



## M5

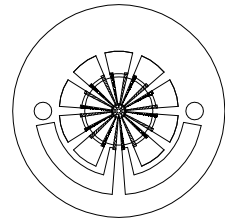
### Thin Film Based Thermopile Detector

**Features:** A thin film-based thermopile offering very low noise and a small 0.5mm diameter active area in a TO-5 package. This is one of the lowest noise thermopiles you can buy and provides a time constant 28ms time constant with Argon encapsulation gas.

**Options:** 1) See [Standard Windows and Filters](#) for list of optical filter options. 2) Internal aperture precisely defines active area for applications with FOV and/or spot size requirements. See [Aperture Options](#) for available sizes. See [Thermopile Configuration Table](#) for more options.

**Applications:** Excellent for non-contact temperature measurement.

**Benefit:** Small active area with medium signal-to-noise ratio.



Detector circuit overlay



M5

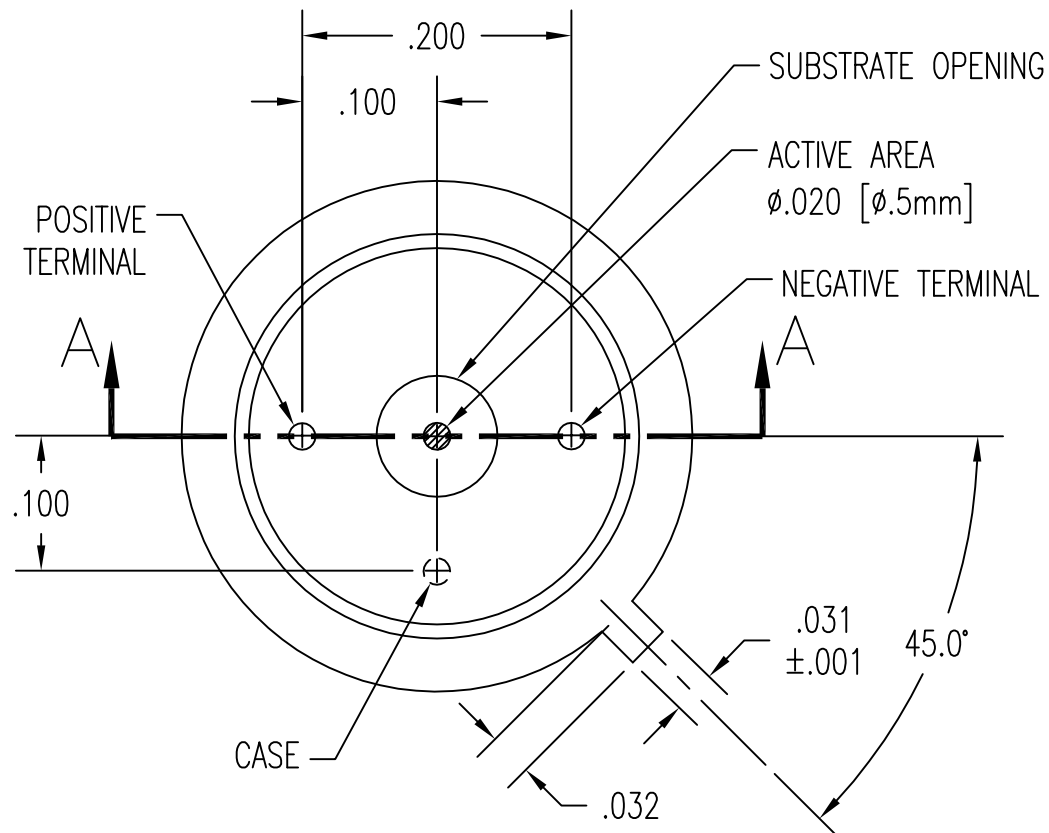
### Technical Specifications

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

Parameter	Min	Typical	Max	Symbol	Units	Comments
Active Area size		Ø.5mm Dia.		AA	mm	Hot junction size, per element.
Element Area		.196		A	mm <sup>2</sup>	
Number of Junctions		10				Per element.
Number of Channels		1				Per detector package.
Output Voltage	22	35	45	V <sub>s</sub>	μV	DC, H=330μW/cm <sup>2</sup> (3)
Signal-to-Noise Ratio	2,716	5,000	7,895	SNR	√Hz	DC, SNR=V <sub>s</sub> /V <sub>n</sub>
Responsivity	34.0	54.1	69.6	ℛ	V/W	DC, ℛ=V <sub>s</sub> /HA (2)
Resistance	2.0	3.0	4.0	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	5.7	7.0	8.1	V <sub>n</sub>	nV/√Hz	V <sub>n</sub> <sup>2</sup> =4kTR
Noise Equivalent Power	.08	.13	.24	NEP	nW/√Hz	DC, NEP= V <sub>n</sub> HA/V <sub>s</sub> (2)
Detectivity	1.9	3.4	5.4	D*	10 <sup>8</sup> cm√Hz/W	DC, D*=V <sub>s</sub> / V <sub>n</sub> H√A (2)
Time Constant		28		τ	ms	Chopped, -3dB point (1)
Field of View		64°/78°		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	

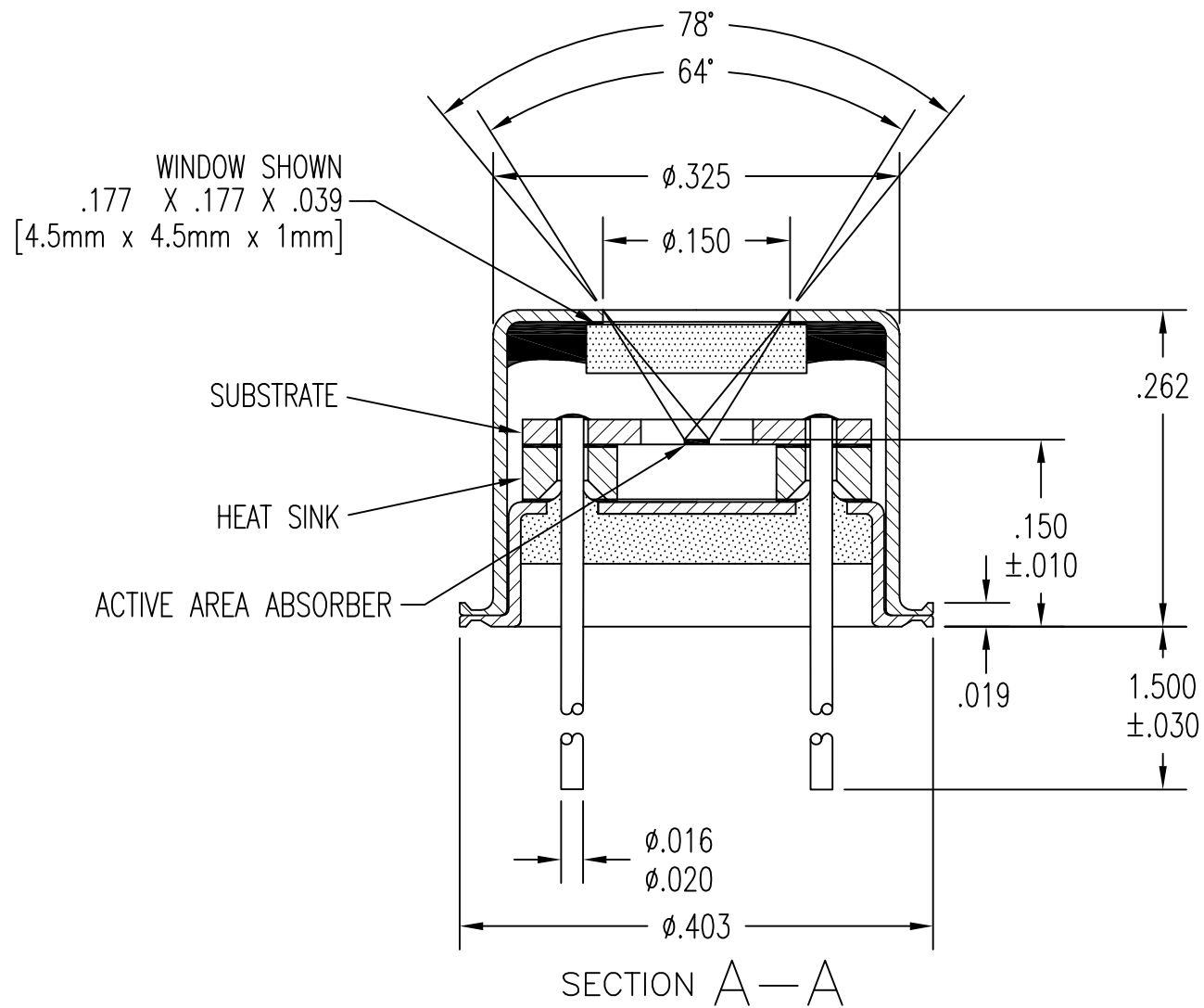
General Specifications: Flat spectral response from 100nm to > 100μm. Linear signal output from 10<sup>-6</sup> to 0.1W/cm<sup>2</sup>. Maximum incident radiance 0.1W/cm<sup>2</sup>, damage threshold ≥ .5W/cm<sup>2</sup>

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 ±		DECIMALS .XX ± .XXX ± .005		ANGLES ±	
APPROVALS		DATE			
DRAWN: DLJ		9/25/00			
CHECKED:					
ENGINEERED:					
APPROVED:					
SIZE: <b>A</b>		SCALE: 7 : 1		DWG. NO. 1034.1	
				REV. A	
				PAGE: 1 OF 2	
MATERIAL:				FINISH:	



UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.	
TOLERANCES ARE:	
FRACTIONS ±	DECIMALS .XX ± .XXX ± .005
APPROVALS	DATE
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ENGINEERED:	
APPROVED:	

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ASSEMBLY, M5 w/ HEAT SINK,  
CROSS SECTION

SIZE: <b>A</b>	SCALE: 7 : 1	DWG. NO. 1034.2	REV. B	PAGE: 2 OF 2
MATERIAL:			FINISH:	