

5.0 SMDJ Series

Surface Mounted Transient Voltage Suppressors

Revision: A

General Description

This SMD diode is for use in protection application circuitry

- I Excellent Clamping Capability
- I Very Fast Response Time
- I Low Reverse Leakage

Features

- I Case: SMC(DO-214AB), molded epoxy body
- I Terminal: Matte tin plated leads
- I Mount Position: Any

Maximum Ratings ($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Units
Peak Power Dissipation with a 10/1000 μs waveform ⁽¹⁾	P_{PP}	5000	W
Peak Pulse Current with a 10/1000 μs waveform ⁽¹⁾	I_{PP}	See Next Table	A
Power Dissipation on infinite heatsink at $T_L = 75^{\circ}\text{C}$	P_D	6.5	W
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Unidirectional Only ⁽²⁾	I_{FSM}	300	A
Maximum Instantaneous Forward Voltage at 100A for Unidirectional Only ⁽³⁾	V_F	3.5/5.0	V
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^{\circ}\text{C}$

Note:

- (1) Non-repetitive current pulse per Fig.5 and derated above $T_A = 25^{\circ}\text{C}$ per Fig.1
- (2) Measured on 8.3ms single half sine-wave or equivalent square wave, duty cycle = 4 pulse per minute maximum
- (3) $V_F < 3.5\text{V}$ for devices of $V_{BR} < 200\text{V}$ and $V_F < 5.0\text{A}$ for devices of $V_{BR} > 201\text{V}$

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Electrical Characteristics (T_A=25°C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Device Marking Code		Breakdown Voltage VBR@I _r			Maximum Reverse Leakage IR @VRWM (μA)	Working Peaking Reverse Voltage VRWM(V)	Maximum Reverse Surge Current I _{FSM} (A)	Maximum Clamping Voltage VC@I _{PP} (V)
		Uni	Bi	Min(V)	Max(V)	I _r (mA)				
5.0SMDJ11	5.0SMDJ11C	5PDW	5BDW	12.20	14.90	10	800	11.0	248.8	20.1
5.0SMDJ11A1	5.0SMDJ11CA	5PDX	5BDX	12.20	13.50	10	800	11.0	274.7	18.2
5.0SMDJ12	5.0SMDJ12C	5PDY	5BDY	13.30	16.30	10	800	12.0	227.3	22.0
5.0SMDJ12A	5.0SMDJ12CA	5PDZ	5BDZ	13.30	14.70	10	800	12.0	251.3	19.9
5.0SMDJ13	5.0SMDJ13C	5PED	5BED	14.40	17.60	10	500	13.0	210.1	23.8
5.0SMDJ13A	5.0SMDJ13CA	5PEE	5BEE	14.40	15.90	10	500	13.0	232.6	21.5
5.0SMDJ14	5.0SMDJ14C	5PEF	5BEF	15.60	19.10	10	200	14.0	193.8	25.8
5.0SMDJ14A	5.0SMDJ14CA	5PEG	5BEG	15.60	17.20	10	200	14.0	215.5	23.2
5.0SMDJ15	5.0SMDJ15C	5PEH	5BEH	16.70	20.40	1	100	15.0	185.9	26.9
5.0SMDJ15A	5.0SMDJ15CA	5PEK	5BEK	16.70	18.50	1	100	15.0	204.9	24.4
5.0SMDJ16	5.0SMDJ16C	5PEL	5BEL	17.80	21.80	1	50	16.0	173.6	28.8
5.0SMDJ16A	5.0SMDJ16CA	5PEM	5BEM	17.80	19.70	1	50	16.0	192.3	26.0
5.0SMDJ17	5.0SMDJ17C	5PEN	5BEN	18.90	23.10	1	20	17.0	163.9	30.5
5.0SMDJ17A	5.0SMDJ17CA	5PEP	5BEP	18.90	20.90	1	20	17.0	181.2	27.6
5.0SMDJ18	5.0SMDJ18C	5PEQ	5BEQ	20.00	24.40	1	10	18.0	155.3	32.2
5.0SMDJ18A	5.0SMDJ18CA	5PER	5BER	20.00	22.10	1	10	18.0	171.2	29.2
5.0SMDJ19	5.0SMDJ19C	5PES	5BES	21.13	25.76	1	10	19.0	147.0	34.0
5.0SMDJ19A	5.0SMDJ19CA	5PET	5BET	21.13	23.30	1	10	19.0	162.4	30.8
5.0SMDJ20	5.0SMDJ20C	5PEU	5BEU	22.20	27.10	1	5	20.0	139.7	35.8
5.0SMDJ20A	5.0SMDJ20CA	5PEV	5BEV	22.20	24.50	1	5	20.0	154.3	32.4
5.0SMDJ22	5.0SMDJ22C	5PEW	5BEW	24.40	29.80	1	5	22.0	126.9	39.4
5.0SMDJ22A	5.0SMDJ22CA	5PEX	5BEX	24.40	26.90	1	5	22.0	140.8	35.5
5.0SMDJ24	5.0SMDJ24C	5PEV	5BEV	26.70	32.60	1	5	24.0	116.3	43.0
5.0SMDJ24A	5.0SMDJ24CA	5PEZ	5BEZ	26.70	29.50	1	5	24.0	128.5	38.9
5.0SMDJ26	5.0SMDJ26C	5PFD	5BFD	28.90	35.30	1	5	26.0	107.3	46.6
5.0SMDJ26A	5.0SMDJ26CA	5PFE	5BFE	28.90	31.90	1	5	26.0	118.8	42.1
5.0SMDJ28	5.0SMDJ28C	5PFF	5BFF	31.10	38.00	1	5	28.0	100.0	50.0
5.0SMDJ28A	5.0SMDJ28CA	5PFG	5BFG	31.10	34.40	1	5	28.0	110.1	45.4
5.0SMDJ30	5.0SMDJ30C	5PFH	5BFH	33.30	40.70	1	5	30.0	93.5	53.5
5.0SMDJ30A	5.0SMDJ30CA	5PFK	5BFK	33.30	36.80	1	5	30.0	103.3	48.4
5.0SMDJ33	5.0SMDJ33C	5PFL	5BFL	36.70	44.90	1	5	33.0	84.7	59.0
5.0SMDJ33A	5.0SMDJ33CA	5PFM	5BFM	36.70	40.60	1	5	33.0	93.8	53.3
5.0SMDJ36	5.0SMDJ36C	5PFN	5BFN	40.00	48.90	1	5	36.0	77.8	64.3
5.0SMDJ36A	5.0SMDJ36CA	5PFP	5BFP	40.00	44.20	1	5	36.0	86.1	58.1
5.0SMDJ40	5.0SMDJ40C	5PFQ	5BFQ	44.40	54.30	1	5	40.0	70.0	71.4
5.0SMDJ40A	5.0SMDJ40CA	5PFR	5BFR	44.40	49.10	1	5	40.0	77.5	64.5

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Electrical Characteristics (T_A=25°C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Device Marking Code		Breakdown Voltage VBR@I _r			Maximum Reverse Leakage IR @VRWM (μA)	Working Peaking Reverse Voltage VRWM(V)	Maximum Reverse Surge Current I _{pp} (A)	Maximum Clamping Voltage VC@I _{pp} (V)
		Uni	Bi	Min(V)	Max(V)	I _r (mA)				
5.0SMDJ43	5.0SMDJ43C	5PFS	5BFS	47.80	58.40	1	5	43.0	65.2	76.7
5.0SMDJ43A	5.0SMDJ43CA	5PFT	5BFT	47.80	52.80	1	5	43.0	72.0	69.4
5.0SMDJ45	5.0SMDJ45C	5PFU	5BFU	50.00	61.10	1	5	45.0	62.3	80.3
5.0SMDJ45A	5.0SMDJ45CA	5PFV	5BFV	50.00	55.30	1	5	45.0	68.8	72.7
5.0SMDJ48	5.0SMDJ48C	5PFW	5BFW	53.30	65.10	1	5	48.0	58.5	85.5
5.0SMDJ48A	5.0SMDJ48CA	5PFX	5BFX	53.30	58.90	1	5	48.0	64.6	77.4
5.0SMDJ51	5.0SMDJ51C	5PFY	5BFY	56.70	69.30	1	5	51.0	54.9	91.1
5.0SMDJ51A	5.0SMDJ51CA	5PFZ	5BFZ	56.70	62.70	1	5	51.0	60.7	82.4
5.0SMDJ54	5.0SMDJ54C	5PGD	5BGD	60.00	73.30	1	5	54.0	51.9	96.3
5.0SMDJ54A	5.0SMDJ54CA	5PGE	5BGE	60.00	66.30	1	5	54.0	57.4	87.1
5.0SMDJ58	5.0SMDJ58C	5PGF	5BGF	64.40	78.70	1	5	58.0	48.5	103.0
5.0SMDJ58A	5.0SMDJ58CA	5PGG	5BGG	64.40	71.20	1	5	58.0	53.4	93.6
5.0SMDJ60	5.0SMDJ60C	5PGH	5BGH	66.70	81.50	1	5	60.0	46.7	107.0
5.0SMDJ60A	5.0SMDJ60CA	5PGK	5BGK	66.70	73.70	1	5	60.0	51.7	96.8
5.0SMDJ64	5.0SMDJ64C	5PGL	5BGL	71.10	86.90	1	5	64.0	43.9	114.0
5.0SMDJ64A	5.0SMDJ64CA	5PGM	5BGM	71.10	78.60	1	5	64.0	48.5	103.0
5.0SMDJ70	5.0SMDJ70C	5PGN	5BGN	77.80	95.10	1	5	70	40.0	125.0
5.0SMDJ70A	5.0SMDJ70CA	5PGP	5BGP	77.80	86.00	1	5	70	44.2	113.0
5.0SMDJ75	5.0SMDJ75C	5PGQ	5BGQ	83.30	102.0	1	5	75	37.3	134.0
5.0SMDJ75A	5.0SMDJ75CA	5PGR	5BGR	83.30	92.10	1	5	75	41.3	121.0
5.0SMDJ78	5.0SMDJ78C	5PGS	5BGS	86.70	106.0	1	5	78	36.0	139.0
5.0SMDJ78A	5.0SMDJ78CA	5PGT	5BGT	86.70	95.80	1	5	78	39.7	126.0
5.0SMDJ80	5.0SMDJ80C	5PGA	5BGA	88.96	108.8	1	5	80	34.9	143.2
5.0SMDJ80A	5.0SMDJ80CA	5PGB	5BGB	88.80	97.60	1	5	80	38.6	129.6
5.0SMDJ85	5.0SMDJ85C	5PGU	5BGU	94.40	115.0	1	5	85	33.1	151.0
5.0SMDJ85A	5.0SMDJ85CA	5PGV	5BGV	94.40	104.0	1	5	85	36.5	137.0
5.0SMDJ90	5.0SMDJ90C	5PGW	5BGW	100.0	122.0	1	5	90	31.3	160.0
5.0SMDJ90A	5.0SMDJ90CA	5PGX	5BGX	100.0	111.0	1	5	90	34.2	146.0
5.0SMDJ100	5.0SMDJ100C	5PGY	5BGY	111.0	136.0	1	5	100	27.9	179.0
5.0SMDJ100A	5.0SMDJ100CA	5PGZ	5BGZ	111.0	123.0	1	5	100	30.9	162.0
5.0SMDJ110	5.0SMDJ110C	5PHD	5BHD	122.0	149.0	1	5	110	25.5	196.0
5.0SMDJ110A	5.0SMDJ110CA	5PHE	5BHE	122.0	135.0	1	5	110	28.2	177.0
5.0SMDJ120	5.0SMDJ120C	5PHF	5BHF	133.0	163.0	1	5	120	23.4	214.0
5.0SMDJ120A	5.0SMDJ120CA	5PHG	5BHG	133.0	147.0	1	5	120	25.9	193.0
5.0SMDJ130	5.0SMDJ130C	5PHH	5BHH	144.0	176.0	1	5	130	21.6	231.0
5.0SMDJ130A	5.0SMDJ130CA	5PHK	5BHK	144.0	159.0	1	5	130	23.9	209.0

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		Uni	Bi	Min(V)	Max(V)	I _r (mA)				
5.0SMDJ140	5.0SMDJ140C	5PHA	5BHA	155.7	190.4	1	5	140	20.0	250.6
5.0SMDJ140A	5.0SMDJ140CA	5PHB	5BHB	155.0	171.0	1	5	140	22.0	226.8
5.0SMDJ150	5.0SMDJ150C	5PHL	5BHL	167.0	204.0	1	5	150	18.7	268.0
5.0SMDJ150A	5.0SMDJ150CA	5PHM	5BHM	167.0	185.0	1	5	150	20.6	243.0
5.0SMDJ160	5.0SMDJ160C	5PHN	5BHN	178.0	218.0	1	5	160	17.4	287.0
5.0SMDJ160A	5.0SMDJ160CA	5PHP	5BHP	178.0	197.0	1	5	160	19.3	259.0
5.0SMDJ170	5.0SMDJ170C	5PHQ	5BHQ	189.0	231.0	1	5	170	16.4	304.0
5.0SMDJ170A	5.0SMDJ170CA	5PHR	5BHR	189.0	209.0	1	5	170	18.2	275.0
5.0SMDJ180	5.0SMDJ180C	5PHS	5BHS	200.2	244.8	1	5	180	15.5	322.2
5.0SMDJ180A	5.0SMDJ180CA	5PHT	5BHT	200.0	220.0	1	5	180	17.1	291.6
5.0SMDJ190	5.0SMDJ190C	5PHU	5BHU	211.3	258.4	1	5	190	14.7	340.1
5.0SMDJ190A	5.0SMDJ190CA	5PHV	5BHV	211.0	232.0	1	5	190	16.2	307.8
5.0SMDJ200A	5.0SMDJ200CA	5PHW	5BHW	224.0	247.0	1	5	200	15.4	324.0
5.0SMDJ220A	5.0SMDJ220CA	5PHX	5BHX	246.0	272.0	1	5	220	14.0	356.0
5.0SMDJ250A	5.0SMDJ250CA	5PHZ	5BHZ	279.0	309.0	1	5	250	12.3	405.0
5.0SMDJ300A	5.0SMDJ300CA	5PJE	5BJE	335.0	371.0	1	5	300	10.3	486.0
5.0SMDJ350A	5.0SMDJ350CA	5PJG	5BJG	391.0	432.0	1	5	350	8.8	567.0
5.0SMDJ400A	5.0SMDJ400CA	5PJK	5BJK	447.0	494.0	1	5	400	7.7	648.0
5.0SMDJ440A	5.0SMDJ440CA	5PJM	5BJM	492.0	543.0	1	5	440	7.0	713.0

Note:

1. Suffix 'A' denotes 5% tolerance device. Without 'A' denotes 10% tolerance device
2. Add suffix 'C' or 'CA' after part number to specify Bi-directional devices
3. For Bi-Directional devices having VR of 10 volts and under the IR limit is double

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Ratings and Characteristics Curves ($T_A=25^\circ\text{C}$ unless otherwise noted)

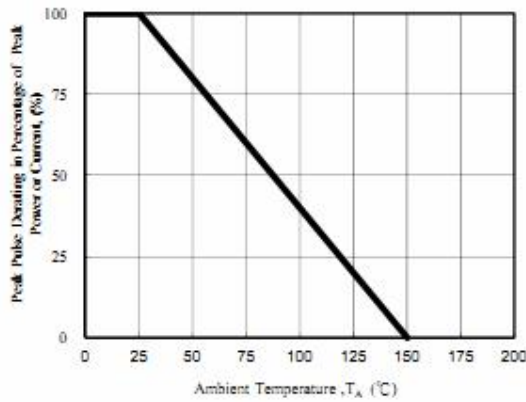


Fig. 1 - Pulse Derating Curve

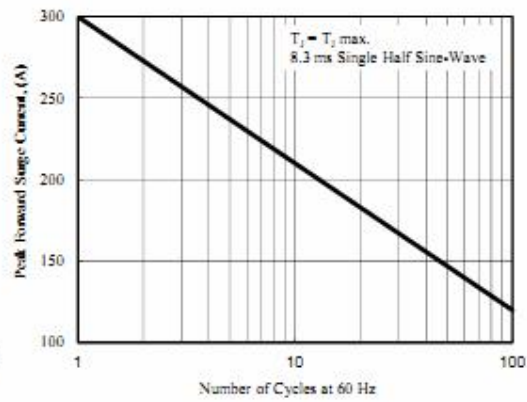


Fig. 2 - Maximum Non-Repetitive Surge Current

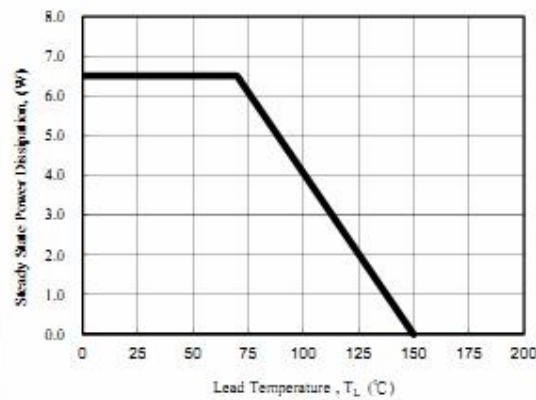


Fig. 3 - Steady State Power Derating Curve

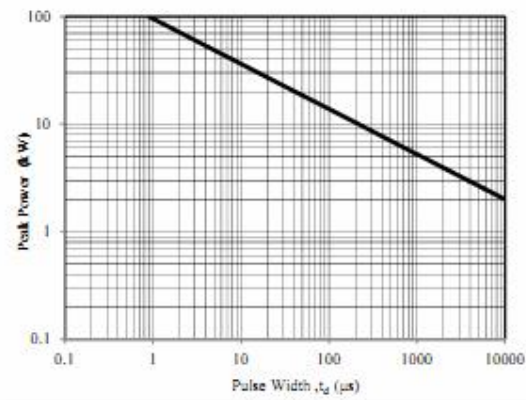


Fig. 4 - Peak Pulse Power Rating Curve

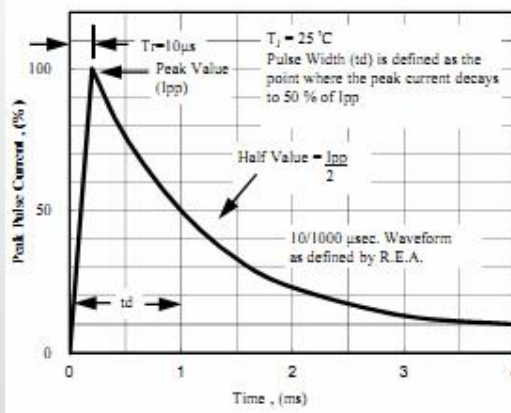


Fig. 5 - Pulse Waveform

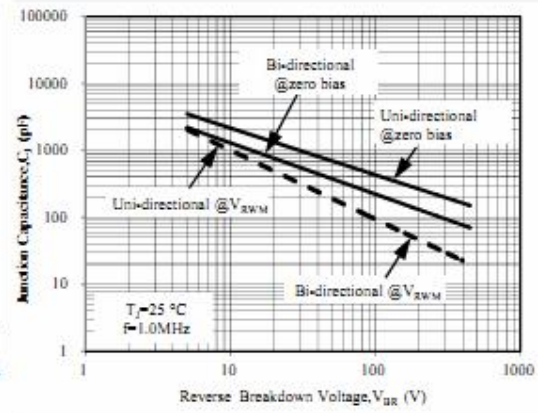
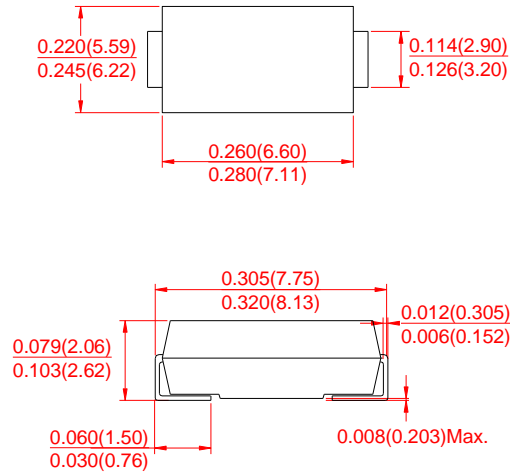


Fig. 6 - Typical Junction Capacitance

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Package Outline Dimensions in inches (millimeters)

SMC(DO-214AB)



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