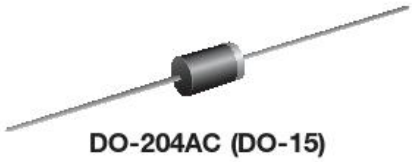
SA Transient Voltage Suppressor Diode Series

General Information

The SA series is designed to protect voltage sensitive components from high voltage, high energy transients. They have excellent clamping capability, high surge capability, low zener impedance and fast response time. The SA series is supplied in YINT Semiconductor's exclusive, cost-effective, highly reliable and is ideally suited for use in communication systems, automotive, numerical controls , process controls, medical equipment, business machines, power supplies and many other industrial/consumer applications.



DO-204AC (DO-15)

Features

- DO-15 glass passivated chip junction
- Plastic package
- Polarity:Color band denoted positive end (cathode) except Bidirectional.
- Typical failure mode is short from over-specified voltage or current
- Fast response time: typically less than 1.0ps from 0 Volts to BV min.
- High Temperature soldering:260° C/10 seconds at terminals.
- Solder dip 275 ° C max. 10 s, per JESD 22-B106

Typical Applications

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

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

Parameter	Symbol	Value	Unit
Peak pulse power dissipation with a 10/1000 μs waveform	P_{PK}	500	Watts
Peak pulse current with a 10/1000 μs waveform	I_{FSM}	See next table	Amps
Power dissipation on infinite heat sink at T_L= 75 °C	P_D	3	Watts
Peak forward surge current 8.3 ms single half sine-wave	I_{FSM}	70	Amps
Instantaneous forward voltage at 100 A for Unidirectional only	V_F	3.5/5.0	V
Operating junction and storage temperature range	T_J ,T_{STG}	-55 to +175	°C

Notes :

(1) Non-repetitive current pulse, per fig. 6 and derated above T_A = 25 °C per fig. 2

(2) Measured 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

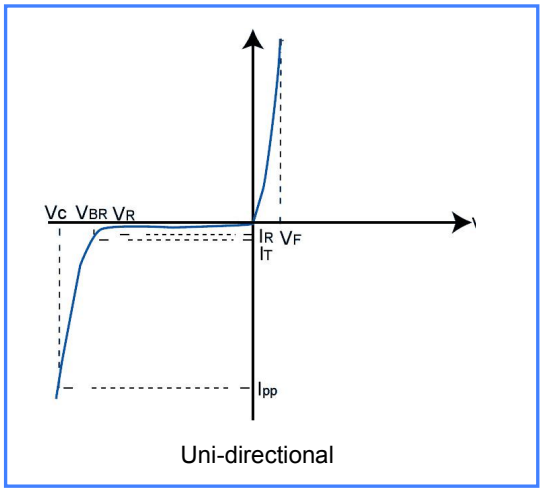
(3) V_F<3.5V for devices of V_{BR}< 200V and V_F < 5.0V for devices of V_{BR}> 201V.

Electrical Characteristics

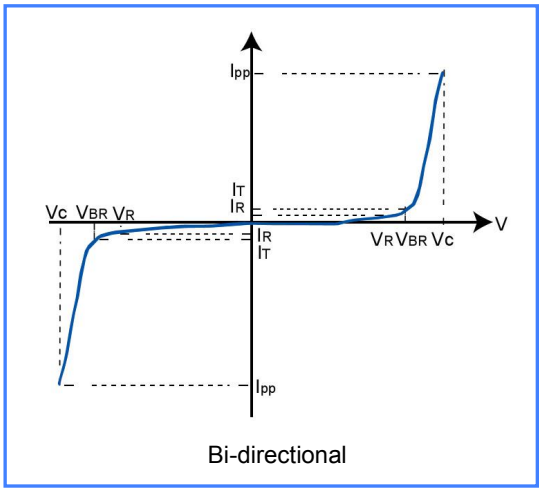
Part Number (Bi)	Part Number (Uni)	Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts)@I_T		Test Current I_T(mA)	Maximum Reverse Leakage I_R @ V_R(μA)	Maximum Peak Pulse Current I pp (A)	Maximum Clamping Voltage V_C @ I_{pp}(V)
			Min .V	Max .V				
SA5.0CA	SA5.0A	5.0	6.40	7.00	10	120	55.4	9.2
SA6.0CA	SA6.0A	6.0	6.67	7.37	10	120	49.5	10.3
SA6.5CA	SA6.5A	6.5	7.22	7.90	10	100	45.5	11.2
SA7.0CA	SA7.0A	7.0	7.78	8.60	10	100	42.5	12.0
SA7.5CA	SA7.5A	7.5	8.33	9.21	1	20	39.5	12.9
SA8.0CA	SA8.0A	8.0	8.89	9.83	1	15	37.5	13.6
SA8.5CA	SA8.5A	8.5	9.44	10.40	1	10	35.4	14.4
SA9.0CA	SA9.0A	9.0	10.00	11.10	1	5	33.1	15.4
SA10CA	SA10A	10	11.10	12.30	1	1	30.0	17.0
SA11CA	SA11A	11	12.20	13.50	1	1	28.0	18.2
SA12CA	SA12A	12	13.30	14.70	1	1	25.6	19.9
SA13CA	SA13A	13	14.40	15.90	1	1	23.7	21.5
SA14CA	SA14A	14	15.60	17.20	1	1	22.0	23.2
SA15CA	SA15A	15	16.70	18.50	1	1	20.9	24.4
SA16CA	SA16A	16	17.80	19.70	1	1	19.6	26.0
SA17CA	SA17A	17	18.90	20.90	1	1	18.5	27.6
SA18CA	SA18A	18	20.00	22.10	1	1	17.5	29.2
SA20CA	SA20A	20	22.20	24.50	1	1	15.7	32.4
SA22CA	SA22A	22	24.40	26.90	1	1	14.4	35.5
SA24CA	SA24A	24	26.70	29.50	1	1	13.1	38.9
SA26CA	SA26A	26	28.90	31.90	1	1	12.1	42.1
SA28CA	SA28A	28	31.10	34.40	1	1	11.2	45.4
SA30CA	SA30A	30	33.30	36.80	1	1	10.5	48.4
SA33CA	SA33A	33	36.70	40.60	1	1	9.6	53.3
SA36CA	SA36A	36	40.00	44.20	1	1	8.8	58.1
SA40CA	SA40A	40	44.40	49.10	1	1	7.9	64.5
SA43CA	SA43A	43	47.80	52.80	1	1	7.3	69.4
SA45CA	SA45A	45	50.00	55.30	1	1	7.0	72.7
SA48CA	SA48A	48	53.30	58.90	1	1	6.6	77.4
SA51CA	SA51A	51	56.70	62.70	1	1	6.2	82.4
SA54CA	SA54A	54	60.00	66.30	1	1	5.9	87.1
SA58CA	SA58A	58	64.40	71.20	1	1	5.4	93.6
SA60CA	SA60A	60	66.70	73.70	1	1	5.3	96.8
SA64CA	SA64A	64	71.10	78.60	1	1	5.0	103.0
SA70CA	SA70A	70	77.80	86.00	1	1	4.5	113.0
SA75CA	SA75A	75	83.30	92.10	1	1	4.2	121.0
SA78CA	SA78A	78	86.70	95.80	1	1	4.0	126.0
SA85CA	SA85A	85	94.4	104.0	1	1	3.7	137.0

Part Number (Bi)	Part Number (Uni)	Reverse Stand off Voltage V_R (Volts)	Breakdown Voltage V_{BR} (Volts)@I_T		Test Current I_T(mA)	Maximum Reverse Leakage I_R@ V_R(μA)	Maximum Peak Pulse Current I pp (A)	Maximum Clamping Voltage V_C@ I_{pp}(V)
			Min .V	Max .V				
SA090CA	SA90A	90	100.0	111.0	1	1	3.5	146.0
SA100CA	SA100A	100	111.0	123.0	1	1	3.1	162.0
SA110CA	SA110A	110	122.0	135.0	1	1	2.9	177.0
SA120CA	SA120A	120	133.0	147.0	1	1	2.6	193.0
SA130CA	SA130A	130	144.0	159.0	1	1	2.4	209.0
SA150CA	SA150A	150	167.0	185.0	1	1	2.1	243.0
SA160CA	SA160A	160	178.0	197.0	1	1	2.0	259.0
SA170CA	SA170A	170	189.0	209.0	1	1	1.9	275.0
SA180CA	SA180A	180	201.0	222.0	1	1	1.7	292.0
SA190CA	SA190A	190	211.0	233.0	1	1	1.6	308.0

I-V Curve Characteristics



Uni-directional



Bi-directional

Symbol	Parameter
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @V_{RWM}
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current

Rating & Characteristic Curves

Figure 1 - Peak Pulse Power Rating Curve

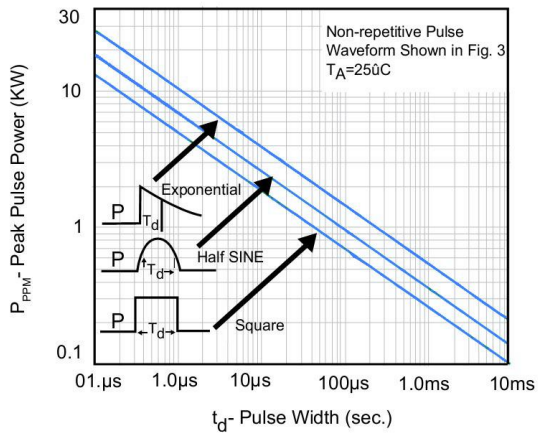


Figure 2 - Pulse Derating Curve

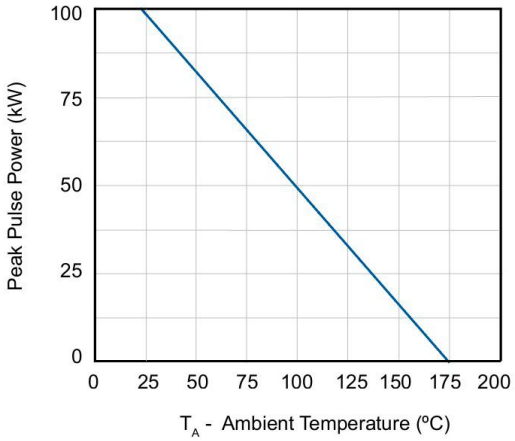


Figure 3 - Pulse Waveform

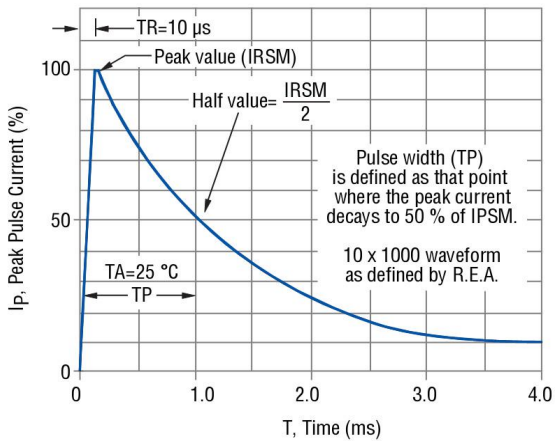


Figure 4 - Typical Junction Capacitance

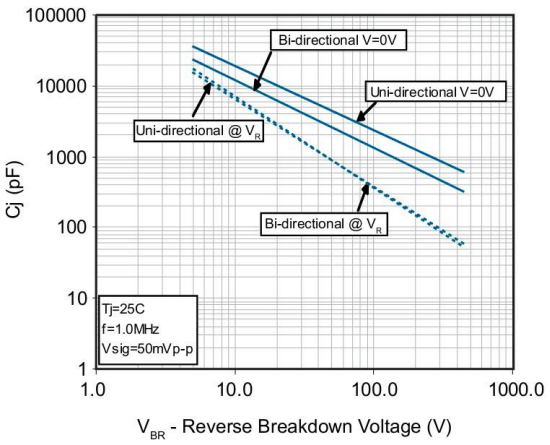


Figure5-Steady State Power Dissipation Derating Curve

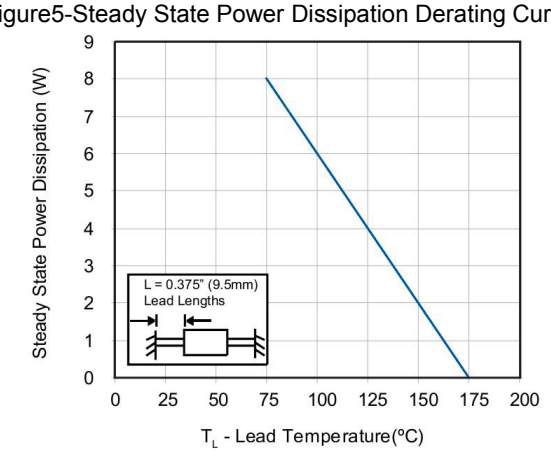
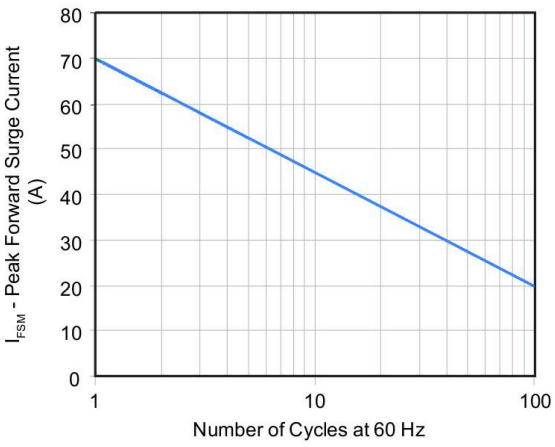
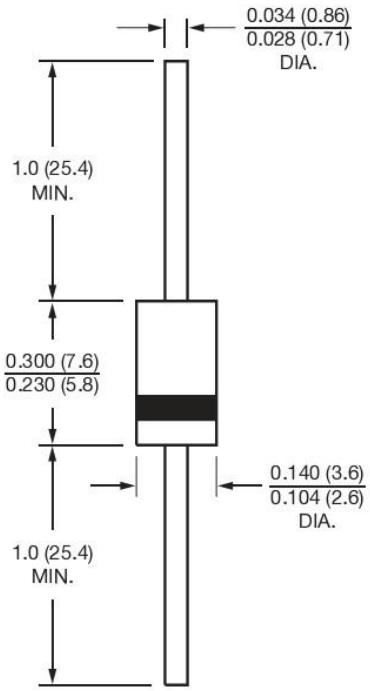


Figure 6 - Maximum Non-Repetitive Surge Current



PACKAGE OUTLINE DIMENSIONS in inches (millimeters)

DO-204AC (DO-15)



Disclaimer

Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.