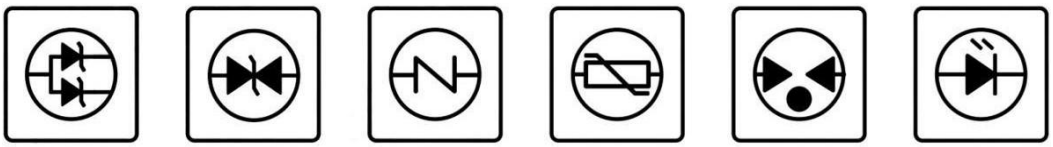
MSKSEMI 美森科
SEMICONDUCTOR



SMBJXXX(C)A

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

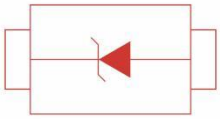
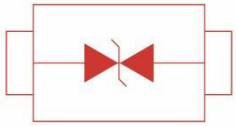
- For surface mounted applications
- Excellent clamping capability
- 400 W peak pulse power capability with a 10/1000μs Waveform.
- V_{RWM} 3.3-440V
- Low profile package and low inductance
- Typical IR less than 1uA above 10 V
- Fast response time: typically less than 1.0ps from 0V to V_{BR}min.

Mechanical Characteristics

- Package: SMA/DO-214AC
- 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: 0.07g(approximate)

Reference News

PACKAGE OUTLINE	PIN CONFIGURATION	Marking Information
		
Unipolar		
		
Bipolar		

Electrical Characteristics (T=25℃)

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

Electrical Characteristics (T=25℃)

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	SMBJ70CA	SMBJ70A	SMBJ70CA	70.0	1	77.80	86.00	1	113.0	5.31
SMBJ75A	SMBJ75CA	SMBJ75A	SMBJ75CA	75.0	1	83.30	92.10	1	121.0	4.96
SMBJ78A	SMBJ78CA	SMBJ78A	SMBJ78CA	78.0	1	86.70	95.80	1	126.0	4.77
SMBJ85A	SMBJ85CA	SMBJ85A	SMBJ85CA	85.0	1	94.40	104.0	1	137.0	4.38
SMBJ90A	SMBJ90CA	SMBJ90A	SMBJ90CA	90.0	1	100.0	111.0	1	146.0	4.11
SMBJ100A	SMBJ100CA	SMBJ100A	SMBJ100CA	100.0	1	111.0	123.0	1	162.0	3.71
SMBJ110A	SMBJ110CA	SMBJ110A	SMBJ110CA	110.0	1	122.0	135.0	1	177.0	3.39
SMBJ120A	SMBJ120CA	SMBJ120A	SMBJ120CA	120.0	1	133.0	147.0	1	193.0	3.11
SMBJ130A	SMBJ130CA	SMBJ130A	SMBJ130CA	130.0	1	144.0	159.0	1	209.0	2.88
SMBJ150A	SMBJ150CA	SMBJ150A	SMBJ150CA	150.0	1	167.0	185.0	1	243.0	2.47
SMBJ160A	SMBJ160CA	SMBJ160A	SMBJ160CA	160.0	1	178.0	197.0	1	259.0	2.32
SMBJ170A	SMBJ170CA	SMBJ170A	SMBJ170CA	170.0	1	189.0	209.0	1	275.0	2.19
SMBJ180A	SMBJ180CA	SMBJ180A	SMBJ180CA	180.0	1	201.0	222.0	1	292.0	2.06
SMBJ190A	SMBJ190CA	SMBJ190A	SMBJ190CA	190.0	1	209.0	233.0	1	308.0	1.96
SMBJ200A	SMBJ200CA	SMBJ200A	SMBJ200CA	200.0	1	224.0	247.0	1	324.0	1.86
SMBJ210A	SMBJ210CA	SMBJ210A	SMBJ210CA	210.0	1	237.0	263.0	1	340.0	1.79
SMBJ220A	SMBJ220CA	SMBJ220A	SMBJ220CA	220.0	1	246.0	272.0	1	356.0	1.69
SMBJ250A	SMBJ250CA	SMBJ250A	SMBJ250CA	250.0	1	279.0	309.0	1	405.0	1.49
SMBJ300A	SMBJ300CA	SMBJ300A	SMBJ300CA	300.0	1	335.0	371.0	1	486.0	1.24
SMBJ350A	SMBJ350CA	SMBJ350A	SMBJ350CA	350.0	1	391.0	432.0	1	567.0	1.06
SMBJ400A	SMBJ400CA	SMBJ400A	SMBJ400CA	400.0	1	447.0	494.0	1	648.0	0.93
SMBJ440A	SMBJ440CA	SMBJ440A	SMBJ440CA	440.0	1	492.0	543.0	1	713.0	0.85

Notes:

① Surge waveform: 10/1000μs

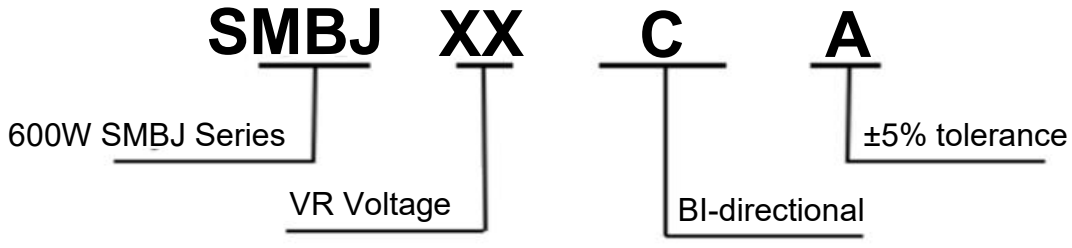
V_R : Stand-off Voltage -- Maximum voltage that can be applied

V_{BR}: Breakdown Voltage

V_C: Clamping Voltage -- Peak voltage measured across the suppressor at a specified Ipp

I_R: Reverse Leakage Current

Part number code

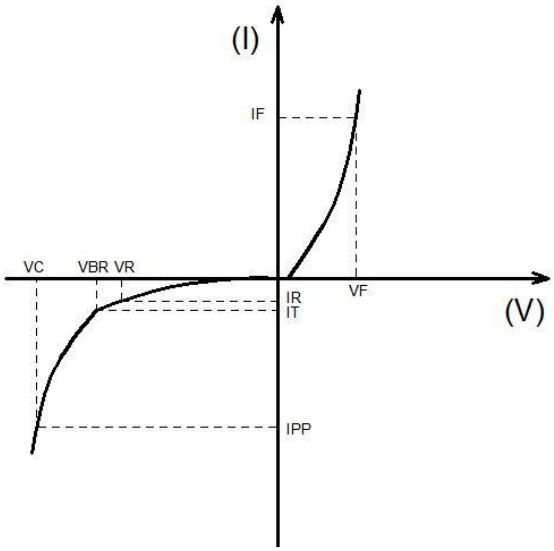


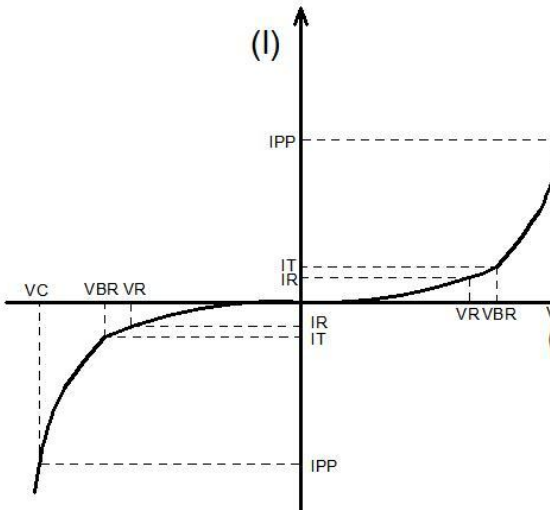
Absolute Maximum Ratings(T=25ºC, RH=45%-75%, unless otherwise noted

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

Ratings And V-I Characteristics Curves (T=25ºC, 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_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}

Typical Characteristics

FIG2：Pulse Derating Curve

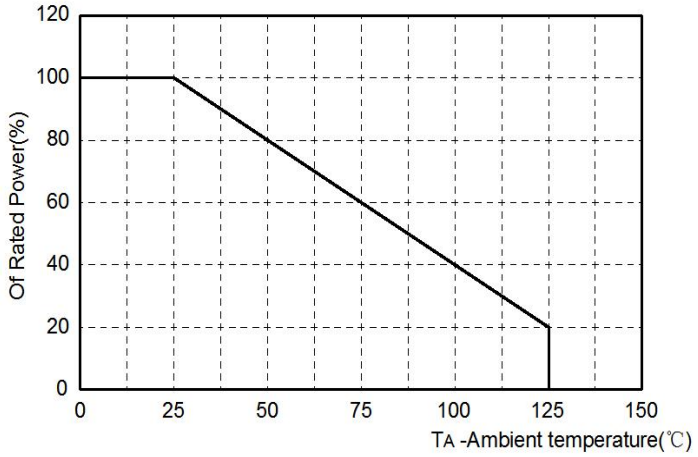


FIG3：Pulse Waveform

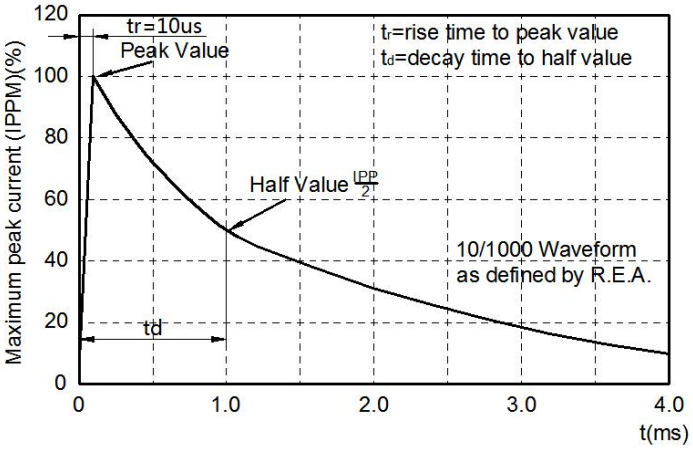


FIG4：Peak Pulse Power Rating Curve

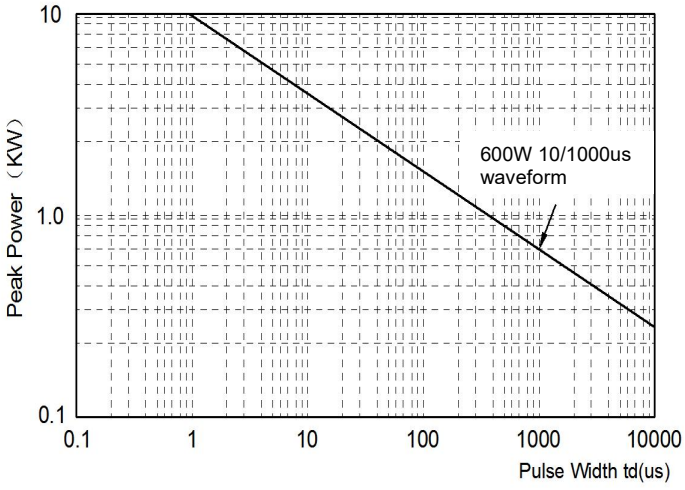
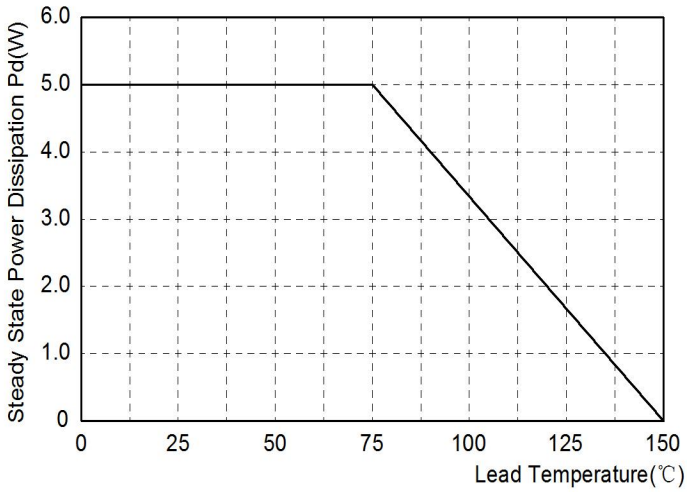
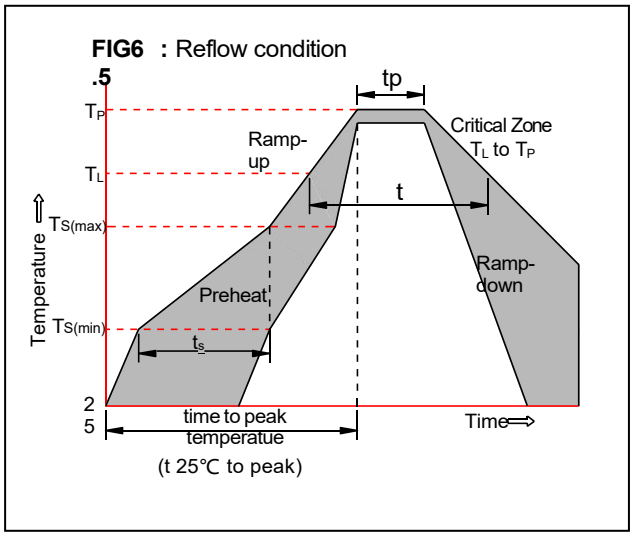


FIG5：Steady State Power Dissipation

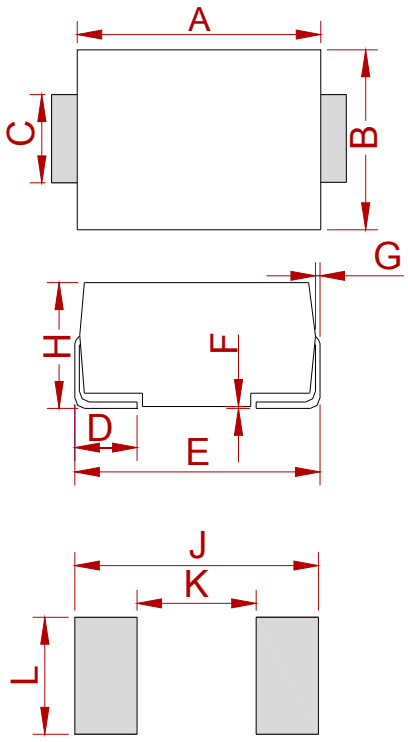


Soldering parameters

ReflowCondition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃



PACKAGE ECHANICAL 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)	SMB	3000

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