DESCRIPTION

A4809 is a series of high precision voltage detector with ultra-low current consumption (4.5uA typ. at V_{IN}=3.0V) and a built-in delay circuit. It can work at very low voltage, which makes it perfect for system reset.

A4809 is composed of high precision voltage reference, comparator, delay circuit, output driver and resistor array. Internally preset detect voltage has a low temperature drift and requires no external trimming.

Two type of output, CMOS and N-channel open-drain are available.

A4809 is available in SOT-23S package.

FEATURES

- High-Precision Detection Voltage: ±3%
- Detection Voltage : 2.63V and 2.93V (customized other voltages)
- Built-in Power on Reset Delay time circuit: Refer to Selection Guide
- Operating Voltage Range:1.2V~6V
- Ultra-low current consumption: 4.5uA typ. (at V_{IN} = 3.0V)
- Two Output Forms: CMOS (Active Low) and N-channel open-drain (Active Low)
- Available in SOT-23S package

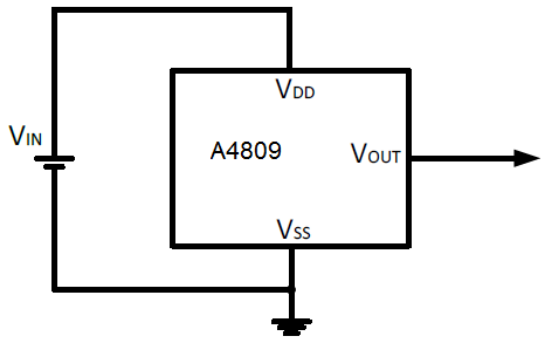
APPLICATION

- Power monitor for portable equipment such as PDA, DSC, Mobile phone,Notebook,MP3
- CPU and Logic Circuit Reset
- Battery Checker
- Battery Back-up Circuit
- Power Failure Detector

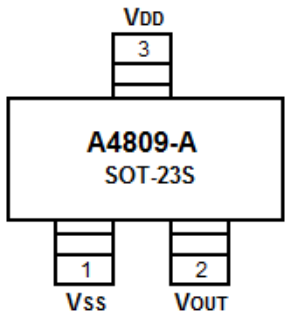
ORDERING INFORMATION

Package Type	Part Number	
SOT-23S SPQ: 3,000pcs/Reel	E3S	A4809E3SR-XXXDZY A4809E3SVR-XXXDZY
Note	XXX: Detector Voltage 263=2.63V; 293=2.93V D: Delay Time; 200ms Z: C=CMOS, N=Nch Y: Pin Type None: Type A B: Type B V: Halogen Free Package R: Tape & Reel	
AiT provides all RoHs products		

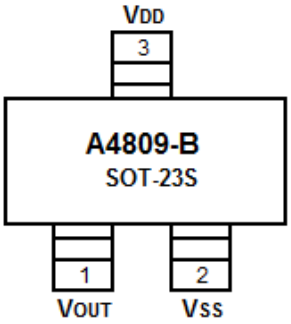
TYPICAL APPLICATION



PIN DESCRIPTION



Top View



Top View

Pin #		Symbol	Function
SOT-23S-A	SOT-23S-B		
1	2	V_{SS}	Ground Pin
2	1	V_{OUT}	Voltage detection output pin
3	3	V_{DD}	Supply Voltage Input

ABSOLUTE MAXIMUM RATINGS

Input Voltage	-0.3V~8V
Output Voltage Range	-0.3V~8V
Maximum Output Current	70mA
T_A, Ambient Temperature	-40℃~+85℃
Power Dissipation	250mW
T_S, Storage Temperature	-40℃~+150℃
Lead Temperature & Time	260℃, 10s

Stress beyond above listed “Absolute Maximum Ratings” may lead permanent damage to the device. These are stress ratings only and operations of the device at these or any other conditions beyond those indicated in the operational sections of the specifications are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

RECOMMENDED WORK CONDITIONS

Parameter	Min.	Recommended	Max.	Unit
Input Voltage Range	1.2		6	V
Ambient Temperature	-40	25	85	℃

ELECTRICAL CHARACTERISTICS

A4809xR-263DZx (2.63V)

Topt = 25℃,unless otherwise specified.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Detector Threshold	$-V_{DET}$		2.551	2.63	2.709	V
Current Consumption	I_{SS}	V_{DD}=4.63V	-	4.5	10	μA
Maximum Operating Voltage	V_{DDH}		-	-	10	V
Minimum Operating Voltage	V_{DDL}		-	0.5	-	V
Output Current	I_{OUT}	Pch V_{DS}=-2.1V , V_{DD}=4.5V	1.0	2.0	-	mA

A4809xR-293DZx (2.93V)

Topt = 25℃,unless otherwise specified.

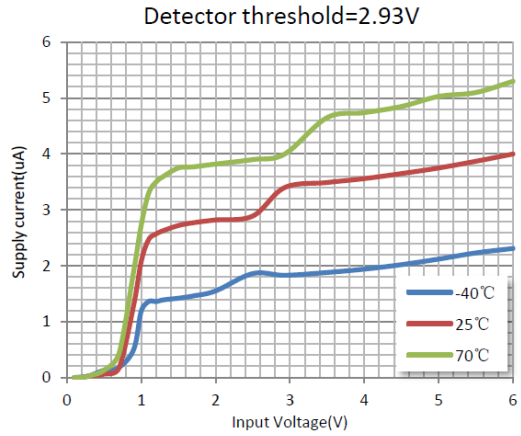
Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Detector Threshold	$-V_{DET}$		2.842	2.93	3.018	V
Current Consumption	I_{SS}	V_{DD}=4.93V	-	4.5	10	μA
Maximum Operating Voltage	V_{DDH}		-	-	10	V
Minimum Operating Voltage	V_{DDL}		-	0.5	-	V
Output Current	I_{OUT}	Pch V_{DS}=-2.1V , V_{DD}=4.5V	1.0	2.0	-	mA

ELECTRICAL CHARACTERISTICS BY OUTPUT DELAY TIME

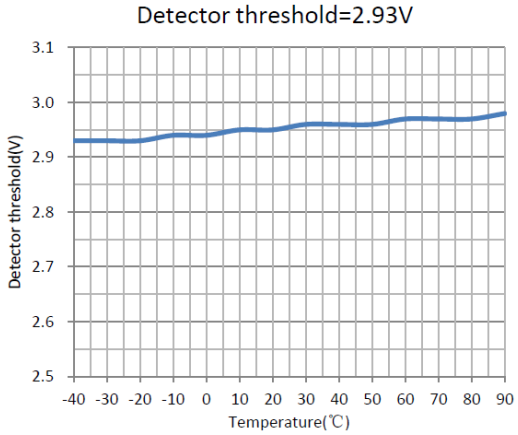
Parameter	Conditions	Output Delay Time			Unit
		Min.	Typ.	Max.	
Delay time	V_{DD}=1.0V to V_{DET}+1.0V	140	200	300	ms

TYPICAL PERFORMANCE CHARACTERISTICS

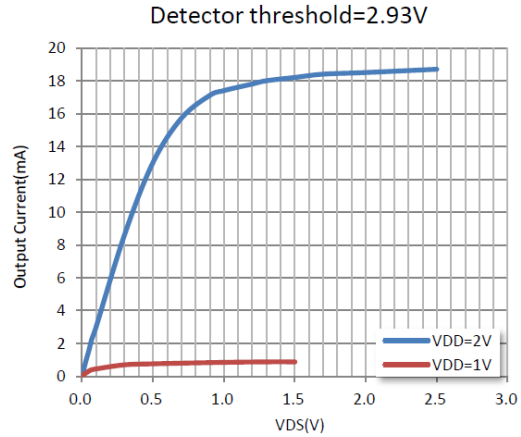
1. Supply current vs. Input voltage



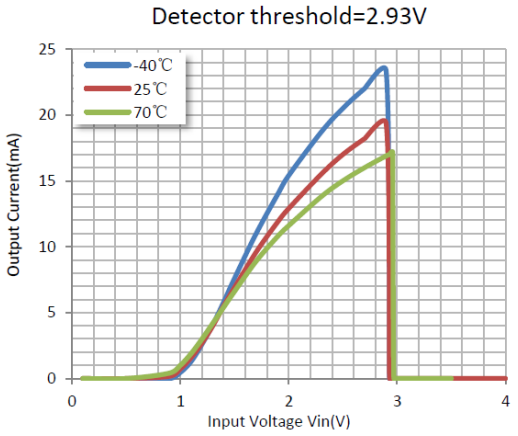
2. Detector Threshold vs. Temperature



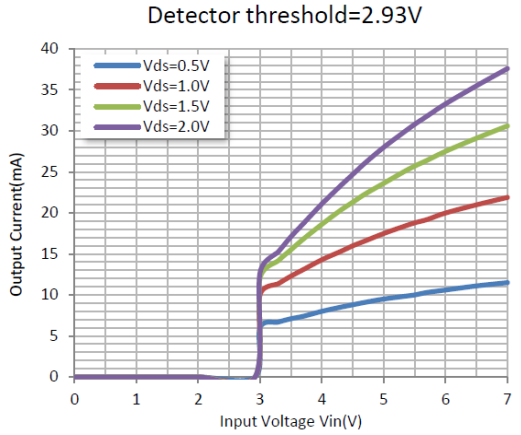
3. Nch Driver Output Current vs. V_{DS}



4. Nch Driver Output Current vs. Input Voltage

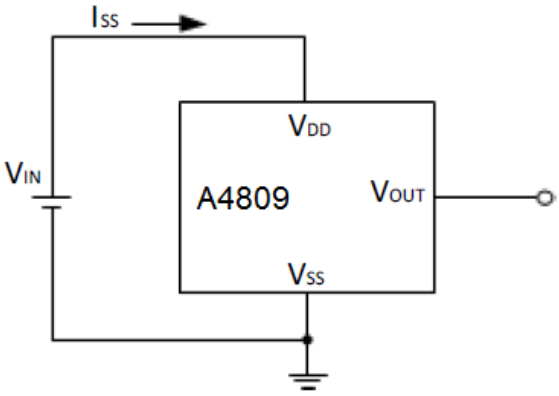


5. Pch Driver Output Current vs. Input Voltage

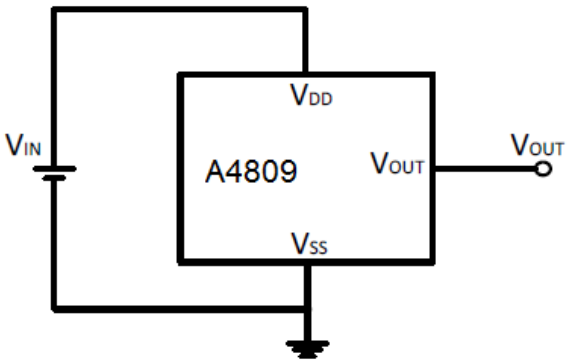


TEST CIRCUITS

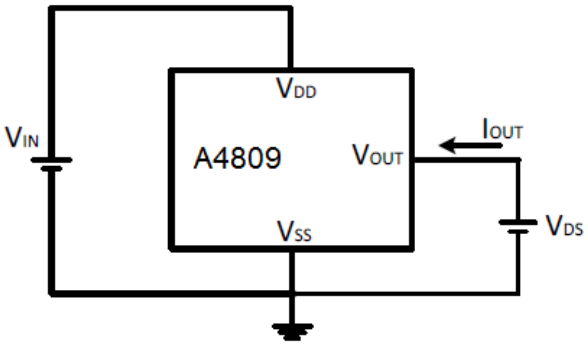
1. Supply current test circuit



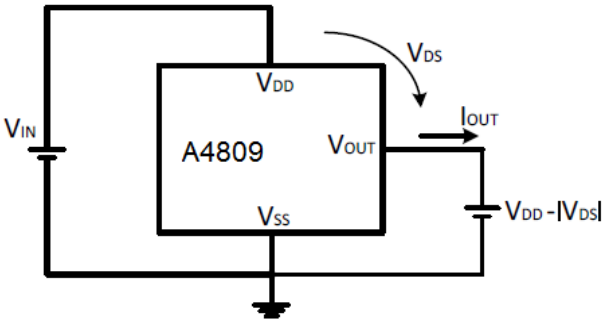
2. Detector threshold test circuit



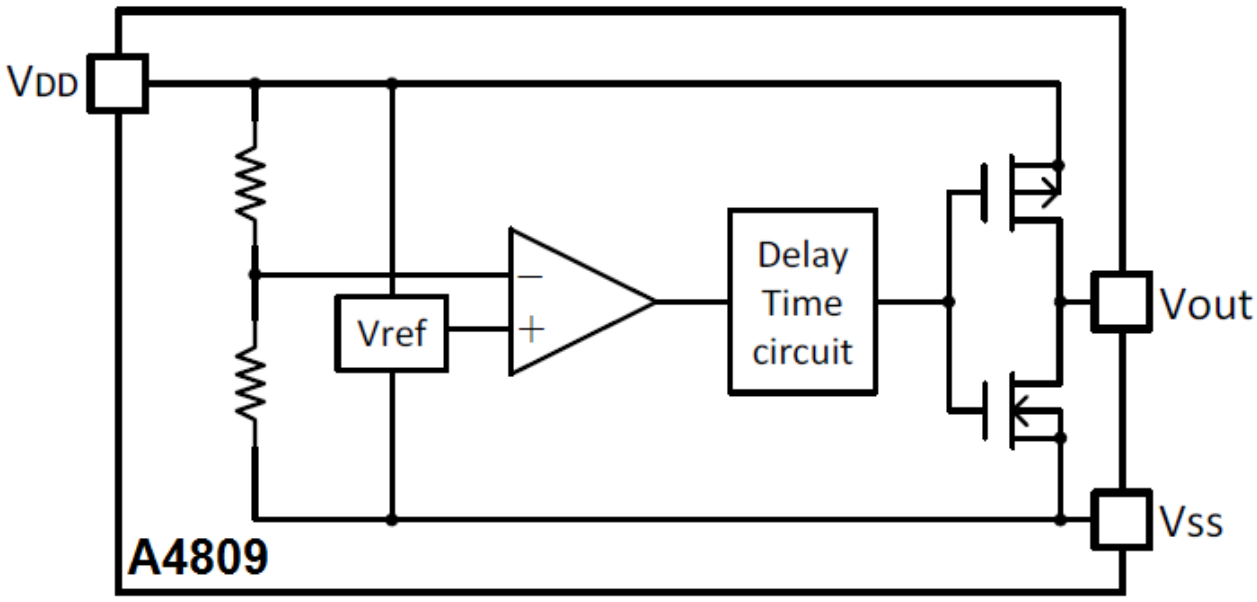
3. Nch Drive Output Current Test Circuit



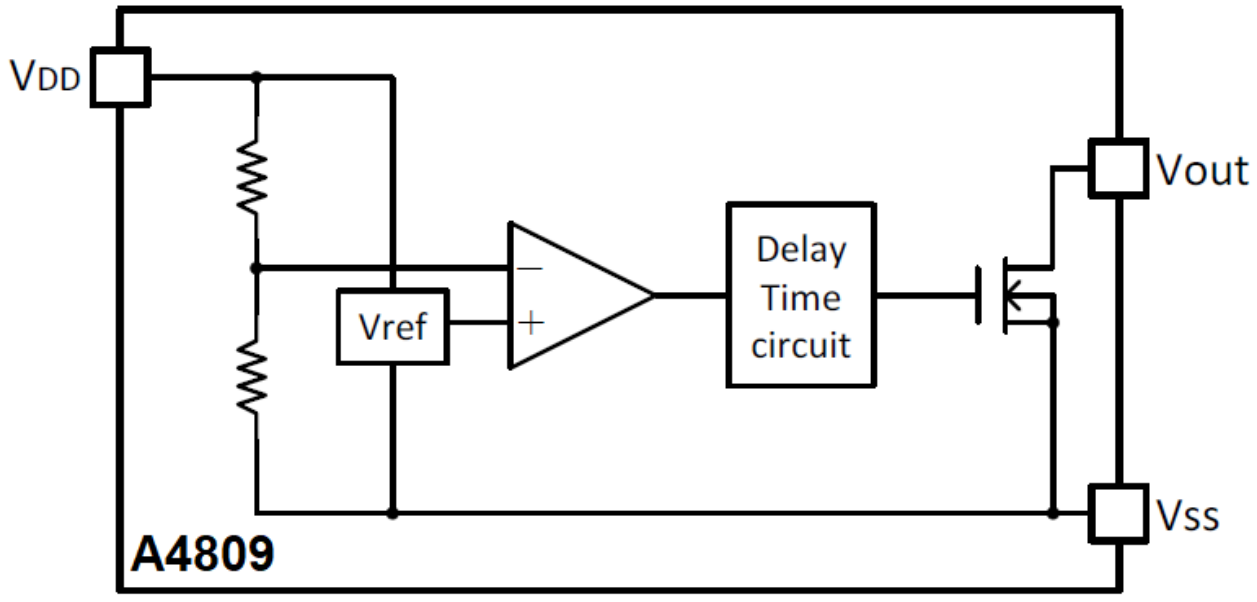
4. Pch Drive Output Current Test Circuit



BLOCK DIAGRAM

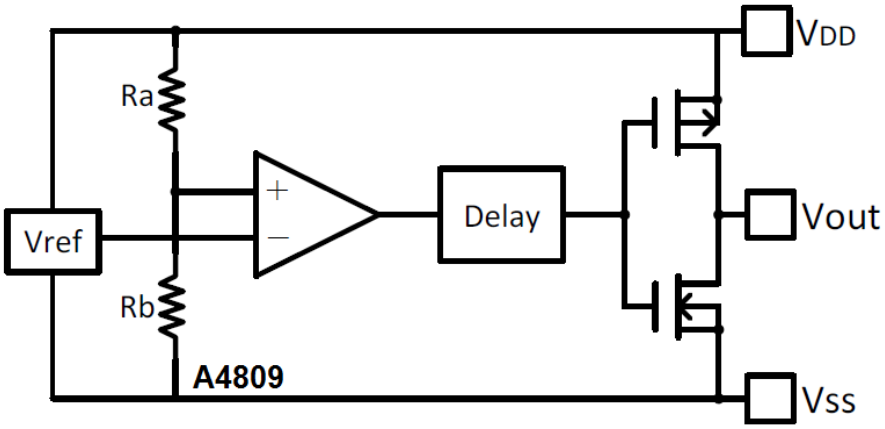


CMOS Output



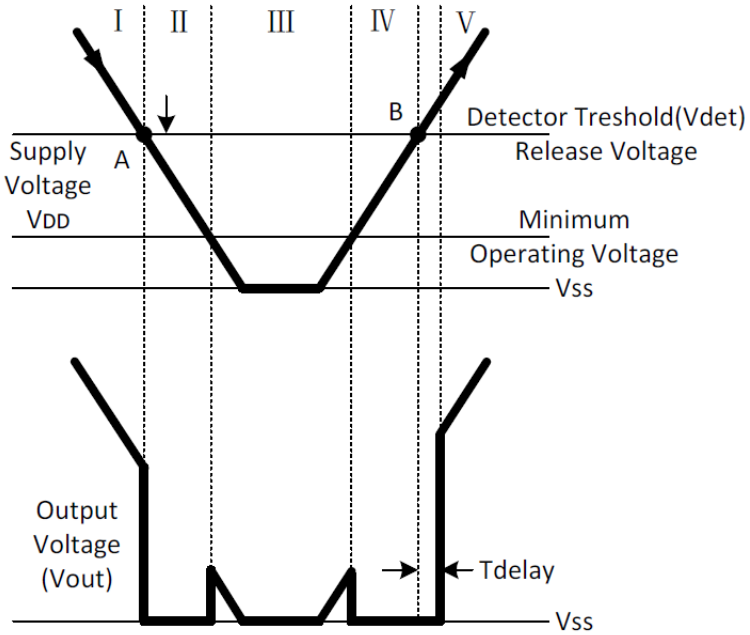
N Channel Open Drain

FUNCTION DESCRIPTION



High precision low temperature co-efficiency reference voltage is applied to the negative input of a comparator. Input voltage, divided by resistor array of Ra and Rb, is applied to the positive input of the comparator. Output of the comparator passes a delay circuit and a series of buffer to drive the output CMOS pair.

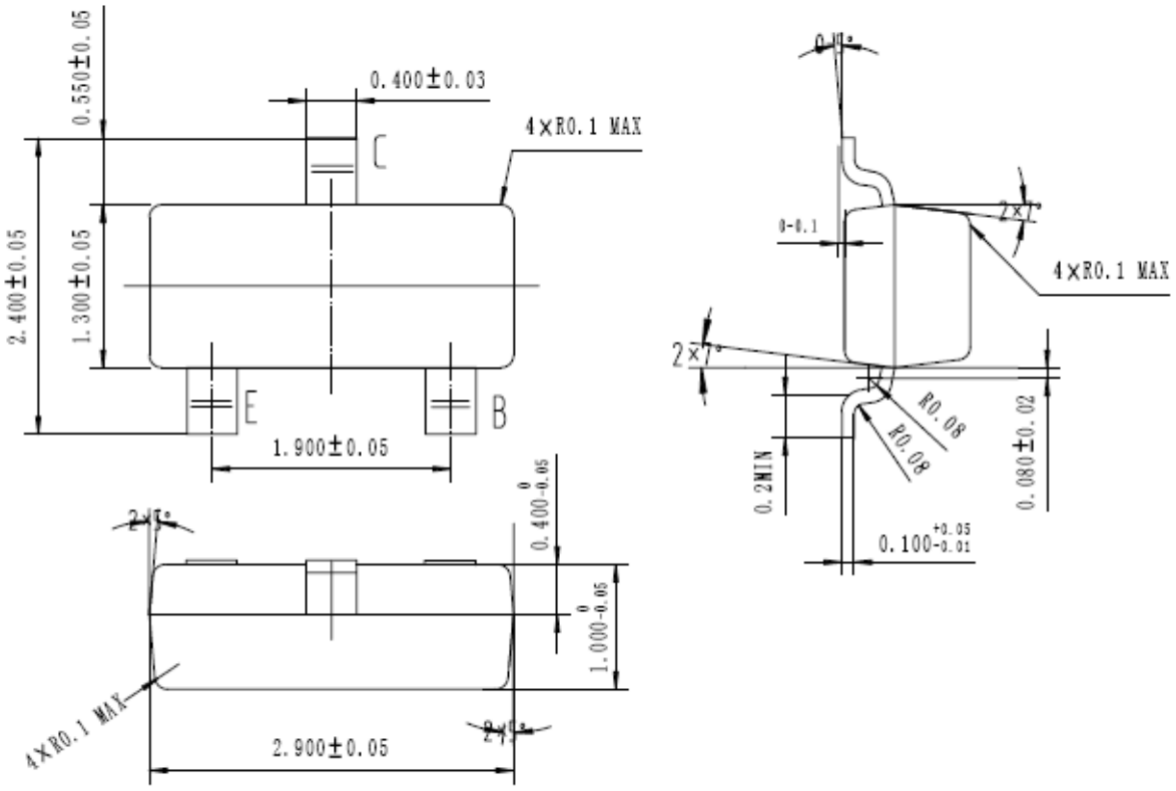
$$V_{DET} = V_{REF}*(1+Ra/Rb)$$



No.	Operation status	Output status
I	$V_{DD}>V_{DET}$	Output voltage is equal to the supply voltage
II	V_{DD} drops below V_{DET}	Output voltage equals to GND level
III	V_{DD} drops further below V_{DDL}	Output voltage is undefined
IV	V_{DD} rises above V_{DDL}	Output voltage equals to GND level
V	V_{DD} rises above V_{DET}	Output voltage equals to supply voltage after t_{DELAY}

PACKAGE INFORMATION

Dimension in SOT-23S Package (Unit: mm)



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