

## TEMPERATURE LIMIT SWITCH

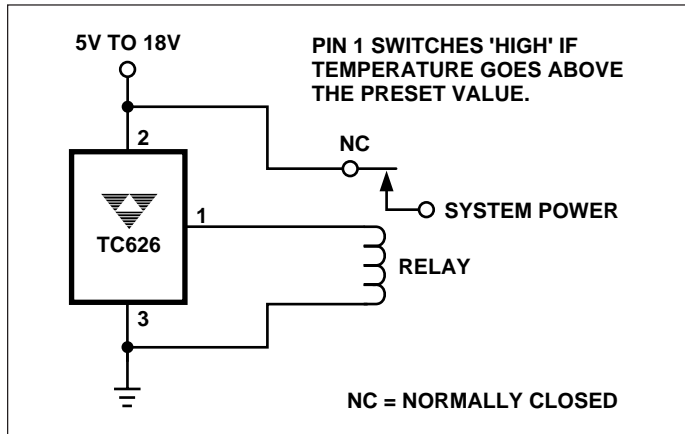
### FEATURES

- Requires No External Components
- On-Chip Temperature Sensing
- TO-220 package for "Hot Spot" Mounting
- 50mA Output Signal TO-220 Package (TC626VAB)
- TO-92 Package for Direct Circuit Board Mounting

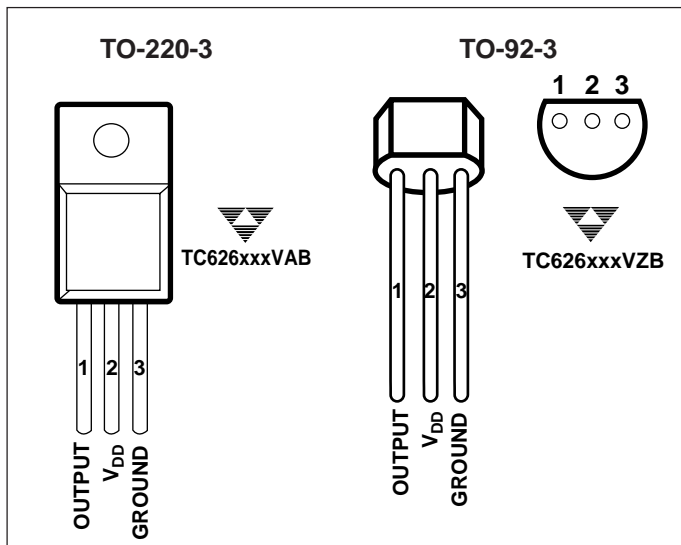
### APPLICATIONS

- Vibration-Immune Temperature Sensing
- Fan Speed Control Circuits
- System Overtemperature Shutdown
- Advanced Thermal Warning
- Consumer Products

### SYSTEM OVERTEMPERATURE PROTECTION



### PIN CONFIGURATIONS



### GENERAL DESCRIPTION

The TC626 is a temperature limit detector that notifies the system when measured temperature is above the factory-programmed setting. It is designed to replace mechanical (bimetal) temperature limit switches and offers increased ruggedness, higher reliability and greater setpoint accuracy. It requires no external components.

The TC626 operates over a  $-55^{\circ}\text{C}$  to  $+125^{\circ}\text{C}$  temperature range. It is available in a TO-92 package, which is ideal for ambient temperature sensing applications. It is also available in a TO-220-3 package for heatsink temperature measurement applications.

### ORDERING INFORMATION

Part Number*	Temperature Package	Range
TC626040VAB	TO-220-3	$-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$
TC626040VZB	TO-92-3	$-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$
TC626050VAB	TO-220-3	$-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$
TC626050VZB	TO-92-3	$-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$
TC626080VAB	TO-220-3	$-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$
TC626080VZB	TO-92-3	$-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$
TC626090VAB	TO-220-3	$-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$
TC626090VZB	TO-92-3	$-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$
TC626100VAB	TO-220-3	$-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$
TC626100VZB	TO-92-3	$-55^{\circ}\text{C}$ to $+125^{\circ}\text{C}$

\*Trip-point temperature is designated as follows: Part numbers are TC626xxxVAB or TC626VZB, where xxx = trip-point temperature in  $^{\circ}\text{C}$ . For high volume applications requiring different trip-points, contact factory.

## TC626

### ABSOLUTE MAXIMUM RATINGS\*

Package Power Dissipation ( $T_A \leq 70^\circ\text{C}$ )	
TO-92 .....	440mW
TO-220 .....	1.6mW
Supply Voltage .....	20V
Input Voltage Any Input .....	(GND - 0.3V) to ( $V_{DD} + 0.3V$ )
Operating Temperature .....	- 55°C to +125°C
Maximum Junction Temperature .....	+150°C
Storage Temperature .....	- 65°C to +150°C
Lead Temperature (Soldering, 10 sec) .....	+300°C

\*Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions above those indicated in the operation sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

### ELECTRICAL CHARACTERISTICS: $V_{DD} = +5V$ and $T_A = -55^\circ\text{C}$ to $+125^\circ\text{C}$ , unless otherwise specified.

Parameter	Test Conditions	Min	Typ	Max	Units
Supply Voltage		4.5	—	18	V
Supply Current		—	300	600	$\mu\text{A}$
Output Resistance	Output High or Low	—	—	75	$\Omega$
Output Current	Source/Sink, $V_{CC} = 18V$	—	—	25	mA
	Source/Sink, $V_{CC} = 4.5V$	—	—	10	mA
Absolute Accuracy	At trip point	T - 3	T	T + 3	$^\circ\text{C}$
Trip Point Hysteresis		3.5	5	6.5	$^\circ\text{C}$

TelCom Semiconductor reserves the right to make changes in the circuitry or specifications detailed in this manual at any time without notice. Minimums and maximums are guaranteed. All other specifications are intended as guidelines only. TelCom Semiconductor assumes no responsibility for the use of any circuits described herein and makes no representations that they are free from patent infringement.

### DETAILED DESCRIPTION

The TC626 output maintains a logic low state when measured temperature is below the factory-programmed setting. As temperature rises, the output is driven active to a high level [ $V_{DD} - (I_{OUT})(R_{OUT})$ ] when temperature equals the setpoint value  $\pm 3^\circ\text{C}$ .

Built-in hysteresis prevents output "chattering" when measured temperature is at (or near) the trip point (Figure 1). As temperature falls through the trip point, hysteresis maintains the output high until measured temperature is  $5^\circ\text{C}$  lower than the trip point setting.

The TC626VZB (TO-92 package) has a maximum output current of 10mA while the TC626VAB has a maximum output current of 50mA. Care must be taken to observe these output current limits as output currents in excess of those stated will cause device self-heating resulting in erroneous temperature measurements.

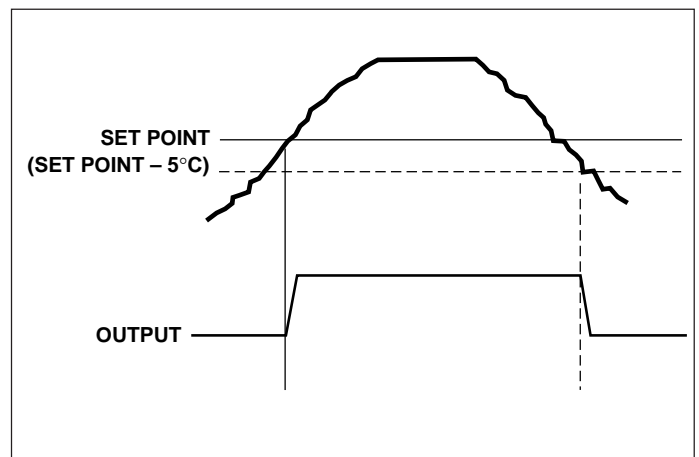


Figure 1. TC626 Operation