

600W 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-0
- 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
- Agency recognition: 



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		Reverse Stand-Off Voltage	Breakdown Voltage		Test Current	Maximum Clamping Voltage@IPP	Peak Pulse Current	Reverse Leakage @VRWM	Certification	Delivery Time
Uni-Polar	Bi-polar	VRWM(V)	Min	Max	IT(mA)	VC(V)	IPP(A)	IR(μA)	UL	days
SMBJ3.3A	----	3.3	5.2	6.00	10	8.0	75.0	600	-	7days
SMBJ5.0A	SMBJ5.0CA	5.0	6.40	7.00	10	9.2	65.3	800	√	7days
SMBJ6.0A	SMBJ6.0CA	6.0	6.67	7.37	10	10.3	58.3	800	√	7days
SMBJ6.5A	SMBJ6.5CA	6.5	7.22	7.98	10	11.2	53.6	500	√	7days
SMBJ7.0A	SMBJ7.0CA	7.0	7.78	8.60	10	12.0	50.0	200	√	7days
SMBJ7.5A	SMBJ7.5CA	7.5	8.33	9.21	1	12.9	46.6	100	√	7days
SMBJ8.0A	SMBJ8.0CA	8.0	8.89	9.83	1	13.6	44.2	50	√	7days
SMBJ8.5A	SMBJ8.5CA	8.5	9.44	10.40	1	14.4	41.7	20	√	7days
SMBJ9.0A	SMBJ9.0CA	9.0	10.0	11.10	1	15.4	39.0	10	√	7days
SMBJ10A	SMBJ10CA	10	11.1	12.3	1	17.0	35.3	5	√	7days
SMBJ11A	SMBJ11CA	11	12.2	13.5	1	18.2	33.0	1	√	7days
SMBJ12A	SMBJ12CA	12	13.3	14.7	1	19.9	30.2	1	√	7days
SMBJ13A	SMBJ13CA	13	14.4	15.9	1	21.5	28.0	1	√	7days
SMBJ14A	SMBJ14CA	14	15.6	17.2	1	23.2	25.9	1	√	7days
SMBJ15A	SMBJ15CA	15	16.7	18.5	1	24.4	24.6	1	√	7days
SMBJ16A	SMBJ16CA	16	17.8	19.7	1	26.0	23.1	1	√	7days
SMBJ17A	SMBJ17CA	17	18.9	20.9	1	27.6	21.8	1	√	7days
SMBJ18A	SMBJ18CA	18	20.0	22.1	1	29.2	20.6	1	√	7days
SMBJ20A	SMBJ20CA	20	22.2	24.5	1	32.4	18.6	1	√	7days
SMBJ22A	SMBJ22CA	22	24.4	26.9	1	35.5	16.9	1	√	7days
SMBJ24A	SMBJ24CA	24	26.7	29.5	1	38.9	15.5	1	√	7days
SMBJ26A	SMBJ26CA	26	28.9	31.9	1	42.1	14.3	1	√	7days
SMBJ28A	SMBJ28CA	28	31.1	34.4	1	45.4	13.3	1	√	7days
SMBJ30A	SMBJ30CA	30	33.3	36.8	1	48.4	12.4	1	√	7days
SMBJ33A	SMBJ33CA	33	36.7	40.6	1	53.3	11.3	1	√	7days

Specifications are subject to change without notice

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Electrical Characteristics (TA=25°C) continued



Part Number		Reverse Stand-Off Voltage	Breakdown Voltage V _{BR} (Volts)@IT		Test Current	Maximum Clamping Voltage@I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RWM}	Safety Certification	Delivery Time
Uni-Polar	Bi-polar	V _{RWM} (V)	Min	Max	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)	UL	days
SMBJ36A	SMBJ36CA	36.0	40.0	44.2	1	58.1	10.4	1	√	7days
SMBJ40A	SMBJ40CA	40.0	44.4	49.1	1	64.5	9.3	1	√	7days
SMBJ43A	SMBJ43CA	43.0	47.8	52.8	1	69.4	8.7	1	√	7days
SMBJ45A	SMBJ45CA	45.0	50.0	55.3	1	72.7	8.3	1	√	7days
SMBJ48A	SMBJ48CA	48.0	53.3	58.9	1	77.4	7.8	1	√	7days
SMBJ51A	SMBJ51CA	51.0	56.7	62.7	1	82.4	7.3	1	√	7days
SMBJ54A	SMBJ54CA	54.0	60.0	66.3	1	87.1	6.9	1	√	7days
SMBJ58A	SMBJ58CA	58.0	64.4	71.2	1	93.6	6.5	1	√	7days
SMBJ60A	SMBJ60CA	60.0	66.7	73.7	1	96.8	6.2	1	√	7days
SMBJ64A	SMBJ64CA	64.0	71.1	78.6	1	103.0	5.9	1	√	7days
SMBJ70A	SMBJ70CA	70.0	77.8	86.0	1	113.0	5.3	1	√	7days
SMBJ75A	SMBJ75CA	75.0	83.3	92.1	1	121.0	5.0	1	√	7days
SMBJ78A	SMBJ78CA	78.0	86.7	95.8	1	126.0	4.8	1	√	7days
SMBJ85A	SMBJ85CA	85.0	94.4	104.0	1	137.0	4.4	1	√	7days
SMBJ90A	SMBJ90CA	90.0	100.0	111.0	1	146.0	4.1	1	√	7days
SMBJ100A	SMBJ100CA	100.0	111.0	123.0	1	162.0	3.7	1	√	7days
SMBJ110A	SMBJ110CA	110.0	122.0	135.0	1	177.0	3.4	1	√	7days
SMBJ120A	SMBJ120CA	120.0	133.0	147.0	1	193.0	3.1	1	√	7days
SMBJ130A	SMBJ130CA	130.0	144.0	159.0	1	209.0	2.9	1	√	7days
SMBJ150A	SMBJ150CA	150.0	167.0	185.0	1	243.0	2.5	1	√	7days
SMBJ160A	SMBJ160CA	160.0	178.0	197.0	1	259.0	2.3	1	√	7days
SMBJ170A	SMBJ170CA	170.0	189.0	209.0	1	275.0	2.2	1	√	7days
SMBJ180A	SMBJ180CA	180.0	201.0	222.0	1	292.0	2.1	1	√	7days
SMBJ190A	SMBJ190CA	190.0	209.0	243.2	1	308.0	2.0	1	√	7days

Electrical Characteristics (TA=25°C) continued

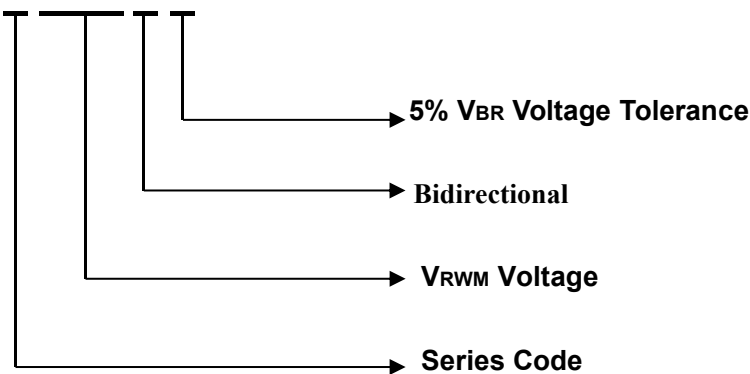


Part Number		Reverse Stand-Off Voltage	Breakdown Voltage V _{BR} (Volts)@I _T		Test Current	Maximum Clamping Voltage@I _{PP}	Peak Pulse Current	Reverse Leakage @V _{RWM}	Safety Certification	Delivery Time
Uni-Polar	Bi-polar	V _{RWM} (V)	Min	Max	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)	UL	days
SMBJ200A	SMBJ200CA	200.0	220.0	247.0	1	324.0	1.9	1	√	7days
SMBJ210A	SMBJ210CA	210.0	231.0	268.8	1	340.0	1.8	1	√	7days
SMBJ220A	SMBJ220CA	220.0	246.0	281.6	1	356.0	1.7	1	√	7days
SMBJ250A	SMBJ250CA	250.0	279.0	309.0	1	405.0	1.5	1	√	7days
SMBJ300A	SMBJ300CA	300.0	335.0	371.0	1	486.0	1.3	1	√	7days
SMBJ350A	SMBJ350CA	350.0	391.0	432.0	1	567.0	1.1	1	√	7days
SMBJ400A	SMBJ400CA	400.0	447.0	494.0	1	648.0	0.9	1	√	7days
SMBJ440A	SMBJ440CA	440.0	492.0	543.0	1	713.0	0.9	1	√	7days


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

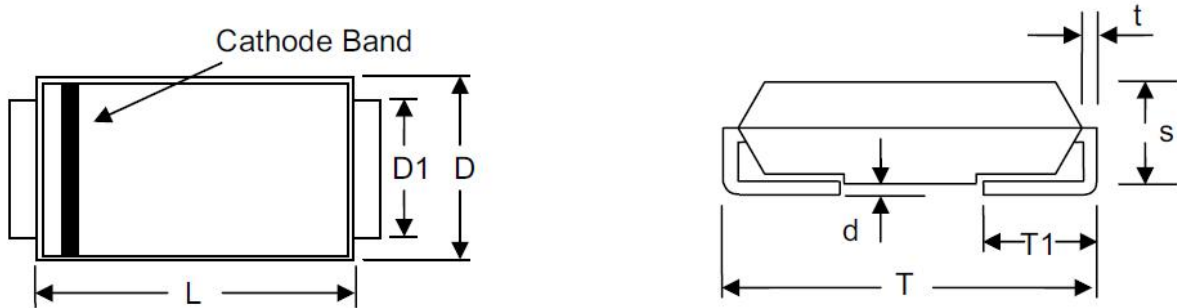
Description of Part Number

SMBJ XXX C A



Packing Options

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



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

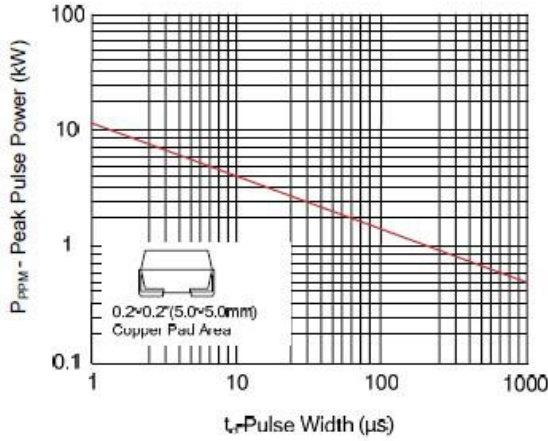


Figure 2. Pulse Derating Curve

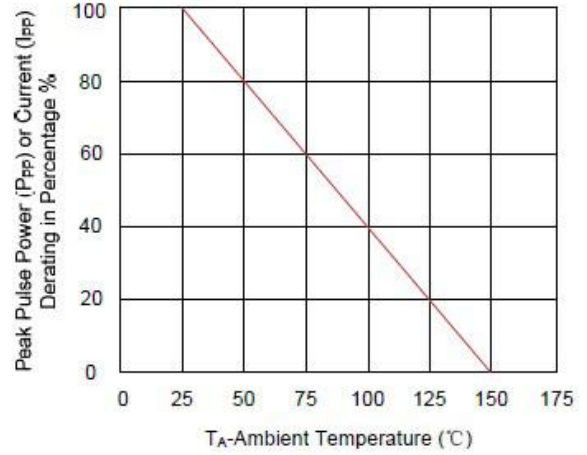


Figure 3. Pulse Waveform

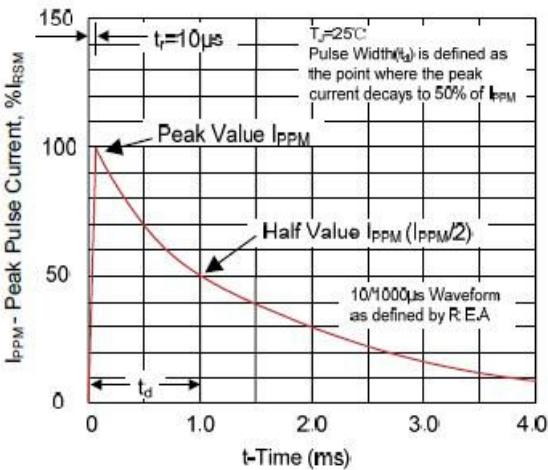


Figure 4. Typical Junction Capacitance

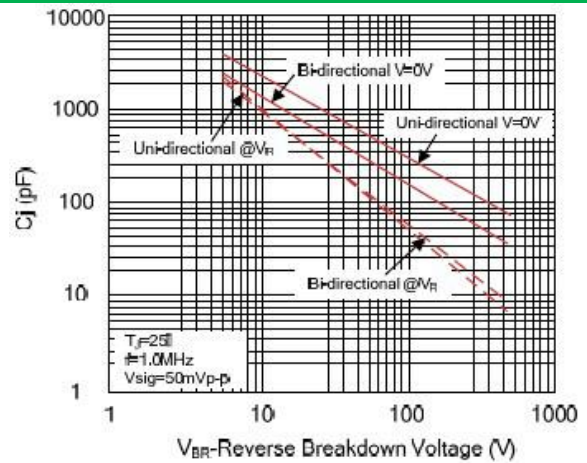


Figure 5. Steady State Power Dissipation Derating Curve

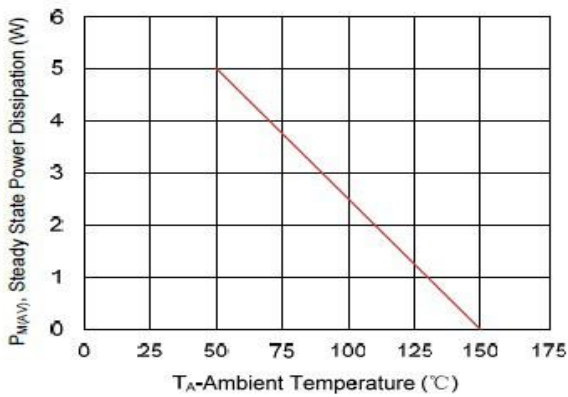


Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

