Accu-Guard®

Introduction

ACCU–GUARD® TECHNOLOGY
The Accu-Guard® series of fuses is based on thin-film techniques. This technology provides a level of control on the component electrical and physical characteristics that is generally not possible with standard fuse technologies. This has allowed AVX to offer a series of devices which are designed for modern surface mount circuit boards which require protection.

FEATURES
• Accurate current rating
• Fast acting
• Small-standard 0402, 0603, 0805, 1206 and 0612 chip sizes
• Taped and reeled
• Completely compatible with all soldering systems used for SMT
• Lead Free Series (F0402G, F0603G, F0402E, F0603E, F0805B, F1206B)

APPROVAL FILE NUMBERS
• UL, cUL: RCD#E143842
• Accurate current rating
• Fast acting
• Small-standard 0402, 0603, 0805, 1206 and 0612 chip sizes
• Taped and reeled
• Completely compatible with all soldering systems used for SMT
• Lead Free Series (F0402G, F0603G, F0402E, F0603E, F0805B, F1206B)

APPLICATIONS
• Cellular Telephones
• Two-Way Radios
• Computers
• Battery Chargers
• Rechargeable Battery Packs
• Hard Disk Drives
• PDA’s
• LCD Screens
• SCSI Interface
• Digital Cameras
• Video Cameras

For RoHS compliant products, please select correct termination style.

APPROVAL FILE NUMBERS
• UL, cUL: RCD#E143842
• Accurate current rating
• Fast acting
• Small-standard 0402, 0603, 0805, 1206 and 0612 chip sizes
• Taped and reeled
• Completely compatible with all soldering systems used for SMT
• Lead Free Series (F0402G, F0603G, F0402E, F0603E, F0805B, F1206B)

DIMENSIONS millimeters (inches)
F0603C, F0805B, F1206A and F1206B

HOW TO ORDER

<table>
<thead>
<tr>
<th>Product Size</th>
<th>Fuse Version</th>
<th>Rated Current</th>
<th>Fuse Speed</th>
<th>Termination</th>
<th>Packaging</th>
</tr>
</thead>
<tbody>
<tr>
<td>F 1206</td>
<td>A=Accu-Guard® B=Accu-Guard® II C=Accu-Guard® II 0603 D=Accu-Guard® II 0612 E=Accu-Guard® II 0402, 0603 G=Accu-Guard® II Low Current 0402, 0603</td>
<td>Current expressed in Amps. Letter R denotes decimal point e.g. 0.20A=0R20 1.75A=1R75</td>
<td>F=Fast</td>
<td>S=Nickel/Lead-Free Solder coated (Sn 100), SMD W=Nickel/solder coated (Sn 63, Pb 37) Solder Coated (Sn100) N=Nickel/Lead-Free Solder Coated (Sn100), LGA</td>
<td>TR=Tape and reel</td>
</tr>
</tbody>
</table>
The new F0402G and F0603G Accu-Guard® series of fuses is based on thin-film technology which allows precise control of the component electrical and physical characteristics that is not possible with standard fuse technologies. The Accu-Guard Low Current series encompasses the lowest current ratings in compact 0402 and 0603 packages and features LGA terminations.

**ELECTRICAL SPECIFICATIONS**

Operating temperature: -55°C to +125°C  
Current carrying capacity:  
-55°C to -11°C 107% of rating  
-10°C to +60°C 100% of rating  
+61°C to +100°C 85% of rating  
+101°C to +125°C 80% of rating  
Rated voltage: 63V (F0603G), 32V (F0402G)  
Post-fusing resistance: >1MΩ  
Interrupt rating: 50A

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Current Rating A</th>
<th>Resistance @0.1 x I rated Ω (max.)</th>
<th>Voltage Drop @ I rated mV (max.)</th>
<th>Fusing Current (within 5 sec) A</th>
<th>Pre-Arc I2t @10x I rated A²·sec (typ)</th>
<th>Color Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>F0402G0R02FNTR F0603G0R02FNTR</td>
<td>0.028</td>
<td>7.5</td>
<td>290</td>
<td>0.070</td>
<td>6 x 10⁻⁷</td>
<td>Green</td>
</tr>
<tr>
<td>F0402G0R03FNTR F0603G0R03FNTR</td>
<td>0.0375</td>
<td>4.8</td>
<td>230</td>
<td>0.094</td>
<td>8 x 10⁻⁷</td>
<td>Red</td>
</tr>
<tr>
<td>F0402G0R05FNTR F0603G0R05FNTR</td>
<td>0.050</td>
<td>3.4</td>
<td>250</td>
<td>0.125</td>
<td>2 x 10⁻⁶</td>
<td>Blue</td>
</tr>
<tr>
<td>F0402G0R06FNTR F0603G0R06FNTR</td>
<td>0.062</td>
<td>2.5</td>
<td>280</td>
<td>0.155</td>
<td>2 x 10⁻⁶</td>
<td>Yellow</td>
</tr>
<tr>
<td>F0402G0R07FNTR F0603G0R07FNTR</td>
<td>0.075</td>
<td>2.0</td>
<td>280</td>
<td>0.188</td>
<td>4 x 10⁻⁶</td>
<td>Brown</td>
</tr>
<tr>
<td>F0402G0R10FNTR F0603G0R10FNTR</td>
<td>0.100</td>
<td>2.4</td>
<td>300</td>
<td>0.250</td>
<td>7 x 10⁻⁶</td>
<td>Red</td>
</tr>
<tr>
<td>F0402G0R12FNTR F0603G0R12FNTR</td>
<td>0.125</td>
<td>1.6</td>
<td>250</td>
<td>0.312</td>
<td>1 x 10⁻⁶</td>
<td>White</td>
</tr>
<tr>
<td>F0402G0R15FNTR F0603G0R15FNTR</td>
<td>0.150</td>
<td>1.2</td>
<td>220</td>
<td>0.375</td>
<td>2 x 10⁻⁶</td>
<td>Green</td>
</tr>
<tr>
<td>F0402G0R20FNTR F0603G0R20FNTR</td>
<td>0.200</td>
<td>0.8</td>
<td>210</td>
<td>0.500</td>
<td>4 x 10⁻⁶</td>
<td>Pink</td>
</tr>
</tbody>
</table>

**ENVIRONMENTAL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Test</th>
<th>Conditions</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solderability</td>
<td>Components completely immersed in a solder bath at 245 ±5°C for 3 secs.</td>
<td>Total area of imperfections in solder coatup to 5% of the land surface area</td>
</tr>
<tr>
<td>Leach Resistance</td>
<td>Components completely immersed in a solder bath at 255 ±5°C for 60 secs.</td>
<td>Dissolution of termination ≤ 15% of the land surface area</td>
</tr>
<tr>
<td>Storage</td>
<td>12 months minimum with components stored in “as received” packaging.</td>
<td>Good solderability</td>
</tr>
<tr>
<td>Shear</td>
<td>Components mounted to a substrate. Increasing shearing force applied paralleled to the substrate till destruction.</td>
<td>Destruction at 5N force minimum</td>
</tr>
<tr>
<td>Temperature Cycling</td>
<td>Components mounted to a flexible substrate (e.g. FR – 4). 1000 cycles -55°C to +125°C.</td>
<td>No Visible damage ΔR/R&lt;10%</td>
</tr>
<tr>
<td>Bend</td>
<td>Tested as shown in diagram</td>
<td>No visible damage ΔR/R&lt;10%</td>
</tr>
</tbody>
</table>
Accu-Guard® II Low Current
LGA Miniature 0402 and 0603 Size Thin-Film Fuses

FUSE PRE–ARC JOULE INTEGRALS VS CURRENT

Pre-Arc $I^2t$, $A^2\text{sec}$ vs. Current, Amp
Accu-Guard® II Low Current
LGA Miniature 0402 and 0603 Size Thin-Film Fuses

FUSE PRE–ARC JOULE INTEGRALS VS PRE–ARC TIME

Pre-Arc $I^2t$, A$^2$sec

Pre-Arc Time, sec

10-7 10-6 10-5 10-4 10-3 10-2 10-1 10

200 mA 150 mA 125 mA 100 mA 75 mA 62 mA 50 mA 37.5 mA 28 mA