# Extended InGaAs Photodiodes
# IG19-Series

## Description

The IG19-series is a panchromatic PIN photodiode with a nominal wavelength cut-off at 1.9 µm. This series has been designed for demanding spectroscopic and radiometric applications. It offers excellent shunt resistance in combination with superior responsivity over a wide range.

## Features

- 50 % cut-off wavelength >= 1.87 µm
- Typical peak responsivity: 1.15 A/W
- Excellent temperature stability
- Reduced edge effect

## Applications

- Spectrophotometer
- Diode laser monitoring



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## Optical Characteristics, Specifications @ 25°C [c]

| Part Number | Diameter [µm] | 50% Cut off Wavelength[a] [µm] | Peak Wavelength[a] [µm] | Peak Responsivity[a] [A/W] | | Responsivity @ 520 nm [a,d] [A/W] | | Responsivity @ 1500 nm [a] [A/W] | | Responsivity @ 1700 nm[a] [A/W] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Typ. | Min. | Typ. | Min. | Typ. | Min. | Typ. | Min. | Typ. |
| IG19X250S4i | 250 | 1.87 | 1.75 | 1.1 | 1.15 | TBD | 0.1 | 0.77 | 0.96 | 0.9 | 1.05 |
| IG19X1000S4i | 1000 | 1.87 | 1.75 | 1.1 | 1.15 | TBD | 0.1 | 0.77 | 0.96 | 0.9 | 1.05 |

[a] Parameter tested on batch level.
[b] Responsivity measured at 0 V Bias.
[c] Data are prior to window integration.
[d] Preliminary data.

## Electro-Optical Characteristics, Specifications @ 25°C

| Part Number | Diameter [µm] | Shunt Impedance @ $V_R$= 10 mV[b] [MOhm] | | Dark Current @ $V_R$= 0.25 V[b] [nA] | | Peak D* [a] [cm $Hz^{1/2}$/W] | | Peak NEP[a] [W/$Hz^{1/2}$] | | Capacitance @ $V_R$= 0 V[a] [pF] |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Min. | Typ. | Typ. | Max. | Min. | Typ. | Typ. | Max. | Typ. |
| IG19X250S4i | 250 | 8.0 | 16 | 5 | 50 | 1.2 E12 | 1.7 E+12 | 2.9 E-14 | 4.1 E-14 | 60 |
| IG19X1000S4i | 1000 | 0.8 | 1.6 | 40 | 400 | 7.6 E+11 | 1.1 E+12 | 0.9 E-13 | 1.3 E-13 | 1040 |

[a] Parameter tested on batch level
[b] Parameter 100% tested

## Thermoelectrically Cooled InGaAs Detectors

| Part Number | Diameter [µm] | Operating Temperature [°C] | Shunt Impedance @ $V_R$= 10 mV[b] [MOhm] | | Peak D* [a] [cm $Hz^{1/2}$/W] | Peak NEP[a] [W/$Hz^{1/2}$] | Capacitance @ $V_R$= 0 V[a] [pF] |
|---|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Typ. | Typ. | Typ. |
| IG19X1000T7 | 1000 | -20 | 30 | 105 | 8.8E+12 | 1.1E-14 | 1040 |
| IG19X1000T9 | 1000 | -40 | 160 | 400 | 1.5E+13 | 6.6E-15 | 1040 |

[a] Parameter tested on batch level
[b] Parameter 100% tested



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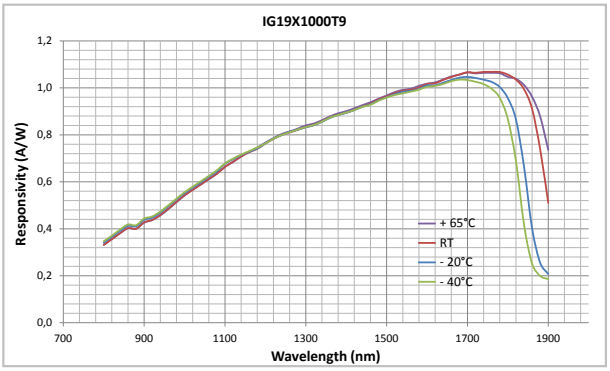
## Absolute Maximum Ratings

| | | Min. | Max. |
|---|---|---|---|
| Storage Temperature [°C] | | -55 | +125° |
| Operating Temperature [°C] | | -40 | +85 |
| Reverse Bias, cw [V] | | - | 1 |
| Forward Current, cw [mA] | | - | 1 |
| Soldering Temperature, 5 sec. [°C] | | - | 260 |
| ESD Damage Threshold, Human Body Model Class 0*, [V] | | 0 | <250 |
| TE Cooler Voltage [V] | T7<br>T9 | -<br>- | 0.8<br>3.7 |
| TE Cooler Current [A] | T7<br>T9 | -<br>- | 1.9<br>1.2 |

*ANSI/ ESD STN5. 1-2007

Fig. 1: Spectral Response



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## Nomenclature

| C- | I | G | 1 | 9 | X | 1 | 0 | 0 | 0 | S | 4 | i | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| Chip only |
|---|

| Type |
|---|
| Extended InGaAs PIN Photodiode |

| Diameter | | |
|---|---|---|
| 250 | = | 250 µm |
| 1000 | = | 1 mm |

| Package Style | | |
|---|---|---|
| S4i | - | TO-46, isolated |
| S4ix | - | TO-46, no window |
| G1i | - | TO-39, isolated |
| G1ix | - | TO-39, no window |
| T7 | - | TO-37, single stage TEC |
| T9 | - | TO-66, dual stage TEC |
| M2 | - | 2 pad PCB SMD |
| L5 | - | TO-46 lens cap |

Standard window: Borosilicate glass

**Package drawings, TEC and thermistor curves can be found on a separate datasheet.**

## Product Changes

LASER COMPONENTS reserves the right to make changes to the product(s) or information contained herein without notice. No liability is assumed as a result of their use or application.

## Ordering Information

Products can be ordered directly from LASER COMPONENTS or its representatives. For a complete listing of representatives, visit our website at www.lasercomponents.com



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