

# SMCJ Series

## TRANSIENT VOLTAGE SUPPRESSORS

**Stand-off Voltage : 5.0 to 170 V**

**Peak Pulse Power : 1500 W**

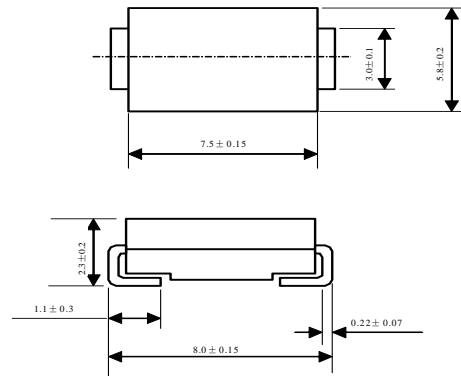
### Features

- 1500 W peak pulse power capability on 10 /1000  $\mu$ s
- Excellent clamping capability
- Fast response time: typically less than 1 ps from 0 V to  $V_{(BR)}$  for unidirectional and 5 ns for bidirectional types

### Mechanical Data

- Case: SMC (DO-214AB) molded plastic
- Epoxy: UL 94V-0 rate flame retardant
- Terminals: Solder plated
- Polarity: Color band denotes cathode end

**SMC (DO-214AB)**



Dimensions in mm

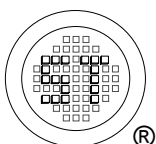
### Types for Bidirectional Applications

- For bidirectional use C or CA suffix for types SMCJ5.0 thru types SMCJ170A (e.g. SMCJ5.0C, SMCJ170CA)
- Electrical characteristics apply in both directions

### Maximum Ratings and Electrical Characteristics

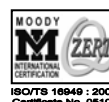
Ratings at 25 °C ambient temperature unless otherwise specified. Single phase, half wave, 50 Hz, resistive or inductive load. For capacitive load, derate by 20%

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation with a 10/1000 $\mu$ s Waveform	$P_{PPM}$	Min. 1500	W
Peak Pulse Current with a 10/1000 $\mu$ s Waveform	$I_{PPM}$	See Next Table	A
Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Unidirectional only	$I_{FSM}$	200	A
Maximum Instantaneous Forward Voltage at 100 A for Unidirectional only	$V_F$	3.5	V
Operating Junction and Storage Temperature Range	$T_J, T_{Stg}$	- 55 to + 150	°C



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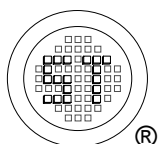
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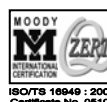
## Electrical Characteristics ( $T_a = 25\text{ }^\circ\text{C}$ unless otherwise specified)

Uni-directional / Bi-directional Type <sup>3)</sup>	Stand-off Voltage $V_{WM}$ (V)	Breakdown Voltage <sup>1)</sup>		Test Current $I_T$ (mA)	Maximum Clamping Voltage $V_C$ (V) at $I_{PPM}$	Maximum Peak Pulse Current $I_{PPM}$ (A)	Maximum Reverse Leakage <sup>2)</sup> $I_D$ ( $\mu\text{A}$ ) at $V_{WM}$
		$V_{BR}$ (V) Min. at $I_T$	$V_{BR}$ (V) Max. at $I_T$				
SMCJ5.0 / C	5	6.4	7.3	10	9.6	164	1000
SMCJ5.0A / CA	5	6.4	7	10	9.2	171	1000
SMCJ6.0 / C	6	6.67	8.15	10	11.4	138	1000
SMCJ6.0A / CA	6	6.67	7.37	10	10.3	152	1000
SMCJ6.5 / C	6.5	7.22	8.82	10	12.3	128	500
SMCJ6.5A / CA	6.5	7.22	7.98	10	11.2	140	500
SMCJ7.0 / C	7	7.78	9.51	10	13.3	118	200
SMCJ7.0A / CA	7	7.78	8.6	10	12	131	200
SMCJ7.5 / C	7.5	8.33	10.3	1	14.3	110	100
SMCJ7.5A / CA	7.5	8.33	9.21	1	12.9	122	100
SMCJ8.0 / C	8	8.89	10.9	1	15	105	50
SMCJ8.0A / CA	8	8.89	9.83	1	13.6	115	50
SMCJ8.5 / C	8.5	9.44	11.5	1	15.9	99	20
SMCJ8.5A / CA	8.5	9.44	10.4	1	14.4	109	20
SMCJ9.0 / C	9	10	12.2	1	16.9	93	10
SMCJ9.0A / CA	9	10	11.1	1	15.4	102	10
SMCJ10 / C	10	11.1	13.6	1	18.8	83	5
SMCJ10A / CA	10	11.1	12.3	1	17	92	5
SMCJ11 / C	11	12.2	14.9	1	20.1	78	5
SMCJ11A / CA	11	12.2	13.5	1	18.2	86	5
SMCJ12 / C	12	13.3	16.3	1	22	71	5
SMCJ12A / CA	12	13.3	14.7	1	19.9	79	5
SMCJ13 / C	13	14.4	17.6	1	23.8	66	5
SMCJ13A / CA	13	14.4	15.9	1	21.5	73	5
SMCJ14 / C	14	15.6	19.1	1	25.8	61	5
SMCJ14A / CA	14	15.6	17.2	1	23.2	67	5
SMCJ15 / C	15	16.7	20.4	1	26.9	58	5
SMCJ15A / CA	15	16.7	18.5	1	24.4	64	5
SMCJ16 / C	16	17.8	21.8	1	28.8	54	5
SMCJ16A / CA	16	17.8	19.7	1	26	60	5
SMCJ17 / C	17	18.9	23.1	1	30.5	51	5
SMCJ17A / CA	17	18.9	20.9	1	27.6	57	5
SMCJ18 / C	18	20	24.4	1	32.2	48	5
SMCJ18A / CA	18	20	22.1	1	29.2	53	5
SMCJ20 / C	20	22.2	27.1	1	35.8	43	5
SMCJ20A / CA	20	22.2	24.5	1	32.4	48	5
SMCJ22 / C	22	24.4	29.8	1	39.4	39	5
SMCJ22A / CA	22	24.4	26.9	1	35.5	44	5
SMCJ24 / C	24	26.7	32.6	1	43	36	5
SMCJ24A / CA	24	26.7	29.5	1	38.9	40	5
SMCJ26 / C	26	28.9	35.3	1	46.6	33	5
SMCJ26A / CA	26	28.9	31.9	1	42.1	37	5
SMCJ28 / C	28	31.1	38	1	50	31	5
SMCJ28A / CA	28	31.1	34.4	1	45.4	34	5
SMCJ30 / C	30	33.3	40.7	1	53.5	29	5
SMCJ30A / CA	30	33.3	36.8	1	48.4	32	5
SMCJ33 / C	33	36.7	44.9	1	59	26	5
SMCJ33A / CA	33	36.7	40.6	1	53.3	29	5



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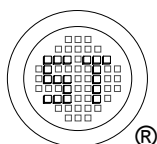
## Electrical Characteristics ( $T_a = 25\text{ }^\circ\text{C}$ unless otherwise specified)

Uni-directional / Bi-directional Type <sup>3)</sup>	Stand-off Voltage $V_{WM}$ (V)	Breakdown Voltage <sup>1)</sup>		Test Current $I_T$ (mA)	Maximum Clamping Voltage $V_C$ (V) at $I_{PPM}$	Maximum Peak Pulse Current $I_{PPM}$ (A)	Maximum Reverse Leakage <sup>2)</sup> $I_D$ ( $\mu\text{A}$ ) at $V_{WM}$
		$V_{BR}$ (V) Min. at $I_T$	$V_{BR}$ (V) Max. at $I_T$				
SMCJ36 / C	36	40	48.9	1	64.3	24	5
SMCJ36A / CA	36	40	44.2	1	58.1	27	5
SMCJ40 / C	40	44.4	54.3	1	71.4	22	5
SMCJ40A / CA	40	44.4	49.1	1	64.5	24	5
SMCJ43 / C	43	47.8	58.4	1	76.7	20	5
SMCJ43A / CA	43	47.8	52.8	1	69.4	22	5
SMCJ45 / C	45	50	61.1	1	80.3	19	5
SMCJ45A / CA	45	50	55.3	1	72.7	21	5
SMCJ48 / C	48	53.3	65.1	1	85.5	18	5
SMCJ48A / CA	48	53.3	58.9	1	77.4	20	5
SMCJ51 / C	51	56.7	69.3	1	91.1	17	5
SMCJ51A / CA	51	56.7	62.7	1	82.4	19	5
SMCJ54 / C	54	60	73.3	1	96.3	16	5
SMCJ54A / CA	54	60	66.3	1	87.1	18	5
SMCJ58 / C	58	64.4	78.7	1	103	15	5
SMCJ58A / CA	58	64.4	71.2	1	93.6	16	5
SMCJ60 / C	60	66.7	81.5	1	107	14	5
SMCJ60A / CA	60	66.7	73.7	1	96.8	16	5
SMCJ64 / C	64	71.1	86.9	1	114	13.8	5
SMCJ64A / CA	64	71.1	78.6	1	103	15	5
SMCJ70 / C	70	77.8	95.1	1	125	12.6	5
SMCJ70A / CA	70	77.8	86	1	113	13.9	5
SMCJ75 / C	75	83.3	102	1	134	11.7	5
SMCJ75A / CA	75	83.3	92.1	1	121	13	5
SMCJ78 / C	78	86.7	106	1	139	11.3	5
SMCJ78A / CA	78	86.7	95.8	1	126	12.5	5
SMCJ85 / C	85	94.4	115	1	151	10.4	5
SMCJ85A / CA	85	94.4	104	1	137	11.5	5
SMCJ90 / C	90	100	122	1	160	9.8	5
SMCJ90A / CA	90	100	111	1	146	10.7	5
SMCJ100 / C	100	111	136	1	179	8.8	5
SMCJ100A / CA	100	111	123	1	162	9.7	5
SMCJ110 / C	110	122	149	1	196	8	5
SMCJ110A / CA	110	122	135	1	177	8.9	5
SMCJ120 / C	120	133	163	1	214	7.3	5
SMCJ120A / CA	120	133	147	1	193	8.1	5
SMCJ130 / C	130	144	176	1	231	6.8	5
SMCJ130A / CA	130	144	159	1	209	7.5	5
SMCJ150 / C	150	167	204	1	268	5.8	5
SMCJ150A / CA	150	167	185	1	243	6.4	5
SMCJ160 / C	160	178	218	1	287	5.4	5
SMCJ160A / CA	160	178	197	1	259	6	5
SMCJ170 / C	170	189	231	1	304	5.1	5
SMCJ170A / CA	170	189	209	1	275	5.7	5

<sup>1)</sup>  $V_{BR}$  measured after  $I_T$  applied for 300  $\mu\text{s}$  square wave pulse or equivalent.

<sup>2)</sup> For bidirectional types having  $V_{WM}$  of 10 V and less, the  $I_D$  limit is doubled.

<sup>3)</sup> For bidirectional use C or CA suffix types, the electrical characteristics apply in both directions



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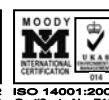
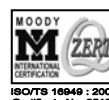


FIG. 1 - PEAK PULSE POWER RATING CURVE

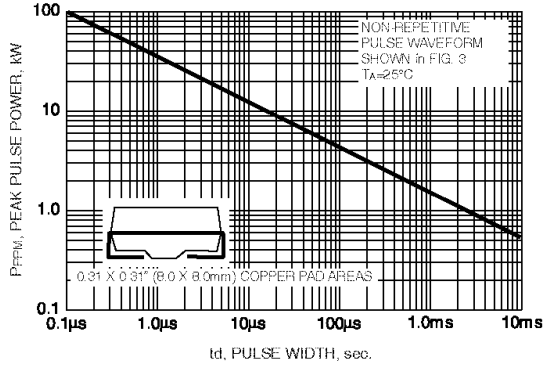


FIG. 2 - PULSE DERATING CURVE

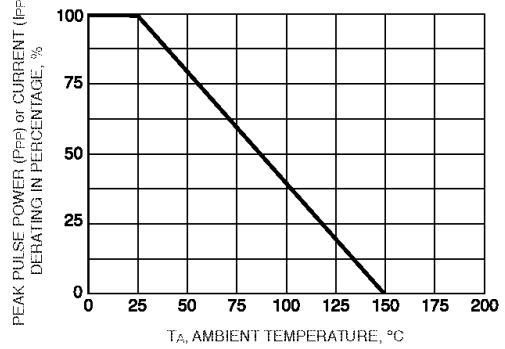


FIG. 3 - PULSE WAVEFORM

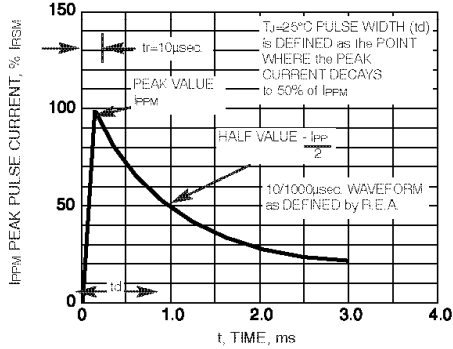


FIG. 4 - TYPICAL JUNCTION CAPACITANCE UNI-DIRECTIONAL

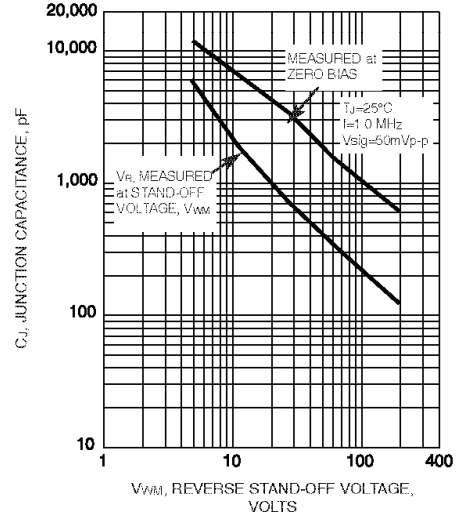


FIG. 5 - TYPICAL JUNCTION CAPACITANCE BI-DIRECTIONAL

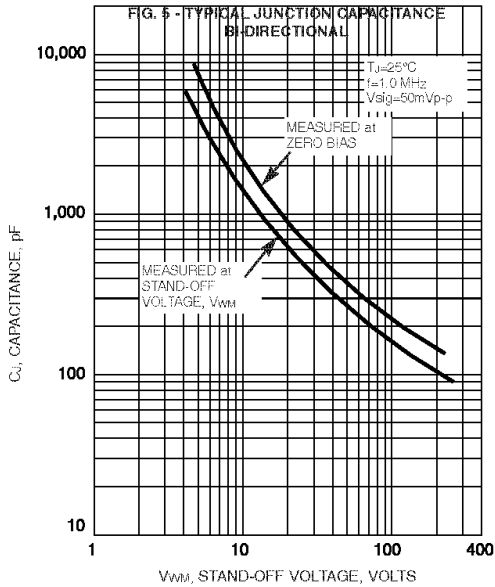
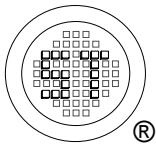
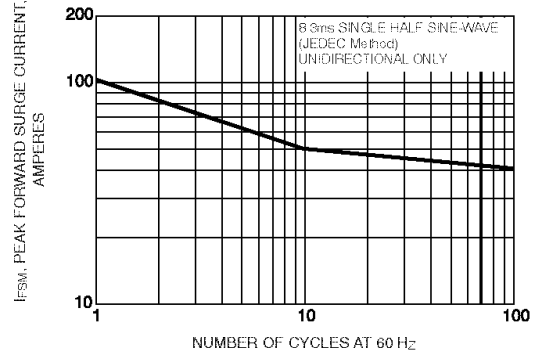
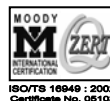


FIG. 6 - MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT



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