

# SMBJ5.0C - 440CA

Stand-off Voltage : 5.0 to 440V

Peak Pulse Power : 600 W

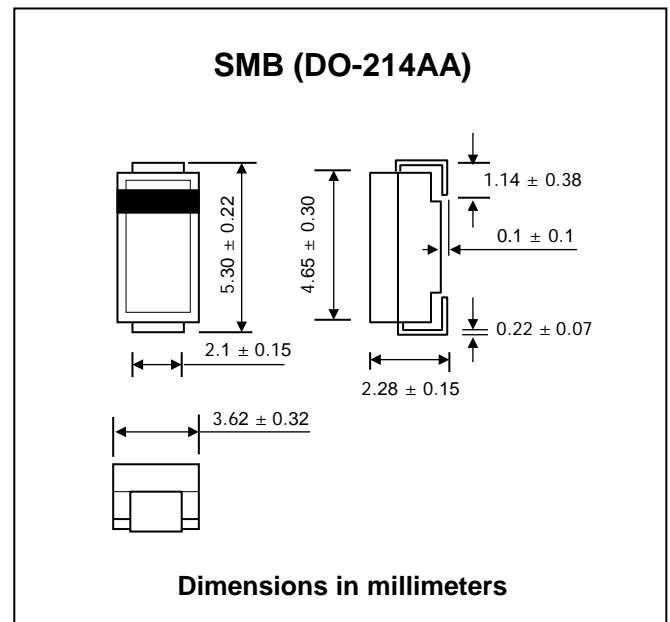
## FEATURES :

- \* 600W peak pulse power capability with a 10/1000 $\mu$ s waveform
- \* Excellent clamping capability
- \* Very fast response time
- \* Pb / RoHS Free

## MECHANICAL DATA

- \* Case : SMB Molded plastic
- \* Epoxy : UL94V-0 rate flame retardant
- \* Lead : Lead Formed for Surface Mount
- \* Mounting position : Any
- \* Weight : 0.108 gram

## SURFACE MOUNT BI-DIRECTIONAL TRANSIENT VOLTAGE SUPPRESSOR



## MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Units
Peak Pulse Power Dissipation on 10/1000 $\mu$ s waveform <sup>(1)(2)</sup> (Fig. 3)	PPPM	Minimum 600	W
Peak Pulse Current on 10/1000 $\mu$ s waveform <sup>(1)</sup> (Fig. 4)	IPPM	See Table	A
Typical Thermal resistance, Junction to ambient	R $\theta$ JA	100	°C/W
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 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal.

## ELECTRICAL CHARACTERISTICS (Rating at 25 °C ambient temp)

Type	Breakdown Voltage @ $I_T^{(1)}$			Reverse Stand-off Voltage	Maximum Reverse Leakage @ $V_{WM}$	Maximum Peak Pulse Surge Current	Maximum Clamping Voltage @ $I_{PPM}$
	$V_{BR}$ (V)		$I_T$	$V_{WM}$	$I_R$	$I_{PPM}$	$V_C$
	Min.	Max.	(mA)	(V)	( $\mu A$ )	(A)	(V)
SMBJ5.0C	6.40	7.82	10	5.0	1600	62.5	9.6
SMBJ5.0CA	6.40	7.25	10	5.0	1600	65.2	9.2
SMBJ6.0C	6.67	8.15	10	6.0	1600	52.6	11.4
SMBJ6.0CA	6.67	7.37	10	6.0	1600	58.3	10.3
SMBJ6.5C	7.22	8.82	10	6.5	1000	48.7	12.3
SMBJ6.5CA	7.22	7.98	10	6.5	1000	53.6	11.2
SMBJ7.0C	7.78	9.51	10	7.0	400	45.1	13.3
SMBJ7.0CA	7.78	8.6	10	7.0	400	50.0	12.0
SMBJ7.5C	8.33	10.2	1.0	7.5	200	42.0	14.3
SMBJ7.5CA	8.33	9.21	1.0	7.5	200	46.5	12.9
SMBJ8.0C	8.89	10.9	1.0	8.0	100	40.0	15.0
SMBJ8.0CA	8.89	9.83	1.0	8.0	100	44.1	13.6
SMBJ8.5C	9.44	11.5	1.0	8.5	20	37.7	15.9
SMBJ8.5CA	9.44	10.4	1.0	8.5	20	41.7	14.4
SMBJ9.0C	10.0	12.2	1.0	9.0	10	35.5	16.9
SMBJ9.0CA	10.0	11.1	1.0	9.0	10	39.0	15.4
SMBJ10C	11.1	13.6	1.0	10	2.0	31.9	18.8
SMBJ10CA	11.1	12.3	1.0	10	2.0	35.3	17.0
SMBJ11C	12.2	14.9	1.0	11	1.0	29.9	20.1
SMBJ11CA	12.2	13.5	1.0	11	1.0	33.0	18.2
SMBJ12C	13.3	16.3	1.0	12	1.0	27.3	22.0
SMBJ12CA	13.3	14.7	1.0	12	1.0	30.2	19.9
SMBJ13C	14.4	17.6	1.0	13	1.0	25.2	23.8
SMBJ13CA	14.4	15.9	1.0	13	1.0	27.9	21.5
SMBJ14C	15.6	19.1	1.0	14	1.0	23.3	25.8
SMBJ14CA	15.6	17.2	1.0	14	1.0	25.8	23.2
SMBJ15C	16.7	20.4	1.0	15	1.0	22.3	26.9
SMBJ15CA	16.7	18.5	1.0	15	1.0	24.0	24.4
SMBJ16C	17.8	21.8	1.0	16	1.0	20.8	28.8
SMBJ16CA	17.8	19.7	1.0	16	1.0	23.1	26.0
SMBJ17C	18.9	23.1	1.0	17	1.0	19.7	30.5
SMBJ17CA	18.9	20.9	1.0	17	1.0	21.7	27.6
SMBJ18C	20.0	24.4	1.0	18	1.0	18.6	32.2
SMBJ18CA	20.0	22.1	1.0	18	1.0	20.5	29.2
SMBJ20C	22.2	27.1	1.0	20	1.0	16.7	35.8
SMBJ20CA	22.2	24.5	1.0	20	1.0	18.5	32.4
SMBJ22C	24.4	29.8	1.0	22	1.0	15.2	39.4
SMBJ22CA	24.4	26.9	1.0	22	1.0	16.9	35.5
SMBJ24C	26.7	32.6	1.0	24	1.0	14.0	43.0
SMBJ24CA	26.7	29.5	1.0	24	1.0	15.4	38.9
SMBJ26C	28.9	35.3	1.0	26	1.0	12.4	46.6
SMBJ26CA	28.9	31.9	1.0	26	1.0	14.2	42.1
SMBJ28C	31.1	38	1.0	28	1.0	12.0	50.0
SMBJ28CA	31.1	34.4	1.0	28	1.0	13.2	45.4
SMBJ30C	33.3	40.7	1.0	30	1.0	11.2	53.5
SMBJ30CA	33.3	36.8	1.0	30	1.0	12.4	48.4
SMBJ33C	36.7	44.9	1.0	33	1.0	10.2	59.0
SMBJ33CA	36.7	40.6	1.0	33	1.0	11.3	53.3
SMBJ36C	40.0	48.9	1.0	36	1.0	9.3	64.3
SMBJ36CA	40.0	44.2	1.0	36	1.0	10.3	58.1

## ELECTRICAL CHARACTERISTICS (Rating at 25 °C ambient temp)

Type	Breakdown Voltage @ $I_T^{(1)}$			Reverse Stand-off Voltage	Maximum Reverse Leakage @ $V_{WM}$	Maximum Peak Pulse Surge Current	Maximum Clamping Voltage @ $I_{PPM}$				
	$V_{BR}$ (V)		$I_T$					$V_{WM}$	$I_R$	$I_{PPM}$	$V_C$
	Min.	Max.									
SMBJ40C	44.4	54.3	1.0	40	1.0	8.4	71.4				
SMBJ40CA	44.4	49.1	1.0	40	1.0	9.3	64.5				
SMBJ43C	47.8	58.4	1.0	43	1.0	7.8	76.7				
SMBJ43CA	47.8	52.8	1.0	43	1.0	8.6	69.4				
SMBJ45C	50.0	61.1	1.0	45	1.0	7.5	80.3				
SMBJ45CA	50.0	55.3	1.0	45	1.0	8.3	72.7				
SMBJ48C	53.3	65.1	1.0	48	1.0	7.0	85.5				
SMBJ48CA	53.3	58.9	1.0	48	1.0	7.7	77.4				
SMBJ51C	56.7	69.3	1.0	51	1.0	6.6	91.1				
SMBJ51CA	56.7	62.7	1.0	51	1.0	7.3	82.4				
SMBJ54C	60.0	73.3	1.0	54	1.0	6.2	96.3				
SMBJ54CA	60.0	66.3	1.0	54	1.0	6.9	87.1				
SMBJ58C	64.4	78.7	1.0	58	1.0	5.8	103				
SMBJ58CA	64.4	71.2	1.0	58	1.0	6.4	93.6				
SMBJ60C	66.7	81.5	1.0	60	1.0	5.6	107				
SMBJ60CA	66.7	73.7	1.0	60	1.0	6.2	96.8				
SMBJ64C	71.1	86.9	1.0	64	1.0	5.3	114				
SMBJ64CA	71.1	78.6	1.0	64	1.0	5.8	103				
SMBJ70C	77.8	95.1	1.0	70	1.0	4.8	125				
SMBJ70CA	77.8	86	1.0	70	1.0	5.3	113				
SMBJ75C	83.3	102	1.0	75	1.0	4.5	134				
SMBJ75CA	83.3	92.1	1.0	75	1.0	4.9	121				
SMBJ78C	86.7	106	1.0	78	1.0	4.3	139				
SMBJ78CA	86.7	95.8	1.0	78	1.0	4.7	126				
SMBJ85C	94.4	115	1.0	85	1.0	3.9	151				
SMBJ85CA	94.4	104	1.0	85	1.0	4.4	137				
SMBJ90C	100	122	1.0	90	1.0	3.8	160				
SMBJ90CA	100	111	1.0	90	1.0	4.1	146				
SMBJ100C	111	136	1.0	100	1.0	3.4	179				
SMBJ100CA	111	123	1.0	100	1.0	3.7	162				
SMBJ110C	122	149	1.0	110	1.0	3.0	196				
SMBJ110CA	122	135	1.0	110	1.0	3.4	177				
SMBJ120C	133	163	1.0	120	1.0	2.8	214				
SMBJ120CA	133	147	1.0	120	1.0	3.1	193				
SMBJ130C	144	176	1.0	130	1.0	2.6	231				
SMBJ130CA	144	159	1.0	130	1.0	2.9	209				
SMBJ150C	167	204	1.0	150	1.0	2.2	268				
SMBJ150CA	167	185	1.0	150	1.0	2.5	243				
SMBJ160C	178	218	1.0	160	1.0	2.1	287				
SMBJ160CA	178	197	1.0	160	1.0	2.3	259				
SMBJ170C	189	231	1.0	170	1.0	2.0	304				
SMBJ170CA	189	209	1.0	170	1.0	2.2	275				
SMBJ188C	209	255	1.0	188	1.0	1.7	344				
SMBJ188CA	209	231	1.0	188	1.0	2.0	328				
SMBJ200C	222	271	1.0	200	1.0	1.7	351				
SMBJ200CA	222	246	1.0	200	1.0	1.9	323				
SMBJ220C	245	299	1.0	220	1.0	1.6	386				
SMBJ220CA	245	270	1.0	220	1.0	1.7	355				

## ELECTRICAL CHARACTERISTICS (Rating at 25 °C ambient temp)

Type	Breakdown Voltage @ $I_T$ <sup>(1)</sup>			Reverse Stand-off Voltage	Maximum Reverse Leakage @ $V_{WM}$	Maximum Peak Pulse Surge Current	Maximum Clamping Voltage @ $I_{PPM}$
	$V_{BR}$ (V)		$I_T$	$V_{WM}$	$I_R$	$I_{PPM}$	$V_C$
	Min.	Max.	(mA)	(V)	( $\mu$ A)	(A)	(V)
<b>SMBJ250C</b>	278	339	1.0	250	1.0	1.4	439
<b>SMBJ250CA</b>	278	307	1.0	250	1.0	1.5	403
<b>SMBJ300C</b>	334	407	1.0	300	1.0	1.1	526
<b>SMBJ300CA</b>	334	368	1.0	300	1.0	1.2	484
<b>SMBJ350C</b>	389	475	1.0	350	1.0	1.0	614
<b>SMBJ350CA</b>	389	430	1.0	350	1.0	1.1	565
<b>SMBJ400C</b>	445	543	1.0	400	1.0	0.9	702
<b>SMBJ400CA</b>	445	491	1.0	400	1.0	0.9	645
<b>SMBJ440C</b>	489	597	1.0	440	1.0	0.8	772
<b>SMBJ440CA</b>	489	540	1.0	440	1.0	0.8	710

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

RATING AND CHARACTERISTIC CURVES ( SMBJ5.0C - SMBJ440CA )

FIG.1 - PULSE DERATING CURVE

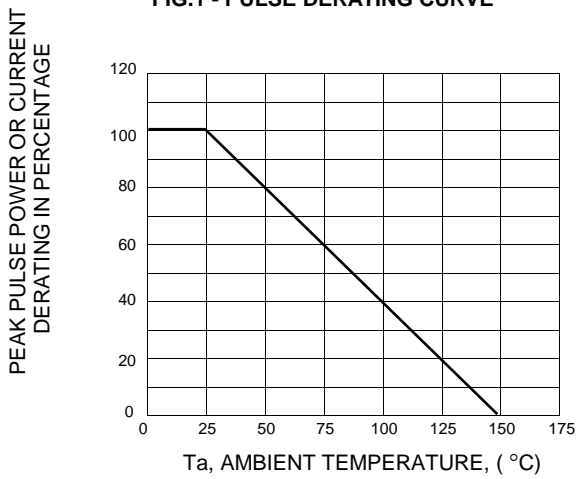


FIG.2 - TYPICAL JUNCTION CAPACITANCE

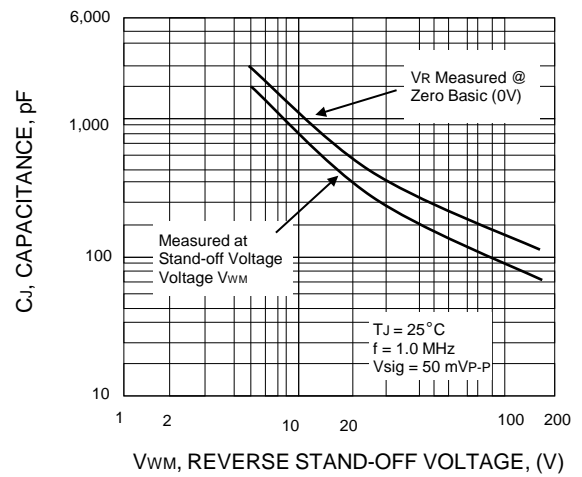


FIG.3 - PULSE WAVEFORM

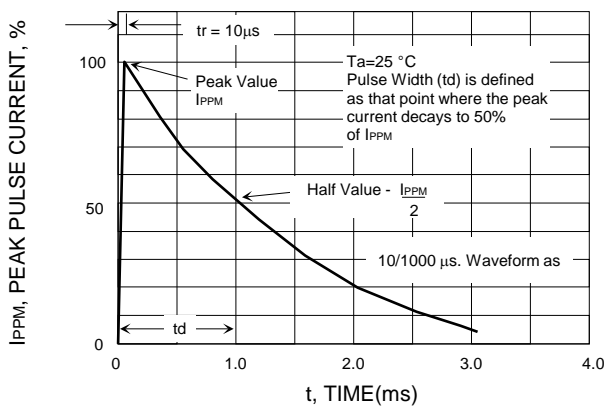
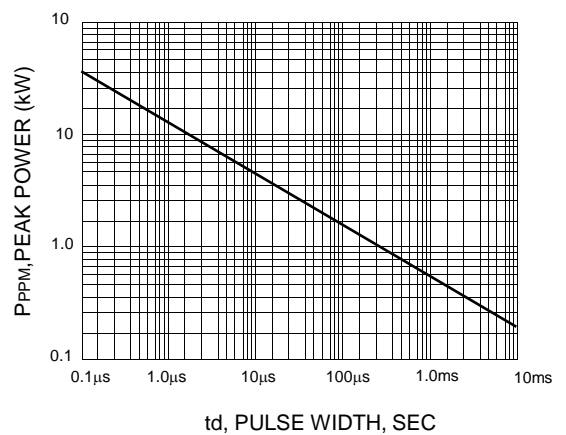


FIG.4 - PEAK PULSE POWER RATING CURVE



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