

9-Channel (8-Remote and 1-Local), High-Accuracy Temperature Sensor

1 Features

- Temperature Range: $-55^{\circ}\text{C} \sim +150^{\circ}\text{C}$
- Temperature Accuracy ($-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$):
 - Local Channel: $\pm 0.5^{\circ}\text{C}$
 - Remote Channel: $\pm 1^{\circ}\text{C}$
- Temperature Resolution: $0.0078125^{\circ}\text{C} / 16\text{bits}$
- ADC Conversion Time Per Channel: 16ms
- I²C or SMBus Compatible Two-Wire Interface With Pin-Programmable Address
- Supply Voltage Range: 2.7V to 5.5V
- I²C Logic Voltage Range: 1.6V to 5.5V
- Low Quiescent Current:
 - Local Channel: 180 μA
 - Remote Channel: 360 μA
 - Shutdown Mode: 1.2 μA
- Support I²C Block Register Reads
- Remote Diode: Series Resistance Cancellation, η -Factor Correction, Offset Correction, and Diode Fault Detection
- Package Information:

PART NUMBER	PACKAGE	BODY SIZE (mm ²)
GXTR308W	WLCSP(16)	1.60 × 1.60
GXTR308Q	QFN(16)	3.00 × 3.00

2 Applications

- MCU, GPU, ASIC, FPGA, DSP, and CPU Temperature Monitoring
- Telecommunication Equipment, Servers and Personal Computers

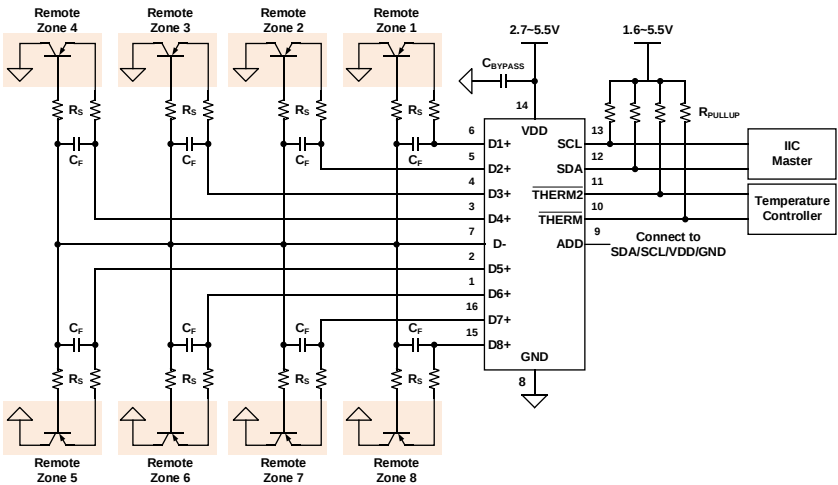
3 Description

The GXTR308 device is a multi-zone, high-accuracy, low-power temperature sensor using a two-wire, SMBus or I²C compatible interface. Up to eight remote diode-connected temperature zones can be monitored simultaneously in addition to the local temperature. A typical use case is for monitoring the temperature across different processors, such as MCUs, GPUs, and FPGAs in complex systems such as servers and telecommunications equipment. Advanced features such as series resistance cancellation, programmable non-ideality factor, programmable offset, and programmable temperature limits are included to provide a robust thermal monitoring solution with improved accuracy and noise immunity.

Each of the eight remote channels (and the local channel) can be programmed independently with two thresholds that are triggered when the corresponding temperature is exceeded at the measured location. In addition, there is a programmable hysteresis setting to avoid constant toggling around the threshold.

The GXTR308 device provides high accuracy ($\pm 0.5^{\circ}\text{C}$ for Local Channel / $\pm 1^{\circ}\text{C}$ for Local Channel) and high resolution ($0.0078125^{\circ}\text{C}$) measurement capabilities. The remote junction supports a temperature range from -55°C to $+150^{\circ}\text{C}$. The device supports wide voltage rails (2.7 V to 5.5 V), common two-wire interfaces, and is available in a small, space efficient package (1.6 mm × 1.6 mm WLCSP-16 package or 3.0 mm × 3.0 mm for QFN-16 package) for easy integration into computing systems.

Figure1. Typical Application Schematic for GXTR308



10 Ordering Information

Ordering Number	Chip Model	Package Type	SPQ	Note
GXTR308W-T&R	GXTR308W	WLCSP-16	3000	Tape & Reel
GXTR308Q-T&R	GXTR308Q	QFN-16	3000	Tape & Reel

Note: W indicates the package form of WLCSP-16 and Q indicates the package form of QFN-16.