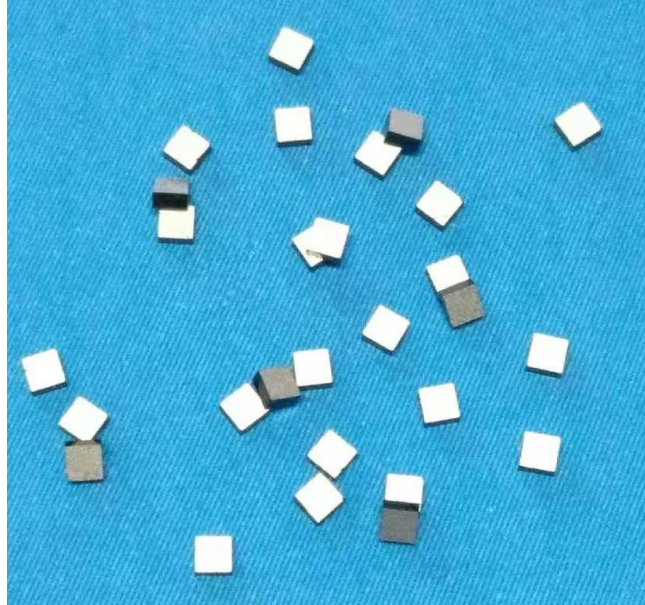


# High precision NTC thermistor Chip



## Notice

1. In order to improve this catalog, specifications may be changed without prior notice, please consult our sales representative or product engineer before ordering;
2. Due to the limitation of length, this catalog provides only the main product information.
3. We can produce any special specifications products according to customers' requests.

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## Description

Sintered from several kinds of metal oxides such as manganese, cobalt or nickel at high temperature, which is highly sensitive to temperature changes, it's the core functional component of all NTC temperature sensors.

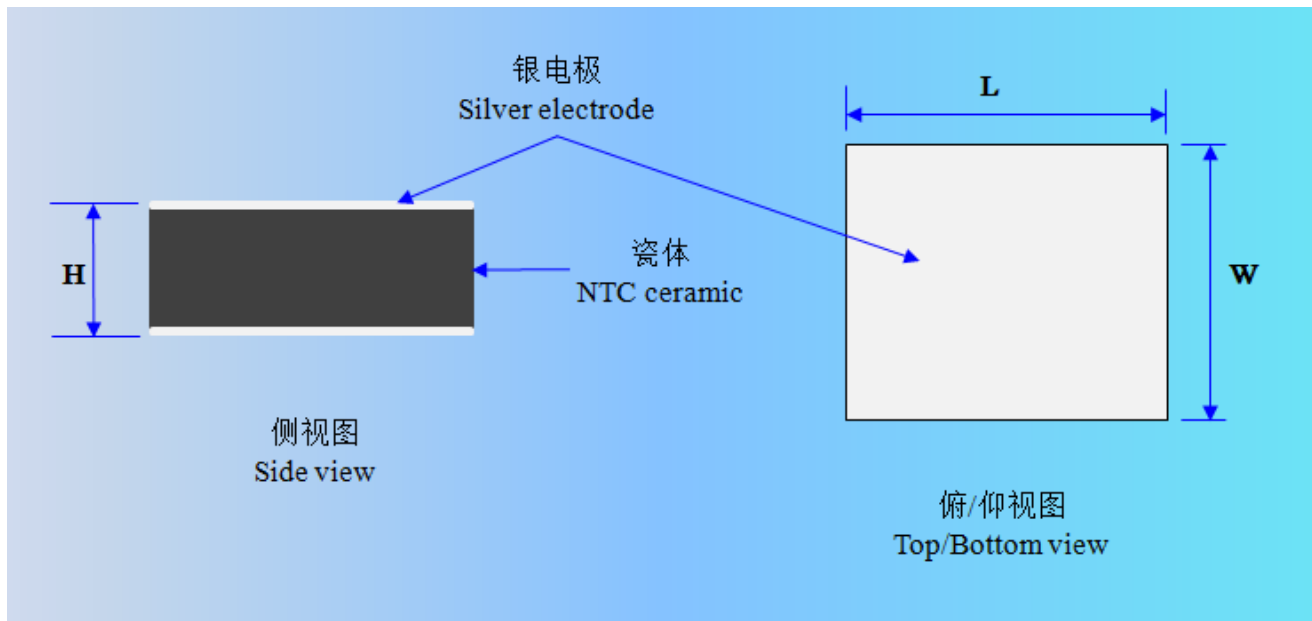
It is designed for high environmental reliability and wide temperature range of usage( $-40^{\circ}\text{C} \sim +125^{\circ}\text{C}$ ). It has excellent high temperature stability and can be applied to the manufacture of various kinds of NTC temperature sensors.

## Features

- $0.9 \times 0.9 \times 0.4$  &  $0.5 \times 0.5 \times 0.25$  standard size
- Excellent thermal stability
- Special specifications of products can be customized

### 1. Shape and Product Identification (Part Number)

#### 1.1 Shape



#### 1.2 Product Identification (Part Number)

CT    1    X    103    F    3435    F    A  
 ①    ②    ③    ④    ⑤    ⑥    ⑦    ⑧

① Type	
CT	Chip of temperature sensor

② Chip dimension code	
L×W×H (mm)	
1	0.45×0.45×0.2
2	0.5×0.5×0.25
3	0.7×0.7×0.35
4	0.9×0.9×0.4
5	1.0×1.0×0.5

③ Delimiter	
X	

④ Nominal Zero-Power Resistance at 25°C	
222	2.2kΩ
103	10kΩ
104	100kΩ

⑤ Tolerance of Resistance	
F	±1%
G	±2%
H	±3%
J	±5%

⑥ B Constant	
3435	3435K
3950	3950K
4250	4250K

⑦ Tolerance of B Constant	
F	±1%
H	±3%

⑧ B constant calculation method	
A	25°C & 85°C
B	25°C & 50°C

**2. Main Techno-Parameters (In static air)**

Part No	Resistance (25°C) (kΩ)	B Constant (25/50°C) (K)	B Constant (25/85°C) (K)	Dissipation (mW/°C)	Thermal Time Constant (s)	Operating Temperature (°C)
CT1X502□3380FB	5	3380±1%	3435	0.45	3	-40~125
CT1X502□3435FA	5	3380	3435±1%			
CT1X103□3380FB	10	3380±1%	3435			
CT1X103□3435FA	10	3380	3435±1%			
CT1X272□3935FB	2.7	3935±1%	3975			
CT1X272□3975FA	2.7	3935	3975±1%			
CT1X502□3935FB	5	3935±1%	3975			
CT1X502□3975FA	5	3935	3975±1%			
CT1X103□3935FB	10	3935±1%	3975			
CT1X103□3975FA	10	3935	3975±1%			
CT1X503□3935FB	50	3935±1%	3975			
CT1X503□3975FA	50	3935	3975±1%			
CT1X104□3935FB	100	3935±1%	3975			
CT1X104□3975FA	100	3935	3975±1%			
CT1X103□3950FB	10	3950±1%	3990			
CT1X103□3990FA	10	3950	3990±1%			
CT1X103□4050FB	10	4050±1%	4100			
CT1X103□4100FA	10	4050	4100±1%			
CT1X503□4050FB	50	4050±1%	4100			
CT1X503□4100FA	50	4050	4100±1%			
CT1X104□4050FB	100	4050±1%	4100			
CT1X104□4100FA	100	4050	4100±1%			
CT1X103□4150FB	10	4150±1%	4200			
CT1X103□4200FA	10	4150	4200±1%			
CT1X503□4150FB	50	4150±1%	4200			
CT1X503□4200FA	50	4150	4200±1%			
CT1X104□4150FB	100	4150±1%	4200			
CT1X104□4200FA	100	4150	4200±1%			
CT1X503□4250FB	50	4250±1%	4310			
CT1X503□4310FA	50	4250	4310±1%			
CT1X104□4250FB	100	4250±1%	4310			
CT1X104□4310FA	100	4250	4310±1%			
CT1X204□4250FB	200	4250±1%	4310			
CT1X204□4310FA	200	4250	4310±1%			
CT1X104□4500FB	100	4500±1%	4600			

CT1X104□4600FA	100	4500	4600±1%			
CT1X204□4500FB	200	4500±1%	4600			
CT1X204□4600FA	200	4500	4600±1%			
Part No	Resistance (25℃) (kΩ)	B Constant (25/50℃) (K)	B Constant (25/85℃) (K)	Dissipation (mW/℃)	Thermal Time Constant (s)	Operating Temperature (℃)
CT2X502□3380FB	5	3380±1%	3435	0.5	3	-40~125
CT2X502□3435FA	5	3380	3435±1%			
CT2X103□3380FB	10	3380±1%	3435			
CT2X103□3435FA	10	3380	3435±1%			
CT2X272□3935FB	2.7	3935±1%	3975			
CT2X272□3975FA	2.7	3935	3975±1%			
CT2X502□3935FB	5	3935±1%	3975			
CT2X502□3975FA	5	3935	3975±1%			
CT2X103□3935FB	10	3935±1%	3975			
CT2X103□3975FA	10	3935	3975±1%			
CT2X503□3935FB	50	3935±1%	3975			
CT2X503□3975FA	50	3935	3975±1%			
CT2X104□3935FB	100	3935±1%	3975			
CT2X104□3975FA	100	3935	3975±1%			
CT2X103□3950FB	10	3950±1%	3990			
CT2X103□3990FA	10	3950	3990±1%			
CT2X103□4050FB	10	4050±1%	4100			
CT2X103□4100FA	10	4050	4100±1%			
CT2X503□4050FB	50	4050±1%	4100			
CT2X503□4100FA	50	4050	4100±1%			
CT2X104□4050FB	100	4050±1%	4100			
CT2X104□4100FA	100	4050	4100±1%			
CT2X103□4150FB	10	4150±1%	4200			
CT2X103□4200FA	10	4150	4200±1%			
CT2X503□4150FB	50	4150±1%	4200			
CT2X503□4200FA	50	4150	4200±1%			
CT2X104□4150FB	100	4150±1%	4200			
CT2X104□4200FA	100	4150	4200±1%			
CT2X503□4250FB	50	4250±1%	4310			
CT2X503□4310FA	50	4250	4310±1%			
CT2X104□4250FB	100	4250±1%	4310			
CT2X104□4310FA	100	4250	4310±1%			
CT2X204□4250FB	200	4250±1%	4310			
CT2X204□4310FA	200	4250	4310±1%			
CT2X104□4500FB	100	4500±1%	4600			
CT2X104□4600FA	100	4500	4600±1%			

CT2X204□4500FB	200	4500±1%	4600			
CT2X204□4600FA	200	4500	4600±1%			
Part No	Resistance (25℃) (kΩ)	B Constant (25/50℃) (K)	B Constant (25/85℃) (K)	Dissipation (mW/℃)	Thermal Time Constant (s)	Operating Temperatur e (℃)
CT3X502□3380FB	5	3380±1%	3435	0.7	4	-40~125
CT3X502□3435FA	5	3380	3435±1%			
CT3X103□3380FB	10	3380±1%	3435			
CT3X103□3435FA	10	3380	3435±1%			
CT3X272□3935FB	2.7	3935±1%	3975			
CT3X272□3975FA	2.7	3935	3975±1%			
CT3X502□3935FB	5	3935±1%	3975			
CT3X502□3975FA	5	3935	3975±1%			
CT3X103□3935FB	10	3935±1%	3975			
CT3X103□3975FA	10	3935	3975±1%			
CT3X503□3935FB	50	3935±1%	3975			
CT3X503□3975FA	50	3935	3975±1%			
CT3X104□3935FB	100	3935±1%	3975			
CT3X104□3975FA	100	3935	3975±1%			
CT3X103□3950FB	10	3950±1%	3990			
CT3X103□3990FA	10	3950	3990±1%			
CT3X103□4050FB	10	4050±1%	4100			
CT3X103□4100FA	10	4050	4100±1%			
CT3X503□4050FB	50	4050±1%	4100			
CT3X503□4100FA	50	4050	4100±1%			
CT3X104□4050FB	100	4050±1%	4100			
CT3X104□4100FA	100	4050	4100±1%			
CT3X103□4150FB	10	4150±1%	4200			
CT3X103□4200FA	10	4150	4200±1%			
CT3X503□4150FB	50	4150±1%	4200			
CT3X503□4200FA	50	4150	4200±1%			
CT3X104□4150FB	100	4150±1%	4200			
CT3X104□4200FA	100	4150	4200±1%			
CT3X503□4250FB	50	4250±1%	4310			
CT3X503□4310FA	50	4250	4310±1%			
CT3X104□4250FB	100	4250±1%	4310			
CT3X104□4310FA	100	4250	4310±1%			
CT3X204□4250FB	200	4250±1%	4310			
CT3X204□4310FA	200	4250	4310±1%			
CT3X104□4500FB	100	4500±1%	4600			
CT3X104□4600FA	100	4500	4600±1%			
CT3X204□4500FB	200	4500±1%	4600			

CT3X204□4600FA	200	4500	4600±1%			
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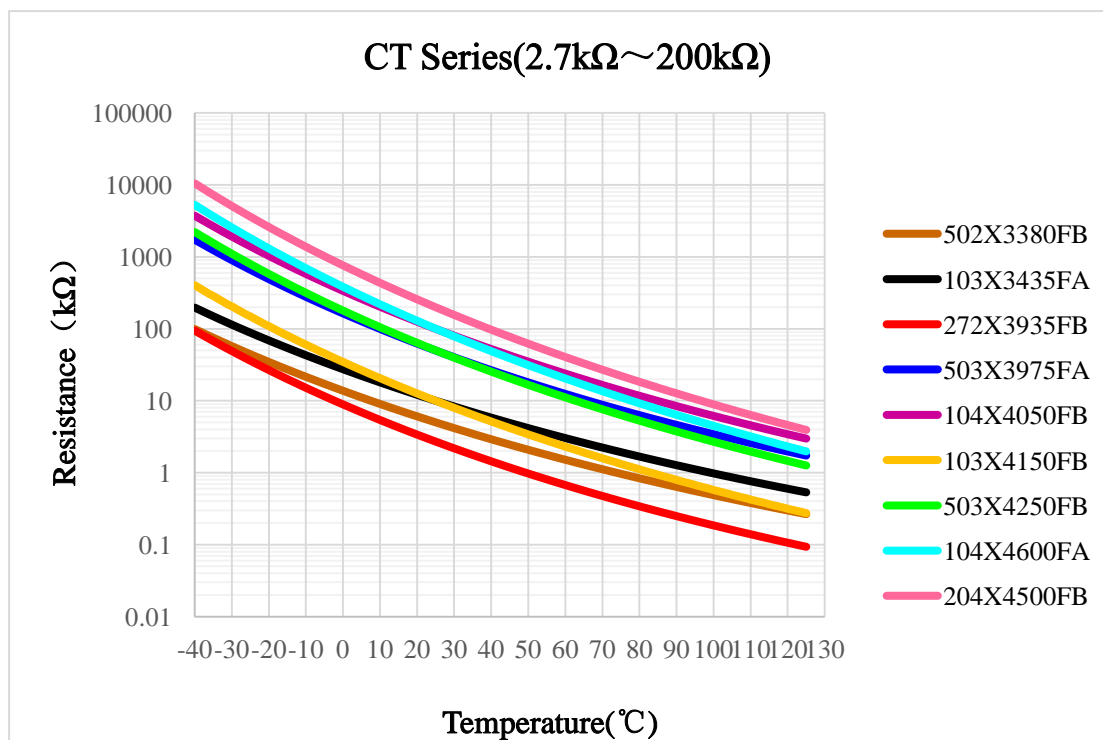
Part No	Resistance (25℃) (kΩ)	B Constant (25/50℃) (K)	B Constant (25/85℃) (K)	Dissipation (mW/℃)	Thermal Time Constant (s)	Operating Temperatu re (℃)
CT4X502□3380FB	5	3380±1%	3435	0.9	5	-40~125
CT4X502□3435FA	5	3380	3435±1%			
CT4X103□3380FB	10	3380±1%	3435			
CT4X103□3435FA	10	3380	3435±1%			
CT4X272□3935FB	2.7	3935±1%	3975			
CT4X272□3975FA	2.7	3935	3975±1%			
CT4X502□3935FB	5	3935±1%	3975			
CT4X502□3975FA	5	3935	3975±1%			
CT4X103□3935FB	10	3935±1%	3975			
CT4X103□3975FA	10	3935	3975±1%			
CT4X503□3935FB	50	3935±1%	3975			
CT4X503□3975FA	50	3935	3975±1%			
CT4X104□3935FB	100	3935±1%	3975			
CT4X104□3975FA	100	3935	3975±1%			
CT4X103□3950FB	10	3950±1%	3990			
CT4X103□3990FA	10	3950	3990±1%			
CT4X103□4050FB	10	4050±1%	4100			
CT4X103□4100FA	10	4050	4100±1%			
CT4X503□4050FB	50	4050±1%	4100			
CT4X503□4100FA	50	4050	4100±1%			
CT4X104□4050FB	100	4050±1%	4100			
CT4X104□4100FA	100	4050	4100±1%			
CT4X103□4150FB	10	4150±1%	4200			
CT4X103□4200FA	10	4150	4200±1%			
CT4X503□4150FB	50	4150±1%	4200			
CT4X503□4200FA	50	4150	4200±1%			
CT4X104□4150FB	100	4150±1%	4200			
CT4X104□4200FA	100	4150	4200±1%			
CT4X503□4250FB	50	4250±1%	4310			
CT4X503□4310FA	50	4250	4310±1%			
CT4X104□4250FB	100	4250±1%	4310			
CT4X104□4310FA	100	4250	4310±1%			
CT4X204□4250FB	200	4250±1%	4310			
CT4X204□4310FA	200	4250	4310±1%			
CT4X104□4500FB	100	4500±1%	4600			
CT4X104□4600FA	100	4500	4600±1%			
CT4X204□4500FB	200	4500±1%	4600			



CT4X204□4600FA	200	4500	4600±1%			
Part No	Resistance (25°C) (kΩ)	B Constant (25/50°C) (K)	B Constant (25/85°C) (K)	Dissipation (mW/°C)	Thermal Time Constant (s)	Operating Temperatu re (°C)
CT5X502□3380FB	5	3380±1%	3435	1.0	5	-40~125
CT5X502□3435FA	5	3380	3435±1%			
CT5X103□3380FB	10	3380±1%	3435			
CT5X103□3435FA	10	3380	3435±1%			
CT5X272□3935FB	2.7	3935±1%	3975			
CT5X272□3975FA	2.7	3935	3975±1%			
CT5X502□3935FB	5	3935±1%	3975			
CT5X502□3975FA	5	3935	3975±1%			
CT5X103□3935FB	10	3935±1%	3975			
CT5X103□3975FA	10	3935	3975±1%			
CT5X503□3935FB	50	3935±1%	3975			
CT5X503□3975FA	50	3935	3975±1%			
CT5X104□3935FB	100	3935±1%	3975			
CT5X104□3975FA	100	3935	3975±1%			
CT5X103□3950FB	10	3950±1%	3990			
CT5X103□3990FA	10	3950	3990±1%			
CT5X103□4050FB	10	4050±1%	4100			
CT5X103□4100FA	10	4050	4100±1%			
CT5X503□4050FB	50	4050±1%	4100			
CT5X503□4100FA	50	4050	4100±1%			
CT5X104□4050FB	100	4050±1%	4100			
CT5X104□4100FA	100	4050	4100±1%			
CT5X103□4150FB	10	4150±1%	4200			
CT5X103□4200FA	10	4150	4200±1%			
CT5X503□4150FB	50	4150±1%	4200			
CT5X503□4200FA	50	4150	4200±1%			
CT5X104□4150FB	100	4150±1%	4200			
CT5X104□4200FA	100	4150	4200±1%			
CT5X503□4250FB	50	4250±1%	4310			
CT5X503□4310FA	50	4250	4310±1%			
CT5X104□4250FB	100	4250±1%	4310			
CT5X104□4310FA	100	4250	4310±1%			
CT5X204□4250FB	200	4250±1%	4310			
CT5X204□4310FA	200	4250	4310±1%			
CT5X104□4500FB	100	4500±1%	4600			
CT5X104□4600FA	100	4500	4600±1%			
CT5X204□4500FB	200	4500±1%	4600			
CT5X204□4600FA	200	4500	4600±1%			

- We can produce special specifications products according to customer's requests.
- Please specify Resistance Tolerance (F=±1%, G=±2%, H=±3%, J=±5%)

### 3. R-T Characteristic Curves



### 4. Reliability Test

Items	Standard	Test Methods	Criteria
Dropping	IEC 60068-2-32	Drop a chip 10 times on a concrete floor from a height of 1 meter.	No visible damage.
Solderability	IEC 60068-2-58	① Solder temperature: 245±5°C. ② Duration: 3±0.3s. ③ Solder: Sn/3.0Ag/0.5Cu. ④ Flux: 25% Resin and 75% ethanol in weight.	① No visible damage. ② Wetting shall exceed 95% coverage.
Resistance to Soldering Heat	IEC 60068-2-58	① Solder temperature: 260±5°C. ② Duration: 10±1s. ③ Solder: Sn/3.0Ag/0.5Cu. ④ Flux: 25% Resin and 75% ethanol in weight. ⑤ The chip shall be stabilized at normal condition for 1~2 hours before measuring.	① No visible damage. ② R25 variation: within ±3% ③ B constant variation: within ±2%

Temperature cycling	IEC 60068-2-14	① 5 cycles of following sequence without loading. <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-40±5℃</td> <td>30±3min</td> </tr> <tr> <td>2</td> <td>25±2℃</td> <td>5±3min</td> </tr> <tr> <td>3</td> <td>125±2℃</td> <td>30±3min</td> </tr> <tr> <td>4</td> <td>25±2℃</td> <td>5±3min</td> </tr> </tbody> </table> ② The chip shall be stabilized at normal condition for 1~2 hours before measuring.	Step	Temperature	Time	1	-40±5℃	30±3min	2	25±2℃	5±3min	3	125±2℃	30±3min	4	25±2℃	5±3min	
Step	Temperature	Time																
1	-40±5℃	30±3min																
2	25±2℃	5±3min																
3	125±2℃	30±3min																
4	25±2℃	5±3min																
Resistance to dry heat	IEC 60068-2-2	① 125±5℃ in air, for 1000±24 hours without loading. ② The chip shall be stabilized at normal condition for 1~2 hours before measuring.																
Resistance to cold	IEC 60068-2-1	① -40±3℃ in air, for 1000±24 hours without loading. ② The chip shall be stabilized at normal condition for 1~2 hours before measuring.	① No visible damage. ② R25 variation: within ±5% ③ B constant variation: within ±2%															
Resistance to damp heat	IEC 60068-2-78	① 40±2℃, 90~95%RH in air, for 1000±24 hours without loading. ② The chip shall be stabilized at normal condition for 1~2 hours before measuring.																

## 5. Packaging and Storage

### a) Packaging

Packaging way: Bulk Packing

Packaging Quantity: 500pcs/bag

### b) Storage

Storage Conditions

- a. Storage temperature: 20±15℃
- b. Relative humidity: ≤75%RH
- c. Keep away from corrosive atmosphere and sunlight.

Period of Storage: Half a year

## 6. Recommended Soldering Technologies

Solder paste: Sn96% Ag4%

Soldering way: Dip soldering

Soldering temperature: 280°C ~ 290°C

Soldering time:  $\leq 0.5\text{s}$