SMTJxxCAT-8S Series Transient Voltage Suppressor

Rev.1.0

DESCRIPTION

The SMTJxxCAT-8S series have high temperature stability and high reliability conditions. It is designed for use in sensitive electronics protection against voltage transients induced by inductive load switching and lighting, especially for automotive load dump protection application.

SMT

Bi-directional

Symbol

FEATURES

- ✧ Low leakage current.
- ✧ High surge capability.
- ✧ AEC-Q101 qualified.
- ✧ Meets ISO16750-2 surge specification(varied by test condition).
- ✧ Meets MSL 1, per J-STD-020, LF maximum peak of 245℃.
- ✧ Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC.
- ✧ Junction passivation optimized design passivated anisotropic rectifier technology.
- ✧ T_J=175℃ capability suitable for high reliability and automotive requirement.

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

Parameter	Symbol	Value	Unit
Peak pulse power dissipation at 10/1000μs waveform	P_{PP}	6600	W
Operating junction and storage temperature range	T_J, T_{STG}	-55 to +175	℃
Typical thermal resistance, junction to case	$R_{\theta JC}$	9.38	℃/W
Typical thermal resistance, junction to lead	$R_{\theta JL}$	18.34	℃/W

MARKING

8S14C: Device Marking Code
2236: the 36th 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}①	I_{PP}①
Bi-Polar	Bi	V	max(μA)	min(V)	max(V)	mA	V	A
SMTJ14CAT-8S	8S14C	14	5	15.6	17.2	5	23.2	284
SMTJ15CAT-8S	8S15C	15	5	16.7	18.5	5	24.4	270
SMTJ16CAT-8S	8S16C	16	5	17.8	19.7	5	26.0	253
SMTJ17CAT-8S	8S17C	17	5	18.9	20.9	5	27.6	239
SMTJ18CAT-8S	8S18C	18	5	20.0	22.1	5	29.2	226
SMTJ20CAT-8S	8S20C	20	5	22.2	24.5	5	32.4	204
SMTJ22CAT-8S	8S22C	22	5	24.4	26.9	5	35.5	186
SMTJ24CAT-8S	8S24C	24	5	26.7	29.5	5	38.9	170
SMTJ26CAT-8S	8S26C	26	5	28.9	31.9	5	42.1	157
SMTJ27CAT-8S	8S27C	27	5	30.0	33.2	5	43.8	150
SMTJ28CAT-8S	8S28C	28	5	31.1	34.4	5	45.4	145
SMTJ30CAT-8S	8S30C	30	5	33.3	36.8	5	48.4	136
SMTJ33CAT-8S	8S33C	33	5	36.7	40.6	5	53.3	124
SMTJ36CAT-8S	8S36C	36	5	40.0	44.2	5	58.1	114
SMTJ40CAT-8S	8S40C	40	5	44.4	49.1	5	64.5	102
SMTJ43CAT-8S	8S43C	43	5	47.8	52.8	5	69.4	95.1

① Surge waveform: 10/1000μs

V_R: Stand-off voltage -- Maximum voltage that can be applied

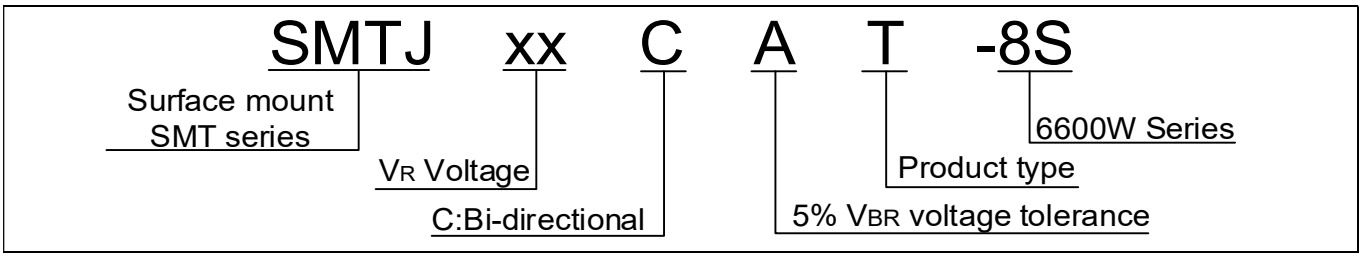
V_{BR}: Breakdown voltage

V_C: Clamping voltage -- Peak voltage measured across the suppressor at a specified I_{PP}

I_R: Reverse leakage current

I_T: Test current

ORDERING INFORMATION



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

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

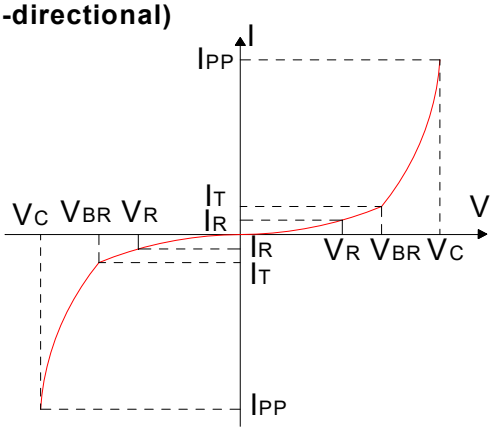


FIG.2: Pulse waveform

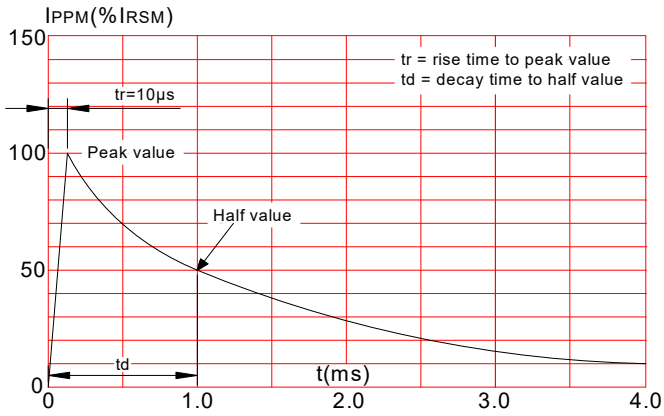


FIG.3: ISO16750-2 test pulse 5a

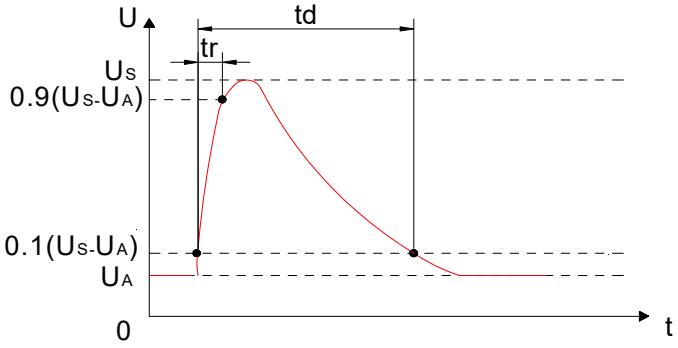
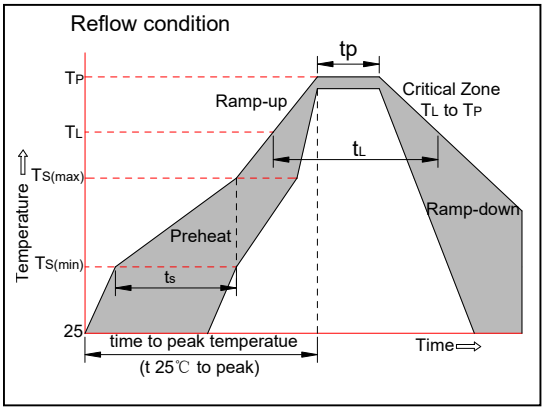


FIG.4: Parameters for test pulse 5a

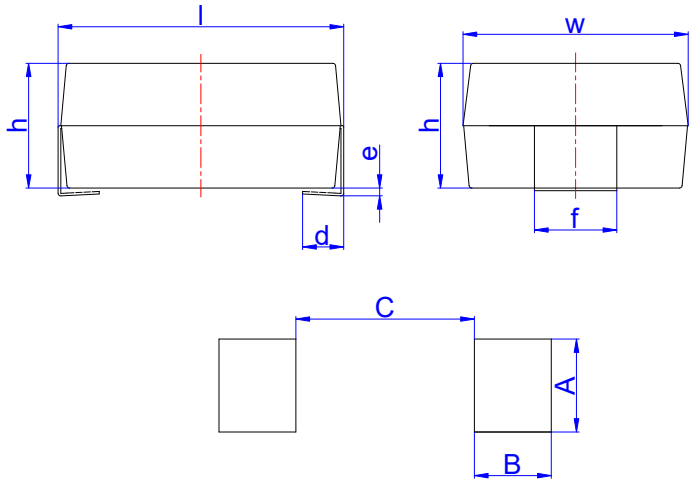
Parameter	12V system	24V system
Us	79~101V	151~202V
Ri	0.5~4Ω	1~8Ω
td	40~400ms	100~350ms
tr	5~10ms	5~10ms

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℃



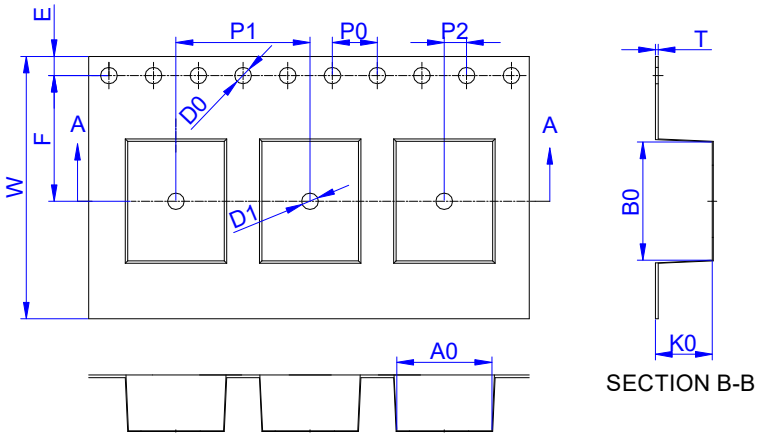
PACKAGE MECHANICAL DATA



Recommended solder pad layout

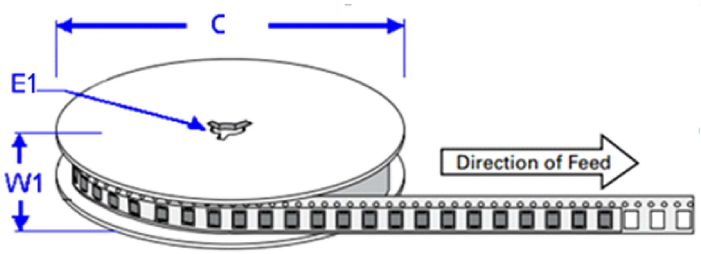
Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
l	10.20		11.00	0.402		0.433
w	7.90		8.50	0.311		0.335
h	4.40		5.00	0.173		0.197
d	1.20		1.80	0.047		0.071
e	0		0.30	0		0.012
f	2.70		3.30	0.106		0.130
A		3.50			0.138	
B		2.80			0.110	
C		6.50			0.256	

TAPE AND REEL SPECIFICATION-SMT



SECTION A-A

SECTION B-B



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.	PACKAGE	REEL (PCS)	PER CARTON (PCS)	DESCRIPTION
SMTJxxCAT-8S	SMT	1,000	4,000	13 inch reel pack

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