

Transient Voltage Suppressors

TVS Diodes - 600W > 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.

Features

- For surface mounted applications in order to optimize board space
- Reliable low cost construction utilizing molded plastic technique
- Plastic material has UL flammability classification 94V-O
- Typical IR less than 1uA above 10V
- Fast response time: typically less than 1.0ps from 0 Volts to VBR min
- Glass passivated junction
- Low inductance
- High Temperature soldering: 260°C/10 seconds at terminals



Package: DO-214AA / SMB

Applications

- I/O interface
- AC/DC power supply
- Low frequency signal transmission line (RS232, RS485, etc.)

Electrical Characteristics

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at TA=25°C by 10x1000μs waveform (Fig.1)(Note 1), (Note 2)	PPPM	600	W
Power Dissipation on infinite heat sink at TA=50°C	PM(AV)	5	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 3)	IFSM	100	A
Maximum Instantaneous Forward Voltage at 25A for Unidirectional only (Note 4)	VF	3.5V/5	V
Operating Junction and Storage Temperature Range	TJ, TSTG	-65 to 150	°C
Typical Thermal Resistance Junction to Lead	RθJL	20	°C/W
Typical Thermal Resistance Junction to Ambient	RθJA	100	°C/W

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above TA=25°C per Fig. 2.
2. Mounted on 5.0x5.0mm copper pad to each terminal.
3. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only.
4. VF < 3.5V for VBR ≤ 200V and VF < 6.5V for VBR ≥ 201V.

Electrical Characteristics (TA=25°C)

Part Number		marking code		Reverse Stand-Off Voltage	Breakdown Voltage V _{BR} (Volts)@I _T		Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RWM}
Unidirectional	Bidirectional	Uni	Bi	V _{RWM} (V)	Min	Max	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)
SMBJ5.0A	SMBJ5.0CA	KE	AE	5.0	6.40	7.00	10	9.2	65.3	800
SMBJ6.0A	SMBJ6.0CA	KG	AG	6.0	6.67	7.37	10	10.3	58.3	800
SMBJ6.5A	SMBJ6.5CA	KK	AK	6.5	7.22	7.98	10	11.2	53.6	500
SMBJ7.0A	SMBJ7.0CA	KM	AM	7.0	7.78	8.60	10	12.0	50.0	200
SMBJ7.5A	SMBJ7.5CA	KP	AP	7.5	8.33	9.21	1	12.9	46.6	100
SMBJ8.0A	SMBJ8.0CA	KR	AR	8.0	8.89	9.83	1	13.6	44.2	50
SMBJ8.5A	SMBJ8.5CA	KT	AT	8.5	9.44	10.40	1	14.4	41.7	20
SMBJ9.0A	SMBJ9.0CA	KV	AV	9.0	10.0	11.10	1	15.4	39.0	10
SMBJ10A	SMBJ10CA	KX	AX	10	11.1	12.3	1	17.0	35.3	5
SMBJ11A	SMBJ11CA	KZ	AZ	11	12.2	13.5	1	18.2	33.0	1
SMBJ12A	SMBJ12CA	LE	BE	12	13.3	14.7	1	19.9	30.2	1
SMBJ13A	SMBJ13CA	LG	BG	13	14.4	15.9	1	21.5	28.0	1
SMBJ14A	SMBJ14CA	LK	BK	14	15.6	17.2	1	23.2	25.9	1
SMBJ15A	SMBJ15CA	LM	BM	15	16.7	18.5	1	24.4	24.6	1
SMBJ16A	SMBJ16CA	LP	BP	16	17.8	19.7	1	26.0	23.1	1
SMBJ17A	SMBJ17CA	LR	BR	17	18.9	20.9	1	27.6	21.8	1
SMBJ18A	SMBJ18CA	LT	BT	18	20.0	22.1	1	29.2	20.6	1
SMBJ20A	SMBJ20CA	LV	BV	20	22.2	24.5	1	32.4	18.6	1
SMBJ22A	SMBJ22CA	LX	BX	22	24.4	26.9	1	35.5	16.9	1
SMBJ24A	SMBJ24CA	LZ	BZ	24	26.7	29.5	1	38.9	15.5	1
SMBJ26A	SMBJ26CA	ME	CE	26	28.9	31.9	1	42.1	14.3	1
SMBJ28A	SMBJ28CA	MG	CG	28	31.1	34.4	1	45.4	13.3	1
SMBJ30A	SMBJ30CA	MK	CK	30	33.3	36.8	1	48.4	12.4	1
SMBJ33A	SMBJ33CA	MM	CM	33	36.7	40.6	1	53.3	11.3	1

Electrical Characteristics (TA=25°C)

continued

Part Number		marking code		Reverse Stand-Off Voltage	Breakdown Voltage V _{BR} (Volts)@I _T		Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RWM}
Unidirectional	Bidirectional	Uni	Bi	V _{RWM} (V)	Min	Max	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)
SMBJ36A	SMBJ36CA	MP	CP	36.0	40.0	44.2	1	58.1	10.4	1
SMBJ40A	SMBJ40CA	MR	CR	40.0	44.4	49.1	1	64.5	9.3	1
SMBJ43A	SMBJ43CA	MT	CT	43.0	47.8	52.8	1	69.4	8.7	1
SMBJ45A	SMBJ45CA	MV	CV	45.0	50.0	55.3	1	72.7	8.3	1
SMBJ48A	SMBJ48CA	MX	CX	48.0	53.3	58.9	1	77.4	7.8	1
SMBJ51A	SMBJ51CA	MZ	CZ	51.0	56.7	62.7	1	82.4	7.3	1
SMBJ54A	SMBJ54CA	NE	DE	54.0	60.0	66.3	1	87.1	6.9	1
SMBJ58A	SMBJ58CA	NG	DG	58.0	64.4	71.2	1	93.6	6.5	1
SMBJ60A	SMBJ60CA	NK	DK	60.0	66.7	73.7	1	96.8	6.2	1
SMBJ64A	SMBJ64CA	NM	DM	64.0	71.1	78.6	1	103.0	5.9	1
SMBJ70A	SMBJ70CA	NP	DP	70.0	77.8	86.0	1	113.0	5.3	1
SMBJ75A	SMBJ75CA	NR	DR	75.0	83.3	92.1	1	121.0	5.0	1
SMBJ78A	SMBJ78CA	NT	DT	78.0	86.7	95.8	1	126.0	4.8	1
SMBJ85A	SMBJ85CA	NV	DV	85.0	94.4	104.0	1	137.0	4.4	1
SMBJ90A	SMBJ90CA	NX	DX	90.0	100.0	111.0	1	146.0	4.1	1
SMBJ100A	SMBJ100CA	NZ	DZ	100.0	111.0	123.0	1	162.0	3.7	1
SMBJ110A	SMBJ110CA	PE	EE	110.0	122.0	135.0	1	177.0	3.4	1
SMBJ120A	SMBJ120CA	PG	EG	120.0	133.0	147.0	1	193.0	3.1	1
SMBJ130A	SMBJ130CA	PK	EK	130.0	144.0	159.0	1	209.0	2.9	1
SMBJ150A	SMBJ150CA	PM	EM	150.0	167.0	185.0	1	243.0	2.5	1
SMBJ160A	SMBJ160CA	PP	EP	160.0	178.0	197.0	1	259.0	2.3	1
SMBJ170A	SMBJ170CA	PR	ER	170.0	189.0	209.0	1	275.0	2.2	1
SMBJ180A	SMBJ180CA	PT	ET	180.0	201.0	222.0	1	292.0	2.1	1
SMBJ190A	SMBJ190CA	PA	EC	190.0	209.0	243.2	1	308.0	2.0	1

Electrical Characteristics (TA=25°C)

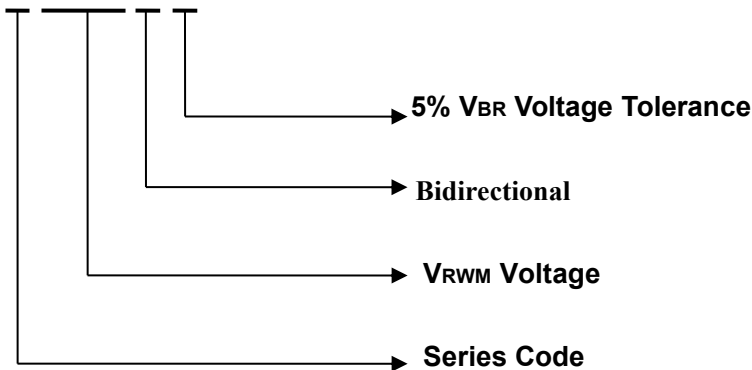
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Part Number		marking code		Reverse Stand-Off Voltage	Breakdown Voltage $V_{BR}(\text{Volts})@I_T$		Test Current	Maximum Clamping Voltage @ I_{PP}	Peak Pulse Current	Reverse Leakage @ V_{RWM}
Unidirectional	Bidirectional	Uni	Bi	$V_{RWM}(V)$	Min	Max	$I_T(mA)$	$V_C(V)$	$I_{PP}(A)$	$I_R(\mu A)$
SMBJ200A	SMBJ200CA	PV	EV	200.0	220.0	247.0	1	324.0	1.9	1
SMBJ210A	SMBJ210CA	PB	ED	210.0	231.0	268.8	1	340.0	1.8	1
SMBJ220A	SMBJ220CA	PX	EX	220.0	246.0	281.6	1	356.0	1.7	1
SMBJ250A	SMBJ250CA	PZ	EZ	250.0	279.0	309.0	1	405.0	1.5	1
SMBJ300A	SMBJ300CA	QE	FE	300.0	335.0	371.0	1	486.0	1.3	1
SMBJ350A	SMBJ350CA	QG	FG	350.0	391.0	432.0	1	567.0	1.1	1
SMBJ400A	SMBJ400CA	QK	FK	400.0	447.0	494.0	1	648.0	0.9	1
SMBJ440A	SMBJ440CA	QM	FM	440.0	492.0	543.0	1	713.0	0.9	1

Notes: For bidirectional type having V_{RWM} of 10 volts and less, the I_R limit is double.

Description of Part Number

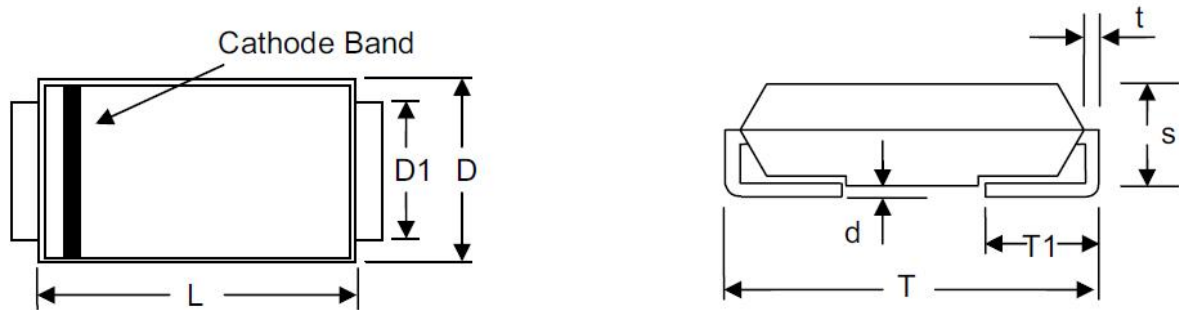
SMBJ XXX C A



Packing Options

Package Type	Description	Packing Quantity	Industry Standard
 DO-214AA	Embossed Carrier Reel Pack	500 PCS / 3000PCS	EIA-481-1

Dimensions - DO-214AA



SMB/DO-214AA

Item	Millimeters		Inches	
	Min.	Max.	Min.	Max.
L	4.06	4.57	0.160	0.180
D	3.30	3.94	0.130	0.155
D1	1.95	2.20	0.077	0.086
T	5.21	5.59	0.205	0.220
T1	0.76	1.52	0.030	0.060
d	-	0.203	-	0.008
s	2.13	2.47	0.084	0.097
t	0.152	0.305	0.006	0.012

Ratings and Characteristics Curve

Figure 1. Peak Pulse Power Rating Curve

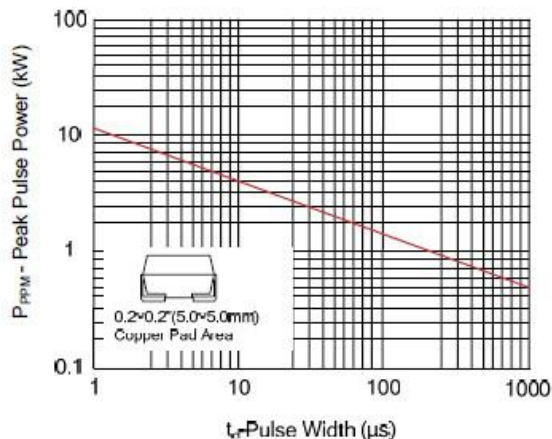


Figure 2. Pulse Derating Curve

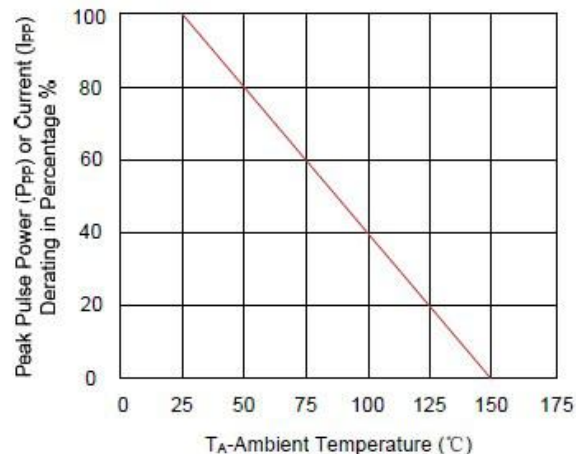


Figure 3. Pulse Waveform

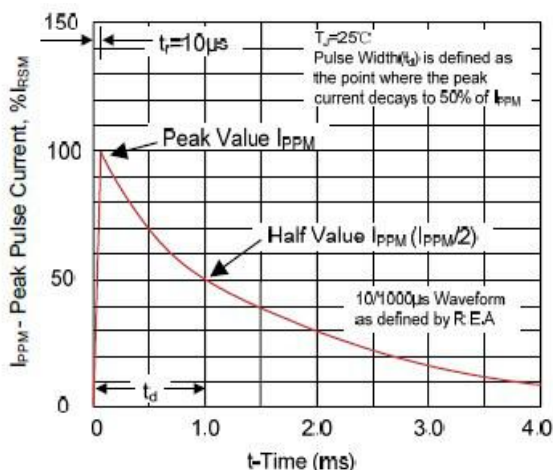


Figure 4. Typical Junction Capacitance

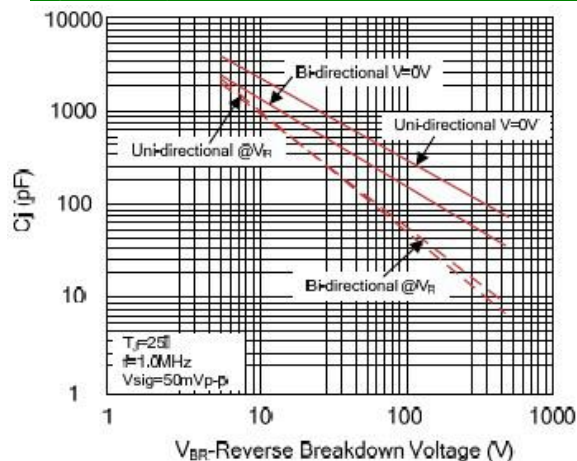


Figure 5. Steady State Power Dissipation Derating Curve

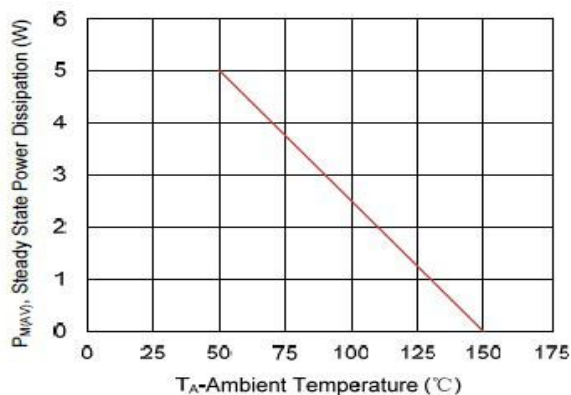
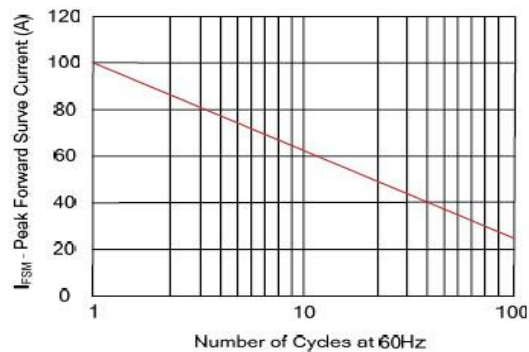


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



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