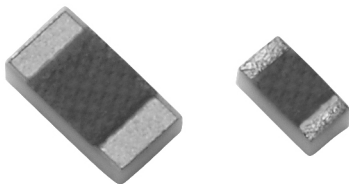


## High Frequency Chip Resistor

SURFACE MOUNT  
CHIPS



FC series chip resistors are designed with low internal reactance. They function as almost pure resistors on a very high range of frequencies. The specialized laser edge trimming allows for precision tolerances to 0.1%

### FEATURES

- Lead (Pb)-Free available
- Small standard size 0402 case size
- Edge trimmed block resistors
- Alumina substrate High Purity 99.6%
- Ohmic range 10 ohms to 1000 ohms
- Small internal reactance
- Low TCR to  $\pm 25$ ppm/ $^{\circ}$ C



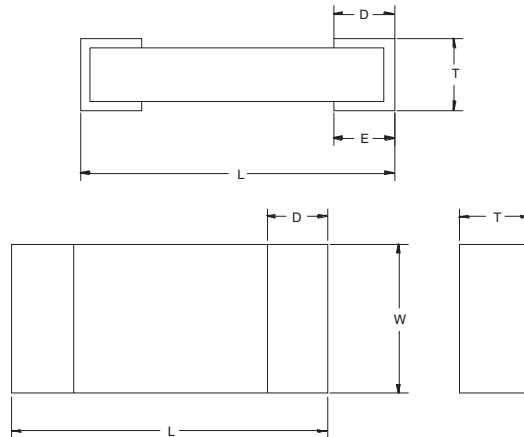
### APPLICATIONS

- Low noise amplifiers
- Attenuation
- Line termination

### STANDARD ELECTRICAL SPECIFICATIONS

		SPECIFICATIONS		CONDITION
<b>MATERIAL</b>		Passivated Nichrome		
<b>Resistance Range</b>		10 Ohms to 1000 Ohms		Case Size Dependant
<b>TCR:</b>		25, (Std) ( $\geq 50$ ohms) to $\pm 100$ ppm/ $^{\circ}$ C		- 55 $^{\circ}$ C to + 125 $^{\circ}$ C
<b>Tolerance:</b>		$\pm 0.1\%$ , $\pm 0.5\%$ , $\pm 1.0\%$ and $\pm 5.0\%$		+ 25 $^{\circ}$ C
<b>Component Ratings</b>	<b>CASE SIZE</b>	<b>Power Rating</b>	<b>Working Voltage</b>	
	<b>0201</b>	30mW	30 Volts	Max @ + 70 $^{\circ}$ C
	<b>0402</b>	50 mW	30 Volts	Max. @ + 70 $^{\circ}$ C
	<b>0505</b>	125 mW	37 Volts	Max. @ + 70 $^{\circ}$ C
	<b>0603</b>	125 mW	50 Volts	Max. @ + 70 $^{\circ}$ C
	<b>0805</b>	200 mW	50 Volts	Max. @ + 70 $^{\circ}$ C
	<b>1005</b>	250 mW	75 Volts	Max. @ + 70 $^{\circ}$ C
	<b>1206</b>	330 mW	75 Volts	Max. @ + 70 $^{\circ}$ C
<b>Stability</b>		500 ppm		2000 hrs @ + 70 $^{\circ}$ C
<b>Operating Temperature Range</b>		- 55 $^{\circ}$ C to + 125 $^{\circ}$ C		

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**DIMENSIONS** in inches


CASE SIZE	LENGTH	WIDTH W ( $\pm 0.005$ )	THICKNESS MIN/MAX	TOP PAD D ( $\pm 0.005$ )	BOTTOM PAD E ( $\pm 0.005$ )
0201	0.020 $\pm$ 0.002	0.010 $\pm$ 0.002	0.010 / 0.020	0.005 $\pm$ 0.002	0.005 $\pm$ 0.002
0402	0.040 $\pm$ 0.003 [1.016 $\pm$ 0.076]	0.020 [0.508]	0.015 [0.381]	0.012 [0.305]	0.015 [0.381]
0505	0.050 $\pm$ 0.005 [1.270 $\pm$ 0.127]	0.050 [1.270]	0.015 [0.381]	0.012 [0.305]	0.015 [0.381]
0603	0.064 $\pm$ 0.006 [1.626 $\pm$ 0.153]	0.032 [0.813]	0.015 [0.381]	0.012 [0.305]	0.015 [0.381]
0805	0.080 $\pm$ 0.006 [2.032 $\pm$ 0.153]	0.050 [1.270]	0.015 [0.381]	0.016 $\pm$ 0.008 [0.407 $\pm$ 0.1053]	0.015 [0.381]
1005	0.100 $\pm$ 0.008 [2.540 $\pm$ 0.204]	0.053 [1.347]	0.025 [0.635]	0.020 +0.005/-0.010 [0.508 + 0.127/-0.254]	
1206	0.126 $\pm$ 0.008 [3.201 $\pm$ 0.204]	0.063 [1.601]	0.025 [0.635]	0.020 +0.005/-0.010 [0.508 + 0.127/-0.254]	

<b>MECHANICAL SPECIFICATIONS</b>	
Resistive Element	Passivated Nichrome
Substrate Material	Alumina (99.6%)
Terminations	Gold or SN 60 Solder over Nickel barrier
Lead (Pb)-free Option	96.5% Sn, 3.0% Ag, 0.5% Cu
Lead (Pb)-free Finish	Hot Solder Dip

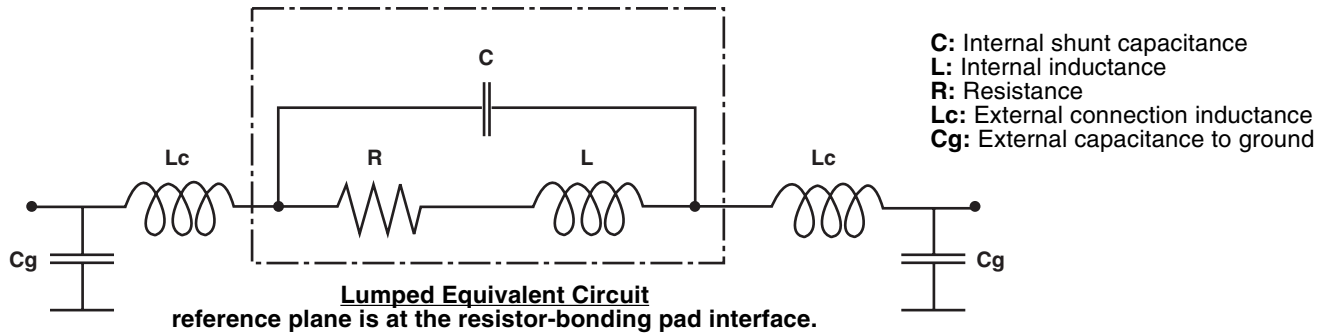
**How to Order**

Series	Size	TCR $\pm$ (ppm/ $^{\circ}$ C)	Nominal	Tolerance $\pm$ (%)	Termination	Packaging
FC	0201 0402 0505 0603 0805 1005 1205	*E = 25 H = 50 K = 100      * $\geq$ 50 ohms only	4 digits. The first 3 digits are significant figures and the last digit specifies the number of zeros to follow Eg. 10R0 = 10 ohms 1000 = 100 ohms	*B = 0.1 % D = 0.5 % F = 1.0 % J = 5.0 %   * $\geq$ 50 ohms only	T = Top side Gold (Std) B = Tinned wraparound G = Gold wraparound TB = Top side Solder TBS = Top side Solder Lead (Pb)-Free S = Wraparound Lead (Pb)-Free Solder	W = Waffle pack T = Tape and reel

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**SURFACE MOUNT  
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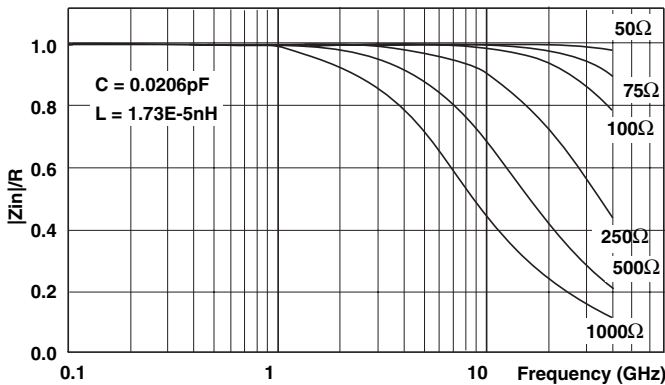
**TYPICAL HIGH FREQUENCY PERFORMANCE ELECTRICAL MODEL AND TESTING**



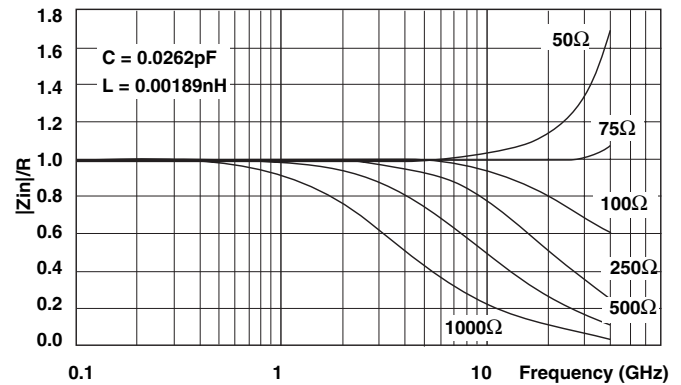
The lumped circuit above was used to model the data at the bonding pad-resistor reference plane. High frequency testing was performed by Modelithics, Inc. on parts mounted to quartz test boards. Quartz test boards were chosen to minimize the contribution of the board effects at high frequencies. Future testing will be performed on various industry standard board types. Vishay in partnership with Modelithics, Inc. will develop substrate scalable models for the FC series resistors. These models will be available for industry standard design software packages and will allow the designer to accurately model their wireless and microwave printed boards.

SURFACE MOUNT CHIPS

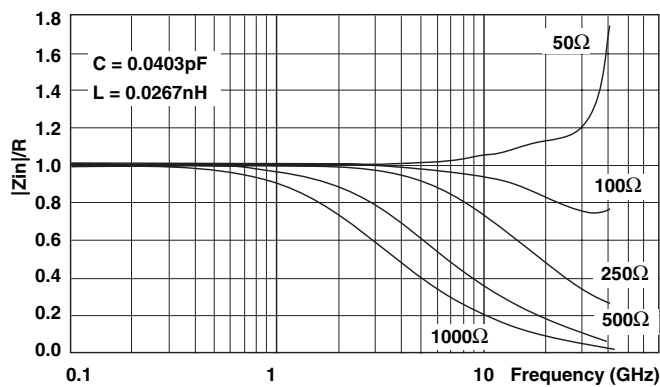
**INTERNAL IMPEDANCE FOR 0201 FLIP CHIP**



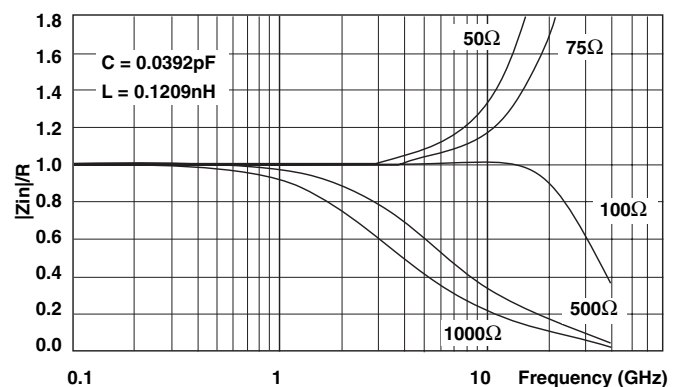
**INTERNAL IMPEDANCE FOR 0402 FLIP CHIP**



**INTERNAL IMPEDANCE FOR 0603 FLIP CHIP**



**INTERNAL IMPEDANCE FOR 0402 WRAP AROUND**





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