SMCJ Series

1500W Transient Voltage Suppressor

Rev.02 - 24 November 2023 Product data sheet

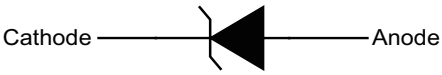
1. General description

SMCJ series, 1500W transient voltage suppressor (TVS) in SMC package, designed to protect electronic circuits against damage induced by lightning surges or other transient voltage events.

2. Features and benefits

- Peak pulse power 1500W @ 10/1000μs waveform
- Excellent clamping capability
- Low incremental surge resistance
- Surface mount package for easy assembly and PCB space-saving
- Typical I_R < 1μA when V_{BR} min > 12V
- Fast response time: typically < 1.0ps from 0V to V_{BR} minimum
- IEC 61000-4-2 ESD 30kV (Air), 30kV (Contact)
- EFT protection of data lines in accordance with IEC 61000-4-4
- Guaranteed high temperature for reflow soldering: 260°C/10sec
- Mold compound complies to UL94V-0 flammability classification
- Meets MSL level 1, per J-STD-020
- Pb-free lead finish
- Halogen free and RoHS compliant

Bi-directional



Uni-directional

3. Applications

- Power supplies
- Industrial applications
- Power management circuits
- I/O interfaces

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 °C unless otherwise specified.

Symbol	Parameter	Conditions	Values	Unit
Absolute maximum rating				
P_{PPM}	peak pulse power	[1]	1500	W
$P_{M(AV)}$	steady state power dissipation	on infinite heatsink at T_a = 50 °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	°C
T_j	operating temperature range		-65 to 150	°C

[1] In accordance with IEC 61643-321 (10/1000 μs current waveform).

6. Characteristics

T_j = 25 °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
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
SMCJ90A	SMCJ90CA	90	100	111	1	146	10.3	1	C090AJ	C090CJ
SMCJ100A	SMCJ100CA	100	111	123	1	162	9.3	1	C100AJ	C100CJ

T_j = 25 °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
SMCJ110A	SMCJ110CA	110	122	135	1	177	8.5	1	C110AJ	C110CJ
SMCJ120A	SMCJ120CA	120	133	147	1	193	7.8	1	C120AJ	C120CJ
SMCJ130A	SMCJ130CA	130	144	159	1	209	7.2	1	C130AJ	C130CJ
SMCJ150A	SMCJ150CA	150	167	185	1	243	6.2	1	C150AJ	C150CJ
SMCJ160A	SMCJ160CA	160	178	197	1	259	5.8	1	C160AJ	C160CJ
SMCJ170A	SMCJ170CA	170	189	209	1	275	5.5	1	C170AJ	C170CJ
SMCJ180A	SMCJ180CA	180	201	222	1	292	5.2	1	C180AJ	C180CJ
SMCJ190A	SMCJ190CA	190	209	231	1	307	4.9	1	C190AJ	C190CJ
SMCJ200A	SMCJ200CA	200	224	247	1	324	4.7	1	C200AJ	C200CJ
SMCJ220A	SMCJ220CA	220	246	272	1	356	4.2	1	C220AJ	C220CJ

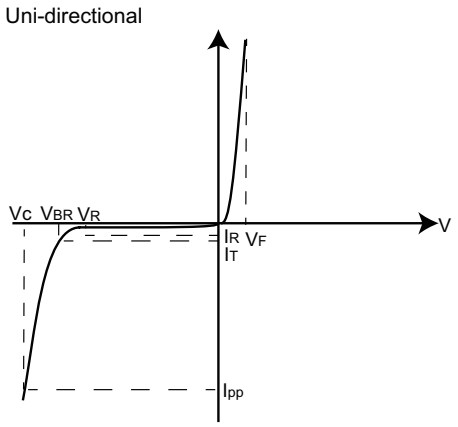


Fig. 1. I-V curve characteristics; Uni-directional

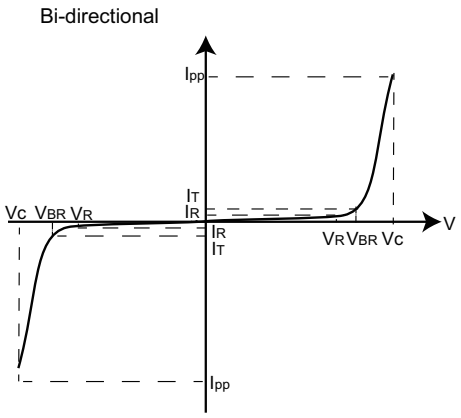


Fig. 2. I-V curve characteristics; Bi-directional

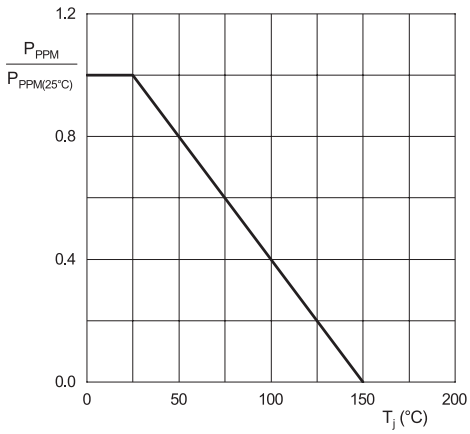


Fig. 3. Peak pulse power derating curve

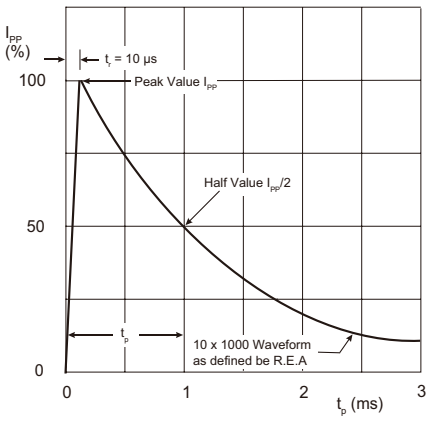


Fig. 4. Pulse waveform

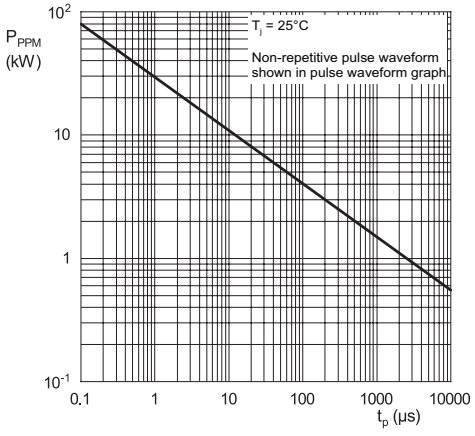


Fig. 5. Peak pulse power rating curve

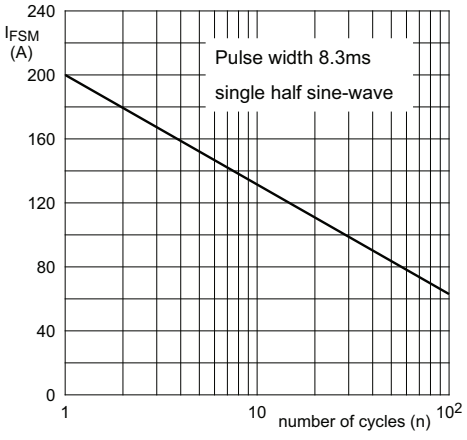


Fig. 6. Maximum non-repetitive surge current Uni-directional only

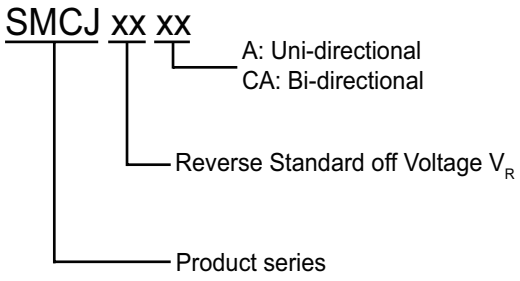


Fig. 7. Part numbering

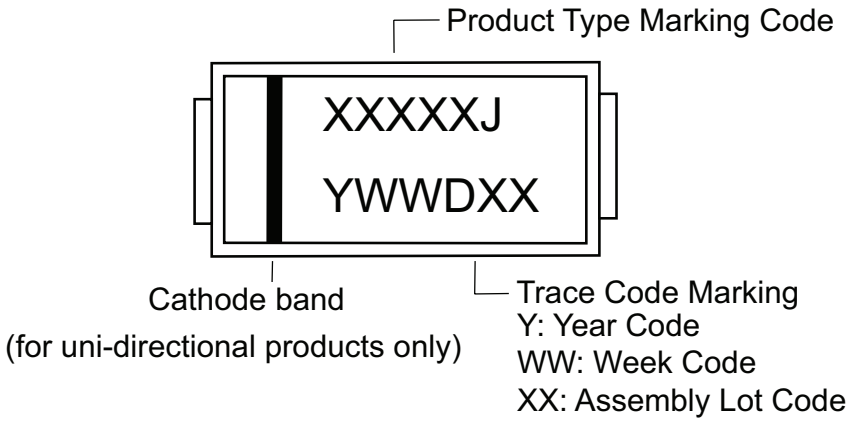
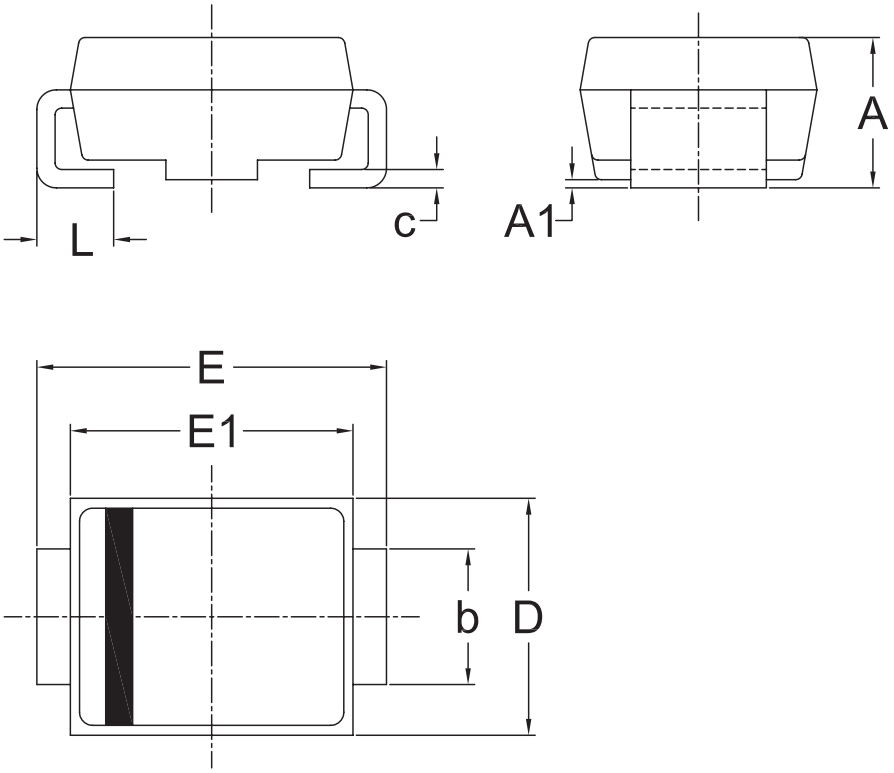


Fig. 8. Part marking

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

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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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