

## 1. General description

SMCJ series, 1500W transient voltage suppressor (TVS) in SMC package, designed to protect electronic circuit which induced by lightning surge or other transient voltage situation.

## 2. Features and benefits

- Peak pulse power 1500W @ 10/1000 $\mu$ s waveform
- Excellent clamping capability
- Low incremental surge resistance
- Surface mount package for easy assembly and board space saving
- Typical  $I_R < 1\mu A$  When  $V_R > 12V$
- Fast response time: Typically less than 1.0ps from 0V to BV min
- IEC 61000-4-2 ESD 30kV (Air), 30kV (Contact)
- EFT protection of data lines in accordance with IEC 61000-4-4
- High temperature to reflow soldering guaranteed: 260°C/10sec
- Meet UL94V-0 flammability classification which guaranteed by mold compound
- Meet MSL level1, per J-STD-020
- Lead free lead finish
- Halogen free and RoHS compliant



Bi-directional



Uni-directional

## 3. Applications

- Power supply protection
- Industrial application
- Power management
- I/O interface protection



## 4. Ordering information

Type number	Package name	Orderable part number	Packing method	Small packing quantity	Package version	Package issue date
SMCJxxxXX	SMC	SMCJxxxXXJ	Tape and reel	3000	SMCJ	18-Oct-2020
eg. SMCJ5.0CA	SMC	SMCJ5.0CAJ	Tape and reel	3000	SMCJ	18-Oct-2020

## 5. Absolute maximum ratings

In accordance with the Absolute Maximum Rating System (IEC 60134).

$T_j = 25^\circ C$  unless otherwise specified.

Symbol	Parameter	Conditions	Values	Unit
<b>Absolute maximum rating</b>				
$P_{PPM}$	peak pulse power	[1]	1500	W
$P_{M(AV)}$	steady state power dissipation	on infinite heatsink at $T_a = 50^\circ C$	5	W
$I_{FSM}$	peak forward surge current	$t_p = 8.3$ ms; single half sine-wave pulse; duty cycle = 4 pulses per minute maximum; unidirectional units only	200	A
$V_F$	forward on-state voltage	$I_F = 100$ A; unidirectional units only	3.5	V
$T_{stg}$	storage temperature range		-65 to 150	$^\circ C$
$T_j$	operating temperature range		-65 to 150	$^\circ C$

[1] In accordance with IEC 61643-321 (10/1000  $\mu$ s current waveform).

## 6. Characteristics

$T_j = 25\text{ }^\circ\text{C}$  unless otherwise specified.

PN (Uni)	PN (Bi)	Reverse Stand off Voltage $V_R$ (V)	Breakdown Voltage $V_{BR}$ @ $I_T$ (V)		Test current $I_T$ (mA)	Max. Clamping Voltage $V_C$ @ $I_{PP}$ (V)	Max. Peak Pulse Current $I_{PP}$ (A)	Maximum Reverse Leakage $I_R$ @ $V_R$ ( $\mu$ A)	Marking	
			Min	Max					Uni	Bi
SMCJ5.0A	SMCJ5.0CA	5	6.45	6.98	10	9.2	163	400	C005AJ	C005CJ
SMCJ6.0A	SMCJ6.0CA	6	6.8	7.32	10	10.3	145.7	400	C006AJ	C006CJ
SMCJ6.5A	SMCJ6.5CA	6.5	7.27	7.92	10	11.2	134	250	C06FAJ	C06FCJ
SMCJ7.0A	SMCJ7.0CA	7	7.82	8.57	10	12	125	200	C007AJ	C007CJ
SMCJ8.0A	SMCJ8.0CA	8	8.95	9.76	1	13.6	110.3	100	C008AJ	C008CJ
SMCJ9.0A	SMCJ9.0CA	9	10.1	11	1	15.4	97.4	10	C009AJ	C009CJ
SMCJ10A	SMCJ10CA	10	11.21	12.19	1	17	88.3	5	C010AJ	C010CJ
SMCJ11A	SMCJ11CA	11	12.32	13.38	1	18.2	82.5	1	C011AJ	C011CJ
SMCJ12A	SMCJ12CA	12	13.43	14.57	1	19.9	75.4	1	C012AJ	C012CJ
SMCJ13A	SMCJ13CA	13	14.54	15.76	1	21.5	69.8	1	C013AJ	C013CJ
SMCJ14A	SMCJ14CA	14	15.75	17.04	1	23.2	64.7	1	C014AJ	C014CJ
SMCJ15A	SMCJ15CA	15	16.86	18.33	1	24.4	61.5	1	C015AJ	C015CJ
SMCJ16A	SMCJ16CA	16	17.93	19.56	1	26	57.7	1	C016AJ	C016CJ
SMCJ17A	SMCJ17CA	17	19.05	20.76	1	27.6	54.4	1	C017AJ	C017CJ
SMCJ18A	SMCJ18CA	18	20.19	21.9	1	29.2	51.4	1	C018AJ	C018CJ
SMCJ20A	SMCJ20CA	20	22.41	24.28	1	32.4	46.3	1	C020AJ	C020CJ
SMCJ22A	SMCJ22CA	22	24.63	26.66	1	35.5	42.3	1	C022AJ	C022CJ
SMCJ24A	SMCJ24CA	24	26.95	29.23	1	38.9	38.6	1	C024AJ	C024CJ
SMCJ26A	SMCJ26CA	26	29.12	31.67	1	42.1	35.7	1	C026AJ	C026CJ
SMCJ28A	SMCJ28CA	28	31.33	34.16	1	45.4	33.1	1	C028AJ	C028CJ
SMCJ30A	SMCJ30CA	30	33.55	36.54	1	48.4	31	1	C030AJ	C030CJ
SMCJ33A	SMCJ33CA	33	36.98	40.3	1	53.3	28.2	1	C033AJ	C033CJ
SMCJ36A	SMCJ36CA	36	40.3	43.9	1	58.1	25.9	1	C036AJ	C036CJ
SMCJ40A	SMCJ40CA	40	44.7	48.8	1	64.5	23.3	1	C040AJ	C040CJ
SMCJ43A	SMCJ43CA	43	48.2	52.4	1	69.4	21.7	1	C043AJ	C043CJ
SMCJ45A	SMCJ45CA	45	50.4	54.9	1	72.7	20.6	1	C045AJ	C045CJ
SMCJ48A	SMCJ48CA	48	53.8	58.4	1	77.4	19.4	1	C048AJ	C048CJ
SMCJ51A	SMCJ51CA	51	57.2	62.1	1	82.4	18.2	1	C051AJ	C051CJ
SMCJ54A	SMCJ54CA	54	60.5	65.7	1	87.1	17.3	1	C054AJ	C054CJ
SMCJ58A	SMCJ58CA	58	65	70.6	1	93.6	16.1	1	C058AJ	C058CJ
SMCJ60A	SMCJ60CA	60	67.3	73	1	96.8	15.5	1	C060AJ	C060CJ
SMCJ64A	SMCJ64CA	64	71.6	78	1	103	14.6	1	C064AJ	C064CJ
SMCJ70A	SMCJ70CA	70	78.5	85.2	1	113	13.3	1	C070AJ	C070CJ
SMCJ75A	SMCJ75CA	75	83.9	91.5	1	121	12.4	1	C075AJ	C075CJ
SMCJ78A	SMCJ78CA	78	87.4	95.1	1	126	11.9	1	C078AJ	C078CJ
SMCJ85A	SMCJ85CA	85	95.1	103.2	1	137	11	1	C085AJ	C085CJ

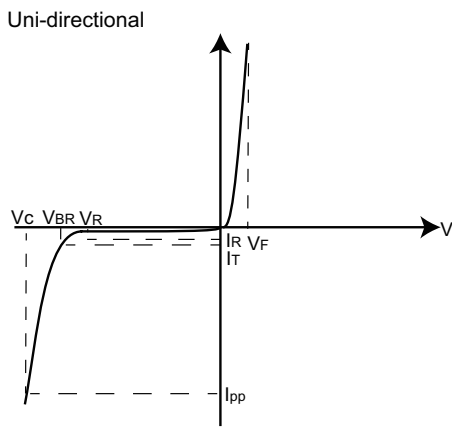


Fig. 1. I-V curve characteristics; Uni-directional

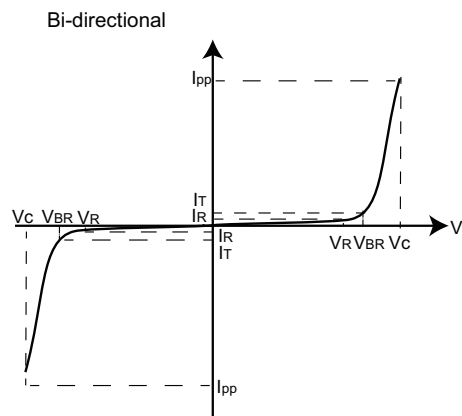


Fig. 2. I-V curve characteristics; Bi-directional

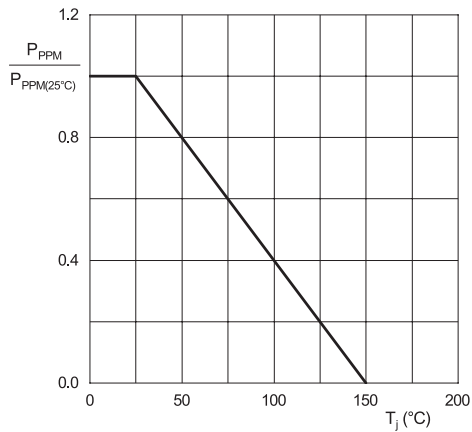


Fig. 3. Peak pulse power derating curve

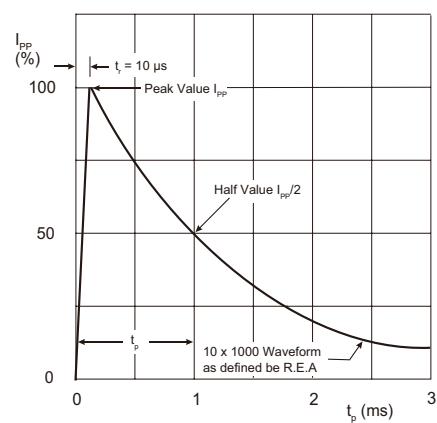


Fig. 4. Pulse waveform

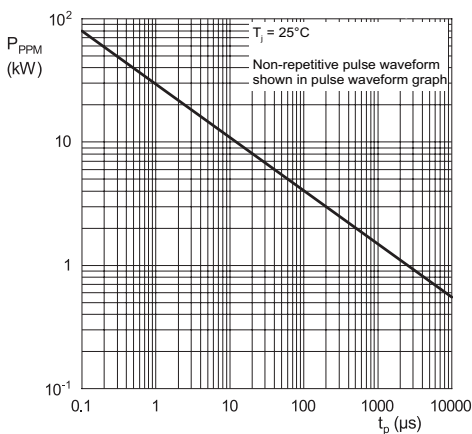


Fig. 5. Peak pulse power rating curve

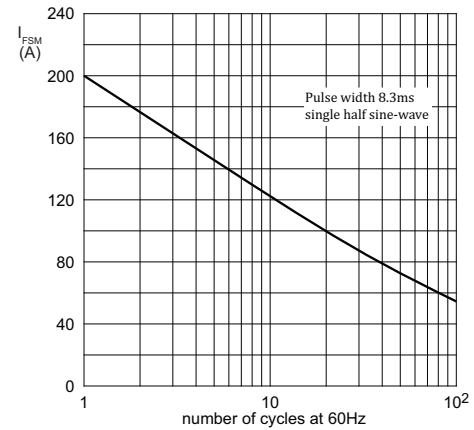


Fig. 6. Maximum non-repetitive surge current

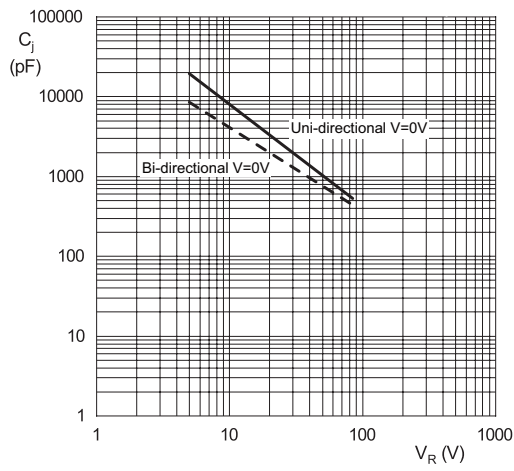


Fig. 7. Typical junction capacitance

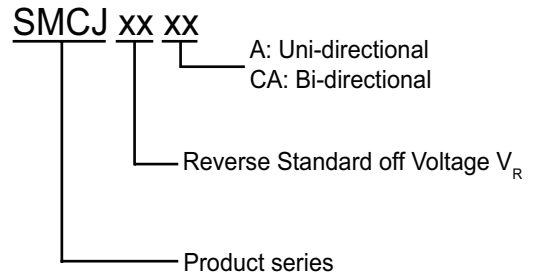


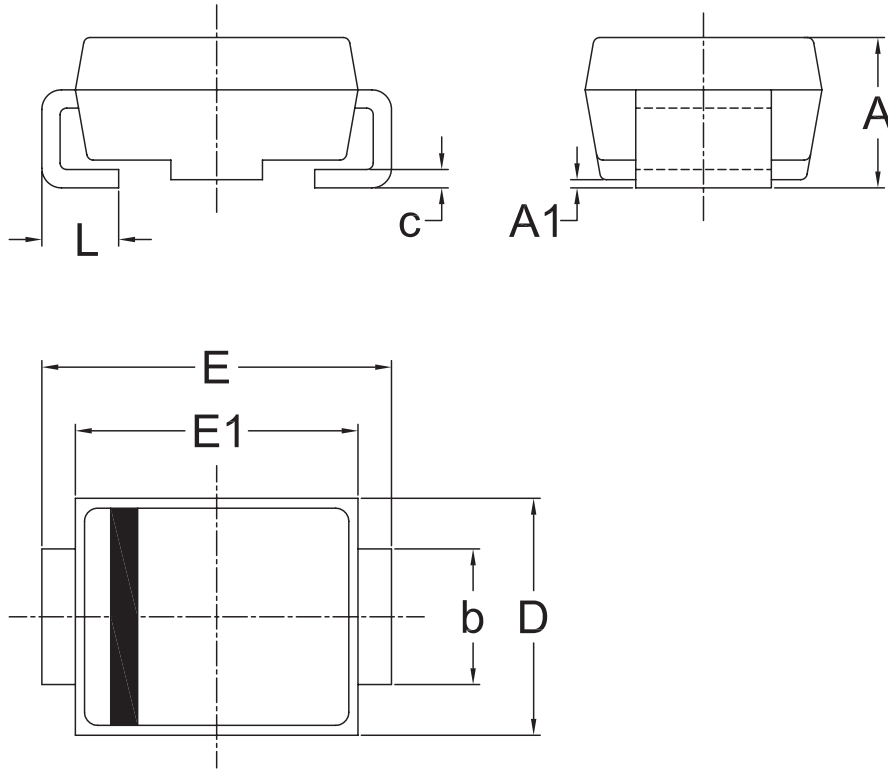
Fig. 8. Part numbering



Fig. 9. Part marking

7. Package outline

SMC



UNIT		A	A1	b	c	D	E	E1	L
mm	Max	2.83	0.30	3.10	0.25	6.15	8.15	7.05	1.60
	Min	2.33	0.00	2.80	0.15	5.85	7.65	6.75	0.90

Remark: Dimensions D and E1 do not include mold flash & gate remain.

## 8. Legal information

### Data sheet status

Document status [1][2]	Product status [3]	Definition
Objective [short] data sheet	Development	This document contains data from the objective specification for product development.
Preliminary [short] data sheet	Qualification	This document contains data from the preliminary specification.
Product [short] data sheet	Production	This document contains the product specification.

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- [2] The term 'short data sheet' is explained in section "Definitions".
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