

## Low $I_q$ Supply Voltage Supervisory in SOT23-3

### FEATURES

- Operating Supply Voltage: 1.0V to 5.5V
- $\pm 2\%$  Reset Threshold Accuracy
- Low Quiescent current: 5 $\mu$ A (typically)
- Push-Pull Active Low  $\overline{\text{RESET}}$  output
- 240ms Power-On Reset Delay
- Reset Output Drive Current: 3mA
- 3-Pin SOT23-3 Package

### APPLICATIONS

- Digital Set Top Boxes
- TV
- Portable Device
- Microprocessor Systems

### GENERAL DESCRIPTION

The TMI6809 series device are low  $I_q$  supply voltage supervisory that monitors a single voltage used in microprocessor and digital control system. The TMI6809 provide an active low reset signal while the VCC supply voltage drops below the reset threshold voltage. When the VCC supply voltage rises above the threshold voltage plus hysteresis the reset output goes high after 240ms (typical) reset delay time.

TMI6809 series are available suitable for monitoring 3V, 3.3V and 5V supply voltages. The low supply current of typical 5 $\mu$ A makes TMI6809 series devices ideal for using in portable, battery powered system applications, and they are available in 3-pin SOT23-3 package.

### TYPICAL APPLICATION

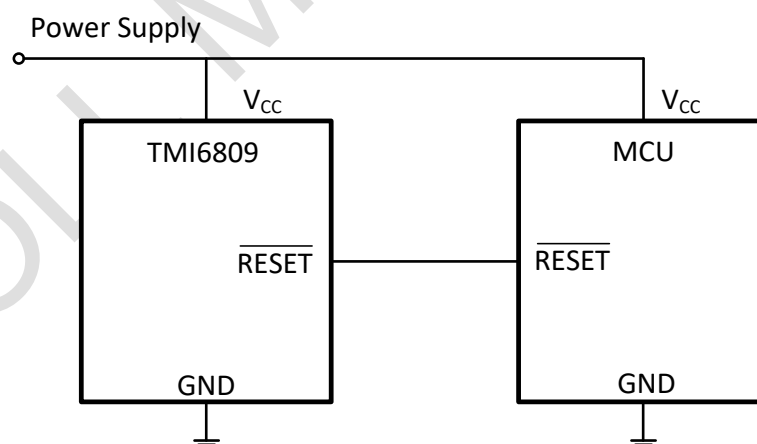
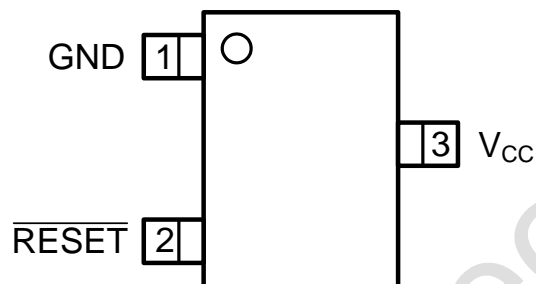


Figure 1. Typical Application Circuits

## ABSOLUTE MAXIMUM RATINGS (Note 1)

Parameter	Value	Unit
Input Supply Voltage	-0.3~6	V
RESET Voltage	-0.3~6	V
Storage Temperature Range	-50~150	°C
Junction Temperature <small>(Note2)</small>	-40~150	°C
Power Dissipation	300	mW

## PACKAGE/ORDER INFORMATION



SOT23-3

Top Mark: TxxXXX (Txx: Device Code, XXX: Inside Code)

Part Number	Reset Threshold	Package	Top mark	Quantity/ Reel
TMI6809-232	2.32V	SOT23-3	T3QXXX	3000
TMI6809-263	2.63V	SOT23-3	T6RXXX	3000
TMI6809-293	2.93V	SOT23-3	T9SXXX	3000
TMI6809-308	3.08V	SOT23-3	T0TXXX	3000
TMI6809-400	4.00V	SOT23-3	T0JXXX	3000
TMI6809-438	4.38V	SOT23-3	T3MXXX	3000
TMI6809-463	4.63V	SOT23-3	T6LXXX	3000

TMI6809 series devices are Pb-free and RoHS compliant.

**PIN FUNCTIONS**

Pin	Name	Function
1	GND	Ground Pin.
2	$\overline{\text{RESET}}$	Active low reset output pin.
3	V <sub>CC</sub>	Power supply voltage that is monitored.

**ESD RATING**

Items	Description	Value	Unit
V <sub>ESD_HBM</sub>	Human Body Model for all pins	±4000	V
V <sub>ESD_CDM</sub>	Charge Device Model for all pins	±2000	V

**JEDEC specification JS-001**
**RECOMMENDED OPERATING CONDITIONS**

Items	Description	Min	Max	Unit
Voltage Range	V <sub>CC</sub>	1.0	5.5	V
T <sub>J</sub>	Operating Junction Temperature Range	-40	125	°C

## ELECTRICAL CHARACTERISTICS

(1.0V < V<sub>IN</sub> < 5.5V, T<sub>A</sub> = 25°C, unless otherwise noted.)

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Input Voltage Range	V <sub>IN</sub>		1.0		5.5	V
Input Supply Quiescent Current	I <sub>q</sub>		1	5	16	μA
$\overline{\text{RESET}}$ Voltage Threshold	V <sub>TH</sub>	TMI6809-232	2.28	2.32	2.36	V
		TMI6809-263	2.58	2.63	2.68	V
		TMI6809-293	2.87	2.93	2.98	V
		TMI6809-308	3.02	3.08	3.14	V
		TMI6809-400	3.92	4.00	4.08	V
		TMI6809-438	4.29	4.38	4.46	V
TMI6809-463	4.54	4.63	4.72	V		
$\overline{\text{RESET}}$ Voltage Threshold Temperature Coefficient				30		ppm/°C
V <sub>CC</sub> to $\overline{\text{RESET}}$ Delay Time	T <sub>PD_VCC</sub>	V <sub>CC</sub> =V <sub>TH</sub> to V <sub>TH</sub> - 100mV		20		μs
$\overline{\text{RESET}}$ Active Timeout Delay	T <sub>D</sub>	T <sub>A</sub> =25°C	210	240	270	ms
		T <sub>A</sub> =-40°C to 125°C <sub>(Note3)</sub>	160	240	320	ms
$\overline{\text{RESET}}$ Low-level Output Voltage	V <sub>OL</sub>	V <sub>CC</sub> = V <sub>TH</sub> - 0.5V, I <sub>O_sink</sub> = 1mA			0.3	V
$\overline{\text{RESET}}$ High-level Output Voltage	V <sub>OH</sub>	V <sub>CC</sub> = V <sub>TH</sub> + 0.5V, I <sub>O_source</sub> = 1mA	V <sub>CC</sub> - 0.3			V
$\overline{\text{RESET}}$ Output Voltage Sink Current	I <sub>OL</sub>	V <sub>CC</sub> = 2V, V <sub>RESET</sub> = 3V TMI6809-263		15		mA
$\overline{\text{RESET}}$ Output Voltage Source Current	I <sub>OH</sub>	V <sub>CC</sub> = 3V, V <sub>RESET</sub> = 0V TMI6809-263		30		mA

**Note 1:** Absolute Maximum Ratings are those values beyond which the life of a device may be impaired.

**Note 2:** T<sub>J</sub> is calculated from the ambient temperature T<sub>A</sub> and power dissipation P<sub>D</sub> according to the following formula: T<sub>J</sub> = T<sub>A</sub> + (P<sub>D</sub>) × θ<sub>JA</sub>.

**Note 3:** Guaranteed by design and production trimming.

**FUNCTIONAL BLOCK DIAGRAM**

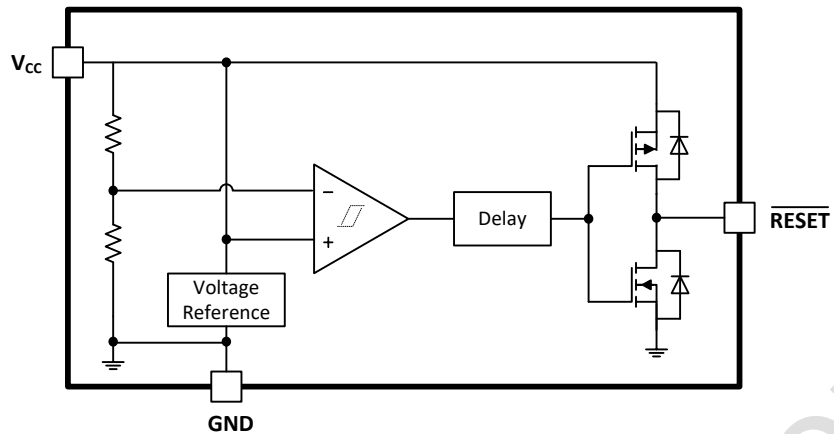


Figure 2. TMI6809 Block Diagram

**V<sub>CC</sub>  $\overline{\text{RESET}}$  TIMING**

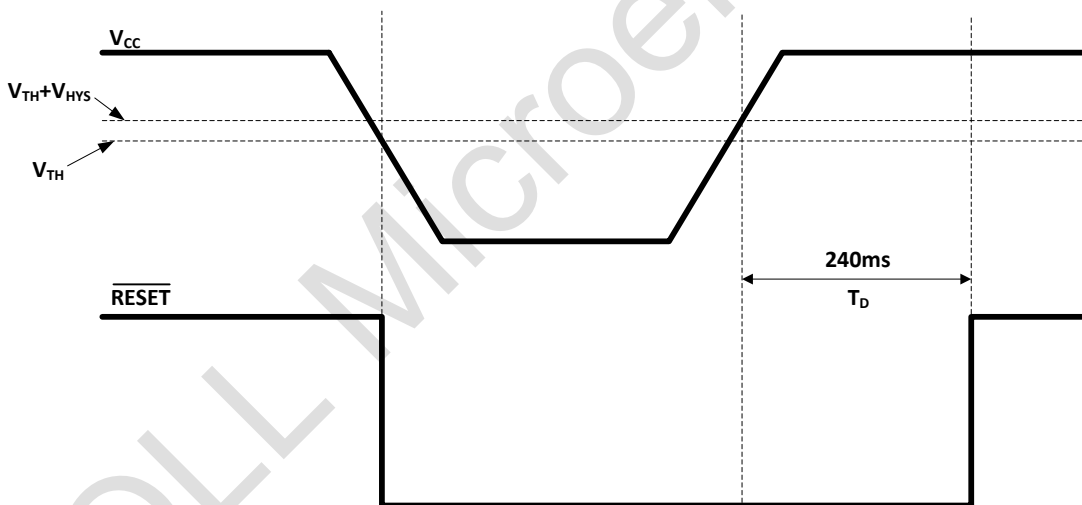
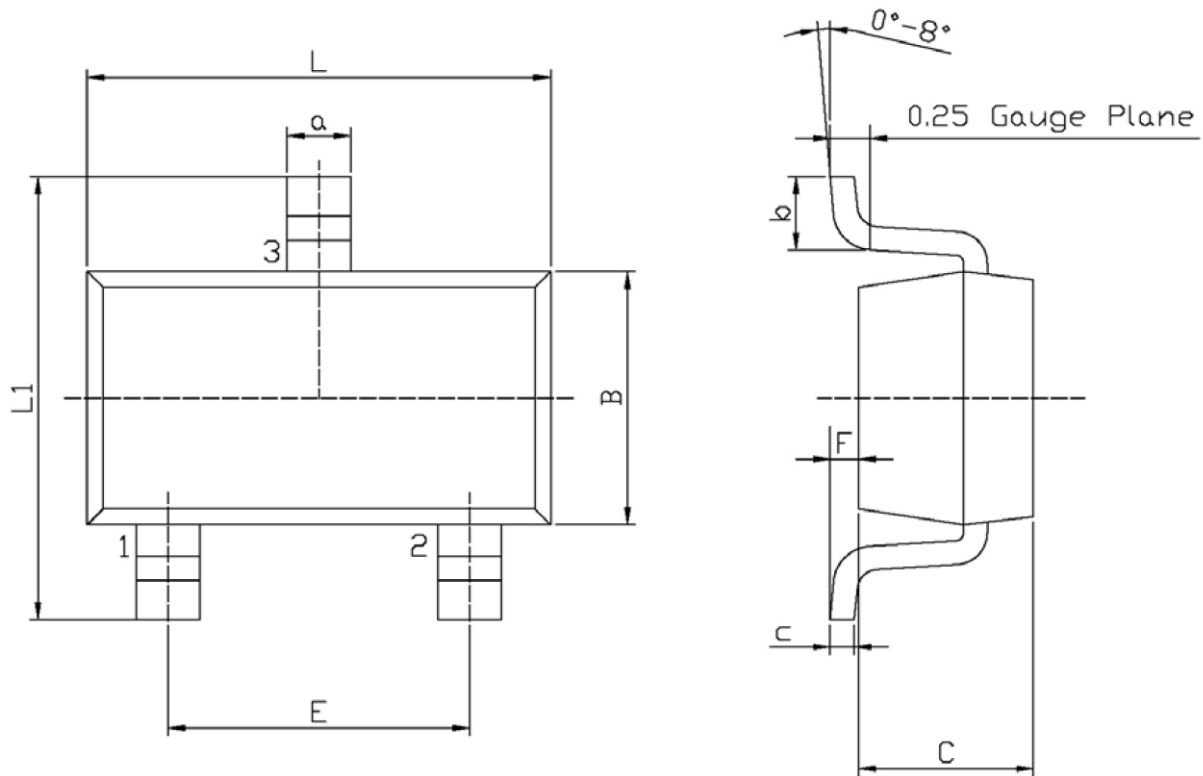


Figure 3. TMI6809 V<sub>CC</sub> Reset Timing

## PACKAGE INFORMATION

### SOT23-3



Unit: mm

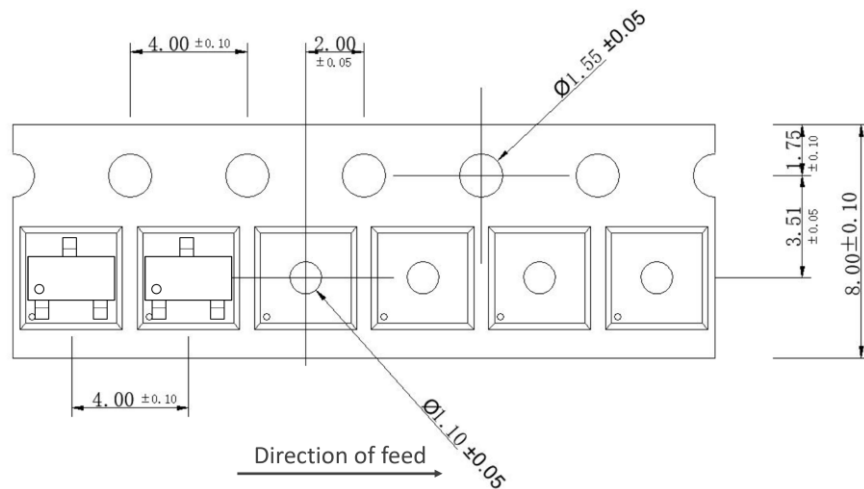
Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
L	2.82	3.02	a	0.35	0.50
B	1.50	1.70	c	0.10	0.20
C	0.90	1.30	b	0.30	0.55
L1	2.60	3.00	F	0	0.15
E	1.80	2.00			

**Note:**

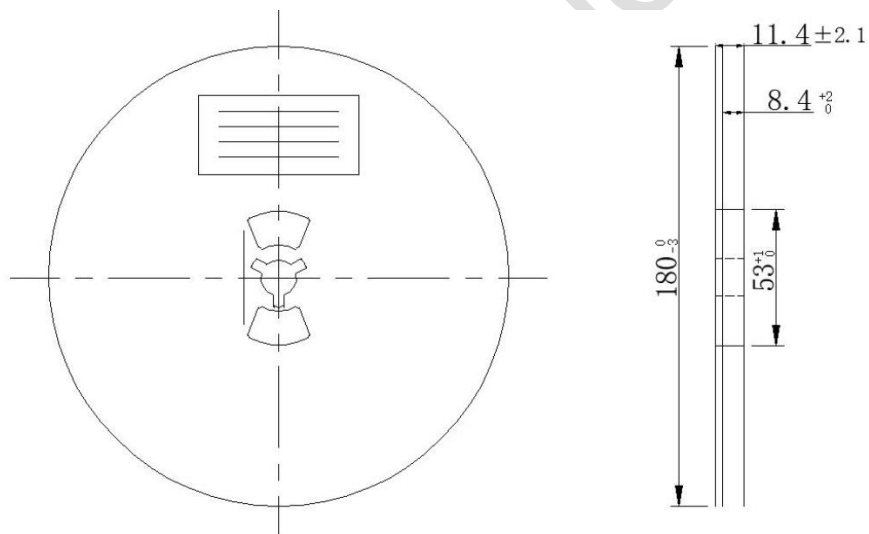
- 1) All dimensions are in millimeters.
- 2) Package length does not include mold flash, protrusion or gate burr.
- 3) Package width does not include inter lead flash or protrusion.
- 4) Lead popularity (bottom of leads after forming) shall be 0.10 millimeters max.

**TAPE AND REEL INFORMATION**

**TAPE DIMENSIONS:**



**REEL DIMENSIONS:**



**Note:**

- 1) All Dimensions are in Millimeter
- 2) Quantity of Units per Reel is 3000
- 3) MSL level is level 3.