

LEONARDO ELECTRONICS

DLATGS - 106 series

Pyroelectric infrared detector

The 106 series single element DLATGS pyroelectric infrared detectors are high performance devices for modern infrared spectrometer applications. Our worldclass DLATGS crystal growth and doping processes produce the highest quality sensing elements available, and provide detectors with extremely high detectivity.

Our proprietary infrared absorbing coating applied to the element is tailored to optimise detector performance to the customer's specific wavelength requirements. The broad band DLATGS infrared element and specially selected low noise J-FET are supplied in industry standard transistor packages, with the customer's choice of window filter.

The broad frequency and high voltage response make the 106 series DLATGS detectors the best choice for applications where a large output signal and very high signal-to-noise ratio are required at low frequency operation.

Applications

- → Mid and far infrared spectrometry
- → Low frequency IR spectrometry
- → Terahertz detection
- → Thermal emissions spectrometry in Space
- → Gas detection and analysis

Key features

- → Large voltage responsivity
- → Voltage or current mode operation
- → Optimised performance <100Hz
- → High detectivity (D*)
- → Broad spectral response from <0.1 to >1000µm, with a choice of window
- → Thermal time constant nominally 140ms
- → Proven in Space

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Typical 106 series detector performance

106 Series, TO5 package, 100 GOhm Resistor, 500K, without window					
Element dimensions (mm)	1.0 x 1.0	2.0 x 0.5	2.0 x 1.0	Ø2.0	2.0 x 2.0
Responsivity at 10Hz (V/W)	8450	8450	5300	3250	2150
Nominal thermal time constant (ms)	140				
NEP at 10Hz (x10^{-10} W/√Hz)	8.70	8.70	11.0	12.3	12.8
D* at 10Hz (x10^{8}cm √Hz/W)	11.5	11.5	12.9	14.4	15.6
Recommended supply voltage VDC	8V to 10V				
Maximum supply voltage VDC	25V				
Recommended operating temperature	-20°C to +55°C				
Recommended humidity	<50% (<30% for CsI windows)				
Signal polarity	+ve (-ve optional)				

Window type		Al_2O_3	BaF_2	BK7	CaF_2	CsI	Diamond	HDPE	KBr	KRS-5	Quartz	ZnSe	ZnSe(AR)
IR Waveband (µm)	from	0.2	0.14	0.35	0.19	0.25	0.5	20	0.3	0.6	0.18	0.6	1.0
	to	6.0	15	4.2	9.0	50	>100	1000	25	40	3.5	21	21
Window factor		0.69	0.94	0.40	0.91	0.91	0.65	0.43	0.95	0.76	0.52	0.74	0.98
To calculate the effect of window material on detector performance, multiply by the Window Factor for actual Responsivity and D*, and divide by Window Factor for actual NEP.													
Parylene coating option		-	-	-	-	•	-	-	•	•	-	-	-
Hermetic window seal		•	•	•	•	-	•	-	-	-	•	•	•

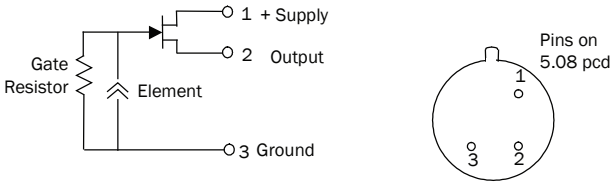
Alternative detector series

→ 99 series - for high performance high frequency instruments

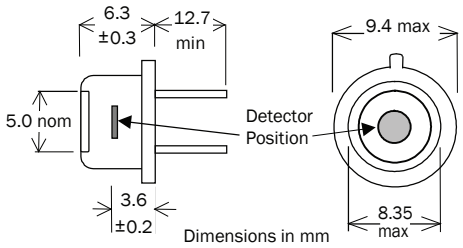
Additional options

Element dimensions	0.5mm to 4.0mm offered as standard. Circular, square or rectangular available. Other dimensions on request.
	Alternative element dimensions available on request.
Window material	Materials listed above (including Si and Ge) offered as standard. Other materials, coatings and lenses available on request.
Gate resistor	100GOhm offered as standard. 30GOhm or 10GOhm available on request.
Environmental protection	Proprietary hermetic window sealing or moisture resistant Parylene coating available
	- see table above.
Pin connections	Alternative pinning configurations available on request.

Pin connections



Detector dimensions for TO5



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