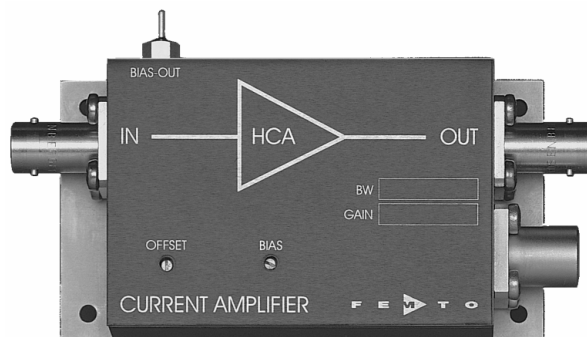




**Datasheet**

**HCA-4M-500K**

**High Speed Current Amplifier**



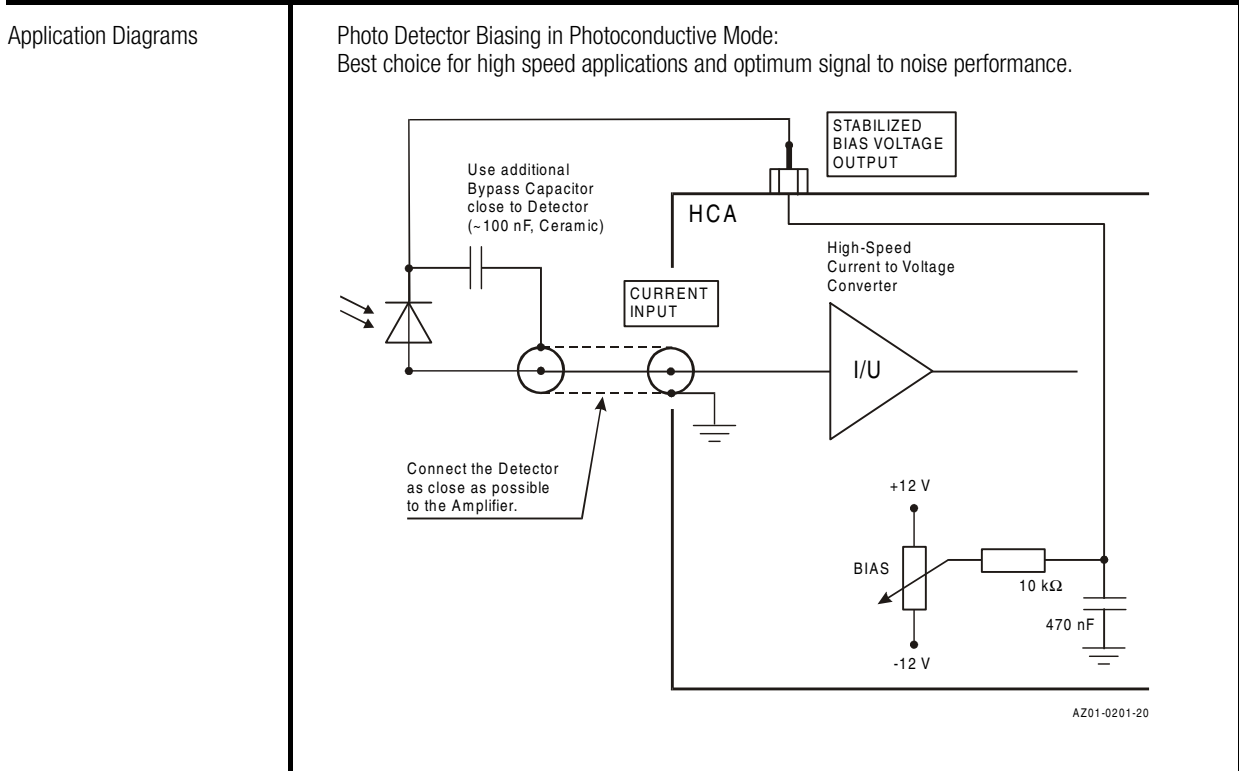
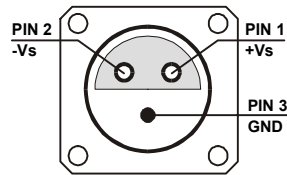
<p>Features</p>	<ul style="list-style-type: none"> <li>• <b>Bandwidth and Frequency Response Independent of Detector Capacitance (up to 15 pF)</b></li> <li>• <b>Low Noise 490 fA/√Hz Equivalent Input Noise Current</b></li> <li>• <b>Bandwidth DC ... 4 MHz</b></li> <li>• <b>Transimpedance (Gain) 5 x 10<sup>5</sup> V/A</b></li> <li>• <b>Protection against ± 3.5 kV Transients</b></li> </ul>																																												
<p>Applications</p>	<ul style="list-style-type: none"> <li>• <b>Photodiode and Photomultiplier Amplifier</b></li> <li>• <b>Spectroscopy</b></li> <li>• <b>Charge Amplifier</b></li> <li>• <b>Ionisation Detectors</b></li> <li>• <b>Preamplifier for Lock-Ins, A/D Converters, etc.</b></li> </ul>																																												
<p>Specifications</p>	<table border="0"> <tr> <td></td> <td><i>Test Conditions</i></td> <td><i>V<sub>s</sub> = ± 15 V, T<sub>a</sub> = 25°C</i></td> </tr> <tr> <td rowspan="2">Gain</td> <td>Transimpedance</td> <td>5 x 10<sup>5</sup> 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>490 fA/√Hz (@ 100 kHz)</td> </tr> <tr> <td>Equ. Input Noise Voltage</td> <td>6 nV/√Hz (@ 100 kHz)</td> </tr> <tr> <td>Input Bias Current</td> <td>5 pA typ.</td> </tr> <tr> <td>Input Bias Current Drift</td> <td>Factor 1.7 / 10 K</td> </tr> <tr> <td>Offset Current Compensation</td> <td>± 4 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>2 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<sub>s</sub> = ± 15 V, T<sub>a</sub> = 25°C</i>	Gain	Transimpedance	5 x 10 <sup>5</sup> 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	490 fA/√Hz (@ 100 kHz)	Equ. Input Noise Voltage	6 nV/√Hz (@ 100 kHz)	Input Bias Current	5 pA typ.	Input Bias Current Drift	Factor 1.7 / 10 K	Offset Current Compensation	± 4 μA adjustable by offset trimpot	Input Current Range	± 3 μA (for linear amplification)	Input Offset Voltage	2 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	$\pm 15\text{ V}$ $\pm 50\text{ mA typ.}$ (depends on operating conditions, recommended power supply capability minimum $\pm 150\text{ mA}$ )
Case	Weight Material	210 g (0.5 lbs) AlMg4.5Mn, nickel-plated
Temperature Range	Storage Temperature Operating Temperature	$-40 \dots +100\text{ }^\circ\text{C}$ $0 \dots +60\text{ }^\circ\text{C}$

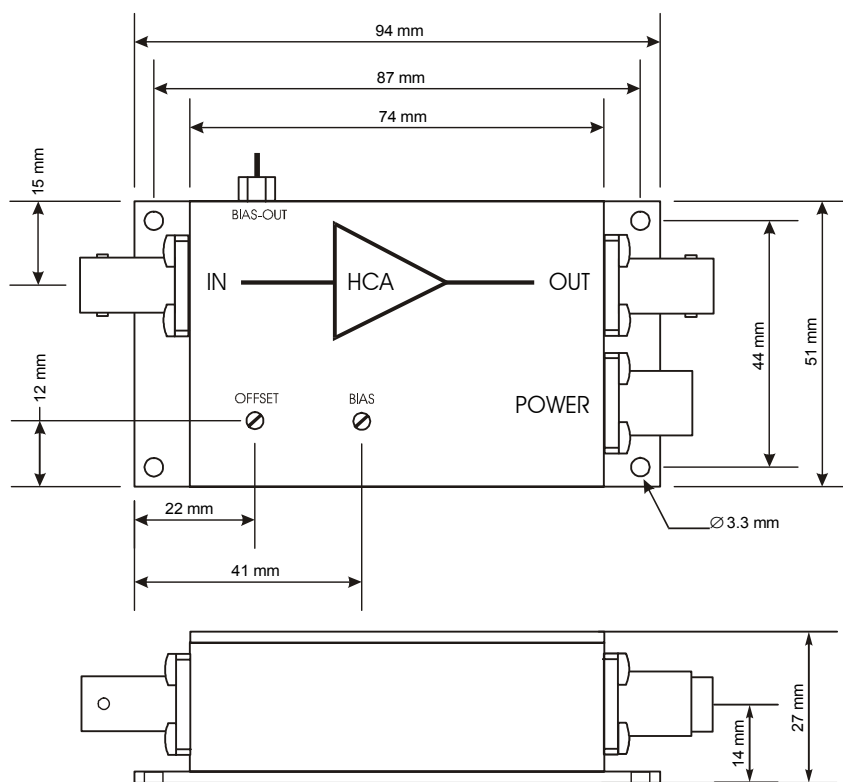
Absolute Maximum Ratings	Input Voltage Input Voltage Transient Power Supply Voltage	$\pm 5\text{ V}$ $\pm 3.5\text{ kV}$ (pulsewidth 10 ns) $\pm 22\text{ V}$
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Connectors	Input Output Power Supply	BNC BNC LEMO series 1S, 3-pin fixed socket Pin 1: +15V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

Dimensions



DZ01-0201-22

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