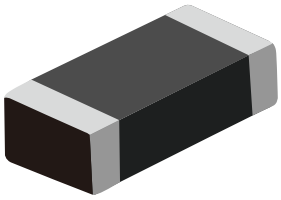
FEATURES

- Small size, large power, strong capacity of suppression of inrush current
- Fast response
- Large material constant(B value), small residual resistance
- Long service life and high reliability
- Complete series, wide applications



0402

APPLICATIONS

- Switching power-supply,switch power, ups power
- Monitor, Sps, Fax, Telecom, Adaptor etc.
- All kinds of RT, display
- Bulb and other lighting lamps

APPROVALS

RoHS	Compliance with 2011/65/EU
HF	Compliance with IEC61249-2-21:2003

PRODUCT IDENTIFICATION(PART NUMBER)

SND	—	CMFD	103	F	3435	F	A
①	②	③	④	⑤	⑥	⑦	⑧

①Code		②Type		③External Dimensions (L×W×T)(mm)		④Nominal Zero-Power Resistance	
SND	Logo	-	Delimiter	0402[CMFD]	1.00×0.50×0.50	472	4.7kΩ
				0603[CMFA]	1.60×0.80×0.80	103	10kΩ
				0805[CMFB]	2.00×1.25×0.85	154	150kΩ
				1206[CMFC]	3.20×1.60×0.85	474	470kΩ

⑤Tolerance of Resistance		⑥B Constant		⑦Tolerance of B Constant		⑧B constant calculation method	
F	±1%	3380	3380K	F	±1%	A	25°C&85°C
G	±2%	3435	3435K	H	±3%	B	25°C&50°C
H	±3%	3950	3950K				
J	±5%	4050	4050K				

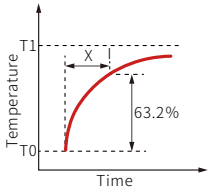
ELECTRICAL CHARACTERISTICS

Part Number	Resistance (25°C) (kΩ)	B Constant (25/50°C) (K)	Permissible Operating Current (25°C) (mA)	Dissipation Factor (mW/°C)	Thermal Time Constant (s)	Rated Electric Power(25°C) (mW)	Operating ambient temperature (°C)
SND-CMFD103F3435FA	10±1%	3435±1%	0.31	1.0	＜3	100	-40～+125

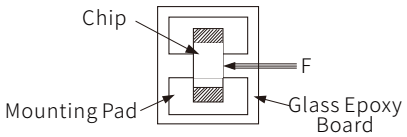
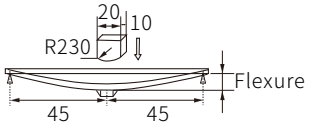
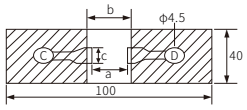
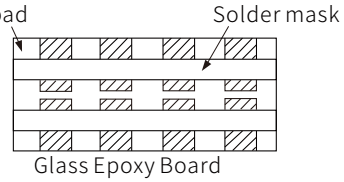
TEST AND MEASUREMENT PROCEDURES

Test Conditions	Inspection Equipment
Unless otherwise specified, the standard atmospheric conditions for measurement/test as: a. Ambient Temperature: 20±15°C b. Relative Humidity: 65±20% c. Air Pressure: 86kPa to 106kPa	Visual Examination: 20×magnifier Resistance value test: Thermistor resistance tester
If any doubt on the results, measurements/tests should be made within the following limits: a. Ambient Temperature: 25±2°C b. Relative Humidity: 65±5% c. Air Pressure: 86kPa to 106kPa	

ELECTRICAL TEST

No.	Items	Test Methods and Remarks
1	Nominal Zero-Power Resistance at 25°C(R25)	Ambient temperature：25±0.05°C Measuring electric power：≤0.1mW
2	Nominal B Constant	Measure the resistance at the ambient temperature of 25±0.05°C, 50±0.05°C or,85±0.05°C. $B(25\text{-}50°C)=\frac{\ln R_{25}-\ln R_{50}}{1/T_{25}-1/T_{50}}$ $B(25\text{-}85°C)=\frac{\ln R_{25}-\ln R_{85}}{1/T_{25}-1/T_{85}}$ T: Absolute temperature (K)
3	Thermal Time Constant	The total time for the temperature of the thermistor to change by 63.2% of the difference from ambient temperature T0 (°C) to T1 (°C) by the drastic change of the power applied to thermistor from Non-zero Power to Zero-Power state, normally expressed in second(S). 
4	Dissipation Factor	The required power which makes the NTC thermistor body temperature raise 1°C through self-heated, normally expressed in milliwatts per degree Celsius (mW/°C). It can be calculated by the following formula: $\delta=\frac{W}{T-T_0}$
5	Rated Power	The necessary electric power makes thermistor’ s temperature rise 100°C by self-heating at ambient temperature 25°C
6	Permissible operating current	The current that keep body temperature of chip NTC on the PC board in still air rising 1°C by self-heating.

RELIABILITY TEST

Items	Standard	Test Methods and Remarks	Requirements
Terminal Strength	IEC 60068-2-21	Solder the chip to the testing jig (glass epoxy board shown in the right) using eutectic solder. Then apply a force in the direction of the arrow. Size / F / Duration: 0201,0402,0603 / 5N / 10±1s; 0805 / 10N / 10±1s	No removal or split of the termination or other defects shall occur. 
Resistance to Flexure	IEC 60068-2-21	Solder the chip to the test jig (glass epoxy board shown in the right) using a eutectic solder. Then apply a force in the direction shown as follow;  Size / Flexure / Pressurizing Speed / Duration: 0201 / 1mm / <0.5mm/s / 10±1s; 0402,0603,0805 / 2mm	① No visible damage ②	ΔR25/R25	⩽5% Type / a / b / c: 0201 / 0.25 / 0.3 / 0.3; 0402 / 0.4 / 1.5 / 0.5; 0603 / 1.0 / 3.0 / 1.2; 0805 / 1.2 / 4.0 / 1.65 
Vibration	IEC 60068-2-80	①Solder the chip to the testing jig (glass epoxy board shown in theleft) using eutectic solder ②The chip shall be subjected to a simple harmonic motion having total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55 Hz ③The frequency ranges from 10 to 55 Hz and return to 10 Hz shall be traversed in approximately 1 minute. This motion shall be applied for a period of 2 hours in each 3mutually perpendicular directions (total of 6 hours).	No visible damage 
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	①Solder temperature: 245±5°C ②Duration: 3±0.3s ③Solder: Sn/3.0Ag/0.5Cu. ④25% Resin and 75% ethanol in weight	①No visible damage. ②Wetting shall exceed 95% coverage.
Resistance to Soldering Heat	IEC 60068-2-58	①Solder temperature: 260±5°C ②Duration: 10±1s ③Solder: Sn/3.0Ag/0.5Cu. ④25% Resin and 75% ethanol in weight ⑤The chip shall be stabilized at normal condition for 1~2 hours before measuring.	①No visible damage ②	ΔR25/R25	⩽5% ③	ΔB/B	⩽2%
Temperature cycling	IEC 60068-2-14	5 cycles of following sequence without loading Step / Temperature / Time: 1 / -40±5°C / 30±3min; 2 / 25±2°C / 5±3min; 3 / 125±2°C / 30±3min; 4 / 25±2°C / 5±3min The chip shall be stabilized at normal condition for 1~2 hours before measuring	①No visible damage ②	ΔR25/R25	⩽3% ③	ΔB/B	⩽2%
Resistance to dry heat	IEC 60068-2-2	①125±5°C in air, for 1000±24 hours without loading. ②The chip shall be stabilized at normal condition for 1~2 hours before measuring	①No visible damage ②	ΔR25/R25	⩽5% ③	ΔB/B	⩽2%

Items	Standard	Test Methods and Remarks	Requirements
Resistance to cold	IEC 60068-2-1	①-40±3℃ in air, for 1000±24 hours without loading. ②The chip shall be stabilized at normal condition for 1~2 hours before measuring.	①No visible damage ②	ΔR25/R25	⩽5% ③	ΔB/B	⩽2%
Resistance to damp heat	IEC 60068-2-78	①40±2℃, 90~95%RH in air, for 1000±24 hours without loading. ②The chip shall be stabilized at normal condition for 1~2 hours before measuring	①No visible damage ②	ΔR25/R25	⩽3% ③	ΔB/B	⩽2%
Resistance to high temperature load	IEC 60539-1 5.25.4	①85±2℃in air with permissive operating current for 1000±48 hours ②The chip shall be stabilized at normal condition for 1~2 hours before measuring	①No visible damage ②	ΔR25/R25	⩽5% ③	ΔB/B	⩽2%

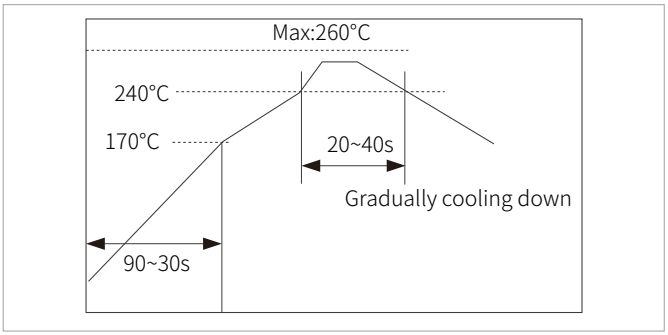
STORAGE

Storage Conditions	
a. Storage Temperature: -10℃~40℃	b. Relative Humidity: ⩽75%RH
c. Keep away from corrosive atmosphere and sunlight	
Period of Storage: 6 Months after delivery	

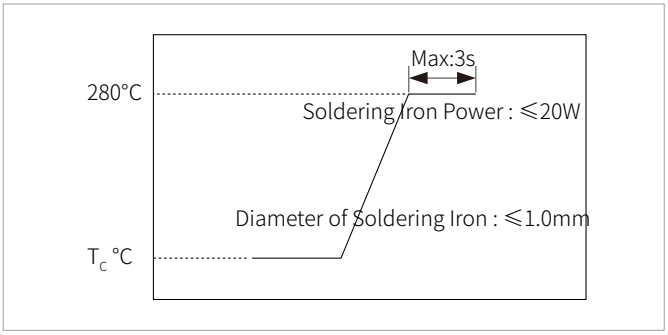
NOTES & WARNINGS

The SND series thermistors shall not be operated and stored under the following environmental condition:	
(1) Corrosive or deoxidized atmospheres (such as chlorine, sulfurated hydrogen, ammonia, sulfuric acid, nitric oxide and so on)	(2) Volatile or inflammable atmospheres
(3) Dusty condition	(4) Excessively high or low pressure condition
(5) Humid site	(6) Places with brine, oil, chemical liquid or organic solvent
(7) Intense vibration	(8) Places with analogously deleterious conditions
The ceramic body of the SND series thermistors is fragile, no excessive pressure or impact shall be exerted on it.	
The SND series thermistors shall not be operated beyond the specified “Operating Temperature Range” in the catalog.	

RECOMMENDED SOLDERING TECHNOLOGIES



Re-flowing Profile
1~2°C/sec. Ramp
Pre-heating: 150~170°C/90±30 sec.
Time above 240°C: 20~40 sec.
Peak temperature: 260°CMax./10 sec.
Solder paste: Sn/3.0Ag/0.5Cu
Max.2 times for re-flowing



Iron Soldering Profile
Iron soldering power: Max.20W
Pre-heating: 150°C/60sec.
Soldering Tip temperature: 280°CMax.
Soldering time: 3 sec Max.
Solder paste: Sn/3.0Ag/0.5Cu
Max.1 times for iron soldering

Note: Take care not to apply the tip of the soldering iron to the terminal electrodes

CHARACTERISTIC CURVES

Fig.1 0402 Series（0.022kΩ-3.3kΩ）

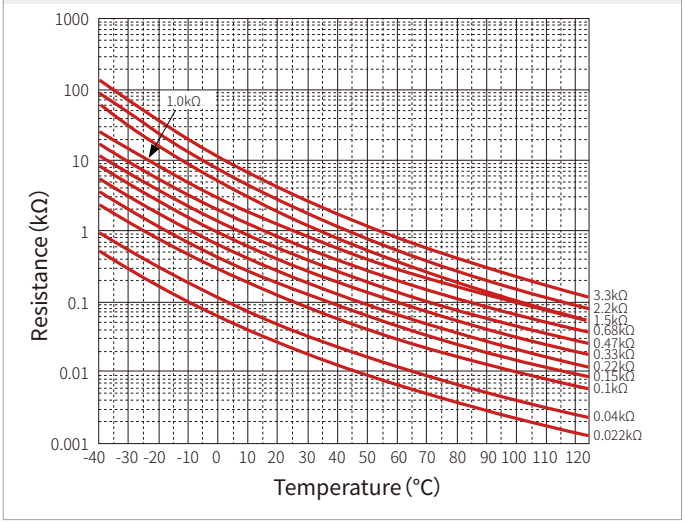
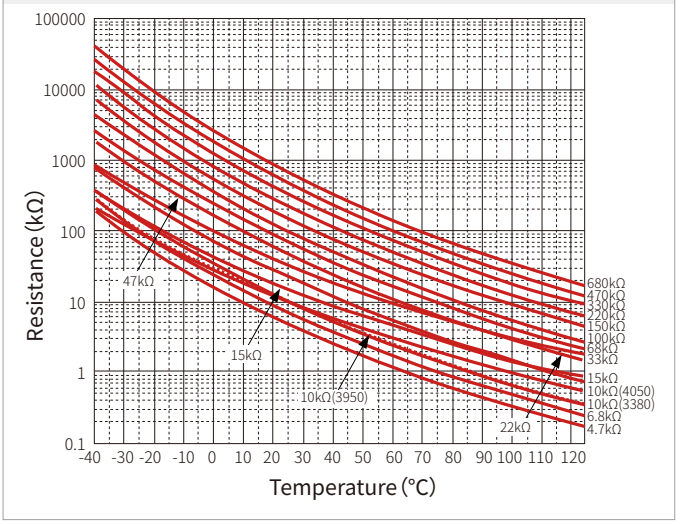
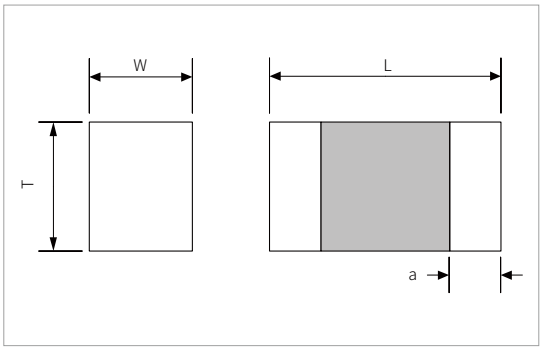


Fig.2 0402 Series（4.7kΩ-680kΩ）

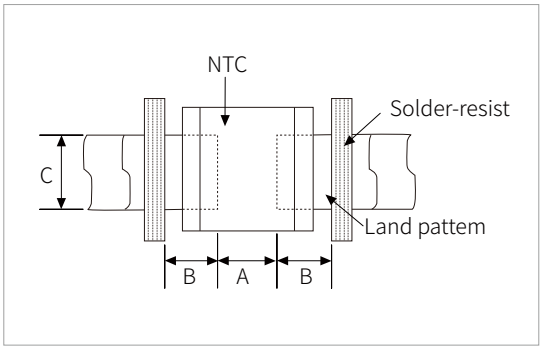


DIMENSION SPECIFICATION



Size	L(mm)	W(mm)	T(mm)	a(mm)
0402	0.039±0.006	0.020±0.006	0.020±0.006	0.010±0.004
[1005]	[1.0±0.15]	[0.5±0.15]	[0.5±0.15]	[0.25±0.1]

DIMENSION SPECIFICATION



A(mm)	B(mm)	C(mm)
[0.45-0.55]	[0.4-0.5]	[0.45-0.55]

TAPING

Type	0201	0402	0603	0805
Tape thickness(mm)	0.5±0.15	0.5±0.15	0.8±0.15	0.85±0.2
Tape material	Paper Tape			
Quantity per Reel	15K	10K	4K	4K

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