

TRANSIENT VOLTAGE SUPPRESSOR

SMBJ5.0--SMBJ440CA

FEATURES

- Glass passivated junction
- Low incremental surge resistance, excellent clamping capability
- Low profile package with built-in strain relief for surface mounted applications
- 600W peak pulse power capability with a 10/1000 μ s
Wave form, 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-214AA 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: 0.002 ounces, 0.064 grams

Devices for Bidirectional Applications

For bi-directional devices, use suffix C or CA (e.g. SMBJ10C, SMBJ10CA). Electrical characteristics apply in both directions.

Maximum Ratings and Thermal Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Value	Unit
Peak power dissipation with a 10/1000 μ s waveform (NOTE 1,2, FIG.1)	P_{PPM}	Minimum 600	W
Peak pulse current with a 10/1000 μ s waveform (NOTE 1)	I_{PPM}	See Table Below	A
Typical thermal resistance, junction to ambient (NOTE 2)	$R_{\theta JA}$	100.0	$^\circ\text{C/W}$
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	$R_{\theta JL}$	20	$^\circ\text{C/W}$
Operating junction and storage temperature range	T_J, T_{STG}	-55---+150	$^\circ\text{C}$

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.

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

Type	Dynamic			V_{WM}	I_{RM}	I_{PPM}	V_C
	V		@ I_T				
	Min	Max	m A	V	μ A	A	V
SMBJ5.0	6.40	7.82	10	5.0	800	62.5	9.6
SMBJ5.0A	6.40	7.07	10	5.0	800	65.2	9.2
SMBJ6.0	6.67	8.15	10	6.0	800	52.6	11.4
SMBJ6.0A	6.67	7.37	10	6.0	800	58.3	10.3
SMBJ6.5	7.22	8.82	10	6.5	500	48.8	12.3
SMBJ6.5A	7.22	7.98	10	6.5	500	53.6	11.2
SMBJ6.8	7.56	9.24	10	6.8	200	49.5	12.1
SMBJ6.8A	7.56	8.35	10	6.8	200	54.6	11.0
SMBJ7.0	7.78	9.51	10	7.0	200	45.1	13.3
SMBJ7.0A	7.78	8.60	10	7.0	200	50.0	12.0
SMBJ7.5	8.33	10.2	1.0	7.5	100	42.0	14.3
SMBJ7.5A	8.33	9.21	1.0	7.5	100	46.5	12.9
SMBJ8.0	8.89	10.9	1.0	8.0	50	40.0	15.0
SMBJ8.0A	8.89	9.83	1.0	8.0	50	44.1	13.6
SMBJ8.5	9.44	11.5	1.0	8.5	20	37.7	15.9
SMBJ8.5A	9.44	10.4	1.0	8.5	20	41.7	14.4
SMBJ9.0	10.0	12.2	1.0	9.0	10	35.5	16.9
SMBJ9.0A	10.0	11.1	1.0	9.0	10	39.0	15.4
SMBJ10	11.1	13.6	1.0	10	5.0	31.9	18.8
SMBJ10A	11.1	12.3	1.0	10	5.0	35.3	17.0
SMBJ11	12.2	14.9	1.0	11	5.0	29.9	20.1
SMBJ11A	12.2	13.5	1.0	11	5.0	33.0	18.2
SMBJ12	13.3	16.3	1.0	12	5.0	27.3	22.0
SMBJ12A	13.3	14.7	1.0	12	5.0	30.2	19.9
SMBJ13	14.4	17.6	1.0	13	5.0	25.2	23.8
SMBJ13A	14.4	15.9	1.0	13	5.0	27.9	21.5
SMBJ14	15.6	19.1	1.0	14	5.0	23.3	25.8
SMBJ14A	15.6	17.2	1.0	14	5.0	25.9	23.2
SMBJ15	16.7	20.4	1.0	15	5.0	22.3	26.9
SMBJ15A	16.7	18.5	1.0	15	5.0	24.6	24.4
SMBJ16	17.8	21.8	1.0	16	5.0	20.8	28.8
SMBJ16A	17.8	19.7	1.0	16	5.0	23.1	26.0
SMBJ17	18.9	23.1	1.0	17	5.0	19.7	30.5
SMBJ17A	18.9	20.9	1.0	17	5.0	21.7	27.6
SMBJ18	20.0	24.4	1.0	18	5.0	18.6	32.2
SMBJ18A	20.0	22.1	1.0	18	5.0	20.5	29.2



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Type	Dynamic			V_{WM}	I_{RM}	I_{PPM}	V_C
	V		@ I_T				
	Min	Max	mA	V	μA	A	V
SMBJ20	22.2	27.1	1.0	20	5.0	16.8	35.8
SMBJ20A	22.2	24.5	1.0	20	5.0	18.5	32.4
SMBJ22	24.4	29.8	1.0	22	5.0	15.2	39.4
SMBJ22A	24.4	26.9	1.0	22	5.0	16.9	35.5
SMBJ24	26.7	32.6	1.0	24	5.0	14.0	43.0
SMBJ24A	26.7	29.5	1.0	24	5.0	15.4	38.9
SMBJ26	28.9	35.3	1.0	26	5.0	12.9	46.6
SMBJ26A	28.9	31.9	1.0	26	5.0	14.3	42.1
SMBJ28	31.1	38.0	1.0	28	5.0	12.0	50.0
SMBJ28A	31.1	34.4	1.0	28	5.0	13.2	45.4
SMBJ30	33.3	40.7	1.0	30	5.0	11.2	53.5
SMBJ30A	33.3	36.8	1.0	30	5.0	12.4	48.4
SMBJ33	36.7	44.9	1.0	33	5.0	10.2	59.0
SMBJ33A	36.7	40.6	1.0	33	5.0	11.3	53.3
SMBJ36	40.0	48.9	1.0	36	5.0	9.3	64.3
SMBJ36A	40.0	44.2	1.0	36	5.0	10.3	58.1
SMBJ40	44.4	54.3	1.0	40	5.0	8.4	71.4
SMBJ40A	44.4	49.1	1.0	40	5.0	9.3	64.5
SMBJ43	47.8	58.4	1.0	43	5.0	7.8	76.7
SMBJ43A	47.8	52.8	1.0	43	5.0	8.6	69.4
SMBJ45	50.0	61.1	1.0	45	5.0	7.5	80.3
SMBJ45A	50.0	55.3	1.0	45	5.0	8.3	72.7
SMBJ48	53.3	65.1	1.0	48	5.0	7.0	85.5
SMBJ48A	53.3	58.9	1.0	48	5.0	7.8	77.4
SMBJ51	56.7	69.3	1.0	51	5.0	6.6	91.1
SMBJ51A	56.7	62.7	1.0	51	5.0	7.3	82.4
SMBJ54	60.0	73.3	1.0	54	5.0	6.2	96.3
SMBJ54A	60.0	66.3	1.0	54	5.0	6.9	87.1
SMBJ58	64.4	78.7	1.0	58	5.0	5.8	103
SMBJ58A	64.4	71.2	1.0	58	5.0	6.4	93.6
SMBJ60	66.7	81.5	1.0	60	5.0	5.6	107
SMBJ60A	66.7	73.7	1.0	60	5.0	6.2	96.8
SMBJ64	71.1	86.9	1.0	64	5.0	5.3	114
SMBJ64A	71.1	78.6	1.0	64	5.0	5.8	103
SMBJ70	77.8	95.1	1.0	70	5.0	4.8	125
SMBJ70A	77.8	86.0	1.0	75	5.0	5.3	113
SMBJ75	83.3	102	1.0	75	5.0	4.5	134
SMBJ75A	83.3	92.1	1.0	78	5.0	5.0	121
SMBJ78	86.7	106	1.0	78	5.0	4.3	139
SMBJ78A	86.7	95.8	1.0	78	5.0	4.8	126

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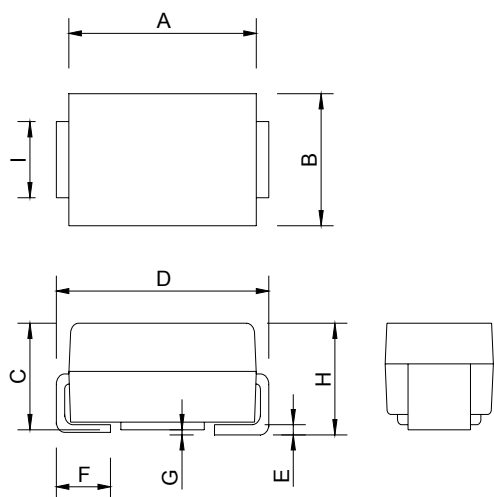
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Type	Dynamic			V _{WM}	I _{RM}	I _{PPM}	V _C
	V		@I _T		V _{WM}		I _{PPM}
	Min	Max	m A	V	u A	A	v
SMBJ85	94.4	115	1.0	85	5.0	4.0	151
SMBJ85A	94.4	104	1.0	85	5.0	4.4	137
SMBJ90	100	122	1.0	90	5.0	3.8	160
SMBJ90A	100	111	1.0	90	5.0	4.1	146
SMBJ100	111	136	1.0	100	5.0	3.4	179
SMBJ100A	111	123	1.0	100	5.0	3.7	162
SMBJ110	122	149	1.0	110	5.0	3.1	196
SMBJ110A	122	135	1.0	110	5.0	3.4	177
SMBJ120	133	163	1.0	120	5.0	2.8	214
SMBJ120A	133	147	1.0	120	5.0	3.1	193
SMBJ130	144	176	1.0	130	5.0	2.6	231
SMBJ130A	144	159	1.0	130	5.0	2.9	209
SMBJ150	167	204	1.0	150	5.0	2.2	268
SMBJ150A	167	185	1.0	150	5.0	2.5	243
SMBJ160	178	218	1.0	160	5.0	2.1	287
SMBJ160A	178	197	1.0	160	5.0	2.3	259
SMBJ170	189	231	1.0	170	5.0	2.0	304
SMBJ170A	189	209	1.0	170	5.0	2.2	275
SMBJ180	200	245	1.0	180	5.0	1.9	321
SMBJ180A	200	221	1.0	180	5.0	2.1	291
SMBJ188	209	255	1.0	188	5.0	1.7	344
SMBJ188A	209	231	1.0	188	5.0	2.0	328
SMBJ200	222	272	1.0	200	5.0	1.7	356
SMBJ200A	222	246	1.0	200	5.0	1.9	323
SMBJ220	245	299	1.0	220	5.0	1.5	392
SMBJ220A	245	270	1.0	220	5.0	1.7	355
SMBJ240	267	326	1.0	240	5.0	1.4	428
SMBJ240A	267	295	1.0	240	5.0	1.5	388
SMBJ250	278	340	1.0	250	5.0	1.3	446
SMBJ250A	278	307	1.0	250	5.0	1.5	404
SMBJ300	333	408	1.0	300	5.0	1.1	535
SMBJ300A	333	368	1.0	300	5.0	1.2	485
SMBJ350	389	476	1.0	350	5.0	1.0	624
SMBJ350A	389	430	1.0	350	5.0	1.1	565
SMBJ360	400	489	1.0	360	5.0	0.9	642
SMBJ360A	400	442	1.0	360	5.0	1.0	582
SMBJ400	445	544	1.0	400	5.0	0.8	713
SMBJ400A	445	491	1.0	400	5.0	0.9	646
SMBJ440	489	598	1.0	440	5.0	0.8	784
SMBJ440A	489	540	1.0	440	5.0	0.8	711

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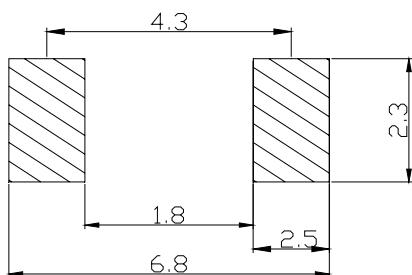
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PACKAGE OUTLINE DIMENSIONS



DO-214AA (SMB)		
Dim	Min	Max
A	4.30	4.70
B	3.30	3.70
C	2.00	2.30
D	5.05	5.55
E	0.10	0.30
F	0.95	1.55
G	0.20MAX	
H	2.10	2.50
I	1.85	2.15
All Dimensions in mm		

SOLDERING FOOTPRINT



Unit : mm

PACKAGE INFORMATION

Device	Package	Shipping
SMBJ5.0-SMBJ440CA	DO-214AA(SMB)	3000/Tape&Reel

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FIG.1 -- PEAK PULSE POWER RATING CURVE

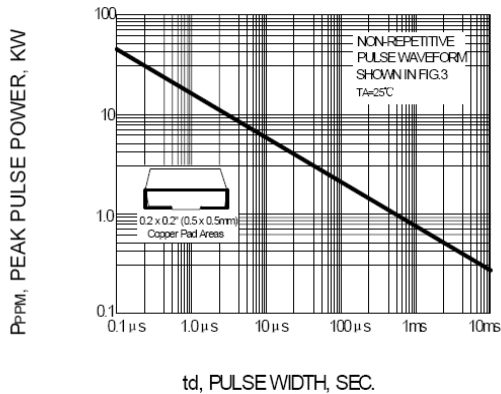


FIG.2 -- PULSE DERATING CURVE

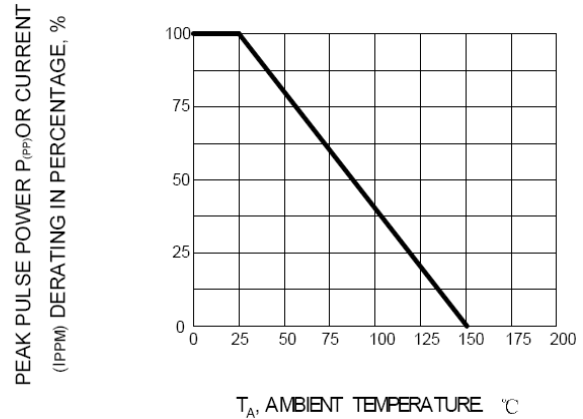


FIG.3 -- PULSE WAVEFORM

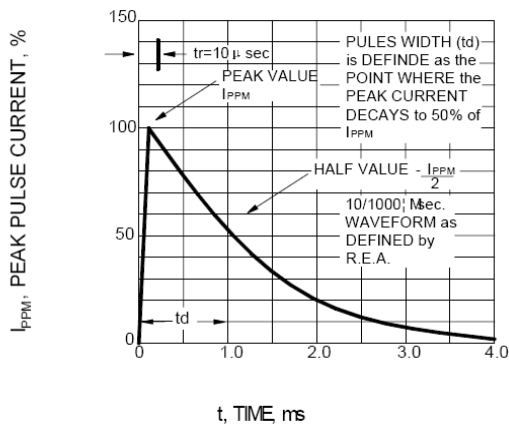


FIG.4 -- TYPICAL JUNCTION CAPACITANCE UNIDIRECTIONAL

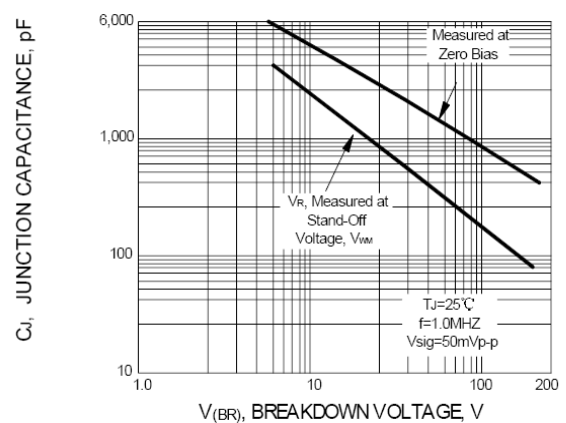


FIG.5 -- TYPICAL TRANSIENT THERMAL IMPEDANCE

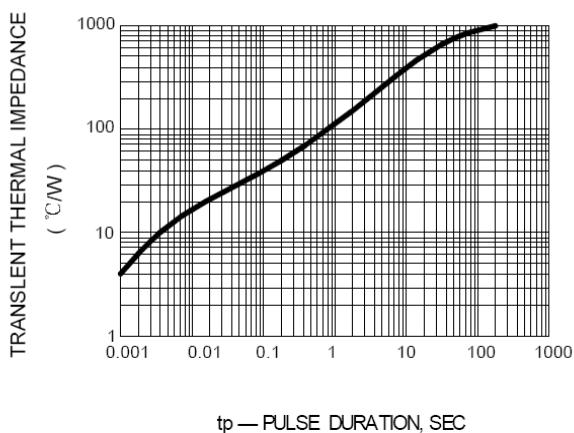


FIG.6 -- MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

