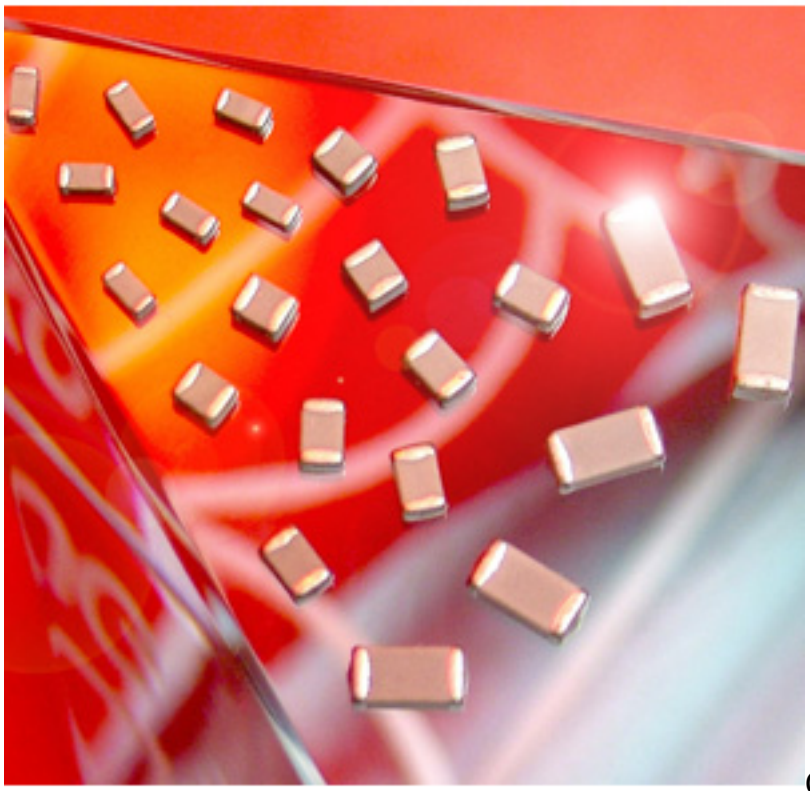
Multilayer ceramic chip capacitors include ultra-low equivalent series resistance



One of the most overlooked, but important, performance characteristics of a capacitor used in power circuits is its equivalent series resistance. It determines the capacitor's I2R heating losses, which in turn impacts the efficiency, pulse handling capability, and reliability of its associated circuit. ESR is Xc/Q so a capacitor with very low ESR will have a high Q or Quality factor. A theoretically perfect capacitor would have an ESR of zero, be lossless and therefore not self heat.

Developed and manufactured by Syfer, these passive devices provide an enhanced capability using the existing, very stable, High Q material system that provides excellent, low loss performance in systems to beyond 3GHz. ESR at 1GHz for a typical 10pF capacitor is below 0.1Ohms, demonstrating a significant improvement over standard High Q devices.

Demand for low ESR capacitors is increasing as these passive components be used in higher power applications and can help reduce power consumption in battery-powered devices and RF power amplifiers. In addition, the better power handling of the capacitors can allow for downsizing or reduction in cooling considerations for existing technology.

Applications include telecommunications systems and other RF and microwave installations, particularly high power RF circuits, amplifier matching networks, filtering, diplexers and antenna matching. These high frequency MLCC’s are also

suitable for many general purpose applications where economical, high performance is required, including High Q, DC blocking, VCO frequency stabilisation and bypass & coupling circuitry.

Syfer's range includes case sizes of 0603, 0805 and 1111; over a capacitance range from 0.5pF to 240pF; rated voltages of 200, 250 and 500V and high self-resonant frequencies up to 10GHz. They are available with various termination options including copper barrier for non-magnetic applications.

Manufactured at Syfer's state of the art, Norwich, UK facility, the devices are readily available in production quantities on a 6 week lead-time.

Source URL (retrieved on *04/21/2014 - 11:27am*):
http://www.ecnmag.com/product-releases/2012/06/multilayer-ceramic-chip-capacitors-include-ultra-low-equivalent-series-resistance