

Surface Mount Transient Voltage Suppressors

15SMBJ Series 5.0 To 200V 1500W

Description

TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent control systems.

Working Voltage: 5.0 to 200 V

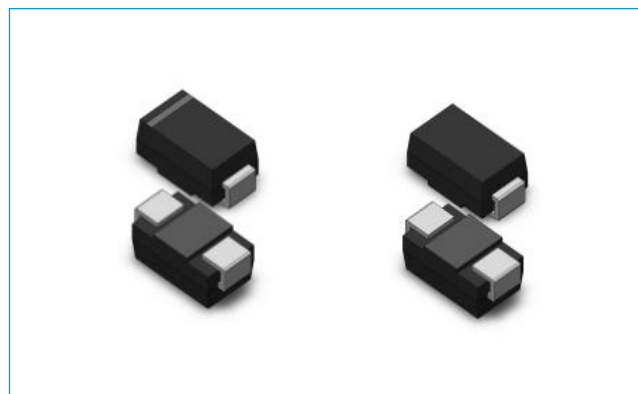
Peak Pulse Power: 1500 W

Features

- ◆ Glass passivated chip
- ◆ 1500 W peak pulse power capability with a 10/1000 us waveform
- ◆ Repetitive rate (duty cycle): 0.01 %
- ◆ Typical IR less than 1 μ A above 10V.
- ◆ Excellent clamping capability
- ◆ Very fast response time
- ◆ High temperature soldering: 260°C/10s at terminals.
- ◆ RoHS compliant

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.



Mechanical Data

- ◆ Case: Molded plastic
- ◆ Epoxy: UL 94V-0 rate flame retardant
- ◆ Lead: Solderable per MIL-STD-750, method 2026 guaranteed
- ◆ Polarity: Color band denotes TVS cathode end
- ◆ Mounting position: Any

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

Parameter	Symbol	Value	Units
Peak power dissipation with a 10/1000us waveform	P_{PPM}	1500	W
Power Dissipation on Infinite Heat Sink at $T_L=75^\circ\text{C}$	P_D	5.0	W
Peak pulse current with a 10/1000us waveform	I_{PP}	See Next Table	A
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to +150	$^\circ\text{C}$
Maximum Instantaneous Forward Voltage at 50A for Unidirectional	V_F	5.0	V

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Electrical Characteristics (@ 25°C Unless Otherwise Specified)

Part Number		Marking		Reverse Stand-Off Voltage $V_{RWM}(V)$	Breakdown Voltage V_{BR} (V) @ I_T		Test Current I_T (mA)	Maximum Clamping Voltage V_C @ I_{PP} (V)	Maximum Peak Pulse Current I_{PP} (A)	Maximum Reverse Leakage I_R @ V_{RWM} (μA)
Uni	Bi	Uni	Bi		MIN	MAX				
15SMBJ5.0A	15SMBJ5.0CA	GDE	BDE	5.0	6.40	7.00	10	9.2	163.0	200
15SMBJ6.0A	15SMBJ6.0CA	GDG	BDG	6.0	6.67	7.37	10	10.3	145.6	200
15SMBJ6.5A	15SMBJ6.5CA	GDK	BDK	6.5	7.22	7.98	10	11.2	134.0	100
15SMBJ7.0A	15SMBJ7.0CA	GDM	BDM	7.0	7.78	8.60	10	12.0	125.0	80
15SMBJ7.5A	15SMBJ7.5CA	GDP	BDP	7.5	8.33	9.21	1	12.9	116.3	50
15SMBJ8.0A	15SMBJ8.0CA	GDR	BDR	8.0	8.89	9.83	1	13.6	110.3	20
15SMBJ8.5A	15SMBJ8.5CA	GDT	BDT	8.5	9.44	15.40	1	14.4	104.2	10
15SMBJ9.0A	15SMBJ9.0CA	GDV	BDV	9.0	10.00	11.10	1	15.4	97.4	5
15SMBJ10A	15SMBJ10CA	GDX	BDX	10.0	11.15	12.30	1	17.0	88.2	2
15SMBJ11A	15SMBJ11CA	GDZ	BDZ	11.0	12.20	13.50	1	18.2	82.4	1
15SMBJ12A	15SMBJ12CA	GEE	BEE	12.0	13.30	14.70	1	19.9	75.4	1
15SMBJ13A	15SMBJ13CA	GEG	BEG	13.0	14.40	15.90	1	21.5	69.8	1
15SMBJ14A	15SMBJ14CA	GEK	BEK	14.0	15.60	17.20	1	23.2	64.7	1
15SMBJ15A	15SMBJ15CA	GEM	BEM	15.0	16.70	18.50	1	24.4	61.5	1
15SMBJ16A	15SMBJ16CA	GEP	BEP	16.0	17.80	19.70	1	26.0	57.7	1
15SMBJ17A	15SMBJ17CA	GER	BER	17.0	18.90	20.90	1	27.6	54.4	1
15SMBJ18A	15SMBJ18CA	GET	BET	18.0	20.00	22.10	1	29.2	51.4	1
15SMBJ20A	15SMBJ20CA	GEV	BEV	20.0	22.20	24.50	1	32.4	46.3	1
15SMBJ22A	15SMBJ22CA	GEX	BEX	22.0	24.40	26.90	1	35.5	42.3	1
15SMBJ24A	15SMBJ24CA	GEZ	BEZ	24.0	26.70	29.50	1	38.9	38.6	1
15SMBJ26A	15SMBJ26CA	GFE	BFE	26.0	28.90	31.90	1	42.1	35.6	1
15SMBJ28A	15SMBJ28CA	GFG	BFG	28.0	31.10	34.40	1	45.4	33.1	1
15SMBJ30A	15SMBJ30CA	GFK	BFK	30.0	33.30	36.80	1	48.4	31.0	1
15SMBJ33A	15SMBJ33CA	GFM	BFM	33.0	36.70	40.60	1	53.3	28.2	1
15SMBJ36A	15SMBJ36CA	GFP	BFP	36.0	40.00	44.20	1	58.1	25.8	1
15SMBJ40A	15SMBJ40CA	GFR	BFR	40.0	44.40	49.10	1	64.5	23.3	1
15SMBJ43A	15SMBJ43CA	GFT	BFT	43.0	47.80	52.80	1	69.4	21.6	1
15SMBJ45A	15SMBJ45CA	GFV	BFV	45.0	50.00	55.30	1	72.7	20.6	1
15SMBJ48A	15SMBJ48CA	GFX	BFX	48.0	53.30	58.90	1	77.4	19.4	1
15SMBJ51A	15SMBJ51CA	GFZ	BFZ	51.0	56.70	62.70	1	82.4	18.2	1
15SMBJ54A	15SMBJ54CA	GGE	BGE	54.0	60.00	66.30	1	87.1	17.2	1
15SMBJ58A	15SMBJ58CA	GGG	BGG	58.0	64.40	71.20	1	93.6	16.1	1
15SMBJ60A	15SMBJ60CA	GGK	BGK	60.0	66.70	73.70	1	96.8	15.5	1
15SMBJ64A	15SMBJ64CA	GGM	BGM	64.0	71.10	78.60	1	103.0	14.6	1
15SMBJ70A	15SMBJ70CA	GGP	BGP	70.0	77.80	86.00	1	113.0	13.3	1
15SMBJ75A	15SMBJ75CA	GGR	BGR	75.0	83.30	92.10	1	121.0	12.4	1
15SMBJ78A	15SMBJ78CA	GGT	BGT	78.0	86.70	95.80	1	126.0	11.9	1
15SMBJ85A	15SMBJ85CA	GGV	BGV	85.0	94.40	154.00	1	137.0	11.0	1
15SMBJ90A	15SMBJ90CA	GGX	BGX	90.0	150.00	111.00	1	146.0	10.3	1
15SMBJ100A	15SMBJ100CA	GGZ	BGZ	100.0	111.00	123.00	1	162.0	9.3	1
15SMBJ110A	15SMBJ110CA	GHE	BHE	110.0	122.00	135.00	1	177.0	8.5	1
15SMBJ120A	15SMBJ120CA	GHG	BHG	120.0	133.00	147.00	1	193.0	7.8	1
15SMBJ130A	15SMBJ130CA	GHK	BHK	130.0	144.00	159.00	1	209.0	7.2	1
15SMBJ150A	15SMBJ150CA	GHM	BHM	150.0	167.00	185.00	1	243.0	6.2	1
15SMBJ160A	15SMBJ160CA	GHP	BHP	160.0	178.00	197.00	1	259.0	5.8	1
15SMBJ170A	15SMBJ170CA	GHR	BHR	170.0	189.00	209.00	1	275.0	5.5	1
15SMBJ180A	15SMBJ180CA	GHT	BHT	180.0	201.00	220.00	1	292.0	5.2	1
15SMBJ190A	15SMBJ190CA	GHU	BHU	190.0	211.00	234.00	1	307.0	4.9	1
15SMBJ200A	15SMBJ200CA	GHV	BHV	200.0	224.00	247.00	1	324.0	4.7	1

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

Figure 1 - Pulse Waveform

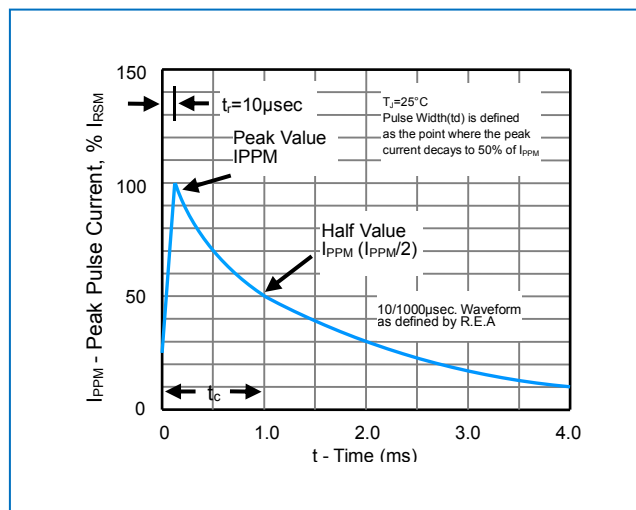
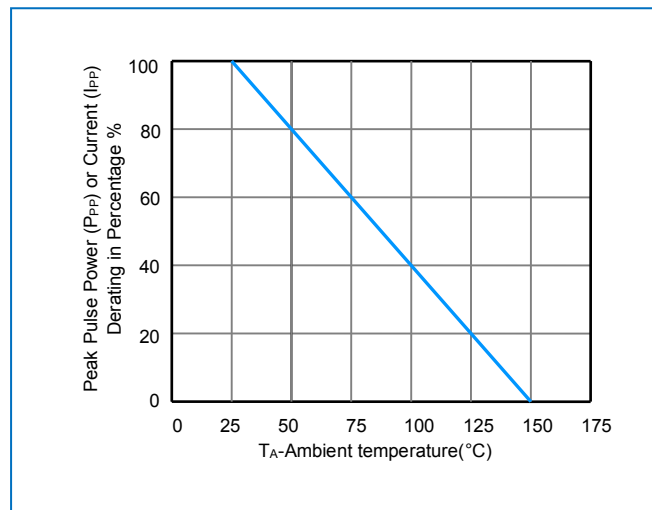
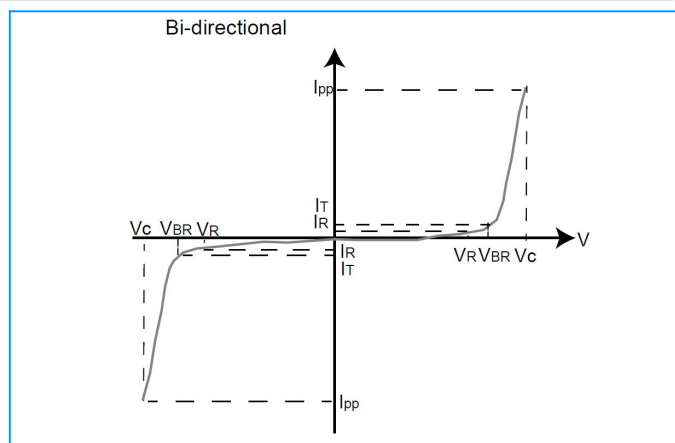
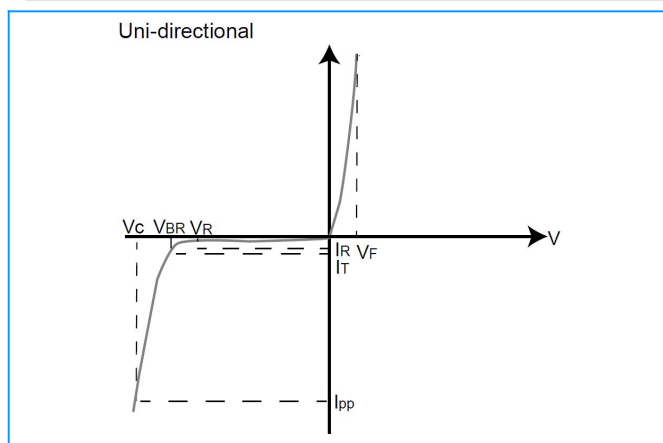


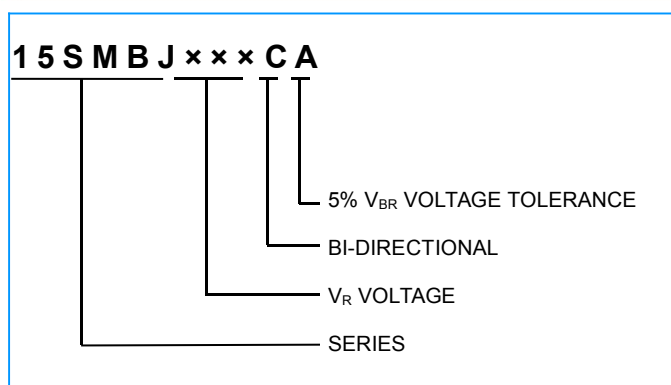
Figure 2 - Pulse Derating Curve



I-V Curve Characteristics



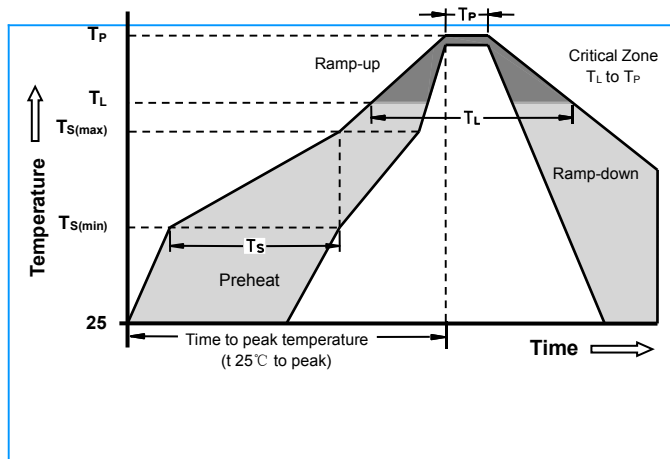
Part Numbering



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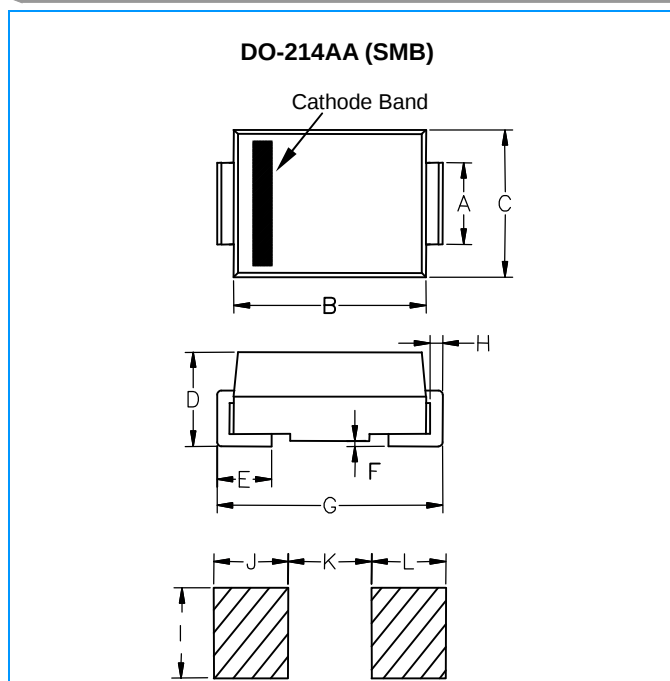
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Soldering Parameters



Reflow Condition		Lead-free assembly
Pre Heat	-Temperature Min ($T_{S(min)}$)	150°C
	-Temperature Max ($T_{S(max)}$)	200°C
	- Time (min to max) (t_s)	60 - 180 Seconds
Average ramp up rate (Liquidus Temp T_L) to peak		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
Peak Temperature (T_P)		260 +0/-5°C
Time within 5°C of actual peak Temperature (t_p)		20 - 40 Seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max
Do not exceed		280°C

Dimensions



Dimensions	Inches		Millimeters	
	Min	Max	Min	Max
A	0.077	0.087	1.960	2.200
B	0.171	0.191	4.350	4.850
C	0.130	0.155	3.300	3.940
D	0.084	0.096	2.130	2.440
E	0.030	0.060	0.750	1.520
F	-	0.008	-	0.203
G	0.201	0.216	5.100	5.500
H	0.006	0.012	0.152	0.305
I	0.089	-	2.260	-
J	0.085	-	2.160	-
K	-	0.107	-	2.740
L	0.085	-	2.160	-