



## Features

- Maximum peak pulse power (10/1000  $\mu$ s): 15 kW
- Maximum peak pulse current (8/20  $\mu$ s): 1 kA
- Standoff Voltage: 16 to 66 volts
- RoHS compliant\*
- AEC-Q101 compliant\*\*

## Applications

- High peak power applications
- High temperature applications
- Clamping diode
- Load switching and lighting

# 15KPA-SD-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 66 V.

## Absolute Maximum Ratings (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Parameter	Symbol	Value	Unit
Maximum Peak Pulse Power (10/1000 $\mu$ s) (Note 1)	$P_{PPM}$	15000	W
Maximum Peak Pulse Current (8/20 $\mu$ s) (Note 1)	$I_{PPM}$	1000	A
Peak Forward Surge Current 8.3 ms Single Half Sine Wave Superimposed on Rated Load (JEDEC Method) (Note 2)	$I_{FSM}$	300	A
Steady State Power Dissipation @ $T_C = 25^\circ\text{C}$	$P_{M(AV)}$	8	W
Maximum Instantaneous Forward Voltage @ $I_{PP} = 100\text{ A}$ (Unidirectional Units Only)	$V_F$	5	V
Operating Temperature Range	$T_J$	-55 to +175	$^\circ\text{C}$
Storage Temperature Range	$T_{STG}$	-55 to +175	$^\circ\text{C}$

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

(Note 2) 8.3 ms Single Sine Wave duty cycle = 4 pulses maximum per minute (unidirectional units only).

## Electrical Characteristics (@ $T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

Unidirectional Device Part No.	Bidirectional Device Part No.	Breakdown Voltage $V_{BR}$ (Volts)			Working Peak Reverse Voltage $V_{RWM}$ (V)	Maximum Reverse Leakage @ $V_{RWM}$ $I_R$ ( $\mu\text{A}$ )	Maximum Clamping Voltage @ $I_{PP}$ $V_C$ (V)	Maximum Peak Pulse Power (10/1000 $\mu$ s) $I_{PP}$ (A)
		Min.	Max.	@ $I_T$ (mA)				
15KPA016	15KPA016C	16.35	19.70	5	16.0	10	23.9	599.0
15KPA017	15KPA017C	17.35	20.90	5	17.0	10	27.0	556.6
15KPA018	15KPA018C	18.34	22.10	5	18.0	10	28.4	527.8
15KPA020	15KPA020C	20.34	24.50	5	20.0	10	31.6	475.5
15KPA022	15KPA022C	22.33	26.90	5	22.0	10	34.1	439.6
15KPA024	15KPA024C	24.49	29.50	5	24.0	10	37.4	400.7
15KPA026	15KPA026C	26.48	31.90	5	26.0	10	40.5	370.6
15KPA028	15KPA028C	28.55	34.40	5	28.0	10	43.7	343.3
15KPA030	15KPA030C	30.54	36.80	5	30.0	10	46.6	321.7
15KPA033	15KPA033C	33.70	40.60	5	33.0	10	50.3	298.1
15KPA036	15KPA036C	36.69	44.20	5	36.0	10	55.0	272.7
15KPA040	15KPA040C	40.75	49.10	5	40.0	10	60.5	247.8
15KPA043	15KPA043C	43.82	52.80	5	43.0	10	64.2	233.6
	15KPA045C	45.90	55.30	5	45.0	10	67.3	206.3
	15KPA048C	48.89	58.90	5	48.0	10	71.5	194.3
	15KPA051C	52.04	62.70	5	51.0	10	76.3	182.1
	15KPA054C	55.03	66.30	5	54.0	10	80.7	172.2
	15KPA058C	59.10	71.20	5	58.0	10	86.3	161.0
	15KPA066C	66.40	80.00	5	66.0	10	96.9	143.3

\* 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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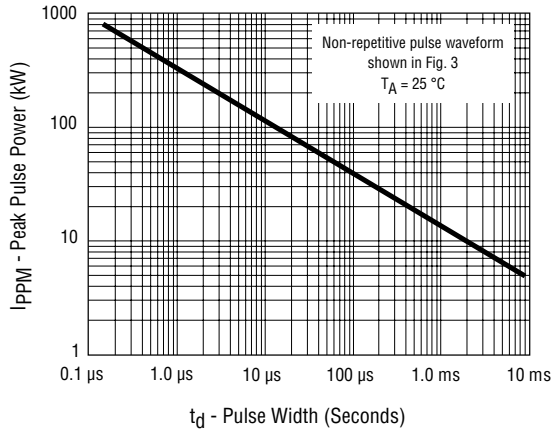
**WARNING Cancer and Reproductive Harm**  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

# 15KPA-SD-Q Transient Voltage Suppressor Diode Series

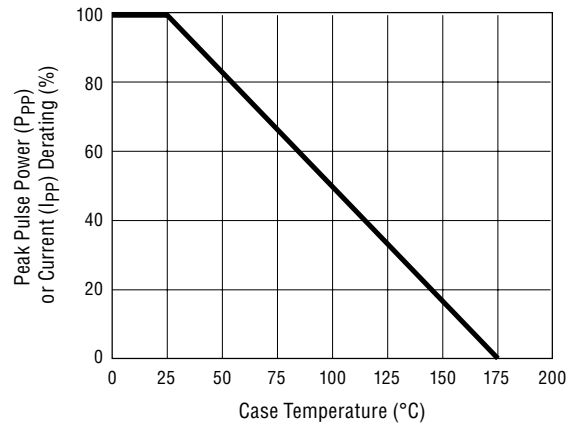
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## Performance Graphs

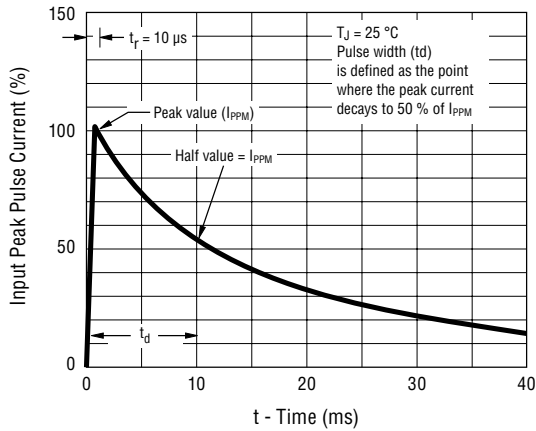
### Pulse Derating Curve



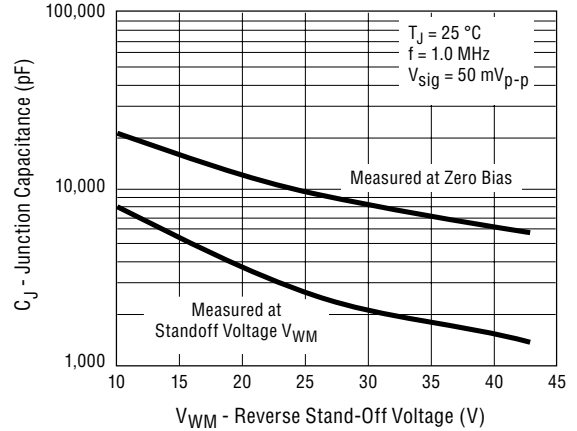
### Peak Power Dissipation



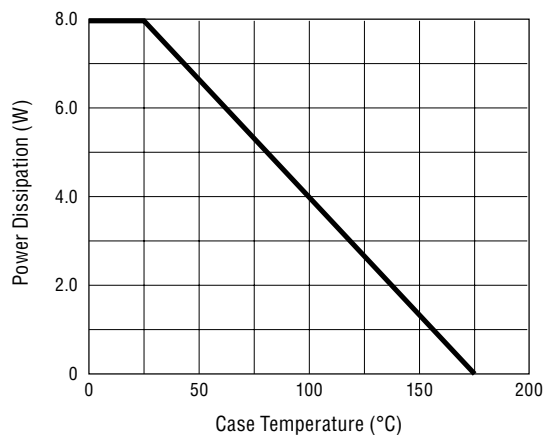
### Pulse Waveform



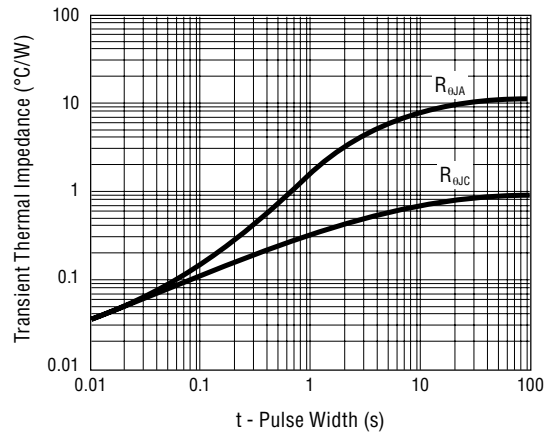
### Typical Junction Capacitance



### Steady State Power Dissipation



### Typical Thermal Impedance

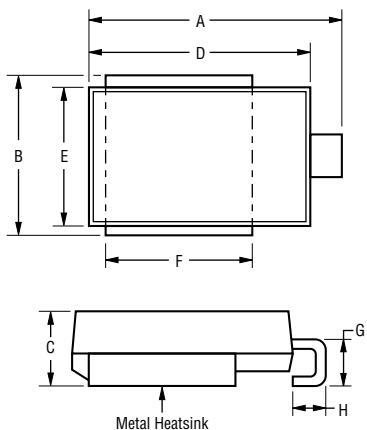


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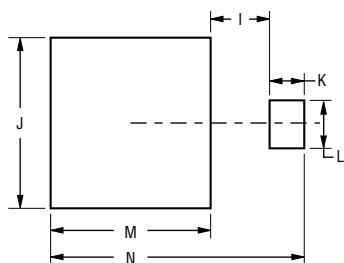
## Product Dimensions



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

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

## Recommended Footprint



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

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

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# 15KPA-SD-Q Transient Voltage Suppressor Diode Series



## 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

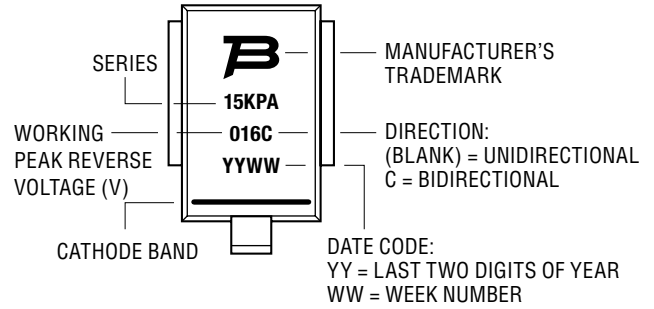
**15KPA 016 C - SD - Q**

Series / Peak Current Rating \_\_\_\_\_  
 15KPA = Power TVS Diode, 15 kW (10/1000  $\mu$ s)  
 Working Peak Reverse Voltage \_\_\_\_\_  
 016 = 16 V<sub>RWM</sub> (Volts)  
 Direction \_\_\_\_\_  
 (Blank) = Unidirectional Device  
 C = Bidirectional Device  
 Package Type \_\_\_\_\_  
 SD = Surface Mount Device  
 AEC-Q101 Suffix \_\_\_\_\_  
 Q = AEC-Q101 Compliant

## Environmental Specifications

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

## Typical Part Marking

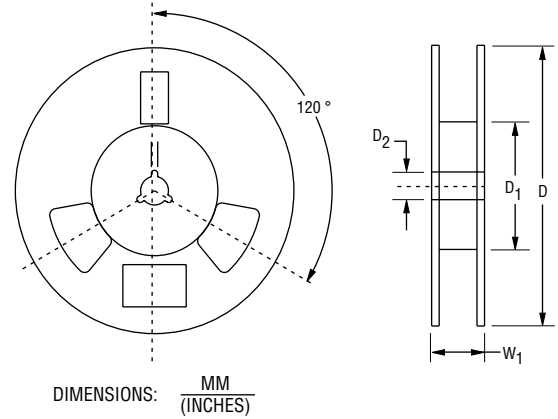
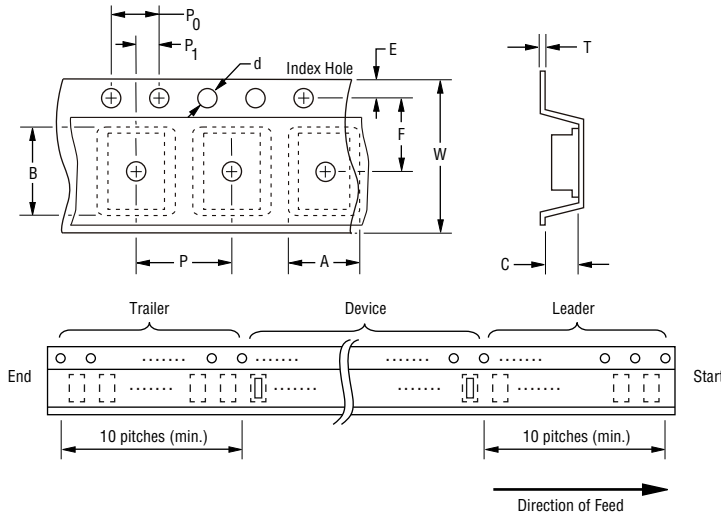


# 15KPA-SD-Q Transient Voltage Suppressor Diode Series

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## Packaging Information

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



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

Item	Symbol	DO-218 Package
Carrier Width	A	$\frac{10.77 \pm 0.20}{(0.424 \pm 0.008)}$
Carrier Length	B	$\frac{16.33 \pm 0.20}{(0.643 \pm 0.008)}$
Carrier Depth	C	$\frac{6.02 \pm 0.20}{(0.237 \pm 0.008)}$
Sprocket Hole	d	$\frac{1.50 + 0.10 / - 0.00}{(0.059 + 0.004 / - 0.00)}$
Reel Outside Diameter	D	$\frac{330 \pm 2.0}{(12.992 \pm 0.079)}$
Reel Inner Diameter	D <sub>1</sub>	$\frac{60.0}{(2.362)}$ MIN.
Feed Hole Diameter	D <sub>2</sub>	$\frac{13.0 + 0.50 / - 0.20}{(0.512 + 0.020 / - 0.008)}$
Sprocket Hole Position	E	$\frac{1.75 \pm 0.10}{(0.069 \pm 0.004)}$
Punch Hole Position	F	$\frac{11.5 \pm 0.10}{(0.453 \pm 0.004)}$
Punch Hole Pitch	P	$\frac{16.0 \pm 0.10}{(0.63 \pm 0.004)}$
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	T	$\frac{0.6}{(0.002)}$ MAX.
Tape Width	W	$\frac{24.0 \pm 0.30}{(0.945 \pm 0.012)}$
Reel Width	W <sub>1</sub>	$\frac{30.4}{(1.197)}$ MAX.
Quantity per Reel	--	750

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