

What is an RF capacitor?

Before we define what an RF capacitor is, we need to provide some background on RF. RF stands for "Radio Frequency" and refers to the oscillation rate of an AC voltage, current, or electromagnetic waves in an electronic device or medium. Today, almost all electronic devices use alternating voltages and currents, ranging from 50Hz to 100s of GHz.

Why do RF capacitors have high Q?

RF capacitors have very high Q due to their low capacitance and very low ESR. Therefore, RF capacitors are often referred to as High Q capacitors. Since RF capacitors are often used for tuning and impedance matching applications, capacitance stability versus temperature is critical.

What are RF/microwave SMD capacitors used for?

These capacitors are suitable for operation across many applications and industries including: consumer, commercial, industrial, telecom, automotive, military, aerospace, space, and medical. RF/Microwave SMD capacitors designed and manufactured for optimal performance in RF and microwave frequencies, high RF power, and optical applications.

What is an equivalent circuit for a RF capacitor?

Equivalent Circuits for RF Capacitors The equivalent circuit for a capacitor is well-known, especially by high-speed digital designers working on PDN impedance engineering. The equivalent circuit for a capacitor is generally modeled as a simple series RLC circuit, which gives a minimum in the impedance curve for the capacitor.

What is a high frequency capacitor?

About High-Frequency Capacitors High-frequency capacitors are marketed as such due to their ability to retain ideal capacitive behavior up to very high frequencies. Capacitors will not exhibit ideal behavior up to the intended operating frequencies in RF systems, even if they are marketed as "high-frequency" or "RF" components.

Do RF capacitors have parasitic elements?

Capacitors marketed specifically for RF systems also have these parasitic elements, but they are specifically engineered so that the self-resonant frequency is very high. This model is well-known among digital designers who have to use a large number of decoupling/bypass capacitors for power delivery.

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Capacitors get the most attention because of their high-frequency characteristics in determining PDN impedance, as well as their use in RF filter circuits. However, parasitics in ...

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Image: Keltron Electrolytic capacitors are polarized as there is a positive and negatively charged terminal. They are usually constructed with an electrolyte-soaked ...

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