

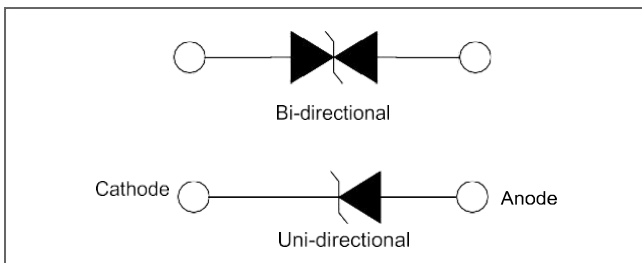
Features

- 400W peak pulse power capability at 10/1000µs waveform, repetition rate (duty cycles):0.01%
- Excellent clamping capability
- Typical failure mode is a short circuit condition for current events exceeding component rating
- Plastic package is flammability rated V-0 per UL-94
- Meet MSL level1, per J-STD-020, lead-frame maximum peak of 260°C
- High reliability application and automotive grade AEC-Q101 qualified



Applications

TPSMF4L devices are ideal for the protection of portable devices/hard drives, notebooks, VCC busses, POS terminal, SSDs, power supplies, monitors, and vulnerable circuit used in other consumer applications.




Maximum Ratings and Thermal Characteristics (T _A =25°C unless otherwise noted)			
Parameter	Symbol	Value	Unit
Peak Pulse Power Dissipation at T _A =25°C by 10/1000µs Waveform (Fig.3)	P _{PPM}	400	W
Power Dissipation on Infinite Heat Sink at T _L =50°C	P _D	1	W
Thermal Resistance Junction to Ambient	R _{θJA}	220	°C/W
Thermal Resistance Junction to Lead	R _{θJL}	100	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55-150	°C

AGENCY	AGENCY FILE NUMBER
	Pending

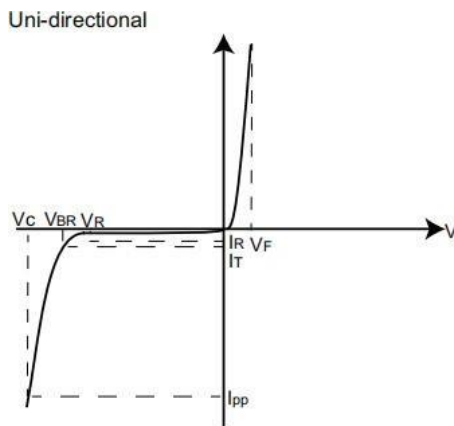
Notes:

1. Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum.

Characteristics (T = 25°C unless otherwise noted)

Part Number (Uni)	Marking Code	Reverse Stand off Voltage V _R (Volts)	Breakdown Voltage V _{BR} (Volts) @ I _T		Test Current I _T (mA)	Maximum Clamping Voltage V _C @ I _{pp} (V)	Maximum Peak Pulse Current I _{pp} (A)	Maximum Reverse Leakage I _R @ V _R (μA)	Agency Approval 
			MIN	MAX					
TPSMF4L5.0A	05	5.0	6.40	7.00	10	9.2	40.1	800	
TPSMF4L6.0A	06	6.0	6.67	7.37	10	10.3	35.9	800	
TPSMF4L6.5A	6F	6.5	7.22	7.98	10	11.2	33.1	500	
TPSMF4L7.0A	07	7.0	7.78	8.60	10	12.0	30.9	200	
TPSMF4L7.5A	7F	7.5	8.33	9.21	1	12.9	28.7	100	
TPSMF4L8.0A	08	8.0	8.89	9.83	1	13.6	27.2	50	
TPSMF4L8.5A	8F	8.5	9.44	10.40	1	14.4	25.7	20	
TPSMF4L9.0A	09	9.0	10.00	11.10	1	15.4	26.4	5	
TPSMF4L10A	10	10.0	11.10	12.30	1	17.0	23.5	5	
TPSMF4L11A	11	11.0	12.20	13.50	1	18.2	22.0	1	
TPSMF4L12A	12	12.0	13.30	14.70	1	19.9	20.1	1	
TPSMF4L13A	13	13.0	14.40	15.90	1	21.5	18.6	1	
TPSMF4L14A	14	14.0	15.60	17.20	1	23.2	17.2	1	
TPSMF4L15A	15	15.0	16.70	18.50	1	24.4	16.4	1	
TPSMF4L16A	16	16.0	17.80	19.70	1	26.0	15.4	1	
TPSMF4L17A	17	17.0	18.90	20.90	1	27.6	14.5	1	
TPSMF4L18A	18	18.0	20.00	22.10	1	29.2	13.7	1	
TPSMF4L20A	20	20.0	22.20	24.50	1	32.4	12.3	1	
TPSMF4L22A	22	22.0	24.40	26.90	1	35.5	11.3	1	
TPSMF4L24A	24	24.0	26.70	29.50	1	38.9	10.3	1	
TPSMF4L26A	26	26.0	28.90	31.90	1	42.1	9.5	1	
TPSMF4L28A	28	28.0	31.10	34.40	1	45.4	8.8	1	
TPSMF4L30A	30	30.0	33.30	36.80	1	48.4	8.3	1	
TPSMF4L33A	33	33.0	36.70	40.60	1	53.3	7.5	1	
TPSMF4L36A	36	36.0	40.00	44.20	1	58.1	6.9	1	
TPSMF4L40A	40	40.0	44.40	49.10	1	64.5	6.2	1	
TPSMF4L43A	43	43.0	47.80	52.80	1	69.4	5.8	1	
TPSMF4L45A	45	45.0	50.00	55.30	1	72.7	5.5	1	
TPSMF4L48A	48	48.0	53.30	58.90	1	77.4	5.2	1	
TPSMF4L51A	51	51.0	56.70	62.70	1	82.4	4.9	1	
TPSMF4L54A	54	54.0	60.00	66.30	1	87.1	4.6	1	
TPSMF4L58A	58	58.0	64.40	71.20	1	93.6	4.3	1	
TPSMF4L60A	60	60.0	66.70	73.70	1	96.8	4.1	1	
TPSMF4L64A	64	64.0	71.10	78.60	1	103.0	3.9	1	
TPSMF4L70A	70	70.0	77.80	86.00	1	113.0	3.5	1	
TPSMF4L75A	75	75.0	83.30	92.10	1	121.0	3.3	1	
TPSMF4L78A	78	78.0	86.70	95.80	1	126.0	3.2	1	
TPSMF4L85A	85	85.0	94.40	104.0	1	137.0	2.9	1	

I-V Curve Characteristics



P_{PPM} Peak Pulse Power Dissipation -- Max power dissipation

V_R Stand-off Voltage -- Maximum voltage that can be applied to the TVS without operation

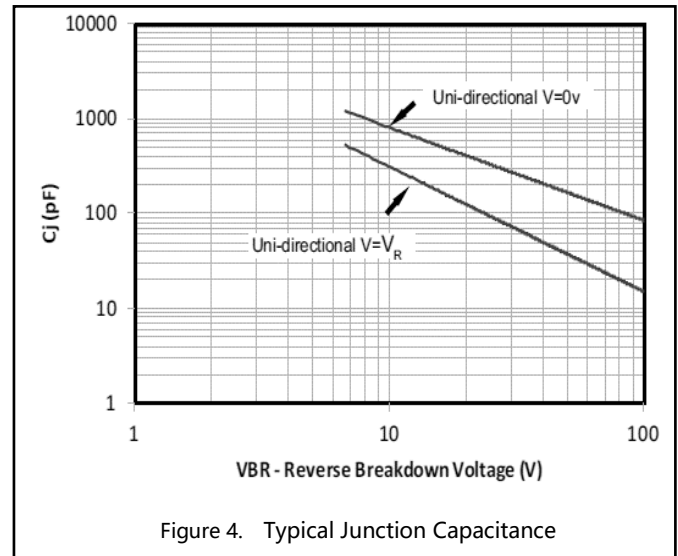
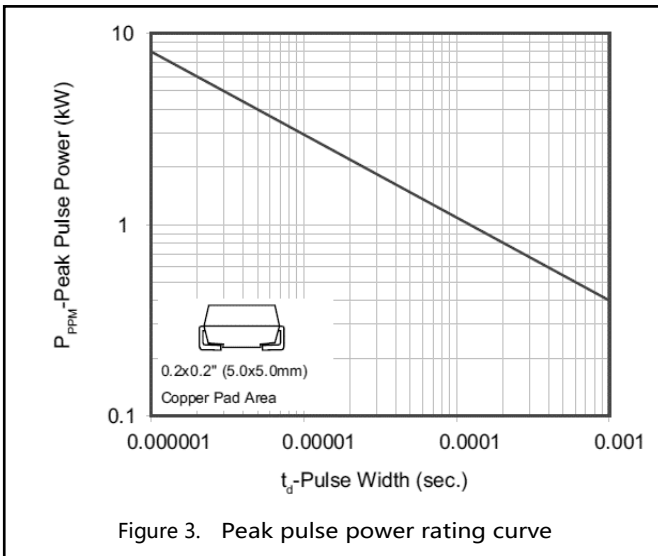
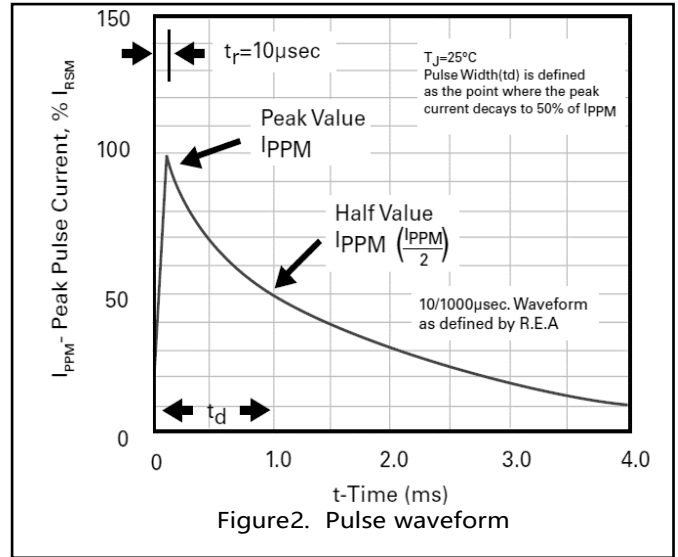
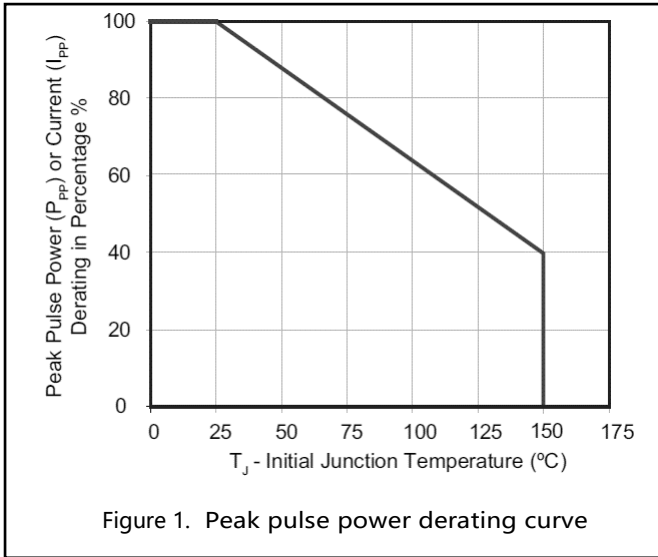
V_{BR} Breakdown Voltage -- Maximum voltage that flows through the TVS at a specified test current (I_T)

V_c Clamping Voltage -- Peak voltage measured across the TVS at a specified I_{PPM} (peak impulse current) I_R Reverse Leakage Current -- Current measured at V_R

V_F Forward Voltage Drop for Uni-directional



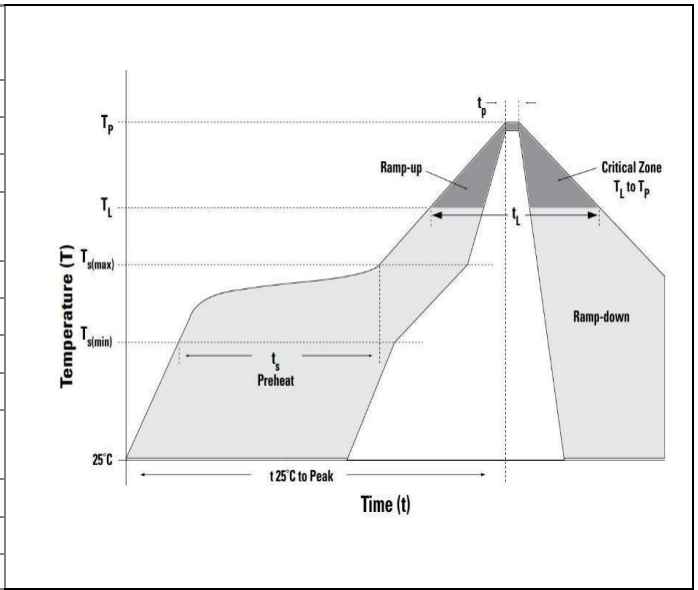
Ratings and Characteristic Curves (T = 25°C unless otherwise noted)



Soldering Parameters

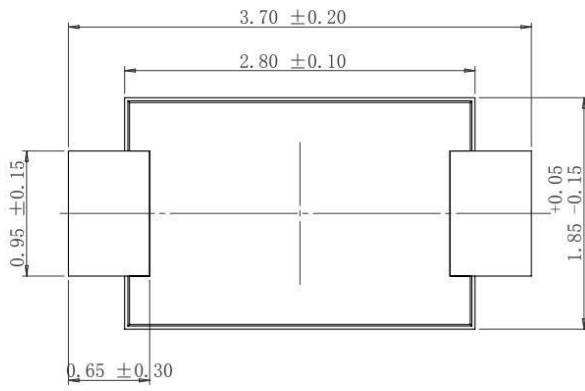
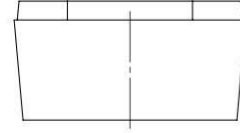
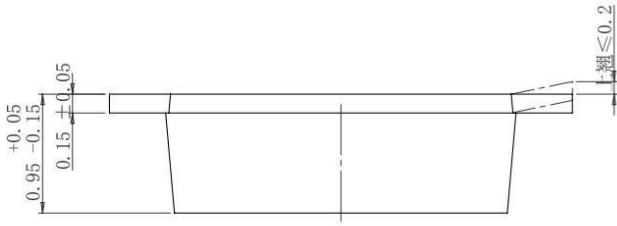
Soldering profile

Reflow Condition		Lead-free assembly
Pre Heat	- Temperature Min ($T_{s(min)}$)	150°C
	- Temperature Max ($T_{s(max)}$)	200°C
	- Time (min to max) (t_s)	60 – 120 secs
Average ramp up rate (Liquidus Temp (T_A) to peak)		3°C/second max
$T_{s(max)}$ to T_A - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_A) (Liquidus)	217°C
	- Time (min to max) (t_s)	60 – 150 seconds
Peak Temperature (T_p)		260 $^{+0/-5}$ °C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_p)		8 minutes Max.
Do not exceed		260°C

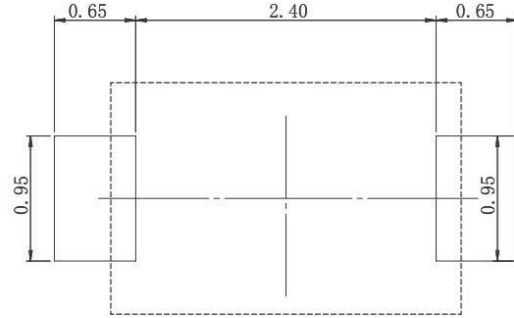




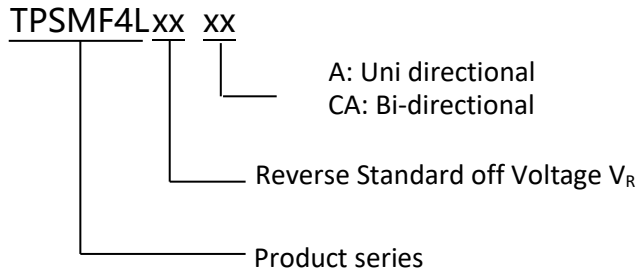
Dimensions



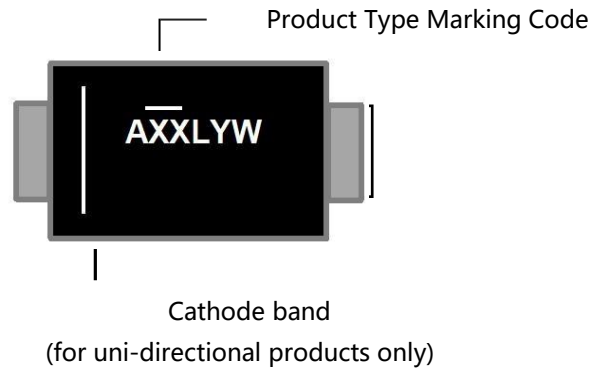
Mounting Pad Layout



Part Numbering



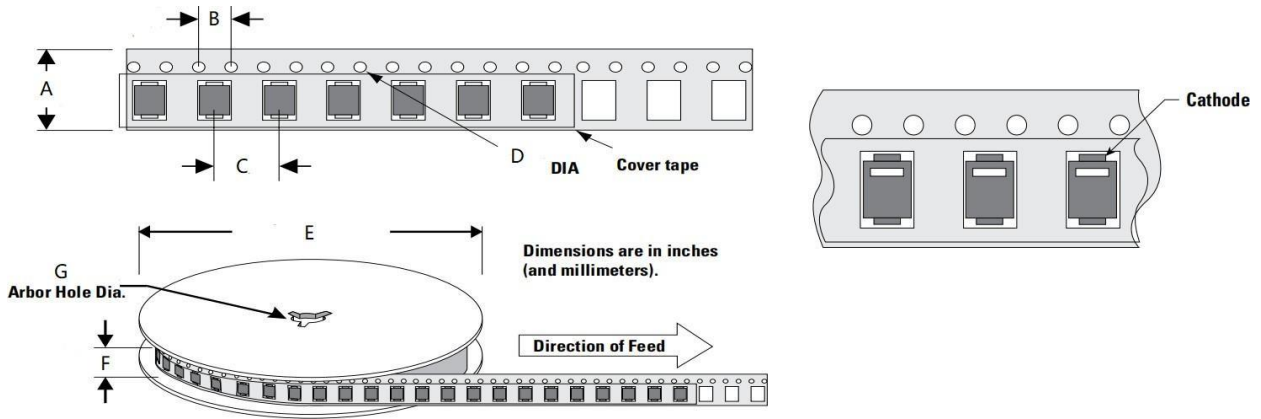
Part Marking



Packing

Part number	Package name	Small packing quantity	Packing method
TPSMF4LXXXX	SOD-123FL	3000	Tape & Reel

Tape and Reel Specification



Symbol	Millimeter
A	8.00±0.10
B	4.00±0.10
C	4.00±0.10
D	1.55±0.05
E	177.80±2.00
F	11.50±1.00
G	13.30±0.30

Revision history of Specification

Version	Change Items	Effective Date
1.0	Initial Release	23-July-2021