SENSYLINK Microelectronics Inc.

(CT7481)

2-CH Remote and 1-CH Local Temperature Sensor

CT7481 is a 3-channels (2-channels Remote and 1-channel Local) Temperature Sensor with ±1°C Accuracy and SMBus Digital Interface.

It is ideally used in Temperature Sensing and Monitoring Systems, such as Computer, Server and Telecom Equipment System etc.

±1°C 3-CH (2-CH Remote and 1-CH Local) Digital Temperature Sensor

Description

The CT7481 is a 3-channel digital temperature sensor with ±1°C accuracy. Temperature data can be read out directly via SMBus interface by MCU or SOC chip.

CT7481 has three independent channels: two remote and one local. The remote channels could be connected to an external diode or BJT transistor (diode-connected mode).

Each chip is calibrated in factory before shipment to customers. There is no need re-calibration anymore for ± 1°C accuracy.

It includes a band-gap circuit, an analog to digital converter (ADC), a calibration unit with non-volatile memory and a digital interface block.

It integrates a 12-bit ADC, which can offer 0.0625°C resolution. The maximum temperature readout range can be extended from -64°C to 191°C by setting configuration1 register.

It has 2 logic output pin ($\overline{ALERT}$ and $\overline{THERM}$) with open drain structure, which are active low as default. Also $\overline{ALERT}$ pin can be configured as $\overline{THERM2}$ pin.

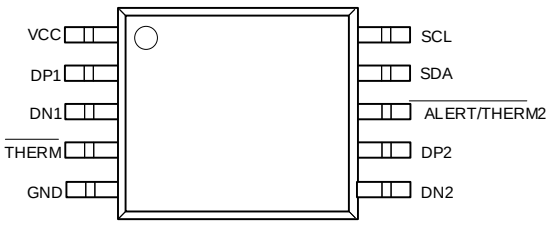
Features

- Operation Voltage: 1.75V to 5.5V
- Average Operating Current:40uA (Typ.) at 1Con/s, Vcc = 3.3V
- Shutdown Current: 3.0uA (Typ.)
- Temperature Accuracy without calibration: ±1°C from 20°C to 100°C
- 12 bit ADC for 0.0625°C resolution
- Digital interface compatible with SMBus and I^2C
- Temperature Range up to from -64°C to 191°C by setting Configuration 1 register (RANGE bit)
- Programmable Over/Under ALERT and THERM Temperature with Hysteresis Temperature
- Serial Resistance Cancellation
- Thermal Diode Fault Detection
- Support SMBus ALERT Response Address (ARA)
- Temperature Range: -40°C to 125°C
- Available package: MSOP-10

Applications

- Desktop & Notebook Computer
- Server
- Telecom Equipment

PIN Configurations (Top View)



CT7481

MSOP-10 (Package Code, MM)

Typical Application

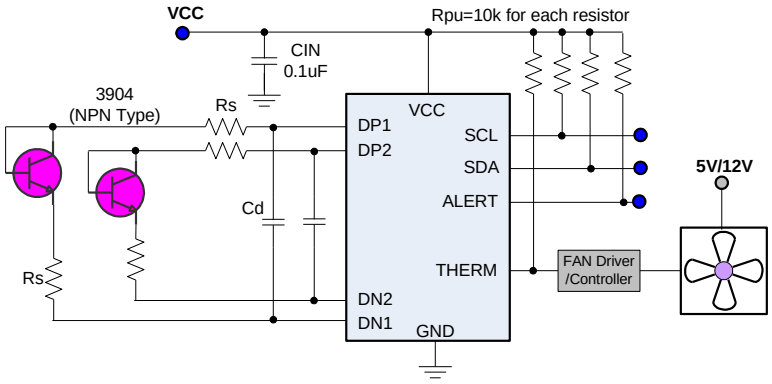


Figure 1. Typical Application of CT7481

Pin Description

PIN No.	PIN Name	Description
1	VCC	Power supply input pin, using 0.1uF low ESR ceramic capacitor to ground
2	DP1	Remote channel 1 positive input pin, it could be positive node of diodes, or BJT transistor (diode-connected mode). It is recommended to use bypass capacitor (Cd = 100pF) plus serial resistor (Rs =50 ohm) to remove noise between DP1 and DN1 pin.
3	DN1	Remote channel 1 negative input pin, it could be negative node of diodes, or BJT transistor (diode-connected mode). It is recommended to use bypass capacitor (Cd = 100pF) plus serial resistor (Rs =50 ohm) to remove noise between DP1 and DN1 pin.
4	$\overline{\text{THERM}}$	Open drain output with active low. Need a pull-up resistor to Vcc. If the measured temperature exceeds THERM-limit (programmable by user), this pin will be activated. This pin can be used to control fan on/off.
5	GND	Ground pin.
6	DN2	Remote channel 2 negative input pin, it could be negative node of diodes, or BJT transistor (diode-connected mode). It is recommended to use bypass capacitor (Cd = 100pF) plus serial resistor (Rs = 50 ohm) to remove noise between DP2 and DN2 pin.
7	DP2	Remote channel 2 positive input pin, it could be positive node of diodes, or BJT transistor (diode-connected mode). It is recommended to use bypass capacitor (Cd = 100pF) plus serial resistor (Rs = 50 ohm) to remove noise between DP2 and DN2 pin.
8	$\overline{\text{ALERT/THERM2}}$	Open drain output with active low. Need a pull-up resistor to Vcc. If the measured temperature drops below the low-limit or exceeds high-limit, this pin will be activated. Also this pin can be used as the other THERM2 pin.
9	SDA	Digital interface data input or output pin, need a pull-up resistor to Vcc.
10	SCL	Digital interface clock input pin, need a pull-up resistor to Vcc.

Function Block

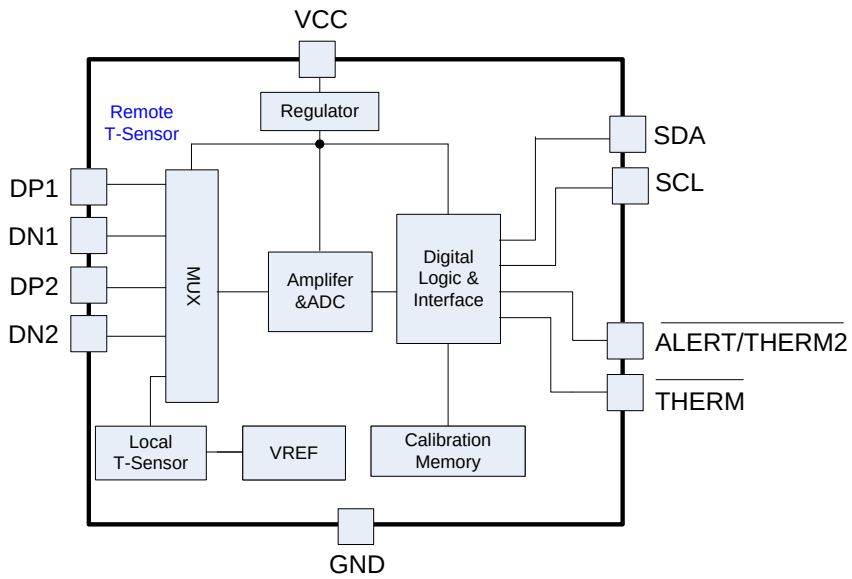
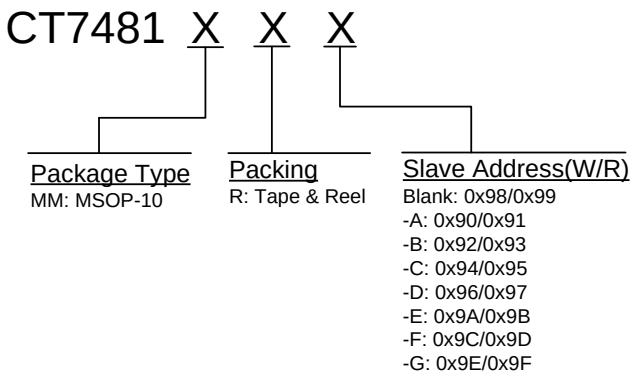


Figure 2. CT7481 Function Block

Ordering Information (Note 1)



Order PN	Slave Address(W/R)	Accuracy	Green[1]	Package	Marking ID[1]	Packing	MPQ	Operation Temperature
CT7481MMR	0x98/0x99	±1°C	Halogen free	MSOP-10	7481 YWWAXX	Tape & Reel	3,000	-40°C~+125°C
CT7481MMR-A	0x90/0x91	±1°C	Halogen free	MSOP-10	SAMA YWWAXX	Tape & Reel	3,000	-40°C~+125°C
CT7481MMR-B	0x92/0x93	±1°C	Halogen free	MSOP-10	SAMB YWWAXX	Tape & Reel	3,000	-40°C~+125°C
CT7481MMR-C	0x94/0x95	±1°C	Halogen free	MSOP-10	SAMC YWWAXX	Tape & Reel	3,000	-40°C~+125°C
CT7481MMR-D	0x96/0x97	±1°C	Halogen free	MSOP-10	SAMD YWWAXX	Tape & Reel	3,000	-40°C~+125°C
CT7481MMR-E	0x9A/0x9B	±1°C	Halogen free	MSOP-10	SAME YWWAXX	Tape & Reel	3,000	-40°C~+125°C
CT7481MMR-F	0x9C/0x9D	±1°C	Halogen free	MSOP-10	SAMF YWWAXX	Tape & Reel	3,000	-40°C~+125°C
CT7481MMR-G	0x9E/0x9F	±1°C	Halogen free	MSOP-10	SAMG YWWAXX	Tape & Reel	3,000	-40°C~+125°C

Note 1:

1. 1. Sensylink can meet RoHS 2.0/REACH requirement. So most package types Sensylink offers only states halogen free, instead of lead free..

2. Marking ID includes 2 rows of characters. In general, the 1st row of characters are part number, and the 2nd row of characters are date code plus production information.

SENSYLINK Microelectronics Inc.

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