

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.

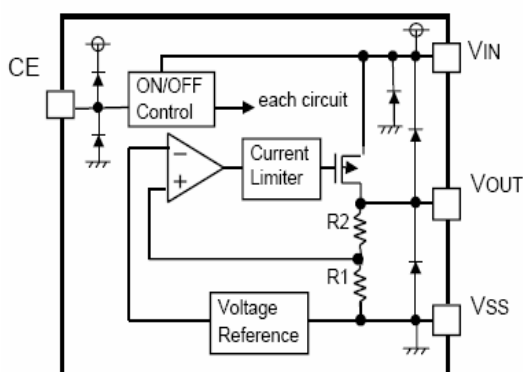
■ FEATURE

- Standby Current : Less than 0.1 μ A (TYP.)
- Maximum Output Current: 250mA (Typ)
- Output Voltage Range: 1.4V~6.0V,
(selectable in 0.1V steps)
- High Accuracy: $\pm 2\%$ (Typ)
- Dropout Voltage: 160mV@100mA (3.0V Typ)
- Excellent Line Regulation: 0.1%/V
- High Ripple Rejection : 62dB (10kHz)
- Built-in Chip Current Limit & Short Protect Circuit
- Static safety: 2KV@HBM
- TC: 100ppm/ $^{\circ}$ C

■ APPLICATION

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

■ BLOCK DIAGRAM



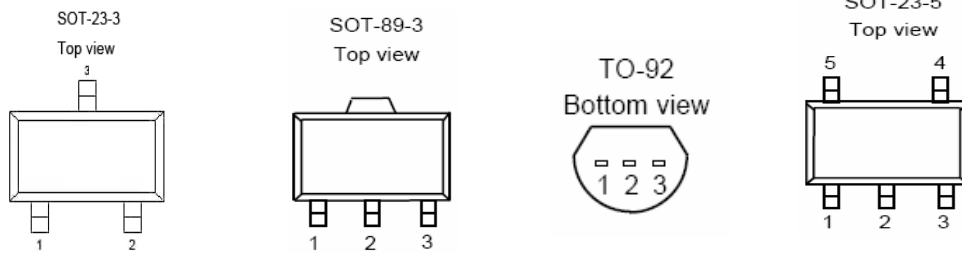
■ ORDER INFORMATION

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

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■ 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

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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}	$V_{ss}-0.3 \sim V_{out}+0.3$	V
Power Dissipation	SOT23	P_d	250
	SOT89	P_d	500
	TO92	P_d	500
Operating Temperature	T_{Opr}	-40~+85	°C
Storage Temperature	T_{stg}	-55~+125	°C
Soldering Temperature & Time	T_{solder}	260°C, 10s	

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ELECTRICAL CHARACTERISTICS

L R 6209 Series

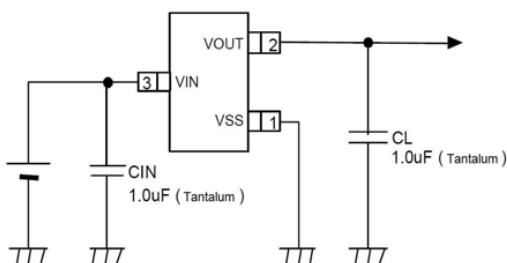
Ta=25°C

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} =V _{OUT} +1V		3.0		μ A
Standby Current	I _{Standby}	V _{CE} =V _{SS}			0.1	μ A
Output Current	I _{out}	—	250			mA
Dropout Voltage (Note 3)	V _{dif1}	I _{OUT} =40mA		80		mV
	V _{dif2}	I _{OUT} =100mA		160		mV
Load Regulation	ΔV _{OUT}	V _{IN} = V _{OUT} +1V, 1mA≤I _{OUT} ≤100mA		10		mV
Line Regulation	$\frac{\Delta V_{OUT}}{\Delta V_{IN} * V_{OUT}}$	I _{OUT} =40mA V _{OUT} +1V≤V _{IN} ≤10V		0.1		%/V
Output Voltage Temperature Characteristics	$\frac{\Delta V_{OUT}}{\Delta T * V_{OUT}}$	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

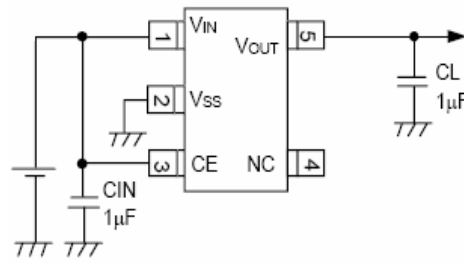
NOTE :

1. V_{OUT}: Specified Output Voltage.
2. V_{OUT} (E) : Effective Output Voltage (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 CIRCUIT



LR6209A Series

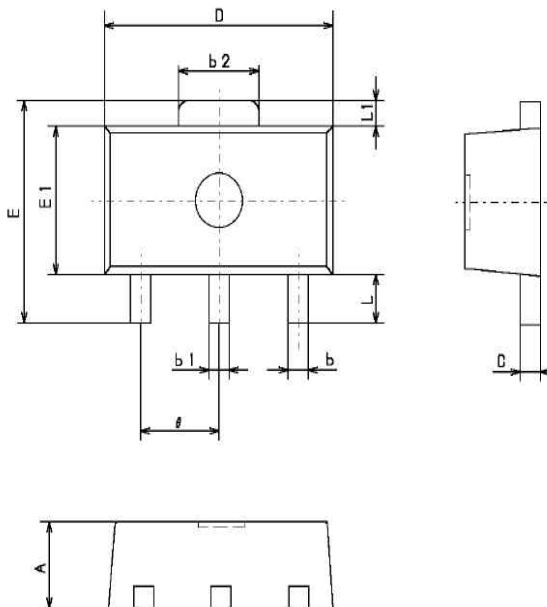
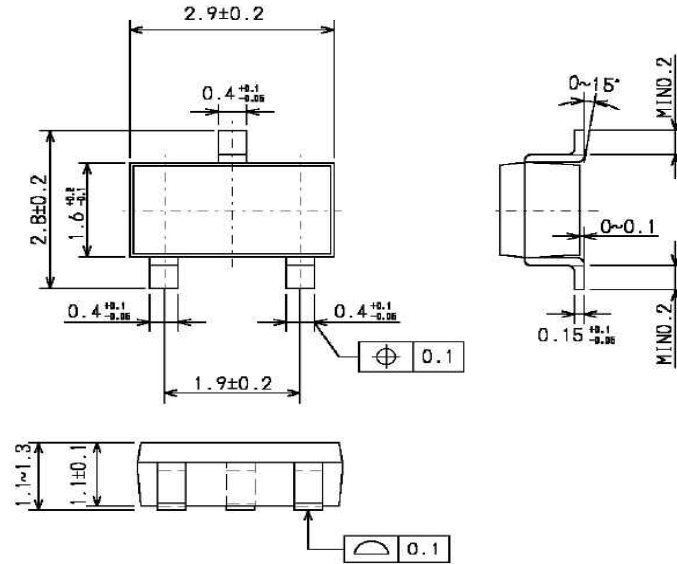


LR6209B Series

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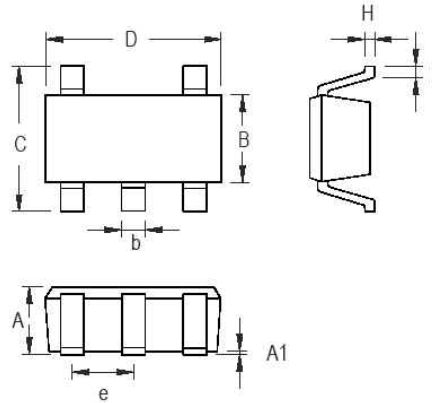
■ PACKAGING INFORMATION

- 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	—

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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

