200W, 5V - 100V Surface Mount Transient Voltage Suppressor

FEATURES

- AEC-Q101 qualified
- Photo Glass passivated junction
- Low power loss, high efficiency
- Ideal for automated placement
- Excellent clamping capability
- Typical I_R less than 1μA above 10V
- Meets ISO 7637-2 (Pulse 1/2a/2b/3a/3b)
- 200 watts peak pulse power capability with a 10 / 1000 μs waveform ($V_{WM} \geqq 60V$, $P_{PPM} = 175W$)
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21

KEY PARAMETERS		
PARAMETER	**VALUE**	**UNIT**
V_{WM}	5 - 100	V
V_{BR} (uni-directional)	6.8 - 117	V
P_{PPM}	200	W
$T_{J\,MAX}$	175	°C
Package	SOD-123W	
Configuration	Single die	

Pb-Free RoHS COMPLIANT HALOGEN FREE

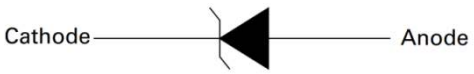
APPLICATIONS

- Protect sensitive circuit from damage by high voltage transients
- Lighting, ESD transient voltage protection of IC, system
- Inductive switching load protection of IC, system
- Electrical Fast Transient Immunity protection of IC, system

SOD-123W

MECHANICAL DATA

- Case: SOD-123W
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Indicated by cathode band
- Weight: 0.016g (approximately)



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)			
PARAMETER	**SYMBOL**	**VALUE**	**UNIT**
Non-repetitive peak impulse power dissipation with 10/1000us waveform(1)	P_{PPM}	200	W
Steady state power dissipation at T_L = 25°C(2)	P_{tot}	1	W
Forward Voltage @ I_F = 12A for Uni-directional only(3)	V_F	3.5	V
Junction temperature	T_J	-55 to +175	°C
Storage temperature	T_{STG}	-55 to +175	°C

Notes:

1. Non-repetitive Current Pulse Per Fig.3 and derated above T_A = 25°C Per Fig.2
2. Units mounted on PCB (5mm x 5mm Cu pad test board)
3. Pulse test with PW = 0.3ms

THERMAL PERFORMANCE			
PARAMETER	**SYMBOL**	**TYP**	**UNIT**
Junction-to-lead thermal resistance	$R_{\Theta JL}$	33	°C/W
Junction-to-ambient thermal resistance	$R_{\Theta JA}$	100	°C/W
Junction-to-case thermal resistance	$R_{\Theta JC}$	34	°C/W

Thermal Performance Note: Units mounted on PCB (5mm x 5mm Cu pad test board)

ORDERING INFORMATION		
ORDERING CODE(1)	**PACKAGE**	**PACKING**
SMFxAH	SOD-123W	10,000 / Tape & Reel

Notes:
1. "x" defines voltage from 5V (SMF5.0AH) to 100V (SMF100AH)

ELECTRICAL SPECIFICATIONS (T_A = 25°C unless otherwise noted)								
Part number	**Marking code**	**Breakdown voltage** $V_{BR}@I_T$ (V) (Note 1)		**Test current** I_T (mA)	**Working stand-off voltage** V_{WM} (V)	**Maximum reverse leakage current** $I_R@V_{WM}$ (μA) (Note 1)	**Maximum peak impulse current** I_{PPM} (A) tp =10/1000μs	**Maximum clamping voltage** $V_C@I_{PPM}$ (V) tp =10/1000μs
Uni	Uni	Min	Max					
SMF5.0AH	2W5P0	6.4	7.0	10	5	800	21.7	9.2
SMF6.0AH	2W6P0	6.67	7.37	10	6	800	19.4	10.3
SMF6.5AH	2W6P5	7.22	7.98	10	6.5	500	17.9	11.2
SMF7.0AH	2W7P0	7.78	8.6	10	7.0	200	16.7	12.0
SMF7.5AH	2W7P5	8.33	9.21	1	7.5	100	15.5	12.9
SMF8.0AH	2W8P0	8.89	9.83	1	8.0	50	14.7	13.6
SMF8.5AH	2W8P5	9.44	10.5	1	8.5	10	13.9	14.4
SMF9.0AH	2W9P0	10.0	11.1	1	9.0	5	13.0	15.4
SMF10AH	2W010	11.1	12.3	1	10	5	11.8	17.0
SMF11AH	2W011	12.2	13.5	1	11	1	11.0	18.2
SMF12AH	2W012	13.3	14.7	1	12	1	10.1	19.9
SMF13AH	2W013	14.4	15.9	1	13	1	9.3	21.5
SMF14AH	2W014	15.6	17.2	1	14	1	8.6	23.2
SMF15AH	2W015	16.7	18.5	1	15	1	8.2	24.4
SMF16AH	2W016	17.8	19.7	1	16	1	7.7	26.0
SMF17AH	2W017	18.9	20.9	1	17	1	7.2	27.6
SMF18AH	2W018	20.0	22.1	1	18	1	6.8	29.2
SMF20AH	2W020	22.2	24.5	1	20	1	6.2	32.4
SMF22AH	2W022	24.4	26.9	1	22	1	5.6	35.5
SMF24AH	2W024	26.7	29.5	1	24	1	5.1	38.9
SMF26AH	2W026	28.9	31.9	1	26	1	4.8	42.1
SMF28AH	2W028	31.1	34.4	1	28	1	4.4	45.4
SMF30AH	2W030	33.3	36.8	1	30	1	4.1	48.4
SMF33AH	2W033	36.7	40.6	1	33	1	3.8	53.3
SMF36AH	2W036	40.0	44.2	1	36	1	3.4	58.1
SMF40AH	2W040	44.4	49.1	1	40	1	3.1	64.5
SMF43AH	2W043	47.8	52.8	1	43	1	2.9	69.4
SMF45AH	2W045	50.0	55.3	1	45	1	2.8	72.7
SMF48AH	2W048	53.3	58.9	1	48	1	2.6	77.4
SMF51AH	2W051	56.7	62.7	1	51	1	2.4	82.4
SMF54AH	2W054	60.0	66.3	1	54	1	2.3	87.1
SMF58AH	2W058	64.4	71.2	1	58	1	2.1	95
SMF60AH	2W060	66.7	73.7	1	60	1	1.8	96.8
SMF64AH	2W064	71.1	78.6	1	64	1	1.7	103
SMF70AH	2W070	77.8	86	1	70	1	1.55	113
SMF75AH	2W075	83.3	92.1	1	75	1	1.45	121
SMF78AH	2W078	86.7	95.8	1	78	1	1.4	126
SMF85AH	2W085	94.4	104	1	85	1	1.3	137
SMF90AH	2W090	100	111	1	90	1	1.2	146
SMF100AH	2W100	111	123	1	100	1	1.08	162

Notes:

1. Pulse test with PW = 30ms

CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig.1 Pulse Power or Current vs. Initial Junction Temperature

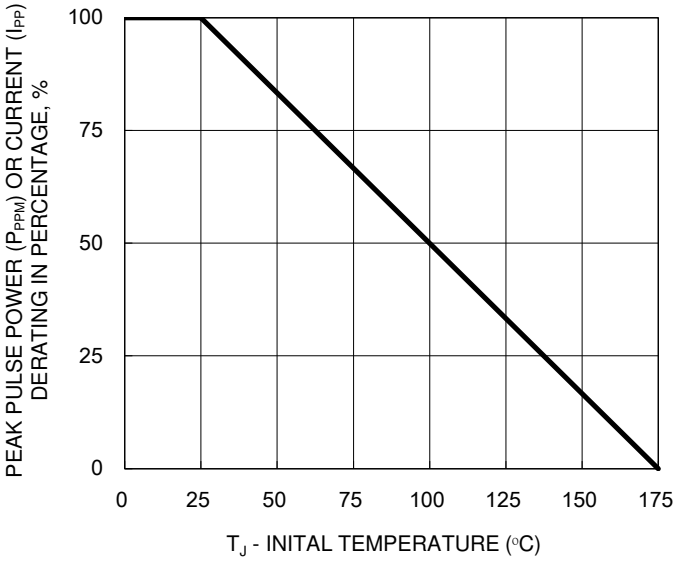


Fig.2 Steady State Power Derating

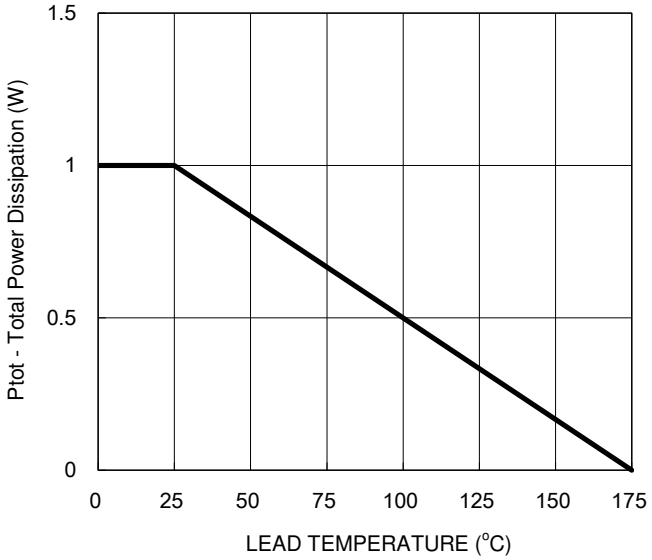


Fig.3 Clamping Power Pulse Waveform

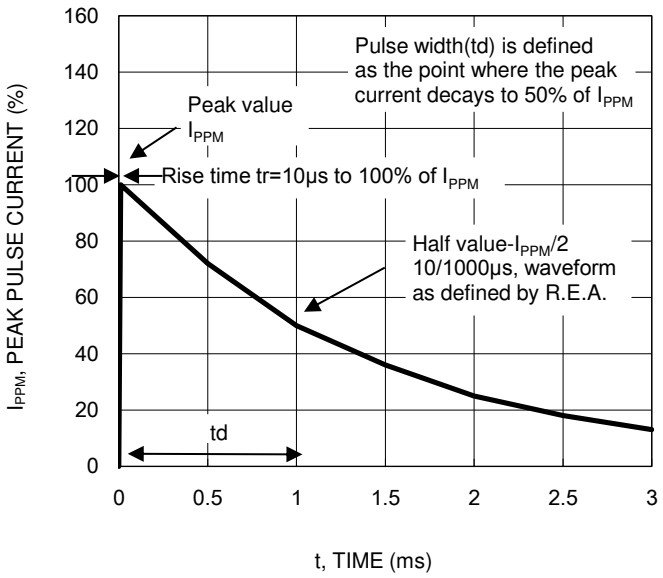
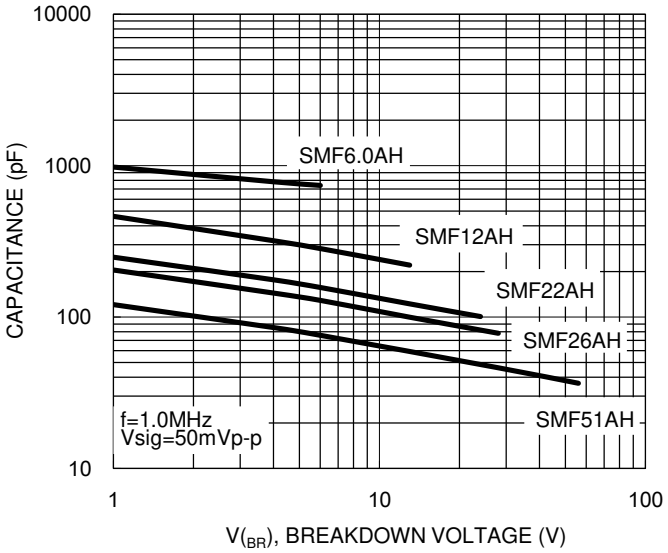
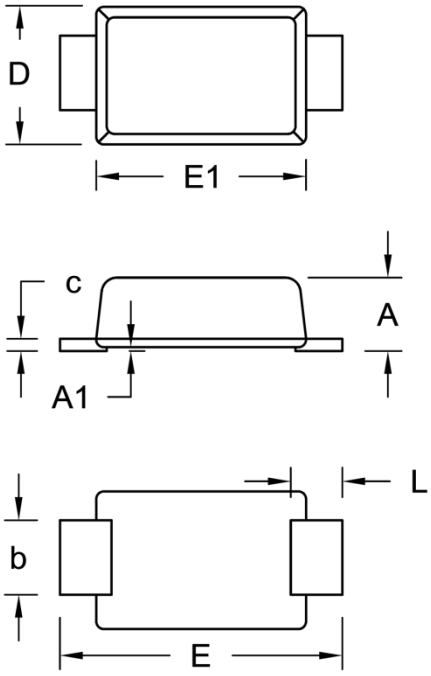


Fig.4 Typical Junction Capacitance



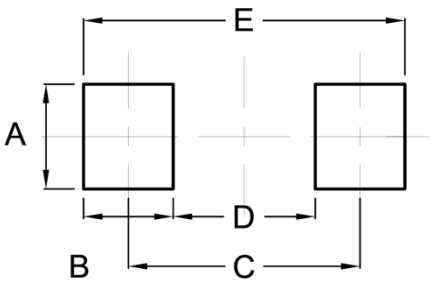
PACKAGE OUTLINE DIMENSIONS

SOD-123W



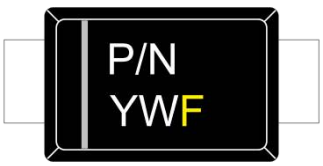
DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	0.90	1.02	0.035	0.040
A1	0.00	0.10	0.000	0.004
b	0.90	1.05	0.035	0.041
c	0.10	0.22	0.004	0.009
D	1.70	1.90	0.067	0.075
E	3.60	3.80	0.142	0.150
E1	2.60	2.90	0.102	0.114
L	0.50	0.85	0.020	0.033

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	1.40	0.055
B	1.20	0.047
C	3.10	0.122
D	1.90	0.075
E	4.30	0.169

MARKING DIAGRAM



P/N = Marking Code
YW = Date Code
F = Factory Code

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