General Semiconductor Industries, Inc.

TRANSZORB® TRANSIENT VOLTAGE SUPPRESSORS

1N6036 THRU 1N6072A

FEATURES

- **1500 watts Peak Pulse Power dissipation**
- **Available in ranges from 5.5 to 185 volts**
- **MIL qualified per MIL-S-19500/507**
- **Hermetically sealed package**
- **BIDIRECTIONAL**
- **UL Recognized (1N6070A thru 1N6072A)**

MAXIMUM RATINGS

- 1500 Watts of Peak Pulse Power dissipation at 25° C (see derating curve)
- $t_{clamping}$ (0 volts to BV min): Less than 1×10^{-9} second (theoretical)
- Operating and Storage temperatures: -65° to +175° C
- Steady State power dissipation: 1.0 watt
- Repetition rate (duty cycle): .01%

MECHANICAL CHARACTERISTICS

- Standard DO-13 package, glass and metal hermetically sealed
- Weight: 1.5 grams (approximate)
- Body marked with Logo and type number

ELECTRICAL CHARACTERISTICS

Clamping Factor: 1.33 at full rated power
1.20 at 50% rated power

Clamping Factor: The ratio of the actual V_C (Clamping Voltage) to the BV (Breakdown Voltage) as measured on a specific device.

APPLICATION

. . .a series of Bidirectional Silicon Transient Suppressors used in AC applications where large voltage transients can permanently damage voltage-sensitive components.

The TransZorb® can be used in applications where induced lightning on rural or remote transmission lines presents a hazard to electronic circuitry (ref: R.E.A. specifications P.E. 60). The response time of TransZorb clamping action is less than (5×10^{-9} sec.); therefore, they can protect Integrated Circuits, MOS devices, Hybrids, and other voltage-sensitive semiconductors and components. These devices have been proven effective EMP Suppressors.

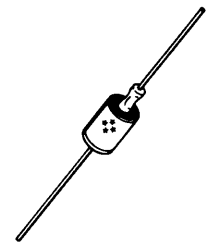
DESCRIPTION

These devices are manufactured using two silicon PN, junction in a back to back configuration. They are characterized by their high surge capability, extremely fast response time, and low impedance, (R_{ON}).

The electrical characteristics are specified as peak values, and apply in both directions. For reference to RMS voltages, multiply the TransZorb voltage characteristics by .707 (example: $V_R \times .707 = V_{R(rms)}$) to obtain the equivalent RMS voltage characteristic.

Also available as JAN, JANTX, and JANTXV devices per MIL-S-19500/507.

CASE DO-13



CASE OUTLINE

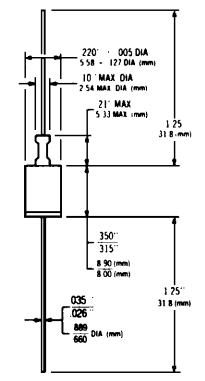


FIGURE 1—Peak Pulse Power vs Pulse Time

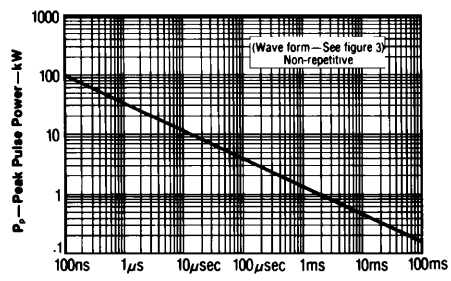
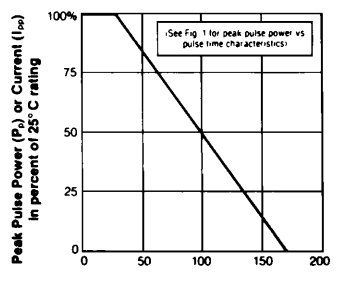


FIGURE 2—Derating Curve

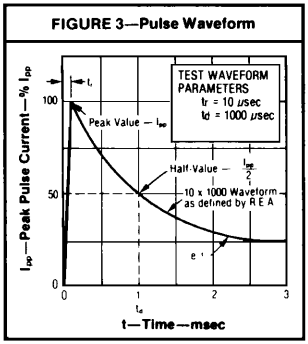


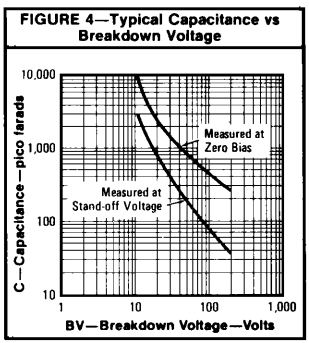
ELECTRICAL CHARACTERISTICS @ 25°C (JEDEC Registered Data)

JEDEC TYPE NUMBER	BREAKDOWN VOLTAGE BV VOLTS MIN.	BREAKDOWN VOLTAGE BV VOLTS MAX.	@ I_T mA	MAXIMUM REVERSE LEAKAGE @V_R I_R uA	MAXIMUM VOLTAGE TEMPERATURE VARIATION OF BV mV/°C
1N6036	6.75	8.25	10	1000	5.0
1N6036A	7.13	7.88	10	1000	5.0
1N6037	7.38	9.02	10	500	5.0
1N6037A	7.79	8.61	10	500	5.0
1N6038	8.19	10.0	10	200	7.0
1N6038A	8.65	9.55	10	200	7.0
1N6039	9.00	11.0	1	50	7.0
1N6039A	9.5	10.5	1	50	7.0
1N6040	9.9	12.1	1	10	8.0
1N6040A	10.5	11.6	1	10	8.0
1N6041	10.8	13.2	1	5	9.0
1N6041A	11.4	12.6	1	5	9.0
1N6042	11.7	14.3	1	5	10
1N6042A	12.4	13.7	1	5	10
1N6043	13.5	16.5	1	5	11
1N6043A	14.3	15.8	1	5	12
1N6044	14.4	17.6	1	5	12
1N6044A	15.2	16.8	1	5	13
1N6045	16.2	19.8	1	5	14
1N6045A	17.1	18.9	1	5	15
1N6046	18.0	22.0	1	5	17
1N6046A	19.0	21.0	1	5	18
1N6047	19.8	24.2	1	5	19
1N6047A	20.9	23.1	1	5	20
1N6048	21.6	26.4	1	5	24
1N6048A	22.8	25.2	1	5	24
1N6049	24.3	29.7	1	5	27
1N6049A	25.7	28.4	1	5	28
1N6050	27.0	33.0	1	5	36
1N6050A	28.5	31.5	1	5	31
1N6051	29.7	36.3	1	5	32
1N6051A	31.4	34.7	1	5	34
1N6052	32.4	39.6	1	5	36
1N6052A	34.2	37.8	1	5	37
1N6053	35.1	42.9	1	5	39
1N6053A	37.1	41.0	1	5	40
1N6054	38.7	47.3	1	5	44
1N6054A	40.9	45.2	1	5	43
1N6055	42.3	51.7	1	5	49
1N6055A	44.7	49.4	1	5	47
1N6056	45.9	56.1	1	5	53
1N6056A	48.5	53.6	1	5	51
1N6057	50.4	61.6	1	5	58
1N6057A	53.2	58.8	1	5	56
1N6058	55.8	68.2	1	5	64
1N6058A	58.9	65.1	1	5	62
1N6059	61.2	74.8	1	5	70
1N6059A	64.6	71.4	1	5	68
1N6060	67.5	82.5	1	5	77
1N6060A	71.3	78.8	1	5	75
1N6061	73.8	90.2	1	5	84
1N6061A	77.9	86.1	1	5	82
1N6062	81.9	100.0	1	5	90
1N6062A	86.5	95.5	1	5	86
1N6063	90.0	110.0	1	5	99
1N6063A	95.0	105.0	1	5	94
1N6064	99.0	121.0	1	5	109
1N6064A	105.0	116.0	1	5	104
1N6065	108.0	132.0	1	5	120
1N6065A	114.0	126.0	1	5	115
1N6066	117.0	143.0	1	5	131
1N6066A	124.0	137.0	1	5	125
1N6067	135.0	165.0	1	5	142
1N6067A	143.0	158.0	1	5	136
1N6068	153.0	187.0	1	5	164
1N6068A	162.0	179.0	1	5	157
1N6069	162.0	198.0	1	5	175
1N6069A	171.0	189.0	1	5	167
1N6070	171.0	210.0	1	5	186
1N6070A†	181.0	200.0	1	5	188
1N6071	180.0	220.0	1	5	197
1N6071A†	190.0	210.0	1	5	188
1N6072	198.0	242.0	1	5	219
1N6072A†	209.0	231.0	1	5	209

Available in JAN & JANTX per MIL-S-19500/507A. †UL Listed.

TRANSZORB® BIDIRECTIONAL 1N6036 THRU 1N6072A





NOTES

Note 1: A TransZorb is normally selected according to the reverse "Stand Off Voltage" (V_R) which should be equal to or greater than the DC or continuous peak operating voltage level.

ABBREVIATIONS & SYMBOLS

- V_R Stand-Off Voltage Applied Reverse Voltage to assure a nonconductive condition. (See Note 1)
- BV(min) This is the minimum Breakdown Voltage the device will exhibit and is used to assure that conduction does not occur prior to this voltage level at 25°C
- V_C(max) Maximum Clamping Voltage. The maximum peak voltage appearing across the TransZorb when subjected to the peak pulse current in a one millisecond time interval. The peak pulse voltages are the combination of voltage rise due to both the series resistance and thermal rise
- I_{pp} Peak Pulse Current — See Figure 3
- P_p Peak Pulse Power
- I_R Reverse Leakage