

Ultra Small Temperature Switches with Pin Selectable Hysteresis

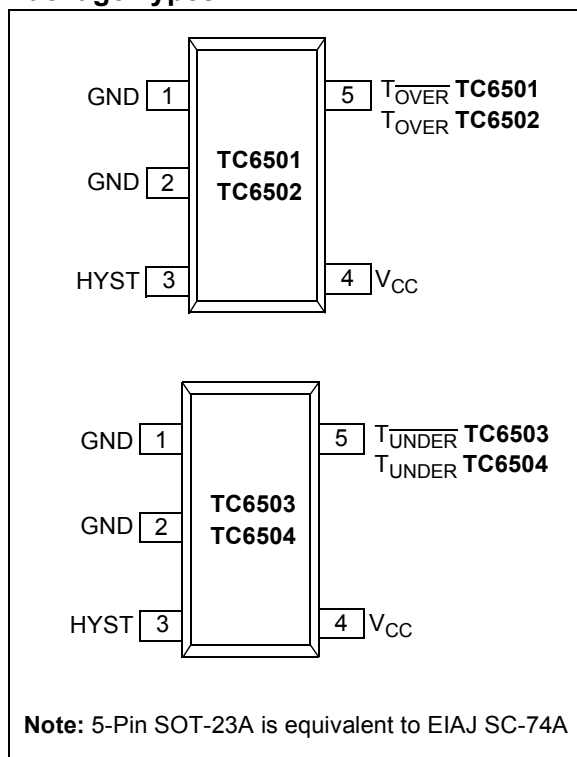
Features

- 5-Pin SOT-23A
- Factory-programmed Thresholds from -45°C to +125°C in 10°C Increments
- Pin Selectable +2°C or +10°C Hysteresis
- $\pm 0.5^\circ\text{C}$ (Typ) Threshold Accuracy Over Full Temperature Range
- No External Components Required
- 17 μA Supply Current (Typ)

Applications

- Thermal Management in PCs and Servers
- Over-temperature Fail-safe Circuits
- Simple Fan Controller
- Temperature Alarms
- Projectors/Printers
- Notebook Computers
- Network Boxes

Package Types



General Description

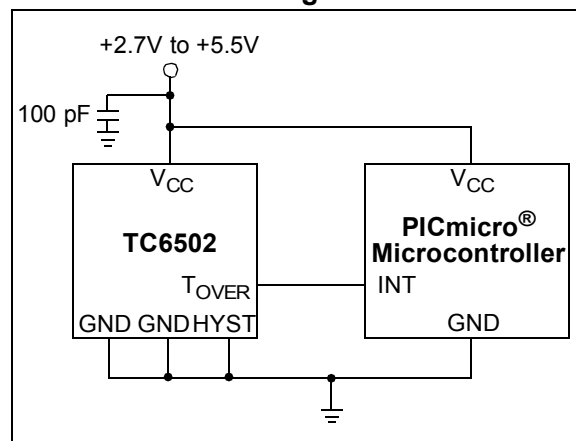
The TC6501/2/3/4 are SOT-23 temperature switches that require no external components and are available with factory-programmed temperature thresholds. A choice of factory-trimmed temperature trip points are also available. Pin-selectable hysteresis of +2°C or +10°C allows flexibility to the design of the application. These parts typically consume only 17 μA of current and operate over the entire -55°C to +135°C temperature range, while offering accuracies of $\pm 0.5^\circ\text{C}$ (typ).

The TC6501 and TC6503 have an open-drain, active-low output, which targets microcontroller reset control. The TC6502 and TC6504 have a CMOS, active-high output designed to drive the logic level MOSFET that turns on a fan or heater element.

The TC6501/TC6502 are designed for hot temperature monitoring (+35°C to +125°C). These devices assert a logic signal when the temperature goes above the threshold. The TC6503/TC6504 are optimized for cold temperature monitoring (-45°C to +15°C) and assert a logic signal when the temperature goes below the threshold.

The TC6501/2/3/4 are offered with five standard temperature thresholds. Available in 5-Pin SOT-23A packages, these parts are ideal for applications requiring high integration, small size, low power and low installed cost.

Functional Block Diagram



TC6501/2/3/4

1.0 ELECTRICAL CHARACTERISTICS

Absolute Maximum Ratings*

Supply Voltage (V_{CC})	-0.3V to +7V
Input Current (All Pins)	20 mA
Output Current (All Pins)	20 mA
Operating Temperature Range	- 55°C to +135°C
Storage Temperature Range	- 65°C to +165°C
T_{OVER} (TC6501)	-0.3V to +7V
T_{OVER} (TC6502)	-0.3V to ($V_{CC} + 0.3V$)
T_{UNDER} (TC6503)	-0.3V to 7V
T_{UNDER} (TC6504)	-0.3V to ($V_{CC} + 0.3V$)
All Other Pins	-0.3V to ($V_{CC} + 0.3V$)
Maximum Junction Temperature, T_J	150°C
Power Dissipation ($T_A = +70^\circ\text{C}$): (Derate 7.1 mW/°C Above +70°C)	570 mW

* **Notice:** Stresses above those listed under “Maximum Ratings” may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of the specifications is not implied. Exposure to maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL SPECIFICATIONS

Electrical Characteristics: Unless otherwise noted, $V_{CC} = +2.7V$ to $+5.5V$, $R_{PULL-UP} = 100\text{ k}\Omega$ (TC6501/TC6503 only), 100 pF decoupling capacitor from V_{CC} to GND, $T_{AMB} = -55^\circ\text{C}$ to $+135^\circ\text{C}$. Typical values are at $T_A = +25^\circ\text{C}$.						
Parameter	Symbol	Min	Typ	Max	Unit	Test Conditions
Supply Voltage Range	V_{CC}	2.7	—	5.5	V	
Supply Current	I_{CC}	—	17	40	μA	
HYST Input Threshold	V_{IH}	$0.8 \times V_{CC}$	—	—	V	
HYST Input Threshold	V_{IL}	—	—	$0.2 \times V_{CC}$	V	
Temperature Threshold Accuracy (Note 1)	ΔT_{TH}	-6	± 0.5	6	$^\circ\text{C}$	-45°C to -25°C
		-4	± 0.5	4	$^\circ\text{C}$	-15°C to +15°C
		-4	± 0.5	4	$^\circ\text{C}$	+35°C to +65°C
		-6	± 0.5	6	$^\circ\text{C}$	+75°C to +125°C
Temperature Threshold Hysteresis	T_{HYST}	—	2.0	—	$^\circ\text{C}$	HYST = GND
		—	10	—	$^\circ\text{C}$	HYST = V_{CC}
Output Voltage High	V_{OH}	$0.8 \times V_{CC}$	—	—	V	$I_{SOURCE} = 500\text{ }\mu\text{A}$, $V_{CC} > 2.7V$ (TC6502/TC6504 Only)
		$V_{CC} - 1.5$	—	—	V	$I_{SOURCE} = 800\text{ }\mu\text{A}$, $V_{CC} > 4.5V$ (TC6502/TC6504 Only)
Output Voltage Low	V_{OL}	—	—	0.3	V	$I_{SINK} = 1.2\text{ mA}$, $V_{CC} > 2.7V$
		—	—	0.4	V	$I_{SINK} = 3.2\text{ mA}$, $V_{CC} > 4.5V$
Open-Drain Output Leakage Current		—	10	—	nA	$V_{CC} = 2.7V$, $T_{UNDER} = 5.5V$ (TC6503); $T_{OVER} = 5.5V$ (TC6501)

Note 1: The TC6501/2/3/4 are available with internal, factory-programmed temperature trip thresholds from -45°C to +125°C, in +10°C increments.

2.0 TYPICAL PERFORMANCE CURVES

Note: The graphs and tables provided following this note are a statistical summary based on a limited number of samples and are provided for informational purposes only. The performance characteristics listed herein are not tested or guaranteed. In some graphs or tables, the data presented may be outside the specified operating range (e.g., outside specified power supply range) and therefore outside the warranted range.

Note: Unless otherwise noted, $V_{CC} = 5.0V$, $R_{PULL-UP} = 100\text{ k}\Omega$ (TC6501/TC6503 only), 100 pF decoupling capacitor from V_{CC} to GND, $T_{AMB} = +25^\circ\text{C}$.

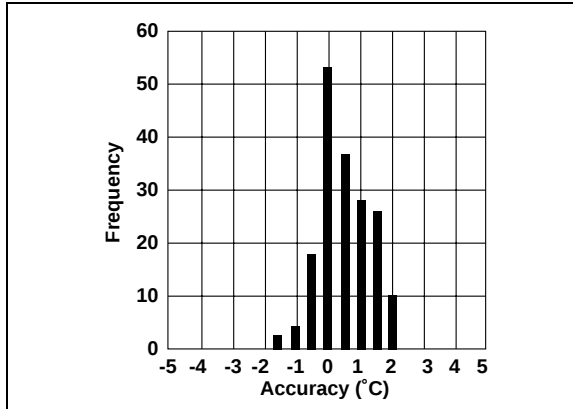


FIGURE 2-1: Trip Threshold Accuracy.

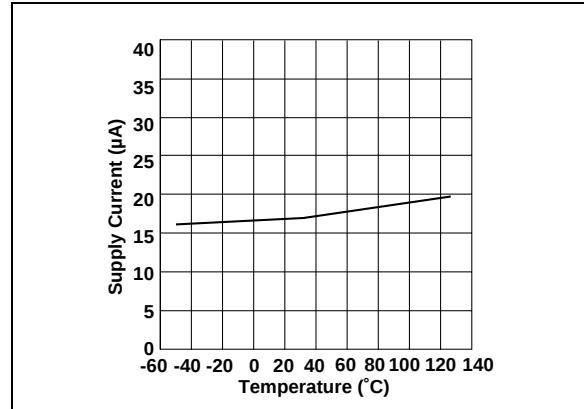


FIGURE 2-4: Supply Current vs. Temperature.

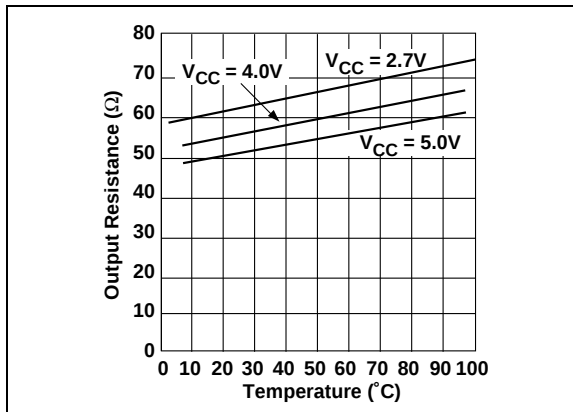


FIGURE 2-2: Output Sink Resistance vs. Temperature.

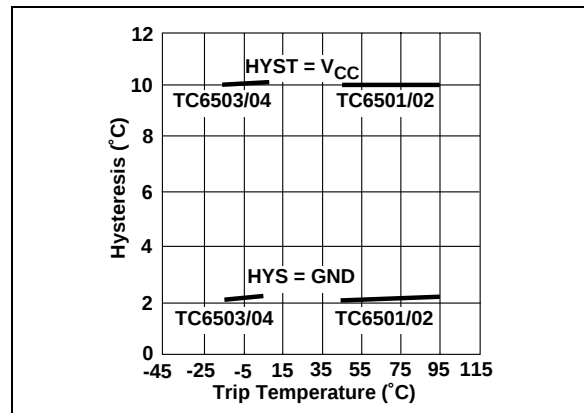


FIGURE 2-5: Hysteresis vs. Trip Temperature.

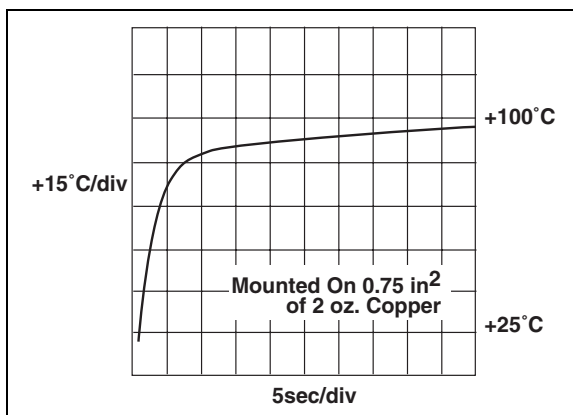


FIGURE 2-3: Thermal Step Response in Perfluorinated Fluid (SOT-23).

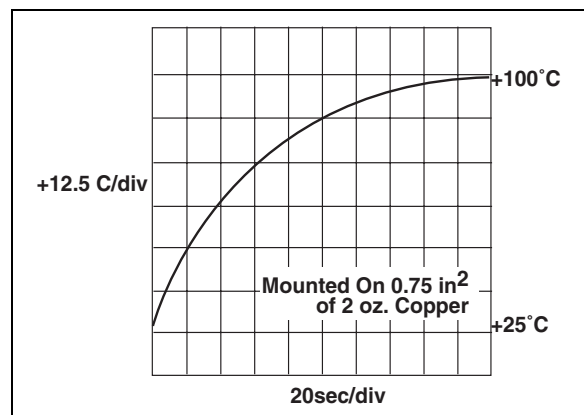


FIGURE 2-6: Thermal Step Response in Still Air (SOT-23).

TC6501/2/3/4

Note: Unless otherwise noted, $V_{CC} = 5.0V$, $R_{PULL-UP} = 100\text{ k}\Omega$ (TC6501/TC6503 only), 100 pF decoupling capacitor from V_{CC} to GND, $T_{AMB} = +25^{\circ}C$.

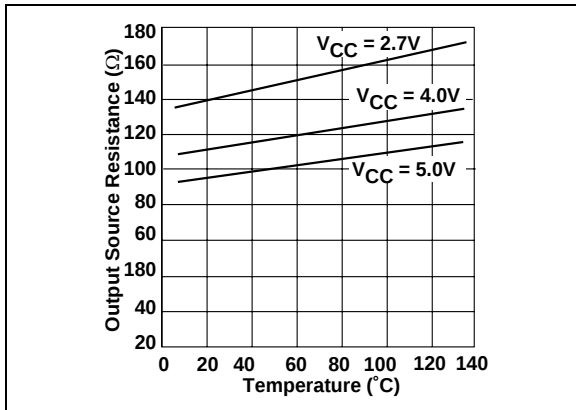


FIGURE 2-7: Output Source Resistance vs. Temperature (TC6502).

3.0 PIN DESCRIPTIONS

The descriptions of the pins are listed in Table 3-1.

TABLE 3-1: PIN FUNCTION TABLE

TC6501	TC6502	TC6503	TC6504	Symbol	Description
1, 2	1, 2	1, 2	1, 2	GND	Ground
3	3	3	3	HYST	Hysteresis Input
4	4	4	4	V _{CC}	Supply Input (+2.7V to +5.5V)
5	—	—	—	T _{OVER}	Open-Drain, Active-Low Output
—	5	—	—	T _{OVER}	Push/Pull Active-High Output
—	—	5	—	T _{UNDER}	Open-Drain, Active-Low Output
—	—	—	5	T _{UNDER}	Push/Pull Active-High Output

3.1 Ground

Connect the device ground pins directly to the PCB ground and minimize the length of the connection. The thermal resistance to the die is at a minimum at Pin 2.

3.2 Hysteresis Input (HYST)

Either 2°C (GND) or 10°C (V_{CC}) of hysteresis is selected by connecting HYST to GND or V_{CC}.

3.3 Supply Input (V_{CC})

A 100 pF or greater decoupling capacitor from V_{CC} to GND is recommended.

3.4 Open-Drain, Active-Low Output (TC6501) (T_{OVER})

The voltage at the T_{OVER} pin is equal to a logic-low level if the sensor detects a temperature that is greater than the factory-programmed threshold temperature. Because this is an open-drain output, an external pull-up resistor is required (a 100 kΩ pull-up resistor is recommended). The voltage on this pin can be higher than V_{CC}, though the voltage must not exceed the absolute maximum input voltage of 7.0V.

3.5 Push/Pull Active-High Output (TC6502) (T_{OVER})

The voltage at T_{OVER} is equal to a logic-high level if the sensor detects a temperature greater than the factory-programmed threshold temperature.

3.6 Open-Drain, Active-Low Output (TC6503) (T_{UNDER})

The voltage at the T_{UNDER} pin is equal to a logic-low level if the sensor detects a temperature that is less than the factory-programmed threshold temperature. Because this is an open-drain output, an external pull-up resistor is required (a 100 kΩ pull-up resistor is recommended). The voltage on this pin can be higher than V_{CC}, though the voltage must not exceed the absolute maximum input voltage of 7.0V.

3.7 Push/Pull Active-High Output (TC6504) (T_{UNDER})

The voltage at T_{UNDER} is equal to a logic-high level if the sensor detects a temperature less than the factory-programmed threshold temperature.

TC6501/2/3/4

4.0 DETAILED DESCRIPTION

The TC6501/2/3/4 integrate a temperature sensor with a factory-programmed threshold switch (see Functional Block Diagrams in Figure 5-4 through Figure 5-7). A logic signal is asserted when the die temperature crosses the factory-programmed threshold. An external hysteresis input pin allows the user to select either 2°C or 10°C hysteresis to give further flexibility to the design of the application. The TC6501 and TC6502 are intended for a temperature range of 35°C to 125°C in 10°C increments. The TC6501 has an open-drain output, while the TC6502 has a push-pull output stage.

The TC6503 and TC6504 are intended for a cold temperature range of -45°C to +15°C in 10°C increments. The TC6503 has an open-drain output, while the TC6504 has a push/pull output stage. The TC6501 and TC6503 are intended for applications with a microcontroller reset input. The TC6502 and TC6504 are intended for applications where a fan or heater element is turned on.

Please contact Microchip Technology for the availability of a particular temperature threshold not included in Table 4-1.

4.1 Hysteresis Input

To prevent the output from “chattering” at or near the trip point temperature, a selectable HYST input pin is provided. Hysteresis can be externally selected at 2°C (HYST = GND) or 10°C (HYST = V_{CC}) by means of the CMOS compatible HYST input pin. Do not let the HYST pin float, as this could cause an increase in supply current. The hysteresis does not depend on the part's programmed trip threshold.

TABLE 4-1: FACTORY-PROGRAMMED THRESHOLD RANGE

Part Number	Threshold (T_{TH}) Range
TC6501	+35°C < T_{TH} < +125°C
TC6502	+35°C < T_{TH} < +125°C
TC6503	-45°C < T_{TH} < +15°C
TC6504	-45°C < T_{TH} < +15°C

4.2 Thermal Considerations

With a 17 μ A typical supply current, the TC6501/2/3/4 dissipates very little power. Thus, the die temperature is basically the same as the package temperature. To minimize the error in temperature readings, the load current should be limited to a few milliamps. For example, the typical thermal resistance of a 5-Pin SOT-23A package is 140°C/W. If, for instance, the TC6501 had to sink 1 mA, and the output voltage is ensured to be less than 0.3V, an additional 0.3 mW of power is dissipated within the temperature sensor. This corresponds to a 0.042°C rise in die temperature.

Temperature-monitoring accuracy depends on the thermal resistance between the device being monitored and the temperature switch die. Heat flows primarily through the leads onto the die. Pin 2 provides the lowest thermal resistance to the die. To achieve the best temperature-monitoring results, the TC6501/2/3/4 should be placed closest to the device being monitored. Additionally, a short and wide copper trace from pin 2 to the device should be used. In some cases, the 5-Pin SOT-23A package can be placed directly under the socketed microcontroller for improved thermal contact.

5.0 APPLICATIONS

The TC6501 and TC6503 have open-drain outputs and are, therefore, intended to interface as microcontroller reset inputs. Moreover, the combination of these two devices can be used to implement a temperature window alarm by wire-ORing the outputs and using an external pull-up resistor (see Figure 5-1).

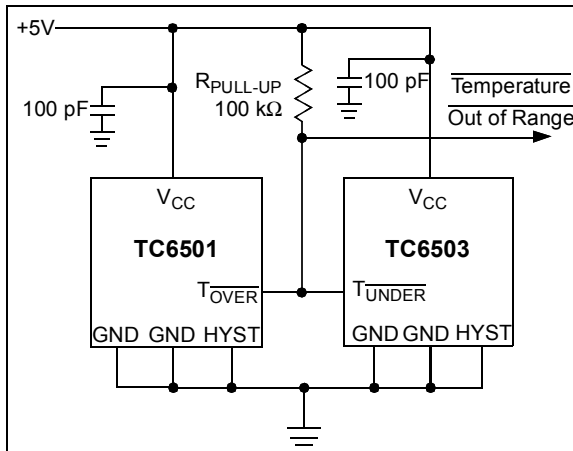


FIGURE 5-1: Over and Under Temperature Alarm.

The TC6502 can be used to control a DC fan. The fan turns on when the sensed temperature rises above the factory-set threshold and remains on until the temperature falls below threshold minus the hysteresis selected. An additional fail-safe measure could be designed by using a second TC6502 with a higher temperature threshold to alert the user of an impending thermal shutdown, should the temperature continue to rise (see Figure 5-2).

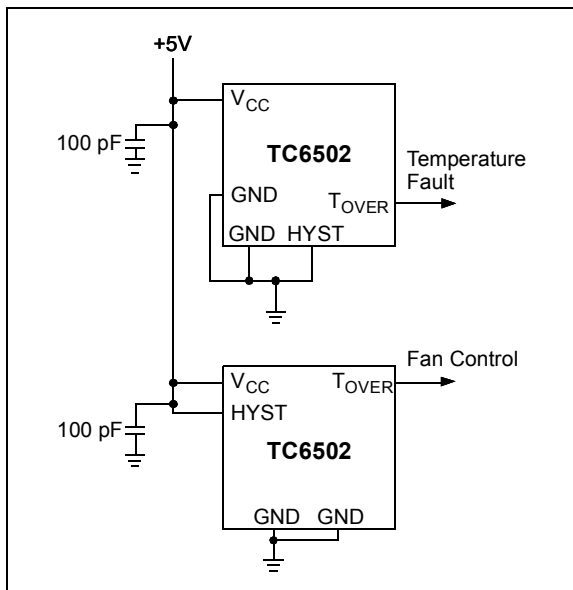


FIGURE 5-2: Fan Control with Over Temperature Alert.

The TC6504, with its push-pull output, may be used in a similar fashion to turn on a heater element at cold temperatures (see Figure 5-3).

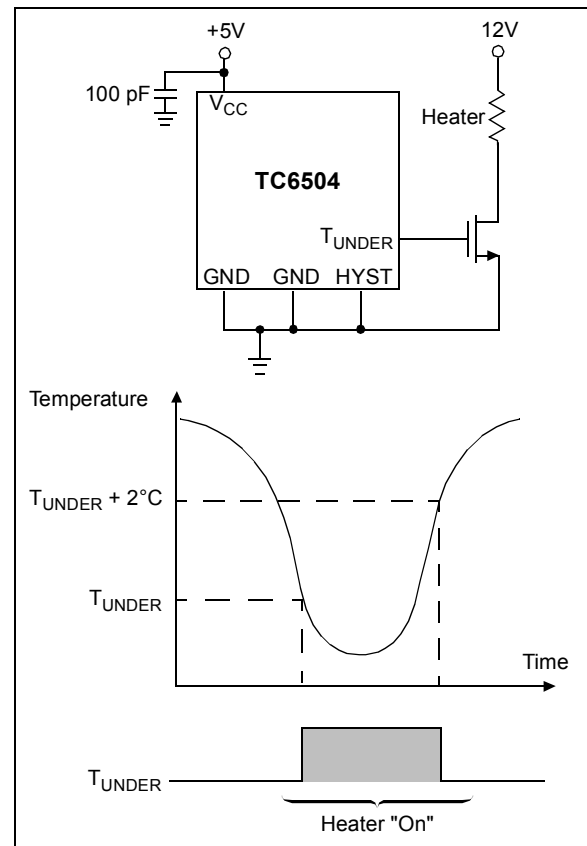


FIGURE 5-3: TC6504 As Heater Thermostat.

TC6501/2/3/4

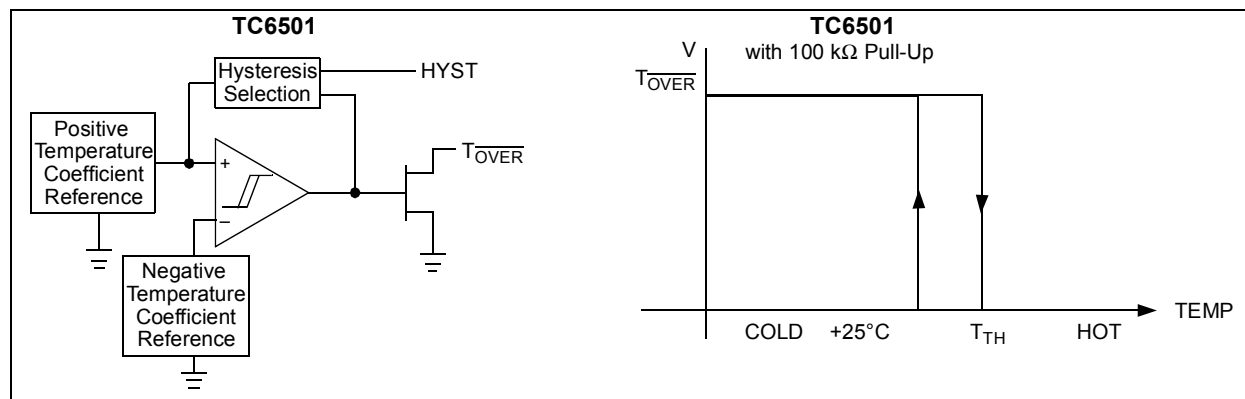


FIGURE 5-4: TC6501 Functional Block Diagram.

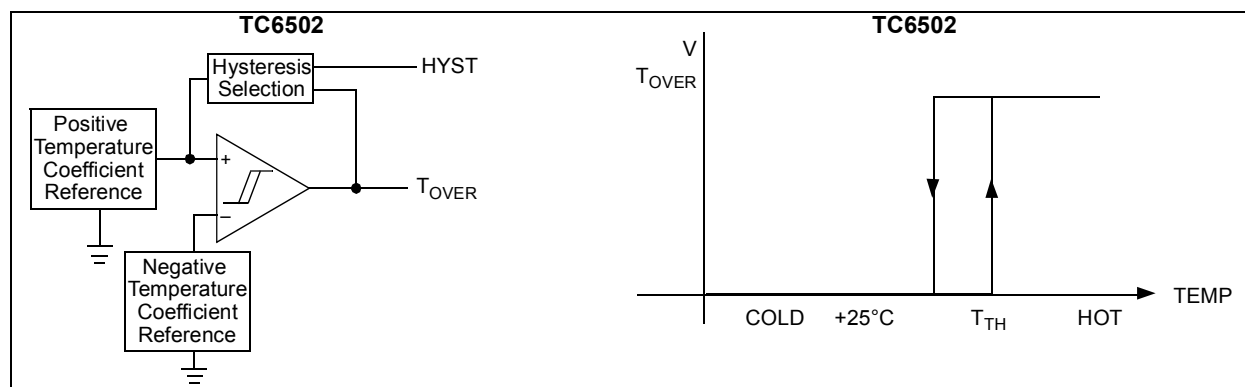


FIGURE 5-5: TC6502 Functional Block Diagram.

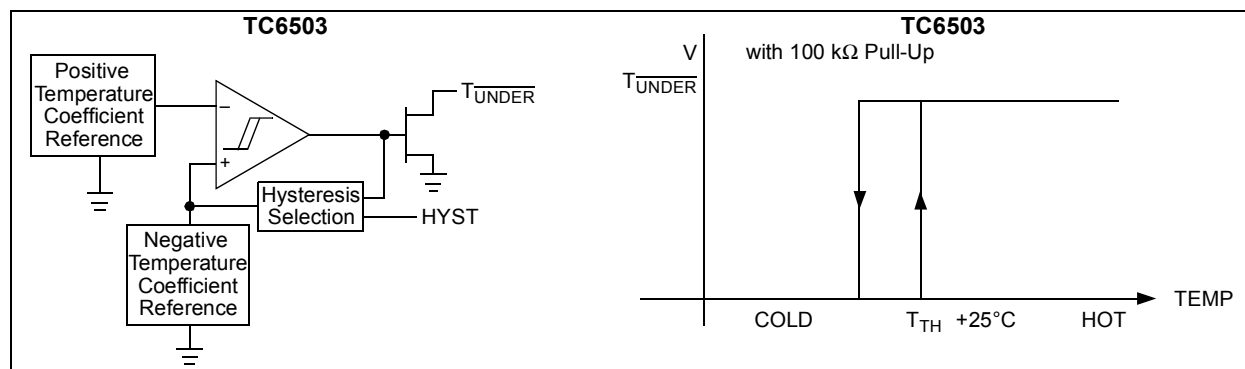


FIGURE 5-6: TC6503 Functional Block Diagram.

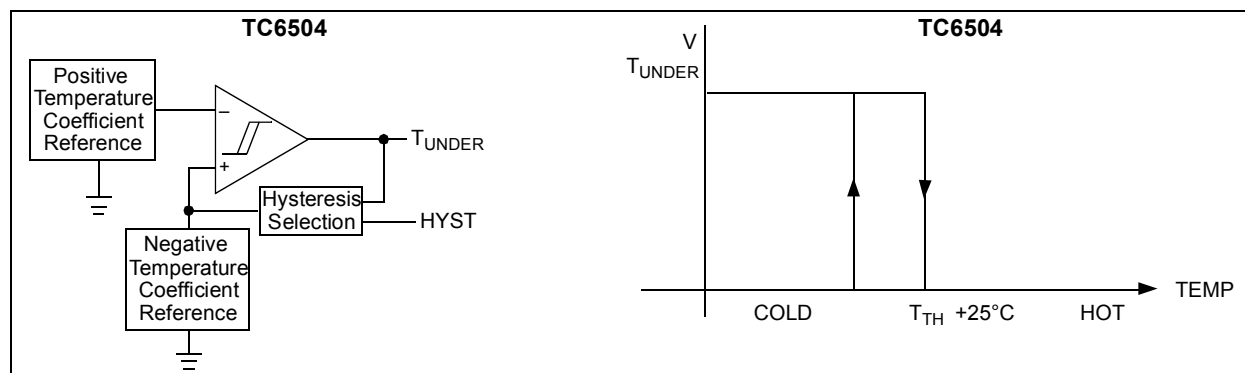
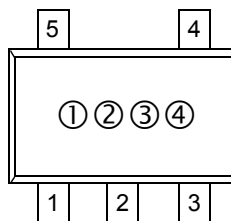


FIGURE 5-7: TC6504 Functional Block Diagram.

6.0 PACKAGING INFORMATION

6.1 Package Marking Diagram



Part Number	Marking Code	Temperature Threshold (°C)
TC6501P045VCT	HA	45
TC6501P065VCT	HC	65
TC6501P075VCT	HD	75
TC6501P095VCT	HF	95
TC6501P105VCT	HG	105
TC6501P115VCT	HH	115
TC6501P120VCT	HV	120
TC6501P125VCT	HJ	125
TC6502P045VCT	JA	45
TC6502P065VCT	JC	65
TC6502P075VCT	JD	75
TC6502P095VCT	JF	95
TC6502P115VCT	JH	115
TC6502P125VCT	JJ	125
TC6503N015VCT	KA	-15
TC6503P005VCT	KB	5
TC6504N015VCT	LA	-15
TC6504P005VCT	LB	5

Note: Please contact Microchip Technology for the availability of a particular temperature threshold not included in Table 4-1.

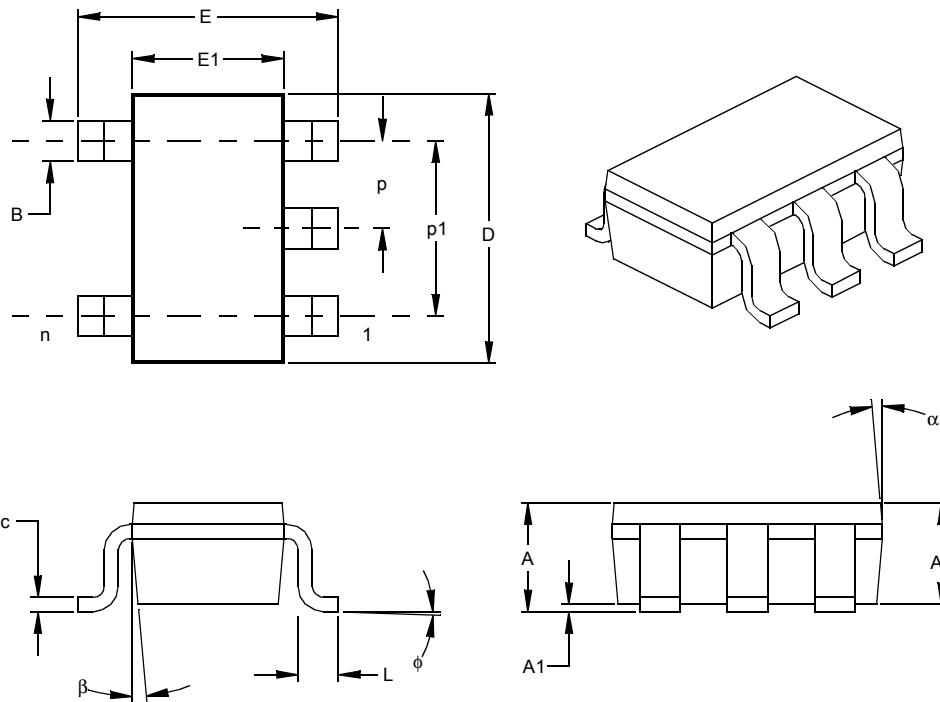
Legend: 1-2 Part Number Marking Code*
3 Year and two-month period code
4 Lot ID

Note: In the event the full Microchip part number cannot be marked on one line, it will be carried over to the next line thus limiting the number of available characters for customer specific information.

*Standard OTP marking consists of Microchip part number, year code, week code, and traceability code.

TC6501/2/3/4

5-Lead Plastic Small Outline Transistor (CT) (SOT-23)



Units		INCHES*			MILLIMETERS		
Dimension Limits		MIN	NOM	MAX	MIN	NOM	MAX
Number of Pins	n		5			5	
Pitch	p		.038			0.95	
Outside lead pitch (basic)	p1		.075			1.90	
Overall Height	A	.035	.046	.057	0.90	1.18	1.45
Molded Package Thickness	A2	.035	.043	.051	0.90	1.10	1.30
Standoff §	A1	.000	.003	.006	0.00	0.08	0.15
Overall Width	E	.102	.110	.118	2.60	2.80	3.00
Molded Package Width	E1	.059	.064	.069	1.50	1.63	1.75
Overall Length	D	.110	.116	.122	2.80	2.95	3.10
Foot Length	L	.014	.018	.022	0.35	0.45	0.55
Foot Angle	φ	0	5	10	0	5	10
Lead Thickness	c	.004	.006	.008	0.09	0.15	0.20
Lead Width	B	.014	.017	.020	0.35	0.43	0.50
Mold Draft Angle Top	α	0	5	10	0	5	10
Mold Draft Angle Bottom	β	0	5	10	0	5	10

* Controlling Parameter

§ Significant Characteristic

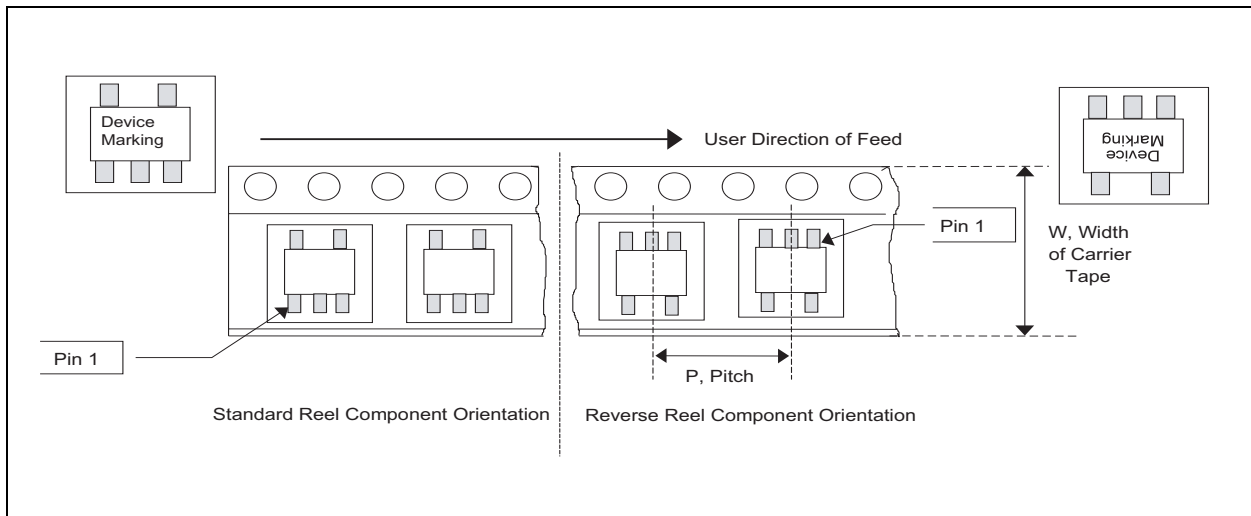
Notes:

Dimensions D and E1 do not include mold flash or protrusions. Mold flash or protrusions shall not exceed .010" (0.254mm) per side.

JEDEC Equivalent: MO-178

Drawing No. C04-091

Product Tape and Reel Specification



TC6501/2/3/4

NOTES:

TC6501/2/3/4

NOTES:

Note the following details of the code protection feature on Microchip devices:

- Microchip products meet the specification contained in their particular Microchip Data Sheet.
- Microchip believes that its family of products is one of the most secure families of its kind on the market today, when used in the intended manner and under normal conditions.
- There are dishonest and possibly illegal methods used to breach the code protection feature. All of these methods, to our knowledge, require using the Microchip products in a manner outside the operating specifications contained in Microchip's Data Sheets. Most likely, the person doing so is engaged in theft of intellectual property.
- Microchip is willing to work with the customer who is concerned about the integrity of their code.
- Neither Microchip nor any other semiconductor manufacturer can guarantee the security of their code. Code protection does not mean that we are guaranteeing the product as "unbreakable."

Code protection is constantly evolving. We at Microchip are committed to continuously improving the code protection features of our products. Attempts to break microchip's code protection feature may be a violation of the Digital Millennium Copyright Act. If such acts allow unauthorized access to your software or other copyrighted work, you may have a right to sue for relief under that Act.

Information contained in this publication regarding device applications and the like is intended through suggestion only and may be superseded by updates. It is your responsibility to ensure that your application meets with your specifications. No representation or warranty is given and no liability is assumed by Microchip Technology Incorporated with respect to the accuracy or use of such information, or infringement of patents or other intellectual property rights arising from such use or otherwise. Use of Microchip's products as critical components in life support systems is not authorized except with express written approval by Microchip. No licenses are conveyed, implicitly or otherwise, under any intellectual property rights.

Trademarks

The Microchip name and logo, the Microchip logo, Accuron, dsPIC, KEELoQ, MPLAB, PIC, PICmicro, PICSTART, PRO MATE and PowerSmart are registered trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

AmpLab, FilterLab, microID, MXDEV, MXLAB, PICMASTER, SEEVAL, SmartShunt and The Embedded Control Solutions Company are registered trademarks of Microchip Technology Incorporated in the U.S.A.

Application Maestro, dsPICDEM, dsPICDEM.net, dsPICworks, ECAN, ECONOMONITOR, FanSense, FlexROM, fuzzyLAB, In-Circuit Serial Programming, ICSP, ICEPIC, microPort, Migratable Memory, MPASM, MPLIB, MPLINK, MPSIM, PICKit, PICDEM, PICDEM.net, PICtail, PowerCal, PowerInfo, PowerMate, PowerTool, rLAB, rPIC, Select Mode, SmartSensor, SmartTel and Total Endurance are trademarks of Microchip Technology Incorporated in the U.S.A. and other countries.

Serialized Quick Turn Programming (SQTP) is a service mark of Microchip Technology Incorporated in the U.S.A.

All other trademarks mentioned herein are property of their respective companies.

© 2004, Microchip Technology Incorporated, Printed in the U.S.A., All Rights Reserved.

 Printed on recycled paper.

**QUALITY MANAGEMENT SYSTEM
CERTIFIED BY DNV
== ISO/TS 16949:2002 ==**

Microchip received ISO/TS-16949:2002 quality system certification for its worldwide headquarters, design and wafer fabrication facilities in Chandler and Tempe, Arizona and Mountain View, California in October 2003. The Company's quality system processes and procedures are for its PICmicro® 8-bit MCUs, KEELoQ® code hopping devices, Serial EEPROMs, microperipherals, non-volatile memory and analog products. In addition, Microchip's quality system for the design and manufacture of development systems is ISO 9001:2000 certified.



WORLDWIDE SALES AND SERVICE

AMERICAS

Corporate Office

2355 West Chandler Blvd.
Chandler, AZ 85224-6199
Tel: 480-792-7200
Fax: 480-792-7277
Technical Support: 480-792-7627
Web Address: <http://www.microchip.com>

Atlanta

3780 Mansell Road, Suite 130
Alpharetta, GA 30022
Tel: 770-640-0034
Fax: 770-640-0307

Boston

2 Lan Drive, Suite 120
Westford, MA 01886
Tel: 978-692-3848
Fax: 978-692-3821

Chicago

333 Pierce Road, Suite 180
Itasca, IL 60143
Tel: 630-285-0071
Fax: 630-285-0075

Dallas

4570 Westgrove Drive, Suite 160
Addison, TX 75001
Tel: 972-818-7423
Fax: 972-818-2924

Detroit

Tri-Atria Office Building
32255 Northwestern Highway, Suite 190
Farmington Hills, MI 48334
Tel: 248-538-2250
Fax: 248-538-2260

Kokomo

2767 S. Albright Road
Kokomo, IN 46902
Tel: 765-864-8360
Fax: 765-864-8387

Los Angeles

18201 Von Karman, Suite 1090
Irvine, CA 92612
Tel: 949-263-1888
Fax: 949-263-1338

Phoenix

2355 West Chandler Blvd.
Chandler, AZ 85224-6199
Tel: 480-792-7966
Fax: 480-792-4338

San Jose

1300 Terra Bella Avenue
Mountain View, CA 94043
Tel: 650-215-1444

Toronto

6285 Northam Drive, Suite 108
Mississauga, Ontario L4V 1X5, Canada
Tel: 905-673-0699
Fax: 905-673-6509

ASIA/PACIFIC

Australia

Suite 22, 41 Rawson Street
Epping 2121, NSW
Australia
Tel: 61-2-9868-6733
Fax: 61-2-9868-6755

China - Beijing

Unit 706B
Wan Tai Bei Hai Bldg.
No. 6 Chaoyangmen Bei Str.
Beijing, 100027, China
Tel: 86-10-85282100
Fax: 86-10-85282104

China - Chengdu

Rm. 2401-2402, 24th Floor,
Ming Xing Financial Tower
No. 88 TIDU Street
Chengdu 610016, China
Tel: 86-28-86766200
Fax: 86-28-86766599

China - Fuzhou

Unit 28F, World Trade Plaza
No. 71 Wusi Road
Fuzhou 350001, China
Tel: 86-591-7503506
Fax: 86-591-7503521

China - Hong Kong SAR

Unit 901-6, Tower 2, Metroplaza
223 Hing Fong Road
Kwai Fong, N.T., Hong Kong
Tel: 852-2401-1200
Fax: 852-2401-3431

China - Shanghai

Room 701, Bldg. B
Far East International Plaza
No. 317 Xian Xia Road
Shanghai, 200051
Tel: 86-21-6275-5700
Fax: 86-21-6275-5060

China - Shenzhen

Rm. 1812, 18/F, Building A, United Plaza
No. 5022 Binhe Road, Futian District
Shenzhen 518033, China
Tel: 86-755-82901380
Fax: 86-755-8295-1393

China - Shunde

Room 401, Hongjian Building, No. 2
Fengxiangnan Road, Ronggui Town, Shunde
District, Foshan City, Guangdong 528303, China
Tel: 86-757-28395507 Fax: 86-757-28395571

China - Qingdao

Rm. B505A, Fullhope Plaza,
No. 12 Hong Kong Central Rd.
Qingdao 266071, China
Tel: 86-532-5027355 Fax: 86-532-5027205

India

Divyasree Chambers
1 Floor, Wing A (A3/A4)
No. 11, O'Shaughnessy Road
Bangalore, 560 025, India
Tel: 91-80-2290061 Fax: 91-80-2290062

Japan

Benex S-1 6F
3-18-20, Shinyokohama
Kohoku-Ku, Yokohama-shi
Kanagawa, 222-0033, Japan
Tel: 81-45-471-6166 Fax: 81-45-471-6122

Korea

168-1, Youngbo Bldg. 3 Floor
Samsung-Dong, Kangnam-Ku
Seoul, Korea 135-882
Tel: 82-2-554-7200 Fax: 82-2-558-5932 or
82-2-558-5934

Singapore

200 Middle Road
#07-02 Prime Centre
Singapore, 188980
Tel: 65-6334-8870 Fax: 65-6334-8850

Taiwan

Kaohsiung Branch
30F - 1 No. 8
Min Chuan 2nd Road
Kaohsiung 806, Taiwan
Tel: 886-7-536-4818
Fax: 886-7-536-4803

Taiwan

Taiwan Branch
11F-3, No. 207
Tung Hua North Road
Taipei, 105, Taiwan
Tel: 886-2-2717-7175 Fax: 886-2-2545-0139

EUROPE

Austria

Durisolstrasse 2
A-4600 Wels
Austria
Tel: 43-7242-2244-399
Fax: 43-7242-2244-393

Denmark

Regus Business Centre
Lautrup høj 1-3
Ballerup DK-2750 Denmark
Tel: 45-4420-9895 Fax: 45-4420-9910

France

Parc d'Activite du Moulin de Massy
43 Rue du Saule Trapu
Batiment A - 1er Etage
91300 Massy, France
Tel: 33-1-69-53-63-20
Fax: 33-1-69-30-90-79

Germany

Steinheilstrasse 10
D-85737 Ismaning, Germany
Tel: 49-89-627-144-0
Fax: 49-89-627-144-44

Italy

Via Quasimodo, 12
20025 Legnano (MI)
Milan, Italy
Tel: 39-0331-742611
Fax: 39-0331-466781

Netherlands

P. A. De Biesbosch 14
NL-5152 SC Drunen, Netherlands
Tel: 31-416-690399
Fax: 31-416-690340

United Kingdom

505 Eskdale Road
Wokingham
Berkshire, England RG41 5TU
Tel: 44-118-921-5869
Fax: 44-118-921-5820

01/08/04

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[Microchip:](#)

[TC6504P005VCTTR](#)

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9