

TVS Diode – 5.0SMDJ-A Series

Features

- Plastic package, excellent insulation strength.
- Glass passivated chip junction in SMC (DO-214AB) package.
- Excellent voltage clamping capability.
- Low Zener impedance.
- 5000W peak pulse power capability on 10/1000 μ s waveform.
- Very fast response time, typically less than 1.0 ps from 0 volt to V_{BR} minimum.
- MSL: JEDEC-J-STD-020, Level 1
- AEC-Q101 qualified

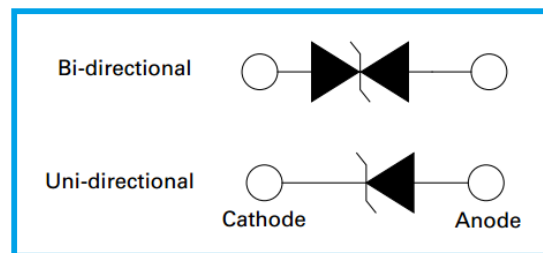


Applications

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

Maximum Ratings and Thermal Characteristics

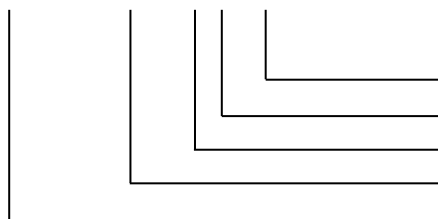
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation on 10/1000 μ s waveform (Note 1, Fig.1).	P_{PPM}	Min 5000	Watt
Peak Pulse Current of 10/1000 μ s waveform (Note 1, Fig.3).	I_{PPM}	See Table	Amp
Steady State Power Dissipation at $T_L = 75^\circ\text{C}$, Lead lengths 0.375", (9.5mm) (Fig.5).	$P_{M(AV)}$	6.5	Watt
Peak Forward Surge Current, 8.3 ms Single Half Sine Wave Superimposed on Rated Load (Note 2, Fig.6).	I_{FSM}	300	Amp
Operating Junction and Storage Temperature Range.	T_J, T_{STG}	-55~150	$^\circ\text{C}$

Note:

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

Part Number Code

5.0SMDJ □□□ C A - A



- Automotive grade
- V_{BR} Voltage tolerance (A: 5%; Blank: 10%)
- C: Bi-directional; Blank: Uni-directional
- Reverse Stand-Off Voltage or Typical Breakdown Voltage
- 5.0SMDJ Series (5000W)

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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 (μ A) @ V_R
Uni	Bi	Uni	Bi		Min.	Max.				
5.0SMDJ14A-A	5.0SMDJ14CA-A	5PER	5BER	14.0	15.6	17.2	10	23.2	216.0	200
5.0SMDJ15A-A	5.0SMDJ15CA-A	5PES	5BES	15.0	16.7	18.5	1	24.4	205.0	100
5.0SMDJ16A-A	5.0SMDJ16CA-A	5PET	5BET	16.0	17.8	19.7	1	26.0	193.0	50
5.0SMDJ17A-A	5.0SMDJ17CA-A	5PEU	5BEU	17.0	18.9	20.9	1	27.6	181.0	20
5.0SMDJ18A-A	5.0SMDJ18CA-A	5PEV	5BEV	18.0	20.0	22.1	1	29.2	172.0	10
5.0SMDJ20A-A	5.0SMDJ20CA-A	5PEW	5BEW	20.0	22.2	24.5	1	32.4	155.0	5
5.0SMDJ22A-A	5.0SMDJ22CA-A	5PEX	5BEX	22.0	24.4	26.9	1	35.5	141.0	5
5.0SMDJ24A-A	5.0SMDJ24CA-A	5PEZ	5BEZ	24.0	26.7	29.5	1	38.9	129.0	5
5.0SMDJ26A-A	5.0SMDJ26CA-A	5PFE	5BFE	26.0	28.9	31.9	1	42.1	119.0	5
5.0SMDJ28A-A	5.0SMDJ28CA-A	5PFG	5BFG	28.0	31.1	34.4	1	45.4	110.0	5
5.0SMDJ30A-A	5.0SMDJ30CA-A	5PFK	5BFK	30.0	33.3	36.8	1	48.4	103.0	5
5.0SMDJ33A-A	5.0SMDJ33CA-A	5PFM	5BFM	33.0	36.7	40.6	1	53.3	93.9	5
5.0SMDJ36A-A	5.0SMDJ36CA-A	5PFP	5BFP	36.0	40.0	44.2	1	58.1	86.1	5
5.0SMDJ40A-A	5.0SMDJ40CA-A	5PFR	5BFR	40.0	44.4	49.1	1	64.5	77.6	5
5.0SMDJ43A-A	5.0SMDJ43CA-A	5PFT	5BFT	43.0	47.8	52.8	1	69.4	72.1	5
5.0SMDJ45A-A	5.0SMDJ45CA-A	5PFT	5BFV	45.0	50.0	55.3	1	72.7	68.8	5
5.0SMDJ48A-A	5.0SMDJ48CA-A	5PFX	5BFX	48.0	53.3	58.9	1	77.4	64.7	5

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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 (μ A) @ V_R
Uni	Bi	Uni	Bi		Min.	Max.				
5.0SMDJ51A-A	5.0SMDJ51CA-A	5PFZ	5BFZ	51.0	56.7	62.7	1	82.4	60.7	5
5.0SMDJ54A-A	5.0SMDJ54CA-A	5RGE	5BGE	54.0	60.0	66.3	1	87.1	57.5	5
5.0SMDJ58A-A	5.0SMDJ58CA-A	5PGG	5BGG	58.0	64.4	71.2	1	93.6	53.5	5
5.0SMDJ60A-A	5.0SMDJ60CA-A	5PGK	5BGK	60.0	66.7	73.7	1	96.8	51.7	5
5.0SMDJ64A-A	5.0SMDJ64CA-A	5PGM	5BGM	64.0	71.1	78.6	1	103.0	48.6	5
5.0SMDJ70A-A	5.0SMDJ70CA-A	5PGP	5BGP	70.0	77.8	86.0	1	113.0	44.3	5
5.0SMDJ75A-A	5.0SMDJ75CA-A	5PGR	5BGR	75.0	83.3	92.1	1	121.0	41.4	5
5.0SMDJ78A-A	5.0SMDJ78CA-A	5PGT	5BGT	78.0	86.7	95.8	1	126.0	39.7	5
5.0SMDJ85A-A	5.0SMDJ85CA-A	5PGV	5BGV	85.0	94.4	104.0	1	137.0	36.5	5

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Ratings and Characteristic Curves

Fig 1 - Peak Pulse Power Rating Curve

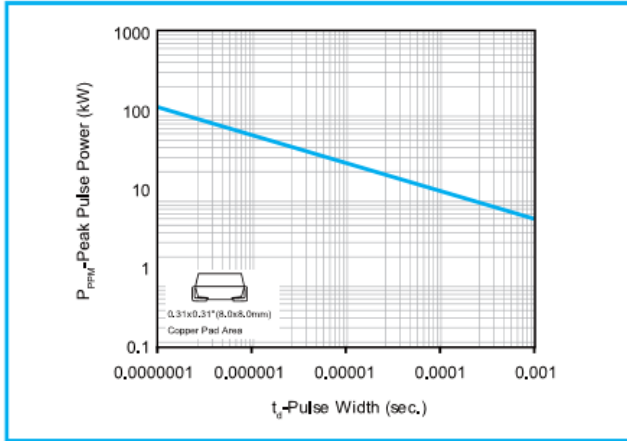


Fig 2 - Pulse Derating Curve

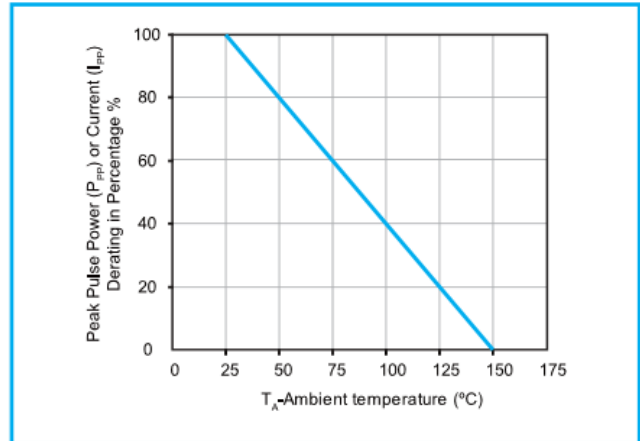


Fig 3 - Pulse Waveform

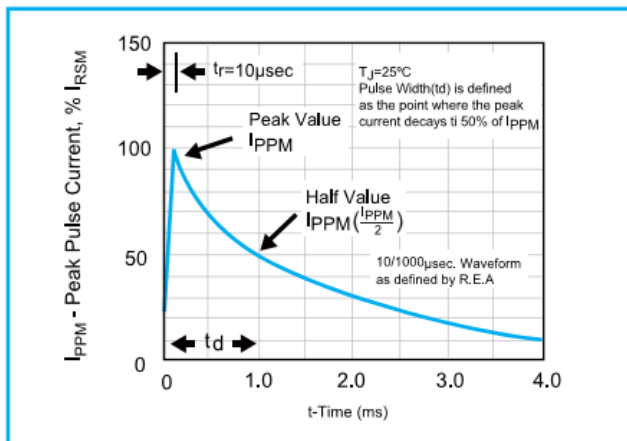


Fig 4 - Typical Junction Capacitance Uni-directional

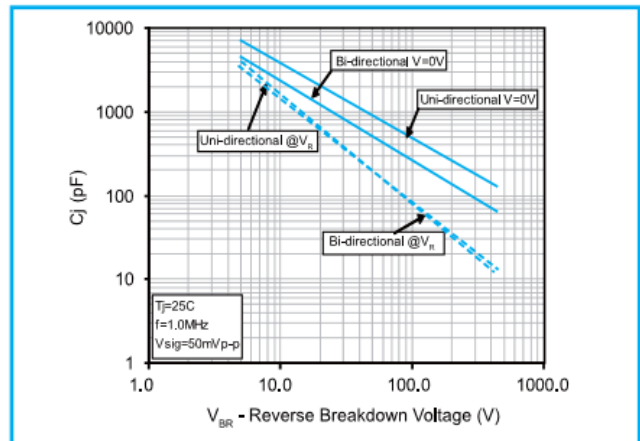


Fig 5 - Steady State Power Dissipation Derating Curve

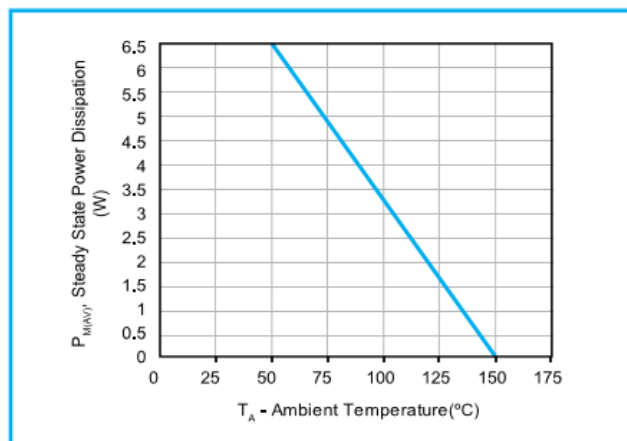
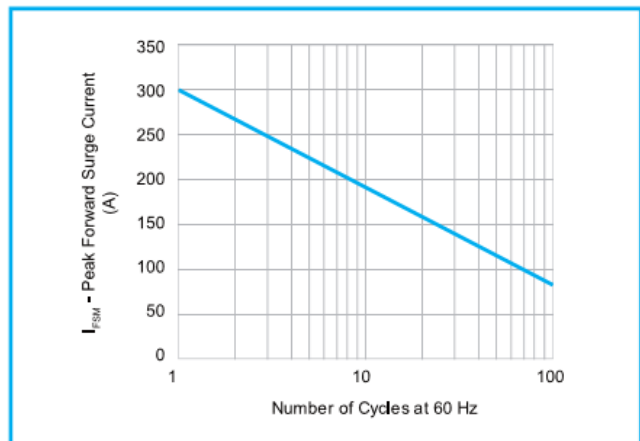
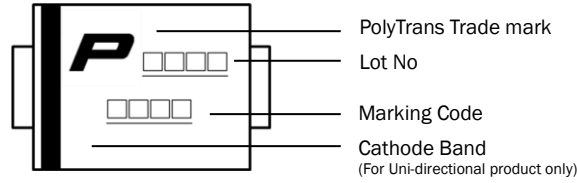


Fig 6 - Maximum Non-Repetitive Forward Surge Current (Uni-directional Only)

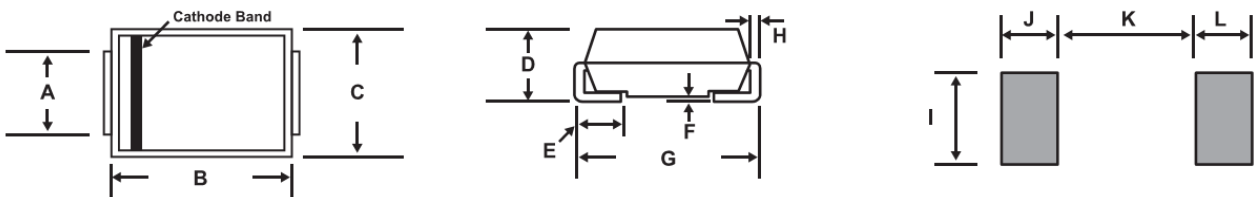


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Marking Definitions



Physical Dimensions



Dimension	Millimeters		Inches	
	Min	Max	Min	Max
A	2.90	3.20	0.114	0.126
B	6.60	7.11	0.260	0.280
C	5.59	6.22	0.220	0.245
D	2.20	2.80	0.087	0.110
E	0.76	1.52	0.030	0.060
F	-	0.20	-	0.008
G	7.75	8.13	0.305	0.320
H	0.15	0.31	0.006	0.012
I	3.30	-	0.129	-
J	2.40	-	0.094	-
K	-	4.20	-	0.165
L	2.40	-	0.094	-

Lead Free Wave Soldering Recommendations

Preheat	
- Temperature Min (Tsmin)	150°C
- Temperature Max (Tsmax)	200°C
- Time (Tsmin to Tsmax)	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 wave soldering temperatures exceed the recommended profile, devices may not meet the performance requirements.

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Packaging Information

Part Number	Component Package	Quantity	Packaging Option	Packaging Specification
5.0SMDJ-A Series	DO-214AB	3000	Tape & Reel – 16mm tape/13" reel	EIA STD RS-481

Tape and Reel Specifications

