

Features

- 600W peak pulse power capability at 10/1000 μ s waveform, repetition rate (duty cycles):0.01%
- Excellent clamping capability
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Plastic package is flammability rated V-0 per UL-94
- Meet MSL level1, per J-STD-020, lead-frame maximum peak of 260°C

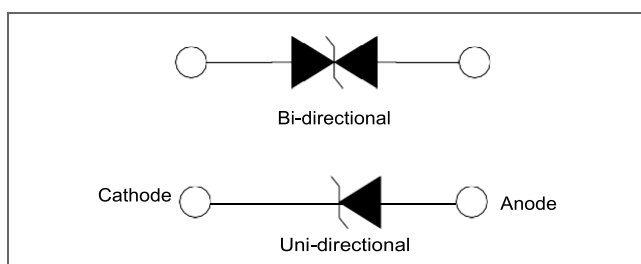
RoHS
Compliant



Applications

TVS devices are ideal for the transient voltage clamp protection of I/O Interfaces, DC power line bus and other circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

Function Diagram



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 10/1000 μ s Waveform (Fig.3)	P _{PPM}	600	W
Power Dissipation on Infinite Heat Sink at T _L =50°C	P _D	5	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave (Note 1)	I _{FSM}	100	A
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only(Note 2)	V _F	3.5	V
Operating Temperature Range	T _J	-55 to 150	°C
Storage Temperature Range	T _{STG}	-55 to 150	°C

AGENCY	AGENCY FILE NUMBER
	Pending

Notes:

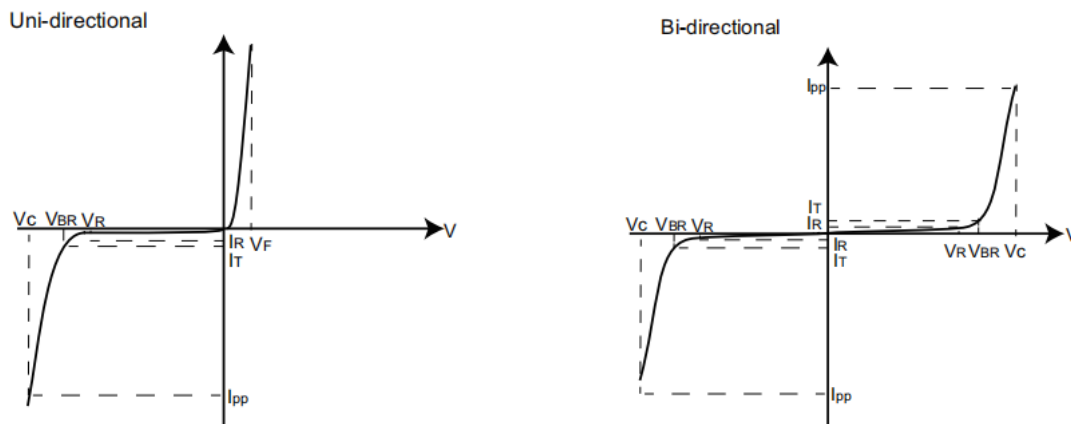
1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

Characteristics (T = 25°C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Key Marking UNI BI		Reverse Stand off Voltage V _R (Volts)	Breakdown Voltage V _{BR} (Volts) @ I _T		Test Current I _T (mA)	Maximum Clamping Voltage V _C @ I _{DD} (V)	Maximum Peak Pulse Current I _{pp} (A)	Maximum Reverse Leakage I _R @ V _R (μA)	Agency Approval 
					MIN	MAX					
SMBJ5.0A	SMBJ5.0CA	B005A	B005C	5.0	6.40	7.00	10	9.2	65.3	800	
SMBJ6.0A	SMBJ6.0CA	B006A	B006C	6.0	6.67	7.37	10	10.3	58.3	800	
SMBJ6.5A	SMBJ6.5CA	B06FA	B06FC	6.5	7.22	7.98	10	11.2	53.6	500	
SMBJ7.0A	SMBJ7.0CA	B007A	B007C	7.0	7.78	8.60	10	12.0	50.0	200	
SMBJ7.5A	SMBJ7.5CA	B07FA	B07FC	7.5	8.33	9.21	1	12.9	46.6	100	
SMBJ8.0A	SMBJ8.0CA	B008A	B008C	8.0	8.89	9.83	1	13.6	44.2	50	
SMBJ8.5A	SMBJ8.5CA	B08FA	B08FC	8.5	9.44	10.40	1	14.4	41.7	20	
SMBJ9.0A	SMBJ9.0CA	B009A	B009C	9.0	10.00	11.10	1	15.4	39.0	10	
SMBJ10A	SMBJ10CA	B010A	B010C	10.0	11.10	12.30	1	17.0	35.3	5	
SMBJ11A	SMBJ11CA	B011A	B011C	11.0	12.20	13.50	1	18.2	33.0	1	
SMBJ12A	SMBJ12CA	B012A	B012C	12.0	13.30	14.70	1	19.9	30.2	1	
SMBJ13A	SMBJ13CA	B013A	B013C	13.0	14.40	15.90	1	21.5	28.0	1	
SMBJ14A	SMBJ14CA	B014A	B014C	14.0	15.60	17.20	1	23.2	25.9	1	
SMBJ15A	SMBJ15CA	B015A	B015C	15.0	16.70	18.50	1	24.4	24.6	1	
SMBJ16A	SMBJ16CA	B016A	B016C	16.0	17.80	19.70	1	26.0	23.1	1	
SMBJ17A	SMBJ17CA	B017A	B017C	17.0	18.90	20.90	1	27.6	21.8	1	
SMBJ18A	SMBJ18CA	B018A	B018C	18.0	20.00	22.10	1	29.2	20.6	1	
SMBJ20A	SMBJ20CA	B020A	B020C	20.0	22.20	24.50	1	32.4	18.6	1	
SMBJ22A	SMBJ22CA	B022A	B022C	22.0	24.40	26.90	1	35.5	16.9	1	
SMBJ24A	SMBJ24CA	B024A	B024C	24.0	26.70	29.50	1	38.9	15.5	1	
SMBJ26A	SMBJ26CA	B026A	B026C	26.0	28.90	31.90	1	42.1	14.3	1	
SMBJ28A	SMBJ28CA	B028A	B028C	28.0	31.10	34.40	1	45.4	13.3	1	
SMBJ30A	SMBJ30CA	B030A	B030C	30.0	33.30	36.80	1	48.4	12.4	1	
SMBJ33A	SMBJ33CA	B033A	B033C	33.0	36.70	40.60	1	53.3	11.3	1	
SMBJ36A	SMBJ36CA	B036A	B036C	36.0	40.00	44.20	1	58.1	10.4	1	
SMBJ40A	SMBJ40CA	B040A	B040C	40.0	44.40	49.10	1	64.5	9.3	1	
SMBJ43A	SMBJ43CA	B043A	B043C	43.0	47.80	52.80	1	69.4	8.7	1	
SMBJ45A	SMBJ45CA	B045A	B045C	45.0	50.00	55.30	1	72.7	8.3	1	
SMBJ48A	SMBJ48CA	B048A	B048C	48.0	53.30	58.90	1	77.4	7.8	1	
SMBJ51A	SMBJ51CA	B051A	B051C	51.0	56.70	62.70	1	82.4	7.3	1	
SMBJ54A	SMBJ54CA	B054A	B054C	54.0	60.00	66.30	1	87.1	6.9	1	
SMBJ58A	SMBJ58CA	B058A	B058C	58.0	64.40	71.20	1	93.6	6.5	1	
SMBJ60A	SMBJ60CA	B060A	B060C	60.0	66.70	73.70	1	96.8	6.2	1	
SMBJ64A	SMBJ64CA	B064A	B064C	64.0	71.10	78.60	1	103.0	5.9	1	
SMBJ70A	SMBJ70CA	B070A	B070C	70.0	77.80	86.00	1	113.0	5.3	1	
SMBJ75A	SMBJ75CA	B075A	B075C	75.0	83.30	92.10	1	121.0	5.0	1	
SMBJ78A	SMBJ78CA	B078A	B078C	78.0	86.70	95.80	1	126.0	4.8	1	
SMBJ85A	SMBJ85CA	B085A	B085C	85.0	94.40	104.00	1	137.0	4.4	1	
SMBJ90A	SMBJ90CA	B090A	B090C	90.0	100.00	111.00	1	146.0	4.1	1	
SMBJ100A	SMBJ100CA	B100A	B100C	100.0	111.00	123.00	1	162.0	3.7	1	
SMBJ110A	SMBJ110CA	B110A	B110C	110.0	122.00	135.00	1	177.0	3.4	1	

Part Number (Uni)	Part Number (Bi)	Key Marking		Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts) @ 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_R (μ A)	Agency Approval 
		UNI	BI		MIN	MAX					
SMBJ120A	SMBJ120CA	B120A	B120C	120.0	133.00	147.00	1	193.0	3.1	1	
SMBJ130A	SMBJ130CA	B130A	B130C	130.0	144.00	159.00	1	209.0	2.9	1	
SMBJ150A	SMBJ150CA	B150A	B150C	150.0	167.00	185.00	1	243.0	2.5	1	
SMBJ160A	SMBJ160CA	B160A	B160C	160.0	178.00	197.00	1	259.0	2.3	1	
SMBJ170A	SMBJ170CA	B170A	B170C	170.0	189.00	209.00	1	275.0	2.2	1	
SMBJ180A	SMBJ180CA	B180A	B180C	180.0	201.00	222.00	1	292.0	2.1	1	
SMBJ190A	SMBJ190CA	B190A	B190C	190.0	211.00	234.00	1	307.0	2.0	1	
SMBJ200A	SMBJ200CA	B200A	B200C	200.0	224.00	247.00	1	324.0	1.9	1	
SMBJ220A	SMBJ220CA	B220A	B220C	220.0	246.00	272.00	1	356.0	1.7	1	
SMBJ250A	SMBJ250CA	B250A	B250C	250.0	279.00	309.00	1	405.0	1.5	1	
SMBJ300A	SMBJ300CA	B300A	B300C	300.0	335.00	371.00	1	486.0	1.2	1	
SMBJ350A	SMBJ350CA	B350A	B350C	350.0	391.00	432.00	1	567.0	1.1	1	
SMBJ400A	SMBJ400CA	B400A	B400C	400.0	447.00	494.00	1	648.0	1.0	1	
SMBJ440A	SMBJ440CA	B440A	B440C	440.0	492.00	543.00	1	713.0	0.9	1	

I-V Curve Characteristics



P_{PPM} Peak Pulse Power Dissipation -- Max power dissipation

V_R Stand-off Voltage -- Maximum voltage that can be applied to the TVS without operation

V_{BR} Breakdown Voltage -- Maximum voltage that flows though the TVS at a specified test current (I_T)

V_C Clamping Voltage -- Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current)

I_R Reverse Leakage Current -- Current measured at V_R

V_F Forward Voltage Drop for Uni-directional



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

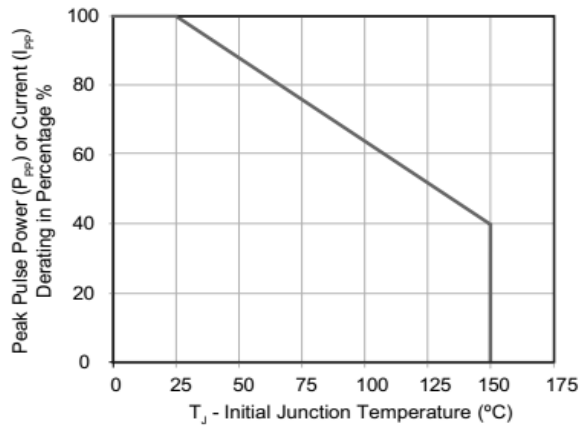


Figure 1. Peak pulse power derating curve

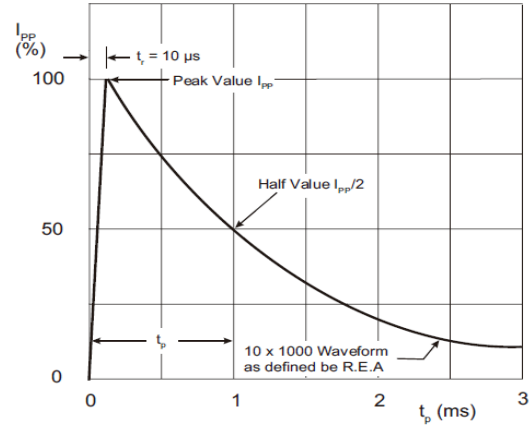


Figure 2. Pulse waveform

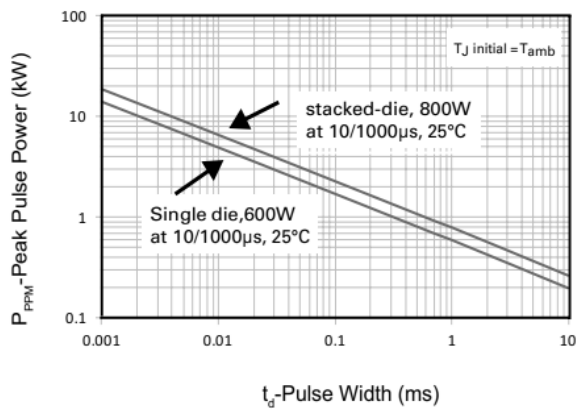


Figure 3. Peak pulse power rating curve

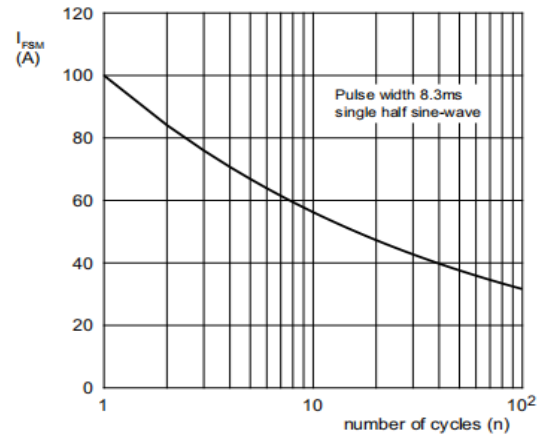
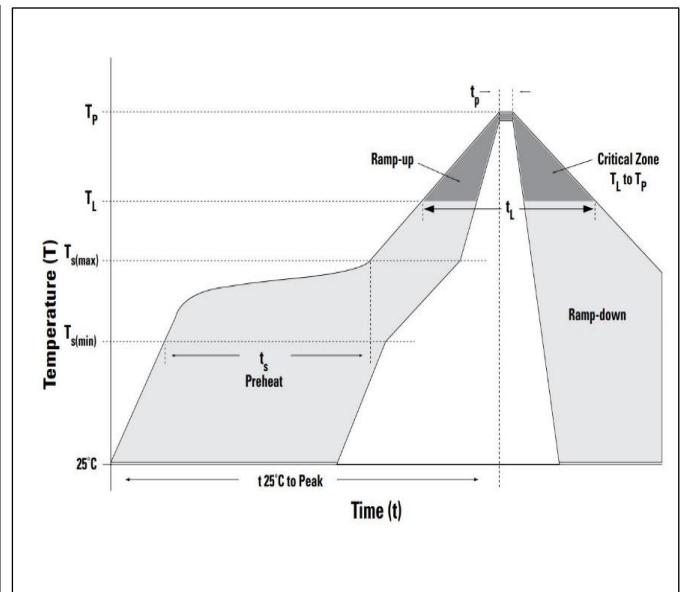


Figure 4. Maximum non-repetitive surge current

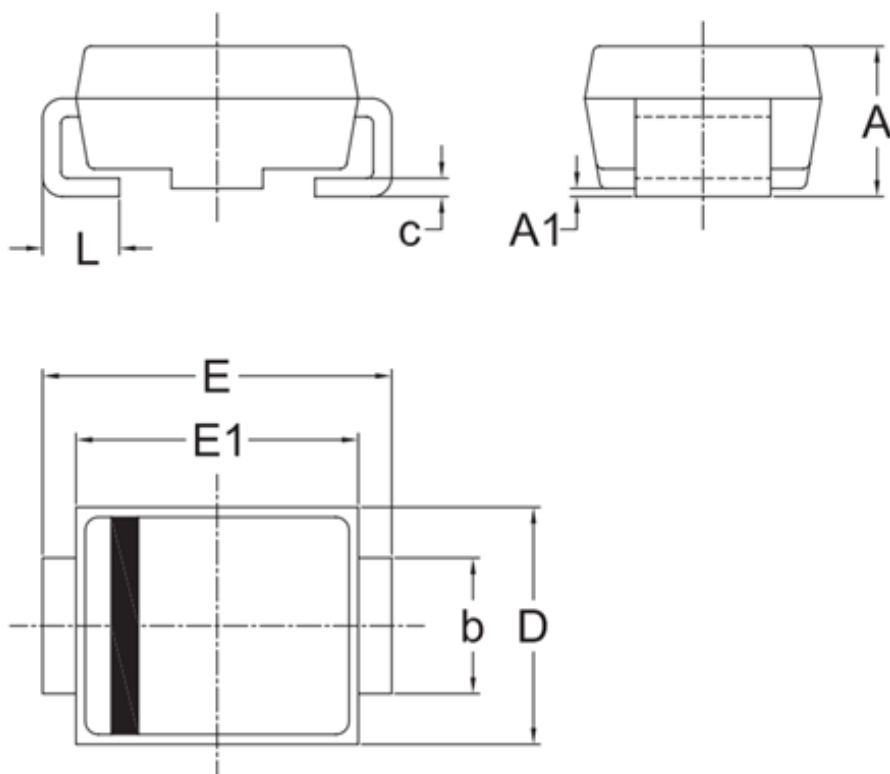
Soldering Parameters

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 secs
Average ramp up rate (Liquidus Temp (T_A) to peak)		3°C/second max
$T_{s(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_A) (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		260°C

Soldering profile

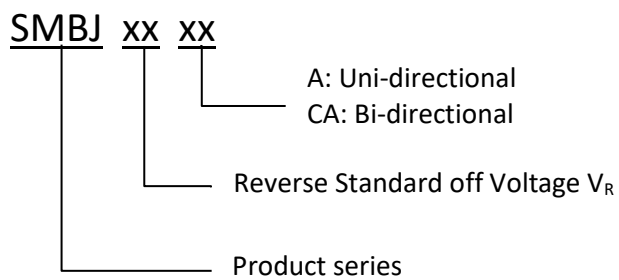


Dimensions

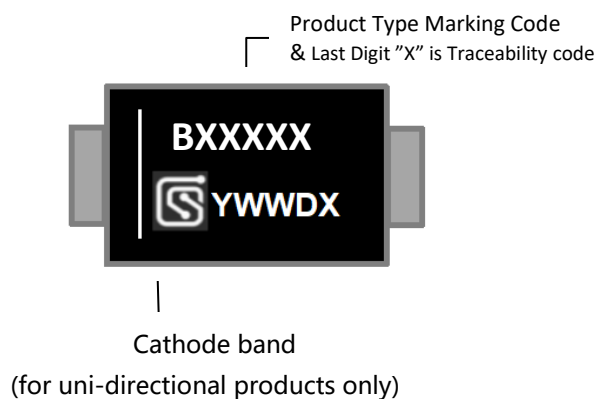


unit		A	A1	b	c	D	E	E1	L
mm	max	2.61	0.3	2.3	0.305	3.94	5.7	4.7	1.52
	min	1.99	0.1	1.7	0.15	3.3	5.05	4.06	0.76

Part Numbering



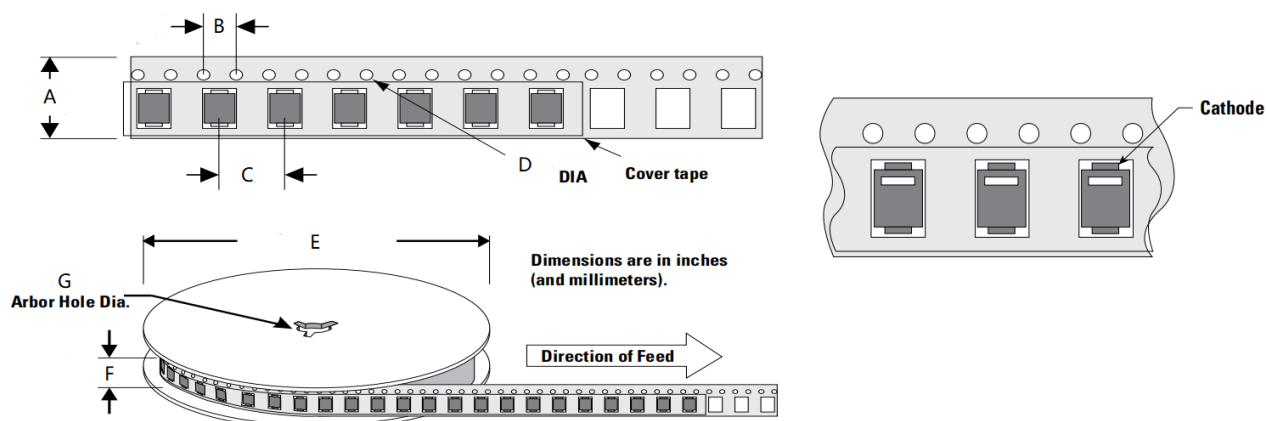
Part Marking



Packing

Part number	Package name	Small packing quantity	Packing method
SMBJXXXX	DO-214AA	3000	Tape & Reel

Tape and Reel Specification



Symbol	Millimeter
A	12.00±0.10
B	4.00±0.10
C	8.00±0.10
D	1.55±0.05
E	330.20±2.00
F	15.70±2.00
G	13.30±0.30

Revision history of Specification

Version	Change Items	Effective Date
1.0	Initial Release	13-Jul-2021
1.1	Modified Temperature Range & Details	16-Aug-2021
1.2	Update Package Sizes	12-Dec-2023
1.3	Add Remark For Marking Last Digit	31-Mar-2024