



## AIRPAX® | 6700 Series

### TO-220, Subminiature Bimetal Disc Thermostat

#### FEATURES

- RoHS compliant per EU directive 2002 / 95 / EC
- TO-220 / Y-220 international electronic package standard
- Ideal for surface and air sensing on PC boards and heat sinks
- VDE approved with "P" bracket option
- Gold-plated contacts
- Up to 20,000 life cycles @ max standard amperage
- Up to 100,000 life cycles @ max gold contact amperage

#### DESCRIPTION

The Airpax™ 6700 series is a RoHS compliant, positive snap action, single pole / single throw, sub-miniature bimetallic thermostat which provides accurate and reliable sensing and switching in a single device.

The 6700 series thermostat dimensionally conforms to the international product package standard Y220 / TO220. Thus, the 6700 may be automatically placed and soldered onto PC boards with high speed automated equipment, eliminating the need for the expensive hand placement and termination required today for most power supply thermostats.

The 6700 provides fast, positive response with excellent repeatability. The thermostat has a switch capability of up to 0.5 amp for 48 VDC, and achieves low-level switching down to 0.001A to 0.020A at 5 VDC for 100,000 cycles. Temperature is pre-set at the factory and is non-adjustable in the field.

Thermal conductivity is mainly through the terminals and the mounting bracket making the unit ideal for both surface mount and ambient air sensing. The nickel-plated copper mounting bracket comes standard, or you can utilize the laminated plastic mounting bracket for increased dielectric strength and VDE approval.

Primarily developed for thermal management applications on power supplies, the Airpax™ 6700 series is also ideally suited for use on crowded PC boards. Typical uses include turning on an indicator light, sounding an audible alarm, switch on a control circuit to send a message to a display screen or even switching a circuit to shut down a system. Applications include computers and computer peripherals, aircraft, automotive, medical devices and test equipment.

#### OPERATION SCHEMATICS



Schematic for  
Open on Rise  
Operation



Schematic for  
Close on Rise  
Operation

## SPECIFICATIONS

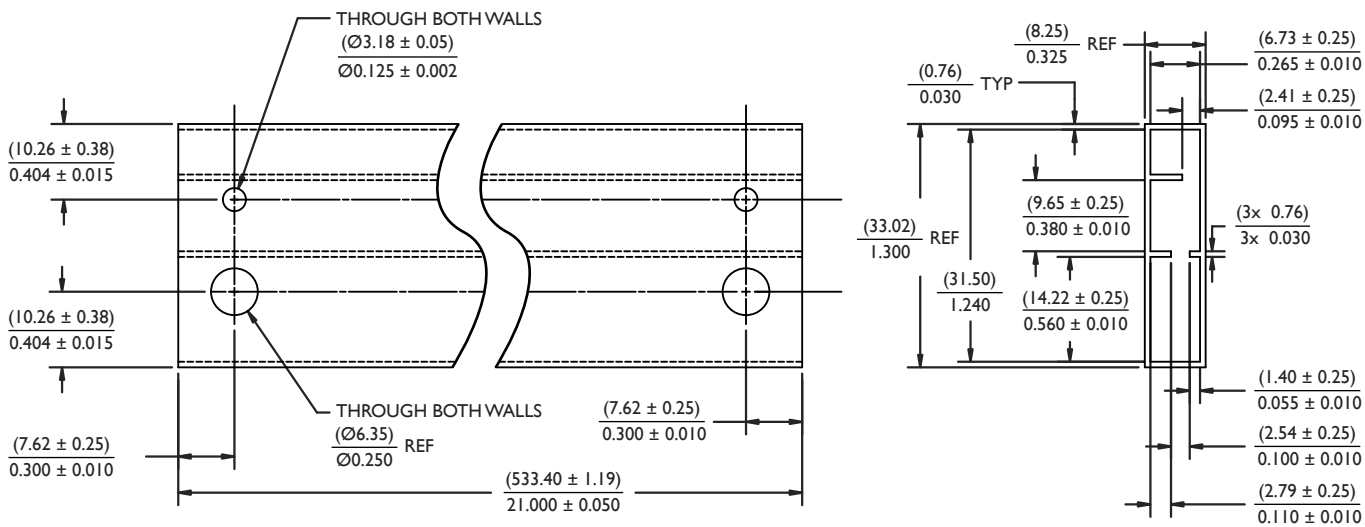
|                                       |                                                                                                                                                                                                |         |                                        |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------------------------|
| Contact Resistance                    | 50 milliohms max (before and after rated life)                                                                                                                                                 |         |                                        |
| Contact Ratings                       | Cycles                                                                                                                                                                                         | Voltage | Amps (resistive)                       |
|                                       | 20,000                                                                                                                                                                                         | 48 VDC  | 0.5                                    |
|                                       | 100,000                                                                                                                                                                                        | 5 VDC   | 0.001 (gold)                           |
| Contact Operations                    | Either close on rise (make) or open on rise (break)                                                                                                                                            |         |                                        |
| Operating Temperature                 | 40°C to 130°C (104°F to 266°F)                                                                                                                                                                 |         |                                        |
| Temperature Tolerance                 | Standard of $\pm 5^{\circ}\text{C}$ ( $\pm 9^{\circ}\text{F}$ ) with nominal operating temperature settings in 5°C increments                                                                  |         |                                        |
| Short Term / Long Term Exposure Limit | Short = 260°C (500°F), 10 second duration                                                                                                                                                      |         | Long = -55°C to 160°C (-67°F to 320°F) |
| Dielectric Strength                   | Nickel-plated copper bracket has 1480 VAC 60Hz, 1 second duration terminals to case. Plastic bracket has 2000 VAC 60Hz, 1 second duration terminals to case.                                   |         |                                        |
| Insulation Resistance                 | 100 Mohms at 500 VDC                                                                                                                                                                           |         |                                        |
| Contact Bounce                        | 3 milliseconds max (make)                                                                                                                                                                      |         |                                        |
| Vibration                             | Per Mil-Std-202, method 204D, test condition D, 10 to 2,000 Hz                                                                                                                                 |         |                                        |
| Shock                                 | Per Mil-Std-202, method 213, test condition C, 100 G's for 6 millisecond duration, ½ sine wave                                                                                                 |         |                                        |
| Seal                                  | High temperature epoxy sealed for wave soldering and cleaning, moisture proof per Sensata specification S-722 (unit will not leak while submerged in 9" of water for a minimum of two minutes) |         |                                        |
| Base Material                         | PPS (Polyphenylene Sulfide), 94 VO rated                                                                                                                                                       |         |                                        |
| Terminal Material                     | 65% Copper, 18% Nickel                                                                                                                                                                         |         |                                        |
| Contact Material                      | Gold-plated or overlay, silver crossbar                                                                                                                                                        |         |                                        |
| Mounting Bracket Material             | Nickel-plated copper (standard) or high pressure laminated plastic ("P" mounting bracket option)                                                                                               |         |                                        |
| Chemical Resistance                   | Unit is resistance to water, salt, alcohol, ammonia, trichlorethane and most other organic solvents                                                                                            |         |                                        |
| Solderability                         | Terminal material is selectively striped with lead-free solder for improved solderability.                                                                                                     |         |                                        |
| Soldering Heat Resistance             | Per Mil-Std-202G, method 210F, test condition C & K, test condition K validated at 260°C for 25 seconds                                                                                        |         |                                        |
| Weight                                | Approximately 0.5 grams                                                                                                                                                                        |         |                                        |
| Agency Approvals                      | cRUus recognized E36687<br>VDE approval 0631/12.83<br>RoHS Compliant per EU Directive 2002/95/EC                                                                                               |         |                                        |

## DIMENSIONAL SPECIFICATIONS, inches [mm]



## STANDARD PACKAGING

All samples and production orders will be shipped in plastic, industry standard shipping tubes.



## STANDARD TEMPERATURE CALIBRATION TABLE

Each thermostat part number consists of functional “building blocks” to enable the user to specify the desired characteristics. Select the proper code in each category, then transfer it to the box indicated. Unless a special requirement is indicated, the part number will be complete when the proper temperature is selected. If you have a special requirement, please call Sensata for a factory assigned number to complete the part number.

### Example 1:

A 67F090 thermostat will close (make contact) on a rising temperature from 85°C to 95°C and will reset open (break contact) on a falling temperature within a window of no greater than 6°C lower than the actual close temperature and no less than 60°C ambient temperature.

### Example 2:

A 67L060P thermostat has a plastic mounting bracket with 2000 VAC dielectric strength and VDE approval. The thermostat will open (break contact) on a rising temperature from 55°C to 65°C and will reset close (make contact) on a falling temperature within a window of no greater than 4°C lower than the actual open temperature and no less than 40°C ambient temperature.

The mounting bracket designation and the 4 digit manufacturing dash number are used for ordering special features and may not appear as part of the marking on the thermostat.

Temperature set point calibration is checked at Sensata Technologies with precision test equipment and proven methods. Because customer checking methods may differ, a typical variance allowed for correlation is  $\pm 1^\circ\text{C}$ .

| OPERATE<br>( $\pm 5^\circ\text{C}$ ) | MIN DIFFERENTIAL<br>( $^\circ\text{C}$ ) | MIN RESET<br>( $^\circ\text{C}$ ) |
|--------------------------------------|------------------------------------------|-----------------------------------|
| 40                                   | 4                                        | 20                                |
| 45                                   | 4                                        | 20                                |
| 50                                   | 4                                        | 30                                |
| 55                                   | 4                                        | 30                                |
| 60                                   | 4                                        | 40                                |
| 65                                   | 4                                        | 40                                |
| 70                                   | 4                                        | 50                                |
| 75                                   | 4                                        | 50                                |
| 80                                   | 6                                        | 55                                |
| 85                                   | 6                                        | 55                                |
| 90                                   | 6                                        | 60                                |
| 95                                   | 6                                        | 60                                |
| 100                                  | 6                                        | 70                                |
| 105                                  | 6                                        | 70                                |
| 110                                  | 6                                        | 80                                |
| 115                                  | 6                                        | 80                                |
| 120                                  | 9                                        | 85                                |
| 125                                  | 9                                        | 85                                |
| 130                                  | 9                                        | 90                                |

## DECISION TABLES

