

## PTC Thermistors, Mini Radial Leaded for Over-Temperature Protection



### FEATURES

- Well-defined protection temperature levels
- Fast response time
- Accurate resistance for ease of circuit design
- Excellent long term behavior ( $\Delta T \leq 1^\circ\text{C}$  after 1000 h at  $T_n + 15^\circ\text{C}$ )
- Wide range of protection temperatures ( $80^\circ\text{C}$  to  $150^\circ\text{C}$ )
- Small size and rugged
- Coated leaded (bare pellets available)
- AEC-Q200 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)


**RoHS**  
COMPLIANT

### QUICK REFERENCE DATA

| PARAMETER                                     | VALUE          | UNIT             |
|-----------------------------------------------|----------------|------------------|
| Resistance at $25^\circ\text{C}$ ( $R_{25}$ ) | 20 to 120      | $\Omega$         |
| Nominal working temperature $T_n$             | 80 to 150      | $^\circ\text{C}$ |
| Maximum voltage                               | 30             | V                |
| Operating temperature range <sup>(1)</sup>    | -40 to +165    | $^\circ\text{C}$ |
| Dissipation factor                            | 5              | mW/K             |
| Thermal time constant (still air)             | 6              | s                |
| Weight                                        | $\approx 0.12$ | g                |

#### Note

- <sup>(1)</sup> Max operating temperature range is  $T_n + 15^\circ\text{C}$ , indicated value is for  $T_n = 150^\circ\text{C}$

### APPLICATIONS

Over-temperature protection and control in:

- Industrial electronics, motor drives, and lighting drivers
- Power supplies, converters, and heat-sink
- Motor protection

### DESCRIPTION

These PTC sensing thermistors consist of a medium resistivity doped barium titanate ceramic with copper clad steel wires lead (Pb)-free soldered to the Ag metalized pellet. A high temperature silicone coating covers the sensing body and has a temperature marking character.

### PACKAGING

PTC thermistors are available in 500 pieces bulk packed or 2000 pieces tape on reel.

### NOMINAL WORKING TEMPERATURES AND ORDERING INFORMATION

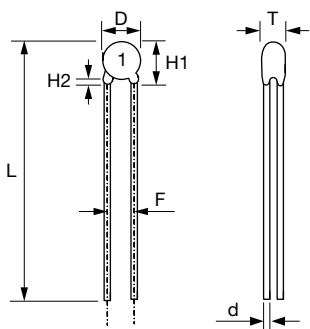
| NOMINAL WORKING TEMPERATURE   | VISHAY SAP ORDERING NUMBER |                 |              |
|-------------------------------|----------------------------|-----------------|--------------|
| $T_n$<br>( $^\circ\text{C}$ ) | BULK                       | TAPE AND REEL   | MARKING CODE |
| 80                            | PTCSL03T081DB1E            | PTCSL03T081DT1E | 8            |
| 90                            | PTCSL03T091DB1E            | PTCSL03T091DT1E | 9            |
| 100                           | PTCSL03T101DB1E            | PTCSL03T101DT1E | 0            |
| 110                           | PTCSL03T111DB1E            | PTCSL03T111DT1E | 1            |
| 120                           | PTCSL03T121DB1E            | PTCSL03T121DT1E | 2            |
| 130                           | PTCSL03T131DB1E            | PTCSL03T131DT1E | 3            |
| 140                           | PTCSL03T141DB1E            | PTCSL03T141DT1E | 4            |
| 150                           | PTCSL03T151DB1E            | PTCSL03T151DT1E | 5            |

#### Note

- 2E pitch version in bulk or tape and reel available on request

**ELECTRICAL CHARACTERISTICS**

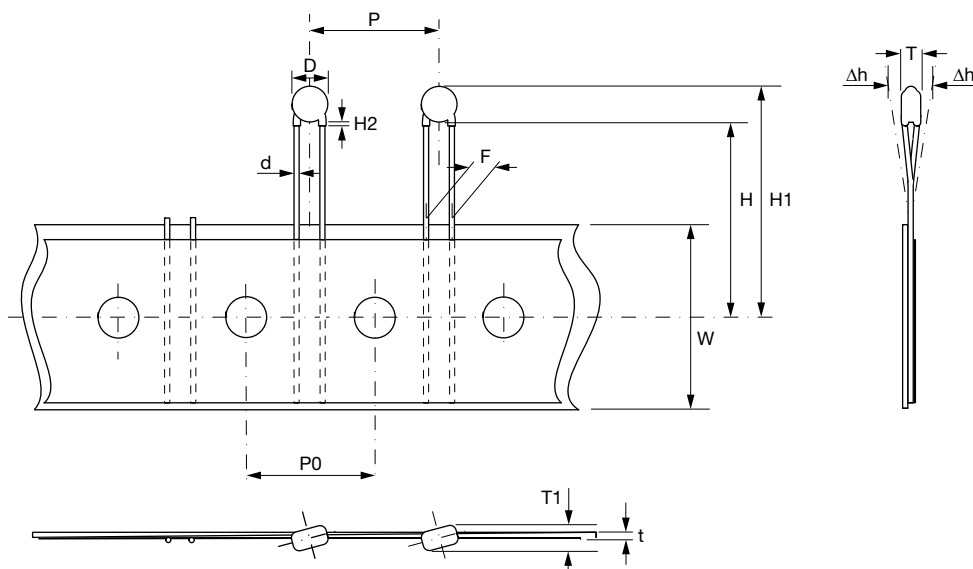
| PARAMETER                                                      | VALUES    | UNIT         |
|----------------------------------------------------------------|-----------|--------------|
| Resistance at 25 °C                                            | 20 to 120 | $\Omega$     |
| Maximum resistance between -20 °C and (T <sub>n</sub> - 20) °C | 250       | $\Omega$     |
| Maximum resistance at -40 °C                                   | 300       | $\Omega$     |
| Maximum resistance at (T <sub>n</sub> - 5) °C                  | 550       | $\Omega$     |
| Minimum resistance at (T <sub>n</sub> + 5) °C                  | 1330      | $\Omega$     |
| Minimum resistance at (T <sub>n</sub> + 15) °C                 | 4000      | $\Omega$     |
| Maximum voltage                                                | 30        | V (AC or DC) |

**DIMENSIONS** in millimeters

**COMPONENT DIMENSIONS** in millimeters

|    |                  |
|----|------------------|
| D  | 3.3 ± 0.4        |
| H1 | 4.7 ± 1.5        |
| H2 | 1.5 ± 1.0        |
| d  | 0.5 ± 0.05       |
| L  | 30 ± 3           |
| F  | 2.5 + 1.0 / -0.5 |
| T  | 2.1 ± 0.3        |

**TAPING DATA DIMENSIONS** in millimeters (based on IEC 60286-2)

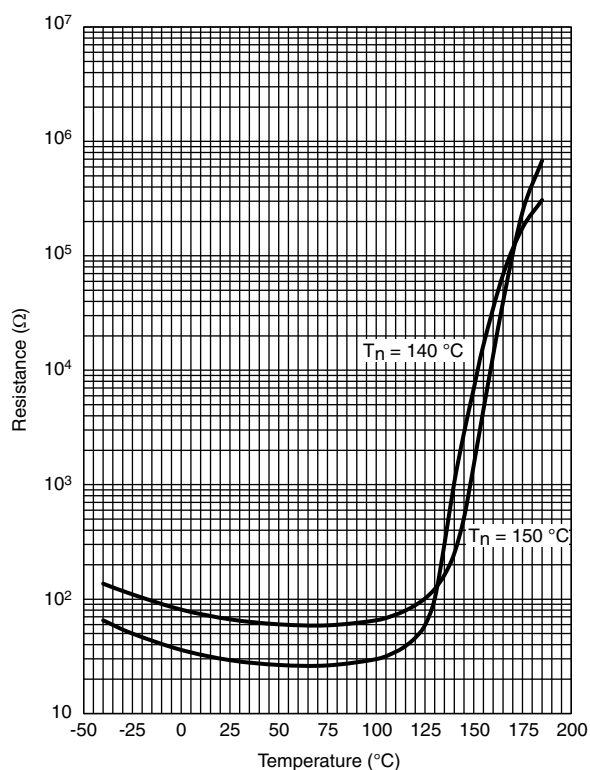
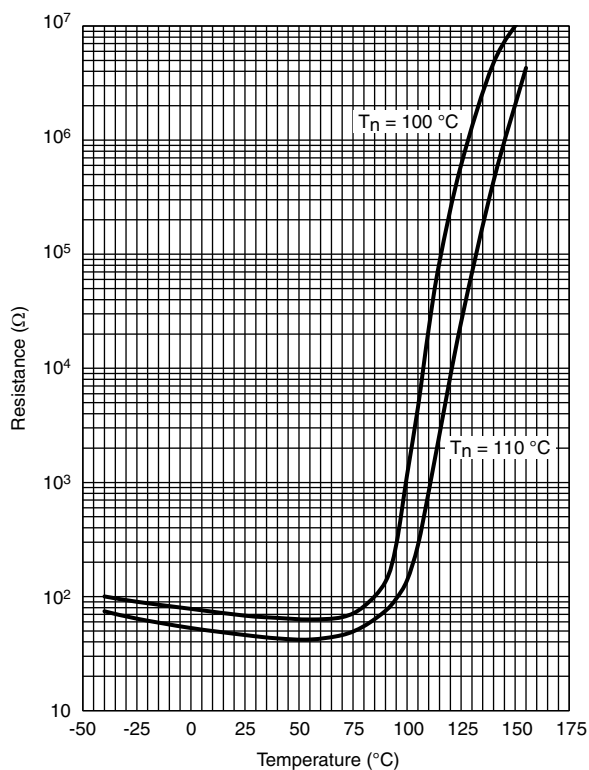
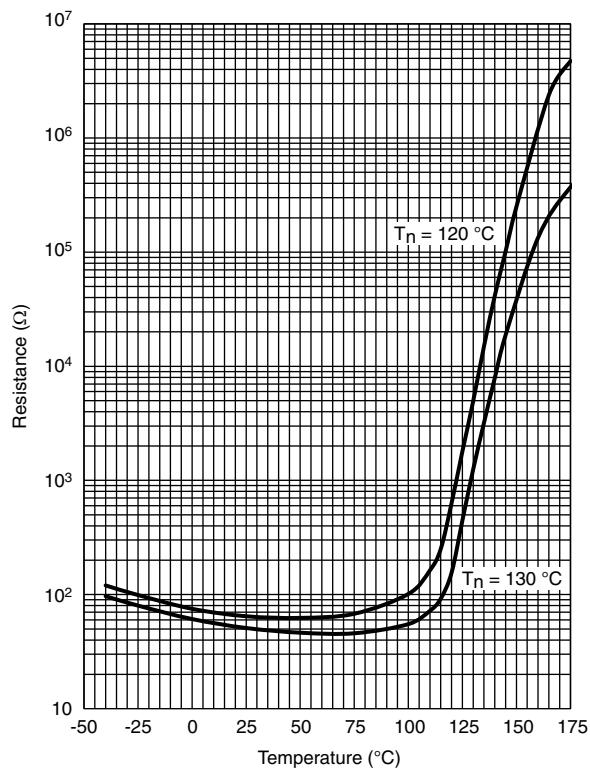
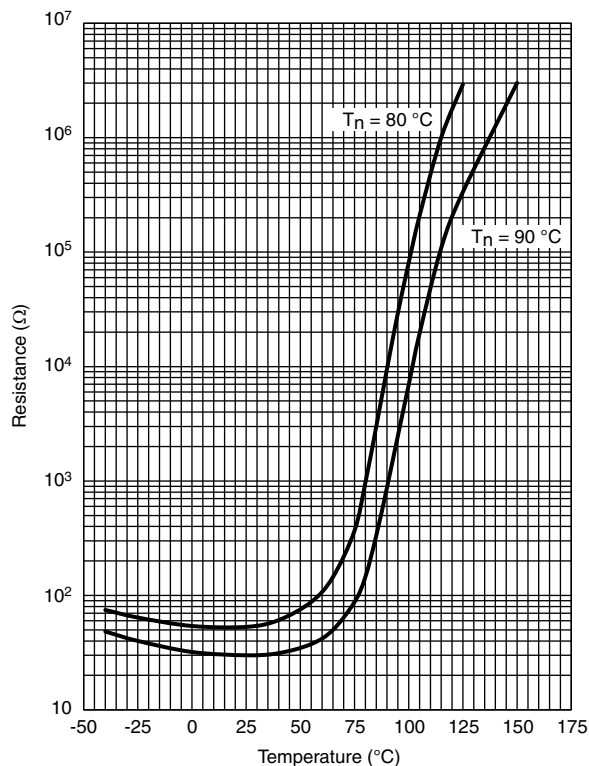
|    |                                        |                   |
|----|----------------------------------------|-------------------|
| D  | Body diameter                          | 3.3 ± 0.4         |
| d  | Lead diameter                          | 0.5 ± 0.05        |
| F  | Lead to lead center distance           | 2.5 + 0.5 / - 0.2 |
| H  | Component seating plane to tape-center | 18.0 + 2.0        |
| H1 | Component top to tape-center           | 25 max.           |
| Δh | Component alignment                    | 0 ± 2             |
| P  | Component pitch                        | 12.7              |
| T  | Total thickness                        | 2.1 ± 0.3         |
| T1 | Total thickness in line of tape        | 3.5 max.          |
| t  | Total tape thickness                   | 0.9 max.          |





## RESISTANCE VS. TEMPERATURE

Typical ( $\leq 5 V_{DC}$ )





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