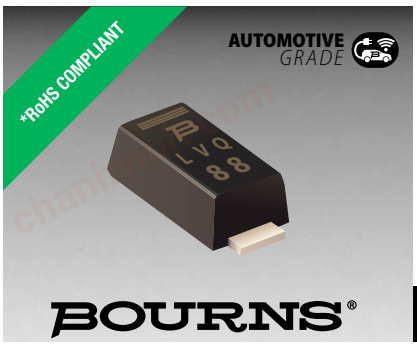
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Features

- Surface Mount SOD-123FL package
- Standoff Voltage: 5 to 85 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 5 V up to 85 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.

Additional Information

Click these links for more information:

PRODUCT | TECHNICAL LIBRARY | INVENTORY | SAMPLES | CONTACT

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)
NEW!	SMF4L5.0A-Q	KEQ	6.4	7.00	10	5	400	9.2	21.7
	SMF4L6.0A-Q	KGQ	6.67	7.37	10	6	400	10.3	19.4
	SMF4L6.5A-Q	KKQ	7.22	7.98	10	6.5	250	11.2	17.9
	SMF4L7.0A-Q	KMQ	7.78	8.6	10	7	100	12.0	16.7
	SMF4L7.5A-Q	KPQ	8.33	9.21	1.0	7.5	50	12.9	15.5
	SMF4L8.0A-Q	KRQ	8.89	9.83	1.0	8	25	13.6	14.7
	SMF4L8.5A-Q	KTQ	9.44	10.4	1.0	8.5	10	14.4	13.9
	SMF4L9.0A-Q	KVQ	10.0	11.1	1.0	9	5	15.4	13.0
	SMF4L10A-Q	KXQ	11.1	12.3	1.0	10	2.5	17.0	11.8
	SMF4L11A-Q	KZQ	12.2	13.5	1.0	11	2.5	18.2	11.0
	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	LTQ	20.0	22.1	1.0	18	1.0	29.2	13.7

~ Continued on next page ~

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.

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SMF4L-Q Transient Voltage Suppressor Diode Series

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

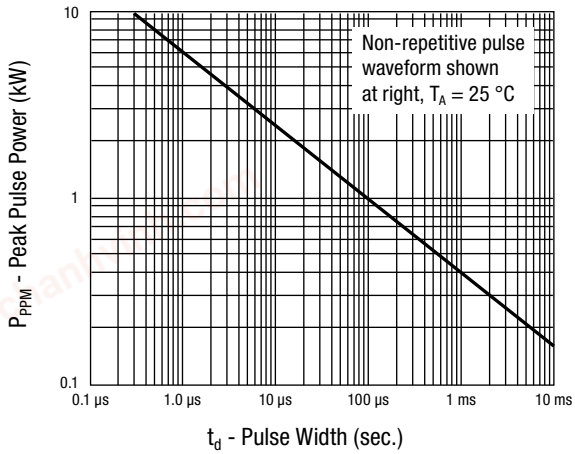
Unidirectional Device		Breakdown Voltage V_{BR} (Volts)			Working Peak Reverse Voltage	Maximum Reverse Leakage @ V_{RWM}	Maximum Reverse Voltage @ I_{RSM}	Maximum Reverse Surge Current
Part No.	Marking	Min.	Max.	@ I_T (mA)	V_{RWM} (V)	I_R (μA)	V_{RSM} (V)	I_{RSM} (A)
SMF4L20A-Q	LVQ	22.2	24.5	1.0	20	1.0	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
NEW! SMF4L60A-Q	NKQ	66.7	73.7	1.0	60	1.0	96.8	3.6
SMF4L64A-Q	NMQ	71.1	78.6	1.0	64	1.0	103.0	3.4
SMF4L70A-Q	NPQ	77.8	86.0	1.0	70	1.0	113.0	3.0
SMF4L75A-Q	NRQ	83.3	92.1	1.0	75	1.0	121.0	2.8
SMF4L78A-Q	NTQ	86.7	95.8	1.0	78	1.0	126.0	2.8
SMF4L85A-Q	NVQ	94.4	104.0	1.0	85	1.0	137.0	2.6

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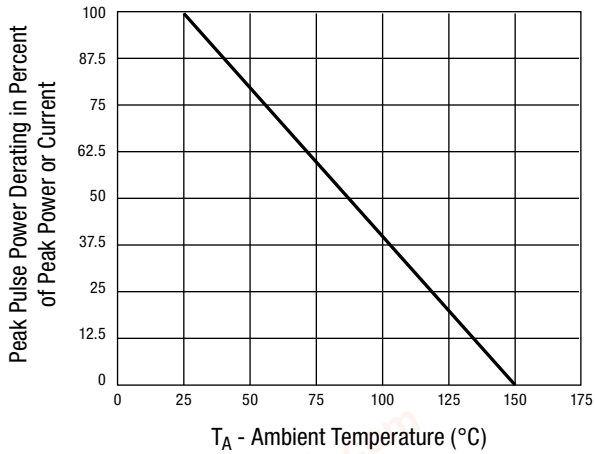
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Performance Graphs

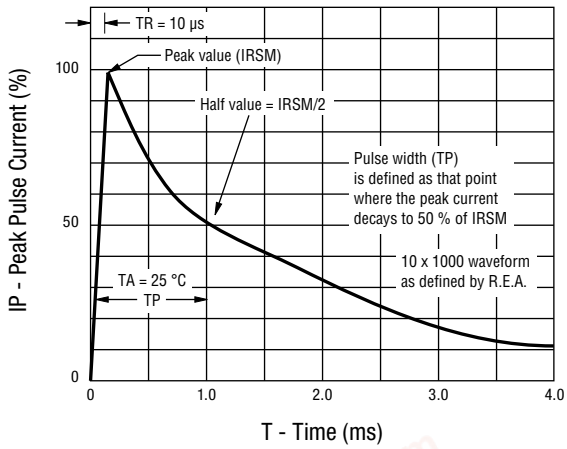
Peak Pulse Power Derating Curve



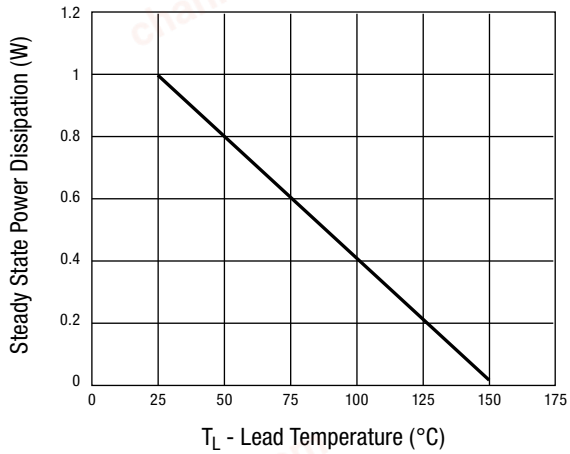
Maximum Non-Repetitive Surge Current



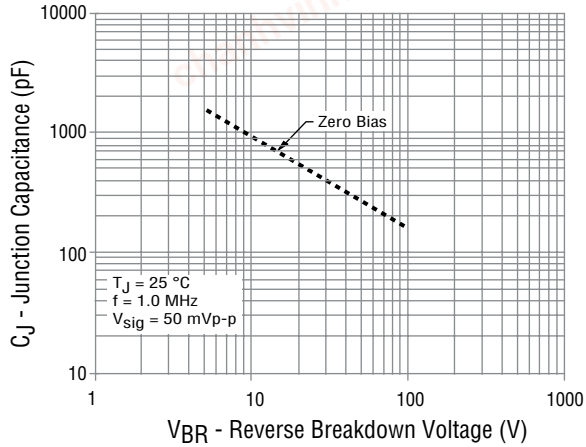
Pulse Waveform



Steady State Power Derating Curve



Typ. Junction Capacitance vs. Reverse Breakdown Voltage



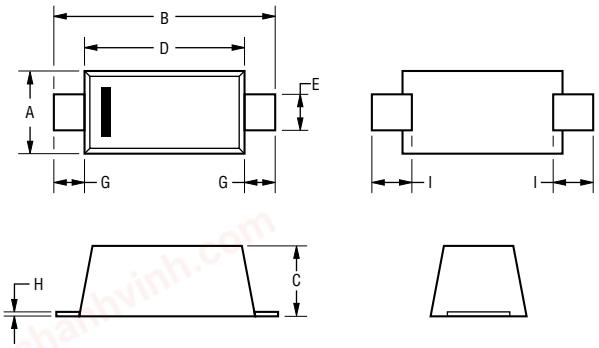
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SMF4L-Q Transient Voltage Suppressor Diode Series

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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



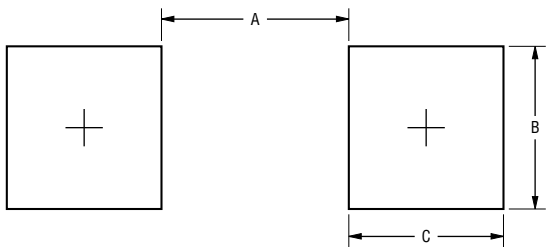
CATHODE BAND

MANUFACTURER'S TRADEMARK

XXX — 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 5.0 A - Q

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

Working Peak Reverse Voltage
5.0 = 5 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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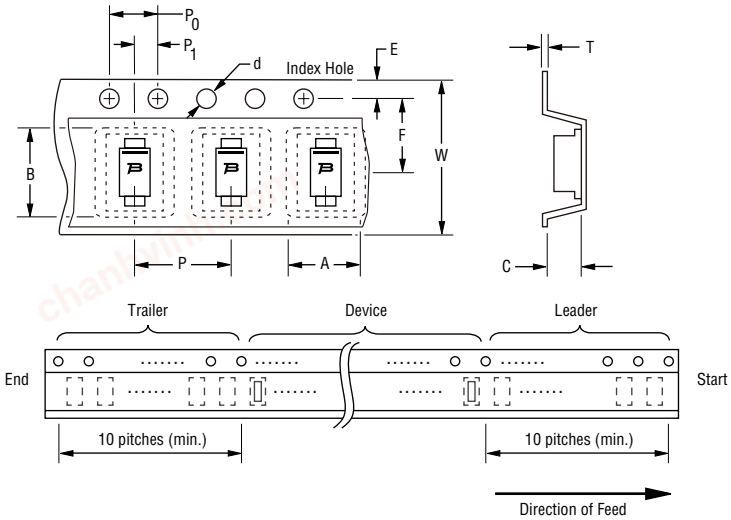
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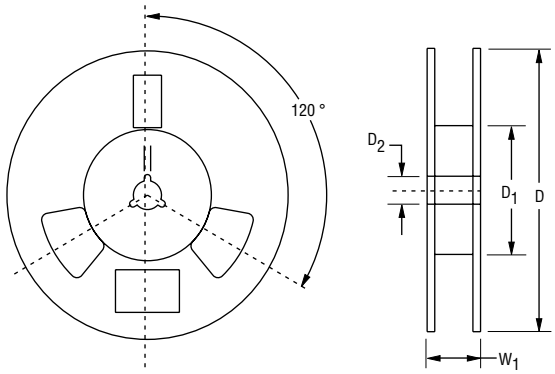
SMF4L-Q Transient Voltage Suppressor Diode Series

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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-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	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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