

### Features

- Dropout voltage: 0.16V at 100mA
- Large output current: 300mA
- Input voltage: up to 18V
- Output voltage range: 1.5V~5.0V
- Low power consumption: 0.8uA(TYP.)

### Typical Application

- Battery powered equipment
- Communication tools
- Mobile phones
- Portable games

### General Description

TP181C series are highly precise, low power consumption, high voltage, positive voltage regulators manufactured using CMOS and laser trimming technologies. The series provides large currents with a significantly small dropout voltage.

The current limiter's foldback circuit also operates as a short protect for the output current limiter and the output pin. The CE function allows the output of regulator to be turned off, resulting in greatly reduced power consumption. The TP181C series can operate with up to 18V input.

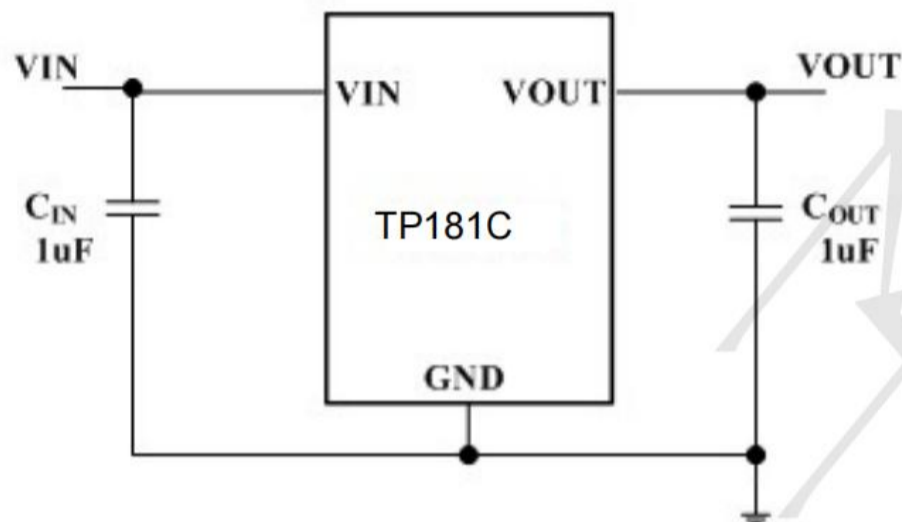
### Selection Guide

#### **TP181C50S5-A**

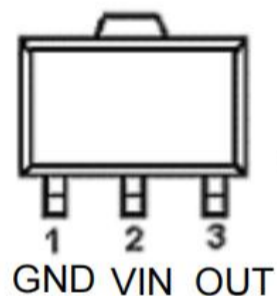
S3L:SOT23-3L Package  
T3:SOT89-3 Package  
S5:SOT23-5 Package  
D6:DFN2X2-6LPackage

Output voltage: 33=3.3V  
50=5.0V  
28=2.8V  
30=3.0V  
XX=X.XV

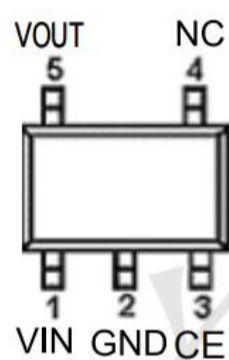
### Typical Application Circuit



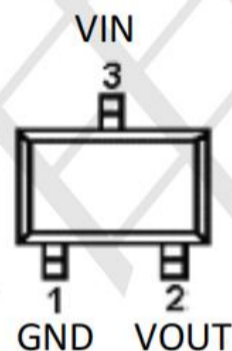
### Pin Configuration



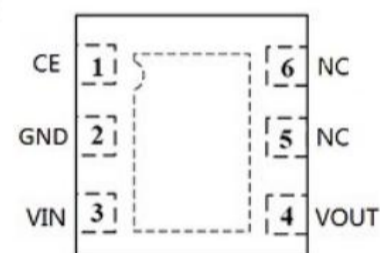
SOT89



SOT23-5



SOT23



DFN2X2-6L

Chip Enable Pin

### Pin Assignment

SOT-89-3L	SOT-23-3L	SOT-23	Pin Name	Functions
1	1	1	GND	Ground
2	3	3	VIN	Power Input
3	2	2	VOUT	Output

Pin Number		Pin Name	Functions
SOT-23-5	DFN2X2-6L		
1	3	VIN	Power Input
2	2	GND	Ground
3	1	CE	Chip Enable Pin
4	5, 6	NC	No Connection
5	4	VOUT	Output



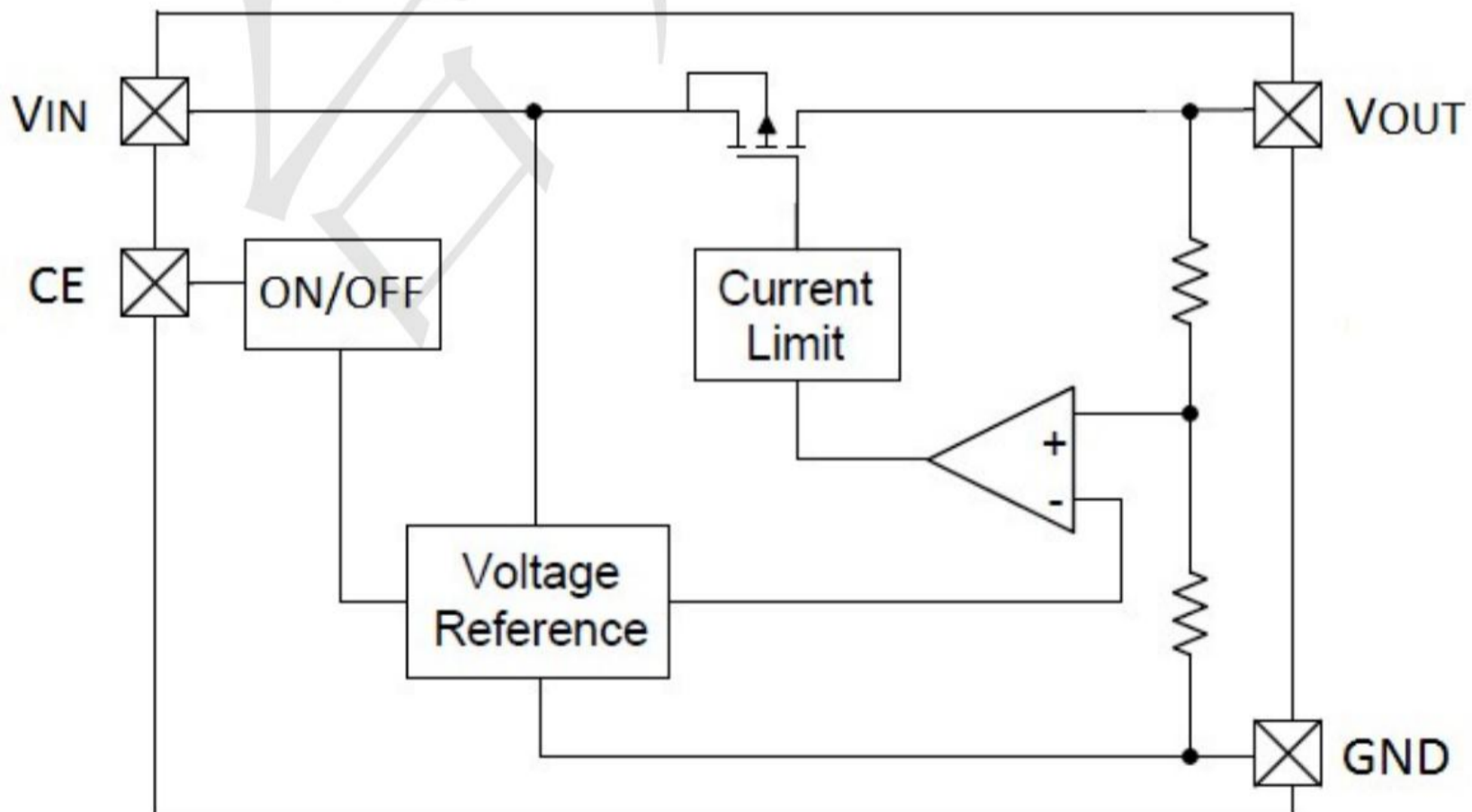
### ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATING	UNITS
INPUT VOLTAGE	$V_{IN}$	18	V
OUTPUT CURRENT	$I_{out}$	500	mA
OUTPUT VOLTAGE	$V_{out}$	$V_{ss}-0.3 \sim V_{out}+0.3$	V
OPERATING TEMP.	$T_{Opr}$	-40 ~ +85	°C
STORAGE TEMP.	$T_{stg}$	-55 ~ +125	°C
LEAD TEMP.	$T_{solder}$	260°C, 10s	

### PACKAGE DISSIPATION LEVEL

Package	Pd(mW)
SOT-23-5L	250

### Block Diagram



TP181C33 ( $V_{IN}=4.3V$ ,  $C_{IN}=1\mu F\sim 10\mu F$ ,  $C_{OUT}=1\mu F\sim 10\mu F$ ,  $T_a=25^\circ C$ ,

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Input Voltage					18.0	V
Supply Current	$I_{SS}$	$V_{IN}=4.3V$		0.8		$\mu A$
Output Voltage	$V_{OUT}$	$V_{IN}=4.3V$ , $I_{OUT}=30mA$	3.234	3.3	3.366	V
Max. Output Current	$I_{OUT} (max)$	$V_{IN}=4.3V$ , $0.95*V_{OUT}$		300		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=4.3V$ , $1mA \leq I_{OUT} \leq 100mA$		6		mV
		$V_{IN}=4.3V$ , $1mA \leq I_{OUT} \leq 200mA$		12		mV
Dropout Voltage	$V_{dif1}$	$I_{OUT}=10mA$		160		mV
	$V_{dif2}$	$I_{OUT}=200mA$		320		mV
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} * V_{OUT}}$	$I_{OUT}=10mA$ , $4.3V \leq V_{IN} \leq 18V$		0.02		%/V
CE "High" Voltage	$V_{GEH}$		1.3			V
CE "Low" Voltage	$V_{CEL}$				0.7	V
Short-circuit Current	$I_{SHORT}$	$V_{IN}=4.3V$		40		mA
Over Current Protection	$I_{LIMIT}$	$V_{IN}=4.3V$		500		mA
Auto Discharge Resistance	$R_{DCHG}$	$V_{CE}=0V$ , $V_{OUT}=V_{OUT}$ , $V_{IN}=5V$		500		$\Omega$

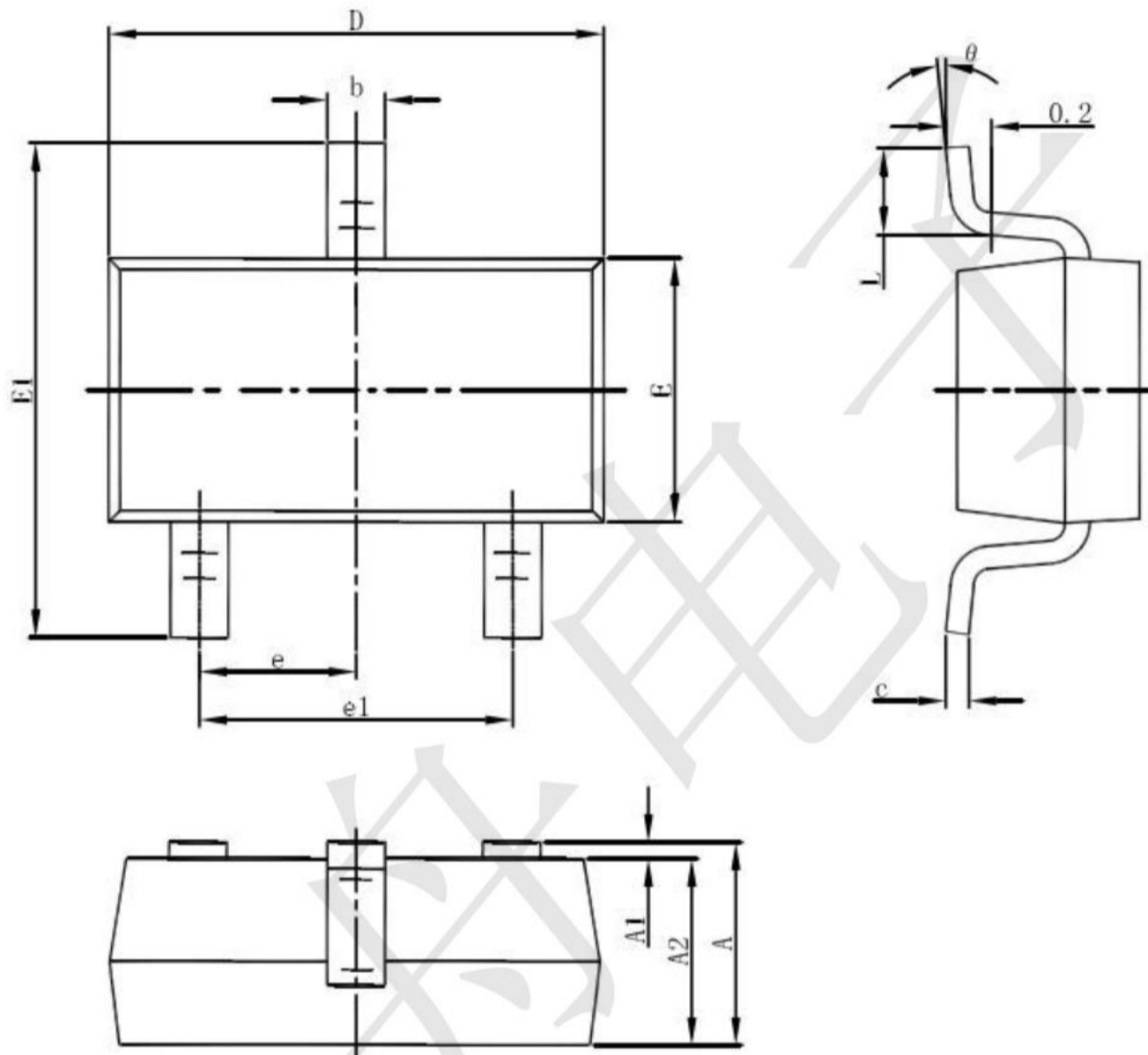
TP181C50 ( $V_{IN}=6.0V$ ,  $C_{IN}=1\mu F\sim 10\mu F$ ,  $C_{OUT}=1\mu F\sim 10\mu F$ ,  $T_a=25^\circ C$ ,

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Input Voltage					18.0	V
Supply Current	$I_{SS}$	$V_{IN}=6.0V$		0.8		$\mu A$
Output Voltage	$V_{OUT}$	$V_{IN}=6.0V$ , $I_{OUT}=30mA$	4.9	5.0	5.1	V
Max. Output Current	$I_{OUT} (max)$	$V_{IN}=6.0V$ , $0.95*V_{OUT}$		300		mA
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=6.0V$ , $1mA \leq I_{OUT} \leq 100mA$		4		mV
		$V_{IN}=6.0V$ , $1mA \leq I_{OUT} \leq 200mA$		8		mV
Dropout Voltage	$V_{dif1}$	$I_{OUT}=100mA$		120		mV
	$V_{dif2}$	$I_{OUT}=200mA$		240		mV
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} * V_{OUT}}$	$I_{OUT}=10mA$ , $6.0 \leq V_{IN} \leq 18$		0.02		%/V
CE "High" Voltage	$V_{GEH}$		1.3			V
CE "Low" Voltage	$V_{CEL}$				0.7	V
Short-circuit Current	$I_{SHORT}$	$V_{IN}=6.0V$		40		mA
Over Current Protection	$LIMIT$	$V_{IN}=6.0V$		500		mA
Auto Discharge Resistance	$R_{DCHG}$	$V_{CE}=0V$ , $V_{OUT}=V_{OUT}$ , $V_{IN}=5V$		500		$\Omega$



**Package information**

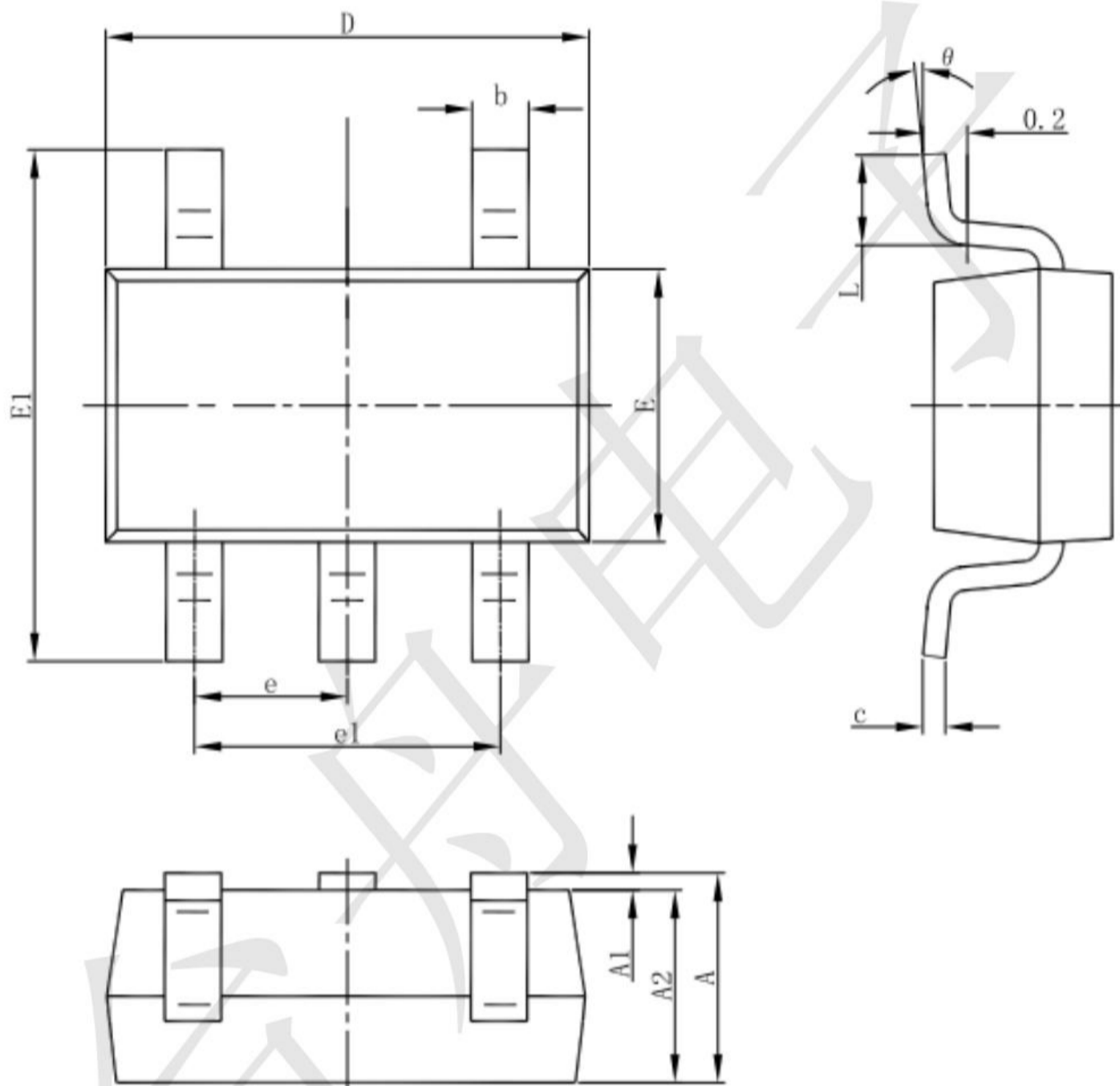
**3-pin SOT23-3L Outline Dimensions**



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
theta	0°	8°	0°	8°

**Package information**

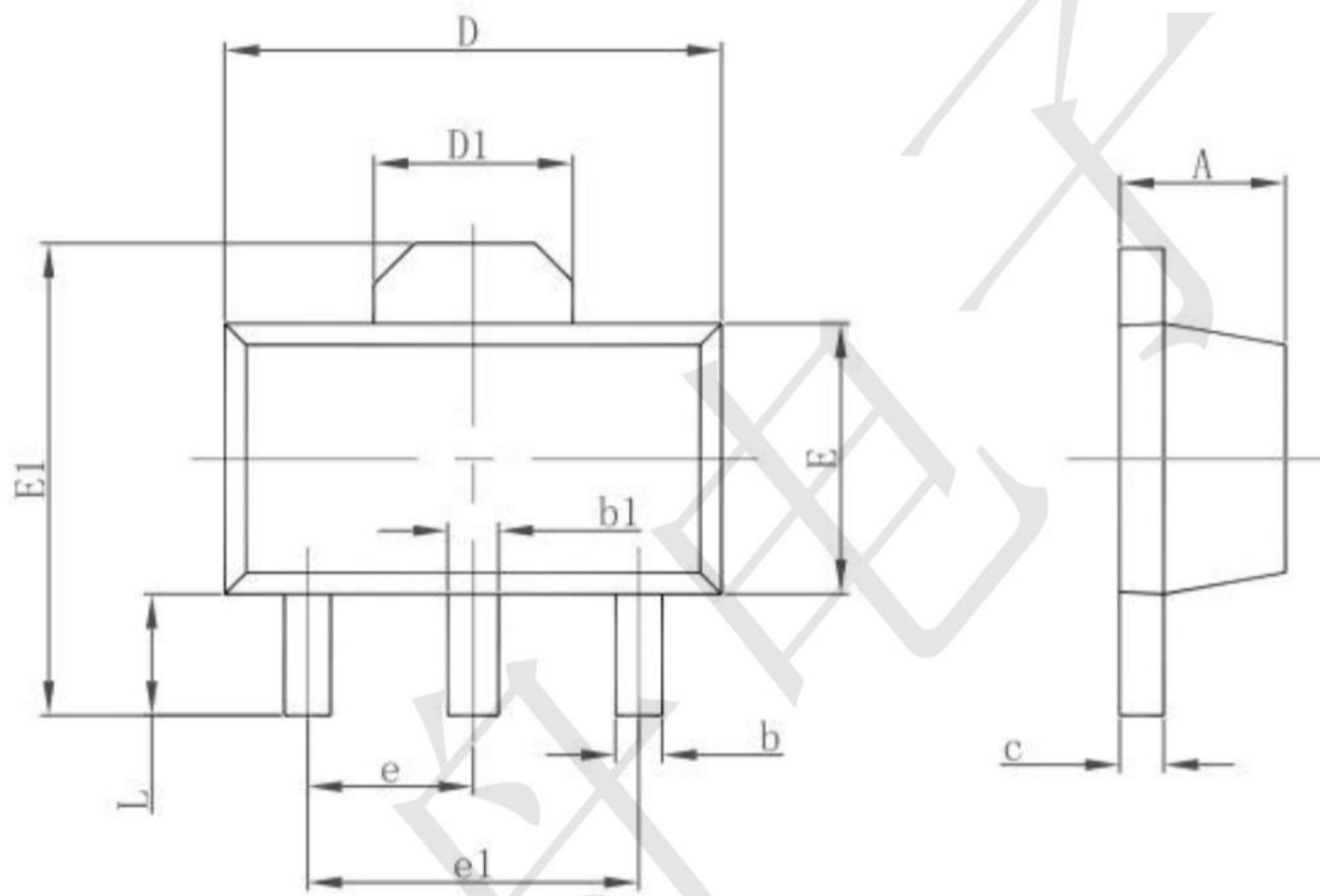
SOT23-5



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
$\theta$	0°	8°	0°	8°

**Package information**

SOT89-3



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.020
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF.		0.061 REF.	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP.		0.060 TYP.	
e1	3.000 TYP.		0.118 TYP.	
L	0.900	1.200	0.035	0.047