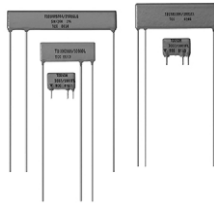


# Thick Film Planar Dividers, Through-Hole, High Voltage



## 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 elements bonded to a high-purity alumina substrate
- Tough epoxy-based coating and high voltage stability
- Custom designs built from customer supplied schematics available
- Custom dividers available with leadwire terminals or with leadless conductive pads
- Maximum resistance ratio of 1000:1 (for ratio's over 1000:1, contact factory)
- Minimum resistance ratio of 40:1
- TCR tracking to  $\pm 25$  ppm/ $^{\circ}$ C
- Resistors available, see Vishay Techno's TR datasheet ([www.vishay.com/doc?68000](http://www.vishay.com/doc?68000))
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### Note

\* This datasheet provides information about parts that are RoHS-compliant and / or parts that are non RoHS-compliant. For example, parts with lead (Pb) terminations are not RoHS-compliant. Please see the information / tables in this datasheet for details

STANDARD ELECTRICAL SPECIFICATIONS									
GLOBAL MODEL / SIZE	POWER RATING $P_{25^{\circ}\text{C}}$ W	MAXIMUM WORKING VOLTAGE $V^{(1)}$	RESISTANCE RANGE $R_1^{(2)(3)}$ $\Omega$	ABSOLUTE TOLERANCE $\pm \%$	ABSOLUTE TEMPERATURE COEFFICIENT $\pm \text{ppm}/^{\circ}\text{C}$	RATIO TOLERANCE $\pm \%$	TCR TRACKING <sup>(4)</sup> $\pm \text{ppm}/^{\circ}\text{C}$	RATIO MAX. <sup>(5)</sup>	
TDA03	0.25	0.8K	300 to 3M	0.5, 1, 2, 5, 10, 20	100	0.5, 1, 2, 5	25, 50, 100	1000:1	
			3.01M to 25M	0.5, 1, 2, 5, 10, 20	200	0.5, 1, 2, 5	25, 50, 100	1000:1	
2.5K		25M to 250M	1, 2, 5, 10, 20	200	1, 2, 5	25, 50, 100	1000:1		
		260M to 2G	5, 10, 20	200	1, 2, 5	25, 50, 100	1000:1		
TDX03	0.25	2.5K	2.1G to 10G	5, 10, 20	500	1, 2, 5	25, 50, 100	1000:1	
			500 to 25M	0.5, 1, 2, 5, 10, 20	100	0.5, 1, 2, 5	25, 50, 100	1000:1	
4K		25.1M to 200M	0.5, 1, 2, 5, 10, 20	200	0.5, 1, 2, 5	25, 50, 100	1000:1		
		5K	30M to 1G	1, 2, 5, 10, 20	200	1, 2, 5	25, 50, 100	1000:1	
TDX05	0.5		5K	1.1G to 20G	5, 10, 20	200	1, 2, 5	25, 50, 100	1000:1
		21G to 100G		5, 10, 20	500	1, 2, 5	25, 50, 100	1000:1	
6.5K		1K to 16M	0.5, 1, 2, 5, 10, 20	100	0.5, 1, 2, 5	25, 50, 100	1000:1		
		16.1M to 120M	0.5, 1, 2, 5, 10, 20	200	0.5, 1, 2, 5	25, 50, 100	1000:1		
TDA10	1	6.5K	20M to 1G	1, 2, 5, 10, 20	200	1, 2, 5	25, 50, 100	1000:1	
			1.1G to 15G	5, 10, 20	200	1, 2, 5	25, 50, 100	1000:1	
10K		16G to 1T	5, 10, 20	500	1, 2, 5	25, 50, 100	1000:1		
		12.5K	1.5K to 45M	0.5, 1, 2, 5, 10, 20	100	0.5, 1, 2, 5	25, 50, 100	1000:1	
TDX10	1		12.5K	45.1M to 340M	0.5, 1, 2, 5, 10, 20	200	0.5, 1, 2, 5	25, 50, 100	1000:1
		15K		60M to 1G	1, 2, 5, 10, 20	200	1, 2, 5	25, 50, 100	1000:1
17.5K			1.1G to 35G	5, 10, 20	200	1, 2, 5	25, 50, 100	1000:1	
		TDX15	1.5	15K	36G to 1.5T	5, 10, 20	500	1, 2, 5	25, 50, 100
20K	2K to 64M				0.5, 1, 2, 5, 10, 20	100	0.5, 1, 2, 5	25, 50, 100	1000:1
	TDA20	2		17.5K	64.1M to 480M	0.5, 1, 2, 5, 10, 20	200	0.5, 1, 2, 5	25, 50, 100
20K					80M to 1G	1, 2, 5, 10, 20	200	1, 2, 5	25, 50, 100
	25K		1.1G to 50G	5, 10, 20	200	1, 2, 5	25, 50, 100	1000:1	
TDX20			2	20K	51G to 2T	5, 10, 20	500	1, 2, 5	25, 50, 100
	25K	3K to 82M			0.5, 1, 2, 5, 10, 20	100	0.5, 1, 2, 5	25, 50, 100	1000:1
30K		82.1M to 620M		0.5, 1, 2, 5, 10, 20	200	0.5, 1, 2, 5	25, 50, 100	1000:1	
	TDA30	3		25K	80M to 1G	1, 2, 5, 10, 20	200	1, 2, 5	25, 50, 100
30K			1.1G to 60G		5, 10, 20	200	1, 2, 5	25, 50, 100	1000:1
	TDX30		3	30K	61G to 3T	5, 10, 20	500	1, 2, 5	25, 50, 100

### Notes

- Custom sizes available
- Voltage coefficient: typically less than 1 ppm/V (tested per MIL-STD-202)
- (1) Continuous working voltage shall be  $\sqrt{P \times R}$  or maximum working voltage, whichever is less
- (2) All resistance values are calibrated at 100  $V_{DC}$ . Calibration at other voltages available upon request
- (3) Minimum  $R_2$  value is 50  $\Omega$
- (4) TCR Tracking measured from 0 $^{\circ}$ C to +70 $^{\circ}$ C
- (5) For ratios over 1000:1, contact factory

GLOBAL PART NUMBER INFORMATION																	
New Global Part Numbering: TDA20E100M3300FFEB																	
T	D	A	2	0	E	1	0	0	M	3	3	0	0	F	F	E	B
GLOBAL MODEL	VOLTAGE RATING	SIZE	TCR TRACKING	RESISTANCE VALUE $R_1$	RATIO $R_1/R_2$	RATIO TOLERANCE	TOLERANCE	TERMINAL FINISH	PACKAGING								
TD	A = medium voltage X = high voltage	03 05 10 15 20 30	E = 25 ppm H = 50 ppm K = 100 ppm	R = $\Omega$ K = $k\Omega$ M = $M\Omega$ G = $G\Omega$ T = $T\Omega$ 400R = 400 $\Omega$ 10M0 = 10 $M\Omega$ 10G7 = 10.7 $G\Omega$	3 digit significant figure, followed by a multiplier 0400 = 40:1 2210 = 221:1 1001 = 1000:1	D = $\pm 0.5\%$ F = $\pm 1\%$ G = $\pm 2\%$ J = $\pm 5\%$	D = $\pm 0.5\%$ F = $\pm 1\%$ G = $\pm 2\%$ J = $\pm 5\%$ K = $\pm 10\%$ M = $\pm 20\%$	E = Sn100 R = Sn60/Pb40	B = bag								

**Note**

- For additional information on packaging, refer to the Through Hole Resistor Packaging document ([www.vishay.com/doc?31544](http://www.vishay.com/doc?31544))

**MECHANICAL SPECIFICATIONS**

**Resistive Element:** thick film

**Substrate:** 96 % pure alumina

**Encapsulation:** epoxy base, conformal coating

**Terminals:** solder 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

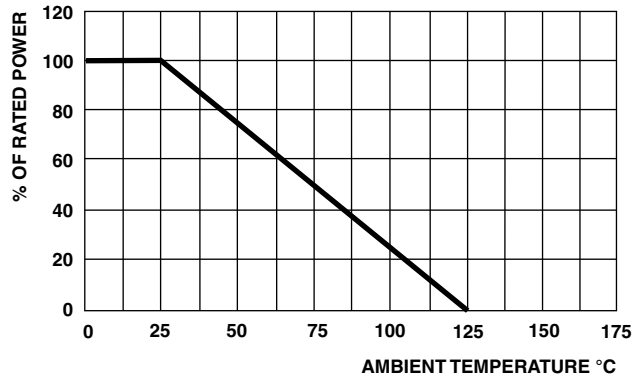
DIMENSIONS in inches (millimeters)					
Schematic					
MODEL	A (LENGTH)	B (HEIGHT)	C (OVERALL LEAD SPACING)	D (LEAD DIA.)	E ( $R_2$ LEAD SPACING)
TDA03, TDX03 <sup>(1)</sup>	0.300 $\pm$ 0.030 (7.62 $\pm$ 0.76)	0.210 $\pm$ 0.021 (5.33 $\pm$ 0.53)	0.200 $\pm$ 0.020 (5.08 $\pm$ 0.51)	0.025 $\pm$ 0.002 (0.64 $\pm$ 0.05)	0.100 $\pm$ 0.010 (2.54 $\pm$ 0.25)
TDA05, TDX05 <sup>(1)</sup>	0.500 $\pm$ 0.050 (12.70 $\pm$ 1.27)	0.300 $\pm$ 0.030 (7.62 $\pm$ 0.76)	0.400 $\pm$ 0.040 (10.16 $\pm$ 1.02)	0.025 $\pm$ 0.002 (0.64 $\pm$ 0.05)	0.100 $\pm$ 0.010 (2.54 $\pm$ 0.25)
TDA10, TDX10	1.00 $\pm$ 0.100 (25.40 $\pm$ 2.54)	0.350 $\pm$ 0.035 (8.89 $\pm$ 0.89)	0.900 $\pm$ 0.090 (22.86 $\pm$ 2.29)	0.032 $\pm$ 0.002 (0.81 $\pm$ 0.05)	0.200 $\pm$ 0.020 (5.08 $\pm$ 0.51)
TDA15, TDX15	1.50 $\pm$ 0.150 (38.10 $\pm$ 3.81)	0.350 $\pm$ 0.035 (8.89 $\pm$ 0.89)	1.40 $\pm$ 0.140 (35.56 $\pm$ 3.56)	0.032 $\pm$ 0.002 (0.81 $\pm$ 0.05)	0.200 $\pm$ 0.020 (5.08 $\pm$ 0.51)
TDA20, TDX20	2.00 $\pm$ 0.200 (50.80 $\pm$ 5.08)	0.350 $\pm$ 0.035 (8.89 $\pm$ 0.89)	1.90 $\pm$ 0.190 (48.26 $\pm$ 4.83)	0.032 $\pm$ 0.002 (0.81 $\pm$ 0.05)	0.200 $\pm$ 0.020 (5.08 $\pm$ 0.51)
TDA30, TDX30	3.00 $\pm$ 0.300 (76.20 $\pm$ 7.62)	0.400 $\pm$ 0.040 (10.16 $\pm$ 1.02)	2.90 $\pm$ 0.290 (73.66 $\pm$ 7.37)	0.032 $\pm$ 0.002 (0.81 $\pm$ 0.05)	0.200 $\pm$ 0.020 (5.08 $\pm$ 0.51)

**Note**

- <sup>(1)</sup> Refer to Fig. 1 for TDA03, TDX03, TDA05 and TDX05 lead lengths



**DERATING**





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