



Features

- Surface Mount SOD-123FL package
- Standoff Voltage: 12 to 58 volts
- Power Dissipation: 400 watts
- RoHS compliant*
- AEC-Q101 compliant**

Applications

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

SMF4L-Q 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 (@ $T_A = 25^\circ\text{C}$ 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	$^\circ\text{C}$
Storage Temperature Range	T_{STG}	-55 to +150	$^\circ\text{C}$

¹ Non-repetitive current pulse, per Pulse Waveform graph and derated above $T_A = 25^\circ\text{C}$.

Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ 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-Q	LEQ	13.3	14.7	1.0	12	1.0	19.9	20.1
SMF4L13A-Q	LGQ	14.4	15.9	1.0	13	1.0	21.5	18.6
SMF4L14A-Q	LKQ	15.6	17.2	1.0	14	1.0	23.2	17.2
SMF4L15A-Q	LMQ	16.7	18.5	1.0	15	1.0	24.4	16.4
SMF4L16A-Q	LPQ	17.8	19.7	1.0	16	1.0	26.0	15.4
SMF4L17A-Q	LRQ	18.9	20.9	1.0	17	1.0	27.6	14.5
SMF4L18A-Q	LTV	20.0	22.1	1.0	18	1.0	29.2	13.7
SMF4L20A-Q	LVQ	22.2	24.5	1.0	20	1.0	32.4	12.3
SMF4L22A-Q	LXQ	24.4	26.9	1.0	22	1.0	35.5	11.3
SMF4L24A-Q	LZQ	26.7	29.5	1.0	24	1.0	38.9	10.3
SMF4L26A-Q	MEQ	28.9	31.9	1.0	26	1.0	42.1	9.5
SMF4L28A-Q	MGQ	31.1	34.4	1.0	28	1.0	45.4	8.8
SMF4L30A-Q	MKQ	33.3	36.8	1.0	30	1.0	48.4	8.3
SMF4L33A-Q	MMQ	36.7	40.6	1.0	33	1.0	53.3	7.5
SMF4L36A-Q	MPQ	40.0	44.2	1.0	36	1.0	58.1	6.9
SMF4L40A-Q	MRQ	44.4	49.1	1.0	40	1.0	64.5	6.2
SMF4L43A-Q	MTQ	47.8	52.8	1.0	43	1.0	69.4	5.8
SMF4L45A-Q	MVQ	50.0	55.3	1.0	45	1.0	72.7	5.5
SMF4L48A-Q	MXQ	53.3	58.9	1.0	48	1.0	77.4	5.2
SMF4L51A-Q	MZQ	56.7	62.7	1.0	51	1.0	82.4	4.9
SMF4L54A-Q	NEQ	60.0	66.3	1.0	54	1.0	87.1	4.6
SMF4L58A-Q	NGQ	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.

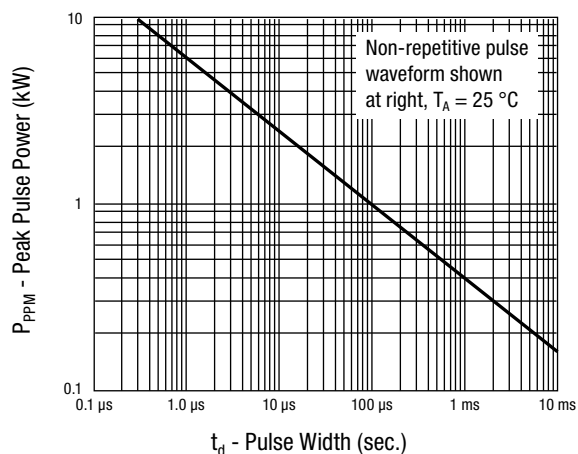
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SMF4L-Q Transient Voltage Suppressor Diode Series

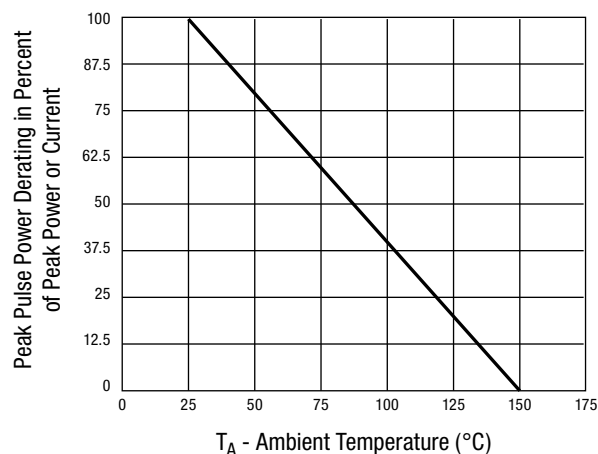
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Performance Graphs

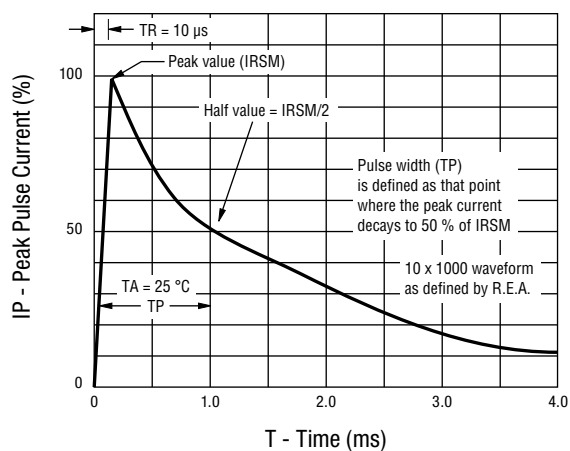
Peak Pulse Power Derating Curve



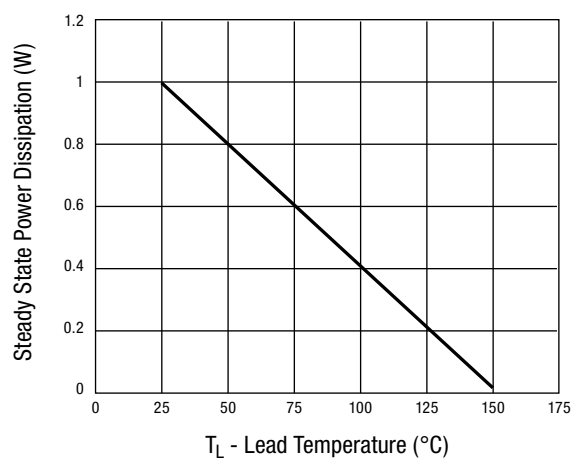
Maximum Non-Repetitive Surge Current



Pulse Waveform



Steady State Power Derating Curve



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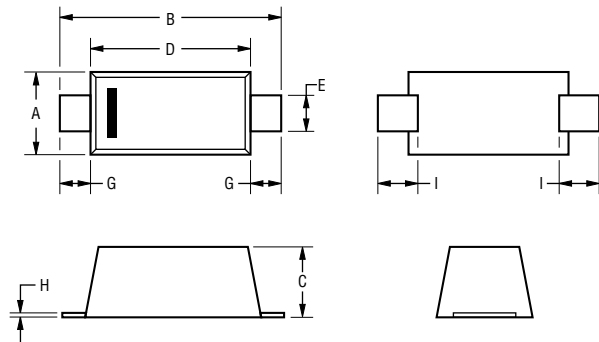
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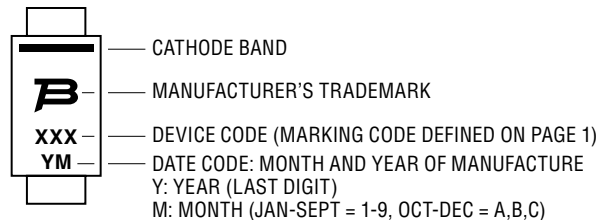
Product Dimensions



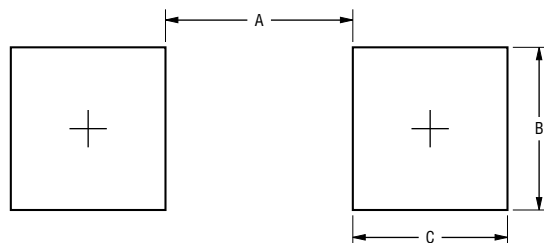
Dimension	SMF (SOD-123FL)
A	$\frac{1.65 \pm 0.25}{(0.065 \pm 0.01)}$
B	$\frac{3.70 \pm 0.15}{(0.146 \pm 0.006)}$
C	$\frac{1.125 \pm 0.225}{(0.044 \pm 0.009)}$
D	$\frac{2.825 \pm 0.275}{(0.111 \pm 0.011)}$
E	$\frac{0.775 \pm 0.275}{(0.031 \pm 0.011)}$
G	$\frac{0.400 \pm 0.15}{(0.016 \pm 0.006)}$
H	$\frac{0.175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

DIMENSIONS: $\frac{\text{MM}}{(\text{INCHES})}$

Typical Part Marking



Recommended Footprint



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

DIMENSIONS: $\frac{\text{MM}}{(\text{INCHES})}$

Physical Specifications

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

How to Order

Package **SMF4L 12 A - Q**
 SMF4L = 400W SMF/SOD-123FL Package
 Working Peak Reverse Voltage
 12 = 12 V_{RWM} (Volts)
 Suffix
 A = 5 % Tolerance Unidirectional Device
 AEC-Q101 Suffix
 Q = AEC-Q101 Compliant

Environmental Specifications

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

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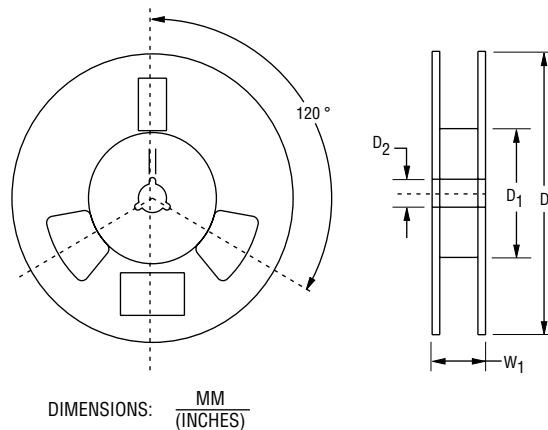
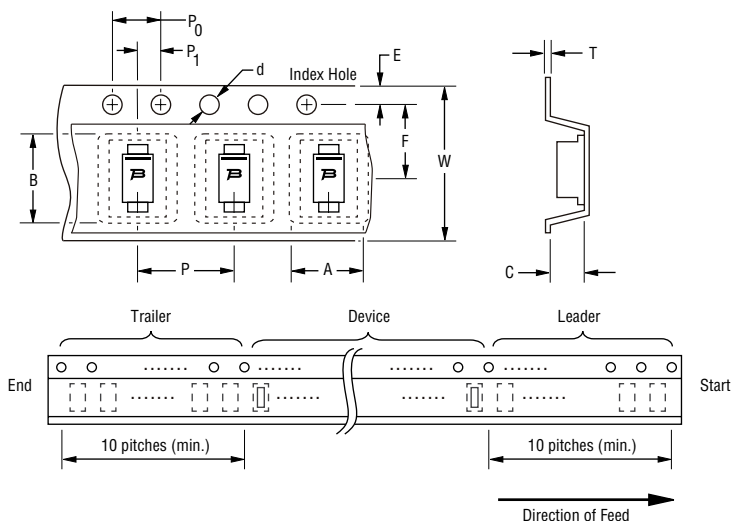
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Packaging Information

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



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

Item	Symbol	SMF4L-Q 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	D1	50.0 (1.969) MIN.
Feed Hole Diameter	D2	$13.0 + 0.50 / - 0.20$ (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	P0	4.00 ± 0.10 (0.157 ± 0.004)
Embossment Center	P1	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	W1	14.4 (5.669) MAX.
Quantity per Reel	--	2,500

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