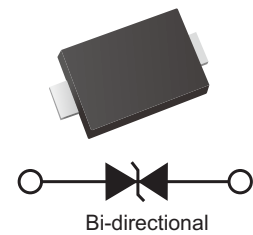
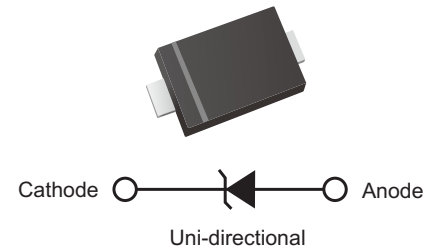


## Transient Voltage Suppressors (TVS) Data Sheet

### Features

- IEC61000-4-2 ESD 15KV Air, 8KV contact compliance
- SOD-123FL surface mount package
- Protects one I/O line
- Peak power dissipation of 1000W under 8/20 $\mu$ s waveform
- Working voltage: 5V~170V
- Low leakage current
- Solid-state silicon avalanche technology
- Solder reflow temperature: Pure Tin-Sn, 260~270 $^{\circ}$ C
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- Lead free in comply with EU RoHS 2011/65/EU directives



### Mechanical Data

- Case: SOD-123FL
- Polarity: For uni-directional types the band denotes cathode end, no marking on bi-directional types

### Applications

- Personal digital assistants (PDA)
- Cellular handsets & Accessories
- Portable devices
- Portable instrumentation
- Handhelds and notebooks
- Digital cameras

### Ordering Information

Part Number	Shipping	Reel
SMF-TR3	3000PCS Tape&Reel	7 inchs
SMF-TR12	12000PCS Tape&Reel	13 inchs

### Maximum Ratings and Characteristics

Rating	Symbol	Value	Unit
Peak pulse power (tp=10/1000 $\mu$ s waveform)	P <sub>PP</sub>	200	W
Peak pulse power (tp=8/20 $\mu$ s waveform)	P <sub>PP</sub>	1000	W
ESD voltage (Contact discharge)	V <sub>ESD</sub>	$\pm 8$	kV
ESD voltage (Air discharge)		$\pm 15$	
Storage & operating temperature range	T <sub>STG</sub> , T <sub>J</sub>	-55~+150	$^{\circ}$ C



**Electrical Characteristics (T<sub>A</sub> =25°C)**

Part Number (Uni)	Part Number (Bi)	Marking		Reverse Stand off Voltage V <sub>R</sub> (Volts)	Breakdown Voltage V <sub>BR</sub> (Volts)@ I <sub>T</sub>		Test Current I <sub>T</sub> (mA)	Maximum Clamping Voltage V <sub>C</sub> @I <sub>PP</sub> (V)	Maximum Peak Pulse Current I <sub>PP</sub> (A)	Maximum Reverse Leakage I <sub>R</sub> @V <sub>R</sub> (μA)
		Uni	Bi		Min	Max				
SMF5.0A	SMF5.0CA	5A	5C	5	6.4	7	10	9.2	21.7	400
SMF6.0A	SMF6.0CA	6A	6C	6	6.67	7.37	10	10.3	19.4	400
SMF6.5A	SMF6.5CA	6A5	6C5	6.5	7.22	7.98	10	11.2	17.9	250
SMF7.0A	SMF7.0CA	7A	7C	7	7.78	8.6	10	12	16.7	100
SMF7.5A	SMF7.5CA	7A5	7C5	7.5	8.33	9.21	1	12.9	15.5	50
SMF8.0A	SMF8.0CA	8A	8C	8	8.89	9.83	1	13.6	14.7	25
SMF8.5A	SMF8.5CA	8A5	8C5	8.5	9.44	10.4	1	14.4	13.9	10
SMF9.0A	SMF9.0CA	9A	9C	9	10	11.1	1	15.4	13.0	5
SMF10A	SMF10CA	10A	10C	10	11.1	12.3	1	17	11.8	2.5
SMF11A	SMF11CA	11A	11C	11	12.2	13.5	1	18.2	11.0	2.5
SMF12A	SMF12CA	12A	12C	12	13.3	14.7	1	19.9	10.1	2.5
SMF13A	SMF13CA	13A	13C	13	14.4	15.9	1	21.5	9.3	1
SMF14A	SMF14CA	14A	14C	14	15.6	17.2	1	23.2	8.6	1
SMF15A	SMF15CA	15A	15C	15	16.7	18.5	1	24.4	8.2	1
SMF16A	SMF16CA	16A	16C	16	17.8	19.7	1	26	7.7	1
SMF17A	SMF17CA	17A	17C	17	18.9	20.9	1	27.6	7.2	1
SMF18A	SMF18CA	18A	18C	18	20	22.1	1	29.2	6.8	1
SMF20A	SMF20CA	20A	20C	20	22.2	24.5	1	32.4	6.2	1
SMF22A	SMF22CA	22A	22C	22	24.4	26.9	1	35.5	5.6	1
SMF24A	SMF24CA	24A	24C	24	26.7	29.5	1	38.9	5.1	1
SMF26A	SMF26CA	26A	26C	26	28.9	31.9	1	42.1	4.8	1
SMF28A	SMF28CA	28A	28C	28	31.1	34.4	1	45.4	4.4	1
SMF30A	SMF30CA	30A	30C	30	33.3	36.8	1	48.4	4.1	1
SMF33A	SMF33CA	33A	33C	33	36.7	40.6	1	53.3	3.8	1
SMF36A	SMF36CA	36A	36C	36	40	44.2	1	58.1	3.4	1
SMF40A	SMF40CA	40A	40C	40	44.4	49.1	1	64.5	3.1	1
SMF43A	SMF43CA	43A	43C	43	47.8	52.8	1	69.4	2.9	1
SMF45A	SMF45CA	45A	45C	45	50	55.3	1	72.7	2.8	1
SMF48A	SMF48CA	48A	48C	48	53.3	58.9	1	77.4	2.6	1
SMF51A	SMF51CA	51A	51C	51	56.7	62.7	1	82.4	2.4	1
SMF54A	SMF54CA	54A	54C	54	60	66.3	1	87.1	2.3	1
SMF58A	SMF58CA	58A	58C	58	64.4	71.2	1	93.6	2.1	1
SMF60A	SMF60CA	60A	60C	60	66.7	73.7	1	96.8	1.8	1
SMF64A	SMF64CA	64A	64C	64	71.1	78.6	1	103	1.7	1
SMF70A	SMF70CA	70A	70C	70	77.8	86	1	113	1.5	1
SMF75A	SMF75CA	75A	75C	75	83.3	92.1	1	121	1.4	1
SMF78A	SMF78CA	78A	78C	78	86.7	95.8	1	126	1.4	1
SMF85A	SMF85CA	85A	85C	85	94.4	104	1	137	1.3	1
SMF90A	SMF90CA	90A	90C	90	100	111	1	146	1.2	1
SMF100A	SMF100CA	100A	100C	100	111	123	1	162	1.1	1
SMF110A	SMF110CA	110A	110C	110	122	135	1	177	1.0	1
SMF120A	SMF120CA	120A	120C	120	133	147	1	193	0.9	1
SMF130A	SMF130CA	130A	130C	130	144	159	1	209	0.8	1
SMF150A	SMF150CA	150A	150C	150	167	185	1	243	0.7	1
SMF160A	SMF160CA	160A	160C	160	178	197	1	259	0.7	1
SMF170A	SMF170CA	170A	170C	170	189	209	1	275	0.6	1



Electrical Characteristics Curve

Fig.1 Peak Pulse Power Rating Curve

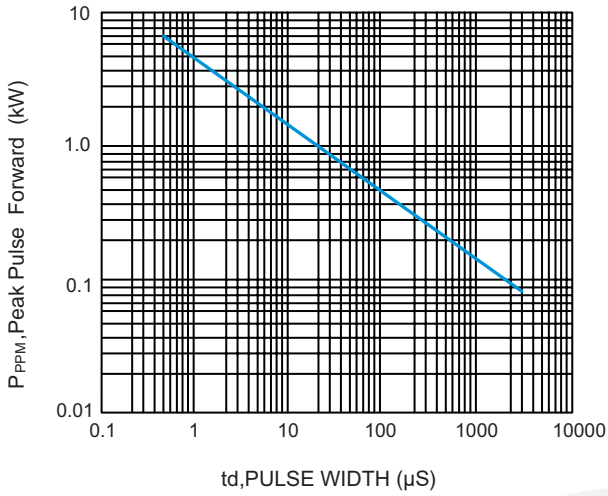


Fig.2 10/1000μs Pulse Waveforms

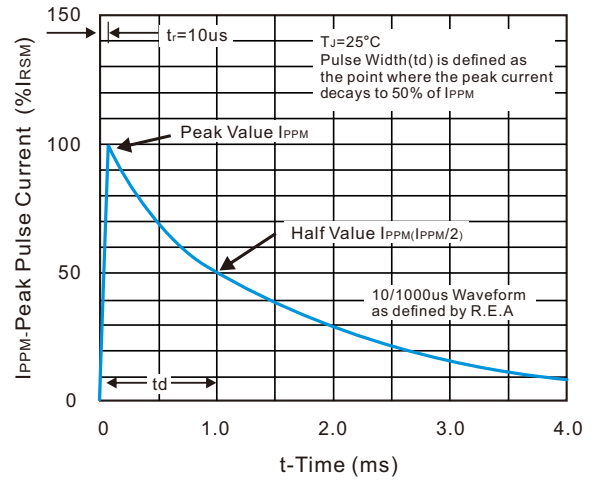


Fig.3 8/20μs Pulse Waveforms

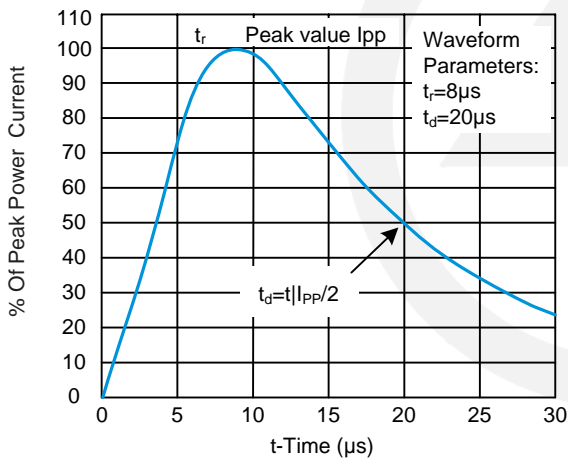


Fig.4 Power Derating Curve

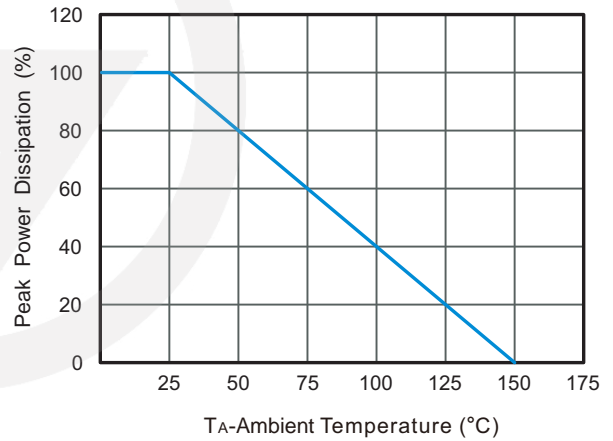
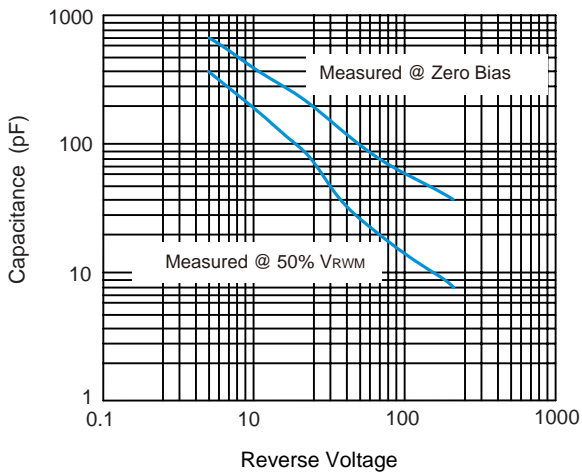
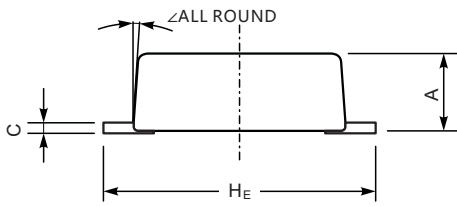


Fig.5 Capacitance vs Reverse Voltage

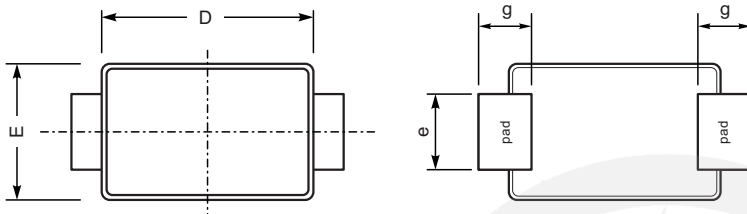


**SOD-123FL Package Outline**

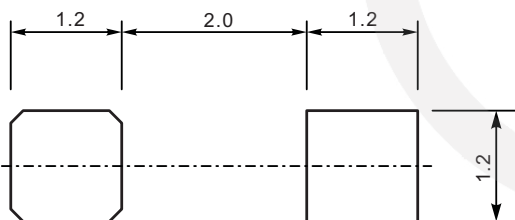
Unit : mm



SYMBOL	DIMENSIONS	
	MIN.	MAX.
A	0.9	1.35
C	0.12	0.20
D	2.6	2.9
E	1.75	1.95
e	0.8	1.1
g	0.7	0.9
H <sub>E</sub>	3.5	3.8
∠	7°	



**SOD-123FL Suggested Pad Layout**

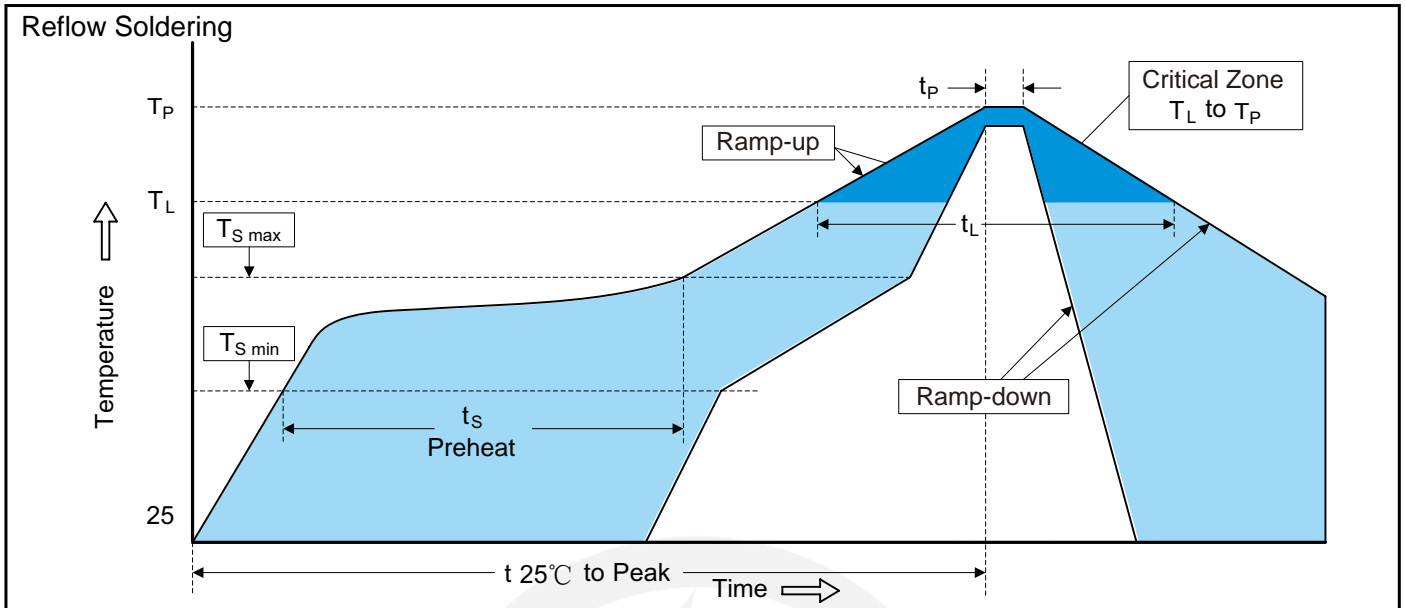


- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05\text{mm}$
  3. The pad layout is for reference purpose only.





Recommended Soldering Conditions



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T <sub>L</sub> to T <sub>P</sub> )	3°C/second max.
Preheat	
-Temperature Min (T <sub>S min</sub> )	150°C
-Temperature Max (T <sub>S max</sub> )	200°C
-Time (min to max) (t <sub>s</sub> )	60-180 seconds
T <sub>S max</sub> to T <sub>L</sub>	
-Ramp-up Rate	3°C/second max.
Time maintained above:	
-Temperature (T <sub>L</sub> )	217°C
-Time (t <sub>L</sub> )	60-150 seconds
Peak Temperature (T <sub>P</sub> )	260°C
Time within 5°C of actual Peak Temperature (t <sub>p</sub> )	20-40 seconds
Ramp-down Rate	6°C/second max.
Time 25°C to Peak Temperature	8 minutes max.

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## Version Update Information

Series NO.	Enactment/Revision Date	Effective Date	Version	Revision content	Revision Reason	Revision Person	Note
01	2024.8.19	2024.8.19	3.0	New File	/	Ding	
02	2025.06.12	2025.06.12	3.1	Update packaging information	/	Ding	