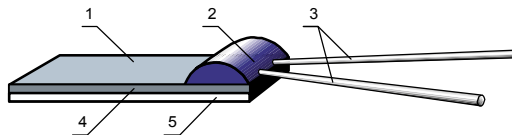


PLATINUM TEMPERATURE SENSORS IN THIN-FILM TECHNOLOGY

Thin-film temperature sensors consist of an Al_2O_3 -carrier substrate onto which a thin platinum layer is applied. By using a laser or a template, this layer is structured in such a way that the desired rated resistance is reached. The platinum layer is protected by a passivation layer. The terminals are mostly made up of Ag_3Pd . Their tensile strength is further increased by applying a detention layer. Thin-film sensors are mostly designed for being used at a temperature of -50 to $+400^\circ C$ (some special designs for temperatures between $-200^\circ C$ and $+1000^\circ C$). The basic values and tolerances of the measuring resistors offered here are in accordance with DIN EN60751. The devices are low-priced, present short response times and can be manufactured also in very small dimensions. The table below contains only a selection of many more possible parameters. Other SMDs are available upon request.



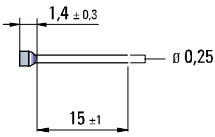
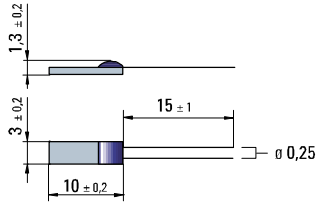
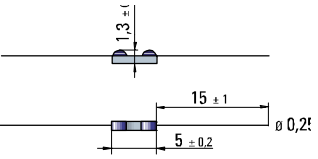
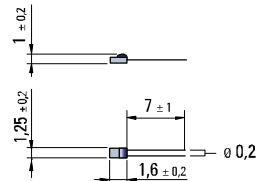
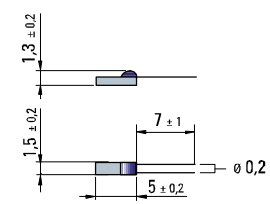
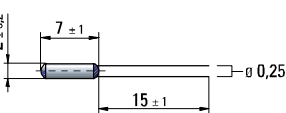
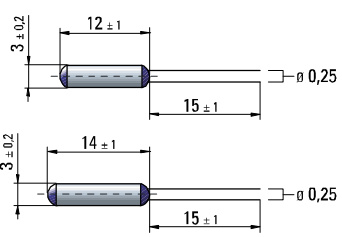
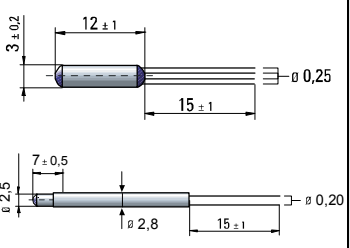
STRUCTURE OF A PT-TEMPERATURE SENSOR



- 1 Passivation layer
- 2 Detention layer
- 3 Connecting wires
- 4 Structured platinum layer
- 5 Al_2O_3 -carrier substrate

TECHNICAL DATA

| Type | Drawing | Basic resistance $R (\Omega)$ | Response time (s) | | | | Self-heating | | | |
|-------------------------------|---------|----------------------------------|----------------------|-------------------|-------------|----------------|-------------------|-------------|---|-----------------|
| | | | Water | | Air | | Coefficient mW/K | | Measurement current (mA) $\Delta t=0.1K$ at $20^\circ C$ | |
| | | | T0.5 | T0.9 | T0.5 | T0.9 | Water | Air | Water | Air |
| FM 2101 FM 2131 FM 2141 | | Pt100 Pt500 Pt1000 | 0.07 0.07 0.07 | 0.3 0.3 0.3 | 6 6 6 | 20 20 20 | 110 110 110 | 6 6 6 | 10 4 3 | 2 1.1 0.8 |
| FM 2103 FM 2133 | | Pt100 Pt500 | 0.07 0.07 | 0.3 0.3 | 6 6 | 20 20 | 35 35 | 6 6 | 6 3 | 2 1 |
| FM 2105 FM 2145 | | Pt100 Pt1000 | 0.07 0.07 | 0.2 0.2 | 4 4 | 10 10 | 35 35 | 3.5 6 | 6 4 | 2 0.8 |

| Type | Drawing | Basic resistance $R(\Omega)$ | Response time (s) | | | | Self-heating | | | |
|----------------------------------|---|---------------------------------|-------------------|-------------------|----------------|----------------|------------------|----------------|--|-------------|
| | | | Water | | Air | | Coefficient mW/K | | Measurement current (mA) $\Delta t=0.1K$ at $20^{\circ}C$ | |
| | | | T0.5 | T0.9 | T0.5 | T0.9 | Water | Air | Water | Air |
| FM 2105 |  | Pt100 | 0.07 | 0.2 | 4 | 10 | 35 | 3.5 | 6 | 2 |
| FM 2100 |  | Pt100 | 0.07 | 0.4 | 8 | 30 | 130 | 8 | 10 | 2 |
| FM 2104 |  | Pt100 | 0.05 | 0.2 | 4 | 10 | 40 | 4 | 6 | 2 |
| FM 2108 FM 2148 |  | Pt100 Pt1000 | 0.05 0.05 | 0.2 0.2 | 3 3 | 10 10 | 40 40 | 4 4 | 6 3 | 2 0.8 |
| FM 2107 |  | Pt100 | 0.07 | 0.4 | 6 | 10 | 40 | 8 | 10 | 2 |
| FMR 2103 |  | Pt100 | 0.07 | 0.3 | 6 | 20 | 40 | 6 | 6 | 2 |
| FMR 2132 FMR 2142 FMR 2102 |  | Pt500 Pt1000 Pt100 | 1.3 1.3 1.3 | 5.0 5.0 5.0 | 15 15 15 | 50 50 50 | 40 40 40 | 10 10 10 | 3 2 6 | 1 1 3 |
| FMR 2202 FMR/HT |  | 2xPt100 Pt200 | 1.3 0.07 | 5.0 0.3 | 15 6 | 50 20 | 40 40 | 10 6 | 6 6 | 3 2 |

The specifications above are subject to modifications due to errors or technical improvements.

September 2011