

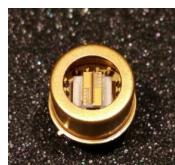
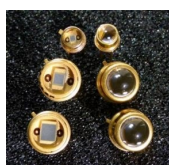


# PbS / PbSe 赤外線センサ



## ●PbSe シングルチャンネル赤外線検出器

赤外線検出器は一般に、熱型検出器または量子型検出器のいずれかに分類されます。硫化鉛(PbS)およびセレン化鉛(PbSe)検出器はどちらも、1.0-5.5μ m範囲のスペクトルに敏感な量子型(光導電型)赤外線検出器の一種です。光導電型検出器は、様々な量の赤外放射線に露光されると導電率が変化する薄膜半導体デバイスです。この変化は、装置を流れる電流量の増加をもたらし、検出器回路の出力は、検出器電流の変化または負荷抵抗の両端に生じる電圧の変化のいずれかになります。



同じ波長領域で使用される他の検出器と比較して、PbSおよびPbSe検出器はより高い検出能力および室温での動作という利点があり、コンパクト、高性能で経済的です。Infrared Materials社は、様々なご要望、ご用途に合わせて、豊富な製品ラインナップからのご選択、またはカスタム対応が可能です。

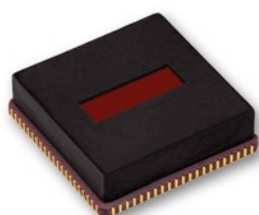
| センサ種類      | PbSセンサ       | PbSeセンサ      |
|------------|--------------|--------------|
| 波長         | 1.0 - 3.0 μm | 1.0 - 5.5 μm |
| 医療用ガス分析    |              | ●            |
| 環境排出ガス分析   |              | ●            |
| サーマルイメージング | ●            | ●            |
| 分光分析       | ●            | ●            |
| 火災、スパーク検知  | ●            | ●            |
| 水分量管理      | ●            |              |
| 材料分析       | ●            | ●            |
| 食品品質管理     | ●            |              |

## ●PbS/PbSe 256素子リニアアレイ検出器

Infrared Materials社の光導電型リニアマルチプレックスアレイは、品質および工程管理システム、IR分光法、ガスモニタリング、イメージングおよびサーモグラフィ等の用途に向けて設計されています。

### ■主な特徴:

- ・256個の正方形または長方形の素子、50μ mピッチ
- ・薄型84ピンリードレスチップキャリア(LCC)パッケージ
- ・TEクーラーとサーミスタによる温度制御
- ・USBデジタルコントローラボード(オプション)



## ●PbSe 4チャンネル赤外線検出器

1つのパッケージに2~4個の個別の光チャンネルを備えた多素子アセンブリです。

### ■主な特徴:

- ・各種バンドパスフィルタの利用可能
- ・個別の超高感度光チャンネル
- ・コンパクトなTO-5パッケージ
- ・気密封止による耐環境性

### ■NDIRガス測定用(例):

- 素子1 HC CWL = 3.44 +/-0.03μ m
- 素子2 REF CWL = 3.84 +/-0.04μ m
- 素子3 CO2 CWL = 4.26 +/-0.04μ m
- 素子4 CO CWL = 4.64 +/-0.05μ m



## PbS Detector Performance Summary

| Model Number                                                                                                                         | Element Size | WL Peak Signal | D*<br>λpk, 630Hz, 1Hz                                | Responsivity<br>(λpk, 630Hz) VW-1 |                                         | Dark Resistance | Time Constant | Operating Temp | ΔT at            | Package Options |         |      |        |       |          |
|--------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------|------------------------------------------------------|-----------------------------------|-----------------------------------------|-----------------|---------------|----------------|------------------|-----------------|---------|------|--------|-------|----------|
|                                                                                                                                      | (mm)         |                |                                                      | (μm)                              | (cm Hz <sup>1/2</sup> W <sup>-1</sup> ) |                 |               |                | Minimum          |                 | Typical | (MΩ) | (μsec) | (° C) | Max Cool |
|                                                                                                                                      |              |                |                                                      |                                   |                                         |                 |               |                |                  |                 |         |      |        |       | (° C)    |
| Flatplate Detectors:                                                                                                                 |              |                |                                                      |                                   |                                         |                 |               |                |                  |                 |         |      |        |       |          |
| A1                                                                                                                                   | 1x 1         | 2.4 typ        | 8.0×10 <sup>10</sup> min<br>1.0×10 <sup>11</sup> typ | 530,000                           | 800,000                                 | 0.2 – 3.5       | 100 – 400     | 25             | N/A              | Flatplate       |         |      |        |       |          |
| A2                                                                                                                                   | 2x 2         |                |                                                      | 270,000                           | 400,000                                 |                 |               |                |                  | Flatplate       |         |      |        |       |          |
| A3                                                                                                                                   | 3x 3         |                |                                                      | 170,000                           | 260,000                                 |                 |               |                |                  | Flatplate       |         |      |        |       |          |
| A6                                                                                                                                   | 6x 6         |                | 7.0×10 <sup>10</sup> min                             | 90,000                            | 140,000                                 |                 |               |                |                  | Flatplate       |         |      |        |       |          |
| A10                                                                                                                                  | 10x 10       |                | 6.0×10 <sup>10</sup> min                             | 50,000                            | 75,000                                  |                 |               |                |                  | Flatplate       |         |      |        |       |          |
| Ambient Packaged Detectors:                                                                                                          |              |                |                                                      |                                   |                                         |                 |               |                |                  |                 |         |      |        |       |          |
| A1-5                                                                                                                                 | 1x 1         | 2.4 typ        | 8.0×10 <sup>10</sup> min<br>1.0×10 <sup>11</sup> typ | 530,000                           | 800,000                                 | 0.2 – 3.5       | 100 – 400     | 25             | N/A              | TO-5            |         |      |        |       |          |
| A2-5                                                                                                                                 | 2x 2         |                |                                                      | 270,000                           | 400,000                                 |                 |               |                |                  | TO-5            |         |      |        |       |          |
| A3-5                                                                                                                                 | 3x 3         |                |                                                      | 170,000                           | 260,000                                 |                 |               |                |                  | TO-5            |         |      |        |       |          |
| A6-8                                                                                                                                 | 6x 6         |                | 7.0×10 <sup>10</sup> min                             | 90,000                            | 140,000                                 |                 |               |                |                  | TO-8            |         |      |        |       |          |
| A10-3                                                                                                                                | 10x 10       |                | 6.0×10 <sup>10</sup> min                             | 50,000                            | 75,000                                  |                 |               |                |                  | TO-3            |         |      |        |       |          |
| 2 Watt TE Cooled Detectors: Typical cooling power at or near max cooling: 0.9 volts @ 1.2 amps                                       |              |                |                                                      |                                   |                                         |                 |               |                |                  |                 |         |      |        |       |          |
| A1-7C3T                                                                                                                              | 1x 1         | 2.5 typ        | 1.0×10 <sup>11</sup> min<br>1.5×10 <sup>11</sup> typ | 1,300,000                         | 2,000,000                               | 2.0 – 15.0      | 1250 – 2500   | -35            | 55 min<br>60 typ | TO-37           |         |      |        |       |          |
| A2-7C3T                                                                                                                              | 2x 2         |                |                                                      | 660,000                           | 1,000,000                               |                 |               |                |                  | TO-37           |         |      |        |       |          |
| A3-7C3T                                                                                                                              | 3x 3         |                |                                                      | 430,000                           | 640,000                                 |                 |               |                |                  | TO-37           |         |      |        |       |          |
| 3 Watt TE Cooled Detectors: Typical cooling power at or near max cooling: 1.8 volts @ 1.2 amps                                       |              |                |                                                      |                                   |                                         |                 |               |                |                  |                 |         |      |        |       |          |
| A1-8C4T                                                                                                                              | 1x 1         | 2.7 typ        | 2.0×10 <sup>11</sup> min<br>3.0×10 <sup>11</sup> typ | 1,400,000                         | 2,100,000                               | 2.0 – 20.0      | 1750 – 3500   | -50            | 70 min<br>75 typ | TO-8, TO-66     |         |      |        |       |          |
| A2-8C4T                                                                                                                              | 2x 2         |                |                                                      | 700,000                           | 1,100,000                               |                 |               | -45            |                  | TO-8, TO-66     |         |      |        |       |          |
| A3-8C4T                                                                                                                              | 3x 3         |                |                                                      | 430,000                           | 650,000                                 |                 |               | -45            |                  | TO-8, TO-66     |         |      |        |       |          |
| A6-8C2T                                                                                                                              | 6x 6         |                | 1.0×10 <sup>11</sup> min                             | 240,000                           | 360,000                                 |                 |               | -25            | 50min<br>55 typ  | TO-8, TO-66     |         |      |        |       |          |
| Specifications apply using 500°K blackbody, a bias of 50 V/mm across the detector and a one Megohm load resistor in series.          |              |                |                                                      |                                   |                                         |                 |               |                |                  |                 |         |      |        |       |          |
| TE cooled specs apply at or near max cooling from a +25°C heatsink. Units are hermetically sealed with a sapphire or Silicon window. |              |                |                                                      |                                   |                                         |                 |               |                |                  |                 |         |      |        |       |          |
| Max rated element temperature is +65°C.                                                                                              |              |                |                                                      |                                   |                                         |                 |               |                |                  |                 |         |      |        |       |          |

Specifications apply using 500°K blackbody, a bias of 50 V/mm across the detector and a one Megohm load resistor in series.

TE cooled specs apply at or near max cooling from a +25°C heatsink. Units are hermetically sealed with a sapphire or Silicon window.

Max rated element temperature is +65°C.

## PbSe Detector Performance Summary

| Model Number                                                                                                                                                                                                                              | Element Size | WL Peak Signal | D*<br>λpk, 1050Hz, 1Hz       | Responsivity<br>(lpk, 1050Hz) V/W-1 |         | Dark Resistance       | Time Constant    | Operating Temp | ΔT at             | Package Options |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------|------------------------------|-------------------------------------|---------|-----------------------|------------------|----------------|-------------------|-----------------|
|                                                                                                                                                                                                                                           | (mm)         | (μm)           | (cm Hz1/2 W-1)               | Minimum                             | Typical | (MΩ)                  | (μsec)           | (° C)          | Max Cool<br>(° C) |                 |
|                                                                                                                                                                                                                                           |              |                |                              |                                     |         |                       |                  |                |                   |                 |
| Flatplate Detectors:                                                                                                                                                                                                                      |              |                |                              |                                     |         |                       |                  |                |                   |                 |
| B1                                                                                                                                                                                                                                        | 1x 1         | 3.8 typ        | 1.2×1010 min<br>1.8×1010 typ | 20,000                              | 40,000  | 0.1 – 3.5<br>0.8 typ  | 2 typ<br>5 max   | 25             | N/A               | Flatplate       |
| B2                                                                                                                                                                                                                                        | 2x 2         |                |                              | 10,000                              | 20,000  |                       |                  |                |                   | Flatplate       |
| B3                                                                                                                                                                                                                                        | 3x 3         |                | 9.0×109 min<br>7.5×109 min   | 6,500                               | 13,000  |                       |                  |                |                   | Flatplate       |
| B6                                                                                                                                                                                                                                        | 6x 6         |                |                              | 3,250                               | 6,500   |                       |                  |                |                   | Flatplate       |
| B10                                                                                                                                                                                                                                       | 10x 10       |                |                              | 1,950                               | 3,900   |                       |                  |                |                   | Flatplate       |
| Ambient Packaged Detectors:                                                                                                                                                                                                               |              |                |                              |                                     |         |                       |                  |                |                   |                 |
| B1-5                                                                                                                                                                                                                                      | 1x 1         | 3.8 typ        | 1.4×1010 min<br>2.0×1010 typ | 22,000                              | 44,000  | 0.1 – 3.5<br>0.8 typ  | 2 typ<br>5 max   | 25             | N/A               | TO-5            |
| B2-5                                                                                                                                                                                                                                      | 2x 2         |                |                              | 11,250                              | 22,500  |                       |                  |                |                   | TO-5            |
| B3-5                                                                                                                                                                                                                                      | 3x 3         |                | 1.2×1010 min<br>1.0×1010 min | 7,400                               | 14,800  |                       |                  |                |                   | TO-5            |
| B6-8                                                                                                                                                                                                                                      | 6x 6         |                |                              | 3,700                               | 7,400   |                       |                  |                |                   | TO-8            |
| B10-3                                                                                                                                                                                                                                     | 10x 10       |                |                              | 2,200                               | 4,400   |                       |                  |                |                   | TO-3            |
| 2 Watt TE Cooled Detectors: Typical cooling power at or near max cooling: 0.9 volts @ 1.2 amps                                                                                                                                            |              |                |                              |                                     |         |                       |                  |                |                   |                 |
| B1-7C3T                                                                                                                                                                                                                                   | 1x 1         | 4.3 typ        | 1.6×1010 min<br>3.0×1010 typ | 66,000                              | 100,000 | 1.0 – 15.0<br>5.0 typ | 9 typ<br>20 max  | -35            | 55 min<br>60 typ  | TO-37           |
| B2-7C3T                                                                                                                                                                                                                                   | 2x 2         |                |                              | 33,000                              | 50,000  |                       |                  |                |                   | TO-37           |
| B3-7C3T                                                                                                                                                                                                                                   | 3x 3         |                |                              | 22,000                              | 33,000  |                       |                  |                |                   | TO-37           |
| 3 Watt TE Cooled Detectors: Typical cooling power at or near max cooling: 1.8 volts @ 1.2 amps                                                                                                                                            |              |                |                              |                                     |         |                       |                  |                |                   |                 |
| B1-8C4T                                                                                                                                                                                                                                   | 1x 1         | 4.5 typ        | 2.0×1010 min<br>3.5×1010 typ | 126,000                             | 190,000 | 1.0 – 20.0<br>6 typ   | 12 typ<br>25 max | -50            | 70 min<br>75 typ  | TO-8, TO-66     |
| B2-8C4T                                                                                                                                                                                                                                   | 2x 2         |                |                              | 63,000                              | 95,000  |                       |                  | -45            |                   | TO-8, TO-66     |
| B3-8C4T                                                                                                                                                                                                                                   | 3x 3         |                |                              | 38,000                              | 56,000  |                       |                  | -45            |                   | TO-8, TO-66     |
| B6-8C2T                                                                                                                                                                                                                                   | 6x 6         |                | 1.6×1010 min                 | 18,000                              | 27,000  |                       |                  | -25            | 50 min<br>55 typ  | TO-8, TO-66     |
| Ambient specifications apply using 500°K blackbody and bias of 50 V/mm across the detector and 1 Megohm load resistor in series.                                                                                                          |              |                |                              |                                     |         |                       |                  |                |                   |                 |
| TE Cooled specifications apply using 500°K blackbody and bias of 35 V/mm across the detector and 1 Megohm load resistor in series at or near max cooling from a +25°C heatsink. Units are hermetically sealed with sapphire or Si window. |              |                |                              |                                     |         |                       |                  |                |                   |                 |
| Max rated element temperature is +85°C.                                                                                                                                                                                                   |              |                |                              |                                     |         |                       |                  |                |                   |                 |

Ambient specifications apply using 500°K blackbody and bias of 50 V/mm across the detector and 1 Megohm load resistor in series.

TE Cooled specifications apply using 500°K blackbody and bias of 35 V/mm across the detector and 1 Megohm load resistor in series at or near max cooling from a +25°C heatsink. Units are hermetically sealed with sapphire or Si window.

Max rated element temperature is +85°C.



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