

## ±1°C Remote and Local Temperature Sensor with SMBus Serial Interface

### Features

- Three Channels: Measures Two Remote and One Local Temperatures
- Measure Thermal Diode with a Transistor Model
- Support Single-Core, Dual-Core and Quad-Core CPU Application
- No Calibration Required
- Built-in Noise-Buster for Remote Sensor
- SMBus 2-Wire Serial Interface
- Programmable Under/Overtemperature Alarms
- Supports SMBus Alert Response
- Accuracy:
  - ±1°C (+60°C to +100°C, remote)
  - ±3°C (+60°C to +100°C, local)
- 320µA (typ) Average Supply Current During Conversion
- Measure Thermal Diode with Transistor Model
- Support 45nm, 65nm and 90nm CPU thermal diode
- +3V to +5.5V Supply Range
- Small 8-Lead SOP, MSOP and TDFN Package
- Remote Temperature Measurement up to 160°C by using offset shifting method (see "Measure Remote Temperature Higher Than 127°C" section)

### Applications

Desktop and Notebook Computers	Central Office Telecom Equipment
Smart Battery Packs	Test and Measurement
LAN Servers	Multi-Chip Modules
Industrial Controllers	

### Ordering Information

ORDER NUMBER	MARKING	TEMP. RANGE	PACKAGE (Green)
G782P71U	G782	-55°C to +125°C	MSOP-10

Note:P7:MSOP-10

1: Bonding Code

U: Tape & Reel

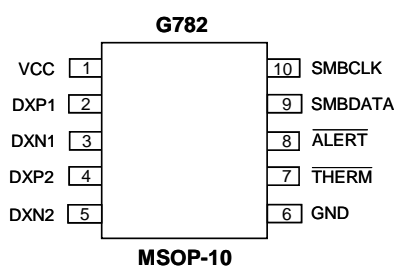
### General Description

The G782 is a precise digital thermometer that reports the temperature of 2 remote sensors and its own package. The remote sensors are diode-connected transistors typically a low-cost, easily mounted 2N3904 NPN type that replace conventional thermistors or thermocouples. Remote accuracy is ±1°C with no calibration needed. It also has a built-in noise filtering function in remote sensor measuring the diode temperature. The remote channel can also measure the die temperature of other ICs, such as microprocessors, that contain an on-chip, diode-connected transistor.

The 2-wire serial interface accepts standard System Management Bus (SMBus) Write Byte, Read Byte, Send Byte, and Receive Byte commands to program the alarm thresholds and to read temperature data. The data format is 11bits plus sign, with each bit corresponding to 0.125°C, in two's-complement format. Measurements can be done automatically and autonomously, with the conversion rate programmed by the user or programmed to operate in a single-shot mode. The adjustable rate allows the user to control the supply current drain.

The G782 is available in a small, 10-pin MSOP surface-mount package.

### Pin Configuration



### Typical Application Circuit

