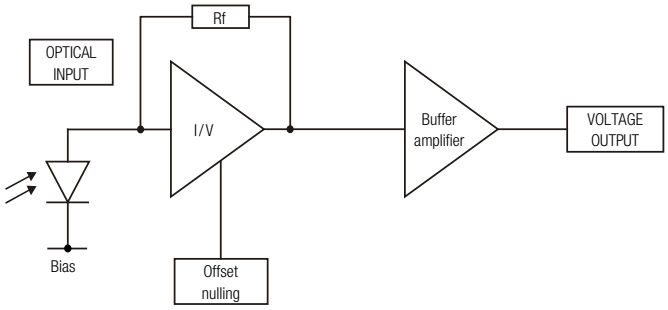
LASER COMPONENTS®

Datasheet LCA-S-400K-BSI

Low Noise 400 kHz Photoreceiver with Black Silicon Photodiode

Features	• **Large area black silicon photodiode, 2 × 2 mm active diameter** • **Quantum efficiency approx. 90 % from 240 nm to 1000 nm** • **Bandwidth DC – 400 kHz** • **Amplifier transimpedance gain 1.0 × 10^7 V/A** • **Max. conversion gain 7.3 × 10^6 V/W @ 1010 nm** • **Spectral range 200 – 1100 nm** • **Free-space input 1.035"-40 threaded** • **UNC 8-32 and M4 tapped holes for mounting on standard posts with metric and imperial thread**
Applications	• **Spectroscopy** • **General purpose opto-electronic measurements** • **Optical front-end for oscilloscopes, A/D converters and lock-in amplifiers**
Block Diagram	 BSD1-LCA-S_R01
Intended Use	The LCA-S-400K-BSI photoreceiver consists of a black silicon photodiode and a subsequent low-noise fixed gain transimpedance amplifier. It is designed for fast conversion of small optical signals into equivalent output voltages. Operation is mostly self-explanatory. If in doubt, consult this document or contact support@femto.de. For safe operation, please refer to the damage thresholds specified in the "Absolute Maximum Ratings", "Temperature Range" and “Power Supply” sections of this document. The operating environment must be free of smoke, dust, grease, oil, condensing moisture, and other contaminants that could affect the operation or performance.

SOPHISTICATED TOOLS FOR SIGNAL RECOVERY FEMTO

LCA-S-400K-BSI_R2/TH/19MAR2026

/ France LASER COMPONENTS S.A.S. Tel +33 1 39 59 52 25 info@lasercomponents.fr www.lasercomponents.fr
/ United Kingdom LASER COMPONENTS (UK) Ltd. Tel +44 1245 491 499 info@lasercomponents.co.uk www.lasercomponents.co.uk

Datasheet LCA-S-400K-BSI

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Available Version	LCA-S-400K-BSI-FST 	1.035"-40 threaded flange with internally threaded coupler ring (outer diameter 30 mm) for free space applications, compatible with many optical standard accessories
Related Models	LCA-S-400K-SI-FST	Si-PIN, ∅ 3 mm, 320 - 1060 nm free space input, 1.035"-40 threaded flange
	LCA-S-400K-IN-FST	InGaAs-PIN, ∅ 0.5 mm, 900 - 1700 nm free space input, 1.035"-40 threaded flange
Available Accessories	PRA-FC PRA-FCA PRA-FSMA 	Fiber-adapter with external 1.035"-40 thread
	PRA-PAP 	Alternative mounting option: post adapter plate, easy to mount on FEMTO photoreceiver series OE, FWPR, PWPR, HCA-S and LCA-S
	PS-15-25-L 	Power Supply input: 100 – 240 VAC output: ±15 VDC

Specifications	Test conditions	V_S = ±15 V, T_A = 25 °C, output load impedance 1 MΩ, warm-up 20 minutes (min. 10 minutes recommended)
Gain	Transimpedance gain	1.0 × 10^7 V/A (@ output load ≥ 100 kΩ)
	Gain accuracy	±1 % (electrical)
	Conversion gain	7.3 × 10^6 V/W typ. (@ 1010 nm, output load ≥ 100 kΩ)
Frequency Response	Lower cut-off frequency	DC
	Upper cut-off frequency (–3 dB)	400 kHz
	Gain flatness	±0.5 dB
Time Response	Rise/fall time (10 % – 90 %)	900 ns
Input	Noise equivalent power (NEP)	110 fW/√Hz (@ 1010 nm, 10 kHz)
	Optical saturation power	1.37 µW (for linear amplification, @ 1010 nm)
	Input offset compensation range	±300 nA, adjustable by offset potentiometer

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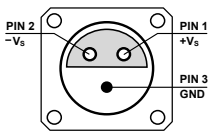
Specifications (continued)		
Detector	Detector	Black silicon photodiode
	Active area	2 × 2 mm
	Spectral range	200 – 1100 nm
	Max. sensitivity	0.73 A/W typ. (@ 1010 nm)
Output	Output voltage range	–3 V ... +10 V (@ ≥ 100 kΩ output load)
	Output impedance	50 Ω (terminate with ≥ 100 kΩ load)
	Max. output current	30 mA (short-circuit proof)
	Output noise	2.0 mV RMS (18 mV peak-peak) typ. (@ ≥ 100 kΩ load, no signal on detector, measurement bandwidth 20 MHz)
Input Flange	Material	1.4305 stainless steel, nickel-plated
Coupler Ring	Material	1.4305 stainless steel, glass bead blasted
Power Supply	Supply voltage	±15 V (±14.5 V ... ±16.5 V)
	Supply current	±40 mA (depends on operating conditions, recommended power supply capability min. ±150 mA)
Case	Weight	212 g (0.47 lbs) incl. coupler ring
	Material	AlMg4.5Mn, nickel-plated
Temperature Range	Storage temperature	–30 °C ... +85 °C
	Operating temperature	0 °C ... +60 °C
Absolute Maximum Ratings	Optical input power (CW)	10 mW
	Power supply voltage	±20 V
Connectors	Input	1.035"-40 threaded flange for free space applications and for use with various types of optical standard accessories
	Output	BNC jack (female)
	Power supply	LEMO® series 1S, 3-pin fixed socket (mating plug type: FFA.1S.303.CLAC52)
Scope of Delivery	LCA-S-400K-BSI, internally threaded coupler ring, LEMO® 3-pin connector, datasheet, transport package	
Ordering Information	LCA-S-400K-BSI-FST	Black silicon photodiode, 2 × 2 mm, 200 – 1100 nm free space input, 1.035"-40 threaded flange



Pin 1: +15 V
Pin 2: –15 V
Pin 3: GND

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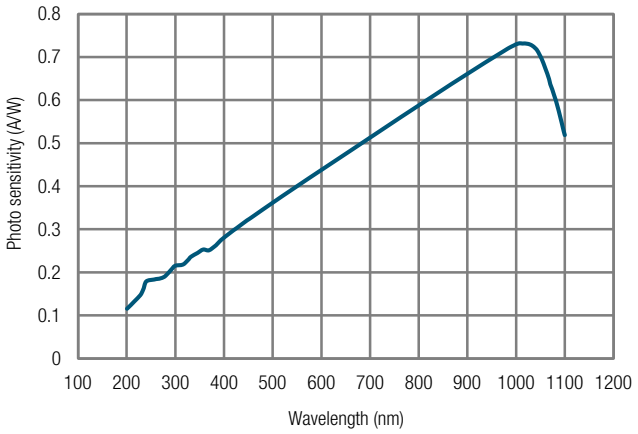
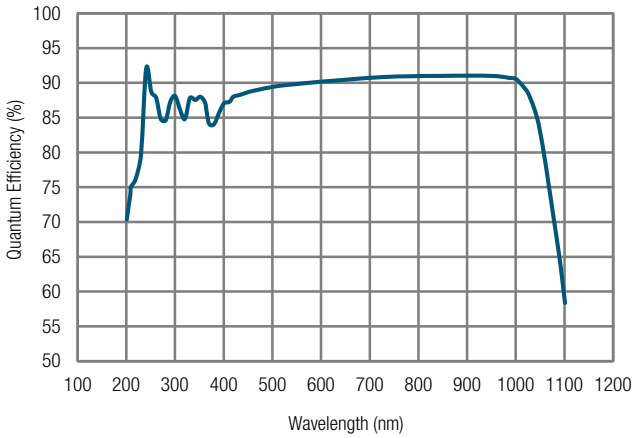
Spectral Responsivity



Spectral Quantum Efficiency



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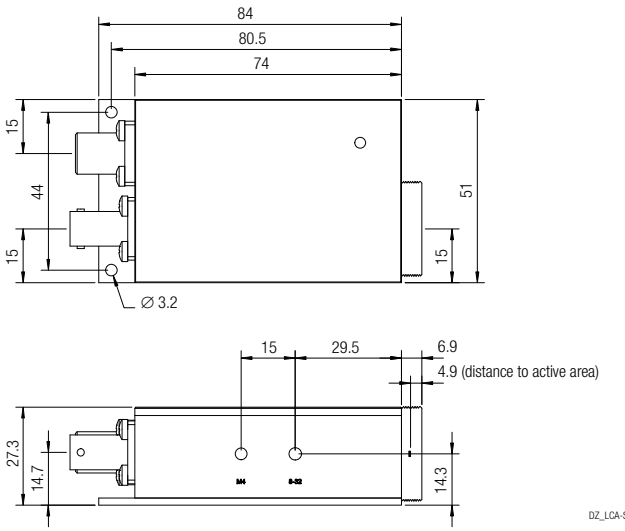
Dimensions

LCA-S-400K-BSI-FST (1.035"-40 threaded free space input)



all dimensions in mm unless otherwise noted

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