NTC Thermistors, Refrigerator Sensors

FEATURES
• Key component for temperature sensing and electronic control
• Accurate Vishay NTC chips, enabling class A to class A+++ refrigerator grades
• Sensor design following class II insulation (principal + supplementary insulation for the sensor head)
• High adhesive strength between PVC wire and encapsulating lacquer
• Specifically developed design allows for a very good water, moisture and ice resistance: 6000 h in water immersion under voltage
• Suitable for evaporator temperature measurement. Very high number of thermal cycles resistant: 100 000 cycles
• The cables jackets are suitable for back-panel polyurethane foaming process (max. 100 °C, 5 min)
• The plastic is not FDA grade
• UL recognized types (file E148885)
• The sensors are also available with single insulated cables, and with PVC-free cable
• Mounting: assembly
• Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

APPLICATIONS
Temperature measurement, sensing and control:
• White goods
• Refrigerators
• Freezers, deep-freezers
• Ice cube makers
• Counter drinks coolers
• Backbar and catering coolers
• Display fridges
• Wine coolers

QUICK REFERENCE DATA

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>VALUE</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistance value at 25 °C (1)</td>
<td>2.7K to 10K</td>
<td>Ω</td>
</tr>
<tr>
<td>Tolerance on $R_{25}$-value (1)</td>
<td>± 1 to ± 2</td>
<td>%</td>
</tr>
<tr>
<td>$B_{25/85}$-value (1)</td>
<td>3984</td>
<td>K</td>
</tr>
<tr>
<td>Tolerance on $B_{25/85}$-value</td>
<td>± 0.5</td>
<td>%</td>
</tr>
<tr>
<td>Operating temperature range at zero power</td>
<td>-55 to +60</td>
<td>°C</td>
</tr>
<tr>
<td>Min. dielectric withstanding voltage (immersed in water)</td>
<td>3750</td>
<td>$V_{AC}$</td>
</tr>
<tr>
<td>Maximum power dissipation at 25 °C</td>
<td>150</td>
<td>mW</td>
</tr>
<tr>
<td>Weight</td>
<td>16</td>
<td>g</td>
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</tbody>
</table>

Note
(1) Other resistance, tolerance and B-values available on request

ELECTRICAL DATA AND ORDERING INFORMATION

<table>
<thead>
<tr>
<th>$R_{25}$ (Ω)</th>
<th>$R_{25}$-TOL. (%)</th>
<th>$B_{25/85}$ (K)</th>
<th>$B_{25/85}$-TOL. (%)</th>
<th>CAP. DIA. Ø D1 (mm)</th>
<th>CAP. LENGTH L2 (mm)</th>
<th>CABLE INSULATION</th>
<th>CABLE LENGTH L1 (mm)</th>
<th>CONNECTOR</th>
<th>SAP MATERIAL AND ORDERING NUMBER</th>
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<tbody>
<tr>
<td>10 000</td>
<td>± 2</td>
<td>3984</td>
<td>± 0.5</td>
<td>7</td>
<td>25</td>
<td>Single</td>
<td>300</td>
<td></td>
<td>NTCACAPE3C90193</td>
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<td>3984</td>
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<td>Double</td>
<td>500</td>
<td>UL</td>
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<tr>
<td>5000</td>
<td>± 1</td>
<td>3984</td>
<td>± 0.5</td>
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<td>Double</td>
<td>900</td>
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<td>3984</td>
<td>± 0.5</td>
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<td>± 0.5</td>
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<td>1250</td>
<td>UL</td>
<td>Rast 2.5 PCB Edge, NTCACAPE3C90125</td>
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</table>
DIMENSIONS in millimeters

L1, L2, D1: See table Electrical Data
D2 = 4 mm, L3 = 50 mm

Notes
(1) Vishay NTC Thermistor chip with epoxy coatings and special potting resins
(2) ABS plastic cap of refrigerator white color
(3) Double insulated cable, cylindrical, PVC/PVC, 2 x 0.35 mm² (AWG#22)
(4) Conductors’ end insulation non stripped

MOUNTING
The plastic housing can be inserted in a pocket inside the refrigerator cabinet.
The plastic housing can be assembled with the refrigerator cabinet backside, with the help of adhesive tape, then foamed.
The plastic housing can be inserted on a pipe welded on the evaporator tube.
The plastic housing can be clamped on the evaporator tube with the help of a clip.
Suitable for PCB Edge connection, or plugged in a wire-to-wire connector, or assembled in a terminal block.

DESIGN-IN SUPPORT
• Other Resistance-Temperature curves are available, based on Vishay NTCC100E4 series, or specific customer’s curve.
• Other lead length and other standard plastic caps, like Ø 6 mm x 25 mm, Ø 7 mm x 25 mm, Ø 8 mm x 30 mm, Ø 9 mm x 30 mm, Ø 9 mm x 49 mm, 7 mm x 7.5 mm x 25 mm or customer specific sensor shapes, are available on request.
• Single insulated cables and Class I sensors can also be supplied.
• The sensors can be supplied without connector, with end-wire stripped, with crimped connectors, sealed connectors, or insulation displacement connectors (e.g. rast 2.5 mm). Consult Vishay for the list of available connectors.
• Several sensors can be grouped on the same connector, with the same or different shape.
• Additional features, like connection to the door switch, can also be included on the grouping connector.
• Visual aids, like cable jacket colors or position markers can be added to optimize customer’s assembling process.
• The cable harness associated with the sensor can be provided as a total solution.

DESIGNERS TOOLS
• 3D solid models: [www.vishay.com/doc?29146](http://www.vishay.com/doc?29146)
• NTC curve computation: [www.vishay.com/thermistors/ntc-curve-list/](http://www.vishay.com/thermistors/ntc-curve-list/)
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