SENSYLINK Microelectronics

(CT1830)

Single-Wire Digital Temperature Sensor with 768-bit EEPROM

CT1830 is a Digital Temperature Sensor with ±0.5°C Accuracy over -10°C to 80°C. Single-Wire Digital interface is Compatible with1-wire Interface. Also it builds in 768-bit EEPROM for user to store temperature data or special code.
It is ideally used in Industry System, System Calibration and Module Identification

±0.5ºC Accuracy Digital Temperature Sensor with 768-bit EEPROM

Description

CT1830 is a digital temperature sensor with ± 0.5ºC(Max.) accuracy over -10ºC to 80ºC. Temperature data can be read out directly via Single-Wire interface (compatible with 1-wire bus in protocol) by MCU.

It includes a high precision band-gap circuit, a 13-bit analog to digital converter that can offer 0.0625ºC resolution, a calibration unit with non-volatile memory, 8-bit CRC generator and a digital interface block.

The chip has built in 768-bit EEPROM which is open for user to store temperature data or special code.

Each chip has a unique 64-bit ROMID, which allows multiple devices to connect the same Single-Wire bus.MCU can distinguish and access each device individually by different ROMID.

It has programmable temperature Alarm function for upper and lower trigger temperature.

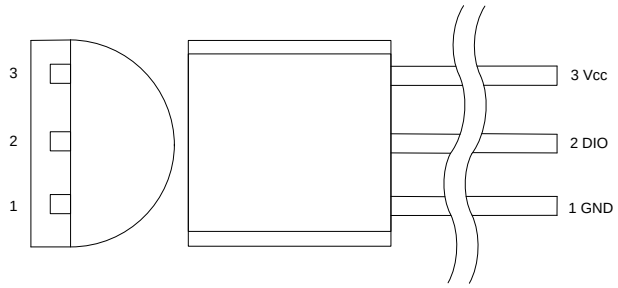
Features

- Operation Voltage: 2.1V to 5.5V
- Operating Current: 30uA during Temperature conversion;
- Average Consumption Current: 1.0uA (Typ.) with reading once temperature per second
- Standby Current: 50nA(Typ.), 200nA (Max.)
- Temperature Conversion time:30ms at 13-bit
- Temperature Accuracy without calibration: ±0.5ºC(Max.) from -10ºC to 80ºC
- 13 bit ADC for 0.0625ºC resolution
- Compatible with 1-wire interface
- 768-bit Available EEPROM
- 24-bit user ID instead of 64-bit ROM ID for quick search, match and Alarm search
- Temperature Range: -40ºC to 125ºC
- Package: TO-92, TO-92S-2,SOT-23-3

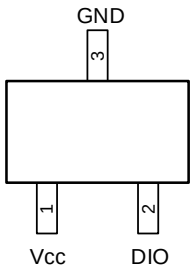
Applications

- Industry System
- System Calibration
- Module Identification

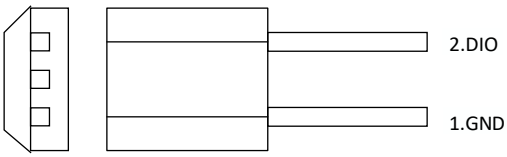
PIN Configurations (Top View)



TO-92 (package code Z)

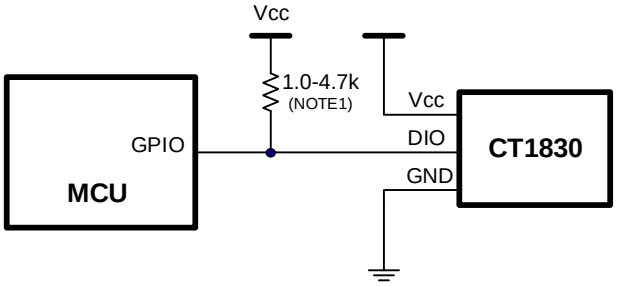


SOT-23-3 (package code K3)



TO-92S-2 (package code Z2)

Typical Application



NOTE1

Prefer to use small pull-up resistor, like 1.0kohm or smaller during memory erase or program operation.

Figure 1. Typical Application of CT1830

Pin Description

PIN Name			PIN No.	Description
TO-92	TO-92S-2	SOT-23-3		
1	1	3	GND	Ground pin.
2	2	2	DIO	Digital interface data input and output pin, Generally it is ok to connect a pull-up resistor (between 1.0k and 3.0k) to Vcc in single sensor and normal power supply applications. In long distance cable communication, with multi sensors and parasitic power supply application, it is better to use strong pull-up design, like using an individual MOSFET instead of pull-up resistor.
3	/	1	Vcc	Power supply input pin. In normal power supply mode, connect a 100nF to 1.0uF ceramic cap to ground. In parasitic power supply mode, connect to ground.

Function Block

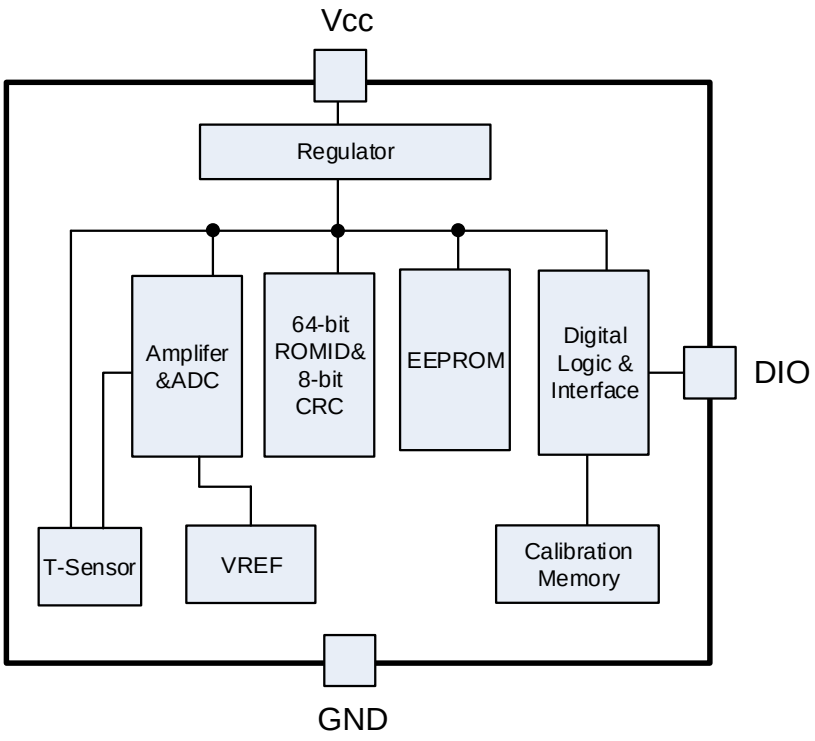
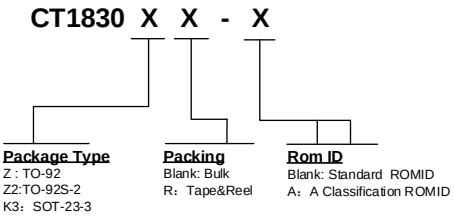


Figure 2. CT1830 function block

Ordering Information



Order PN	Accuracy	Green[1]	Package	Marking ID[NOTE2]	Packing	MPQ	Operation Temperature
CT1830Z	±0.5ºC	Halogen free	TO-92	1830 YWWAXX	Bulk	1,000	-40ºC~+125ºC
CT1830Z2	±0.5ºC	Halogen free	TO-92S-2	1830 YWWAXX	Bulk	1,000	-40ºC~+125ºC
CT1830K3R	±0.5ºC	Halogen free	SOT-23-3	AQWX	Tape & Reel	3,000	-40ºC~+125ºC
CT1830K3R-A	±0.5ºC	Halogen free	SOT-23-3	AQWX	Tape & Reel	3,000	-40ºC~+125ºC

Note 2

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. For very small outline package, there's 4 digits to stands for product information and date code, first 2 digits represent product code, and the other 2 digits stands for trace code.

SENSYLINK Microelectronics Inc.

www.sensylink.com

IMPORTANT NOTICE

SENSYLINK Microelectronics Inc. reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein or to discontinue any product or service. Customers should obtain the latest relevant information before placing orders and should verify the latest and complete information. SENSYLINK Microelectronics does not assume any responsibility for use of any product, nor does SENSYLINK Microelectronics any liability arising out of the application or use of this document or any product or circuit described herein. SENSYLINK Microelectronics assumes no liability for applications assistance or the design of Customers' products. Customers are responsible for their products and applications using SENSYLINK Microelectronics components. SENSYLINK Microelectronics does not convey any license under its patent or trademark rights nor the other rights.