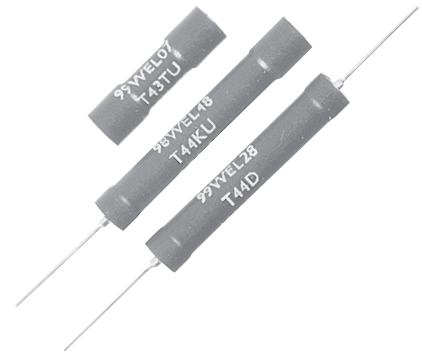


## T Series

### Features

- Working voltage up to 100kV
- Resistances up to 30G
- TCR down to 25ppm
- Termination variants
- Sets of resistors with matched characteristics



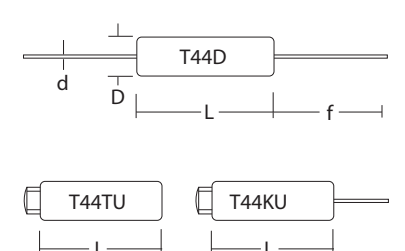
 All Pb-free parts comply with EU Directive 2011/65/EU amended by (EU)2015/863 (RoHS3)

## Electrical Data

		T43	T44	T48
Power rating at 20°C	W	1.5	3.5	10
Resistance range	ohms	10K to 5G	10K to 10G	33K to 30G
Limiting element voltage in air	kV	4	14	50
Limiting element voltage in oil	kV	8	28	100
Standard TCR	ppm/°C	≤1G0: 100 >1G0: 250		
Low TCR	ppm/°C	≤1G0: 25, 50		
Resistance tolerance	%	1, 2, 5		
Values		E24 preferred, custom on request		
Thermal impedance	°C/W	31	27	13
Ambient temperature range	°C	-55 to 150		

## Physical Data

Dimensions (mm) & Weight (g)							
Type	L max	D max	f min	d nom	PCB mounting centres	Min Bend Radius	Wt. nom
T43D	25.4	8.4	32.0	0.8	31.8	1.2	3.1
T44D	50.8	8.4	32.0	0.8	57.2	1.2	5.6
T48D	150.0	8.4	32.0	0.8	156.4	1.2	18.5
T43KU	30.2	8.5	32.0	0.8			3.9
T44KU	53.2	8.5	32.0	0.8			7.4
T48KU	152.2	8.5	32.0	0.8			19.3
T43TU	32.6	8.5					5.8
T44TU	55.6	8.5					8.2
T48TU	154.8	8.5					20.2



### General Note

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## T Series

### Construction

A ruthenium oxide based resistive film is fired onto the surface of a high quality former. Turned brass end caps are fitted. A helical cut is made into the film to adjust its resistive value, lacquer protection is applied and finally a protective sleeve is fitted to provide mechanical protection and electrical insulation. For use in oil protection code H (without the sleeve) should be used, in order to avoid trapped air.

### Terminations

Three styles of termination are available to permit resistors to be screwed together in a series chain, with the end members having axial wires for soldering.

**Wire Terminations:** Styles D and KU.  
Non standard terminations available upon request.

**Material:** Solder coated copper wire.

**Strength:** The terminations meet the requirements of IEC 68.2.21

**Solderability:** The terminations meet the requirements of IEC 115-1, Clause 4.17.3.2.

**Screw Terminations:** Styles TU and KU.

**Material:** Turned brass.

**Screw Thread:** All caps are tapped UNF – 10 x 4.2 deep. UNF – 10 is 32 TPI, 60° thread angle, 4.72±0.07 mm outside diameter, 3.83 mm core diameter.

**Coupling Stud:** All KU & TU resistors are supplied with 8 mm long screwed brass studs.

### Marking

Type reference, resistance value, tolerance and date code are legend marked. The resistance value conforms to IEC 62.

### Solvent Resistance

The lacquer and the protective sleeve provide excellent resistance to all normal industrial cleaning solvents suitable for printed circuits.

## Performance Data

		Maximum	Typical
Load at rated power: 1000 hours at 20°C	ΔR%	≤ IG:3, >IG:5	0.3
Shelf life: 12 months at room temperature	ΔR%	0.3	0.1
Derating from rated power at 20°C		Zero at 150°C	
Noise (in a decade of frequency)	μV/V		<2.5
Voltage coefficient of resistance	ppm/V		<1

### Matched Sets

Matched sets can be supplied for use as precision voltage dividers. These may be screwed together to form sticks and, by selecting the KU type of termination, a wire connection can be provided at each end of the stick.

Enquiries are welcomed for special resistors and sets when resistor length, operating voltage or resistance value are outside the catalogued range.

### Application Notes

Due to the high voltage which can appear between the end cap and any adjacent metal part, resistors should be mounted at an adequate distance from other conductors.

An appropriate number of resistors may be screwed together as a stick to provide an assembly which will be capable to withstanding any desired voltage, providing no individual resistor is subject to a greater stress or power dissipation than is recommended in this data sheet, and that appropriate anti-corona devices are fitted.

The axial termination should not be bent closer than twice the diameter of the terminal wire from the body of the resistor.

When resistors are required to be potted, the preferred encapsulant is a silicone compound.

For voltage dividers with a low resistance section below the minimum available value of 1kΩ, it is normal practice to use a Welwyn resistor, RC Series, obtainable down to 1 ohm.

### Oil Immersion

For some high voltage applications it is required to immerse the components in oil to reduce the effects of corona and surface tracking. A special lacquer protected version of the resistor is available, suitable for immersion in transformer oil.

### Packaging

Resistors are supplied packed in boxes.

### Standard Quantities Per Box

All Types	10 or 20 per box
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## T Series

### Ordering Procedure

**Example: T44D-4M7JI** (T44 wire ended and sleeved, 4.7 megohms  $\pm 5\%$ , standard TCR  $\pm 100\text{ppm}/^\circ\text{C}$ , Pb-free)

T	4	4	D	-	4	M	7	J	I
1	2	3	4	5	6				

1	2		3	4	5	6
Type	Termination		Protection	Value	Tolerance	Finish & Packing
T43	D	Wire + wire	Omit for lacquered & sleeved	E24 = 3/4 characters	F = $\pm 1\%$	Pb-free finish Bulk 10 or 20 / box
T44	KU	Wire + screw		K = kilohms	G = $\pm 2\%$	
T48	TU	Screw + screw	H = lacquered only (for use in oil)	M = megohms G = gigohms	J = $\pm 5\%$	

#### Low TCR Part Numbers

For 25 and 50ppm/ $^\circ\text{C}$  TCR grades, replace the codes from columns 1, 2 & 3 with the 6-digit codes below.

**Example: 424471-4M7JI** (T44 wire ended and sleeved, 4.7 megohms  $\pm 5\%$ , low TCR  $\pm 25\text{ppm}/^\circ\text{C}$ , Pb-free)

T43			T44			T48		
Type	TCR	Code	Type	TCR	Code	Type	TCR	Code
T43D	$\pm 50\text{ppm}/^\circ\text{C}$	424363	T44D	$\pm 50\text{ppm}/^\circ\text{C}$	424463	T48D	$\pm 50\text{ppm}/^\circ\text{C}$	424863
	$\pm 25\text{ppm}/^\circ\text{C}$	424371		$\pm 25\text{ppm}/^\circ\text{C}$	424471		$\pm 25\text{ppm}/^\circ\text{C}$	424871
T43DH	$\pm 50\text{ppm}/^\circ\text{C}$	424367	T44DH	$\pm 50\text{ppm}/^\circ\text{C}$	424467	T48DH	$\pm 50\text{ppm}/^\circ\text{C}$	424867
	$\pm 25\text{ppm}/^\circ\text{C}$	424218		$\pm 25\text{ppm}/^\circ\text{C}$	424518		$\pm 25\text{ppm}/^\circ\text{C}$	424818
T43TU	$\pm 50\text{ppm}/^\circ\text{C}$	424360	T44TU	$\pm 50\text{ppm}/^\circ\text{C}$	424460	T48TU	$\pm 50\text{ppm}/^\circ\text{C}$	424860
	$\pm 25\text{ppm}/^\circ\text{C}$	424366		$\pm 25\text{ppm}/^\circ\text{C}$	424466		$\pm 25\text{ppm}/^\circ\text{C}$	424866
T43TUH	$\pm 50\text{ppm}/^\circ\text{C}$	424362	T44TUH	$\pm 50\text{ppm}/^\circ\text{C}$	424462	T48TUH	$\pm 50\text{ppm}/^\circ\text{C}$	424862
	$\pm 25\text{ppm}/^\circ\text{C}$	424389		$\pm 25\text{ppm}/^\circ\text{C}$	424489		$\pm 25\text{ppm}/^\circ\text{C}$	424889
T43KU	$\pm 50\text{ppm}/^\circ\text{C}$	424388	T44KU	$\pm 50\text{ppm}/^\circ\text{C}$	424488	T48KU	$\pm 50\text{ppm}/^\circ\text{C}$	424888
	$\pm 25\text{ppm}/^\circ\text{C}$	424377		$\pm 25\text{ppm}/^\circ\text{C}$	424477		$\pm 25\text{ppm}/^\circ\text{C}$	424877
T43KUH	$\pm 50\text{ppm}/^\circ\text{C}$	424364	T44KUH	$\pm 50\text{ppm}/^\circ\text{C}$	424464	T48KUH	$\pm 50\text{ppm}/^\circ\text{C}$	424864
	$\pm 25\text{ppm}/^\circ\text{C}$	424390		$\pm 25\text{ppm}/^\circ\text{C}$	424490		$\pm 25\text{ppm}/^\circ\text{C}$	424890

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