

Description

The ACE809 microprocessor supervisory circuits can be used to monitor the power supplies in microprocessor and digital systems. They provide a reset to the microprocessor during power-up, power-down and brown-out conditions.

The function of the ACE809 is to monitor the V_{CC} supply voltage, and assert a reset signal whenever this voltage declines below the factory-programmed reset threshold. The reset signal remains asserted for 240ms after V_{CC} rises above the threshold. The ACE809 has an active-low $\overline{\text{RESET}}$ output. The output of the ACE809 is guaranteed valid down to $V_{CC} = 1V$. The device is available in a SOT-23-3L package.

The ACE809 is optimized to reject fast transient glitches on the V_{CC} line. Low supply current of $25\mu A$, ($V_{CC}=3.3V$) makes these devices suitable for battery powered applications.

Features

- Precision Vcc Monitor for 3.0V, 3.3V and 5.0V Supplies
- 140ms Guaranteed Minimum $\overline{\text{RESET}}$ Output Duration
- $\overline{\text{RESET}}$ Output Guaranteed to $V_{CC}=1.0V$
- Low $25\mu A$ Supply Current.
- Vcc Transient Immunity.
- No External Components.

Application

- Embedded systems
- Computers
- Critical μP Power Supply Monitoring
- Battery Powered equipment

Absolute Maximum Ratings

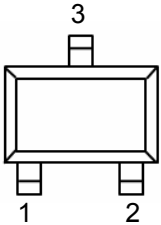
| Parameter | Symbol | Max | Unit |
|--|---------------------------|--------------------------|---------------|
| Supply Voltage | V_{CC} | 5.5 | V |
| Output Voltage | $\overline{\text{RESET}}$ | -0.3 to ($V_{CC}+0.3$) | V |
| Input Current | | 20 | mA |
| Output Current | I_{OUT} | 20 | mA |
| Power Dissipation | P_D | Internally Limited | |
| Thermal resistance junction to ambient SOT-23-3 | θ_{JA} | 230 | $^{\circ}C/W$ |
| Operating junction temperature range | T_J | 0 to 125 | $^{\circ}C$ |
| Storage temperature range | T_{STG} | -60 to 150 | $^{\circ}C$ |

Note 1: Exceeding these rating could cause damage to the device. All voltages are with respect to Ground. Currents are positive into, negative out of the specified terminal.

Note 2: Voltage values are with respect to the anode terminal unless otherwise noted.

Packaging Type

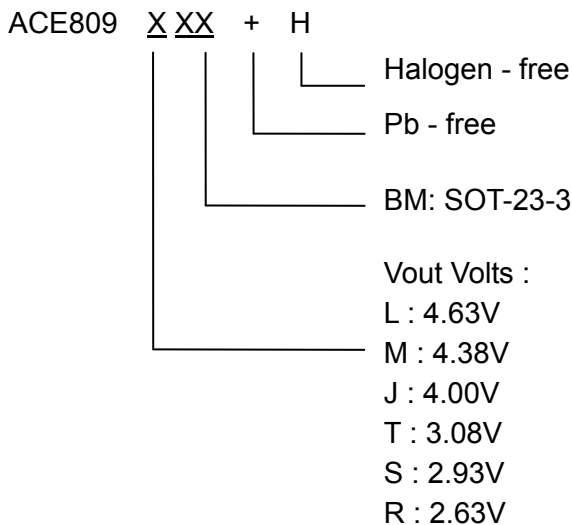
SOT-23-3



| Pin No | Symbol | Description |
|--------|--------|---|
| 1 | GND | Ground |
| 2 | RESET | RESET output remains low while Vcc is below the reset voltage threshold and for 240msec(typ.) after Vcc rises above reset threshold |
| 3 | Vcc | Supply Voltage (typ.) |

Ordering information

Selection Guide



Power Dissipation Table

| Package | θ_{JA} ($^{\circ}\text{C}/\text{W}$) | Df(mW/ $^{\circ}\text{C}$) $\text{TA} \geq 25^{\circ}\text{C}$ | $\text{TA} \leq 25^{\circ}\text{C}$ Power rating(mW) | $\text{TA} = 70^{\circ}\text{C}$ Power rating(mW) | $\text{TA} = 85^{\circ}\text{C}$ Power rating (mW) |
|---------|--|--|---|--|---|
| BM | 230 | 3.5 | 543 | 348 | 283 |

Note:1.Exceeding the maximum allowable power dissipation will result in excessive die temperature, and the regulator will go into Thermal shutdown.

2.T_J: Junction Temperature Calculation $T_J = T_A + (P_D \times \theta_{JA})$

The θ_{JA} numbers are guidelines for the thermal performance of the device/PC-board system. All of the above assume no Ambient airflow.

3. θ_{JA} : Thermal Resistance-Junction to Ambient, Df: Derating factor, P_o: Power consumption

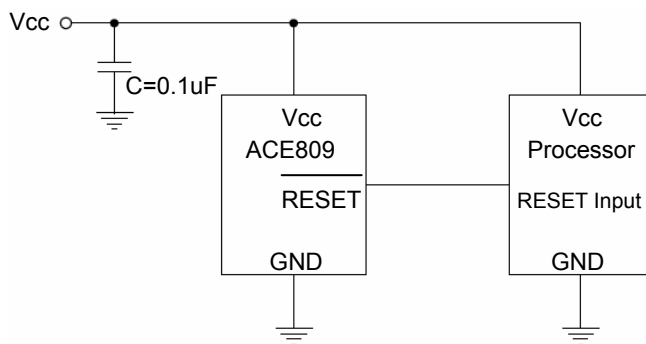
Recommended Work Conditions

| Item | Min | Typ. | Max | Unit |
|--|-------|------|-----|------|
| Input Voltage (V _{in}) | 2.0 | | 5.5 | V |
| Junction Temperature (T _J) | 0~125 | | | °C |

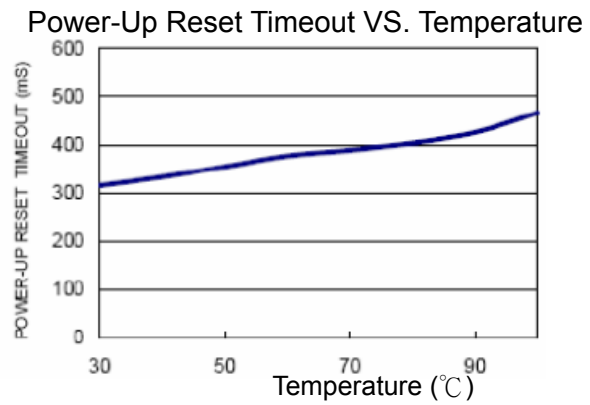
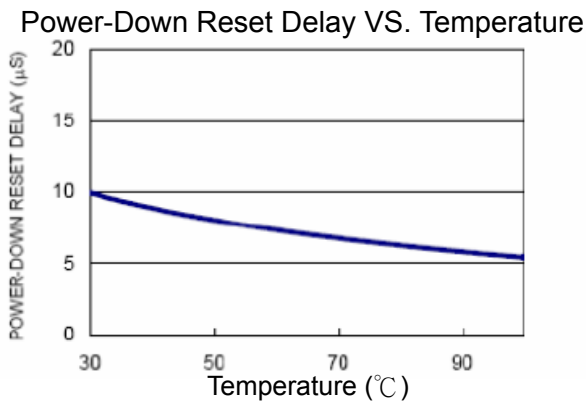
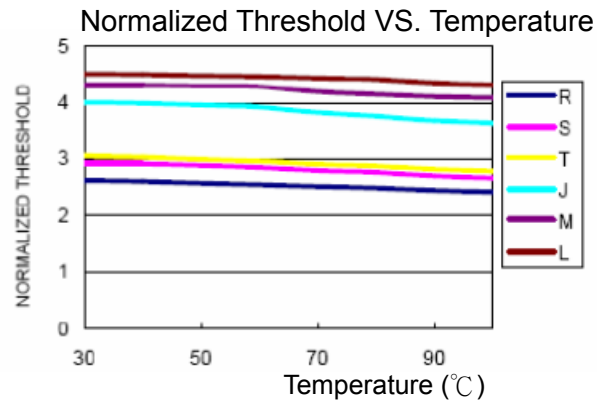
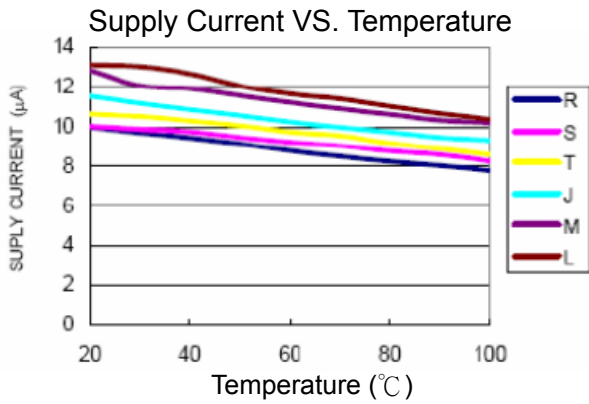
Electrical Characteristics

| Parameter | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|--|-----------------|----------------------------|--------------------|------|------|------------|
| Input Voltage | V _{cc} | | 2.0 | | 5.5 | V |
| Supply Current | I _{cc} | | | 18 | 25 | uA |
| Reset Threshold | V _{TH} | ACE809-4.63 | 4.54 | 4.63 | 4.72 | V |
| | | ACE809-4.38 | 4.29 | 4.38 | 4.47 | |
| | | ACE809-4.00 | 3.92 | 4.00 | 4.08 | |
| | | ACE809-3.08 | 3.02 | 3.08 | 3.14 | |
| | | ACE809-2.93 | 2.87 | 2.93 | 2.99 | |
| | | ACE809-2.63 | 2.58 | 2.63 | 2.68 | |
| Reset Threshold Temperature Coefficient (Note) | | | | 30 | | ppm/ °C |
| V _{cc} to Reset Delay V _{cc} =V _{TH} to (V _{TH} -100mV) | | | | 20 | | usec |
| Reset Active Timeout Period | | | | 240 | | msec |
| RESET Output Voltage Low | V _{OL} | I _{SINK} =3mA | | | 0.4 | V |
| RESET Output Voltage High | V _{OH} | I _{SOURCE} =800uA | 0.8V _{cc} | | | V |

Typical Applications

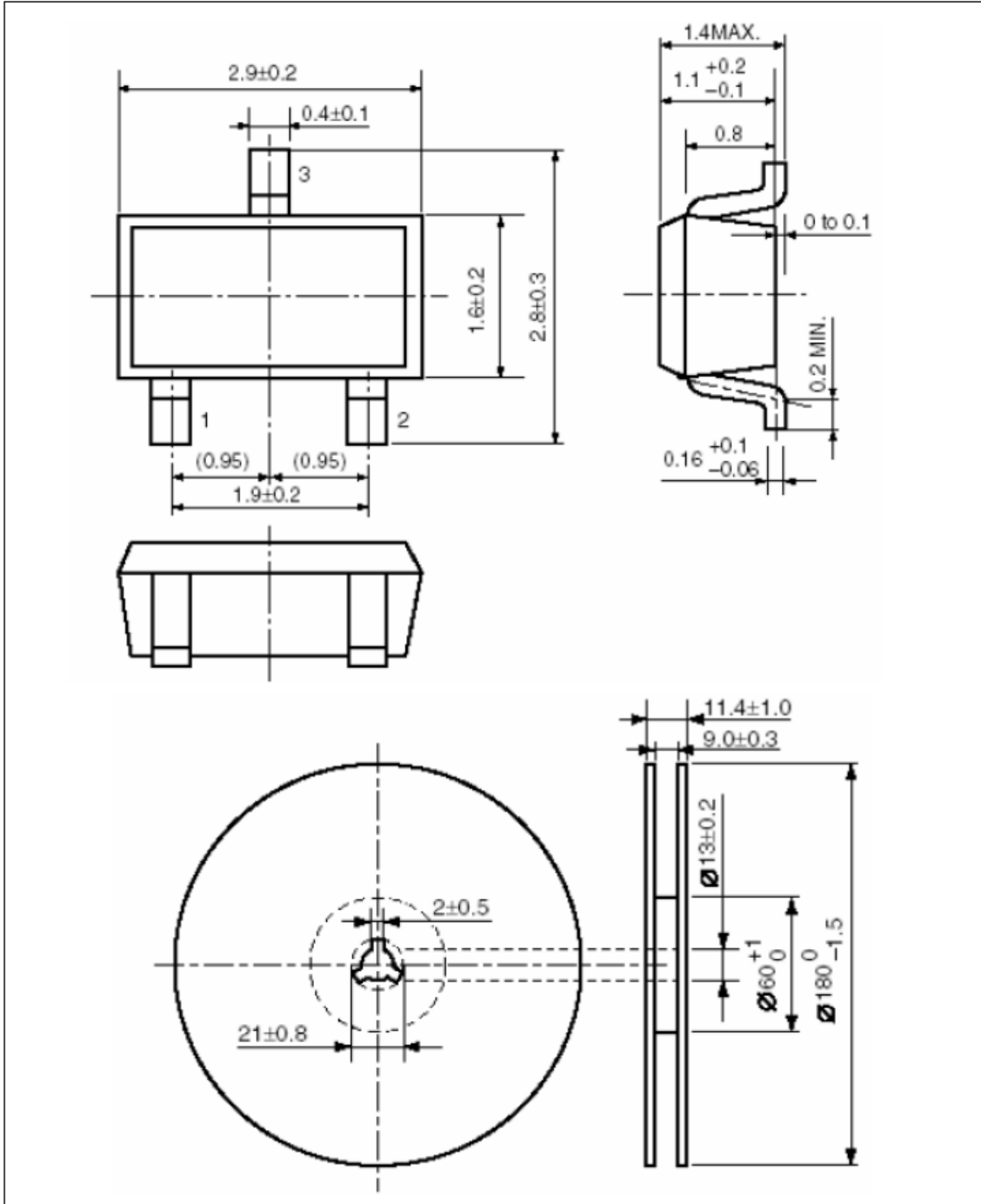


Typical Performance Characteristics



Packing Information

SOT-23-3



Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Electronics Co., LTD. As sued herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and whose failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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