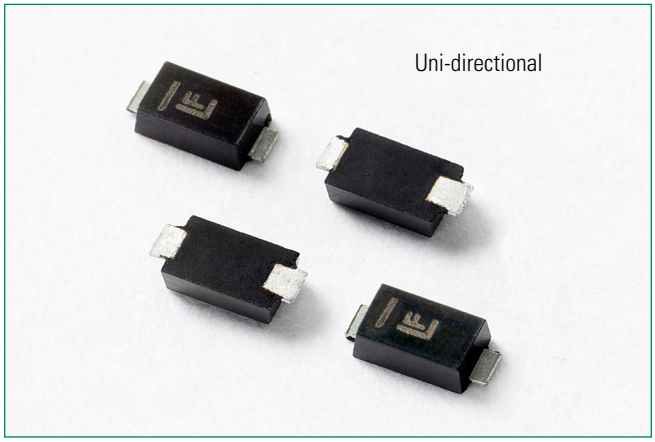
TPSMF4L-E Series

Surface Mount – 400 W

AUTOMOTIVE GRADE RoHS



Agency Approvals

Agency	Agency File Number
	E230531

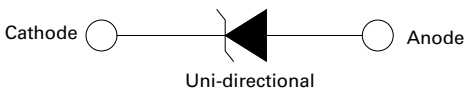
Maximum Ratings and Thermal Characteristics

(T_A=25 °C unless otherwise noted)

Parameter		Symbol	Value	Unit
Peak Pulse Power Dissipation with 10/1000 µs exponential pulse		P_{PPM}	400	W
Peak Forward Surge Current 8.3 ms. (Jedec Method) (Note 1)		I_{FSM}	40	A
Max. Forward Voltage Drop at I_F = 25 A		V_F	3.5	V
Operating Temperature Range	$V_{BR} \leq 43$ V	T_J	-65 to 175	°C
	$V_{BR} > 43$ V		-65 to 150	
Storage Temperature Range		T_{STG}	-65 to 175	°C
Typical Thermal Resistance Junction to Ambient Air		$R_{th\ (j-a)}$	75	°C/W
Typical Thermal Resistance Junction to Lead		$R_{th\ (j-l)}$	15	°C/W

Notes:
1. Mounted on 0.31 x 0.31" (8.0 x 8.0 mm) copper pads to each terminal

Functional Diagram



Description

The TPSMF4L-E series in SOD-123FL flat lead low-profile package is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events, and it's especially suitable for automotive application.

Features

- Low profile package (SOD-123FL)
- Ideal for automated placement
- 400 W peak pulse powe capability with a 10/1000 µs waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Solder dip 260 °C, 10s
- AEC-Q101 qualified and PPAP capable
- Component in accordance to RoHS 2011/65/EU and WEEE 2002/96/EC
- Meets MSL level 1, per J-ED-020, LF maximum peak of 260 °C
- Manufactured Front-End in Spain and Back-End in Thailand, these products support reliable global production scalability and long-term supply chain resiliency.

Applications

Designed to protect sensitive electronic components from voltage transients caused by inductive load switching and lightning. Suitable for use in ICs, MOSFETs, and signal lines of sensor units across consumer electronics, computing, industrial, automotive, and telecommunications applications.

Physical Specifications

Weight	0.0165 grams
Case	SOD-123FL. Epoxy meets UL 94V-0 flammability rating.
Polarity	For unidirectional types color band denotes cathode end.
Terminal	Matte tin plated leads, solderable per MILSTD-750 Method 2026, J-ED-002 and JESD22-B102. Meets JESD 201 class 1A whisker test.

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Electrical Characteristics (T_A=25 °C unless otherwise noted)

Part Number	Marking Code	Breakdown Voltage V_{BR} (Volts) @ I_T (1)		Test Current I_T (mA)	Stand-off Voltage V_{WM} (V)	Maximum Reverse Leakage @ V_{WM} I_D (µA) (1)	Maximum Peak Surge Current I_{PPM} (A) (2)	Maximum Clamping Voltage @I_{PPM} V_C (V)	Agency Approval
		Min	Max						
TPSMF4L5.0A-E	AA	6.40	7.07	10	5.0	1000	43.5	9.2	X
TPSMF4L6.0A-E	AB	6.67	7.37	10	6.0	1000	38.8	10.3	X
TPSMF4L6.5A-E	AC	7.22	7.98	10	6.5	500	35.7	11.2	X
TPSMF4L7.0A-E	AD	7.78	8.60	10	7.0	200	33.3	12.0	X
TPSMF4L7.5A-E	AE	8.33	9.21	1.0	7.5	100	31.0	12.9	X
TPSMF4L8.0A-E	AF	8.89	9.83	1.0	8.0	50	29.4	13.6	X
TPSMF4L8.5A-E	AG	9.44	10.40	1.0	8.5	20	27.8	14.4	X
TPSMF4L9.0A-E	AH	10.00	11.10	1.0	9.0	10	26.0	15.4	X
TPSMF4L10A-E	AI	11.10	12.30	1.0	10	5.0	23.5	17.0	X
TPSMF4L11A-E	AJ	12.20	13.50	1.0	11	5.0	22.0	18.2	X
TPSMF4L12A-E	AK	13.30	14.70	1.0	12	5.0	20.1	19.9	X
TPSMF4L13A-E	AL	14.40	15.90	1.0	13	1.0	18.6	21.5	X
TPSMF4L14A-E	AM	15.60	17.20	1.0	14	1.0	17.2	23.2	X
TPSMF4L15A-E	AN	16.70	18.50	1.0	15	1.0	16.4	24.4	X
TPSMF4L16A-E	AO	17.80	19.70	1.0	16	1.0	15.4	26.0	X
TPSMF4L17A-E	AP	18.90	20.90	1.0	17	1.0	14.5	27.6	X
TPSMF4L18A-E	AQ	20.00	22.10	1.0	18	1.0	13.7	29.2	X
TPSMF4L20A-E	AR	22.20	24.50	1.0	20	1.0	12.3	32.4	X
TPSMF4L22A-E	AS	24.40	26.90	1.0	22	1.0	11.0	35.5	X
TPSMF4L24A-E	AT	26.70	29.50	1.0	24	1.0	10.3	38.9	X
TPSMF4L26A-E	AU	28.90	31.90	1.0	26	1.0	9.5	42.1	X
TPSMF4L28A-E	AV	31.10	34.40	1.0	28	1.0	8.8	45.4	X
TPSMF4L30A-E	AW	33.30	36.80	1.0	30	1.0	8.3	48.4	X
TPSMF4L33A-E	AX	36.70	40.60	1.0	33	1.0	7.5	53.3	X
TPSMF4L36A-E	AY	40.00	44.20	1.0	36	1.0	6.9	58.1	X
TPSMF4L40A-E	AZ	44.40	49.10	1.0	40	1.0	6.2	64.5	X
TPSMF4L43A-E	A1	47.80	52.80	1.0	43	1.0	5.8	69.4	X
TPSMF4L45A-E	A2	50.00	55.30	1.0	45	1.0	5.5	72.7	X
TPSMF4L48A-E	A3	53.30	58.90	1.0	48	1.0	5.2	77.4	X
TPSMF4L51A-E	A4	56.70	62.70	1.0	51	1.0	4.9	82.4	X
TPSMF4L54A-E	A5	60.00	66.30	1.0	54	1.0	4.6	87.1	X
TPSMF4L58A-E	A6	64.40	71.20	1.0	58	1.0	4.3	93.6	X
TPSMF4L60A-E	A7	66.70	73.70	1.0	60	1.0	4.1	96.8	X
TPSMF4L64A-E	A8	71.10	78.60	1.0	64	1.0	3.9	103.0	X

Notes:
1. Tested with pulses Pulse test: tp ≤ 50 ms; δ < 2%
2. Exponential pulse waveform 10/1000 µs

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

Figure 1 - Pulse Waveform

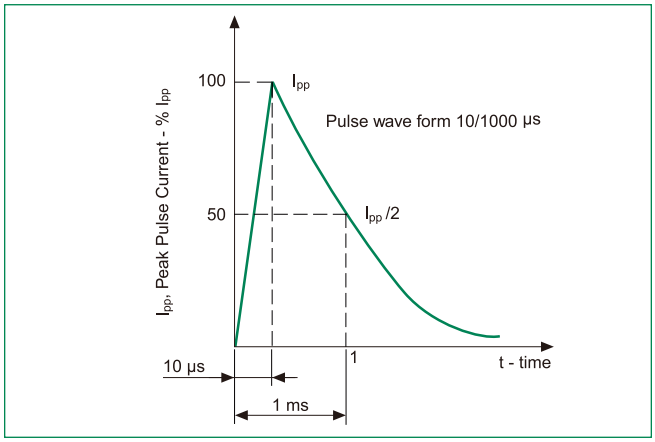


Figure 2 - Pulse Power or Current vs. Initial Junction Temperature

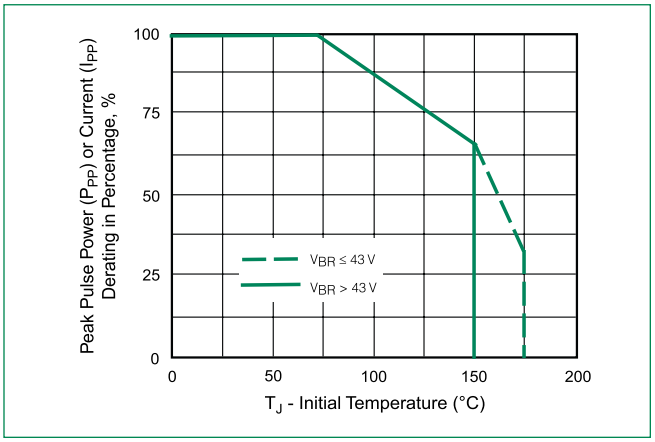


Figure 3 - Peak Pulse Power Rating Curve

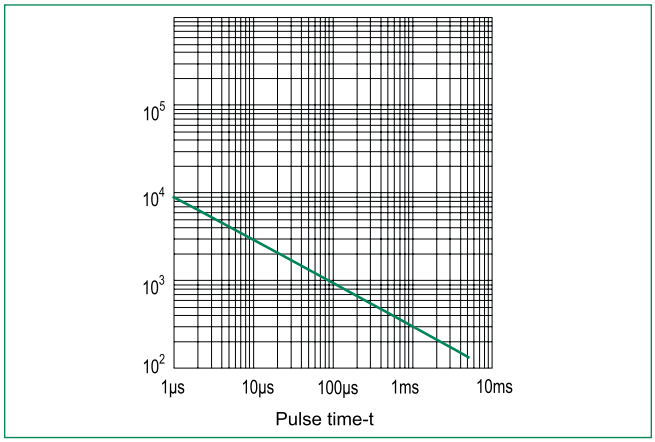
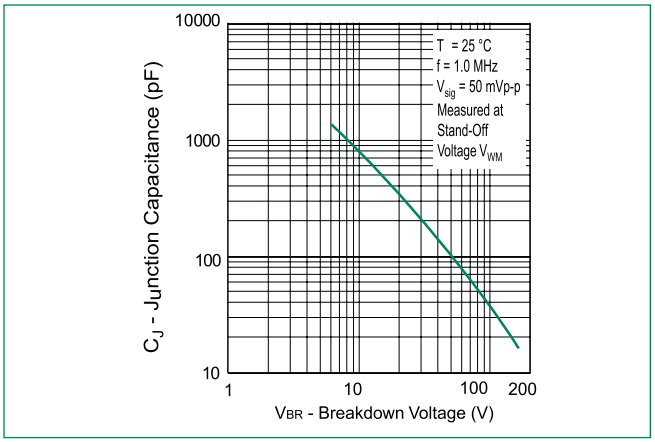
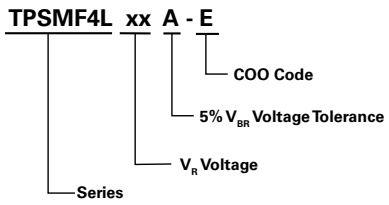


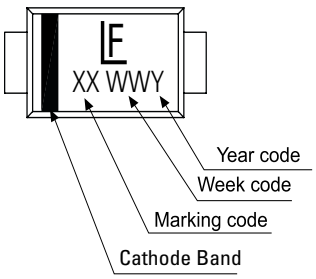
Figure 4 - Typical Junction Capacitance



Part Numbering System



Part Marking System



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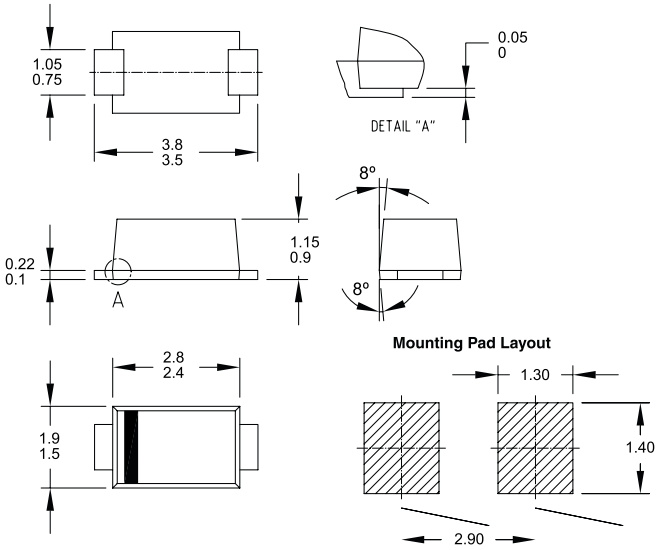
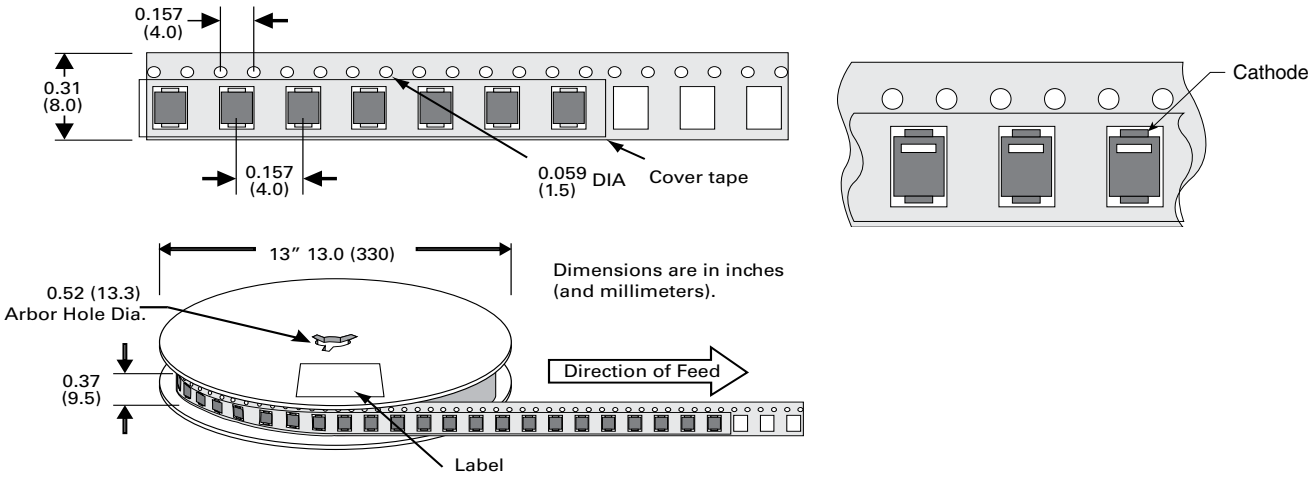
Dimensions - SOD-123FL Package



Packaging Options

Part number	Component Package	Quantity	Packaging Option	Packaging Specification
TPSMF4LxxX-E	SOD-123FL	10000	13" diameter tape and reel	EIA RS-481

Tape and Reel Specification



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