Features

- Maximum Peak Power Dissipation: 6600 watts
- Meets ISO7637-2 / ISO16750-2 Surge specification (varies by test condition)
- RoHS compliant*
- AEC-Q101 compliant**

Applications

- High peak power applications (up to rated limits)
- High temperature applications (up to rated limits)
- Clamping diode
- Load switching and lighting

SM8S-Q Transient Voltage Suppressor Diode Series

General Information

Bourns offers Transient Voltage Suppressor Diodes for surge and ESD protection applications, in compact chip package DO-218 size format. The Transient Voltage Suppressor series offers a choice of Working Peak Reverse Voltage from 16 V up to 43 V. Typical fast response times are less than 1.0 picosecond from 0 V to Breakdown Voltage.

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

Parameter	Symbol	Value	Unit
Maximum Peak Pulse Power Dissipation (10/1000 μs)	P_{PK}	6600	W
Maximum Peak Pulse Power Dissipation (10/10000 μs)	P_{PK}	5200	W
Power Dissipation with Infinite Heatsink (T_C = 25 °C)	P_D	8	W
Operating Temperature Range	T_J	-55 to +175	°C
Storage Temperature Range	T_{STG}	-55 to +175	°C

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

Unidirectional Device	Bidirectional 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.	Part No.	Min.	Max.	@ I_T (mA)	V_{RWM} (V)	I_R (μA)	V_{RSM} (V)	I_{RSM} (A)
SM8S16A	SM8S16CA	17.80	19.70	5	16.0	10	26.0	254.0
SM8S17A	SM8S17CA	18.90	20.90	5	17.0	10	27.6	239.0
SM8S18A	SM8S18CA	20.00	22.10	5	18.0	10	29.2	226.0
SM8S20A	SM8S20CA	22.20	24.50	5	20.0	10	32.4	204.0
SM8S22A	SM8S22CA	24.40	26.90	5	22.0	10	35.5	186.0
SM8S24A	SM8S24CA	26.70	29.50	5	24.0	10	38.9	170.0
SM8S26A	SM8S26CA	28.90	31.90	5	26.0	10	42.1	157.0
SM8S28A	SM8S28CA	31.10	34.40	5	28.0	10	45.4	145.0
SM8S30A	SM8S30CA	33.30	36.80	5	30.0	10	48.4	136.0
SM8S33A	SM8S33CA	36.70	40.60	5	33.0	10	53.3	124.0
SM8S36A	SM8S36CA	40.00	44.20	5	36.0	10	58.1	114.0
SM8S40A	SM8S40CA	44.40	49.10	5	40.0	10	64.5	102.0
SM8S43A	SM8S43CA	47.80	52.80	5	43.0	10	69.4	95.0

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

*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.
**"Q" part number suffix for automotive and other applications requiring appropriate AEC-Q101 compliance.
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Users should verify actual device performance in their specific applications.
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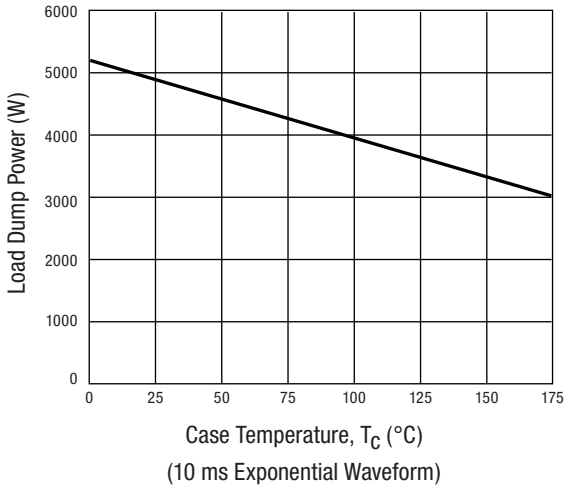
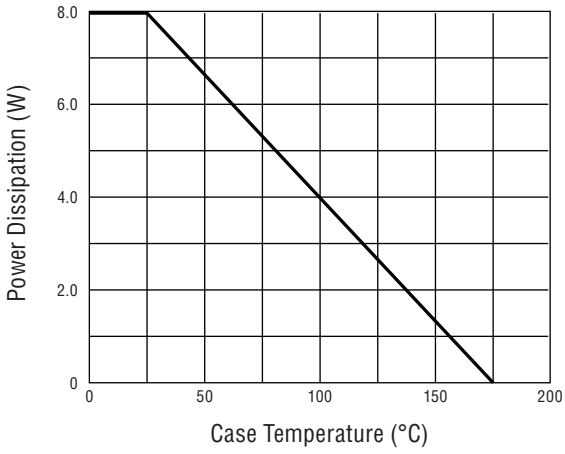
Performance Graphs

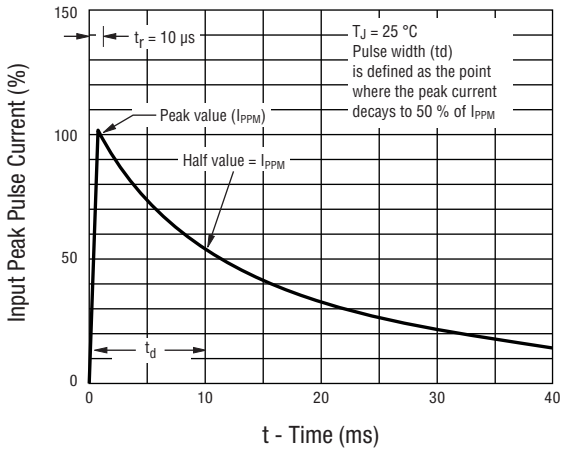
Load Dump Power Characteristics



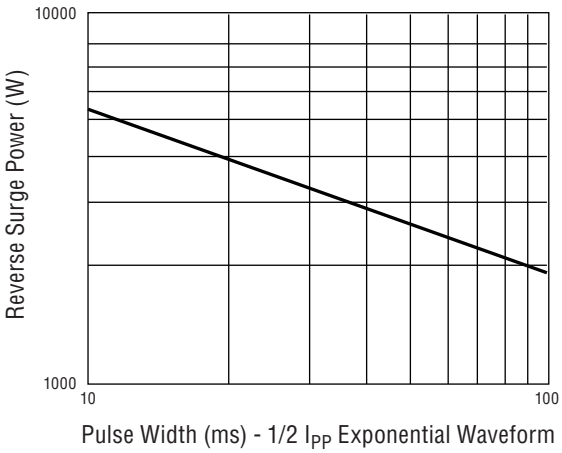
Steady State Power Dissipation



Pulse Waveform



Maximum Non-Repetitive Surge Current



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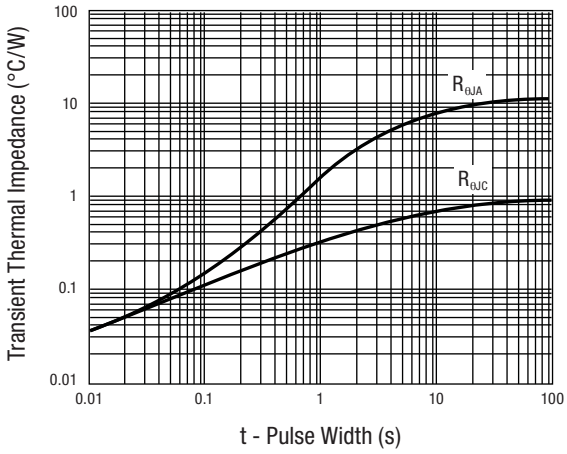
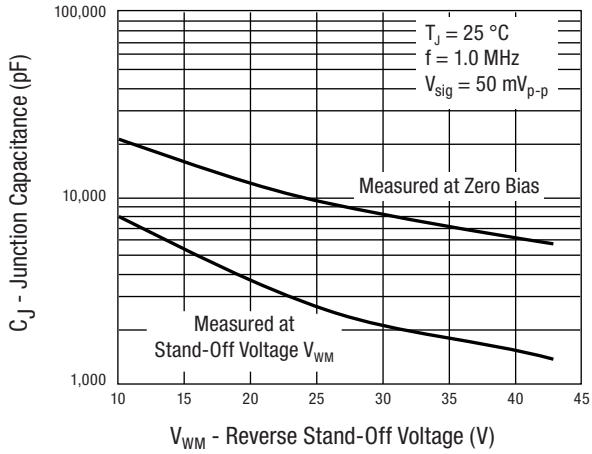
Performance Graphs

Typical Transient Thermal Impedance



Typical Junction Capacitance



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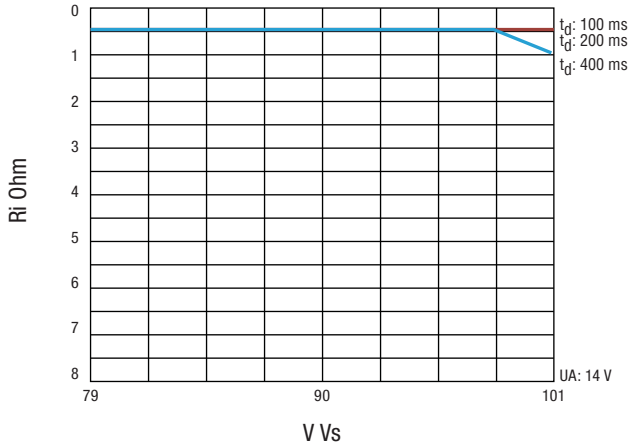
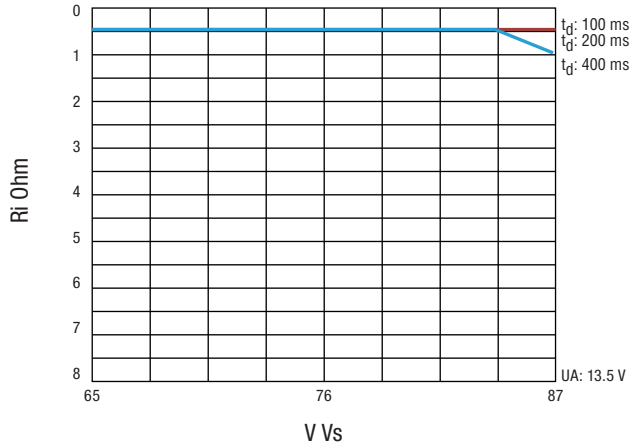
Performance Graphs

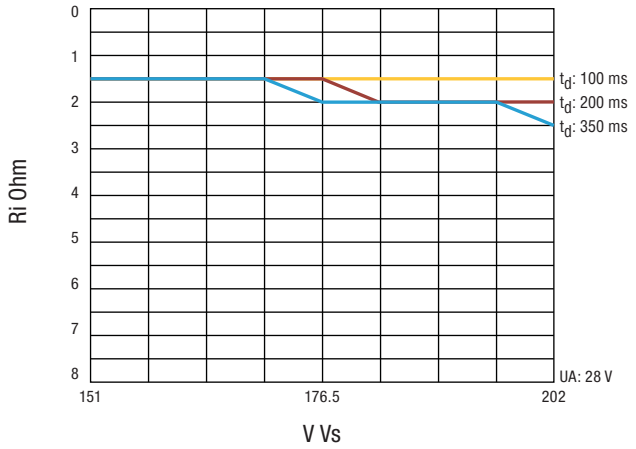
ISO 16750-2 Test A (10 Pulse) - SM8S24A



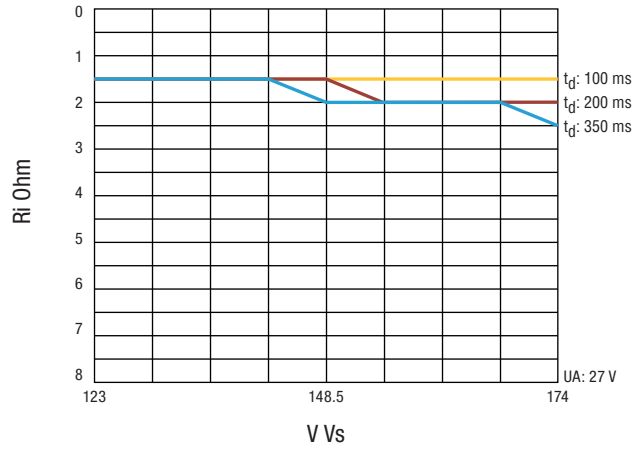
ISO 7637-2 5a (1 Pulse) - SM8S24A



ISO 16750-2 Test A (10 Pulse) - SM8S36A



ISO 7637-2 5a (1 Pulse) - SM8S36A



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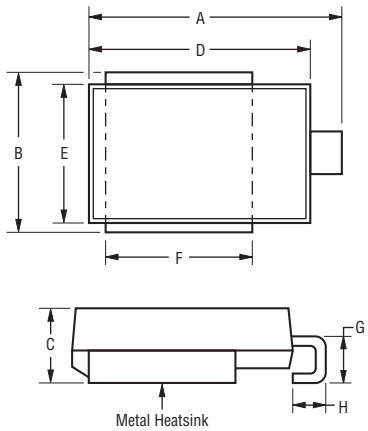
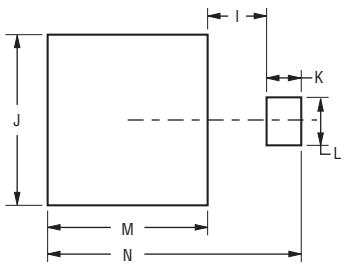
Product Dimensions



Dimension	Value
A	15.5 ± 0.5 (0.610 ± 0.02)
B	10.0 ± 0.5 (0.394 ± 0.02)
C	4.85 ± 0.15 (0.191 ± 0.006)
D	13.5 ± 0.2 (0.531 ± 0.008)
E	8.5 ± 0.2 (0.335 ± 0.008)
F	9.0 ± 0.3 (0.354 ± 0.012)
G	3.0 ± 0.5 (0.118 ± 0.02)
H	2.0 ± 0.5 (0.079 ± 0.02)

DIMENSIONS: MM / (INCHES)

Recommended Footprint



Dimension	Value
I	3.5 ± 0.3 (0.138 ± 0.012)
J	10.0 ± 0.5 (0.394 ± 0.02)
K	2.0 ± 0.3 (0.079 ± 0.012)
L	2.7 ± 0.3 (0.106 ± 0.012)
M	9.0 ± 0.3 (0.354 ± 0.012)
N	14.5 ± 0.4 (0.571 ± 0.016)

DIMENSIONS: MM / (INCHES)

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Physical Specifications

Case .....Molded plastic per UL Class 94V-0
Polarity..... Cathode band indicates unidirectional device
No cathode band indicates bidirectional device

How to Order

SM8S 18 CA - Q

Package
SM8S = DO-218 Package

Working Peak Reverse Voltage
18 = 18 V_{RWM} (Volts)

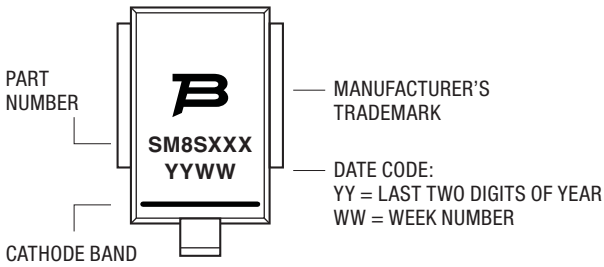
Suffix
A = 5 % Tolerance Unidirectional Device
CA = 5 % Tolerance Bidirectional Device

AEC-Q101 Suffix
Q = AEC-Q101 Compliant

Environmental Specifications

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

Typical Part Marking



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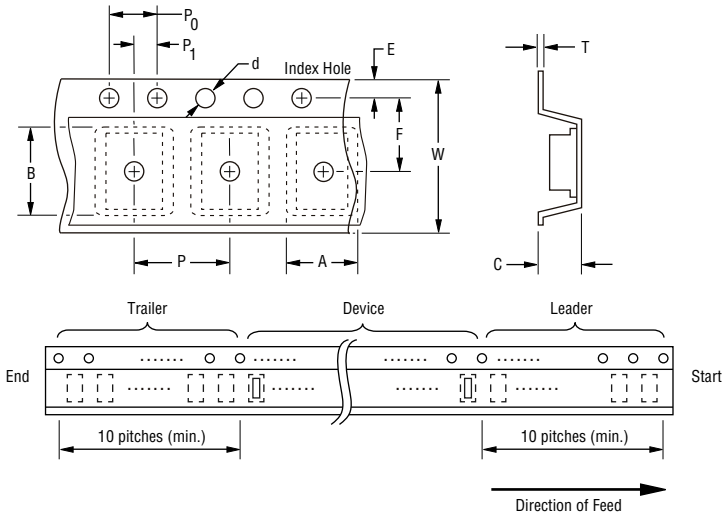
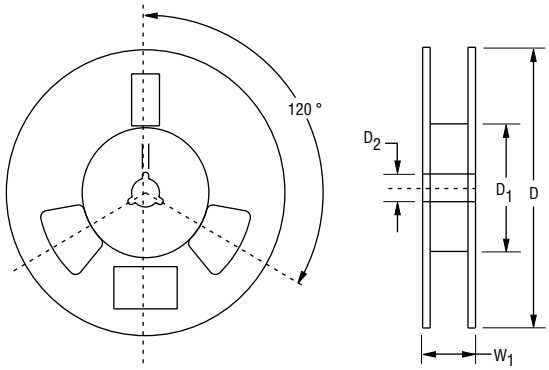
Packaging Information

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	SM8S-Q Series
Carrier Width	A	10.77 ± 0.20 (0.424 ± 0.008)
Carrier Length	B	16.33 ± 0.20 (0.643 ± 0.008)
Carrier Depth	C	6.02 ± 0.20 (0.237 ± 0.008)
Sprocket Hole	d	1.50 + 0.10 / - 0.00 (0.059 + 0.004 / - 0.00)
Reel Outside Diameter	D	330 ± 2.0 (12.992 ± 0.079)
Reel Inner Diameter	D_1	60.0 (2.362) 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	11.5 ± 0.10 (0.453 ± 0.004)
Punch Hole Pitch	P	16.0 ± 0.10 (0.63 ± 0.004)
Sprocket Hole Pitch	P_0	4.00 ± 0.10 (0.157 ± 0.004)
Embossment Center	P_1	2.00 ± 0.10 (0.079 ± 0.004)
Overall Tape Thickness	T	12 (0.472) MAX.
Tape Width	W	24.0 ± 0.30 (0.945 ± 0.012)
Reel Width	W_1	30.4 (1.197) MAX.
Quantity per Reel	--	750

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