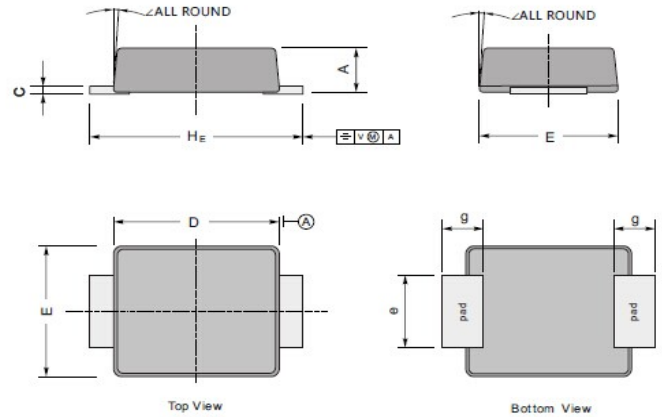
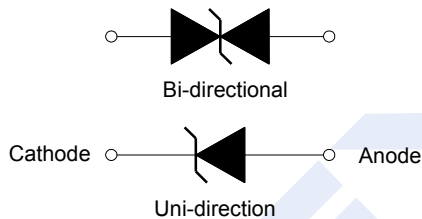


TVS Diodes

SMBFJ5.0 ~ SMBFJ 440CA

■ Features

- Low profile package
- Uni and Bidirectional unit
- 600W peak pulse power capability with a 10/1000us waveform, repetition rate (duty cycle): 0.01%
- Excellent clamping capability
- For devices with $V_{(BR)} \geq 10V$, I_D are typically less than 1uA
- Fast response time: typically less than 1.0ps from 0 volts to $V_{(BR)}$ for unidirectional and 5.0ns for bidirectional types



UNIT		A	C	D	E	H _E	e	g	∠
mm	max	1.3	0.26	4.4	3.7	5.5	2.2	1.0	9°
	min	1.1	0.18	4.2	3.5	5.1	1.9		
mil	max	51	10	173	146	216	86	40	
	min	43	7	165	138	200	75		

Uni-directional

Bi-directional



■ Absolute Maximum Ratings $T_a = 25^\circ\text{C}$

Parameter	Symbol	Rating	Unit
Forward Voltage at 25A for Unidirectional Only (Note.1)	V_F	3.5/5	V
Peak Pulse Current With a 10/1000 us Waveform (Note.2)	I_{PPM}	See Next Table	A
Peak Forward Surge Current @ 8.3ms (Note.3)	I_{FSM}	100	
Peak Pulse Power Dissipation With a 10/1000 us Waveform (Note.4)	P_{PPM}	600	W
Power Dissipation on Infinite Heat Sink at $T_L=75^\circ\text{C}$	$P_{M(Av)}$	5	
Junction Temperature	T_J	150	°C
Storage Temperature range	T_{stg}	-55 to 150	

Note.1: $V_F < 3.5V$ for $V_{BR} < 200V$ and $V_F < 6.5V$ for $V_{BR} > 201V$.

Note.2: Non-repetitive current pulse, per Fig. 3 and derated above $T_a = 25^\circ\text{C}$ per Fig. 2.

Note.3 :8.3ms single half sine-wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

Note.4: Mounted on 5.0mm x 5.0mm (0.03mm thick) Copper Pads to each terminal.

TVS Diodes

SMBFJ5.0 ~ SMBFJ440CA

■ Electrical Characteristics Ta = 25°C

Part Number		Marking		Reverse Stand-Off Voltage V _{RWM} (V)	Breakdown Voltage V _{BR} (V) @I _T		Test Current I _T (mA)	Maximum Clamping Voltage V _C @I _{PP} (V)	Maximum Peak Pulse Current I _{PP} (A)	Maximum Reverse Leakage I _R @V _{RWM} (μA)
Uni	Bi	Uni	Bi		MIN	MAX				
SMBFJ5.0	SMBFJ5.0C	KD	AD	5.0	6.40	7.30	10	9.6	62.50	800
SMBFJ5.0A	SMBFJ5.0CA	KE	AE	5.0	6.40	7.00	10	9.2	65.22	800
SMBFJ6.0	SMBFJ6.0C	KF	AF	6.0	6.67	8.15	10	11.4	52.63	800
SMBFJ6.0A	SMBFJ6.0CA	KG	AG	6.0	6.67	7.37	10	10.3	58.25	800
SMBFJ6.5	SMBFJ6.5C	KH	AH	6.5	7.22	8.82	10	12.3	48.78	500
SMBFJ6.5A	SMBFJ6.5CA	KK	AK	6.5	7.22	7.98	10	11.2	53.57	500
SMBFJ7.0	SMBFJ7.0C	KL	AL	7.0	7.78	9.51	10	13.3	45.11	200
SMBFJ7.0A	SMBFJ7.0CA	KM	AM	7.0	7.78	8.60	10	12.0	50.00	200
SMBFJ7.5	SMBFJ7.5C	KN	AN	7.5	8.33	10.20	1	14.3	41.96	100
SMBFJ7.5A	SMBFJ7.5CA	KP	AP	7.5	8.33	9.21	1	12.9	46.51	100
SMBFJ8.0	SMBFJ8.0C	KQ	AQ	8.0	8.89	10.90	1	15.0	40.00	50
SMBFJ8.0A	SMBFJ8.0CA	KR	AR	8.0	8.89	9.83	1	13.6	44.12	50
SMBFJ8.5	SMBFJ8.5C	KS	AS	8.5	9.44	11.50	1	15.9	37.74	10
SMBFJ8.5A	SMBFJ8.5CA	KT	AT	8.5	9.44	10.40	1	14.4	41.67	10
SMBFJ9.0	SMBFJ9.0C	KU	AU	9.0	10.00	12.20	1	16.9	35.50	5
SMBFJ9.0A	SMBFJ9.0CA	KV	AV	9.0	10.00	11.10	1	15.4	38.96	5
SMBFJ10	SMBFJ10C	KW	AA	10.0	11.10	13.60	1	18.8	31.91	5
SMBFJ10A	SMBFJ10CA	KX	AX	10.0	11.10	12.30	1	17.0	35.29	5
SMBFJ11	SMBFJ11C	KY	AY	11.0	12.20	14.90	1	20.1	29.85	5
SMBFJ11A	SMBFJ11CA	KZ	WZ	11.0	12.20	13.50	1	18.2	32.97	5
SMBFJ12	SMBFJ12C	LD	BD	12.0	13.30	16.30	1	22.0	27.27	5
SMBFJ12A	SMBFJ12CA	LE	BE	12.0	13.30	14.70	1	19.9	30.15	5
SMBFJ13	SMBFJ13C	LF	BF	13.0	14.40	17.60	1	23.8	25.21	5
SMBFJ13A	SMBFJ13CA	LG	BG	13.0	14.40	15.90	1	21.5	27.91	5
SMBFJ14	SMBFJ14C	LH	BH	14.0	15.60	19.10	1	25.8	23.26	5
SMBFJ14A	SMBFJ14CA	LK	BK	14.0	15.60	17.20	1	23.2	25.86	5
SMBFJ15	SMBFJ15C	LL	BL	15.0	16.70	20.40	1	26.9	22.30	5
SMBFJ15A	SMBFJ15CA	LM	BM	15.0	16.70	18.50	1	24.4	24.59	5
SMBFJ16	SMBFJ16C	LN	BN	16.0	17.80	21.80	1	28.8	20.83	5
SMBFJ16A	SMBFJ16CA	LP	BP	16.0	17.80	19.70	1	26.0	23.08	5
SMBFJ17	SMBFJ17C	LQ	BQ	17.0	18.90	23.10	1	30.5	19.67	5
SMBFJ17A	SMBFJ17CA	LR	BR	17.0	18.90	20.90	1	27.6	21.74	5
SMBFJ18	SMBFJ18C	LS	BS	18.0	20.00	24.40	1	32.2	18.63	5
SMBFJ18A	SMBFJ18CA	LT	BT	18.0	20.00	22.10	1	29.2	20.55	5
SMBFJ19	SMBFJ19C	LA	BA	19.0	21.13	25.76	1	34.0	17.64	5
SMBFJ19A	SMBFJ19CA	LB	BB	19.0	21.10	23.30	1	30.8	19.49	5
SMBFJ20	SMBFJ20C	LU	BU	20.0	22.20	27.10	1	35.8	16.67	5
SMBFJ20A	SMBFJ20CA	LV	BV	20.0	22.20	24.50	1	32.4	18.52	5
SMBFJ22	SMBFJ22C	LW	BW	22.0	24.40	29.80	1	39.4	15.23	5
SMBFJ22A	SMBFJ22CA	LX	BX	22.0	24.40	26.90	1	35.5	16.90	5
SMBFJ24	SMBFJ24C	LY	BY	24.0	26.70	32.60	1	43.0	13.95	5
SMBFJ24A	SMBFJ24CA	LZ	BZ	24.0	26.70	29.50	1	38.9	15.42	5
SMBFJ26	SMBFJ26C	MD	CD	26.0	28.90	35.30	1	46.6	12.88	5
SMBFJ26A	SMBFJ26CA	ME	CE	26.0	28.90	31.90	1	42.1	14.25	5
SMBFJ28	SMBFJ28C	MF	CF	28.0	31.10	38.00	1	50.0	12.00	5
SMBFJ28A	SMBFJ28CA	MG	CG	28.0	31.10	34.40	1	45.4	13.22	5
SMBFJ30	SMBFJ30C	MH	CH	30.0	33.30	40.70	1	53.5	11.21	5
SMBFJ30A	SMBFJ30CA	MK	CK	30.0	33.30	36.80	1	48.4	12.40	5
SMBFJ33	SMBFJ33C	ML	CL	33.0	36.70	44.90	1	59.0	10.17	5
SMBFJ33A	SMBFJ33CA	MM	CM	33.0	36.70	40.60	1	53.3	11.26	5
SMBFJ36	SMBFJ36C	MN	CN	36.0	40.00	48.90	1	64.3	9.33	5
SMBFJ36A	SMBFJ36CA	MP	CP	36.0	40.00	44.20	1	58.1	10.33	5
SMBFJ40	SMBFJ40C	MQ	CQ	40.0	44.40	54.30	1	71.4	8.40	5
SMBFJ40A	SMBFJ40CA	MR	CR	40.0	44.40	49.10	1	64.5	9.30	5
SMBFJ43	SMBFJ43C	MS	CS	43.0	47.80	58.40	1	76.7	7.82	5
SMBFJ43A	SMBFJ43CA	MT	CT	43.0	47.80	52.80	1	69.4	8.65	5

TVS Diodes

SMBFJ5.0 ~ SMBFJ440CA

■ Electrical Characteristics Ta = 25°C

Part Number		Marking		Reverse Stand-Off Voltage V _{RWM} (V)	Breakdown Voltage V _{BR} (V) @I _T		Test Current I _T (mA)	Maximum Clamping Voltage V _c @I _{PP} (V)	Maximum Peak Pulse Current I _{PP} (V)	Maximum Reverse Leakage I _R @V _{RWM} (uA)
Uni	Bi	Uni	Bi		MIN	MAX				
SMBFJ45	SMBFJ45C	MU	CU	45.0	50.00	61.10	1	80.3	7.47	5
SMBFJ45A	SMBFJ45CA	MV	CV	45.0	50.00	55.30	1	72.7	8.25	5
SMBFJ48	SMBFJ48C	MW	CW	48.0	53.30	65.10	1	85.5	7.02	5
SMBFJ48A	SMBFJ48CA	MX	CX	48.0	53.30	58.90	1	77.4	7.75	5
SMBFJ51	SMBFJ51C	MY	CY	51.0	56.70	69.30	1	91.1	6.59	5
SMBFJ51A	SMBFJ51CA	MZ	CZ	51.0	56.70	62.70	1	82.4	7.28	5
SMBFJ54	SMBFJ54C	ND	DD	54.0	60.00	73.30	1	96.3	6.23	5
SMBFJ54A	SMBFJ54CA	NE	DE	54.0	60.00	66.30	1	87.1	6.89	5
SMBFJ58	SMBFJ58C	NF	DF	58.0	64.40	78.70	1	103.0	5.83	5
SMBFJ58A	SMBFJ58CA	NG	DG	58.0	64.40	71.20	1	93.6	6.41	5
SMBFJ60	SMBFJ60C	NH	DH	60.0	66.70	81.50	1	107.0	5.61	5
SMBFJ60A	SMBFJ60CA	NK	DK	60.0	66.70	73.70	1	96.8	6.20	5
SMBFJ64	SMBFJ64C	NL	DL	64.0	71.10	86.90	1	114.0	5.26	5
SMBFJ64A	SMBFJ64CA	NM	DM	64.0	71.10	78.60	1	103.0	5.83	5
SMBFJ70	SMBFJ70C	NN	DN	70.0	77.80	95.10	1	125.0	4.80	5
SMBFJ70A	SMBFJ70CA	NP	DP	70.0	77.80	86.00	1	113.0	5.31	5
SMBFJ75	SMBFJ75C	NQ	DQ	75.0	83.30	102.00	1	134.0	4.48	5
SMBFJ75A	SMBFJ75CA	NR	DR	75.0	83.30	92.10	1	121.0	4.96	5
SMBFJ78	SMBFJ78C	NS	DS	78.0	86.70	106.00	1	139.0	4.32	5
SMBFJ78A	SMBFJ78CA	NT	DT	78.0	86.70	95.80	1	126.0	4.76	5
SMBFJ80	SMBFJ80C	NA	DA	80.0	88.96	108.80	1	143.2	4.19	5
SMBFJ80A	SMBFJ80CA	NB	DB	80.0	88.80	97.60	1	129.6	4.63	5
SMBFJ85	SMBFJ85C	NU	DU	85.0	94.40	115.00	1	151.0	3.97	5
SMBFJ85A	SMBFJ85CA	NV	DV	85.0	94.40	104.00	1	137.0	4.38	5
SMBFJ90	SMBFJ90C	NW	DW	90.0	100.00	122.00	1	160.0	3.75	5
SMBFJ90A	SMBFJ90CA	NX	DX	90.0	100.00	111.00	1	146.0	4.11	5
SMBFJ100	SMBFJ100C	NY	DY	100.0	111.00	136.00	1	179.0	3.35	5
SMBFJ100A	SMBFJ100CA	NZ	DZ	100.0	111.00	123.00	1	162.0	3.70	5
SMBFJ110	SMBFJ110C	PD	ED	110.0	122.00	149.00	1	196.0	3.06	5
SMBFJ110A	SMBFJ110CA	PE	EE	110.0	122.00	135.00	1	177.0	3.39	5
SMBFJ120	SMBFJ120C	PF	EF	120.0	133.00	163.00	1	214.0	2.80	5
SMBFJ120A	SMBFJ120CA	PG	EG	120.0	133.00	147.00	1	193.0	3.11	5
SMBFJ130	SMBFJ130C	PH	EH	130.0	144.00	176.00	1	231.0	2.60	5
SMBFJ130A	SMBFJ130CA	PK	EK	130.0	144.00	159.00	1	209.0	2.87	5
SMBFJ140	SMBFJ140C	PA	EA	140.0	155.68	190.40	1	250.6	2.39	5
SMBFJ140A	SMBFJ140CA	PB	EB	140.0	155.00	171.00	1	226.8	2.65	5
SMBFJ150	SMBFJ150C	PL	EL	150.0	167.00	204.00	1	268.0	2.24	5
SMBFJ150A	SMBFJ150CA	PM	EM	150.0	167.00	185.00	1	243.0	2.47	5
SMBFJ160	SMBFJ160C	PN	EN	160.0	178.00	218.00	1	287.0	2.09	5
SMBFJ160A	SMBFJ160CA	PP	EP	160.0	178.00	197.00	1	259.0	2.32	5
SMBFJ170	SMBFJ170C	PQ	EQ	170.0	189.00	231.00	1	304.0	1.97	5
SMBFJ170A	SMBFJ170CA	PR	ER	170.0	189.00	209.00	1	275.0	2.18	5
SMBFJ180	SMBFJ180C	PS	ES	180.0	201.00	244.80	1	322.2	1.86	5
SMBFJ180A	SMBFJ180CA	PT	ET	180.0	201.00	220.00	1	291.6	2.06	5
SMBFJ190	SMBFJ190C	PU	EU	190.0	211.21	258.40	1	340.1	1.76	5
SMBFJ190A	SMBFJ190CA	PV	EV	190.0	211.00	232.00	1	307.8	1.95	5
SMBFJ200A	SMBFJ200CA	PW	EW	200.0	224.00	247.00	1	324.0	1.85	5
SMBFJ220A	SMBFJ220CA	PX	EX	220.0	246.00	272.00	1	356.0	1.69	5
SMBFJ250A	SMBFJ250CA	PZ	EZ	250.0	279.00	309.00	1	405.0	1.48	5
SMBFJ300A	SMBFJ300CA	QE	FE	300.0	335.00	371.00	1	486.0	1.23	5
SMBFJ350A	SMBFJ350CA	QG	FG	350.0	391.00	432.00	1	567.0	1.06	5
SMBFJ400A	SMBFJ400CA	QK	FK	400.0	447.00	494.00	1	648.0	0.93	5
SMBFJ440A	SMBFJ440CA	QM	FM	440.0	492.00	543.00	1	713.0	0.84	5

Note:

1. Suffix 'A' denotes 5% tolerance device. Without 'A' denotes 10% tolerance device
2. Add suffix 'C' or 'CA' after part number to specify Bi-directional devices
3. For Bi-Directional devices having V_R of 10 volts and under, the I_R limit is double

TVS Diodes SMBFJ5.0 ~ SMBFJ440CA

■ Typical Characteristics

Figure 1 - Peak Pulse Power Rating Curve

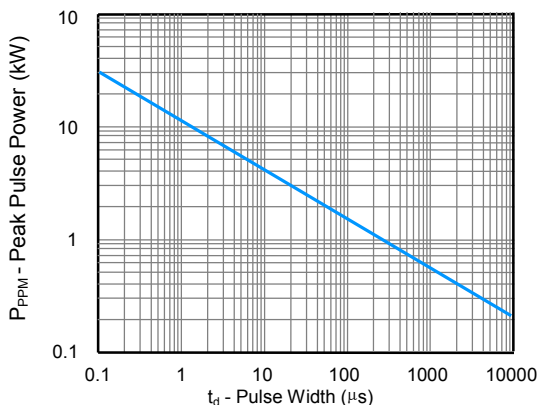


Figure 2 - Pulse Derating Curve

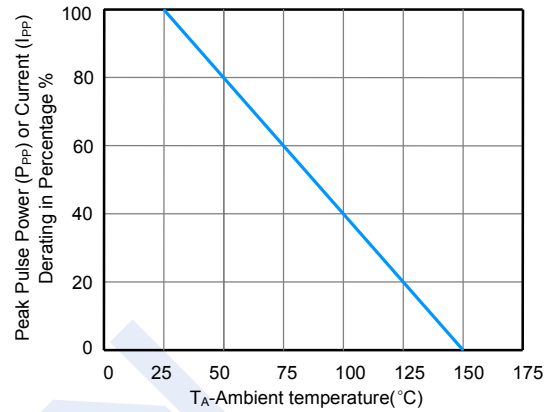


Figure 3 - Pulse Waveform

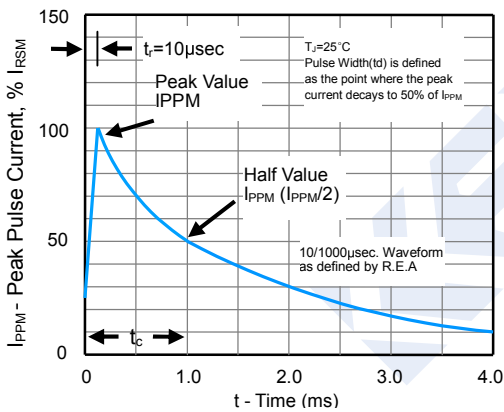


Figure 4 - Typical Junction Capacitance

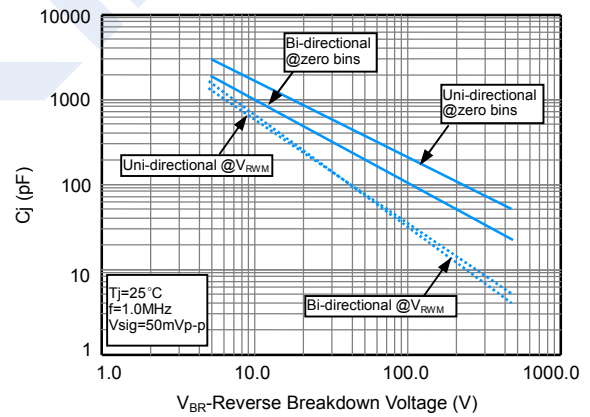


Figure 5 - Steady State Power Derating Curve

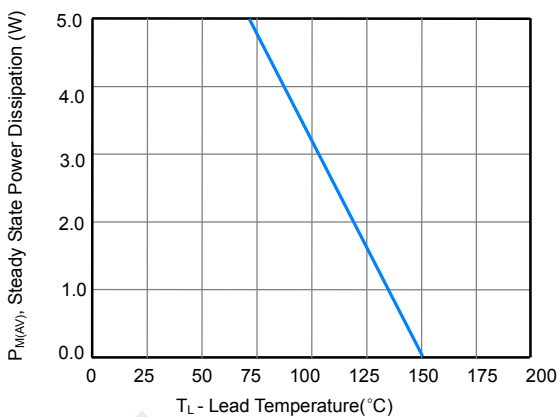


Figure 6 - Maximum Non-Repetitive Surge Current

