DeXter RESEARCH CENTER

We're Everywhere It Matters…

T34 Compensated

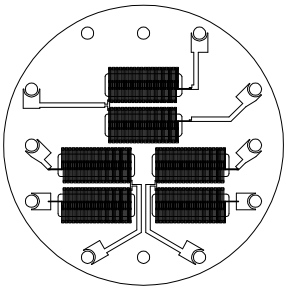
Thin Film Based Thermopile Detector

Features: A three-channel compensated (6 element) thin-film thermopile in a TO-8 package. Each active area is 3.16mm x 0.4mm. Offers thermal compensation to minimize effect of sudden ambient temperature change. Internal aperture minimizes channel-to-channel crosstalk while increasing sensitivity.

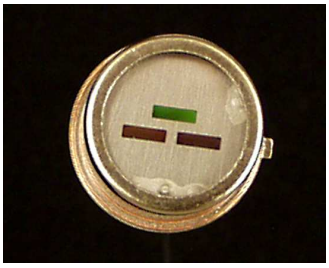
Options: 1) See Standard Windows and Filters for list of optical filter options. **2)** Internal 30kΩ 5% NTC chip thermistor provides ambient package temperature measurement. *See* Thermistor Options p/n: MT04. See Thermopile Configuration Table for more options.

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

Benefit: 3-channels in a TO-8 package with moderate output.



Detector circuit overlay



T34

Technical Specifications

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

Parameter	Min	Typical	Max	Symbol	Units	Comments
Active Area size		3.16 x .4		AA	mm	Hot junction size, per element.
Element Area		1.264		A	mm^2	
Number of Junctions		40				Per element.
Number of Channels		3 Compensated				Per detector package.
Output Voltage	90	115	130	V_s	µV	DC, H=330µW/cm^2 (3)
Signal-to-Noise Ratio	4,545	7,099	11,404	SNR	√Hz	DC, SNR=V_s/V_n
Responsivity	21.6	27.6	31.2	$\mathcal{R}$	V/W	DC, $\mathcal{R}=V_s/HA$ (2)
Resistance	8	16	24	R	kΩ	Detector element
Temperature Coefficient of $\mathcal{R}$		-.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	11.4	16.2	19.8	V_n	nV/√Hz	$V_n^2=4kTR$
Noise Equivalent Power	.37	.59	.92	NEP	nW/√Hz	DC, NEP= V_n HA/V_s (2)
Detectivity	1.2	1.9	3.1	D*	10^8cm√Hz/W	DC, $D^*=V_s/V_n H\sqrt{A}$ (2)
Time Constant		38		$\mathcal{T}$	ms	Chopped, -3dB point (1)
Field of View		NA		FOV	Degrees	Not Applicable
Package Type		TO-8 with 12 Pins				Standard package hole size: ∅.437"
Element Matching		5	10	$\mathcal{M}$	%	$\mathcal{M}=\lvert V_A-V_B\rvert/V_B$ (2)
Element Separation		NA			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/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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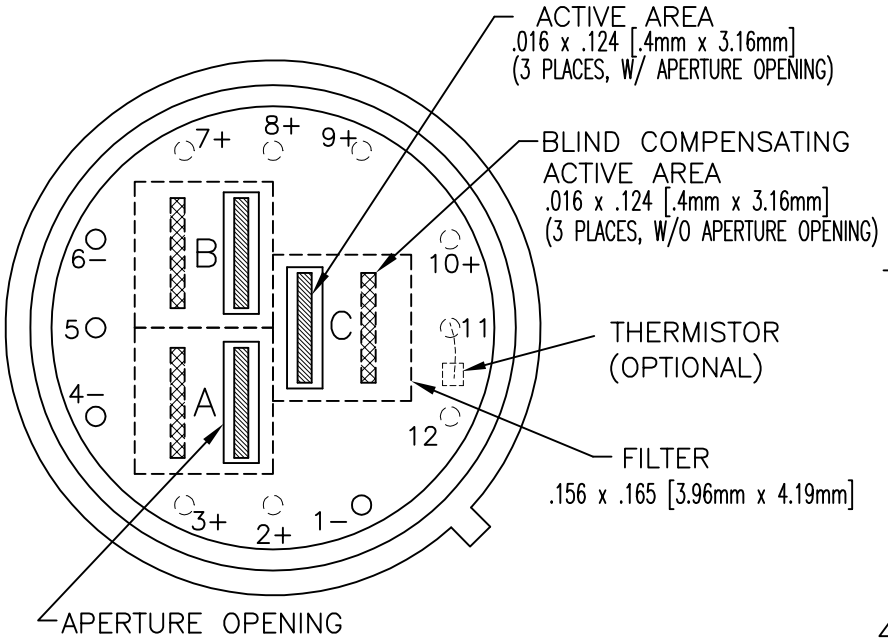
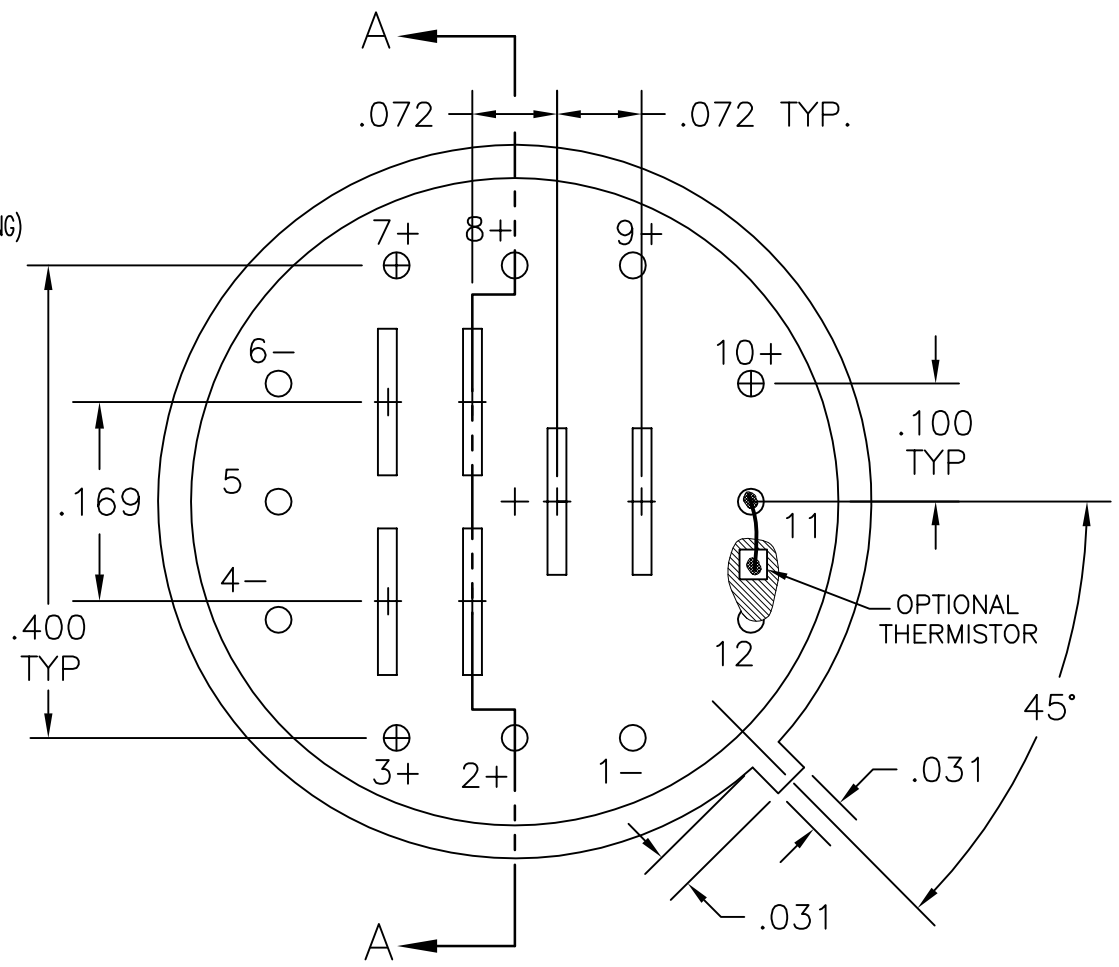


TOP VIEW
WITH APERTURE
WITHOUT COVER
.75X SCALE



TOP VIEW

WITHOUT COVER, FILTER, OR APERTURE

PIN	ELEMENT	DESCRIPTION	P/N
2 3	A(ACTIVE)+ A(BLIND)+		
7 8	B(BLIND)+ B(ACTIVE)+		
9 10	C(ACTIVE)+ C(BLIND)+		
1,4, 5,6	COMMON −		
11 12	THERMISTOR (OPTIONAL)		

NOTES:
1−APERTURE SUPPORTED BY PINS 1,4,5,6
2−SOME FEATURES NOT SHOWN FOR CLARITY

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES.
TOLERANCES ARE:
FRACTIONS ± DECIMALS .XX ± .01 .XXX ± .005 ANGLES ±

APPROVALS		DATE
DRAWN:	DLJ	1/3/11
CHECKED:		
ENGINEERED:		
APPROVED:		

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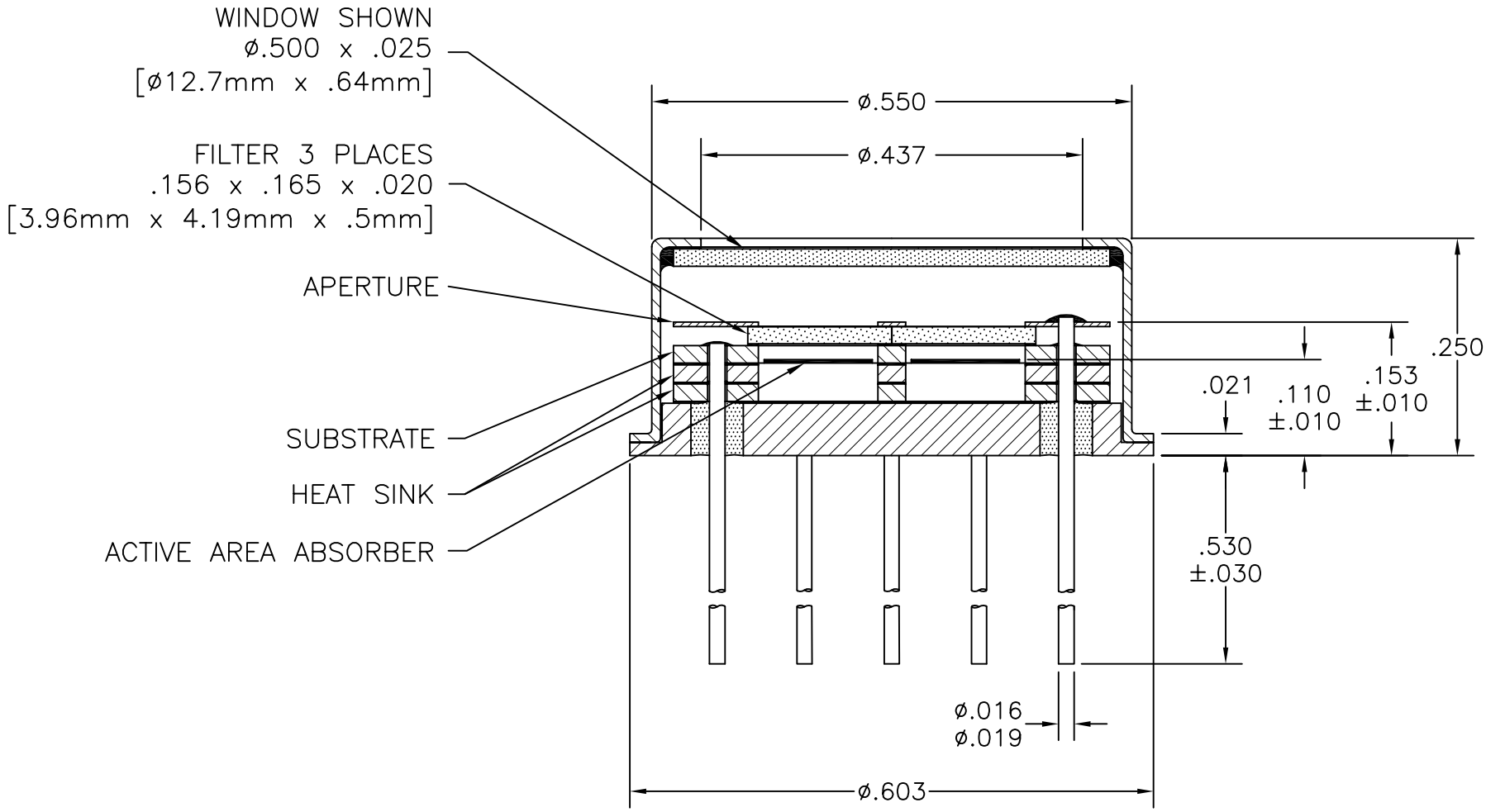
ASSEMBLY,T34 , RESISTANCE WELD, TOP VIEW

SIZE:	SCALE:	DWG. NO.	REV.	PAGE:
A	6" : 1"	1058.1	D	1 OF 2

DRC PART NO.	MATERIAL:	FINISH:



SECTION A–A

NOTES:
SOME FEATURES NOT SHOWN FOR CLARITY.

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES. TOLERANCES ARE: FRACTIONS ± DECIMALS .XX ± .01 .XXX ± .005 ANGLES ±		
APPROVALS		DATE
DRAWN:	DLJ	12/16/10
CHECKED:		
ENGINEERED:		
APPROVED:		

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ASSEMBLY, T34 RESISTANCE WELD W/ HEAT SINK, CROSS SECTION

SIZE:	SCALE:	DWG. NO.	REV.	PAGE:
A	5.5 : 1	1058.2	A	2 OF 2

MATERIAL: FINISH: