



SMTPA SERIES

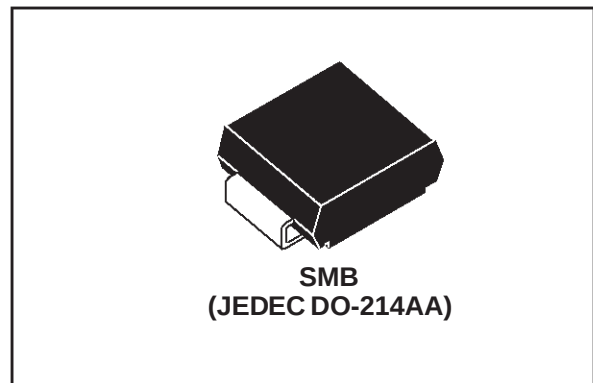
TRISIL™

FEATURES

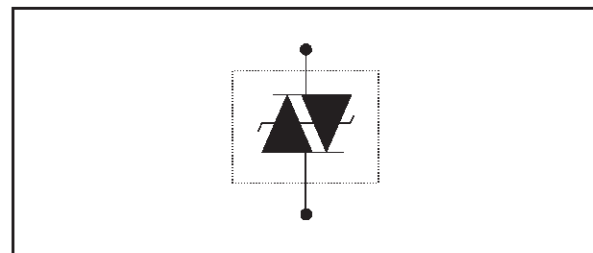
- BIDIRECTIONAL CROWBAR PROTECTION.
- BREAKDOWN VOLTAGE RANGE:
From 62 V To 270 V.
- HOLDING CURRENT = 150 mA min
- REPETITIVE PEAK PULSE CURRENT :
 $I_{PP} = 50 \text{ A}$, 10/1000 μs .

DESCRIPTION

The SMTPAxx series has been designed to protect telecommunication equipment against lightning and transient induced by AC power lines.



SCHEMATIC DIAGRAM



COMPLIES WITH THE FOLLOWING STANDARDS:	Peak Surge Voltage (V)	Voltage Waveform (μs)	Current Waveform (μs)	Admissible I_{pp} (A)	Necessary Resistor (Ω)
(CCITT) ITU-K20	1000	10/700	5/310	25	-
(CCITT) ITU-K17	1500	10/700	5/310	38	-
VDE0433	2000	10/700	5/310	50	-
VDE0878	2000	1.2/50	1/20	50	-
IEC-1000-4-5	level 3 level 4	10/700 1.2/50	5/310 8/20	50 100	- -
FCC Part 68, lightning surge type A	1500 800	10/160 10/560	10/160 10/560	75 55	12.5 6.5
FCC Part 68, lightning surge type B	1000	9/720	5/320	25	-
BELLCORE TR-NWT-001089 First level	2500 1000	2/10 10/1000	2/10 10/1000	150 50	11.5 10
BELLCORE TR-NWT-001089 Second level	5000	2/10	2/10	150	11.5
CNET I31-24	1000	0.5/700	0.8/310	25	-

SMTPA xxx

ABSOLUTE MAXIMUM RATINGS (T_{amb} = 25°C)

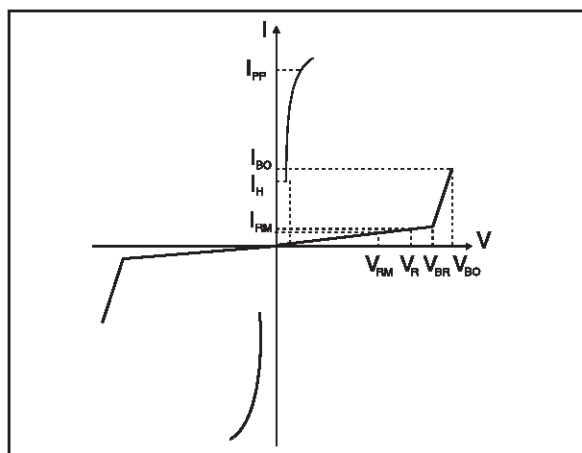
Symbol	Parameter		Value	Unit
P	Power dissipation	T _{lead} = 50 °C	5	W
I _{PP}	Peak pulse current	10/1000 μs 8/20 μs	50 100	A
I _{TSM}	Non repetitive surge peak on-state current	tp = 20 ms	30	A
dV/dt	Critical rate of rise of off-state voltage	V _{RM}	5	KV/μs
T _{stg} T _j	Storage temperature range Maximum junction temperature		- 55 to + 150 150	°C °C
T _L	Maximum lead temperature for soldering during 10 s.		260	°C

THERMAL RESISTANCES

Symbol	Parameter	Value	Unit
R _{th} (j-l)	Junction to leads.	20	°C/W
R _{th} (j-a)	Junction to ambient on printed circuit with standard footprint dimensions.	100	°C/W

ELECTRICAL CHARACTERISTICS (T_{amb} = 25°C)

Symbol	Parameter
V _{RM}	Stand-off voltage
I _{RM}	Leakage current at stand-off voltage
V _R	Continuous Reverse voltage
V _{BR}	Breakdown voltage
V _{BO}	Breakover voltage
I _H	Holding current
I _{BO}	Breakover current
I _{PP}	Peak pulse current
C	Capacitance



Type	Marking	I _{RM} @ V _{RM} max.		I _R @ V _R max. note 1		V _{BO} @ I _{BO} max. note 2		I _H min. note 3	C max. note 4
		μA	V	μA	V	V	mA	mA	pF
SMTPA62	U01	2	56	50	62	82	800	150	150
SMTPA68	U05	2	61	50	68	90	800	150	150
SMTPA100	U13	2	90	50	100	133	800	150	100
SMTPA120	U17	2	108	50	120	160	800	150	100
SMTPA130	U19	2	117	50	130	173	800	150	100
SMTPA180	U25	2	162	50	180	240	800	150	100
SMTPA200	U27	2	180	50	200	267	800	150	100
SMTPA220	U31	2	198	50	220	293	800	150	100
SMTPA240	U35	2	216	50	240	320	800	150	100
SMTPA270	U39	2	243	50	270	360	800	150	100

All parameters tested at 25°C, except where indicated.

Note 1: I_R measured at V_R guarantee V_{BRmin} ≥ V_R

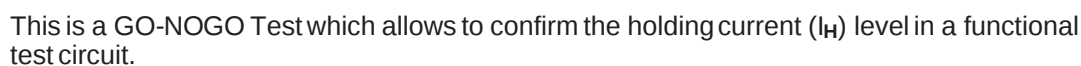
Note 2: Measured at 50 Hz (1 cycle) - See test circuit 1.

Note 3: See test circuit 2.

Note 4: V_R = 1V, F = 1MHz. Refer to fig.3 for C versus V_R.



- TEST CIRCUIT 2 for I_H parameter.**



TEST PROCEDURE :

- 1) Adjust the current level at the I_H value by short circuiting the AK of the D.U.T.
- 2) Fire the D.U.T with a surge Current : $I_{pp} = 10A$, $10/1000 \mu s$.
- 3) The D.U.T will come back off-state within 50 ms max.

Fig. 1: Non repetitive surge peak on-state current versus overload duration (T_j initial=25°C).

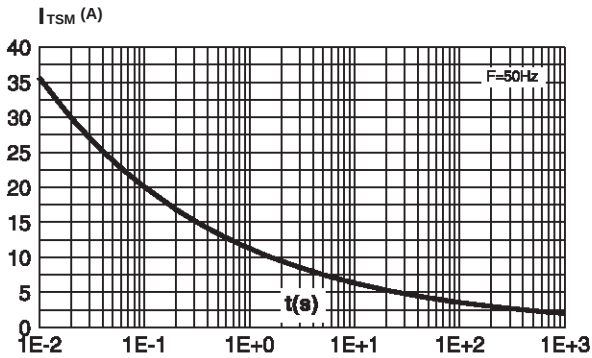


Fig. 3: Relative variation of junction capacitance versus reverse applied voltage (typical values).
Note: For V_{RM} upper than 56V, the curve is extrapolated (dotted line).

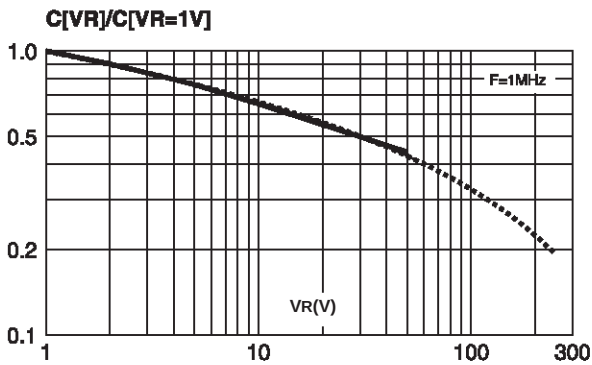


Fig. 5: Transient thermal impedance junction to ambient versus pulse duration (for FR4 PC Board with $T_{lead} = 10$ mm).

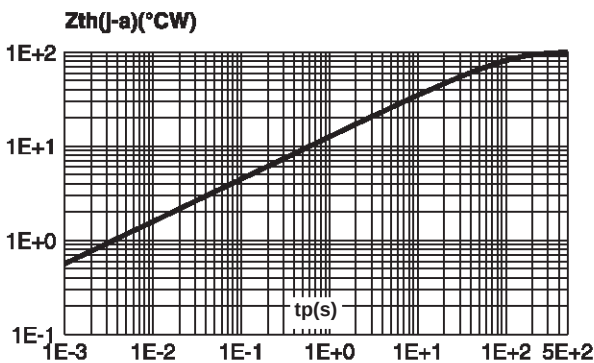


Fig. 2: Relative variation of holding current versus junction temperature.

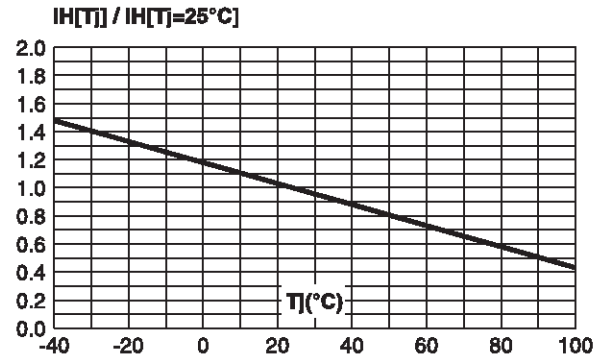
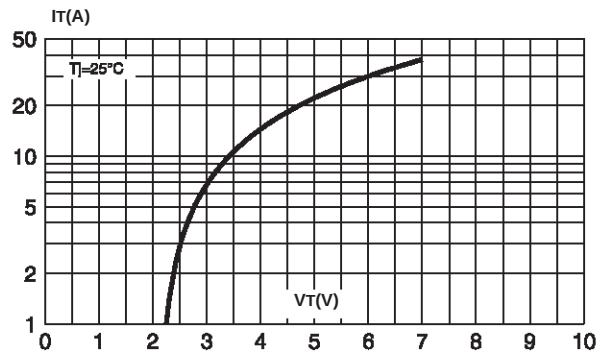
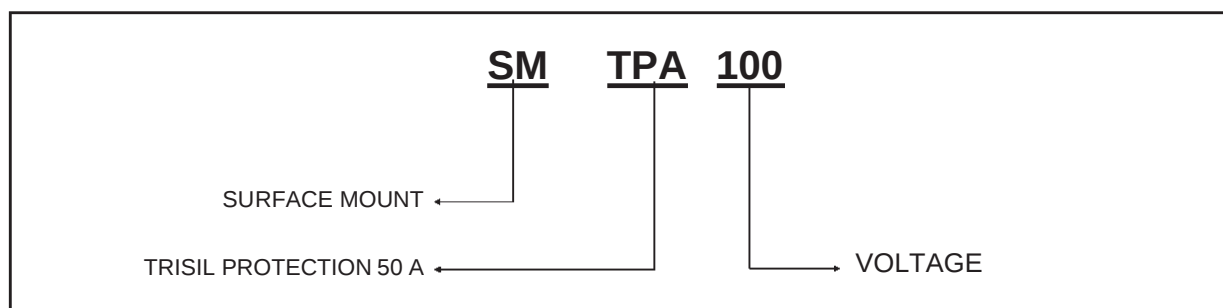


Fig. 4: On-state current versus on-state voltage (typical values).

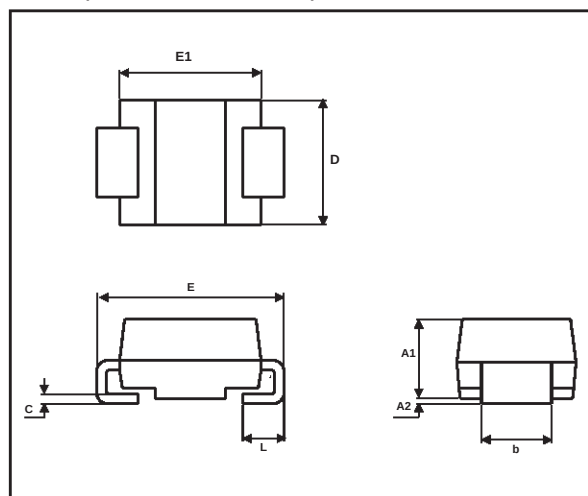




MARKING : Logo, date code, type code.

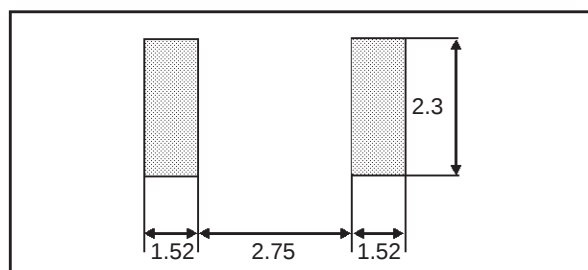
PACKAGE MECHANICAL DATA.

SMB (JEDEC DO-214AA)



REF.	DIMENSIONS			
	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A1	1.90	2.45	0.075	0.096
A2	0.05	0.20	0.002	0.008
b	1.95	2.20	0.077	0.087
c	0.15	0.41	0.006	0.016
E	5.10	5.60	0.201	0.220
E1	4.05	4.60	0.159	0.181
D	3.30	3.95	0.130	0.156
L	0.75	1.60	0.030	0.063

FOOT PRINT DIMENSION (in millimeters) SMB



Packaging :

Standard packaging is in tape and reel

Weight : 0.12g

Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a registered trademark of STMicroelectronics

© 1998 STMicroelectronics - Printed in Italy - All rights reserved.

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - France - Germany - Italy - Japan - Korea - Malaysia - Malta - Mexico - Morocco - The Netherlands - Singapore - Spain - Sweden - Switzerland - Taiwan - Thailand - United Kingdom - U.S.A.

<http://www.st.com>