1N6461 thru 1N6468

Microsemi
SCOTTSDALE DIVISION

Voidless-Hermetically-Sealed Unidirectional Transient Suppressors

ALSO AVAILABLE IN SURFACE MOUNT

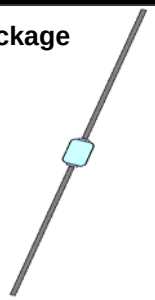
www.Microsemi.COM

DESCRIPTION

This series of industry recognized voidless-hermetically-sealed Unidirectional Transient Voltage Suppressor (TVS) designs is military qualified to MIL-PRF-19500/551 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 500 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 500 W series is military qualified to MIL-PRF-19500/551. These devices are also available in a surface mount MELF package configuration by adding a "US" suffix (see separate data sheet for 1N6461US thru 1N6468US). 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

"E" 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-19500/551 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. SP6462, SP6468, 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 500 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: 500 Watts @ 10/1000 µs (also see Figures 1,2 and 4)
- Impulse repetition rate (duty factor): 0.01%
- Forward Surge Current: 80 Amps@ 8.33 ms one-half sine wave
- Forward Voltage: 1.5 V @ 1 Amp dc and 4.8 V at 100 Amps (pulsed)
- Steady-State Power: 2.5 Watts @ T_A = 25°C (see note below and Figure 4)
- Thermal Resistance @ 3/8 inch lead length: 60 °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: 750 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

1N6461 – 1N6468
1N6469 – 1N6476

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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
1N6461	5.6	25	5	3000	9.0	315	56	-.03, +0.04
1N6462	6.5	20	6	2500	11.0	258	46	0.06
1N6463	13.6	5	12	500	22.6	125	22	0.085
1N6464	16.4	5	15	500	26.5	107	19	0.085
1N6465	27.0	2	24	50	41.4	69	12	.096
1N6466	33.0	1	30.5	3	47.5	63	11	.098
1N6467	43.7	1	40.3	2	63.5	45	8	.101
1N6468	54.0	1	51.6	2	78.5	35	6	.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

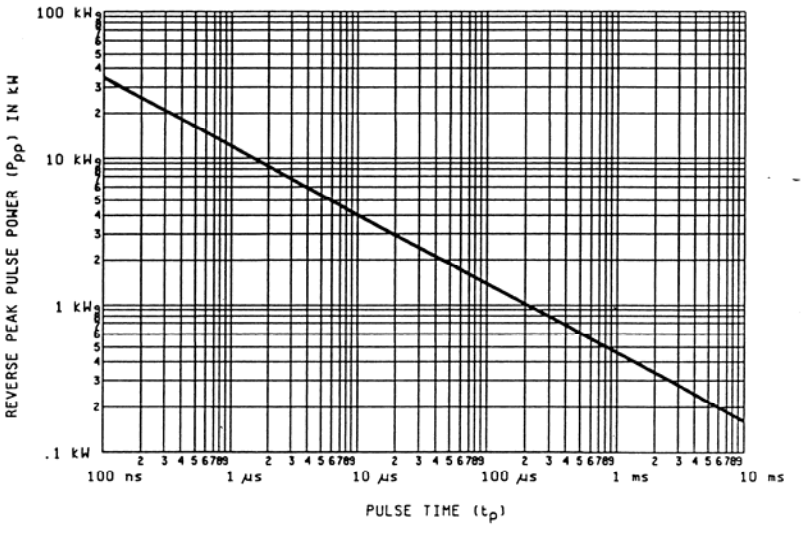


FIGURE 1
PEAK PULSE POWER vs. PULSE TIME

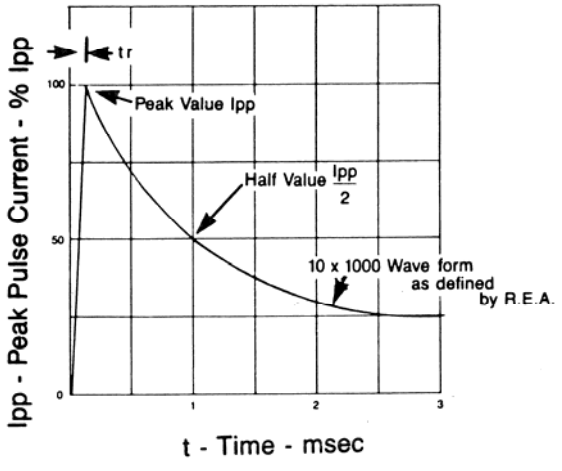


FIGURE 2
10/1000 µs CURRENT IMPULSE WAVEFORM

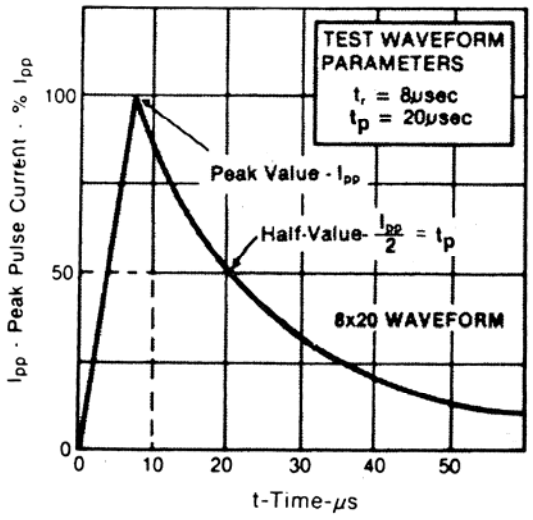


FIGURE 3
8/20 µs CURRENT IMPULSE WAVEFORM
(per MIL-PRF-19500/551

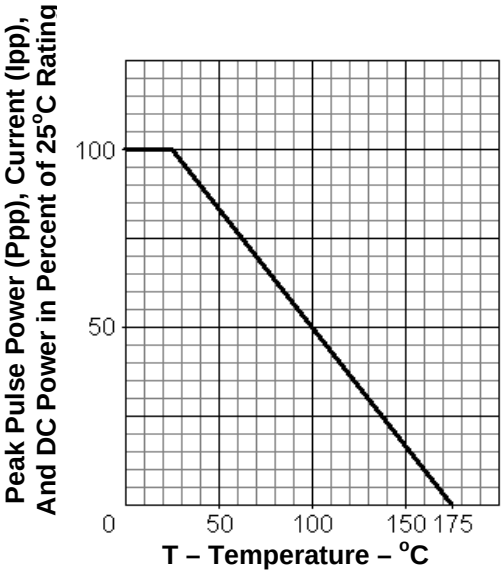
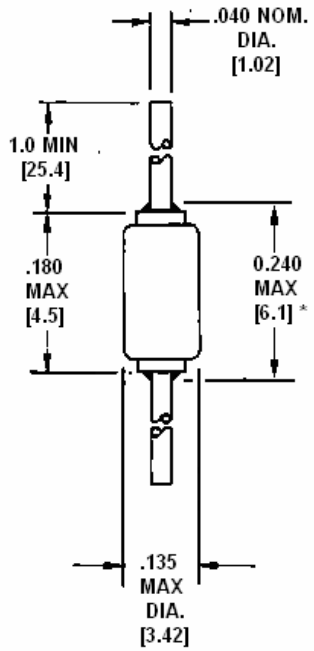


FIGURE 4
DERATING CURVE

PACKAGE DIMENSIONS Inches [mm]



Lead Tolerance = + .002 -.003 in
*Includes sections of the lead or fillet over which the lead diameter is uncontrolled.