

MWA5100 SERIES PYROELECTRIC DETECTOR

Premium Performance with Integral FET Preamp

Description

The MWA 5100 Series Single Element DLATGS Pyroelectric Detectors are our premium performance devices, which are optimized for lower frequency operations. (10-100 Hz.) The wide spectral sensitivity from the U.V. to 1,000 microns is achieved with a proprietary broadband absorbing coating. In addition the sensing elements are especially thinned to achieve the highest performance.

The DLATGS crystal used to produce the sensing element is the latest development in pyroelectric materials. Its polarization is "locked in" thus no longer requiring a poling voltage to maintain the output signal level. The Curie temperature is also raised to be above 60 C.

The integral FET Voltage Mode Preamp utilizes a very low leakage JFET and high value $1 \times 10^{11} \Omega$ resistor (Other values on request) which produces the lowest noise.

State of the art manufacturing and mounting techniques are used in the manufacture of the 5100 series resulting in reduced sensitivity to microphonics and shock.

These devices can also be supplied in a variety of hermetically sealed transistor style packages and with any of various IR transmissive windows (Broadband spectral sensitivity is limited in practice by the window selection. See chart).

Integral thermoelectric (TE) temperature controlled versions available.

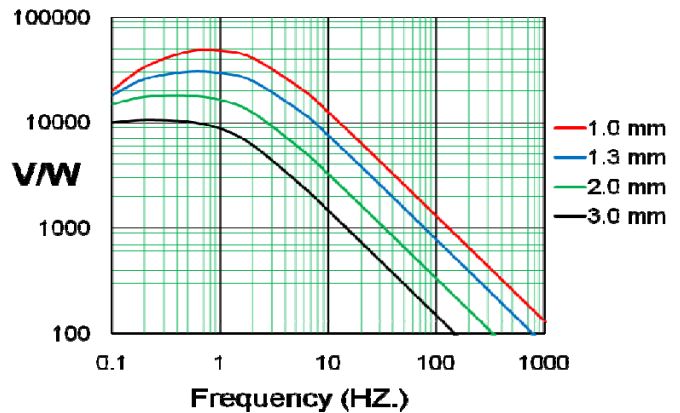
Applications

- Non Dispersive Spectroscopy
- Non-Contact Temperature Measurement
- Precision Spectroscopy
- Gas Analysis
- Laser Modulation Studies
- Interferometry

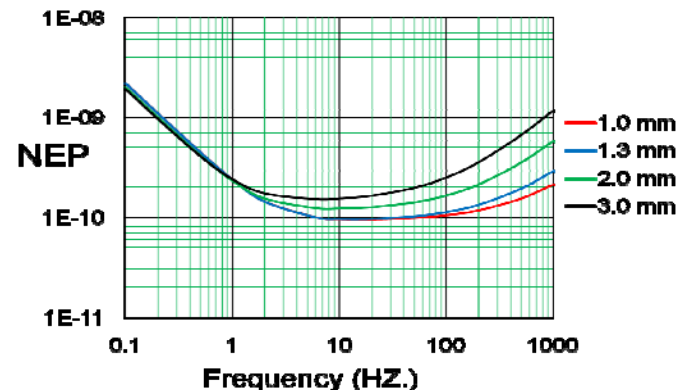
Features

- Highest D*
- Optimized Performance from 10 Hz to 100 Hz
- Wide Spectral Range: 0.1 - >1,000 μm
- Permanently Poled
- Integral Preamplifiers
- TE Cooled models available
- Many active areas available

Voltage Responsivity vs. Frequency



NEP vs. Frequency

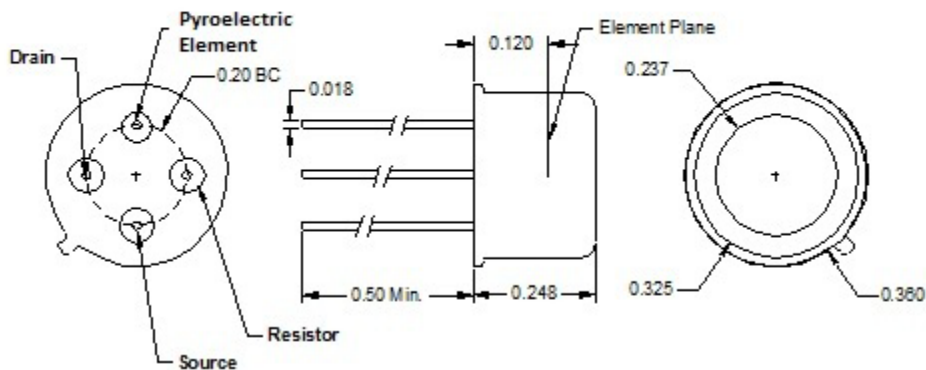


TYPICAL SERIES 5100 PERFORMANCE SPECIFICATIONS					
(Standard TO-5 Package with 1 x 10 ¹¹ Ohms Load Resistor @ 1,000K BB)					
51XX		10	13	20	30
Element Diameter	mm	1.0	1.3	2.0	3.0
Responsivity @ 10Hz	V/W	12000	7500	3250	1450
D* (10, 1)	cm √Hz/W	9.28x10 ⁸	1.19x10 ⁹	1.45x10 ⁹	1.73 ⁹
NEP (10, 1)	W/√Hz	9.55x10 ⁻¹¹	9.65x10 ⁻¹¹	1.22x10 ⁻¹⁰	1.54x10 ⁻¹⁰
Output Impedance	Ohms	10 ⁴	10 ⁴	10 ⁴	10 ⁴
Electrical Break Frequency	Hz	1.0	0.5	0.25	0.12
Thermal Time Constant	msec	< 100	< 100	<100	< 100
Recommended Operating Temperature	°C	-20 to 55	- 20 to 55	-20 to 55	-20 to 55

Options

Element Shape Square, Rectangular
 Window KBr, Csl, Ge, BaF, ZnSe Others Available.
 Package Style TO-37, TO-8
 Preamplifiers Low Noise, Variable Gain
 Thermo Electric Cooling Available (TO37,TO66 Package)
 Non Standard Pin Out
 Special Tests and Measurements

Mechanical Data



Circuit Diagram

