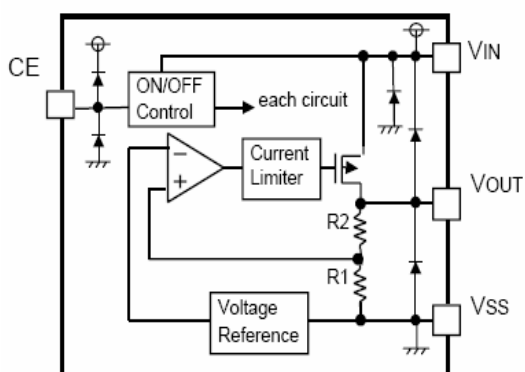# LR6209

■ INTRODUCTION

The LR6209 Series are a group of positive voltage regulators manufactured by CMOS technologies with high ripple rejection, extremely low power consumption and low dropout voltage, which provide large output currents even when the difference of the input-output voltage is small. Each of the LR6209 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, such as Portable/Palm computers, Portable consumer equipments, industry equipments and so on, which want to prolong the using life of the battery.

■ FEATURE

- Standby Current : Less than 0.1μA (TYP.)
- Maximum Output Current：250mA（Typ）
- Output Voltage Range：1.4V～6.0V，
  （selectable in 0.1V steps）
- High Accuracy：±2％（Typ）
- Dropout Voltage：160mV@100mA（3.0V Typ）
- Excellent Line Regulaion：0.1％/V
- High Ripple Rejection : 62dB (10kHz)
- Buit-in Chip Current Limit & Short Protect Circuit
- Static safety: 2KV@HBM
- TC：100ppm/℃

■ APPLICATION

- Battery powered systems
- Portable instrumentations
- Reference Voltage Sources
- Radio control systems
- Portable/Palm computers
- Portable consumer equipments

■ BLOCK DIAGRAM

■ ORDER INFORMATION

LR6209 ①②③④

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 : SOT23,SOT25
	P	Package : SOT89
	T	Package : TO-92

LR6209

■ PIN CONFIGURATION
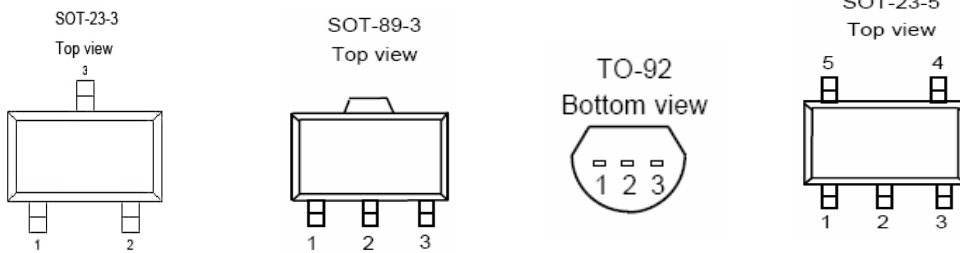
LR6209A

PIN NUMBER				PIN NAME	FUNCTION
SOT23-3	SOT89-3		TO92		
M	P	P1	T		
1	1	1	1	Vss	Ground
2	3	2	3	Vout	Output
3	2	3	2	Vin	Power input

LR6209B

PIN NUMBER	PIN NAME	FUNCTION
SOT23-5		
1	Vin	Power input
2	Vss	Ground
3	CE	Chip Enable Pin
4	NC	No Connection
5	Vout	Output Pin

■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	DESCRIPTION	UNIT
Input Voltage		V_{IN}	10	V
Output Current		I_{out}	500	mA
Output Voltage		V_{out}	Vss-0.3~Vout+0.3	V
Power Dissipation	SOT23	Pd	250	mW
	SOT89	Pd	500	mW
	TO92	Pd	500	mW
Operating Temperature		T_{Opr}	-40~+85	℃
Storage Temperature		T_{stg}	-55~+125	℃
Soldering Temperature & Time		T_{solder}	260℃, 10s	

■ ELECTRICAL CHARACTERISTICS

**L R 6209 Series**   **Ta=25℃**

| PARAMETER	SYMBOL	CONDITIONS	MIN.	TYP.	MAX.	UNITS
Output Voltage	V_{OUT}(E) (Note 2)	I_{OUT}=40mA V_{IN}= V_{OUT} +1V	V_{OUT} *0.98	V_{OUT}	V_{OUT} *1.02	V
Supply Current	I_{SS}	V_{CE}=V_{IN}=Vout+1V		3.0		μ A
Standby Current	$I_{Standby}$	V_{CE}=V_{SS}			0.1	μ A
Output Current	Iout	—	250			mA
Dropout Voltage (Note 3)	V_{dif1}	I_{OUT} =40mA		80		mV
	V_{dif2}	I_{OUT} =100mA		160		mV
Load Regulation	$\underline{\Delta}V_{OUT}$	V_{IN}= V_{OUT} +1V, 1mA≤I_{OUT}≤100mA		10		mV
Line Regulation	$\dfrac{\underline{\Delta}V_{OUT}}{\Delta V_{IN} * V_{OUT}}$	I_{OUT} =40mA V_{OUT} +1V≤V_{IN}≤10V		0.1		%/V
Output Voltage Temperature Characteristics	$\dfrac{\underline{\Delta}V_{OUT}}{\Delta T * V_{OUT}}$	I_{OUT} =40mA -40≤T≤+85		100		ppm
Short Current	I_{Short}	V_{OUT} =V_{SS}		100		mA
Input Voltage	V_{IN}	—			8	V
CE "High" Voltage	V_{CE} "H"		1.0		V_{IN}	V
CE "Low" Voltage	V_{CE} "L"				0.2	V

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).

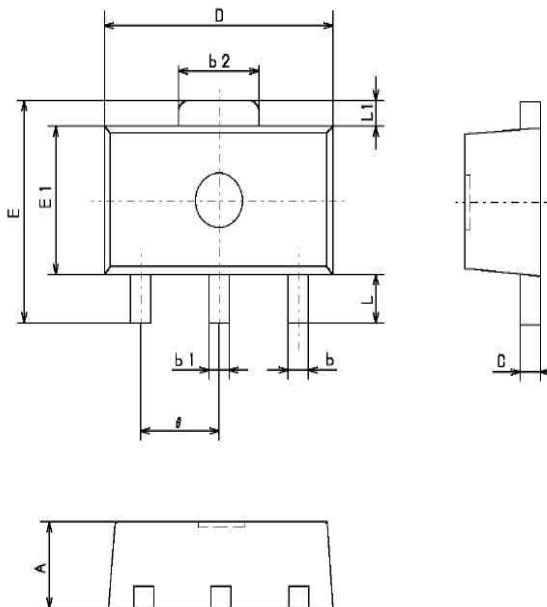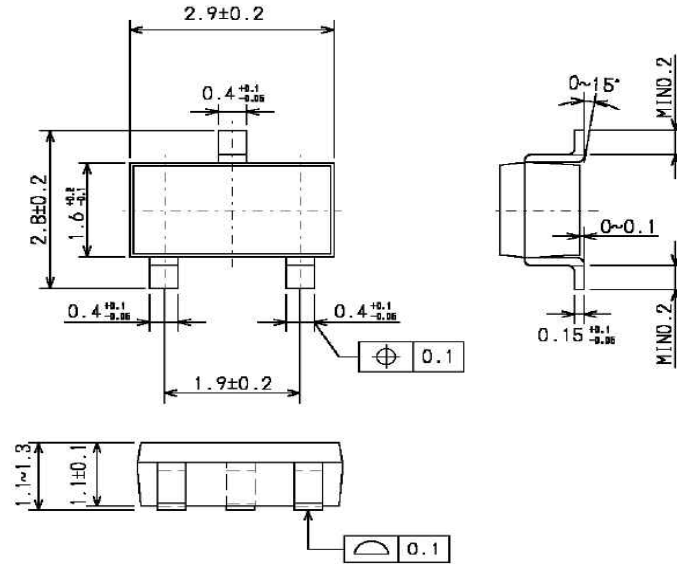## ■ TYPICAL APPLICATION CIRCUIT
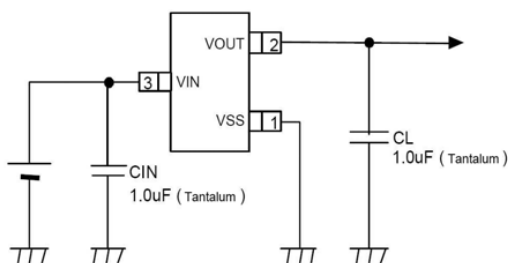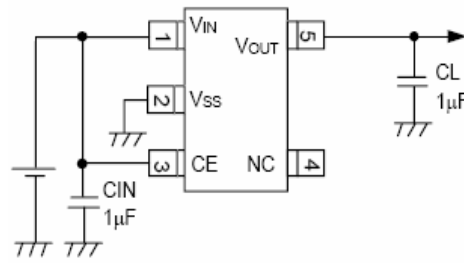
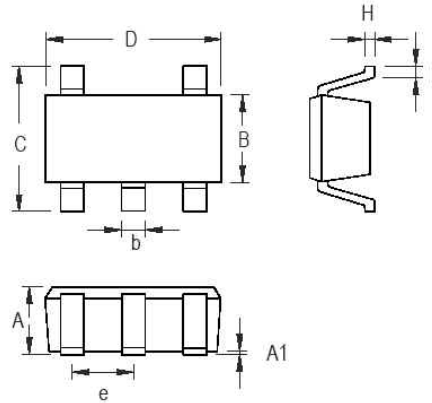**LR6209A Series**   **LR6209B Series**

LR6209

■ PACKAGING INFORMATION

● SOT-23

Symbols	Dimensions in millimeters		
	Min	Nom	Max
A	1.40	1.50	1.60
b	0.36	0.42	0.48
b1	0.41	0.47	0.53
b2	1.40	1.60	1.75
C	0.38	0.40	0.43
D	4.40	4.50	4.60
E	—	—	4.25
E1	2.40	2.50	2.60
θ	1.40	1.50	1.60
L	1.80	—	—
L1	—	0.40	—

LR6209

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.889	1.295	0.035	0.051
A1	0.000	0.152	0.000	0.006
B	1.397	1.803	0.055	0.071
b	0.356	0.559	0.014	0.022
C	2.591	2.997	0.102	0.118
D	2.692	3.099	0.106	0.122
e	0.838	1.041	0.033	0.041
H	0.080	0.254	0.003	0.010
L	0.300	0.610	0.012	0.024

● **TO92**

DIMENSIONS ARE IN MILLIMETERS