

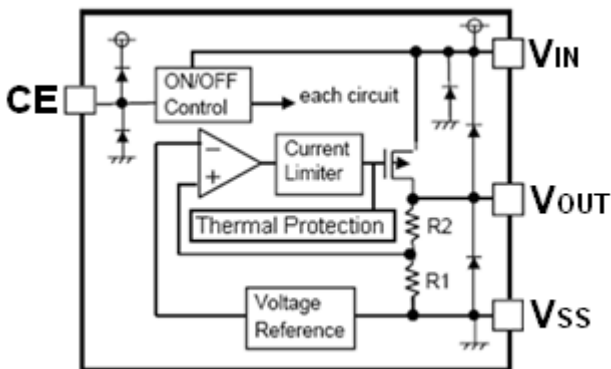
■ INTRODUCTION

The CE6208 Series are a group of positive voltage regulators manufactured by CMOS technology with high ripple rejection, ultra-fast transient response and low dropout voltage, which provide large output currents even when the difference of the input-output voltage is small. Each of the CE6208 series consists of a high-precision voltage reference, an error correction circuit, and a current limited output driver. Thus the series are very suitable for the battery-powered equipments, wireless communication applications, industry equipments and so on.

■ APPLICATIONS

- Battery powered systems
- Portable instrumentations
- PC peripherals

■ BLOCK DIAGRAM



■ FEATURES

- Guaranteed Output Current: 1.0A(Typ.)
- Low Quiescent Current: 70μA (Typ.)
- Output Voltage Range: 1.5V~5.0V
- Input Voltage Range: 2.5V~6.0V
- High Accuracy: ±2% (Typ.)
- Dropout Voltage:
500mV@1.0A (3.0V Typ.)
- Excellent Line Regulation: 0.02%/V
- High PSRR : 70dB@1KHz
- Built-in Current Limiter & Thermal Protection
- Short Circuit Current Fold-back
- Output Capacitor: Ceramic Compatible

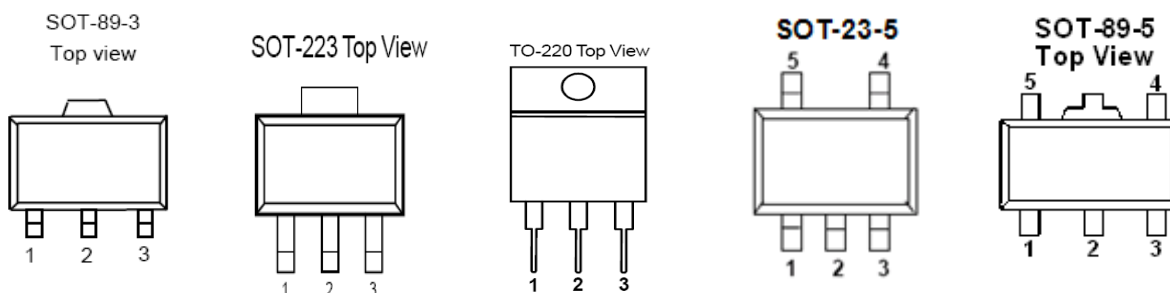
- CD/DVD-ROM, CD/RW
- Wireless devices
- Battery charger

■ ORDER INFORMATION

CE6208①②③④

DESIGNATOR	SYMBOL	DESCRIPTION
①	A	Standard
	B	With Shutdown Function
②③	Integer	Output Voltage(1.5~5.0V) e.g:3.0V=②:3, ③:0
④	G	Package:SOT-223
	P	Package:SOT-89
	B	Package:TO-220
	M	Package:SOT-23-5

■ **PIN CONFIGURATION** (Pin output sequence can be ordered by customer)



CE6208AXX (SOT-223, SOT-89-3, TO-220)

PIN NUMBER									PIN NAME	FUNCTION
SOT-223			SOT-89-3			TO-220				
G	GW	GL	P	PW	PL	B	BW	BL		
1	1	2	1	1	2	1	1	2	V_{SS}	Ground
2	3	1	2	3	1	2	3	1	V_{IN}	Power input
3	2	3	3	2	3	3	2	3	V_{OUT}	Output

■ **CE6208BXXP (SOT-89-5) / CE6208BXXM (SOT-23-5)**

PIN NUMBER		PIN NAME	FUNCTION
SOT-23-5	SOT-89-5		
3	1	CE	Chip Enable
2	2	V_{SS}	Ground
4	3	NC	No Connection
1	4	V_{IN}	Power input
5	5	V_{OUT}	Output Pin

■ **ABSOLUTE MAXIMUM RATINGS**

(Unless otherwise specified, $T_a=25^\circ\text{C}$)

PARAMETER	SYMBOL	RATINGS	UNITS
Input Voltage	V_{IN}	$V_{SS}-0.3\sim V_{SS}+7$	V
Output Current	I_{OUT}	2000	mA
Output Voltage	V_{OUT}	$V_{SS}-0.3\sim V_{IN}+0.3$	V
Power Dissipation	SOT-89	P_d	600
	SOT-223	P_d	800
	TO-220	P_d	3000
	SOT-23-5	P_d	250
Operating Temperature	T_{opr}	$-40\sim+85$	$^\circ\text{C}$
Storage Temperature	T_{stg}	$-40\sim+125$	$^\circ\text{C}$
Soldering Temperature & Time	T_{solder}	$260^\circ\text{C}, 10\text{s}$	

■ ELECTRICAL CHARACTERISTICS

CE6208 Series ($V_{IN}=V_{OUT}+1V$, $C_{IN}=C_{OUT}=4.7\mu F$, $T_a=25^\circ C$, unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNITS
Output Voltage	$V_{OUT(E)}$ (Note 2)	$I_{OUT}=100mA$	V_{OUT} *0.98	V_{OUT} (Note 1)	V_{OUT} *1.02	V
Supply Current	I_{SS}			70		μA
Shutdown Current	I_{SHDN}	$V_{CE}=V_{SS}$		0.1	1.0	μA
Output Current	I_{OUT}	—	1000			mA
Dropout Voltage (Note 3)	V_{dif1}	$I_{OUT}=300mA$		150		mV
	V_{dif2}	$I_{OUT}=1000mA$		500		mV
Load Regulation	ΔV_{OUT}	$V_{IN}=V_{OUT}+1V$, $1mA \leq I_{OUT} \leq 1.0A$		30		mV
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} * V_{OUT}}$	$I_{OUT}=100mA$ $V_{OUT}+1V \leq V_{IN} \leq 6V$		0.02	0.2	%/V
Output Voltage Temperature Characteristics	$\frac{\Delta V_{OUT}}{\Delta T * V_{OUT}}$	$I_{OUT}=100mA$ $-40^\circ C \leq T \leq +85^\circ C$		50		ppm/ $^\circ C$
Short Current	I_{Short}	$V_{OUT}=V_{SS}$		200		mA
Input Voltage	V_{IN}	—	2.5		6.0	V
Power Supply Rejection Rate	1KHz	PSRR	$I_{OUT}=100mA$	70		dB
	10KHz			50		
CE "High" Voltage	$V_{CE} "H"$		1.5		V_{IN}	V
CE "Low" Voltage	$V_{CE} "L"$				0.3	V
Thermal Shutdown Temperature	T_{SD}			150		$^\circ C$
Thermal Shutdown Temperature Hysteresis	ΔT_{SD}			30		$^\circ C$

NOTE:

- V_{OUT} : Specified Output Voltage.
- $V_{OUT(E)}$: Effective Output Voltage (I.e. The Output Voltage When $V_{IN} = (V_{OUT} + 1.0V)$ And Maintain A Certain I_{OUT} Value).
- V_{diff} : The Difference Of Output Voltage And Input Voltage When Input Voltage Is Decreased Gradually Till Output Voltage Equals To 98% Of $V_{OUT(E)}$; When $V_{OUT} < 2.5V$, $V_{IN} \geq 2.5V$ Should be Guaranteed.

■ TYPICAL APPLICATION CIRCUITS

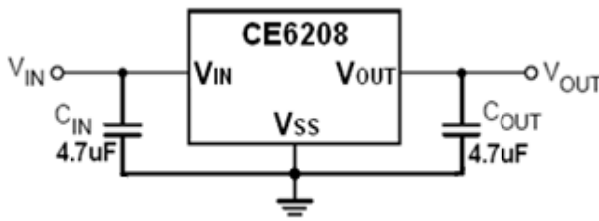


Figure1 CE6208A Typical Application Circuit

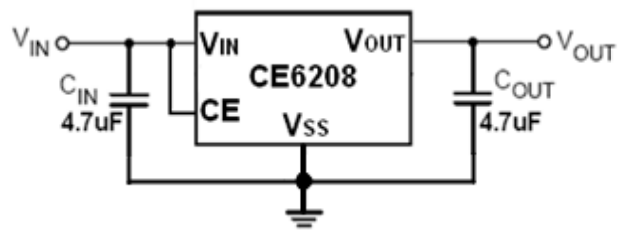


Figure2 CE6208B Typical Application Circuit

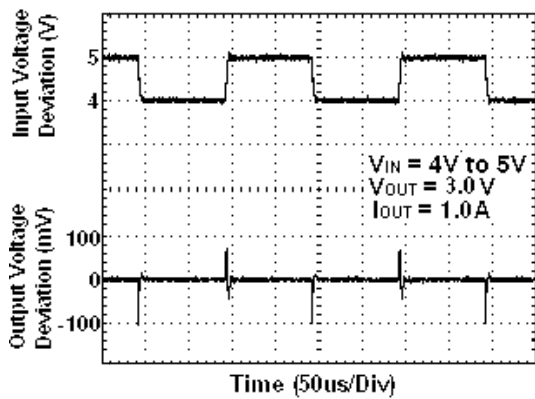
Input capacitor (C_{IN}): 4.7 μ F or more;

Output capacitor (C_{OUT}): 4.7 μ F or more;

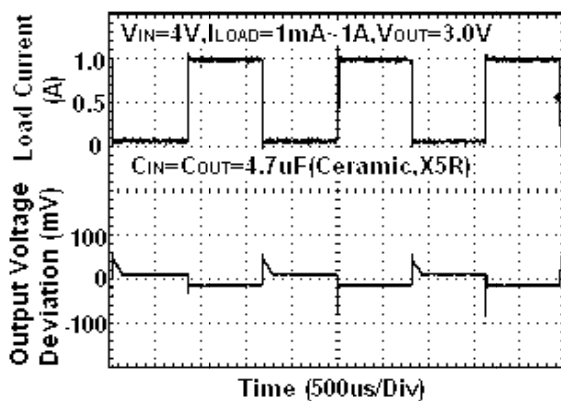
Caution: A general series regulator may oscillate, depending on the external components selected. Check that no oscillation occurs with the application using the above capacitor.

■ TYPICAL PERFORMANCE CHARACTERISTICS

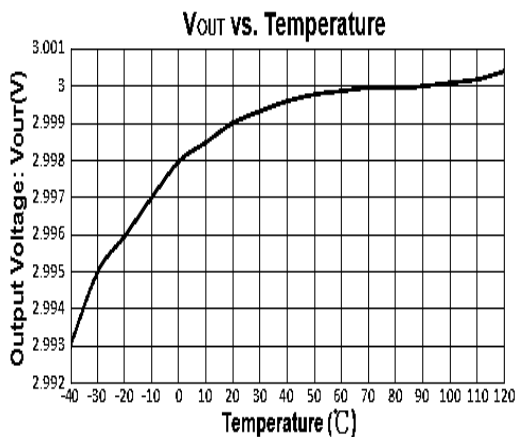
(1) Input Transient Response



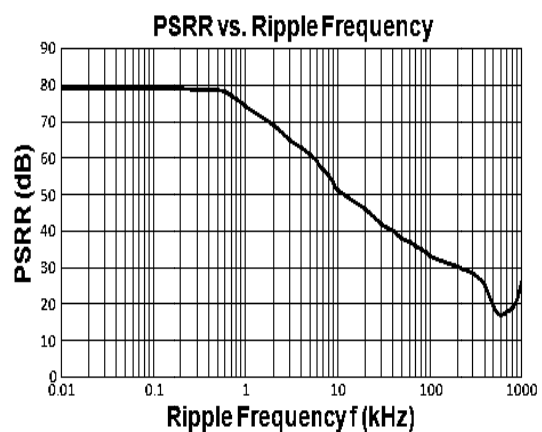
(2) Load Transient Response



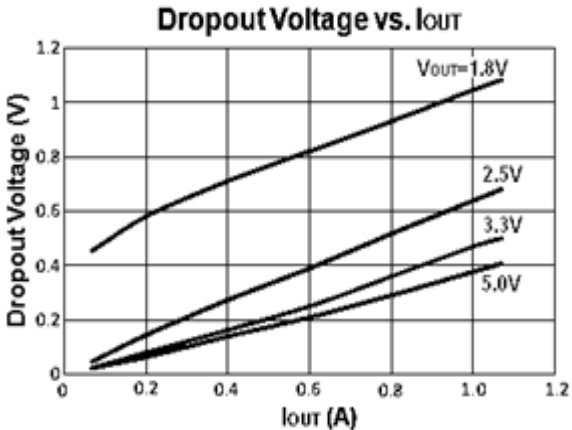
(3) Output Voltage vs. Temperature



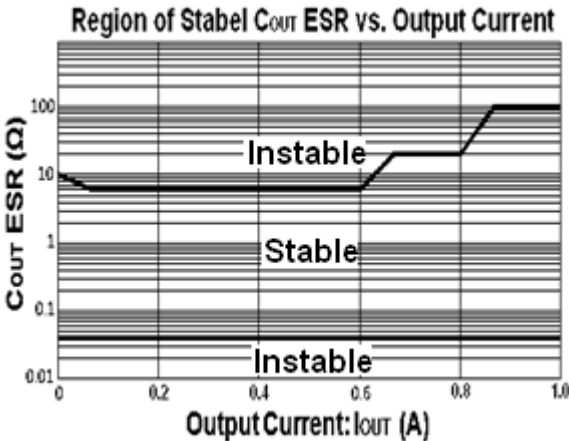
(4) Power Supply Rejection Ratio



(3) Dropout Voltage vs. Output Current

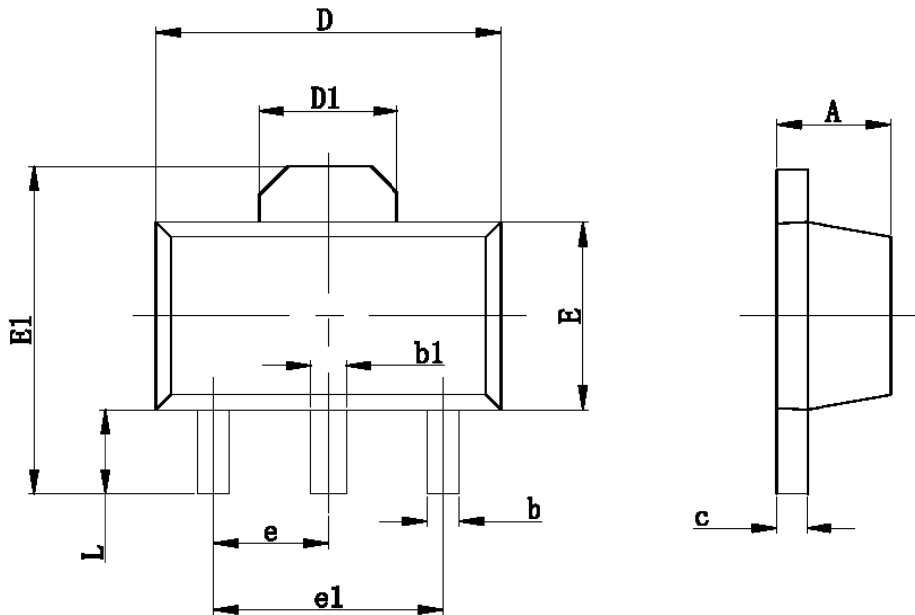


(4) Region of Stable C_{OUT} ESR vs. Load



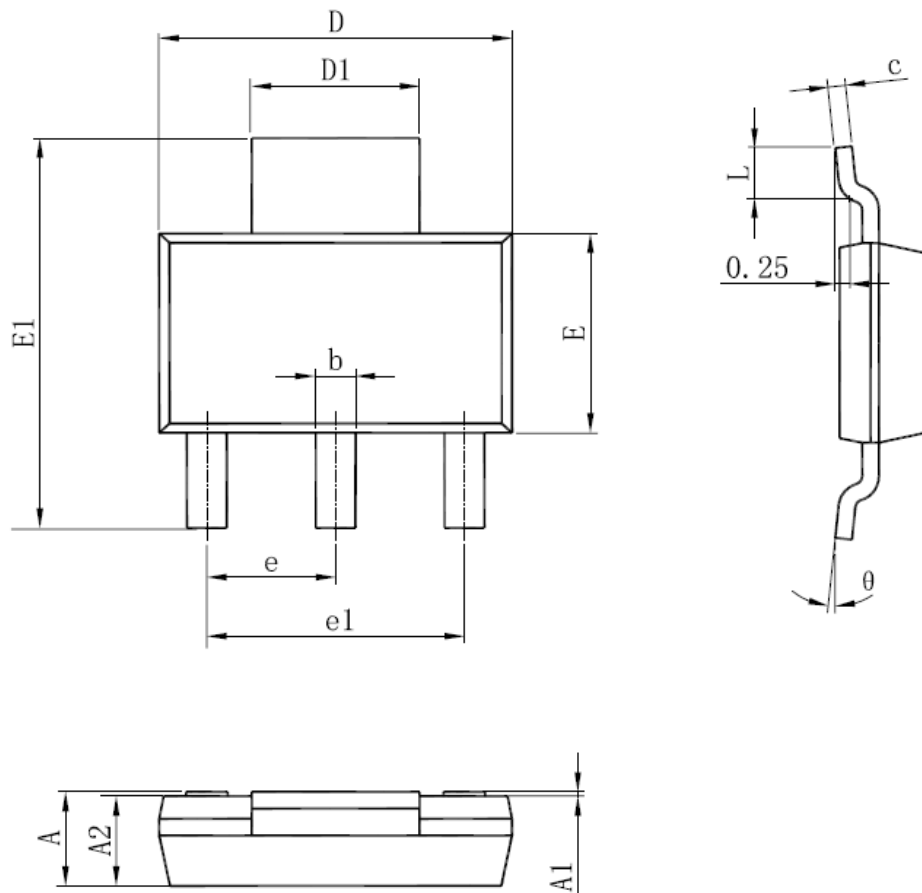
■ PACKAGING INFORMATION

● SOT-89-3 PACKAGE OUTLINE DIMENSIONS



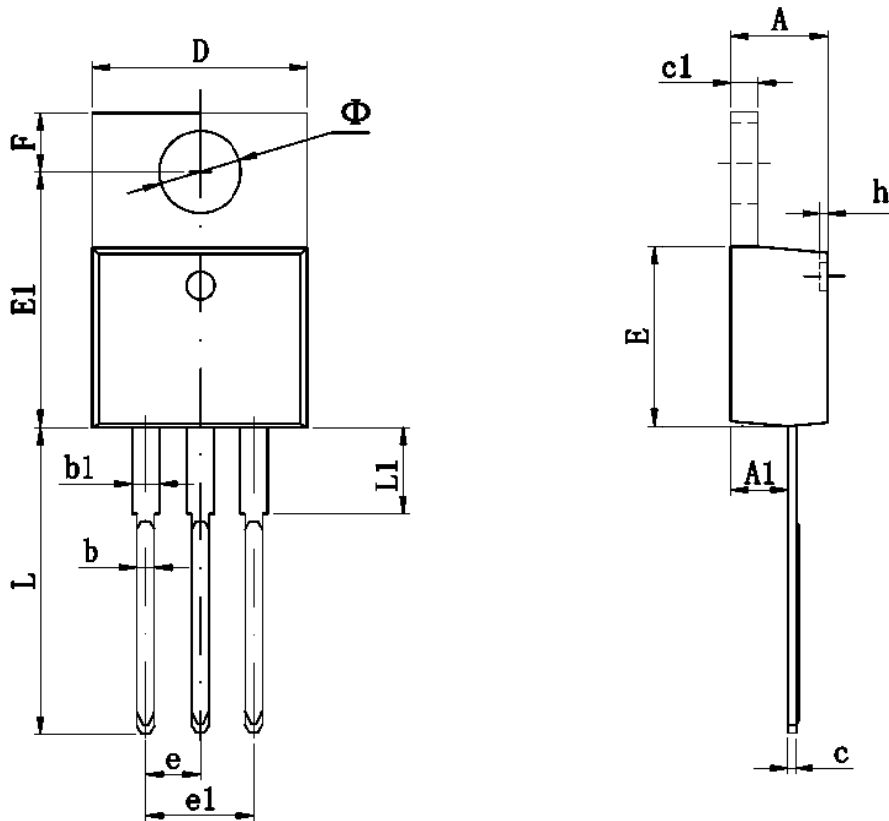
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.400	1.600	0.055	0.063
b	0.320	0.520	0.013	0.197
b1	0.400	0.580	0.016	0.023
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.550 REF		0.061 REF	
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500 TYP		0.060TYP	
e1	3.000 TYP		0.118TYP	
L	0.900	1.200	0.035	0.047

• SOT-223 PACKAGE OUTLINE DIMENSIONS



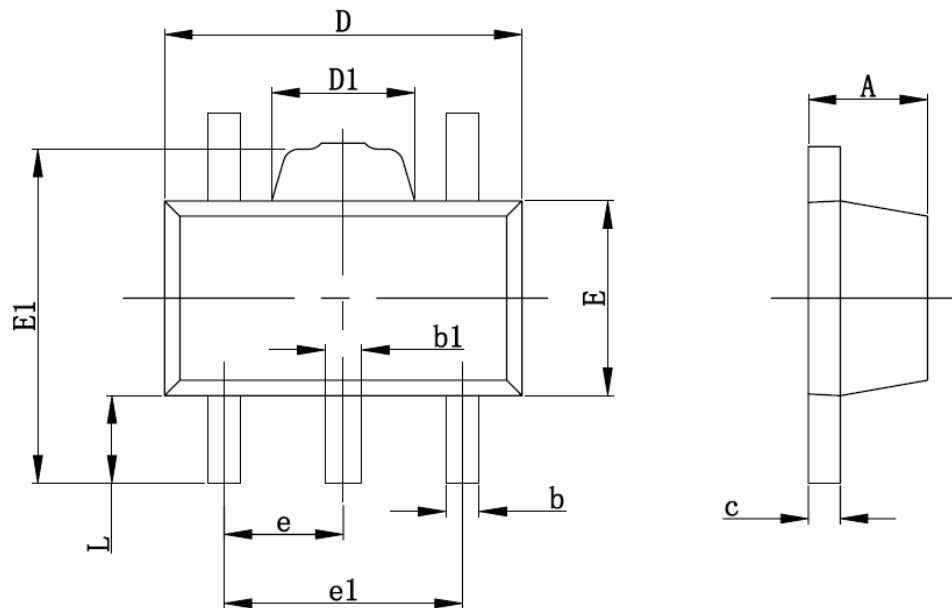
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.520	1.800	0.060	0.071
A1	0.000	0.100	0.000	0.004
A2	1.500	1.700	0.059	0.067
b	0.660	0.820	0.026	0.032
c	0.250	0.350	0.010	0.014
D	6.200	6.400	0.244	0.252
D1	2.900	3.100	0.114	0.122
E	3.300	3.700	0.130	0.146
E1	6.830	7.070	0.269	0.278
e	2.300(BSC)		0.091(BSC)	
e1	4.500	4.700	0.177	0.185
L	0.900	1.150	0.035	0.045
θ	0°	10°	0°	10°

• TO-220 PACKAGE OUTLINE DIMENSIONS



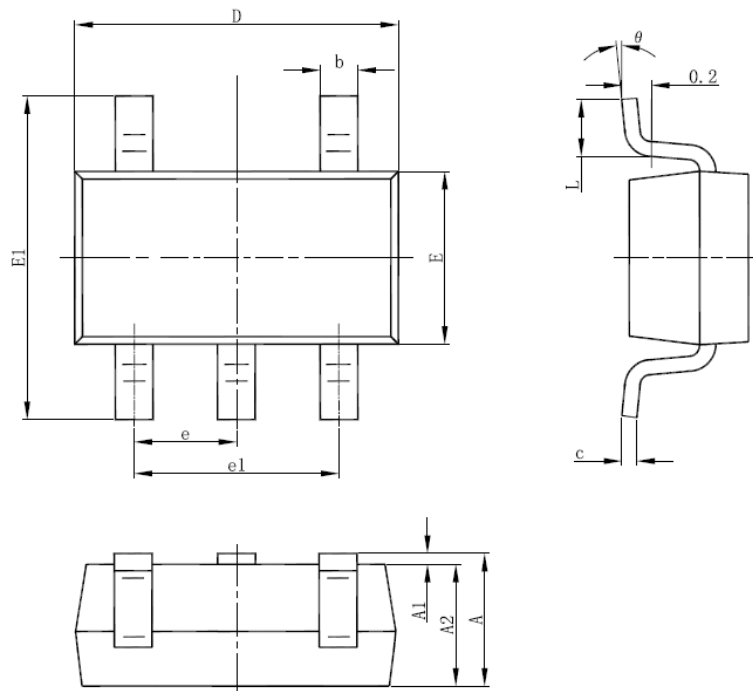
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
Φ	3.735	3.935	0.147	0.155

- SOT-89-5 PACKAGE OUTLINE DIMENSIONS



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	0.360	0.560	0.014	0.022
c	0.350	0.440	0.014	0.017
D	4.400	4.600	0.173	0.181
D1	1.400	1.800	0.055	0.071
E	2.300	2.600	0.091	0.102
E1	3.940	4.250	0.155	0.167
e	1.500TYP		0.060TYP	
e1	2.900	3.100	0.114	0.122
L	0.900	1.100	0.035	0.043

● SOT-23-5 PACKAGE 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
θ	0°	8°	0°	8°

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