ATSC
Automotive high Temperature Si Capacitors up to 200°C

Key features

• Qualified according to AEC-Q100
• Ultra long life @ 200°C
• High stability of capacitance value over temperature, voltage and ageing
• 16 V operating voltage
• Load dump
• 8 kV HBM ESD
• Suitable for high temperature leadframe mounting
  (please refer to our Assembly Application Note for more details)

Key applications

• Harsh conditions sensors
• 200°C sensors
• Ignition sensors
• Oil pressure sensors
• Temperature sensors
• Motor management sensors
• Turbo charger sensors
• Hall effect sensors

The ATSC capacitors target Under-the-hood electronics and all sensors exposed to harsh conditions in the automotive market segment. The deep trench MOS capacitors manufactured in Murata® IATF 16949 certified facility, combined with a unique Mosaic structure and distributed trench capacitors drive an unprecedented level of electrical performances. Thanks to the purity of the oxide cured at a temperature of 900°C during the manufacturing process, Murata is now offering a range of capacitors qualified according to AEC-Q100 conditions up to 200°C with a lifetime that has never been equaled.

The Sicap technology features high reliability - up to 10 times better than alternative capacitor technologies - coupled with high stability and low profile. The ATSC capacitors offer enhanced decoupling performances compared with standard competitors SMD solutions and is fully compatible with a System in Package assembly and a leadframe.

*Murata Integrated Passive Solutions
Electrical specifications

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Capacitance range</td>
<td>390 pF to 1 μF(*)</td>
</tr>
<tr>
<td>Capacitance tolerances</td>
<td>±15 %(*)</td>
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<tr>
<td>Operating temperature range</td>
<td>-55 to 200°C</td>
</tr>
<tr>
<td>Storage temperature range</td>
<td>-70 to 215°C(**)</td>
</tr>
<tr>
<td>Temperature coefficient</td>
<td>+80 ppm/K</td>
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<tr>
<td>Breakdown Voltage (BV)</td>
<td>30 VDC</td>
</tr>
<tr>
<td>Rated voltage</td>
<td>16 VDC</td>
</tr>
<tr>
<td>Capacitance variation versus voltage</td>
<td>0.1 %/V (from 0 V to RVDC)</td>
</tr>
<tr>
<td>Insulation resistance</td>
<td>50 GΩ @ 10 V, @ 25°C, t&gt;120s, for 100 nF, or 15 GΩ @15V for 100 nF</td>
</tr>
<tr>
<td>Ageing</td>
<td>Negligible, &lt; 0.001% / 1000 h</td>
</tr>
<tr>
<td>Reliability</td>
<td>FIT&lt;0.017 parts / billions hours</td>
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</tbody>
</table>

(*) other values on request               (**) w/o packing

Termination

Pad finishing in Aluminum. Applicable for high temperature wirebonding and other mountings. Other finishing available such as nickel or gold.

Packaging

Tape and reel, waffle pack or wafer delivery.
Assembly

The attachment techniques recommended by Murata for the ATSC capacitors on the customers substrates are fully detailed in specific documents available on our website. To assure the correct use and proper functioning of Murata Silicon capacitors please download the latest assembly instructions on www.murata.com and read them carefully.

For the assembly instructions, please go to:
https://www.murata.com/ and follow the sections:
Products > Capacitor > Silicon Capacitor > ATSC

Download the pdf files called “Assembly Note ATSC”