



## NTC Thermistors, Radial Leaded, Standard Precision



RoHS COMPLIANT

### FEATURES

- Accuracy over a wide temperature range
- High stability over a long life
- Excellent price/performance ratio
- cULus recognized, file E148885 (category XGPU2/XGPU8)
- Mounting: radial
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)

### APPLICATIONS

- Temperature measurement, compensation, sensing and control in consumer and industrial applications

### DESCRIPTION

These thermistors have a negative temperature coefficient. The part consists of a NTC chip, soldered between two tin plated copper wires. It has a gray base coating and is color band coded. The coating has no specified insulation properties.

### PACKAGING

The thermistors are packed in bulk or tape on reel; see part numbers and relevant packaging quantities.

### DESIGN-IN SUPPORT

For complete Curve Computation, visit: [www.vishay.com/thermistors/ntc-curve-list/](http://www.vishay.com/thermistors/ntc-curve-list/)

### MARKING

The thermistors are marked with colored bands; see dimensions drawing and “Electrical data and ordering information”.

### MOUNTING

By soldering in any position.  
Not intended for potted applications.

### ADDITIONAL RESOURCES



QUICK REFERENCE DATA		
PARAMETER	VALUE	UNIT
Resistance value at 25 °C	3.3 to 470K	Ω
Tolerance on R <sub>25</sub> -value	± 2; ± 3; ± 5	%
B <sub>25/85</sub> -value	2880 to 4570	K
Tolerance on B <sub>25/85</sub> -value	± 0.5 to ± 3	%
Operating temperature range: At zero power dissipation; continuously	-40 to +125	°C
At zero power dissipation; for short periods	≤ 150	
Response time (in oil)	≈ 1.2	s
Thermal time constant τ (for information only)	15	s
Dissipation factor δ (for information only)	7 8.5 (for R <sub>25</sub> -value ≤ 680 Ω)	mW/K
Maximum power dissipation at 55 °C	500	mW
Climatic category (LCT / UCT / days)	40 / 125 / 56	-
Weight	≈ 0.3	g

ELECTRICAL DATA AND ORDERING INFORMATION									
R <sub>25</sub> (Ω)	R <sub>25</sub> -TOL. (± %)	B <sub>25/85</sub> (K)	B <sub>25/85</sub> -TOL. (± %)	COLOR CODE (1)			UL RECOGNIZED (Y / N)	SAP MATERIAL AND ORDERING NUMBER (2)	
				I	II	III		NTCLE100E3...B0/T1/T2 RoHS COMPLIANT WITH EXEMPTION (3)	NTCLE100E3...B0A/T1A/T2A RoHS COMPLIANT
3.3	2, 3, 5	2880	3	Orange	Orange	Gold	N	338*B0	338*B0A
4.7	2, 3, 5	2880	3	Yellow	Violet	Gold	N	478*B0	478*B0A
6.8	2, 3, 5	2880	3	Blue	Grey	Gold	N	688*B0	688*B0A
10	2, 3, 5	2990	3	Brown	Black	Black	N	109*B0	109*B0A
15	2, 3, 5	3041	3	Brown	Green	Black	N	159*B0	159*B0A
22	2, 3, 5	3136	3	Red	Red	Black	N	229*B0	229*B0A
33	2, 3, 5	3390	3	Orange	Orange	Black	Y	339*B0	339*B0A
47	2, 3, 5	3390	3	Yellow	Violet	Black	Y	479*B0	479*B0A
68	2, 3, 5	3390	3	Blue	Grey	Black	Y	689*B0	689*B0A
100	2, 3, 5	3560	1.5	Brown	Black	Brown	Y	101*B0	101*B0A
150	2, 3, 5	3560	1.5	Brown	Green	Brown	Y	151*B0	151*B0A
220	2, 3, 5	3560	1.5	Red	Red	Brown	Y	221*B0	221*B0A



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## NTE3019 Light Emitting Diode (LED) Red Diffused, 5mm

**Features:**

- Tapered Barrel T-1 3/4 Package
- High Intensity Red light source with various lens colors and effects
- Versatile Mounting on PC Board or Panel
- T-1 3/4 with Stand-off

**Absolute Maximum Ratings:** ( $T_A = +25^{\circ}\text{C}$  unless otherwise specified)

Reverse Voltage,  $V_R$  ..... 5V  
 Peak Forward Current (Note 1,  $I_F$  ..... 1A  
 Power Dissipation ( $T_A = +25^{\circ}\text{C}$ ),  $P_D$  ..... 180mW  
     Derate linearly from  $25^{\circ}\text{C}$  ..... 2mW/ $^{\circ}\text{C}$   
 Operating Temperature Range,  $T_{opr}$  .....  $-55^{\circ}$  to  $+100^{\circ}\text{C}$   
 Storage Temperature Range,  $T_{stg}$  .....  $-55^{\circ}$  to  $+100^{\circ}\text{C}$   
 Lead Temperature (During Soldering, 1/16" (1.6mm) from case, 5sec max),  $T_L$  .....  $+260^{\circ}\text{C}$

Note 1. Pulse Width =  $1\mu\text{s}$ , 0.3% duty cycle.

**Electrical Characteristics:** ( $T_A = +25^{\circ}\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Luminous Intensity	$I_V$	$I_F = 20\text{ mA}$	0.9	3.0	-	mcd
Peak Wavelength	$\lambda_p$	$I_F = 20\text{ mA}$	-	-	660	nm
Spectral Line Half Width	$\Delta\lambda$	$I_F = 20\text{ mA}$	-	20	-	nm
Forward Voltage	$V_F$	$I_F = 20\text{ mA}$	-	1.65	2.0	V
Reverse Current	$I_n$	$V_R = 5.0\text{V}$	-	-	100	$\lambda\text{A}$
Reverse Voltage	$\lambda\text{A}$	$I_R = 100\ \lambda\text{A}$	-	5.0	-	V
Capacitance	C	$V = 0$	-	35	-	pF
Viewing Angle	$2\theta_{1/2}$	Between 50% Points	-	60	-	degree
Rise Time	$t_r$	10% - 90% 50 $\Omega$	-	50	-	ns
Fall Time	$t_f$	90% - 10% 50 $\Omega$	-	50	-	ns