GENERAL DESCRIPTION

AVX 0402/0603 Automotive AntennaGuard products are an ultra low capacitance extension to the Automotive TransGuard® Series and are intended for use in RF and other capacitance sensitive circuits. These low capacitance values have low insertion loss, low leakage current and unsurpassed reliability compared to diode options. These advantages combined with size advantages and bi-directional protection make the AntennaGuard the right choice for automotive applications including RF circuits, sensors, high-speed signal transmission lines, etc...

GENERAL CHARACTERISTICS

• Operating Temperature: -55°C to +125°C
• Working Voltage: ≤18Vdc
• Case Size: 0402, 0603

FEATURES

• AEC Q200 Qualified
• 25kV ESD rating
• Meet 27.5Vdc Jump Start requirements
• Multi-strike capability
• Sub 1nS response to ESD strike

APPLICATIONS

• RF Circuit
• Sensors
• Antennas
• Data lines
• Keyless entry
• Capacitance sensitive applications

HOW TO ORDER

<table>
<thead>
<tr>
<th>VC</th>
<th>AS</th>
<th>06</th>
<th>AG</th>
<th>18</th>
<th>3R0</th>
<th>Y</th>
<th>A</th>
<th>T</th>
<th>1</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varistor Chip</td>
<td>Series</td>
<td>Case Size</td>
<td>Type</td>
<td>Working Voltage</td>
<td>Capacitance</td>
<td>Non-Std Cap Tol</td>
<td>Not Applicable</td>
<td>Termination</td>
<td>Reel Size</td>
<td>Reel Qty</td>
</tr>
<tr>
<td>AS = Automotive</td>
<td>04 = 0402</td>
<td>06 = 0603</td>
<td>18 = 18VDC</td>
<td>2R0 = 2pF</td>
<td>3R0 = 3pF</td>
<td>120 = 12pF</td>
<td>C = ±0.25pF (2R0)</td>
<td>T = Ni/Sn Plated</td>
<td>1 = 7” reel</td>
<td>A = 4K or 10K pcs</td>
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<tr>
<td>VCAS04AG183R0YAT_</td>
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<td></td>
<td></td>
<td></td>
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<tr>
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<tr>
<td>VCAS06AG18120YAT_</td>
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</table>

ELECTRICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>AVX Part Number</th>
<th>( V_W ) (DC)</th>
<th>( V_W ) (AC)</th>
<th>( I_L )</th>
<th>Cap</th>
<th>Cap Tolerance</th>
<th>( V_{Jump} )</th>
<th>Case Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>VCAS04AG183R0YAT_</td>
<td>( \leq 18 )</td>
<td>( \leq 14 )</td>
<td>0.1</td>
<td>3</td>
<td>Max</td>
<td>27.5</td>
<td>0402</td>
</tr>
<tr>
<td>VCAS06AG182R0CAT_</td>
<td>( \leq 18 )</td>
<td>( \leq 14 )</td>
<td>0.1</td>
<td>2</td>
<td>±0.25pF</td>
<td>27.5</td>
<td>0603</td>
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<tr>
<td>VCAS06AG183R0YAT_</td>
<td>( \leq 18 )</td>
<td>( \leq 14 )</td>
<td>0.1</td>
<td>3</td>
<td>Max</td>
<td>27.5</td>
<td>0603</td>
</tr>
<tr>
<td>VCAS06AG18120YAT_</td>
<td>( \leq 18 )</td>
<td>( \leq 14 )</td>
<td>0.1</td>
<td>12</td>
<td>+4, -2pF</td>
<td>27.5</td>
<td>0603</td>
</tr>
</tbody>
</table>

\( V_W \) (DC) DC Working Voltage (V)
\( V_W \) (AC) AC Working Voltage (V)
\( I_L \) Maximum Leakage Current at the Working Voltage (μA)
Cap Maximum Capacitance (pF) @ 1 MHz and 0.5 Vrms; VC06AG18120YAT capacitance tolerance: +4, -2pF
\( V_{Jump} \) Jump Start (V)
PHYSICAL DIMENSIONS: mm (inches)

<table>
<thead>
<tr>
<th>Size (EIA)</th>
<th>Length (L)</th>
<th>Width (W)</th>
<th>Max Thickness (T)</th>
<th>Land Length (t)</th>
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</thead>
<tbody>
<tr>
<td>0402</td>
<td>1.00±0.10</td>
<td>0.50±0.10</td>
<td>0.60</td>
<td>0.25±0.15</td>
</tr>
<tr>
<td></td>
<td>(0.040±0.004)</td>
<td>(0.020±0.004)</td>
<td></td>
<td>(0.010±0.006)</td>
</tr>
<tr>
<td>0603</td>
<td>1.60±0.15</td>
<td>0.80±0.15</td>
<td>0.90</td>
<td>0.25±0.15</td>
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<tr>
<td></td>
<td>(0.063±0.006)</td>
<td>(0.031±0.006)</td>
<td></td>
<td>(0.014±0.006)</td>
</tr>
</tbody>
</table>

S21 TRANSMISSION CHARACTERISTICS

![S21 Response Graph]

Frequency (MHz)

Insertion Loss (dB)
ESD CHARACTERISTICS

**Electrical Transient Conduction**

**AntennaGuard 0402/0603 Automotive Series**

**AVX Low Capacitance Automotive Varistors**

**ESD Protection for Automotive Circuits Sensitive to Capacitance**

![Graph showing Electrical Transient Conduction](image)

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**AEC-Q200 Pulse Test**

**AEC-Q200-002**

![Graph showing AEC-Q200 Pulse Test](image)

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**ESD PULSE**

- VCAS04AG183R0Y
- VCAS06AG183R0Y
- VCAS06AG18120Y

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**Electrical Transient Conduction**

**ISO 7637 Pulse 1-3**

![Graph showing Electrical Transient Conduction](image)

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**Pulse #**

- 1
- 2A
- 3A
- 3B

- VCAS04AG183R0Y
- VCAS06AG183R0Y
- VCAS06AG18120Y

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