

**FEATURES**

- Bidirectional surge arrester.
- Very low stand-off voltage :  $V_{RM} = 8\text{ V}$ .
- High repetitive surge capability :  
 $I_{PP} = 75\text{ A}$  (10/1000 $\mu\text{s}$ ).
- Very low capacitance :  $C < 75\text{ pF}$
- Low leakage current :  $< 2\text{ }\mu\text{A}$

**DESCRIPTION**

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

**MAIN APPLICATION**

XDSL TRANSMISSION EQUIPMENT

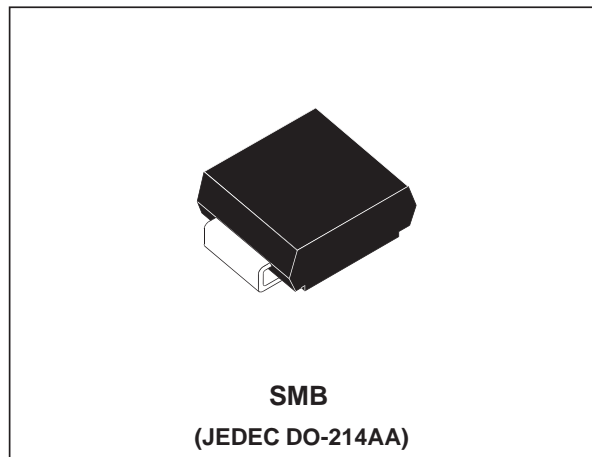
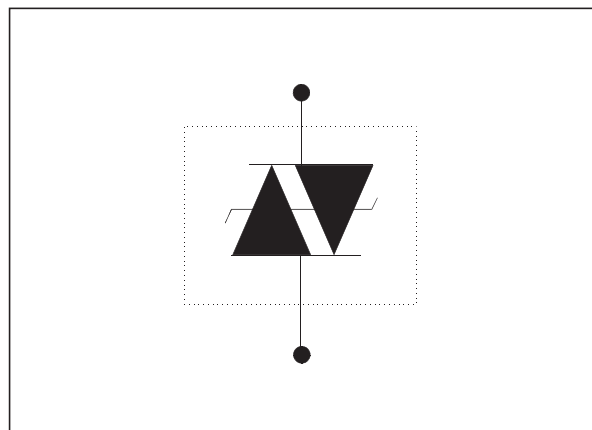
**BENEFITS**

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

**COMPLIES WITH THE FOLLOWING STANDARDS :**

- BELLCORE TR-NWT		
-000974:	10/1000 $\mu\text{s}$	1 kV
	10/1000 $\mu\text{s}$	75A *
- CCITT K20:	10/700 $\mu\text{s}$	4 kV
	5/310 $\mu\text{s}$	100A
- VDE 0433:	10/700 $\mu\text{s}$	4 kV
	5/310 $\mu\text{s}$	100A
- VDE 0878:	1.2/50 $\mu\text{s}$	4 kV
	1/20 $\mu\text{s}$	100A

\* with series resistor or PTC.

**SCHEMATIC DIAGRAM**

## SMP75-8

### ABSOLUTE MAXIMUM RATINGS (T<sub>amb</sub> = 25°C)

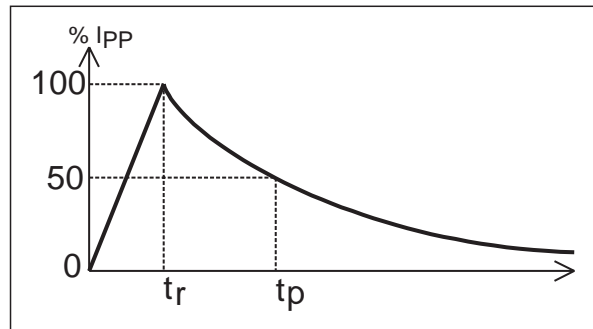
Symbol	Parameter	Value	Unit
I <sub>pp</sub>	Peak pulse current	10/1000μs	75
		8/20μs	250
I <sub>TSM</sub>	Non repetitive surge peak on-state current One cycle	50Hz	35
		60Hz	37
	Non repetitive surge peak on-state current F = 50Hz	0.2s	14
		2s	6
T <sub>l</sub>	Maximum lead temperature for soldering during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

### THERMAL RESISTANCES

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

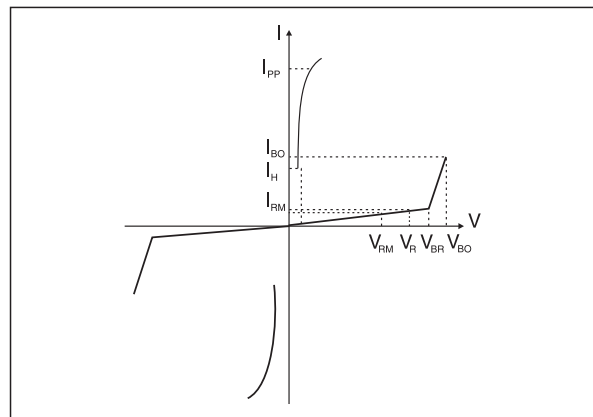
#### Note 1: Pulse waveform

10 / 1000 μs	tr = 10 μs	tp = 1000 μs
8 / 20 μs	tr = 8 μs	tp = 20 μs
5 / 310 μs	tr = 5 μs	tp = 310 μs
1 / 20 μs	tr = 1 μs	tp = 20 μs
2 / 10 μs	tr = 2 μs	tp = 10 μs



### ELECTRICAL CHARACTERISTICS (T<sub>amb</sub> = 25°C)

Symbol	Parameter
V <sub>RM</sub>	Stand-off voltage
I <sub>RM</sub>	Leakage current at stand-off voltage
V <sub>R</sub>	Continuous Reverse voltage
V <sub>BR</sub>	Breakdown voltage
V <sub>BO</sub>	Breakover voltage
I <sub>H</sub>	Holding current
I <sub>BO</sub>	Breakover current
I <sub>PP</sub>	Peak pulse current



## STATIC PARAMETERS

Type	$I_{RM}$ @ $V_{RM}$ max.		$I_R$ @ $V_R$ max. note 1		$V_{BO}$ @ $I_{BO}$ max. note 2		$I_H$ typ. note 3	$C$ max. note 4
	$\mu A$	V	$\mu A$	V	V	mA	mA	pF
SMP75-8	2	6	50	8	15	800	50	75

**Note 1 :**  $I_R$  measured at  $V_R$  guarantees  $V_{BR} > V_R$

**Note 2 :** Measured at 50Hz, see test circuit 1. In any case  $V_{BOmin} \mid V_{BR}$

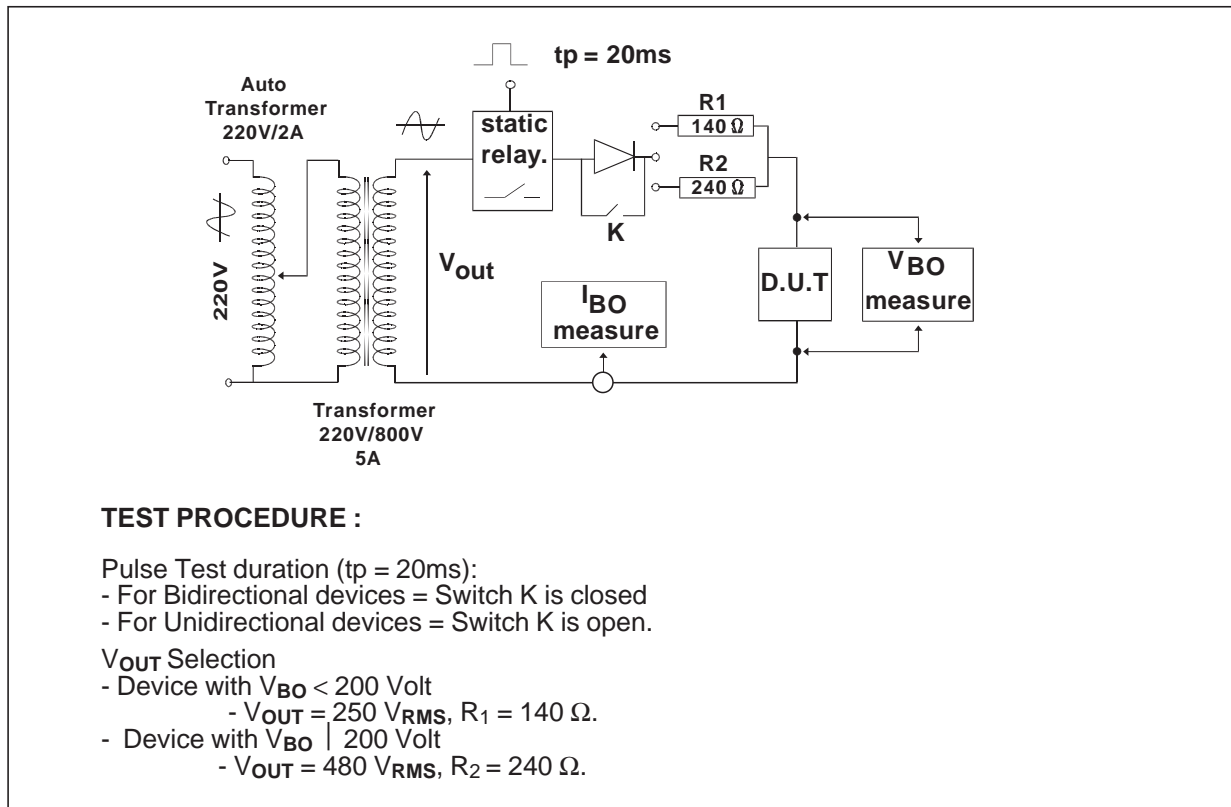
**Note 3 :** See functional holding current test circuit 2.

**Note 4 :**  $V_R=1V$  bias,  $V_{RMS}=1V$ ,  $F=1MHz$ .

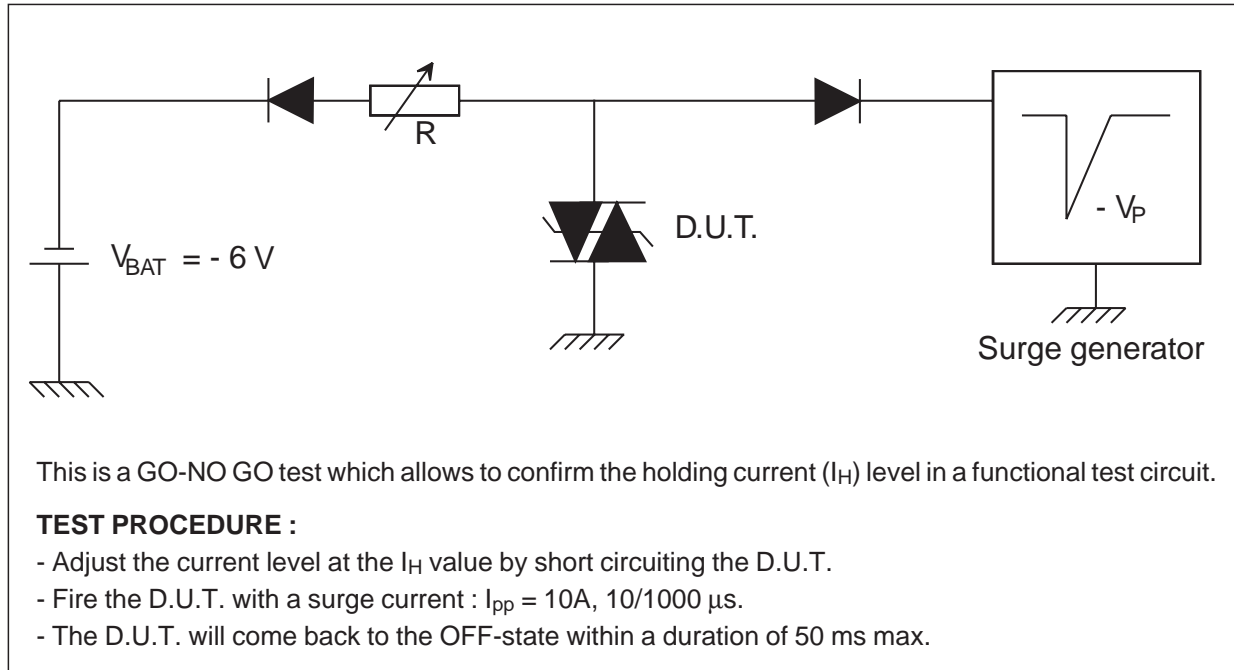
## DYNAMIC PARAMETERS

Symbol	Test conditions (see note 5)	Type	Max.	Unit
$V_{BO}$	<p><b>Test conditions 1</b> <math>V_{RISE} = 100 V/\mu s</math>, <math>di/dt &lt; 10 A/\mu s</math>, <math>I_{PP} = 75 A</math></p> <p><b>Test conditions 2</b> <math>V_{RISE} = 1 kV/\mu s</math>, <math>di/dt &lt; 10 A/\mu s</math>, <math>I_{PP} = 10 A</math></p>	SMP75-8	20	V

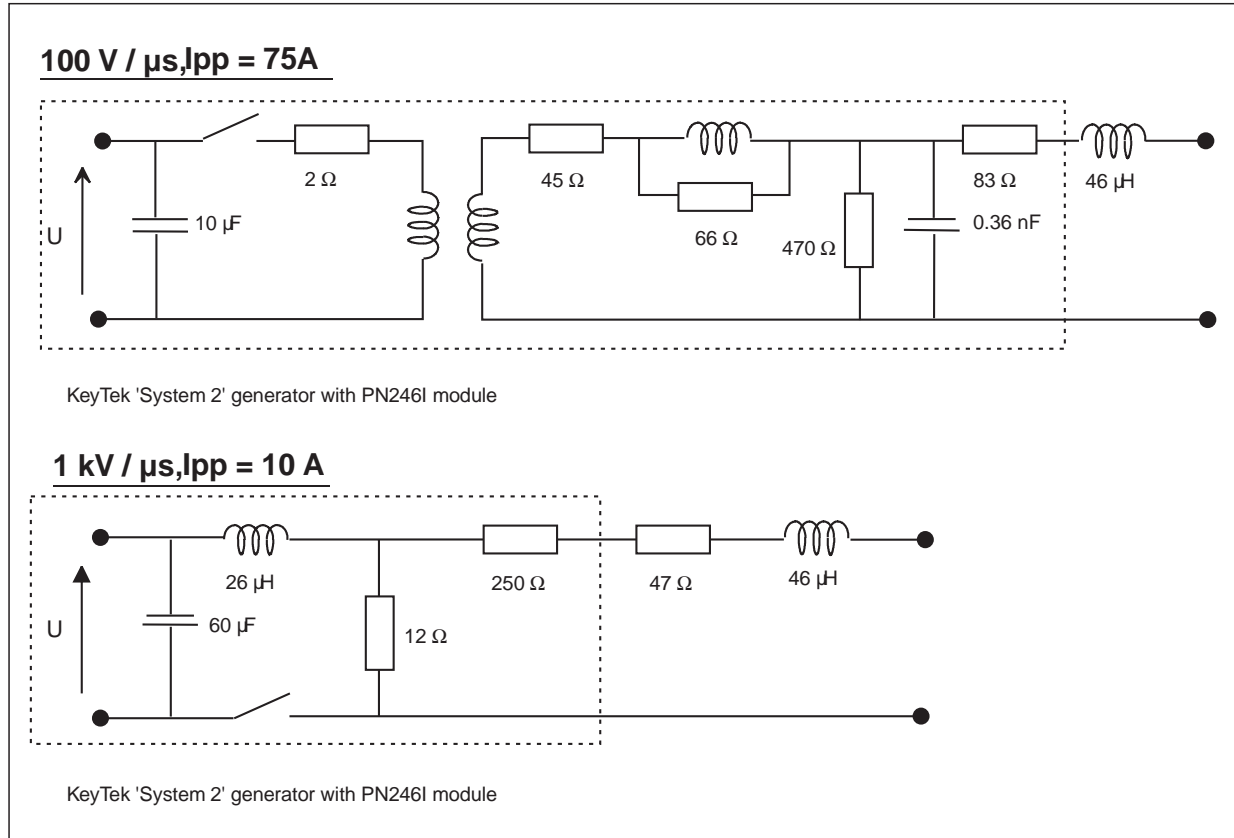
**Note 5 :**  $V_{BO}$  parameters are given by a KeyTek 'System 2' generator with PN2461 module.  
See test circuits (3) for  $V_{BO}$  dynamic parameters.

TEST CIRCUIT 1 FOR  $I_{BO}$  and  $V_{BO}$  parameters :

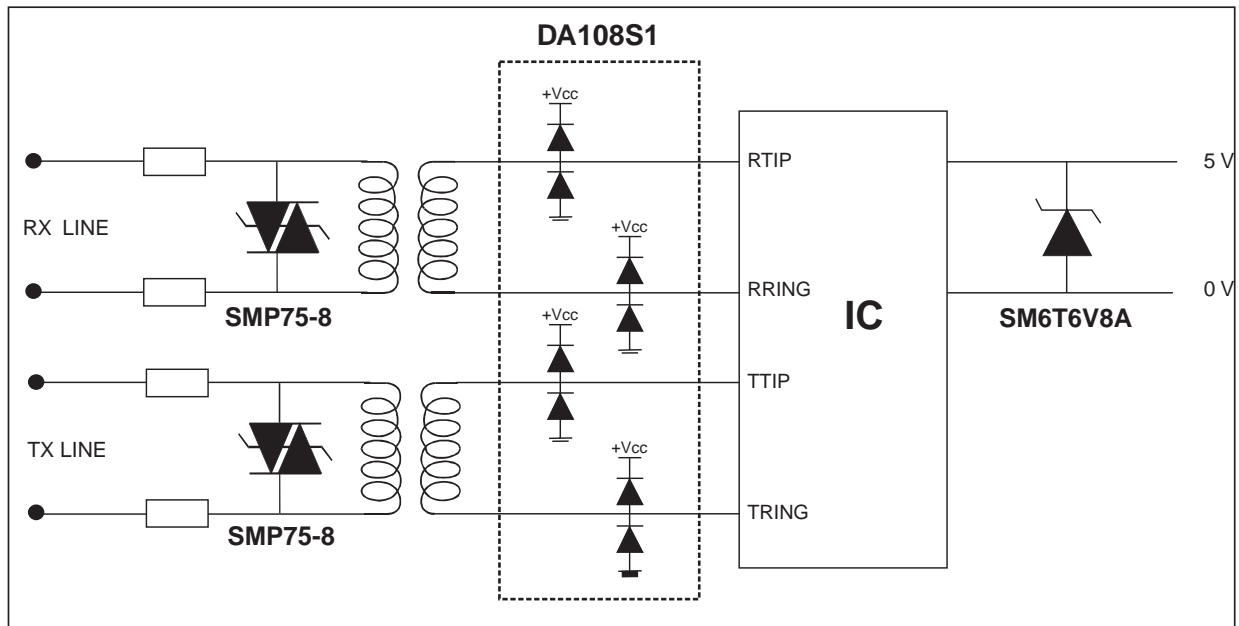
**FUNCTIONAL HOLDING CURRENT ( $I_H$ ) TEST CIRCUIT 2: GO-NO GO TEST**



**TEST CIRCUITS 3 FOR  $V_{BO}$  DYNAMIC PARAMETERS**



TYPICAL APPLICATION : T1 / E1 protection



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 Transil **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 (10/1000µs pulse) and a maximum breakover voltage of 15V. This low voltage prevents the transformer to be saturated 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

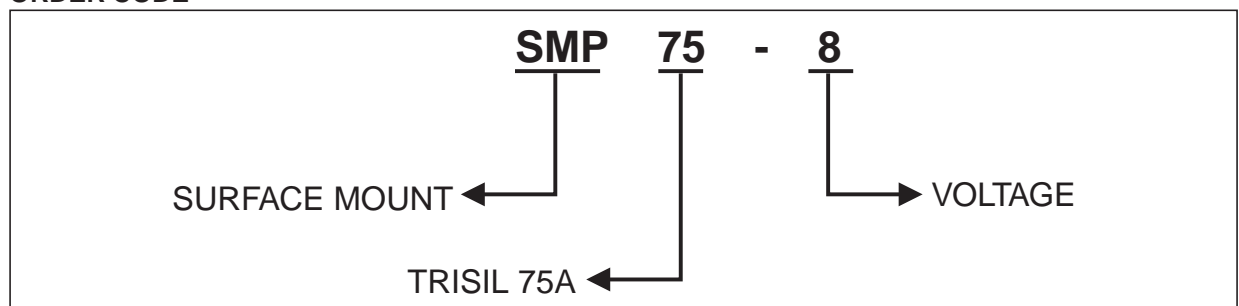
the line input / output pins of the IC. The diode array DA108S1 connected between +Vcc and GND is then used to limit the remaining overvoltage within a safe level.

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 data.

The DA108S1 is a fully integrated (1 chip) device and results from the ST ASD™ (Application Specific Discretes) technology. ASDs™ 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.

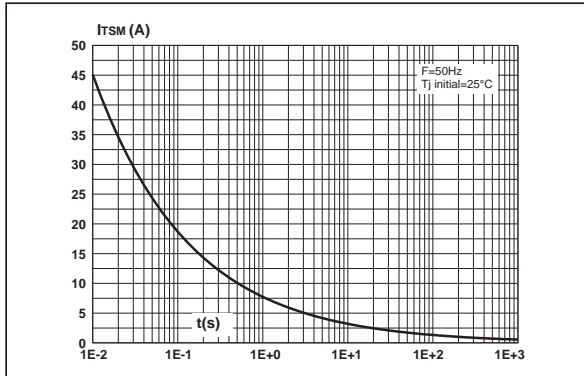
The unidirectional Transil™ **SM6T6V8A** is used to clamp surges coupled onto the power supply.

ORDER CODE



## SMP75-8

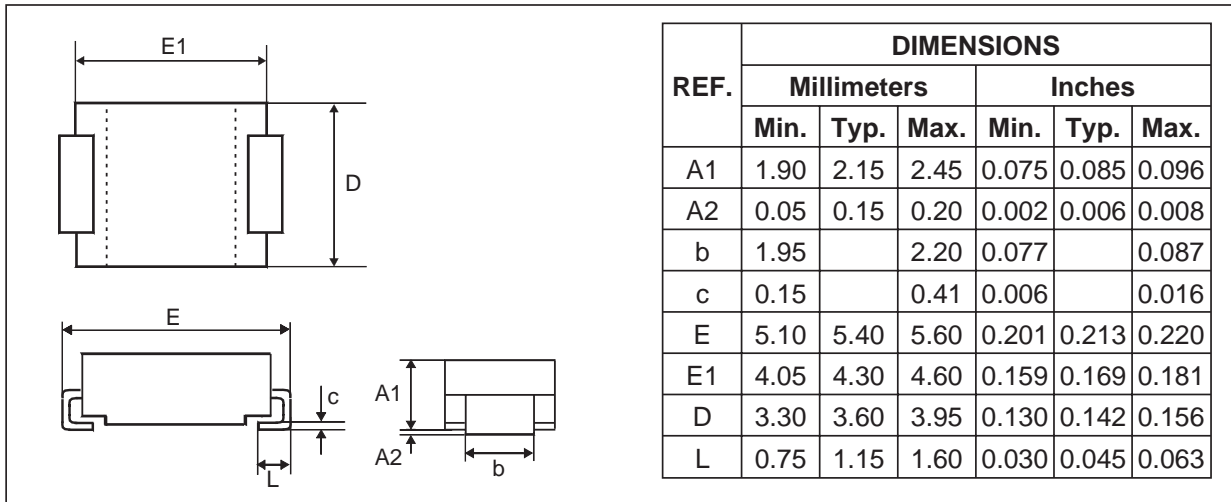
Non repetitive surge peak current versus overload duration.



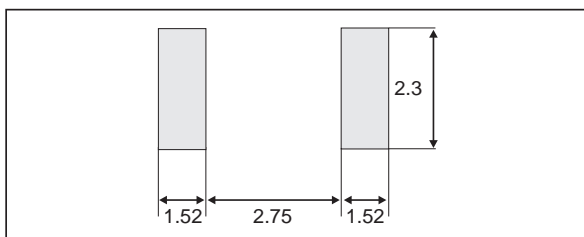
### MARKING

Package	Type	Marking
SMB	SMP75-8	L08

### PACKAGE MECHANICAL DATA SMB (JEDEC DO-214AA)(Plastic)



### FOOT PRINT (in millimeters)



**Packaging** : tape and reel

**Weight** : 0.12g

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