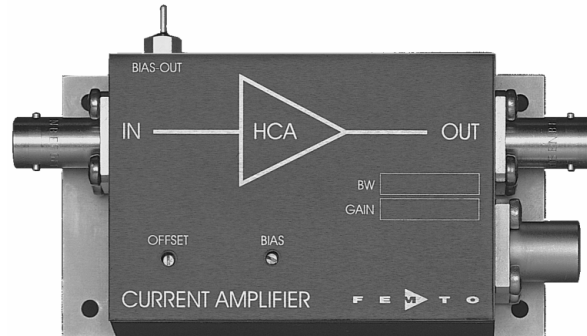




Datasheet

HCA-4M-500K-C

High Speed Current Amplifier



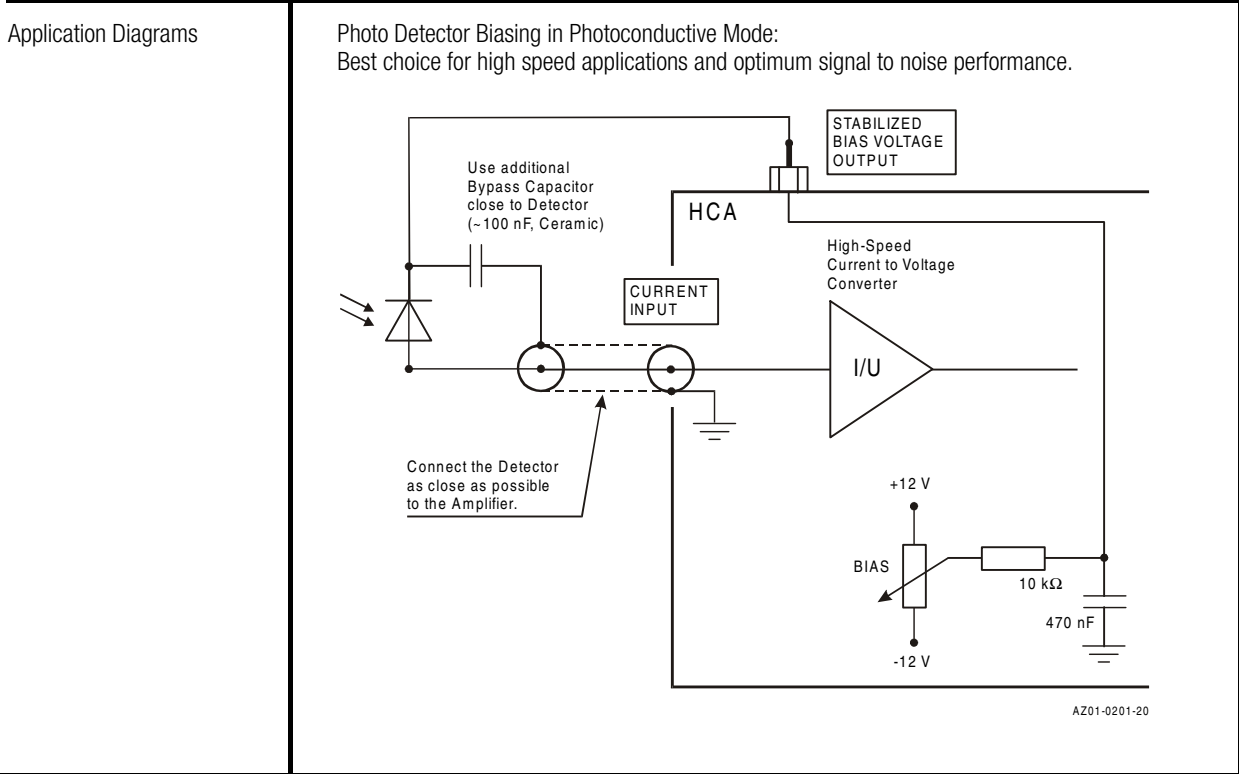
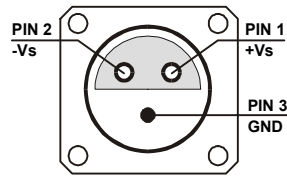
Features	<ul style="list-style-type: none"> • Bandwidth and Frequency Response Independent of Detector Capacitance (up to 500 pF) • Low Noise 3.5 pA/√Hz Equivalent Input Noise Current • Bandwidth DC ... 4 MHz • Transimpedance (Gain) 5 x 10⁵ V/A • Protection against ± 3.5 kV Transients 																																												
Applications	<ul style="list-style-type: none"> • Photodiode and Photomultiplier Amplifier • Spectroscopy • Charge Amplifier • Ionisation Detectors • Preamplifier for Lock-Ins, A/D Converters, etc. 																																												
Specifications	<table border="0"> <tr> <td></td> <td><i>Test Conditions</i></td> <td><i>V_s = ± 15 V, T_a = 25°C</i></td> </tr> <tr> <td rowspan="2">Gain</td> <td>Transimpedance</td> <td>5 x 10⁵ V/A (@ 50 Ω load)</td> </tr> <tr> <td>Gain Accuracy</td> <td>± 1 %</td> </tr> <tr> <td rowspan="4">Frequency Response</td> <td>Lower Cut-Off Frequency</td> <td>DC</td> </tr> <tr> <td>Upper Cut-Off Frequency (- 3 dB)</td> <td>4 MHz</td> </tr> <tr> <td>Rise / Fall Time (10 % - 90 %)</td> <td>90 ns</td> </tr> <tr> <td>Gain Flatness</td> <td>± 0.3 dB</td> </tr> <tr> <td rowspan="8">Input</td> <td>Equ. Input Noise Current</td> <td>3.5 pA/√Hz (@ 100 kHz)</td> </tr> <tr> <td>Equ. Input Noise Voltage</td> <td>0.8 nV/√Hz (@ 100 kHz)</td> </tr> <tr> <td>Input Bias Current</td> <td>18 μA typ.</td> </tr> <tr> <td>Input Bias Current Drift</td> <td>0.8 nA / K</td> </tr> <tr> <td>Offset Current Compensation</td> <td>± 6 μA adjustable by offset trimpot</td> </tr> <tr> <td>Input Current Range</td> <td>± 3 μA (for linear amplification)</td> </tr> <tr> <td>Input Offset Voltage</td> <td>3 mV</td> </tr> <tr> <td>DC Input Impedance</td> <td>50 Ω (virtual) // 5 pF</td> </tr> <tr> <td rowspan="2">Output</td> <td>Output Voltage Range</td> <td>± 1.5 V (@ 50 Ω load) for linear operation and low harmonic distortion</td> </tr> <tr> <td>Output Impedance</td> <td>50 Ω (terminate with 50 Ω load for best performance)</td> </tr> <tr> <td rowspan="2">Bias Output</td> <td>Bias Output Voltage Range</td> <td>± 12 V, adjustable by bias trimpot</td> </tr> <tr> <td>Bias Output Impedance</td> <td>10 kΩ // 1 μF</td> </tr> </table>		<i>Test Conditions</i>	<i>V_s = ± 15 V, T_a = 25°C</i>	Gain	Transimpedance	5 x 10 ⁵ V/A (@ 50 Ω load)	Gain Accuracy	± 1 %	Frequency Response	Lower Cut-Off Frequency	DC	Upper Cut-Off Frequency (- 3 dB)	4 MHz	Rise / Fall Time (10 % - 90 %)	90 ns	Gain Flatness	± 0.3 dB	Input	Equ. Input Noise Current	3.5 pA/√Hz (@ 100 kHz)	Equ. Input Noise Voltage	0.8 nV/√Hz (@ 100 kHz)	Input Bias Current	18 μA typ.	Input Bias Current Drift	0.8 nA / K	Offset Current Compensation	± 6 μA adjustable by offset trimpot	Input Current Range	± 3 μA (for linear amplification)	Input Offset Voltage	3 mV	DC Input Impedance	50 Ω (virtual) // 5 pF	Output	Output Voltage Range	± 1.5 V (@ 50 Ω load) for linear operation and low harmonic distortion	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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High Speed Current Amplifier

Specifications (continued)		
Power Supply	Supply Voltage Supply Current	± 15 V ± 50 mA typ. (depends on operating conditions, recommended power supply capability minimum ± 150 mA)
Case	Weight Material	210 g (0.5 lbs) AlMg4.5Mn, nickel-plated
Temperature Range	Storage Temperature Operating Temperature	-40 ... +100 °C 0 ... +60 °C

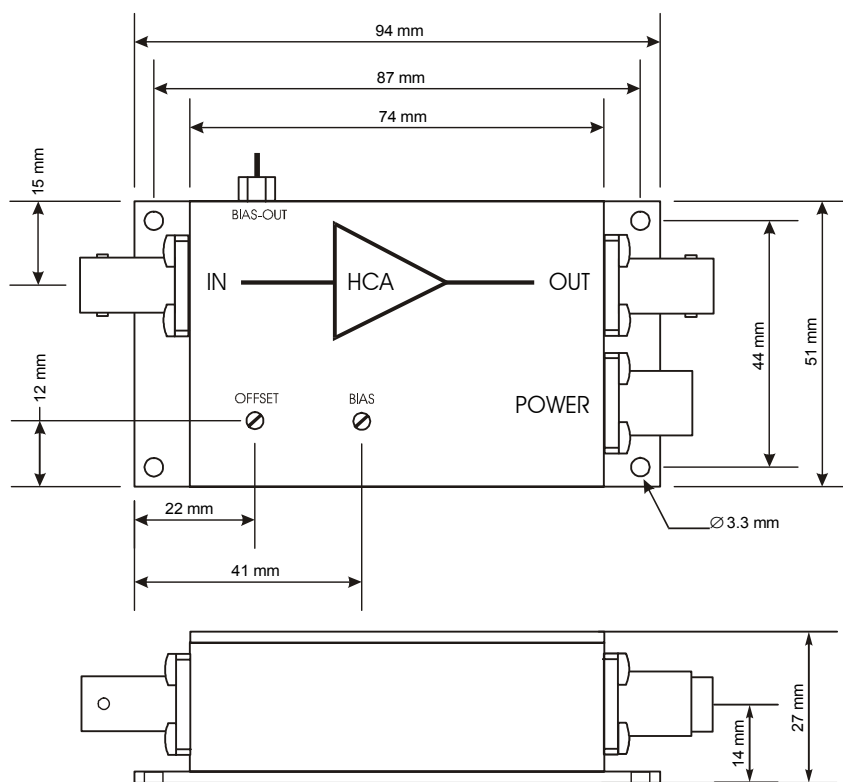
Absolute Maximum Ratings	Input Voltage Input Voltage Transient Power Supply Voltage	± 5 V ± 3.5 kV (pulsewidth 10 ns) ± 22 V
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Connectors	Input Output Power Supply	BNC BNC LEMO series 1S, 3-pin fixed socket Pin 1: +15V Pin 2: -15V Pin 3: GND
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High Speed Current Amplifier

Dimensions



DZ01-0201-22

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