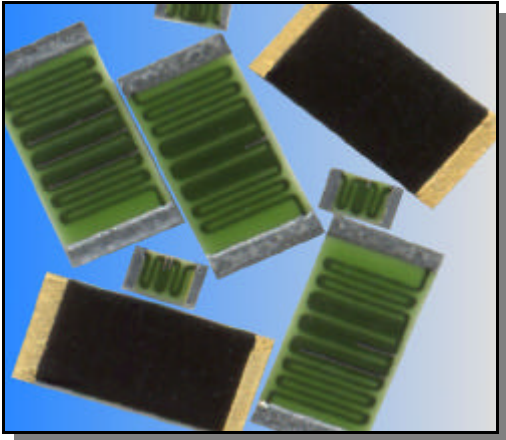


# MCH Series

## Military Grade High Voltage Chip Resistors



OhmCraft's revolutionary fine line, thick film technology, called **FineFilm**, provides an entirely new level of stability and voltage ratings in chip resistors. Our MCH series of resistors meets the same high standards as our HVC series, but with the added feature of an extended temperature range.



The usual hybrid technologies for manufacturing resistors depend upon composite materials that have limitations. Traditional thick-film methods severely limit performance characteristics and thin-film methods are limited in attainable ohmic values. The **FineFilm** method of manufacturing offers the best characteristics of both methods, plus adds many unique features. **FineFilm** resistors feature a longer, high-aspect ratio trace of lower resistivity film. The combination of long line, high-aspect ratio, and higher conductivity film, give **FineFilm**

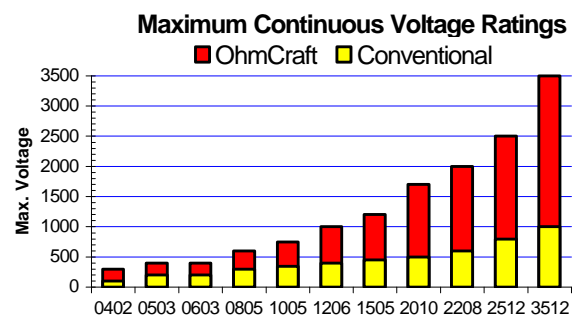
- ◆ Voltage Ratings to 40,000 Volts
- ◆ Ohmic Values to 1,000 Gigohms
- ◆ Ultra High Stability
- ◆ Tight Tolerances ( to 0.1% )
- ◆ Low TCR and VCR
- ◆ Very Low noise
- ◆ Extended Temperature Range  
(-55°C to +125°C)
- ◆ Custom Configurations

resistors unmatched design efficiency, versatility, linearity, stability and low noise. The **FineFilm** method allows control of process parameters to very tight tolerances. The result is chip resistors with outstanding stability and high voltage ratings.

Using the same method, a complete line of **FineFilm** leaded resistors, dividers and networks are manufactured. For information on those products, please refer to the appropriate data sheets.

### Maximum Continuous Voltage:

**FineFilm** high voltage chip resistors offer voltage ratings that are much higher than conventional screen printed resistors of the same size and resistive value.



### Ratings

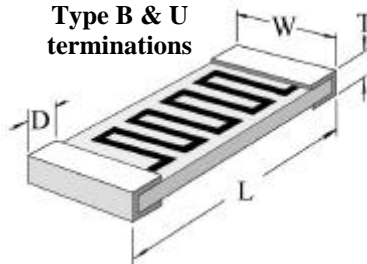
	Case Size <sup>1</sup>										
	0402	0503	0603	0805	1005	1206	1505	2010	2208	2512	3512
Max. Power (W)	0.040	0.050	0.060	0.200	0.250	0.330	0.330	1.000	0.750	2.000	3.000
Max. Voltage <sup>2</sup> (V) (In air)	300	350	400	600	750	1000	1200	1700	2000	2500	3500
Max. Voltage (V) (Potted)	4000	6000	6000	10K	13K	16K	19K	30K	35K	40K	50K
Resistance Range (ohms)	1K- 20G	1K- 200G	1K- 300G	1K- 350G	1K- 450G	1K- 500G	5K- 750G	10K- 1T	5K- 1.5T	10K- 2.0T	10K- 2.0T

Note 1: Other standard & custom case sizes are available including: 0403, 0502, 0504, 1004, 1210 & 2510

Note 2: The continuous maximum voltage applied cannot exceed the maximum power rating.

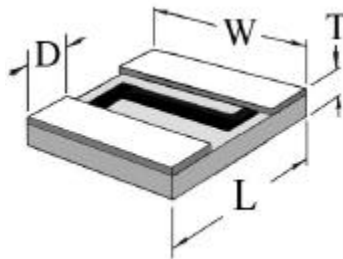
## Dimensions

### Wrap-around Type B & U terminations



L = Length  
W = Width  
T = Thickness  
D = Pad dimension

### Bondable Type G & S terminations



Case Size ?	Length (L) (mils)	Width (W) (mils)	Thickness (T) Max. (mils)	Pad (D) (mils)
0402	40 $\pm$ 5	20 $\pm$ 3	20	10 ( $\pm$ 5)
0403	40 $\pm$ 5	30 $\pm$ 5	20	10 ( $\pm$ 5)
0502	50 (+10,-5)	25 $\pm$ 5	20	10 ( $\pm$ 5)
0503	55 (+10,-5)	30 $\pm$ 5	20	6 ( $\pm$ 2)
0504	50 (+10,-5)	40 $\pm$ 5	20	6 ( $\pm$ 2)
0603	63 (+10,-5)	31 $\pm$ 5	20	10 (+10,-5)
0805	79 (+10,-5)	50 $\pm$ 5	25	10 (+10,-5)
1004	100 (+10,-5)	40 $\pm$ 5	25	15 (+10,-5)
1005	100 (+10,-5)	50 $\pm$ 5	25	15 (+10,-5)
1206	126 (+10,-5)	63 $\pm$ 5	30	15 (+10,-5)
1210	126 (+10,-5)	98 $\pm$ 5	30	15 (+10,-5)
1505	150 (+10,-5)	50 $\pm$ 5	30	15 (+10,-5)
2010	200 (+10,-5)	100 $\pm$ 5	30	20 (+10,-5)
2208	225 (+10,-5)	75 $\pm$ 5	30	20(+10,-5)
2510	250 (+10,-5)	100 $\pm$ 5	30	20 (+10,-5)
2512	250 (+10,-5)	125 $\pm$ 5	30	20 (+10,-5)
3512	350 (+10,-5)	125 $\pm$ 5	30	20 (+10,-5)

## How to build a part number....

**Type      Case size      TCR<sup>1</sup>      Value<sup>2</sup>      Tolerance<sup>3</sup>      Termination**

### MCH

High Voltage  
Chip

See dimension  
table above

E =  $\pm$  25ppm/ $^{\circ}$ C  
H =  $\pm$  50ppm/ $^{\circ}$ C  
K =  $\pm$  100ppm/ $^{\circ}$ C  
L =  $\pm$  200ppm/ $^{\circ}$ C

Resistance value  
expressed as a four  
digit number where  
the first three num-  
bers are the signifi-  
cant value, and the  
forth number is the  
number of zeros.

B =  $\pm$  0.1 %  
C =  $\pm$  0.25 %  
D =  $\pm$  0.5 %  
F =  $\pm$  1.0 %  
G =  $\pm$  2.0%  
J =  $\pm$  5.0 %  
K =  $\pm$  10 %  
N =  $\pm$  15 %  
L =  $\pm$  20 %  
M =  $\pm$  30 %  
P =  $\pm$  50 %

B = Solderable wrap-around  
(solder coated with nickel  
barrier)  
S = Solderable single surface  
(flip-chip)  
G = Wire Bond able (gold)  
U = Bondable wraparound  
(gold)

Note 1: TCR measured from  $-55^{\circ}$ C to  $+125^{\circ}$ C.

Note 2: Value is dependent on case size.

Note 3: Tolerance is dependent on case size & value.

**Example:** For a High Voltage, 125 Meg-ohm resistor with case size of 0805,  
a TCR of  $\pm$  50 ppm/C, a  $\pm$ 1% tolerance, and wrap-around solderable  
terminations - the part number would be:

**MCH0805H1256FB**

### RHOPOINT COMPONENTS

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