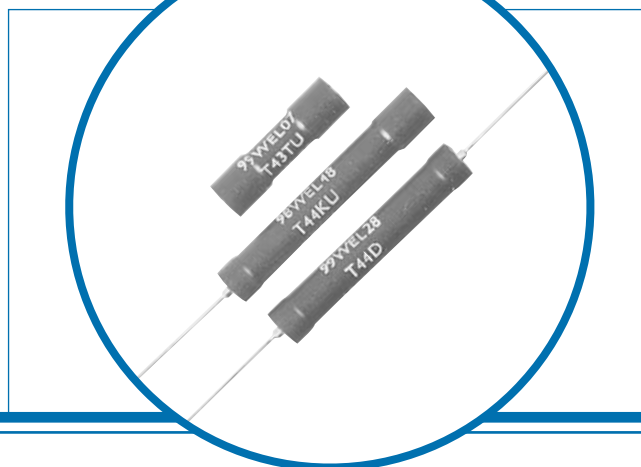


# High Voltage Precision Thick Film Resistors

## T Series

- Working voltage up to 100kV
- Resistances up to 50G
- TCR down to 25ppm
- Termination variants
- Sets of resistors with matched characteristics



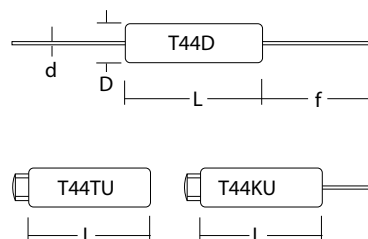
## Electrical Data

		T43	T44	T48	Notes
Power rating at 20°C	watts	1.5	3.5	10	
Resistance range	ohms	1K to 10G	1K to 50G	1K to 50G	
Limiting element voltage	volts	4K	14K	50K	In air
		8K	28K	100K	In oil
TCR	ppm/°C	100 *			Values > 1G: TCR is 250ppm/°C
Resistance tolerance	%	1, 2, 5			Closer tolerances over restricted range
Values		E24 preferred values			Any value to special order
Thermal impedance	°C/watt	31	27	13	
Ambient temperature range	°C	-55 to 150			

\* Contact factory for 25 or 50ppm/°C

## 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

Welwyn Components reserves the right to make changes in product specification without notice or liability. All information is subject to Welwyn's own data and is considered accurate at time of going to print.

# High Voltage Precision Thick Film Resistors

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 and finally a protective sleeve is fitted to provide mechanical protection and electrical insulation. Resistors for use in oil or SF6, can be supplied with a lacquer protection instead of the sleeve.

## 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°C 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 or gas 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 or SF6.

## Packaging

Resistors are supplied packed in boxes.

## Standard Quantities Per Box

All Types	10 or 20 per box
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## Ordering Procedure

Example: T44 wire-ended and sleeved at 4.7 gigohms and 5% tolerance -

**T 4 4 D - 4 G 7 J I**

Type \_\_\_\_\_

Termination \_\_\_\_\_

D	Wire / wire
KU	Wire / screw
TU	Screw / screw

Protection \_\_\_\_\_

	Lacquered & Sleeved
H	Lacquered only (for use in oil or SF <sub>6</sub> )

Value (use IEC62 code) \_\_\_\_\_

Tolerance (use IEC62 code) \_\_\_\_\_

F	1%
G	2%
J	5%

Packing \_\_\_\_\_

I	Box	10 or 20/box	Standard
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Note: Standard TCR is 100ppm/°C. Contact factory for 50 and 25ppm/°C grades.