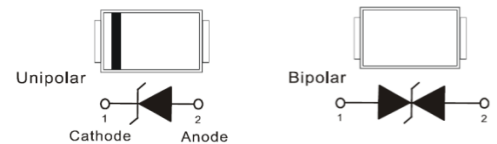
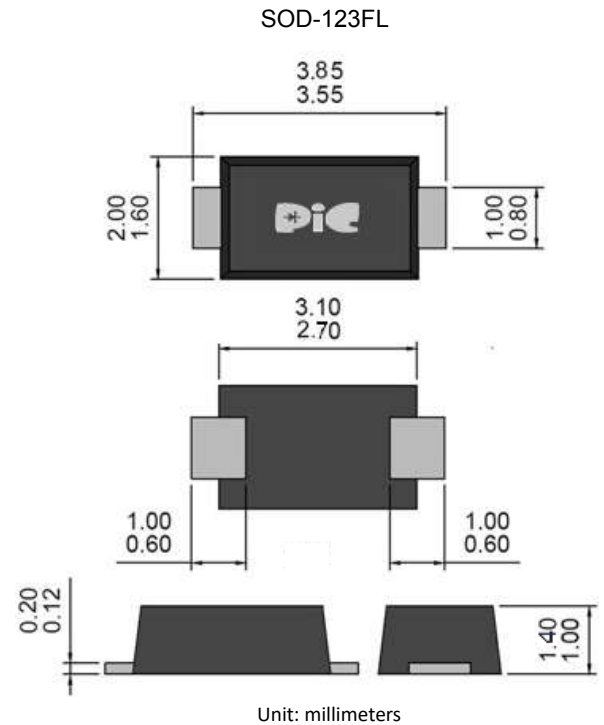


Features

- Glass passivated chip
- 200W 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

- Epoxy: UL94V-0 rated flame retardant
- Case: Epoxy, Molded
- Terminals: Solder plated solderable per MIL-STD-750 Method 2026
- Polarity: Color band denotes cathode end except Bipolar
- Weight: Approx. 0.0006 ounce, 0.0173 grams



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

Parameter	Symbol	Value	UNITS
Peak Power Dissipation with a 10/1000 μ s waveform (Notes 1)	P_{PP}	200	Watts
Peak Power Dissipation with a 8/20 μ s waveform (Notes 1)	P_{PP}	1000	Watts
Peak Forward Surge Current , 8.3 ms single half sine-wave unidirectional only (Notes 2)	I_{FSM}	20	Amps
Peak Pulse Current with a 10/1000 μ s waveform (Notes 1)	I_{PP}	See Next Table	Amps
Power dissipation on infinite heatsink at $T_L = 75^\circ\text{C}$	P_D	0.4	Watts
Max. instantaneous forward voltage at 25 A for unidirectional only	V_F	3.5	Volts
Operating Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ\text{C}$

Notes :

- (1) Non-repetitive current pulse, per Fig.5 and derated above $T_A = 25^\circ\text{C}$ per Fig.1.
- (2) Measured on 8.3ms single half sine-wave, or equivalent square wave, duty cycle = 4 pulses per minutes maximum.



SMF5.0A THRU SMF220CA

200W Transient Voltage Suppressors

Electrical Characteristics (T_A=25°C unless otherwise noted)

Part Number		Marking Code		Breakdown Voltage			Max. Reverse Leakage	Working Peak Reverse Voltage	Max. Reverse Surge Current	Max. Clamping Voltage
				V _{BR} @ I _T			I _R @ V _{RWM}	V _{RWM}	I _{PP}	V _C @I _{PP}
				Min.	Max.	I _T				
UNI	BI	UNI	BI	V	V	mA	μA	V	A	V
SMF5.0A	SMF5.0CA	FE	KE	6.4	7	10	400	5	21.74	9.2
SMF6.0A	SMF6.0CA	FG	KG	6.67	7.37	10	400	6	19.42	10.3
SMF6.5A	SMF6.5CA	FK	KK	7.22	7.98	10	250	6.5	17.86	11.2
SMF7.0A	SMF7.0CA	FM	KM	7.78	8.6	10	100	7	16.67	12
SMF7.5A	SMF7.5CA	FP	KP	8.33	9.21	1	50	7.5	15.5	12.9
SMF8.0A	SMF8.0CA	FR	KR	8.89	9.83	1	25	8	14.71	13.6
SMF8.5A	SMF8.5CA	FT	KT	9.44	10.4	1	10	8.5	13.89	14.4
SMF9.0A	SMF9.0CA	FV	KV	10	11.1	1	5	9	12.99	15.4
SMF10A	SMF10CA	FX	KX	11.1	12.3	1	2.5	10	11.76	17
SMF11A	SMF11CA	FZ	KZ	12.2	13.5	1	2.5	11	10.99	18.2
SMF12A	SMF12CA	HE	LE	13.3	14.7	1	2.5	12	10.05	19.9
SMF13A	SMF13CA	HG	LG	14.4	15.9	1	1	13	9.3	21.5
SMF14A	SMF14CA	HK	LK	15.6	17.2	1	1	14	8.62	23.2
SMF15A	SMF15CA	HM	LM	16.7	18.5	1	1	15	8.2	24.4
SMF16A	SMF16CA	HP	LP	17.8	19.7	1	1	16	7.69	26
SMF17A	SMF17CA	HR	LR	18.9	20.9	1	1	17	7.25	27.6
SMF18A	SMF18CA	HT	LT	20	22.1	1	1	18	6.85	29.2
SMF19A	SMF19CA	HB	LB	21.1	23.3	1	1	19	6.54	30.6
SMF20A	SMF20CA	HV	LV	22.2	24.5	1	1	20	6.17	32.4
SMF22A	SMF22CA	HX	LX	24.4	26.9	1	1	22	5.63	35.5
SMF24A	SMF24CA	HZ	LZ	26.7	29.5	1	1	24	5.14	38.9
SMF26A	SMF26CA	JE	ME	28.9	31.9	1	1	26	4.75	42.1
SMF28A	SMF28CA	JG	MG	31.1	34.4	1	1	28	4.41	45.4
SMF30A	SMF30CA	JK	MK	33.3	36.8	1	1	30	4.13	48.4
SMF33A	SMF33CA	JM	MM	36.7	40.6	1	1	33	3.75	53.3
SMF36A	SMF36CA	JP	MP	40	44.2	1	1	36	3.44	58.1
SMF40A	SMF40CA	JR	MR	44.4	49.1	1	1	40	3.1	64.5
SMF43A	SMF43CA	JT	MT	47.8	52.8	1	1	43	2.88	69.4
SMF45A	SMF45CA	JV	MV	50	55.3	1	1	45	2.75	72.7
SMF48A	SMF48CA	JX	MX	53.3	58.9	1	1	48	2.58	77.4
SMF51A	SMF51CA	JZ	MZ	56.7	62.7	1	1	51	2.43	82.4
SMF54A	SMF54CA	XE	NE	60	66.3	1	1	54	2.3	87.1
SMF58A	SMF58CA	XG	NG	64.4	71.2	1	1	58	2.14	93.6
SMF60A	SMF60CA	XK	NK	66.7	73.7	1	1	60	2.07	96.8
SMF64A	SMF64CA	XM	NM	71.1	78.6	1	1	64	1.94	103

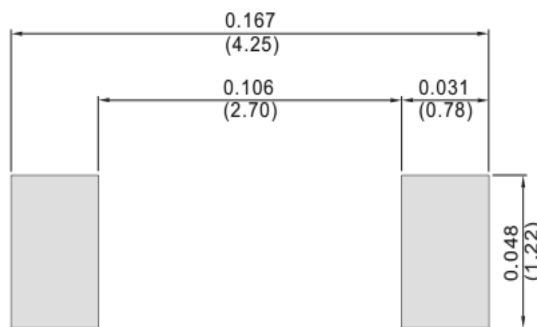
Electrical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

Part Number		Marking Code		Breakdown Voltage			Max. Reverse Leakage	Working Peak Reverse Voltage	Max. Reverse Surge Current	Max. Clamping Voltage
				$V_{BR} @ I_T$						
				Min.	Max.	I_T	$I_R @ V_{RWM}$	V_{RWM}	I_{PP}	$V_C @ I_{PP}$
UNI	BI	UNI	BI	V	V	mA	μA	V	A	V
SMF70A	SMF70CA	XP	NP	77.8	86	1	1	70	1.77	113
SMF75A	SMF75CA	XR	NR	83.3	92.1	1	1	75	1.65	121
SMF78A	SMF78CA	XT	NT	86.7	95.8	1	1	78	1.59	126
SMF80A	SMF80CA	XB	NB	88.8	97.6	1	1	80	1.55	129
SMF85A	SMF85CA	XV	NV	94.4	104	1	1	85	1.46	137
SMF90A	SMF90CA	XX	NX	100	111	1	1	90	1.37	146
SMF100A	SMF100CA	XZ	NZ	111	123	1	1	100	1.23	162
SMF110A	SMF110CA	TE	PE	122	135	1	1	110	1.13	177
SMF120A	SMF120CA	TG	PG	133	147	1	1	120	1.04	193
SMF130A	SMF130CA	TK	PK	144	159	1	1	130	0.96	209
SMF140A	SMF140CA	TB	PB	155	171	1	1	140	0.89	224
SMF150A	SMF150CA	TM	PM	167	185	1	1	150	0.82	243
SMF160A	SMF160CA	TP	PP	178	197	1	1	160	0.77	259
SMF170A	SMF170CA	TR	PR	189	209	1	1	170	0.73	275
SMF180A	SMF180CA	TT	PT	200	220	1	1	180	0.68	292
SMF190A	SMF190CA	TV	PV	211	232	1	1	190	0.65	308
SMF200A	SMF200CA	TX	PX	224	247	1	1	200	0.62	324
SMF220A	SMF220CA	TZ	PZ	246	272	1	1	220	0.56	356

Notes :

- (1) The available parts are "A" type only, the parts without A (V_{BR} is $\pm 10\%$) is not available.
- (2) Add suffix '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.

Suggested Pad Layout



Unit: inch (mm)

Rating & Characteristic Curves

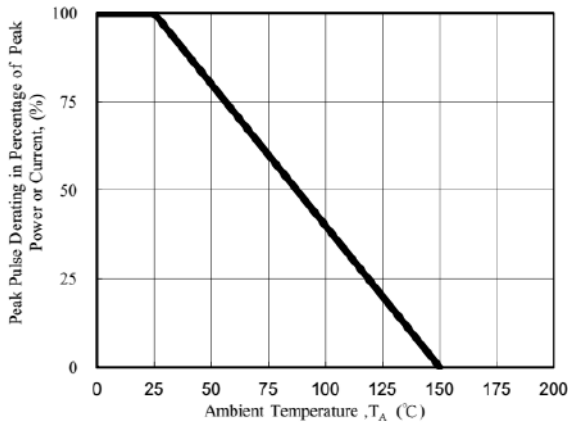


Fig. 1 Pulse Derating Curve

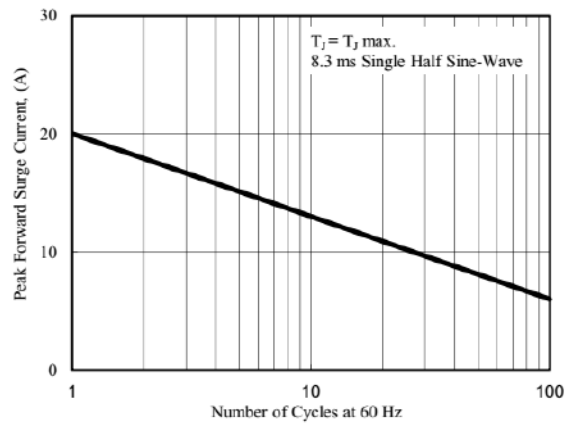


Fig. 2 Max. Non-Repetitive Surge Current

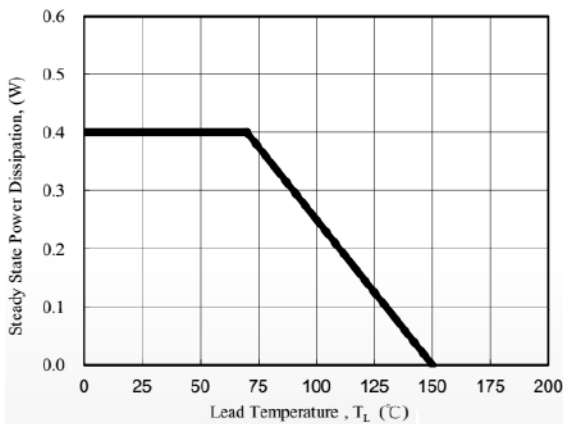


Fig. 3 Steady State Power Derating Curve

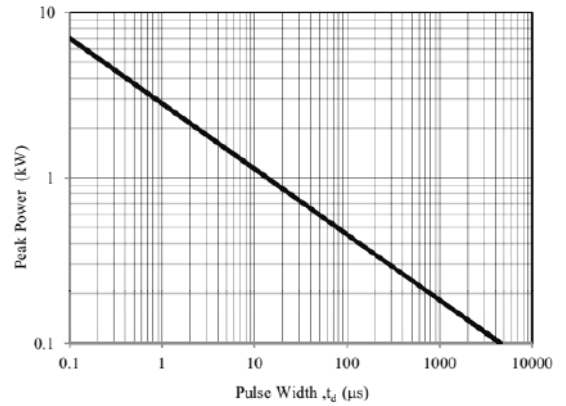


Fig. 4 Peak Pulse Power Rating Curve

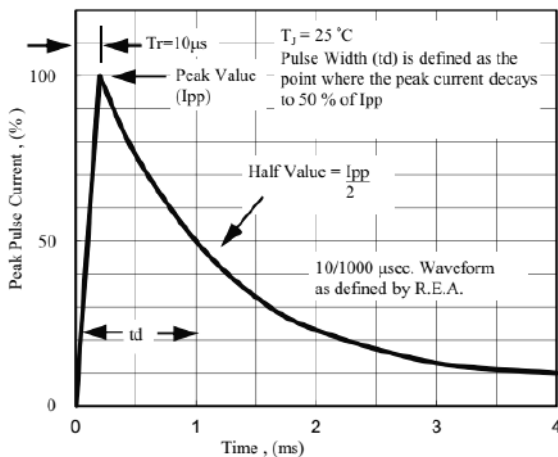


Fig. 5 Pulse Waveform

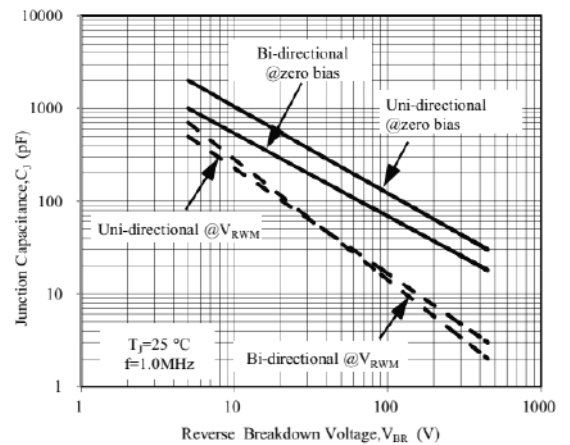
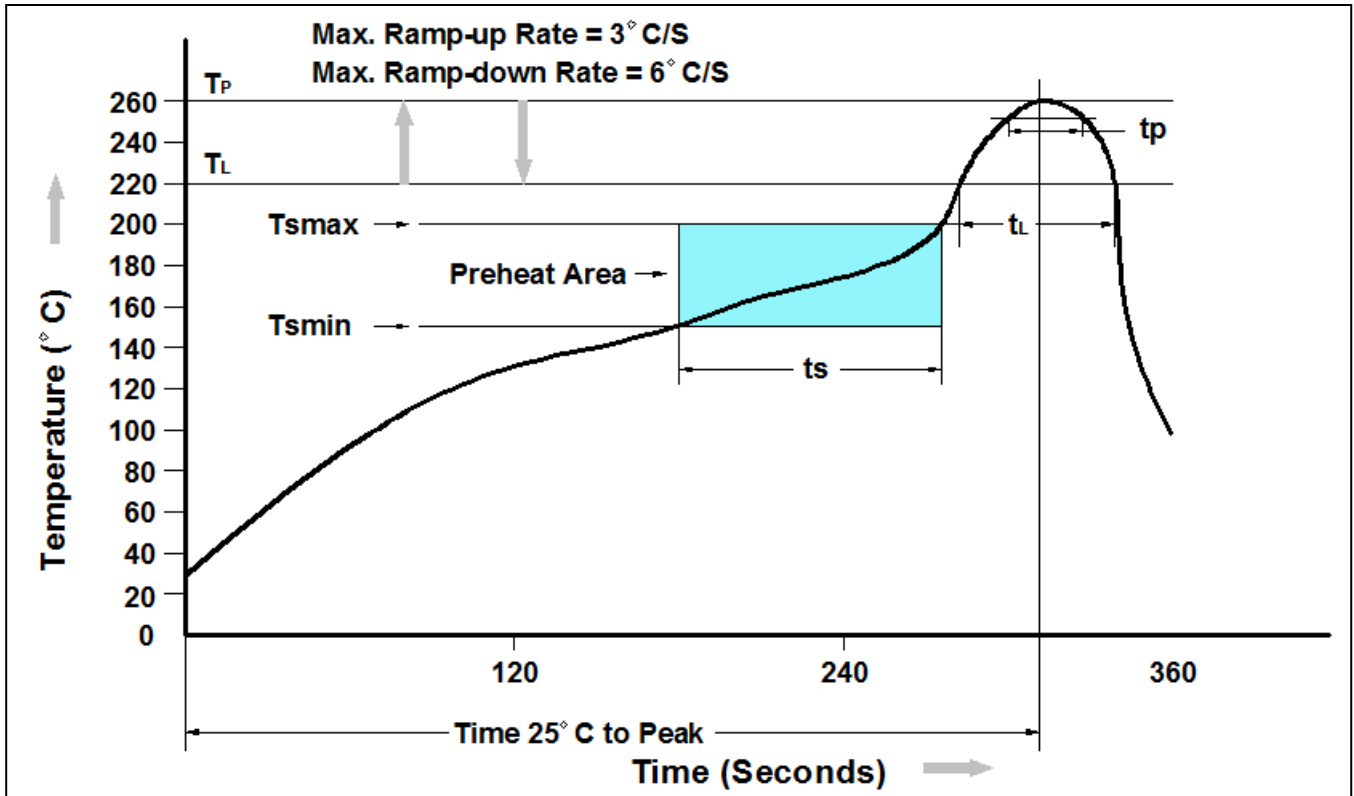


Fig. 6 Typical Junction Capacitance

Recommend IR Reflow Soldering Thermal Profile



Profile Feature	Pb-Free Assembly Profile
Temperature Min. (T _{smin})	150°C
Temperature Max. (T _{smax})	200°C
Time (t _s) from (T _{smin} to T _{smax})	60-120 seconds
Average Ramp-up Rate (t _L to t _P)	3°C/second max.
Liquidous Temperature (T _L)	217°C
Time (t _L) Maintained Above (T _L)	60 – 150 seconds
Peak Temperature	260°C +0°C / -5°C
Time (t _P) within 5°C of actual Peak Temperature	30 seconds
Ramp-down Rate (T _P to T _L)	6°C/second max
Time 25°C to Peak Temperature	8 minutes max.

Ordering Information

Part Number	Description	Quantity
SMF5.0A THRU SMF220CA	SOD-123FL Reel	3000 pcs

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