Low Power Consumption LDO ME6209 Series

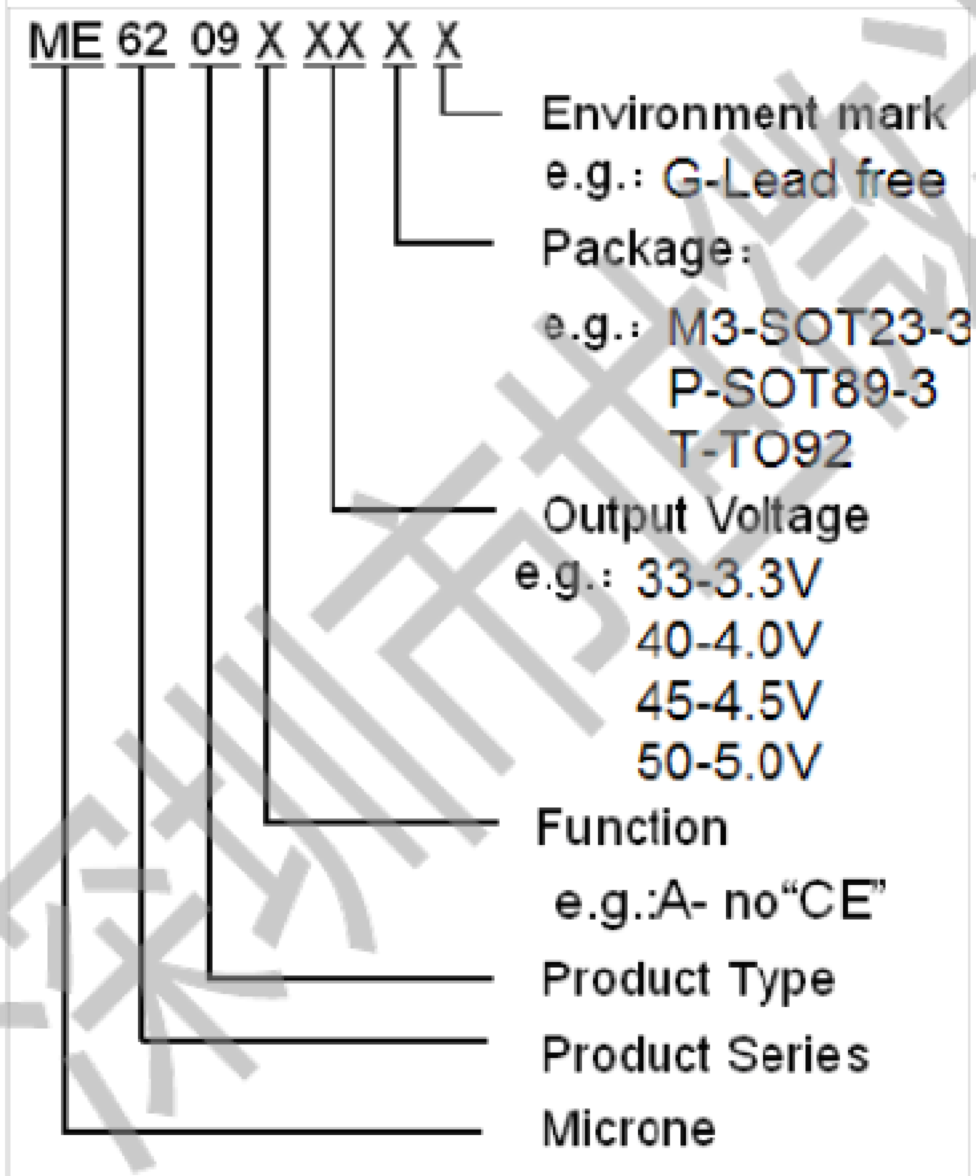
General Description

The ME6209 series are a group of positive voltage output, three -pin regulator, that provide a high current even when the input/output Voltage differential is small. Low power consumption and high accuracy is achieved through CMOS technology. They allow input voltages as high as 18V.

Features

- Ultra low quiescent current: 3.0uA(typ)
- High input voltage (up to 18V)
- Low dropout voltage :80mV@Iout=40mA （V_{OUT}=3.3V ）
- Output voltage accuracy ： ±2%
- Maximum output current ：250mA （within max.power dissipation,V_{OUT} =3.3V ）
- Low temperature coefficient
- Package ：SOT23-3 、TO-92 、SOT89-3

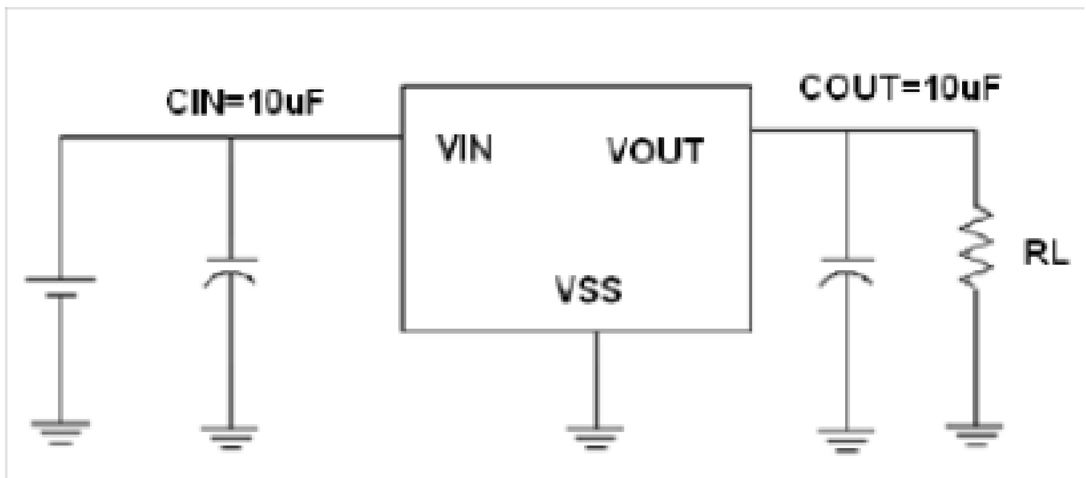
Selection Guide



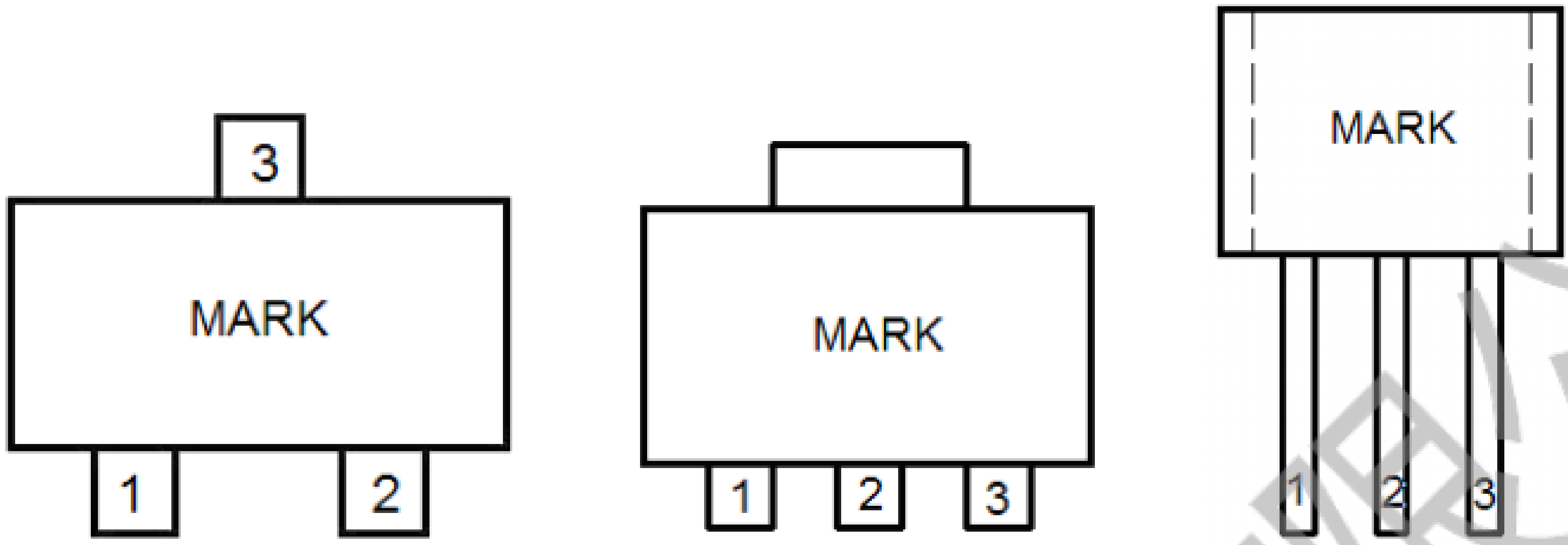
Typical Application

- Cameras, video recorders
- Voltage regulator for microprocessor
- Voltage regulator for LAN cards
- Wireless communication equipment
- Audio/Video equipment

Typical Application Circuit



Pin Configuration



SOT23-3 SOT89-3 TO-92

Pin Assignment

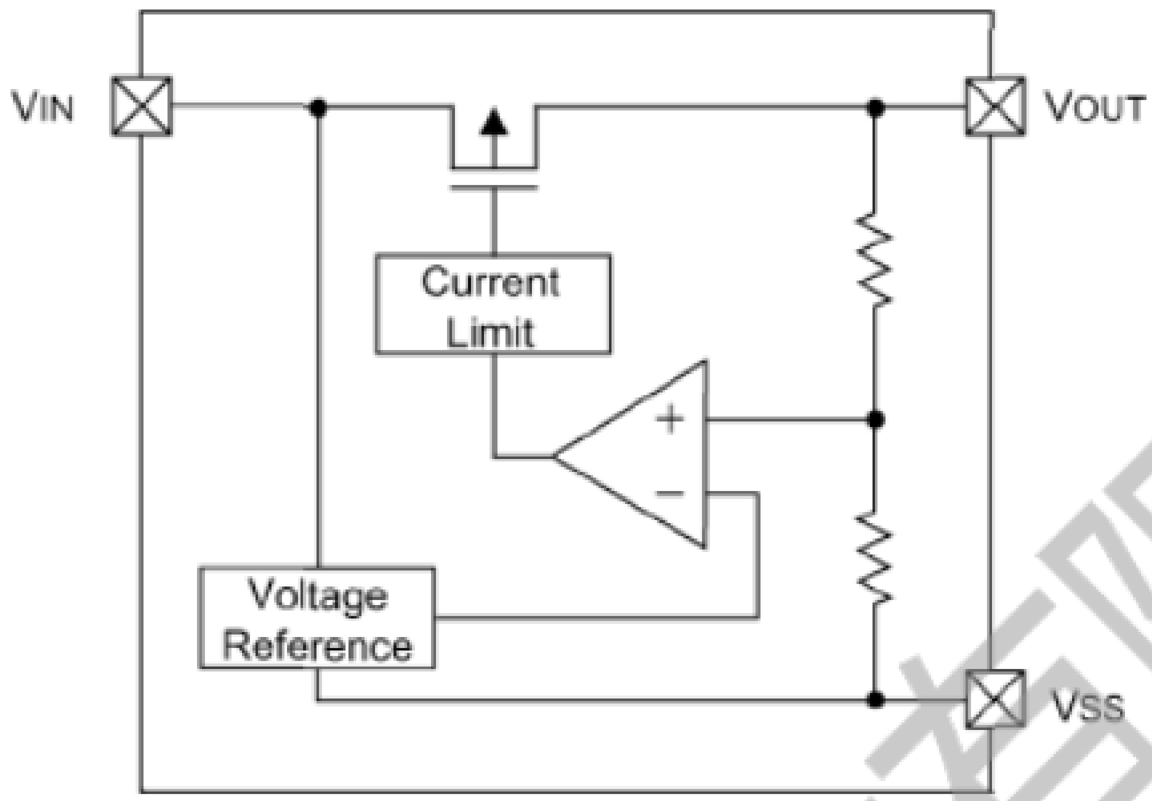
ME6209AXX

Pin Number		Pin Name	Functions
SOT89-3/TO-92	SOT23-3		
1	1	V_{SS}	Ground
2	3	V_{IN}	Input
3	2	V_{OUT}	Output

Absolute Maximum Ratings

Parameter		Symbol	Ratings	Units
Input Voltage		V_{IN}	18	V
Output Voltage		V_{OUT}	Vss-0.3 ～V_{IN} +0.3	V
Output Current		I_{OUT}	500	mA
Operating Temperature Range		T_{OPR}	-40～＋85	℃
Storage Temperature Range		T_{STG}	－40～＋125	℃
Power Dissipation	SOT89-3	P_D	500	mW
	TO-92		500	
	SOT23-3		300	

Block Diagram



Electrical Characteristics

ME6209A33

(V_{IN}= V_{OUT} +1.0V， C_{IN}= C_L=10uF， Ta=25 ^{O}C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	V_{OUT}(E) (Note 2)	I_{OUT}=40mA, V_{IN}=V_{OUT}+1V	X 0.98	V_{OUT} (T) (Note 1)	X 1.02	V
Input Voltage	V_{IN}				18	V
Maximum Output Voltage	I_{OUT} _max	V_{IN}=V_{OUT}+1V	250			mA
Load Regulation	?V_{OUT}	V_{IN}=V_{OUT}+1V, 1mA≤ I_{OUT} ≤60mA		15	40	mV
Dropout Voltage (Note 3)	V_{DIF}	I_{OUT} =40mA		80		mV
Supply Current	I_{SS}	V_{IN}=V_{OUT}+1V		3	4	μA
Line Regulations	$\frac{?V_{OUT}}{?V_{IN} \times V_{OUT}}$	I_{OUT} =40mA V_{OUT}+1V ≤ V_{IN} ≤18V		0.1	0.2	%/V
△VOUT/ △Ta	Temperature Coefficient	V_{IN}=V_{OUT}+1V, I_{OUT} =40mA -40℃<Ta<85 ℃		±0.7		mV/ ℃

ME6209A40

(V_{IN}= V_{OUT} +1.0V， C_{IN}= C_L=10uF， Ta=25 ^{O}C, unless otherwise noted)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Units
Output Voltage	V_{OUT}(E) (Note 2)	I_{OUT}=40mA, V_{IN}=V_{OUT}+1V	X 0.98	V_{OUT} (T) (Note 1)	X 1.02	V
Input Voltage	V_{IN}				18	V
Maximum Output Voltage	I_{OUT} _max	V_{IN}=V_{OUT}+1V	250			mA
Load Regulation	?V_{OUT}	V_{IN}=V_{OUT}+1V, 1mA≤ I_{OUT} ≤60mA		15	40	mV
Dropout Voltage (Note 3)	V_{DIF}	I_{OUT} =40mA		70		mV
Supply Current	I_{SS}	V_{IN}=V_{OUT}+1V		3	4	μA
Line Regulations	?V_{OUT} / ?V_{IN} ×V_{OUT}	I_{OUT} =40mA V_{OUT}+1V ≤V_{IN}≤18V		0.1	0.2	%/V
△VOUT/ △Ta	Temperature Coefficient	V_{IN}=V_{OUT}+1V, I_{OUT} =40mA -40℃<Ta<85℃		±0.7		mV/℃

Note ：

1. V_{OUT} (T) ：Specified Output Voltage

2. V_{OUT} (E) ：Effective Output Voltage (i e. The output voltage when “V_{OUT}(T)+ 1.0 V” is provided at the Vin pin while maintaining a certain I_{OUT} value.)

3. V_{DIF}：V_{IN1} –V_{OUT} (E) ’

V_{IN1} ：The input voltage when V_{OUT}(E) ’ appears as input voltage is gradually decreased.

V_{OUT} (E) ’=A voltage equal to 98% of the output voltage whenever an amply stabilized I_{OUT} and {V_{OUT} (T)+ 1.0V} is input.

Precautions

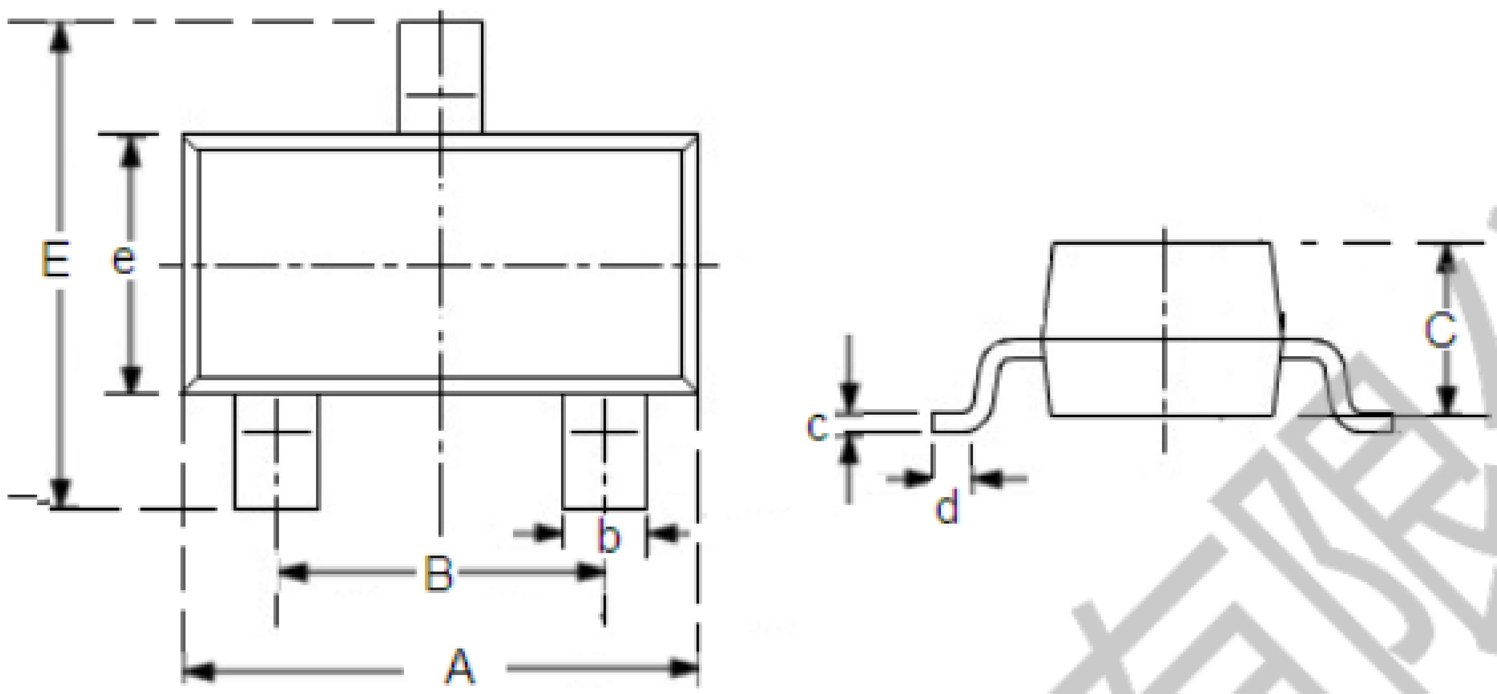
During the test, if AC/DC power supply and the ceramic chip capacitors collocation are used, there may be serious voltage spike phenomenon instantaneously. When the power supply access to 16V, the voltage is rushed to about 30V instantaneously. Because of exceeding the limit voltage of chip, the chip is damaged. If you string a small resistance of 1 ohm in the input end during the test, the peak phenomenon can be avoided.

In the test, there is serious burr phenomenon only when the AC/DC power is used with ceramic chip capacitors. But electrolytic capacitors and tantalum capacitance won't appear above phenomenon. Please be sure to pay attention to this point when you use AC/DC power.

In normal use, when any type of capacitor is used with battery or the supply of fire power, the above phenomenon doesn’t occur.

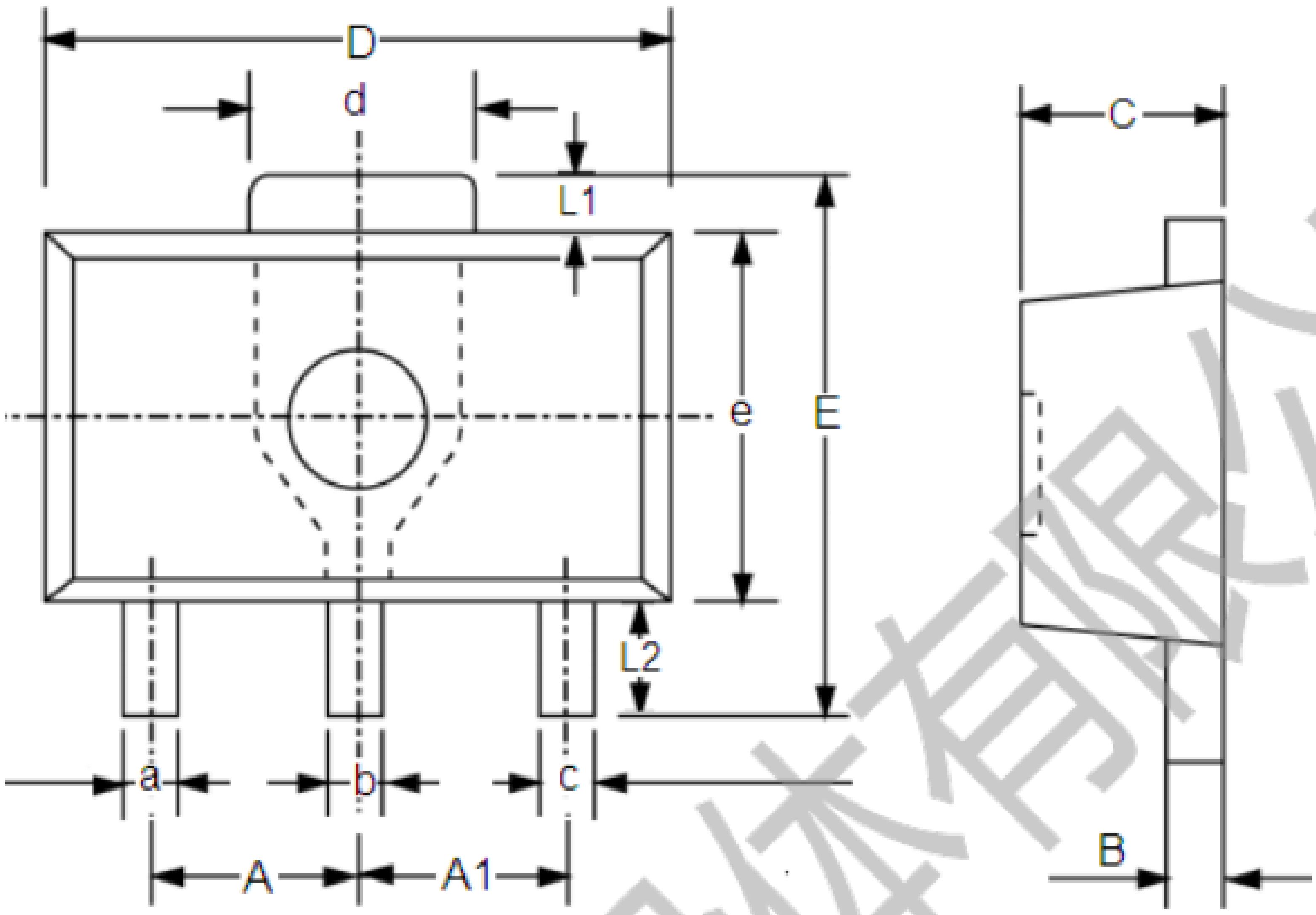
Packaging Information:

- SOT23-3



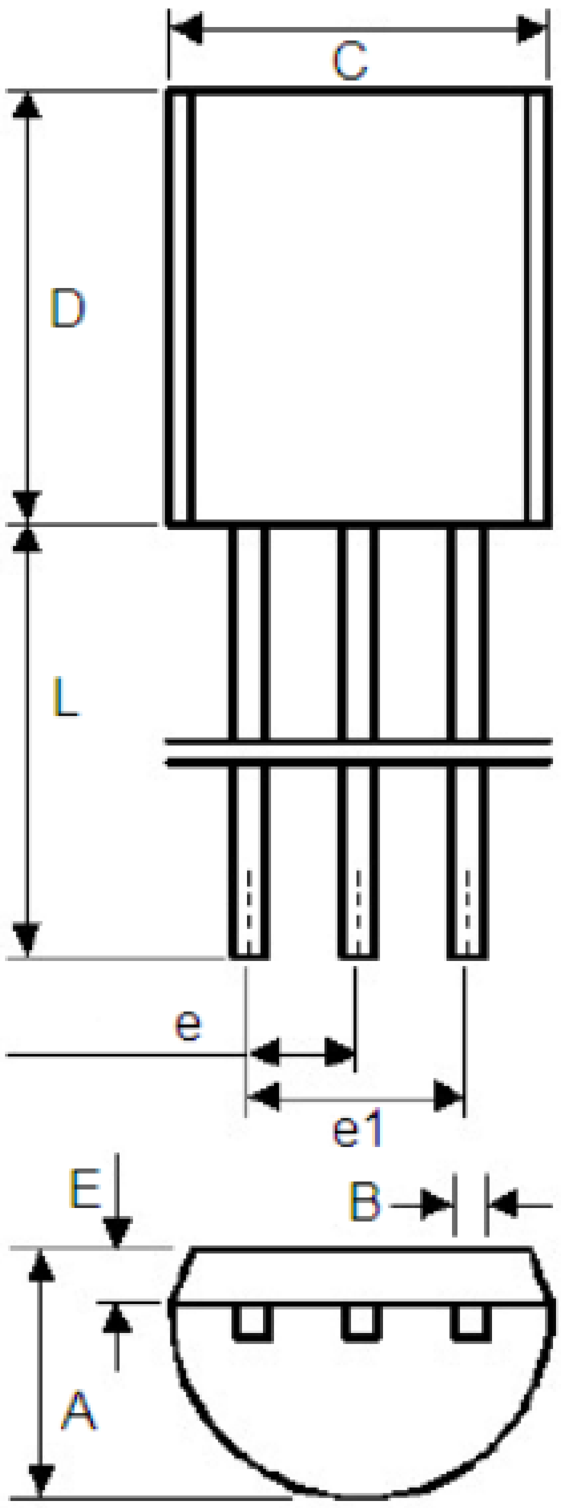
DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	2.7	3.1	0.1063	0.122
B	1.7	2.1	0.0669	0.0827
b	0.35	0.5	0.0138	0.0197
C	1.0	1.2	0.0394	0.0472
c	0.1	0.25	0.0039	0.0098
d	0.2	-	0.0079	-
E	2.6	3.0	0.1023	0.1181
e	1.5	1.8	0.059	0.0708

- SOT89-3



DIM	Millimeters		Inches	
	Min	Max	Min	Max
A	1.4	1.6	0.0551	0.0630
A1	1.4	1.6	0.0551	0.0630
a	0.36	0.48	0.0142	0.0189
b	0.41	0.53	0.0161	0.0209
c	0.36	0.48	0.0142	0.0189
d	1.4	1.75	0.0551	0.0689
B	0.38	0.43	0.015	0.0169
C	1.4	1.6	0.0551	0.0630
D	4.4	4.6	0.1732	0.181
E	-	4.25	-	0.1673
e	2.4	2.6	0.0945	0.1023
L1	0.4	-	0.0157	-
L2	0.8	-	0.0315	-

- TO-92



	Min	Max	Min	Max
A	3.4	3.8	0.13386	0.1496
B	0.3	0.5	0.0118	0.0197
C	4.4	4.8	0.1732	0.189
D	4.4	4.8	0.1732	0.189
E	0.9	1.5	0.0354	0.059
e	1.17	1.37	0.046	0.0539
e1	2.39	2.69	0.094	0.1059
L	12	16	0.4724	0.6299