

# P6KE SERIES - S

# TRANSIENT VOLTAGE SUPPRESSOR

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

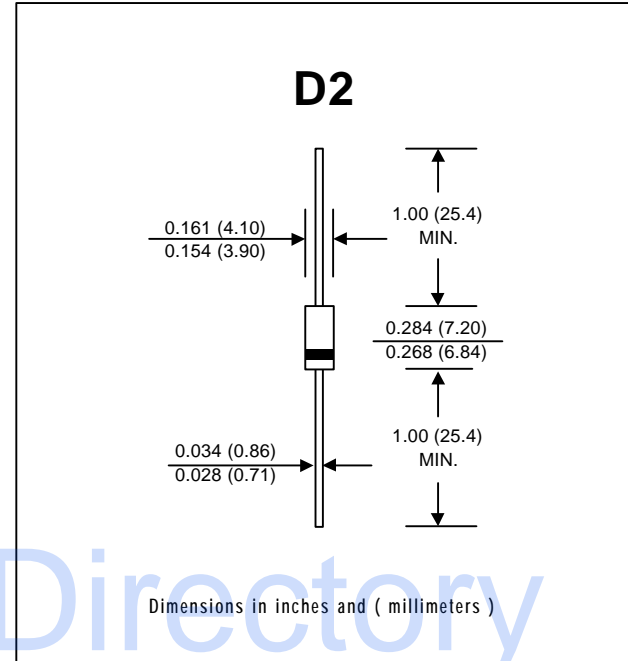
**PPK : 600 Watts**

## 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 : D2 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 : 0.465 gram



## DEVICES FOR BIPOLAR APPLICATIONS

For Bi-directional use CS or CAS 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)	PPK	Minimum 600	W
Steady State Power Dissipation at TL = 75 °C			
Lead Lengths 0.375", (9.5mm) (Note 2)	Pd	5.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	IFSM	100	A
Operating and Storage Temperature Range	TJ, TSTG	- 65 to + 175	°C

### Note :

- (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.

## ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified

TYPE	Breakdown Voltage @ It ( Note 1 )		Working Peak Reverse Voltage	Maximum Reverse Leakage @ V <sub>RWM</sub>	Maximum Reverse Current	Maximum Clamping Voltage @ I <sub>RSM</sub>	Maximum Temperature Co-efficient of V <sub>BR</sub> (% / °C)	
	V <sub>BR</sub> (V)							V <sub>RWM</sub>
	Min.	Max.	I <sub>t</sub> (mA)	(V)	(μA)	(A)	(V)	
P6KE6.8S	6.12	7.48	10	5.50	1000	55.5	10.8	0.057
P6KE6.8AS	6.45	7.14	10	5.80	1000	57.0	10.5	0.057
P6KE7.5S	6.75	8.25	10	6.05	500	51.0	11.7	0.061
P6KE7.5AS	7.13	7.88	10	6.40	500	53.0	11.3	0.061
P6KE8.2S	7.38	9.02	10	6.63	200	48.0	12.5	0.065
P6KE8.2AS	7.79	8.61	10	7.02	200	50.0	12.1	0.065
P6KE9.1S	8.19	10.0	1.0	7.37	150	44.0	13.8	0.068
P6KE9.1AS	8.65	9.55	1.0	7.78	150	45.0	13.4	0.068
P6KE10S	9.00	11.0	1.0	8.10	150	40.0	15.0	0.073
P6KE10AS	9.50	10.5	1.0	8.55	150	41.0	14.5	0.073
P6KE11S	9.90	12.1	1.0	8.92	150	37.0	16.2	0.075
P6KE11AS	10.5	11.6	1.0	9.40	150	38.0	15.6	0.075
P6KE12S	10.8	13.2	1.0	9.72	5.0	35.0	17.3	0.078
P6KE12AS	11.4	12.6	1.0	10.2	5.0	36.0	16.7	0.078
P6KE13S	11.7	14.3	1.0	10.5	5.0	32.0	19.0	0.081
P6KE13AS	12.4	13.7	1.0	11.1	5.0	33.0	18.2	0.081
P6KE15S	13.5	16.5	1.0	12.1	5.0	27.0	22.0	0.084
P6KE15AS	14.3	15.8	1.0	12.8	5.0	28.0	21.2	0.084
P6KE16S	14.4	17.6	1.0	12.9	5.0	26.0	23.5	0.086
P6KE16AS	15.2	16.8	1.0	13.6	5.0	27.0	22.5	0.086
P6KE18S	16.2	19.8	1.0	14.5	5.0	23.0	26.5	0.088
P6KE18AS	17.1	18.9	1.0	15.3	5.0	24.0	25.2	0.088
P6KE20S	18.0	22.0	1.0	16.2	5.0	21.0	29.1	0.090
P6KE20AS	19.0	21.0	1.0	17.1	5.0	22.0	27.7	0.090
P6KE22S	19.8	24.2	1.0	17.8	5.0	19.0	31.9	0.092
P6KE22AS	20.9	23.1	1.0	18.8	5.0	20.0	30.6	0.092
P6KE24S	21.6	26.4	1.0	19.4	5.0	17.0	34.7	0.094
P6KE24AS	22.8	25.2	1.0	20.5	5.0	18.0	33.2	0.094
P6KE27S	24.3	29.7	1.0	21.8	5.0	15.0	39.1	0.096
P6KE27AS	25.7	28.4	1.0	23.1	5.0	16.0	37.5	0.096
P6KE30S	27.0	33.0	1.0	24.3	5.0	14.0	43.5	0.097
P6KE30AS	28.5	31.5	1.0	25.6	5.0	14.4	41.4	0.097
P6KE33S	29.7	36.3	1.0	26.8	5.0	12.6	47.7	0.098
P6KE33AS	31.4	34.7	1.0	28.2	5.0	13.2	45.7	0.098
P6KE36S	32.4	39.6	1.0	29.1	5.0	11.6	52.0	0.099
P6KE36AS	34.2	37.8	1.0	30.8	5.0	12.0	49.9	0.099
P6KE39S	35.1	42.9	1.0	31.6	5.0	10.6	56.4	0.100
P6KE39AS	37.1	41.0	1.0	33.3	5.0	11.2	53.9	0.100
P6KE43S	38.7	47.3	1.0	34.8	5.0	9.6	61.9	0.101
P6KE43AS	40.9	45.2	1.0	36.8	5.0	10.1	59.3	0.101
P6KE47S	42.3	51.7	1.0	38.1	5.0	8.9	67.8	0.101
P6KE47AS	44.7	49.4	1.0	40.2	5.0	9.3	64.8	0.101
P6KE51S	45.9	56.1	1.0	41.3	5.0	8.2	73.5	0.102
P6KE51AS	48.5	53.6	1.0	43.6	5.0	8.6	70.1	0.102
P6KE56S	50.4	61.6	1.0	45.4	5.0	7.4	80.5	0.103
P6KE56AS	53.2	58.8	1.0	47.8	5.0	7.8	77.0	0.103

## ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified

TYPE	Breakdown Voltage @ $I_t$ ( Note 1 )		Working Peak Reverse Voltage	Maximum Reverse Leakage @ $V_{RWM}$	Maximum Reverse Current	Maximum Clamping Voltage @ $I_{RSM}$	Maximum Temperature Co-efficient of $V_{BR}$ (% / °C)
	$V_{BR}$ (V)						
	Min.	Max.	(mA)	(V)	( $\mu$ A)	(A)	(V)

P6KE62S	55.8	68.2	1.0	50.2	5.0	6.8	89.0	0.104
P6KE62AS	58.9	65.1	1.0	53.0	5.0	7.1	85.0	0.104
P6KE68S	61.2	74.8	1.0	55.1	5.0	6.1	98.0	0.104
P6KE68AS	64.6	71.4	1.0	58.1	5.0	6.5	92.0	0.104
P6KE75S	67.5	82.5	1.0	60.7	5.0	5.5	108	0.105
P6KE75AS	71.3	78.8	1.0	64.1	5.0	5.8	103	0.105
P6KE82S	73.8	90.2	1.0	66.4	5.0	5.1	118	0.105
P6KE82AS	77.9	86.1	1.0	70.1	5.0	5.3	113	0.105
P6KE91S	81.9	100	1.0	73.7	5.0	4.5	131	0.106
P6KE91AS	86.5	95.5	1.0	77.8	5.0	4.8	125	0.106
P6KE100S	90.0	110	1.0	81.0	5.0	4.2	144	0.106
P6KE100AS	95.0	105	1.0	85.5	5.0	4.4	137	0.106
P6KE110S	99.0	121	1.0	89.2	5.0	3.8	158	0.107
P6KE110AS	105	116	1.0	94.0	5.0	4.0	152	0.107
P6KE120S	108	132	1.0	97.2	5.0	3.5	173	0.107
P6KE120AS	114	126	1.0	102	5.0	3.6	165	0.107
P6KE130S	117	143	1.0	106	5.0	3.2	187	0.107
P6KE130AS	124	137	1.0	111	5.0	3.3	179	0.107
P6KE150S	135	165	1.0	121	5.0	2.8	215	0.108
P6KE150AS	143	158	1.0	128	5.0	2.9	207	0.108
P6KE160S	144	176	1.0	130	5.0	2.6	230	0.108
P6KE160AS	152	168	1.0	136	5.0	2.7	219	0.108
P6KE170S	153	187	1.0	138	5.0	2.5	244	0.108
P6KE170AS	162	179	1.0	145	5.0	2.6	234	0.108
P6KE180S	162	198	1.0	146	5.0	2.3	258	0.108
P6KE180AS	171	189	1.0	154	5.0	2.4	246	0.108
P6KE200S	180	220	1.0	162	5.0	2.1	287	0.108
P6KE200AS	190	210	1.0	171	5.0	2.2	274	0.108
P6KE220S	198	242	1.0	175	5.0	1.75	344	0.108
P6KE220AS	209	231	1.0	185	5.0	1.83	328	0.108
P6KE250S	225	275	1.0	202	5.0	1.67	360	0.110
P6KE250AS	237	263	1.0	214	5.0	1.75	344	0.110
P6KE300S	270	330	1.0	243	5.0	1.40	430	0.110
P6KE300AS	285	315	1.0	256	5.0	1.45	414	0.110
P6KE350S	315	385	1.0	284	5.0	1.20	504	0.110
P6KE350AS	332	368	1.0	300	5.0	1.25	482	0.110
P6KE400S	360	440	1.0	324	5.0	1.05	574	0.110
P6KE400AS	380	420	1.0	342	5.0	1.10	548	0.110
P6KE440S	396	484	1.0	356	5.0	0.95	631	0.110
P6KE440AS	418	462	1.0	376	5.0	1.00	602	0.110

**Note:**

- ( 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.

## RATING AND CHARACTERISTIC CURVES ( P6KE SERIES - S )

FIG.1 - PULSE DERATING CURVE

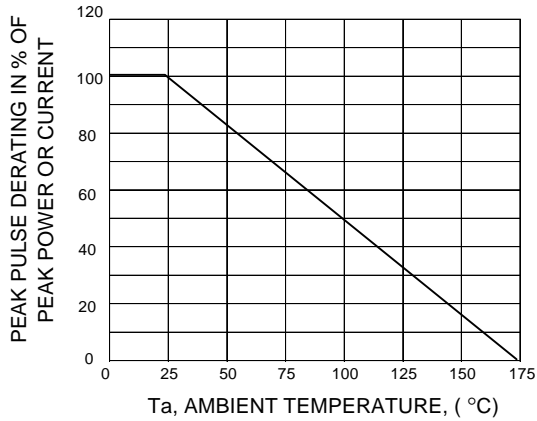


FIG.2 - MAXIMUM NON-REPETITIVE SURGE CURRENT

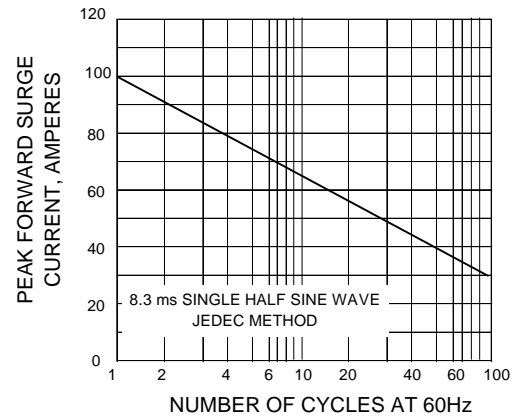


FIG.3 - STEADY STATE POWER DERATING

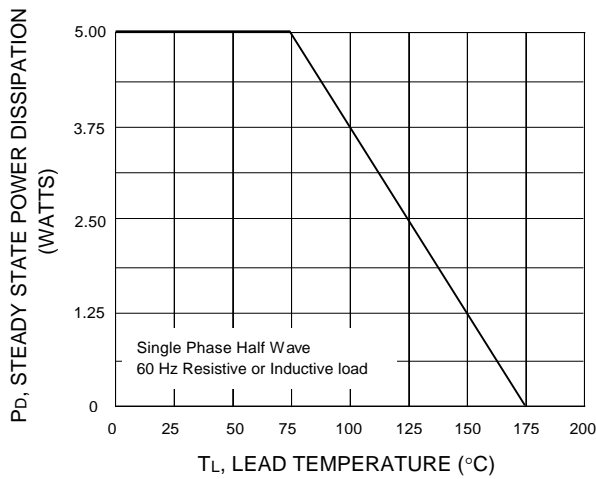


FIG.4 - PULSE RATING CURVE

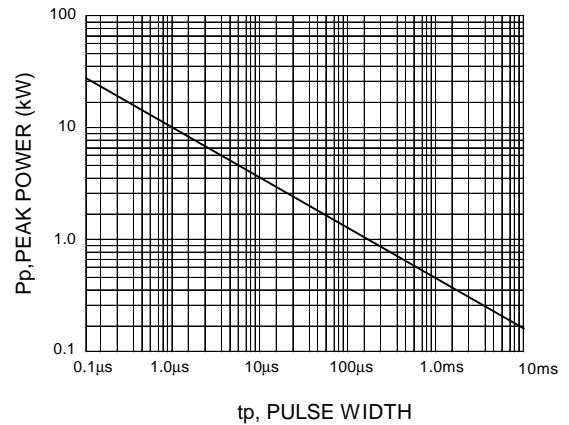


FIG.5 - PULSE WAVEFORM

