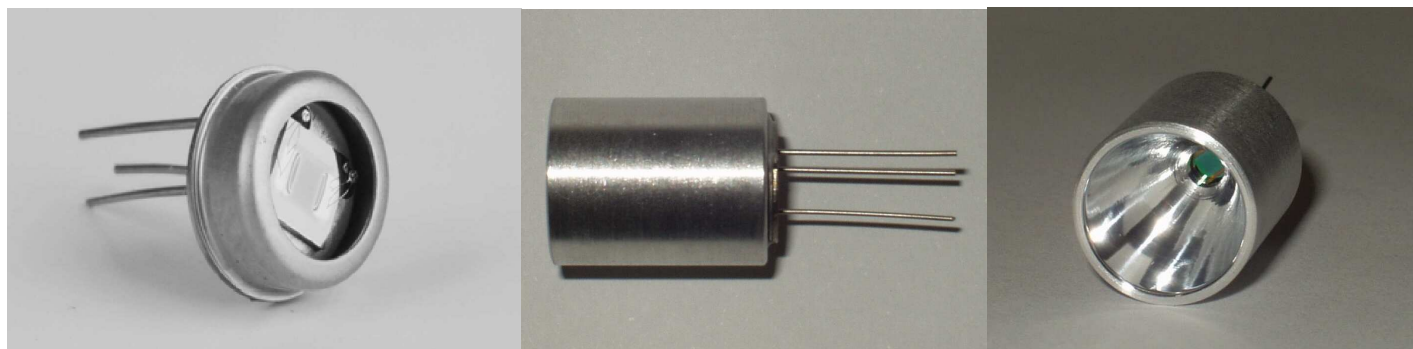


SERIES 50

THIN FILM 0.9 WATT INFRA-RED EMITTER

The IR-50 range of infra red sources is based around a very low thermal mass diamond-like carbon thin film element. Due to the low thermal mass, the infra red source can be pulsed at frequencies up to 100Hz with good modulation depth, or contrast between the on and off states. It is therefore suitable for use with quantum detectors like photoconductive PbS and PbSe, which otherwise would require a chopper to avoid excess low frequency "flicker" (1/f) noise.



This source is significantly better, watt for watt and Hz for Hz, than any competing non-mechanical modulation technology offers. This new source has an active area of approximately 2.89 mm² (1.7 x 1.7 mm) and is supplied in a TO-5 style package. The normal working range is 500° to 750°C with peak short term heating up to 850°C possible. Calculated lifetime is approximately three years.

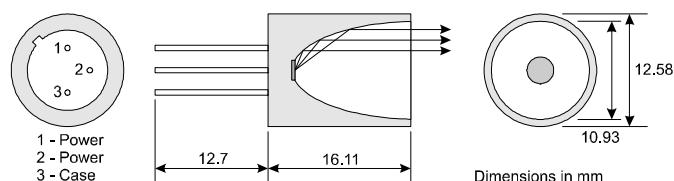
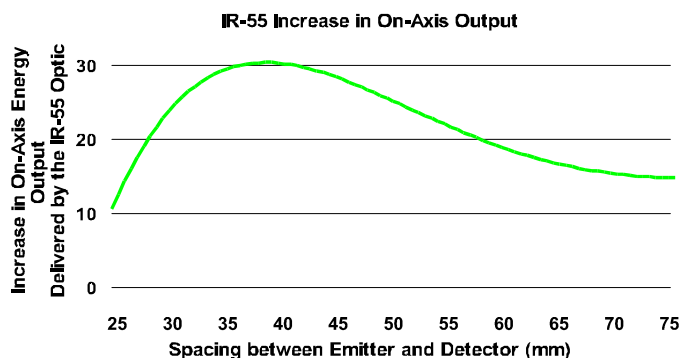


The Series 50 is offered as follows:

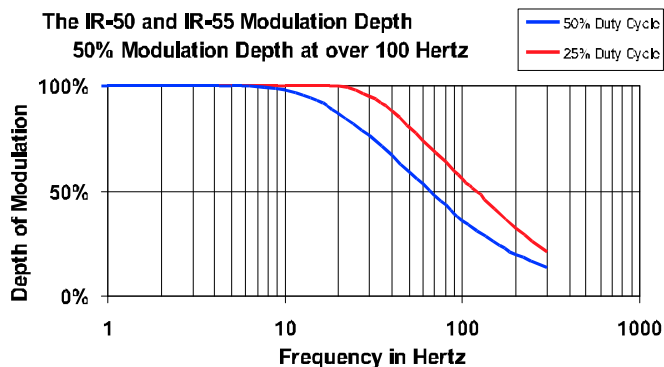
Part #	Description
IR 50	IR Source mounted in a TO5 header
IR 55	IR Source mounted with a Parabolic Reflector

Normal Operating Specifications:

Temperature	750°C (1025K)
Voltage	6.4 volts RMS (AC or DC)
Current	0.135 Amps
Active Area	1.7 x 1.7 mm
Modulation Rate	Up to 100 Hz
Lifetime	3+ years at 750°C, typical



IR-55 Drawing



Scitec Instruments Ltd
Bartles Industrial Estate
North Street
Redruth
Cornwall TR15 1HR
United Kingdom

t. +44 [0]1209 314608
f. +44 [0]1209 314609

i. www.scitec.uk.com
e. scitec@scitec.uk.com



Operating Guidelines

The IR-50 Series utilizes a thin thermoresistive conducting film of amorphous (diamond-like) carbon. Infrared radiation is the result of heating this film by passing an electric current through it.

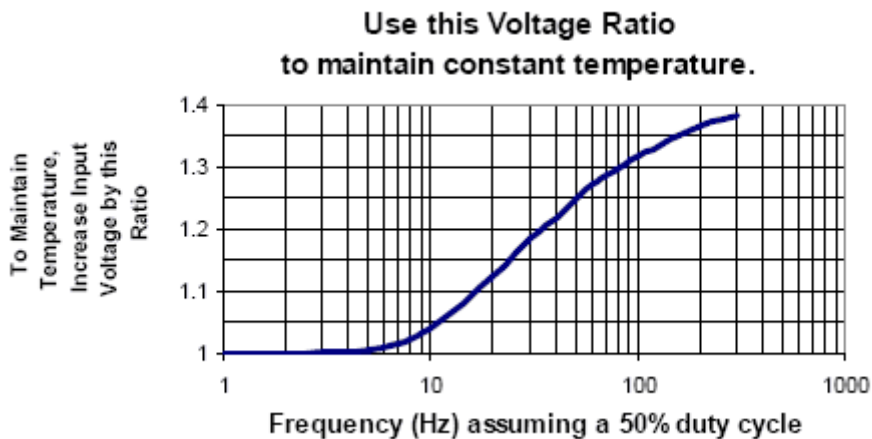
Either a constant voltage or a constant current power source is suitable for driving these parts, however it is the temperature of the source that is important.

The maximum temperature of the film should not exceed 750°C in continuous operation. A faint red luminescence of the film is observed during continuous operation at temperatures near 750°C. Short term heating up to 850°C is possible but will reduce the lifetime of the unit.

The nominal specifications assume an infrared source operating without a radiator and at ambient temperature and pressure. Operation with a radiator will cause the part to cool and hence the temperature of the part will drop and the drive voltage will need to be increased to compensate. Operating in an enclosed space or a high

ambient temperature will generally cause the part to overheat and the drive voltage will need to be reduced to compensate.

The IR-50 Series is the perfect solution for an application that requires fast electrical modulation. However, it can also be used in a steady state (DC) mode. In applications where steady state power is used (or if used with electrical modulation but with a duty cycle of greater than 50%), it is recommended that the nominal input power specifications not be exceeded in order to avoid overheating of the membrane. On the other hand, by reducing the length of the heating pulse or by increasing the frequency of modulation, the membrane will not have sufficient time to reach 750°C. In this case, the pulsed power can be increased to allow 750°C to be maintained. The chart below shows the factor by which the voltage can be increased as frequency is increased. This chart assumes a 50% duty cycle. Use this Voltage Ratio to maintain constant temperature.



Using a 50% duty cycle and the appropriate power factor as determined above, a 50% modulation depth is achievable at modulation frequencies of more than 60 hertz. This modulation depth can be achieved at even higher frequencies (more than 100 hertz) if a 25% duty

cycle were used along with a correspondingly higher power factor (sufficient to maintain the membrane temperature at 750°C). Please contact us for assistance in determining the proper power factor for the duty cycle to be used in your application.

Please note that over driving or contact with the thin film will cause these devices to fail.