

Micro-Power Voltage Detectors

General Description

The RT9809 is a micro-power voltage detector supervising the power supply voltage level for microprocessors (μP) or digital systems. It provides internally fixed threshold levels with 0.1V per step ranging from 1.5V to 5V, which covers most digital applications. It features low supply current of 2.5 μA .

The RT9809 performs supervisory function by sending out a reset signal whenever the VDD voltage falls below a preset threshold level. This reset signal will last the whole period before VDD recovering. Once VDD recovered up-crossing the threshold level, the reset signal will be released after a certain delay time. A 5% hysteresis splits the rising and falling threshold levels.

RT9809 is provided in SOT-23 package.

Applications

- Computers
- Controllers
- Intelligent Instruments
- Critical μP and μC Power Monitoring
- Portable/Battery-Powered Equipment

Ordering Information

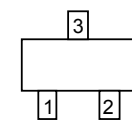
RT9809-□□□□

- Package Type
V : SOT-23
- Operating temperature range
C: Commercial standard
- Reset Threshold
15 : 1.5V
16 : 1.6V
:
49 : 4.9V
50 : 5.0V

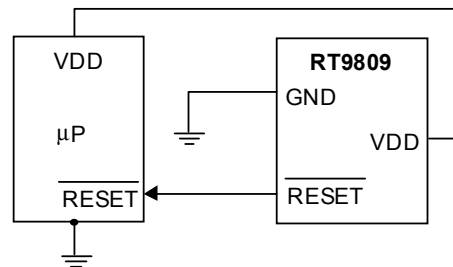
Features

- Internally Fixed Threshold 1.5V to 5V in 0.1V Step
- $\pm 2\%$ Accuracy
- Low Supply Current 2.5 μA
- No External Components Required
- Quick Reset within 20 μs
- Built-in Recovery Delay 400mS
- Low Functional Supply Voltage 0.9V
- Small 3-Pin SOT-23 Package

Pin Configurations

| Part Number | Pin Configurations |
|-------------------------|--|
| RT9809-□□CV (SOT-23) |  <p>TOP VIEW</p> <ol style="list-style-type: none"> 1. GND 2. RESET 3. VDD |

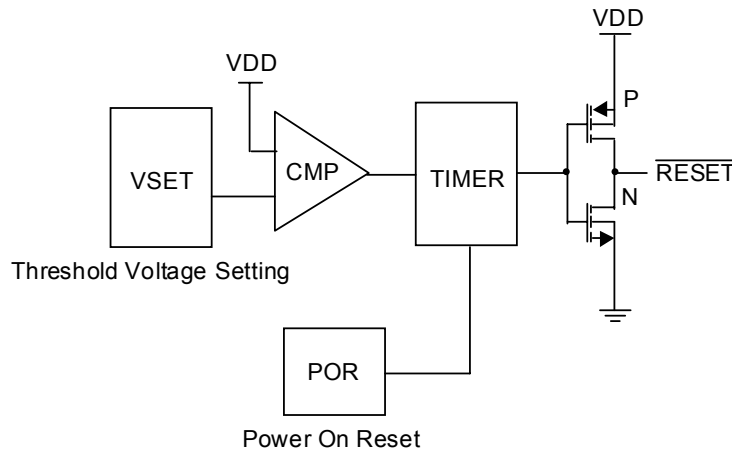
Typical Application Circuit



Pin Description

| Pin Name | Pin Function |
|----------|------------------------------------|
| GND | Ground Pin |
| RESET | Reset Pulse Output, Negative Pulse |
| VDD | Power Pin |

Function Block Diagram



Absolute Maximum Ratings

- Terminal Voltage (with Respect to GND)
 - VDD ----- -0.3V to 6.0V
 - All Other Inputs ----- -0.3V to VDD+0.3V
- Input Current, VDD ----- 20mA
- Output Current, $\overline{\text{RESET}}$ ----- 20mA
- Power Dissipation, P_D @ $T_A = 25^\circ\text{C}$
 - SOT-23 ----- 0.25W
- Operating Junction Temperature Range ----- $-40^\circ\text{C} \sim 125^\circ\text{C}$
- Storage Temperature Range ----- $-65^\circ\text{C} \sim 125^\circ\text{C}$
- Package Thermal Resistance
 - SOT-23, θ_{JA} ----- $250^\circ\text{C}/\text{W}$
- Lead Temperature (Soldering, 5sec.) ----- 260°C

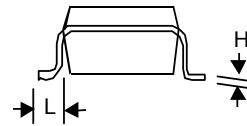
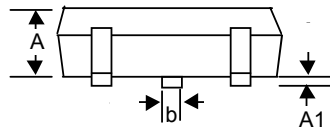
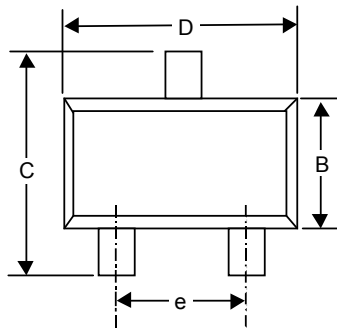
Electrical Characteristics

(VDD = 3.0, unless specified)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Units |
|--|-----------------|--|-----|-------------|-----|---------------|
| Operating VDD (V_{OUT}) Range | V_{DD} | | 0.9 | -- | 6 | V |
| Supply Current | I_{DD} | $V_{DD} = 1.5\text{V} \sim 5\text{V}, I_{OUT} = 0$ | -- | 2.5 | -- | μA |
| Reset Threshold | V_{TH} | $T_A = 27^\circ\text{C}$ | -- | Note1 | -- | V |
| Threshold Voltage Accuracy | ΔV_{TH} | $T_A = 27^\circ\text{C}$ | -- | -- | 2 | % |
| V_{CC} Drop to Reset Delay | t_{RD} | $V_{DD} = 5\text{V}, \text{Drop} = -20\text{mV}$ | -- | 25 | -- | μS |
| | | $V_{DD} = 1.5\text{V}, \text{Drop} = -20\text{mV}$ | -- | 5 | -- | |
| Reset Active Time Out Period | t_{RP} | $V_{DD} \geq 1.02 \times V_{TH}$ | -- | 400 | -- | mS |
| $\overline{\text{RESET}}$ Output Voltage | V_{OH} | $V_{DD} > V_{TH}, I_{SOURCE} > 1\text{mA}$ | -- | $0.8V_{DD}$ | -- | V |
| | V_{OL} | $V_{DD} < V_{TH}, I_{SINK} > 3.5\text{mA}$ | -- | $0.2V_{DD}$ | -- | |

Note1: 1.5V ~ 5V, step 0.1V

Package Information



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | 0.889 | 1.295 | 0.035 | 0.051 |
| A1 | -- | 0.152 | -- | 0.006 |
| B | 1.397 | 1.803 | 0.055 | 0.071 |
| b | 0.356 | 0.508 | 0.014 | 0.020 |
| C | 2.591 | 2.997 | 0.102 | 0.118 |
| D | 2.692 | 3.099 | 0.106 | 0.122 |
| e | 1.803 | 2.007 | 0.071 | 0.079 |
| H | 0.102 | 0.254 | 0.004 | 0.010 |
| L | 0.356 | 0.610 | 0.014 | 0.024 |

SOT-23 Plastic Surface Mount

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