

# AEC-Q200 Capacitors Product Overview

## AEC-Q200 Background

The Component Technical Committee established AEC-Q200, “Stress Test Qualification for Passive Components,” to define the minimum stress test-driven qualification requirements for passive electrical devices, including ceramic capacitors.

## IATF 16949 Certified

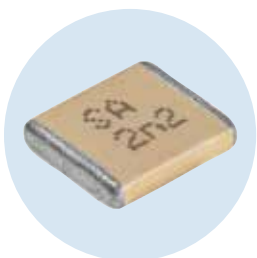
Knowles Precision Devices has developed a range of MLC capacitors and surface-mount EMI filters qualified to AEC-Q200 that meets the needs of high reliability and automotive manufacturers.

## STACKICAP™ X7R HIGH DENSITY



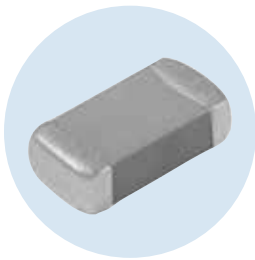
Product	<ul style="list-style-type: none"> <li>• High voltage monolithic capacitors</li> <li>• Case sizes: 1812, 2220, 3640</li> </ul>
Applications	<ul style="list-style-type: none"> <li>• Battery management system</li> <li>• On-board charger</li> <li>• DC-DC converter</li> <li>• AC-DC inverter</li> <li>• PTC heater controller</li> </ul>
Benefits	<ul style="list-style-type: none"> <li>• Suitable for applications in power supplies filtering and DC-DC converters</li> <li>• Suitable replacement for film and tantalum capacitors</li> <li>• Designed to provide high CV in compact packages</li> </ul>

## SAFETY CAPACITORS COG AND X7R



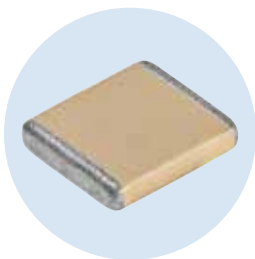
Product	<ul style="list-style-type: none"> <li>• High voltage AC250 rated MLCCs</li> <li>• 250Vac</li> <li>• The following case sizes apply: <ul style="list-style-type: none"> <li>- X7R: 1808, 1812, 2211, 2215, 2220</li> <li>- COG: 1808, 1812, 2211, 2215</li> </ul> </li> </ul>
Applications	<ul style="list-style-type: none"> <li>• Battery management system</li> <li>• On-board charger</li> <li>• DC-DC converter</li> <li>• AC-DC inverter</li> <li>• PTC heater controller</li> <li>• E-compressor inverter</li> </ul>
Benefits	<ul style="list-style-type: none"> <li>• Safety-certified capacitors are certified to international class Y2, X1 and X2 ratings</li> <li>• UL and TUV certified</li> <li>• Reduces board area and overcomes height restrictions</li> <li>• FlexiCap™ termination option and AEC-Q200 qualification</li> <li>• High DC rating to allow for DC withstand testing of automotive systems</li> </ul>

## HIGH VOLTAGE COG/NPO INCLUDING SNUBBER APPLICATIONS



<b>Product</b>	<ul style="list-style-type: none"> <li>• Case sizes: 0603 - 3640</li> <li>• Range extension: <ul style="list-style-type: none"> <li>- 1812 1.5kV 4.7nF      - 2220 1.5kV 4.7nF</li> <li>- 1812 2kV 2.7nF      - 2220 2kV 5.6nF</li> </ul> </li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>• High voltage where stability under temperature and voltage is critical</li> <li>• DC-DC converters</li> <li>• Battery management</li> <li>• PTC heater controller</li> <li>• EV and HEV</li> </ul>
<b>Benefits</b>	<ul style="list-style-type: none"> <li>• A high voltage range to satisfy the emerging requirements of EVs</li> <li>• Suitable for both industrial and automotive markets</li> <li>• Offers capacitance selection for 1.5kV and 2kV range that is important for snubber applications</li> <li>• Offers 3kV and 4kV parts to satisfy the demands of 800V battery system DWV testing</li> <li>• Suitable for both industrial and automotive markets</li> </ul>

## FAILURE MITIGATION MLCC HIGH VOLTAGE COG AND X7R



<b>Product</b>	<ul style="list-style-type: none"> <li>• FlexiCap™ case sizes: 0603 - 3640</li> <li>• Open mode case sizes: 0603 - 2225</li> <li>• Tandem capacitor case sizes: 0603 - 1812</li> <li>• Top of the range items include: <ul style="list-style-type: none"> <li>- 2220 3kV 6.8nF      - 3640 3kV 18nF      - 1812 4kV 2.2nF</li> <li>- 2220 4kV 4.7nF      - 1812 1kV 180nF StackiCap™      - 2220 630V 1.0μF StackiCap™</li> </ul> </li> </ul>
<b>Applications</b>	<ul style="list-style-type: none"> <li>• DC/DC converter</li> <li>• Battery management</li> <li>• PTC heater controller</li> <li>• EV and HEV</li> </ul>
<b>Benefits</b>	<ul style="list-style-type: none"> <li>• FlexiCap™ reduces the mechanical stress being exerted on the capacitor by PCB design/ assembly processes, rated up to 3kV. Max voltage 4kV. Also applies to safety rated range with 250Vac ratings <ul style="list-style-type: none"> <li>- Offers 5 millimeter bend test deflection without failure</li> </ul> </li> <li>• Open Mode enhanced internal electrode design reduces risk of ceramic crack that may lead to electrical short circuit</li> <li>• Tandem introduces two capacitors in series within a single part, so that failure of one will not compromise circuit integrity</li> </ul>