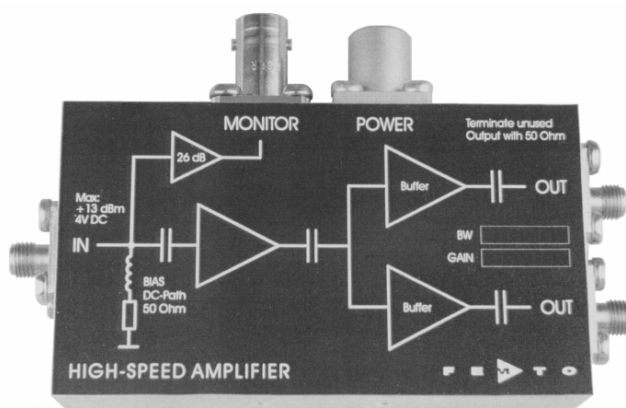
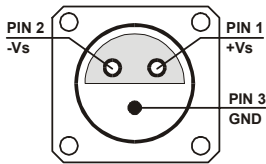


# 1 GHz High-Speed Amplifier



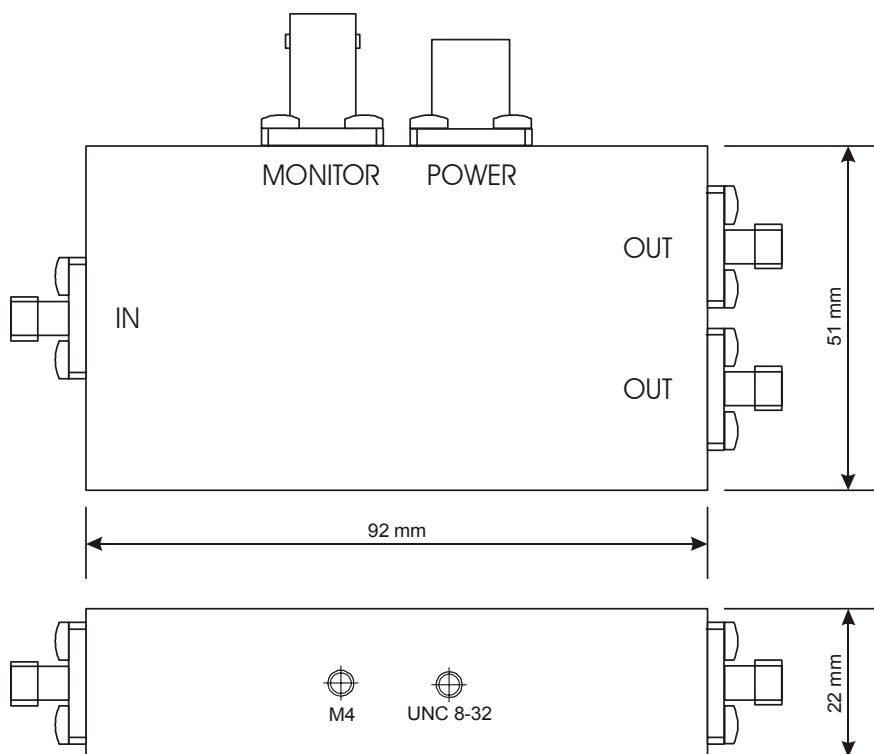
|                    |                                                                                                                                                                                                                                                                                                                                |                                                      |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
| Features           | <ul style="list-style-type: none"> <li>• <b>Bandwidth 10 kHz ... 1 GHz</b></li> <li>• <b>Rise Time 330 ps</b></li> <li>• <b>Gain 40 dB (5 kV/A)</b></li> <li>• <b>Noise Figure 1.9 dB</b></li> <li>• <b>Integrated Bias Circuit</b></li> <li>• <b>Monitor Output</b></li> <li>• <b>Two identical Signal Outputs</b></li> </ul> |                                                      |
| Applications       | <ul style="list-style-type: none"> <li>• <b>Preamplifier for ultra-fast Detectors (Microchannel-Plates, Photomultipliers, Avalanche-Photodiodes, PIN-Photodiodes etc.)</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     | <p><i>Test Conditions</i> <math>V_s = \pm 15\text{ V}</math>, <math>T_a = 25^\circ\text{C}</math>, System Impedance = <math>50\ \Omega</math></p>                                                                                                                                                                              |                                                      |
| Gain               | Gain                                                                                                                                                                                                                                                                                                                           | 40 dB (5 kV/A)                                       |
|                    | Gain Accuracy                                                                                                                                                                                                                                                                                                                  | $\pm 1\text{ dB}$                                    |
|                    | Gain Flatness                                                                                                                                                                                                                                                                                                                  | $\pm 0.1\text{ dB}$                                  |
| Frequency Response | Lower Cut-Off Frequency                                                                                                                                                                                                                                                                                                        | 10 kHz                                               |
|                    | Upper Cut-Off Frequency                                                                                                                                                                                                                                                                                                        | 1 GHz                                                |
| Time Response      | Rise / Fall Time (10% - 90%)                                                                                                                                                                                                                                                                                                   | 330 ps                                               |
| Input              | DC Input Impedance                                                                                                                                                                                                                                                                                                             | $50\ \Omega$                                         |
|                    | RF Input Impedance                                                                                                                                                                                                                                                                                                             | $50\ \Omega$                                         |
|                    | $50\ \Omega$ Noise Figure                                                                                                                                                                                                                                                                                                      | 1.9 dB (@ $f < 700\text{ MHz}$ )                     |
|                    | Equivalent Input Voltage Noise                                                                                                                                                                                                                                                                                                 | 330 pV/ $\sqrt{\text{Hz}}$ (@ $f < 700\text{ MHz}$ ) |
|                    | Equivalent Input Current Noise                                                                                                                                                                                                                                                                                                 | 6.6 pA/ $\sqrt{\text{Hz}}$ (@ $f < 700\text{ MHz}$ ) |
|                    | Input VSWR                                                                                                                                                                                                                                                                                                                     | 1 : 1.45 (@ $f < 1.5\text{ GHz}$ )                   |
|                    | Maximum Input VSWR                                                                                                                                                                                                                                                                                                             | 1 : 1.45 (@ $f < 3\text{ GHz}$ )                     |

## 1 GHz High-Speed Amplifier

|                          |                                                                                                                                                                                                                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Output                   | Two identical Signal Outputs:<br>Output Impedance 50 $\Omega$<br>Maximum Output VSWR 1 : 1.6 (@ f < 3 GHz)<br>Output Power P <sub>1dB</sub> + 11.5 dBm (@ f < 500 MHz)<br>Output Peak-Peak Voltage 2 V <sub>pp</sub> (@ f < 500 MHz, for linear Amplification)<br>Isolation between Outputs 20 dB (@ f < 3 GHz) |
| Monitor Amplifier        | Gain 26 dB (1 kV/A)<br>Lower Cut-Off Frequency DC<br>Upper Cut-Off Frequency 100 kHz<br>Output Voltage $\pm 10$ V (@ 10k $\Omega$ load)                                                                                                                                                                         |
| Power Supply             | Supply Voltage $\pm 15$ V<br>Supply Current + 200 / -10 mA                                                                                                                                                                                                                                                      |
| Case                     | Weight 180 gr. (0.41 lbs)<br>Material AlMg4.5Mn, nickel-plated                                                                                                                                                                                                                                                  |
| Temperature Range        | Storage Temperature - 40 ... + 100 °C<br>Operating Ambient Temperature 0 ... + 60 °C<br>Operating Case Temperature 40 °C (@ T <sub>a</sub> = 25 °C)                                                                                                                                                             |
| Absolute Maximum Ratings | Power Supply Voltage $\pm 20$ V<br>DC and LF Input Voltage $\pm 4$ V<br>RF Input Power + 13 dBm                                                                                                                                                                                                                 |
| Connectors               | Input SMA<br>Signal Outputs SMA<br>Monitor Output BNC<br>Power Supply LEMO Series 1S, 3-pin fixed Socket<br>Pin 1: + 15 V<br>Pin 2: - 15 V<br>Pin 3: GND<br>                                                                |
|                          |                                                                                                                                                                                                                                                                                                                 |

## 1 GHz High-Speed Amplifier

Dimensions



DZ01-0611-10

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