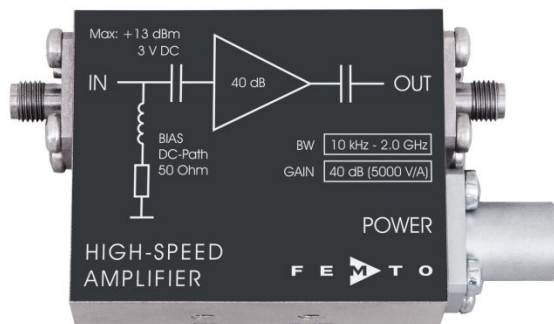


## 2.0 GHz High-Speed Amplifier



Features	<ul style="list-style-type: none"> <li>• <b>Bandwidth 10 kHz ... 2 GHz</b></li> <li>• <b>Rise time 180 ps</b></li> <li>• <b>Gain 40 dB</b></li> <li>• <b>Integrated bias circuit</b></li> </ul>																																
Applications	<ul style="list-style-type: none"> <li>• <b>Preamplifier for ultra-fast detectors (microchannel-plates, photomultipliers, avalanche-photodiodes and PIN-photodiodes)</b></li> <li>• <b>Oscilloscope and transient-recorder preamplifier</b></li> <li>• <b>Time-resolved pulse and transient measurements</b></li> </ul>																																
Block Diagram																																	
Specifications	<table border="0"> <tr> <td>Test conditions</td> <td colspan="2"><math>V_s = +15\text{ V}</math>, <math>T_A = 25^\circ\text{C}</math>, system impedance = <math>50\ \Omega</math></td> </tr> <tr> <td>Gain</td> <td colspan="2">40 dB (x 100)</td> </tr> <tr> <td>Transimpedance gain</td> <td>5,000 V/A</td> <td>(40 dB x <math>50\ \Omega</math>)</td> </tr> <tr> <td>Gain accuracy</td> <td colspan="2"><math>\pm 1\text{ dB}</math></td> </tr> <tr> <td rowspan="3">Frequency Response</td> <td>Lower cut-off frequency (<math>-3\text{ dB}</math>)</td> <td>10 kHz (<math>\pm 25\%</math>)</td> </tr> <tr> <td>Upper cut-off frequency (<math>-3\text{ dB}</math>)</td> <td>2.0 GHz (<math>\pm 15\%</math>)</td> </tr> <tr> <td>Rise/fall time (10% - 90%)</td> <td>180 ps</td> </tr> <tr> <td rowspan="5">Input</td> <td>DC input impedance</td> <td><math>50\ \Omega</math></td> </tr> <tr> <td>RF input impedance</td> <td><math>50\ \Omega</math></td> </tr> <tr> <td><math>50\ \Omega</math> noise figure</td> <td>4.5 dB (@ <math>f &lt; 1\text{ GHz}</math>)</td> </tr> <tr> <td>Equivalent input voltage noise</td> <td>620 pV/<math>\sqrt{\text{Hz}}</math></td> </tr> <tr> <td>Input VSWR</td> <td>1.4 : 1 (@ <math>f &lt; 2\text{ GHz}</math>)</td> </tr> <tr> <td>Input return loss</td> <td>15.5 dB (@ <math>f &lt; 2\text{ GHz}</math>)</td> </tr> </table>	Test conditions	$V_s = +15\text{ V}$ , $T_A = 25^\circ\text{C}$ , system impedance = $50\ \Omega$		Gain	40 dB (x 100)		Transimpedance gain	5,000 V/A	(40 dB x $50\ \Omega$ )	Gain accuracy	$\pm 1\text{ dB}$		Frequency Response	Lower cut-off frequency ( $-3\text{ dB}$ )	10 kHz ( $\pm 25\%$ )	Upper cut-off frequency ( $-3\text{ dB}$ )	2.0 GHz ( $\pm 15\%$ )	Rise/fall time (10% - 90%)	180 ps	Input	DC input impedance	$50\ \Omega$	RF input impedance	$50\ \Omega$	$50\ \Omega$ noise figure	4.5 dB (@ $f < 1\text{ GHz}$ )	Equivalent input voltage noise	620 pV/ $\sqrt{\text{Hz}}$	Input VSWR	1.4 : 1 (@ $f < 2\text{ GHz}$ )	Input return loss	15.5 dB (@ $f < 2\text{ GHz}$ )
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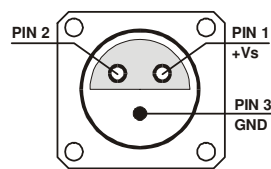
## 2.0 GHz High-Speed Amplifier

Specifications (continued)

Output	Output impedance                    50 Ω Output VSWR                            2.5 : 1            (@ f < 3 GHz) Output return loss                    7.3 dB            (@ f < 3 GHz) Output power P <sub>1dB</sub> +10.5 dBm       (@ f < 1 GHz) Output peak-to-peak voltage        1.9 V <sub>pp</sub> (@ f < 500 MHz, for linear amplification) Output noise                            typ. 3.5 mV <sub>RMS</sub> or 23 mV <sub>pp</sub> * (measurement BW: 4 GHz)
	* The peak-to-peak output noise is derived from the RMS noise as follows: V <sub>pp</sub> = V <sub>RMS</sub> x 6.6 (99.9% of the time the output noise voltage will be within the specified peak-to-peak value.)
Power Supply	Supply voltage                            +15 V Supply current                            +125 mA
Case	Weight                                    100 g (0.23 lbs) Material                                    AlMg4.5Mn, nickel-plated
Temperature Range	Storage temperature                    -40 ... +100 °C Operating ambient temperature       0 ... +60 °C

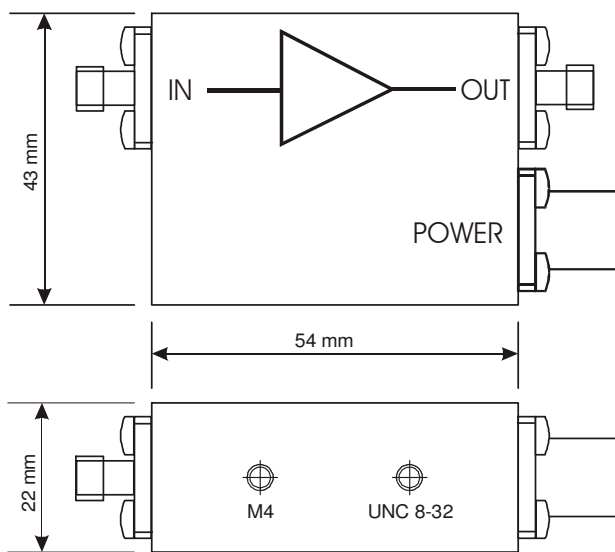
Absolute Maximum Ratings	Power supply voltage                    +20 V DC and LF input voltage               ±3 V RF input power                            +13 dBm
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Connectors	Input                                        SMA, jack (female) Output                                        SMA, jack (female) Power supply                                Lemo® series 1S, 3-pin fixed socket (mating plug type: FFA.1S.303.CLAC52) Pin 1:                                        +15 V Pin 2:                                        NC Pin 3:                                        GND
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### 2.0 GHz High-Speed Amplifier

Dimensions



DZ01-0601-10

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