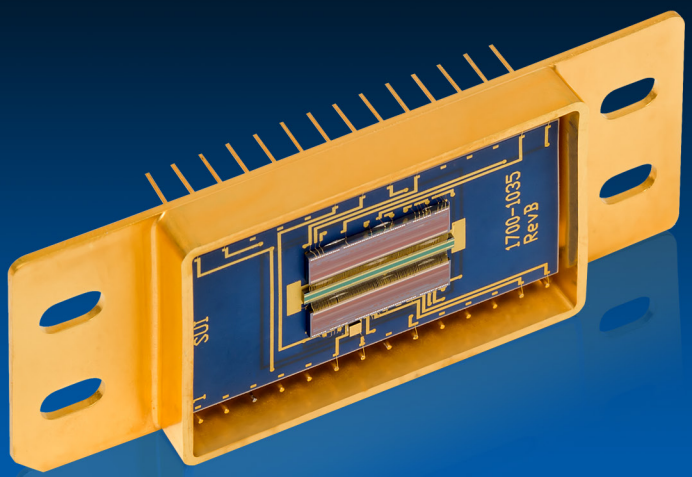
SENSORS UNLIMITED



LDB/LSB Series

InGaAs Linear Photodiode Arrays

The LDB/LSB Series linear InGaAs photodiode arrays have set the standard for high performance in near-infrared spectroscopy and imaging applications. These arrays are widely used for optical performance monitoring of S, C & L band channels in DWDM networks. Other applications include agricultural sorting, biomedical analysis, thermal imaging and industrial process control.

SUI produces LDB/LSB InGaAs array products with 256 and 512 elements on a 25 µm or 50 µm pixel pitch with pixel heights of 250 and 500 µm. Standard wavelength range of 0.8 to 1.7 µm, a shorter range of 0.8 to 1.45 µm or extended wavelength range of 1.1 to 2.2 µm. The photodetector arrays are hybridized with CMOS readout integrated circuits (ROIC) of SUI exclusive design to offer maximum noise immunity and sensitivity.

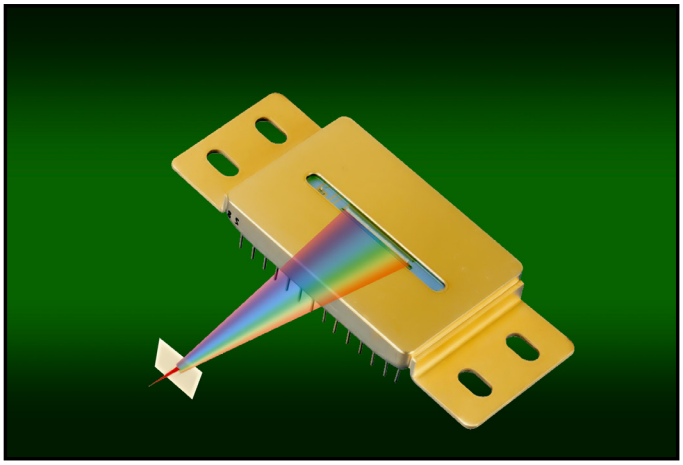
Operating circuit designs need only provide for one analog supply and two digital control lines for optimum ROIC performance. Two separate gains are selectable with a single input. Arrays are available with thermoelectric coolers for temperature stabilization and monitoring. SUI LDB/LSB Series photodiode arrays are telecommunication system reliable and available in volume.

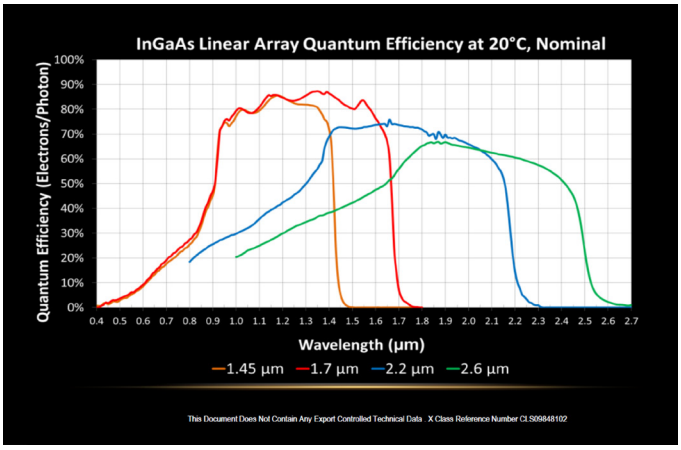
FEATURES

- Easy to use analog design
- 25 µm or 50 µm pitch – one-half inch and one-quarter inch array
- Wavelength ranges 0.8 µm to 2.2 µm
- Pixel heights of 250 µm or 500 µm
- Antiblooming to prevent charge overflow from saturated pixels
- Two separate gains are selectable with a single input
- Available with 1 or 2 stage thermoelectric cooler, or without a cooler for uncooled or externally-cooled operations
- Max Ips 5KHz – Analog output
- ESD Resistant

SENSORS UNLIMITED

Model No: LDB/LSB-Series





ELECTRICAL INPUTS

Parameter/Description	Unit	Min.	Typical	Max.
V_{DD}/Analog supply voltage	V	4.90	5.00	5.25
V_{SS}/Analog supply ground	V		0	
V_{DP}/Amplifier dead potential	V		3.25	
V_{CLK}/Digital pixel clock	V		Hi: V_{DD} Low: V_{SS}	
V_{LSYNC}/Digital exposure control	V		Hi: V_{DD} Low: V_{SS}	
V_{CAP}/Digital gain control	V		Hi: V_{DD} Low: V_{SS}	

PERFORMANCE CHARACTERISTICS

Parameter	Unit	Min.	Typical	Max.
Peak wavelength sensitivity (λ_{pk})	µm		1.5	
Responsivity (at λ_{pk})	nV/photon	10.5		
Photoresponse nonuniformity (PRNU)	%		5	10
Gain	nV/electron		400 [1], 15.4 [2]	
Saturation charge	pC		0.8 [1], 20.8 [2]	
Readout noise	electron/√scan		800 [1],10,000 [2]	
Pixel clock	MHz			1.25
Readout rate per output	Mpix/sec/output			2.5
Inoperable pixels				0

[1] High-sensitivity mode: high gain capacitor
[2] High dynamic range mode: low gain capacitor

ABSOLUTE MAXIMUM RATINGS

Parameter/Description		Unit	Min.	Typical	Max.
Power consumption (V_{DD}=5.00V)	LDB LSB	mW mW			300 150
Operating temperature range		°C	-20		+70
Storage temperature range		°C	-40		+85

LINEAR ARRAY COMPARISON TABLE (Representative Values)

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	1.65	1.36
2.2 µm	10 nA	1.3	2.155	1.67
2.6 µm	100 nA	1.64	2.41	1.84

SENSORS UNLIMITED

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