



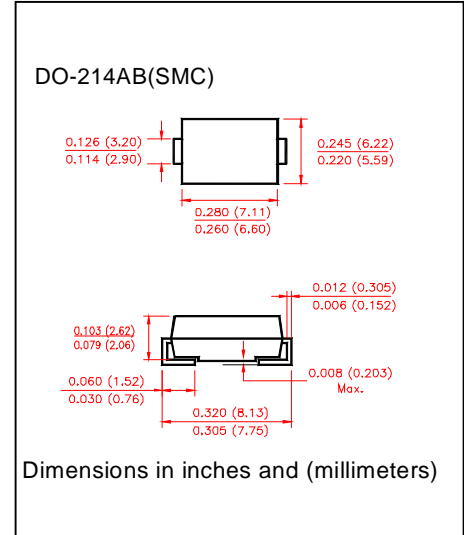
# GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSORS

SMC5.0 THRU SMC170CA

Stand-off Voltage 5.0 to 170 Volts  
Peak Pulse Power 1500 Watts

## FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- For surface mounted applications in order to optimize board space
- Low profile package
- Built-in strain relief
- Glass passivated junction
- Low inductance
- 1500W peak pulse power capability with a 10/1000  $\mu$  s waveform, repetition rate (duty cycle): 0.01%
- Excellent clamping capability
- Fast response time: typically less than 1.0ps from 0 Volts to  $V_{(BR)}$  for unidirectional and 5.0ns for bidirectional types
- For devices with  $V_{(BR)} \geq 10V$ ,  $I_D$  are typically less 1.0  $\mu$  A
- High temperature soldering guaranteed: 250°C/10 seconds at terminals



## MECHANICAL DATA

- Cass: JEDEC DO-214 AB, molded plastic over passivated junction
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: For uni-direction types the Color band denotes the cathode, which is positive with respect to the anode under normal TVS operation
- Mounting Position: any
- Weight: 0.007 ounces, 0.21 gram

## DEVICES FOR BIDIRECTIONAL APPLICATIONS

- For bidirectional use suffix C or CA for types SMC-5.0 thru SMC-170 (e.g. SMC5.0C, SMC170CA). Electrical characteristics apply in both in both directions.

## MAXIMUM RATINGS AND ELECTRICAL CHARACTERISTICS

- Ratings at 25°C ambient temperature unless otherwise specified

Ratings	Symbols	Value	Unit
Peak Pulse power dissipation with a 10/1000 $\mu$ s waveform(NOTE1,2,FIG.1)	PPM	Minimum1500	Watts
Peak Pulse current with a 10/1000 $\mu$ s waveform (NOTE1,FIG.3)	IPPM	See Table 1	Amps
Peak forward surge current 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) (Notes 2,3) – unidirectional only	$I_{FSM}$	200.0	Amps
Maximum instantaneous forward voltage at 100A (NOTE3) unidirectional only	$V_F$	3.5	Volts
Operating Junction and Storage Temperature Range	$T_J, T_{STG}$	50 to + 150	°C

## Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A=25^\circ C$  per Fig.2
2. Mounted on 0.31  $\times$  0.31" (8.0  $\times$  8.0mm) copper pads to each terminal
3. Measured on 8.3ms single half sine-wave. For uni-directional devices only.



# GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSORS

SMC5.0 THRU SMC170CA

Stand-off Voltage 5.0 to 170 Volts  
Peak Pulse Power 1500 Watts

Electrical Characteristic (T<sub>A</sub> = 25°C unless otherwise noted) Table 1

Device Type	Device Marking Code		Breakdown Voltage V <sub>(BR)</sub> (Volts) (Note 1)		Test Current at I <sub>r</sub> (mA)	Stand-off Voltage V <sub>WM</sub> (Volts)	Maximum Reverse Leakage at V <sub>WM</sub> (Note 3) I <sub>D</sub> (μ A)	Maximum Peak Pulse Surge Current I <sub>PPM</sub> (Note 2)(Amps)	Maximum Clamping Voltage at I <sub>PPM</sub> V <sub>c</sub> (Volts)
	UNI	BI	MIN	MAX					
SMC5.0	5V0	5V0C	6.4	7.82	10	5	1000	156.3	9.6
SMC5.0A	5V0A	5V0CA	6.4	7.07	10	5	1000	163	9.2
SMC6.0	6V0	6V0C	6.67	8.15	10	6	1000	131.6	11.4
SMC6.0A	6V0A	6V0CA	6.67	7.37	10	6	1000	145.6	10.3
SMC6.5	6V5	6V5C	7.22	8.82	10	6.5	500	122	12.3
SMC6.5A	6V5A	6V5CA	7.22	7.98	10	6.5	500	133.9	11.2
SMC7.0	7V0	7V0C	7.78	9.51	10	7	200	112.8	13.3
SMC7.0A	7V0A	7V0CA	7.78	8.6	10	7	200	125	12
SMC7.5	7V5	7V5C	8.33	10.2	1	7.5	100	104.9	14.3
SMC7.5A	7V5A	7V5CA	8.33	9.21	1	7.5	100	116.3	12.9
SMC8.0	8V0	8V0C	8.89	10.9	1	8	50	100	15
SMC8.0A	8V0A	8V0CA	8.89	9.83	1	8	50	110.3	13.6
SMC8.5	8V5	8V5C	9.44	11.5	1	8.5	20	94.3	15.9
SMC8.5A	8V5A	8V5CA	9.44	10.4	1	8.5	20	104.2	14.4
SMC9.0	9V0	9V0C	10	12.2	1	9	10	88.8	16.9
SMC9.0A	9V0A	9V0CA	10	11.1	1	9	10	97.4	15.4
SMC10	10V	10VC	11.1	13.6	1	10	5	79.8	1838
SMC10 A	10VA	10VCA	11.1	12.3	1	10	5	88.2	17
SMC11	11V	11VC	12.2	14.9	1	11	5	74.6	20.1
SMC11A	11VA	11VCA	12.2	13.5	1	11	5	82.4	18.2
SMC12	12V	12VC	13.3	16.3	1	12	5	68.2	22
SMC12A	12VA	12VCA	13.3	14.7	1	12	5	75.4	19.9
SMC13	13V	13VC	14.4	17.6	1	13	5	63	23.8
SMC13A	13VA	13VCA	14.4	15.9	1	13	5	69.8	21.5
SMC14	14V	14VC	15.6	19.1	1	14	5	58.1	25.8
SMC14A	14VA	14VCA	15.6	17.2	1	14	5	64.7	23.2
SMC15	15V	15VC	16.7	20.4	1	15	5	55.8	26.9
SMC15A	15VA	15VCA	16.7	18.5	1	15	5	61.5	24.4
SMC16	16V	16VC	17.8	21.8	1	16	5	52.1	28.8
SMC16A	16VA	16VCA	17.8	19.7	1	16	5	57.7	26
SMC17	17V	17VC	18.9	23.1	1	17	5	49.2	30.5
SMC17A	17VA	17VCA	18.9	20.9	1	17	5	54.3	27.6
SMC18	18V	18VC	20	24.4	1	18	5	46.6	32.2
SMC18A	18VA	18VCA	20	22.1	1	18	5	51.4	29.2
SMC20	20V	20VC	22.2	27.1	1	20	5	41.9	35.8
SMC20A	20VA	20VCA	22.2	24.5	1	20	5	46.3	32.4
SMC22	22V	22VC	24.4	29.8	1	22	5	38.1	39.4
SMC22A	22VA	22VCA	24.4	26.9	1	22	5	42.3	35.5
SMC24	24V	24VC	26.47	32.6	1	24	5	34.9	43
SMC24A	24VA	24VCA	26.7	29.5	1	24	5	38.6	38.9
SMC26	26V	26VC	28.9	35.3	1	26	5	32.2	46.6
SMC26A	26VA	26VCA	28.9	31.9	1	26	5	35.6	42.1
SMC28	28V	28VC	31.1	38	1	28	5	30	50
SMC28A	28VA	28VCA	31.1	34.4	1	28	5	33	45.4
SMC30	30V	30VC	33.3	40.7	1	30	5	28	53.5
SMC30A	30VA	30VCA	33.3	36.8	1	30	5	31	48.4
SMC33	33V	33VC	36.7	44.9	1	33	5	25.4	59
SMC33A	33VA	33VCA	36.7	40.6	1	33	5	28.1	53.3



# GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSORS

## SMC5.0 THRU SMC170CA

Stand-off Voltage 5.0 to 170 Volts  
Peak Pulse Power 1500 Watts

**Electrical Characteristic (T<sub>A</sub> = 25°C unless otherwise noted) Table 1**

Device Type	Device Marking Code		Breakdown Voltage V <sub>(BR)</sub> (Volts) (Note 1)		Test Current at I <sub>r</sub> (mA)	Stand-off Voltage V <sub>WM</sub> (Volts)	Maximum Reverse Leakage at V <sub>WM</sub> (Note 3) I <sub>D</sub> (μ A)	Maximum Peak Pulse Surge Current I <sub>PPM</sub> (Note 2)(Amps)	Maximum Clamping Voltage at I <sub>PPM</sub> V <sub>C</sub> (Volts)
	UNI	BI	MIN	MAX					
SMC36	36V	36VC	40	48.9	1	36	5	23.3	64.3
SMC36A	36VA	36VCA	40	44.2	1	36	5	25.8	58.1
SMC40	40V	40VC	44.4	54.3	1	40	5	21	71.4
SMC40A	40VA	40VCA	44.4	49.1	1	40	5	23.3	64.5
SMC43	43V	43VC	47.8	58.4	1	43	5	19.6	76.7
SMC43A	43VA	43VCA	47.8	52.8	1	43	5	21.6	69.4
SMC45	45V	45VC	50	61.1	1	45	5	18.7	80.3
SMC45A	45VA	45VCA	50	55.3	1	45	5	20.6	72.7
SMC48	48V	48VC	53.3	65.1	1	48	5	17.5	85.5
SMC48A	48VA	48VCA	53.3	58.9	1	48	5	19.4	77.4
SMC51	51V	51VC	56.7	69.3	1	51	5	16.5	91.1
SMC51A	51VA	51VCA	56.7	62.7	1	51	5	18.2	82.4
SMC54	54V	54VC	60	73.3	1	54	5	15.6	96.3
SMC54A	54VA	54VCA	60	66.3	1	54	5	17.2	87.1
SMC58	58V	58VC	64.4	78.7	1	58	5	14.6	103
SMC58A	58VA	58VCA	64.4	71.2	1	58	5	16	93
SMC60	60V	60VC	66.7	81.5	1	60	5	14	107
SMC60A	60VA	60VCA	66.7	73.7	1	60	5	15.5	96
SMC64	64V	64VC	71.1	86.9	1	64	5	13.2	114
SMC64A	64VA	64VCA	71.1	78.6	1	64	5	14.6	103
SMC70	70V	70VC	77.8	95.1	1	70	5	12	125
SMC70A	70VA	70VCA	77.8	86	1	70	5	13.3	113
SMC75	75V	75VC	83.3	102	1	75	5	11.2	134
SMC75A	75VA	75VCA	83.3	92.1	1	75	5	12.4	121
SMC78	78V	78VC	86.7	106	1	78	5	10.8	139
SMC78A	78VA	78VCA	86.7	95.8	1	78	5	11.9	126
SMC85	85V	85VC	94.4	115	1	85	5	9.9	151
SMC85A	85VA	85VCA	94.4	104	1	85	5	10.9	137
SMC90	90V	90VC	100	122	1	90	5	9.4	160
SMC90A	90VA	90VCA	100	111	1	90	5	10.3	146
SMC100	100V	100VC	111	136	1	100	5	8.4	179
SMC100A	100VA	100VCA	111	123	1	100	5	9.3	162
SMC110	110V	110VC	122	149	1	110	5	7.7	196
SMC110A	110VA	110VCA	122	135	1	110	5	8.5	177
SMC120	120V	120VC	133	163	1	120	5	7	214
SMC120A	120VA	120VCA	133	147	1	120	5	7.8	193
SMC130	130V	130VC	144	176	1	130	5	6.5	231
SMC130A	130VA	130VCA	144	159	1	130	5	7.2	209
SMC150	150V	150VC	167	204	1	150	5	5.6	268
SMC150A	150VA	150VCA	167	185	1	150	5	6.2	243
SMC160	160V	160VC	178	218	1	160	5	5.2	287
SMC160A	160VA	160VCA	178	197	1	160	5	5.8	259
SMC170	170V	170VC	189	231	1	170	5	4.9	304
SMC170A	170VA	170VCA	189	209	1	170	5	5.5	275

**Notes:**

- (1) V<sub>(BR)</sub> measured after I<sub>r</sub> applied for 300 μ s I<sub>r</sub>=square wave pulse or equivalent
- (2) Surge current waveform per Figure 3 and derate per Fig.2
- (3) For bidirectional type having V<sub>WM</sub> of 10 volts and less, the I<sub>D</sub> limit is doubled
- (4) For the bi-directional SMC5.0CA, the maximum V<sub>(BR)</sub> is 7.25 Volts
- (5) All terms and symbols are consistent with ANSI/IEEE C62.35



# GLASS PASSIVATED JUNCTION TRANSIENT VOLTAGE SUPPRESSORS

## SMC5.0 THRU SMC170CA

Stand-off Voltage 5.0 to 170 Volts  
Peak Pulse Power 1500 Watts

### RATING AND CHARACTERISTIC CURVES SMC5.0 THRU SMC170CA

