



S25* TO-5

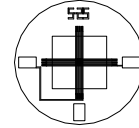
Silicon Based Thermopile Detector

Features: A single-channel silicon-based thermopile that offers the smallest single element active area size at 0.25mm x 0.25mm in a TO-5 package. Delivers a fast 18ms time constant in Argon encapsulation gas and even faster with Neon gas at 9ms. Delivers a very low Temperature Coefficient of Responsivity of -0.04%/°C.

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 when extremely small spot size is a design requirement.

Benefit: Small active area, fast time constant with lower output that has a higher cost.



Detector circuit overlay



Technical Specifications

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

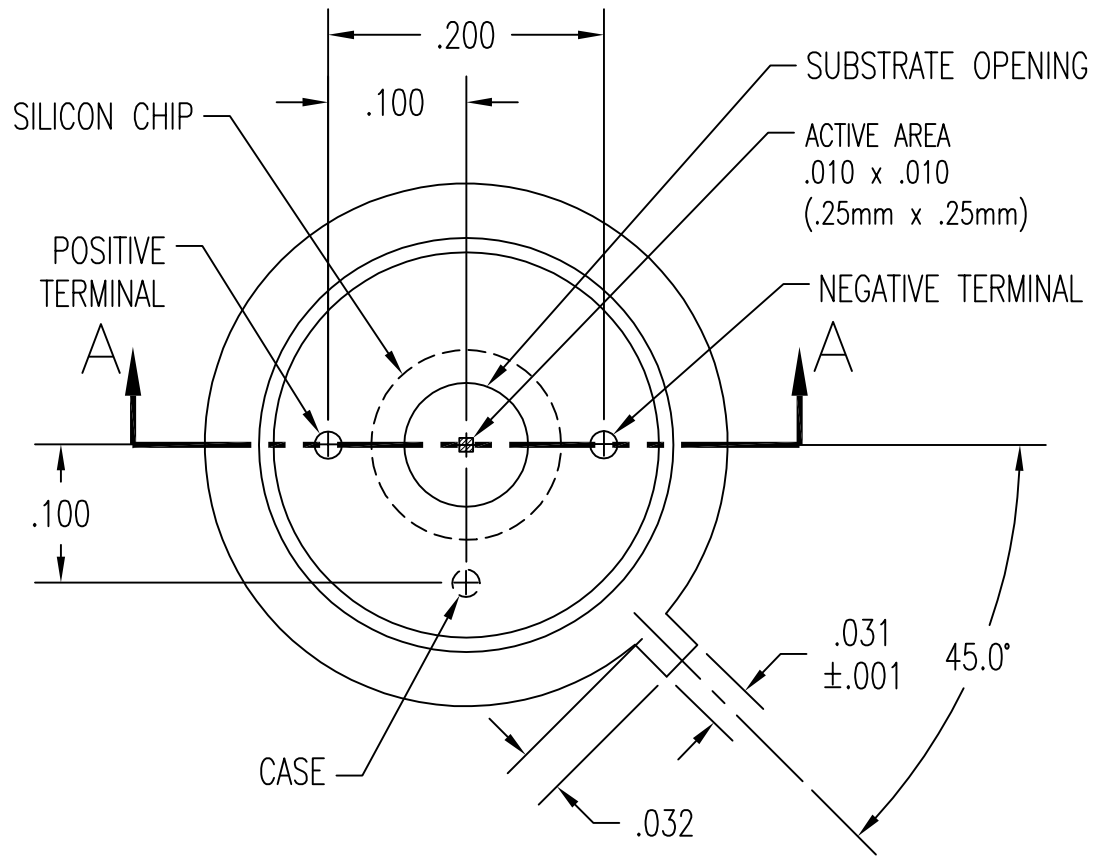
S25 TO-5

Parameter	Min	Typical	Max	Symbol	Units	Comments
Active Area size		.25 x .25		AA	mm	Hot junction size, per element.
Element Area		.0625		A	mm ²	
Number of Junctions		20				Per element.
Number of Channels		1				Per detector package.
Output Voltage	35	40	45	V _s	μV	DC, H=330μW/cm ² (3)
Signal-to-Noise Ratio	1,636	2,062	2,616	SNR	√Hz	DC, SNR=V _s /V _n
Responsivity	169.7	193.9	218.2	ℛ	V/W	DC, ℛ=V _s /HA (2)
Resistance	18	23	28	R	kΩ	Detector element
Temperature Coefficient of ℛ		-.04			%/°C	Best linear fit, 0° to 85°C (1)
Temperature Coefficient of R		.11			%/°C	Best fit, 0° to 85°C (1)
Noise Voltage	17.2	19.4	21.4	V _n	nV/√Hz	V _n ² =4kTR
Noise Equivalent Power	.08	.10	.13	NEP	nW/√Hz	DC, NEP= V _n HA/V _s (2)
Detectivity	2.0	2.5	3.2	D*	10 ⁸ cm√Hz/W	DC, D*=V _s /V _n H√A (2)
Time Constant		18		τ	ms	Chopped, -3dB point (1)
Field of View		69°/76°		FOV	Degrees	See Assembly Drawings for FOV Description.
Package Type		TO-5				Standard package hole size: Ø.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/cm². Maximum incident radiance 0.1W/cm², damage threshold ≥ .5W/cm²

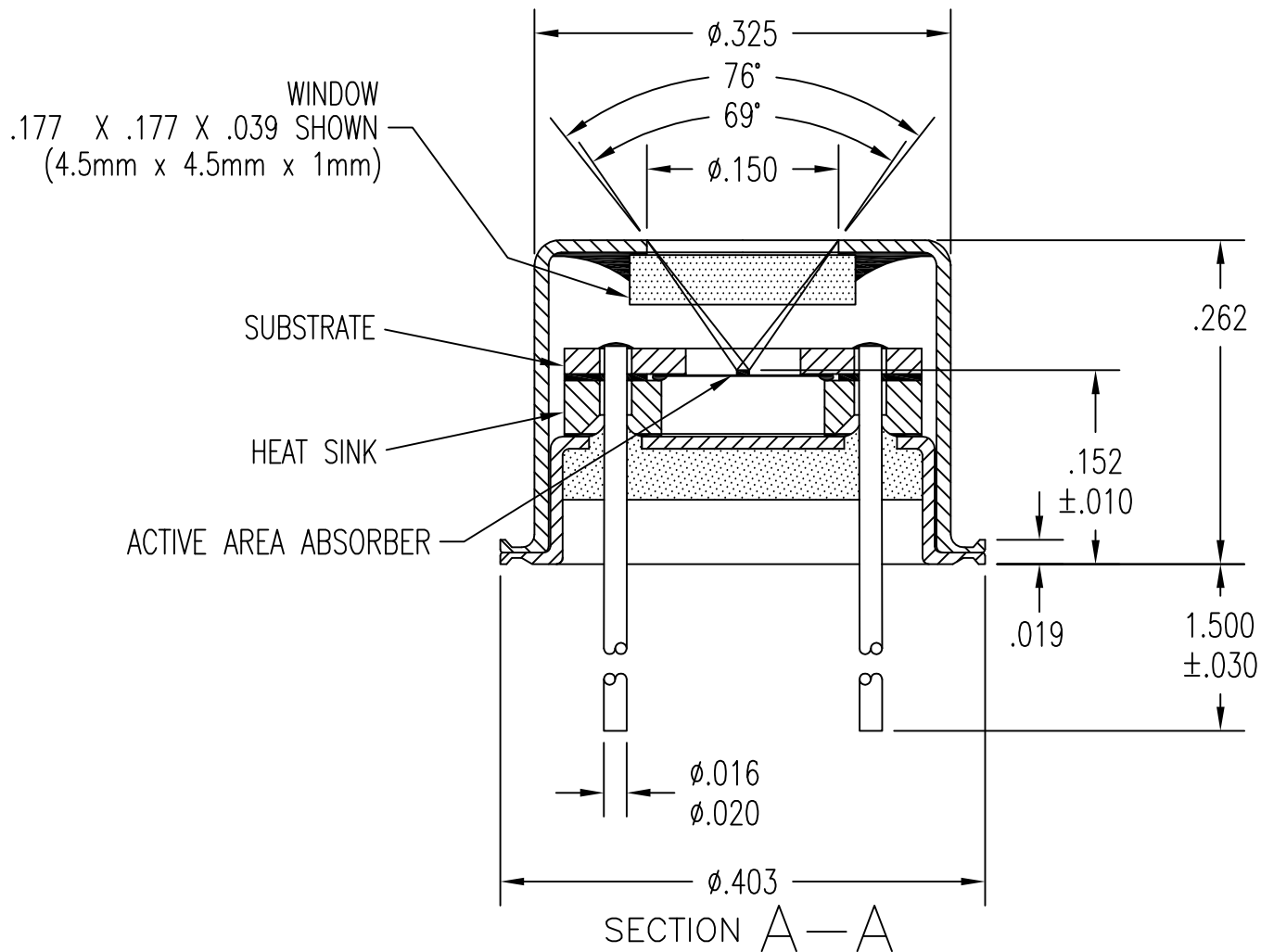
Notes: (1) Parameter is not 100% tested. 90% of all units meet these specifications. (2) A is detector area in cm². (3) Test Conditions: 500K Blackbody source; Detector active surface 10cm from 0.6513cm Diameter Blackbody Aperture.

*Protected by U.S. Patent No. 5,059,543 and U.S. Patent No. 5,100,479



TOP VIEW
WITHOUT COVER

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES. TOLERANCES ARE:		DEXTER RESEARCH CENTER, Inc.			
FRACTIONS ±		DECIMALS .XX ±	ANGLES ±		7300 Huron River Dr., Dexter, MI 48130, ph. 734-426-3921 fax 734-426-5090
APPROVALS		DATE		ASSEMBLY, S25, TO-5, TOP VIEW	
DRAWN: DLJ		7/05/00		SIZE: A	SCALE: 7" = 1"
CHECKED:				DWG. NO. 1043.1	REV. NC
ENGINEERED:				PAGE: 1 OF 2	
APPROVED:				DRC PART NO.	MATERIAL:
				FINISH:	



UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.		DEXTER RESEARCH CENTER, Inc.			
TOLERANCES ARE:		7300 Huron River Dr., Dexter, MI 48130, ph. 734-426-3921 fax 734-426-5090			
FRACTIONS	DECIMALS	ANGLES		ASSEMBLY, S25,	
\pm	.XX \pm	\pm		TO-5, CROSS SECTION	
	.XXX \pm .005			SIZE:	SCALE:
APPROVALS	DATE	A		7" = 1"	DWG. NO.
DRAWN: DLJ	12/15/10			1043.2	REV. PAGE:
CHECKED:				A	2 OF 2
ENGINEERED:		DRC PART NO.		MATERIAL:	FINISH:
APPROVED:					