DESCRIPTION

The A4806 series is a series of high-precision voltage detectors developed using CMOS process. The detection voltage is fixed internally with an accuracy of ±2.0%. Two output forms, Nch open-drain and CMOS output, are available. Ultra-low current consumption and miniature package lineup can meet demand from the portable device applications.

A4806 is available in SOT-23 package.

ORDERING INFORMATION

Package Type	Part Number	
SOT-23 SPQ: 3,000pcs/Reel	E3	A4806E3R-XXZ
		A4806E3VR-XXZ
Note	XX: Detect Voltage 29=2.9V, 33=3.3V Z: N=Nch, C=CMOS V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		

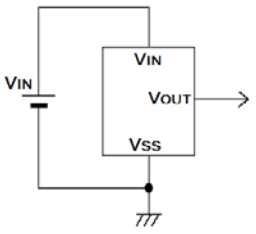
FEATURES

- Ultra-low current consumption 2.0μA typ. (Vin=1.5V)
- High-precision detection voltage ±2.0%
- Operating voltage range 0.7V to 8.0V
- Detection voltage 1.0V to 6.0V (0.1V step)
- Output form Nch open-drain output (Active Low) or CMOS output (Active Low)
- Available in SOT-23 Package

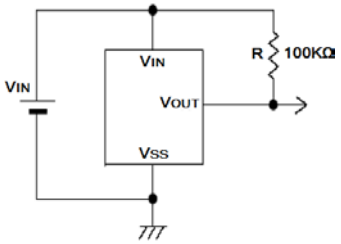
APPLICATION

- Battery checkers
- Power failure detectors
- Power monitor for portable equipments such as pagers, calculators, electronic notebooks and remote controllers.
- Constant voltage power monitor for cameras, video equipments and communication devices.
- Power monitor for microcomputers and reset for CPUs.

TYPICAL APPLICATION

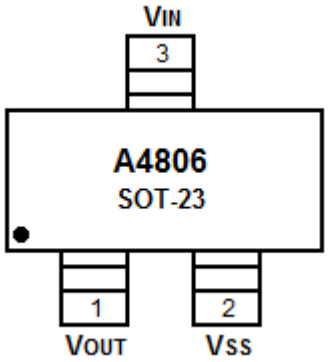


CMOS Output



Nch Open-drain Output Test circuit

PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	V_{OUT}	Output pin
2	V_{SS}	GND pin
3	V_{IN}	Voltage Input pin

ABSOLUTE MAXIMUM RATINGS

T_A = 25℃

V_{IN}, Power Supply Voltage		8V
I_{OUT}, Output Current		50mA
V_{OUT}, Output Voltage	CMOS	Vss-0.3V ~ Vin+0.3V
	N-ch	Vss-0.3V ~ 8V
P_D, Power Dissipation	SOT-23	150mW
T_{OPR}, Operating Ambient Temperature		-40℃ ~ +85℃

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.

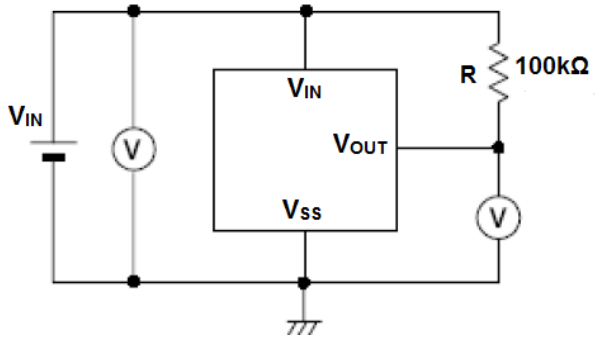
ELECTRICAL CHARACTERISTICS

$V_{DF\ (T)}$ =1.0 to 6.0V ±2% T_A=25℃

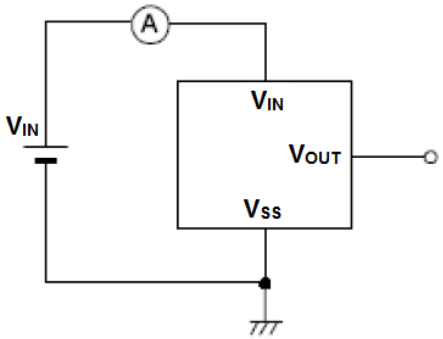
Parameter	Symbol	Conditions		Min	Typ.	Max	Unit	Test circuit
Detection Voltage	V_{DF}			V_{DF}x0.98	V_{DF}	V_{DF}x1.02	V	1
Release Voltage	V_{HYS}			-	V_{DF}x0.05	-	V	1
Current Consumption	I_{SS}	V_{IN} = 1.0V		-	2.0	2.2	uA	2
		V_{IN} = 1.5V		-	2.0	2.4		
		V_{IN} = 2.0V		-	2.0	2.8		
		V_{IN} = 3.0V		-	2.0	3.1		
		V_{IN} = 4.0V		-	2.0	3.3		
		V_{IN} = 5.0V		-	2.0	3.7		
Operating voltage	V_{IN}	V_{DF}=1.0 ~ 6.0V		0.7	-	8	V	1
Output current	I_{OUT}	Nch V_{DS}=0.5V	V_{IN} = 1.0V	1.0	2.2	-	mA	3
			V_{IN} = 1.5V	2.0	5.7	-		
			V_{IN} = 2.0V	3.0	7.7	-		
			V_{IN} = 3.0V	5.0	10.1	-		
			V_{IN} = 4.0V	6.0	11.5	-		
			V_{IN} = 5.0V	7.0	13.0	-		
		Pch V_{DS}=2.1 V_{IN}=8.0		-	-10	-2		4
Temperature Coefficient		-40~+85℃		-	±100	-	ppm/℃	

TEST CIRCUIT

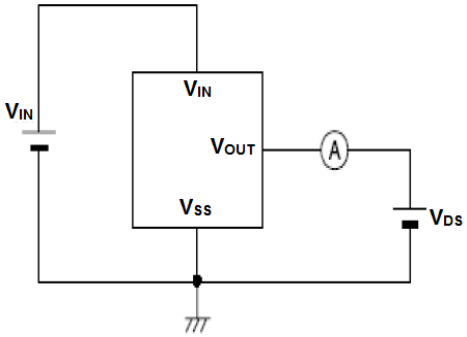
Circuit 1



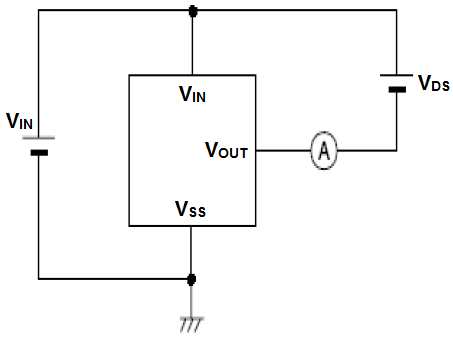
Circuit 2



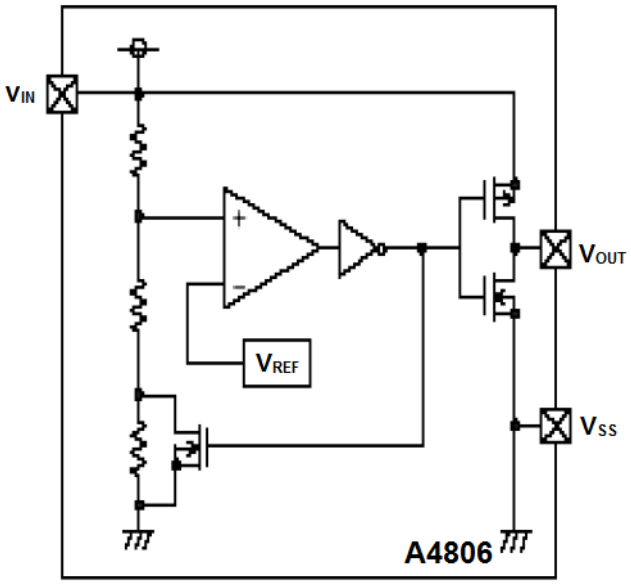
Circuit 3



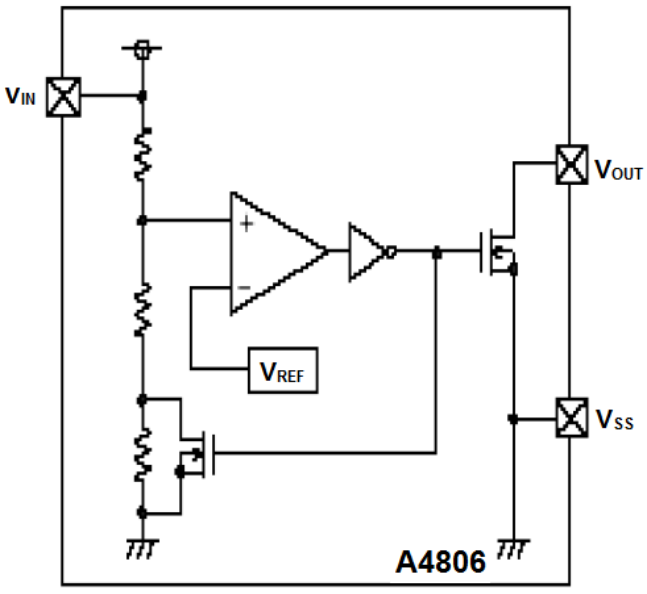
Circuit 4



BLOCK DIAGRAM



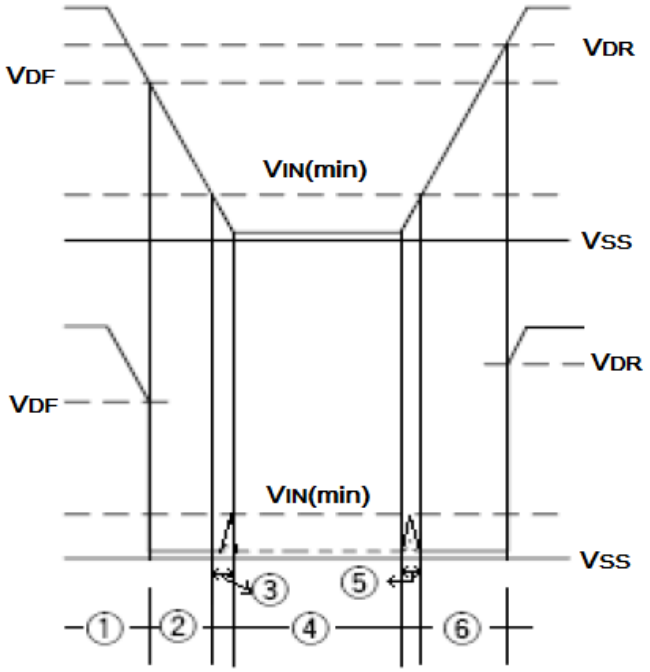
CMOS Output Products



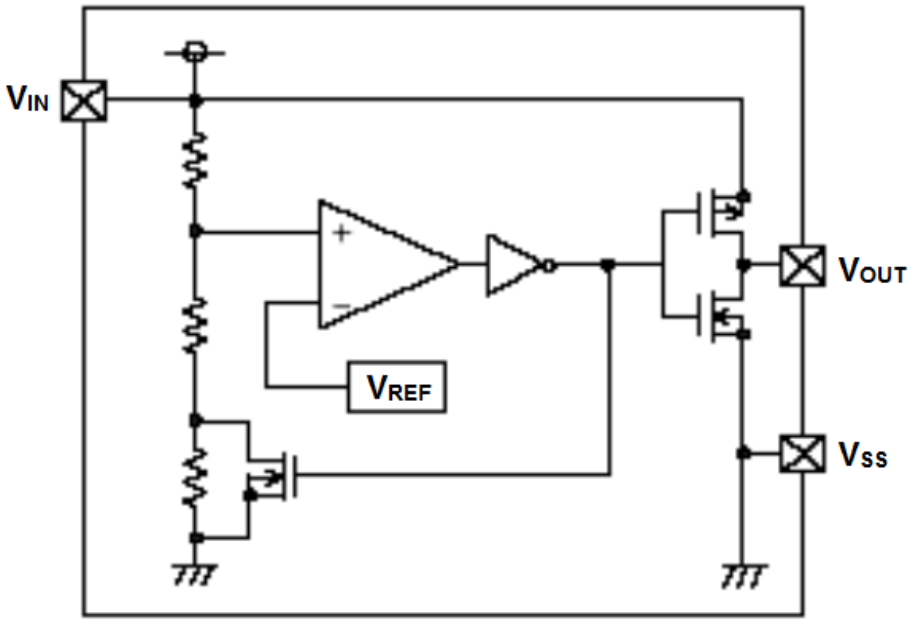
Nch Open-drain Output Products

DETAILED INFORMATION

Timing Chart



Operation



1-1. When the power supply voltage (V_{DD}) is higher than the release voltage (V_{DF}), the Nch transistor is OFF and the Pch transistor is ON to provide V_{DD} (high) at the output.

1-2. When the power supply voltage (V_{DD}) is lower than the release voltage (V_{DF}), the Nch transistor is ON and the Pch transistor is OFF to provide V_{SS} (low) at the output.

1-3. When the V_{DD} falls below the minimum operating voltage, the output becomes undefined, or goes to the V_{DD} when the output is pulled up to the V_{DD}.

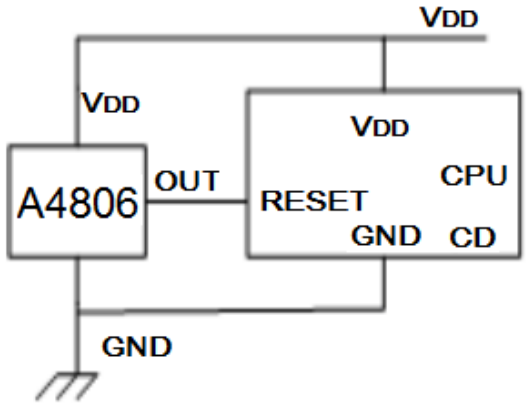
1-4. The V_{SS} level appears when the V_{DD} is V_{SS} level.

1-5. The V_{SS} level appears when the V_{DD} rises above the minimum operating voltage. The V_{SS} level still appears even when the V_{DD} surpasses − V_{DF}, as long as it does not exceed the release voltage + V_{DF}.

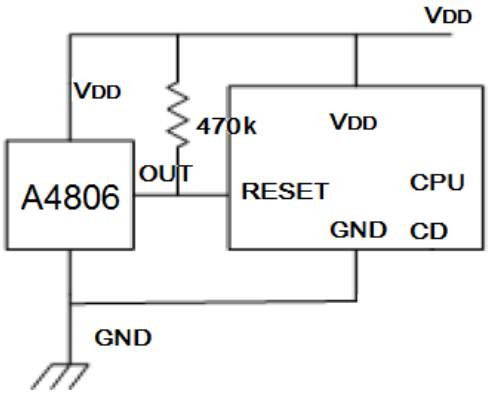
1-6. When the V_{DD} rises above + V_{DF} the Nch transistor becomes OFF and the Pch transistor becomes ON to provide V_{DD} level at the output.

Application Circuit Examples

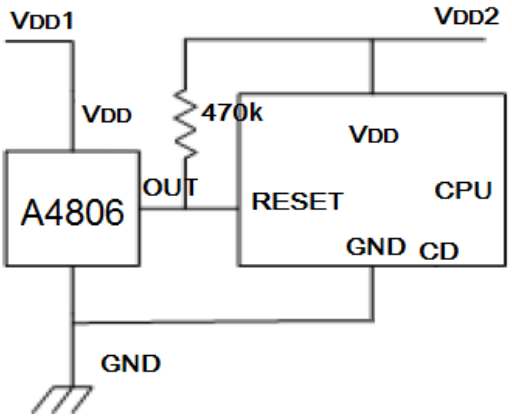
Microcomputer Reset Circuits



The same supply voltage with CPU (CMOS output)

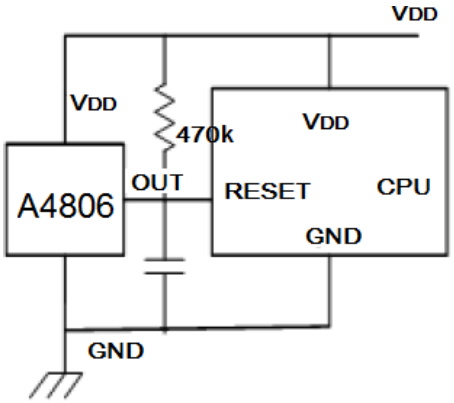


The same supply voltage with CPU (N_{CH} Open drain output)

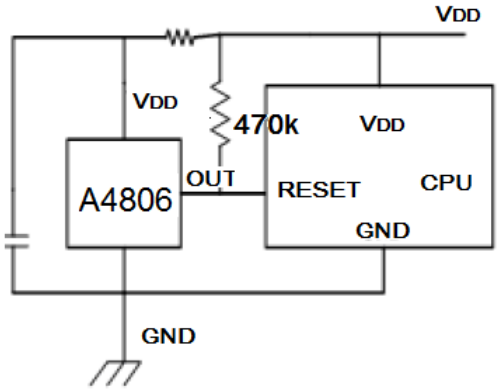


The different supply voltage with CPU (N_{CH} open drain output)

Power-on Reset Circuit

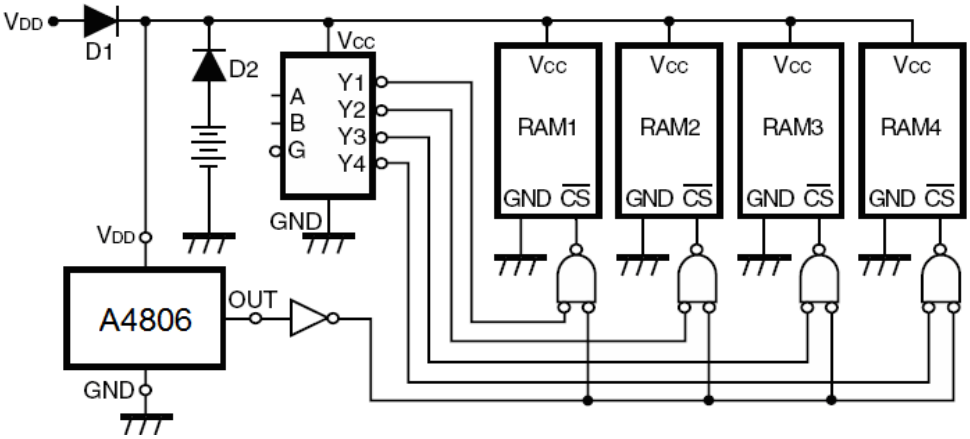


Nch Open Drain

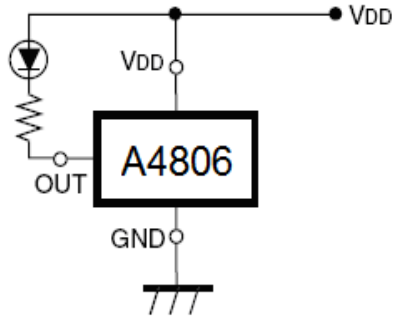


Nch Open Drain

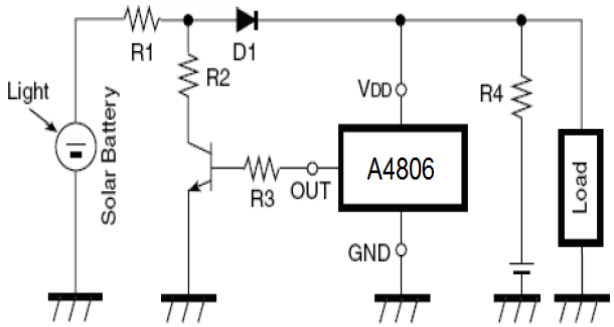
Memory Back-up Circuit



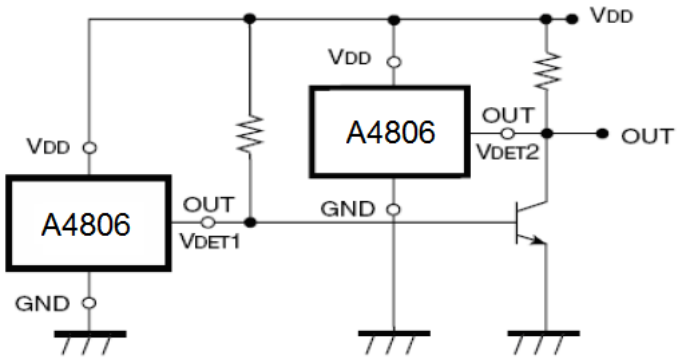
Power failure detectors



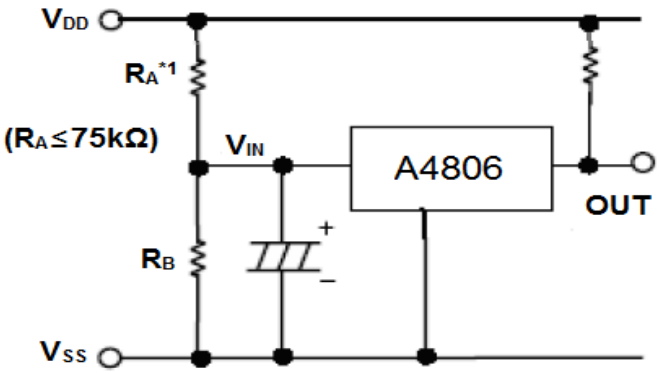
Overcharge protect circuit



Window Comparator Circuit

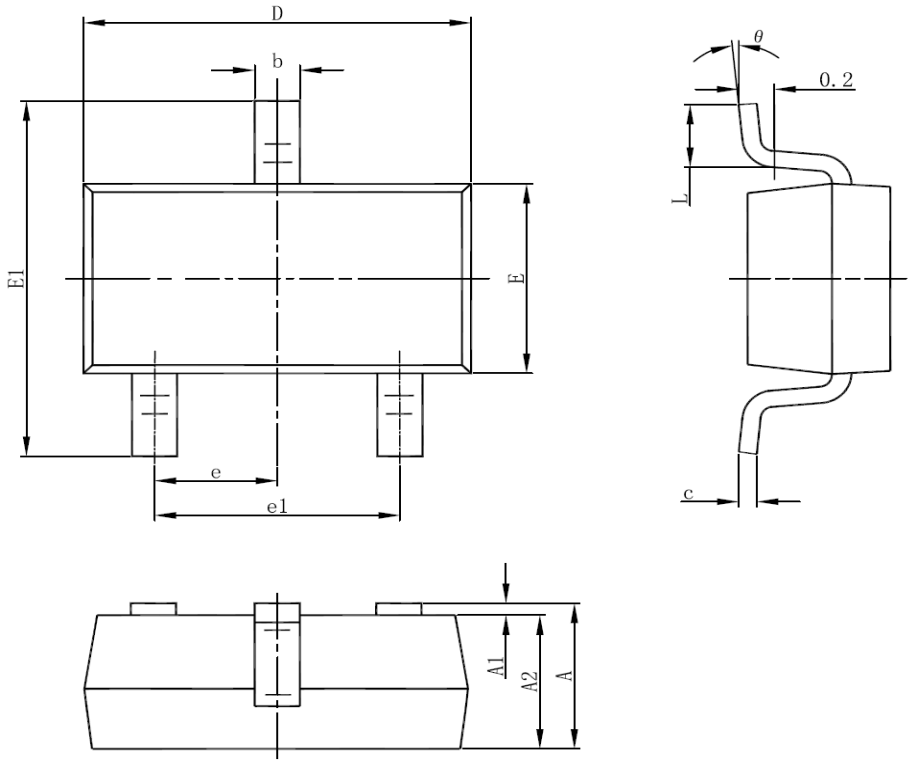


Detector Adjustable Circuit



PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)



Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

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