1 GHz High-Speed Amplifier

**Features**
- Bandwidth 10 kHz ... 1.1 GHz
- Rise Time 320 ps
- Gain 60 dB (50 kV/A)
- Noise Figure 1.9 dB
- Integrated Bias Circuit
- Monitor Output
- Two identical Signal Outputs

**Applications**
- Preamplifier for ultra-fast Detectors (Microchannel-Plates, Photomultipliers, Avalanche-Photodiodes, PIN-Photodiodes etc.)
- Oscilloscope and Transient-Recorder Preamplifier
- Time-Resolved Pulse and Transient Measurements

**Block Diagram**

![Block Diagram Image]

**Specifications**

<table>
<thead>
<tr>
<th>Test Conditions</th>
<th>Vs = ± 15 V, Ta = 25°C, System Impedance = 50 Ω</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gain</td>
<td>60 dB (50 kVA)</td>
</tr>
<tr>
<td>Gain Accuracy</td>
<td>± 1 dB</td>
</tr>
<tr>
<td>Gain Flatness</td>
<td>± 0.2 dB</td>
</tr>
<tr>
<td>Lower Cut-Off Frequency</td>
<td>10 kHz</td>
</tr>
<tr>
<td>Upper Cut-Off Frequency</td>
<td>1.1 GHz</td>
</tr>
<tr>
<td>Rise / Fall Time (10% - 90%)</td>
<td>320 ps</td>
</tr>
<tr>
<td>DC Input Impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>RF Input Impedance</td>
<td>50 Ω</td>
</tr>
<tr>
<td>50 Ω Noise Figure</td>
<td>1.9 dB  (f &lt; 700 MHz)</td>
</tr>
<tr>
<td>Equivalent Input Voltage Noise</td>
<td>330 pV/√Hz  (f &lt; 700 MHz)</td>
</tr>
<tr>
<td>Equivalent Input Current Noise</td>
<td>6.6 pA/√Hz  (f &lt; 700 MHz)</td>
</tr>
<tr>
<td>Input VSWR</td>
<td>1 : 1.4  (f &lt; 1.5 GHz)</td>
</tr>
<tr>
<td>Maximum Input VSWR</td>
<td>1 : 1.4  (f &lt; 3 GHz)</td>
</tr>
</tbody>
</table>
### Specifications (continued)

**Output**
- Two identical Signal Outputs:
  - Output Impedance: 50 Ω
  - Maximum Output VSWR: 1 : 1.4 (@ f < 3 GHz)
  - Output Power $P_{1dB}$: +13 dBm (@ f < 500 MHz)
  - Output Peak-Peak Voltage: 2.3 Vpp (@ f < 500 MHz, for linear Amplification)
  - Isolation between Outputs: 16 dB (@ f < 3 GHz)

**Monitor Amplifier**
- Gain: 26 dB (1 kV/A)
- Lower Cut-Off Frequency: DC
- Upper Cut-Off Frequency: 100 kHz
- Output Voltage: ± 10 V (@ 10 kΩ load)

**Power Supply**
- Supply Voltage: ± 15 V
- Supply Current: +180 / -10 mA

**Case**
- Weight: 180 gr. (0.41 lbs)
- Material: AlMg4.5Mn, nickel-plated

**Temperature Range**
- Storage Temperature: -40 ... +100 °C
- Operating Ambient Temperature: 0 ... +60 °C
- Operating Case Temperature: 39 °C (@ $T_a = 25 ^\circ C$)

**Absolute Maximum Ratings**
- Power Supply Voltage: ± 20 V
- DC and LF Input Voltage: ± 4 V
- RF Input Power: +13 dBm

**Connectors**
- Input: SMA
- Signal Outputs: SMA
- Monitor Output: BNC
- Power Supply: LEMO Series 1S, 3-pin fixed Socket
  - Pin 1: +15 V
  - Pin 2: −15 V
  - Pin 3: GND
1 GHz High-Speed Amplifier

Dimensions

Specifications are subject to change without notice. Information provided herein is believed to be accurate and reliable. However, no responsibility is assumed by FEMTO Messtechnik GmbH for its use, nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of FEMTO Messtechnik GmbH. Product names mentioned may also be trademarks used here for identification purposes only.

© by FEMTO Messtechnik GmbH · Printed in Germany