ALSO AVAILABLE IN SURFACE MOUNT

Microsemi Corp.
The diode experts

SCOTTSDALE, AZ
For more information call:
(602) 941-6300

1N6267 thru 1N6303A and 1.5KE6.8 thru 1.5KE400A

TRANSIENT ABSORPTION ZENER

UNIDIRECTIONAL AND BIDIRECTIONAL

FEATURES

- ECONOMICAL
- 1500 WATTS PEAK PULSE POWER DISSIPATION
- STAND OFF VOLTAGES FROM 5.5V - 171V
- UNIPOLAR OR BIPOLAR
- AVAILABLE IN CHIP FORM FOR HYBRID APPLICATION
- MULTI-CHIP BIDIRECTIONAL CELLS AVAILABLE

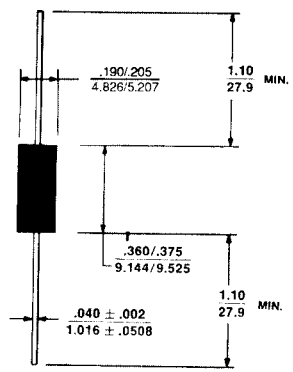
DESCRIPTION

This defines a series of silicon Transient Suppressors designed to protect voltage sensitive components from high energy voltage transients. TAZ devices have become very important as a consequence of their high surge capability, extremely fast response time, and low incremental surge resistance (Rs).

To characterize TAZ, a minimum voltage at low current conditions (V_{BR}), and a maximum clamping voltage (V_C), at a maximum peak pulse current are specified. In addition, a maximum clamping ratio is indicated. The maximum leakage current at the rated stand-off voltage is also provided to assure low power consumption under normal conditions.

APPLICATION

This TAZ series has a peak pulse power rating of 1500 watts for one millisecond. It can protect integrated circuits, hybrids, CMOS, MOS, and other voltage sensitive components in a broad range of applications such as telecommunications, power supplies, computers, automotive, and industrial equipment.



All dimensions in INCH / m.m.

MAXIMUM RATINGS

1500 Watts of Peak Pulse Power Dissipation at 25°C.

$t_{clamping}$ (0 Volts to $V_{(BR)}$ Min.):
Unidirectional $< 1 \times 10^{-12}$ Seconds; Bidirectional $< 5 \times 10^{-9}$ Seconds.
Operating and Storage Temperature -65°C to +175°C.
Forward Surge Rating 200 Amps, 1/20 Second at 25°C.
Steady State Power Dissipation 5.0 W @ T1 = 75°C.
(Not Applicable in Chip Form).

MECHANICAL CHARACTERISTICS

CASE: Molded

WEIGHT: 1.5 Grams (Approx.)

POLARITY: Positive Terminal Marked with Band

ELECTRICAL CHARACTERISTICS

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

The Clamping Factor is defined as: The ratio of the actual V_C (Clamping Voltage) to the actual $V_{(BR)}$ (Breakdown Voltage) as measured on a specific device.

1N6267 thru 1N6303A and 1.5KE6.8 thru 1.5KE400A

ELECTRICAL CHARACTERISTICS @ 25°C

Industry Type Number	JEDEC Type Number	Rated Stand-off Voltage	Breakdown Voltage V(BR) VOLTS		@ IT mA	Maximum Clamping Voltage @ Ipp (1 mSEC)	Maximum Reverse Leakage @ VWM	Rated Maximum Peak Pulse Current	Maximum Temperature Coefficient of V(BR)
		VWM VOLTS	MIN	MAX		VC VOLTS	ID μA	Ipp A	%/°C
—	1N5908	5.0	6.0	—	1	7.6	300	30.	.057
1.5KE6.8	1N6267	5.50	6.12	7.48	10	10.8	1000	139.0	.057
1.5KE6.8A	1N6267A	5.80	6.45	7.14	10	10.5	1000	143.0	.057
1.5KE7.5	1N6268	6.05	6.75	8.25	10	11.7	500	128.0	.061
1.5KE7.5A	1N6268A	6.40	7.13	7.88	10	11.3	500	132.0	.061
1.5KE8.2	1N6269	6.63	7.38	9.02	10	12.5	200	120.0	.065
1.5KE8.2A	1N6269A	7.02	7.79	8.61	10	12.1	200	124.0	.065
1.5KE9.1	1N6270	7.37	8.19	10.00	1	13.8	50	109.0	.068
1.5KE9.1A	1N6270A	7.78	8.65	9.55	1	13.4	50	112.0	.068
1.5KE10	1N6271	8.10	9.00	11.00	1	15.0	10	100.0	.073
1.5KE10A	1N6271A	8.55	9.50	10.50	1	14.5	10	103.0	.073
1.5KE11	1N6272	8.92	9.90	12.10	1	16.2	5	93.0	.075
1.5KE11A	1N6272A	9.40	10.50	11.60	1	15.6	5	96.0	.075
1.5KE12	1N6273	9.72	10.80	13.20	1	17.3	5	87.0	.078
1.5KE12A	1N6273A	10.20	11.40	12.60	1	16.7	5	90.0	.078
1.5KE13	1N6274	10.50	11.70	14.30	1	19.0	5	79.0	.081
1.5KE13A	1N6274A	11.10	12.40	13.70	1	18.2	5	82.0	.081
1.5KE15	1N6275	12.10	13.50	16.50	1	22.0	5	68.0	.084
1.5KE15A	1N6275A	12.80	14.30	15.80	1	21.2	5	71.0	.084
1.5KE16	1N6276	12.90	14.40	17.60	1	23.5	5	64.0	.086
1.5KE16A	1N6276A	13.60	15.20	16.80	1	22.5	5	67.0	.086
1.5KE18	1N6277	14.50	16.20	19.80	1	26.5	5	56.5	.088
1.5KE18A	1N6277A	15.30	17.10	18.90	1	25.2	5	59.5	.088
1.5KE20	1N6278	16.20	18.00	22.00	1	29.1	5	51.5	.090
1.5KE20A	1N6278A	17.10	19.00	21.00	1	27.7	5	54.0	.090
1.5KE22	1N6279	17.80	19.80	24.20	1	31.9	5	47.0	.092
1.5KE22A	1N6279A	18.80	20.90	23.10	1	30.6	5	49.0	.092
1.5KE24	1N6280	19.40	21.60	26.40	1	34.7	5	43.0	.094
1.5KE24A	1N6280A	20.50	22.80	25.20	1	33.2	5	45.0	.094
1.5KE27	1N6281	21.80	24.30	29.70	1	39.1	5	38.5	.096
1.5KE27A	1N6281A	23.10	25.70	28.40	1	37.5	5	40.0	.096
1.5KE30	1N6282	24.30	27.00	33.00	1	43.5	5	34.5	.097
1.5KE30A	1N6282A	25.60	28.50	31.50	1	41.4	5	36.0	.097
1.5KE33	1N6283	26.80	29.70	36.30	1	47.7	5	31.5	.098
1.5KE33A	1N6283A	28.20	31.40	34.70	1	45.7	5	33.0	.098
1.5KE36	1N6284	29.10	32.40	39.60	1	52.0	5	29.0	.099
1.5KE36A	1N6284A	30.80	34.20	37.80	1	49.9	5	30.0	.099
1.5KE39	1N6285	31.60	35.10	42.90	1	56.4	5	26.5	.100
1.5KE39A	1N6285A	33.30	37.10	41.00	1	53.9	5	28.0	.100
1.5KE43	1N6286	34.80	38.70	47.30	1	61.9	5	24.0	.101
1.5KE43A	1N6286A	36.80	40.90	45.20	1	59.3	5	25.3	.101
1.5KE47	1N6287	38.10	42.30	51.70	1	67.8	5	22.2	.101
1.5KE47A	1N6287A	40.20	44.70	49.40	1	64.8	5	23.2	.101
1.5KE51	1N6288	41.30	45.90	56.10	1	73.5	5	20.4	.102
1.5KE51A	1N6288A	43.60	48.50	53.60	1	70.1	5	21.4	.102
1.5KE56	1N6289	45.40	50.40	61.60	1	80.5	5	18.6	.103
1.5KE56A	1N6289A	47.80	53.20	58.80	1	77.0	5	19.5	.103
1.5KE62	1N6290	50.20	55.80	68.20	1	89.0	5	16.9	.104
1.5KE62A	1N6290A	53.00	58.90	65.10	1	85.0	5	17.7	.104
1.5KE68	1N6291	55.10	61.20	74.80	1	98.0	5	15.3	.104
1.5KE68A	1N6291A	58.10	64.60	71.40	1	92.0	5	16.3	.104
1.5KE75	1N6292	60.70	67.50	82.50	1	108.0	5	13.9	.105
1.5KE75A	1N6292A	64.10	71.30	78.80	1	103.0	5	14.6	.105
1.5KE82	1N6293	66.40	73.80	90.20	1	118.0	5	12.7	.105
1.5KE82A	1N6293A	70.10	77.90	86.10	1	113.0	5	13.3	.105
1.5KE91	1N6294	73.70	81.90	100.00	1	131.0	5	11.4	.106
1.5KE91A	1N6294A	77.80	86.50	95.50	1	125.0	5	12.0	.106
1.5KE100	1N6295	81.00	90.00	110.00	1	144.0	5	10.4	.106
1.5KE100A	1N6295A	85.50	95.00	105.00	1	137.0	5	11.0	.106
1.5KE110	1N6296	89.20	99.00	121.00	1	158.0	5	9.5	.107
1.5KE110A	1N6296A	94.00	105.00	116.00	1	152.0	5	9.9	.107
1.5KE120	1N6297	97.20	108.00	132.00	1	173.0	5	8.7	.107
1.5KE120A	1N6297A	102.00	114.00	126.00	1	165.0	5	9.1	.107
1.5KE130	1N6298	105.00	117.00	143.00	1	187.0	5	8.0	.107
1.5KE130A	1N6298A	111.00	124.00	137.00	1	179.0	5	8.4	.107
1.5KE150	1N6299	121.00	135.00	165.00	1	215.0	5	7.0	.108
1.5KE150A	1N6299A	128.00	143.00	158.00	1	207.0	5	7.2	.108
1.5KE160	1N6300	130.00	144.00	176.00	1	230.0	5	6.5	.108
1.5KE160A	1N6300A	136.00	152.00	168.00	1	219.0	5	6.8	.108
1.5KE170	1N6301	138.00	153.00	187.00	1	244.0	5	6.2	.108
1.5KE170A	1N6301A	145.00	162.00	179.00	1	234.0	5	6.4	.108
1.5KE180	1N6302	146.00	162.00	198.00	1	258.0	5	5.8	.108
1.5KE180A	1N6302A	154.00	171.00	189.00	1	246.0	5	6.1	.108
1.5KE200	1N6303	162.00	180.00	220.00	1	287.0	5	5.2	.108
1.5KE200A	1N6303A	171.00	190.00	210.00	1	274.0	5	5.5	.108
1.5KE220		175.00	198.00	242.00	1	344.0	5	4.3	0.110
1.5KE220A		185.00	209.00	231.00	1	328.0	5	4.6	0.110
1.5KE250		202.00	225.00	275.00	1	360.0	5	5.0	0.110
1.5KE250A		214.00	237.00	263.00	1	344.0	5	5.0	0.110
1.5KE300		243.00	270.00	330.00	1	430.0	5	5.0	0.111
1.5KE300A		256.00	285.00	315.00	1	414.0	5	5.0	0.111
1.5KE350		284.00	315.00	385.00	1	504.0	5	4.0	0.111
1.5KE350A		300.00	332.00	368.00	1	482.0	5	4.0	0.111
1.5KE400		324.00	360.00	440.00	1	574.0	5	4.0	0.111
1.5KE400A		342.00	380.00	420.00	1	548.0	5	4.0	0.111

V_f at 100 amps peak. 8.3 ms sine wave equals 3.5 volts max. (unidirectional only). For Bidirectional part number add C or CA as suffix (e.e., 1.5KE33C or 1.5KE33CA). For Bidirectional types having V_{WM} of 8 volts and under, the I_D leakage current is doubled. 1N62XX or 1N5908 not available as bidirectional. For bipolar capacitance will be .5 that shown in Fig. 2 for zero bias.

SYMBOLS AND ABBREVIATIONS

V_{WM} = Rated Stand-off Voltage

I_{PP} = Peak Pulse Current

P_{PP} = Peak Pulse Power

$V_{C(MAX)}$ = Maximum Clamping Voltage

$V_{(BR)}$ = Breakdown Voltage

I_T = Test Current

I_D = Reverse Leakage

NOTE 1: Normal selection criteria for TAZ devices is by rated stand-off voltage (V_{WM}) and should be equal or greater than DC or continuous peak operating voltage.
NOTE 2: TAZ 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.

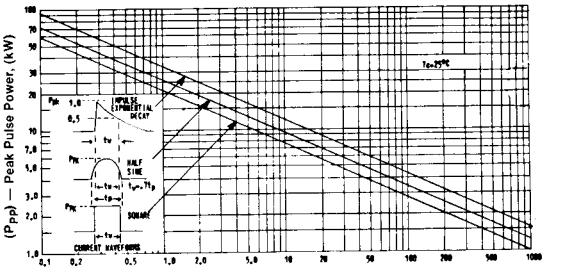


FIGURE 1
PEAK PULSE POWER VS. PULSE TIME (T w) IN μs

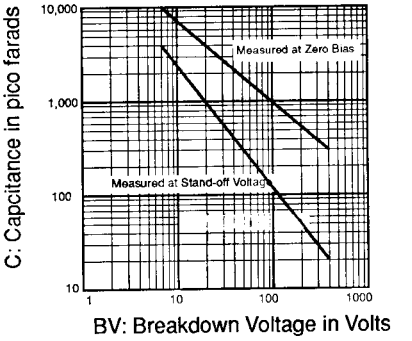


FIGURE 2
TYPICAL CAPACITANCE VS. BREAKDOWN VOLTAGE

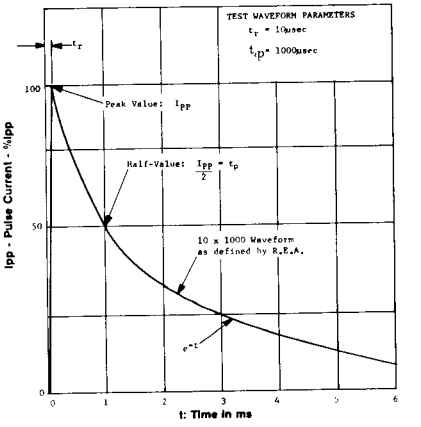


FIGURE 3 PULSE WAVE FORM

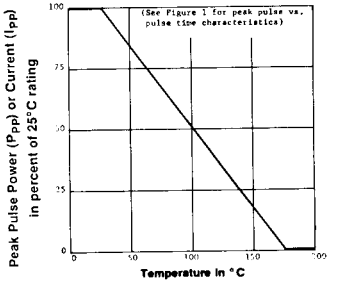


FIGURE 4 DERATING CURVE

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