

## MWA4000 SERIES PYROELECTRIC DETECTOR (Detector Element) Premium Performance For Use With NDIR

### Description

The MWA 4000 Series is a high performance single element permanently poled Lithium Tantalate pyroelectric IR detector. These single element devices offer superior performance when operated from 1 Hz to 100 Hz. They are supplied with a choice of packages with a choice of several optical windows or custom optical filters. The wide spectral sensitivity from the U.V. to 1,000 microns is achieved with a proprietary absorbing coating. They can be easily interfaced to an external FET (voltage mode) or to a low noise operational amplifier (current mode.)

State of the art manufacturing techniques are used in the manufacture of the 4000 series resulting in reduced sensitivity to microphonics. The sensing elements are especially thinned to achieve the highest performance.

Broadband spectral sensitivity is limited in practice by the window selection.

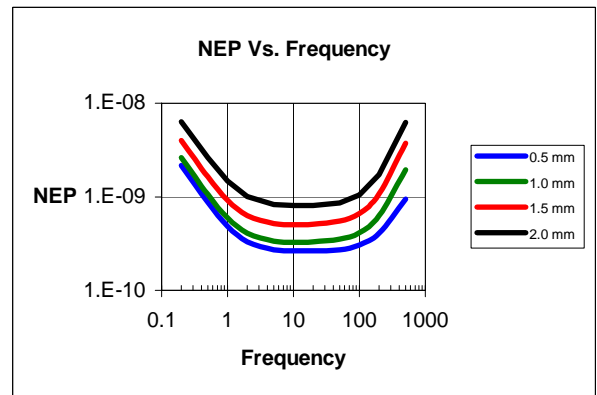
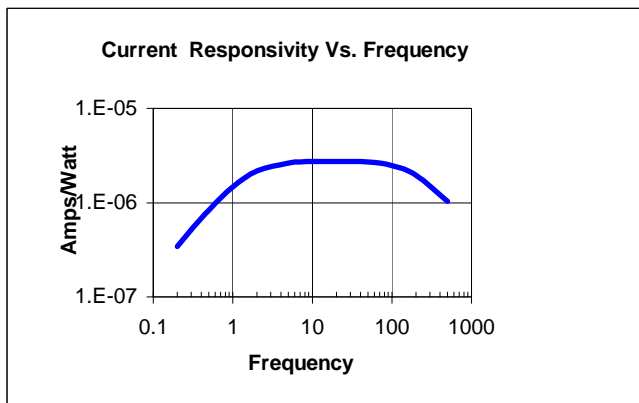
These can be supplied in a variety of sealed transistor style packages including TO5 and TO18 Styles.

### Applications

- NDIR Process Control
- Non Contact Temperature
- Spectroscopy
- Gas Analysis
- Flame Detection
- Laser Power Meters

### Features

- Optimized Performance from 1 to 100Hz
- Broad Band Absorbing Coating
- Wide Spectral Range: 0.1 - >1,000  $\mu\text{m}$
- Permanently Poled

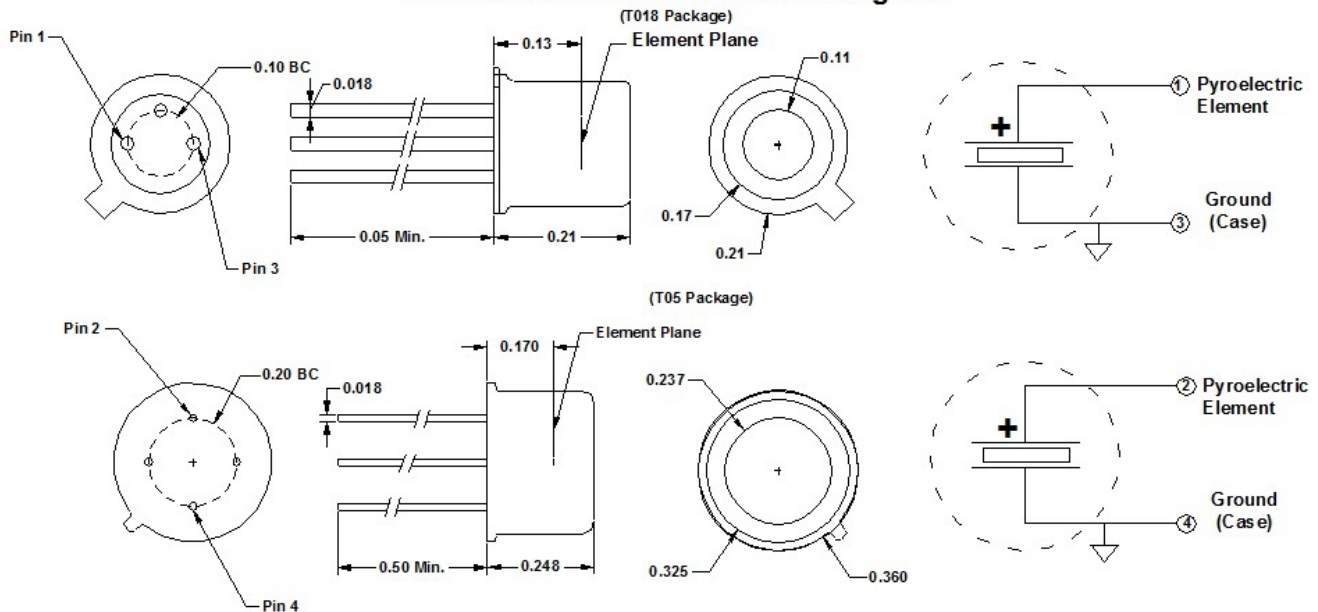


TYPICAL SERIES 4000 PERFORMANCE SPECIFICATIONS					
(Performance Measured with Low noise JFET and $1 \times 10^{11} \Omega$ RL @ 1,000K BB)					
40XX		05	10	15	20
Element Dim. (square)	mm	0.5 x 0.5	1.0 x 1.0	1.5 x 1.5	2.0 x 2.0
Current Responsivity @ 10 Hz	$\mu$ A/W	2.0	—————	—————	—————
Loss Tangent	$\delta$	.001	—————	—————	—————
NEP (10, 1)	W/ $\sqrt$ Hz	$2.0 \times 10^{-10}$	$2.2 \times 10^{-10}$	$2.4 \times 10^{-10}$	$3.0 \times 10^{-10}$
Element Capacitance	pF	5	18	40	70
Thermal Time Constant	ms	<100	—————	—————	—————
Recommended Operating Temperature	$^{\circ}$ C	-30 to 80	—————	—————	—————

### Options

- Element Shape                      Square, Rectangular, Circular
- Window                                KBr, Csl, Ge, BaF, ZnSe Sapphire, KRS5 (Others Available) and Windowless
- Package Style                        TO-5, TO18, (also available as "Chips")
- Preamplifiers                        Low Noise, Variable Gain Available Separately
- Non Standard Pin Out                Consult Factory
- Special Testing                        Consult Factory

### Mechanical Data and Circuit Diagram



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