

High-precision Digital Temperature Sensor optimized for Human Body Temperature Measurement

Datasheet_V1.4
Apr. 2025

1 Features

- Operating Temperature : $-55^{\circ}\text{C} \sim +150^{\circ}\text{C}$
- Accuracy : $\pm 0.1^{\circ}\text{C}$ max. ($+30^{\circ}\text{C} \sim +45^{\circ}\text{C}$)
- Resolution : $0.0078125^{\circ}\text{C}@16\text{bits}$
- Supply voltage : $1.6\text{V} \sim 5.5\text{V}$
- Conversion Time : 50ms
- Average Current : $3\mu\text{A}$ @1Hz
- Shutdown Current : $0.5\mu\text{A}$
- Digital output : I²C, SMBus
- Package Information:

PART NUMBER	PACKAGE	BODY SIZE (mm ²)
GXT310Wx	WLCSP-4	0.73 × 0.73
GXT310Tx	MCLGA-4	3.00 × 3.00
GXT310Dx	DFN-6	2.00 × 2.00

2 Applications

- Medical Thermometer
- Wearable Body Temperature Monitoring
- High-precision Temperature Probe
- Environmental Monitoring
- Thermostat Control
- Power Supply and Battery Thermal Protection
- Server and Computer Thermal Management
- Electrical Motor Driver Thermal Protection
- Industrial Control

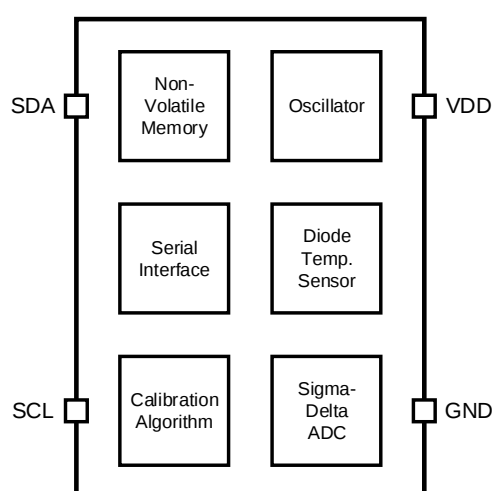
3 Description

The GXT310 is a fully integrated digital temperature sensor optimized for human body temperature measurement.

The GXT310 requires no external components to sense the temperature. The op-chip 16-bit ADC offers resolution down to 0.0078°C . Each chip is specially calibrated for $\pm 0.1^{\circ}\text{C}$ (max.) accuracy over $+30^{\circ}\text{C}$ to $+45^{\circ}\text{C}$ range in factory before shipment to customers, eliminating the need for users to make any additional adjustments for temperature output.

The GXT310 features SMBus and I²C interface with speed up to 1MHz (2.3MHz at high-speed mode), and allows up to eight devices on the same bus. The GXT310 has a 3-digit built-in address, which is distinguished by the last digit of the part number.

Block Diagram of GXT310



10 Ordering Information

ORDER PN	DEVICE	PACKAGE	SPQ	REMARK
GXT310Tx-Tr	GXT310Tx	MCLGA-4	490	Tray
GXT310Wx-T&R	GXT310Wx	WLCSP-4	3000	Tape & Reel
GXT310Dx-T&R	GXT310Dx	DFN-6	4000	Tape & Reel

Note: The x in the ORDER PN and the DEVICE represents the slave address, and the value is 0 to 7.