LEONARDO ELECTRONICS



DLATGS - 99 series

Pyroelectric infrared detector

The 99 series single element DLATGS pyroelectric infrared detectors are high performance devices for modern high speed infrared spectrometer applications. Our world-class 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 99 series DLATGS detectors the best choice for applications where a large output signal and very high signal-to-noise ratio are required.

Applications

- → Mid and far infrared spectrometry
- → High speed FT-IR spectrometry
- → Terahertz detection
- → Gas detection and analysis
- → Laser pulse detection

Key features

- → Large voltage responsivity
- → Voltage or current mode operation
- → Optimised performance <10Hz to >20kHz
- → High detectivity (D*)
- → Broad spectral response from <0.1 to >1000µm, with a choice of window
- → Thermal time constant nominally 18ms
- → Thermo-electric temperature stabilisation optional

Alternative detector series

- → 106 Series - for high performance at low frequencies

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Typical 99 series detector performance

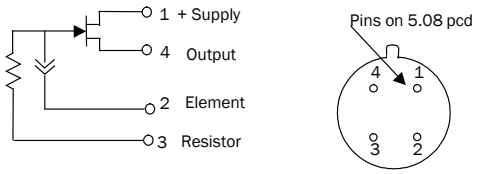
99 Series, TO5 package, 10GOhm Resistor, 1000K, without window						
Element dimensions (mm)	0.25x0.25	Ø0.5	Ø1.0	Ø1.3	Ø2.0	Ø3.0
Responsivity at 100Hz (V/W)	4400	2160	920	640	300	130
Responsivity at 1kHz (V/W)	600	240	100	64	30	13
Nominal thermal time constant (ms)	10	18				
NEP at 100Hz (x10^{-10} W/√Hz)	0.8	1.3	2.3	2.0	2.7	4.0
NEP at 1kHz (x10^{-10} W/√Hz)	1.2	2.1	4.0	3.5	5.0	7.6
D* at 100Hz (x10^{8}cm √Hz/W)	3.1	3.4	3.9	5.7	6.6	6.6
D* at 1kHz (x10^{8}cm √Hz/W)	2.0	2.1	2.2	3.3	3.5	3.5
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		•	•	•	•	-	•	-	-	-	•	•	•

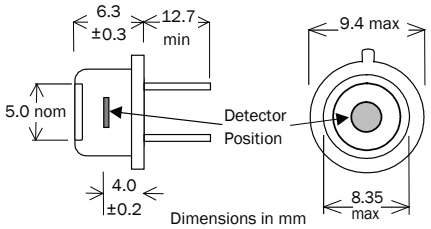
Additional options

Element dimensions	0.25mm to 3.0mm offered as standard.
	Circular, square or rectangular available.
	4mm available on some detector series.
	Other dimensions on request.
Window material	Materials listed above (including Si and Ge) offered as standard.
	Other materials, coatings and lenses available on request.
Gate resistor	10GOhm offered as standard.
	30GOhm or 100GOhm 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.
Temperature stabilisation	Detectors with thermo-electric cooling available in TO38 package.

Pin connections



Detector dimensions for TO5



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