ACE809

3-Pin Microprocessor Reset Circuits

Description

The ACE809 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 after VCC rises above the reset threshold. The ACE809 has an active-low RESET output. The output of the ACE809 is guaranteed valid down to VCC=1V.

The ACE809 is characterized for operation from -40℃ to 85℃, junction temperature. The ACE809 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 Vcc Monitor for 2.8V, 3.0V,3.3V and 5.0V Supplies
- 150ms Guaranteed Minimum RESET Output Duration
- RESET Output Guaranteed to Vcc=1.0V
- Low 7μA Supply Current.
- Vcc Transient Immunity.
- No External Components.
- ESD rating is 7KV(HBM)
- Wide operating temperature: -40℃ to 85℃

Application

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

Absolute Maximum Ratings(1)

Parameter	Symbol	Max	Unit
Supply Voltage	V_{CC}	5.5	V
Output Voltage	RESET	-0.3 to (Vcc+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	℃/W
Operating Temperature Range	T_A	-40~85	℃
Operating junction temperature range	T_J	0 to 125	℃
Storage temperature range	T_S	-60 to 150	℃

Operating Rating(2)

Parameter	Symbol	Value	Unit
Supply Input Voltage	V_{CC}	2.0 to 5.5	V
Junction Temperature	T_J	0 to 125	℃

Note:

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

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

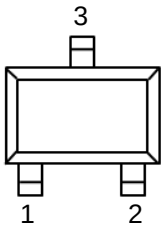
3.The maximum allowable power dissipation at any TA (ambient temperature) is calculated using:

$P_{D(MAX)} = (T_{J(MAX)} – T_A)/\Theta_{JA}$. 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

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

Packaging Type

SOT-23-3



SOT-23-3	Description	Function
1	GND	Ground
2	RESET	RESET output remains low while Vcc is below the reset voltage threshold and for 240msec(typ.) after Vcc rises above reset threshold
3	Vcc	Supply Voltage (typ.)

Ordering information

ACE809 X XX + H

- H: Halogen - free
- +: Pb - free
- XX: BM: SOT-23-3
- X: Voltage : L: 4.63V / M: 4.38V / J: 4.00V / T: 3.08V / S: 2.93V / R: 2.63V

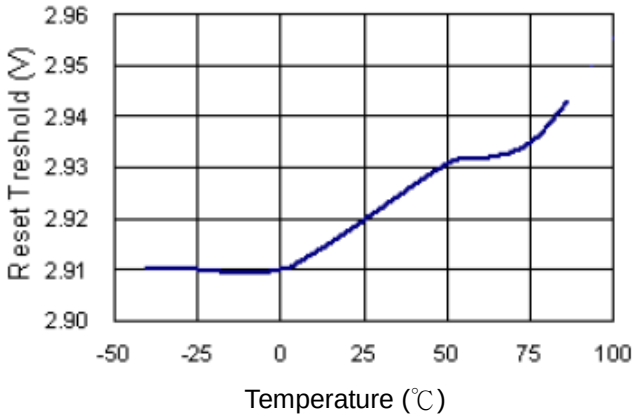
Electrical Characteristics

Vcc=5V for L/M/J ;3.3V for T/S ;3.0V for R ,TA = 25°C, unless otherwise specified.

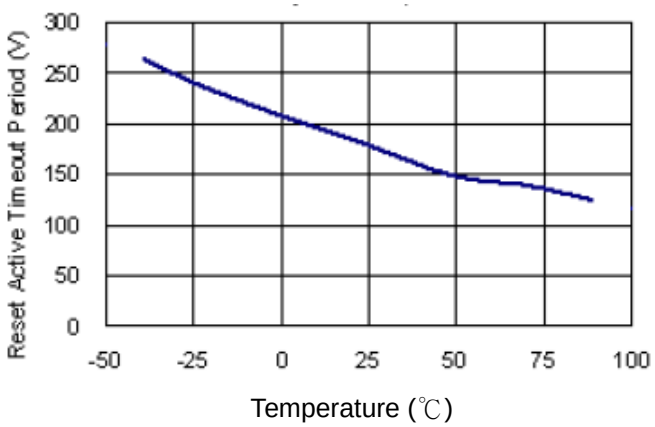
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Input Voltage	Vcc		2.0		5.5	V
Supply Current	Icc			7	10	uA
Reset Threshold	V_{TH}	ACE809-4.63	4.51	4.63	4.75	V
		ACE809-4.38	4.27	4.38	4.49	
		ACE809-4.00	3.90	4.00	4.10	
		ACE809-3.08	3.00	3.08	3.16	
		ACE809-2.93	2.85	2.93	3.00	
		ACE809-2.63	2.56	2.63	2.70	
		ACE809-2.3V	2.18	2.25	2.33	
Reset Threshold Temperature Coefficient(4)				30		ppm/℃
Vcc to Reset Delay Vcc=V_{TH} to (V_{TH}-100mV)				20		usec
Reset Active Timeout Period				150		msec
RESET Output Voltage Low	V_{OL}	I_{SINK}=3mA			0.4	V
RESET Output Voltage High	V_{OH}	I_{SOURCE}=800uA	0.8Vcc			V

Typical Performance Characteristics

Vth vs. Temperature

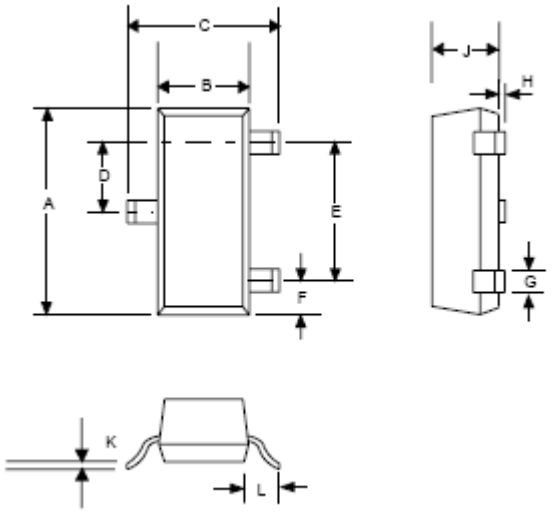


T-delay vs. Temperature



Packing Information

SOT-23-3



DIMENSIONS				
DIM	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

Notes

ACE does not assume any responsibility for use as critical components in life support devices or systems without the express written approval of the president and general counsel of ACE Electronics Co., LTD. As sued herein:

1. Life support devices or systems are devices or systems which, (a) are intended for surgical implant into the body, or (b) support or sustain life, and shoes failure to perform when properly used in accordance with instructions for use provided in the labeling, can be reasonably expected to result in a significant injury to the user.
2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.

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