

MSKSEMI 美森科

SEMICONDUCTOR



ESD



TVS



TSS



MOV



GDT



PLED

SMBJXXX(C)A-MS

Product specification

Description

Transient voltage suppression diodes, also known as TVS diodes, are protective electronic parts that protect electrical equipment from voltage spikes introduced by wires.

Applications

- computer system
- domestic appliance
- video input

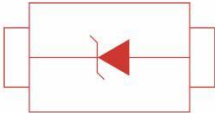
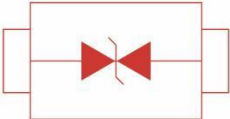
Features

- For surface mounted applications
- Excellent clamping capability
- 600 W peak pulse power capability with a 10/1000μs Waveform.
- V_{RWM} 3.3-440V
- Low profile package and low inductance
- Typical IR less than 1uA above 10 V
- Fast response time: typically less than 1.0ps from 0V to V_{BRmin} .

Mechanical Characteristics

- Package: DO-214AA/SMB
- Case Material:Molded Plastic. UL Flammability Classification Rating 94V-0 .RoHS compliant
- Moisture Sensitivity: Meet MSL 1
- Terminal: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode except bi-directional models
- Weight: 0.003 ounce, 0.095 grams

Reference News

PACKAGE OUTLINE	PIN CONFIGURATION	Marking Information
		
Unipolar		
		
Bipolar		

Electrical Characteristics (T=25°C)

Part Number		Marking		V _R	I _R @V _R	V _{BR} @I _T		I _T	V _C @I _{PP}	I _{PP} ^①
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V)	A
SMBJ3.3A-MS	/	SMBJ3.3A	/	3.3	600	5.2	6	10	8.0	75.00
SMBJ5.0A-MS	SMBJ5.0CA-MS	SMBJ5.0A	SMBJ5.0CA	5.0	800	6.40	7.00	10	9.2	65.22
SMBJ6.0A-MS	SMBJ6.0CA-MS	SMBJ6.0A	SMBJ6.0CA	6.0	800	6.67	7.37	10	10.3	58.26
SMBJ6.5A-MS	SMBJ6.5CA-MS	SMBJ6.5A	SMBJ6.5CA	6.5	500	7.22	7.98	10	11.2	53.58
SMBJ7.0A-MS	SMBJ7.0CA-MS	SMBJ7.0A	SMBJ7.0CA	7.0	200	7.78	8.60	10	12.0	50.00
SMBJ7.5A-MS	SMBJ7.5CA-MS	SMBJ7.5A	SMBJ7.5CA	7.5	100	8.33	9.21	1	12.9	46.52
SMBJ8.0A-MS	SMBJ8.0CA-MS	SMBJ8.0A	SMBJ8.0CA	8.0	50	8.89	9.83	1	13.6	44.12
SMBJ8.5A-MS	SMBJ8.5CA-MS	SMBJ8.5A	SMBJ8.5CA	8.5	20	9.44	10.40	1	14.4	41.67
SMBJ9.0A-MS	SMBJ9.0CA-MS	SMBJ9.0A	SMBJ9.0CA	9.0	10	10.00	11.10	1	15.4	38.97
SMBJ10A-MS	SMBJ10CA-MS	SMBJ10A	SMBJ10CA	10.0	5	11.10	12.30	1	17.0	35.30
SMBJ11A-MS	SMBJ11CA-MS	SMBJ11A	SMBJ11CA	11.0	1	12.20	13.50	1	18.2	32.97
SMBJ12A-MS	SMBJ12CA-MS	SMBJ12A	SMBJ12CA	12.0	1	13.30	14.70	1	19.9	30.16
SMBJ13A-MS	SMBJ13CA-MS	SMBJ13A	SMBJ13CA	13.0	1	14.40	15.90	1	21.5	27.91
SMBJ14A-MS	SMBJ14CA-MS	SMBJ14A	SMBJ14CA	14.0	1	15.60	17.20	1	23.2	25.87
SMBJ15A-MS	SMBJ15CA-MS	SMBJ15A	SMBJ15CA	15.0	1	16.70	18.50	1	24.4	24.60
SMBJ16A-MS	SMBJ16CA-MS	SMBJ16A	SMBJ16CA	16.0	1	17.80	19.70	1	26.0	23.08
SMBJ17A-MS	SMBJ17CA-MS	SMBJ17A	SMBJ17CA	17.0	1	18.90	20.90	1	27.6	21.74
SMBJ18A-MS	SMBJ18CA-MS	SMBJ18A	SMBJ18CA	18.0	1	20.00	22.10	1	29.2	20.55
SMBJ20A-MS	SMBJ20CA-MS	SMBJ20A	SMBJ20CA	20.0	1	22.20	24.50	1	32.4	18.52
SMBJ22A-MS	SMBJ22CA-MS	SMBJ22A	SMBJ22CA	22.0	1	24.40	26.90	1	35.5	16.91
SMBJ24A-MS	SMBJ24CA-MS	SMBJ24A	SMBJ24CA	24.0	1	26.70	29.50	1	38.9	15.43
SMBJ26A-MS	SMBJ26CA-MS	SMBJ26A	SMBJ26CA	26.0	1	28.90	31.90	1	42.1	14.26
SMBJ28A-MS	SMBJ28CA-MS	SMBJ28A	SMBJ28CA	28.0	1	31.10	34.40	1	45.4	13.22
SMBJ30A-MS	SMBJ30CA-MS	SMBJ30A	SMBJ30CA	30.0	1	33.30	36.80	1	48.4	12.40
SMBJ33A-MS	SMBJ33CA-MS	SMBJ33A	SMBJ33CA	33.0	1	36.70	40.60	1	53.3	11.26
SMBJ36A-MS	SMBJ36CA-MS	SMBJ36A	SMBJ36CA	36.0	1	40.00	44.20	1	58.1	10.33
SMBJ40A-MS	SMBJ40CA-MS	SMBJ40A	SMBJ40CA	40.0	1	44.40	49.10	1	64.5	9.31
SMBJ43A-MS	SMBJ43CA-MS	SMBJ43A	SMBJ43CA	43.0	1	47.80	52.80	1	69.4	8.65
SMBJ45A-MS	SMBJ45CA-MS	SMBJ45A	SMBJ45CA	45.0	1	50.00	55.30	1	72.7	8.26
SMBJ48A-MS	SMBJ48CA-MS	SMBJ48A	SMBJ48CA	48.0	1	53.30	58.90	1	77.4	7.76
SMBJ51A-MS	SMBJ51CA-MS	SMBJ51A	SMBJ51CA	51.0	1	56.70	62.70	1	82.4	7.29
SMBJ54A-MS	SMBJ54CA-MS	SMBJ54A	SMBJ54CA	54.0	1	60.00	66.30	1	87.1	6.89
SMBJ58A-MS	SMBJ58CA-MS	SMBJ58A	SMBJ58CA	58.0	1	64.40	71.20	1	93.6	6.42
SMBJ60A-MS	SMBJ60CA-MS	SMBJ60A	SMBJ60CA	60.0	1	66.70	73.70	1	96.8	6.20
SMBJ64A-MS	SMBJ64CA-MS	SMBJ64A	SMBJ64CA	64.0	1	71.10	78.60	1	103.0	5.83

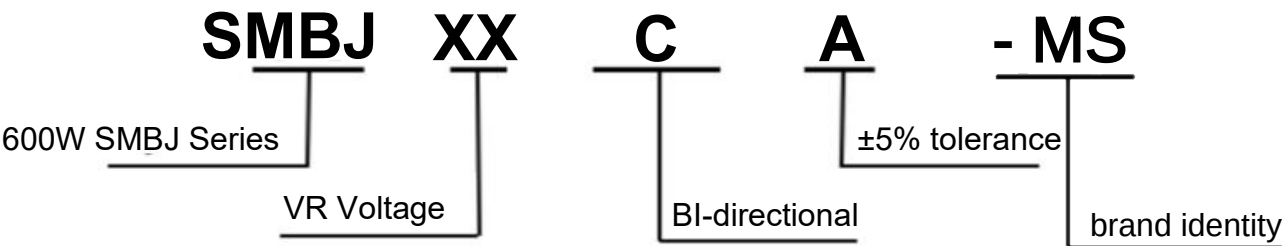
Electrical Characteristics (T=25°C)

Part Number		Marking		V _R	I _R @V _R	V _{BR} @I _T		I _T	V _C @I _{PP}	I _{PP} ^①
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V)	A
SMBJ70A-MS	SMBJ70 CA-MS	SMBJ70A	SMBJ70 CA	70.0	1	77.80	86.00	1	113.0	5.31
SMBJ75A-MS	SMBJ75 CA-MS	SMBJ75A	SMBJ75 CA	75.0	1	83.30	92.10	1	121.0	4.96
SMBJ78A-MS	SMBJ78 CA-MS	SMBJ78A	SMBJ78 CA	78.0	1	86.70	95.80	1	126.0	4.77
SMBJ85A-MS	SMBJ85 CA-MS	SMBJ85A	SMBJ85 CA	85.0	1	94.40	104.0	1	137.0	4.38
SMBJ90A-MS	SMBJ90 CA-MS	SMBJ90A	SMBJ90 CA	90.0	1	100.0	111.0	1	146.0	4.11
SMBJ100A-MS	SMBJ100 CA-MS	SMBJ100A	SMBJ100 CA	100.0	1	111.0	123.0	1	162.0	3.71
SMBJ110A-MS	SMBJ110 CA-MS	SMBJ110A	SMBJ110 CA	110.0	1	122.0	135.0	1	177.0	3.39
SMBJ120A-MS	SMBJ120 CA-MS	SMBJ120A	SMBJ120 CA	120.0	1	133.0	147.0	1	193.0	3.11
SMBJ130A-MS	SMBJ130 CA-MS	SMBJ130A	SMBJ130 CA	130.0	1	144.0	159.0	1	209.0	2.88
SMBJ150A-MS	SMBJ150 CA-MS	SMBJ150A	SMBJ150 CA	150.0	1	167.0	185.0	1	243.0	2.47
SMBJ160A-MS	SMBJ160 CA-MS	SMBJ160A	SMBJ160 CA	160.0	1	178.0	197.0	1	259.0	2.32
SMBJ170A-MS	SMBJ170 CA-MS	SMBJ170A	SMBJ170 CA	170.0	1	189.0	209.0	1	275.0	2.19
SMBJ180A-MS	SMBJ180 CA-MS	SMBJ180A	SMBJ180 CA	180.0	1	201.0	222.0	1	292.0	2.06
SMBJ190A-MS	SMBJ190 CA-MS	SMBJ190A	SMBJ190 CA	190.0	1	209.0	233.0	1	308.0	1.96
SMBJ200A-MS	SMBJ200 CA-MS	SMBJ200A	SMBJ200 CA	200.0	1	224.0	247.0	1	324.0	1.86
SMBJ210A-MS	SMBJ210 CA-MS	SMBJ210A	SMBJ210 CA	210.0	1	237.0	263.0	1	340.0	1.79
SMBJ220A-MS	SMBJ220 CA-MS	SMBJ220A	SMBJ220 CA	220.0	1	246.0	272.0	1	356.0	1.69
SMBJ250A-MS	SMBJ250 CA-MS	SMBJ250A	SMBJ250 CA	250.0	1	279.0	309.0	1	405.0	1.49
SMBJ300A-MS	SMBJ300 CA-MS	SMBJ300A	SMBJ300 CA	300.0	1	335.0	371.0	1	486.0	1.24
SMBJ350A-MS	SMBJ350 CA-MS	SMBJ350A	SMBJ350 CA	350.0	1	391.0	432.0	1	567.0	1.06
SMBJ400A-MS	SMBJ400 CA-MS	SMBJ400A	SMBJ400 CA	400.0	1	447.0	494.0	1	648.0	0.93
SMBJ440A-MS	SMBJ440 CA-MS	SMBJ440A	SMBJ440 CA	440.0	1	492.0	543.0	1	713.0	0.85

Notes:

- ① Surge waveform: 10/1000μs
- V_R : Stand-off Voltage -- Maximum voltage that can be applied
- V_{BR}: Breakdown Voltage
- V_C: Clamping Voltage -- Peak voltage measured across the suppressor at a specified I_{pp}
- I_R: Reverse Leakage Current

Part number code

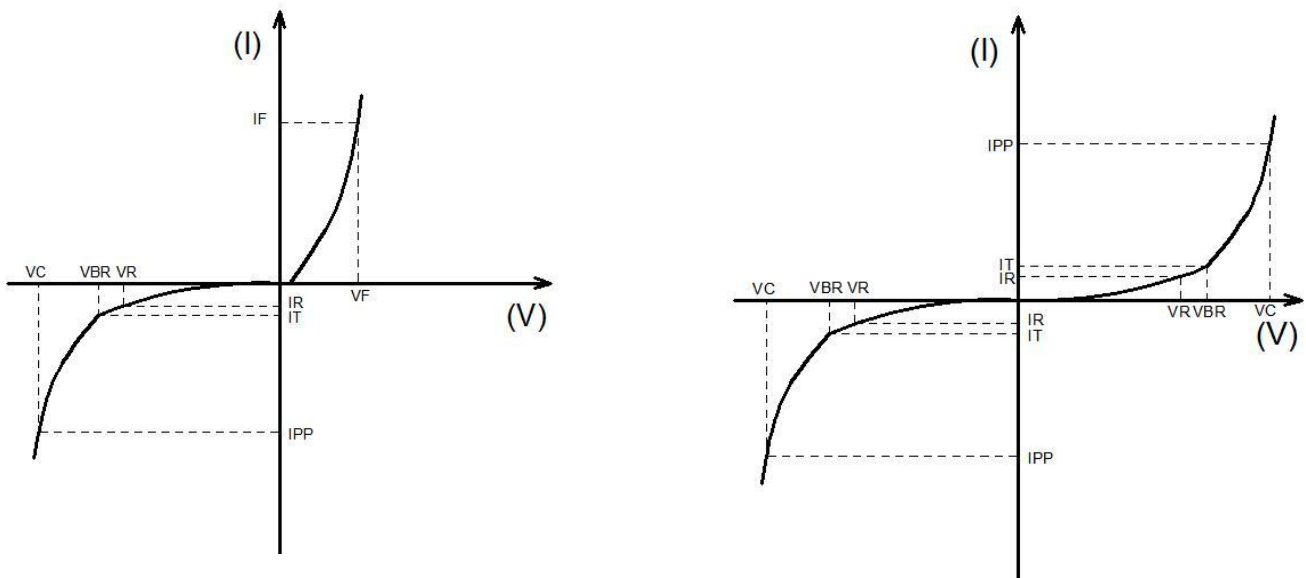


Absolute Maximum Ratings($T=25^{\circ}\text{C}$, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 10/1000 μs waveform	P_{PP}	600	W
Steady state power dissipation at $T_L=75^{\circ}\text{C}$	$P_{M(AV)}$	5.0	W
Operating junction temperature range	T_j	-55 to +125	$^{\circ}\text{C}$
Storage temperature range	T_{stg}	-55 to +150	$^{\circ}\text{C}$

Ratings And V-I Characteristics Curves ($T=25^{\circ}\text{C}$, unless otherwise noted)

FIG1: V-I cure characteristics



Symbol	Parameter
I_F	Mean Forward Current
V_F	Maximum Forward Voltage @ I_F
V_R	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_R
V_{BR}	Breakdown Voltage @ I_R
I_R	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}

Typical Characteristics

FIG2: Pulse Derating Curve

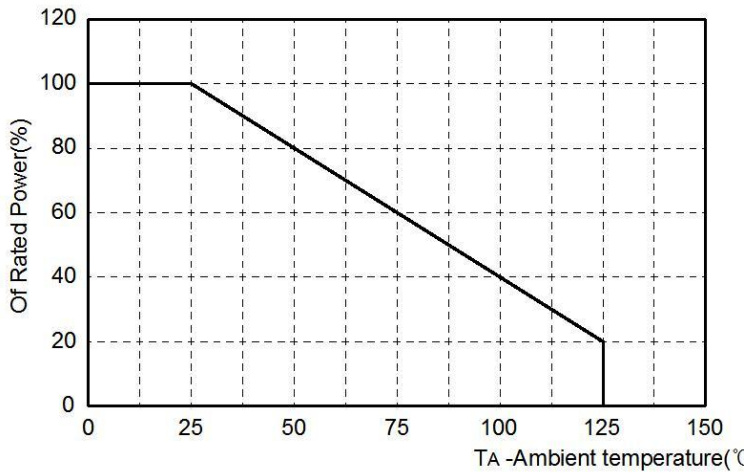


FIG3: Pulse Waveform

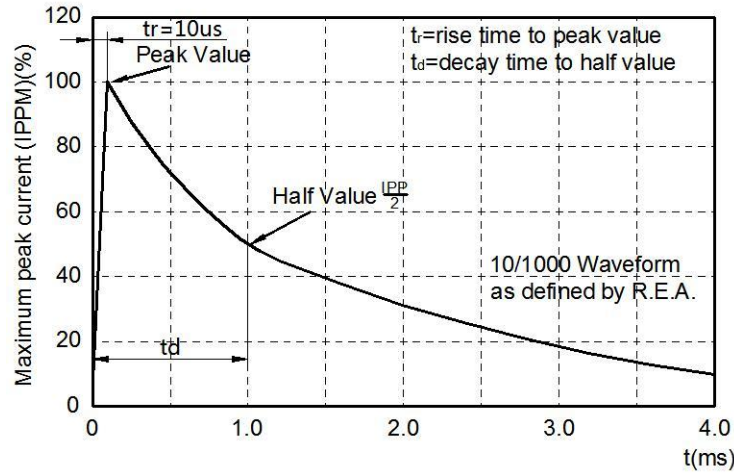


FIG4: Peak Pulse Power Rating Curve

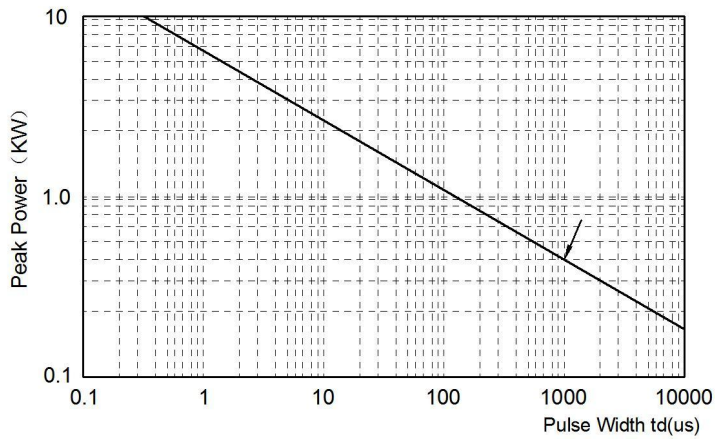
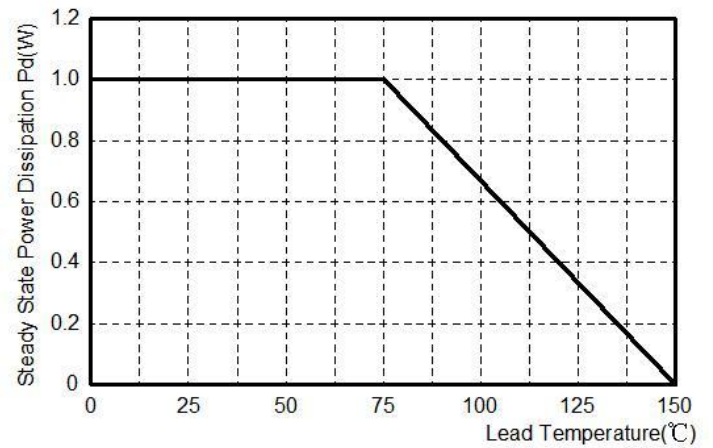
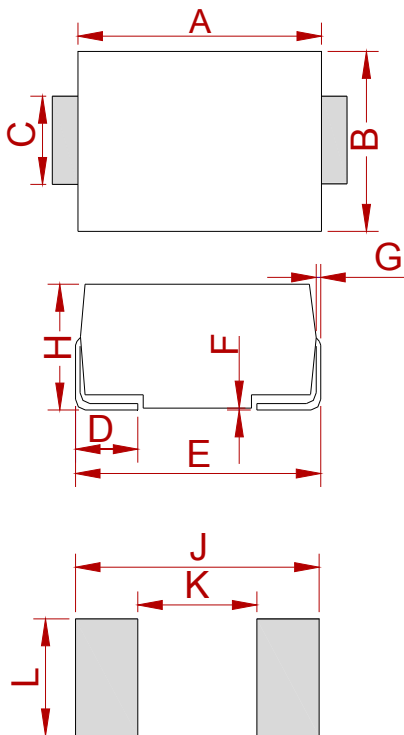


FIG5: Steady State Power Dissipation



PACKAGE MECHANICAL DATA



DO-214AA (SMB)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.25	4.75	0.167	0.187
B	3.30	3.94	0.130	0.155
C	1.85	2.21	0.073	0.087
D	0.76	1.52	0.030	0.060
E	5.08	5.59	0.200	0.220
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.11	2.44	0.083	0.096
J	6.80		0.270	
K		2.60		0.100
L	2.40		0.090	

REEL SPECIFICATION

P/N	PKG	QTY
SMBJXXXA(CA)-MS	SMB	3000

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