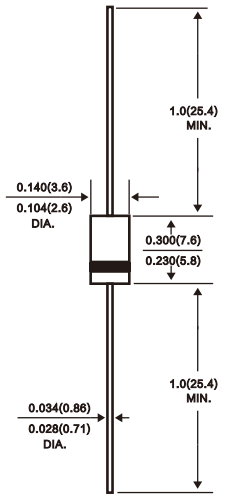
FEATURES

- Glass passivated chip junction
- Available in uni-directional and bi-directional
- 500 W peak pulse power capability with a 10/1000 µs waveform, repetitive rate (duty cycle): 0.01 %
- Excellent clamping capability
- Very fast response time
- Low incremental surge resistance
- Solder dip 275 °C max. 10 s, per JESD 22-B106
- AEC-Q101 qualified

DO−15(DO−204AC)



Dimensions in inches and (millimeters)

MECHANICAL DATA

Case: DO-204AC, molded epoxy over passivated chip Molding compound meets UL 94 V-0 flammability rating Base P/N-E3 - RoHS compliant, commercial grade Base P/NHE3 - RoHS compliant, AEC-Q101 qualified

Terminals: Matte tin plated leads, solderable per J-STD-002 and JESD 22-B102
E3 suffix meets JESD 201 class 1A whisker test, HE3 suffix meets JESD 201 class 2 whisker test

Polarity: For uni-directional types the color band denotes cathode end, no marking on bi-directional types

PRIMARY CHARACTERISTICS	
V_{WM}	5.0 V to 170 V
V_{BR} (uni-directional)	6.4 V to 209 V
V_{BR} (bi-directional)	6.4 V to 209 V
P_{PPM}	500 W
P_D	3.0 W
I_{FSM} (uni-directional only)	70 A
T_J max.	175 °C
Polarity	Uni-directional, bi-directional
Package	DO-204AC (DO-15)

MAXIMUM RATINGS (T_A = 25 °C unless otherwise noted)

PARAMETER	SYMBOL	VALUE	UNIT
Peak pulse power dissipation with a 10/1000 µs waveform (1) (fig. 1)	P_{PPM}	500	W
Peak pulse current with a 10/1000 µs waveform (1)	I_{PPM}	See next table	A
Power dissipation on infinite heatsink at T_L = 75 °C (fig. 5)	P_D	3.0	W
Peak forward surge current 10 ms single half sine-wave uni-directional only	I_{FSM}	70	A
Maximum instantaneous forward voltage at 100 A for uni-directional only (3)	V_F	3.5	V
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) 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

ELECTRICAL CHARACTERISTICS (T_A = 25 °C unless otherwise noted)

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} (3) I_D (µA)	MAXIMUM PEAK PULSE CURRENT I_{PPM} (2) (A)	MAXIMUM CLAMPING VOLTAGE AT I_{PPM} V_C (V)	MAXIMUM TEMPERATURE COEFFICENT AT V_{BR} (mV/°C)
	MIN.	MAX.						
SA5.0(CA)	6.40	7.07	10	5.0	600	54.3	9.2	5
SA6.0A(CA)	6.67	7.37	10	6.0	600	48.5	10.3	5
SA6.5A(CA)	7.22	7.98	10	6.5	400	44.7	11.2	5
SA7.0 A(CA)	7.78	8.60	10	7.0	150	41.7	12.0	6
SA7.5A(CA)	8.33	9.21	1.0	7.5	50	38.8	12.9	7
SA8.0A(CA)	8.89	9.83	1.0	8.0	25	36.8	13.6	7
SA8.5A(CA)	9.44	10.4	1.0	8.5	10	34.7	14.4	8
SA9.0A(CA)	10.0	11.1	1.0	9.0	5.0	32.5	15.4	9
SA10A(CA)	11.1	12.3	1.0	10	1.0	29.4	17.0	10
SA11A(CA)	12.2	13.5	1.0	11	1.0	27.5	18.2	11
SA12A(CA)	13.3	14.7	1.0	12	1.0	25.1	19.9	12
SA13A(CA)	14.4	15.9	1.0	13	1.0	23.3	21.5	13
SA14A(CA)	15.6	17.2	1.0	14	1.0	21.6	23.2	14
SA15A(CA)	16.7	18.5	1.0	15	1.0	20.5	24.4	16
SA16A(CA)	17.8	19.7	1.0	16	1.0	19.2	26.0	17
SA17A(CA)	18.9	20.9	1.0	17	1.0	18.1	27.6	19
SA18A(CA)	20.0	22.1	1.0	18	1.0	17.1	29.2	20
SA20A(CA)	22.2	24.5	1.0	20	1.0	15.4	32.4	23
SA22A(CA)	24.4	26.9	1.0	22	1.0	14.1	35.5	25
SA24A(CA)	26.7	29.5	1.0	24	1.0	12.9	38.9	28
SA26A(CA)	28.9	31.9	1.0	26	1.0	11.9	42.1	30
SA28A(CA)	31.1	34.4	1.0	28	1.0	11	45.4	31
SA30A(CA)	33.3	36.8	1.0	30	1.0	10	48.4	36
SA33A(CA)	36.7	40.6	1.0	33	1.0	9.4	53.3	39
SA36A(CA)	40.0	44.2	1.0	36	1.0	8.6	58.1	41
SA40A(CA)	44.4	49.1	1.0	40	1.0	7.8	64.5	46
SA43A(CA)	47.8	52.8	1.0	43	1.0	7.2	69.4	50
SA45A(CA)	50.0	55.3	1.0	45	1.0	6.9	72.7	52
SA48A(CA)	53.3	58.9	1.0	48	1.0	6.5	77.4	56
SA51A(CA)	56.7	62.7	1.0	51	1.0	6.1	82.4	61
SA54A(CA)	60.0	66.3	1.0	54	1.0	5.7	87.1	65
SA58A(CA)	64.4	71.2	1.0	58	1.0	5.3	93.6	70
SA60A(CA)	66.7	73.7	1.0	60	1.0	5.2	96.8	71
SA64A(CA)	71.1	78.6	1.0	64	1.0	4.9	103	76
SA70A(CA)	77.8	86.0	1.0	70	1.0	4.4	113	85
SA75A(CA)	83.3	92.1	1.0	75	1.0	4.1	121	91
SA78A(CA)	86.7	95.8	1.0	78	1.0	4	126	95
SA85A(CA)	94.4	104	1.0	85	1.0	3.6	137	103
SA90A(CA)	100	111	1.0	90	1.0	3.4	146	110
SA100A(CA)	111	123	1.0	100	1.0	3.1	162	123
SA110A(CA)	122	135	1.0	110	1.0	2.8	177	133
SA120A(CA)	133	147	1.0	120	1.0	2.6	193	146
SA130A(CA)	144	159	1.0	130	1.0	2.4	209	158
SA150A(CA)	167	185	1.0	150	1.0	2.1	243	184
SA160A(CA)	178	197	1.0	160	1.0	1.9	259	196
SA170A(CA)	189	209	1.0	170	1.0	1.8	275	208

Notes

(1) Pulse test: $t_p \leq$ 50 ms

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

(3) For bi-directional types with V_{WM} of 10 V and less the I_D limit is doubled

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

(5) All terms and symbols are consistent with ANSI/EEE CA62.35

RATINGS AND CHARACTERISTICS CURVES (T_A = 25 °C unless otherwise noted)

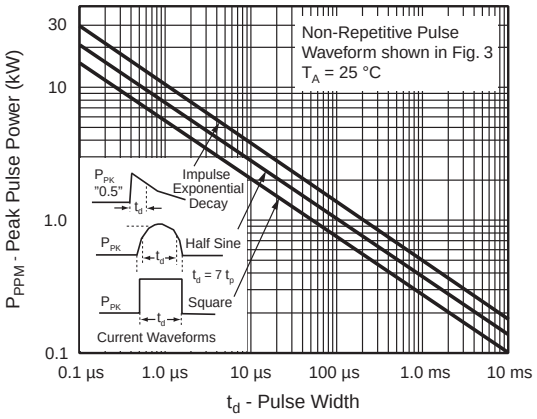


Fig. 1 - Peak Pulse Power Rating Curve

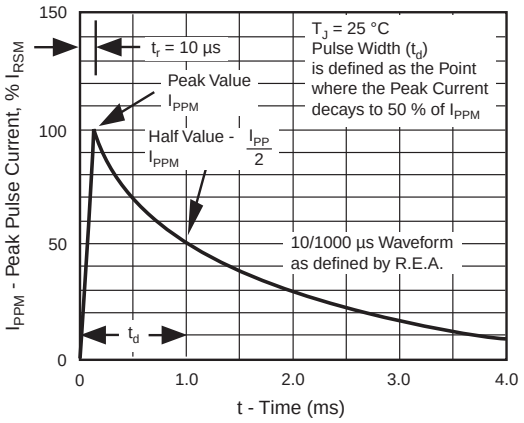


Fig. 3 - Pulse Waveform

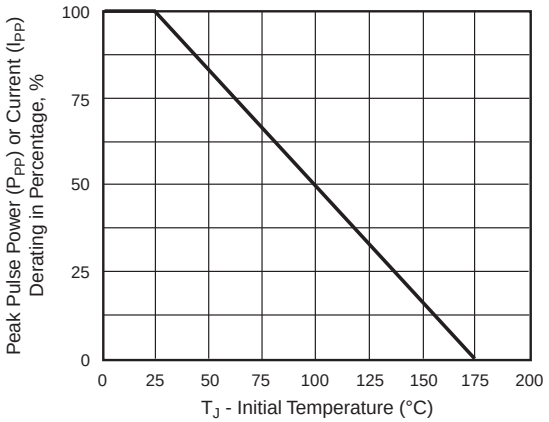


Fig. 2 - Pulse Derating Curve

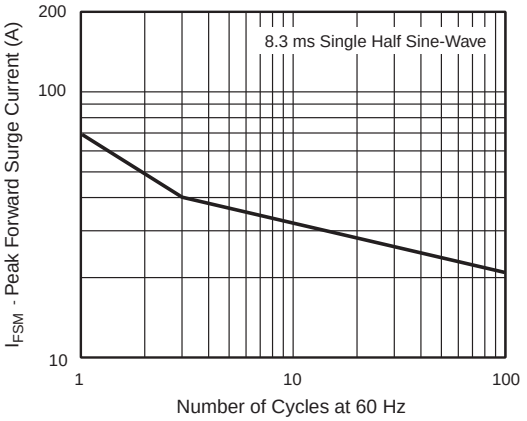


Fig. 4 - Maximum Non-Repetitive Forward Surge Current
Uni-Directional Only

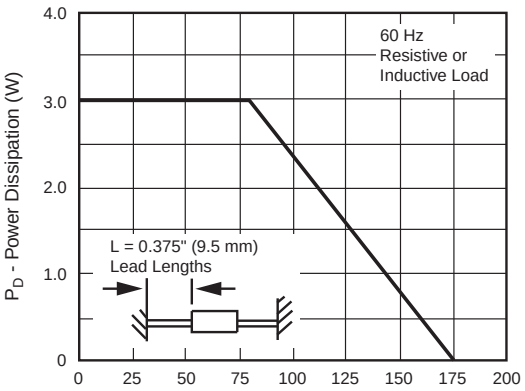


Fig. 5 - Steady State Power Derating Curve

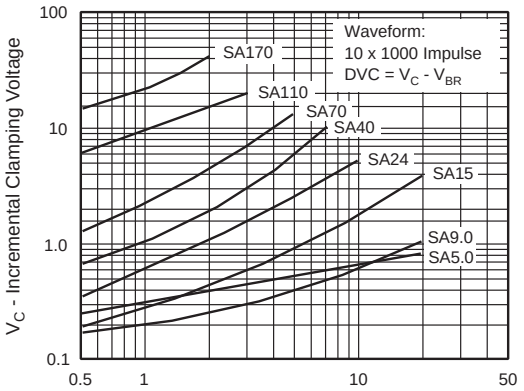


Fig. 8 - Incremental Clamping Voltage Curve Uni-Directional

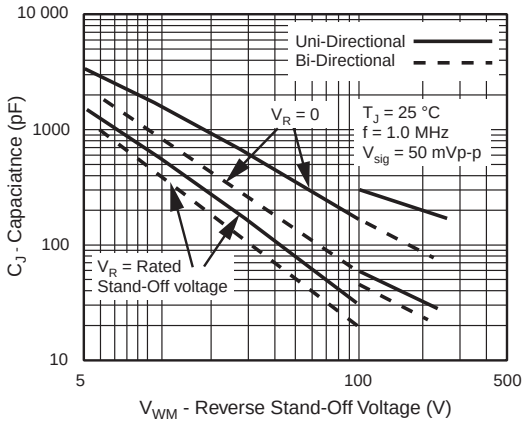


Fig. 6 - Capacitance

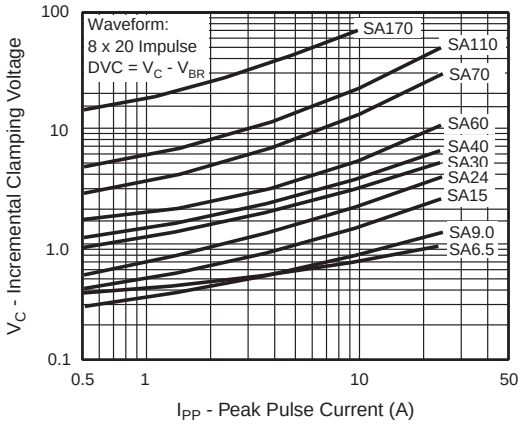


Fig. 9 - Incremental Clamping Voltage Curve Bi-Directional

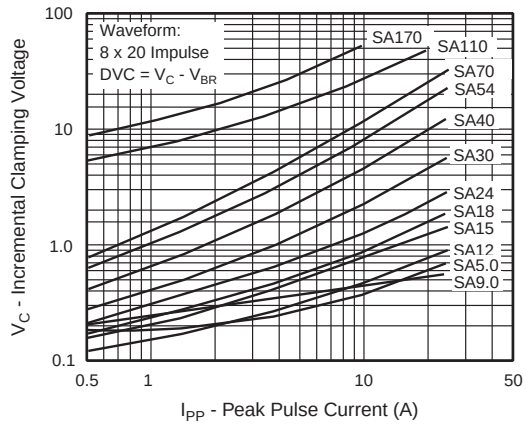


Fig. 7 - Incremental Clamping Voltage Curve Uni-Directional

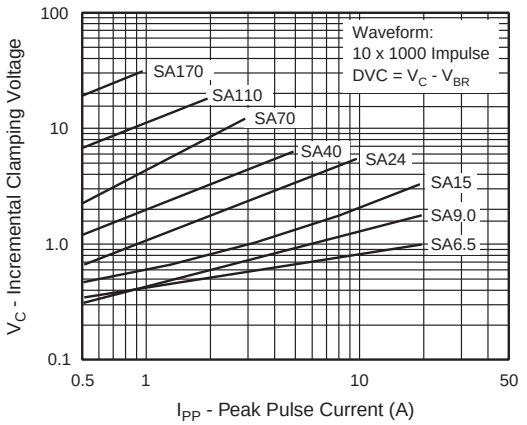


Fig. 10 - Incremental Clamping Voltage Curve Bi-Directional

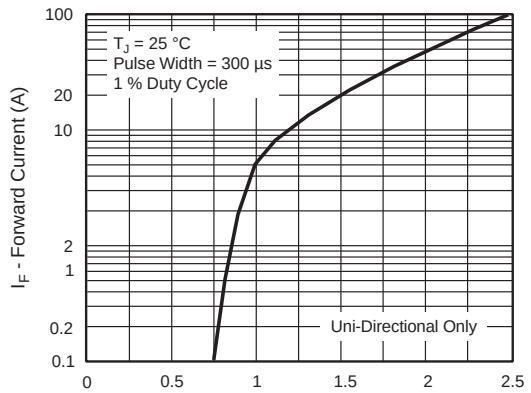


Fig. 11 - Typical Instantaneous Forward Voltage

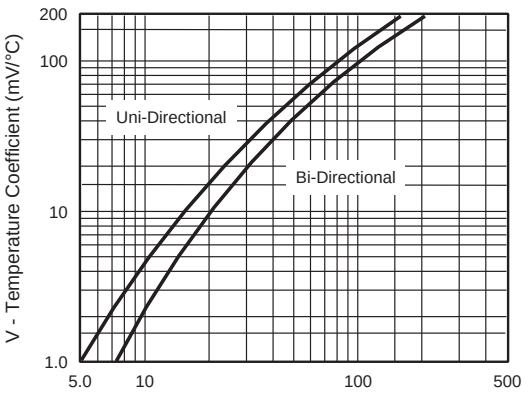


Fig. 12 - Breakdown Voltage Temperature Coefficient Curve