

D31 / L31 / LT31 Series Single Channel Voltage Mode Pyroelectric Detectors

Description

Our D31, L31, and LT31 series of pyroelectric detectors are a collection of high end single channel devices based on DLaTGS, LTO, or thin LTO material operating in voltage mode with an integrated JFET.

Features

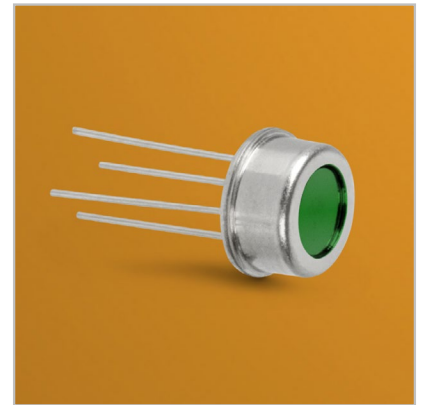
- Thermal based detector, any radiation absorbed produces a signal
- Wide spectral coverage from the UV to LWIR
- Modular design principle
- Assembled in an ISO:9001 certified facility
- Microphonics reduction as standard
- Typ. higher D^* than standard LTO

Applications

- FTIR spectroscopy
- Non-dispersive infrared spectroscopy
- THz detection

Versions

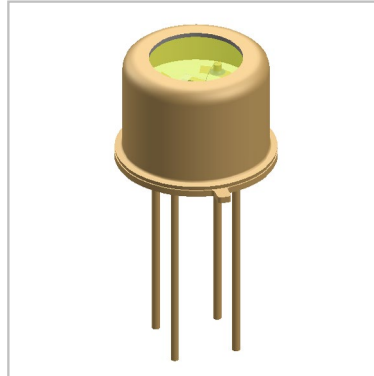
- Low and high speed devices available
- Wide range of filter and window options



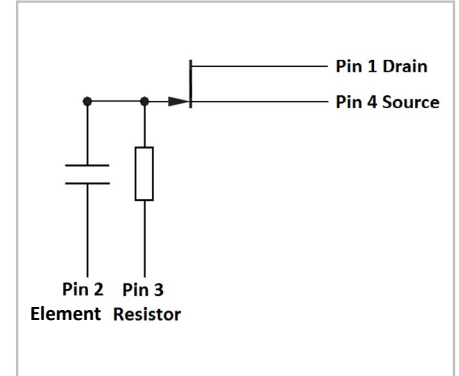
LT3111X

- Single channel thin chip Lithium Tantalate pyroelectric detector
- Low frequency optimized (4 Hz – 200 Hz)
- Voltage mode
- Without TFC

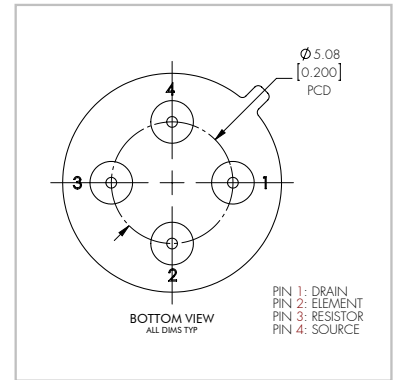
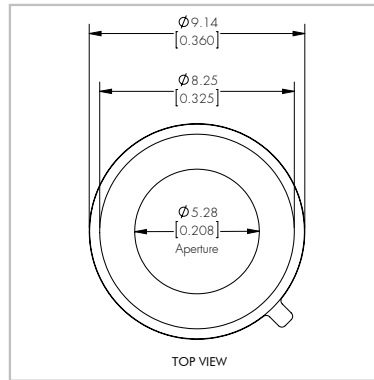
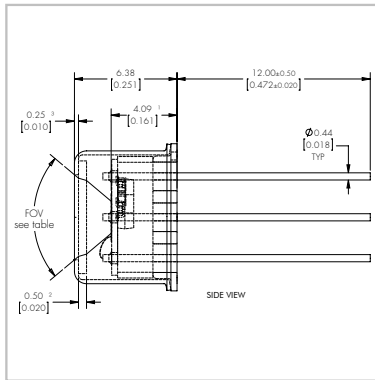
Isometric Drawing



Circuit Diagram



Technical Drawing



| Part | Element Size | Aperture Size* | Package | Absorber |
|-------------|--------------------------------|----------------|-------------|-------------|
| LT3111X2020 | Dim. 2.0 x 2.0 mm ² | Dia. 5.3 mm | TO-39 4-pin | Metal black |

| Load Resistor | Amplifier | Supply Voltage [V] | Polarity |
|---------------|-----------|-----------------------------------|----------|
| 100 GOhm | JFET 1A | +9 V (recommended) (max. 25 V) | Positive |

| Part | Responsivity** [V/W] | D* (Jones) | | FOV [°] | NEP |
|---------------------|-------------------------|------------|---------|------------|-----------------|
| | | Min. | Typ. | | [W/√Hz] Typ. |
| LT3111X2020 @10 Hz | 500 | 3.2E+09 | 4.0E+09 | 80 | 4.0E-11 |
| LT3111X2020 @100 Hz | 50 | 5.5E+08 | 1.0E+09 | | 1.0E-10 |

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

** without window/filter

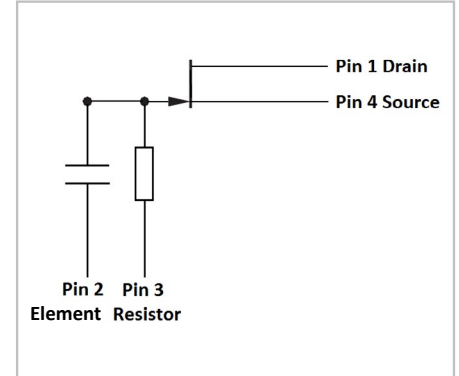
D3151X

- Single channel DLaTGS pyroelectric detector
- Voltage mode
- Without TFC
- For FTIR, TDLS
- High frequency applications

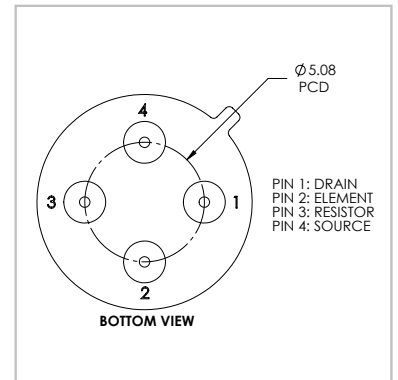
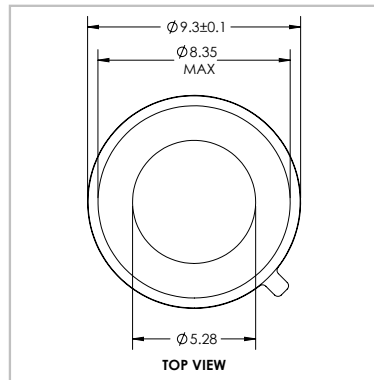
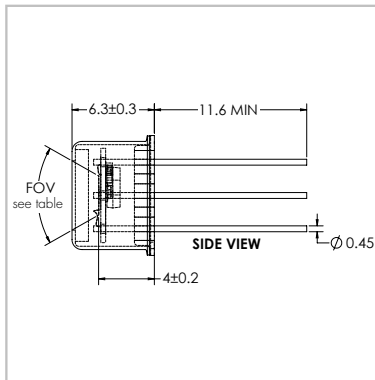
Isometric Drawing



Circuit Diagram



Technical Drawing



| Part | Element Size | Aperture Size* | Package | Absorber |
|------------|--------------|----------------|-------------|-------------|
| D3151X1300 | Dia. 1.3 mm | Dia. 5.3 mm | TO-39 4-pin | Metal black |

| Load Resistor | Amplifier | Supply Voltage [V] | Polarity |
|---------------|-----------|--------------------------------------|----------|
| 10 GOhm | JFET 2 | +9 V (recommended) (max. 25 V) | Negative |

| Part | Responsivity** [V/W] | D* (Jones) @ 1 kHz | | FOV [°] | NEP [W/√Hz] |
|------------|-------------------------|-----------------------|---------|------------|----------------|
| | | Min. | Typ. | | Typ. |
| D3151X1300 | 45 | 1.6E+08 | 2.0E+08 | 80 | 4.5E-10 |

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

** without window/filter

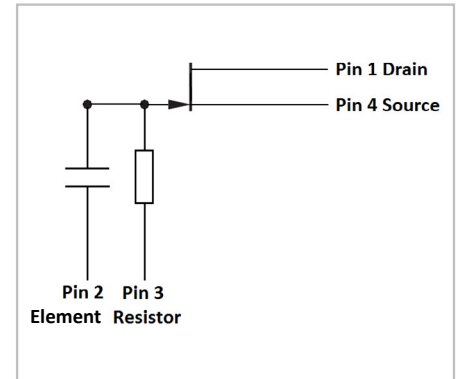
L3151X

- Single channel LTO pyroelectric detector
- Voltage mode
- Without TFC
- For FTIR, TDLS
- High frequency applications
- Alternative to DLATGS for FTIR applications

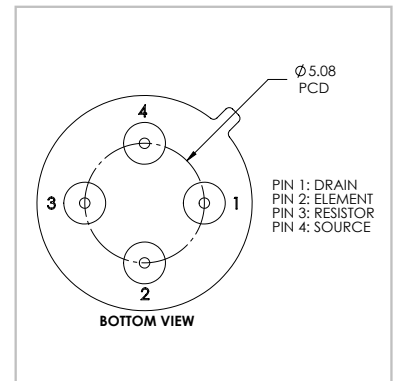
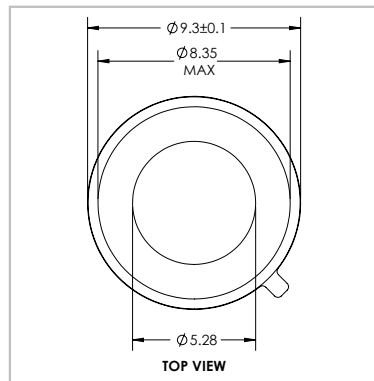
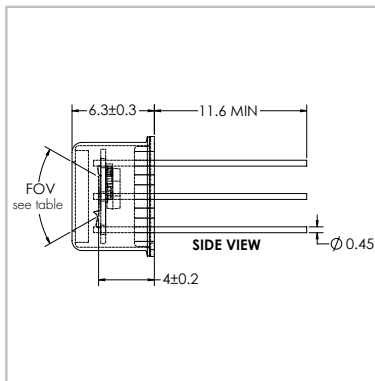
Isometric Drawing



Circuit Diagram



Technical Drawing



| Part | Element Size | Aperture Size* | Package | Absorber |
|------------|--------------|----------------|-------------|-------------|
| L3151X1300 | Dia. 1.3 mm | Dia. 5.3 mm | TO-39 4-pin | Metal black |
| L3151X2000 | Dia. 2.0 mm | | | |

| Load Resistor | Amplifier | Supply Voltage [V] | Polarity |
|---------------|-----------|--------------------------------------|----------|
| 10 GOhm | JFET 2 | +9 V (recommended) (max. 25 V) | Negative |

| Part | Responsivity** [V/W] Typ. | D* (Jones) @ 1 kHz | | FOV [°] |
|------------|---------------------------------|-----------------------|---------|------------|
| | | Min. | Typ. | |
| L3151X1300 | 10 | 6.0E+07 | 8.8E+07 | 80 |
| L3151X2000 | 6 | 6.0E+07 | 7.1E+07 | 70 |

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

** without window/filter

Absolute Maximum Ratings

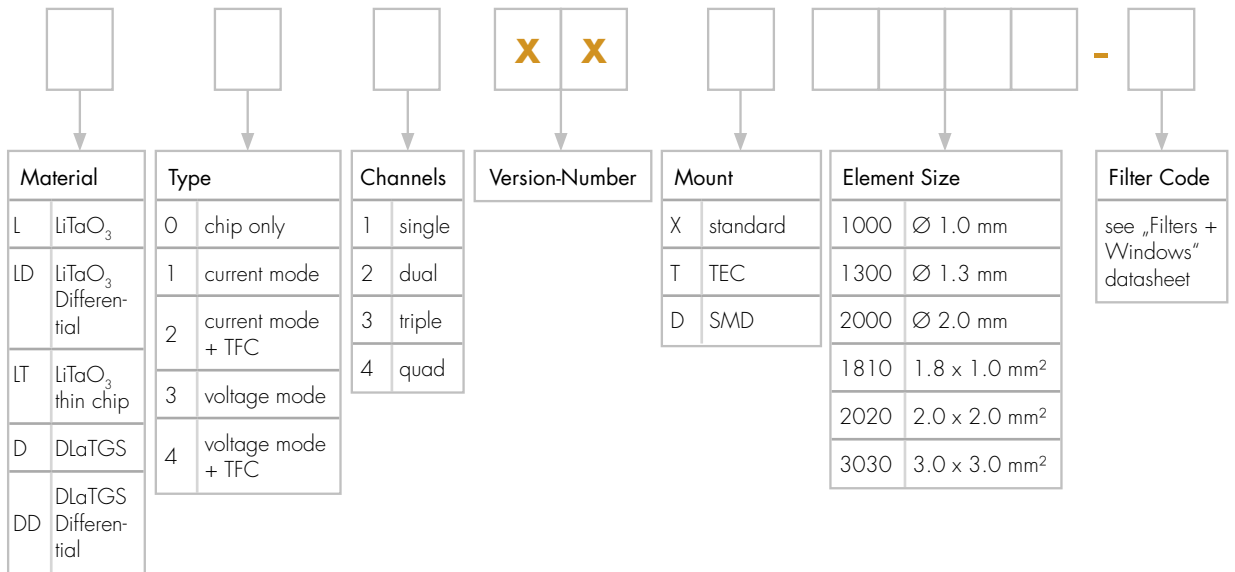
| | Min | Max | |
|--|-------|----------|------------|
| | | D31 | L31 / LT31 |
| Storage temperature [°C] | - 25 | + 40 *** | + 60 ** |
| Operating temperature [°C] | - 20 | + 55 | + 85 |
| Soldering temperature, 5 sec [°C] | + 280 | + 300 | + 300 |
| ESD damage threshold, Human Body Model Class* [V] | 0 | < 250 | |

- * ANSI/ESD STN5. 1-2007
- ** Limited by packing materials.
- *** High Temperatures can cause depoling of the DLaTGS crystal.

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