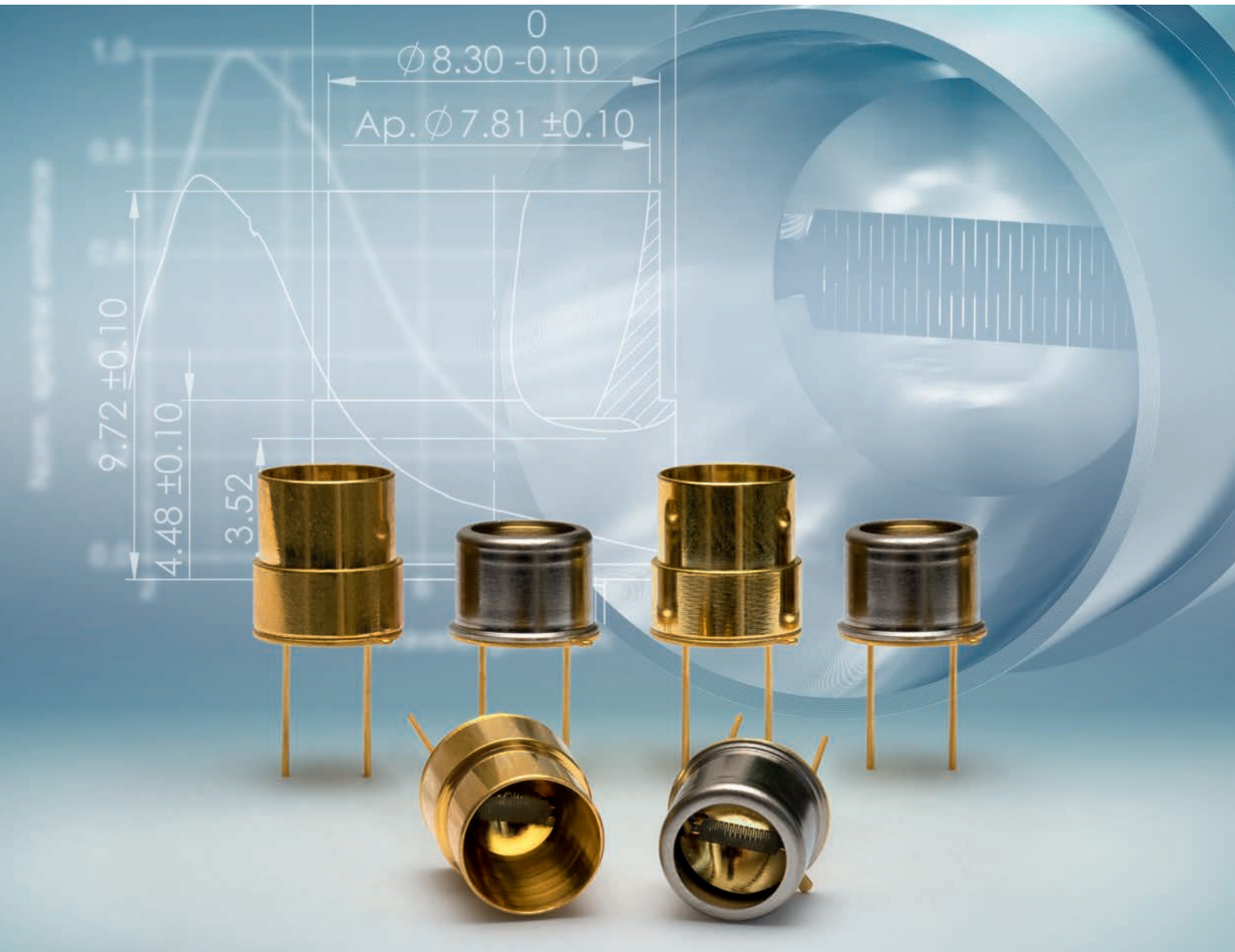


INFRA·SOLID[®]



HISbasic series

TO-39/TO-5 Thermal Infrared Emitters

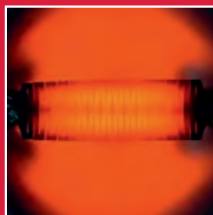
HISbasic series

Thermal Infrared Emitters

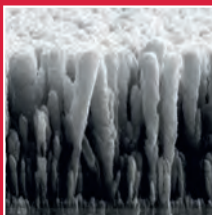
Infrasolid's infrared radiation sources are pulsable thermal emitters with a near black-body emittance. Based on a patented nanotechnology and a patented emitter set-up made of a high-melting metal, the free-standing monolithic radiating element and the nanostructured emitter surface offer numerous advantages in many applications.

HISbasic series emitters have an integrated gold plated reflector that directs the radiation emitted from the rear to the front in order to achieve maximum efficiency. All our emitters offer minimum drift at constant resistance (Ohm). Infrasolids IR emitters are characterized by a very low temperature coefficient of electrical resistance. Therefore the hot resistance and the cold resistance are almost identical which eases the electrical control of the IR sources.

Key features



High radiant power



High efficiency



Low cost

- ✓ Pulsable thermal black-body infrared source mounted in an industry standard TO-39/TO-5 package.
- ✓ Patented nanostructured radiating element achieves up to 500% more detection signal!
- ✓ Lower radiating element temperature of 600 °C increases lifetime!
- ✓ Wide wavelength range enables a broad range of applications.

*innovative infrared sources for
gas detection & spectroscopy*

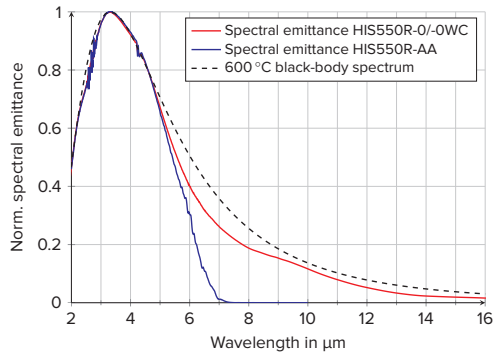
Main specifications

Parameter	HIS550R-O / -OWC	HIS550R-AA
Package	TO-39 / TO-5	TO-39 / TO-5
Radiating element area	11 mm ²	11 mm ²
Radiating element emissivity	> 0.9	> 0.9
Radiating element temperature	600 °C at 650 mW	600 °C at 600 mW
Optical output power	up to 220 mW	up to 140 mW
Max. electrical power (DC)	700 mW	630 mW
Max. electrical voltage	4.0 V	3.7 V
Max. electrical current	175 mA	170 mA
Electrical resistance	21...23 Ω	21...23 Ω
Modulation frequency*	6 Hz	4 Hz
Filter**	none (open)	Sapphire (soldered)
Wavelength range	2 to 20 μm	2 to 6 μm
Filling gas	none	Argon

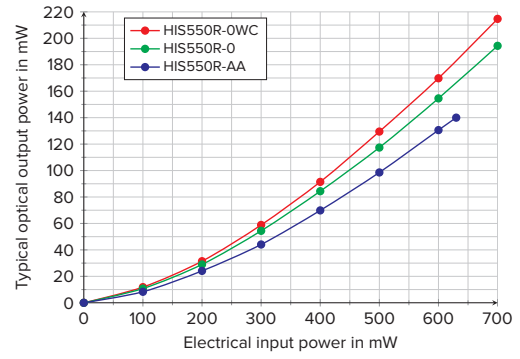
* 50 % modulation depth, square wave signal, 50 % duty cycle

** Other Filters (i.e. CaF₂, BaF₂) available upon request

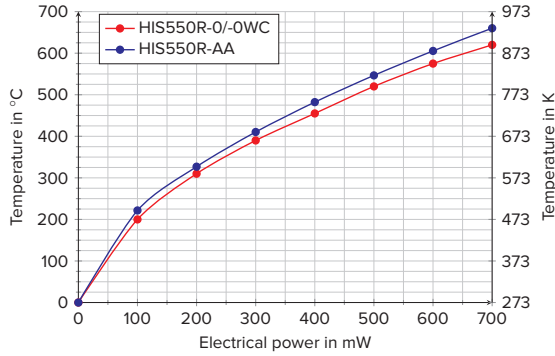
Optical specifications



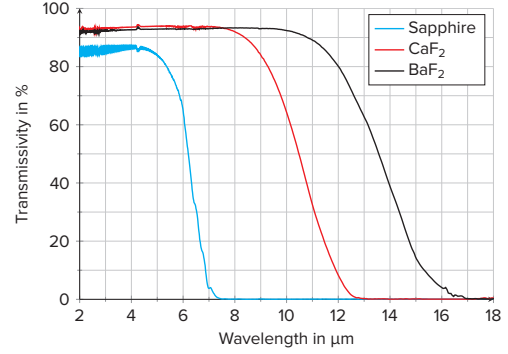
Optical output power



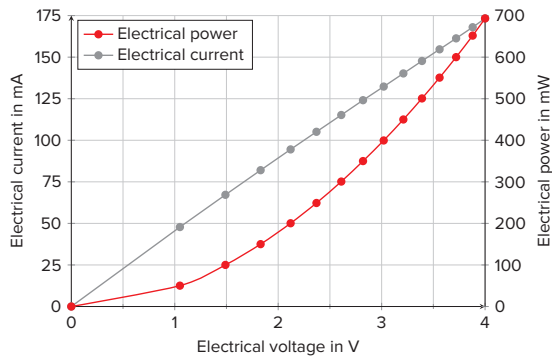
Radiating element temperature



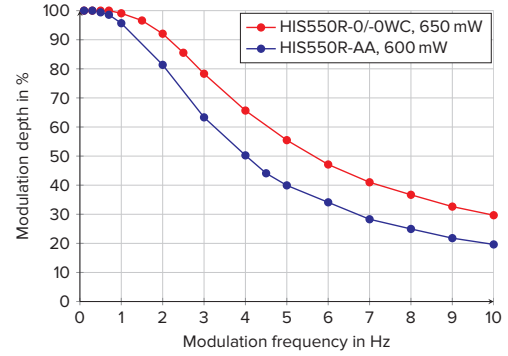
Window material transmissivity



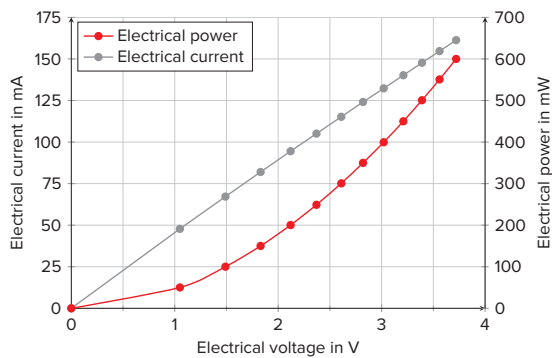
Electrical specifications HIS550R-0 / -OWC




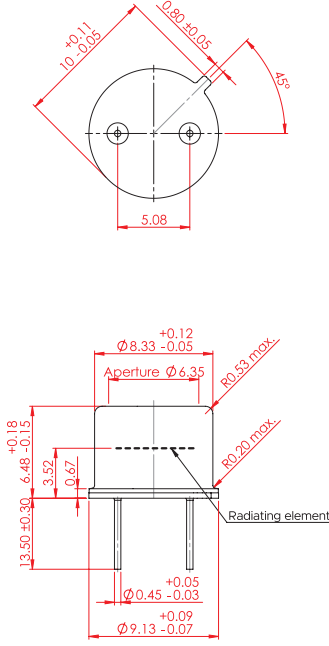
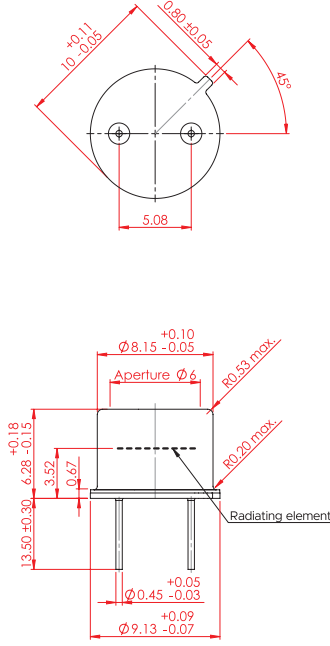
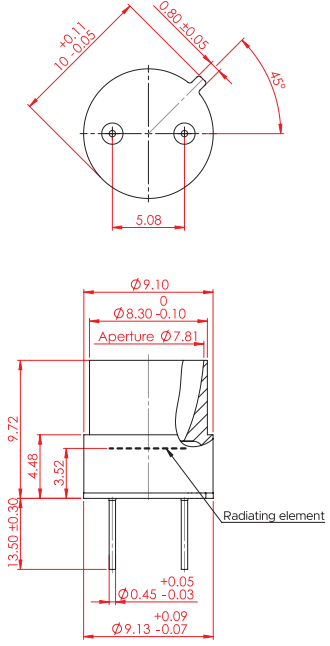


Modulation depth

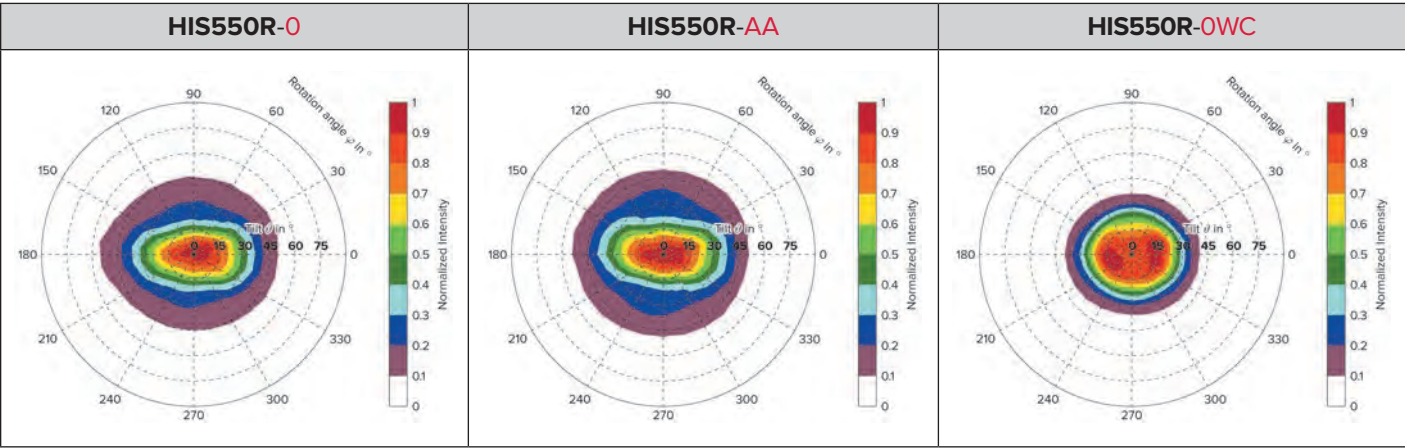


Electrical specifications HIS550R-AA

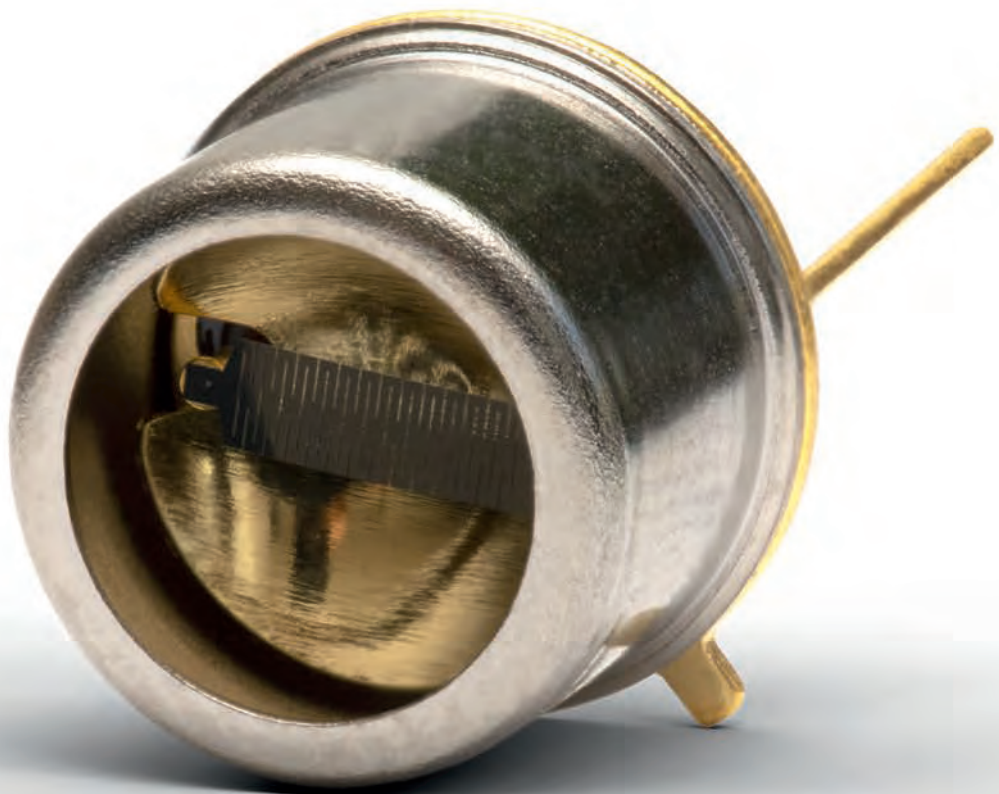


HIS550R-0	HIS550R-AA	HIS550R-0WC
		
HIS550R-0 Without window (open version)	HIS550R-AA Soldered sapphire window Hermetically sealed	HIS550R-0WC Without window (open version)
With reflector	With reflector	With reflector and Winston cone collimator
No gas filling	Argon gas filling (other gases possible)	No gas filling
		

Angular radiation distribution



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Data Sheet HIS*basic*

HIS550R-0

TO-39/TO-5 Thermal Infrared Emitter

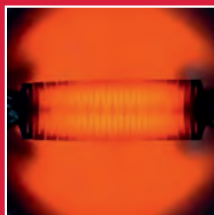
HIS550R-0

Thermal infrared emitter with gold plated reflector

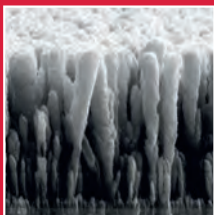
Our HIS550R-0 is a NiCr filament based thermal emitter in a TO39 package, with a gold plated reflector that directs the radiation emitted from the rear of the filament to the front. This almost doubles our optical output power. The open emitter offers high performance for a wide spectral measuring range.

HISbasic series emitters have an integrated gold plated reflector that directs the radiation emitted from the rear to the front in order to achieve maximum efficiency. All our emitters offer minimum drift at constant resistance (Ohm). Infrasil IR emitters are characterized by a very low temperature coefficient of electrical resistance. Therefore the hot resistance and the cold resistance are almost identical which eases the electrical control of the IR sources.

Key features



High radiant power



High efficiency



Low cost

- ✓ Pulsable thermal black-body infrared source mounted in an industry standard TO-39/TO-5 package.
- ✓ Patented nanostructured radiating element achieves up to 500% more detection signal!
- ✓ Lower radiating element temperature of 600 °C increases lifetime!
- ✓ Wide wavelength range enables a broad range of applications.

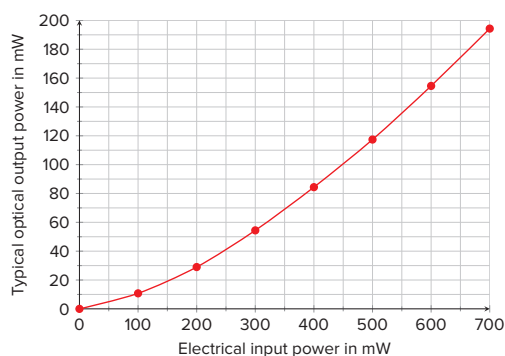
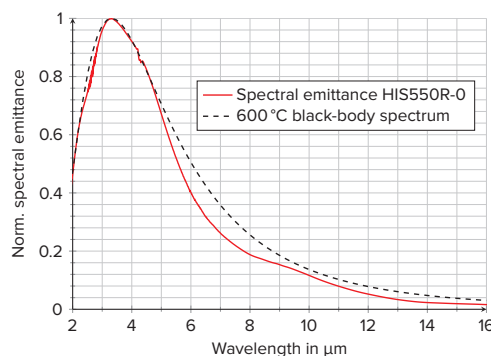
*innovative infrared sources for
gas detection & spectroscopy*

Main specifications

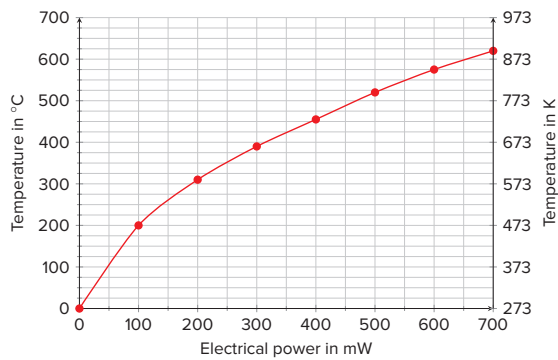
Parameter	HIS550R-0
Package	TO-39 / TO-5
Radiating element area	11 mm ²
Radiating element emissivity	> 0.9
Radiating element temperature	600 °C at 650 mW
Optical output power	up to 195 mW
Max. electrical power (DC)	700 mW
Max. electrical voltage	4.0 V
Max. electrical current	175 mA
Electrical resistance	21...23 Ω
Modulation frequency*	6 Hz
Wavelength range	2 to 20 μm

* 50 % modulation depth, square wave signal, 50 % duty cycle

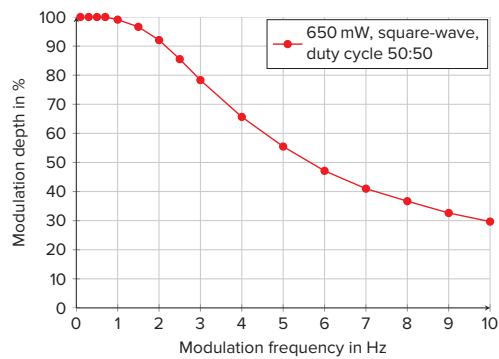
Optical specifications



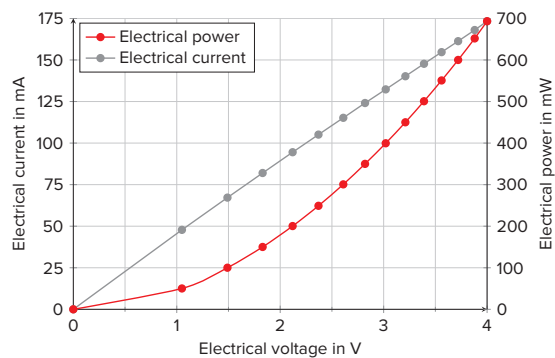
Radiating element temperature



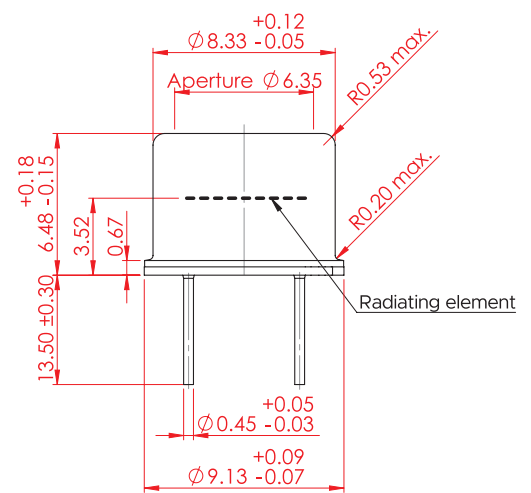
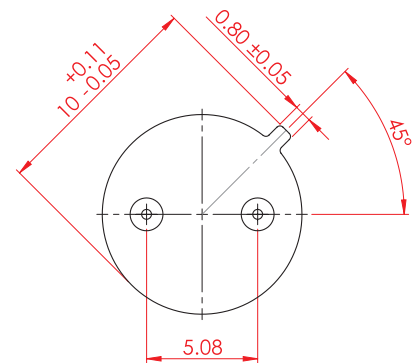
Modulation depth



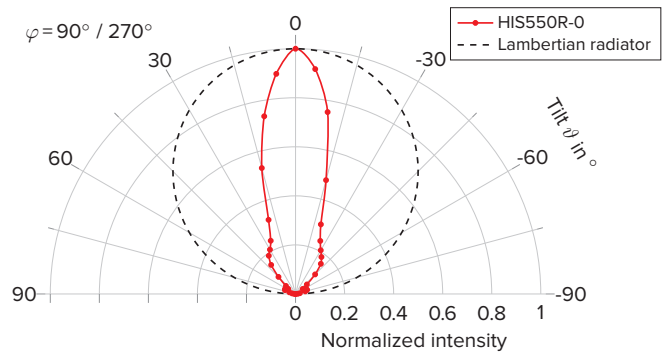
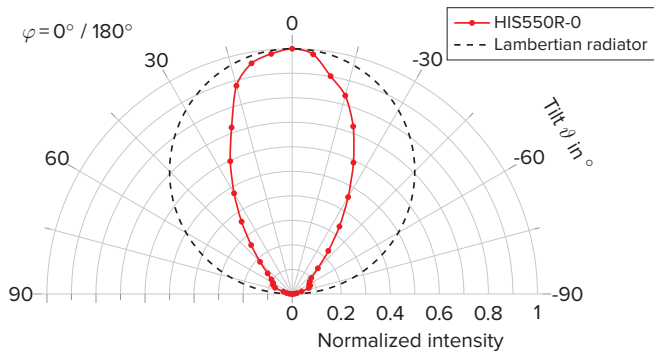
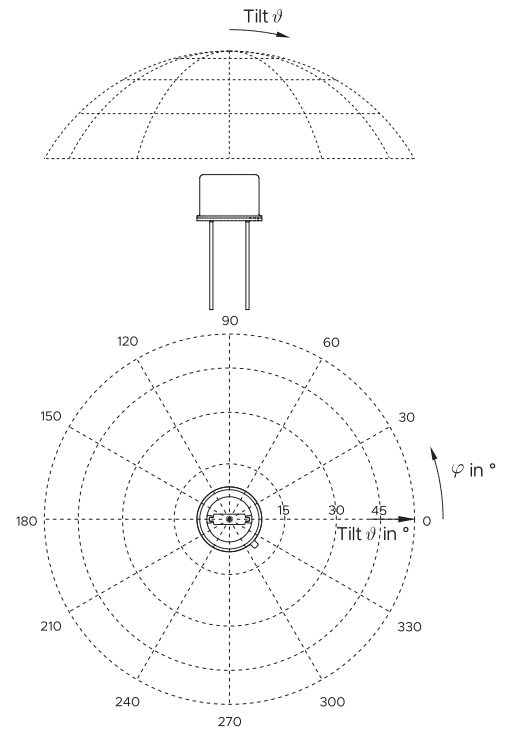
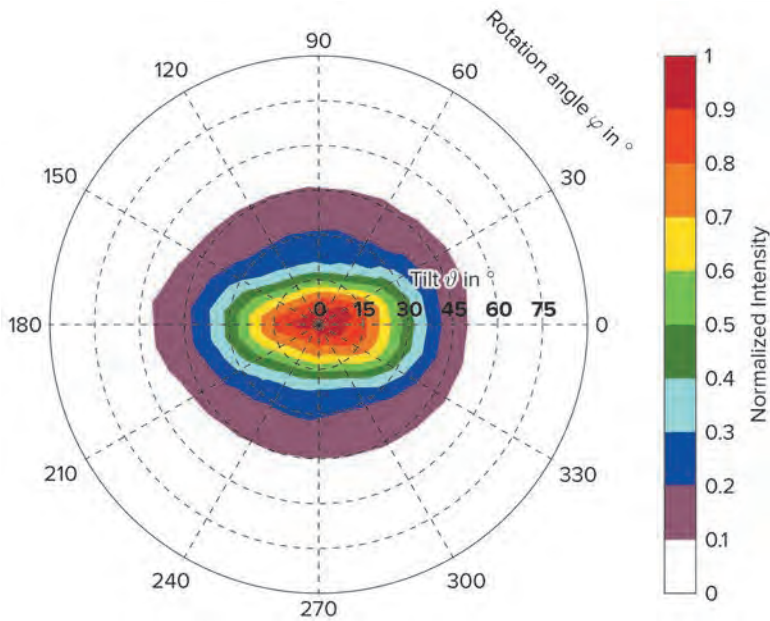
Electrical specifications



HIS550R-0



Angular radiation distribution (without window)



Operating mode recommendation:

All our IR sources can be driven in electrical voltage, current or power regulated mode. The application decides whether the operating mode is DC or AC (pulsed). Depending on the drive mode and the applied electrical power the electrical resistance of the IR emitter can change over time. For highest measurement accuracy a power regulated mode is always recommended for thermal IR emitters. However, it is the most complex operating mode and not suitable in all applications.

For applications that require a small and low-cost driving circuit with a maximum stability we have a technical note with an adjustable low dropout voltage (LDO) regulator.

For further information please refer to:
www.infrasolid.com/technicalnote

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Data Sheet HIS*basic*

HIS550R-0WC

TO-39/TO-5 Thermal Infrared Emitter

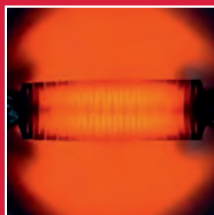
HIS550R-OWC

Thermal infrared emitter with gold plated reflector and Winston cone collimator

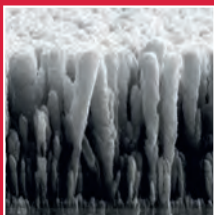
Our HIS550R-OWC is a NiCr filament based thermal emitter in a TO39 package, with a gold plated reflector as well as a gold plated Winston cone collimator. While the reflector directs the radiation emitted from the rear of the filament to the front, the Winston cone collimator bundles the beam for maximum optical output power. The open emitter offers high performance for a wide spectral measuring range.

HISbasic series emitters have an integrated gold plated reflector that directs the radiation emitted from the rear to the front in order to achieve maximum efficiency. All our emitters offer minimum drift at constant resistance (Ohm). Infrasil IR emitters are characterized by a very low temperature coefficient of electrical resistance. Therefore the hot resistance and the cold resistance are almost identical which eases the electrical control of the IR sources.

Key features



High radiant power



High efficiency



Low cost

- ✓ Pulsable thermal black-body infrared source mounted in an industry standard TO-39/TO-5 package.
- ✓ Patented nanostructured radiating element achieves up to 500% more detection signal!
- ✓ Lower radiating element temperature of 600 °C increases lifetime!
- ✓ Wide wavelength range enables a broad range of applications.

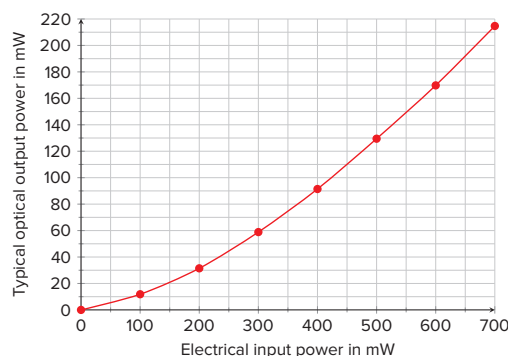
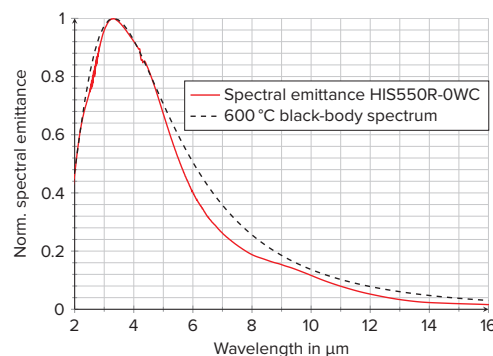
*innovative infrared sources for
gas detection & spectroscopy*

Main specifications

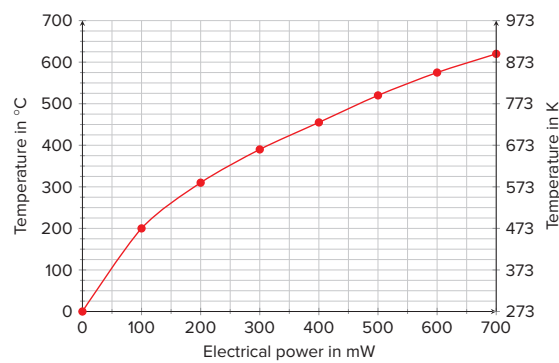
Parameter	HIS550R-OWC
Package	TO-39 / TO-5
Radiating element area	11 mm ²
Radiating element emissivity	> 0.9
Radiating element temperature	600 °C at 650 mW
Optical output power	up to 215 mW
Max. electrical power (DC)	700 mW
Max. electrical voltage	4.0 V
Max. electrical current	175 mA
Electrical resistance	21...23 Ω
Modulation frequency*	6 Hz
Wavelength range	2 to 20 μm

* 50 % modulation depth, square wave signal, 50 % duty cycle

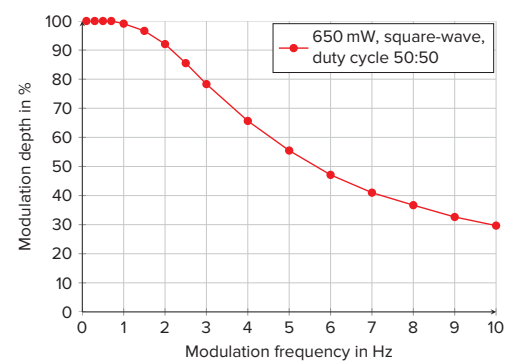
Optical specifications



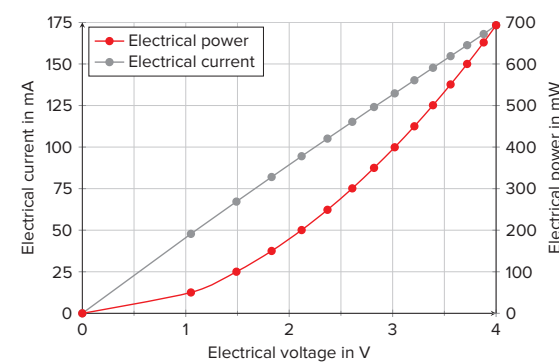
Radiating element temperature



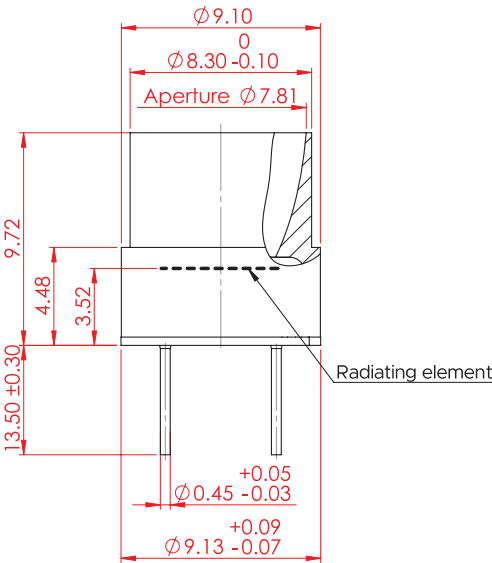
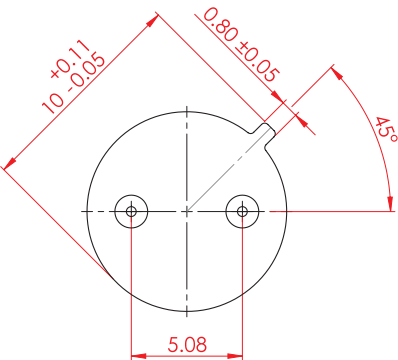
Modulation depth



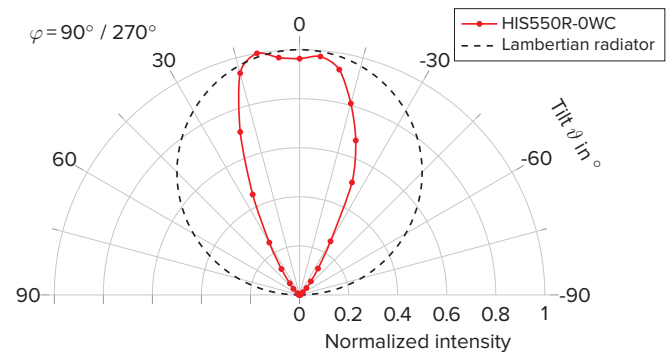
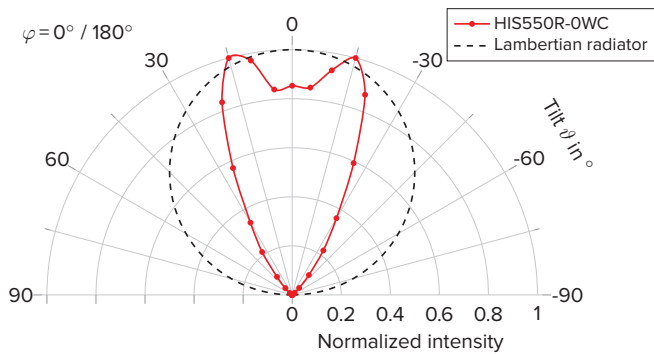
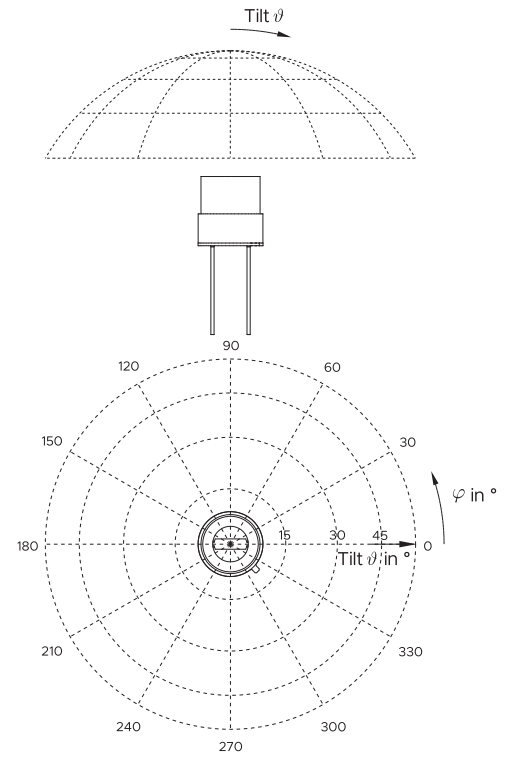
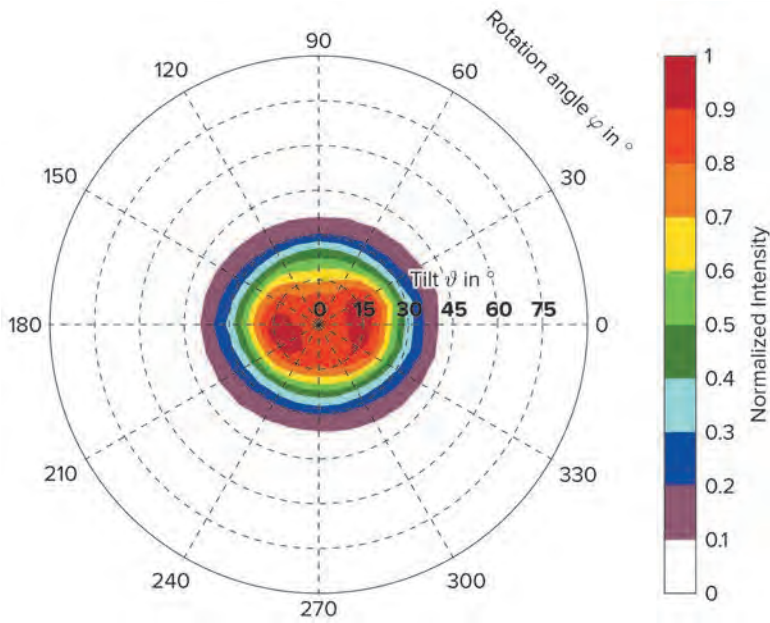
Electrical specifications



HIS550R-0WC



Angular radiation distribution (without window)



Operating mode recommendation:

All our IR sources can be driven in electrical voltage, current or power regulated mode. The application decides whether the operating mode is DC or AC (pulsed). Depending on the drive mode and the applied electrical power the electrical resistance of the IR emitter can change over time. For highest measurement accuracy a power regulated mode is always recommended for thermal IR emitters. However, it is the most complex operating mode and not suitable in all applications.

For applications that require a small and low-cost driving circuit with a maximum stability we have a technical note with an adjustable low dropout voltage (LDO) regulator.

For further information please refer to:
www.infrasolid.com/technicalnote

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Data Sheet HIS*basic*

HIS550R-AA

TO-39/TO-5 Thermal Infrared Emitter

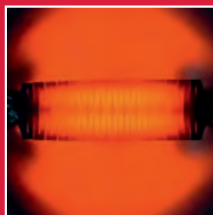
HIS550R-AA

Thermal infrared emitter with sapphire window and Argon gas filling

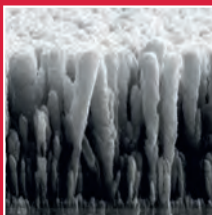
Our HIS550R-AA is a NiCr filament based thermal emitter in a TO39 package, with a soldered sapphire window. This guarantees hermetically sealed package and long-term stability. The cap with the soldered sapphire window is tested with Helium leak test at $< 10^{-8}$ mbar l/s. The Argon gas filling with its higher thermal resistance compared to air or nitrogen provides a higher optical output power at the same electrical input power.

HISbasic series emitters have an integrated gold plated reflector that directs the radiation emitted from the rear to the front in order to achieve maximum efficiency. All our emitters offer minimum drift at constant resistance (Ohm). Infrasil IR emitters are characterized by a very low temperature coefficient of electrical resistance. Therefore the hot resistance and the cold resistance are almost identical which eases the electrical control of the IR sources.

Key features



High radiant power



High efficiency



Hermetically sealed

- ✓ Pulsable thermal black-body infrared source mounted in an industry standard TO-39/TO-5 package.
- ✓ Patented nanostructured radiating element achieves up to 500% more detection signal!
- ✓ Lower radiating element temperature of 600 °C increases lifetime!
- ✓ Wide wavelength range enables a broad range of applications.

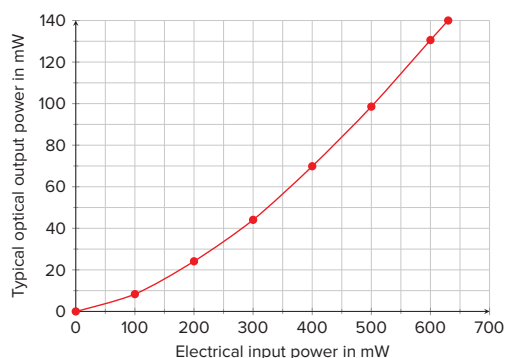
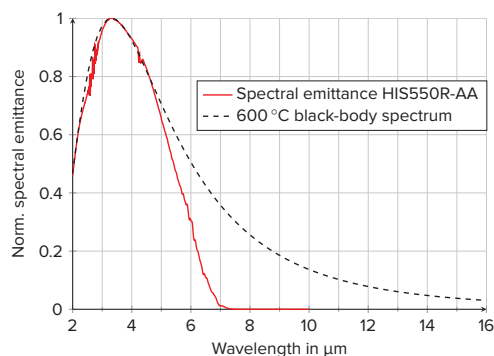
*innovative infrared sources for
gas detection & spectroscopy*

Main specifications

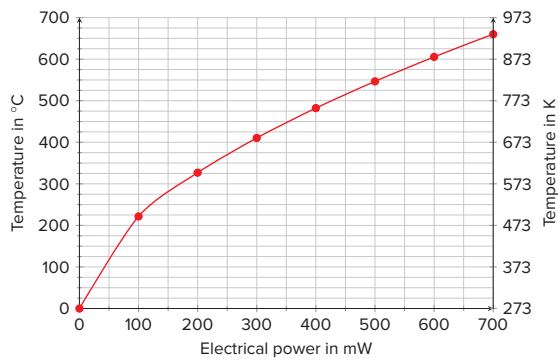
Parameter	HIS550R-AA
Package	TO-39 / TO-5
Radiating element area	11 mm ²
Radiating element emissivity	> 0.9
Radiating element temperature	600 °C at 600 mW
Optical output power	up to 140 mW
Max. electrical power (DC)	630 mW
Max. electrical voltage	3.7 V
Max. electrical current	170 mA
Electrical resistance	21...23 Ω
Modulation frequency*	4 Hz
Filter (soldered window)	Sapphire
Wavelength range	2 to 6 μm
Filling gas	Argon

* 50 % modulation depth, square wave signal, 50 % duty cycle

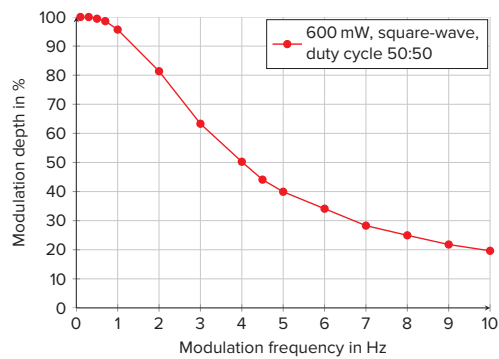
Optical specifications



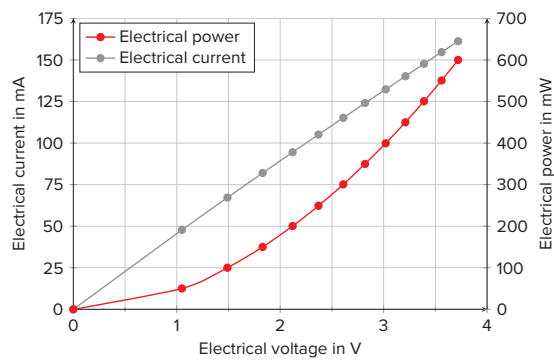
Radiating element temperature



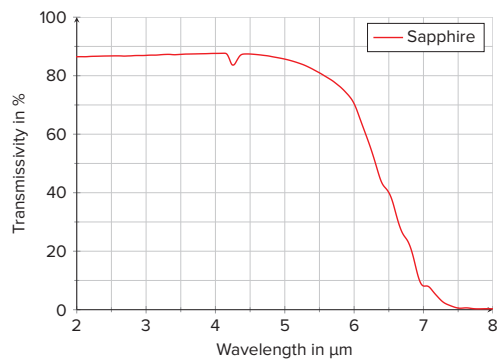
Modulation depth



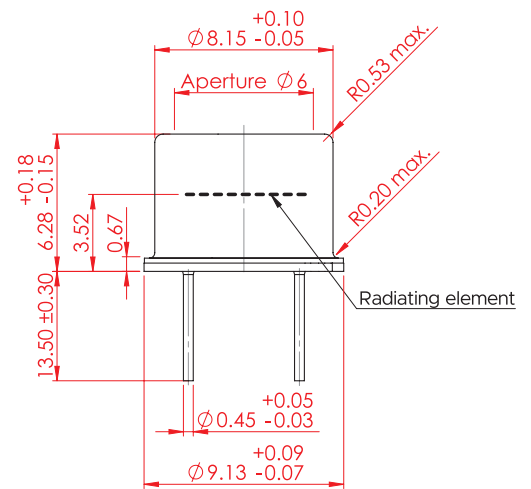
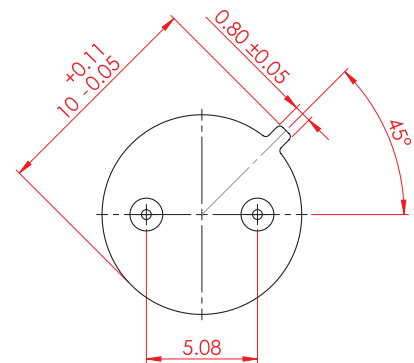
Electrical specifications



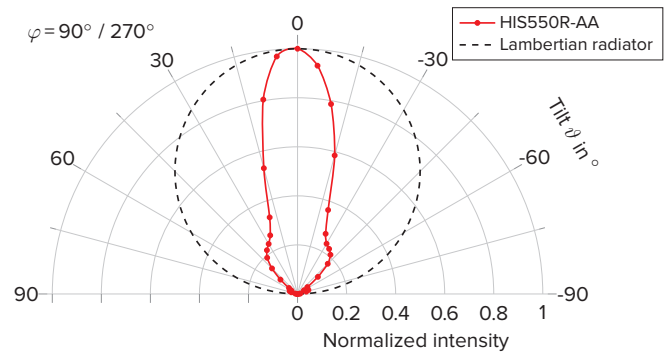
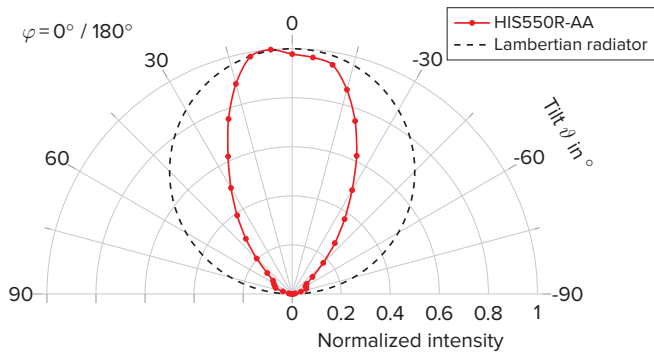
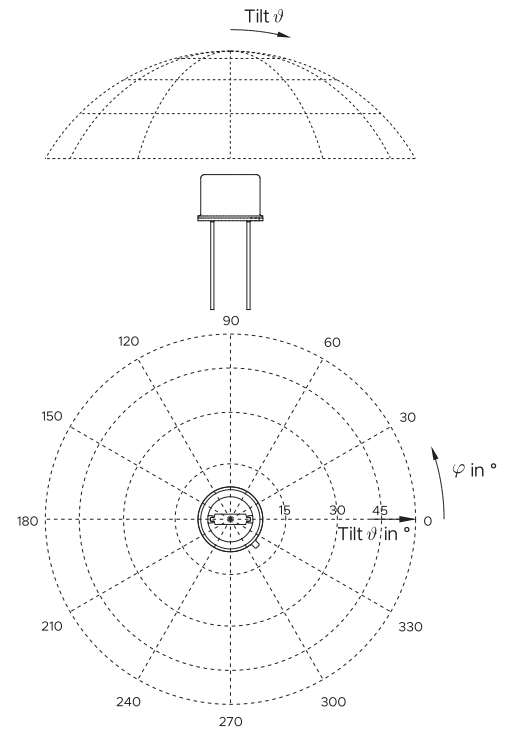
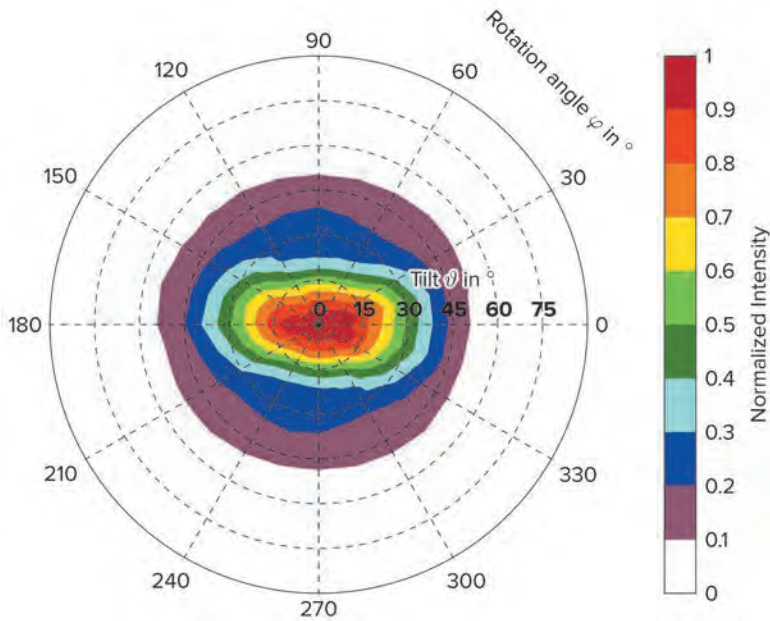
Window material transmissivity



HIS550R-AA



Angular radiation distribution



Operating mode recommendation:

All our IR sources can be driven in electrical voltage, current or power regulated mode. The application decides whether the operating mode is DC or AC (pulsed). Depending on the drive mode and the applied electrical power the electrical resistance of the IR emitter can change over time. For highest measurement accuracy a power regulated mode is always recommended for thermal IR emitters. However, it is the most complex operating mode and not suitable in all applications.

For applications that require a small and low-cost driving circuit with a maximum stability we have a technical note with an adjustable low dropout voltage (LDO) regulator.

For further information please refer to:
www.infrasolid.com/technicalnote