# Endured high voltage fixed thick film chip resistors

## **KTR18** (3216 size: 1 / 4W)

### ●Features

1) Power rating of 1 / 4W
2) Limiting element voltage of KTR series is twice compared with that of MCR series.
3) Highly reliable chip resistor Ruthenium oxide dielectric offers superior resistance to the elements.
4) ROHM resistors have approved ISO–9001 certification.

Design and specifications are subject to change without notice. Carefully check the specification sheet before using or ordering it.

### ●Ratings

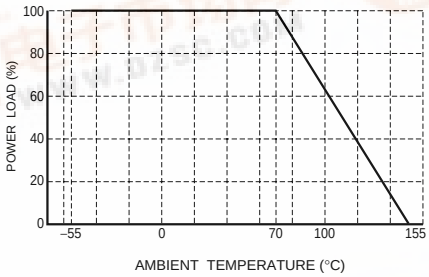
| Item | Conditions | Specifications |
|---|---|---|
| Rated power | Power must be derated according to the power derating curve in Figure 1 when ambient temperature exceeds 70°C.<br>  <br><br>Fig.1 | 0.25W (1 / 4W)<br>at 70°C |
| Rated voltage | The voltage rating is calculated by the following equation.<br>If the value obtained exceeds the limiting element voltage, the voltage rating is equal to the maximum operating voltage.<br>$E=\sqrt{P\times R}$<br>E: Rated voltage (V)<br>P: Rated power (W)<br>R: Nominal resistance (Ω) | Limiting element voltage: 400V |
| Nominal resistance | See Table 1. | |
| Operating temperature | | –55°C to +155°C |

Table 1

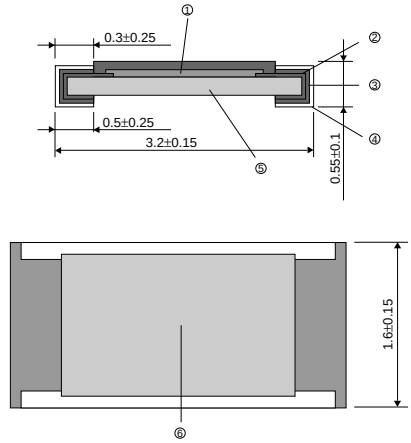
| Resistance tolerance | Resistance range (Ω) | Resistance temperature coefficient (ppm / °C) |
|---|---|---|
| F (±1%) | 5.6 ≤ R ≤ 10M (E24,96) | ±100 |
| J (±5%) | 5.6 ≤ R ≤ 10M (E24) | ±200 |

●Before using components in circuits where they will be exposed to transients such as pulse loads (short–duration, high–level loads), be certain to evaluate the component in the mounted state. In addition, the reliability and performance of this component cannot be guaranteed if it is used with a steady state voltage that is greater than its rated voltage.

## ●Characteristics

| Item | Guaranteed value<br>Resistor type | Test conditions (JIS C 5201-1) |
|---|---|---|
| Resistance | J : ±5%<br>F : ±1% | JIS C 5201-1 4.5 |
| Variation of resistance with temperature | See Table.1 | JIS C 5201-1 4.8<br>Measurement : –55 / +25 / +125°C |
| Overload | ± (2.0%+0.1Ω) | JIS C 5201-1 4.13<br>Rated voltage (current) ×2.5, 2s.<br>Limiting Element Voltage×2 : 800V |
| Solderability | A new uniform coating of minimum of 95% of the surface being immersed and no soldering damage. | JIS C 5201-1 4.17<br>Rosin·Ethanol (25%WT)<br>Soldering condition : 235±5°C<br>Duration of immersion : 2.0±0.5s. |
| Resistance to soldering heat | ± (1.0%+0.05Ω)<br>No remarkable abnormality on the appearance. | JIS C 5201-1 4.18<br>Soldering condition : 260±5°C<br>Duration of immersion : 10±1s. |
| Rapid change of temperature | ± (1.0%+0.05Ω) | JIS C 5201-1 4.19<br>Test temp. : –55°C to +125°C 5cyc |
| Damp heat, steady state | ± (3.0%+0.1Ω) | JIS C 5201-1 4.24<br>40°C, 93%RH<br>Test time : 1,000h to 1,048h |
| Endurance at 70°C | ± (3.0%+0.1Ω) | JIS C 5201-1 4.25.1<br>Rated voltage (current), 70°C<br>1.5h : ON – 0.5h : OFF<br>Test time : 1,000h to 1,048h |
| Endurance | ± (3.0%+0.1Ω) | JIS C 5201-1 4.25.3<br>155°C<br>Test time : 1,000h to 1,048h |
| Resistance to solvent | ± (1.0%+0.05Ω) | JIS C 5201-1 4.29<br>23±5°C, Immersion cleaning, 5±0.5min.<br>Solvent : 2-propanol |
| Bend strength of the end face plating | ± (1.0%+0.05Ω)<br>Without mechanical damage such as breaks. | JIS C 5201-1 4.33 |

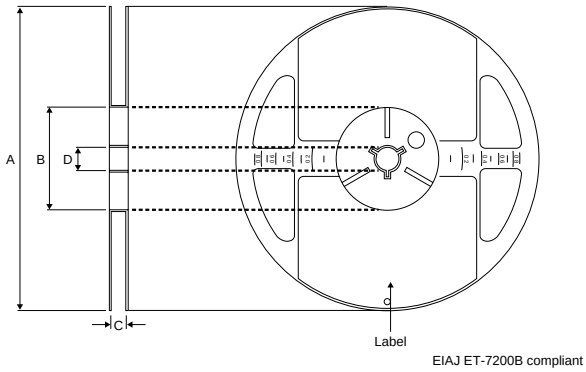
## ●External dimensions (Unit : mm)




| No. | Material |
|---|---|
| ① | Thick film resistive element |
| ② | Silver thick film electrode |
| ③ | Nickel electrode |
| ④ | Sn electrode |
| ⑤ | Alumina substrate |
| ⑥ | Overcoating |

## ●Packaging

### Reel

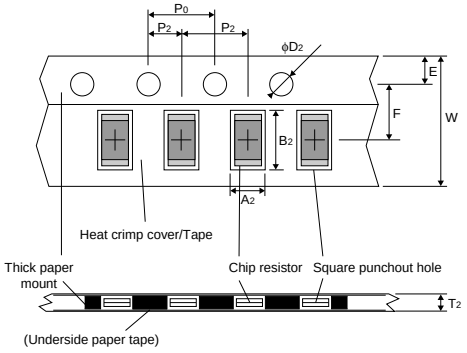



EIAJ ET-7200B compliant

(Unit: mm)

| A | B | C | D |
|---|---|---|---|
| $\phi180^{\ 0}_{-1.5}$ | $\phi60^{\ +1}_{\ 0}$ | $9^{\ +1.0}_{\ 0}$ | $\phi13\pm0.2$ |

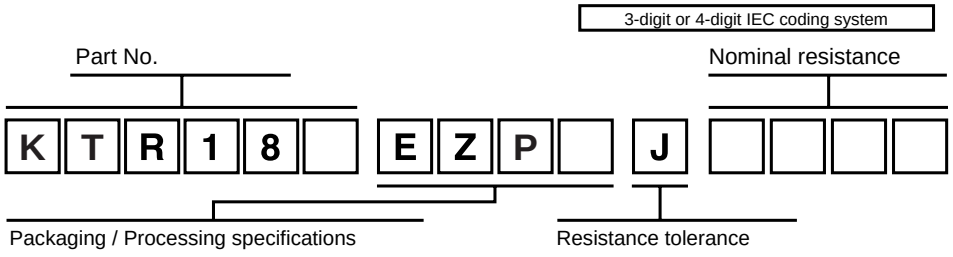
### Taping




(Unit: mm)

| W | F | E | $A_2$ | $B_2$ |
|---|---|---|---|---|
| 8.0±0.3 | 3.5±0.05 | 1.75±0.1 | $1.95^{+0.1}_{-0.05}$ | $3.5^{+0.15}_{-0.05}$ |
| $D_2$ | $P_2$ | $P_2$ | $P_2$ | $T_2$ |
| $\phi1.5^{+0.1}_{0}$ | 4.0±0.1 | 4.0±0.1 | 2.0±0.05 | Max. 1.1 |

## ●Makeup of the part number




| Part No. | Code | Packaging | Standard ordering unit(pcs) |
|---|---|---|---|
| KTR18 | EZP | Paper tape | 5,000 |

| | | | |
|---|---|---|---|
| F | ±1% | J | ±5% |

## ●Dimensions

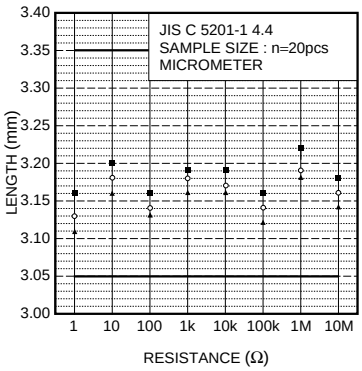



Fig.2 Dimensions (length)

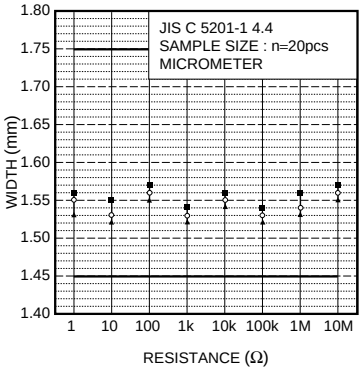



Fig.3 Dimensions (width)

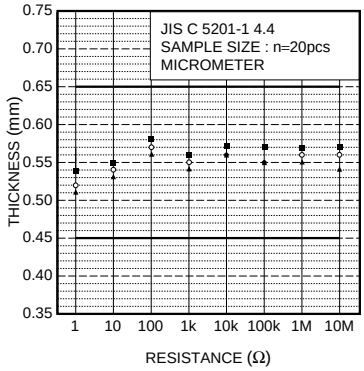



Fig.4 Dimensions (thickness)

## ●Electrical characteristics

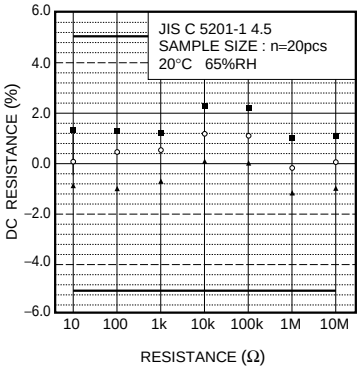



Fig.5 Resistance (J class)

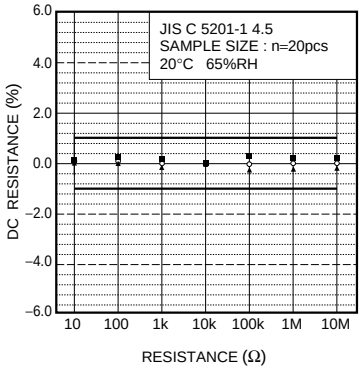



Fig.6 Resistance (F class)

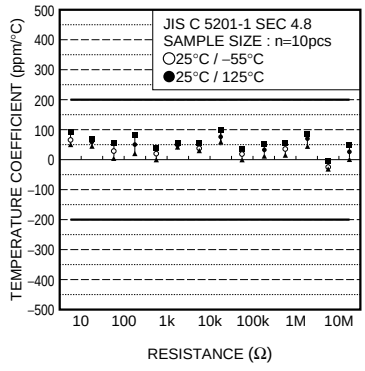



Fig.7 Variation resistance with temperature (J class)

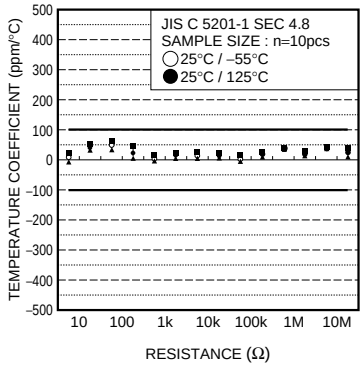



Fig.8 Variation resistance with temperature (F class)

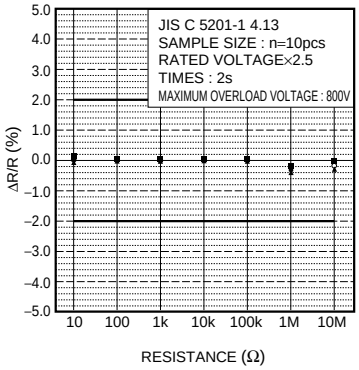



Fig.9 Overload

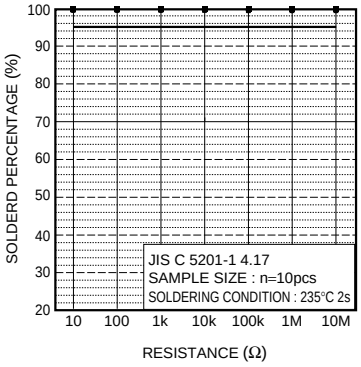



Fig.10 Solderability

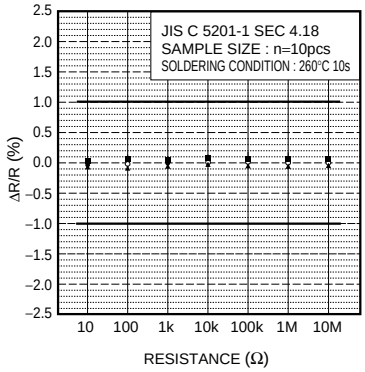



Fig.11 Resistance to soldering heat

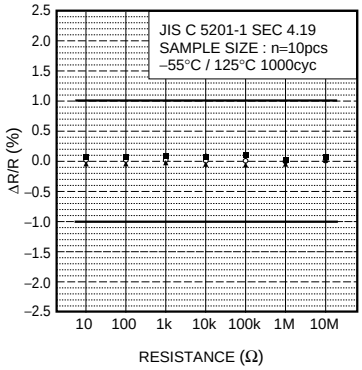



Fig.12 Rapid change of temperature

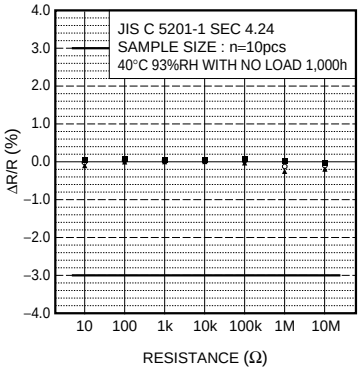



Fig.13 Damp heat , Steady state

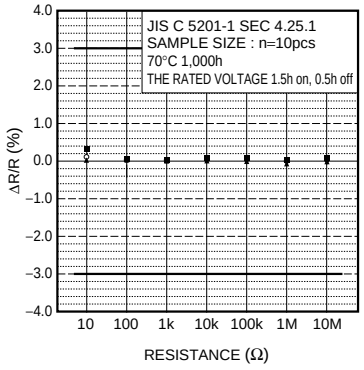



Fig.14 Endurance (at70°C)

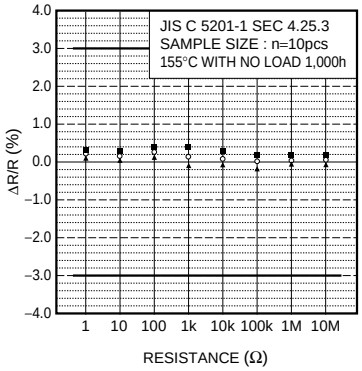



Fig.15 Endurance

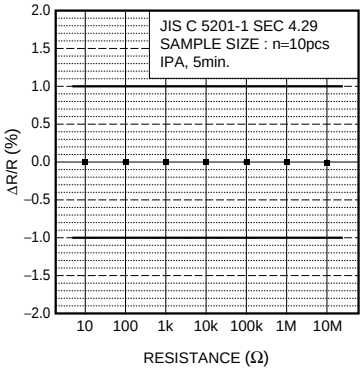



Fig.16 Component solvent resistance

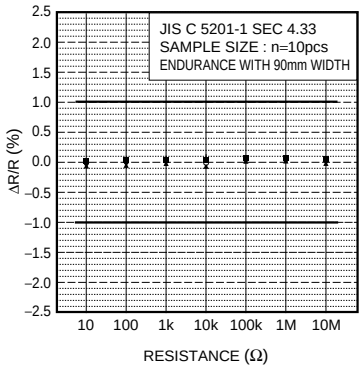



Fig.17 Bend strength of the end face plating

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