## 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 20µsec 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 18µA (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.
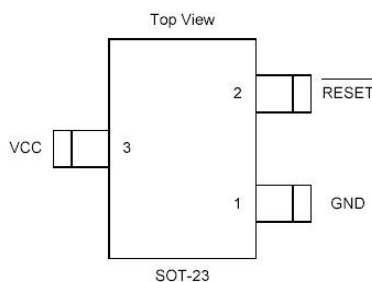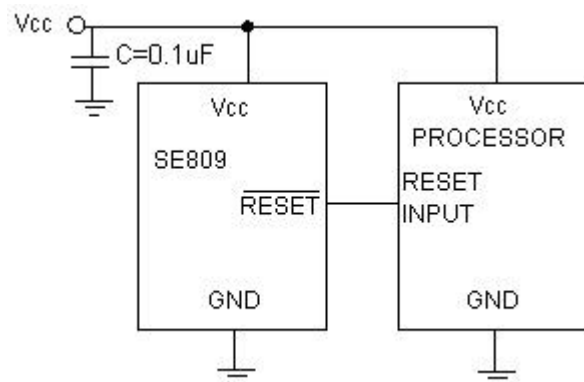
Features

➢ 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

➢ Low7µA Supply Current

➢ V_{CC} Transient Immunity

➢ No External Components

➢ Small SOT-23 Package and TO-92 Package

➢ Wide Operating Temperature: 0°C to 85°C

Application

➢ Computers

➢ Embedded systems

➢ Battery powered equipment

➢ Critical µP power supply monitoring

Pin Configuration

Application Diagram

Ordering/Marking Information

Ordering Information	Marking Information
SE809‑LF‑XXV	$S8\overline{0}9xa^{\bullet}$
SE809‑HF‑XXV	$S8\overline{0}9xa$
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

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.
The "x" denotes a suffix for V$_{CC}$ threshold .
The last character is the week code. (A-Z: 1-26, a-z: 27-52)
A dot on top right corner is for lead-free process.
No dot on top right corner is for Halogen Free process

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$_A$	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[2]

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

Vcc=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	-	µA
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[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} = 3.2mA	--	--	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 low while Vcc is below the reset voltage threshold and for 150msec(typ) after Vcc rises above reset threshold
3	Vcc	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.
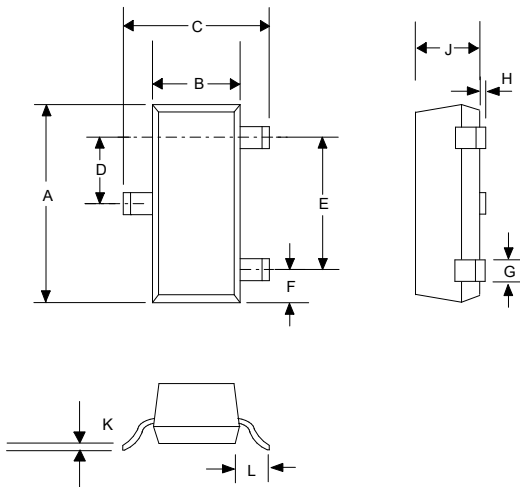
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Typical Performance Characteristics

Vth VS Temperature

T-delay VS Temperature
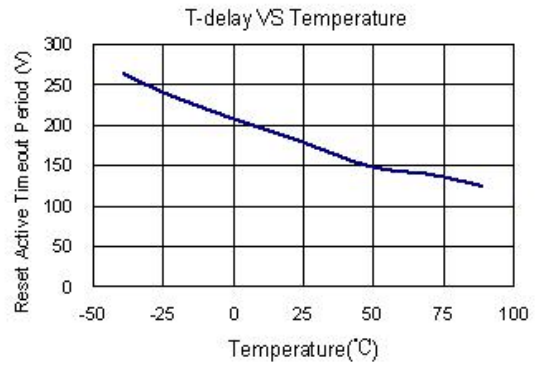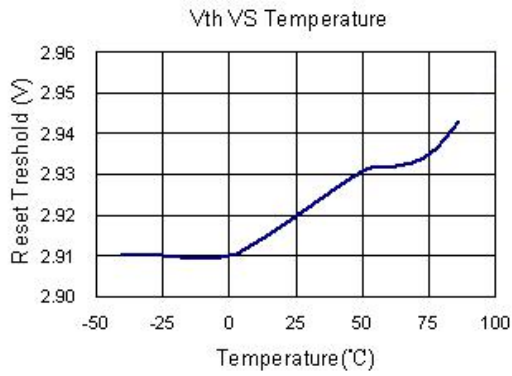
OUTLINE DRAWING SOT-23

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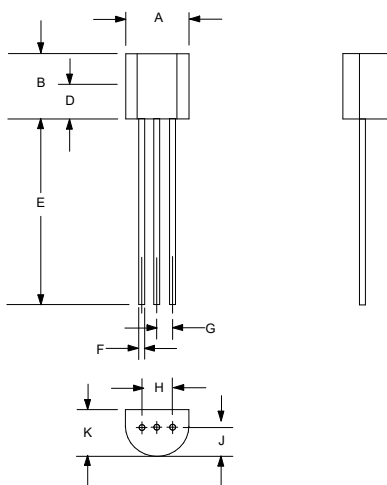
DIMENSIONS				
DIM^N	INCHES		MM	
	MIN	MAX	MIN	MAX
A	0.175	0.205	4.445	5.207
B	0.170	0.210	4.318	5.334
E	0.500	0.610	12.70	15.50
F	0.016	0.021	0.407	0.533
G	0.045	0.055	1.143	1.397
H	0.095	0.105	2.413	2.667
J	0.080	0.105	2.032	2.667
K	0.125	0.165	3.175	4.191

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