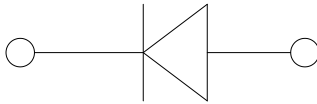
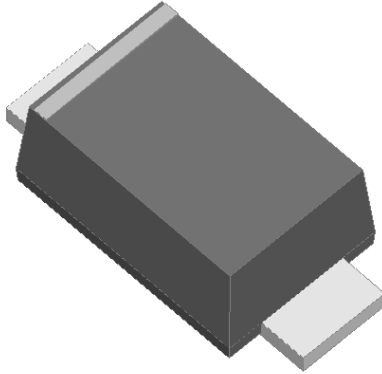


## Surface Mount Transient Voltage Suppressor



### Features

- Low profile package
- Ideal for automated placement
- Glass passivated chip junction
- Available in Unidirectional and Bidirectional
- 200 W peak pulse power capability with a 10/1000  $\mu$ s waveform, repetitive rate (duty cycle): 0.01 % (300W above 78 V)
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Meets MSL level 1, per J-STD-020C, LF max peak of 260 °C
- Solder Dip 260 °C, 40 seconds
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC

### 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, automotive and telecommunication.

### Mechanical Data

- **Package:** SOD-123FL  
Molding compound meets UL 94 V-0 flammability rating, RoHS-compliant, halogen-free
- **Terminals:** Tin plated leads, solderable per J-STD-002 and JESD22-B102
- **Polarity:** Cathode line denotes the cathode end

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

PARAMETER	SYMBOL	UNIT	Conditions	Max
Peak power dissipation	$P_{PPM}$	W	with a 10/1000us waveform (SMF5.0A~ SMF58A)	200
			with a 10/1000us waveform (SMF60A~ SMF170A)	175
Peak pulse current	$I_{PPM}$	A	with a 10/1000us waveform	(See Next Table)
Operating junction and storage temperature range	$T_J, T_{STG}$	$^\circ\text{C}$		-55 to +150
Thermal resistance	$R_{\theta JL}$	$^\circ\text{C/W}$	Between junction and lead	26
	$R_{\theta JA}$		Between junction and Ambient	300
	$R_{\theta JC}$		Between junction and Curve	40

#### Notes:

- (1). Non-repetitive current pulse at  $T_A=25^\circ\text{C}$ , per waveform of Figure 2.
- (2).  $T_L=30^\circ\text{C}$  unless otherwise noted,  $V_F \leq 1.25\text{Volts}@200\text{mA}$ .



# SMF SERIES

## ■ Ordering Information (Example)

PREFERRED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SMF SERIES	F1	0.0167	3000	15000	120000	7" reel
SMF SERIES	F2	0.0167	10000	20000	160000	13" reel

## ■ Electrical Characteristics (TA=25°C unless otherwise noted)

Part Number	Marking	Breakdown Voltage $V_{BR}@I_T$			Maximum Reverse Leakage $I_R^{(3)}$ ( $\mu A$ )	Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Surge Current $I_{PP}^{(2)}$ (A)	Maximum Clamping Voltage $V_c$ @ $I_{PP}$ (V)
		Min(V)	Max (V)	$I_T^{(1)}$ (mA)				
SMF5.0A	5.0A	6.40	7.07	10.0	400	5.0	21.7	9.2
SMF6.0A	6.0A	6.67	7.37	10.0	400	6.0	19.4	10.3
SMF6.5A	6.5A	7.22	7.98	10.0	250	6.5	17.9	11.2
SMF7.0A	7.0A	7.78	8.60	10.0	100	7.0	16.7	12.0
SMF7.5A	7.5A	8.33	9.21	1.0	50	7.5	15.5	12.9
SMF8.0A	8.0A	8.89	9.83	1.0	25	8.0	14.7	13.6
SMF8.5A	8.5A	9.44	10.40	1.0	10.0	8.5	13.9	14.4
SMF9.0A	9.0A	10.00	11.10	1.0	5	9.0	13.0	15.4
SMF10A	10A	11.10	12.30	1.0	2.5	10.0	11.8	17.0
SMF11A	11A	12.20	13.50	1.0	2.5	11.0	11.0	18.2
SMF12A	12A	13.30	14.70	1.0	2.5	12.0	10.1	19.9
SMF13A	13A	14.40	15.90	1.0	1.0	13.0	9.3	21.5
SMF14A	14A	15.60	17.20	1.0	1.0	14.0	8.6	23.2
SMF15A	15A	16.70	18.50	1.0	1.0	15.0	8.2	24.4
SMF16A	16A	17.80	19.70	1.0	1.0	16.0	7.7	26.0
SMF17A	17A	18.90	20.90	1.0	1.0	17.0	7.2	27.6
SMF18A	18A	20.00	22.10	1.0	1.0	18.0	6.8	29.2
SMF20A	20A	22.20	24.50	1.0	1.0	20.0	6.2	32.4
SMF22A	22A	24.40	26.90	1.0	1.0	22.0	5.6	35.5
SMF24A	24A	26.70	29.50	1.0	1.0	24.0	5.1	38.9
SMF26A	26A	28.90	31.90	1.0	1.0	26.0	4.8	42.1
SMF28A	28A	31.10	34.40	1.0	1.0	28.0	4.4	45.4
SMF30A	30A	33.30	36.80	1.0	1.0	30.0	4.1	48.4
SMF33A	33A	36.70	40.60	1.0	1.0	33.0	3.8	53.3
SMF36A	36A	40.00	44.20	1.0	1.0	36.0	3.4	58.1
SMF40A	40A	44.40	49.10	1.0	1.0	40.0	3.1	64.5
SMF43A	43A	47.80	52.80	1.0	1.0	43.0	2.9	69.4
SMF45A	45A	50.00	55.30	1.0	1.0	45.0	2.8	72.7
SMF48A	48A	53.30	58.90	1.0	1.0	48.0	2.6	77.4
SMF51A	51A	56.70	62.70	1.0	1.0	51.0	2.4	82.4
SMF54A	54A	60.00	66.30	1.0	1.0	54.0	2.3	87.1
SMA58A	58A	64.40	71.20	1.0	1.0	58.0	2.1	93.6
SMF60A	60A	66.70	73.70	1.0	1.0	60.0	1.8	96.8
SMF64A	64A	71.10	78.60	1.0	1.0	64.0	1.7	103.0
SMF70A	70A	77.80	86.00	1.0	1.0	70.0	1.5	113.0
SMF75A	75A	83.30	92.10	1.0	1.0	75.0	1.4	121.0



# SMF SERIES

Part Number	Marking	Breakdown Voltage $V_{BR}@I_T$			Maximum Reverse Leakage $I_R^{(3)}$ ( $\mu A$ )	Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Surge Current $I_{PP}^{(2)}$ (A)	Maximum Clamping Voltage $V_c$ @ $I_{PP}$ (V)
		Min(V)	Max (V)	$I_T^{(1)}$ (mA)				
SMF78A	78A	86.70	95.80	1.0	1.0	78.0	1.4	126.0
SMF85A	85A	94.40	104.00	1.0	1.0	85.0	1.3	137.0
SMF90A	90A	100.00	111.00	1.0	1.0	90.0	1.2	146.0
SMF100A	100A	111.00	123.00	1.0	1.0	100.0	1.1	162.0
SMF110A	110A	122.00	135.00	1.0	1.0	110.0	1.0	177.0
SMF120A	120A	133.00	147.00	1.0	1.0	120.0	0.9	193.0
SMF130A	130A	144.00	159.00	1.0	1.0	130.0	0.8	209.0
SMF150A	150A	167.00	185.00	1.0	1.0	150.0	0.7	243.0
SMF160A	160A	178.00	197.00	1.0	1.0	160.0	0.7	259.0
SMF170A	170A	189.00	209.00	1.0	1.0	170.0	0.6	275.0

Notes:

- (1)  $t_p \leq 50ms$  Pulse test:  $t_p \leq 50ms$ .
- (2) Surge current waveform per Fig. 2 and derated per Fig.3.
- (3) For bi-directional types having VWM of 10 V and less, the  $I_R$  limit is doubled.

## ■ Characteristics(Typical)

FIG1: Peak Pulse Power Rating Curve

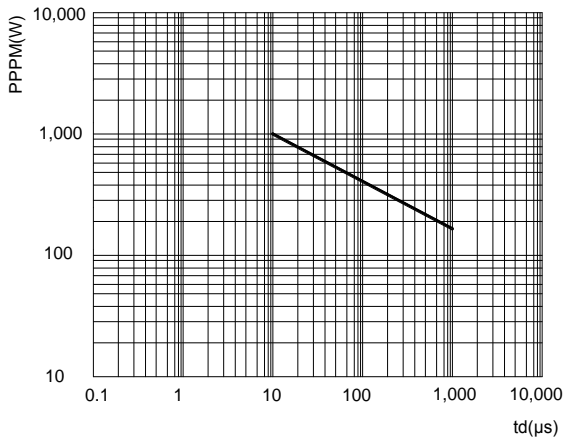


FIG2: Pulse Waveform

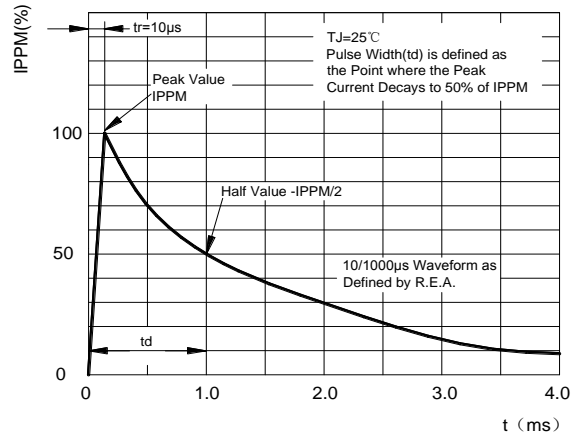


FIG3: Pulse Power or Current vs. Initial Junction Temperature

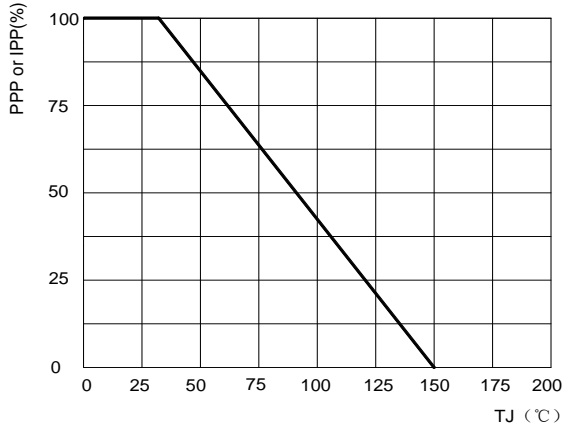
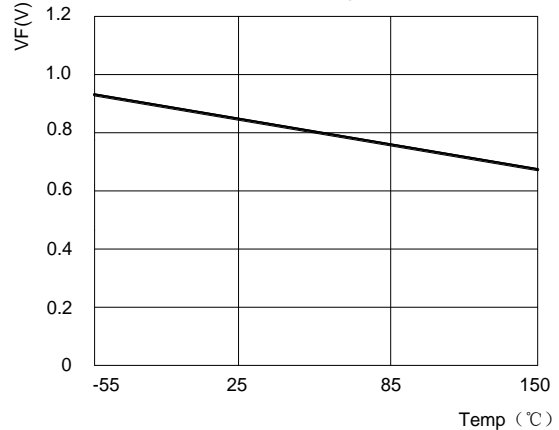
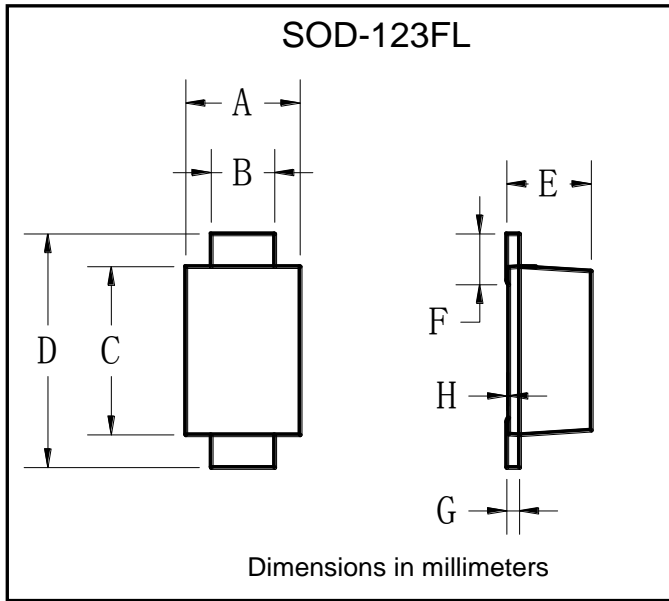


FIG4: Forward Voltage Curve

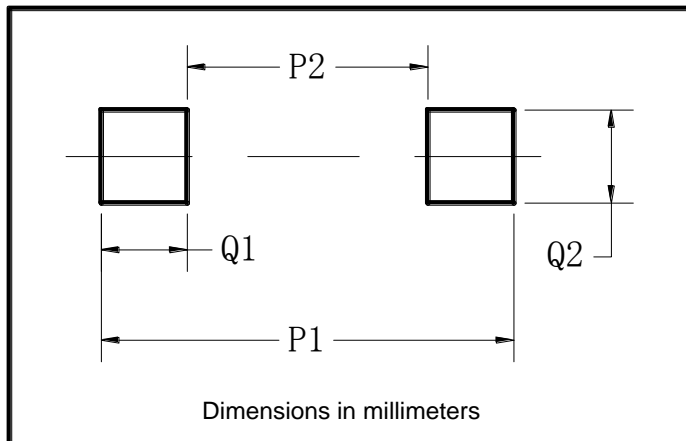


## ■ Outline Dimensions



SOD-123FL		
Dim	Min	Max
A	1.60	1.90
B	0.90	1.10
C	2.55	2.85
D	3.60	3.90
E	1.00	1.20
F	0.40	0.90
G	0.10	0.25
H	0.02	0.05

## ■ Suggested pad layout



SOD-123FL	
Dim	Millimeters
P1	3.90
P2	1.90
Q1	1.00
Q2	1.50



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