

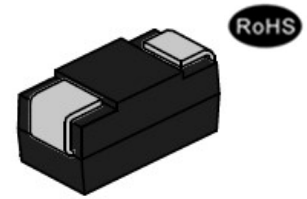


## 6AJxx(C)A-AU Series 600W Transient Voltage Suppressor

Rev.1.0

### DESCRIPTION

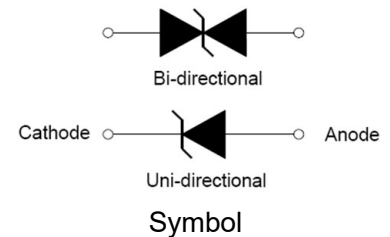
TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, telecommunications and intelligent control systems.



SMA

### FEATURES

- ✧ Low profile package.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ 600W peak pulse power capability at 10/1000μs waveform.
- ✧ Typical  $I_R$  less than 1μA above 10V.
- ✧ Fast response time: typically less than 1.0ps from 0V to  $V_{BR}$  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.
- ✧ IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact).
- ✧ For surface mounted applications in order to optimize board space.
- ✧ High reliability application and automotive grade (AEC-Q101 qualified).



### 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



AX: Device Marking Code  
2221: the 21st week, 2022

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

Part Number		Marking		V <sub>R</sub>	I <sub>R</sub> @V <sub>R</sub>	V <sub>BR</sub> @I <sub>T</sub>		I <sub>T</sub>	V <sub>C</sub> @I <sub>PP</sub>	I <sub>PP</sub> <sup>°</sup>
Uni-Polar	Bi-Polar	Uni	Bi	V	max(μA)	min(V)	max(V)	mA	max(V)	A
6AJ10A-AU	6AJ10CA-AU	KX	AX	10.0	2	11.10	12.30	1	17.0	35.3
6AJ11A-AU	6AJ11CA-AU	KZ	AZ	11.0	1	12.20	13.50	1	18.2	33.0
6AJ12A-AU	6AJ12CA-AU	LE	BE	12.0	1	13.30	14.70	1	19.9	30.2
6AJ13A-AU	6AJ13CA-AU	LG	BG	13.0	1	14.40	15.90	1	21.5	27.9
6AJ14A-AU	6AJ14CA-AU	LK	BK	14.0	1	15.60	17.20	1	23.2	25.9
6AJ15A-AU	6AJ15CA-AU	LM	BM	15.0	1	16.70	18.50	1	24.4	24.6
6AJ16A-AU	6AJ16CA-AU	LP	BP	16.0	1	17.80	19.70	1	26.0	23.1
6AJ17A-AU	6AJ17CA-AU	LR	BR	17.0	1	18.90	20.90	1	27.6	21.8
6AJ18A-AU	6AJ18CA-AU	LT	BT	18.0	1	20.00	22.10	1	29.2	20.6
6AJ20A-AU	6AJ20CA-AU	LV	BV	20.0	1	22.20	24.50	1	32.4	18.6
6AJ22A-AU	6AJ22CA-AU	LX	BX	22.0	1	24.40	26.90	1	35.5	16.9
6AJ24A-AU	6AJ24CA-AU	LZ	BZ	24.0	1	26.70	29.50	1	38.9	15.4
6AJ26A-AU	6AJ26CA-AU	ME	CE	26.0	1	28.90	31.90	1	42.1	14.3
6AJ28A-AU	6AJ28CA-AU	MG	CG	28.0	1	31.10	34.40	1	45.4	13.2
6AJ30A-AU	6AJ30CA-AU	MK	CK	30.0	1	33.30	36.80	1	48.4	12.4
6AJ33A-AU	6AJ33CA-AU	MM	CM	33.0	1	36.70	40.60	1	53.3	11.3
6AJ36A-AU	6AJ36CA-AU	MP	CP	36.0	1	40.00	44.20	1	58.1	10.4
6AJ40A-AU	6AJ40CA-AU	MR	CR	40.0	1	44.40	49.10	1	64.5	9.3
6AJ43A-AU	6AJ43CA-AU	MT	CT	43.0	1	47.80	52.80	1	69.4	8.7
6AJ45A-AU	6AJ45CA-AU	MV	CV	45.0	1	50.00	55.30	1	72.7	8.3
6AJ48A-AU	6AJ48CA-AU	MX	CX	48.0	1	53.30	58.90	1	77.4	7.8

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

Part Number		Marking		V <sub>R</sub>	I <sub>R</sub> @V <sub>R</sub>	V <sub>BR</sub> @I <sub>T</sub>		I <sub>T</sub>	V <sub>C</sub> @I <sub>PP</sub>	I <sub>PP</sub> <sup>①</sup>
Uni-polar	Bi-polar	Uni	Bi	V	max(μA)	min(V)	max(V)	mA	V	A
6AJ51A-AU	6AJ51CA-AU	MZ	CZ	51.0	1	56.70	62.70	1	82.4	7.3
6AJ54A-AU	6AJ54CA-AU	NE	DE	54.0	1	60.00	66.30	1	87.1	6.9
6AJ58A-AU	6AJ58CA-AU	NG	DG	58.0	1	64.40	71.20	1	93.6	6.4
6AJ60A-AU	6AJ60CA-AU	NK	DK	60.0	1	66.70	73.70	1	96.8	6.2
6AJ64A-AU	6AJ64CA-AU	NM	DM	64.0	1	71.10	78.60	1	103.0	5.8
6AJ70A-AU	6AJ70CA-AU	NP	DP	70.0	1	77.80	86.00	1	113.0	5.3
6AJ75A-AU	6AJ75CA-AU	NR	DR	75.0	1	83.30	92.10	1	121.0	5.0
6AJ78A-AU	6AJ78CA-AU	NT	DT	78.0	1	86.70	95.80	1	126.0	4.8
6AJ85A-AU	6AJ85CA-AU	NV	DV	85.0	1	94.4	104.0	1	137.0	4.4
6AJ100A-AU	6AJ100CA-AU	NZ	DZ	100.0	1	111.0	123.0	1	162.0	3.7
6AJ110A-AU	6AJ110CA-AU	PE	EE	110.0	1	122.0	135.0	1	177.0	3.4
6AJ120A-AU	6AJ120CA-AU	PG	EG	120.0	1	133.0	147.0	1	193.0	3.1

① Surge waveform: 10/1000μs

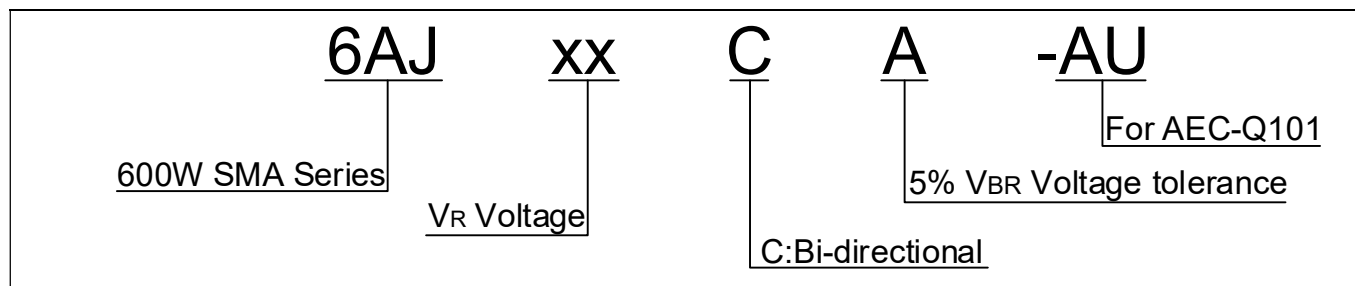
V<sub>R</sub>: Stand-off voltage -- Maximum voltage that can be applied

V<sub>BR</sub>: Breakdown voltage

V<sub>C</sub>: Clamping voltage -- Peak voltage measured across the suppressor at a specified I<sub>PP</sub>

I<sub>R</sub>: Reverse leakage current

## ORDERING INFORMATION



RATINGS AND V-I CHARACTERISTICS CURVES ( $T_A=25^{\circ}\text{C}$ , unless otherwise noted)

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

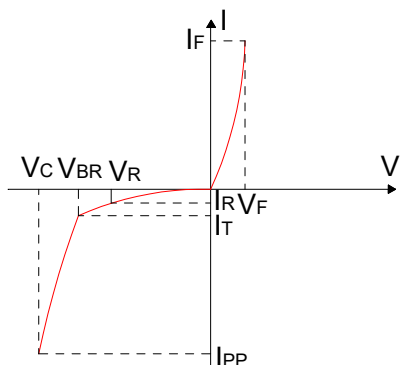


FIG.2:V- I curve characteristics (Bi-directional)

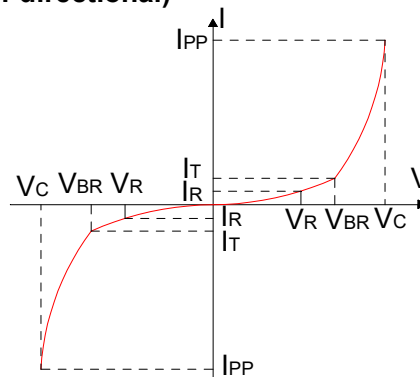


FIG.3: Pulse waveform

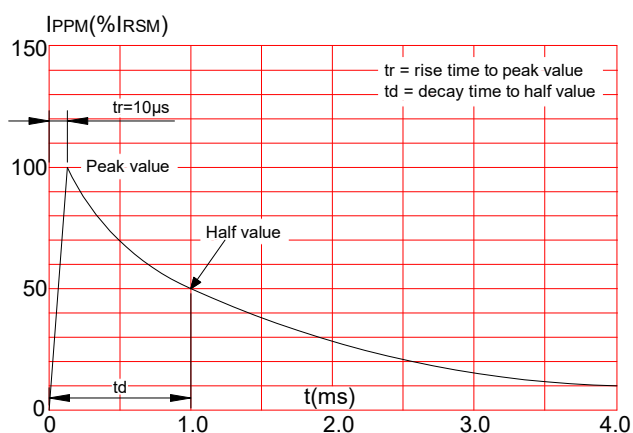


FIG.4: Pulse derating curve

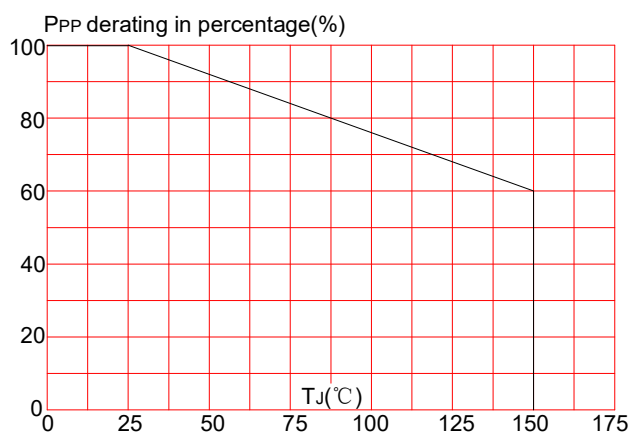
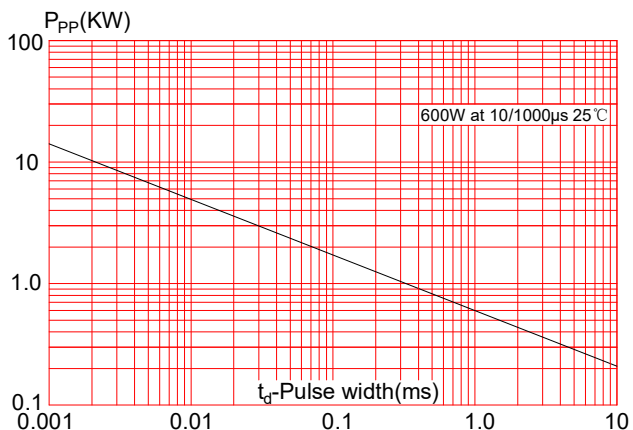
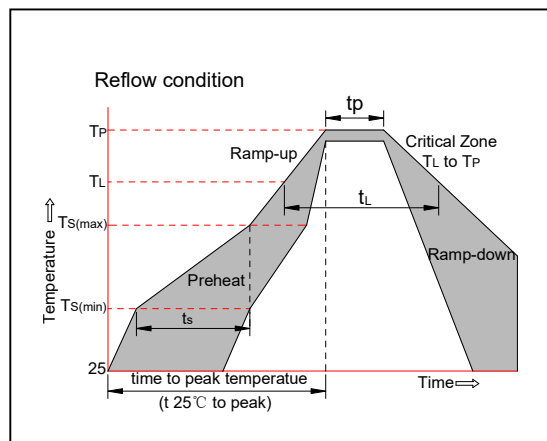


FIG.5:Peak pulse power dissipation vs. pulse width

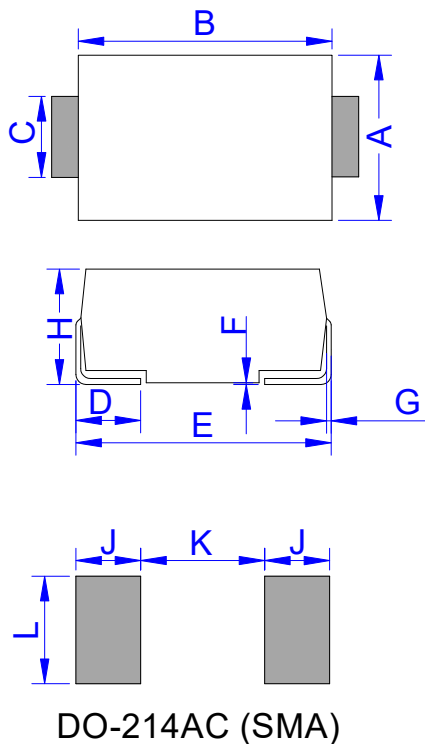


**SOLDERING PARAMETERS**

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) (ts)	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

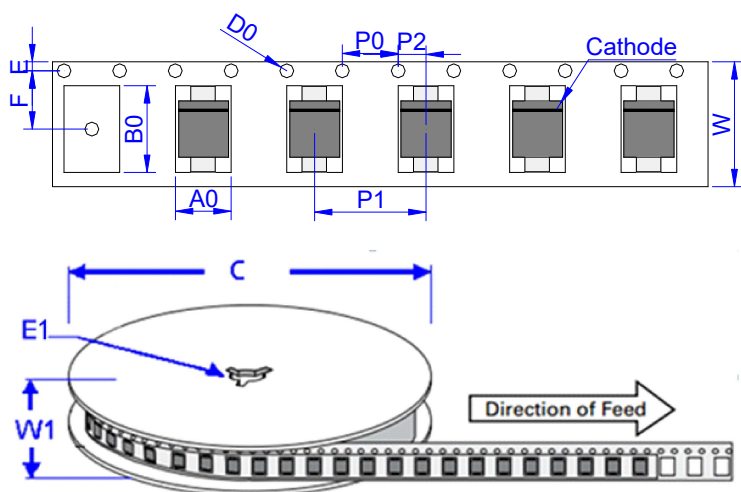


**PACKAGE MECHANICAL DATA**



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-AU	0.068	7,500	120,000	13 inch reel pack


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