Ultra-Fast High PSRR
High Output Current CMOS Voltage Regulator

LR6208 Series

■ INTRODUCTION

The LR6208 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 LR6208 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.

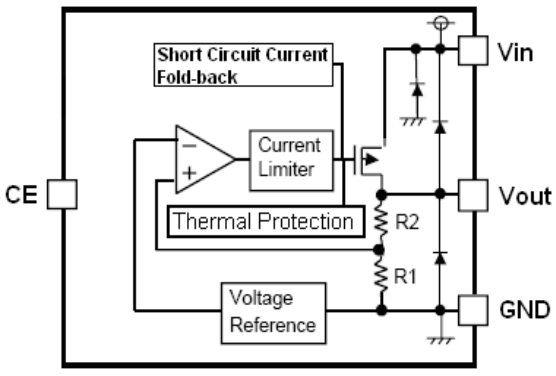
■ FEATURE

- Guaranteed Output Current：1.0A（Typ）
- Low Quiescent Current：90μA（Typ）
- Output Voltage Range：1.5V～5.0V
- Input Voltage Range：2.5V～6.0V
- High Accuracy：±2％（Typ）
- Dropout Voltage：600mV@1.0A（3.0V Typ）
- Excellent Line Regulation：0.02％/V
- High PSRR：50dB (1kHz)
- Built-in Current Limiter & Thermal Protection
- Short Circuit Current Fold-back
- Static safety:：2KV@HBM
- TC：50ppm/℃
- Output Capacitor：Ceramic Compatible

■ APPLICATION

- Battery powered systems
- Portable instrumentations
- Wireless devices
- CD/DVD-ROM,CD/RW
- Battery charger
- PC peripherals

■ BLOCK DIAGRAM

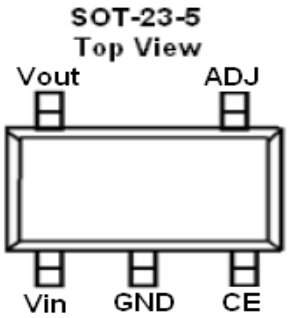


LR6208①②③④

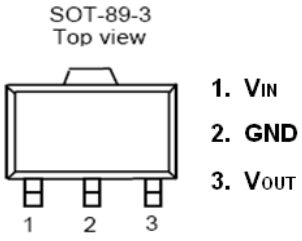
DESIGNATOR	SYMBOL	DESCRIPTION
①	A	Standard
	B	With shutdown function
② ③	Integer	Output Voltage(1.4V~6.0V), e.g. 3.0V= ②:3, ③:0
④	M	Package：SOT25
	P	Package：SOT89
	T1	Package：TO-220
	S	Package：SOT223

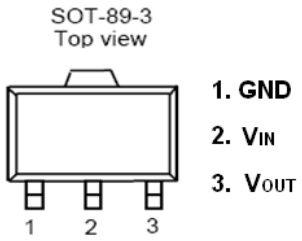
■ PIN CONFIGURATION

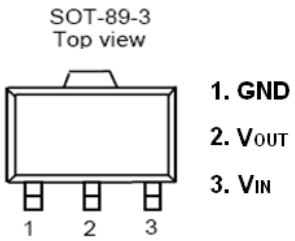
1. SOT23-5L



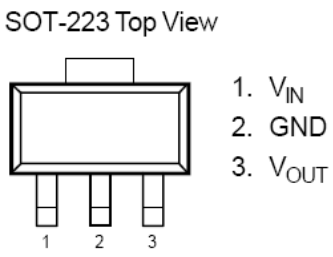
2. SOT-89-3

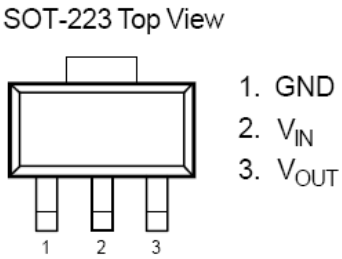


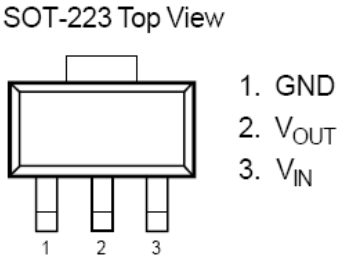




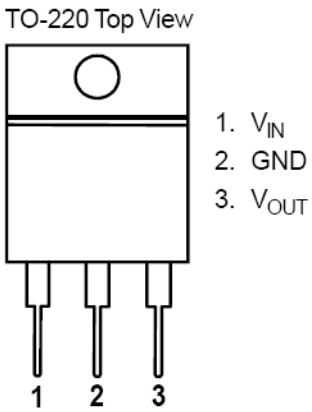
3. SOT-223

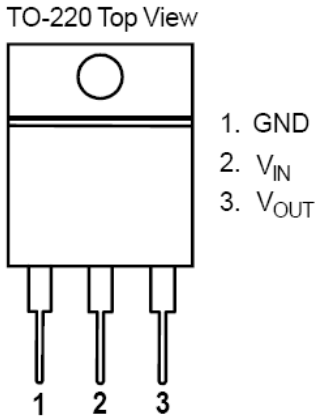


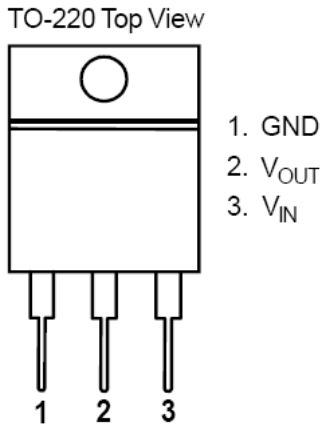




4. TO-220







■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	Rating	UNIT
Input Voltage		V_{IN}	Vss-0.3~Vss+7	V
Output Current		I_{out}	2000	mA
Output Voltage		V_{out}	Vss+0.3~V_{IN}+0.3	V
Power Dissipation	SOT89-3	Pd	600	mW
	SOT223	Pd	750	mW
	TO220	Pd	3000	mW
Operating Temperature		T_{Opr}	-40~+85	℃
Storage Temperature		T_{stg}	-55~+125	℃
Soldering Temperature & Time		T_{solder}	260℃, 10s	

■ ELECTRICAL CHARACTERISTICS

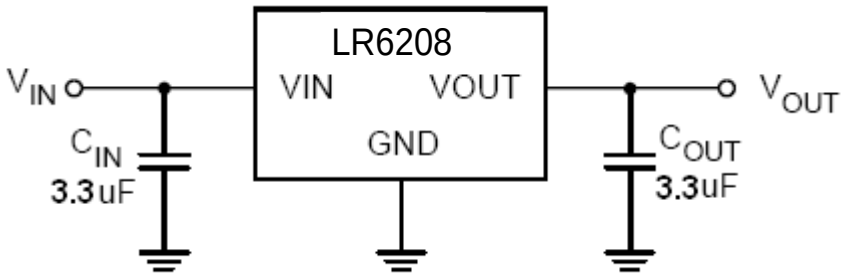
(V_{IN} = V_{OUT}+1V,C_{IN} = C_{OUT} = 3.3μF ,Ta = 25℃,unless otherwise specified)

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}			90	120	μA
Output Current		I_{OUT}	—	1000			mA
Dropout Voltage (Note 3)		V_{dif1}	I_{OUT} =300mA		200		mV
		V_{dif2}	I_{OUT} =1000mA		600		mV
Load Regulation		ΔV_{OUT}	V_{IN}= V_{OUT} +1V, 1mA≤I_{OUT}≤1.0A		30		mV
Line Regulation		$\frac{\Delta V_{OUT}}{\Delta V_{IN} * V_{OUT}}$	I_{OUT} =10mA V_{OUT} +1V≤V_{IN}≤6V		0.02		%/V
Output Voltage Temperature Characteristics		$\frac{\Delta V_{OUT}}{\Delta T * V_{OUT}}$	I_{OUT} =10mA -40≤T≤+85		50		ppm
Short Current		I_{Short}	V_{OUT} =V_{SS}		600		mA
Input Voltage		V_{IN}	—	2.5		6	V
Power Supply Rejection Rate	1kHz	PSRR	I_{OUT}=100mA		50		dB
	10kHz				40		
Thermal Shutdown Temperature		T_{SD}			150		℃
Thermal Shutdown Temperature Hysteresis		$\triangle T_{SD}$			30		℃

NOTE :

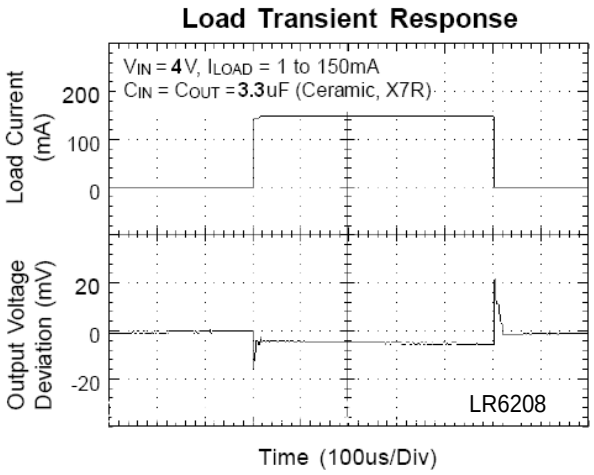
1. V_{OUT}：Specified Output Voltage.
2. V_{OUT} (E) ： Effective Output Voltage (Ie. The Output Voltage When V_{IN} = (V_{OUT} +1.0V) And Maintain A Certain I_{OUT} Value).
3. V_{dif}： The Difference Of Output Voltage And Input Voltage When Input Voltage Is Decreased Gradually Till Output Voltage Equals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

■ TYPICAL APPLICATION CIRCUIT

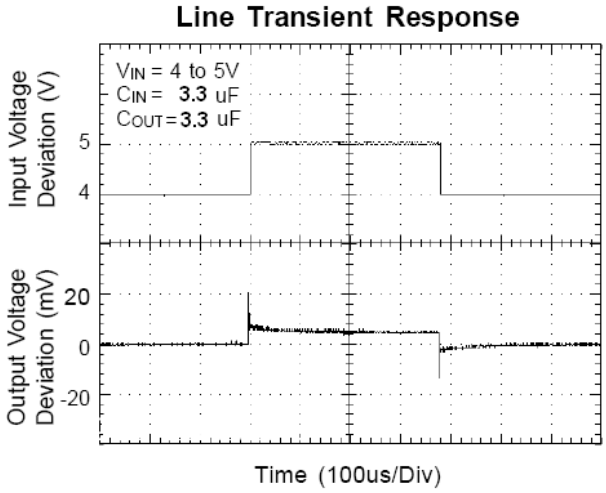


■ Typical Performance Characteristics

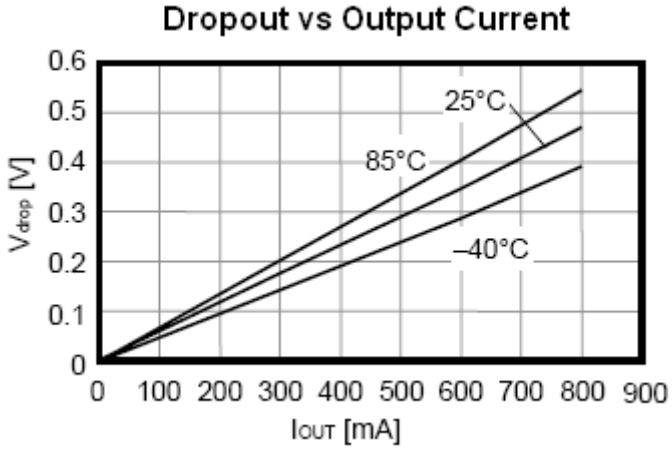
（1）Load Transient Response



（2）Input Transient Response

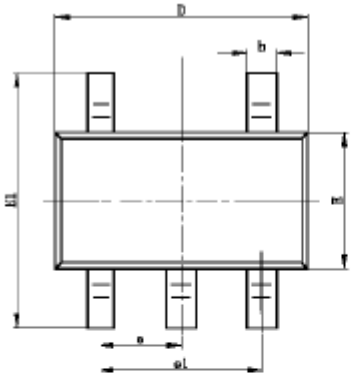


（3）Dropout Voltage vs Output Current



■ PACKAGING INFORMATION

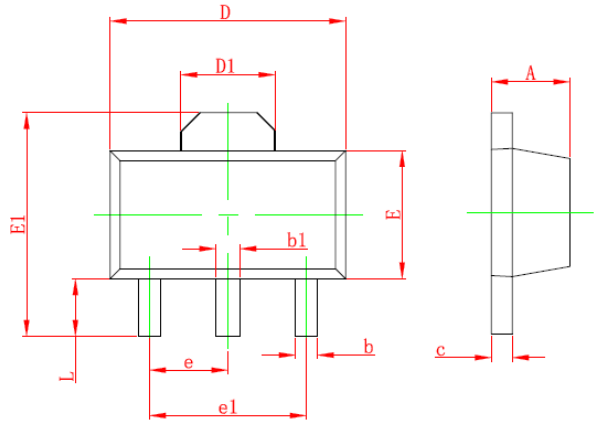
• SOT23-5L



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-89-3L

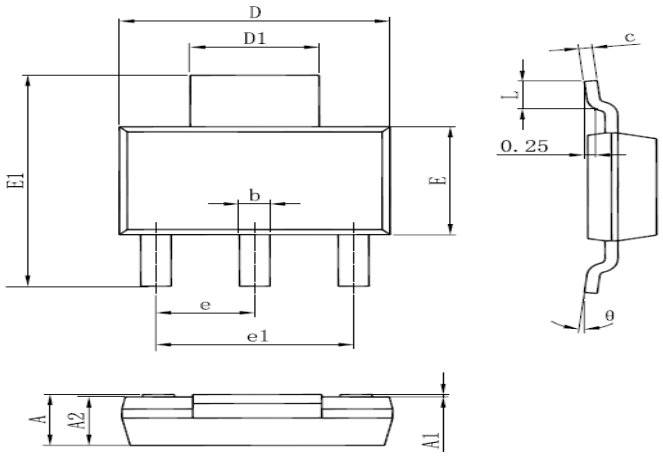
SOT-89-3L PACKAGE OUTLINE DIMENSIONS



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

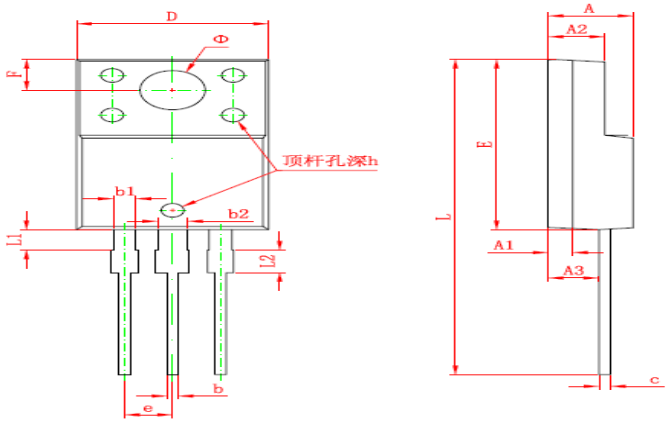
SOT-223 PACKAGE OUTLINE DIMENSIONS



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

TO-220F PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	4.300	4.700	0.169	0.185
A1	1.300 REF		0.051 REF	
A2	2.800	3.200	0.110	0.126
A3	2.500	2.900	0.098	0.114
b	0.500	0.750	0.020	0.030
b1	1.100	1.350	0.043	0.053
b2	1.500	1.750	0.059	0.069
c	0.500	0.750	0.020	0.030
D	9.960	10.360	0.392	0.408
E	14.800	15.200	0.583	0.598
e	2.540 TYP		0.100 TYP	
F	2.700 REF		0.106 REF	
Φ	3.500 REF		0.138 REF	
h	0.000	0.300	0.000	0.012
L	28.000	28.400	1.102	1.118
L1	1.700	1.900	0.067	0.075
L2	1.900	2.100	0.075	0.083