3-Pin Microprocessor Reset Monitor (Preliminary)

SE809

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 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 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 2.30, 2.63, 2.93, 3.08, 4.0, 4.38, and 4.63V.

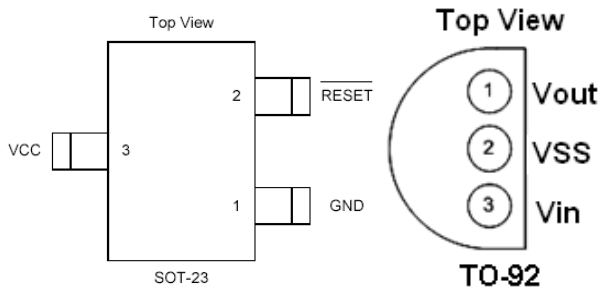
Features

- Precision V_{CC} Monitor for 2.8V, 3.0V, 3.3V, and 5.0V Supplies
- 200mSec typical $\overline{\text{RESET}}$ Output Delay.
- $\overline{\text{RESET}}$ Output Guaranteed to V_{CC}=1.0V
- Low 7μA Supply Current typical.
- V_{CC} Transient Immunity
- Small SOT-23 Package and TO-92 Package
- No External Components
- Wide Operating Temperature: 0°C to 85°C
- 100% Lead (Pb)-Free

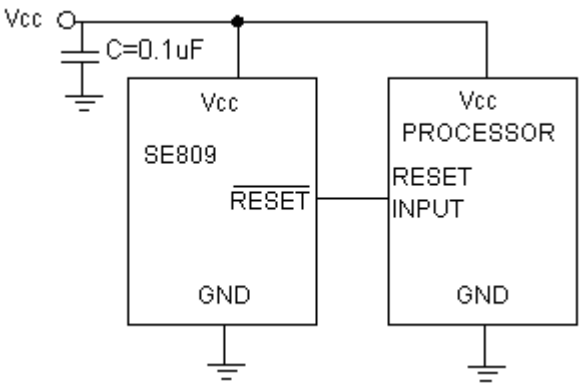
Application

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

Pin Configuration



Application Diagram



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Ordering/Marking Information (SOT23)

Ordering Information	Marking Information	
SE809xS	S8$\bar{0}$9xa•	
Suffix	**Reset V_{CC} threshold(V)**	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.
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	
SE809Z	SE809Z XXXX-LF	XXXX is the batch number. Lead-free package is indicated by LF after XXXX.
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	0 ~ 85	℃
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

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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	10	μA
V_{TH}	Reset Threshold	SE809L-4.63V	4.54	4.63	4.72	V
		SE809M-4.38V	4.29	4.38	4.47	
		SE809J-4.00V	3.92	4.00	4.08	
		SE809T-3.08V	3.02	3.08	3.14	
		SE809S-2.93V	2.87	2.93	2.99	
		SE809R-2.63V	2.58	2.63	2.68	
		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		--	200		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 Vcc is below the reset voltage threshold and for 200msec(typ) after Vcc rises above reset threshold
3	Vcc	Supply Voltage (typ.)

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

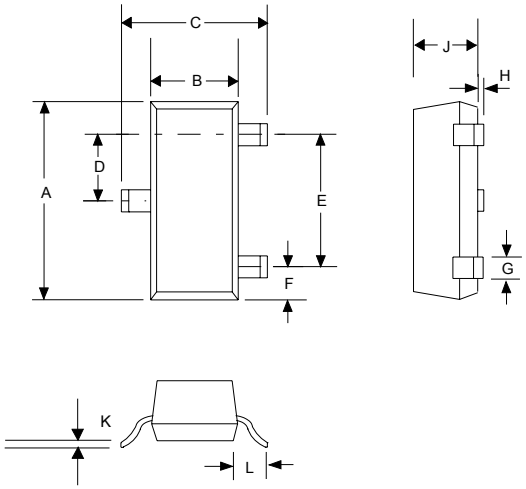
Note 2: The device is not guaranteed to function outside its operating rating.

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

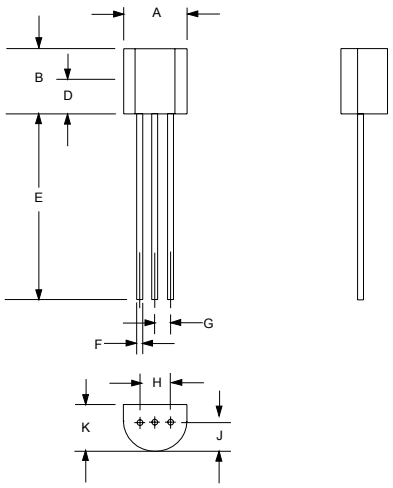
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OUTLINE DRAWING SOT-23



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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