

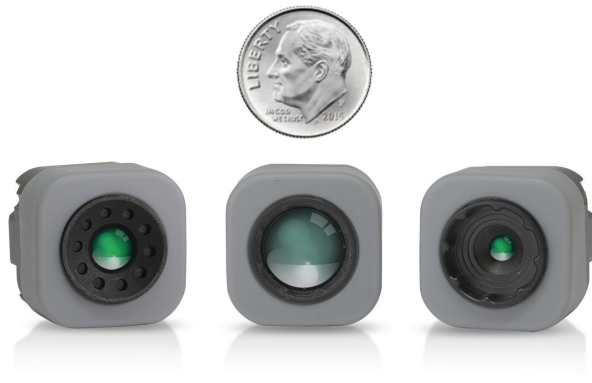
# MosaicCORE™

**HIGH PERFORMANCE, EASY TO USE  
AND RELIABLE THERMAL IMAGING  
CORES CONFIGURABLE FOR  
VARIOUS APPLICATIONS.**

## KEY CAMERA SPECS

- 200 x 150 & 320 x 240 Sensor Resolution
- 15° to 105° Field of View Options
- 40C to 330C (-40F to 626F) Detection
- Size (LxWxH) 10x20x21mm to 23x20x21mm
- Dual-Gain Smart Pixels
- Up to 32Hz and < 9Hz Frame Rate

**seek**  
thermal  
thermal.com



Implementing high-end thermal technology has never been this simple. Mosaic Core is configurable for a variety of applications, such as Surveillance & Security, Test & Measurement, Firefighting, Drones, PVS (Personal Vision Systems), Automotive, and much more. Mosaic Cores are designed for performance and versatility while enabling manufactures to build winning product lines with competitive pricing.

**Designed and Manufactured in Santa Barbara, California with Global Components.**

## KEY FEATURES

### High-Resolution Thermal Sensors

Choose a core with 30,000 or 76,800 temperature pixels with excellent image clarity and sensitivity

### Dual-Gain Smart Pixels

Each pixel automatically adjusts gain states to maximize resolution contrast when viewing hot and cold objects in the same scene

### 12 Micron Pixels

More resolution and temperature data packed into a physically tiny array enables small form factor applications and lower cost

### Options For <9Hz or Fast Frame

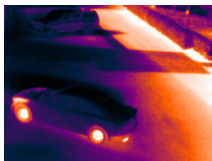
Perfect for regions where <9Hz is required and available up to 32Hz Fast Frame where higher frame rates are preferred and permitted

### Configurable To Meet Your Design Goals

Select the ideal thermal core for your project with options for resolution, field of view, frame rate and more

### Easy To Use Development Tools

Purchase a development Starter Kit and start imaging in seconds with Simple Viewer.



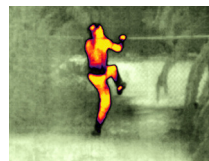
Security & Surveillance



Automotive



Test & Measurement



Personal Vision Systems



Firefighting



Drones

## DEVELOPER PORTAL ACCESS

Get access to SDKs, APIs, support documentation and other important tools to ensure your project is a success. SDKs available for Linux, Android and Windows.

**Please contact your sales representative for access to the Seek Developer Portal.**

TECHNICAL SUMMARY

200 x 150 RESOLUTION

| 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                                  | <9Hz or up to 32Hz  |                |   |                |  |
| Imaging Range <sup>1</sup>                  | -40°C to 330°C<br>Contact your sales rep for higher temperature applications  |                |   |                |  |
| Sensor Sensitivity                          | 65 mK (typical), <100 mK (max) @ 25°C   |                |   |                |  |
| Non-Uniformity Correction (NUC)             | Automatic NUC (with shutter)  |                |   |                |  |
| Video Output Interfaces                     | USB   |                |   |                |  |
| Supply Voltage                              | 3.3V to 5.0V  |                |   |                |  |
| Power: Core Only                            | <50mW   |                |   |                |  |
| Power: Core + Interface Board               | 300mW   |                |   |                |  |
| Output Formats (user selectable)            | Linux / Windows SDK   |                | Android SDK   |                |  |
|   | 16-bit filtered pre AGC.<br>32-bit ARGB post colorization.<br>32-bit floating point or 16-bit fixed point thermography data.  |                | 16-bit filtered pre AGC.<br>32-bit ARGB post colorization in the bitmap image.<br>16-bit fixed point thermography data. |                |  |
| Optics & Mechanical                         |   |                |   |                |  |
| Focal Length                                | 2.2mm   | 4.0mm          | 6.6mm   | 9.1mm          |  |
| F-number (focal length/aperture)            | f/1.05  | f/1.00         | f/1.26  | f/1.00         |  |
| Spatial Resolution (IFOV, center)           | 5.23  | 3.00           | 1.82  | 1.32           |  |
| HFOV  | 61°   | 35°            | 21°   | 15°            |  |
| VFOV  | 45°   | 26°            | 15°   | 12°            |  |
| Detection Range <sup>2</sup>                | 186m  | 333m           | 543m  | 758m           |  |
| Recognition Range <sup>2</sup>              | 46m   | 83m            | 136m  | 190m           |  |
| Identification Range <sup>2</sup>           | 27m   | 48m            | 78m   | 108m           |  |
| Distance to Spot Ratio                      | 31:1  | 56:1           | 91:1  | 126:1          |  |
| Ingress Protection                          | N/A   | IP67           | IP67  | IP67           |  |
| Core Dimensions Without Cushion (L x W x H) | 10 x 20 x 21mm  | 20 x 20 x 21mm | 23 x 20 x 21mm  | 20 x 20 x 21mm |  |
| Core Weight                                 | 8 g   | 12 g           | 12 g  | 12 g           |  |
| Focus                                       | Fixed   |                |   |                |  |
| Lens Material                               | Chalcogenide  |                |   |                |  |
| Thermography                                |   |                |   |                |  |
| Temperature Calibration                     | Calibrated Output in °C, °F, K  |                |   |                |  |
| Temperature Accuracy <sup>1,3</sup>         | The greater of ±5°C or 5% between 5°C to 140°C scene temperatures<br>Typical performance of ±10% between 140°C to 330°C scene temperatures<br>Contact your sales rep for higher temperature accuracy up to 330°C and beyond |                |   |                |  |
| Environmental                               |   |                |   |                |  |
| Operating Temperature Range                 | -10°C to 60°C<br>Contact your sales rep for higher operating temperature ranges   |                |   |                |  |
| Storage Temperature Range                   | -40°C to 80°C   |                |   |                |  |
| Solar Protection                            | Yes   |                |   |                |  |
| Humidity                                    | 10%~95%RH, non-condensing   |                |   |                |  |
| Regulatory                                  | ROHS, WEEE, REACH   |                |   |                |  |
| Documentation and Tools                     |   |                |   |                |  |
| Starter Kit                                 | Available   |                |   |                |  |
| Data Sheet                                  | Available   |                |   |                |  |
| Accessories                                 | Interface Board and Flexes  |                |   |                |  |

1. Specified at nominal 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. Contact Seek Thermal for performance at other nominal operating temperatures and measurement distances.
2. Based on Johnson Criteria.
3. Factory default emissivity is set to 0.97. Emissivity is adjustable using the SDK. See data sheet for more information.

**TECHNICAL SUMMARY**
**320 x 240 RESOLUTION**

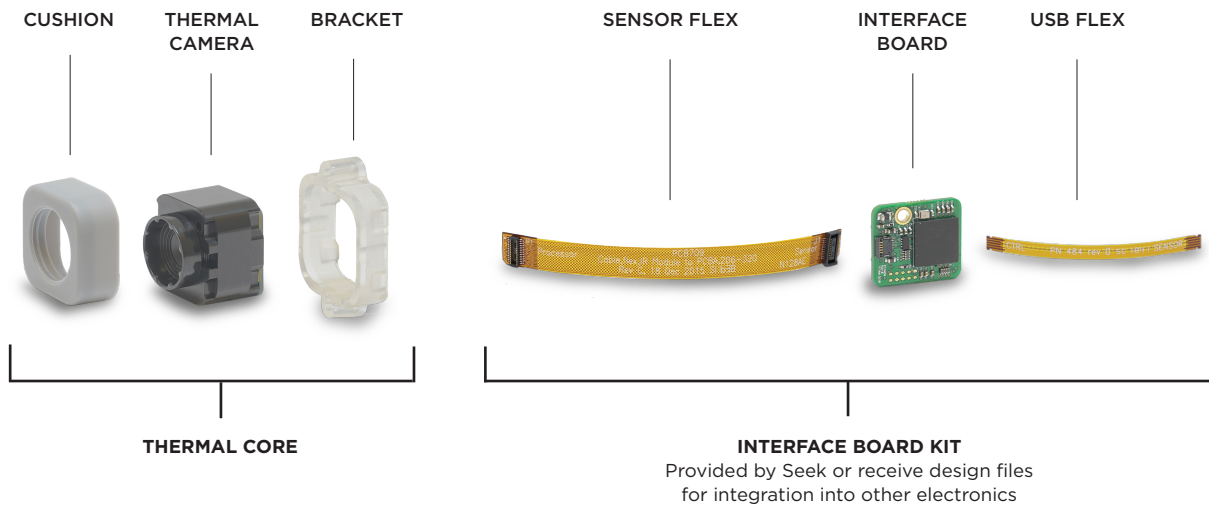
| Specifications                              |   | Description    |   |                |  |
|---|---|----------------|---|----------------|--|
| Microbolometer                              | Uncooled Vanadium Oxide   |                |   |                |  |
| Pixel Pitch                                 | 12 Microns  |                |   |                |  |
| Spectral Response                           | 7.8 - 14 Microns  |                |   |                |  |
| Sensor Resolution (Array Format)            | 320 (h) x 240 (v); 76,800 pixels  |                |   |                |  |
| Frame Rate                                  | <9Hz or up to 27Hz  |                |   |                |  |
| Imaging Range <sup>1</sup>                  | -40°C to 330°C<br>Contact your sales rep for higher temperature applications  |                |   |                |  |
| Sensor Sensitivity                          | 65 mK (typical), <100 mK (max) @ 25°C   |                |   |                |  |
| Non-Uniformity Correction (NUC)             | Automatic NUC (with shutter)  |                |   |                |  |
| Video Output Interfaces                     | USB   |                |   |                |  |
| Supply Voltage                              | 3.3V to 5.0V  |                |   |                |  |
| Power: Core Only                            | <50mW   |                |   |                |  |
| Power: Core + Interface Board               | 300mW   |                |   |                |  |
| Output Formats (user selectable)            | Linux / Windows SDK   |                | Android SDK   |                |  |
|   | 16-bit filtered pre AGC.<br>32-bit ARGB post colorization.<br>32-bit floating point or 16-bit fixed point thermography data.  |                | 16-bit filtered pre AGC.<br>32-bit ARGB post colorization in the bitmap image.<br>16-bit fixed point thermography data. |                |  |
| Optics & Mechanical                         |   |                |   |                |  |
| Focal Length                                | 2.2mm   | 4.0mm          | 6.6mm   | 9.1mm          |  |
| F-number (focal length/aperture)            | f/1.05  | f/1.00         | f/1.26  | f/1.00         |  |
| Spatial Resolution (IFOV, center)           | 5.23  | 3.00           | 1.82  | 1.32           |  |
| HFOV <sup>4</sup>                           | 105°<br>67° without vignetting  | 56°            | 34°   | 24°            |  |
| VFOV <sup>4</sup>                           | 75°<br>48° without vignetting   | 42°            | 25°   | 18°            |  |
| Detection Range <sup>2</sup>                | 186m  | 333m           | 543m  | 758m           |  |
| Recognition Range <sup>2</sup>              | 46m   | 83m            | 136m  | 190m           |  |
| Identification Range <sup>2</sup>           | 27m   | 48m            | 78m   | 108m           |  |
| Distance to Spot Ratio                      | 31:1  | 56:1           | 91:1  | 126:1          |  |
| Ingress Protection                          | N/A   | IP67           | IP67  | IP67           |  |
| Core Dimensions Without Cushion (L x W x H) | 10 x 20 x 21mm  | 20 x 20 x 21mm | 23 x 20 x 21mm  | 20 x 20 x 21mm |  |
| Core Weight                                 | 8 g   | 12 g           | 12 g  | 12 g           |  |
| Focus                                       | Fixed   |                |   |                |  |
| Lens Material                               | Chalcogenide  |                |   |                |  |
| Thermography                                |   |                |   |                |  |
| Temperature Calibration                     | Calibrated Output in °C, °F, K  |                |   |                |  |
| Temperature Accuracy <sup>1,3,4</sup>       | The greater of ±5°C or 5% between 5°C to 140°C scene temperatures<br>Typical performance of ±10% between 140°C to 330°C scene temperatures<br>Contact your sales rep for higher temperature accuracy up to 330°C and beyond |                |   |                |  |
| Environmental                               |   |                |   |                |  |
| Operating Temperature Range                 | -10°C to 60°C<br>Contact your sales rep for higher operating temperature ranges   |                |   |                |  |
| Storage Temperature Range                   | -40°C to 80°C   |                |   |                |  |
| Solar Protection                            | Yes   |                |   |                |  |
| Humidity                                    | 10%~95%RH, non-condensing   |                |   |                |  |
| Regulatory                                  | ROHS, WEEE, REACH   |                |   |                |  |
| Documentation and Tools                     |   |                |   |                |  |
| Starter Kit                                 | Available   |                |   |                |  |
| Data Sheet                                  | Available   |                |   |                |  |
| Accessories                                 | Interface Board and Flexes  |                |   |                |  |

- Specified at nominal 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. Contact Seek Thermal for performance at other nominal operating temperatures and measurement distances.
- Based on Johnson Criteria.
- Factory default emissivity is set to 0.97. Emissivity is adjustable using the SDK. See data sheet for more information.
- Actual usable FOV and temperature accuracy on 2.2mm lens may be less due to vignetting at the edges and corners.

Specifications and undocumented specifications are subject to change without notice.

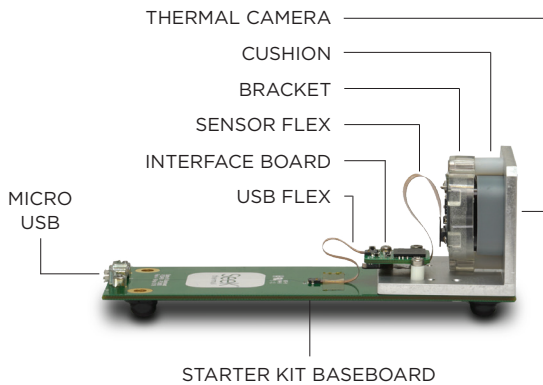
 For the most up-to-date specifications, visit [thermal.com/oem](http://thermal.com/oem)

## REQUIRED ELEMENTS



## MOSAIC CORE PART NUMBERS

| Resolution | Lens         | HFOV | Interface Board Kit | Frame Rate | Part Number |
|------------|--------------|------|---------------------|------------|-------------|
| 200 x 150  | 2.2mm f/1.05 | 61°  | Provided by Seek    | < 9Hz      | C202SP      |
|            |              |      |                     | Fast Frame | C212SPX     |
|            | 4.0mm f/1.00 | 35°  | Provided by Seek    | < 9Hz      | C204SP      |
|            |              |      |                     | Fast Frame | C214SPX     |
|            | 6.6mm f/1.26 | 21°  | Provided by Seek    | < 9Hz      | C206SP      |
|            |              |      |                     | Fast Frame | C216SPX     |
|            | 9.1mm f/1.00 | 15°  | Provided by Seek    | < 9Hz      | C209SP      |
|            |              |      |                     | Fast Frame | C219SPX     |
| 320 x 240  | 2.2mm f/1.05 | 105° | Provided by Seek    | < 9Hz      | C302NP      |
|            |              |      |                     | Fast Frame | C312NPX     |
|            | 4.0mm f/1.00 | 56°  | Provided by Seek    | < 9Hz      | C304SP      |
|            |              |      |                     | Fast Frame | C314SPX     |
|            | 6.6mm f/1.26 | 34°  | Provided by Seek    | < 9Hz      | C306SP      |
|            |              |      |                     | Fast Frame | C316SPX     |
|            | 9.1mm f/1.00 | 24°  | Provided by Seek    | < 9Hz      | C309SP      |
|            |              |      |                     | Fast Frame | C319SPX     |



It all starts with Starter Kits

Everything you need to start developing with Seek Thermal comes with a Starter Kit. In addition to receiving a development thermal camera, customers receive access to the Developer Portal with SDKs, APIs, and other important documentation to ensure your project is a success. Starter Kits enable your project team to begin development quickly and easily.

MOSAIC CORE STARTER KIT PART NUMBERS

| Resolution | Lens         | HFOV | Interface Board Kit | Frame Rate | Part Number |
|------------|--------------|------|---------------------|------------|-------------|
| 200 x 150  | 2.2mm f/1.05 | 61°  | Provided by Seek    | < 9Hz      | S202SP      |
|            |              |      |                     | Fast Frame | S212SPX     |
|            | 4.0mm f/1.00 | 35°  | Provided by Seek    | < 9Hz      | S204SP      |
|            |              |      |                     | Fast Frame | S214SPX     |
|            | 6.6mm f/1.26 | 21°  | Provided by Seek    | < 9Hz      | S206SP      |
|            |              |      |                     | Fast Frame | S216SPX     |
|            | 9.1mm f/1.00 | 15°  | Provided by Seek    | < 9Hz      | S209SP      |
|            |              |      |                     | Fast Frame | S219SPX     |
| 320 x 240  | 2.2mm f/1.05 | 105° | Provided by Seek    | < 9Hz      | S302NP      |
|            |              |      |                     | Fast Frame | S312NPX     |
|            | 4.0mm f/1.00 | 56°  | Provided by Seek    | < 9Hz      | S304SP      |
|            |              |      |                     | Fast Frame | S314SPX     |
|            | 6.6mm f/1.26 | 34°  | Provided by Seek    | < 9Hz      | S306SP      |
|            |              |      |                     | Fast Frame | S316SPX     |
|            | 9.1mm f/1.00 | 24°  | Provided by Seek    | < 9Hz      | S309SP      |
|            |              |      |                     | Fast Frame | S319SPX     |

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Seek Thermal engineers and manufactures affordable, high-resolution thermal imaging cameras and OEM thermal cores. Founded by industry pioneers who spent 40 years advancing the state of military and professional-grade thermal technologies, Seek Thermal has developed a breakthrough line of products at competitive price points making this technology more accessible to manufacturers and end users. The company's products serve the firefighting, law enforcement and commercial markets, among others, under its own brand and OEM offerings.