IR Detectors – B Series
High Performance Lead Selenide (PbSe) Single Channel Uncooled and Cooled Devices

KEY FEATURES

- Fast high sensitivity in 1-5 Micron Region
- Provides High Signal to Noise Performance for Wide Measurement Dynamic Range
- Fastest Response Speed for Mid-IR Applications
- High Reliability for Long Life
- Best Overall Performance for the 1-5 Micron Spectrum

The B Series single channel infrared detectors offer the best balance of performance and attributes for analyzing materials in the one to five-micron spectrum. The combination of high sensitivity, fast response time, and industry leading reliability assure consistent performance where and when it is needed.

High sensitivity maximizes measurement dynamic range for applications with trace elements. Real-time measurements are easily supported with the B Series fast response time. High durability and long life minimize repair and maintenance costs. With the goal of optimizing your system's performance, Opto Diode is committed to providing high quality, reliable products.

Available in a variety of standard configurations, customers can choose an assortment of options such as element size, cooling alternatives, and package type to suit a variety of system and application requirements. Cooled units provide additional sensitivity for very low-level signal detection and enhanced stability for environments where temperatures are in constant flux.

Opto Diode has been manufacturing and selling high performance PbS and PbSe infrared detectors for over 25 years. Having established a reputation for highly controlled manufacturing processes, customers can rely on consistent, repeatable performance and superior customer service. Supporting all stages of development, from early prototyping to high volume production, Opto Diode is dedicated to helping customers develop market-leading instruments. Custom requirements can be addressed by contacting the Opto Diode sales team.

Applications

- Gas analysis
  - Medical
  - Industrial
- Emissions monitoring
- Spectroscopy
- Process control systems
- Thermal imaging
- Defense and security
From Deep UV to Mid-IR
www.aptechnologies.co.uk

IR Detectors – B Series
High Performance Lead Selenide (PbSe) Single Channel
Uncooled and Cooled Devices

B Series Specifications

<table>
<thead>
<tr>
<th>Model #</th>
<th>Part #</th>
<th>Description - Size</th>
<th>Package Type</th>
<th>Active Element Area (mm²)</th>
<th>Element Operating Temp. (°C)</th>
<th>Peak Sensitivity Wavelength λp (µm)</th>
<th>D° Ap, 1000 Hz,1 Hz (cm Hz¹/₂ W⁻¹)</th>
<th>Responsivity¹ Ap, 1000 Hz (V/W)</th>
<th>Resistance (MΩ)</th>
<th>Time Constant (µsec)</th>
<th>Window Type</th>
<th>Absolute Ratings Storage &amp; Operating Temperature (°C)³</th>
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</thead>
<tbody>
<tr>
<td>BXP-15E</td>
<td>40785</td>
<td>1 mm x 1 mm</td>
<td>TO5</td>
<td>1</td>
<td>+23</td>
<td>3.6</td>
<td>3.8</td>
<td>7.0x10⁻⁶</td>
<td>2.0x10⁻⁶</td>
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<td>3.8</td>
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<td>1.5x10⁻⁴</td>
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<td>3.8</td>
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<td>1.5x10⁻⁵</td>
<td>6.0x10⁻⁶</td>
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<td>3.0x10⁻⁴</td>
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<td>-</td>
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<td>-</td>
<td>1.65x10⁻⁵</td>
<td>2.5x10⁻⁴</td>
<td>1.0 - 15.0</td>
</tr>
</tbody>
</table>

¹ Specifications apply at a bias voltage (Vbias) of 25 V/mm for cooled and 35 V/mm for uncooled detectors with either a 1 MΩ or 0.5 MΩ load resistor in series.
² Specifications apply at maximum cooling with a heat sink at +25 °C. Typical cooler power at max cooling: BXT1 0.8 V @ 1.5 A, BXT2 0.8 V @ 1.2 A, BX2S 1.9 V @ 1.2 A.
³ Max rated element temperature is 85 °C.

Revision May 7, 2018
Detector Spectral Response

Typical S/N vs Detector Voltage at 25 °C for a 2 mm x 2 mm Detector
TO5 Packages

40333

Package and Pin Out Information

<table>
<thead>
<tr>
<th>Pin No.</th>
<th>Function</th>
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<tr>
<td>1</td>
<td>Detector</td>
</tr>
<tr>
<td>2</td>
<td>Detector/Gnd</td>
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40055, 40573

<table>
<thead>
<tr>
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<th>Function</th>
<th>Color</th>
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<td>1</td>
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<td>Bare</td>
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<tr>
<td>2</td>
<td>Case Gnd</td>
<td>Bare</td>
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<td>3</td>
<td>Detector</td>
<td>Bare</td>
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40785

<table>
<thead>
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<th>Function</th>
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<tbody>
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<td>Detector</td>
</tr>
<tr>
<td>2</td>
<td>Case/Gnd</td>
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<tr>
<td>3</td>
<td>Detector</td>
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TO8 Packages

40070

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<th>Function</th>
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<td>Cooler (−)</td>
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<tr>
<td>4</td>
<td>Cooler (+)</td>
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<tr>
<td>9</td>
<td>Detector</td>
</tr>
<tr>
<td>10</td>
<td>Thermistor</td>
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<tr>
<td>11</td>
<td>Thermistor</td>
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<tr>
<td>12</td>
<td>Detector</td>
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IR Detectors – B Series
High Performance Lead Selenide (PbSe) Single Channel
Uncooled and Cooled Devices

40076, 40186, 40203

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<td>Cooler (–)</td>
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<tr>
<td>4</td>
<td>Cooler (+)</td>
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<tr>
<td>9</td>
<td>Detector</td>
</tr>
<tr>
<td>10</td>
<td>Thermistor</td>
</tr>
<tr>
<td>11</td>
<td>Thermistor</td>
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<tr>
<td>12</td>
<td>Detector</td>
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40521

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<th>Function</th>
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<td>Cooler (–)</td>
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<tr>
<td>4</td>
<td>Cooler (+)</td>
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<td>Detector</td>
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<td>10</td>
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**IR Detectors – B Series**
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**TO37 Packages**

**40065**

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<td>7</td>
<td>Detector</td>
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<tr>
<td>8</td>
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**40071, 40174**

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<td>Cooler (−)</td>
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IR Detectors – B Series
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**40136**

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<td>Detector</td>
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**40587**

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<td>8</td>
<td>Cooler (–)</td>
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<tr>
<td>9</td>
<td>Cooler (+)</td>
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</table>
IR Detectors – B Series
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Flateplate

40042

40044

ACTIVE AREA 0.089 0.069

ACTIVE AREA 0.089 0.069

2 CHARS D

0.100 -A-

0.180 -B-

0.033 0.020

0.060

0.120

2X ENCAPSULATED WITH STRAIN RELIEF EPOXY

Ø0.003 TINNED COPPER LEAD BOTH SIDES
IR Detectors – B Series
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Uncooled and Cooled Devices