

◆ DESCRIPTION

The MT809 microprocessor supervisory circuits can be used to monitor the power supplies in microprocessor and digital systems. They provide a reset to the microprocessor during power-up, power-down and brown-out conditions.

The function of the MT809 is to monitor the V_{CC} supply voltage, and assert a reset signal whenever this voltage declines below the factory-programmed reset threshold. The reset signal remains asserted for 240ms after V_{CC} rises above the threshold. The MT809 has an active-low $\overline{\text{RESET}}$ output. The output of the MT809 is guaranteed valid down to $V_{CC} = 1V$. The device is available in a SOT-23-3L package.

The MT809 is characterized for operation from -40°C to 85°C junction temperature. The MT809 is optimized to reject fast transient glitches on the V_{CC} line. Low supply current of $25\mu\text{A}$, ($V_{CC}=3.3V$) makes these devices suitable for battery powered applications.

◆ FEATURES

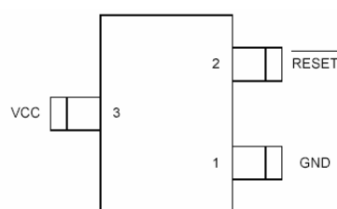
- Precision V_{CC} Monitor for 2.8V, 3.0V, 3.3V and 5.0V Supplies.
- 200ms typical $\overline{\text{RESET}}$ Output Duration.
- $\overline{\text{RESET}}$ Output Guaranteed to $V_{CC} = 1.0V$.
- Low $7\mu\text{A}$ Supply Current typical.
- V_{CC} Transient Immunity.
- No External Components.
- ESD rating is 8KV(HBM)

◆ APPLICATIONS

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

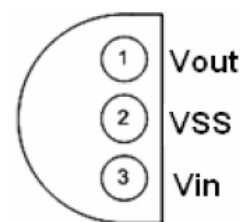
◆ PIN CONFIGURATIONS

SOT-23 (Top View)



MT809-X.XXS

TO-92 (Top View)



MT809-X.XXZ

◆ ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Maximum	Unit
Supply 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	
Thermal Resistance, Junction-to-Ambient	θ_{JA}	230	$^{\circ}C/W$
Operating Temperature Range	T_A	-40~85	$^{\circ}C$
Operating junction temperature range	T_J	0 to 125	$^{\circ}C$
Storage temperature range	T_{STG}	- 60 to 150	$^{\circ}C$
Lead temperature (soldering) 10sec	T_{LEAD}	260	$^{\circ}C$

Note 1.:

Exceeding these ratings could cause damage to the device. All voltages are with respect to Ground. Currents are positive into, negative out of the specified terminal.

Note 2.:

Voltage values are with respect to the anode terminal unless otherwise noted.

◆ ORDERING INFORMATION

Device	Package		Vout Volts	Volts marking Code	T_A ($^{\circ}C$)
MT809-X.XX X ↙ ↘ Volts Package	S	SOT-23	4.63	L	-40 ~ 85
			4.38	M	
			4.00	J	
	Z	TO-92	3.08	T	
			2.93	S	
			2.63	R	

◆ POWER DISSIPATION TABLE

Package	θ_{JA} ($^{\circ}C/W$)	$T_A \leq 25^{\circ}C$ Power rating(Mw)	$T_A = 70^{\circ}C$ Power rating(Mw)	$T_A = 85^{\circ}C$ Power rating (Mw)
S	230	435	239	174
Z	220	455	250	182

Note :

- Exceeding the maximum allowable power dissipation will result in excessive die temperature, and the regulator will go into Thermal shutdown
- T_J : Junction Temperature Calculation: $T_J = T_A + (P_D \times \theta_{JA})$,
The θ_{JA} numbers are guidelines for the thermal performance of the device/PC-board system
All of the above assume no ambient airflow
- θ_{JA} : Thermal Resistance-Junction to Ambient, D_F : Derating factor, P_O : Power consumption.

◆ RECOMMENDED OPERATING CONDITIONS

Parameter	Symbol	Operating Conditions			Unit
		Min.	Typ.	Max.	
Input Voltage	V_{IN}	2.0	-	5.5	V
Junction temperature	T_J	0 ~ 125			°C

◆ ELECTRICAL CHARACTERISTICS

$V_{CC}=5V$ for L/M/J; 3.3V for T/S; 3.0V for R, $T_A=25^{\circ}C$, unless otherwise specified.

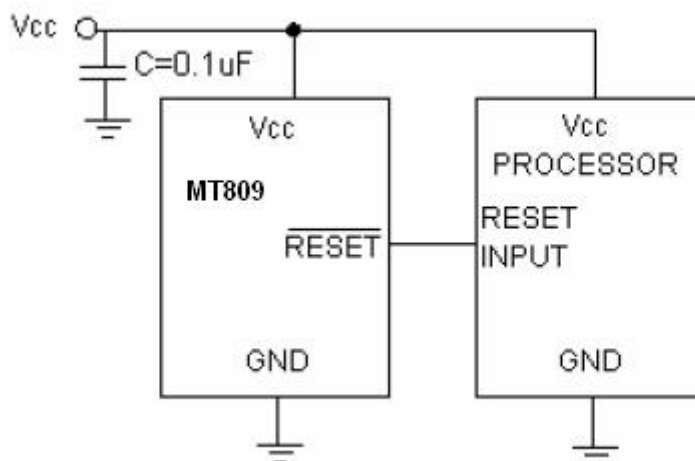
Parameter	Symbol	Test Conditions	Min.	Typ.	Max.	Unit
Input Voltage	V_{CC}		2.0	-	5.5	V
Supply Current	I_{CC}		-	7	10	μA
Reset Threshold	V_{TH}	MT809-4.63	4.51	4.63	4.75	V
		MT809-4.38	4.27	4.38	4.49	
		MT809-4.00	3.90	4.00	4.10	
		MT809-3.08	3.00	3.08	3.16	
		MT809-2.93	2.85	2.93	3.00	
		MT809-2.63	2.56	2.63	2.70	
Reset Threshold Temperature Coefficient (Note)			-	30	-	ppm/°C
V_{CC} to Reset Delay $V_{CC}=V_{TH}$ to ($V_{TH} - 100mV$)			-	20	-	μsec
Reset Active Timeout Period			-	200	-	msec
RESET Output Voltage Low	V_{OL}	$I_{SINK}=3mA$	-	-	0.4	V
RESET Output Voltage High	V_{OH}	$I_{SOURCE} = 800\mu A$	$0.8V_{CC}$	-	-	V

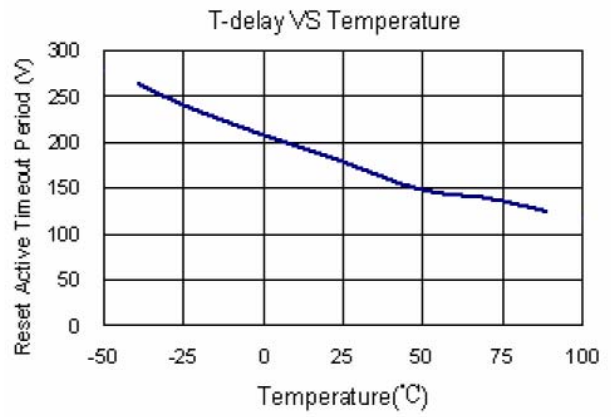
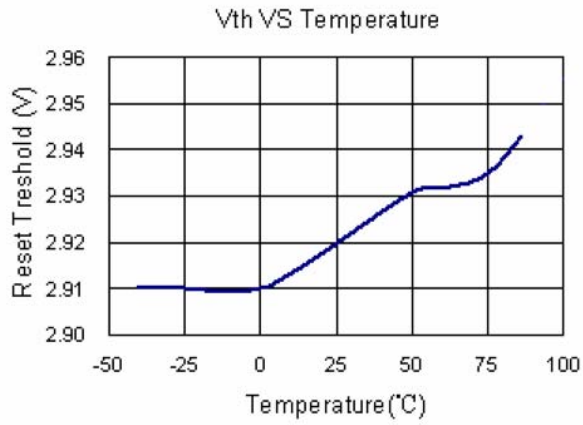
NOTES:

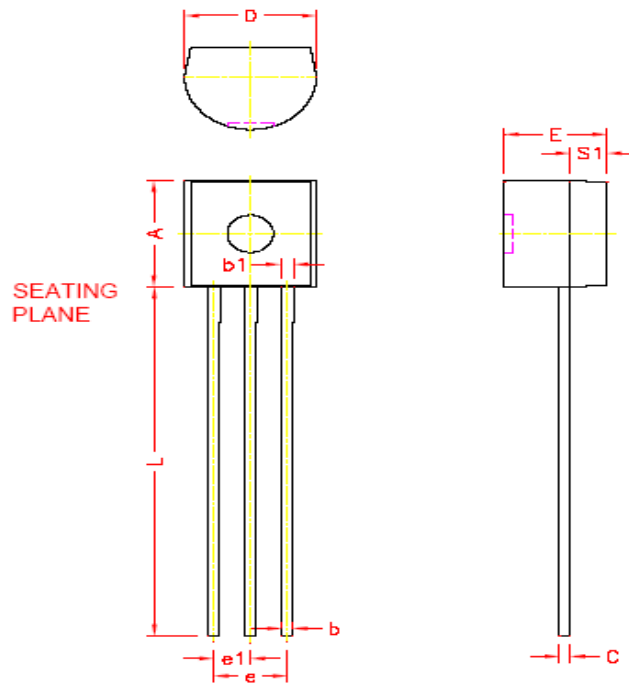
1. RESET threshold temperature coefficient is the worst case voltage change divided by the total temperature range.

◆ 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 200msec(typ.) after V_{CC} rises above reset threshold
3	V_{CC}	Supply Voltage (typ.)

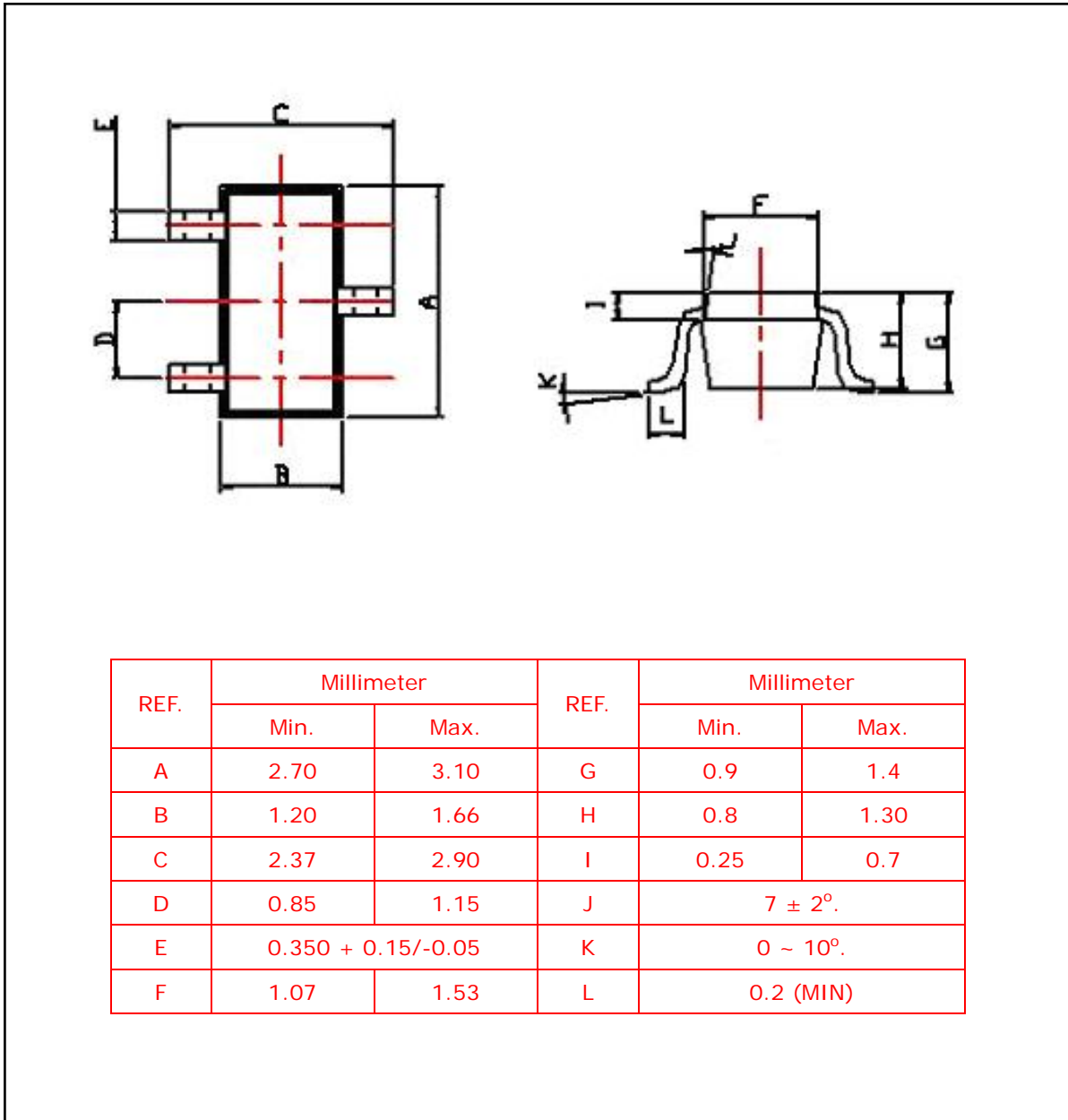
◆ TYPICAL APPLICATIONS


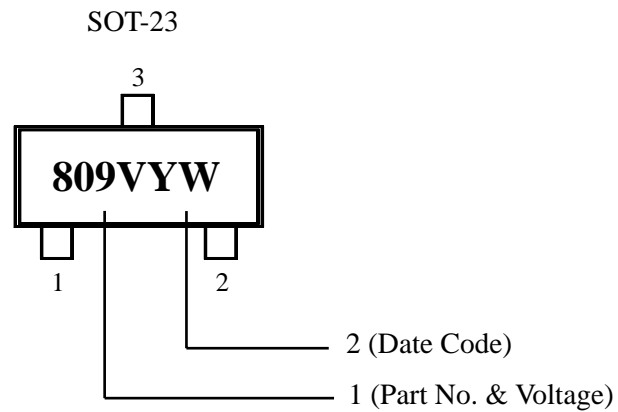
◆ TYPICAL PERFORMANCE CHARACTERISTICS


◆ PHYSICAL DIMENSIONS
3-Pin surface Mount TO-92(Z)


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	4.45	4.70	D	4.44	4.7
S1	1.02	—	E	3.30	3.81
b	0.36	0.51	L	12.70	—
b1	0.36	0.76	e1	1.15	1.39
C	0.36	0.51	e	2.42	2.66

◆ **PHYSICAL DIMENSIONS**
3-Pin surface Mount SOT-23(S)



◆ MARKING INFORMATION

1. Part No & Voltage : 809V

809 : MT809

V : Voltage (R=2.63V, S=2.93V, T=3.08V, M=4.38V)

Part No.	Marking
MT809-2.63S	809RXY
MT809-2.93S	809SXY
MT809-3.08S	809TXY
MT809-4.38S	809MXY

2. Date Code : Y W

Y = Year Code (2007 : 7 ; 2008 : 8 ; 2010 : 0)

W = Week Code (A~Z : 1~26 ; a ~ z : 27 ~ 52)