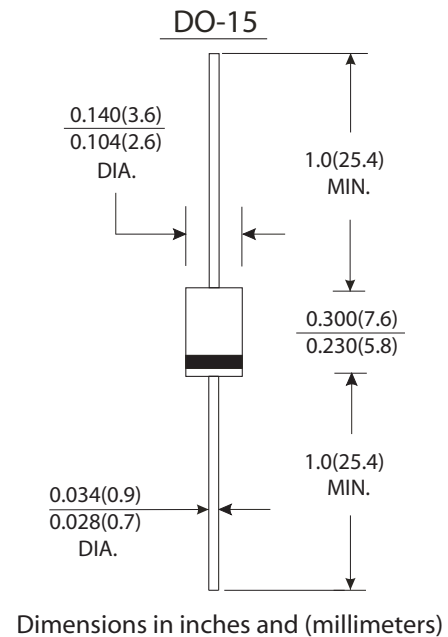


### Features

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- Glass passivated junction
- 600W peak pulse power capability with a 10/100 $\mu$ S waveform, repetition rate(duty cycle) : 0.01%
- Excellent clamping capability
- Low incremental surge resistance
- Fast response time : typically less than 1.0ps from 1 Volts to V(BR) for uni-directional and 5.0ns for Bi-directional types
- Typical ID less than 1.0 $\mu$ A above 10V
- High temperature soldering guaranteed : 265 °C/10seconds, 0.375"(9.5mm) lead length, 5lbs. (2.3kg) tension

### Mechanical Data

- Case : DO-15 molded plastic body over passivated junction
- Terminals : Solder plated axial leads, solderable per MIL-STD-750, method 2026
- Polarity : For uni-directional types the color band denotes cathode end. which is positive with respect to the anode under normal TVS operation
- Mounting Position : Any
- Weight : 0.014 ounce, 0.33 gram



### Devices For Bidirectional Applications

- For bi-directional use C or CA suffix for types P6KE7.5 thru types P6KE440CA(e.g. P6KE10C, P6KE220CA), electrical characteristics apply in both directions.

### Maximum Ratings And Electrical Characteristics

(Ratings at 25 °C ambient temperature unless otherwise specified)

	Symbols	Values	Units
Peak power dissipation with a 10/1000 $\mu$ S waveform (Note 1. Fig. 3)	PPPM	Min.600	Watts
Peak pulse current with a 10/1000 $\mu$ S waveform (Note 1)	I <sub>PPM</sub>	See Table 1	Amps
Steady state power dissipation at T <sub>L</sub> =75 °C lead length 0.375"(9.5mm) (Note2)	P <sub>M(AV)</sub>	5.0	Watts
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load(JEDEC method) unidirectional (Note 3)	I <sub>FSM</sub>	100.0	Amps
Maximum instantaneous forward voltage at 50A for unidirectional only(Note4)	V <sub>F</sub>	3.5/50	Volts
Operating junction and storage temperature range	T <sub>J</sub> ,T <sub>STG</sub>	-55 to +175	°C

#### Notes:

- (1) Non repetitive current pulse, per Fig.3 and derated above T<sub>A</sub>=25 °C per Fig.2
- (2) Mounted on copper pads area of 1.6 $\times$ 1.6"(40 $\times$ 40mm) per Fig.5
- (3) Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulse per minute maximum
- (4) V<sub>F</sub>=3.5 Volts max. for devices of V(BR) $\leq$ 220V, and V<sub>F</sub>=5.0 Volts max. for devices of V(BR) $>$ 220V



ELECTRICAL CHARACTERISTIC at (TA=25 °C unless other specified)

Device Type	Breakdown Voltage V(BR) (Volts) (Note 1)		Test Current at IT (mA)	Stand-off Voltage VWM (Volts)	Max. Reverse Leakage at VWM Id(Note2) (µA)	Max. Peak Pulse Current IPPM(Note 2) (Amps)	Max. Clamping Voltage at IPPM Vc(VOLTS)	Max. Temp Coefficient of V(BR) (%/°C)
	Max.	Min.						
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	5.0	27.3	22.0	0.084
P6KE15A	14.3	15.8	1.0	12.8	5.0	28.3	21.2	0.084
P6KE16	14.4	17.6	1.0	12.9	5.0	25.5	23.5	0.086
P6KE16A	15.2	16.8	1.0	13.6	5.0	26.7	22.5	0.086
P6KE18	16.2	19.8	1.0	14.5	5.0	22.6	26.5	0.088
P6KE18A	17.1	18.9	1.0	15.3	5.0	23.8	25.2	0.088
P6KE20	18.0	22.0	1.0	16.2	5.0	20.6	29.1	0.090
P6KE20A	19.0	21.0	1.0	17.1	5.0	21.7	27.7	0.090
P6KE22	19.8	24.2	1.0	17.8	5.0	18.8	31.9	0.092
P6KE22A	20.9	23.1	1.0	18.8	5.0	19.6	30.6	0.092
P6KE24	21.6	26.4	1.0	19.4	5.0	17.3	34.7	0.094
P6KE24A	22.8	25.2	1.0	20.5	5.0	18.1	33.2	0.094
P6KE27	24.3	29.7	1.0	21.8	5.0	15.3	39.1	0.096
P6KE27A	25.7	28.4	1.0	23.1	5.0	16.0	37.5	0.096
P6KE30	27.0	33.0	1.0	24.3	5.0	13.8	43.5	0.097
P6KE30A	28.5	31.5	1.0	25.6	5.0	14.5	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	13.1	45.7	0.098
P6KE36	32.4	39.6	1.0	29.1	5.0	11.5	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	11.1	53.9	0.100
P6KE43	38.7	47.3	1.0	34.8	5.0	9.7	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	8.8	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
P6KE56	50.4	61.6	1.0	45.4	5.0	7.5	80.5	0.103
P6KE56A	53.2	58.8	1.0	47.8	5.0	7.8	77.0	0.103



## ELECTRICAL CHARACTERISTIC at (TA=25 °C unless other specified)

Device Type	Breakdown Voltage VF(BR) (Volts) (Note 1)		Test Current at IT (mA)	Stand-off Voltage VWM (Volts)	Max. Reverse Leakage at VWM ID(Note2) (µA)	Max. Peak Pulse Current IPPM(Note 2) (Amps)	Max. Clamping Voltage at IPPM Vc(VOLTS)	Max. Temp Coefficient of V(BR) (%/°C)
	Max.	Min.						
P4KE62	55.8	68.2	1.0	50.2	5.0	6.7	89.0	0.104
P4KE62A	58.9	65.1	1.0	53.0	5.0	7.1	85.0	0.104
P4KE68	61.2	74.8	1.0	55.1	5.0	6.1	98.0	0.104
P4KE68A	64.6	71.4	1.0	58.1	5.0	6.5	92.0	0.104
P4KE75	67.5	82.5	1.0	60.7	5.0	5.6	108	0.105
P4KE75A	71.3	78.8	1.0	64.1	5.0	5.8	103	0.105
P4KE82	73.8	90.2	1.0	66.4	5.0	5.1	118	0.105
P4KE82A	77.9	86.1	1.0	70.1	5.0	5.3	113	0.105
P4KE91	81.9	100	1.0	73.7	5.0	4.6	131	0.106
P4KE91A	86.5	95.5	1.0	77.8	5.0	4.8	125	0.106
P4KE100	90.0	110	1.0	81.0	5.0	4.2	144	0.106
P4KE100A	95.0	105	1.0	85.5	5.0	4.4	137	0.106
P4KE110	99.0	121	1.0	89.2	5.0	3.8	158	0.107
P4KE110A	105	116	1.0	94.0	5.0	3.9	152	0.107
P4KE120	108	132	1.0	97.2	5.0	3.5	173	0.107
P4KE120A	114	126	1.0	102	5.0	3.6	165	0.107
P4KE130	117	143	1.0	105	5.0	3.2	187	0.107
P4KE130A	124	137	1.0	111	5.0	3.4	179	0.107
P4KE150	135	165	1.0	121	5.0	2.8	215	0.108
P4KE150A	143	158	1.0	128	5.0	2.9	207	0.108
P4KE160	144	176	1.0	130	5.0	2.6	230	0.108
P4KE160A	152	168	1.0	136	5.0	2.7	219	0.108
P4KE170	153	187	1.0	138	5.0	2.5	244	0.108
P4KE170A	162	179	1.0	145	5.0	2.6	234	0.108
P4KE180	162	198	1.0	146	5.0	2.3	258	0.108
P4KE180A	171	189	1.0	154	5.0	2.4	246	0.108
P4KE200	180	220	1.0	162	5.0	2.1	287	0.108
P4KE200A	190	210	1.0	171	5.0	2.2	274	0.108
P4KE220	198	242	1.0	175	5.0	1.7	344	0.108
P4KE220A	209	231	1.0	185	5.0	1.8	328	0.108
P4KE250	225	275	1.0	202	5.0	1.7	360	0.110
P4KE250A	237	263	1.0	214	5.0	1.7	344	0.110
P4KE300	270	330	1.0	243	5.0	1.4	430	0.110
P4KE300A	285	315	1.0	256	5.0	1.4	414	0.110
P4KE350	315	385	1.0	284	5.0	1.2	504	0.110
P4KE350A	333	368	1.0	300	5.0	1.2	482	0.110
P4KE400	360	440	1.0	324	5.0	1.0	574	0.110
P4KE400A	380	420	1.0	342	5.0	1.1	548	0.110
P4KE440	396	484	1.0	356	5.0	0.95	631	0.110
P4KE440A	418	462	1.0	376	5.0	1.0	602	0.110

**Notes:**

- (1) V<sub>BR</sub> measured after I<sub>T</sub> applied for 300µS, I<sub>T</sub>=square wave pulse or equivalent.
- (2) Surge current waveform per Fig.3 and derated per Fig.2
- (3) For bidirectional types having V<sub>WM</sub> of 10 Volts and less. The I<sub>D</sub> limit is doubled.



# RATINGS AND CHARACTERISTIC CURVES P6KE6.8 THRU P6KE440CA

FIG.1-PEAK PULSE POWER RATING CURVE

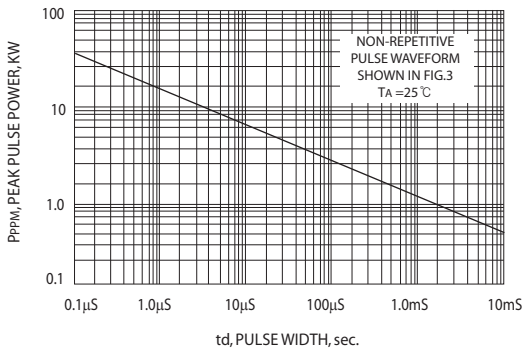


FIG.2-PULSE DERATING CURVE

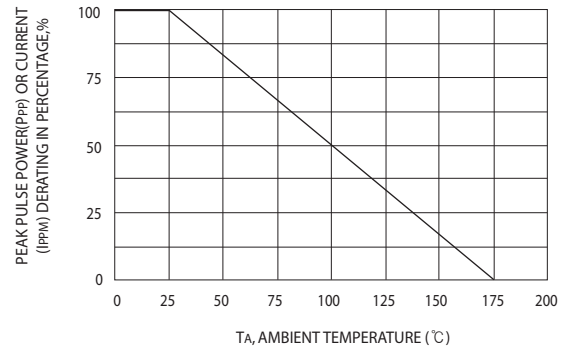


FIG.3-PULSE WAVEFORM

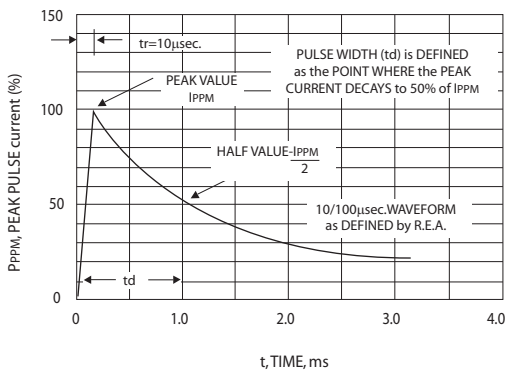


FIG.4-TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL

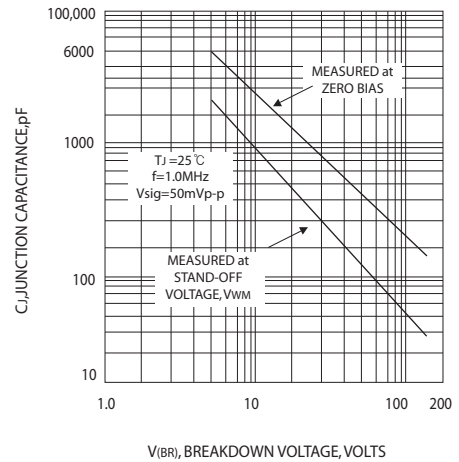


FIG.5-STEADY STATE POWER DERATING CURVE

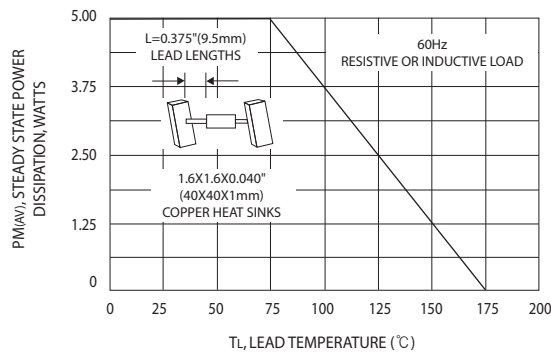


FIG.6-MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY

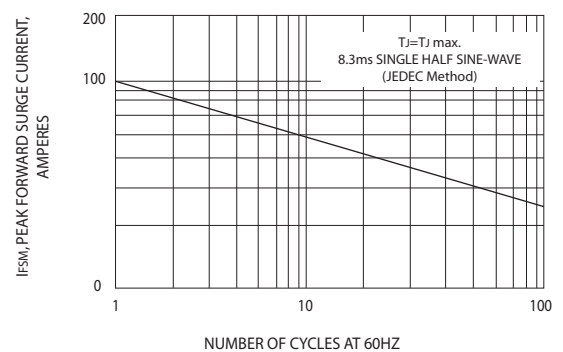
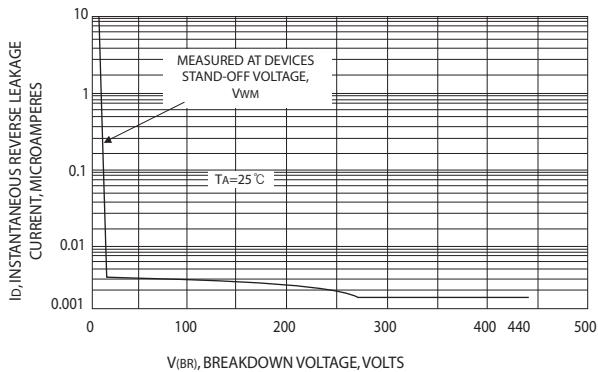


FIG7-TYPICAL REVERSE LEAKAGE CHARACTERISTICS



### Description

This P6KE TVS series is a low cost commercial products for use in applications where large voltage transients can permanently damage voltage-sensitive components.

The P6KE series device types are designed in a small package size where power and space is a consideration. They are characterized by their high surge capability, extremely fast response time, and low impedance, ( $R_{on}$ ). Because of the unpredictable nature of transients, and the variation of the impedance with respect to these transients, per se, is not specified as a parametric value.

However, a minimum voltage at low current conditions ( $BV$ ) and a maximum clamping voltage ( $V_c$ ) at a maximum peak pulse current is specified.

In some instances, the thermal effect (see  $V_c$  clamping voltage) may be responsible for 50% to 70%, of the observed voltage differential when subjected to high pulses for several duty cycle, thus making a maximum impedance specification insignificant. In case of a severe current overload or abnormal transient beyond the maximum ratings. The Tansient Voltage Suppressors will initially fail "short" thus tripping this system circuit breaker or fuse while protecting the entire circuit. Curves depicting clamping voltage vs, various current pulses are available from the factory. Extended power curves vs, pulse time are also available.