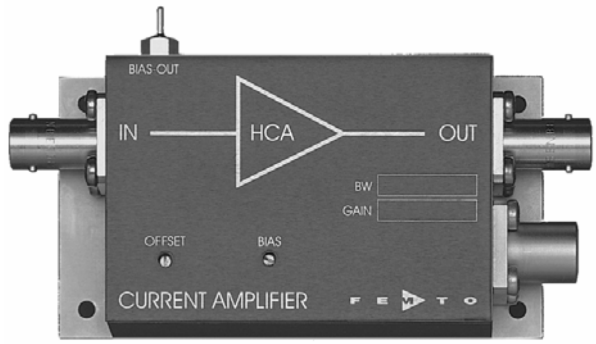
High Speed Current Amplifier



Features

- **Bandwidth DC … 400 MHz**
- **Rise / Fall Time 1 ns**
- **Optimized for Low Pulse Distortion – Almost No Overshoot or Ringing will Occur**
- **Transimpedance (Gain) 5 x 10^3 V/A**

Applications

- **Photodiode and Photomultiplier Amplifier**
- **Spectroscopy**
- **Ionisation Detectors**
- **Ideal for Analyzing Digital Signals (No Baseline Shift at any Digital Code)**
- **Preamplifier for A/D Converters, Digitizers etc.**

Specifications

	Test Conditions	*Vs = ± 15 V, Ta = 25°C*	
Gain	Transimpedance	5 x 10^3 V/A	(@ 50 Ω load)
	Gain Accuracy	± 2 %	
Frequency Response	Lower Cut-Off Frequency	DC	
	Upper Cut-Off Frequency (- 3 dB)	400 MHz	(± 10 %, @ Csource 2 to 4 pF)
		350 MHz	(± 10 %, @ Csource 5 to 10 pF)
	Max. Source Capacitance	10 pF	(incl. cable, e.g. typical coax cable 1 pF/ cm)
	Rise / Fall Time (10 % - 90 %)	1.0 ns	(@ Csource 2 to 4 pF)
		1.3 ns	(@ Csource 5 to 10 pF)
	Gain Flatness	± 0.3 dB	
Input	Equ. Input Noise Current	21 pA/√Hz	(@ 100 MHz)
	Equ. Input Noise Voltage	3.5 nV/√Hz	(@ 100 MHz)
	Equ. Integrated Noise	4 µA peak-peak	(independent of Csource)
	Input Bias Current	2 µA typ.	
	Input Bias Current Drift	0.07 µA / °C	
	Offset Current Compensation	± 200 µA, adjustable by offset trimpot	
	Input Current Range	± 200 µA (for linear amplification)	
	Input Offset Voltage	< 2 mV	
	DC Input Impedance	50 Ω (virtual) // 5 pF	
Output	Output Voltage Range	± 1.0 V	(@ 50 Ω load)
		for linear operation and low harmonic distortion	
	Max. Output Voltage Range	± 1.5 V	(@ 50 Ω load)
	Output Impedance	50 Ω (terminate with 50 Ω load for best performance)	
Bias Output	Bias Output Voltage Range	± 12 V, adjustable by bias trimpot	
	Bias Output Impedance	10 kΩ // 1 µF	

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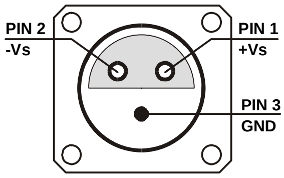
Specifications (continued)

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

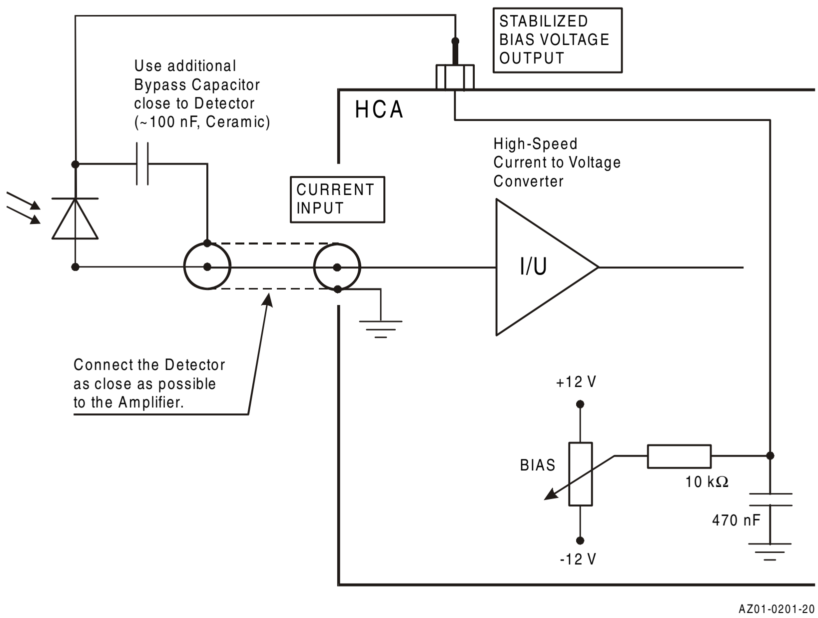
Absolute Maximum Ratings	Input Voltage	± 5 V
	Power Supply Voltage	± 22 V

Connectors	Input	BNC
	Output	BNC
	Power Supply	LEMO series 1S, 3-pin fixed socket Pin 1: + 15V Pin 2: - 15V Pin 3: GND



Application Diagrams

Photo Detector Biasing in Photoconductive Mode:
Best choice for high speed applications and optimum signal to noise performance.



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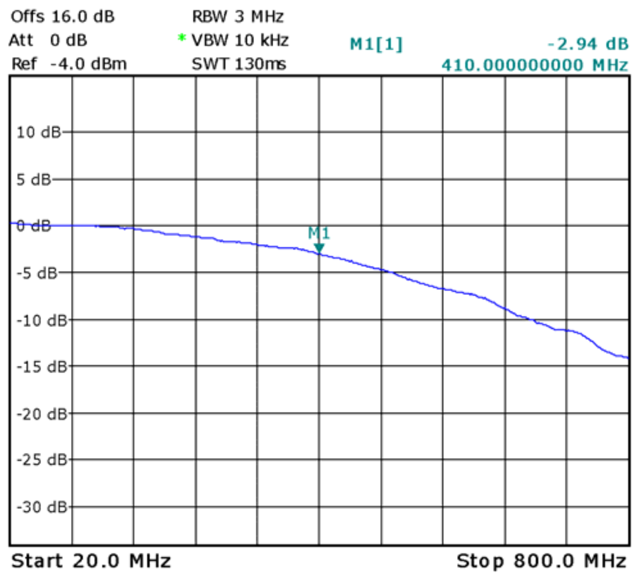
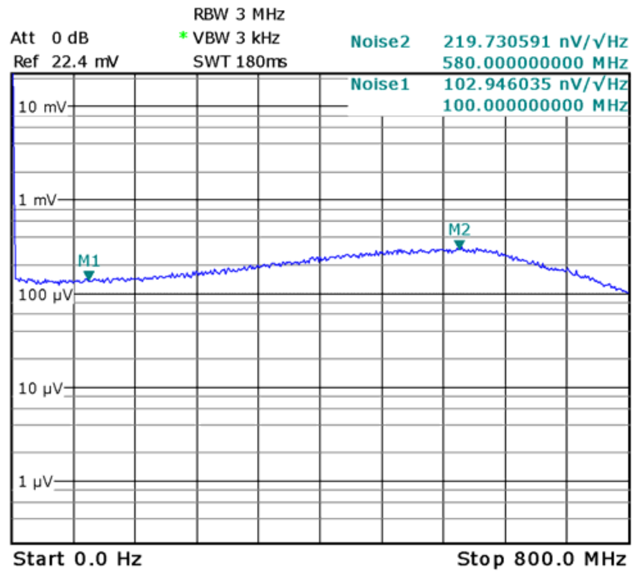
Typical Performance Characteristics

Frequency Response



Noise Spectrum



Note: Spectral noise data is measured at the amplifier output with open but shielded input. To determine the spectral input noise divide the measured output noise by the amplifier gain of 5 x 10^3 V/A, i.e.:

Marker	Frequency	Output Noise	Resulting Input Noise
1	100 MHz	103 nV/√Hz	21 pA√Hz
2	580 MHz	220 nV/√Hz	44 pA√Hz

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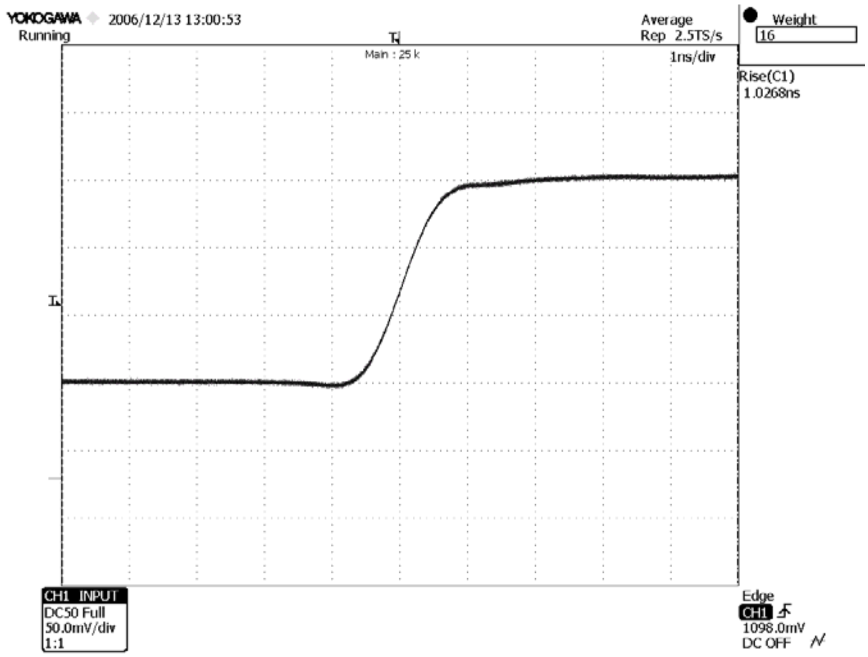
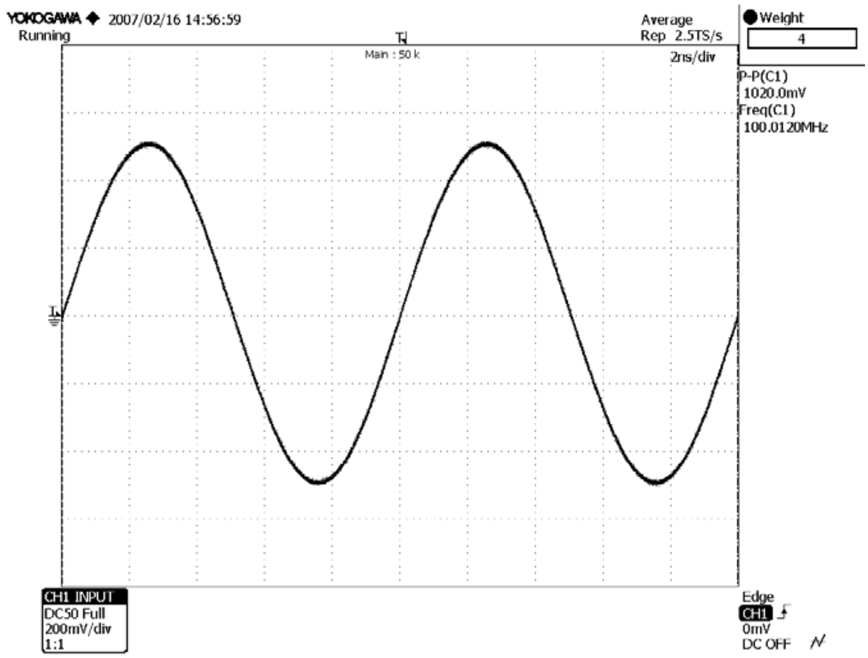
Typical Performance Characteristics (continued)

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



Large Signal Response
output signal for 100 MHz, 200 µA peak-peak input signal
(with 4 times averaging)



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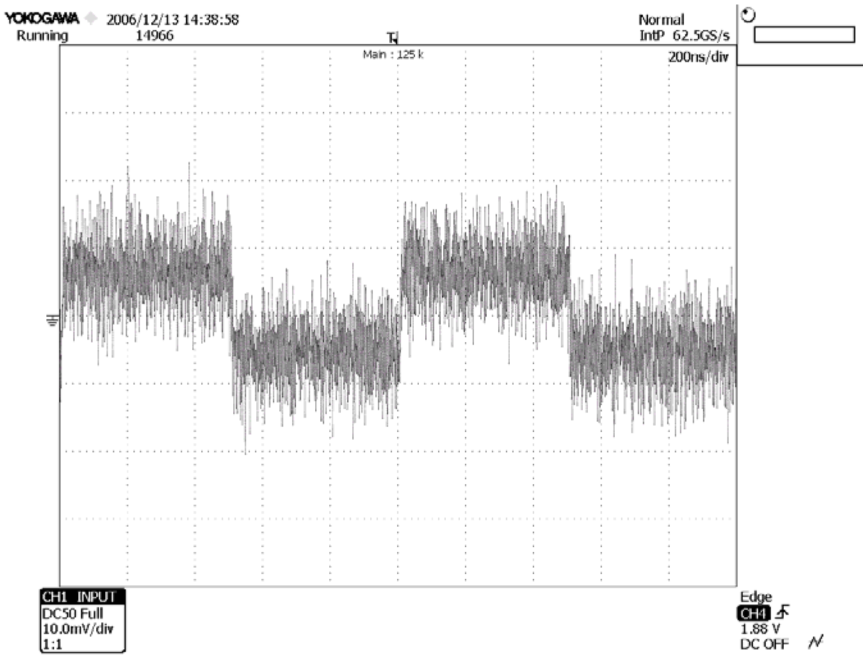
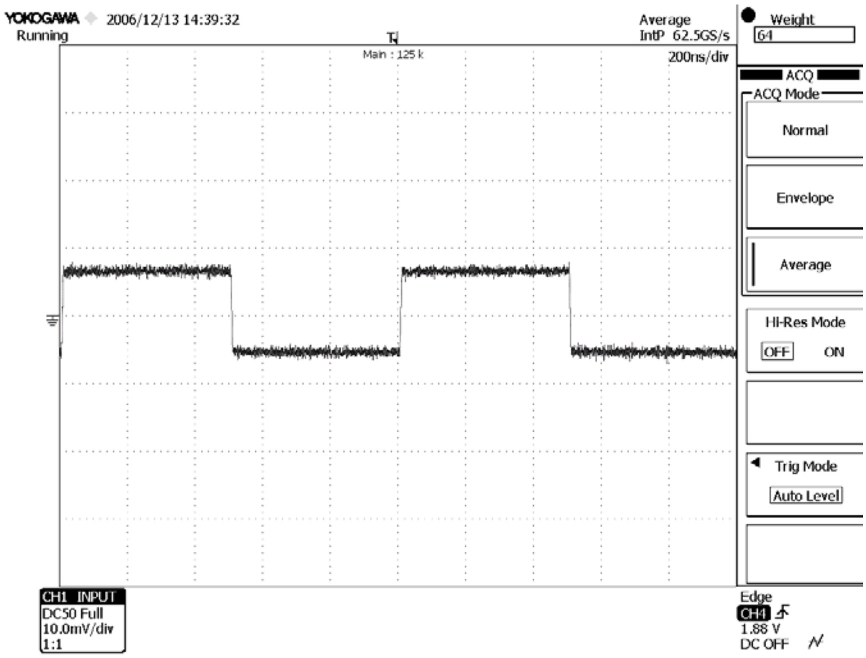
Typical Performance Characteristics (continued)

Small Signal Response
output signal for 1 MHz, 2.4 µA peak-peak square wave input signal
(without (top) and with 64 times averaging (bottom))





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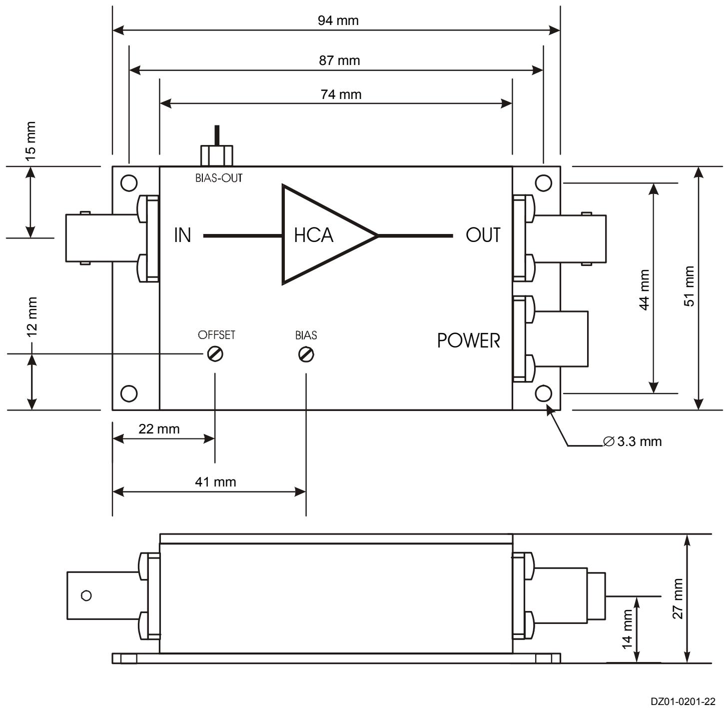
Dimensions



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