

## 1. General description

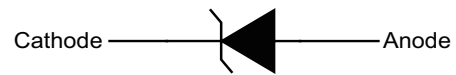
SMBJ series, 600W transient voltage suppressor (TVS) in SMB package, designed to protect electronic circuits against damage induced by lightning surges or other transient voltage events.

## 2. Features and benefits

- Peak pulse power 600W @ 10/1000 $\mu$ s waveform
- Excellent clamping capability
- Low incremental surge resistance
- Surface mount package for easy assembly and PCB space-saving
- Typical  $I_R < 1\mu$ A when  $V_{BR\ min} > 12$ V
- Fast response time: typically  $< 1.0$ ps 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
SMBJxxxXX	SMB	SMBJxxxXXJ	Tape and reel	3000	SMBJ	18-Oct-2020
eg. SMBJ5.0CA	SMB	SMBJ5.0CAJ	Tape and reel	3000	SMBJ	18-Oct-2020

## 5. Absolute maximum ratings

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

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

Symbol	Parameter	Conditions	Values	Unit
<b>Absolute maximum rating</b>				
$P_{PPM}$	peak pulse power	[1]	600	W
$P_{M(AV)}$	steady state power dissipation	on infinite heatsink at $T_a = 50\text{ }^\circ\text{C}$	5	W
$I_{FSM}$	peak forward surge current	$t_p = 8.3\text{ ms}$ ; single half sine-wave pulse; duty cycle = 4 pulses per minute maximum; unidirectional units only	100	A
$V_F$	forward on-state voltage	$I_F = 50\text{ A}$ ; 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 $I_R$ @ $V_R$ ( $\mu$ A)	Marking	
			Min	Max					Uni	Bi
SMBJ5.0A	SMBJ5.0CA	5	6.45	6.98	10	9.2	65.3	400	B005AJ	B005CJ
SMBJ6.0A	SMBJ6.0CA	6	6.8	7.32	10	10.3	58.3	400	B006AJ	B006CJ
SMBJ6.5A	SMBJ6.5CA	6.5	7.27	7.92	10	11.2	53.6	250	B06FAJ	B06FCJ
SMBJ7.0A	SMBJ7.0CA	7	7.82	8.57	10	12	50	100	B007AJ	B007CJ
SMBJ8.0A	SMBJ8.0CA	8	8.95	9.76	1	13.6	44.2	50	B008AJ	B008CJ
SMBJ9.0A	SMBJ9.0CA	9	10.1	11	1	15.4	39	10	B009AJ	B009CJ
SMBJ10A	SMBJ10CA	10	11.21	12.19	1	17	35.3	5	B010AJ	B010CJ
SMBJ11A	SMBJ11CA	11	12.32	13.38	1	18.2	33	1	B011AJ	B011CJ
SMBJ12A	SMBJ12CA	12	13.43	14.57	1	19.9	30.2	1	B012AJ	B012CJ
SMBJ13A	SMBJ13CA	13	14.54	15.76	1	21.5	28	1	B013AJ	B013CJ
SMBJ14A	SMBJ14CA	14	15.75	17.04	1	23.2	25.9	1	B014AJ	B014CJ
SMBJ15A	SMBJ15CA	15	16.86	18.34	1	24.4	24.6	1	B015AJ	B015CJ
SMBJ16A	SMBJ16CA	16	17.97	19.52	1	26	23.1	1	B016AJ	B016CJ
SMBJ17A	SMBJ17CA	17	19.08	20.72	1	27.6	21.8	1	B017AJ	B017CJ
SMBJ18A	SMBJ18CA	18	20.19	21.9	1	29.2	20.6	1	B018AJ	B018CJ
SMBJ20A	SMBJ20CA	20	22.41	24.28	1	32.4	18.6	1	B020AJ	B020CJ
SMBJ22A	SMBJ22CA	22	24.63	26.66	1	35.5	16.9	1	B022AJ	B022CJ
SMBJ24A	SMBJ24CA	24	26.95	29.23	1	38.9	15.5	1	B024AJ	B024CJ
SMBJ26A	SMBJ26CA	26	29.12	31.67	1	42.1	14.3	1	B026AJ	B026CJ
SMBJ28A	SMBJ28CA	28	31.33	34.16	1	45.4	13.3	1	B028AJ	B028CJ
SMBJ30A	SMBJ30CA	30	33.55	36.54	1	48.4	12.4	1	B030AJ	B030CJ
SMBJ33A	SMBJ33CA	33	36.98	40.3	1	53.3	11.3	1	B033AJ	B033CJ
SMBJ36A	SMBJ36CA	36	40.3	43.9	1	58.1	10.4	1	B036AJ	B036CJ
SMBJ40A	SMBJ40CA	40	44.7	48.8	1	64.5	9.3	1	B040AJ	B040CJ
SMBJ43A	SMBJ43CA	43	48.2	52.4	1	69.4	8.7	1	B043AJ	B043CJ
SMBJ45A	SMBJ45CA	45	50.4	54.9	1	72.7	8.3	1	B045AJ	B045CJ
SMBJ48A	SMBJ48CA	48	53.7	58.5	1	77.4	7.8	1	B048AJ	B048CJ
SMBJ51A	SMBJ51CA	51	57.1	62.3	1	82.4	7.3	1	B051AJ	B051CJ
SMBJ54A	SMBJ54CA	54	60.5	65.8	1	87.1	6.9	1	B054AJ	B054CJ
SMBJ58A	SMBJ58CA	58	64.9	70.7	1	93.6	6.5	1	B058AJ	B058CJ
SMBJ60A	SMBJ60CA	60	67.2	73.2	1	96.8	6.2	1	B060AJ	B060CJ
SMBJ64A	SMBJ64CA	64	71.6	78	1	103	5.9	1	B064AJ	B064CJ
SMBJ70A	SMBJ70CA	70	78.4	85.4	1	113	5.3	1	B070AJ	B070CJ
SMBJ75A	SMBJ75CA	75	83.9	91.5	1	121	5	1	B075AJ	B075CJ
SMBJ78A	SMBJ78CA	78	87.4	95.1	1	126	4.8	1	B078AJ	B078CJ
SMBJ85A	SMBJ85CA	85	95.1	103.3	1	137	4.4	1	B085AJ	B085CJ

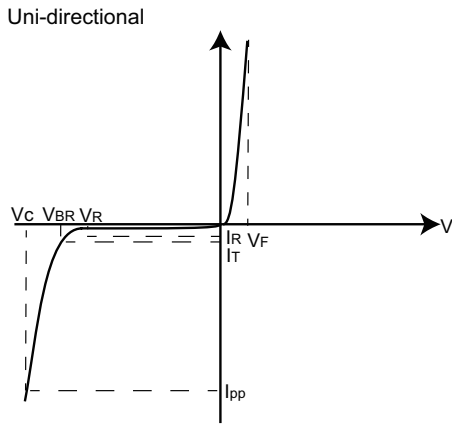


Fig. 1. I-V curve characteristics; Uni-directional

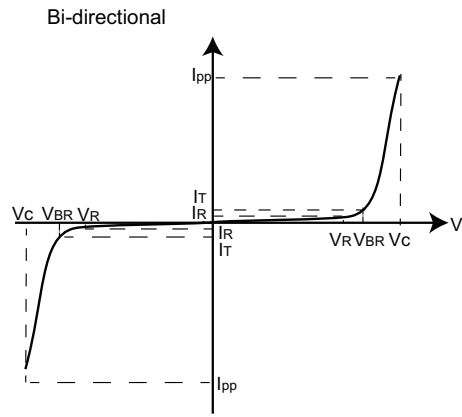


Fig. 2. I-V curve characteristics; Bi-directional

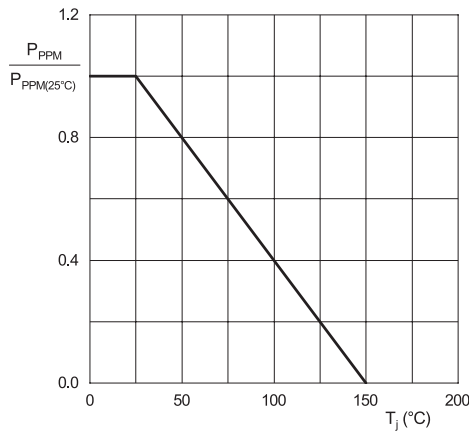


Fig. 3. Peak pulse power derating curve

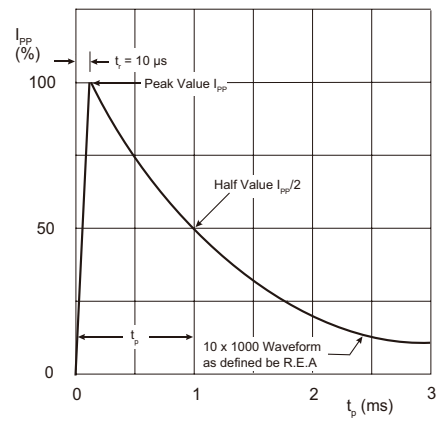


Fig. 4. Pulse waveform

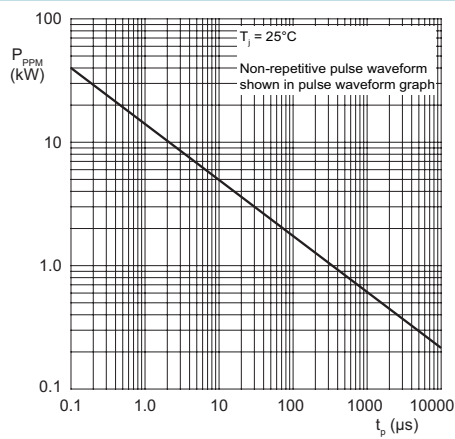


Fig. 5. Peak pulse power rating curve

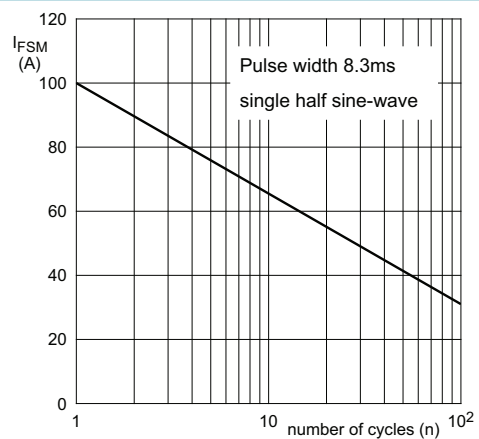
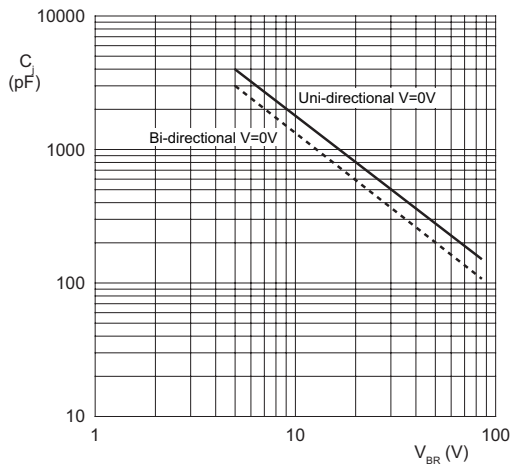
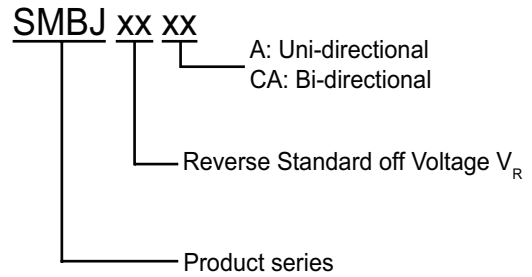


Fig. 6. Maximum non-repetitive surge current Uni-directional only



**Fig. 7. Typical junction capacitance**



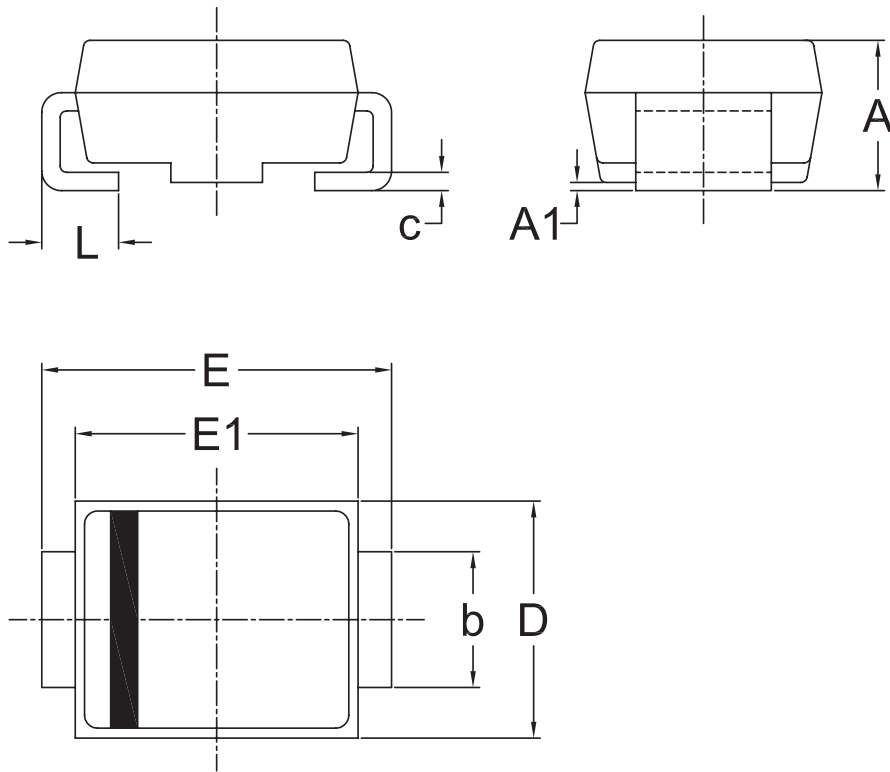
**Fig. 8. Part numbering**



**Fig. 9. Part marking**

**7. Package outline**

SMB



UNIT	A	A1	b	c	D	E	E1	L	
mm	Max	2.50	0.30	2.15	0.25	3.75	5.54	4.65	1.50
	Min	2.00	0.00	1.85	0.15	3.45	5.04	4.35	0.80

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".
- [3] The product status of device(s) described in this document may have changed since this document was published and may differ in case of multiple devices. The latest product status information is available on the Internet at URL <http://www.ween-semi.com>.

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