1500W, 5V - 170V Surface Mount Transient Voltage Suppressor

FEATURES

- AEC-Q101 qualified
- Ideal for automated placement
- Glass passivated junction
- Excellent clamping capability
- Meets ISO 7637-2 (Pulse 1/2a/2b/3a/3b)
- Fast response time: Typically less than 1.0ps from 0 V to BV min
- Typical I_R less than 1μA above 10V
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

KEY PARAMETERS		
PARAMETER	**VALUE**	**UNIT**
V_{WM}	5 - 170	V
V_{BR}	6.4 - 231	V
P_{PK}	1500	W
$T_{J\ MAX}$	150	°C
Package	DO-214AB (SMC)	
Configuration	Single die	

Pb-Free RoHS COMPLIANT HALOGEN FREE

APPLICATIONS

- Immunization of sensitive devices in telecommunications, consumer electronics, and industrial equipment from electrostatic discharge (ESD) and transient voltages induced by load switching and lightning.

DO-214AB (SMC)

MECHANICAL DATA

- Case: DO-214AB (SMC)
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 0.210g (approximately)

ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Peak power dissipation at T_A = 25°C, tp = 1ms[1]	P_{PK}	1500	W
Steady state power dissipation at T_A = 25°C	P_D	5	W
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load	I_{FSM}	200	A
Forward Voltage @ I_F = 100A for Unidirectional only [2]	V_F	3.5 / 5.0	V
Junction temperature	T_J	-55 to +150	°C
Storage temperature	T_{STG}	-55 to +150	°C

Notes:

1. Non-repetitive current pulse per Fig.5 and derated above T_A = 25°C per Fig.2
2. V_F = 3.5V on SMCJ5.0H - SMCJ90H devices and V_F = 5.0V on SMCJ100H - SMCJ170H devices

Devices for bipolar applications

1. For bidirectional use CH or CAH suffix for types SMCJ5.0H - types SMCJ170H
2. Electrical characteristics apply in both directions

THERMAL PERFORMANCE

PARAMETER	SYMBOL	TYP	UNIT
Junction-to-ambient thermal resistance	$R_{\Theta JA}$	55	°C/W
Junction-to-case thermal resistance	$R_{\Theta JC}$	10	°C/W

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)

Part number	Marking code	Breakdown voltage $V_{BR}@I_T$ (V)		Test current I_T (mA)	Working stand-off voltage V_{WM} (V)	Maximum Reverse Leakage (Note 3) $I_R@V_{WM}$ (μA)	Maximum peak impulse current (Note 2) I_{PPM} (A)	Maximum clamping voltage (Note 2) $V_C@I_{PPM}$ (V)
		Min	Max					
SMCJ5.0H	GDD	6.4	7.3	10	5	1000	164	9.6
SMCJ5.0AH	GDE	6.4	7	10	5	1000	171	9.2
SMCJ6.0H	GDF	6.67	8.15	10	6	1000	138	11.4
SMCJ6.0AH	GDG	6.67	7.37	10	6	1000	152	10.3
SMCJ6.5H	GDH	7.22	8.82	10	6.5	500	128	12.3
SMCJ6.5AH	GDK	7.22	7.98	10	6.5	500	140	11.2
SMCJ7.0H	GDL	7.78	9.51	10	7	200	118	13.3
SMCJ7.0AH	GDM	7.78	8.6	10	7	200	131	12.0
SMCJ7.5H	GDN	8.33	10.30	1	7.5	100	110	14.3
SMCJ7.5AH	GDP	8.33	9.21	1	7.5	100	122	12.9
SMCJ8.0H	GDQ	8.89	10.9	1	8	50	105	15.0
SMCJ8.0AH	GDR	8.89	9.83	1	8	50	115	13.6
SMCJ8.5H	GDS	9.44	11.5	1	8.5	20	99	15.9
SMCJ8.5AH	GDT	9.44	10.4	1	8.5	20	109	14.4
SMCJ9.0H	GDU	10	12.2	1	9	10	93	16.9
SMCJ9.0AH	GDV	10	11.1	1	9	10	102	15.4
SMCJ10H	GDW	11.1	13.6	1	10	5	83	18.8
SMCJ10AH	GDX	11.1	12.3	1	10	5	92	17.0
SMCJ11H	GDY	12.2	14.9	1	11	1	78	20.1
SMCJ11AH	GDZ	12.2	13.5	1	11	1	86	18.2
SMCJ12H	GED	13.3	16.3	1	12	1	71	22.0
SMCJ12AH	GEE	13.3	14.7	1	12	1	79	19.9
SMCJ13H	GEF	14.4	17.6	1	13	1	66	23.8
SMCJ13AH	GEG	14.4	15.9	1	13	1	73	21.5
SMCJ14H	GEH	15.6	19.1	1	14	1	61	25.8
SMCJ14AH	GEK	15.6	17.2	1	14	1	67	23.2
SMCJ15H	GEL	16.7	20.4	1	15	1	58	26.9
SMCJ15AH	GEM	16.7	18.5	1	15	1	64	24.4
SMCJ16H	GEN	17.8	21.8	1	16	1	54	28.8
SMCJ16AH	GEP	17.8	19.7	1	16	1	60	26.0
SMCJ17H	GEQ	18.9	23.1	1	17	1	51	30.5
SMCJ17AH	GER	18.9	20.9	1	17	1	57	27.6
SMCJ18H	GES	20	24.4	1	18	1	48	32.2
SMCJ18AH	GET	20	22.1	1	18	1	53	29.2
SMCJ20H	GEU	22.2	27.1	1	20	1	43	35.8
SMCJ20AH	GEV	22.2	24.5	1	20	1	48	32.4
SMCJ22H	GEW	24.4	29.8	1	22	1	39	39.4
SMCJ22AH	GEX	24.4	26.9	1	22	1	44	35.5
SMCJ24H	GEY	26.7	32.6	1	24	1	36	43.0
SMCJ24AH	GEZ	26.7	29.5	1	24	1	40	38.9
SMCJ26H	GFD	28.9	35.3	1	26	1	33	46.6
SMCJ26AH	GFE	28.9	31.9	1	26	1	37	42.1
SMCJ28H	GFF	31.1	38	1	28	1	31	50.0

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)								
Part number	**Marking code**	**Breakdown voltage** V_{BR}@I_T (V)		**Test current** I_T (mA)	**Working stand-off voltage** V_{WM} (V)	**Maximum Reverse Leakage** (Note 3) I_R@V_{WM} (μA)	**Maximum peak impulse current** (Note 2) I_{PPM} (A)	**Maximum clamping voltage** (Note 2) V_C@I_{PPM} (V)
		Min	Max					
SMCJ28AH	GFG	31.1	34.4	1	28	1	34	45.4
SMCJ30H	GFH	33.3	40.7	1	30	1	29	53.5
SMCJ30AH	GFK	33.3	36.8	1	30	1	32	48.4
SMCJ33H	GFL	36.7	44.9	1	33	1	26	59.0
SMCJ33AH	GFM	36.7	40.6	1	33	1	29	53.3
SMCJ36H	GFN	40	48.9	1	36	1	24	64.3
SMCJ36AH	GFP	40	44.2	1	36	1	27	58.1
SMCJ40H	GFQ	44.4	54.3	1	40	1	22	71.4
SMCJ40AH	GFR	44.4	49.1	1	40	1	24	64.5
SMCJ43H	GFS	47.8	58.4	1	43	1	20	76.7
SMCJ43AH	GFT	47.8	52.8	1	43	1	22	69.4
SMCJ45H	GFU	50	61.1	1	45	1	19	80.3
SMCJ45AH	GFV	50	55.3	1	45	1	21	72.7
SMCJ48H	GFW	53.3	65.1	1	48	1	18	85.5
SMCJ48AH	GFX	53.3	58.9	1	48	1	20	77.4
SMCJ51H	GFY	56.7	69.3	1	51	1	17	91.1
SMCJ51AH	GFZ	56.7	62.7	1	51	1	19	82.4
SMCJ54H	GGD	60	73.3	1	54	1	16	96.3
SMCJ54AH	GGE	60	66.3	1	54	1	18	87.1
SMCJ58H	GGF	64.4	78.7	1	58	1	15	103
SMCJ58AH	GGG	64.4	71.2	1	58	1	16	93.6
SMCJ60H	GGH	66.7	81.5	1	60	1	14	107
SMCJ60AH	GGK	66.7	73.7	1	60	1	16	96.8
SMCJ64H	GGL	71.1	86.9	1	64	1	13.8	114
SMCJ64AH	GGM	71.1	78.6	1	64	1	15	103
SMCJ70H	GGN	77.8	95.1	1	70	1	12.6	125
SMCJ70AH	GGP	77.8	86	1	70	1	13.9	113
SMCJ75H	GGQ	83.3	102	1	75	1	11.7	134
SMCJ75AH	GGR	83.3	92.1	1	75	1	13	121
SMCJ78H	GGS	86.7	106	1	78	1	11.3	139
SMCJ78AH	GGT	86.7	95.8	1	78	1	12.5	126
SMCJ85H	GGU	94.4	115	1	85	1	10.4	151
SMCJ85AH	GGV	94.4	104	1	85	1	11.5	137
SMCJ90H	GGW	100	122	1	90	1	9.8	160
SMCJ90AH	GGX	100	111	1	90	1	10.7	146
SMCJ100H	GGY	111	136	1	100	1	8.8	179
SMCJ100AH	GGZ	111	123	1	100	1	9.7	162
SMCJ110H	GHD	122	149	1	110	1	8	196
SMCJ110AH	GHE	122	135	1	110	1	8.9	177
SMCJ120H	GHF	133	163	1	120	1	7.3	214
SMCJ120AH	GHG	133	147	1	120	1	8.1	193
SMCJ130H	GHH	144	176	1	130	1	6.8	231
SMCJ130AH	GHK	144	159	1	130	1	7.5	209
SMCJ150H	GHL	167	204	1	150	1	5.8	266
SMCJ150AH	GHM	167	185	1	150	1	6.4	243
SMCJ160H	GHN	178	218	1	160	1	5.4	287
SMCJ160AH	GHP	178	197	1	160	1	6	259
SMCJ170H	GHQ	189	231	1	170	1	5.1	304
SMCJ170AH	GHR	189	209	1	170	1	5.7	275

Notes:

1. V_{BR} measure after I_T applied for 30ms, I_T = square wave pulse or equivalent
2. Surge current waveform per Fig.5 and derate per Fig.2
3. For bipolar types having V_{WM} of 10V and under, the I_R limit is doubled
4. All terms and symbols are consistent with ANSI/IEEE C62.35

ORDERING INFORMATION		
ORDERING CODE[1]	**PACKAGE**	**PACKING**
SMCJxH	DO-214AB (SMC)	3,000 / Tape & Reel

Notes:

1. "x" defines voltage from 5V(SMCJ5.0H) to 170V(SMCJ170H)

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Peak Pulse Power Rating Curve

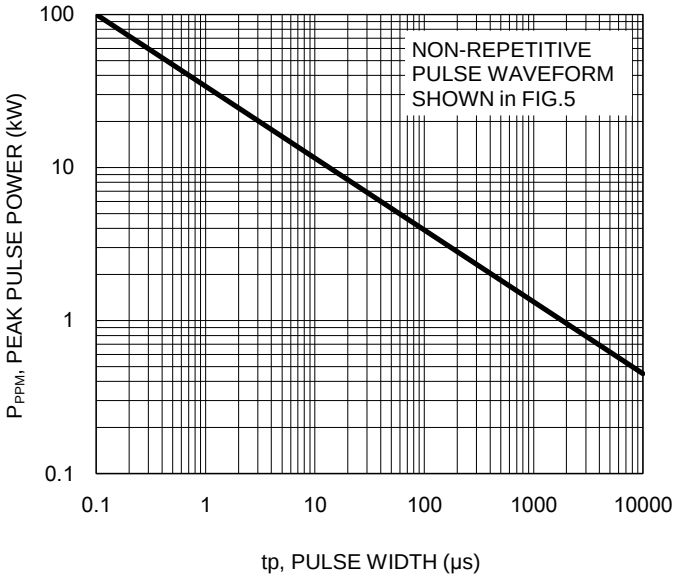


Fig.2 Pulse Derating Curve

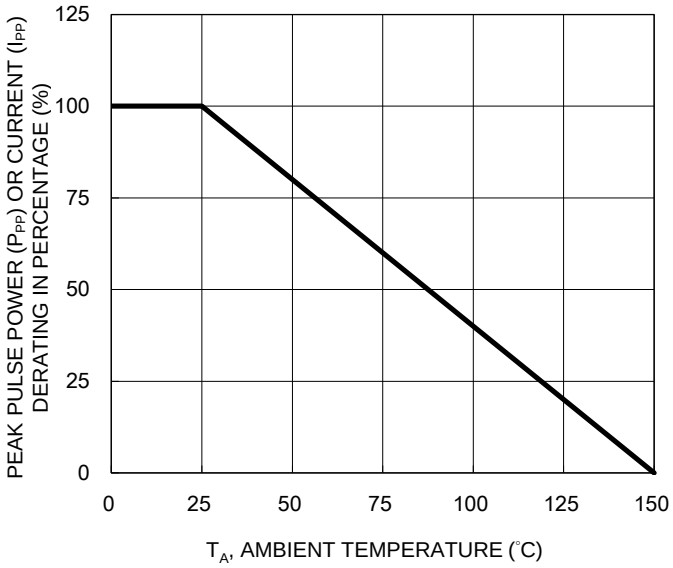


Fig.3 Typical Junction Capacitance

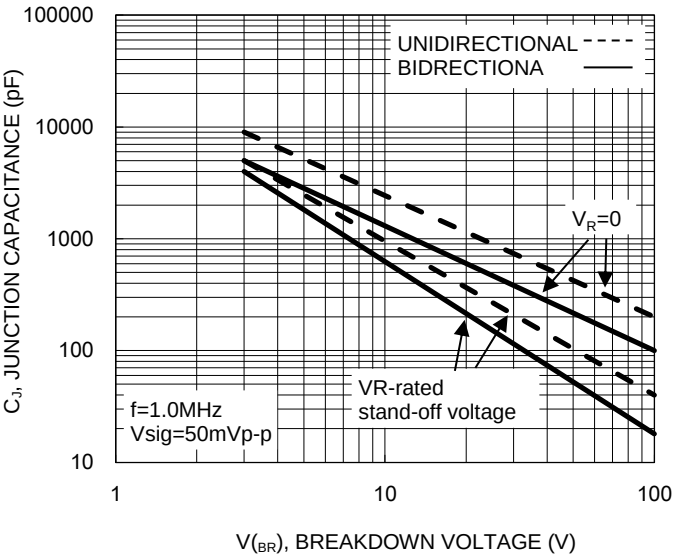
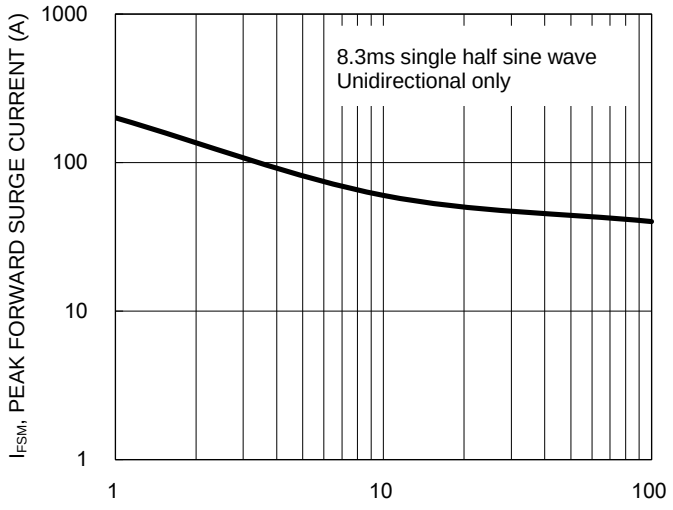


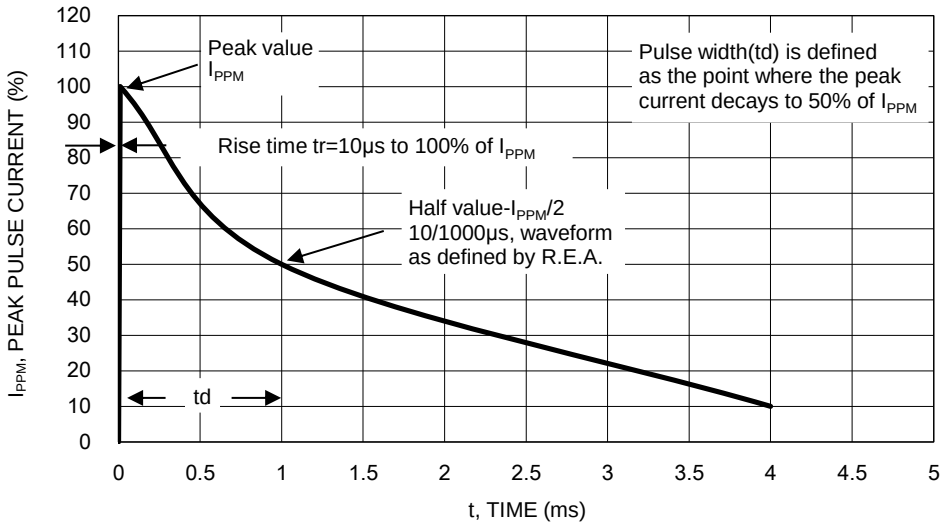
Fig.4 Maximum Non-repetitive Forward Surge Current



CHARACTERISTICS CURVES

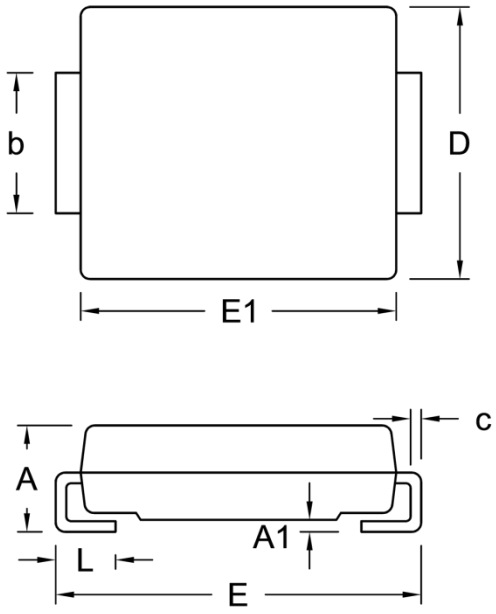
(T_A = 25°C unless otherwise noted)

Fig.5 Clamping Power Pulse Waveform



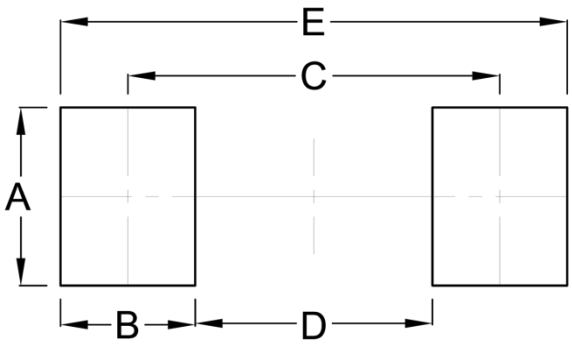
PACKAGE OUTLINE DIMENSIONS

DO-214AB (SMC)



DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	2.00	2.62	0.079	0.103
A1	0.10	0.20	0.004	0.008
b	2.90	3.20	0.114	0.126
c	0.15	0.31	0.006	0.012
D	5.59	6.22	0.220	0.245
E	7.75	8.13	0.305	0.320
E1	6.60	7.11	0.260	0.280
L	1.00	1.60	0.039	0.063

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	3.30	0.130
B	2.50	0.098
C	6.90	0.272
D	4.40	0.173
E	9.40	0.370

MARKING DIAGRAM

Cathode band for uni-directional products only

P/N = Marking Code
G = Green Compound
YW = Date Code
F = Factory Code

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