

# TO Caps for UV Applications

## Product Information

SCHOTT offers a wide variety of TO caps with sealed-in lenses or windows. These caps are sealed hermetically by fusing the glass directly to the metal frame without the use of any other interface materials. This is achieved by reheating cooled glass and then fusing it with the metal. TO caps can be manufactured with windows, convex (plano and biconvex) lenses or various kinds of filters for special applications. Windows and lenses can also be supplied in a range of designs and according to customer specifications.

TO caps for UV applications are mass-produced to achieve economies-of-scale for the customers. In addition, a borosilicate glass, which has been uniquely designed for use in such applications, offers optimal efficiency. The occasional occurrence of striae will have no influence on the performance of the caps.

## Advantages

- Economical alternative for
  - Quartz and sapphire applications, e.g. gas flame and general photo detection
  - Integrated sensor principles (e.g. low resolution sensors)
- High chemical stability
- Good UV transparency for UV A & UV B

## Available Coatings:

- Metal Part:
  - Electroless Nickel,
  - Gold (Soft wAu)
- Optics: Anti-reflective Coating

## Applications

- Medical applications e.g.:
  - Phototherapy treatment
  - Dental applications
  - Fluorescence and ultraviolet-visible spectroscopy
  - Skin dermatology forensics
- Industrial applications e.g.:
  - Photo-catalyst curing of inks, coatings and adhesives
  - Paper currency and document validation



TO Caps



Variety of TO headers, caps and windows

## Technical Information

**Gas-tight:**  $1 \times 10^{-8}$  mbar x l/s

**Temperature stability:** > 250 °C

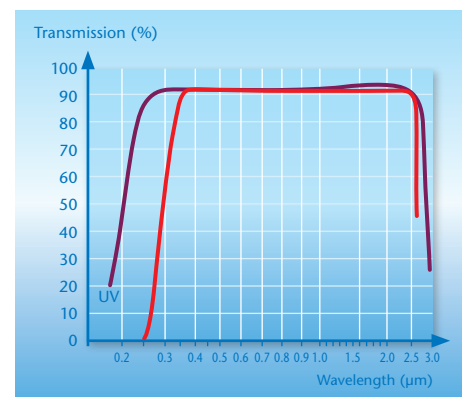
**Chemical resistance:** High

**Thermal shock stability:**  
– 65 °C to 150 °C for 15 cycles

**Transmission (visual spectrum):**  
>92% uncoated, (AOI = 5°)

**Autoclaving:** Proven functionality for

- Oils
- Thermal disinfection (95 °C; 10 min)
- Steam sterilization (2 bar; 134 °C for 3 min.)



Transmission of typical glasses –  
Direct sealed (UV) and standard direct sealed caps

**SCHOTT**  
glass made of ideas

# Variety of Packaging Options for Sensitive Electronic Components

## Glass/Ceramic-to-Metal Sealing Technology

For more than 70 years, SCHOTT has been developing, manufacturing and perfecting hermetic packaging components in which wiring is guided through metal and then insulated using melted glass or ceramic. Extensive stress tests show that this bond remains completely sealed, even under the most difficult environmental conditions, enabling long lifetimes of several decades for the enclosed electronic components.

## Aspherical Lens Caps

SCHOTT's Aspherical Lens Caps are manufactured by sealing high precision aspheres to metal caps with glass-to-metal sealing technology. These caps provide high coupling efficiency in regular datacom and telecom applications.

## Soldered TO Caps

Soldered caps consist of ready-made glass bodies with special optical properties, and they are permanently connected to a metal frame using a specialized solder glass. This method can be used to connect windows and lenses, with a range of different properties as well as additional optical coatings, to metal. The result of soldering a cap to a matching header is a hermetically sealed housing that provides long-term protection to sensitive components and ensures that optical signals are transmitted with precision. Soldered caps are used for transmission related applications in optical data communication and for high resolution sensors (e.g. CCD camera sensors).

## TO Headers and SCHOTT TO PLUS®

The TO header provides a mechanical basis for the installation of electronic and optical components such as semiconductors, laser diodes or simple electronic circuits, while at the same time supplies power to the encapsulated components with the aid of pins. Applications include high-speed data transfer, infrared and MEMS. SCHOTT TO PLUS® is a TO header with enhanced performance for high speed data rates of up to 25 Gbit/s.

## GTMS and SCHOTT CerTMS® Microelectronic Packages

Microelectronic packages are used in situations whereby more than one component has to be encapsulated or if standard packaging is not appropriate due to a special required number or arrangement of feedthroughs.

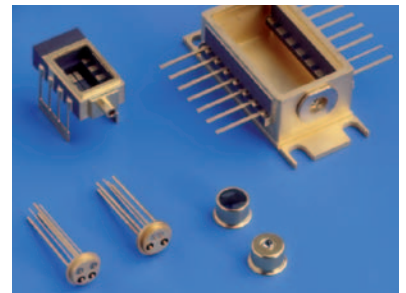
SCHOTT offers both glass-to-metal and ceramic-to-metal sealed (SCHOTT CerTMS®) microelectronic packages for highly demanding applications, such as if several complex opto-electronic components are to be combined with a large number of electrical and optical connections. These can contain lasers, for example, sensors for medical applications or microwave transmitters and receivers.

SCHOTT CerTMS® packages enable the complex guidance of conductor paths to the inside of increasingly miniaturized packages, facilitate high data transmission rates of more than 40 Gbit/s and cause low attenuation losses.

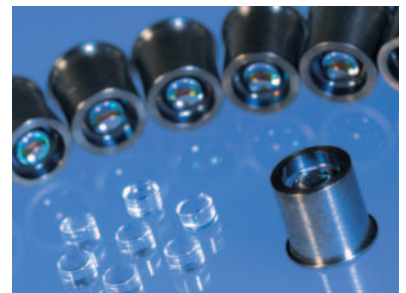
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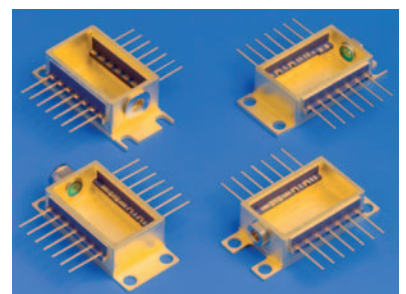
Variety of Opto-electronic Packages



Aspherical Lens Caps



SCHOTT TO PLUS®



SCHOTT CerTMS® Microelectronic Packages

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