

SENSYLINK Microelectronics

(CT1820S)

Single-Wire Digital Temperature Sensor

CT1820S is a Digital Temperature Sensor with $\pm 0.5^{\circ}\text{C}$ Accuracy over -10°C to 80°C . Single-Wire Digital interface is Compatible with 1-wire Interface.
It is ideally used in Industry System and General Temperature Monitor etc.

$\pm 0.5^{\circ}\text{C}$ Accuracy Digital Temperature Sensor with Single-Wire Interface

Description

CT1820S is a digital temperature sensor with $\pm 0.5^{\circ}\text{C}$ (Max.) accuracy over -10°C to 80°C . 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 12-bit analog to digital converter, a calibration unit with non-volatile memory, 8-bit CRC generator and a digital interface block. The chip can offer 0.5°C resolution using TLSB (0x00) and TMSB (0x01) data or 0.0625°C resolution using TLSB (0x00), TMSB (0x01) plus ExT_Num (0x06) and ExT_Den (0x07) data.

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

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

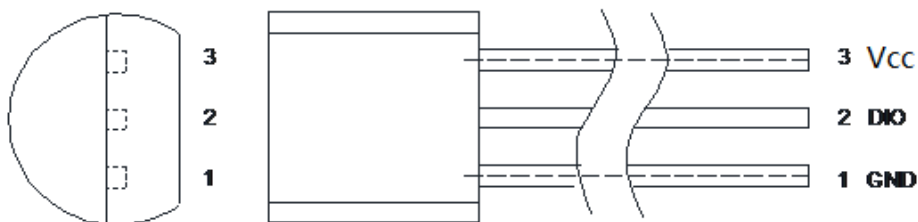
Features

- Operation Voltage: 3.0V to 5.5V
- Operating Current: 38uA during Temperature conversion;
- Average Consumption Current: 1.5uA (Typ.) with reading once temperature per second
- Standby Current: 100nA (Typ.), 1000nA (Max.)
- Temperature Conversion time: 30ms at 12-bit
- Temperature Accuracy without calibration: $\pm 0.5^{\circ}\text{C}$ (Max.) from -10°C to 80°C
- 12 bit ADC for 0.5°C resolution
- Compatible with 1-wire interface
- Temperature Range: -50°C to 125°C
- Package: TO-92

Applications

- Industry System
- General Temperature Monitor

PIN Configurations (Top View)



TO-92 (package code Z)

Typical Application

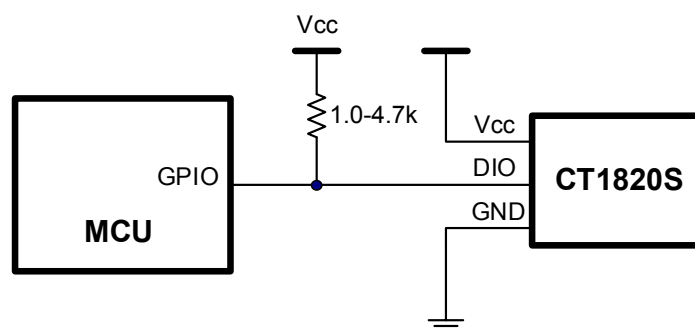


Figure 1. Typical Application of CT1820S

$\pm 0.5\text{ }^{\circ}\text{C}$ Accuracy Digital Temperature Sensor with Single-Wire Interface

Pin Description

PIN No.	PIN Name	Description
GND	1	Ground pin.
DIO	2	Digital interface data input and output pin, Generally it needs a pull-up resistor to Vcc in most applications, between 1.0k and 4.7k.
Vcc	3	Power supply input pin, it should connect a 100nF to 1.0uF ceramic cap at least to ground.

Function Block

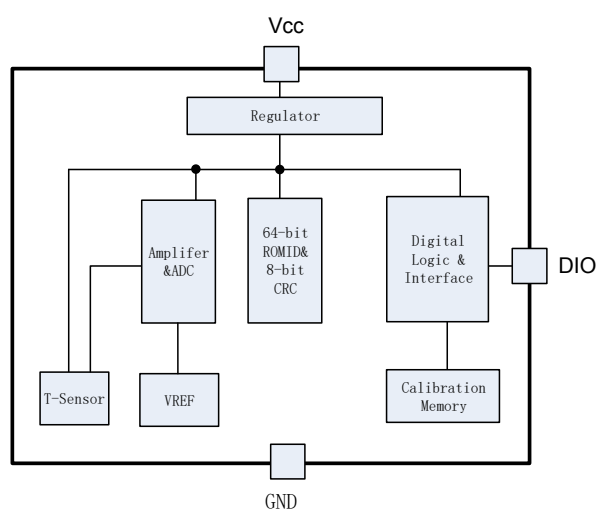
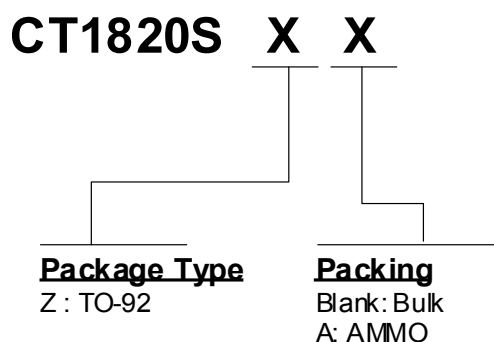


Figure 2. CT1820S function block

$\pm 0.5^{\circ}\text{C}$ Accuracy Digital Temperature Sensor with Single-Wire Interface
Ordering Information


Order PN	Accuracy	Green ¹	Package	Marking ID ²	Packing	MPQ	Operation Temperature
CT1820SZ	$\pm 0.5^{\circ}\text{C}$	Halogen free	TO-92	1820S YWWAXX	Bulk	1,000	$-50^{\circ}\text{C}\sim+125^{\circ}\text{C}$
CT1820SZA	$\pm 0.5^{\circ}\text{C}$	Halogen free	TO-92	1820S YWWAXX	AMMO	2,000	$-50^{\circ}\text{C}\sim+125^{\circ}\text{C}$

Notes

1. Based on ROHS Y2012 spec, Halogen free covers lead free. 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 Co., Ltd

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