



3M

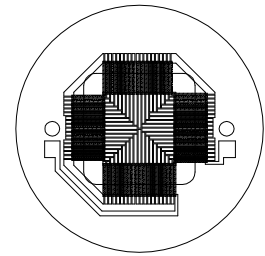
Thin Film Based Thermopile Detector

Features: A thin film-based single element thermopile. The highest output detector in our line-up.

Options: See [Standard Windows and Filters](#) for list of optical filter options. See [Thermopile Configuration Table](#) for more options.

Applications: Excellent for laser power measurement and can be used for gas analysis.

Benefit: Highest signal-to-noise ratio with larger TO-8 package and higher cost.



Detector circuit overlay



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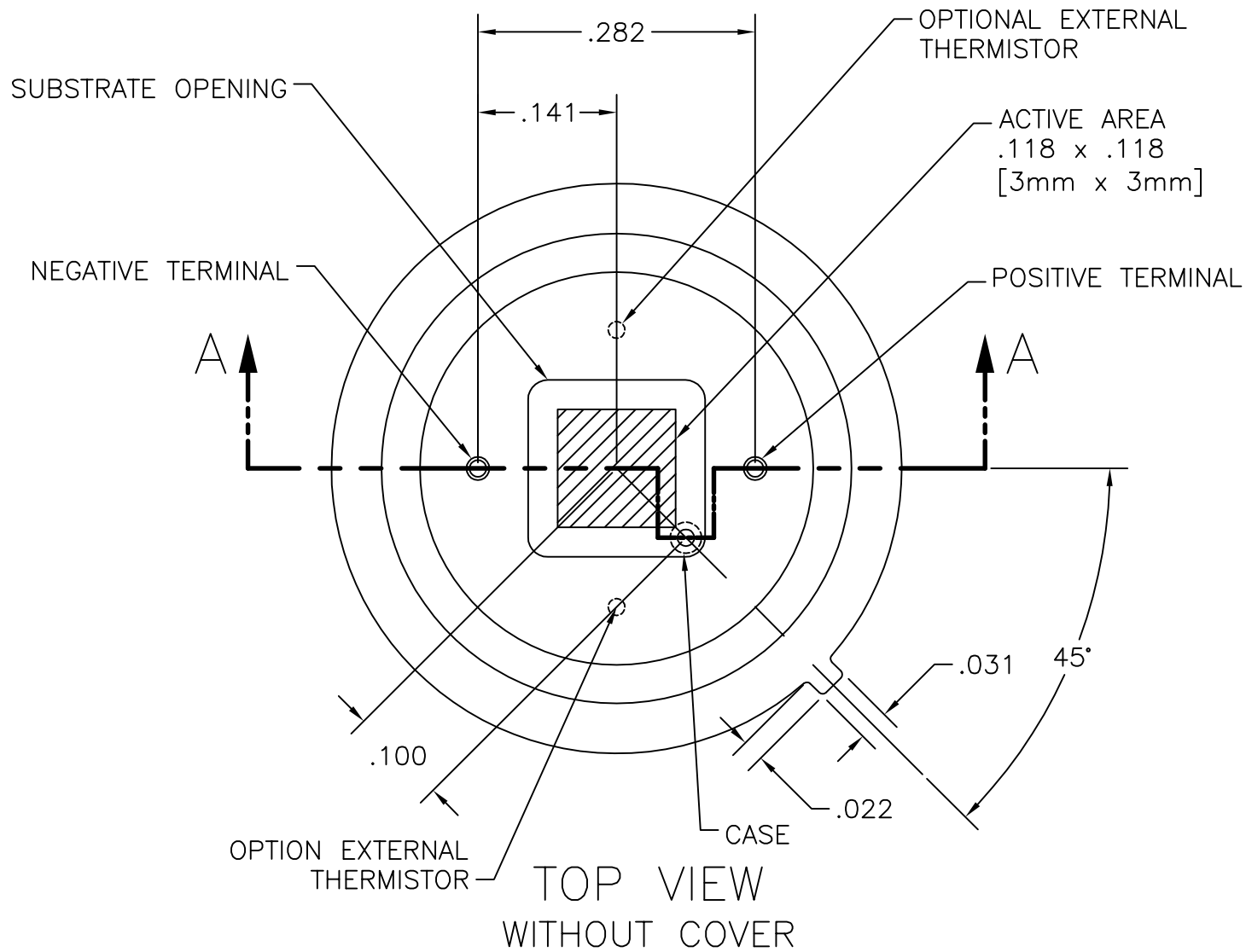
Technical Specifications

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

Parameter	Min	Typical	Max	Symbol	Units	Comments
Active Area size		3 x 3		AA	mm	Hot junction size, per element.
Element Area		9		A	mm ²	
Number of Junctions		72				Per element.
Number of Channels		1				Per detector package.
Output Voltage	400	440	500	V _s	μV	DC, H=330μW/cm ² (3)
Signal-to-Noise Ratio	18,100	25,581	31,847	SNR	√Hz	DC, SNR=V _s /V _n
Responsivity	13.5	14.8	16.8	ℜ	V/W	DC, ℜ=V _s /HA (2)
Resistance	15	18	30	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	15.7	17.2	22.1	V _n	nV/√Hz	V _n ² =4kTR
Noise Equivalent Power	.93	1.16	1.64	NEP	nW/√Hz	DC, NEP= V _n HA/V _s (2)
Detectivity	1.8	2.6	3.2	D*	10 ⁸ cm√Hz/W	DC, D*=V _s /V _n H√A (2)
Time Constant		100		τ	ms	Chopped, -3dB point (1)
Field of View		63°/120°		FOV	Degrees	See Assembly Drawings for FOV Description.
Package Type		TO-8				Standard package hole size: Ø.250"
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/cm². Maximum incident radiance 0.1W/cm², damage threshold ≥ .5W/cm²

Notes: (1) Parameter is not 100% tested. 90% of all units meet these specifications. (2) A is detector area in cm². (3) Test Conditions: 500K Blackbody source; Detector active surface 10cm from 0.6513cm Diameter Blackbody Aperture.



UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.
TOLERANCES ARE:

FRACTIONS	DECIMALS	ANGLES
±	.XX ±	±
	.XXX ± .005	

APPROVALS	DATE
DRAWN: DLJ	5/09/06
CHECKED:	
ENGINEERED:	
APPROVED:	

DEXTER RESEARCH CENTER, Inc.

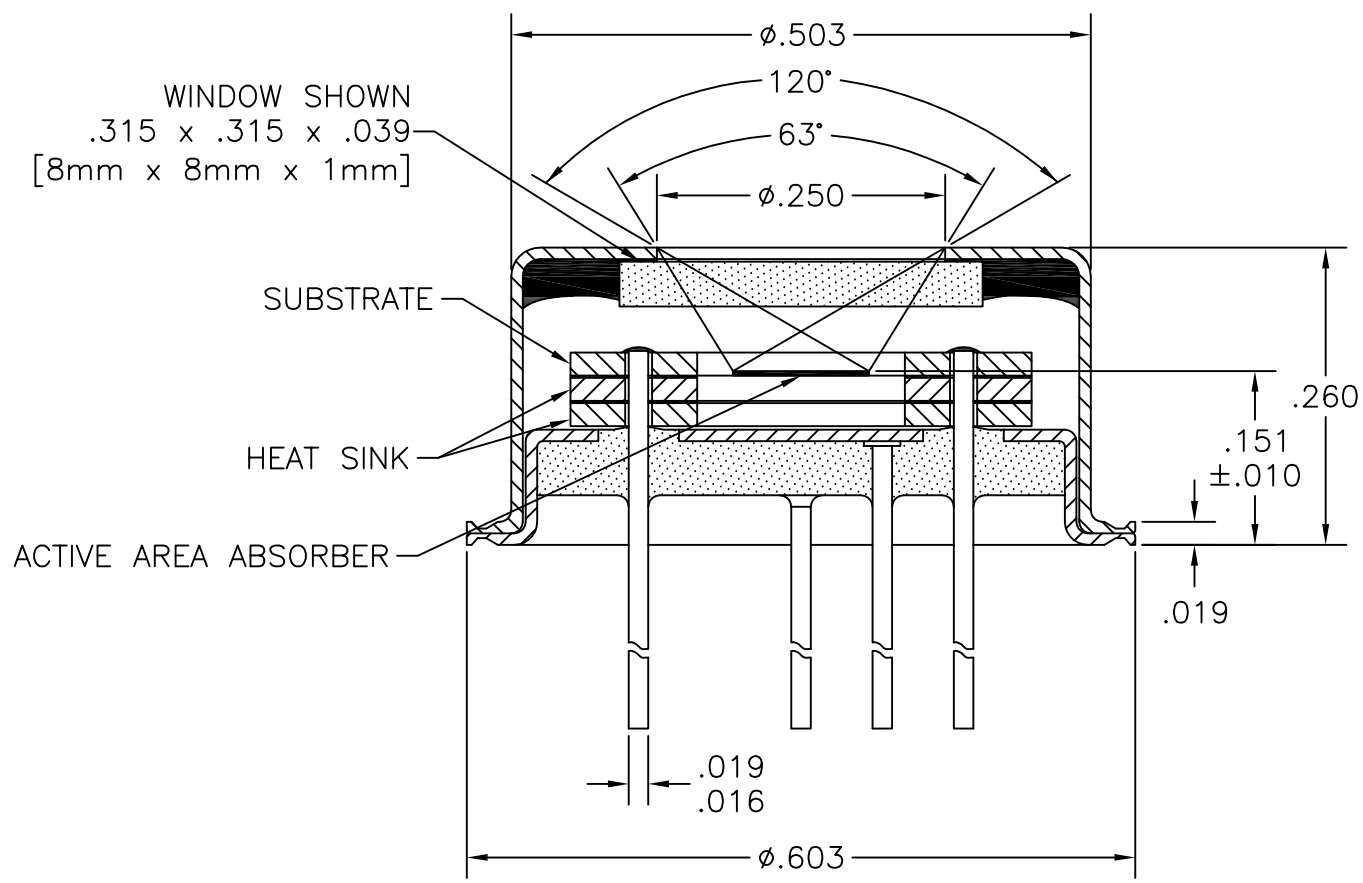
7300 Huron River Dr., Dexter, MI 48130, ph. 734-426-3921 fax 734-426-5090

ASSEMBLY, 3M

TOP VIEW

SIZE:	SCALE:	DWG. NO.	REV.	PAGE:
A	6" : 1"	1036.1	A	1 OF 2

MATERIAL: FINISH:



SECTION A-A

NOTE: SOME FEATURES REMOVED FOR CLARITY

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FRACTIONS ±	DECIMALS .XX ± .XXX ± .005	ANGLES ±	ASSEMBLY, 3M CROSS SECTION			
APPROVALS	DATE	SIZE: SCALE: DWG. NO. REV. PAGE:				
DRAWN: DLJ	12/16/10	A 6" : 1"		1036.2	B 2 OF 2	
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