YuShi Electronics
NTC & PTC CHIP THERMISTORS

Chip NTC Thermistor

0603 · 10 kΩ / B3950 · SMD, −40 to +125 °C

YSN-0603R103F3950F-R

RoHS compliant (lead-free) · MSL 1

Ceramic chip NTC thermistor for temperature sensing and compensation on dense SMT boards. Three-layer plated terminations for reflow lines; small size and low thermal mass for fast response.

Electrical characteristics (still air)

Zero-power resistance R25	10 kΩ ±1% (code F)
B constant B25/50	3950 K ±1% (code F)
B constant B25/85 (reference)	3990 K
Permissible operating current (25 °C)	0.31 mA
Rated power (25 °C)	100 mW
Dissipation constant δ	1.0 mW/°C
Thermal time constant τ	<5 s
Operating temperature range	−40 to +125 °C
Storage (packed)	−10 to +40 °C, ≤75% RH

R25 measured at 25 ± 0.01 °C, measuring power ≤0.1 mW. B(T1/T2) = (ln R1 − ln R2) / (1/T1 − 1/T2), T in K. δ: power for 1 °C self-heating. Permissible current: current giving 1 °C self-heating in still air. Rated power: power raising body temperature by 100 °C at 25 °C ambient. τ: time to reach 63.2% of a step temperature change at zero power.

Ordering code

YSN-	0603	103F	F	3950	F	-R
Series: chip NTC	Size 1.6×0.8 mm	R25 = 10 kΩ	R25 tol. ±1%	B25/50 (K)	B tol. ±1%	Standard grade, tape & reel

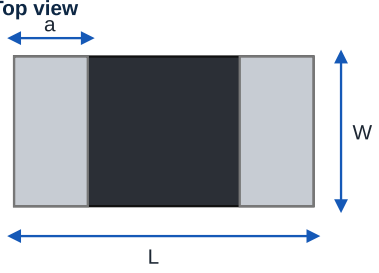
Other R25 tolerances: H ±3%, J ±5% on request. Suffix -B = bulk. Other R25/B combinations in 0201–1206: see yushielectronics.com/products/.

Packaging

Carrier	8 mm paper tape, 4 mm pitch
Reel	Φ178 mm (7-inch)
Quantity	4,000 pcs / reel
Bulk	Available (suffix -B)

Dimensions (mm)

Top view



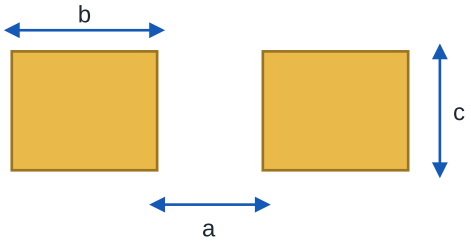
Side view



Grey = terminations
Not to scale

L	W	T	a
1.6 ± 0.15	0.8 ± 0.15	0.8 ± 0.15	0.4 ± 0.2

Recommended land pattern (reflow)



a	b	c	Solder paste
0.6–0.8	0.6–0.7	0.6–0.8	200 µm

Compliance

RoHS compliant (lead-free).

Chip NTC Thermistor

0603 · 10 kΩ / B3950 · SMD, −40 to +125 °C

R–T characteristic — YSN-0603R103F3950F-R (R25 = 10 kΩ, B25/50 = 3950 K)

Nominal (centre) resistance values from the series R–T characteristic, −40 to +125 °C in 5 °C steps. Values are typical, not per-lot test results; R25 tolerance ±1% applies at 25 °C. Contact us for R–T data in 1 °C steps or with min./max. limits.

Temp. (°C)	R nom (kΩ)
-40	345.275
-35	247.816
-30	180.032
-25	132.284
-20	98.185
-15	73.626
-10	55.744
-5	42.592
0	32.814
+5	25.497
+10	19.958
+15	15.742
+20	12.504
+25	10.000
+30	8.049
+35	6.520
+40	5.313

Temp. (°C)	R nom (kΩ)
+45	4.354
+50	3.588
+55	2.973
+60	2.476
+65	2.072
+70	1.742
+75	1.472
+80	1.249
+85	1.065
+90	0.911
+95	0.783
+100	0.675
+105	0.585
+110	0.508
+115	0.443
+120	0.388
+125	0.341

Reliability (R25 ≥10 kΩ)

Test	Condition
Bending strength	2 mm flexure, <0.5 mm/s, 10 s
Terminal adhesion	5 N, 10 s — no removal of termination
Vibration	1.5 mm, 10–55–10 Hz, 2 h per axis (6 h)
Drop	1 m onto concrete, 10 times — no visible damage
Solderability	240 ± 5 °C, 3 s, SAC305 — ≥95% coverage
Resistance to soldering heat	Preheat 150 °C 3 min; 260 ± 5 °C, 10 s
Temperature cycling	−40 / +25 / +125 / +25 °C, 5 cycles
Thermal shock	−40 / +125 °C, 30 min each, 100 cycles
High / low temp. storage	+125 °C and −40 °C, 1000 h, no load
Damp heat	60 °C, 90–95% RH, 1000 h, no load
High-temperature load	85 °C, permissible current, 1000 h

Criteria: no visible damage; ΔR25 within ±2%, ΔB within ±1%. Measured after 1–2 h at standard conditions.

Soldering (reference)

- Reflow: ramp 1–2 °C/s; preheat 150–170 °C, 90 ± 30 s; above 240 °C 20–40 s; peak 260 °C, 10 s max.
- Max. 2 reflow cycles; cumulative peak time ≤30 s
- Solder SAC305; rosin-based flux only
- Hand soldering: iron ≤20 W, tip ≤280 °C, ≤3 s, preheat 150 °C / 60 s, once only
- Placement nozzle force 0.1–0.3 N static

Storage & handling

- −10 to +40 °C, ≤75% RH (non-condensing); avoid dust, corrosive gases and sunlight
- Use within 6 months of delivery, first-in first-out
- Do not use in corrosive/reducing gases, volatile or flammable gases, dusty or damp locations, or with salt water, oil, chemicals or solvents
- Ceramic part: avoid excessive pressure or impact; do not exceed ratings
- Provide fail-safe protection in the end product

Contact

Samples, full specification and test reports:
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yushielectronics.com