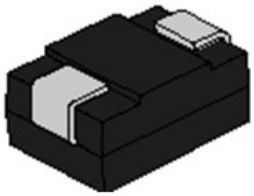
SMDJxx(C)A-AU Series 3000W Transient Voltage Suppressor

Rev.1.0

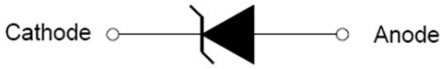
DESCRIPTION

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



SMC

Bi-directional



Uni-directional

Symbol

FEATURES

- ✧ Low profile package.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ 3000W peak pulse power capability at 10/1000μs waveform.
- ✧ Typical I_R less than 5μA.
- ✧ Fast response time: typically less than 1.0ps from 0V to V_{BR} min.
- ✧ High temperature to reflow soldering: 260℃/40s at terminals.
- ✧ Plastic package has underwriters laboratory flammability 94V-0.
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of 260℃.
- ✧ Terminal: solder plated, solderable per J-STD-002.
- ✧ IEC61000-4-2 (ESD) ±30kV (air), ±30kV (contact).
- ✧ UL 497B item recognized. (File No.:E480698).
- ✧ For surface mounted applications in order to optimize board space.
- ✧ High reliability application and automotive grade (AEC-Q101 qualified).

ABSOLUTE MAXIMUM RATINGS(T_A=25℃, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Storage and operating junction temperature range	T_{STG}/T_J	-55 to +150	℃
Steady state power dissipation at T_L=75℃	$P_{M(AV)}$	6.5	W
Peak pulse power dissipation at 10/1000μs waveform	P_{PP}	3000	W
Maximum instantaneous forward voltage at 100A for unidirectional only	V_F	5.0	V
Peak forward surge current, 8.3ms single half sine wave(Note 1)	I_{FSM}	300	A
Typical thermal resistance junction to lead	$R_{\theta JL}$	15	℃/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	℃/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

H12C: Device Marking Code
2221: the 21th week, 2022

ELECTRICAL CHARACTERISTICS(T_A=25℃)

Part Number		Marking		V_R	I_R@V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}①
Uni-Polar	Bi-Polar	Uni	Bi	V	max(μA)	min(V)	max(V)	mA	max(V)	A
SMDJ12A-AU	SMDJ12CA-AU	H12A	H12C	12.0	5	13.30	14.70	1	19.9	150.8
SMDJ13A-AU	SMDJ13CA-AU	H13A	H13C	13.0	5	14.40	15.90	1	21.5	139.5
SMDJ14A-AU	SMDJ14CA-AU	H14A	H14C	14.0	5	15.60	17.20	1	23.2	129.3
SMDJ15A-AU	SMDJ15CA-AU	H15A	H15C	15.0	5	16.70	18.50	1	24.4	123.0
SMDJ16A-AU	SMDJ16CA-AU	H16A	H16C	16.0	5	17.80	19.70	1	26.0	115.4
SMDJ17A-AU	SMDJ17CA-AU	H17A	H17C	17.0	5	18.90	20.90	1	27.6	108.7
SMDJ18A-AU	SMDJ18CA-AU	H18A	H18C	18.0	5	20.00	22.20	1	29.2	102.7
SMDJ20A-AU	SMDJ20CA-AU	H20A	H20C	20.0	5	22.20	24.50	1	32.4	92.6
SMDJ22A-AU	SMDJ22CA-AU	H22A	H22C	22.0	5	24.40	26.90	1	35.5	84.5
SMDJ24A-AU	SMDJ24CA-AU	H24A	H24C	24.0	5	26.70	29.50	1	38.9	77.1
SMDJ26A-AU	SMDJ26CA-AU	H26A	H26C	26.0	5	28.90	31.90	1	42.1	71.3
SMDJ28A-AU	SMDJ28CA-AU	H28A	H28C	28.0	5	31.10	34.40	1	45.4	66.1
SMDJ30A-AU	SMDJ30CA-AU	H30A	H30C	30.0	5	33.30	36.80	1	48.4	62.0
SMDJ33A-AU	SMDJ33CA-AU	H33A	H33C	33.0	5	36.70	40.60	1	53.3	56.3
SMDJ36A-AU	SMDJ36CA-AU	H36A	H36C	36.0	5	40.00	44.20	1	58.1	51.6
SMDJ40A-AU	SMDJ40CA-AU	H40A	H40C	40.0	5	44.40	49.10	1	64.5	46.5
SMDJ43A-AU	SMDJ43CA-AU	H43A	H43C	43.0	5	47.80	52.80	1	69.4	43.2
SMDJ45A-AU	SMDJ45CA-AU	H45A	H45C	45.0	5	50.00	55.30	1	72.7	41.3
SMDJ48A-AU	SMDJ48CA-AU	H48A	H48C	48.0	5	53.30	58.90	1	77.4	38.8
SMDJ51A-AU	SMDJ51CA-AU	H51A	H51C	51.0	5	56.70	62.70	1	82.4	36.4

ELECTRICAL CHARACTERISTICS(T_A=25℃,continued)

Part Number		Marking		V_R	I_R@V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}①
Uni-Polar	Bi-Polar	Uni	Bi	V	max(μA)	min(V)	max(V)	mA	max(V)	A
SMDJ54A-AU	SMDJ54CA-AU	H54A	H54C	54.0	5	60.00	66.30	1	87.1	34.4
SMDJ58A-AU	SMDJ58CA-AU	H58A	H58C	58.0	5	64.40	71.20	1	93.6	32.1

① Surge waveform: 10/1000μs

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

SMDJ xx C A -AU

- SMDJ: 3000W SMC Series
- xx: V_R Voltage
- C: C: Bi-directional
- A: 5% V_{BR} Voltage tolerance
- -AU: For AEC-Q101

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

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

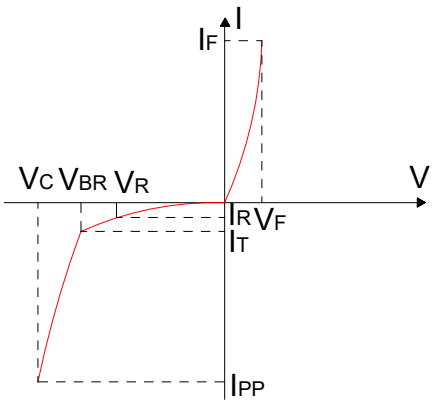


FIG.2:V- I curve characteristics (Bi-directional)

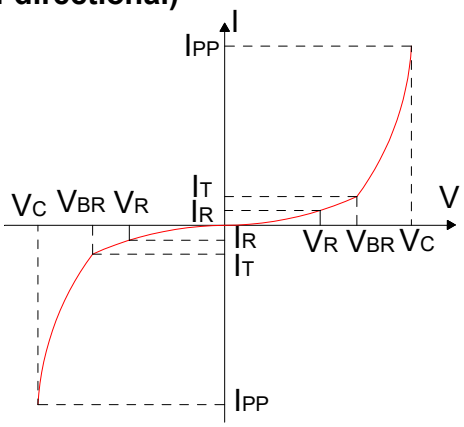


FIG.3: Pulse waveform

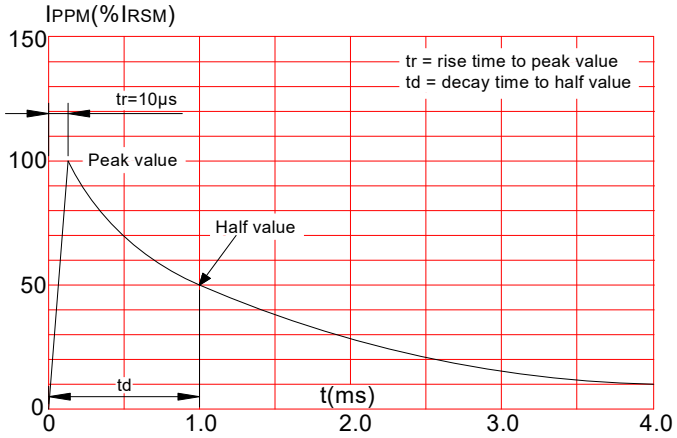


FIG.4: Pulse derating curve

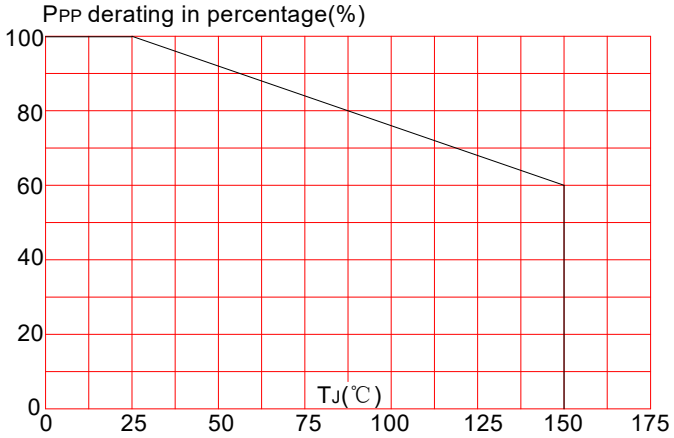
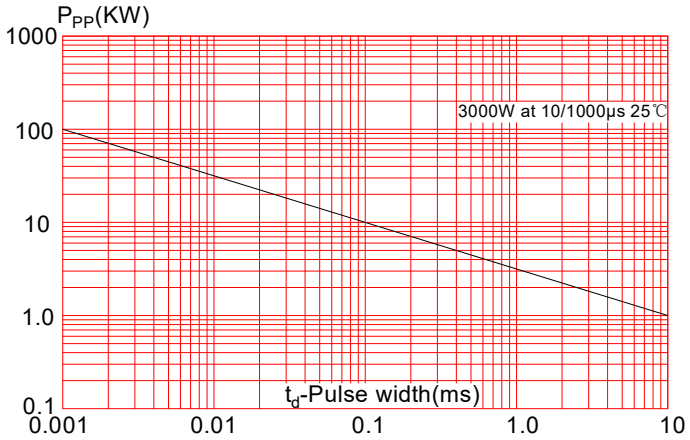
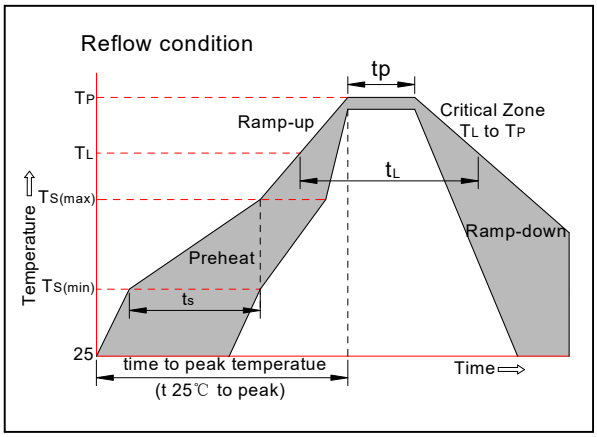


FIG.5:Peak pulse power dissipation vs. pulse width

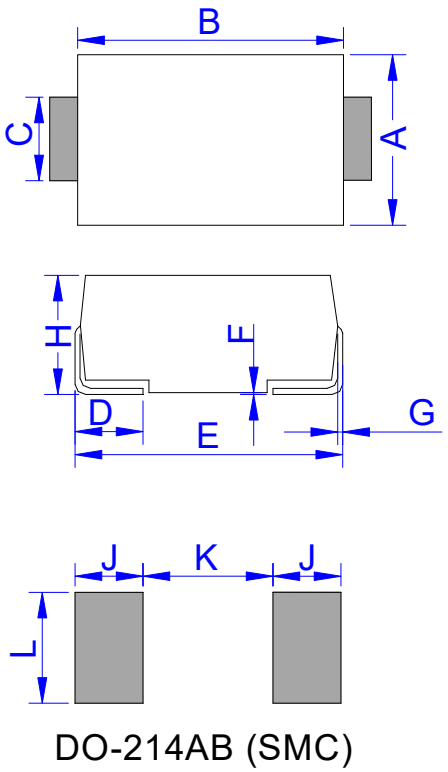


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquidus Temp (T_L)to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquidus)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃of actual Peak Temp (t_p)		20-40secs.
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃



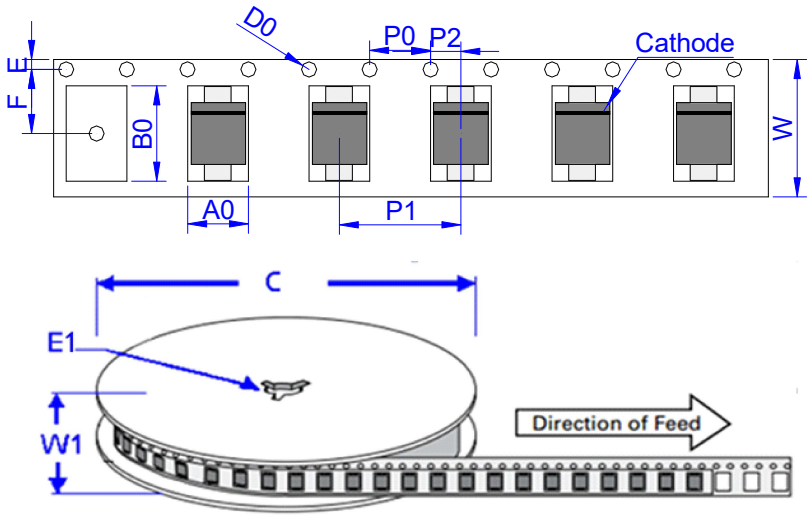
PACKAGE MECHANICAL DATA



DO-214AB (SMC)

Ref.	Dimensions			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	5.75	6.25	0.226	0.246
B	6.90	7.40	0.272	0.291
C	2.75	3.25	0.108	0.128
D	0.95	1.52	0.037	0.060
E	7.70	8.20	0.303	0.323
F	0.051	0.203	0.002	0.008
G	0.15	0.31	0.006	0.012
H	2.15	2.62	0.085	0.103
J	2.40		0.094	
K		4.20		0.165
L	3.30		0.130	

TAPE AND REEL SPECIFICATION-SMC



Ref.	Dimensions	
	Millimeters	Inches
A0	6.05 ± 0.3	0.238 ± 0.012
B0	8.31 ± 0.3	0.327 ± 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	7.50 ± 0.2	0.295 ± 0.008
P0	4.00 ± 0.2	0.157 ± 0.008
P1	8.00 ± 0.2	0.3145 ± 0.008
P2	2.00 ± 0.2	0.079 ± 0.008
W	16.0 ± 0.2	0.630 ± 0.008
W1	19.7 ± 2.0	0.776 ± 0.079

PART No.	UNIT WEIGHT (g/PCS) typ.	REEL (PCS)	PER CARTON (PCS)	DESCRIPTION
SMDJxxA/CA-AU	0.31	3,000	48,000	13 inch reel pack