



Certificate Number: Q10561



Certificate Number: E17276

SA5.0 - SA170A

V_{BR} : 6.8 - 200 Volts**P_{PK} : 500 Watts**

FEATURES :

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

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

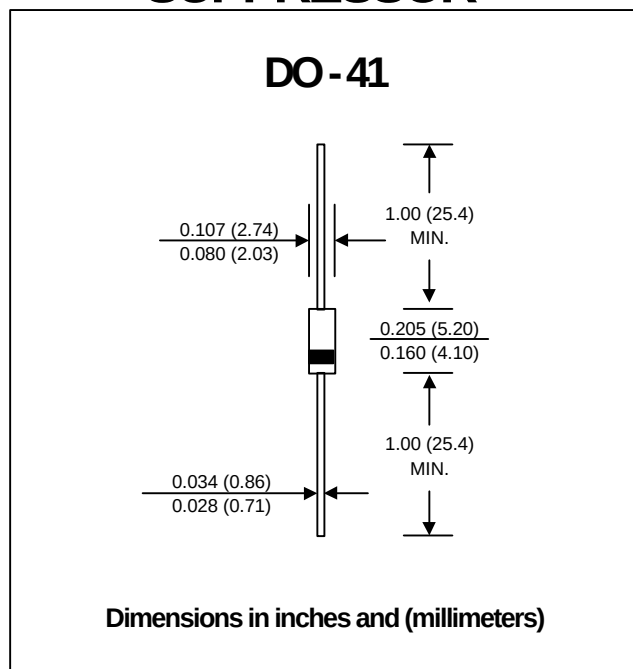
Rating at 25 °C ambient temperature unless otherwise specified.

Rating	Symbol	Value	Unit
Peak Power Dissipation at T _a = 25 °C, T _p =1ms (Note1)	P _{PK}	Minimum 500	Watts
Steady State Power Dissipation at T _L = 75 °C Lead Lengths 0.375", (9.5mm) (Note 2)	P _D	3.0	Watts
Peak Forward Surge Current, 8.3ms Single Half Sine-Wave Superimposed on Rated Load (JEDEC Method) (Note 3)	I _{FSM}	70	Amps.
Operating and Storage Temperature Range	T _J , T _{STG}	- 65 to + 175	°C

Note :

- (1) Non-repetitive Current pulse, per Fig. 5 and derated above T_a = 25 °C per Fig. 1
- (2) Mounted on Copper Leaf area of 1.57 in² (40mm²).
- (3) 8.3 ms single half sine-wave, duty cycle = 4 pulses per minutes maximum.

TRANSIENT VOLTAGE SUPPRESSOR



UPDATE : SEPTEMBER 18, 2000



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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 @ VRWM	Maximum Reverse Current	Maximum Clamping Voltage @ IRSM	Maximum Voltage Temperature Variation of VBR				
	VBR (V)		It						VRWM	IR	IRSM	VRSM
	Min.	Max.	(mA)						(V)	(μA)	(A)	(V)
SA5.0	6.40	7.3	10	5.0	600	52.0	9.6	5.0				
SA5.0A	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				

ELECTRICAL CHARACTERISTICS

Rating at = 25 °C ambient temperature unless otherwise specified

TYPE	Breakdown Voltage @ It (Note 1)		Working Peak Reverse Voltage	Maximum Reverse Leakage @ VRWM	Maximum Reverse Current	Maximum Clamping Voltage @ IRSM	Maximum Voltage Temperature Variation of VBR
	VBR (V)		VRWM	IR	IRSM	VRSM	(mV / °C)
	Min.	Max.	(mA)	(V)	(µA)	(A)	
SA36	40.0	48.9	1.0	36.0	1.0	7.8	46.0
SA36A	40.0	44.2	1.0	36.0	1.0	8.6	41.0
SA40	44.4	54.3	1.0	40.0	1.0	7.0	51.0
SA40A	44.4	49.1	1.0	40.0	1.0	7.8	46.0
SA43	47.8	58.4	1.0	43.0	1.0	6.5	55.0
SA43A	47.8	52.8	1.0	43.0	1.0	7.2	50.0
SA45	50.0	61.1	1.0	45.0	1.0	6.2	58.0
SA45A	50.0	55.3	1.0	45.0	1.0	6.9	52.0
SA48	53.3	65.1	1.0	48.0	1.0	5.8	63.0
SA48A	53.3	58.9	1.0	48.0	1.0	6.5	56.0
SA51	56.7	69.3	1.0	51.0	1.0	5.5	66.0
SA51A	56.7	62.7	1.0	51.0	1.0	6.1	61.0
SA54	60.0	73.3	1.0	54.0	1.0	5.2	71.0
SA54A	60.0	66.3	1.0	54.0	1.0	5.7	65.0
SA58	64.4	78.7	1.0	58.0	1.0	4.9	78.0
SA58A	64.4	71.2	1.0	58.0	1.0	5.3	70.0
SA60	66.7	81.5	1.0	60.0	1.0	4.7	80.0
SA60A	66.7	73.7	1.0	60.0	1.0	5.2	71.0
SA64	71.1	86.9	1.0	64.0	1.0	4.4	86.0
SA64A	71.1	78.6	1.0	64.0	1.0	4.9	76.0
SA70	77.8	95.1	1.0	70.0	1.0	4.0	125
SA70A	77.8	86.0	1.0	70.0	1.0	4.4	113
SA75	83.3	102	1.0	75.0	1.0	3.7	134
SA75A	83.3	92.1	1.0	75.0	1.0	4.1	121
SA78	86.7	106	1.0	78.0	1.0	3.6	139
SA78A	86.7	95.8	1.0	78.0	1.0	4.0	126
SA85	94.4	115	1.0	85.0	1.0	3.3	151
SA85A	94.4	104	1.0	85.0	1.0	3.6	137
SA90	100	122	1.0	90.0	1.0	3.1	160
SA90A	100	111	1.0	90.0	1.0	3.4	146
SA100	111	136	1.0	100	1.0	2.8	179
SA100A	111	123	1.0	100	1.0	3.1	162
SA110	122	149	1.0	110	1.0	2.6	196
SA110A	122	135	1.0	110	1.0	2.8	177
SA120	133	163	1.0	120	1.0	2.3	214
SA120A	133	147	1.0	120	1.0	2	193
SA130	144	176	1.0	130	1.0	2.2	231
SA130A	144	159	1.0	130	1.0	2.4	209
SA150	167	204	1.0	150	1.0	1.9	268
SA150A	167	185	1.0	150	1.0	2.1	243
SA160	178	218	1.0	160	1.0	1.7	287
SA160A	178	197	1.0	160	1.0	1.9	259
SA170	189	231	1.0	170	1.0	1.6	304
SA170A	189	209	1.0	170	1.0	1.8	275

Note:

- (1) VBR measured after It applied for 300 µs., It = square wave pulse or equivalent.
- (2) VF = 3.5 Vmax., IF = 35 Amps. (6.8 Volts thru 91 Volts)
VF = 5.0 Vmax., IF = 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.

RATING AND CHARACTERISTIC CURVES (SA5.0 - SA170A)

FIG.1 - PULSE DERATING CURVE

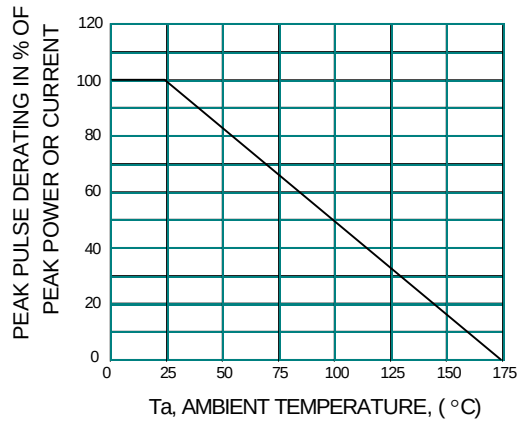


FIG.2 - MAXIMUM NON-REPETITIVE SURGE CURRENT

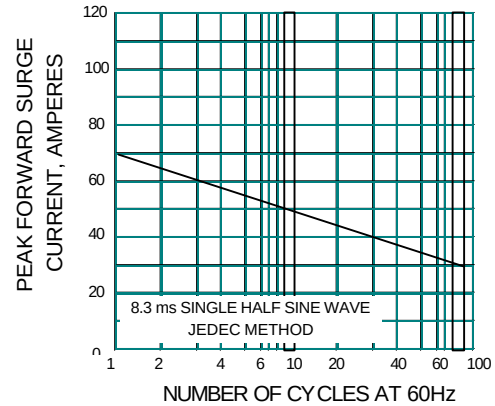


FIG.3 - STEADY STATE POWER DERATING

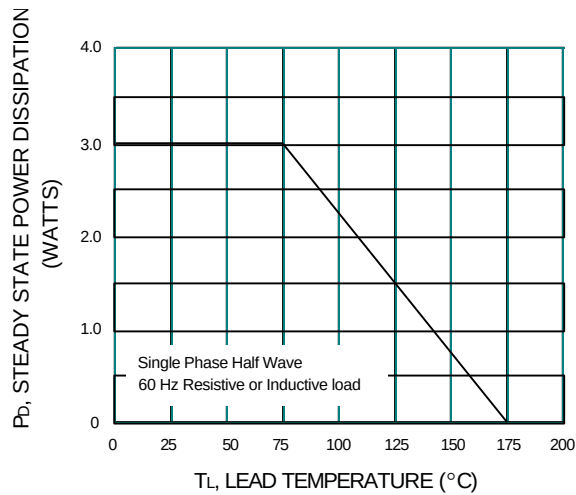


FIG.4 - PULSE RATING CURVE

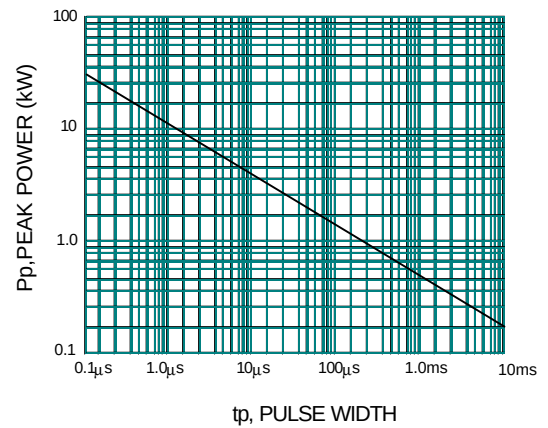


FIG.5 - PULSE WAVEFORM

