High-Speed Photoreceiver with InGaAs PIN Photodiode

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 Fast 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	± 100 µA adjustable by offset trimpot	
	Max. Optical Input Power	60 µW (for linear amplification, @ 1550 nm)	
	Min. NEP	5.4 pW/√Hz	(@ 1550 nm, 10 MHz)

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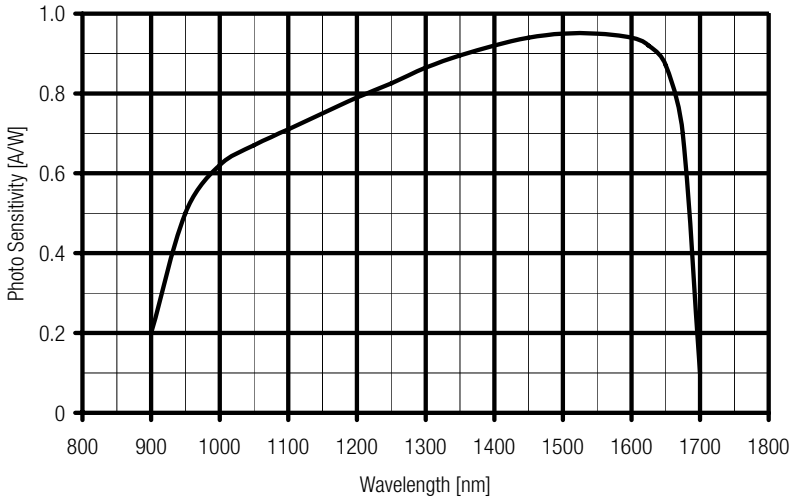
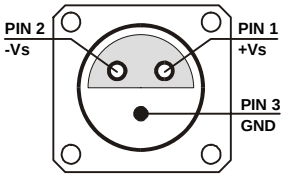
Output	Output Voltage Range	± 1.2 V (@ 50 Ω load) for linear operation and low harmonic distortion
	Max. Output Voltage Range	± 1.7 V (@ 50 Ω load)
	Output Impedance	50 Ω (terminate with 50 Ω load for best performance)
	Output Noise	20 mV peak-peak (@ 50 Ω load, no signal on photodiode)
Power Supply	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	optical, free space, 25 mm ∅ round flange compatible with microbench systems
Output	BNC
Power Supply	LEMO series 1S, 3-pin fixed socket Pin 1: + 15V Pin 2: - 15V Pin 3: GND



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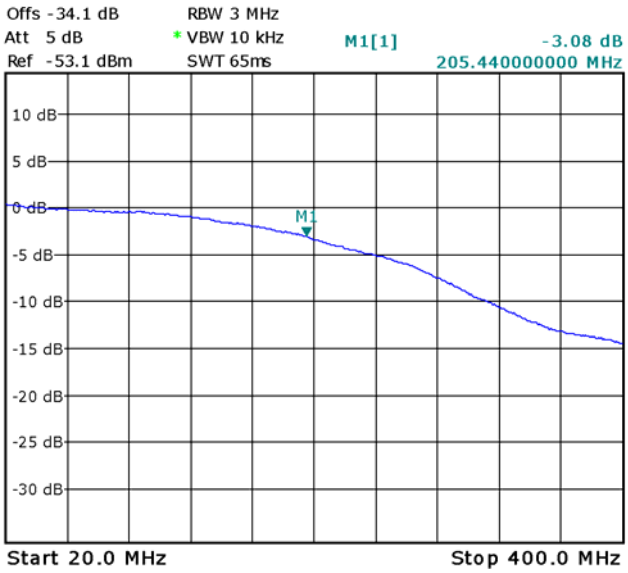
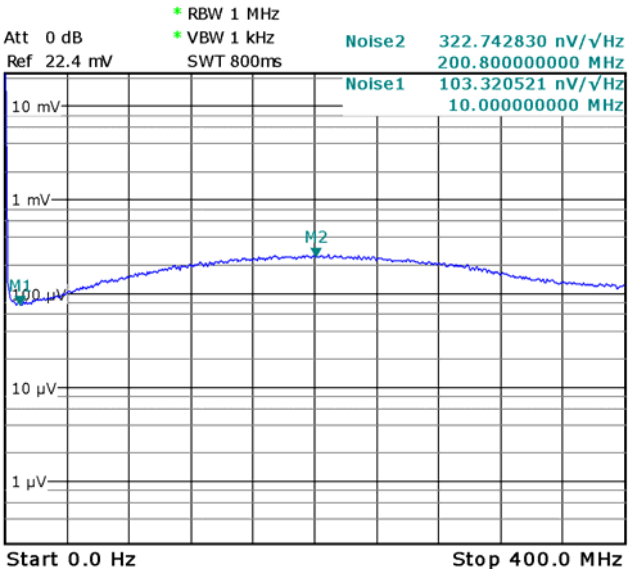
Typical Performance Characteristics

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	103 nV/√Hz	5.4 pW/√Hz (@ 1550 nm)
2	200 MHz	323 nV/√Hz	17 pW/√Hz (@ 1550 nm)

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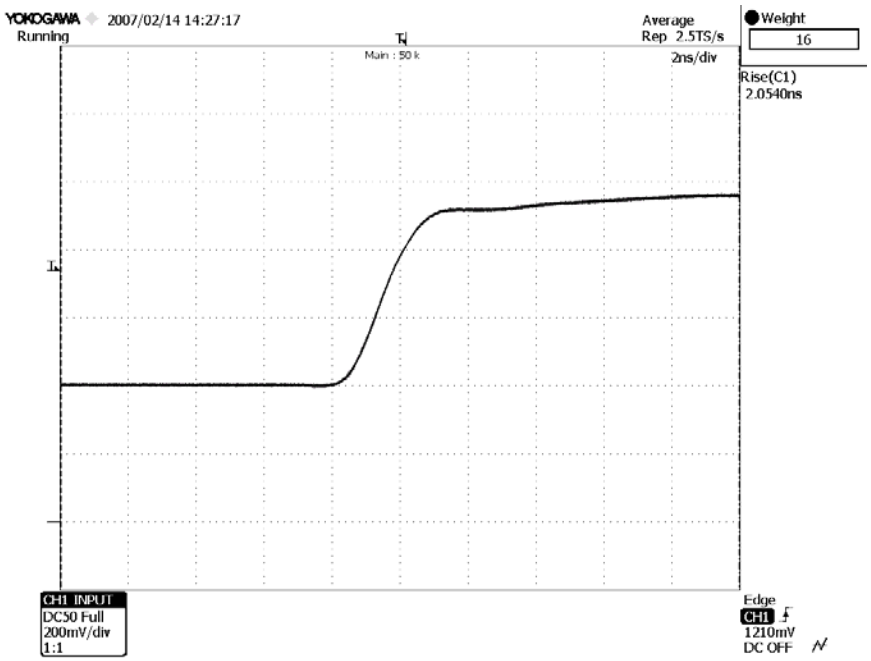
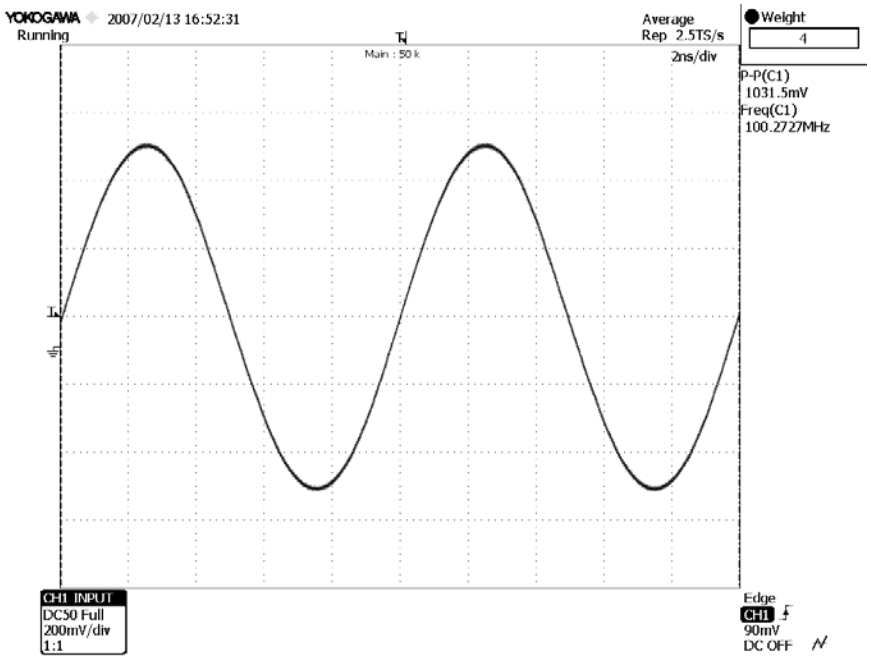
Typical Performance Characteristics (continued)

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



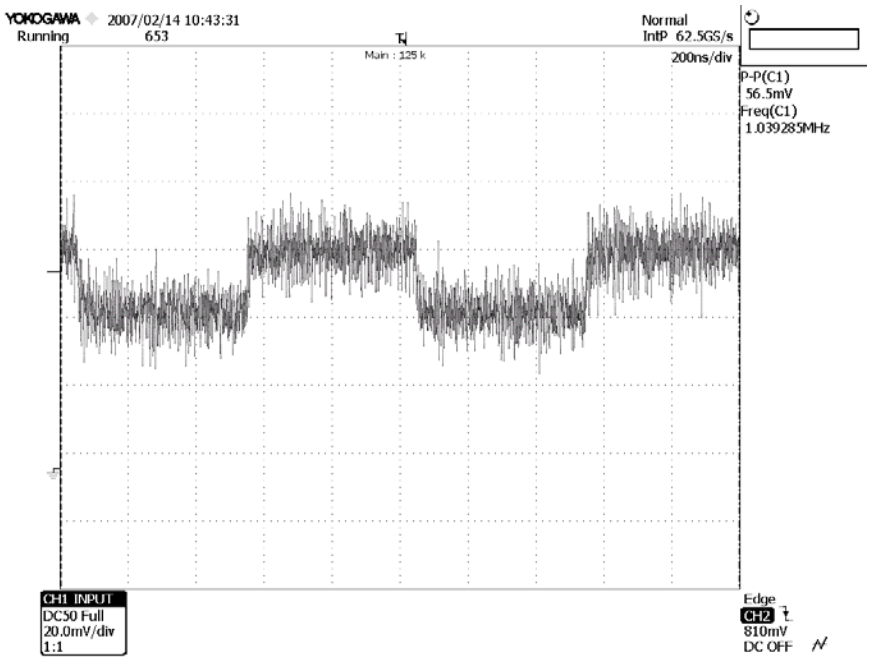
Large Signal Response
output signal for 100 MHz, 50 µW modulated optical input signal
(with 4 times averaging)

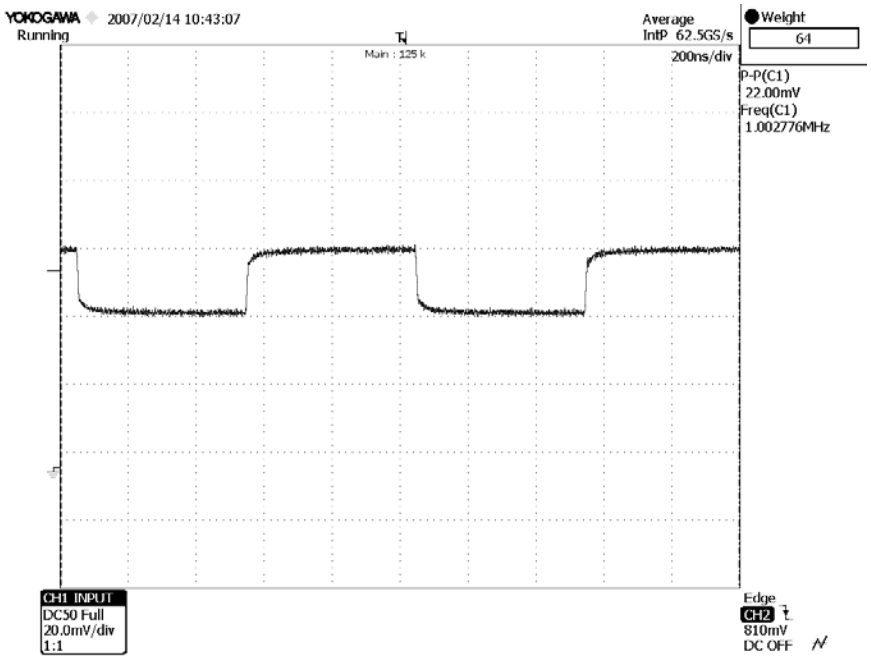


High-Speed Photoreceiver with InGaAs PIN Photodiode

Typical Performance Characteristics (continued)

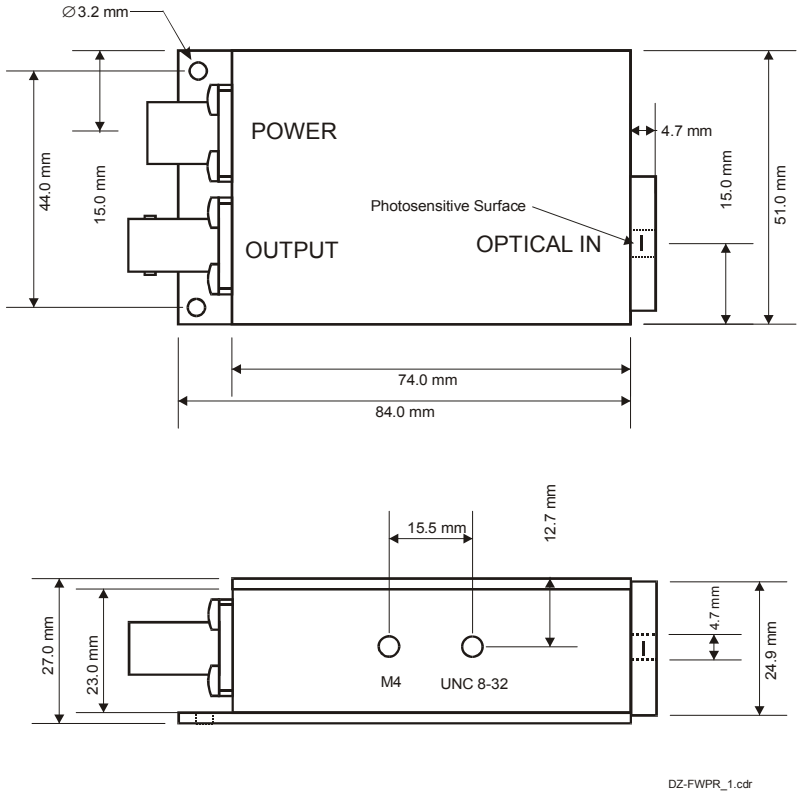
Small Signal Response
output signal for 1.2 µW modulated optical input signal, 1 MHz square wave
(without (top) and with 64 times averaging (bottom))





High-Speed Photoreceiver with InGaAs PIN Photodiode

Dimensions



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