

# ***SENSYLINK Microelectronics***

***(CTS7509/10)***

## ***Digital Temperature Sensor***

***CTS7509/10 are Temperature Switches with  $\pm 2^{\circ}\text{C}$  Accuracy in typical. And trigger temperature can be programmed with an external resistor.***

***It is ideally used in Temperature alarm, Thermal shutdown and Fan control etc.***

# Resistor Programmable Temperature Switches

## Description

CTS7509/10 are temperature switches with  $\pm 2^{\circ}\text{C}$  accuracy in typical. Trigger temperature can be programmed by changing an external resistor ( $R_{\text{SET}}$ ).

CTS7509/10 support hysteresis option of  $2^{\circ}\text{C}$  or  $10^{\circ}\text{C}$  by setting HYST pin as low or high.

CTS7509/10 offer digital logic output once trigger condition happened. CTS7509 is active low with open drain output, which requires an external pull-up resistor in application. CTS7510 supports 3 output structures, active low with push-pull, or active high with push-pull, or active low with open drain, which is built-in pull-up resistor, no requirement external resistor.

The trigger temperature range of CTS7509/10 is from  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ .

Available Package: SOT-23-5, SOT-23-6 package

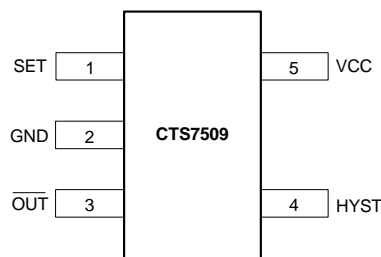
## Features

- Operation Voltage: 2.5V to 5.5V
- Quiescent Current: 30uA (Typ.), 50uA (Max.)
- Trigger Temperature Accuracy:  $\pm 2.0^{\circ}\text{C}$ (Typ.) from  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$   
 $\pm 3.0^{\circ}\text{C}$ (Typ.) from  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$
- Temperature Trigger Option:  
Temperature rising from cold to hot: H suffix  
Temperature falling from hot to cold: C suffix
- Output Structure:  
CTS7509, active low with open drain (need an external resistor)  
CTS7510, active low with open drain (no need external resistor)  
CTS7510, active low with push-pull  
CTS7510, active high with push-pull
- Selectable Hysteresis,  $2^{\circ}\text{C}$  or  $10^{\circ}\text{C}$
- Temperature Range:  $-40^{\circ}\text{C}$  to  $125^{\circ}\text{C}$

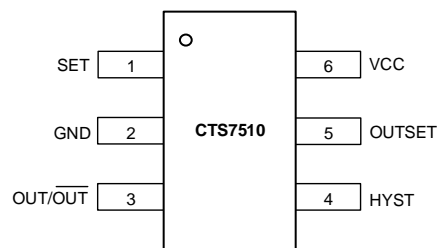
## Applications

- Temperature alarm
- Thermal shutdown
- Fan control

## PIN Configurations (Top View)



SOT-23-5(Package Code K5)



SOT-23-6 (Package Code K6)

## Typical Application

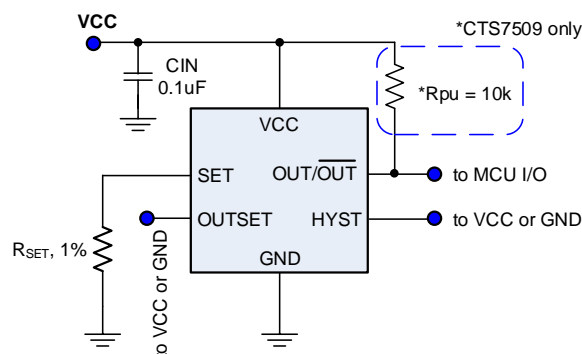


Figure 1. Typical Application of CTS7509/10

**Pin Description**

PIN Name.	PIN No.		Description
	CTS7509	CTS7510	
	SOT-23-5	SOT-23-6	
SET	1	1	Connect an external resistor to ground to setup trigger temperature.
GND	2	2	Ground pin.
$\overline{\text{OUT}}$	3		Open drain output with active low.
OUT/ $\overline{\text{OUT}}$		3	Output with active low or active high. it is depended on OUTSET pin connections. OUTSET->GND, Active low with push-pull; OUTSET->VCC, Active high with push-pull; OUTSET->float/unconnected, Active low with open drain, built-in internal pull-up resistor (100k in typical);
HYST	4	4	Hysteresis setup PIN: Short to GND, hysteresis temperature is 2°C; Short to VCC, hysteresis temperature is 10°C. <b>Do not leave HYST unconnected</b>
VCC	5	6	Power supply input pin.
OUTSET		5	Output setup pin:

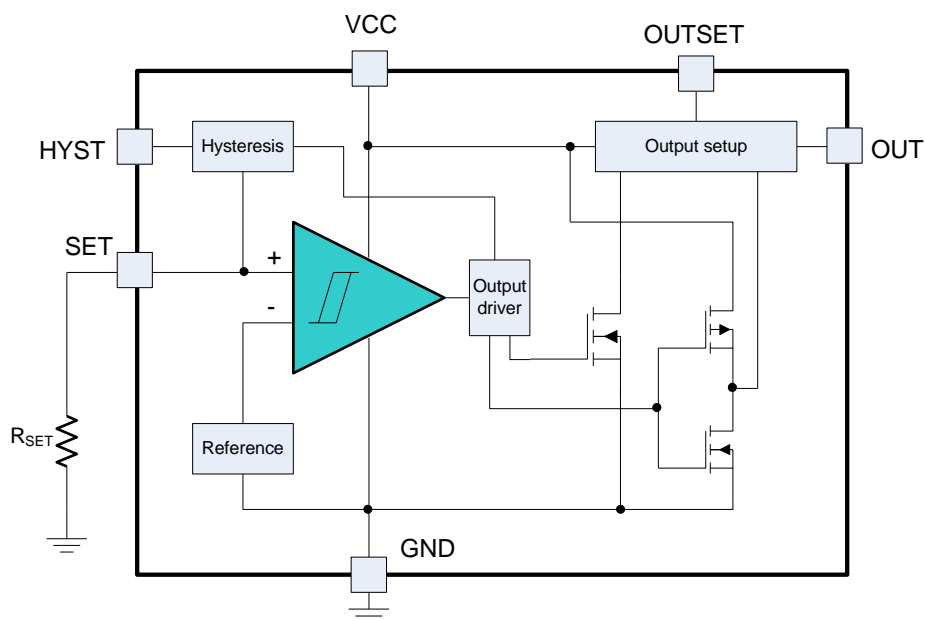
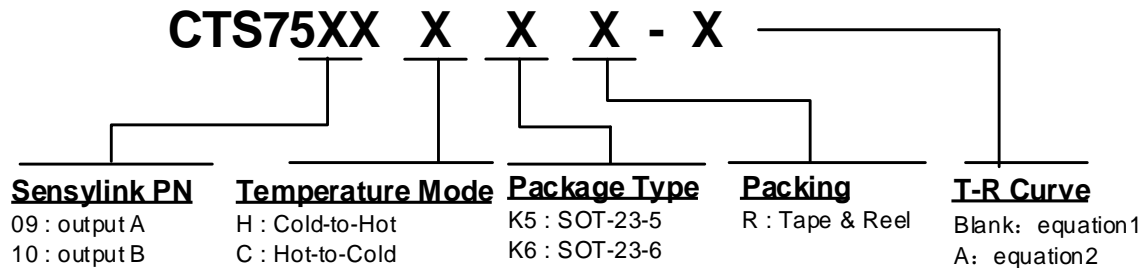
**Function Block**


Figure 2. CTS7509/10 function block

**Resistor Programmable Temperature Switches**
**Ordering Information**


CTS7509, output A can be setup as active low with open drain only (require an external pull-up resistor); CTS7510, output B can be setup as active low with push-pull, or active high with push-pull, or active low with open drain output (built-in internal pull-up resistor, no require an external pull-up resistor any more).

Order PN	Accuracy	Green <sup>1</sup>	Package	Marking ID <sup>2</sup>	Packing	MPQ	Operation Temperature
CTS7509HK5R	±2°C	Halogen free	SOT-23-5	AJWX	Tape & Reel	3,000	-40°C~+125°C
CTS7509CK5R	±2°C	Halogen free	SOT-23-5	AKWX	Tape & Reel	3,000	-40°C~+125°C
CTS7509HK5R-A	±2°C	Halogen free	SOT-23-5	FDWX	Tape & Reel	3,000	-40°C~+125°C
CTS7509CK5R-A	±2°C	Halogen free	SOT-23-5	FEWX	Tape & Reel	3,000	-40°C~+125°C
CTS7510HK6R	±2°C	Halogen free	SOT-23-6	ALWX	Tape & Reel	3,000	-40°C~+125°C
CTS7510CK6R	±2°C	Halogen free	SOT-23-6	AMWX	Tape & Reel	3,000	-40°C~+125°C
CTS7510HK6R-A	±2°C	Halogen free	SOT-23-6	FFWX	Tape & Reel	3,000	-40°C~+125°C
CTS7510CK6R-A	±2°C	Halogen free	SOT-23-6	FGWX	Tape & Reel	3,000	-40°C~+125°C

**Note**

1. Based on ROHS Y2012 spec, Halogen free covers lead free. So most package types Sensylink offers only states halogen free, instead of lead free.

2. For very small outline package, there's 4 digits to stands for product information and date code.



## ***SENSYLINK Microelectronics Inc.***

*[www.sensylink.com](http://www.sensylink.com)*

### **IMPORTANT NOTICE**

SENSYLINK Microelectronics Inc. reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein or to discontinue any product or service. Customers should obtain the latest relevant information before placing orders and should verify the latest and complete information. SENSYLINK Microelectronics does not assume any responsibility for use of any product, nor does SENSYLINK Microelectronics any liability arising out of the application or use of this document or any product or circuit described herein. SENSYLINK Microelectronics assumes no liability for applications assistance or the design of Customers' products. Customers are responsible for their products and applications using SENSYLINK Microelectronics components. SENSYLINK Microelectronics does not convey any license under its patent or trademark rights nor the other rights.

SENSYLINK Microelectronics Inc. © 2015 - 2023.