

# 3.0SMCJ5.0C - 220CA

# SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR

**Stand-off Voltage : 5.0 to 220V**

**Peak Pulse Power : 3000 W**

**FEATURES :**

- \* 3000W peak pulse power capability with a 10/1000µs waveform
- \* Excellent clamping capability
- \* Low inductance
- \* High temperature soldering : 250 °C/10 seconds at terminals.
- \* Built-in strain relief
- \* **Pb / RoHS Free**

**MECHANICAL DATA**

- \* Case : SMC Molded plastic
- \* Epoxy : UL94V-O rate flame retardant
- \* Lead : Lead Formed for Surface Mount
- \* Mounting position : Any
- \* Weight : 0.21 gram

**DEVICES FOR UNIPOLAR APPLICATIONS**

For uni-directional without "C"  
Electrical characteristics apply in both directions

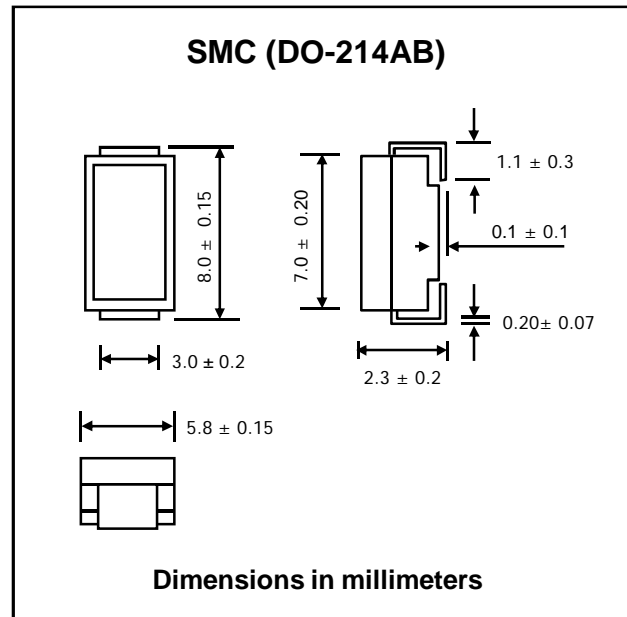
**MAXIMUM RATINGS**

Rating at 25 °C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Unit
Peak Pulse Power Dissipation on 10/1000 µs waveform <sup>(1)</sup> <sup>(2)</sup>	P <sub>PPM</sub>	3000	W
Peak Pulse Current on 10/1000 s waveform <sup>(1)</sup>	I <sub>PPM</sub>	See Next Table	A
Peak Forward Surge Current, 8.3 ms single half sine-wave superimposed on rated load <sup>(2)</sup> <sup>(3)</sup>	I <sub>FSM</sub>	200	A
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	- 55 to + 150	°C

**Notes :**

- (1) Non-repetitive Current pulse, per Fig. 3 and derated above Ta = 25 °C per Fig. 1
- (2) Mounted on 5.0 mm<sup>2</sup> (0.013 thick) land areas.
- (3) Measured on 8.3 ms , single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minutes maximum.



## ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified

Type	Breakdown Voltage @ $I_T^{(1)}$		Working Peak Reverse Voltage	Maximum Reverse Leakage @ $V_{WM}$	Maximum Clamping Voltage @ $I_{PPM}$	Maximum Peak Pulse Surge Current	
	$V_{BR}$ (V)		$I_T$	$V_{RWM}$	$I_R$	$V_C$	$I_{PPM}$
	Min.	Max.	(mA)	(V)	( $\mu$ A)	(V)	(A)
3.0SMCJ5.0C	6.4	7.55	10	5.0	2000	9.6	312.5
3.0SMCJ5.0CA	6.4	7.25	10	5.0	2000	9.2	326
3.0SMCJ6.0C	6.67	8.45	10	6.0	2000	11.4	263.2
3.0SMCJ6.0CA	6.67	7.67	10	6.0	2000	10.3	291.3
3.0SMCJ6.5C	7.22	9.14	10	6.5	1000	12.3	243.9
3.0SMCJ6.5CA	7.22	8.3	10	6.5	1000	11.2	267.9
3.0SMCJ7.0C	7.78	9.86	10	7.0	400	13.3	225.6
3.0SMCJ7.0CA	7.78	8.95	10	7.0	400	12.0	250
3.0SMCJ7.5C	8.33	10.67	1.0	7.5	200	14.3	209.8
3.0SMCJ7.5CA	8.33	9.58	1.0	7.5	200	12.9	232.6
3.0SMCJ8.0C	8.89	11.3	1.0	8.0	100	15.0	200
3.0SMCJ8.0CA	8.89	10.23	1.0	8.0	100	13.6	220.6
3.0SMCJ8.5C	9.44	11.92	1.0	8.5	50	15.9	188.8
3.0SMCJ8.5CA	9.44	10.82	1.0	8.5	50	14.4	208.4
3.0SMCJ9.0C	10.0	12.6	1.0	9.0	20	16.9	177.4
3.0SMCJ9.0CA	10.0	11.5	1.0	9.0	20	15.4	194.8
3.0SMCJ10C	11.1	14.1	1.0	10	5	18.8	159.6
3.0SMCJ10CA	11.1	12.8	1.0	10	5	17.0	176.4
3.0SMCJ11C	12.2	15.4	1.0	11	5	20.1	149.2
3.0SMCJ11CA	12.2	14.0	1.0	11	5	18.2	184.8
3.0SMCJ12C	13.3	16.9	1.0	12	5	22.0	136.4
3.0SMCJ12CA	13.3	15.3	1.0	12	5	19.9	150.6
3.0SMCJ13C	14.4	18.2	1.0	13	5	23.8	126.0
3.0SMCJ13CA	14.4	16.5	1.0	13	5	21.5	139.4
3.0SMCJ14C	15.6	19.8	1.0	14	5	25.8	116.2
3.0SMCJ14CA	15.6	17.9	1.0	14	5	23.2	129.4
3.0SMCJ15C	16.7	21.1	1.0	15	5	26.9	111.6
3.0SMCJ15CA	16.7	19.2	1.0	15	5	24.4	123.0
3.0SMCJ16C	17.8	22.6	1.0	16	5	28.8	104.2
3.0SMCJ16CA	17.8	20.5	1.0	16	5	26.0	115.4
3.0SMCJ17C	18.9	23.9	1.0	17	5	30.5	98.4
3.0SMCJ17CA	18.9	21.7	1.0	17	5	27.6	106.6
3.0SMCJ18C	20.0	25.3	1.0	18	5	32.2	93.2
3.0SMCJ18CA	20.0	23.3	1.0	18	5	29.2	102.8
3.0SMCJ20C	22.2	28.1	1.0	20	5	35.8	83.8
3.0SMCJ20CA	22.2	25.5	1.0	20	5	32.4	92.6
3.0SMCJ22C	24.4	30.9	1.0	22	5	39.4	76.2
3.0SMCJ22CA	24.4	28.0	1.0	22	5	35.5	84.4
3.0SMCJ24C	26.7	33.8	1.0	24	5	43.0	69.8
3.0SMCJ24CA	26.7	30.7	1.0	24	5	38.9	77.2
3.0SMCJ26C	28.9	36.6	1.0	26	5	46.6	64.4
3.0SMCJ26CA	28.9	33.2	1.0	26	5	42.1	71.2
3.0SMCJ28C	31.1	39.4	1.0	28	5	50.0	60.0
3.0SMCJ28CA	31.1	35.8	1.0	28	5	45.4	66.0
3.0SMCJ30C	33.3	42.2	1.0	30	5	53.5	56.0
3.0SMCJ30CA	33.3	38.3	1.0	30	5	48.4	62.0
3.0SMCJ33C	36.7	46.5	1.0	33	5	59.0	50.4
3.0SMCJ33CA	36.7	42.2	1.0	33	5	53.3	56.2
3.0SMCJ36C	40.0	50.7	1.0	36	5	64.3	46.6
3.0SMCJ36CA	40.0	46.0	1.0	36	5	58.1	51.6
3.0SMCJ40C	44.4	56.3	1.0	40	5	71.4	42.0
3.0SMCJ40CA	44.4	51.1	1.0	40	5	64.5	46.4
3.0SMCJ43C	47.8	60.5	1.0	43	5	76.7	39.2
3.0SMCJ43CA	47.8	54.9	1.0	43	5	69.4	43.2

## ELECTRICAL CHARACTERISTICS

Rating at 25 °C ambient temperature unless otherwise specified

Type	Breakdown Voltage @ $I_T^{(1)}$		Working Peak Reverse Voltage	Maximum Reverse Leakage @ $V_{WM}$	Maximum Clamping Voltage @ $I_{PPM}$	Maximum Peak Pulse Surge Current	
	$V_{BR}$ (V)		$I_T$	$V_{RWM}$	$I_R$	$V_C$	$I_{PPM}$
	Min.	Max.	(mA)	(V)	( $\mu$ A)	(V)	(A)
3.0SMCJ45C	50.0	63.3	1.0	45	5	80.3	37.4
3.0SMCJ45CA	50.0	57.5	1.0	45	5	72.7	41.2
3.0SMCJ48C	53.3	67.5	1.0	48	5	85.5	35.0
3.0SMCJ48CA	53.3	61.3	1.0	48	5	77.4	38.8
3.0SMCJ51C	56.7	71.8	1.0	51	5	91.1	37.0
3.0SMCJ51CA	56.7	65.2	1.0	51	5	82.4	36.4
3.0SMCJ54C	60.0	76.0	1.0	54	5	96.3	31.2
3.0SMCJ54CA	60.0	69.0	1.0	54	5	87.1	34.4
3.0SMCJ58C	64.4	81.6	1.0	58	5	103	39.2
3.0SMCJ58CA	64.4	74.1	1.0	58	5	93.6	32.0
3.0SMCJ60C	66.7	84.5	1.0	60	5	107	28.0
3.0SMCJ60CA	66.7	76.7	1.0	60	5	96	31.0
3.0SMCJ64C	71.1	90.1	1.0	64	5	114	26.4
3.0SMCJ64CA	71.1	81.8	1.0	64	5	103	29.2
3.0SMCJ70C	77.8	98.6	1.0	70	5	125	24.0
3.0SMCJ70CA	77.8	89.5	1.0	70	5	113	26.6
3.0SMCJ75C	83.3	105.7	1.0	75	5	134	22.4
3.0SMCJ75CA	83.3	95.8	1.0	75	5	121	24.8
3.0SMCJ78C	86.7	109.8	1.0	78	5	139	21.6
3.0SMCJ78CA	86.7	99.7	1.0	78	5	126	22.8
3.0SMCJ85C	94.4	119.2	1.0	85	5	151	19.8
3.0SMCJ85CA	94.4	108.2	1.0	85	5	137	20.8
3.0SMCJ90C	100	126.5	1.0	90	5	160	18.8
3.0SMCJ90CA	100	115.5	1.0	90	5	146	20.6
3.0SMCJ100C	111	141.0	1.0	100	5	179	16.6
3.0SMCJ100CA	111	128.0	1.0	100	5	162	18.6
3.0SMCJ110C	122	154.5	1.0	110	5	196	15.4
3.0SMCJ110CA	122	140.5	1.0	110	5	177	16.8
3.0SMCJ120C	133	169.0	1.0	120	5	214	14.0
3.0SMCJ120CA	133	153.0	1.0	120	5	193	15.6
3.0SMCJ130C	144	182.5	1.0	130	5	231	13.0
3.0SMCJ130CA	144	165.5	1.0	130	5	209	14.4
3.0SMCJ150C	167	211.5	1.0	150	5	268	11.2
3.0SMCJ150CA	167	192.5	1.0	150	5	243	12.4
3.0SMCJ160C	178	226.0	1.0	160	5	287	10.4
3.0SMCJ160CA	178	205.0	1.0	160	5	259	11.6
3.0SMCJ170C	189	239.5	1.0	170	5	304	9.8
3.0SMCJ170CA	189	217.5	1.0	170	5	275	11.0
3.0SMCJ180C	198	253.8	1.0	180	5	322	9.3
3.0SMCJ180CA	198	230.4	1.0	180	5	292	10.3
3.0SMCJ190C	209	267.9	1.0	190	5	340	8.8
3.0SMCJ190CA	209	243.2	1.0	190	5	308	9.7
3.0SMCJ200C	220	282.0	1.0	200	5	358	8.4
3.0SMCJ200CA	220	256.0	1.0	200	5	324	9.3
3.0SMCJ210C	231	296.1	1.0	210	5	376	7.8
3.0SMCJ210CA	231	268.8	1.0	210	5	340	8.8
3.0SMCJ220C	242	310.2	1.0	220	5	394	7.6
3.0SMCJ220CA	242	281.6	1.0	220	5	356	8.4

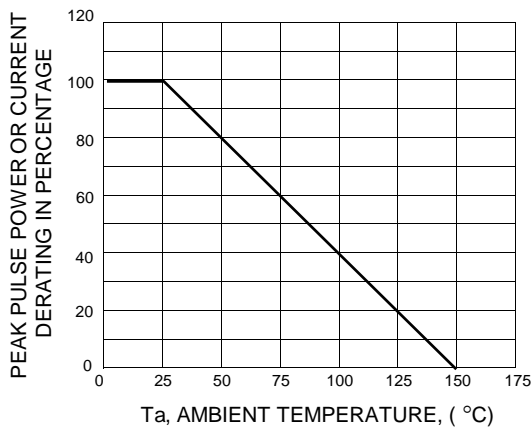
**Notes :**

(1) Pulse test :  $t_p \leq 50\text{ms}$ .

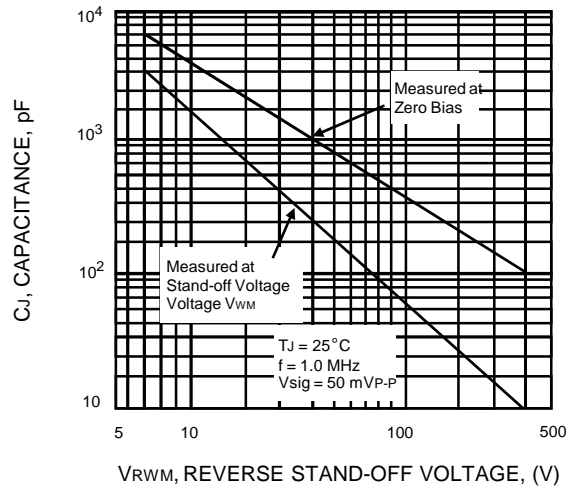
(2) "SMCJ" will be omitted on marking of the diode.

**RATING AND CHARACTERISTIC CURVES ( 3.0SMCJ5.0C - 220CA )**

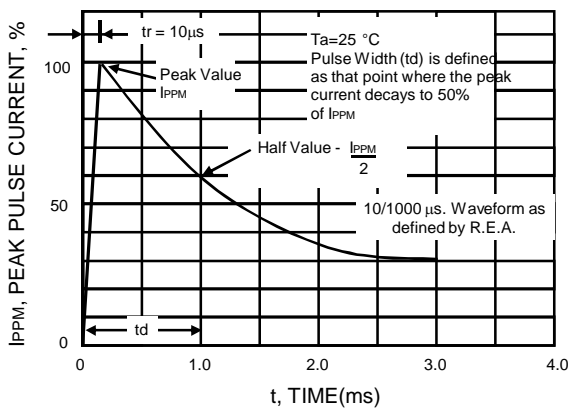
**FIG.1 - PULSE DERATING CURVE**



**FIG.2 - TYPICAL JUNCTION CAPACITANCE**



**FIG.3 - PULSE WAVEFORM**



**FIG.4 - PEAK PULSE POWER RATING CURVE**

