

**Datasheet****HSPR-X-I-2G-IN****Ultra High Speed Photoreceiver
with InGaAs-PIN Photodiode**

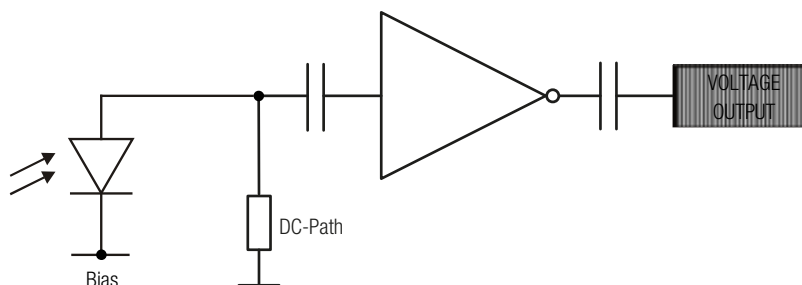
The picture shows model HSPR-X-I-2G-IN-FS.
The photoreceiver will be delivered without post holder and post.

Features

- **InGaAs-PIN photodiode**
- **Bandwidth 10 kHz – 2 GHz**
- **Amplifier transimpedance gain 5.0×10^3 V/A (inverting)**
- **Max. conversion gain 4.75×10^3 V/W @ 1550 nm**
- **Spectral range 900 – 1700 nm**
- **Free-space input 1.035"-40 threaded, alternatively 25 mm diameter unthreaded**
- **UNC 8-32 and M4 tapped holes for mounting on standard posts with metric and imperial thread**

Applications

- **Spectroscopy**
- **Ultra-fast pulse and transient measurements**
- **Optical triggering**
- **Optical front-end for oscilloscopes and ultra-fast A/D converters**

Block Diagram

Ultra High Speed Photoreceiver with InGaAs-PIN Photodiode

Available Versions

HSPR-X-I-2G-IN-FST



Picture shows 1.035"-40 threaded flange with internally threaded coupler ring (outer diameter 30 mm)

1.035"-40 threaded flange for free space applications. Compatible with many optical standard accessories .

HSPR-X-I-2G-IN-FS



Picture shows unthreaded flange with 25 mm diameter

25 mm dia. unthreaded flange for free space applications. Compatible with many optical standard accessories.

HSPR-X-I-2G-IN-FC



Fix/permanent FC fiber connector for high coupling efficiency and excellent conversion gain accuracy.

Related Models

HSA-X-S-2G-IN-FST

InGaAs-PIN, \varnothing 0.1 mm, 900 – 1700 nm free space input, 1.035"-40 threaded flange

HSA-X-S-2G-IN-FS

InGaAs-PIN, \varnothing 0.1 mm, 900 – 1700 nm free space input, 25 mm dia. unthreaded flange

HSA-X-S-2G-IN-FC

InGaAs-PIN, integrated ball lens, 900 – 1700 nm, inverting output, FC fiber connector (fix/permanent)

HSPR-X-I-1G4-SI-FST

Si-PIN, \varnothing 0.4 mm, 320 – 1000 nm, inverting output free space input, 1.035"-40 threaded flange


HSPR-X-I-1G4-SI-FS

Si-PIN, \varnothing 0.4 mm, 320 – 1000 nm, inverting output free space input, 25 mm dia. unthreaded flange

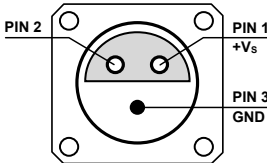
HSPR-X-I-1G4-SI-FC

Si-PIN, integrated ball lens, 320 – 1000 nm, inverting output, FC fiber connector (fix/permanent)

Ultra High Speed Photoreceiver with InGaAs-PIN Photodiode

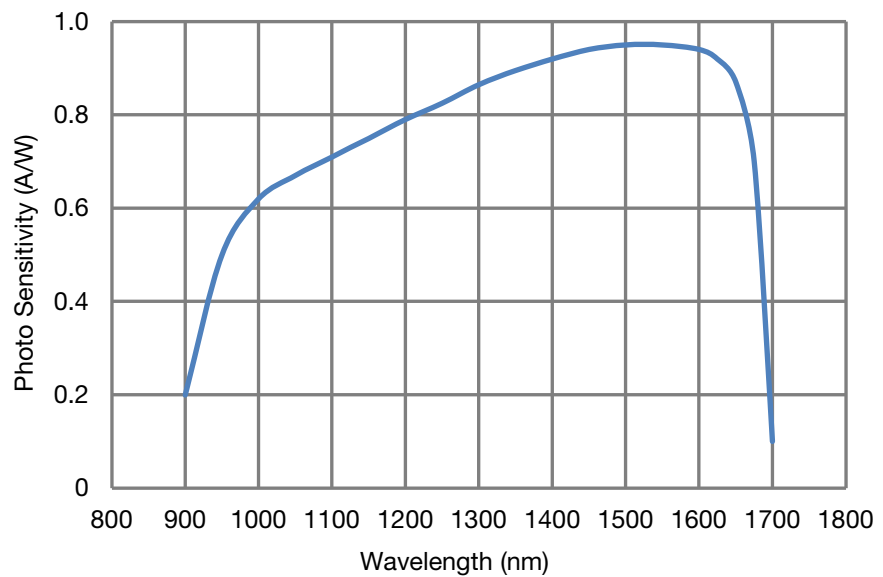
Related Models (continued)	HSA-X-S-1G4-SI-FST	Si-PIN, Ø 0.4 mm, 320 – 1000 nm free space input, 1.035"-40 threaded flange
	HSA-X-S-1G4-SI-FS	Si-PIN, Ø 0.4 mm, 320 – 1000 nm free space input, 25 mm dia. unthreaded flange
	HSA-X-S-1G4-SI-FC	Si-PIN, integrated ball lens, 320 – 1000 nm FC fiber connector (fix/permanent)
Available Accessories	PS-15-25-L	 <p>Power supply Input: 100 – 240 VAC Output: ±15 VDC</p>
Specifications	Test conditions	$V_s = +15\text{ V}$, $T_A = 25\text{ °C}$, output load impedance $50\ \Omega$, warm-up 20 minutes (min. 10 minutes recommended)
Gain	Transimpedance gain	$5.0 \times 10^3\text{ V/A}$ (inverting, @ output load $50\ \Omega$)
	Conversion gain	$4.75 \times 10^3\text{ V/W typ.}$ (@ 1550 nm, output load $50\ \Omega$)
Frequency Response	Lower cut-off frequency (–3 dB)	10 kHz
	Upper cut-off frequency (–3 dB)	2 GHz ($\pm 15\%$)
Time Response	Rise/fall time (10 % – 90 %)	180 ps ($\pm 15\%$)
Input	Noise equivalent power (NEP)	11 pW/√Hz (@ 1550 nm, 100 MHz)
	Optical saturation power	210 μW AC (for linear amplification, @ 1550 nm) 10 mW CW (to prevent saturation, @ 1550 nm)
Detector	Detector	InGaAs-PIN photodiode
	Active area (FS/FST version)	Ø 100 μm
	Active area (FC version)	integrated ball lens, suitable for fibers up to 62.5 μm core diameter
	Spectral range	900 – 1700 nm
Output	Max. sensitivity	0.95 A/W typ. (@ 1550 nm)
	Output voltage range	2.0 V _{PP} (@ 50 Ω output load) for linear operation and low harmonic distortion
	Output VSWR	1.4:1 (@ $f < 2.5\text{ GHz}$)
	Output return loss	15.5 dB (@ $f < 2.5\text{ GHz}$)
Input Flange	Output impedance	50 Ω (terminate with 50 Ω load)
	Output noise	2.5 mV _{RMS} (17 mV _{PP}) typ. (@ 50 Ω load, no signal on detector, measurement bandwidth 4 GHz MHz)
	Material	1.4305 stainless steel, nickel-plated (FST flange) AlMg4.5Mn, nickel-plated (FS flange)
	Material	1.4305 stainless steel, glass bead blasted
Coupler Ring (FST version only)	Material	1.4305 stainless steel, glass bead blasted
Power Supply	Supply voltage	+15 V
	Supply current	150 mA (depends on operating conditions, recommended power supply capability min. 200 mA)

Ultra High Speed Photoreceiver with InGaAs-PIN Photodiode

Specifications (continued)		
Case	Weight	133 g (0.29 lbs) HSPR-X-I-2G-IN-FST incl. coupler ring 120 g (0.26 lbs) HSPR-X-I-2G-IN-FS 110 g (0.24 lbs) HSPR-X-I-2G-IN-FC
	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) 12 mW (averaged) Power supply voltage 18.5 V
Connectors	Input	HSPR-X-I-2G-IN-FST 1.035"-40 threaded flange for free space applications and for use with various types of optical standard accessories HSPR-X-I-2G-IN-FS 25 mm dia. unthreaded flange for free space applications HSPR-X-I-2G-IN-FC FC fiber optic connector (fix/permanent, FC/PC and FC/APC compatible)
	Output	SMA jack (female)
Power supply		LEMO® series 1S, 3-pin fixed socket (mating plug type: FFA.1S.303.CLAC52)
		 <p>PIN 1: +15 V Pin 2: NC Pin 3: GND</p>
Scope of Delivery		HSPR-X-I-2G-IN, internally threaded coupler ring (FST version only), LEMO® 3-pin connector, datasheet, transport package
Ordering Information		
		HSPR-X-I-2G-IN-FST 1.035"-40 threaded flange for free space applications and for use with various types of optical standard accessories.
		HSPR-X-I-2G-IN-FS 25 mm dia. unthreaded flange for free space applications.
		HSPR-X-I-2G-IN-FC FC fiber optic connector (fix/permanent, FC/PC and FC/APC compatible).

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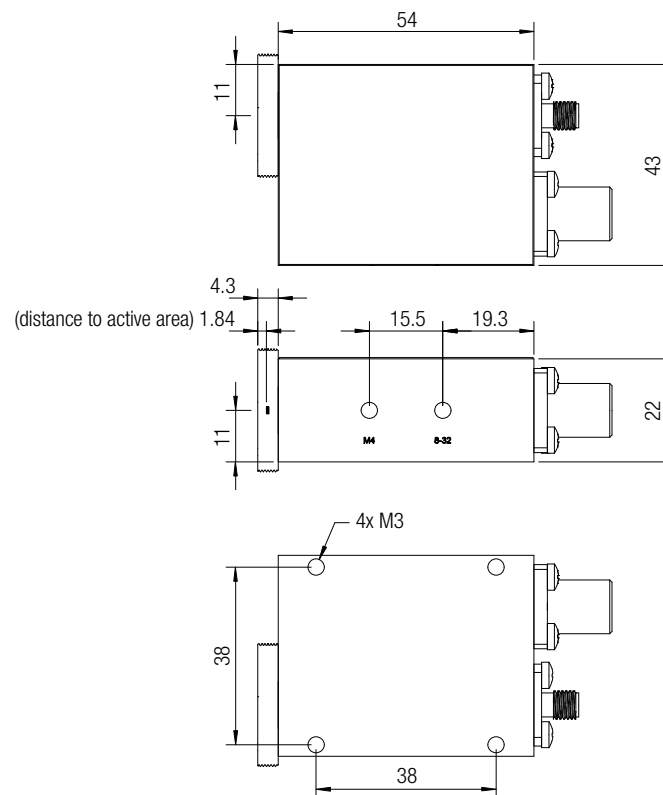
Spectral Responsivity



DB-Sens-HSPR-X-I-2G-IN_R01

Dimensions

HSPR-X-I-2G-IN-FST (1.035"-40 threaded free space input)



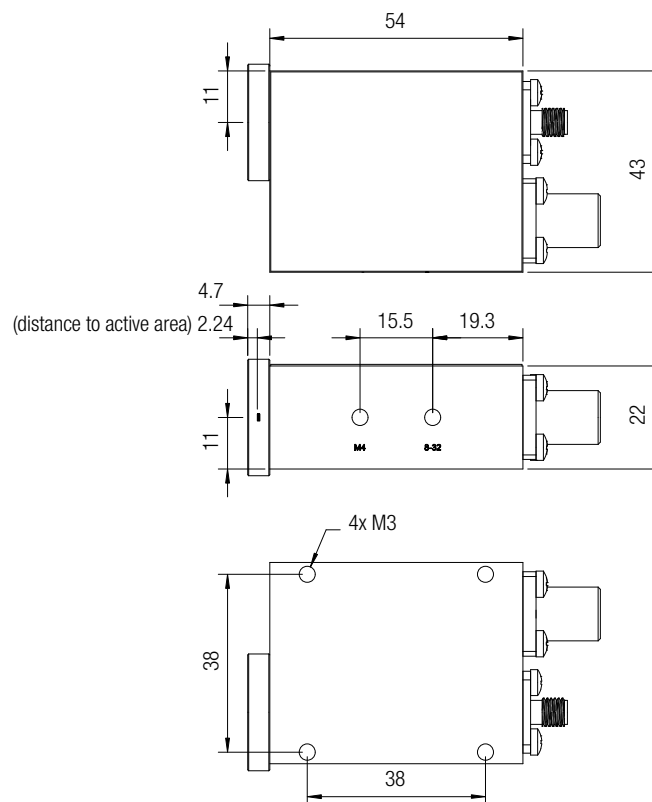
DZ-HSPR-X-I-2G-IN_FST_R1

all dimensions in mm unless otherwise noted

Ultra High Speed Photoreceiver with InGaAs-PIN Photodiode

Dimensions (continued)

HSPR-X-I-2G-IN-FS (25 mm dia. unthreaded free space input)



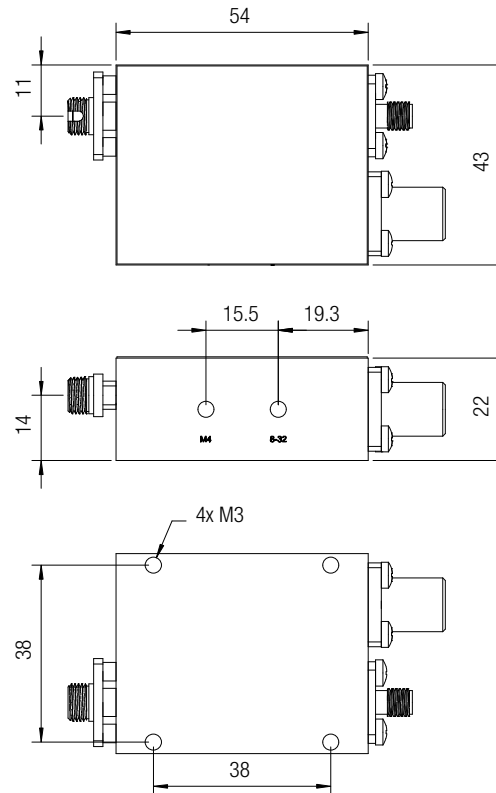
DZ-HSPR-X-I-2G-IN_FS_R1

all dimensions in mm unless otherwise noted

Ultra High Speed Photoreceiver with InGaAs-PIN Photodiode

Dimensions (continued)

HSPR-X-I-2G-IN-FC (FC fiber optic connector)



DZ-HSPR-X-I-2G-IN_FC_R1

all dimensions in mm unless otherwise noted

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