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TELAIRE®

ChipCap® 2

Fully-Calibrated Humidity and Temperature Sensor



Features

- Fully-calibrated and temperature-compensated
- Digital or analog output with alarm function
- Precision and accuracy (±2%RH, ±0.3°C, 14 bit)
- Free operating voltage (min 2.7V to max 5.5V)
- Low current consumption
- SMD package for automated assembly
- Reliable in harsh environments

Applications

- Energy saving HVAC control-air conditioning, refrigeration, indoor air quality, vent fans, home appliances, humi/dehumidifiers
- Process control & instrumentation—medical instruments, handheld devices, weather stations, food processing, printers, RFIDs
- Automobile and transportation—cabin climate control, defogging control condensing preventive device
- Medical—nebulizers, Oxygen Air, CPAP/Sleep Apnea Devices
- OEM Assemblies Available

ChipCap 2 offers the most advanced and cost effective humidity and temperature sensing solution for virtually any type of application.

A capacitive polymer sensor chip and CMOS integrated circuit with EEPROM are integrated into one embedded system in a reflow solderable SMD package.

Individually calibrated and tested, ChipCap 2 performs at ±2% from 20% to 80% RH (±3% over entire humidity range), and is simple and ready to use without further calibration or temperature compensation.

ChipCap 2 provides linear output signals in various interfaces to customer requirements:

- I²C interface
- PDM convertible to analog signal
- Alarm function for preset control at min/max humidity

Amphenol

Advanced Sensors

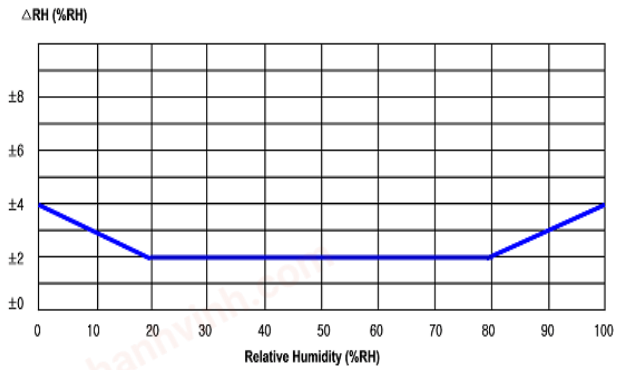
Sensor Performance

Relative Humidity (RH%)

Resolution	14 bit (0.01%RH)
Accuracy[1]	±2.0 %RH (20~80%RH)[2]
Repeatability	±0.2 %RH
Hysteresis	±1.0 %RH
Linearity	<2.0 %RH
Response time[3]	<4.0 sec
Temp Coefficient	0.05%RH/C @ 50%RH (at 10-60°C) 0.15%RH/C @ 90%RH (at 10-60°C)
Operating Range	0 ~ 100 %RH (non-condensing)
Long Term Drift	<0.5 %RH/yr (normal condition)

1. *Custom accuracy tolerance available*
2. *Accuracies measured at 25°C, 5.0V*
3. *Measured at 25°C, 1m/sec airflow for achieving 63% of step from 33%RH to 90%RH*

Typical %RH Accuracy

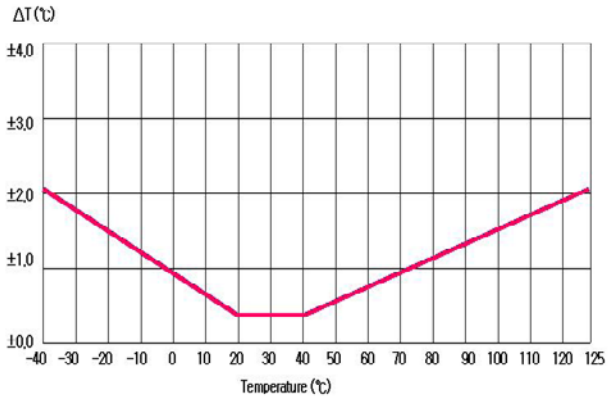


Temperature (°C)

Resolution	14 bit (0.01°C)
Accuracy[1]	±0.3°C
Repeatability	±0.1°C
Response time[2]	5.0 sec (63%)
Operating range	- 40 to 125°C
Long term drift	<0.05°C/yr (normal condition)

1. *Accuracies measured at 25°C, 5.0V*
2. *Min 5.0 sec, Max 20 sec*

Typical Temperature Accuracy



Absolute Maximum Rating

Parameter	Min	Max
Supply Voltage (VDD)	-0.3V	6.0V
Storage Temp (T_{strg})	-55°C	150°C
Junction Temp (T_j)	-55°C	150°C

Electrical Specifications

Supply Voltage
min 2.3V to max 5.5V

Supply Current (IDD)
750 µA (typical)

Sleep Current (Isleep)
0.6 µA (typical)

Environmental

Operating Temperature Range
- 40 to 125°C

Operating RH Range
0 to 100 % RH (non-condensing)

Soldering Information

Standard or IR Solder Reflow
Tp: 240°C, tp: 40 sec. (qualify Pb free profile)

Note: After soldering, reconditioning will be required. Details for this process can be found in the ChipCap® 2 application note (916-127).

Package Contents
Capacitive polymer RH sensor,
PTA (Proportional to Absolute) temperature sensor integrated ASIC chip in LCC (Leadless Chip Carrier) package, SMD, RoHS compliant

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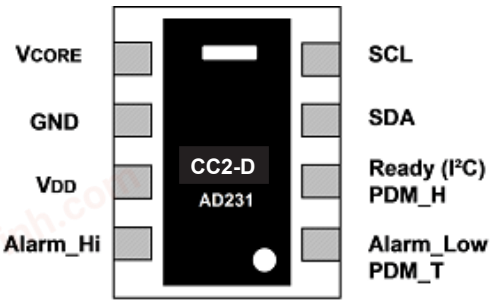
Pin Connection

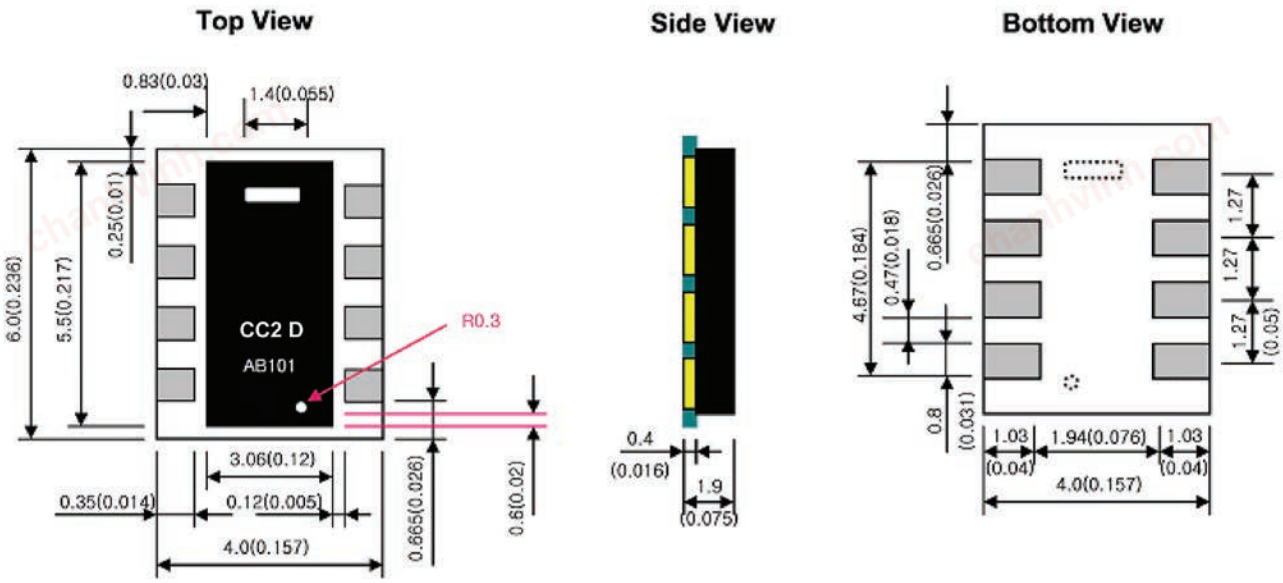


Ordering Information

Telaire part no.	Description
CC2A25	ChipCap® 2, analog, 2%, 5v
CC2A23	ChipCap 2, analog, 2%, 3.3v
CC2D23S	ChipCap 2, digital, sleep mode, 2%, 3.3v
CC2D25S	ChipCap 2, digital , sleep mode, 2%, 5v
CC2D23	ChipCap 2, digital, 2%, 3.3v
CC2D25	ChipCap 2, digital, 2%, 5v
CC2D35	ChipCap 2, digital, 3%, 5v
CC2A33	ChipCap 2, analog, 3%, 3.3v
CC2D33S	ChipCap 2, digital, sleep mode, 3%, 3.3v
CC2D35S	ChipCap 2, digital , sleep mode, 3%, 5v
CC2D33	ChipCap 2, digital, 3%, 3.3v
CC2A35	ChipCap 2, analog, 3%, 5v

Packaging Tape and Reel

Dimensions (units: mm (inch))



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Important Safety Information

Telaire makes no warranty, representation or guarantee regarding the suitability of this product for any particular application, including safety critical applications. Nor does Telaire assume any liability arising out of the application or use in any product or circuit. Telaire specifically disclaims all liability without limitation consequential or incidental damages. No statuary or fitness for particular purpose shall be implied.

Warning

Before installing the product, review the product data sheet and application notes.

The product shall be used only within power supply and electrical input and output limits as specified by the datasheet and application notes.

Improper use of the product may result in product damage and property loss and/or personal injury.

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