

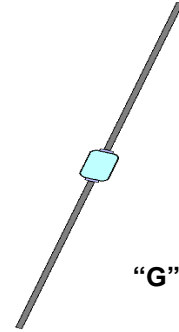
Voidless-Hermetically-Sealed Unidirectional Transient Suppressors

ALSO AVAILABLE IN SURFACE MOUNT

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.

APPEARANCE



"G" Package

www.Microsemi.com

IMPORTANT: For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

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)

APPLICATIONS / BENEFITS

- 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 $+175^{\circ}\text{C}$
- 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 @ $T_A = 25^{\circ}\text{C}$ (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)

MECHANICAL AND PACKAGING

- CASE: Hermetically sealed voidless hard glass with Tungsten slugs
- TERMINATIONS: Axial-leads are Tin/Lead (Sn/Pb) over copper
- MARKING: Body painted and part number, etc.
- POLARITY: Cathode band
- Tape & Reel option: Standard per EIA-296
- Weight: 1270 mg
- See package dimensions on last page

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 $T_{J(MAX)}$ is not exceeded.

JANS

1N6469 - 1N6476

ELECTRICAL CHARACTERISTICS

| TYPE | BREAK DOWN VOLTAGE V(BR) MIN. | BREAKDOWN CURRENT I _(BR) | WORKING PEAK VOLTAGE V _{WM} | MAX LEAKAGE CURRENT I _D | MAXIMUM CLAMPING VOLTAGE V _C @ 10/1000 μs | MAXIMUM PEAK PULSE CURRENT I _{PP} | | MAXIMUM TEMP. COEF. OF V(BR) |
|--------|-------------------------------|-------------------------------------|--------------------------------------|------------------------------------|--|--|-------------|------------------------------|
| | | | | | | @8/20 μs | @10/1000 μs | |
| | Volts | mAdc | Vdc | μAdc | V(pk) | A(pk) | A(pk) | %/°C |
| 1N6469 | 5.6 | 50 | 5 | 1500 | 9.0 | 945 | 167 | -.03, +0.04 |
| 1N6470 | 6.5 | 50 | 6 | 1000 | 11.0 | 775 | 137 | 0.06 |
| 1N6471 | 13.6 | 10 | 12 | 20 | 22.6 | 374 | 66 | 0.085 |
| 1N6472 | 16.4 | 10 | 15 | 10 | 26.5 | 322 | 57 | 0.085 |
| 1N6473 | 27.0 | 5 | 24 | 5 | 41.4 | 207 | 36.5 | .096 |
| 1N6474 | 33.0 | 1 | 30.5 | 5 | 47.5 | 181 | 32 | .098 |
| 1N6475 | 43.7 | 1 | 40.3 | 5 | 63.5 | 135 | 24 | .101 |
| 1N6476 | 54.0 | 1 | 51.6 | 5 | 78.5 | 107 | 19 | .103 |

SYMBOLS & DEFINITIONS

| Symbol | Definition |
|-----------------|--|
| V _{BR} | Minimum Breakdown Voltage: The minimum voltage the device will exhibit at a specified current. |
| V _{WM} | Working Peak Voltage: The maximum peak voltage that can be applied over the operating temperature range. This is also referred to as Standoff Voltage. |
| I _D | Maximum Standoff Current: The maximum current that will flow at the specified voltage and temperature. |
| V _C | Maximum clamping voltage at specified I _{PP} (Peak Pulse Current) at the specified pulse conditions. |
| P _{PP} | Peak Pulse Power: The peak power dissipation resulting from the peak impulse current I _{PP} . |

GRAPHS

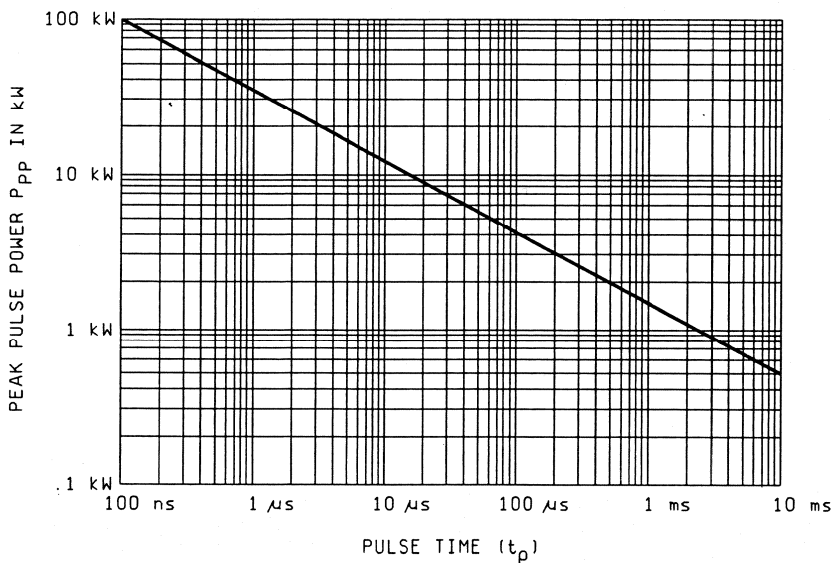


FIG. 1 – Non-repetitive peak pulse power rating curve
NOTE: Peak power defined as peak voltage times peak current

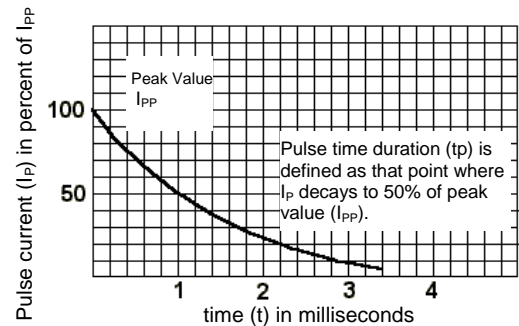


FIG. 2 Pulse wave form for exponential surge for 10/1000 μs

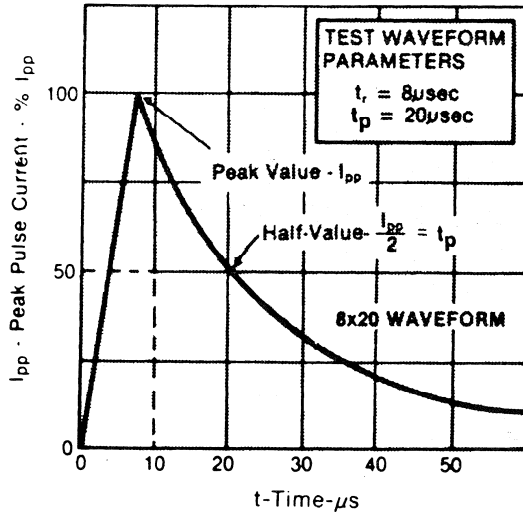


FIGURE 3
8/20 μs CURRENT IMPULSE WAVEFORM

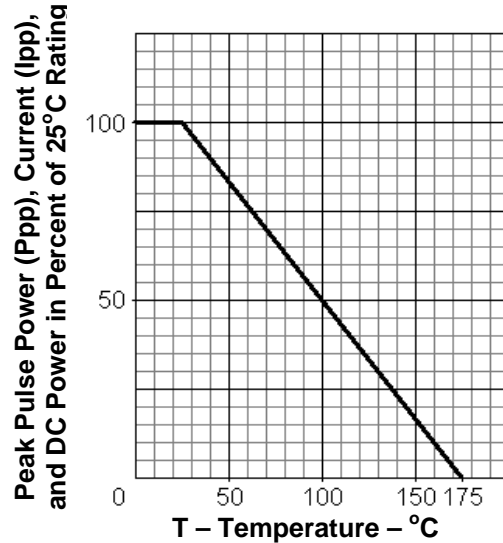
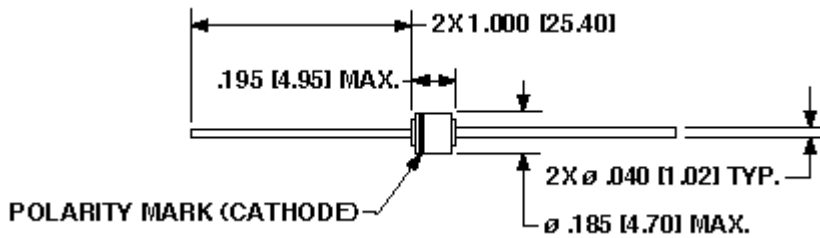


FIGURE 4
DERATING CURVE

PACKAGE DIMENSIONS Inches [mm]



PACKAGE G

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