Certificate Number: Q10561

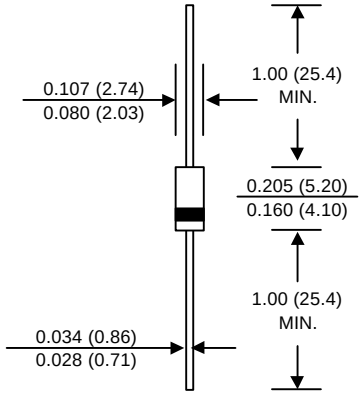
Certificate Number: E17276

SA5.0 - SA170A

TRANSIENT VOLTAGE SUPPRESSOR

Stand-off Zener Voltage Range 5.0 - 170 Volts
P_{PK} : 500 Watts

DO - 41



Dimensions in inches and (millimeters)

FEATURES :

* 500W surge capability at 1ms
* Excellent clamping capability
* Low zener impedance
* Fast response time : typically less then 1.0 ps from 0 volt to $V_{BR(min.)}$
* Typical I_R less then 1μA above 10V
* Pb / RoHS Free

MECHANICAL DATA

* Case : DO-41 Molded plastic
* Epoxy : UL94V-O rate flame retardant
* Lead : Axial lead solderable per MIL-STD-202, method 208 guaranteed
* Polarity : Color band denotes cathode end except Bipolar.
* Mounting position : Any
* Weight : 0.339 gram

DEVICES FOR BIPOLAR APPLICATIONS

For bi-directional use C or CA Suffix
Electrical characteristics apply in both directions

MAXIMUM RATINGS

Rating at 25 °C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Unit
Peak Power Dissipation at Ta = 25 °C, Tp=1ms (Note1)	P_{PK}	Minimum 500	W
Steady State Power Dissipation at T_L = 75 °C Lead Lengths 0.375", (9.5mm) (Note 2)	P_D	3.0	W
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	I_{FSM}	70	A
Operating and Storage Temperature Range	T_J, T_{STG}	- 65 to + 175	°C

Notes :

(1) Non-repetitive Current pulse, per Fig. 5 and derated above Ta = 25 °C per Fig. 1
(2) Mounted on Copper Leaf area of 1.57 in^2 (40mm^2).
(3) 8.3 ms single half sine-wave, duty cycle = 4 pulses per minutes maximum.

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ELECTRICAL CHARACTERISTICS (Rating at 25°C ambient temperature unless otherwise specified)

TYPE	Breakdown Voltage @ It (Note 1)			Working Peak Reverse Voltage	Maximum Reverse Leakage @ V_{RWM}	Maximum Reverse Current	Maximum Clamping Voltage @ I_{RSM}	Maximum Voltage Temperature Variation of V_{BR}
	V_{BR} (V)		It	V_{RWM}	I_R	I_{RSM}	V_{RSM}	
	Min.	Max.	(mA)	(V)	(µA)	(A)	(V)	(mV / °C)
SA5.0	6.40	7.3	10	5.0	600	52.0	9.6	5.0
SA5.0A[4]	6.40	7.0	10	5.0	600	54.3	9.2	5.0
SA6.0	6.67	8.15	10	6.0	600	43.9	11.4	5.0
SA6.0A	6.67	7.37	10	6.0	600	48.5	10.3	5.0
SA6.5	7.22	8.82	10	6.5	400	40.7	12.3	5.0
SA6.5A	7.22	7.98	10	6.5	400	44.7	11.2	5.0
SA7.0	7.78	9.51	10	7.0	150	37.8	13.3	6.0
SA7.0A	7.78	8.60	10	7.0	150	41.7	12.0	6.0
SA7.5	8.33	10.2	1.0	7.5	50	35.0	14.3	7.0
SA7.5A	8.33	9.21	1.0	7.5	50	38.8	12.9	7.0
SA8.0	8.89	10.9	1.0	8.0	25	33.3	15.0	7.0
SA8.0A	8.89	9.83	1.0	8.0	25	36.7	13.6	7.0
SA8.5	9.44	11.5	1.0	8.5	5.0	31.4	15.9	8.0
SA8.5A	9.44	10.4	1.0	8.5	5.0	34.7	14.4	8.0
SA9.0	10.0	12.2	1.0	9.0	1.0	29.5	16.9	9.0
SA9.0A	10.0	11.1	1.0	9.0	1.0	32.5	15.4	9.0
SA10	11.1	13.6	1.0	10.0	1.0	26.6	18.8	10.0
SA10A	11.1	12.3	1.0	10.0	1.0	29.4	17.0	10.0
SA11	12.2	14.9	1.0	11.0	1.0	24.9	20.1	11.0
SA11A	12.2	13.5	1.0	11.0	1.0	27.4	18.2	11.0
SA12	13.3	16.3	1.0	12.0	1.0	22.7	22.0	12.0
SA12A	13.3	14.7	1.0	12.0	1.0	25.1	19.9	12.0
SA13	14.4	17.6	1.0	13.0	1.0	21.0	23.8	13.0
SA13A	14.4	15.9	1.0	13.0	1.0	23.2	21.5	13.0
SA14	15.6	19.1	1.0	14.0	1.0	19.4	25.8	14.0
SA14A	15.6	17.2	1.0	14.0	1.0	21.5	23.2	14.0
SA15	16.7	20.4	1.0	15.0	1.0	18.8	26.9	16.0
SA15A	16.7	18.5	1.0	15.0	1.0	20.6	24.4	16.0
SA16	17.8	21.8	1.0	16.0	1.0	17.6	28.8	19.0
SA16A	17.8	19.7	1.0	16.0	1.0	19.2	26.0	17.0
SA17	18.9	23.1	1.0	17.0	1.0	16.4	30.5	20.0
SA17A	18.9	20.9	1.0	17.0	1.0	18.1	27.6	19.0
SA18	20.0	24.4	1.0	18.0	1.0	15.5	32.2	21.0
SA18A	20.0	22.1	1.0	18.0	1.0	17.2	29.2	20.0
SA20	22.2	27.1	1.0	20.0	1.0	13.9	35.8	25.0
SA20A	22.2	24.5	1.0	20.0	1.0	15.4	32.4	23.0
SA22	24.4	29.8	1.0	22.0	1.0	12.7	39.4	28.0
SA22A	24.4	26.9	1.0	22.0	1.0	14.1	35.5	25.0
SA24	26.7	32.6	1.0	24.0	1.0	11.6	43.0	31.0
SA24A	26.7	29.5	1.0	24.0	1.0	12.8	38.9	28.0
SA26	28.9	35.3	1.0	26.0	1.0	10.7	46.6	31.0
SA26A	28.9	31.9	1.0	26.0	1.0	11.9	42.1	30.0
SA28	31.1	38.0	1.0	28.0	1.0	9.9	50.0	35.0
SA28A	31.1	34.4	1.0	28.0	1.0	11.0	45.4	31.0
SA30	33.3	40.7	1.0	30.0	1.0	9.3	53.5	39.0
SA30A	33.3	36.8	1.0	30.0	1.0	10.3	48.4	36.0
SA33	36.7	44.9	1.0	33.0	1.0	8.5	59.0	42.0
SA33A	36.7	40.6	1.0	33.0	1.0	9.4	53.3	39.0
SA36	40.0	48.9	1.0	36.0	1.0	7.8	64.3	46.0
SA36A	40.0	44.2	1.0	36.0	1.0	8.6	58.1	41.0

Certificate Number: Q10561

Certificate Number: E17276

ELECTRICAL CHARACTERISTICS (Rating at 25°C ambient temperature unless otherwise specified)

TYPE	Breakdown Voltage @ It (Note 1)			Working Peak Reverse Voltage	Maximum Reverse Leakage @ V_{RWM}	Maximum Reverse Current	Maximum Clamping Voltage @ I_{RSM}	Maximum Voltage Temperature Variation of V_{BR}
	V_{BR} (V)		It	V_{RWM}	I_R	I_{RSM}	V_{RSM}	
	Min.	Max.	(mA)	(V)	(μA)	(A)	(V)	(mV / °C)
SA40	44.4	54.3	1.0	40.0	1.0	7.0	71.4	51.0
SA40A	44.4	49.1	1.0	40.0	1.0	7.8	64.5	46.0
SA43	47.8	58.4	1.0	43.0	1.0	6.5	76.7	55.0
SA43A	47.8	52.8	1.0	43.0	1.0	7.2	69.4	50.0
SA45	50.0	61.1	1.0	45.0	1.0	6.2	80.3	58.0
SA45A	50.0	55.3	1.0	45.0	1.0	6.9	72.7	52.0
SA48	53.3	65.1	1.0	48.0	1.0	5.8	85.5	63.0
SA48A	53.3	58.9	1.0	48.0	1.0	6.5	77.4	56.0
SA51	56.7	69.3	1.0	51.0	1.0	5.5	91.1	66.0
SA51A	56.7	62.7	1.0	51.0	1.0	6.1	82.4	61.0
SA54	60.0	73.3	1.0	54.0	1.0	5.2	96.3	71.0
SA54A	60.0	66.3	1.0	54.0	1.0	5.7	87.1	65.0
SA58	64.4	78.7	1.0	58.0	1.0	4.9	103	78.0
SA58A	64.4	71.2	1.0	58.0	1.0	5.3	93.6	70.0
SA60	66.7	81.5	1.0	60.0	1.0	4.7	107	80.0
SA60A	66.7	73.7	1.0	60.0	1.0	5.2	96.8	71.0
SA64	71.1	86.9	1.0	64.0	1.0	4.4	114	86.0
SA64A	71.1	78.6	1.0	64.0	1.0	4.9	103	76.0
SA70	77.8	95.1	1.0	70.0	1.0	4.0	125	94.0
SA70A	77.8	86.0	1.0	70.0	1.0	4.4	113	85.0
SA75	83.3	102	1.0	75.0	1.0	3.7	134	101
SA75A	83.3	92.1	1.0	75.0	1.0	4.1	121	91.0
SA78	86.7	106	1.0	78.0	1.0	3.6	139	105
SA78A	86.7	95.8	1.0	78.0	1.0	4.0	126	95.0
SA85	94.4	115	1.0	85.0	1.0	3.3	151	114
SA85A	94.4	104	1.0	85.0	1.0	3.6	137	103
SA90	100	122	1.0	90.0	1.0	3.1	160	121
SA90A	100	111	1.0	90.0	1.0	3.4	146	110
SA100	111	136	1.0	100	1.0	2.8	179	135
SA100A	111	123	1.0	100	1.0	3.1	162	123
SA110	122	149	1.0	110	1.0	2.6	196	148
SA110A	122	135	1.0	110	1.0	2.8	177	133
SA120	133	163	1.0	120	1.0	2.3	214	162
SA120A	133	147	1.0	120	1.0	2	193	146
SA130	144	176	1.0	130	1.0	2.2	231	175
SA130A	144	159	1.0	130	1.0	2.4	209	158
SA150	167	204	1.0	150	1.0	1.9	268	203
SA150A	167	185	1.0	150	1.0	2.1	243	184
SA160	178	218	1.0	160	1.0	1.7	287	217
SA160A	178	197	1.0	160	1.0	1.9	259	196
SA170	189	231	1.0	170	1.0	1.6	304	230
SA170A	189	209	1.0	170	1.0	1.8	275	208

Notes:

(1) V_{BR} measured after It applied for 300 μs., It = square wave pulse or equivalent.

(2) V_F = 3.5 Vmax., I_F = 35 Amps. (6.8 Volts thru 91 Volts)

V_F = 5.0 Vmax., I_F = 35 Amps. (150 Volts thru 200 Volts) per 1/2 square or equivalent sine wave.

PW = 8.3 ms, duty cycle = 4 pulses per minute maximum.

(3) For bidirectional types with V_{WM} of 10 Volts and less, the I_R limit is doubled

(4) For the bidirectional SA5.0CA, the maximum V_{BR} is 7.25V

RATING AND CHARACTERISTIC CURVES (SA5.0 - SA170A)

FIG.1 - PULSE DERATING CURVE

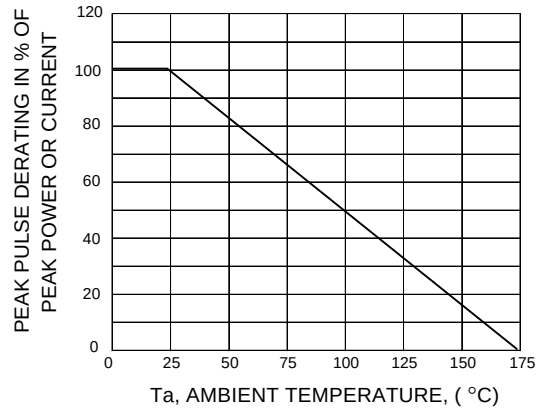

FIG.2 - MAXIMUM NON-REPETITIVE SURGE CURRENT

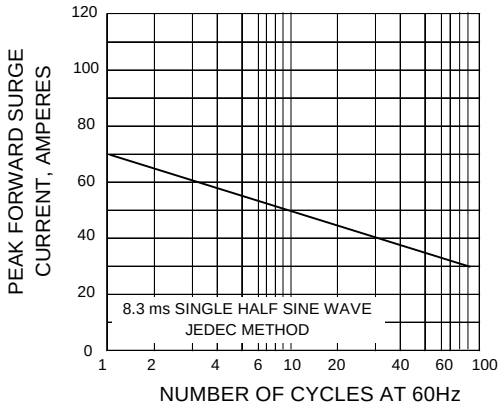

FIG.3 - STEADY STATE POWER DERATING

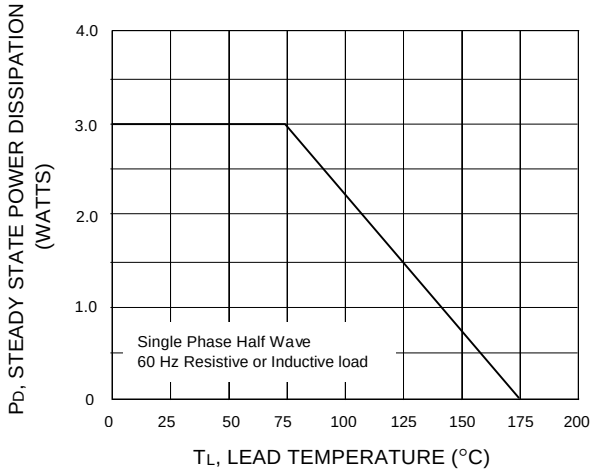

FIG.4 - PULSE RATING CURVE

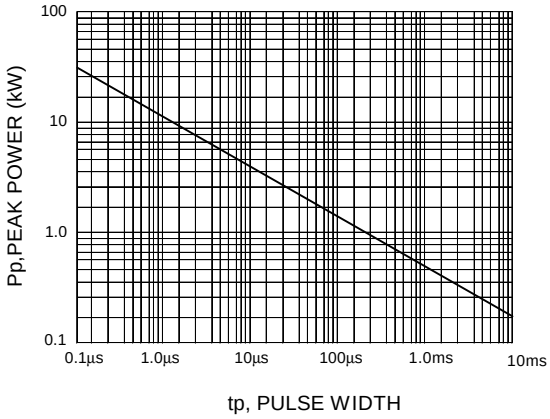

FIG.5 - PULSE WAVEFORM