



## **MWA 4200TC SERIES DUAL CHANNEL LITHIUM TANTALATE THERMALLY COMPENSATED PYROELECTRIC DETECTOR**

**High Performance with Integrated Voltage Mode Amplifier**

### **Description**

The MWA 4200TC Series Lithium Tantalate (LTO) Pyroelectric Detectors are from our family of high performance IR detectors. These devices comprise two independent IR detection channels each channel utilizes two identical LTO elements mounted in a parallel opposed arrangement of "active" and "compensating" elements. The common mode pyroelectric signals produced by the active and compensating elements are cancelled yet only the IR energy which is absorbed by the active element produces a signal voltage. This reduces the signals associated within the changes in the micro-atmosphere of the package as well as thermal and mechanical transients.

The sensing elements and the integrated low noise JFET voltage mode preamplifiers are packaged in a TO39 transistor package with provision for separate optical filters or windows.

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

These are available with any of our standard filter sets. Typically one of the channels (chan. 2) is supplied with a reference filter with an optical bandwidth which is not affected by the chemical or gas to be detected and which is used to measure the performance of the IR source and the reduction in signal due to obstructions or degradation of the optical path. However any filter can be installed in any position dependent on user preference. (MWA's standard filter list follows)

### **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**

### **4200TC Series PERFORMANCE SPECIFICATIONS (Typical w/o Filter or Window)**

Model	4218TC
Active Element Dim. mm	1.8 x 1.0
Responsivity V/W @ 2 Hz	2000
Thermal Time Constant	150 ms
NEP (1000K, 2, 1) W	$4 \times 10^{-10}$
D* (1000K, 2, 1) cmHz <sup>1/2</sup> /W <sup>-1</sup>	$3.3 \times 10^8$
Operating Voltage VDC	+ 2 to +18
Operating Current (Typ.) μA	10
Operating Temperature °C	-20 to 70
Optical Response μm	0.1 - 1000

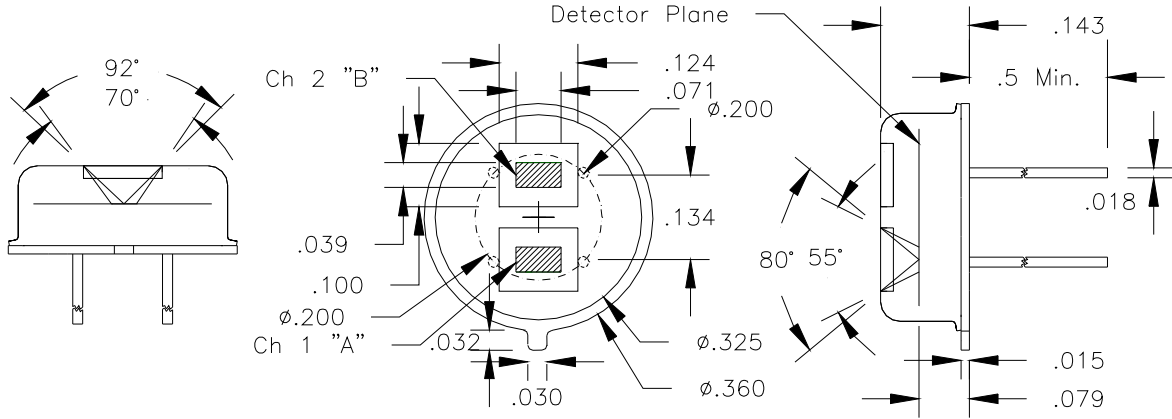
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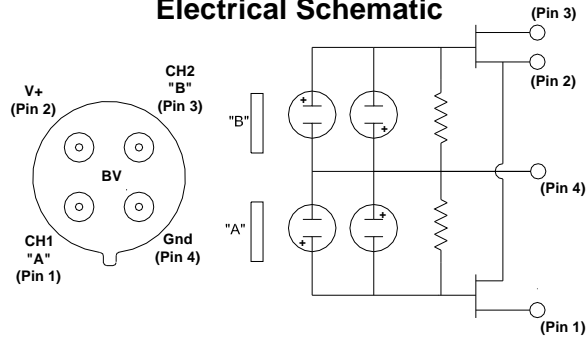
SUNSTAR自动化 <http://www.sensor-ic.com/> TEL: 0755-83376489 FAX:0755-83376182 E-MAIL:szss20@163.com

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### Mechanical Information



### Electrical Schematic



### Filters

These devices are normally fitted with optical filters. The choice of filter including center wavelength (CWL) and optical bandwidth (HPBW) are very dependent on the gas to be detected, the optical system in which these detectors will be placed and the performance over the required temperature range. Several stock filters are listed below. Check with factory as list is constantly updated

Type	Gas	CWL	HPBW	T	Blocking
-01	Ref	3.95±.05um	90±20nm	>75%	UV, Vis, to >7.5um
-02	HC	3.325±.05um	160±30nm	>75%	UV, Vis, to >7.5um
-03	CO2	4.26±.05um	155±30nm	>75%	UV, Vis, to >7.5um
-04	CO2	4.43±.05um	90±20nm	>70%	UV, Vis, to 10.5um
-05	CO2	4.26±.05um	155±30nm	>75%	UV, Vis, to >7.5um
-06	CO	4.66±.05um	180±30nm	>75%	UV, Vis, to >7.5um
-07	NOx	5.30±.05um	180±30nm	>75%	UV, Vis, to >7.5um
-08	SO2	7.3 ±.04um	200±30nm	>70%	UV, Vis, to >9.3um
-09	SF6	10.56 ±.06um	370±50nm	>70%	UV, Vis, to >15um

MWA will also install filters which are furnished by the user (CSM). The required dimensions for dual channel (TO5/39) are 3.0 mm x 2.4 mm (+0.0/-0.1) x 0.5 mm

(Many other Materials and Filters Available)

### Part Number Configuration

Example: Model MWA4218TC with an HC filter in ch.1 and a Ref filter in ch 2 PN would be: MWA4218TC-0201



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