5.0SMCJ12 thru 5.0SMCJ170A
5000W Transient Voltage Suppressor

FEATURES

- 5000 W peak pulse power capability with a 10/1000 μs waveform
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020, LF maximum
- Solder dip 275 °C, 10s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

DO-214AB (SMC)

RoHS COMPLIANT

APPLICATIONS

For use in sensitive electronics protection against voltage transients induced by lightning or inductive load switching. Key applications include protection of I/O interfaces, industrial and LED lighting applications, DC power buses, and other vulnerable circuits used in consumer electronics.

For bi-directional devices, use suffix C or CA (e.g.5.0SMCJ12CA).
Electrical characteristics apply in both directions.

MECHANICAL DATA

Case: DO-214AB (SMC)
Molding compound meets UL 94 V-0 flammability rating

Terminals: Matte tin plated leads, solderable perJ-STD-002 and JESD22-B102

Marking: Laser marking band denotes cathode end or device code; Unidirectional-Device Code and Cathode Band; Bidirectional-Device Code Only

MAXIMUM RATINGS (TA = 25 °C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Peak pulse power dissipation with a 10/1000 μs waveform (1)	P_{PPM}	Minimum 5000	W
Peak pulse current with a 10/1000 μs waveform (1)	I_{PPM}	See Next Table	A
Steady state power dissipation at T_L = 75 °C, lead length 0.375"(9.5mm)	$P_{M(AV)}$	8.0	W
Peak forward surge current 8.3 ms single half sine-wave (2)	I_{FSM}	500	A
Instantaneous forward voltage at 100A (3)	V_F	3.5	V
Operating junction and storage temperature range	T_J, T_{STG}	- 55 to + 175	°C

Notes:
1. Non-repetitive current pulse, per Fig. 3 and derated above TA=25 °C per Fig. 2.
2. Mounted on cooper pad area of 0.8 x 0.8" (20x20mm) Per Fig.5.
3. Measured on 8.3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

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For bi-directional devices, use suffix CA (e.g. 5.0SMCJ12CA). Electrical characteristics apply in both directions

Device type	Breakdown voltage $V_{(BR)}$ (Volts)[1]		Test current at I_T(mA)	Stand-off voltage V_{WM}(Volts)	Maximum reverse leakage at V_{WM} I_D(uA)	Maximum peak pulse current I_{PPM}[2](A)	Maximum clamping voltage at I_{PPM} V_C(Volts	Maximum temperature coefficient of $V_{(BR)}$ (%/℃)
5.0SMCJ12	13.3	16.3	5.0	12.0	5.0	227	22.0	0.088
5.0SMCJ12A	13.3	14.7	5.0	12.0	5.0	251	19.9	0.088
5.0SMCJ13	14.4	17.6	5.0	13.0	2.0	210	23.8	0.090
5.0SMCJ13A	14.4	15.9	5.0	13.0	2.0	233	21.5	0.090
5.0SMCJ14	15.6	19.1	5.0	14.0	2.0	194	25.8	0.092
5.0SMCJ14A	15.6	17.2	5.0	14.0	2.0	216	23.2	0.092
5.0SMCJ15	16.7	20.4	5.0	15.0	2.0	186	26.9	0.094
5.0SMCJ15A	16.7	18.5	5.0	15.0	2.0	205	24.4	0.094
5.0SMCJ16	17.8	21.8	5.0	16.0	2.0	174	28.8	0.096
5.0SMCJ16A	17.8	19.7	5.0	16.0	2.0	192	26.0	0.096
5.0SMCJ17	18.9	23.1	5.0	17.0	2.0	164	30.5	0.097
5.0SMCJ17A	18.9	20.9	5.0	17.0	2.0	181	27.6	0.097
5.0SMCJ18	20.0	24.4	5.0	18.0	2.0	155	32.2	0.098
5.0SMCJ18A	20.0	22.1	5.0	18.0	2.0	171	29.2	0.098
5.0SMCJ20	22.2	27.1	5.0	20.0	2.0	140	35.8	0.099
5.0SMCJ20A	22.2	24.5	5.0	20.0	2.0	154	32.4	0.099
5.0SMCJ22	24.4	29.8	5.0	22.0	2.0	127	39.4	0.100
5.0SMCJ22A	24.4	26.9	5.0	22.0	2.0	141	35.5	0.100
5.0SMCJ24	26.7	32.6	5.0	24.0	2.0	116	43.0	0.101
5.0SMCJ24A	26.7	29.5	5.0	24.0	2.0	129	38.9	0.101
5.0SMCJ26	28.9	35.3	5.0	26.0	2.0	107	46.6	0.101
5.0SMCJ26A	28.9	31.9	5.0	26.0	2.0	119	42.1	0.101
5.0SMCJ28	31.1	38.0	5.0	28.0	2.0	100	50.0	0.102
5.0SMCJ28A	31.1	34.4	5.0	28.0	2.0	110	45.4	0.102
5.0SMCJ30	33.3	40.7	5.0	30.0	2.0	93.5	53.5	0.103
5.0SMCJ30A	33.3	36.8	5.0	30.0	2.0	103	48.4	0.103

Device type	Breakdown voltage $V_{(BR)}$ (Volts)(1)		Test current at I_T(mA)	Stand-off voltage V_{WM}(Volts)	Maximum reverse leakage at V_{WM} I_D(uA)	Maximum peak pulse current I_{PPM}(2)(A)	Maximum clamping voltage at I_{PPM} V_C(Volts	Maximum temperature coefficient of $V_{(BR)}$ (%/℃)
5.0SMCJ33	36.7	44.9	5.0	33.0	2.0	84.7	59.0	0.104
5.0SMCJ33A	36.7	40.6	5.0	33.0	2.0	93.8	53.3	0.104
5.0SMCJ36	40.0	48.9	5.0	36.0	2.0	77.8	64.3	0.104
5.0SMCJ36A	40.0	44.2	5.0	36.0	2.0	86.1	58.1	0.104
5.0SMCJ40	44.4	54.3	5.0	40.0	2.0	70.0	71.4	0.105
5.0SMCJ40A	44.4	49.1	5.0	40.0	2.0	77.5	64.5	0.105
5.0SMCJ43	47.8	58.4	5.0	43.0	2.0	65.2	76.7	0.105
5.0SMCJ43A	47.8	52.8	5.0	43.0	2.0	72.0	69.4	0.105
5.0SMCJ45	50.0	61.1	5.0	45.0	2.0	62.3	80.3	0.106
5.0SMCJ45A	50.0	55.3	5.0	45.0	2.0	68.8	72.7	0.106
5.0SMCJ48	53.3	65.2	5.0	48.0	2.0	58.5	85.5	0.106
5.0SMCJ48A	53.3	58.9	5.0	48.0	2.0	64.6	77.4	0.106
5.0SMCJ51	56.7	69.3	5.0	51.0	2.0	54.9	91.1	0.107
5.0SMCJ51A	56.7	62.7	5.0	51.0	2.0	60.7	82.4	0.107
5.0SMCJ54	60.0	73.3	5.0	54.0	2.0	51.9	96.3	0.107
5.0SMCJ54A	60.0	66.3	5.0	54.0	2.0	57.4	87.1	0.107
5.0SMCJ58	64.4	78.7	5.0	58.0	2.0	48.5	103	0.107
5.0SMCJ58A	64.4	71.2	5.0	58.0	2.0	53.4	94	0.107
5.0SMCJ60	66.7	81.5	5.0	60.0	2.0	46.7	107	0.108
5.0SMCJ60A	66.7	73.7	5.0	60.0	2.0	51.7	97	0.108
5.0SMCJ64	71.1	86.9	5.0	64.0	2.0	43.9	114	0.108
5.0SMCJ64A	71.1	78.6	5.0	64.0	2.0	48.5	103	0.108
5.0SMCJ70	77.8	95.1	5.0	70.0	2.0	40.0	125	0.108
5.0SMCJ70A	77.8	86.0	5.0	70.0	2.0	44.2	113	0.108
5.0SMCJ75	83.3	102	5.0	75.0	2.0	37.3	134	0.108
5.0SMCJ75A	83.3	92.1	5.0	75.0	2.0	41.3	121	0.108
5.0SMCJ78	86.7	106	5.0	78.0	2.0	36.0	139	0.108
5.0SMCJ78A	86.7	95.8	5.0	78.0	2.0	39.7	126	0.108
5.0SMCJ85	94.4	115	5.0	85.0	2.0	33.1	151	0.108
5.0SMCJ85A	94.4	104	5.0	85.0	2.0	36.5	137	0.110
5.0SMCJ90	100	122	5.0	90.0	2.0	31.3	160	0.110
5.0SMCJ90A	100	111	5.0	90.0	2.0	34.2	146	0.110
5.0SMCJ100	111	136	5.0	100	2.0	27.9	179	0.110
5.0SMCJ100A	111	123	5.0	100	2.0	30.9	162	0.110
5.0SMCJ110	122	149	5.0	110	2.0	25.5	196	0.112
5.0SMCJ110A	122	135	5.0	110	2.0	28.2	177	0.112
5.0SMCJ120A	133	147	5.0	120	2.0	26.4	193	0.110
5.0SMCJ130A	144	159	5.0	130	2.0	24.4	209	0.110
5.0SMCJ150A	167	185	5.0	150	2.0	21.0	243	0.110
5.0SMCJ160A	178	197	5.0	160	2.0	19.7	259	0.110
5.0SMCJ170A	189	209	5.0	170	2.0	18.5	275	0.110

Notes: 1.V(BR) measured after IT applied for 300us, IT=square wave pulse or equivalent
2. Surge current waveform per Fig.3 and derate per Fig.2

RATINGS AND CHARACTERISTIC CURVES (T_A = 25 °C unless otherwise noted)

Fig. 1 - Peak Pulse Power Rating Curve

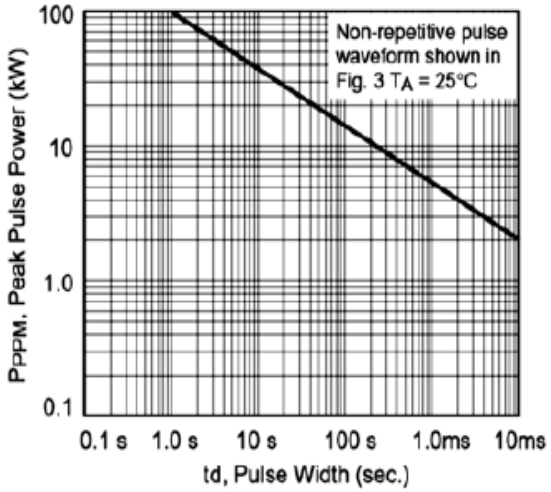


Fig. 2 - Pulse Derating Curve

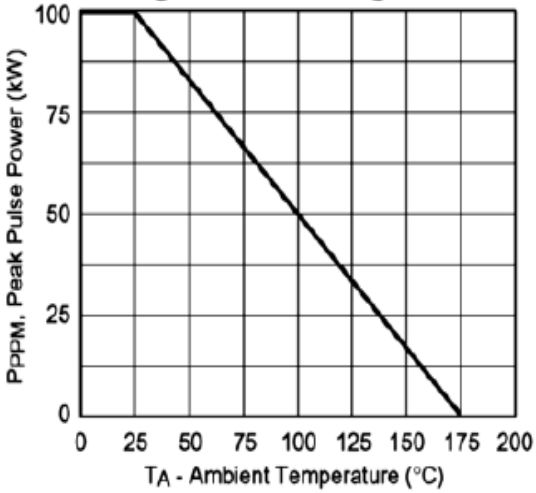


Fig. 3 – Pulse Waveform

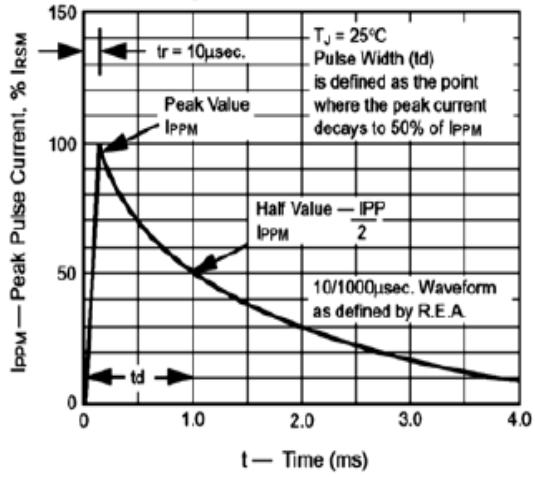


Fig. 4 - Typical Junction Capacitance

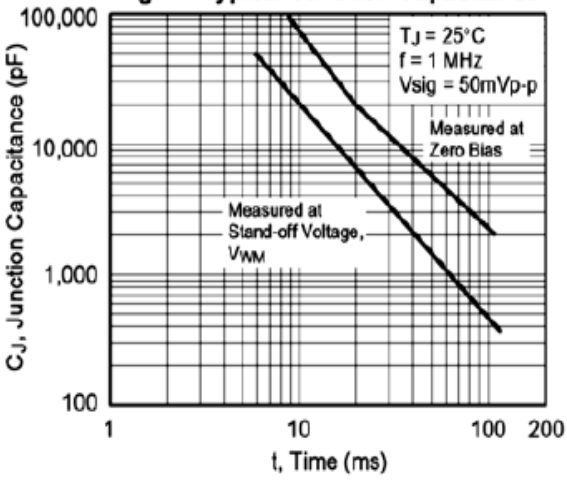


Fig. 5 - Steady State Power Derating Curve

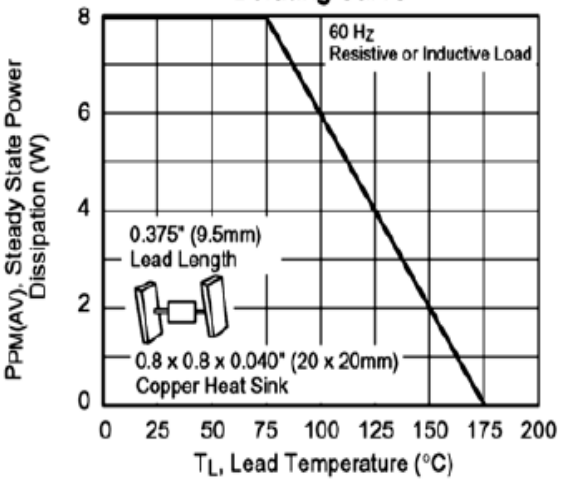
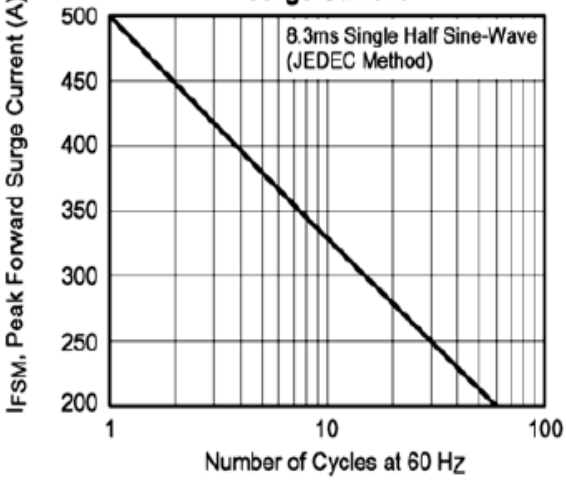


Fig. 6 - Maximum Non-repetitive Forward Surge Current



PACKAGE OUTLINE DO-214AB(SMC) dimensions in inches (millimeters)