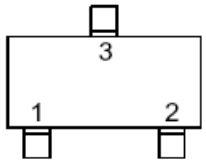
Micro-Power Voltage Detectors, Reset Of MCU With Delay Time

General Description

The LP3809 is a micro-power voltage detector supervising the power supply voltage level for microprocessors (μP) or digital systems. It provides internally fixed threshold levels with 0.1V per step ranging from 1.2V to 5V, which covers most digital applications. It features low supply current of 3μA. The LP3809 performs supervisory function by sending out a reset signal whenever the VDD voltage falls below a preset threshold level. This reset signal will last the whole period before VDD recovering. Once VDD recovered upcrossing the threshold level, the reset signal will be released after a certain delay time. Available in the 5-lead of SOT-23 packages.

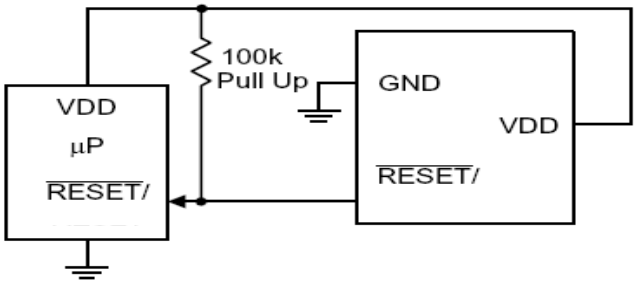
Pin Configurations



SOT-23

Pin No.	1	2	3
Type A	RESET	GND	VDD
Type B	GND	RESET	VDD

Typical Application Circuit



Features

- Built-in Recovery Delay Include 210ms
- Internally Fixed Threshold 1.2V to 5V in 0.1V Step
- No External Components Required
- High Accuracy ±1.5%
- Low Supply Current 3μA
- Low Functional Supply Voltage 0.9V
- N-Channel Open-Drain output
- Quick Start-Up

Applications

- Computers
- CPU/MCU/DSP
- Portable
- Battery-Powered Equipment

Ordering Information

LP3809□ - □ □ □ □ □

- F: PB-Free Package
- B3: SOT-23
- Output Voltage: 12: 1.2V, 13: 1.3V, ..., 50: 5.5V
- Type: A: Type A, B: Type B

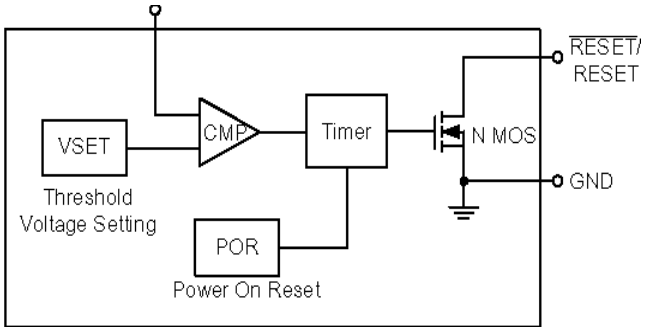
Note:

1. Output Voltage range from 1.2V to 5.0V in 0.1V increments.
2. 2.7V output order is LP3809A-27B3F.

Functional Pin Description

Pin Name	Pin Function
GND	Ground
RESET	Active Low Open-Drain Reset Output
VDD	Power Pin

Function Block Diagram



Absolute Maximum Ratings

Supply Input Voltage----------6V

Power Dissipation, PD @ TA = 25°C

SOT-23 ----------400mW

Package Thermal Resistance

SOT-23, θJA ----------250°C/W

ESD Susceptibility

HBM (Human Body Mode) ----------2kV

MM(Machine-Mode)----------200V

Recommended Operating Conditions

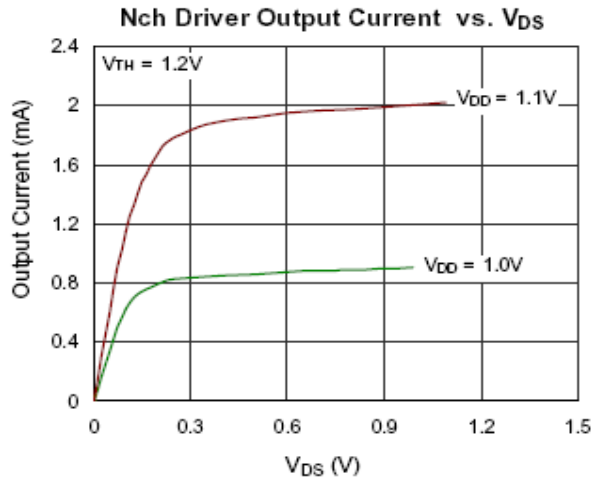
Supply Input Voltage----------0.3V to 6V

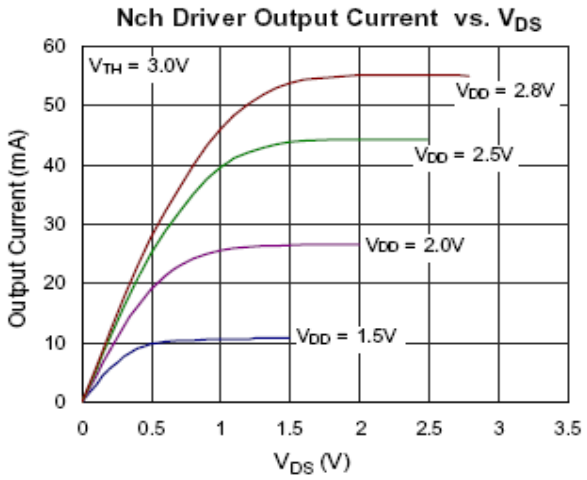
Operation Ambient Temperature Range----------−40°C to 85°C

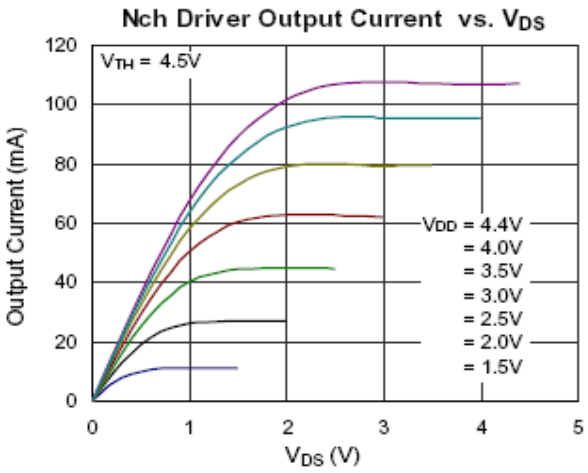
Electrical Characteristics

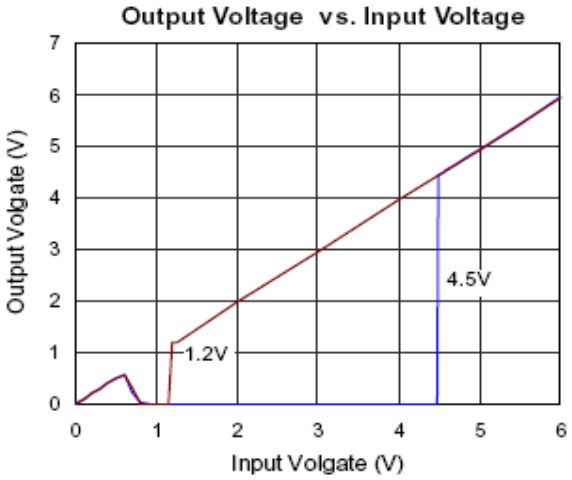
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Quiescent Current	IQ	VEN ≥ 1.2V, IOUT = 0mA		3		μA
Reset Threshold	VTH	TA = 27°C	1.2		1.5	V
Threshold Voltage Accuracy	ΔVTH		-1.5		1.5	%
VDD Drop to Reset Delay	Trd	Drop = VTH -125mV		20		uS
Reset Active Time	LP3809A/B	VDD ≥ 1.02×VTH		210		mS
RESET Output Voltage Low	VOL	3 = VDD < VTH ISINK >3.5mA		0.4		V
Thermal Shutdown Temperature	TSD			165		° C

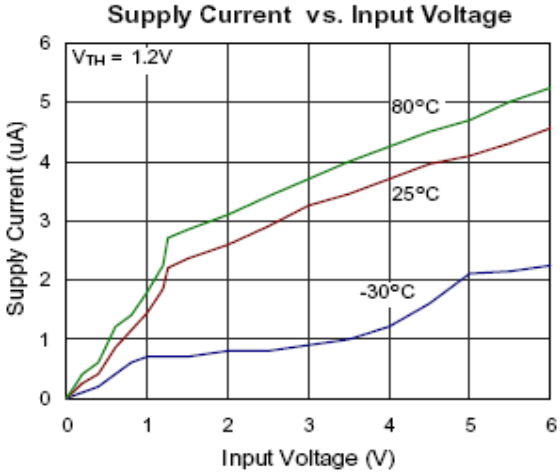
Typical Operating Characteristics

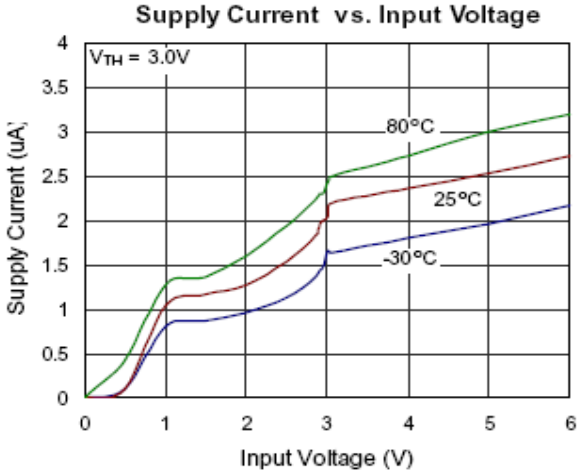




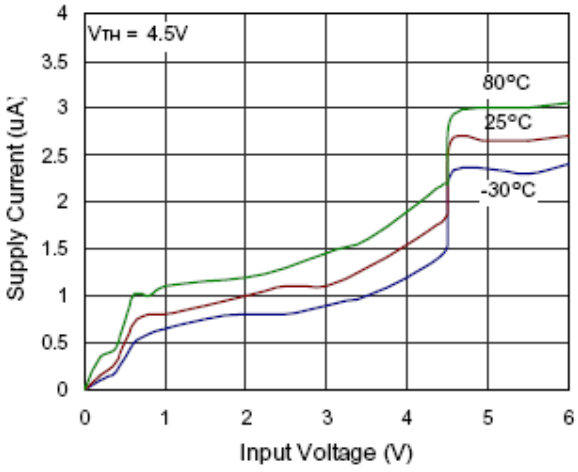




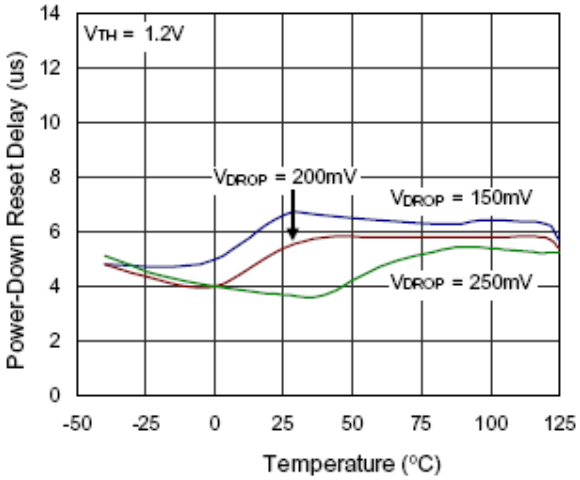




Supply Current vs. Input Voltage



Power-Down Reset Delay vs. Temperature



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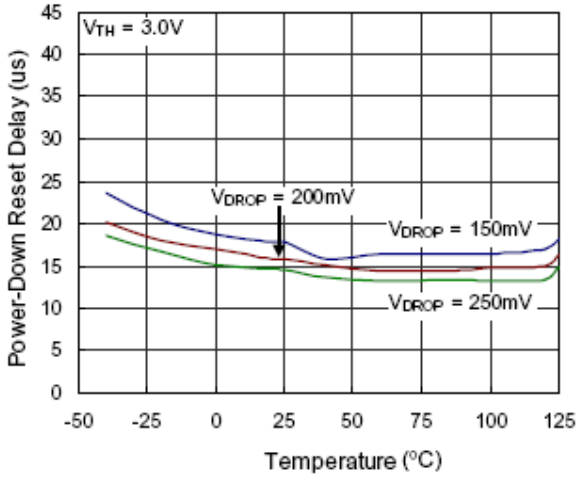
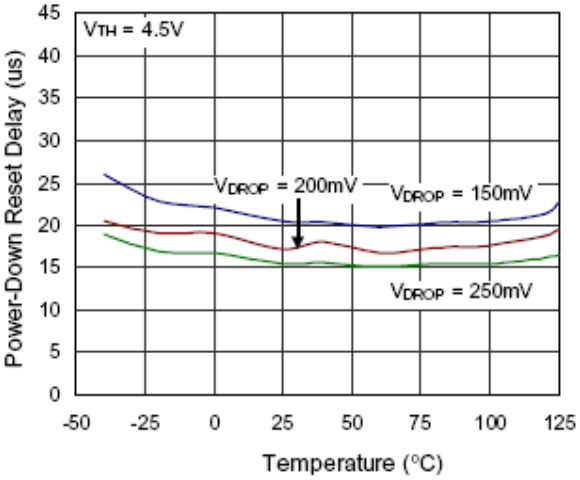
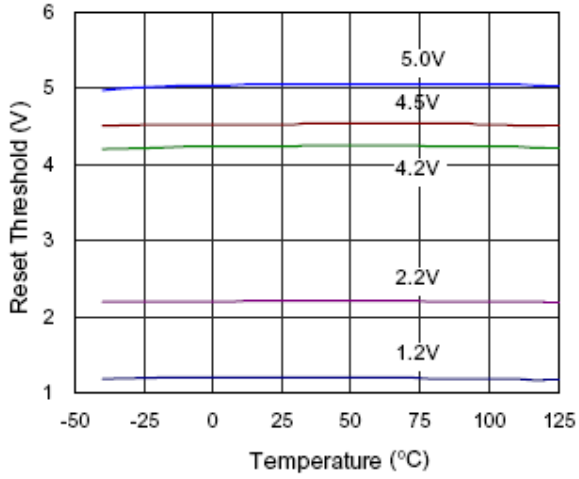


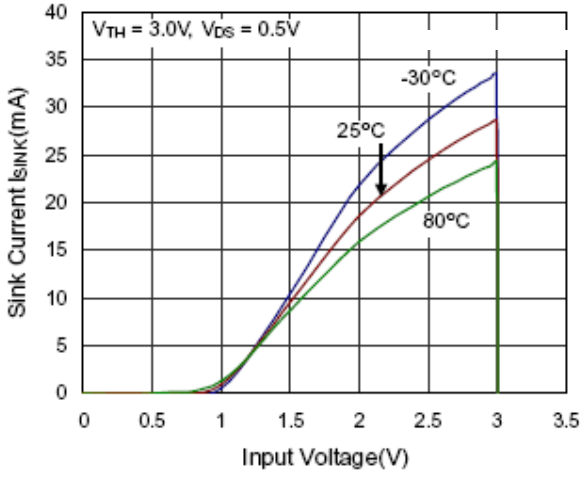
Power-Down Reset Delay vs. Temperature



Reset Threshold Deviation vs. Temperature



Nch Driver Sink Current vs. Input Voltage



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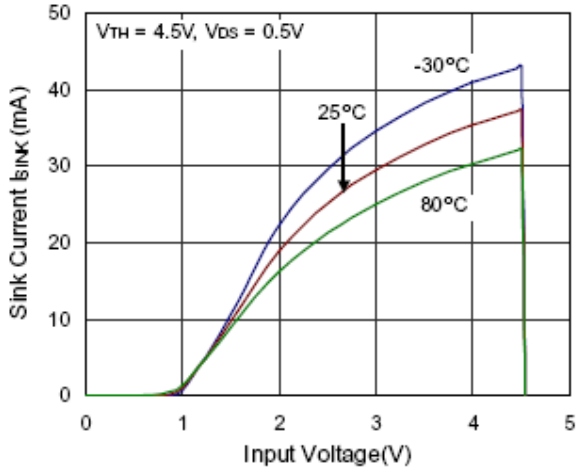
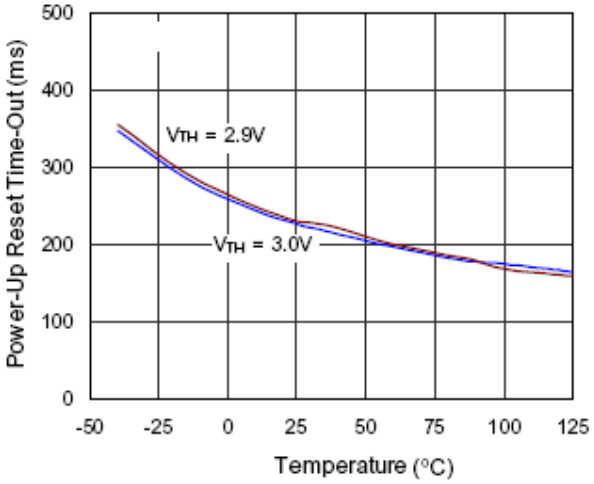
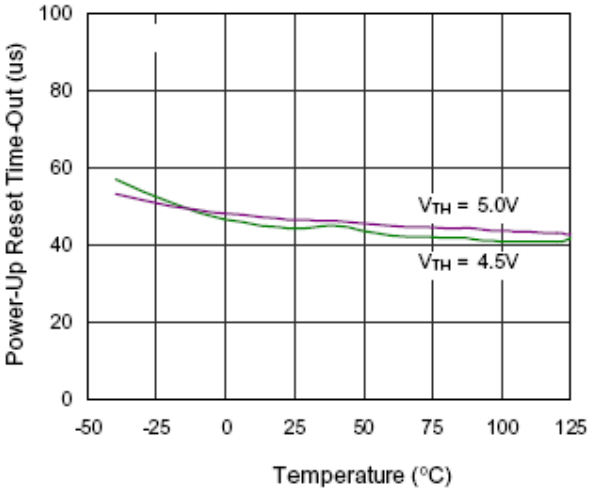


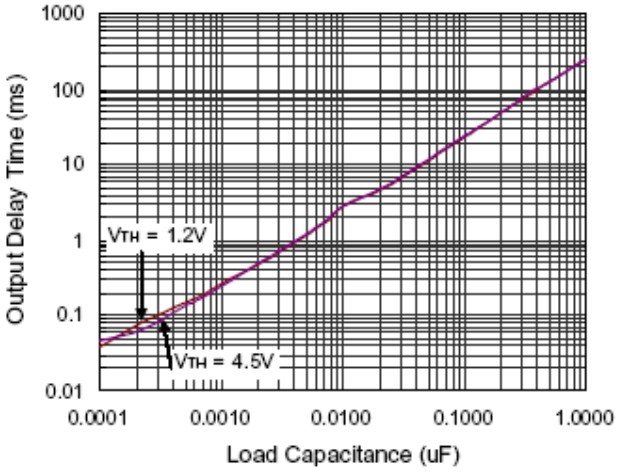
Power-Up Reset Time-Out vs. Temperature



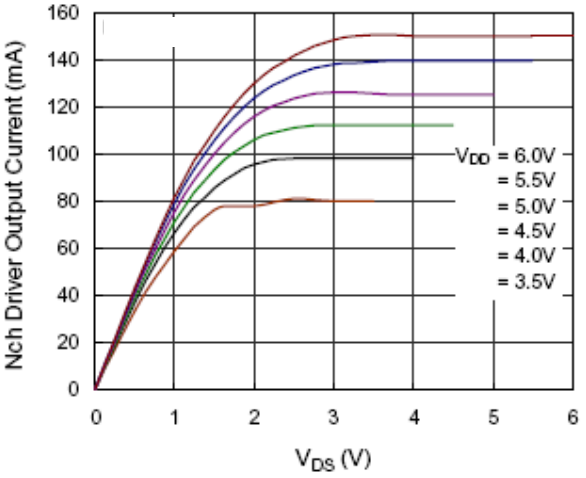
Power-Up Reset Time-Out vs. Temperature



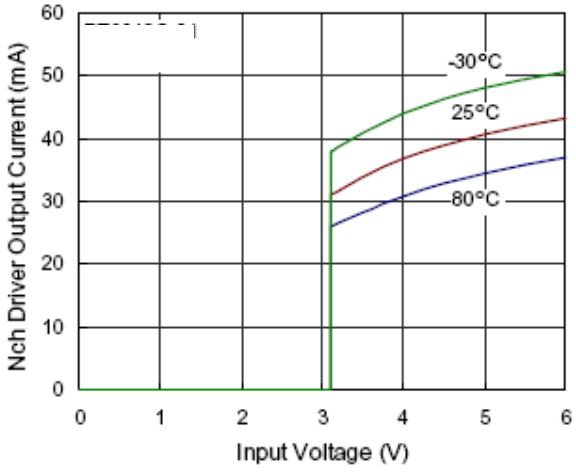
Output Delay Time vs. Load Capacitance



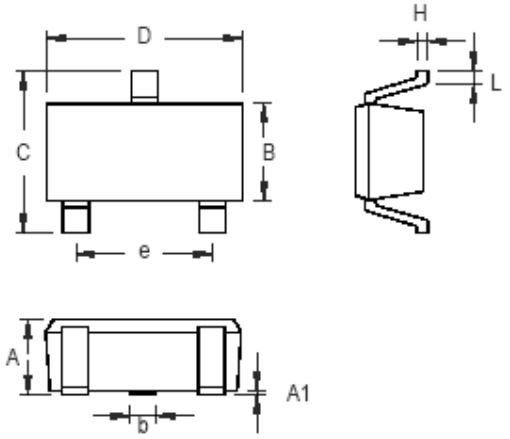
Nch Driver Output Current vs. V_{DS}



Nch Driver Output Current vs. Input Voltage



Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.889	1.295	0.035	0.051
A1	0.000	0.152	0.000	0.006
B	1.397	1.803	0.055	0.071
b	0.356	0.508	0.014	0.020
C	2.591	2.997	0.102	0.118
D	2.692	3.099	0.106	0.122
e	1.803	2.007	0.071	0.079
H	0.080	0.254	0.003	0.010
L	0.300	0.610	0.012	0.024

SOT-23-3 Surface Mount Package