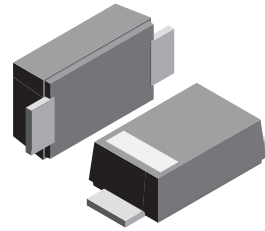




# SMBF5.0A(CA) - SMBF200A(CA)

## SURFACE MOUNT TRANSIENT VOLTAGE SUPPRESSOR DIODE

**VOLTAGE RANGE: 5.0 - 440 V**  
**POWER: 600Watts**

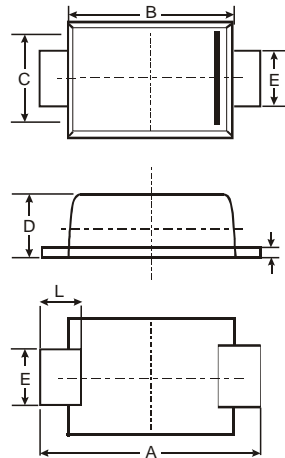


### Features

- Glass Passivated Die Construction
- Uni- and Bi-Directional Versions Available
- Excellent Clamping Capability
- Fast Response Time
- Plastic Material: UL Flammability Classification Rating 94V-0

### Mechanical Data

- Case: SMBF, Molded Plastic
- Terminals: Solder Plated, Solderable per MIL-STD-750, Method 2026
- Polarity: Cathode Band or Cathode Notch  
Marking: Date Code and Marking Code
- See Page 2
- Weight: 0.0018 ounces, 0.05grams



SMBF			
Dim	Min	Max	Typ
A	5.45	5.55	5.50
B	4.27	4.33	4.30
C	3.57	3.63	3.60
D	1.32	1.38	1.35
E	1.96	2.00	1.98
H	0.019	0.021	0.20
L	0.73	0.77	0.75
All Dimensions in mm			

### Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Peak Pulse Power Dissipation (Non repetitive current pulse derated above $T_A = 25^\circ\text{C}$ ) (Note 1)	$P_{PK}$	600	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Notes 1, 2, & 3)	$I_{FSM}$	100	A
Instantaneous Forward Voltage @ $I_{PP} = 35\text{A}$ (Notes 1, 2, & 3)	$V_F$	$V_{BR} < 100\text{V}$ 3.5 $V_{BR} \geq 100\text{V}$ 5.0	V V
Operating and Storage Temperature Range	$T_j, T_{STG}$	-55 to +150	$^\circ\text{C}$

- Notes:
1. Valid provided that terminals are kept at ambient temperature.
  2. Measured with 8.3ms single half sine-wave. Duty cycle = 4 pulses per minute maximum.
  3. Unidirectional units only.



TYPE		Reverse Stand-Off Voltage	Breakdown Voltage Min. @I <sub>T</sub>	Breakdown Voltage Max. @ I <sub>T</sub>	Test Current	Maximum Clamping Voltage @I <sub>PP</sub>	Peak Pulse Current	Reverse Leakage @V <sub>RWM</sub>
(Uni)	(Bi)	V <sub>RWM</sub> (V)	V <sub>BR MIN</sub> (V)	V <sub>BR MAX</sub> (V)	I <sub>T</sub> (mA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A)	I <sub>R</sub> (uA)
SMBF5.0	SMBF5.0C	5.0	6.40	7.55	10	9.6	62.5	800.0
SMBF5.0A	SMBF5.0CA	5.0	6.40	7.25	10	9.2	65.2	800.0
SMBF6.0	SMBF6.0C	6.0	6.67	8.45	10	11.4	52.6	800.0
SMBF6.0A	SMBF6.0CA	6.0	6.67	7.67	10	10.3	58.3	800.0
SMBF6.5	SMBF6.5C	6.5	7.22	9.14	10	12.3	48.8	500.0
SMBF6.5A	SMBF6.5CA	6.5	7.22	8.30	10	11.2	53.6	500.0
SMBF7.0	SMBF7.0C	7.0	7.78	9.86	10	13.3	45.1	200.0
SMBF7.0A	SMBF7.0CA	7.0	7.78	8.95	10	12.0	50.0	200.0
SMBF7.5	SMBF7.5C	7.5	8.33	10.67	1.0	14.3	42.0	100.0
SMBF7.5A	SMBF7.5CA	7.5	8.33	9.58	1.0	12.9	46.5	100.0
SMBF8.0	SMBF8.0C	8.0	8.89	11.3	1.0	15.0	40.0	50.0
SMBF8.0A	SMBF8.0CA	8.0	8.89	10.23	1.0	13.6	44.1	50.0
SMBF8.5	SMBF8.5C	8.5	9.44	11.92	1.0	15.9	37.7	20.0
SMBF8.5A	SMBF8.5CA	8.5	9.44	10.82	1.0	14.4	41.7	20.0
SMBF9.0	SMBF9.0C	9.0	10.0	12.6	1.0	16.9	35.5	10.0
SMBF9.0A	SMBF9.0CA	9.0	10.0	11.5	1.0	15.4	39.0	10.0
SMBF10	SMBF10C	10	11.1	14.1	1.0	18.8	31.9	5.0
SMBF10A	SMBF10CA	10	11.1	12.8	1.0	17.0	35.3	5.0
SMBF11	SMBF11C	11	12.2	15.4	1.0	20.1	29.9	5.0
SMBF11A	SMBF11CA	11	12.2	14.0	1.0	18.2	33.0	5.0
SMBF12	SMBF12C	12	13.3	16.9	1.0	22.0	27.3	5.0
SMBF12A	SMBF12CA	12	13.3	15.3	1.0	19.9	30.2	5.0
SMBF13	SMBF13C	13	14.4	18.2	1.0	23.8	25.2	5.0
SMBF13A	SMBF13CA	13	14.4	16.5	1.0	21.5	27.9	5.0
SMBF14	SMBF14C	14	15.6	19.8	1.0	25.8	23.3	5.0
SMBF14A	SMBF14CA	14	15.6	17.9	1.0	23.2	25.9	5.0
SMBF15	SMBF15C	15	16.7	21.1	1.0	26.9	22.3	5.0
SMBF15A	SMBF15CA	15	16.7	19.2	1.0	24.4	24.6	5.0
SMBF16	SMBF16C	16	17.8	22.6	1.0	28.8	20.8	5.0
SMBF16A	SMBF16CA	16	17.8	20.5	1.0	26.0	23.1	5.0
SMBF17	SMBF17C	17	18.9	23.9	1.0	30.5	19.7	5.0
SMBF17A	SMBF17CA	17	18.9	21.7	1.0	27.6	21.7	5.0
SMBF18	SMBF18C	18	20.0	25.3	1.0	32.2	18.6	5.0
SMBF18A	SMBF18CA	18	20.0	23.3	1.0	29.2	20.5	5.0
SMBF20	SMBF20C	20	22.2	28.1	1.0	35.8	16.8	5.0
SMBF20A	SMBF20CA	20	22.2	25.5	1.0	32.4	18.5	5.0
SMBF22	SMBF22C	22	24.4	30.9	1.0	39.4	15.2	5.0
SMBF22A	SMBF22CA	22	24.4	28.0	1.0	35.5	16.9	5.0
SMBF24	SMBF24C	24	26.7	33.8	1.0	43.0	14.0	5.0
SMBF24A	SMBF24CA	24	26.7	30.7	1.0	38.9	15.4	5.0
SMBF26	SMBF26C	26	28.9	36.6	1.0	46.6	12.9	5.0
SMBF26A	SMBF26CA	26	28.9	33.2	1.0	42.1	14.3	5.0
SMBF28	SMBF28C	28	31.1	39.4	1.0	50.0	12.0	5.0
SMBF28A	SMBF28CA	28	31.1	35.8	1.0	45.4	13.2	5.0



TYPE		Reverse Stand-Off Voltage	Breakdown Voltage Min. @I <sub>T</sub>	Breakdown Voltage Max. @ I <sub>T</sub>	Test Current	Maximum Clamping Voltage @I <sub>PP</sub>	Peak Pulse Current	Reverse Leakage @V <sub>RWM</sub>
(Uni)	(Bi)	V <sub>RWM</sub> (V)	V <sub>BR MIN</sub> (V)	V <sub>BR MAX</sub> (V)	I <sub>T</sub> (mA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A)	I <sub>R</sub> (uA)
SMBF30	SMBF30C	30	33.3	42.2	1.0	53.5	11.2	5.0
SMBF30A	SMBF30CA	30	33.3	38.3	1.0	48.4	12.4	5.0
SMBF33	SMBF33C	33	36.7	46.5	1.0	59.0	10.2	5.0
SMBF33A	SMBF33CA	33	36.7	42.2	1.0	53.3	11.3	5.0
SMBF36	SMBF36C	36	40.0	50.7	1.0	64.3	9.3	5.0
SMBF36A	SMBF36CA	36	40.0	46.0	1.0	58.1	10.3	5.0
SMBF40	SMBF40C	40	44.4	56.3	1.0	71.4	8.4	5.0
SMBF40A	SMBF40CA	40	44.4	51.1	1.0	64.5	9.3	5.0
SMBF43	SMBF43C	43	47.8	60.5	1.0	76.7	7.8	5.0
SMBF43A	SMBF43CA	43	47.8	54.9	1.0	69.4	8.6	5.0
SMBF45	SMBF45C	45	50.0	63.3	1.0	80.3	7.5	5.0
SMBF45A	SMBF45CA	45	50.0	57.5	1.0	72.7	8.3	5.0
SMBF48	SMBF48C	48	53.3	67.5	1.0	85.5	7.0	5.0
SMBF48A	SMBF48CA	48	53.3	61.3	1.0	77.4	7.8	5.0
SMBF51	SMBF51C	51	56.7	71.8	1.0	91.1	6.6	5.0
SMBF51A	SMBF51CA	51	56.7	65.2	1.0	82.4	7.3	5.0
SMBF54	SMBF54C	54	60.0	76.0	1.0	96.3	6.2	5.0
SMBF54A	SMBF54CA	54	60.0	69.0	1.0	87.1	6.9	5.0
SMBF58	SMBF58C	58	64.4	81.6	1.0	103	5.8	5.0
SMBF58A	SMBF58CA	58	64.4	74.1	1.0	93.6	6.4	5.0
SMBF60	SMBF60C	60	66.7	84.5	1.0	107	5.6	5.0
SMBF60A	SMBF60CA	60	66.7	76.7	1.0	96.8	6.2	5.0
SMBF64	SMBF64C	64	71.1	90.1	1.0	114	5.3	5.0
SMBF64A	SMBF64CA	64	71.1	81.8	1.0	103	5.8	5.0
SMBF70	SMBF70C	70	77.8	98.6	1.0	125	4.8	5.0
SMBF70A	SMBF70CA	70	77.8	89.5	1.0	113	5.3	5.0
SMBF75	SMBF75C	75	83.0	105.7	1.0	134	4.5	5.0
SMBF75A	SMBF75CA	75	83.0	95.8	1.0	121	5.0	5.0
SMBF78	SMBF78C	78	86.0	109.8	1.0	139	4.3	5.0
SMBF78A	SMBF78CA	78	86.0	99.7	1.0	126	4.8	5.0
SMBF85	SMBF85C	85	94.0	119.2	1.0	151	4.0	5.0
SMBF85A	SMBF85CA	85	94.0	108.2	1.0	137	4.4	5.0
SMBF90	SMBF90C	90	100	126.5	1.0	160	3.8	5.0
SMBF90A	SMBF90CA	90	100	115.5	1.0	146	4.1	5.0
SMBF100	SMBF100C	100	111	141.0	1.0	179	3.4	5.0
SMBF100A	SMBF100CA	100	111	128.0	1.0	162	3.7	5.0
SMBF110	SMBF110C	110	122	154.5	1.0	196	3.1	5.0
SMBF110A	SMBF110CA	100	122	140.5	1.0	177	3.4	5.0
SMBF120	SMBF120C	120	133	169.0	1.0	214	2.8	5.0
SMBF120A	SMBF120CA	120	133	153.0	1.0	193	3.1	5.0
SMBF130	SMBF130C	130	144	182.5	1.0	231	2.6	5.0
SMBF130A	SMBF130CA	130	144	165.5	1.0	209	2.9	5.0
SMBF150	SMBF150C	150	167	211.5	1.0	268	2.2	5.0
SMBF150A	SMBF150CA	150	167	192.5	1.0	243	2.5	5.0
SMBF160	SMBF160C	160	178	226.0	1.0	287	2.1	5.0
SMBF160A	SMBF160CA	160	178	205.0	1.0	259	2.3	5.0



TYPE		Reverse Stand-Off Voltage	Breakdown Voltage Min. @I <sub>T</sub>	Breakdown Voltage Max. @ I <sub>T</sub>	Test Current	Maximum Clamping Voltage @I <sub>PP</sub>	Peak Pulse Current	Reverse Leakage @V <sub>RWM</sub>
(Uni)	(Bi)	V <sub>RWM</sub> (V)	V <sub>BR MIN</sub> (V)	V <sub>BR MAX</sub> (V)	I <sub>T</sub> (mA)	V <sub>C</sub> (V)	I <sub>PP</sub> (A)	I <sub>R</sub> (uA)
SMBF170	SMBF170C	170	189	239.5	1.0	304	2.0	5.0
SMBF170A	SMBF170CA	170	189	217.5	1.0	275	2.2	5.0
SMBF180	SMBF180C	180	200	253.8	1.0	321	1.9	5.0
SMBF180A	SMBF180CA	180	200	230.4	1.0	290	2.1	5.0
SMBF190	SMBF190C	190	211	267.9	1.0	339	1.8	5.0
SMBF190A	SMBF190CA	190	211	243.2	1.0	306	2.0	5.0
SMBF200	SMBF200C	200	222	282.0	1.0	356	1.7	5.0
SMBF200A	SMBF200CA	200	222	256.0	1.0	322	1.9	5.0

**Note:**

- ( 1 ) V<sub>BR</sub> measured after I<sub>T</sub> applied for 300 μs., I<sub>T</sub> = square wave pulse or equivalent.
- ( 2 ) Surge Current Waveform per Figure 5 and Derate per Figure 1
- ( 3 ) A Transient suppressor is normally selected according to the reverse " Stand-off Voltage " (V<sub>RWM</sub>) which should be equal to or greater then the D.C. or continuous peak operating voltage level.



**Ratings and Characteristic Curves  $T_A = 25^\circ\text{C}$  unless otherwise noted**

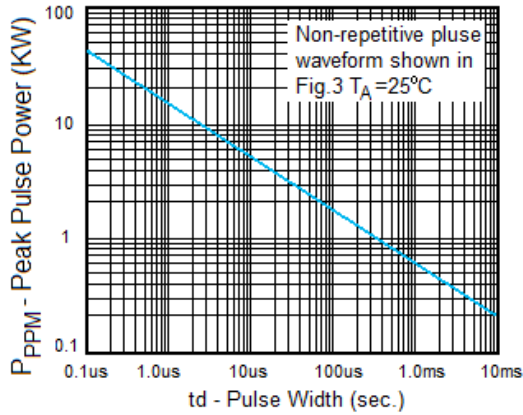


Fig. 1 Peak Pulse Power Rating

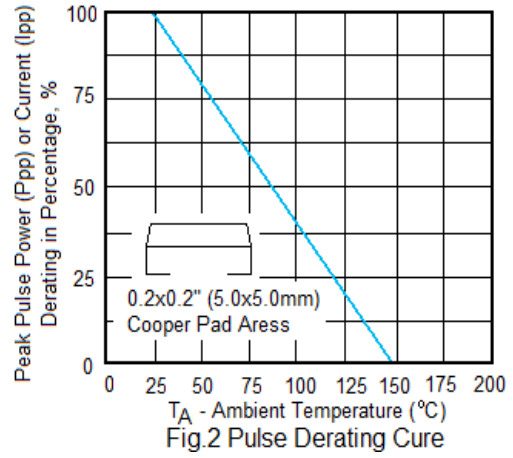


Fig. 2 Pulse Derating Curve

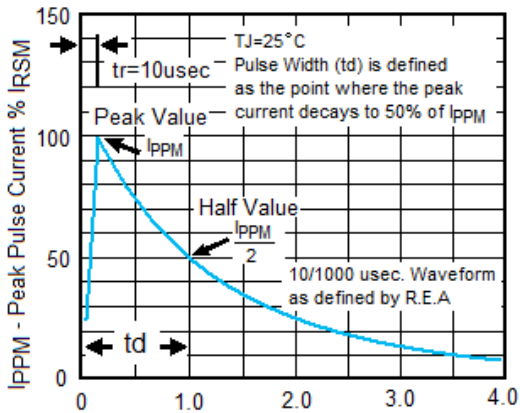


Fig. 3 Pulse Waveform

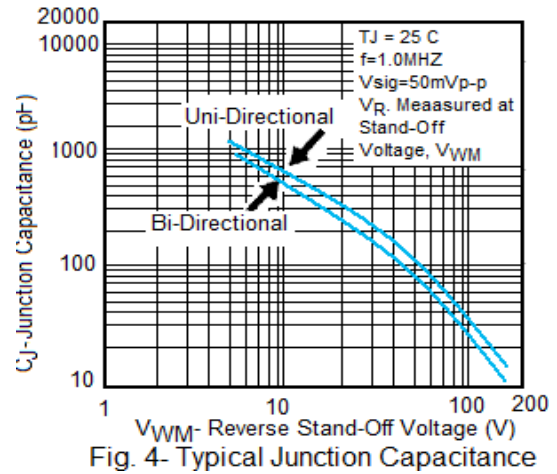


Fig. 4- Typical Junction Capacitance