SGS-THOMSON MICROELECTRONICS

# NTSP1

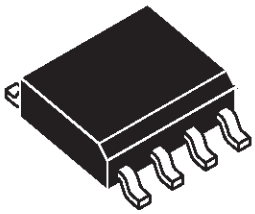
Application Specific Discretes
A.S.D.™

## NETWORK TERMINATION S INTERFACE PROTECTION

### MAIN APPLICATIONS

ISDN equipment where transient overvoltage and electrostatic discharge protection is required, such as :

- S interface on NT equipment
- S interface of terminal equipment



**SO8**

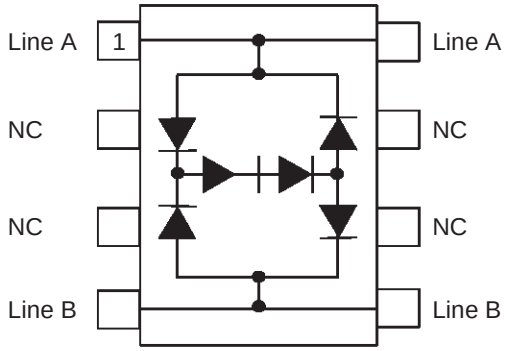
### DESCRIPTION

The NTSP1 is a monolithic diode structure especially designed to protect ISDN S/T interfaces against transient overvoltage and ESD surges.

### FEATURES

- Peak pulse current : $I_{PP}$ = 10 A max (5 / 310 µs)
- Clamping voltage : $V_{CL}$ = 3 V max
- Low leakage current : $I_R$ = 1 µA
- Capacitance : C = 40 pF typ.

### FUNCTIONAL DIAGRAM



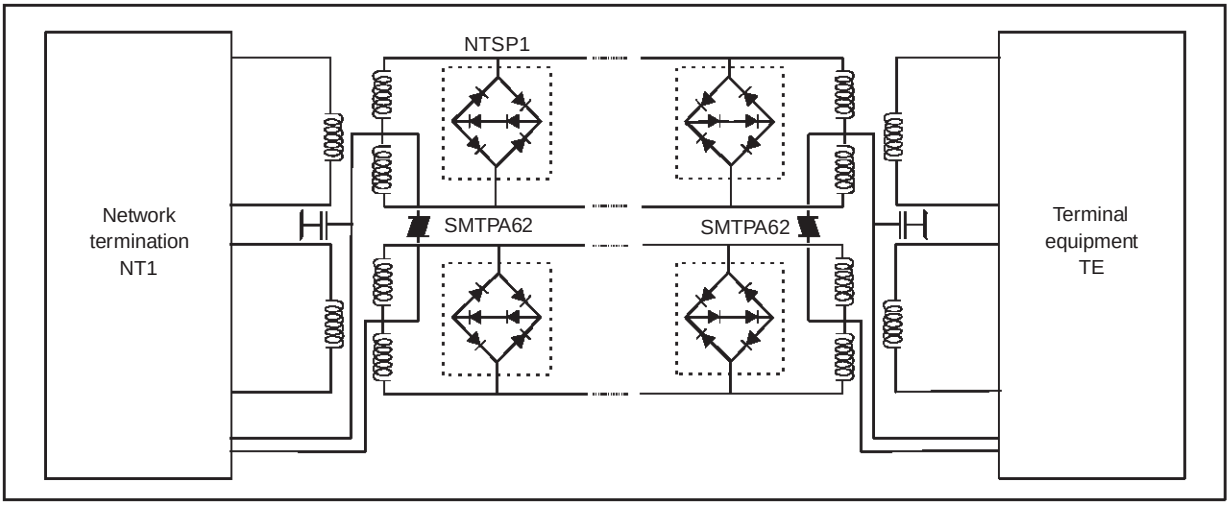

### BENEFITS

- Monolithic diode structure for high reliability
- Transient overvoltage and ESD surges protection
- Board space saving

### COMPLIES WITH THE FOLLOWING STANDARDS :

| | |
|---|---|
| CCITT K21 | 1 kV, 10/700 µs (with serial resistance of 100 Ω) see test circuit |
| CCITT K22 | 1 kV, 1.2/50 µs (with serial resistance of 50 Ω) |
| IEC 1000-4-5 | 2 kV, 1.2/50 µs (with serial resistance of 100 Ω) |
| IEC 1000-4-2 | 15 kV (air discharge) 8 kV (contact discharge) |

## APPLICATION EXAMPLE : typical connection diagram



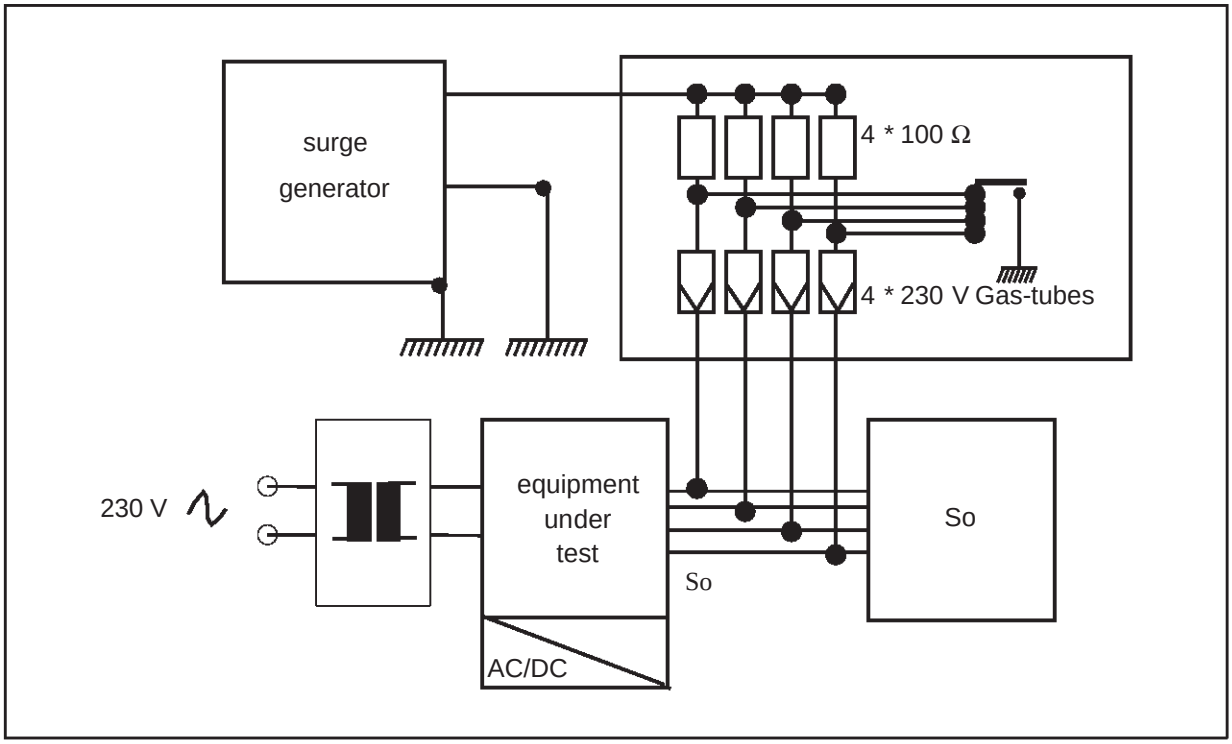

## ABSOLUTE MAXIMUM RATINGS ($T_{amb}$ = 25 °C)

| Symbol | Parameter | Test condition | Value | Unit |
|---|---|---|---|---|
| $I_{PP}$ | Peak pulse current | 1 kV 10/700 µs (see test circuit)<br>2 kV 1.2/50 µs (see test circuit) | 10<br>20 | A |
| $T_{stg}$ | Storage temperature range | | -40 to +150 | °C |
| $T_L$ | Lead temperature for soldering during 10 s | | 260 | °C |

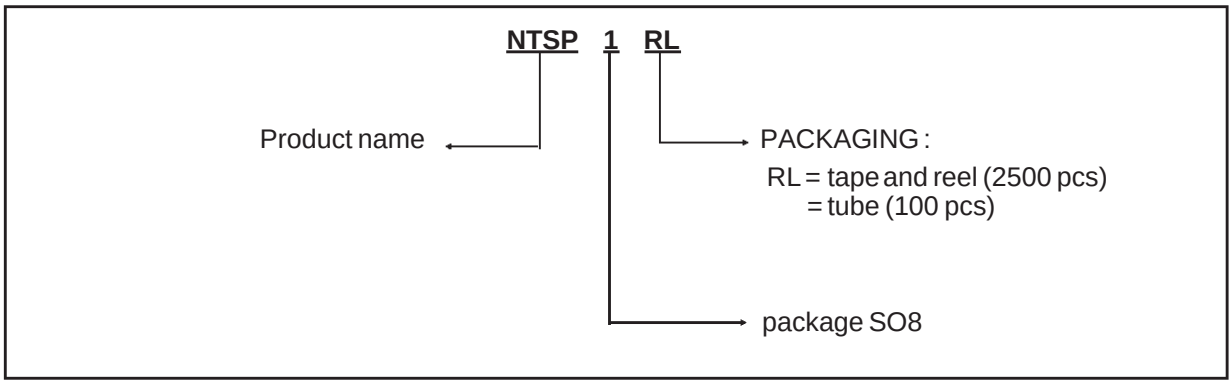
## ELECTRICAL CHARACTERISTICS ($T_{amb}$ = 25 °C)

| Type | Parameter | Test condition | Typ. | Max. | Unit |
|---|---|---|---|---|---|
| $V_{CL}$ | Clamping voltage | 1 mA, measured at 50 Hz<br>at $I_{PP}$, 10/700 µs<br>at $I_{PP}$, 1.2/50 µs | | 3<br>15<br>25 | V |
| $I_R$ | Leakage current | $V_R$ = 1.2 V, 25 °C<br>$V_R$ = 1.2 V, 70 °C | | 1<br>5 | µA<br>µA |
| C | Capacitance | $V_R$ = 1.2 V, F = 1 MHz | 40 | | pF |

**TEST CIRCUIT**
(Transversal mode)

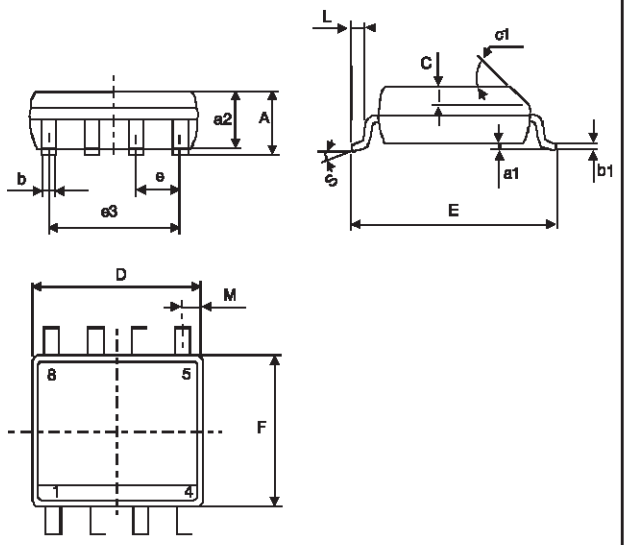



**ORDER CODE**



## 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) | | | | | |

**Weight :** 0.08g

## MARKING

| Type | Marking |
|---|---|
| NTSP1 | NTSP1 |