

Datasheet

HSA-X-S-1G4-SI

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>Gain</td> <td>Amplifier transimpedance</td> <td>5×10^3 V/A (@ 50 Ω load)</td> </tr> <tr> <td></td> <td>Conversion gain</td> <td>2.55×10^3 V/W (typ. @ 760 nm)</td> </tr> <tr> <td>Frequency Response</td> <td>Lower cut-off frequency (-3 dB)</td> <td>10 kHz</td> </tr> <tr> <td></td> <td>Upper cut-off frequency (-3 dB)</td> <td>1.4 GHz (± 15 %)</td> </tr> <tr> <td></td> <td>Rise/fall time (10 % - 90 %)</td> <td>250 ps (± 15 %)</td> </tr> <tr> <td>Input/Detector</td> <td>Detector material</td> <td>Si-PIN photodiode</td> </tr> <tr> <td></td> <td>Active area</td> <td>FS-version: \varnothing 400 μm FC-version: integrated ball lens, suitable for fibers up to 400 μm core diameter</td> </tr> <tr> <td></td> <td>Spectral range</td> <td>320 ... 1000 nm</td> </tr> <tr> <td></td> <td>Max. optical peak input power</td> <td>370 μW AC (for linear amplification, @ 760 nm) 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)
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SOPHISTICATED TOOLS FOR SIGNAL RECOVERY



DE-HSA-X-S-1G4-SI_R10/MN_JM/25NOV2015

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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_{FP} (@ 50 Ω load, for linear amplification)
 Output noise typ. 3.6 mV_{RMS} or 24 mV_{FP}* (measurement BW: 4 GHz)

* The peak-to-peak output noise is derived from the RMS noise as follows: V_{FP} = V_{RMS} × 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

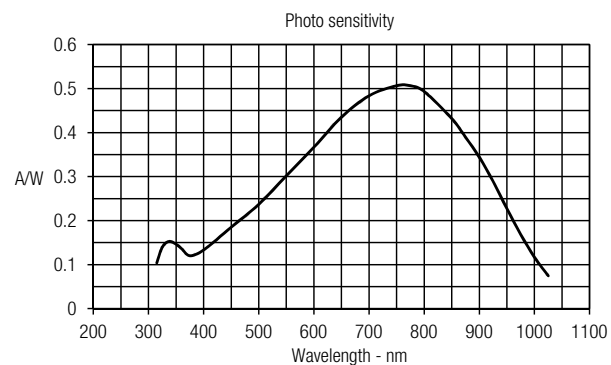
Temperature Range

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

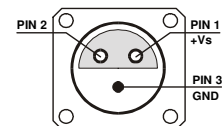


Connectors

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



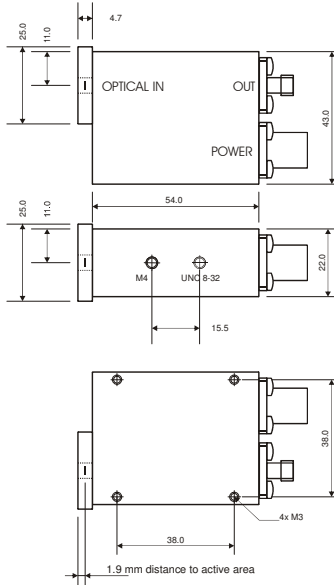
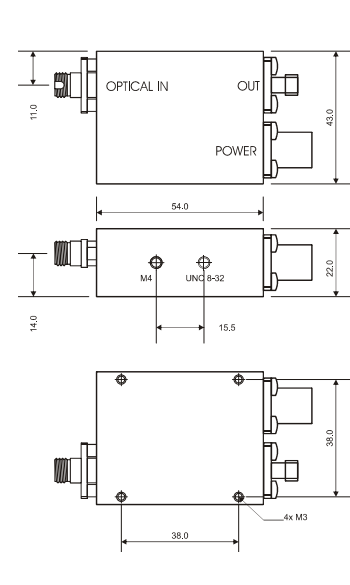
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F E M T O

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**Ultra High-Speed Photoreceiver
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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	<p>HSA-X-S-1G4-SI-FS</p> 	<p>HSA-X-S-1G4-SI-FC</p>  <p>All Measures in mm unless otherwise noted.</p>

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