

# DIGITRON SEMICONDUCTORS

1N6267-1N6303A

UNIDIRECTIONAL AND BIDIRECTIONAL  
TRANSIENT VOLTAGE SUPPRESSORS

## FEATURES

- Available in both Unidirectional and Bidirectional (add C or CA suffix for bidirectional)
- Voltages from 6.8 to 180 V Breakdown ( $V_{BR}$ )
- Suppresses transients up to 1500 watts @ 10/1000  $\mu$ s (see Figure 1)
- Power rating = 1500 watts
- 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

Peak Pulse Power Dissipation at 25°C:	1500 watts @ 10/1000 $\mu$ s (see Figures 1, 2, & 3)
Impulse Repetition Rate (duty factor):	0.01%
$t_{clamping}$ (0 volts to $V_{(BR)}$ min):	<100 ps theoretical for unidirectional and <5 ns for bidirectional
Operating and Storage Temperature:	-65°C to +150°C
Thermal Resistance:	22°C/W junction to lead at 3/8"(10mm) from body, or 82°C/W junction to ambient when mounted on FR4 PC board with 4mm <sup>2</sup> copper pads (1oz) and track width 1mm, length 25mm
Steady-State Power Dissipation:	5 watts at $T_L=40^\circ\text{C}$ or 1.52 watts @ $T_A=25^\circ\text{C}$ when mounted on FR4 PC board described for thermal resistance
Forward Surge:	200 Amps peak impulse of 8.3ms half-sine wave at 25°C (unidirectional only)
Solder Temperature:	260°C for 10 s (maximum)

## ELECTRICAL CHARACTERISTICS

Type Number	Rated Standoff Voltage $V_{WM}$ (Note 1)	Breakdown Voltage $V_{(BR)}$ @ $I_{(BR)}$			Maximum Clamping Voltage $V_C$ @ $I_{PP}$	Maximum Standby Current $I_D$ @ $V_{WM}$	Maximum Pulse Current $I_{PP}$ (Fig. 2)	Maximum Temperature Coefficient of $V_{(BR)}$ $\alpha_{V(BR)}$
	Volts	Volts	Volts	mA	Volts	$\mu$ A	A	% / °C
		Min	Max					
1N6267	5.50	6.12	7.48	10	10.8	1000	139.0	.057
1N6267A	5.80	6.45	7.14	10	10.5	1000	143.0	.057
1N6268	6.05	6.75	8.25	10	11.7	500	128.0	.061
1N6268A	6.40	7.13	7.88	10	11.3	500	132.0	.061
1N6269	6.63	7.38	9.02	10	12.5	200	120.0	.065
1N6269A	7.02	7.79	8.61	10	12.1	200	124.0	.065
1N6270	7.37	8.19	10.00	1	13.8	50	109.0	.068
1N6270A	7.78	8.65	9.55	1	13.4	50	112.0	.068
1N6271	8.10	9.00	11.00	1	15.0	10	100.0	.073
1N6271A	8.55	9.50	10.50	1	14.5	10	103.0	.073
1N6272	8.92	9.90	12.10	1	16.2	5	93.0	.075
1N6272A	9.40	10.50	11.60	1	15.6	5	96.0	.075
1N6273	9.72	10.80	13.20	1	17.3	5	87.0	.078
1N6273A	10.22	11.40	12.60	1	16.7	5	90.0	.078
1N6274	10.50	11.70	14.30	1	19.0	5	79.0	.081

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	Volts	Volts	Volts	mA	Volts	$\mu A$	A	%/ $^{\circ}C$
		Min	Max					
1N6274A	11.10	12.40	13.70	1	18.2	5	82.0	.081
1N6275	12.10	13.50	16.50	1	22.0	1	68.0	.084
1N6275A	12.80	14.30	15.80	1	21.2	1	71.0	.084
1N6276	12.90	14.40	17.60	1	23.5	1	64.0	.086
1N6276A	13.60	15.20	16.80	1	22.5	1	67.0	.086
1N6277	14.50	16.20	19.80	1	26.5	1	56.5	.088
1N6277A	15.30	17.10	18.90	1	25.2	1	59.5	.088
1N6278	16.20	18.00	22.00	1	29.1	1	51.5	.090
1N6278A	17.10	19.00	21.00	1	27.7	1	54.0	.090
1N6279	17.80	19.80	24.20	1	31.9	1	47.0	.092
1N6279A	18.80	20.90	23.10	1	30.6	1	49.0	.092
1N6280	19.40	21.60	26.40	1	34.7	1	43.0	.094
1N6280A	20.50	22.80	25.20	1	33.2	1	45.0	.094
1N6281	21.80	24.30	29.70	1	39.1	1	38.5	.096
1N6281A	23.10	25.70	28.40	1	37.5	1	40.0	.096
1N6282	24.30	27.00	33.00	1	43.5	1	34.5	.097
1N6282A	25.60	28.50	31.50	1	41.4	1	36.0	.097
1N6283	26.80	29.70	36.30	1	47.7	1	31.5	.098
1N6283A	28.20	31.40	34.70	1	45.7	1	33.0	.098
1N6284	29.10	32.40	39.60	1	52.0	1	29.0	.099
1N6284A	30.80	34.20	37.80	1	49.9	1	30.0	.099
1N6285	31.60	35.10	42.90	1	56.4	1	26.5	.100
1N6285A	33.30	37.10	41.00	1	53.9	1	28.0	.100
1N6286	34.80	38.70	47.30	1	61.9	1	24.0	.101
1N6286A	36.80	40.90	45.20	1	59.3	1	25.3	.101
1N6287	38.10	42.30	51.70	1	67.8	1	22.2	.101
1N6287A	40.20	44.70	49.40	1	64.8	1	23.2	.101
1N6288	41.30	45.90	56.10	1	73.5	1	20.4	.102
1N6288A	43.60	48.50	53.60	1	70.1	1	21.4	.102
1N6289	45.40	50.40	61.60	1	80.5	1	18.6	.103

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	Volts	Volts	Volts	mA	Volts	$\mu A$	A	%/ $^{\circ}C$
		Min	Max					
1N6289A	47.80	53.20	58.80	1	77.0	1	19.5	.103
1N6290	50.20	55.80	68.20	1	89.0	1	16.9	.104
1N6290A	53.00	58.90	65.10	1	85.0	1	17.7	.104
1N6291	55.10	61.20	74.80	1	98.0	1	15.3	.104
1N6291A	58.10	64.60	71.40	1	92.0	1	16.3	.104
1N6292	60.70	67.50	82.50	1	108.0	1	13.9	.105
1N6292A	64.10	71.30	78.80	1	103.0	1	14.6	.105
1N6293	66.40	73.80	90.20	1	118.0	1	12.7	.105
1N6293A	70.10	77.90	86.10	1	113.0	1	13.3	.105
1N6294	73.70	81.90	100.00	1	131.0	1	11.4	.106
1N6294A	77.80	86.50	95.50	1	125.0	1	12.0	.106
1N6295	81.00	90.00	110.00	1	144.0	1	10.4	.106
1N6295A	85.50	95.00	105.00	1	137.0	1	11.0	.106
1N6296	89.20	99.00	121.00	1	158.0	1	9.5	.107
1N6296A	94.00	105.00	116.00	1	152.0	1	9.9	.107
1N6297	97.20	108.00	132.00	1	173.0	1	8.7	.107
1N6297A	102.00	114.00	126.00	1	165.0	1	9.1	.107
1N6298	105.00	117.00	143.00	1	187.0	1	8.0	.107
1N6298A	111.00	124.00	137.00	1	179.0	1	8.4	.107
1N6299	121.00	135.00	165.00	1	215.0	1	7.0	.108
1N6299A	128.00	143.00	158.00	1	207.0	1	7.2	.108
1N6300	130.00	144.00	176.00	1	230.0	1	6.5	.108
1N6300A	136.00	152.00	168.00	1	219.0	1	6.8	.108
1N6301	138.00	153.00	187.00	1	244.0	1	6.2	.108
1N6301A	145.00	162.00	179.00	1	234.0	1	6.4	.108
1N6303	146.00	162.00	198.00	1	258.0	1	5.8	.108
1N6303A	154.00	171.00	189.00	1	246.0	1	6.1	.108

- Notes:
1. Normal selection criteria for TVS devices is by rated stand-off voltage ( $V_{WM}$ ) and should be equal or greater than dc or continuous peak operating voltage.
  2. TVS devices are tested to maximum peak pulse current ( $I_{PP}$ ) with clamping voltage monitored. This surge capability is one of the most significant electrical characteristics of the device and should be considered as part of customer quality inspections.
  3. For Bidirectional part number add C or CA as suffix. For Bidirectional types having  $V_{WM}$  of 8 volts and under, the  $I_D$  leakage current is doubled. For bipolar capacitance will be .5 that shown in Fig. 2 for zero bias.
  4. For unidirectional, the forward voltage ( $V_F$ ) is 3.5 volts maximum at 100 Amps peak 8.3 ms half-sine wave.

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## MECHANICAL CHARACTERISTICS

<b>Case:</b>	DO-201 plastic package
<b>Polarity:</b>	Cathode band. No cathode marking on bidirectional devices
<b>Marking:</b>	Body Painted, Alpha-Numeric

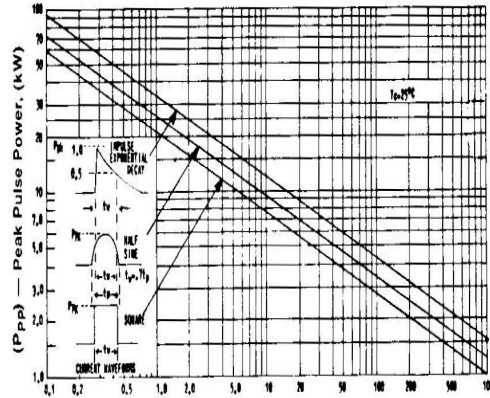


FIGURE 1  
PEAK PULSE POWER VS. PULSE TIME ( $T_w$ ) IN  $\mu s$

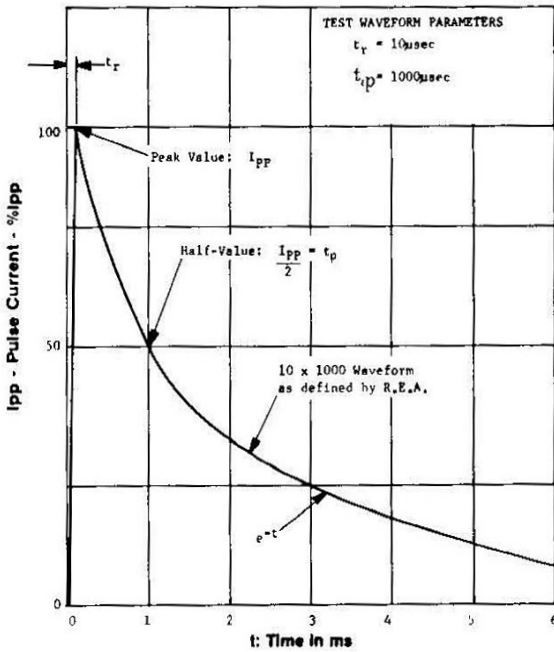


Figure 2  
Pulse Wave Form

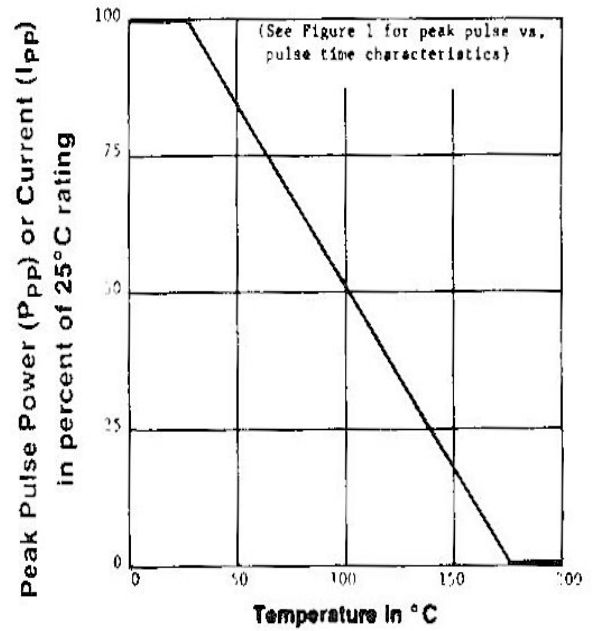
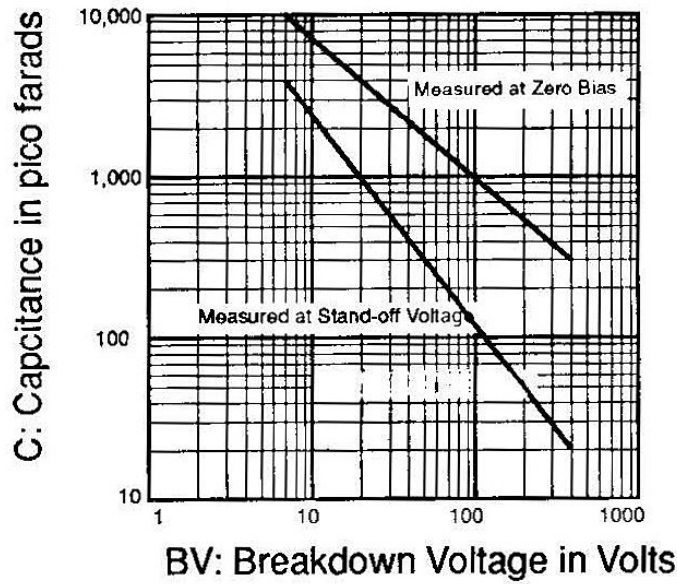


Figure 3  
Derating Curve

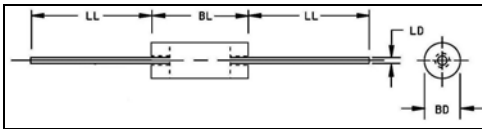
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**Figure 4**  
**Typical Capacitance vs.**  
**Breakdown Voltage**



	Dimensions			
	Inches		Millimeters	
	Min	Max	Min	Max
<b>BD</b>	0.190	0.205	4.800	5.207
<b>BL</b>	0.360	0.375	9.144	9.525
<b>LD</b>	0.038	0.042	0.960	1.070
<b>LL</b>	1.000	-	25.400	-