

JSIR340-4-AL-R-D6.0-0-0

IR emitter with high modulation frequency for mass markets in NDIR gas analysis



Applications

- NDIR gas analysis
- DIR spectroscopy
- ATR spectroscopy
- PAS spectroscopy

Target gases

- CO₂, CO, N₂O, NH₃, SO₂, SF₆ and ripening gases such as C₂H₄ (ethylene) and C₂H₂ (acetylene)

Features

- Time constant of 11 ms due to low thermal mass of the chip membrane
- High membrane temperature up to 770 °C with active chip area 2.2 x 2.2 mm²
- Long-term stable chip architecture
- Spectral bandwidth from 2 to 15 μm
- CMOSI chip technology

Additional product information

The cost-effective infrared emitter JSIR340-4 is optimized for NDIR gas analysis and other infrared measurement applications such as DIR spectroscopy, ATR spectroscopy or PAS spectroscopy. The membrane of the CMOS-based IR emitter reaches membrane temperatures of up to 770 °C. It enables long-term stable radiation performance for industrial applications to control and monitor process gases, associated gases at ambient temperatures between -20 and 185 °C.

The MEMS chip used in our IR emitters consists of a multilayer hotplate membrane containing a high temperature stable metal C-MOSI layer. The emitter chip has an active area of 2.2 x 2.2 mm² and is based on a silicon substrate with a back-etched membrane. All thin-film processes are carried out using standard MEMS processes and CMOS-compatible materials. The active C-MOSI resistive layer is protected against ageing and the environment.

Online shop for IR components and sensors

Filter products simply by selecting the desired properties and request your quotation.

 microhybrid.com/shop



Technical data

Technical parameter	Value	Unit
Spectral output min.	2	μm
Spectral output max.	15	μm
Active area	2.2 x 2.2	mm ²
Hot resistance ¹	18 ± 5	Ω
Temperature coefficient typ. ²	1100	ppm/K
Time constant 0-63 % typ.	11	ms
Nominal power consumption ³	650	mW
Operation voltage typ. ⁴	3.4	V
Operation current typ. ⁴	190	mA
Recommended driving mode	Power mode	
Estimated lifetime ^{6,8}	> 5000 h at 770 °C; > 100000 h at 540 °C	
Active area temperature ^{1,5,7}	540 ± 30	°C
Housing	TO39	
Input power max.	1200	mW
Housing temperature max. ⁸	185	°C
Active area temperature max.	770	°C

¹ At nominal power

² 25 °C - 770 °C

³ At power on-state

⁴ With 18 Ω hot resistance

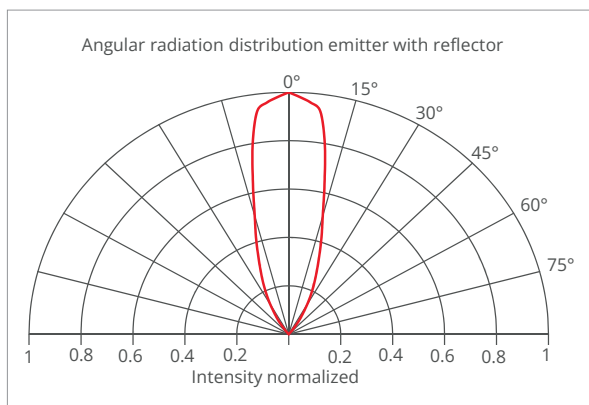
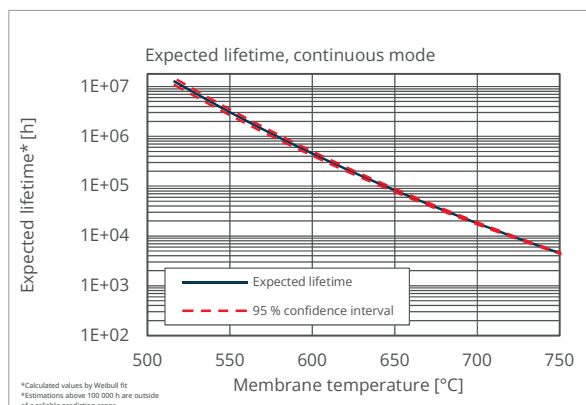
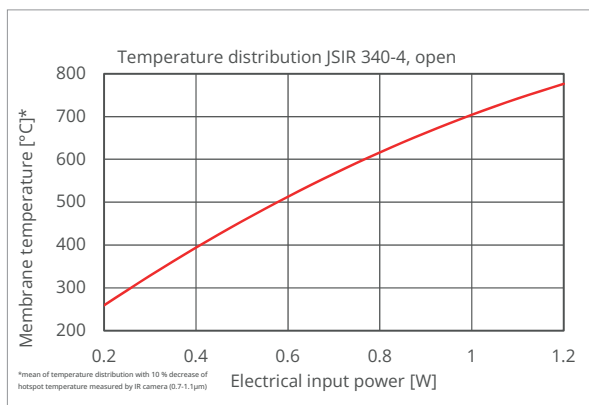
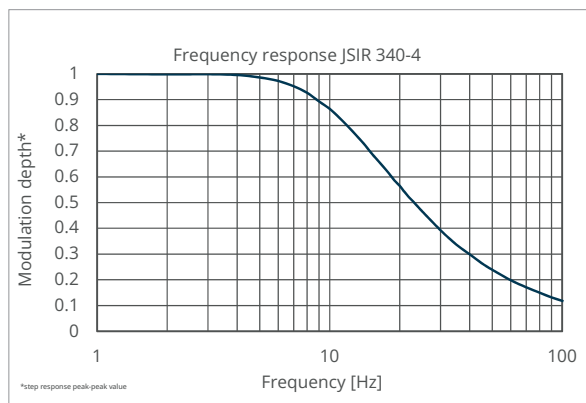
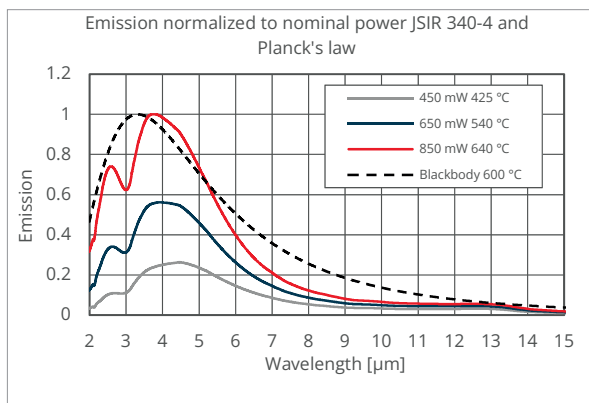
⁵ At T_{amb} = 25 °C

⁶ Continuous mode, MTTF 63 % (membrane fracture, calculated values based on Arrhenius)

⁷ Mean of temperature distribution with 10 % decrease of hotspot temperature measured by IR camera (0.7 - 1.1 μm)

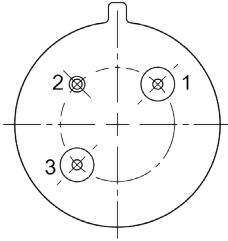
⁸ Including ambient temperature

Typical operating characteristics



Electrical schemata

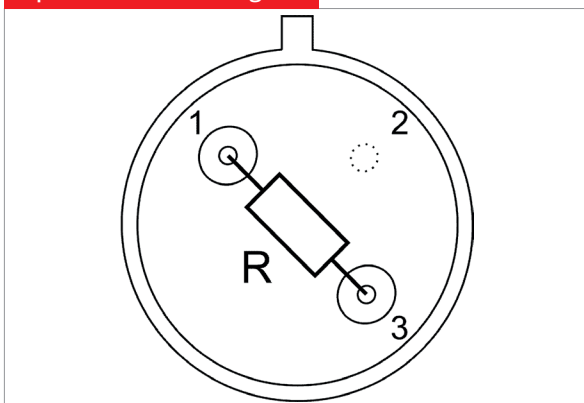
Pin out (bottom view)



- Pin 1 – Power 1
- Pin 2 – Case
- Pin 3 – Power 2

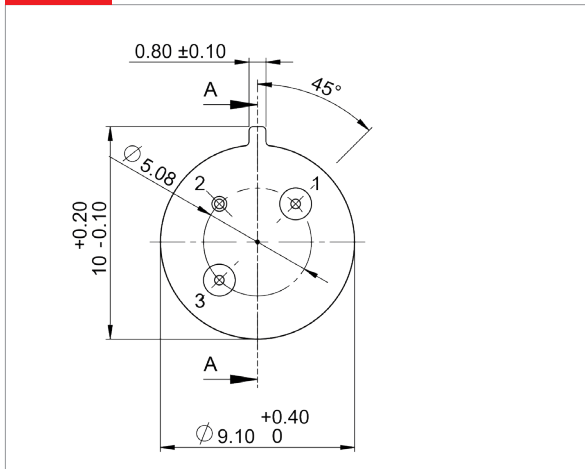
Circuits

Equivalent circuit diagram



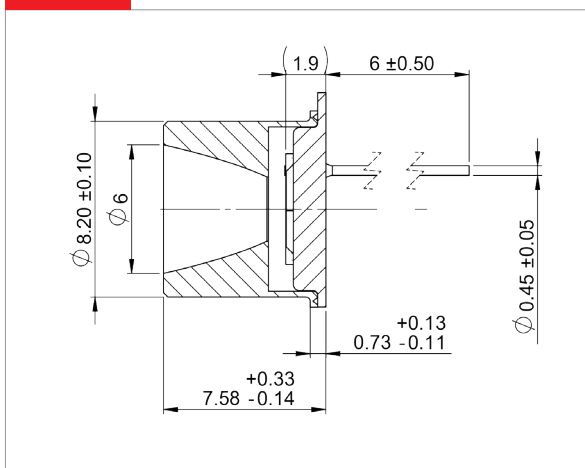
Mechanical drawings

Bottom



➔ All geometrical dimensions in mm

Sectional



Disclaimer

All rights reserved. All information in this data sheet are based on latest knowledge, results of practical experience and tests carried out. Earlier specifications are hereby invalid. All specifications – technical included – are subject to change without notice. It is the customer's responsibility to ensure that the performance of the product is suitable for customer's specific application. No liability is accepted for indirect damage, in particular for the use or inability to use the product. Any liability we may have is limited to the value of the product itself.