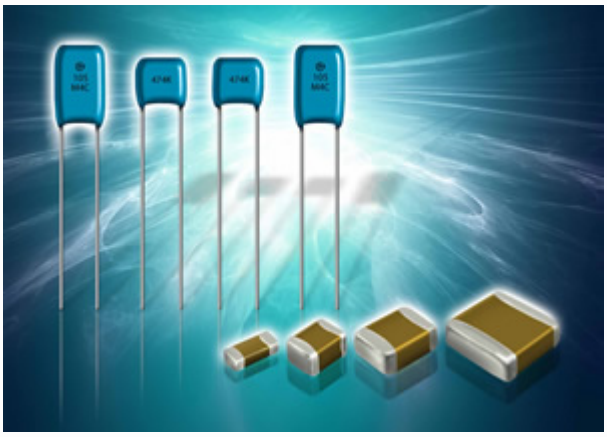
Murata MLCC reduces flicker and acoustic noise in LED lighting applications



Murata has announced the introduction of a series of capacitors specifically designed to provide **DC smoothing and acoustic noise reduction in LED lighting applications**. As the market for LED lighting has steadily grown customers have recognized that a capacitive DC bias, which results in less actual capacitive value, and a piezo-electric phenomenon within capacitors has been the cause of light flickering and acoustic noise. Previously, many designers have avoided the use of ceramic capacitors in LED lighting applications even though they have superior size and higher temperature reliability.

The **GR3** and **RDE** series of multi-layer ceramic capacitors (MLCC) have been designed by Murata to be incorporated in LED lighting circuits, immediately following the bridge rectification stage, to provide DC supply smoothing and EMI filtering. The GR3 family is for reflow soldering use and the RDE family provides radial leaded insertion production. Compared to standard ceramic capacitors, tests by Murata showed a 10dB reduction in acoustic noise by using the new GR3 MLCC capacitors. Further noise reductions are possible with the RDE leaded parts. Both families provide better DC bias and acoustic noise reduction performance than X7R series.

The GR3 is available in 250, 450 or 630 VDC rating and popular capacitances starting from 10nF and up to 1,000nF for the 250 VDC range, to 560nF for 450 VDC and 270nF for the 630 VDC. Package sizes for the GR3 series include 0805, 1206, 1210, 1812 and 2220. The RDE leaded series has the same voltage rating as the GR3 series with capacitances of 10nF to a maximum of 2.2uF for the 250 VDC part, 1.2uF for the 450 VDC, and 560nF for the 630 VDC component.