

Description

The EC95809 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 for a typical delay of 150msec after V_{CC} rises above the reset threshold. The EC95809 has an active-low RESET output. The output of the EC95809 is guaranteed valid down to $V_{CC}=1V$ in most applications. Please see application section for more details.

The EC95809 is optimized to reject fast transient glitches on the V_{CC} line. Low supply current of 18 μ 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.

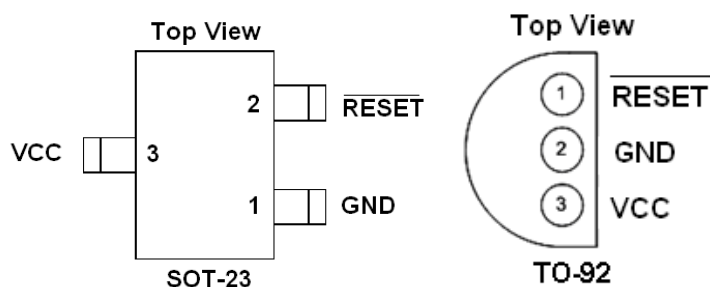
Features

- Precision V_{CC} Monitor for 2.8V, 3.0V, 3.3V, and 5.0V Supplies
- 150msec typical delay for RESET Output
- RESET Output Guaranteed to $V_{CC}=1.0V$
- Low 20 μ A Supply Current
- V_{CC} Transient Immunity
- No External Components
- Small SOT-23 Package and TO-92 Package
- Wide Operating Temperature: -40°C to 85°C
- 100% Lead (Pb)-Free

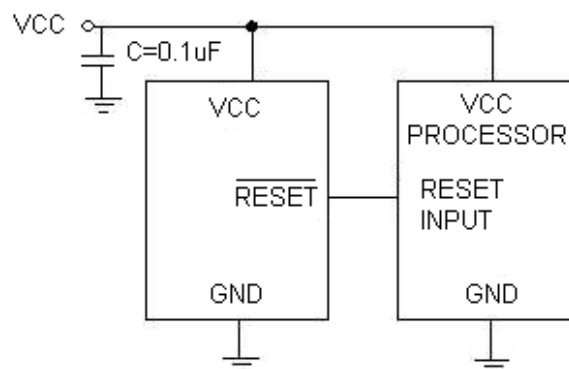
Application

- Computers/Portable Devices
- Embedded systems
- Battery powered equipment
- Critical μ P power supply monitoring

Pin Configuration



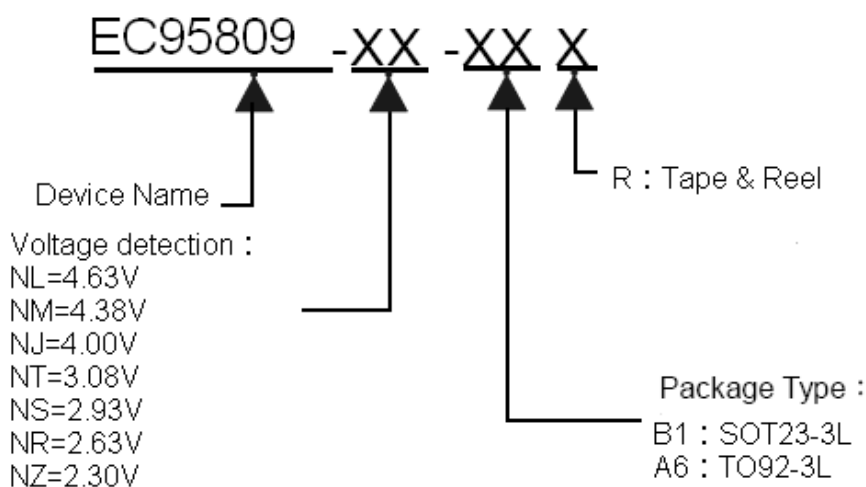
Application Diagram



PIN DESCRIPTION:

Symbol	Description
GND	Ground
RESET	RESET output remains low while Vcc is below the reset voltage threshold and for 150msec(typ) after Vcc rises above reset threshold
Vcc	Supply Voltage (typ.)

Ordering Information



Marking Information(SOT23-3L)

Device	Voltage Detection	Marking Information	Package Type	Remarks
EC95809NLB1R	4.63V	<u>S</u> 809La	SOT23-3L	1. Starting with S,a bar on top of S is for production year 2013,and underlined S is for 2014.The next character is marked .on top for 2015 and underlined for 2016.The naming pattern continues with consecutive characters for last year. 2. the 5 th character denotes a suffix for Vcc threshold. 3. The last character is the week code (A-Z:1-26 ; a-z:27-25). *A dot on top right corner is for lead-free. Non-dot on top right corner is for Green.
EC95809NMB1R	4.38V	<u>S</u> 809Ma		
EC95809NJB1R	4.00V	<u>S</u> 809Ja		
EC95809NTB1R	3.08V	<u>S</u> 809Ta		
EC95809NSB1R	2.93V	<u>S</u> 809Sa		
EC95809NRB1R	2.63V	<u>S</u> 809Ra		

Marking Information(TO92-3L)

Device	Voltage Detection	Marking Information	Package Type	Remarks
EC95809NZA6R	2.30V	809Zf	TO92-3L	<p>1. Starting with underlined 0, a bar is for production year 2012. The next bar is mark on top of 9 is for year 2013. The next bar is mark on bottom of 9 is for year 2014. The next bar is mark on top of Z is year for 2015. The naming pattern continues with consecutive characters for later years.</p> <p>2. f is the week of production. The big character of A~Z is for the week of 1~26, and small a~z is for the week of 27~52.</p>

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		--		13	μA
V _{TH}	Reset Threshold	EC95809NL-4.63V	4.514	4.63	4.746	V
		EC95809NM-4.38V	4.271	4.380	4.490	
		EC95809NJ-4.00V	3.900	4.000	4.100	
		EC95809NT-3.08V	3.003	3.080	3.157	
		EC95809NS-2.93V	2.857	2.930	3.003	
		EC95809NR-2.63V	2.564	2.630	2.696	
		EC95809NZ-2.30V	2.194	2.250	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	500	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

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

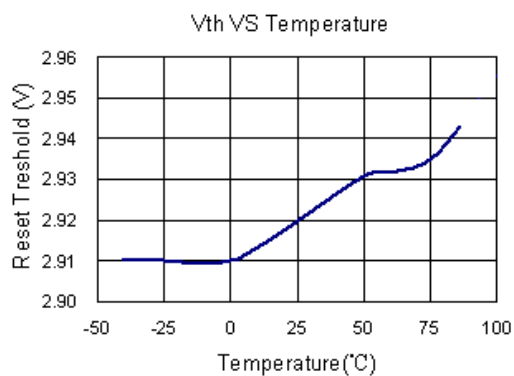
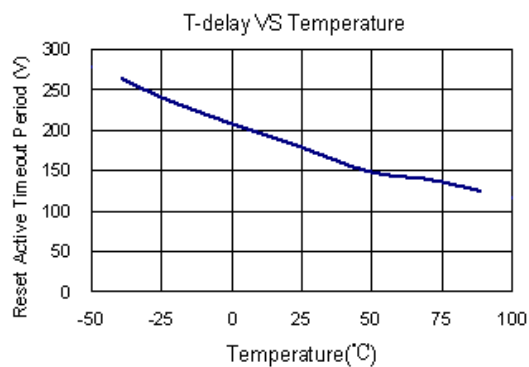
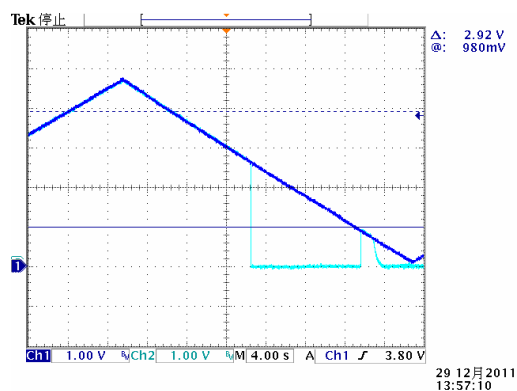
Note 2: The device is not guaranteed to function outside its operating rating.

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

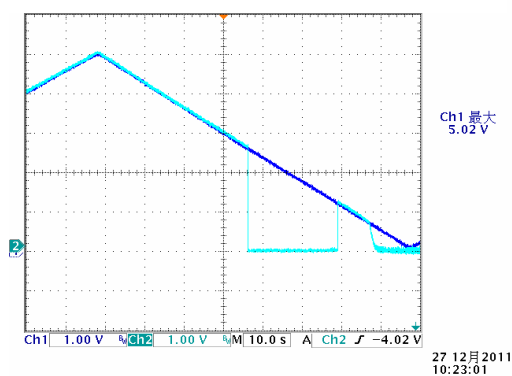
(T_{J(MAX)} – T_A)/Θ_{JA}. Exceeding the maximum allowable power dissipation will result in excessive die temperature, and the regulator will go into thermal shutdown. See “Thermal Consideration” section for details

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

Typical Performance Characteristics

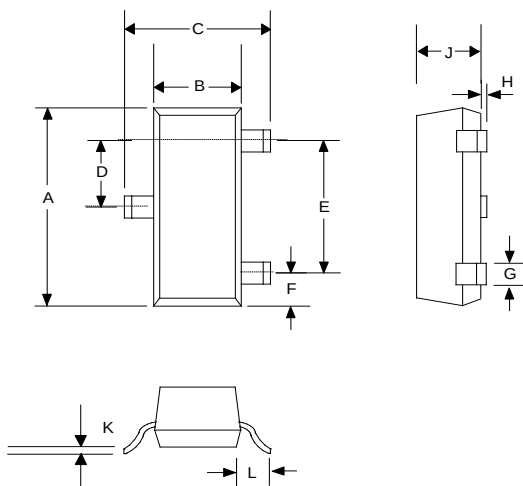


Vout is maintained to <1V if waveform period is less than 56 sec.



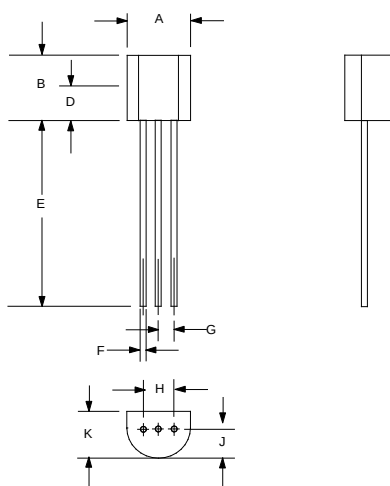
Vout is maintained to 1.2V if waveform period is longer than 160 sec.

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