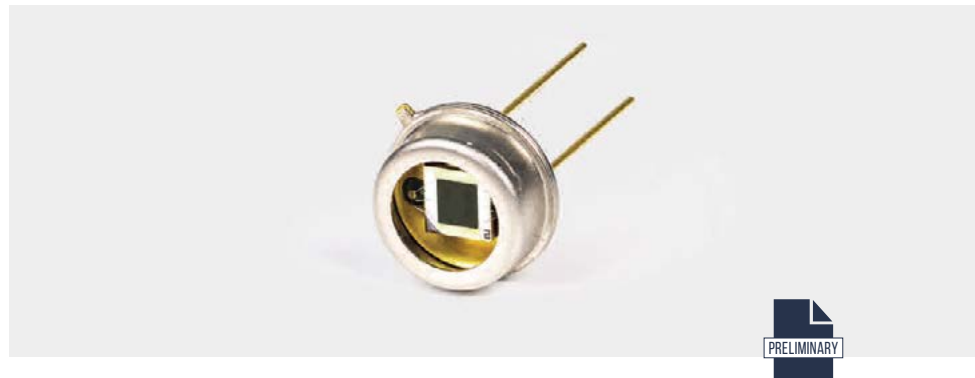


 PRODUCT DATA SHEET

JSIR 360-4

High-end MEMS based infrared emitter with black-silicon emission layer for NDIR gas analysis in the long wave length range for ambitious medical and industrial applications.



By implementation of a sophisticated micro-nano structured silicon-metal emissions layer at a MEMS hot-plate emitter chip, Micro-Hybrid offers infrared sources with true black body radiation characteristic.

The extraordinary performant IR emitter MEMS chips are defined by hot-plate temperatures up to 700 °C in combination with a spectral broadband emission coefficient ϵ nearly 1. This enables highest radiation intensities over a wide infrared wavelength range. Besides the high infrared output intensity our successful development focused on the long term stability.

JSIR 360 sources are available in different T0 packaging versions with cap or reflector as well as in SMD housings. Various backfill gases in hermetically sealed T0 packages produce highly efficient versions and less power dissipation for e.g. battery-powered applications.

FEATURES

- True black body radiation behavior
- Highest radiation intensities by hot-plate temperatures up to 700 °C in combination with emission coefficient ϵ nearly 1
- Long lifetime by thermal-mechanical adjusted membrane
- Spectral drift free behavior also in hermetical sealed packages
- HermeSEAL® technology empowering application in harsh environments

APPLICATIONS

- NDIR gas analysis
- DIR & ATR spectroscopy
- Photoacoustic gas spectroscopy

TARGET GASES

- CO₂, CO, NO₂, NH₃, SO_x, SF₆ and ripening gases such as C₂H₄ (ethylene) and C₂H₂ (acetylene)

PRODUCT DATA SHEET • IR sources • JSIR 360-4 | © Micro-Hybrid-Electronic GmbH | 2020-12

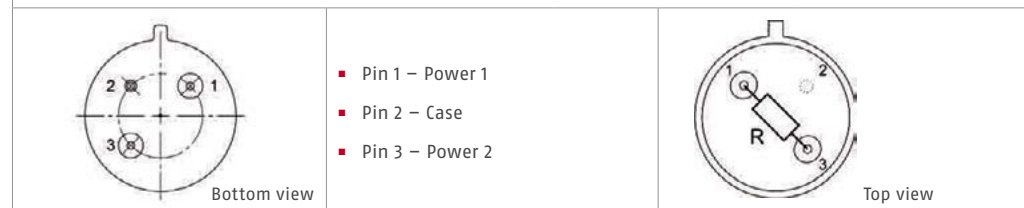
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**INFRARED COMPONENTS
AND SYSTEMS**

Technical data

| Technical parameter | Open / window N ₂ | Window Kr | Unit |
|--|------------------------------|-----------------|-----------------|
| Spectral output range ¹ | 2 ... 15 | 2 ... 15 | μm |
| Active area | 2.2 x 2.2 | 2.2 x 2.2 | mm ² |
| Hot resistant ² | 18 ± 5 | 18 ± 5 | Ω |
| Temperature coefficient ³ | 1250 | 1250 | ppm/K |
| Time constant _{0-63 %} | typ. 26 | typ. 42 | ms |
| Nominal power consumption ⁴ | 650 | 400 | mW |
| Operation voltage ⁵ | 3.42 | 2.68 | V |
| Operation current ⁵ | 190 | 149 | mA |
| Recommended driving mode | Power mode | Power mode | |
| Active area temperature ^{2,6,7} | 600 ± 30 | 600 ± 30 | °C |
| Window/ filter | Available | Available | |
| Housing | T039 (modified) | T039 (modified) | |
| Estimated lifetime ^{6,8} | 100000 | 100000 | h |
| Absolute max. ratings | | | |
| Input power ^{4,6} | 850 | 530 | mW |
| Housing temperature | 200 | 200 | °C |
| Active area temperature | 700 | 700 | °C |

Pin out

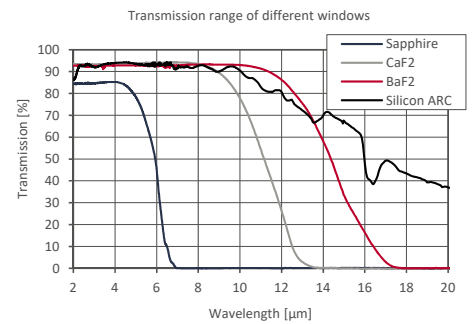
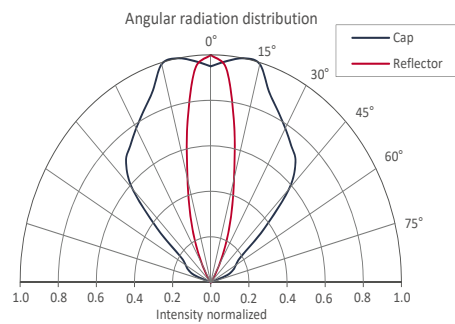
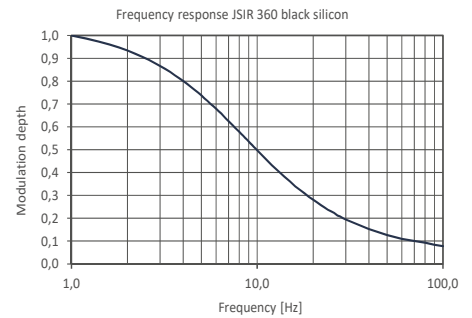
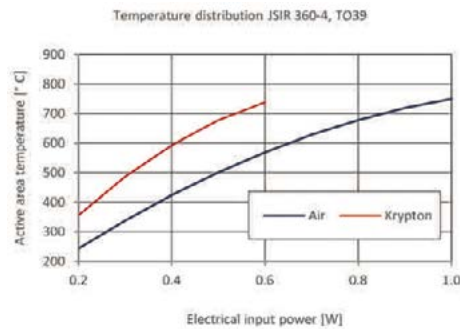
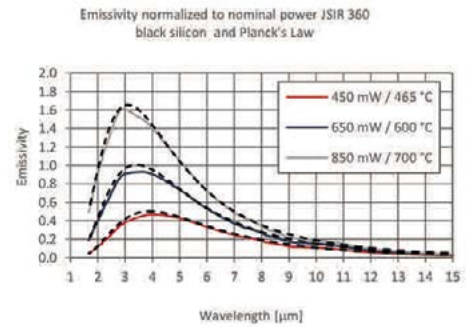
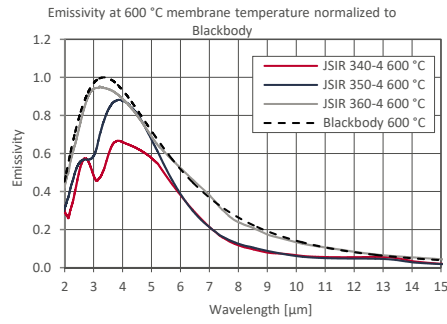


- Pin 1 – Power 1
- Pin 2 – Case
- Pin 3 – Power 2

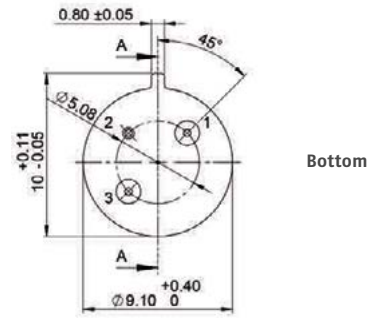
- ¹ without filter
- ² at nominal power
- ³ 0 °C bis 800 °C
- ⁴ at power on-state

- ⁵ with 18 Ω hot resistant
- ⁶ at T_{amb} = 25 °C
- ⁷ measurement condition – diameter 1 mm center of membrane
- ⁸ at 1 Hz, 50 % duty cycle, MTF 63 % (membrane fracture, preliminary results)

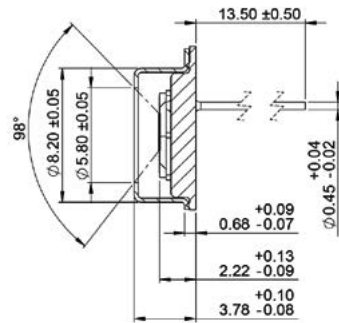
Typical operating characteristics of IR sources › JSIR 360-4 (open / window N₂)



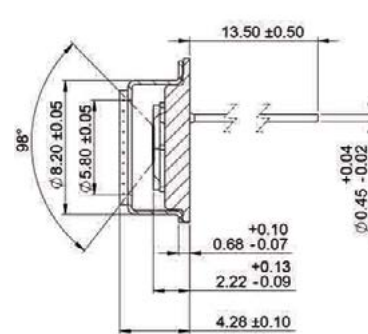
Mechanical drawings



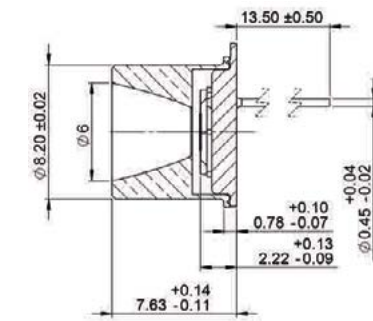
AA – JSIR 360 cap open



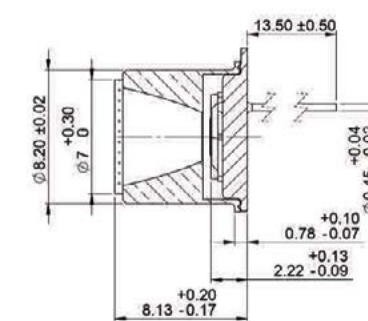
AA – JSIR 360 cap with filter



AA – JSIR 360 reflector open



AA – JSIR 360 reflector with filter



all geometrical dimensions in mm

Product overview

| Article | | Type | Filling gas | Temp. min | Temp. max | Aperture | Filter | Active area |
|-------------------------|----------|---------------------|-------------|-----------|-----------|----------|--------|---------------------------|
| JSIR360-4-AL-C-D5.8-0-0 | S | T039 with cap | | -20 °C | 85 °C | 5.8 mm | w/o | 2.2 x 2.2 mm ² |
| JSIR360-4-AL-R-D6.0-0-0 | S | T039 with reflector | | -20 °C | 85 °C | 6.0 mm | w/o | 2.2 x 2.2 mm ² |

S in stock

Micro-Hybrid's offer includes IR emitter of our subsidiaries **NOVA IR** and **CMOSIR**.
All IR emitters are supplied in a T0 or SMD housing. We ship from stock and on demand.

NOVA IR and **CMOSIR** are companies of Micro-Hybrid Electronic GmbH.