

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

FEATURES

- Ideal for automated placement
- Glass passivated chip 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 $1\mu A$ 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_{JMAX}	150	°C
Package	DO-214AB (SMC)	
Configuration	Single die	

APPLICATIONS

- Protect sensitive circuit from damage by high voltage transients
- Lighting, ESD transient voltage protection of IC, system
- Inductive switching load protection of IC, system
- Electrical Fast Transient Immunity protection of IC, system

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)



DO-214AB (SMC)

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Peak power dissipation at $T_A = 25^\circ C$, $t_p = 1ms^{(1)}$	P_{PK}	1500	W
Steady state power dissipation at $T_A = 25^\circ C$	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 $T_A = 25^\circ C$ per Fig.2
2. $V_F = 3.5V$ on SMCJ5.0 - SMCJ90 devices and $V_F = 5.0V$ on SMCJ100 - SMCJ170 devices

Devices for bipolar applications

1. For bidirectional use C or CA suffix for types SMCJ5.0 - types SMCJ170
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 ($T_A = 25^\circ\text{C}$ 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					
SMCJ5.0	GDD	6.4	7.3	10	5	1000	164	9.6
SMCJ5.0A	GDE	6.4	7	10	5	1000	171	9.2
SMCJ5V0A								
SMCJ6.0	GDF	6.67	8.15	10	6	1000	138	11.4
SMCJ6.0A	GDG	6.67	7.37	10	6	1000	152	10.3
SMCJ6V0A								
SMCJ6.5	GDH	7.22	8.82	10	6.5	500	128	12.3
SMCJ6.5A	GDK	7.22	7.98	10	6.5	500	140	11.2
SMCJ6V5A								
SMCJ7.0	GDL	7.78	9.51	10	7	200	118	13.3
SMCJ7.0A	GDM	7.78	8.6	10	7	200	131	12.0
SMCJ7V0A								
SMCJ7.5	GDN	8.33	10.30	1	7.5	100	110	14.3
SMCJ7.5A	GDP	8.33	9.21	1	7.5	100	122	12.9
SMCJ7V5A								
SMCJ8.0	GDQ	8.89	10.9	1	8	50	105	15.0
SMCJ8.0A	GDR	8.89	9.83	1	8	50	115	13.6
SMCJ8V0A								
SMCJ8.5	GDS	9.44	11.5	1	8.5	20	99	15.9
SMCJ8.5A	GDT	9.44	10.4	1	8.5	20	109	14.4
SMCJ8V5A								
SMCJ9.0	GDU	10	12.2	1	9	10	93	16.9
SMCJ9.0A	GDV	10	11.1	1	9	10	102	15.4
SMCJ9V0A								
SMCJ10	GDW	11.1	13.6	1	10	5	83	18.8
SMCJ10A	GDX	11.1	12.3	1	10	5	92	17.0
SMCJ11	GDY	12.2	14.9	1	11	1	78	20.1
SMCJ11A	GDZ	12.2	13.5	1	11	1	86	18.2
SMCJ12	GED	13.3	16.3	1	12	1	71	22.0
SMCJ12A	GEE	13.3	14.7	1	12	1	79	19.9
SMCJ13	GEF	14.4	17.6	1	13	1	66	23.8
SMCJ13A	GEG	14.4	15.9	1	13	1	73	21.5
SMCJ14	GEH	15.6	19.1	1	14	1	61	25.8
SMCJ14A	GEK	15.6	17.2	1	14	1	67	23.2
SMCJ15	GEL	16.7	20.4	1	15	1	58	26.9
SMCJ15A	GEM	16.7	18.5	1	15	1	64	24.4
SMCJ16	GEN	17.8	21.8	1	16	1	54	28.8
SMCJ16A	GEP	17.8	19.7	1	16	1	60	26.0
SMCJ17	GEQ	18.9	23.1	1	17	1	51	30.5
SMCJ17A	GER	18.9	20.9	1	17	1	57	27.6
SMCJ18	GES	20	24.4	1	18	1	48	32.2
SMCJ18A	GET	20	22.1	1	18	1	53	29.2
SMCJ20	GEU	22.2	27.1	1	20	1	43	35.8
SMCJ20A	GEV	22.2	24.5	1	20	1	48	32.4
SMCJ22	GEW	24.4	29.8	1	22	1	39	39.4
SMCJ22A	GEX	24.4	26.9	1	22	1	44	35.5
SMCJ24	GEY	26.7	32.6	1	24	1	36	43.0
SMCJ24A	GEZ	26.7	29.5	1	24	1	40	38.9

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					
SMCJ26	GFD	28.9	35.3	1	26	1	33	46.6
SMCJ26A	GFE	28.9	31.9	1	26	1	37	42.1
SMCJ28	GFF	31.1	38	1	28	1	31	50.0
SMCJ28A	GFG	31.1	34.4	1	28	1	34	45.4
SMCJ30	GFH	33.3	40.7	1	30	1	29	53.5
SMCJ30A	GFK	33.3	36.8	1	30	1	32	48.4
SMCJ33	GFL	36.7	44.9	1	33	1	26	59.0
SMCJ33A	GFM	36.7	40.6	1	33	1	29	53.3
SMCJ36	GFN	40	48.9	1	36	1	24	64.3
SMCJ36A	GFP	40	44.2	1	36	1	27	58.1
SMCJ40	GFQ	44.4	54.3	1	40	1	22	71.4
SMCJ40A	GFR	44.4	49.1	1	40	1	24	64.5
SMCJ43	GFS	47.8	58.4	1	43	1	20	76.7
SMCJ43A	GFT	47.8	52.8	1	43	1	22	69.4
SMCJ45	GFU	50	61.1	1	45	1	19	80.3
SMCJ45A	GFV	50	55.3	1	45	1	21	72.7
SMCJ48	GFW	53.3	65.1	1	48	1	18	85.5
SMCJ48A	GFX	53.3	58.9	1	48	1	20	77.4
SMCJ51	GFY	56.7	69.3	1	51	1	17	91.1
SMCJ51A	GFZ	56.7	62.7	1	51	1	19	82.4
SMCJ54	GGD	60	73.3	1	54	1	16	96.3
SMCJ54A	GGE	60	66.3	1	54	1	18	87.1
SMCJ58	GGF	64.4	78.7	1	58	1	15	103
SMCJ58A	GGG	64.4	71.2	1	58	1	16	93.6
SMCJ60	GGH	66.7	81.5	1	60	1	14	107
SMCJ60A	GGK	66.7	73.7	1	60	1	16	96.8
SMCJ64	GGL	71.1	86.9	1	64	1	13.8	114
SMCJ64A	GGM	71.1	78.6	1	64	1	15	103
SMCJ70	GGN	77.8	95.1	1	70	1	12.6	125
SMCJ70A	GGP	77.8	86	1	70	1	13.9	113
SMCJ75	GGQ	83.3	102	1	75	1	11.7	134
SMCJ75A	GGR	83.3	92.1	1	75	1	13	121
SMCJ78	GGS	86.7	106	1	78	1	11.3	139
SMCJ78A	GGT	86.7	95.8	1	78	1	12.5	126
SMCJ85	GGU	94.4	115	1	85	1	10.4	151
SMCJ85A	GGV	94.4	104	1	85	1	11.5	137
SMCJ90	GGW	100	122	1	90	1	9.8	160
SMCJ90A	GGX	100	111	1	90	1	10.7	146
SMCJ100	GGY	111	136	1	100	1	8.8	179
SMCJ100A	GGZ	111	123	1	100	1	9.7	162
SMCJ110	GHD	122	149	1	110	1	8	196
SMCJ110A	GHE	122	135	1	110	1	8.9	177
SMCJ120	GHF	133	163	1	120	1	7.3	214
SMCJ120A	GHG	133	147	1	120	1	8.1	193
SMCJ130	GHH	144	176	1	130	1	6.8	231
SMCJ130A	GHK	144	159	1	130	1	7.5	209
SMCJ150	GHL	167	204	1	150	1	5.8	266
SMCJ150A	GHM	167	185	1	150	1	6.4	243
SMCJ160	GHN	178	218	1	160	1	5.4	287
SMCJ160A	GHP	178	197	1	160	1	6	259
SMCJ170	GHQ	189	231	1	170	1	5.1	304
SMCJ170A	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
SMCJx	DO-214AB (SMC)	3,000 / Tape & Reel

Notes:

1. "x" defines voltage from 5V(SMCJ5.0) to 170V(SMCJ170)

CHARACTERISTICS CURVES

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

Fig.1 Peak Pulse Power Rating Curve

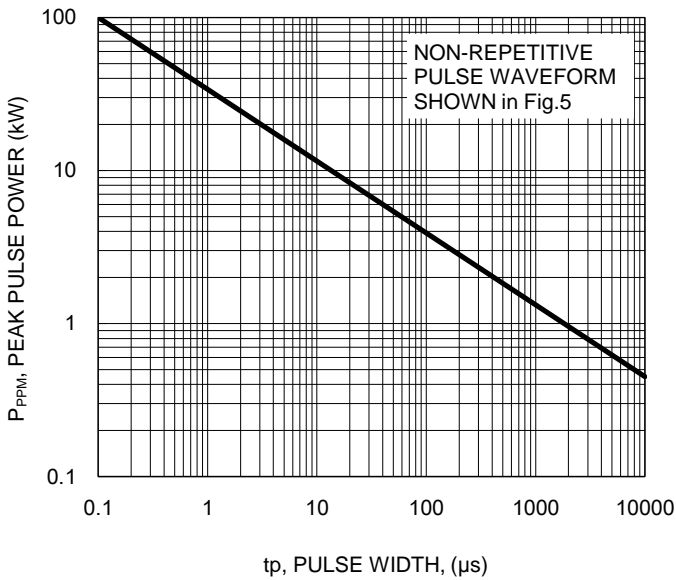


Fig.2 Pulse Derating Curve

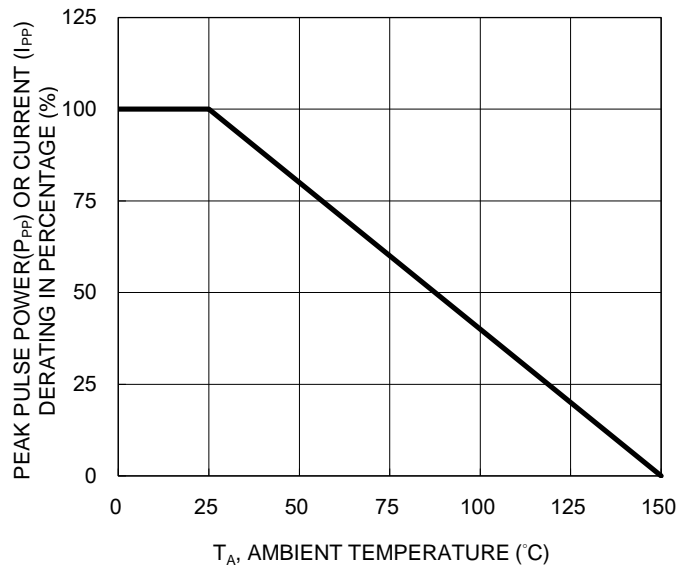


Fig.3 Typical Junction Capacitance

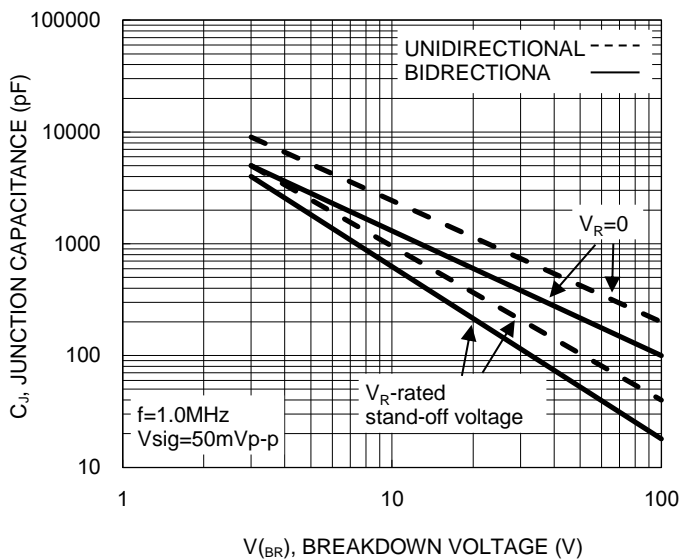
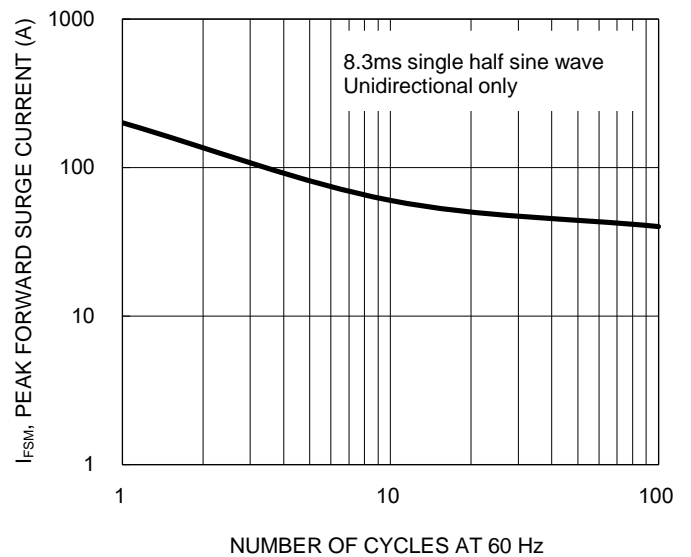


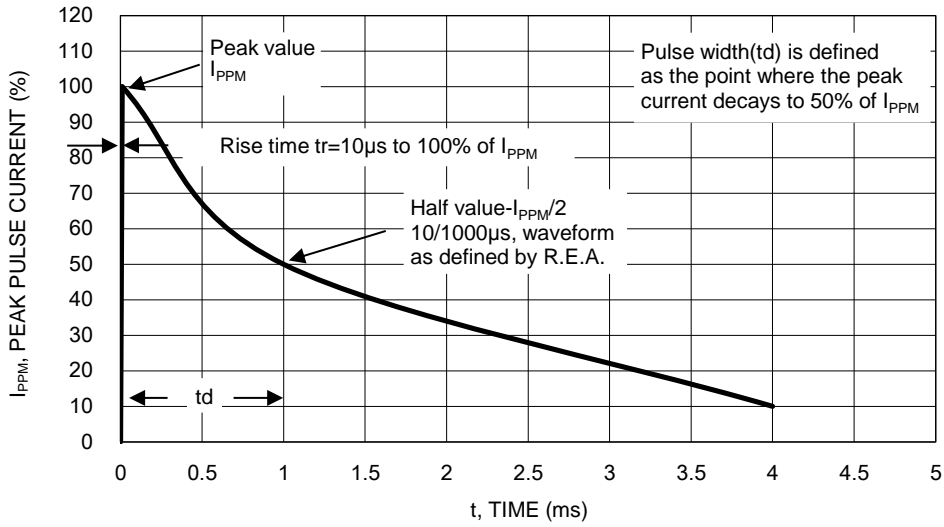
Fig.4 Maximum Non-repetitive Forward Surge Current



CHARACTERISTICS CURVES

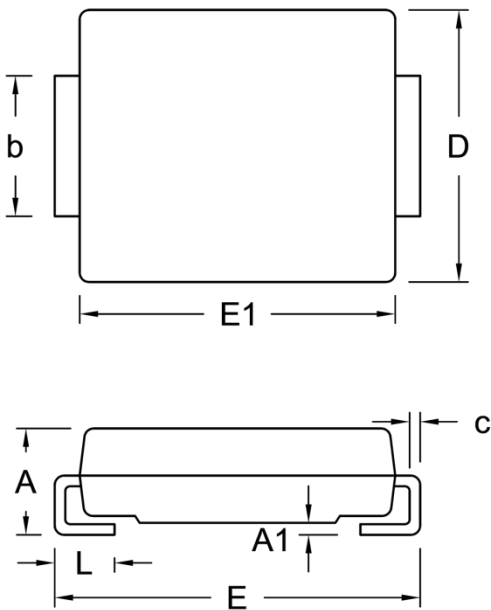
($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.5 Clamping Power Pulse Waveform



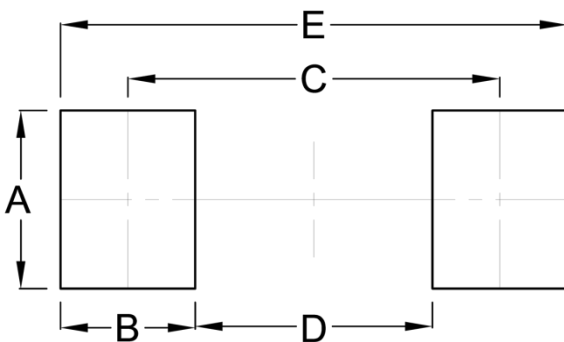
PACKAGE OUTLINE DIMENSIONS

DO-214AB (SMC)



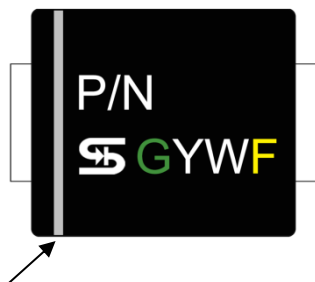
DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	2.00	2.62	0.079	0.103
A1	0.10	0.20	0.004	0.008
b	2.90	3.20	0.114	0.126
c	0.15	0.31	0.006	0.012
D	5.59	6.22	0.220	0.245
E	7.75	8.13	0.305	0.320
E1	6.60	7.11	0.260	0.280
L	1.00	1.60	0.039	0.063

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



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

Cathode band for uni-directional products only

Notice

Specifications of the products displayed herein are subject to change without notice. TSC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies.

Purchasers are solely responsible for the choice, selection, and use of TSC products and TSC assumes no liability for application assistance or the design of Purchasers' products.

Information contained herein is intended to provide a product description only. No license, express or implied, to any intellectual property rights is granted by this document. Except as provided in TSC's terms and conditions of sale for such products, TSC assumes no liability whatsoever, and disclaims any express or implied warranty, relating to sale and/or use of TSC products including liability or warranties relating to fitness for a particular purpose, merchantability, or infringement of any patent, copyright, or other intellectual property right.

The products shown herein are not designed for use in medical, life-saving, or life-sustaining applications. Customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify TSC for any damages resulting from such improper use or sale.

单击下面可查看定价，库存，交付和生命周期等信息

[>>Taiwan Semiconductor](#)