VISHAY
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DID YOU KNOW?

THE EFFECTS OF MOUNTING IN HIGH FREQUENCY APPLICATIONS: ASSESSING THE PERFORMANCE OF CH RESISTORS

The microwave performance of electronic components can be expressed in various ways. Scattering parameters, |Z|/R, or voltage standing wave ratio (VSWR) curves, are among those most commonly used to define high frequency performance. Nevertheless, as with all measurements, it is crucial to pay attention to what they cover in order to understand what they really mean.

Sometimes manufacturers provide the performance of their components "alone", out of any circuit. That can be a good indication of the component's behavior, but not enough information to predict its performance in a circuit. Indeed, the soldering of components inevitably causes parasitic elements – mainly inductance and capacitance – leading to performance deviations. Even if the testing circuit is not exactly the same as the customer's, this configuration will give closer results to the ones that can be expected in the final circuit. Below is a graph showing how much the parasitic elements influence performance.

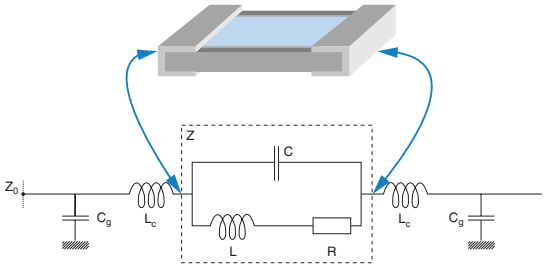


Fig 1. - The resistor is not soldered on a circuit. We will consider Z as its impedance.

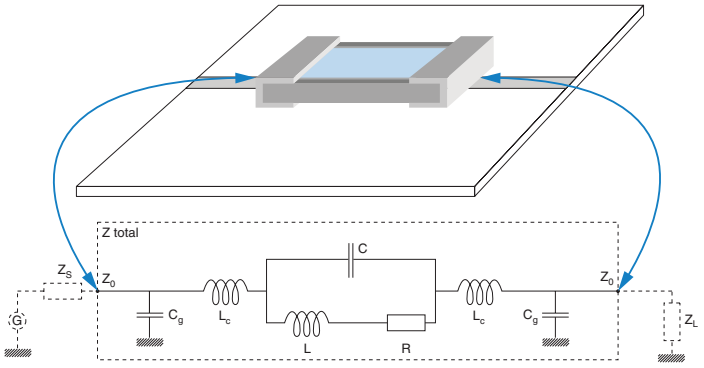
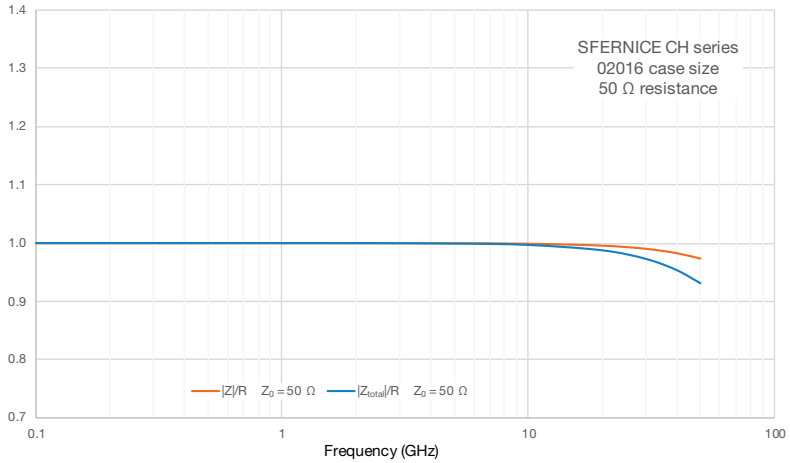


Fig 2. - The resistor is soldered on a circuit. We will consider Z_{total} as the impedance of the chip, including the parasitic elements.



In order to help designers, Vishay provides design tools. |Z|/R data for "alone" and mounted CH devices is available in the datasheet www.vishay.com/ppg?53014.

S-parameter data for mounted devices can be downloaded at www.vishay.com/doc?53061.