

### **MLCC Squeezes 0.1 $\mu$ F Into 008004 Package**

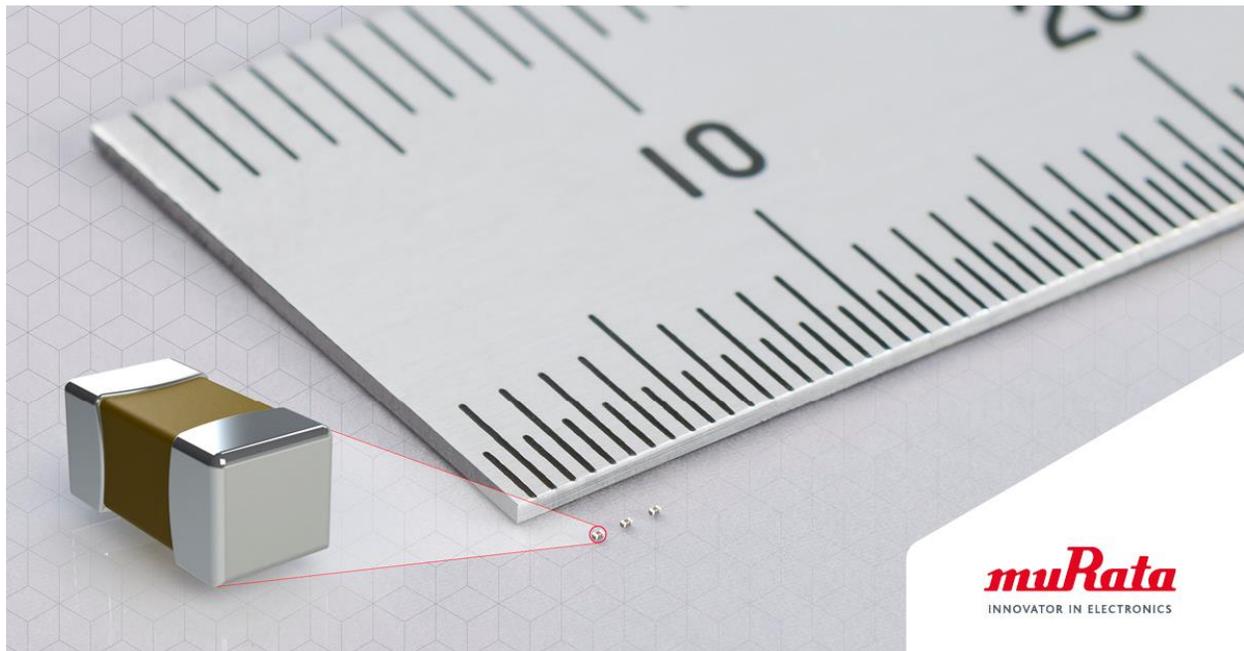
[Murata Electronics'](#) GRM011R60J104M is being introduced as the world's first multi-layer ceramic capacitor (MLCC) that features a maximum capacitance of 0.1  $\mu$ F in an 008004 (0.25-mm $\times$ 0.125-mm) package. The solution also delivers a capacitance tolerance of  $\pm$ 20%, usage temperature range of -55°C to 85°C, and a rated voltage of 6.3 Vdc.

By using proprietary ceramic and electrode material atomization and homogenization technology, Murata achieved a mounting surface area approximately half the size and a volume (L $\times$ W $\times$ H) approximately 80% smaller than conventional products in an 01005 package. Additionally, the GRM011R60J104M has nearly 10 times the capacity of similarly-sized products from the vendor.

According to Murata, the 008004 is the smallest standard case size available on the market for MLCCs (see the figure). The company adds that prior to this introduction, the highest capacitance value offered by Murata in this case size was 10 nF (0.01  $\mu$ F). But through improvement in the production art, the company has been able to introduce three new values: 22 nF, 47 nF and 100 nF (0.1  $\mu$ F). They note that Taiyo Yuden also has capacitors up to 22 nF in this case size.

The demand for smaller and higher density electronic circuitry is growing exponentially as 5G smartphones and devices such as wearables become more widespread, multifunctional, and compact. For example, higher end smartphones alone are generally equipped with 800 to 1,000 components. With MLCCs being critical in this circuitry, it is necessary for them to be as miniaturized and powerful as possible.

"As the innovation and market leader in MLCCs, Murata's comprehensive research and development efforts in the areas of high-precision and microscopic layering technology for electrode materials is enabling designers to meet the market demands for further miniaturization and greater functionality of electronic devices," said Shawn Li, senior business development manager, Murata Americas. For more information, to view the data sheets, or request samples, see the ceramic capacitors (SMD) [page](#).



*Figure. The 008004 (0.25-mm  $\times$  0.125-mm) package represents the smallest case size available for MLCCs. While previously, MLCCs were available in this package with values up to 22 nF, improvements in production capability now enable Murata to offer up to 100 nF (0.1  $\mu$ F) in this tiny case size.*