

## Surface Mount Transient Voltage Suppressors

### FEATURES

- 3000 W peak pulse power capability with a 10/1000  $\mu$ s 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, 10 s
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC



DO-214AB (SMC)

### TYPICAL APPLICATIONS

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, automotive and telecommunication.

For bi-directional devices, use suffix C or CA (e.g.3.0SMCJ7.0CA).

Electrical characteristics apply in both directions.

PRIMARY CHARACTERISTICS	
V <sub>WM</sub>	7~170V
P <sub>PPM</sub>	3000 W
P <sub>D</sub>	6.0 W
I <sub>FSM</sub>	250 A
T <sub>J</sub> max.	175 °C

### 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 (T<sub>A</sub> = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation with a 10/1000 $\mu$ s waveform (1) (Fig. 3)	P <sub>PPM</sub>	3000	W
Peak power pulse current with a 10/1000 $\mu$ s waveform (1) (Fig. 1)	I <sub>PPM</sub>	See Next Table	A
Peak forward surge current 8.3 ms single half sine-wave (2)	I <sub>FSM</sub>	250	A
Power dissipation on infinite heatsink at T <sub>L</sub> = 75 °C (Fig. 6)	P <sub>D</sub>	6.0	W
Maximum instantaneous forward voltage at 100A (2)	V <sub>F</sub>	3.5	V
Operating junction and storage temperature range	T <sub>J</sub> , T <sub>STG</sub>	- 65 to + 175	°C

### Notes:

(1) Non-repetitive current pulse, per Fig. 3 and derated above T<sub>A</sub> = 25 °C per Fig. 2

(2) Measured on 8.3 ms single half sine-wave, or equivalent square wave, duty cycle = 4 pulses per minute maximum



Device Type	Device marking code		Breakdown voltage $V_{(BR)}$ (Volts) <sup>(1)</sup>		Test current at $I_T$ (mA)	Stand-off voltage $V_{WM}$ (Volts)	Maximum reverse leakage at $V_{WM}$		Maximum peak pulse surge current $I_{PPM}$ <sup>(2)</sup> (A)	Maximum clamping voltage at $I_{PPM}$ $V_C$ (Volts)
	UNI	BI	Min.	Max.			$I_R$ ( $\mu$ A)			
							UNI	BI		
3.0SMCJ7.0	HDL	IDL	7.78	9.36	10	7	200	400	225.6	13.3
3.0SMCJ7.0A	HDM	IDM	7.78	8.45	10	7	200	400	250	12
3.0SMCJ7.5	HDN	IDN	8.33	10.17	1	7.5	100	200	209.8	14.3
3.0SMCJ7.5A	HDP	IDP	8.33	9.08	1	7.5	100	200	232.6	12.9
3.0SMCJ8.0	HDQ	IDQ	8.89	10.8	1	8	50	100	220	13.7
3.0SMCJ8.0A	HDR	IDR	8.89	9.73	1	8	50	100	220.6	13.6
3.0SMCJ8.5	HDS	IDS	9.44	11.42	1	8.5	25	50	188.8	15.9
3.0SMCJ8.5A	HDT	IDT	9.44	10.32	1	8.5	25	50	208.4	14.4
3.0SMCJ9.0	HDU	IDU	10	12.1	1	9	10	20	177.4	16.9
3.0SMCJ9.0A	HDV	IDV	10	11	1	9	10	20	194.8	15.4
3.0SMCJ10	HDW	IDW	11.1	13.6	1	10	5	5	159.6	18.8
3.0SMCJ10A	HDX	IDX	11.1	12.3	1	10	5	5	176.4	17
3.0SMCJ11	HDY	IDY	12.2	14.9	1	11	5	5	149.2	20.1
3.0SMCJ11A	HDZ	IDZ	12.2	13.5	1	11	5	5	184.88	16.3
3.0SMCJ12	HED	IED	13.3	16.4	1	12	5	5	136.4	22
3.0SMCJ12A	HEE	IEE	13.3	14.8	1	12	5	5	150.6	20
3.0SMCJ13	HEF	IEF	14.4	17.7	1	13	5	5	126	24
3.0SMCJ13A	HEG	IEG	14.4	16	1	13	5	5	139.4	21.6
3.0SMCJ14	HEH	IEH	15.6	19.3	1	14	5	5	116.2	25.9
3.0SMCJ14A	HEK	IEK	15.6	17.4	1	14	5	5	129.4	23.2
3.0SMCJ15	HEL	IEL	16.7	20.6	1	15	5	5	111.6	26.9
3.0SMCJ15A	HEM	IEM	16.7	18.7	1	15	5	5	123	24.4
3.0SMCJ16	HEN	IEN	17.8	22.1	1	16	5	5	104.2	28.8
3.0SMCJ16A	HEP	IEP	17.8	20	1	16	5	5	115.4	26
3.0SMCJ17	HEQ	IEQ	18.9	23.4	1	17	5	5	98.4	30.5
3.0SMCJ17A	HER	IER	18.9	21.2	1	17	5	5	106.6	28.2
3.0SMCJ18	HES	IES	20	24.8	1	18	5	5	93.2	32.2
3.0SMCJ18A	HET	IET	20	22.8	1	18	5	5	102.8	29.2
3.0SMCJ20	HEU	IEU	22.2	27.6	1	20	5	5	83.8	35.8
3.0SMCJ20A	HEV	IEV	22.2	25	1	20	5	5	92.6	32.4



## 3.0SMCJ7.0 thru 3.0SMCJ170A

Device Type	Device marking code		Breakdown voltage $V_{(BR)}$ (Volts) <sup>(1)</sup>		Test current at $I_T$ (mA)	Stand-off voltage $V_{WM}$ (Volts)	Maximum reverse leakage at $V_{WM}$		Maximum peak pulse surge current $I_{PPM}$ <sup>(2)</sup> (A)	Maximum clamping voltage at $I_{PPM}$ $V_C$ (Volts)
	UNI	BI	Min.	Max.			$I_R$ ( $\mu$ A)			
							UNI	BI		
3.0SMCJ22	HEW	IEW	24.4	30.4	1	22	5	5	76.2	39.4
3.0SMCJ22A	HEX	IEX	24.4	27.5	1	22	5	5	84.4	35.7
3.0SMCJ24	HEY	IEY	26.7	33.3	1	24	5	5	69.8	43
3.0SMCJ24A	HEZ	IEZ	26.7	30.2	1	24	5	5	77.2	38.9
3.0SMCJ26	HFD	IFD	28.9	36.1	1	26	5	5	64.4	46.6
3.0SMCJ26A	HFE	IFE	28.9	32.7	1	26	5	5	71.2	42.3
3.0SMCJ28	HFF	IFF	31.1	38.9	1	28	5	5	60	50
3.0SMCJ28A	HFG	IFG	31.1	35.3	1	28	5	5	66	45.6
3.0SMCJ30	HFH	IFH	33.3	41.7	1	30	5	5	56	53.6
3.0SMCJ30A	HFK	IFK	33.3	37.8	1	30	5	5	62	48.4
3.0SMCJ33	HFL	IFL	36.7	46	1	33	5	5	50.4	59.8
3.0SMCJ33A	HFM	IFM	36.7	41.7	1	33	5	5	56.2	53.7
3.0SMCJ36	HFN	IFN	40	50.2	1	36	5	5	46.6	64.6
3.0SMCJ36A	HFP	IFP	40	45.5	1	36	5	5	51.6	58.2
3.0SMCJ40	HFQ	IFQ	44.4	55.8	1	40	5	5	42	71.5
3.0SMCJ40A	HFR	IFR	44.4	50.6	1	40	5	5	46.4	64.7
3.0SMCJ43	HFS	IFS	47.8	60	1	43	5	5	39.2	76.7
3.0SMCJ43A	HFT	IFT	47.8	54.4	1	43	5	5	43.2	69.5
3.0SMCJ45	HFU	IFU	50	62.8	1	45	5	5	37.4	80.3
3.0SMCJ45A	HFV	IFV	50	57	1	45	5	5	41.2	72.9
3.0SMCJ48	HFV	IFV	53.3	67	1	48	5	5	35	85.8
3.0SMCJ48A	HFX	IFX	53.3	60.8	1	48	5	5	38.8	77.4
3.0SMCJ51	HFY	IFY	56.7	71.3	1	51	5	5	37	81.5
3.0SMCJ51A	HFZ	IFZ	56.7	64.7	1	51	5	5	36.4	82.5
3.0SMCJ54	HGD	IGD	60	75.5	1	54	5	5	31.2	96.3
3.0SMCJ54A	HGE	IGE	60	68.5	1	54	5	5	34.4	87.5
3.0SMCJ58	HGF	IGF	64.4	81.1	1	58	5	5	29.2	103
3.0SMCJ58A	HGG	IGG	64.4	73.6	1	58	5	5	32	94
3.0SMCJ60	HGH	IGH	66.7	84	1	60	5	5	28	107.5
3.0SMCJ60A	HGK	IGK	66.7	76.2	1	60	5	5	31	97

Device Type	Device marking code		Breakdown voltage $V_{(BR)}$ (Volts) <sup>(1)</sup>		Test current at $I_T$ (mA)	Stand-off voltage $V_{WM}$ (Volts)	Maximum reverse leakage at $V_{WM}$		Maximum peak pulse surge current $I_{PPM}$ <sup>(2)</sup> (A)	Maximum clamping voltage at $I_{PPM}$ $V_C$ (Volts)
	UNI	BI	Min.	Max.			$I_R$ ( $\mu$ A)			
							UNI	BI		
3.0SMCJ64	HGL	IGL	71.1	89.6	1	64	5	5	26.4	114
3.0SMCJ64A	HGM	IGM	71.1	81.3	1	64	5	5	29.2	103
3.0SMCJ70	HGN	IGN	77.8	98.1	1	70	5	5	24	125
3.0SMCJ70A	HGP	IGP	77.8	89	1	70	5	5	26.8	112.1
3.0SMCJ75	HGQ	IGQ	83.3	105.2	1	75	5	5	22.4	134
3.0SMCJ75A	HGR	IGR	83.3	95.3	1	75	5	5	24.8	121
3.0SMCJ78	HGS	IGS	86.7	109.3	1	78	5	5	21.6	139
3.0SMCJ78A	HGT	IGT	86.7	99.2	1	78	5	5	22.8	132
3.0SMCJ85	HGU	IGU	94.4	118.7	1	85	5	5	19.8	152
3.0SMCJ85A	HGV	IGV	94.4	107.7	1	85	5	5	20.8	145
3.0SMCJ90	HGW	IGW	100	126	1	90	5	5	18.8	160
3.0SMCJ90A	HGX	IGX	100	115	1	90	5	5	20.6	146
3.0SMCJ100	HGY	IGY	111	140.5	1	100	5	5	16.6	181
3.0SMCJ100A	HGZ	IGZ	111	127.5	1	100	5	5	18.6	162
3.0SMCJ110	HHD	IHD	122	154	1	110	5	5	15.4	196
3.0SMCJ110A	HHE	IHE	122	140	1	110	5	5	16.8	179
3.0SMCJ120	HHF	IHF	133	168.5	1	120	5	5	14	215
3.0SMCJ120A	HHG	IHG	133	152.5	1	120	5	5	15.6	193
3.0SMCJ130	HHH	IHH	144	182	1	130	5	5	13	231
3.0SMCJ130A	HHK	IHK	144	165	1	130	5	5	14.4	209
3.0SMCJ150	HHL	IHL	167	211	1	150	5	5	11.2	268
3.0SMCJ150A	HHM	IHM	167	192	1	150	5	5	12.4	243
3.0SMCJ160	HHN	IHN	178	225.5	1	160	5	5	10.4	289
3.0SMCJ160A	HHP	IHP	178	204.5	1	160	5	5	11.6	259
3.0SMCJ170	HHQ	IHQ	189	239	1	170	5	5	9.8	307
3.0SMCJ170A	HHR	IHR	189	217	1	170	5	5	11	273

### Notes:

- (1) Pulse test:  $t_p \leq 50$  ms
- (2) Surge current waveform per Fig. 3 and derated per Fig. 2
- (3) All terms and symbols are consistent with ANSI/IEEE C62.35

**RATINGS AND CHARACTERISTICS CURVES**

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

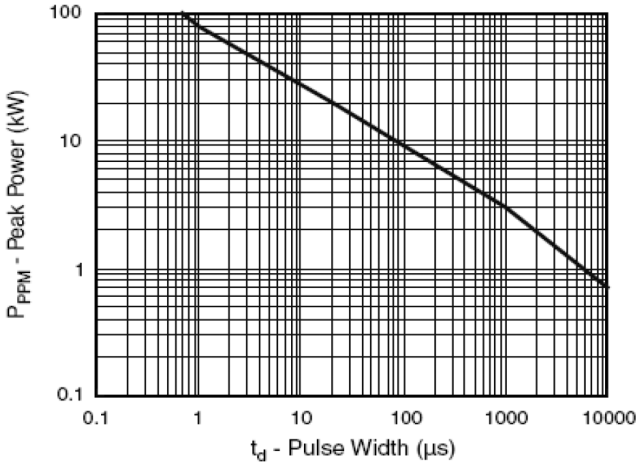


FIGURE 1-PEAK PULSE POWER VS PULSE TIME

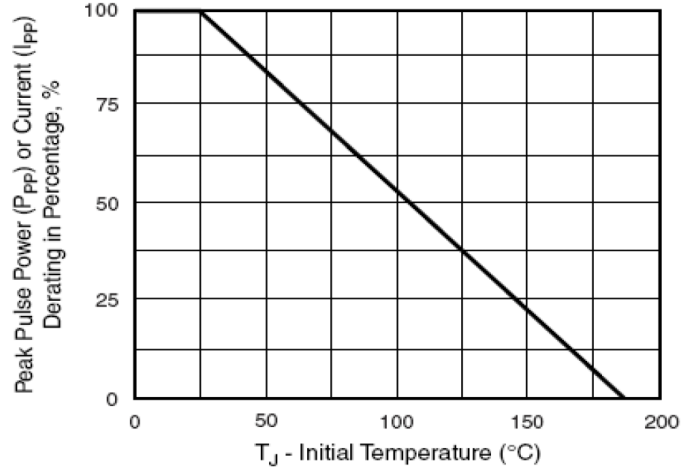


FIGURE 2 Pulse Power or Current vs. Initial Junction Temperature

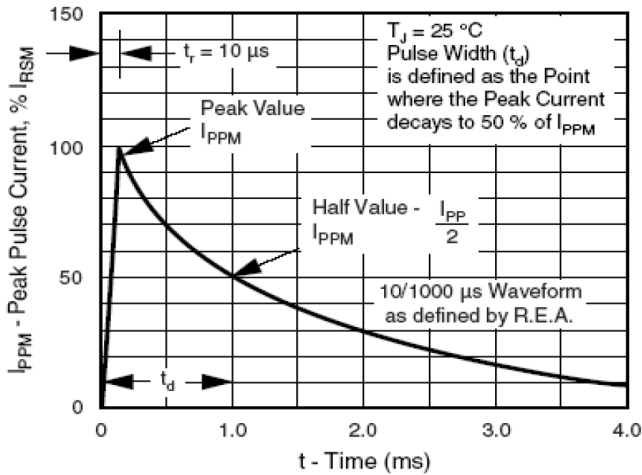


FIGURE 3-PULSE WAVEFORM

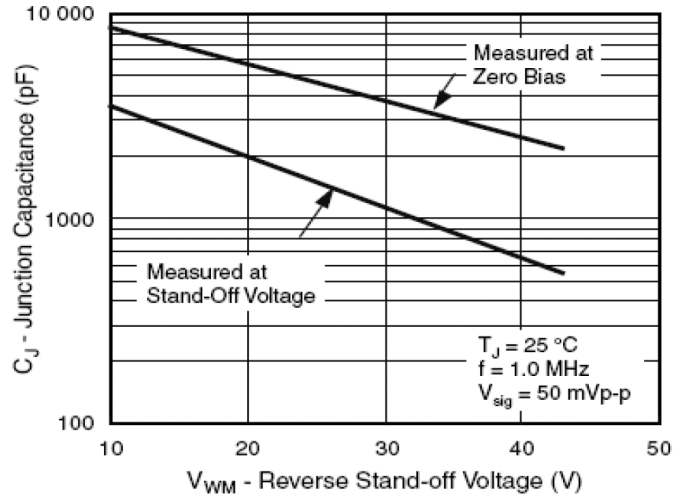


FIGURE 4 TYPICAL CAPACITANCE VS STAND-OFF VOLTAGE

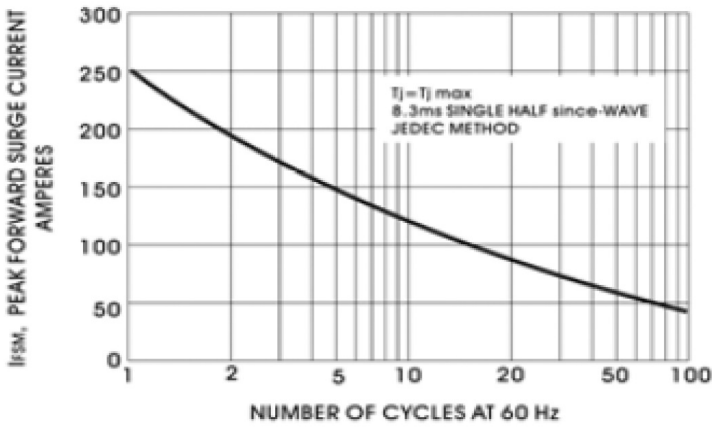


FIGURE 5 MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT UNIDIRECTIONAL

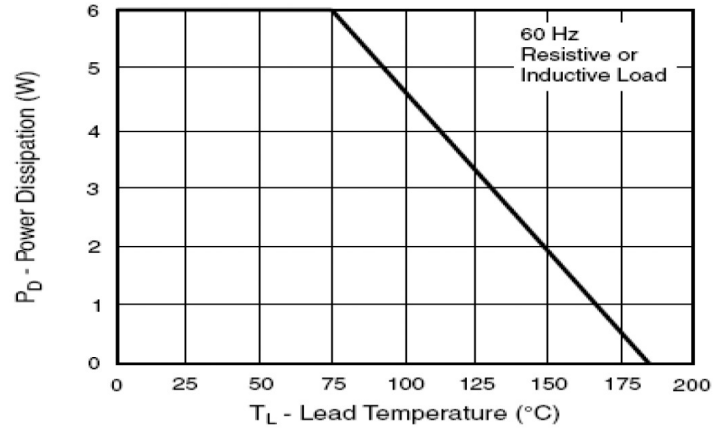
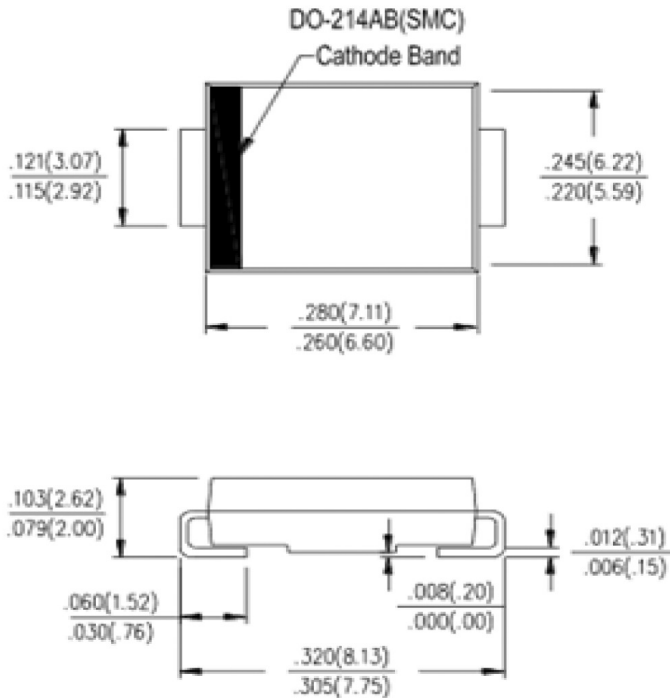


FIGURE 6 STEADY STATE POWER DERATING CURVE

## PACKAGE OUTLINE DIMENSIONS in inches (millimeters)



## Mounting Pad Layout

