

Features

- For surface mounted applications in order to optimize board space
- Low profile space
- Glass passivated chip
- Low inductance
- Excellent clamping capability
- Very fast response time
- Typical I_D less than $1\mu A$ at V_{WM}
- 3000 W peak pulse power capability with a 10/1000 μs waveform
- Component in accordance to RoHS 2002/95/1 and WEEE 2002/96/EC



SMC (DO – 214AB)

Mechanical Data

- **Case:** JEDEC DO-214AB molded plastic body over glass passivated chip
- **Terminals:** Solder plated, solderable per MIL-STD-750 Method 2026
- **Polarity:** For uni-directional types the band by laser denotes the cathode, which is positive with respect to the anode under normal TVS operation

Major Ratings and Characteristics

P_{PPM}	3000 W
V_{RRM}	5 V to 190 V
I_{FSM}	200 A
$T_j \text{ max.}$	150 °C

Devices for Bidirectional Applications

- For bi-directional devices, use suffix C or CA (e.g.SMDJ10C, SMDJ10CA).
Electrical characteristics apply in both directions.

Maximum Ratings & Thermal Characteristics

($T_A = 25^\circ C$ unless otherwise noted)

Items	Symbol	Value	UNIT
Peak pulse power dissipation with a 10/1000 μs waveform (see fig. 1)	P_{PPM}	3000	W
Peak pulse current with a waveform (see fig. 3 , single pulse)	I_{PPM}	See Next Table	A
Peak forward surge current 8.3ms single half sine-wave uni-directional only	I_{FSM}	200	A
Typical thermal resistance, junction to ambient ⁽¹⁾	$R_{\theta JA}$	75	°C / W
Typical thermal resistance, junction to lead ⁽¹⁾	$R_{\theta JL}$	15	°C / W
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	°C

Note 1: Mounted on P.C.B. with 0.32 x 0.32" (8.0 x 8.0mm) copper pad areas.

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Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

TRR House No.		MarkinP Code		Breakdown Voltage at $I_T^{(1)}$ $V_{(BR)}$ (V)		Test Current	Stand-off Voltage	Maximum Reverse Leakage at V_{WM}	Maximum Peak Pulse Surge Current $I_{PPM}^{(2)}$	Maximum Clamping Voltage at I_{PPM}
UNI	BI	UNI	DI	Min	Max	I_T (mA)	V_{WM} (V)	I_D (μA)	I_{PPM} (A)	V_C (V)
SMDJ5	SMDJ5C	PDD	DDD	6.4	7.82	10.0	5.0	1000	312.5	9.6
SMDJ5A	SMDJ5CA	PDE	DDE	6.4	7.07	10.0	5.0	1000	326.1	9.2
SMDJ6	SMDJ6C	PDF	DDF	6.67	8.15	10.0	6.0	1000	263.2	11.4
SMDJ6A	SMDJ6CA	PDP	DDG	6.7	7.37	10.0	6.0	1000	291.3	10.3
SMDJ6.5	SMDJ6.5C	PDH	DDH	7.22	8.82	10.0	6.5	500	243.9	12.3
SMDJ6.5A	SMDJ6.5CA	PDK	DDK	7.22	7.98	10.0	6.5	500	267.9	11.2
SMDJ7	SMDJ7C	PDL	DDL	7.78	9.51	10.0	7.0	200	225.6	13.3
SMDJ7A	SMDJ7CA	PDM	DDM	7.78	8.6	10.0	7.0	200	250.0	12.0
SMDJ7.5	SMDJ7.5C	PDN	DDN	8.33	10.2	1.0	7.5	100	209.8	14.3
SMDJ7.5A	SMDJ7.5CA	PDP	DDP	8.33	9.21	1.0	7.5	100	232.6	12.9
SMDJ8	SMDJ8C	PDQ	DDQ	8.89	10.9	1.0	8.0	50	200.0	15.0
SMDJ8A	SMDJ8CA	PDR	DDR	8.89	9.83	1.0	8.0	20	220.6	13.6
SMDJ8.5	SMDJ8.5C	PDS	DDS	9.44	11.5	1.0	8.5	20	188.7	15.9
SMDJ8.5A	SMDJ8.5CA	PDT	DDT	9.44	10.4	1.0	8.5	10	208.3	14.4
SMDJ9	SMDJ9C	PDU	DDU	10	12.2	1.0	9.0	10	177.5	16.9
SMDJ9A	SMDJ9CA	PDV	DDV	10	11.1	1.0	9.0	5	194.8	15.4
SMDJ10	SMDJ10C	PDW	DDW	11.1	13.6	1.0	10.0	5	159.6	18.8
SMDJ10A	SMDJ10CA	PDX	DDX	11.1	12.3	1.0	10.0	5	176.5	17.0
SMDJ11	SMDJ11C	PDY	DDY	12.2	14.9	1.0	11.0	5	149.3	20.1
SMDJ11A	SMDJ11CA	PDZ	DDZ	12.2	13.5	1.0	11.0	5	164.8	18.2
SMDJ12	SMDJ12C	PED	DED	13.3	16.3	1.0	12.0	5	136.4	22.0
SMDJ12A	SMDJ12CA	PEE	DEE	13.3	14.7	1.0	12.0	5	150.8	19.9
SMDJ13	SMDJ13C	PEF	DEF	14.4	17.6	1.0	13.0	1	126.1	23.8
SMDJ13A	SMDJ13CA	PEP	DEG	14.4	15.9	1.0	13.0	1	139.5	21.5
SMDJ14	SMDJ14C	PEH	DEH	15.6	19.1	1.0	14.0	1	116.3	25.8
SMDJ14A	SMDJ14CA	PEK	DEK	15.6	17.2	1.0	14.0	1	129.3	23.2
SMDJ15	SMDJ15C	PEL	DEL	16.7	20.4	1.0	15.0	1	111.5	26.9
SMDJ15A	SMDJ15CA	PEM	DEM	16.7	18.5	1.0	15.0	1	123.0	24.4
SMDJ16	SMDJ16C	PEN	DEN	17.8	21.8	1.0	16.0	1	104.2	28.8
SMDJ16A	SMDJ16CA	PEP	DEP	17.8	19.7	1.0	16.0	1	115.4	26.0
SMDJ17	SMDJ17C	PEQ	DEQ	18.9	23.1	1.0	17.0	1	98.4	30.5
SMDJ17A	SMDJ17CA	PER	DER	18.9	20.9	1.0	17.0	1	108.7	27.6
SMDJ18	SMDJ18C	PES	DES	20	24.4	1.0	18.0	1	93.2	32.2
SMDJ18A	SMDJ18CA	PET	DET	20	22.1	1.0	18.0	1	102.7	29.2
SMDJ19	SMDJ19C	PEA	DEA	21.1	25.8	1.0	19.0	1	88.2	34.0
SMDJ19A	SMDJ19CA	PEB	DEB	21.1	23.3	1.0	19.0	1	97.5	30.8
SMDJ20	SMDJ20C	PEU	DEU	22.2	27.1	1.0	20.0	1	83.8	35.8
SMDJ20A	SMDJ20CA	PEV	DEV	22.2	24.5	1.0	20.0	1	92.6	32.4

Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

TRR House No.		MarkinP Code		Breakdown Voltage at $I_T^{(1)}$ $V_{(BR)}$ (V)		Test Current	Stand-off Voltage	Maximum Reverse Leakage at V_{WM}	Maximum Peak Pulse Surge Current $I_{PPM}^{(2)}$	Maximum Clamping Voltage at I_{PPM}
UNI	BI	UNI	DI	Min	Max	I_T (mA)	V_{WM} (V)	I_D (μA)	I_{PPM} (A)	V_C (V)
SMDJ22	SMDJ22C	PEW	DEW	24.4	29.8	1.0	22.0	1	76.1	39.4
SMDJ22A	SMDJ22CA	PEX	DEX	24.4	26.9	1.0	22.0	1	84.5	35.5
SMDJ24	SMDJ24C	PEY	DEY	26.7	32.6	1.0	24.0	1	69.8	43.0
SMDJ24A	SMDJ24CA	PEZ	DEZ	26.7	29.5	1.0	24.0	1	77.1	38.9
SMDJ26	SMDJ26C	PFD	DFD	28.9	35.3	1.0	26.0	1	64.4	46.6
SMDJ26A	SMDJ26CA	PFE	DFE	28.9	31.9	1.0	26.0	1	71.3	42.1
SMDJ28	SMDJ28C	PFF	DFD	31.1	38	1.0	28.0	1	60.0	50.0
SMDJ28A	SMDJ28CA	PFP	DFG	31.1	34.4	1.0	28.0	1	66.1	45.4
SMDJ30	SMDJ30C	PFH	DFH	33.3	40.7	1.0	30.0	1	56.1	53.5
SMDJ30A	SMDJ30CA	PFK	DFK	33.3	36.8	1.0	30.0	1	62.0	48.4
SMDJ33	SMDJ33C	PFL	DFL	36.7	44.9	1.0	33.0	1	50.8	59.0
SMDJ33A	SMDJ33CA	PFM	DFM	36.7	40.6	1.0	33.0	1	56.3	53.3
SMDJ36	SMDJ36C	PFN	DFN	40	48.9	1.0	36.0	1	46.7	64.3
SMDJ36A	SMDJ36CA	PFP	DFP	40	44.2	1.0	36.0	1	51.6	58.1
SMDJ40	SMDJ40C	PFQ	DFQ	44.4	54.3	1.0	40.0	1	42.0	71.4
SMDJ40A	SMDJ40CA	PFR	DFR	44.4	49.1	1.0	40.0	1	46.5	64.5
SMDJ43	SMDJ43C	PFS	DFS	47.8	58.4	1.0	43.0	1	39.1	76.7
SMDJ43A	SMDJ43CA	PFT	DFT	47.8	52.8	1.0	43.0	1	43.2	69.4
SMDJ45	SMDJ45C	PFU	DFU	50	61.1	1.0	45.0	1	37.4	80.3
SMDJ45A	SMDJ45CA	PFV	DFV	50	55.3	1.0	45.0	1	41.3	72.7
SMDJ48	SMDJ48C	PFW	DFW	53.3	65.1	1.0	48.0	1	35.1	85.5
SMDJ48A	SMDJ48CA	PFX	DFX	53.3	58.9	1.0	48.0	1	38.8	77.4
SMDJ51	SMDJ51C	PFY	DFY	56.7	69.3	1.0	51.0	1	32.9	91.1
SMDJ51A	SMDJ51CA	PFZ	DFZ	56.7	62.7	1.0	51.0	1	36.4	82.4
SMDJ54	SMDJ54C	PGD	DGD	60	73.3	1.0	54.0	1	31.2	96.3
SMDJ54A	SMDJ54CA	PGE	DGE	60	66.3	1.0	54.0	1	34.4	87.1
SMDJ58	SMDJ58C	PGF	DGF	64.4	78.7	1.0	58.0	1	29.1	103
SMDJ58A	SMDJ58CA	PGG	DGG	64.4	71.2	1.0	58.0	1	32.1	93.6
SMDJ60	SMDJ60C	PGH	DGH	66.7	81.5	1.0	60.0	1	28.0	107
SMDJ60A	SMDJ60CA	PGK	DGK	66.7	73.7	1.0	60.0	1	31.0	96.8
SMDJ64	SMDJ64C	PGL	DGL	71.1	86.9	1.0	64.0	1	26.3	114
SMDJ64A	SMDJ64CA	PGM	DGM	71.1	78.6	1.0	64.0	1	29.1	103
SMDJ70	SMDJ70C	PGN	DGN	77.8	95.1	1.0	70.0	1	24.0	125
SMDJ70A	SMDJ70CA	PGP	DGP	77.8	86	1.0	70.0	1	26.5	113
SMDJ75	SMDJ75C	PGQ	DGQ	83.3	102	1.0	75.0	1	22.4	134
SMDJ75A	SMDJ75CA	PGR	DGR	83.3	92.1	1.0	75.0	1	24.8	121
SMDJ78	SMDJ78C	PGS	DGS	86.7	106	1.0	78.0	1	21.6	139
SMDJ78A	SMDJ78CA	PGT	DGT	86.7	95.8	1.0	78.0	1	23.8	126

Electrical Characteristics $T_A = 25^\circ\text{C}$ unless otherwise noted

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UNI	BI	UNI	DI	Min	Max	I_T (mA)	V_{WM} (V)	I_D (μA)	I_{PPM} (A)	V_C (V)
SMDJ80	SMDJ80C	PGA	DGA	89	109	1.0	80.0	1	20.9	143
SMDJ80A	SMDJ80CA	PGB	DGB	88.8	97.6	1.0	80.0	1	23.1	130
SMDJ85	SMDJ85C	PPU	DGU	94.4	115	1.0	85.0	1	19.9	151
SMDJ85A	SMDJ85CA	PGU	DGV	94.4	104	1.0	85.0	1	21.9	137
SMDJ90	SMDJ90C	PGV	DGW	100	122	1.0	90.0	1	18.8	160
SMDJ90A	SMDJ90CA	PGW	DGX	100	111	1.0	90.0	1	20.5	146
SMDJ100	SMDJ100C	PGX	DGY	111	136	1.0	100.0	1	16.8	179
SMDJ100A	SMDJ100CA	PGY	DGZ	111	123	1.0	100.0	1	18.5	162
SMDJ110	SMDJ110C	PGZ	DHD	122	149	1.0	110.0	1	15.3	196
SMDJ110A	SMDJ110CA	PHE	DHE	122	135	1.0	110.0	1	16.9	177
SMDJ120	SMDJ120C	PHF	DHF	133	163	1.0	120.0	1	14.0	214
SMDJ120A	SMDJ120CA	PHP	DHG	133	147	1.0	120.0	1	15.5	193
SMDJ130	SMDJ130C	PHH	DHH	144	176	1.0	130.0	1	13.0	231
SMDJ130A	SMDJ130CA	PHK	DHK	144	159	1.0	130.0	1	14.4	209
SMDJ140	SMDJ140C	PHA	DHA	156	190	1.0	140.0	1	12.0	251
SMDJ140A	SMDJ140CA	PHB	DHB	155	171	1.0	140.0	1	13.2	227
SMDJ150	SMDJ150C	PHL	DHL	167	204	1.0	150.0	1	11.2	268
SMDJ150A	SMDJ150CA	PHM	DHM	167	185	1.0	150.0	1	12.3	243
SMDJ160	SMDJ160C	PHN	DHN	178	218	1.0	160.0	1	10.5	287
SMDJ160A	SMDJ160CA	PHP	DHP	178	197	1.0	160.0	1	11.6	259
SMDJ170	SMDJ170C	PHQ	DHQ	189	231	1.0	170.0	1	9.9	304
SMDJ170A	SMDJ170CA	PHR	DHR	189	209	1.0	170.0	1	10.9	275
SMDJ180	SMDJ180C	PHS	DHS	200	245	1.0	180.0	1	9.3	322
SMDJ180A	SMDJ180CA	PHT	DHT	200	220	1.0	180.0	1	10.3	292
SMDJ190	SMDJ190C	PHU	DHU	211	258	1.0	190.0	1	8.8	340
SMDJ190A	SMDJ190CA	PHV	DHV	211	232	1.0	190.0	1	9.6	308

Notes: (1) Pulse test : $T_p \leq 50\text{ms}$

(2) Surge current waveform Per Fig. 3 and derate Per Fig. 2

(3) Ratings at 25°C ambient temperature unless otherwise specified.

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

Fig. 1-- Peak Pulse Power Rating Cure

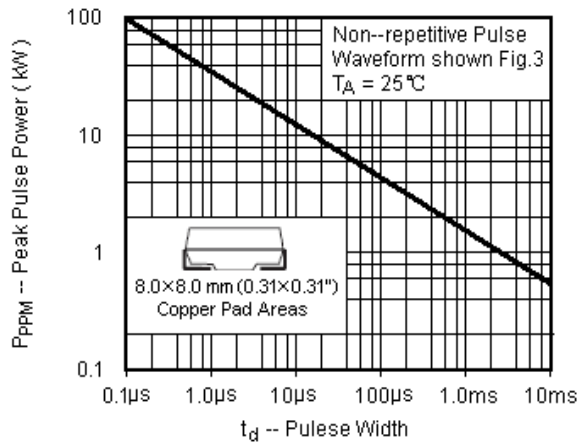


Fig.2--Pulse Derating Cure

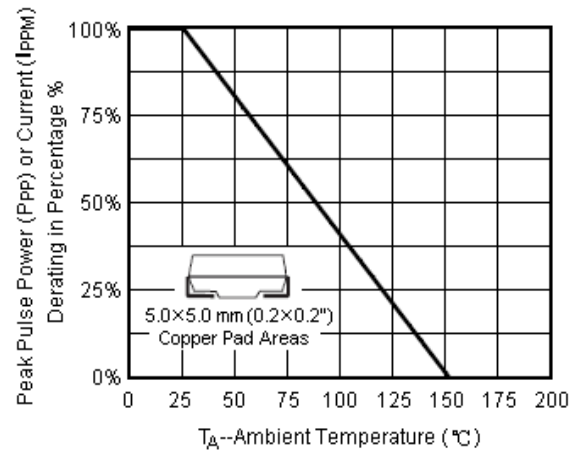


Fig. 3--Pulse Waveform

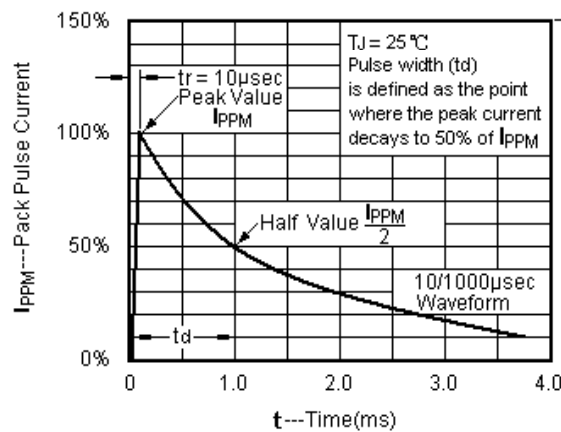


Fig. 4 -- Typical Junction Capacitance

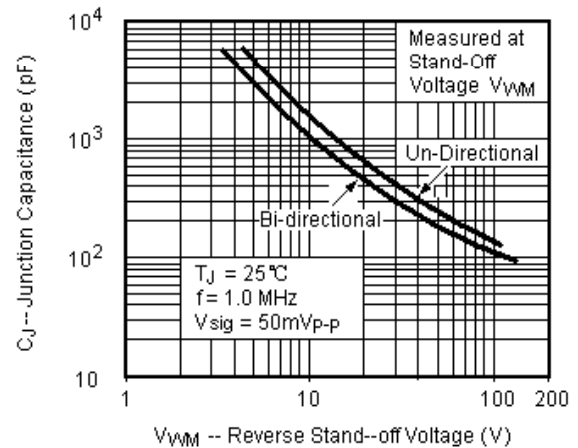


Fig. 5 -- Typical Tansient Thermal Impedance

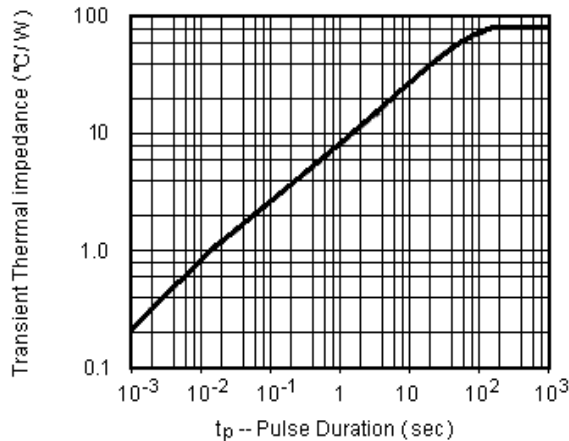
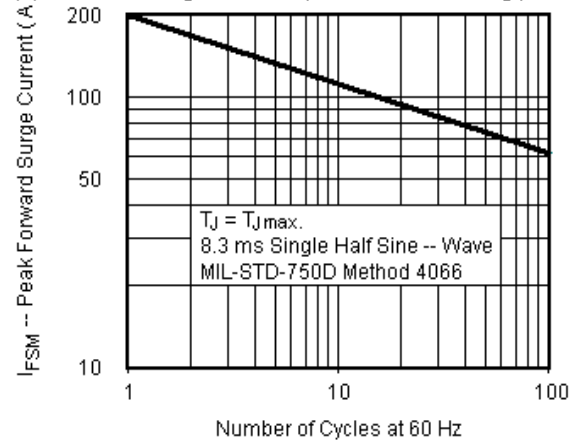
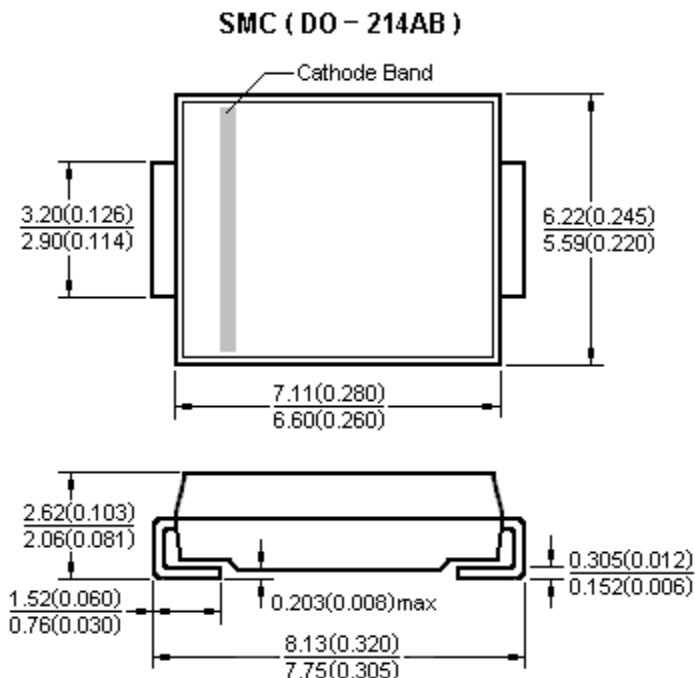


Fig. 6 -- Maximum Non-Repetitive Forward Surge Current (Uni-Directional Only)



Package Outline



Dimensions in millimeters and (inches)

Notice

- Product is intended for use in general electronics applications.
- Product should be worked less than the ratings; if exceeded, may cause permanent damage or introduce latent failure mechanisms.
- The absolute maximum ratings are rated values and must not be exceeded during operation. The following are the general derating methods you design a circuit with a device.
 - $I_{F(AV)}$: We recommend that the worst case current be no greater than 80% .
 - I_{FSM} : This rating specifies the non-repetitive peak current. This is only applied for an abnormal operation, which the general during the lifespan of the device.
 - T_J : Derate this rating when using a device in order to ensure high reliability. We recommend that the device be used at a T_J of below 125°C.

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