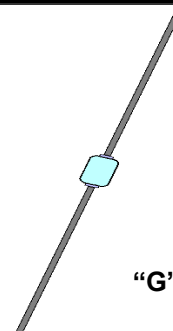


Voidless-Hermetically-Sealed Unidirectional Transient Suppressors

 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

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 "MSP" prefix, e.g. MSP6469, MSP6476, 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.

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	mA dc	V dc	μA dc	V(pk)	A(pk)	A(pk)	%/°C
1N6469	5.6	50	5	500	9.0	945	167	-.03, +0.04
1N6470	6.5	50	6	100	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} .

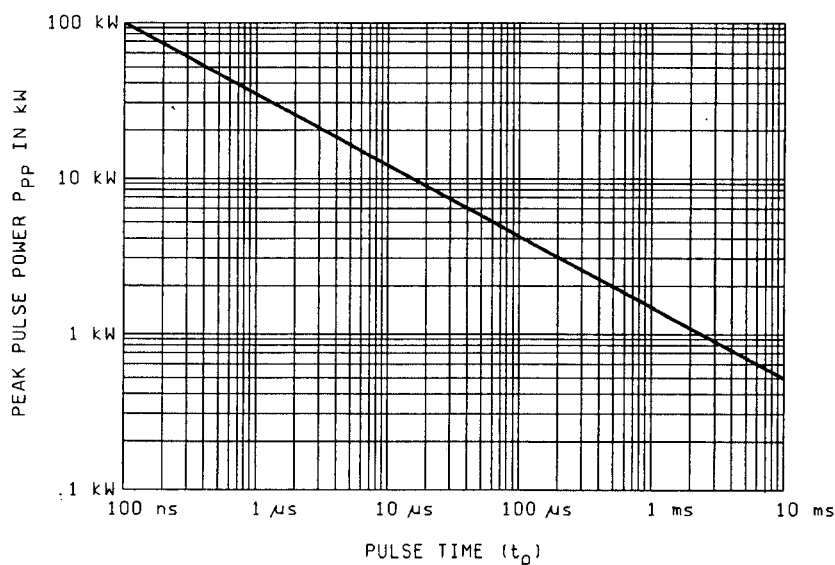
GRAPHS


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

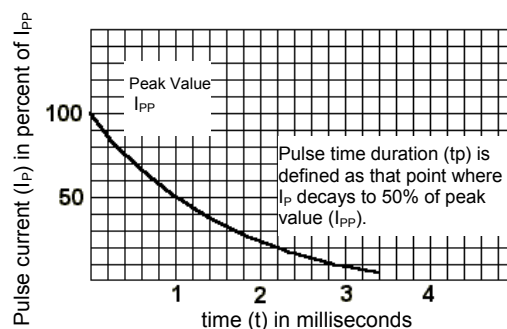


FIG. 2 Pulse wave form for exponential surge for 10/1000 μs

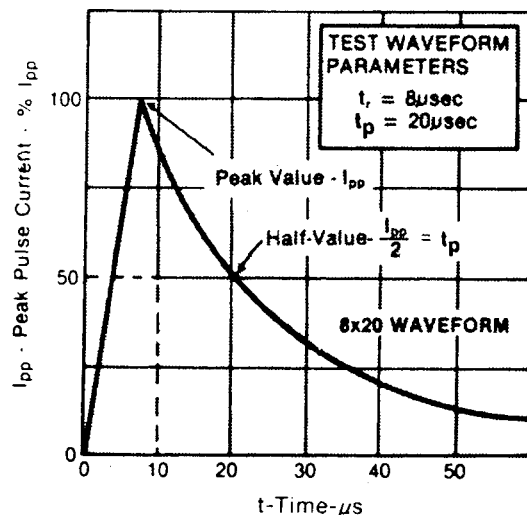


FIGURE 3

8/20 μs CURRENT IMPULSE WAVEFORM

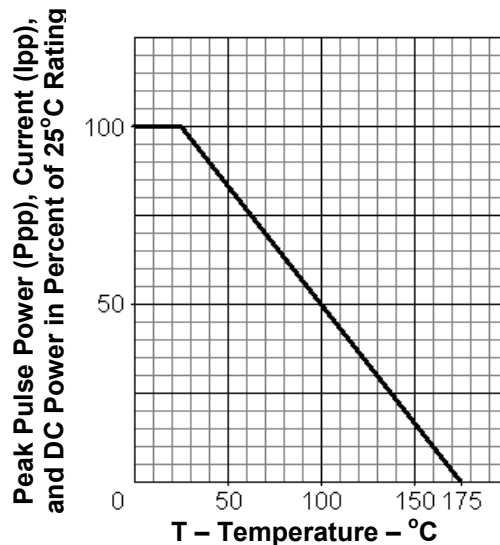
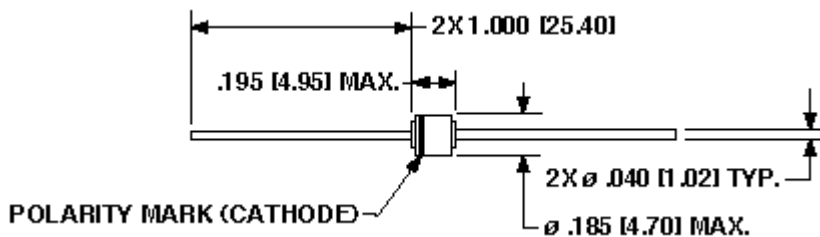


FIGURE 4

DERATING CURVE

PACKAGE DIMENSIONS Inches [mm]



PACKAGE G

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