

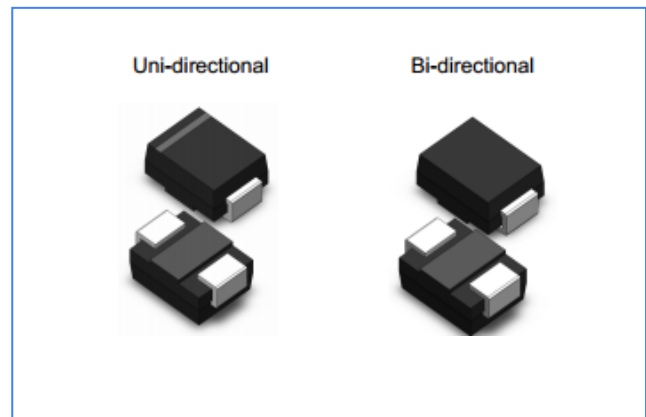
## SMBJ Series

### Description

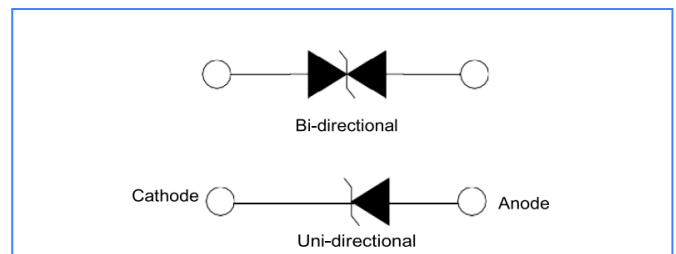
The SMBJ series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events. They have excellent clamping capability, high surge capability, low zener impedance and fast response time. The SMBJ series is supplied in YINT Semiconductor's exclusive, cost-effective, highly reliable and is ideally suited for use in communication systems, automotive, numerical controls, process controls, medical equipment, business machines, power supplies and many other industrial/consumer Applications.

### Features

- Case: DO-214AA(SMB)
- Excellent clamping capability
- 600 W peak pulse power capability with a 10/1000  $\mu$ s waveform
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Fast response time: typically less than 1.0ps from 0 Volts to VB min.
- IEC61000-4-2 (ESD)  $\pm$ 30kV (air),  $\pm$ 30kV (contact).



### Functional Diagram



### Applications

TVS devices are ideal for the transient voltage clamp protection of I/O Interfaces, DC power line bus and other circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

### Maximum Ratings ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at $T_A=25^\circ\text{C}$ by 10/1000 $\mu$ s Waveform	$P_{PK}$	600	W
Power Dissipation on Infinite Heat Sink at $T_L=50^\circ\text{C}$	$P_D$	5	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave <sup>1</sup>	$I_{FSM}$	100	A
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only <sup>2</sup>	$V_F$	3.5	V
Operating Temperature Range	$T_J$	-55 to +150	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +150	$^\circ\text{C}$

#### NOTES:

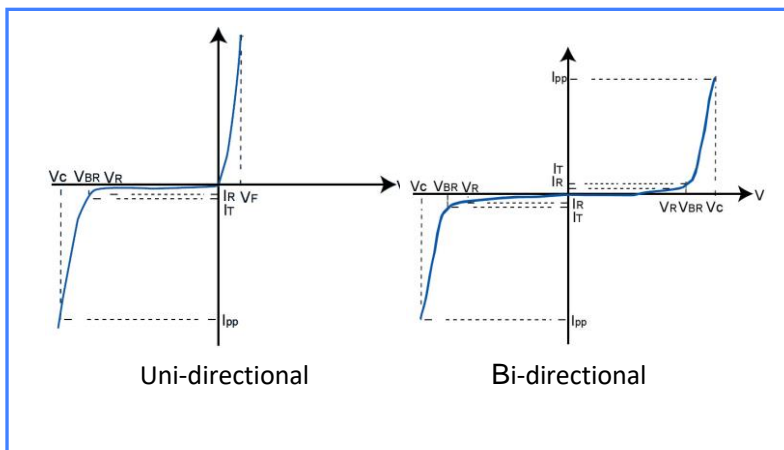
1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

**Electrical characteristics (TA = 25 °C unless otherwise noted)**

Part Number (Bi)	Part Number (Uni)	MARKING		Reverse Stand off Voltage V <sub>R</sub> (Volts)	Breakdown Voltage V <sub>BR</sub> (Volts)@I <sub>T</sub>		Test Current I <sub>T</sub> (mA)	Maximum Reverse Leakage I <sub>R</sub> @ V <sub>R</sub> (μA)	Maximum Peak Pulse Current I <sub>pp</sub> (A)	Maximum Clamping Voltage V <sub>C</sub> @I <sub>pp</sub> (V)
		BI	UNI		Min .V	Max .V				
SMBJ5.0CA	SMBJ5.0A	AE	KE	5.0	6.40	7.00	10	500	65.2	9.2
SMBJ6.0CA	SMBJ6.0A	AG	KG	6.0	6.67	7.37	10	500	58.3	10.3
SMBJ 6.5CA	SMBJ 6.5A	AK	KK	6.5	7.22	7.9	10	300	53.6	11.2
SMBJ7.0CA	SMBJ7.0 A	AM	KM	7.0	7.78	8.60	10	200	50.0	12.0
SMBJ7.5CA	SMBJ7.5A	AP	KP	7.5	8.33	9.21	1	100	46.6	12.9
SMBJ8.0CA	SMBJ8.0A	AR	KR	8.0	8.89	9.83	1	50	44.2	13.6
SMBJ8.5CA	SMBJ8.5 A	AT	KT	8.5	9.44	10.40	1	20	41.7	14.4
SMBJ9.0CA	SMBJ9.0 A	AV	KV	9.0	10.00	11.10	1	10	39.0	15.4
SMBJ10CA	SMBJ10A	AX	KX	10.0	11.10	12.30	1	5	35.3	17.0
SMBJ11CA	SMBJ11A	AZ	KZ	11.0	12.20	13.50	1	1	33.0	18.2
SMBJ12CA	SMBJ12A	BE	LE	12.0	13.30	14.70	1	1	30.2	19.9
SMBJ13CA	SMBJ13A	BG	LG	13.0	14.40	15.90	1	1	28.0	21.5
SMBJ14CA	SMBJ14A	BK	LK	14.0	15.60	17.20	1	1	25.9	23.2
SMBJ15CA	SMBJ15A	BM	LM	15.0	16.70	18.50	1	1	24.6	24.4
SMBJ16CA	SMBJ16A	BP	LP	16.0	17.80	19.70	1	1	23.1	26.0
SMBJ17CA	SMBJ17A	BR	LR	17.0	18.90	20.90	1	1	21.8	27.6
SMBJ18CA	SMBJ18A	BT	LT	18.0	20.00	22.10	1	1	20.6	29.2
SMBJ20CA	SMBJ20A	BV	LV	20.0	22.20	24.50	1	1	18.6	32.4
SMBJ22CA	SMBJ22A	BX	LX	22.0	24.40	26.90	1	1	16.9	35.5
SMBJ24CA	SMBJ24A	BZ	LZ	24.0	26.70	29.50	1	1	15.5	38.9
SMBJ26CA	SMBJ26A	CE	ME	26.0	28.90	31.90	1	1	14.3	42.1
SMBJ28CA	SMBJ28A	CG	MG	28.0	31.10	34.40	1	1	13.3	45.4
SMBJ30CA	SMBJ30A	CK	MK	30.0	33.30	36.80	1	1	12.4	48.4
SMBJ33CA	SMBJ33A	CM	MM	33.0	36.70	40.60	1	1	11.3	53.3
SMBJ36CA	SMBJ36A	CP	MP	36.0	40.00	44.20	1	1	10.4	58.1
SMBJ40CA	SMBJ40A	CR	MR	40.0	44.40	49.10	1	1	9.3	64.5
SMBJ43CA	SMBJ43A	CT	MT	43.0	47.80	52.80	1	1	8.7	69.4
SMBJ45CA	SMBJ45A	CV	MV	45.0	50.00	55.30	1	1	8.3	72.7
SMBJ48CA	SMBJ48A	CX	MX	48.0	53.30	58.90	1	1	7.8	77.4
SMBJ51CA	SMBJ51A	CZ	MZ	51.0	56.70	62.70	1	1	7.3	82.4
SMBJ54CA	SMBJ54A	DE	NE	54.0	60.00	66.30	1	1	6.9	87.1
SMBJ58CA	SMBJ58A	DG	NG	58.0	64.40	71.20	1	1	6.5	93.6
SMBJ60CA	SMBJ60A	DK	NK	60.0	66.70	73.70	1	1	6.2	96.8
SMBJ64CA	SMBJ64A	DM	NM	64.0	71.10	78.60	1	1	5.9	103.0
SMBJ70CA	SMBJ70A	DP	NP	70.0	77.80	86.00	1	1	5.3	113.0

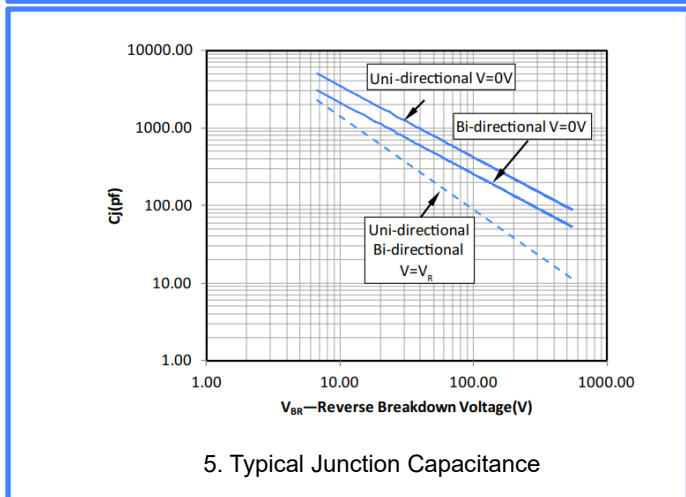
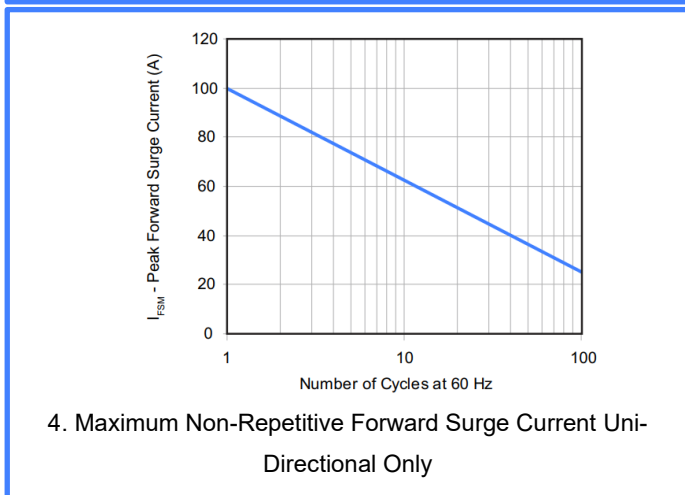
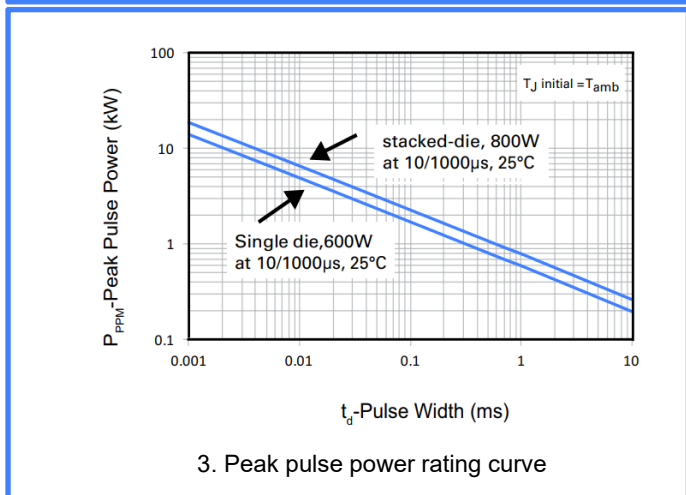
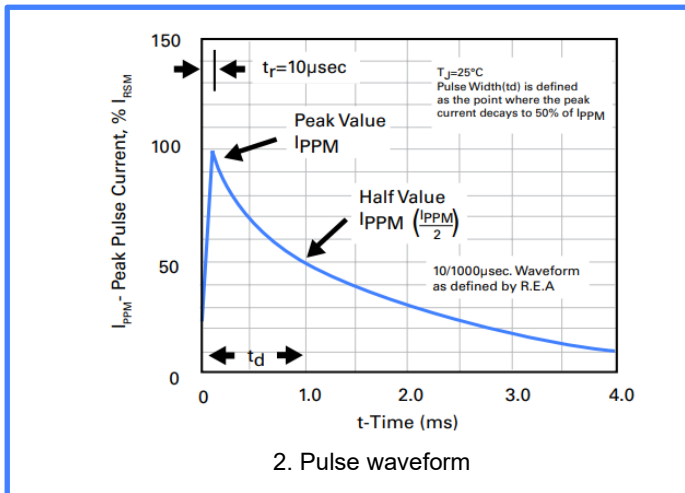
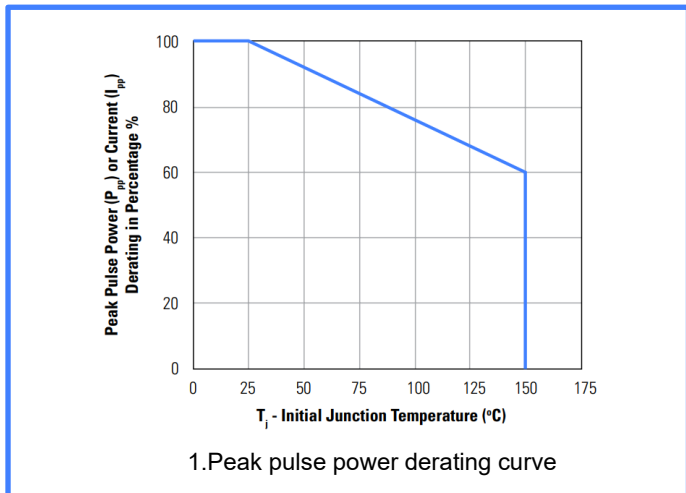
SMBJ75CA	SMBJ75A	DR	NR	75.0	83.30	92.10	1	1	5.0	121.0
SMBJ78CA	SMBJ78A	DT	NT	78.0	86.70	95.80	1	1	4.8	126.0
SMBJ85CA	SMBJ85A	DV	NV	85.0	94.4	104.0	1	1	4.4	137.0
SMBJ90CA	SMBJ90A	DX	NX	90.0	100.0	111.0	1	1	4.1	146.0
SMBJ100CA	SMBJ100A	DZ	NZ	100.0	111.0	123.0	1	1	3.7	162.0
SMBJ110CA	SMBJ110A	EE	PE	110.0	122.0	135.0	1	1	3.4	177.0
SMBJ120CA	SMBJ120A	EG	PG	120.0	133.0	147.0	1	1	3.1	193.0
SMBJ130CA	SMBJ130A	EK	PK	130.0	144.0	159.0	1	1	<b>2.9</b>	<b>209.0</b>
SMBJ150CA	SMBJ150A	EM	PM	150.0	167.0	185.0	1	1	2.5	243.0
SMBJ160CA	SMBJ160A	EP	PP	160.0	178.0	197.0	1	1	2.3	259.0
SMBJ170CA	SMBJ170A	ER	PR	170.0	189.0	209.0	1	1	2.2	275.0
SMBJ180CA	SMBJ180A	ET	PT	180.0	201.0	222.0	1	1	2.1	292.0
SMBJ190CA	SMBJ190A	EC	PA	190.0	211.0	233.0	1	1	2.0	308.0
SMBJ200CA	SMBJ200A	EV	PV	200.0	224.0	247.0	1	1	1.9	324.0
SMBJ210CA	SMBJ210A	ED	PB	210.0	237.0	263.0	1	1	1.8	340.0
SMBJ220CA	SMBJ220A	EX	PX	220.0	246.0	272.0	1	1	1.7	356.0
SMBJ250CA	SMBJ250A	EZ	PZ	250.0	279.0	309.0	1	1	1.5	405.0
SMBJ300CA	SMBJ300A	FE	QE	300.0	335.0	371.0	1	1	1.3	486.0
SMBJ350CA	SMBJ350A	FG	QG	350.0	391.0	432.0	1	1	1.1	567.0
SMBJ400CA	SMBJ400A	FK	QK	400.0	447.0	494.0	1	1	0.9	648.0
SMBJ440CA	SMBJ440A	FM	QM	440.0	492.0	543.0	1	1	0.9	713.0

**I-V Curve characteristics**

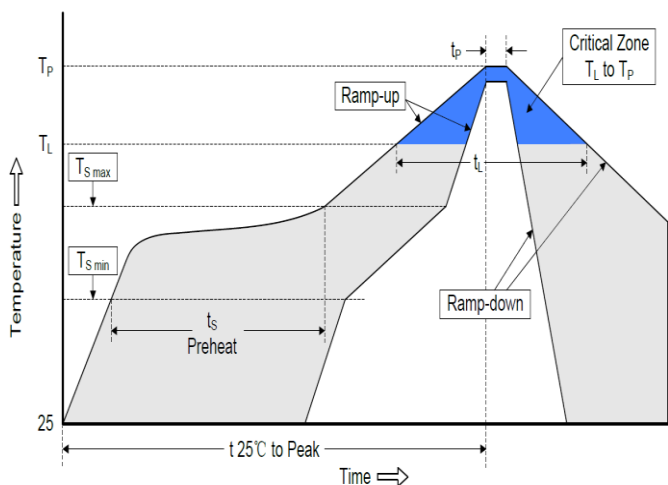


Symbol	Parameter
$I_{PP}$	Maximum Reverse Peak Pulse Current
$V_C$	Clamping Voltage @ $I_{PP}$
$V_{RWM}$	Working Peak Reverse Voltage
$I_R$	Maximum Reverse Leakage Current @ $V_{RWM}$
$V_{BR}$	Breakdown Voltage @ $I_T$ (Test Current)

**Rating & Characteristic Curves**



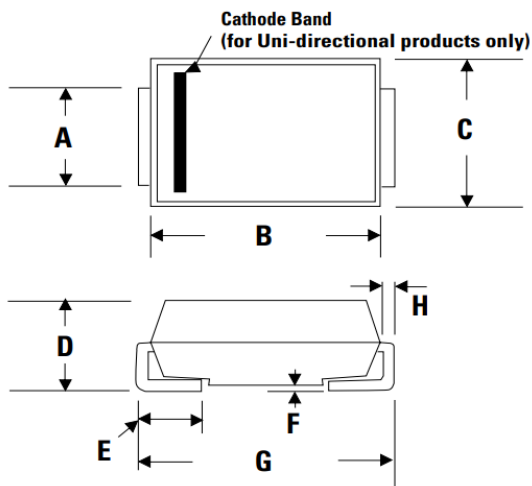
**Soldering parameters**



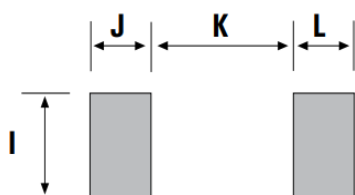
Profile Feature	Pb-Free Assembly
Average ramp-up rate (TL to TP)	3°C/second max.
Preheat	
-Temperature Min (TS min)	150°C
-Temperature Max (TS max)	200°C
-Time (min to max)(ts)	60-180 seconds
TS max to TL	
-Ramp-up Rate	3°C/second max.
Time maintained above:	
- Temperature (TL)	217°C
- Time (tL)	60-150 seconds
Peak Temperature (TP)	260°C
Time within 5°C of actual Peak Temperature (tp)	20-40 seconds
Ramp-down Rate	6°C /second max.
Time 25°C to Peak Temperature	8 minutes max.

**Package outline dimensions in millimeters**

**DO-214AA (SMB J-Bend)**

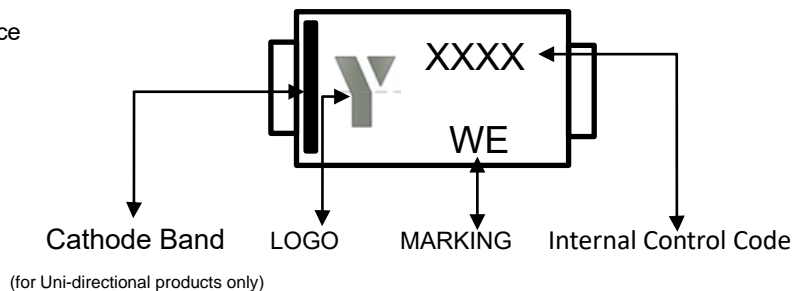
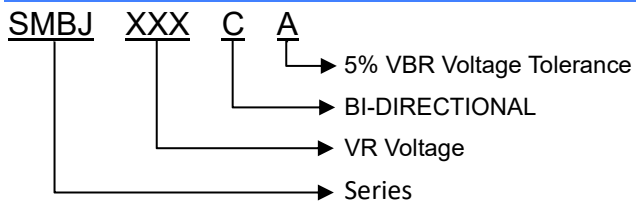


**Mounting Pad Layout**



Dimensions	Millimeter	
	Min	Max
A	1.930	2.200
B	4.060	4.750
C	3.300	3.940
D	1.990	2.610
E	0.760	1.520
F	-	0.203
G	5.210	5.590
H	0.152	0.305
I	2.260	-
J	2.160	-
K	-	2.740
L	2.160	-

**Part number code & Marking code**



**Disclaimer**

Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.