

## NTC Thermistors, Refrigerator Sensors



QUICK REFERENCE DATA	
PARAMETER	VALUE
Climatic category (IEC 60539)	55/60/56
Resistance value at 25 °C <sup>(1)</sup>	2000 Ω to 47 000 Ω
Tolerance on R <sub>25</sub> - value <sup>(1)</sup>	± 1 % to 2 %
B <sub>25/85</sub> - value <sup>(1)</sup>	3984K <sup>(1)</sup>
Tolerance on B <sub>25/85</sub> - value	± 0.5 %
Operating temperature range at zero power	- 55 °C to + 60 °C
Min. dielectric withstanding voltage (immersed in water)	3750 V <sub>AC</sub>
Max. Power	150 mW
R/T values	Refer to table
Weight	16 g

**Note**

<sup>(1)</sup> Other resistances and B values available

### 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)
- Compliant to RoHS directive 2002/95/EC and in accordance to WEEE 2002/96/EC
- The plastic is not FDA grade
- UL certification on request
- The sensors are also available with single insulated cables, and with PVC-free cable



**RoHS**  
COMPLIANT

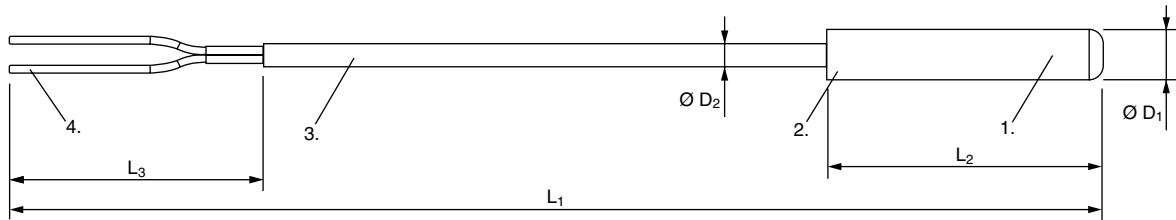
### APPLICATIONS

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

ELECTRICAL DATA AND ORDERING INFORMATION										
VISHAY SAP	CAP. DIA. Ø D1 (mm)	CAP. LENGTH L2 (mm)	CABLE INSULATION	CABLE LENGTH L1 (mm)	R <sub>25</sub> - VALUE (Ω)	R <sub>25</sub> - TOL.	B <sub>25/85</sub> - VALUE (K)	B <sub>25/85</sub> - TOL.		CONNECTOR
NTCACAPE3C90193	7	25	Single	300	10 000	± 2 %	3984K	± 0.5 %	-	-
NTCACAPE3C90144	7	25	Double	500	10 000	± 2 %	3984K	± 0.5 %	-	-
NTCACAPE3C90066	7	25	Double	500	2700	± 2 %	3984K	± 0.5 %	UL	-
NTCACAPE3C90191	8	30	Double	900	5000	± 1 %	3984K	± 0.5 %	-	-
NTCACAPE3C90125	9	49	Double	1250	10 000	± 2 %	3984K	± 0.5 %	UL	Rast 2.5 (**) PCB Edge

### DIMENSIONS in millimeters



L<sub>1</sub>, L<sub>2</sub>, D<sub>1</sub>: See table Electrical Data  
D<sub>2</sub> = 4 mm, L<sub>3</sub> = 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 mm<sup>2</sup>
- (4) Conductors' end insulation non stripped

### PACKAGING

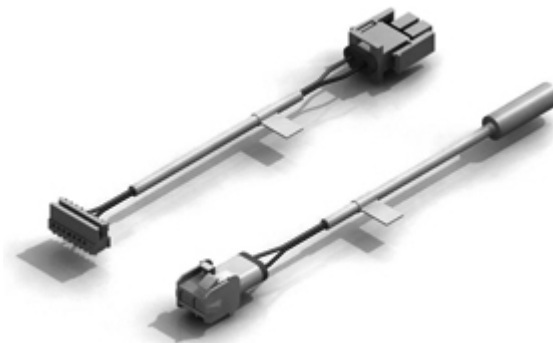
SPQ: 250 items

### 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.

### DESIGNERS CORNER

- Other Resistance-Temperature curves are available, based on Vishay 2381 640 0xxxx 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 colours 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 (STEP or IGES) or 2D Models (DXF, DWG) are available
- 3D solid models: [www.vishay.com/doc?29106](http://www.vishay.com/doc?29106)
- NTC curve computation: [www.vishay.com/thermistors/curve-computation-list/](http://www.vishay.com/thermistors/curve-computation-list/)



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