

APPLICATION NOTE

Frequency Tuning of Coaxial Resonators

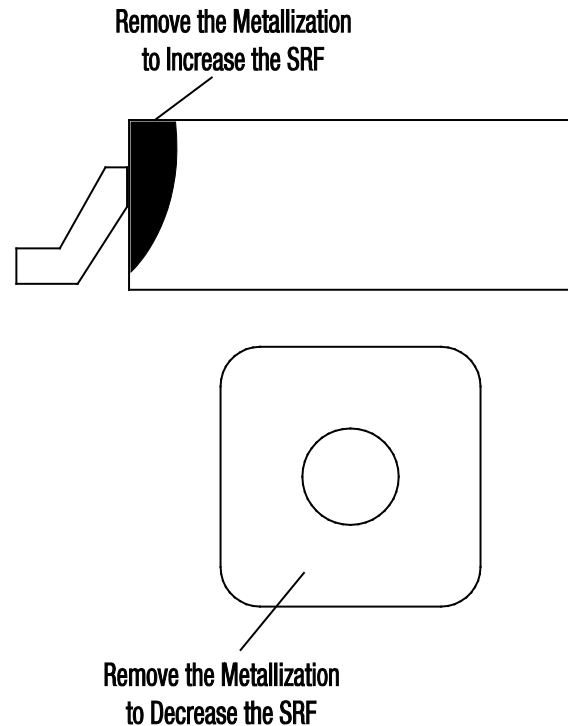
The space-saving design and mechanical ruggedness of Skyworks high Quality Factor (Q) coaxial resonators make them ideal for use in stable oscillators and filter applications. It is usually preferable to shift the Self Resonant Frequency (SRF) of the resonator when testing circuit prototypes. This document demonstrates three mechanical methods of tuning a coaxial resonator.

In most applications, the SRF of the coaxial resonator is loaded by stray and parallel capacitances. In an oscillator, this usually leads to a shift in the resonant frequency to a lower value.

The resonator's SRF can be increased by removing the silver metallization from the open end. Start this process by removing 10 mils to 50 mils from the top, and then continue to remove metallization from each side if necessary. Depending on the length of the part, the SRF can be increased 10 % to 20 % without degrading the unloaded Q.

The resonator's SRF can be decreased by removing the silver metallization from the shortened end of the resonator or by varying the position of the grounding plane. Removing the silver metallization from the shortened end of the resonator disturbs the current and results in a degradation of the Q.

When a designer produces a resonator that works well in a circuit, the SRF can be measured using the method described in the Skyworks *Measuring the SRF and Q of Coaxial Resonators Application Note* (document number 202724), or the part can be returned to Skyworks to characterize and provide new samples.



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