

SMP75-8

TRISILTM

FEATURES

- Bidirectional surge arrestor.
- Very low stand-off voltage : V_{RM} = 8 V.
- High repetitive surge capability: IPP = 75 A (10/1000μs).
- Very low capacitance: C < 75 pF
- Low leakage current : < 2 µA

DESCRIPTION

The SMP75-8 is a very low voltage transient surge arrestor especially designed to protect sensitive telecommunication equipment against lightning strikes and other transients.

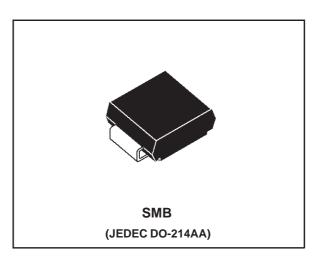
MAIN APPLICATION

* with series resistor or PTC.

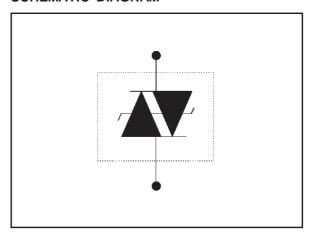
XDSL TRANSMISSION EQUIPMENT

BENEFITS

- Protection against high energy surges.
- Very low breakover voltage : V_{BO} < 15 V, thus avoiding saturation of transformer.
- No signal distortion thanks to very low capacitance.



SCHEMATIC DIAGRAM



COMPLIES WITH THE FOLLOWING STANDARDS:

- BELLCORETR-NWT		
-000974:	10/1000 μs	1 kV
	10/1000 ຸ່ມຣ	75A *
- CCITT K20:	10/700 μs	4 kV
	5/310 µs	100A
- VDE 0433:	10/700 μs	4 kV
	5/310 µs	100A
- VDE 0878:	•	4 kV
VBE 0070.	1.2/50 μs 1/20 μs	100A

January 1998 - Ed : 2 1/6

SMP75-8

ABSOLUTE MAXIMUM RATINGS $(T_{amb} = 25 \degree C)$

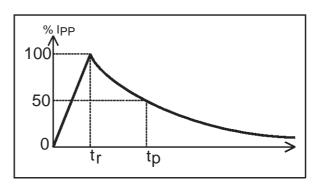
Symbol	Parameter	Value	Unit	
I _{pp}	Peak pulse current	10/1000μs 8/20μs	75 250	A A
I _{TSM}	Non repetitive surge peak on-state current One cycle	50Hz 60Hz	35 37	A A
	Non repetitive surge peak on-state current F = 50Hz	0.2s 2s	14 6	A A
Tı	Maximum lead temperature for soldering during	ng 10s	260	°C
T _{stg} Tj	Storage temperature range Maximum junction temperature		- 55 to + 150 150	ο̈́ο̈́

THERMAL RESISTANCES

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

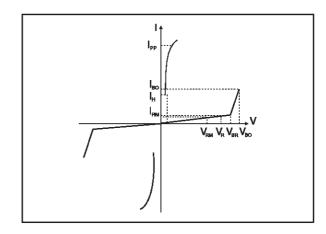
Note 1: Pulse waveform

10 / 1000 μs	tr = 10 μs	tp = 1000 μs
8 / 20 μs	$tr = 8 \mu s$	$tp = 20 \mu s$
5/310 μs	$tr = 5 \mu s$	tp = 310 μs
1 / 20 μs	$tr = 1 \mu s$	$tp = 20 \mu s$
2 / 10 us	$tr = 2 \mu s$	$to = 10 \mu s$



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

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



STATIC PARAMETERS

Туре	I	I _{RM} @ V _{RM} max.		I _R @ V _R max. note 1		V _{BO} @ I _{BO} max.		C max. note 4
	μΑ	V	μΑ	V	V	mA	mA	pF
SMP75-8	2	6	50	8	15	800	50	75

Note 1: IR measured at VR guarantees VBR>VR

Note 2 : Measured at 50Hz, see test circuit 1. In any case VBOmin ≥ VBR

Note 3: See functional holding current test circuit 2.

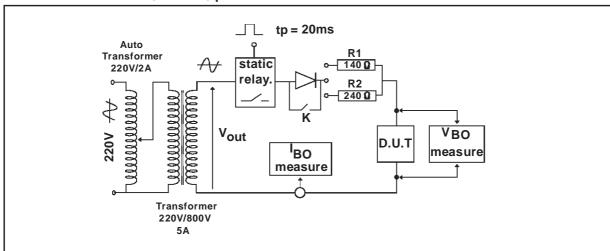
Note 4: VR=1V bias, VRMS=1V, F=1MHz.

DYNAMIC PARAMETERS

Symbol	Test conditions (see note 5)	Туре	Max.	Unit
V BO	Test conditions 1 $V_{RISE} = 100 \text{ V/}\mu\text{s}$, di/dt < 10 A/ μ s, I _{PP} = 75 A	SMP75-8	20	v
V BO	Test conditions 2 $V_{RISE} = 1 \text{ kV/}\mu\text{s}$, $di/dt < 10 \text{ A/}\mu\text{s}$, $I_{PP} = 10 \text{ A}$	3ivii 73-0	20	•

Note 5: VBO parameters are given by a KeyTek 'System 2' generator with PN246I module. See test circuits (3) for VBO dynamic parameters.

TEST CIRCUIT 1 FOR IBO and VBO parameters:



TEST PROCEDURE:

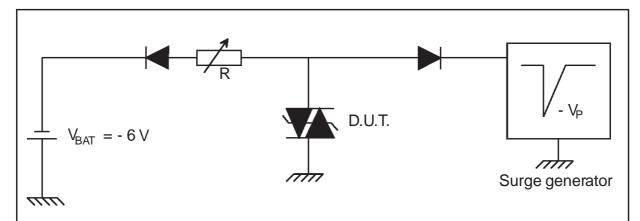
Pulse Test duration (tp = 20ms):

- For Bidirectional devices = Switch K is closed
- For Unidirectional devices = Switch K is open.

Vout Selection

- Device with VBo < 200 Volt
 - Vout = 250 V_{RMS}, R_1 = 140 Ω .
- Device with $V_{BO} \ge 200 \, Volt$ $V_{OUT} = 480 \, V_{RMS}, \, R_2 = 240 \, \Omega.$

FUNCTIONAL HOLDING CURRENT (I_H) TEST CIRCUIT 2: GO-NO GO TEST

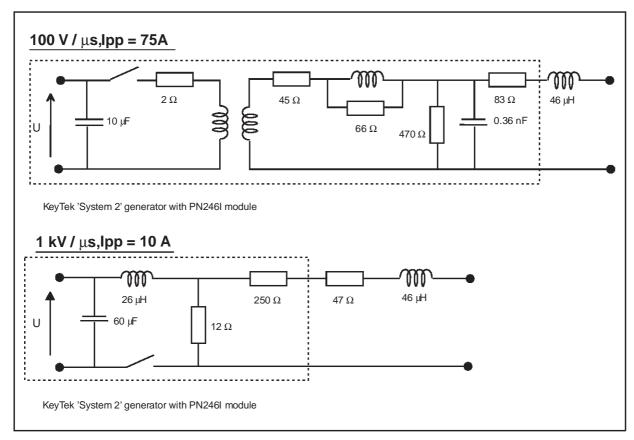


This is a GO-NOGO test which allows to confirm the holding current (I_H) level in a functional test circuit.

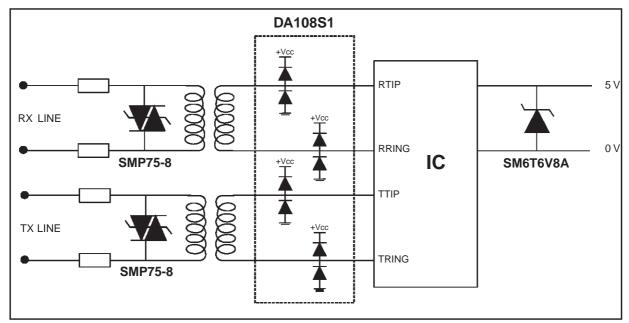
TEST PROCEDURE:

- Adjust the current level at the $I_{\text{\scriptsize H}}$ value by short circuiting the D.U.T.
- Fire the D.U.T. with a surge current : $I_{pp} = 10A$, $10/1000 \, \mu s$.
- The D.U.T. will come back to the OFF-state within a duration of 50 ms max.

TEST CIRCUITS 3 FOR VBO DYNAMIC PARAMETERS







The above schematic shows a T1 / E1 application circuit. This type of line protection may be used in premises equipment or telephone company equipment on ports directly connected to metallic plant lines.

During the lightning surge, the low voltage Trisil **SMP75-8** provides an efficient crowbar protection on the primary side of the transformer.

The SMP75-8 has a maximum peak pulse current of 75A ($10/1000\mu s$ pulse) and a maximum breakover voltage of 15V. This low voltage prevents the transformer to be satured when a surge occurs on the line. Additionally, the low capacitance (65pF) is required to avoid significant signal degradation in the case of high speed digital pulses.

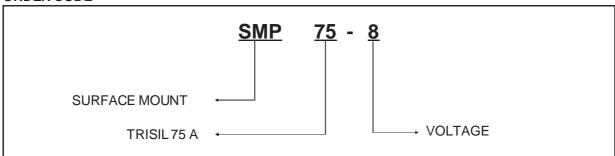
To protect the IC line interface from the remaining energy which is coupled through the transformer,

additional voltage protection is recommended on the line input / output pins of the IC. The diode array DA108S1 connected between +Vcc and GND is then used to limit the remaining overvoltage within a safe level.

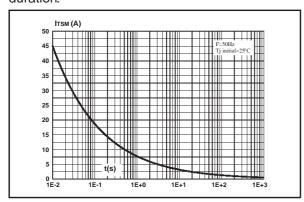
The DA108S1 is especially dedicated to this application because. Its fast response time and low forward voltage drop enable it to clamp any surge before the IC line interface internal protection fails. Additionally, the low capacitance (30pF) is required to prevent signal degradation of the high speed datd.

The DA108S1 is a fully integrated (1 chip) device and results from the ST ASDTM (Application Specific Discretes) technology. ASDsTM combine the functions of several components into a single monolithic device that is tailored to meet the exact requirement of a specific application, allowing higher density and improved reliability.

ORDER CODE



Non repetitive surge peak current versus overload duration.

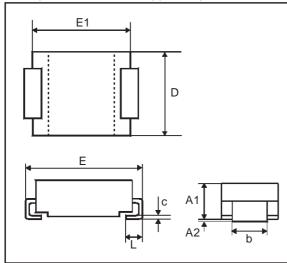


MARKING

Package	Туре	Marking
SMB	SMP75-8	L08

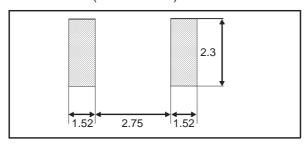
PACKAGE MECHANICAL DATA

SMB (JEDEC DO-214AA)(Plastic)



	DIMENSIONS					
REF.	Millimeters Inches			;		
	Min. Typ. Max. Min.		Тур.	Max.		
A1	1.90	2.15	2.45	0.075	0.085	0.096
A2	0.05	0.15	0.20	0.002	0.006	0.008
b	1.95		2.20	0.077		0.087
С	0.15		0.41	0.006		0.016
Е	5.10	5.40	5.60	0.201	0.213	0.220
E1	4.05	4.30	4.60	0.159	0.169	0.181
D	3.30	3.60	3.95	0.130	0.142	0.156
Ĺ	0.75	1.15	1.60	0.030	0.045	0.063

FOOT PRINT (in millimeters)



Packaging: tape and reel

Weight: 0.12g

Information furnished is believed to be accurate and reliable. However, SGS-THOMSON Microelectronics 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 SGS-THOMSON Microelectronics. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. SGS-THOMSON Microelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of SGS-THOMSON Microelectronics.

© 1998 SGS-THOMSON Microelectronics - Printed in Italy - All rights reserved.

SGS-THOMSON Microelectronics GROUP OF COMPANIES

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

