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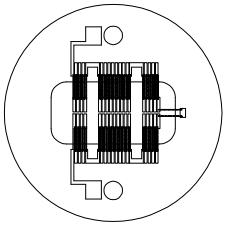
1SC

Thin Film Based Thermopile Detector



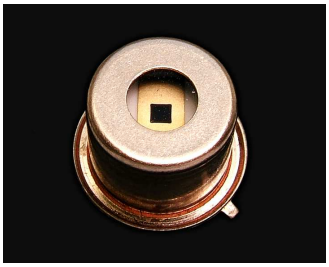
Detector circuit overlay

Features: A thin film-based single channel thermopile detector that offers thermal compensation to minimize effects of sudden ambient temperature change during the initial five seconds of change. The 1SC Compensated comes in a TO-5 package with a medium sized 1.0 x 1.0mm active area. Compensation is achieved through the integration of two additional half-sized thermopile elements. Internal aperture is standard and precisely defines active area for applications with FOV and/or spot size requirements.

Options: See Standard Windows and Filters for list of optical filter options. See Thermopile Configuration Table for more options.

Applications: Excellent for non-contact temperature measurement.

Benefit: Thermal compensation with increase in noise and a time constant of 48ms in Argon encapsulation gas.



1SC

Technical Specifications

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

Parameter	Min	Typical	Max	Symbol	Units	Comments
Active Area size		1 x 1		AA	mm	Hot junction size, per element.
Element Area		1		A	mm^2	
Number of Junctions		18				Per element.
Number of Channels		1 Compensated				Per detector package.
Output Voltage	40	48	55	V_s	µV	DC, H=330µW/cm^2 (3)
Signal-to-Noise Ratio	2,649	3,582	5,140	SNR	√Hz	DC, SNR=V_s/V_n
Responsivity	12.1	14.5	16.7	ℜ	V/W	DC, ℜ=V_s/HA (2)
Resistance	7.0	11.0	14.0	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	10.7	13.4	15.1	V_n	nV/√Hz	V_n^2=4kTR
Noise Equivalent Power	.64	.92	1.25	NEP	nW/√Hz	DC, NEP= V_n HA/V_s (2)
Detectivity	.8	1.1	1.6	D*	10^8cm√Hz/W	DC, D*=V_s/ V_n H√A (2)
Time Constant		48		𝒯	ms	Chopped, -3dB point (1)
Field of View		20°/89°		FOV	Degrees	See Assembly Drawings for FOV Description.
Package Type		TO-5				Standard package hole size: ∅.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/cm^2. Maximum incident radiance 0.1W/cm^2, damage threshold ≥ .5W/cm^2

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

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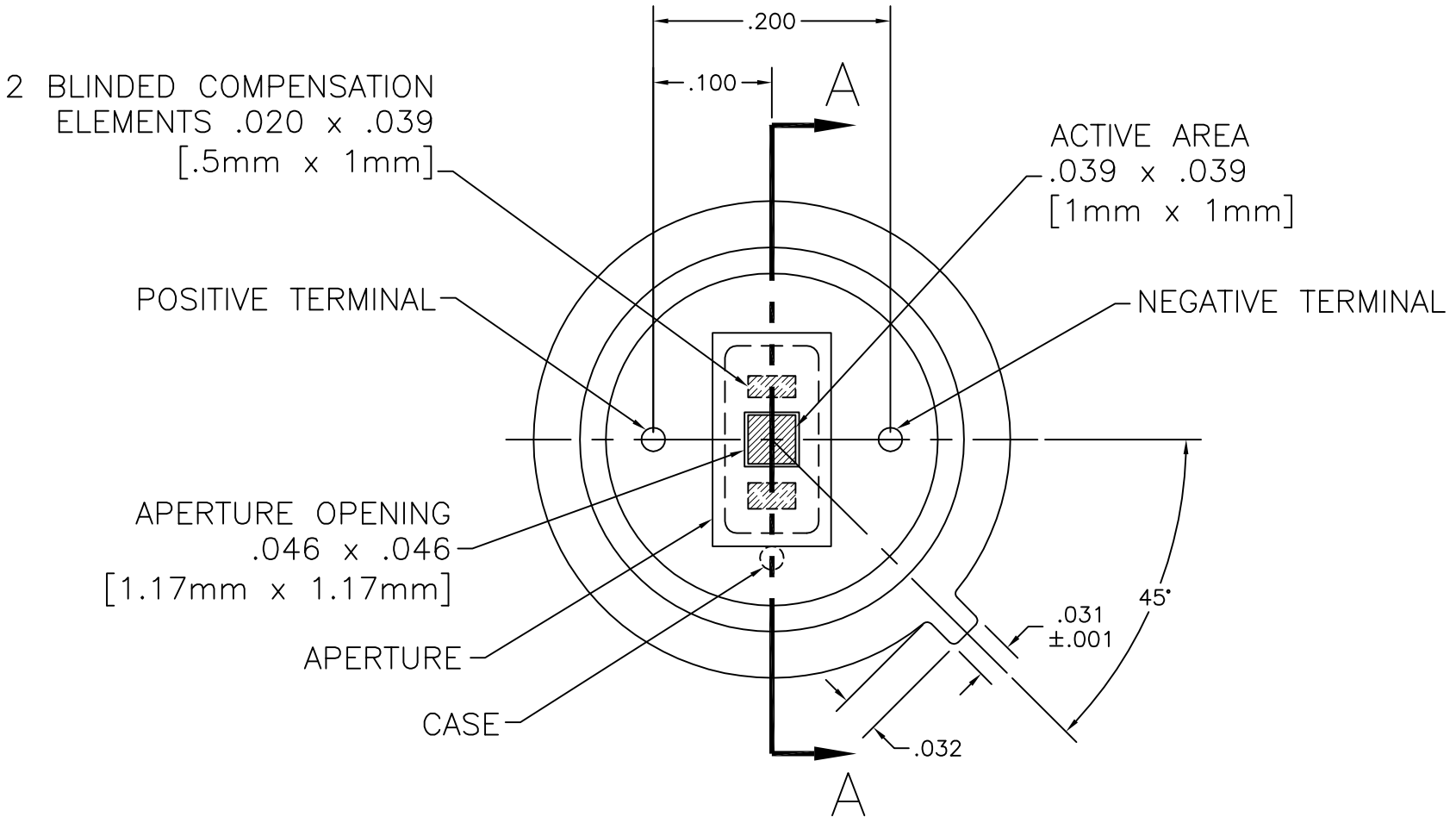

TOP VIEW
W/O COVER

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES. TOLERANCES ARE: FRACTIONS ± DECIMALS .XX ± .XXX ± .005 ANGLES ±		DEXTER RESEARCH CENTER, Inc. 7300 Huron River Dr., Dexter, MI 48130, ph. 734-426-3921 fax 734-426-5090	
APPROVALS	DATE	ASSEMBLY, 1SC, TOP VIEW	
DRAWN: DLJ	9/22/00		
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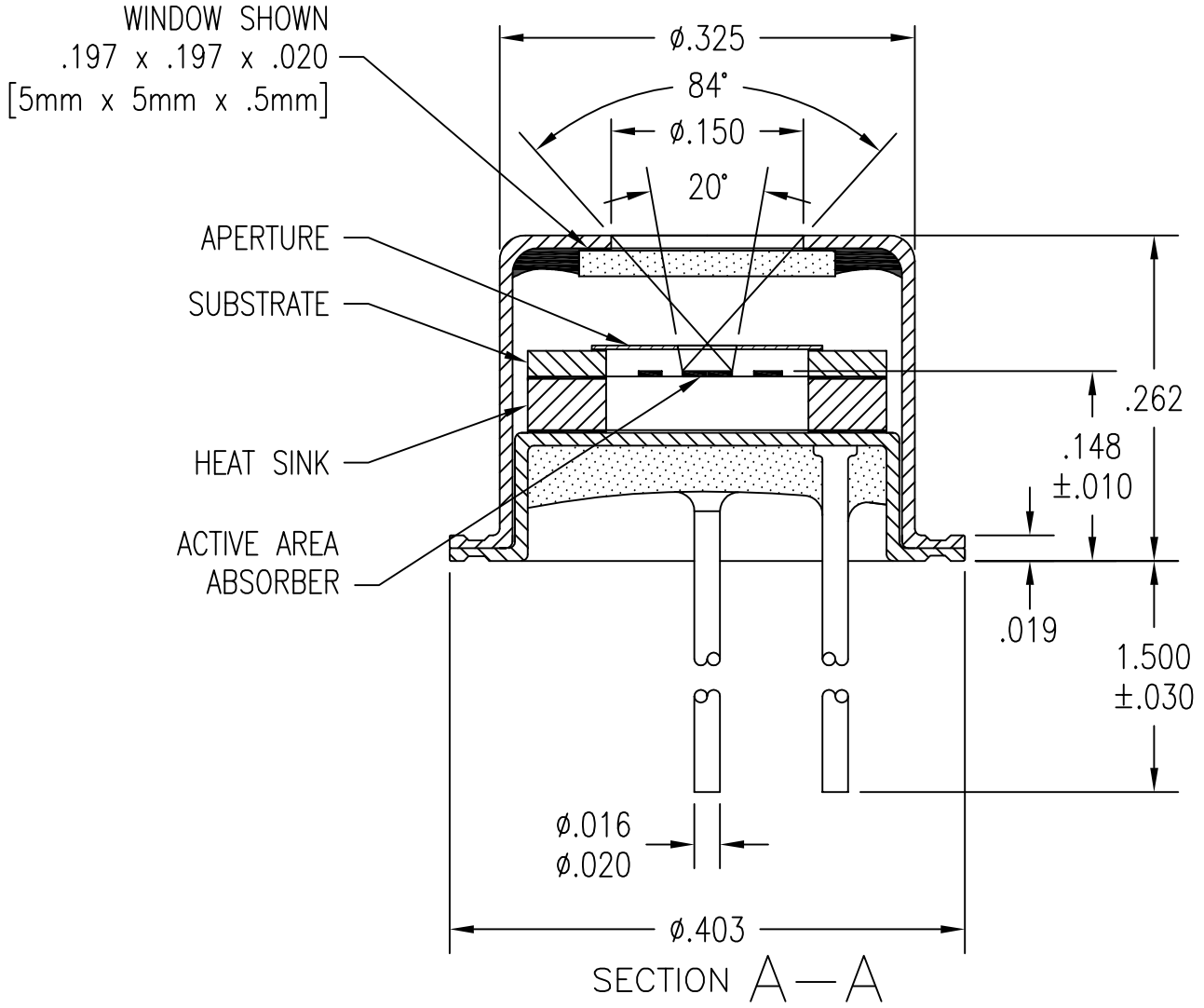

NOTE: SOME FEATURES REMOVED FOR CLARITY

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ASSEMBLY, 1SC,
CROSS SECTION

SIZE:	SCALE:	DWG. NO.	REV.	PAGE:
A	7" = 1"	1005.2	A	2 OF 2

DRC PART NO.	MATERIAL:	FINISH: