Autoclavable housings for reliable encapsulation of medical electronics

TO and microelectronic packages from SCHOTT protect sensors and electronic components

Landshut (Germany), April 20, 2015 – SCHOTT offers a wide variety of gas-tight housings for hermetic encapsulation of sensitive electronics in medical technology. Particularly high requirements apply here for devices that need to be sterilized with pressurized steam. These include instruments for use in endoscopy, dental surgery, surgical navigation, spectrometry and pulse oximetry. The permanent protection of sensitive electronics from heat and moisture in an autoclave plays an important role in ensuring that this equipment functions properly. SCHOTT will be presenting its housing solutions for use in medical technology at MEDTEC in Stuttgart (hall 3, booth G57) from April 21 – 23, 2015.

Medical technology instruments that come into contact with the human body must withstand regular steam sterilization at a temperature of 134 °C without impairing either its performance or its durability. This applies to the sensitive sensors and other electronic and optoelectronic components in these devices. They must be supplied with power and be able to send and receive information reliably. At the same time, however, sensitive electronics must be encapsulated and thus protected from moisture in the autoclave as well as other environmental influences.

Expertise in manufacturing autoclavable housings

Glass-to-metal, ceramic-to-metal (CerTMS®) and full-ceramic housings and feedthroughs are particularly well suited for packaging electronic components safely. After all, these inorganic materials do not age, which means that glass and ceramics allow for a gas-tight hermetic seal and also act as insulators of electrical contacts.

And yet, the main challenge is to permanently fuse glass and metal or ceramic and metal together. Due to the typically different coefficients of thermal expansion, all materials must be perfectly matched. “We have many years of experience in advising our customers and can recommend and supply the best technology and high-performance material combinations. Here, we rely on our knowledge of metals, housing designs, glass manufacturing and processing, as well as melting and soldering technologies,” explains Robert Hettler, Head of R&D for Opto-Electronics at SCHOTT Electronic Packaging.

Transistor outlines and microelectronic packages for a wide range of applications

Depending on the requirements of the particular application, SCHOTT offers the appropriate housings that range from transistor outlines (TOs) to microelectronic...
packages. “Here, SCHOTT offers a wide variety of standard housings as well as the option of developing the complete design based on the customer's requirements. Of course, the types of metals that are typically used in medical technology can also be used, such as stainless steel, for example,” Hettler says.

In medical technology, TO packages are ideally suited for encapsulating LED chips and photodiodes like those that are used in measurement instruments for navigated surgery, for example. Hybrid housings are perfect for encapsulating electronics in instruments such as drill controllers for surgical procedures, among other devices. In dental technology, ceramic-to-metal (CerTMS®) housings are well-suited for constant current sources since they can be used to connect LEDs that are installed inside the drilling head of a dental turbine. This is possible in a material-efficient manner as the ceramic base serves as printed circuit board.

**Experience in glass and glass-sealed, hermetic housings**

130 years of experience in the area of special purpose glass and more than 70 years of experience in manufacturing hermetic seals and feedthroughs flow into the development and production of new products at SCHOTT Electronic Packaging.

For more information:

**Photo download link:**

SCHOTT offers autoclavable glass-to-metal, ceramic-to-metal (CerTMS®) and full ceramic housings for reliable encapsulation of the electronic components used in medical technology. As inorganic and thus materials that do not age, glass and ceramics allow for a gas-tight hermetic seal and also act as insulators of electrical contacts. Photos: SCHOTT.

*SCHOTT is a leading international technology group in the areas of specialty glass and glass-ceramics. The company has more than 130 years of outstanding development, materials and technology expertise and offers a broad portfolio of high-quality products and intelligent solutions.*
SCHOTT is an innovative enabler for many industries, including the home appliance, pharmaceutical, electronics, optics, automotive and aviation industries. SCHOTT strives to play an important part of everyone’s life and is committed to innovation and sustainable success. The group maintains a global presence with production sites and sales offices in 35 countries. With its workforce of approximately 15,400 employees, sales of 1.87 billion euros were generated in fiscal year 2013/2014. The parent company, SCHOTT AG, has its headquarters in Mainz (Germany) and is solely owned by the Carl Zeiss Foundation. As a foundation company, SCHOTT assumes special responsibility for its employees, society and the environment.

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