Microwatt APPLICATIONS
Making Light, Work

MWA 4100TC SERIES THERMALLY COMPENSATED LITHIUM TANTALATE PYROELECTRIC DETECTOR

High Performance with Integrated Voltage Mode Amplifier

Description

The MWA 4100TC Series Lithium Tantalate Pyroelectric Detectors are the newest devices from our family of high performance IR detectors. These devices are configured with a second differentially connected element which reduces the signals associated within the micro-atmosphere of the package as well as thermal and mechanical transients. The specially processed parallel opposed sensing elements and the integrated low noise JFET voltage mode preamplifier are available in TO5/39 (MWA4105TC) and TO18/46 (MWA4118TC) transistor packages with many optical windows or filters.

Two identical Lithium Tantalate (LTO) elements are mounted in a parallel opposed arrangement including "active" and "compensating" elements. The common mode pyroelectric signals produced by the active and compensating elements are cancelled yet only the IR energy absorbed by the active element produces a signal voltage.

The broad spectral response of the element is produced by our proprietary optical absorber coating which is applied only to the active element. (The compensator coating is highly reflective.)

The LTO with its very high Currie temperature (~600 C.) and low sensitivity to ambient temperature (<0.2%/ deg C.) allow operation over a wide temperature range without the need for temperature control.

Applications

- **NDIR Process Control**
- **Interferometers**
- **Gas Analysis**
- **Flame Detection**

Features

- **Integrated Voltage Mode Preamp.**
- **Large Voltage Responsivity**
- **High D***
- **Wide Spectral Range: 0.1 - >1,000 µm**
- **Permanently Poled**
- **Low Thermal Sensitivity**

4100TC Series
PERFORMANCE SPECIFICATIONS
(Typical w/o Filter or Window)

Parameter	4118TC	4105TC
Active Element Dim. mm	1.8 x 1.0	2.0 x2.0
Responsivity V/W @ 10 Hz	500	220
Thermal Time Constant	150 ms	→
NEP (10, 1) W	4×10^{-10}	4×10^{-10}
D* (10, 1) $cmHz^{1/2}/W^{-1}$	3.3×10^{8}	4.8×10^{8}
Operating Voltage VDC	+ 2 to +18	→
Operating Current (Typ.) µA	10	→
Operating Temperature ºC	-20 to 70	→
Optical Response µm	0.1 - 1000	→

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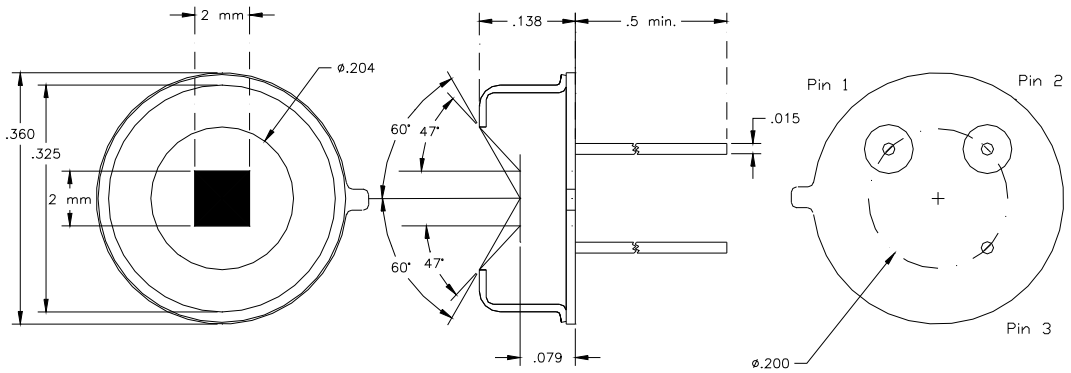
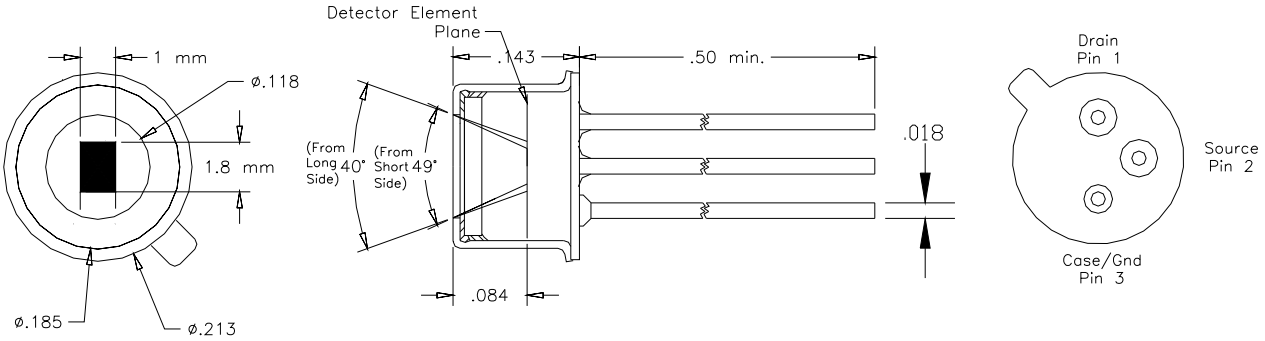
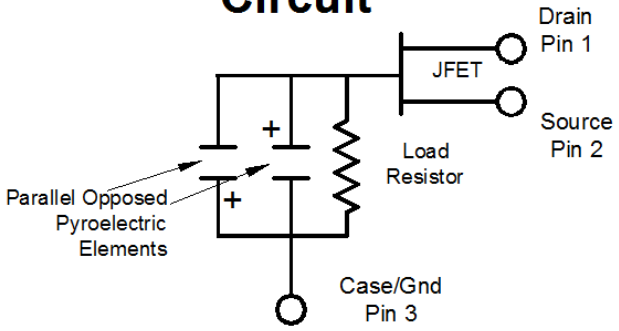
4105TC



4118TC



Circuit



Options

Windows KBr, CsI, Ge, BaF, ZnSe, HDPE (Many other Materials and Filters Available)

Package Style - TO 5/39, TO-18/46

Non Standard or Special Tests and Measurements

Many Variations including: Element size, Pinouts Frequency Response, Dual Channel, Arrays

PYPA Low Noise, Variable Gain Preamplifier Available

Please Consult Factory

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