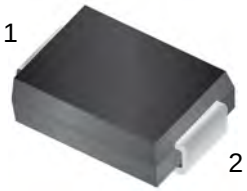
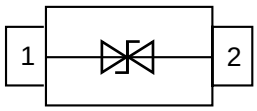
Power TVS in DO-214AA/SMB

Features

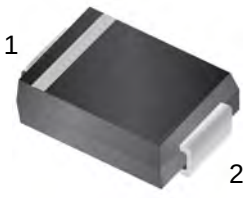
- Glass passivated chip
- 1000W peak pulse power(10/1000us)
- High accuracy, 5% tolerance
- Uni and Bidirectional unit
- Low clamping voltage
- Low Leakage current
- Very fast response time
- JESD22-A114-B ESD Voltage:HBM 15KV
- JEDEC EIA/JESD22-C101F ESD Voltage:CDM 500V
- JEDEC EIA/JESD22-A115 ESD Voltage:MM 400V
- ESD-immunity acc. IEC 61000-4-2 ±30KV contact ±30KV air

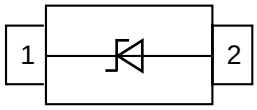
Bidirectional





Unidirectional





Mechanical Data

- **Case:** DO-214AA/SMB (plastic package). RoHS compliant
- **Molding Compound Flammability Rating:** UL 94 V-0
- **Terminals:** High temperature soldering guaranteed: 260 °C/10 sec. at terminals

RoHS COMPLIANT
HALOGEN FREE

Applications

- Computers
- Telecom system
- Industrial equipments
- Consumer electronic applications
- Other VCC bus and I/O interfaces

Absolute Maximum Ratings

Ratings at 25 °C, ambient temperature unless otherwise specified

Parameter	Symbol	Value	Unit
Peak pulse power dissipation with a 10/1000us waveform (1)	P_{PP}	1000	W
Maximum peak reverse pulse current a 10/1000us waveform (1)	I_{PP}	See Next Table	A
Peak forward surge current 8.3ms single half sine-wave (2)	I_{FSM}	120	A
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	℃

Notes:

1.Non-repetitive current pulse,per Fig.5 and detated above TA=25°C per Fig.1

2.Measured on 8.3ms single half sine-wave,or equivalent square wave,duty cycle=4 pulses per minute maximum

Electrical Characteristics

(T_A = 25 °C unless otherwise specified)

Part Number	Marking	Direction	Maximum Working Voltage V_{RWM} (V)	Maximum Reverse Current@V_{RWM} I_R max(uA)	Breakdown Voltage@I_T			Peak Surge Current I_{PP} (A)	Maximum Clamping Voltage@I_{PP} V_C (V)
					V_{BR} min(V)	V_{BR} max(V)	I_T(mA)		
1.0SMBJ5.0A	1.0KE	Uni-Dir	5.0	800	6.4	7.00	10	108.70	9.2
1.0SMBJ5.0CA	1.0AE	Bi-Dir	5.0	1600	6.4	7.00	10	108.70	9.2
1.0SMBJ6.0A	1.0KG	Uni-Dir	6.0	800	6.7	7.37	10	97.10	10.3
1.0SMBJ6.0CA	1.0AG	Bi-Dir	6.0	1600	6.7	7.37	10	97.10	10.3
1.0SMBJ6.5A	1.0KK	Uni-Dir	6.5	500	7.2	7.98	10	89.30	11.2
1.0SMBJ6.5CA	1.0AK	Bi-Dir	6.5	1000	7.2	7.98	10	89.30	11.2
1.0SMBJ7.0A	1.0KM	Uni-Dir	7.0	200	7.8	8.60	10	83.30	12.0
1.0SMBJ7.0CA	1.0AM	Bi-Dir	7.0	400	7.8	8.60	10	83.30	12.0
1.0SMBJ7.5A	1.0KP	Uni-Dir	7.5	100	8.3	9.21	1	77.50	12.9
1.0SMBJ7.5CA	1.0AP	Bi-Dir	7.5	200	8.3	9.21	1	77.50	12.9
1.0SMBJ8.0A	1.0KR	Uni-Dir	8.0	50	8.9	9.83	1	73.50	13.6
1.0SMBJ8.0CA	1.0AR	Bi-Dir	8.0	100	8.9	9.83	1	73.50	13.6
1.0SMBJ8.5A	1.0KT	Uni-Dir	8.5	20	9.4	10.40	1	69.40	14.4
1.0SMBJ8.5CA	1.0AA	Bi-Dir	8.5	40	9.4	10.40	1	69.40	14.4
1.0SMBJ9.0A	1.0KV	Uni-Dir	9.0	10	10.0	11.10	1	64.90	15.4
1.0SMBJ9.0CA	1.0AV	Bi-Dir	9.0	20	10.0	11.10	1	64.90	15.4
1.0SMBJ10A	1.0KX	Uni-Dir	10.0	5	11.1	12.30	1	58.80	17.0
1.0SMBJ10CA	1.0AX	Bi-Dir	10.0	10	11.1	12.30	1	58.80	17.0
1.0SMBJ11A	1.0KZ	Uni-Dir	11.0	1	12.2	13.50	1	54.90	18.2
1.0SMBJ11CA	1.0AZ	Bi-Dir	11.0	1	12.2	13.50	1	54.90	18.2
1.0SMBJ12A	1.0LE	Uni-Dir	12.0	1	13.3	14.70	1	50.30	19.9
1.0SMBJ12CA	1.0BE	Bi-Dir	12.0	1	13.3	14.70	1	50.30	19.9
1.0SMBJ13A	1.0LG	Uni-Dir	13.0	1	14.4	15.90	1	46.50	21.5
1.0SMBJ13CA	1.0BG	Bi-Dir	13.0	1	14.4	15.90	1	46.50	21.5
1.0SMBJ14A	1.0LK	Uni-Dir	14.0	1	15.6	17.20	1	43.10	23.2
1.0SMBJ14CA	1.0BK	Bi-Dir	14.0	1	15.6	17.20	1	43.10	23.2
1.0SMBJ15A	1.0LM	Uni-Dir	15.0	1	16.7	18.50	1	41.00	24.4
1.0SMBJ15CA	1.0BM	Bi-Dir	15.0	1	16.7	18.50	1	41.00	24.4
1.0SMBJ16A	1.0LP	Uni-Dir	16.0	1	17.8	19.70	1	38.50	26.0
1.0SMBJ16CA	1.0BP	Bi-Dir	16.0	1	17.8	19.70	1	38.50	26.0
1.0SMBJ17A	1.0LR	Uni-Dir	17.0	1	18.9	20.90	1	36.20	27.6
1.0SMBJ17CA	1.0BR	Bi-Dir	17.0	1	18.9	20.90	1	36.20	27.6
1.0SMBJ18A	1.0LT	Uni-Dir	18.0	1	20.0	22.10	1	34.20	29.2
1.0SMBJ18CA	1.0BT	Bi-Dir	18.0	1	20.0	22.10	1	34.20	29.2
1.0SMBJ19A	1.0LW	Uni-Dir	19.0	1	21.1	23.30	1	32.50	30.8
1.0SMBJ19CA	1.0BW	Bi-Dir	19.0	1	21.1	23.30	1	32.50	30.8
1.0SMBJ20A	1.0LV	Uni-Dir	20.0	1	22.2	24.50	1	30.90	32.4
1.0SMBJ20CA	1.0BV	Bi-Dir	20.0	1	22.2	24.50	1	30.90	32.4

Part Number	Marking	Direction	Maximum Working Voltage V_{RWM} (V)	Maximum Reverse Current@V_{RWM} I_R max(uA)	Breakdown Voltage@I_T			Peak Surge Current I_{PP} (A)	Maximum Clamping Voltage@I_{PP} V_C (V)
					V_{BR} min(V)	V_{BR} max(V)	I_T(mA)		
1.0SMBJ22A	1.0LX	Uni-Dir	22.0	1	24.4	26.90	1	28.20	35.5
1.0SMBJ22CA	1.0BX	Bi-Dir	22.0	1	24.4	26.90	1	28.20	35.5
1.0SMBJ24A	1.0LZ	Uni-Dir	24.0	1	26.7	29.50	1	25.70	38.9
1.0SMBJ24CA	1.0BZ	Bi-Dir	24.0	1	26.7	29.50	1	25.70	38.9
1.0SMBJ26A	1.0ME	Uni-Dir	26.0	1	28.9	31.90	1	23.80	42.1
1.0SMBJ26CA	1.0CE	Bi-Dir	26.0	1	28.9	31.90	1	23.80	42.1
1.0SMBJ28A	1.0MG	Uni-Dir	28.0	1	31.1	34.40	1	22.00	45.4
1.0SMBJ28CA	1.0CG	Bi-Dir	28.0	1	31.1	34.40	1	22.00	45.4
1.0SMBJ30A	1.0MK	Uni-Dir	30.0	1	33.3	36.80	1	20.70	48.4
1.0SMBJ30CA	1.0CK	Bi-Dir	30.0	1	33.3	36.80	1	20.70	48.4
1.0SMBJ33A	1.0MM	Uni-Dir	33.0	1	36.7	40.60	1	18.80	53.3
1.0SMBJ33CA	1.0CM	Bi-Dir	33.0	1	36.7	40.60	1	18.80	53.3
1.0SMBJ36A	1.0MP	Uni-Dir	36.0	1	40.0	44.20	1	17.20	58.1
1.0SMBJ36CA	1.0CP	Bi-Dir	36.0	1	40.0	44.20	1	17.20	58.1
1.0SMBJ40A	1.0MR	Uni-Dir	40.0	1	44.4	49.10	1	15.50	64.5
1.0SMBJ40CA	1.0CR	Bi-Dir	40.0	1	44.4	49.10	1	15.50	64.5
1.0SMBJ43A	1.0MT	Uni-Dir	43.0	1	47.8	52.80	1	14.40	69.4
1.0SMBJ43CA	1.0CT	Bi-Dir	43.0	1	47.8	52.80	1	14.40	69.4
1.0SMBJ45A	1.0MV	Uni-Dir	45.0	1	50.0	55.30	1	13.80	72.7
1.0SMBJ45CA	1.0CV	Bi-Dir	45.0	1	50.0	55.30	1	13.80	72.7
1.0SMBJ48A	1.0MX	Uni-Dir	48.0	1	53.3	58.90	1	12.90	77.4
1.0SMBJ48CA	1.0CX	Bi-Dir	48.0	1	53.3	58.90	1	12.90	77.4
1.0SMBJ51A	1.0MZ	Uni-Dir	51.0	1	56.7	62.70	1	12.10	82.4
1.0SMBJ51CA	1.0CZ	Bi-Dir	51.0	1	56.7	62.70	1	12.10	82.4
1.0SMBJ54A	1.0NE	Uni-Dir	54.0	1	60.0	66.30	1	11.50	87.1
1.0SMBJ54CA	1.0DE	Bi-Dir	54.0	1	60.0	66.30	1	11.50	87.1
1.0SMBJ58A	1.0NG	Uni-Dir	58.0	1	64.4	71.20	1	10.70	93.6
1.0SMBJ58CA	1.0DG	Bi-Dir	58.0	1	64.4	71.20	1	10.70	93.6
1.0SMBJ60A	1.0NK	Uni-Dir	60.0	1	66.7	73.70	1	10.30	96.8
1.0SMBJ60CA	1.0DK	Bi-Dir	60.0	1	66.7	73.70	1	10.30	96.8
1.0SMBJ64A	1.0NM	Uni-Dir	64.0	1	71.1	78.60	1	9.70	103.0
1.0SMBJ64CA	1.0DM	Bi-Dir	64.0	1	71.1	78.60	1	9.70	103.0
1.0SMBJ70A	1.0NP	Uni-Dir	70.0	1	77.8	86.00	1	8.80	113.0
1.0SMBJ70CA	1.0DP	Bi-Dir	70.0	1	77.8	86.00	1	8.80	113.0
1.0SMBJ75A	1.0NR	Uni-Dir	75.0	1	83.3	92.10	1	8.30	121.0
1.0SMBJ75CA	1.0DR	Bi-Dir	75.0	1	83.3	92.10	1	8.30	121.0
1.0SMBJ78A	1.0NT	Uni-Dir	78.0	1	86.7	95.80	1	7.90	126.0
1.0SMBJ78CA	1.0DT	Bi-Dir	78.0	1	86.7	95.80	1	7.90	126.0

Part Number	Marking	Direction	Maximum Working Voltage V_{RWM} (V)	Maximum Reverse Current@V_{RWM} I_R max(uA)	Breakdown Voltage@I_T			Peak Surge Current I_{PP} (A)	Maximum Clamping Voltage@I_{PP} V_C (V)
					V_{BR} min(V)	V_{BR} max(V)	I_T(mA)		
1.0SMBJ80A	1.0NW	Uni-Dir	80.0	1	88.8	97.60	1	7.70	129.6
1.0SMBJ80CA	1.0DW	Bi-Dir	80.0	1	88.8	97.60	1	7.70	129.6
1.0SMBJ85A	1.0NV	Uni-Dir	85.0	1	94.4	104.00	1	7.30	137.0
1.0SMBJ85CA	1.0DV	Bi-Dir	85.0	1	94.4	104.00	1	7.30	137.0
1.0SMBJ90A	1.0NX	Uni-Dir	90.0	1	100.0	111.00	1	6.80	146.0
1.0SMBJ90CA	1.0DX	Bi-Dir	90.0	1	100.0	111.00	1	6.80	146.0
1.0SMBJ100A	1.0NZ	Uni-Dir	100.0	1	111.0	123.00	1	6.20	162.0
1.0SMBJ100CA	1.0DZ	Bi-Dir	100.0	1	111.0	123.00	1	6.20	162.0
1.0SMBJ110A	1.0PE	Uni-Dir	110.0	1	122.0	135.00	1	5.60	177.0
1.0SMBJ110CA	1.0EE	Bi-Dir	110.0	1	122.0	135.00	1	5.60	177.0
1.0SMBJ120A	1.0PG	Uni-Dir	120.0	1	133.0	147.00	1	5.20	193.0
1.0SMBJ120CA	1.0EG	Bi-Dir	120.0	1	133.0	147.00	1	5.20	193.0
1.0SMBJ130A	1.0PK	Uni-Dir	130.0	1	144.0	159.00	1	4.80	209.0
1.0SMBJ130CA	1.0EK	Bi-Dir	130.0	1	144.0	159.00	1	4.80	209.0
1.0SMBJ140A	1.0PL	Uni-Dir	140.0	1	155.0	171.00	1	4.40	226.8
1.0SMBJ140CA	1.0EL	Bi-Dir	140.0	1	155.0	171.00	1	4.40	226.8
1.0SMBJ150A	1.0PM	Uni-Dir	150.0	1	167.0	185.00	1	4.10	243.0
1.0SMBJ150CA	1.0EM	Bi-Dir	150.0	1	167.0	185.00	1	4.10	243.0
1.0SMBJ160A	1.0PP	Uni-Dir	160.0	1	178.0	197.00	1	3.90	259.0
1.0SMBJ160CA	1.0EP	Bi-Dir	160.0	1	178.0	197.00	1	3.90	259.0
1.0SMBJ170A	1.0PR	Uni-Dir	170.0	1	189.0	209.00	1	3.60	275.0
1.0SMBJ170CA	1.0ER	Bi-Dir	170.0	1	189.0	209.00	1	3.60	275.0
1.0SMBJ180A	1.0ET	Uni-Dir	180.0	1	200.0	220.00	1	3.42	291.6
1.0SMBJ180CA	1.0PT	Bi-Dir	180.0	1	200.0	220.00	1	3.42	291.6
1.0SMBJ190A	1.0EU	Uni-Dir	190.0	1	211.0	232.00	1	3.24	307.8
1.0SMBJ190CA	1.0PU	Uni-Dir	190.0	1	211.0	232.00	1	3.24	307.8
1.0SMBJ200A	1.0EV	Uni-Dir	200.0	1	224.0	247.00	1	3.08	324.0
1.0SMBJ200CA	1.0PV	Uni-Dir	200.0	1	224.0	247.00	1	3.08	324.0

Typical Characteristics (T_{amb} = 25 °C unless otherwise specified)

Fig. 1 - Pulse Derating Curve

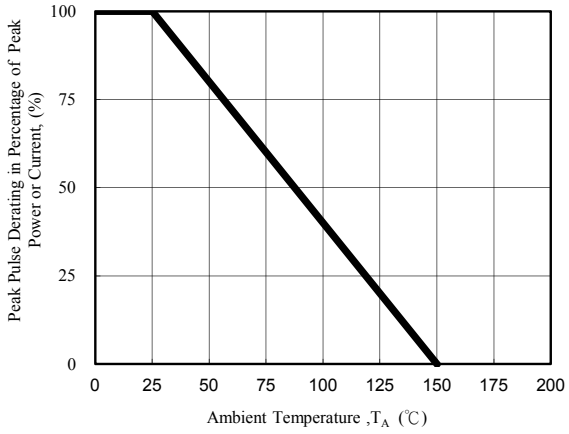


Fig. 2 - Maximum Non-Repetitive Surge Current

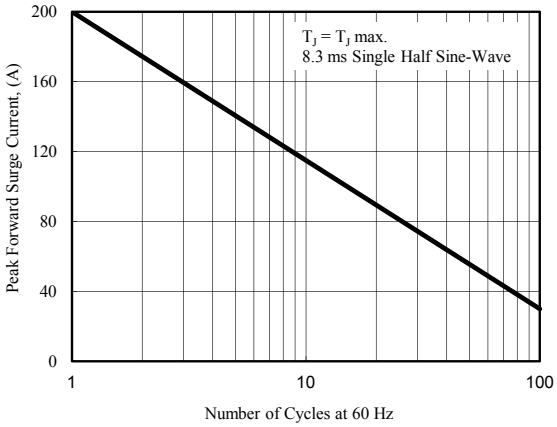


Fig. 3 - Steady State Power Derating Curve

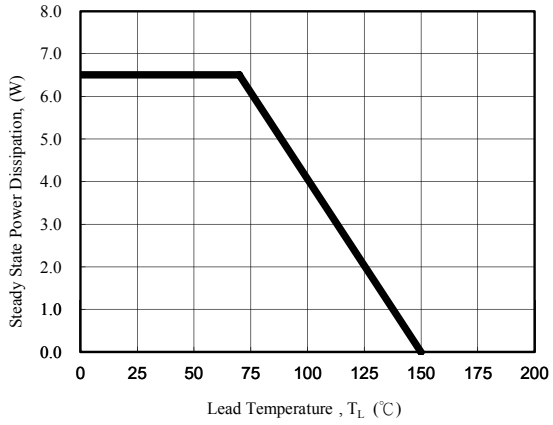


Fig. 4 - Peak Pulse Power Rating Curve

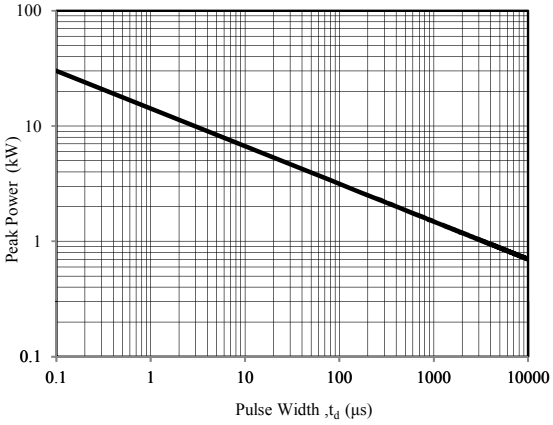


Fig. 5 - Pulse Waveform

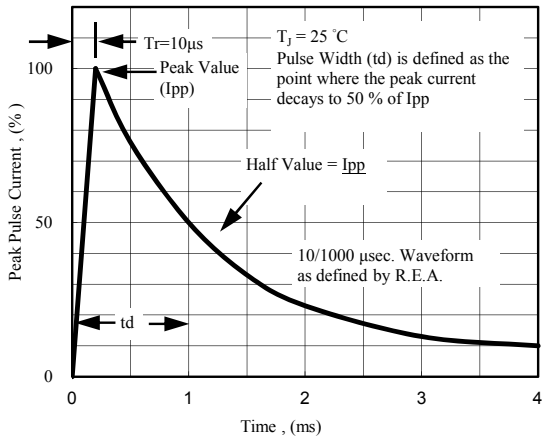
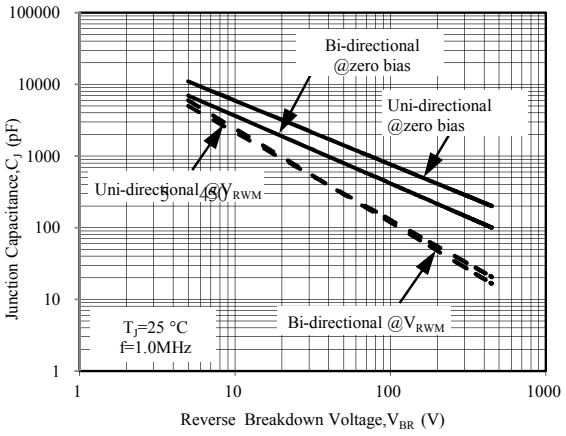
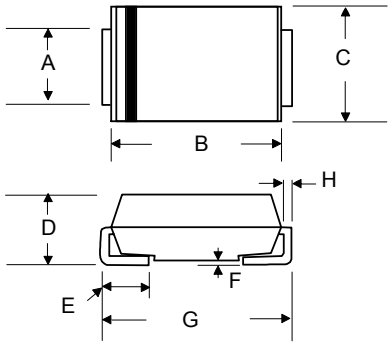


Fig. 6 - Typical Junction Capacitance

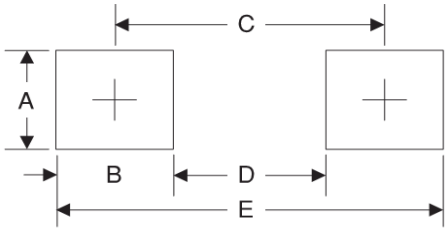


Package Dimensions



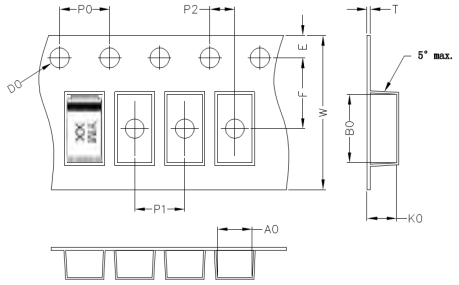
Symbol	Dimensions in millimeters	
	Min	Max
A	1.80	2.20
B	4.06	4.57
C	3.30	3.94
D	1.99	2.61
E	0.90	1.41
F	0.10	0.20
G	5.08	5.59
H	0.15	0.31

PAD Dimensions



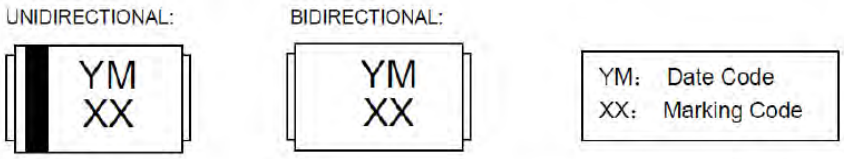
Symbol	Unit (mm)	Unit (inch)
A	2.30	0.091
B	2.00	0.078
C	4.10	0.161
D	2.10	0.083
E	6.10	0.240

Packing Information



A0	B0	K0	D0	E	F
3.80	5.40	2.45	1.55	1.75	5.50
P0	**P1**	**P2**	**T**	**W**	**Tolerance**
4.0	8.0	2.0	0.25	12	0.1

Marking



Ordering information

Order code	Package	Packaging option	Base quantity	Packaging specification
1.0SMBJ Series	DO-214AA/SMB	Tape and reel	3000pcs / reel	EIA STD RS-481

Revision history

Date	Revision	Changes
23-May-2020	1.0	Initial release

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