Transient Voltage Suppressor SMCJ5.0--SMCJ440CA

Features

- Glass passivated junction
- Low incremental surge resistance, excellent clamping capability
- Underwriters Laboratory Recognition under UL standard
- for safety 497B: Isolated Loop Circuit Protection
- Low profile package with built-in strain relief for surface mounted applications
- 1500W peak pulse power capability with a 10/1000μs
- waveform, repetition rate (duty cycle): 0.01%
- Very fast response time
- High temperature soldering guaranteed: 250°C/10 seconds at terminals

Mechanical Data

- Case: SMC molded plastic
- Molding compound, UL flammability classification rating 94V-0
- Terminals: Solder plated, solderable per MIL- STD-202,Method 208
- Polarity: Color band denotes cathode end

Devices for Bidirectional Applications

- For bi-directional devices, use suffix C or CA (e.g. SMCJ10C, SMCJ10CA). Electrical characteristics apply in both directions.

Maximum Ratings (@T_A = 25°C unless otherwise specified)

Parameter	Symbol	Value	Units
Peak power dissipation with a 10/1000μs waveform (NOTE 1,2, FIG.1)	P_{PPM}	Minimum 1500	W
Peak pulse current with a 10/1000μs waveform (NOTE 1)	I_{PPM}	See Table Below	A
Typical thermal resistance, junction to ambient ((NOTE 2)	$R_{\theta JA}$	100	℃/W
Peak forward surge current, 8.3ms single half sine-wave uni-directional only (NOTE 3)	I_{FSM}	100	A
Typical thermal resistance, junction to lead	$R_{\theta JL}$	20	℃/W
Operating junction and storage temperature range	T_J, T_{STG}	-55---+150	℃

NOTES:

1. Non-repetitive current pules, per Fig. 3 and derated above TA=25 per Fig. 2.
2. Mounted on minimum recommended pad layout.
3. Mounted on 0.2 x 0.2" (5.0 x 5.0mm) copper pads to each terminal.

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Electrical Characteristics (@T_A = 25°C unless otherwise specified)

Type	Breakdown Voltage V_{BR}@I_T		Test Current	Reverse Standoff Voltage	Max. Reverse Leakage@ V_{RWM}	Max. Peak Pulse Current	Max. Clamping Voltage @I_{PP}
	V		I_T	V_{RWM}	I_R	I_{PP}	V_C
	Min	Max	m A	V	u A	A	V
SMCJ5.0	6.40	7.82	10	5.0	1000	156.3	9.6
SMCJ5.0A	6.40	7.07	10	5.0	1000	163.0	9.2
SMCJ6.0	6.67	8.15	10	6.0	1000	131.6	11.4
SMCJ6.0A	6.67	7.37	10	6.0	1000	145.6	10.3
SMCJ6.5	7.22	8.82	10	6.5	500	122.0	12.3
SMCJ6.5A	7.22	7.98	10	6.5	500	133.9	11.2
SMCJ6.8	7.56	9.22	10	6.8	500	123.3	12.1
SMCJ6.8A	7.56	8.35	10	6.8	500	136.0	12.0
SMCJ7.0	7.78	9.51	10	7.0	200	112.8	13.3
SMCJ7.0A	7.78	8.60	10	7.0	200	125.0	12.0
SMCJ7.5	8.33	10.2	1.0	7.5	100	104.9	14.3
SMCJ7.5A	8.33	9.21	1.0	7.5	100	116.3	12.9
SMCJ8.0	8.89	10.9	1.0	8.0	50	100.0	15.0
SMCJ8.0A	8.89	9.83	1.0	8.0	50	110.3	13.6
SMCJ8.5	9.44	11.5	1.0	8.5	20	94.3	15.9
SMCJ8.5A	9.44	10.4	1.0	8.5	20	104.2	14.4
SMCJ9.0	10.0	12.2	1.0	9.0	10	88.8	16.9
SMCJ9.0A	10.0	11.1	1.0	9.0	10	97.4	15.4
SMCJ10	11.1	13.6	1.0	10	5.0	79.8	18.8
SMCJ10A	11.1	12.3	1.0	10	5.0	88.2	17.0
SMCJ11	12.2	14.9	1.0	11	5.0	74.6	20.1
SMCJ11A	12.2	13.5	1.0	11	5.0	82.4	18.2
SMCJ12	13.3	16.3	1.0	12	5.0	68.2	22.0
SMCJ12A	13.3	14.7	1.0	12	5.0	75.4	19.9
SMCJ13	14.4	17.6	1.0	13	5.0	63.0	23.8
SMCJ13A	14.4	15.9	1.0	13	5.0	69.8	21.5
SMCJ14	15.6	19.1	1.0	14	5.0	58.1	25.8
SMCJ14A	15.6	17.2	1.0	14	5.0	64.7	23.2
SMCJ15	16.7	20.4	1.0	15	5.0	55.8	26.9
SMCJ15A	16.7	18.5	1.0	15	5.0	61.5	24.4

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	V		I_T	V_{RWM}	I_R	I_{PP}	V_C
	Min	Max	m A	V	u A	A	V
SMCJ16	17.8	21.8	1.0	16	5.0	52.1	28.8
SMCJ16A	17.8	19.7	1.0	16	5.0	57.7	26.0
SMCJ17	18.9	23.1	1.0	17	5.0	49.2	30.5
SMCJ17A	18.9	20.9	1.0	17	5.0	54.3	27.6
SMCJ18	20.0	24.4	1.0	18	5.0	46.6	32.2
SMCJ18A	20.0	22.1	1.0	18	5.0	51.4	29.2
SMCJ20	22.2	27.1	1.0	20	5.0	41.9	35.8
SMCJ20A	22.2	24.5	1.0	20	5.0	46.3	32.4
SMCJ22	24.4	29.8	1.0	22	5.0	38.1	39.4
SMCJ22A	24.4	26.9	1.0	22	5.0	42.3	35.5
SMCJ24	26.7	32.6	1.0	24	5.0	34.9	43.0
SMCJ24A	26.7	29.5	1.0	24	5.0	38.6	38.9
SMCJ26	28.9	35.3	1.0	26	5.0	32.2	46.6
SMCJ26A	28.9	31.9	1.0	26	5.0	35.6	42.1
SMCJ28	31.1	38.0	1.0	28	5.0	30.0	50.0
SMCJ28A	31.1	34.4	1.0	28	5.0	33.0	45.4
SMCJ30	33.3	40.7	1.0	30	5.0	28.0	53.5
SMCJ30A	33.3	36.8	1.0	30	5.0	31.0	48.4
SMCJ33	36.7	44.9	1.0	33	5.0	25.4	59.0
SMCJ33A	36.7	40.6	1.0	33	5.0	28.1	53.3
SMCJ36	40.0	48.9	1.0	36	5.0	23.3	64.3
SMCJ36A	40.0	44.2	1.0	36	5.0	25.8	58.1
SMCJ40	44.4	54.3	1.0	40	5.0	21.0	71.4
SMCJ40A	44.4	49.1	1.0	40	5.0	23.3	64.5
SMCJ43	47.8	58.4	1.0	43	5.0	19.6	76.7
SMCJ43A	47.8	52.8	1.0	43	5.0	21.6	69.4
SMCJ45	50.0	61.1	1.0	45	5.0	18.7	80.3
SMCJ45A	50.0	55.3	1.0	45	5.0	20.6	72.7
SMCJ48	53.3	65.1	1.0	48	5.0	17.5	85.5
SMCJ48A	53.3	58.9	1.0	48	5.0	19.4	77.4
SMCJ51	56.7	69.3	1.0	51	5.0	16.5	91.1
SMCJ51A	56.7	62.7	1.0	51	5.0	18.2	82.4

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	V		I_T	V_{RWM}	I_R	I_{PP}	V_C
	Min	Max	m A	V	u A	A	V
SMCJ54	60.0	73.3	1.0	54	5.0	15.6	96.3
SMCJ54A	60.0	66.3	1.0	54	5.0	17.2	87.1
SMCJ58	64.4	78.7	1.0	58	5.0	14.6	103
SMCJ58A	64.4	71.2	1.0	58	5.0	16.0	93.6
SMCJ60	66.7	81.5	1.0	60	5.0	14.0	107
SMCJ60A	66.7	73.7	1.0	60	5.0	15.5	96.8
SMCJ64	71.1	86.9	1.0	64	5.0	13.2	114
SMCJ64A	71.1	78.6	1.0	64	5.0	14.6	103
SMCJ68	75.5	92.3	1.0	68	5.0	12.4	121
SMCJ68A	75.5	83.5	1.0	68	5.0	13.7	109
SMCJ70	77.8	95.1	1.0	70	5.0	12.0	125
SMCJ70A	77.8	86.0	1.0	75	5.0	13.3	113
SMCJ75	83.3	102	1.0	75	5.0	11.2	134
SMCJ75A	83.3	92.1	1.0	78	5.0	12.4	121
SMCJ78	86.7	106	1.0	78	5.0	10.8	139
SMCJ78A	86.7	95.8	1.0	78	5.0	11.9	126
SMCJ85	94.4	115	1.0	85	5.0	9.9	151
SMCJ85A	94.4	104	1.0	85	5.0	10.9	137
SMCJ90	100	122	1.0	90	5.0	9.4	160
SMCJ90A	100	111	1.0	90	5.0	10.3	146
SMCJ100	111	136	1.0	100	5.0	8.4	179
SMCJ100A	111	123	1.0	100	5.0	9.3	162
SMCJ110	122	149	1.0	110	5.0	7.7	196
SMCJ110A	122	135	1.0	110	5.0	8.5	177
SMCJ120	133	163	1.0	120	5.0	7.0	214
SMCJ120A	133	147	1.0	120	5.0	7.8	193
SMCJ130	144	176	1.0	130	5.0	6.5	231
SMCJ130A	144	159	1.0	130	5.0	7.2	209
SMCJ150	167	204	1.0	150	5.0	5.6	268
SMCJ150A	167	185	1.0	150	5.0	6.2	243
SMCJ160	178	218	1.0	160	5.0	5.2	287
SMCJ160A	178	197	1.0	160	5.0	5.8	259

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	V		I_T	V_{RWM}	I_R	I_{PP}	V_C
	Min	Max	m A	V	u A	A	V
SMCJ170	189	231	1.0	170	5.0	4.9	304
SMCJ170A	189	209	1.0	170	5.0	5.5	275
SMCJ188	209	255	1.0	188	5.0	4.4	344
SMCJ188A	209	231	1.0	188	5.0	4.6	328
SMCJ200	222	272	1.0	200	5.0	4.2	356
SMCJ200A	222	246	1.0	200	5.0	4.6	323
SMCJ220	245	299	1.0	220	5.0	3.8	392
SMCJ220A	245	270	1.0	220	5.0	4.2	355
SMCJ240	267	326	1.0	240	5.0	3.5	428
SMCJ240A	267	295	1.0	240	5.0	3.9	388
SMCJ250	278	340	1.0	250	5.0	3.4	446
SMCJ250A	278	307	1.0	250	5.0	3.7	404
SMCJ300	333	408	1.0	300	5.0	2.8	535
SMCJ300A	333	368	1.0	300	5.0	3.1	485
SMCJ350	389	476	1.0	350	5.0	2.4	624
SMCJ350A	389	429	1.0	350	5.0	2.7	566
SMCJ360	400	489	1.0	360	5.0	2.3	652
SMCJ360A	400	442	1.0	360	5.0	2.6	582
SMCJ400	445	544	1.0	400	5.0	2.1	713
SMCJ400A	445	491	1.0	400	5.0	2.3	646
SMCJ440	489	598	1.0	440	5.0	1.9	784
SMCJ440A	489	540	1.0	440	5.0	2.1	711

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Ratings and Characteristic Curves (T_A=25°C unless otherwise noted)

FIG.1 – PEAK PULSE POWER RATING CURVE

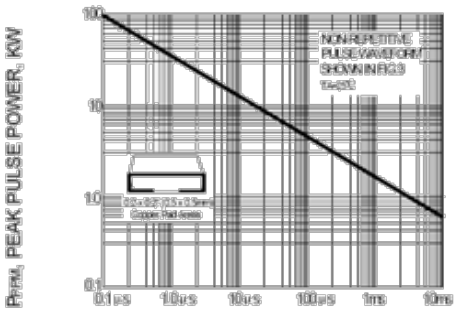


FIG.2 – PULSE DERATING CURVE

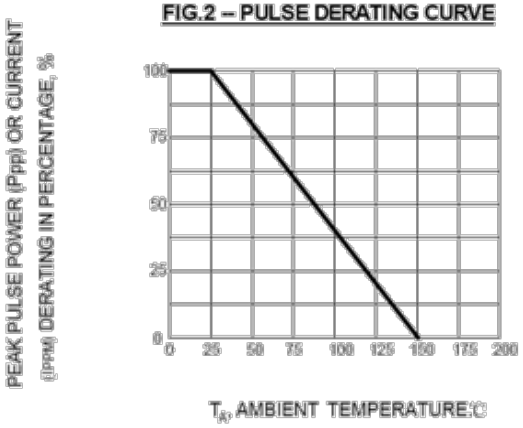


FIG.3 – PULSE WAVEFORM

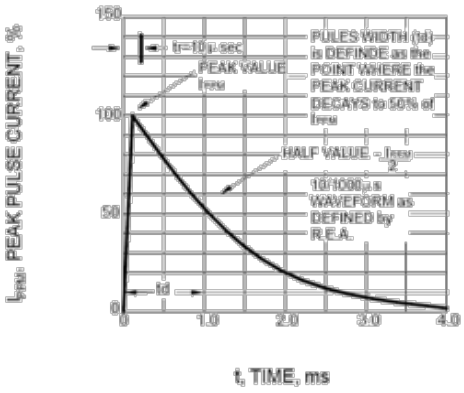


FIG.4 – TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL

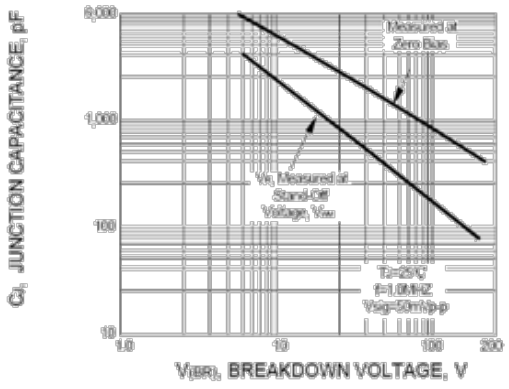


FIG.5 – TYPICAL TRANSIENT THERMAL IMPEDANCE

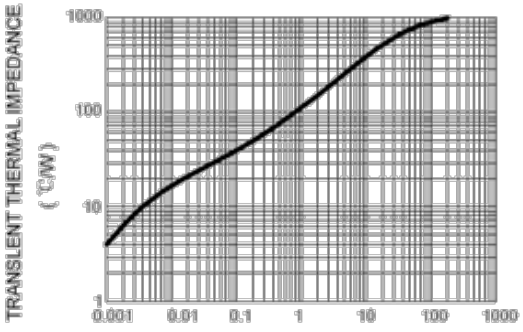
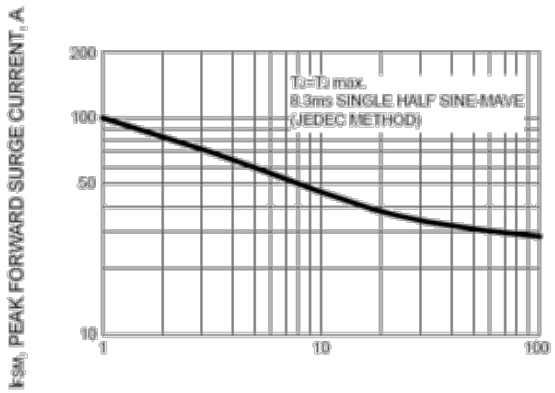
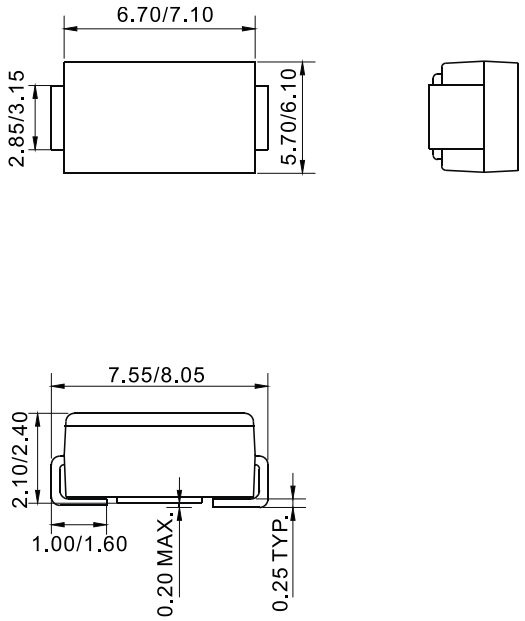


FIG.6 – MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

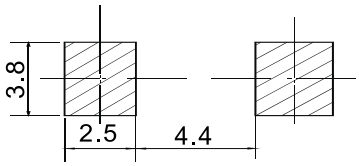


Transient Voltage Suppressor SMCJ5.0--SMCJ440CA

Package Outline Dimensions(unit:mm)



Mounting Pad Layout(unit:mm)



Ordering Information

Part No.	Package	Shipping
SMCJ5.0-SMCJ440CA	SMC	3000 /Tape&Reel