

## TVS Diode – 1.5SMBJ Series

### Features

- Plastic package, excellent insulation strength
- Glass passivated chip junction in SMB package
- Excellent voltage clamping capability
- Low Zener impedance
- 1500 W peak pulse power capability on 10/1000  $\mu$ s waveform.
- Typical leakage current less than 1  $\mu$ A above 13 V
- Very fast response time, typically less than 1.0 ps from 0 volt to  $V_{BR}$  minimum
- High temperature soldering guaranteed: 265  $^{\circ}$ C/10 sec
- MSL: JEDEC-J-STD-020, Level 1

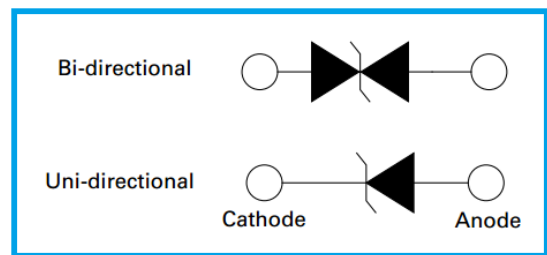


### Applications

- I/O interface,  $V_{CC}$  bus
- Telecom
- Industrial and consumer electronic applications
- Relay and electromagnetic valve surge absorption

### Agency Approval

- UL file no.: E474915



### Mechanical and Physical Data

- Case: JEDEC SMB molded plastic
- Axial leaded, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denoted cathode except bidirectional

### Maximum Ratings and Thermal Characteristics

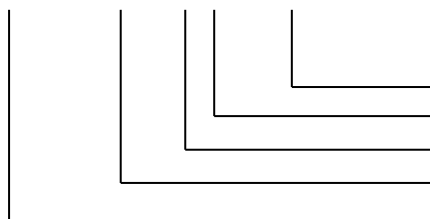
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation on 10/1000 $\mu$ s waveform (Note 1, Fig.1).	$P_{PPM}$	Min 1500	Watt
Peak Pulse Current of 10/1000 $\mu$ s waveform (Note 1, Fig.3).	$I_{PPM}$	See Table	Amp
Steady State Power Dissipation at $T_L = 75^{\circ}$ C (Fig.5).	$P_{M(AV)}$	5.0	Watt
Peak Forward Surge Current, 8.3 ms Single Half Sine Wave Superimposed on Rated Load (Note 2, Fig.6).	$I_{FSM}$	100	Amp
Operating Junction and Storage Temperature Range.	$T_J, T_{STG}$	-55~150	$^{\circ}$ C

Note:

1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A = 25^{\circ}$ C per Fig.2.
2. 8.3 ms single half sine wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

### Part Number Code

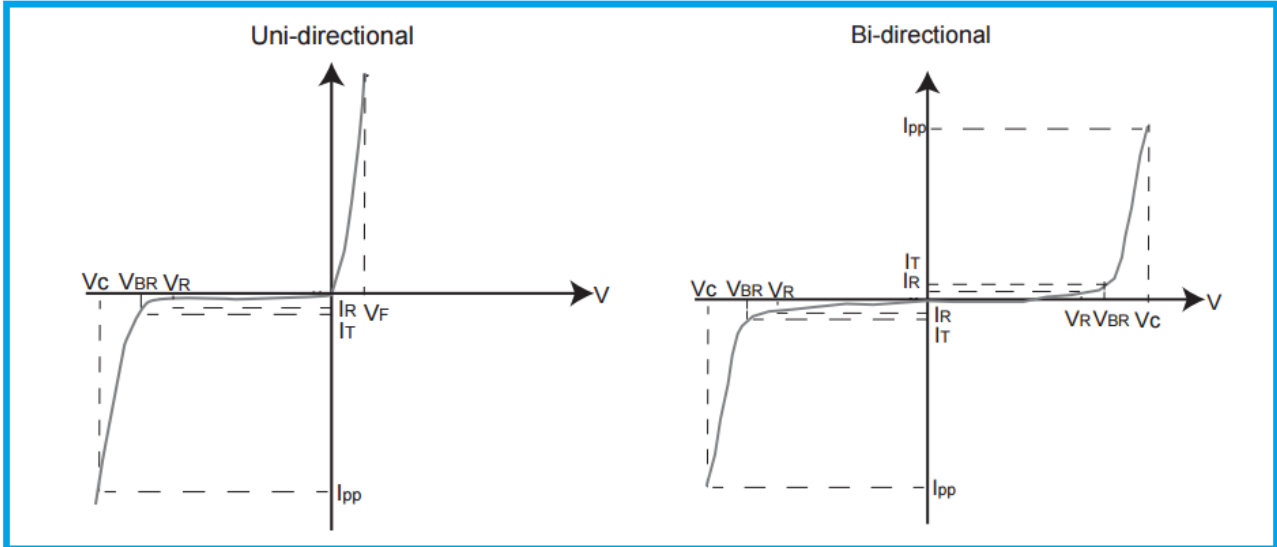
**1.5SMBJ** □□□ **CA** - □□□



- Packaging Code (T13: Tape with 13" Reel; T7: Tape with 7")
- $V_{BR}$  Voltage tolerance (A: 5%; Blank: 10%)
- C: Bi-directional; Blank: Uni-directional
- Reverse Stand-Off Voltage
- 1.5SMBJ Series (1500W)

## TVS Diode – 1.5SMBJ Series

### I-V Curve Characteristics



- $P_{PPM}$  Peak Pulse Power Dissipation – Maximum 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 through 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

### Electrical Characteristics

Part Number		Marking		Reverse Stand Off Voltage $V_R$ (V)	Breakdown Voltage $V_{BR}$ (V) @ $I_T$		Test Current $I_T$ (mA)	Maximum Clamping Voltage $V_C$ (V) @ $I_{PP}$	Maximum Peak Pulse Current $I_{PP}$ (A)	Maximum Reverse Leakage $I_R$ ( $\mu$ A) @ $V_R$	UL
Uni	Bi	Uni	Bi		Min.	Max.					
1.5SMBJ15A	1.5SMBJ15CA	LM7	BM7	15.0	16.7	18.5	1	27.1	55.3	10	Pending
1.5SMBJ18A	1.5SMBJ18CA	LT7	BT7	18.0	20.0	22.1	1	32.4	46.3	5	Pending
1.5SMBJ24A	1.5SMBJ24CA	LZ7	BZ7	24.0	26.7	29.5	1	38.9	38.6	5	Pending
1.5SMBJ30A	1.5SMBJ30CA	MK7	CK7	30.0	33.3	36.8	1	48.4	31.0	1	Pending
1.5SMBJ36A	1.5SMBJ36CA	MP7	CP7	36.0	40.0	44.2	1	58.1	25.9	1	Pending
1.5SMBJ43A	1.5SMBJ43CA	MT7	CT7	43.0	47.8	52.8	1	69.4	21.7	1	Pending
1.5SMBJ51A	1.5SMBJ51CA	MZ7	CZ7	51.0	56.7	62.7	1	82.4	18.2	1	Pending
1.5SMBJ58A	1.5SMBJ58CA	NG7	DG7	58.0	64.4	71.2	1	93.6	16.1	1	Pending
1.5SMBJ64A	1.5SMBJ64CA	NM7	DM7	64.0	71.1	78.6	1	103.0	14.6	1	Pending
1.5SMBJ70A	1.5SMBJ70CA	NP7	DP7	70.0	77.8	86.0	1	113.0	13.3	1	Pending
1.5SMBJ78A	1.5SMBJ78CA	NT7	DT7	78.0	86.7	95.8	1	126.0	11.9	1	Pending
1.5SMBJ85A	1.5SMBJ85CA	NV7	DV7	85.0	94.4	104.0	1	137.0	11.0	1	Pending

## TVS Diode – 1.5SMBJ Series

### Ratings and Characteristic Curves

Fig 1 - Peak Pulse Power Rating Curve

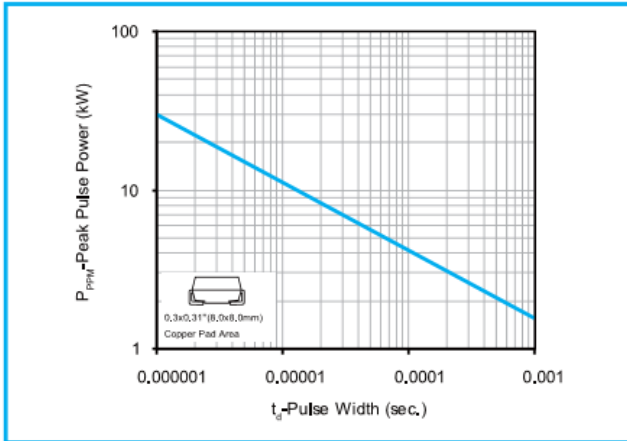


Fig 2 - Pulse Derating Curve

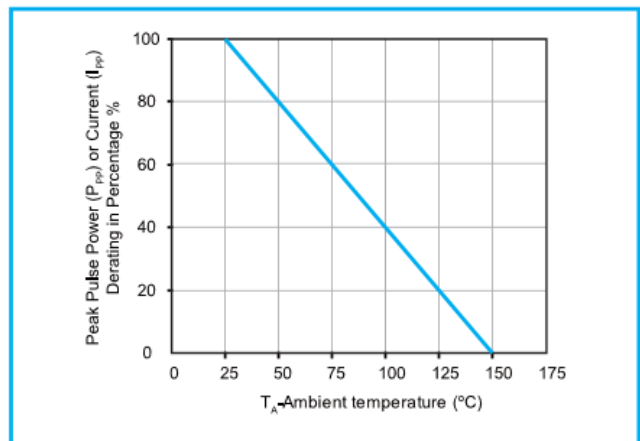


Fig 3 - Pulse Waveform

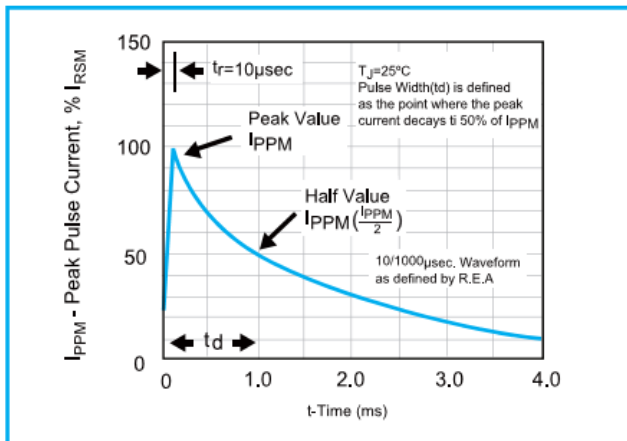


Fig 4 - Typical Junction Capacitance Uni-directional

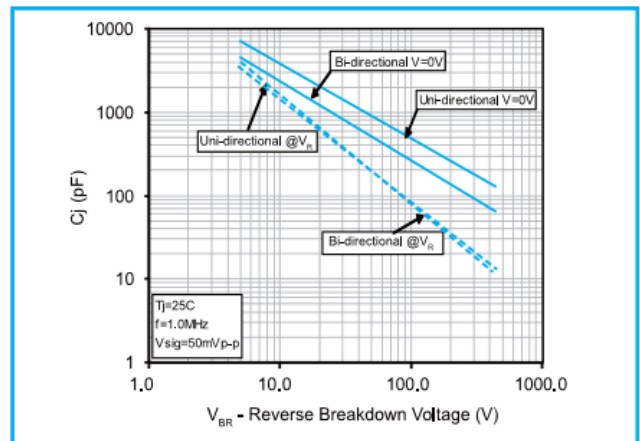


Fig 5 - Steady State Power Dissipation Derating Curve

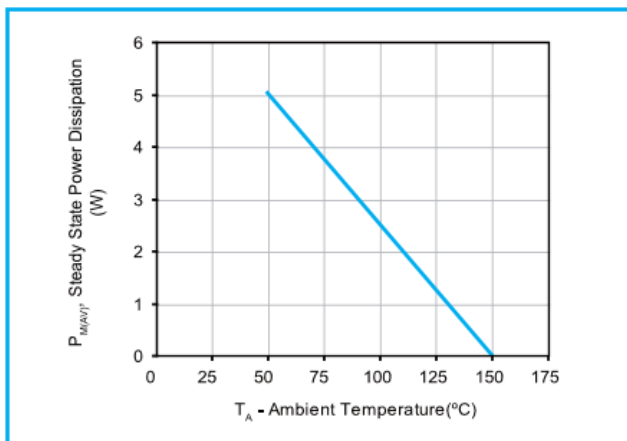
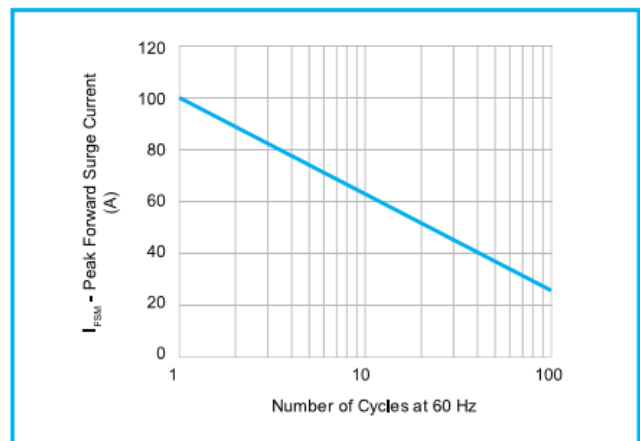
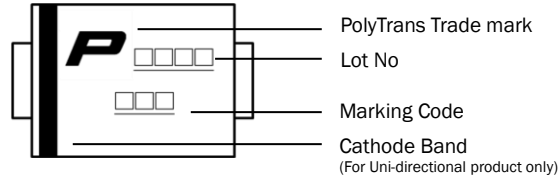


Fig 6 - Maximum Non-Repetitive Forward Surge Current (Uni-directional Only)

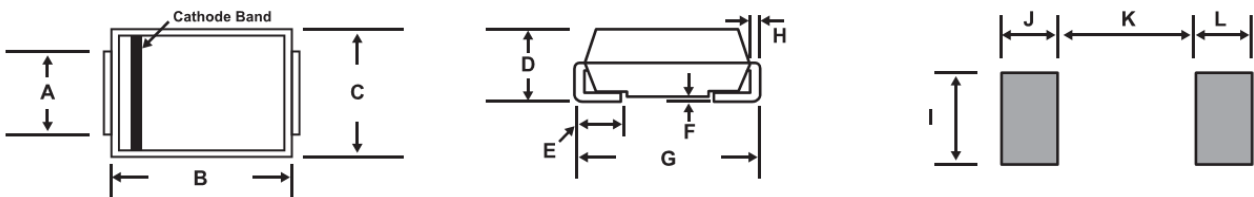


## TVS Diode - 1.5SMBJ Series

### Marking Definitions



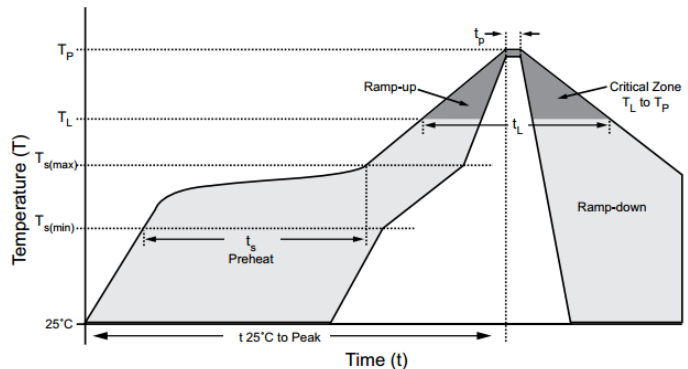
### Physical Dimensions



Dimension	Millimeters		Inches	
	Min	Max	Min	Max
A	1.90	2.20	0.077	0.086
B	4.06	4.85	0.160	0.191
C	3.30	3.94	0.130	0.155
D	1.95	2.44	0.084	0.096
E	0.76	1.52	0.030	0.060
F	-	0.20	-	0.008
G	5.21	5.59	0.205	0.220
H	0.15	0.31	0.006	0.012
I	2.26	-	0.089	-
J	2.16	-	0.085	-
K	-	2.74	-	0.107
L	2.16	-	0.085	-

### Lead Free Reflow Soldering Recommendations

Preheat	
- Temperature Min ( $T_{s\_min}$ )	150°C
- Temperature Max ( $T_{s\_max}$ )	200°C
- Time ( $T_{s\_min}$ to $T_{s\_max}$ )	60-180 seconds
- Average Ramp-Up Rate	1~3°C/second
Peak Temperature	260°C max.
Time within 5°C of actual Peak Temperature ( $t_p$ )	40 seconds max.
Ramp-Down Rate	6 °C /second max.



**Note:** If the soldering temperatures exceed the recommended profile, devices may not meet the performance requirements.

## TVS Diode – 1.5SMBJ Series

### Packaging Information

Part Number	Packaging Code	Component Package	Quantity	Packaging Option	Packaging Specification
1.5SMBJ Series	T13	DO-214AA	3000	Tape & Reel - 12mm tape/13" reel	EIA STD RS-481
1.5SMBJ Series	T7	DO-214AA	500	Tape & Reel - 12mm tape/7" reel	EIA STD RS-481

### Tape and Reel Specifications

