LEONARDO ELECTRONICS



Wren

Uncooled pyroelectric detector for infrared microscopy

The Wren detector is a high performance single element DLATGS pyroelectric infrared detector, designed for use in infrared microscopy and spectroscopy applications. The detector has been developed to replace conventional cooled single element technologies. It operates at ambient temperature to offer the user the benefit of a broad band IR response (0.1 to >1000µm) without the inconvenience or cost of maintaining a cooling system.

The Wren detector's active area directly replicates that of existing technologies in order to minimise the instrument modifications needed to integrate this detector. It is available with a variety of window filters to suit customer applications.

Leonardo designs, develops and manufactures InfraRed (IR) detectors at its dedicated facility in Southampton, UK. With a reputation for providing customers with the best in high performance and costeffective technology for infrared detection systems, Leonardo offers a unique level of expertise.

Main features

- → DLATGS is one of the highest performing commercial pyroelectric materials available
- → Doped with Deuterium to raise Curie temperature to ~59°C
- → Doped with L-alanine to prevent permanent depoling after excursions above Curie temperature
- → Broad spectral response 0.1 to >1000µm
- → Standard detector supplied in a TO5 package
- → Element size 250µm x 250µm
- → 10ms Thermal Time Constant (Nominal)
- → Choice of windows
- → Choice of pinning (3 or 4 pin header)
- → Variety of pinning configurations available
- → Hermetic sealing or Parylene coating for improved environmental durability
- → Thermo-electric temperature stabilisation optional

Key benefits

- → No cooling necessary
- → No maintenance
- → Low cost

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Technical specification

Active area

Number of elements	1
Element size	250µm x 250µm

Electrical

Recommended supply voltage	+8V to +10V
Maximum supply voltage	+25V
Typical output impedance	360Ω
Recommended source load resistor	470Ω
Integral JFET pre-amplifier gate resistance of	100GΩ
Operating frequency range	0.1 to >1000µm
Signal polarity	-ve

Performance

Measured with a 1000K Black Body and at ambient temperature of 22°C, with KBr window	
Typical responsivity at 1000Hz	580 V/W
Typical D* at 1000Hz	1.9 x 108 cm√ Hz/W
Typical responsivity at 100Hz	4200 V/W
Typical D* at 100Hz	2.9 x 108 cm√ Hz/W

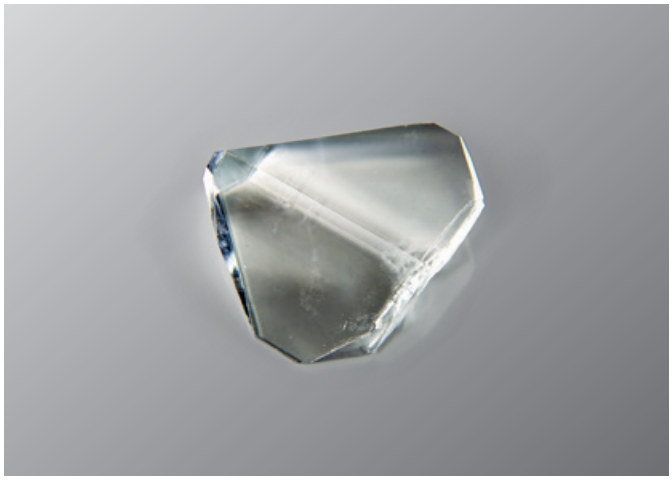
Environmental

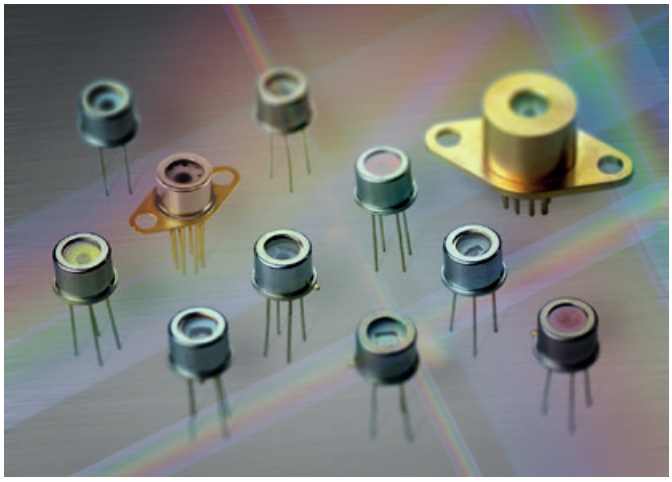
Operating temperature	-20°C to 55°C
Storage temperature	-20°C to 70°C
Humidity	<50% RH (<30%RH for CsI windows)

Alternative detector series

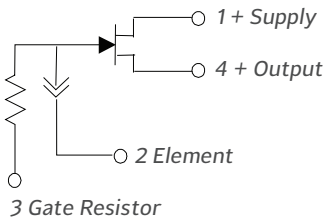
99 series - for high performance high frequency instruments

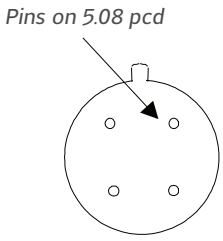
106 series - for high performance at low frequencies

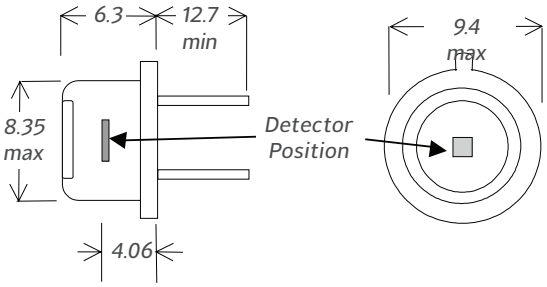




Pinning (Dimensions in mm)







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LDO_UK25_01576 10-25

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