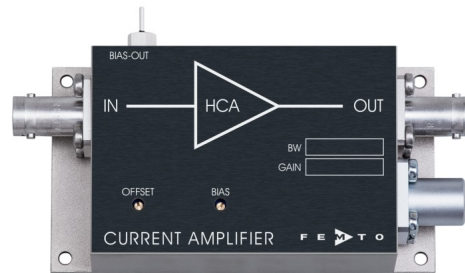


Datasheet

HCA-100M-50K-C

High-Speed Current Amplifier



Features	<ul style="list-style-type: none"> • Bandwidth DC ... 100 MHz • Transimpedance (Gain) 5×10^4 V/A • Suitable for High Source Capacitance up to 20 pF • Low Equivalent Input Noise Current of 3.8 pA/√Hz 												
Applications	<ul style="list-style-type: none"> • Photodiode and Photomultiplier Amplifier • Spectroscopy • Charge Amplifier • Ionisation Detectors • Pre-amplifier for Lock-Ins, A/D Converters, etc. 												
Specifications	<table border="0"> <tr> <td>Test Conditions</td> <td>$V_s = \pm 15$ V, $T_a = 25^\circ$C</td> </tr> <tr> <td>Gain</td> <td>Transimpedance 5×10^4 V/A (@ 50 Ω load) Gain Accuracy ± 2 %</td> </tr> <tr> <td>Frequency Response</td> <td>Lower Cut-Off Frequency DC Upper Cut-Off Frequency (-3 dB) 100 MHz (± 10 %, @ Csource 2 to 10 pF) 80 MHz (± 10 %, @ Csource 11 to 20 pF) Max. Source Capacitance 20 pF (incl. cable, e.g. typical coax cable 1 pF/cm) Rise / Fall Time (10 % - 90 %) 3.4 ns (@ Csource 2 to 10 pF) 4.0 ns (@ Csource 11 to 20 pF) Gain Flatness ± 0.3 dB</td> </tr> <tr> <td>Input</td> <td>Equ. Input Noise Current 3.8 pA/√Hz (@ 10 MHz) Equ. Input Noise Voltage 0.9 nV/√Hz (@ 10 MHz) Equ. Integrated Noise 0.6 μA peak-peak Input Bias Current 12 μA typ. Input Bias Current Drift 3 nA / °C Offset Current Compensation ± 40 μA adjustable by offset trimpot Input Current Range ± 30 μA (for linear amplification) Input Offset Voltage < 1 mV DC Input Impedance 56 Ω (virtual) // 5 pF</td> </tr> <tr> <td>Output</td> <td>Output Voltage Range ± 1.5 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)</td> </tr> <tr> <td>Bias Output</td> <td>Bias Output Voltage Range ± 12 V, adjustable by bias trimpot Bias Output Impedance 10 kΩ // 1 μF</td> </tr> </table>	Test Conditions	$V_s = \pm 15$ V, $T_a = 25^\circ$ C	Gain	Transimpedance 5×10^4 V/A (@ 50 Ω load) Gain Accuracy ± 2 %	Frequency Response	Lower Cut-Off Frequency DC Upper Cut-Off Frequency (-3 dB) 100 MHz (± 10 %, @ Csource 2 to 10 pF) 80 MHz (± 10 %, @ Csource 11 to 20 pF) Max. Source Capacitance 20 pF (incl. cable, e.g. typical coax cable 1 pF/cm) Rise / Fall Time (10 % - 90 %) 3.4 ns (@ Csource 2 to 10 pF) 4.0 ns (@ Csource 11 to 20 pF) Gain Flatness ± 0.3 dB	Input	Equ. Input Noise Current 3.8 pA/√Hz (@ 10 MHz) Equ. Input Noise Voltage 0.9 nV/√Hz (@ 10 MHz) Equ. Integrated Noise 0.6 μA peak-peak Input Bias Current 12 μA typ. Input Bias Current Drift 3 nA / °C Offset Current Compensation ± 40 μA adjustable by offset trimpot Input Current Range ± 30 μA (for linear amplification) Input Offset Voltage < 1 mV DC Input Impedance 56 Ω (virtual) // 5 pF	Output	Output Voltage Range ± 1.5 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)	Bias Output	Bias Output Voltage Range ± 12 V, adjustable by bias trimpot Bias Output Impedance 10 kΩ // 1 μF
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SOPHISTICATED TOOLS FOR SIGNAL RECOVERY



DE-HCA-100M-50K-C_R4/JM/18MAR2019

Datasheet

HCA-100M-50K-C

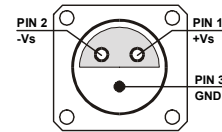
High-Speed Current Amplifier

Specifications (continued)

Power Supply	Supply Voltage	± 15 V
	Supply Current	± 50 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	$-40 \dots +100$ °C
	Operating Temperature	$0 \dots +60$ °C

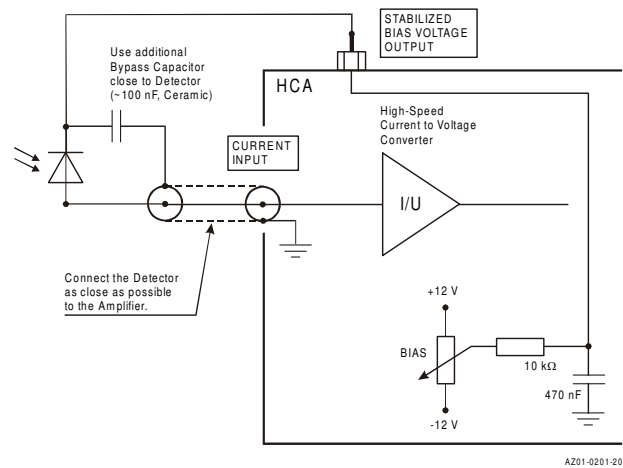
Absolute Maximum Ratings	Input Voltage	± 5 V
	Power Supply Voltage	± 22 V

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.



AZ01-0201-20

SOPHISTICATED TOOLS FOR SIGNAL RECOVERY



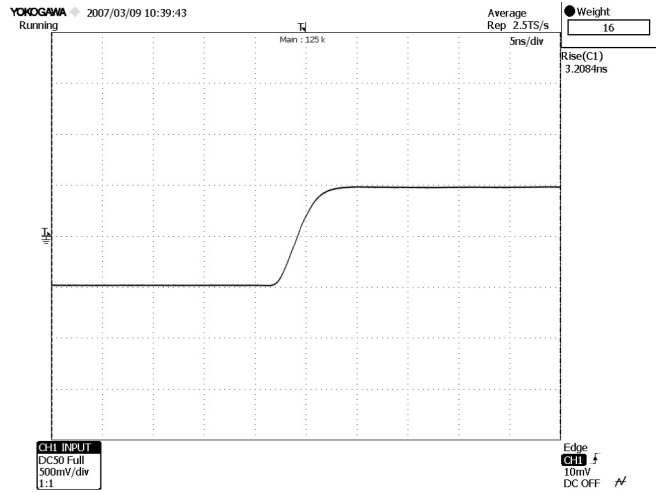
Datasheet

HCA-100M-50K-C

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 50 MHz, 20 μ A peak-peak input signal
(with 4 times averaging)



SOPHISTICATED TOOLS FOR SIGNAL RECOVERY



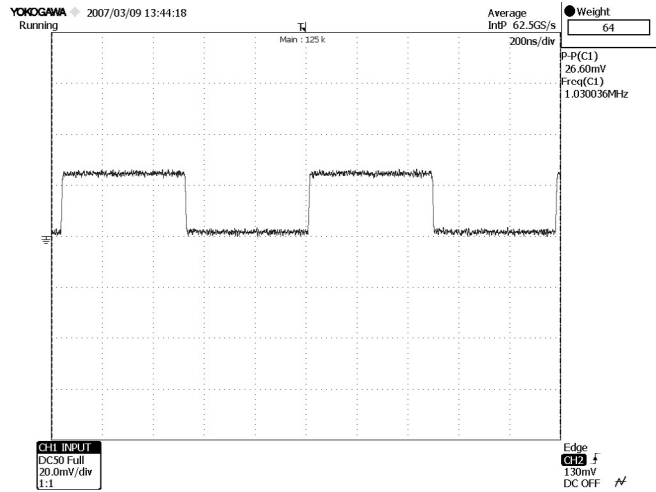
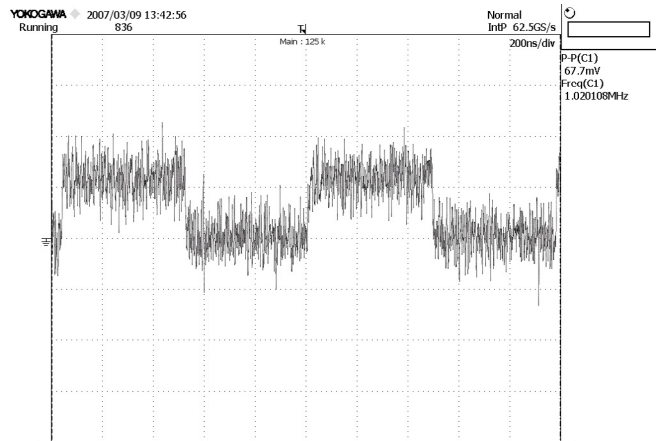
Datasheet

HCA-100M-50K-C

High-Speed Current Amplifier

Typical Performance
Characteristics
(continued)

Small Signal Response
output signal for 1 MHz, 500 nA peak-peak square wave input signal
(without (top) and with 64 times averaging (bottom))



SOPHISTICATED TOOLS FOR SIGNAL RECOVERY

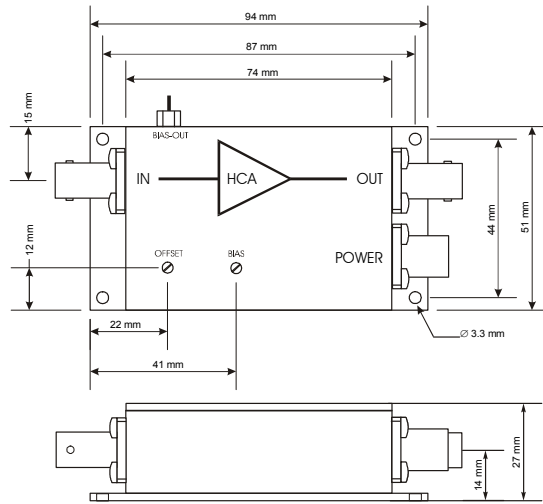


Datasheet

HCA-100M-50K-C

High-Speed Current Amplifier

Dimensions



D201-0201-22

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SOPHISTICATED TOOLS FOR SIGNAL RECOVERY

