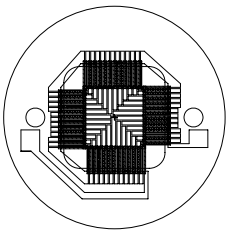


2M

Thin Film Based Thermopile Detector



Detector circuit overlay

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 12.8nV/√Hz.

Options: 1) See Standard Windows and Filters for list of optical filter options. **2)** Internal 30kΩ 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.



2M

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.

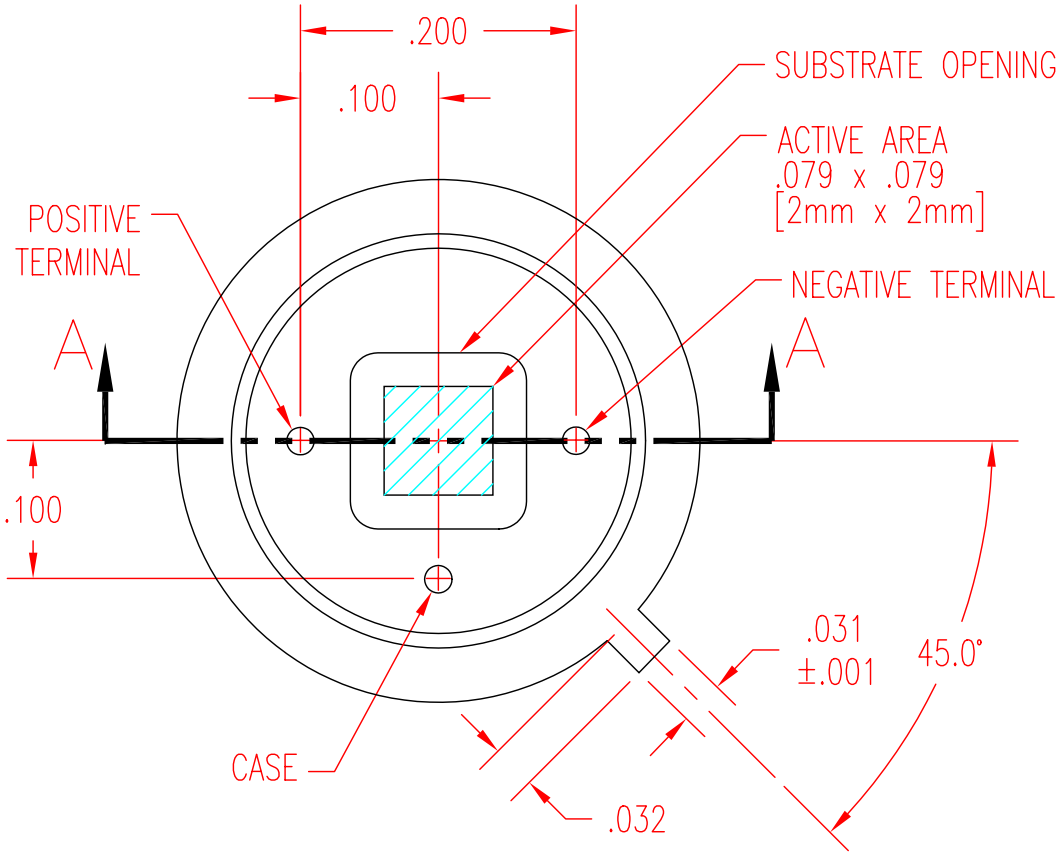
Technical Specifications

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^2	
Number of Junctions		48				Per element.
Number of Channels		1				Per detector package.
Output Voltage	200	250	300	V_s	µV	DC, H=330µW/cm^2 (3)
Signal-to-Noise Ratio	12,739	19,531	33,333	SNR	√Hz	DC, SNR=V_s/V_n
Responsivity	15.2	18.9	22.7	ℜ	V/W	DC, ℜ=V_s/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_n	nV/√Hz	V_n^2=4kTR
Noise Equivalent Power	.40	.68	1.03	NEP	nW/√Hz	DC, NEP= V_n HA/V_s (2)
Detectivity	1.9	3.0	5.0	D*	10^8cm√Hz/W	DC, D*=V_s/ V_n H√A (2)
Time Constant		85		$\mathcal{T}$	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: ∅.150"
Operating Temperature	-50		100	T_a	°C	

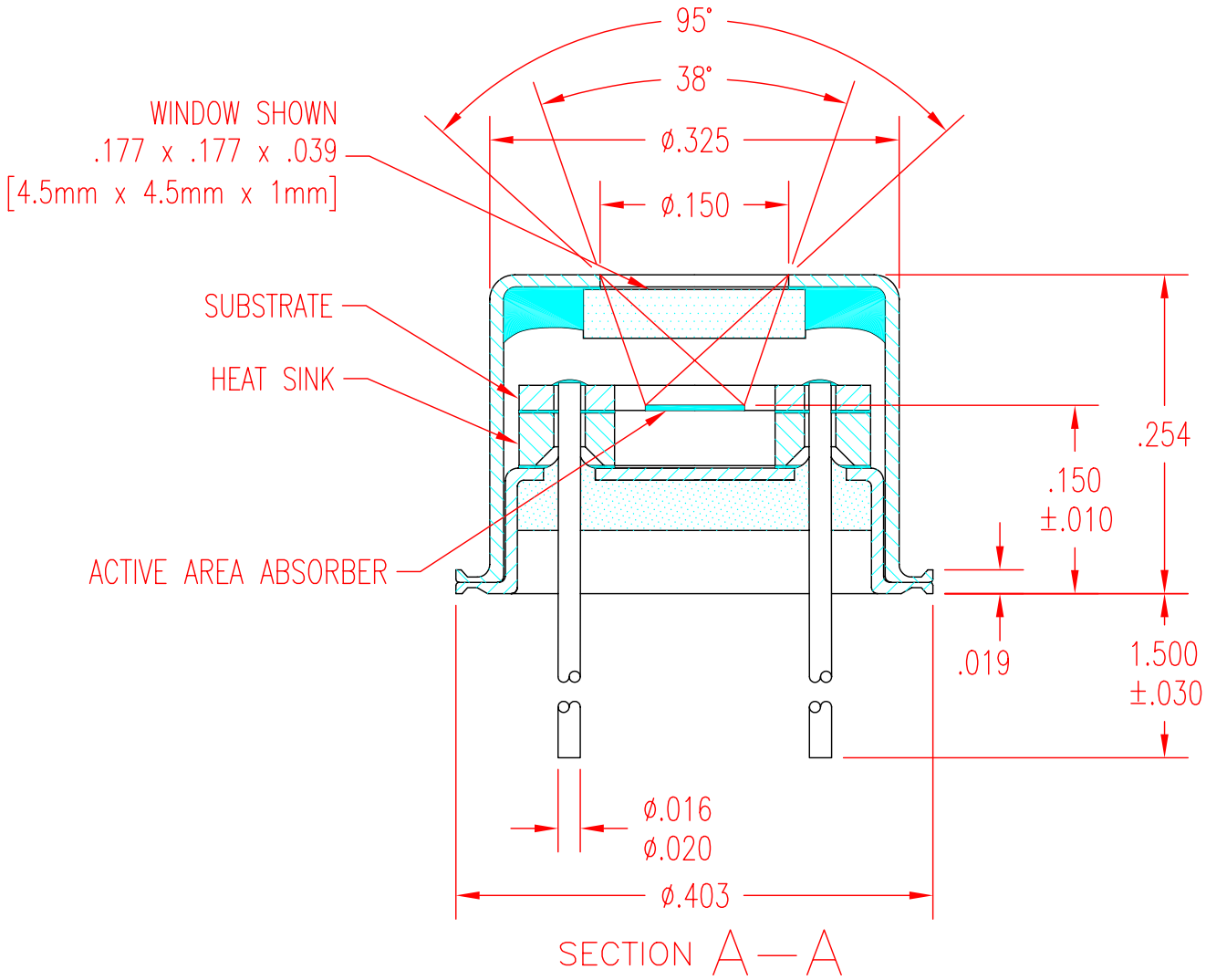
General Specifications: Flat spectral response from 100nm to > 100µm. Linear signal output from 10^{-6} to 0.1W/cm^2. Maximum incident radiance 0.1W/cm^2, damage threshold ≥ .5W/cm^2

Notes: (1) Parameter is not 100% tested. 90% of all units meet these specifications. (2) A is detector area in cm^2. (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: FRACTIONS ± DECIMALS .XX ± .XXX ± .005 ANGLES ±	DEXTER RESEARCH CENTER, Inc. 7300 Huron River Dr., Dexter, MI 48130, ph. 734-426-3921 fax 734-426-5090
APPROVALS / DATE	ASSEMBLY, 2M, 2MC Au, 2MC Sb, w/ HEAT SINK, TOP VIEW
DRAWN: DLJ 9/25/00	SIZE: A · SCALE: 7" = 1" · DWG. NO. 1011.1 · REV. A · PAGE: 1 OF 2
CHECKED:	DRC PART NO. · MATERIAL: · FINISH:
ENGINEERED:	
APPROVED:	



SECTION A—A

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APPROVALS / DATE	ASSEMBLY, 2M, 2MC Au, 2MC Sb, w/ HEAT SINK, CROSS SECTION
DRAWN: DLJ 9/20/00	SIZE: A · SCALE: 7" = 1" · DWG. NO. 1011.2 · REV. A · PAGE: 2 OF 2
CHECKED:	DRC PART NO. · MATERIAL: · FINISH:
ENGINEERED:	
APPROVED:	