

InGaAs Linear Photodiode Arrays

The New Standard in Performance NIR Spectroscopy

Designers of spectroscopy systems have new options to improve their system performance.

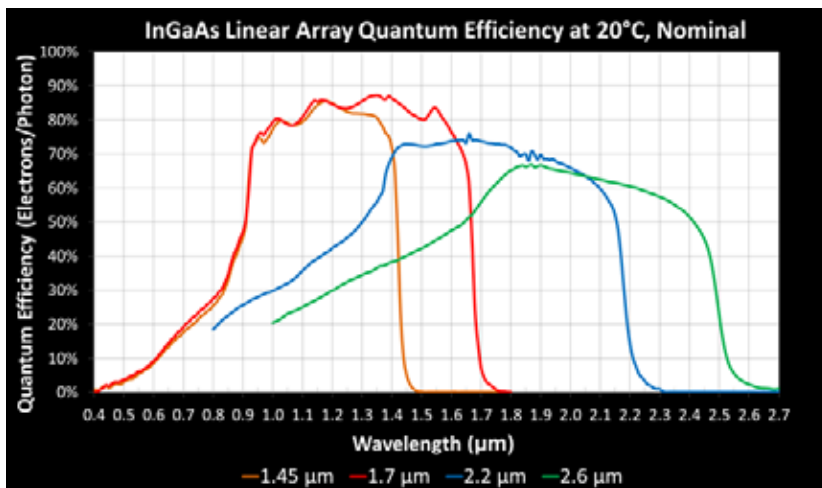
InGaAs Linear Array products with cut-off wavelengths of 1.45, 1.7, 2.2 or 2.6 microns are now available in quantity from Sensors Unlimited, a part of UTC Aerospace Systems. All versions exhibit reduced dark current and improved uniformity as a result of new equipment and processes at the Sensors' facility. Designers have the choice between two families of readout devices, the integrate-then-read LDB/LE or the integrate-while-read LC. The LC version is the choice for fast line times, while also offering 4 programmable gain options. One of the gains provides the largest available full-well for absorbance spectroscopy.

FEATURES

- Choice of wavelength ranges for reduced dark current (1.45 μm), standard (1.7 μm), extended (2.2 μm) and full range (2.6 μm – LC only)
- Array lengths of 256, 512, or 1024 pixels, with widths of 1/4, 1/2 or 1 inch (6.4, 12.8 or 25.6 mm)
- Large full well capacities, 130 or 250 Me-
- Pitch of 25 or 50 microns
- Apertures (heights) of 250 or 500 (μm) for spectroscopy, or square for machine vision
- Hermetic Kovar™ package
- Internal 1, 2 or 3-stages of temperature control, or TEC-less for low-power or external deep cooling

APPLICATIONS

- Raman: 1.45 μm for low-power handhelds, 1.7 μm for full Raman spectrum
- NIR Molecular Spectroscopy
- 1.7 μm for high performance capture of 1st overtone O-H, N-H, C-H combinations
- 2.2 μm for 1st overtone C-H, S-H, 2nd H₂O and C-O, O-H combinations
- 2.6 μm for combinations of N-H, C-H, and O-H



LINEAR ARRAY COMPARISON TABLE

Material type	Dark Current	50% QE Cut-on λ (μm)	50% QE Cut-off λ (μm)	Peak λ (μm)
1.45 μm	1.3 pA	0.91	1.415	1.17
1.7 μm	2.3 pA	0.91	1.650	1.36
2.2 μm	10 nA	1.30	2.155	1.67
2.6 μm	100 nA	1.64	2.410	1.84

CURRENT PACKAGING OPTIONS FOR EACH READOUT IC OPTION

Not all combinations of format, cooling, readout, pixel height and wavelength material are produced, but may be possible; Please contact SUI to discuss your needs.

LC/LSC ROIC

Features: antibloom, snapshot, IWR* and ITR*, multiple outputs, slow to very fast readout, 4 gain/full-well settings, selectable bandwidth, autozero and power options

Pixels	Pitch	Max Ips	Wavelength and Pixel Height			
			1.45	1.7	2.2	2.6
256	50	15.7 k			T2, 250 μm	T2, 250 μm
512	25	91 k	T2, 500 μm	T1, 500 μm T2, 250 μm T2, 500 μm LT, 500 μm		T2, 250 μm
1024	25	91 k	T2, 500 μm	T1, 500 μm LT, 500 μm	T2, 250 μm	

LE/LSE ROIC

Features: antibloom, snapshot, ITR*, 1 output per side, slow to medium readout, 2 gain/full-well settings

Pixels	Pitch	Max Ips	Wavelength and Pixel Height			
			1.45	1.7	2.2	2.6
512	50	1.25 k		LT, 500 μm RT, 500 μm	T1, 250 μm T2, 250 μm	n/a
1024	25	1.25 k	T2, 500 μm	T1, 500 μm LT, 500 μm	T1, 250 μm T2, 250 μm	n/a

LDB/LSB ROIC

Features: antibloom, snapshot, ITR*, 1 output per side, slow to medium readout, 2 gain/full-well settings

Pixels	Pitch	Max Ips	Wavelength and Pixel Height			
			1.45	1.7	2.2	2.6
256	50	5 k		T1, 500 μm LT, 500 μm RT, 500 μm T2 500 μm	T1, 250 μm T2, 250 μm RT, 250 μm T3, 250 μm	n/a
256	25	5 k		T1, 500 μm RT, 500 μm		
512	25	5 k	T2, 500 μm RT, 500 μm	T1, 500 μm LT, 500 μm T2, 500 μm RT, 500 μm	T1, 250 μm T2, 250 μm RT, 250 μm	n/a

*ITR: Integrate-Then-Read

*IWR: Integrate-While-Read



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Model No: InGaAs Linear Photodiode Arrays Doc 4110-0044 Rev I Jan 2016

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