

INDIVIDUAL SPECIFICATION SHEET

Product Name: Transient Voltage Suppressors

Part Number: 1.0 SMBJ Series

Revision: A



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Rev.	Effective Date	Changed Contents
A	2018-11-29	New Release

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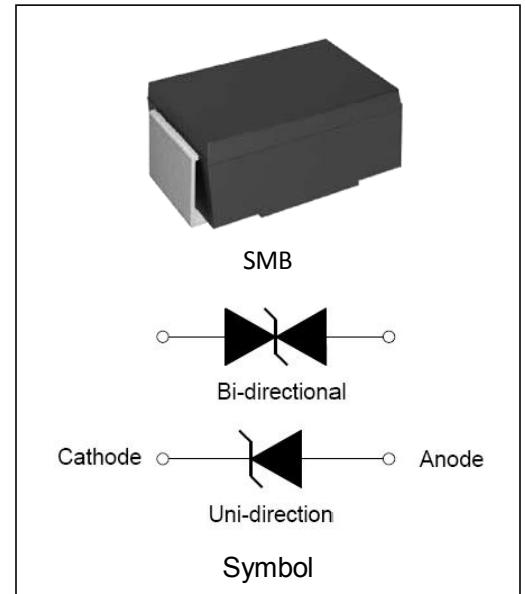


DESCRIPTION:

TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent control systems.

FEATURES:

- ✧ Glass passivated or planar junction
- ✧ Excellent clamping capability
- ✧ Repetition rate (duty cycle): 0.01%
- ✧ Typical I_R less than $1\mu A$ above 10V.
- ✧ Low profile package and low inductance
- ✧ 1000W Peak Pulse power capability at $10 \times 1000\mu s$ waveform.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BRmin} .
- ✧ High temperature soldering: $260^\circ C/10s$ at terminals.
- ✧ Plastic package has Underwriters Laboratory Flammability 94V-0.
- ✧ For surface mounted applications in order to optimize board space



ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ C$, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage temperature range	T_{stg}	-55 to +150	$^\circ C$
Operating junction temperature range	T_j	-55 to +150	$^\circ C$
Steady state power dissipation at $T_L=75^\circ C$	$P_{M(AV)}$	5.0	W
Peak pulse power dissipation on 10/1000 μs waveform	P_{PP}	1000	W
Maximum Instantaneous Forward Voltage at 50A for Unidirectional	V_F	5.0	V

ELECTRICAL CHARACTERISTICS($T_A=25^{\circ}\text{C}$)

Part Number		V_R	$I_R@V_R$	$V_{BR}@I_T$		I_T	$V_C@I_{PP}$	$I_{PP}①$
Uni-Polar	Bi-Polar	V	μA	min(V)	max(V)	mA	max(V)	A
1.0SMBJ5.0A	1.0SMBJ5.0CA	5.0	200	6.40	7.00	10	9.2	108.7
1.0SMBJ6.0A	1.0SMBJ6.0CA	6.0	200	6.67	7.37	10	10.3	97.1
1.0SMBJ6.5A	1.0SMBJ6.5CA	6.5	100	7.22	7.98	10	11.2	89.3
1.0SMBJ7.0A	1.0SMBJ7.0CA	7.0	80	7.78	8.60	10	12.0	83.4
1.0SMBJ7.5A	1.0SMBJ7.5CA	7.5	50	8.33	9.21	1	12.9	77.6
1.0SMBJ8.0A	1.0SMBJ8.0CA	8.0	20	8.89	9.83	1	13.6	73.6
1.0SMBJ8.5A	1.0SMBJ8.5CA	8.5	10	9.44	10.40	1	14.4	69.5
1.0SMBJ9.0A	1.0SMBJ9.0CA	9.0	5	10.00	11.10	1	15.4	65.0
1.0SMBJ10A	1.0SMBJ10CA	10	2	11.10	12.30	1	17.0	58.9
1.0SMBJ11A	1.0SMBJ11CA	11	1	12.20	13.50	1	18.2	55.0
1.0SMBJ12A	1.0SMBJ12CA	12	1	13.30	14.70	1	19.9	50.3
1.0SMBJ13A	1.0SMBJ13CA	13	1	14.40	15.90	1	21.5	46.6
1.0SMBJ14A	1.0SMBJ14CA	14	1	15.60	17.20	1	23.2	43.1
1.0SMBJ15A	1.0SMBJ15CA	15	1	16.70	18.50	1	24.4	41.0
1.0SMBJ16A	1.0SMBJ16CA	16	1	17.80	19.70	1	26.0	38.5
1.0SMBJ17A	1.0SMBJ17CA	17	1	18.90	20.90	1	27.6	36.3
1.0SMBJ18A	1.0SMBJ18CA	18	1	20.00	22.10	1	29.2	34.3
1.0SMBJ20A	1.0SMBJ20CA	20	1	22.20	24.50	1	32.4	30.9
1.0SMBJ22A	1.0SMBJ22CA	22	1	24.40	26.90	1	35.5	28.2
1.0SMBJ24A	1.0SMBJ24CA	24	1	26.70	29.50	1	38.9	25.7
1.0SMBJ26A	1.0SMBJ26CA	26	1	28.90	31.90	1	42.1	23.8
1.0SMBJ28A	1.0SMBJ28CA	28	1	31.10	34.40	1	45.4	22.1
1.0SMBJ30A	1.0SMBJ30CA	30	1	33.30	36.80	1	48.4	20.7
1.0SMBJ33A	1.0SMBJ33CA	33	1	36.70	40.60	1	53.3	18.8
1.0SMBJ36A	1.0SMBJ36CA	36	1	40.00	44.20	1	58.1	17.3
1.0SMBJ40A	1.0SMBJ40CA	40	1	44.40	49.10	1	64.5	15.5
1.0SMBJ43A	1.0SMBJ43CA	43	1	47.80	52.80	1	69.4	14.4
1.0SMBJ45A	1.0SMBJ45CA	45	1	50.00	55.30	1	72.7	13.8
1.0SMBJ48A	1.0SMBJ48CA	48	1	53.30	58.90	1	77.4	13.0
1.0SMBJ51A	1.0SMBJ51CA	51	1	56.70	62.70	1	82.4	12.2

ELECTRICAL CHARACTERISTICS (T_A=25°C, continued)

Part Number		V _R	I _R @ V _R	V _{BR} @I _T		I _T	V _C @I _{PP}	I _{PP} ①
Uni-Polar	Bi-Polar	V	μA	min(V)	max(V)	mA	max(V)	A
1.0SMBJ54A	1.0SMBJ54CA	54	1	60.00	66.30	1	87.1	11.5
1.0SMBJ58A	1.0SMBJ58CA	58	1	64.40	71.20	1	93.6	10.7
1.0SMBJ60A	1.0SMBJ60CA	60	1	66.70	73.70	1	96.8	10.4
1.0SMBJ64A	1.0SMBJ64CA	64	1	71.10	78.60	1	103.0	9.7
1.0SMBJ70A	1.0SMBJ70CA	70	1	77.80	86.00	1	113.0	8.9
1.0SMBJ75A	1.0SMBJ75CA	75	1	83.30	92.10	1	121.0	8.3
1.0SMBJ78A	1.0SMBJ78CA	78	1	86.70	95.80	1	126.0	8.0
1.0SMBJ85A	1.0SMBJ85CA	85	1	94.40	104.0	1	137.0	7.3
1.0SMBJ90A	1.0SMBJ90CA	90	1	100.0	111.0	1	146.0	6.9
1.0SMBJ100A	1.0SMBJ100CA	100	1	111.0	123.0	1	162.0	6.2
1.0SMBJ110A	1.0SMBJ110CA	110	1	122.0	135.0	1	177.0	5.7
1.0SMBJ120A	1.0SMBJ120CA	120	1	133.0	147.0	1	193.0	5.2
1.0SMBJ130A	1.0SMBJ130CA	130	1	144.0	159.0	1	209.0	4.8
1.0SMBJ150A	1.0SMBJ150CA	150	1	167.0	185.0	1	243.0	4.2
1.0SMBJ160A	1.0SMBJ160CA	160	1	178.0	197.0	1	259.0	3.9
1.0SMBJ170A	1.0SMBJ170CA	170	1	189.0	209.0	1	275.0	3.7
1.0SMBJ180A	1.0SMBJ180CA	180	1	201.0	222.0	1	292.0	3.5
1.0SMBJ190A	1.0SMBJ190CA	190	1	211.0	234.0	1	307.0	3.3
1.0SMBJ200A	1.0SMBJ200CA	200	1	224.0	247.0	1	324.0	3.1

① Surge waveform: 10/1000μ

V_R: Stand-off Voltage -- Maximum voltage that can be applied V_{BR}:

Breakdown Voltage

V_C: Clamping Voltage -- Peak voltage measured across the suppressor at a specified I_{pp} I_R:

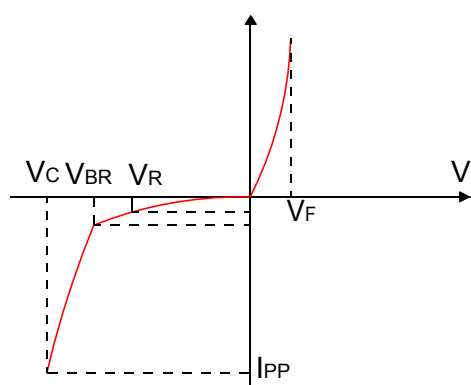
Reverse Leakage Current

ORDERING INFORMATION

1.0SMBJ xx 1000W SMB Series V_R Voltage	C A 5% V_{BR} Voltage tolerance
	C: Bi-directional

RATINGS AND V-I CHARACTERISTICS CURVES (T_A=25°C, unless otherwise noted)

**FIG.1:V- I curve characteristics
(Uni-directional)**



**FIG.2:V- I curve characteristics
(Bi-directional)**

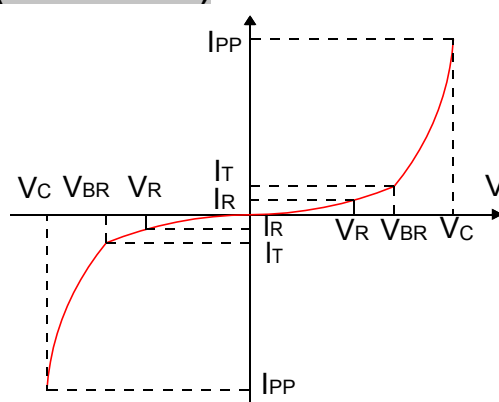


FIG.3: Pulse waveform

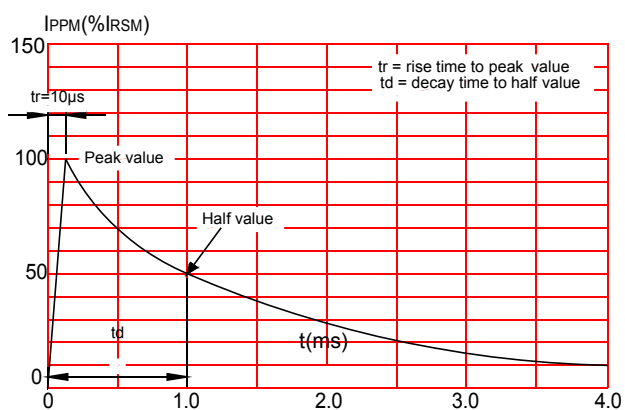
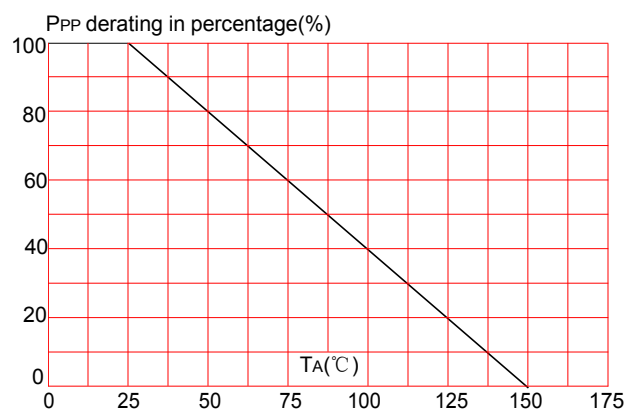
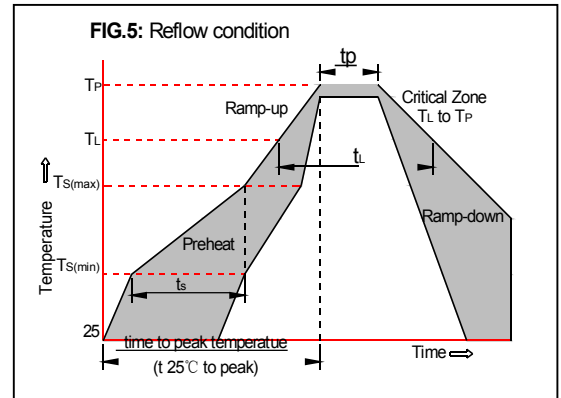


FIG.4: Pulse derating curve

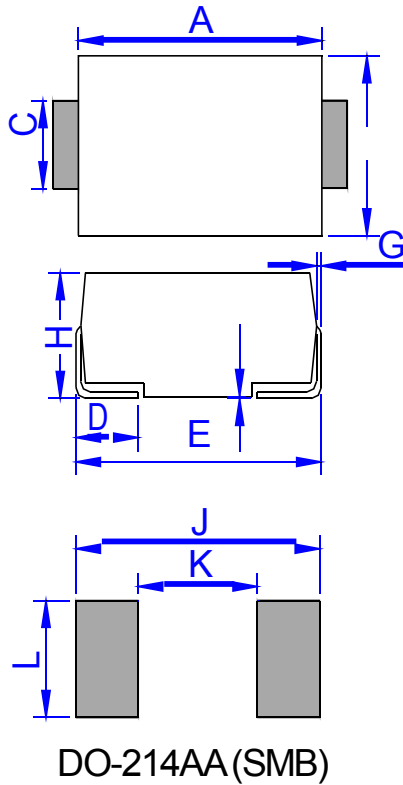


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see FIG.5)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150°C
	-Temperature Max($T_{s(max)}$)	+200°C
	-Time (Min to Max) (t_s)	60-180 secs.
Average ramp up rate (Liquid usTemp (T_L) to peak)		3°C/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217°C
	-Temperature(t_L)	60-150 secs.
Peak Temp(T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp(t_p)		30 secs. Max
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp(T_p)		8 min. Max
Do not exceed		+260°C



PACKAGE MECHANICAL DATA



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.25	4.75	0.167	0.187
B	3.30	3.94	0.130	0.155
C	1.85	2.21	0.073	0.087
D	0.76	1.52	0.030	0.060
E	5.08	5.59	0.200	0.220
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.11	2.44	0.083	0.096
J	6.80		0.270	
K		2.60		0.100
L	2.40		0.090	