

■ **INTRODUCTION**

The CE6202 series are a group of positive voltage regulators manufactured by CMOS technologies with ultra low power consumption and low dropout voltage, which can prolong battery life in portable electronics. The CE6202 series work with low-ESR ceramic capacitors, reducing the amount of board space necessary for power applications. The series are very suitable for the battery-powered equipments, such as RF applications and other systems requiring a quiet voltage source.

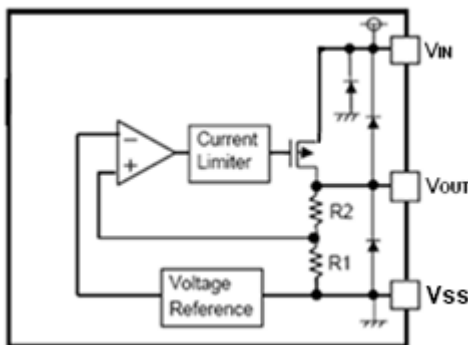
■ **FEATURES**

- Low Quiescent Current: 0.5μA
- Operating Voltage: 1.8V~6V
- Output Current: 300mA
- Low Dropout Voltage: 300mV@100mA
- Excellent Line and Load Transient Response
- Output Voltage: 0.9~ 5.0V
- High Accuracy: ±2% (Typ.)
- Built-in Current Limiter, Short-Circuit Protection
- Ceramic Capacitor Compatible

■ **APPLICATIONS**

- Portable consumer equipments
- Laptop, Palmtops and PDA
- Digital Still and Video Cameras
- MP3, MP4 Player
- Radio control systems
- Battery-Powered Equipment

■ **BLOCK DIAGRAM**



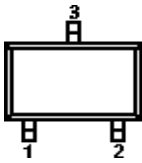
■ **ORDER INFORMATION**

CE6202①②③④

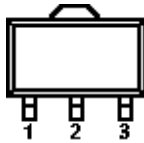
DESIGNATOR	SYMBOL	DESCRIPTION
①	A	Standard
②③	Integer	Output Voltage e.g.1.8V=②:1, ③:8
④	M/MA/MC/MY	Package:SOT-23-3
	MF	Package:SOT-23-5
	P/PT	Package:SOT-89-3
	T	Package:TO-92

## ■ PIN CONFIGURATION

SOT-23-3



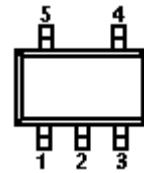
SOT-89-3



TO-92



SOT-23-5



PIN NUMBER							PIN NAME	FUNCTION
SOT-23-3			SOT-89-3		TO-92			
M	MA	MC	MY	P	PT	T		
1	2	3	3	1	2	1	$V_{SS}$	Ground
2	1	2	1	3	1	3	$V_{OUT}$	Output
3	3	1	2	2	3	2	$V_{IN}$	Power input

### SOT-23-5

PIN NUMBER	SYMBOL	FUNCTION
MF		
1	$V_{IN}$	Power Input Pin
2	$V_{SS}$	Ground
3	NC	No Connection
4	NC	No Connection
5	$V_{OUT}$	Output Pin

## ■ ABSOLUTE MAXIMUM RATINGS

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

PARAMETER	SYMBOL	RATINGS	UNITS
Input Voltage	$V_{IN}$	$V_{SS} - 0.3 \sim V_{SS} + 8$	V
Output Current	$I_{OUT}$	500	mA
Output Voltage	$V_{OUT}$	$V_{SS} - 0.3 \sim V_{IN} + 0.3$	V
Power Dissipation	SOT-23	$P_d$	250
	SOT-89	$P_d$	500
	TO-92	$P_d$	500
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

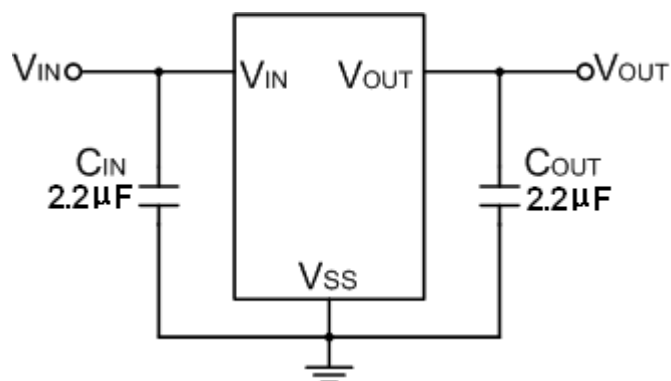
CE6202 Series ( $V_{IN}=V_{OUT}+1V$ ,  $C_{IN}=C_{OUT}=2.2\mu F$ ,  $T_a=25^\circ C$ , unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Output Voltage	$V_{OUT(E)}$ (Note 2)	$I_{OUT}=10mA$	$V_{OUT}$ *0.98	$V_{OUT}$	$V_{OUT}$ *1.02	V
Supply Current	$I_{SS}$	$I_{OUT}=0$		0.5	1.8	$\mu A$
Output Current	$I_{OUT}$	$V_{OUT}\geq 3.0V$	300			mA
Dropout Voltage (Note 3)	$V_{dif}$	$I_{OUT}=100mA$ $V_{OUT}\geq 3.0V$		300		mV
Load Regulation	$\Delta V_{OUT}$	$V_{IN}=V_{OUT}+1V$ , $1mA\leq I_{OUT}\leq 100mA$		10		mV
Line Regulation	$\frac{\Delta V_{OUT}}{V_{OUT} \times \Delta V_{IN}}$	$I_{OUT}=10mA$ $V_{OUT}+1V\leq V_{IN}\leq 6V$		0.01	0.3	%/V
Output Voltage Temperature Characteristics	$\frac{\Delta V_{OUT}}{\Delta T \times V_{OUT}}$	$I_{OUT}=10mA$ $-40\leq T\leq +85$		100		ppm
Short Current	$I_{Short}$	$V_{OUT}=V_{SS}$		30		mA
Input Voltage	$V_{IN}$	—	1.8		6.0	V

### NOTE:

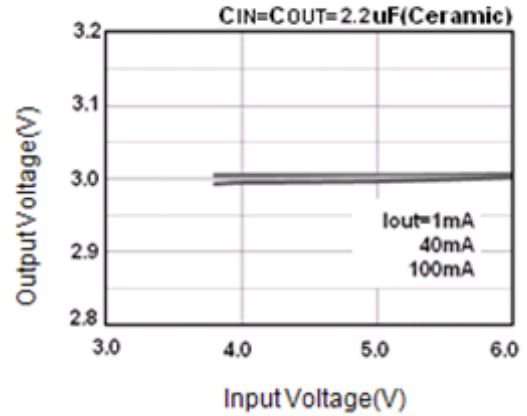
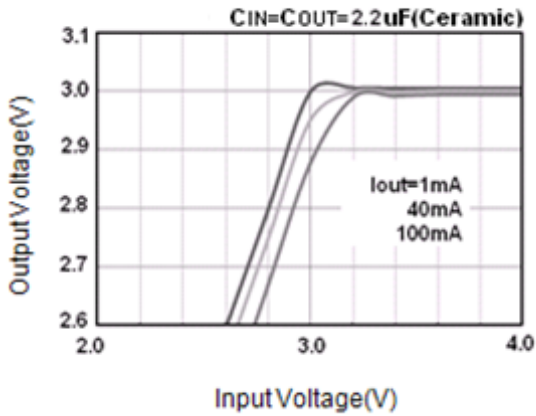
1.  $V_{OUT}$ : Specified Output Voltage.
2.  $V_{OUT(E)}$  : Effective Output Voltage ( i.e. The Output Voltage When  $V_{IN} = (V_{OUT} + 1.0V)$  And Maintain A Certain  $I_{OUT}$  Value).
3.  $V_{dif}$ : The Difference Of Output Voltage And Input Voltage When Input Voltage Is Decreased Gradually Till Output Voltage Equals To 98% Of  $V_{OUT(E)}$ .

## ■ TYPICAL APPLICATION

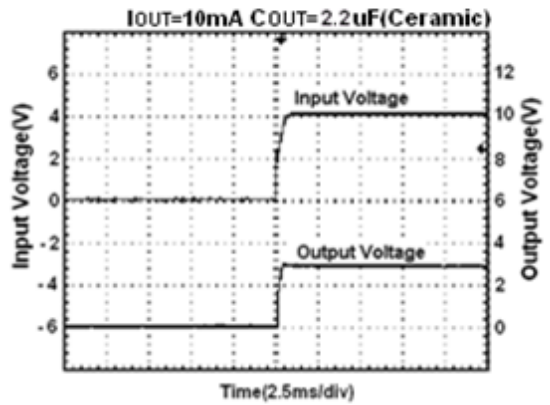
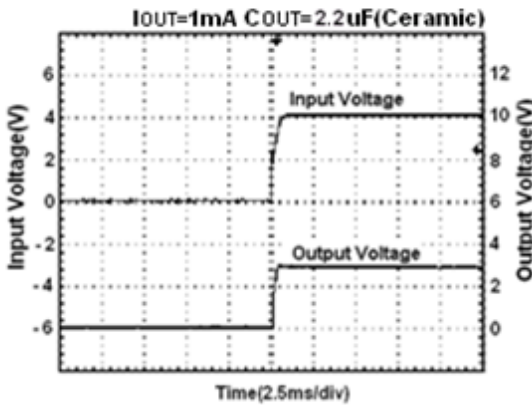


■ TYPICAL PERFORMANCE CHARACTERISTICS

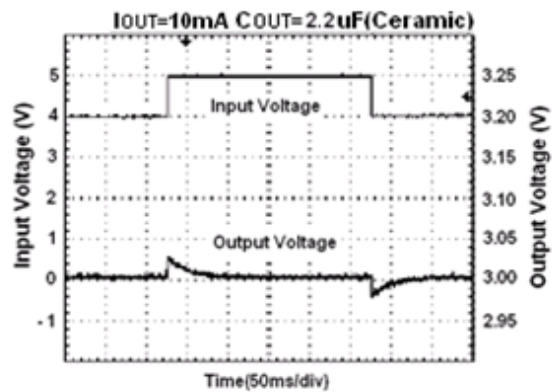
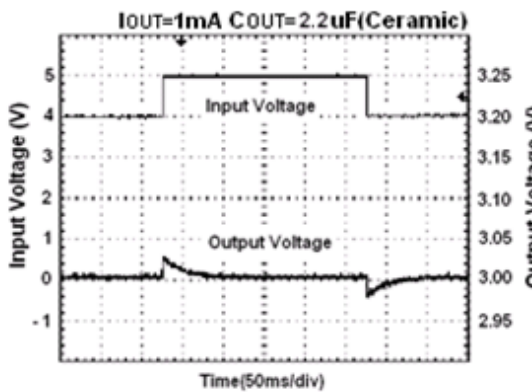
(1) Output Voltage vs. Input Voltage



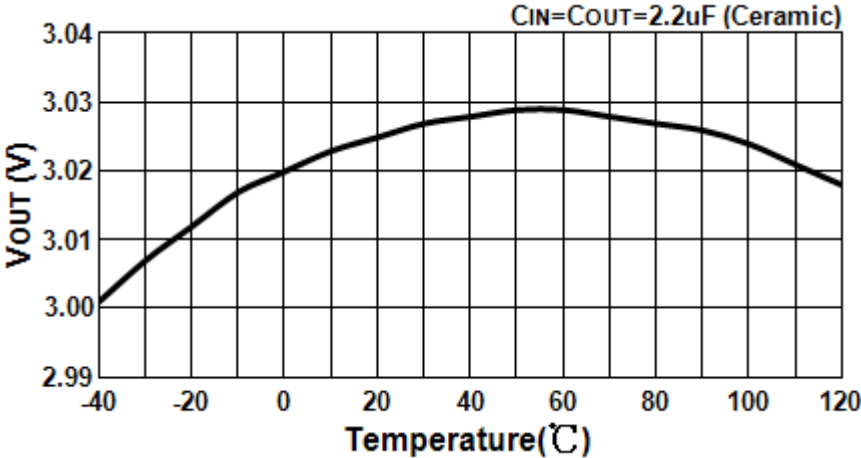
(2) Input Transient Response 1



(3) Input Transient Response 2

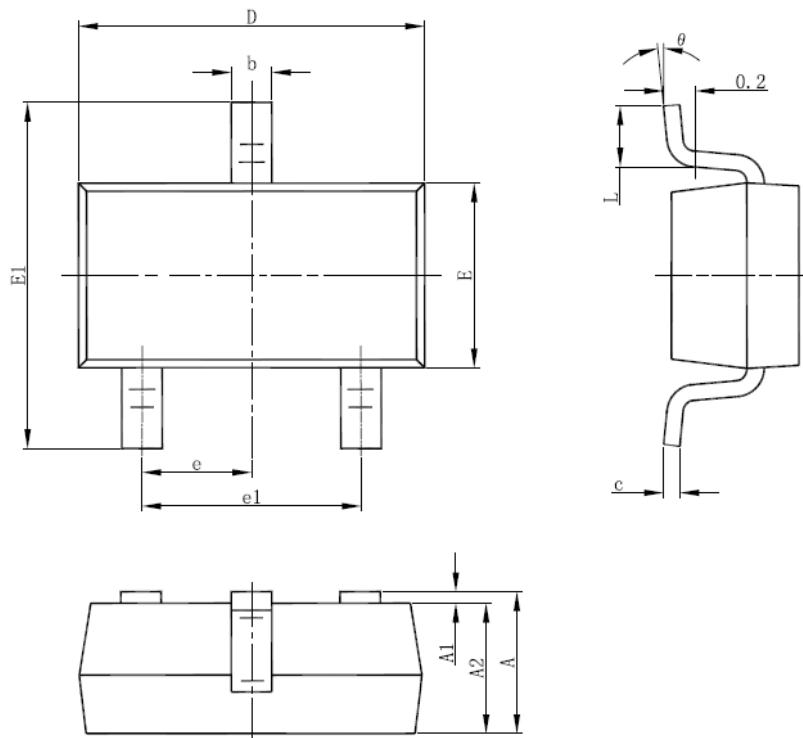


(4) Output Voltage vs. Temperature



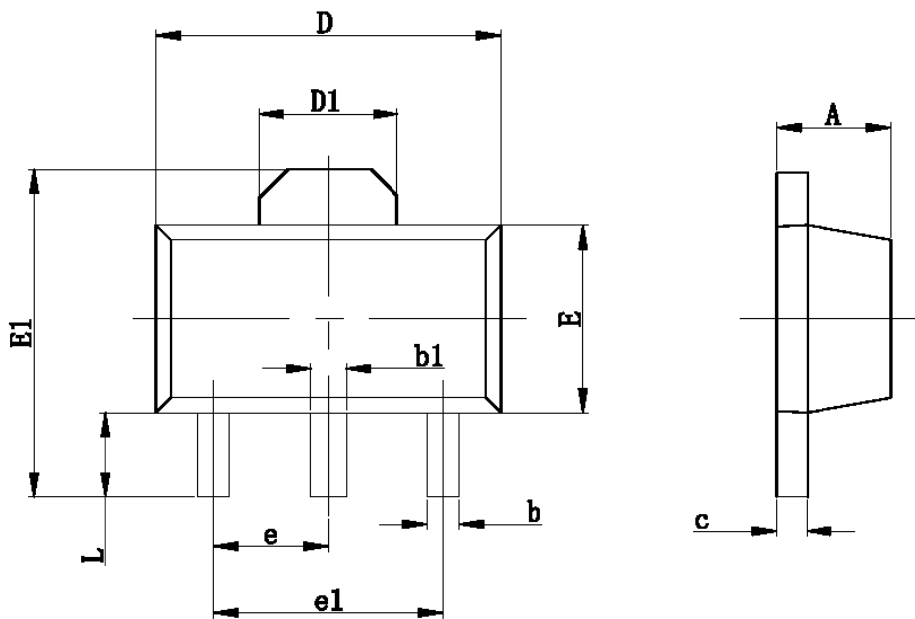
■ PACKAGING INFORMATION

- SOT-23-3 PACKAGE OUTLINE DIMENSIONS



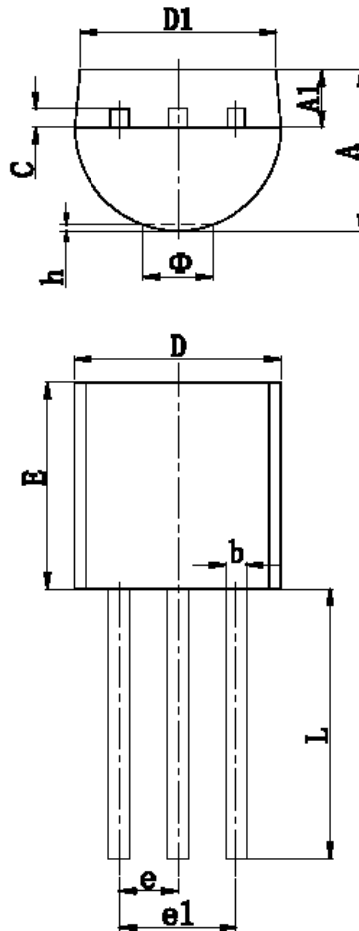
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)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

- 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

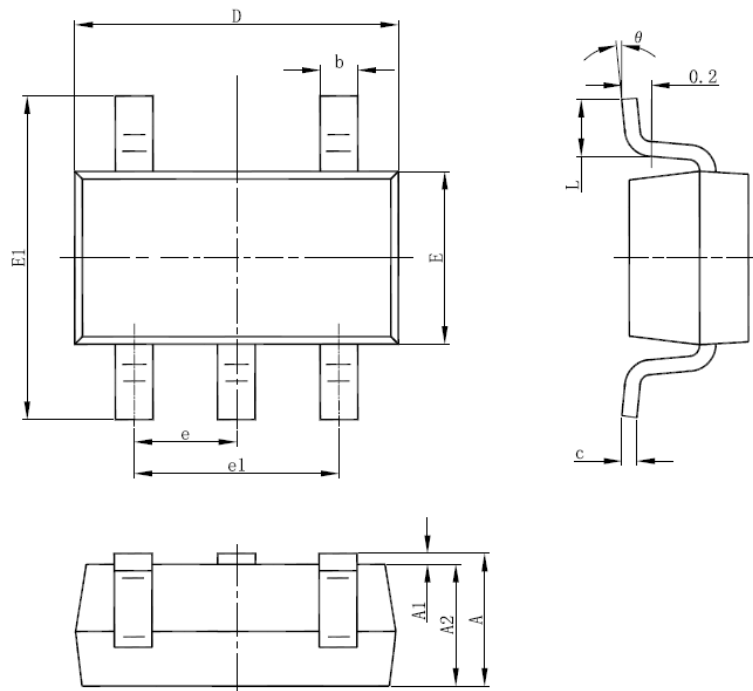
- TO-92 PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.400	4.700	0.173	0.185
D1	3.430		0.135	
E	4.300	4.700	0.169	0.185
e	1.270 TYP		0.050 TYP	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
$\Phi$		1.600		0.063
h	0.000	0.380	0.000	0.015

## 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
$\theta$	0°	8°	0°	8°

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