DIGITRON™ Semiconductors

High-reliability discrete products and engineering services since 1977

1N6373-1N6389

Transient Voltage Suppressor
1500 Watt

FEATURES:

- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number
- Available Non-RoHS (standard) or RoHS compliant (add PBF suffix)
- Unidirectional and bidirectional TVS series for thru-hole mounting
- Suppresses transients up to 1500 watts @ 10/1000 µs
- $t_{clamping}$ (0 volts to $V_{(BR)}$ min):
  - Unidirectional – Less than 100 pico seconds
  - Bidirectional – Less than 5 nano seconds
- Working voltage (V_{WM}) range 5 V to 45 V
- Low clamping factor (ratio of actual V_C/V_{BR}): 1.33 @ full rated power and 1.20 @ 50% rated power
- Economical plastic encapsulated TVS for thru-hole mount
- Surface mount equivalent packages also available

MAXIMUM RATINGS

1500 Watts for 10/1000 µs with repetition rate of 0.01% or less* at lead temperature (T_L) 25°C (See figures 1, 2, & 4)	
Operating and Storage Temperature:	-65°C to +150°C
Thermal Resistance:	22°C/W junction to lead at ⅜" from body or 82°C/W junction t ambient when mounted on FR4 PC board with 4mm^2 copper pads and track width 1 mm, length 25mm
Steady State Power Dissipation:*:	5 watts at $T_L \leq 40$°C, or 1.52 watts at T_A = 25°C when mounted on FR4 PC board described for thermal resistance
Solder Temperatures:	260°C for 10 s (maximum)

* 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).

ELECTRICAL CHARACTERISTICS UNIDIRECTIONAL (T_A = 25°C)

Part Number	Direction	Stand-Off Voltage (Note 1)	Maximum Reverse Leakage @ V_{WM}	Minimum* Breakdown Voltage @ 1.0 mA	Maximum Clamping Voltage (Fig. 2) I_{PP1} = 1A	Maximum Clamping Voltage (Fig. 2) @ I_{PP2} = 10A	Maximum Peak Pulse Current
		V_{WM}	I_D	$V_{(BR)\ (min)}$	V_C	V_C	I_{PP3}
		VOLTS	µA	VOLTS	VOLTS	VOLTS	A
1N6373	**Unidirectional**	5.0	300	6.0	7.1	7.5	160
1N6374	**Unidirectional**	8.0	25	9.4	11.3	11.5	100
1N6375	**Unidirectional**	10.0	2	11.7	13.7	14.1	90
1N6376	**Unidirectional**	12.0	2	14.1	16.1	16.5	70
1N6377	**Unidirectional**	15.0	2	17.6	20.1	20.6	60
1N6378	**Unidirectional**	18.0	2	21.2	24.2	25.2	50
1N6379	**Unidirectional**	22.0	2	25.9	29.8	32.0	40
1N6380	**Unidirectional**	36.0	2	42.4	50.6	54.3	23
1N6381	**Unidirectional**	45.0	2	52.9	63.3	70.0	19
1N6382	**Bidirectional**	8.0	25	9.4	11.4	11.6	100
1N6383	**Bidirectional**	10.0	2	11.7	14.1	14.5	90

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1N6384	**Bidirectional**	12.0	2	14.1	16.7	17.1	70
1N6385	**Bidirectional**	15.0	2	17.6	20.8	21.4	60
1N6386	**Bidirectional**	18.0	2	21.2	24.8	25.5	50
1N6387	**Bidirectional**	22.0	2	25.9	30.8	32.0	40
1N6388	**Bidirectional**	36.0	2	42.4	50.6	54.3	23
1N6389	**Bidirectional**	45.0	2	52.9	63.3	70.0	19

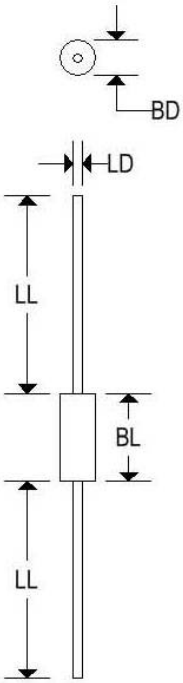
Note 1: TVS devices are normally selected according to the reverse "Stand Off Voltage" (V_{WM}) which should be equal to or greater than dc or continuous peak operating voltage level.

- For bidirectional parts, add suffix C at end of the part number.

* The minimum breakdown voltage as shown takes into consideration the ±1 volt tolerance normally specified for power supply regulation on most integrated circuit manufacturers data sheets. Similar devices are available with reduced clamping voltages where tighter regulated power supply voltages are employed.

MECHANICAL CHARACTERISTICS

Case	DO-201
Marking	Alpha-numeric
Polarity	Cathode band



	DO-201			
	Inches		Millimeters	
	Min	Max	Min	Max
BD	0.190	0.250	4.826	6.350
BL	0.285	0.375	7.240	9.530
LD	0.038	0.042	0.970	1.070
LL	1.000	-	25.400	-

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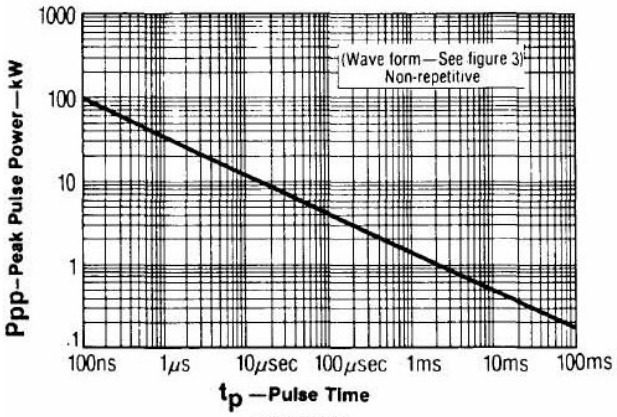

FIGURE 1
Peak Pulse Power vs. Pulse Time

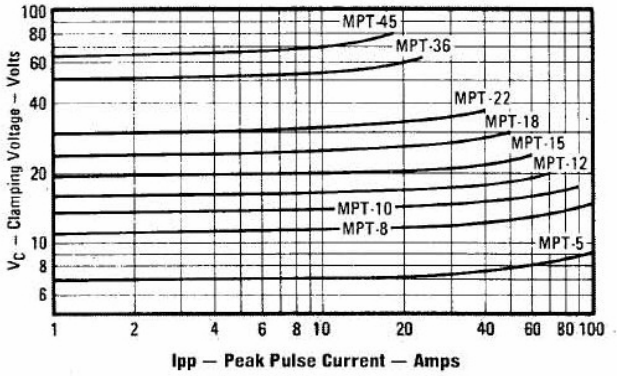

FIGURE 2
Typical Characteristic Clamping Voltage vs. Peak Pulse Current

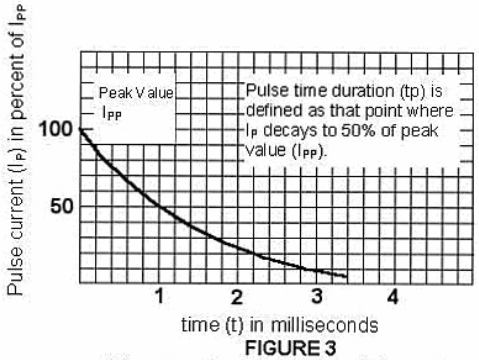

FIGURE 3
Pulse wave form for exponential surge

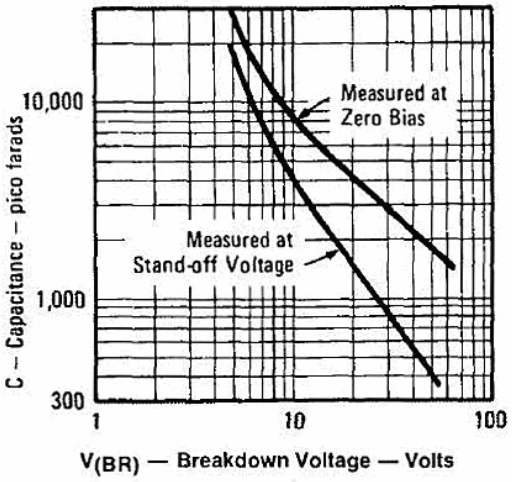

FIGURE 4
Typical Capacitance vs. Breakdown Voltage (Unidirectional Types)

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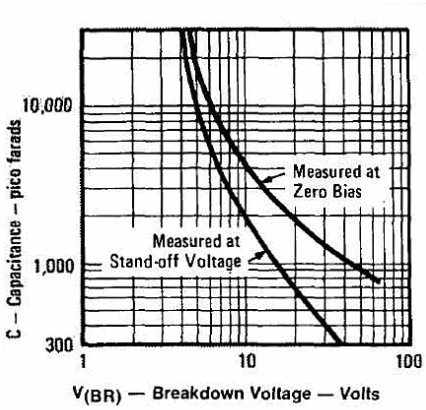

FIGURE 5
Typical Capacitance vs. Breakdown Voltage
(Bidirectional Types)