

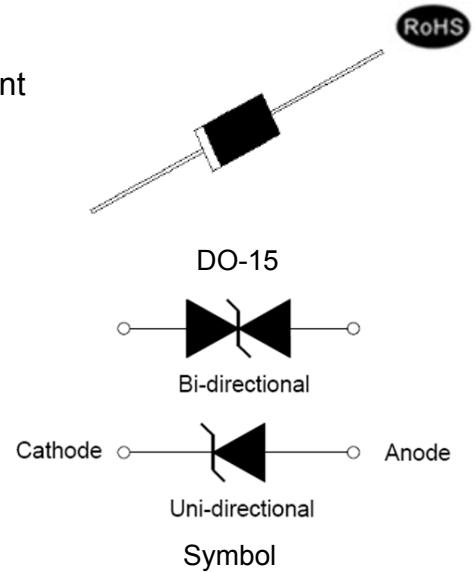


SAxx(C)AS Series 500W Transient Voltage Suppressor

Rev.1.1

DESCRIPTION

The SAxx(C)AS series of high current uni/bi-directional transient suppressors are designed for A.C. line protection and high power DC bus clamping applications. These devices offer uni/bi-directional port protection from 5.0 volts to 100 volts. They provide a clamping voltage lower than the avalanche voltage. Therefore, any voltage rise due to increased current conduction is contained to a minimum, providing the best possible protection level. They can also be connected in series and/or parallel to create very high capacity protection solutions.



FEATURES

- ✧ Low incremental surge resistance.
- ✧ Excellent clamping capability.
- ✧ Color band denoted cathode except bidirectional.
- ✧ Typical I_R less than $1\mu A$ above 10V.
- ✧ High temperature wave soldering: $265^\circ C/10s$ at terminals.
- ✧ Plastic package has underwriters laboratory flammability 94V-0.
- ✧ 500W peak pulse power capability at 10/1000 μs waveform.
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of $260^\circ C$.
- ✧ Terminal: solder plated, solderable per J-STD-002.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ✧ IEC61000-4-2 (ESD) $\pm 30kV$ (air), $\pm 30kV$ (contact).

ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ C$, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175	$^\circ C$
Peak pulse power dissipation at 10/1000 μs waveform	P_{PP}	500	W
Steady state power dissipation at $T_L=75^\circ C$	$P_{M(AV)}$	3.0	W
Maximum instantaneous forward voltage at 35A for unidirectional	V_F	3.5	V
Peak forward surge current, 8.3ms single half sine-wave for unidirectional only (NOTE 1)	I_{FSM}	70	A

ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$, RH=45%-75%, unless otherwise noted, continued)

Parameter	Symbol	Value	Unit
Typical thermal resistance junction to lead	$R_{\theta JL}$	20	$^{\circ}\text{C}/\text{W}$
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	$^{\circ}\text{C}/\text{W}$

Notes:

- 1 . Measured on 8.3ms single half sine wave or equivalent square wave for unidirectional device only, duty cycle=4 per minute maximum

ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$)

Part Number		V_R	$I_R@V_R$	$V_{BR}@I_T$		I_T	$V_C@I_{PP}$	$I_{PP}^{\text{①}}$
Uni-Polar	Bi-Polar	V	max(μA)	min(V)	max(V)	mA	max(V)	A
SA5.0AS	SA5.0CAS	5.0	200	6.40	7.00	10	9.2	55.4
SA6.0AS	SA6.0CAS	6.0	200	6.67	7.37	10	10.3	49.5
SA6.5AS	SA6.5CAS	6.5	120	7.22	7.98	10	11.2	45.5
SA7.0AS	SA7.0CAS	7.0	50	7.78	8.60	10	12.0	42.5
SA7.5AS	SA7.5CAS	7.5	50	8.33	9.21	1	12.9	39.5
SA8.0AS	SA8.0CAS	8.0	20	8.89	9.83	1	13.6	37.5
SA8.5AS	SA8.5CAS	8.5	10	9.44	10.40	1	14.4	35.5
SA9.0AS	SA9.0CAS	9.0	5	10.00	11.10	1	15.4	33.1
SA10AS	SA10CAS	10.0	2	11.10	12.30	1	17.0	30.0
SA11AS	SA11CAS	11.0	1	12.20	13.50	1	18.2	28.0
SA12AS	SA12CAS	12.0	1	13.30	14.70	1	19.9	25.6
SA13AS	SA13CAS	13.0	1	14.40	15.90	1	21.5	23.7
SA14AS	SA14CAS	14.0	1	15.60	17.20	1	23.2	22.0
SA15AS	SA15CAS	15.0	1	16.70	18.50	1	24.4	20.9
SA16AS	SA16CAS	16.0	1	17.80	19.70	1	26.0	19.6
SA17AS	SA17CAS	17.0	1	18.90	20.90	1	27.6	18.5
SA18AS	SA18CAS	18.0	1	20.00	22.10	1	29.2	17.5
SA20AS	SA20CAS	20.0	1	22.20	24.50	1	32.4	15.7
SA22AS	SA22CAS	22.0	1	24.40	26.90	1	35.5	14.4
SA24AS	SA24CAS	24.0	1	26.70	29.50	1	38.9	13.1
SA26AS	SA26CAS	26.0	1	28.90	31.90	1	42.1	12.1
SA28AS	SA28CAS	28.0	1	31.10	34.40	1	45.4	11.2

ELECTRICAL CHARACTERISTICS (T_A=25°C, continued)

Part Number		V _R	I _R @V _R	V _{BR} @I _T		I _T	V _C @I _{PP}	I _{PP} ^①
Uni-Polar	Bi-Polar	V	max(μA)	min(V)	max(V)	mA	max(V)	A
SA30AS	SA30CAS	30.0	1	33.30	36.80	1	48.4	10.5
SA33AS	SA33CAS	33.0	1	36.70	40.60	1	53.3	9.6
SA36AS	SA36CAS	36.0	1	40.00	44.20	1	58.1	8.8
SA40AS	SA40CAS	40.0	1	44.40	49.10	1	64.5	7.9
SA43AS	SA43CAS	43.0	1	47.80	52.80	1	69.4	7.3
SA45AS	SA45CAS	45.0	1	50.00	55.30	1	72.7	7.0
SA48AS	SA48CAS	48.0	1	53.30	58.90	1	77.4	6.6
SA51AS	SA51CAS	51.0	1	56.70	62.70	1	82.4	6.2
SA54AS	SA54CAS	54.0	1	60.00	66.30	1	87.1	5.9
SA58AS	SA58CAS	58.0	1	64.40	71.20	1	93.6	5.4
SA60AS	SA60CAS	60.0	1	66.70	73.70	1	96.8	5.3
SA64AS	SA64CAS	64.0	1	71.10	78.60	1	103.0	5.0
SA70AS	SA70CAS	70.0	1	77.80	86.00	1	113.0	4.5
SA75AS	SA75CAS	75.0	1	83.30	92.10	1	121.0	4.2
SA78AS	SA78CAS	78.0	1	86.70	95.80	1	126.0	4.0
SA85AS	SA85CAS	85.0	1	94.40	104.0	1	137.0	3.7
SA90AS	SA90CAS	90.0	1	100.0	111.0	1	146.0	3.5
SA100AS	SA100CAS	100.0	1	111.0	123.0	1	162.0	3.1

① Surge waveform: 10/1000μs

V_R: Stand-off voltage -- maximum voltage that can be appliedV_{BR}: Breakdown voltageV_C: Clamping voltage -- peak voltage measured across the suppressor at a specified I_{PP}I_R: Reverse leakage current

RATINGS AND V-I CHARACTERISTICS CURVES (T_A=25°C, unless otherwise noted)

FIG.1:V- I curve characteristics (Uni-directional)

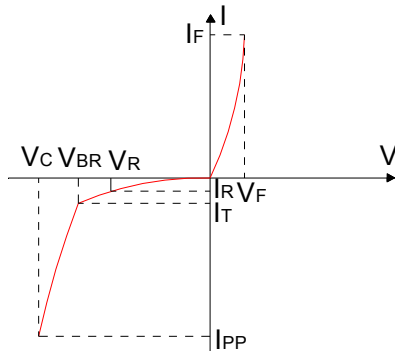


FIG.2:V- I curve characteristics (Bi-directional)

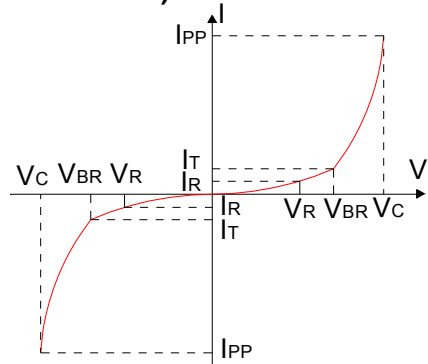


FIG.3: Pulse waveform

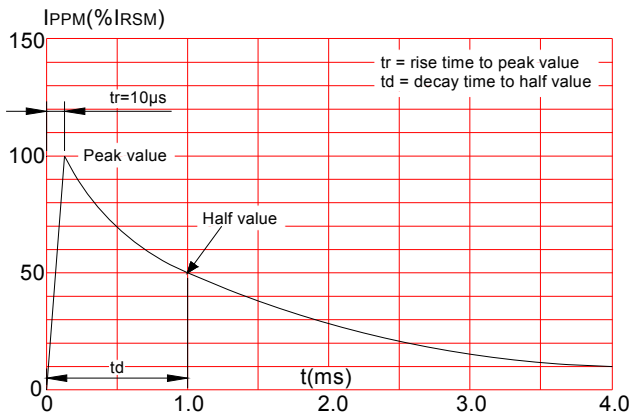
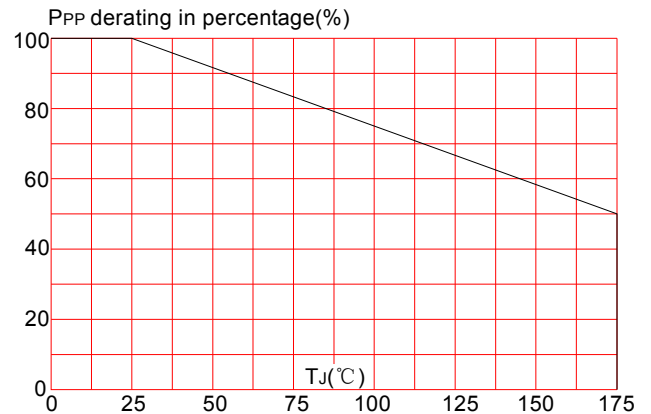
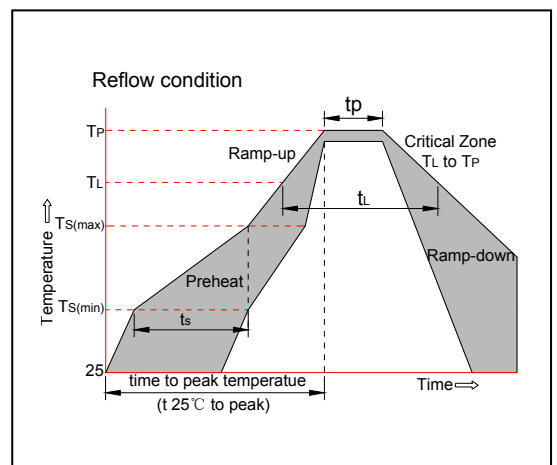


FIG.4: Pulse derating curve



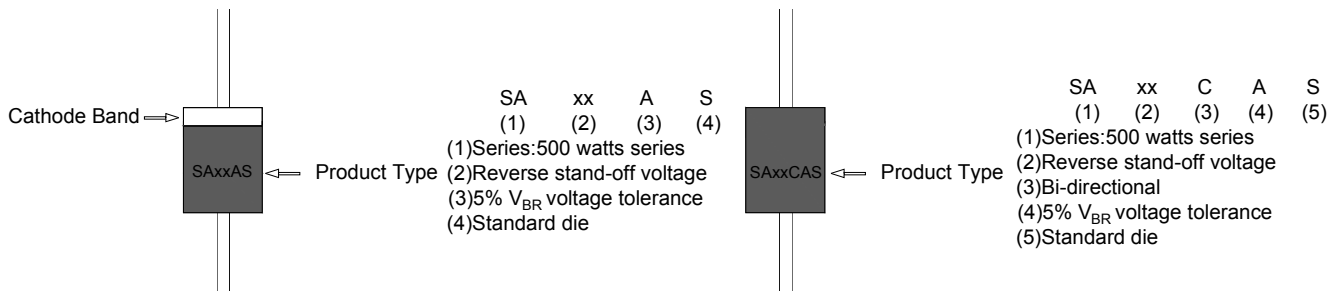
SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min (T _{s(min)})	+150°C
	-Temperature Max(T _{s(max)})	+200°C
	-Time (Min to Max) (t _s)	60-180 secs.
Average ramp up rate (Liquidus Temp (T _L)to peak)		3°C/sec. Max
T _{s(max)} to T _L - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T _L)(Liquidus)	+217°C
	-Temperature(t _L)	60-150 secs.
Peak Temp (T _p)		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t _p)		20-40secs.
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T _p)		8 min. Max
Do not exceed		+260°C



Flow/Wave Soldering(Solder Dipping)	
Peak temperature	265°C
Dipping time	10 sec.
Soldering	1 time

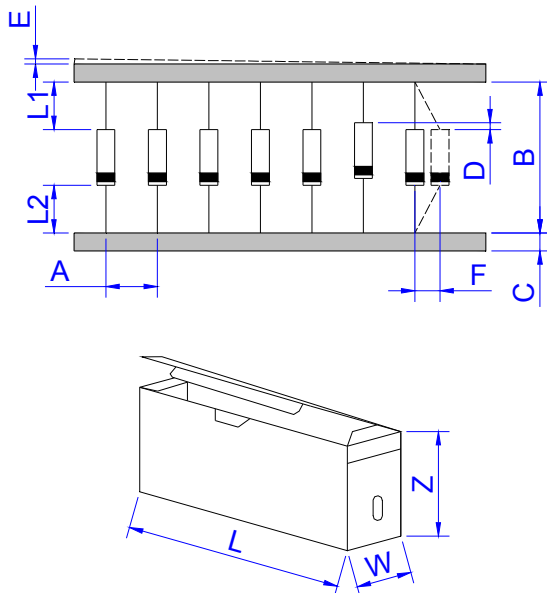
MARKING & ORDERING INFORMATION



PACKAGE MECHANICAL DATA

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	25.40	-	1.000	-
B	5.80	7.62	0.228	0.300
C	0.71	0.86	0.028	0.034
D	2.60	3.60	0.102	0.142

TAPE AND BOX SPECIFICATION-DO-15



Ref.	Dimensions	
	Millimeters	Inches
A	5.0±0.5	0.197±0.020
B	53.0±1.5	2.087±0.059
C	6.0±0.5	0.236±0.020
D	1.2(MAX)	0.047(MAX)
E	0.8(MAX)	0.031(MAX)
F	1.5(MAX)	0.059(MAX)
L1-L2	1.0(MAX)	0.039(MAX)
W	80±5.0	3.150±0.197
L	250±5.0	9.843±0.197
Z	115±5.0	4.528±0.197

PART No.	UNIT WEIGHT (g/PCS) typ.	PER BOX (PCS)	PER CARTON (PCS)	DESCRIPTION
SAxxAS/CAS	0.42	2,000	20,000	Box

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