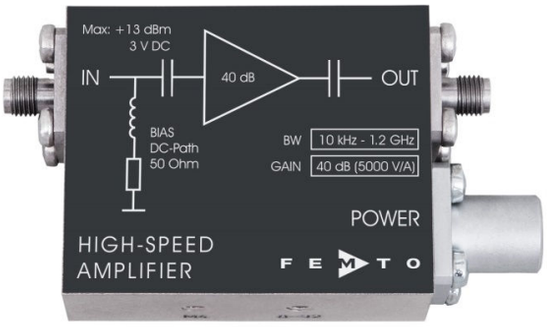
Datasheet HSA-X-1-40

1.2 GHz High-Speed Amplifier



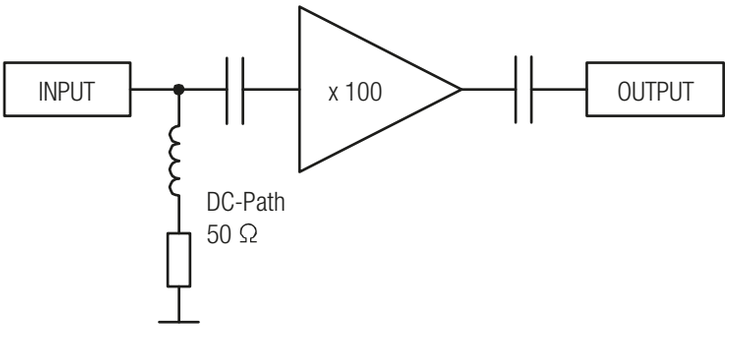
Features

- **Bandwidth 10 kHz … 1.2 GHz**
- **Rise time 290 ps**
- **Gain 40 dB**
- **Noise figure 1.7 dB**
- **Integrated bias circuit**

Applications

- **Preamplifier for ultra-fast detectors (microchannel-plates, photomultipliers, avalanche-photodiodes and PIN-photodiodes)**
- **Oscilloscope and transient-recorder preamplifier**
- **Time-resolved pulse and transient measurements**

Block Diagram



Specifications

Test conditions		V_S = + 15 V, T_A = 25°C, system impedance = 50 Ω	
Gain	Gain	40 dB (x 100)	
	Transimpedance gain	5,000 V/A	(40 dB x 50 Ω)
	Gain accuracy	±1 dB	
Frequency Response	Lower cut-off frequency (–3 dB)	10 kHz	(±20 %)
	Upper cut-off frequency (–3 dB)	1.2 GHz	(±15 %)
	Rise/fall time (10 % - 90 %)	290 ps	
Input	DC input impedance	50 Ω	
	RF input impedance	50 Ω	
	50 Ω noise figure	1.7 dB	(@ f < 700 MHz)
	Equivalent input voltage noise	310 pV/√Hz	(@ f < 700 MHz)
	Input VSWR	1.6 : 1	(@ f < 2 GHz)
	Input return loss	13 dB	(@ f < 2 GHz)

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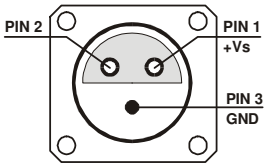
Output	Output impedance	50 Ω	
	Output VSWR	1.35 : 1	(@ f < 1.2 GHz)
	Output return loss	16.5 dB	(@ f < 1.2 GHz)
	Output power P_{1dB}	+12.5 dBm	(@ f < 500 MHz)
	Output peak-to-peak voltage	2.0 V_{PP}	(@ f < 500 MHz, for linear amplification)
	Output noise	typ. 2.1 mV_{RMS} or 14 mV_{PP}*	(measurement BW: 4 GHz)
	* The peak-to-peak output noise is derived from the RMS noise as follows: $V_{PP} = V_{RMS}$ 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	+140 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	+18.5 V	
	DC and LF input voltage	±3 V	
	RF input power	+13 dBm	
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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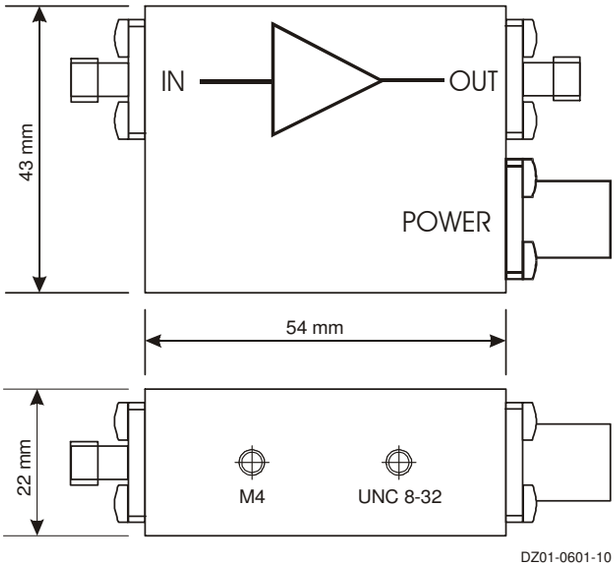
Dimensions



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