

KWK RESISTORS INDIA



KCTN SERIES - THIN FILM CHIP RESISTORS - SURFACE MOUNT TYPE

The KCTN series is a range of advanced thin film technology fixed chip, commonly known as SMD. Nickel - Chromium is used to construct these resistors. The construction includes highly reliable multilayer electrodes. This series is designed to be compatible with all soldering processes.

Features:

- Advanced Thin Film Technology
- Very low tolerance up to $\pm 0.01\%$
- Extremely low TCR up to $\pm 5\text{PPM}/^\circ\text{C}$
- Wide resistance range 1Ω to $3\text{M}\Omega$

Applications:

- Medical Equipment.
- Testing & Measuring Equipment.
- Automatic Equipment Controller.
- Converters, Communication Devices, cell phones, GPS & PDA.



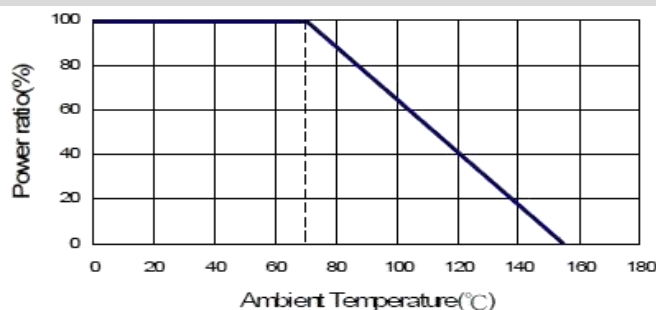
ELECTRICAL AND ENVIRONMENTAL SPECIFICATIONS

| Characteristics | Condition | Compliance |
|--|--|--|
| Tolerance | | $\pm 0.01\%, \pm 0.05\%, \pm 0.1\%, \pm 0.25\%, \pm 0.5\%, \pm 1\%$ |
| Insulation Resistance | 100V DC for 1minute (According to MIL-STD-202F METHOD302) | $\geq 1000\text{M}\Omega$ |
| Change in resistance a. Short time overload b. Endurance c. Damp Heat with load d. Bending Strength e. Low Temperature Operation f. Resistance to soldering heat g. Thermal Shock | RCWV*2.5 or Max. overload voltage for 5sec (2sec for high power series). @70 $\pm 2^\circ\text{C}$ Max. working voltage for 1000hrs with 1.5hrs ON and 0.5hrs OFF. (According to MIL-STD-202F METHOD108A) @40 $\pm 2^\circ\text{C}$, 90~95% RH. Max. working voltage for 1000hrs with 1.5hrs ON and 0.5hrs OFF. (According to MIL-STD-202F METHOD103B) Bending amplitude 3mm for 10 seconds -65 $^\circ\text{C}$ 1hr, followed by 45minutes RCWV 260 $\pm 5^\circ\text{C}$ for 10 seconds (According to MIL-STD-202F METHOD210E) -55 $^\circ\text{C}$ to 150 $^\circ\text{C}$, 100 cycles (According to MIL-STD-202F METHOD107G) | $\pm 0.05\%$ for Tol $\leq 0.05\%$, $\pm 0.2\%$ for Tol $> 0.05\%$ $\pm 0.2\%$ for high power rating. $\pm 0.05\%$ for Tol $\leq 0.05\%$, $\pm 0.2\%$ for Tol $> 0.05\%$ $\pm 0.5\%$ for R $> 7\text{k}\Omega$ & high power rating. $\pm 0.05\%$ for Tol $\leq 0.05\%$, $\pm 0.3\%$ for Tol $> 0.05\%$ $\pm 0.5\%$ for high power rating. $\pm 0.05\%$ for Tol $\leq 0.05\%$, $\pm 0.2\%$ for Tol $> 0.05\%$ $\pm 0.05\%$ for Tol $\leq 0.05\%$, $\pm 0.2\%$ for Tol $> 0.05\%$ $\pm 0.5\%$ for high power rating. $\pm 0.05\%$ for Tol $\leq 0.05\%$, $\pm 0.2\%$ for Tol $> 0.05\%$ $\pm 0.05\%$ for Tol $\leq 0.05\%$, $\pm 0.25\%$ for Tol $> 0.05\%$ |
| Solderability | 245 $\pm 5^\circ\text{C}$ for 3 seconds (According to MIL-STD-202F METHOD103B) | $> 95\%$ |
| Voltage Proof | Max overload voltage for 1minute (According to MIL-STD-202F METHOD301) | No breakdown |

Storage Conditions

Temperature— 25 $\pm 3^\circ\text{C}$; Humidity <80%RH

POWER DERATING CURVE

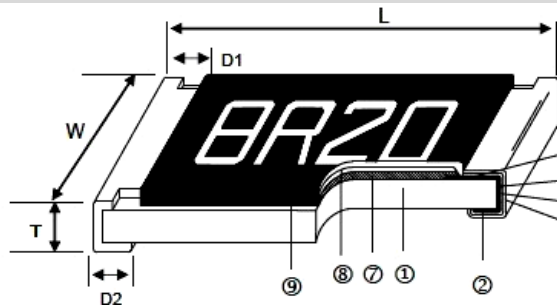


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KCTN SERIES - THIN FILM CHIP RESISTORS - SURFACE MOUNT TYPE

RESISTANCE RANGE AND DIMENSIONAL DETAILS - STANDARD POWER



1. Alumina Substrate
2. Bottom Electrode (Ag)
3. Top Electrode (Ag)
4. Edge Electrode (NiCr)
5. Barrier layer (Ni)
6. External Electrode (Sn)
7. Resistor layer (NiCr)
8. Overcoat (Epoxy)
9. Marking

Note: All dimension are in mm.

| Series | Rated Power @70°C | Operating Temp. Range | Max. Operating Voltage | Max Overload Voltage | Resistance Range | Tolerance | TCR (PPM/°C) | Size (inch) | L | W | T | D1 D2 | Weight (g/1000pcs) |
|----------|-------------------|-----------------------|------------------------|----------------------|---------------------------------------|----------------------------------|----------------------------------|-------------|-----------|-----------|-----------|------------------------|--------------------|
| KCTN0201 | 1/32W | -55 to +155°C | 15V | 30V | 49.9Ω-4.99KΩ 49.9Ω-33KΩ | ±0.5% ±1% | ±25 ±50 | 0201 | 0.58±0.05 | 0.29±0.05 | 0.23±0.05 | 0.12±0.05 0.15±0.05 | 0.14 |
| KCTN0402 | 1/16W | | 25V | 50V | 49.9Ω-12KΩ 10Ω-255KΩ 4.7Ω-511KΩ | ±0.05% ±0.1% ±0.5%, ±1% | ±25, ±50 ±50 ±50 | 0402 | 1.00±0.05 | 0.50±0.05 | 0.30±0.05 | 0.20±0.10 0.20±0.10 | 0.54 |
| KCTN0603 | 1/16W | | 50V | 100V | 4.7Ω-332KΩ 4.7Ω-1MΩ 1Ω-1MΩ | ±0.05% ±0.1% ±0.25% to ±1% | ±25, ±50 ±25, ±50 ±25, ±50 | 0603 | 1.55±0.10 | 0.80±0.10 | 0.45±0.10 | 0.30±0.20 0.30±0.20 | 1.83 |
| KCTN0805 | 1/10W | | 100V | 200V | 4.7Ω-1MΩ 4.7Ω-2MΩ 1Ω-2MΩ | ±0.05% ±0.1% ±0.25% to ±1% | ±25, ±50 ±25, ±50 ±25, ±50 | 0805 | 2.00±0.15 | 1.25±0.15 | 0.55±0.10 | 0.30±0.20 0.40±0.20 | 4.71 |
| KCTN1206 | 1/8W | | 150V | 300V | 4.7Ω-1MΩ 4.7Ω-2.49MΩ 1Ω-2.49MΩ | ±0.05% ±0.1% ±0.25% to ±1% | ±25, ±50 ±25, ±50 ±25, ±50 | 1206 | 3.05±0.15 | 1.55±0.15 | 0.55±0.10 | 0.42±0.20 0.35±0.25 | 9.02 |
| KCTN1210 | 1/4W | | | | | | | 1210 | 3.10±0.15 | 2.40±0.15 | 0.55±0.10 | 0.40±0.20 0.55±0.25 | 10 |
| KCTN2010 | 1/4W | | 150V | 300V | 4.7Ω-1MΩ 4.7Ω-3MΩ 1Ω-3MΩ | ±0.05% ±0.1% ±0.25% to ±1% | ±25, ±50 ±25, ±50 ±25, ±50 | 2010 | 4.90±0.15 | 2.40±0.15 | 0.55±0.10 | 0.60±0.30 0.50±0.25 | 23.61 |
| KCTN2512 | 1/2W | | | | | | | 2512 | 6.30±0.15 | 3.10±0.15 | 0.55±0.10 | 0.50±0.25 | 38.06 |

RESISTANCE RANGE AND DIMENSIONAL DETAILS - MEDIUM POWER

| | | | | | | | | | | | | | |
|-----------|-------|---------------|------|------|--|--|------------------------------------|------|-----------|-----------|-----------|------------------------|-------|
| KCTNM0402 | 1/16W | -55 to +155°C | 25V | 50V | 49.9Ω-4.99KΩ 49.9Ω-69.8KΩ | ±0.01% to ±1% ±0.01% to ±1% | ±2, ±3, ±5 ±10, ±15 | 0402 | 1.00±0.05 | 0.50±0.05 | 0.30±0.05 | 0.20±0.10 0.20±0.10 | 0.54 |
| KCTNM0603 | 1/16W | | | | | | | | | | | | |
| KCTNM0805 | 1/10W | | 100V | 200V | 24.9Ω-30KΩ 24.9Ω-200KΩ 4.7Ω-1MΩ | ±0.01% to ±1% ±0.01% ±0.05% to ±1% | ±2, ±3, ±5 ±10, ±15 ±10, ±15 | 0805 | 2.00±0.15 | 1.25±0.15 | 0.55±0.10 | 0.30±0.20 0.40±0.20 | 4.71 |
| KCTNM1206 | 1/8W | | | | | | | | | | | | |
| KCTNM1210 | 1/4W | | 150V | 300V | 24.9Ω-100KΩ 24.9Ω-499KΩ 4.7Ω-1MΩ | ±0.01% to ±1% ±0.01% ±0.05% to ±1% | ±2, ±3, ±5 ±10, ±15 ±10, ±15 | 1210 | 3.10±0.15 | 2.40±0.15 | 0.55±0.10 | 0.40±0.20 0.55±0.25 | 10 |
| KCTNM2010 | 1/4W | | | | | | | | | | | | |
| KCTNM2512 | 1/2W | | 150V | 300V | 24.9Ω-100KΩ 24.9Ω-499KΩ 4.7Ω-1MΩ | ±0.01% to ±1% ±0.01% ±0.05% to ±1% | ±2, ±3, ±5 ±10, ±15 ±10, ±15 | 2512 | 6.30±0.15 | 3.10±0.15 | 0.55±0.10 | 0.60±0.30 0.50±0.25 | 38.06 |

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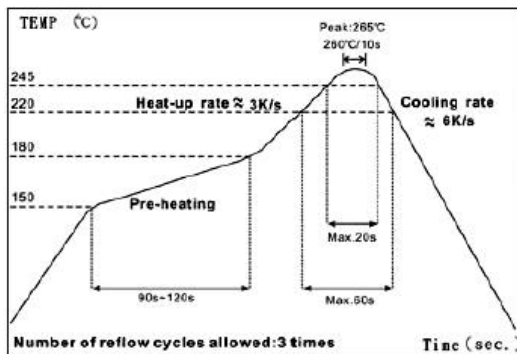


KCTN SERIES - THIN FILM CHIP RESISTORS - SURFACE MOUNT TYPE

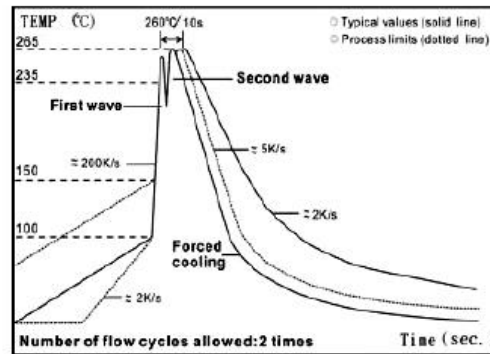
RESISTANCE RANGE AND DIMENSIONAL DETAILS - HIGH POWER

| Series | Rated Power @70°C | Operating Temp. Range | Max. Operating Voltage | Max Overload Voltage | Resistance Range | Tolerance | TCR (PPM/°C) | Dimensional Details |
|-----------|-------------------|-----------------------|------------------------|----------------------|---|---|---|-----------------------------|
| KCTNH0603 | 1/10W | -55 to +155°C | 75V | 150V | 24.9Ω-15KΩ 24.9Ω-100KΩ 4.7Ω-332KΩ 4.7Ω-1MΩ | ±0.01% to ±1% ±0.01% ±0.05% to ±1% ±0.1% to ±1% | ±2, ±3, ±5 ±10, ±15, ±25, ±50 ±10, ±15, ±25, ±50 ±25, ±50 | Please Refer Previous table |
| | 1/6W | | 100V | 150V | 10Ω-332KΩ | ±0.05% to ±1% | ±25, ±50 | |
| KCTNH0805 | 1/8W | | 150V | 300V | 24.9Ω-30KΩ 24.9Ω-200KΩ 4.7Ω-511KΩ 4.7Ω-1MΩ 1Ω-1MΩ | ±0.01% to ±1% ±0.01% ±0.05% to ±1% ±0.1% to ±1% ±0.25% to ±1% | ±2, ±3, ±5 ±10, ±15, ±25, ±50 ±10, ±15, ±25, ±50 ±15 ±25, ±50 | |
| | 1/4W | | 150V | 300V | 10Ω-499KΩ | ±0.05% to ±1% | ±25, ±50 | |
| KCTNH1206 | 1/4W | | 200V | 400V | 24.9Ω-49.9KΩ 24.9Ω-499KΩ 4.7Ω-1MΩ | ±0.01% to ±1% ±0.01% ±0.05% to ±1% | ±2, ±3, ±5 ±10, ±15, ±25, ±50 ±10, ±15, ±25, ±50 | |
| | 1/3W | | 200V | 400V | 10Ω-1MΩ | ±0.05% to ±1% | ±25, ±50 | |
| KCTNH1210 | 1/3W | | 200V | 400V | 24.9Ω-49.9KΩ 24.9Ω-499KΩ 4.7Ω-1MΩ | ±0.01% to ±1% ±0.01% ±0.05% to ±1% | ±2, ±3, ±5 ±10, ±15, ±25, ±50 ±10, ±15, ±25, ±50 | |
| KCTNH2010 | 1/3W | | 200V | 400V | 24.9Ω-49.9KΩ 24.9Ω-499KΩ 4.7Ω-1MΩ | ±0.01% to ±1% ±0.01% ±0.05% to ±1% | ±2, ±3, ±5 ±10, ±15, ±25, ±50 ±10, ±15, ±25, ±50 | |
| KCTNH2512 | 3/4W | | 200V | 400V | 24.9Ω-2KΩ 4.7Ω-2KΩ 1Ω-2KΩ | ±0.01% ±0.05% to ±0.1% ±0.25% to ±1% | ±10, ±15, ±25, ±50 | |
| | 1W | | 200V | 400V | 4.7Ω-100Ω 1Ω-100Ω | ±0.1% ±0.25% to ±1% | ±25, ±50 | |

SOLDERING CONDITION



IR Reflow Soldering



Wave Soldering (Flow Soldering)

- (1) Time of IR reflow soldering at maximum temperature point 260°C : 10s
- (2) Time of wave soldering at maximum temperature point 260°C : 10s
- (3) Time of soldering iron at maximum temperature point 410°C : 5s

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ORDERING DETAILS

KCTNseries W R T C P TR

| | | |
|----------------|--------------------|--|
| KCTN/M/Hseries | - Series Model # | (KCTN-Standard Power, KCTNM-Medium Power, KCTNH-High Power, 0201,0402,0603,0805,1206,1210,2010,2512) |
| W | - Rated Power | (1/32,1/16,1/10,1/8,1/6,1/4,1/3,1/2,3/4,1W) |
| R | - Resistance Value | (e.g. 1R=1Ω, 5R2=5.2Ω, 1k=1kΩ, 1M=1MΩ) |
| T | - Tolerance Code | (±0.01%- T,±0.05%- A,±0.1%-B,±0.25%-C,±0.5%-D ±1% - F) |
| C | - TCR | (as per above tables) |
| P | - Packaging | (T: Taping Reel, B: Bulk) |

Disclaimer: Product specifications, data and dimensions are subject to change without any prior notice to improve performance, reliability and design.

Example: KCTN0201 1/32 10R A 50 T - Standard Power KCTN0201 1/32W 10R 0.1% ±50PPM/°C with Tape Reel packing.

Please feel free to contact us for any assistance required to choose the right solution. We are also able to design Custom Resistive Solutions.

KWK Resistors India Pvt. Ltd.

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