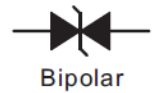
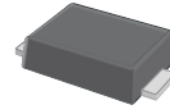
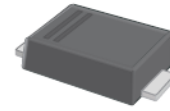


Features

- ◆ Low profile package
- ◆ Built-in strain relief
- ◆ Excellent clamping capability
- ◆ Glassed passivated junction
- ◆ Low inductance
- ◆ Typical IR less than 1uA above 10V
- ◆ Repetition rate (duty cycle):0.01%
- ◆ Fast response time: typically less than 1.0ps from 0V to V(BR) for unidirectional types
- ◆ High temperature soldering: 260℃/10s at terminals
- ◆ Plastic package has Underwriters Laboratory Flammability 94V-0
- ◆ For surface mounted applications in order to optimize board space.
- ◆ Pb-free plated

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Top View

Simplified outline SOD-123FL and symbol

Mechanical Data

- ◆ Case: JEDEC SOD-123F molded plastic over passivated chip
- ◆ Terminals: Solder plated, solderable per MIL-STD-750 Method 2026
- ◆ Polarity: For uni-directional types the band by laser denotes the cathode, which is positive with respect to the anode under normal TVS operation

Device for Bipolar Application

- ◆ For Bidirectional use C or CA Suffix for types PMF5.0 thru types PMF170 (e.g. PMF5.0C , PMF170CA)
- ◆ Electrical characteristics apply in both directions

Maximum Ratings and Characteristics

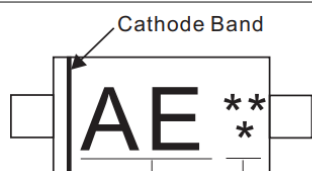
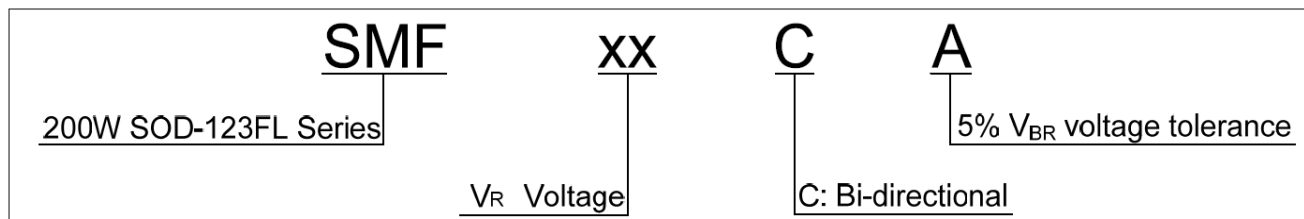
Ratings at 25℃, ambient temperature unless otherwise specified

Rating	Symbol	Value	Units
Peak Pulse Power Dissipation on 10/1000us waveform (Note1,2, FIG.1)	P _{PPM}	200	W
Peak Pulse Current on 10/1000us waveform (Note1, FIG.3)	I _{PPM}	SEE TABLE1	A
Peak Forward Surge Current,8.3ms Single Half Sine-Wave Superimposed on Rated Load, (JEDEC Method) (Note2,3)	I _{FSM}	20	A
Operating Junction and Storage Temperature Range	T _J / T _{STG}	-55 to +150	℃

Notes:

1. Non-repetitive current pulse, per Fig.3 and derated above TA=25℃ per Fig.2.
2. Mounted on 5.0mm x 5.0mm (0.03mm thick) copper pads to each terminal.
3. 8.3ms single half sine-wave, or equivalent square waver, duty cycle=4 pulses per minutes maximum

Part Number Naming Rule and Marking



Marking Code Serial number



Marking Code Serial number

For example: the device marking code of SMF5.0A and SMF5.0CA are AE and WE respectively.

Electrical Characteristics (Ta=25°C, unless otherwise noted)

Table 1

Part Number		Marking		V_R	$I_R@V_R$	$V_{BR}@I_T$		I_T	$V_C@I_{PP}$	$I_{PP}^{(1)}$
Uni-Polar	Bi-Polar	Uni	Bi	V	uA	min(V)	max(V)	mA	max(V)	A
SMF5.0A	SMF5.0CA	AE	WE	5.0	400	6.40	7.00	10	9.2	21.70
SMF6.0A	SMF6.0CA	AG	WG	6.0	400	6.67	7.37	10	10.3	19.40
SMF6.5A	SMF6.5CA	AK	WK	6.5	250	7.22	7.98	10	11.2	17.90
SMF7.0A	SMF7.0CA	AM	WM	7.0	100	7.78	8.60	10	12.0	16.70
SMF7.5A	SMF7.5CA	AP	WP	7.5	50	8.33	9.21	1	12.9	15.50
SMF8.0A	SMF8.0CA	AR	WR	8.0	25	8.89	9.83	1	13.6	14.70
SMF8.5A	SMF8.5CA	AT	WT	8.5	10	9.44	10.40	1	14.4	13.90
SMF9.0A	SMF9.0CA	AV	WV	9.0	5	10.00	11.10	1	15.4	13.00
SMF10A	SMF10CA	AX	WX	10.0	2	11.10	12.30	1	17.0	11.80
SMF11A	SMF11CA	AZ	WZ	11.0	2	12.20	13.50	1	18.2	11.00
SMF12A	SMF12CA	BE	XE	12.0	2	13.30	14.70	1	19.9	10.10
SMF13A	SMF13CA	BG	XG	13.0	1	14.40	15.90	1	21.5	9.30
SMF14A	SMF14CA	BK	XK	14.0	1	15.60	17.20	1	23.2	8.62
SMF15A	SMF15CA	BM	XM	15.0	1	16.70	18.50	1	24.4	8.20
SMF16A	SMF16CA	BP	XP	16.0	1	17.80	19.70	1	26.0	7.69
SMF17A	SMF17CA	BR	XR	17.0	1	18.90	20.90	1	27.6	7.25
SMF18A	SMF18CA	BT	XT	18.0	1	20.00	22.10	1	29.2	6.85
SMF19A	SMF19CA	BU	XU	19.0	1	21.10	23.30	1	30.6	6.54
SMF20A	SMF20CA	BV	XV	20.0	1	22.20	24.50	1	32.4	6.17
SMF22A	SMF22CA	BX	XY	22.0	1	24.40	26.90	1	35.5	5.63
SMF24A	SMF24CA	BZ	XZ	24.0	1	26.70	29.50	1	38.9	5.14
SMF26A	SMF26CA	CE	YE	26.0	1	28.90	31.90	1	42.1	4.75
SMF28A	SMF28CA	CG	YG	28.0	1	31.10	34.40	1	45.4	4.41
SMF30A	SMF30CA	CK	YK	30.0	1	33.30	36.80	1	48.4	4.13

Electrical Characteristics (Ta=25°C, unless otherwise noted)

Table1

Part Number		Marking		V _R	I _R @V _R	V _{BR} @I _T		I _T	V _C @I _{PP}	I _{PP} (1)
Uni-Polar	Bi-Polar	Uni	Bi	V	uA	min(V)	max(V)	mA	max(V)	A
SMF33A	SMF33CA	CM	YM	33.0	1	36.70	40.60	10	53.3	3.75
SMF36A	SMF36CA	CP	YP	36.0	1	40.00	44.20	10	58.1	3.44
SMF40A	SMF40CA	CR	YR	40.0	1	44.40	49.10	10	64.5	3.10
SMF43A	SMF43CA	CT	YT	43.0	1	47.80	52.80	10	69.4	2.88
SMF45A	SMF45CA	CV	YV	45.0	1	50.00	55.30	1	72.7	2.75
SMF48A	SMF48CA	CX	YX	48.0	1	53.30	58.90	1	77.4	2.58
SMF51A	SMF51CA	CZ	YZ	51.0	1	56.70	62.70	1	82.4	2.43
SMF54A	SMF54CA	RE	ZE	54.0	1	60.00	66.30	1	87.1	2.30
SMF58A	SMF58CA	RG	ZG	58.0	1	64.40	71.20	1	93.6	2.14
SMF60A	SMF60CA	RK	ZK	60.0	1	66.70	73.70	1	96.8	2.07
SMF64A	SMF64CA	RM	ZM	64.0	1	71.10	78.60	1	103.0	1.94
SMF70A	SMF70CA	RP	ZP	70.0	1	77.80	86.00	1	113.0	1.77
SMF75A	SMF75CA	RR	ZR	75.0	1	83.30	92.10	1	121.0	1.65
SMF78A	SMF78CA	RT	ZT	78.0	1	86.70	95.80	1	126.0	1.59
SMF80A	SMF80CA	RU	ZU	80.1	1	88.80	97.60	1	129.0	1.55
SMF85A	SMF85CA	RV	ZV	85.0	1	94.40	104.0	1	137.0	1.46
SMF90A	SMF90CA	RX	ZX	90.0	1	100.0	111.0	1	146.0	1.37
SMF100A	SMF100CA	RZ	ZZ	100.0	1	111.0	123.0	1	162.0	1.23
SMF110A	SMF110CA	SE	VE	110.0	1	122.0	135.0	1	177.0	1.13
SMF120A	SMF120CA	SG	VG	120.0	1	133.0	147.0	1	193.0	1.04
SMF130A	SMF130CA	SK	VK	130.0	1	144.0	159.0	1	209.0	0.96
SMF140A	SMF140CA	SL	VL	140.0	1	155.0	171.0	1	224.0	0.89
SMF150A	SMF150CA	SM	VM	150.0	1	167.0	185.0	1	243.0	0.82
SMF160A	SMF160CA	SP	VP	160.0	1	178.0	197.0	1	259.0	0.77
SMF170A	SMF170CA	SR	VR	170.0	1	189.0	209.0	1	275.0	0.73
SMF180A	SMF180CA	ST	VT	180.0	1	200.0	220.0	1	290.0	0.69

(1) Surge waveform: 10/1000us

 V_R: Stand-off voltage—maximum voltage that can be applied

 V_{BR}: Breakdown voltage

 V_C: Clamping voltage—peak voltage measured across the suppressor at a specified I_{PP}

 I_R: Reverse leakage current

Characteristics Curves ($T_a=25^{\circ}\text{C}$, unless otherwise noted)

Fig.1 Peak Pulse Power Rating Curve

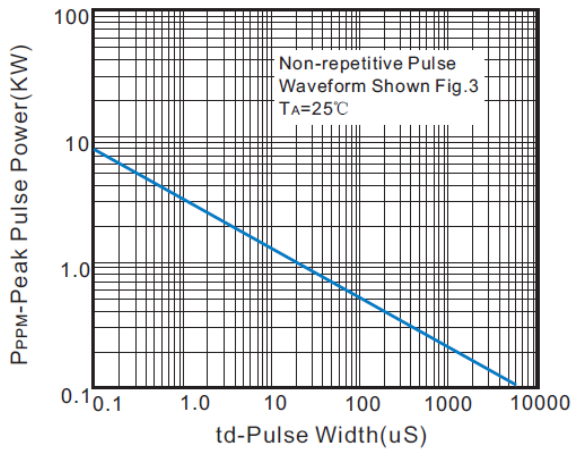


Fig.2 Pulse Derating Curve

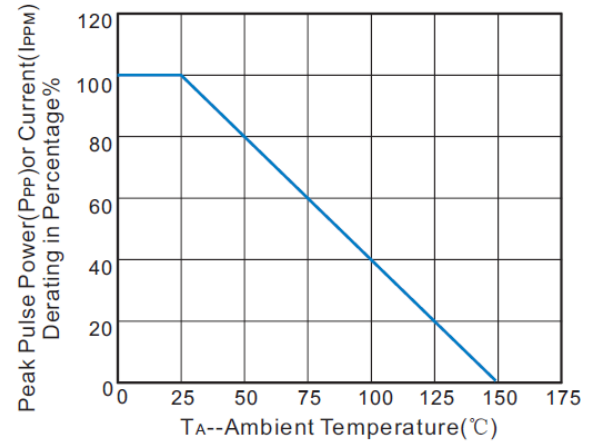


Fig.3 Pulse Waveform

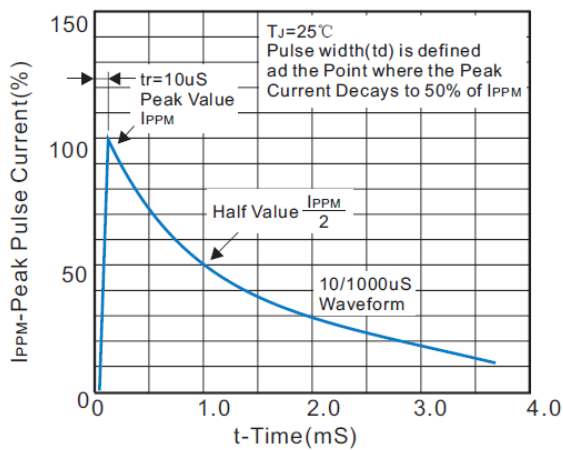


Fig.4 Type Junction Capacitance

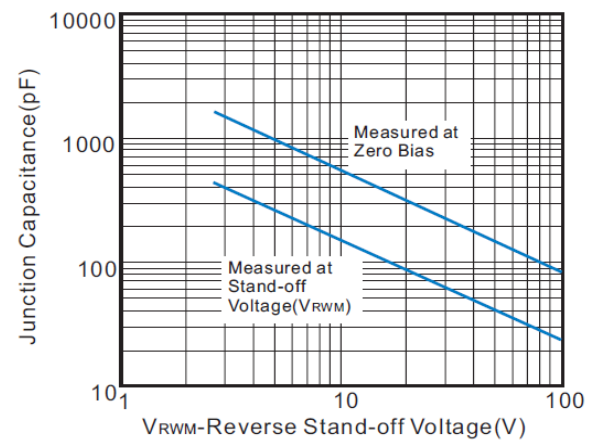
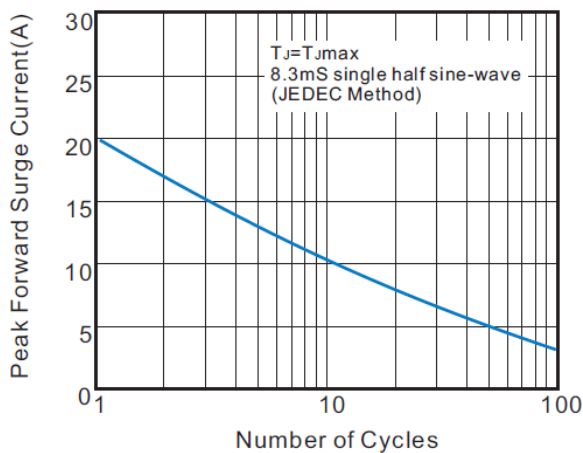
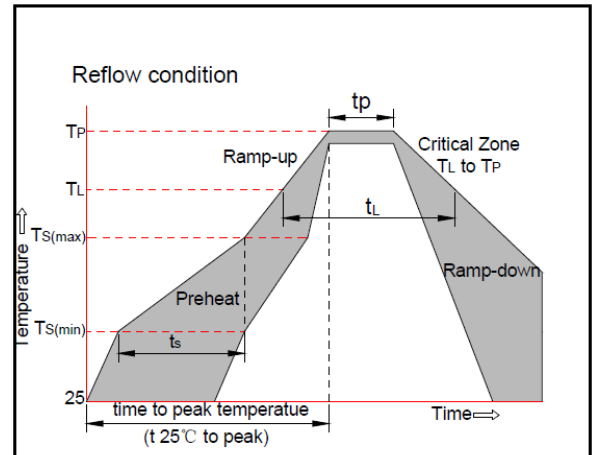


Fig.5 Maximum Non-Repetitive Peak Forward Surge Current



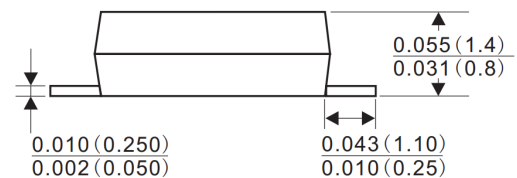
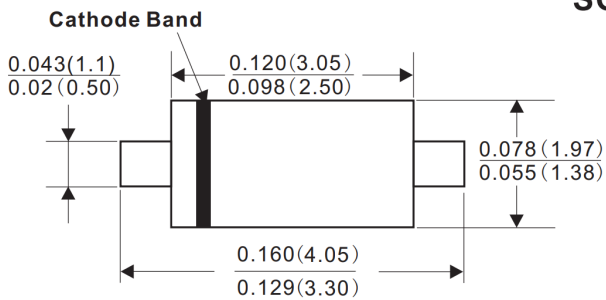
Recommended Soldering Conditions

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min($T_{S(min)}$)	+150°C
	-Temperature Min($T_{S(max)}$)	+200°C
	-Time(Min to Max)(t_s)	60-180 secs.
Average ramp up rate (Liquidus Temp(T_L) to peak)		3°C/sec.Max
$T_{S(max)}$ to T_L -Ramp-up-Rate		3°C/sec.Max
Reflow	-Temperature(T_L)(Liquidus)	+ 217°C
	- Temperature(t_L)	60-150 secs
Peak Temp(T_p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t_p)		20-40 secs.
Ramp-down Rate		6°C/sec.Max
Time 25°C to Peak Temp (T_p)		8 min.Max
Do not exceed		260°C



Package Outline Dimensions(SOD-123FL)

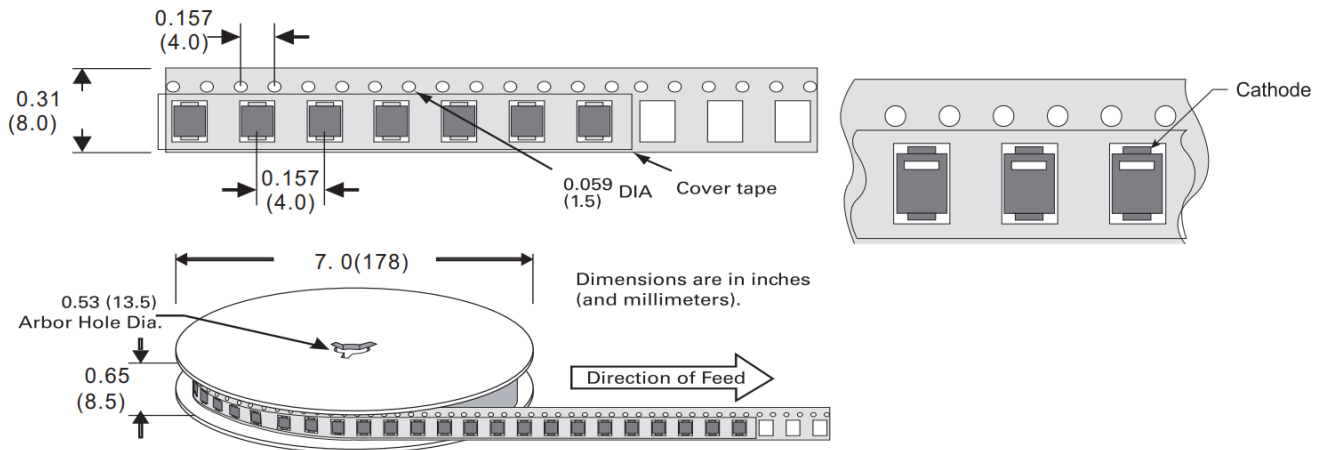
SOD-123FL



Dimensions in inches and(millimeters)

Tape and Reel Specification

Symbol	Ea Per Reel	REEL DIA(mm)	Industry Standard
SMF***	3000	3000	EIA RS-481



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