

## Transient Voltage Suppressor

**Breakdown Voltage 6.8 to 440 Volts**  
**Peak Pulse Power 600 Watts**

### Features

- Breakdown Voltages ( $V_{BR}$ ) from 6.8 to 440V
- 600W peak pulse power capability with a 10/1000 $\mu$ s waveform, repetitive rate (duty cycle):0.01%
- Fast Response Time
- Low incremental surge resistance
- Excellent clamping capability
- Available in uni-directional and bi-directional
- High temperature soldering guaranteed: 265°C /10 seconds, 0.375" (9.5mm) lead length, 5lbs. (2.3kg) tension

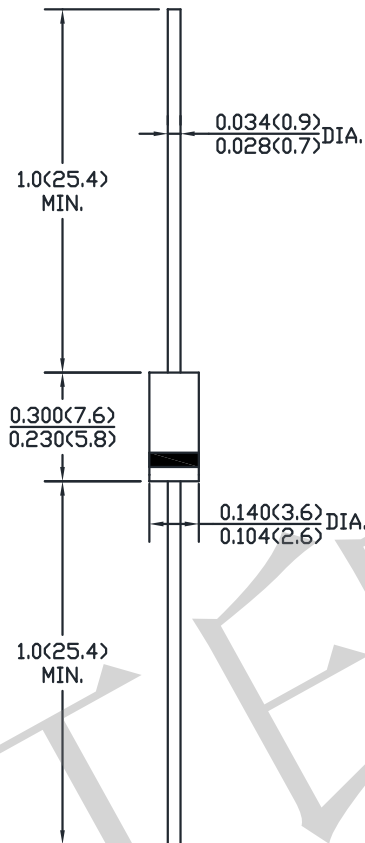
### Application

- Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFE, signal lines of sensor units for consumer, computer, industrial, automotive and telecommunication

### Mechanical Data

- **Case:** Void-free transfer molded thermosetting epoxy body meeting UL94V-O
- **Terminals:** Tin-Lead or ROHS Compliant annealed matte-Tin plating readily solderable per MIL-STD-750, Method 2026
- **Marking:** Body marked with part number
- **Polarity:** Band denotes cathode. Bidirectional not marked.
- **Weight:** 0.4g (Approximately)

### CASE: DO-204AC (DO-15)



Dimensions in inches and (millimeters)

### Maximum Ratings and Electrical Characteristics @ 25°C unless otherwise specified

Symbol	Conditions	Value	Unit
$P_{PPM}$	Peak pulse power capability with a 10/1000 $\mu$ s	600	W
$I_{PPM}$	Peak pulse current with a 10/1000 $\mu$ s	SEE TABLE 1	A
$P_{M(AV)}$	Steady state power at $T_L=25^\circ\text{C}$ 0.375"(10mm) from body	5.0	W
	Steady state power at $T_A=25^\circ\text{C}$ when mounted on FR4 PC described for thermal resistance	1.47	W
$I_{FSM}$	Peak forward surge current, 8.3ms single half sine-wave unidirectional only(1)	100	A
$V_F$	Maximum instantaneous forward voltage at 30A for unidirectional only(2)	3.5/5.0	V
$R_{\theta JL}$	Thermal resistance junction to lead	25	$^\circ\text{C}/\text{W}$
$R_{\theta JA}$	Thermal resistance junction to ambient	85	$^\circ\text{C}/\text{W}$
$T_J, T_{STG}$	Operating and Storage Temperature	-65 to +150	$^\circ\text{C}$

#### Notes:

- (1) Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum
- (2)  $V_F=3.5\text{V}$  for P6KE220(A) and below;  $V_F=5.0\text{V}$  for P6KE250(A) and above

**Electrical Characteristics @ 25°C (Unless Otherwise Noted) TABLE1**

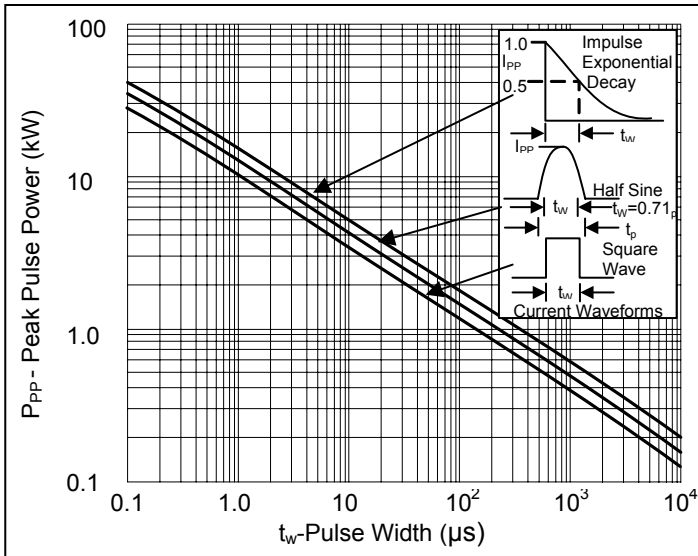
Microsemi Part Number	Breakdown Voltage $V_{BR}$ @ $I_{BR}$			Rated Stand Off Voltage	Maximum Standby current $I_D$ @ $V_{WM}$	Maximum Peak Pulse Current	Maximum Clamping Voltage $V_C$ @ $I_{PP}$	Maximum Temperature Coefficient of $V_{(BR)}$
	MIN	MAX						
	$V_{BR}(V)$		$I_{BR}(mA)$					
P6KE6.8	6.12	7.48	10	5.50	1000	56.0	10.8	.057
P6KE6.8A	6.45	7.14	10	5.80	1000	57.0	10.5	.057
P6KE7.5	6.75	8.25	10	6.05	500	51.0	11.7	.061
P6KE7.5A	7.13	7.88	10	6.40	500	53.0	11.3	.061
P6KE8.2	7.38	9.02	10	6.63	200	48.0	12.5	.065
P6KE8.2A	7.79	8.61	10	7.02	200	50.0	12.1	.065
P6KE9.1	8.19	10.0	1	7.37	50	44.0	13.8	.068
P6KE9.1A	8.65	9.55	1	7.78	50	45.0	13.4	.068
P6KE10	9.0	11.0	1	8.10	10	40.0	15.0	.073
P6KE10A	9.5	10.5	1	8.55	10	41.0	14.5	.073
P6KE11	9.9	12.1	1	8.92	5	37.0	16.2	.075
P6KE11A	10.5	11.6	1	9.40	5	38.0	15.6	.075
P6KE12	10.8	13.2	1	9.72	5	35.0	17.3	.078
P6KE12A	11.4	12.6	1	10.2	5	36.0	16.7	.078
P6KE13	11.7	14.3	1	10.5	5	32.0	19.0	.081
P6KE13A	12.4	13.7	1	11.1	5	33.0	18.2	.081
P6KE15	13.5	16.5	1	12.1	1	27.0	22.0	.084
P6KE15A	14.3	15.8	1	12.8	1	28.0	21.2	.084
P6KE16	14.4	17.6	1	12.9	1	26.0	23.5	.086
P6KE16A	15.2	16.8	1	13.6	1	27.0	22.5	.086
P6KE18	16.2	19.8	1	14.5	1	23.0	26.5	.088
P6KE18A	17.1	18.9	1	15.3	1	24.0	25.2	.088
P6KE20	18.0	22.0	1	16.2	1	21.0	29.1	.090
P6KE20A	19.0	21.0	1	17.1	1	22.0	27.7	.090
P6KE22	19.8	24.2	1	17.8	1	19.0	31.9	.092
P6KE22A	20.9	23.1	1	18.8	1	20.0	30.6	.092
P6KE24	21.6	26.4	1	19.4	1	17.0	34.7	.094
P6KE24A	22.8	25.2	1	20.5	1	18.0	33.2	.094
P6KE27	24.3	29.7	1	21.8	1	15.0	39.1	.096
P6KE27A	25.7	28.4	1	23.1	1	16.0	37.5	.096
P6KE30	27.0	33.0	1	24.3	1	14.0	43.5	.097
P6KE30A	28.5	31.5	1	25.6	1	14.4	41.4	.097
P6KE33	29.7	36.3	1	26.8	1	12.6	47.7	.098
P6KE33A	31.4	34.7	1	28.2	1	13.2	45.7	.098
P6KE36	32.4	39.6	1	29.1	1	11.6	52.0	.099
P6KE36A	34.2	37.8	1	30.8	1	12.0	49.9	.099
P6KE39	35.1	42.9	1	31.6	1	10.6	56.4	.100
P6KE39A	37.1	41.0	1	33.3	1	11.2	53.9	.100
P6KE43	38.7	47.3	1	34.8	1	9.6	61.9	.101
P6KE43A	40.9	45.2	1	36.8	1	10.1	59.3	.101
P6KE47	42.3	51.7	1	38.1	1	8.8	67.8	.101
P6KE47A	44.7	49.4	1	40.2	1	9.3	64.8	.101
P6KE51	45.9	56.1	1	41.3	1	8.2	73.5	.102
P6KE51A	48.5	53.6	1	43.6	1	8.6	70.1	.102
P6KE56	50.4	61.6	1	45.4	1	7.4	80.5	.103
P6KE56A	53.2	58.8	1	47.8	1	7.8	77.0	.103
P6KE62	55.8	68.2	1	50.2	1	6.8	89.0	.104
P6KE62A	58.9	65.1	1	53.0	1	7.1	85.0	.104
P6KE68	61.2	74.8	1	55.1	1	6.1	98.0	.104
P6KE68A	64.6	71.4	1	58.1	1	6.5	92.0	.104
P6KE75	67.5	82.5	1	60.7	1	5.5	108.0	.105
P6KE75A	71.3	78.8	1	64.1	1	5.8	103.0	.105

**Electrical Characteristics @ 25°C (Unless Otherwise Noted) TABLE1**

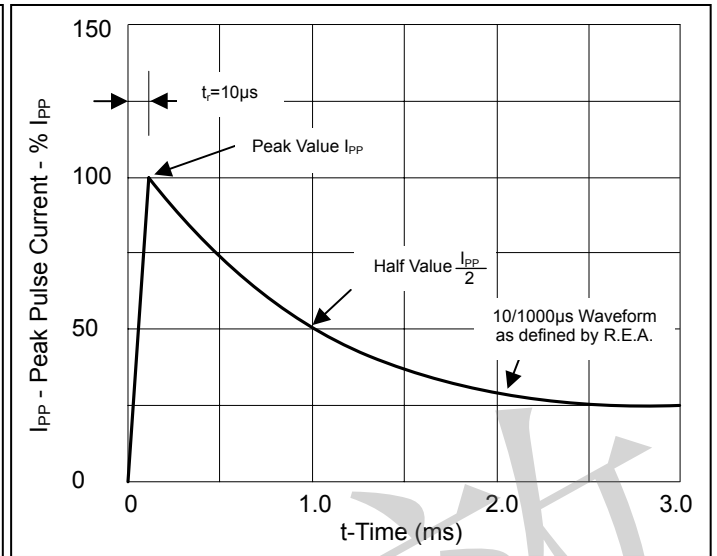
Microsemi Part Number	Breakdown Voltage $V_{BR}$ @ $I_{BR}$			Rated Stand Off Voltage	Maximum Standby current $I_D$ @ $V_{WM}$	Maximum Peak Pulse Current	Maximum Clamping Voltage $V_C$ @ $I_{PP}$	Maximum Temperature Coefficient of $V_{BR}$
	MIN	MAX						
	$V_{BR}(V)$		$I_{BR}(mA)$					
P6KE82	73.8	90.2	1	66.4	1	5.1	118.0	.105
P6KE82A	77.9	86.1	1	70.1	1	5.3	113.0	.105
P6KE91	81.9	100.0	1	73.7	1	4.5	131.0	.106
P6KE91A	86.5	95.5	1	77.8	1	4.8	125.0	.106
P6KE100	90.0	110.0	1	81.0	1	4.2	144.0	.106
P6KE100A	95.0	105.0	1	85.5	1	4.4	137.0	.106
P6KE110	99.0	121.0	1	89.2	1	3.8	158.0	.107
P6KE110A	105.0	116.0	1	94.0	1	4.4	152.0	.107
P6KE120	108.0	132.0	1	97.2	1	3.5	173.0	.107
P6KE120A	114.0	126.0	1	102.0	1	3.6	165.0	.107
P6KE130	117.0	143.0	1	105.0	1	3.2	187.0	.107
P6KE130A	124.0	137.0	1	111.0	1	3.3	179.0	.107
P6KE150	135.0	165.0	1	121.0	1	2.8	215.0	.108
P6KE150A	143.0	158.0	1	128.0	1	2.9	207.0	.108
P6KE160	144.0	176.0	1	130.0	1	2.6	230.0	.108
P6KE160A	152.0	168.0	1	136.0	1	2.7	219.0	.108
P6KE170	153.0	187.0	1	138.0	1	2.5	244.0	.108
P6KE170A	161.0	179.0	1	145.0	1	2.6	234.0	.108
P6KE180	162.0	198.0	1	146.0	1	2.3	258.0	.108
P6KE180A	171.0	189.0	1	154.0	1	2.4	246.0	.108
P6KE200	180.0	220.0	1	162.0	1	2.1	287.0	.108
P6KE200A	190.0	210.0	1	171.0	1	2.2	274.0	.108
P6KE220	198.0	242.0	1	175.0	1	1.8	344.0	.110
P6KE220A	209.0	231.0	1	185.0	1	1.9	328.0	.110
P6KE250	225.0	275.0	1	202.0	1	1.7	360.0	.110
P6KE250A	237.0	263.0	1	214.0	1	1.8	344.0	.110
P6KE300	270.0	330.0	1	243.0	1	1.4	430.0	.110
P6KE300A	285.0	315.0	1	256.0	1	1.5	414.0	.110
P6KE350	315.0	385.0	1	284.0	1	1.2	504.0	.110
P6KE350A	332.0	368.0	1	300.0	1	1.3	482.0	.110
P6KE400	360.0	440.0	1	324.0	1	1.1	574.0	.110
P6KE400A	380.0	420.0	1	342.0	1	1.1	548.0	.110
P6KE440	396.0	484.0	1	356.0	1	1.0	631.0	.110
P6KE440A	418.0	462.0	1	376.0	1	1.0	600.0	.110

1. For bi-directional construction, indicate a C or CA suffix after part number, i.e. P6KE200C or P6KE200CA

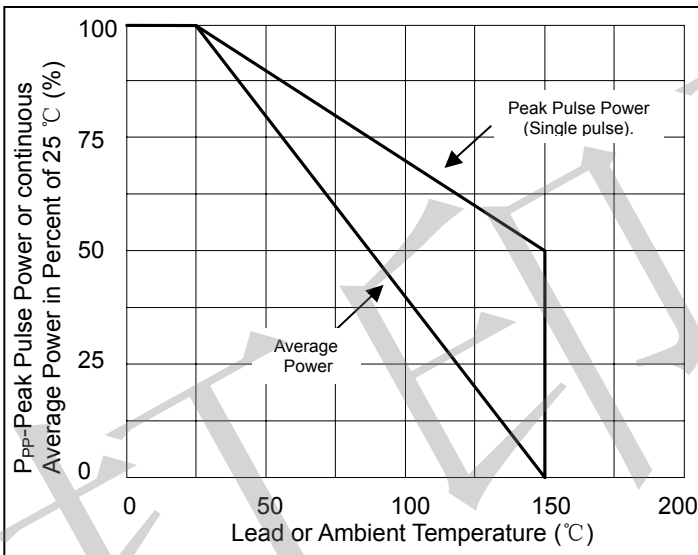
## Characteristic Curve



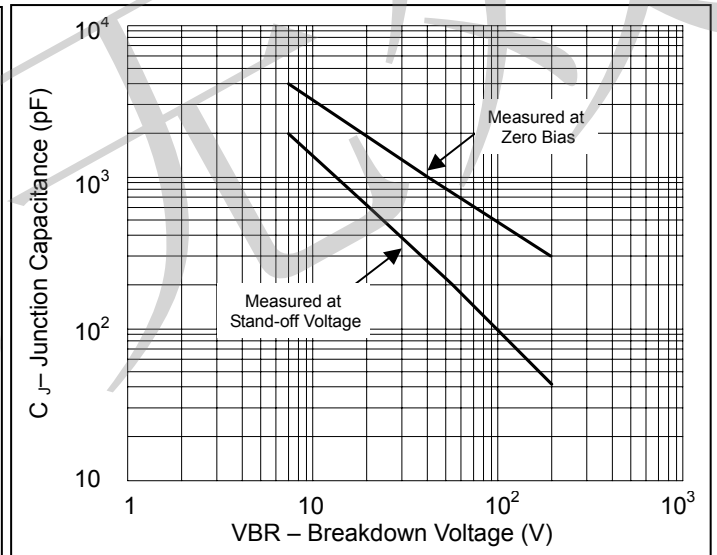
**Fig. 1 Peak Pulse Power vs. Pulse Time**



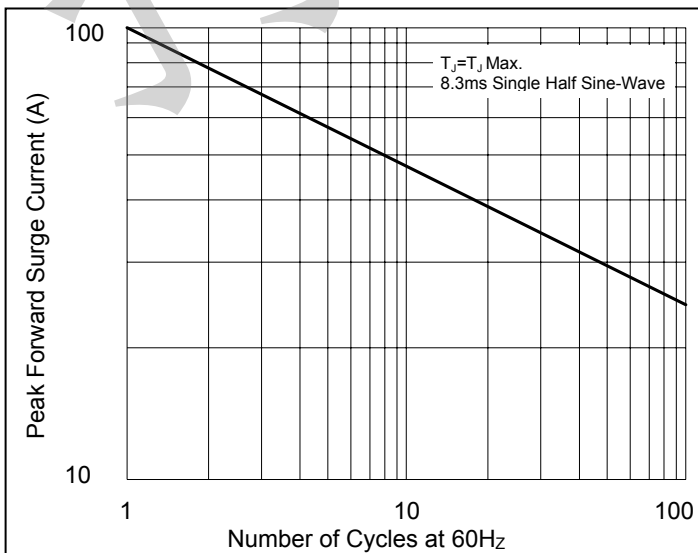
**Fig. 2 Pulse Waveform for Exponential Surge**



**Fig. 3 Derating Curve**



**Fig. 4 Typical Capacitance vs. Breakdown Voltage (Unipolar)**



**Fig. 5 Max. Non-Repetitive Forward Surge Current Uni-Directional Only**