



## 2M

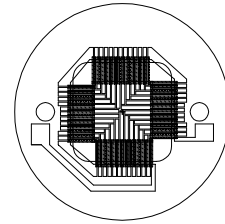
### Thin Film Based Thermopile Detector

**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

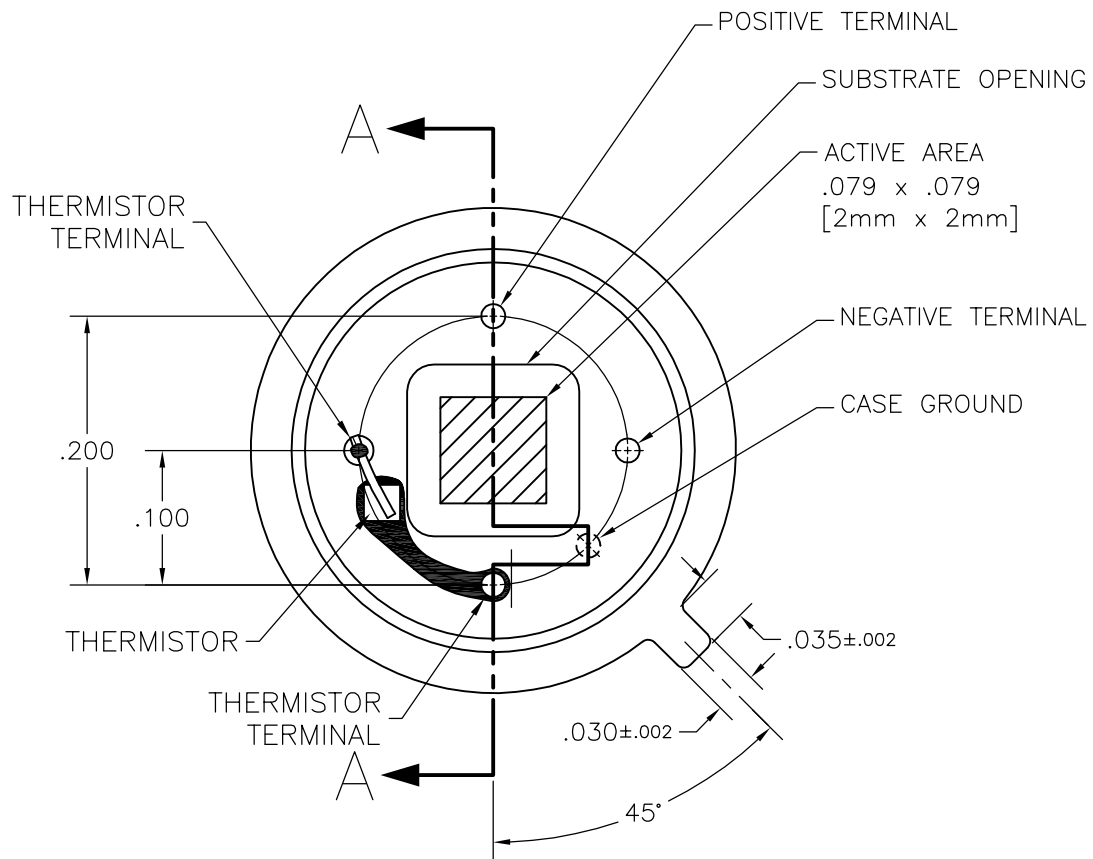
### Technical Specifications

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	

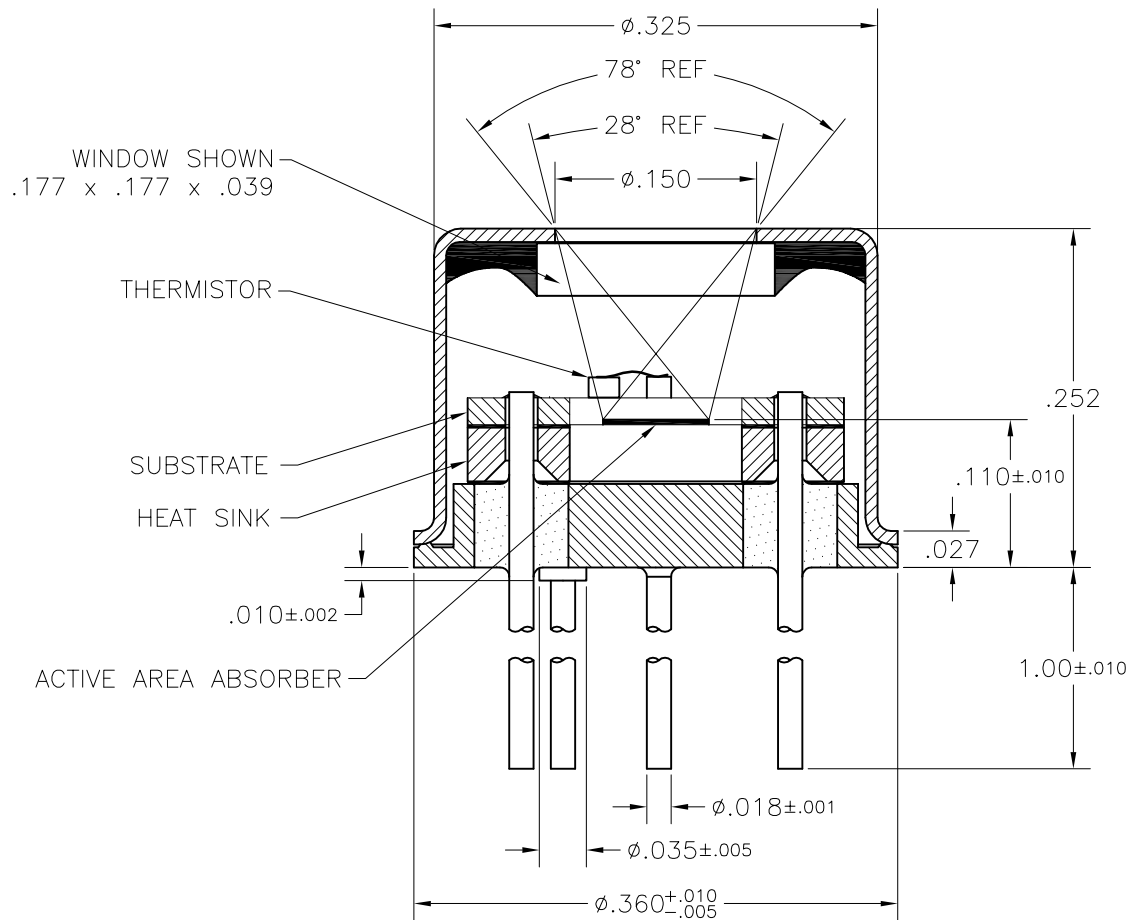
**General Specifications:** Flat spectral response from 100nm to > 100μm. Linear signal output from 10<sup>-6</sup> to 0.1W/cm<sup>2</sup>. Maximum incident radiance 0.1W/cm<sup>2</sup>, damage threshold ≥ .5W/cm<sup>2</sup>

**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. TOLERANCES ARE:		DEXTER RESEARCH CENTER, Inc.			
FRACTIONS ± N/A		DECIMALS .XX ± .01 .XXX ± .005	ANGLES ± 1°		7300 Huron River Dr., Dexter, MI 48130, ph. 734-426-3921 fax 734-426-5090
APPROVALS	DATE	ASSEMBLY, 2M 4 HOLE, RW, THERMISTOR, TOP VIEW			
DRAWN: DLJ	7/20/09	SIZE: <b>A</b>	SCALE: 7" = 1"	DWG. NO. 1344.1	REV. NC PAGE: 1 OF 2
CHECKED:		DRC PART NO.		CUSTOMER P/N	FINISH:
ENGINEERED:					
APPROVED:					



NOTE: SOME ITEMS REMOVED FOR CLARITY

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FRACTIONS $\pm \text{N/A}$			7300 Huron River Dr., Dexter, MI 48130, ph. 734-426-3921 fax 734-426-5090		
DECIMALS .XX $\pm .01$ .XXX $\pm .005$			ASSEMBLY, 2M 4 HOLE, RW, THERMISTOR, CROSS SECTION		
ANGLES $\pm \text{N/A}$			SIZE:	SCALE:	DWG. NO.
APPROVALS			<b>A</b>	7" = 1"	1344.2
DATE			REV.	PAGE:	
DRAWN: DLJ				NC	2 OF 2
7/20/09			DRC PART NO.		
CHECKED:			CUSTOMER P/N		
ENGINEERED:			FINISH:		
APPROVED:					