

TB02 SERIES SPECIFICATIONS

1 Applications

With the miniature size, insulated case, snap-shot action and huge cycle advantages, the TB02 series is suitable for the applications of both overheating and over current protection in fractional power motor, heating appliance, fluorescent lighting ballasts, transformer, automotor, integrated circuit and general electrical facilities.

2 Configuration

Because the two kinds of the metal have different thermal effects, the bimetal shape is changing with the ambient temperature changing until the circuit is open or connected, in which way it fulfills the overheating & overload protection.

TB02 series is the first club-shape product which is miniature size, high reliability & sensibility.

3 Classification, type and structure

TB02-B B 8 D-XXX °C

Opening Temperature: 30~155°C

Bimetal Disc: G-High resistance
Z-Middle resistance D-Low resistance

Case: 1、2、3、4、5、6、7、8、9

Protection:
A-Temperature protection
B-Current&Temperature dual protection
C-Temperature delay protection
D-Current&Temperature dual delay protection

Contact type: K-normally open B-normally closed

Device

Instructions:

TB02-BB8D-35°C

TB02--model

B--contact way, normally open or normally closed

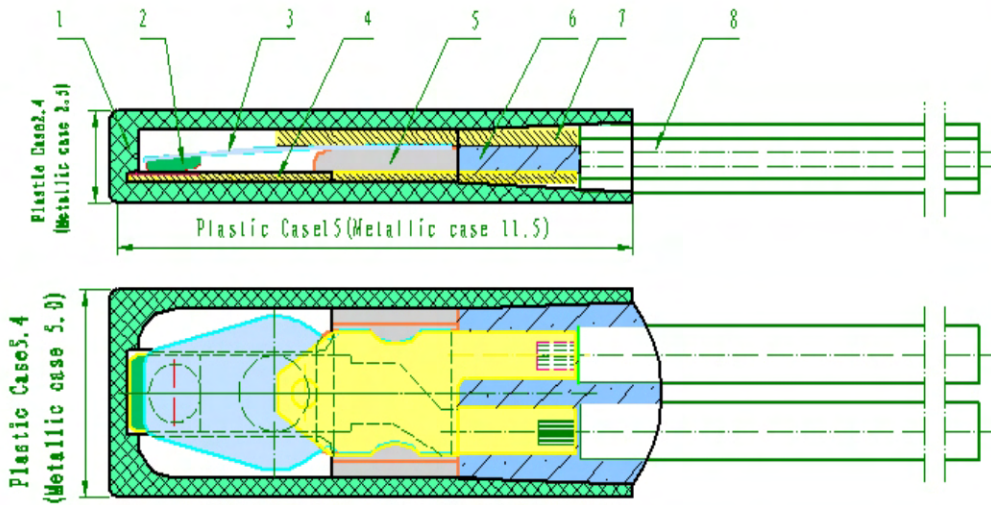
B--functions, temperature or current protection

8--case No.

D--low internal resistance

35°C--opening temperature

3. 3 Classification & type for TB02 series



SN	Parts	material
1	case	PBT CRN7030
2	contact	AgNi10/BZn
3	bimetal	30R
4	Static contact	AgNi10/BZn
5	fixture	PBT CRN7030
6	epoxy	9002A
7	Dynamic contact	BZn
8	wire	22# 3266

3. 3 The maximum capability

4A/DC12V、3A/DC24V、3A/AC115V、2A/AC250V

4 Parameters

4.1 Appearance:

- No burrs, cracks, distortions and corroding to the case.;
- Correct, clear and durable stickers;

4. 2Opening & reset temperature:

Models	Opening temperature	Reset temperature	Models	Opening temperature	Reset temperature
TB02-BB8D-30°C	30 ± 3°C	≥ 20°C	TB02-BB8D-95°C	95 ± 5°C	70 ± 15°C
TB02-BB8D-35°C	35 ± 3.5°C	≥ 25°C	TB02-BB8D-100°C	100 ± 5°C	70 ± 15°C
TB02-BB8D-40°C	40 ± 4°C	≥ 30°C	TB02-BB8D-105°C	105 ± 5°C	75 ± 15°C
TB02-BB8D-45°C	45 ± 4.5°C	≥ 33°C	TB02-BB8D-110°C	110 ± 5°C	75 ± 15°C
TB02-BB8D-50°C	50 ± 5°C	≥ 35°C	TB02-BB8D-115°C	115 ± 5°C	80 ± 15°C
TB02-BB8D-55°C	55 ± 5°C	42 ± 6°C	TB02-BB8D-120°C	120 ± 5°C	85 ± 15°C
TB02-BB8D-60°C	60 ± 5°C	45 ± 8°C	TB02-BB8D-125°C	125 ± 5°C	85 ± 15°C
TB02-BB8D-65°C	65 ± 5°C	48 ± 10°C	TB02-BB8D-130°C	130 ± 5°C	90 ± 15°C
TB02-BB8D-70°C	70 ± 5°C	50 ± 12°C	TB02-BB8D-135°C	135 ± 5°C	95 ± 15°C
TB02-BB8D-75°C	75 ± 5°C	53 ± 14°C	TB02-BB8D-140°C	140 ± 5°C	100 ± 15°C
TB02-BB8D-80°C	80 ± 5°C	55 ± 15°C	TB02-BB8D-145°C	145 ± 5°C	100 ± 15°C
TB02-BB8D-85°C	85 ± 5°C	60 ± 15°C	TB02-BB8D-150°C	150 ± 5°C	105 ± 15°C
TB02-BB8D-90°C	90 ± 5°C	65 ± 15°C	TB02-BB8D-155°C	155 ± 5°C	110 ± 15°C

- 4.3 The I-T scheme of TB02 series (see scheme a);
- 4.4 The I-t scheme of TB02 series (see scheme b);
- 4.5 Pull resistance detection, the product lead wire should withstand more than 20N pulling force for 5s without incompact and desquamation occurrence.
- 4.6 Electricity conductive performance:
 - a. The lead wire could withstand Ac660v for 1minute without penetration when it is open (leakage current 1mA).
 - b. It could withstand AC1800V between the lead wire and insulated case for 1s without penetration (leakage current 1mA).

4.7 Insulation The insulated resistance between the lead wire and insulated case is above 100MΩ at normal ambient temperature. (Test with DC500V Mili-ohmmeter)

4.8 Contact resistances: the contact resistance should be no more than 50MΩ

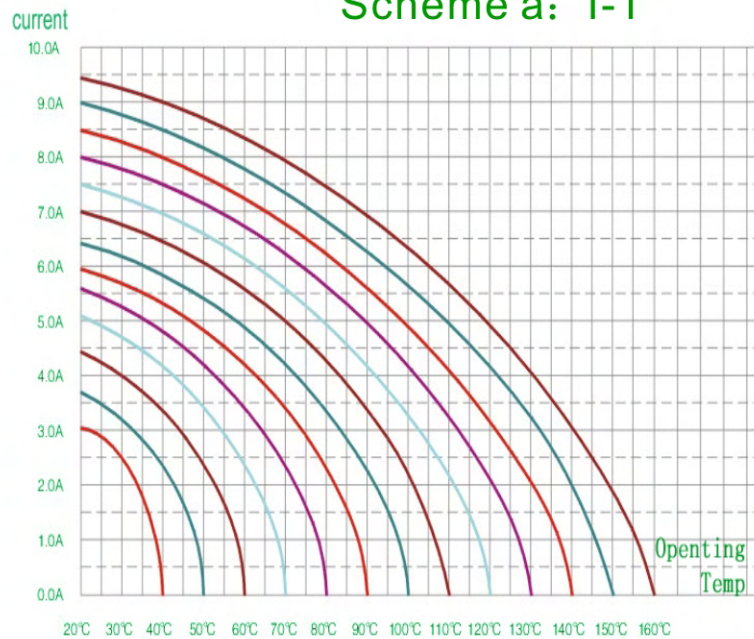
4.9 Durability

4.9.1 Electricity lifespan

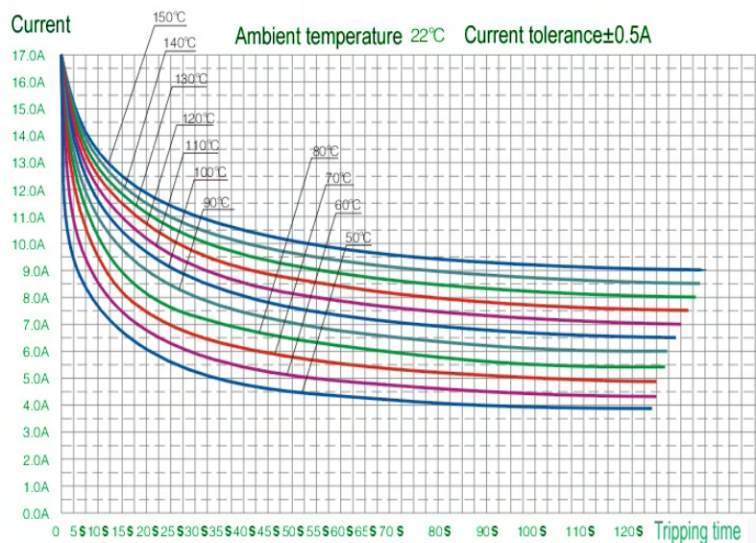
When the AC voltage is 220V, 50Hz and power factor $\cos\phi$ is 0.70, after 2,000 times testing, it should satisfy:

- a. The action temperature should not exceed $\pm 5^\circ\text{C}$ or $\pm 5\%$ from initial value, choosing the bigger one.
- b. No fusion welding for the ends.

Scheme a: I-T



Scheme b: I-t



C. After taking the same test for 5,000 times, there should be no failure on performance any more.

4.9.2 Humidity performance

Thermal protector has to approve the humidity regulations in GB2423.3Ca which is 48h rank and the thermal protector insulated resistance is above $2M\Omega$ after test.

4.9.3 High temperature resistance performance

Keep thermal protector where the ambient temperature is 50°C higher than its opening temperature for 96h.

4.9.4 Low temperature resistance performance

Keep thermal protector where the ambient temperature is -40°C for 96h.

4.9.5 Heat resistance

First Put products into 150°C environment for 30 minutes, then change to -20°C environment for another 30 minutes and make it in this way for 5 cycles.

4.9.6 Vibration test

Fixing thermal protector on the test-bed, vibrate it to X, Y and Z directions respectively with 1.5mm amplitude, changing from 10 to 50Hz frequency for 2h, scan its changes during test.

4.9.7 Heat impact resistance

Keep thermal protector where the temperature is 150°C for 30 minutes with 5 testing cycles, and the outcomes of 4.9.2, 4.9.3, 4.9.4, 4.9.5, 4.9.6, 4.9.7 should be consistent with the following:

- a. No distortion, no fission in wires
- b. The opening temperature should be kept changing within $\pm 7^{\circ}\text{C}$ or $\pm 5\%$ against its pre-calibrated value, take the larger one as its rated value.
- c. Contact resistance has to be below $100m\Omega$.
- d. The electricity intensity should be in accordance with 5.6.1, when testing voltage is 75% of the original.

5 Precautions

5.1 Temperature

Test Testing be done in the oven that the precision of constant temp is $\pm 1^{\circ}\text{C}$. When testing, the thermocouple or thermometer

rising, when the temperature reaches 10°C less than rated temperature, the temperature rising rate should be less than 0.5°C per minute and the testing current should be no more than 0.01A.

5.2 Employed Conditions

5.2.1 Do not keep thermal protector in the condition of 180°C for a long time, it would damage the plastic case and make the product ineffective.

5.2.2 Do not place thermal protector under conditions of alkali or acid for a long time.

5.3 Installation & connection

Do place the sensitivity point of protected subject closely to the right side of thermal protector which is marked with triangle concave.

During installation, do keep a close eye to the following to prevent the case from distortion or other damage.

- a. Do not press thermal protector hard to any sharps.
- b. Do not hammer the protector.
- c. When doing some welding, do not let the strong current through the product or that will bring some damage to the contact of thermal protector.

6 Storage conditions

During the transportation and storage, the packaging cases shall not be invaded by snow or rain, extruded or damaged, and the relative humidity of air shall be no more than 90%.

7 Certificate of approvals

VDE: 4001621

CQC: CQC05002013372

TUV: R 50109800

CB: CN5785

UL: E305764