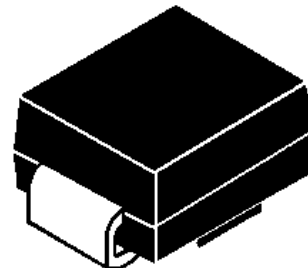


# 1500W Surface Mount Transient Voltage Suppressors



## Features

- ⌘ Working peak reverse voltage range – 5.0V to 440V.
- ⌘ Peak power dissipation 1500W @10 x 1000 us Pulse
- ⌘ Low profile package.
- ⌘ Excellent clamping capability.
- ⌘ Glass passivated junction.
- ⌘ Fast response time: typically less than 1 ns for Uni-direction.  
Less than 5 ns for Bi-direction, from 0 Volts to BV min
- ⌘ Typical IR less than 1uA above 10V.
- ⌘ Plastic material has UL flammability classification 94V-O
- ⌘ RoHS compliant in lead-free versions

## Mechanical Characteristics

CASE: Void-free, JEDEC SMC Molded Plastic over glass passivated junction..

Mounting Position: Any

Polarity: by cathode band denotes uni-directional device, none cathode band denotes bi-directional device.

Terminal: Solder plated, solderable per MIL-STD-750, Method 2026

## Maximum Ratings And Characteristics @ 25°C Ambient Temperature (unless otherwise noted)

Parameter	Symbol	Value	Units
Peak Pulse Power Dissipation on 10/1000 us Waveform (Note 1, 2, FIG.1)	P <sub>PPM</sub>	Min 1500	W
Peak Pulse Current of on 10/1000us Waveform (Note 1, FIG.3)	I <sub>PPM</sub>	See Table 1	Amps
Peak Forward Surge Current, 8.3ms Single Half Sine-wave Superimposed on Rated Load, (JEDEC Method) (Note 2. 3)	I <sub>FSM</sub>	200	Amps
Operating Junction Temperature Range	T <sub>J</sub>	-55 to 150	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to 150	°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 5.0mm<sup>2</sup> (0.03mm thick) Copper Pads to each terminal.
3. 8.3 ms single half sine-wave, or equivalent square wave, Duty cycle=4 pluses per minute maximum.

## Electrical Specification @ Tamb 25°C

Type Number		Marking		Reverse Stand-Off Voltage	Breakdown Voltage Min. @I <sub>T</sub>	Breakdown Voltage Max. @ I <sub>T</sub>	Test Current	Maximum Clamping Voltage @I <sub>PP</sub>	Peak Pulse Current	Reverse Leakage @V <sub>RMW</sub>
(Uni)	(Bi)	(Uni)	(Bi)	V <sub>RMW</sub> (V)	V <sub>BR MIN</sub> (V)	V <sub>BR MAX</sub> (V)	I <sub>T</sub> (mA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A)	I <sub>R</sub> ( $\mu$ A)
KSMCJ5.0	KSMCJ5.0C	GDD	BDD	5.0	6.40	7.55	10.0	9.6	156.3	800.0
KSMCJ5.0A	KSMCJ5.0CA	GDE	BDE	5.0	6.40	7.25	10.0	9.2	163.0	800.0
KSMCJ6.0	KSMCJ6.0C	GDF	BDF	6.0	6.67	8.45	10.0	11.4	131.6	800.0
KSMCJ6.0A	KSMCJ6.0CA	GDG	BDG	6.0	6.67	7.67	10.0	10.3	145.6	800.0
KSMCJ6.5	KSMCJ6.5C	GDH	BDH	6.5	7.22	9.14	10.0	12.3	122.0	500.0
KSMCJ6.5A	KSMCJ6.5CA	GDK	BDK	6.5	7.22	8.30	10.0	11.2	133.9	500.0
KSMCJ7.0	KSMCJ7.0C	GDL	BDL	7.0	7.78	9.86	10.0	13.3	112.8	200.0
KSMCJ7.0A	KSMCJ7.0CA	GDM	BDM	7.0	7.78	8.95	10.0	12.0	125.0	200.0
KSMCJ7.5	KSMCJ7.5C	GDN	BDN	7.5	8.33	10.67	1.0	14.3	104.9	100.0
KSMCJ7.5A	KSMCJ7.5CA	GDP	BDP	7.5	8.33	9.58	1.0	12.9	116.3	100.0
KSMCJ8.0	KSMCJ8.0C	GDQ	BDQ	8.0	8.89	11.3	1.0	15.0	100.0	50.0
KSMCJ8.0A	KSMCJ8.0CA	GDR	BDR	8.0	8.89	10.23	1.0	13.6	110.3	50.0
KSMCJ8.5	KSMCJ8.5C	GDS	BDS	8.5	9.44	11.92	1.0	15.9	94.3	20.0
KSMCJ8.5A	KSMCJ8.5CA	GDT	BDT	8.5	9.44	10.82	1.0	14.4	104.2	20.0
KSMCJ9.0	KSMCJ9.0C	GDU	BDU	9.0	10.0	12.6	1.0	16.9	88.8	10.0
KSMCJ9.0A	KSMCJ9.0CA	GDV	BDV	9.0	10.0	11.5	1.0	15.4	97.4	10.0
KSMCJ10	KSMCJ10C	GDW	BDW	10	11.1	14.1	1.0	18.8	79.8	5.0
KSMCJ10A	KSMCJ10CA	GDX	BDX	10	11.1	12.8	1.0	17.0	88.2	5.0
KSMCJ11	KSMCJ11C	GDY	BDY	11	12.2	15.4	1.0	20.1	74.6	5.0
KSMCJ11A	KSMCJ11CA	GDZ	BDZ	11	12.2	14.0	1.0	18.2	82.4	5.0
KSMCJ12	KSMCJ12C	GED	BED	12	13.3	16.9	1.0	22.0	68.2	5.0
KSMCJ12A	KSMCJ12CA	GEE	BEE	12	13.3	15.3	1.0	19.9	75.4	5.0
KSMCJ13	KSMCJ13C	GEF	BEF	13	14.4	18.2	1.0	23.8	63.0	5.0
KSMCJ13A	KSMCJ13CA	GEG	BEG	13	14.4	16.5	1.0	21.5	69.8	5.0
KSMCJ14	KSMCJ14C	GEH	BEH	14	15.6	19.8	1.0	25.8	58.1	5.0
KSMCJ14A	KSMCJ14CA	GEK	BEK	14	15.6	17.9	1.0	23.2	64.7	5.0
KSMCJ15	KSMCJ15C	GEL	BEL	15	16.7	21.1	1.0	26.9	55.8	5.0
KSMCJ15A	KSMCJ15CA	GEM	BEM	15	16.7	19.2	1.0	24.4	61.5	5.0
KSMCJ16	KSMCJ16C	GEN	BEN	16	17.8	22.6	1.0	28.8	52.1	5.0
KSMCJ16A	KSMCJ16CA	GEP	BEP	16	17.8	20.5	1.0	26.0	57.7	5.0
KSMCJ17	KSMCJ17C	GEQ	BEQ	17	18.9	23.9	1.0	30.5	49.2	5.0
KSMCJ17A	KSMCJ17CA	GER	BER	17	18.9	21.7	1.0	27.6	54.3	5.0
KSMCJ18	KSMCJ18C	GES	BES	18	20.0	25.3	1.0	32.2	46.6	5.0
KSMCJ18A	KSMCJ18CA	GET	BET	18	20.0	23.3	1.0	29.2	51.4	5.0
KSMCJ20	KSMCJ20C	GEU	BEU	20	22.2	28.1	1.0	35.8	41.9	5.0
KSMCJ20A	KSMCJ20CA	GEV	BEV	20	22.2	25.5	1.0	32.4	46.3	5.0

※ For Bi-directional type having VRWM of 10 Volts and less, the IR limit is double

Type Number		Marking		Reverse Stand-Off Voltage	Breakdown Voltage Min. @I <sub>r</sub>	Breakdown Voltage Max. @ I <sub>r</sub>	Test Current	Maximum Clamping Voltage @I <sub>PP</sub>	Peak Pulse Current	Reverse Leakage @V <sub>RMW</sub>
(Uni)	(Bi)	(Uni)	(Bi)	V <sub>RMW</sub> (V)	V <sub>BR MIN</sub> (V)	V <sub>BR MAX</sub> (V)	I <sub>r</sub> (mA)	V <sub>c</sub> (V)	I <sub>PP</sub> (A)	I <sub>r</sub> (uA)
KSMCJ22	KSMCJ22C	GEW	BEW	22	24.4	30.9	1.0	39.4	38.1	5.0
KSMCJ22A	KSMCJ22CA	GEX	BEX	22	24.4	28.0	1.0	35.5	42.3	5.0
KSMCJ24	KSMCJ24C	GEY	BEY	24	26.7	33.8	1.0	43.0	34.9	5.0
KSMCJ24A	KSMCJ24CA	GEZ	BEZ	24	26.7	30.7	1.0	38.9	38.6	5.0
KSMCJ26	KSMCJ26C	GFD	BFD	26	28.9	36.6	1.0	46.6	32.2	5.0
KSMCJ26A	KSMCJ26CA	GFE	BFE	26	28.9	33.2	1.0	42.1	35.6	5.0
KSMCJ28	KSMCJ28C	GFF	BFF	28	31.1	39.4	1.0	50.0	30.0	5.0
KSMCJ28A	KSMCJ28CA	GFG	BFG	28	31.1	35.8	1.0	45.4	33.0	5.0
KSMCJ30	KSMCJ30C	GFH	BFH	30	33.3	42.2	1.0	53.5	28.0	5.0
KSMCJ30A	KSMCJ30CA	GFK	BFK	30	33.3	38.3	1.0	48.4	31.0	5.0
KSMCJ33	KSMCJ33C	GFL	BFL	33	36.7	46.5	1.0	59.0	25.4	5.0
KSMCJ33A	KSMCJ33CA	GFM	BFM	33	36.7	42.2	1.0	53.3	28.1	5.0
KSMCJ36	KSMCJ36C	GFN	BFN	36	40.0	50.7	1.0	64.3	23.3	5.0
KSMCJ36A	KSMCJ36CA	GFP	BFP	36	40.0	46.0	1.0	58.1	25.8	5.0
KSMCJ40	KSMCJ40C	GFQ	BFQ	40	44.4	56.3	1.0	71.4	21.0	5.0
KSMCJ40A	KSMCJ40CA	GFR	BFR	40	44.4	51.1	1.0	64.5	23.3	5.0
KSMCJ43	KSMCJ43C	GFS	BFS	43	47.8	60.5	1.0	76.7	19.6	5.0
KSMCJ43A	KSMCJ43CA	GFT	BFT	43	47.8	54.9	1.0	69.4	21.6	5.0
KSMCJ45	KSMCJ45C	GFU	BFU	45	50.0	63.3	1.0	80.3	18.7	5.0
KSMCJ45A	KSMCJ45CA	GFV	BFV	45	50.0	57.5	1.0	72.7	20.6	5.0
KSMCJ48	KSMCJ48C	GJS	BSJ	48	53.3	67.5	1.0	85.5	17.5	5.0
KSMCJ48A	KSMCJ48CA	GJT	BJT	48	53.3	61.3	1.0	77.4	19.4	5.0
KSMCJ51	KSMCJ51C	GJU	BJU	51	56.7	71.8	1.0	91.1	16.5	5.0
KSMCJ51A	KSMCJ51CA	GJV	BJV	51	56.7	65.2	1.0	82.4	18.2	5.0
KSMCJ54	KSMCJ54C	GFW	BFW	54	60.0	76.0	1.0	96.3	15.6	5.0
KSMCJ54A	KSMCJ54CA	GFY	BFY	54	60.0	69.0	1.0	87.1	17.2	5.0
KSMCJ58	KSMCJ58C	GFY	BFY	58	64.4	81.6	1.0	103	14.6	5.0
KSMCJ58A	KSMCJ58CA	GFZ	BFZ	58	64.4	74.1	1.0	93.6	16.0	5.0
KSMCJ60	KSMCJ60C	GGD	BGD	60	66.7	84.5	1.0	107	14.0	5.0
KSMCJ60A	KSMCJ60CA	GGE	BGE	60	66.7	76.7	1.0	96.8	15.5	5.0
KSMCJ64	KSMCJ64C	GGF	BGF	64	71.1	90.1	1.0	114	13.2	5.0
KSMCJ64A	KSMCJ64CA	GGG	BGG	64	71.1	81.8	1.0	103	14.6	5.0
KSMCJ70	KSMCJ70C	GGH	BGH	70	77.8	98.6	1.0	125	12.0	5.0
KSMCJ70A	KSMCJ70CA	GGK	BGK	70	77.8	89.5	1.0	113	13.3	5.0
KSMCJ75	KSMCJ75C	GGL	BGL	75	83.0	105.7	1.0	134	11.2	5.0
KSMCJ75A	KSMCJ75CA	GGM	BGM	75	83.0	95.8	1.0	121	12.4	5.0
KSMCJ78	KSMCJ78C	GGN	BGN	78	86.0	109.8	1.0	139	10.8	5.0
KSMCJ78A	KSMCJ78CA	GGP	BGP	78	86.0	99.7	1.0	126	11.9	5.0

※ For Bi-directional type having VRWM of 10 Volts and less, the IR limit is double

Type Number		Marking		Reverse Stand-Off Voltage	Breakdown Voltage Min. @I <sub>T</sub>	Breakdown Voltage Max. @ I <sub>T</sub>	Test Current	Maximum Clamping Voltage @I <sub>PP</sub>	Peak Pulse Current	Reverse Leakage @V <sub>RMW</sub>
(Uni)	(Bi)	(Uni)	(Bi)	V <sub>RMW</sub> (V)	V <sub>BR MIN</sub> (V)	V <sub>BR MAX</sub> (V)	I <sub>T</sub> (mA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A)	I <sub>R</sub> (uA)
KSMCJ85	KSMCJ85C	GGQ	BGQ	85	94.0	119.2	1.0	151	9.9	5.0
KSMCJ85A	KSMCJ85CA	GGR	BGR	85	94.0	108.2	1.0	137	10.9	5.0
KSMCJ90	KSMCJ90C	GGG	BGS	90	100	126.5	1.0	160	9.4	5.0
KSMCJ90A	KSMCJ90CA	GGT	BGT	90	100	115.5	1.0	146	10.3	5.0
KSMCJ100	KSMCJ100C	GGU	BGU	100	111	141.0	1.0	179	8.4	5.0
KSMCJ100A	KSMCJ100CA	GGV	BGV	100	111	128.0	1.0	162	9.3	5.0
KSMCJ110	KSMCJ110C	GGW	BGW	110	122	154.5	1.0	196	7.7	5.0
KSMCJ110A	KSMCJ110CA	GGX	BGX	110	122	140.5	1.0	177	8.5	5.0
KSMCJ120	KSMCJ120C	GGY	BGY	120	133	169.0	1.0	214	7.0	5.0
KSMCJ120A	KSMCJ120CA	GGZ	BGZ	120	133	153.0	1.0	193	7.8	5.0
KSMCJ130	KSMCJ130C	GHD	BHD	130	144	182.5	1.0	231	6.5	5.0
KSMCJ130A	KSMCJ130CA	GHE	BHE	130	144	165.5	1.0	209	7.2	5.0
KSMCJ150	KSMCJ150C	GHF	BHF	150	167	211.5	1.0	268	5.6	5.0
KSMCJ150A	KSMCJ150CA	GHG	BHG	150	167	192.5	1.0	243	6.2	5.0
KSMCJ160	KSMCJ160C	GHH	BHH	160	178	226.0	1.0	287	5.2	5.0
KSMCJ160A	KSMCJ160CA	GHK	BHK	160	178	205.0	1.0	259	5.8	5.0
KSMCJ170	KSMCJ170C	GHL	BHL	170	189	239.5	1.0	304	4.9	5.0
KSMCJ170A	KSMCJ170CA	GHM	BHM	170	189	217.5	1.0	275	5.5	5.0
KSMCJ180	KSMCJ180C	GHN	BHN	180	200	253.8	1.0	321	4.7	5.0
KSMCJ180A	KSMCJ180CA	GHP	BHP	180	200	230.4	1.0	290	5.2	5.0
KSMCJ190	KSMCJ190C	GHQ	BHQ	190	211	267.9	1.0	339	4.4	5.0
KSMCJ190A	KSMCJ190CA	GHR	BHR	190	211	243.2	1.0	306	4.9	5.0
KSMCJ200	KSMCJ200C	GHW	BHW	200	222	282.0	1.0	356	4.2	5.0
KSMCJ200A	KSMCJ200CA	GHX	BHX	200	222	256.0	1.0	322	4.7	5.0
KSMCJ210	KSMCJ210C	GHY	BHY	210	233	296.1	1.0	375	4.0	5.0
KSMCJ210A	KSMCJ210CA	GHZ	BHZ	210	233	268.8	1.0	339	4.4	5.0
KSMCJ220	KSMCJ220C	GJD	BJD	220	244	310.2	1.0	392	3.8	5.0
KSMCJ220A	KSMCJ220CA	GJE	BJE	220	244	281.6	1.0	355	4.2	5.0
KSMCJ250	KSMCJ250C	GJF	BJF	250	278	342.5	1.0	447	3.4	5.0
KSMCJ250A	KSMCJ250CA	GJG	BJG	250	278	309.0	1.0	403	3.7	5.0
KSMCJ300	KSMCJ300C	GJH	BJH	300	333	411.0	1.0	535	2.8	5.0
KSMCJ300A	KSMCJ300CA	GJK	BJK	300	333	371.0	1.0	484	3.1	5.0
KSMCJ350	KSMCJ350C	GJL	BJL	350	389	479.5	1.0	624	2.4	5.0
KSMCJ350A	KSMCJ350CA	GJM	BJM	350	389	432.0	1.0	565	2.7	5.0
KSMCJ400	KSMCJ400C	GJN	BJN	400	444	548.0	1.0	687	2.2	5.0
KSMCJ400A	KSMCJ400CA	GJP	BJP	400	444	494.0	1.0	645	2.3	5.0
KSMCJ440	KSMCJ440C	GJQ	BJQ	440	489	602.8	1.0	786	1.9	5.0
KSMCJ440A	KSMCJ440CA	GJR	BJR	440	489	543.0	1.0	710	2.1	5.0

※ For Bi-directional type having VRWM of 10 Volts and less, the IR limit is double

Ratings and Characteristic Curves  $T_A=25^\circ\text{C}$  unless otherwise noted

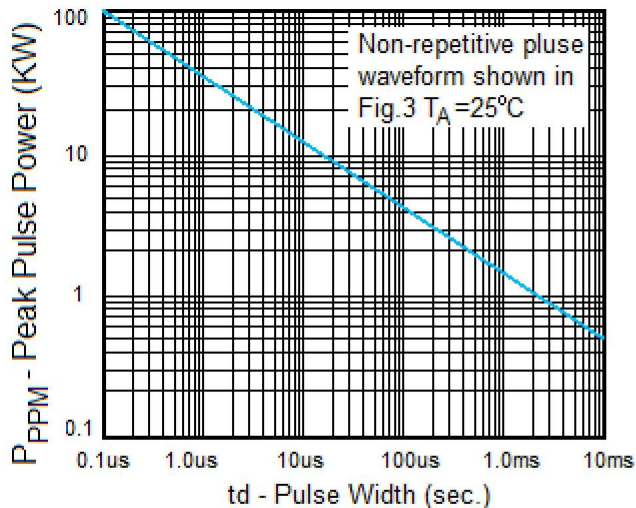


Fig. 1 Peak Pulse Power Rating

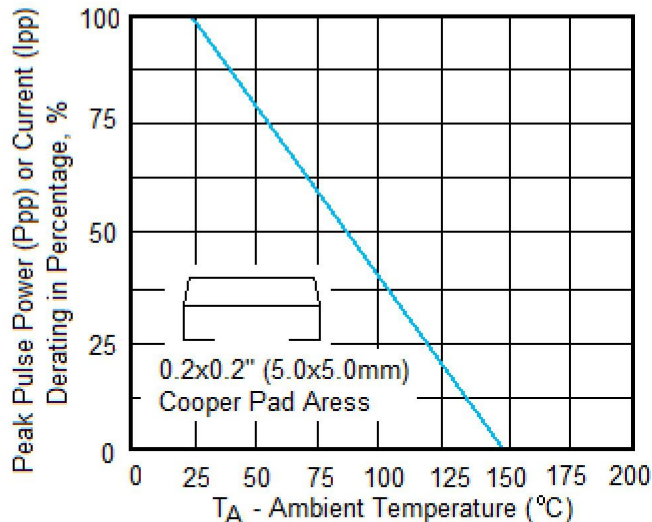


Fig.2 Pulse Derating Curve

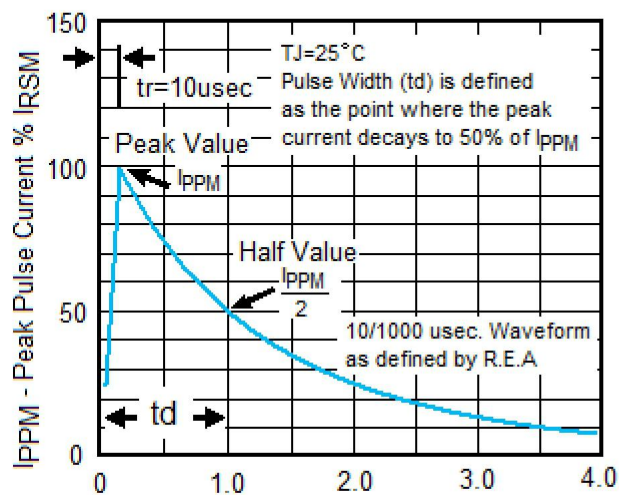


Fig.3 Pulse Waveform

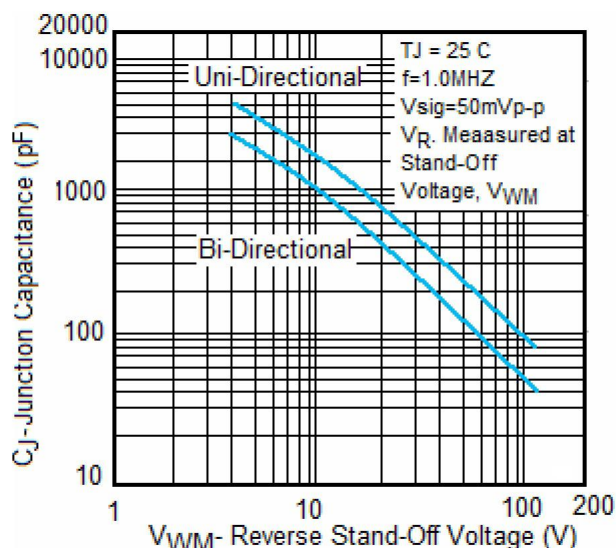
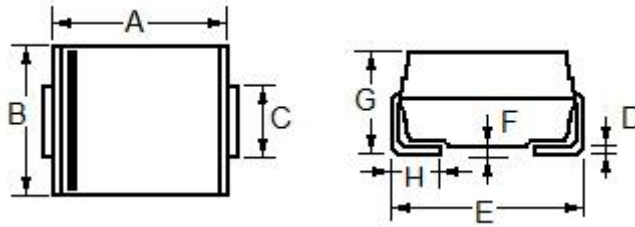


Fig. 4- Typical Junction Capacitance

Package Outline Dimensions and Pad Layouts

SMC



Dim	Millimeters		Inches	
	Min	Max	Min	Max
A	6.60	7.11	0.260	0.280
B	5.59	6.22	0.220	0.245
C	2.90	3.20	0.114	0.126
D	0.125	0.305	0.006	0.012
E	7.60	8.13	0.299	0.320
F	----	0.203	----	0.008
G	2.06	2.62	0.079	0.103
H	0.76	1.52	0.030	0.060