

## Molded Thick Film Divider, High Voltage, High Precision, Surface-Mount



### LINKS TO ADDITIONAL RESOURCES



### FEATURES

- High voltage up to 1500 V utilizing thick film technology
- Precision to  $\pm 0.5\%$  with low TCR tracking to 10 ppm/ $^{\circ}\text{C}$  utilizing thick film technology
- Sulfur resistant verified by testing to EIA 977 test condition A
- Automotive compliant terminations
- AEC-Q200 qualified
- Wide range of resistance value and ratios
- 12.5 mm creepage distance. Rated 1250 V per IEC 60664-1
- PATENT(S): [www.vishay.com/patents](http://www.vishay.com/patents)
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



STANDARD ELECTRICAL SPECIFICATIONS								
GLOBAL MODEL	CASE SIZE	POWER RATING $P_{70^{\circ}\text{C}}$ W	MAXIMUM WORKING VOLTAGE ( <sup>1</sup> ) V	RESISTANCE RANGE $R_1$ ( <sup>2</sup> ) $\Omega$	TOLERANCE ( <sup>3</sup> ) $R_1$ $\pm\%$	RATIO RANGE ( <sup>4</sup> ) $(R_1 + R_2) / R_2$	RATIO TOL. $\pm\%$	TCR TRACKING ( $-55^{\circ}\text{C}$ to $+155^{\circ}\text{C}$ ) $\pm$ ppm/ $^{\circ}\text{C}$
CDMM	4527	1.5	1500	500K to 50M	0.5, 1, 2, 5, 10	100:1 to 500:1	0.5, 1, 2, 5	10 - 50

#### Notes

- (<sup>1</sup>) Continuous working voltage shall be  $\sqrt{P \times R}$  or maximum working voltage, whichever is less
- (<sup>2</sup>) Resistance value is calibrated at 100 V<sub>DC</sub>
- (<sup>3</sup>) Contact factory for tighter tolerances
- (<sup>4</sup>) Contact factory for other ratios

GLOBAL PART NUMBER INFORMATION															
New Global Part Numbering: CDMM20M0F2500FEF (preferred part number format)															
C	D	M	M	2	0	M	0	F	2	5	0	0	F	E	F
GLOBAL MODEL	RESISTANCE VALUE ( $R_1$ )	TOLERANCE	RATIO ( $(R_1 + R_2) / R_2$ )	RATIO TOLERANCE	SOLDER TERMINATION	PACKAGING	SPECIAL								
(see Standard Electrical Specifications Global Model column for options)	<b>K</b> = k $\Omega$ <b>M</b> = M $\Omega$ <b>525K</b> = 525 k $\Omega$ <b>1M50</b> = 1.5 M $\Omega$	<b>D</b> = $\pm 0.5\%$ <b>F</b> = $\pm 1\%$ <b>G</b> = $\pm 2\%$ <b>J</b> = $\pm 5\%$ <b>K</b> = $\pm 10\%$	3 digit significant figure, followed by a multiplier <b>2500</b> = 250:1 <b>3000</b> = 300:1	<b>D</b> = $\pm 0.5\%$ <b>F</b> = $\pm 1\%$ <b>G</b> = $\pm 2\%$ <b>J</b> = $\pm 5\%$	<b>E</b> = Sn100	<b>B</b> = bulk (250 pcs max.) <b>F</b> = T/R (1200 pcs) <b>1</b> = T/R (1000 pcs) <b>5</b> = T/R (500 pcs) <b>T</b> = T/R (250 pcs min.)	Blank = standard (dash number) (up to 2 digits) from <b>1</b> to <b>99</b> as applicable								

#### Notes

- Contact factory for other ratios
- For additional information on packaging, refer to the Surface Mount Resistor Packaging document ([www.vishay.com/doc?31543](http://www.vishay.com/doc?31543))

PATENT(S): [www.vishay.com/patents](http://www.vishay.com/patents)

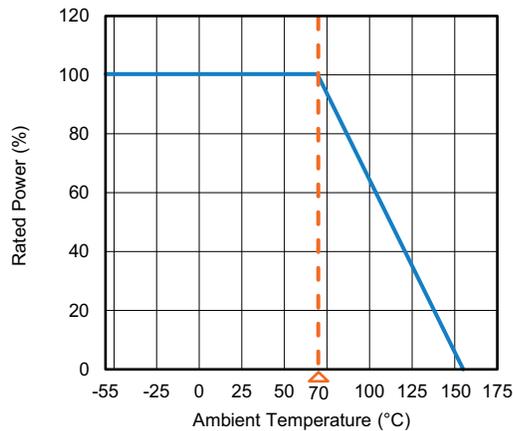
This Vishay product is protected by one or more United States and international patents.

**VOLTAGE AND TEMPERATURE COEFFICIENTS OF RESISTANCE CHART (TYPICAL)**

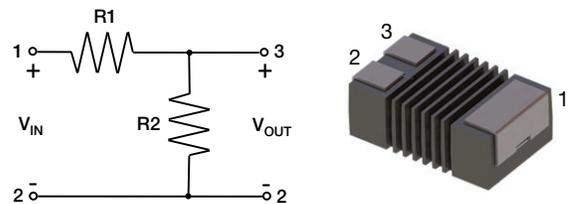
GLOBAL MODEL	RESISTANCE $\Omega$	RATIO (TYPICAL)	VCR ppm/V	TCR TRACKING (-55 °C to +150 °C) ppm/°C
CDMM	500K	100:1	-10	$\pm 20$
	15M	250:1	-10	$\pm 10$
	50M	500:1	-10	-50 to 0

**Note**

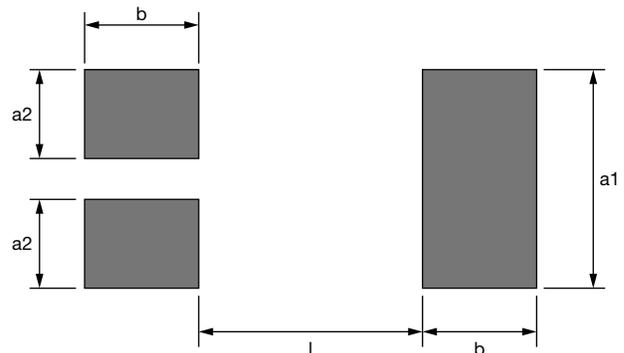
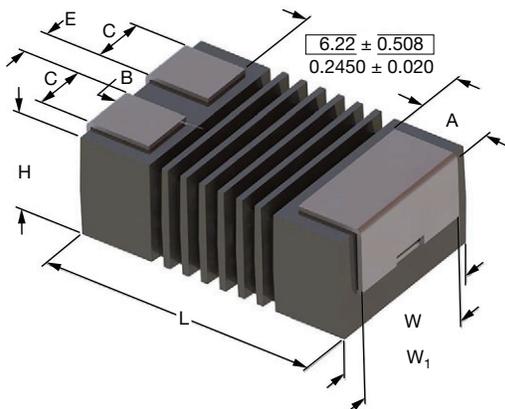
- Contact factory for other ratios

**DERATING CURVE**

**ENVIRONMENTAL SPECIFICATIONS**

Operating temperature	-55 °C to +155 °C
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**TYPICAL DC ELECTRICAL CIRCUIT**

**MECHANICAL SPECIFICATIONS**

Resistive element	Ruthenium oxide (thick film)
Encapsulation	Molded thermoplastic
Substrate	Alumina
Termination	Solder-coated bronze

**DIMENSIONS** in inches (millimeters)


L (1)	H (1)	W	W <sub>1</sub>	A	B	C	E	a1	a2	b	l
0.455 $\pm 0.020$ (11.56 $\pm 0.508$ )	0.167 $\pm 0.010$ (4.24 $\pm 0.254$ )	0.275 $\pm 0.005$ (6.98 $\pm 0.127$ )	0.216 $\pm 0.005$ (5.49 $\pm 0.127$ )	0.100 $\pm 0.010$ (2.54 $\pm 0.254$ )	0.100 $\pm 0.010$ (2.54 $\pm 0.254$ )	0.083 $\pm 0.005$ (2.11 $\pm 0.127$ )	0.050 $\pm 0.005$ (1.27 $\pm 0.127$ )	0.225 (5.72)	0.87 (2.21)	0.145 (3.68)	0.255 (6.48)

**Note**

- (1) Dimensions includes the terminals

PERFORMANCE		
TEST	CONDITIONS OF TEST	TEST LIMITS
Thermal shock	-55 °C to +150 °C, 1000 cycles, 15 min at each extreme	± 1.0 % $\Delta R$
High temperature exposure	1000 h at 155 °C	± 1.0 % $\Delta R$
Biased humidity	+85 °C, 85 % RH, 10 % rated power <sup>(1)</sup> , 1000 h	± 2.0 % $\Delta R$
Mechanical shock	100 g's for 11 ms, 5 pulses	± 0.5 % $\Delta R$
Vibration	Frequency varied 10 Hz to 500 Hz in 1 min, 3 directions, 9 h	± 0.5 % $\Delta R$
Load life	1000 h at rated power, +70 °C, 1.5 h "ON", 0.5h "OFF"	± 1.0 % $\Delta R$
Resistance to solder heat	+260 °C solder, 10 s to 12 s dwell, 25 mm/s emergence	± 1.0 % $\Delta R$

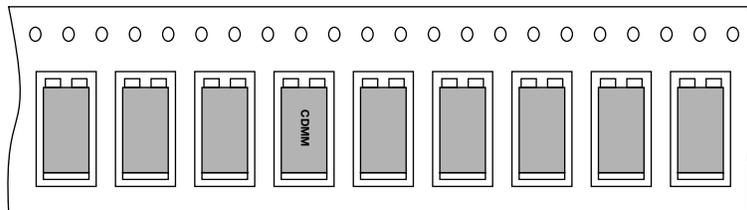
**Note**

<sup>(1)</sup> Applied voltage is based on the critical resistance value, not to exceed 500 V

PACKAGING				
MODEL	TAPE WIDTH	DIAMETER	PIECES/REEL	CODE
CDMM	24 mm / embossed plastic	330 mm / 13"	1200	EF
			1000	E1
			500	E5
			250	ET

**Note**

- Embossed carrier tape per EIA-481



The above image shows the orientation of the parts in the reel



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