

SA5.0 THRU SA170CA

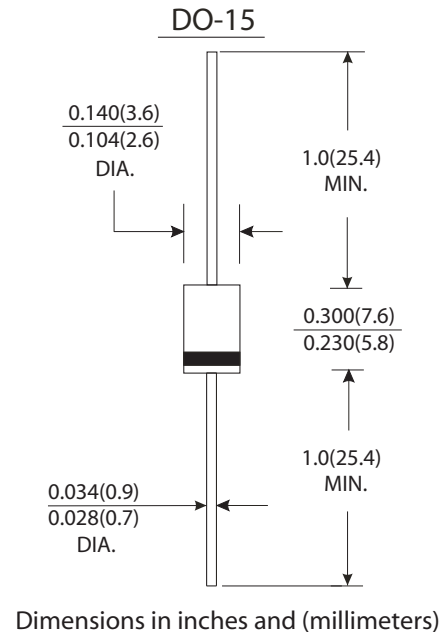
POWER 500Watts
VOLTAGE 5.0 to 170 Volts

Features

- Plastic package has Underwriters Laboratory flammability classification 94V-0
- Glass passivated junction
- 500W peak pulse power surge capability with a 10/100 μ S waveform, repetition rate(duty cycle) : 0.01%
- Excellent clamping capability
- Low incremental surge resistance
- Very fast response time
- High temperature soldering guaranteed : 265 °C/10 seconds, 0.375"(9.5mm) lead length, 5lbs. (2.3Kg) tension

Mechanical Data

- Case : JEDEC DO-15 molded plastic body over passivated junction
- Terminals : Solder plated axial leads, solderable per MIL-STD-750, method 2026
- Polarity : For uni-directional types the color band denotes cathode, which is positive with respect to the anode under normal TVS operation
- Mounting Position : Any
- Weight : 0.014 ounce, 0.40 gram



Devices For Bidirectional Applications

- For bi-directional use C or CA suffix. (e.g. SA5.0C, SA170CA)
Electrical characteristics apply in both directions.

Maximum Ratings And Electrical Characteristics

(Ratings at 25 °C ambient temperature unless otherwise specified)

	Symbols	Values	Units
Peak power dissipation with a 10/1000 μ S waveform (Note 1. Fig. 1)	PPPM	500 (MIN.)	Watts
Peak pulse current with a 10/1000 μ S waveform (Note 1)	I _{PPM}	See next table	Amps
Steady state power dissipation at T _A =75 °C lead length 0.375"(9.5mm) (Note2)	P _{M(AV)}	3.0	Watts
Peak forward surge current, 10mm single half sine-wave unidirectional only	I _{FSM}	70	Amps
Maximum instantaneous forward voltage at 35A for unidirectional only	V _F	3.5	Volts
Operating junction and storage temperature range	T _J ,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) Mounted on copper pads area of 1.6 × 1.6"(40 × 40mm) per Fig.5
- (3) 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulse per minute maximum.



ELECTRICAL CHARACTERISTIC at (TA=25 °C unless other specified)

Device Type	Breakdown Voltage V _(BR) at I _T ⁽¹⁾ (V)		Test Current I _T (mA)	Stand-off Voltage V _{WM} (V)	Maximum Reverse Leakage at V _{WM} I _D ⁽³⁾ (μA)	Maximum Peak Pulse Current I _{PPM} ⁽²⁾ (A)	Maximum Clamping Voltage at I _{PPM} V _C (V)	Maximum Temperature Coefficient of V _(BR) (mV / °C)
	MIN	MAX						
SA5.0 (C)	6.40	7.30	10	5.0	600	52.1	9.6	5.0
SA5.0 (C)A ⁽⁴⁾	6.40	7.07	10	5.0	600	54.3	9.2	5.0
SA6.0 (C)	6.67	8.15	10	6.0	600	43.9	11.4	5.0
SA6.0 (C)A	6.67	7.37	10	6.0	600	48.5	10.3	5.0
SA6.5 (C)	7.22	8.82	10	6.5	400	40.7	12.3	5.0
SA6.5 (C)A	7.22	7.98	10	6.5	400	44.7	11.2	5.0
SA7.0 (C)	7.78	9.51	10	7.0	150	37.6	13.3	6.0
SA7.0 (C)A	7.78	8.60	10	7.0	150	41.7	12.0	6.0
SA7.5 (C)	8.33	10.2	1.0	7.5	50	35.0	14.3	7.0
SA7.5 (C)A	8.33	9.21	1.0	7.5	50	38.8	12.9	7.0
SA8.0 (C)	8.89	10.9	1.0	8.0	25	33.3	15.0	7.0
SA8.0 (C)A	8.89	9.83	1.0	8.0	25	36.8	13.6	7.0
SA8.5 (C)	9.44	11.5	1.0	8.5	10	31.4	15.9	8.0
SA8.5 (C)A	9.44	10.4	1.0	8.5	10	34.7	14.4	8.0
SA9.0 (C)	10.0	12.2	1.0	9.0	5.0	29.6	16.9	9.0
SA9.0 (C)A	10.0	11.1	1.0	9.0	5.0	32.5	15.4	9.0
SA10 (C)	11.1	13.6	1.0	10.0	1.0	26.6	18.8	10.0
SA10 (C)A	11.1	12.3	1.0	10.0	1.0	29.4	17.0	10.0
SA11 (C)	12.2	14.9	1.0	11.0	1.0	24.9	20.1	11.0
SA11 (C)A	12.2	13.5	1.0	11.0	1.0	27.5	18.2	11.0
SA12 (C)	13.3	16.3	1.0	12.0	1.0	22.7	22.0	12.0
SA12 (C)A	13.3	14.7	1.0	12.0	1.0	25.1	19.9	12.0
SA13 (C)	14.4	17.6	1.0	13.0	1.0	21.0	23.8	13.0
SA13 (C)A	14.4	15.9	1.0	13.0	1.0	23.3	21.5	13.0
SA14 (C)	15.6	19.1	1.0	14.0	1.0	19.4	25.8	14.0
SA14 (C)A	15.6	17.2	1.0	14.0	1.0	21.6	23.2	14.0
SA15 (C)	16.7	20.4	1.0	15.0	1.0	18.6	26.9	16.0
SA15 (C)A	16.7	18.5	1.0	15.0	1.0	20.5	24.4	16.0
SA16 (C)	17.8	21.8	1.0	16.0	1.0	17.4	28.8	19.0
SA16 (C)A	17.8	19.7	1.0	16.0	1.0	19.2	26.0	17.0
SA17 (C)	18.9	23.1	1.0	17.0	1.0	16.4	30.5	20.0
SA17 (C)A	18.9	20.9	1.0	17.0	1.0	18.1	27.6	19.0
SA18 (C)	20.0	24.4	1.0	18.0	1.0	15.5	32.2	21.0
SA18 (C)A	20.0	22.1	1.0	18.0	1.0	17.1	29.2	20.0
SA20 (C)	22.2	27.1	1.0	20.0	1.0	14.0	35.8	25.0
SA20 (C)A	22.2	24.5	1.0	20.0	1.0	15.4	32.4	23.0
SA22 (C)	24.4	29.8	1.0	22.0	1.0	22.7	39.4	28.0
SA22 (C)A	24.4	26.9	1.0	22.0	1.0	14.1	35.5	25.0
SA24 (C)	26.7	32.6	1.0	24.0	1.0	11.6	43.0	31.0
SA24 (C)A	26.7	29.5	1.0	24.0	1.0	12.9	38.9	28.0
SA26 (C)	28.9	35.3	1.0	26.0	1.0	10.7	46.6	31.0
SA26 (C)A	28.9	31.9	1.0	26.0	1.0	11.9	42.1	30.0
SA28 (C)	31.1	38.0	1.0	28.0	1.0	10.0	50.1	35.0
SA28 (C)A	31.1	34.4	1.0	28.0	1.0	11.0	45.4	31.0
SA30 (C)	33.3	40.7	1.0	30.0	1.0	9.3	53.5	39.0
SA30 (C)A	33.3	36.8	1.0	30.0	1.0	10	48.4	36.0
SA33 (C)	36.7	44.9	1.0	33.0	1.0	8.5	59.0	42.0
SA33 (C)A	36.7	40.6	1.0	33.0	1.0	9.4	53.3	39.0
SA36 (C)	40.0	48.9	1.0	36.0	1.0	7.8	64.3	46.0
SA36 (C)A	40.0	44.2	1.0	36.0	1.0	8.6	58.1	41.0
SA40 (C)	44.4	54.3	1.0	40.0	1.0	7.0	71.4	51.0
SA40 (C)A	44.4	49.1	1.0	40.0	1.0	7.8	64.5	46.0



ELECTRICAL CHARACTERISTIC at (TA=25 °C unless other specified)

Device Type	Breakdown Voltage V _(BR) at I _T ⁽¹⁾ (V)		Test Current I _T (mA)	Stand-off Voltage V _{WM} (V)	Maximum Reverse Leakage at V _{WM} I _D ⁽³⁾ (μA)	Maximum Peak Pulse Current I _{PPM} ⁽²⁾ (A)	Maximum Clamping Voltage at I _{PPM} V _C (V)	Maximum Temperature Coefficient of V _(BR) (mV /°C)
	MIN	MAX						
SA43 (C)	47.8	58.4	1.0	43.0	1.0	6.5	76.7	55.0
SA43 (C)A	47.8	52.8	1.0	43.0	1.0	7.2	69.4	50.0
SA45 (C)	50.0	61.1	1.0	45.0	1.0	6.2	80.3	58.0
SA45 (C)A	50.0	55.3	1.0	45.0	1.0	6.9	72.7	52.0
SA48 (C)	53.3	65.2	1.0	48.0	1.0	5.8	85.5	63.0
SA48 (C)A	53.3	58.9	1.0	48.0	1.0	6.5	77.4	56.0
SA51 (C)	56.7	69.3	1.0	51.0	1.0	5.5	91.1	66.0
SA51 (C)A	56.7	62.7	1.0	51.0	1.0	6.1	82.4	61.0
SA54 (C)	60.0	73.3	1.0	54.0	1.0	5.2	96.3	71.0
SA54 (C)A	60.0	66.3	1.0	54.0	1.0	5.7	87.1	65.0
SA58 (C)	64.4	78.7	1.0	58.0	1.0	4.9	103	78.0
SA58 (C)A	64.4	71.2	1.0	58.0	1.0	5.3	93.6	70.0
SA60 (C)	66.7	81.5	1.0	60.0	1.0	4.7	107	80.0
SA60 (C)A	66.7	73.7	1.0	60.0	1.0	5.2	96.8	71.0
SA64 (C)	71.1	86.9	1.0	64.0	1.0	4.4	114	86.0
SA64 (C)A	71.1	78.6	1.0	64.0	1.0	4.9	103	76.0
SA70 (C)	77.8	95.1	1.0	70.0	1.0	4.0	125	94.0
SA70 (C)A	77.8	86.0	1.0	70.0	1.0	4.4	113	85.0
SA75 (C)	83.3	102	1.0	75.0	1.0	3.7	134	101
SA75 (C)A	83.3	92.1	1.0	75.0	1.0	4.1	121	91.0
SA78 (C)	86.7	106	1.0	78.0	1.0	3.6	139	105
SA78 (C)A	86.7	95.8	1.0	78.0	1.0	4.0	126	95.0
SA85 (C)	94.4	115	1.0	85.0	1.0	3.3	151	114
SA85 (C)A	94.4	104	1.0	85.0	1.0	3.6	137	103
SA90 (C)	100	122	1.0	90.0	1.0	3.1	160	121
SA90 (C)A	100	111	1.0	90.0	1.0	3.4	146	110
SA100 (C)	111	136	1.0	100	1.0	2.8	179	135
SA100 (C)A	111	123	1.0	100	1.0	3.1	162	123
SA110 (C)	122	149	1.0	110	1.0	2.6	196	148
SA110 (C)A	122	135	1.0	110	1.0	2.8	177	133
SA120 (C)	133	163	1.0	120	1.0	2.3	214	162
SA120 (C)A	133	147	1.0	120	1.0	2.6	193	146
SA130 (C)	144	176	1.0	130	1.0	2.2	230	175
SA130 (C)A	144	159	1.0	130	1.0	2.4	209	158
SA150 (C)	167	204	1.0	150	1.0	1.9	268	203
SA150 (C)A	167	185	1.0	150	1.0	2.1	243	184
SA160 (C)	178	218	1.0	160	1.0	1.7	257	217
SA160 (C)A	178	197	1.0	160	1.0	1.9	259	196
SA170 (C)	189	231	1.0	170	1.0	1.6	304	230
SA170 (C)A	189	209	1.0	170	1.0	1.8	275	208

Notes: (1) Pulse test: t_p ≡ 50ms

(2) Surge current waveform per Fig. 3 and derate per Fig. 2

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

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

(5) All terms and symbols are consistent with ANSI/IEEE C62.35

RATINGS AND CHARACTERISTIC CURVES SA5.0 THRU SA170CA

Fig. 1D Peak Pulse Power Rating Curve

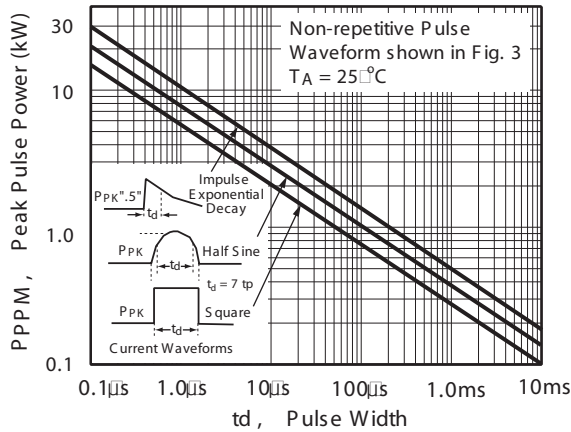


Fig. 2D Pulse Derating Curve

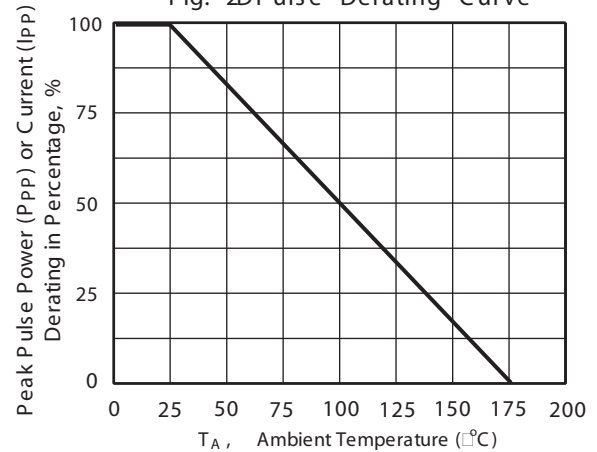


Fig. 3D Pulse Waveform

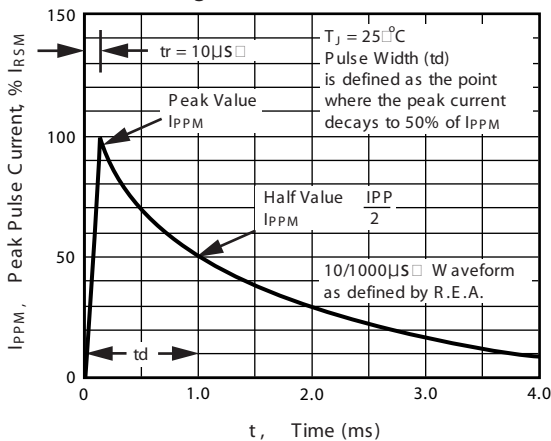


Fig. 4 - Maximum Non-Repetitive Forward Surge Current Uni-Directional Only

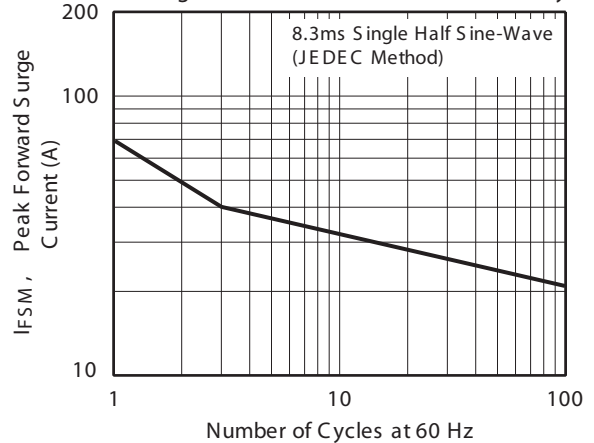


Fig. 5D Steady State Power Derating Curve

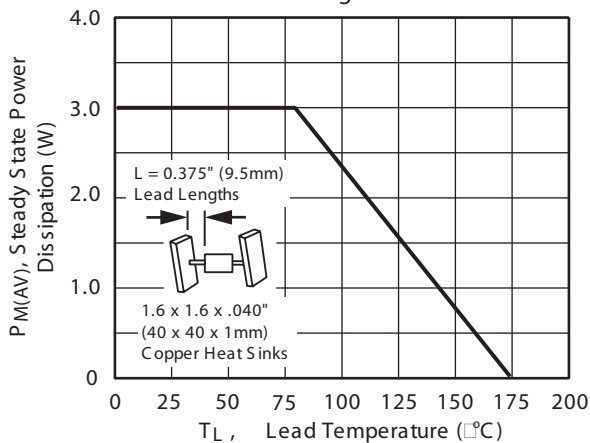
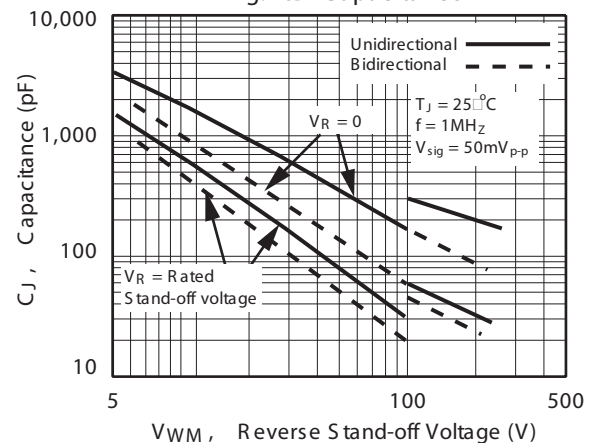


Fig. 6D Capacitance



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Fig. 7D Incremental Clamping Voltage Curve Unidirectional

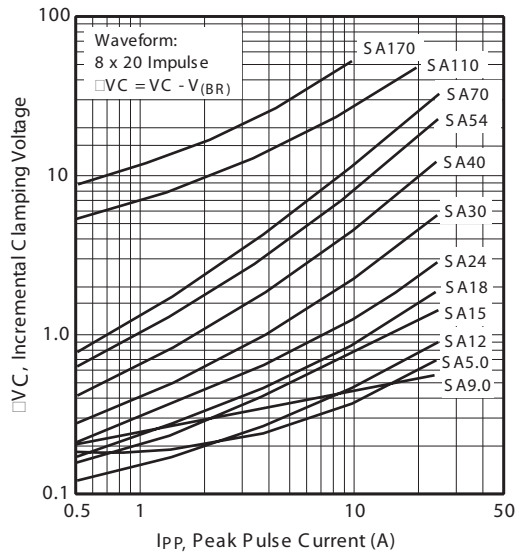


Fig. 8D Incremental Clamping Voltage Curve Unidirectional

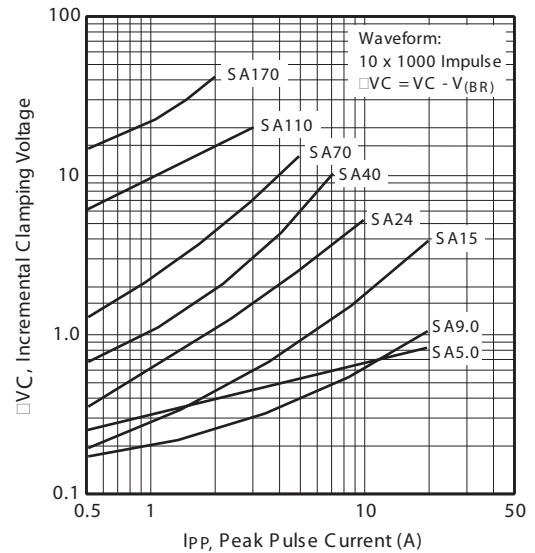


Fig. 9D Incremental Clamping Voltage Curve Bidirectional

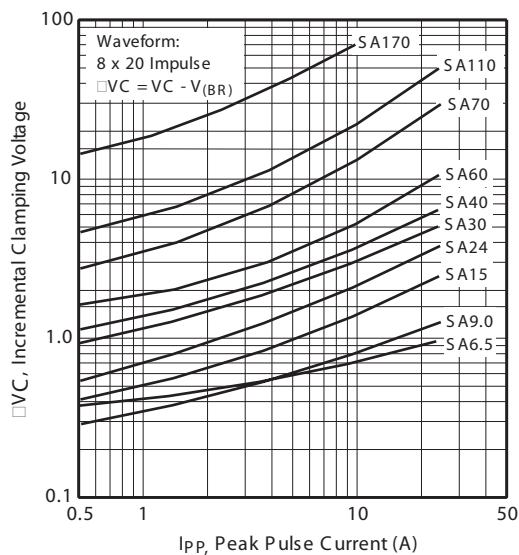
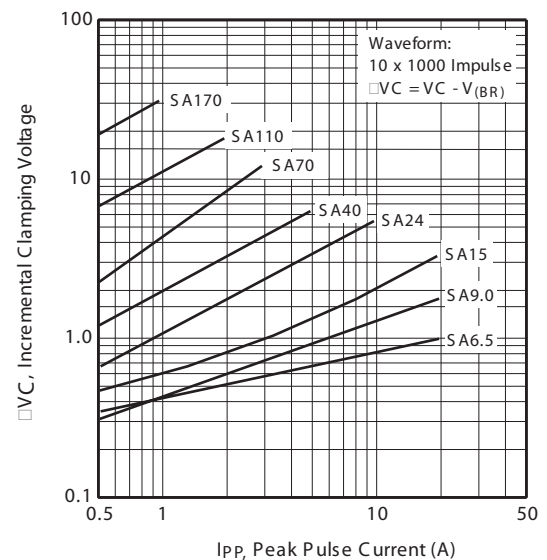


Fig. 10D Incremental Clamping Voltage Curve Bidirectional



RATINGS AND CHARACTERISTIC CURVES SA5.0 THRU SA170CA

Fig. 11D Typical Instantaneous Forward Voltage

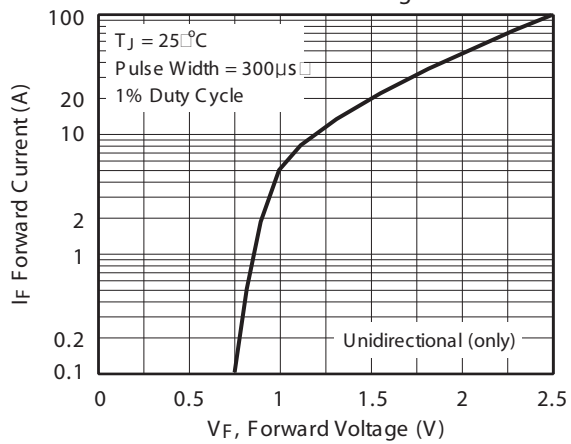


Fig. 12D Breakdown Voltage Temperature Coefficient Curve

