



Microsemi Corp.

The diode experts

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

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 (R_s).

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.

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 @ $T_1 = 75^\circ\text{C}$.

(Not Applicable in Chip Form).

ELECTRICAL CHARACTERISTICS

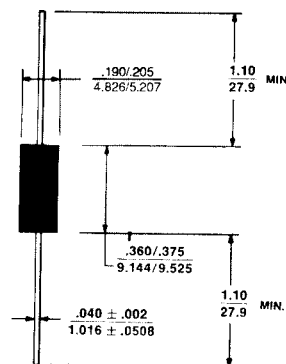
Clamping Factor: 1.33 @ full rated power

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.

**TRANSIENT
ABSORPTION ZENER**

**UNIDIRECTIONAL
AND
BIDIRECTIONAL**



All dimensions in INCH
m. m.

MECHANICAL CHARACTERISTICS

CASE: Molded

WEIGHT: 1.5 Grams (Approx.)

POLARITY: Positive Terminal
Marked with Band

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})			θ JA °C/W	Maximum Clamping Voltage (V _{CC})	Maximum Reverse Leakage @ V _{RR} = 1 V	Maximum Peak Pulse Current (I _{PP})	Maximum Temperature Coefficient α _V %/°C
			V _{WM} VOLTS	MIN	MAX					
—	1N5009	5.0	6.0	—	1	7.6	300	30.	0.57	
1.5KE6-8	1N5676	5.50	6.12	7.48	10	10.8	139.0	0.57	0.57	
1.5KE6-8A	1N5676A	5.80	6.45	7.14	10	10.5	1000	0.57	0.57	
1.5KE7-5	1N5675	6.40	6.75	6.05	25	11.7	500	128.0	0.561	
1.5KE7-5A	1N5675A	6.80	7.13	7.88	10	11.3	500	132.0	0.561	
1.5KE8-2	1N5676	6.63	7.38	9.02	10	12.5	200	120.0	0.65	
1.5KE8-2A	1N5676A	7.02	7.79	8.61	10	12.1	200	103.0	0.65	
1.5KE9-1	1N5677	7.37	8.19	9.00	10	13.8	50	109.0	0.68	
1.5KE9-1A	1N5677A	7.78	8.65	9.55	1	13.4	50	112.0	0.68	
1.5KE10	1N5671	8.10	9.00	11.00	1	15.0	100.0	0.70	0.73	
1.5KE10A	1N5671A	8.55	9.50	10.50	1	14.5	5	93.0	0.75	
1.5KE11	1N5672	8.50	9.90	12.00	1	16.2	5	96.0	0.75	
1.5KE11A	1N5672A	9.40	10.50	11.60	1	15.6	5	87.0	0.78	
1.5KE12	1N5673	9.72	10.80	13.20	1	17.3	5	90.0	0.81	
1.5KE12A	1N5673A	10.20	11.40	12.70	1	16.7	5	79.0	0.86	
1.5KE13	1N5674	10.50	11.70	14.30	1	19.0	5	82.0	0.81	
1.5KE13A	1N5674A	11.10	12.40	13.70	1	18.2	5	71.0	0.84	
1.5KE15	1N5675	12.10	13.50	16.50	1	22.0	5	68.0	0.84	
1.5KE15A	1N5675A	12.80	14.30	15.80	1	21.2	5	64.0	0.86	
1.5KE16	1N5676	12.90	14.40	17.60	1	22.5	5	67.0	0.86	
1.5KE16A	1N5676A	13.60	15.20	16.80	1	21.7	5	56.5	0.98	
1.5KE18	1N5677	14.50	16.20	19.80	1	26.5	5	59.5	0.98	
1.5KE18A	1N5677A	15.30	17.10	18.90	1	25.2	5	51.5	0.90	
1.5KE19	1N5678	16.00	18.00	21.00	1	29.1	5	54.0	0.90	
1.5KE20	1N5679	17.80	19.80	24.20	1	31.9	5	47.0	0.92	
1.5KE20A	1N5679A	18.80	20.90	23.10	1	30.6	5	45.0	0.92	
1.5KE21	1N5679	19.40	21.60	24.40	1	34.7	5	43.0	0.94	
1.5KE24A	1N5670A	20.50	22.80	25.00	1	33.2	5	40.0	0.94	
1.5KE27	1N5681	21.80	24.30	29.70	1	39.1	5	38.5	0.95	
1.5KE27A	1N5681A	23.10	25.70	28.40	1	37.5	5	34.5	0.97	
1.5KE28	1N5678	24.30	27.00	31.00	1	43.5	5	36.0	0.97	
1.5KE30A	1N5679A	25.60	28.50	31.50	1	41.4	5	31.5	0.98	
1.5KE33	1N5683	26.80	29.70	36.30	1	47.7	5	30.0	0.98	
1.5KE33A	1N5683A	28.20	31.40	34.70	1	45.7	5	29.0	0.99	
1.5KE36	1N5684	29.10	32.40	38.00	1	52.0	5	26.0	0.99	
1.5KE36A	1N5684A	30.80	34.20	37.80	1	49.9	5	25.5	1.00	
1.5KE39	1N5685	31.60	35.10	42.90	1	56.4	5	28.0	1.00	
1.5KE39A	1N5685A	33.30	37.00	41.00	1	53.9	5	25.3	1.01	
1.5KE43	1N5686	34.80	38.70	47.30	1	61.9	5	22.2	1.01	
1.5KE43A	1N5686A	36.10	40.90	45.70	1	59.3	5	23.2	1.01	
1.5KE47	1N5687	38.00	42.30	51.70	1	67.8	5	20.4	1.02	
1.5KE47A	1N5687A	40.20	44.70	49.40	1	64.8	5	21.4	1.02	
1.5KE51	1N5688	41.30	45.90	56.10	1	73.5	5	18.5	1.03	
1.5KE51A	1N5688A	43.60	48.50	53.60	1	70.1	5	16.6	1.03	
1.5KE56	1N5689	45.40	50.40	61.60	1	80.0	5	15.5	1.03	
1.5KE56A	1N5689A	47.80	53.20	60.80	1	77.0	5	16.9	1.04	
1.5KE62	1N5690	50.20	55.80	68.20	1	89.0	5	12.7	1.05	
1.5KE62A	1N5690A	52.50	58.90	65.10	1	85.0	5	14.6	1.05	
1.5KE66	1N5691	55.10	61.20	74.80	1	98.0	5	10.3	1.04	
1.5KE66A	1N5691A	58.10	64.60	71.40	1	94.0	5	16.3	1.04	
1.5KE75	1N5692	60.70	67.50	82.50	1	108.0	5	13.9	1.05	
1.5KE75A	1N5692A	64.10	71.30	78.80	1	103.0	5	14.6	1.05	
1.5KE82	1N5693	66.40	73.80	89.20	1	118.0	5	10.7	1.06	
1.5KE82A	1N5693A	70.10	77.90	86.10	1	113.0	5	13.3	1.06	
1.5KE81	1N5694	73.80	81.90	100.00	1	131.0	5	11.4	1.06	
1.5KE81A	1N5694A	76.70	86.50	97.00	1	125.0	5	12.0	1.06	
1.5KE80A	1N5695	81.80	90.70	110.00	1	144.0	5	10.4	1.06	
1.5KE100A	1N5696	85.50	95.00	105.00	1	137.0	5	11.0	1.06	
1.5KE110	1N5696	98.20	99.00	121.00	1	158.0	5	9.5	1.07	
1.5KE110A	1N5696A	99.00	105.00	114.00	1	152.0	5	10.9	1.07	
1.5KE120	1N5697	97.70	108.00	132.00	1	170.0	5	8.7	1.07	
1.5KE120A	1N5697A	102.00	114.00	126.00	1	165.0	5	9.1	1.07	
1.5KE130	1N5698	105.00	117.00	143.00	1	180.0	5	8.0	1.07	
1.5KE130A	1N5698A	111.00	124.00	137.00	1	175.0	5	8.4	1.07	
1.5KE150	1N5699	121.00	135.00	165.00	1	215.0	5	7.0	1.08	
1.5KE150A	1N5699A	128.00	143.00	158.00	1	207.0	5	7.2	1.08	
1.5KE160	1N5630	130.00	144.00	176.00	1	230.0	5	6.5	1.08	
1.5KE160A	1N5630A	136.00	150.00	168.00	1	219.0	5	6.8	1.08	
1.5KE170	1N5631	145.00	153.00	187.00	1	240.0	5	6.2	1.08	
1.5KE170A	1N5631A	145.00	162.00	178.00	1	234.0	5	6.4	1.08	
1.5KE180	1N5632	146.00	167.00	198.00	1	258.0	5	5.8	1.08	
1.5KE190A	1N5633	154.00	171.00	206.00	1	246.0	5	5.1	1.08	
1.5KE200	1N5634	163.00	180.00	220.00	1	287.0	5	5.5	1.08	
1.5KE200A	1N5634A	163.00	190.00	210.00	1	274.0	5	5.2	1.08	
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	340.0	5	5.0	0.111	
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	410.0	5	5.0	0.111	
1.5KE350	—	284.00	315.00	385.00	1	504.0	5	4.0	0.111	
1.5KE350A	—	302.00	332.00	368.00	1	480.0	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	540.0	5	4.0	0.111	

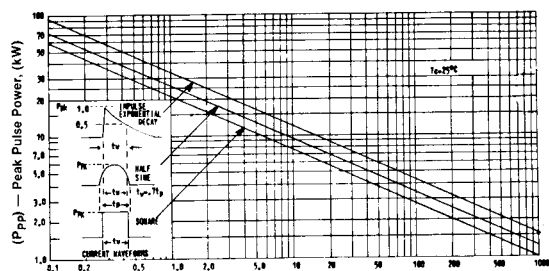
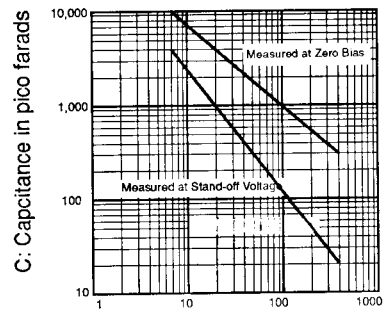


FIGURE 1
PEAK PULSE POWER VS. PULSE TIME (T_w) IN μs



BV: Breakdown Voltage in Volts

FIGURE 2
TYPICAL CAPACITANCE VS.
BREAKDOWN VOLTAGE

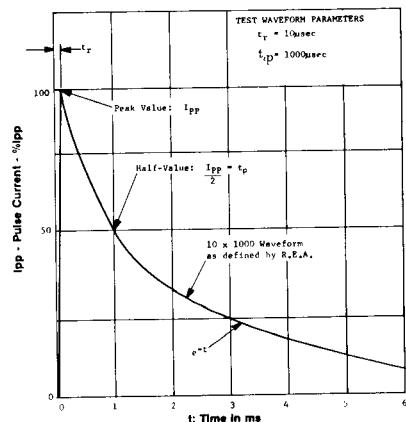


FIGURE 3 PULSE WAVE FORM

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.

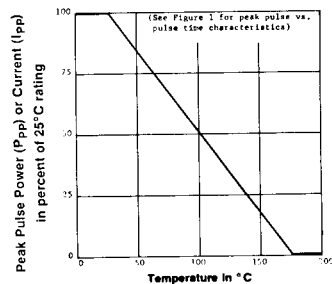


FIGURE 4 DERATING CURVE



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