

## GN809

### µProcessor Supervisory

#### Description

The GN809 family allows the user to customize the CPU reset function without any external components. The user has a large choice of reset voltage thresholds and output driver configurations, all of which are preset at the factory. Each wafer is trimmed to the customer's specifications.

These circuits monitor the power supply voltage of up based systems. When the power supply voltage drops below the voltage threshold a reset is asserted immediately (within an interval  $T_{D1}$ ). The reset remains asserted after the supply voltage rises above the voltage threshold for a time interval,  $T_{D2}$ . The reset output is active low (RESETB). The reset output may be configured as either push/pull or open drain. The state of the reset output is guaranteed to be correct for supply voltage greater than 1V.

Space saving SOT-23 package and micropower quiescent current (<3.0uA) make this family a natural for portable battery powered equipment.

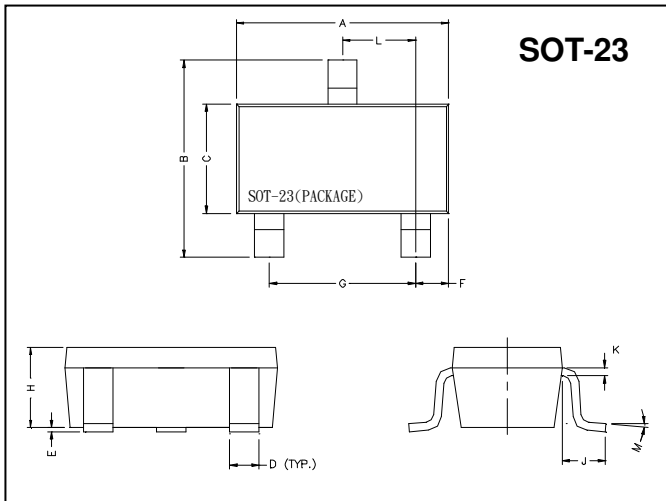
#### Features

- Tight Voltage Threshold Tolerance  $\pm 1.5\%$
- Wide Temperature Range  $-40^{\circ}\text{C}$  to  $80^{\circ}\text{C}$
- Low Quiescent Current <3.0uA
- Lead Free Products Meet RoHS standards

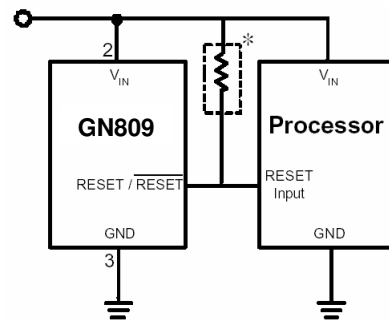
#### Applications

- Power Supplies
- Data Acquisition Systems
- Applications using CPUs
- Consumer Electronics
- Computer Peripherals
- Portable Electronics

#### Package Dimensions

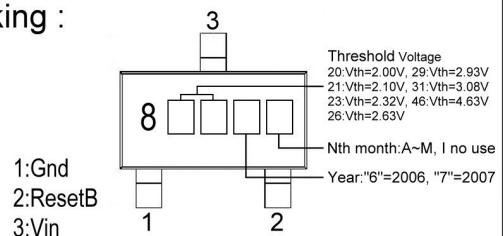


#### Typical Operating Circuit



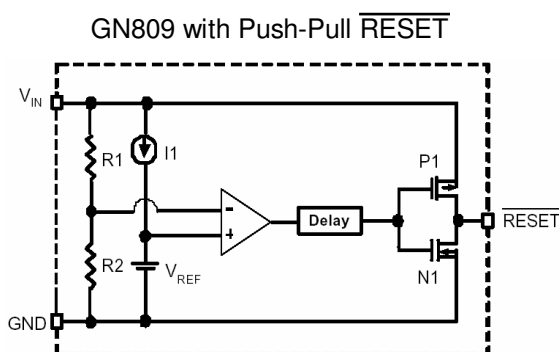
Note:\* External pull-up resistor is required if open-drain output is used. 10kΩ is recommended.

#### Marking :



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	1.90	REF.
B	2.40	2.80	H	1.00	1.30
C	1.40	1.60	K	0.10	0.20
D	0.35	0.50	J	0.40	-
E	0	0.10	L	0.85	1.15
F	0.45	0.55	M	0°	10°

#### Block Diagram



**Pin Description**

Pin Name	Pin Description
Gnd	Ground
RESETB	RESETB is active low and push-pull output
V <sub>IN</sub>	Positive power supply. A reset is asserted after this voltage drops below a predetermined. After V <sub>IN</sub> rises above that level the reset output remains asserted until the end of the reset timeout period.

**Absolute Maximum Ratings**

Parameter	Symbol	Ratings	Unit
Input Voltage	V <sub>IN</sub>	7	V
Input Current, V <sub>IN</sub>		20	mA
Output Current, RESETB		20	mA
Rate of Rise, V <sub>IN</sub>		100	V/μs
Ambient Temperature Range	T <sub>A</sub>	-40 ~ +85	°C
Junction Temperature Range	T <sub>J</sub>	-40 ~ +125	°C
Storage Temperature Range	T <sub>STG</sub>	-65 ~ +150	°C
Maximum Junction Temperature	T <sub>J Max</sub>	150	°C
Thermal Resistance	θ <sub>jc</sub>	140	°C/W
	θ <sub>ja</sub>	285	°C/W
Internal Power Dissipation	PD	400	mW
Solder Iron (10 Sec)*		350	°C
EDS Classification		B**	

Caution: Stress above the listed absolute maximum rating may cause permanent damage of the device

\*MIL-STDS-202G 210F

\*\*HBM B: 2000V ~ 3999V

**Electrical Characteristics Ta=25°C (unless otherwise noted)**

Parameter	Symbol	Condition	Min	TYP	Max	Unit
V <sub>IN</sub> Range	V <sub>Range</sub>	T <sub>A</sub> =-40°C ~ +85°C	1	-	5.5	V
Supply Current	I <sub>IN</sub>	V <sub>IN</sub> =V <sub>TH</sub> *1.10	-	-	3.0	μA
		V <sub>IN</sub> =V <sub>TH</sub> *1.10, T <sub>A</sub> =-40°C ~ +85°C	-	-	5.0	
Reset Threshold Voltage	V <sub>TH</sub>		V <sub>TH(NOM)</sub> -1.5%	-	V <sub>TH(NOM)</sub> +1.5%	mV
		T <sub>A</sub> =-40°C ~ +85°C	V <sub>TH(NOM)</sub> -2.0%	-	V <sub>TH(NOM)</sub> +2.0%	
Hysteresis Range (Note2)	V <sub>HYST</sub>	V <sub>Release</sub> -V <sub>TH</sub> (Note1)	10	30	60	mV
RESET Threshold Tempco (Note2)			30	50	160	ppm
RESETB Output Voltage Low	V <sub>OL</sub>	V <sub>IN</sub> <V <sub>TH(MIN)</sub> , I <sub>SINK</sub> =1.2mA T <sub>A</sub> =-40°C ~ +85°C	-	-	0.2	V
RESETB Output Voltage High	V <sub>OH</sub>	V <sub>IN</sub> >V <sub>TH(MAX)</sub>	I <sub>SOURCE</sub> =0.5mA V <sub>IN</sub> >1.8V	0.8*V <sub>IN</sub>	-	V
			I <sub>SOURCE</sub> =0.15mA 1.8V≥V <sub>IN</sub> >1.0V			
V <sub>IN</sub> to Reset Delay	T <sub>D1</sub>	V <sub>IN</sub> =V <sub>TH</sub> -100mV, T <sub>A</sub> =-40°C ~ +85°C	-	40	-	μs
Reset Timeout Period	T <sub>D2</sub>	T <sub>A</sub> =-40°C ~ +85°C	80	150	230	ms

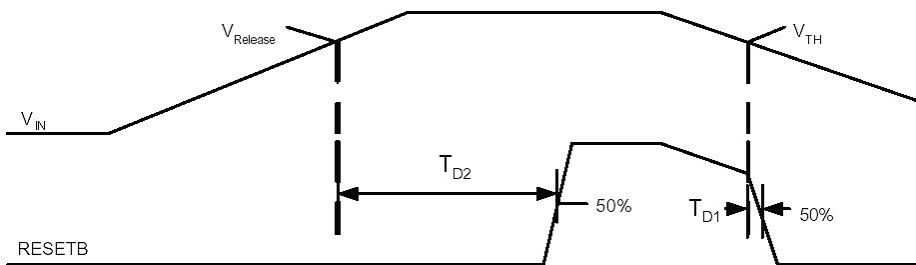
Note 1: The data based on V<sub>TH</sub>=2.7V part type.

2: Guaranteed by Design

## Ordering Information ( contd.)

Part Number	Marking	Output Voltage	Part Number	Marking	Output Voltage
GN809-20	820XX	2.00V	GN809-21	821XX	2.10V
GN809-23	823XX	2.32V	GN809-26	826XX	2.63V
GN809-29	829XX	2.93V	GN809-31	831XX	3.08V
GN809-46	846XX	4.63V			

## Timing Diagram

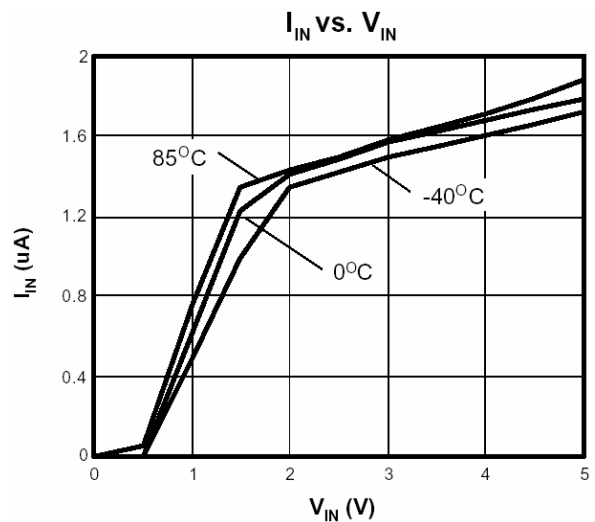
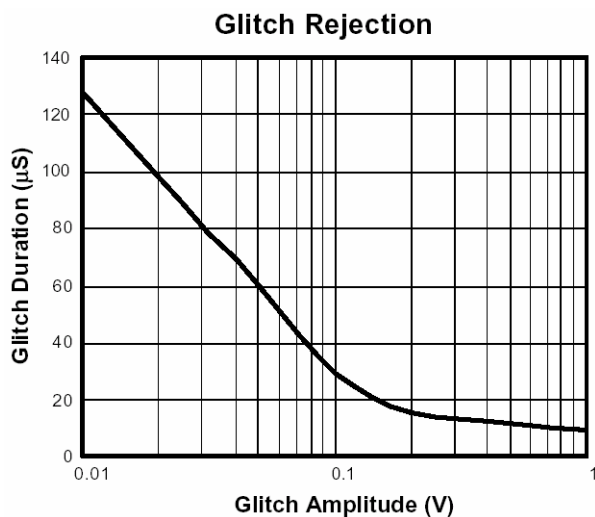


## Application Information

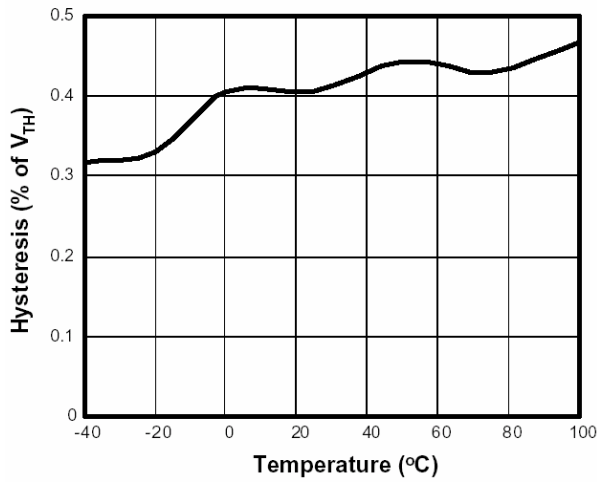
### Supply Transients

These device have a certain immunity to fast negative going transients. In the following pages the graph titled "Glitch Rejection" indicates the maximum allowable glitch amplitude and duration to avoid triggering an unintended reset. As shown in the graph shorter transient can have large amplitudes without triggering resets.

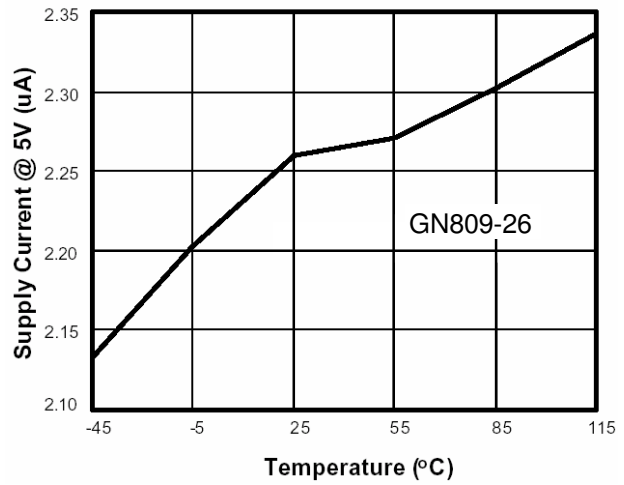
## Characteristics Curve



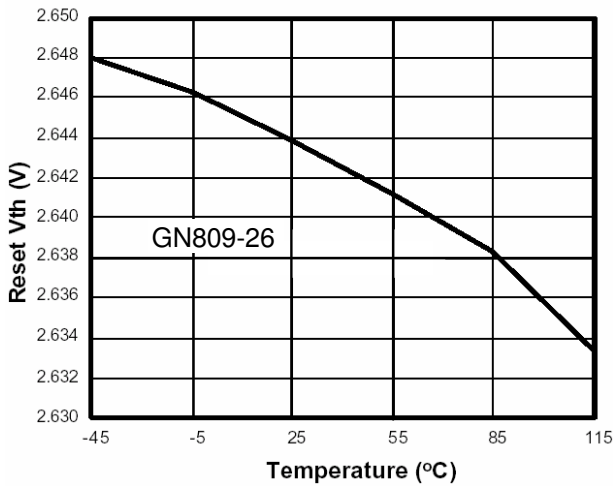
**Threshold Hysteresis vs. Temperature**



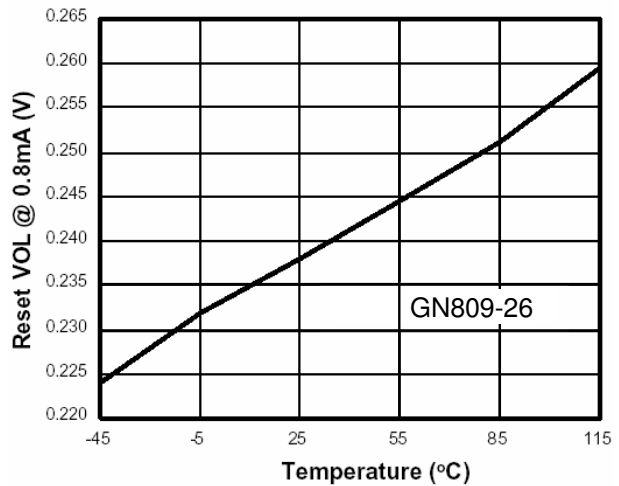
**I<sub>IN</sub> vs. Temperature**



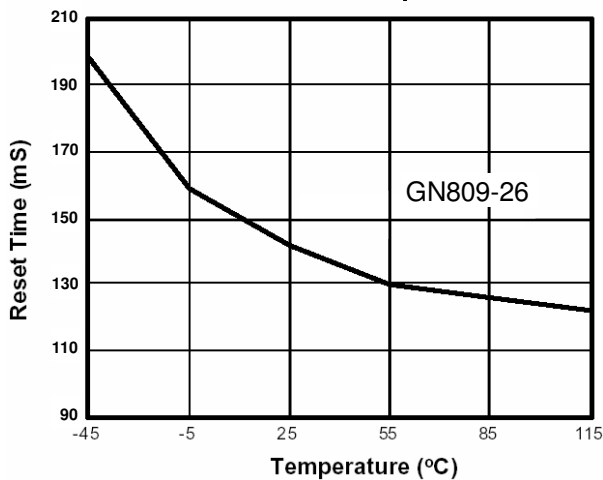
**Reset V<sub>TH</sub> vs. Temperature**



**Reset VOL vs. Temperature**



**Reset Time vs. Temperature**



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