

**Ultra Fast High PSRR  
Low Noise CMOS Voltage Regulator**

**LR6200 Series**

**■ INTRODUCTION**

The **LR6200 Series** are a group of positive voltage regulators manufactured by CMOS technologies with high ripple rejection, ultra low noise, low power consumption and low dropout voltage, which can prolong battery life in portable electronics. A noise bypass pin is available for further reduction output noise. The LR6200 series have a quick start circuit which makes them have fast turn-on time less than 100µs. The series are very suitable for the battery-powered equipments, such as RF applications and other systems requiring a quiet voltage source.

**■ APPLICATION**

- Cellular and Smart Phones
- MP3,MP4 Player
- Laptop, Palmtops and PDA
- Radio control systems
- Digital Still and Video Cameras
- Battery-Powered Equipment

**■ ORDER INFORMATION**

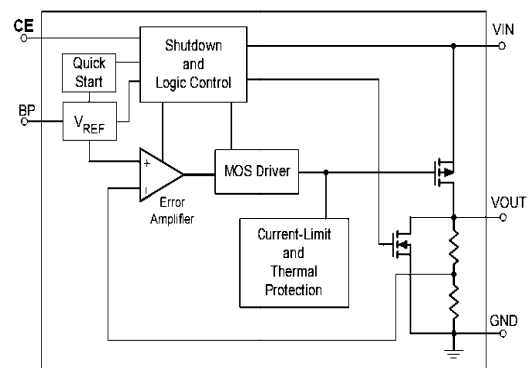
LR6200 ①②③④

DESIGNATOR	SYMBOL	DESCRIPTION
①	A	Standard
②③	Integer	Output Voltage e.g. 1.8V=②:1, ③:8
④	M	Package:SOT23-5

**■ FEATURE**

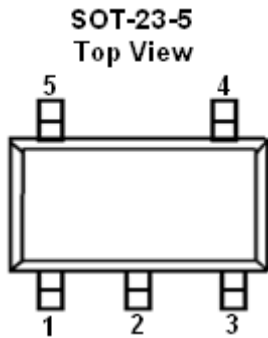
- Low Output Noise: 30µV<sub>RMS</sub> (10Hz~100kHz)
- Low Dropout Voltage: 150mV@150mA
- Quick Start-up: less than 100µs
- Low Quiescent Current: 70µA
- High Ripple Rejection: 70dB@1kHz
- Excellent Line and Load Transient Response
- Operating Voltage: 2.5V~5.5V
- Output Voltage: 1.5 ~ 5.0V
- High Accuracy: ±2% (Typ)
- Built-in Current Limiter, Short-Circuit and Thermal Protection
- TTL- Logic-Controlled Shutdown Input

**■ BLOCK DIAGRAM**



■ PIN CONFIGURATION

LR6200 Series



PIN NUMBER	PIN NAME	FUNCTION
1	V <sub>IN</sub>	Power Input
2	GND	Ground
3	CE	Chip Enable
4	BP	Bypass Capacitor Connection Pin
5	V <sub>OUT</sub>	Output Pin

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	Rating	UNIT
Input Voltage		V <sub>IN</sub>	6	V
Output Current		I <sub>out</sub>	500	mA
CE Voltage		V <sub>CE</sub>	- 0.3~V <sub>IN</sub> + 0.3	V
Output Voltage		V <sub>out</sub>	- 0.3~V <sub>IN</sub> + 0.3	V
Power Dissipation	SOT23	Pd	400	mW
Operating Temperature		T <sub>Opr</sub>	-40~+85	°C
Storage Temperature		T <sub>stg</sub>	-55~+125	°C
Soldering Temperature & Time		T <sub>solder</sub>	260°C, 10s	

■ TYPICAL APPLICATION

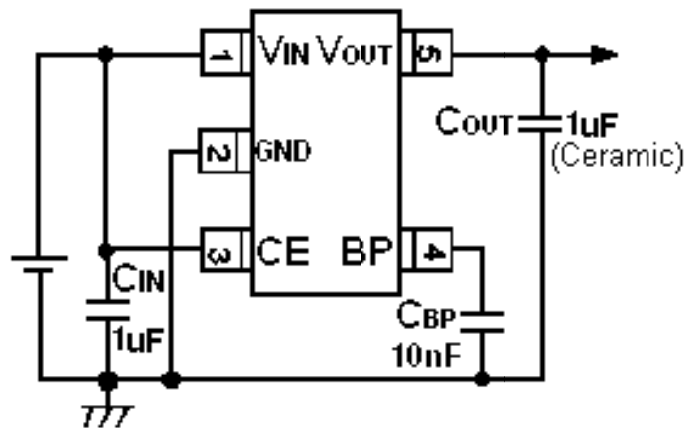


Figure 1. Typical Application Circuit

## LR6200 Series

### ■ ELECTRICAL CHARACTERISTIC

( $V_{IN} = V_{OUT} + 1V$ ,  $C_{IN} = C_{OUT} = 1\mu F$ ,  $C_{BP} = 10nF$ ,  $T_A = 25^\circ C$ , 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	$I_{SS}$			70	120	$\mu A$
Standby Current	$I_{STBY}$	CE = GND			0.1	$\mu A$
Output Current	$I_{OUT}$	—	300			mA
Dropout Voltage (Note 3)	$V_{dif}$	$I_{OUT} = 150mA$ $V_{OUT} \geq 2.8V$		150		mV
Load Regulation	$\Delta V_{OUT}$	$V_{IN} = V_{OUT} + 1V$ , $1mA \leq I_{OUT} \leq 100mA$		10		mV
Line Regulation	$\frac{\Delta V_{OUT}}{V_{OUT} \Delta V_{IN}}$	$I_{OUT} = 10mA$ $V_{OUT} + 1V \leq V_{IN} \leq 6V$		0.01	0.2	%/V
Output Voltage Temperature Characteristics	$\frac{\Delta V_{OUT}}{\Delta T} \cdot \frac{1}{V_{OUT}}$	$I_{OUT} = 10mA$ $-40 \leq T \leq +85$		100		ppm
Short Current	$I_{Short}$	$V_{OUT} = V_{SS}$		50		mA
Input Voltage	$V_{IN}$	—	2.5		5.5	V
Power Supply Rejection Rate	1kHz	PSRR	$I_{OUT} = 100mA$	70		dB
	10kHz			50		
Thermal Shutdown Temperature	$T_{SD}$			150		$^\circ C$
Thermal Shutdown Temperature Hysteresis	$\Delta T_{SD}$			30		$^\circ C$
CE "High" Voltage	$V_{CE"H"}$		1.5		$V_{IN}$	V
CE "Low" Voltage	$V_{CE"L"}$				0.3	V

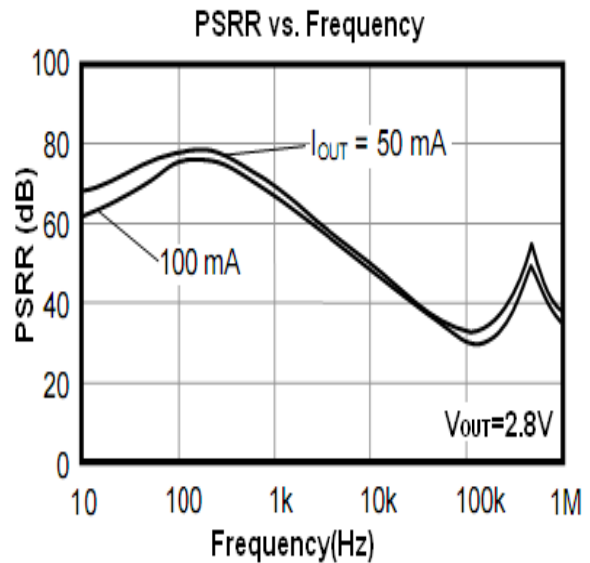
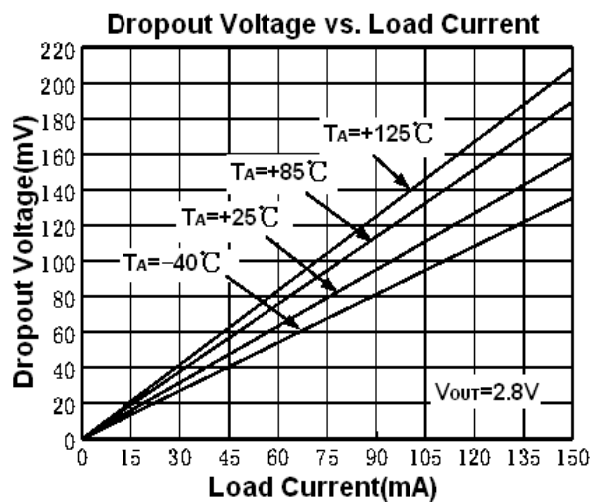
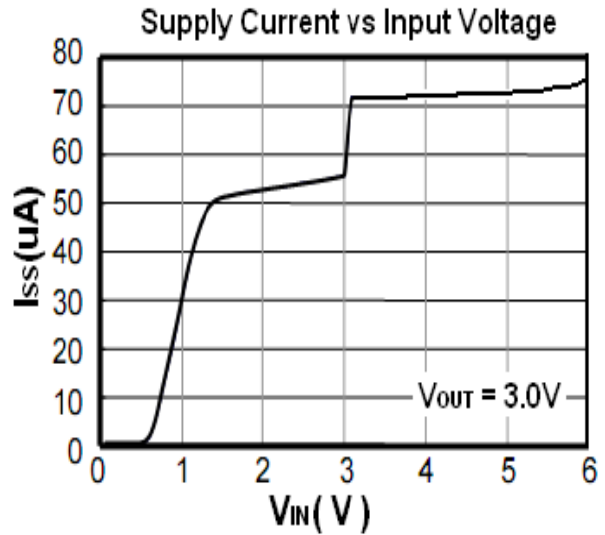
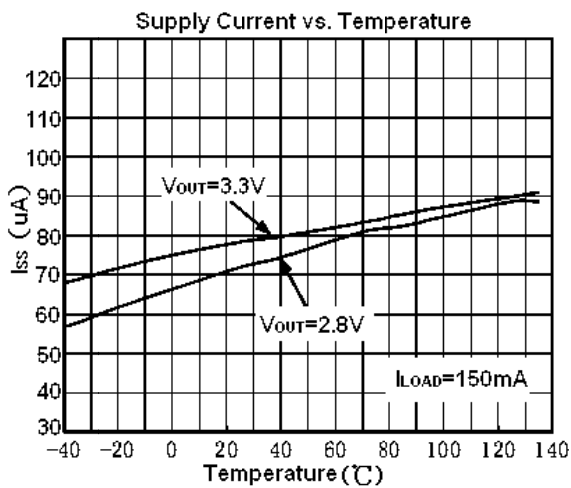
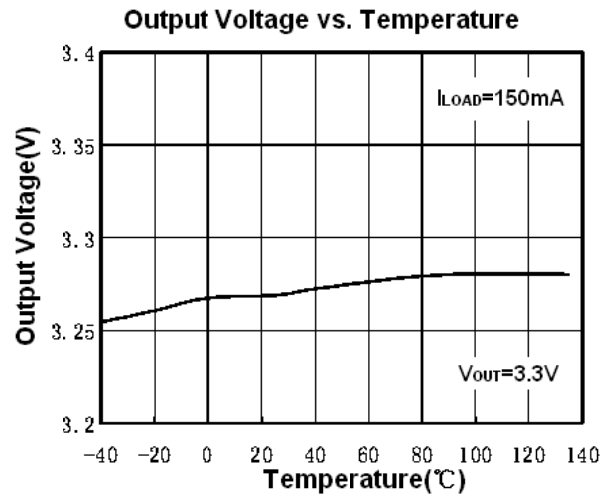
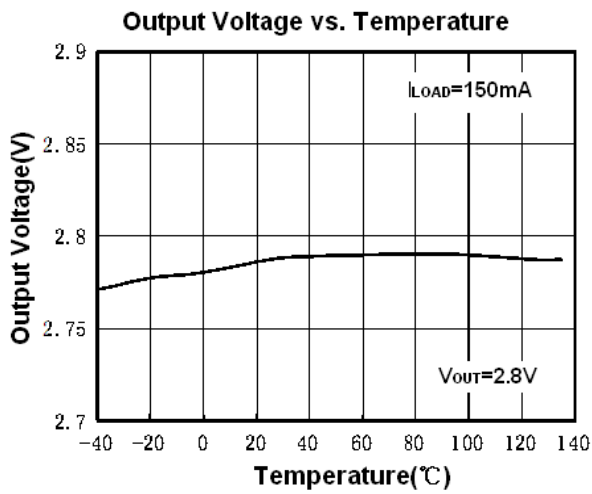
#### NOTE :

- $V_{OUT}$ : 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).
- $V_{dif}$ : 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 Performance Characteristics

LR6200 Series

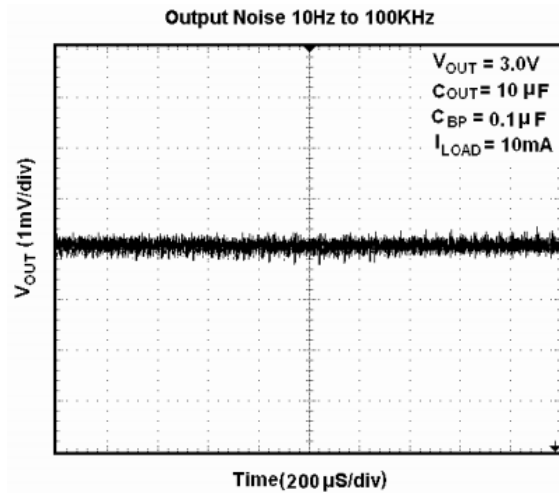
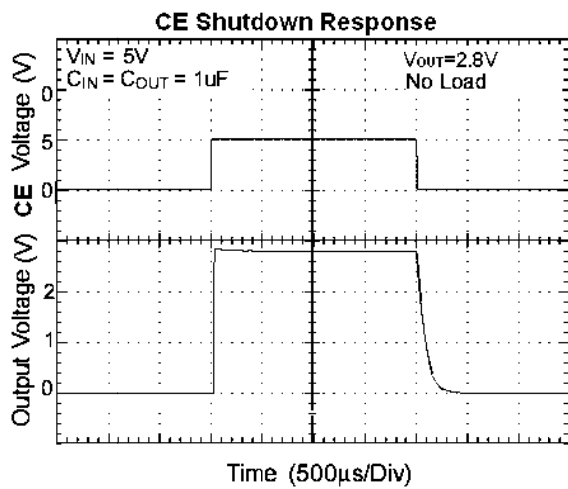
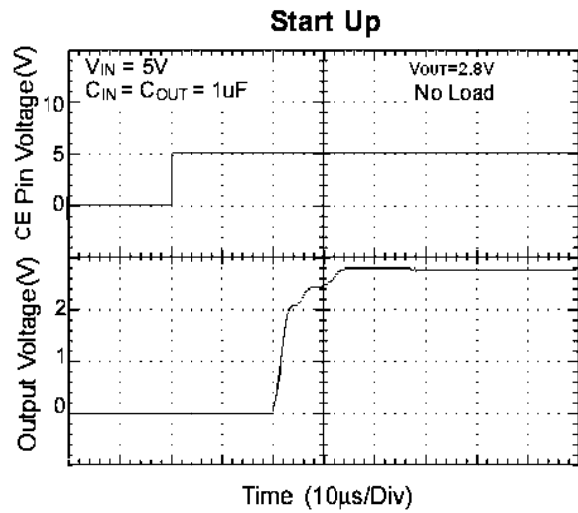
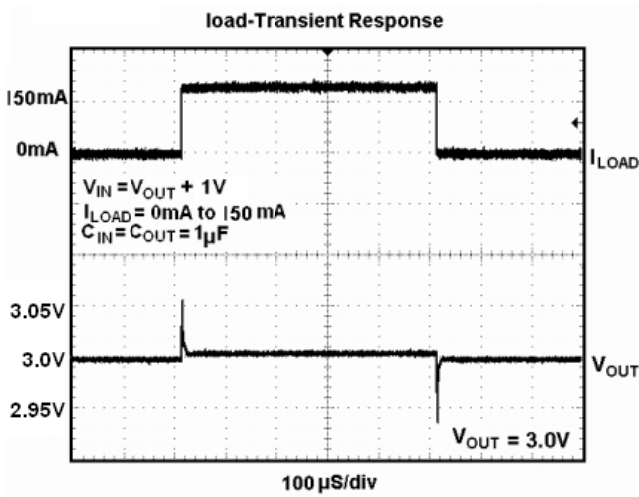
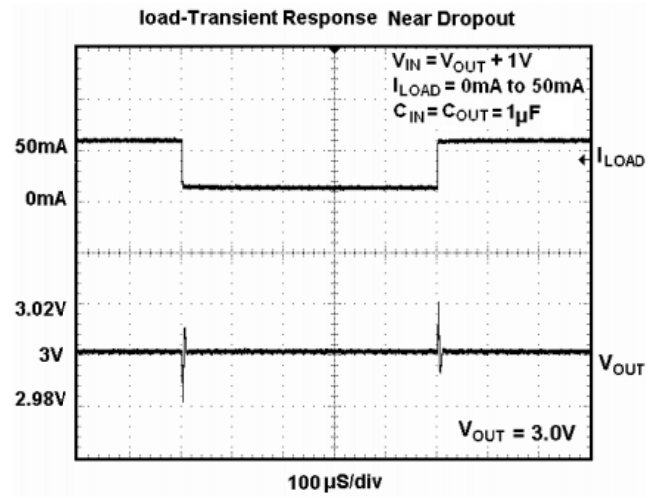
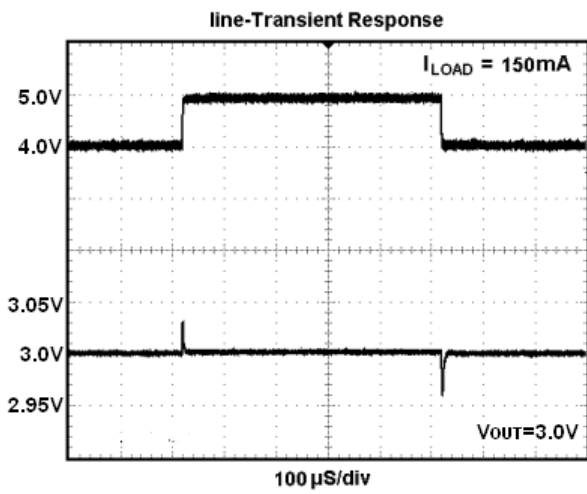
( Test Figure 1 above unless otherwise specified )

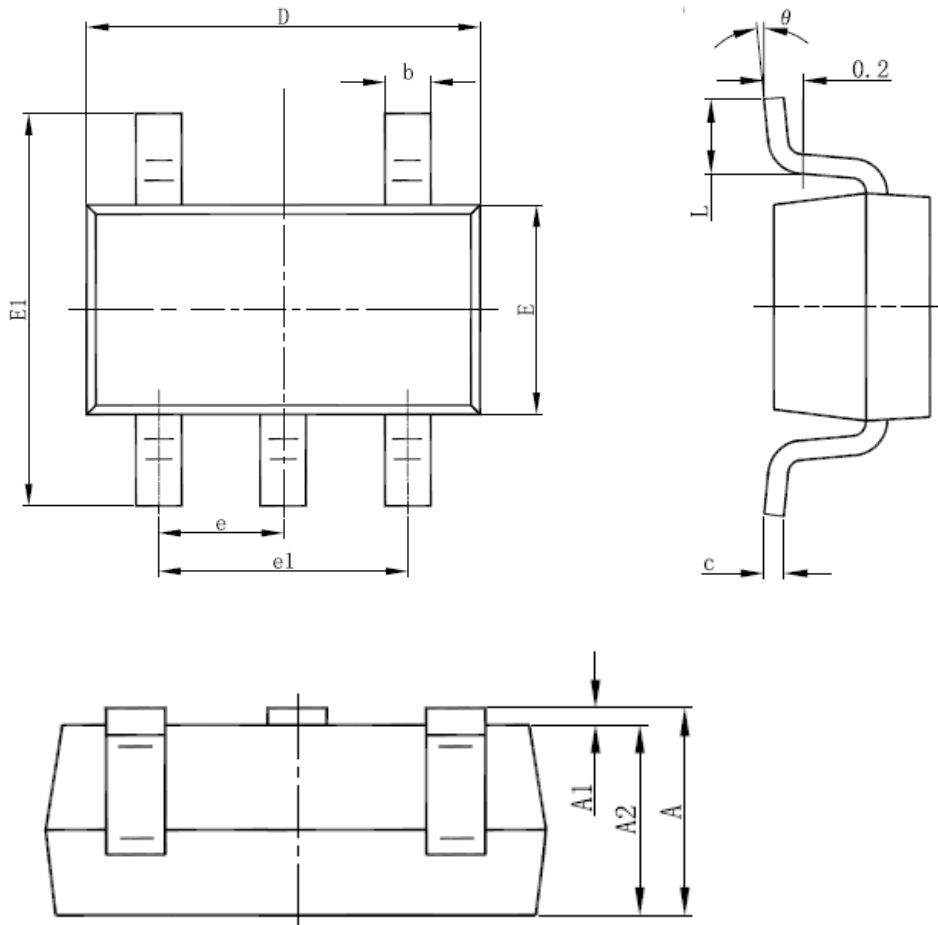


## Typical Performance Characteristics

## LR6200 Series

( Test Figure 1 above unless otherwise specified )



**■ PACKAGING INFORMATION**
**LR6200 Series**
**● 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°