3-Pin Microprocessor Reset Monitors

DESCRIPTION

The ST809 series are power supply supervisory circuits used to monitor the supply change in microprocessors and digital systems. The ST809 series provide a reset to the microprocessors during system power-up, power-down and brown-out conditions.

The ST809 is designed to monitor the VCC supply voltage and assert a reset signal whenever the voltage declined below the preset threshold. The reset signal remains for at least 140ms after VCC has risen above the threshold. The ST809 provides an active-low reset output.

The ST809 series are optimized to reject fast transient glitches on the VCC line. Low power supply current of 10μA makes the ST809 more suitable for battery-powered applications.

The ST809 series are available in SOT23-3 package.

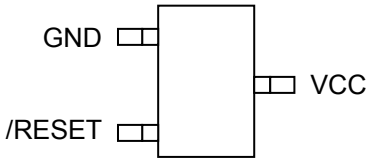
FEATURE

- Precision VCC Monitor for 3.0V, 3.3V and 5.0V Supplies
- 140ms Guaranteed Minimum RESET Output Duration
- Low 10μA Supply Current
- VCC Transient Immunity
- No External Components
- SOT-23 package design

APPLICATIONS

- Embedded Systems
- Computers
- Critical μP Power Supply Monitoring
- Battery Powered equipment

PIN CONFIGURATION



TOP VIEW
SOT-23

PART NUMBER INFORMATION

ST809-XXX S-XX X

- Lead Plating Code
- Handling Code
- Package Code
- Voltage Code

Lead Plating Code
G : Lead-free product.
This product is RoHS compliant

Handling Code
TR : Tape&Reel

Package Code
S : SOT-23

Voltage Code
263 : 2.63V 270 : 2.70V
293 : 2.93V 308 : 3.08V

■ ORDERING INFORMATION

Part Number	VOUT Voltage	Package Code	Package	Shipping
ST809-XXXS-TRG	2.63 2.70 2.93 3.08	S	SOT-23	3000/Tape&Reel

Note:
※ SOT-23 : Only available in tape and reel packaging. (A reel contains 3000 devices)
※ G : Lead-free product. This product is RoHS compliant.

■ ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Maximum	Unit
Supply Voltage	Vcc	6.0	V
Output Voltage	/RESET	-0.3 to (Vcc+0.3)	V
Input Current	I_{IN}	20	mA
Output Current	I_{OUT}	20	mA
Power Dissipation	P_D	320	mW
Thermal resistance junction to ambient SOT-23	θ_{JA}	230	°C/W
Operating junction temperature range	T_J	0 to 125	°C
Storage temperature range	T_{STG}	-65 to 150	°C
Lead temperature (soldering) 10sec	T_{LEAD}	300	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ POWER DISSIPATION TABLE

Package	θ_{JA} (°C /W)	D_f(mW/°C) $T_A \geq$ 25°C	$T_A \leq$ 25°C Power rating(mW)	T_A=70°C Power rating(mW)	T_A= 85°C Power rating (mW)
S	230	3.5	543	348	283

Note: θJA: Thermal Resistance-Junction to Ambient, DF: Derating factor, PO: Power consumption

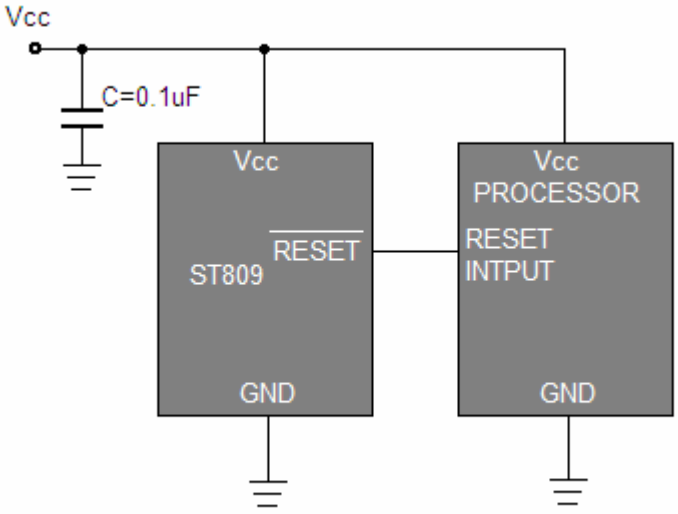
■ ELECTRICAL CHARACTERISTICS (TA = 25°C Unless otherwise noted specified.)

VCC = full range, TA = −40°C to +105°C, unless otherwise noted. Typical values are at TA = +25°C, VCC = 3.3V for 2.93/3.08V versions, and VCC = 3V for 2.7V/2.63V version.

Parameter	Symbol	Test Conditions	Operating Conditions			Unit
			Min	Typ	Max	
Input Voltage	V_{CC}	-	2.0	-	5.5	V
Suply Current	I_{CC}	-	-	18	25	mA
Reset Threshold	V_{TH}	ST809-2.63 ST809-2.70 ST809-2.93 ST809-3.08	2.55 2.66 2.86 3.00	2.63 2.70 2.93 3.08	2.68 2.73 2.99 3.15	V
Reset Threshold Temperature Coefficient	-	-	-	30	-	ppm/°C
V_{CC} to Reset Delay $V_{CC}=V_{TH}$ to (V_{TH} - 100mV)	-	-	-	20	-	µsec
Reset Active Timeout Period	-	-	140	240	560	msec
/RESET Output Voltage Low	V_{OL}	I_{SINK}=1.2mA	-	-	0.3	V
/RESET Output Voltage High	V_{OH}	I_{SOURCE} = 500µA	0.8V_{CC}	-	-	V

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

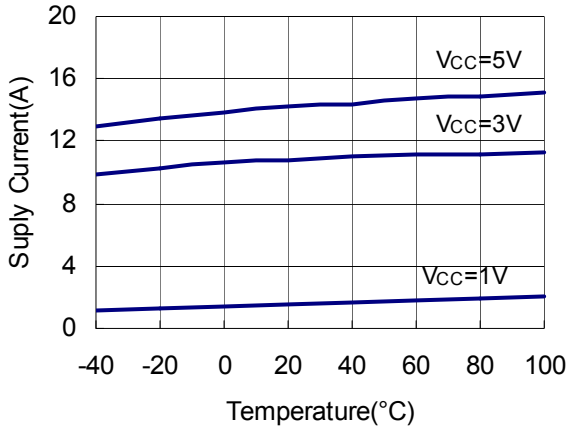
■ TYPICAL APPLICATIONS



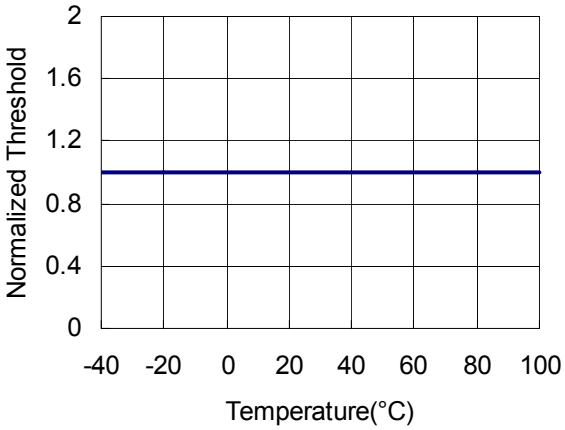
Typical Application Diagram

TYPICAL PERFORMANCE CHARACTERISTICS

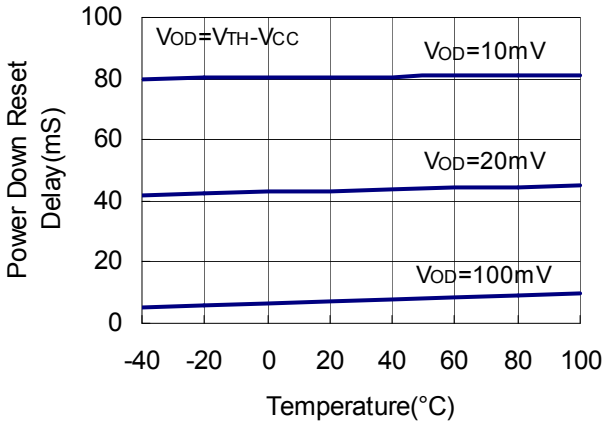
Supply Current VS Temperature



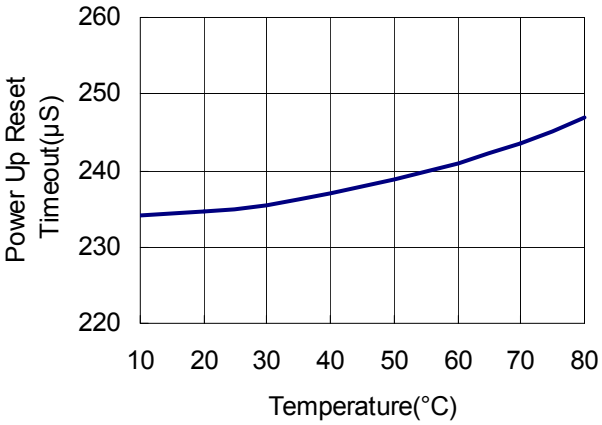
Normalized Threshold VS Temperature



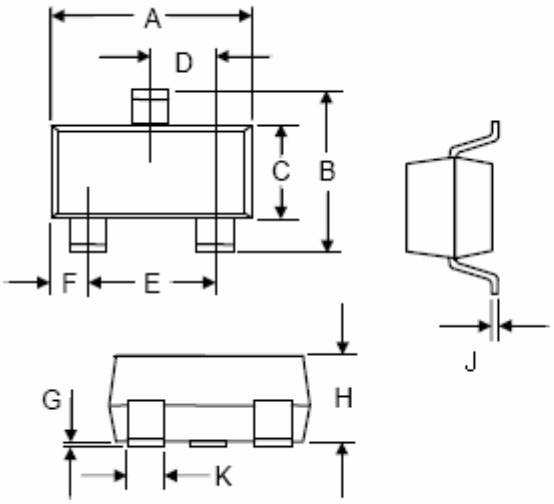
Delay Time VS Temperature



Timeout VS Temperature



SOT-23 PACKAGE DIMENSIONS



Dimensions				
Symbol	Inches		Millimeters	
	Min	Max	Min	Max
A	0.110	0.120	2.80	3.04
B	0.83	0.098	2.10	2.64
C	0.47	0.055	1.20	1.40
D	0.35	0.041	0.89	1.03
E	0.70	0.081	1.78	2.05
F	0.18	0.024	0.45	0.60
G	0.001	0.0039	0.013	0.100
H	0.035	0.044	0.89	1.12
J	0.003	0.007	0.085	0.18
K	0.015	0.02	0.37	0.51