

Application Specific Discretos  
A.S.D.<sup>TM</sup>

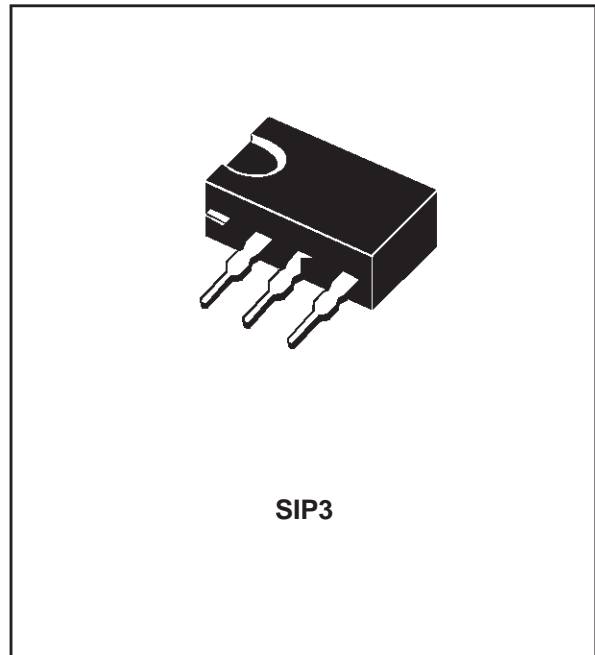
TRANSIENT VOLTAGE SUPPRESSOR  
FOR SLIC PROTECTION

**FEATURES**

- DUAL BIDIRECTIONAL CROWBAR PROTECTION.
- PEAK PULSE CURRENT :  
- I<sub>PP</sub> = 75 A, 10/1000 μs.
- HOLDING CURRENT = 150 mA min
- BREAKDOWN VOLTAGE = 200 V min.
- BREAKOVER VOLTAGE = 290 V max.
- MONOLITHIC DEVICE.

**DESCRIPTION**

This monolithic protection device has been especially designed to protect subscriber line cards. The THBT200 device is particularly suitable to protect ring generator relay against transient overvoltages.

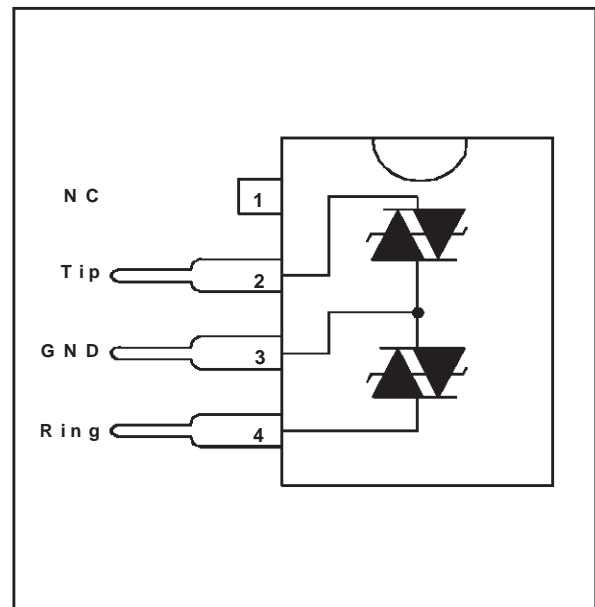


**COMPLIES WITH THE FOLLOWING STANDARDS :**

<b>CCITT K20 :</b>	10/700 μs	1kV
	5/310 μs	25A
<b>VDE 0433 :</b>	10/700 μs	2kV
	5/310 μs	50A
<b>VDE 0878 :</b>	1.2/50 μs	1.5kV
	1/20 μs	40A
<b>FCC part 68 :</b>	2/10 μs	2.5kV
	2/20 μs	225A (*)
<b>BELLCORE</b>		
<b>TR-NWT-001089 :</b>	2/10 μs	2.5kV
	2/10 μs	225A (*)
	10/1000 μs	1kV
	10/1000 μs	75A (*)

(\*) with series resistors or PTC.

**SCHEMATIC DIAGRAM**



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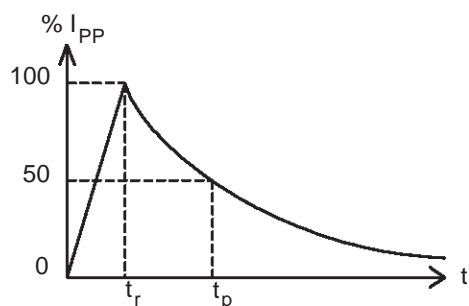
## THBT200S

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

Symbol	Parameter	Value	Unit	
$I_{PP}$	Peak pulse current (see note 1)	10/1000 $\mu\text{s}$	75	
		5/310 $\mu\text{s}$	125	
		8/20 $\mu\text{s}$	150	
		2/10 $\mu\text{s}$	225	
$I_{TSM}$	Non repetitive surge peak on-state current ( $F = 50\text{Hz}$ )	$t_p = 20\text{ms}$	30	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	230	$^{\circ}\text{C}$	

Note 1 : Pulse waveform :

10/1000 $\mu\text{s}$	$t_r=10\mu\text{s}$	$t_p=1000\mu\text{s}$
5/310 $\mu\text{s}$	$t_r=5\mu\text{s}$	$t_p=310\mu\text{s}$
2/10 $\mu\text{s}$	$t_r=2\mu\text{s}$	$t_p=10\mu\text{s}$

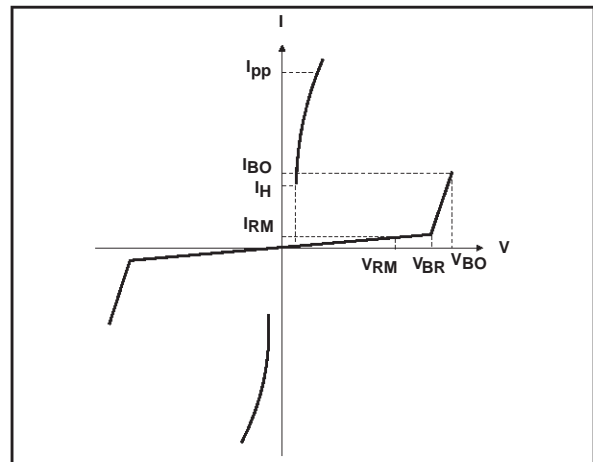


### THERMAL RESISTANCE

Symbol	Parameter	Value	Unit
$R_{th(j-a)}$	Junction to ambient	80	$^{\circ}\text{C/W}$

**ELECTRICAL CHARACTERISTICS** ( $T_{amb} = 25^{\circ}C$ ).

Symbol	Parameter
$V_{RM}$	Stand-off voltage
$I_{RM}$	Leakage current at $V_{RM}$
$V_{BR}$	Continuous reverse voltage
$V_{BO}$	Breakover voltage
$I_H$	Holding current
$I_{BO}$	Breakover current
$I_{PP}$	Peak pulse current
C	Capacitance



**PARAMETERS RELATED TO ONE TRISIL (Between TIP and GND or RING and GND)**

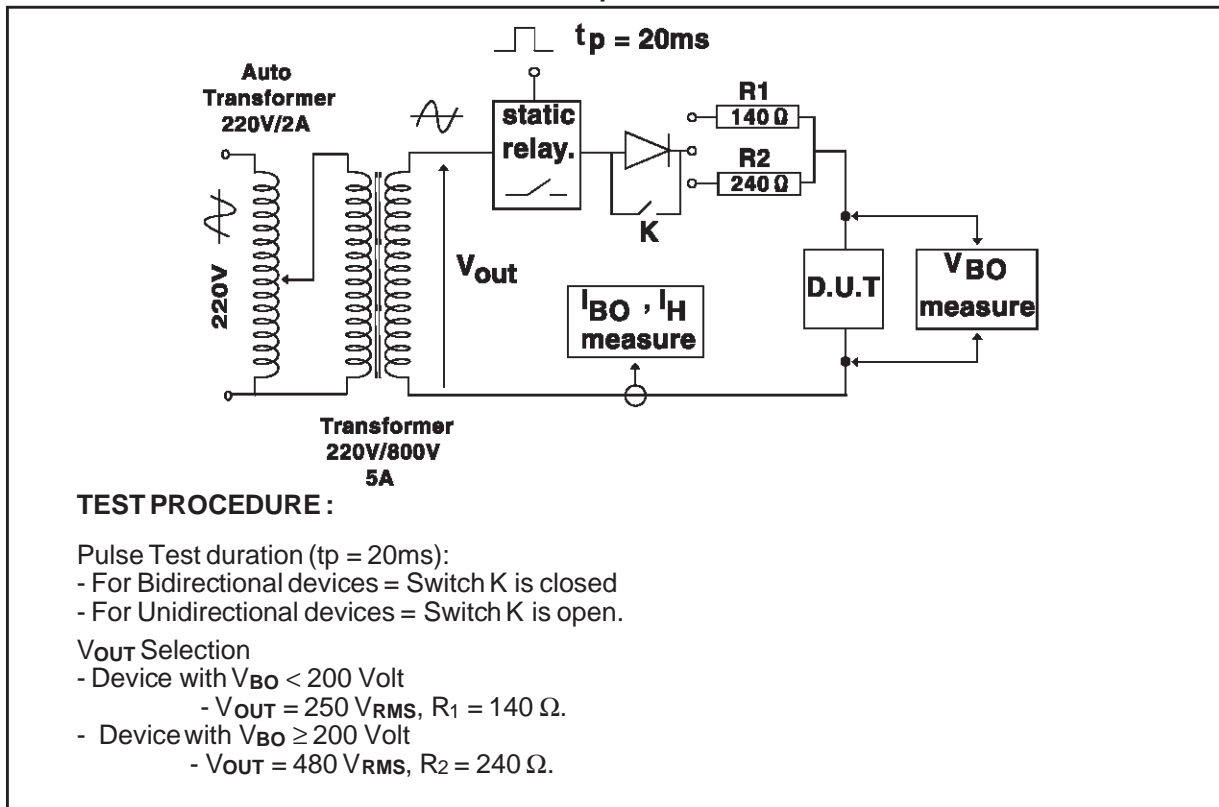
$I_{RM} @ V_{RM}$		$V_{BR} @ I_R$		$V_{BO} @ I_{BO}$			$I_H$	C
max.		min.		max.	min.	max.	min.	max.
				note 1			note 2	note 3
$\mu A$	V	V	mA	V	mA	mA	mA	pF
10	180	200	1	290	150	800	150	200

**Note 1 :** See reference test circuit 1 for  $I_{BO}$  and  $V_{BO}$  parameters.

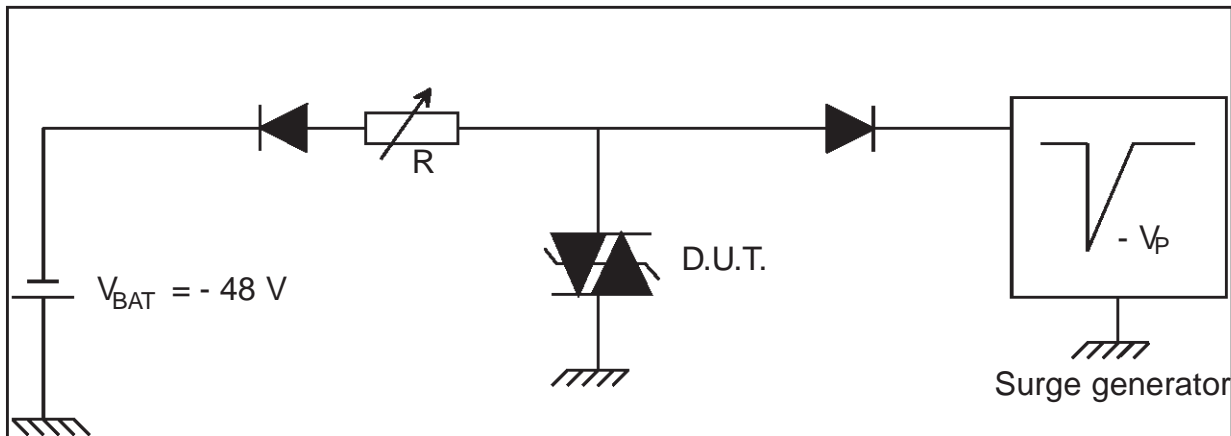
**Note 2 :** See test circuit 2.

**Note 3 :**  $V_R = 1V, F = 1MHz$ .

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



FUNCTIONAL HOLDING CURRENT ( $I_H$ ) TEST CIRCUIT 2.



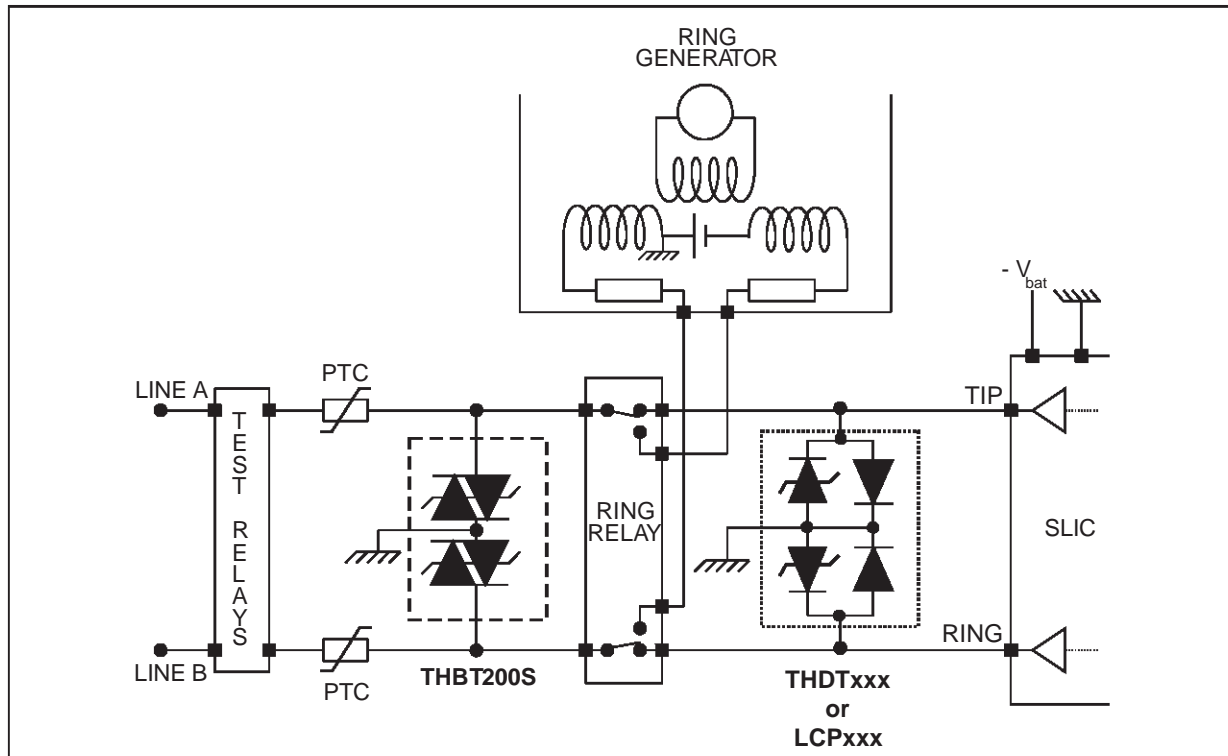
This is a GO-NOGO Test which allows to confirm the holding current ( $I_H$ ) level in a functional test circuit.

**TEST PROCEDURE :**

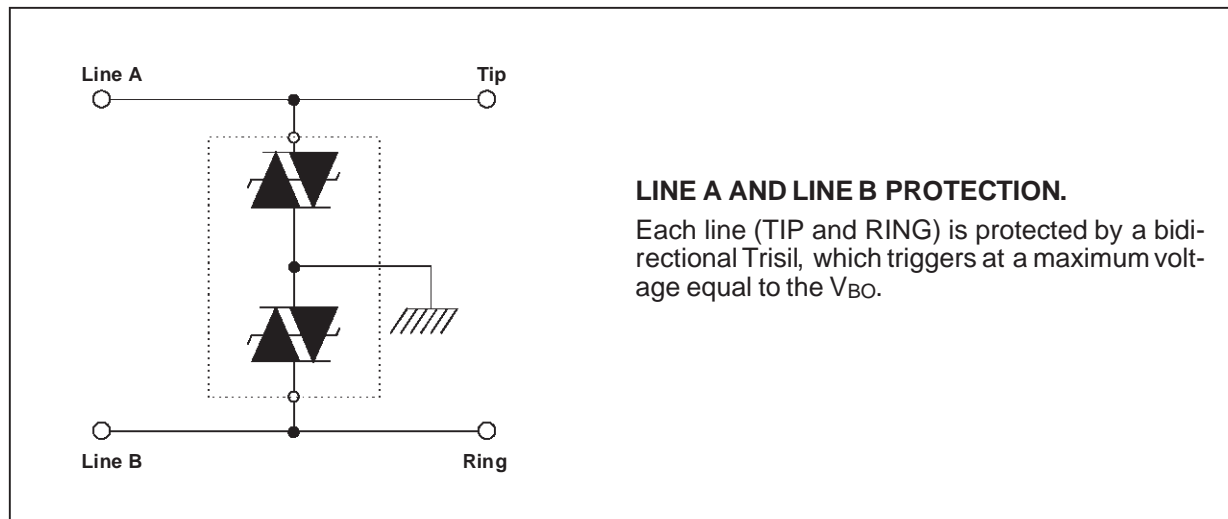
- 1) Adjust the current level at the  $I_H$  value by short circuiting the AK of the D.U.T.
- 2) Fire the D.U.T with a surge Current :  $I_{pp} = 10A$  ,  $10/1000\mu s$ .
- 3) The D.U.T will come back off-state within 50 ms max.

APPLICATION CIRCUIT

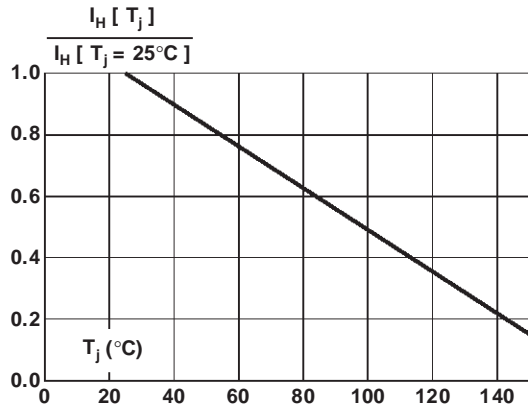
Typical line card protection concept



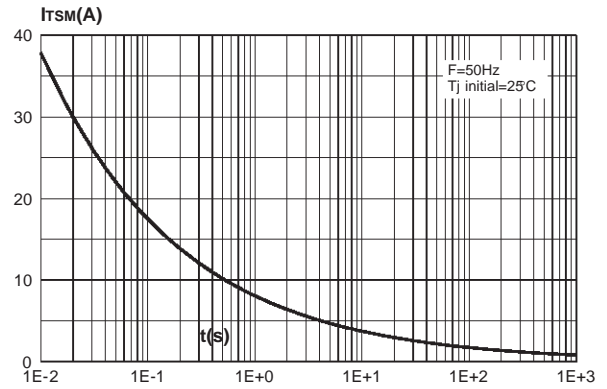
FUNCTIONAL DESCRIPTION



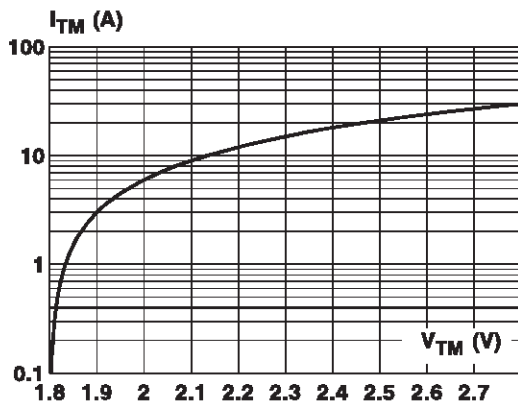
**Fig. 1 :** Relative variation of holding current versus junction temperature.



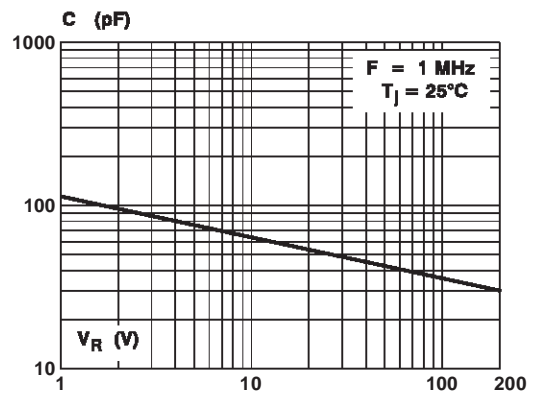
**Fig. 2 :** Surge peak current versus overload duration.



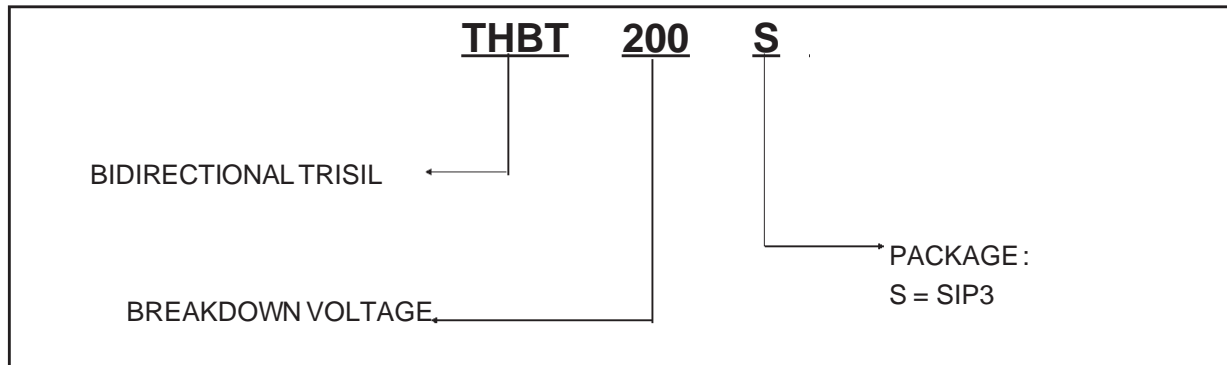
**Fig. 3 :** Peak on state voltage versus peak on state current (typical values).



**Fig. 4 :** Capacitance versus reverse applied voltage (typical values).



ORDER CODE

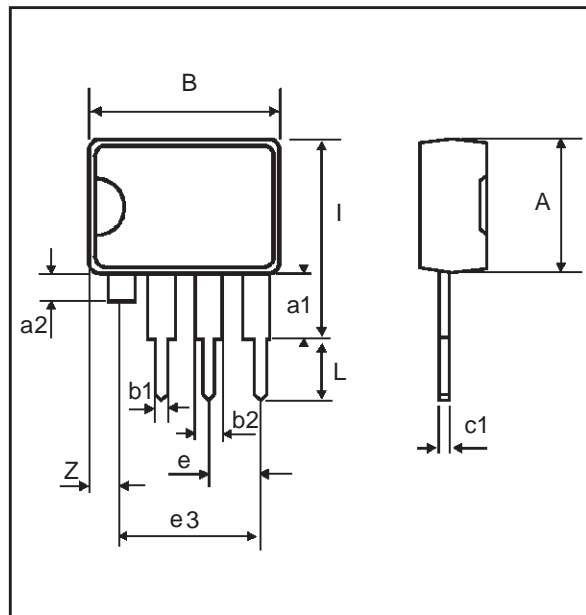


MARKING :

Package	Types	Marking
SIP3	THBT200S	THBT200S

PACKAGE MECHANICAL DATA

SIP3 Plastic



REF.	DIMENSIONS					
	Millimetres			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A			7.10			0.280
a1	2.80			0.110		
a2	1.50		1.90	0.059		0.075
B			10.15			0.400
b1		0.50			0.020	
b2	1.35		1.75	0.053		0.069
c1	0.38		0.50	0.015		0.020
e		2.54			0.100	
e3		7.62			0.200	
I			10.50			0.413
L		3.30			0.130	
Z			1.50			0.059

**Packaging:** Products supplied in antistatic tubes.

**Weight:** 0.55g

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