



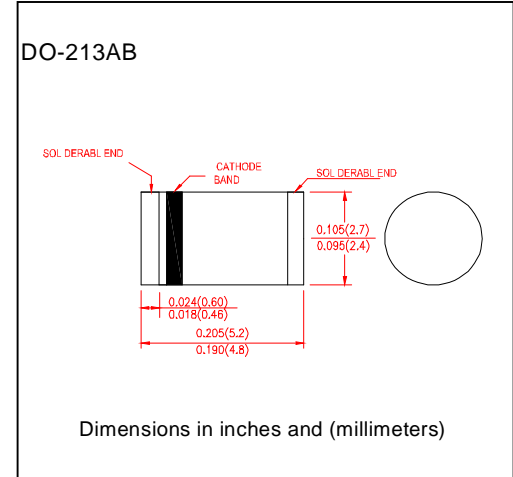
# SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

SM6.8 THRU SM200CA

Breakdown Voltage 6.8 to 200 Volts  
Peak Pulse Power 400 Watts

## FEATURES

- Plastic package has Underwriters Laboratory Flammability Classification 94V-O
- For surface mounted applications
- Glass passivated junction
- Low inductance surge resistance
- Fast response time: typical less than 1.0ps from 0 volts to  $V_{(BR)}$  for unidirectional AND 5.0ns for bidirectional types
- 400W peak pulse capability with a 10/1000  $\mu$  s waveform, repetition rate (duty cycle): 0.01%
- For devices with  $V_{(BR)} \geq 10V$ ,  $I_D$  are typically less than 1.0  $\mu$  A
- High temperature soldering guaranteed: 250°C/10 seconds at terminals



## MECHANICAL DATA

- Cass: JEDEC DO-213AB, molded plastic body over passivated junction
- Terminals: Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Blue bands denotes positive end (cathode) for unidirectional and yellow band in the Middle for bidirectional types
- Mounting position: any
- Weight: 0.116 ounces, 0.0064 gram

## DEVICES FOR BIDIRECTIONAL APPLICATIONS

- For bidirectional applications use suffix letters C or CA for types SM6.8 thru SM200A (e.g. SM6.8C, SM200CA).Electrical Characteristics apply 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,FIG.1)	P <sub>PPM</sub>	Minimum 400	Watts
Steady Stage Power Dissipation at T <sub>T</sub> =75°C (Note2)	P <sub>M(AV)</sub>	1.0	Watt
Peak Pulse current with a 10/1000 $\mu$ s waveform (NOTE1,FIG.3)	I <sub>PPM</sub>	See Table 1	Amps
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load for unidirectional only (JEDEC Method) (Note3)	I <sub>FSM</sub>	40.0	Amps
Maximum instantaneous forward voltage at 25A (NOTE 3) for unidirectional only	V <sub>F</sub>	3.5	Volts
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	50 to +150	°C

### Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above T<sub>A</sub>=25°C per Fig.2
2. Mounted on copper pads to each terminal of 0.31 in (8.0mm<sup>2</sup>) per Fig 5.
3. Measured at 8.3ms single half sine-wave or equivalent square wave duty cycle = 4 pulses per minutes maximum.



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**Electrical Characteristic at (T<sub>A</sub> = 25°C unless otherwise noted) TABLE1**

Device Type	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> I <sub>D</sub> (μ A)	Maximum Peak Pulse Current I <sub>PPM</sub> (Note 2) (Amps)	Maximum Clamping Voltage at I <sub>PPM</sub> V <sub>c</sub> (Volts)	Maximum Temperature Coefficient of V <sub>(BR)</sub> (%/°C)
	MIN	MAX						
SM6.8	6.12	7.48	10	5.5	1000	37	10.8	0.06
SM6.8A	6.45	7.14	10	5.8	1000	38.1	10.5	0.06
SM7.5	6.75	8.25	10	6.05	500	34.2	11.7	0.064
SM7.5A	7.13	7.88	10	6.4	500	35.4	11.3	0.064
SM8.2	7.38	9.02	10	6.63	200	32	12.5	0.068
SM8.2A	7.79	8.61	10	7.02	200	33.1	12.1	0.068
SM9.1	8.19	10	1	7.37	50	29	13.8	0.071
SM9.1A	7.65	9.55	1	7.78	50	29.9	13.4	0.071
SM10	9	11	1	8.1	10	26.7	15	0.076
SM10A	9.5	10.5	1	8.55	10	27.6	14.5	0.076
SM11	9.9	12.1	1	8.92	5	24.7	16.2	0.078
SM11A	10.5	11.6	1	9.4	5	25.6	15.6	0.078
SM12	10.8	13.2	1	9.372	5	23.1	17.3	0.081
SM12A	11.4	12.6	1	10.2	5	24	16.7	0.081
SM13	11.7	14.3	1	10.5	5	21.1	19	0.084
SM13A	12.4	13.7	1	11.1	5	22	18.2	0.084
SM15	13.5	16.5	1	12.1	5	18.2	22	0.087
SM15A	14.3	15.8	1	12.8	5	18.9	21.2	0.087
SM16	14.4	17.6	1	12.9	5	17	23.5	0.089
SM16A	15.2	16.8	1	13.6	5	17.8	22.5	0.089
SM18	16.2	19.8	1	14.5	5	15.1	26.5	0.091
SM18A	17.1	18.9	1	15.3	5	15.9	25.2	0.091
SM20	18	22	1	16.2	5	13.7	29.1	0.093
SM20A	19	21	1	17.1	5	14.4	27.7	0.093
SM22	19.8	24.2	1	17.8	5	12.5	31.9	0.095
SM22A	20.9	23.1	1	18.8	5	13.1	30.6	0.095
SM24	21.6	26.4	1	19.4	5	11.5	34.7	0.097
SM24A	22.8	25.2	1	20.5	5	12	33.2	0.097
SM27	24.3	29.7	1	21.8	5	10.2	39.1	0.099
SM27A	25.7	28.4	1	23.1	5	10.7	37.5	0.099
SM30	27	33	1	24.3	5	9.2	43.5	0.1
SM30A	28.5	31.5	1	25.6	5	9.7	41.4	0.1
SM33	29.7	36.3	1	26.8	5	8.4	47.7	0.101
SM33A	31.4	34.7	1	28.2	5	8.8	45.7	0.101
SM36	32.4	39.6	1	29.1	5	7.7	52	0.102
SM36A	34.2	37.8	1	30.8	5	8	49.9	0.102
SM39	35.1	42.9	1	31.6	5	7.1	56.4	0.103
SM39A	37.1	41	1	33.3	5	7.4	53.9	0.103
SM43	38.7	47.3	1	34.8	5	6.5	61.9	0.104
SM43A	40.9	45.2	1	36.8	5	6.7	59.3	0.104
SM47	42.3	51.7	1	38.1	5	5.9	67.8	0.104
SM47A	44.7	49.4	1	40.2	5	6.2	64.8	0.104
SM51	45.7	56.1	1	41.3	5	5.4	73.5	0.105
SM51A	48.5	43.6	1	43.6	5	5.7	70.1	0.105
SM56	50.4	61.6	1	45.4	5	5	80.5	0.106
SM56A	53.2	58.8	1	47.8	5	5.2	77	0.106
SM62	55.8	68.2	1	50.2	5	4.5	89	0.107
SM62A	58.9	65.1	1	53	5	4.7	85	0.107



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Peak Pulse Power

400 Watts

**Electrical Characteristic at (T<sub>A</sub> =25°C unless otherwise noted) TABLE 1 (Cont'd)**

Device Type	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> I <sub>D</sub> (μ A) (Note 4)	Maximum Peak Pulse Current I <sub>PPM</sub> (Note 2) (Amps)	Maximum Clamping Voltage at I <sub>PPM</sub> V <sub>c</sub> (Volts)	Maximum Temperature Coefficient of V <sub>BR</sub> (%/°C)
	MIN	MAX						
SM68	61.2	74.8	1	55.1	5	4.1	98	0.107
SM68A	64.6	71.4	1	58.1	5	4.3	92	0.107
SM75	67.5	82.5	1	60.7	5	3.7	105	0.108
SM75A	71.3	78.8	1	64.1	5	3.9	103	0.108
SM82	73.8	90.2	1	66.4	5	3.4	118	0.108
SM82A	77.9	86.1	1	70.1	5	3.5	113	0.108
SM91	81.9	100	1	73.7	5	3.1	131	0.109
SM91A	86.5	95.5	1	77.8	5	3.2	125	0.109
SM100	90	110	1	81	5	1.39	144	0.109
SM100A	95	105	1	85.5	5	1.46	137	0.109
SM110	99	121	1	89.2	5	1.27	158	0.11
SM110A	105	116	1	94	5	1.32	152	0.11
SM120	108	132	1	97.2	5	1.16	173	0.11
SM120A	114	126	1	102	5	1.21	165	0.11
SM130	117	143	1	105	5	1.07	187	0.11
SM130A	124	137	1	111	5	1.12	179	0.11
SM150	135	165	1	121	5	0.93	215	0.111
SM150A	143	159	1	128	5	0.97	207	0.111
SM160	144	175	1	130	5	0.87	230	0.111
SM160A	152	167	1	136	5	0.91	219	0.111
SM170	153	187	1	138	5	0.82	244	0.111
SM170A	162	179	1	145	5	0.85	234	0.111
SM180	162	197	1	146	5	0.78	258	0.111
SM180A	171	189	1	154	5	0.81	246	0.111
SM200	180	220	1	162	5	0.7	287	0.111
SM200A	190	210	1	171	5	0.73	274	0.111

**Notes:**

- (1) V<sub>BR</sub> measured after IT applied for 300ms square wave pulse or equivalent
- (2) Surge current waveform per Figure 3 and derate per Fig.2
- (3) All terms and symbols are consistent with ANSI/IEEE C62.35



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## RATING AND CHARACTERISTIC CURVES SM6.8 THRU SM200CA

