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

Features

- **Two Channels: Measures Both Remote and Local Temperatures**
- **Measure Thermal Diode with a Transistor Model**
- **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 Measurment up to 160°C by using offset shifting method (see "Measure Remote Temperature Higher Than 127°C" section)**

Applications

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

General Description

The G780 is a precise digital thermometer that reports the temperature of both a remote sensor and its own package. The remote sensor is a diode-connected transistor 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 build-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.

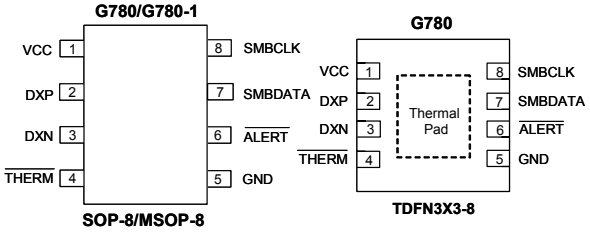
The G780 is available in a small, 8-pin SOP, MSOP and TDFN surface-mount package.

Ordering Information

ORDER NUMBER	MARKING	TEMP. RANGE	PACKAGE (Pb free)
G780P11U	G780	-55°C to +125°C	SOP-8
G780P81U	G780	-55°C to +125°C	MSOP-8
G780RD1U	780	-55°C to +125°C	TDFN3X3-8
G780-1P11U	G780-1	-55°C to +125°C	SOP-8
G780-1P81U	G780-1	-55°C to +125°C	MSOP-8

Note:P1:SOP-8 P8:MSOP-8 RD:TDFN3X3-8
1: Bonding Code
U: Tape & Reel

Pin Configuration



Note: Recommend connecting the Thermal Pad to the GND or let it keep floating.

Typical Application Circuit