



DESCRIPTION

A4813 is a series of high precision voltage detector with ultra-low current consumption (4uA typ.@Vin=3.0V) and a built-in delay circuit. It can work at very low voltage, which makes it perfect for system reset.

A4813 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.

The A4813 is available in DFN6(2x2) package.

ORDERING INFORMATION

Package Type	Part Number	
DFN6(2x2)	J6	A4813J6R
		A4813J6VR
Note	V: Halogen free Package R: Tape & Reel SPQ: 3,000pcs/Reel	
AiT provides all RoHS products		

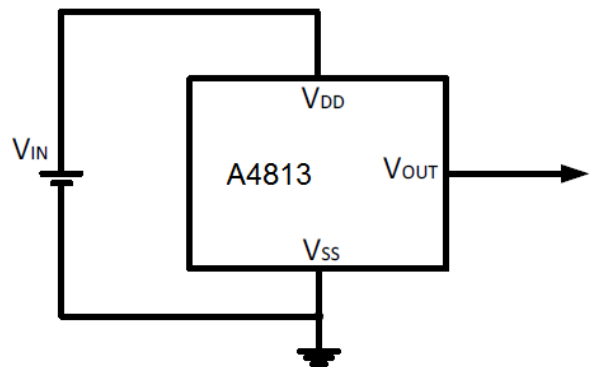
FEATURES

- High-Precision Detection Voltage: $\pm 2.5\%$
- Detection Voltage: 1.4V
- Built-in Power on Reset Delay Time circuit: Refer to Selection Guide
- Operating Voltage Range: 1.2V~6.0V
- Ultra-low current consumption : 4uA(typ.) @ $V_{IN}=3.0V$
- Output Forms: Active Low
- Available in DFN6(2x2) Package

APPLICATION

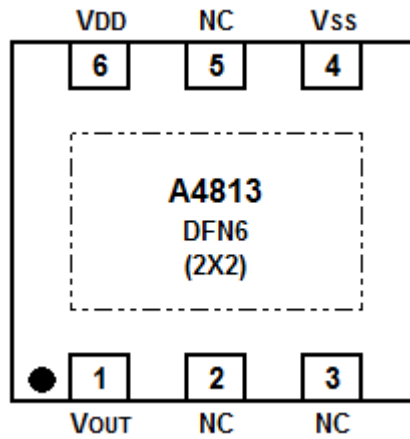
- Power monitor for portable equipment such as PDA, DSC, Mobile phone, Notebook, MP3
- CPU and Logic Circuit Reset
- Battery Checker
- Battery Back-up Circuit
- Power Failure Detector

TYPICAL APPLICATION





PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	V _{OUT}	Voltage Detection Output pin
2,3,5	NC	No Connection
4	V _{SS}	Ground Pin
6	V _{DD}	Supply Voltage Input



ABSOLUTE MAXIMUM RATINGS

Input Voltage		-0.3V~8V
Output Voltage range		-0.3V~8V
Maximum Output current		10mA
T _A , Ambient Temperature		-40°C~85°C
θ _{JA} , Package Thermal Resistance	DFN6(2x2)	80°C / W
T _S , Storage Temperature		-40°C~150°C
Lead Temperature & Time		260°C, 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 OPERATING CONDITIONS

Parameter	MIN	Recommended	MAX	Units
Input Voltage Range	1.2		6	V
Ambient Temperature	-40	25	85	°C



ELECTRICAL CHARACTERISTICS

A4813J6R(1.4V)

T_{OPT} = 25°C, unless otherwise specified.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Detector Threshold	-V _{DET}		1.365	1.4	1.435	V
Current Consumption	I _{SS}	V _{DD} =3V		4.0	10	μA
Output Current	I _{OUT}	Nch V _{DS} =-0.5V , V _{DD} =1.2V	1.0	2.5		mA

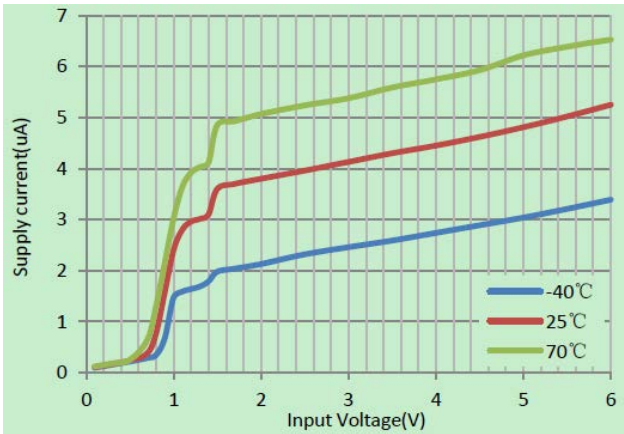
ELECTRICAL CHARACTERISTICS BY OUTPUT DELAY TIME

Part Number	Test Condition	Output Delay Time			Unit
		Min.	Typ.	Max.	
A4813J6R	V _{DD} =1.0V to V _{det} +1.0V	10	15	20	ms

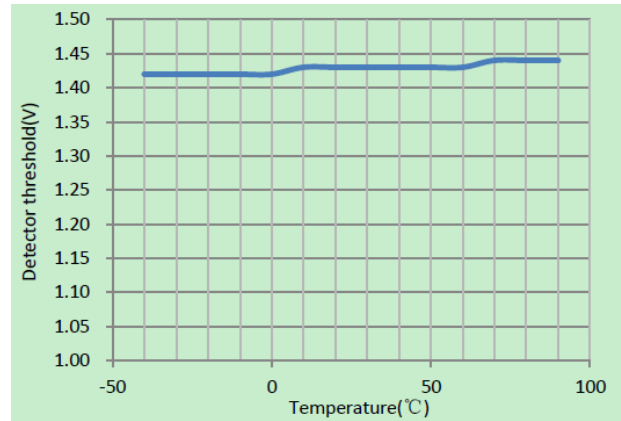


TYPICAL PERFORMANCE CHARACTERISTICS

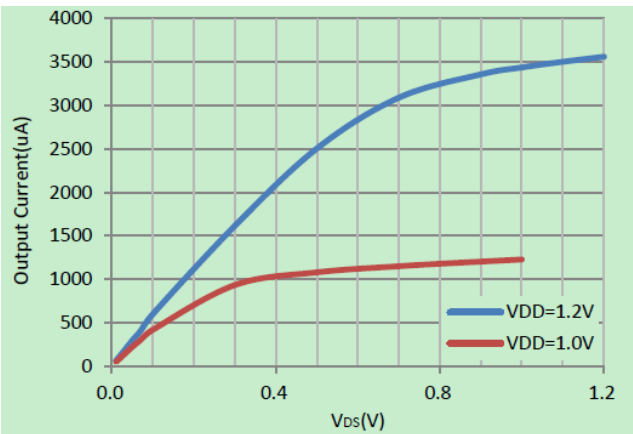
1. Supply current vs. Input voltage



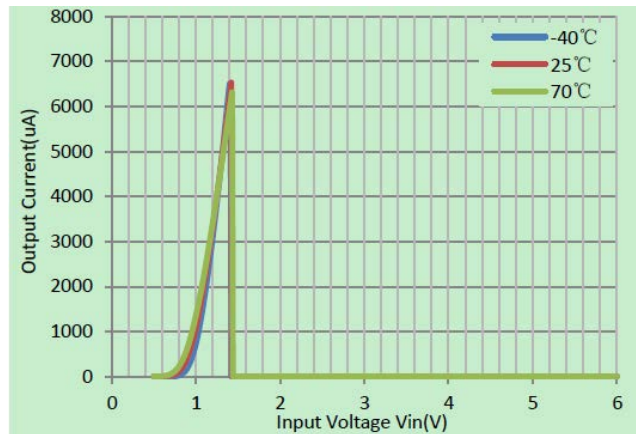
2. Detector Threshold vs. Temperature



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



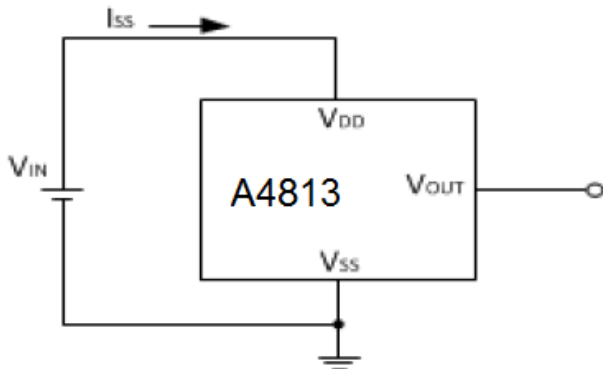
4. Output Current vs. Input Voltage



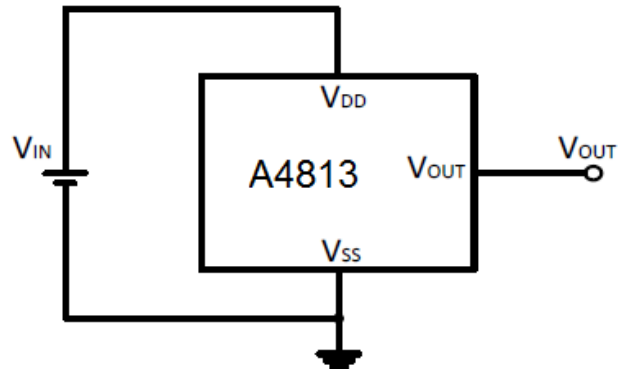


TEST CIRCUIT

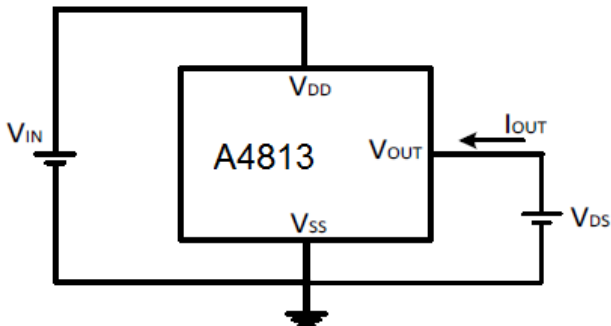
1. Supply current test circuit



2. Detector threshold test circuit

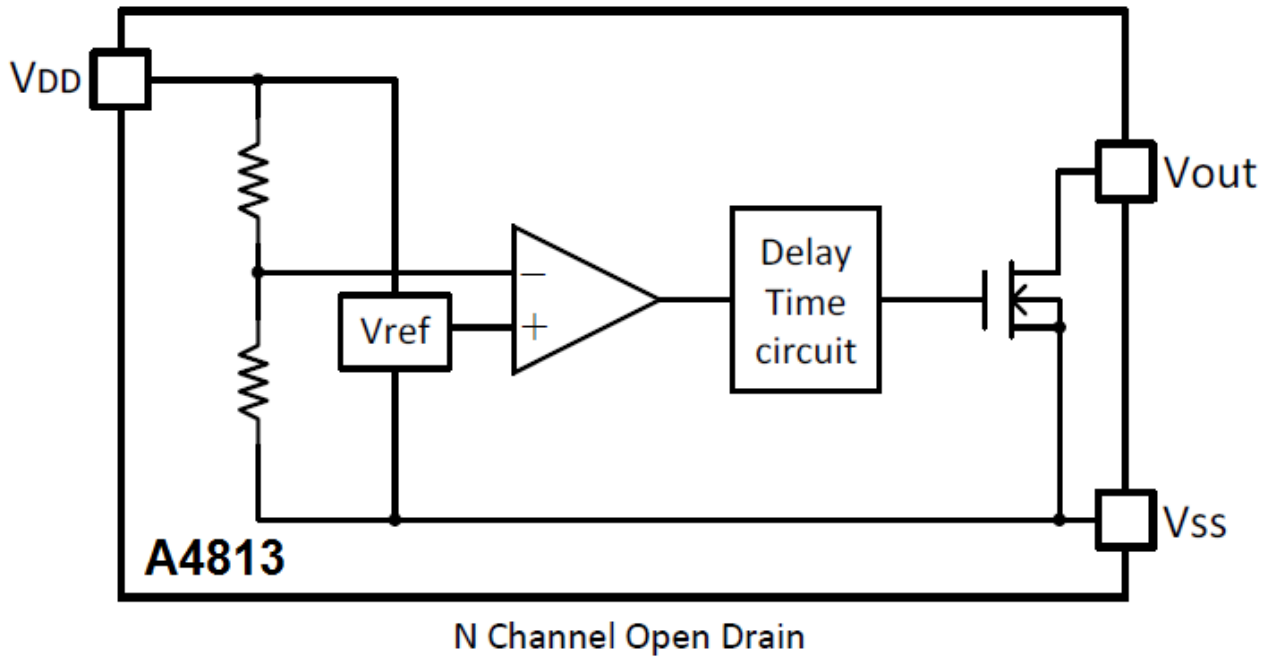


3. NCH Drive Output Current Test Circuit



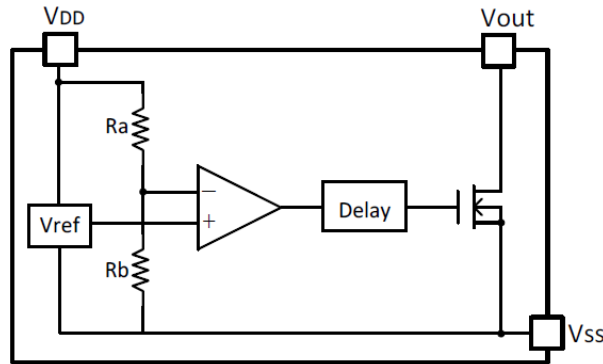


BLOCK DIAGRAM

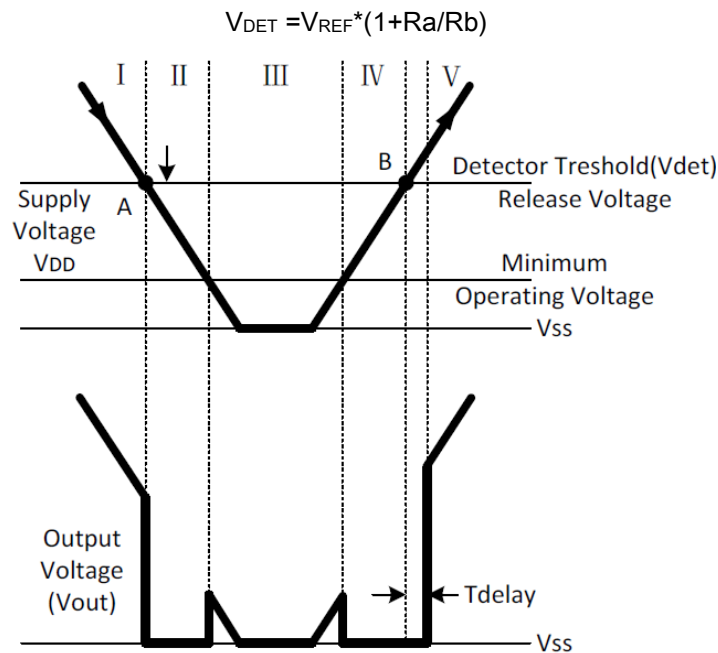




FUNCTION DESCRIPTION



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.

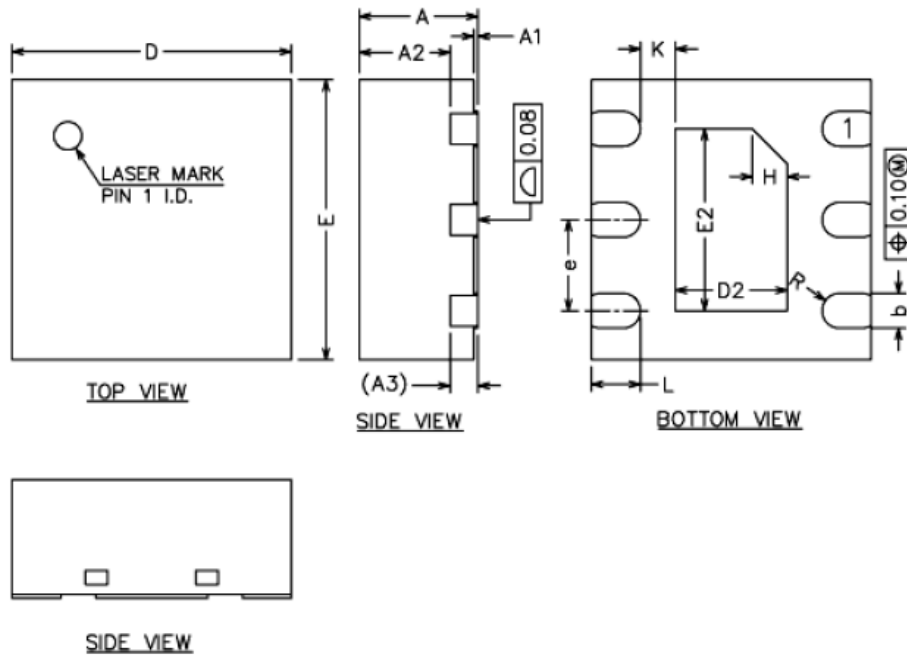


No.	Operation status	Output status
I	$V_{DD} > V_{DET}$	Output voltage is equal to the supply voltage
II	V_{DD} drops below V_{DET}	Output voltage equals to GND level
III	V_{DD} drops further below V_{DDL}	Output voltage is undefined
IV	V_{DD} rises above V_{DDL}	Output voltage equals to GND level
V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



PACKAGE INFORMATION

Dimension in DFN6(2x2) (Unit: mm)



Symbol	Min	Max
A	0.80	0.90
A1	0.00	0.05
A2	0.60	0.70
A3	0.20 REF	
b	0.18	0.30
D	1.90	2.10
E	1.90	2.10
D2	0.70	0.90
E2	1.20	1.40
e	0.55	0.75
H	0.25 REF	
K	0.20	-
L	0.30	0.40
R	0.11	-



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 servers 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.