



## 2M

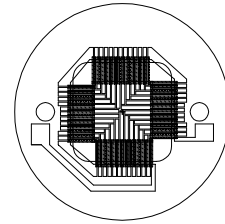
### Thin Film Based Thermopile Detector

**Features:** A thin film-based single element thermopile detector that offers the world's highest sensitivity in a TO-5 package. Dare to compare. Low noise voltage of  $12.8\text{nV}/\sqrt{\text{Hz}}$ .

**Options:** 1) See [Standard Windows and Filters](#) for list of optical filter options. 2) Internal  $30\text{k}\Omega$  5% NTC chip thermistor provides ambient package temperature measurement. Resistance Weld package only. See [Thermistor Options](#) p/n: DC-4005. 3) Order this unit encapsulated with Xenon and this becomes a super-high output detector with very low noise. See [Thermopile Configuration Table](#) for more options.

**Applications:** Excellent for gas analysis, fire detection and non-contact temperature measurement.

**Benefit:** Extremely high output with best signal-to-noise performance with a time constant of 85ms when encapsulated with Argon gas.



Detector circuit overlay



2M

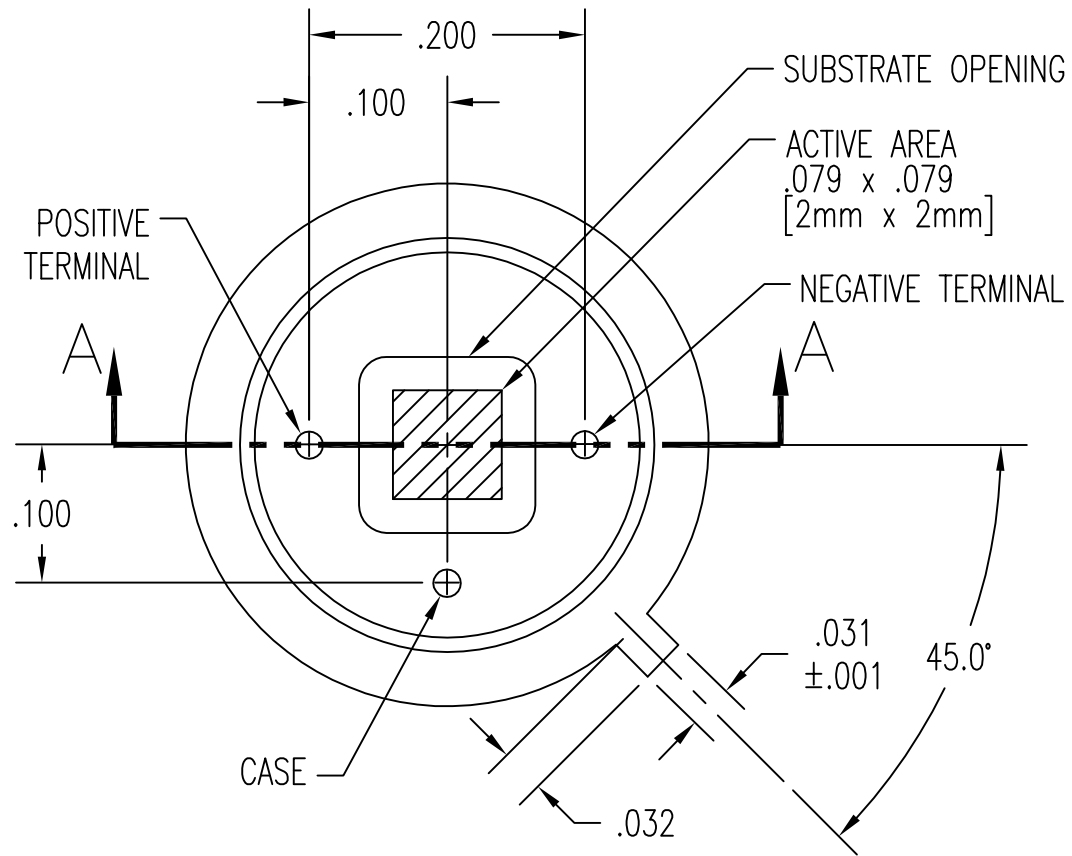
### Technical Specifications

Specifications apply at 23°C with KBr Window and Argon encapsulating gas

Parameter	Min	Typical	Max	Symbol	Units	Comments
Active Area size		2 x 2		AA	mm	Hot junction size, per element.
Element Area		4		A	mm <sup>2</sup>	
Number of Junctions		48				Per element.
Number of Channels		1				Per detector package.
Output Voltage	200	250	300	V <sub>s</sub>	μV	DC, H=330μW/cm <sup>2</sup> (3)
Signal-to-Noise Ratio	12,739	19,531	33,333	SNR	√Hz	DC, SNR=V <sub>s</sub> /V <sub>n</sub>
Responsivity	15.2	18.9	22.7	ℜ	V/W	DC, ℜ=V <sub>s</sub> /HA (2)
Resistance	5	10	15	R	kΩ	Detector element
Temperature Coefficient of ℜ		-36			%/°C	Best linear fit, 0° to 85°C (1)
Temperature Coefficient of R		-2			%/°C	Best fit, 0° to 85°C (1)
Noise Voltage	9.0	12.8	15.7	V <sub>n</sub>	nV/√Hz	V <sub>n</sub> <sup>2</sup> =4kTR
Noise Equivalent Power	.40	.68	1.03	NEP	nW/√Hz	DC, NEP= V <sub>n</sub> HA/V <sub>s</sub> (2)
Detectivity	1.9	3.0	5.0	D*	10 <sup>8</sup> cm√Hz/W	DC, D*=V <sub>s</sub> /V <sub>n</sub> H√A (2)
Time Constant		85		τ	ms	Chopped, -3dB point (1)
Field of View		38°/95°		FOV	Degrees	See Assembly Drawings for FOV Description.
Package Type		TO-5				Standard package hole size: Ø.150"
Operating Temperature	-50		100	T <sub>a</sub>	°C	

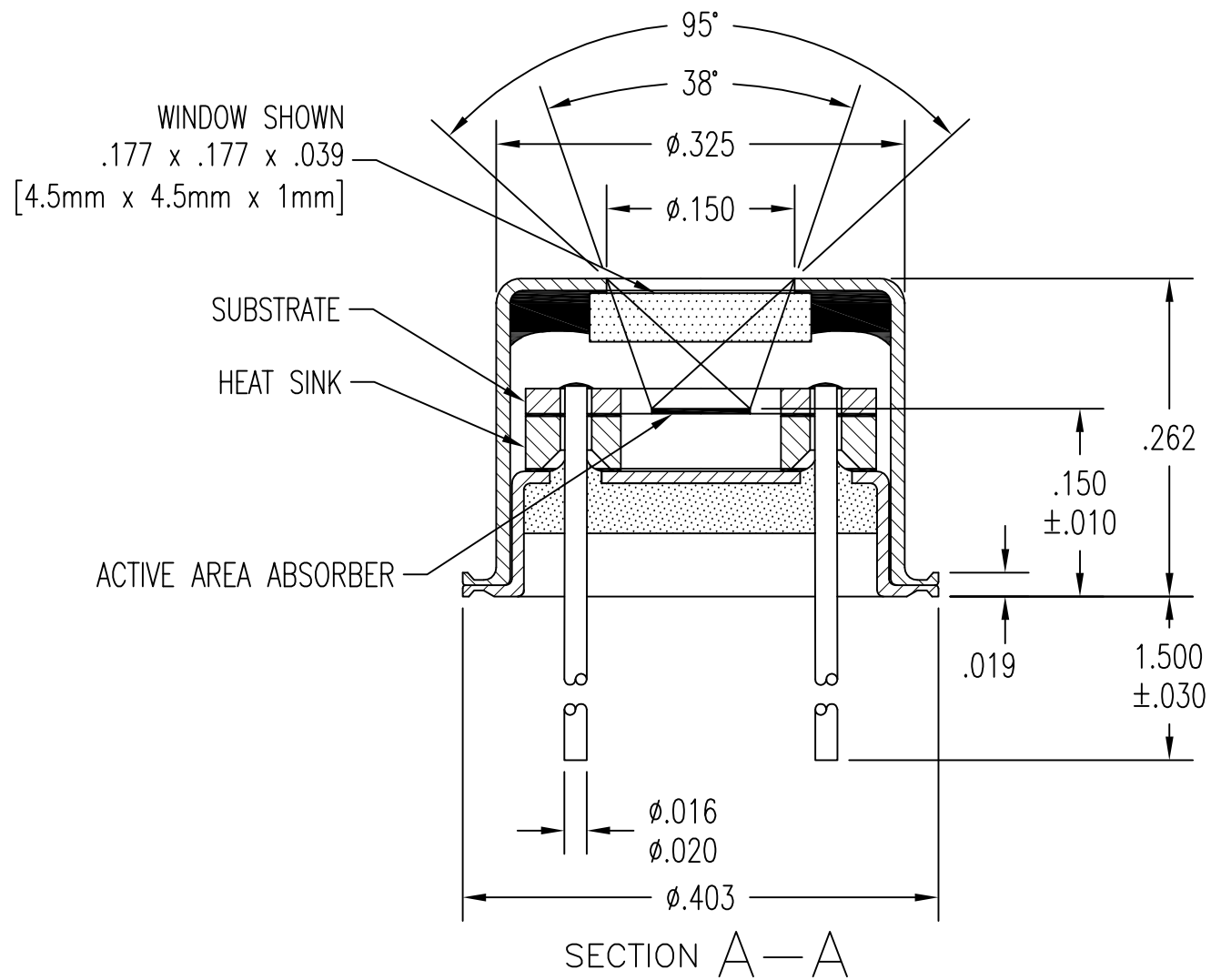
**General Specifications:** Flat spectral response from 100nm to > 100μm. Linear signal output from 10<sup>-6</sup> to 0.1W/cm<sup>2</sup>. Maximum incident radiance 0.1W/cm<sup>2</sup>, damage threshold ≥ .5W/cm<sup>2</sup>

**Notes:** (1) Parameter is not 100% tested. 90% of all units meet these specifications. (2) A is detector area in cm<sup>2</sup>. (3) Test Conditions: 500K Blackbody source; Detector active surface 10cm from 0.6513cm Diameter Blackbody Aperture.



TOP VIEW  
WITHOUT COVER

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.		DEXTER RESEARCH CENTER, Inc. 7300 Huron River Dr., Dexter, MI 48130, ph. 734-426-3921 fax 734-426-5090			
TOLERANCES ARE:					
FRACTIONS ±	DECIMALS .XX ± .XXX ± .005	ANGLES ±	ASSEMBLY, 2M, 2MC Au, 2MC Sb, w/ HEAT SINK, TOP VIEW		
APPROVALS	DATE	SIZE:	SCALE:	DWG. NO.	REV.   PAGE:
DRAWN: DLJ	9/25/00	<b>A</b>	7" = 1"	1011.1	A   1 OF 2
CHECKED:		DRC PART NO.		MATERIAL:	FINISH:
ENGINEERED:					
APPROVED:					



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FRACTIONS	DECIMALS	ANGLES	ASSEMBLY, 2M, 2MC Au, 2MC Sb,		
±	.XX ±	±	w/ HEAT SINK, CROSS SECTION		
	.XXX ± .005		SIZE:	SCALE:	DWG. NO.
APPROVALS	DATE		<b>A</b>	7" = 1"	1011.2
DRAWN: DLJ	12/15/10		DRC PART NO.	MATERIAL:	REV. B
CHECKED:					PAGE: 2 OF 2
ENGINEERED:					FINISH:
APPROVED:					