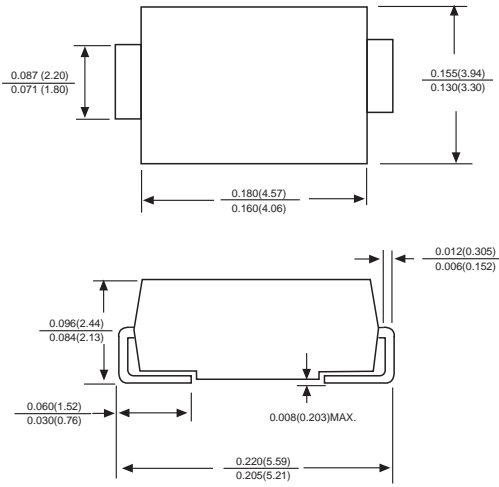


# SMBJ5.0 THRU SMBJ170CA

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

Breakdown voltage: 5.0-170 Volts Peak pulse power: 600 Watts

### DO-214AA



Dimensions in inches and (millimeters)

### FEATURE

- ◆ Optimized for LAN protection applications
- ◆ Ideal for ESD protection of data lines in accordance with IEC 1000-4-2(IEC801-2)
- ◆ Ideal for EFT protection of data lines in accordance with IEC1000-4-4(IEC801-2)
- ◆ Plastic package has Underwriters Laboratory Flammability Classification 94V-0
- ◆ Glass passivated junction
- ◆ 600w peak pulse power capability
- ◆ Excellent clamping capability
- ◆ Low incremental surge resistance
- ◆ Fast response time: typically less than 1.0ps from 0v to  $V_{(BR)}$  min
- ◆ High temperature soldering guaranteed: 265°C/10S at terminals

### MECHANICAL DATA

**Case:** JEDEC DO-214AA molded plastic body over passivated junction

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

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

**Mounting Position:** Any

**Weight:** 0.003 ounce, 0.093 grams

### DEVICES FOR BIDIRECTIONAL APPLICATIONS

For bidirectional use suffix C or CA for types SMBJ5.0 thru SMBJ170 (e.g. SMBJ5.0C, SMBJ170CA)  
Electrical characteristics apply in both directions.

### MAXIMUM RATINGS AND CHARACTERISTICS

Ratings at 25°C ambient temperature unless otherwise specified.

	SYMBOLS	VALUE	UNITS
Peak pulse power dissipation with a 10/1000µs wavetorm(NOTE 1,2,FIG.1)	P <sub>PPM</sub>	Minimum 600	Watts
Peak forward surge current (Note 1,2,3)	I <sub>FSM</sub>	100.0	Amps
Peak pulse current with a 10/1000µs waveform(NOTE 1)	I <sub>PPM</sub>	See Table 1	Amps
Steady state power dissipation (Note 3)	P <sub>M(AV)</sub>	5.0	Watts
Maximum instantaneous forward voltage at 50A(Note 3,4) unidirectional only	V <sub>F</sub>	3.5/5.0	Volts
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<sub>A</sub>=25°C per Fig.2

2. Mounted on 5.0mm<sup>2</sup> copper pads to each terminal

3. Measured on 8.3ms single half sine-wave. For uni-directional devices only.

4. V<sub>F</sub>=3.5V on SMB-5.0 thru SMB-90 devices and V<sub>F</sub>=5.0V on SMB-100 thru SMB-170 devices

## ELECTRICAL CHARACTERISTICS (at TA=25°C unless otherwise noted)

Device	Working Peak Reverse Voltage V <sub>WM</sub> (Volts)	Breakdown Voltage V <sub>(BR)</sub> (NOTE 1) (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> (NOTE 2) (Amps)	Maximum Reverse Leakage a V <sub>WM</sub> (NOTE 5) I <sub>D</sub> (μA)
		MIN	MAX				
SMBJ5.0	5.0	6.40	7.81	10	9.6	62.5	800
SMBJ5.0A	5.0	6.40	7.08	10	9.2	65.2	800
SMBJ6.0	6.0	6.67	8.15	10	11.4	52.6	800
SMBJ6.0A	6.0	6.67	7.37	10	10.3	58.3	800
SMBJ6.5	6.5	7.22	8.82	10	12.3	48.8	500
SMBJ6.5A	6.5	7.22	7.98	10	11.2	53.6	500
SMBJ7.0	7.0	7.78	9.51	10	13.3	45.1	200
SMBJ7.0A	7.0	7.78	8.60	10	12.0	50.0	200
SMBJ7.5	7.5	8.33	10.3	1.0	14.3	42.0	100
SMBJ7.5A	7.5	8.33	9.21	1.0	12.9	46.5	100
SMBJ8.0	8.0	8.89	10.9	1.0	15.0	40.0	50.0
SMBJ8.0A	8.0	8.89	9.83	1.0	13.6	44.1	50.0
SMBJ8.5	8.5	9.44	11.5	1.0	15.9	37.7	10.0
SMBJ8.5A	8.5	9.44	10.4	1.0	14.4	41.7	10.0
SMBJ9.0	9.0	10.0	12.2	1.0	16.9	35.5	5.0
SMBJ9.0A	9.0	10.0	11.1	1.0	15.4	39.0	5.0
SMBJ10	10.00	11.1	13.6	1.0	18.8	31.9	5.0
SMBJ10A	10.00	11.1	12.3	1.0	17.0	35.3	5.0
SMBJ11	11.00	12.2	14.9	1.0	20.1	29.9	5.0
SMBJ11A	11.00	12.2	13.5	1.0	18.2	33.0	5.0
SMBJ12	12.00	13.3	16.3	1.0	22.0	27.3	5.0
SMBJ12A	12.00	13.3	14.7	1.0	19.9	30.2	5.0
SMBJ13	13.00	14.4	17.6	1.0	23.8	25.2	5.0
SMBJ13A	13.00	14.4	15.9	1.0	21.5	27.9	5.0
SMBJ14	14.00	15.6	19.1	1.0	25.8	23.3	5.0
SMBJ14A	14.00	15.6	17.2	1.0	23.2	25.9	5.0
SMBJ15	15.00	16.7	20.4	1.0	26.9	22.3	5.0
SMBJ15A	15.00	16.7	18.5	1.0	24.4	24.6	5.0
SMBJ16	16.00	17.8	21.8	1.0	28.8	20.8	5.0
SMBJ16A	16.00	17.8	19.7	1.0	26.0	23.1	5.0
SMBJ17	17.00	18.9	23.1	1.0	30.5	19.7	5.0
SMBJ17A	17.00	18.9	20.9	1.0	27.6	21.7	5.0
SMBJ18	18.00	20.0	24.4	1.0	32.2	18.6	5.0
SMBJ18A	18.00	20.0	22.1	1.0	29.2	20.5	5.0
SMBJ20	20.00	22.2	27.1	1.0	35.8	16.8	5.0
SMBJ20A	20.00	22.2	24.5	1.0	32.4	18.5	5.0
SMBJ22	22.00	24.4	29.8	1.0	39.4	15.2	5.0
SMBJ22A	22.00	24.4	26.9	1.0	35.5	16.9	5.0
SMBJ24	24.00	26.7	32.6	1.0	43.0	14.0	5.0
SMBJ24A	24.00	26.7	29.5	1.0	38.9	15.4	5.0
SMBJ26	26.00	28.9	35.3	1.0	46.6	12.9	5.0
SMBJ26A	26.00	28.9	31.9	1.0	42.1	14.3	5.0
SMBJ28	28.00	31.1	38.0	1.0	50.0	12.0	5.0
SMBJ28A	28.00	31.1	34.4	1.0	45.4	13.2	5.0
SMBJ30	30.00	33.3	40.7	1.0	53.5	11.2	5.0
SMBJ30A	30.00	33.3	36.8	1.0	48.4	12.4	5.0

## ELECTRICAL CHARACTERISTICS (at TA=25°C unless otherwise noted)

Device	Working Peak Reverse Voltage V <sub>WM</sub> (Volts)	Breakdown Voltage V <sub>(BR)</sub> (NOTE 1) (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> (NOTE 2) (Amps)	Maximum Reverse Leakage a V <sub>WM</sub> (NOTE 3) I <sub>D</sub> (μA)
		MIN	MAX				
SMBJ33	33.00	36.7	44.9	1.0	59.0	10.2	5.0
SMBJ33A	33.00	36.7	40.6	1.0	53.3	11.3	5.0
SMBJ36	36.00	40.0	48.9	1.0	64.3	9.3	5.0
SMBJ36A	36.00	40.0	44.2	1.0	58.1	10.3	5.0
SMBJ40	40.00	44.4	54.3	1.0	71.4	8.4	5.0
SMBJ40A	40.00	44.4	49.1	1.0	64.5	9.3	5.0
SMBJ43	43.00	47.8	58.4	1.0	76.7	7.8	5.0
SMBJ43A	43.00	47.8	52.8	1.0	69.4	8.6	5.0
SMBJ45	45.00	50.0	61.1	1.0	80.3	7.5	5.0
SMBJ45A	45.00	50.0	55.3	1.0	72.7	8.3	5.0
SMBJ48	48.00	53.3	65.1	1.0	85.5	7.0	5.0
SMBJ48A	48.00	53.3	58.9	1.0	77.4	7.8	5.0
SMBJ51	51.00	56.7	69.3	1.0	91.1	6.6	5.0
SMBJ51A	51.00	56.7	62.7	1.0	82.4	7.3	5.0
SMBJ54	54.00	60.0	73.3	1.0	96.3	6.2	5.0
SMBJ54A	54.00	60.0	66.3	1.0	87.1	6.9	5.0
SMBJ58	58.00	64.4	78.7	1.0	103.0	5.8	5.0
SMBJ58A	58.00	64.4	71.2	1.0	93.6	6.4	5.0
SMBJ60	60.00	66.7	81.5	1.0	107.0	5.6	5.0
SMBJ60A	60.00	66.7	73.7	1.0	96.8	6.2	5.0
SMBJ64	64.00	71.1	86.4	1.0	114.0	5.3	5.0
SMBJ64A	64.00	71.1	78.6	1.0	103.0	5.8	5.0
SMBJ70	70.00	77.8	95.1	1.0	125	4.8	5.0
SMBJ70A	70.00	77.8	86.0	1.0	113	5.3	5.0
SMBJ75	75.00	83.3	102	1.0	134	4.5	5.0
SMBJ75A	75.00	83.3	92.1	1.0	121	5.0	5.0
SMBJ78	78.00	86.7	106	1.0	139	4.3	5.0
SMBJ78A	78.00	86.7	95.8	1.0	126	4.8	5.0
SMBJ85	85.00	94.4	115	1.0	151	4.0	5.0
SMBJ85A	85.00	94.4	104	1.0	137	4.4	5.0
SMBJ90	90.00	100	122	1.0	160	3.8	5.0
SMBJ90A	90.00	100	111	1.0	146	4.1	5.0
SMBJ100	100.00	111	136	1.0	179	3.4	5.0
SMBJ100A	100.00	111	123	1.0	162	3.7	5.0
SMBJ110	110.00	122	149	1.0	196	3.1	5.0
SMBJ110A	110.00	122	135	1.0	177	3.4	5.0
SMBJ120	120.00	133	163	1.0	214	2.8	5.0
SMBJ120A	120.00	133	147	1.0	193	3.1	5.0
SMBJ130	130.00	144	176	1.0	231	2.6	5.0
SMBJ130A	130.00	144	159	1.0	209	2.9	5.0
SMBJ150	150.00	167	204	1.0	268	2.2	5.0
SMBJ150A	150.00	167	185	1.0	243	2.5	5.0
SMBJ160	160.00	178	218	1.0	287	2.1	5.0
SMBJ160A	160.00	178	197	1.0	259	2.3	5.0
SMBJ170	170.00	189	231	1.0	304	2.0	5.0
SMBJ170A	170.00	189	209	1.0	275	2.2	5.0

**NOTES:**

1. V<sub>(BR)</sub> measured after I<sub>T</sub> applied for 300μs, I<sub>T</sub>=square wave pulse or equivalent
2. Surge current waveform per Fig.3 and derated per Fig.2
3. For bidirectional types having V<sub>WM</sub> of 10 volts and less, the I<sub>D</sub> limit is doubled
4. All items and symbols are consistent with ANSI/IEEE C62.35

# RATINGS AND CHARACTERISTIC CURVES SMBJ5.0 THUR 170CA

FIG. 1-PEAK PULSE POWER RATING CURVE

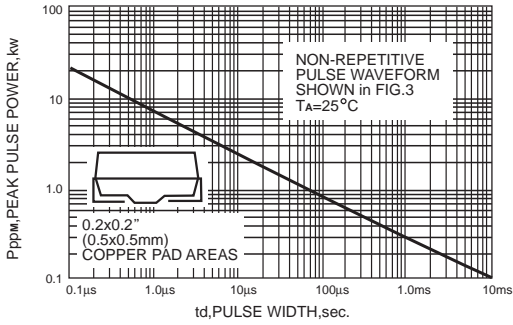


FIG. 2-PULSE DERATING CURVE

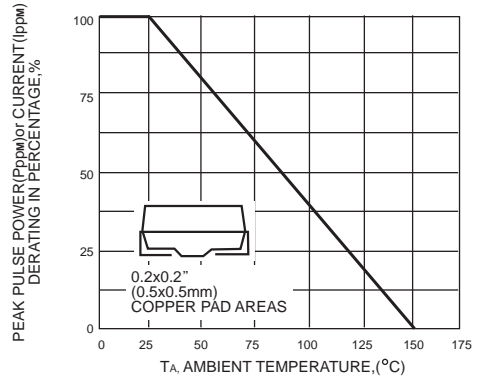


FIG. 3-PULSE WAVEFORM



FIG. 4-TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL

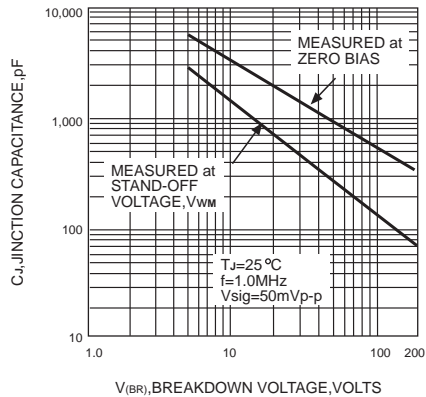


FIG. 5-STEADY STATE POWER DERATING CURVE



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

