



ST120 QUAD

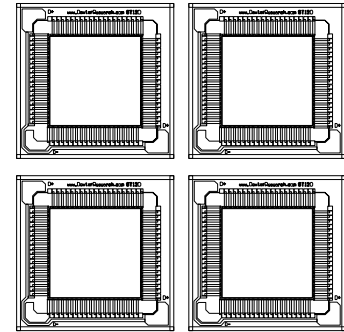
Silicon Based Thermopile Detector

Features: A four-channel silicon-based thermopile in a TO-5 package. Each small active area is 1.2mm x 1.2mm. Time constant of 25ms with Nitrogen encapsulation gas. Delivers a very low Temperature Coefficient of Responsivity of -0.04%/°C. This detector has a very short thermal shock response to ambient temperature change.

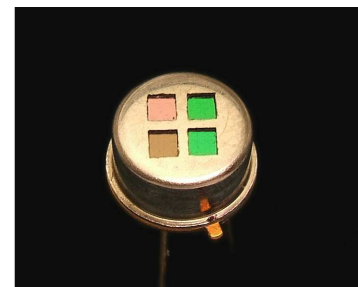
Options: 1) See [Standard Windows and Filters](#) for list of optical filter options. 2) Internal 30kΩ 5% NTC chip thermistor provides ambient package temperature measurement. See [Thermistor Options](#) p/n: DC-4005. 3) Internal aperture precisely defines active area for applications with FOV and/or spot size requirements. See [Aperture Options](#) for available sizes. See [Thermopile Configuration Table](#) for more options.

Applications: Excellent for gas analysis, position sensor, and horizon sensor.

Benefit: Low cost with high output.



Detector circuit overlay



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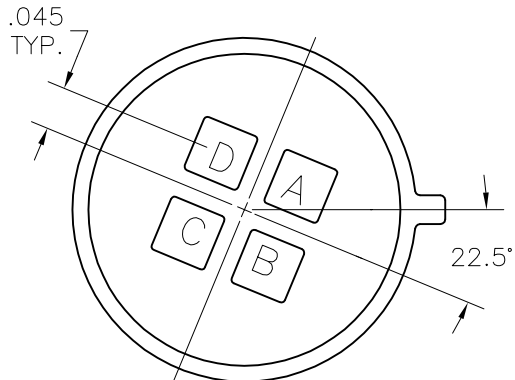
Technical Specifications

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

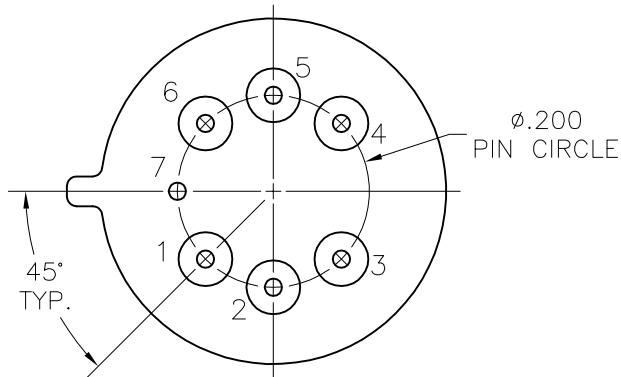
Parameter	Min	Typical	Max	Symbol	Units	Comments
Active Area size		1.2 x 1.2		AA	mm	Hot junction size, per element.
Element Area		1.44		A	mm ²	
Number of Junctions		80				Per element.
Number of Channels		4				Per detector package.
Output Voltage		140		V _s	μV	DC, H=330μW/cm ² (3)
Signal-to-Noise Ratio		3,649		SNR	√Hz	DC, SNR=V _s /V _n
Responsivity		29.5		ℜ	V/W	DC, ℜ=V _s /HA (2)
Resistance		90		R	kΩ	Detector element
Temperature Coefficient of ℜ		-.04			%/°C	Best linear fit, 0° to 85°C (1)
Temperature Coefficient of R		.02			%/°C	Best fit, 0° to 85°C (1)
Noise Voltage		38.4		V _n	nV/√Hz	V _n ² =4kTR
Noise Equivalent Power		1.30		NEP	nW/√Hz	DC, NEP= V _n HA/V _s (2)
Detectivity		0.92		D*	10 ⁹ cm√Hz/W	DC, D*=V _s /V _n H√A (2)
Time Constant		25		τ	ms	Chopped, -3dB point (1)
Field of View		9°/63°		FOV	Degrees	See Assembly Drawings for FOV Description.
Package Type		TO-5				Standard package hole size: .060" x .060"
Element Matching		25		ℳ	%	ℳ = V _A -V _B /V _B (2)
Element Separation		2.08			mm	Center to Center
Operating Temperature	-50		125	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

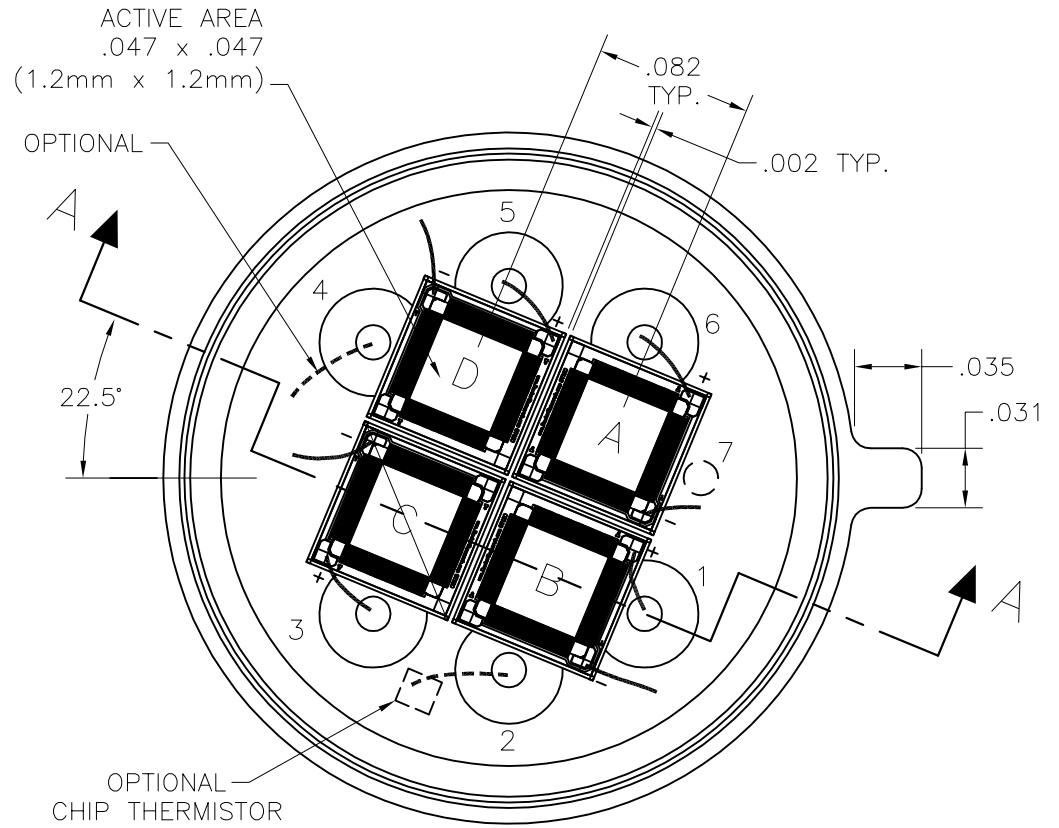
Notes: (1) Parameter is not 100% tested. 90% of all units meet these specifications. (2) A is detector area in cm². (3) Test Conditions: 500K Blackbody source; Detector active surface 10cm from 0.6513cm Diameter Blackbody Aperture.



TOP VIEW WITH COVER



BOTTOM VIEW

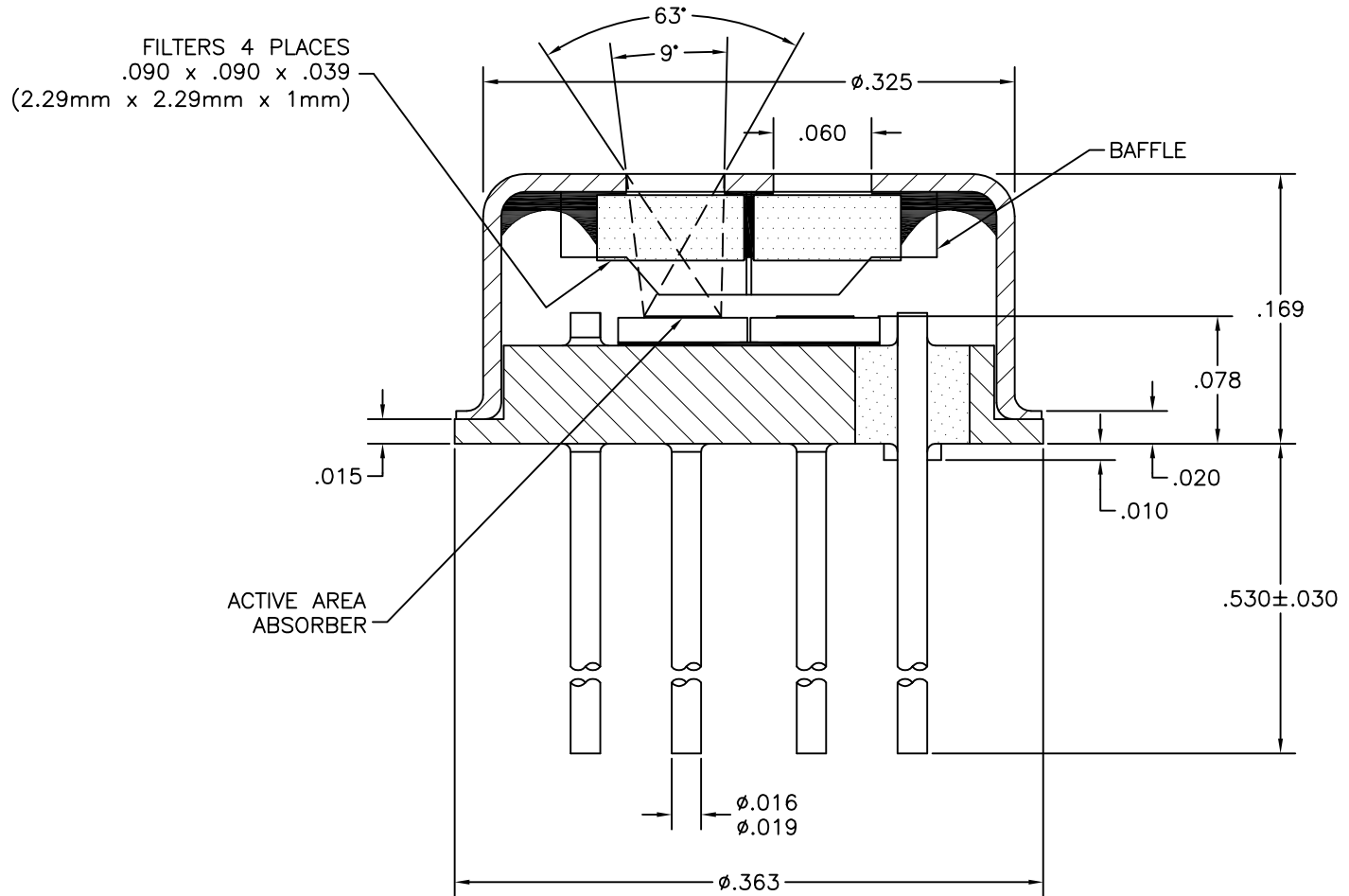


TOP VIEW WITHOUT COVER

PIN	ELEMENT	DESCRIPTION	P/N
1	B+		
3	C+		
4	OPTIONAL DETECTOR COMMON WITH CASE GROUND		
5	D+		
6	A+		
2	OPTIONAL THERMISTOR		
7	CASE GROUND AND OPTIONAL THERMISTOR		

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.	
TOLERANCES ARE:	
FRACTIONS ±	DECIMALS .XX ± .01 .XXX ± .003
ANGLES ±	
APPROVALS	DATE
DRAWN: DLJ	3/15/10
CHECKED:	
ENGINEERED:	
APPROVED:	

DEXTER RESEARCH CENTER, Inc.			
7300 Huron River Dr., Dexter, MI 48130, ph. 734-426-3921 fax 734-426-5090			
ASSEMBLY, ST120 QUAD, TO-5, TOP VIEW			
SIZE: A	SCALE: 10" : 1"	DWG. NO. 1199.1	REV. C
		PAGE: 1 OF 2	
DRC PART NO.	MATERIAL:	FINISH:	



VIEW A-A

NOTE: RECOMMENDED FILTER THICKNESS 1mm TO MINIMIZE CROSS TALK
SOME FEATURES NOT SHOWN FOR CLARITY

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FRACTIONS ±	DECIMALS .XX ± .01 .XXX ± .002	ANGLES ±			
APPROVALS	DATE	ASSEMBLY, ST120 QUAD, TO-5, CROSS SECTION			
DRAWN: DLJ	12/16/10	SIZE: A	SCALE: 9" : 1"	DWG. NO. 1199.2	REV. C
CHECKED:				PAGE: 2 OF 2	
ENGINEERED:		DRC PART NO.		MATERIAL:	FINISH:
APPROVED:					