

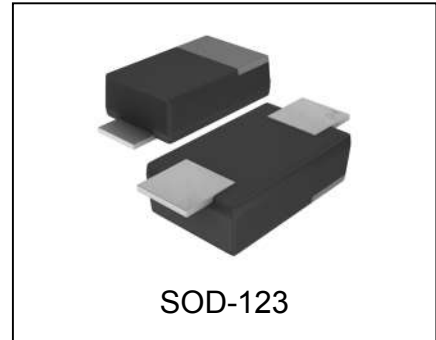


# SM4FxxA

## Power Transient Voltage Suppressor

### Features

- 400 watts Peak Pulse Power (10/1000μs)
- Unidirectional Protection
- Fast Response Time : Typically < 1ns
- Excellent Clamping Capability
- Built-in Strain relief
- Low inductance
- Low profile package
- IEC 61000-4-2 (ESD) ±30kV(air), ±30kV(contact)



### Mechanical Characteristics

- SOD-123 package
- Matte tin lead - free plated
- Marking: Marking Code
- RoHS Compliant

### Applications

- I/O Interfaces
- Power lines
- Automotive and Telecommunication
- Industrial Electronics

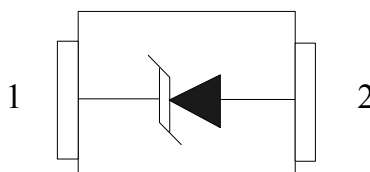
Absolute Maximum Rating			
Rating	Symbol	Value	Units
Peak Pulse Power (tp =10/1000μs) (see Note1&2)	P <sub>PPM</sub>	400	Watts
Peak pulse current (10/1000μs) (see Note2)	I <sub>PPM</sub>	See Electrical Characteristics	A
Peak Forward surge current (see Note3)	I <sub>FSM</sub>	20	A
Power Dissipation on infinite heat sink T <sub>L</sub> = 50 °C (Fig4)	P <sub>D</sub>	1.0	W
Operating Junction Temperature range	T <sub>J</sub>	-55 to + 150	°C

**Note1:** Peak Pulse Power Rating as Pulse Width ,per Fig1.

**Note2:** Peak Pulse Power or Current Derated above T<sub>A</sub>=25°C Per Fig. 2 and Non-Repetitive Current Pulse,Per Fig.3.

**Note3:** 8.3ms Single Half Sine Wave or Equivalent Square Wave unidirectional device only.

### Pin Configuration



## Electrical Characteristics

Part Number	Marking Code	Reverse Stand off Voltage $V_{RWM}$ (Volts)	Breakdown Voltage $V_{BR@I_T}$ (Volts)		Test Current $I_T$ (mA)	Maximum Clamping Voltage $V_C@I_{PP}$ (Volts)	Maximum Peak Pulse Current $I_{PP}$ (Amps)	Maximum Reverse Leakage $I_R@V_{RWM}$ ( $\mu$ A)
			MIN	MAX				
SM4F5.0A	4HE	5.0	6.4	7.0	10	9.2	43.5	400
SM4F6.0A	4HG	6.0	6.67	7.37	10	10.3	38.8	400
SM4F6.5A	4HK	6.5	7.22	7.98	10	11.2	35.7	250
SM4F7.0A	4HM	7.0	7.78	8.6	10	12	33.3	100
SM4F7.5A	4HP	7.5	8.33	9.21	1	12.9	31.0	50
SM4F8.0A	4HR	8.0	8.89	9.83	1	13.6	29.4	25
SM4F8.5A	4HT	8.5	9.44	10.4	1	14.4	27.8	10
SM4F9.0A	4HV	9.0	10.0	11.1	1	15.4	26.0	5
SM4F10A	4HX	10	11.1	12.3	1	17	23.5	2.5
SM4F11A	4HZ	11	12.2	13.5	1	18.2	22.0	2.5
SM4F12A	4IE	12	13.3	14.7	1	19.9	20.1	2.5
SM4F13A	4IG	13	14.4	15.9	1	21.5	18.6	1
SM4F14A	4IK	14	15.6	17.2	1	23.2	17.2	1
SM4F15A	4IM	15	16.7	18.5	1	24.4	16.4	1
SM4F16A	4IP	16	17.8	19.7	1	26	15.4	1
SM4F17A	4IR	17	18.9	20.9	1	27.6	14.5	1
SM4F18A	4IT	18	20.0	22.1	1	29.2	13.7	1
SM4F20A	4IV	20	22.2	24.5	1	32.4	12.3	1
SM4F22A	4IX	22	24.4	26.9	1	35.5	11.3	1
SM4F24A	4IZ	24	26.7	29.5	1	38.9	10.3	1
SM4F26A	4JE	26	28.9	31.9	1	42.1	9.5	1
SM4F28A	4JG	28	31.1	34.4	1	45.4	8.8	1
SM4F30A	4JK	30	33.3	36.8	1	48.4	8.3	1
SM4F33A	4JM	33	36.7	40.6	1	53.3	7.5	1
SM4F36A	4JP	36	40.0	44.2	1	58.1	6.9	1
SM4F40A	4JR	40	44.4	49.1	1	64.5	6.2	1
SM4F43A	4JT	43	47.8	52.8	1	69.4	5.8	1

Typical Characteristics

Figure 1: Peak Pulse Power Rating Curve

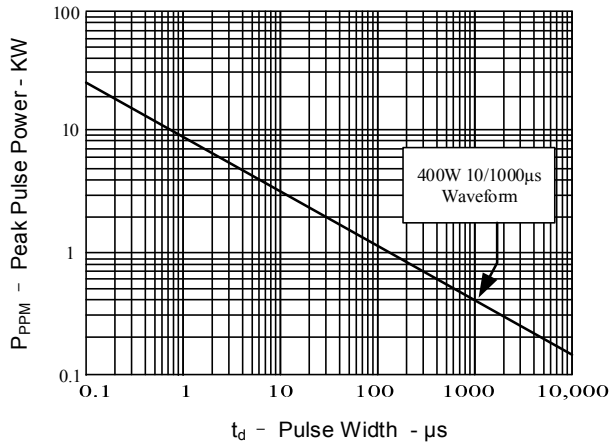


Figure 2: Pulse Derating Curve

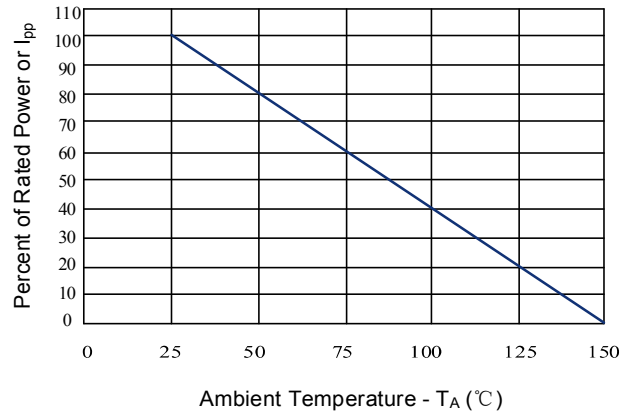


Figure 3: Pulse Waveform

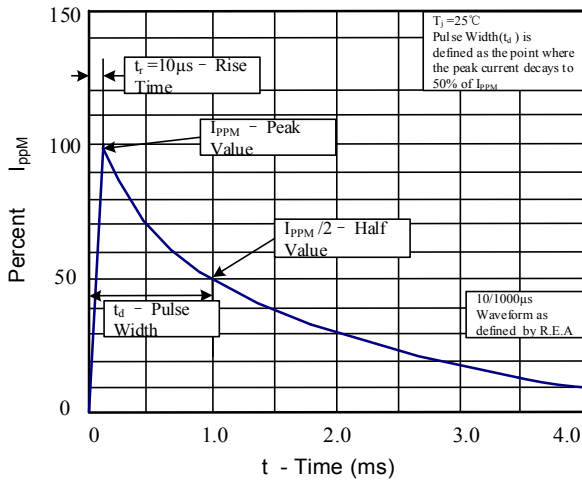


Figure 4: Steady State Power Dissipation Derating Curve

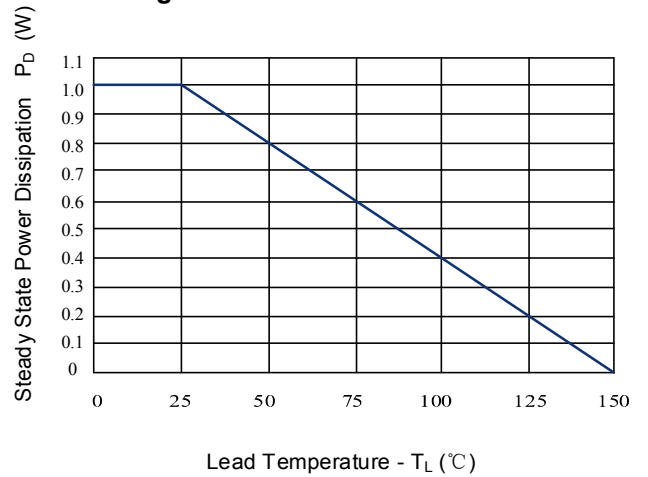
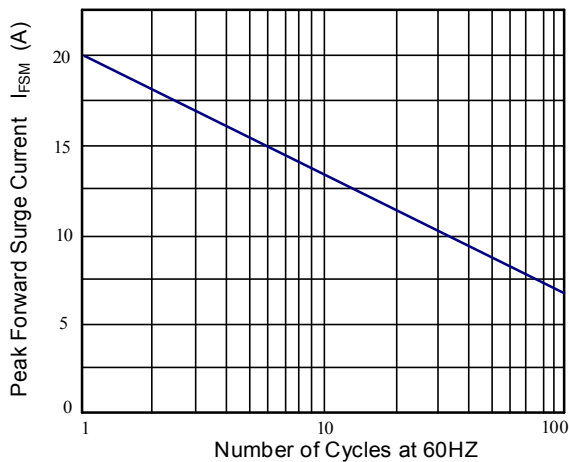
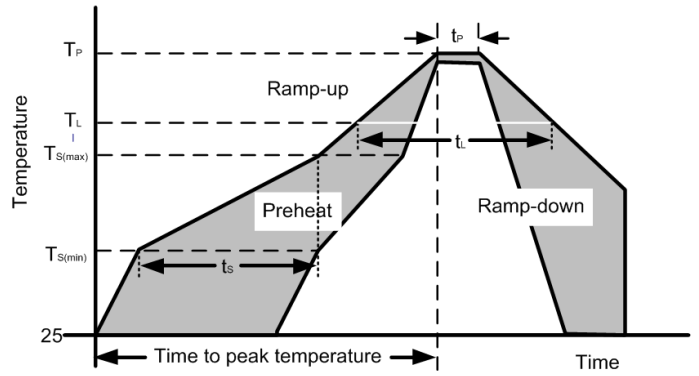


Figure 5: Maximum Non-Repetitive Forward Surge Current Only Unidirectional



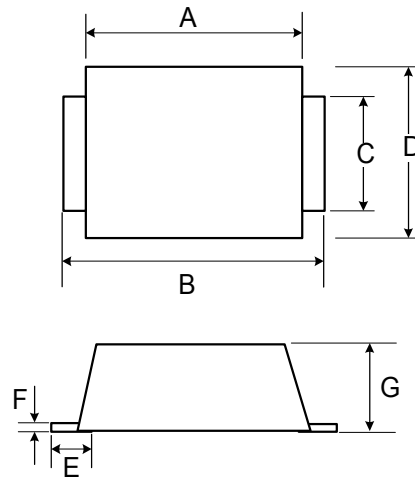
Soldering Parameters

Reflow Condition		
Pre-Heat	Temperature min ( $T_{s(min)}$ )	150°C
	Temperature max ( $T_{s(max)}$ )	200°C
	Time (min to max) ( $t_s$ )	60-190 s
Average ramp up rate (Liquidus Temp) ( $T_L$ ) to peak		3°C/s max
Ts(max) to TL - Ramp-up Rate		3°C/s max
Reflow	Temperature ( $T_L$ ) (Liquidus)	217°C
	Temperature ( $t_L$ )	60-150 s
Peak Temperature ( $T_P$ )		260 <sup>+0/-5</sup> °C
Time within actual peak Temperature ( $t_p$ )		20-40 s
Ramp-down Rate		5°C/s max
Time 25°C to peak Temperature ( $T_P$ )		8 minutes max
Do not exceed		260°C

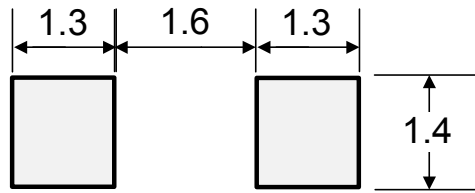


Outline Drawing – SOD-123

Ref. (mm)	Millimeters	
	Min.	Max.
A	2.50	2.95
B	3.40	3.95
C	0.70	1.10
D	1.50	1.90
E	0.45	0.95
F	0.05	0.26
G	0.90	1.35

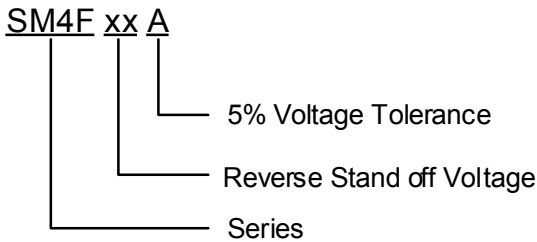


Recommended Solder Pad Layout

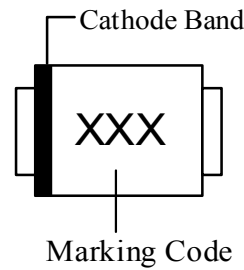


Dimensions in mm

Part Numbering System



Part Marking System



Package Information

Package Type	Description	Quantity (pcs)	Standard
SOD-123	Tape & Reel -8mm/7" tape	3000	EIA-481-D

CONTACT INFORMATION

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For additional information, please contact your local Sales Representative.

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*Specifications are subject to change without notice.  
 The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.  
 Users should verify actual device performance in their specific applications.*