

# P6KE6.8 thru P6KE540A

## Transient Voltage Suppressors

Pppm: 600W

IFSM: 100A

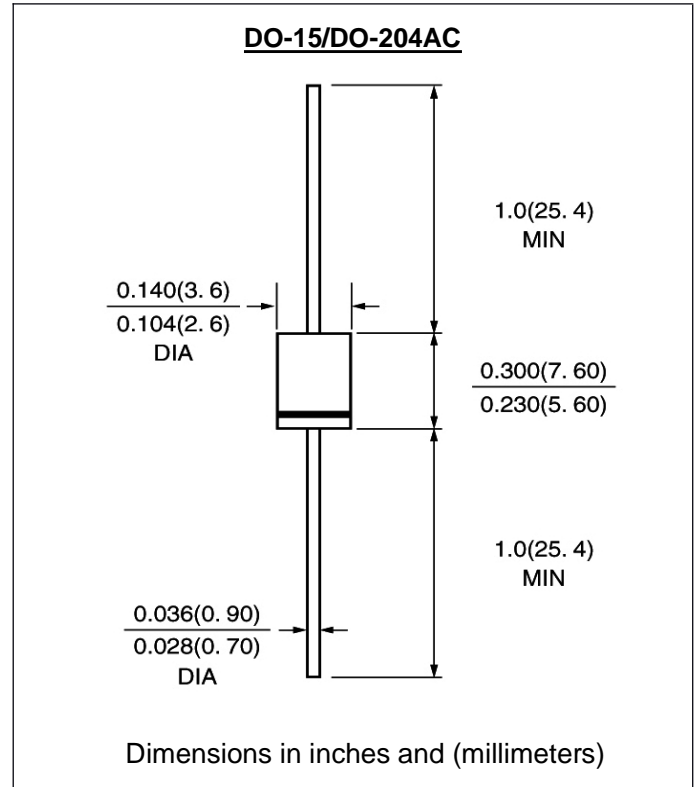


### FEATURE

- Low power loss
- High surge capability
- Glass passivated chip junction
- Ultra-fast recovery time for high efficiency
- High temperature soldering guaranteed
- 250°C/10sec/0.375" lead length at 5 lbs tension

### MECHANICAL DATA

- Terminal: Plated axial leads solderable per MIL-STD 202E, method 208C
- Case: Molded with UL-94 Class V-0 recognized Flame Retardant Epoxy
- Polarity: color band denotes cathode
- Mounting position: any



### MAXIMUM RATINGS (TA = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	VALUE UNI	units
Peak power dissipation with a 10/1000 μs waveform (1) (Fig. 1)	PPPM	600	W
Peak pulse current with a 10/1000 μs waveform (1)	IPPM	see next table	A
Power dissipation on infinite heatsink at TL = 75 °C (Fig. 5)	PD	5.0	W
Peak forward surge current, 8.3 ms single half sine-wave (2)	IFSM	100	A
Maximum instantaneous forward voltage at 50 A for unidirectional only (3)	VF	3.5/5.0	V
Typical thermal resistance junction-to-lead	Rth(jl)	20	°C/W
Typical thermal resistance junction-to-ambient	Rth(ja)	75	°C/W
Storage and Operating Junction Temperature	Tstg,Tj	-55 to +175	°C

- Note:
- (1) Non-repetitive current pulse, per Fig. 3 and derated above TA = 25 °C per Fig. 2
  - (2) Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 per minute maximum
  - (3) VF = 3.5 V for P6KE220(A) & below; VF = 5.0 V for P6KE250(A) & above

ELECTRICAL CHARACTERISTICS (T <sub>A</sub> = 25 °C unless otherwise noted)								
DEVICE TYPE	BREAKDOWN VOLTAGE V <sub>(BR)</sub> AT I <sub>T</sub> <sup>(1)</sup> (V)		TEST CURRENT I <sub>T</sub> (mA)	STAND-OFF VOLTAGE V <sub>WM</sub> (V)	MAXIMUM REVERSE LEAKAGE AT V <sub>WM</sub> <sup>(3)</sup> I <sub>D</sub> (μA)	PEAK PULSE CURRENT I <sub>PPM</sub> <sup>(2)</sup> (A)	MAXIMUM CLAMPING VOLTAGE AT I <sub>PPM</sub> V <sub>C</sub> (V)	MAXIMUM TEMPERATURE COEFFICIENT OF V <sub>(BR)</sub> (%/°C)
	MIN	MAX						
(+)P6KE6.8	6.12	7.48	10	5.50	1000	55.6	10.8	0.057
(+)P6KE6.8A	6.45	7.14	10	5.80	1000	57.1	10.5	0.057
(+)P6KE7.5	6.75	8.25	10	6.05	500	51.3	11.7	0.061
(+)P6KE7.5A	7.13	7.88	10	6.40	500	53.1	11.3	0.061
(+)P6KE8.2	7.38	9.02	10	6.63	200	48.0	12.5	0.065
(+)P6KE8.2A	7.79	8.61	10	7.02	200	49.6	12.1	0.065
(+)P6KE9.1	8.19	10.0	1.0	7.37	50	43.5	13.8	0.068
(+)P6KE9.1A	8.65	9.55	1.0	7.78	50	44.8	13.4	0.068
(+)P6KE10	9.00	11.0	1.0	8.10	10	40.0	15.0	0.073
(+)P6KE10A	9.50	10.5	1.0	8.55	10	41.4	14.5	0.073
(+)P6KE11	9.90	12.1	1.0	8.92	5.0	37.0	16.2	0.075
(+)P6KE11A	10.5	11.6	1.0	9.40	5.0	38.5	15.6	0.075
(+)P6KE12	10.8	13.2	1.0	9.72	5.0	34.7	17.3	0.078
(+)P6KE12A	11.4	12.6	1.0	10.2	5.0	35.9	16.7	0.078
(+)P6KE13	11.7	14.3	1.0	10.5	5.0	31.6	19.0	0.081
(+)P6KE13A	12.4	13.7	1.0	11.1	5.0	33.0	18.2	0.081
(+)P6KE15	13.5	16.5	1.0	12.1	1.0	27.3	22.0	0.084
(+)P6KE15A	14.3	15.8	1.0	12.8	1.0	28.3	21.2	0.084
(+)P6KE16	14.4	17.6	1.0	12.9	1.0	25.5	23.5	0.086
(+)P6KE16A	15.2	16.8	1.0	13.6	1.0	26.7	22.5	0.086
(+)P6KE18	16.2	19.8	1.0	14.5	1.0	22.6	26.5	0.088
(+)P6KE18A	17.1	18.9	1.0	15.3	1.0	23.8	25.2	0.088
(+)P6KE20	18.0	22.0	1.0	16.2	1.0	20.6	29.1	0.090
(+)P6KE20A	19.0	21.0	1.0	17.1	1.0	21.7	27.7	0.090
(+)P6KE22	19.8	24.2	1.0	17.8	1.0	18.8	31.9	0.092
(+)P6KE22A	20.9	23.1	1.0	18.8	1.0	19.6	30.6	0.092
(+)P6KE24	21.6	26.4	1.0	19.4	1.0	17.3	34.7	0.094
(+)P6KE24A	22.8	25.2	1.0	20.5	1.0	18.1	33.2	0.094
(+)P6KE27	24.3	29.7	1.0	21.8	1.0	15.3	39.1	0.096
(+)P6KE27A	25.7	28.4	1.0	23.1	1.0	16.0	37.5	0.096
(+)P6KE30	27.0	33.0	1.0	24.3	1.0	13.8	43.5	0.097
(+)P6KE30A	28.5	31.5	1.0	25.6	1.0	14.5	41.4	0.097
(+)P6KE33	29.7	36.3	1.0	26.8	1.0	12.6	47.7	0.098
(+)P6KE33A	31.4	34.7	1.0	28.2	1.0	13.1	45.7	0.098
(+)P6KE36	32.4	39.6	1.0	29.1	1.0	11.5	52.0	0.099
(+)P6KE36A	34.2	37.8	1.0	30.8	1.0	12.0	49.9	0.099
(+)P6KE39	35.1	42.9	1.0	31.6	1.0	10.6	56.4	0.100
(+)P6KE39A	37.1	41.0	1.0	33.3	1.0	11.1	53.9	0.100
(+)P6KE43	38.7	47.3	1.0	34.8	1.0	9.7	61.9	0.101
(+)P6KE43A	40.9	45.2	1.0	36.8	1.0	10.1	59.3	0.101
(+)P6KE47	42.3	51.7	1.0	38.1	1.0	8.8	67.8	0.101
(+)P6KE47A	44.7	49.4	1.0	40.2	1.0	9.3	64.8	0.101

ELECTRICAL CHARACTERISTICS ( $T_A = 25\text{ }^\circ\text{C}$ unless otherwise noted)								
DEVICE TYPE	BREAKDOWN VOLTAGE $V_{(BR)}$ AT $I_T^{(1)}$ (V)		TEST CURRENT $I_T$ (mA)	STAND-OFF VOLTAGE $V_{WM}$ (V)	MAXIMUM REVERSE LEAKAGE AT $V_{WM}^{(3)}$ $I_D$ ( $\mu\text{A}$ )	PEAK PULSE CURRENT $I_{PPM}^{(2)}$ (A)	MAXIMUM CLAMPING VOLTAGE AT $I_{PPM}$ $V_C$ (V)	MAXIMUM TEMPERATURE COEFFICIENT OF $V_{(BR)}$ ( $\%/^\circ\text{C}$ )
	MIN	MAX						
(+)P6KE51	45.9	56.1	1.0	41.3	1.0	8.2	73.5	0.102
(+)P6KE51A	48.5	53.6	1.0	43.6	1.0	8.6	70.1	0.102
(+)P6KE56	50.4	61.6	1.0	45.4	1.0	7.5	80.5	0.103
(+)P6KE56A	53.2	58.8	1.0	47.8	1.0	7.8	77.0	0.103
(+)P6KE62	55.8	68.2	1.0	50.2	1.0	6.7	89.0	0.104
(+)P6KE62A	58.9	65.1	1.0	53.0	1.0	7.1	85.0	0.104
(+)P6KE68	61.2	74.8	1.0	55.1	1.0	6.1	98.0	0.104
(+)P6KE68A	64.6	71.4	1.0	58.1	1.0	6.5	92.0	0.104
(+)P6KE75	67.5	82.5	1.0	60.7	1.0	5.6	108	0.105
(+)P6KE75A	71.3	78.8	1.0	64.1	1.0	5.8	103	0.105
(+)P6KE82	73.8	90.2	1.0	66.4	1.0	5.1	118	0.105
(+)P6KE82A	77.9	86.1	1.0	70.1	1.0	5.3	113	0.105
(+)P6KE91	81.9	100	1.0	73.7	1.0	4.6	131	0.106
(+)P6KE91A	86.5	95.5	1.0	77.8	1.0	4.8	125	0.106
(+)P6KE100	90.0	110	1.0	81.0	1.0	4.2	144	0.106
(+)P6KE100A	95.0	105	1.0	85.5	1.0	4.4	137	0.106
(+)P6KE110	99.0	121	1.0	89.2	1.0	3.8	158	0.107
(+)P6KE110A	105	116	1.0	94.0	1.0	3.9	152	0.107
(+)P6KE120	108	132	1.0	97.2	1.0	3.5	173	0.107
(+)P6KE120A	114	126	1.0	102	1.0	3.6	165	0.107
(+)P6KE130	117	143	1.0	105	1.0	3.2	187	0.107
(+)P6KE130A	124	137	1.0	111	1.0	3.4	179	0.107
(+)P6KE150	135	165	1.0	121	1.0	2.8	215	0.108
(+)P6KE150A	143	158	1.0	128	1.0	2.9	207	0.108
(+)P6KE160	144	176	1.0	130	1.0	2.6	230	0.108
(+)P6KE160A	152	168	1.0	136	1.0	2.7	219	0.108
(+)P6KE170	153	187	1.0	138	1.0	2.5	244	0.108
(+)P6KE170A	162	179	1.0	145	1.0	2.6	234	0.108
(+)P6KE180	162	198	1.0	146	1.0	2.3	258	0.108
(+)P6KE180A	171	189	1.0	154	1.0	2.4	246	0.108
(+)P6KE200	180	220	1.0	162	1.0	2.1	287	0.108
(+)P6KE200A	190	210	1.0	171	1.0	2.2	274	0.108
(+)P6KE220	198	242	1.0	175	1.0	1.7	344	0.108
(+)P6KE220A	209	231	1.0	185	1.0	1.8	328	0.108
(+)P6KE250	225	275	1.0	202	1.0	1.7	360	0.110
(+)P6KE250A	237	263	1.0	214	1.0	1.7	344	0.110
(+)P6KE300	270	330	1.0	243	1.0	1.4	430	0.110
(+)P6KE300A	285	315	1.0	256	1.0	1.4	414	0.110
(+)P6KE350	315	385	1.0	284	1.0	1.2	504	0.110
(+)P6KE350A	333	368	1.0	300	1.0	1.2	482	0.110
(+)P6KE400	360	440	1.0	324	1.0	1.0	574	0.110
(+)P6KE400A	380	420	1.0	342	1.0	1.1	548	0.110
(+)P6KE440	396	484	1.0	356	1.0	0.95	631	0.110
(+)P6KE440A	418	462	1.0	376	1.0	1.00	602	0.110
P6KE480	432	528	1.0	389	1.0	0.88	686	0.110
P6KE480A	456	504	1.0	408	1.0	0.91	658	0.110
P6KE510	459	561	1.0	413	1.0	0.82	729	0.110
P6KE510A	485	535	1.0	434	1.0	0.86	698	0.110
P6KE540	486	594	1.0	437	1.0	0.78	772	0.110
P6KE540A	513	567	1.0	459	1.0	0.81	740	0.110

( $T_A = 25^\circ\text{C}$  unless otherwise noted)

## RATINGS AND CHARACTERISTICS CURVES

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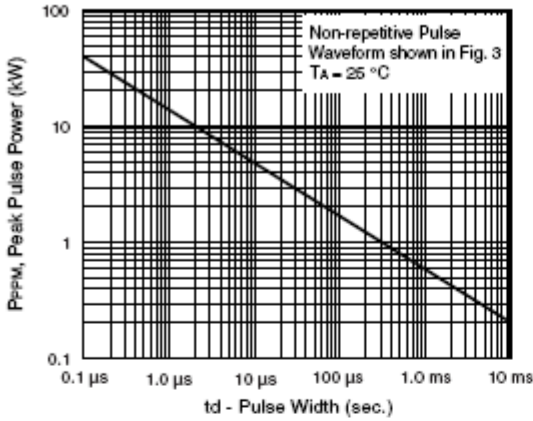


Figure 1. Peak Pulse Power Rating Curve

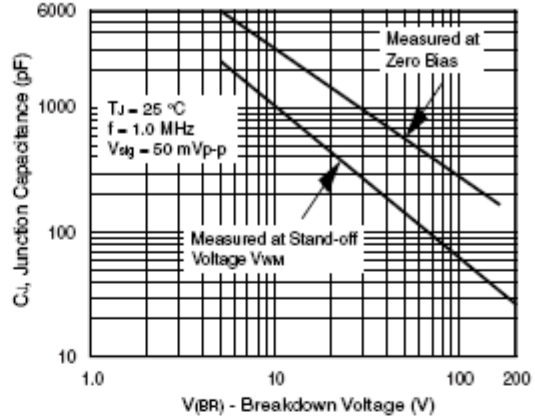


Figure 4. Typical Junction Capacitance Uni-Directional

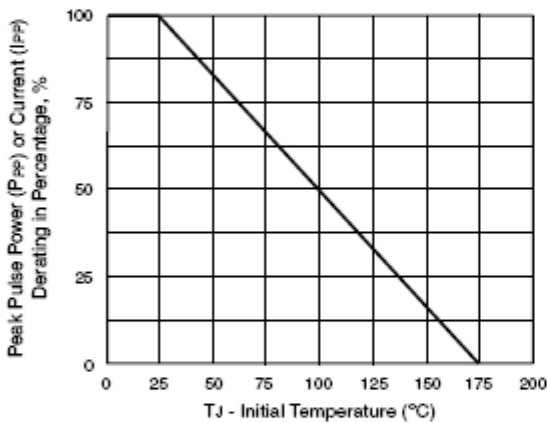


Figure 2. Pulse Power or Current versus Initial Junction Temperature

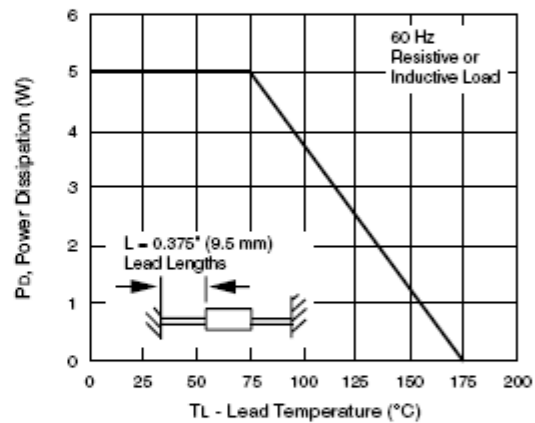


Figure 5. Power Derating Curve

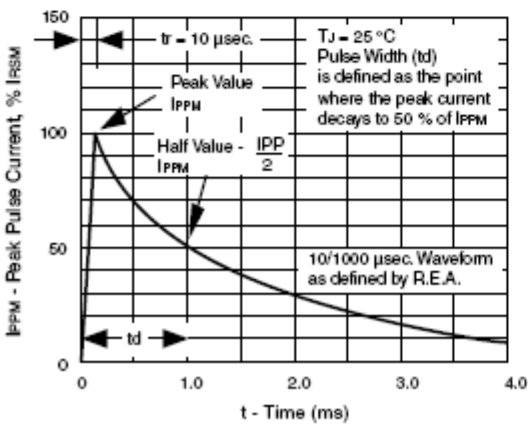


Figure 3. Pulse Waveform

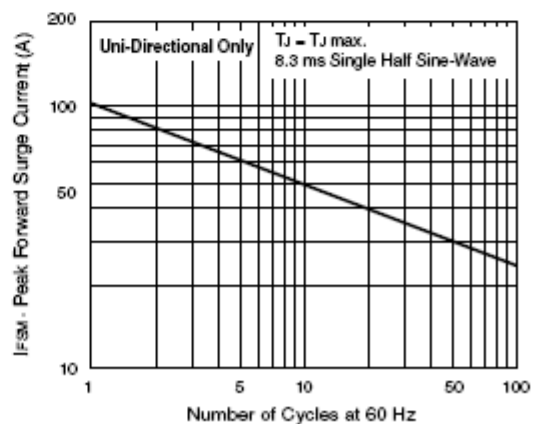


Figure 6. Maximum Non-Repetitive Forward Surge Current

(TA = 25 ° C unless otherwise noted)

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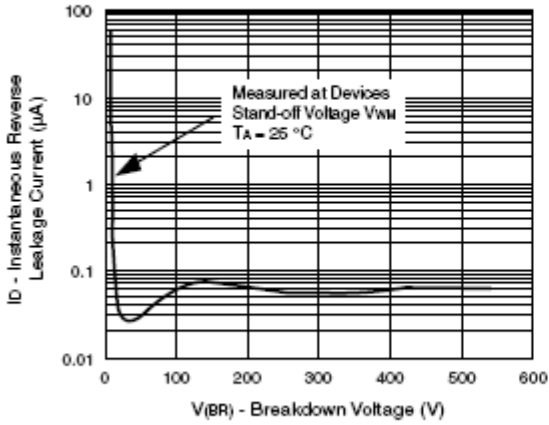


Figure 7. Typical Reverse Leakage Characteristics

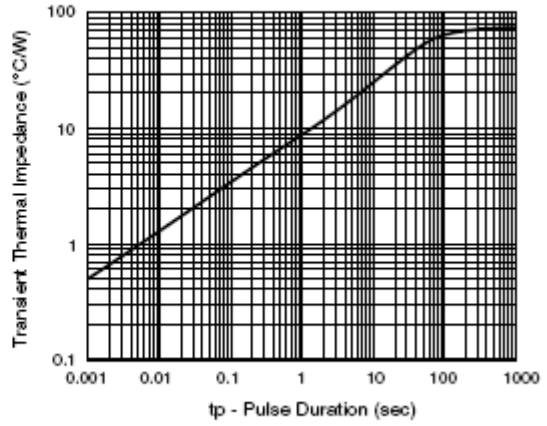


Figure 8. Typical Transient Thermal Impedance