

TC65X Fan Speed Controller Family

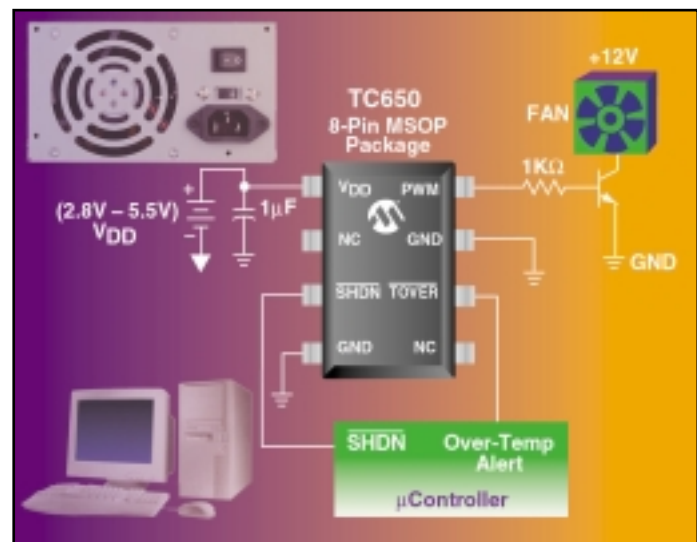
Product Information

The **TC650**, **TC651**, **TC652**, and **TC653** are fan speed controller products with built-in temperature sensor.

The **TC650**, **TC651**, **TC652**, and **TC653** are pulse width modulation (PWM) fan speed controllers for DC brushless fans. These devices adjust the speed of the fan according to the temperature level, therefore reducing acoustic noise, minimizing power consumption, and extending fan life. Temperature data from an on-board temperature sensor is translated into a fractional speed from 40% to 100%. The TC65X family features a PWM frequency of 15Hz. These devices offer a typical accuracy of $\pm 1^{\circ}\text{C}$ with a low typical operating current of 50 μA .

The devices are fully specified from 2.8V to 5.5V over the -40°C to $+125^{\circ}\text{C}$ temperature range. A variety of features address a broad application spectrum: shutdown mode for further power savings, FanSense™ technology for fan fault detection, auto-shutdown for automatic fan shut-off, minimum fan speed for constant cooling, and over-temperature alert for overheating detection. All devices are available in small 8-pin MSOP packages.

These devices are ideal for every application utilizing DC fans, especially where acoustic noise and fan reliability are very important. Applications may include computers, projectors, servers, datacom equipment, telecom equipment, power supplies, set-top boxes, fan racks, and test equipment.



Features:

- Temperature proportional fan speed control
- FanSense™ technology protects against fan and system failure
- 2.8V to 5.5V supply voltage range
- Low 50 μA operating current
- $\pm 1^{\circ}\text{C}$ typical accuracy
- 15Hz pulse width modulation (PWM) frequency
- Shutdown mode
- Built-in over-temperature alert
- Temperature range: -40°C to $+125^{\circ}\text{C}$
- 8-Pin MSOP package

Related Application Notes:

- AN58 Suppressing Acoustic Noise in Pulse Width Modulation (PWM) Fan Speed Control Systems
- AN59 Speed Error in Pulse Width Modulation (PWM) Fan Control Systems

TC65X Fan Speed Controller Family *Continued*

Additional Information:

- Microchip's web site: www.microchip.com
- Microchip's *Technical Library CD-ROM*, Order No. [DS00161](#)
- *Analog Interface Handbook*, Order No. [DS00207](#)
- Product Line Card, Order No. [DS00148](#)
- *Analog Design Pack CD-ROM*, Order No. [DS51205](#)

Related Tools:

- TC650DEMO Development System DS21453
- TC652DEMO Development System DS21506

TC65X Fan Speed Controller Family

Product	V _{CC} Range	Temperature	# of Pins/ Package	Maximum I _Q	PWM Frequency	Typical Accuracy
TC650	2.8V to 5.5V	-40°C to +125°C	8MS	90µA	15Hz	±1°C
TC651	2.8V to 5.5V	-40°C to +125°C	8MS	90µA	15Hz	±1°C
TC652	2.8V to 5.5V	-40°C to +125°C	8MS	90µA	15Hz	±1°C
TC653	2.8V to 5.5V	-40°C to +125°C	8MS	90µA	15Hz	±1°C

Package Key: MS = MSOP

Americas

Atlanta (770) 640-0034
Austin – Analog (512) 345-2030
Boston (978) 692-3848
Boston – Analog (978) 371-6400
Chicago (630) 285-0071
Dallas (972) 818-7423
Dayton (937) 291-1654
Detroit (248) 538-2250
Los Angeles (949) 263-1888
Mountain View (650) 968-9241
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Asia /Pacific

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Taiwan 886-2-2717-7175

Europe

Denmark 45-4420-9895
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Germany – Analog 49-89-895-650 0
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