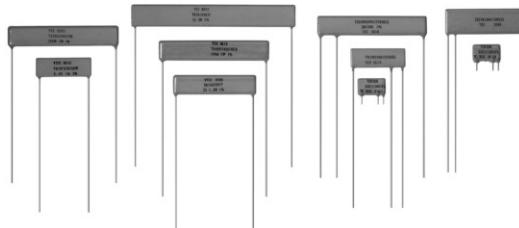


Thick Film Planar Resistors and Dividers, Through-Hole, High Voltage



APPLICATIONS

Applications include power supplies, transformers and any application requiring operation within an environment where high voltages are used.

FEATURES

- 30 000 V capability
- Very low voltage coefficient to less than 1 ppm/V
- Outstanding stability under adverse conditions
- Stable cermet resistive element bonded to a high-purity alumina substrate
- Tough epoxy-based coating and high voltage stability
- Designs built from customer supplied schematics
- Dividers available leaded or non-leaded
- Typical resistance ratios of 1000:1, 2000:1, etc.
- TCR tracking to ± 5 ppm/ $^{\circ}$ C depending on values
- TD series dividers available, contact factory
- Compliant to RoHS directive 2002/95/EC
- Halogen-free according to IEC 61249-2-21 definition



RoHS
COMPLIANT
HALOGEN
FREE

STANDARD ELECTRICAL SPECIFICATIONS

MODEL	POWER RATING $P_{25^{\circ}\text{C}}$ W	MAXIMUM WORKING VOLTAGE ⁽²⁾ kV	RESISTANCE RANGE ⁽¹⁾ Ω					
			1 % to 20 %	1 %, 2 %	5 % to 20 %	1 %, 2 %	5 % to 20 %	5 % to 20 %
			± 100 ppm/ $^{\circ}$ C	± 200 ppm/ $^{\circ}$ C	± 200 ppm/ $^{\circ}$ C	± 300 ppm/ $^{\circ}$ C	± 300 ppm/ $^{\circ}$ C	(3)
TR03C	0.25	0.8	300 to 3M	300 to 25M	300 to 25M	300 to 25M	300 to 25M	-
TR03X		2.5	-	25M to 250M	25M to 2G	25M to 250M	25M to 2G	2.1G to 10G
TR05D	0.5	4	500 to 25M	3k to 200M	3k to 200M	3k to 200M	3k to 200M	-
TR05X		5	-	30M to 1G	30M to 20G	30M to 1G	30M to 20G	21G to 100G
TR10F	1	6.5	1k to 16M	2k to 120M	2k to 120M	2k to 120M	2k to 120M	-
TR10X		10	-	20M to 1G	20M to 15G	20M to 1G	20M to 15G	16G to 1T
TR15G	1.5	12.5	1.5k to 45M	5k to 340M	5k to 340M	5k to 340M	5k to 340M	-
TR15X		15	-	60M to 1G	60M to 35G	60M to 1G	60M to 35G	36G to 1.5T
TR20H	2	17.5	2k to 64M	8k to 480M	8k to 480M	8k to 480M	8k to 480M	-
TR20X		20	-	80M to 1G	80M to 50G	80M to 1G	80M to 50G	51G to 2T
TR30J	3	25	3k to 82M	8.5k to 620M	8.5k to 620M	8.5k to 620M	8.5k to 620M	-
TR30X		30	-	80M to 1G	80M to 60G	80M to 1G	80M to 60G	61G to 3T

Notes

- Custom sizes available
- Voltage coefficient: Typically less than 1 ppm/V (tested per MIL-STD-202)
- Ratio tolerance for dividers: 1 % to 20 %
- Ratio TCR for dividers: To ± 5 ppm/ $^{\circ}$ C (ratio over 1000:1, contact factory)

(1) All resistance values are calibrated at 100 V_{DC}. Calibration at other voltages available upon request.

(2) Continuous working voltage shall be $\sqrt{P} \times R$ or maximum working voltage, whichever is less.

(3) Contact factory

GLOBAL PART NUMBER INFORMATION

New Global Part Numbering: TR20H1K00FKEB (preferred part number format)

T	R	2	0	H	1	K	0	0	F	K	E	B
GLOBAL MODEL	SIZE/POWER RATING	RESISTANCE VALUE	TOLERANCE	TCR	TERMINAL FINISH	PACKAGING						
TR	03C = 0.25 W 03X = 0.25 W, max. voltage 05D = 0.5 W 05X = 0.5 W, max. voltage 10F = 1 W 10X = 1 W, max. voltage 15G = 1.5 W 15X = 1.5 W, max. voltage 20H = 2 W 20X = 2 W, max. voltage 30J = 3 W 30X = 3 W, max. voltage	R = Ω K = $k\Omega$ M = $M\Omega$ G = $G\Omega$ T = $T\Omega$ 400R = 400 Ω 10M0 = 10 M Ω 1T00 = 1 T Ω	F = $\pm 1.0\%$ G = $\pm 2.0\%$ J = $\pm 5.0\%$ K = $\pm 10.0\%$ M = $\pm 20.0\%$	K = 100 ppm N = 200 ppm M = 300 ppm	E = Sn100 R = Sn60/Pb40	B = Bag S = Strip						

Historical Part Numbering: TR20H1001FKe3 (will continue to be accepted)

TR	20H	1001	F	K	e3
HISTORICAL MODEL	SIZE/POWER RATING	RESISTANCE VALUE	TOLERANCE	TCR	TERMINAL FINISH

* Pb containing terminations are not RoHS compliant, exemptions may apply

MECHANICAL SPECIFICATIONS

Resistive Element: Thick film

Substrate: 96 % pure alumina

Encapsulation: Epoxy base, conformal coating

Terminals: Tin plated copper leads

Terminal Strength: 4.5 pounds pull-test

Power: Derated from ambient temperature + 25 °C

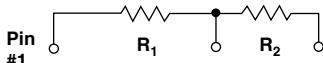
ENVIRONMENTAL SPECIFICATIONS

Temperature Range: - 55 °C to + 125 °C (for higher temperature range, consult factory)

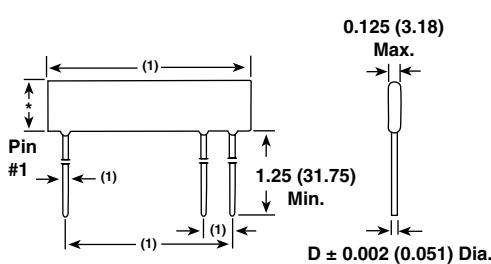
Load Life: Less than 0.15 %, 1000 h

DIMENSIONS in inches (millimeters)

Typical Resistor Schematic for Divider



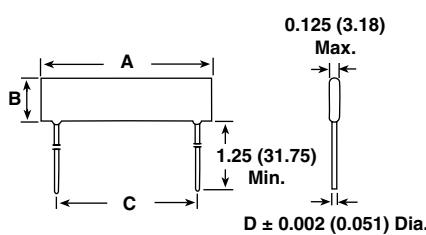
Typical High Voltage Divider



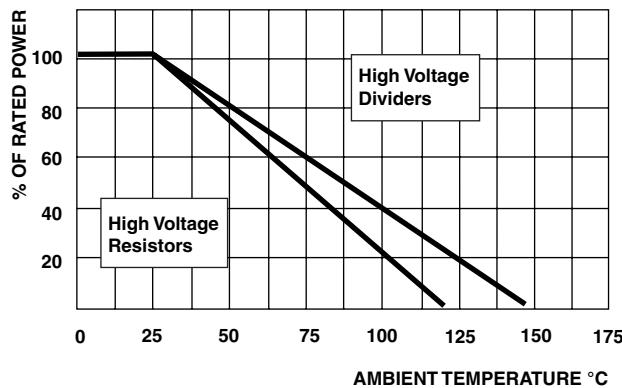
Note

(1) Specified by application

Standard High Voltage Resistor

**DIMENSIONS ($\pm 10\%$)**

MODEL	A (LENGTH)	B (HEIGHT)	C (LEAD SPACING)	D (LEAD DIA.)
TR03	0.300 (7.62)	0.210 (5.33)	0.200 (5.08)	0.025
TR05	0.500 (12.70)	0.300 (7.62)	0.400 (10.16)	0.025
TR10	1.00 (25.40)	0.350 (8.89)	0.900 (22.86)	0.032
TR15	1.50 (38.10)	0.350 (8.89)	1.40 (35.56)	0.032
TR20	2.00 (50.80)	0.350 (8.89)	1.90 (48.26)	0.032
TR30	3.00 (76.20)	0.400 (10.16)	2.90 (73.66)	0.032

DERATING

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