

# DELPHI

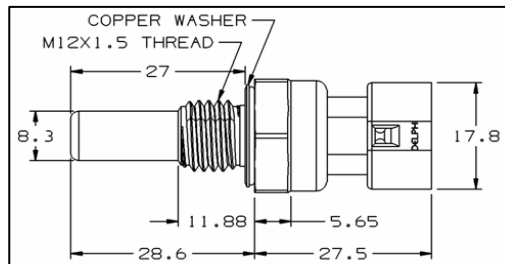
## TEMPERATURE SENSOR PRODUCT DATA

### COOLANT TEMPERATURE SENSOR

PART NUMBER 15326388

#### FEATURES:

- Design for Manufacturability
- Cost Effective
- Robust Design
- Few Components
- Few Assembly Processes
- Thermistor Technology
- 100% Calibration Certified



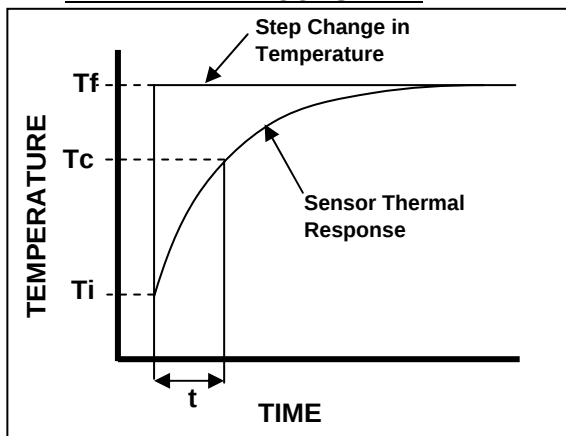
#### THERMAL & ELECTRICAL PROPERTIES

Typical Voltage Supply: **5V DC**  
Operating Temperature: **-40 C to 135 C**  
Resistive Range (Ohms): **See Table**  
Dissipation Constant: \* **25 mW/°C**  
Thermal Time Constant: \*\* **13.7 to 19.8 seconds**  
Accuracy: **See Table**

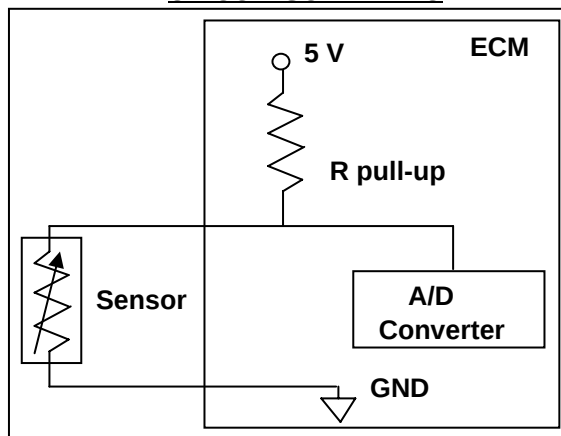
#### MECHANICAL PROPERTIES

Sensor Body Material: **Brass**  
Connector: **PBT 30% GF**  
Hex Size: **18.90 mm (3/4")**  
Thread Size: **M12 x 1.5**  
Thread Sealant: **Loctite VibraSeal**  
Sealing Pressure: **145 kPa**  
Mating Connector & Seal: **15336024**  
Installation Torque: **20 N-m, dynamic**  
Overall Weight: **23.2 g**

#### THERMAL TIME CONSTANT



#### CIRCUIT SCHEMATIC



\* The ratio, at a specified ambient temperature, of the change in the power dissipation of the sensor to the resultant temperature change of the thermistor. Test medium: silicone oil

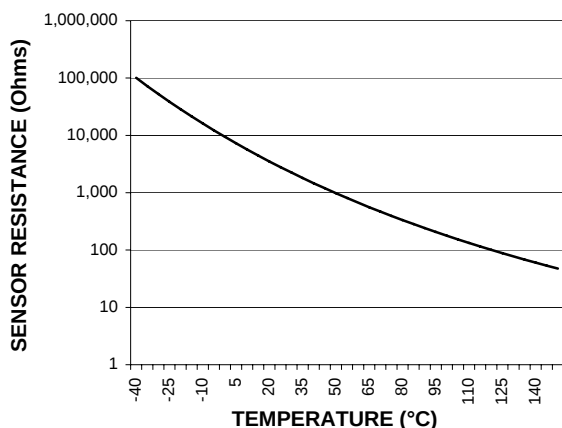
\*\* The time required for the sensor to achieve 63.2% of its steady state value when subjected to a step change in ambient temperature [ $T_c = (T_f - T_i) * 63.2\% + T_i$ ]. Test medium: silicone oil.

Part Revision Level: **002**  
Data Sheet Revision Date: **4/16/2004**

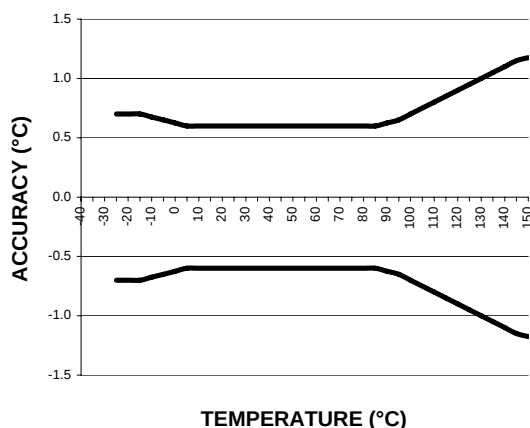
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## TEMPERATURE SENSOR PRODUCT DATA

UNLOADED RESISTANCE vs TEMPERATURE  
CHARACTERISTIC CHART



TEMPERATURE ACCURACY CHART



Note: Temperature Sensor Calibration Resistance Guaranteed by 100% Automated Calibration Certification.

| Temp<br>(°C) | Res<br>(Ohms) | Res<br>(±%) | Ref Acc<br>(±°C) | Temp<br>(°C) | Res<br>(Ohms) | Res<br>(±%) | Ref Acc<br>(±°C) | Temp<br>(°C) | Res<br>(Ohms) | Res<br>(±%) | Ref Acc<br>(±°C) |
|--------------|---------------|-------------|------------------|--------------|---------------|-------------|------------------|--------------|---------------|-------------|------------------|
| -40          | 100865        | 4.87        | 0.70             | 25           | 2795          | 2.50        | 0.60             | 90           | 241.8         | 2.10        | 0.70             |
| -35          | 72437         | 4.64        | 0.70             | 30           | 2240          | 2.45        | 0.60             | 95           | 207.1         | 2.21        | 0.70             |
| -30          | 52594         | 4.43        | 0.70             | 35           | 1806          | 2.40        | 0.60             | 100          | 178.0         | 2.31        | 0.80             |
| -25          | 38583         | 4.21        | 0.70             | 40           | 1465          | 2.36        | 0.60             | 105          | 153.6         | 2.42        | 0.80             |
| -20          | 28582         | 4.00        | 0.70             | 45           | 1195          | 2.31        | 0.60             | 110          | 133.1         | 2.52        | 0.90             |
| -15          | 21371         | 3.80        | 0.70             | 50           | 980           | 2.27        | 0.60             | 115          | 115.7         | 2.61        | 0.90             |
| -10          | 16120         | 3.60        | 0.60             | 55           | 809           | 2.23        | 0.60             | 120          | 100.9         | 2.68        | 1.00             |
| -5           | 12261         | 3.40        | 0.60             | 60           | 671           | 2.19        | 0.60             | 125          | 88.3          | 2.75        | 1.00             |
| 0            | 9399          | 3.21        | 0.60             | 65           | 559           | 2.15        | 0.60             | 130          | 77.5          | 2.80        | 1.10             |
| 5            | 7263          | 3.06        | 0.60             | 70           | 469           | 2.11        | 0.60             | 135          | 68.3          | 2.84        | 1.10             |
| 10           | 5658          | 2.92        | 0.60             | 75           | 395           | 2.07        | 0.60             | 140          | 60.3          | 2.87        | 1.20             |
| 15           | 4441          | 2.78        | 0.60             | 80           | 334           | 2.04        | 0.60             | 145          | 53.4          | 2.89        | 1.20             |
| 20           | 3511          | 2.64        | 0.60             | 85           | 283           | 2.00        | 0.60             | 150          | 47.5          | 2.90        | 1.20             |

**Important:** The values above are for the unloaded thermistor, as shipped from Delphi Packard Electric, and does not reflect the effects of application system errors and aging.

**Notes:** Please contact Delphi Packard Engineering for the resistance vs temperature curve for your temperature sensor application. Due to self-heating effects of the thermistor, the resistance is dependant upon the application.

Since thermistors are "continuous function devices", resistance vs temperature data is available for numbers beyond those specified above.

For more information contact:

Delphi Packard Electric Systems  
Sensor Business Segment M/S 93B  
North River Road  
Warren, OH 44483

Phone: (330) 373-3689

Fax: (330) 373-4147

| Temperature<br>(°C) | Resistance<br>(Ohms) | Resistance<br>(±%) | Temperature Accuracy |       |
|---------------------|----------------------|--------------------|----------------------|-------|
|                     |                      |                    | (+°C)                | (-°C) |
| -40                 | 100,865              | 4.87               | 0.7                  | -0.7  |
| -35                 | 72,437               | 4.64               | 0.7                  | -0.7  |
| -30                 | 52,594               | 4.43               | 0.7                  | -0.7  |
| -25                 | 38,583               | 4.21               | 0.7                  | -0.7  |
| -20                 | 28,582               | 4.00               | 0.7                  | -0.7  |
| -15                 | 21,371               | 3.80               | 0.7                  | -0.7  |
| -10                 | 16,120               | 3.60               | 0.6                  | -0.6  |
| -5                  | 12,261               | 3.40               | 0.6                  | -0.6  |
| 0                   | 9,399                | 3.21               | 0.6                  | -0.6  |
| 5                   | 7,263                | 3.06               | 0.6                  | -0.6  |
| 10                  | 5,658                | 2.92               | 0.6                  | -0.6  |
| 15                  | 4,441                | 2.78               | 0.6                  | -0.6  |
| 20                  | 3,511                | 2.64               | 0.6                  | -0.6  |
| 25                  | 2,795                | 2.50               | 0.6                  | -0.6  |
| 30                  | 2,240                | 2.45               | 0.6                  | -0.6  |
| 35                  | 1,806                | 2.40               | 0.6                  | -0.6  |
| 40                  | 1,465                | 2.36               | 0.6                  | -0.6  |
| 45                  | 1,195                | 2.31               | 0.6                  | -0.6  |
| 50                  | 980                  | 2.27               | 0.6                  | -0.6  |
| 55                  | 809                  | 2.23               | 0.6                  | -0.6  |
| 60                  | 671                  | 2.19               | 0.6                  | -0.6  |
| 65                  | 559                  | 2.15               | 0.6                  | -0.6  |
| 70                  | 469                  | 2.11               | 0.6                  | -0.6  |
| 75                  | 395                  | 2.07               | 0.6                  | -0.6  |
| 80                  | 334                  | 2.04               | 0.6                  | -0.6  |
| 85                  | 283                  | 2.00               | 0.6                  | -0.6  |
| 90                  | 241.8                | 2.10               | 0.7                  | -0.7  |
| 95                  | 207.1                | 2.21               | 0.7                  | -0.7  |
| 100                 | 178.0                | 2.31               | 0.8                  | -0.8  |
| 105                 | 153.6                | 2.42               | 0.8                  | -0.8  |
| 110                 | 133.1                | 2.52               | 0.9                  | -0.9  |
| 115                 | 115.7                | 2.61               | 0.9                  | -0.9  |
| 120                 | 100.9                | 2.68               | 1.0                  | -1.0  |
| 125                 | 88.3                 | 2.75               | 1.0                  | -1.0  |
| 130                 | 77.5                 | 2.80               | 1.1                  | -1.1  |
| 135                 | 68.3                 | 2.84               | 1.1                  | -1.1  |
| 140                 | 60.3                 | 2.87               | 1.2                  | -1.2  |
| 145                 | 53.4                 | 2.89               | 1.2                  | -1.2  |
| 150                 | 47.5                 | 2.90               | 1.2                  | -1.2  |