

**P5KE5.0  
 thru  
 P5KE170A**

**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.

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

**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  $+175^\circ\text{C}$

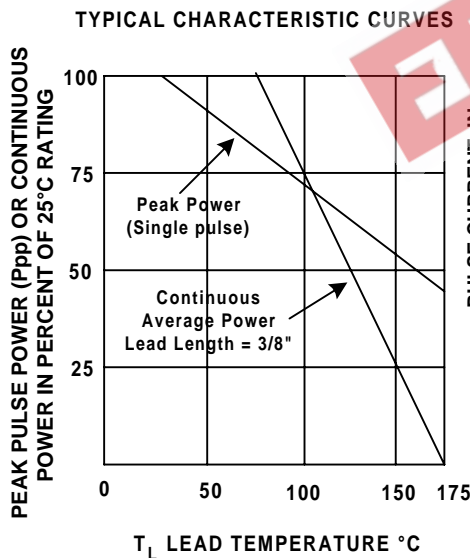


FIGURE 1

DERATING CURVE

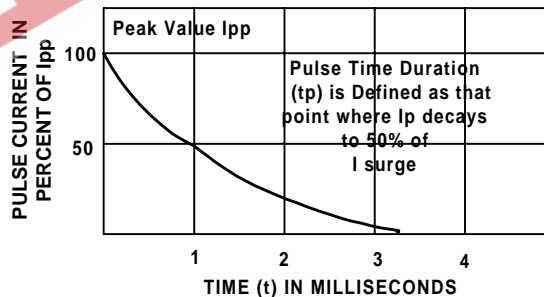
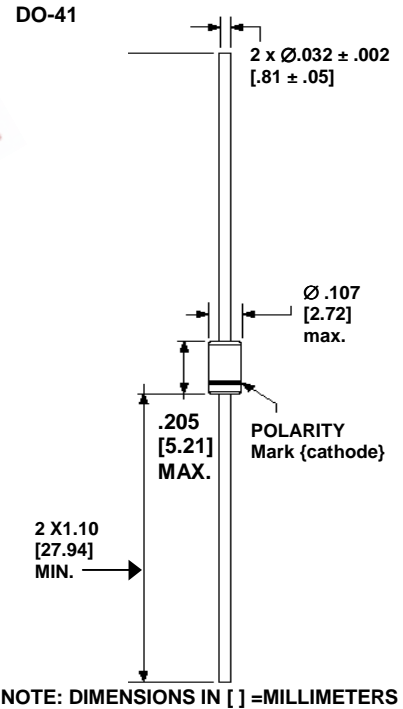


FIGURE 2

PULSE WAVEFORM FOR  
 EXPONENTIAL SURGE



**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



**P5KE5.0  
thru  
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**ELECTRICAL CHARACTERISTICS AT 25°C**

PART NUMBER	BREAKDOWN VOLTAGE V(BR)		TEST CURRENT I <sub>T</sub>	RATED STAND OFF VOLTAGE V <sub>WM</sub>	MAX. REVERSE STANDBY CURRENT I <sub>D</sub> @ V <sub>WM</sub>	MAX. PEAK REVERSE VOLTAGE V <sub>C</sub> MAX. @ I <sub>PP</sub>	MAX. PEAK PULSE CURRENT I <sub>PP</sub> (Figure 2)	MAX. TEMP. COEFFICIENT OF V(BR) -55°C TO 175°C α <sub>V(BR)</sub>
	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 <sub>T</sub>	RATED STAND OFF VOLTAGE V <sub>WM</sub>	MAX. REVERSE STANDBY CURRENT I <sub>D</sub> @ V <sub>WM</sub>	MAX. PEAK REVERSE VOLTAGE V <sub>C</sub> MAX. @ I <sub>PP</sub>	MAX. PEAK PULSE CURRENT I <sub>PP</sub> (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

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**ELECTRICAL CHARACTERISTICS AT 25°C**

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	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

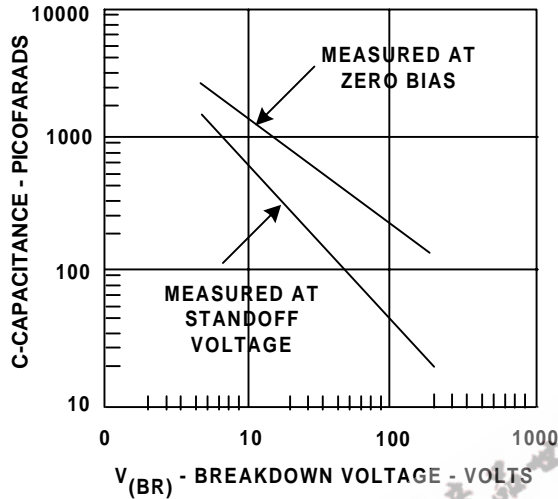
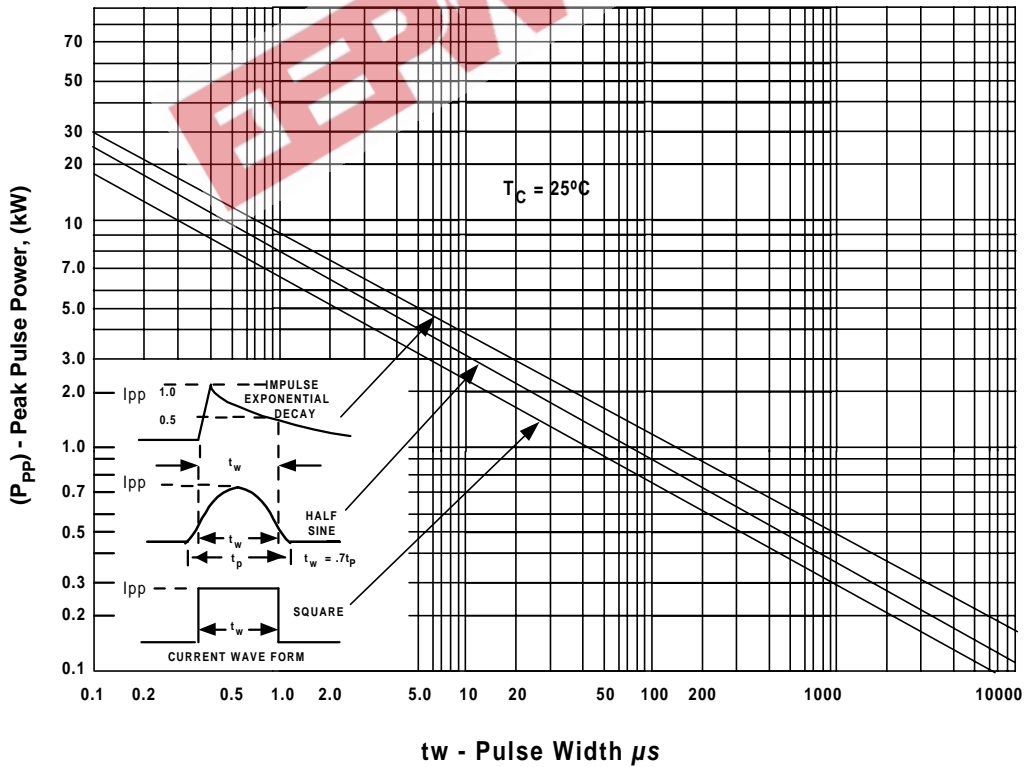


FIGURE 3  
TYPICAL CAPACITANCE VS  
BREAKDOWN VOLTAGE



tw - Pulse Width  $\mu$ s  
FIGURE 4  
PEAK PULSE POWER VS. PULSE TIME