

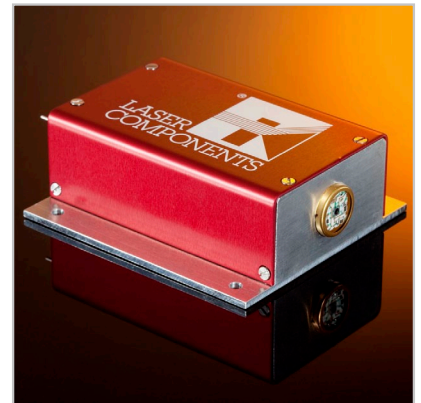
APD Module LCSEA/LCIA-Series

Description

Laser Components' new range of APD modules has been designed for customers interested in experimenting with APDs. Featuring a low-noise silicon (or InGaAs) APD with matched preamplifier and integrated high voltage supply, the module offers everything needed to operate APDs easily and conveniently. In-built temperature compensation circuitry allows the APD to be operated at constant gain even if the ambient temperature changes. A 12 V DC supply is all that is needed to operate the module.

The metal housing is fully nickel-plated, in order to reduce EMI emissions from the module, and to protect the module from any external EMI.

Custom designed modules and OEM versions are available on request.



Features

- High sensitivity
- Low noise
- Easy handling
- Single 12 V DC supply operation
- Compact
- Temperature compensation circuit
- User adjustable gain

Applications

- APD evaluation
- Range finding / LIDAR
- Optical Communication Systems
- Laser Scanners
- Spectroscopy
- Fluorescence
- Medical

Si-APD Module

Generic Characteristics @ T = 25°C

	Min.	Typ.	Max.	Units
Wavelength Range	400		1100	nm
Peak Sensitivity		905		nm

Absolute Maximum Ratings

	Min.	Typ.	Max.	Units
Supply Voltage	11.5	+12	+13.5	V
Operating Temperature	0		+50	°C
Storage Temperature	-20		+70	°C
Maximum incident light level (cw operation)			10	mW
Output Voltage (50 Ω) (typical)			+1.6	V
(1 MΩ) (typical)			+2.5	V

Technical Specifications for 0.5 mm Si-APD-Module (typical values @ M = 100, 25°C)

Part Number	LCSA500-01	LCSA500-03	LCSA500-10	LCSA500-25	Units
Si-APD	SAR500	SAR500	SAR500	SAR500	
Active Area Diameter	0.5	0.5	0.5	0.5	mm
Wavelength Range	400 - 1000	400 - 1000	400 - 1000	400 - 1000	nm
Peak Sensitivity	905	905	905	905	nm
Bandwidth	DC - 1	DC - 3	DC - 10	DC - 25	MHz
Responsivity					
540 nm	270	27	2.7	0.27	MV/W
650 nm	400	40	4	0.4	MV/W
905 nm	500	50	5	0.5	MV/W
NEP					
540 nm	11	11	55	150	fW/rtHz
650 nm	7.5	7.5	37.5	100	fW/rtHz
905 nm	6	6	30	80	fW/rtHz
Output Noise Density	3000	300	150	40	nV/rtHz
Input Referred Noise Density (maximum)	0.3	0.3	1.5	4	pA/rtHz

Note: Noise measured at 100 kHz.

Technical Specifications for 1.5 mm Si-APD-Module (typical values @ M = 100, 25°C)

Part Number	LCSA1500-01	LCSA1500-03	LCSA1500-10	LCSA1500-25	Units
Si-APD	SAR1500	SAR1500	SAR1500	SAR1500	
Diameter	1.5	1.5	1.5	1.5	mm
Wavelength Range	400 - 1000	400 - 1000	400 - 1000	400 - 1000	nm
Peak Sensitivity	905	905	905	905	nm
Bandwidth	DC - 1	DC - 3	DC - 10	DC - 25	MHz
Responsivity					
540 nm	270	27	2.7	0.27	MV/W
650 nm	400	40	4	0.4	MV/W
905 nm	500	50	5	0.5	MV/W
NEP					
540 nm	11	37	55	150	fW/rtHz
650 nm	7.5	25	37.5	100	fW/rtHz
905 nm	6	20	30	80	fW/rtHz
Output Noise Density	3000	1000	150	40	nV/rtHz
Input Referred Noise Density (maximum)	0.3	1	1.5	4	pA/rtHz

Note: Noise measured at 100 kHz.

LCSA1500-01 and LCSA1500-03 will saturate with high background light levels due to their very high sensitivity.

Operation in environments with high background levels (e.g. daylight) is therefore not recommended.

Technical Specifications for 3 mm Si-APD-Module (typical values @ M = 100, 25°C)

Part Number	LCSA3000-01	LCSA3000-03	LCSA3000-10	LCSA3000-25	Units
Si-APD	SAR3000	SAR3000	SAR3000	SAR3000	
Diameter	3	3	3	3	mm
Wavelength Range	400 - 1000	400 - 1000	400 - 1000	400 - 1000	nm
Peak Sensitivity	905	905	905	905	nm
Bandwidth	DC - 1	DC - 3	DC - 10	DC - 25	MHz
Responsivity					
540 nm	270	27	2.7	0.27	MV/W
650 nm	400	40	4	0.4	MV/W
905 nm	500	50	5	0.5	MV/W
NEP					
540 nm	15	37	55	225	fW/rtHz
650 nm	11	25	38	150	fW/rtHz
905 nm	9	20	30	120	fW/rtHz
Output Noise Density	4000	1000	150	6	nV/rtHz
Input Referred Noise Density (maximum)	0.4	1	1.5	6	pA/rtHz

Note: Noise measured at 100 kHz.

LCSA3000-01 and LCSA3000-03 will saturate with high background light levels due to their very high sensitivity.

Operation in environments with high background levels (e.g. daylight) is therefore not recommended.

InGaAs-APD Module

Generic Characteristics @ T = 25°C

	Min.	Typ.	Max.	Units
Wavelength Range	1000		1650	nm
Peak Sensitivity		1550		nm

Absolute Maximum Ratings

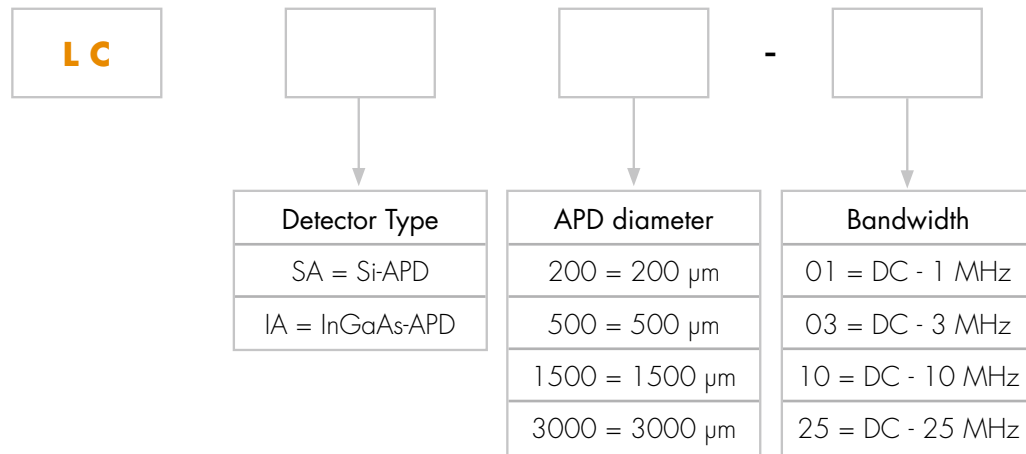
	Min.	Typ.	Max.	Units
Supply Voltage		+12	+13.5	V
Operating Temperature	0		+50	°C
Storage Temperature	-20		+70	°C
Maximum incident light level (cw operation)			10	mW
Output Voltage (50 Ω) (typical) (1 MΩ) (typical)			+1.6 +2.5	V V

Technical Specifications for 200 μm InGaAs-APD-Module (typical values @ M = 10, 25°C)

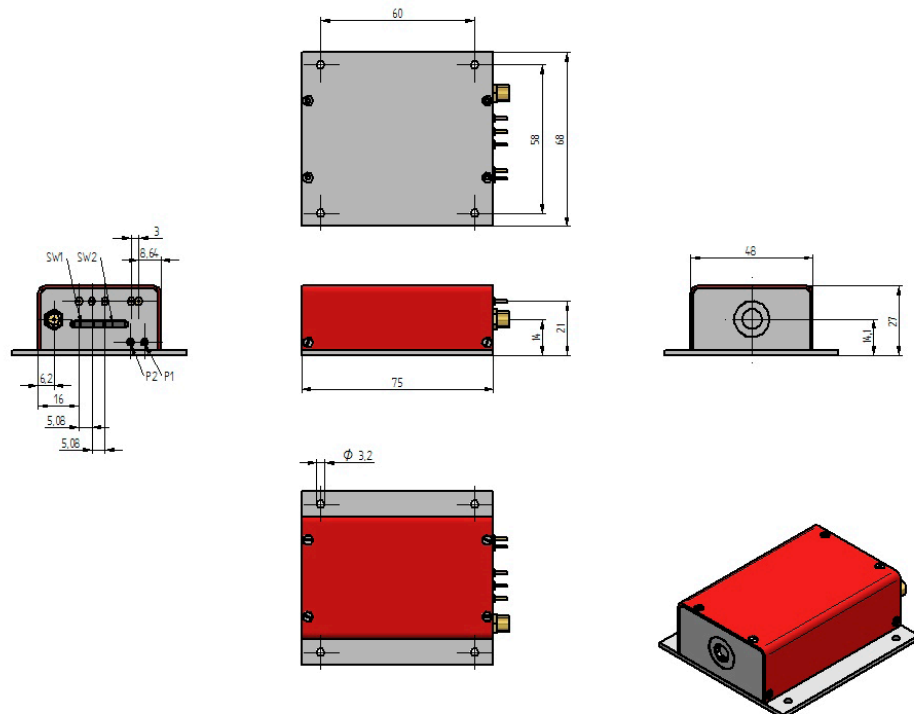
Part Number	LCIA200-01	LCIA200-03	LCIA200-10	LCIA200-25	Units
Si-APD	IAG200	IAG200	IAG200	IAG200	
Diameter	200	200	200	200	μm
Wavelength Range	900 - 1700	900 - 1700	900 - 1700	900 - 1700	nm
Peak Sensitivity	1550	1550	1550	1550	nm
Bandwidth	DC - 1	DC - 3	DC - 10	DC - 25	MHz
Responsivity 1550 nm	94	9.4	0.94	0.094	MV/W
NEP 1550 nm	32	64	160	425	fW/rtHz
Output Noise Density	3000	600	150	40	nV/rtHz
Input Referred Noise Density (maximum)	0.3	0.6	1.5	4	pA/rtHz

Note: Noise measured at 100 kHz.

Product Number Designations



Package Drawings



Other packages and OEM versions are available on request.

Bandwidths >25 MHz are also available on request.

PIN Configuration

Pin	Name	Function	Characteristic
1	+ VB	Supply Voltage	+12 V DC (typical)
2	GND	Ground	-
3	V_{mon}	Monitor	[0 ... 5] V
4		RTK	Poti
5		RTK	Poti
SW1		ADJ/Tcom	-
SW2		RTK	on/off
P1		RTK	-
P2		HV (Gain)	-

