

**FEATURES**

- TRIPLE CROWBAR PROTECTION
- PEAK PULSE CURRENT :  $I_{PP} = 30\text{ A}$ , 10/1000 $\mu\text{s}$
- VERY LOW CAPACITANCE :  
C = 30 pF
- PROTECTS HIGH-SPEED LINE DRIVERS / RECEIVERS

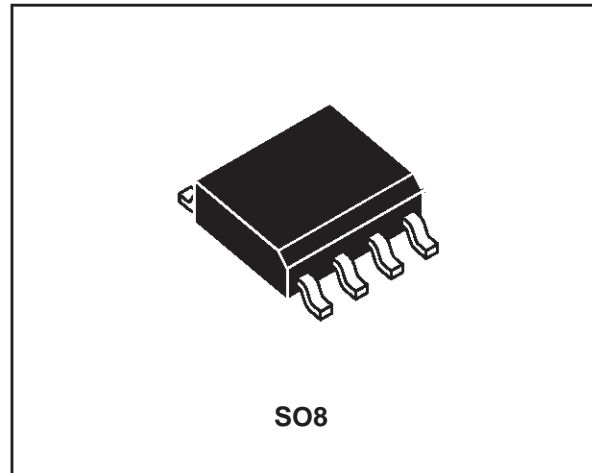
**DESCRIPTION**

Dedicated to dataline protection, this device provides a triple protection function. It ensures the same protection capability with the same breakdown voltage both in common mode and in differential mode.

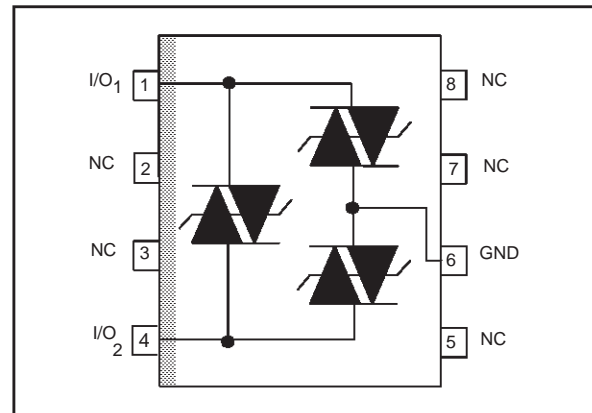
With a stand-off voltage of 28V and a very low capacitance, this device is able to protect high-speed interfaces such as T1/E1 interface.

**COMPLIES WITH THE FOLLOWING STANDARDS :**

- IEC801-2    15kV        (air discharge)
- IEC801-4    40A            (repetitive 2.5kHz)
- IEC801-5    1.2/50 $\mu\text{s}$     4kV  
                  8/20 $\mu\text{s}$       100A



**SCHEMATIC DIAGRAM**



**ABSOLUTE MAXIMUM RATINGS** ( $T_{amb} = 25\text{ }^\circ\text{C}$ )

Symbol	Parameter	Value	Unit
$I_{pp}$	Peak pulse current	10/1000 $\mu\text{s}$	30 A
		8/20 $\mu\text{s}$	150 A
$T_{stg}$	Storage temperature range	- 40 to + 150	$^\circ\text{C}$
$T_j$	Maximum junction temperature	150	$^\circ\text{C}$
$T_L$	Maximum lead temperature for soldering during 10s	260	$^\circ\text{C}$

**THERMAL RESISTANCE**

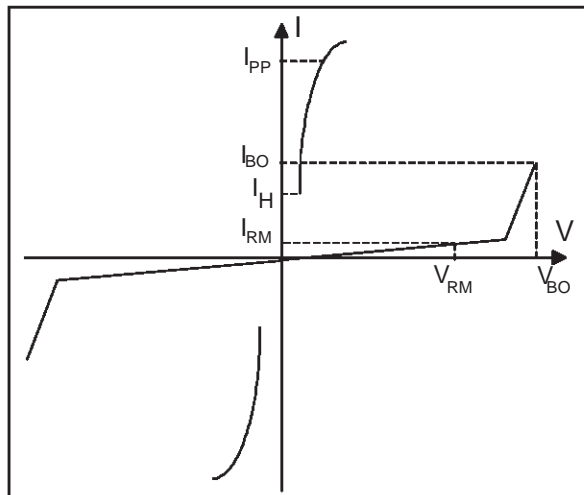
Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient	170	$^\circ\text{C/W}$

TM: ASD is a trademark of SGS-THOMSON Microelectronics.

# TPN3021

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

Symbol	Parameter
V <sub>RM</sub>	Stand-off voltage
V <sub>BO</sub>	Breakover voltage
V <sub>BR</sub>	Breakdown voltage
I <sub>H</sub>	Holding current
I <sub>BO</sub>	Breakover current
I <sub>RM</sub>	Leakage current at V <sub>RM</sub>
I <sub>PP</sub>	Peak pulse current
C	Capacitance
αT	Temperature coefficient



Type	I <sub>RM</sub> @ V <sub>RM</sub> max.		V <sub>BO</sub> @ I <sub>BO</sub> max.		I <sub>H</sub> min.	C typ.	C max.	αT typ.
	note 1							
	μA	V	V	mA	mA	pF	pF	10 <sup>-4</sup> /°C
TPN3021	4	28	38	100	30	25	30	8

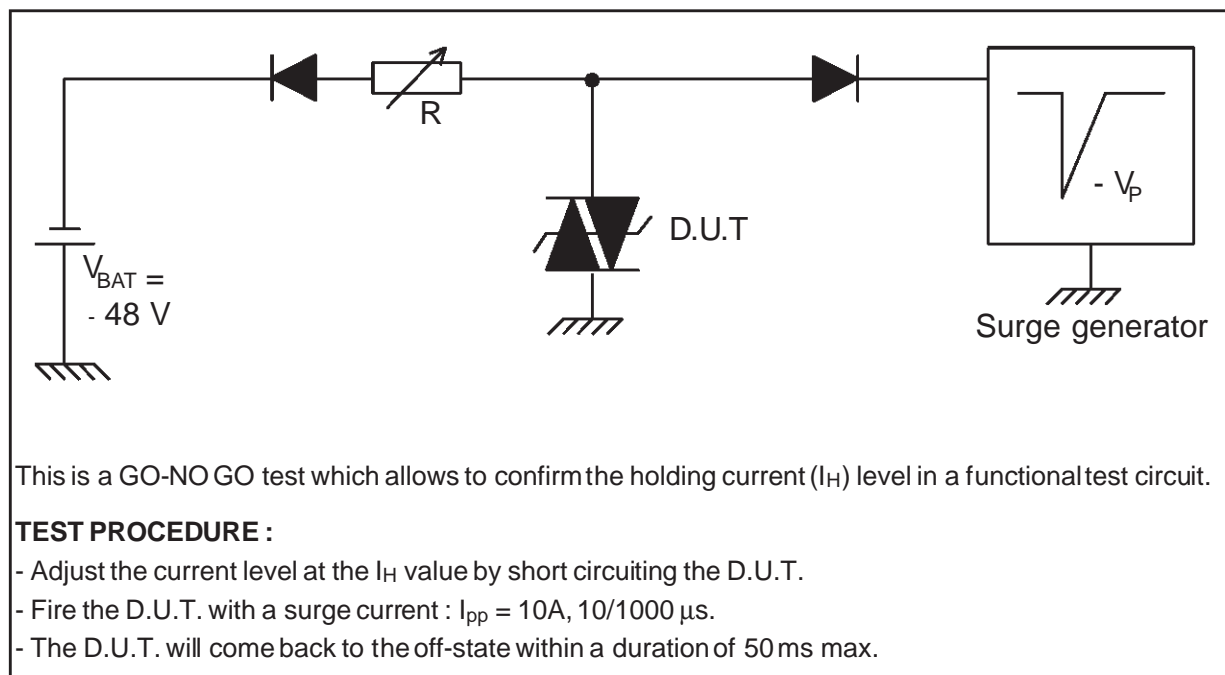
**Note 1 :** Between any I/O pin and Ground or between I/O1 and I/O2.

**Note 2 :** See the functional holding current (I<sub>H</sub>) test circuit.

**Note 3 :** Between any I/O pin and GND or between I/O1 and I/O2 at 0V bias, V<sub>RMS</sub> = 30 mV, F = 1 MHz.

**Note 4 :** ΔV<sub>BO</sub> = αT × (T<sub>amb</sub> - 25) × V<sub>BO</sub>(25°C).

## FUNCTIONAL HOLDING CURRENT (I<sub>H</sub>) TEST CIRCUIT : GO-NO GO TEST



APPLICATION CIRCUIT : T1/E1 Interface Protection

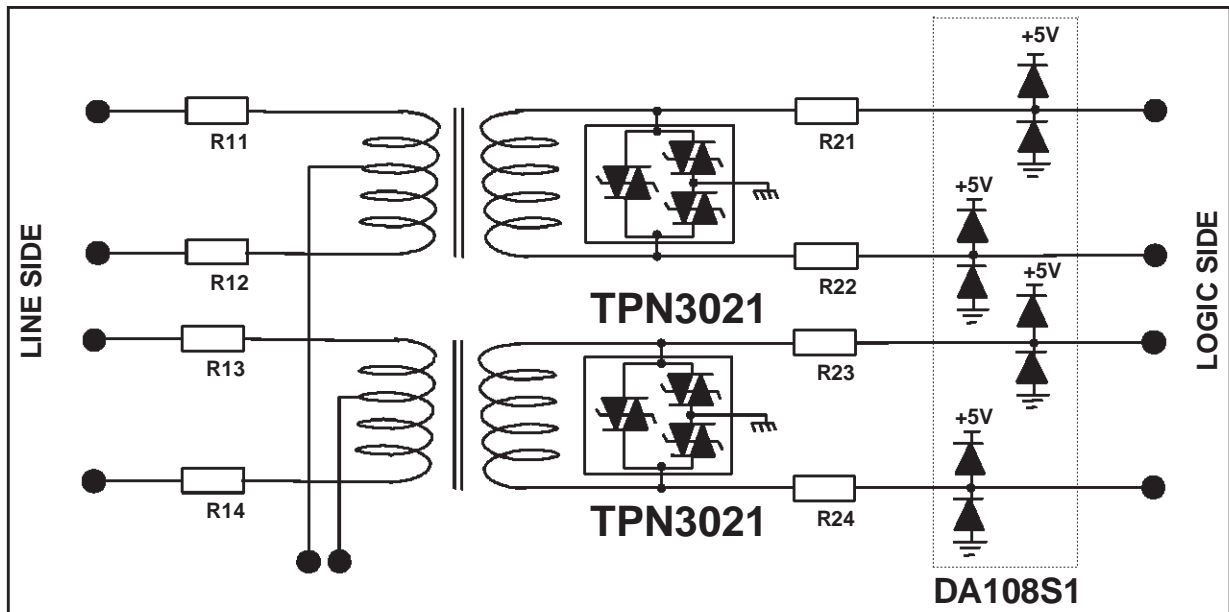
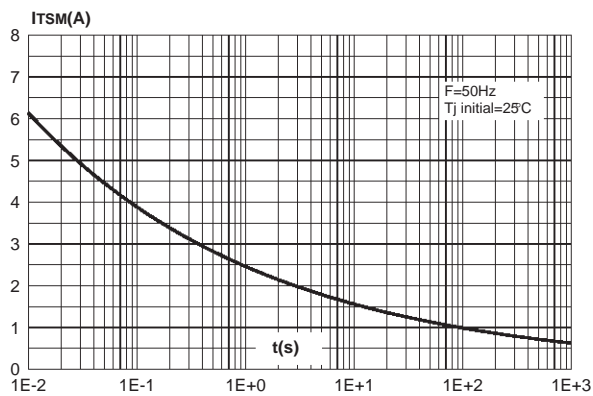
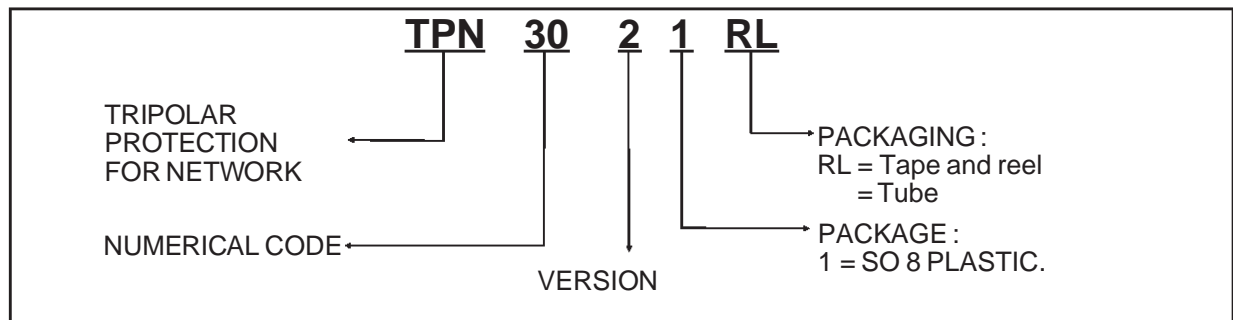


Fig. 1 : Surge peak current versus overload duration.



# TPN3021

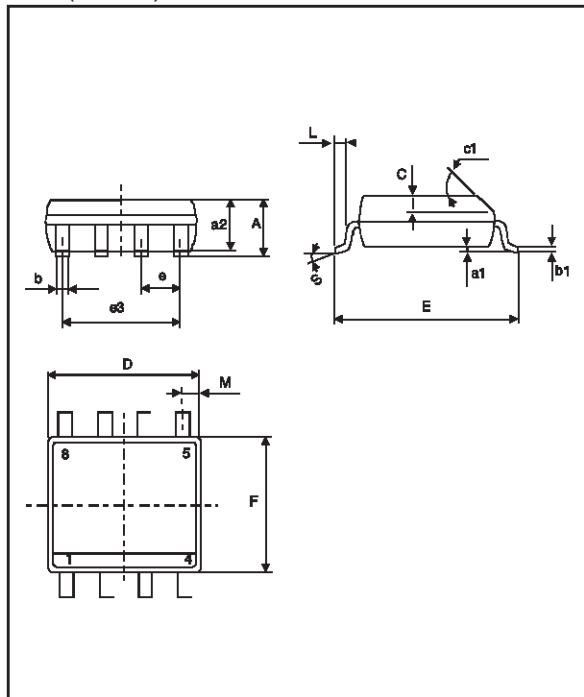
## ORDER CODE



## Marking

Type	Marking
TPN3021	TPN302

## PACKAGE MECHANICAL DATA SO8 (Plastic)



REF.	DIMENSIONS					
	Millimetres			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			1.75			0.069
a1	0.1		0.25	0.004		0.010
a2			1.65			0.065
b	0.35		0.48	0.014		0.019
b1	0.19		0.25	0.007		0.010
C		0.50			0.020	
c1	45° (typ)					
D	4.8		5.0	0.189		0.197
E	5.8		6.2	0.228		0.244
e		1.27			0.050	
e3		3.81			0.150	
F	3.8		4.0	0.15		0.157
L	0.4		1.27	0.016		0.050
M			0.6			0.024
S	8° (max)					

**Packaging** = Products supplied in antistatic tubes or tape and reel.

**Weight** = 0.08 g

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.