

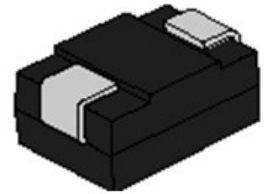


## 5.0SMDJ24CAP 7000W Transient Voltage Suppressor

Rev.1.2

### 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.



SMC



Bi-directional Symbol

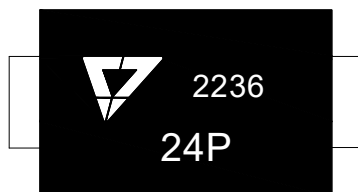
### FEATURES

- ✧ Low profile package.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ 7000W peak pulse power capability at 10/1000 $\mu$ s waveform.
- ✧ Fast response time: typically less than 1.0ps from 0V to  $V_{BR}$  min.
- ✧ High temperature to reflow soldering: 260 $^{\circ}$ C/40s at terminals.
- ✧ Plastic package has under writers laboratory flammability 94V-0.
- ✧ Meets MSL level 1, per J-STD-020, LF maximum peak of 260 $^{\circ}$ C.
- ✧ Terminal: solder plated, solderable per J-STD-002.
- ✧ IEC61000-4-2 (ESD)  $\pm$ 30kV (air),  $\pm$ 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 ( $T_A=25^{\circ}$ C, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Operating junction and storage temperature range	$T_J/T_{STG}$	-55 to +150	$^{\circ}$ C
Steady state power dissipation at $T_L=75^{\circ}$ C	$P_{M(AV)}$	6.5	W
Peak pulse power dissipation at 10/1000 $\mu$ s waveform	$P_{PP}$	7000	W
Peak pulse voltage at 1.2/50 $\mu$ s-8/20 $\mu$ s@2 $\Omega$ waveform	$V_{PP}$	4000	V
Typical thermal resistance junction to lead	$R_{\theta JL}$	15	$^{\circ}$ C/W
Typical thermal resistance junction to ambient	$R_{\theta JA}$	75	$^{\circ}$ C/W

## MARKING



24P: Device Marking Code  
2236: the 36th 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> <sup>①</sup>		I <sub>PP</sub> <sup>①</sup>	V <sub>H</sub> <sup>②</sup>	V <sub>C</sub> @ V <sub>PP</sub> <sup>③</sup>	V <sub>PP</sub> <sup>③</sup>
				Min (V)	Max (V)		Typ (V)	Max (V)				
Bi-Polar	Bi	V	Max (μA)	Min (V)	Max (V)	mA	Typ (V)	Max (V)	A	Typ (V)	Typ (V)	V
☆5.0SMDJ24CAP	24P	24	1	26.70	29.50	1	28.0	38.9	180	20	34	4000

① Surge waveform: 10/1000μs

② Surge waveform: 1.2/50μs-8/20μs@2Ω

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

☆: Product with negative resistance

## ORDERING INFORMATION

<u>5.0SMDJ</u> 7000W SMC Series	<u>24</u> V <sub>R</sub> Voltage	<u>C</u> C: Bi-directional	<u>A</u> 5% V <sub>BR</sub> Voltage tolerance	<u>P</u> Chip code
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RATINGS AND V-I CHARACTERISTICS CURVES (T<sub>A</sub>=25°C, unless otherwise noted)

FIG.1: V- I curve characteristics (Bi-directional with negative resistance)

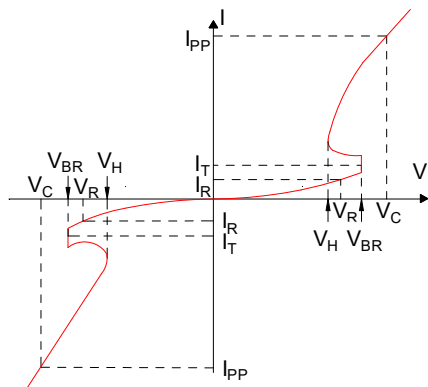


FIG.2: Pulse waveform

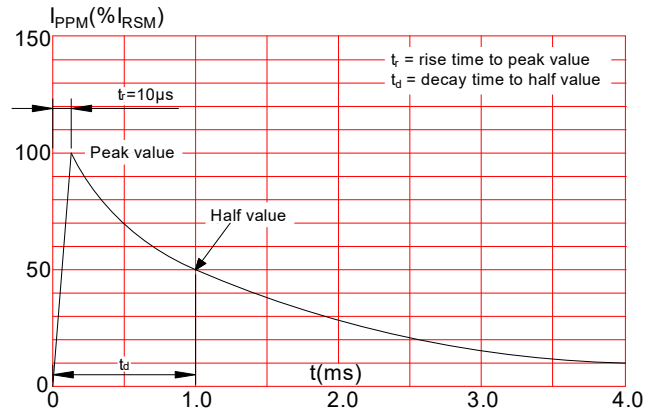


FIG.3: Pulse waveform

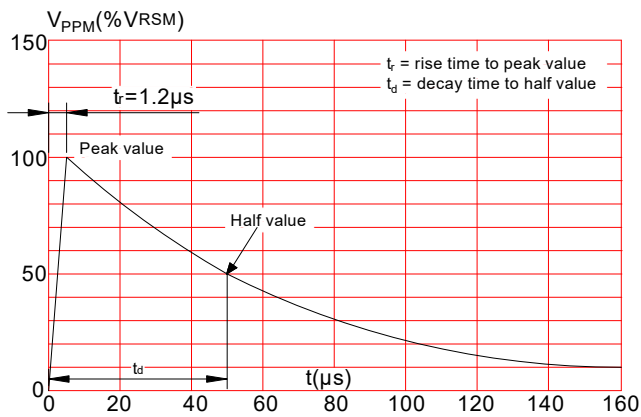


FIG.4: Pulse derating curve(10/1000μs)

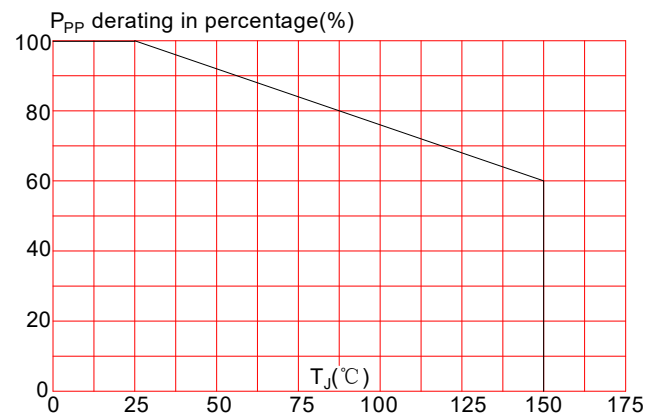
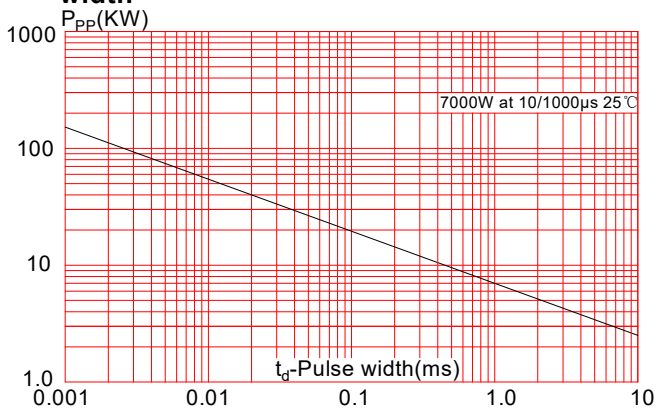
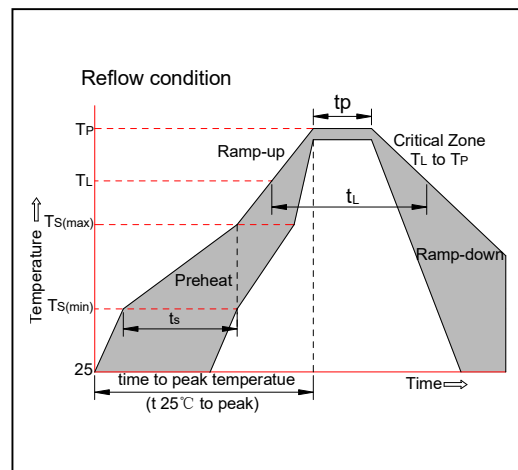
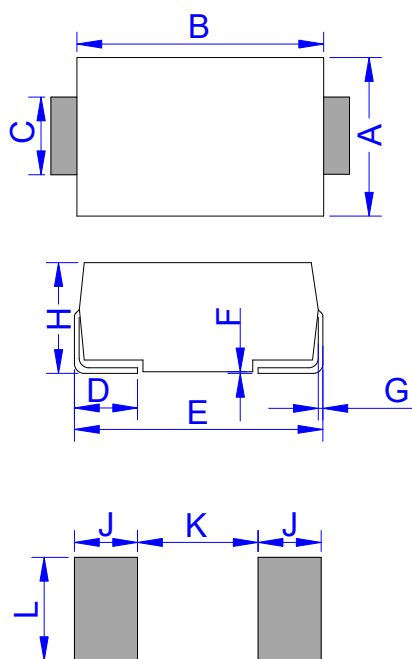


FIG.5: Peak pulse power dissipation vs. pulse width



**SOLDERING PARAMETERS**

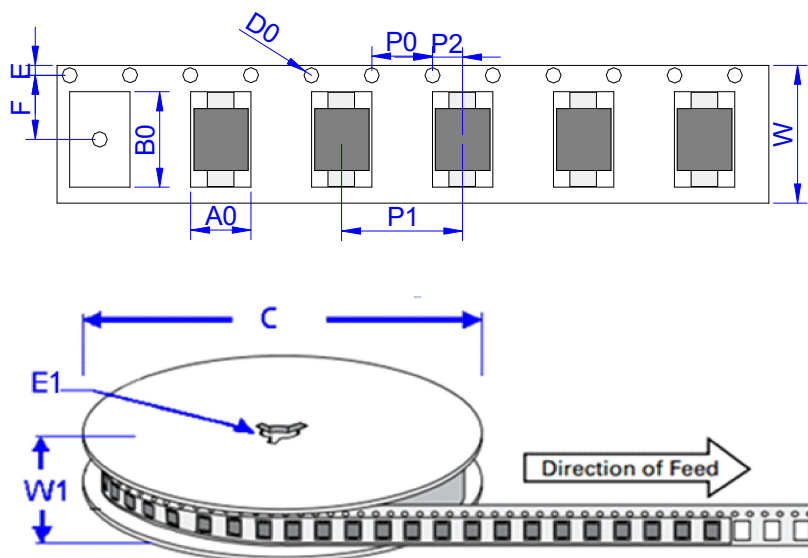
Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min ( $T_{s(min)}$ )	+150°C
	-Temperature Max( $T_{s(max)}$ )	+200°C
	-Time (Min to Max) ( $t_s$ )	60-180 secs.
Average ramp up rate (Liquidus Temp ( $T_L$ ) to peak)		3°C/sec. Max
$T_{s(max)}$ to $T_L$ - Ramp-up Rate		3°C/sec. 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**

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
5.0SMDJ24CAP	0.342	3,000	48,000	13 inch reel pack

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