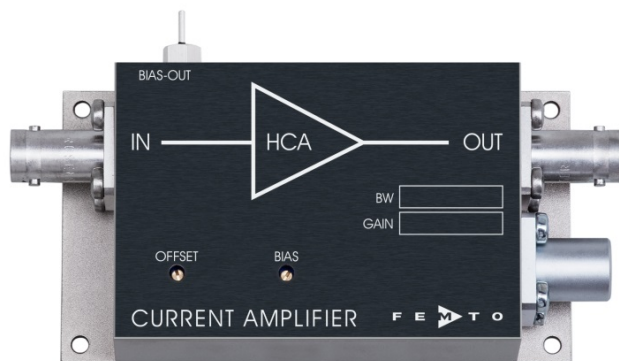


High-Speed Current Amplifier



Features	• Bandwidth DC ... 400 MHz • Rise / Fall Time 1 ns • Optimized for Low Pulse Distortion – Almost No Overshoot or Ringing will Occur • Transimpedance (Gain) 5×10^3 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	$V_s = \pm 15$ V, $T_a = 25^\circ\text{C}$
Gain	Transimpedance	5×10^3 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/ $\sqrt{\text{Hz}}$ (@ 100 MHz)
	Equ. Input Noise Voltage	3.5 nV/ $\sqrt{\text{Hz}}$ (@ 100 MHz)
	Equ. Integrated Noise	4 μA peak-peak (independent of Csource)
	Input Bias Current	2 μA typ.
	Input Bias Current Drift	0.07 $\mu\text{A} / ^\circ\text{C}$
	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 k Ω // 1 μF

High-Speed Current Amplifier

Specifications (continued)

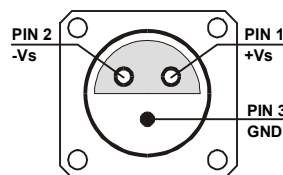
Power Supply	Supply Voltage	$\pm 15\text{ V}$
	Supply Current	$\pm 60\text{ mA typ.}$ (depends on operating conditions, recommended power supply capability minimum $\pm 150\text{ mA}$)
Case	Weight	210 g (0.5 lbs)
	Material	AlMg4.5Mn, nickel-plated
Temperature Range	Storage Temperature	$-40 \dots +100\text{ }^{\circ}\text{C}$
	Operating Temperature	$0 \dots +60\text{ }^{\circ}\text{C}$

Absolute Maximum Ratings

Input Voltage	$\pm 5\text{ V}$
Power Supply Voltage	$\pm 22\text{ V}$

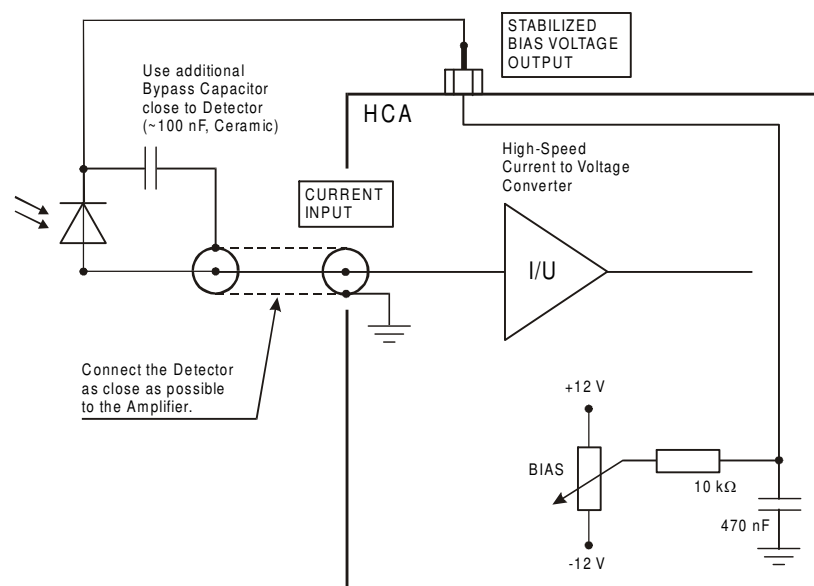
Connectors

Input	BNC
Output	BNC
Power Supply	LEMO series 1S, 3-pin fixed socket
	Pin 1: $+15\text{ V}$
	Pin 2: -15 V
	Pin 3: GND



Application Diagrams

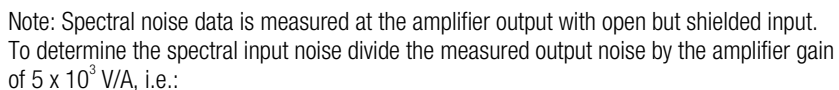
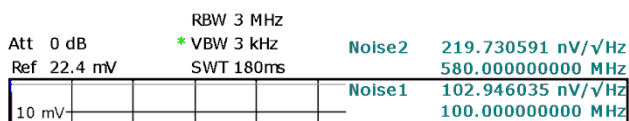
Photo Detector Biasing in Photoconductive Mode:
Best choice for high speed applications and optimum signal to noise performance.



AZ01-0201-20

Typical Performance Characteristics

Offs 16.0 dB	RBW 3 MHz		
Att 0 dB	* VBW 10 kHz	M1[1]	-2.94 dB
Ref -4.0 dBm	SWT 130ms		410.000000000 MHz

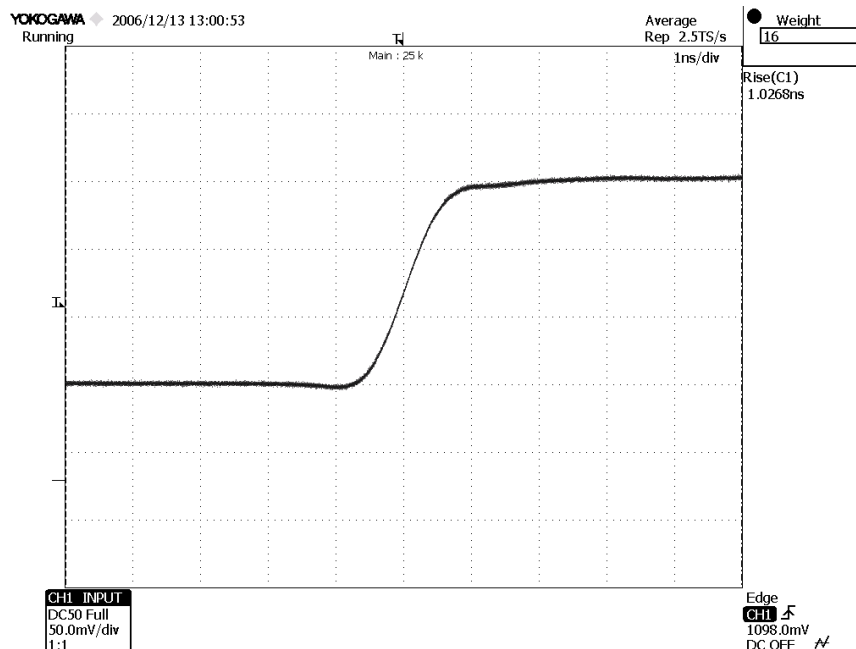


Marker	Frequency	Output Noise	Resulting Input Noise
1	100 MHz	103 nV/ $\sqrt{\text{Hz}}$	21 pA/ $\sqrt{\text{Hz}}$
2	580 MHz	220 nV/ $\sqrt{\text{Hz}}$	44 pA/ $\sqrt{\text{Hz}}$

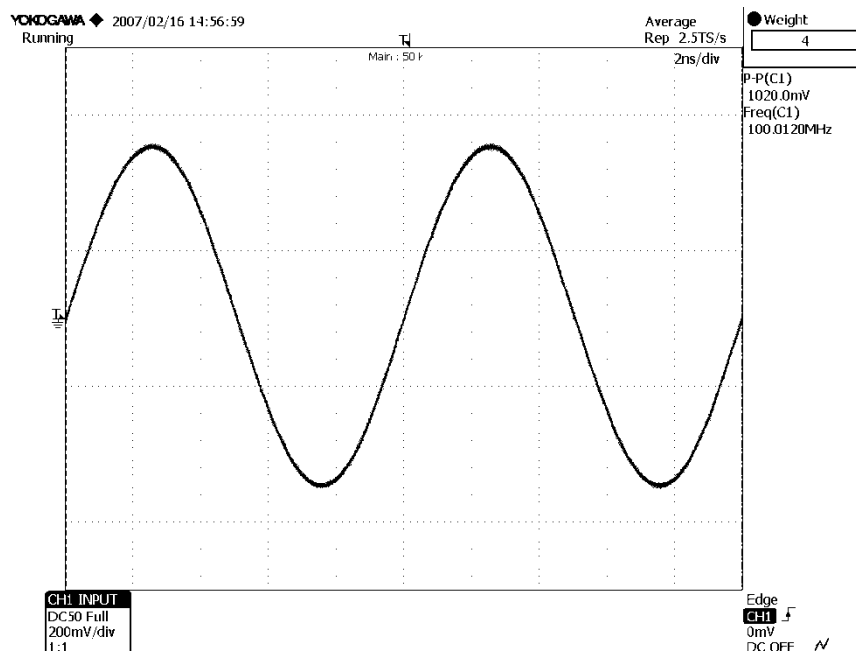
High-Speed Current Amplifier

Typical Performance
Characteristics
(continued)

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



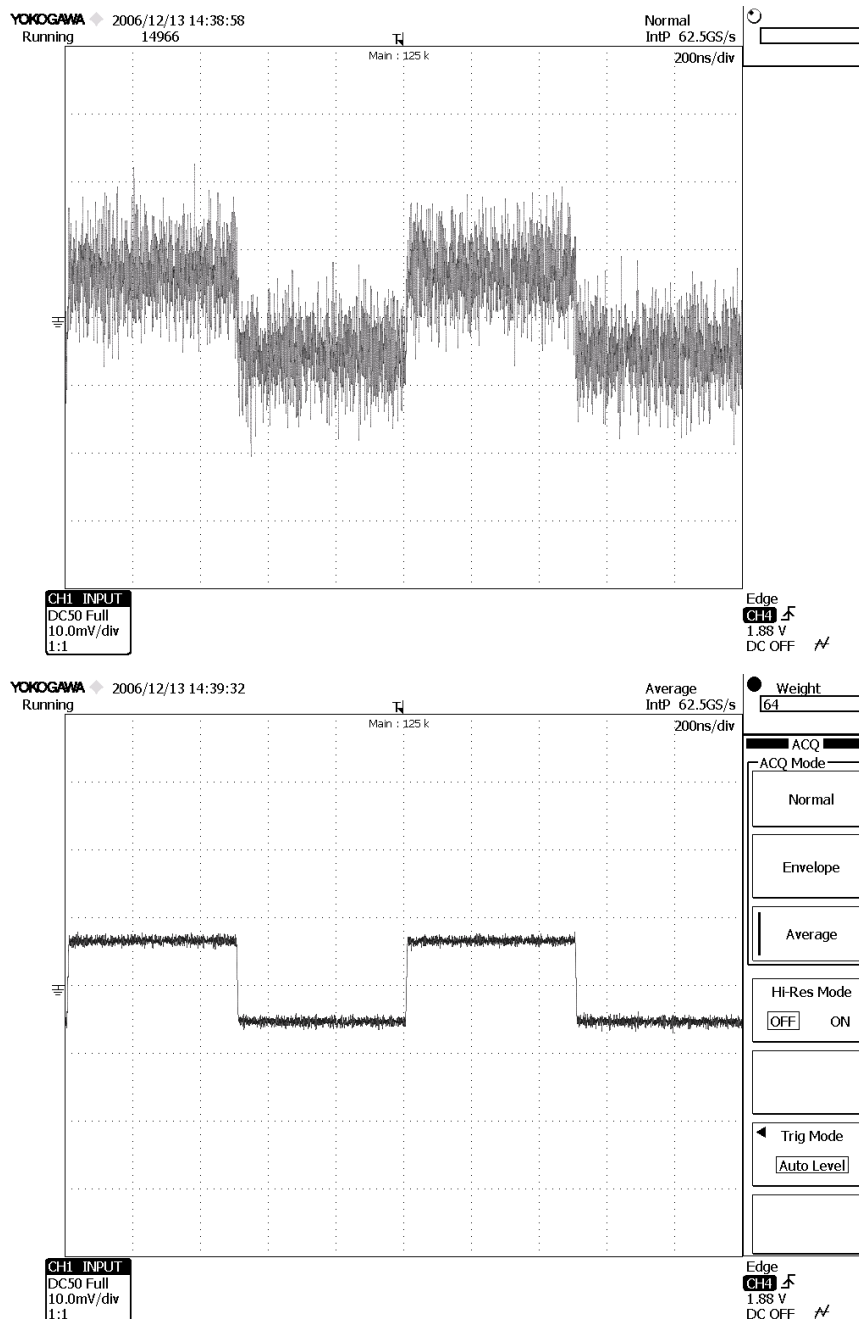
Large Signal Response
output signal for 100 MHz, 200 μ A peak-peak input signal
(with 4 times averaging)



High-Speed Current Amplifier

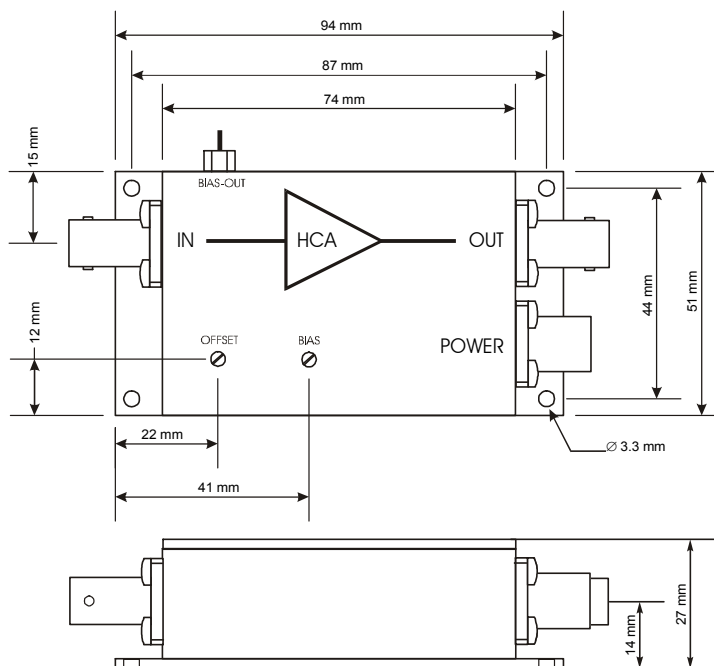
Typical Performance
Characteristics
(continued)

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



High-Speed Current Amplifier

Dimensions



DZ01-0201-22

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