

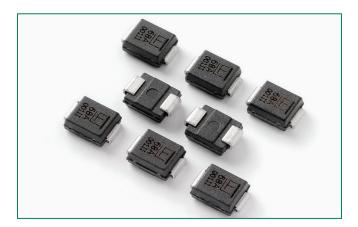
SMBJ Series











Agency Approvals

AGENCY	AGENCY FILE NUMBER
!	E128662/E230531

Maximum Ratings and Thermal Characteristics (T_a=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at T_A =25°C by 10x1000 μ s waveform (Fig.1)(Note 1), (Note 2)	P _{PPM}	600	W
Power Dissipation on infinite heat sink at $T_A = 50^{\circ}C$	P _{M(AV)}	5.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 3)	I _{FSM}	100	А
Maximum Instantaneous Forward Voltage at 50A for Unidirectional only (Note 4)	V _F	3.5V/5.0	V
Operating Junction and Storage Temperature Range	T _J , T _{STG}	-65 to 150	°C
Typical Thermal Resistance Junction to Lead	R _{wL}	20	°C/W
Typical Thermal Resistance Junction to Ambient	R _{uJA}	100	°C/W

- 1. Non-repetitive current pulse , per Fig. 3 and derated above $T_{\rm A} = 25^{\circ}{\rm C}$ per Fig. 2.
- 2. Mounted on copper pad area of 0.2x0.2" (5.0 x 5.0mm) to each terminal.
- 3. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.
- 4. $V_F < 3.5 V$ for $V_{BB} \le 200 V$ and $V_F < 5.0 V$ for $V_{BB} \ge 201 V$.

Description

The SMBJ series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

Features

- Halogen-Free
- RoHS compliant
- For surface mounted applications to optimize board space
- Low profile package
- Built-in strain relief
- Typical maximum temperature coefficient $\Delta V_{BR} = 0.1\% \times V_{BR}@25^{\circ}C \times \Delta T$ • High Temperature
- Glass passivated chip junction
- 600W peak pulse power capability at $10 \times 1000 \mu s$ waveform, repetition rate (duty cycles):0.01%

- Fast response time: typically less than 1.0ps from 0V to BV min
- Excellent clamping capability
- Low incremental surge resistance
- Typical I_R less than 1μA above 12V
- soldering guaranteed: 260°C/40 seconds at terminals
- Plastic package has Underwriters Laboratory Flammability 94V-O
- Matte Tin Lead-free Plated

Applications

TVS devices are ideal for the protection of I/O Interfaces, V_{cc} bus and other vulnerable circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

Transient Voltage Suppression DiodesSurface Mount – 600W > SMBJ series

Electrical Characteristics

MIN MIN MAX MAX	Part Number (Uni)	Part Number (Bi)	Mar	king	Reverse Stand off Voltage V _R	Volta	down geV _{BR} s) @ I _T	Test Current	Maximum Clamping Voltage V _c @ I	Maximum Peak Pulse Current I _{pp}	Maximum Reverse Leakage I _R @ V _B	Agency Approval
SMB-BIGA SMB-BIGCA KG AG 6.0 6.67 737 10 10.3 58.3 500 X SMB-BIGAS SMB-BIGCA KK AK 6.5 727 738 10 11.2 53.6 500 X SMB-BIGAS SMB-BIGCA KM AM 70 778 88.60 10 12.0 60.0 200 X SMB-BIGAS SMB-BIGCA KR AR 70 778 88.60 10 12.0 60.0 200 X SMB-BIGA SMB-BIGCA KR AR 8.0 8.89 98.3 1 13.6 44.2 50 X SMB-BIGA SMB-BIGCA KR AR 8.0 8.89 98.3 1 13.6 44.2 50 X SMB-BIGA SMB-BIGCA KV AV 9.0 10.00 11.10 1 15.4 39.0 10 X SMB-BIGA SMB-BIGCA KV AV 9.0 10.00 11.10 1 15.4 39.0 10 X SMB-BIGA SMB-BIGCA KV AV 9.0 10.00 11.10 1 15.4 39.0 10 X SMB-BIGA SMB-BIGCA KV AV 9.0 10.00 11.10 1 15.4 39.0 10 X SMB-BIGA SMB-BIGCA KV AV 9.0 10.00 11.10 1 15.4 39.0 10 X SMB-BIGA SMB-BIGCA KV AV 9.0 10.00 11.10 1 15.4 39.0 10 X SMB-BIGA SMB-BIGCA KV AV 9.0 10.00 11.10 1 15.4 39.0 10 X SMB-BIGA SMB-BIGCA KV AV 9.0 10.00 11.10 1 15.4 39.0 1 X SMB-BIGA SMB-BIGCA KV AV 9.0 10.00 11.10 1 15.4 39.0 1 X SMB-BIGA SMB-BIGCA LG BG 13.0 14.40 15.90 1 21.5 28.0 1 X SMB-BIGA SMB-BIGCA LG BG 13.0 14.40 15.90 1 21.5 28.0 1 X SMB-BIGA SMB-BIGCA LF BP 16.0 1780 18.50 12.4 24.6 1 X SMB-BIGA SMB-BIGCA LF BP 16.0 1780 18.50 12.2 25.9 1 X SMB-BIGA SMB-BIGCA LF BF 16.0 1780 19.70 1 26.0 23.1 1 X SMB-BIGA SMB-BIGCA LF BF 16.0 1780 19.70 1 26.0 23.1 1 X SMB-BIGA SMB-BIGCA LF BF 16.0 1780 19.70 1 29.2 20.6 1 X SMB-BIGA SMB-BIGCA LF BF 16.0 1780 19.70 1 29.2 20.6 1 X SMB-BIGA SMB-BIGCA LF BF 16.0 1780 19.70 1 29.2 20.6 1 X SMB-BIGA SMB-BIGCA LF BF 16.0 1780 19.70 1 29.5 2 20.6 1 X SMB-BIGA SMB	, , ,	` ′	UNI	BI	(Volts)	MIN	MAX	(mA)	(V) ^{pp}	(A) pp	(μA)	8 2 0
SMB.B.B.G.A. SMB.B.B.G.C.A. KK	SMBJ5.0A	SMBJ5.0CA	KE	AE	5.0	6.40	7.00	10	9.2	65.3	800	Χ
SMB_170A SMB_170CA KM AM 70 778 8.60 10 12.0 50.0 200 X SMB_175A SMB_175CA KP AP 75 8.33 9.21 1 12.9 466 100 X SMB_180A SMB_180CA KR AR 8.0 8.89 9.83 1 13.6 44.2 50 X SMB_180A SMB_180CA KR AR 8.0 8.89 9.83 1 13.6 44.2 50 X SMB_180A SMB_180CA KV AV 9.0 10.00 11.10 1 15.4 39.0 10 X SMB_190A SMB_180CA KV AV 9.0 10.00 11.10 1 15.4 39.0 10 X SMB_190A SMB_190CA KX AX 10.0 11.10 12.30 1 170 36.3 5 X SMB_111CA SMB_111CA KZ AZ 11.0 12.20 13.50 1 18.2 33.0 1 X SMB_111CA SMB_111CA LE BE 12.0 13.30 14.70 1 19.9 30.2 1 X SMB_111CA SMB_111CA LE BE 12.0 13.30 14.70 1 19.9 30.2 1 X SMB_111CA SMB_111CA LE BE 12.0 13.30 14.70 1 19.9 30.2 1 X SMB_111CA SMB_111CA LE BE 12.0 13.00 14.70 1 19.9 30.2 1 X SMB_111CA SMB_111CA LE BE 12.0 13.00 14.70 1 29.2 25.9 1 X SMB_111CA SMB_111CA LE BE 16.0 17.80 19.70 1 22.5 25.9 1 X SMB_111CA SMB_111CA LE BF 16.0 17.80 19.70 1 26.0 23.1 1 X SMB_111CA SMB_111CA LE BF 16.0 17.80 19.70 1 26.0 23.1 1 X SMB_112CA SMB_113CA LE BF 16.0 17.80 19.70 1 26.0 23.1 1 X SMB_112CA SMB_112CA LE BF 18.0 20.00 22.10 1 29.2 20.6 1 X SMB_112CA SMB_112CA LE BF 18.0 20.00 22.10 1 29.2 20.6 1 X SMB_112CA SMB_112CA LE BF 18.0 20.00 22.10 1 29.2 20.6 1 X SMB_112CA SMB_112CA LE BF 24.0 26.70 29.50 1 38.9 15.5 1 X SMB_112CA SMB_112CA LE BF 24.0 26.70 29.50 1 38.9 15.5 1 X SMB_112CA SMB_112CA LE BF 24.0 26.0 27.00 1 38.9 15.5 1 X SMB_112CA SMB_112CA LE BF 24.0 26.0 33.0 36.70 40.60 1 33.3 11.3 X SMB_112CA SMB_112CA LE ST ST ST ST ST ST S		SMBJ6.0CA						10			800	
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SMBJ160A SMBJ160CA PP EP 160.0 178.00 197.00 1 259.0 2.3 1 X SMBJ170A SMBJ170CA PR ER 170.0 189.00 209.00 1 275.0 2.2 1 X SMBJ180A SMBJ180CA PT ET 180.0 201.00 222.00 1 292.0 2.1 1 SMBJ200A SMBJ200CA PV EV 200.0 224.00 247.00 1 324.0 1.9 1 SMBJ220A SMBJ220CA PX EX 220.0 246.00 272.00 1 356.0 1.7 1 SMBJ250A SMBJ250CA PZ EZ 250.0 279.00 309.00 1 405.0 1.5 1 SMBJ300A SMBJ300CA QE FE 300.0 335.00 371.00 1 486.0 1.3 1 SMBJ350CA QG FG 350.0 391.00 432.00	SMBJ130A	SMBJ130CA	PK		130.0	144.00	159.00	1			1	
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SMBJ180A SMBJ180CA PT ET 180.0 201.00 222.00 1 292.0 2.1 1 SMBJ200A SMBJ200CA PV EV 200.0 224.00 247.00 1 324.0 1.9 1 SMBJ220A SMBJ220CA PX EX 220.0 246.00 272.00 1 356.0 1.7 1 SMBJ250A SMBJ250CA PZ EZ 250.0 279.00 309.00 1 405.0 1.5 1 SMBJ300A SMBJ300CA QE FE 300.0 335.00 371.00 1 486.0 1.3 1 SMBJ350A SMBJ350CA QG FG 350.0 391.00 432.00 1 567.0 1.1 1					1							
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SMBJ350A SMBJ350CA QG FG 350.0 391.00 432.00 1 567.0 1.1 1				-								
0.01 0.01 0.00 0.00 0.00 0.00 0.00 0.00				-	-							
SMBJ440A SMBJ440CA QM FM 440.0 492.00 543.00 1 713.0 0.9 1												

For bidirectional type having $V_{\rm R}$ of 10 volts and less, the $I_{\rm R}$ limit is double.

For parts without A , the $\rm V_{BR}$ is $\pm~10\,\%$ and Vc is 5% higher than with A parts.



Ratings and Characteristic Curves (T_A=25°C unless otherwise noted)

Figure 1 - Peak Pulse Power Rating

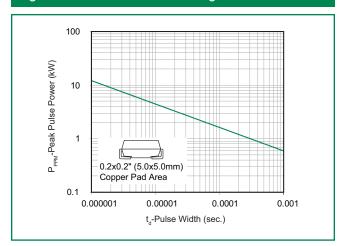


Figure 2 - Pulse Derating Curve

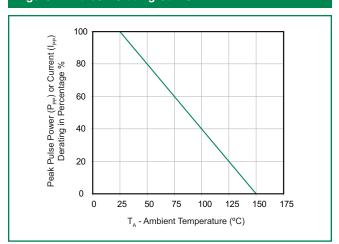


Figure 3 - Pulse Waveform

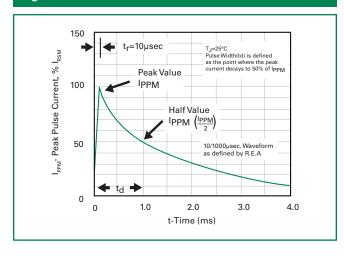


Figure 4 - Typical Junction Capacitance

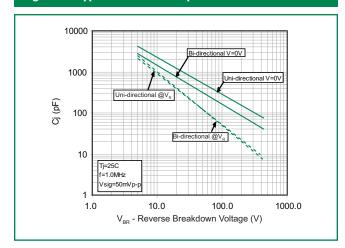


Figure 5 - Steady State Power Dissipation Derating Curve

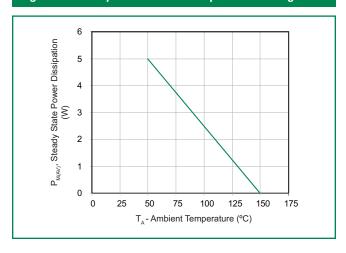
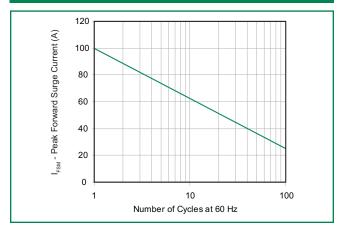


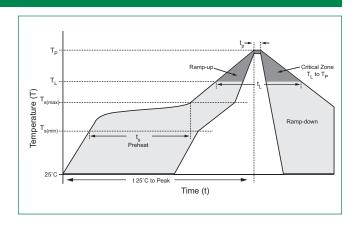
Figure 6 - Maximum Non-Repetitive Peak Forward Surge Current Uni-Directional Only



Transient Voltage Suppression DiodesSurface Mount – 600W > SMBJ series

Soldering Parameters

Reflow Co	ndition	Lead-free assembly		
	-Temperature Min (T _{s(min)})	150°C		
Pre Heat	-Temperature Max (T _{s(max)})	200°C		
	-Time (min to max) (t _s)	60 - 180 secs		
Average ra	amp up rate (Liquidus Temp ık	3°C/second max		
T _{S(max)} to T _L	- Ramp-up Rate	3°C/second max		
Reflow	-Temperature (T _L) (Liquidus)	217°C		
	-Time (min to max) (t _s)	60 – 150 seconds		
PeakTemp	perature (T _P)	260 ^{+0/-5} °C		
Time with	in 5°C of actual peak ure (t _p)	20 - 40 seconds		
Ramp-dov	vn Rate	6°C/second max		
Time 25°C	to peakTemperature (T _P)	8 minutes Max.		
Do not exc	ceed	280°C		



Physical Specifications

Weight	0.003 ounce, 0.093 grams
Case	JEDEC DO214AA. Molded plastic body over glass passivated junction
Polarity	Color band denotes cathode except Bidirectional
Terminal	Matte Tin-plated leads, Solderable per JESD22-B102D

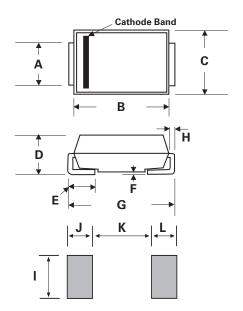
Environmental Specifications

Temperature Cycle	JESD22-A104
Pressure Cooker	JESD22-A102
High Temp. Storage	JESD22-A103
HTRB	JESD22-A108
Thermal Shock	JESD22-A106

Dimensions

SMBJ Series

DO-214AA (SMB J-Bend)

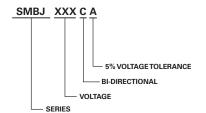


Dimensions	Inc	hes	Millimeters		
Dimensions	Min	Max	Min	Max	
А	0.077	0.086	1.950	2.200	
В	0.160	0.180	4.060	4.570	
С	0.130	0.155	3.300	3.940	
D	0.084	0.096	2.130	2.440	
Е	0.030	0.060	0.760	1.520	
F	-	0.008	-	0.203	
G	0.205	0.220	5.210	5.590	
Н	0.006	0.012	0.152	0.305	
1	0.089	-	2.260	-	
J	0.085	-	2.160	-	
K	-	0.107	-	2.740	
L	0.085	-	2.160	-	

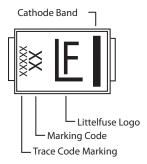
Transient Voltage Suppression Diodes

Surface Mount – 600W > SMBJ series

Part Numbering System



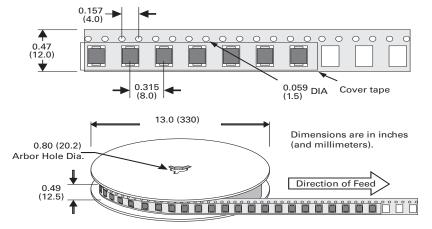
Part Marking System



Packaging

Part number	Component Package	Quantity	Packaging Option	Packaging Specification
SMBJxxxXX	DO-214AA	3000	Tape & Reel – 12mm/13" tape	EIA STD RS-481

Tape and Reel Specification





Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Littelfuse:

 SMBJ15
 SMBJ16CA
 SMBJ40C
 SMBJ100
 SMBJ150
 SMBJ15C
 SMBJ24
 SMBJ20
 SMBJ180C
 SMBJ10C

 SMBJ22C
 SMBJ6.0CA
 SMBJ10
 SMBJ13CA
 SMBJ18A
 SMBJ36
 SMBJ17C
 SMBJ58CA
 SMBJ60
 SMBJ14CA

 SMBJ300C
 SMBJ8.5
 SMBJ9.0
 SMBJ120C
 SMBJ150CA
 SMBJ18
 SMBJ26C
 SMBJ130CA
 SMBJ54CA
 SMBJ64

 SMBJ130C
 SMBJ14
 SMBJ45A
 SMBJ48CA
 SMBJ78A
 SMBJ33A
 SMBJ110A
 SMBJ180CA
 SMBJ220A
 SMBJ60C

 SMBJ7.0
 SMBJ78C
 SMBJ490CA
 SMBJ75CA
 SMBJ85
 SMBJ100A
 SMBJ17
 SMBJ18C
 SMBJ110CA

 SMBJ12C
 SMBJ200A
 SMBJ64A
 SMBJ7.5CA
 SMBJ9.0CA
 SMBJ110C
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