



## **MWA4500CM SERIES**

### **LITHIUM TANTALATE PYROELECTRIC DETECTOR**

#### **High Frequency Performance with Integral Current Mode Amplifier**

#### **Description**

The MWA 4500CM Series Lithium Tantalate Pyroelectric Detectors are new devices from our family of high performance IR detectors. The specially processed sensing element and the integrated current mode amplifier all in a TO39 transistor package provide high voltage response with a high  $D^*$ . The very high output signal from the MWA 4500CM series is often of sufficient amplitude that a preamplifier may not be required thus saving power, cost and space for remote or battery powered applications.

The Lithium Tantalate crystal (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. LTO is non hygroscopic and can thus be supplied and operated in a "windowless" configuration

The very wide spectral sensitivity (U.V. to 1,000 $\mu$ ) and high speed is achieved with a proprietary low thermal mass absorbing coating. (Spectral sensitivity is limited in practice by the window selection).

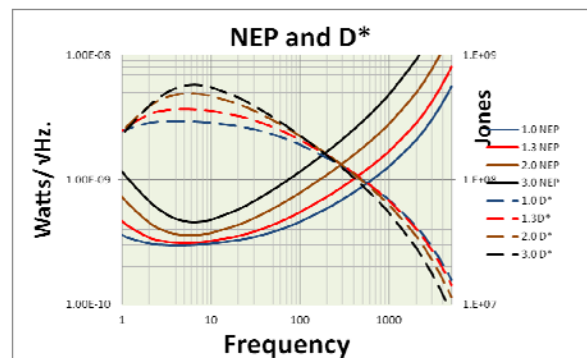
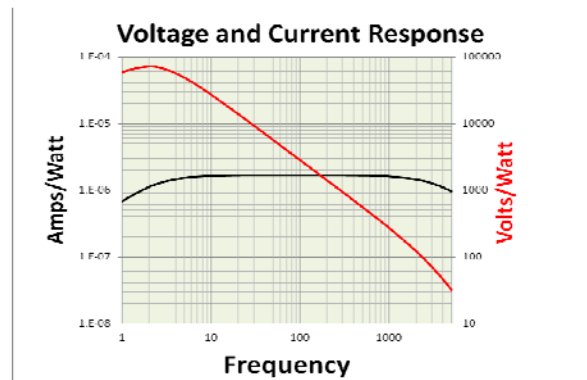
These devices can be supplied in many different configurations including element geometry and size and amplifier response characteristics. Other packages and configurations are available.

#### **Applications**

- High Speed Spectroscopy (FTIR)**
- NDIR Process Control**
- Interferometers**
- Gas Analysis**

#### **Features**

- Integral Current Mode Preamp.**
- Large Voltage Responsivity**
- High  $D^*$  at higher frequencies**
- Wide Spectral Range: 0.1 - >1,000  $\mu$ m**
- Permanently Poled**
- Low Thermal Sensitivity**



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**TYPICAL SERIES 4500 CM PERFORMANCE SPECIFICATIONS**

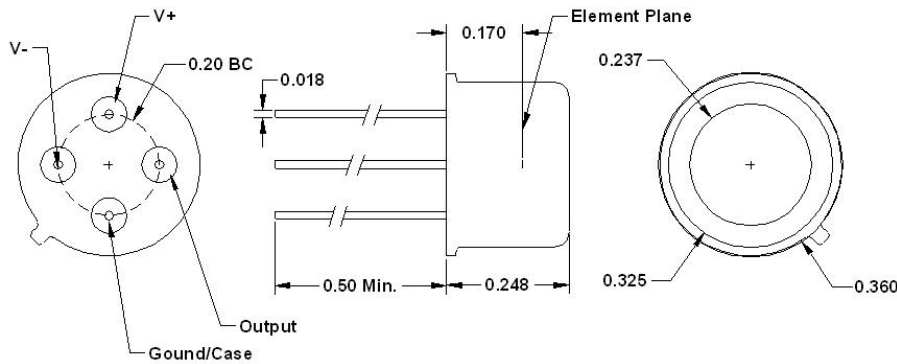
(Standard TO-5 Package without Window Loss  $RF = 1 \times 10^{11}$  Ohms @ 1,000C BB)

45XXCM		10	13	20	30
Element Dimensions	Dia. mm	1.0	1.3	2.0	3.0
Responsivity @ 10 Hz	VW <sup>-1</sup>	$2.7 \times 10^4$	→		
Thermal Time Constant	ms	500	→		
NEP (,10, 1)	W/Hz <sup>1/2</sup>	$3.0 \times 10^{-10}$	$3.2 \times 10^{-10}$	$3.7 \times 10^{-10}$	$4.8 \times 10^{-10}$
D* (10, 1)	Jones	$2.8 \times 10^{+8}$	$3.5 \times 10^{+8}$	$4.7 \times 10^{+8}$	$5.5 \times 10^{+8}$
Operating Voltage	VDC	± 2 - 5	→		
Operating Current	mA	<<10	→		
Output Impedance	Ohms	<100	→		
Recommended Operating Temperature	°C	-20 to 50	→		

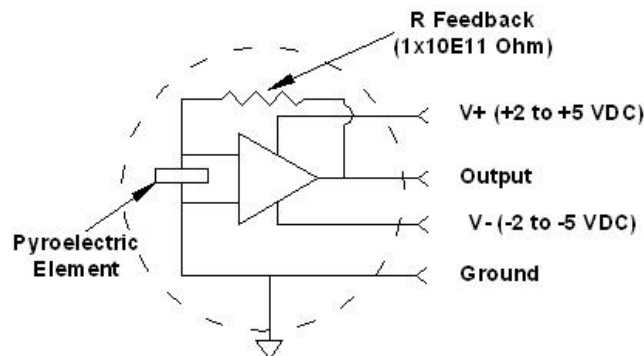
**Options**

- Element Shape      Circular, Square, Rectangular
- Windows            KBr, Csl, Ge, BaF, ZnSe (Many others Window Materials and Filters Available)
- Other Packages and Pinouts Available
- Non Standard Special Tests and Measurements

**Mechanical Outline**



**Electrical Schematic**



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