

# NEW PRODUCT BRIEF

## Bourns® Model BPS240



### INTRODUCTION

Bourns® Precision Sensor (BPS) portfolio has one of the smallest, most dependable sensors for measuring relative humidity. Quality, performance and reliability are the core values of this family of environmental condition sensors.

BPS humidity sensors are based on innovative capacitive technology which provides extremely accurate condition readings in a miniature package size. As with other Sensors & Controls products, our BPS models can be modified to fit the customer's specific application. Ask our FAEs for information regarding customization.

### FEATURES

- Accuracy:  $\pm 2.0\%$  RH (Typical)
- Response Time < 2 seconds
- Temperature range:  
-40 °C to +105 °C
- Supply voltage range:  
1.62 to 5.5 VDC
- Output: Digital I<sup>2</sup>C  
(temperature and humidity)
- RoHS and REACH compliant\*

### BENEFITS

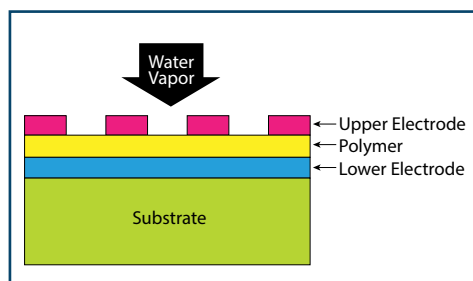
- High reliability and stable performance over the life of the sensor
- High sensitivity for relative humidity sensing
- Low voltage operation capability
- Extremely small package size  
(2.0 mm x 2.0 mm x 1.25 mm)
- Low current consumption for battery supported applications

### MARKET SEGMENT OVERVIEW

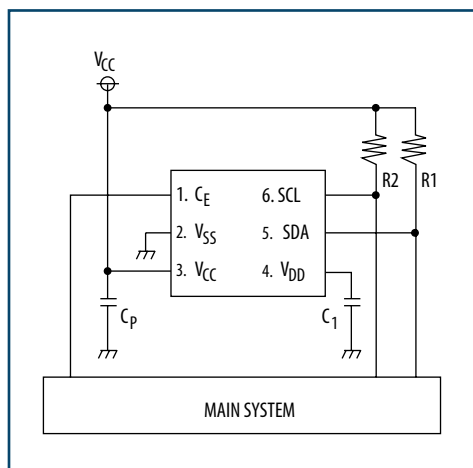
Sensors have become the most critical component of information collection. Features such as self-diagnostics, network compatibility, small form factor and self-calibration are considered essential. "Real-time" data analytics are driving the evolution of sensors and sensor networks.

Dependable sensors for every type of pressure and environment compatible with high temperatures are used in applications across multiple market segments.

### BASIC CONSTRUCTION



### CIRCUIT DIAGRAM



### PRODUCT FIT & APPLICATIONS

These products are best suited for applications where precision is essential and customers understand the value proposition of the product in the following market segments:

#### Industrial

- HVAC—RH and temperature monitoring
- Food processing
- Equipment cabinets
- Agriculture field and silo sensors
- Packaging automation

#### Medical Devices (low/medium risk)\*\*

- Portable oxygen generators
- Nebulizer
- CPAP equipment
- Gas chromatography equipment

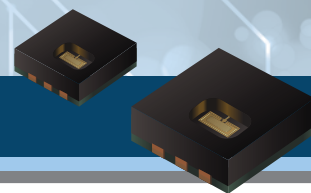
#### Consumer

- White goods
- Office automation

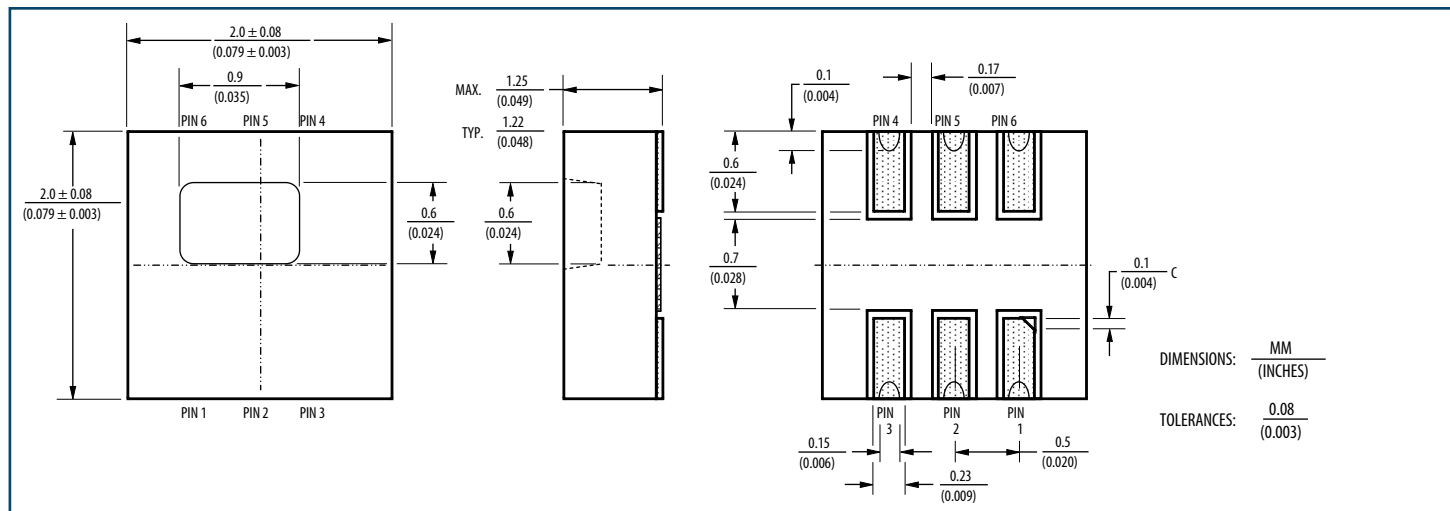
\*RoHS3 Directive 2015/863

Amendments of Annex II on March 31, 2015.

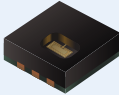
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<http://www.bourns.com/docs/legal/disclaimer.pdf>.



## PRODUCT DIMENSIONS



## PRODUCT CHARACTERISTICS

| Series | Photo                                                                               | Operating Range | Temperature Range | Output                   | Accuracy  | Features                                                                                                                                                             |
|--------|-------------------------------------------------------------------------------------|-----------------|-------------------|--------------------------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BPS240 |  | 0 to 100 % RH   | -30 °C to 100 °C  | I <sup>2</sup> C, 10 bit | ±2.0 % RH | <ul style="list-style-type: none"> <li>Low voltage</li> <li>2.0 x 2.0 x 1.25 mm package</li> <li>Temperature and humidity output</li> <li>RoHS compliant*</li> </ul> |

## CONVERSION OF SIGNAL OUTPUT

## Humidity

$$RH = \frac{100}{2^{10}} \times RH_{IC} \quad (0 \sim 100 \% RH)$$

$RH_{IC}$  : IC Humidity Output Data (10 bit)

Refer to Register Map:

$RH_{IC}$  = Data of the addresses 04H and 05H (000h ~ 3FFh)  
It changes into a decimal and is operation.

## Temperature

$$T = [T_{IC} - (2^{10} - \frac{25}{0.1})] \times 0.1 \quad (-30 \sim 100 ^\circ C)$$

$T_{IC}$  : IC Temperature Output Data (11 bit)

Refer to Register Map:

$T_{IC}$  = Data of the addresses 06H and 07H (000h ~ 7FFh)  
It changes into a decimal and is operation.

\*RoHS3 Directive 2015/863 Amendments of Annex II on March 31, 2015.

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