

# P6KE15 thru P6KE540A

## Transient Voltage Suppressors

$P_{PPM}$ : 600W

$I_{FSM}$ : 100A



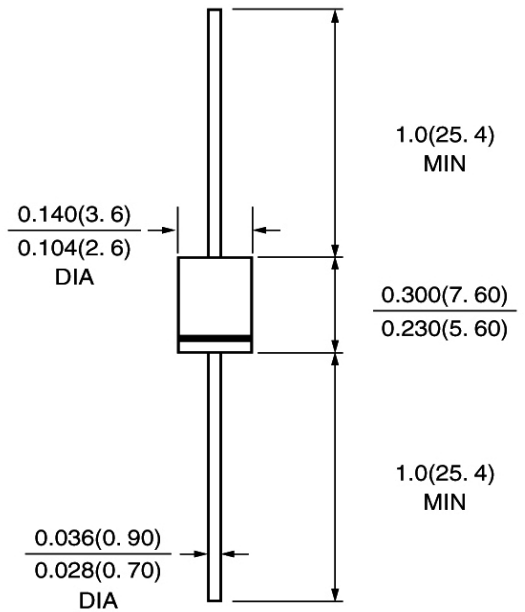
### FEATURE

- Low power loss
- High surge capability
- Glass passivated chip junction
- Available in Unidirectional and Bidirectional (For Bidirectional types, use C or CA suffix, e.g. P6KE400CA)
- Ultra-fast recovery time for high efficiency
- High temperature soldering guaranteed
- 260°C/10sec/0.375" lead length at 5 lbs tension

### MECHANICAL DATA

- Terminal: Plated axial leads solderable per J-STD-002
- Case: Molded with UL-94 Class V-0 recognized Flame Retardant Epoxy
- Polarity: color band denotes cathode
- Mounting position: For unidirectional types the color band denotes cathode end, no marking on bidirectional types

**DO-15/DO-204AC**



Dimensions in inches and (millimeters)

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

PARAMETER	SYMBOL	VALUE UNI	units
Peak power dissipation with a 10/1000 $\mu$ s waveform (1) (Fig. 1)	$P_{PPM}$	600	W
Peak pulse current with a 10/1000 $\mu$ s waveform (1)	$I_{PPM}$	see next table	A
Power dissipation on infinite heatsink at TL = 75 °C (Fig. 5)	$P_D$	5.0	W
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only (2)	$I_{FSM}$	100	A
Maximum instantaneous forward voltage at 50A for unidirectional only (3)	$V_F$	3.5/5.0	V
Typical thermal resistance junction-to-lead	$R_{th(jl)}$	20	°C/W
Typical thermal resistance junction-to-ambient	$R_{th(ja)}$	75	°C/W
Storage and Operating Junction Temperature	$T_{stg}, T_j$	-55 to +175	°C

Note:

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

DEVICE TYPE	BREAKDOWN VOLTAGE $V_{(BR)}$ (V) @ $I_T^{(1)}$		TEST CURRENT $I_T$ (mA)	STAND-OFF VOLTAGE $V_{WM}$ (V)	MAXIMUM REVERSE LEAKAGE $I_D$ ( $\mu$ A) @ $V_{WM}$	PEAK PULSE CURRENT $I_{PPM}$ (A) <sup>(2)</sup>	MAXIMUM CLAMPING VOLTAGE $V_C$ (V) @ $I_{PPM}$
	MIN	MAX					
P6KE15	13.5	16.5	1.0	12.1	1.0	27.3	22
P6KE15A	14.3	15.8	1.0	12.8	1.0	28.3	21.2
P6KE16	14.4	17.6	1.0	12.9	1.0	25.5	23.5
P6KE16A	15.2	16.8	1.0	13.6	1.0	26.7	22.5
P6KE18	16.2	19.8	1.0	14.5	1.0	22.6	26.5
P6KE18A	17.1	18.9	1.0	15.3	1.0	23.8	25.2
P6KE20	18.0	22.0	1.0	16.2	1.0	20.6	29.1
P6KE20A	19.0	21.0	1.0	17.1	1.0	21.7	27.7
P6KE22	19.8	24.2	1.0	17.8	1.0	18.8	31.9
P6KE22A	20.9	23.1	1.0	18.8	1.0	19.6	30.6
P6KE24	21.6	26.4	1.0	19.4	1.0	17.3	34.7
P6KE24A	22.8	25.2	1.0	20.5	1.0	18.1	33.2
P6KE27	24.3	29.7	1.0	21.8	1.0	15.3	39.1
P6KE27A	25.7	28.4	1.0	23.1	1.0	16.0	37.5
P6KE30	27.0	33.0	1.0	24.3	1.0	13.8	43.5
P6KE30A	28.5	31.5	1.0	25.6	1.0	14.5	41.4
P6KE33	29.7	36.3	1.0	26.8	1.0	12.6	47.7
P6KE33A	31.4	34.7	1.0	28.2	1.0	13.1	45.7
P6KE36	32.4	39.6	1.0	29.1	1.0	11.5	52
P6KE36A	34.2	37.8	1.0	30.8	1.0	12.0	49.9
P6KE39	35.1	42.9	1.0	31.6	1.0	10.6	56.4
P6KE39A	37.1	41.0	1.0	33.3	1.0	11.1	53.9
P6KE43	38.7	47.3	1.0	34.8	1.0	9.7	61.9
P6KE43A	40.9	45.2	1.0	36.8	1.0	10.1	59.3
P6KE47	42.3	51.7	1.0	38.1	1.0	8.8	67.8
P6KE47A	44.7	49.4	1.0	40.2	1.0	9.3	64.8
P6KE51	45.9	56.1	1.0	41.3	1.0	8.2	73.5
P6KE51A	48.5	53.6	1.0	43.6	1.0	8.6	70.1
P6KE56	50.4	61.6	1.0	45.4	1.0	7.5	80.5
P6KE56A	53.2	58.8	1.0	47.8	1.0	7.8	77
P6KE62	55.8	68.2	1.0	50.2	1.0	6.7	89
P6KE62A	58.9	65.1	1.0	53.0	1.0	7.1	85
P6KE68	61.2	74.8	1.0	55.1	1.0	6.1	98
P6KE68A	64.6	71.4	1.0	58.1	1.0	6.5	92
P6KE75	67.5	82.5	1.0	60.7	1.0	5.6	108
P6KE75A	71.3	78.8	1.0	64.1	1.0	5.8	103
P6KE82	73.8	90.2	1.0	66.4	1.0	5.1	118
P6KE82A	77.9	86.1	1.0	70.1	1.0	5.3	113
P6KE91	81.9	100	1.0	73.7	1.0	4.6	131
P6KE91A	86.5	95.5	1.0	77.8	1.0	4.8	125
P6KE100	90.0	110	1.0	81.0	1.0	4.2	144
P6KE100A	95.0	105	1.0	85.5	1.0	4.4	137
P6KE110	99.0	121	1.0	89.2	1.0	3.8	158
P6KE110A	105	116	1.0	94.0	1.0	3.9	152
P6KE120	108	132	1.0	97.2	1.0	3.5	173
P6KE120A	114	126	1.0	102	1.0	3.6	165
P6KE130	117	143	1.0	105	1.0	3.2	187
P6KE130A	124	137	1.0	111	1.0	3.4	179

DEVICE TYPE	BREAKDOWN VOLTAGE $V_{(BR)}$ (V) @ $I_T^{(1)}$		TEST CURRENT $I_T$ (mA)	STAND-OFF VOLTAGE $V_{WM}$ (V)	MAXIMUM REVERSE LEAKAGE $I_D$ ( $\mu$ A) @ $V_{WM}^{(3)}$	PEAK PULSE CURRENT $I_{PPM}$ (A) <sup>(2)</sup>	MAXIMUM CLAMPING VOLTAGE $V_C$ (V) @ $I_{PPM}$
	MIN	MAX					
P6KE140	126	154	1.0	112	1.0	3.0	200
P6KE140A	133	147	1.0	119	1.0	3.1	192
P6KE150	135	165	1.0	121	1.0	2.8	215
P6KE150A	143	158	1.0	128	1.0	2.9	207
P6KE160	144	176	1.0	130	1.0	2.6	230
P6KE160A	152	168	1.0	136	1.0	2.7	219
P6KE170	153	187	1.0	138	1.0	2.5	244
P6KE170A	162	179	1.0	145	1.0	2.6	234
P6KE180	162	198	1.0	146	1.0	2.3	258
P6KE180A	171	189	1.0	154	1.0	2.4	246
P6KE200	180	220	1.0	162	1.0	2.1	287
P6KE200A	190	210	1.0	171	1.0	2.2	274
P6KE220	198	242	1.0	175	1.0	1.7	344
P6KE220A	209	231	1.0	185	1.0	1.8	328
P6KE250	225	275	1.0	202	1.0	1.7	360
P6KE250A	237	263	1.0	214	1.0	1.7	344
P6KE300	270	330	1.0	243	1.0	1.4	430
P6KE300A	285	315	1.0	256	1.0	1.4	414
P6KE350	315	385	1.0	284	1.0	1.2	504
P6KE350A	333	368	1.0	300	1.0	1.2	482
P6KE400	360	440	1.0	324	1.0	1.0	574
P6KE400A	380	420	1.0	342	1.0	1.1	548
P6KE440	396	484	1.0	356	1.0	0.95	631
P6KE440A1	442	462	1.0	376	1.0	1.0	602
P6KE440A	418	462	1.0	376	1.0	1.0	602
P6KE480	432	528	1.0	389	1.0	0.88	686
P6KE480A	456	504	1.0	408	1.0	0.91	658
P6KE510	459	561	1.0	413	1.0	0.82	729
P6KE510A	485	535	1.0	434	1.0	0.86	698
P6KE540	486	594	1.0	437	1.0	0.78	772
P6KE540A	513	567	1.0	459	1.0	0.81	740

Note:

(1) Pulse test:  $t_p \leq 50$ ms

(2) Surge current waveform per Fig.3 and derate per Fig.2

(3) For Bidirectional types, only can provide 15V to 440V

(TA = 25 ° C unless otherwise noted)

## RATINGS AND CHARACTERISTICS CURVES

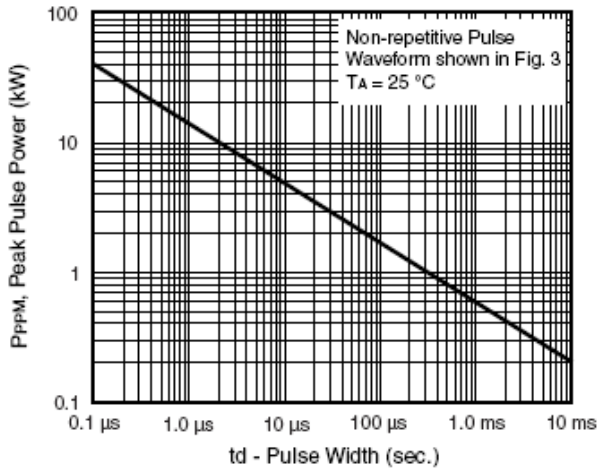


Figure 1. Peak Pulse Power Rating Curve

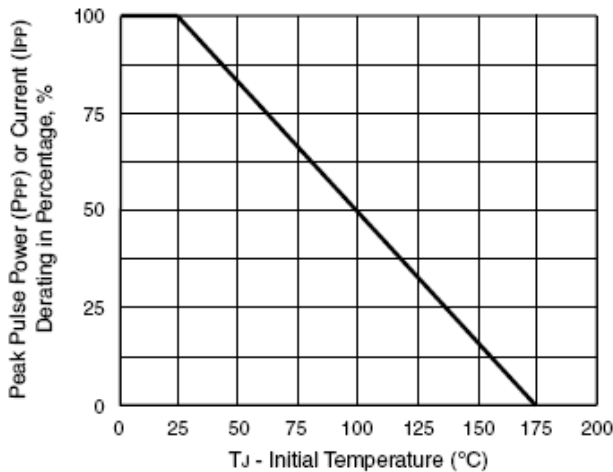


Figure 2. Pulse Power or Current versus Initial Junction Temperature

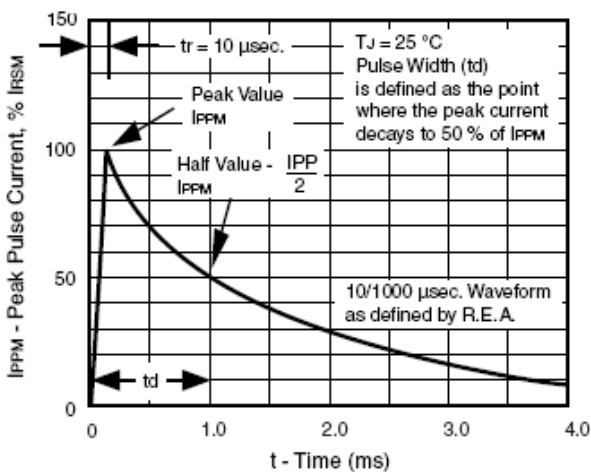


Figure 3. Pulse Waveform

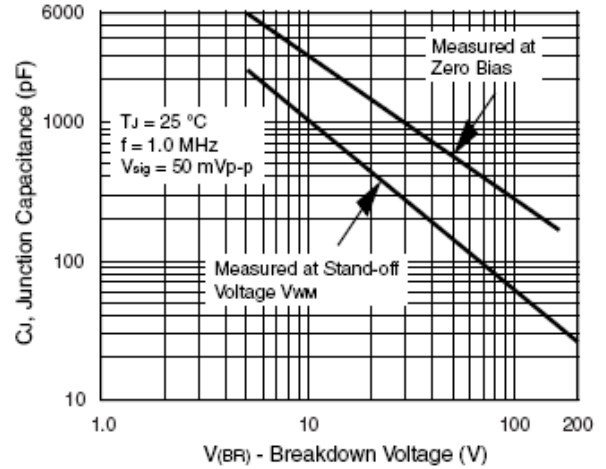


Figure 4. Typical Junction Capacitance Uni-Directional

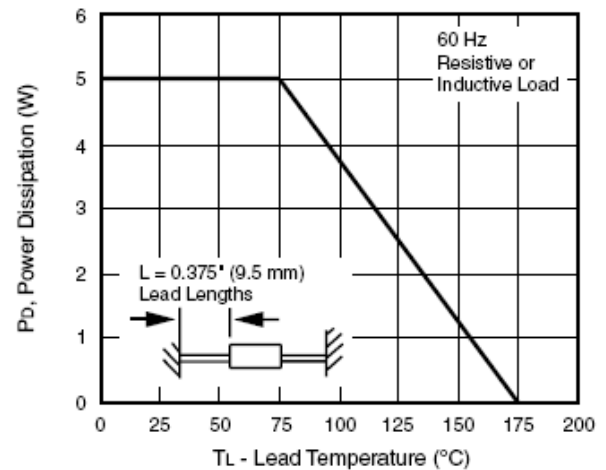


Figure 5. Power Derating Curve

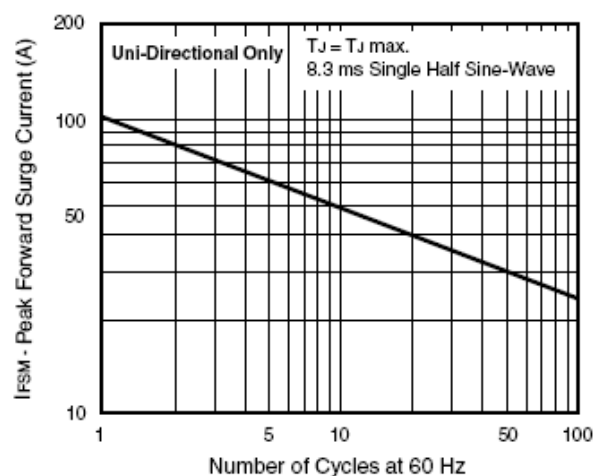


Figure 6. Maximum Non-Repetitive Forward Surge Current

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

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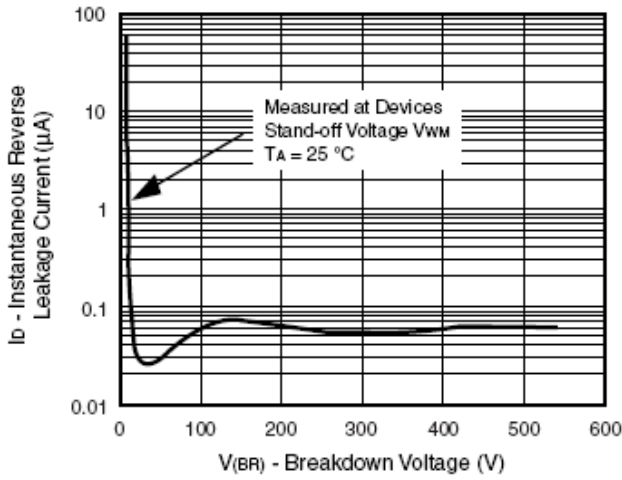


Figure 7. Typical Reverse Leakage Characteristics

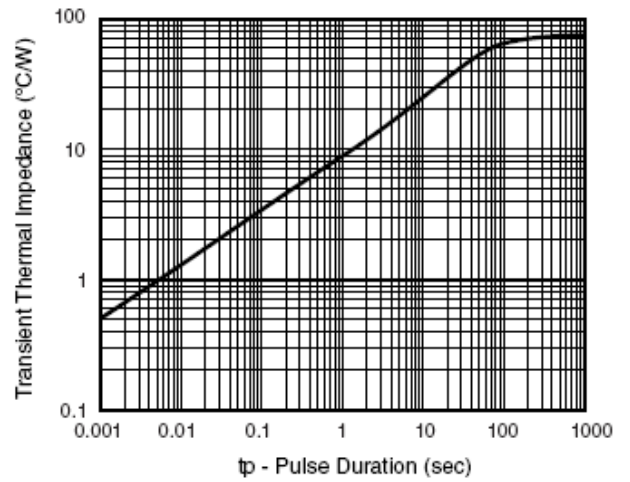


Figure 8. Typical Transient Thermal Impedance