DESCRIPTION

This series of industry recognized voidless-hermetically-sealed Unidirectional Transient Voltage Suppressor (TVS) designs is military qualified to MIL-PRF-19500/552 and are ideal for high-reliability applications where a failure cannot be tolerated. They provide a Working Peak “Standoff” Voltage selection from 5.0 to 51.6 Volts with 1500 W ratings. They are very robust in hard-glass construction and also use an internal metallurgical bond identified as Category I for high reliability applications. The 1500 W series is military qualified to MIL-PRF-19500/552. These devices are also available in a surface mount MELF package configuration by adding a “US” suffix (see separate data sheet for 1N6469US thru 1N6476AUS). Microsemi also offers numerous other TVS products to meet higher and lower peak pulse power and voltage ratings in both through-hole and surface-mount packages.

FEATURES

- High surge current and peak pulse power provides transient voltage protection for sensitive circuits
- Triple-layer passivation
- Internal “Category I” metallurgical bonds
- Voidless hermetically sealed glass package
- JAN/TX/TXV military qualifications available per MIL-PRF-19500/552 by adding JAN, JANTX, or JANTXV prefix
- Further options for screening in accordance with MIL-PRF-19500 for JANS by using a “SP” prefix, e.g. SP6469, SP6476, etc.
- Surface Mount equivalents are also available in a square-end-cap MELF configuration with a “US” suffix (see separate data sheet)
- Military and other high reliability transient protection
- Extremely robust construction
- Working Peak “Standoff” Voltage ($V_{WM}$) from 5.0 to 51.6 V
- Available as 1500 W Peak Pulse Power ($P_{PP}$)
- ESD and EFT protection per IEC61000-4-2 and IEC61000-4-4 respectively
- Secondary lightning protection per select levels in IEC61000-4-5
- Flexible axial-leaded mounting terminals
- Nonsensitive to ESD per MIL-STD-750 Method 1020
- Inherently radiation hard as described in Microsemi MicroNote 050

MAXIMUM RATINGS

- Operating & Storage Temperature: -55°C to +175°C
- Peak Pulse Power at 25°C: 1500 Watts @ 10/1000 µs (also see Figures 1, 2 and 4)
- Impulse repetition rate (duty factor): 0.01%
- Forward Surge Current: 130 Amps@ 8.33 ms one-half sine wave
- Forward Voltage: 1.5 V @ 4 Amps dc and 4.8 V at 100 Amps (pulsed)
- Steady-State Power: 3.0 W @ $T_A = 25°C$ (see note below and Figure 4)
- Thermal Resistance @ 3/8 inch lead length: 50.0 °C/W
- Solder Temperatures: 260°C for 10 s (maximum)

NOTE: Steady-state power ratings with reference to ambient are for PC boards where thermal resistance from mounting point to ambient is sufficiently controlled where $T_{J(\text{MAX})}$ is not exceeded.
**ELECTRICAL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>BREAKDOWN VOLTAGE V(BR) MIN.</th>
<th>BREAKDOWN CURRENT I(BR)</th>
<th>WORKING PEAK VOLTAGE VWM</th>
<th>MAX LEAKAGE CURRENT I₀ @ 10/1000 µs</th>
<th>MAXIMUM CLAMPING VOLTAGE Vc @ 10/1000 µs</th>
<th>MAXIMUM PEAK PULSE CURRENT Ipp @ 8/20 µs</th>
<th>MAXIMUM PEAK PULSE CURRENT Ipp @ 10/1000 µs</th>
<th>MAXIMUM TEMP. COEF. OF V(BR)</th>
<th>%/°C</th>
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<tbody>
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<td>19</td>
<td>0.103</td>
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**SYMBOLS & DEFINITIONS**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Definition</th>
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<tbody>
<tr>
<td>V_{BR}</td>
<td>Minimum Breakdown Voltage: The minimum voltage the device will exhibit at a specified current.</td>
</tr>
<tr>
<td>V_{WM}</td>
<td>Working Peak Voltage: The maximum peak voltage that can be applied over the operating temperature range. This is also referred to as Standoff Voltage.</td>
</tr>
<tr>
<td>I₀</td>
<td>Maximum Standoff Current: The maximum current that will flow at the specified voltage and temperature.</td>
</tr>
<tr>
<td>V_C</td>
<td>Maximum clamping voltage at specified I_{PP} (Peak Pulse Current) at the specified pulse conditions.</td>
</tr>
<tr>
<td>I_{PP}</td>
<td>Peak Pulse Power: The peak power dissipation resulting from the peak impulse current I_{PP}.</td>
</tr>
</tbody>
</table>

**GRAPHS**

**FIG. 1** – Non-repetitive peak pulse power rating curve

**FIG. 2** – Pulse wave form for exponential surge for 10/1000 µs

**NOTE:** Peak power defined as peak voltage times peak current
FIGURE 3
8/20 µs CURRENT IMPULSE WAVEFORM

FIGURE 4
DERATING CURVE

PACKAGE DIMENSIONS Inches [mm]

Note: Package G lead dimension diameter is 0.040 inch nominal with –.003 +.002 inch tolerance