SENSYLINK Microelectronics

(CT7112)

Digital Temperature Sensor

CT7112 is a Digital Temperature Sensor with±0.5℃ Accuracy Compatible with SMBus, I²C and 2-wire Interface.
It is ideally used in HVAC, Thermal management and Portable Devices etc.

±0.5ºC Digital Temperature Sensor with Digital Interface

Description

CT7112 is a digital temperature sensor with ±0.5ºC accuracy. Temperature data can be read out directly via digital interface (compatible with SMBus, I^{2}C or 2-wire) by MCU, Bluetooth Chip or SoC chip.

CT7112 supports I^{2}C communication with speed up to 400 kHz.

Each chip is specially calibrated for ±0.5ºC(Max.) accuracy over 0ºC to 50ºC range in factory before shipment to customers. There is no need for re-calibration anymore for ±0.5ºC accuracy.

It includes a high precision band-gap circuit, a 12-bit analog to digital converter that can offer 0.0625ºC resolution, a calibration unit with non-volatile memory, and a digital interface block.

It has ALERT logic output pin with open drain structure, which is selectable for active low or high by programming. ALERT response is compatible with SMBus ALERT Response Address (ARA).CT7112 can also be used as standalone thermostat.

Available Package: DFN1.6x1.6-6 package

Features

- Operation Voltage: 1.7V to 5.5V
- Average Quiescent Current: 3uA(Typ.) 1Cov/s
- Standby Current: 1.5uA (typ.)
- Temperature Accuracy without calibration:
  Maximum:±0.5ºC from 0ºC to 50ºC
  Maximum:±1.0ºC from -40ºC to 125ºC
- 12 bit ADC for 0.0625ºC resolution
- Compatible with SMBus, 2-wire and I^{2}C interface
- Programmable Over/Under Temperature
- Programmable Active Low or High for ALERT pin
- Support SMBus ALERT Response Address(ARA)
- Generate 4 different slave address by setup A0 pin
- Temperature Range: -40ºC to 125ºC

Applications

- Smart HVAC System
- Thermal Management
- Portable Devices

PIN Configurations (Top View)

SCL	1		6	SDA
GND	2		5	VCC
NC	3		4	A0

CT7112A

SCL	1		6	SDA
GND	2		5	VCC
ALERT	3		4	A0
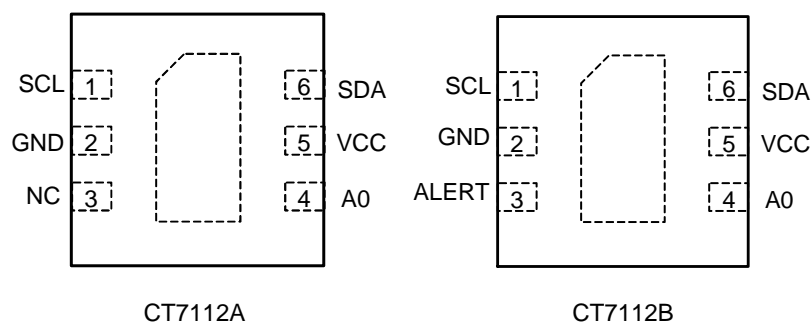
CT7112B

DFN1.6x1.6-6 (Package Code DN)

Typical Application
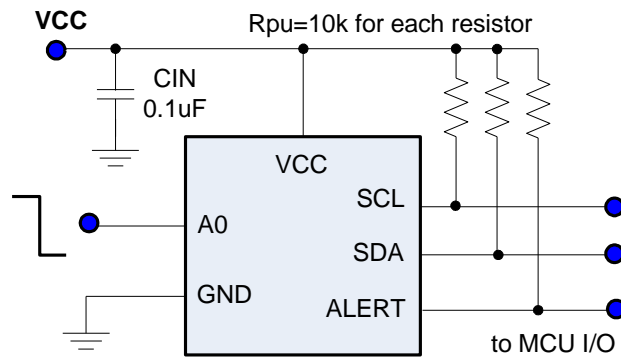
Figure 1. Typical Application of CT7112

Pin Description

PIN No.		PIN Name	Description
CT7112A	**CT7112B**		
1	1	SCL	Digital interface clock input pin, need a pull-up resistor to VCC.
2	2	GND	Ground pin.
3		NC	No Connection.
	3	ALERT	To Indicate ALERT of over or under Temperature programmed by setting T_{HIGH}/T_{LOW} register, it is open drain output with programmable active low or high. Need a pull-up resistor to VCC in application.
4	4	A0	Address selection pin, the chip can be defined total 4 different slave address by connecting this pin to GND, VCC, SCL or SDA pin respectively. Do not leave this pin open. See 1.5.1 **Slave Address** for detail.
5	5	VCC	Power supply input pin, using 0.1uF low ESR ceramic capacitor to ground
6	6	SDA	Digital interface data input or output pin, need a pull-up resistor to VCC.
		Exposed Thermal PAD (bottom side)	Exposed thermal pad (bottom side) is short to GND pin inside the chip.

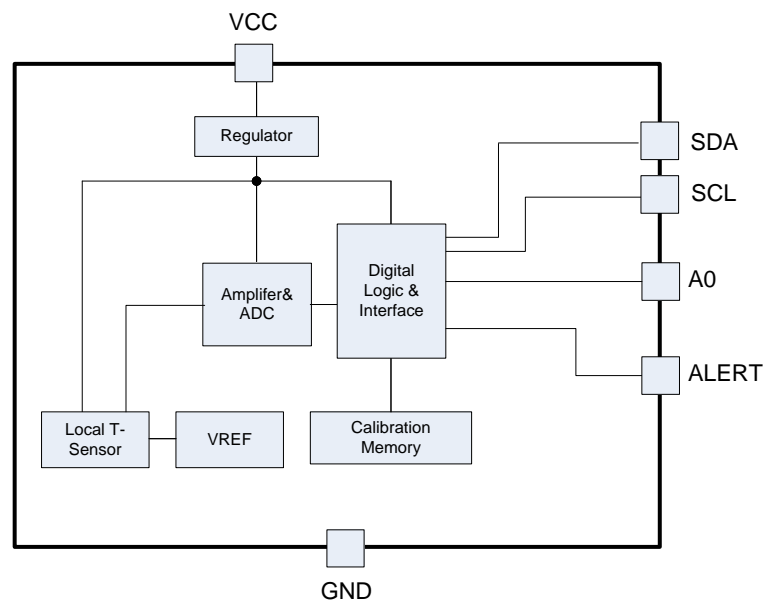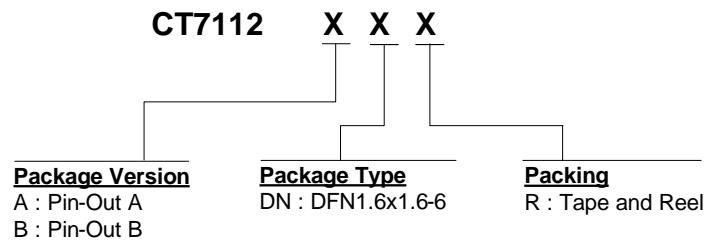## Function Block

Figure 2. CT7112 function block

±0.5ºC Digital Temperature Sensor with Digital Interface

Ordering Information

$$CT7112 \quad X \quad X \quad X$$

__Package Version__
A : Pin-Out A
B : Pin-Out B

__Package Type__
DN : DFN1.6x1.6-6

__Packing__
R : Tape and Reel

Order PN	Accuracy	Green[1]	Package	Marking ID[2]	Packing	MPQ	Operation Temperature
CT7112ADNR	±0.5ºC	Halogen free	DFN1.6x1.6-6	AG TWWA	Tape & Reel	3000	-40ºC~+125ºC
CT7112BDNR	±0.5ºC	Halogen free	DFN1.6x1.6-6	AH YWWA	Tape & Reel	3000	-40ºC~+125ºC

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.

  1) *Generally, date code is represented by 3 numbers. The number stands for year and work week information. e.g. 501stands for the first work week of year 2015;621 stands for the 21st work week of year 2016.*

  2) *Right after the date code information, the next 2-3 numbers or letters are specified to stands for supplier or production location information.*

  3) *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 work week*

SENSYLINK Microelectronics Inc.

www.sensylink.com

IMPORTANT NOTICE