

DIGITRON SEMICONDUCTORS

1N6373 – 1N6389

1500 WATT LOW CLAMPING FACTOR
TRANSIENT VOLTAGE SUPPRESSOR

- Unidirectional and bidirectional TVS series for thru-hole mounting
- Suppresses transients up to 1500 watts @ 10/1000 μ s
- $t_{clamping}$ (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
- Available Non-RoHS (standard) or RoHS compliant (add PBF suffix)
- Available as "HR" (high reliability) screened per MIL-PRF-19500, JANTX level. Add "HR" suffix to base part number.

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 $\frac{3}{8}$ " from body or 82°C/W junction to 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 $T_L \leq 40^\circ\text{C}$, or 1.52 watts at $T_A = 25^\circ\text{C}$ 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 @ 25°C (Unidirectional)

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
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

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ELECTRICAL CHARACTERISTICS @ 25°C (Bidirectional)

Part Number	Direction	Stand-Off Voltage (Note 1)	Maximum Reverse Leakage	Minimum* Breakdown Voltage @ 1.0 mA	Maximum Clamping Voltage $I_{PP1} = 1A$	Maximum Clamping Voltage @ $I_{PP2} = 10A$	Maximum Peak Pulse Current
		V_{WM}	I_D	$V_{(BR)} (min)$	V_C	V_C	I_{PP3}
		VOLTS	μA	VOLTS	VOLTS	VOLTS	A
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.

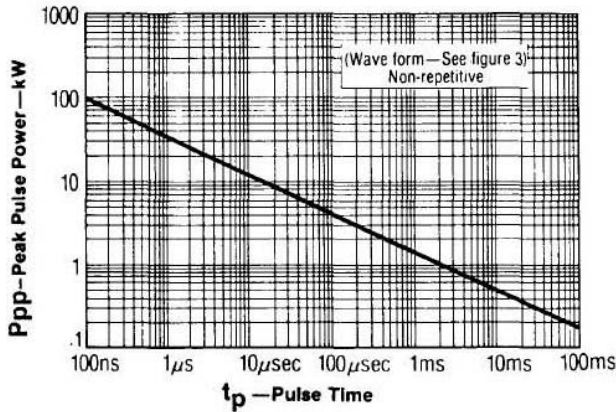


FIGURE 1
Peak Pulse Power vs. Pulse Time

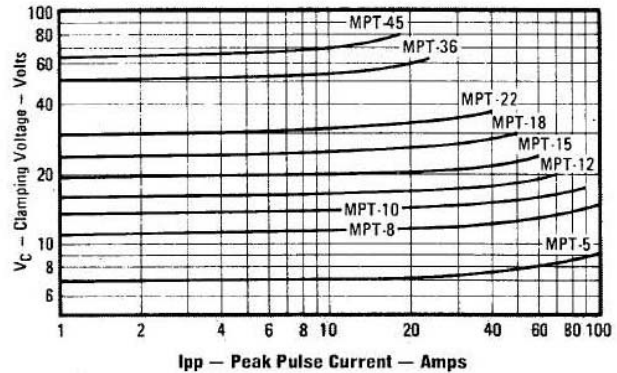


FIGURE 2
Typical Characteristic Clamping Voltage vs. Peak Pulse Current

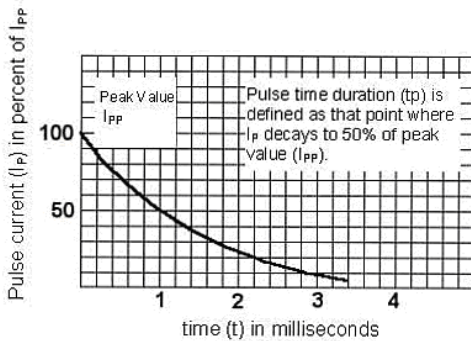


FIGURE 3
Pulse wave form for exponential surge

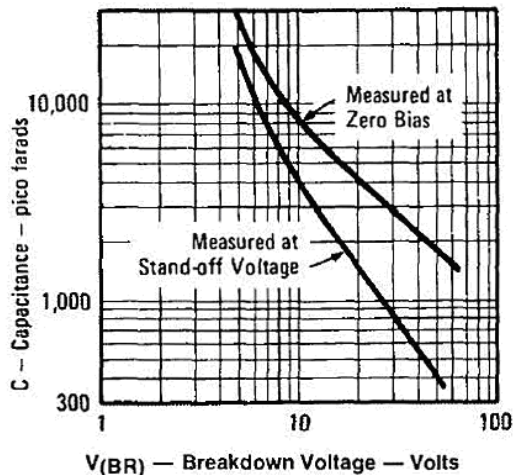


FIGURE 4
Typical Capacitance vs. Breakdown Voltage (Unidirectional Types)

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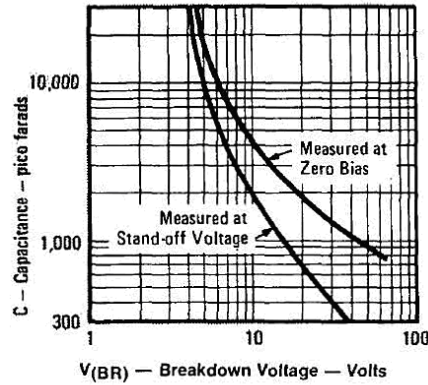
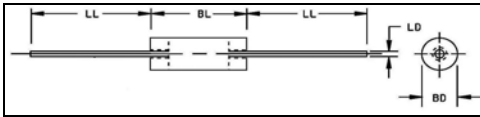


FIGURE 5
Typical Capacitance vs. Breakdown Voltage
(Bidirectional Types)

MECHANICAL CHARACTERISTICS

Case:	Plastic, DO-201
Marking:	Alpha-Numeric
Polarity:	Cathode band



	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
BD	0.190	0.205	4.826	5.207
BL	0.360	0.375	9.146	9.527
LD	0.038	0.042	0.958	1.074
LL	1.100	-	27.900	-