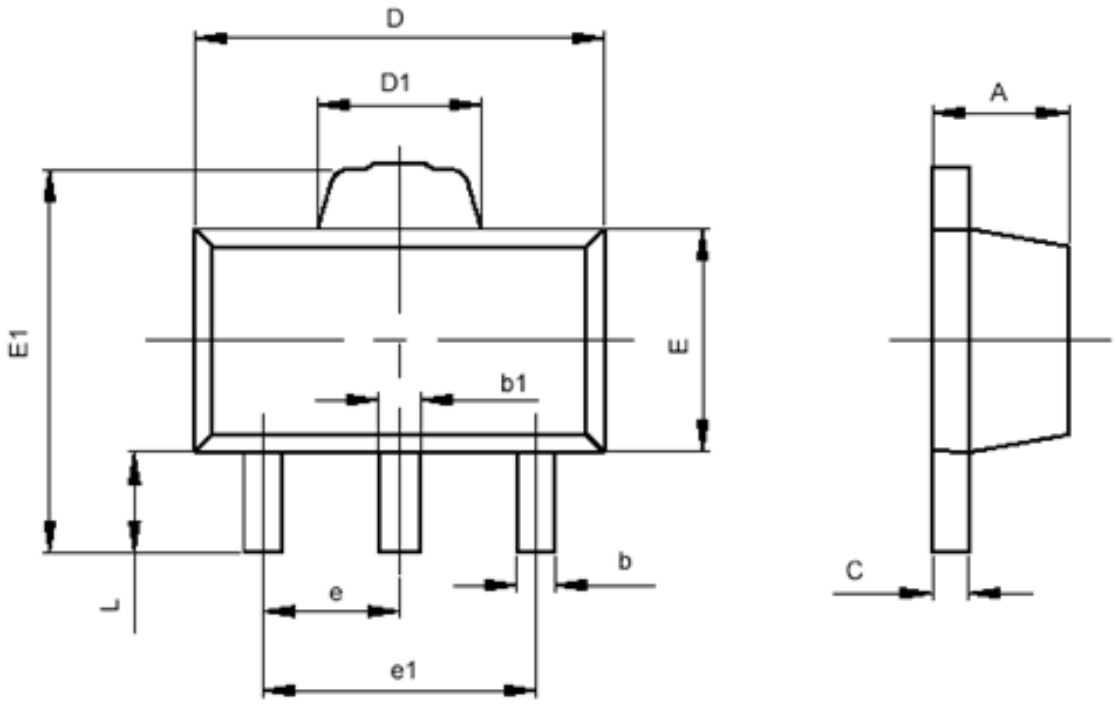


Load input transition response characteristics



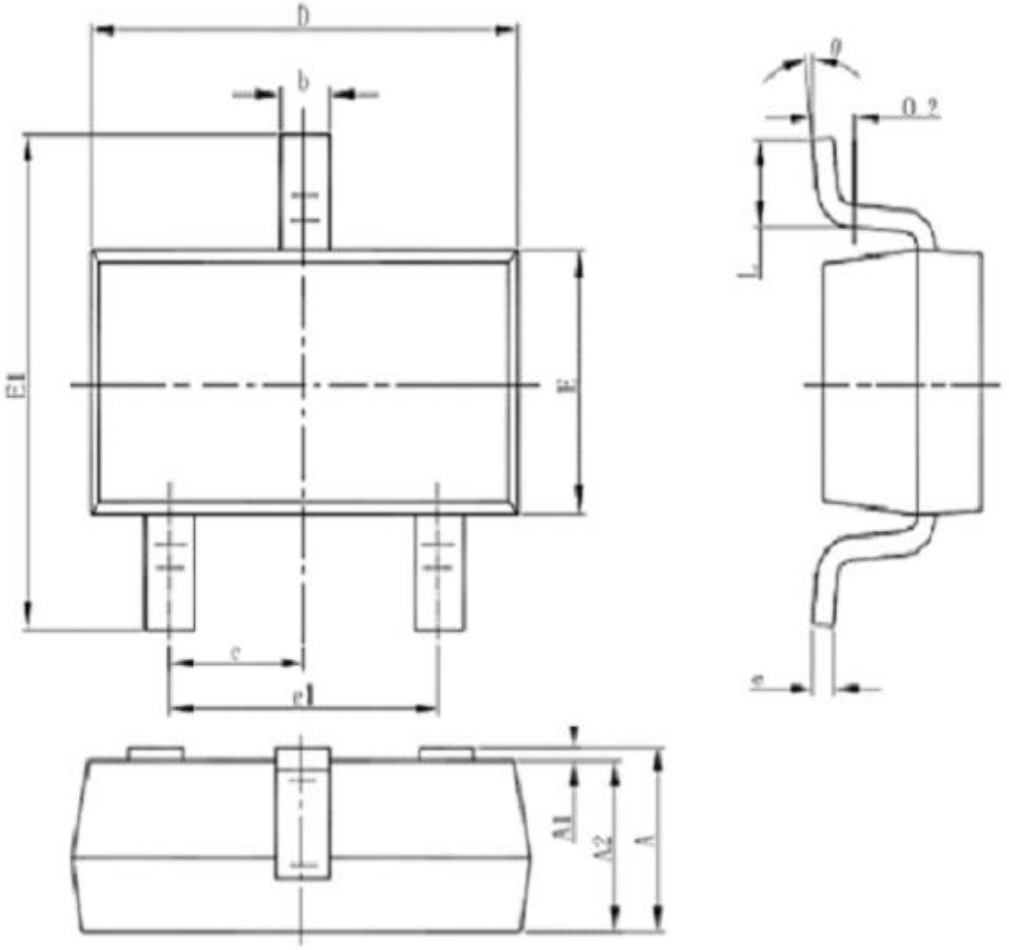
■ **Package Information**

SOT-89-3



符号	最小值（mm）	最大值（mm）
A	1.400	1.600
b	0.320	0.520
b1	0.360	0.560
c	0.350	0.440
D	4.400	4.600
D1	1.400	1.800
E	2.300	2.600
E1	3.940	4.250
e	1.500TYP	
e1	2.900	3.100
L	0.900	1.100

SOT-23-3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°