

Products & Technologies



Thermistors

July 2008

Sensors for accurate medical thermometers

The new disposable thermometers from EPCOS are characterized by a high accuracy of up to ± 0.1 K and a short response time of 7 s. This allows fast and simple measurement of a patient's body temperature. The concept of these disposable sensors relies on the proven ceramic technology for NTC thermistors on a chip basis, the use of materials such as polypropylene qualified by the US Food and Drug Administration (FDA), and new process

technologies. By contacting the NTC chip and copper interconnections with silver paste in a low-temperature process, process-related resistance drifts of the NTC thermistor are greatly minimized. This cannot be achieved by other connecting technologies such as soldering or welding. The great advantage of disposable thermometers is their very short response time. To reduce the measuring time, conventional solutions must extrapolate a patient's expected body temperature in a complex predictive mode. This is not required in the EPCOS solution. The costs of the additional electronics are thus unnecessary.

EPCOS has developed reusable thermometers for long-term measurements – such as for monitoring the body temperature of patients during operations or of infants in incubators. They are characterized by their great accuracy, rugged design and high resistance to sterilization cycles. They feature an operating life of more than 100 sterilization cycles at 121 °C for 20 min or at 134 °C for 4 min. The plastic injection molding technology used by EPCOS assures good humidity resistance. In contrast, sensor systems produced by conventional potted solutions have a lower impermeability. Another advantage is the double insulated and highly flexibly cable with an insulation resistance of more than 100 M Ω for reliable body temperature measurement on the surface of the skin.