



DESCRIPTION

A4804 is a series of high precision voltage detector with ultra low current consumption (500nA typ. at $V_{DD} = 3.0V$). It can work at very low voltage, which makes it perfect for system reset.

A4804 is composed of high precision voltage reference, comparator, output driver and resistor array. Internally preset detect voltage has a low temperature drift and requires no external trimming.

N-channel open-drain is available.

A4804 is available in SOT-23 package.

ORDERING INFORMATION

Package Type	Part Number	
SOT-23	E3	A4804E3R-XXN
		A4804E3VR-XXN
Note	XX: Output Voltage 30=3.0V	
	N: N-channel open drain V: Halogen free Package R: Tape & Reel	
AiT provides all RoHS products		
Suffix “ V ” means Halogen free Package		

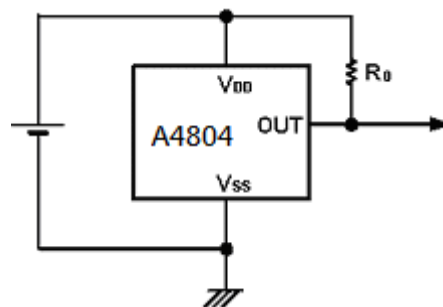
FEATURES

- High-precision detection Voltage: $\pm 3\%$
- Detection Voltage: 0.9V~6.0V (in 0.1V step)
- Precise hysteresis: 4% typ.
- Operating Voltage range: 0.7V~10V
- Ultra-low current consumption: 500nA typ.
(at $V_{DD} = 3.0V$)
- Available in SOT-23 package

APPLICATION

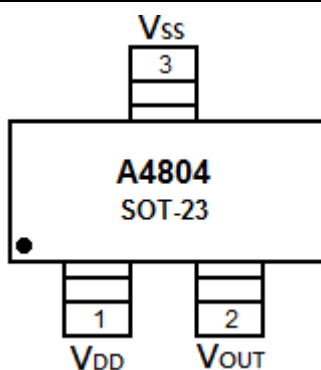
- Power monitor for portable equipment such as PDA, DSC, Mobile phone, Notebook, MP3
- CPU and Logic Circuit Reset
- Battery Checker
- Battery Back-up Circuit
- Power Failure Detector

TYPICAL APPLICATION





PIN DESCRIPTION



Top View

Pin #	Symbol	Function
1	V _{DD}	Voltage input pin
2	V _{OUT}	Voltage detection output pin
3	V _{SS}	Ground Pin

ABSOLUTE MAXIMUM RATINGS

Input Voltage		-0.3V ~ 10V
Output Voltage Range		-0.3V ~ 12V
Maximum Output Current		70mA
T _A , Ambient Temperature		-40°C ~ 85°C
P _D , Power Dissipation	SOT-23	250mW
T _S , Storage Temperature Range		-40°C ~ 150°C
Lead Temperature & Time		260°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.

RECOMMENDED WORK CONDITIONS

Parameter	Min	Recommended	Max	Unit
Input Voltage Range	0.7	-	10	V
Ambient Temperature	-40	25	85	°C



ELECTRICAL CHARACTERISTICS

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

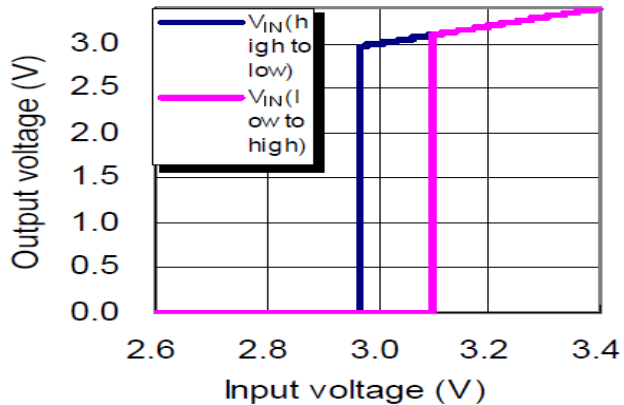
Parameter	Symbol	Conditions		Min	Typ.	Max	Unit
Detector Threshold	-V _{DET}		3.0V	2.91	3.00	3.09	V
Detector Threshold Hysteresis	V _{HYS}		3.0V	0.06	0.12	0.18	V
Current Consumption	I _{SS}	V _{DD} = 5.0V	3.0V	-	0.50	2.50	uA
Output Current	I _{OUT}	V _{DS} = 0.05V, V _{DD} = 0.7V	3.0V	0.01	0.05	-	mA
Maximum Operating Voltage	V _{DDH}			-	-	10	V
Minimum Operating Voltage	V _{DDL}			-	0.5	-	V
Output Delay Time	T _{PLH}			-	-	20	us



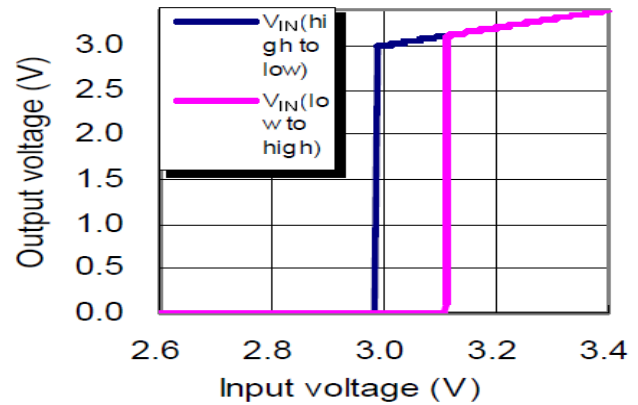
TYPICAL PERFORMANCE CHARACTERISTICS

Output Voltage VS. Input Voltage

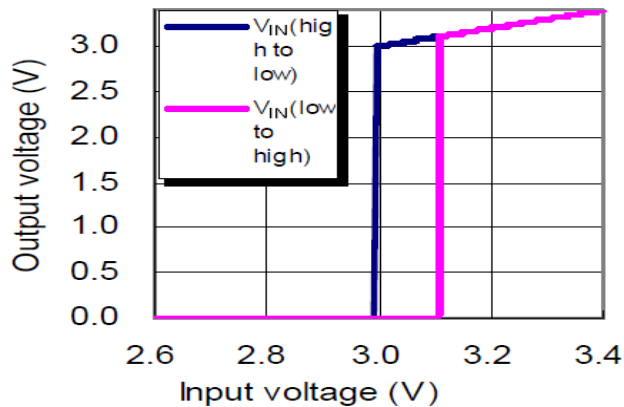
1. Detector threshold = 3.0V (-40°C)



2. Detector threshold = 3.0V (25°C)

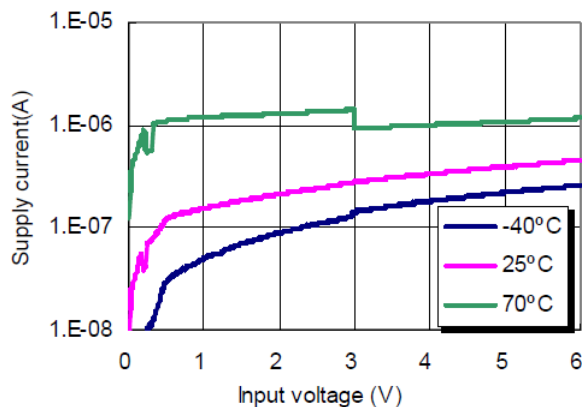


3. Detector threshold = 3.0V (70°C)



Supply current VS. Input voltage

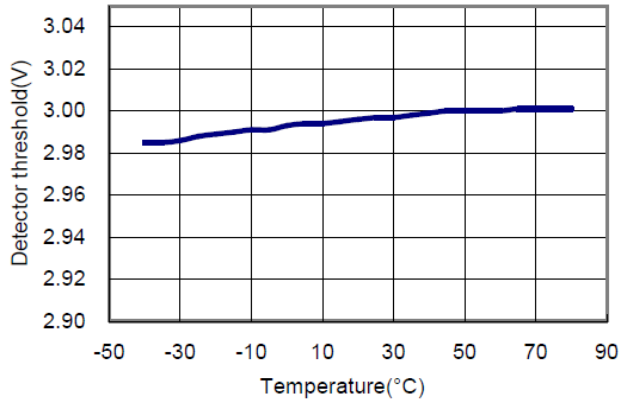
4. Detector threshold = 3.0V





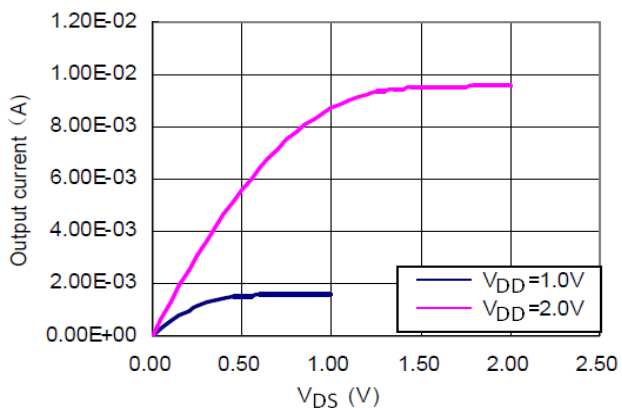
Detector Threshold Hysteresis VS. Temperature

5. Detector threshold = 3.0V



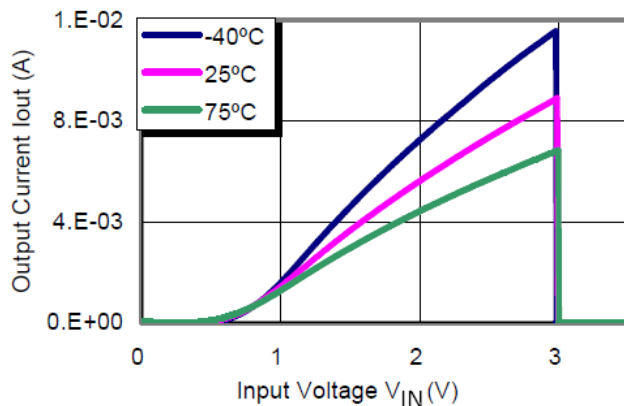
Driver Output Current VS. V_{DS}

6. A4804E3R-30N



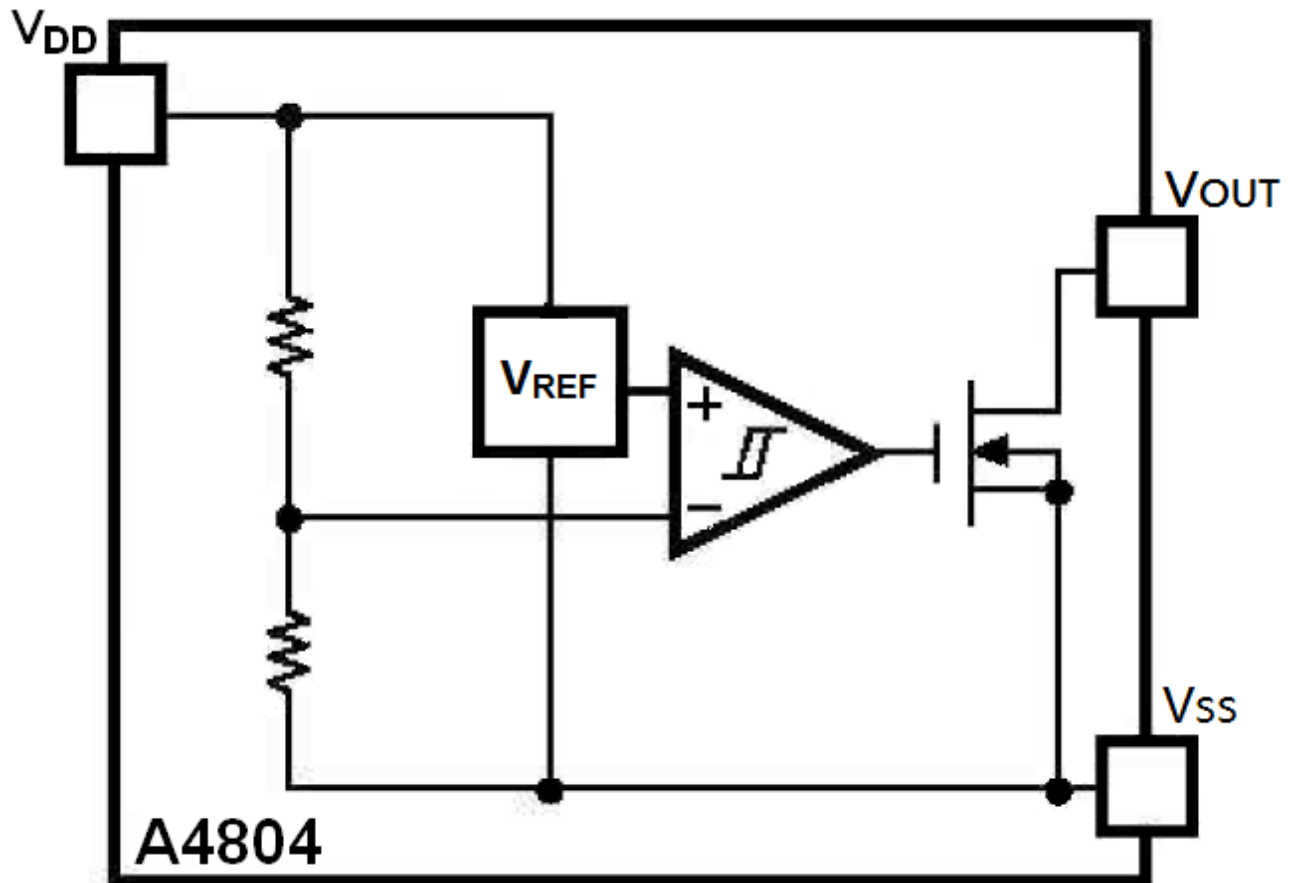
Driver Output Current vs. Input Voltage

7. Detector threshold = 3.0V



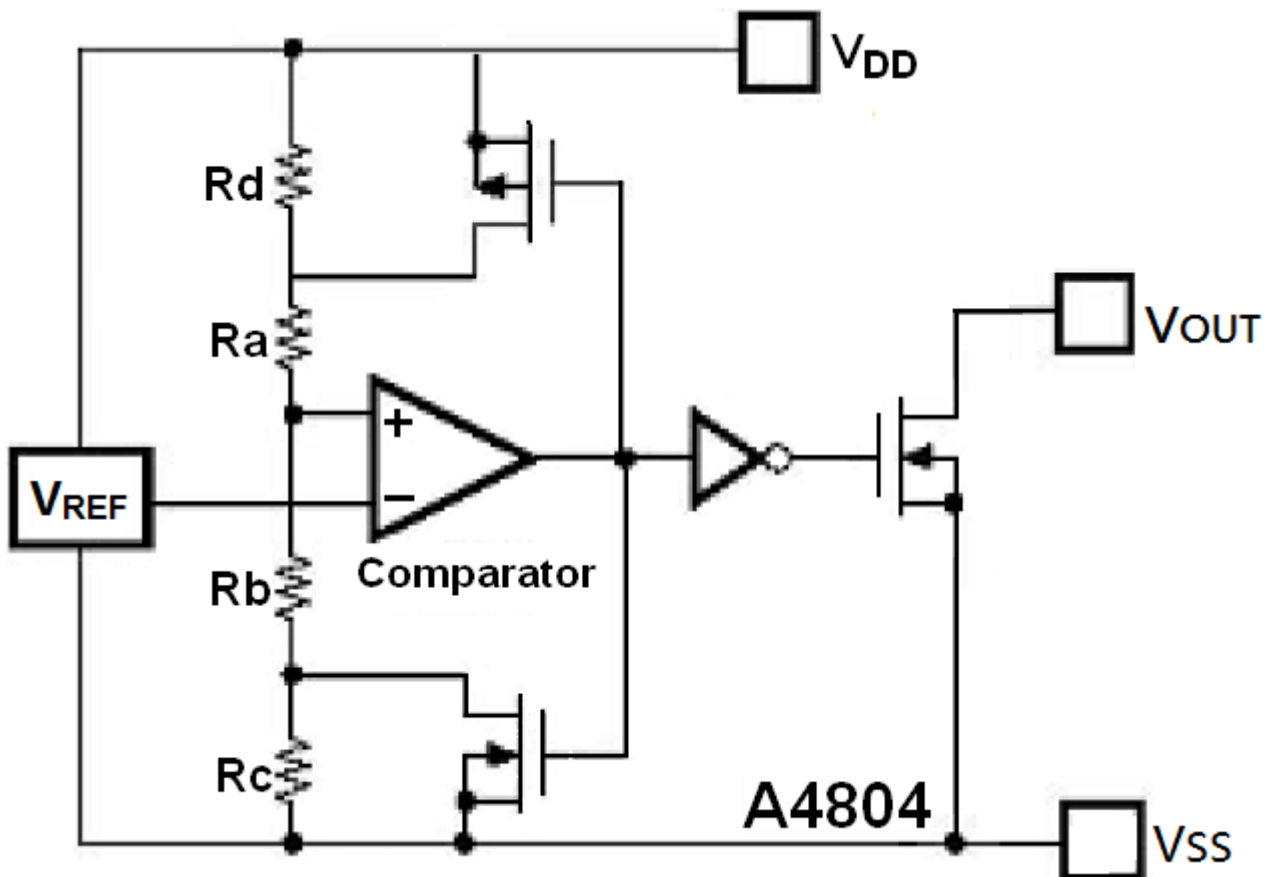


BLOCK DIAGRAM





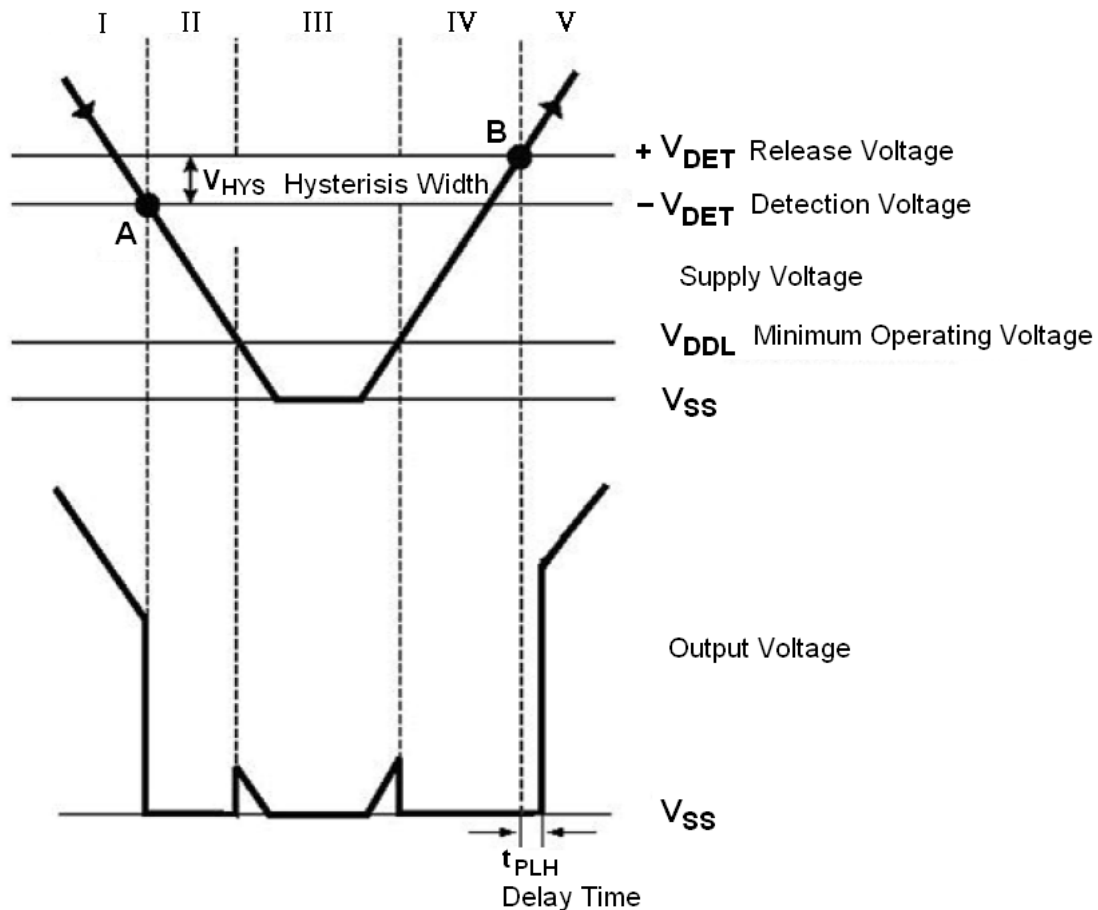
DETAILED INFORMATION



In A4804, a high precision low temperature coefficient reference voltage is applied to the negative input of a comparator. Input voltage, divided by resistor array of R_a , R_b and R_c , is applied to the positive input of the comparator. Output of the comparator controls a pair of NMOS and PMOS switches, generating the hysteresis. Output of the comparator passes a series of buffer to drive the output NMOS.



OUTPUT ACTION

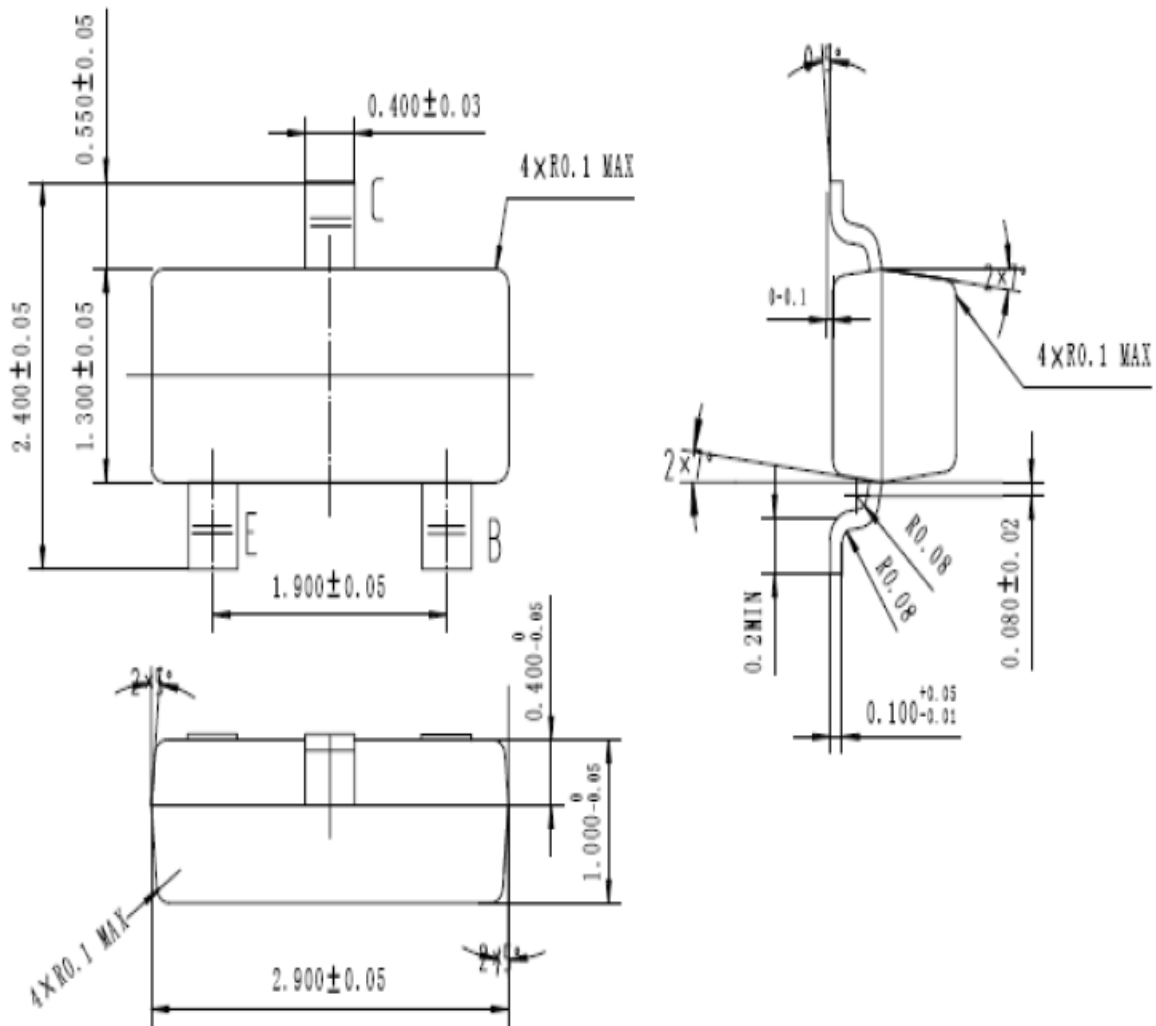


No.	Operation status	Output status
I	$V_{DD} > -V_{DET}$	Output voltage is equal to the supply voltage
II	V_{DD} drops below $-V_{DET}$	Output voltage equals to GND level
III	V_{DD} drops further below V_{DDL}	Output voltage is undefined
IV	V_{DD} rises above V_{DDL}	Output voltage equals to GND level
V	V_{DD} rises above $+V_{DET}$	Output voltage equals to supply voltage, $V_{HYS} = (+V_{DET}) - (-V_{DET})$



PACKAGE INFORMATION

Dimension in SOT-23 Package (Unit: mm)





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