



## General Description

The MAX809 series are highly accurate, low power consumption voltage detectors, manufactured using CMOS and laser trimming technologies.

A delay circuit is built-in to each detectors.

Detect voltage is extremely accurate with minimal temperature drift.

Since the delay circuit is built-in, peripherals are unnecessary and high density mounting is possible.

## Pin Assignment



SOT-23

| PIN NO. | PIN NAME | FUNCTION       |
|---------|----------|----------------|
| 1       | GND      | GND pin        |
| 2       | VCC      | Supply Voltage |
| 3       | Reset    | Reset pin      |

## Features

- Low power consumption
- Low temperature coefficient
- Built-in delay circuit: 200ms
- High input voltage (up to 6V)
- Output voltage accuracy: tolerance  $\pm 2\%$
- SOT-23 package

## Applications

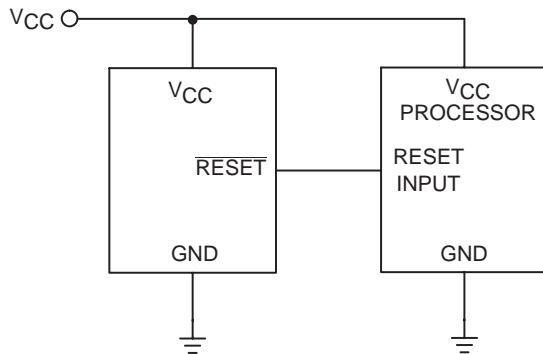
- Computers
- Embedded Systems
- Power on reset circuits
- Battery Powered Equipment
- Critical uP Power Supply Monitoring

## Selection Table

| Part No | Detectable Voltage | Delay Time | Tolerance | Package |
|---------|--------------------|------------|-----------|---------|
| MAX809L | 4.63V              | 200ms      | $\pm 2\%$ | SOT-23  |
| MAX809M | 4.38V              |            | $\pm 2\%$ |         |
| MAX809J | 4.00V              |            | $\pm 2\%$ |         |
| MAX809T | 3.08V              |            | $\pm 2\%$ |         |
| MAX809S | 2.93V              |            | $\pm 2\%$ |         |
| MAX809R | 2.63V              |            | $\pm 2\%$ |         |



### Application Circuits



### Absolute Maximum Ratings

Input Voltage .....-0.3V to VCC+0.3V Storage Temperature .....-40°C to 125°C  
Operating Temperature .....-40°C to 85°C

Note: These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

### Thermal Information

| Symbol        | Parameter   | Max. | Unit |
|---------------|---|------|------|
| $\theta_{JA}$ | Thermal Resistance (Junction to Ambient)<br>(Assume no ambient airflow, no heat sink) | 260  | °C/W |
| $P_D$         | Power Dissipation   | 0.23 | W    |

Note:  $P_D$  is measured at  $T_a = 25^\circ\text{C}$

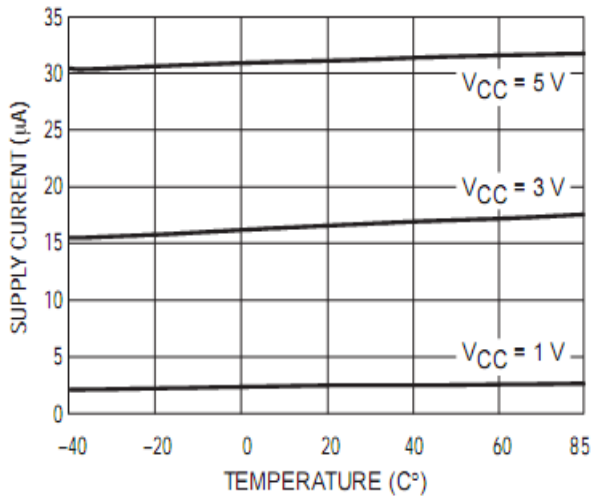


### Electrical Characteristics

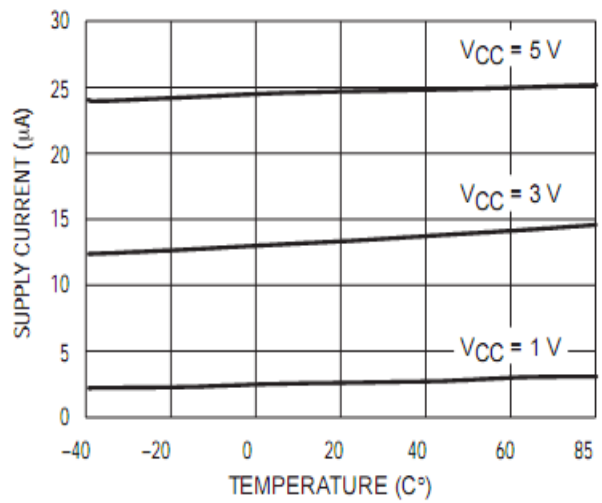
| Symbol           | Parameter                              | Test Conditions  | Min.  | Typ.     | Max.              | Unit       |
|------------------|--|--|---|----------|-------------------|------------|
| V <sub>CC</sub>  | Input Voltage (V <sub>CC</sub> ) Range | 25°C   | 1.2   |          | 5.5               | V          |
| I <sub>SS</sub>  | Supply Current                         | MAX809L/M/J:V <sub>CC</sub> < 5.5V<br>MAX809R/S/T:V <sub>CC</sub> < 3.6V   |   | 24<br>17 | 60<br>50          | μA         |
| V <sub>DET</sub> | Reset Threshold                        | MAX809L:TA=25°C  | 4.56  | 4.63     | 4.70              | V          |
|                  |  | MAX809MTA=25°C   | 4.31  | 4.38     | 4.45              |            |
|                  |  | MAX809J:TA=25°C  | 3.93  | 4.00     | 4.06              |            |
|                  |  | MAX809T:TA=25°C  | 3.04  | 3.08     | 3.11              |            |
|                  |  | MAX809S:TA=25°C  | 2.89  | 2.93     | 2.96              |            |
|                  |  | MAX809R:TA=25°C  | 2.59  | 2.63     | 2.66              |            |
|                  | Reset Threshold Stability              |  |   | 30       |                   | Ppm/<br>°C |
|                  | V <sub>CC</sub> to Reset Delay         | V <sub>CC</sub> = V <sub>TH</sub> to V <sub>TH</sub> -100mV  |   | 20       |                   | us         |
| V <sub>OL</sub>  | RESET Output Voltage Low               | MAX809L/M/J:V <sub>CC</sub> =V <sub>TH</sub> min,ISINK=1.2mA<br>MAX809R/S/T:V <sub>CC</sub> =V <sub>TH</sub> min,ISINK=3.2mA<br>V <sub>CC</sub> > 1.0V, ISINK=50uA |   |          | 0.4<br>0.3<br>0.3 | V          |
| V <sub>OH</sub>  | RESET Output Voltage High              | MAX809L/M/J:V <sub>CC</sub> =V <sub>TH</sub> min,ISINK=0.5mA<br>MAX809R/S/T:V <sub>CC</sub> =V <sub>TH</sub> min,ISINK=0.8mA                                       | 0.8 V <sub>CC</sub><br>V <sub>CC</sub> -1.5 |          |                   | V          |



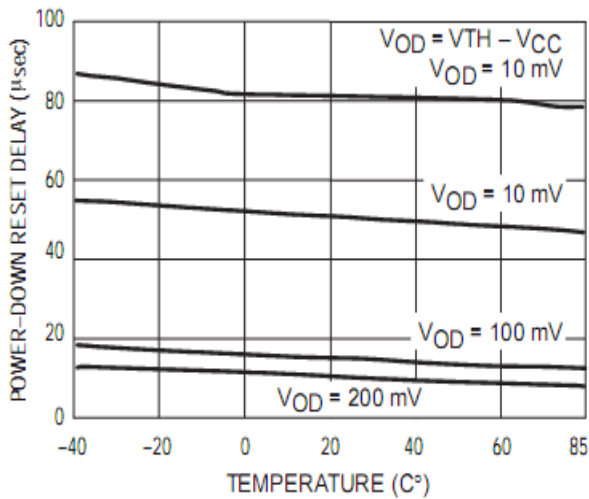
### Typical Characteristics



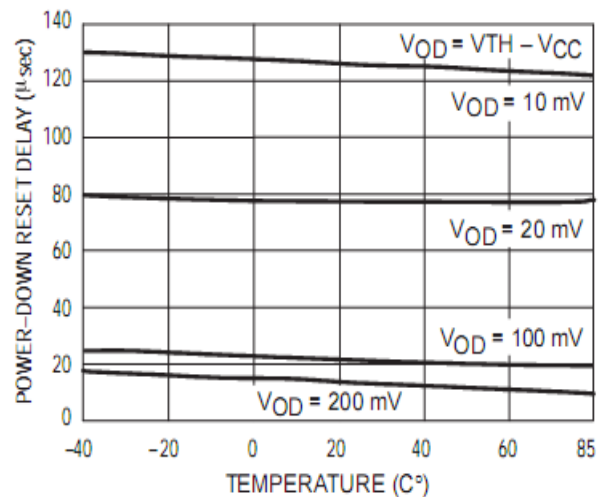
Supply Current vs Temperature  
(No Load, MAX809R/S/T)



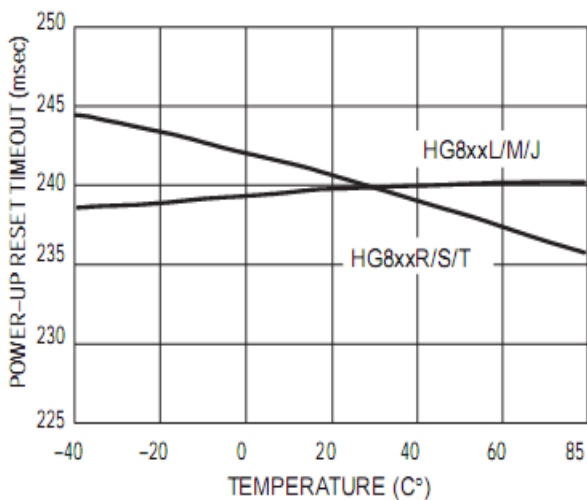
Supply Current vs Temperature  
(No Load, MAX809L/M/J)



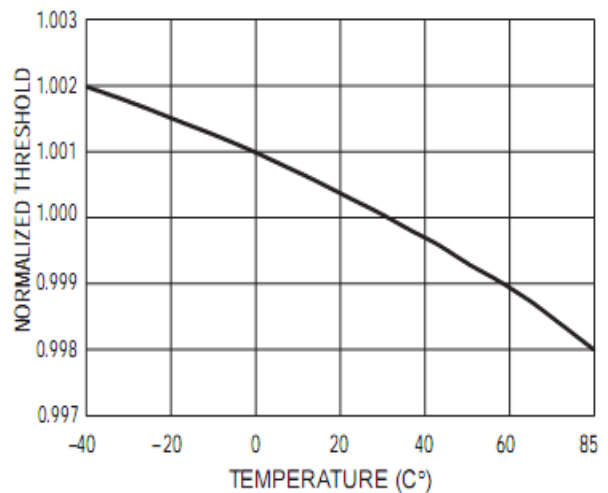
Power-Down Reset Delay vs  
Temperature and Overdrive (MAX809R/S/T)



Power-Down Reset Delay vs  
Temperature and Overdrive (MAX809L/M/J)



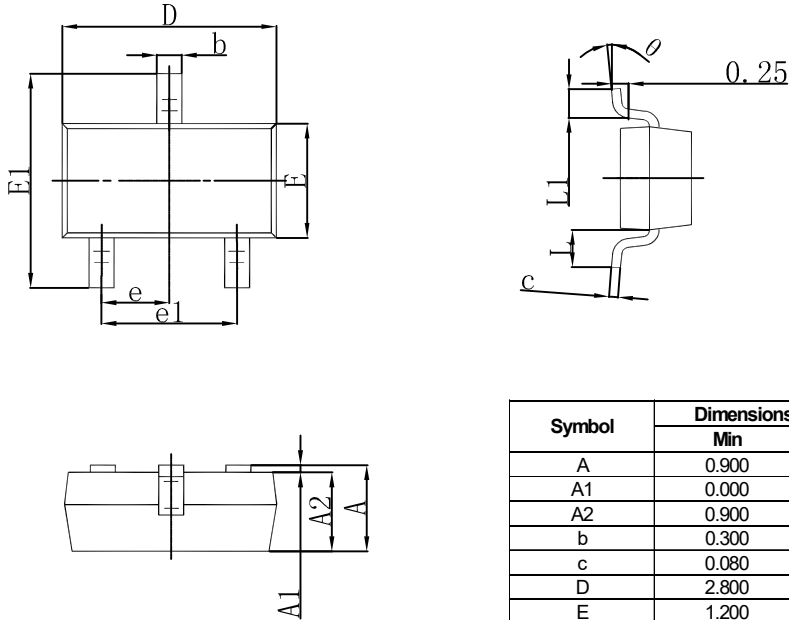
Power-Up Reset Timeout vs  
Temperature



Normalized Reset Threshold vs  
Temperature

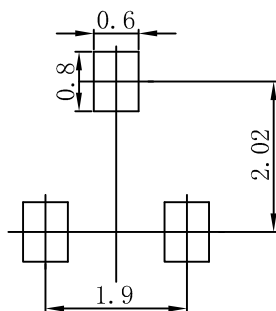


### SOT-23 Package Outline Dimensions



| 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 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

### SOT-23 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.



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