

Description

The SA series is designed specifically to protect sensitive electronic equipment from voltage transients induced by lightning and other transient voltage events.

Features

- Halogen free and RoHS compliant
- Low incremental surge resistance
- Excellent clamping capability
- 500W peak pulse power capability at 10/1000 μ s waveform, repetition rate (duty cycle): 0.01%
- Fast response time
- Typical I_R less than 1 μ A above 10V devices
- High Temperature soldering guaranteed: 265 $^{\circ}$ C/10 seconds/.375", (9.5mm) lead length, 5lbs (2.3kg) tension
- Plastic package has underwriters laboratory flammability 94V-0
- Meet MSL level1, per J-STD-020
- IEC-61000-4-2 ESD 30kV(Air), 30kV (Contact)
- Unit Weight: 0.42g



Applications

TVS components are ideal for the protection of I/O Interfaces, VCC bus and other vulnerable circuits used in telecom, computer, Industrial and consumer electronic applications.

Maximum Ratings and Characteristics ($T_A=25^{\circ}$ C)

Rating	Symbol	Value
Peak pulse power dissipation at 10/1000 μ s waveform (Note1, Fig.1)	P_{PPM}	500W
Peak pulse current of at 10/1000 μ s waveform (Note 1, Fig.3)	I_{PPM}	See Table(A)
Steady state power dissipation at $T_L=75^{\circ}$ C (Fig.5)	$P_{M(AV)}$	3.0W
Maximum Instantaneous Forward Voltage at 50A for Unidirectional Only	V_F	3.5V/5.0V
Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load, (JEDEC Method) (Note2, Fig.6)	I_{FSM}	70A
Operating junction and Storage Temperature Ranges	T_J, T_{STG}	-55 $^{\circ}$ C to +150 $^{\circ}$ C
Typical thermal resistance junction to lead	$R_{\theta JL}$	20 $^{\circ}$ C/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75 $^{\circ}$ C/W

Notes:1. Non-repetitive current pulse, per Fig.3 and derating above $T_A=25^{\circ}$ C per Fig.2.

2. 8.3ms single half sine-wave or equivalent square wave, duty cycle=4 pulses per minutes maximum.

3. $V_F < 3.5V$ for single die parts and $V_F < 5.0V$ for stacked-die parts.

Electrical Characteristics (T_A=25°C)

Part Number		Reverse Stand-Off Voltage	Breakdown Voltage @I _T		Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _R
Uni.	Bi.	V _R (V)	V _{B Min.} (V)	V _{B Max.} (V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)
SA5.0A	SA5.0CA	5.0	6.40	7.00	10	9.2	55.4	600
SA6.0A	SA6.0CA	6.0	6.67	7.37	10	10.3	49.5	600
SA6.5A	SA6.5CA	6.5	7.22	7.98	10	11.2	45.5	400
SA7.0A	SA7.0CA	7.0	7.78	8.60	10	12.0	42.5	150
SA7.5A	SA7.5CA	7.5	8.33	9.21	1	12.9	39.5	50
SA8.0A	SA8.0CA	8.0	8.89	9.83	1	13.6	37.5	25
SA8.5A	SA8.5CA	8.5	9.44	10.40	1	14.4	35.4	10
SA9.0A	SA9.0CA	9.0	10.00	11.10	1	15.4	33.1	5
SA10A	SA10CA	10.0	11.10	12.30	1	17.0	30	3
SA11A	SA11CA	11.0	12.20	13.50	1	18.2	28	1
SA12A	SA12CA	12.0	13.30	14.70	1	19.9	25.6	1
SA13A	SA13CA	13.0	14.40	15.90	1	21.5	23.7	1
SA14A	SA14CA	14.0	15.60	17.20	1	23.2	22	1
SA15A	SA15CA	15.0	16.70	18.50	1	24.4	20.9	1
SA16A	SA16CA	16.0	17.80	19.70	1	26.0	19.6	1
SA17A	SA17CA	17.0	18.90	20.90	1	27.6	18.5	1
SA18A	SA18CA	18.0	20.00	22.10	1	29.2	17.5	1
SA20A	SA20CA	20.0	22.20	24.50	1	32.4	15.7	1
SA22A	SA22CA	22.0	24.40	26.90	1	35.5	14.4	1
SA24A	SA24CA	24.0	26.70	29.50	1	38.9	13.1	1
SA26A	SA26CA	26.0	28.90	31.90	1	42.1	12.1	1
SA28A	SA28CA	28.0	31.10	34.40	1	45.4	11.2	1
SA30A	SA30CA	30.0	33.30	36.80	1	48.4	10.5	1
SA33A	SA33CA	33.0	36.70	40.60	1	53.3	9.6	1
SA36A	SA36CA	36.0	40.00	44.20	1	58.1	8.8	1

Electrical Characteristics (TA=25°C)

Part Number		Reverse Stand-Off Voltage	Breakdown Voltage @I _T		Test Current	Maximum Clamping Voltage @I _{PP}	Peak Pulse Current	Reverse Leakage @V _R
Uni.	Bi.	V _R (V)	V _{B Min.} (V)	V _{B Max.} (V)	I _T (mA)	V _C (V)	I _{PP} (A)	I _R (μA)
SA40A	SA40CA	40.0	44.40	49.10	1	64.5	7.9	1
SA43A	SA43CA	43.0	47.80	52.80	1	69.4	7.3	1
SA45A	SA45CA	45.0	50.00	55.30	1	72.7	7	1
SA48A	SA48CA	48.0	53.30	58.90	1	77.4	6.6	1
SA51A	SA51CA	51.0	56.70	62.70	1	82.4	6.2	1
SA54A	SA54CA	54.0	60.00	66.30	1	87.1	5.9	1
SA58A	SA58CA	58.0	64.40	71.20	1	93.6	5.4	1
SA60A	SA60CA	60.0	66.70	73.70	1	96.8	5.3	1
SA64A	SA64CA	64.0	71.10	78.60	1	103.0	5	1
SA70A	SA70CA	70.0	77.80	86.00	1	113.0	4.5	1
SA75A	SA75CA	75.0	83.30	92.10	1	121.0	4.2	1
SA78A	SA78CA	78.0	86.70	95.80	1	126.0	4	1
SA85A	SA85CA	85.0	94.40	104.0	1	137.0	3.7	1
SA90A	SA90CA	90.0	100.0	111.0	1	146.0	3.5	1
SA100A	SA100CA	100.0	111.00	123.00	1	162.0	3.1	1
SA110A	SA110CA	110.0	122.0	135.0	1	177.0	2.9	1
SA120A	SA120CA	120.0	133.0	147.0	1	193.0	2.6	1
SA130A	SA130CA	130.0	144.0	159.0	1	209.0	2.4	1
SA150A	SA150CA	150.0	167.0	185.0	1	243.0	2.1	1
SA160A	SA160CA	160.0	178.0	197.0	1	259.0	2	1
SA170A	SA170CA	170.0	189.0	209.0	1	275.0	1.9	1
SA180A	SA180CA	180.0	201.0	222.0	1	292.0	1.7	1
SA190A	SA190CA	190.0	211.0	233.0	1	308.0	1.6	1
SA200A	SA200CA	200.0	224.0	247.0	1	324.0	1.5	1
SA210A	SA210CA	210.0	237.0	263.0	1	340.0	1.5	1
SA220A	SA220CA	220.0	246.0	272.0	1	356.0	1.4	1

Ratings and Characteristic Curves ($T_A=25^\circ\text{C}$)

Figure 1. Peak Pulse Power Rating Curve

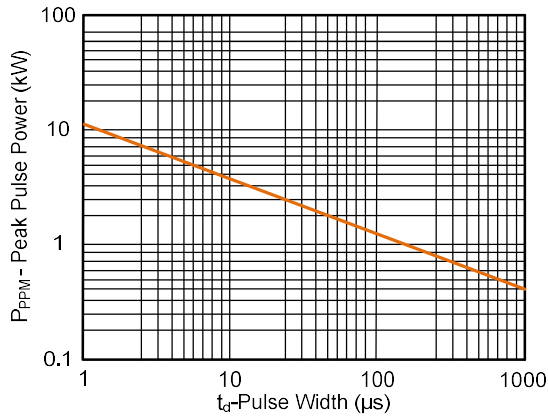


Figure 2. Pulse Derating Curve

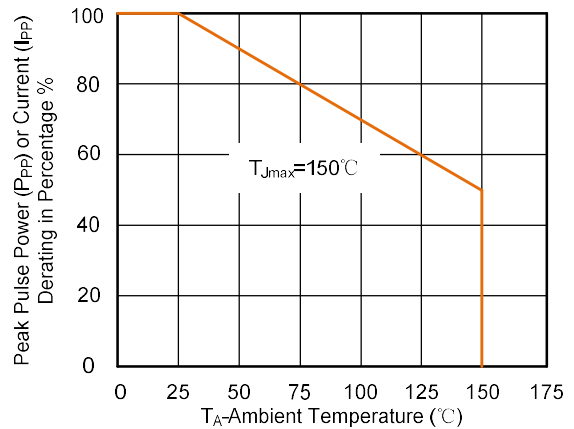


Figure 3. Pulse Waveform

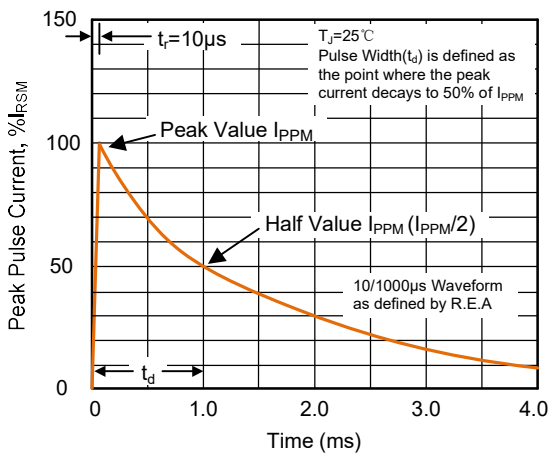


Figure 4. Typical Junction Capacitance

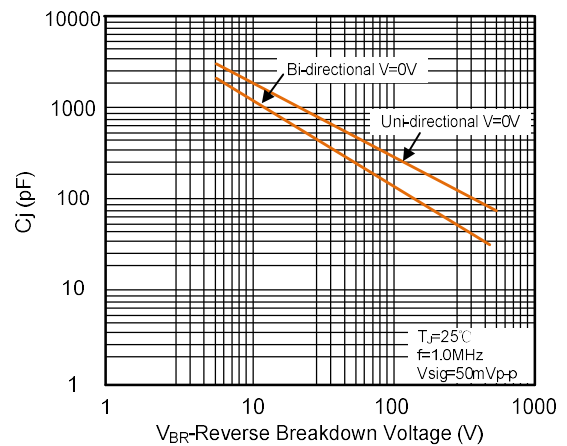


Figure 5. Steady State Power Dissipation Derating Curve

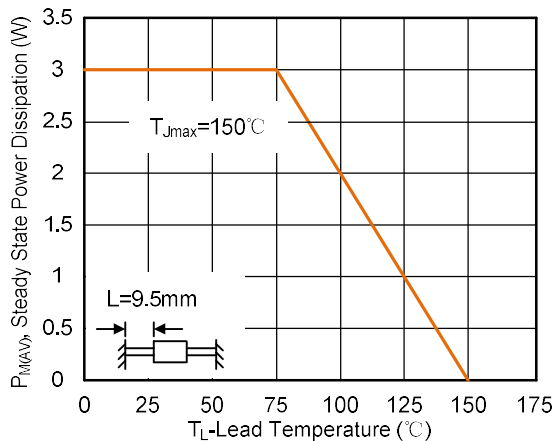
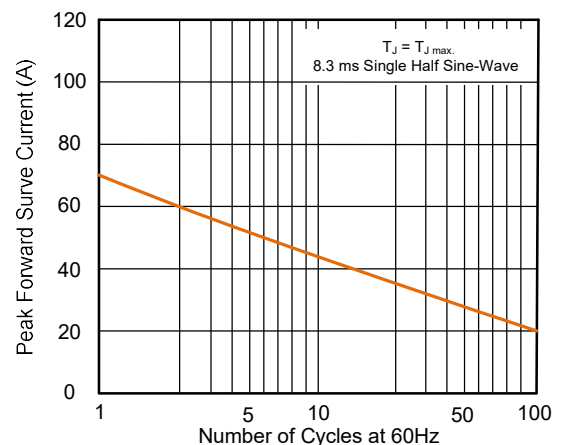
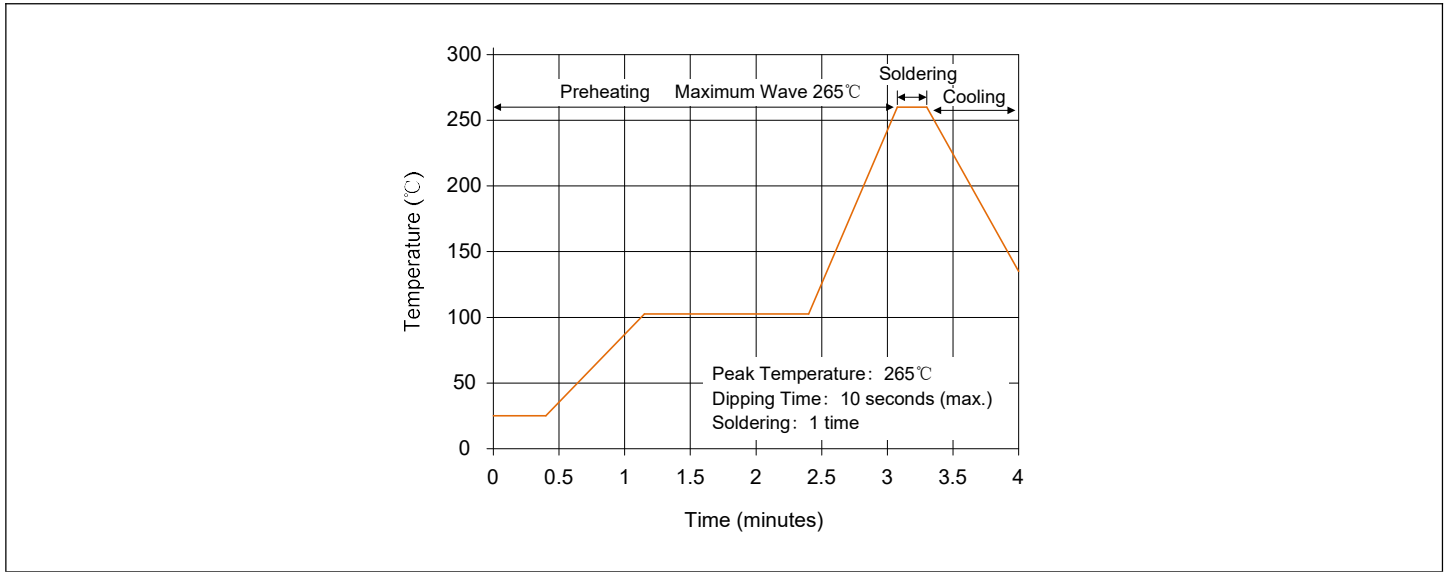


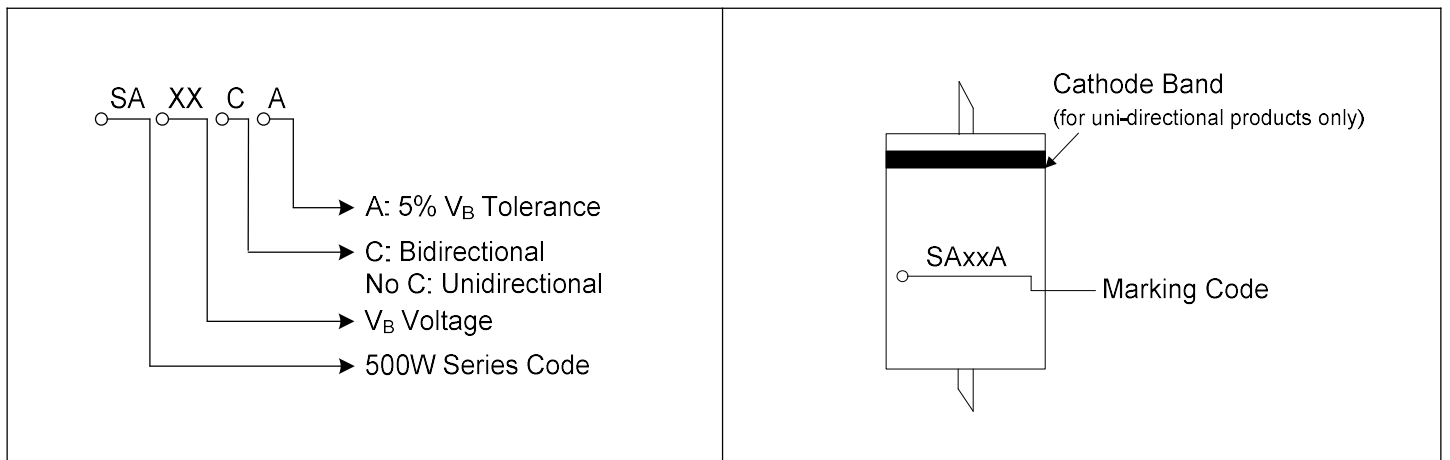
Figure 6. Maximum Non-Repetitive Forward Surge Current Uni-Directional Only



Wave Soldering



Part Number Code and Marking Code



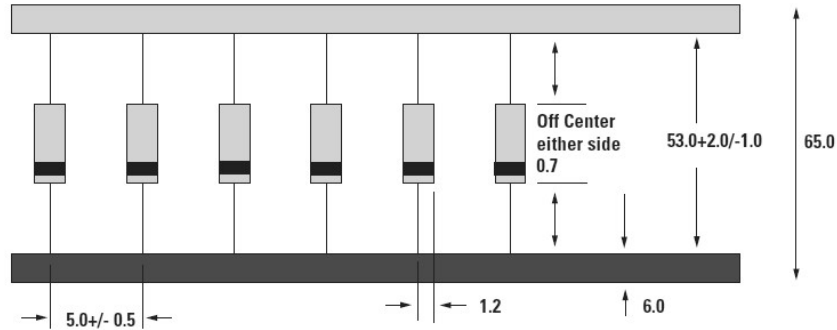
Dimensions (DO-204AC/DO-15)

The diagram shows the dimensions of the DO-204AC/DO-15 package: A (lead length), B (lead thickness), C (lead diameter), and d (package diameter).

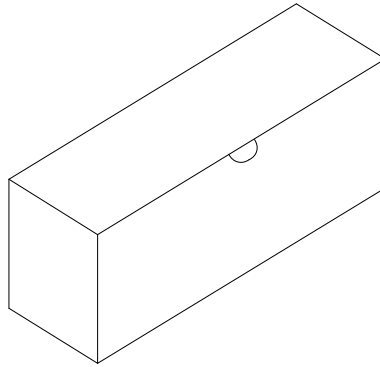
Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	25.40	-	1.000	-
B	5.80	7.60	0.230	0.300
C	2.60	3.60	0.104	0.140
d	0.71	0.86	0.028	0.034

Packaging Specification

Tape

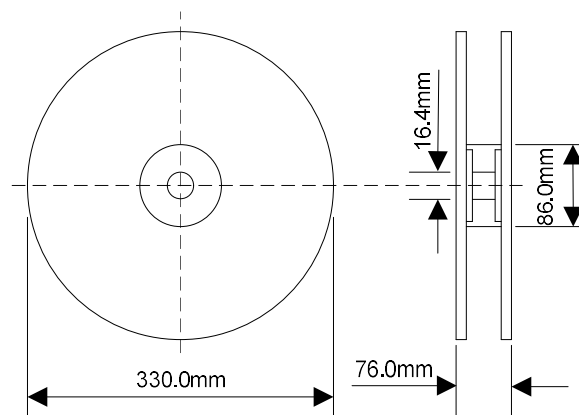


Box



Quantity: 2000pcs/box

Reel



Quantity: 4000pcs/reel