Description

The SGM809 is a general-purpose voltage detector which only consume about 5uA at 3.6V,which can be widely used in all electronic system to either monitor a battery voltage or generate a power-on reset signal.It can work under the voltage ranging from 1V to 6V.

SGM809 employs a low voltage reference, low offset comparator,timer and push-pull output stage.Its push-pull output is pushed high after input voltage is greater than the internal setting level for 240ms.

The SGM809 is available in SOT-23 package.

Features

Wide operation range:1-6V
Voltage detecting level setting range:2.3-5V
SOT-23 package
Detection delay time: 240ms
Reset pin output kept low when input voltage < 1V
4kV ESD

Applications

Battery voltage monitor
Power-on reset
Set-top-box
Voltage level trigger
Press button debouncing
Portable devices

Package Marking and Ordering Information

Part No	Voltage Detecting Level	Package	Tape & Reel
SGM809-ZXN3L/TR	2.32V	SOT-23	3K/Reel
SGM809-RXN3L/TR	2.63V		
SGM809-SXN3L/TR	2.93V		
SGM809-TXN3L/TR	3.08V		
SGM809-JXN3L/TR	4.00V		
SGM809-MXN3L/TR	4.38V		
SGM809-LXN3L/TR	4.63V		

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

Symbol	Parameter	Limit	Unit
V_{IN}		-0.3 to 8	V
V_{RESET}		-0.3 to V_{IN} +0.3	V
	Continuous Power Dissipation	0.3	W
T_J	Junction Temperature	-40 to 125	°C
	Lead Temperature	260	°C
T_{STG}	Storage Temperature	-55 To 150	°C
$R_{\theta JA}$	Thermal Resistance,Junction-to-Ambient (Note 2)	280	°C/W
$R_{\theta JC}$	Thermal Resistance,Junction-to-Ambient (Note 2)	90	°C/W

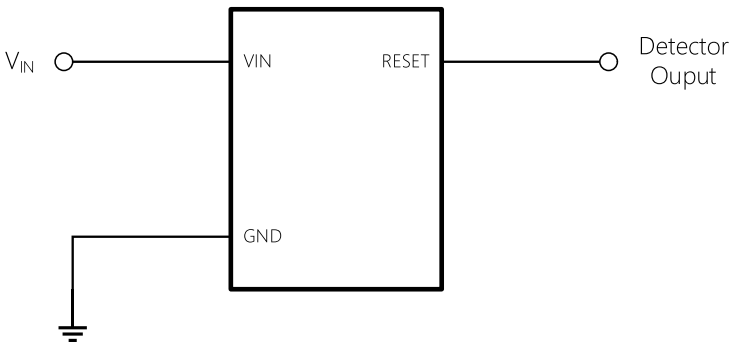
Notes:

(1) Exceeding these ratings may damage the device.

(2) The maximum allowable power dissipation is a function of the maximum junction temperature T_J(MAX), the junction-to-ambient thermal resistance θ_{JA}, and the ambient temperature T_A. The maximum allowable continuous power dissipation at any ambient temperature is calculated by $P_D(MAX)=(T_J(MAX)-T_A)/\theta_{JA}$. Exceeding the maximum allowable power dissipation will cause excessive die temperature, and the regulator will go into thermal shutdown. Internal thermal shutdown circuitry protects the device from permanent damage.

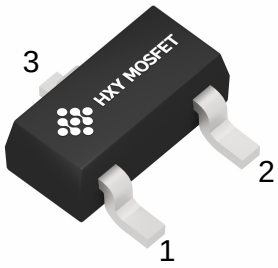
(3) Measured on JESD51-7, 4-layer PCB.

Typical Application



Detector output remains low if V_{IN} is below detecting level, and jumps to high if VIN is above detecting level for 240ms

Pin Assignment



SOT-23

The package of SGM809 is SOT23, with pin assignment shown in following table:

Pin No	Name	Description
1	GND	Ground
2	VIN	The power input node as well as the voltage node to be detected
3	RESET	The push pull output node, pulled low when V_{IN} is lower than detect level and pushed high when V_{IN} is higher than detect level for 240ms

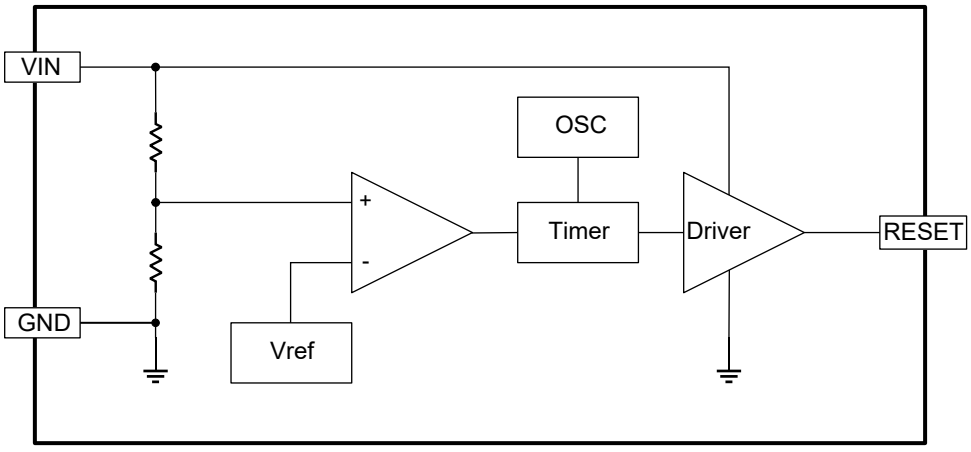
Electrical Characteristics (T_A=25°C unless otherwise noted)

Parameter	Conditions	Min	Typ	Max	Units
Input voltage range, V_{IN}		1		6	V
Quiescent current, I_Q	V_{IN} = 3.6V, T_A=25°C	3	5	10	μA
	V_{IN} = 3.6V, T_A=-40°C	2	3.5	10	μA
	V_{IN} = 3.6V, T_A=125°C	4	6.3	15	μA
Detecting voltage level, V_{DET}	V_{DET} = 2.32V	2.262	2.32	2.378	V
	V_{DET} = 2.63V	2.564	2.63	2.696	V
	V_{DET} = 2.93V	2.857	2.93	3.003	V
	V_{DET} = 3.08V	3.003	3.08	3.157	V
	V_{DET} = 4.00V	3.92	4.00	4.08	V
	V_{DET} = 4.38V	4.292	4.38	4.468	V
	V_{DET} = 4.63V	4.537	4.63	4.723	V
Delay time	T_A = -40°C to 85°C	150	240	560	ms
Reset falling delay	V_{IN} falling below V_{DET}		2	50	μs
Reset output low voltage, V_{OL}	I_{SINK} = 1.2mA, V_{IN}=2V	0	0.03	0.3	V
Reset output high voltage, V_{OH}	I_{SOURCE} = 1.2mA, V_{IN}=3V	V_{IN}-0.3	V_{IN}-0.05	V_{IN}	V

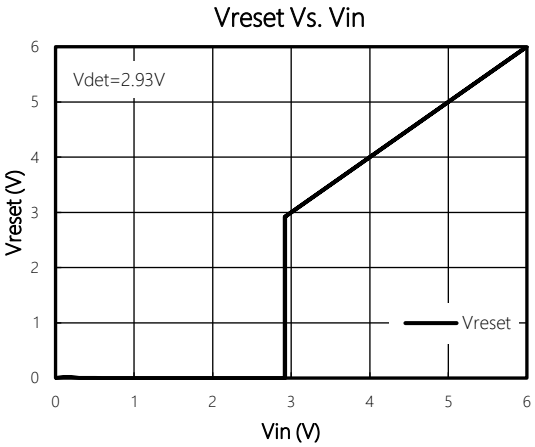
Function Descriptions

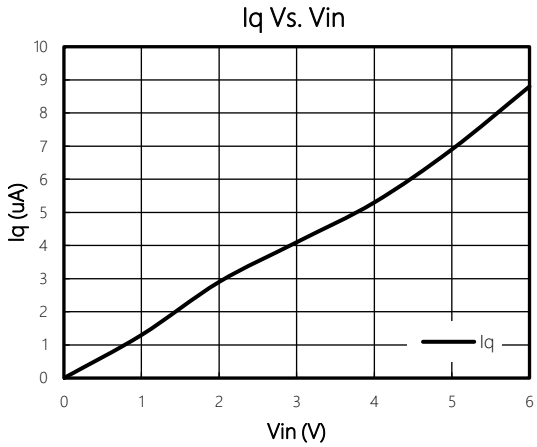
The SGM809 is a general-purpose voltage detector.It can work from 1V to 6V while consuming about 5uA at 3.6V.SGM809 keeps monitoring its VIN voltage, and RESET will jump high if VIN voltage is higher than detecting level V_{DET} for 240ms. Given all these features, SGM809 is suitable for the applications like battery voltage monitoring, power-on reset, voltage SGM809 employs a low voltage reference, low offset comparator,timer and push-pull output stage.Its push-pull output is comparison and even press button debouncing.

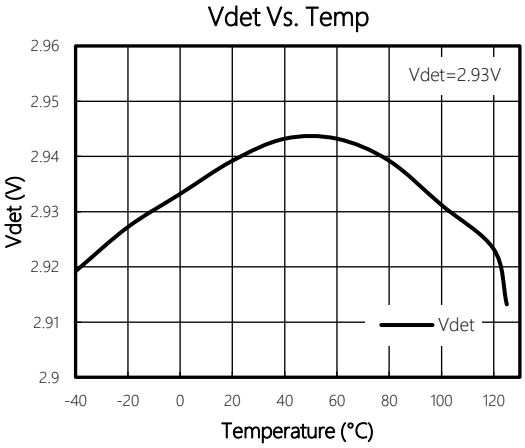
Function Diagram

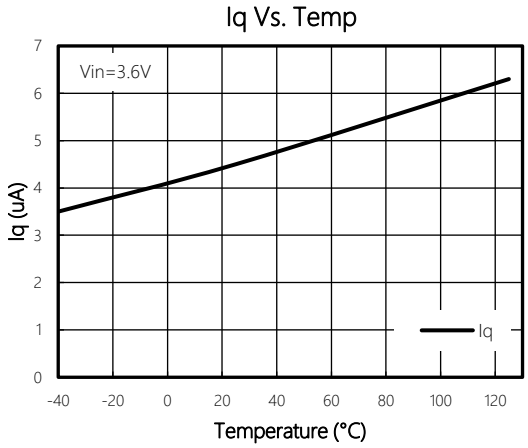


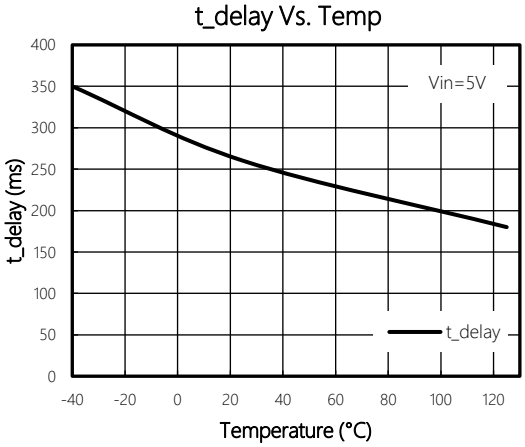
Typical Characteristics

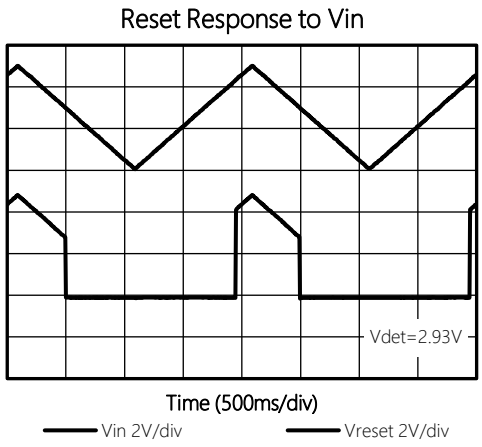




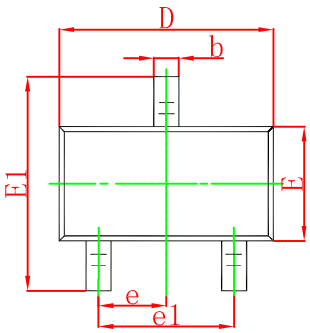


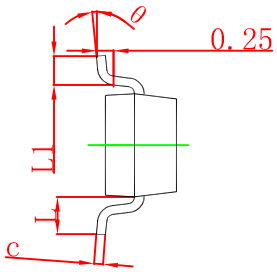


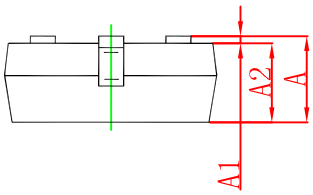




SOT-23 Package Outline Dimensions

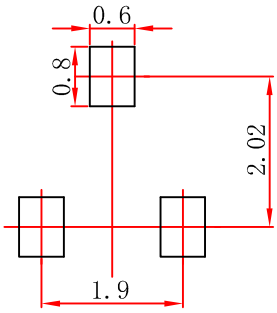






Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP		0.037 TYP	
e1	1.800	2.000	0.071	0.079
L	0.550 REF		0.022 REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

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