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Datasheet HCA-S-200M-IN

200 MHz Photoreceiver with InGaAs PIN Photodiode

The picture shows the HCA-S-200M-IN-FS with free space input.
The photoreceiver will be delivered without post holder and post.

Features

- **InGaAs PIN Detector, 0.3 mm Active Diameter**
- **Spectral Range 900 ... 1700 nm**
- **Bandwidth DC ... 200 MHz**
- **Amplifier Transimpedance (Gain) 2.0 x 10^4 V/A**
- **Max. Conversion Gain 1.9 x 10^4 V/W @ 1550 nm**

Applications

- **Spectroscopy**
- **Fast Pulse and Transient Measurements**
- **Optical Triggering**
- **Optical Front-End for Oscilloscopes, A/D Converters and HF Lock-In Amplifiers**

Specifications

	Test Conditions	*Vs = ± 15 V, Ta = 25°C*	
Gain	Transimpedance	2.0 x 10^4 V/A	(@ 50 Ω load)
	Max. Conversion Gain	1.9 x 10^4 V/W	(@ 1550 nm)
Frequency Response	Lower Cut-Off Frequency	DC	
	Upper Cut-Off Frequency (- 3 dB)	200 MHz	(± 10 %)
	Rise/Fall Time (10% - 90%)	1.8 ns	
	Gain Flatness	± 1 dB	
Detector	Detector Material	InGaAs PIN photodiode	
	Active Area	∅ 0.3 mm	
	Spectral Response	900 ... 1700 nm	
Input	Input Offset Compensation Range	± 100 µA adjustable by offset trimpot	
	Optical Saturation Power	60 µW (for linear amplification, @ 1550 nm)	
	Min. NEP	4.9 pW/√Hz	(@ 1550 nm, 10 MHz)

200 MHz Photoreceiver with InGaAs PIN Photodiode

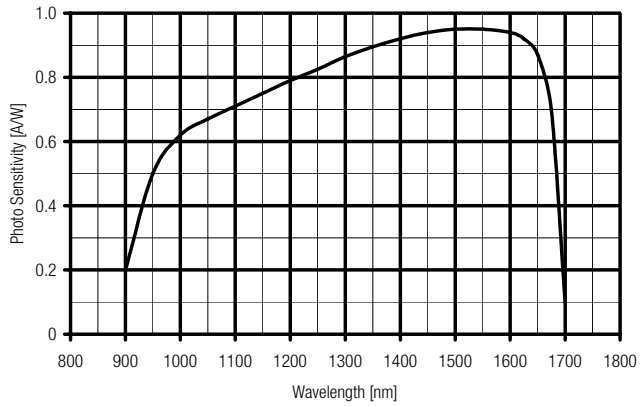
Specifications (continued)

Output	Output Voltage Range	± 1.2 V (@ 50 Ω load) for linear operation and low harmonic distortion
	Max. Output Voltage Range	± 1.7 V (@ 50 Ω load)
	Output Impedance	50 Ω (designed for 50 Ω load)
	Output Noise	ca. 20 mV peak-peak or 3 mV rms (@ 50 Ω load, no signal on detector)
Power Supply	Supply Voltage	± 15 V
	Supply Current	± 60 mA typ. (depends on operating conditions, recommended power supply capability minimum ± 150 mA)
Case	Weight	210 g (0.5 lbs)
	Material	AlMg4.5Mn, nickel-plated
Temperature Range	Storage Temperature	- 40 ... + 100 °C
	Operating Temperature	0 ... + 60 °C

Absolute Maximum Ratings

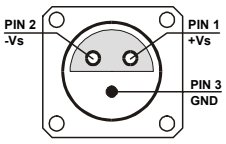
Optical Input Power	10 mW
Power Supply Voltage	± 22 V

Spectral Response



Connectors

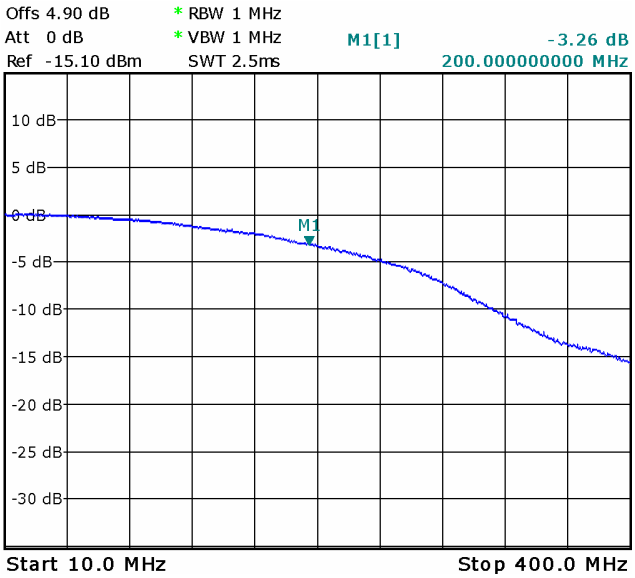
Input	HCA-S-200M-IN-FS	25 mm round flange for free space applications
	HCA-S-200M-IN-FC	FC fiber optic receptacle
Output	BNC	
Power Supply	LEMO series 1S, 3-pin fixed socket Pin 1: + 15V Pin 2: - 15V Pin 3: GND	



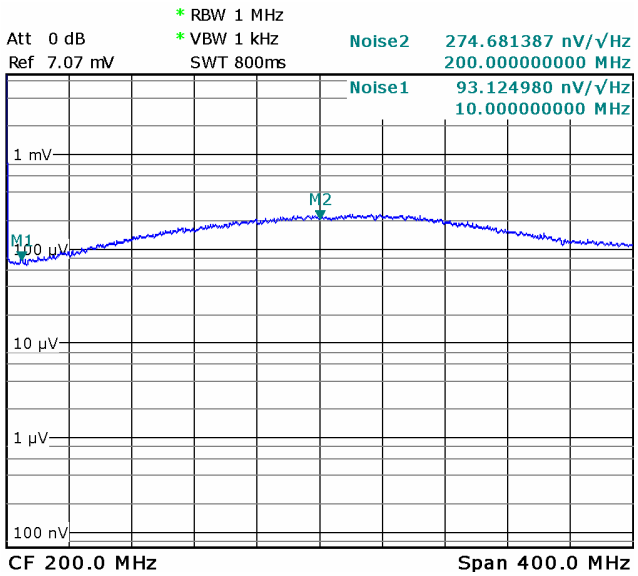
200 MHz Photoreceiver with InGaAs PIN Photodiode

Typical Performance Characteristics

Frequency Response



Noise Spectrum



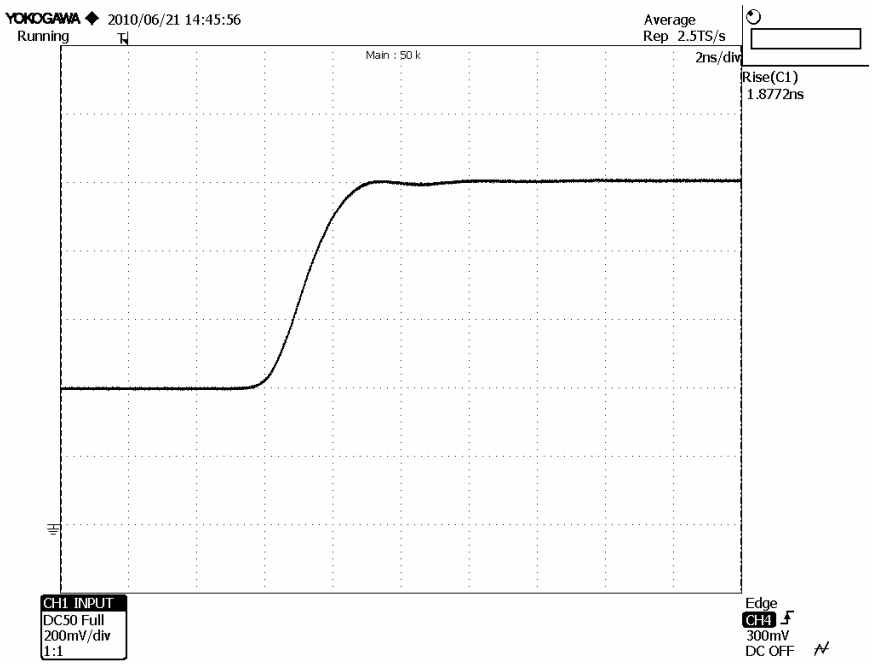
Note: Spectral noise data is measured at the amplifier output with no signal on the photodiode. To determine the spectral input noise divide the measured output noise by the amplifier conversion gain.
Conversion gain (V/W) = amplifier gain (20,000 V/A) x photo sensitivity (A/W).

Marker	Frequency	Output Noise	Resulting Input Noise (NEP)
1	10 MHz	93 nV/√Hz	4.9 pW/√Hz (@ 1550 nm)
2	200 MHz	275 nV/√Hz	15 pW/√Hz (@ 1550 nm)

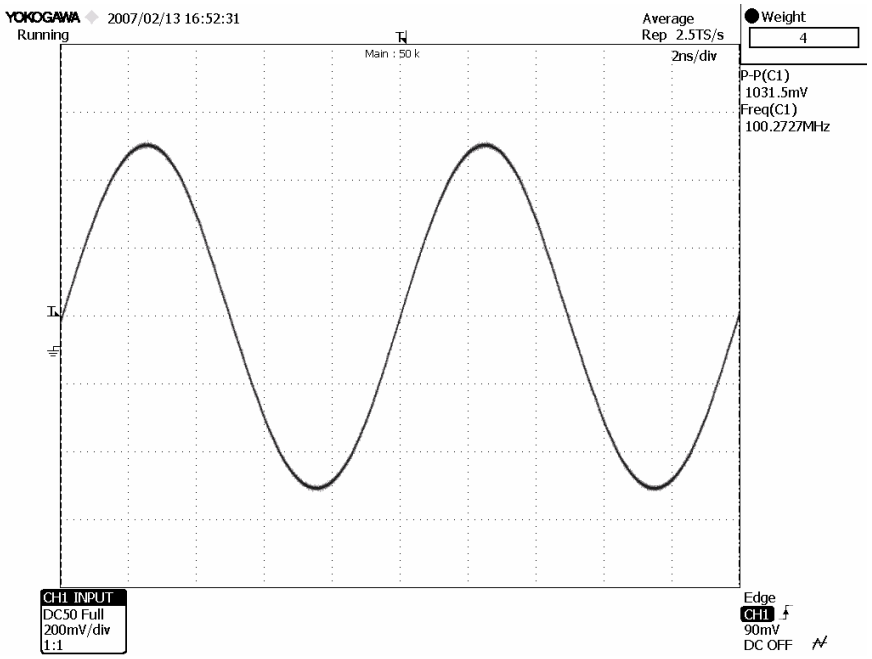
200 MHz Photoreceiver with InGaAs PIN Photodiode

Typical Performance Characteristics (continued)

Pulse Response to Square Wave Input Signal
(with 16 times averaging)



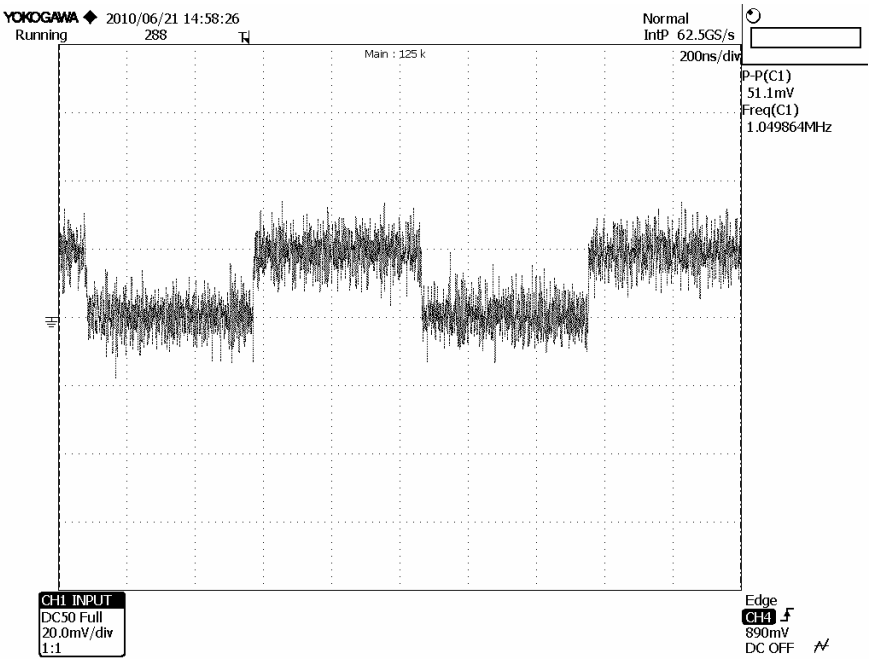
Large Signal Response
output signal for 100 MHz, 55 µW modulated optical input signal
(with 4 times averaging)

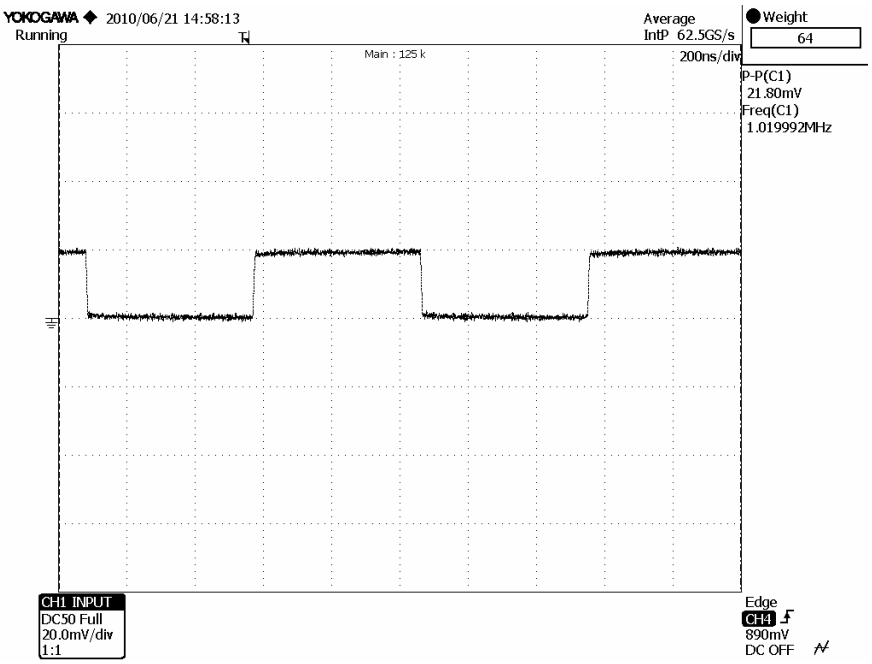


200 MHz Photoreceiver with InGaAs PIN Photodiode

Typical Performance Characteristics (continued)

Small Signal Response
output signal for 1.2 µW modulated optical input signal, 1 MHz square wave
(without (top) and with 64 times averaging (bottom))





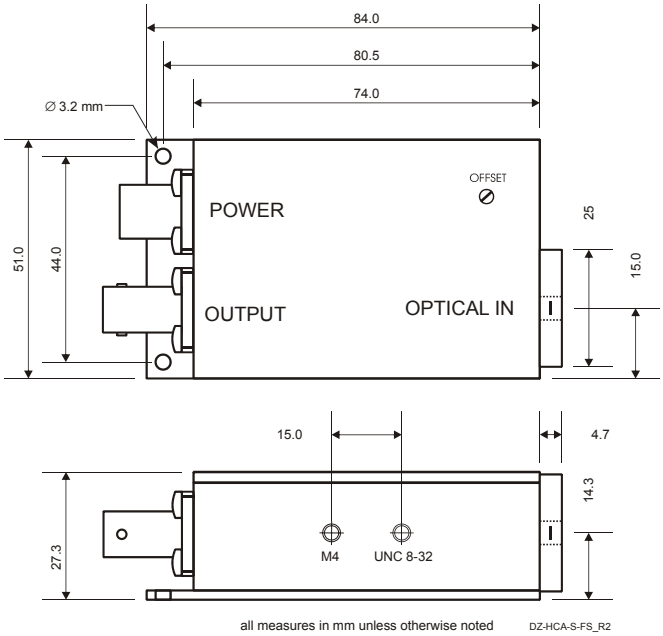
Available Models

HCA-S-200M-IN-FS	free space input
HCA-S-200M-IN-FC	FC fiber optic receptacle
HCA-S	customized versions available on request

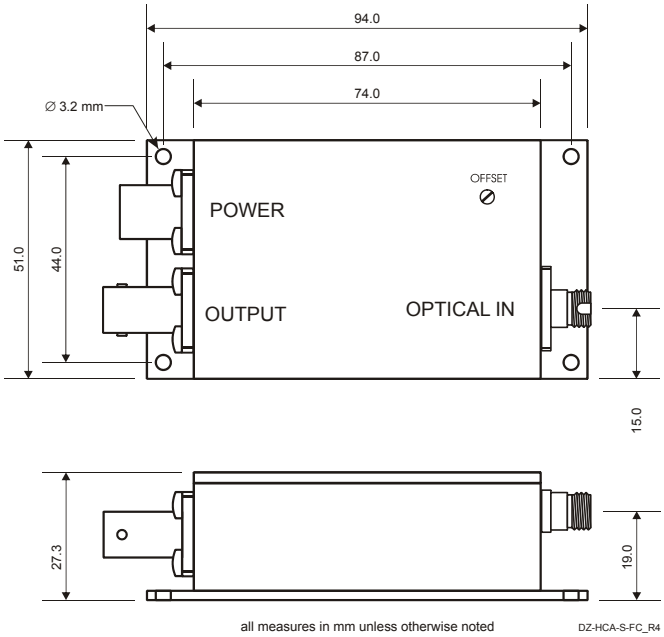
200 MHz Photoreceiver with InGaAs PIN Photodiode

Dimensions

HCA-S-200M-IN-FS



HCA-S-200M-IN-FC



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