Features

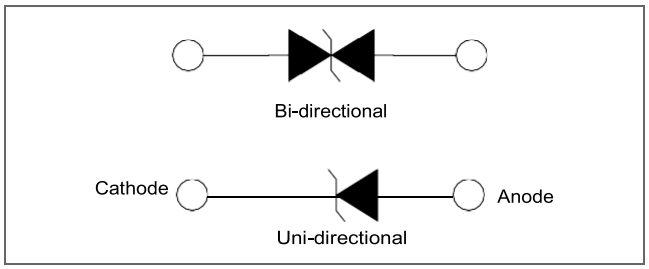
RoHS Compliant

- 600W peak pulse power capability at 10/1000μs 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

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 10/1000μs 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
®RU	Pending

Notes:

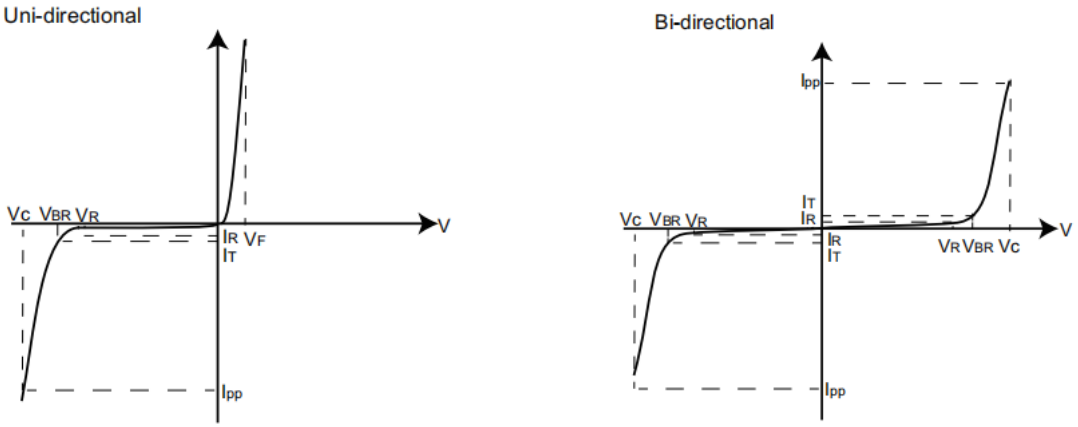
1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

Characteristics (T =25°C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Key Marking UNI	Key Marking BI	Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts) @ I_T MIN	Breakdown Voltage V_{BR} (Volts) @ I_T MAX	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 (μA)	Agency Approval
SMBJ5.0A	SMBJ5.0CA	005A	005C	5.0	6.40	7.00	10	9.2	65.3	800	
SMBJ6.0A	SMBJ6.0CA	006A	006C	6.0	6.67	7.37	10	10.3	58.3	800	
SMBJ6.5A	SMBJ6.5CA	06FA	06FC	6.5	7.22	7.98	10	11.2	53.6	500	
SMBJ7.0A	SMBJ7.0CA	007A	007C	7.0	7.78	8.60	10	12.0	50.0	200	
SMBJ7.5A	SMBJ7.5CA	07FA	07FC	7.5	8.33	9.21	1	12.9	46.6	100	
SMBJ8.0A	SMBJ8.0CA	008A	008C	8.0	8.89	9.83	1	13.6	44.2	50	
SMBJ8.5A	SMBJ8.5CA	8V5A	8V5C	8.5	9.44	10.40	1	14.4	41.7	20	
SMBJ9.0A	SMBJ9.0CA	009A	009C	9.0	10.00	11.10	1	15.4	39.0	10	
SMBJ10A	SMBJ10CA	010A	010C	10.0	11.10	12.30	1	17.0	35.3	5	
SMBJ11A	SMBJ11CA	011A	011C	11.0	12.20	13.50	1	18.2	33.0	1	
SMBJ12A	SMBJ12CA	012A	012C	12.0	13.30	14.70	1	19.9	30.2	1	
SMBJ13A	SMBJ13CA	013A	013C	13.0	14.40	15.90	1	21.5	28.0	1	
SMBJ14A	SMBJ14CA	014A	014C	14.0	15.60	17.20	1	23.2	25.9	1	
SMBJ15A	SMBJ15CA	015A	015C	15.0	16.70	18.50	1	24.4	24.6	1	
SMBJ16A	SMBJ16CA	016A	016C	16.0	17.80	19.70	1	26.0	23.1	1	
SMBJ17A	SMBJ17CA	017A	017C	17.0	18.90	20.90	1	27.6	21.8	1	
SMBJ18A	SMBJ18CA	018A	018C	18.0	20.00	22.10	1	29.2	20.6	1	
SMBJ20A	SMBJ20CA	020A	020C	20.0	22.20	24.50	1	32.4	18.6	1	
SMBJ22A	SMBJ22CA	022A	022C	22.0	24.40	26.90	1	35.5	16.9	1	
SMBJ24A	SMBJ24CA	024A	024C	24.0	26.70	29.50	1	38.9	15.5	1	
SMBJ26A	SMBJ26CA	026A	026C	26.0	28.90	31.90	1	42.1	14.3	1	
SMBJ28A	SMBJ28CA	028A	028C	28.0	31.10	34.40	1	45.4	13.3	1	
SMBJ30A	SMBJ30CA	030A	030C	30.0	33.30	36.80	1	48.4	12.4	1	
SMBJ33A	SMBJ33CA	033A	033C	33.0	36.70	40.60	1	53.3	11.3	1	
SMBJ36A	SMBJ36CA	036A	036C	36.0	40.00	44.20	1	58.1	10.4	1	
SMBJ40A	SMBJ40CA	040A	040C	40.0	44.40	49.10	1	64.5	9.3	1	
SMBJ43A	SMBJ43CA	043A	043C	43.0	47.80	52.80	1	69.4	8.7	1	
SMBJ45A	SMBJ45CA	045A	045C	45.0	50.00	55.30	1	72.7	8.3	1	
SMBJ48A	SMBJ48CA	048A	048C	48.0	53.30	58.90	1	77.4	7.8	1	
SMBJ51A	SMBJ51CA	051A	051C	51.0	56.70	62.70	1	82.4	7.3	1	
SMBJ54A	SMBJ54CA	054A	054C	54.0	60.00	66.30	1	87.1	6.9	1	
SMBJ58A	SMBJ58CA	058A	058C	58.0	64.40	71.20	1	93.6	6.5	1	
SMBJ60A	SMBJ60CA	060A	060C	60.0	66.70	73.70	1	96.8	6.2	1	
SMBJ64A	SMBJ64CA	064A	064C	64.0	71.10	78.60	1	103.0	5.9	1	
SMBJ70A	SMBJ70CA	070A	070C	70.0	77.80	86.00	1	113.0	5.3	1	
SMBJ75A	SMBJ75CA	075A	075C	75.0	83.30	92.10	1	121.0	5.0	1	
SMBJ78A	SMBJ78CA	078A	078C	78.0	86.70	95.80	1	126.0	4.8	1	
SMBJ85A	SMBJ85CA	085A	085C	85.0	94.40	104.00	1	137.0	4.4	1	
SMBJ90A	SMBJ90CA	090A	090C	90.0	100.00	111.00	1	146.0	4.1	1	
SMBJ100A	SMBJ100CA	100A	100C	100.0	111.00	123.00	1	162.0	3.7	1	
SMBJ110A	SMBJ110CA	110A	110C	110.0	122.00	135.00	1	177.0	3.4	1	

Part Number (Uni)	Part Number (Bi)	Key Marking UNI	Key Marking BI	Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts) @ I_T MIN	Breakdown Voltage V_{BR} (Volts) @ I_T MAX	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 (μA)	Agency Approval
SMBJ120A	SMBJ120CA	120A	120C	120.0	133.00	147.00	1	193.0	3.1	1	
SMBJ130A	SMBJ130CA	130A	130C	130.0	144.00	159.00	1	209.0	2.9	1	
SMBJ150A	SMBJ150CA	150A	150C	150.0	167.00	185.00	1	243.0	2.5	1	
SMBJ160A	SMBJ160CA	160A	160C	160.0	178.00	197.00	1	259.0	2.3	1	
SMBJ170A	SMBJ170CA	170A	170C	170.0	189.00	209.00	1	275.0	2.2	1	
SMBJ180A	SMBJ180CA	180A	180C	180.0	201.00	222.00	1	292.0	2.1	1	
SMBJ190A	SMBJ190CA	190C	190A	190.0	211.00	234.00	1	307.0	2.0	1	
SMBJ200A	SMBJ200CA	200A	200C	200.0	224.00	247.00	1	324.0	1.9	1	
SMBJ220A	SMBJ220CA	220A	220C	220.0	246.00	272.00	1	356.0	1.7	1	
SMBJ250A	SMBJ250CA	250A	250C	250.0	279.00	309.00	1	405.0	1.5	1	
SMBJ300A	SMBJ300CA	300A	300C	300.0	335.00	371.00	1	486.0	1.2	1	
SMBJ350A	SMBJ350CA	350A	350C	350.0	391.00	432.00	1	567.0	1.1	1	
SMBJ400A	SMBJ400CA	400A	400C	400.0	447.00	494.00	1	648.0	1.0	1	
SMBJ440A	SMBJ440CA	440A	440C	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)

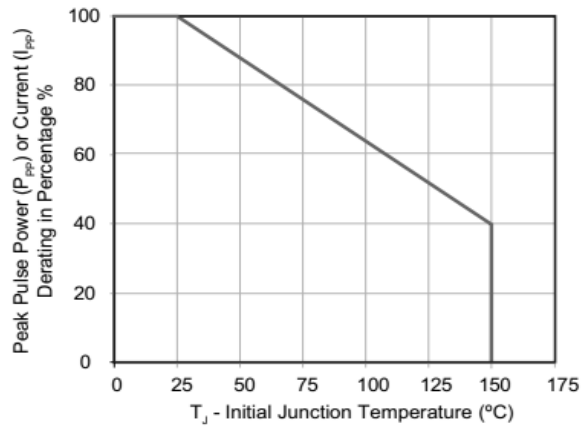


Figure 1. Peak pulse power derating curve

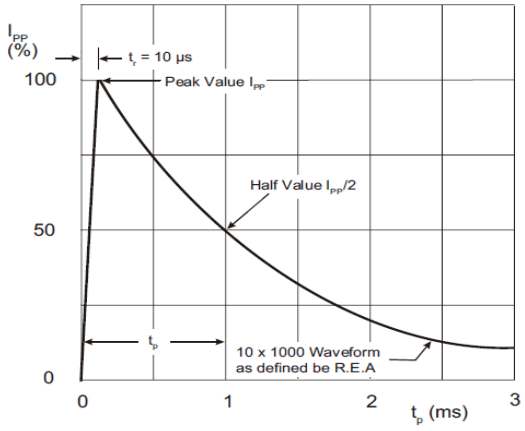


Figure2. Pulse waveform

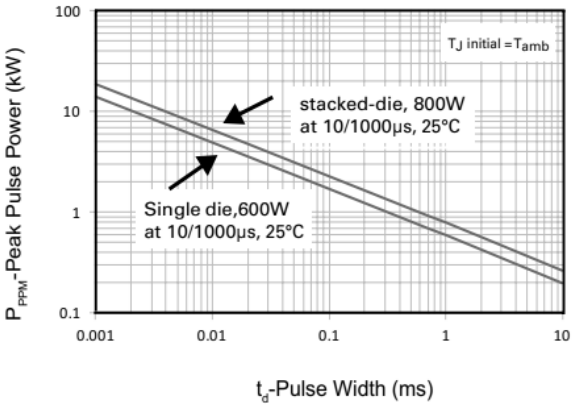


Figure 3. Peak pulse power rating curve

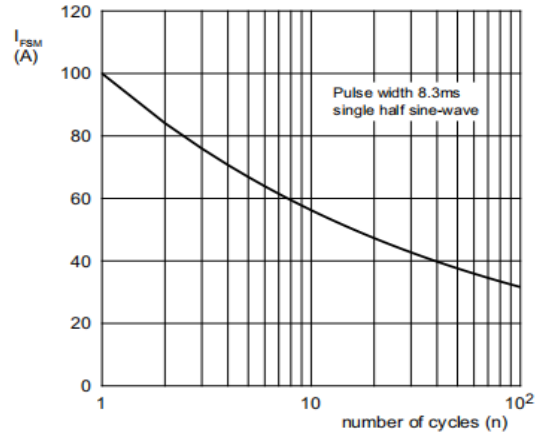
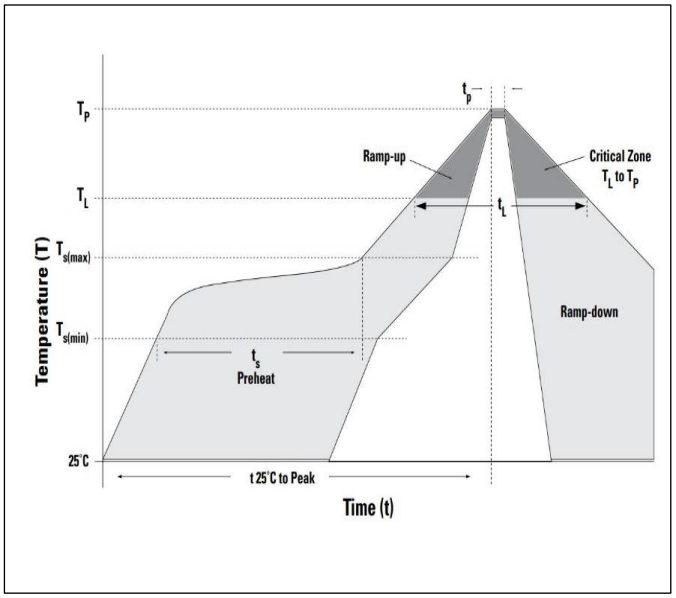


Figure 4. Maximum non-repetitive surge current

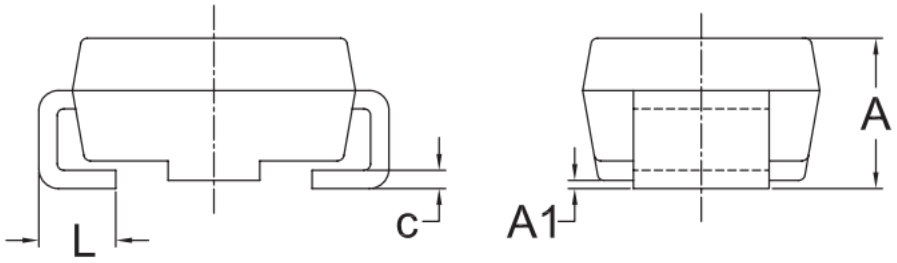
Soldering Parameters

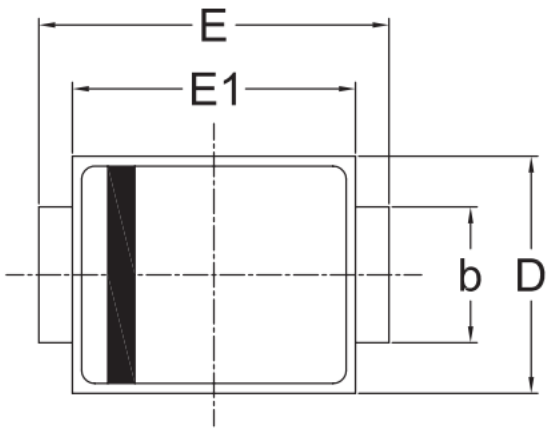
Reflow Condition		Lead–free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 – 180 secs
Average ramp up rate (Liquidus Temp (T_A) to peak		3°C/second max
$T_{S(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	- Temperature (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	2.50	0.30	2.15	0.25	3.75	5.54	4.65	1.50
	Min	2.00	0.00	1.85	0.15	3.45	5.04	4.35	0.80

Remark: Dimensions D and E1 do not include mold flash & gate remain.

.

Part Numbering

SMBJ xx xx

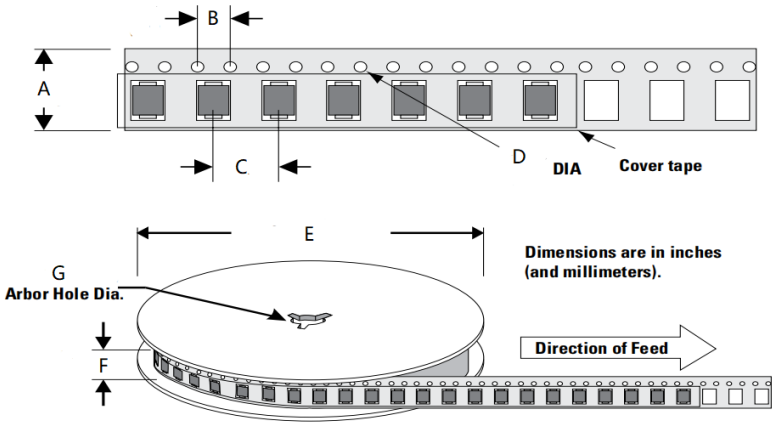
- A: Uni-directional
  CA: Bi-directional
- Reverse Standard off Voltage V_R
- Product series

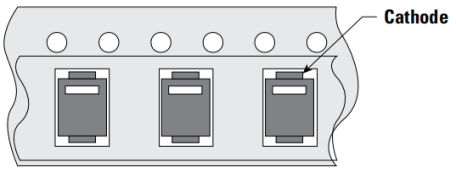
Part Marking

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-July-2021
1.1	Modified Temperature Range & Details	16-August-2021