

## 1. General description

SMDJ series, 3000W 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 3000W @ 10/1000 $\mu$ s waveform
- Excellent clamping capability
- Low incremental surge resistance
- Surface mount package for easy assembly and board space saving
- Typical  $I_R < 2\mu$ A When  $V_R > 12$ V
- 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
SMDJxxxXX	SMC	SMDJxxxXXJ	Tape and reel	3000	SMCJ	18-Oct-2020
eg. SMDJ9.0CA	SMC	SMDJ9.0CAJ	Tape and reel	3000	SMCJ	18-Oct-2020

## 5. Absolute maximum ratings

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

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

Symbol	Parameter	Conditions	Values	Unit
<b>Absolute maximum rating</b>				
$P_{PPM}$	peak pulse power	[1]	3000	W
$P_{M(AV)}$	steady state power dissipation	on infinite heatsink at $T_a = 50^\circ\text{C}$	6.5	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	300	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	$^\circ\text{C}$
$T_j$	operating temperature range		-65 to 150	$^\circ\text{C}$

[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 $I_R$ @ $V_R$ ( $\mu\text{A}$ )	Marking	
			Min	Max					Uni	Bi
SMDJ9.0A	SMDJ9.0CA	9	10.1	11	1	15.4	194.8	10	D009AJ	D009CJ
SMDJ10A	SMDJ10CA	10	11.21	12.19	1	17	176.5	3.5	D010AJ	D010CJ
SMDJ11A	SMDJ11CA	11	12.32	13.33	1	18.2	164.8	2	D011AJ	D011CJ
SMDJ12A	SMDJ12CA	12	13.48	14.57	1	19.9	150.8	2	D012AJ	D012CJ
SMDJ13A	SMDJ13CA	13	14.54	15.76	1	21.5	139.5	2	D013AJ	D013CJ
SMDJ14A	SMDJ14CA	14	15.75	17.04	1	23.2	129.3	2	D014AJ	D014CJ
SMDJ15A	SMDJ15CA	15	16.86	18.33	1	24.4	123	2	D015AJ	D015CJ
SMDJ16A	SMDJ16CA	16	17.94	19.56	1	26	115.4	2	D016AJ	D016CJ
SMDJ17A	SMDJ17CA	17	19.04	20.75	1	27.6	108.7	2	D017AJ	D017CJ
SMDJ18A	SMDJ18CA	18	20.19	21.9	1	29.2	102.7	2	D018AJ	D018CJ
SMDJ20A	SMDJ20CA	20	22.41	24.28	1	32.4	92.6	2	D020AJ	D020CJ
SMDJ22A	SMDJ22CA	22	24.59	26.71	1	35.5	84.5	2	D022AJ	D022CJ
SMDJ24A	SMDJ24CA	24	26.9	29.18	1	38.9	77.1	2	D024AJ	D024CJ
SMDJ26A	SMDJ26CA	26	29.12	31.68	1	42.1	71.3	2	D026AJ	D026CJ
SMDJ28A	SMDJ28CA	28	31.34	34.16	1	45.4	66.1	2	D028AJ	D028CJ
SMDJ30A	SMDJ30CA	30	33.6	36.59	1	48.4	62	2	D030AJ	D030CJ
SMDJ33A	SMDJ33CA	33	36.98	40.3	1	53.3	56.3	2	D033AJ	D033CJ
SMDJ36A	SMDJ36CA	36	40.3	43.9	1	58.1	51.6	2	D036AJ	D036CJ
SMDJ40A	SMDJ40CA	40	44.8	48.8	1	64.5	46.5	2	D040AJ	D040CJ
SMDJ43A	SMDJ43CA	43	48.2	52.4	1	69.4	43.2	2	D043AJ	D043CJ
SMDJ45A	SMDJ45CA	45	50.4	54.9	1	72.7	41.3	2	D045AJ	D045CJ
SMDJ48A	SMDJ48CA	48	53.7	58.5	1	77.4	38.8	2	D048AJ	D048CJ
SMDJ51A	SMDJ51CA	51	57.1	62.3	1	82.4	36.4	2	D051AJ	D051CJ
SMDJ54A	SMDJ54CA	54	60.5	65.8	1	87.1	34.4	2	D054AJ	D054CJ
SMDJ58A	SMDJ58CA	58	64.9	70.7	1	93.6	32.1	2	D058AJ	D058CJ
SMDJ60A	SMDJ60CA	60	67.2	73.2	1	96.8	31	2	D060AJ	D060CJ
SMDJ64A	SMDJ64CA	64	71.6	78	1	103	29.1	2	D064AJ	D064CJ
SMDJ70A	SMDJ70CA	70	78.4	85.4	1	113	26.5	2	D070AJ	D070CJ
SMDJ75A	SMDJ75CA	75	83.9	91.5	1	121	24.8	2	D075AJ	D075CJ
SMDJ78A	SMDJ78CA	78	87.4	95.1	1	126	23.8	2	D078AJ	D078CJ
SMDJ85A	SMDJ85CA	85	95.2	103.3	1	137	21.9	2	D085AJ	D085CJ

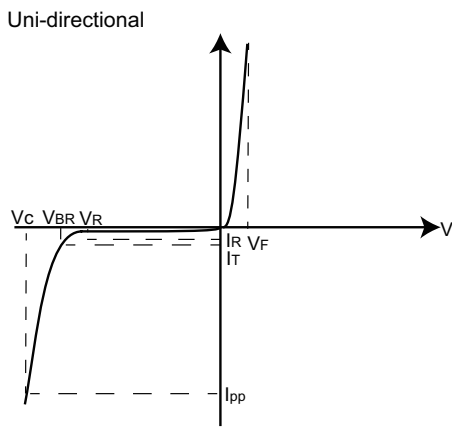


Fig. 1. I-V curve characteristics; Uni-directional

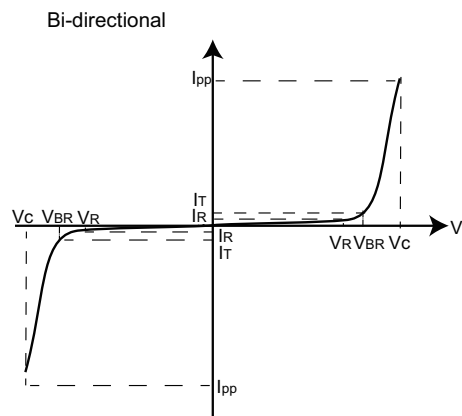


Fig. 2. I-V curve characteristics; Bi-directional

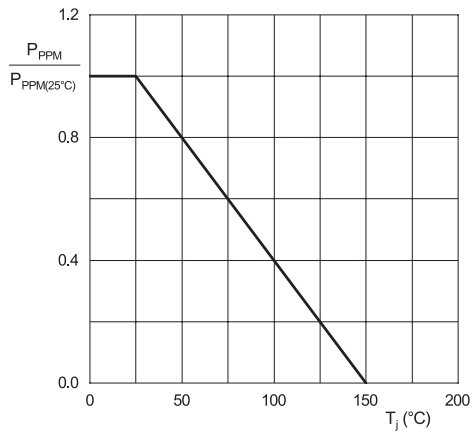


Fig. 3. Peak pulse power derating curve

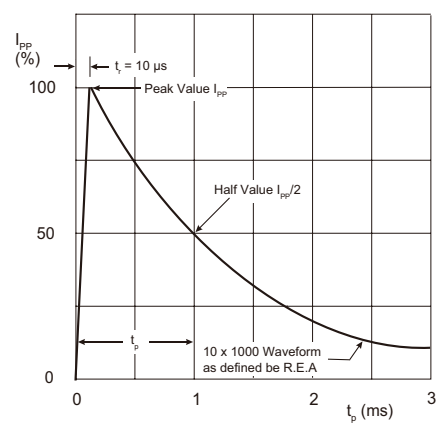


Fig. 4. Pulse waveform

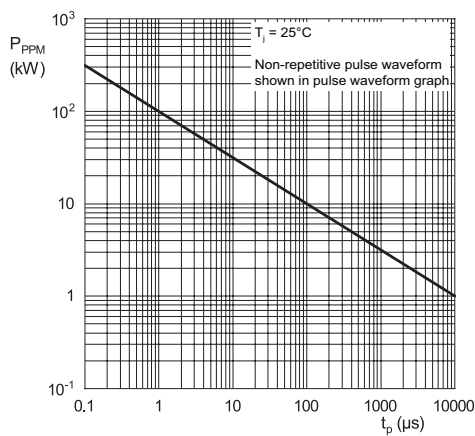


Fig. 5. Peak pulse power rating curve

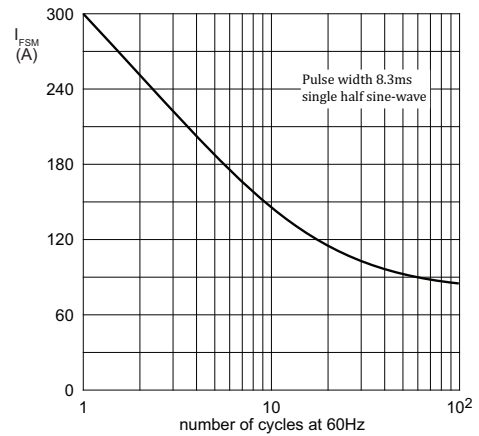


Fig. 6. Maximum non-repetitive surge current

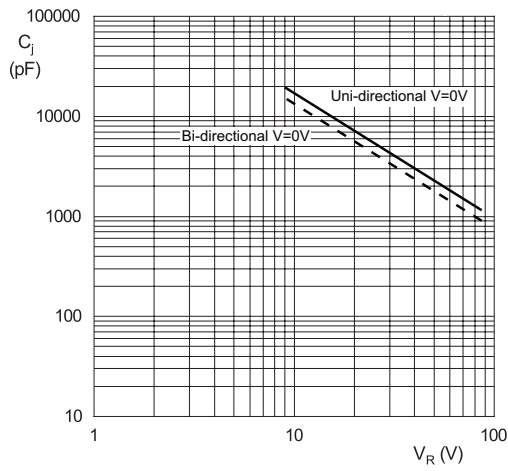


Fig. 7. Typical junction capacitance

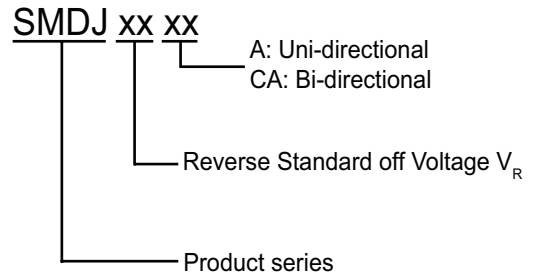


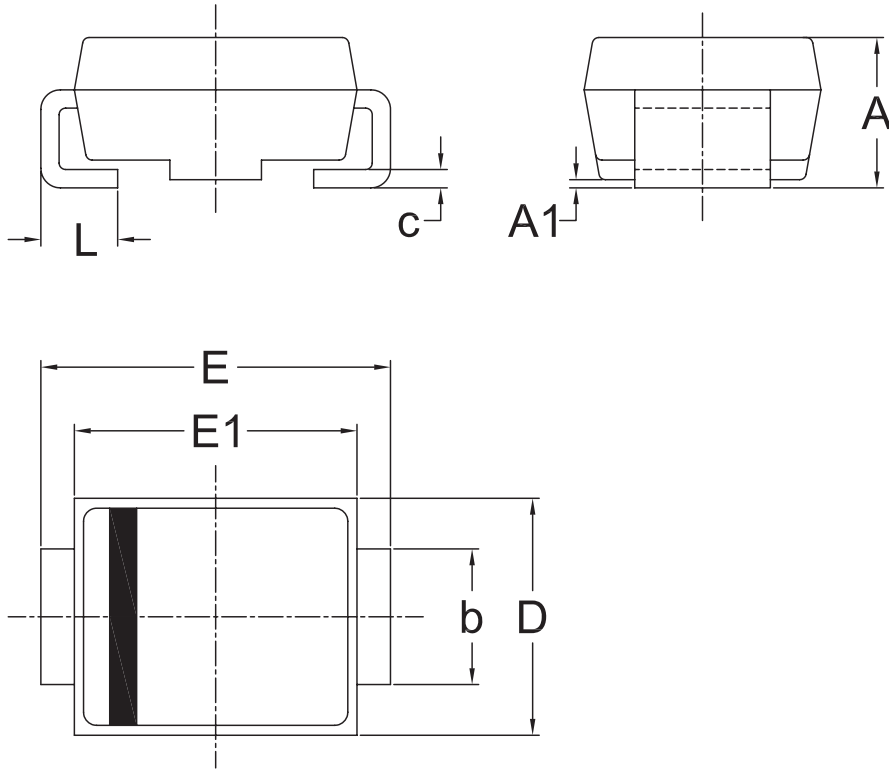
Fig. 8. Part numbering



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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