Features

- Surface Mount SOD-123FL package
- Standoff Voltage: 12 to 58 volts
- Power Dissipation: 400 watts
- RoHS compliant*

Applications

- Protection of power buses
- Protection of I/O interfaces
- Overvoltage transient protection
- Telecom, computer, industrial and consumer electronics applications

BOURNS®

SMF4L Transient Voltage Suppressor Diode Series

General Information

Bourns offers Transient Voltage Suppressor Diodes for surge and ESD protection applications, in compact chip package SOD-123FL size format. The Transient Voltage Suppressor series offers a choice of Working Peak Reverse Voltage from 12 V up to 58 V. Typical fast response times are less than 1.0 picosecond from 0 V to Breakdown Voltage.

Bourns® Chip Diodes conform to JEDEC standards, are easy to handle with standard pick and place equipment and the flat configuration minimizes roll away.

Absolute Maximum Ratings (@ T_A = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Value	Unit
Maximum Peak Pulse Power Dissipation (10/1000 μs)[1]	P_{PPM}	400	W
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method)	I_{FSM}	50	A
Operating Temperature Range	T_J	-55 to +150	°C
Storage Temperature Range	T_{STG}	-55 to +150	°C

1 Non-repetitive current pulse, per Pulse Waveform graph and derated above T_A = 25 °C.

Electrical Characteristics (@ T_A = 25 °C Unless Otherwise Noted)

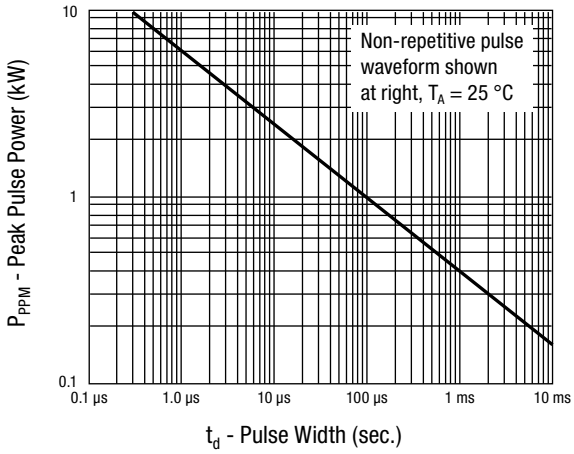
Unidirectional Device		Breakdown Voltage V_{BR} (Volts)			Working Peak Reverse Voltage	Maximum Reverse Leakage @ V_{RWM}	Maximum Reverse Voltage @ I_{RSM}	Maximum Reverse Surge Current
Part No.	Marking	Min.	Max.	@ I_T (mA)	V_{RWM} (V)	I_R (μA)	V_{RSM} (V)	I_{RSM} (A)
SMF4L12A	LE	13.3	14.7	1.0	12	1.0	19.9	20.1
SMF4L13A	LG	14.4	15.9	1.0	13	1.0	21.5	18.6
SMF4L14A	LK	15.6	17.2	1.0	14	1.0	23.2	17.2
SMF4L15A	LM	16.7	18.5	1.0	15	1.0	24.4	16.4
SMF4L16A	LP	17.8	19.7	1.0	16	1.0	26.0	15.4
SMF4L17A	LR	18.9	20.9	1.0	17	1.0	27.6	14.5
SMF4L18A	LT	20.0	22.1	1.0	18	1.0	29.2	13.7
SMF4L20A	LV	22.2	24.5	1.0	20	1.0	32.4	12.3
SMF4L22A	LX	24.4	26.9	1.0	22	1.0	35.5	11.3
SMF4L24A	LZ	26.7	29.5	1.0	24	1.0	38.9	10.3
SMF4L26A	ME	28.9	31.9	1.0	26	1.0	42.1	9.5
SMF4L28A	MG	31.1	34.4	1.0	28	1.0	45.4	8.8
SMF4L30A	MK	33.3	36.8	1.0	30	1.0	48.4	8.3
SMF4L33A	MM	36.7	40.6	1.0	33	1.0	53.3	7.5
SMF4L36A	MP	40.0	44.2	1.0	36	1.0	58.1	6.9
SMF4L40A	MR	44.4	49.1	1.0	40	1.0	64.5	6.2
SMF4L43A	MT	47.8	52.8	1.0	43	1.0	69.4	5.8
SMF4L45A	MV	50.0	55.3	1.0	45	1.0	72.7	5.5
SMF4L48A	MX	53.3	58.9	1.0	48	1.0	77.4	5.2
SMF4L51A	MZ	56.7	62.7	1.0	51	1.0	82.4	4.9
SMF4L54A	NE	60.0	66.3	1.0	54	1.0	87.1	4.6
SMF4L58A	NG	64.4	71.2	1.0	58	1.0	93.6	4.3

WARNING Cancer and Reproductive Harm - www.P65Warnings.ca.gov

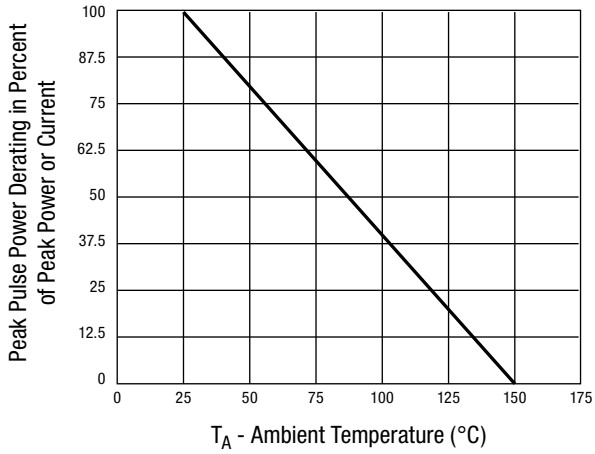
*RoHS Directive 2015/863, Mar 31, 2015 and Annex.
**"Q" part number suffix for automotive and other applications requiring appropriate AEC-Q101 compliance.
Specifications are subject to change without notice.
Users should verify actual device performance in their specific applications.

Performance Graphs

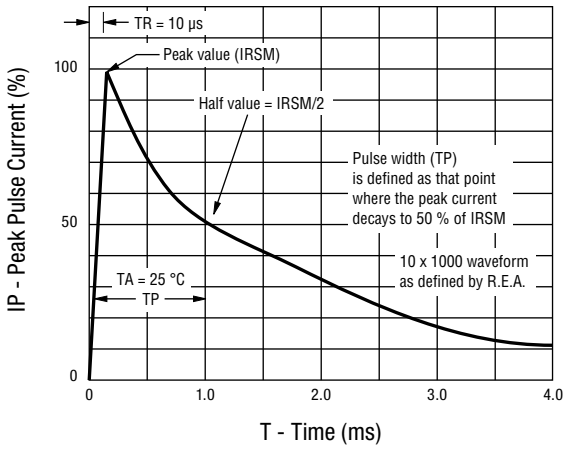
Peak Pulse Power Derating Curve



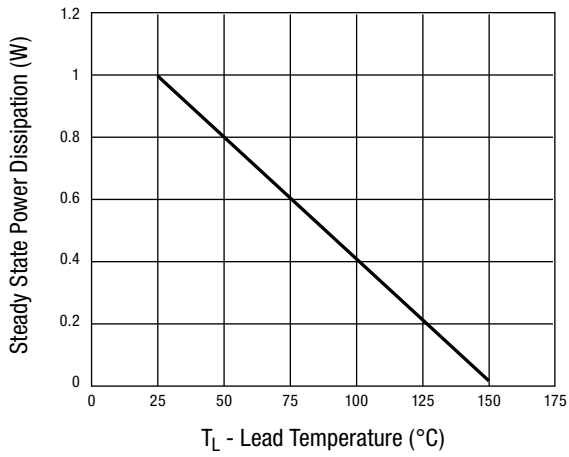
Maximum Non-Repetitive Surge Current



Pulse Waveform



Steady State Power Derating Curve



SMF4L Transient Voltage Suppressor Diode Series

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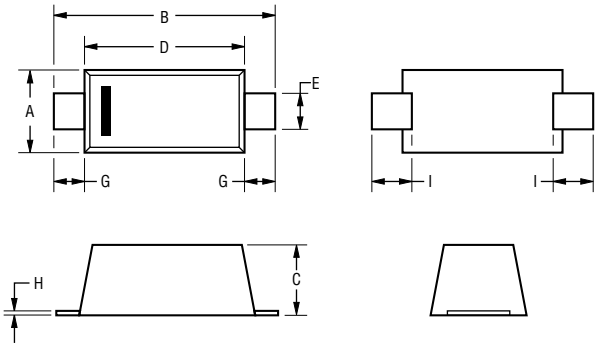
Product Dimensions



Dimension	SMF (SOD-123FL)
A	1.65 ± 0.25 (0.065 ± 0.01)
B	3.70 ± 0.15 (0.146 ± 0.006)
C	1.125 ± 0.225 (0.044 ± 0.009)
D	2.825 ± 0.275 (0.111 ± 0.011)
E	0.775 ± 0.275 (0.031 ± 0.011)
G	0.400 ± 0.15 (0.016 ± 0.006)
H	0.175 ± 0.075 (0.007 ± 0.003)
I	0.550 ± 0.15 (0.022 ± 0.006)

DIMENSIONS: MM / (INCHES)

Typical Part Marking

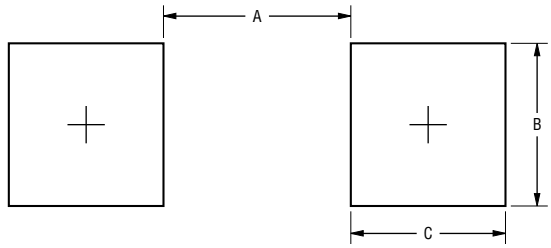
CATHODE BAND

MANUFACTURER'S TRADEMARK

XX — DEVICE CODE (MARKING CODE DEFINED ON PAGE 1)

YM — DATE CODE: MONTH AND YEAR OF MANUFACTURE
Y: YEAR (LAST DIGIT)
M: MONTH (JAN-SEPT = 1-9, OCT-DEC = A,B,C)

Recommended Footprint



Dimension	SMF (SOD-123FL)
A (Max.)	2.36 (0.093)
B (Min.)	1.22 (0.048)
C (Min.)	0.91 (0.036)

DIMENSIONS: MM / (INCHES)

Physical Specifications

Case ..... Molded plastic per UL Class 94V-0
Polarity..... Cathode band indicates unidirectional device

How to Order

SMF4L 12 A

Package
SMF4L = 400 W SMF/SOD-123FL Package

Working Peak Reverse Voltage
12 = 12 V_{RWM} (Volts)

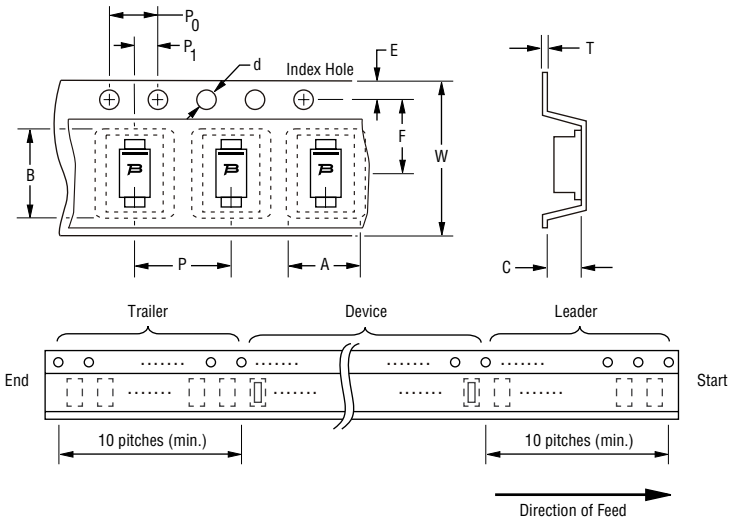
Suffix
A = 5 % Tolerance Unidirectional Device

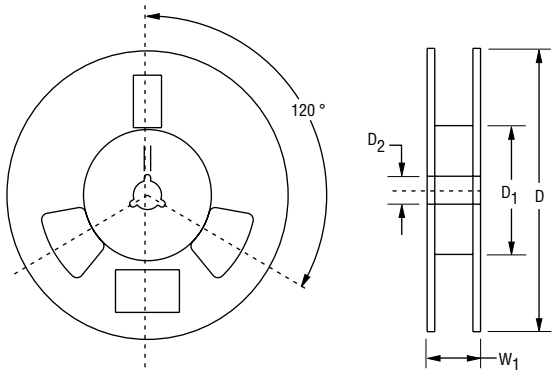
Environmental Specifications

Moisture Sensitivity Level 1
ESD Classification (HBM)..... 3B

Packaging Information

The product will be dispensed in tape and reel format (see diagram below).





DIMENSIONS: MM / (INCHES)

Devices are packed in accordance with EIA 481 standard specifications shown here.

Item	Symbol	SMF4L Series
Carrier Width	A	1.9 ± 0.20 (0.075 ± 0.008)
Carrier Length	B	4.01 ± 0.20 (0.158 ± 0.008)
Carrier Depth	C	1.32 ± 0.20 (0.052 ± 0.008)
Sprocket Hole	d	1.50 + 0.10 / - 0.00 (0.059 + 0.004 / - 0.00)
Reel Outside Diameter	D	178 (7.008)
Reel Inner Diameter	D_1	50.0 (1.969) MIN.
Feed Hole Diameter	D_2	13.0 + 0.50 / - 0.20 (0.512 + 0.020 / - 0.008)
Sprocket Hole Position	E	1.75 ± 0.10 (0.069 ± 0.004)
Punch Hole Position	F	3.50 ± 0.05 (0.138 ± 0.002)
Punch Hole Pitch	P	4.00 ± 0.10 (0.157 ± 0.004)
Sprocket Hole Pitch	P_0	4.00 ± 0.10 (0.157 ± 0.004)
Embossment Center	P_1	2.00 ± 0.05 (0.079 ± 0.002)
Overall Tape Thickness	T	0.40 (0.016) MAX.
Tape Width	W	8.00 ± 0.30 (0.315 ± 0.012)
Reel Width	W_1	14.4 (5.669) MAX.
Quantity per Reel	--	2,500

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