

Mosaic Core Specification

Core Number: C202S		Starter Kit Number: S202SP	Mktg Rev. 3	11/05/2021
Product Specifications:		Description		
Microbolometer	Uncooled Vanadium Oxide			
Pixel Pitch	12 Microns			
Spectral Response	7.8 - 14 Microns			
Sensor Resolution (Array Format)	200 (h) x 150 (v); 30,000 pixels			
Frame Rate	Slow Frame - <9Hz			
Non-Uniformity Correction (NUC)	Automatic NUC (with shutter)			
Video Output Interfaces	USB			
Power:				
Power Requirement	3.3-5.0V, <50mW (Core only), 300mW (Core + Coprocessor Board)			
Optical & Mechanical:				
Focal Length	2.2mm EFL			
F-number (Focal Length/aperture)	f/1.05			
Spatial Resolution (IFOV, center)	5.23			
Field of View (FOV)	61° Horizontal x 45° Vertical			
Detection Range	186m (based on Johnson Criteria)			
Recognition Range	46m (based on Johnson Criteria)			
Identification Range	27m (based on Johnson Criteria)			
Distance to Spot Ratio	31:1			
Core Size/ Core Weight	10mm x 20mm x 21mm	Core Weight: 8 g		
Seek Software Development Kit:				
Supported Platforms	USB: Seek Linux, Windows, & Android SDK			
Output Formates (User selectable)	Linux / Windows SDK	Android SDK		
	16-bit filtered pre AGC	16-bit filtered pre AGC		
	32-bit ARGB post colorization.	32-bit ARGB post colorization in the bitmap image.		
	32-bit floating point or 16-bit fixed point	32-bit floating point or 16-bit fixed point thermography data.		
Imaging Specifications:		Calibrated Output in °C, °F, K		
Imaging Range	-40°C to +330°C at ambient operating temprature			
Thermography Accuracy	Center spot temperature greater of ±5°C or 5% between -10°C to 140°C			
	Center spot temperature greater of ±10°C or 10% (typical) above 140°C			
	All measured at 25°C ambient operating temperature and nominal measurement distance of 12 inches.			
	Temperature reported is Center Spot temperature, which is an average of the center 36 pixels.			
Sensor Sensitivity	65 mK (typical), <100 mK (max) @ 25°C			
Emmissivity	Factory default emissivity is set to 0.97. Emissivity is adjustable using the SDK.			
Environmental Conditions:				
Operating Temperature Range	-10°C to +60°C (-14°F to 140°F)			
Storage Temperature Range	-40°C to +80°C (-40°F to 176°F)			
Solar Protection	Yes			
Humidity	10%~95%RH, non-condensing			
Regulatory	ROHS, WEEE, REACH			
Accessories:				
Cushion	Yes			
Bracket	Yes			
Sensor Flex	No			
Coprocessor Board	No			
USB Flex	No			
Customer Responsibilities:				
IP Rating	N/A			
Shock/Vibe	Customer responsibility with proper integration into final product housing			

Refer to next page and Mosaic Core Engineering Datasheet

Overview:

Mosaic cores store unit-specific calibration data on the sensor head itself. This feature allows for easier system integration, improved thermal performance due to remote locating the processor, and reduced cost and size by allowing the user to integrate the coprocessor circuit into other electronics elsewhere in the system.

Seek Thermal's Mosaic cores must interface to a coprocessor that communicates with the Seek image processing pipeline in the SDK. There are two main options for integrating the coprocessor into a system.

Option 1:

Mosaic core part numbers that end in "P" or "PX" comes with a coprocessor board from Seek and have a simple USB interface for connecting to the customer's host processor running the SDK.

Option 2:

Mosaic core part numbers that end in "S" or "SX" require the customer to integrate the coprocessor into their own circuit design. Seek provides engineering documentation and reference designs to aid the customer in this design process.

For Option 2, Seek provides:

- 1) Schematic for coprocessor circuit
- 2) BOM for coprocessor circuit
- 3) Compiled binary file(s) for the coprocessor code.
- 4) Interface details for connecting the core to the coprocessor circuit on the system main board
- 5) Optional flex cables, if the user prefers to use the Seek design.
- 6) Seek SDK for implementation on user's Host Processor

For Option 2, the user will:

- Design the system main board around one of the coprocessor options (USB or SPI)
- Optionally design the flex connections if the Seek flex solutions are not appropriate.

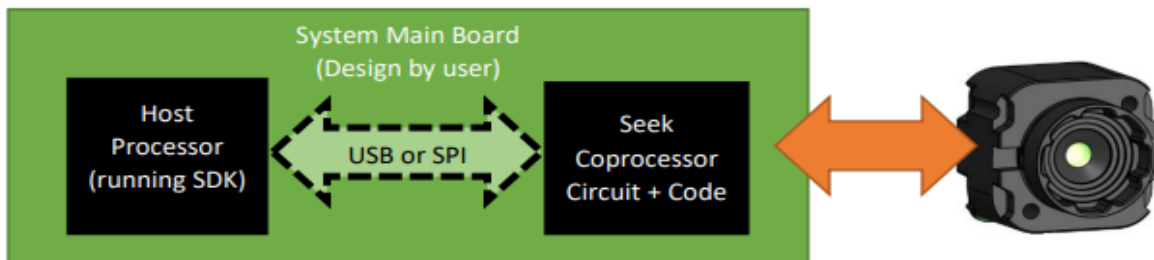


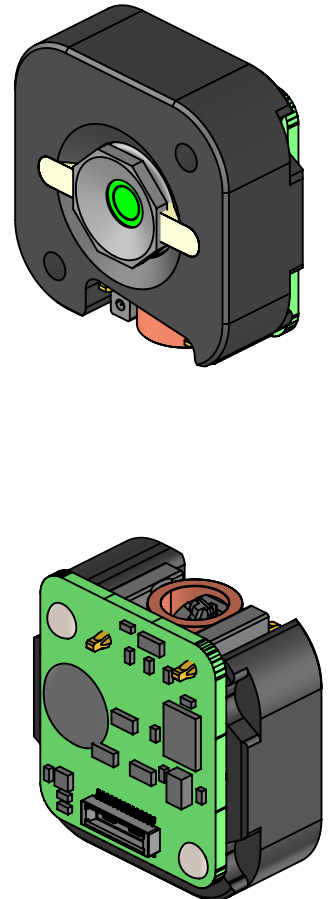
Figure 2: Coprocessor Option 2 Block Diagram

This document is not intended as a standalone comprehensive source of information required to design a system around the Mosaic cores. Please **consult Seek Thermal** and refer to **Mosaic Core Engineering Datasheet** for full design support.

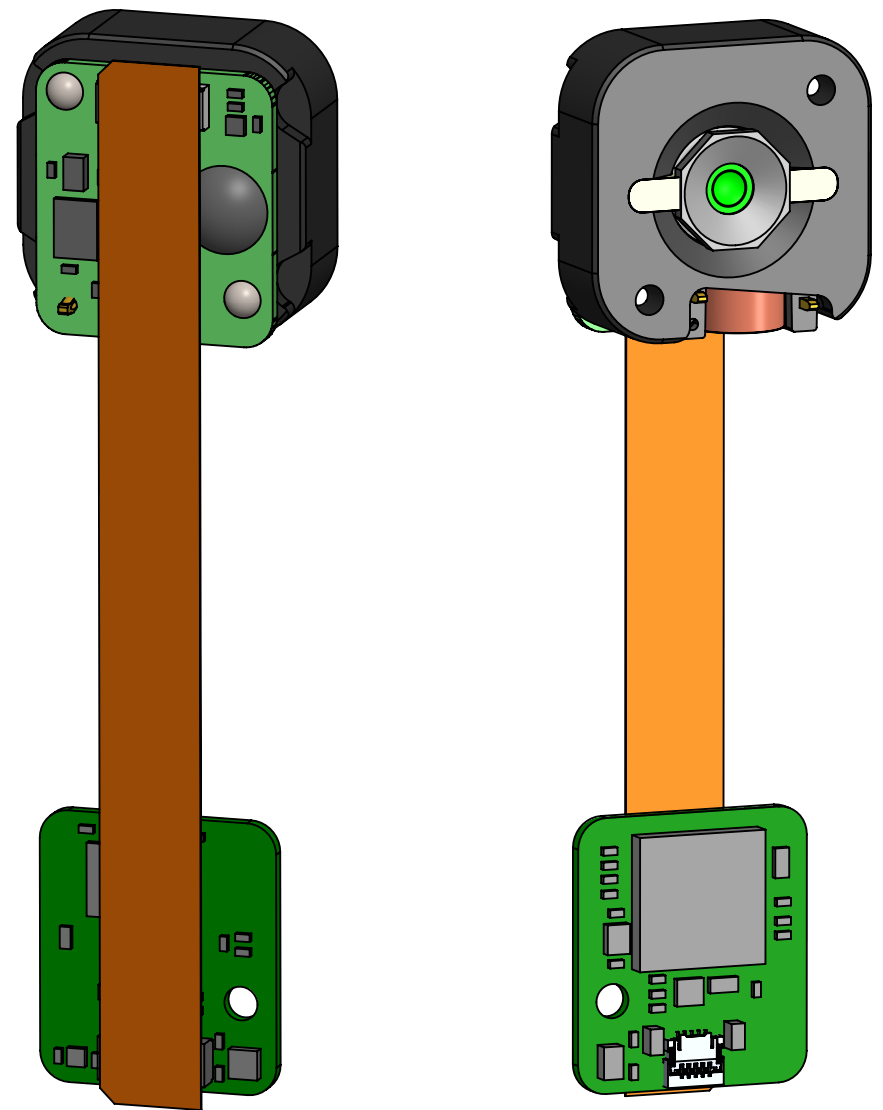
THIS DRAWING COVERS
THE FOLLOWING SKUS:

- C2*2*
- C3*2*
- S2*2*
- S3*2*

NO COPROCESSOR BOARD



"P" OPTION WITH COPROCESSOR BOARD



NOTES:

1. SEE 3D CAD FILE FOR FULL GEOMETRY.
2. KEEPOUT FOR SHUTTER CLEARANCE.
3. LENS ADHESIVE DOES NOT EXTEND ABOVE FRONT FACE.
4. THIS DESIGN IS NOT IPxx RATED.
5. ADHESIVE BUMP PRESENT ON <9Hz CORES.
6. PROCESSOR BOARD AND FLEX INCLUDED WITH "P" OPTION CORES.

MATERIAL	SEE NOTES	DRAWN	DLM	27MAR2019
FINISH	SEE NOTES	APPR.		
UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MM (IN) IN ACCORDANCE WITH ASME Y14.5-2009		THIRD ANGLE PROJECTION		
GENERAL TOLERANCES 0.5 TO 6 ±0.1 [.004] > 6 TO 30 ±0.2 [.008] > 30 TO 120 ±0.2 [.008] > 120 TO 400 ±0.3 [.012] ANGLES ±1°		PROPRIETARY AND CONFIDENTIAL THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SEEK THERMAL. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT WRITTEN PERMISSION IS PROHIBITED.		

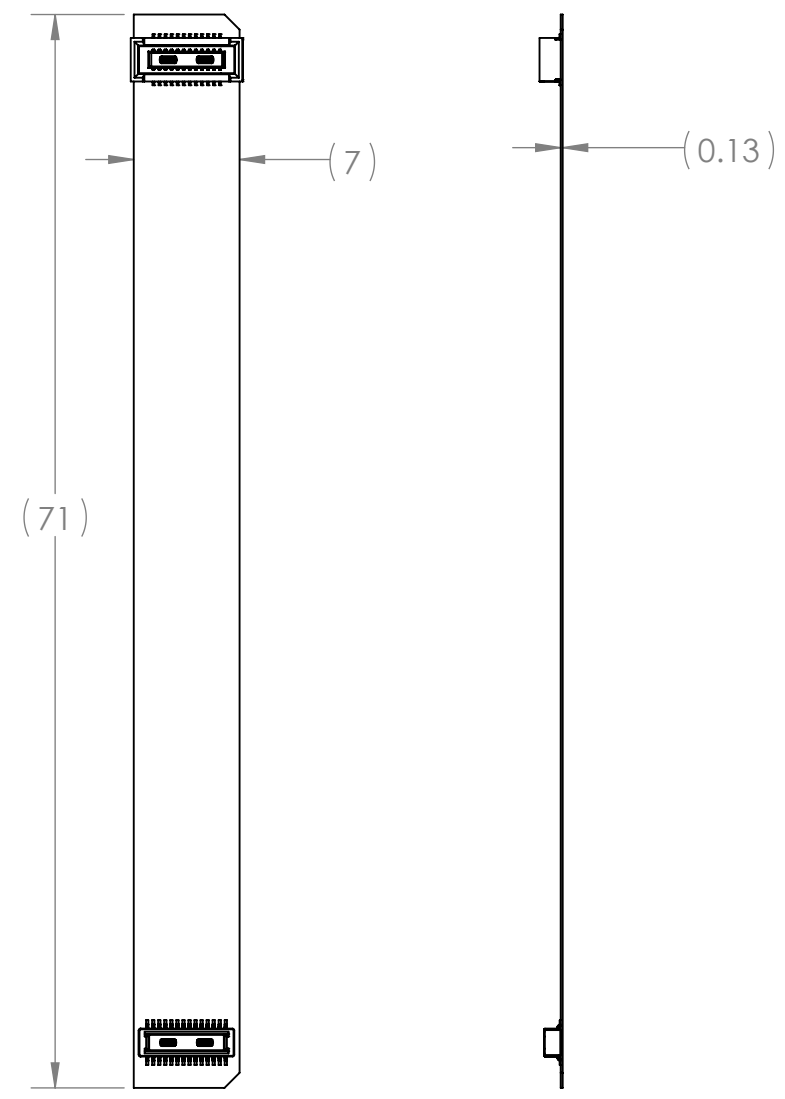
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TITLE: DOC, INTERFACE CONTROL
DRAWING, MECH, 2.2MM MOSAIC

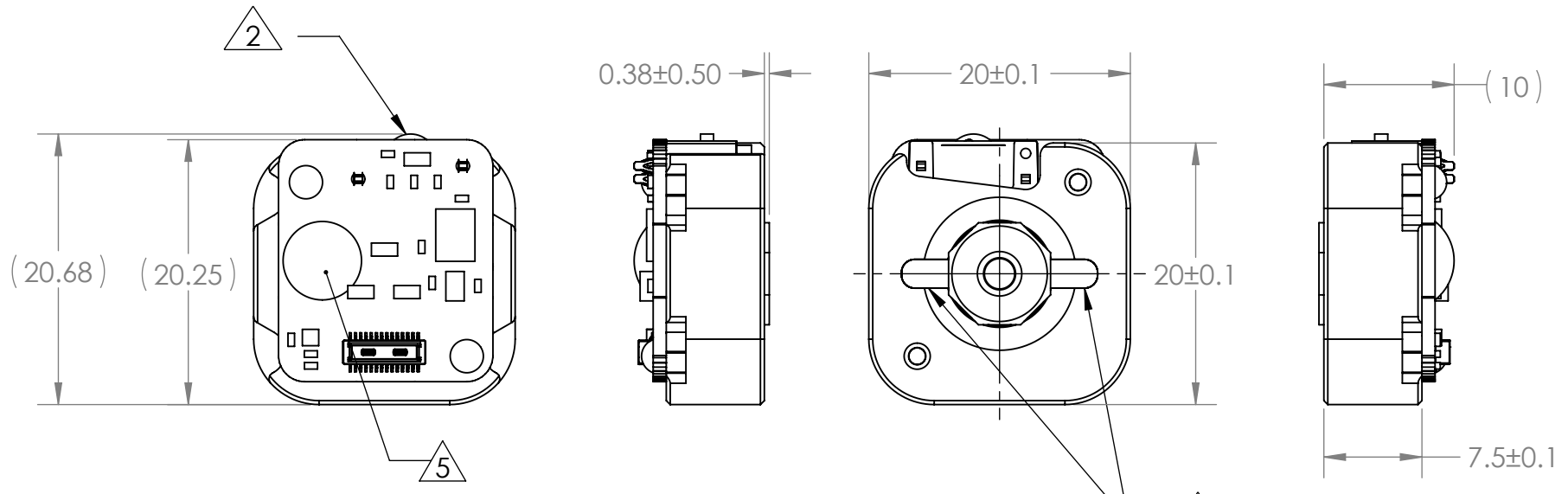
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8 7 6 5 4 3 2 1

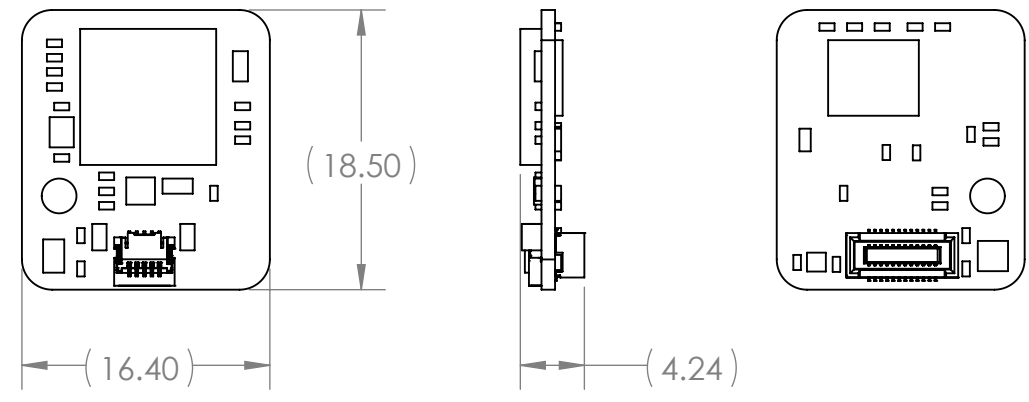
D
C
B
A



FLEX CABLE



THERMAL IMAGING CORE



COPROCESSOR BOARD

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SCALE: 2:1		SHEET 2 OF 2

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