

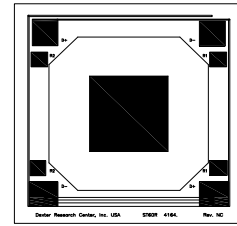


PRELIMINARY

ST60 LCC & ST60R LCC

Silicon Based Thermopile Detector

Features: A single-channel silicon-based thermopile in a LCC package for surface mount assembly in a small active area of 0.61mm x 0.61mm. Time constant of 18ms with Nitrogen encapsulation gas. Delivers a very low Temperature Coefficient of Responsivity of $-0.04\%/^{\circ}\text{C}$. This detector has a very short thermal shock response to ambient temperature change.

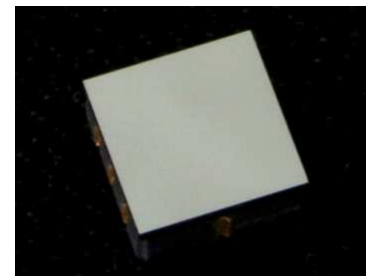


Detector circuit overlay

Options: 1) See [Standard Windows and Filters](#) for list of optical filter options. 2) **ST60R LCC** version offers a low-cost (20% tolerance) poly-silicon resistor to be used as a PTC thermistor. 3) Internal 30k Ω 5% NTC chip thermistor provides ambient package temperature measurement. See [Thermistor Options](#) p/n: DC-4005 See [Thermopile Configuration Table](#) for more options.

Applications: Excellent for non-contact temperature, and horizon sensor.

Benefit: Low cost surface mount assembly and small active area size with medium output.



ST60 LCC Package

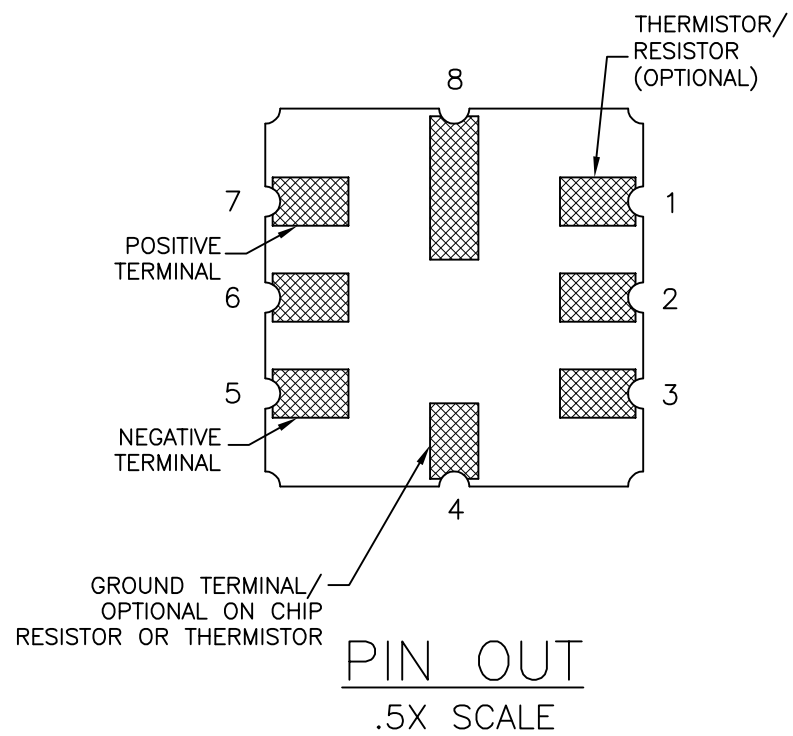
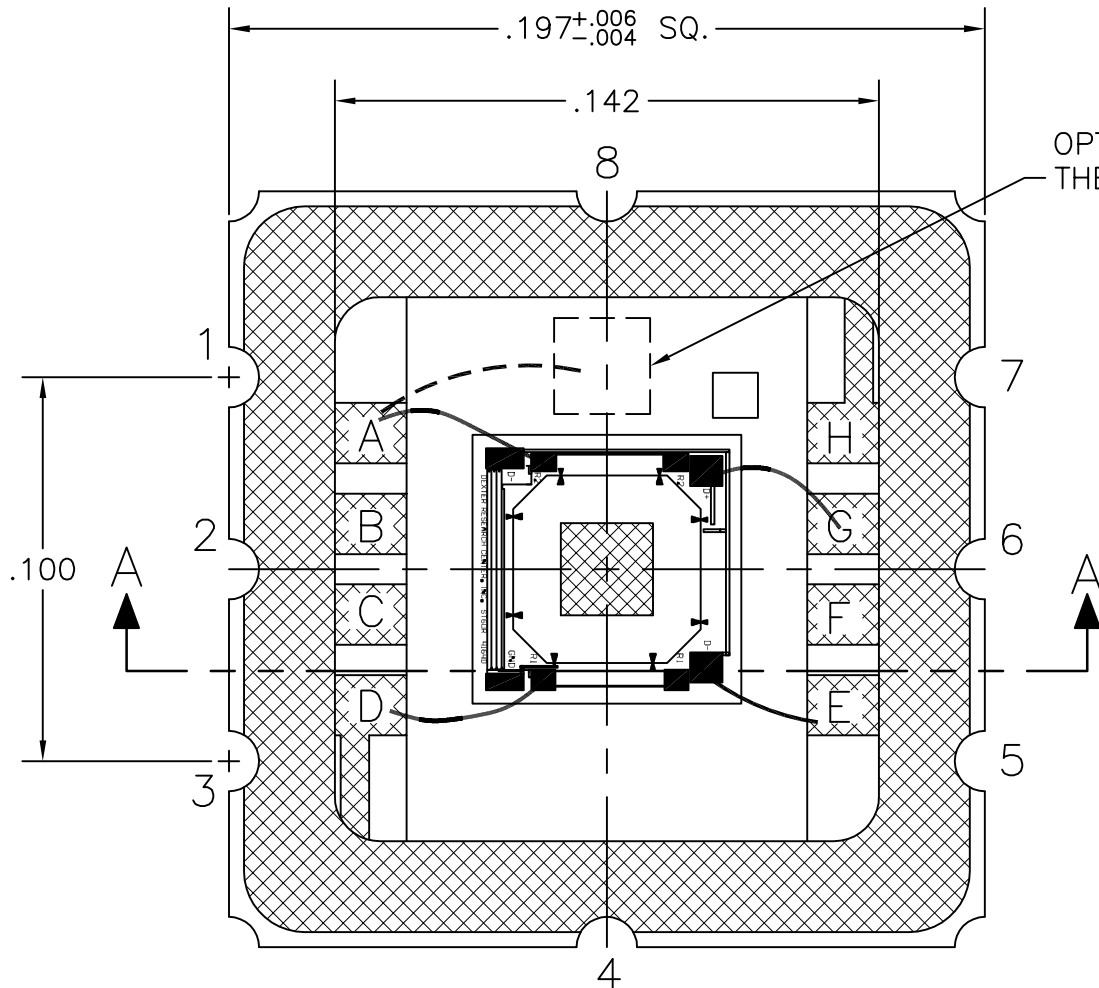
Technical Specifications

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

Parameter	Min	Typical	Max	Symbol	Units	Comments
Active Area size	.61 x .61			AA	mm	Hot junction size, per element.
Element Area	.37			A	mm ²	
Number of Junctions	80					Per element.
Number of Channels	1					Per detector package.
Output Voltage	50	62	74	V _s	μV	DC, H=330 $\mu\text{W}/\text{cm}^2$ (3)
Signal-to-Noise Ratio	1,381	1,981	2,891	SNR	$\sqrt{\text{Hz}}$	DC, SNR=V _s /V _n
Responsivity	40.7	50.5	60.3	\mathcal{R}	V/W	DC, $\mathcal{R}=V_s/HA$ (2)
Resistance	45	60	70	R	k Ω	Detector element
Temperature Coefficient of \mathcal{R}	-.04				%/ $^{\circ}\text{C}$	Best linear fit, 0° to 85°C (1)
Temperature Coefficient of R	.11				%/ $^{\circ}\text{C}$	Best fit, 0° to 85°C (1)
Noise Voltage	25.6	31.3	36.2	V _n	nV/ $\sqrt{\text{Hz}}$	V _n ² =4kTR
Noise Equivalent Power	.42	.62	.89	NEP	nW/ $\sqrt{\text{Hz}}$	DC, NEP= V _n HA/V _s (2)
Detectivity	.69	.98	1.44	D*	10 ⁸ cm $\sqrt{\text{Hz}}/\text{W}$	DC, D*=V _s /V _n H \sqrt{A} (2)
Time Constant	18			\mathcal{T}	ms	Chopped, -3dB point (1)
Field of View	45°/81°			FOV	Degrees	See Assembly Drawings for FOV Description.
Package Type	LCC					Standard package hole size: $\varnothing.069''$
Operating Temperature	-50		100	T _a	$^{\circ}\text{C}$	
ST60R Thermistor Option	~24	30	~36	R _T	k Ω	PTC Poly-Silicon resistor on detector die.
ST60R Thermistor Temperature Coefficient of R	.107	.11	.113		%/ $^{\circ}\text{C}$	$\Delta R/(\Delta T)$, Best fit, 0° to 85°C (1)

General Specifications: Flat spectral response from 100nm to $> 100\mu\text{m}$. Linear signal output from 10⁻⁶ to 0.1W/cm². Maximum incident radiance 0.1W/cm², damage threshold $\geq .5\text{W}/\text{cm}^2$

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
W/O FILTER

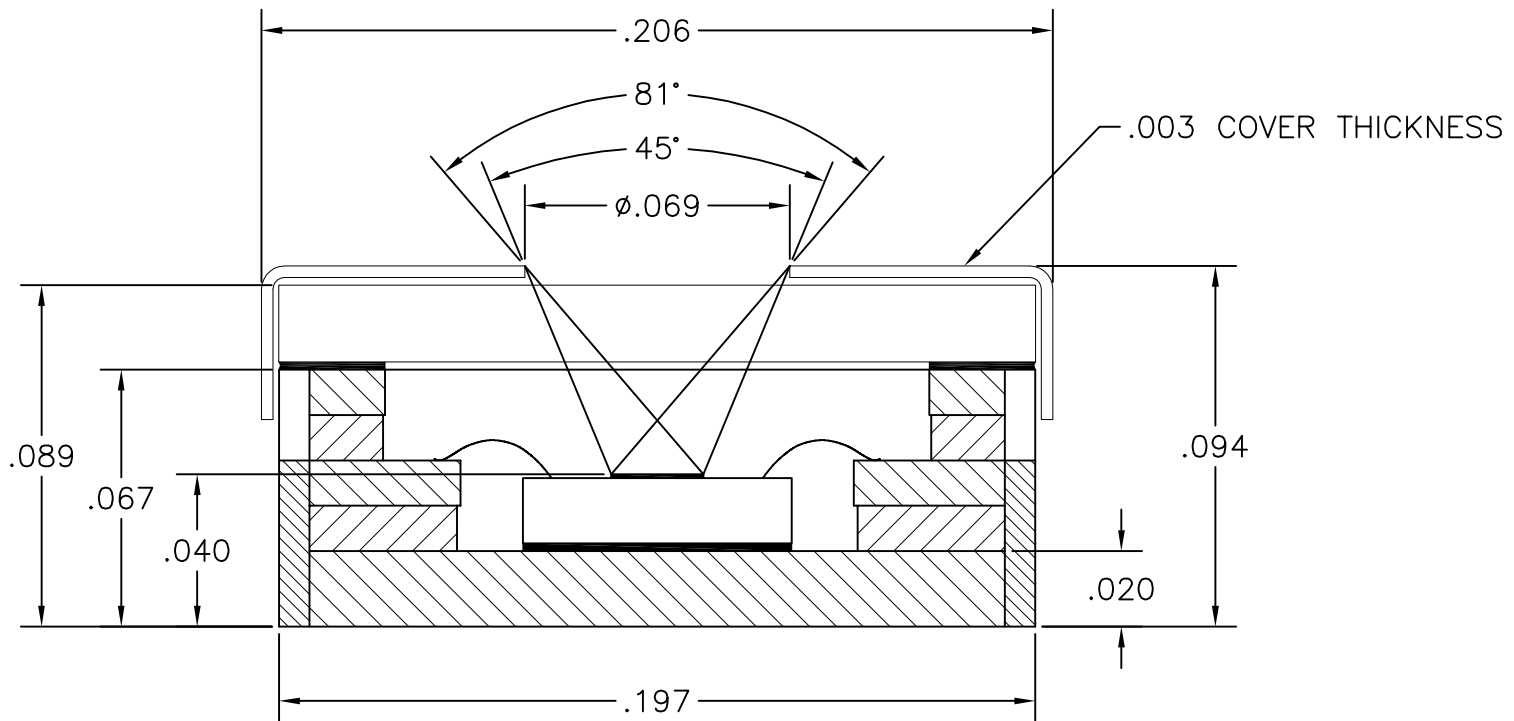
PIN OUT
.5X SCALE

PRELIMINARY

PIN OUT	
1	OPTIONAL RESISTOR/ THERMISTOR
2	NO CONNECTION
3	NO CONNECTION
4	CASE GROUND / OPTIONAL RESISTOR OR THERMISTOR
5	D-
6	NO CONNECTION
7	D+
8	NO CONNECTION

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES. TOLERANCES ARE:	
FRACTIONS ±	DECIMALS .XX ± .XXX ± .005
ANGLES ±	
APPROVALS	DATE
DRAWN: DLJ	4/26/10
CHECKED:	
ENGINEERED:	
APPROVED:	

DEXTER RESEARCH CENTER, Inc. 7300 Huron River Dr., Dexter, MI 48130, ph. 734-426-3921 fax 734-426-5090			
ASSMBLY, ST60/ST60R, LCC, TOP VIEW			
SIZE: A	SCALE: 20" = 1"	DWG. NO. 1204.1	REV. PAGE: A 1 OF 2
DRC PART NO.	MATERIAL:	FINISH:	



SECTION A-A

PRELIMINARY

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN INCHES. TOLERANCES ARE:		DEXTER RESEARCH CENTER, Inc.			
		7300 Huron River Dr., Dexter, MI 48130, ph. 734-426-3921 fax 734-426-5090			
FRACTIONS ±	DECIMALS .XX ± .01 .XXX ± .005	ANGLES ±		ASSEMBLY, ST60, LCC	
APPROVALS		DATE		CROSS SECTION	
DRAWN:		5/31/06		SIZE: A	SCALE: 20" = 1"
CHECKED:		DWG. NO.	REV.	PAGE:	
ENGINEERED:		1204.2	NC	2 OF 2	
APPROVED:		DRC PART NO.	MATERIAL:	FINISH:	