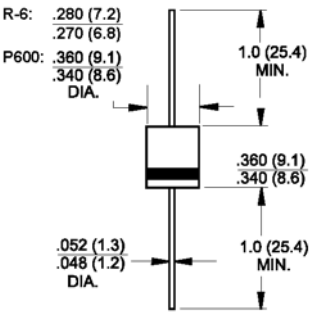
3KP5.0 thru 3KP220CA

Transient Voltage Suppressors
Peak Pulse Power 3000W Stand-off Voltage 5.0 to 220V

Features

- Plastic package has Underwriters Laboratory Flammability Classification 94V-O
- Glass passivated chip junction in P-600/R-6 package
- 3000W Peak Pulse Power capability at on 10/1000uS waveform
- Excellent clamping capability
- Low zener impedance
- Repetition rate(Duty Cycle):.05%
- Fast response time: typically less than 1.0 ps from 0 volts to BV min
- Typical I_R less than 1uA above 10V
- High temperature soldering guaranteed: 260°C/10 seconds/ .375",(9.5mm) lead length/5lbs., (2.3kg) tension

R-6 or P600



Dimensions in inches and (millimeters)

Mechanical Data

- Case: JEDEC P600 molded plastic
- Terminals: Axial leads, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denoted cathode except Bipolar
- Mounting Position: Any
- Weight: 0.07 ounce, 2.1 grams

For Bidirectional use C or CA Suffix for types 3KP5.0 thru types 3KP220
Electrical characteristics apply in both directions.

Maximum Ratings and Thermal Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

Parameter	Symbol	Value	Unit
Peak Power Dissipation at T_A=25°C, T_P=1ms (1)	P_{PPM}	Minimum 3000	W
Peak pulse current with a 10/1000us waveform (1)	I_{PPM}	See Next Table	A
Steady state power dissipation at T_L=75°C, lead lengths 0.375" (9.5mm) (2)	$P_{M(AV)}$	8.0	W
Peak forward surge current, 8.3ms single half sine-wave (3)	I_{FSM}	250	Amps
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175	°C

Notes: 1. Non-repetitive current pulse, per Fig.3 and derated above T_A=25°C per Fig. 2
2. Mounted on copper pad area of 0.79 x 0.79" (20 x 20 mm) per Fig. 5.
3. Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum.

Electrical Characteristics

(T_A=25ºC unless otherwise noted.)

Device type	Breakdown voltage $V_{(BR)}$ (Volts) (1)		Test current at I_T (mA)	Stand-off voltage V_{WM} (Volts)	Maximum reverse leakage at V_{WM} I_R (uA)		Maximum peak pulse current I_{PPM} (2) (A)	Maximum clamping voltage at I_{PPM} V_C (Volts)
	Min.	Max.			UNI-	BI-		
3KP5.0	6.40	7.55	10	5.0	1000	2000	312.5	9.6
3KP5.0A	6.40	7.25	10	5.0	1000	2000	326.0	9.2
3KP6.0	6.67	8.45	10	6.0	1000	2000	263.2	11.4
3KP6.0A	6.67	7.67	10	6.0	1000	2000	291.3	10.3
3KP6.5	7.22	9.14	10	6.5	500	1000	243.9	12.3
3KP6.5A	7.22	8.30	10	6.5	500	1000	267.9	11.2
3KP7.0	7.78	9.86	10	7.0	200	400	225.6	13.3
3KP7.0A	7.78	8.95	10	7.0	200	400	250.0	12.0
3KP7.5	8.33	10.67	1.0	7.5	100	200	209.8	14.3
3KP7.5A	8.33	9.58	1.0	7.5	100	200	232.6	12.9
3KP8.0	8.89	11.30	1.0	8.0	50	100	220.0	15.0
3KP8.0A	8.89	10.23	1.0	8.0	50	100	220.6	13.6
3KP8.5	9.44	11.92	1.0	8.5	25	50	188.8	15.9
3KP8.5A	9.44	10.82	1.0	8.5	25	50	208.4	14.4
3KP9.0	10.0	12.6	1.0	9.0	10	20	177.4	16.9
3KP9.0A	10.0	11.5	1.0	9.0	10	20	194.8	15.4
3KP10	11.1	14.1	1.0	10.0	5	5	159.6	18.8
3KP10A	11.1	12.8	1.0	10.0	5	5	176.4	17.0
3KP11	12.2	15.4	1.0	11.0	5	5	149.2	20.1
3KP11A	12.2	14.0	1.0	11.0	5	5	184.88	18.2
3KP12	13.3	16.9	1.0	12.0	5	5	136.4	22.0
3KP12A	13.3	15.3	1.0	12.0	5	5	150.6	19.9
3KP13	14.4	18.2	1.0	13.0	5	5	126.0	23.8
3KP13A	14.4	16.5	1.0	13.0	5	5	139.4	21.5
3KP14	15.6	19.8	1.0	14.0	5	5	116.2	25.8
3KP14A	15.6	17.9	1.0	14.0	5	5	129.4	23.2
3KP15	16.7	21.1	1.0	15.0	5	5	111.6	26.9
3KP15A	16.7	19.2	1.0	15.0	5	5	123.0	24.4
3KP16	17.8	22.6	1.0	16.0	5	5	104.2	28.8
3KP16A	17.8	20.5	1.0	16.0	5	5	115.4	26.0
3KP17	18.9	23.9	1.0	17.0	5	5	98.4	30.5
3KP17A	18.9	21.7	1.0	17.0	5	5	106.6	27.6
3KP18	20.0	25.3	1.0	18.0	5	5	93.2	32.2
3KP18A	20.0	23.3	1.0	18.0	5	5	102.8	29.2
3KP20	22.2	28.1	1.0	20.0	5	5	83.8	35.8
3KP20A	22.2	25.5	1.0	20.0	5	5	92.6	32.4
3KP22	24.4	30.9	1.0	22.0	5	5	76.2	39.4
3KP22A	24.4	28.0	1.0	22.0	5	5	84.4	35.5
3KP24	26.7	33.8	1.0	24.0	5	5	69.8	43.0
3KP24A	26.7	30.7	1.0	24.0	5	5	77.2	38.9
3KP26	28.9	36.6	1.0	26.0	5	5	64.4	46.6
3KP26A	28.9	33.2	1.0	26.0	5	5	71.2	42.1
3KP28	31.1	39.4	1.0	28.0	5	5	60.0	50.0
3KP28A	31.1	35.8	1.0	28.0	5	5	66.0	45.4
3KP30	33.3	42.2	1.0	30.0	5	5	56.0	53.5
3KP30A	33.3	38.3	1.0	30.0	5	5	62.0	48.4

Electrical Characteristics

(T_A=25°C unless otherwise noted.)

Device type	Breakdown voltage $V_{(BR)}$ (Volts) (1) Min.	Max.	Test current at I_T (mA)	Stand-off voltage V_{WM} (Volts)	Maximum reverse leakage at V_{WM} I_D (uA) UNI-	BI-	Maximum peak pulse current I_{PPM} (2) (A)	Maximum clamping voltage at I_{PPM} V_C (Volts)
3KP33	36.7	46.5	1.0	33.0	5	5	50.4	59.0
3KP33A	36.7	42.2	1.0	33.0	5	5	56.2	53.3
3KP36	40.0	50.7	1.0	36.0	5	5	46.6	64.3
3KP36A	40.0	46.0	1.0	36.0	5	5	51.6	58.1
3KP40	44.4	56.3	1.0	40.0	5	5	42.0	71.4
3KP40A	44.4	51.1	1.0	40.0	5	5	46.4	64.5
3KP43	47.8	60.5	1.0	43.0	5	5	39.2	76.7
3KP43A	47.8	54.9	1.0	43.0	5	5	43.2	69.4
3KP45	50.0	63.3	1.0	45.0	5	5	37.4	80.3
3KP45A	50.0	57.5	1.0	45.0	5	5	41.2	72.7
3KP48	53.3	67.5	1.0	48.0	5	5	35.0	85.5
3KP48A	53.3	61.3	1.0	48.0	5	5	38.8	77.4
3KP51	56.7	71.8	1.0	51.0	5	5	37.0	91.1
3KP51A	56.7	65.2	1.0	51.0	5	5	36.4	82.4
3KP54	60.0	76.0	.0	54.0	5	5	31.2	96.3
3KP54A	60.0	69.0	1.0	54.0	5	5	34.4	87.1
3KP58	64.4	81.6	1.0	58.0	5	5	29.2	103
3KP58A	64.4	74.1	1.0	58.0	5	5	32.0	94
3KP60	66.7	84.5	1.0	60.0	5	5	28.0	107
3KP60A	66.7	76.7	1.0	60.0	5	5	31.0	97
3KP64	71.1	90.1	1.0	64.0	5	5	26.4	114
3KP64A	71.1	81.8	1.0	64.0	5	5	29.2	103
3KP70	77.8	98.6	1.0	70.0	5	5	24.0	125
3KP70A	77.8	89.5	1.0	70.0	5	5	26.8	113
3KP75	83.3	105.7	1.0	75.0	5	5	22.4	134
3KP75A	83.3	95.8	1.0	75.0	5	5	24.8	121
3KP78	86.7	109.8	1.0	78.0	5	5	21.6	139
3KP78A	86.7	99.7	1.0	78.0	5	5	22.8	126
3KP85	94.4	119.2	1.0	85.0	5	5	19.8	151
3KP85A	94.4	108.2	1.0	85.0	5	5	20.8	137
3KP90	100	126.5	1.0	90.0	5	5	18.8	160
3KP90A	100	115.5	1.0	90.0	5	5	20.6	146
3KP100	111	141.0	1.0	100	5	5	16.6	179
3KP100A	111	128.0	1.0	100	5	5	18.6	162
3KP110	122	154.5	1.0	110	5	5	15.4	196
3KP110A	122	140.5	1.0	110	5	5	16.8	177
3KP120	133	169.0	1.0	120	5	5	14.0	214
3KP120A	133	153.0	1.0	120	5	5	15.6	193
3KP130	144	182.5	1.0	130	5	5	13.0	231
3KP130A	144	165.5	1.0	130	5	5	14.4	209
3KP150	167	211.5	1.0	150	5	5	11.2	268
3KP150A	167	192.5	1.0	150	5	5	12.4	243
3KP160	178	226.0	1.0	160	5	5	10.4	287
3KP160A	178	205.0	1.0	160	5	5	11.6	259
3KP170	189	239.5	1.0	170	5	5	9.8	304
3KP170A	189	217.5	1.0	170	5	5	11.0	275
3KP180	196	253.8	1.0	180	5	5	9.3	322
3KP180A	196	230.4	1.0	180	5	5	10.3	292
3KP190	209	267.9	1.0	190	5	5	8.8	340
3KP190A	209	243.2	1.0	190	5	5	9.7	308
3KP200	220	282.0	1.0	200	5	5	8.4	358
3KP200A	220	256.0	1.0	200	5	5	9.3	324
3KP210	231	296.1	1.0	210	5	5	7.8	376
3KP210A	231	268.8	1.0	210	5	5	8.8	340
3KP220	242	310.2	1.0	220	5	5	7.6	394
3KP220A	242	281.6	1.0	220	5	5	8.4	356

Notes: 1. $V_{(BR)}$ measured after I_T applied for 300us, I_T=square wave pulse or equivalent
2. Surge current waveform per Fig. 3 and derate per Fig. 2

Application:

The 3KP series of high power transient voltage suppressors were designed to be used on the output of switching power supplies. These devices may be used to replace crowbar circuits. Both the 5 and 10 percent voltage tolerances are referenced to the power supply output voltage level.
They are able to withstand high levels of peak current while allowing a circuit breaker to trip or a fuse blow before shorting. This will enable the user to reset the breaker or replace the fuse and continue operation. For this type operation, it is recommended that a sufficient mounting surface be used for dissipating the heat generated by the Transient Voltage Suppressor during the transient or over-voltage condition.
Transient Voltage Suppressors are Silicon PN Junction devices designed for absorption of high voltage transients associated with power disturbances, switching and induced lighting effects. This series is available from 5.0 volts thru 220 volts.

RATINGS AND CHARACTERISTIC CURVES

(T_A = 25°C unless otherwise noted)

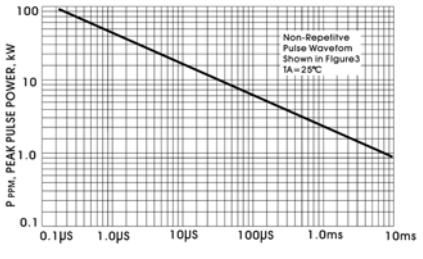


FIGURE 1-PEAK PULSE POWER VS PULSE TIME

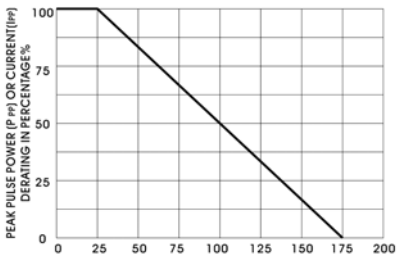


FIGURE2 DERATING CURVE

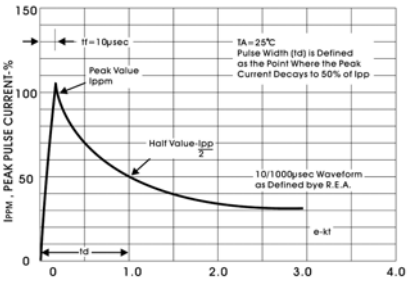


FIGURE 3-PULSE WAVEFORM

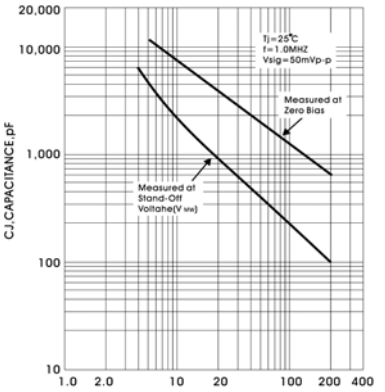


FIGURE 4
TYPICAL CAPACITANCE
VS STAND-OFF VOLTAGE

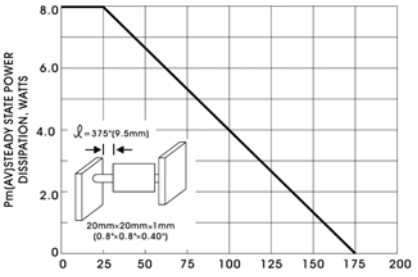


FIG.5-STEADY STATE POWER DERATING CURVE

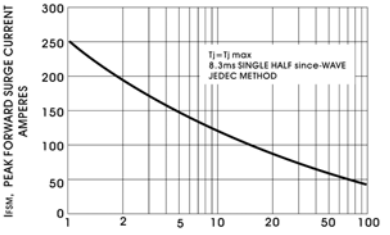


FIG.6-MAXIMUM NON-REPETITEVE PEAK FORWARD SURGE CURRENT UNIDIRECTIONAL