VOLTAGE DEPENDENT RESISTORS

rod type

QUICK REFERENCE DATA	
Voltages	
types with I_{nom} = 10 mA d.c.	470 to 1300 V
type with I_{nom} = 2 mA d.c.	950 V
types with I_{nom} = 1 mA d.c.	56 to 300 V
β-values	0,16 to 0,36
Maximum dissipation	0,8 W
Operating temperature range	
at zero power	−25 to +125 °C
at maximum power	0 to +55 °C

APPLICATION

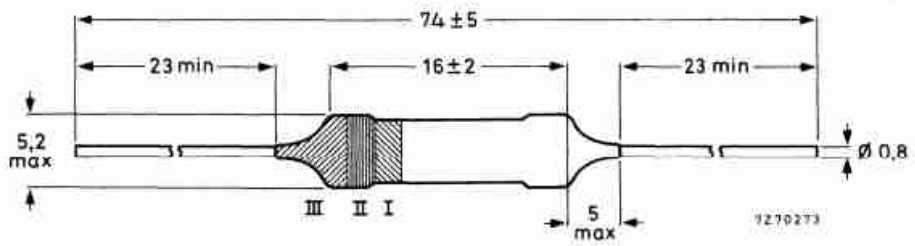
To be used for stabilization of voltages, protection of contacts, etc.

DESCRIPTION

These rods are provided with two axial solid tinned copper wires. They are tan lacquered, but not insulated.

MECHANICAL DATA

Dimensions (mm)



Marking

The thermistors are colour coded according to the table and Fig. 1

Weight 0,9 g approximately

Mounting In any position by soldering

Robustness of terminations

Tensile strength	20 N
Bending	10 N
Torsion	3 times

Soldering

Solderability	max. 240 °C, max. 4 s
Resistance to heat	max. 265 °C, max. 11 s

ELECTRICAL DATA

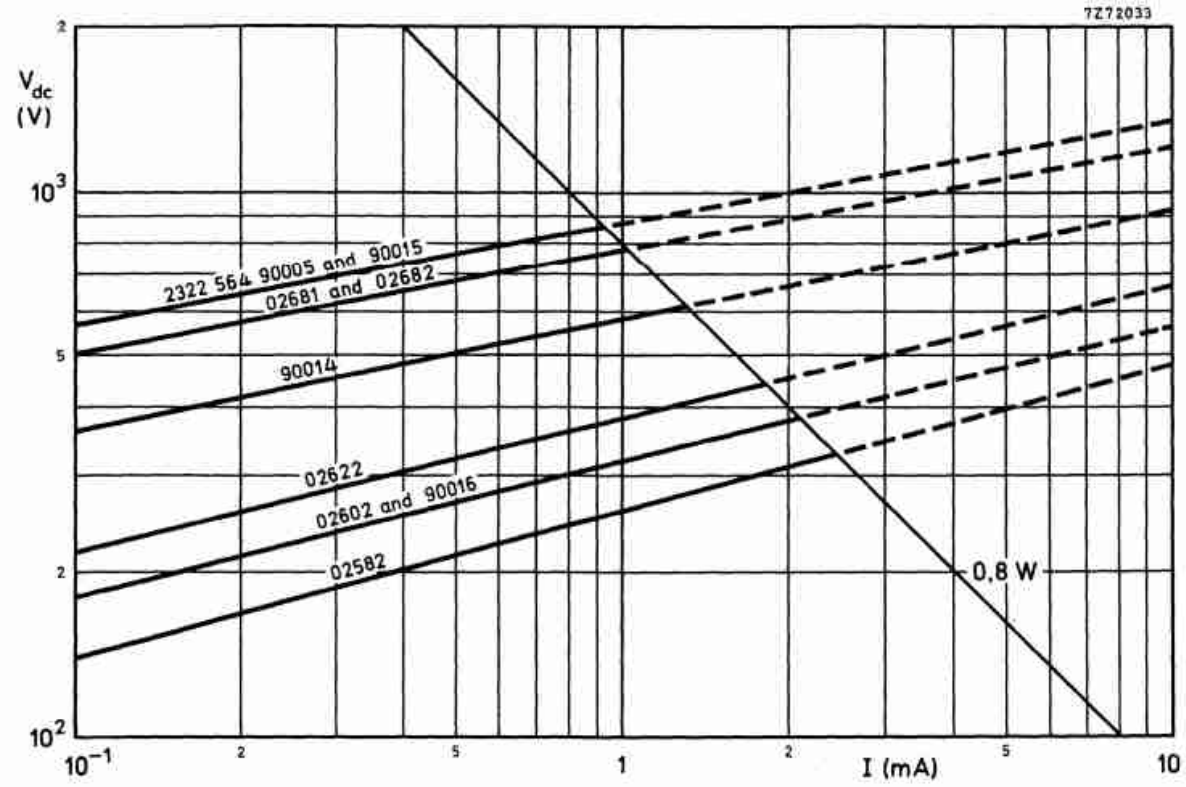
d.c. current I_{nom} (mA)	voltage at I_{nom} (V) [1]	tolerance %	β-value	colour code (see Fig. 1) band I	band II	band III	catalogue number
10	470	± 10	0,20-0,25	green			2322 564 02582
10	560	± 10	0,18-0,23	blue			2322 564 02602
10	680	± 10	0,18-0,23	violet			2322 564 02622
10	1200	± 20	0,17-0,22	grey			2322 564 02681
10	1200	± 10	0,17-0,22	brown			2322 564 02682
10	910	± 10	0,17-0,22	white			2322 564 90014
10	1300	± 10	0,16-0,21	red			2322 564 90015
2	950	± 10	0,16-0,21	black	blue		2322 564 90005
1	300	± 20	0,18-0,25	yellow	-	-	2322 564 90016
1	56	± 20 [2]	0,29-0,36	orange	orange	blue	2322 564 03361
1	68	± 20 [2]	0,29-0,36	orange	orange	grey	2322 564 03381
1	82	± 20 [2]	0,29-0,36	orange	yellow	black	2322 564 03401
1	100	± 20 [2]	0,25-0,32	orange	yellow	red	2322 564 03421
1	120	± 20 [2]	0,25-0,32	orange	yellow	yellow	2322 564 03441
1	150	± 20 [2]	0,22-0,29	orange	yellow	blue	2322 564 03461
1	180	± 20 [2]	0,22-0,29	orange	yellow	grey	2322 564 03481
1	220	± 20 [2]	0,21-0,28	orange	green	black	2322 564 03501
1	270	± 20 [2]	0,21-0,28	orange	green	red	2322 564 03521

Dissipation factor	20 mW/°C
Temperature coefficient at 1 mA between +25 and +100 °C	−0,1 %/°C
Maximum dissipation	0,8 W
Asymmetry	max. 2% [3]
Operating temperature range	
at zero power	−25 to +125 °C
at maximum power	0 to +55 °C

[1] The voltage is so measured, that the internal heat development is negligible.

[2] For a voltage tolerance of 10% the last figure of the catalogue number is 2 instead of 1.

[3] Covered by the specified voltage tolerance



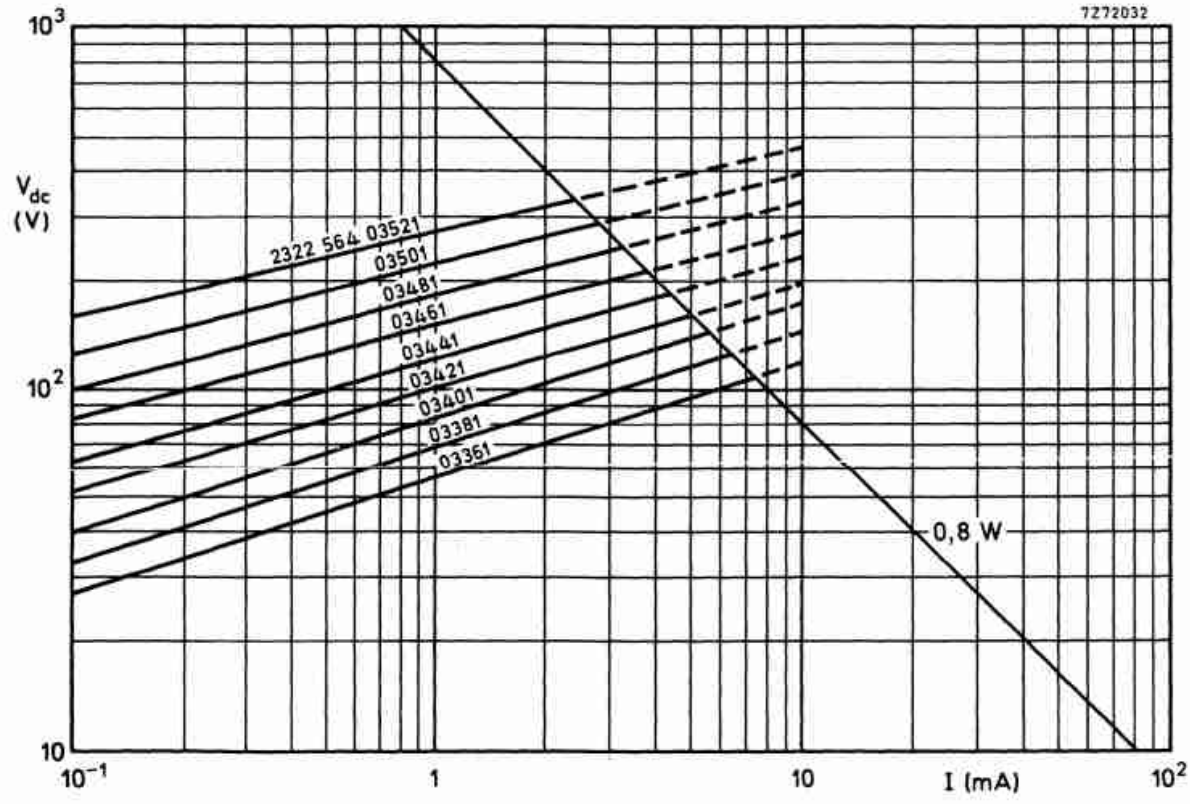


Fig. 2a and b. Typical voltage/current characteristics measured under pulse conditions.

TESTS AND REQUIREMENTS

According to IEC 68 recommendations, unless otherwise specified.

test [1]	test method	duration	ΔV/V (%) at I_{nom}	Δβ/β (%)
Cold at −25 °C	A	1000 h	± 3	± 3
Storage at +25 °C	H	1000 h	± 2	± 3
Dry heat at +125 °C	B	1000 h	± 3	± 5
Thermal shock −25 to +125 °C	Na	5 cycles	± 3	± 5
Max. dissipation		1000 h	± 5	± 7,5
Robustness of terminations	U			
Tensile strenght 20 N	Ua	10 s	[2]	
Bending 10 N	Ub	2 times	[2]	
Torsion	Uc	3 times	[2]	
Soldering	T			
Solderability at 230 ± 10 °C	par 3.2.3	3 to 4 s	[3]	
Resistance to heat at 260 ± 5 °C	Tb	10 to 11 s	± 2	± 2

[1]) For d.c. measurements the measuring current must have the same polarity as the load current.

[2]) Leads should neither come loose nor break.

[3]) Leads must be solderable initially and after six months storage with solder containing resin flux.

QUALITY LEVEL

Sampling and data evaluation for quality level in accordance with MIL-STD-105D

A.Q.L. 1%, major defects - Electrical
A.Q.L. 1,5%, major defects - Mechanical
A.Q.L. 4%, minor defects - Physical

PACKING

Cardboard boxes containing 100 items.