

ChipCap® 2-SIP

Humidity and Temperature Sensor

Description

ChipCap® 2-SIP is a Single In-Line Package type of ChipCap® with ready installed V-Core capacitor for easy and convenient application.

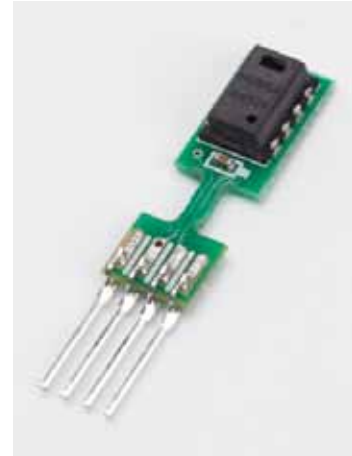
ChipCap® offers the most advanced and cost effective humidity and temperature sensing solution for virtually any type of applications. Capacitive polymer sensor chip developed and fabricated in-house and CMOS integrated circuit with EEPROM are integrated into one embedded system.

Individually calibrated and tested, ChipCap® 2-SIP performs $\pm 2\%$ from 20% to 80%RH ($\pm 3\%$ over entire humidity range), and yet is simple and ready to use without further calibration or temperature compensation.

ChipCap® 2-SIP offers another sensible sensing solution for excellent reliability, high accuracy, and cost effective sensing applications.

Features

- Fully Calibrated & Temperature Compensated
- Digital (I^2C) Output
- Precision and Accuracy ($\pm 2\%$ RH, $\pm 0.3^\circ\text{C}$, 14 bit)
- Free Operating Voltage (min 2.3V to max 5.5V)
- Low Current Consumption



- SIP (Single-In-line-Package)
- Reliable in Harsh Environment
- Eliminates the reconditioning procedure needed for surface mount RH sensors
- Field replaceable.
- Allows better air circulation and response time

Applications

- Energy Saving HVAC Control: Air Conditioning, Refrigeration, IAQ monitoring, Vent Fans, Home Appliances, Humi/Dehumidifiers
- Process Control and Instrumentation: Sensor Performance
- Medical Instruments, Handheld Devices, Weather Stations, Food Processing, Printers, RFIDs
- Automobile & Transportation: Cabin Climate Control, Defogging Control, Condensing Preventive Device
- Mass Quantity Application: OEM custom specification available



Sensor Performance

Relative Humidity (RH%)

* Custom Accuracy Tolerance Available

Resolution	14 bit (0.01%RH)
Accuracy ¹	±2.0%RH (20~80%RH)*
Repeatability	±0.2 %RH
Hysteresis	±2.0 %RH
Linearity	<2.0 %RH
Response time ²	7.0 sec (T63%)
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)

Temperature (°C)

Resolution	14 bit (0.01°C)
Accuracy ³	±0.3°C (Figure 2)
Repeatability	±0.1°C
Response time ⁴	5.0 sec (T63%)
Operating range	- 40 ~ 125 °C
Long term drift	<0.05 °C/yr (Normal condition)

- 1. Accuracies measured at 25°C, 5.0V.
- 2. Measured at 25°C, 1m/sec airflow for achieving 63% of step from 33%RH to 90%RH
- 3. Accuracies measured at 25°C, 5.0V.
- 4. Min 5.0 sec, Max 20 sec

Figure 1. Typical RH% Accuracy at 25°C

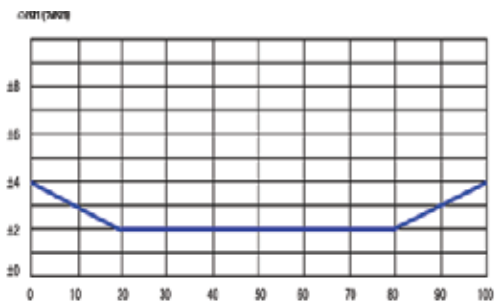
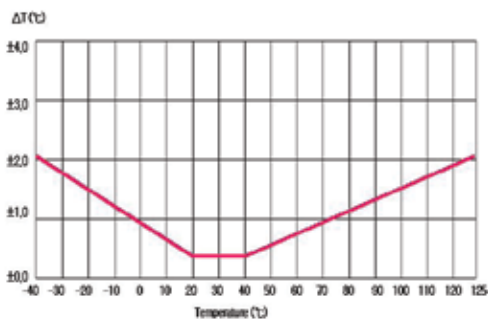
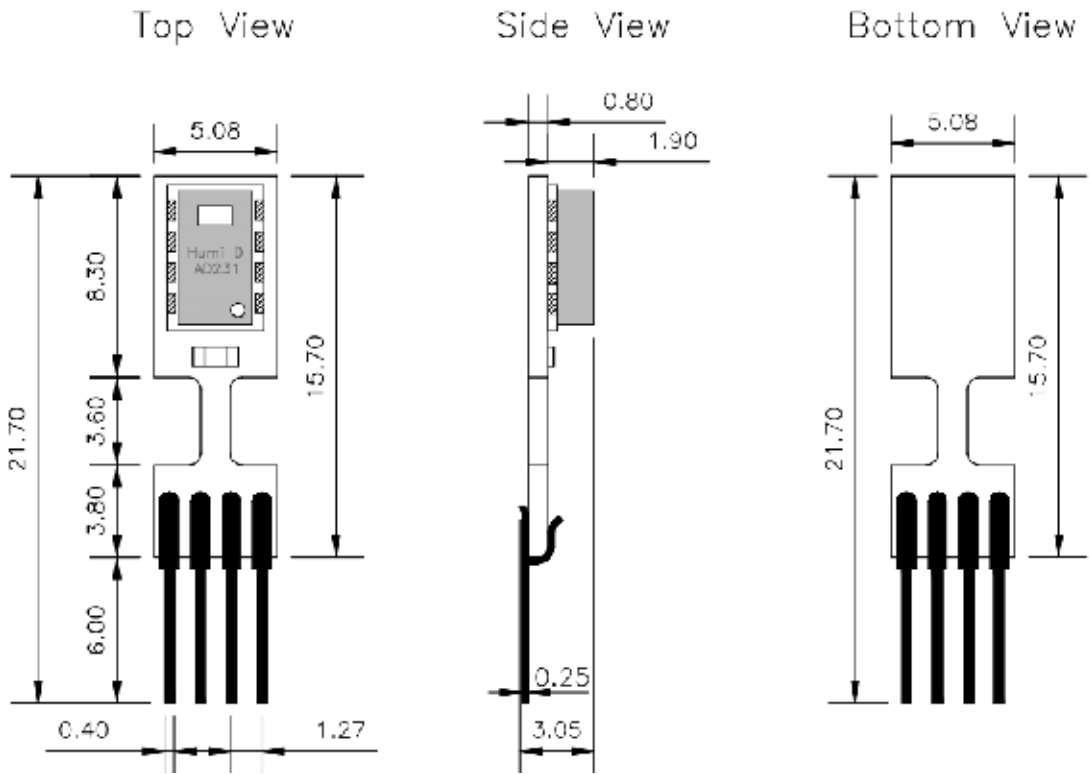


Figure 2. Typical Temperature Accuracy



Dimensions



Electrical Specification

Supply Voltage* ¹	1 min 2.3V ~ max 5.5V
Supply Current (I_{DD})	750 μ A (typical)
Sleep Current (I_{Sleep})* ²	0.6 μ A (typical)

*1. Lower than 2.7V supply voltage may increase the accuracy tolerance of the Temperature.

*2. At -40 ~85°C

Pin Connection



SCL VDD VSS SDA

*Chip on Board is 100 nF capacitor for Vcore.

Package Contents

ChipCap 2-SIP consists of a ChipCap 2 and a V-core capacitor soldered on the top of a FR4 substrate. Lead Pins are made of Cu, Sn, P alloy and all parts are fully RoHS and REACH compliant.

Ordering Information

Output	Accuracy	VDD	Mode	Part Number
I2C	2%	3.3 V	Update	CC2D23-SIP
I2C	2%	5 V	Update	CC2D25-SIP
I2C	2%	3.3 V	Sleep	CC2D23S-SIP
I2C	2%	5 V	Sleep	CC2D25S-SIP
I2C	3%	3.3 V	Update	CC2D33-SIP
I2C	3%	5 V	Update	CC2D35-SIP
I2C	3%	3.3 V	Sleep	CC2D33S-SIP
I2C	3%	5 V	Sleep	CC2D35S-SIP

Environmental

Operating Temperature	- 40 ~ 125°C
Operating Humidity	0~100%RH (non condensing)

Absolute Maximum Rating

Parameter	Min	Max
Supply Voltage (VDD)	-0.3V	6.0V
Storage Temp	-55°C	150°C
Junction Temp	-55°C	150°C

Soldering Information

Standard or IR Solder Reflow.

Tp: 260°C, tp: 40 sec. (qualify Pb free profile)
For manual soldering, contact time should not exceed 4 seconds at up to 350°C.

Shipping

Tray : 100 ea
Inner Box : 500 ea
Out Box : 5,000 ea

Standard Digital (I²C) Output :
Factory setting is Sleep Mode and calibrated at 3.3V.



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920-628A