Transient Voltage Suppressors (TVS) Data Sheet

Features

- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- Excellent clamping capability
- 3000W peak pulse power capability at 10/1000μs waveform, repetition rate (duty cycle): 0.01%
- Fast response time
- Typical I_R less than 1μA above 10V
- High Temperature soldering: 260°C/10 seconds at terminals
- Plastic package has underwriters laboratory flammability 94V-0
- Meets MSL level 1, per J-STD-020
- Safety certification: UL: E244458

Mechanical Data

- Case: JEDEC DO-214AB. Molded plastic over glass passivated junction
- Terminal: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode except bi-directional models
- Standard Packaging: 16mm tape (EIA STD RS-481)
- Weight: 0.28g

Applications

- I/O interface
- AC/DC power supply
- Low frequency signal transmission line (RS232, RS485, etc.)

Maximum Ratings and Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Symbol</th>
<th>Value</th>
<th>Units</th>
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<tbody>
<tr>
<td>Peak pulse power dissipation at 10/1000μs waveform</td>
<td>P_{PPM}</td>
<td>Minimum 3000</td>
<td>Watts</td>
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<tr>
<td>(Note 1, Note 2, Fig.1)</td>
<td></td>
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<tr>
<td>Peak pulse current of at 10/1000μs waveform (Note 1, Fig.3)</td>
<td>I_{PPM}</td>
<td>See Table</td>
<td>Amps</td>
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<tr>
<td>Steady state power dissipation at T_A=50°C (Fig.5)</td>
<td>P_{M(AV)}</td>
<td>6.5</td>
<td>Watts</td>
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<tr>
<td>Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note 3, Fig.6)</td>
<td>I_{FSM}</td>
<td>300</td>
<td>Amps</td>
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<tr>
<td>Operating junction and Storage Temperature Range.</td>
<td>T_{J}, T_{STG}</td>
<td>-65 to +150</td>
<td>°C</td>
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<tr>
<td>Typical thermal resistance junction to lead</td>
<td>R_{BUL}</td>
<td>15</td>
<td>°C/W</td>
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<tr>
<td>Typical thermal resistance junction to ambient</td>
<td>R_{JUA}</td>
<td>75</td>
<td>°C/W</td>
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</table>

Notes:
1. Non-repetitive current pulse, per Fig.3 and derated above T_A=25°C per Fig.2.
2. Mounted on 8.0mm×8.0mm copper pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square wave, duty cycle=4 pulses per minutes maximum.
SMDJ SERIES

Dimensions (SMC/DO-214AB)

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<th>Symbol</th>
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<th>Inches</th>
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<td>Min.</td>
<td>Max.</td>
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Electrical Characteristics (TA=25°C)

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<th>Part Number</th>
<th>Device Marking Code</th>
<th>Reverse Stand-Off Voltage</th>
<th>Breakdown Voltage @IT</th>
<th>Test Current</th>
<th>Maximum Clamping Voltage @IPP</th>
<th>Peak Pulse Current</th>
<th>Reverse Leakage @VWM</th>
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<td></td>
<td>UNI</td>
<td>BI</td>
<td>V_RM(V)</td>
<td>V_BR(V)</td>
<td>IT(mA)</td>
<td>V_C(V)</td>
<td>IPP(A)</td>
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<td>DDE</td>
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<td>DEG</td>
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### Electrical Characteristics (TA=25°C)

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Device Marking Code</th>
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<th>Breakdown Voltage @ IT</th>
<th>Test Current</th>
<th>Maximum Clamping Voltage @ IPP</th>
<th>Peak Pulse Current</th>
<th>Reverse Leakage @ VRWM</th>
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Notes: For bidirectional type having VRWM of 10V and less, the IR limit is double.
Ratings and Characteristic Curves (T_A=25°C unless otherwise noted)

**Figure 1. Peak Pulse Power Rating Curve**

**Figure 2. Pulse Derating Curve**

**Figure 3. Pulse Waveform**

**Figure 4. Typical Junction Capacitance**

**Figure 5. Steady State Power Dissipation Derating Curve**

**Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only**
Recommended Soldering Conditions

**Reflow Soldering**

**Profile Feature**

<table>
<thead>
<tr>
<th>Profile Feature</th>
<th>Pb-Free Assembly</th>
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<tbody>
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<td>Average ramp-up rate ($T_L$ to $T_P$)</td>
<td>3°C/second max.</td>
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<td>Preheat:</td>
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<tr>
<td>- Temperature Min ($T_{S_{min}}$)</td>
<td>150°C</td>
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<tr>
<td>- Temperature Max ($T_{S_{max}}$)</td>
<td>200°C</td>
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<tr>
<td>- Time (min to max) ($t_S$)</td>
<td>60-180 seconds</td>
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<td>$T_{S_{max}}$ to $T_L$</td>
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<td>- Ramp-up Rate</td>
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<td>Time maintained above:</td>
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<tr>
<td>- Temperature ($T_L$)</td>
<td>217°C</td>
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<tr>
<td>- Time ($t_L$)</td>
<td>60-150 seconds</td>
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<td>Peak Temperature ($T_P$)</td>
<td>260°C</td>
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<td>Time within 5°C of actual Peak Temperature ($t_P$)</td>
<td>20-40 seconds</td>
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<tr>
<td>Ramp-down Rate</td>
<td>6°C/second max.</td>
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<tr>
<td>Time 25°C to Peak Temperature</td>
<td>8 minutes max.</td>
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**Marking Code**

- **Cathode Band**
  - Logo
  - YXXX
  - RDE
  - Date Code
  - Marking Code

- **Logo**
  - YXXX
  - DDE
  - Date Code
  - Marking Code

Revision: 21-Jul-14

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## Packaging

### Tape

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Dimension (mm)</th>
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<td>W</td>
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<td>4.00±0.10</td>
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<tr>
<td>P1</td>
<td>8.00±0.10</td>
</tr>
<tr>
<td>P2</td>
<td>2.00±0.10</td>
</tr>
<tr>
<td>D0</td>
<td>Φ1.5±0.10</td>
</tr>
<tr>
<td>D1</td>
<td>Φ1.5±0.10</td>
</tr>
<tr>
<td>E</td>
<td>1.75±0.10</td>
</tr>
<tr>
<td>F</td>
<td>7.50±0.10</td>
</tr>
<tr>
<td>A0</td>
<td>6.27±0.10</td>
</tr>
<tr>
<td>B0</td>
<td>8.30±0.10</td>
</tr>
<tr>
<td>K0</td>
<td>3.15±0.15</td>
</tr>
<tr>
<td>T</td>
<td>0.30±0.05</td>
</tr>
</tbody>
</table>

**7" Reel**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Dimension (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D2</td>
<td>Φ178.0±2.0</td>
</tr>
<tr>
<td>D3</td>
<td>Φ50.0Min.</td>
</tr>
<tr>
<td>D4</td>
<td>Φ13.0±0.5</td>
</tr>
<tr>
<td>W1</td>
<td>20.0±2.0</td>
</tr>
</tbody>
</table>

**13" Reel**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Dimension (mm)</th>
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<tbody>
<tr>
<td>D5</td>
<td>Φ330.0±2.0</td>
</tr>
<tr>
<td>D6</td>
<td>Φ13.5±0.5</td>
</tr>
<tr>
<td>H</td>
<td>2.5±1.0</td>
</tr>
<tr>
<td>W2</td>
<td>20.0±2.0</td>
</tr>
</tbody>
</table>

Quantity: 500PCS for 7" Reel, 3000PCS for 13" Reel.