

500W,5 - 180V Transient Voltage Suppressors

Features

- Very fast response time
- Glass passivated junction
- Excellent clamping capability
- Moisture sensitivity: level 1, per J-STD-020
- Available in unidirectional and bidirectional
- Plastic package has underwriters Laboratory Flammability Classification 94V-0
- 500 W peak pulse power capability with a 10/1000 μ s waveform



DO-15(DO-204AC)

Applications

- SMPS
- Adapters
- Monitor

Absolute Maximum Ratings ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Ratings	Unit
Peak power dissipation with a 10/1000us waveform	P_{PPM}	500	W
Peak pulse current with a 10/1000us waveform	I_{PPM}	See Next Table	A
Power dissipation, on infinite heat sink at $T_L=75^\circ\text{C}$	P_D	3	W
Peak forward surge current, 8.3ms single half-sine wave	I_{FSM}	70	A
Typical Thermal Resistance , Junction to Ambient	$R_{\theta JA}$	60	$^\circ\text{C/W}$
Typical Thermal Resistance , Junction to Case	$R_{\theta JC}$	15	$^\circ\text{C/W}$
Typical Thermal Resistance , Junction to Lead	$R_{\theta JL}$	12	$^\circ\text{C/W}$
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175	$^\circ\text{C}$

Electrical Characteristics (TA = 25 °C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage VBR (Volts)		Test Current I _T (mA)	Stand off Voltage V _{WM} (Volts)	Maximum reverse leakage at V _{WM} I _D (μA)	Maximum Peak Pulse Current I _{PPM} (A)	Maximum Clamping Voltage at I _{PPM} V _C (Volts)
		Min	Max					
SA5.0	SA5.0C	6.40	7.30	10.0	5	600	52.1	9.6
SA5.0A	SA5.0CA	6.40	7.07	10.0	5	600	54.3	9.2
SA6.0	SA6.0C	6.67	8.15	10.0	6	600	43.9	11.4
SA6.0A	SA6.0CA	6.67	7.37	10.0	6	600	48.5	10.3
SA6.5	SA6.5C	7.22	8.82	10.0	6.5	400	40.7	12.3
SA6.5A	SA6.5CA	7.22	7.98	10.0	6.5	400	44.7	11.2
SA7.0	SA7.0C	7.78	9.51	10.0	7	150	37.6	13.3
SA7.0A	SA7.0CA	7.78	8.60	10.0	7	150	41.7	12.0
SA7.5	SA7.5C	8.33	10.20	1.0	7.5	50	35.0	14.3
SA7.5A	SA7.5CA	8.33	9.21	1.0	7.5	50	38.8	12.9
SA8.0	SA8.0C	8.89	10.90	1.0	8	25	33.3	15.0
SA8.0A	SA8.0CA	8.89	9.83	1.0	8	25	36.8	13.6
SA8.5	SA8.5C	9.44	11.50	1.0	8.5	10	31.4	15.9
SA8.5A	SA8.5CA	9.44	10.40	1.0	8.5	10	34.7	14.4
SA9.0	SA9.0C	10.0	12.20	1.0	9	5	29.6	16.9
SA9.0A	SA9.0CA	10.0	11.10	1.0	9	5	32.5	15.4
SA10	SA10C	11.1	13.6	1.0	10	1.0	26.6	18.8
SA10A	SA10CA	11.1	12.3	1.0	10	1.0	29.4	17.0
SA11	SA11C	12.2	14.9	1.0	11	1.0	24.9	20.1
SA11A	SA11CA	12.2	13.5	1.0	11	1.0	27.5	18.2
SA12	SA12C	13.3	16.3	1.0	12	1.0	22.7	22.0
SA12A	SA12CA	13.3	14.7	1.0	12	1.0	25.1	19.9
SA13	SA13C	14.4	17.6	1.0	13	1.0	21.0	23.8
SA13A	SA13CA	14.4	15.9	1.0	13	1.0	23.3	21.5
SA14	SA14C	15.6	19.1	1.0	14	1.0	19.4	25.8
SA14A	SA14CA	15.6	17.2	1.0	14	1.0	21.6	23.2
SA15	SA15C	16.7	20.4	1.0	15	1.0	18.6	26.9
SA15A	SA15CA	16.7	18.5	1.0	15	1.0	20.5	24.4
SA16	SA16C	17.8	21.8	1.0	16	1.0	17.4	28.8
SA16A	SA16CA	17.8	19.7	1.0	16	1.0	19.2	26.0
SA17	SA17C	18.9	23.1	1.0	17	1.0	16.4	30.5
SA17A	SA17CA	18.9	20.9	1.0	17	1.0	18.1	27.6
SA18	SA18C	20.0	24.4	1.0	18	1.0	15.5	32.2
SA18A	SA18CA	20.0	22.1	1.0	18	1.0	17.1	29.2

Electrical Characteristics (TA = 25 °C unless otherwise noted)

Part Number (Uni)	Part Number (Bi)	Breakdown Voltage VBR (Volts)		Test Current I _T (mA)	Stand off Voltage V _{WM} (Volts)	Maximum reverse leakage at V _{WM} I _D (μA)	Maximum Peak Pulse Current I _{ppM} (A)	Maximum Clamping Voltage at I _{ppM} V _C (Volts)
		Min	Max					
SA20	SA20C	22.2	27.1	1.0	20	1.0	14.0	35.8
SA20A	SA20CA	22.2	24.5	1.0	20	1.0	15.4	32.4
SA22	SA22C	24.4	29.8	1.0	22	1.0	13.1	39.4
SA22A	SA22CA	24.4	26.9	1.0	22	1.0	14.1	35.5
SA24	SA24C	26.7	32.6	1.0	24	1.0	11.6	43.0
SA24A	SA24CA	26.7	29.5	1.0	24	1.0	12.9	38.9
SA26	SA26C	28.9	35.3	1.0	26	1.0	10.7	46.6
SA26A	SA26CA	28.9	31.9	1.0	26	1.0	11.9	42.1
SA28	SA28C	31.1	38.0	1.0	28	1.0	10.0	50.1
SA28A	SA28CA	31.1	34.4	1.0	28	1.0	11.0	45.4
SA30	SA30C	33.3	40.7	1.0	30	1.0	9.3	53.5
SA30A	SA30CA	33.3	36.8	1.0	30	1.0	10.0	48.4
SA33	SA33C	36.7	44.9	1.0	33	1.0	8.5	59.0
SA33A	SA33CA	36.7	40.6	1.0	33	1.0	9.4	53.3
SA36	SA36C	40.0	48.9	1.0	36	1.0	7.8	64.3
SA36A	SA36CA	40.0	44.2	1.0	36	1.0	8.6	58.1
SA40	SA40C	44.4	54.3	1.0	40	1.0	7.0	71.4
SA40A	SA40CA	44.4	49.1	1.0	40	1.0	7.8	64.5
SA43	SA43C	47.8	58.4	1.0	43	1.0	6.5	76.7
SA43A	SA43CA	47.8	52.8	1.0	43	1.0	7.2	69.4
SA45	SA45C	50.0	61.1	1.0	45	1.0	6.2	80.3
SA45A	SA45CA	50.0	55.3	1.0	45	1.0	6.9	72.7
SA48	SA48C	53.3	65.2	1.0	48	1.0	5.8	85.5
SA48A	SA48CA	53.3	58.9	1.0	48	1.0	6.5	77.4
SA51	SA51C	56.7	69.3	1.0	51	1.0	5.5	91.1
SA51A	SA51CA	56.7	62.7	1.0	51	1.0	6.1	82.4
SA54	SA54C	60.0	73.3	1.0	54	1.0	5.2	96.3
SA54A	SA54CA	60.0	66.3	1.0	54	1.0	5.7	87.1
SA58	SA58C	64.4	78.7	1.0	58	1.0	4.9	103
SA58A	SA58CA	64.4	71.2	1.0	58	1.0	5.3	93.6
SA60	SA60C	66.7	81.5	1.0	60	1.0	4.7	107
SA60A	SA60CA	66.7	73.7	1.0	60	1.0	5.2	96.8
SA64	SA64C	71.1	86.9	1.0	64	1.0	4.4	114
SA64A	SA64CA	71.1	78.6	1.0	64	1.0	4.9	103



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Part Number (Uni)	Part Number (Bi)	Breakdown Voltage VBR (Volts)		Test Current I _T (mA)	Stand off Voltage V _{WM} (Volts)	Maximum reverse leakage at V _{WM} I _D (μA)	Maximum Peak Pulse Current I _{PPM} (A)	Maximum Clamping Voltage at I _{PPM} V _C (Volts)
		Min	Max					
SA70	SA70C	77.8	95.1	1.0	70	1.0	4.0	125
SA70A	SA70CA	77.8	86.0	1.0	70	1.0	4.4	113
SA75	SA75C	83.3	102	1.0	75	1.0	3.7	134
SA75A	SA75CA	83.3	92.1	1.0	75	1.0	4.1	121
SA78	SA78C	86.7	106	1.0	78	1.0	3.6	139
SA78A	SA78CA	86.7	95.8	1.0	78	1.0	4.0	126
SA85	SA85C	94.4	115	1.0	85	1.0	3.3	151
SA85A	SA85CA	94.4	104	1.0	85	1.0	3.6	137
SA90	SA90C	100	122	1.0	90	1.0	3.1	160
SA90A	SA90CA	100	111	1.0	90	1.0	3.4	146
SA100	SA100C	111	136	1.0	100	1.0	2.8	179
SA100A	SA100CA	111	123	1.0	100	1.0	3.1	162
SA110	SA110C	122	149	1.0	110	1.0	2.6	196
SA110A	SA110CA	122	135	1.0	110	1.0	2.8	177
SA120	SA120C	133	163	1.0	120	1.0	2.3	214
SA120A	SA120CA	133	147	1.0	120	1.0	2.6	193
SA130	SA130C	144	176	1.0	130	1.0	2.2	230
SA130A	SA130CA	144	159	1.0	130	1.0	2.4	209
SA150	SA150C	167	204	1.0	150	1.0	1.9	268
SA150A	SA150CA	167	185	1.0	150	1.0	2.1	243
SA160	SA160C	178	218	1.0	160	1.0	1.7	257
SA160A	SA160CA	178	197	1.0	160	1.0	1.9	259
SA170	SA170C	189	231	1.0	170	1.0	1.6	304
SA170A	SA170CA	189	209	1.0	170	1.0	1.8	275
SA180A	SA180CA	200	233	1.0	180	1.0	1.7	289

Note:

1. Valid provided that leads at a distance of 9.5 mm from case are kept at ambient temperature.

Ratings and Characteristics Curves

($T_A = 25^\circ\text{C}$ unless otherwise noted)

FIG.1-Peak Pulse Power Rating Curve

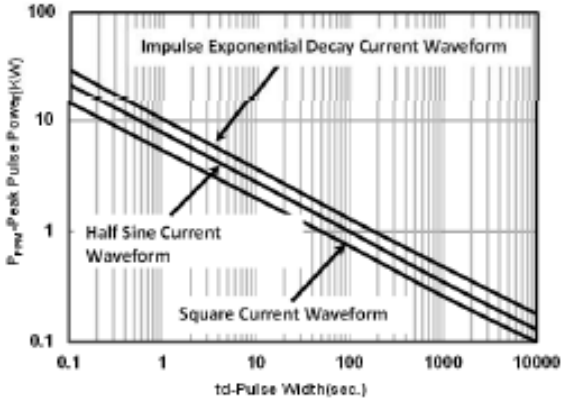


FIG.2-Pulse Derating Curve

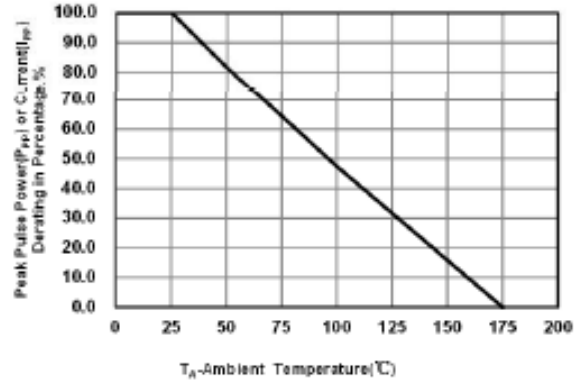


FIG.3-Pulse Waveform

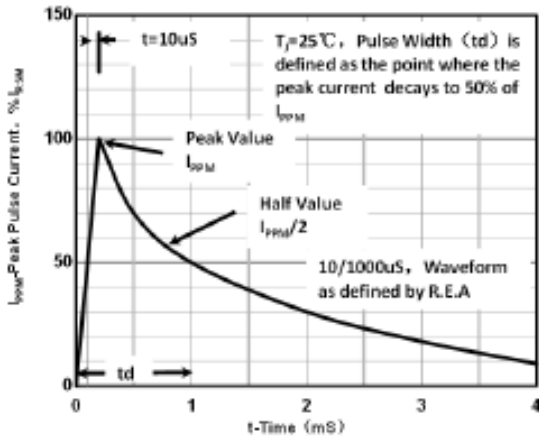


FIG.4-Capacitance

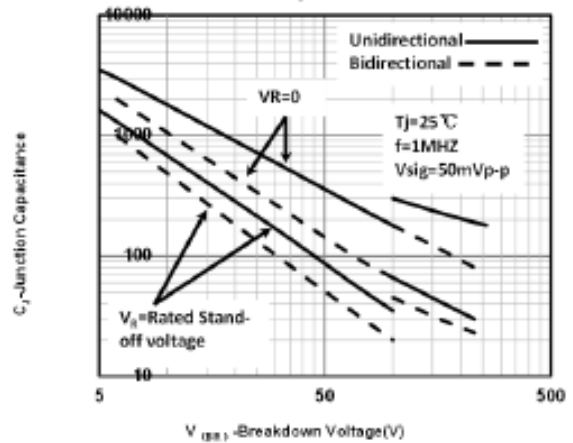


FIG5-Steady State Power Derating Curve

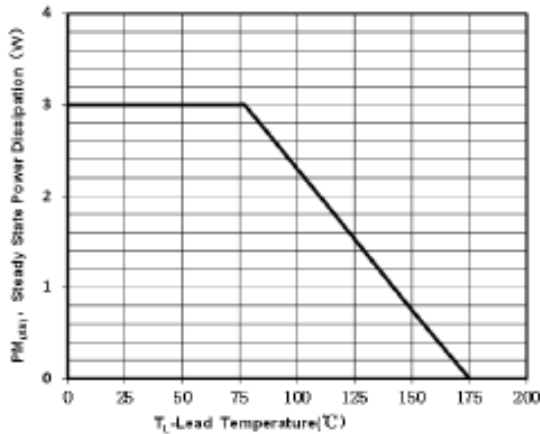
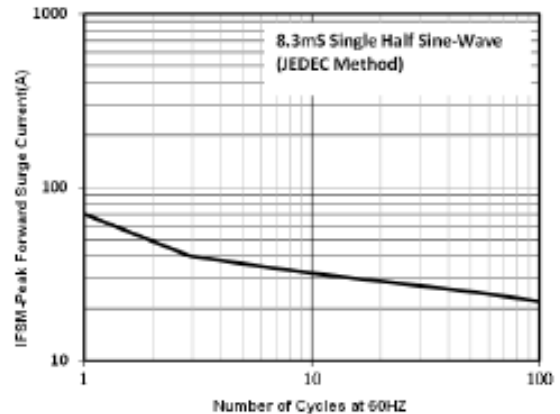
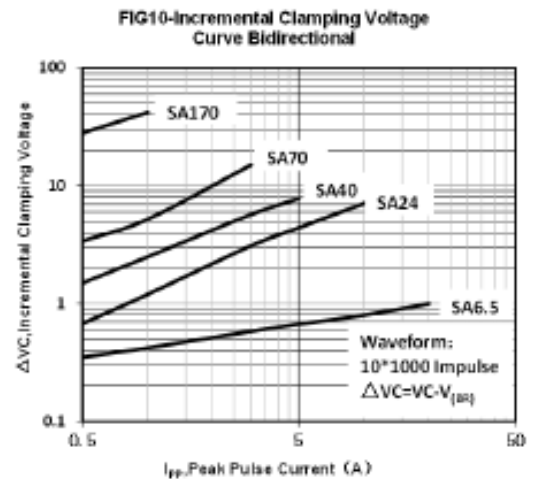
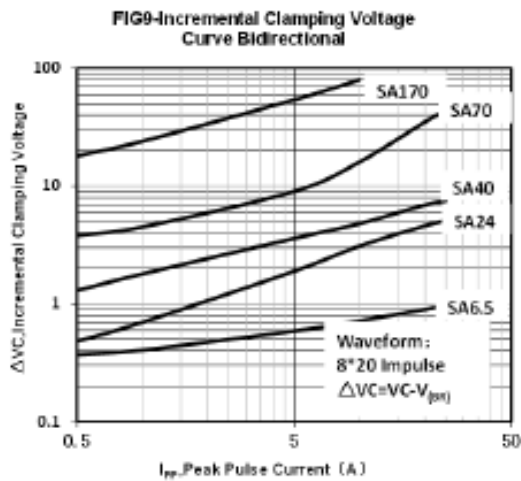
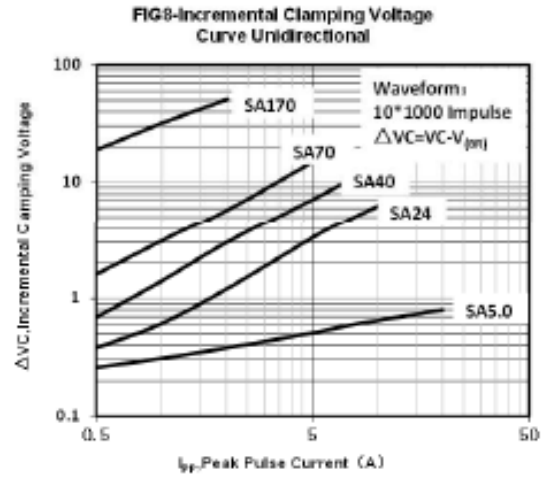
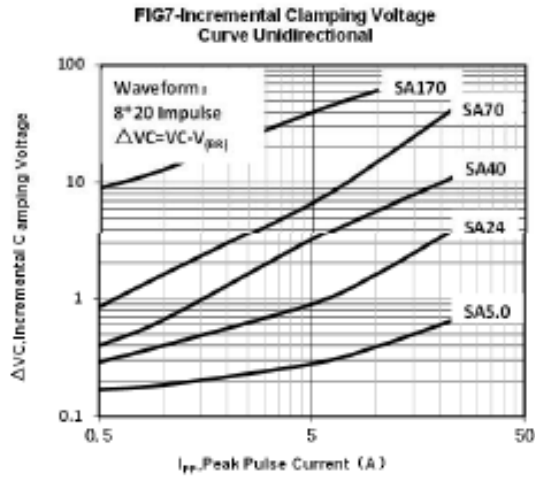


FIG6-Max.Non-Repetitive Forward Surge Current Uni-Directional Only

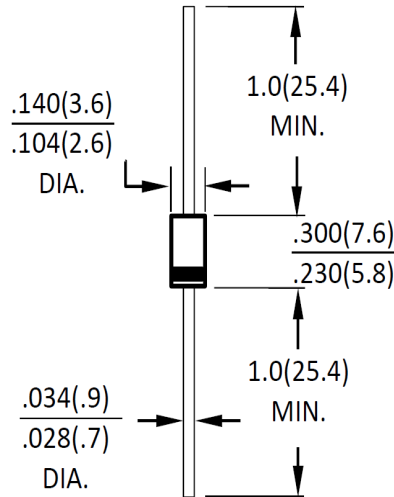




Package Outline Dimensions

in inches (millimeters)

DO-15(DO-204AC)



Dimensions in inches and (millimeters)

Revision History

Document Version	Date of release	Description of changes
Rev.A	2021.06.15	Released Datasheet
Rev.B	2023.11.28	Modify document format

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