5.0SMDJ Series

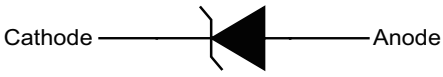
5000W Transient Voltage Suppressor

Rev.01 - 08 December 2023 Product data sheet

1. General description

5.0SMDJ series, 5000W transient voltage suppressor (TVS) in SMC package, designed to protect electronic circuits against damage induced by lightning surges or other transient voltage events.

Bi-directional



Uni-directional

2. Features and benefits

- Peak pulse power 5000W @ 10/1000μs waveform
- Excellent clamping capability
- Low incremental surge resistance
- Surface mount package for easy assembly and PCB space-saving
- 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

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
5.0SMDJxxxXX	SMC	5.0SMDJxxxXXJ	Tape and reel	3000	SMCJ	18-Oct-2020
eg. 5.0SMDJ64CA	SMC	5.0SMDJ64CAJ	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]	5000	W
$P_{M(AV)}$	steady state power dissipation	on infinite heatsink at T_a = 50 °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	5	V
T_{stg}	storage temperature range		-55 to 150	°C
T_j	operating temperature range		-55 to 150	°C
$R_{th(j-l)}$	thermal resistance from junction to lead		14	K/W
$R_{th(j-a)}$	thermal resistance from junction to ambient free air	[2]	70	K/W

[1] In accordance with IEC 61643-321 (10/1000 μs current waveform).
[2] Device mounted on an FR4 PCB, single-sided copper, tin plated and standard footprint.

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
5.0SMDJ12A	5.0SMDJ12CA	12	13.3	14.7	1	19.9	252	1	||||5S012J	5S012J
5.0SMDJ13A	5.0SMDJ13CA	13	14.4	15.9	1	21.5	233	1	||||5S013J	5S013J
5.0SMDJ14A	5.0SMDJ14CA	14	15.6	17.2	1	23.2	216	1	||||5S014J	5S014J
5.0SMDJ15A	5.0SMDJ15CA	15	16.7	18.5	1	24.4	205	1	||||5S015J	5S015J
5.0SMDJ16A	5.0SMDJ16CA	16	17.8	19.7	1	26	193	1	||||5S016J	5S016J
5.0SMDJ17A	5.0SMDJ17CA	17	18.9	20.9	1	27.6	181	1	||||5S017J	5S017J
5.0SMDJ18A	5.0SMDJ18CA	18	20	22.1	1	29.3	172	1	||||5S018J	5S018J
5.0SMDJ20A	5.0SMDJ20CA	20	22.2	24.5	1	32.4	155	1	||||5S020J	5S020J
5.0SMDJ22A	5.0SMDJ22CA	22	24.4	26.9	1	35.5	141	1	||||5S022J	5S022J
5.0SMDJ24A	5.0SMDJ24CA	24	26.7	29.5	1	38.9	129	1	||||5S024J	5S024J
5.0SMDJ26A	5.0SMDJ26CA	26	28.9	31.9	1	42.1	119	1	||||5S026J	5S026J
5.0SMDJ28A	5.0SMDJ28CA	28	31.1	34.4	1	45.4	110	1	||||5S028J	5S028J
5.0SMDJ30A	5.0SMDJ30CA	30	33.3	36.8	1	48.4	103	1	||||5S030J	5S030J
5.0SMDJ33A	5.0SMDJ33CA	33	36.7	40.6	1	53.3	93.9	1	||||5S033J	5S033J
5.0SMDJ36A	5.0SMDJ36CA	36	40	44.2	1	58.1	86.1	1	||||5S036J	5S036J
5.0SMDJ40A	5.0SMDJ40CA	40	44.4	49.1	1	64.5	77.6	1	||||5S040J	5S040J
5.0SMDJ43A	5.0SMDJ43CA	43	47.8	52.8	1	69.4	72.1	1	||||5S043J	5S043J
5.0SMDJ45A	5.0SMDJ45CA	45	50	55.3	1	72.7	68.8	1	||||5S045J	5S045J
5.0SMDJ48A	5.0SMDJ48CA	48	53.3	58.9	1	77.4	64.7	1	||||5S048J	5S048J
5.0SMDJ51A	5.0SMDJ51CA	51	56.7	62.7	1	82.4	60.7	1	||||5S051J	5S051J
5.0SMDJ54A	5.0SMDJ54CA	54	60	66.3	1	87.1	57.5	1	||||5S054J	5S054J
5.0SMDJ58A	5.0SMDJ58CA	58	64.4	71.2	1	93.6	53.5	1	||||5S058J	5S058J
5.0SMDJ60A	5.0SMDJ60CA	60	66.7	73.7	1	96.8	51.7	1	||||5S060J	5S060J
5.0SMDJ64A	5.0SMDJ64CA	64	71.1	78.6	1	103	48.6	1	||||5S064J	5S064J
5.0SMDJ70A	5.0SMDJ70CA	70	77.8	86	1	113	44.3	1	||||5D070J	5D070J
5.0SMDJ75A	5.0SMDJ75CA	75	83.3	92.1	1	121	41.4	1	||||5D075J	5D075J
5.0SMDJ78A	5.0SMDJ78CA	78	86.7	95.8	1	126	39.7	1	||||5D078J	5D078J
5.0SMDJ85A	5.0SMDJ85CA	85	94.4	104	1	137	36.5	1	||||5D085J	5D085J
5.0SMDJ90A	5.0SMDJ90CA	90	100	111	1	146	34.3	1	||||5D090J	5D090J
5.0SMDJ100A	5.0SMDJ100CA	100	111	123	1	162	30.9	1	||||5D100J	5D100J
5.0SMDJ110A	5.0SMDJ110CA	110	122	135	1	177	28.3	1	||||5D110J	5D110J
5.0SMDJ120A	5.0SMDJ120CA	120	133	147	1	193	26	1	||||5D120J	5D120J
5.0SMDJ130A	5.0SMDJ130CA	130	144	159	1	209	24	1	||||5D130J	5D130J
5.0SMDJ150A	5.0SMDJ150CA	150	167	185	1	243	20.6	1	||||5D150J	5D150J
5.0SMDJ160A	5.0SMDJ160CA	160	178	197	1	259	19.3	1	||||5D160J	5D160J
5.0SMDJ170A	5.0SMDJ170CA	170	189	209	1	275	18.2	1	||||5D170J	5D170J

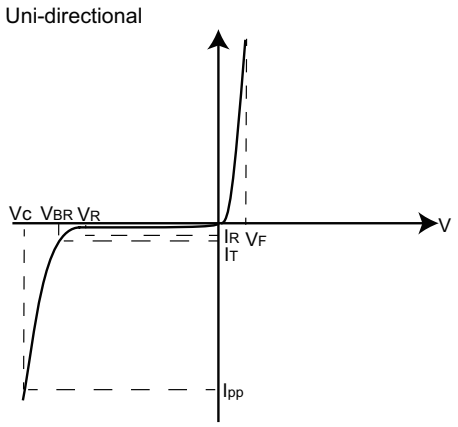


Fig. 1. I-V curve characteristics; Uni-directional

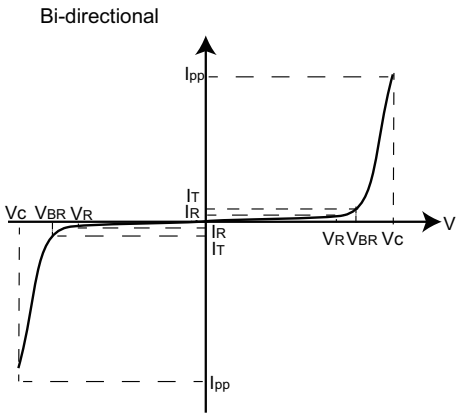


Fig. 2. I-V curve characteristics; Bi-directional

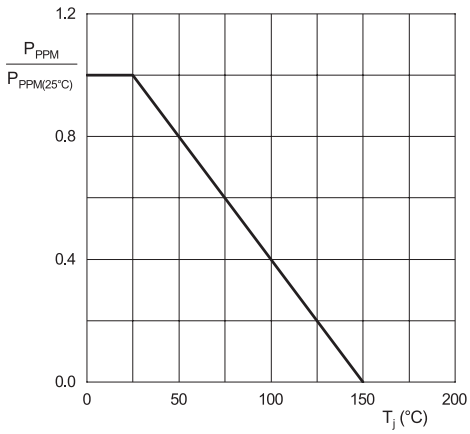


Fig. 3. Peak pulse power derating curve

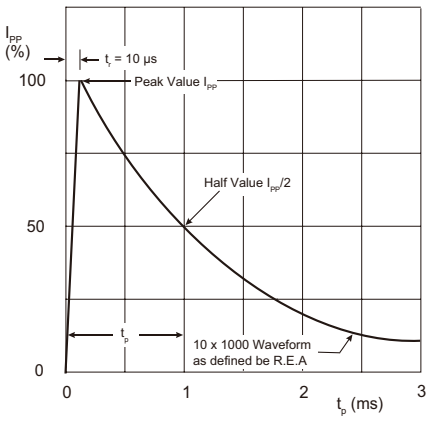


Fig. 4. Pulse waveform

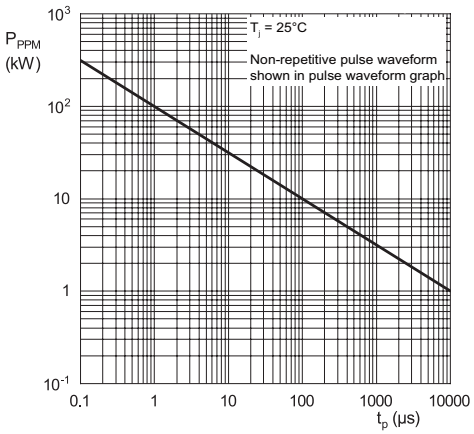


Fig. 5. Peak pulse power rating curve

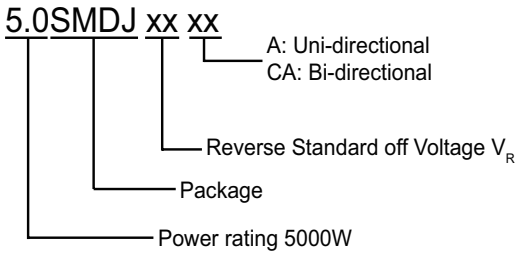


Fig. 6. Part numbering

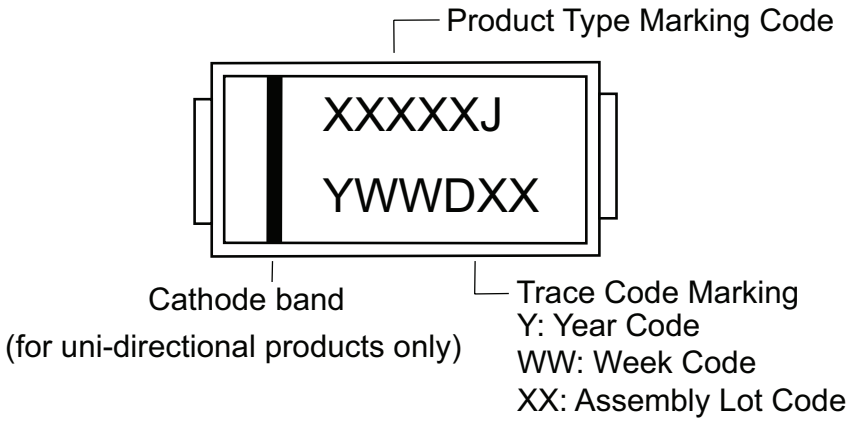
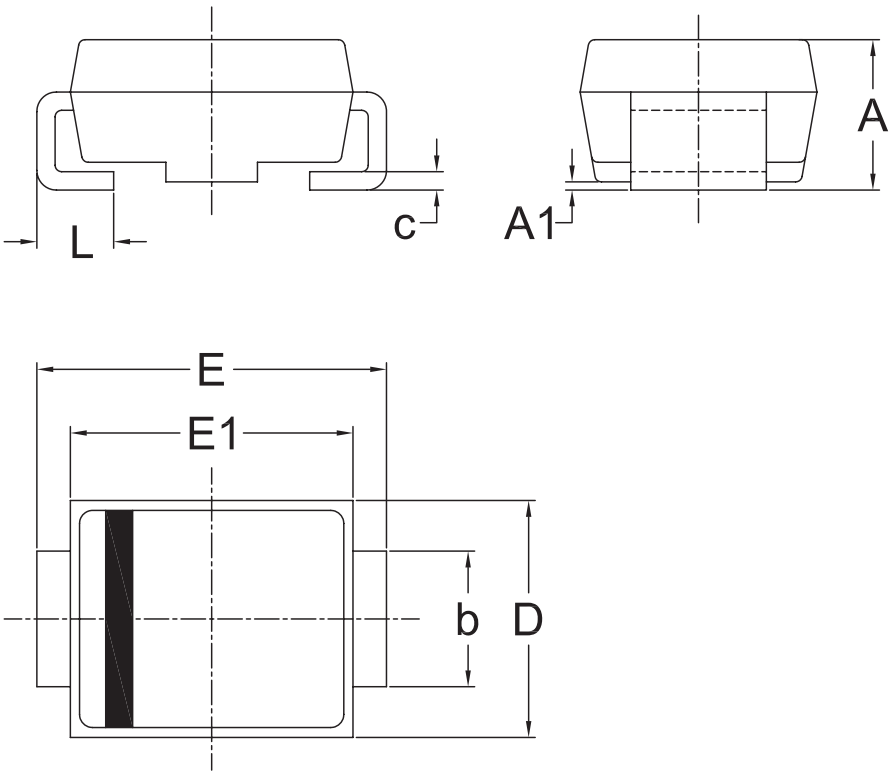


Fig. 7. Part marking

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.

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