6 Lake Street, Lawrence, MA 01841
1-800-446-1158 / (978) 620-2600 / Fax: (978) 689-0803
Website: http://www.microsemi.com

Gort Road Business Park, Ennis, Co. Clare, Ireland
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APPLICATIONS / BENEFITS

- Suppresses transients up to 1500 watts @ 10/1000 µs (see Figure 1)
- Clamps transient in less than 100 pico seconds
- Protection from switching transients and induced RF
- Protection from ESD and EFT per IEC 61000-4-2 and IEC 61000-4-4
- Secondary lightning protection per IEC61000-4-5 with 42 Ohms source impedance:
  Class 1: 1N5555 to 1N5558
  Class 2 & 3: 1N5555 to 1N5557
  Class 4: 1N5555 to 1N5556
- Secondary lightning protection per IEC61000-4-5 with 12 Ohms source impedance:
  Class 1: 1N5555 to 1N5557
  Class 2: 1N5555 to 1N5557
- Inherently radiation hard as described in Microsemi MicroNote 050

MAXIMUM RATINGS

- 1500 Watts for 10/1000 µs with repetition rate of 0.01% or less* at lead temperature (T_L) 25°C (see Figs 1, 2, & 4)
- Operating & Storage Temperatures: -65° to +175°C
- THERMAL RESISTANCE: 50°C/W junction to lead at 0.375 inches (10 mm) from body or 110°C/W junction to ambient when mounted on FR4 PC board with 4 mm^2 copper pads (1oz) and track width 1 mm, length 25 mm
- DC Power Dissipation*: 1 Watt at T_L = +25°C 3/8" (10 mm) from body (see derating in Fig 3)
- Forward surge current: 200 Amps for 8.3ms half-sine wave at T_A = +25°C
- Solder Temperatures: 260 ° C for 10 s (maximum)

MECHANICAL AND PACKAGING

- CASE: DO-13 (DO-202AA), welded, hermetically sealed metal and glass
- FINISH: All external metal surfaces are Tin-Lead plated and solderable per MIL-STD-750 method 2026
- POLARITY: Cathode connected to case and polarity indicated by diode symbol
- MARKING: Part number and polarity diode symbol
- WEIGHT: 1.4 grams. (Approx)
- TAPE & REEL option: Standard per EIA-296 (add "TR" suffix to part number)
- See package dimension on last page

* TVS devices are not typically used for dc power dissipation and are instead operated at or less than their rated standoff voltage (V_{WM}) except for transients that briefly drive the device into avalanche breakdown (V_{BR} to V_C region).

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ELECTRICAL CHARACTERISTICS

JEDEC Type Number (Notes 1&2)	Minimum Breakdown Voltage $V_{(BR)}$ @ $I_{(BR)}$	Test Current $I_{(BR)}$	Rated Standoff Voltage V_{WM}	Maximum (RMS) Reverse Voltage $V_{WM(RMS)}$	Maximum Standby Current I_D @ V_{WM}	Maximum Peak Reverse Voltage V_C @ I_{PP}	Maximum Peak Pulse Current I_{PP}	Maximum Temperature Coefficient of $V_{(BR)}$ $\alpha_{V(BR)}$ @ 1.0 mA
	V	mA	V	V	µA	V	A	%/°C
1N5555	33.0	1.0	30.5	21.5	5	47.5	32	+.093
1N5556	43.7	1.0	40.3	28.5	5	63.5	24	+.094
1N5557	54.0	1.0	49.0	34.5	5	78.5	19	+.096
1N5558	191.0	1.0	175.0	124.0	5	265.0	5.7	+.100

NOTE 1: A TVS is normally selected according to the rated "Standoff Voltage" V_{WM} that should be equal to or greater than the dc or continuous peak operating voltage level.

NOTE 2: Also available in military qualified types with a JAN, JANTX, or JANTXV prefix.

SYMBOLS & DEFINITIONS

Symbol	Definition
V_{WM}	Standoff Voltage: Applied Reverse Voltage to assure a nonconductive condition. (See Note 1 above.)
$V_{(BR)}$	Breakdown Voltage: This is the Breakdown Voltage the device will exhibit at 25°C
V_C	Maximum Clamping Voltage: The maximum peak voltage appearing across the TVS when subjected to the peak pulse current in a one millisecond time interval. The peak pulse voltage is the combination of voltage rise due to both the series resistance and thermal rise and positive temperature coefficient ($\alpha_{V(BR)}$)
I_{PP}	Peak Pulse Current: The peak current during the impulse (See Figure 2)
P_{PP}	Peak Pulse Power: The pulse power as determined by the product of V_C and I_{PP}
I_D	Standby Current: The current at the standoff voltage (V_{WM})
$I_{(BR)}$	Breakdown Current: The current used for measuring Breakdown Voltage ($V_{(BR)}$)

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GRAPHS

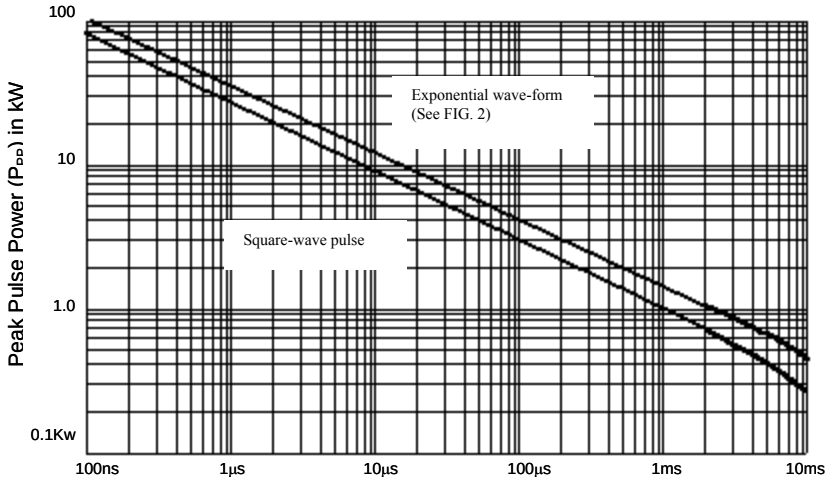

FIG. 1 – Non-repetitive peak pulse power rating curve
NOTE: Peak power defined as peak voltage times peak current

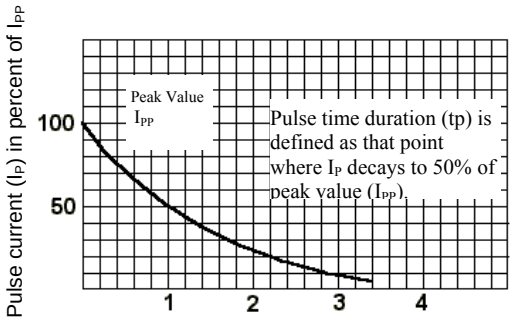

FIG. 2 Pulse wave form for exponential surge

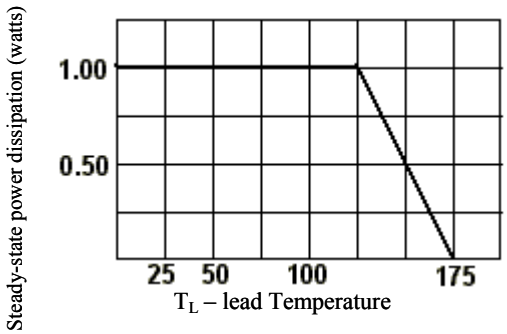

FIG. 3 Steady-state power derating curve

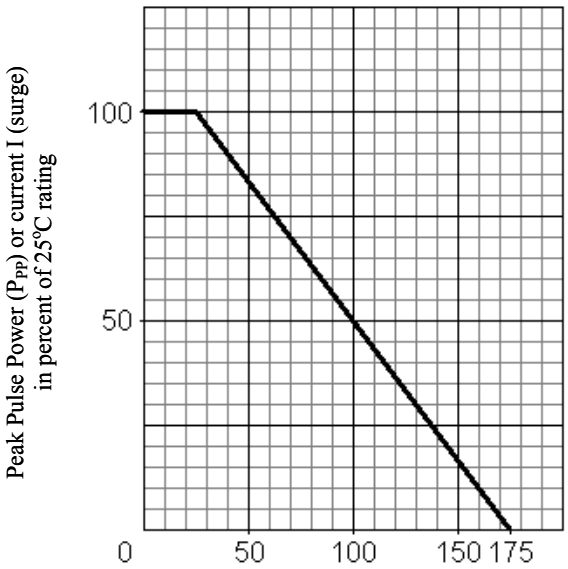

FIG. 4 Derating Curve

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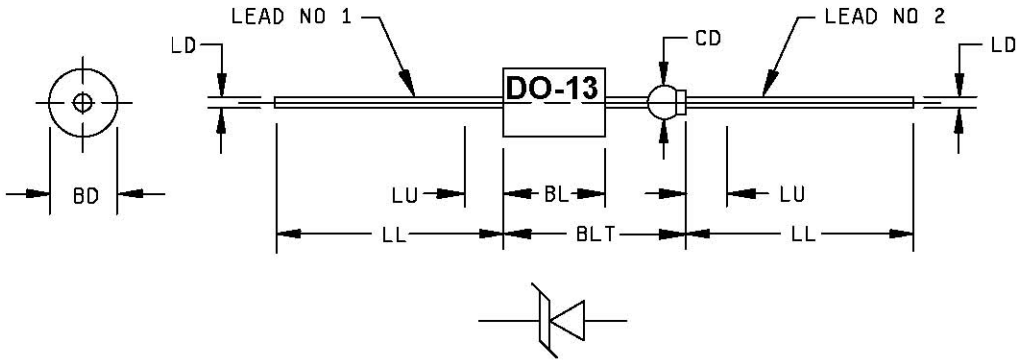
PACKAGE DIMENSIONS



NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. The major diameter is essentially constant along its length.
4. Within this zone, diameter may vary to allow for lead finishes and irregularities.
5. Dimension to allow for pinch or seal deformation anywhere along tubulation.
6. Lead 1 (cathode) shall be electrically connected to the case.
7. In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.

Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
BD	.215	.235	5.46	5.97	
BL	.293	.357	7.44	9.07	3
BLT		.570		14.48	
CD	.045	.100	1.14	2.54	5
LD	.025	.035	0.64	0.89	
LL	1.000	1.625	25.40	41.28	4
LU		.188		4.78	4

FIGURE 1. Physical dimensions (DO-13).