

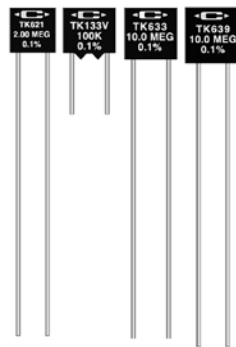
Type TK Low TC Precision Radial-Lead Film Resistors

Low TC of 5 ppm/°C, 10 ppm/°C, or 20 ppm/°C and Resistance Range from 1 Kohm to 10 Meg

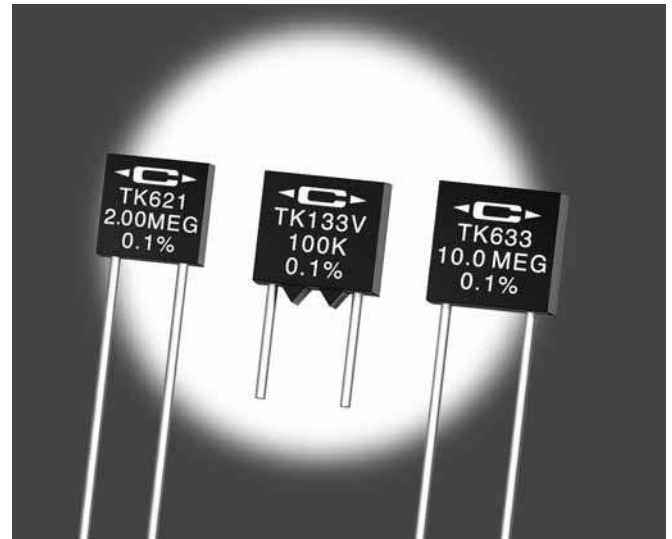
Type TK Low TC Precision Radial-Lead Resistors with the Tetrinox® resistance system solve the reliability problems related to other low TC precision resistor technologies. The robust construction of Caddock's Type TK Resistors provides reliable operation even in harsh temperature cycling and/or power cycling environments.

Type TK Low TC Precision Radial-Lead Film Resistors provide a combination of performance advantages never before available in a resistive component:

- **Low Temperature Coefficient** - better than 5 ppm/°C, 10 ppm/°C, or 20 ppm/°C over the entire temperature range from -55°C to +125°C!
- **Long-Term Absolute Stability** - typically better than ±0.05% per 2,000 hours of operation.
- **Extended Resistance Range** - from 1 K ohm to 10 Megohm.
- **Precision Tolerances** - ±0.1% is standard, and tolerances of ±1% and ±0.05% are available.
- **Wide Operating Temperature Range** - from -55°C to +175°C.
- **Small Size** - with four miniature rectangular cases for maximum packaging density and minimum mounting area.
- **High Power Density** - with power ratings of 0.2 Watt and 0.3 Watt in molded cases, the largest of which is a standard CK06 package.
- **Caddock's Non-Inductive Performance** - provides faster settling times and minimum distortion in all types of high frequency circuits.



(Photos show resistors full size)



The Tetrinox® Resistance System was introduced by Caddock in 1975. Tetrinox provides a wide range of resistivities, with the higher resistivities capable of producing resistance values up to 100 times higher than other ultra-low TC resistors in a similar size component. The essentially linear TC is well within 10 ppm/°C over the entire temperature range from -55°C to +125°C. By using TK resistors engineers can design high precision circuits with lower current drain and lower power requirements.

Through our R&D, Caddock has continued to improve the Tetrinox Resistance System, building on over 40 years of experience with our unique complex oxide resistance system technologies.

Low TC “Matched-Pair” Voltage Dividers can be Assembled Without Pre-Selection of Resistors.

An important application for Type TK resistors is in “matched-pair” voltage dividers where the low 5 ppm/°C temperature coefficient provides ratio tracking of less than 10 ppm/°C without resistor pre-selection or special testing. With factory selection, Type TK resistor pairs can be matched to within 1 ppm/°C.

Recommended Limitation of Use:

The Type TK resistors that are shown on this data sheet have pure matte tin (Sn) lead finish which is a preferred lead finish in commercial and industrial applications. These resistors are recommended by Caddock for use only in commercial and industrial applications. Any use of this product in a military program, against this recommended limitation of use, will be completely supported by the customer program design activity and component engineering activity based on their complete evaluation and testing, there will be no support provided by Caddock for this military use.

Background regarding the “Recommended Limitation of Use” for these Type TK resistors:

Presently, military applications either prohibit the use of a matte tin lead finish or are trending toward this prohibition. Therefore, Caddock no longer recommends and no longer supports, in any way, the Type TK Resistors that are shown on this data sheet for use in military applications.

For Military Applications, Caddock recommends the “Pure Tin Free” design of Models TK134 and TK634, that have Gold Plated lead finish.

Please see the “TK134 and TK634” data sheet.

Applications Engineering
17271 North Umpqua Hwy.
Roseburg, Oregon 97470-9422
Phone: (541) 496-0700
Fax: (541) 496-0408

CADDOCK ELECTRONICS, INC.

e-mail: caddock@caddock.com • web: www.caddock.com
For Caddock Distributors listed by country see caddock.com/contact/dist.html

Sales and Corporate Office
1717 Chicago Avenue
Riverside, California 92507-2364
Phone: (951) 788-1700
Fax: (951) 369-1151

Type TK Low TC Precision Radial-Lead Film Resistors

	Model No.	Temperature Coefficient ppm/°C	Wattage @ +125°C	Max. Working Voltage	Dielect. Strength	Resistance		Dimensions	Encapsulation	Leadwire	Comments
						Min.	Max.				
TK100 Series	TK121	5, 10, or 20	0.2	200	300	1 K	500 K	Ref. Case "A" Dwg.	Transfer Molded	Tinned Copper	————
	TK133	5, 10, or 20	0.3	300	400	1 K	1.5 Meg	Ref. Case "B" Dwg.	Transfer Molded	Tinned Copper	————
	TK133V	5, 10, or 20	0.3	300	400	1 K	1.5 Meg	Ref. Case "D" Dwg.	Transfer Molded	Tinned Copper	With Standoff
	TK139	5, 10, or 20	0.3	300	400	1 K	1.5 Meg	Ref. Case "C" Dwg.	Transfer Molded	Tinned Copper	————
TK600 Series	TK621	5, 10 or 20	Limited by Maximum Working Voltage	200	300	501 K	2 Meg	Ref. Case "A" Dwg.	Transfer Molded	Tinned Copper	————
	TK633	5, 10 or 20		300	400	1.51 Meg	10 Meg	Ref. Case "B" Dwg.	Transfer Molded	Tinned Copper	————
	TK633V	5, 10 or 20		300	400	1.51 Meg	10 Meg	Ref. Case "D" Dwg.	Transfer Molded	Tinned Copper	With Standoff
	TK639	5, 10 or 20		300	400	1.51 Meg	10 Meg	Ref. Case "C" Dwg.	Transfer Molded	Tinned Copper	————

Resistance Tolerance: ±0.1% Standard (tolerances of ±1% and ±0.05% are available)

Temperature Coefficient: Referenced to 25°C, ΔR taken at -55°C to +125°C.

TC identification is made with a color stripe on the top edge of the part.

- 5 ppm/°C White Stripe
- 10 ppm/°C No Stripe
- 20 ppm/°C Green Stripe

Overload*:

TK100 Series - 6.25 times rated power for 5 seconds at voltage not to exceed 1.5 times maximum rated working voltage, ΔR less than 0.05%.

TK600 Series - 1.5 times rated working voltage for 5 seconds, ΔR less than 0.2%.

Operating Temperature: -55°C to +175°C.

Thermal Shock:

TK100 Series - Mil-Std-202, Method 107, Cond. B, ΔR less than 0.05%.

TK600 Series - Mil-Std-202, Method 107, Cond. B, ΔR less than 0.1%.

Low Temperature Operation*:

TK100 Series - ΔR less than 0.02%.

TK600 Series - ΔR less than 0.05%.

Dielectric Withstanding Voltage*:

TK100 Series - ΔR less than 0.02%.

TK600 Series - ΔR less than 0.05%.

Moisture Resistance*:

Mil-Std-202, Method 106,

1K to 500K ΔR less than 0.05%,

500.1K to 10.0 Meg ΔR less than 0.1%.

Load Life*: 2,000 hours at +125°C.

TK100 Series -

1K to 500K ΔR less than 0.07%,

500.1K to 1.5 Meg ΔR less than 0.1%.

TK600 Series -

1.51 Meg to 10 Meg ΔR less than 0.2%.

Shelf Life (Typical):

TK100 Series - 25 ppm/year.

TK600 Series - 50 ppm/year.

Insulation Resistance: 10,000 Megohms.

Vibration*:

TK100 Series - ΔR less than 0.03%.

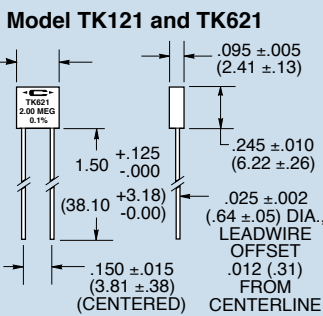
TK600 Series - ΔR less than 0.05%.

Shock*: ΔR less than 0.05%.

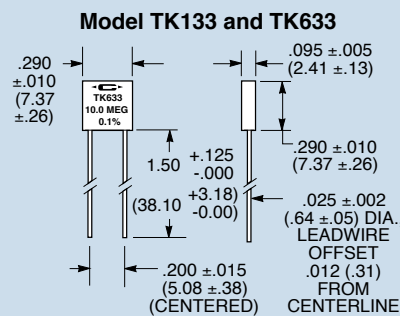
*Test methods per procedures of Mil-PRF-55182/9.

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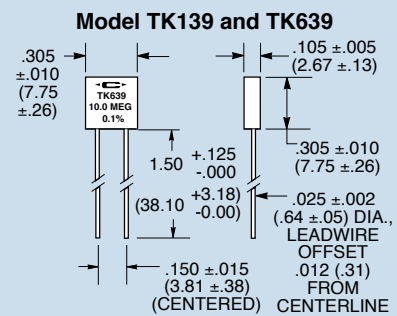
Case "A"



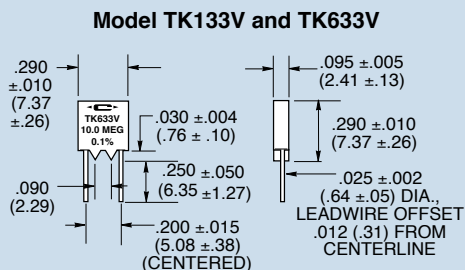
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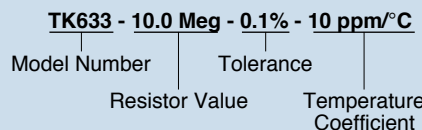
Case "C"



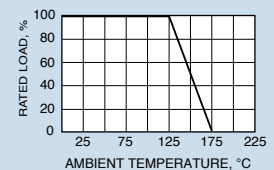
Case "D"



Ordering Information:



Derating Curve:



Applications Engineering
 17271 North Umpqua Hwy.
 Roseburg, Oregon 97470-9422
 Phone: (541) 496-0700
 Fax: (541) 496-0408

CADDOCK ELECTRONICS, INC.

e-mail: caddock@caddock.com • web: www.caddock.com
 For Caddock Distributors listed by country see caddock.com/contact/dist.html

Sales and Corporate Office
 1717 Chicago Avenue
 Riverside, California 92507-2364
 Phone: (951) 788-1700
 Fax: (951) 369-1151