



Working Voltage: 5.0 to 440 V

Peak Pulse Power: 400 W

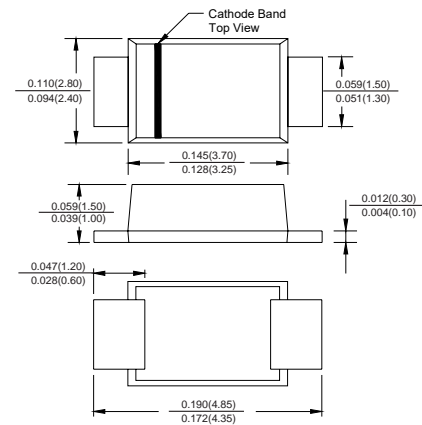
Features

- Glass passivated chip
- 400 W peak pulse power capability with a 10/1000 μ s waveform, repetitive rate (duty cycle):0.01 %
- Low leakage
- Uni and Bidirectional unit
- Excellent clamping capability
- Very fast response time
- RoHS compliant

Mechanical Data

- Case: Molded plastic
- Epoxy: UL 94V-0 rate flame retardant
- Lead: Solderable per MIL-STD-750, method 2026
- Polarity: Color band denotes cathode end except Bipolar
- Mounting position: Any

SMAF



Dimensions in inches and(millimeters)

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

Parameter	Symbol	Value	UNIT
Peak power dissipation with a 10/1000 μ s waveform ⁽¹⁾	P_{PP}	400	W
Peak pulse current with a 10/1000 μ s waveform ⁽¹⁾	I_{PP}	See Next Table	A
Power dissipation on infinite heatsink at $T_L = 75^\circ\text{C}$	P_D	1.0	W
Peak forward surge current, 8.3 ms single half sine-wave unidirectional only ⁽²⁾	I_{FSM}	40	A
Maximum instantaneous forward voltage at 25 A for unidirectional only ⁽³⁾	V_F	3.5/5.0	V
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Note:

(1)Non-repetitive current pulse per Fig.5 and derated above $T_A=25^\circ\text{C}$ per Fig.1

(2)Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

(3) $V_F < 3.5\text{V}$ for devices of $V_{BR} < 200\text{V}$ and $V_F < 5.0\text{V}$ for devices of $V_{BR} > 201\text{V}$

Electrical Characteristics($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Device Marking Code		Breakdown Voltage V_{BR} @ I_T			Maximum Reverse Leakage I_R @ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP} (A)	Maximum Clamping Voltage V_C @ I_{PP} (V)
		Uni	Bi	Min (V)	Max (V)	I_T (mA)				
SMAFS5.0	SMAFS5.0C	AD	WD	6.40	7.30	10	800	5.0	41.67	9.6
SMAFS5.0A	SMAFS5.0CA	AE	WE	6.40	7.00	10	800	5.0	43.48	9.2
SMAFS6.0	SMAFS6.0C	AF	WF	6.67	8.15	10	800	6.0	35.09	11.4
SMAFS6.0A	SMAFS6.0CA	AG	WG	6.67	7.37	10	800	6.0	38.83	10.3
SMAFS6.5	SMAFS6.5C	AH	WH	7.22	8.82	10	500	6.5	32.52	12.3
SMAFS6.5A	SMAFS6.5CA	AK	WK	7.22	7.98	10	500	6.5	35.71	11.2
SMAFS7.0	SMAFS7.0C	AL	WL	7.78	9.51	10	200	7.0	30.08	13.3
SMAFS7.0A	SMAFS7.0CA	AM	WM	7.78	8.60	10	200	7.0	33.33	12.0
SMAFS7.5	SMAFS7.5C	AN	WN	8.33	10.20	10	100	7.5	27.97	14.3
SMAFS7.5A	SMAFS7.5CA	AP	WP	8.33	9.21	1	100	7.5	31.01	12.9
SMAFS8.0	SMAFS8.0C	AQ	WQ	8.89	10.90	1	50	8.0	26.67	15.0
SMAFS8.0A	SMAFS8.0CA	AR	WR	8.89	9.83	1	50	8.0	29.41	13.6
SMAFS8.5	SMAFS8.5C	AS	WS	9.44	11.50	1	10	8.5	25.16	15.9
SMAFS8.5A	SMAFS8.5CA	AT	WT	9.44	10.40	1	10	8.5	27.78	14.4
SMAFS9.0	SMAFS9.0C	AU	WU	10.00	12.20	1	5	9.0	23.67	16.9
SMAFS9.0A	SMAFS9.0CA	AV	WV	10.00	11.10	1	5	9.0	25.97	15.4
SMAFS10	SMAFS10C	AW	WW	11.10	13.60	1	5	10.0	21.28	18.8
SMAFS10A	SMAFS10C	AX	WX	11.10	12.30	1	5	10.0	23.53	17.0
SMAFS11	SMAFS11C	AY	WY	12.20	14.90	1	1	11.0	19.90	20.1
SMAFS11A	SMAFS11CA	AZ	WZ	12.20	13.50	1	1	11.0	21.98	18.2
SMAFS12	SMAFS12C	BE	XD	13.30	16.30	1	1	12.0	18.18	22.0
SMAFS12A	SMAFS12CA	BF	XE	13.30	14.70	1	1	12.0	20.10	19.9
SMAFS13	SMAFS13C	BD	XF	14.40	17.60	1	1	13.0	16.81	23.8
SMAFS13A	SMAFS13CA	BE	XG	14.40	15.90	1	1	13.0	18.60	21.5
SMAFS14	SMAFS14C	BF	XH	15.60	19.10	1	1	14.0	15.50	25.8
SMAFS14A	SMAFS14CA	BG	XK	15.60	17.20	1	1	14.0	17.24	23.2
SMAFS15	SMAFS15C	BH	XL	16.70	20.40	1	1	15.0	14.87	26.9
SMAFS15A	SMAFS15CA	BK	XM	16.70	18.50	1	1	15.0	16.39	24.4
SMAFS16	SMAFS16C	BN	XN	17.80	21.80	1	1	16.0	13.89	28.8
SMAFS16A	SMAFS16CA	BP	XP	17.80	19.70	1	1	16.0	15.38	26.0
SMAFS17	SMAFS17C	BQ	XQ	18.90	23.10	1	1	17.0	13.11	30.5
SMAFS17A	SMAFS17CA	BR	XR	18.90	20.90	1	1	17.0	14.49	27.6
SMAFS18	SMAFS18C	BS	XS	20.00	24.40	1	1	18.0	12.42	32.2
SMAFS18A	SMAFS18CA	BT	XT	20.00	22.10	1	1	18.0	13.70	29.2
SMAFS19	SMAFS19C	BA	XA	21.13	25.76	1	1	19.0	11.76	34.0
SMAFS19A	SMAFS19CA	BB	XB	21.10	23.30	1	1	19.0	13.00	30.8
SMAFS20	SMAFS20C	BU	XU	22.20	27.10	1	1	20.0	11.17	35.8
SMAFS20A	SMAFS20CA	BV	XV	22.20	24.50	1	1	20.0	12.35	32.4
SMAFS22	SMAFS22C	BW	XW	24.40	29.80	1	1	22.0	10.15	39.4
SMAFS22A	SMAFS22CA	BX	XX	24.40	26.90	1	1	22.0	11.27	35.5
SMAFS24	SMAFS24C	BY	XY	26.70	32.60	1	1	24.0	9.30	43.0
SMAFS24A	SMAFS24CA	BZ	XZ	26.70	29.50	1	1	24.0	10.28	38.9
SMAFS26	SMAFS26C	CD	YD	28.90	35.30	1	1	26.0	8.58	46.6
SMAFS26A	SMAFS26CA	CE	YE	28.90	31.90	1	1	26.0	9.50	42.1
SMAFS28	SMAFS28C	CF	YF	31.10	38.00	1	1	28.0	8.00	50.0
SMAFS28A	SMAFS28CA	CG	YG	31.10	34.40	1	1	28.0	8.81	45.4
SMAFS30	SMAFS30C	CH	YH	33.30	40.70	1	1	30.0	7.48	53.5
SMAFS30A	SMAFS30CA	CK	YK	33.30	36.80	1	1	30.0	8.26	48.4
SMAFS33	SMAFS33C	CL	YL	36.70	44.90	1	1	33.0	6.78	59.0
SMAFS33A	SMAFS33CA	CM	YM	36.70	40.60	1	1	33.0	7.50	53.3
SMAFS36	SMAFS36C	CN	YN	40.00	48.90	1	1	36.0	6.22	64.3
SMAFS36A	SMAFS36CA	CP	YP	40.00	44.20	1	1	36.0	6.88	58.1

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



SMAFS Series

Transient Voltage Suppressors



Electrical Characteristics($T_A=25^{\circ}\text{C}$ unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Device Marking Code		Breakdown Voltage V_{BR} @ I_T			Maximum Reverse Leakage I_R @ V_{RWM} (uA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP} (A)	Maximum Clamping Voltage V_C @ I_{PP} (V)
		Uni	Bi	Min (V)	Max (V)	I_T (mA)				
SMAFS40	SMAFS40C	CQ	YQ	44.40	54.30	1	1	40.0	5.60	71.4
SMAFS40A	SMAFS40CA	CR	YR	44.40	49.10	1	1	40.0	6.20	64.5
SMAFS43	SMAFS43C	CS	YS	47.80	58.40	1	1	43.0	5.22	76.7
SMAFS43A	SMAFS43CA	CT	YT	47.80	52.80	1	1	43.0	5.76	69.4
SMAFS45	SMAFS45C	CU	YU	50.00	61.10	1	1	45.0	4.98	80.3
SMAFS45A	SMAFS45CA	CV	YV	50.00	55.30	1	1	45.0	5.50	72.7
SMAFS48	SMAFS48C	CW	YW	53.30	65.10	1	1	48.0	4.68	85.5
SMAFS48A	SMAFS48CA	CX	YX	53.30	58.90	1	1	48.0	5.17	77.4
SMAFS51	SMAFS51C	CY	YY	56.70	69.30	1	1	51.0	4.39	91.1
SMAFS51A	SMAFS51CA	CZ	YZ	56.70	62.70	1	1	51.0	4.85	82.4
SMAFS54	SMAFS54C	RD	ZD	60.00	73.30	1	1	54.0	4.15	96.3
SMAFS54A	SMAFS54CA	RE	ZE	60.00	66.30	1	1	54.0	4.59	87.1
SMAFS58	SMAFS58C	RF	ZF	64.40	78.70	1	1	58.0	3.88	103.0
SMAFS58A	SMAFS58CA	RG	ZG	64.40	71.20	1	1	58.0	4.27	93.6
SMAFS60	SMAFS60C	RH	ZH	66.70	81.50	1	1	60.0	3.74	107.0
SMAFS60A	SMAFS60CA	RK	ZK	66.70	73.70	1	1	60.0	4.13	96.8
SMAFS64	SMAFS64C	RL	ZL	71.10	86.90	1	1	64.0	3.51	114.0
SMAFS64A	SMAFS64CA	RM	ZM	71.10	78.60	1	1	64.0	3.88	103.0
SMAFS70	SMAFS70C	RN	ZN	77.80	95.10	1	1	70.0	3.20	125.0
SMAFS70A	SMAFS70CA	RP	ZP	77.80	86.00	1	1	70.0	3.54	113.0
SMAFS75	SMAFS75C	RO	ZO	83.30	102.00	1	1	75.0	2.99	134.0
SMAFS75A	SMAFS75CA	RR	ZR	83.30	92.10	1	1	75.0	3.31	121.0
SMAFS78	SMAFS78C	RS	ZS	86.70	106.00	1	1	78.0	2.88	139.0
SMAFS78A	SMAFS78CA	RT	ZT	86.70	95.80	1	1	78.0	3.17	126.0
SMAFS80	SMAFS80C	RA	ZA	88.96	108.80	1	1	80.0	2.79	143.2
SMAFS80A	SMAFS80CA	RB	ZB	88.80	97.60	1	1	80.0	3.09	129.6
SMAFS85	SMAFS85C	RU	ZU	94.40	115.00	1	1	85.0	2.65	151.0
SMAFS85A	SMAFS85CA	RV	ZV	94.40	104.00	1	1	85.0	2.92	137.0
SMAFS90	SMAFS90C	RW	ZW	100.00	122.00	1	1	90.0	2.50	160.0
SMAFS90A	SMAFS90CA	RX	ZX	100.00	111.00	1	1	90.0	2.74	146.0
SMAFS100	SMAFS100C	RY	ZY	111.00	136.00	1	1	100.0	2.23	179.0
SMAFS100A	SMAFS100CA	RZ	ZZ	111.00	123.00	1	1	100.0	2.47	162.0
SMAFS110	SMAFS110C	SD	VD	122.00	149.00	1	1	110.0	2.04	196.0
SMAFS110A	SMAFS110CA	SE	VE	122.00	135.00	1	1	110.0	2.26	177.0
SMAFS120	SMAFS120C	SF	VF	133.00	163.00	1	1	120.0	1.87	214.0
SMAFS120A	SMAFS120CA	SG	VG	133.00	147.00	1	1	120.0	2.07	193.0
SMAFS130	SMAFS130C	SH	VH	144.00	176.00	1	1	130.0	1.73	231.0
SMAFS130A	SMAFS130CA	SK	VK	144.00	159.00	1	1	130.0	1.91	209.0
SMAFS140	SMAFS140C	SA	VA	155.68	190.40	1	1	140.0	1.60	250.6
SMAFS140A	SMAFS140CA	SB	VB	155.00	171.00	1	1	140.0	1.76	226.8
SMAFS150	SMAFS150C	SL	VL	167.00	204.00	1	1	150.0	1.49	268.0
SMAFS150A	SMAFS150CA	SM	VM	167.00	185.00	1	1	150.0	1.65	243.0
SMAFS160	SMAFS160C	SN	VN	178.00	218.00	1	1	160.0	1.39	287.0
SMAFS160A	SMAFS160CA	SP	VP	178.00	197.00	1	1	160.0	1.54	259.0
SMAFS170	SMAFS170C	SO	VO	189.00	231.00	1	1	170.0	1.32	304.0
SMAFS170A	SMAFS170CA	SR	VR	189.00	209.00	1	1	170.0	1.45	275.0
SMAFS180	SMAFS180C	SS	VS	200.16	244.80	1	1	180.0	1.24	322.2
SMAFS180A	SMAFS180CA	ST	VT	200.00	220.00	1	1	180.0	1.37	291.6
SMAFS190	SMAFS190C	SU	VU	211.28	258.40	1	1	190.0	1.18	340.1
SMAFS190A	SMAFS190CA	SV	VV	211.00	232.00	1	1	190.0	1.30	307.8
SMAFS200A	SMAFS200CA	SW	VW	224.00	247.00	1	1	200.0	1.23	324.0
SMAFS220A	SMAFS220CA	SX	VX	246.00	272.00	1	1	220.0	1.12	356.0
SMAFS250A	SMAFS250CA	SZ	VZ	279.00	309.00	1	1	250.0	0.99	405.0
SMAFS300A	SMAFS300CA	DE	HE	335.00	371.00	1	1	300.0	0.82	486.0
SMAFS350A	SMAFS350CA	DG	HG	391.00	432.00	1	1	350.0	0.71	567.0
SMAFS400A	SMAFS400CA	DK	HK	447.00	494.00	1	1	400.0	0.62	648.0
SMAFS440A	SMAFS440CA	DM	HM	492.00	543.00	1	1	440.0	0.56	713.0

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

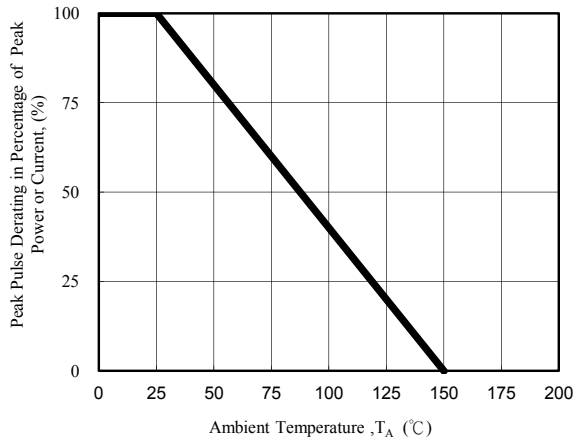


Fig. 1 - Pulse Derating Curve

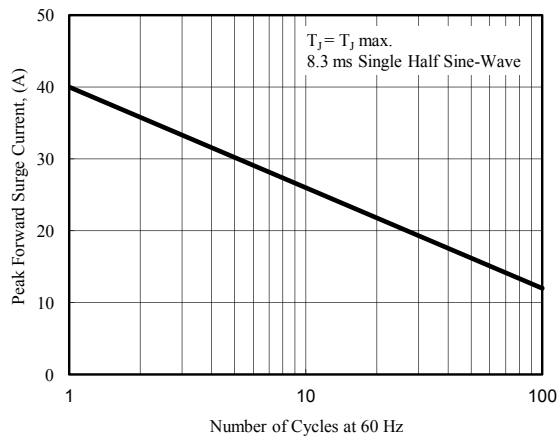


Fig. 2 - Maximum Non-Repetitive Surge Current

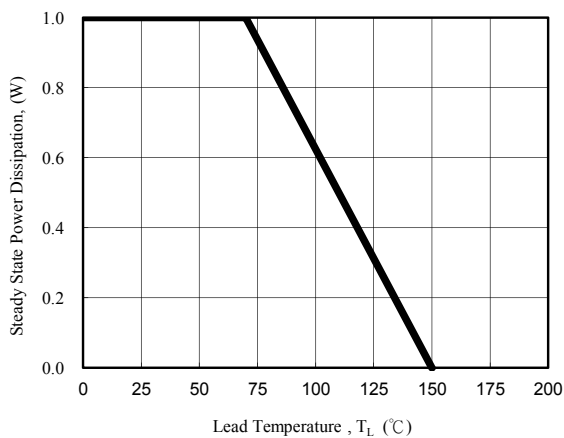


Fig. 3 - Steady State Power Derating Curve

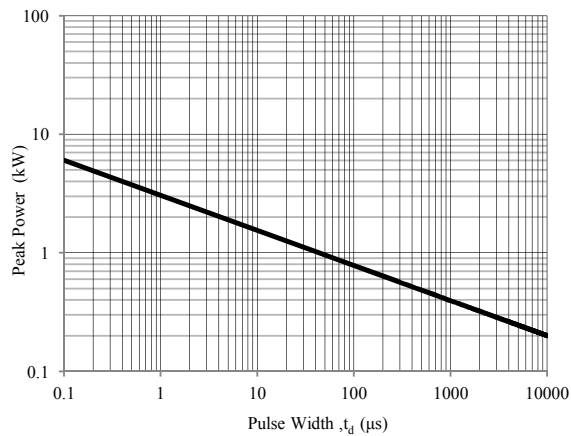


Fig. 4 - Peak Pulse Power Rating Curve

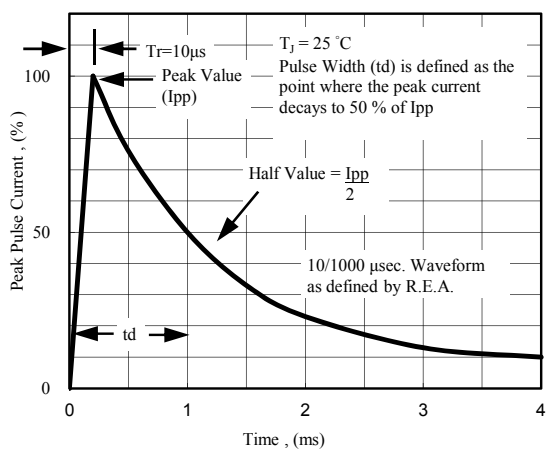


Fig. 5 - Pulse Waveform

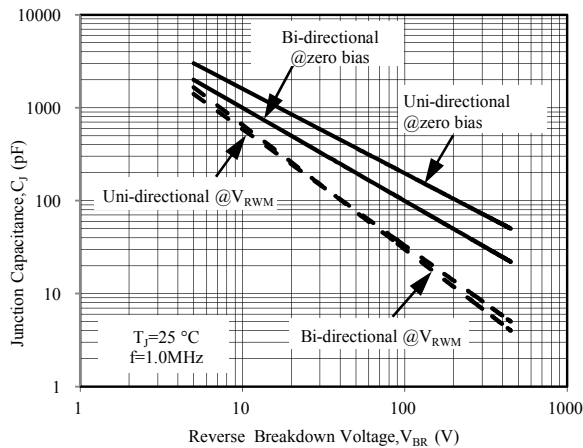


Fig. 6 - Typical Junction Capacitance