



5.0SMDJ24CAP 7000W Transient Voltage Suppressor

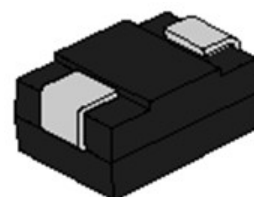
Rev.1.2

DESCRIPTION

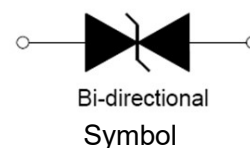
TVS diodes can be used in a wide range of applications which like consumer electronic products, automotive industries, munitions, telecommunications, aerospace industries, and intelligent control systems.

FEATURES

- ✧ Low profile package.
- ✧ Low inductance.
- ✧ Excellent clamping capability.
- ✧ 7000W peak pulse power capability at 10/1000 μ 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).



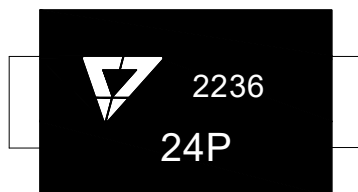
SMC



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

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

MARKING



24P: Device Marking Code
2236: the 36th week, 2022

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

Part Number	Marking	V_R	$I_R @ V_R$	$V_{BR} @ I_T$		I_T	$V_C @ I_{PP}^{\circ}$		I_{PP}°	V_H°	$V_C @ V_{PP}^{\circ}$	V_{PP}°
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: 10/1000 μs

② Surge waveform: 1.2/50 μs -8/20 μs @2 Ω

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

☆: Product with negative resistance

ORDERING INFORMATION

<u>5.0SMDJ</u>		<u>24</u>	<u>C</u>	<u>A</u>	<u>P</u>
7000W SMC Series		V_R Voltage	C: Bi-directional	5% V_{BR} Voltage tolerance	
				Chip code	

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

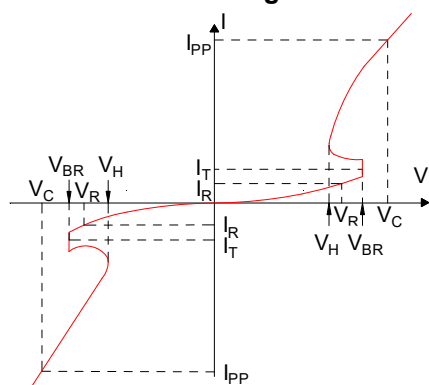
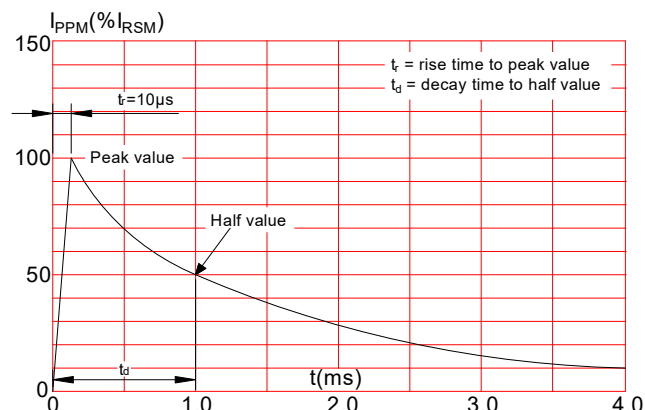


FIG.2: Pulse waveform



The graph shows the relationship between the peak-to-peak voltage V_{PPM} (in % V_{RSM}) and time t (in μs). The curve starts at the origin, rises to a peak value, and then decays. The rise time t_r is the time taken for the signal to reach the peak value, which is $1.2 \mu s$. The decay time t_d is the time taken for the signal to decay to half its peak value. The peak value is approximately 100% V_{RSM} , and the half value is approximately 50% V_{RSM} .

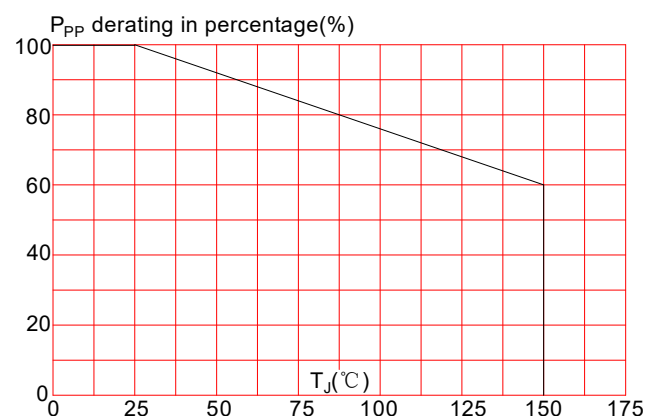
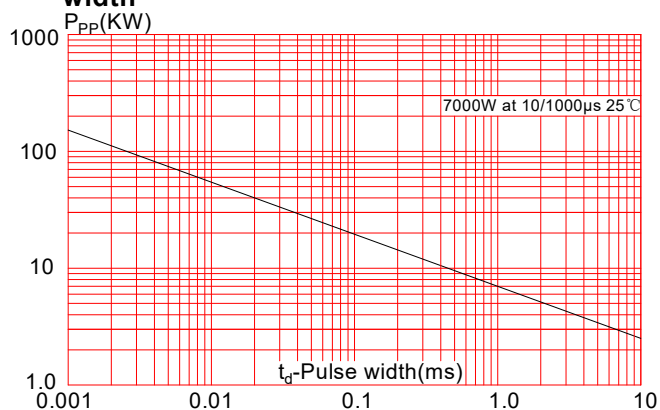
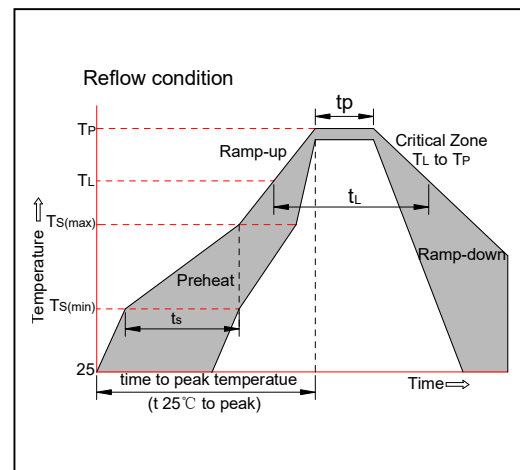
 P_{PP} derating in percentage(%)

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

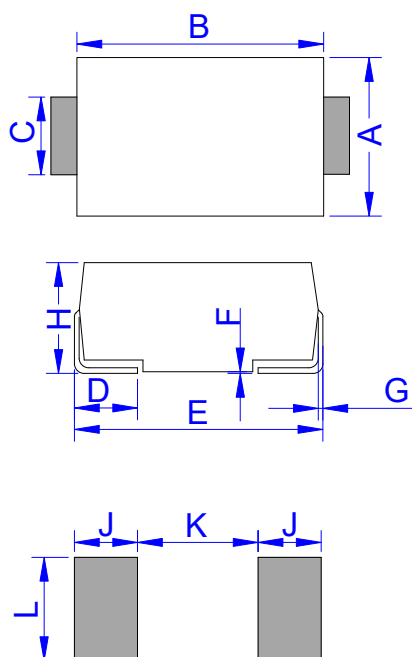


SOLDERING PARAMETERS

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



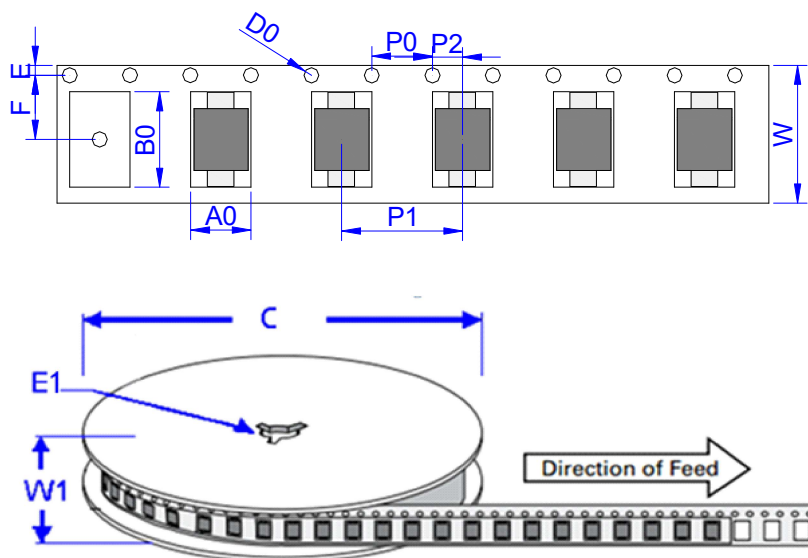
PACKAGE MECHANICAL DATA



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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