

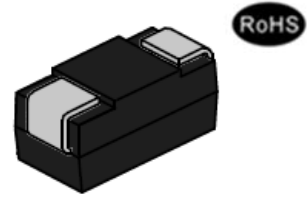


## 6AJ Series 600W Transient Voltage Suppressor

Rev.5.3

### DESCRIPTION:

TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent control systems.



SMA



Bi-directional



Uni-direction

Symbol

### FEATURES:

- ✧ Low profile package.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ 600W peak pulse power capability at 10/1000μs waveform.
- ✧ Typical I<sub>R</sub> less than 1μA above 10V.
- ✧ Fast response time: typically less than 1.0ps from 0V to V<sub>BR</sub> min.
- ✧ High temperature to reflow soldering: 260°C/40s at terminals.
- ✧ Plastic package has underwriters laboratory flammability 94V-0.
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of 260°C.
- ✧ Terminal: solder plated, solderable per J-STD-002.
- ✧ For surface mounted applications in order to optimize board space.
- ✧ IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact).

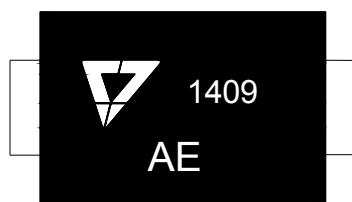
### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	T <sub>STG</sub> / T <sub>J</sub>	-55 to +150	°C
Steady state power dissipation at T <sub>L</sub> =75°C	P <sub>M(AV)</sub>	5.0	W
Peak pulse power dissipation at 10/1000μs waveform	P <sub>PP</sub>	600	W
Maximum instantaneous forward voltage at 50A for unidirectional	V <sub>F</sub>	5.0	V
Peak forward surge current, 8.3ms single half sine wave (Note 1)	I <sub>FSM</sub>	60	A
Typical thermal resistance junction to lead	R <sub>θJL</sub>	30	°C/W
Typical thermal resistance junction to ambient	R <sub>θJA</sub>	120	°C/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

## MARKING



AE: Device Marking Code  
1409: In ninth week, 2014

ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C)

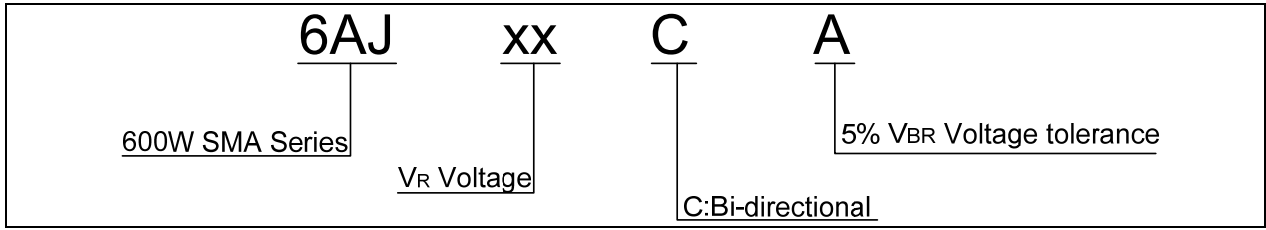
Part Number		Marking		V <sub>R</sub>	I <sub>R@V<sub>R</sub></sub>	V <sub>BR@I<sub>T</sub></sub>		I <sub>T</sub>	V <sub>C@I<sub>PP</sub></sub>	I <sub>PP</sub> <sup>①</sup>
Uni-Polar	Bi-Polar	Uni	Bi	V	max(μA)	min(V)	max(V)	mA	max(V)	A
6AJ5.0A	6AJ5.0CA	KE	AE	5.0	120	6.40	7.00	10	9.2	65.2
6AJ6.0A	6AJ6.0CA	KG	AG	6.0	120	6.67	7.37	10	10.3	58.3
6AJ6.5A	6AJ6.5CA	KK	AK	6.5	120	7.22	7.98	10	11.2	53.6
6AJ7.0A	6AJ7.0CA	KM	AM	7.0	50	7.78	8.60	10	12.0	50.0
6AJ7.5A	6AJ7.5CA	KP	AP	7.5	50	8.33	9.21	1	12.9	46.5
6AJ8.0A	6AJ8.0CA	KR	AR	8.0	20	8.89	9.83	1	13.6	44.1
6AJ8.5A	6AJ8.5CA	KT	AT	8.5	10	9.44	10.40	1	14.4	41.7
6AJ9.0A	6AJ9.0CA	KV	AV	9.0	5	10.00	11.10	1	15.4	39.0
6AJ10A	6AJ10CA	KX	AX	10.0	2	11.10	12.30	1	17.0	35.3
6AJ11A	6AJ11CA	KZ	AZ	11.0	1	12.20	13.50	1	18.2	33.0
6AJ12A	6AJ12CA	LE	BE	12.0	1	13.30	14.70	1	19.9	30.2
6AJ13A	6AJ13CA	LG	BG	13.0	1	14.40	15.90	1	21.5	27.9
6AJ14A	6AJ14CA	LK	BK	14.0	1	15.60	17.20	1	23.2	25.9
6AJ15A	6AJ15CA	LM	BM	15.0	1	16.70	18.50	1	24.4	24.6
6AJ16A	6AJ16CA	LP	BP	16.0	1	17.80	19.70	1	26.0	23.1
6AJ17A	6AJ17CA	LR	BR	17.0	1	18.90	20.90	1	27.6	21.8
6AJ18A	6AJ18CA	LT	BT	18.0	1	20.00	22.10	1	29.2	20.6
6AJ20A	6AJ20CA	LV	BV	20.0	1	22.20	24.50	1	32.4	18.6
6AJ22A	6AJ22CA	LX	BX	22.0	1	24.40	26.90	1	35.5	16.9
6AJ24A	6AJ24CA	LZ	BZ	24.0	1	26.70	29.50	1	38.9	15.4
6AJ26A	6AJ26CA	ME	CE	26.0	1	28.90	31.90	1	42.1	14.3

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

Part Number		Marking		$V_R$	$I_R@V_R$	$V_{BR}@I_T$		$I_T$	$V_C@I_{PP}$	$I_{PP}^{\text{①}}$
Uni-polar	Bi-polar	Uni	Bi	V	max( $\mu\text{A}$ )	min(V)	max(V)	mA	V	A
6AJ28A	6AJ28CA	MG	CG	28.0	1	31.10	34.40	1	45.4	13.2
6AJ30A	6AJ30CA	MK	CK	30.0	1	33.30	36.80	1	48.4	12.4
6AJ33A	6AJ33CA	MM	CM	33.0	1	36.70	40.60	1	53.3	11.3
6AJ36A	6AJ36CA	MP	CP	36.0	1	40.00	44.20	1	58.1	10.4
6AJ40A	6AJ40CA	MR	CR	40.0	1	44.40	49.10	1	64.5	9.3
6AJ43A	6AJ43CA	MT	CT	43.0	1	47.80	52.80	1	69.4	8.7
6AJ45A	6AJ45CA	MV	CV	45.0	1	50.00	55.30	1	72.7	8.3
6AJ48A	6AJ48CA	MX	CX	48.0	1	53.30	58.90	1	77.4	7.8
6AJ51A	6AJ51CA	MZ	CZ	51.0	1	56.70	62.70	1	82.4	7.3
6AJ54A	6AJ54CA	NE	DE	54.0	1	60.00	66.30	1	87.1	6.9
6AJ58A	6AJ58CA	NG	DG	58.0	1	64.40	71.20	1	93.6	6.4
6AJ60A	6AJ60CA	NK	DK	60.0	1	66.70	73.70	1	96.8	6.2
6AJ64A	6AJ64CA	NM	DM	64.0	1	71.10	78.60	1	103.0	5.8
6AJ70A	6AJ70CA	NP	DP	70.0	1	77.80	86.00	1	113.0	5.3
6AJ75A	6AJ75CA	NR	DR	75.0	1	83.30	92.10	1	121.0	5.0
6AJ78A	6AJ78CA	NT	DT	78.0	1	86.70	95.80	1	126.0	4.8
6AJ85A	6AJ85CA	NV	DV	85.0	1	94.4	104.0	1	137.0	4.4
6AJ100A	6AJ100CA	NZ	DZ	100.0	1	111.0	123.0	1	162.0	3.7
6AJ110A	6AJ110CA	PE	EE	110.0	1	122.0	135.0	1	177.0	3.4
6AJ120A	6AJ120CA	PG	EG	120.0	1	133.0	147.0	1	193.0	3.1

① Surge waveform: 10/1000 $\mu\text{s}$  $V_R$ : Stand-off voltage -- Maximum voltage that can be applied $V_{BR}$ : Breakdown voltage $V_C$ : Clamping voltage -- Peak voltage measured across the suppressor at a specified  $I_{PP}$  $I_R$ : Reverse leakage current

ORDERING INFORMATION



RATINGS AND V-I CHARACTERISTICS CURVES (T<sub>A</sub>=25°C, unless otherwise noted)

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

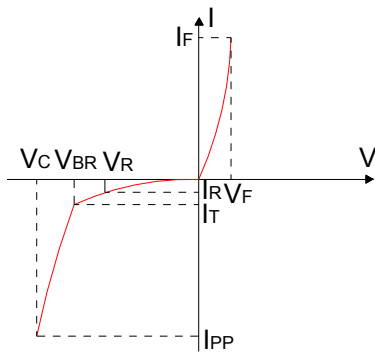


FIG.2:V- I curve characteristics (Bi-directional)

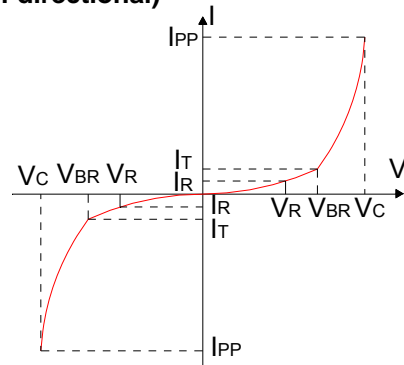


FIG.3: Pulse waveform

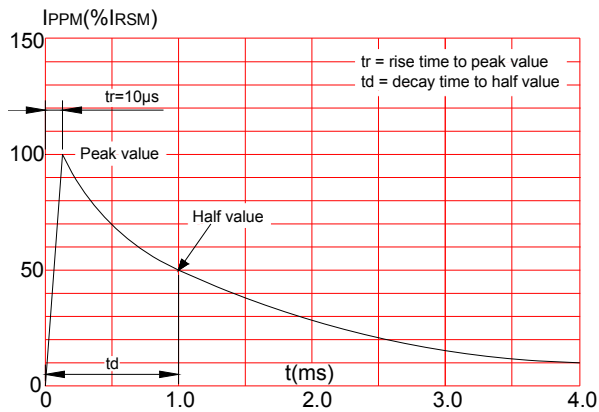
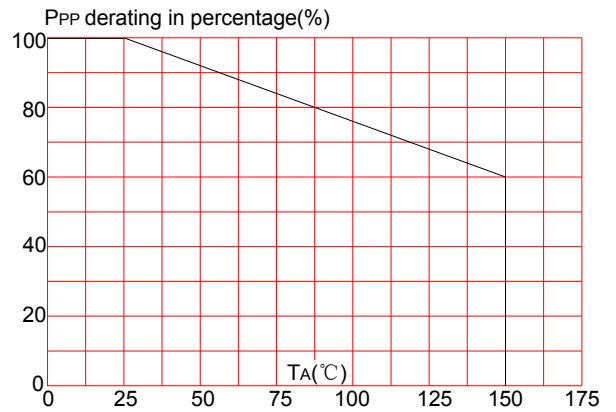
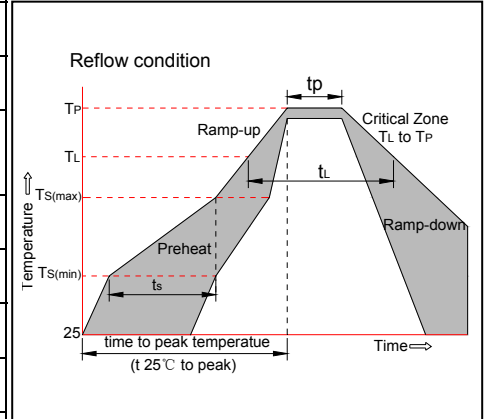


FIG.4: Pulse derating curve

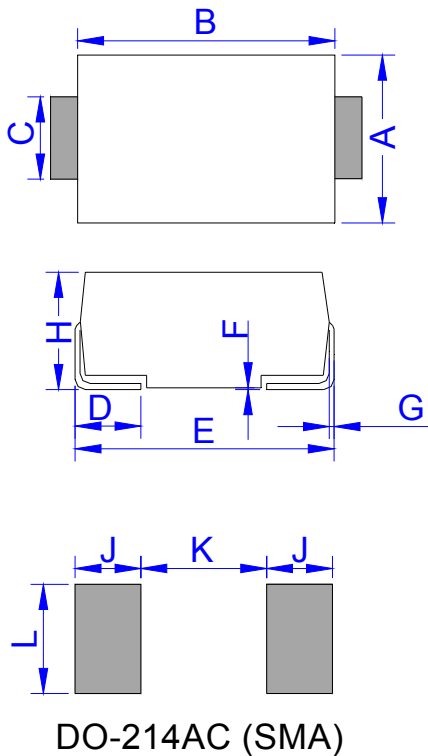


**SOLDERING PARAMETERS**

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

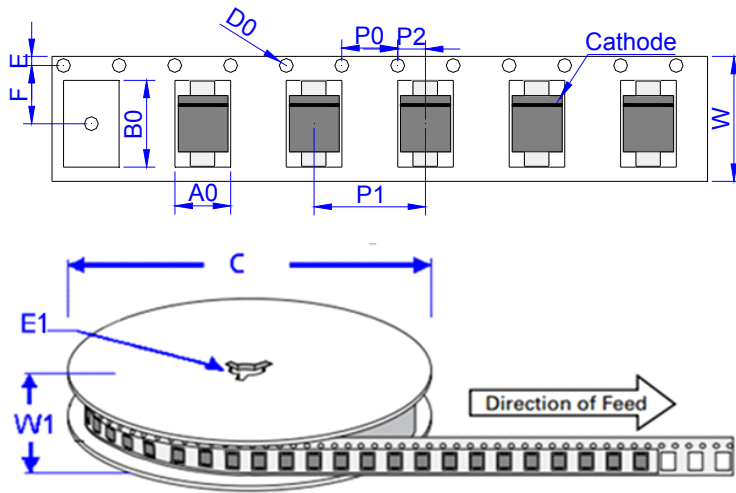


**PACKAGE MECHANICAL DATA**



Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	2.60	3.00	0.102	0.118
B	4.15	4.65	0.163	0.183
C	1.25	1.65	0.049	0.065
D	0.95	1.52	0.037	0.060
E	4.90	5.30	0.193	0.209
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.00	2.44	0.079	0.096
J	2.00		0.079	
K		2.30		0.091
L	1.80		0.071	

**TAPE AND REEL SPECIFICATION-SMA**




Ref.	Dimensions	
	Millimeters	Inches
A0	2.79 ± 0.3	0.110 ± 0.012
B0	5.33 ± 0.3	0.210 ± 0.012
C	330.0	13.0
D0	1.55 ± 0.1	0.061 ± 0.004
E	1.75 ± 0.2	0.069 ± 0.008
E1	13.3 ± 0.3	0.524 ± 0.012
F	5.5 ± 0.2	0.217 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	4.00 ± 0.2	0.157 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	12.0 ± 0.2	0.472 ± 0.008
W1	15.7 ± 2.0	0.618 ± 0.079

PART No.	UNIT WEIGHT (g/PCS) typ.	REEL (PCS)	PER CARTON (PCS)	DESCRIPTION
6AJxxA/CA	0.068	7,500	120,000	13 inch reel pack

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