



## CJ809 Series

### ■ INTRODUCTION

The CJ809 Series is a series of high-precision voltage detectors with a built-in delay time generator of fixed time, developed using CMOS process.

The detection voltage is fixed internally, with an accuracy of  $\pm 2.0\%$ . Internal oscillator and counter timer can delay the release signal without external parts, delay times 200 ms Two output forms, NMOS open-drain and CMOS output are available.

### ■ APPLICATIONS

- Memory battery back-up circuits
- Power-on reset circuits
- Power failure detection
- Power monitor for portable equipment such as notebook computers, digital cameras, PDA, and cellular phones.
- Constant voltage power monitors for cameras, video equipment and communication devices.
- Power monitor for microcomputers and reset for CPUs.

### ■ FEATURES

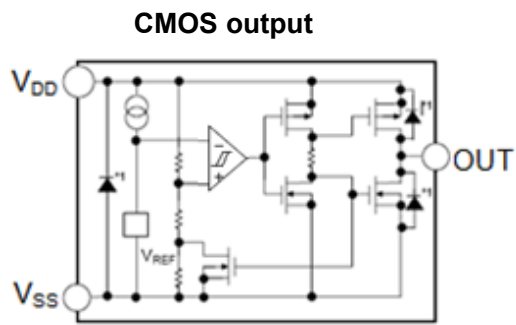
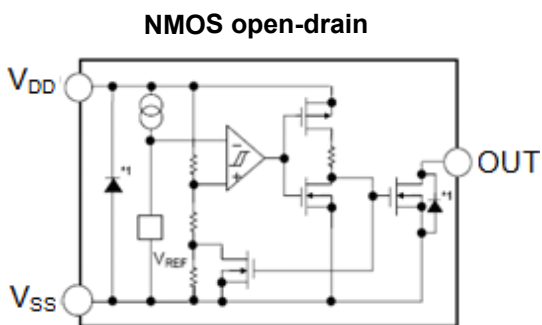
- Ultra-low current consumption:  
0.9 $\mu$ A@3.5V(Typ.)
- High-precision detection voltage:  $\pm 2.0\%$
- Hysteresis characteristics:  $-V_{DET} \times 5\%$ (Typ.)
- Operating voltage range: 0.95V to 7.0V
- Detection voltage: 1.5V to 6.0V (10mV step)
- Delay time: 210 ms (Typ.)
- Output forms:  
NMOS open-drain output (Active Low)  
CMOS output (Active Low)

### ■ ORDER INFORMATION

#### CJ809 ①②③④⑤

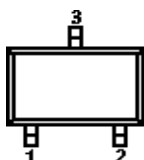
DESIGNATOR	SYMBOL	DESCRIPTION
①	C	CMOS
	N	NMOS open drain
②③④	Integer	Detection Voltage “④”elide when it is “0” e.g. 3.0V=②:3, ③:0 2.93V=②:2, ③:9, ④:3
⑤	M	Package: SOT-23-3L
	P	Package: SOT-89-3L
	N	Package: SOT-23

## ■ BLOCK DIAGRAMS



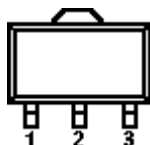
## ■ PIN CONFIGURATION

**SOT-23**  
**SOT-23-3L**



PIN NO.	N/M	FUNCTION
1	$V_{SS}$	Ground
2	$V_{OUT}$	Voltage detection output pin
3	$V_{DD}$	Voltage input pin

**SOT-89-3L**



PIN NO.	P	FUNCTION
1	$V_{OUT}$	Voltage detection output pin
2	$V_{DD}$	Voltage input pin
3	$V_{SS}$	Ground

## Electrical Characteristics

### ■ ABSOLUTE MAXIMUM RATINGS

(Ta=25°C, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNITS
Power supply voltage		V <sub>DD</sub>	V <sub>SS</sub> -0.3 ~ V <sub>SS</sub> +8	V
Output voltage		V <sub>OUT</sub>	V <sub>SS</sub> -0.3 ~ V <sub>SS</sub> +8	V
Power dissipation	SOT-23-3L	PD	250	mW
	SOT-89-3L		600	
	SOT-23		200	
Operating ambient temperature		T <sub>opr</sub>	-40 ~ +85	°C
Storage temperature		T <sub>stg</sub>	-40 ~ +125	°C
Soldering Temperature & Time		T <sub>solder</sub>	260°C, 10s	

### ■ ELECTRICAL CHARACTERISTICS

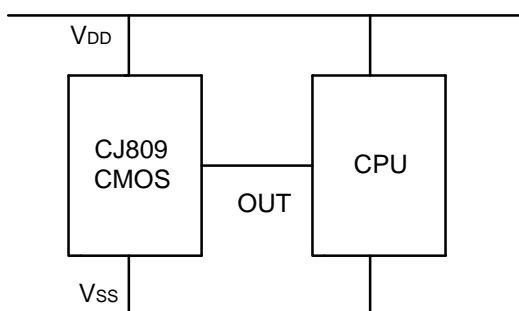
(Ta=25°C, unless otherwise specified)

PARAMETER	SYMBOL	CONDITIONS		MIN	TYP	MAX	UNITS
Detection voltage*1	-V <sub>DET</sub>	—		-V <sub>DET(S)</sub> ×0.98	-V <sub>DET(S)</sub>	-V <sub>DET(S)</sub> ×1.02	V
Hysteresis width	V <sub>HYS</sub>	—		0.02× -V <sub>DET(S)</sub>	0.05× -V <sub>DET(S)</sub>	0.08× -V <sub>DET(S)</sub>	V
Current consumption	I <sub>SS</sub>	V <sub>DD</sub> = -V <sub>DET</sub> +0.5V	C/N20~26	—	1.0	3.0	uA
			C/N 26~39	—	1.2	3.2	uA
			C/N 39~60	—	1.5	3.5	uA
Operating voltage	V <sub>DD</sub>	—		0.95	—	7	V
Output current	I <sub>OUT</sub>	NMOS: V <sub>OUT</sub> =0.5 V V <sub>DD</sub> =-V <sub>DET</sub> +0.5V	C/N 20~26	3.0	13.0	—	mA
			C/N 26~39	3.0	15.0	—	mA
			C/N 39~60	3.0	18.0	—	mA
		PMOS: V <sub>DD</sub> -V <sub>OUT</sub> =0.5 V V <sub>DD</sub> =-V <sub>DET</sub> -0.5 V	C/N 20~26	1.5	4.0	—	mA
			C/N 26~39	1.5	6.0	—	mA
			C/N 39~60	1.5	8.0	—	mA
Leakage current	I <sub>LEAK</sub>	Only for NMOS open-drain output products, V <sub>DD</sub> =6.0 V, V <sub>OUT</sub> =6.0 V			—	1.0	uA
temperature coefficient		Ta=-40°C ~+85°C		—	±120	±360	ppm/°C
Delay time	T <sub>PLH</sub>			130	210	290	ms

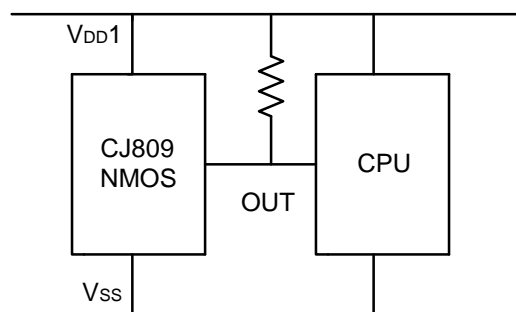
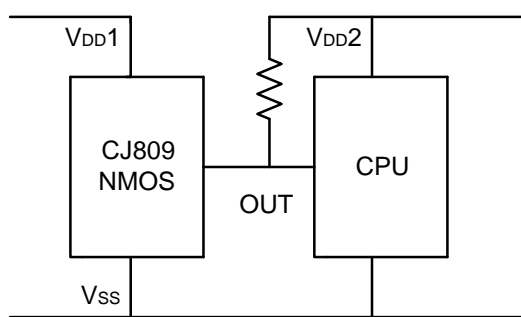
\*1. -V<sub>DET</sub>: Actual detection voltage value, -V<sub>DET(S)</sub>: Specified detection voltage value

## ■ TYPICAL APPLICATION CIRCUITS

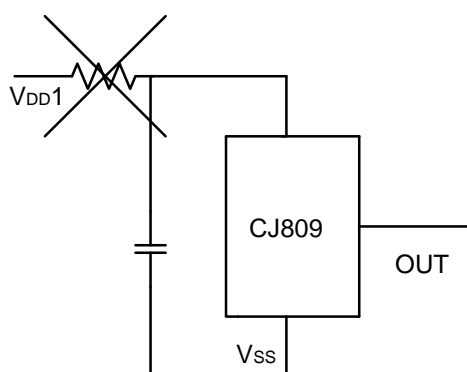
### 1、CMOS output:



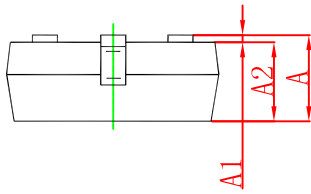
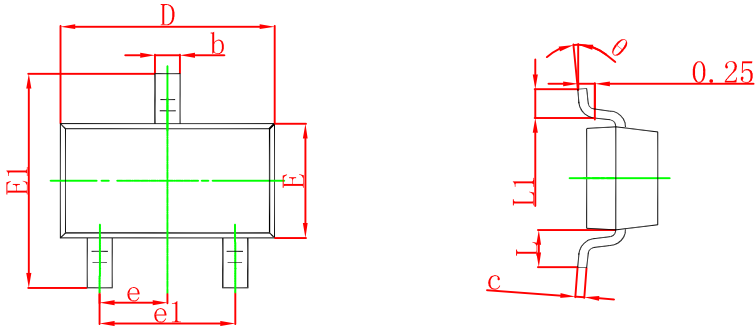
### 2、NMOS open-drain



### 3. Forbidden Circuits

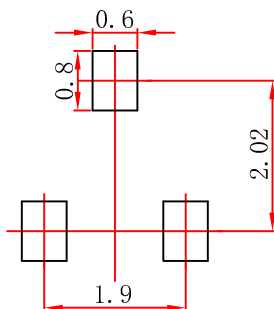


## SOT-23 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
$\theta$	0°	8°	0°	8°

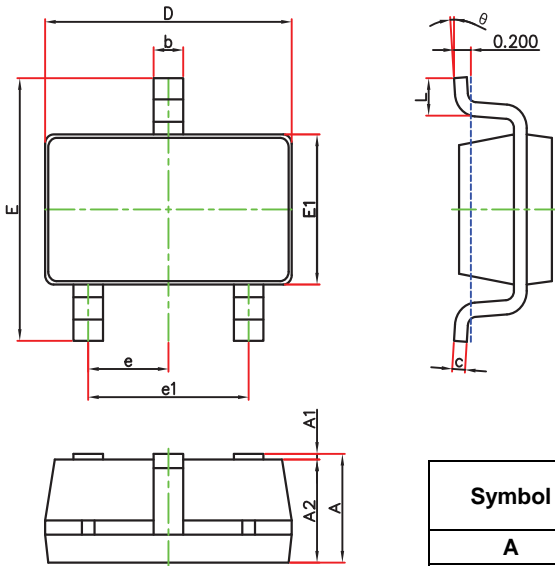
## SOT-23 Suggested Pad Layout



Note:

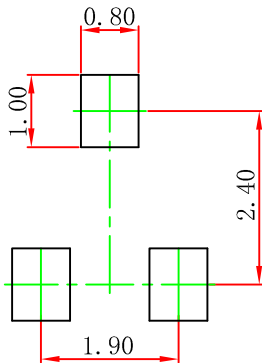
1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05$  mm.
3. The pad layout is for reference purposes only.

## SOT-23-3L 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	2.650	2.950	0.104	0.116
E1	1.500	1.700	0.059	0.067
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°

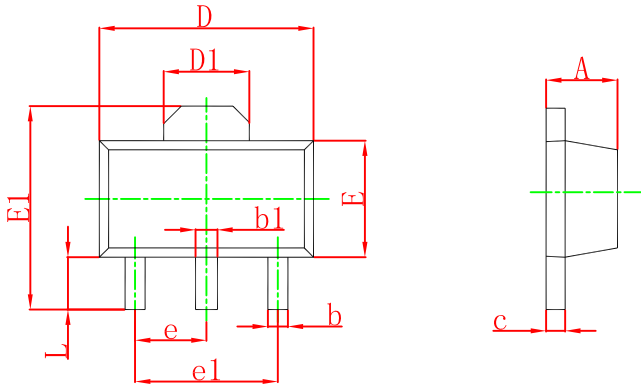
## SOT-23-3L Suggested Pad Layout



Note:

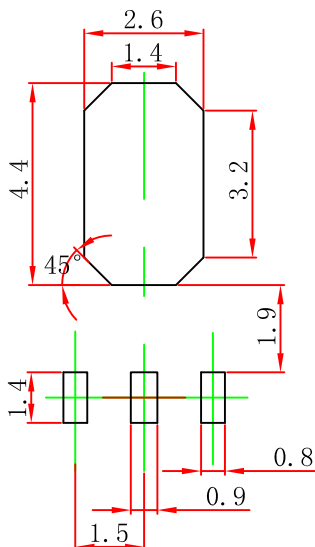
1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

## 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		0.060 TYP	
e1	3.000 TYP		0.118 TYP	
L	0.900	1.200	0.035	0.047

## SOT-89-3L Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05$  mm.
  3. The pad layout is for reference purposes only.

# DISCLAIMER

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