

## SMSJ5.0(SMF5.0)~SMSJ220CA(SMF220CA) 200W Surface Mount Transient Voltage Suppressors

### Features

- ◆ Optimized for LAN protection applications
- ◆ Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- ◆ Glass passivated junction
- ◆ 400w peak pulse power capability
- ◆ Excellent clamping capability
- ◆ Low incremental surge resistance
- ◆ Fast response time: typically less than 1.0ps from 0v to  $V_{BRmin}$
- ◆ High temperature soldering guaranteed:  
260°C/10S at terminals

### Mechanical Data

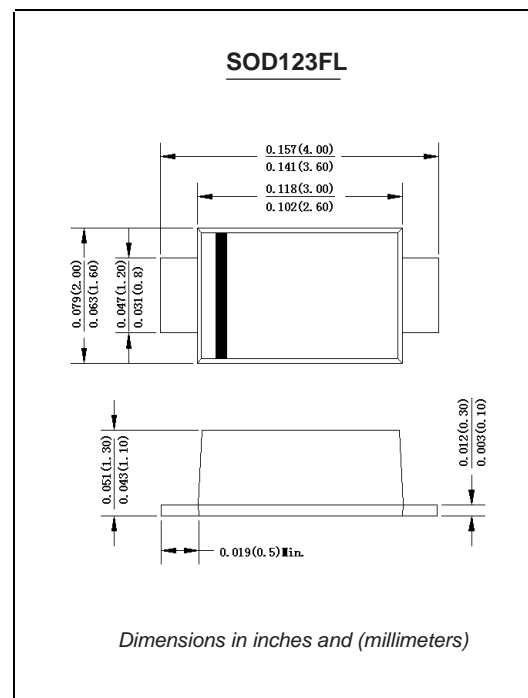
**Case:** JEDEC SOD-123FL molded plastic body over passivated chip

**Terminals:** Solder plated, solderable per MIL-STD 750, method 2026

**Polarity:** Color band denotes cathode except for bidirectional types

**Mounting Position:** Any

**Weight:** 0.0007 ounce, 0.02 grams



### Devices For Bidirectional Applications

For bidirectional use suffix C or CA for types SMSJ5.0 thru SMSJ220 (e.g. SMSJ5.0CA, SMSJ220CA) Electrical characteristics apply in both directions.

### Maximum Ratings And Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.

	SYMBOLS	VALUE	UNITS
Peak pulse power dissipation with a 10/1000 $\mu$ s wavetorm(NOTE 1,2,4,FIG.1)	P <sub>PPM</sub>	Minimum 200	Watts
Peak forward surge current (Note 3)	I <sub>FSM</sub>	20.0	Amps
Peak pulse current with a 10/1000 $\mu$ s waveform(NOTE 1,2,5)Fig.2	I <sub>PPM</sub>	See Table 1	Amps
Steady State Power Dissipation(Note 4)	P <sub>M(AV)</sub>	1.0	Watts
Operating junction and storage temperature range	T <sub>STG</sub> , T <sub>J</sub>	-55 to + 150	°C

- Notes:**
1. Non-repetitive current pulse, per Fig.3 and derated above  $T_A=25^\circ\text{C}$  per Fig.2
  2. Mounted on 5.0mm copper pads to each terminal
  3. Measured on 8.3ms single half sine-wave. For uni-directional devices only.
  4. Lead temperature at  $75^\circ\text{C}=T_L$
  5. Peak pulse power waveform is 10/1000 $\mu$ s

## Electrical Characteristics

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

Device	Working Peak Reverse Voltage V <sub>WM</sub> (Volts)	Breakdown Voltage V <sub>(BR)</sub> (Volts) at I <sub>T</sub>		Test Current I <sub>T</sub> (mA)	Maximum Clamping Voltage at I <sub>PPM</sub> V <sub>c</sub> (Volts)(NOTE5)	Maximum Peak Pulse Reverse Current I <sub>PPM</sub> (NOTE5) (Amps)	Maximum Reverse Leakage a V <sub>WM</sub> I <sub>D</sub> (μA)
		MIN	MAX				
SMSJ5.0 SMF5.0	5.0	6.40	7.55	10	9.6	41.6	800
SMSJ5.0(C)A SMF5.0(C)A	5.0	6.40	7.25	10	9.2	43.5	800
SMSJ6.0 SMF6.0	6.0	6.67	8.45	10	11.4	35.1	800
SMSJ6.0(C)A SMF6.0(C)A	6.0	6.67	7.67	10	10.3	38.8	800
SMSJ6.5 SMF6.5	6.5	7.22	9.14	10	12.3	32.5	500
SMSJ6.5(C)A SMF6.5(C)A	6.5	7.22	8.3	10	11.2	35.7	500
SMSJ7.0 SMF7.0	7.0	7.78	9.86	10	13.3	30.1	200
SMSJ7.0(C)A SMF7.0(C)A	7.0	7.78	8.95	10	12.0	33.3	200
SMSJ7.5 SMF7.5	7.5	8.33	10.67	1.0	14.3	28.0	100
SMSJ7.5(C)A SMF7.5(C)A	7.5	8.33	9.58	1.0	12.9	31.0	100
SMSJ8.0 SMF8.0	8.0	8.89	11.3	1.0	15.0	26.5	50.0
SMSJ8.0(C)A SMF8.0(C)A	8.0	8.89	10.23	1.0	13.6	29.4	50.0
SMSJ8.5 SMF8.5	8.5	9.44	11.92	1.0	15.9	25.1	10.0
SMSJ8.5(C)A SMF8.5(C)A	8.5	9.44	10.82	1.0	14.4	27.7	10.0
SMSJ9.0 SMF9.0	9.0	10.0	12.6	1.0	16.9	23.6	5.0
SMSJ9.0(C)A SMF9.0(C)A	9.0	10.0	11.5	1.0	15.4	26.0	5.0
SMSJ10 SMF10	10.00	11.1	14.1	1.0	18.8	21.2	5.0
SMSJ10(C)A SMF10(C)A	10.00	11.1	12.8	1.0	17.0	23.5	5.0
SMSJ11 SMF11	11.00	12.2	15.4	1.0	20.1	20.0	5.0
SMSJ11(C)A SMF11(C)A	11.00	12.2	14	1.0	18.2	22.0	5.0
SMSJ12 SMF12	12.00	13.3	16.9	1.0	22.0	18.1	5.0
SMSJ12(C)A SMF12(C)A	12.00	13.3	15.3	1.0	19.9	20.1	5.0
SMSJ13 SMF13	13.00	14.4	18.2	1.0	23.8	16.8	5.0
SMSJ13(C)A SMF13(C)A	13.00	14.4	16.5	1.0	21.5	18.6	5.0
SMSJ14 SMF14	14.00	15.6	19.8	1.0	25.8	15.5	5.0
SMSJ14(C)A SMF14(C)A	14.00	15.6	17.9	1.0	23.2	17.2	5.0
SMSJ15 SMF15	15.00	16.7	21.1	1.0	26.9	14.8	5.0
SMSJ15(C)A SMF15(C)A	15.00	16.7	19.2	1.0	24.4	16.4	5.0
SMSJ16 SMF16	16.00	17.8	22.6	1.0	28.8	13.8	5.0
SMSJ16(C)A SMF16(C)A	16.00	17.8	20.5	1.0	26.0	15.3	5.0
SMSJ17 SMF17	17.00	18.9	23.9	1.0	30.5	13.1	5.0
SMSJ17(C)A SMF17(C)A	17.00	18.9	21.7	1.0	27.6	14.5	5.0
SMSJ18 SMF18	18.00	20.0	25.3	1.0	32.2	12.4	5.0
SMSJ18(C)A SMF18(C)A	18.00	20.0	23.3	1.0	29.2	13.7	5.0
SMSJ20 SMF20	20.00	22.2	28.1	1.0	35.8	11.1	5.0
SMSJ20(C)A SMF20(C)A	20.00	22.2	25.5	1.0	32.4	12.3	5.0
SMSJ22 SMF22	22.00	24.4	30.9	1.0	39.4	10.1	5.0
SMSJ22(C)A SMF22(C)A	22.00	24.4	28	1.0	35.5	11.2	5.0
SMSJ24 SMF24	24.00	26.7	33.8	1.0	43.0	9.3	5.0
SMSJ24(C)A SMF24(C)A	24.00	26.7	30.7	1.0	38.9	10.3	5.0
SMSJ26 SMF26	26.00	28.9	36.6	1.0	46.6	8.6	5.0
SMSJ26(C)A SMF26(C)A	26.00	28.9	33.2	1.0	42.1	9.5	5.0
SMSJ28 SMF28	28.00	31.1	39.4	1.0	50.0	8.0	5.0
SMSJ28(C)A SMF28(C)A	28.00	31.1	35.8	1.0	45.4	8.8	5.0
SMSJ30 SMF30	30.00	33.3	42.2	1.0	53.5	7.5	5.0
SMSJ30(C)A SMF30(C)A	30.00	33.3	38.3	1.0	48.4	8.3	5.0
SMSJ33 SMF33	33.00	36.7	46.5	1.0	59.0	6.8	5.0
SMSJ33(C)A SMF33(C)A	33.00	36.7	42.2	1.0	53.3	7.5	5.0
SMSJ36 SMF36	36.00	40.0	50.7	1.0	64.3	6.2	5.0
SMSJ36(C)A SMF36(C)A	36.00	40.0	46.0	1.0	58.1	6.9	5.0
SMSJ40 SMF40	40.00	44.4	56.3	1.0	71.4	5.6	5.0
SMSJ40(C)A SMF40(C)A	40.00	44.4	51.1	1.0	64.5	6.2	5.0

## Electrical Characteristics

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

Device	Working Peak Reverse Voltage V <sub>WM</sub> (Volts)	Breakdown Voltage V <sub>(BR)</sub> (Volts) at I <sub>T</sub>		Test Current I <sub>T</sub> (mA)	Maximum Clamping Voltage at I <sub>PPM</sub> V <sub>C</sub> (Volts)	Maximum Peak Pulse Reverse Current I <sub>PPM</sub> (NOTE5) (Amps)	Maximum Reverse Leakage I <sub>D</sub> (μA)
		MIN	MAX				
SMSJ43 SMF43	43.00	47.8	60.5	1.0	76.7	5.2	5.0
SMSJ43(C)A SMF43(C)A	43.00	47.8	54.9	1.0	69.4	5.7	5.0
SMSJ45 SMF45	45.00	50.0	63.3	1.0	80.3	5.0	5.0
SMSJ45(C)A SMF45(C)A	45.00	50.0	57.5	1.0	72.7	5.5	5.0
SMSJ48 SMF48	48.00	53.3	67.5	1.0	85.5	4.7	5.0
SMSJ48(C)A SMF48(C)A	48.00	53.3	61.3	1.0	77.4	5.2	5.0
SMSJ51 SMF51	51.00	56.7	71.8	1.0	91.1	4.4	5.0
SMSJ51(C)A SMF51(C)A	51.00	56.7	65.2	1.0	82.4	4.9	5.0
SMSJ54 SMF54	54.00	60.0	76.0	1.0	96.3	4.2	5.0
SMSJ54(C)A SMF54(C)A	54.00	60.0	69.0	1.0	87.1	4.6	5.0
SMSJ58 SMF58	58.00	64.4	81.6	1.0	103.0	3.9	5.0
SMSJ58(C)A SMF58(C)A	58.00	64.4	74.1	1.0	93.6	4.3	5.0
SMSJ60 SMF60	60.00	66.7	84.5	1.0	107.0	3.7	5.0
SMSJ60(C)A SMF60(C)A	60.00	66.7	76.7	1.0	96.8	4.1	5.0
SMSJ64 SMF64	64.00	71.1	90.1	1.0	114.0	3.5	5.0
SMSJ64(C)A SMF64(C)A	64.00	71.1	81.8	1.0	103.0	3.9	5.0
SMSJ70 SMF70	70.00	77.8	98.6	1.0	125	3.2	5.0
SMSJ70(C)A SMF70(C)A	70.00	77.8	89.5	1.0	113	3.5	5.0
SMSJ75 SMF75	75.00	83.3	105.7	1.0	134	3.0	5.0
SMSJ75(C)A SMF75(C)A	75.00	83.3	95.8	1.0	121	3.3	5.0
SMSJ78 SMF78	78.00	86.7	109.8	1.0	139	2.9	5.0
SMSJ78(C)A SMF78(C)A	78.00	86.7	99.7	1.0	126	2.2	5.0
SMSJ85 SMF85	85.00	94.4	119.2	1.0	151	2.6	5.0
SMSJ85(C)A SMF85(C)A	85.00	94.4	108.2	1.0	137	2.9	5.0
SMSJ90 SMF90	90.00	100	126.5	1.0	160	2.5	5.0
SMSJ90(C)A SMF90(C)A	90.00	100	115.5	1.0	146	2.7	5.0
SMSJ100 SMF100	100.00	111	141	1.0	179	2.2	5.0
SMSJ100(C)A SMF100(C)A	100.00	111	128	1.0	162	2.5	5.0
SMSJ110 SMF110	110.00	122	154.4	1.0	196	2.0	5.0
SMSJ110(C)A SMF110(C)A	110.00	122	140.5	1.0	177	2.3	5.0
SMSJ120 SMF120	120.00	133	169	1.0	214	1.9	5.0
SMSJ120(C)A SMF120(C)A	120.00	133	153	1.0	193	2.0	5.0
SMSJ130 SMF130	130.00	144	182.5	1.0	231	1.7	5.0
SMSJ130(C)A SMF130(C)A	130.00	144	165.5	1.0	209	1.9	5.0
SMSJ150 SMF150	150.00	167	211.5	1.0	268	1.5	5.0
SMSJ150(C)A SMF150(C)A	150.00	167	192.5	1.0	243	1.6	5.0
SMSJ160 SMF160	160.00	178	226	1.0	287	1.4	5.0
SMSJ160(C)A SMF160(C)A	160.00	178	205	1.0	259	1.5	5.0
SMSJ170 SMF170	170.00	189	239.5	1.0	304	1.3	5.0
SMSJ170(C)A SMF170(C)A	170.00	189	217.5	1.0	275	1.4	5.0
SMSJ180 SMF180	180.00	198	253.8	1.0	322	1.2	5.0
SMSJ180(C)A SMF180(C)A	180.00	198	230.4	1.0	292	1.3	5.0
SMSJ190 SMF190	190.00	209	267.9	1.0	340	1.2	5.0
SMSJ190(C)A SMF190(C)A	190.00	209	243.2	1.0	308	1.3	5.0
SMSJ200 SMF200	200.00	220	282.0	1.0	358	1.1	5.0
SMSJ200(C)A SMF20(C)A	200.00	220	256.0	1.0	324	1.2	5.0
SMSJ210 SMF210	210.00	231	296.1	1.0	376	1.1	5.0
SMSJ210(C)A SMF210(C)A	210.00	231	268.8	1.0	340	1.2	5.0
SMSJ220 SMF220	220.00	242	310.2	1.0	394	1.0	5.0
SMSJ220(C)A SMF220(C)A	220.00	242	281.6	1.0	356	1.1	5.0

# Ratings And Characteristic Curves

## SMSJ5.0(SMF5.0) THUR SMSJ220CA(SMF220CA)

FIG.1 – PEAK PULSE POWER RATING CURVE

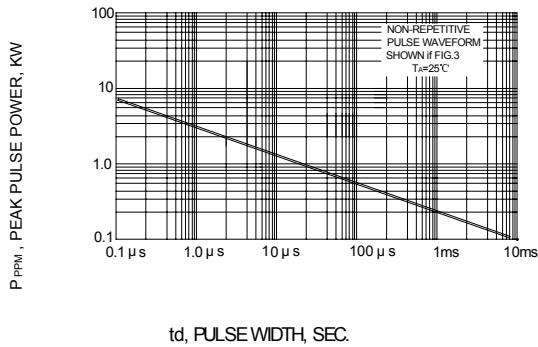


FIG.2 – PULSE DERATING CURVE

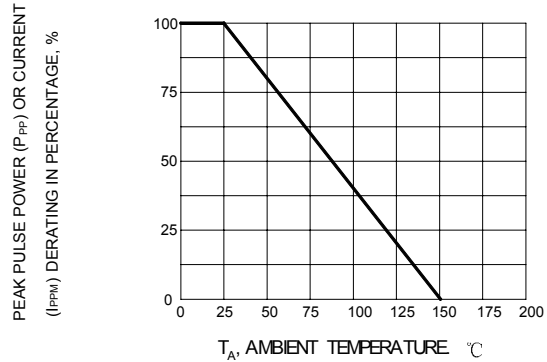


FIG.3 – PULSE WAVEFORM

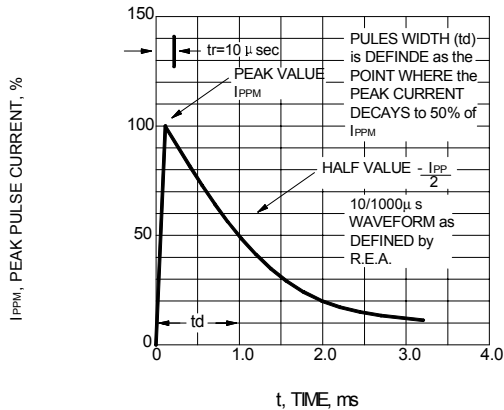


FIG.4 – TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL

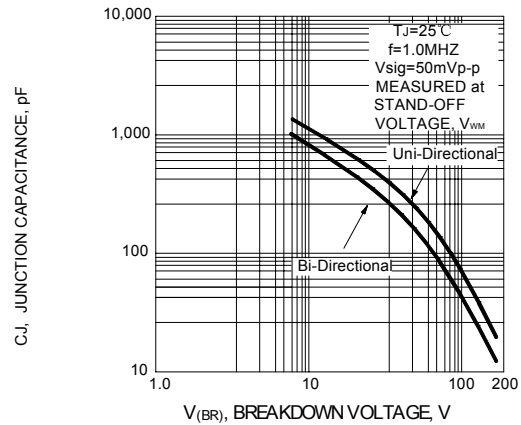


FIG.6 – MAXIMUM NON-REPETITIVE FORWARD SURGE CURRENT UNIDIRECTIONAL ONLY

