

### Features

- Maximum Peak Power Dissipation: 7000 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

# SM8SF-Q Transient Voltage Suppressor Diode Series

#### **General Information**

The Model SM8SF-Q Series TVS diodes are designed to provide overvoltage protection for sensitive electronics, meeting ISO7637-2 and ISO16750-2 requirements (varies by test condition).

The Model SM8SF-Q Series offers a choice of Working Peak Reverse Voltages from 24 V to 36 V and Breakdown Voltage up to 40 V. The SM8SF-Q is available in a compact DFN package of 8.1 mm x 10.5 mm, with a low profile of just 1.3 mm, facilitating layout in today's compact PCB designs.

#### Absolute Maximum Ratings (@ T<sub>A</sub> = 25 °C Unless Otherwise Noted)

Parameter	Symbol	Value	Unit
Maximum Peak Pulse Power Dissipation (10/1000 $\mu$ s)	P <sub>PK</sub>	7000	W
Power Dissipation with Infinite Heatsink ( $T_c = 25 \ ^{\circ}C$ )	PD	5	W
Operating Temperature Range	ТJ	-55 to +175	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +175	°C

### Electrical Characteristics (@ T<sub>A</sub> = 25 °C Unless Otherwise Noted)

Unidirectional Device		Bidirectional Device		Breakdown Voltage V <sub>BR</sub> (Volts)		Working Peak Reverse Voltage	Maximum Reverse Leakage @ V <sub>RWM</sub>	Maximum Reverse Voltage @ I <sub>RSM</sub>	Maximum Reverse Surge Current	
Part No.	Marking	Part No.	Marking	Min.	Max.	@ I <sub>T</sub> (mA)	V <sub>RWM</sub> (V)	I <sub>R</sub> (μΑ)	V <sub>RSM</sub> (V)	I <sub>RSM</sub> (A)
SM8SF24A-Q	24A	SM8SF24CA-Q	24CA	26.7	29.5	5	24	10	38.9	180
SM8SF28A-Q	28A	SM8SF28CA-Q	28CA	31.1	34.4	5	28	10	45.4	154
SM8SF30A-Q	30A	SM8SF30CA-Q	30CA	33.3	36.8	5	30	10	48.4	145
SM8SF33A-Q	33A	SM8SF33CA-Q	33CA	36.7	40.6	5	33	10	53.3	131
SM8SF36A-Q	36A	SM8SF36CA-Q	36CA	40.0	44.2	5	36	10	58.1	120

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\* 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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#### **Performance Graphs**



ISO 7637-2: Pulse 5a, Single Pulse: SM8SF-24A-Q







Peak Pulse Power Derating Curve



ISO 7637-2: Pulse 5a, Single Pulse: SM8SF-33A-Q



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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





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#### **Packaging Information**

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



Direction of Feed

Item	Symbol	SM8SF Series			
Carrier Width	A	$\frac{8.35 \pm 0.10}{(0.329 \pm 0.004)}$			
Carrier Length	В	$\frac{10.75 \pm 0.10}{(0.423 \pm 0.004)}$			
Carrier Depth	С	$\frac{1.65 \pm 0.10}{(0.065 \pm 0.004)}$			
Sprocket Hole	d	$\frac{1.55 \pm 0.05}{(0.061 \pm 0.002)}$			
Reel Outside Diameter	D	$\frac{178 \pm 1.0}{(7.008 \pm 0.039)}$			
Reel Inner Diameter	D <sub>1</sub>	$\frac{60 \pm 1.0}{(2.362 \pm 0.039)}$			
Feed Hole Diameter	D <sub>2</sub>	$\frac{13.5 \pm 0.50}{(0.531 \pm 0.02)}$			
Sprocket Hole Position	E	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$			
Punch Hole Position	F	$\frac{5.50 \pm 0.10}{(0.217 \pm 0.004)}$			
Punch Hole Pitch	Р	$\frac{12.00 \pm 0.10}{(0.472 \pm 0.004)}$			
Sprocket Hole Pitch	P <sub>0</sub>	$\frac{4.00 \pm 0.10}{(0.157 \pm 0.004)}$			
Embossment Center	P <sub>1</sub>	$\frac{2.00 \pm 0.10}{(0.079 \pm 0.004)}$			
Overall Tape Thickness	т	<u>0.40</u> (0.016) MAX.			
Tape Width	W	$\frac{16.00 \pm 0.30}{(0.630 \pm 0.012)}$			
Reel Width	W <sub>1</sub>	$\frac{18.1 \pm 1.2}{(0.713 \pm 0.047)}$			
Quantity per Reel		750			



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



Recommended pick-up height: The bottom of the device should be 0.3 mm above the PCB.

#### 09/19

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