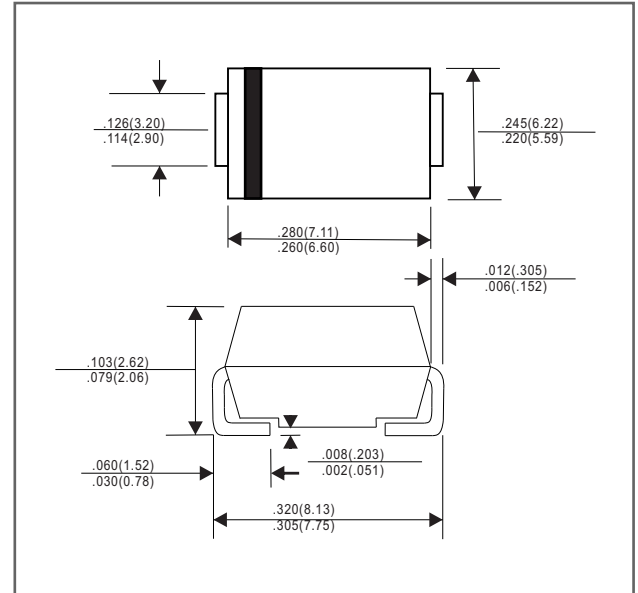


### 5000W Surface Mount Transient Voltage Suppressors - 11.0V-170V

### Package outline

#### SMC-F



Dimensions in inches and (millimeters)

### Features

- 3000W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetition rate(duty cycle): 0.01%.
- Excellent clamping capability.
- Low incremental surge resistance.
- Fast response time from 0V to VBR, typically less than 1 ps for uni-directional & 5 ns for bi-directional types.
- Glass passivated chip junction.
- Lead-free parts meet RoHS requirements.
- Suffix "-H" indicates Halogen-free parts, ex. 5.0SMCJ11(C)AG-H.

### Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, DO-214AB/SMC-F
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity : Indicated by cathode band
- Mounting Position : Any
- Weight :Approximated 0.21 gram

### Maximum ratings (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

PARAMETER	CONDITIONS	Symbol	SMCJ Series	UNIT
Peak Power Dissipation	with a 10/1000 $\mu$ s waveform, Note 1, 2 & Fig. 1	$P_{PPM}$	5000	W
Peak Pulse current	with a 10/1000 $\mu$ s waveform	$I_{PPM}$	See Table 1	A
Steady State PowerDissipation	at $T_J=75^\circ\text{C}$ , Note 2	$P_{M(AV)}$	6.5	W
Peak Forward Surge Current	8.3mS Single Half Sine-Wave, Note 3	$I_{FSM}$	400	A
Maximum Instantaneous Forward Voltage	at 100A For Uni-Directional Types Only	$V_F$	3.5/5.0	V
Operating Temperature		$T_J$	-55 ~ +150	$^\circ\text{C}$
Storage temperature		$T_{STG}$	-65 ~ +175	$^\circ\text{C}$

Note 1. Non-repetitive current pulse, per Fig. 3 and derated above  $T_A=25^\circ\text{C}$  per Fig. 2

2. Mounted on copper pad area of 0.2"x0.2" (5.0x5.0 mm) per Fig 5

3. Measured on 8.3 mS single half sine-wave or equivalent square wave, duty cycle=4 pulses per minute maximum

## Electrical characteristics (at T = 25°C, unless otherwise noted)

Part No.	Reverse Stand-off Voltage	Breakdown Voltage		Test Current	Peak Forward Surge Current	Maximum Clamping Voltage @ I <sub>PP</sub>		Maximum Leakage Current
	V <sub>RWM</sub>	V <sub>BR Min</sub>	V <sub>BR Max</sub>	I <sub>T</sub>	I <sub>FSM</sub>	V <sub>C</sub>	I <sub>PP</sub>	I <sub>R</sub> @V <sub>RWM</sub>
	Volts	Volts	Volts	mA	A	Volts	A	μA
5.0SMCJ11(C)AG	11	12.2	13.5	10	400	18.2	275.0	800
5.0SMCJ12(C)AG	12	13.3	14.7	10	400	19.9	252.0	800
5.0SMCJ13(C)AG	13	14.4	15.9	10	400	21.5	233.0	500
5.0SMCJ14(C)AG	14	15.6	17.2	10	400	23.2	216.0	200
5.0SMCJ15(C)AG	15	16.7	18.5	1.0	400	24.4	205.0	100
5.0SMCJ16(C)AG	16	17.8	19.7	1.0	400	26.0	193.0	50
5.0SMCJ17(C)AG	17	18.9	20.9	1.0	400	27.6	181.0	20
5.0SMCJ18(C)AG	18	20.0	22.1	1.0	400	29.2	172.0	10
5.0SMCJ20(C)AG	20	22.2	24.5	1.0	400	32.4	155.0	5
5.0SMCJ22(C)AG	22	24.4	26.9	1.0	400	35.5	141.0	5
5.0SMCJ24(C)AG	24	26.7	29.5	1.0	400	38.9	129.0	5
5.0SMCJ26(C)AG	26	28.9	31.9	1.0	400	42.1	119.0	5
5.0SMCJ28(C)AG	28	31.1	34.4	1.0	400	45.4	110.0	5
5.0SMCJ30(C)AG	30	33.3	36.8	1.0	400	48.4	103.0	5
5.0SMCJ33(C)AG	33	36.7	40.6	1.0	400	53.3	93.9	5
5.0SMCJ36(C)AG	36	40.0	44.2	1.0	400	58.1	86.1	5
5.0SMCJ40(C)AG	40	44.4	49.1	1.0	400	64.5	77.6	5
5.0SMCJ43(C)AG	43	47.8	52.8	1.0	400	69.4	72.1	5
5.0SMCJ45(C)AG	45	50.0	55.3	1.0	400	72.7	68.8	5
5.0SMCJ48(C)AG	48	53.3	58.9	1.0	400	77.4	64.7	5
5.0SMCJ51(C)AG	51	56.7	62.7	1.0	400	82.4	60.7	5
5.0SMCJ54(C)AG	54	60.0	66.3	1.0	400	87.1	57.5	5
5.0SMCJ58(C)AG	58	64.4	71.2	1.0	400	93.6	53.5	5
5.0SMCJ60(C)AG	60	66.7	73.7	1.0	400	96.8	51.7	5
5.0SMCJ64(C)AG	64	71.1	78.6	1.0	400	103.0	48.6	5
5.0SMCJ70(C)AG	70	77.8	86.6	1.0	400	113.0	44.3	5
5.0SMCJ75(C)AG	75	83.3	92.1	1.0	400	121.0	41.4	5
5.0SMCJ78(C)AG	78	86.7	95.8	1.0	400	126.0	39.7	5
5.0SMCJ85(C)AG	85	94.4	104	1.0	400	137.0	36.5	5
5.0SMCJ90(C)AG	90	100	111	1.0	400	146.0	34.3	5
5.0SMCJ100(C)AG	100	111	123	1.0	400	162.0	30.9	5
5.0SMCJ110(C)AG	110	122	135	1.0	400	177.0	28.3	5
5.0SMCJ120(C)AG	120	133	147	1.0	400	193.0	26.0	5
5.0SMCJ130(C)AG	130	144	159	1.0	400	209.0	24.0	5
5.0SMCJ150(C)AG	150	167	185	1.0	400	243.0	20.6	5
5.0SMCJ160(C)AG	160	178	197	1.0	400	259.0	19.3	5
5.0SMCJ170(C)AG	170	189	209	1.0	400	275.0	18.2	5

Note 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 bi-directional types having V<sub>WM</sub> of 10 volts and less, the I<sub>PP</sub> limit is doubled

4. Suffix 'C' denotes bi-directional devices. Suffix 'A' denotes 5% tolerance devices, no suffix denotes 10% tolerance devices.

5. All terms and symbols are consistent with ANSI/IEEE C62.35

6. Transient Voltage Suppressors (TVS) are devices used to protect vulnerable circuits from electrical overstress such as that caused by electrostatic discharge, inductive load switching and induced lightning. Within the TVS, damaging voltage spikes are limited by clamping or avalanche action of a rugged silicon pn junction which reduces the amplitude of the transient to a nondestructive level. See Fig. 7 & Fig. 8

## Rating and characteristic curves

Fig.1 - Peak Pulse Power Rating Curve

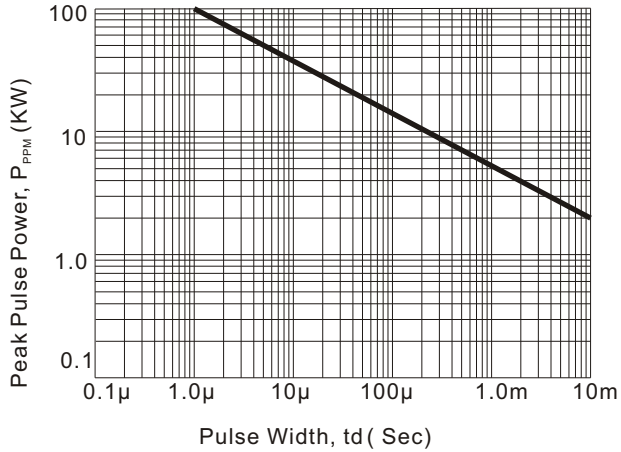


Fig.2 - Pulse Derating Curve

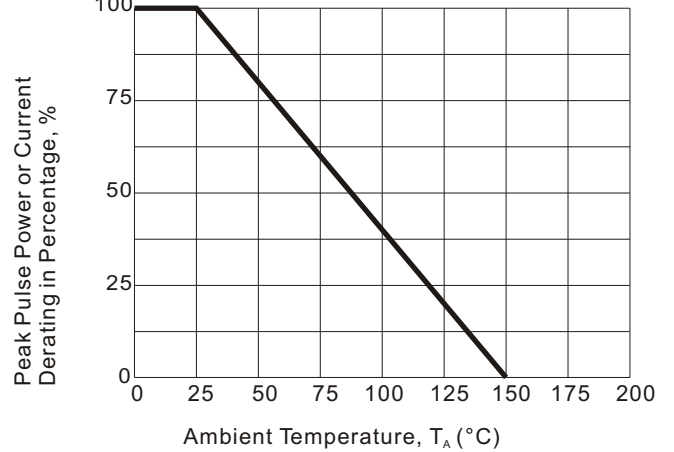


Fig.3 - Pulse Waveform

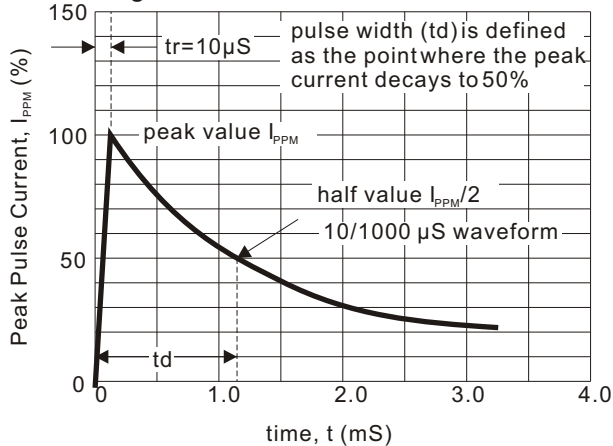
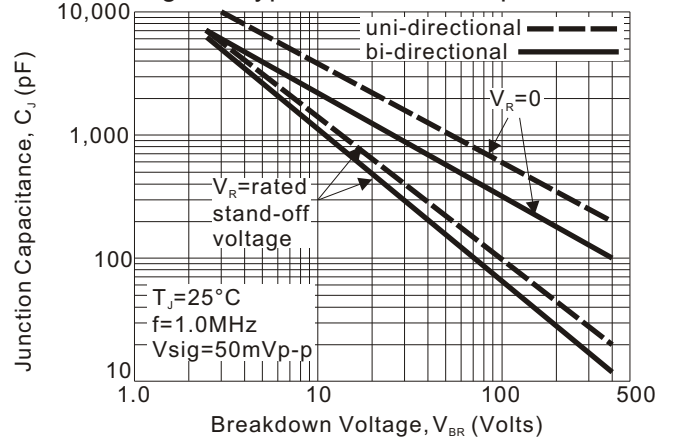


Fig.4 - Typical Junction Capacitance



## Rating and characteristic curves

Fig.5 - Steady State Power Derating Curve

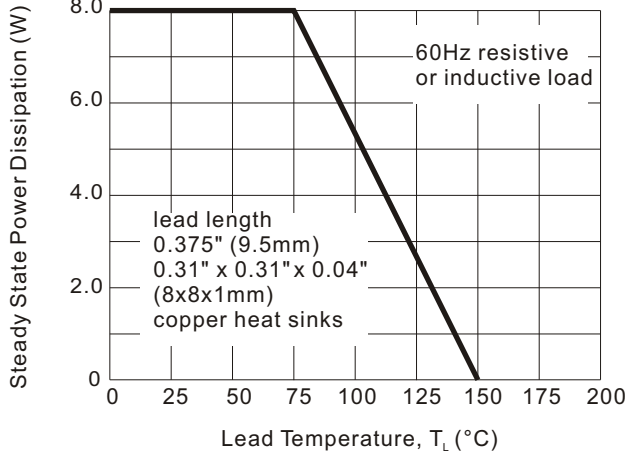


Fig.6 - Maximum Non-Repetitive Forward Surge Current

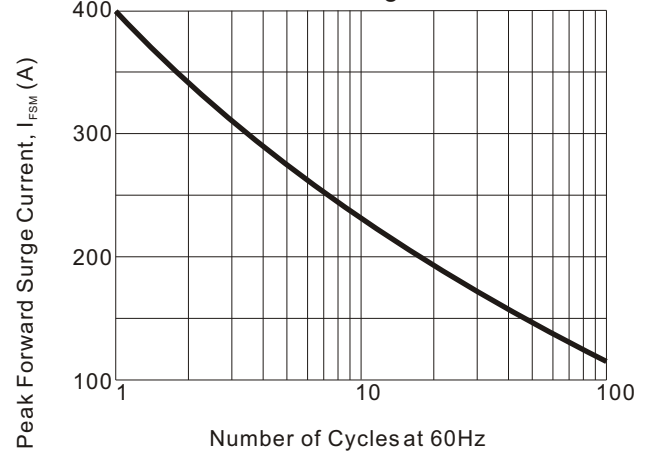


Fig. 7 - Transients of several thousand volts can be clamped to a safe level by the TVS

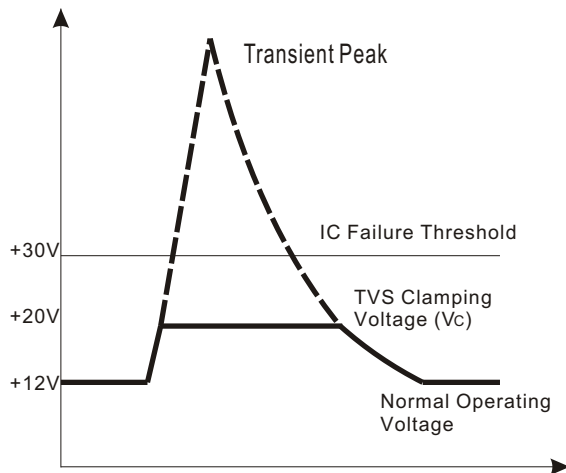


Fig. 8 - Transient current is diverted to ground thru TVS; the voltage seen by the protected load is limited to the clamping voltage level

