

## L11/21 Series Single Channel Current Mode Pyroelectric Detectors

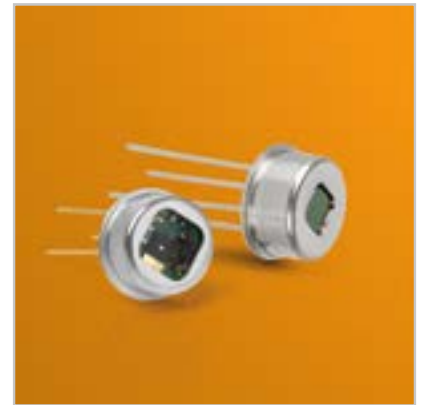
### Description

Our L11/21 series of pyroelectric detectors are a collection of single channel  $\text{LiTaO}_3$  devices operating in current mode with an integrated Op-Amp.

TFC (Temperature Fluxuation Compensation) is incorporated into all of our L21- series detectors via the use of an optically blind element.

### Features

- Thermal based detector, any radiation absorbed produces a signal
- Wide spectral coverage from the UV to LWIR
- Modular design principle
- Microphonics reduction as standard
- Assembled in an ISO:9001 certified facility



### Applications

- Non-dispersive infrared gas analysis
- Flame and fire detection
- Non-contact temperature measurement
- Flame control
- Moisture monitoring

### Versions

- Integrated Op-Amp (Split and Single Supply)
- Low and high speed devices available
- Wide range of window and filter options (including small and large apertures)
- A large aperture cap with  $5 \times 5 \text{ mm}^2$  is available for applications such as flame detection that requires a wide field of view (FOV). For applications where a smaller aperture is sufficient, example to keep stray light out in gas sensing, a  $3.5 \times 3.5 \text{ mm}^2$  aperture is available.

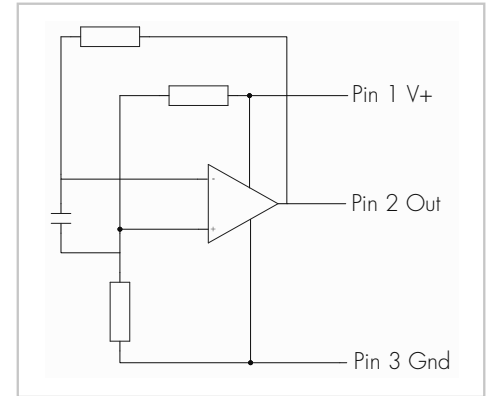
L1100D2020

- Single channel Pyroelectric detector
- Current mode
- Single supply
- Without TFC

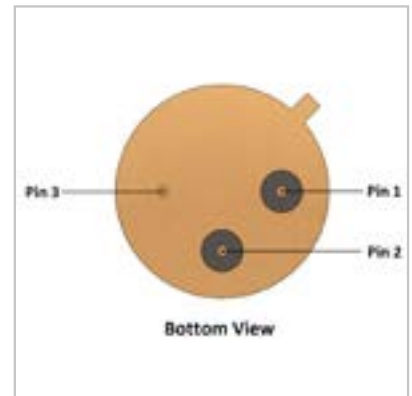
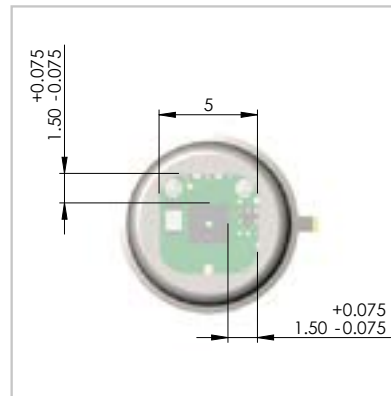
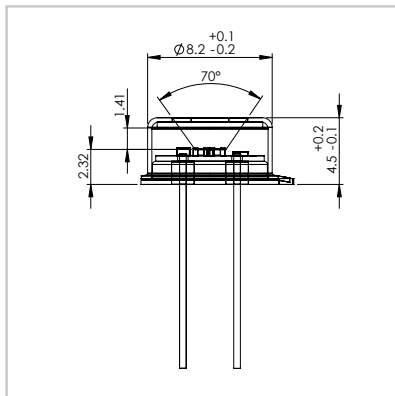
Isometric Drawing (with cutaway)



Circuit Diagram



Technical Drawing



Element Size	Aperture Size*	Package	Absorber
2 mm x 2 mm	5.0 mm Sq. 3.5 mm Sq.	TO-39 3-pin	Organic Black
Feedback Resistor	Amplifier	-3dB Freq [Hz]	Supply Voltage [V]
27 GOhm	Op-Amp 7	TBD	1.8 – 5.5 V (3 V recommended)
Responsivity ** [V/W]	D* (Jones) ** @ 10 Hz	Noise Density [µV/sqrt(Hz)]	Output Polarity
Min: 30,000 Typ: 40,000	Min: 3 x 10 <sup>8</sup> Typ: 4 x 10 <sup>8</sup>	Max: 30	Negative

\* Please refer "Filters and Windows" datasheet for all available options (aperture size depends on filter/window option chosen)

\*\* Without filter / window

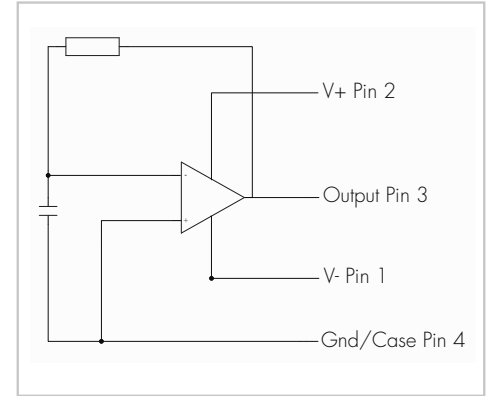
L1120D2020

- Single channel Pyroelectric detector
- Current mode
- Dual supply
- Without TFC
- High speed

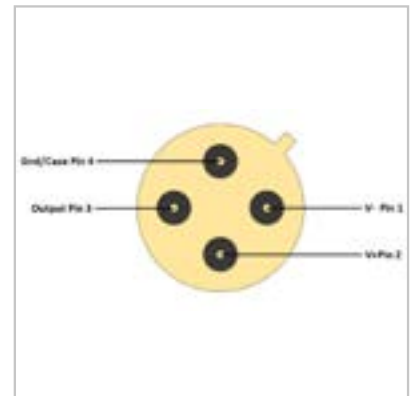
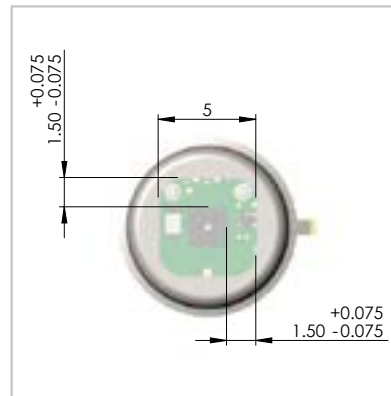
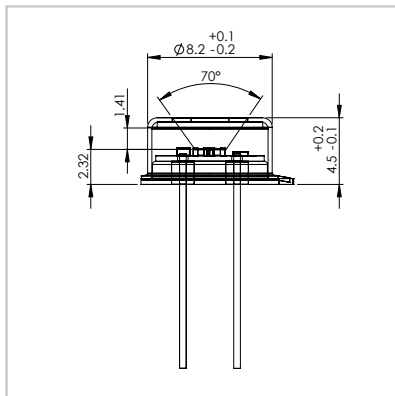
Isometric Drawing (with cutaway)



Circuit Diagram



Technical Drawing



Element Size	Aperture Size*	Package	Absorber
2 mm x 2 mm	5.0 mm Sq. 3.5 mm Sq.	TO-39 4-pin	Organic Black
Feedback Resistor	Amplifier	-3dB Freq [Hz]	Supply Voltage [V]
11 MOhm	Op-Amp 4	TBD	Dual Supply: $\pm 2.5 - \pm 13$ V ( $V_+ = +6$ V; $V_- = -6$ V recommended)
Responsivity** [V/W]	D* (Jones)** @ 10 Hz	Noise Density [ $\mu$ V/sqrt(Hz)]	Output Polarity
Min: 17 Typ: 22	Min: $6.8 \times 10^6$ Typ: $1 \times 10^7$	Max: 0.5	Negative

\* Please refer "Filters and Windows" datasheet for all available options (aperture size depends on filter/window option chosen)

\*\* Without filter / window

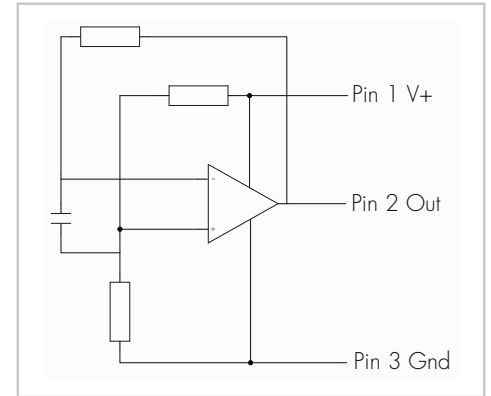
L1130D2020

- Single channel Pyroelectric detector
- Current mode
- Single supply
- Without TFC

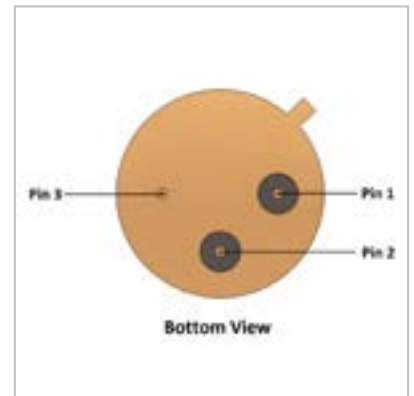
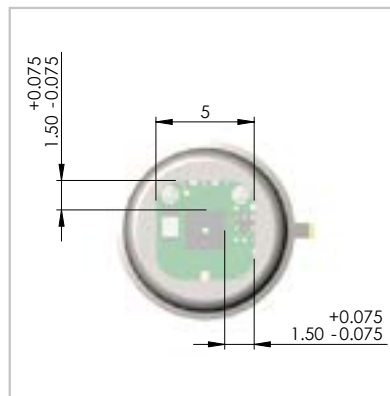
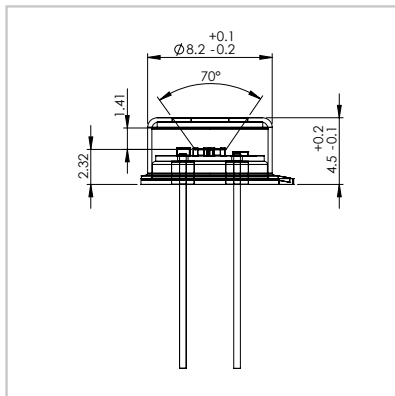
Isometric Drawing



Circuit Diagram



Technical Drawing



Element Size	Aperture Size*	Package	Absorber
2 mm x 2 mm	5.0 mm Sq. 3.5 mm Sq.	TO-39 3-pin	Organic Black
Feedback Resistor	Amplifier	-3dB Freq [Hz]	Supply Voltage [V]
5 GOhm	Op-Amp 7	TBD	1.8 – 5.5 V (3 V recommended)
Responsivity** [V/W]	D* (Jones)** @ 10 Hz	Noise Density [µV/sqrt(Hz)]	Output Polarity
Min: 6500 Typ: 7500	Min: 1.5 x 10 <sup>8</sup> Typ: 2.5 x 10 <sup>8</sup>	Max: 12	Negative

\* Please refer "Filters and Windows" datasheet for all available options (aperture size depends on filter/window option chosen)

\*\* Without filter / window

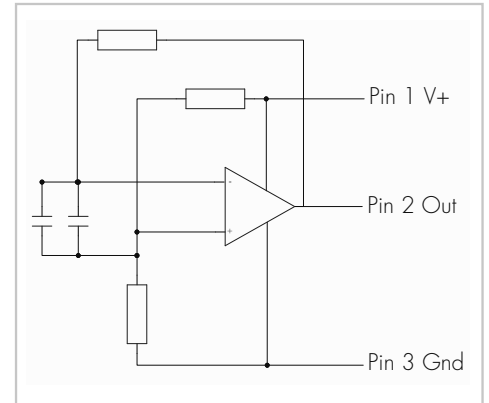
L2100D2020

- Single channel Pyroelectric detector
- Current mode
- Single supply
- With TFC

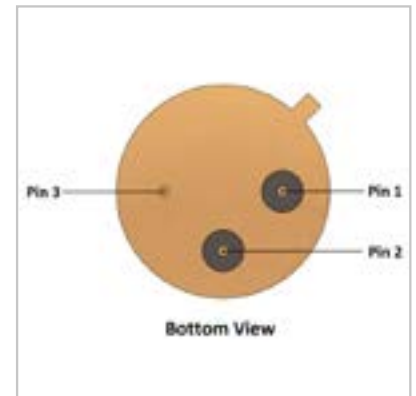
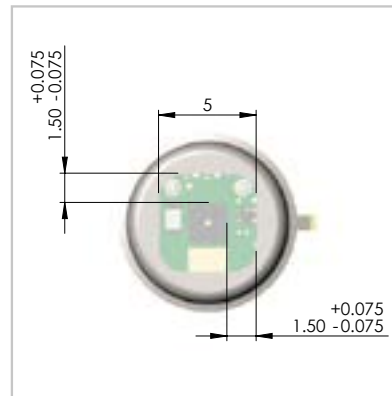
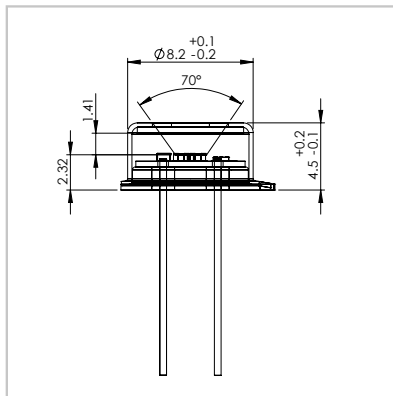
Isometric Drawing (with cutaway)



Circuit Diagram



Technical Drawing



Element Size	Aperture Size*	Package	Absorber
2 mm x 2 mm	5.0 mm Sq. 3.5 mm Sq.	TO-39 3-pin	Organic Black
Feedback Resistor	Amplifier	-3dB Freq [Hz]	Supply Voltage [V]
100 GOhm	Op-Amp 7	TBD	1.8 – 5.5 V (3 V recommended)
Responsivity** [V/W]	D* (Jones)** @ 10 Hz	Noise Density [µV/sqrt(Hz)]	Output Polarity
Min: 100,000 Typ: 150,000	Min: 4.5 x 10 <sup>8</sup> Typ: 6 x 10 <sup>8</sup>	Max: 60	Negative

\* Please refer "Filters and Windows" datasheet for all available options (aperture size depends on filter/window option chosen)

\*\* Without filter / window

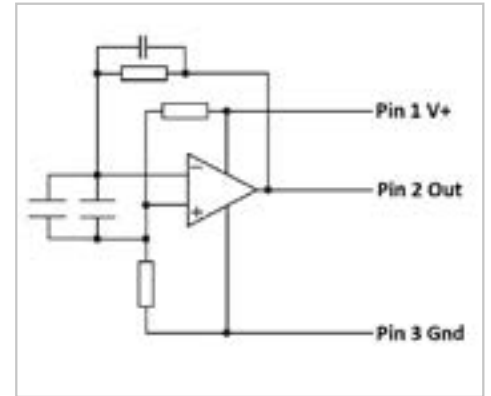
L2101D2020

- Single channel Pyroelectric detector
- Current mode
- Single supply
- With TFC
- Optimized for low frequency applications (~5 Hz)

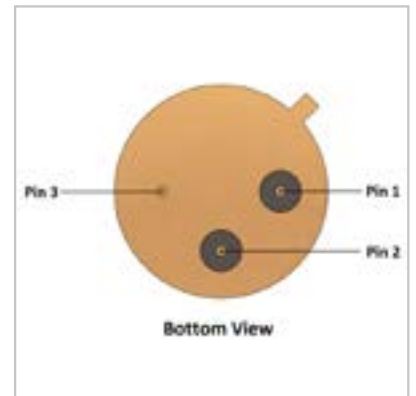
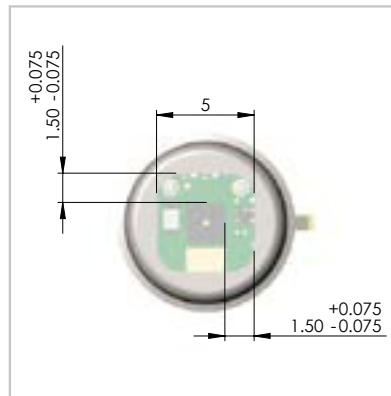
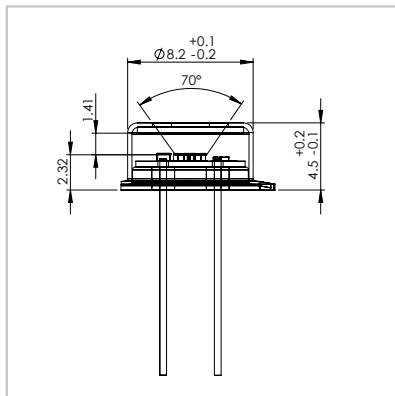
Isometric Drawing (with cutaway)



Circuit Diagram



Technical Drawing



Element Size	Aperture Size*	Package	Absorber
2 mm x 2 mm	5.0 mm Sq. 3.5 mm Sq.	TO-39 3-pin	Organic Black
Feedback Resistor	Amplifier	-3dB Freq [Hz]	Supply Voltage [V]
100 GOhm	Op-Amp 7	TBD	2.7 – 10 V (3 V recommended)
Responsivity** [V/W]	D* (Jones)** @ 5 Hz	Noise Density [µV/sqrt(Hz)]	Output Polarity
Min: 40,000 Typ: 45,000	Min: 7.5 x 10 <sup>8</sup> Typ: 9.0 x 10 <sup>8</sup>	Max: 14	Negative

\* Please refer "Filters and Windows" datasheet for all available options (aperture size depends on filter/window option chosen)

\*\* Without filter / window

### Absolute Maximum Ratings

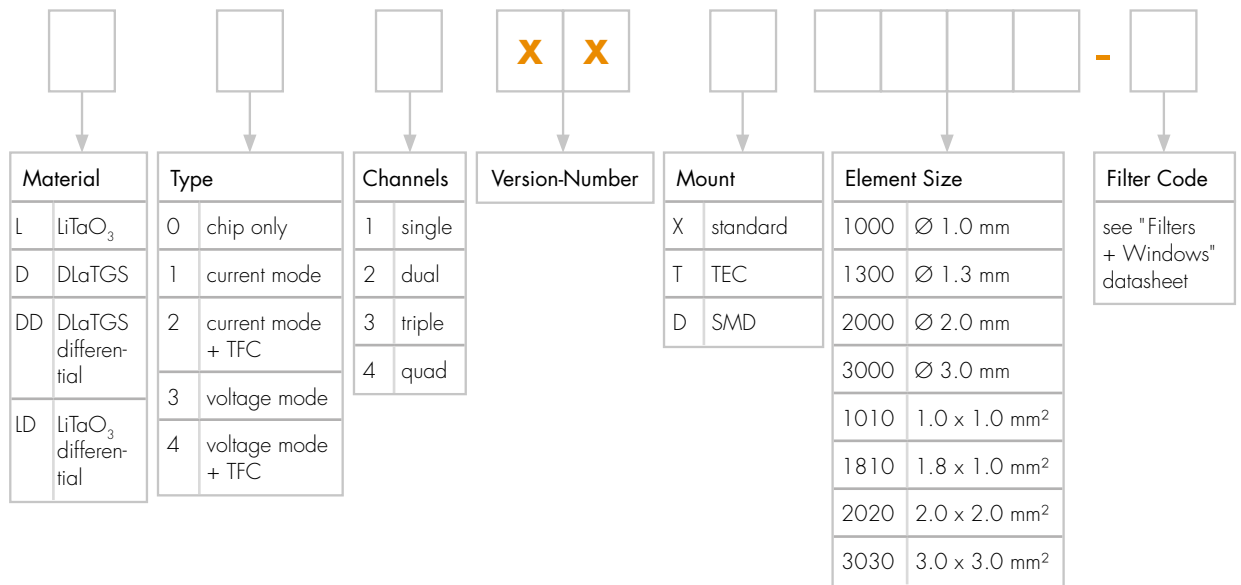
	Min	Max
Storage temperature [°C]	- 25	+ 60 **
Operating temperature [°C]	- 20	+ 85
Soldering temperature, 5 sec [°C]	+ 280	+ 300
ESD damage threshold, Human Body Model Class ....* [V]	0	< 250

\* ANSI/ESD STN5. 1-2007  
\*\* Limited by packing materials.

### Handling

ESD sensitive device. High electrostatic discharge can damage or degrade the device.  
Use proper ESD handling precautions.

### Part Number Designation



### Product Changes

LASER COMPONENTS reserves the right to make changes to the product(s) or information contained herein without notice. No liability is assumed as a result of their use or application.

### Ordering Information

Products can be ordered directly from LASER COMPONENTS or its representatives. For a complete listing of representatives, visit our website at [www.lasercomponents.com](http://www.lasercomponents.com)