PixelSensor™
Multispectral Sensors

Multispectral Sensors for Compact Devices

PixelSensor™ multispectral sensors use on-chip filtering to pack up to 8 wavelength-selective photodiodes into a compact 9 mm x 9 mm array for simple integration into optical devices. A single PixelSensor replaces multiple components, helping OEMs shrink multi-wavelength instruments for applications including in vitro diagnostics, biochemical assays, solar radiation and colorimetry applications.

PixelSensor’s wafer-level optical filters split the spectrum into 8 discrete color bands and suppress out-of-band background light, improving contrast and sensitivity. PixelSensor offers wavelength selectivity (400-1010 nm), is available in OEM versions with user-defined spectral bands, and can be specified with optional electronics board and accessories for rapid prototyping and development.
**Photodiode Performance Characteristics**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Symbol</th>
<th>Test</th>
<th>Min</th>
<th>Typical</th>
<th>Max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark current</td>
<td>$I_D$</td>
<td>$V_R = 10V$</td>
<td>2</td>
<td>8</td>
<td></td>
<td>nA</td>
</tr>
<tr>
<td>Shunt resistance</td>
<td>$R_{sh}$</td>
<td>$V_R = 10mV$</td>
<td>100</td>
<td></td>
<td></td>
<td>MΩ</td>
</tr>
<tr>
<td>Junction capacity</td>
<td>$C_J$</td>
<td>$V_R = 0V; f=1kHz$</td>
<td>6</td>
<td>7</td>
<td>0.7</td>
<td>pF</td>
</tr>
<tr>
<td>Spectral range</td>
<td></td>
<td>Spot scan</td>
<td>400</td>
<td></td>
<td>1010</td>
<td>nm</td>
</tr>
<tr>
<td>Breakdown voltage</td>
<td>$V_{BR}$</td>
<td>$I = 10μA$</td>
<td>75</td>
<td></td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>Noise equivalent power</td>
<td>NEP</td>
<td>$V_R = 5V$</td>
<td>$= 10^{-14}$</td>
<td>5x10^-14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Response time</td>
<td>$t_R$</td>
<td>$R = 50Ω, V_R = 50V$</td>
<td>6.0</td>
<td></td>
<td></td>
<td>ns</td>
</tr>
</tbody>
</table>

**LCC Sensor**
- Spectral filters: Standard and custom 10-100 nm FWHM
- Photodiodes: Si, 1.0 x 0.8 mm
- Package: LCC 20

**LCC Dimensions**

**Optional Evaluation Housing**
- Mechanical fixture including:
  - 15.2 mm light guide
  - SM05 lens adapter
  - Fiber optic adapter for collimating lens

**OEM Board Specifications**
- Integration time: 1-1024 ms
- Gain reference: 20–5120 nA/nV
- Interface: USB 2.0
- Protocol: HID-compliant
- Software: Windows 32/64-bit compatible

**OEM Board Dimensions (inches/mm)**

- [Diagram of OEM Board Dimensions]