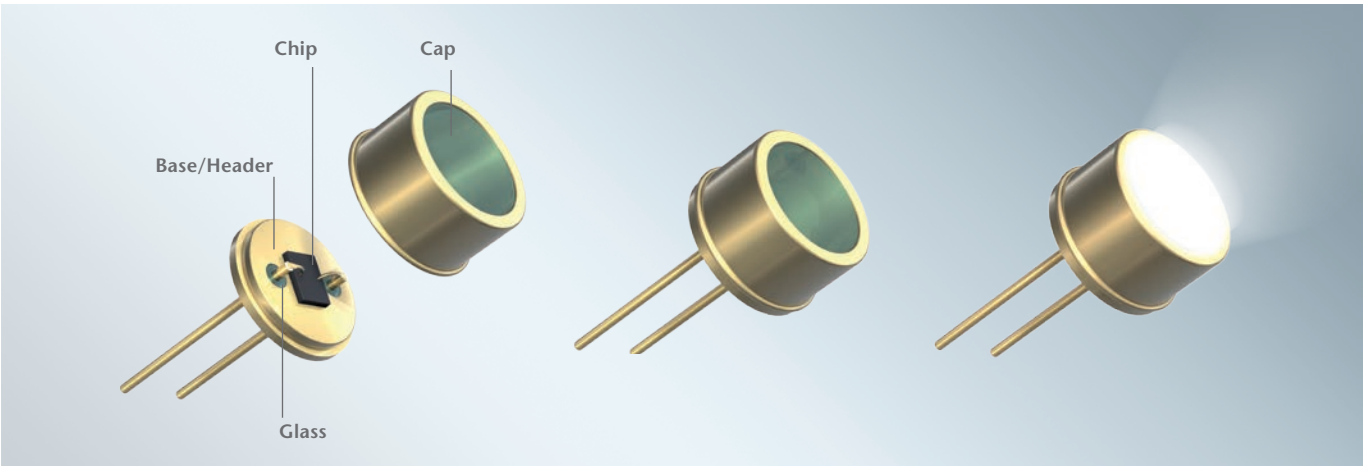
SCHOTT Solidur® TO LED

Custom designable, sterilizable and robust HB LED for Medical and Dental Devices



Product Information

The Solidur® TO LED is enclosed in a hermetic, glass-to-metal sealed housing. This makes the TO LED a fully autoclavable High Brightness (HB) LED. The shape and design is based on typical TO (Transistor Outline) footprints. These footprints are industrial standards that have governed the design and size of current-conducting microelectronic packaging and housings over the past few decades.

Easy to integrate | The TO LED can easily be incorporated into any medical device as it is available as a connectorized format as well as in SMD (surface mount) design.

Gas-tight and robust | Owing to its fully gas-tight housing based on inorganic, non-aging materials, the TO LED is extremely robust, resistant to chemicals, corrosion and pressure – even at varying temperatures.

Sterilizable | This makes the Solidur® TO LED a highly reliable light source, performing efficiently over a long period time and over many autoclaving cycles (over 3500 cycles at 134°C).

Applications

The TO LED is suitable for applications in medical lighting, especially for medical devices that need autoclaving. Typical applications include UV curing devices, endoscopes, laparoscopes, laryngoscopes, intraoral cameras, otoscopes, surgical equipment and many more.

Medical

Surgical

Otoscopes

Endoscopes, Laparoscopes

Ophthalmoscopes

Dental

UV Curing

Cameras

Mirrors

Hand tools

SCHOTT
glass made of ideas

SCHOTT Solidur® TO LED

Features

- Color temperature C_T: 3000-6000K (warm, neutral to cold white)
- Color rendering index R_a: 65-92
- Individual wavelength according to customer request
- Forward current I_F: typ. <700 mA
- ESD protection and resistors integrable
- Luminous flux ϕ_V: typ. 10-300 lm at 20-700 mA (design depending)
- Colored LEDs on request
- Forward voltage V_F: typ. 3.4 V at I_F = 350 mA
- Viewing angle: Full Width Half Maximum (FWHM) Θ_V: typ. 20 – 130°
- Layout for multi chips possible
- Size: ∅ ≥ 2 mm
- Height: > 2 mm
- Lens material: refractive index 1.5 < n < 1.84

Customized white light and color temperature

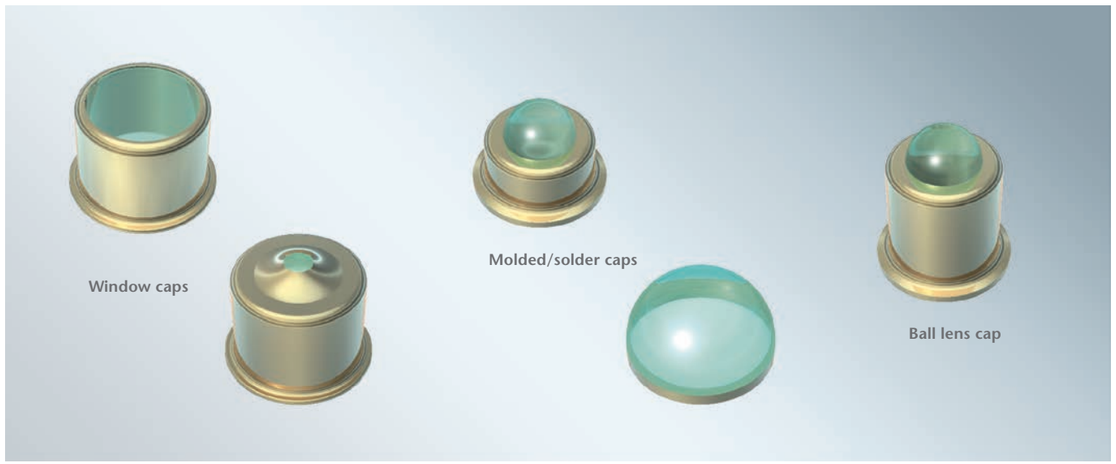
Technical concept

- Typically metal header and cap
- Inorganic, non-aging materials
- Single and Multi-chip package
- High corrosion robustness
- Low thermal resistance
- Available as white light LED or coloured LED

Advantages

- The TO LED can be adapted to your application and requirements:
  - Choose your light color
  - Define your colour temperature and CRI
  - Define your radiation pattern
  - Customize your optical properties like luminous flux, radiation pattern and lens
  - Different colors and wavelength can be combined within one LED module
- Fully autoclavable, highly reliable light source
- Good thermal management
- Non-aging glass lens

SCHOTT LED caps with matching glass optics fulfill the high requirements in medical & dental applications



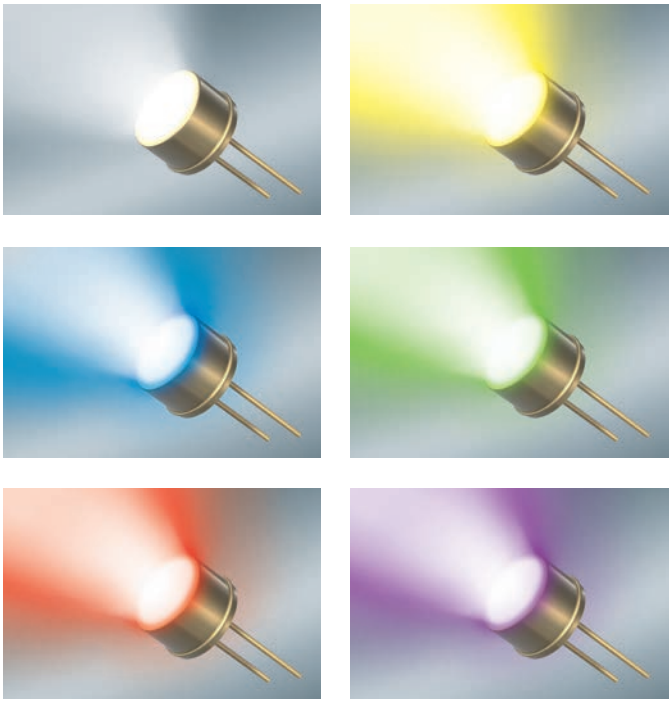
Material options for lens and window optics

Glass type	Lens shape	Metal cap	Physical data			Transmission			
			n_d	α	λ	DUV	UVB/UVA	VIS	IR
				$10^{-6}K^{-1}$	W/mK	240-280 nm	280-380 nm	380-780 nm	780-1µm
Standard	Lens Flat window	Kovar (29 Ni-18 Fe-Co)	1.487	5.0	1.2			√	√
Autoclavable	Lens Flat window	Kovar (29 Ni-18 Fe-Co)	1.490	5.5	1			√	√
UV	Lens Flat window	Kovar (28 Ni-18 Fe-Co)	1.476	4.1	1.0	√	√	√	√
Sapphire	Flat window	Kovar (29 Ni-18 Fe-Co)	1.767	5.4-6.2	4.0		√	√	√
Ultraflat window Glass; Type B/D	Flat window	NiFe alloys	1.523	7.4/9.4	1			√	√
NBK 7	Ball Lens windows	NiFe alloys	1.517	8.3	1.1			√	√
Fused Silica	Ball Lens	NiFeCo/NiFe	1.458	0,57	1.3	√	√	√	√
Coating options				AR coating Filter coating					

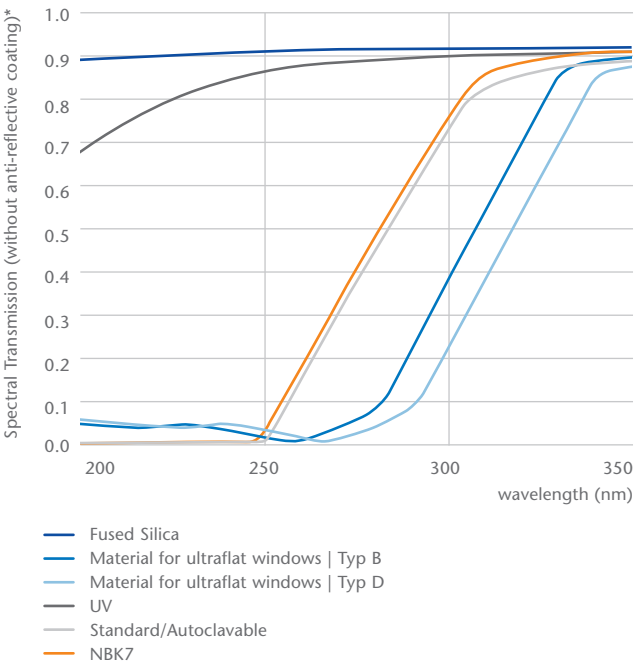
SCHOTT Solidur® TO LED

Customized caps and lenses for UV applications

SMD LED module with ceramic-to-metal sealed housing



TO LEDs with customizable wavelengths



*Typical values, not intended for specification purpose

- Specially adapted UV transparent glasses available as windows or lenses
- High transmission at low wavelength
- Fully hermetic

About SCHOTT Electronic Packaging

SCHOTT is an international technology group with more than 130 years of experience in the areas of specialty glasses and materials.

More than 600 scientists and engineers are working for and with SCHOTT customers all over the world, while setting the pace by developing new, cutting edge technologies for the requirements of today and tomorrow.

The SCHOTT Group with a workforce of about 15,400 employees maintains close proximity to its customers with manufacturing and sales units in 35 different countries.

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