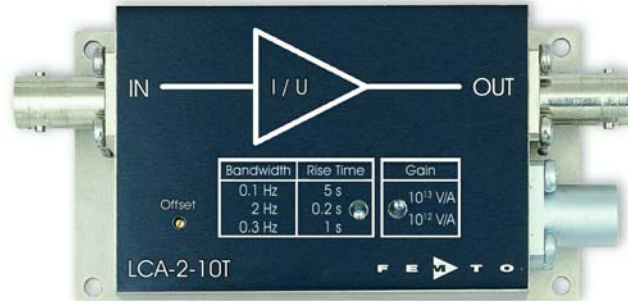


Datasheet

LCA-2-10T

Ultra Low Noise Current Amplifier



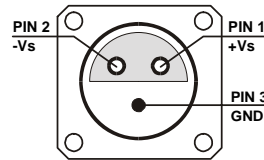
<p>Features</p>	<ul style="list-style-type: none"> • Switchable Transimpedance (Gain) 1×10^{12} V/A and 1×10^{13} V/A • Extremely Low Input Noise Current of $0.18 \text{ fA}/\sqrt{\text{Hz}}$ • Rise Time 0.2 s • Switchable Low Pass Filter 2 Hz, 0.3 Hz and 0.1 Hz • Protection against $\pm 2 \text{ kV}$ Transients 																
<p>Applications</p>	<ul style="list-style-type: none"> • Very Sensitive Current and Charge Measurements • Spectroscopy • Photodiode Amplifier • Conductive Atomic Force Microscopy (cAFM) • Amplifier for Ionization and Charge Detectors • Characterization of Active Electronic Components • Preamplifier for Oscilloscopes, A/D-Converters, Digital Voltmeter etc. 																
<p>Specifications</p>	<p><i>Test Conditions</i> $V_s = \pm 15 \text{ V}$, $T_a = 25^\circ\text{C}$</p> <table border="0"> <tr> <td style="vertical-align: top;">Gain</td> <td>Transimpedance Accuracy</td> <td>1×10^{12} V/A and 1×10^{13} V/A (@ $\geq 1 \text{ M}\Omega$ load) $\pm 2 \%$</td> </tr> <tr> <td style="vertical-align: top;">Frequency Response</td> <td>Lower Cut-Off Frequency Upper Cut-Off Frequency (- 3 dB) Rise- / Fall-Time (10 % - 90%)</td> <td>DC 2 Hz, 0.3 Hz and 0.1 Hz 0.2 s, 1 s and 5 s</td> </tr> <tr> <td style="vertical-align: top;">Input</td> <td>Equ. Input Noise Current Integrated Input Noise Input Bias Current Input Bias Current Drift Offset Compensation Range Max. Input Current Input Offset Voltage DC Input Impedance</td> <td>$0.18 \text{ fA}/\sqrt{\text{Hz}}$ (@ 0.2 Hz) 0.3 fA peak-peak (@ 0.1 Hz bandwidth setting) 0.6 fA peak-peak (@ 0.3 Hz bandwidth setting) 2 fA peak-peak (@ 2 Hz bandwidth setting) 10 fA typ. factor 2 / 10°C $\pm 50 \text{ fA}$, adjustable by offset trimpot $\pm 10 \text{ pA}$ (for linear amplification @ 1×10^{12} V/A gain) $\pm 1 \text{ pA}$ (for linear amplification @ 1×10^{13} V/A gain) < 0.5 mV $1 \text{ k}\Omega$ (virtual) // 5 pF</td> </tr> <tr> <td style="vertical-align: top;">Output</td> <td>Output Voltage Output Impedance Max. Output Current</td> <td>$\pm 10 \text{ V}$ (@ $\geq 1 \text{ M}\Omega$ load) 50Ω (terminate with $\geq 1 \text{ M}\Omega$ load for best performance) $\pm 10 \text{ mA}$ (for linear amplification)</td> </tr> <tr> <td style="vertical-align: top;">Power Supply</td> <td>Supply Voltage Supply Current</td> <td>$\pm 15 \text{ V}$ $\pm 15 \text{ mA}$ typ. (depends on operating conditions,</td> </tr> </table>		Gain	Transimpedance Accuracy	1×10^{12} V/A and 1×10^{13} V/A (@ $\geq 1 \text{ M}\Omega$ load) $\pm 2 \%$	Frequency Response	Lower Cut-Off Frequency Upper Cut-Off Frequency (- 3 dB) Rise- / Fall-Time (10 % - 90%)	DC 2 Hz, 0.3 Hz and 0.1 Hz 0.2 s, 1 s and 5 s	Input	Equ. Input Noise Current Integrated Input Noise Input Bias Current Input Bias Current Drift Offset Compensation Range Max. Input Current Input Offset Voltage DC Input Impedance	$0.18 \text{ fA}/\sqrt{\text{Hz}}$ (@ 0.2 Hz) 0.3 fA peak-peak (@ 0.1 Hz bandwidth setting) 0.6 fA peak-peak (@ 0.3 Hz bandwidth setting) 2 fA peak-peak (@ 2 Hz bandwidth setting) 10 fA typ. factor 2 / 10°C $\pm 50 \text{ fA}$, adjustable by offset trimpot $\pm 10 \text{ pA}$ (for linear amplification @ 1×10^{12} V/A gain) $\pm 1 \text{ pA}$ (for linear amplification @ 1×10^{13} V/A gain) < 0.5 mV $1 \text{ k}\Omega$ (virtual) // 5 pF	Output	Output Voltage Output Impedance Max. Output Current	$\pm 10 \text{ V}$ (@ $\geq 1 \text{ M}\Omega$ load) 50Ω (terminate with $\geq 1 \text{ M}\Omega$ load for best performance) $\pm 10 \text{ mA}$ (for linear amplification)	Power Supply	Supply Voltage Supply Current	$\pm 15 \text{ V}$ $\pm 15 \text{ mA}$ typ. (depends on operating conditions,
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Specifications (continued)		
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 Power Supply Voltage Transient Input Voltage	± 10 V ± 20 V ± 2 kV (discharge from 1 nF source)
Connectors	Input Output Power Supply	BNC BNC LEMO series 1S, 3-pin fixed socket Pin 1: + 15V Pin 2: - 15V Pin 3: GND



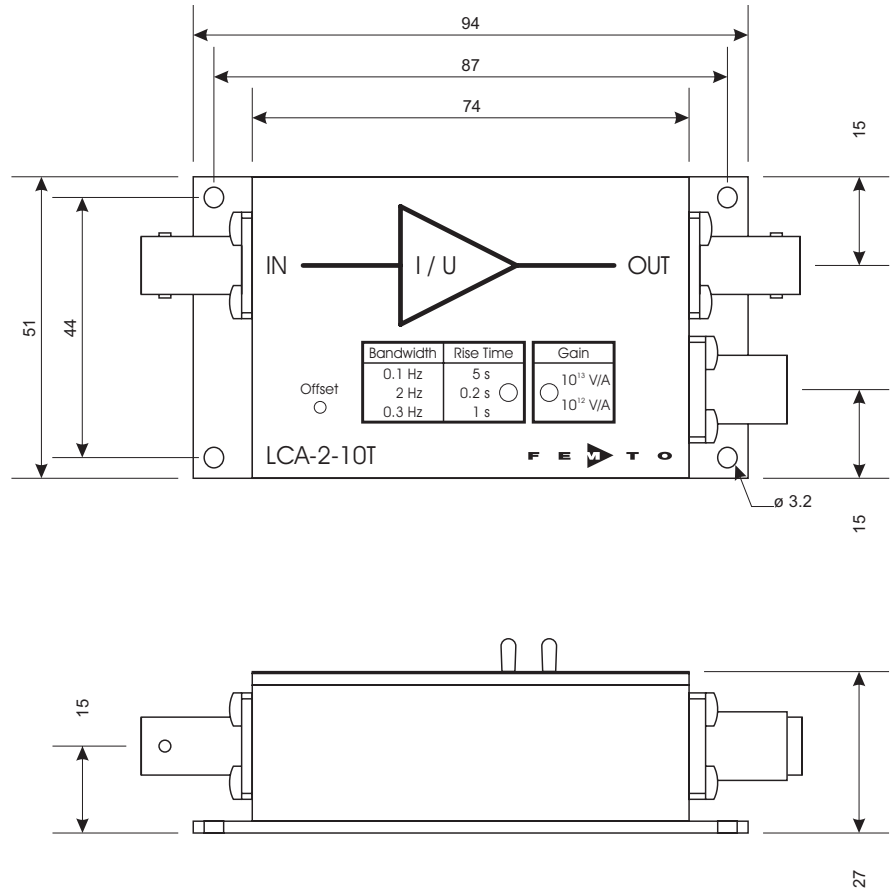
Application Diagrams	<p>Photo Detector Biasing in Photovoltaic Mode: Use for Low Speed Applications and Minimum Dark Current.</p> <p style="text-align: right;">AZ02-0101-20</p>
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Datasheet

LCA-2-10T

Ultra Low Noise Current Amplifier

Dimensions



all measures in mm unless otherwise noted

DZ-LCA-2-10T_R2

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SOPHISTICATED TOOLS FOR SIGNAL RECOVERY

