LASER COMPONENTS®

Extended InGaAs Photodiodes IG26-Series

Description

The IG26-series is a panchromatic PIN photodiode with a nominal cut-off wavelength at 2.6 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 spectral range.

Features

- 50 % cut-off wavelength > 2.45 µm
- Typical peak responsivity: 1.45 A/W
- Excellent temperature stability
- Reduced edge effect

Applications

- Spectrophotometer
- Diode laser monitoring
- Non-contact temperature measurement
- Flame control
- Moisture monitoring

Versions

- Uncooled:
  TO-can, chip only
- Cooled:
  TE1, TE2, TE3

Germany & Other Countries
Laser Components Germany GmbH

France
Laser Components S.A.S.

United Kingdom
Laser Components (UK) Ltd.

Nordic Countries
Laser Components Nordic AB

USA
Laser Components USA, Inc.

Optical Characteristics, Specifications @ 25 °C [c]

Part Number	Diameter [µm]	50% Cut off Wavelength[a] [µm]	Peak Wavelength[a] [µm]	Peak Responsivity [a,b] [A/W]		Responsivity @ 520 nm [a,b,d] [A/W]		Responsivity @ 1600 nm [a,b] [A/W]		Responsivity @ 1900 nm [a,b] [A/W]	
			Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.	Min.	Typ.
IG26X250S4i	250	≥2.45	2.25+/- 0.1	1.30	1.50	TBD	0.1	0.7	1.0	1.08	1.36
IG26X500S4i	500										
IG26X1000S4i	1000										
IG26X1300S4i	1300										
IG26X2000G1i	2000										
IG26X3000G1i	3000										

[a] Parameter tested on batch level at T =25°C.
[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] [kOhm]		Dark Current @ V_R = 0.25 V [b] [µA]		Peak D* [a] f = 1 kHz [cm Hz½/W]		Peak NEP [a] f = 1 kHz [W/Hz½]	
		Min.	Typ.	Typ.	Max.	Min.	Typ.	Max.	Typ.
IG26X250S4i	250	25	60	2	8	8.3 E+10	1.2 E+11	6.0 E-13	4.2 E-13
IG26X500S4i	500	10	25	4	25	7.4 E+10	1.2 E+11	1.0 E-12	6.0 E-13
IG26X1000S4i	1000	3	9	8	75	5.7 E+10	1.0 E+11	1.8 E-12	1.0 E-12
IG26X1300S4i	1300	1	4	15	150	3.7 E+10	7.6 E+10	3.0 E-12	1.5 E-12
IG26X2000G1i	2000	0.6	1.5	30	300	3.6 E+10	5.8 E+10	3.9 E-12	2.4 E-12
IG26X3000G1i	3000	0.25	0.7	75	750	2.8 E+10	4.8 E+10	6.0 E-12	3.6 E-12

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

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Electrical Characteristics, Specifications @ 25 °C

Part Number	Diameter [µm]	Capacitance @ V_R= 0 V [a] [pF]	Forward Voltage [V]
		Typ.	Typ.
IG26X250S4i	250	35	0.48
IG26X500S4i	500	140	
IG26X1000S4i	1000	580	
IG26X1300S4i	1300	1040	
IG26X2000G1i	2000	1920	
IG26X3000G1i	3000	3200	

[a] Parameter tested on batch level

Thermoelectrically Cooled InGaAs Detectors

Part Number	Diameter [µm]	Operating Temperature [°C]	Shunt Impedance @ V_R= 10 mV [b] [kOhm]		Peak D* [a] [cm Hz½/W]	Peak NEP [a] [W/Hz½]	Capacitance @ V_R= 0 V [a] [pF]
			Min.	Typ.	Typ.	Typ.	Typ.
IG26X250T7	250	-10	-	-	-	-	35
IG26X1000T7	1000		15	75	3.9 E+11	3.5 E-13	580
IG26X1300T7	1300		-	-	-	-	1040
IG26X2000T7	2000		3	15	1.8 E+11	7.8 E-13	1925
IG26X3000T7	3000		-	-	-	-	3200
IG26X250T9	250	-20	-	-	-	-	35
IG26X1000T9	1000		30	150	4.1 E+11	2.5 E-13	580
IG26X1300T9	1300		-	-	-	-	1040
IG26X2000T9	2000		6	30	2.6 E+11	5.5 E-13	1920
IG26X3000T9	3000		-	-	-	-	3200

[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 T9	- -	0.8 3.7
TE cooler current [A]	T7 T9	- -	1.9 1.2

*ANSI/ ESD STN5. 1-2007
Valid with sufficient heat sinking only.

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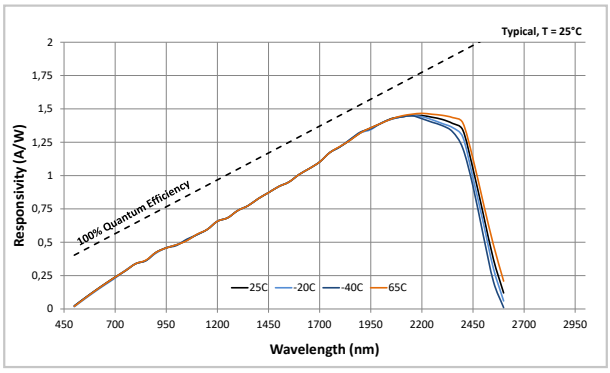
Fig. 1: Spectral Response



Spectral Response Zoom

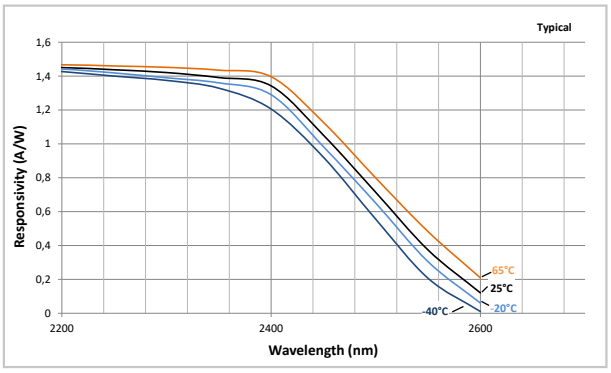


Fig. 2: Dark Current vs. Reverse Voltage

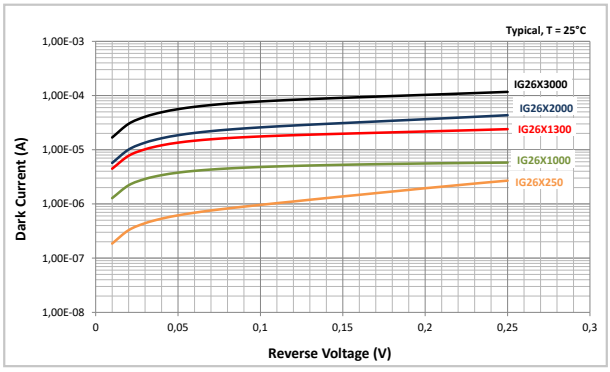


Fig. 3: Shunt Resistance vs. Temperature

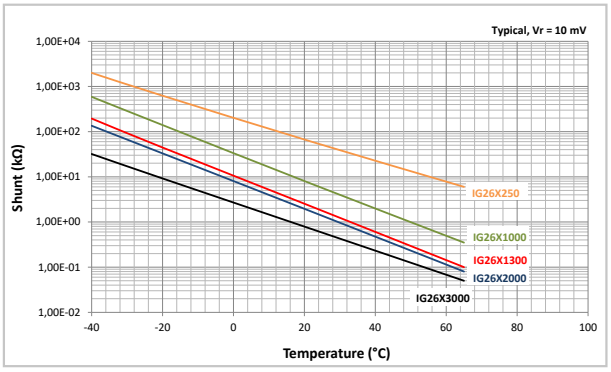


Fig. 4: Shunt Resistance vs. Detectivity

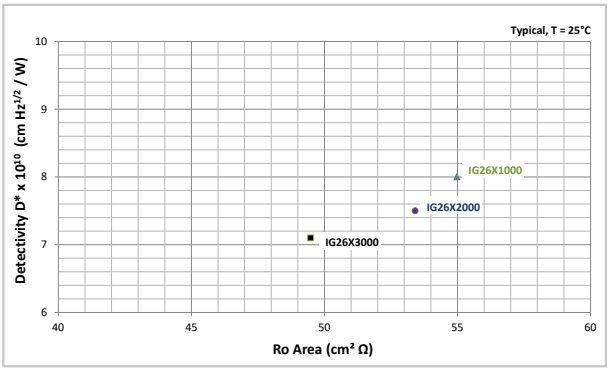


Fig. 5: Capacitance vs. Reverse Voltage

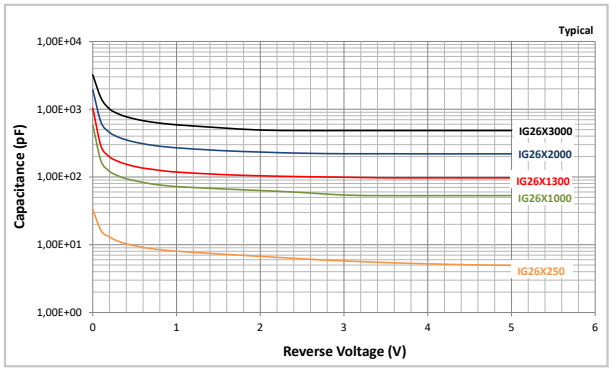


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Fig. 6: Responsivity Temperature Coefficient I

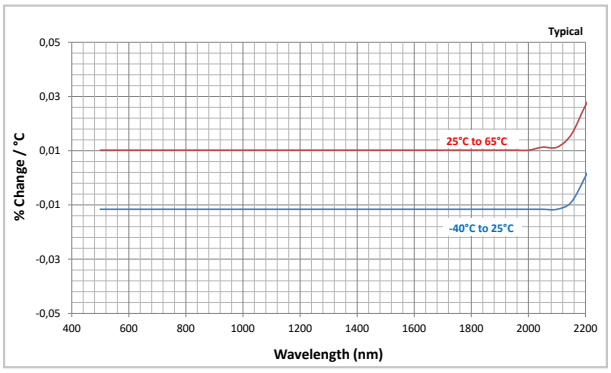


Fig. 7: Responsivity Temperature Coefficient II

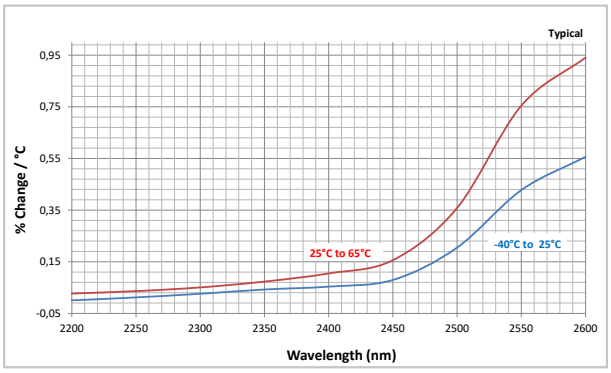


Fig. 8: Sample Pulse Response

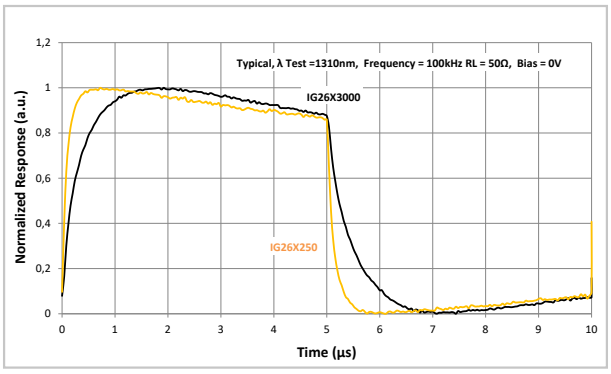
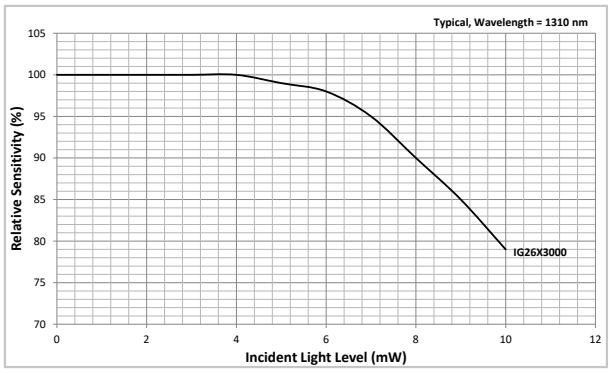


Fig. 9: Linearity



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Nomenclature

C-	I	G	2	6	X		2	5	0	S	4	i	

Chip only

Type
Extended InGaAs PIN Photodiode

Diameter		
250	=	250 µm
500	=	500 µm
1000	=	1 mm
1300	=	1.3 mm
2000	=	2 mm
3000	=	3 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
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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