



# NTC THERMISTORS: TYPE ND

## CHIP THERMISTOR WITH OR WITHOUT WIRES

### DESCRIPTION:

A range of resin-coated chips with wires (bare or insulated) and uncoated, unwired chips with thick film silver electrodes.

### FEATURES:

- Designed for accurate temperature measurement, control & compensation
- Tight tolerances on resistance and B value
- Operation up to 155°C with excellent stability
- Small body size
- Fast response
- Available with nickel or monel (cupronickel) wires to limit heat conduction
- Epoxy resin provides voltage insulation
- Suitable for automotive, HVAC & white goods applications

### CODING

To identify the wire style required, replace \* in the codes shown as follows:

- Bare  $d = 0.2\text{mm}$  tinned monel** ..... K  
**Bare  $d = 0.25\text{mm}$  tinned copper** ..... L  
**Bare  $d = 0.2\text{mm}$  tinned copper** ..... M  
**PTFE-insulated  $d = 0.25\text{mm}$  nickel** ..... P  
**No wires**..... U, and replace C with B

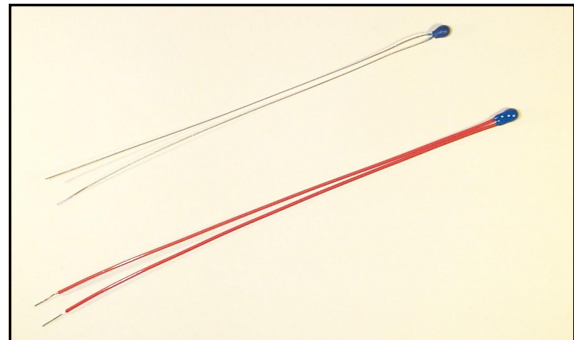
### DATA

#### NDK, NDL, NDM & NDP TYPES:

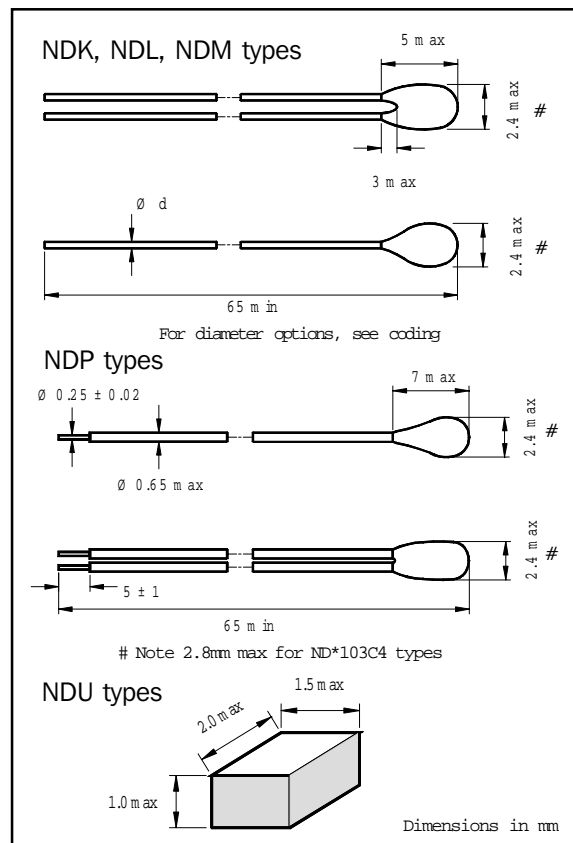
- Minimum operating temperature** ..... -40°C  
**Maximum operating temperature** .... See table  
**Thermal time constant** .... <10s (NDL & NDM)  
 ..... <20s (NDK & NDP)  
**Dissipation factor** ..... 2.2mW/K (NDL & NDM)  
 ..... 1.5mW/K (NDK & NDP)  
**Voltage insulation** ..... 500V d.c.  
**Wire insulation** . Cadmium-free red PTFE (NDP)  
**Packing / MOQ** ..... 500/box

#### NDU TYPES:

- Minimum operating temperature** ..... -40°C  
**Maximum operating temperature** .... See table  
**Resistance tolerance** .....  $\pm 3\%$  or greater  
**Electrode** ..... Thick film silver  
**Packing / MOQ** ..... 1000/box  
**Note: NDU types are not available in material systems 4 & 5.**



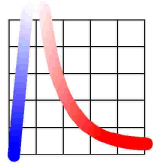
### DIMENSIONS:



### OPTIONS:

- Other resistance values within the ranges shown e.g. code ND\*152C2R1 for  $1500\Omega \pm 1\%$  at 25°C
- Resistance values outside the ranges shown with modified dimensions
- Reference temperatures in the range 0°C up to the maximum operating temperature
- Wire lengths 30 to 600mm ( $\pm 1\text{mm}$  or  $\pm 2\%$ , whichever is the greater)
- Other wire materials
- Other wire colours (white, black, blue, green, yellow, orange)

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R 25 $\Omega$	Material system	B 25/85 K	Maximum operating temperature °C	Code R 25 $\pm$ 1%	Code R 25 $\pm$ 2%	Code R 25 $\pm$ 3%	Code R 25 $\pm$ 5%	Code R 25 $\pm$ 10%
1000	2	3540 $\pm$ 1%	125	ND *102C 2R 1	ND *102C 2R 2	ND *102C 2R 3	ND *102C 2R 5	ND *102C 2R 10
2000	2	3540 $\pm$ 1%	125	ND *202C 2R 1	ND *202C 2R 2	ND *202C 2R 3	ND *202C 2R 5	ND *202C 2R 10
5000	2	3540 $\pm$ 1%	125	ND *502C 2R 1	ND *502C 2R 2	ND *502C 2R 3	ND *502C 2R 5	ND *502C 2R 10
1000	2A	3627 $\pm$ 1%	125	ND *102C 2AR 1	ND *102C 2AR 2	ND *102C 2AR 3	ND *102C 2AR 5	ND *102C 2AR 10
2000	2A	3627 $\pm$ 1%	125	ND *202C 2AR 1	ND *202C 2AR 2	ND *202C 2AR 3	ND *202C 2AR 5	ND *202C 2AR 10
5000	2A	3627 $\pm$ 1%	125	ND *502C 2AR 1	ND *502C 2AR 2	ND *502C 2AR 3	ND *502C 2AR 5	ND *502C 2AR 10
2700	1	3977 $\pm$ 0.75%	155	ND *272C 1R 1	ND *272C 1R 2	ND *272C 1R 3	ND *272C 1R 5	ND *272C 1R 10
5000	1	3977 $\pm$ 0.75%	155	ND *502C 1R 1	ND *502C 1R 2	ND *502C 1R 3	ND *502C 1R 5	ND *502C 1R 10
10000	1	3977 $\pm$ 0.75%	155	ND *103C 1R 1	ND *103C 1R 2	ND *103C 1R 3	ND *103C 1R 5	ND *103C 1R 10
30000	1	3977 $\pm$ 0.75%	155	ND *303C 1R 1	ND *303C 1R 2	ND *303C 1R 3	ND *303C 1R 5	ND *303C 1R 10
47000	1	3977 $\pm$ 0.75%	155	ND *473C 1R 1	ND *473C 1R 2	ND *473C 1R 3	ND *473C 1R 5	ND *473C 1R 10
50000	1	3977 $\pm$ 0.75%	155	ND *503C 1R 1	ND *503C 1R 2	ND *503C 1R 3	ND *503C 1R 5	ND *503C 1R 10
2700	3	3960 $\pm$ 1%	155	ND *272C 3R 1	ND *272C 3R 2	ND *272C 3R 3	ND *272C 3R 5	ND *272C 3R 10
5000	3	3960 $\pm$ 1%	155	ND *502C 3R 1	ND *502C 3R 2	ND *502C 3R 3	ND *502C 3R 5	ND *502C 3R 10
10000	3	3960 $\pm$ 1%	155	ND *103C 3R 1	ND *103C 3R 2	ND *103C 3R 3	ND *103C 3R 5	ND *103C 3R 10
30000	3	3960 $\pm$ 1%	155	ND *303C 3R 1	ND *303C 3R 2	ND *303C 3R 3	ND *303C 3R 5	ND *303C 3R 10
47000	3	3960 $\pm$ 1%	155	ND *473C 3R 1	ND *473C 3R 2	ND *473C 3R 3	ND *473C 3R 5	ND *473C 3R 10
50000	3	3960 $\pm$ 1%	155	ND *503C 3R 1	ND *503C 3R 2	ND *503C 3R 3	ND *503C 3R 5	ND *503C 3R 10
12000	5	3740 $\pm$ 1.5%	125	ND *123C 5R 1	ND *123C 5R 2	ND *123C 5R 3	ND *123C 5R 5	ND *123C 5R 10
5000	4A	3435 $\pm$ 1%	155	ND *502C 4AR 1	ND *502C 4AR 2	ND *502C 4AR 3	ND *502C 4AR 5	ND *502C 4AR 10
10000	4A	3435 $\pm$ 1%	155	ND *103C 4AR 1	ND *103C 4AR 2	ND *103C 4AR 3	ND *103C 4AR 5	ND *103C 4AR 10
30000	4	3435 $\pm$ 1%	110	ND *303C 4R 1	ND *303C 4R 2	ND *303C 4R 3	ND *303C 4R 5	ND *303C 4R 10
50000	4	3435 $\pm$ 1%	110	ND *503C 4R 1	ND *503C 4R 2	ND *503C 4R 3	ND *503C 4R 5	ND *503C 4R 10
100000	4	3435 $\pm$ 1%	110	ND *104C 4R 1	ND *104C 4R 2	ND *104C 4R 3	ND *104C 4R 5	ND *104C 4R 10

See separate tables for resistance - temperature data

Data sheet D-ND-5

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