

GE

Measurement & Control

# ChipCap 2™

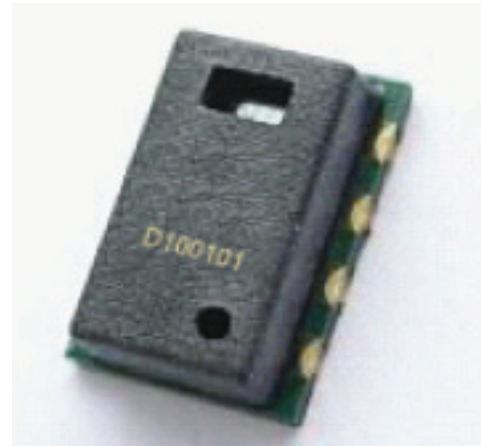
## A Fully Calibrated Humidity and Temperature Sensor

### Features

- Fully Calibrated & Temperature Compensated
- Digital or Analog Output with Alarm Function
- Precision & Accuracy ( $\pm 2\%RH$ ,  $\pm 0.3^{\circ}C$ , 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 & 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 a 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  $\pm 2\%$  from 20% to 80% RH ( $\pm 3\%$  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:

- I<sup>2</sup>C interface
- PDM convertible to analog signal
- Alarm function for preset control at min/max humidity



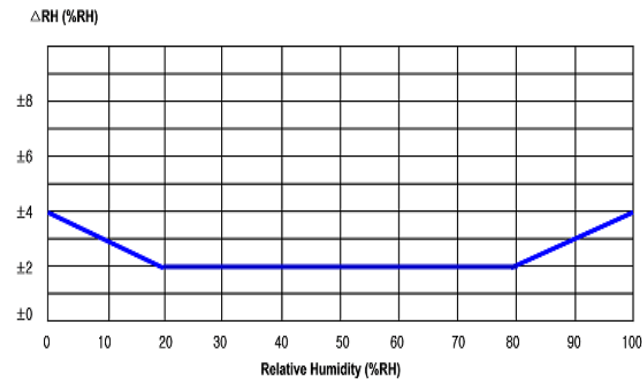
# Sensor Performance

## Relative Humidity (RH%)

Resolution	14 bit (0.01%RH)
Accuracy <sup>1</sup>	±2.0 %RH (20~80%RH) <sup>2</sup>
Repeatability	±0.2 %RH
Hysteresis	±2.0 %RH
Linearity	<2.0 %RH
Response time <sup>3</sup>	7.0 sec (τ 63%)
Temp Coefficient	Max 0.13 %RH/°C (at 10~60°C, 10~90%RH)
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



## Electrical Specifications

### Supply Voltage

min 2.7V to max 5.5V

### Supply Current (IDD)

750 μA (typical)

### Sleep Current (I<sub>sleep</sub>)

0.6 μA (typical)

## Environmental

### Operating Temperature Range

- 40 to 125°C

### Operating RH Range

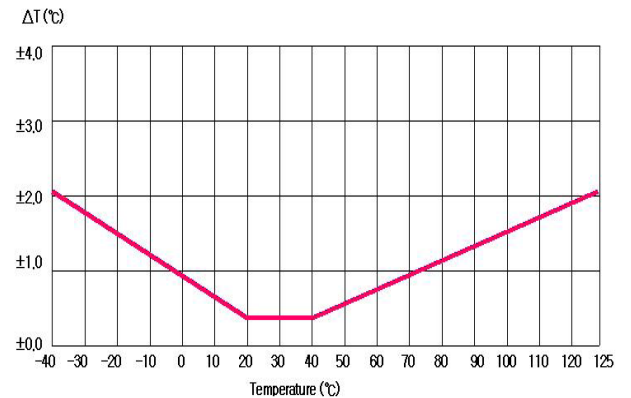
0 to 100 % RH (non-condensing)

## Temperature (°C)

Resolution	14 bit (0.01°C)
Accuracy <sup>1</sup>	±0.3°C
Repeatability	±0.1°C
Response time <sup>2</sup>	5.0 sec (τ 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 <sub>strg</sub> )	-50°C	150°C
Junction Temp (T <sub>j</sub> )	-55°C	150°C

## Soldering Information

### Standard or IR Solder Reflow

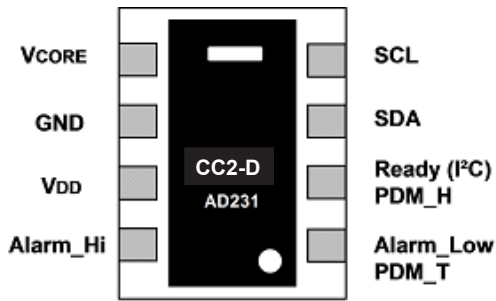
T<sub>p</sub>: 260°C, t<sub>p</sub>: 40 sec. (qualify Pb free profile)

*Note: After soldering reconditioning will be required. Details for this process can be found in the ChipCap2 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

## Pin Connection

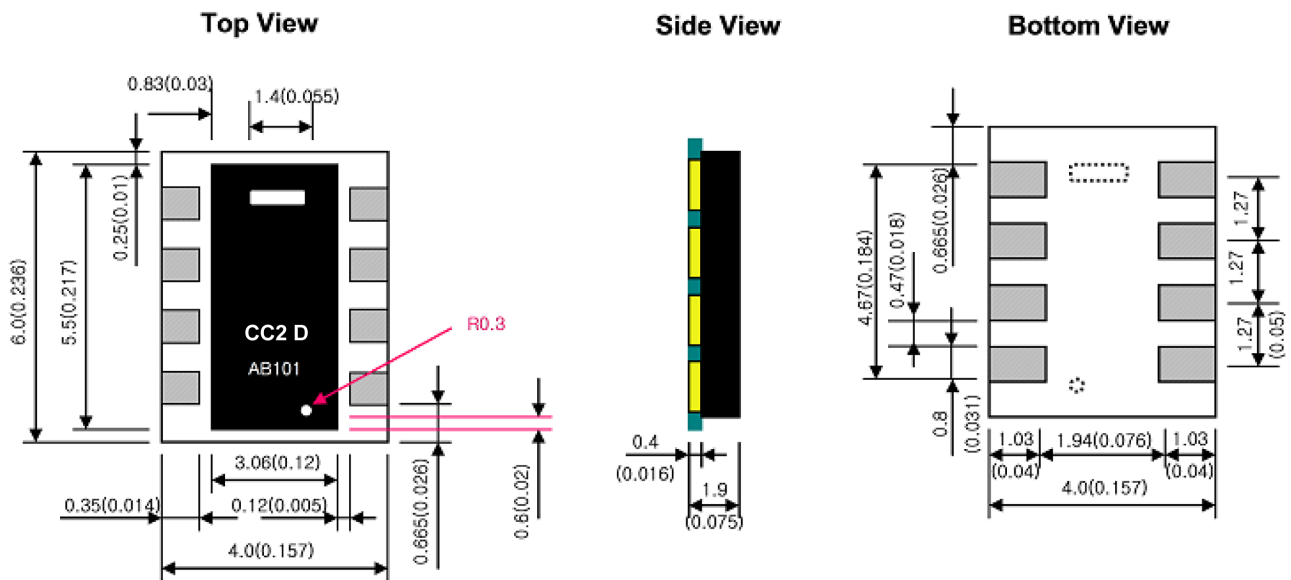


## Ordering Information

GE part no.	Description
CC2A25	ChipCap2, analog, 2%, 5v
CC2A23	ChipCap2, analog, 2%, 3.3v
CC2D23S	ChipCap2, digital, sleep mode, 2%, 3.3v
CC2D25S	ChipCap2, digital, sleep mode, 2%, 5v
CC2D23	ChipCap2, digital, 2%, 3.3v
CC2D25	ChipCap2, digital, 2%, 5v
CC2D35	ChipCap2, digital, 3%, 5v
CC2A33	ChipCap2, analog, 3%, 3.3v
CC2D33S	ChipCap2, digital, sleep mode, 3%, 3.3v
CC2D35S	ChipCap2, digital, sleep mode, 3%, 5v
CC2D33	ChipCap2, digital, 3%, 3.3v
CC2A35	ChipCap2, analog, 3%, 5v

Packaging Tape and Reel

## Dimensions (units: mm (inch))





[www.ge-mcs.com](http://www.ge-mcs.com)

920-558A