

Transient Voltage Suppression Diode

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Features:

- Available in Uni-Directional and Bi-Directional
- 500W peak pulse power capability with a 10/1000µs 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	Values	Unit
Peak Pulse Power Dissipation by 10 × 1000µs test waveform (Note 1)	P _{PPM}	500	W
Steady State Power Dissipation on infinite heat sink at T _L = 75°C	P _D	3	W
Peak Forward Surge Current, 8.3ms Single Half Sine Wave Uni-Directional only (Note 2)	I _{FSM}	70	Amps
Maximum Instantaneous Forward Voltage at 35A for Uni-Directional only (Note 3)	V _F	3.5/5	V
Typical Thermal Resistance Junction to Lead	R _{UJL}	20	°C/W
Typical Thermal Resistance Junction	R _{UJA}	75	°C/W
Operating Temperature Range	T _J	-55 to +175	°C
Storage Temperature Range	T _{STG}	-55 to +175	°C

Notes:

1. Non-repetitive current pulse ,per Fig. 3 and derated above T_A = 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_F < 3.5V for devices of V_{BR} ≤ 200V and V_F < 5.0V for devices of V_{BR} ≥ 201V.

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Part Number		Reverse Standoff Voltage	Breakdown Voltage $V_{BR}(V)$ @ I_T		Test Current I_T	Max. Clamping Voltage V_c @ I_{pp}	Max. Peak Pulse Current	Max. Reverse Leakage I_R @ V_R
(UNI)	(BI)	Volts	Min.(V)	A	mA	$V_c(V)$	$I_{pp}(A)$	μA
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

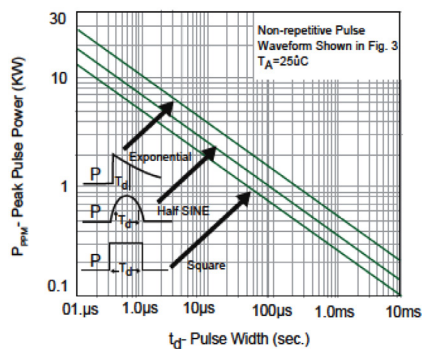


FIG.2 – Pulse Derating Curve

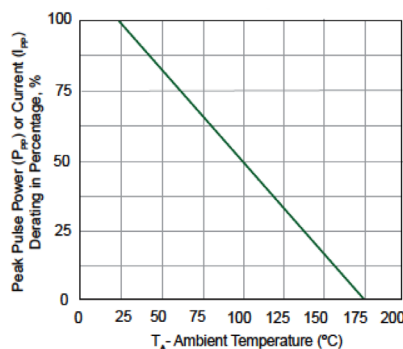


FIG.3 – Pulse Waveform

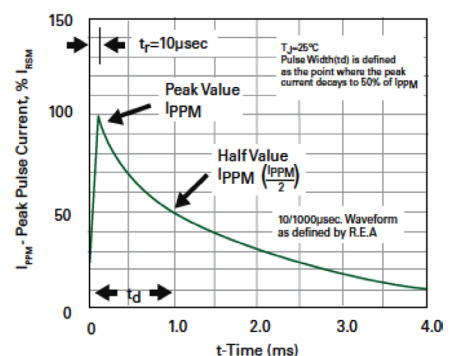


FIG.4 – Typical junction capacitance

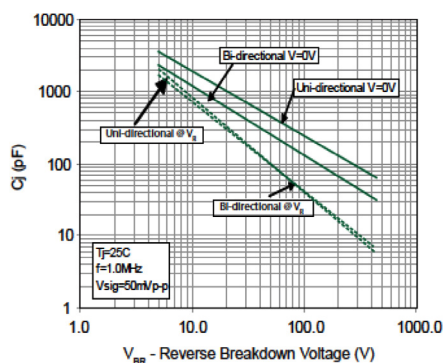


FIG.4 – Steady State Power Dissipation Derating Curve

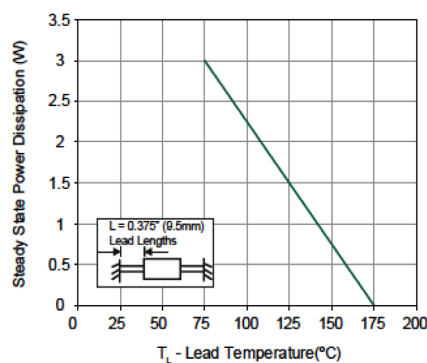
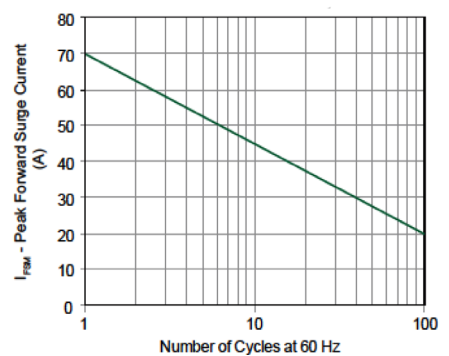


FIG.4 – Max. Non-Repetitive Forward Surge Current Uni-Directional Only



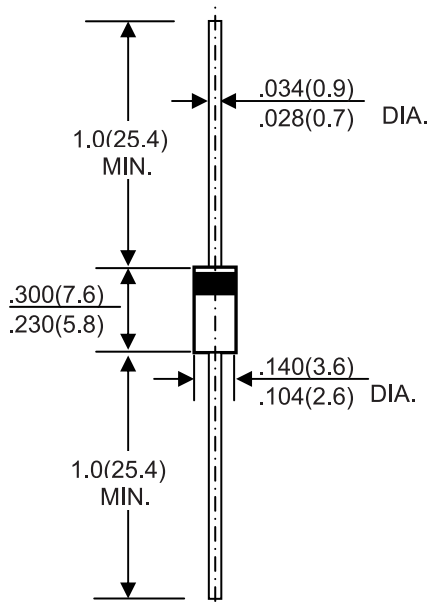
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DO-15



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+

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