

# Transient Voltage Suppression Diode



## Features:

- Available in Uni-Directional and Bi-Directional
- 500W peak pulse power capability with a 10/1000 $\mu$ s waveform, repetitive rate (duty cycle): 0.01%
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Solder dip 260°C, 40 seconds

## Mechanical Data:

Case	: DO-15
Terminals	: Matte tin plated leads, solderable per J-STD-002B and JESD22-B102D
Polarity	: For Uni-Directional types the colour band denotes cathode end, no marking on Bi-Directional types
Power	: 500 Watts

## Typical Applications:

Use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting on Ics, MOS-FET, signal lines of sensor units for consumer, computer, industrial, automotive and telecommunication

## Maximum Ratings and Electrical Characteristics:

Rating at 25°C ambient temperature unless otherwise specified.

Characteristics	Symbol	Value	Unit
Peak Pulse Power Dissipation by 10 x 1000 $\mu$ s test waveform (Note 1)	P <sub>PPM</sub>	500	W
Steady State Power Dissipation on infinite heat sink at T <sub>L</sub> = 75°C	P <sub>D</sub>	3	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Uni-Directional only (Note 2)	I <sub>FSM</sub>	70	Amps
Maximum Instantaneous Forward Voltage at 35A for Uni-Directional only (Note 3)	V <sub>F</sub>	3.5/5	V
Typical Thermal Resistance Junction to Lead	R <sub>UJL</sub>	20	°C/W
Typical Thermal Resistance Junction	R <sub>UJA</sub>	75	°C/W
Operating Temperature Range	T <sub>J</sub>	-55 to +175	°C
Storage Temperature Range	T <sub>STG</sub>	-55 to +175	°C

### Notes:

1. Non-repetitive current pulse ,per Fig. 3 and derated above T<sub>A</sub> = 25°C per Fig. 2.
2. Measured on 8.3ms single half sine wave or equivalent square wave, duty cycle=4 per minute maximum.
3. V<sub>F</sub> < 3.5V for devices of V<sub>BR</sub> ≤ 200V and V<sub>F</sub> < 5.0V for devices of V<sub>BR</sub> ≥ 201V.

# Transient Voltage Suppression Diode



Part Number		Reverse Standoff Voltage	Breakdown Voltage $V_{BR}(V)$ @ IT		Test Current IT	Max. Clamping Voltage $V_c$ @ Ipp	Max. Peak Pulse Current	Max. Reverse Leakage $I_R$ @ $V_R$
(UNI)	(BI)	Volts	Min.(V)	A	mA	$V_c(V)$	Ipp(A)	$\mu A$
SA5.0A	-	5	X	7	10	9.2	55.4	600
SA12A	SA12CA	12	13.3	14.7	1	19.9	25.6	1
SA15A	SA15CA	15	16.7	18.5	1	24.4	20.9	1
-	SA20CA	20	22.2	24.5	1	32.4	15.7	1
SA22A	-	22	24.4	26.9	1	35.5	14.4	1
SA24A	SA24CA	24	26.7	29.5	1	38.9	13.1	1
	SA28CA	28	31.1	34.4	1	45.4	11.2	1
SA30A	SA30CA	30	33.3	36.8	1	48.4	10.5	1
SA33A	SA33CA	33	36.7	40.6	1	53.3	9.6	1

Notes: 1. For bidirectional type having  $V_R$  of 10 volts and less, the  $I_R$  limit is double.  
 2. For parts without A, the  $V_{BR}$  is  $\pm 10\%$ .

## Ratings and Characteristic Curves

FIG.1 – Peak Pulse Power Rating Curve

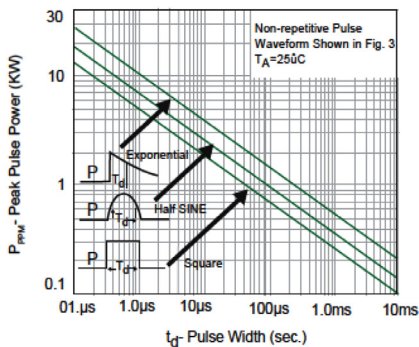


FIG.2 – Pulse Derating Curve

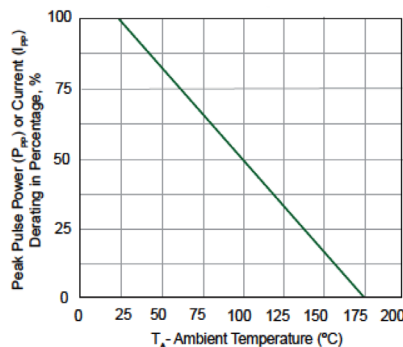


FIG.3 – Pulse Waveform

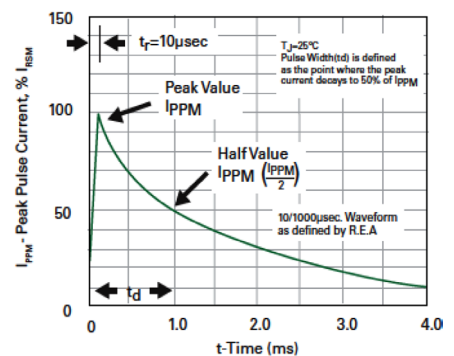


FIG.4 – Typical junction capacitance

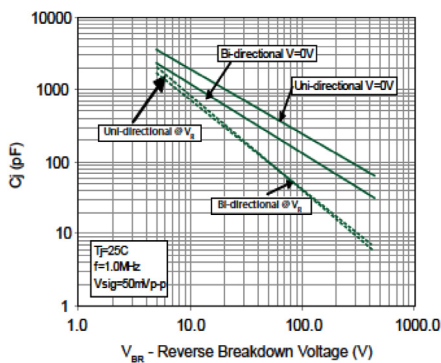


FIG.4 – Steady State Power Dissipation Derating Curve

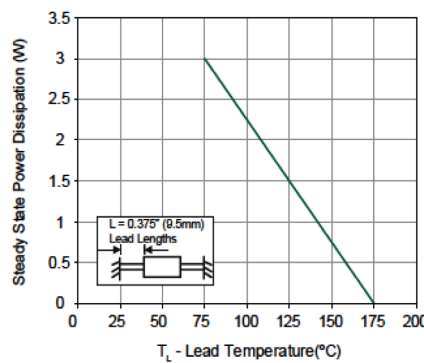
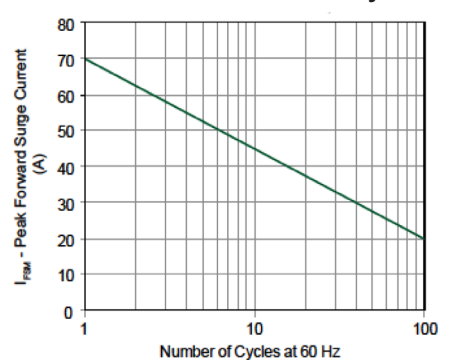


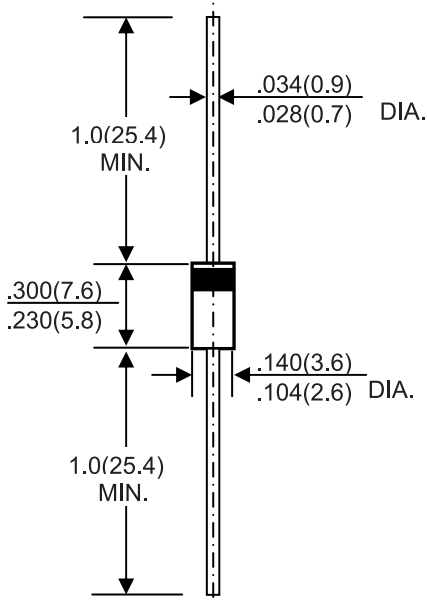
FIG.4 – Max. Non-Repetitive Forward Surge Current Uni-Directional Only



# Transient Voltage Suppression Diode



## DO-15



Dimensions : Inches (Millimetres)

### Part Number Table

Description	Part Number
Transient Voltage Suppression Diode	SA12A
	SA12CA
	SA15A
	SA15CA
	SA20CA
	SA22A
	SA24A
	SA24CA
	SA28CA
	SA30A
	SA30CA
	SA33A
	SA33CA
SA5.0A	

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