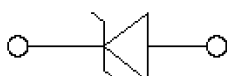
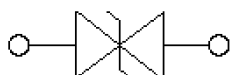


Surface Mount Transient Voltage Suppressors

Uni-directional



Bi-directional



Features

- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional and Bidirectional
- 600 W peak pulse power capability with a 10/1000 μ s waveform
- Low incremental surge resistance, excellent clamping capability
- Very fast response time
- High temperature soldering guaranteed: 260 °C/10 s at terminals
- Meets MSL level 1
- Component in accordance to

Typical Applications

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on ICs, MOSFET, signal lines of sensor units for consumer, computer, industrial, telecommunication.

Mechanical Data

- **Package:** SMBF
Molding compound meets UL 94 V-0 flammability rating, -compliant, halogen-free
- **Terminals:** Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D
- **Polarity:** For uni-directional types the band denotes cathode end, no marking on bi-directional types

■Maximum Ratings ($T_a=25^\circ\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Max
Peak power dissipation, with a 10/1000us waveform ⁽¹⁾ ⁽²⁾ (Fig.1)	P_{PPM}	W	600
Peak pulse current, with a 10/1000us waveform ⁽¹⁾	I_{PPM}	A	See Next Table
Power dissipation, on infinite heat sink at $T_L=75^\circ\text{C}$	P_D	W	5.0
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only ⁽²⁾	I_{FSM}	A	100
Operating junction and storage temperature range	T_J, T_{STG}	$^\circ\text{C}$	-55 to +150

■Electrical Characteristics ($T_a=25^\circ\text{C}$ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	VALUE
Maximum instantaneous forward voltage @ at 50A for unidirectional only ⁽³⁾	V_F	V	3.5/5.0

■ Thermal Characteristics (T_a=25°C Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Conditions	VALUE
Thermal resistance(Typical)	R _{θJA}	°C/W	junction to ambient	100
	R _{θJL}	°C/W	junction to lead	20
	R _{θJC}	°C/W	Junction to case	15

Notes:

- (1) Non-repetitive current pulse, per Fig. 3 and derated above T_A = 25°C per Fig.2.
- (2) Mounted on 0.2 x 0.2" (5.0 x 5.0 mm) copper pads to each terminal.
- (3) V_F<3.5V for devices of V_{BR}<200V and V_F<5.0V for devices of V_{BR}>201V.

■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SMBF5.0A-SMBF220CA	F1	Approximate 0.065	5000	/	80000	13" reel

■ Electrical Characteristics (T_a=25°C Unless otherwise specified)

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage V _{BR} @I _T			Maximum Reverse Leakage I _R ⁽⁶⁾ @ V _{RWM} (μA)	Working Peak Reverse Voltage V _{RWM} (V)	Maximum Reverse Surge Current I _{PP} ⁽⁵⁾ (A)	Maximum Clamping Voltage V _c @ I _{PP} (V)
		Min(V)	Max (V)	I _T ⁽⁴⁾ (mA)				
SMBF5.0A	SMBF5.0CA(4)	6.4	7.07	10	800	5	65.22	9.2
SMBF6.0A	SMBF6.0CA	6.67	7.37	10	800	6	58.25	10.3
SMBF6.5A	SMBF6.5CA	7.22	7.98	10	500	6.5	53.57	11.2
SMBF7.0A	SMBF7.0CA	7.78	8.6	10	200	7	50	12
SMBF7.5A	SMBF7.5CA	8.33	9.21	1	100	7.5	46.51	12.9
SMBF8.0A	SMBF8.0CA	8.89	9.83	1	50	8	44.12	13.6
SMBF8.5A	SMBF8.5CA	9.44	10.4	1	10	8.5	41.67	14.4
SMBF9.0A	SMBF9.0CA	10	11.1	1	5	9	38.96	15.4
SMBF10A	SMBF10CA	11.1	12.3	1	5	10	35.29	17
SMBF11A	SMBF11CA	12.2	13.5	1	5	11	32.97	18.2
SMBF12A	SMBF12CA	13.3	14.7	1	5	12	30.15	19.9
SMBF13A	SMBF13CA	14.4	15.9	1	1	13	27.91	21.5
SMBF14A	SMBF14CA	15.6	17.2	1	1	14	25.86	23.2
SMBF15A	SMBF15CA	16.7	18.5	1	1	15	24.59	24.4
SMBF16A	SMBF16CA	17.8	19.7	1	1	16	23.08	26
SMBF17A	SMBF17CA	18.9	20.9	1	1	17	21.74	27.6
SMBF18A	SMBF18CA	20	22.1	1	1	18	20.55	29.2
SMBF19A	SMBF19CA	21.1	23.3	1	1	19	19.49	30.8
SMBF20A	SMBF20CA	22.2	24.5	1	1	20	18.52	32.4
SMBF22A	SMBF22CA	24.4	26.9	1	1	22	16.9	35.5
SMBF24A	SMBF24CA	26.7	29.5	1	1	24	15.42	38.9
SMBF26A	SMBF26CA	28.9	31.9	1	1	26	14.25	42.1
SMBF28A	SMBF28CA	31.1	34.4	1	1	28	13.22	45.4
SMBF30A	SMBF30CA	33.3	36.8	1	1	30	12.4	48.4
SMBF33A	SMBF33CA	36.7	40.6	1	1	33	11.26	53.3

■Electrical Characteristics (T_a=25℃ Unless otherwise specified)

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage V _{BR} @I _T			Maximum Reverse Leakage I _R ⁽⁶⁾ @ V _{RWM} (μA)	Working Peak Reverse Voltage V _{RWM} (V)	Maximum Reverse Surge Current I _{PP} ⁽⁵⁾ (A)	Maximum Clamping Voltage V _c @ I _{PP} (V)
		Min(V)	Max (V)	I _T ⁽⁴⁾ (mA)				
SMBF36A	SMBF36CA	40	44.2	1	1	36	10.33	58.1
SMBF40A	SMBF40CA	44.4	49.1	1	1	40	9.3	64.5
SMBF43A	SMBF43CA	47.8	52.8	1	1	43	8.65	69.4
SMBF45A	SMBF45CA	50	55.3	1	1	45	8.25	72.7
SMBF48A	SMBF48CA	53.3	58.9	1	1	48	7.75	77.4
SMBF51A	SMBF51CA	56.7	62.7	1	1	51	7.28	82.4
SMBF54A	SMBF54CA	60	66.3	1	1	54	6.89	87.1
SMBF58A	SMBF58CA	64.4	71.2	1	1	58	6.41	93.6
SMBF60A	SMBF60CA	66.7	73.7	1	1	60	6.2	96.8
SMBF64A	SMBF64CA	71.1	78.6	1	1	64	5.83	103
SMBF70A	SMBF70CA	77.8	86	1	1	70	5.31	113
SMBF75A	SMBF75CA	83.3	92.1	1	1	75	4.96	121
SMBF78A	SMBF78CA	86.7	95.8	1	1	78	4.76	126
SMBF80A	SMBF80CA	88.8	97.6	1	1	80	4.63	129.6
SMBF85A	SMBF85CA	94.4	104	1	1	85	4.38	137
SMBF90A	SMBF90CA	100	111	1	1	90	4.11	146
SMBF100A	SMBF100CA	111	123	1	1	100	3.7	162
SMBF110A	SMBF110CA	122	135	1	1	110	3.39	177
SMBF120A	SMBF120CA	133	147	1	1	120	3.11	193
SMBF130A	SMBF130CA	144	159	1	1	130	2.87	209
SMBF140A	SMBF140CA	155	171	1	1	140	2.65	226.8
SMBF150A	SMBF150CA	167	185	1	1	150	2.47	243
SMBF160A	SMBF160CA	178	197	1	1	160	2.32	259
SMBF170A	SMBF170CA	189	209	1	1	170	2.18	275
SMBF180A	SMBF180CA	200	220	1	1	180	2.06	291.6
SMBF190A	SMBF190CA	211	232	1	1	190	1.95	307.8
SMBF200A	SMBF200CA	224	247	1	1	200	1.85	324
SMBF220A	SMBF220CA	246	272	1	1	220	1.69	356

Notes:

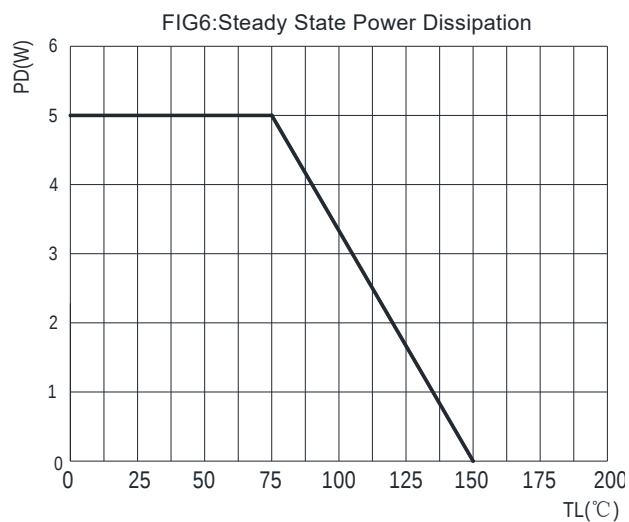
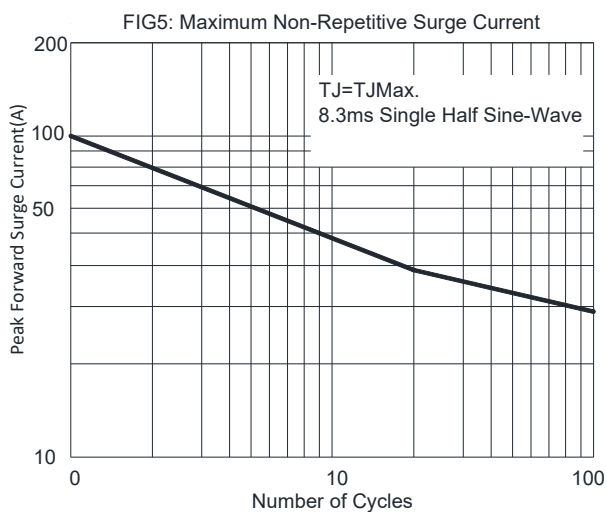
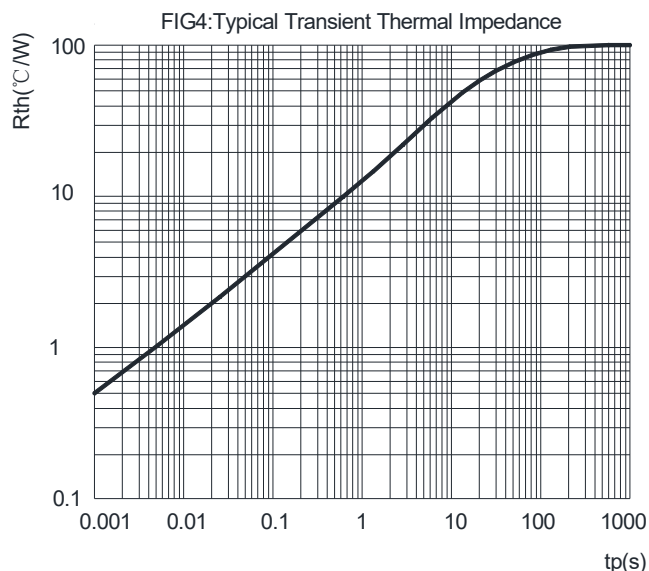
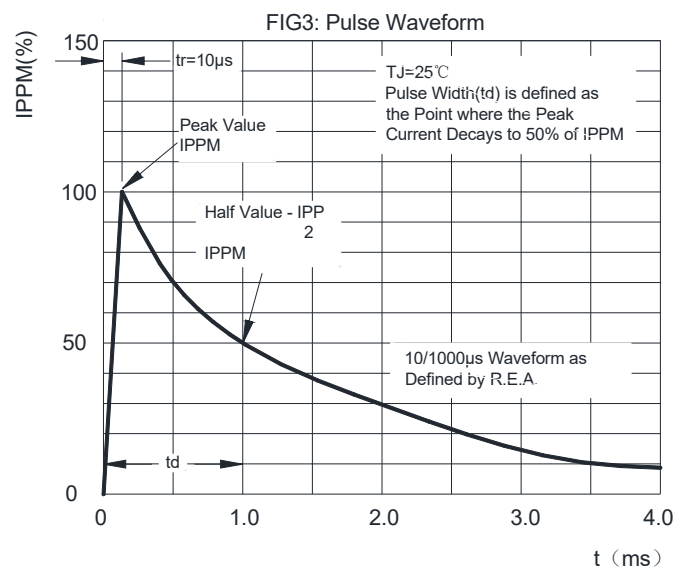
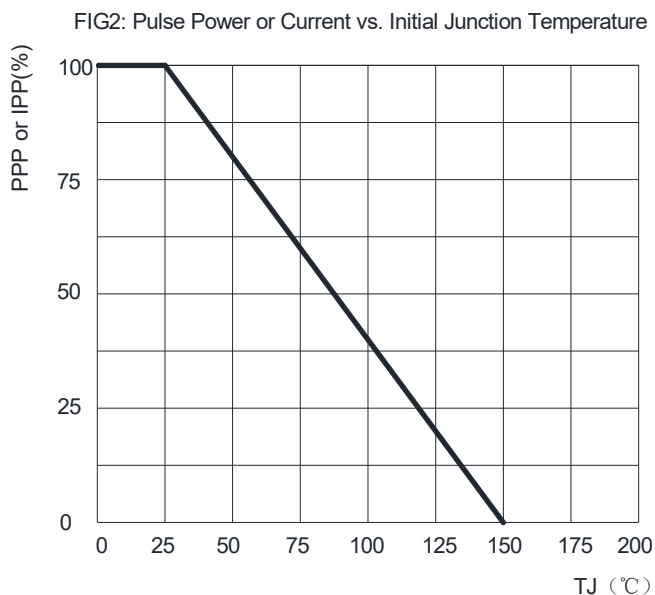
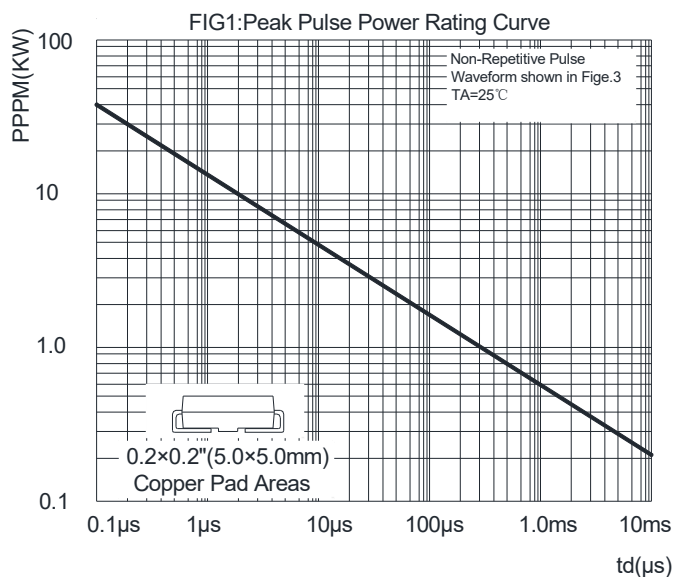
(4) Pulse test: t_p≤50ms.

(5) Surge current waveform per Fig. 3 and derated per Fig.2.

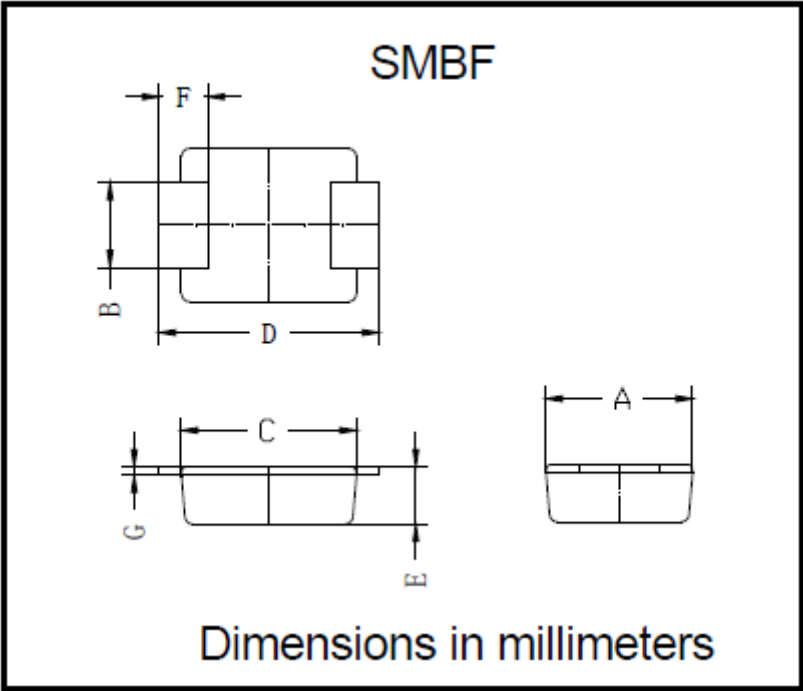
(6) For bi-directional types having V_{RWM} of 10 V and less, the I_R limit is doubled.

(7) For the bi-directional SMBJ5.0CA, the maximum V_{BR} is 7.25 V.

■ Characteristics (Typical)

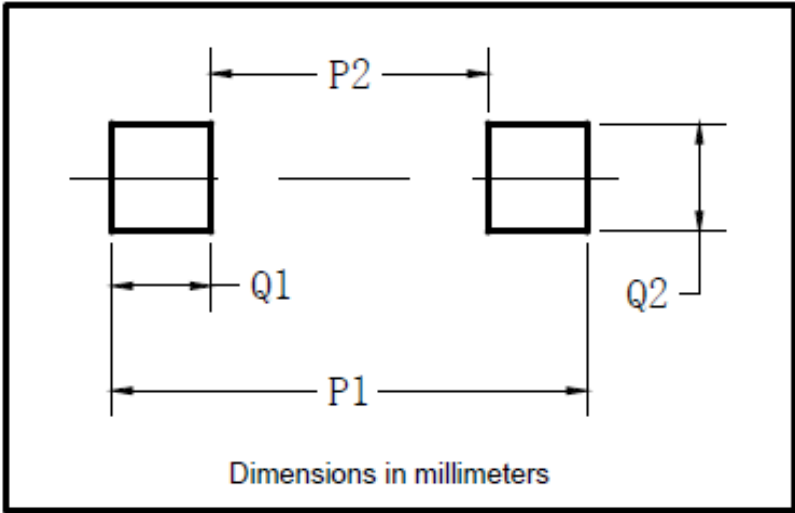


■ Outline Dimensions



SMBF		
Dim	Min	Max
A	3.40	3.80
B	1.90	2.10
C	4.15	4.45
D	5.10	5.60
E	1.05	1.55
F	0.7	1.35
G	0.15	0.25

■ Suggested pad layout



SMBF	
Dim	Millimeters
P1	6.20
P2	2.40
Q1	1.90
Q2	2.20

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