

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 μ 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
Absolute maximum rating				
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 μ 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 (μA)	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

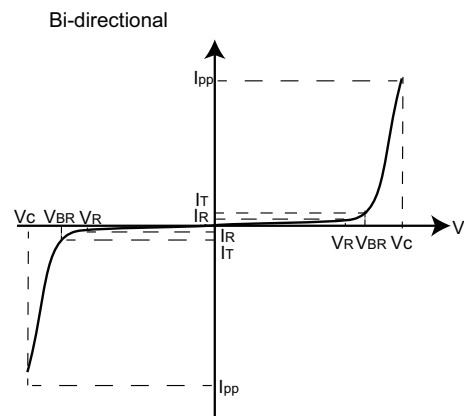


Fig. 2. I-V curve characteristics; Bi-directional



Fig. 3. Peak pulse power derating curve

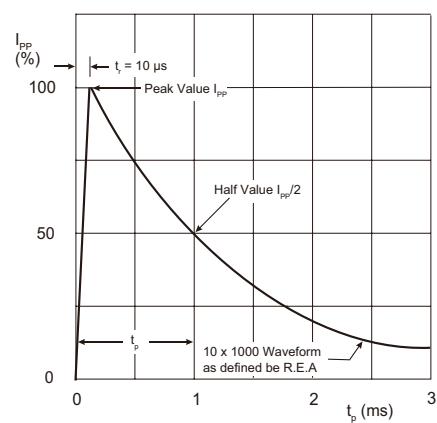


Fig. 4. Pulse waveform

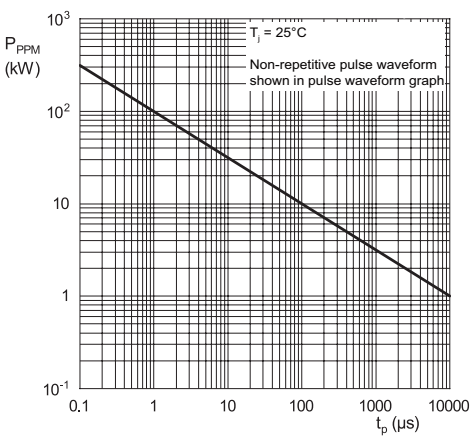


Fig. 5. Peak pulse power rating curve

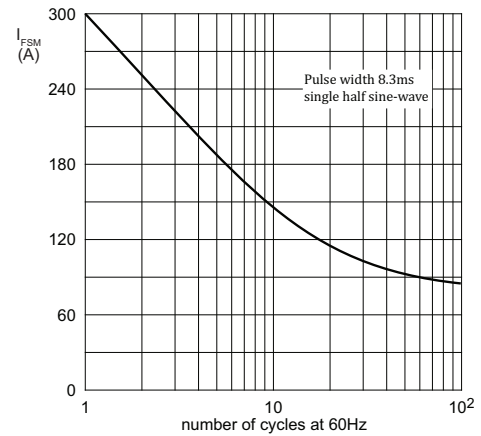


Fig. 6. Maximum non-repetitive surge current

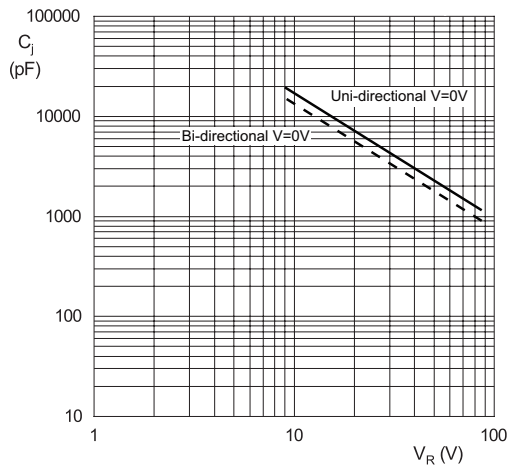


Fig. 7. Typical junction capacitance

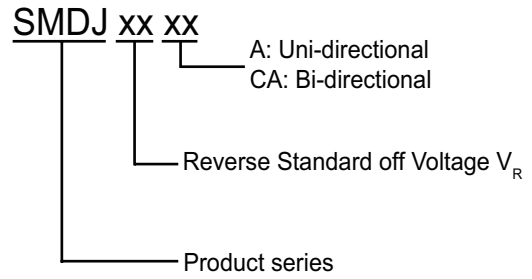


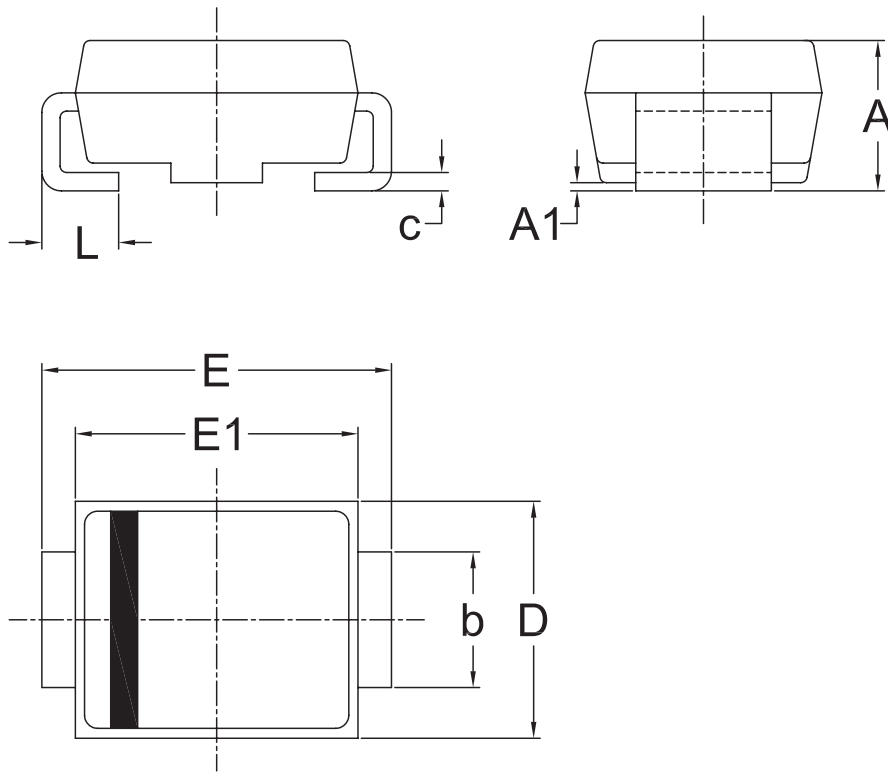
Fig. 8. Part numbering



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.

- [1] Please consult the most recently issued document before initiating or completing a design.
- [2] The term 'short data sheet' is explained in section "Definitions".
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