3.0SMBJ Series

Transient Voltage Suppressor

Datasheet

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

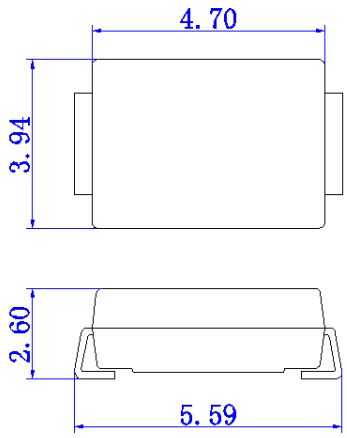
- For surface mounted applications
- Excellent clamping capability
- 3000W peak pulse power capability with a 10/1000μs Waveform.
- V_{RWM} 11 - 75 V
- Low profile package and low inductance
- Typical IR less than 1uA above 10 V
- Fast response time: typically less than 1.0ps from 0V to V_{BR} min.

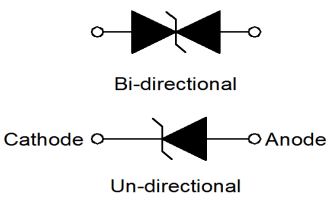
Mechanical Characteristics

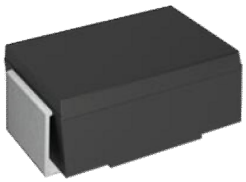
- Package: SMB/DO-214AA
- Case Material:Molded Plastic. UL Flammability Classification Rating 94V-0 .RoHS compliant
- Moisture Sensitivity: Meet MSL 1
- Terminal：Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode except bi-directional models

Weight: 0.09g(approximate)

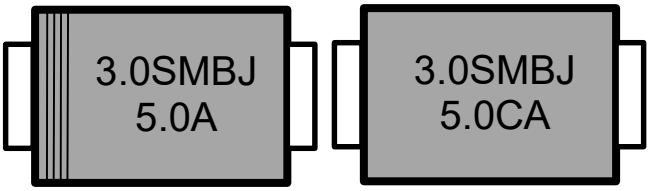
Dimensions & Symbol（Unit: mm Max）







Marking Information



3.0SMBJ5.0A：3.0SMBJ5.0A Marking code
3.0SMBJ5.0CA：3.0SMBJ5.0CA Marking code

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}
Uni-Polar	Bi-Polar	Uni	Bi	V	μA	min(V)	max(V)	mA	max(V)	A
3.0SMBJ11A	3.0SMBJ11CA	3.0SMBJ11A	3.0SMBJ11CA	11.0	800	12.20	13.50	1	18.2	164.84
3.0SMBJ12A	3.0SMBJ12CA	3.0SMBJ12A	3.0SMBJ12CA	12.0	800	13.30	14.70	1	19.9	150.75
3.0SMBJ13A	3.0SMBJ13CA	3.0SMBJ13A	3.0SMBJ13CA	13.0	500	14.40	15.90	1	21.5	139.53
3.0SMBJ14A	3.0SMBJ14CA	3.0SMBJ14A	3.0SMBJ14CA	14.0	200	15.60	17.20	1	23.2	129.31
3.0SMBJ15A	3.0SMBJ15CA	3.0SMBJ15A	3.0SMBJ15CA	15.0	200	16.70	18.50	1	24.4	122.95
3.0SMBJ16A	3.0SMBJ16CA	3.0SMBJ16A	3.0SMBJ16CA	16.0	100	17.80	19.70	1	26	115.38
3.0SMBJ17A	3.0SMBJ17CA	3.0SMBJ17A	3.0SMBJ17CA	17.0	50	18.90	20.90	1	27.6	108.70
3.0SMBJ18A	3.0SMBJ18CA	3.0SMBJ18A	3.0SMBJ18CA	18.0	20	20.00	22.10	1	29.2	102.74
3.0SMBJ20A	3.0SMBJ20CA	3.0SMBJ20A	3.0SMBJ20CA	20.0	10	22.20	24.50	1	32.4	92.59
3.0SMBJ22A	3.0SMBJ22CA	3.0SMBJ22A	3.0SMBJ22CA	22.0	2	24.40	26.90	1	35.5	84.51
3.0SMBJ24A	3.0SMBJ24CA	3.0SMBJ24A	3.0SMBJ24CA	24.0	2	26.70	29.50	1	38.9	77.12
3.0SMBJ26A	3.0SMBJ26CA	3.0SMBJ26A	3.0SMBJ26CA	26.0	2	28.90	31.90	1	42.1	71.26
3.0SMBJ28A	3.0SMBJ28CA	3.0SMBJ28A	3.0SMBJ28CA	28.0	2	31.10	34.40	1	45.4	66.08
3.0SMBJ30A	3.0SMBJ30CA	3.0SMBJ30A	3.0SMBJ30CA	30.0	2	33.30	36.80	1	48.4	61.98
3.0SMBJ33A	3.0SMBJ33CA	3.0SMBJ33A	3.0SMBJ33CA	33.0	2	36.70	40.60	1	53.3	56.29
3.0SMBJ36A	3.0SMBJ36CA	3.0SMBJ36A	3.0SMBJ36CA	36.0	2	40.00	44.20	1	58.1	51.64
3.0SMBJ40A	3.0SMBJ40CA	3.0SMBJ40A	3.0SMBJ40CA	40.0	2	44.40	49.10	1	64.5	46.51
3.0SMBJ43A	3.0SMBJ43CA	3.0SMBJ43A	3.0SMBJ43CA	43.0	2	47.80	52.80	1	69.4	43.23

3.0SMBJ45A	3.0SMBJ45CA	3.0SMBJ45A	3.0SMBJ45CA	45.0	2	50.00	55.30	1	72.7	41.27
3.0SMBJ48A	3.0SMBJ48CA	3.0SMBJ48A	3.0SMBJ48CA	48.0	2	53.30	58.90	1	77.4	38.76
3.0SMBJ51A	3.0SMBJ51CA	3.0SMBJ51A	3.0SMBJ51CA	51.0	2	56.70	62.70	1	82.4	36.41
3.0SMBJ54A	3.0SMBJ54CA	3.0SMBJ54A	3.0SMBJ54CA	54.0	2	60.00	66.30	1	87.1	34.44
3.0SMBJ58A	3.0SMBJ58CA	3.0SMBJ58A	3.0SMBJ58CA	58.0	2	64.40	71.20	1	93.6	32.05
3.0SMBJ60A	3.0SMBJ60CA	3.0SMBJ60A	3.0SMBJ60CA	60.0	2	66.70	73.70	1	96.8	30.99
3.0SMBJ64A	3.0SMBJ64CA	3.0SMBJ64A	3.0SMBJ64CA	64.0	2	71.10	78.60	1	103	29.13
3.0SMBJ70A	3.0SMBJ70CA	3.0SMBJ70A	3.0SMBJ70CA	70.0	2	77.80	86.00	1	113	26.55
3.0SMBJ75A	3.0SMBJ75CA	3.0SMBJ75A	3.0SMBJ75CA	75.0	2	83.30	92.10	1	121	24.79

Notes：

① Surge waveform: 10/1000μs

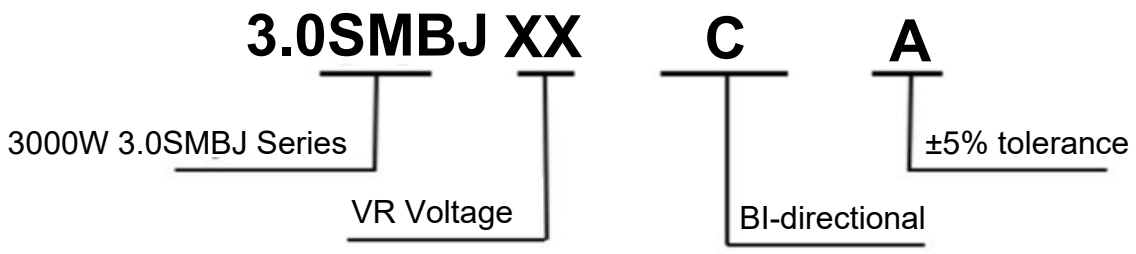
V_R ： Stand-off Voltage -- Maximum voltage that can be applied

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

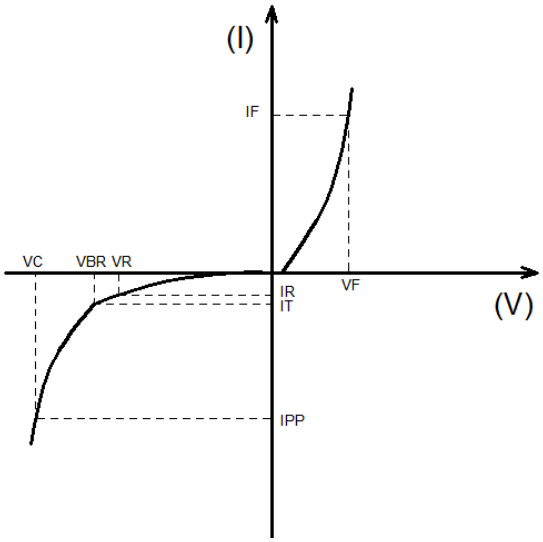


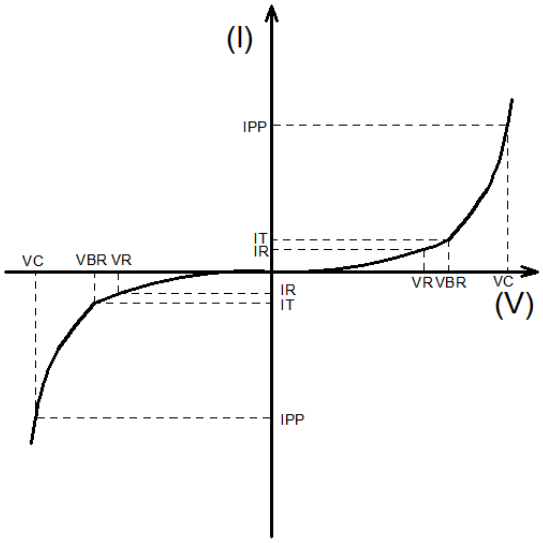
Absolute Maximum Ratings(T=25ºC, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 10/1000μs waveform	P_{PP}	3000	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

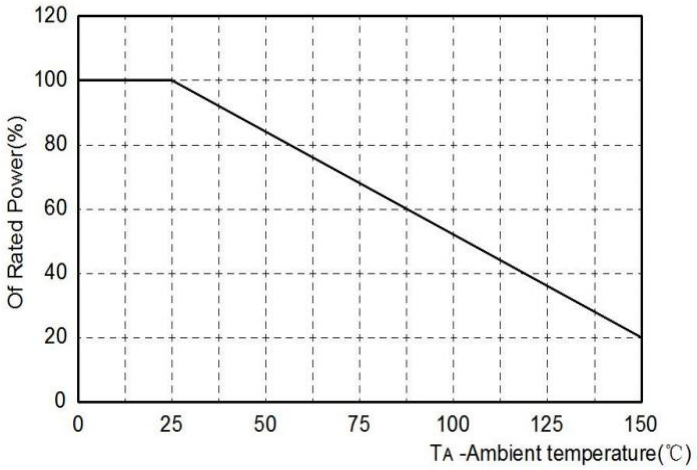


FIG3：Pulse Waveform

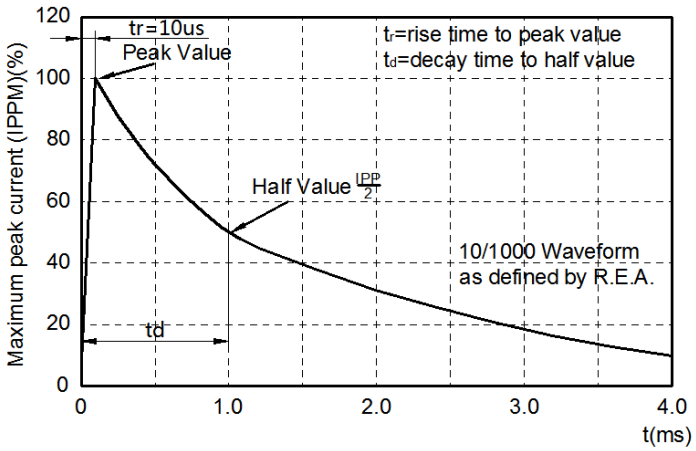


FIG4：Peak Pulse Power Rating Curve

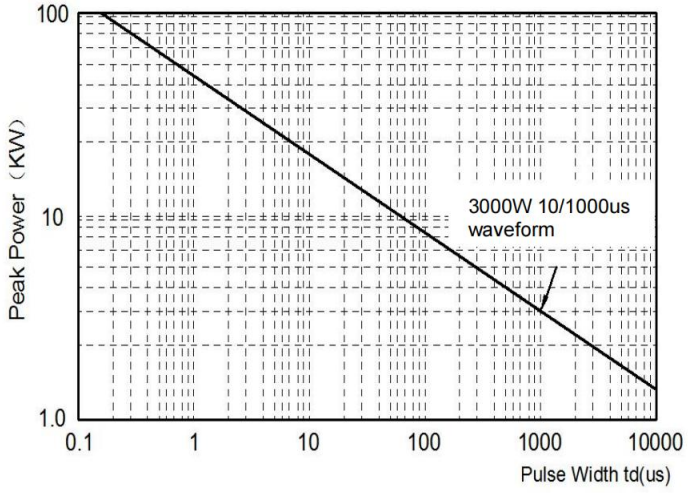
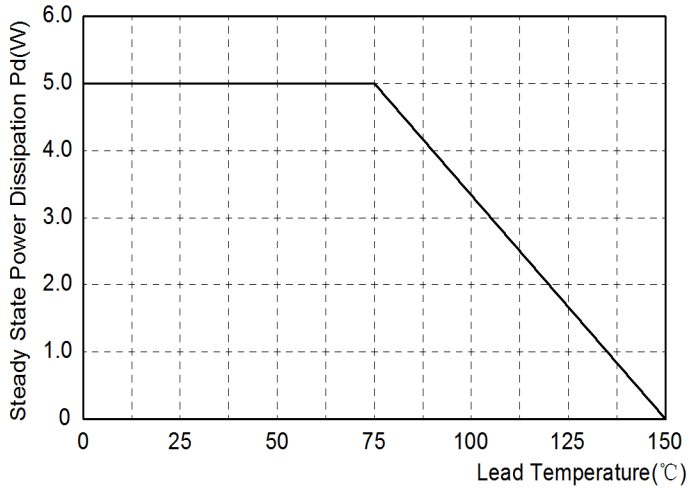
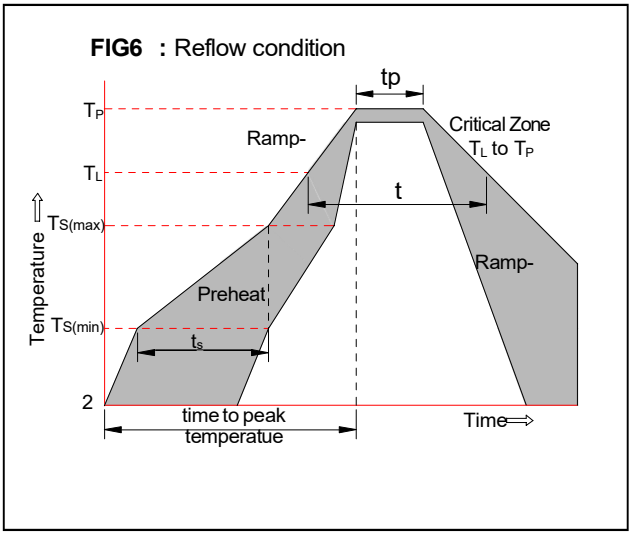


FIG5：Steady State Power Dissipation

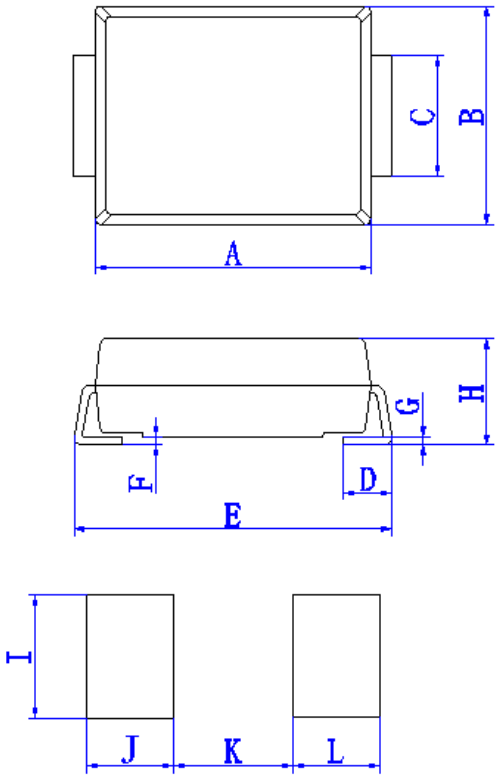


Soldering parameters

Reflow Condition		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 mechanical data & Suggested Land Pattern



Ref.(mm)	Millimeters	
	Min.	Max.
A	4.22	4.70
B	3.4	3.94
C	1.9	2.1
D	0.90	1.42
E	5.21	5.59
F	0	0.23
G	0.15	0.25
H	1.95	2.60
I	2.30	
J	1.50	
K		2.80
L	1.50	