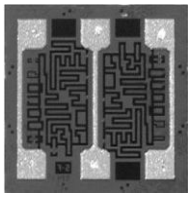
Thin Film, Center-Tapped Resistor Divider Network



Product may not be to scale

LINKS TO ADDITIONAL RESOURCES

3D Models

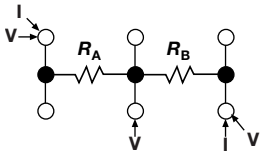
The CTR series is a center-tapped resistor chip combining excellent stability with 250 mW power levels. The CTR offers the designer flexibility in use as either a single value resistor as two resistors with a center tap feature. The CTR's six bonding pads allows the user increased layout flexibility.

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

FEATURES

- Wire bondable
- Center tap feature
- Tight ratio tolerances to: 0.05 %
- Chip size: 0.030" x 0.030"
- Case: 0303
- Resistance range total: 10 Ω to 1 MΩ
- Oxidized silicon substrate for good power dissipation
- Moisture resistant
- Resistor material: tantalum nitride, self-passivating
- Material categorization: for definitions of compliance please see www.vishay.com/doc?99912

Pb-free
RoHS COMPLIANT
HALOGEN FREE
GREEN (5-2008)

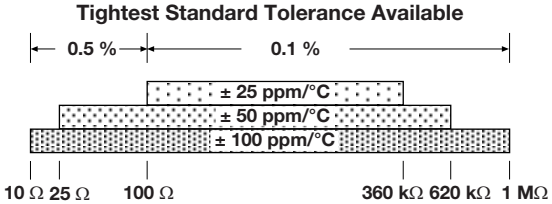


APPLICATIONS

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

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. The method illustrated above is critical for resistors of less than 100 Ω.

TEMPERATURE COEFFICIENT OF RESISTANCE, VALUES, AND TOLERANCES		
PARAMETER	**VALUE**	**UNIT**
Total Resistance Range	10 to 1M	Ω
Standard Tolerances	± 0.1, ± 0.5	%
TCR	± 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 or > 251 kΩ	-20 typ.	dB
Moisture Resistance, MIL-STD-202, Method 106	± 0.5 max. $\Delta R/R$	%
Stability, 1000 h, +125 °C, 125 mW	± 0.2 max. absolute	%
Operating Temperature Range	-55 to +150	°C
Thermal Shock, MIL-STD-202, Method 107, Test Condition F	± 0.1 max. $\Delta R/R$	%
High Temperature Exposure, +150 °C, 100 h	± 0.2 max. $\Delta R/R$	%
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
5x Rated Power Short-Time Overload, +25 °C, 5 s	± 0.1 max. $\Delta R/R$	%

Note
(1) 5 ppm/°C for R < 100. 20 ppm/°C for R < 20

For technical questions, contact: efi@vishay.com
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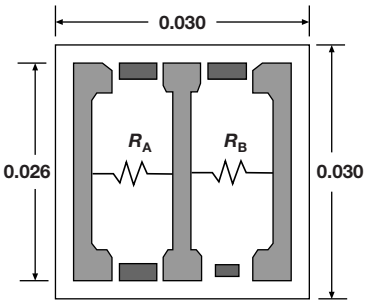
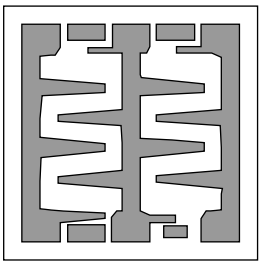
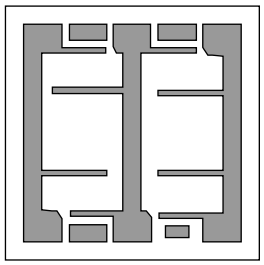
DIMENSIONS in inches



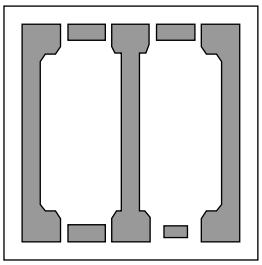
STANDARD CONFIGURATION
Six locations. All pads 0.005" x 0.005"



TYPICAL RANGE
10 Ω to 26.9 Ω

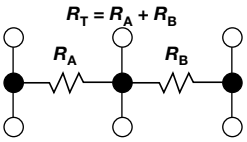


TYPICAL RANGE
27 Ω to 99 Ω



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 ± 0.05 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	Tantalum nitride, self-passivating
Bonding Pad Size	0.005" x 0.005" (0.127 mm x 0.127 mm) min.
Number of Pads	6
Pad Material	10 kÅ minimum aluminum
Backing	None, lapped semiconductor silicon

GLOBAL PART NUMBER INFORMATION

Global Part Number: CTR50000KFKKGNHWS
Global Part Number Description: CTR 5K 10 %, RT 1 %, 100 ppm/°C, TC track 10, Au, no back metal, class H, WS

C	T	R	5	0	0	0	0	K	F	K	K	G	N	H	W	S

MODEL	RESISTANCE (*R* TOTAL)	RESISTANCE MULTIPLIER CODE	TOL. CODE (%)	RATIO TOL.	TCR (ppm/°C)	TC TRACK (ppm/°C)	TERMINATION	BACK METAL	VISUAL CLASS	PACKAGING CODE
CTR	First 4 digits are significant figures of resistance	**C** = 0.001 **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 **M** = 20	**B** = 0.1 **C** = 0.25 **D** = 0.5 **F** = 1.0 **G** = 2.0 **J** = 5.0 **N** = No	**E** = ± 25 **C** = ± 50 **K** = ± 100 **M** = ± 250	**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.

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