

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: JEDEC DO-214AB molded plastic over passivated chip
- Terminals: solder plated, solderable per MIL-STD-750, method 2026
- Polarity: for uni-directional types the color band denotes the cathode, which is positive with respect to the anode under normal TVS operation
- Mounting position: any Weight: 0.007 ounces, 0.21 grams
- Flammability: Epoxy is rated UL 94V-0

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 and Thermal Characteristics (T_A=25°C unless otherwise noted)

Characteristic	Symbol	Value	Unit
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 _{θJA}	100.0	°C/W
Peak forward surge current, 8.3ms single half sine-wave uni-directional only (NOTE 3)	I _{FSM}	100.0	A
Typical thermal resistance, junction to lead	R _{θJL}	20	°C/W
Operating junction and storage temperature range	T _J , T _{STG}	-55---+150	°C

NOTES: (1) Non-repetitive current pulses, per Fig. 3 and derated above T_A=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.

TRANSIENT VOLTAGE SUPPRESSOR

SMCJ5.0--SMCJ440CA

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$)

Type	Dynamic			V _{WM}	I _{RM}	I _{PPM}	VC
	V		@I _T		V _{WM}		I _{PPM}
	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
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



TRANSIENT VOLTAGE SUPPRESSOR

SMCJ5.0--SMCJ440CA

Type	Dynamic			V _{WM}	I _{RM}	I _{PPM}	VC
	V		@I _T		V _{WM}		I _{PPM}
	Min	Max	m A	V	uA	A	V
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
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

TRANSIENT VOLTAGE SUPPRESSOR

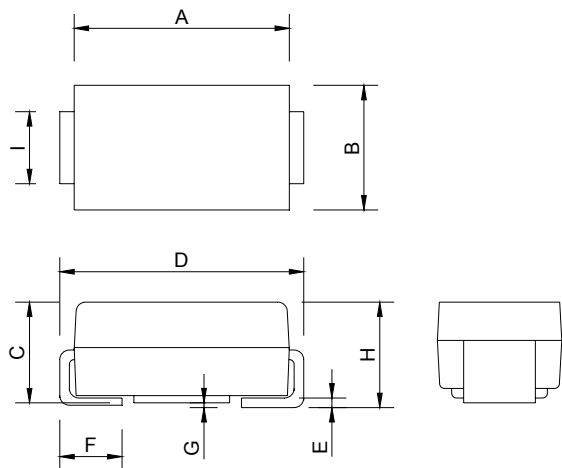
SMCJ5.0--SMCJ440CA

Type	Dynamic			V_{WM}	I_{RM}	I_{PPM}	VC
	V		@ I_T		V_{WM}		I_{PPM}
	Min	Max	m A		μA		v
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
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

TRANSIENT VOLTAGE SUPPRESSOR

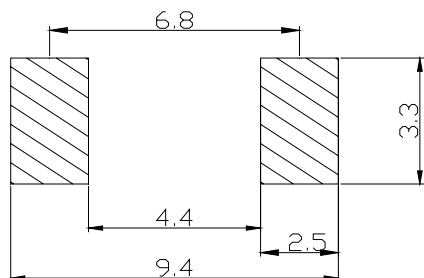
SMCJ5.0--SMCJ440CA

PACKAGE OUTLINE DIMENSIONS



SMC		
Dim	Min	Max
A	6.70	7.10
B	5.70	6.10
C	2.10	2.40
D	7.55	8.05
E	0.15	0.35
F	1.00	1.60
G	0.20MAX	
H	2.15	2.45
I	2.85	3.15
All Dimensions in mm		

SOLDERING FOOTPRINT



Unit : mm

PACKAGE INFORMATION

Device	Package	Shipping
SMCJ5.0-SMCJ440CA	DO-214AB(SMC)	3000/Tape&Reel

TRANSIENT VOLTAGE SUPPRESSOR

SMCJ5.0--SMCJ440CA

FIG.1 -- PEAK PULSE POWER RATING CURVE

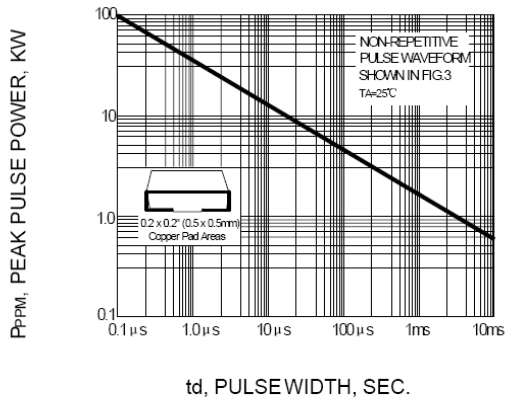


FIG.2 -- PULSE DERATING CURVE

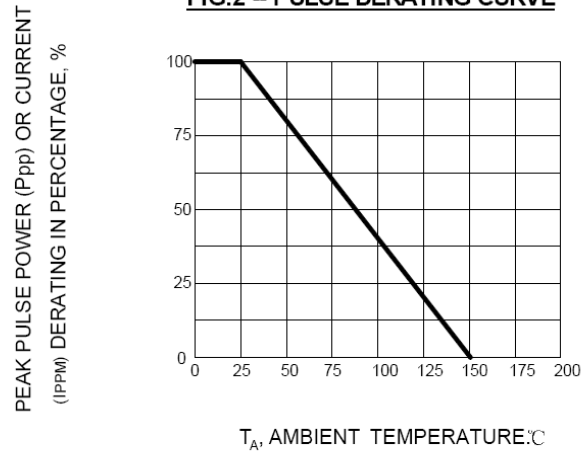


FIG.3 -- PULSE WAVEFORM

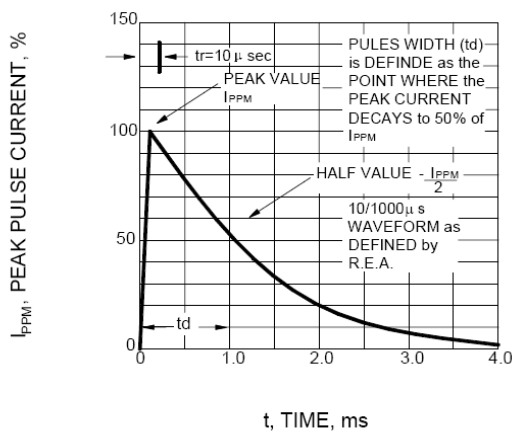


FIG.4 -- TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL

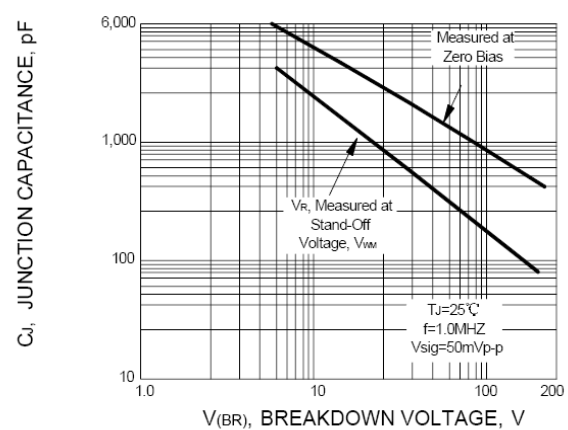


FIG.5 -- TYPICAL TRANSIENT THERMAL IMPEDANCE

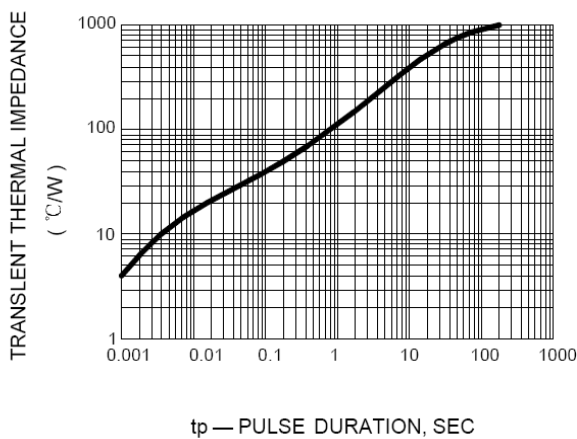


FIG.6 -- MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

