

FEATURES 特征

- Small in size, suitable for high-density surface mount technology.
体积小, 适合高密度表面贴装。
- Excellent solderability and high heat resistance.
良好的可焊性和耐焊性。
- The ceramic body surface is encapsulated with glass, featuring excellent moisture resistance and high reliability.
瓷体表面采用玻璃包封, 耐潮湿性能好, 高可靠性。
- Operating Temp : -40°C~+125°C(Including self heating)
工作温度范围:-40~+125°C(包括自身温度上升)
- High-precision resistance value and B-value constant.
高精度的电阻值和B值常数。



APPLICATIONS 用途

- Temperature sensing for rechargeable batteries in devices such as mobile phones, car phones, laptop computers, and smart wearable devices.
手机、汽车电话、笔记本电脑、智能穿戴设备等设备充电电池的温度传感。
- Temperature compensation for transistors, ICs, and crystal oscillators in mobile communication equipment.
移动通信设备的晶体管、IC和晶体振荡器的温度补偿。
- electronic thermometers, electronic perpetual calendars, temperature displays of electronic clocks, electronic gifts, etc.
电子温度计、电子万年历、电子钟温度显示、电子礼品等

PART NUMBERING 产品型号

ANTC	1608	-	103	F	3435	F	B
①	②		③	④	⑤	⑥	⑦

① Series Name	
ANTC	Chip NTC Thermistor

③ Nominal Zero-Power Resistance at 25°C	
Code (example)	Resistance [KΩ]
103	10
474	470

④ Tolerance of Resistance	
D	±0.5%
F	±1%
H	±3%
J	±5%

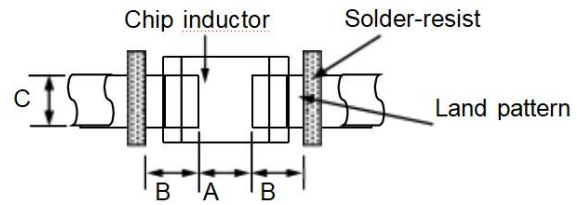
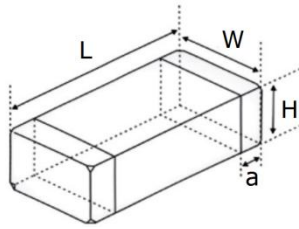
⑦ B Constant Calculation Method	
A	25°C&85°C
B	25°C&50°C

② External Dimensions [inch]	(L×W) (mm)
0603 [0201]	0.6×0.3
1005 [0402]	1.0×0.5
1608 [0603]	1.6×0.8
2012 [0805]	2.0×1.2
3216 [1206]	3.2×1.6

⑤ B Constant	
3435	3435K
3950	3950K
4250	4250K

⑥ Tolerance of B Constant	
D	±0.5%
E	±0.7%
F	±1%
H	±3%

■ DIMENSIONS & RECOMMENDED LAND PATTERN 尺寸及推荐焊盘



Unit: mm [inch]

Dimensions					Recommended Land Pattern		
Series	L	W	H	a	A	B	C
ANTC0603 [0201]	0.6±0.05 [0.024±0.002]	0.3±0.05 [0.012±0.002]	0.3±0.05 [0.012±0.002]	0.15±0.05 [0.006±0.002]	0.25	0.3	0.3
ANTC1005 [0402]	1.0±0.15 [0.039±0.006]	0.5±0.15 [0.020±0.006]	0.5±0.15 [0.020±0.006]	0.25±0.1 [0.010±0.004]	0.4	0.4-0.5	0.5
ANTC1608 [0603]	1.6±0.15 [0.063±0.006]	0.8±0.15 [0.031±0.006]	0.8±0.15 [0.031±0.006]	0.4±0.2 [0.016±0.008]	0.6-0.8	0.6-0.7	0.6-0.8
ANTC2012 [0805]	2.0±0.2 [0.079±0.008]	1.25±0.2 [0.049±0.008]	0.85±0.2 [0.033±0.008]	0.5±0.3 [0.020±0.012]	0.9-1.2	0.7-0.9	0.9-1.2
ANTC3216 [1206]	3.2±0.2 [0.126±0.008]	1.60±0.2 [0.063±0.008]	0.85±0.2 [0.033±0.008]	0.5±0.3 [0.020±0.012]	1.8-2.5	1.2-1.8	1.5-2.0

■ ELECTRICAL CHARACTERISTICS 特性规格表

● ANTC0603 Series

Part No	Resistance (25℃) (kΩ)	B Constant (25/50℃) (K)	B Constant (25/85℃) (K)	Permissible Operating Current (25℃)(mA)	Rated Electric Power(25℃) (mW)	Dissipation Factor (mW/℃)	Thermal Time Constant (s)
ANTC0603-103□3380FB	10	3380	3435	0.31	100	1	<3
ANTC0603-223□3380FB	22	3380	3435	0.21	100	1	<3
ANTC0603-473□4050FB	47	4050	4110	0.14	100	1	<3
ANTC0603-683□4150FB	68	4150	4210	0.12	100	1	<3
ANTC0603-104□4250FB	100	4250	4310	0.1	100	1	<3
ANTC0603-474□3950FB	470	3950	4010	0.04	100	1	<3
ANTC0603-474□4050FA	470	3990	4050	0.04	100	1	<3

● ANTC1005 Series

Part No	Resistance (25℃) (kΩ)	B Constant (25/50℃) (K)	B Constant (25/85℃) (K)	Permissible Operating Current (25℃)(mA)	Rated Electric Power(25℃) (mW)	Dissipation Factor (mW/℃)	Thermal Time Constant (s)
ANTC1005-472□3380FB	4.7	3380	3435	0.46	100	1	<3
ANTC1005-472□3500FB	4.7	3500	3545	0.46	100	1	<3
ANTC1005-502□3380FB	5	3380	3435	0.44	100	1	<3
ANTC1005-502□3500FB	5	3500	3545	0.44	100	1	<3
ANTC1005-682□3600FB	6.8	3600	3660	0.38	100	1	<3
ANTC1005-103□3380FB	10	3380	3435	0.31	100	1	<3
ANTC1005-103□3450FB	10	3450	3500	0.31	100	1	<3
ANTC1005-103□3900FB	10	3900	3935	0.31	100	1	<3
ANTC1005-103□3950FB	10	3950	3990	0.31	100	1	<3

Specifications subject to change without notice. Please check our website for latest information.

ELECTRICAL CHARACTERISTICS 特性规格表

● ANTC1005 Series

Part No	Resistance (25℃) (kΩ)	B Constant (25/50℃) (K)	B Constant (25/85℃) (K)	Permissible Operating Current (25℃)(mA)	Rated Electric Power(25℃) (mW)	Dissipation Factor (mW/℃)	Thermal Time Constant (s)
ANTC1005-153□3950FB	15	3950	3990	0.25	100	1	<3
ANTC1005-203□3950FB	20	3950	3990	0.21	100	1	<3
ANTC1005-223□3950FB	22	3950	3990	0.21	100	1	<3
ANTC1005-223□4050FB	22	4050	4110	0.21	100	1	<3
ANTC1005-303□3950FB	30	3950	3990	0.17	100	1	<3
ANTC1005-303□4050FB	30	4050	4110	0.17	100	1	<3
ANTC1005-333□3950FB	33	3950	3990	0.17	100	1	<3
ANTC1005-333□4050FB	33	4050	4110	0.17	100	1	<3
ANTC1005-473□3380FB	47	3380	3435	0.14	100	1	<3
ANTC1005-473□3950FB	47	3950	3990	0.14	100	1	<3
ANTC1005-473□4050FB	47	4050	4110	0.14	100	1	<3
ANTC1005-493□3380FB	49	3380	3435	0.14	100	1	<3
ANTC1005-493□3937FB	49	3937	3980	0.14	100	1	<3
ANTC1005-493□3950FB	49	3950	3990	0.14	100	1	<3
ANTC1005-503□3380FB	50	3380	3435	0.14	100	1	<3
ANTC1005-503□3937FB	50	3937	3980	0.14	100	1	<3
ANTC1005-503□3950FB	50	3950	3990	0.14	100	1	<3
ANTC1005-503□4050FB	50	4050	4110	0.14	100	1	<3
ANTC1005-563□3380FB	56	3380	3435	0.13	100	1	<3
ANTC1005-563□3450FB	56	3450	3500	0.13	100	1	<3
ANTC1005-683□3380FB	68	3380	3435	0.12	100	1	<3
ANTC1005-683□3450FB	68	3450	3500	0.12	100	1	<3
ANTC1005-683□4000FB	68	4000	4060	0.12	100	1	<3
ANTC1005-683□4150FB	68	4150	4210	0.12	100	1	<3
ANTC1005-104□3380FB	100	3380	3435	0.1	100	1	<3
ANTC1005-104□3950FB	100	3950	4010	0.1	100	1	<3
ANTC1005-104□3975FA	100	3935	3975	0.1	100	1	<3
ANTC1005-104□4050FB	100	4050	4110	0.1	100	1	<3
ANTC1005-104□4100FB	100	4100	4160	0.1	100	1	<3
ANTC1005-104□4150FB	100	4150	4210	0.1	100	1	<3
ANTC1005-104□4250FB	100	4250	4310	0.1	100	1	<3
ANTC1005-104□4360FB	100	4360	4375	0.1	100	1	<3
ANTC1005-104□4485FB	100	4485	4500	0.1	100	1	<3
ANTC1005-154□3950FB	150	3950	4010	0.08	100	1	<3
ANTC1005-154□4250FB	150	4250	4310	0.08	100	1	<3
ANTC1005-154□4500FB	150	4500	4510	0.08	100	1	<3
ANTC1005-204□3950FB	200	3950	4010	0.07	100	1	<3
ANTC1005-204□4250FB	200	4250	4310	0.07	100	1	<3
ANTC1005-224□3950FB	220	3950	4010	0.06	100	1	<3
ANTC1005-224□4250FB	220	4250	4310	0.06	100	1	<3

ELECTRICAL CHARACTERISTICS 特性规格表

● ANTC1005 Series

Part No	Resistance (25℃) (kΩ)	B Constant (25/50℃) (K)	B Constant (25/85℃) (K)	Permissible Operating Current (25℃)(mA)	Rated Electric Power(25℃) (mW)	Dissipation Factor (mW/℃)	Thermal Time Constant (s)
ANTC1005-224□4500FB	220	4500	4510	0.06	100	1	<3
ANTC1005-224□4700FB	220	4700	4715	0.06	100	1	<3
ANTC1005-334□3950FB	330	3950	4010	0.05	100	1	<3
ANTC1005-334□4500FB	330	4500	4510	0.05	100	1	<3
ANTC1005-474□3950FB	470	3950	4010	0.04	100	1	<3
ANTC1005-474□4050FA	470	3990	4050	0.04	100	1	<3
ANTC1005-474□4100FB	470	4100	4160	0.04	100	1	<3
ANTC1005-474□4500FB	470	4500	4510	0.04	100	1	<3
ANTC1005-474□4700FA	470	4685	4700	0.04	100	1	<3
ANTC1005-684□4050FA	680	3990	4050	0.03	100	1	<3
ANTC1005-684□4500FB	680	4500	4510	0.03	100	1	<3
ANTC1005-135□4500FB	1300	4500	4510	0.02	100	1	<3

● ANTC1608 Series

Part No	Resistance (25℃) (kΩ)	B Constant (25/50℃) (K)	B Constant (25/85℃) (K)	Permissible Operating Current (25℃)(mA)	Rated Electric Power(25℃) (mW)	Dissipation Factor (mW/℃)	Thermal Time Constant (s)
ANTC1608-102□3250FB	1	3250	3280	1	100	1	<5
ANTC1608-202□3380FB	2	3380	3435	0.7	100	1	<5
ANTC1608-222□3380FB	2.2	3380	3435	0.67	100	1	<5
ANTC1608-332□3380FB	3.3	3380	3435	0.55	100	1	<5
ANTC1608-472□3435FA	4.7	3380	3435	0.46	100	1	<5
ANTC1608-472□3500FB	4.7	3500	3545	0.46	100	1	<5
ANTC1608-472□3600FB	4.7	3600	3660	0.46	100	1	<5
ANTC1608-502□3380FB	5	3380	3435	0.44	100	1	<5
ANTC1608-502□3500FB	5	3500	3545	0.44	100	1	<5
ANTC1608-502□3600FB	5	3600	3660	0.44	100	1	<5
ANTC1608-502□3950FB	5	3950	3990	0.44	100	1	<5
ANTC1608-682□3435FB	6.8	3435	3480	0.38	100	1	<5
ANTC1608-682□3500FB	6.8	3500	3545	0.38	100	1	<5
ANTC1608-682□3600FB	6.8	3600	3660	0.38	100	1	<5
ANTC1608-682□3950FB	6.8	3950	3990	0.38	100	1	<5
ANTC1608-682□4050FB	6.8	4050	4110	0.38	100	1	<5
ANTC1608-103□3380FB	10	3380	3435	0.31	100	1	<5
ANTC1608-103□3450FB	10	3450	3500	0.31	100	1	<5
ANTC1608-103□3500FB	10	3500	3545	0.31	100	1	<5
ANTC1608-103□3600FB	10	3600	3660	0.31	100	1	<5
ANTC1608-103□3610FA	10	3565	3610	0.31	100	1	<5
ANTC1608-103□3900FB	10	3900	3935	0.31	100	1	<5
ANTC1608-103□3950FB	10	3950	3990	0.31	100	1	<5
ANTC1608-103□4050FB	10	4050	4110	0.31	100	1	<5
ANTC1608-153□3950FB	15	3950	3990	0.25	100	1	<5

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ELECTRICAL CHARACTERISTICS 特性规格表

● ANTC1608 Series

Part No	Resistance (25℃) (kΩ)	B Constant (25/50℃) (K)	B Constant (25/85℃) (K)	Permissible Operating Current (25℃)(mA)	Rated Electric Power(25℃) (mW)	Dissipation Factor (mW/℃)	Thermal Time Constant (s)
ANTC1608-203□3950FB	20	3950	3990	0.22	100	1	<5
ANTC1608-223□3950FB	22	3950	3990	0.21	100	1	<5
ANTC1608-223□4050FB	22	4050	4110	0.21	100	1	<5
ANTC1608-303□3950FB	30	3950	3990	0.18	100	1	<5
ANTC1608-303□4050FB	30	4050	4110	0.18	100	1	<5
ANTC1608-333□3950FB	33	3950	3990	0.17	100	1	<5
ANTC1608-333□4050FB	33	4050	4110	0.17	100	1	<5
ANTC1608-473□3950FB	47	3950	3990	0.14	100	1	<5
ANTC1608-473□4050FB	47	4050	4110	0.14	100	1	<5
ANTC1608-493□3380FB	49	3380	3435	0.14	100	1	<5
ANTC1608-493□3937FB	49	3937	3980	0.14	100	1	<5
ANTC1608-493□3950FB	49	3950	3990	0.14	100	1	<5
ANTC1608-503□3380FB	50	3380	3435	0.14	100	1	<5
ANTC1608-503□3937FB	50	3937	3980	0.14	100	1	<5
ANTC1608-503□3950FB	50	3950	3990	0.14	100	1	<5
ANTC1608-503□4050FB	50	4050	4110	0.14	100	1	<5
ANTC1608-563□3380FB	56	3380	3435	0.13	100	1	<5
ANTC1608-563□3450FB	56	3450	3500	0.13	100	1	<5
ANTC1608-683□3380FB	68	3380	3435	0.12	100	1	<5
ANTC1608-683□3450FB	68	3450	3500	0.12	100	1	<5
ANTC1608-683□4000FB	68	4000	4060	0.12	100	1	<5
ANTC1608-683□4150FB	68	4150	4210	0.12	100	1	<5
ANTC1608-753□3950FB	75	3950	4010	0.11	100	1	<5
ANTC1608-753□4100FB	75	4100	4160	0.11	100	1	<5
ANTC1608-104□3380FB	100	3380	3435	0.1	100	1	<5
ANTC1608-104□3950FB	100	3950	4010	0.1	100	1	<5
ANTC1608-104□3975FA	100	3935	3975	0.1	100	1	<5
ANTC1608-104□4050FB	100	4050	4110	0.1	100	1	<5
ANTC1608-104□4100FB	100	4100	4160	0.1	100	1	<5
ANTC1608-104□4150FB	100	4150	4210	0.1	100	1	<5
ANTC1608-104□4250FB	100	4250	4310	0.1	100	1	<5
ANTC1608-104□4360FB	100	4360	4375	0.1	100	1	<5
ANTC1608-104□4485FB	100	4485	4500	0.1	100	1	<5
ANTC1608-114□3950FB	110	3950	4010	0.1	100	1	<5
ANTC1608-154□3950FB	150	3950	4010	0.08	100	1	<5
ANTC1608-154□4250FB	150	4250	4310	0.08	100	1	<5
ANTC1608-154□4500FB	150	4500	4510	0.08	100	1	<5
ANTC1608-204□3950FB	200	3950	4010	0.07	100	1	<5
ANTC1608-224□3950FB	220	3950	4010	0.06	100	1	<5
ANTC1608-224□4200FB	220	4200	4260	0.06	100	1	<5
ANTC1608-224□4500FB	220	4500	4510	0.06	100	1	<5

ELECTRICAL CHARACTERISTICS 特性规格表

● ANTC1608 Series

Part No	Resistance (25℃) (kΩ)	B Constant (25/50℃) (K)	B Constant (25/85℃) (K)	Permissible Operating Current (25℃)(mA)	Rated Electric Power(25℃) (mW)	Dissipation Factor (mW/℃)	Thermal Time Constant (s)
ANTC1608-224□4700FB	220	4700	4715	0.06	100	1	<5
ANTC1608-474□3950FB	470	3950	4050	0.04	100	1	<5
ANTC1608-474□4050FA	470	3950	4050	0.04	100	1	<5
ANTC1608-474□4100FB	470	4100	4160	0.04	100	1	<5
ANTC1608-474□4500FB	470	4500	4510	0.04	100	1	<5
ANTC1608-474□4700FA	470	4685	4700	0.04	100	1	<5
ANTC1608-564□4100FB	560	4100	4160	0.03	100	1	<5
ANTC1608-684□4050FA	680	3990	4050	0.03	100	1	<5
ANTC1608-684□4500FB	680	4500	4510	0.03	100	1	<5
ANTC1608-135□4500FB	1300	4500	4510	0.02	100	1	<5

● ANTC2012 Series

Part No	Resistance (25℃) (kΩ)	B Constant (25/50℃) (K)	B Constant (25/85℃) (K)	Permissible Operating Current (25℃)(mA)	Rated Electric Power(25℃) (mW)	Dissipation Factor (mW/℃)	Thermal Time Constant (s)
ANTC2012-202□3450FB	2	3450	3500	0.98	100	2	<5
ANTC2012-222□3380FB	2.2	3380	3435	0.95	100	2	<5
ANTC2012-222□3450FB	2.2	3450	3500	0.95	100	2	<5
ANTC2012-472□3380FB	4.7	3380	3435	0.65	100	2	<5
ANTC2012-472□3450FB	4.7	3450	3500	0.65	100	2	<5
ANTC2012-472□3500FB	4.7	3500	3545	0.65	100	2	<5
ANTC2012-472□3600FB	4.7	3600	3660	0.65	100	2	<5
ANTC2012-472□3950FB	4.7	3950	3990	0.65	100	2	<5
ANTC2012-502□3380FB	5	3380	3435	0.63	100	2	<5
ANTC2012-502□3500FB	5	3500	3545	0.63	100	2	<5
ANTC2012-502□3600FB	5	3600	3660	0.63	100	2	<5
ANTC2012-502□3950FB	5	3950	3990	0.63	100	2	<5
ANTC2012-682□3380FB	6.8	3380	3435	0.54	100	2	<5
ANTC2012-682□3500FB	6.8	3500	3545	0.54	100	2	<5
ANTC2012-682□3600FB	6.8	3600	3660	0.54	100	2	<5
ANTC2012-682□3950FB	6.8	3950	3990	0.54	100	2	<5
ANTC2012-682□4050FB	6.8	4050	4110	0.54	100	2	<5
ANTC2012-103□3380FB	10	3380	3435	0.44	100	2	<5
ANTC2012-103□3450FB	10	3450	3500	0.44	100	2	<5
ANTC2012-103□3500FB	10	3500	3545	0.44	100	2	<5
ANTC2012-103□3600FB	10	3600	3660	0.44	100	2	<5
ANTC2012-103□3900FB	10	3900	3935	0.44	100	2	<5
ANTC2012-103□3950FB	10	3950	3990	0.44	100	2	<5
ANTC2012-103□3970FA	10	3945	3970	0.44	100	2	<5
ANTC2012-103□4050FB	10	4050	4110	0.44	100	2	<5
ANTC2012-153□3950FB	15	3950	3990	0.36	100	2	<5
ANTC2012-203□3950FB	20	3950	3990	0.32	100	2	<5

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ELECTRICAL CHARACTERISTICS 特性规格表

● ANTC2012 Series

Part No	Resistance (25℃) (kΩ)	B Constant (25/50℃) (K)	B Constant (25/85℃) (K)	Permissible Operating Current (25℃)(mA)	Rated Electric Power(25℃) (mW)	Dissipation Factor (mW/℃)	Thermal Time Constant (s)
ANTC2012-203□4050FB	20	4050	4110	0.32	100	2	<5
ANTC2012-223□3950FB	22	3950	3990	0.3	100	2	<5
ANTC2012-223□4050FB	22	4050	4110	0.3	100	2	<5
ANTC2012-303□3950FB	30	3950	3990	0.25	100	2	<5
ANTC2012-303□4050FB	30	4050	4110	0.25	100	2	<5
ANTC2012-333□3950FB	33	3950	3990	0.24	100	2	<5
ANTC2012-333□4050FB	33	4050	4110	0.24	100	2	<5
ANTC2012-473□3950FB	47	3950	3990	0.2	100	2	<5
ANTC2012-473□4050FB	47	4050	4110	0.2	100	2	<5
ANTC2012-473□4150FB	47	4150	4210	0.2	100	2	<5
ANTC2012-493□3937FB	49	3937	3980	0.19	100	2	<5
ANTC2012-493□3950FB	49	3950	3990	0.19	100	2	<5
ANTC2012-503□3950FB	50	3950	3990	0.19	100	2	<5
ANTC2012-503□4050FB	50	4050	4110	0.19	100	2	<5
ANTC2012-503□4150FB	50	4150	4210	0.19	100	2	<5
ANTC2012-683□3950FB	68	3950	4010	0.17	100	2	<5
ANTC2012-683□4050FB	68	4050	4110	0.17	100	2	<5
ANTC2012-683□4150FB	68	4150	4210	0.17	100	2	<5
ANTC2012-104□3950FB	100	3950	4010	0.14	100	2	<5
ANTC2012-104□4050FB	100	4050	4110	0.14	100	2	<5
ANTC2012-104□4150FB	100	4150	4210	0.14	100	2	<5
ANTC2012-104□4250FB	100	4250	4310	0.14	100	2	<5
ANTC2012-104□4360FB	100	4360	4375	0.14	100	2	<5
ANTC2012-104□4485FB	100	4485	4500	0.14	100	2	<5
ANTC2012-124□3950FB	120	3950	4010	0.13	100	2	<5
ANTC2012-154□3950FB	150	3950	4010	0.11	100	2	<5
ANTC2012-154□4250FB	150	4250	4310	0.11	100	2	<5
ANTC2012-204□3950FA	200	3890	3950	0.09	100	2	<5
ANTC2012-204□3950FB	200	3950	4010	0.09	100	2	<5
ANTC2012-204□4050FB	200	4050	4110	0.09	100	2	<5
ANTC2012-224□3950FB	220	3950	4010	0.08	100	2	<5
ANTC2012-224□4250FB	220	4250	4310	0.08	100	2	<5
ANTC2012-224□4500FB	220	4500	4515	0.08	100	2	<5
ANTC2012-304□3950FB	300	3950	4010	0.07	100	2	<5
ANTC2012-334□3950FB	330	3950	4010	0.07	100	2	<5
ANTC2012-334□4050FB	330	4050	4110	0.07	100	2	<5
ANTC2012-334□4250FB	330	4250	4310	0.07	100	2	<5
ANTC2012-474□3950FB	470	3950	4010	0.05	100	2	<5
ANTC2012-474□4050FB	470	4050	4110	0.05	100	2	<5
ANTC2012-474□4100FB	470	4100	4160	0.05	100	2	<5
ANTC2012-474□4500FB	470	4500	4515	0.05	100	2	<5

ELECTRICAL CHARACTERISTICS 特性规格表

● ANTC2012 Series

Part No	Resistance (25℃) (kΩ)	B Constant (25/50℃) (K)	B Constant (25/85℃) (K)	Permissible Operating Current (25℃)(mA)	Rated Electric Power(25℃) (mW)	Dissipation Factor (mW/℃)	Thermal Time Constant (s)
ANTC2012-504□3950FB	500	3950	4010	0.05	100	2	<5
ANTC2012-504□4150FB	500	4150	4210	0.05	100	2	<5
ANTC2012-564□4050FB	560	4050	4110	0.04	100	2	<5
ANTC2012-564□4500FB	560	4500	4515	0.04	100	2	<5
ANTC2012-684□4150FB	680	4150	4210	0.03	100	2	<5
ANTC2012-684□4500FB	680	4500	4515	0.03	100	2	<5
ANTC2012-105□4500FB	1000	4500	4515	0.02	100	2	<5
ANTC2012-135□4500FB	1300	4500	4515	0.02	100	2	<5

● ANTC3216 Series

Part No	Resistance (25℃) (kΩ)	B Constant (25/50℃) (K)	B Constant (25/85℃) (K)	Permissible Operating Current (25℃)(mA)	Rated Electric Power(25℃) (mW)	Dissipation Factor (mW/℃)	Thermal Time Constant (s)
ANTC3216-103□3380FB	10	3380	3435	0.66	150	3	<8
ANTC3216-103□3450FB	10	3450	3500	0.66	150	3	<8
ANTC3216-103□3600FB	10	3600	3660	0.66	150	3	<8
ANTC3216-103□3950FB	10	3950	3990	0.66	150	3	<8
ANTC3216-473□3950FB	47	3950	3990	0.45	150	3	<8
ANTC3216-473□4050FB	47	4050	4110	0.45	150	3	<8
ANTC3216-503□3950FB	50	3950	3990	0.43	150	3	<8
ANTC3216-503□4050FB	50	4050	4110	0.43	150	3	<8
ANTC3216-104□3950FB	100	3950	4010	0.21	150	3	<8
ANTC3216-104□4250FB	100	4250	4310	0.21	150	3	<8

● Test Conditions

Unless otherwise specified, the standard atmospheric conditions for measurement/test as:

- Ambient Temperature: 20±15℃
- Relative Humidity: 65±20%
- Air Pressure: 86kPa to 106kPa

If any doubt on the results, measurements/tests should be made within the following limits:

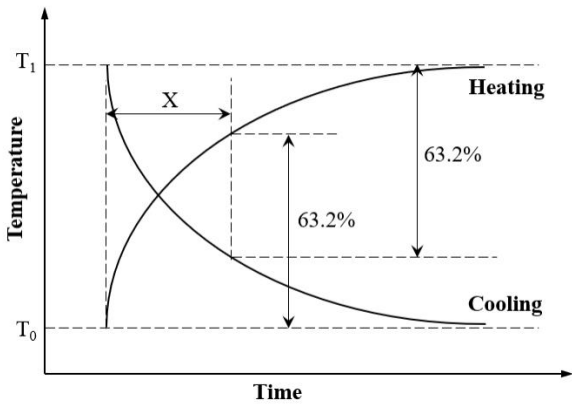
- Ambient Temperature: 25±2℃
- Relative Humidity: 65±5%
- Air Pressure: 86kPa to 106kPa

● Inspection Equipment

Visual Examination: 20 x magnifier

Resistance value test: Thermistor resistance tester

Electrical Test 电性测试

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	B Constant	Respectively measure the resistance value R1 & R2 at the ambient temperature of T1 & T2, calculate B constant value by the following formula: $B(T_1/T_2) = \frac{\ln R_1 - \ln R_2}{1/T_1 - 1/T_2}$ T: Absolute temperature (K) Usually 25°C and 50°C or 85°C are used.
3	Thermal Time Constant	Under zero-power conditions, when the ambient temperature of the thermistor changes drastically, the time required for the thermistor to produce a temperature change of 63.2% of the difference between the initial temperature and the final temperature, usually expressed in seconds (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.

RESISTANCE-TEMPERATURE CHARACTERISTICS (CENTER VALUE) 电阻 - 温度特性(中心值)

Part No.	472□3500FB	502□3500FB	682□3600FB	103□3380FB	103□3950FB	153□3950FB
Resistance	4.7kΩ	5.0kΩ	6.8kΩ	10kΩ	10kΩ	15kΩ
B Constant	3500K	3500K	3600K	3380K	3950K	3950K
Temperature	Resistance	Resistance	Resistance	Resistance	Resistance	Resistance
(°C)	(kΩ)	(kΩ)	(kΩ)	(kΩ)	(kΩ)	(kΩ)
-40	105.705	112.452	158.872	197.39	345.275	517.912
-35	79.126	84.176	118.383	149.39	247.816	371.724
-30	59.794	63.611	89.287	114.34	180.032	270.048
-25	45.63	48.543	67.946	88.381	132.284	198.426
-20	35.144	37.387	52.215	68.915	98.185	147.278
-15	27.303	29.046	40.469	54.166	73.626	110.439
-10	21.377	22.741	31.618	42.889	55.744	83.617
-5	16.869	17.946	24.891	34.196	42.592	63.888
0	13.411	14.267	19.742	27.445	32.814	49.221
5	10.735	11.42	15.759	22.165	25.497	38.245
10	8.653	9.205	12.658	18.01	19.958	29.936
15	7.018	7.465	10.232	14.72	15.742	23.613
20	5.726	6.092	8.318	12.099	12.504	18.756
25	4.7	5	6.8	10	10	15
30	3.879	4.127	5.589	8.309	8.049	12.074
35	3.219	3.424	4.617	6.939	6.52	9.78
40	2.685	2.856	3.833	5.824	5.313	7.969
45	2.25	2.394	3.197	4.911	4.354	6.531
50	1.895	2.016	2.68	4.16	3.588	5.382
55	1.604	1.706	2.255	3.539	2.973	4.459
60	1.363	1.449	1.906	3.024	2.476	3.713
65	1.163	1.237	1.618	2.593	2.072	3.108
70	0.996	1.06	1.38	2.233	1.742	2.613
75	0.857	0.912	1.181	1.929	1.472	2.208
80	0.74	0.787	1.014	1.673	1.249	1.873
85	0.641	0.682	0.875	1.455	1.065	1.597
90	0.558	0.593	0.757	1.27	0.911	1.367
95	0.487	0.518	0.657	1.112	0.783	1.174
100	0.426	0.454	0.573	0.976	0.675	1.013
105	0.375	0.399	0.501	0.86	0.585	0.878
110	0.33	0.351	0.44	0.759	0.508	0.763
115	0.292	0.311	0.387	0.673	0.443	0.665
120	0.259	0.275	0.341	0.598	0.388	0.582
125	0.23	0.245	0.302	0.532	0.341	0.511

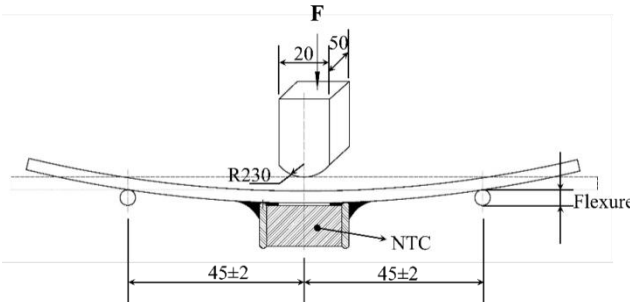
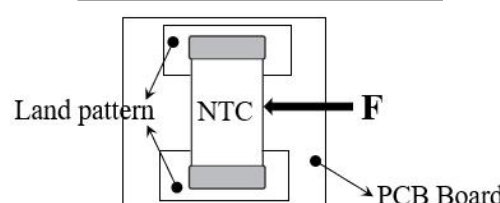
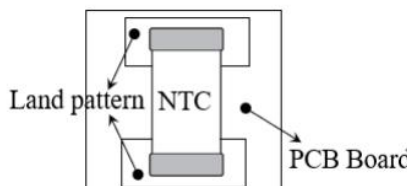
RESISTANCE-TEMPERATURE CHARACTERISTICS (CENTER VALUE) 电阻 - 温度特性(中心值)

Part No.	223□3950FB	333□3950FB	473□3950FB	473□4050FB	683□4150FB	104□3950FB
Resistance	22kΩ	33kΩ	47kΩ	47kΩ	68kΩ	100kΩ
B Constant	3950K	3950K	3950K	4050K	4150K	3950K
Temperature	Resistance	Resistance	Resistance	Resistance	Resistance	Resistance
(°C)	(kΩ)	(kΩ)	(kΩ)	(kΩ)	(kΩ)	(kΩ)
-40	759.605	1,139.41	1,622.79	1,747.92	2,735.36	3,225.55
-35	545.196	817.793	1,164.74	1,245.43	1,937.39	2,343.29
-30	396.07	594.105	846.15	898.485	1,389.35	1,719.70
-25	291.025	436.537	621.734	655.802	1,008.01	1,274.38
-20	216.008	324.012	461.471	483.954	738.978	953.185
-15	161.977	242.965	346.041	360.85	547.456	719.319
-10	122.638	183.957	261.999	271.697	409.6	547.478
-5	93.702	140.554	200.182	206.463	309.217	420.105
0	72.191	108.286	154.225	158.214	235.606	324.899
5	56.093	84.14	119.835	122.259	180.98	253.161
10	43.907	65.86	93.801	95.227	140.139	198.687
15	34.633	51.949	73.988	74.73	109.344	157.015
20	27.509	41.264	58.769	59.065	85.929	124.908
25	22	33	47	47	68	100
30	17.709	26.563	37.832	37.643	54.167	80.55
35	14.344	21.516	30.644	30.334	43.421	65.265
40	11.688	17.532	24.97	24.591	35.016	53.18
45	9.578	14.367	20.463	20.048	28.406	43.569
50	7.894	11.841	16.864	16.433	23.166	35.881
55	6.54	9.81	13.972	13.539	18.997	29.699
60	5.446	8.169	11.635	11.209	15.657	24.701
65	4.559	6.838	9.739	9.328	12.967	20.641
70	3.832	5.748	8.187	7.798	10.794	17.325
75	3.239	4.858	6.919	6.544	9.021	14.605
80	2.748	4.122	5.87	5.518	7.575	12.364
85	2.342	3.513	5.004	4.674	6.387	10.509
90	2.004	3.007	4.282	3.972	5.407	8.967
95	1.722	2.583	3.679	3.388	4.598	7.68
100	1.486	2.229	3.175	2.902	3.922	6.601
105	1.287	1.931	2.75	2.494	3.359	5.694
110	1.119	1.678	2.39	2.15	2.887	4.929
115	0.975	1.463	2.084	1.86	2.489	4.28
120	0.854	1.281	1.824	1.615	2.155	3.728
125	0.75	1.125	1.602	1.406	1.87	3.257

RESISTANCE-TEMPERATURE CHARACTERISTICS (CENTER VALUE) 电阻 - 温度特性(中心值)

Part No.	104□4250FB	154□3950FB	224□3950FB	334□3950FB	474□3950FB	474□4050FA
Resistance	100kΩ	150kΩ	220kΩ	330kΩ	470kΩ	470kΩ
B Constant	4250K	3950K	3950K	3950K	3950K	4050K
Temperature	Resistance	Resistance	Resistance	Resistance	Resistance	Resistance
(°C)	(kΩ)	(kΩ)	(kΩ)	(kΩ)	(kΩ)	(kΩ)
-40	4,397.12	4,838.32	7,096.20	10,644.30	15,160.06	15,250.67
-35	3,088.60	3,514.93	5,155.24	7,732.85	11,013.46	11,090.80
-30	2,197.23	2,579.56	3,783.35	5,675.02	8,082.61	8,146.57
-25	1,581.88	1,911.56	2,803.63	4,205.44	5,989.57	6,041.01
-20	1,151.04	1,429.78	2,097.01	3,145.51	4,479.97	4,520.31
-15	846.579	1,078.98	1,582.50	2,373.75	3,380.80	3,411.68
-10	628.988	821.217	1,204.45	1,806.68	2,573.15	2,596.20
-5	471.632	630.158	924.232	1,386.35	1,974.50	1,991.24
0	357.012	487.348	714.777	1,072.17	1,527.02	1,538.79
5	272.5	379.741	556.953	835.43	1,189.86	1,197.76
10	209.71	298.03	437.111	655.667	933.828	938.79
15	162.651	235.522	345.432	518.148	737.969	740.732
20	127.08	187.361	274.797	412.195	587.065	588.218
25	100	150	220	330	470	470
30	79.222	120.825	177.21	265.815	378.585	377.786
35	63.167	97.898	143.583	215.375	306.746	305.418
40	50.677	79.77	116.996	175.494	249.946	248.29
45	40.904	65.353	95.851	143.776	204.772	202.939
50	33.195	53.822	78.938	118.408	168.641	166.739
55	27.091	44.549	65.338	98.007	139.585	137.691
60	22.224	37.052	54.343	81.514	116.096	114.264
65	18.323	30.961	45.409	68.114	97.011	95.277
70	15.184	25.988	38.115	57.173	81.428	79.814
75	12.635	21.908	32.132	48.197	68.645	67.164
80	10.566	18.546	27.201	40.801	58.11	56.768
85	8.873	15.763	23.119	34.679	49.391	48.188
90	7.481	13.45	19.727	29.59	42.144	41.076
95	6.337	11.52	16.895	25.343	36.095	35.158
100	5.384	9.902	14.523	21.785	31.026	30.212
105	4.594	8.541	12.527	18.791	26.763	26.064
110	3.934	7.393	10.843	16.264	23.164	22.572
115	3.38	6.42	9.415	14.123	20.115	19.621
120	2.916	5.592	8.202	12.303	17.522	17.119
125	2.522	4.886	7.166	10.75	15.31	14.989

RELIABILITY TEST 可靠性测试

Items	Test Methods and Remarks	Requirements												
Resistance to Flexure	Solder the chip on the test PCB board, then apply a force in the direction as shown below: <table><tr><th>Inch Size</th><th>Flexure</th><th>Pressurizing Speed</th><th>Duration</th></tr><tr><td>0201</td><td>1mm</td><td><0.5mm/s</td><td>10±1s</td></tr><tr><td>0402/0603/0805/1206</td><td>2mm</td><td><0.5mm/s</td><td>10±1s</td></tr></table> 	Inch Size	Flexure	Pressurizing Speed	Duration	0201	1mm	<0.5mm/s	10±1s	0402/0603/0805/1206	2mm	<0.5mm/s	10±1s	① No visible damage. ② R25 variation: within ±2% ③ B constant variation: within ±1%
Inch Size	Flexure	Pressurizing Speed	Duration											
0201	1mm	<0.5mm/s	10±1s											
0402/0603/0805/1206	2mm	<0.5mm/s	10±1s											
Robustness of electrode	Solder the chip on the test PCB board, then apply 5N force in the direction of the arrow for 10s as shown below. <table><tr><th>Inch Size (EIA)</th><th>F</th></tr><tr><td>0201</td><td>2N</td></tr><tr><td>0402, 0603</td><td>5N</td></tr><tr><td>0805, 1206</td><td>10N</td></tr></table> 	Inch Size (EIA)	F	0201	2N	0402, 0603	5N	0805, 1206	10N	No peeling of the electrodes or other defects shall occur.				
Inch Size (EIA)	F													
0201	2N													
0402, 0603	5N													
0805, 1206	10N													
Vibration	① Solder the chip on the test PCB board as shown below; ② NTC 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; ③ The 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). 	① No visible damage. ② R25 variation: within ±2% ③ B constant variation: within ±1%												

RELIABILITY TEST 可靠性测试

Items	Test Methods and Remarks	Requirements
Dropping	Drop a chip 10 times on a concrete floor from a height of 1 meter.	No visible damage.
Solderability	① Soldering temperature: $240\pm 5^{\circ}\text{C}$. ② Duration: $3\pm 0.3\text{s}$. ③ Solder: 96.5wt%Sn/3.0wt%Ag/0.5wt%Cu ④ Flux: 25% Rosin and 75% ethanol in weight.	① No visible damage. ② Wetting shall exceed 95% coverage.
Resistance to Soldering Heat	① Soldering temperature: $260\pm 5^{\circ}\text{C}$. ② Duration: $10\pm 1\text{s}$. ③ Solder: 96.5wt%Sn/3.0wt%Ag/0.5wt%Cu . ④ Flux: 25% Rosin 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 $\pm 2\%$ ③ B constant variation: within $\pm 1\%$

Climatic performance

Item	Test Methods and Remarks	Requirements															
Temperature cycling	① 5 cycles of following sequence without load.	① No visible damage. ② R25 variation: within ±2% ③ B constant variation:within ±1%															
	<table><tr><th>Step</th><th>Temperature</th><th>Time</th></tr><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></table>		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															
② The chip shall be stabilized at normal condition for 1~2 hours before measuring.																	
Thermal Shock	40℃/30±5min→+125℃/30±5min , transforming interval: 20s, 100 cycles																
Dry heat	① 125±5℃ in air, for 1000±24 hours without load. ② The chip shall be stabilized at normal condition for 1~2 hours before measuring.																
Cold	① -40±3℃ in air, for 1000±24 hours without load. ② The chip shall be stabilized at normal condition for 1~2 hours before measuring.																
Damp heat	① 60±2℃, 90~95%RH in air, for 1000±24 hours without load. ② The chip shall be stabilized at normal condition for 1~2 hours before measuring.	① No visible damage. ② R25 variation: within ±2% ③ B constant variation:within ±1%															
High temperature load	① 85±2℃in air with permissive operating current for 1000±48 hours. ② The chip shall be stabilized at normal condition for 1~2 hours before measuring.																

● The above variation is applicable to products with resistance value $\geq 10\text{k}\Omega$

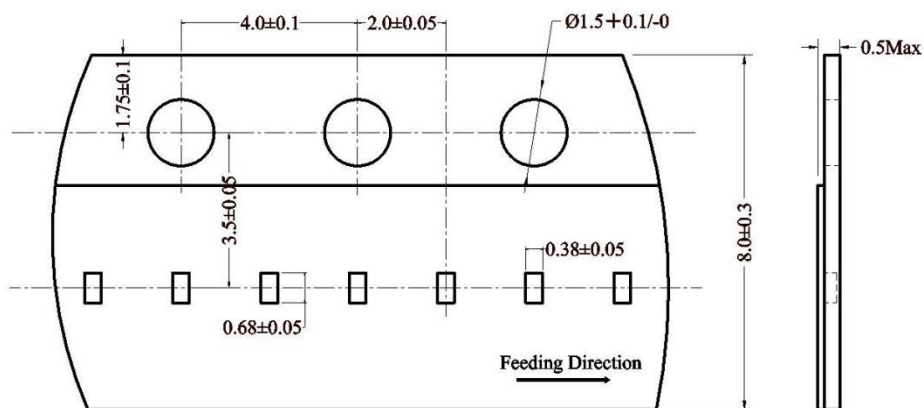
● The variation before and after the test of products with a resistance value less than $10\text{k}\Omega$:
R25 within $\pm 5\%$; B constant: within $\pm 2\%$.

Taping 包装

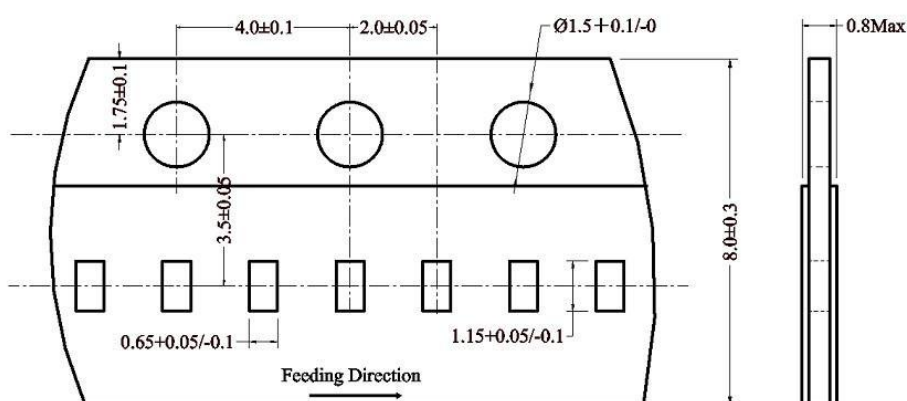
Paper Taping

* Applicable to EIA 0201/0402/0603/0805/1206 products (Unit:mm)

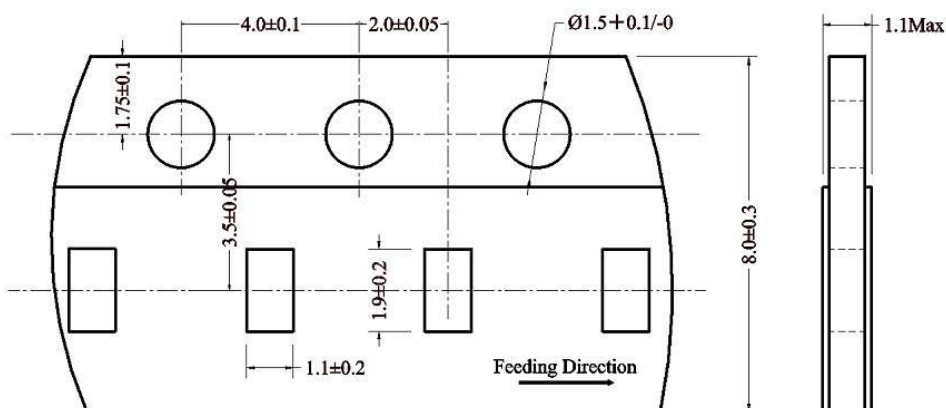
Paper tape for EIA 0201(ANTC0603) products



Paper tape for EIA 0402 (ANTC1005) products



Paper tape for EIA 0603 (ANTC1608) products

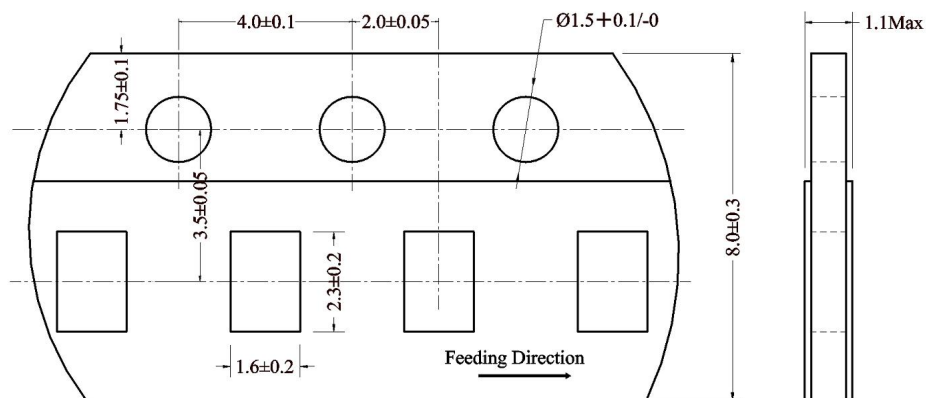


Taping 包装

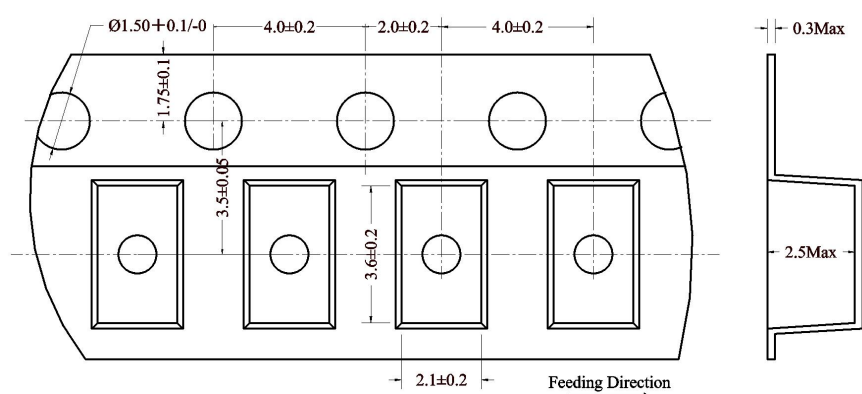
Paper Taping

* Applicable to EIA 0201/0402/0603/0805/1206 products (Unit:mm)

Paper tape for EIA 0805 (ANTC2012) products



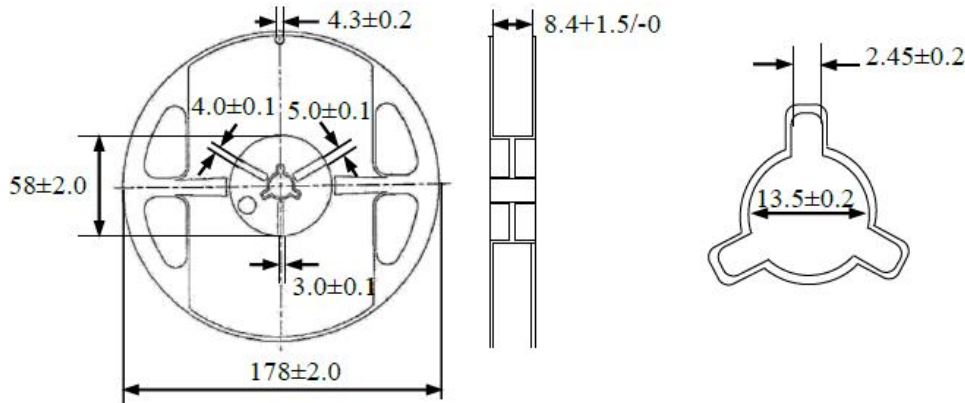
Paper tape for EIA 1206 (ANTC3216) products



TAPING 包装

● Reel Dimensions

*Universal for paper tape and plastic carrier tape



Inch Size (EIA)	Quantity/Reel
0201 (ANTC0603)	15000pcs
0402 (ANTC1005)	10000pcs
0603 (ANTC1608)	4000pcs
0805 (ANTC2012)	4000pcs
1206 (ANTC3216)	3000pcs

CAUTION/NOTICE 注意事项

● Caution(Storage and Operating Conditions)

This product is designed for application in an ordinary environment (normal room temperature, humidity and atmospheric pressure).

● Do not use under the following conditions because all of these factors can deteriorate the product characteristics or cause failures and burn-out.

- 1) Corrosive gas or deoxidizing gas (Chlorine gas, Hydrogen sulfide gas, Ammonia gas, Sulfuric acid gas, Nitric oxide gas, etc.)
- 2) Volatile or flammable gas
- 3) Dusty conditions
- 4) Under vacuum, or under high or low pressure
- 5) Wet or humid locations
- 6) Places with salt water, oils, chemical liquids or organic solvents
- 7) Strong vibrations
- 8) Other places where similar hazardous conditions exist

● The ceramic of this product is fragile, and care must be taken not to load an excessive press-force or to cause a shock at handling. Such forces may cause cracking or chipping.

● Do not apply the power exceeding the 'Rated Electric power'.

● Use this product within the specified temperature range. Higher temperature may cause deterioration of the characteristics or the material quality of this product.

● Be sure to provide an appropriate fail-safe function on your product to prevent secondary damage that may be caused by the abnormal function or the failure of our product.

CAUTION/NOTICE 注意事项

● Notice(Storage)

To keep the solderability of the product from degrading, the following storage conditions are recommended.

● Storage condition:

- (1) Storage Temperature: $-10^{\circ}\text{C}\sim+40^{\circ}\text{C}$
- (2) Relative Humidity: $\leq 75\%\text{RH}$ (not dewing condition)
- (3) Keep away from dust, corrosive atmosphere and sunlight.

● Storage term:

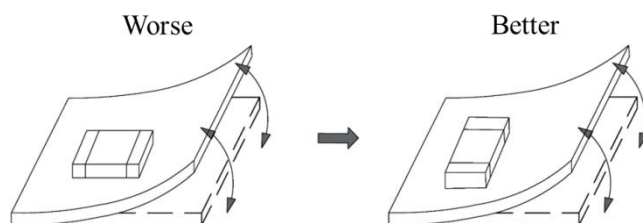
Use this product within 6 months after delivery by first-in and first-out stocking system.

● Notice (Soldering and Mounting)

(1) Mounting Position

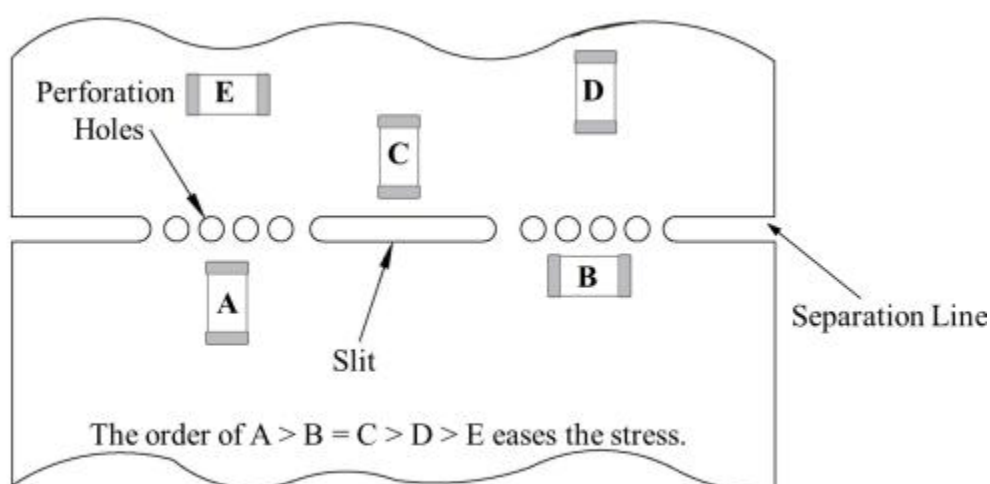
Choose a mounting position that minimizes the stress imposed on the chip during flexing or bending of the board. The recommendations are shown in the following figure:

Component Direction



Locate this product horizontal to the direction in which stress acts.

When Mounting Close to Board Separation Line



Put this product on the PC Board near the Slit, not near the Perforation Holes.

Keep this product on the PC Board away from the Separation Line.

■ CAUTION/NOTICE 注意事项

● Application to board

Mounting head pressure

Under suction nozzle if dead point too, during implementation, excessive force joins of NTC thermistor low, as cause causes of crack, please use with reference to something about following.

- 1) Being set to top surface of substrate so that under suction nozzle as for dead center, substrate does not bend back, and adjust, please.
- 2) Nozzle pressure at implementation is 1-3N in static load, please.
- 3) Substrate fixes up back surface of substrate with support pin in impact of suction nozzle to wely deflection to the utmost, and substrate hold deflection, please

Mechanical shock that, if positioning your nail to wear, ragged edge of positionings, participates in NTC thermistor are locally, and NTC thermistor, as there is possibility of crack generated, cut the closed positioning, and maintenance and inspection, and, exchange of manage dimensions and position nail periodically, please.

● Soldering

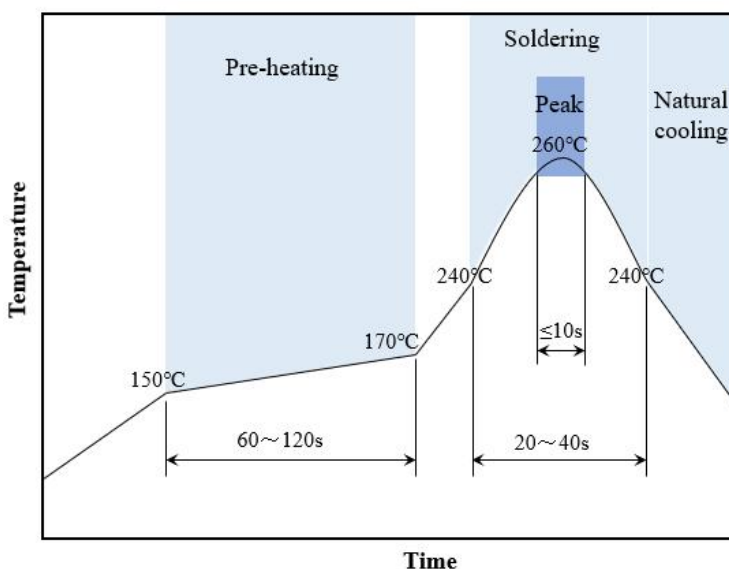
1) Reflow Soldering

- 1~2°C/sec. Ramp
- Pre-heating: 150~170°C/90±30 sec.

Insufficient preheating may cause a crack on the ceramic body. The difference between preheating temperature and the highest temperature in the profile shall be 100°C .

- Time above 240°C: 20~40sec
- Peak temperature: 260°CMax/10 sec.
- Solder paste: 96.5wt%Sn/3.0wt%Ag/0.5wt%Cu
- Flux: Use rosin type flux in the soldering process.

If strong acidic flux(with halide content exceeding 0.1wt%) or water-soluble flux(non-rosin type flux including wash-type flux and non-wash-type flux) is used, some problems might be caused in the product characteristics and reliability.



- Max.2 times for re-flowing.

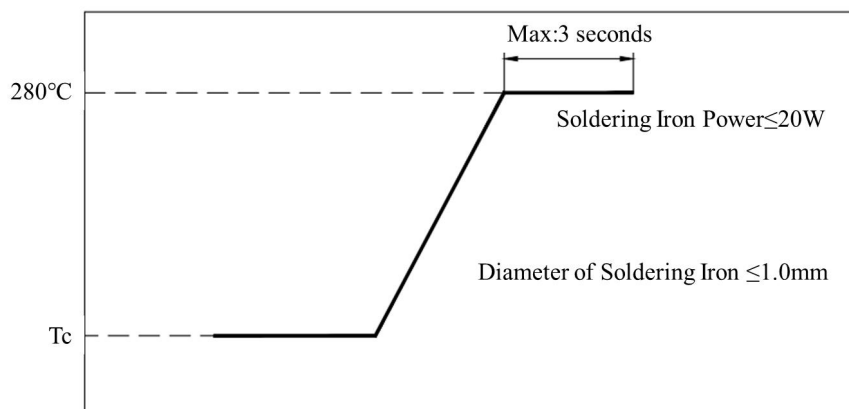
In case of repeated soldering, the total accumulated soldering time at peak temperature is within 30sec (Including the first time and second time).

- Cooling: Gradually cooling in air. Rapid cooling by dipping in solvent or by other means is not recommended.
- Excessive soldering conditions may cause dissolution of metallization or deterioration of solder- wetting on the external electrode.

CAUTION/NOTICE 注意事项

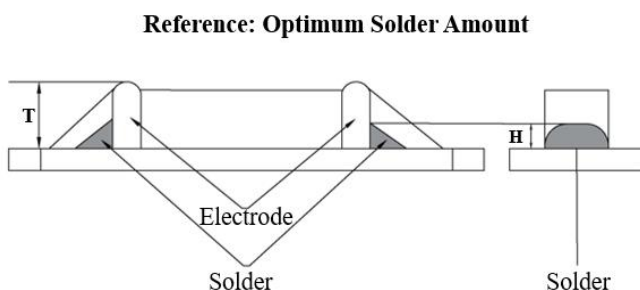
● Iron Soldering

- Iron soldering power: Max.20W
 - Pre-heating: 150°C/60sec.
 - Soldering Tip temperature: 280°C Max.
 - Soldering time: 3 sec Max.
 - Solder paste: 96.5wt%Sn/3.0wt%Ag/0.5wt%Cu
 - Max.1 times for iron soldering
- [Note: Take care not to apply the tip of the soldering iron to the terminal electrodes.]



● Printing Conditions of Solder Paste

- The amount of solder is critical . Standard height of fillet is shown in the table below.



Inch Size	Solder Paste	H
(EIA)	Thickness	
0201	100μm	$1/3T \leq H \leq T$
0402	150μm	$1/3T \leq H \leq T$
0603	200μm	$0.2\text{mm} \leq H \leq T$
0805		
1206		

- Too much solder may cause mechanical stress, resulting in cracking, mechanical and/or electronic damage.

● Cleaning

- For removing the flux after soldering, observe the following points in order to avoid deterioration of the characteristics or any change of the external electrodes quality.

- 1) Please keep mounted parts and a substrate from an occurrence of resonance in ultrasonic cleaning.
- 2) Please do not clean the products in the case of using a non-wash-type flux.

Inch Size (EIA)	0201, 0402	0603, 0805, 1206
Solvent	Isopropyl Alcohol	
Dipping Cleaning	Less than 5 min. at room temp. or Less than 2 min. at 40°C max.	
Ultrasonic Cleaning	Less than 1 min, 20W/L Frequency of several 28kHz to several 40kHz.	Less than 1 min, 20W/L Frequency of several 10kHz to several 100kHz.

● Drying

After cleaning, promptly dry this product.