



## SMTJ Series 3500A Transient Voltage Suppressor

Rev.1.1

### DESCRIPTION:

The SMTJ series of high current transient suppressors have been specially designed for use in D.C. line protection and any demanding applications. They offer superior clamping characteristics by virtue of the snapback technology. Therefore, any voltage rise due to increased current conduction is contained to a minimum, providing the best possible protection level.



SMT-4



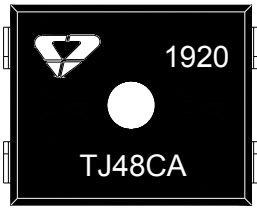
### FEATURES:

- ✧ Halogen-free.
- ✧ Bi-directional.
- ✧ RoHS compliant.
- ✧ Low slope resistance.
- ✧ Very low clamping voltage.
- ✧ Sharp breakdown voltage.
- ✧ Glass passivated junction.
- ✧ Snapback technology for superior clamping factor.
- ✧ Plastic package has underwriters laboratory flammability 94V-0.
- ✧ High temperature reflow soldering: 260°C/40s at terminals.
- ✧ 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).

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

Parameter	Symbol	Value	Unit
Peak pulse current@8/20μs	I <sub>PP</sub>	3500	A
Operating junction temperature range	T <sub>J</sub>	-55 to +150	°C
Storage temperature range	T <sub>STG</sub>	-55 to +150	°C
Typical thermal resistance junction to lead	R <sub>θJL</sub>	15	°C/W
Typical thermal resistance junction to ambient	R <sub>θJA</sub>	65	°C/W

**MARKING**



TJ48CA: Device Marking Code  
1920: the 20th week, 2019

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

Part Number	Marking	V <sub>R</sub>	V <sub>BR</sub> @I <sub>T</sub>		I <sub>T</sub>	I <sub>R</sub> @V <sub>R</sub>	V <sub>C</sub> @8/20μs	V <sub>C</sub> @8/20μs	C <sub>o</sub> <sup>①</sup>
			3000A	3500A			Max(V)	Max(V)	
Bi-Polar	Bi	V	Min(V)	Max(V)	mA	Max(μA)	Max(V)	Max(V)	
SMTJ36CAT-Z	TJ36CA	36	40.0	45.0	10	5	80	90	4200
SMTJ48CAT-Z	TJ48CA	48	50.0	59.0	10	5	95	105	3700

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

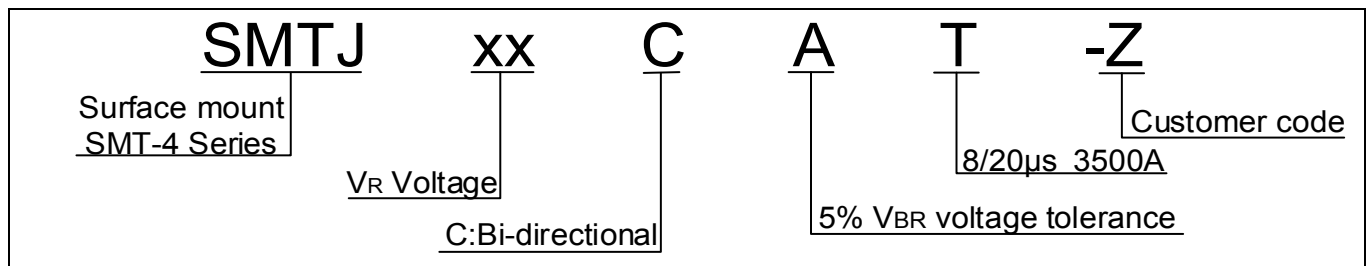
V<sub>BR</sub>: Breakdown voltage

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

① Off-state capacitance is measured in V<sub>RWM</sub>=0V, f=1MHz

**ORDERING INFORMATION**



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)

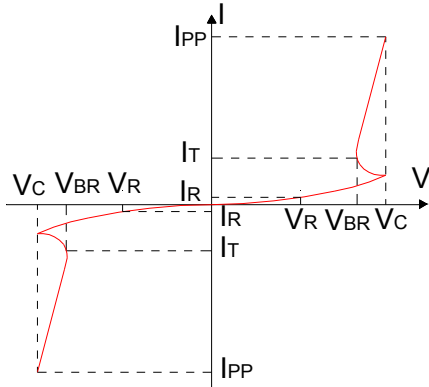


FIG.2: Typical V<sub>BR</sub> vs. junction temperature

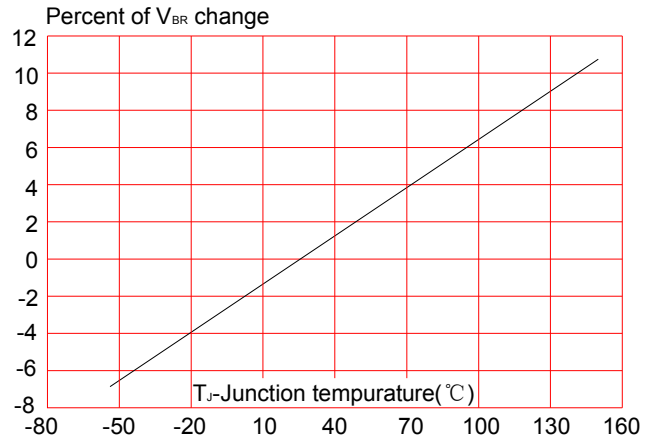


FIG.3: Pulse waveform

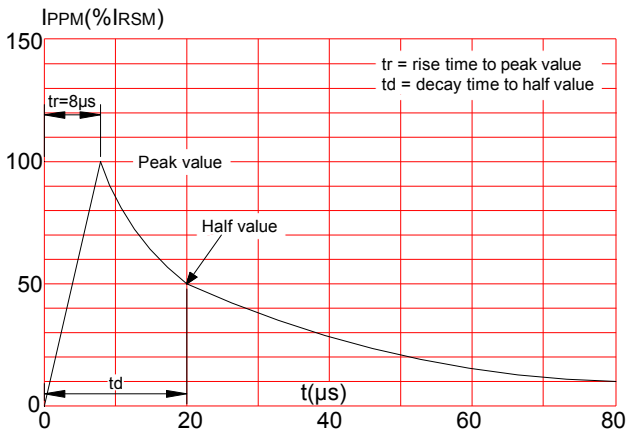
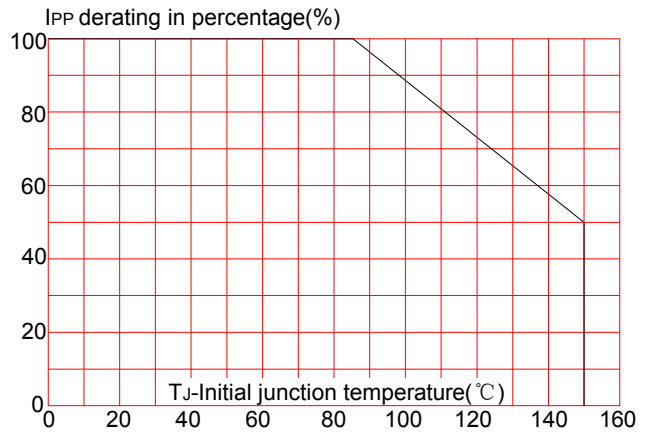
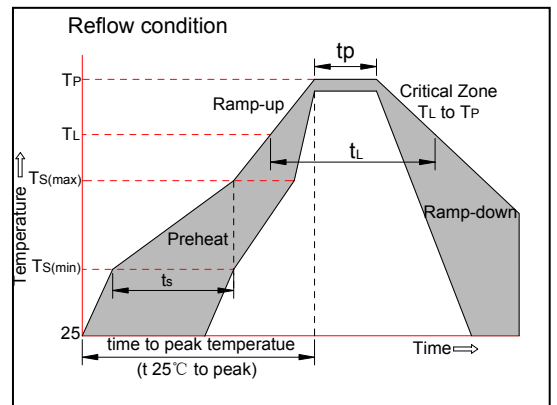


FIG.4: Pulse derating curve

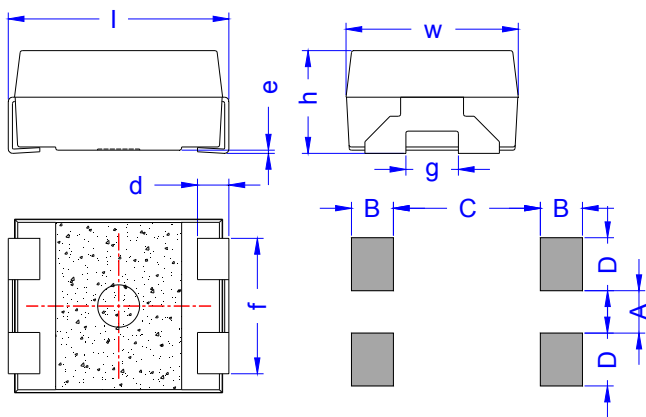


SOLDERING PARAMETERS

Reflow Condition		Pb-Free assembly (see figure at right)
Pre Heat	-Temperature Min (T <sub>s(min)</sub> )	+150°C
	-Temperature Max(T <sub>s(max)</sub> )	+200°C
	-Time (Min to Max) (t <sub>s</sub> )	60-180 secs.
Average ramp up rate (Liquidus Temp (T <sub>L</sub> )to peak)		3°C/sec. Max
T <sub>s(max)</sub> to T <sub>L</sub> - Ramp-up Rate		3°C/sec. Max
Reflow	-Temperature(T <sub>L</sub> )(Liquidus)	+217°C
	-Temperature(t <sub>L</sub> )	60-150 secs.
Peak Temp (T <sub>p</sub> )		+260(+0/-5)°C
Time within 5°C of actual Peak Temp (t <sub>p</sub> )		20-40secs.
Ramp-down Rate		6°C/sec. Max
Time 25°C to Peak Temp (T <sub>p</sub> )		8 min. Max
Do not exceed		+260°C



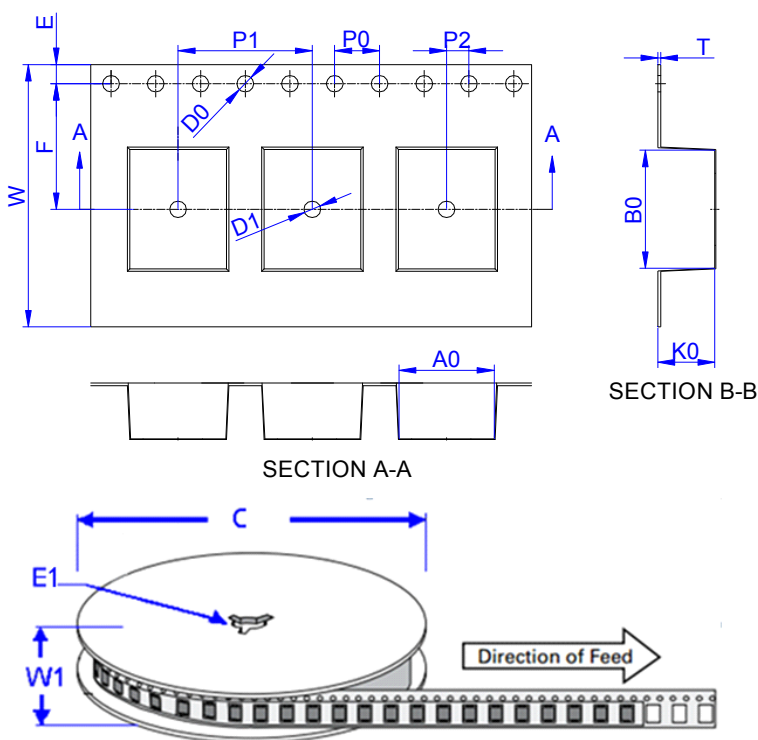
PACKAGE MECHANICAL DATA



SMT-4

Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
l	10.10		10.70	0.398		0.421
w	7.70		8.30	0.303		0.327
h	4.20		5.00	0.165		0.197
d	1.20		1.80	0.047		0.071
e	0		0.30	0		0.012
f	6.20		6.60	0.244		0.260
g	2.40		2.60	0.094		0.102
A			2.00			0.079
B	2.00			0.079		
C			7.00			0.276
D	2.50			0.098		

TAPE AND REEL SPECIFICATION-SMT-4



Ref.	Dimensions	
	Millimeters	Inches
A0	8.50±0.10	0.335±0.004
B0	10.80±0.10	0.425±0.004
C	330.0	13.0
D0	1.50±0.10	0.059±0.004
D1	1.50±0.10	0.059±0.004
E	1.75±0.10	0.069±0.004
E1	13.3±0.3	0.524±0.012
F	11.50±0.10	0.453±0.004
K0	5.10±0.10	0.201±0.004
P0	4.00±0.10	0.157±0.004
P1	12.00±0.10	0.472±0.004
P2	2.00±0.10	0.079±0.004
T	0.30±0.05	0.012±0.002
W	24.00±0.30	0.945±0.012
W1	28.5±2.0	1.122±0.079

PART No.	REEL (PCS)	PER CARTON (PCS)	DESCRIPTION
SMTJxxCAT-Z	1,000	8,000	13 inch reel pack

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