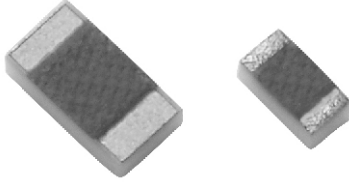


## High Frequency (up to 20 GHz) Resistor, Thin Film Surface Mount Chip



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

- Small standard size 0402 case size
- Edge trimmed block resistors
- Alumina substrate high purity (99.6 %)
- Ohmic range (10  $\Omega$  to 1000  $\Omega$ )
- Small internal reactance (< 10 m $\Omega$ )
- Low TCR (down to  $\pm$  25 ppm/ $^{\circ}$ C)
- Epoxy bondable termination available
- Material categorization: For definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



### Note

\* Lead (Pb)-containing terminations are not RoHS-compliant. Exemptions may apply.

### APPLICATIONS

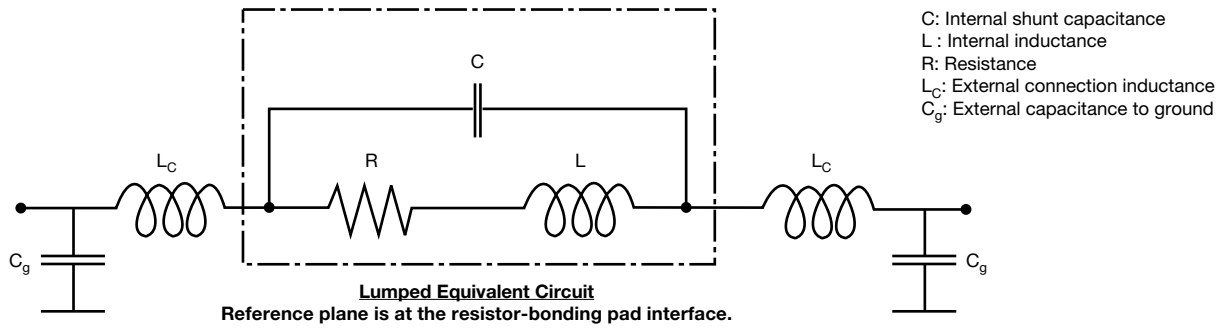
- Low noise amplifiers
- Attenuation
- Line termination

STANDARD ELECTRICAL SPECIFICATIONS		
TEST	SPECIFICATIONS	CONDITIONS
Material	Passivated nichrome	-
Resistance Range	10 $\Omega$ to 1000 $\Omega$	Case size dependent
TCR: Absolute	$\pm$ 25 ppm/ $^{\circ}$ C (standard) ( $\geq$ 50 $\Omega$ ) to $\pm$ 100 ppm/ $^{\circ}$ C	- 55 $^{\circ}$ C to + 125 $^{\circ}$ C
Tolerance: Absolute	$\pm$ 0.1 % to $\pm$ 5.0 %	+ 25 $^{\circ}$ C
Stability: Absolute	$\Delta R \pm$ 0.02 %	2000 h at 70 $^{\circ}$ C
Stability: Ratio	-	-
Voltage Coefficient	0.1 ppm/V	-
Working Voltage	30 V to 75 V	-
Operating Temperature Range	- 55 $^{\circ}$ C to + 125 $^{\circ}$ C	-
Storage Temperature Range	- 55 $^{\circ}$ C to + 150 $^{\circ}$ C	-
Noise	< - 35 dB	-
Shelf Life Stability: Absolute	$\Delta R \pm$ 0.01 %	1 year at + 25 $^{\circ}$ C

COMPONENT RATINGS			
CASE SIZE	POWER RATING (mW)	WORKING VOLTAGE (V)	RESISTANCE RANGE ( $\Omega$ )
0402	50	30	10 to 1000
0505	125	37	20 to 1000
0603	125	50	10 to 1000
0805	200	50	10 to 1000
1005	250	75	10 to 1000
1206	330	75	10 to 1000



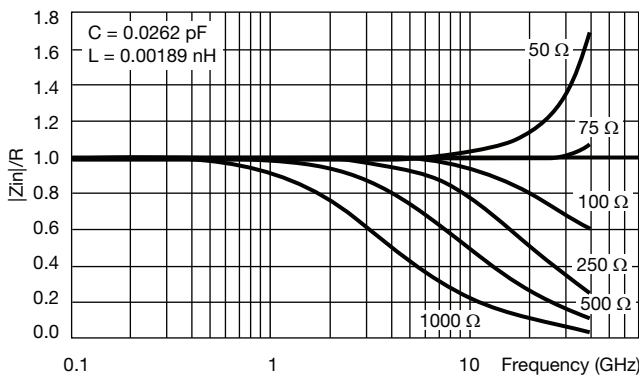
**TYPICAL HIGH FREQUENCY PERFORMANCE ELECTRICAL MODEL AND TESTING**



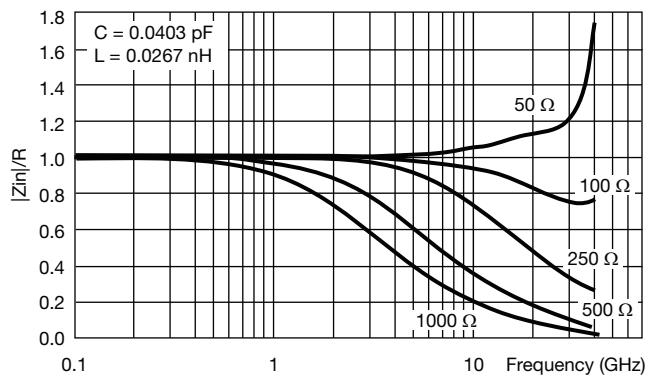
The lumped circuit above was used to model the data at the bonding pad-resistor reference plane. High frequency testing was performed by Modelithics, Inc. on parts mounted to quartz test boards. Quartz test boards were chosen to minimize the contribution of the board effects at high frequencies. Future 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.

**INTERNAL IMPEDANCE**

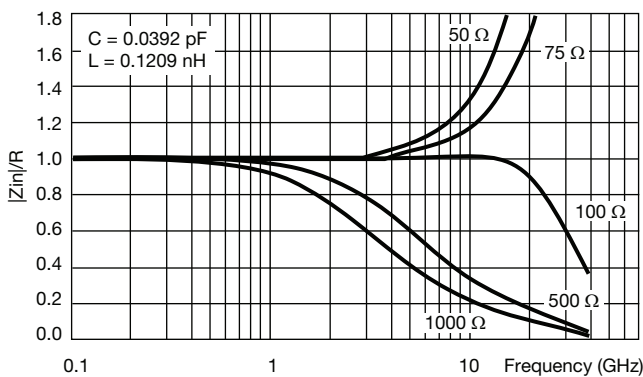
**0402 Flip chip**



**0603 Flip chip**

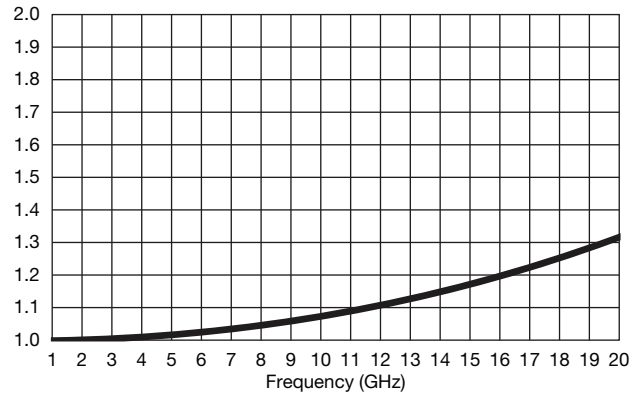


**0402 Wraparound**

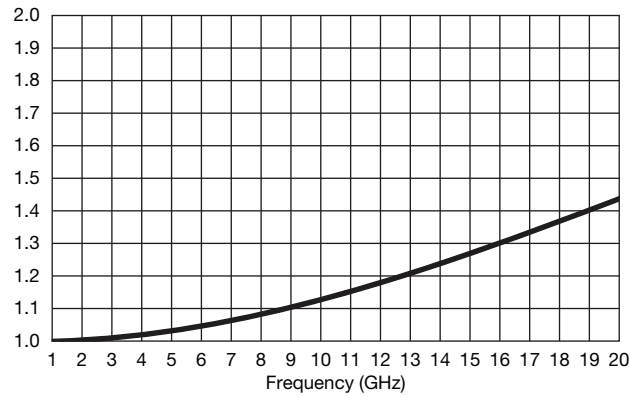




**VSWR FC Series 0402 size 50 Ω**



**VSWR FC Series 0402 size 100 Ω**





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**Please note that some Vishay documentation may still make reference to RoHS Directive 2002/95/EC. We confirm that all the products identified as being compliant to Directive 2002/95/EC conform to Directive 2011/65/EU.**

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