

**OVERVIEW**

The SM6611 series are temperature switch ICs that change state (invert) when the chip temperature exceeds a preset temperature. The switches are designed with temperature hysteresis to prevent unstable output when the temperature is in the vicinity of the preset temperature.

There are 6 output switching temperatures in the series, available in 2 output configurations, making the SM6611 series devices ideal for a wide range of applications.

**FEATURES**

- 2.4 to 12.0V operating supply voltage
- -20 to 100°C operating temperature range
- ±3°C temperature accuracy
- 45 to 95°C output switch temperatures in 10°C steps
- 10°C temperature hysteresis

- 30μA (typ) low current consumption
- Output configuration
  - SM6611×AH open-drain active-LOW output
  - SM6611×BH CMOS active-HIGH output
- 6-pin SOT23-6W package

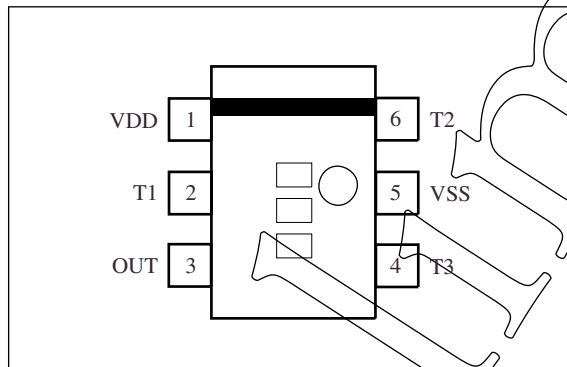
**APPLICATIONS**

- Motherboard overheating protection

- Battery-pack temperature protection

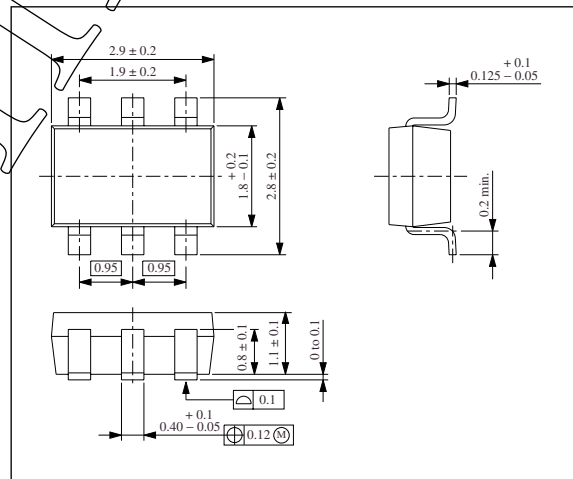
**PINOUT**

(Top view)



**PACKAGE DIMENSIONS**

(Unit: mm)



**ORDERING INFORMATION**

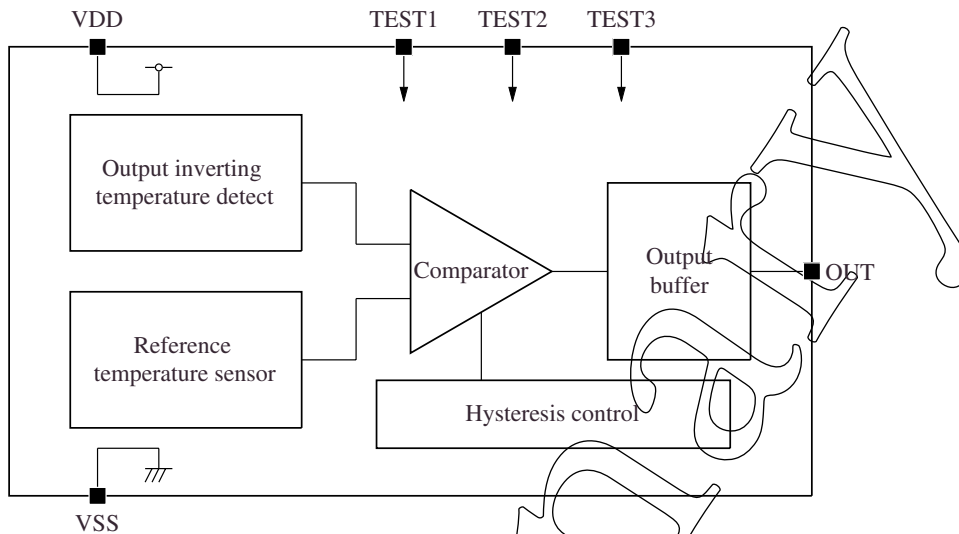
**SM6611×AH series**

Device	Output switch temperature	Output configuration
SM6611AAH	45°C	Open-drain active-LOW output
SM6611BAH	55°C	
SM6611CAH	65°C	
SM6611DAH	75°C	
SM6611EAH	85°C	
SM6611FAH	95°C	

**SM6611×BH series**

Device	Output switch temperature	Output configuration
SM6611ABH	45°C	CMOS active-HIGH output
SM6611BBH	55°C	
SM6611CBH	65°C	
SM6611DBH	75°C	
SM6611EBH	85°C	
SM6611FBH	95°C	

**BLOCK DIAGRAM**



**PIN DESCRIPTION**

Number	Name	I/O	Description
1	VDD	-	Supply voltage
2	T1	-	Test pin 1. This pin is used for test purposes by NPC. It has a built-in pull-up resistor. Leave open for normal operation.
3	OUT	O	Output. SM6611×AH: Open-drain output. A pull-up resistor of 100kΩ should be connected to this pin. Goes LOW when the switch preset temperature is exceeded. SM6611×BH: CMOS output. Goes LOW to HIGH when the switch preset temperature is exceeded.
4	T3	-	Test pin 3. This pin is used for test purposes by NPC. Connect to VSS for normal operation.
5	VSS	-	Ground
6	T2	-	Test pin 3. This pin is used for test purposes by NPC. Connect to VSS for normal operation.

## SPECIFICATIONS

### Absolute Maximum Ratings

$V_{SS} = 0V$

Parameter	Symbol	Rating	Unit
Supply voltage range	$V_{DD}$	-0.3 to 15	V
Power dissipation	$P_D$	2.5	mW
Storage temperature range	$T_{STG}$	-40 to 125	°C

### Recommended Operating Conditions

$V_{SS} = 0V$

Parameter	Symbol	Rating	Unit
Supply voltage range	$V_{DD}$	2.4 to 12	V
Operating temperature range	$T_{OPR}$	-20 to 100	°C

### DC Characteristics

$V_{DD} = 2.4$  to  $12V$ ,  $V_{SS} = 0V$ ,  $T_a = -20$  to  $100^\circ C$  unless otherwise noted

Parameter	Symbol	Condition	Rating			Unit
			min	typ	max	
Supply voltage	$V_{DD}$		2.4	-	12	V
Current consumption	$I_{DD}$		-	30	100	$\mu A$
LOW-level output voltage	$V_{OL}$	$I_{SINK} = 1mA, V_{DD} > 2.4V$	-	-	0.3	V
		$I_{SINK} = 3mA, V_{DD} > 4V$	-	-	0.4	V
HIGH-level output voltage	$V_{OH}$	CMOS output (SM6611×BH), $I_{SOURCE} = 0.5mA, V_{DD} > 2.4V$	$V_{DD} - 1.0$	-	-	V
Open-drain output maximum voltage	$V_{OMAX}$	Open-drain output (SM6611×AH)	-	-	12	V
Open-drain output leakage current	$I_{LEAK}$	$V_{DD} = 2.4V, V_{OUT} = 12V$ , (SM6611×AH)	-1	-	+1	$\mu A$
Output switch temperature accuracy	$\Delta T_{TH}$	45 to 95°C	-3	-	+3	°C
Hysteresis temperature	$T_{HYST}$		-	10	-	°C

Preliminary

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NIPPON PRECISION CIRCUITS INC.

4-3, Fukuzumi 2-chome  
Koto-ku, Tokyo 135-8430, Japan  
Telephone: +81-3-3642-6661  
Facsimile: +81-3-3642-6698  
<http://www.npc.co.jp/>  
Email: [sales@npc.co.jp](mailto:sales@npc.co.jp)

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