

➤ PRODUCT DATA SHEET

# JSIR 350-4

Premium MEMS based infrared radiation sources on T039 for NDIR gas analysis



By combining standard silicon material technology with NAC coatings, Micro-Hybrid offers MEMS products with exceptional performance.

The powerful IR emitters made by our MEMS fab NOVA IR consist of nanoamorphic carbon (NAC). They reach membrane temperatures of up to 850 °C for a high and long-term stable radiation performance. JSIR 350-4 sources are available in different packaging options with cap and reflector. The spectral performance can be individually optimized by various filters and filling gases.

Only at Micro-Hybrid: **HermeSEAL® technology**: a unique process - that creates hermetically sealed emitters for use in harsh environments.

**FEATURES**

- High membrane temperature up to 850 °C
- High radiation output
- High modulation frequency
- Long lifetime (reliability due to high stability of the membrane)
- **HermeSEAL® technology**

**APPLICATIONS**

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

**TARGET GASES**

- CO<sub>2</sub>, CO, NO<sub>2</sub>, NH<sub>3</sub>, SO<sub>x</sub>, SF<sub>6</sub> and ripening gases such as C<sub>2</sub>H<sub>4</sub> (ethylene) and C<sub>2</sub>H<sub>2</sub> (acetylene)



1 - Multi layer hot plate membrane containing NAC layer  
 2 - Bond pads  
 3 - Si frame and membrane

PRODUCT DATA SHEET • IR sources • JSIR 350-4 | © Micro-Hybrid-Electronic GmbH | 2020-10

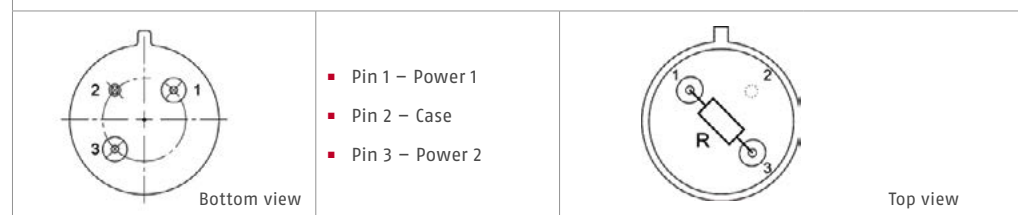
All rights reserved. All specifications – technical included – are subject to change without notice. No liability is accepted for any consequential losses, injury or damage resulting from the use of this document or from any omissions or errors herein.

 **INFRARED COMPONENTS AND SYSTEMS**

### Technical data

Technical parameter	Open, window Nz	Window Kr	Unit
Spectral output range	2 ... 15	2 ... 15	μm
Active area	2.2 x 2.2	2.2 x 2.2	mm <sup>2</sup>
Hot resistant	40 ± 20	40 ± 20	Ω
Temperature coefficient <sup>1</sup>	typ. 500	typ. 500	ppm/K
Time constant <sub>0-63%</sub>	typ. 17	typ. 30	ms
Nominal power consumption <sup>2</sup>	650	400	mW
Operation voltage <sup>3</sup>	typ. 4.9	typ. 4.0	V
Operation current <sup>3</sup>	typ. 132	typ. 100	mA
Recommended driving mode	Power mode	Power mode	
Active area temperature <sup>4,5</sup>	610 ± 30	610 ± 30	°C
Window	available	available	
Housing	T039 (modified)	T039 (modified)	
Estimated lifetime <sup>5,6</sup>	> 5000 h at 740 °C	> 5000 h at 740 °C	
	> 100000 h at 610 °C	> 100000 h at 610 °C	
<b>Absolute max. ratings</b>			
Input power <sup>2,5</sup>	1200	700	mW
Housing temperature	120	120	°C
Active area temperature	850	850	°C

### Pin out



<sup>1</sup> 0 °C – 800 °C

<sup>2</sup> at power on-state

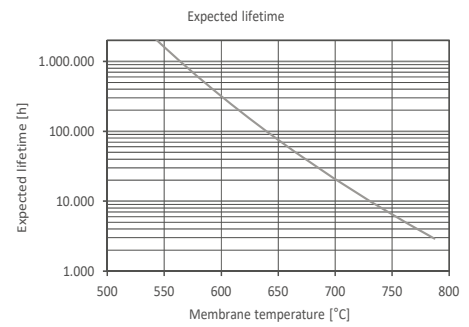
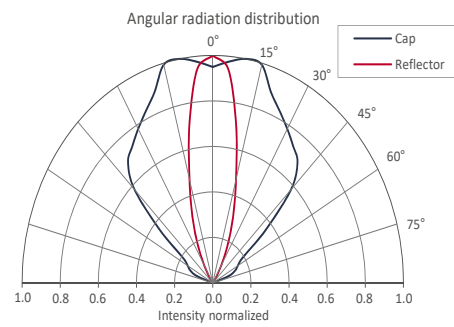
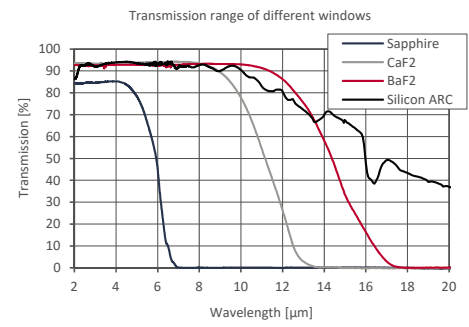
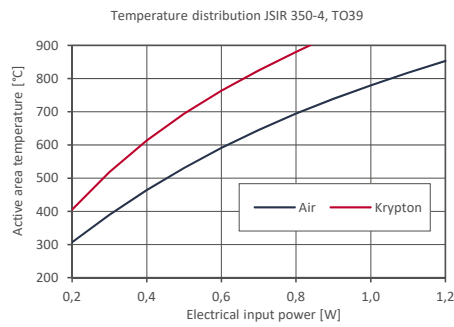
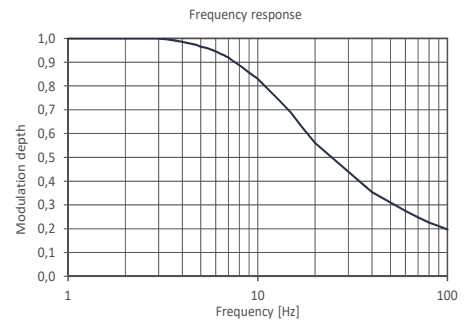
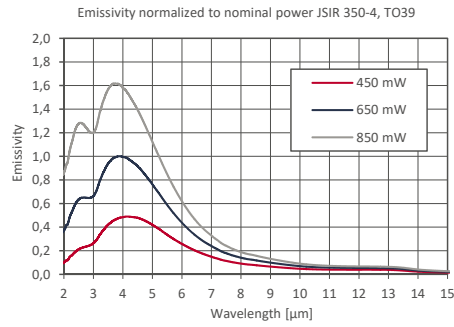
<sup>3</sup> with 40 Ω

<sup>4</sup> DC power (nominal power)

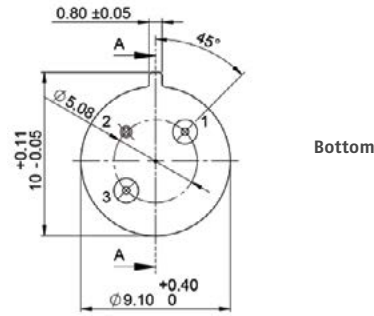
<sup>5</sup> at T<sub>amb</sub> = 25 °C

<sup>6</sup> at 1 Hz, 50 % duty cycle, MTF 63 % (membrane fracture, preliminary results)

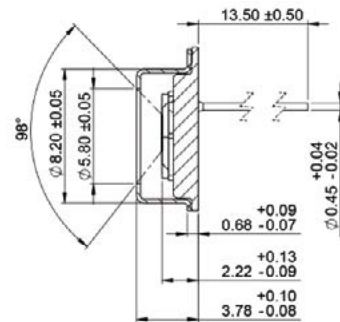
### Typical operating characteristics of IR sources › JSIR 350-4 (open / window N<sub>2</sub>)



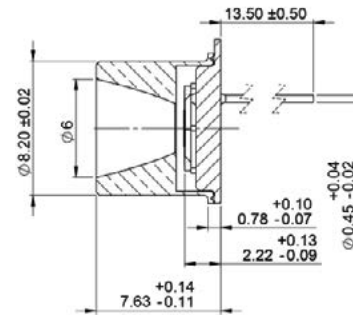
**Mechanical drawings**



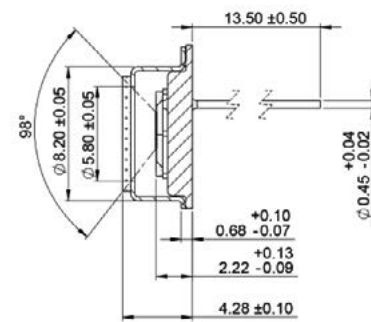
AA - JSIR 350 cap open



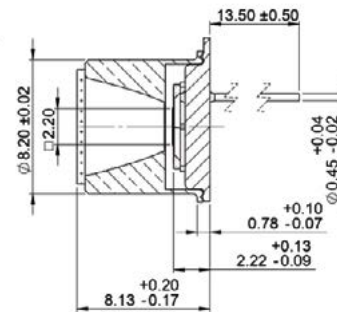
AA - JSIR 350 reflector open



AA - JSIR 350 cap with filter



AA - JSIR 350 reflector with filter



all geometrical dimensions in mm

## Product overview

Article		Type	Filling gas	Temp. min	Temp. max	Aperture	Filter	Active area
JSIR350-4-AL-C-D5.8-0-0	<b>s</b>	T039 with cap		-20 °C	85 °C	5.8 mm	w/o	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-C-D5.8-2-A2	<b>s</b>	T039 with cap	Kr	-20 °C	85 °C	5.8 mm	CaF <sub>2</sub>	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-C-D5.8-2-A1	<b>d</b>	T039 with cap	Kr	-20 °C	85 °C	5.8 mm	Sapphire	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-C-D5.8-2-A2	<b>d</b>	T039 with cap	Kr	-20 °C	85 °C	5.8 mm	CaF <sub>2</sub>	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-C-D5.8-2-A4	<b>d</b>	T039 with cap	Kr	-20 °C	85 °C	5.8 mm	BaF <sub>2</sub>	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-C-D5.8-1-A1	<b>d</b>	T039 with cap	N <sub>2</sub>	-20 °C	85 °C	5.8 mm	Sapphire	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-C-D.5.8-1-A2	<b>d</b>	T039 with cap	N <sub>2</sub>	-20 °C	85 °C	5.8 mm	CaF <sub>2</sub>	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-C-D.5.8-1-A4	<b>d</b>	T039 with cap	N <sub>2</sub>	-20 °C	85 °C	5.8 mm	BaF <sub>2</sub>	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-C-D3.7-2-A7-I <sup>HS</sup>	<b>s</b>	T039 with cap	Kr	-20 °C	125 °C	5.8 mm	Silicon	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-C-D5.8-2-A1-I <sup>HS</sup>	<b>d</b>	T039 with cap	Kr	-20 °C	185 °C	5.8 mm	Sapphire	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-R-D6.0-0-0	<b>s</b>	T039 with reflector		-20 °C	85 °C	6.0 mm	w / o	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-R-D6.0-2-A2	<b>s</b>	T039 with reflector	Kr	-20 °C	85 °C	6.0 mm	CaF <sub>2</sub>	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-R-D6.0-2-A4	<b>d</b>	T039 with reflector	Kr	-20 °C	85 °C	6.0 mm	BaF <sub>2</sub>	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-R-D6.0-1-A1	<b>d</b>	T039 with reflector	N <sub>2</sub>	-20 °C	85 °C	6.0 mm	Sapphire	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-R-D6.0-1-A2	<b>d</b>	T039 with reflector	N <sub>2</sub>	-20 °C	85 °C	6.0 mm	CaF <sub>2</sub>	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-R-D6.0-1-A4	<b>d</b>	T039 with reflector	N <sub>2</sub>	-20 °C	85 °C	6.0 mm	BaF <sub>2</sub>	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-R-D6.0-2-A7-I <sup>HS</sup>	<b>d</b>	T039 with reflector	Kr	-20 °C	125 °C	6.0 mm	Silicon	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-AL-R-D6.0-2-A1-I <sup>HS</sup>	<b>d</b>	T039 with reflector	Kr	-20 °C	185 °C	6.0 mm	Sapphire	2.2 x 2.2 mm <sup>2</sup>
JSIR350-4-CB-0-S5.0-0-A7	<b>s</b>	SMD	Air	-20 °C	85 °C	6.0 mm	Silicon	2.2 x 2.2 mm <sup>2</sup>

<sup>HS</sup> HermeSEAL® technology    **s** in stock    **d** on demand

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.