

# S5KP SERIES

# SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

**V<sub>RM</sub> : 5.0 - 180 Volts**  
**P<sub>PK</sub> : 5000 Watts**

### FEATURES :

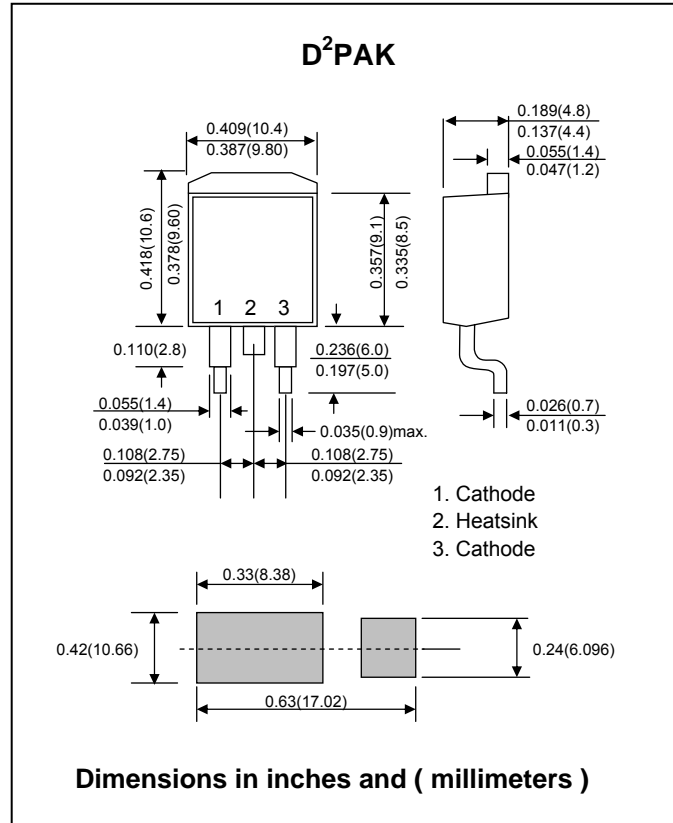
- \* 5000W Peak Pulse Power
- \* Excellent clamping capability
- \* Low incremental surge resistance
- \* Fast response time : typically less than 1.0 ps from 0 volt to V<sub>BR(min.)</sub>
- \* Pb / RoHS Free

### MECHANICAL DATA

- \* Case : D<sup>2</sup>PAK(TO-263)
- \* Epoxy : UL94V-O rate flame retardant
- \* Lead : Surface Mount per J-STD-020C, Method 208 guaranteed
- \* Polarity : Heatsink is Anode
- \* Mounting position : Any
- \* Weight : 1.7 grams (approximately)

### DEVICES FOR UNIPOLAR APPLICATIONS

For uni-directional without "C"  
 Electrical characteristics apply in both directions



### MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified

Rating	Symbol	Value	Unit
Peak Pulse Power Dissipation at t <sub>p</sub> = 1ms (Note 1, Fig. 4)	P <sub>PK</sub>	Minimum 5000	W
Steady State Power Dissipation	P <sub>D</sub>	5.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method) (Note 2)	I <sub>FSM</sub>	400	A
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	- 55 to + 150	°C

#### Notes:

- (1) Non-repetitive Current pulse, per Fig. 5 and derated above Ta = 25 °C per Fig. 1
- (2) Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minutes maximum.

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

TYPE	Breakdown Voltage @ I <sub>T</sub> ( Note 1 )		Reverse Stand off Voltage	Maximum Reverse Leakage @ V <sub>RM</sub>	Maximum Peak Pulse Current <sup>(2)</sup>	Maximum Clamping Voltage @ I <sub>PPM</sub>	Maximum Temperature Coefficient of V <sub>BR</sub> (%/°C)	
	V <sub>BR</sub> (V)							V <sub>RM</sub>
	Min.	Max.	(mA)	(V)	(µA)	(A)	(V)	
S5KP5.0C	6.40	7.30	50	5.0	10000	520	9.60	0.057
S5KP5.0CA	6.40	7.00	50	5.0	10000	543	9.20	0.057
S5KP6.0C	6.67	8.15	50	6.0	10000	439	11.4	0.061
S5KP6.0CA	6.67	7.37	50	6.0	10000	485	10.3	0.061
S5KP6.5C	7.22	8.82	50	6.5	4000	407	12.3	0.065
S5KP6.5CA	7.22	7.98	50	6.5	4000	447	11.2	0.065
S5KP7.0C	7.78	9.51	5.0	7.0	2000	378	13.3	0.068
S5KP7.0CA	7.78	8.60	5.0	7.0	2000	417	12.0	0.068
S5KP7.5C	8.33	10.2	5.0	7.5	500	350	14.3	0.073
S5KP7.5CA	8.33	9.21	5.0	7.5	500	388	12.9	0.073
S5KP8.0C	8.89	10.9	5.0	8.0	300	333	15.0	0.075
S5KP8.0CA	8.89	9.83	5.0	8.0	300	367	13.6	0.075
S5KP8.5C	9.44	11.5	5.0	8.5	100	314	15.9	0.078
S5KP8.5CA	9.44	10.4	5.0	8.5	100	347	14.4	0.078
S5KP9.0C	10.0	12.2	5.0	9.0	40	295	16.9	0.081
S5KP9.0CA	10.0	11.1	5.0	9.0	40	325	15.4	0.081
S5KP10C	11.1	13.6	5.0	10	30	266	18.8	0.084
S5KP10CA	11.1	12.3	5.0	10	30	294	17.0	0.084
S5KP11C	12.2	14.9	5.0	11	10	249	20.1	0.086
S5KP11CA	12.2	13.5	5.0	11	10	274	18.2	0.086
S5KP12C	13.3	16.3	5.0	12	10	227	22.0	0.088
S5KP12CA	13.3	14.7	5.0	12	10	251	19.9	0.088
S5KP13C	14.4	17.6	5.0	13	10	210	23.8	0.090
S5KP13CA	14.4	15.9	5.0	13	10	232	21.5	0.090
S5KP14C	15.6	19.1	5.0	14	10	194	25.8	0.092
S5KP14CA	15.6	17.2	5.0	14	10	215	23.2	0.092
S5KP15C	16.7	20.4	5.0	15	10	188	26.9	0.094
S5KP15CA	16.7	18.5	5.0	15	10	206	24.4	0.094
S5KP16C	17.8	21.8	5.0	16	10	176	28.8	0.096
S5KP16CA	17.8	19.7	5.0	16	10	192	26.0	0.096
S5KP17C	18.9	23.1	5.0	17	10	164	30.5	0.097
S5KP17CA	18.9	20.9	5.0	17	10	181	27.6	0.097
S5KP18C	20.0	24.4	5.0	18	10	155	32.2	0.098
S5KP18CA	20.0	22.1	5.0	18	10	172	29.2	0.098
S5KP20C	22.2	27.1	5.0	20	10	139	35.8	0.099
S5KP20CA	22.2	24.5	5.0	20	10	154	32.4	0.099
S5KP22C	24.4	29.8	5.0	22	10	127	39.4	0.100
S5KP22CA	24.4	26.9	5.0	22	10	141	35.5	0.100
S5KP24C	26.7	32.6	5.0	24	10	116	43.0	0.101
S5KP24CA	26.7	29.5	5.0	24	10	128	38.9	0.101
S5KP26C	28.9	35.3	5.0	26	10	107	46.6	0.101
S5KP26CA	28.9	31.9	5.0	26	10	119	42.1	0.101
S5KP28C	31.1	38.0	5.0	28	10	99	50.1	0.102
S5KP28CA	31.1	34.4	5.0	28	10	110	45.4	0.102
S5KP30C	33.3	40.7	5.0	30	10	93	53.5	0.103
S5KP30CA	33.3	36.8	5.0	30	10	103	48.4	0.103
S5KP33C	36.7	44.9	5.0	33	10	85	59.0	0.104
S5KP33CA	36.7	40.6	5.0	33	10	94	53.3	0.104
S5KP36C	40.0	48.9	5.0	36	10	78	64.3	0.104
S5KP36CA	40.0	44.2	5.0	36	10	86	58.1	0.104

## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

TYPE	Breakdown Voltage @ I <sub>T</sub> ( Note 1 )		Reverse Stand off Voltage	Maximum Reverse Leakage @ V <sub>RM</sub>	Maximum Peak Pulse Current <sup>(2)</sup>	Maximum Clamping Voltage @ I <sub>PPM</sub>	Maximum Temperature Coefficient of V <sub>BR</sub> (%/°C)	
	V <sub>BR</sub> (V)							I <sub>T</sub> (mA)
	Min.	Max.						
S5KP40C	44.4	54.3	5.0	40	10	70	71.4	0.105
S5KP40CA	44.4	49.1	5.0	40	10	78	64.5	0.105
S5KP43C	47.8	58.4	5.0	43	10	65	76.7	0.105
S5KP43CA	47.8	52.8	5.0	43	10	72	69.4	0.105
S5KP45C	50.0	61.1	5.0	45	10	62	80.3	0.106
S5KP45CA	50.0	55.3	5.0	45	10	69	72.7	0.106
S5KP48C	53.3	65.2	5.0	48	10	58	85.5	0.106
S5KP48CA	53.3	58.9	5.0	48	10	65	77.4	0.106
S5KP51C	56.7	69.3	5.0	51	10	55	91.1	0.107
S5KP51CA	56.7	62.7	5.0	51	10	61	82.4	0.107
S5KP54C	60.0	73.3	5.0	54	10	52	96.3	0.107
S5KP54CA	60.0	66.3	5.0	54	10	57	87.1	0.107
S5KP56C	62.2	76.1	5.0	56	10	50	100	0.107
S5KP56CA	62.2	68.8	5.0	56	10	55	91	0.107
S5KP58C	64.4	78.7	5.0	58	10	49	103	0.107
S5KP58CA	64.4	71.2	5.0	58	10	53	94	0.107
S5KP60C	66.7	81.5	5.0	60	10	47	107	0.108
S5KP60CA	66.7	73.7	5.0	60	10	52	97	0.108
S5KP64C	71.1	96.9	5.0	64	10	44	114	0.108
S5KP64CA	71.1	78.6	5.0	64	10	49	103	0.108
S5KP70C	77.6	95.1	5.0	70	10	40	125	0.108
S5KP70CA	77.6	86.0	5.0	70	10	44	113	0.108
S5KP75C	83.3	102	5.0	75	10	37	134	0.108
S5KP75CA	83.3	92.1	5.0	75	10	41	121	0.108
S5KP78C	86.7	106	5.0	78	10	36	139	0.108
S5KP78CA	86.7	95.8	5.0	78	10	40	126	0.108
S5KP85C	94.4	115	5.0	85	10	33	151	0.108
S5KP85CA	94.4	104	5.0	85	10	36	137	0.110
S5KP90C	100	122	5.0	90	10	31	160	0.110
S5KP90CA	100	111	5.0	90	10	34	146	0.110
S5KP100C	111	136	5.0	100	10	28	179	0.110
S5KP100CA	111	123	5.0	100	10	31	162	0.110
S5KP110C	122	149	5.0	110	10	26	196	0.112
S5KP110CA	122	135	5.0	110	10	28	177	0.112
S5KP120C	133	163	5.0	120	10	24	211	0.112
S5KP120CA	133	147	5.0	120	10	26	194	0.112
S5KP150C	167	204	5.0	150	10	19	263	0.112
S5KP150CA	167	184	5.0	150	10	21	242	0.112
S5KP160C	178	217	5.0	160	10	18	281	0.114
S5KP160CA	178	196	5.0	160	10	19	258	0.114
S5KP170C	189	231	5.0	170	10	17	298	0.114
S5KP170CA	189	209	5.0	170	10	18	274	0.114
S5KP180C	200	244	5.0	180	10	16	316	0.114
S5KP180CA	200	221	5.0	180	10	17	290	0.114

### Notes:

- (1) V<sub>BR</sub> measured after I<sub>T</sub> applied for 300 µs., I<sub>T</sub> = square wave pulse or equivalent.
- (2) Surge Current waveform per Fig. 5.
- (3) V<sub>F</sub> = 3.5 Volts max. for devices of V<sub>R</sub> < 100 V, and V<sub>F</sub> = 5 Volts max. for devices of V<sub>R</sub> > 100 V.
- (4) " S KP " will be omitted in marking on the diode.

## RATING AND CHARACTERISTIC CURVES ( S5KP SERIES )

FIG.1 - PULSE DERATING CURVE

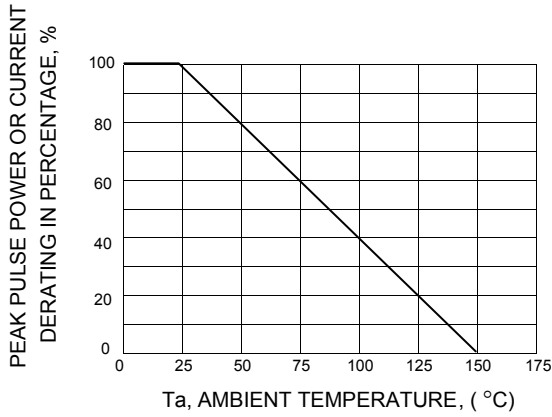


FIG.2 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

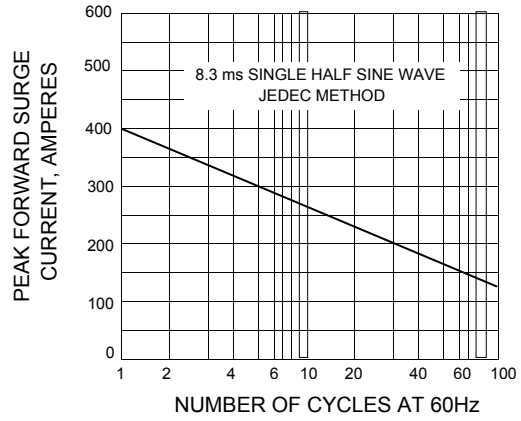


FIG.3 - STEADY STATE POWER DERATING

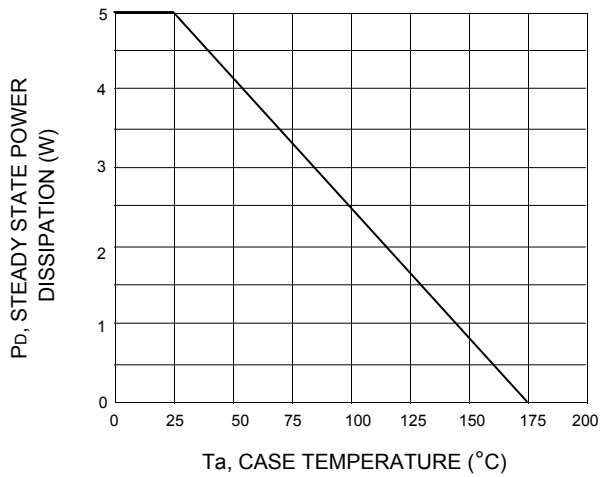


FIG.4 - PEAK PULSE POWER RATING CURVE

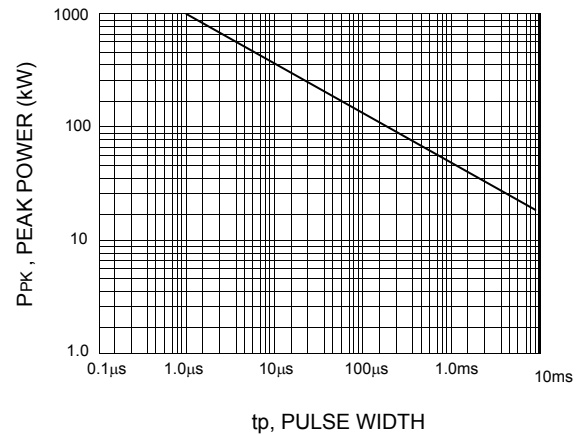


FIG.5 - PULSE WAVEFORM

