

**Modify Record:**

| 版次         | 新版本 | 旧版本 | 修改单位 | 修改内容                                           |
|------------|-----|-----|------|------------------------------------------------|
| 2005-08-10 | 1.0 | NA  | 研发部  | 新文件制成                                          |
| 2008-10-26 | 1.1 | 1.0 | 市场部  | 增加 T092 封装, 去掉 order 中代表封装的 S                  |
| 2015-10-26 | 1.2 | 1.1 | 市场部  | 去掉 T092 封装, 增加 HF 无卤素, Order 标签 Part NO 变更命名方式 |
| 2016-10-26 | 1.3 | 1.2 | 市场部  | 去掉 T092 封装脚位图                                  |
| 2021-11-08 | 1.4 | 1.3 | 研发部  | 增加 Vcc 和 Icc 的条件                               |

### Description

The SE809 is a cost-effective system supervisor Integrated Circuit (IC) designed to monitor  $V_{CC}$  in digital and mixed signal systems and provide a warning signal when the system power supply is out of working range, and a reset signal to the host processor when necessary. No external components are required.

The reset output is driven active within 20 $\mu$ sec of  $V_{CC}$  falling through the reset voltage threshold. Reset is maintained active for a minimum of 150msec after  $V_{CC}$  rises above the reset threshold. The SE809 has an active-low RESET output. The output of the SE809 is guaranteed valid down to  $V_{CC}=1V$ .

The SE809 is optimized to reject fast transient glitches on the  $V_{CC}$  line. Low supply current of 18 $\mu$ A ( $V_{CC}=3.3V$ ) makes these devices suitable for battery powered applications. The output voltages range from 1.7V to 4.5V in 100mV increments. Standard voltage versions are 2.63, 2.93, 3.08, 4.0, 4.38, and 4.63V.

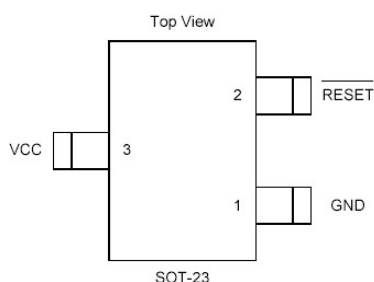
### Features

- Precision  $V_{CC}$  Monitor for 2.8V, 3.0V, 3.3V, and 5.0V Supplies
- 150msec Guaranteed Minimum  $\overline{\text{RESET}}$  Output Duration
- $\overline{\text{RESET}}$  Output Guaranteed to  $V_{CC}=1.0V$
- Low 7 $\mu$ A Supply Current
- $V_{CC}$  Transient Immunity
- No External Components
- Small SOT-23 Package
- Wide Operating Temperature: 0°C to 85°C

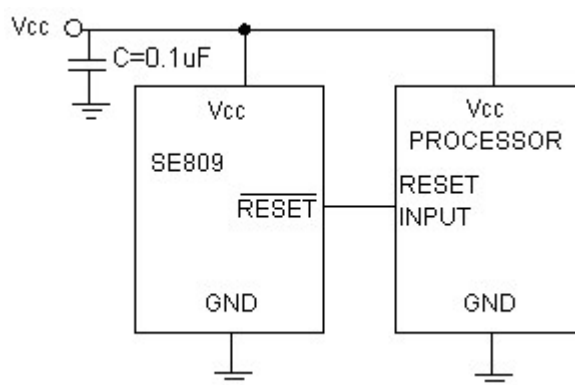
### Application

- Computers
- Embedded systems
- Battery powered equipment
- Critical  $\mu$ P power supply monitoring

### Pin Configuration



### Application Diagram



### Ordering/Marking Information

| Ordering Information | Marking Information         | <p>Starting with 8, a bar on top of 8 is for production year 2003, and underlined 8 is for year 2004. The next character is marked on top for 2005, and underlined for 2006. The naming pattern continues with consecutive characters for later years.</p> <p>The "x" denotes a suffix for <math>V_{CC}</math> threshold.</p> <p>The last character is the week code. (A-Z: 1-26, a-z: 27-52)</p> <p>A dot on top right corner is for lead-free process.</p> <p>No dot on top right corner is for Halogen Free process</p> |
|----------------------|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SE809-LF-XXV         | S809xa <sup>•</sup>         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| SE809-HF-XXV         | S809xa                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Suffix               | Reset $V_{CC}$ threshold(V) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| L                    | 4.63                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| M                    | 4.38                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| J                    | 4.00                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| T                    | 3.08                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| S                    | 2.93                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| R                    | 2.63                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Z                    | 2.30                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

### Absolute Maximum Ratings<sup>(1)</sup>

| Parameter                               | Symbol        | Value                             | Units |
|-----------------------------------------|---------------|-----------------------------------|-------|
| Input Voltage                           | $V_{CC}$      | 5.5                               | V     |
| Output Voltage                          | 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 <sup>(3)</sup> |       |
| Output Short Circuit Duration           |               | Infinite                          |       |
| Thermal Resistance, Junction-to-Ambient | $\Theta_{JA}$ | 230                               | °C/W  |
| Operating Temperature Range             | $T_A$         | 0 ~ 85                            | °C    |
| Lead Temperature (Soldering, 10 sec.)   |               | 260                               | °C    |
| Junction Temperature                    | $T_J$         | 0 to +125                         | °C    |
| Storage Temperature                     | $T_S$         | -60 to +150                       | °C    |

### Operating Rating<sup>(2)</sup>

| Parameter            | Symbol   | Value         | Units |
|----------------------|----------|---------------|-------|
| Supply Input Voltage | $V_{CC}$ | +2.0V to +5.5 | V     |
| Junction Temperature | $T_J$    | 0 to +125     | °C    |

### Electrical Characteristics

$V_{CC}=5V$  for L/M/J ;  $3.3V$  for T/S ;  $3.0V$  for R ,  $T_A = 25^{\circ}C$ , unless otherwise specified.

| Symbol   | Parameter                                                       | Condition                   | Min         | Typ  | Max   | Unit             |
|----------|-----------------------------------------------------------------|-----------------------------|-------------|------|-------|------------------|
| $V_{CC}$ | Input Voltage                                                   | $T_A=25^{\circ}C$           | 2.0         |      | 5.5   | V                |
| $I_{CC}$ | Supply Current                                                  | $V_{DD} < 5V, I_{SINK} = 0$ | --          | 7    | -     | $\mu A$          |
| $V_{TH}$ | Reset Threshold                                                 | SE809L-4.63V                | 4.514       | 4.63 | 4.746 | V                |
|          |                                                                 | SE809M-4.38V                | 4.271       | 4.38 | 4.49  |                  |
|          |                                                                 | SE809J-4.00V                | 3.90        | 4.00 | 4.1   |                  |
|          |                                                                 | SE809T-3.08V                | 3.003       | 3.08 | 3.157 |                  |
|          |                                                                 | SE809S-2.93V                | 2.857       | 2.93 | 3.003 |                  |
|          |                                                                 | SE809R-2.63V                | 2.564       | 2.63 | 2.696 |                  |
|          |                                                                 | SE809Z-2.30V                | 2.194       | 2.25 | 2.306 |                  |
|          | Reset Threshold Temperature Coefficient <sup>(4)</sup>          |                             | --          | 30   | --    | ppm/ $^{\circ}C$ |
|          | $V_{CC}$ to Reset Delay $V_{CC} = V_{TH}$ to $(V_{TH} - 100mV)$ |                             | --          | 20   | --    | $\mu sec$        |
|          | Reset Active Timeout Period                                     |                             | --          | 150  |       | msec             |
| $V_{OL}$ | RESET Output Voltage Low                                        | $I_{SINK} = 3.2mA$          | --          | --   | 0.4   | V                |
| $V_{OH}$ | RESET Output Voltage High                                       | $I_{SOURCE} = 800\mu A$     | $0.8V_{CC}$ | --   | --    | V                |

### PIN DESCRIPTION:

| Pin No. | Symbol   | Description                                                                                                                                  |
|---------|----------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 1       | GND      | Ground                                                                                                                                       |
| 2       | RESET    | RESET output remains low while $V_{CC}$ is below the reset voltage threshold and for 150msec(typ) after $V_{CC}$ rises above reset threshold |
| 3       | $V_{CC}$ | Supply Voltage (typ.)                                                                                                                        |

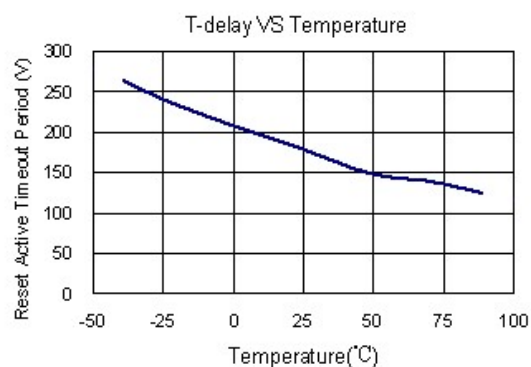
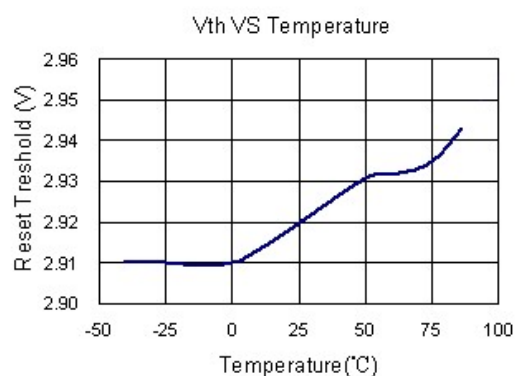
**Note 1:** Exceeding the absolute maximum rating may damage the device.

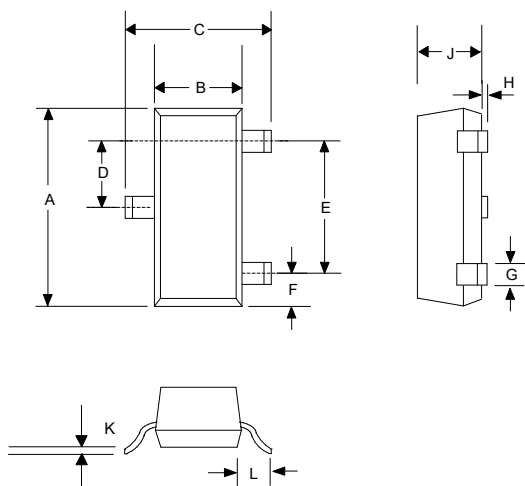
**Note 2:** The device is not guaranteed to function outside its operating rating.

**Note 3:** The maximum allowable power dissipation at any  $T_A$  (ambient temperature) is calculated using:  $P_{D(MAX)} = (T_{J(MAX)} - T_A)/\theta_{JA}$ . Exceeding the maximum allowable power dissipation will result in excessive die temperature, and the regulator will go into thermal shutdown. See "Thermal Consideration" section for details

**Note 4:** RESET threshold temperature coefficient is the worst case voltage change divided by the total temperature range.

### Typical Performance Characteristics



**OUTLINE DRAWING SOT-23**


| DIM <sup>N</sup> | DIMENSIONS |       |       |      |
|------------------|------------|-------|-------|------|
|                  | INCHES     |       | MM    |      |
|                  | MIN        | MAX   | MIN   | MAX  |
| A                | 0.110      | 0.120 | 2.80  | 3.04 |
| B                | 0.047      | 0.055 | 1.20  | 1.40 |
| C                | 0.083      | 0.104 | 2.10  | 2.64 |
| D                | 0.035      | 0.040 | 0.89  | 1.03 |
| E                | 0.070      | 0.080 | 1.78  | 2.05 |
| F                | 0.018      | 0.024 | 0.45  | 0.60 |
| G                | 0.015      | 0.020 | 0.37  | 0.51 |
| H                | 0.0005     | 0.004 | 0.013 | 0.10 |
| J                | 0.034      | 0.040 | 0.887 | 1.02 |
| K                | 0.003      | 0.007 | 0.085 | 0.18 |
| L                | -          | 0.027 | -     | 0.69 |

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