

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

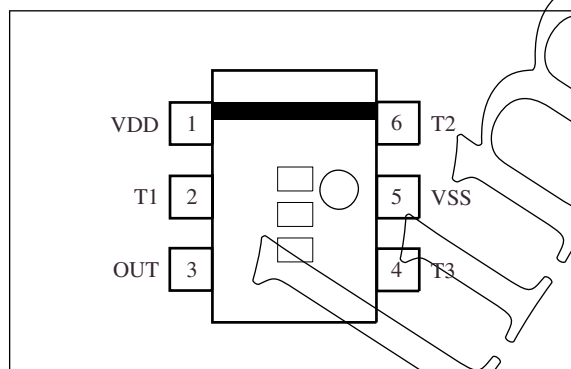
- 2.4 to 12.0V operating supply voltage
- -20 to 100°C operating temperature range
- $\pm 3^\circ\text{C}$ temperature accuracy
- 45 to 95°C output switch temperatures in 10°C steps
- 10°C temperature hysteresis
- 30 μA (typ) low current consumption
- Output configuration
 - SM6611xAH open-drain active-LOW output
 - SM6611xBH CMOS active-HIGH output
- 6-pin SOT23-6W package

APPLICATIONS

- Motherboard overheating protection
- Battery-pack temperature protection

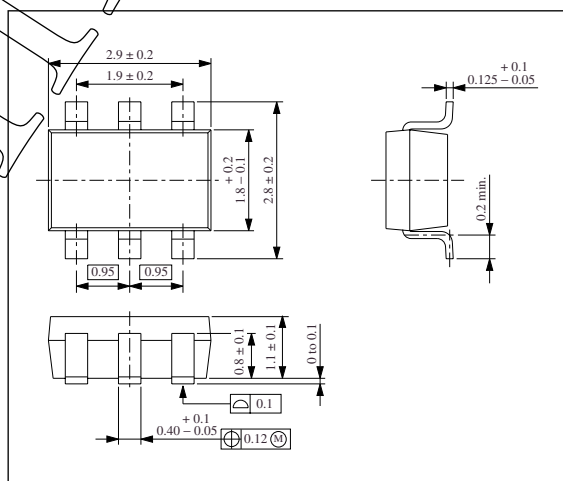
PINOUT

(Top view)



PACKAGE DIMENSIONS

(Unit: mm)



ORDERING INFORMATION

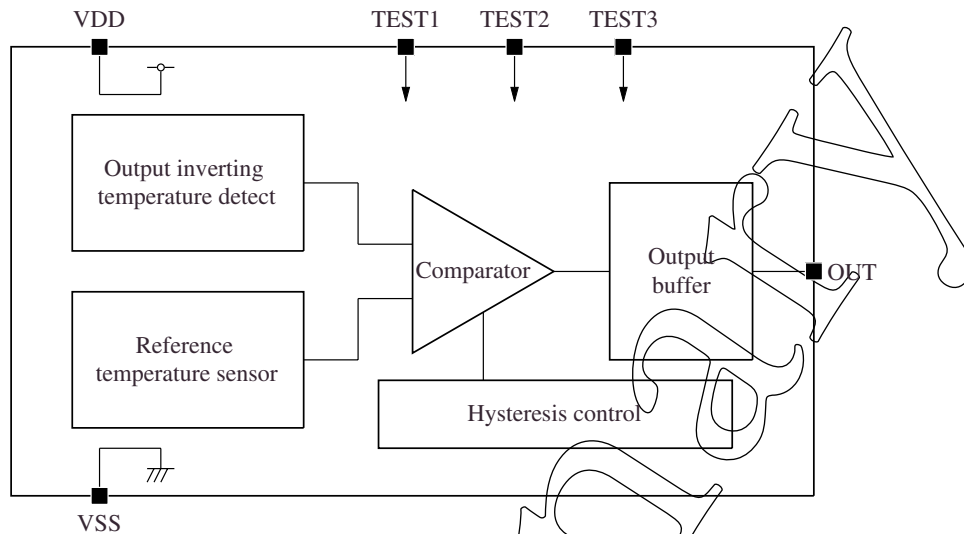
SM6611×AH series

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°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	μA
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	μA
Output switch temperature accuracy	ΔT_{TH}	45 to 95°C	–3	–	+3	°C
Hysteresis temperature	T_{HYST}		–	10	–	°C

Preliminary

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