

Open collector output temperature switch

Monolithic IC MM1523 □N/MM1524 □N

Outline

This IC is a temperature switch that emits a logic signal when chip temperature during load reaches the set detection temperature. It is composed of a temperature detection circuit and a comparator.

Features

1. Detection temperature precision $\pm 3^{\circ}\text{C}$ max.
2. Detection temperature hysteresis 10°C typ.
3. Detection temperature is lined up in 10°C steps by trimming in the $+50^{\circ}\text{C} \sim +100^{\circ}\text{C}$ range.
4. Active low output/MM1523 □N
5. Active high output/MM1524 □N
6. Consumption current $90\mu\text{A}$ (when OFF/typ.)
7. Operating power voltage range $+2.7 \sim +10.0\text{V}$
8. Operating temperature range $-40 \sim +125^{\circ}\text{C}$

Package

SOT-25A

Applications

1. CPU heat protection
2. Battery charger heat protection
3. Cellular phones

Pin Description

Pin No.	Pin Name	Function
1,3	N.C	
2	GND	GND PIN
4	V _{CC}	V _{CC} PIN
5	V _{OUT}	Output PIN

Absolute Maximum Ratings (T_a=25°C)

Item	Symbol	Rating	Unit
Storage temperature	T _{STG}	-55~+150	°C
Operating temperature	T _{OPR}	-40~+125	°C
Supply Voltage	V _{CC} max.	+13	V
Output current	I _{OUT} max.	10	mA
Allowable loss	P _d	188	mW

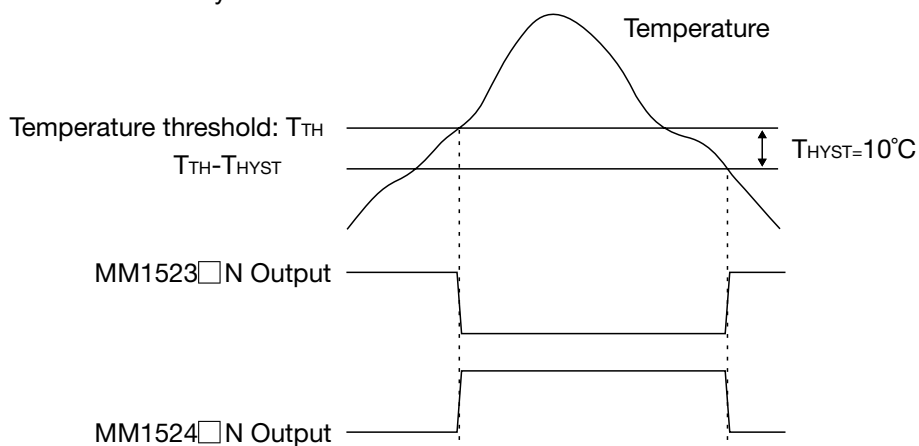
Electrical Characteristics (Except where noted otherwise, $V_{CC}=3V$, $T_a=-40\sim+125^{\circ}C$, $I_{OUT}=0\mu A$)

Item	Symbol	Measuring Circuit	Min.	Typ.	Max.	Unit
Temperature threshold*1	T_{TH}		47	50	53	$^{\circ}C$
			57	60	63	$^{\circ}C$
			67	70	73	$^{\circ}C$
			77	80	83	$^{\circ}C$
			87	90	93	$^{\circ}C$
			97	100	103	$^{\circ}C$
Current consumption when turning it off	I_{CCOFF}	$V_{CC}=2.7\sim 10V$		90	150	μA
Current consumption when turning it on	I_{CCON}	$V_{CC}=2.7\sim 10V$		160	230	μA
Temperature threshold hysteresis*2	T_{HYST}			10		$^{\circ}C$
Output leakage current when turning it off	I_{OFF}	$V_{CC}=2.7\sim 10V$ $T_a=25^{\circ}C$			± 0.1	μA
Low-level output voltage	V_{LO}	$I_{OUT}=1mA$		0.1	0.4	V

Note: *1 Temperature threshold

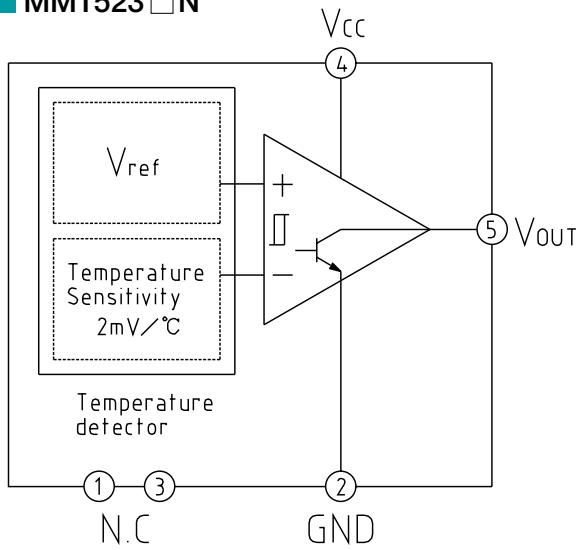
Model Name		Temperature Threshold
MM1523AN	MM1524AN	$50^{\circ}C$
MM1523BN	MM1524BN	$60^{\circ}C$
MM1523CN	MM1524CN	$70^{\circ}C$
MM1523DN	MM1524DN	$80^{\circ}C$
MM1523EN	MM1524EN	$90^{\circ}C$
MM1523FN	MM1524FN	$100^{\circ}C$

Note: *2 Temperature threshold hysteresis: T_{HYST}

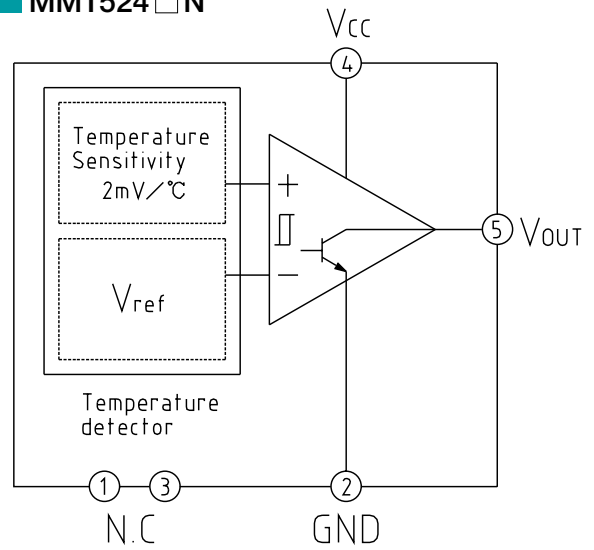


Block Diagram

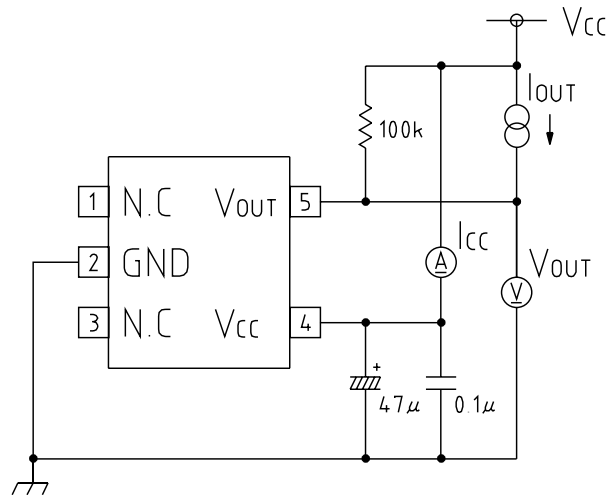
■ MM1523 □N



■ MM1524 □N



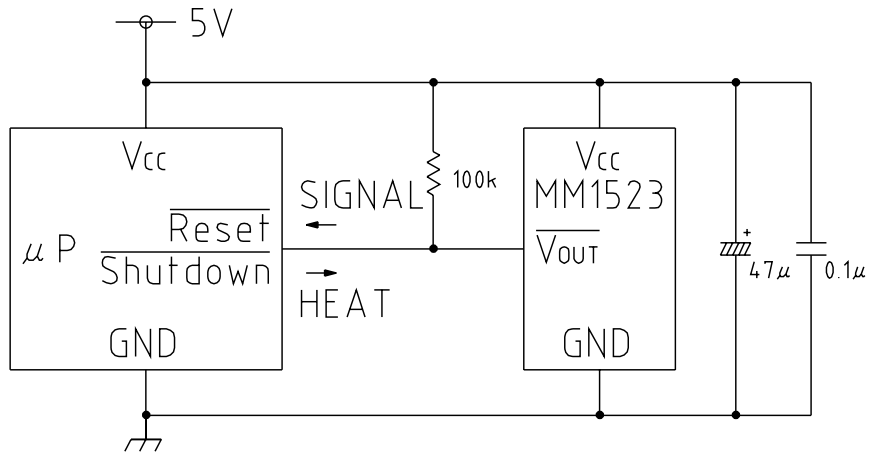
Measuring Circuit



Application Circuits

Microprocessor warning/reset

· MM1523 □N



Fan control

· MM1524 □N

