



Thin Film Chip Resistors (RB series Standard)

Document No

TRB-100S001B

Issued date

2007/12/27

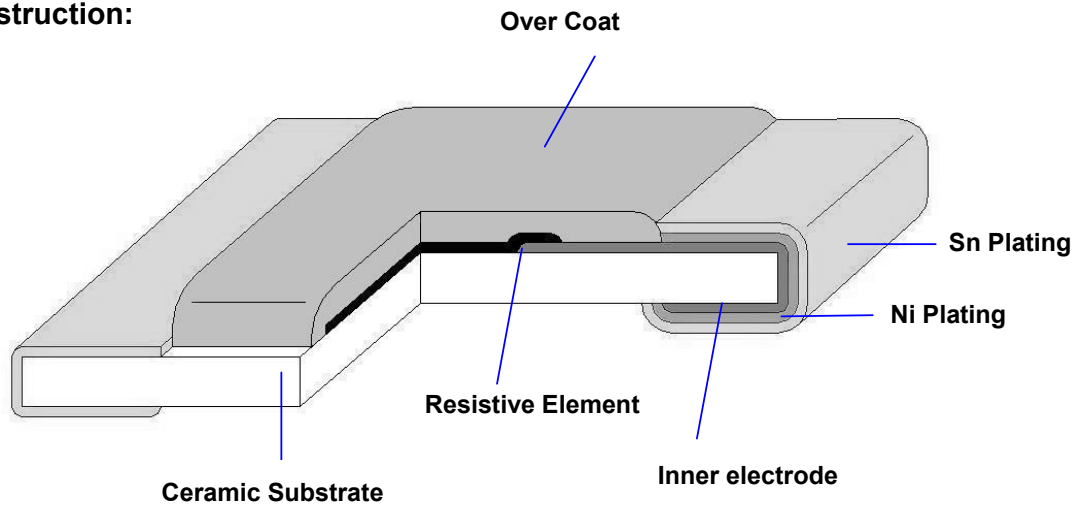
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1. Scope :

This specification applies for the RB series of thin film chip resistors made by TA-I.

2. Construction:



3. Type Designation:

| <u>RB</u> | <u>10</u> | <u>B</u> | <u>T</u> | <u>P</u> | <u>1001</u> |
|--------------------|--|---|---|-------------------|--------------------|
| Product Code | Size | Tolerance | Packaging | TCR | Nominal Resistance |
| RB : Thin Film | Power Rating | | | | Resistance |
| 10-0805(2012) 1/8W | B- ±0.10% C- ±0.25% D- ±0.50% F- ±1.00% | T- Paper Tape B- Bulk Cassette | J- ±5 ppm k- ±10 ppm M- ±15 ppm P- ±25 ppm S- ±50 ppm | e.g., 1001=1kΩ | |

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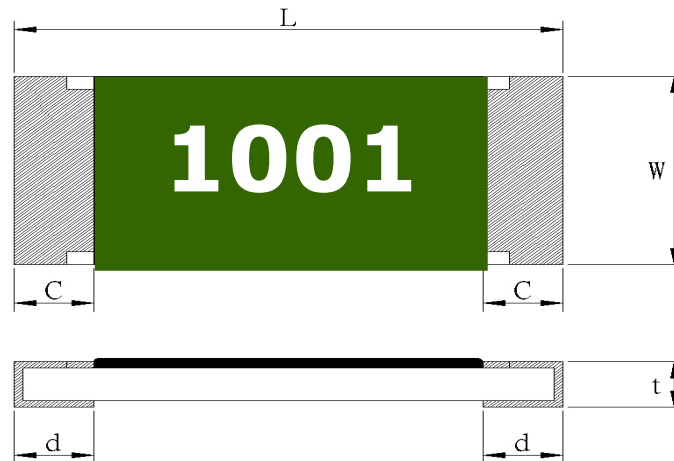
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4. Dimensions:



UNIT: mm

| Type | L | W | C | d | t |
|------|------------|------------|------------|------------|------------|
| RB10 | 2.00 ±0.10 | 1.25 ±0.10 | 0.40 ±0.20 | 0.40 ±0.20 | 0.50 ±0.10 |

5. Ratings & Characteristics

| Type | Power Rating at 70°C | Rated Voltage | Max. Working Voltage | Max. Over- Load Voltage | T.C.R (PPM/°C) | Resistance Range | Resistance tolerance(%) |
|------|----------------------|---------------|----------------------|-------------------------|---------------------|------------------|-------------------------|
| RB10 | 1/8 W | Refer 5.2 | 150V | 300V | ± 50 | 1~9.1Ω | ±0.5~1 |
| RB10 | 1/8 W | Refer 5.2 | 150V | 300V | ± 10 ±25 ± 50 | 10Ω~800KΩ | ± 0.1 ~ ±1.0 |

Operating Temp(°C): -55°C ~ +125°C

Note : Except for the above standardized products, we also provide the customized products.



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5.1 Derating Curve :

For resistors operated at ambient temperature over 70°C , power rating shall be derated according to figure 1.

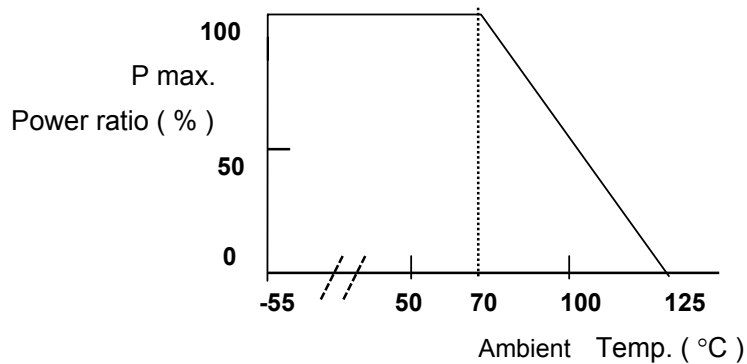


Figure 1

5.2 Rated Voltage:

The rated voltage is calculated by the following formula:

$$E = \sqrt{P * R}$$

E=Rated Voltage(V)

P=Rated Power(W)

R=Resistance Value(Ω)



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6. Reliability Tests:(As specified in JIS C 5202)

| Test Items | Reference standard | Condition of Test | Test Limits |
|---|--------------------|---|--|
| Temperature Coefficient of Resistance | JIS-C5202-5.2 | +25 ~ +125 °C | Refer 5.0 |
| Rapid Change of Temp. | JIS-C5202-7.4 | -55°C(30 min.) / +125°C(30 min.), 5 cycles | ±(0.5%+0.05Ω) |
| Short Time Overload | JIS-C5202-5.5 | 2.5 X rated voltage for 5sec | ±(0.5% + 0.05Ω) |
| Resistance to Dry Heat | JIS-C5202-7.2 | 125±5°C for 96±4Hrs | ±(0.5% +0.05Ω) |
| Load Life | JIS-C5202-7.10 | 1000 hours at rated power , 70°C , 1.5hours“ON “, 0.5hour “OFF” | ±(0.5% +0.05Ω) |
| Resistance to Solder Heat | JIS-C5202-6.10 | 270 ±5°C solder , 10 ±1 sec dwell . | ±(0.5% +0.05Ω) |
| Bending | JIS-C5202—6.1 | 3mm deflection | ±(0.5% +0.05Ω) |
| Dielectric Withstanding Voltage (Voltage Proof) | JIS-C5202-5.7 | Applying voltage : 0201 : 50V , 0402 & 0603 : 300V The other 500V for a minute . | No abnormalities such as flashover, burning dielectric breakdown shall appear. |
| Load Life with Humidity | JIS-C5202-7.5 | 40±2°C , 90~95% RH for 1000 hours | ±(0.5% +0.05Ω) |
| Insulation Resistance | JIS-C5202-5.6 | Applying voltage 100V for 1 minute. Remark : 0201 50V | ≥ 1GΩ |
| Solderability | JIS-C5202-6.11 | 245 ±5°C solder, 2 ±0.5 sec dwell. Solder : Sn96.5 / Ag3.0 / Cu0.5 | At least 95% of surface area of electrode shall be covered with new solder. |

Note* :RCWV : Rated continuous working voltage .

7. Marking

7.1 ±0.1% ~ 1%

Resistance value is expressed by 4 digits, the first three digits represent the significant figures of nominal resistance value in Ω , and the fourth digit represents exponent for base of 10.

e.g., 1001 =100 ×10¹ = 1000Ω=1KΩ

7.2 ±1%(RB06/E96)

When the marking space is too small in such small-sized resistors as RM06, the marking can not made by 4 digits and may be made by two digits combined with one English capital.



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Symbol for E96 series nominal resistance value

| Symbol | E96 | Symbol | E96 | Symbol | E96 | Symbol | E96 |
|--------|-----|--------|-----|--------|-----|--------|-----|
| 01 | 100 | 25 | 178 | 49 | 316 | 73 | 562 |
| 02 | 102 | 26 | 182 | 50 | 324 | 74 | 576 |
| 03 | 105 | 27 | 187 | 51 | 332 | 75 | 590 |
| 04 | 107 | 28 | 191 | 52 | 340 | 76 | 604 |
| 05 | 110 | 29 | 196 | 53 | 348 | 77 | 619 |
| 06 | 113 | 30 | 200 | 54 | 357 | 78 | 634 |
| 07 | 115 | 31 | 205 | 55 | 365 | 79 | 649 |
| 08 | 118 | 32 | 210 | 56 | 374 | 80 | 665 |
| 09 | 121 | 33 | 215 | 57 | 383 | 81 | 681 |
| 10 | 124 | 34 | 221 | 58 | 392 | 82 | 698 |
| 11 | 127 | 35 | 226 | 59 | 402 | 83 | 715 |
| 12 | 130 | 36 | 232 | 60 | 412 | 84 | 732 |
| 13 | 133 | 37 | 237 | 61 | 422 | 85 | 750 |
| 14 | 137 | 38 | 243 | 62 | 432 | 86 | 768 |
| 15 | 140 | 39 | 249 | 63 | 442 | 87 | 787 |
| 16 | 143 | 40 | 255 | 64 | 453 | 88 | 806 |
| 17 | 147 | 41 | 261 | 65 | 464 | 89 | 825 |
| 18 | 150 | 42 | 267 | 66 | 475 | 90 | 845 |
| 19 | 154 | 43 | 274 | 67 | 487 | 91 | 866 |
| 20 | 158 | 44 | 280 | 68 | 499 | 92 | 887 |
| 21 | 162 | 45 | 287 | 69 | 511 | 93 | 909 |
| 22 | 165 | 46 | 294 | 70 | 523 | 94 | 931 |
| 23 | 169 | 47 | 301 | 71 | 536 | 95 | 953 |
| 24 | 174 | 48 | 309 | 72 | 549 | 96 | 976 |

Symbol for multipliers

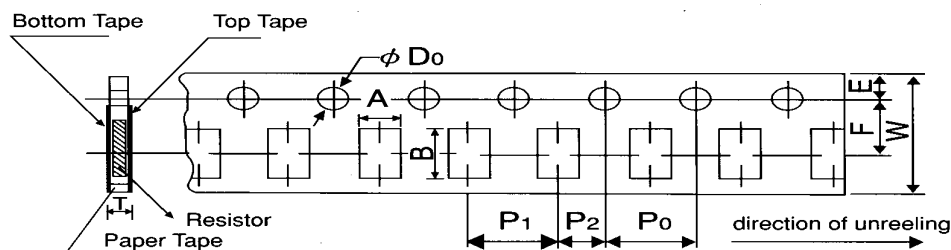
| Symbol | A | B | C | D | E | F | G | H | X | Y | Z |
|-------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|------------------|
| multipliers | 10 ⁰ | 10 ¹ | 10 ² | 10 ³ | 10 ⁴ | 10 ⁵ | 10 ⁶ | 10 ⁷ | 10 ⁻¹ | 10 ⁻² | 10 ⁻³ |

Ex: 02c=102 ×10²=10.2kΩ

8. Taping & Reel

8.1 Taping Dimensions

8.1.1 4 mm pitch paper



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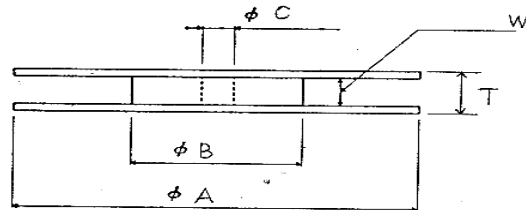
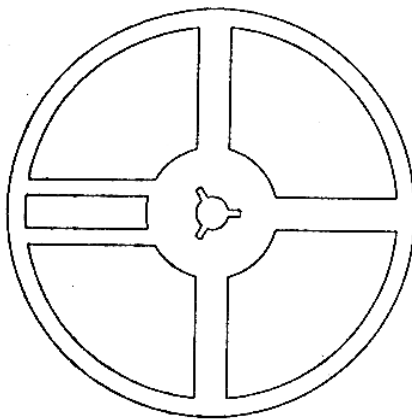
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| Packing | Type | A | B | W | F | E | P ₁ | P ₂ | P ₀ | D ₀ | T |
|------------|------|----------|---------|---------|----------|----------|----------------|----------------|----------------|-------------------------------------|----------|
| Paper Tape | RB10 | 1.6±0.15 | 2.4±0.2 | 8.0±0.2 | 3.5±0.05 | 1.75±0.1 | 4.0±0.1 | 2.0±0.1 | 4.0±0.1 | φ 1.5 ^{+0.1} ₋₀ | 0.84±0.1 |

UNIT: mm

| Type | Size | Paper Tape |
|------|------|------------|
| | | 4 mm pitch |
| | | 180mm/R |
| RB | 10 | 5000 |

8.2 Reel Specifications



| Type | φ A | φ B | φ C | W | T |
|------|---------------------------------|--------|-----------|----------|-----------|
| RB10 | 180 ⁺⁰ ₋₃ | 60 min | 13.0 ±1.0 | 9.0 ±1.0 | 11.4 ±2.0 |

UNIT: mm



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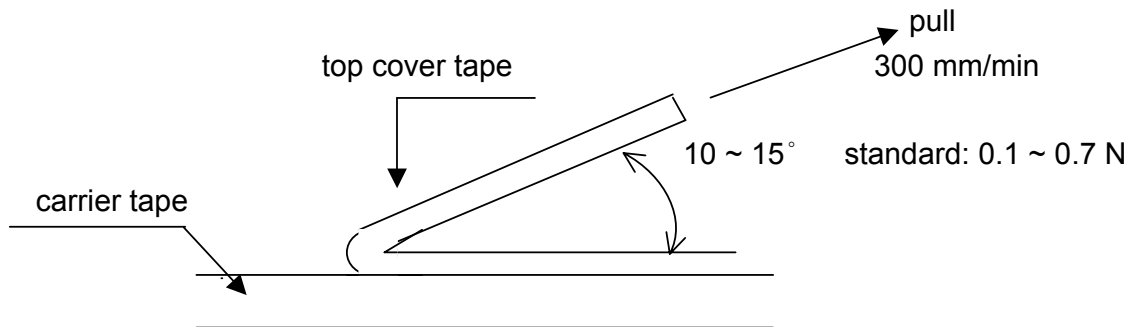
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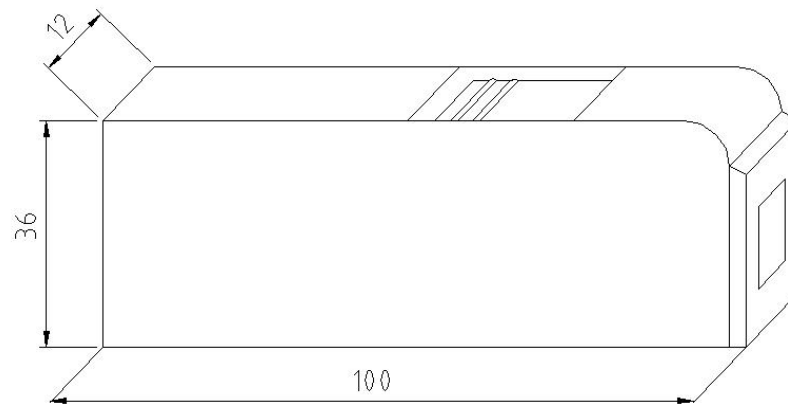
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8.3 Peel – off force :

Peel – off force of paper and blister tape is in accordance with “JIS ”
that is , 0.1 to 0.7 N at a peel-off speed of 300 mm / minute.



9. Bulk Case Specifications:



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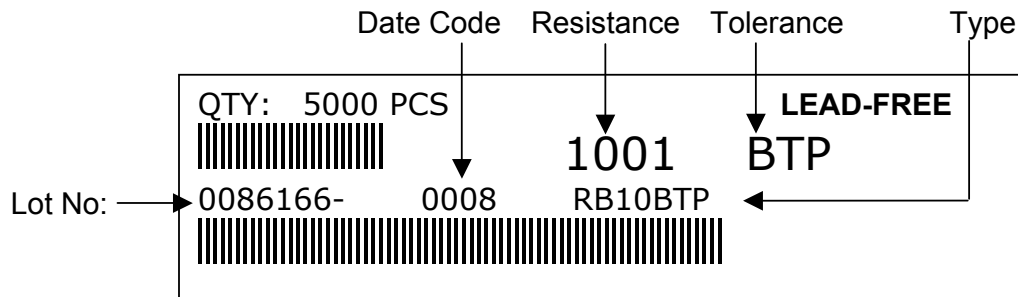
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UNIT:mm

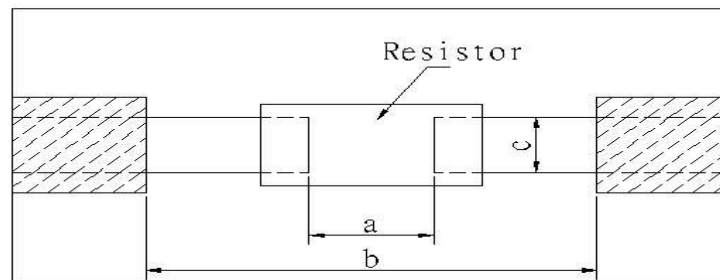
10. Label

10.1 Normal Products :



Manufacture Label

11. Recommended land patterns



| Land pattern | | Dimension (mm) | | |
|--------------|------------|------------------|-----------|-----------|
| Type | Size | a | b | c |
| RB | 10 (0805) | 1.0 ~ 1.4 | 3.2 ~ 3.8 | 0.9 ~ 1.4 |

12. ECN

Engineering Change Notice: The customer will be informed with ECN if there is significant modification on the characteristics and materials described in Approval Sheet.

13. Storage Conditions:

Temperature: 5°C~35°C, Humidity:40%~75%

14. Shelf Life:

2 years from manufacturing date.



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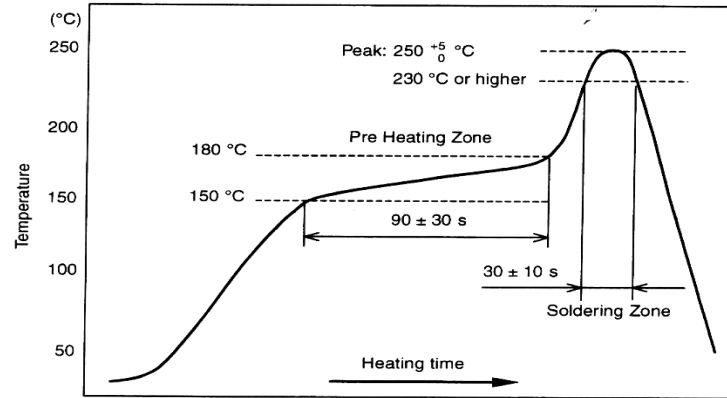
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15. Recommend IR – Reflow profile : (solder : Sn96.5 / Ag3 / Cu0.5)



Peak : 250 \pm 5 °C , 5 sec
- 0

Pre – heat Zone : 150 to 180 °C , 90 \pm 30 sec

Soldering Zone : 230°C or higher , 30 \pm 10 sec

16. Manufacturing Country & City:

TA-I TECHNOLOGY CO., LTD. (Taiwan– Taoyuan)

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(2) TA-I TECHNOLOGY (SU ZHOU) CO., LTD. (China – Jiang-Su)

Tel :86- 512-63457879 Fax : 86-512-63457869

(3) TAI OHM ELECTRONICS (M) SDN. BHD. (Malaysia – Pulaupinang)

Tel :604- 3900480 Fax : 604-3901481

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