

# NTC Thermistor Temperature Sensing/Compensation

PCB Mounted Radial type Thermistor Sensor for Temperature Compensation and Measurement

## Registered office

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## Manufacturing unit:

ZENTRIAD ELECTROLINK CORP  
Industrial Development Plot No : 3  
Varavoor Industrial Estate Thalssery Road Varavoor  
8086861017 kerala

ZENTRIAD  
Second Floor, 500 SQ.FEET,Plot No:- E-69, Hall No.5,GIDC Road, Sector  
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## Temperature Measurement

Thermistors serve a crucial role in temperature detection. For example, thermistor temperature detection can be used in fire alarms to detect fires based on a sudden change in temperature. Unlike photoelectric detectors or ionization alarms, thermistors only require heat to activate

# Applications

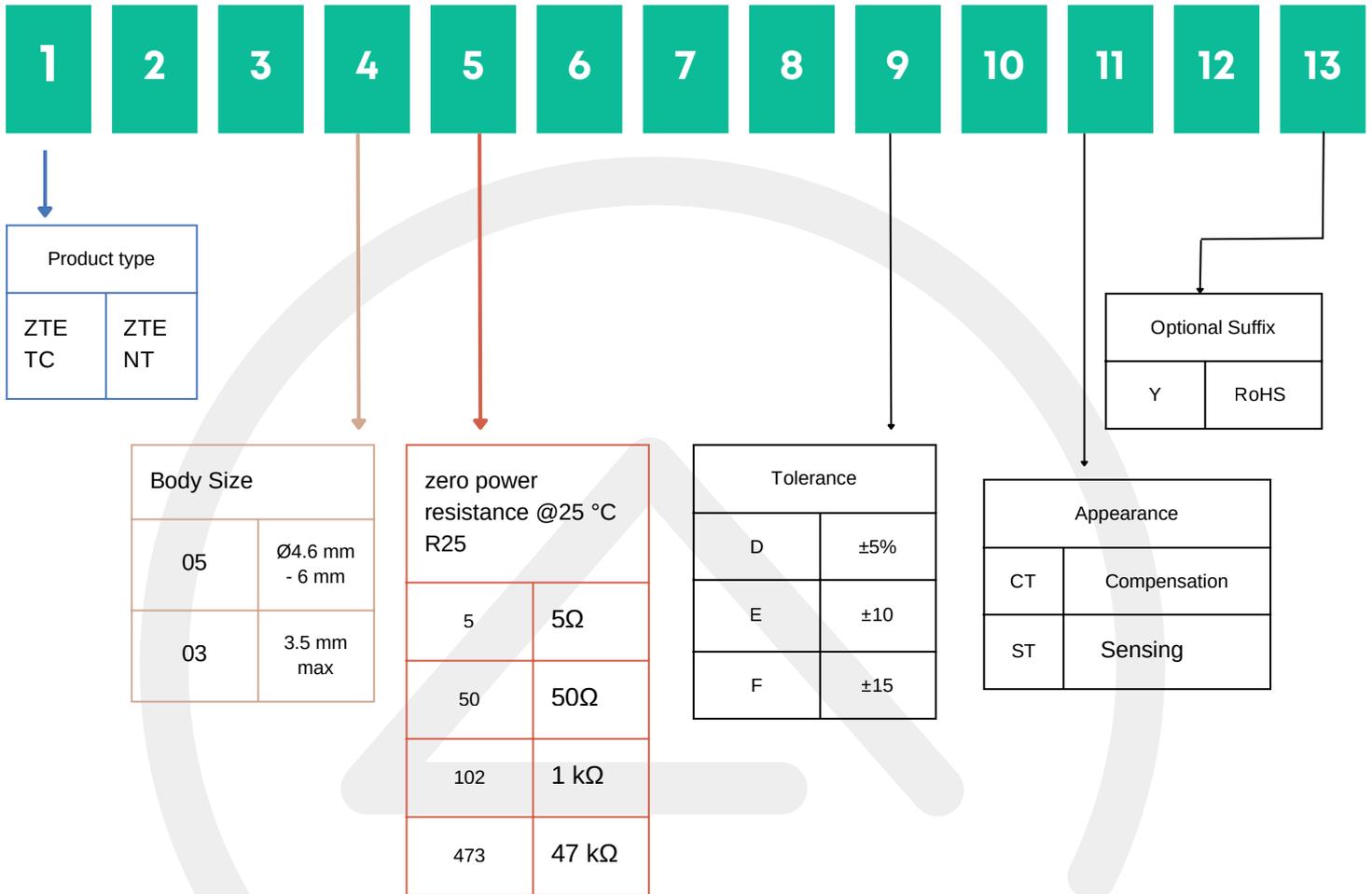
- Home appliances
- Computers
- Automotive Electronics
- Adapters
- Switch Mode Power Supply
- LED Drive Circuits



# Features

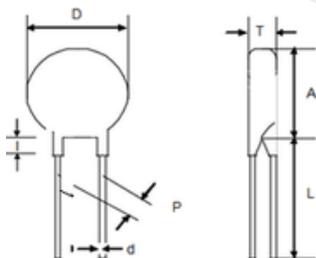
- RoHS compliant
- Halogen-Free (HF) series are available
- Body size:  $\Phi 3\text{mm}$  to  $\Phi 6.0\text{mm}$
- Radial lead without any Insulation
- Cost effective
- Operating temperature range:  $-40^{\circ}\text{C} \sim +140^{\circ}\text{C}$
- Wide resistance range

# Part Numbering

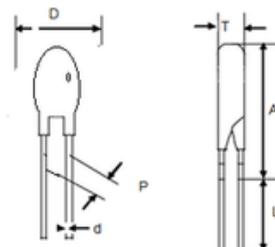


## Structure and Dimensions

**CT model (Compensation Type)**



**ST Type (Sensor Model)**



(Unit: mm)



SERIES ZENTC	D max	P (mm)	d (mm)	l max	A max	L max	T max
CT model	6.5	5.0 + 0.5	0.5 + 0.1	3.0	8.0	32	5
ST model	3.5	3.0 + 0.5	0.5 + 0.1	-	6.0	32	3

## Electrical Characteristics 1

Part No.	Zero Power Resistance at 25°C	Tolerance of R25	B(2550) Value		Tolerance of B value	Max. Power Dissipation at 25 °C	Dissipation factor	Thermal Time Constant	Operating Temperature Range	Safety Approvals	
	R25 (KΩ)	(±%)	(K)		(±%)	Pmax (mW)	Δ (mW/°C)	T (Sec.)	TL~TU (°C)	UL	cUL
ZTETC05005 □	5	10,15	2400		3	3450	~4 TO 5	~20	-30 ~ +125	Y	Y
ZTETC05010 □	10		2800							Y	Y
ZTETC05015 □	15		2800							Y	Y
ZTETC05020 □	20		2800							Y	Y
ZTETC05025 □	25		2900							Y	Y
ZTETC05045 □	45		3100							Y	Y
ZTETC05050 □	50		3100							Y	Y
ZTETC05060 □	60		3100							Y	Y
ZTETC05085 □	85		3200							Y	Y
ZTETC05090 □	90		3200							Y	Y

# Electrical Characteristics 2

Part No.	Zero Power Resistance at 25°C	Tolerance of R25	B Value	Tolerance of B value	Max. Power Dissipation at 25 °C	Dissipation factor	Thermal Time Constant	Operating Temperature Range	Safety Approvals	
	R25 (KΩ)	(±%)	(K)	(±%)	Pmax (mW)	Δ (mW/°C)	T (Sec.)	TL~TU (°C)	UL	cUL
ZTETC05101 □	100	10,15	25 /50	3	3450	~4 TO 5	~20	-30 ~ +125	Y	Y
ZTETC05121 □	120								Y	Y
ZTETC05151 □	150								Y	Y
ZTETC05201 □	200								Y	Y
ZTETC05221 □	220								Y	Y
ZTETC05251 □	250								Y	Y
ZTETC05301 □	300								Y	Y
ZTETC05060 □	470								Y	Y
ZTETC05085 □	500								Y	Y
ZTETC05090 □	680								Y	Y

# Electrical Characteristics 3

Part No.	Zero Power Resistance at 25°C	Tolerance of R25	B Value		Tolerance of B value	Max. Power Dissipation at 25 °C	Dissipation factor	Thermal Time Constant	Operating Temperature Range	Safety Approvals	
	R25 (KΩ )	( ±%)	(K)		( ±%)	Pmax (mW)	Δ (mW/ °C)	T (Sec.)	TL~TU (°C)	UL	cUL
ZTETC05701 □	700	10,15	25 /50	3800	3	450	~4 TO 5	~20	-30 ~ +125	Y	Y
ZTETC05102 □	1000			3850						Y	Y
ZTETC05152 □	1500			3900						Y	Y
ZTETC05202 □	2000			4000						Y	Y
ZTETC05222 □	2200			4000						Y	Y
ZTETC05252 □	2500			4000						Y	Y
ZTETC05302 □	3000			4000						Y	Y
ZTETC05332 □	3300			4000						Y	Y
ZTETC05402 □	4000			4000						Y	Y
ZTETC05472 □	4700			4050						Y	Y

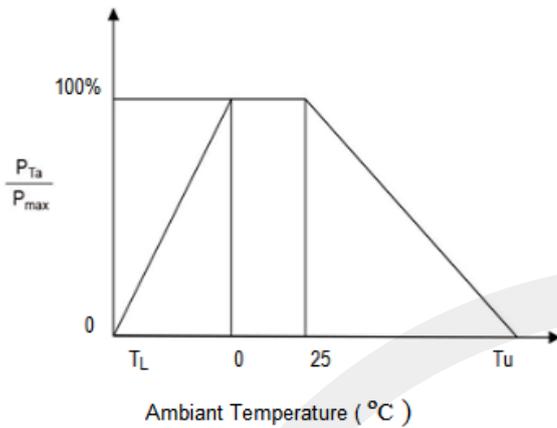
# Electrical Characteristics 4

Part No.	Zero Power Resistance at 25°C	Tolerance of R25	B Value		Tolerance of B value	Max. Power Dissipation at 25 °C	Dissipation factor	Thermal Time Constant	Operating Temperature Range	Safety Approvals	
	R25 (KΩ )	( ±%)		(K)	(±%)	Pmax (mW)	Δ (mW/°C)	T (Sec.)	TL~TU (°C)	UL	cUL
ZTETC05502 □	5000			3950						Y	Y
ZTETC05602 □	6000			4050						Y	Y
ZTETC05682 □	6800			4050						Y	Y
ZTETC05802 □	8000			4050						Y	Y
ZTETC05103 □	10000			4050						Y	Y
ZTETC05123 □	12000			4050						Y	Y
ZTETC05153 □	15000			4050						Y	Y
ZTETC05203 □	20000	10,15	25 /50	4200	3	450	~4 TO 5	~20	-30 ~ +125	Y	Y
ZTETC05303 □	30000			4250						Y	Y
ZTETC05473 □	47000			4300						Y	Y
ZTETS05503 □	50000			4300							
ZTETS05683 □	68000			4350							
ZTETS05104 □	100000			4400							
ZTETS05154 □	150000			4500							
ZTETS05204 □	200000			4600							
ZTETS05224 □	220000			4600							

Note 1 : □ = Tolerance of R25

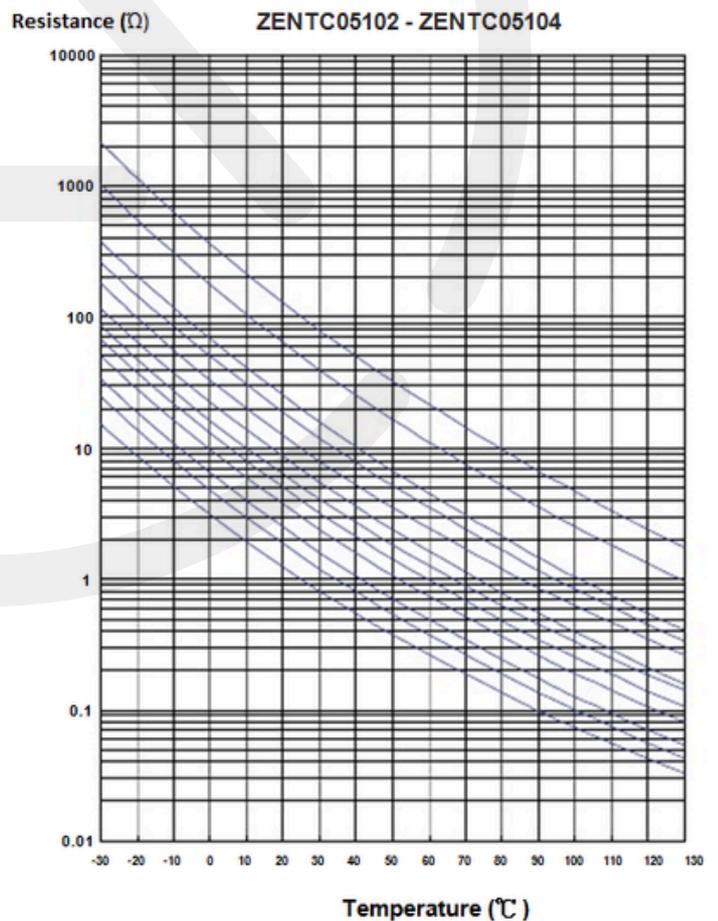
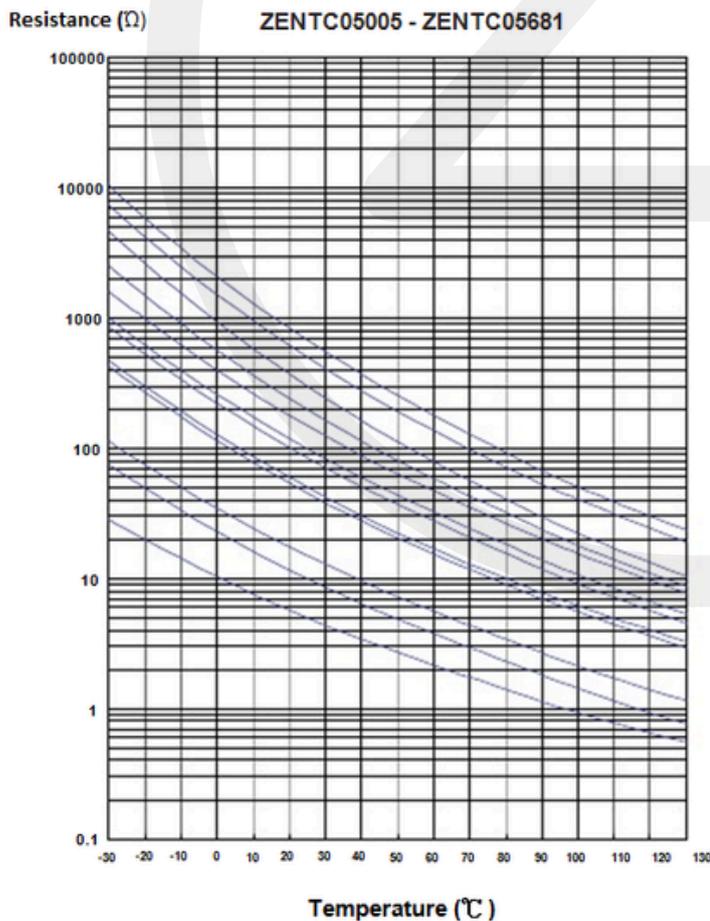
Note 2: Special FEASIBLE Mechanical and Electrical specifications are available upon request.

# Maximum Power Dissipation Derating Curve



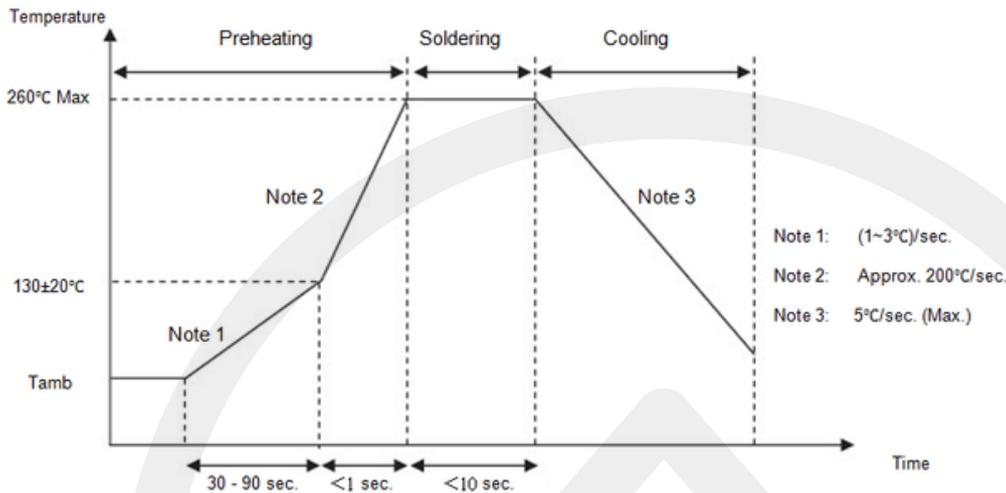
TU: Maximum operating Temperature (°C)  
TL : Minimum operating temperature (°C)  
For example:  
Ambient temperature( $T_a$ ) = 55°C  
Maximum operating temperature(TU) = 125°C  
 $P_{Ta} = (TU - T_a) / (TU - 25) \times P_{max} = 70\% P_{max}$

## R - T Characteristic Curve



# Soldering Recommendation

## Soldering Recommendation



Caution: It had better to keep the minimum distance as 6mm between the bottom of the thermistor body and PCB surface to prevent the component damage.

## Recommended Reworking Conditions With Soldering Iron

Item	Conditions
Temperature of Soldering Iron Tip	360°C max.
Soldering Time	3 Sec. max.
Distance from Thermistor	2 mm min

# Reliability Measurement

Item	Standard	Test conditions	Specifications
Tensile Strength of Terminals	IEC 60068-2-21	Gradually Applied specified force and keep the Unit Fixed for 10+1 sec.  Terminal Diameter (mm) Force (kg) 0.3<d≤0.5 0.5	No Visible Damage
Bending Strength of Terminals	IEC 60068-2-21	Hold specimen and apply the force specified below to each lead. Bend the specimen to 90°, and then return to the original position. Repeat the procedure in the opposite direction.  Terminal Diameter (mm) Force (kg) 0.3<d≤0.5 0.25	No Visible Damage
Insulation Test	MIL-STD-202F-METHOD 302	1000 VDC ,1 min	> 500 MΩ
Solderability	IEC 60068-2-20	245 ± 3°C, 3 ± 0.3 sec.	At least 95% of terminal electrode is covered by new solder
Resistance to soldering Heat	IEC 60068-2-20	260 + 3°C, 10 + 1 sec.	No Visible Damage $\Delta R_{25}/R_{25} \leq 3\%$
High Temperature Storage	IEC 60068-2-2	125 + 5°C, 1000 + 24 hrs.	No Visible Damage $\Delta R_{25}/R_{25} \leq 5\%$
Damp Heat steady state	IEC 60068-2-78	40 + 2°C, 90-95% RH, 1000 + 24 hrs.	No Visible Damage $\Delta R_{25}/R_{25} \leq 3\%$
Rapid Change of Temp.	IEC 60068-2-14	The condition shown below shall be repeated 5 cycles Step Temp. °C period (minutes) 1 -30 + 5 Temp. 30 + 32 Room 5 + 33 125 + 5 30 + 34 Room Temp. 5 + 3	No Visible Damage $\Delta R_{25}/R_{25} \leq 3\%$
Max. Power Dissipation	IEC 60539-14.26.3	25 + 5°C Pmax, 1000 + 24hrs..	No Visible Damage $\Delta R_{25}/R_{25} \leq 5\%$

# Packaging

Normal Packaging : 250/500 pcs in Poly bag

Bulk Packaging: In Carton Box

## Storage Conditions

- 1.Storage Temperature : -10 °C to +40°C
- 2.Relative Humidity :  $\leq 75\%RH$
- 3.Keep Away from Corrosive Atmosphere
- 4.Keep Away from Direct Sunlight
- 5.Period of Storage : 1 year



# Manufacturing Precision Delivering Trust