

Extended InGaAs Photodiodes IG26-Series

Description

The IG26-series is a 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

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

Versions

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

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.	Typ.	Min.	Typ.	Min.	Typ.
IG26X250S4i	250	≥2.45	2.25+/-0.1	1.35	1.50	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 Hz ^{1/2} /W]		Peak NEP ^a f = 1 kHz [W/Hz ^{1/2}]	
		Min.	Typ.	Typ.	Max.	Min.	Typ.	Max.	Typ.
IG26X250S4i	250	25	50	2	8	3.7 E+10	5.2 E+10	6.0 E-13	4.2 E-13
IG26X500S4i	500	10	25	4	25	4.6 E+10	7.4 E+10	1.0 E-12	6.0 E-13
IG26X1000S4i	1000	3	9	7.5	75	5.1 E+10	8.8 E+10	1.8 E-12	1.0 E-12
IG26X1300S4i	1300	1	4	15	150	3.8 E+10	7.6 E+10	3.0 E-12	1.5 E-12
IG26X2000G1i	2000	0.6	1.5	30	300	4.6 E+10	7.2 E+10	3.9 E-12	2.4 E-12
IG26X3000G1i	3000	0.25	0.7	75	750	4.4 E+10	7.4 E+10	6.0 E-12	3.6 E-12

^a Parameter tested on batch level

^b Parameter 100% tested

Electrical Characteristics, Specifications @ 25 °C

Part Number	Diameter [μm]	Capacitance @ $V_r = 0 \text{ V}^a$ [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 @ $V_r = 10 \text{ mV}^b$ [kOhm]		Peak D^*^a [$\text{cm Hz}^{1/2}/\text{W}$]	Peak NEP ^a [$\text{W}/\text{Hz}^{1/2}$]	Capacitance @ $V_r = 0 \text{ V}^a$ [pF]
			Min.	Typ.	Typ.	Typ.	Typ.
IG26X1000T7	1000	-10	15	75	2.5 E+11	3.5 E-13	580
IG26X2000T7	2000		3	15	2.3 E+11	7.8 E-13	1925
IG26X250T9	250	-20	250	1000	8.0 E+11	8.7 E-14	35
IG26X1000T9	1000		30	150	3.6 E+11	2.5 E-13	580
IG26X2000T9	2000		6	30	3.2 E+11	5.5 E-13	1920
IG26X3000T9	3000		1.0	2.8	1.6 E+11	1.6 E-12	3200

^a Parameter tested on batch level

^b Parameter 100% tested

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

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

ESD sensitive device.

High electrostatic discharge can damage or degrade the device.
Use proper ESD handling precautions.



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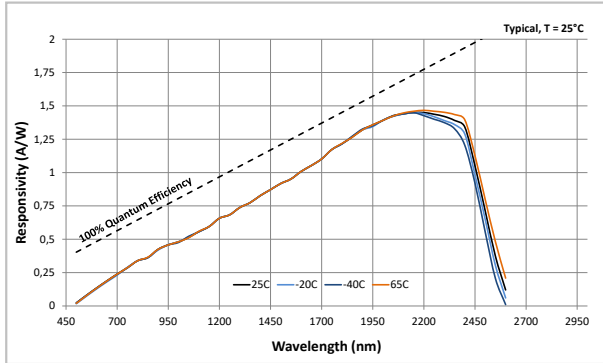
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Fig. 1: Spectral Response



Spectral Response Zoom

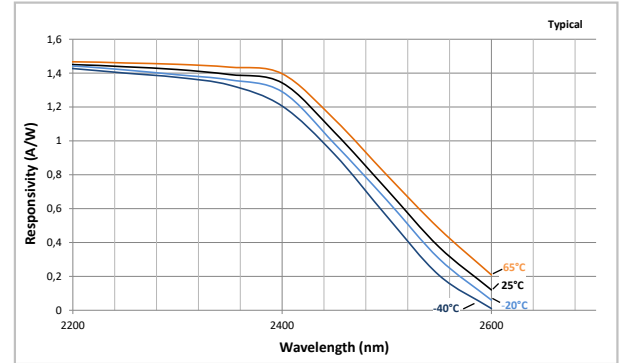


Fig. 2: Dark Current vs. Reverse Voltage

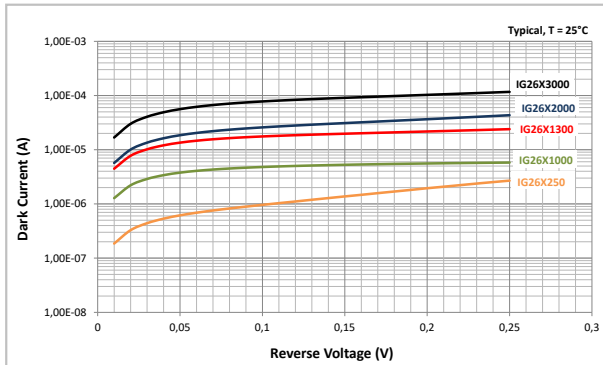


Fig. 3: Shunt Resistance vs. Temperature

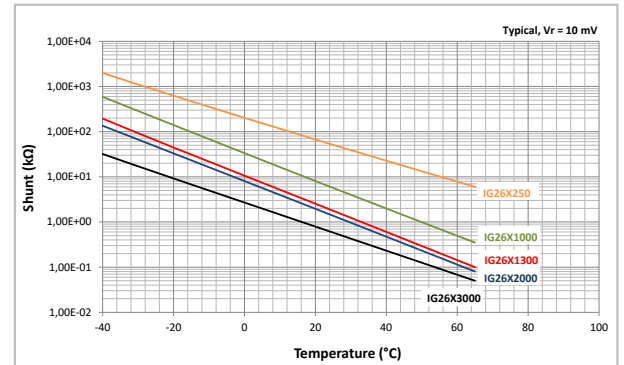


Fig. 4: Shunt Resistance vs. Detectivity

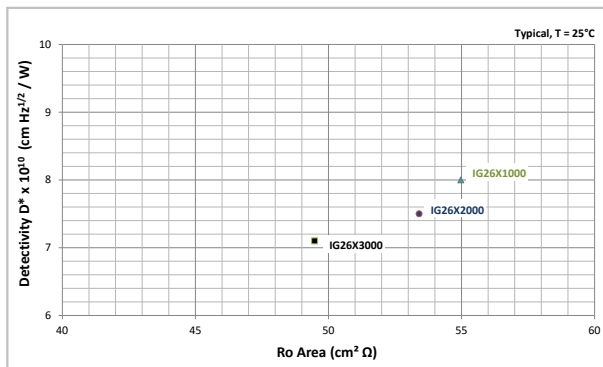


Fig. 5: Capacitance vs. Reverse Voltage

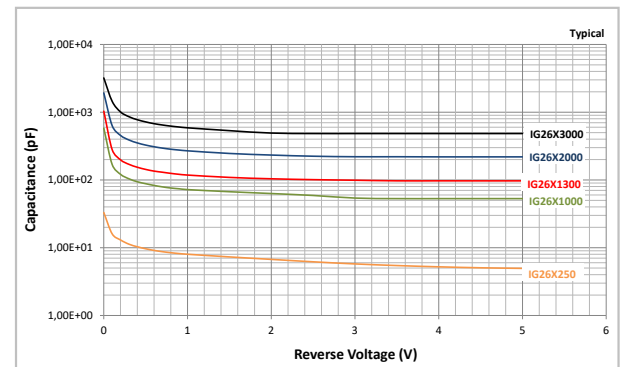


Fig. 6: Responsivity Temperature Coefficient I

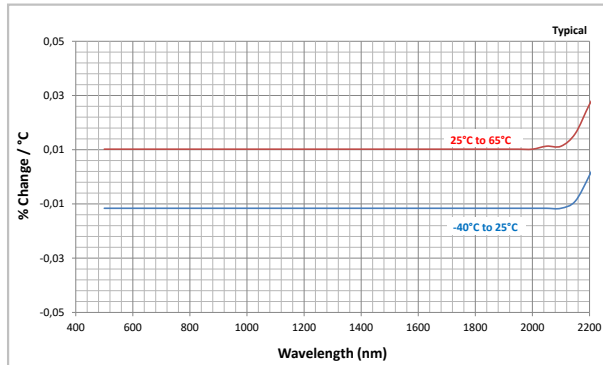


Fig. 7: Responsivity Temperature Coefficient II

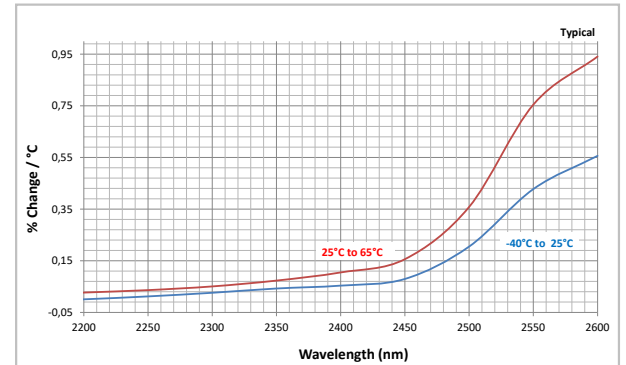


Fig. 8: Sample Pulse Response

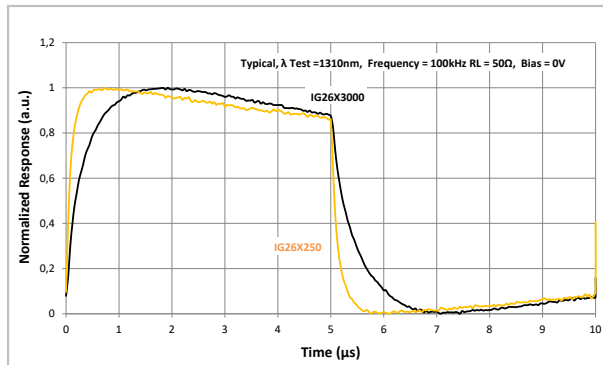
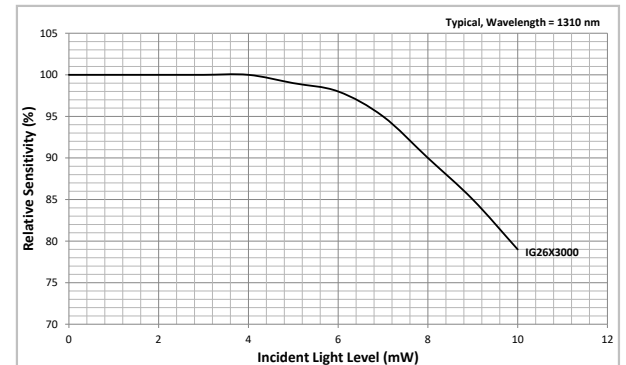


Fig. 9: Linearity



Nomenclature

C-	I	G	2	6	X		2	5	0	S	4	i	
Chip only	Type					Diameter				Package Style			
	Extended InGaAs PIN Photodiode					250 = 250 µm				S4i - TO-46, isolated			
						500 = 500 µm				S4ix - TO-46, no window			
						1000 = 1 mm				G1i - TO-39, isolated			
						1300 = 1.3 mm				G1ix - TO-39, no window			
						2000 = 2 mm				T7 - TO-37, single stage TEC			
						3000 = 3 mm				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

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