

**P5KE5.0  
 thru  
 P5KE170A**

**5.0 thru 170 volts  
 500 Watts  
 Transient Voltage  
 Suppressors**

**FEATURES:**

- ECONOMICAL SERIES
- AVAILABLE IN BOTH UNIDIRECTIONAL AND BI-DIRECTIONAL CONSTRUCTION
- 5.0 TO 170 STAND-OFF VOLTAGE AVAILABLE
- 500 WATTS PEAK PULSE POWER DISSIPATION
- QUICK RESPONSE

**DESCRIPTION:**

This Transient Voltage Suppressor is an economical, molded, commercial product used to protect voltage sensitive components from destruction or partial degradation. The response time of their clamping action is virtually instantaneous ( $1 \times 10^{-12}$  seconds) and they have a peak pulse power rating of 500 watts for 1 ms as depicted in Figure 1 and 2. Microsemi also offers a great variety of other Transient Voltage Suppressor's to meet higher and lower power demands and special applications.

**MAXIMUM RATINGS:**

Peak Pulse Power Dissipation at 25°C: 500 Watts

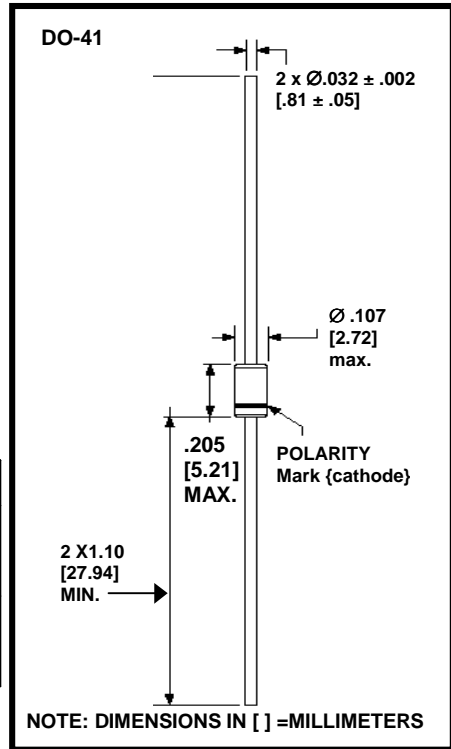
Steady State Power Dissipation: 2.5 Watts at  $T_L = +75^\circ\text{C}$

3/8" Lead Length

$t_{\text{clamping}}$  (0 volts to BV Min.):

Unidirectional  $<1 \times 10^{-12}$  Seconds: Bi-directional  $<5 \times 10^{-9}$  Seconds.

Operating and Storage Temperature:  $-55^\circ$  to  $+175^\circ\text{C}$



**MECHANICAL CHARACTERISTICS**  
**CASE:** Void free transfer molded thermosetting plastic.  
**FINISH:** Readily solderable.  
**POLARITY:** Band denotes cathode. Bi-directional not marked.  
**WEIGHT:** 0.7 gram (Appx.).  
**MOUNTING POSITION:** Any

TYPICAL CHARACTERISTIC CURVES

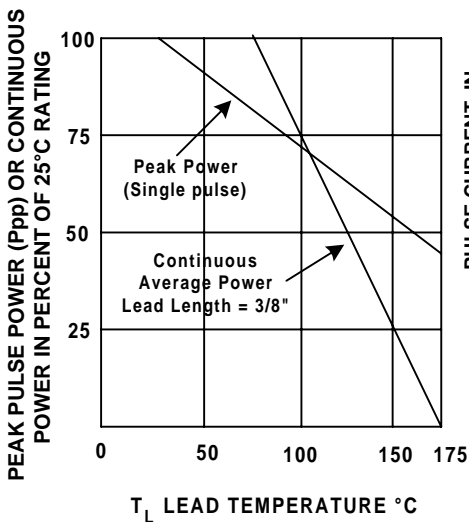


FIGURE 1

DERATING CURVE

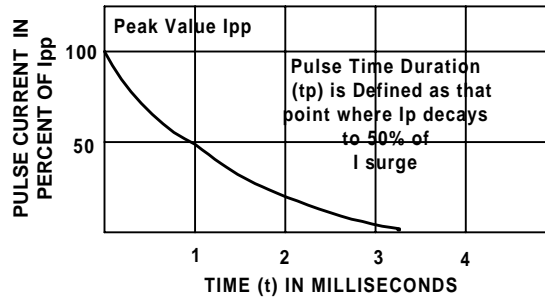


FIGURE 2

PULSE WAVEFORM FOR EXPONENTIAL SURGE

**ELECTRICAL CHARACTERISTICS AT 25°C**

PART NUMBER	BREAKDOWN VOLTAGE V(BR)		TEST CURRENT $I_T$	RATED STAND OFF VOLTAGE $V_{WM}$	MAX. REVERSE STANDBY CURRENT $I_D @ V_{WM}$	MAX. PEAK REVERSE VOLTAGE $V_C$ MAX. @ $I_{PP}$	MAX. PEAK PULSE CURRENT $I_{PP}$ (Figure 2)	MAX. TEMP. COEFFICIENT OF V(BR) -55°C TO 175°C $\alpha_{V(BR)}$
	MIN. VOLTS	MAX VOLTS						
P5KE5.0	6.40	7.30	10	5.0	600	9.6	52	.057
P5KE5.0A	6.40	7.00	10	5.0	600	9.2	54.3	.057
P5KE6.0	6.67	8.15	10	6.0	600	11.4	43.9	.059
P5KE6.0A	6.67	7.37	10	6.0	600	10.3	48.5	.059
P5KE6.5	7.22	8.82	10	6.5	400	12.3	40.7	.061
P5KE6.5A	7.22	7.98	10	6.5	400	11.2	44.7	.061
P5KE7.0	7.78	9.51	10	7.0	150	13.3	37.8	.065
P5KE7.0A	7.78	8.60	10	7.0	150	12.0	41.7	.065
P5KE7.5	8.33	10.2	1	7.5	50	14.3	35.0	.067
P5KE7.5A	8.33	9.21	1	7.5	50	12.9	38.8	.067
P5KE8.0	8.89	10.9	1	8.0	25	15.0	33.3	.070
P5KE8.0A	8.89	9.83	1	8.0	25	13.6	36.7	.070
P5KE8.5	9.44	11.5	1	8.5	5	15.9	31.4	.073
P5KE8.5A	9.44	10.4	1	8.5	5	14.4	34.7	.073
P5KE9.0	10.0	12.2	1	9.0	1	16.9	29.5	.076
P5KE9.0A	10.0	11.1	1	9.0	1	15.4	32.5	.076
P5KE10	11.1	13.6	1	10	1	18.8	26.6	.078
P5KE10A	11.1	12.3	1	10	1	17.0	29.4	.078
P5KE11	12.2	14.9	1	11	1	20.1	24.9	.081
P5KE11A	12.2	13.5	1	11	1	18.2	27.4	.081
P5KE12	13.3	16.3	1	12	1	22.0	22.7	.082
P5KE12A	13.3	14.7	1	12	1	19.9	25.1	.082
P5KE13	14.4	17.6	1	13	1	23.8	21.0	.084
P5KE13A	14.4	15.9	1	13	1	21.5	23.2	.084
P5KE14	15.6	19.1	1	14	1	25.8	19.4	.086
P5KE14A	15.6	17.2	1	14	1	23.2	21.5	.086
P5KE15	16.7	20.4	1	15	1	26.9	18.8	.087
P5KE15A	16.7	18.5	1	15	1	24.4	20.6	.087
P5KE16	17.8	21.8	1	16	1	28.8	17.6	.088
P5KE16A	17.8	19.7	1	16	1	26.0	19.2	.088
P5KE17	18.9	23.1	1	17	1	30.5	16.4	.090
P5KE17A	18.9	20.9	1	17	1	27.6	18.1	.090
P5KE18	20.0	24.4	1	18	1	32.2	15.5	.092
P5KE18A	20.0	22.1	1	18	1	29.2	17.2	.092
P5KE20	22.2	27.1	1	20	1	35.8	13.9	.093
P5KE20A	22.2	24.5	1	20	1	32.4	15.4	.093

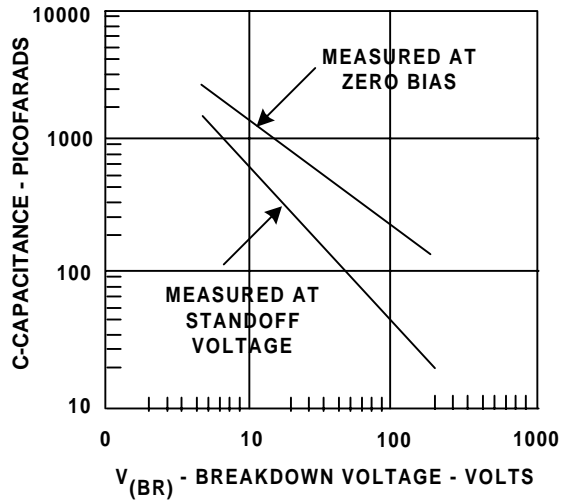
**ELECTRICAL CHARACTERISTICS AT 25°C**

PART NUMBER	BREAKDOWN VOLTAGE V(BR)		TEST CURRENT $I_T$	RATED STAND OFF VOLTAGE $V_{WM}$	MAX. REVERSE STANDBY CURRENT $I_D @ V_{WM}$	MAX. PEAK REVERSE VOLTAGE $V_C$ MAX. @ $I_{PP}$	MAX. PEAK PULSE CURRENT $I_{PP}$ (Figure 2)	MAX. TEMP. COEFFICIENT OF V(BR) -55°C TO 175°C $\alpha_{V(BR)}$
	MIN. VOLTS	MAX VOLTS						
P5KE22	24.4	29.8	1	22	1	39.4	12.7	.094
P5KE22A	24.4	26.9	1	22	1	35.5	14.1	.094
P5KE24	26.7	32.6	1	24	1	43.0	11.6	.096
P5KE24A	26.7	29.5	1	24	1	38.9	12.8	.096
P5KE26	28.9	35.3	1	26	1	46.6	10.7	.097
P5KE26A	28.9	31.9	1	26	1	42.1	11.9	.097
P5KE28	31.1	38.0	1	28	1	50.0	9.9	.098
P5KE28A	31.1	34.4	1	28	1	45.4	11.0	.098
P5KE30	33.3	40.7	1	30	1	53.5	9.3	.099
P5KE30A	33.3	36.8	1	30	1	48.4	10.3	.099
P5KE33	36.7	44.9	1	33	1	59.0	8.5	.100
P5KE33A	36.7	40.6	1	33	1	53.3	9.4	.100
P5KE36	40.0	48.9	1	36	1	64.3	7.8	.101
P5KE36A	40.0	44.2	1	36	1	58.1	8.6	.101
P5KE40	44.4	54.3	1	40	1	71.4	7.0	.101
P5KE40A	44.4	49.1	1	40	1	64.5	7.8	.101
P5KE43	47.8	58.4	1	43	1	76.7	6.5	.102
P5KE43A	47.8	52.8	1	43	1	69.4	7.2	.102
P5KE45	50.0	61.1	1	45	1	80.3	6.2	.102
P5KE45A	50.0	55.3	1	45	1	72.7	6.9	.102
P5KE48	53.3	65.1	1	48	1	85.5	5.8	.103
P5KE48A	53.3	58.9	1	48	1	77.4	6.5	.103
P5KE51	56.7	69.3	1	51	1	91.1	5.5	.103
P5KE51A	56.7	62.7	1	51	1	82.4	6.1	.103
P5KE54	60.0	73.3	1	54	1	96.3	5.2	.104
P5KE54A	60.0	66.3	1	54	1	87.1	5.7	.104
P5KE58	64.4	78.7	1	58	1	103.0	4.9	.104
P5KE58A	64.4	71.2	1	58	1	93.6	5.3	.104
P5KE60	66.7	81.5	1	60	1	107.0	4.7	.104
P5KE60A	66.7	73.7	1	60	1	96.8	5.2	.104
P5KE64	71.1	86.9	1	64	1	114.0	4.4	.105
P5KE64A	71.1	78.6	1	64	1	103.0	4.9	.105
P5KE70	77.8	95.1	1	70	1	125.0	4.0	.105
P5KE70A	77.8	86.0	1	70	1	113.0	4.4	.105
P5KE75	83.3	102.0	1	75	1	134.0	3.7	.105
P5KE75A	83.3	92.1	1	75	1	121.0	4.1	.105

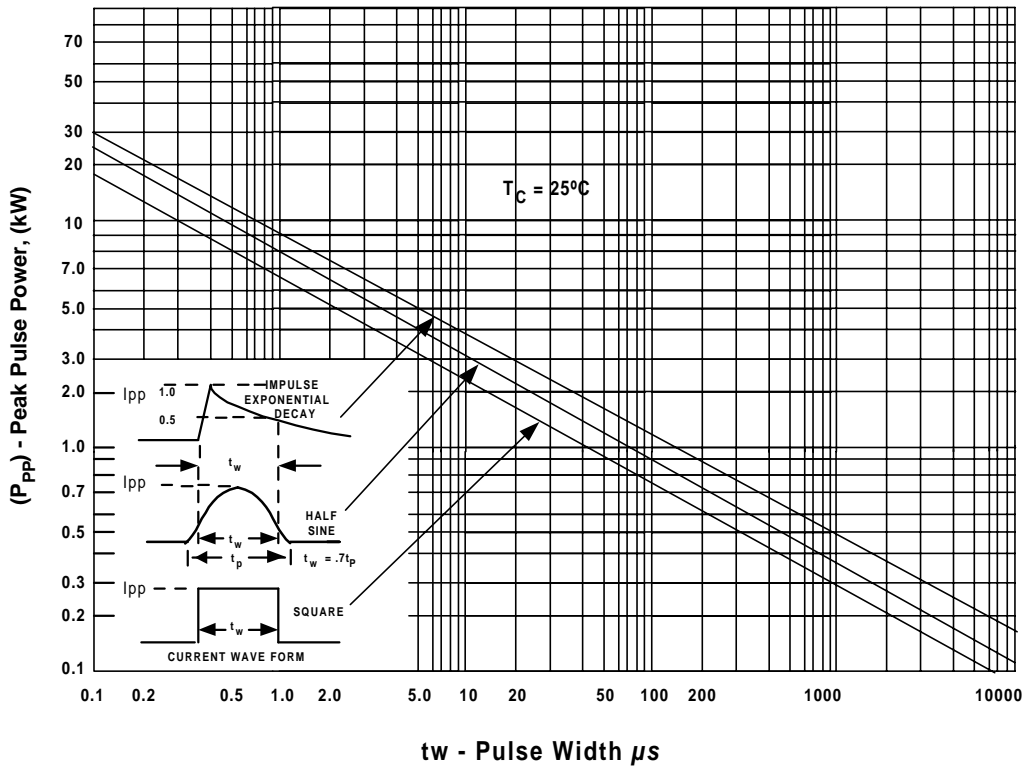
**ELECTRICAL CHARACTERISTICS AT 25°C**

PART NUMBER	BREAKDOWN VOLTAGE V(BR)		TEST CURRENT $I_T$	RATED STAND OFF VOLTAGE $V_{WM}$	MAX. REVERSE STANDBY CURRENT $I_D @ V_{WM}$	MAX. PEAK REVERSE VOLTAGE $V_C$ MAX. @ $I_{PP}$	MAX. PEAK PULSE CURRENT $I_{PP}$ (Figure 2)	MAX. TEMP. COEFFICIENT OF V(BR) -55°C TO 175°C $\alpha_{V(BR)}$
	MIN. VOLTS	MAX VOLTS						
P5KE78	86.7	106.0	1	78	1	139.0	3.6	.106
P5KE78A	86.7	95.8	1	78	1	126.0	4.0	.106
P5KE85	94.4	115.0	1	85	1	151.0	3.3	.106
P5KE85A	94.4	104.0	1	85	1	137.0	3.6	.106
P5KE90	100.0	122.0	1	90	1	160.0	3.1	.107
P5KE90A	100.0	111.0	1	90	1	146.0	3.4	.107
P5KE100	111.0	136.0	1	100	1	179.0	2.8	.107
P5KE100A	111.0	123.0	1	100	1	162.0	3.1	.107
P5KE110	122.0	149.0	1	110	1	196.0	2.6	.107
P5KE110A	122.0	135.0	1	110	1	177.0	2.8	.107
P5KE120	133.0	163.0	1	120	1	214.0	2.3	.107
P5KE120A	133.0	147.0	1	120	1	193.0	2.0	.107
P5KE130	144.0	176.0	1	130	1	231.0	2.2	.108
P5KE130A	144.0	159.0	1	130	1	209.0	2.4	.108
P5KE150	167.0	204.0	1	150	1	268.0	1.9	.108
P5KE150A	167.0	185.0	1	150	1	243.0	2.1	.108
P5KE160	178.0	218.0	1	160	1	287.0	1.7	.108
P5KE160A	178.0	197.0	1	160	1	259.0	1.9	.108
P5KE170	189.0	231.0	1	170	1	304.0	1.6	.108
P5KE170A	189.0	209.0	1	170	1	275.0	1.8	.108

Note: For Bi-directional construction, indicate a C or CA suffix after the part number, i.e. P5KE5.0CA



**FIGURE 3**  
TYPICAL CAPACITANCE VS  
BREAKDOWN VOLTAGE



**FIGURE 4**  
PEAK PULSE POWER VS. PULSE TIME