

SMBJx Series

Surface Mount Transient Voltage Suppressors
Peak Pulse Power 600W Stand-off Voltage 5V to 440V

Features

- Glass passivated junction
- Low incremental surge resistance, excellent clamping capability
- 600W peak pulse power capability with a 10/1000us waveform, repetition rate (duty cycle): 0.01%
- Fast response time
- High temperature soldering guaranteed:250°C/10seconds at terminals



DO-214AA(SMB)



RoHS
COMPLIANT

Mechanical Data

Case: JEDEC DO-214AA(SMB) molded plastic over passivated junction

Terminals: Solder plated, solderable per MIL-STD-750 Method 2026

Polarity: For unidirectional types the band denotes the cathode, which is positive with respect to the anode under normal TVS

Weight: 0.003oz., 0.093g

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation With a 10/1000us Waveform ^{1,2} (see Fig. 1)	P _{PPM}	Minimum 600	W
Peak Pulse Current With a 10/1000us Waveform ¹	I _{PPM}	See Next Table	A
Peak Forward Surge Current 8.3ms Single Half Sine-wave Uni-Directional Only ²	I _{FSM}	100	A
Typical Thermal Resistance, Junction To Ambient ⁴	R _{θJA}	100	°C/W
Typical Thermal Resistance, Junction To Lead	R _{θJL}	20	°C/W
Operating Junction Temperature Range	T _J	-55 to +150	°C
Storage Temperature Range	T _{STG}	-55 to +150	°C

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above T_A=25°C per Fig.2
2. Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal
3. Mounted on minimum recommended pad layout

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Electrical Characteristics $T_A=25^\circ\text{C}$ unless otherwise specified, $V_F=3.5\text{V}$ at $I_F=50\text{A}$ (uni-directional only)

Part Number (Uni)	Part Number (Bi)	Marking Code		Breakdown Voltage ¹		Test Current	Stand-off Voltage	Maximum Reverse Leakage Current ³	Maximum Clamping Voltage	Maximum Peak Pulse Current ²
				$V_{(BR)}$						
		Min.	Max.	UNI	BI					
		V	V			mA	V	μA	V	A
SMBJ5.0A	SMBJ5.0CA ⁴	KE	AE	6.4	7.07	10	5	800	9.2	65.2
SMBJ6.0A	SMBJ6.0CA	KG	AG	6.67	7.37	10	6	800	10.3	58.3
SMBJ6.5A	SMBJ6.5CA	KK	AK	7.22	7.98	10	6.5	500	11.2	53.6
SMBJ7.0A	SMBJ7.0CA	KM	AM	7.78	8.6	10	7	200	12	50
SMBJ7.5A	SMBJ7.5CA	KP	AP	8.33	9.21	1	7.5	100	12.9	46.5
SMBJ8.0A	SMBJ8.0CA	KR	AR	8.89	9.83	1	8	50	13.6	44.1
SMBJ8.5A	SMBJ8.5CA	KT	AT	9.44	10.4	1	8.5	20	14.4	41.7
SMBJ9.0A	SMBJ9.0CA	KV	AV	10	11.1	1	9	10	15.4	39
SMBJ10A	SMBJ10CA	KX	AX	11.1	12.3	1	10	5	17	35.3
SMBJ11A	SMBJ11CA	KZ	AZ	12.2	13.5	1	11	5	18.2	33
SMBJ12A	SMBJ12CA	LE	BE	13.3	14.7	1	12	5	19.9	30.2
SMBJ13A	SMBJ13CA	LG	BG	14.4	15.9	1	13	1	21.5	27.9
SMBJ14A	SMBJ14CA	LK	BK	15.6	17.2	1	14	1	23.2	25.9
SMBJ15A	SMBJ15CA	LM	BM	16.7	18.5	1	15	1	24.4	24.6
SMBJ16A	SMBJ16CA	LP	BP	17.8	19.7	1	16	1	26	23.1
SMBJ17A	SMBJ17CA	LR	BR	18.9	20.9	1	17	1	27.6	21.7
SMBJ18A	SMBJ18CA	LT	BT	20	22.1	1	18	1	29.2	20.5
SMBJ20A	SMBJ20CA	LV	BV	22.2	24.5	1	20	1	32.4	18.5
SMBJ22A	SMBJ22CA	LX	BX	24.4	26.9	1	22	1	35.5	16.9
SMBJ24A	SMBJ24CA	LZ	BZ	26.7	29.5	1	24	1	38.9	15.4
SMBJ26A	SMBJ26CA	ME	CE	28.9	31.9	1	26	1	42.1	14.3
SMBJ28A	SMBJ28CA	MG	CG	31.1	34.4	1	28	1	45.4	13.2
SMBJ30A	SMBJ30CA	MK	CK	33.3	36.8	1	30	1	48.4	12.4
SMBJ33A	SMBJ33CA	MM	CM	36.7	40.6	1	33	1	53.3	11.3
SMBJ36A	SMBJ36CA	MP	CP	40	44.2	1	36	1	58.1	10.3
SMBJ40A	SMBJ40CA	MR	CR	44.4	49.1	1	40	1	64.5	9.3
SMBJ43A	SMBJ43CA	MT	CT	47.8	52.8	1	43	1	69.4	8.6

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Part Number (Uni)	Part Number (Bi)	Marking Code		Breakdown Voltage ¹		Test Current	Stand-off Voltage	Maximum Reverse Leakage Current ³	Maximum Clamping Voltage	Maximum Peak Pulse Current ²
				$V_{(BR)1}$						
		UNI	BI	Min.	Max.	I_T	VWM	$I_D@V_{WM}$	$V_C@I_{PPM}$	I_{PPM2}
				V	V					
SMBJ45A	SMBJ45CA	MV	CV	50	55.3	1	45	1	72.7	8.3
SMBJ48A	SMBJ48CA	MX	CX	53.3	58.9	1	48	1	77.4	7.8
SMBJ51A	SMBJ51CA	MZ	CZ	56.7	62.7	1	51	1	82.4	7.3
SMBJ54A	SMBJ54CA	NE	DE	60	66.3	1	54	1	87.1	6.9
SMBJ58A	SMBJ58CA	NG	DG	64.4	71.2	1	58	1	93.6	6.4
SMBJ60A	SMBJ60CA	NK	DK	66.7	73.7	1	60	1	96.8	6.2
SMBJ64A	SMBJ64CA	NM	DM	71.1	78.6	1	64	1	103	5.8
SMBJ70A	SMBJ70CA	NP	DP	77.8	86	1	70	1	113	5.3
SMBJ75A	SMBJ75CA	NR	DR	83.3	92.1	1	75	1	121	5
SMBJ78A	SMBJ78CA	NT	DT	86.7	95.8	1	78	1	126	4.8
SMBJ85A	SMBJ85CA	NV	DV	94.4	104	1	85	1	137	4.4
SMBJ90A	SMBJ90CA	NX	DX	100	111	1	90	1	146	4.1
SMBJ100A	SMBJ100CA	NZ	DZ	111	123	1	100	1	162	3.7
SMBJ110A	SMBJ110CA	PE	FE	122	135	1	110	1	177	3.4
SMBJ120A	SMBJ120CA	PG	FG	133	147	1	120	1	193	3.1
SMBJ130A	SMBJ130CA	PK	FK	144	159	1	130	1	209	2.9
SMBJ150A	SMBJ150CA	PM	FM	167	185	1	150	1	243	2.5
SMBJ160A	SMBJ160CA	PP	FP	178	197	1	160	1	259	2.3
SMBJ170A	SMBJ170CA	PR	FR	189	209	1	170	1	275	2.2
SMBJ180A	SMBJ180CA	PT	FT	201	222	1	180	1	292	2.1
SMBJ200A	SMBJ200CA	PV	FV	224	247	1	200	1	324	1.9
SMBJ220A	SMBJ220CA	PX	FX	246	272	1	220	1	356	1.7
SMBJ250A	SMBJ250CA	PZ	FZ	279	309	1	250	1	405	1.5
SMBJ300A	SMBJ300CA	QE	GE	335	371	1	300	1	486	1.3
SMBJ350A	SMBJ350CA	QG	GG	391	432	1	350	1	567	1.1
SMBJ400A	SMBJ400CA	QK	GK	447	494	1	400	1	648	0.9
SMBJ440A	SMBJ440CA	QM	GM	492	543	1	440	1	713	0.9

- Notes:**
- $V_{(BR)}$ measured after I_T applied for 300us square wave pulse or equivalent
 - Surge current waveform per Fig. 3 and derate per Fig. 2
 - For bi-directional types having V_{WM} of 10 Volts and less, the I_D limit is doubled
 - For the bidirectional SMBJ5.0CA, the maximum $V(BR)$ is 7.25V.

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Ratings and Characteristic Curves ($T_A = 25^\circ\text{C}$ unless otherwise noted)

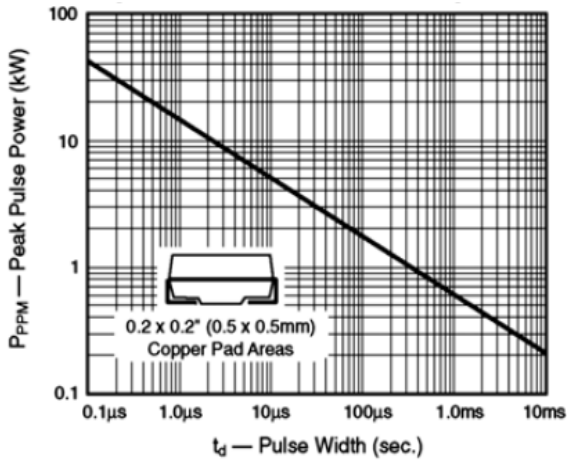


Figure 1. Peak Pulse Power Rating Curve

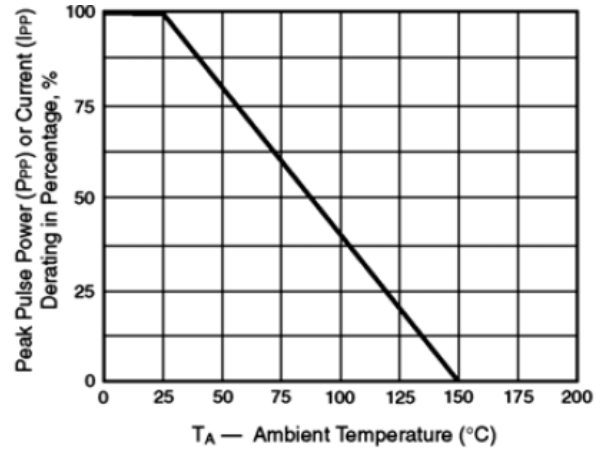


Figure 2. Pulse Derating Curve

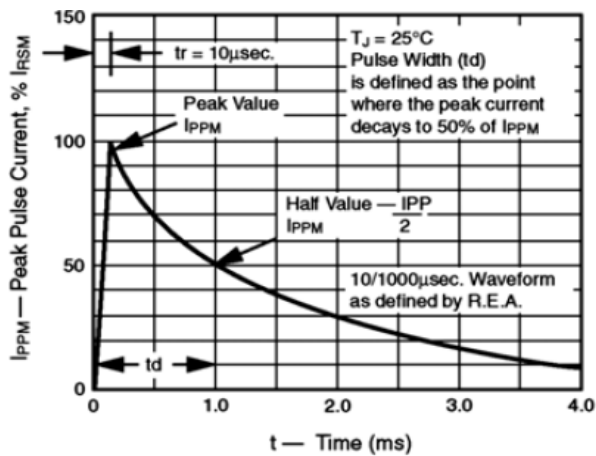


Figure 3. Pulse Waveform

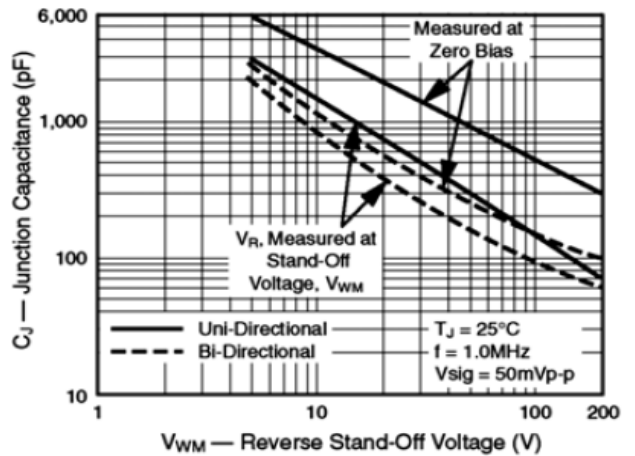


Figure 4. Typical Junction Capacitance

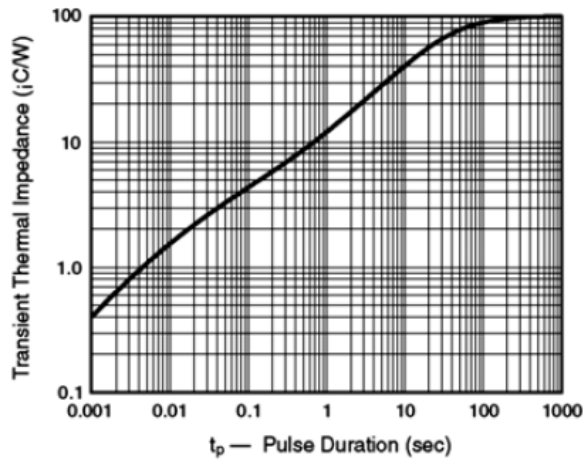


Figure 5. Typical Transient Thermal Impedance

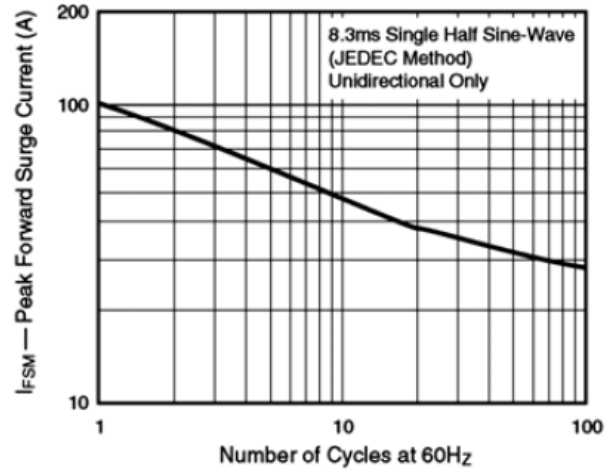
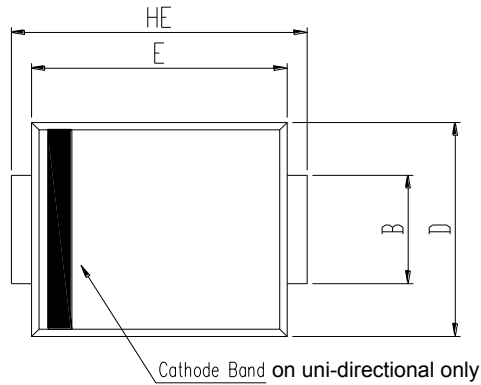


Figure 6. Maximum Non-Repetitive Peak Forward Surge Current

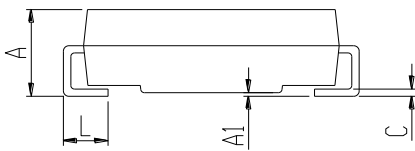
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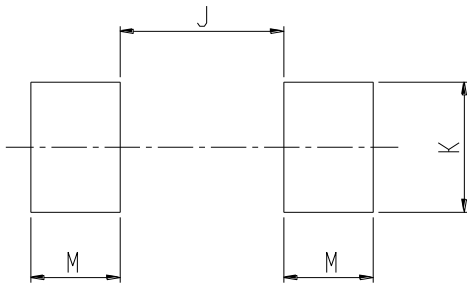
Package Outline Dimensions DO-214AA(SMB)



SMB (DO-214AA)				
DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	1.99	2.61	0.078	0.103
A1	0.00	0.20	0.000	0.008
B	1.93	2.08	0.076	0.082
C	0.15	0.31	0.006	0.012
D	3.48	3.73	0.137	0.147
E	4.25	4.75	0.167	0.187
HE	5.26	5.46	0.207	0.215
L	0.90	1.41	0.035	0.056



Recommended Pad Layout



SMB Recommended Pad Layout (Reference Only)				
DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.
J	-	2.60	-	0.102
K	2.20	-	0.087	-
M	1.80	-	0.071	-