



2M Quad

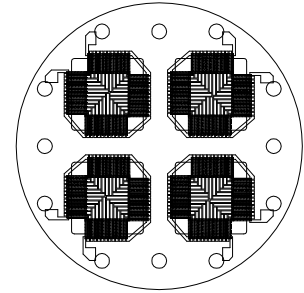
Thin Film Based Thermopile Detector

Features: A four-channel thin-film thermopile in a TO-8 package. Each active area is 2mm x 2mm. offers the world's highest 4-channel sensitivity with exceptional signal-to-noise performance in a TO-8 package. Internal aperture minimizes channel-to-channel crosstalk while increasing sensitivity.

Options: **1)** See [Standard Windows and Filters](#) for list of optical filter options. **2)** Order this unit back-filled with Xenon and this becomes a super-high output detector with very low noise. **3)** Internal 30kΩ 5% NTC chip thermistor provides ambient package temperature measurement. See [Thermistor Options](#) p/n: MT04. See [Thermopile Configuration Table](#) for more options.

Applications: Gas analysis for automotive, environmental air quality, industrial sensors and medical monitoring.

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



Detector circuit overlay



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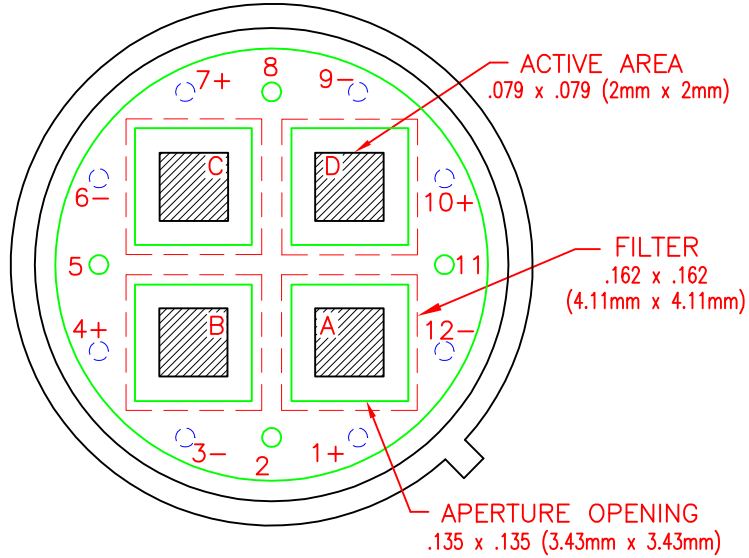
Technical Specifications

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

Parameter	Min	Typical	Max	Symbol	Units	Comments
Active Area size		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		4				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 ⁸ cm√Hz/W	DC, D*=V _s /V _n H√A (2)
Time Constant		85		τ	ms	Chopped, -3dB point (1)
Field of View		NA		FOV	Degrees	Not Applicable
Package Type		TO-8 with 12 Pins				Standard package hole size: Ø.437"
Element Matching		5	10	μ	%	μ = V _A -V _B /V _B (2)
Element Separation		4.57			mm	Center to Center
Operating Temperature	-50		100	T _a	°C	

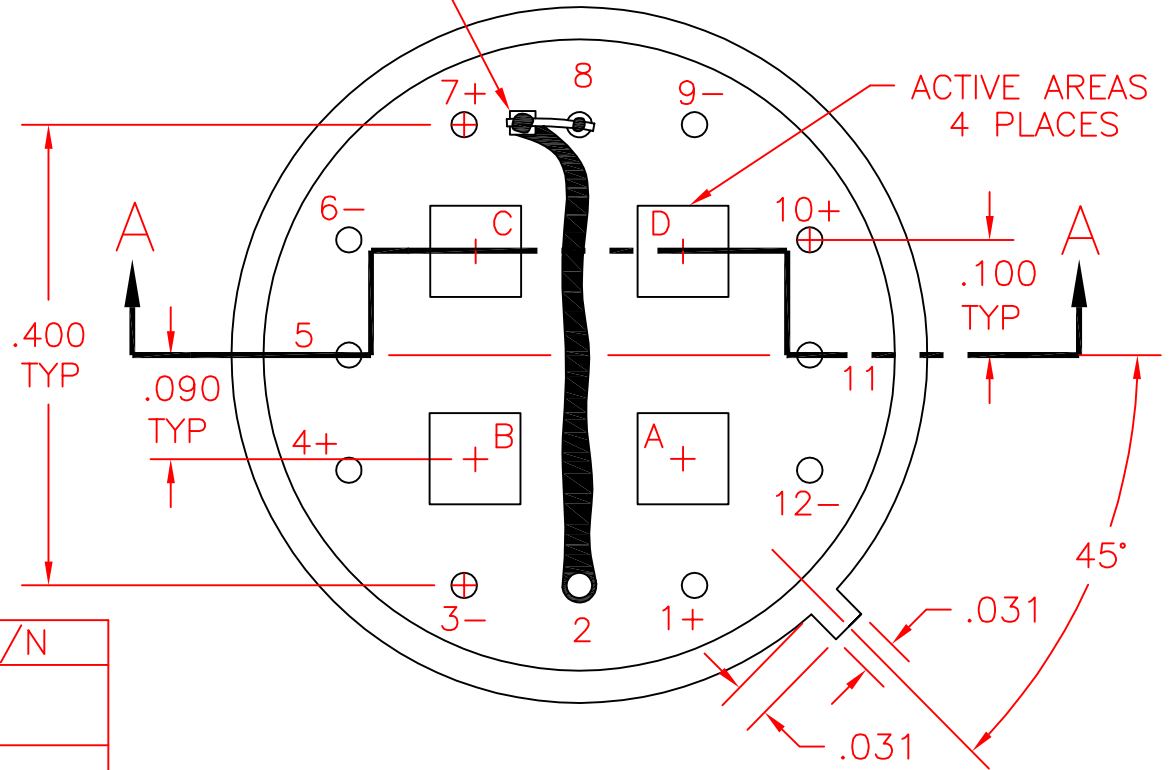
General Specifications: Flat spectral response from 100nm to > 100μm. Linear signal output from 10⁻⁶ to 0.1W/cm². Maximum incident radiance 0.1W/cm², damage threshold ≥ .5W/cm²

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.



TOP VIEW
WITHOUT COVER
.75X SCALE

CHIP THERMISTOR
(OPTIONAL)



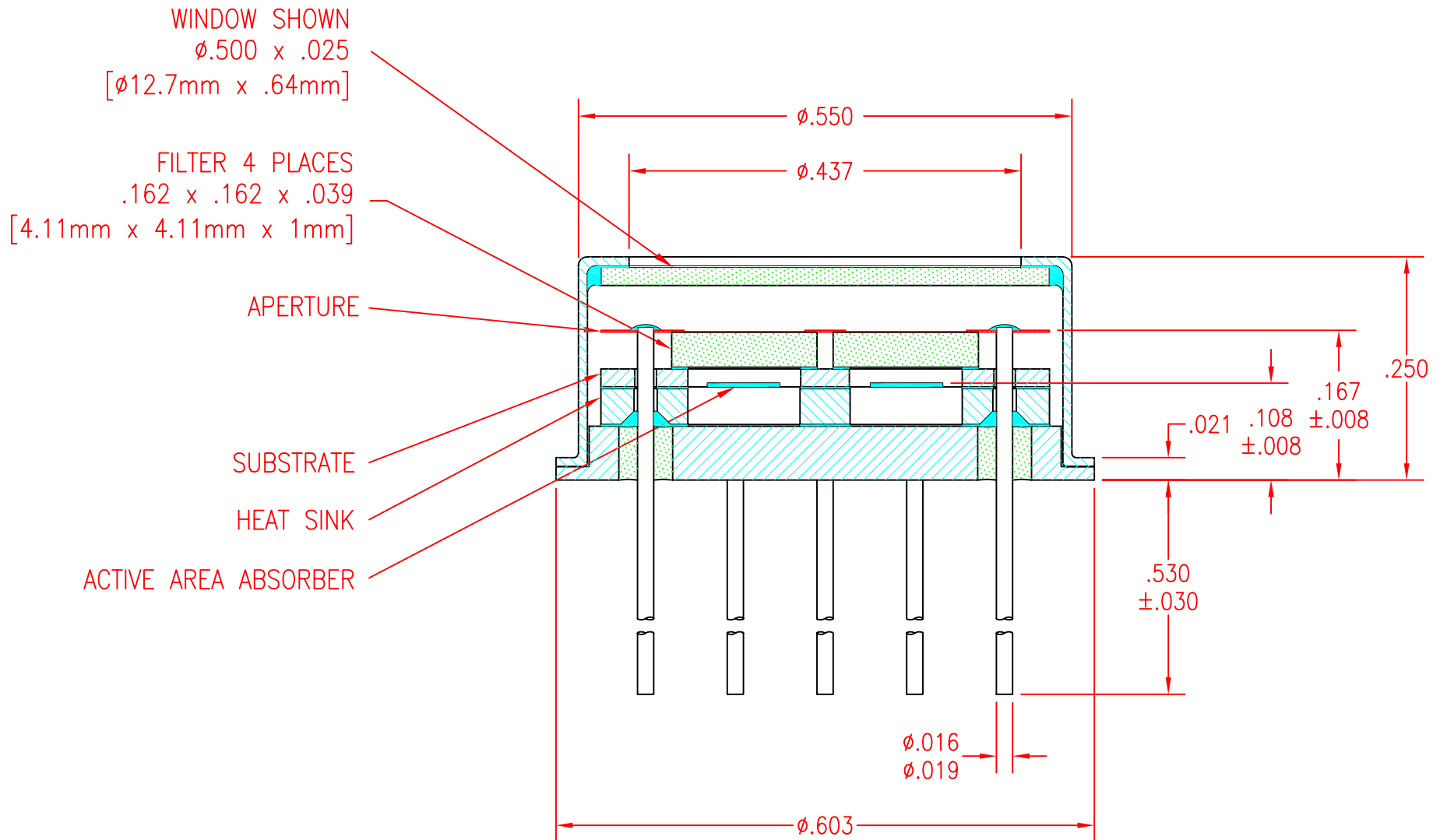
TOP VIEW
WITHOUT COVER

PIN	ELEMENT	DESCRIPTION	P/N
12	A-		
1	A+		
3	B-		
4	B+		
5	NO CONNECTION		
6	C-		
7	C+		
9	D-		
10	D+		
11	NO CONNECTION		
2	THERMISTOR (OPTIONAL)		
8			

NOTES:

- 1-APERTURE SUPPORTED BY PINS (2),5,(8),11
- 2-SOME FEATURES NOT SHOWN FOR CLARITY

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES. TOLERANCES ARE:		DEXTER RESEARCH CENTER, Inc.			
FRACTIONS ±		DECIMALS .XX ± .01 .XXX ± .005	ANGLES ±		7300 Huron River Dr., Dexter, MI 48130, ph. 734-426-3921 fax 734-426-5090
APPROVALS	DATE	ASSEMBLY, 2M QUAD, TOP VIEW			
DRAWN: DLJ	4/01/03	SIZE: A	SCALE: 6" : 1"	DWG. NO. 1003.1	REV. E PAGE: 1 OF 2
CHECKED:		DRC PART NO.		MATERIAL:	FINISH:
ENGINEERED:					
APPROVED:					



SECTION A-A

NOTE: SOME FEATURES NOT SHOWN FOR CLARITY.

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TOLERANCES ARE:		7300 Huron River Dr., Dexter, MI 48130, ph. 734-426-3921 fax 734-426-5090			
FRACCTIONS ±	DECIMALS .XX ± .01 .XXX ± .005	ANGLES ±	ASSEMBLY, 2M QUAD R.W. w/ H.S., CROSS SECTION		
APPROVALS	DATE	SIZE:	SCALE:	DWG. NO.	REV. PAGE:
DRAWN: DLJ	12/16/10	A	6" = 1"	1003.2	E 2 OF 2
CHECKED:		DRC PART NO.		MATERIAL:	FINISH:
ENGINEERED:					
APPROVED:					