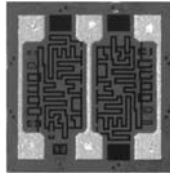


Nichrome Thin Film, Center Tapped Resistor Divider Network



Product may not be to scale

The CTN series is a center tapped nichrome resistor chip providing excellent stability at 250 mW power levels.

The CTN offers the designer flexibility in use as either a single value resistor or as two resistors with a center tap feature. The CTNs six bonding pads allows the user increased layout flexibility.

The CTNs are manufactured using Vishay Electro-Films (EFI) sophisticated thin film equipment and manufacturing technology. The CTNs are 100 % electrically tested and visually inspected to MIL-STD-883, method 2032 class H or K.

FEATURES

- Wire bondable
- Center tap feature
- Chip size: 0.030" x 0.030"
- Case: 0303
- Resistance range total: 10 Ω to 1 MΩ
- Ratio tolerances to: 0.1 %
- Resistor material: Nichrome
- Oxidized silicon substrate for good power dissipation
- Material categorization: For definitions of compliance please see www.vishay.com/doc?99912



APPLICATIONS

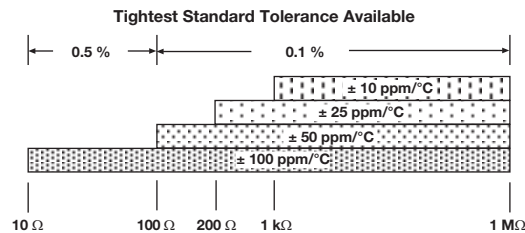
The CTN center-tapped resistor chips are used mainly in feedback circuits of amplifiers where ratio matching, high power and tracking between two resistors is critical.

Recommended for Hermetic environment where die is not exposed to moisture.

For low values, the resistance of the six bonding-pad configurations can vary, depending on the method of measurement used.

Vishay EFI measures low-value resistors by the four wire Kelvin technique.

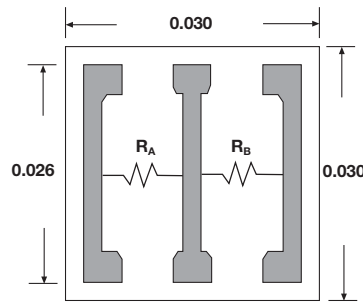
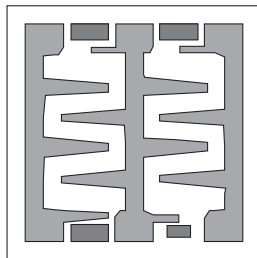
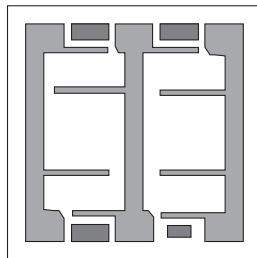
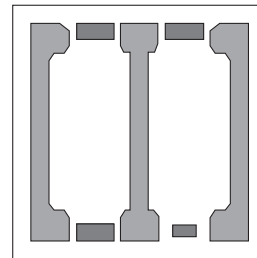
| TEMPERATURE COEFFICIENT OF RESISTANCE, VALUES, AND TOLERANCES | | |
|---|-------------------------|--------|
| PARAMETER | VALUE | UNIT |
| Total Resistance Range | 10 to 1M | Ω |
| Standard Tolerances | ± 0.1, ± 0.5 | % |
| TCR | ± 10, ± 25, ± 50, ± 100 | ppm/°C |

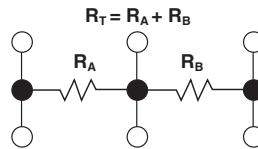


| STANDARD ELECTRICAL SPECIFICATIONS | | |
|--|-----------------------|--------|
| PARAMETER | VALUE | UNIT |
| TCR Tracking Between Halves (R_A/R_B) ⁽¹⁾ | ± 2 | ppm/°C |
| Center Tap Ratio, R_A/R_B : Tolerance | 1 ± 1 standard | % |
| Noise, MIL-STD-202, Method 308, 100 Ω to 250 kΩ | - 35 typ. | dB |
| Stability, 1000 h, + 125 °C, 125 mW | ± 0.1 max. ΔR/R | % |
| Operating Temperature Range | - 55 to + 125 | °C |
| Dielectric Voltage Breakdown | 200 | V |
| Insulation Resistance | 10 ¹² min. | Ω |
| Operating Voltage | 100 max. | V |
| DC Power Rating at + 70 °C (derated to zero at + 175 °C) | 0.25 max. | W |

Note

(1) 20 ppm/°C for $R < 20$

DIMENSIONS in inches

STANDARD CONFIGURATION
 Six locations. All pads 0.005 x 0.005 inch

TYPICAL RANGE
 10 Ω to 26 Ω

TYPICAL RANGE
 27 Ω to 99 Ω

TYPICAL RANGE
 100 Ω to 1 MΩ

SCHEMATIC


| MECHANICAL SPECIFICATIONS | |
|---------------------------|---|
| PARAMETER | VALUE |
| Chip Size | 0.030" x 0.030" ± 0.002" (0.762 mm x 0.762 mm ± 0.050 mm) |
| Chip Thickness | 0.010" ± 0.002" (0.254 mm ± 0.05 mm) |
| Chip Substrate Material | Oxidized silicon, 10 kÅ minimum SiO ₂ |
| Resistor Material | Nichrome |
| Bonding Pad Size | 0.005" x 0.005" (0.127 mm x 0.127 mm) min. |
| Number of Pads | 6 |
| Pad Material | 15 kÅ minimum gold (Au optional) |
| Backing | None, lapped semiconductor silicon (Au optional) |

Options: Alphanumeric part marking, up to six characters.

| GLOBAL PART NUMBER INFORMATION | | | | | | | | | | | | | | | | |
|--|--|---|--|--|---|--|--------------------------------|----------------------------------|--|--|----------|----------|----------|----------|----------|----------|
| Global Part Number: CTN50000KCKGNHWS | | | | | | | | | | | | | | | | |
| Global Part Number Description: CTN 5K 10% RT 0.25% ± 100 ppm/°C ± 10 ppm/°C Au None H WS | | | | | | | | | | | | | | | | |
| C | T | N | 5 | 0 | 0 | 0 | 0 | K | C | K | K | G | N | H | W | S |
| MODEL | RESISTANCE (R TOTAL) | RESISTANCE MULTIPLIER CODE | TOL. CODE (%) | RATIO TOL. (%) | TCR (ppm/°C) | TCR TRACK (ppm/°C) | TERMINATION | BACK METAL | VISUAL CLASS | PACKAGING CODE | | | | | | |
| CTN | First 4 digits are significant figures of resistance | B = 0.01 A = 0.1 0 = 1 1 = 10 2 = 100 3 = 1000 | B = 0.1 C = 0.25 D = 0.5 F = 1.0 G = 2.0 J = 5.0 K = 10.0 | B = 0.1 C = 0.25 D = 0.5 F = 1.0 G = 2.0 N = No | B = ± 10 E = ± 25 C = ± 50 K = ± 100 | G = ± 2 J = ± 5 K = ± 10 N = No | G = Au A = Al | G = Au N = None | H = Class H K = Class K | WS = Waffle pack 100 min., 1 mult | | | | | | |



Disclaimer

ALL PRODUCT, PRODUCT SPECIFICATIONS AND DATA ARE SUBJECT TO CHANGE WITHOUT NOTICE TO IMPROVE RELIABILITY, FUNCTION OR DESIGN OR OTHERWISE.

Vishay Intertechnology, Inc., its affiliates, agents, and employees, and all persons acting on its or their behalf (collectively, "Vishay"), disclaim any and all liability for any errors, inaccuracies or incompleteness contained in any datasheet or in any other disclosure relating to any product.

Vishay makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, Vishay disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on Vishay's knowledge of typical requirements that are often placed on Vishay products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and / or specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify Vishay's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Hyperlinks included in this datasheet may direct users to third-party websites. These links are provided as a convenience and for informational purposes only. Inclusion of these hyperlinks does not constitute an endorsement or an approval by Vishay of any of the products, services or opinions of the corporation, organization or individual associated with the third-party website. Vishay disclaims any and all liability and bears no responsibility for the accuracy, legality or content of the third-party website or for that of subsequent links.

Vishay products are not designed for use in life-saving or life-sustaining applications or any application in which the failure of the Vishay product could result in personal injury or death unless specifically qualified in writing by Vishay. Customers using or selling Vishay products not expressly indicated for use in such applications do so at their own risk. Please contact authorized Vishay personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of Vishay. Product names and markings noted herein may be trademarks of their respective owners.