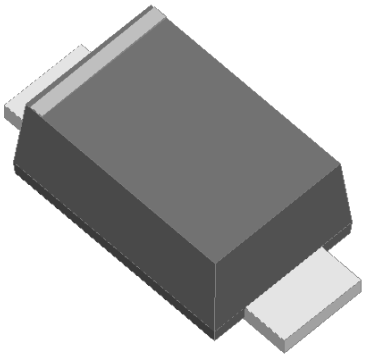
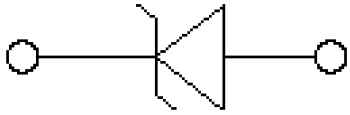
Surface Mount Transient Voltage Suppressor

Uni-directional





Features

- For surface mounted applications
- Low-profile package
- Ideal for automated placement
- Available in Unidirectional
- 200 W peak pulse power capability with a 10/1000 μs waveform
- Low incremental surge resistance, excellent clamping capability
- Very fast response time
- High temperature soldering guaranteed: 260 °C/10 s at terminals
- Meets MSL level 1
- Part no. with suffix “Q” means AEC-Q101 qualified

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 Date

- **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:** For uni-directional types the band denotes cathode end

■Maximum Ratings (Ta=25℃ Unless otherwise specified)

PARAMETER	SYMBOL	UNIT	Conditions	Max
Peak power dissipation(1) (2) (Fig.1)	P_{PPM}	W	with a 10/1000us waveform	200
Peak pulse current(1)	I_{PPM}	A	with a 10/1000us waveform	(See Next Table)
Power dissipation, on infinite heat sink	P_D	W	T_a=55℃	0.4
Peak forward surge current, 8.3 ms single (3)	I_{FSM}	A	8.3 ms single half sine-wave	20
Operating junction and	T_J	℃	-	-55 to +175
Storage temperature range	T_{STG}	℃	-	-55 to +175
Thermal resistance	$R_{\theta JL}$	℃/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_J =25℃， per waveform of Fig3.

(2). T_L=30℃ unless otherwise noted , V_F ≤1.25V@200mA.

(3). Measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

■Ordering Information (Example)

PREFERED P/N	PACKING CODE	UNIT WEIGHT(g)	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SMF SERIES	F1	0.0177	3000	30000	120000	7" reel

■ Electrical Characteristics (Ta=25℃ unless otherwise noted)

Part Number	Marking	Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R @ V_{RWM} (μA)	Working Peak Reverse Voltage V_{RWM} (V)	Maximum Reverse Surge Current I_{PP} (2) (A)	Maximum Clamping Voltage Vc @ I_{PP} (V)
		Min(V)	Max (V)	I_T(1)(mA)				
SMF5.0AQ	5.0A	6.40	7.07	10	400.0	5.0	21.74	9.2
SMF6.0AQ	6.0A	6.67	7.37	10	400.0	6.0	19.42	10.3
SMF6.5AQ	6.5A	7.22	7.98	10	250.0	6.5	17.86	11.2
SMF7.0AQ	7.0A	7.78	8.60	10	100.0	7.0	16.67	12.0
SMF7.5AQ	7.5A	8.33	9.21	1	50.0	7.5	15.50	12.9
SMF8.0AQ	8.0A	8.89	9.83	1	25.0	8.0	14.71	13.6
SMF8.5AQ	8.5A	9.44	10.40	1	10.0	8.5	13.89	14.4
SMF9.0AQ	9.0A	10.00	11.10	1	5.0	9.0	12.99	15.4
SMF10AQ	10A	11.10	12.30	1	2.5	10.0	11.76	17.0
SMF11AQ	11A	12.20	13.50	1	2.5	11.0	10.99	18.2
SMF12AQ	12A	13.30	14.70	1	2.5	12.0	10.05	19.9
SMF13AQ	13A	14.40	15.90	1	1.0	13.0	9.30	21.5
SMF14AQ	14A	15.60	17.20	1	1.0	14.0	8.62	23.2
SMF15AQ	15A	16.70	18.50	1	1.0	15.0	8.20	24.4
SMF16AQ	16A	17.80	19.70	1	1.0	16.0	7.69	26.0
SMF17AQ	17A	18.90	20.90	1	1.0	17.0	7.25	27.6
SMF18AQ	18A	20.00	22.10	1	1.0	18.0	6.85	29.2
SMF19AQ	19A	21.10	23.30	1	1.0	19.0	6.54	30.6
SMF20AQ	20A	22.20	24.50	1	1.0	20.0	6.17	32.4
SMF22AQ	22A	24.40	26.90	1	1.0	22.0	5.63	35.5
SMF24AQ	24A	26.70	29.50	1	1.0	24.0	5.14	38.9
SMF26AQ	26A	28.90	31.90	1	1.0	26.0	4.75	42.1
SMF28AQ	28A	31.10	34.40	1	1.0	28.0	4.41	45.4
SMF30AQ	30A	33.30	36.80	1	1.0	30.0	4.13	48.4
SMF33AQ	33A	36.70	40.60	1	1.0	33.0	3.75	53.3
SMF36AQ	36A	40.00	44.20	1	1.0	36.0	3.44	58.1
SMF40AQ	40A	44.40	49.10	1	1.0	40.0	3.10	64.5
SMF43AQ	43A	47.80	52.80	1	1.0	43.0	2.88	69.4
SMF45AQ	45A	50.00	55.30	1	1.0	45.0	2.75	72.7
SMF48AQ	48A	53.30	58.90	1	1.0	48.0	2.58	77.4
SMF51AQ	51A	56.70	62.70	1	1.0	51.0	2.43	82.4
SMF54AQ	54A	60.00	66.30	1	1.0	54.0	2.30	87.1
SMF58AQ	58A	64.40	71.20	1	1.0	58.0	2.14	93.6
SMF60AQ	60A	66.70	73.70	1	1.0	60.0	2.07	96.8
SMF64AQ	64A	71.10	78.60	1	1.0	64.0	1.94	103.0
SMF70AQ	70A	77.80	86.00	1	1.0	70.0	1.77	113.0
SMF75AQ	75A	83.30	92.10	1	1.0	75.0	1.65	121.0
SMF78AQ	78A	86.70	95.80	1	1.0	78.0	1.59	126.0
SMF80AQ	80A	88.80	97.60	1	1.0	80.0	1.55	129.0
SMF85AQ	85A	94.40	104.00	1	1.0	85.0	1.46	137.0
SMF90AQ	90A	100.00	111.00	1	1.0	90.0	1.37	146.0
SMF100AQ	100A	111.00	123.00	1	1.0	100.0	1.23	162.0

Notes:

(1) t_p≤50ms Pulse test: t_p≤50ms.

(2) Surge current waveform per Fig. 2 and derated per Fig.3.

■ **Characteristics**(Typical)

Fig.1 Peak Pulse Power Rating Curve

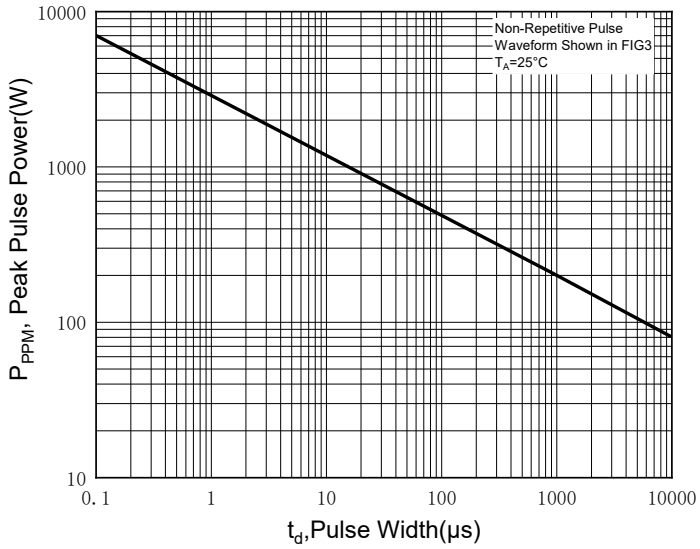


Fig.2 Pulse Waveform

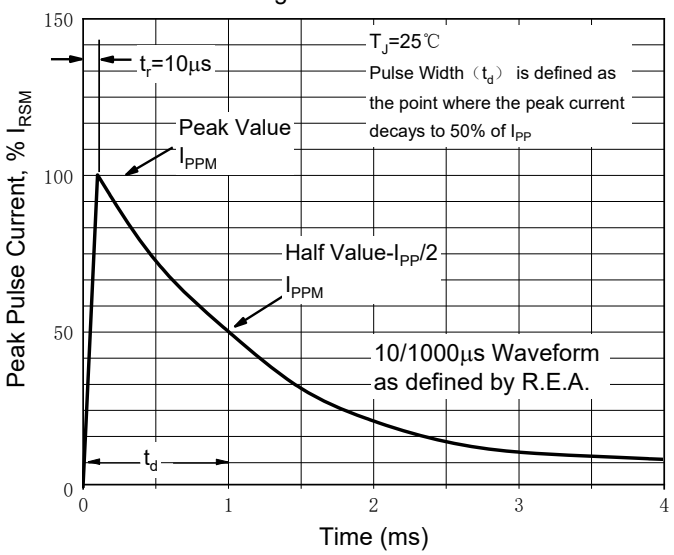


Fig.3 Pulse Power or Current vs. Initial Junction Temperature

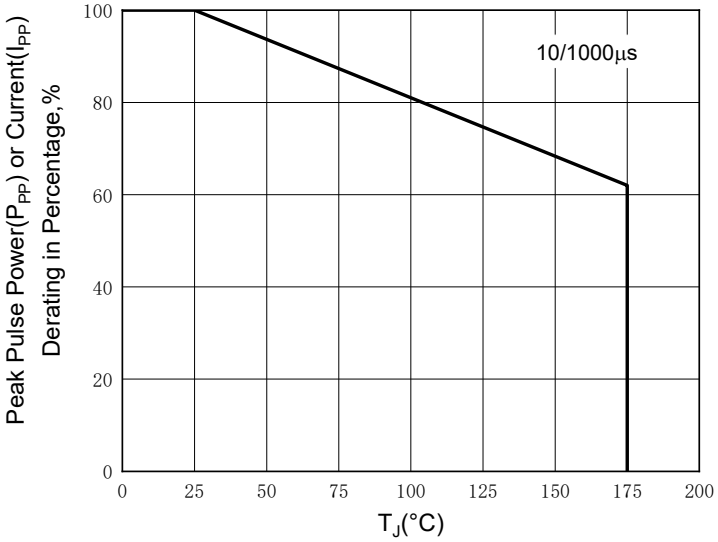


Fig.4 Forward Voltage Curve

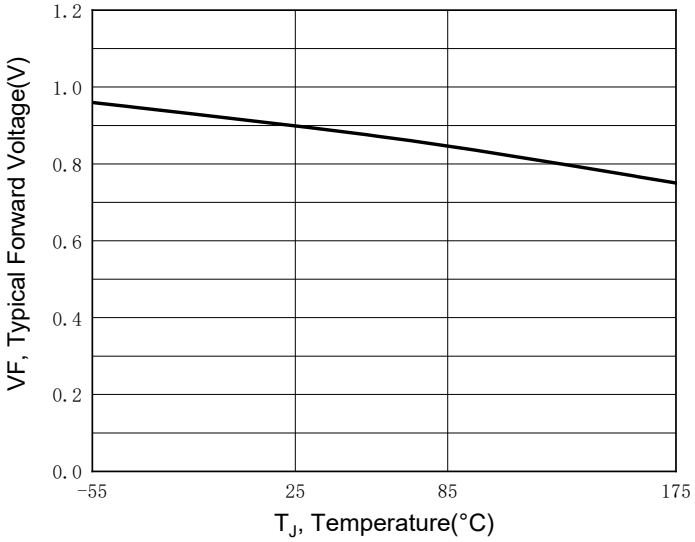
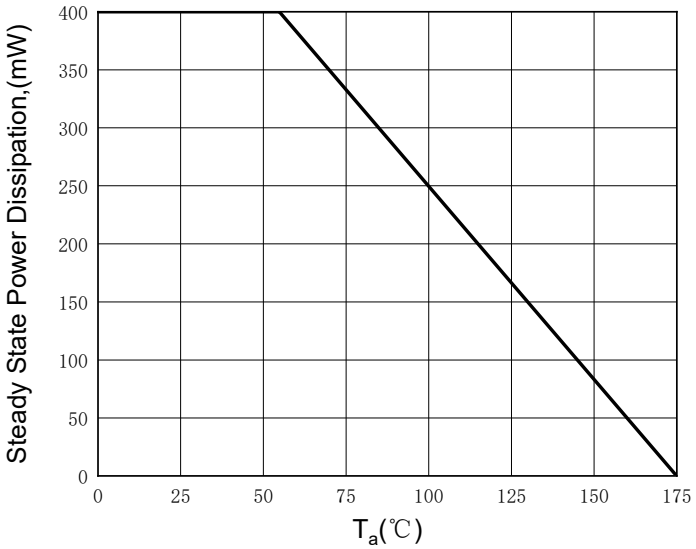
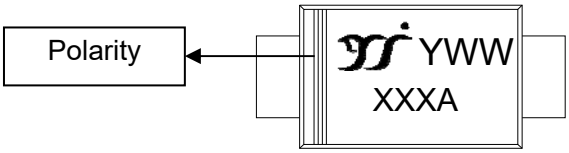


Fig.5 Steady State Power Derating Curve



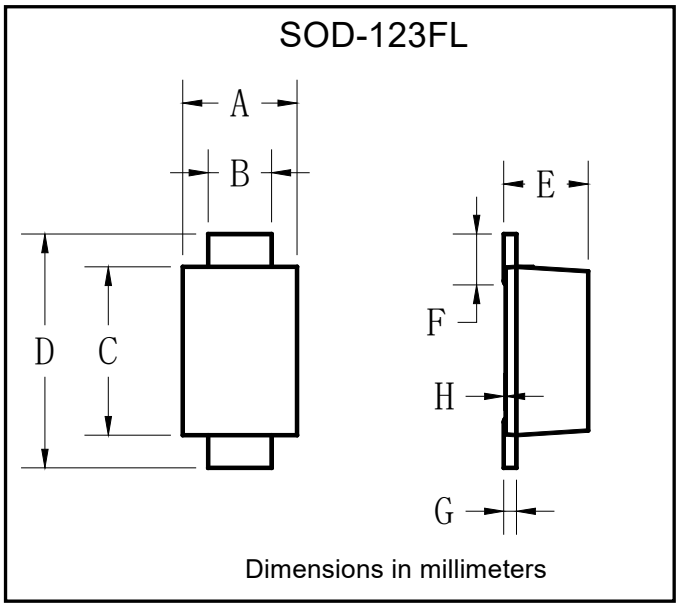
■ Marking Information

Uni-directional



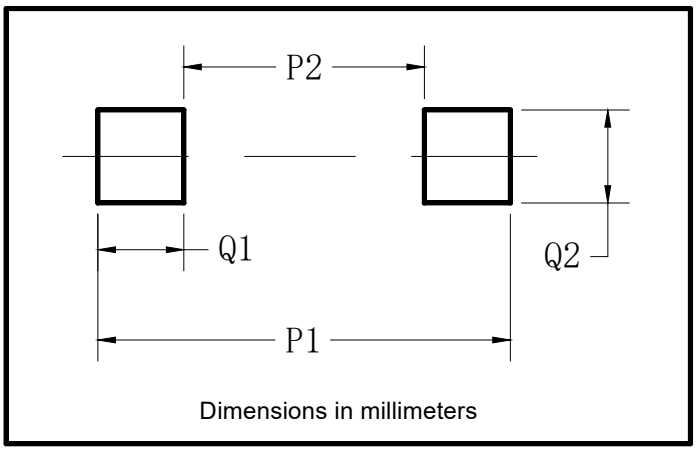
Note:
1. All marking is at middle of the product body
2. All marking is in laser printing
3. XXXA is marking code, like SMF100A marking code is 100A
4. Body color: Black
5. YWW is date code, “Y” is year. “WW” is week.
For instance:
The 17th week of 2021, date code is 117
The 17th week of 2022, date code is 217

■ 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

Disclaimer

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