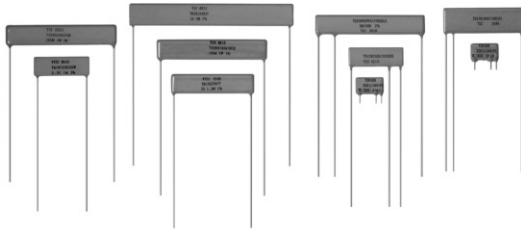


Thick Film Planar Resistors and Dividers, Through-Hole, High Voltage



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 Ω M = M Ω G = G Ω T = T Ω 400R = 400 Ω 10M0 = 10 M Ω 1T00 = 1 T Ω | | | F = ± 1.0 % G = ± 2.0 % J = ± 5.0 % K = ± 10.0 % M = ± 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

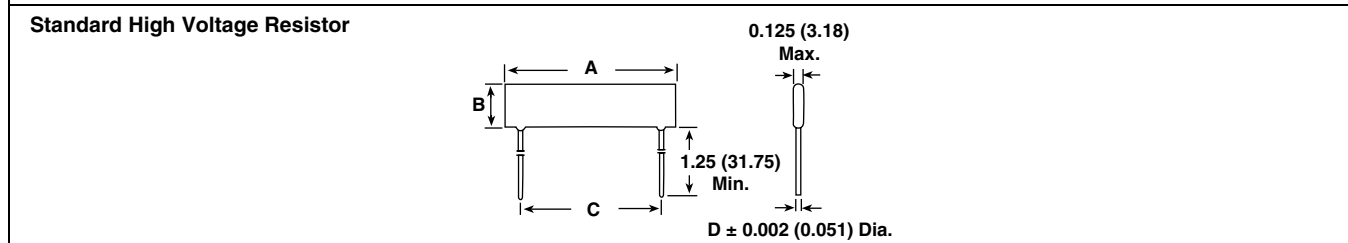
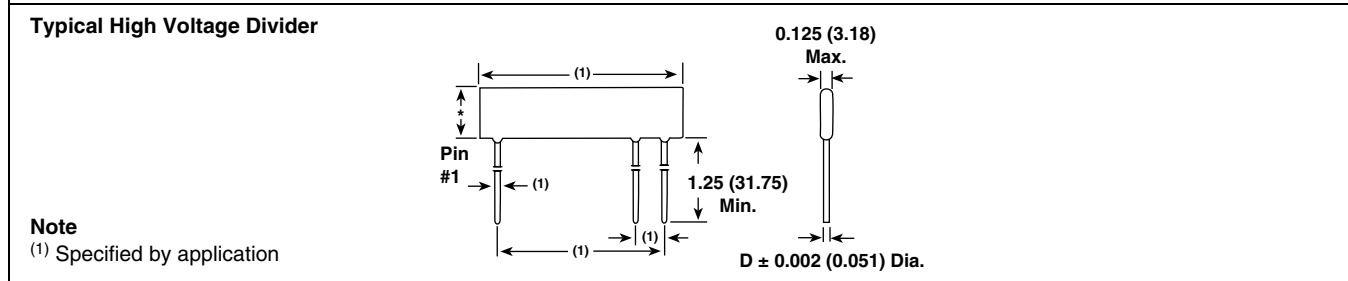
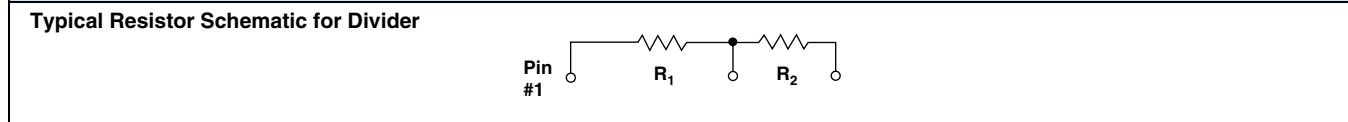
MECHANICAL SPECIFICATIONS

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

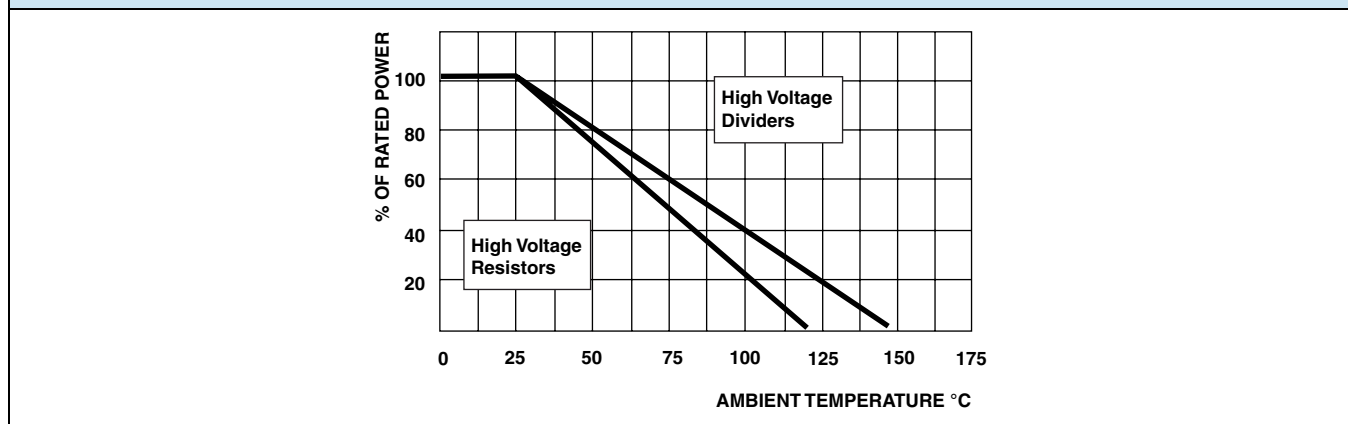
DIMENSIONS in inches (millimeters)



DIMENSIONS (± 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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