

Ultra High-Speed Photoreceiver with Si-PIN Photodiode



The picture shows the HSA-X-S-1G4-SI-FS with free space input. The photoreceiver will be delivered without post holder and post.

Features	<ul style="list-style-type: none"> • Bandwidth 10 kHz ... 1.4 GHz • Si-PIN detector • Spectral range 320 ... 1000 nm • Amplifier transimpedance (gain) 5×10^3 V/A • Conversion gain 2.55×10^3 V/W @ 760 nm 																													
Applications	<ul style="list-style-type: none"> • Spectroscopy • Ultra-fast pulse and transient measurements • Optical triggering • Optical front-end for oscilloscopes and ultra-fast A/D converters 																													
Specifications	<table border="0"> <tr> <td>Test conditions</td> <td colspan="2">$V_s = +15$ V, $T_A = 25$ °C, system impedance = 50 Ω</td> </tr> <tr> <td rowspan="2">Gain</td> <td>Amplifier transimpedance</td> <td>5×10^3 V/A (@ 50 Ω load)</td> </tr> <tr> <td>Conversion gain</td> <td>2.55×10^3 V/W (typ. @ 760 nm)</td> </tr> <tr> <td rowspan="3">Frequency Response</td> <td>Lower cut-off frequency (-3 dB)</td> <td>10 kHz</td> </tr> <tr> <td>Upper cut-off frequency (-3 dB)</td> <td>1.4 GHz (± 15 %)</td> </tr> <tr> <td>Rise/fall time (10 % - 90 %)</td> <td>250 ps (± 15 %)</td> </tr> <tr> <td rowspan="4">Input/Detector</td> <td>Detector material</td> <td>Si-PIN photodiode</td> </tr> <tr> <td rowspan="2">Active area</td> <td>FS-version: \varnothing 400 μm</td> </tr> <tr> <td>FC-version: integrated ball lens, suitable for fibers up to 400 μm core diameter</td> </tr> <tr> <td>Spectral range</td> <td>320 ... 1000 nm</td> </tr> <tr> <td rowspan="2">Max. optical peak input power</td> <td>370 μW AC (for linear amplification, @ 760 nm)</td> </tr> <tr> <td>10 mW CW (to prevent saturation, @ 760 nm)</td> </tr> <tr> <td>Noise</td> <td>Min. NEP</td> <td>32 pW/\sqrtHz (@ 760 nm, 100 MHz)</td> </tr> </table>	Test conditions	$V_s = +15$ V, $T_A = 25$ °C, system impedance = 50 Ω		Gain	Amplifier transimpedance	5×10^3 V/A (@ 50 Ω load)	Conversion gain	2.55×10^3 V/W (typ. @ 760 nm)	Frequency Response	Lower cut-off frequency (-3 dB)	10 kHz	Upper cut-off frequency (-3 dB)	1.4 GHz (± 15 %)	Rise/fall time (10 % - 90 %)	250 ps (± 15 %)	Input/Detector	Detector material	Si-PIN photodiode	Active area	FS-version: \varnothing 400 μ m	FC-version: integrated ball lens, suitable for fibers up to 400 μ m core diameter	Spectral range	320 ... 1000 nm	Max. optical peak input power	370 μ W AC (for linear amplification, @ 760 nm)	10 mW CW (to prevent saturation, @ 760 nm)	Noise	Min. NEP	32 pW/ \sqrt Hz (@ 760 nm, 100 MHz)
Test conditions	$V_s = +15$ V, $T_A = 25$ °C, system impedance = 50 Ω																													
Gain	Amplifier transimpedance	5×10^3 V/A (@ 50 Ω load)																												
	Conversion gain	2.55×10^3 V/W (typ. @ 760 nm)																												
Frequency Response	Lower cut-off frequency (-3 dB)	10 kHz																												
	Upper cut-off frequency (-3 dB)	1.4 GHz (± 15 %)																												
	Rise/fall time (10 % - 90 %)	250 ps (± 15 %)																												
Input/Detector	Detector material	Si-PIN photodiode																												
	Active area	FS-version: \varnothing 400 μ m																												
		FC-version: integrated ball lens, suitable for fibers up to 400 μ m core diameter																												
	Spectral range	320 ... 1000 nm																												
Max. optical peak input power	370 μ W AC (for linear amplification, @ 760 nm)																													
	10 mW CW (to prevent saturation, @ 760 nm)																													
Noise	Min. NEP	32 pW/ \sqrt Hz (@ 760 nm, 100 MHz)																												

Ultra High-Speed Photoreceiver with Si-PIN Photodiode

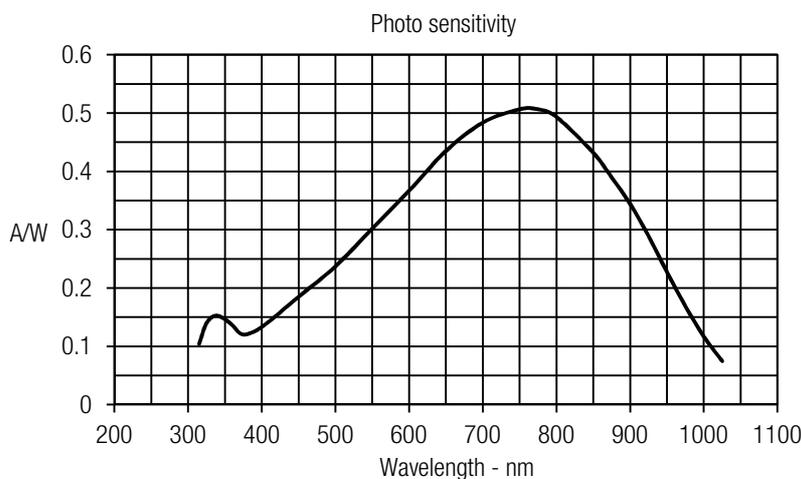
Specifications (continued)

Output	Output impedance 50 Ω (designed for 50 Ω load) Output VSWR 2.5 : 1 (@ f < 2.5 GHz) Output return loss 7.3 dB (@ f < 2.5 GHz) Max. output voltage 1.9 V _{PP} (@ 50 Ω load, for linear amplification) Output noise typ. 3.6 mV _{RMS} or 24 mV _{PP} * (measurement BW: 4 GHz)
	* The peak-to-peak output noise is derived from the RMS noise as follows: V _{PP} = V _{RMS} x 6.6 (99.9% of the time the output noise voltage will be within the specified peak-to-peak value.)
Power Supply	Supply voltage +15 V, 130 mA typ. (depends on operating conditions, recommended power supply capability minimum 200 mA)
Case	Weight 100 g (0.23 lbs) Material AlMg4.5Mn, nickel-plated
Temperature Range	Storage temperature -40 ... +100 °C Operating temperature 0 ... +60 °C

Absolute Maximum Ratings

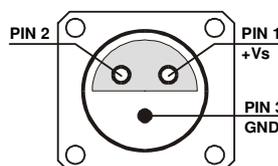
Power supply voltage	±20 V
Optical input power	12 mW (averaged)

Spectral Response



Connectors

Input	HSA-X-S-1G4-SI-FS 25 mm round flange for free space applications HSA-X-S-1G4-SI-FC FC fiber optic receptacle
Output	SMA jack (female)
Power supply	Lemo® series 1S, 3-pin fixed socket (mating plug type: FFA.1S.303.CLAC52) Pin 1: +15V Pin 2: NC Pin 3: GND



Ultra High-Speed Photoreceiver with Si-PIN Photodiode

Available Models	HSA-X-S-1G4-SI-FS HSA-X-S-1G4-SI-FC HSA-X-S	free space input fiber optic receptacle customized versions available on request
------------------	---	--

Dimensions	HSA-X-S-1G4-SI-FS	HSA-X-S-1G4-SI-FC
	All Measures in mm unless otherwise noted.	

FEMTO Messtechnik GmbH
Klosterstr. 64
10179 Berlin · Germany
Phone: +49 30 280 4711-0
Fax: +49 30 280 4711-11
Email: info@femto.de
www.femto.de

Specifications are subject to change without notice. Information provided herein is believed to be accurate and reliable. However, no responsibility is assumed by FEMTO Messtechnik GmbH for its use, nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of FEMTO Messtechnik GmbH. Product names mentioned may also be trademarks used here for identification purposes only.

© by FEMTO Messtechnik GmbH · Printed in Germany