Radial Leaded High Temperature Automotive

150°C Rated Radial Leaded TransGuard®

GENERAL DESCRIPTION

AVX High Temperature Multi-Layer Varistors are designed for underhood applications. Products have been tested, qualified, and specified to 150°C. The Radial Leaded TransGuard is built for durability in harsh environments. The MLV advantage is EMI/RFI attenuation in the off state. This allows designers to combine the circuit protection and EMI/RFI attenuation function into a single highly reliable device.

GENERAL CHARACTERISTICS

- Operating Temperatures: -55°C to +150°C
- Working Voltage: 14-48Vdc

FEATURES

- Rated at 150°C
- AEC Q200 qualified
- ESD rated to 25kV (HBM ESD Level 6)
- EMI/RFI attenuation in off state
- Excellent current and energy handling

APPLICATIONS

- Under hood
- Down Hole Drilling
- DC Motors
- Relays
- Inductive Loads
- High Temperature/Harsh environment and more

HOW TO ORDER

VR15
AVX Style
VR15
VR20
AT Series Voltage
VR15AT14A580 14.0 10.0 34.5±10% 60 1 10 0.1 0.15 30 120 K 27.5 0.002
VR15AT18A650 18.0 13.0 41.0±10% 67 1 10 0.1 0.15 30 90 M 29 0.002
VR20AT26D101 26.0 18.0 62.0±10% 100 1 10 0.4 1.5 100 225 M 48 0.008
VR20AT48S151 48.0 34.0 100.0±10% 150 1 10 2.0 3.5 250 275 K 48 0.040

ELECTRICAL CHARACTERISTICS

<table>
<thead>
<tr>
<th>AVX Part Number</th>
<th>V_W_DC (V)</th>
<th>V_W_AC (V)</th>
<th>V_B (V)</th>
<th>V_C (V)</th>
<th>I_WC (mA)</th>
<th>I_L (μA)</th>
<th>E_T (J)</th>
<th>E_LD (J)</th>
<th>I_P (mA)</th>
<th>C (pF)</th>
<th>FREQ (kHz)</th>
<th>V_JUMP (V)</th>
<th>P_DISS (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR15AT14A580</td>
<td>14.0</td>
<td>10.0</td>
<td>34.5±10%</td>
<td>60</td>
<td>1</td>
<td>10</td>
<td>0.1</td>
<td>0.15</td>
<td>30</td>
<td>120</td>
<td>K</td>
<td>27.5</td>
<td>0.002</td>
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<tr>
<td>VR15AT18A650</td>
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<td>41.0±10%</td>
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<td>10</td>
<td>0.1</td>
<td>0.15</td>
<td>30</td>
<td>90</td>
<td>M</td>
<td>29</td>
<td>0.002</td>
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<tr>
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<td>18.0</td>
<td>62.0±10%</td>
<td>100</td>
<td>1</td>
<td>10</td>
<td>0.4</td>
<td>1.5</td>
<td>100</td>
<td>225</td>
<td>M</td>
<td>48</td>
<td>0.008</td>
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<td>VR20AT48S151</td>
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<td>34.0</td>
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<td>1</td>
<td>10</td>
<td>2.0</td>
<td>3.5</td>
<td>250</td>
<td>275</td>
<td>K</td>
<td>48</td>
<td>0.040</td>
</tr>
</tbody>
</table>

V_W_DC (V) DC Working Voltage [V]
V_W_AC (V) AC Working Voltage [V]
V_B (V) Typical Breakdown Voltage [V @ 1mA]
V_C (V) Clamping Voltage [V @ I_L]
I_WC (mA) Test Current for V_C
I_L (μA) Maximum leakage current at the working voltage [μA]
E_T (J) Transient Energy Rating [J, 10x1000μS]
E_LD (J) Load Dump Energy (x10) [J]
I_P (mA) Peak Current Rating [mA]
C (pF) Typical capacitance [pF] @ frequency specified and 0.5V RMS
V_JUMP (V) Jump Start (V)
P_DISS (W) Power Dissipation (W)

PHYSICAL DIMENSIONS

<table>
<thead>
<tr>
<th>AVX Style</th>
<th>Width (W)</th>
<th>Height (H)</th>
<th>Thickness (T)</th>
<th>Lead Spacing</th>
<th>Lead Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>VR15</td>
<td>4.32 Max. (0.170)</td>
<td>3.81 Max. (0.150)</td>
<td>2.54 Max. (0.100)</td>
<td>2.54</td>
<td>0.508 (0.020)</td>
</tr>
<tr>
<td>VR20</td>
<td>5.89 Max. (0.220)</td>
<td>5.06 Max. (0.200)</td>
<td>3.175 Max. (0.125)</td>
<td>2.54</td>
<td>0.508 (0.020)</td>
</tr>
</tbody>
</table>
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**TYPICAL PERFORMANCE CURVES**

**Typical Voltage Current Characteristics**

![Graph showing voltage current characteristics for different models.](image)

**AEC-Q200-002 ESD Characteristics**

![Graph showing ESD characteristics.](image)

**ESD Wave Absorption Characteristics**

![Graph showing ESD wave absorption characteristics.](image)

**TAPE & REEL PACKAGING OPTIONS**

- **TR1**
  - Tape & Reel Standard 1
  - Min. 0.630 (16.0)

- **TR2**
  - Tape & Reel Standard 2
  - Min. 0.748 (19.0)