



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 μ sec of V_{CC} falling through the reset voltage threshold. Reset is maintained active after V_{CC} rises above the reset threshold. The SE809 has an active-low $\overline{\text{RESET}}$ output. The output of the SE809 is guaranteed valid down to $V_{CC}=1V$.

The SE809 is characterized for operation from -40°C to 85°C , junction temperature. The SE809 is optimized to reject fast transient glitches on the V_{CC} line. Low supply current of 7 μA ($V_{CC}=3.3V$) 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 2.30, 2.63, 2.93, 3.08, 4.0, 4.38, and 4.63V.

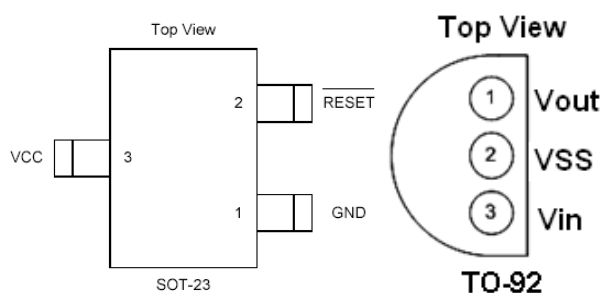
Features

- Precision V_{CC} Monitor for 2.8V, 3.0V, 3.3V, and 5.0V Supplies
- 150mSec typical $\overline{\text{RESET}}$ Output Delay.
- $\overline{\text{RESET}}$ Output Guaranteed to $V_{CC}=1.0V$
- Low 7 μA 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 85°C
- 100% Lead (Pb)-Free

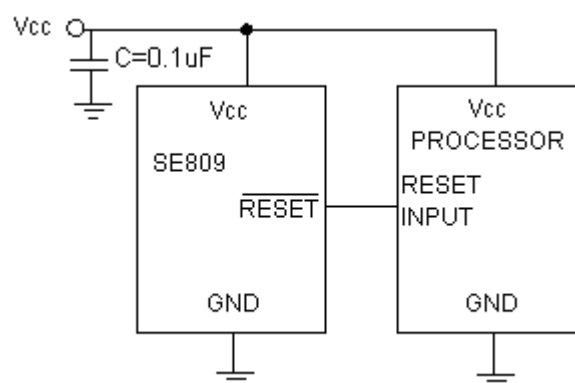
Application

- 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.
SE809xS	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	

Ordering/Marking Information (TO92)

Ordering Information	Marking Information	XXXX is the batch number. Lead-free package is indicated by LF after XXXX.
SE809Z	SE809Z 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~ 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

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	SE809L-4.63V	4.51	4.63	4.75	V
		SE809M-4.38V	4.27	4.38	4.49	
		SE809J-4.00V	3.90	4.00	4.10	
		SE809T-3.08V	3.00	3.08	3.16	
		SE809S-2.93V	2.85	2.93	3.00	
		SE809R-2.63V	2.56	2.63	2.70	
		SE809R-2.30V	2.18	2.25	2.33	
	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} = 3mA	--	--	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 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.

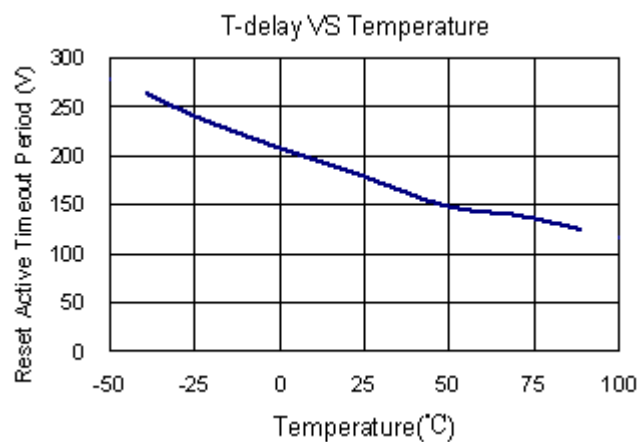
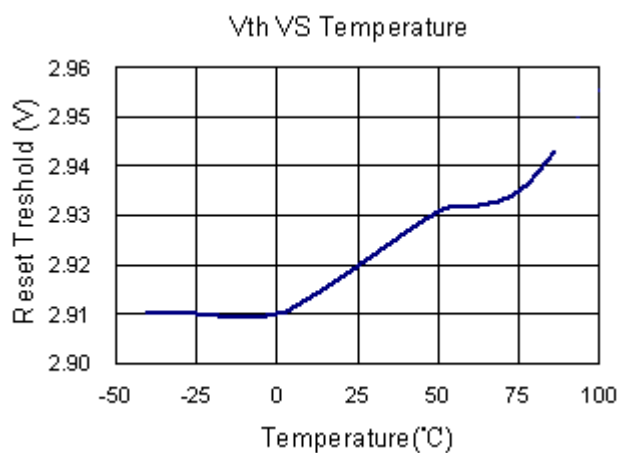
Note 3: The maximum allowable power dissipation at any T_A (ambient temperature) is calculated using: P_{D(MAX)} =

(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.

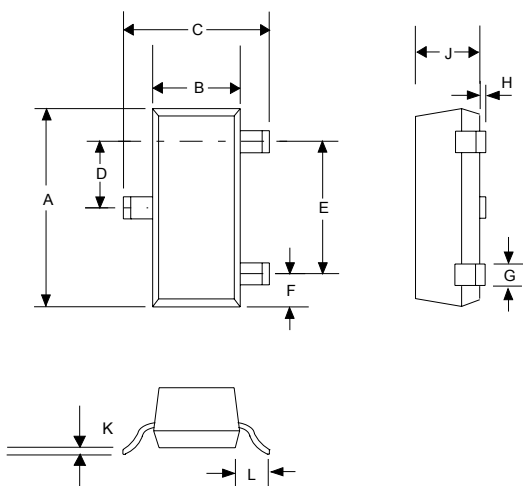


Typical Performance Characteristics



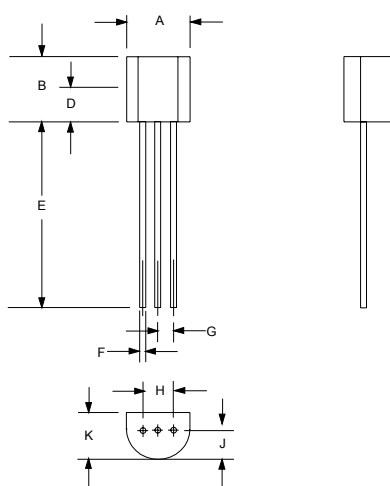


OUTLINE DRAWING SOT-23



DIM ^N	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

OUTLINE DRAWING TO-92



DIM ^N	DIMENSIONS			
	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