

# P6KE SERIES

**V<sub>BR</sub> : 6.8 - 440 Volts**

**P<sub>PK</sub> : 600 Watts**

## FEATURES :

- \* 600W surge capability at 1ms
- \* Excellent clamping capability
- \* Low zener impedance
- \* Fast response time : typically less than 1.0 ps from 0 volt to V<sub>BR(min.)</sub>
- \* Typical I<sub>R</sub> less than 1μA above 10V
- \* **Pb / RoHS Free**

## MECHANICAL DATA :

- \* Case : DO-15 Molded plastic
- \* Epoxy : UL94V-O rate flame retardant
- \* Lead : Axial lead solderable per MIL-STD-202, Method 208 guaranteed
- \* Polarity : Color band denotes cathode end
- \* Mounting position : Any
- \* Weight : 0.4 gram

## DEVICES FOR BIPOLAR APPLICATIONS

For Bi-directional use C or CA Suffix  
Electrical characteristics apply in both directions

## MAXIMUM RATINGS

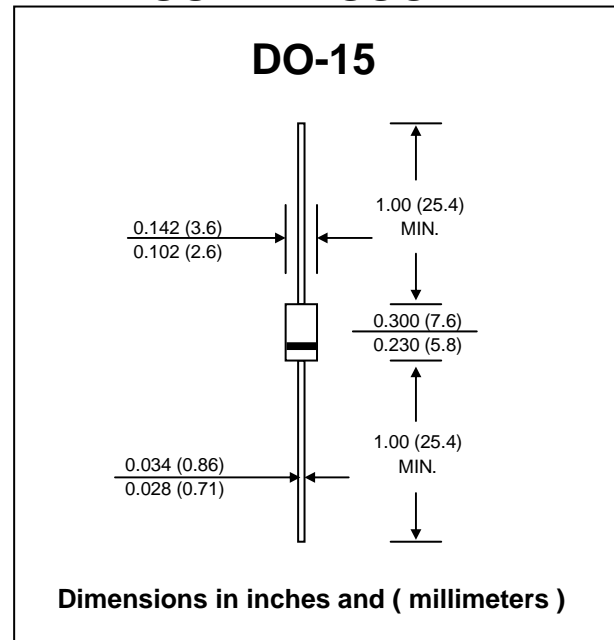
Rating at 25 °C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Unit
Peak Power Dissipation at Ta = 25 °C, Tp=1ms (Note1)	P <sub>PK</sub>	Minimum 600	W
Steady State Power Dissipation at TL = 75 °C Lead Lengths 0.375", (9.5mm) (Note 2)	P <sub>D</sub>	5.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	I <sub>FSM</sub>	100	A
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	- 65 to + 175	°C

### Notes :

- (1) Non-repetitive Current pulse, per Fig. 5 and derated above Ta = 25 °C per Fig. 1
- (2) Mounted on Copper Leaf area of 1.57 in<sup>2</sup> (40mm<sup>2</sup>).
- (3) 8.3 ms single half sine-wave, duty cycle = 4 pulses per minutes maximum.

# TRANSIENT VOLTAGE SUPPRESSOR



## ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified.

Type No.	Breakdown Voltage @ It ( Note 1 )			Working Peak Reverse Voltage	Maximum Reverse Leakage @ VRWM	Maximum Reverse Current	Maximum Clamping Voltage @ IRSM	Maximum Temperature Co-efficient of VBR of VBR
	VBR (V)		It (mA)					
	Min.	Max.					(% / °C)	
P6KE6.8	6.12	7.48	10	5.50	1000	55.5	10.8	0.057
P6KE6.8A	6.45	7.14	10	5.80	1000	57.0	10.5	0.057
P6KE7.5	6.75	8.25	10	6.05	500	51.0	11.7	0.061
P6KE7.5A	7.13	7.88	10	6.40	500	53.0	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	50.0	12.1	0.065
P6KE8.5	7.65	9.35	10	6.89	200	46.0	13.0	0.067
P6KE8.5A	8.08	8.93	10	7.27	200	47.0	12.7	0.067
P6KE9.1	8.19	10.0	1.0	7.37	150	44.0	13.8	0.068
P6KE9.1A	8.65	9.55	1.0	7.78	150	45.0	13.4	0.068
P6KE10	9.00	11.0	1.0	8.10	150	40.0	15.0	0.073
P6KE10A	9.50	10.5	1.0	8.55	150	41.0	14.5	0.073
P6KE11	9.90	12.1	1.0	8.92	150	37.0	16.2	0.075
P6KE11A	10.5	11.6	1.0	9.40	150	38.0	15.6	0.075
P6KE12	10.8	13.2	1.0	9.72	5.0	35.0	17.3	0.078
P6KE12A	11.4	12.6	1.0	10.2	5.0	36.0	16.7	0.078
P6KE13	11.7	14.3	1.0	10.5	5.0	32.0	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	5.0	27.0	22.0	0.084
P6KE15A	14.3	15.8	1.0	12.8	5.0	28.0	21.2	0.084
P6KE16	14.4	17.6	1.0	12.9	5.0	26.0	23.5	0.086
P6KE16A	15.2	16.8	1.0	13.6	5.0	27.0	22.5	0.086
P6KE18	16.2	19.8	1.0	14.5	5.0	23.0	26.5	0.088
P6KE18A	17.1	18.9	1.0	15.3	5.0	24.0	25.2	0.088
P6KE20	18.0	22.0	1.0	16.2	5.0	21.0	29.1	0.090
P6KE20A	19.0	21.0	1.0	17.1	5.0	22.0	27.7	0.090
P6KE22	19.8	24.2	1.0	17.8	5.0	19.0	31.9	0.092
P6KE22A	20.9	23.1	1.0	18.8	5.0	20.0	30.6	0.092
P6KE24	21.6	26.4	1.0	19.4	5.0	17.0	34.7	0.094
P6KE24A	22.8	25.2	1.0	20.5	5.0	18.0	33.2	0.094
P6KE27	24.3	29.7	1.0	21.8	5.0	15.0	39.1	0.096
P6KE27A	25.7	28.4	1.0	23.1	5.0	16.0	37.5	0.096
P6KE28	25.2	30.8	1.0	22.7	5.0	15.0	40	0.096
P6KE28A	26.6	29.4	1.0	23.9	5.0	15.5	38.7	0.096
P6KE30	27.0	33.0	1.0	24.3	5.0	14.0	43.5	0.097
P6KE30A	28.5	31.5	1.0	25.6	5.0	14.4	41.4	0.097
P6KE33	29.7	36.3	1.0	26.8	5.0	12.6	47.7	0.098
P6KE33A	31.4	34.7	1.0	28.2	5.0	13.2	45.7	0.098
P6KE36	32.4	39.6	1.0	29.1	5.0	11.6	52.0	0.099
P6KE36A	34.2	37.8	1.0	30.8	5.0	12.0	49.9	0.099
P6KE39	35.1	42.9	1.0	31.6	5.0	10.6	56.4	0.100
P6KE39A	37.1	41.0	1.0	33.3	5.0	11.2	53.9	0.100
P6KE43	38.7	47.3	1.0	34.8	5.0	9.6	61.9	0.101
P6KE43A	40.9	45.2	1.0	36.8	5.0	10.1	59.3	0.101
P6KE47	42.3	51.7	1.0	38.1	5.0	8.9	67.8	0.101
P6KE47A	44.7	49.4	1.0	40.2	5.0	9.3	64.8	0.101
P6KE51	45.9	56.1	1.0	41.3	5.0	8.2	73.5	0.102
P6KE51A	48.5	53.6	1.0	43.6	5.0	8.6	70.1	0.102

## ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified.

Type No.	Breakdown Voltage @ $I_t$ ( Note 1 )			Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Leakage @ $V_{RWM}$ $I_R$ ( $\mu$ A)	Maximum Reverse Current $I_{RSM}$ (A)	Maximum Clamping Voltage @ $I_{RSM}$ $V_{RSM}$ (V)	Maximum Temperature Co-efficient of $V_{BR}$ (% / °C)
	$V_{BR}$ (V)		$I_t$ (mA)					
	Min.	Max.						
P6KE56	50.4	61.6	1.0	45.4	5.0	7.4	80.5	0.103
P6KE56A	53.2	58.8	1.0	47.8	5.0	7.8	77.0	0.103
P6KE62	55.8	68.2	1.0	50.2	5.0	6.8	89.0	0.104
P6KE62A	58.9	65.1	1.0	53.0	5.0	7.1	85.0	0.104
P6KE68	61.2	74.8	1.0	55.1	5.0	6.1	98.0	0.104
P6KE68A	64.6	71.4	1.0	58.1	5.0	6.5	92.0	0.104
P6KE75	67.5	82.5	1.0	60.7	5.0	5.5	108	0.105
P6KE75A	71.3	78.8	1.0	64.1	5.0	5.8	103	0.105
P6KE82	73.8	90.2	1.0	66.4	5.0	5.1	118	0.105
P6KE82A	77.9	86.1	1.0	70.1	5.0	5.3	113	0.105
P6KE91	81.9	100	1.0	73.7	5.0	4.5	131	0.106
P6KE91A	86.5	95.5	1.0	77.8	5.0	4.8	125	0.106
P6KE100	90.0	110	1.0	81.0	5.0	4.2	144	0.106
P6KE100A	95.0	105	1.0	85.5	5.0	4.4	137	0.106
P6KE110	99.0	121	1.0	89.2	5.0	3.8	158	0.107
P6KE110A	105	116	1.0	94.0	5.0	4.0	152	0.107
P6KE120	108	132	1.0	97.2	5.0	3.5	173	0.107
P6KE120A	114	126	1.0	102	5.0	3.6	165	0.107
P6KE130	117	143	1.0	106	5.0	3.2	187	0.107
P6KE130A	124	137	1.0	111	5.0	3.3	179	0.107
P6KE150	135	165	1.0	121	5.0	2.8	215	0.108
P6KE150A	143	158	1.0	128	5.0	2.9	207	0.108
P6KE160	144	176	1.0	130	5.0	2.6	230	0.108
P6KE160A	152	168	1.0	136	5.0	2.7	219	0.108
P6KE170	153	187	1.0	138	5.0	2.5	244	0.108
P6KE170A	162	179	1.0	145	5.0	2.6	234	0.108
P6KE180	162	198	1.0	146	5.0	2.3	258	0.108
P6KE180A	171	189	1.0	154	5.0	2.4	246	0.108
P6KE200	180	220	1.0	162	5.0	2.1	287	0.108
P6KE200A	190	210	1.0	171	5.0	2.2	274	0.108
P6KE220	198	242	1.0	175	5.0	1.75	344	0.108
P6KE220A	209	231	1.0	185	5.0	1.83	328	0.108
P6KE250	225	275	1.0	202	5.0	1.67	360	0.110
P6KE250A	237	263	1.0	214	5.0	1.75	344	0.110
P6KE300	270	330	1.0	243	5.0	1.40	430	0.110
P6KE300A	285	315	1.0	256	5.0	1.45	414	0.110
P6KE320	288	352	1.0	259	5.0	1.31	460	0.110
P6KE320A	303	337	1.0	272	5.0	1.35	445	0.110
P6KE350	315	385	1.0	284	5.0	1.20	504	0.110
P6KE350A	332	368	1.0	300	5.0	1.25	482	0.110
P6KE400	360	440	1.0	324	5.0	1.05	574	0.110
P6KE400A	380	420	1.0	342	5.0	1.10	548	0.110
P6KE440	396	484	1.0	356	5.0	0.95	631	0.110
P6KE440A	418	462	1.0	376	5.0	1.00	602	0.110

### Notes:

- ( 1 )  $V_{BR}$  measured after  $I_t$  applied for 300  $\mu$ s.,  $I_t$  = square wave pulse or equivalent.
- ( 2 )  $V_F$  = 3.5  $V_{max.}$ ,  $I_F$  = 50 Amps. ( 6.8 Volts thru 91 Volts )  
 $V_F$  = 5.0  $V_{max.}$ ,  $I_F$  = 50 Amps. ( 100 Volts thru 440 Volts ) per 1/2 square or equivalent sine wave.  
 PW = 8.3 ms, duty cycle = 4 pulses per minute maximum.
- ( 3 ) For Bipolar types moving  $V_R$  of 10 Volts and under, the  $I_R$  limit is doubled.
- ( 4 ) "6KE" will be omitted in marking on the diode.

## RATING AND CHARACTERISTIC CURVES ( P6KE SERIES )

FIG.1 - PULSE DERATING CURVE

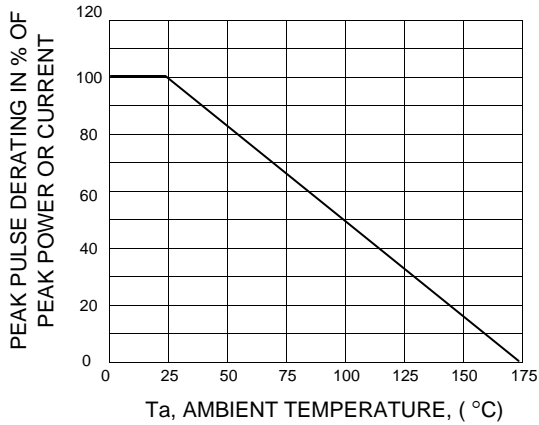


FIG.2 - MAXIMUM NON-REPETITIVE SURGE CURRENT

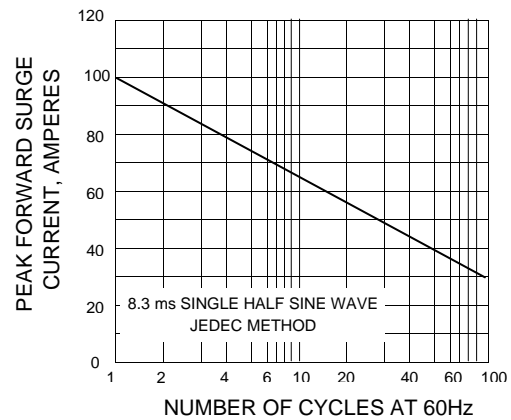


FIG.3 - STEADY STATE POWER DERATING

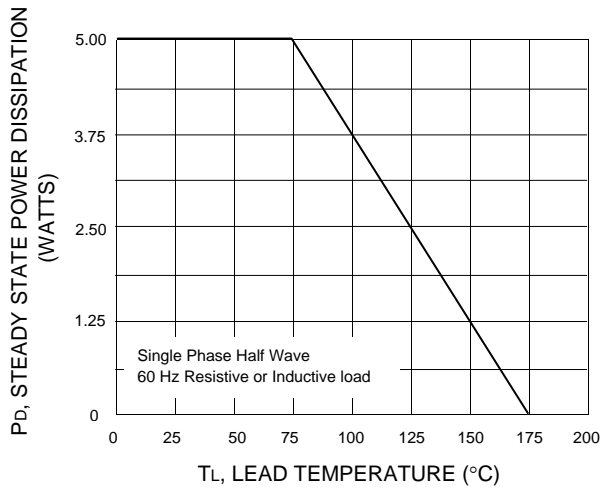


FIG.4 - PULSE RATING CURVE

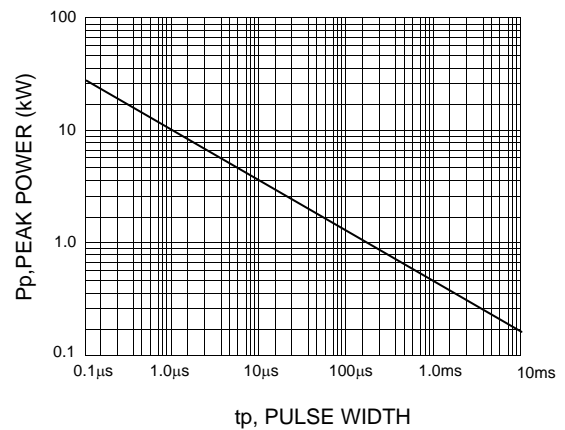


FIG.5 - PULSE WAVEFORM

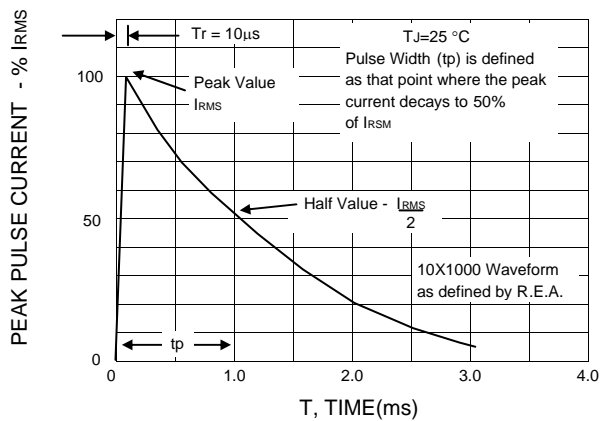


FIG. 6 - TYPICAL JUNCTION CAPACITANCE UNI-DIRECTIONAL

