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EOC-IRE-100SMD vs. Micro Light Bulb for Gas Analysis and Spectroscopy



Characteristic	Enables	EOC-IRE-100SMD	Micro light bulb	Reference
Broadband spectral emission	Measurement of many different gases	✓	✗	Fig. 1
Planar radiating surface emits directional radiation	High signal-to-noise ratio on the detector sensitive area	✓	✗	Fig. 2
Robustness of the filament against knocks	Reliable, long-term stable measurement	✓	✗	Fig. 2
SMD housing	Cost reduction due to automated mounting on PCB	✓	✗	Fig. 3
Overall height < 2 mm	Use in flat and mobile devices	✓	✗	Fig. 3
Low energy consumption	Use in battery driven devices	✓ ¹	✗ ²	Data sheet HIS100smd

¹ EOC-IRE-100SMD with an electrical input power of **290 mW**.

² Standard micro light bulb size T-3/4 with 150 mcd light output and an electrical input power of **575 mW**.

Broadband spectral emission enables the measurement of many different gases, even in the long-wavelength range ($\lambda > 5 \mu\text{m}$)

Radiation source	Spectral range of the radiation	
	from	to
Micro light bulb	0,5 μm	ca. 4,5 μm
EOC-IRE-100SMD-0 (no window)	2 μm	> 20 μm
EOC-IRE-100SMD-S (Si-ARC)	2,5 μm	> 16 μm
EOC-IRE-100SMD-Z (ZnSe)	2 μm	> 20 μm

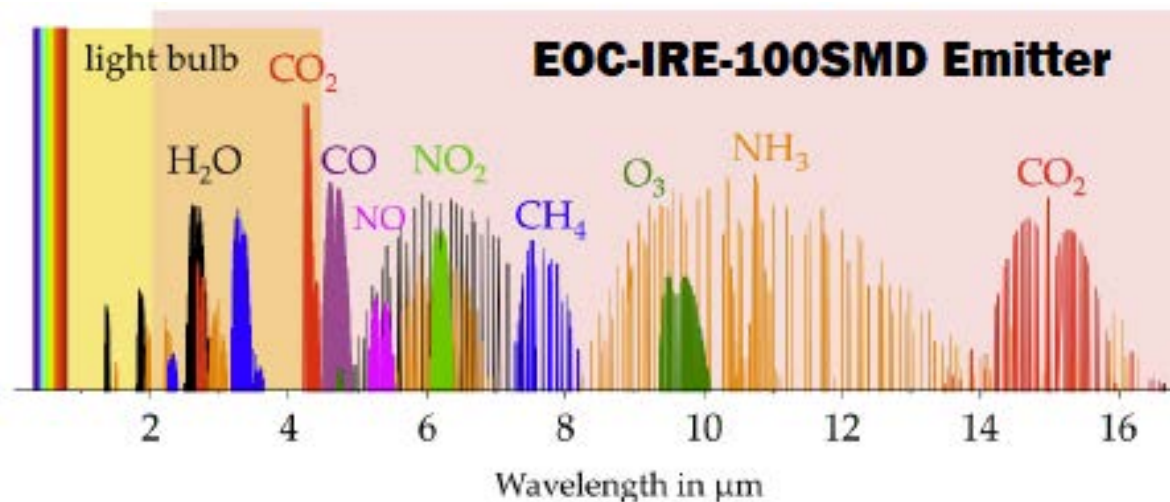


Fig. 1: Absorption bands of various gases and covered spectral range of micro light bulb and **EOC-IRE-100SMD**.

Planar radiating surface emits directional radiation

Shocks and vibrations cause the fragile filament of the micro light bulb to move. This changes the optical image on the detector, resulting in large measurement inaccuracies.

The filament of the **EOC-IRE-100SMD** emitters is robust against shocks and vibrations and thus enables a long-term stable directional emission and thus a reliable measurement.

Our SMD offers low radiation losses on the beam path to the detector due to a more focused radiation.

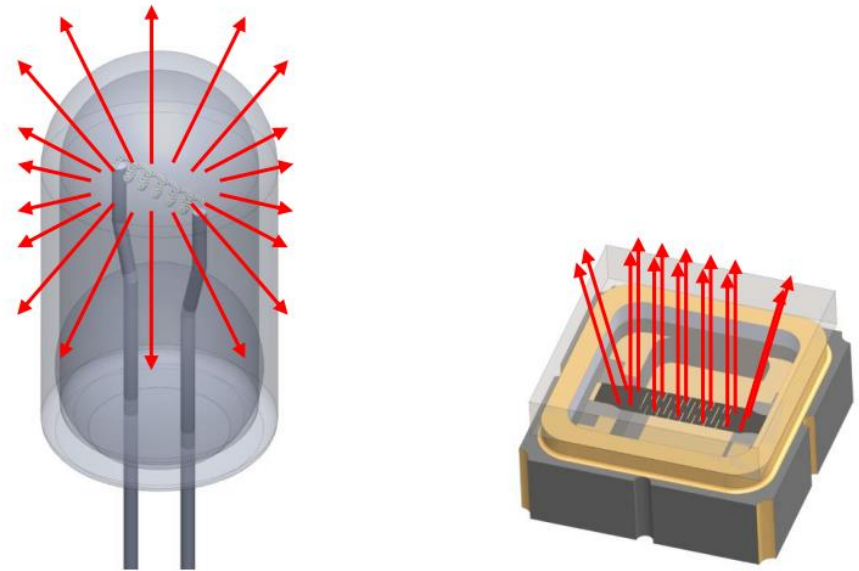


Fig. 2: Comparison of the beam directions of the micro light bulb and HISmd.

The SMD package enables a strong cost reduction due to an automated surface mounting of the radiation source on PCBs.

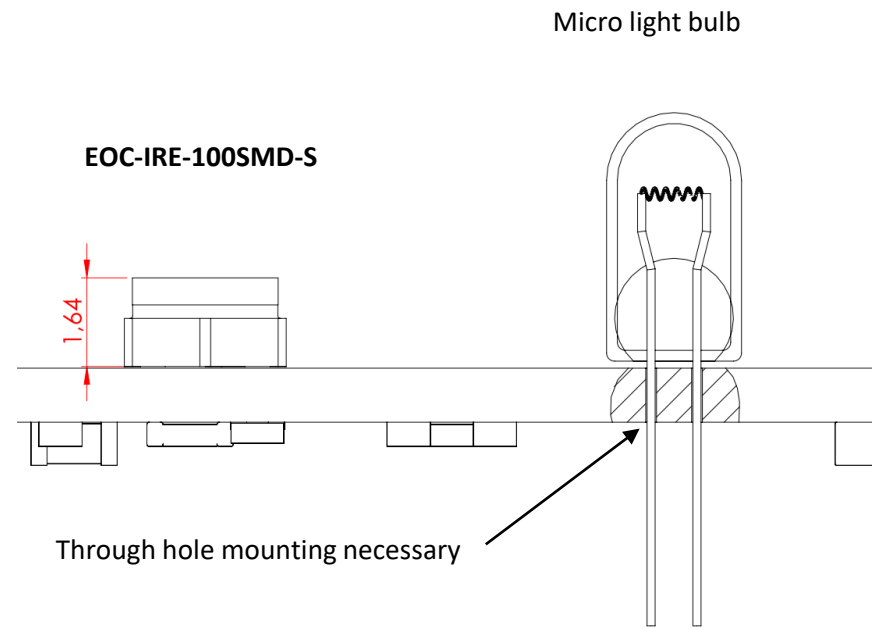


Fig. 3: Mounting of the **EOC-IRE-100SMD-S** and the micro light bulb on a printed circuit board..