

**Microsemi Corp.**  
The diode experts

SANTA ANA, CA

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**1.0 KE5  
thru  
1.0 KE170A**

**FEATURES**

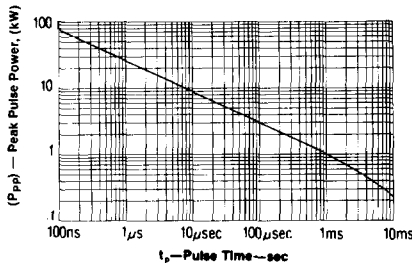
- AVAILABLE IN RANGES FROM 5.0 TO 170 VOLTS
- AVAILABLE IN BIDIRECTIONAL FOR AC APPLICATIONS
- LOW CLAMPING RATIO
- SMALL PACKAGE SIZE

As a low cost, 1,000 watt commercial and industrial component, this TAZ series is used in applications where space is a premium and where large voltage transients can permanently damage voltage-sensitive components.

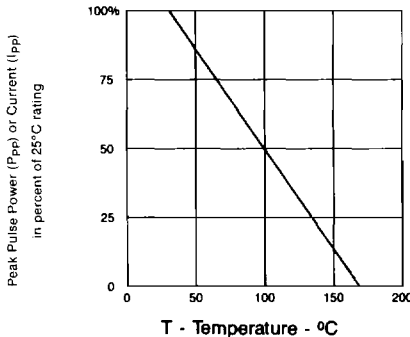
This TAZ has a peak pulse power rating of 1,000 watts for one millisecond. The response time of TAZ clamping action is theoretically instantaneous ( $1 \times 10^{-12}$  sec); therefore, they can protect integrated circuits, MOS devices, hybrids, and other voltage-sensitive semiconductors and components. TAZ can also be used in series or parallel to increase the peak power ratings.

**MAXIMUM RATINGS**

- 1000 Watts of Peak Pulse Power dissipation at 25°C (see derating curve)
- $t_{clamping}$  (0 Volts to BV Min.): Unidirectional  $< 1 \times 10^{-12}$  Seconds; Bidirectional  $< 5 \times 10^{-9}$  Seconds (theoretical)
- Operating and Storage temperatures: -55° to +175°C
- Forward surge rating: 133 amps, 8.3 msec at 25°C (except Bidirectional)
- Steady State power dissipation: 5.0 watt  $T_L = 75^\circ\text{C}$ , Lead Length = 3/8"
- Repetition rate (duty cycle): .05%



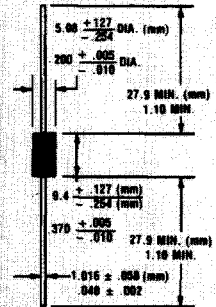
**FIGURE 1** PEAK PULSE POWER VS PULSE TIME



**FIGURE 2** DERATING CURVE

**TRANSIENT  
ABSORPTION  
ZENER**

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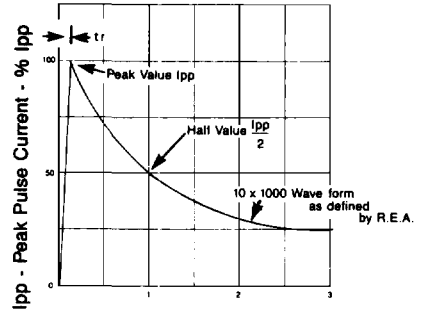
**MECHANICAL  
CHARACTERISTICS**

- CASE: Molded case
- FINISH: Silver-plated copper, readily solderable
- POLARITY: Cathode terminal marked with band (except bidirectional)
- WEIGHT: 1.5 grams (Appx.)
- MOUNTING POSITION: Any

# 1.0KE5 thru 1.0KE170A

## ELECTRICAL CHARACTERISTICS @ 25°C

MICROSEMI PART NUMBER	REVERSE STAND-OFF VOLTAGE (NOTE 1) $V_{RM}$ VOLTS	BREAKDOWN VOLTAGE $V_{BR}$ VOLTS @		$I_B$ mA	MAXIMUM REVERSE LEAKAGE CURRENT (NOTE 2) $I_{RS}$ $\mu$ A	MAXIMUM CLAMPING VOLTAGE @ $I_{PP}$ (FIG. 3) VOLTS	MAXIMUM PEAK PULSE CURRENT (FIG. 3) $I_{PP}$ A	MAXIMUM TEMPERATURE VARIATION OF $V_{RM}$ °C
		MIN.	MAX.					
1.0KE5.0	5.0	8.40	7.3	10	1000	9.8	104.0	5.0
1.0KE5.0A	5.0	8.40	7.00	10	500	9.2	100.0	5.0
1.0KE6.0	8.0	8.67	8.15	10	1000	11.4	87.7	5.0
1.0KE6.0A	8.0	8.67	7.37	10	1000	10.3	97.0	5.0
1.0KE6.5	6.5	7.22	6.82	10	500	12.3	81.3	5.0
1.0KE6.5A	6.5	7.22	7.90	10	500	11.2	80.3	5.0
1.0KE7.0	7.0	7.78	9.51	10	200	13.3	75.2	6.0
1.0KE7.0A	7.0	7.78	8.80	10	200	12.0	83.3	6.0
1.0KE7.5	7.5	8.33	10.2	1	100	14.3	69.0	7.0
1.0KE7.5A	7.5	8.33	9.21	1	100	12.9	77.5	7.0
1.0KE8.0	8.0	8.89	10.9	1	50	15.0	68.5	7.0
1.0KE8.0A	8.0	8.89	9.83	1	50	13.6	73.5	7.0
1.0KE8.5	8.5	9.44	11.5	1	25	15.9	62.6	8.0
1.0KE8.5A	8.5	9.44	10.4	1	25	14.4	69.4	8.0
1.0KE9.0	9.0	10.0	12.2	1	10	16.9	58.2	9.0
1.0KE9.0A	9.0	10.0	11.1	1	10	15.4	64.9	9.0
1.0KE10	10	11.1	13.8	1	5	18.8	53.3	10
1.0KE10A	10	11.1	12.3	1	5	17.0	58.3	10
1.0KE11	11	12.2	14.9	1	5	20.1	46.8	11
1.0KE11A	11	12.2	13.5	1	5	18.2	54.9	11
1.0KE12	12	13.3	16.3	1	5	22.0	45.5	12
1.0KE12A	12	13.3	14.7	1	5	19.9	50.2	12
1.0KE13	13	14.4	17.8	1	5	23.8	42.0	13
1.0KE13A	13	14.4	15.9	1	5	21.5	46.5	13
1.0KE14	14	15.6	19.1	1	5	25.8	38.8	14
1.0KE14A	14	15.6	17.2	1	5	23.2	43.1	14
1.0KE15	15	16.7	20.4	1	5	29.9	37.2	16
1.0KE15A	15	16.7	18.5	1	5	24.4	41.6	16
1.0KE16	16	17.8	21.8	1	5	28.8	34.7	19
1.0KE16A	16	17.8	18.7	1	5	26.0	38.5	17
1.0KE17	17	18.9	23.1	1	5	30.5	32.8	20
1.0KE17A	17	18.9	20.9	1	5	27.6	36.2	19
1.0KE18	18	20.0	24.4	1	5	32.2	31.1	21
1.0KE18A	18	20.0	22.1	1	5	29.2	34.2	20
1.0KE20	20	22.2	27.1	1	5	37.6	27.8	25
1.0KE20A	20	22.2	24.5	1	5	32.4	30.8	23
1.0KE22	22	24.4	29.8	1	5	39.4	25.4	28
1.0KE22A	22	24.4	26.9	1	5	35.5	28.2	25
1.0KE24	24	26.7	32.6	1	5	43.0	23.3	31
1.0KE24A	24	26.7	29.5	1	5	39.9	25.7	29
1.0KE28	28	28.9	35.3	1	5	48.6	21.5	36
1.0KE28A	28	28.9	31.9	1	5	42.1	23.8	30
1.0KE28	28	31.1	38.0	1	5	50.0	20.0	36
1.0KE28A	28	31.1	34.4	1	5	45.4	22.0	31
1.0KE30	30	33.3	40.7	1	5	53.5	18.7	39
1.0KE30A	30	33.3	36.8	1	5	48.4	20.6	36
1.0KE33	33	36.7	44.8	1	5	59.0	17.0	45
1.0KE33A	33	36.7	40.8	1	5	53.3	18.8	41
1.0KE36	36	40.0	48.9	1	5	64.3	15.6	46
1.0KE36A	36	40.0	44.2	1	5	58.1	17.2	40
1.0KE40	40	44.4	54.1	1	5	71.4	14.0	55
1.0KE40A	40	44.4	49.1	1	5	64.5	15.5	50
1.0KE43	43	47.8	58.4	1	5	78.7	13.0	60
1.0KE43A	43	47.8	52.8	1	5	69.4	14.4	54
1.0KE45	45	50.0	61.1	1	5	80.3	12.5	63
1.0KE45A	45	50.0	55.3	1	5	72.7	13.8	57
1.0KE48	48	53.3	65.1	1	5	85.5	11.7	68
1.0KE48A	48	53.3	59.9	1	5	77.4	12.9	61
1.0KE51	51	56.7	69.3	1	5	91.1	11.0	72
1.0KE51A	51	56.7	62.7	1	5	82.4	12.1	65
1.0KE54	54	60.0	73.3	1	5	96.3	10.4	76
1.0KE54A	54	60.0	66.3	1	5	87.1	11.5	69
1.0KE58	58	64.4	78.7	1	5	109.0	9.7	83
1.0KE58A	58	64.4	71.2	1	5	93.8	10.7	74
1.0KE80	80	86.7	111.5	1	5	107.0	9.3	86
1.0KE80A	80	86.7	73.7	1	5	96.8	10.3	77
1.0KE84	84	71.1	96.9	1	5	114.8	8.8	91
1.0KE84A	84	71.1	78.6	1	5	103.0	8.7	82
1.0KE70A	70	77.8	95.1	1	5	125	8.0	90
1.0KE70A	70	77.8	80.0	1	5	113	8.8	80
1.0KE75	75	83.3	102.0	1	5	134	7.5	100
1.0KE75A	75	83.3	92.1	1	5	121	8.3	97
1.0KE78	78	88.7	108.0	1	5	139	7.2	112
1.0KE78A	78	88.7	95.8	1	5	126	7.9	102
1.0KE85	85	94.4	115.0	1	5	151	6.6	123
1.0KE85A	85	94.4	104.0	1	5	137	7.3	110
1.0KE90	90	100	122	1	5	160	6.3	130
1.0KE90A	90	100	111	1	5	146	6.8	118
1.0KE100	100	111	136	1	5	179	5.8	145
1.0KE100A	100	111	122	1	5	162	6.2	132
1.0KE110	110	122	149	1	5	198	5.1	159
1.0KE110A	110	122	135	1	5	177	5.7	144
1.0KE120	120	133	163	1	5	214	4.7	176
1.0KE120A	120	133	147	1	5	193	5.2	157
1.0KE130	130	144	176	1	5	231	4.3	190
1.0KE130A	130	144	159	1	5	210	4.8	172
1.0KE150	150	167	204	1	5	288	3.7	220
1.0KE150A	150	167	185	1	5	243	4.1	200
1.0KE180	180	178	218	1	5	287	3.5	235
1.0KE180A	180	178	197	1	5	259	3.9	213
1.0KE170	170	189	231	1	5	304	3.3	254
1.0KE170A	170	189	209	1	5	275	3.8	228



Test wave form  
parameters  
 $t_r = 10 \mu$   
 $t_p = 1000 \mu$

FIGURE 3  
PULSE WAVEFORM

$V_f$  at 65 amps peak, 8.5 ms sine wave equals 3.5 volts maximum (except bidirectional).  
For Bidirectional Applications — use C or CA suffix for types 1.0KE6.5 through 1.0KE170.

**NOTE 1:** A TAZ is normally selected according to the reverse "Stand Off Voltage" ( $V_{WM}$ ) which should be equal to or greater than the DC or continuous peak operating voltage level.