DESCRIPTION

The A4810A/B microprocessor supervisory circuit can be used to monitor the power supplies in microprocessor and digital systems. It provides a reset to the microprocessor during power-up, power-down, and brown-out conditions.

The function of the A4810A/B is to monitor the V_{DD} supply voltage, and assert a reset signal whenever this voltage declines below the factory-programmed reset threshold. The reset signal remains asserted for 250ms after V_{DD} rises above the threshold. The A4810A/B has an active-low /RESET output.

With a low supply current of only 2μA (Typ.), the A4810A/B are ideal for use in portable equipment.

A4810A/B is available in SOT-23 package.

ORDERING INFORMATION

Package Type	Part Number	
SOT-23	E3	A4810AE3R-XXXDZ
		A4810AE3VR-XXXDZ
		A4810BE3R-XXXDZ
		A4810BE3VR-XXXDZ
Note	XXX: Detector Voltage 263 = 2.63V ; 293 =2.93V D: Delay Time 250ms Z: C=CMOS, N=Nch V: Green Package R: Tape & Reel	
AiT provides all RoHS products Suffix “V” means Halogen free Package		

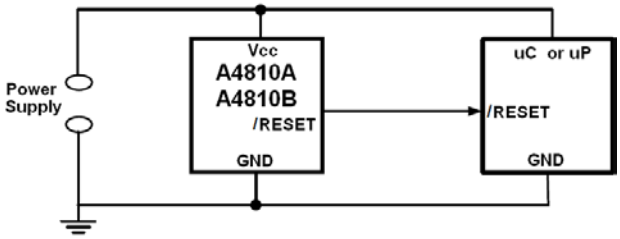
FEATURES

- Precise monitoring of 2.7V, 3.0V, 3.3V and 5.0V supplies
- 140 ms min. Power-On Reset pulse width, 250ms typical, has an active-low /RESET Output
- Guaranteed /RESET Output valid for V_{DD}≥1.1V
- Low Supply Current, 2μA Typ.
- No external components needed
- Specified over full temperature range
  A4810A: -40°C to +85°C,
  A4810B: -40°C to +105°C
- Available in SOT-23 package

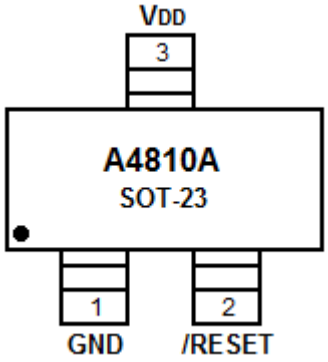
APPLICATION

- Microprocessor Systems
- Computers
- Controllers
- Intelligent Instruments
- Portable/Battery-Powered Equipment
- Automotive

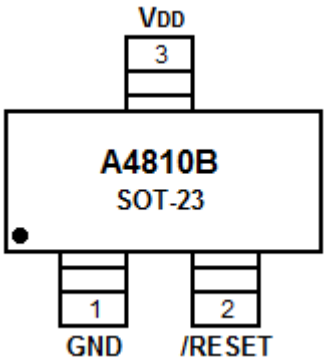
TYPICAL APPLICATION



PIN DESCRIPTION



Top View



Top View

Pin #	Symbol	Function
1	GND	GND Pin
2	/RESET	Action-low output. /RESET remains low while V_{CC} is below the reset threshold, and for 250ms after V_{CC} rises above the reset threshold.
3	V_{DD}	Voltage input pin

ABSOLUTE MAXIMUM RATINGS

Input Voltage Range	-0.3V ~ 6.0V
Output Voltage Range	-0.3V ~ (V_{DD} + 0.3V)
Input Current at V_{DD}	20mA
Output Current: /RESET	20mA
Rate of Rise at V_{DD}	100V/μs
Power Dissipation (T_A= 70°C) (Derate 4mW/°C above 70°C)	320mW
Operating Temperature Range	
A4810A	-40°C ~ 85°C
A4810B	-40°C ~ 105°C
Storage Temperature Range	-65°C ~ 160°C
Lead Temperature & Time	300°C,10S

Stresses beyond may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

Unless otherwise noted V_{DD} is over the full voltage range, T_A = -40°C to 105°C. Typical values at T_A = 25°C
V_{DD}=5V for 4.38V, V_{DD}=3.3V for 2.93/3.08V and V_{DD}=3V for 2.63V

Parameter	Symbol	Conditions		Min	Typ	Max	Unit
Input Voltage(V_{DD}) Range	V_{DD}	T_A= 0°C to 70°C		1.1	-	5.5	V
		T_A = -40°C to 85°C	A4810A	1.2	-	5.5	
		T_A = -40°C to 105°C	A4810B				
Supply Current	I_{CC}	T_A = -40°C to 85°C V_{DD} < 5.5V, 4.38V		-	2.5	5	uA
		T_A = -40°C to 85°C V_{DD} < 3.6V, 2.63/2.93/3.08V		-	1.5	4	
		T_A = 85°C to 105°C V_{DD} < 5.5V, 4.38V		-	-	10	
		T_A= 85°C to 105°C V_{DD} < 3.6V, 2.63/2.93/3.08V		-	-	8	
		V_{DD}=5, V_{DET}=4.38V					
		T_A = 25°C		4.31	4.38	4.45	
		T_A = -40°C to 85°C		4.25	-	4.50	
		T_A = 85°C to 105°C		4.16	-	4.56	
		V_{DD}=3.3V, V_{DET}=3.08V					
		T_A = 25°C		3.04	3.08	3.11	
		T_A = -40°C to 85°C		3.00	-	3.15	
		T_A = 85°C to 105°C		2.92	-	3.23	
		V_{DD}=3.3V, V_{DET}=2.93V					
		T_A = 25°C		2.89	2.93	2.96	
		T_A = -40°C to 85°C		2.85	-	3.00	
		T_A = 85°C to 105°C		2.78	-	3.08	
		V_{DD}=3.0, V_{DET}=2.63V					
		T_A = 25°C		2.59	2.63	2.66	
		T_A = -40°C to 85°C		2.55	-	2.70	
		T_A = 85°C to 105°C		2.50	-	2.76	
Reset Threshold Stability				-	30	-	ppm /°C
V_{DD} to Reset Delay		V_{DD}= V_{TH} to (V_{TH} - 100mV)		-	20	-	uS
Reset Active Timeout Period	T_{OL}	T_A = -40°C to 85°C		140	250	560	mS
		T_A = 85°C to 105°C		100	-	840	
RESET Output Voltage Low	V_{OL}	V_{DD}=V_{TH} min., I_{SINK} = 1.2mA, 2.63/2.93/3.08V		-	-	0.1	V
		V_{DD}=V_{TH} min., I_{SINK} = 3.2mA, 4.38V		-	-	0.2	
		V_{DD}> 1.1V, I_{SINK} = 50μA		-	-	0.1	
RESET Output Voltage High	V_{OH}	V_{DD}=V_{TH} max, I_{SOURCE}=500uA, 2.63/2.93/3.08V		0.9 V_{DD}	-	-	V
		V_{DD}=V_{TH} max, I_{SOURCE} =800uA, 4.38V		V_{DD}-1.5	-	-	

DETAILED INFORMATION

Function Diagram

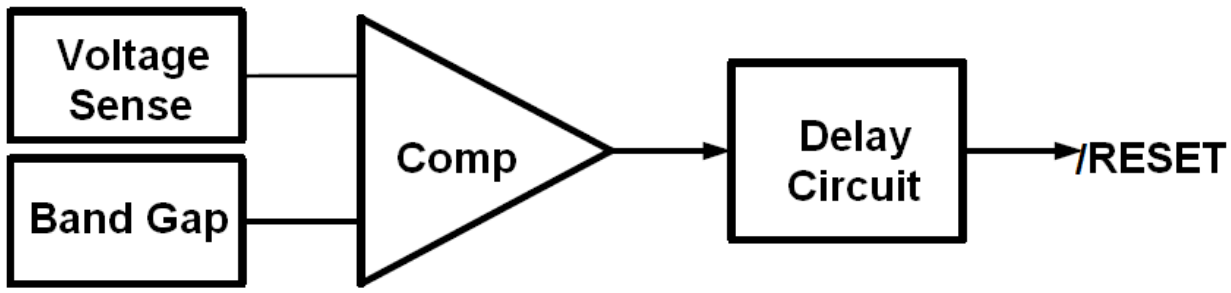


Figure 1 Function Diagram

Reset Timing

The reset signal is asserted-low for the A4810A/B-when the V_{DD} signal falls below the threshold trip voltage and remains asserted for 140ms minimum after the V_{DD} has risen above the threshold.

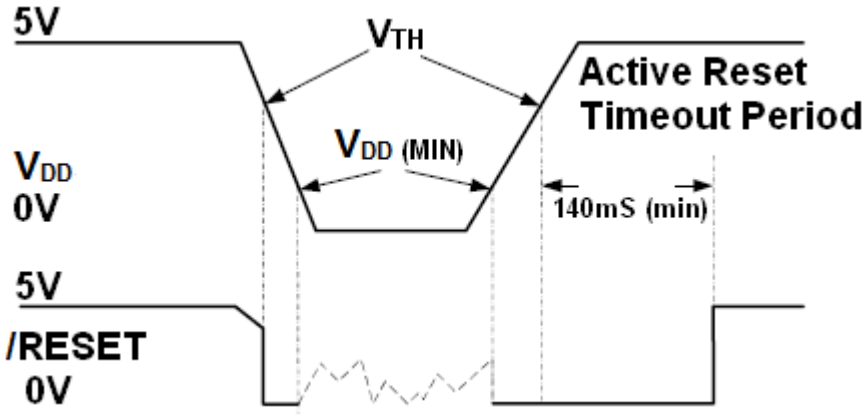


Figure 2 A4810A/B Reset Timing Diagram

Negative V_{DD} Transients

The A4810A/B protects μPs from brownouts and low V_{DD}. Short duration transients of 100mV amplitude and 20μs or less duration typically do not cause a false RESET.

Valid Reset with V_{DD} under 1.1V

To ensure logic inputs connected to the A4810A/B RESET pin are in a known state when V_{DD} is under 1.1V, a 100kΩ pull-down resistor at RESET is needed. The value is not critical.

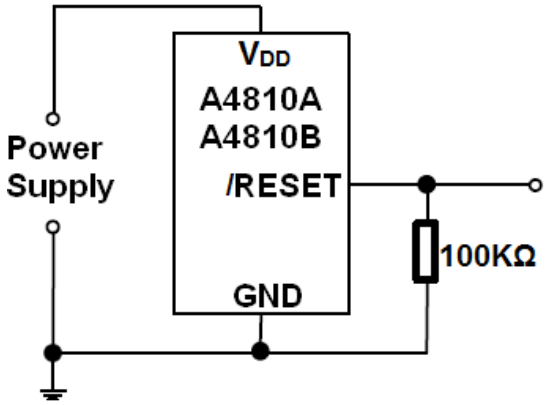


Figure 3 RESET Valid with V_{DD} under 1.1V

Bi-directional Reset Pin Interfacing

The A4810A/B can interface with μP/μC bi-directional reset pins by connecting a 4.7kΩ resistor in series with the A4810A/B reset output and the μP/μC bi-directional reset pin.

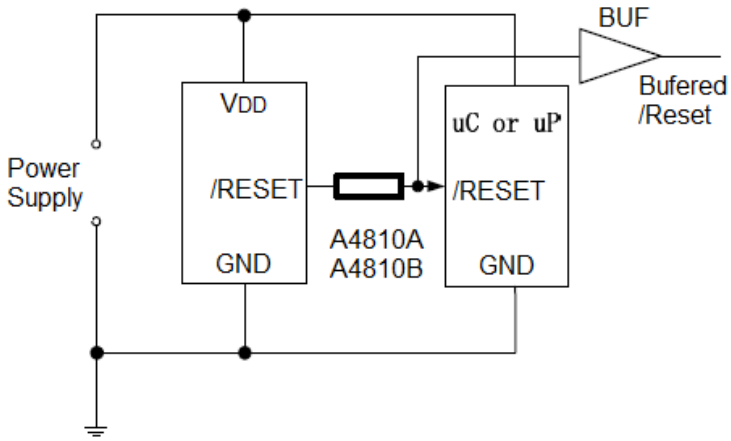
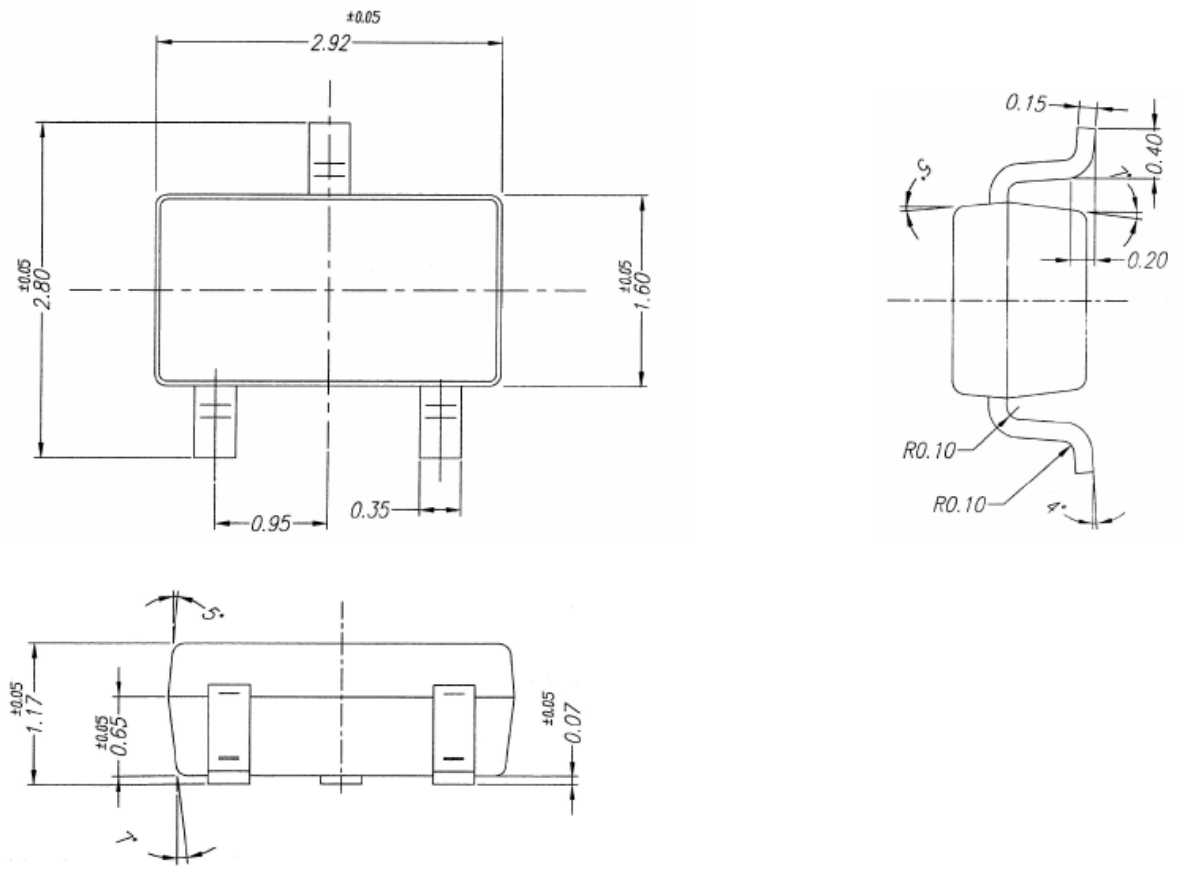


Figure 4 Bi-directional Reset Pin Interfacing

PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)



IMPORTANT NOTICE

AiT Semiconductor Inc. (AiT) reserves the right to make changes to any its product, specifications, to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

AiT Semiconductor Inc.'s integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life support applications, devices or systems or other critical applications. Use of AiT products in such applications is understood to be fully at the risk of the customer. As used herein may involve potential risks of death, personal injury, or servere property, or environmental damage. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

AiT Semiconductor Inc. assumes to no liability to customer product design or application support. AiT warrants the performance of its products of the specifications applicable at the time of sale.