



Description

The SE810 is a cost-effective system supervisor Integrated Circuit (IC) designed to monitor VCC 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 20µsec of VCC falling through the reset voltage threshold. Reset is maintained active for a 150mSec(typ) after VCC rises above the reset threshold. The SE810 has an active-high RESET output.

The SE810 is characterized for operation from -40oC to 125oC, junction temperature. The SE810 is optimized to reject fast transient glitches on the VCC line. Low supply current of 7µA (VCC=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 2.30, 2.63, 2.93, 3.08, 4.0, 4.38, and 4.63V.

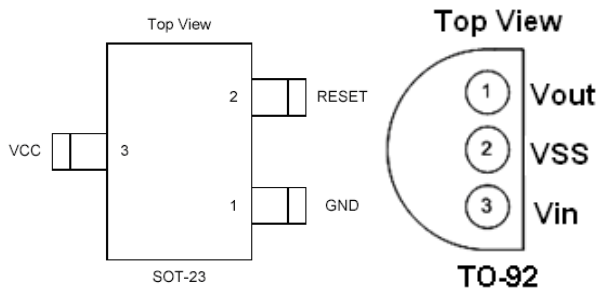
Features

- Precision V_{CC} Monitor for 2.8V, 3.0V, 3.3V, and 5.0V Supplies
- 150mSec typical RESET Output Delay.
- Low 7µA Supply Current typical.
- V_{CC} Transient Immunity
- Small SOT-23 Package and TO-92 Package
- No External Components
- ESD rating is 7KV(HBM).
- Wide Operating Temperature: -40°C to 125°C
- 100% Lead (Pb)-Free

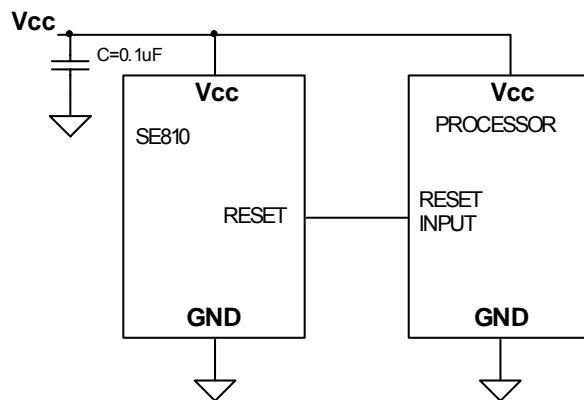
Application

- Computers
- Embedded systems
- Battery powered equipment
- Critical µP power supply monitoring

Pin Configuration



Application Diagram





Ordering/Marking Information (SOT23)

| Ordering Information | Marking Information | The "x" denotes a suffix for V _{CC} threshold. The last character is the batch number. A dot on top right corner is for lead-free process. |
|----------------------|--|---|
| SE810xS | S810xa* | |
| Suffix | Reset V_{CC} threshold(V) | |
| L | 4.63 | |
| M | 4.38 | |
| J | 4.00 | |
| T | 3.08 | |
| S | 2.93 | |
| R | 2.63 | |

Ordering/Marking Information (TO92)

| Ordering Information | Marking Information | XXXX is the batch number. Lead-free package is indicated by LF after XXXX. |
|----------------------|--|--|
| SE810Z | SE810Z XXXX-LF | |
| Suffix | Reset V_{CC} threshold(V) | |
| Z | 2.30 | |

Absolute Maximum Ratings⁽¹⁾

| 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 ⁽³⁾ | |
| Output Short Circuit Duration | | Infinite | |
| Thermal Resistance, Junction-to-Ambient | Θ _{JA} | 230 | °C/W |
| Operating Temperature Range | T _A | -40~+125 | °C |
| Lead Temperature (Soldering, 10 sec.) | | 260 | °C |
| Junction Temperature | T _J | -40 to +125 | °C |
| Storage Temperature | T _S | -60 to +150 | °C |

Operating Rating⁽²⁾

| Parameter | Symbol | Value | Units |
|----------------------|-----------------|---------------|-------|
| Supply Input Voltage | V _{CC} | +2.0V to +5.5 | V |
| Junction Temperature | T _J | -40 to +125 | °C |



Electrical Characteristics

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

| Symbol | Parameter | Condition | Min | Typ | Max | Unit |
|-----------------|---|--|--|--|--|--------|
| V _{CC} | Input Voltage | | 2.0 | | 5.5 | V |
| I _{CC} | Supply Current | | -- | 7 | 10 | μA |
| V _{TH} | Reset Threshold | SE810L-4.63V SE810M-4.38V SE810J-4.00V SE810T-3.08V SE810S-2.93V SE810R-2.63V SE810R-2.30V | 4.51 4.27 3.90 3.00 2.85 2.56 2.18 | 4.63 4.38 4.00 3.08 2.93 2.63 2.25 | 4.75 4.49 4.10 3.16 3.00 2.70 2.33 | V |
| | Reset Threshold Temperature Coefficient ⁽⁴⁾ | | -- | 30 | -- | ppm/°C |
| | V _{CC} to Reset Delay V _{CC} = V _{TH} to (V _{TH} – 100mV) | | -- | 20 | -- | μsec |
| | Reset Active Timeout Period | | -- | 150 | | msec |
| V _{OL} | RESET Output Voltage Low | I _{SINK} = 1.2mA | -- | -- | 0.4 | V |
| V _{OH} | RESET Output Voltage High | I _{SOURCE} = 800μA | 0.8V _{CC} | -- | -- | V |

PIN DESCRIPTION:

| Pin No. | Symbol | Description |
|---------|-----------------|---|
| 1 | GND | Ground |
| 2 | RESET | RESET output remains high 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.

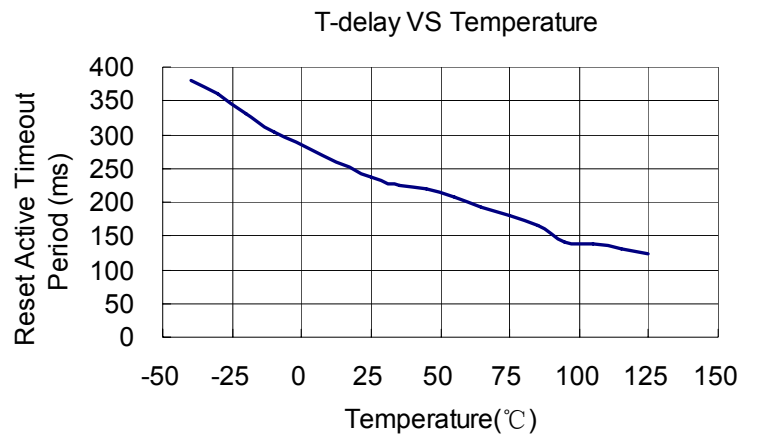
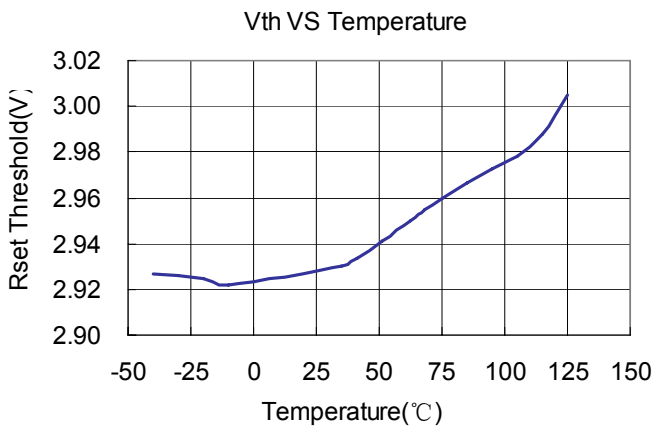
Note 2: The device is not guaranteed to function outside its operating rating.

Note 3: The maximum allowable power dissipation at any T_A (ambient temperature) is calculated using: P_{D(MAX)} = (T_{J(MAX)} – T_A)/θ_{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.

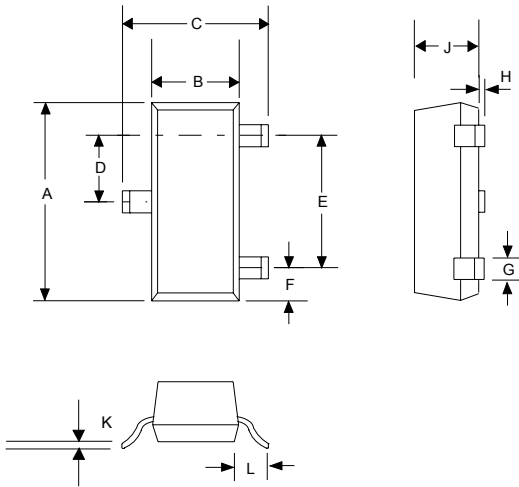


Typical Performance Characteristics



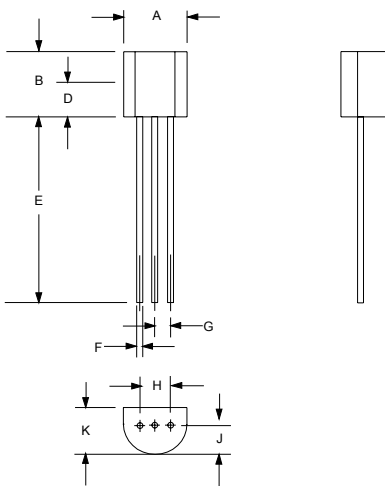


OUTLINE DRAWING SOT-23



| DIMENSIONS | | | | |
|------------------|--------|-------|-------|------|
| DIM ^N | 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 |

OUTLINE DRAWING TO-92



| DIMENSIONS | | | | |
|------------------|--------|-------|-------|-------|
| DIM ^N | INCHES | | MM | |
| | MIN | MAX | MIN | MAX |
| A | 0.175 | 0.205 | 4.445 | 5.207 |
| B | 0.170 | 0.210 | 4.318 | 5.334 |
| E | 0.500 | 0.610 | 12.70 | 15.50 |
| F | 0.016 | 0.021 | 0.407 | 0.533 |
| G | 0.045 | 0.055 | 1.143 | 1.397 |
| H | 0.095 | 0.105 | 2.413 | 2.667 |
| J | 0.080 | 0.105 | 2.032 | 2.667 |
| K | 0.125 | 0.165 | 3.175 | 4.191 |



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Last Updated - 7/28/2009