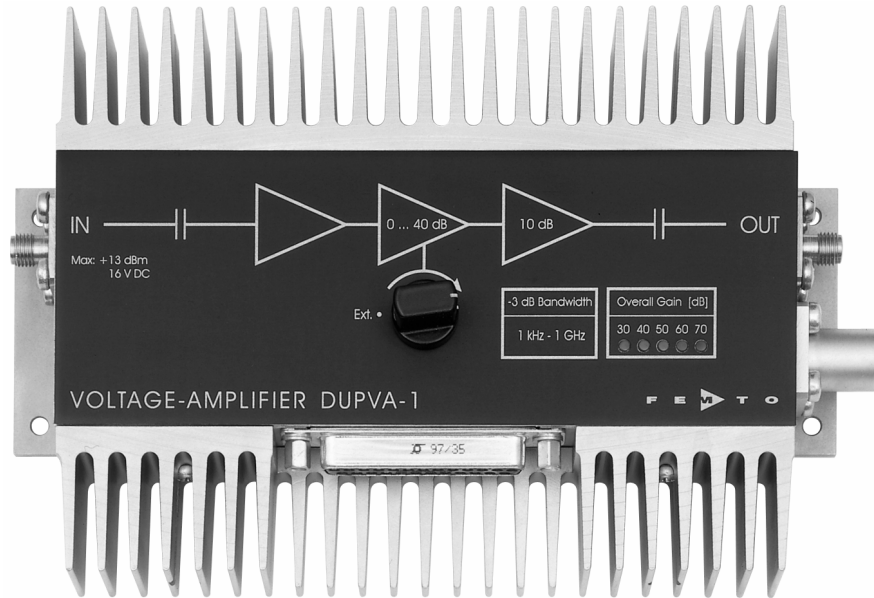


Variable-Gain Ultra-Wideband Voltage Amplifier



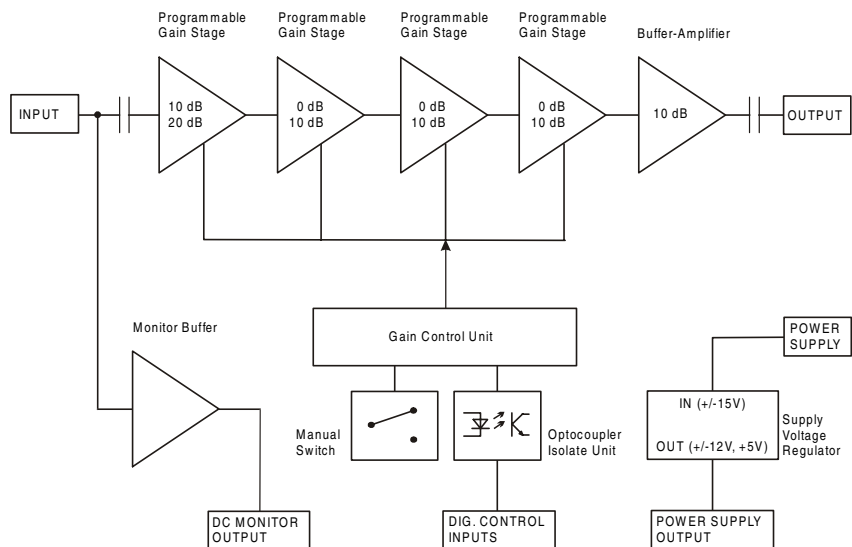
Features

- Variable Gain 20 to 60 dB, switchable in 10 dB Steps
- Bandwidth 1 kHz ... 1.2 GHz
- Bandwidth, Frequency- and Pulse Response independent of Gain Setting
- Local and Remote Control
- DC Monitor Output

Applications

- Oscilloscope and Transient-Recorder Preamplifier
- Photomultiplier and Microchannel-Plate Amplifier
- Signal-Booster for Optical Receivers and Current Amplifiers
- Time-Resolved Pulse and Transient Measurements
- Automated Measurement Systems

Block Diagram

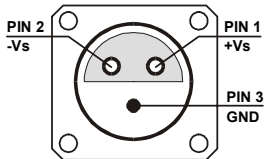


BS01-0640-13

Variable-Gain Ultra-Wideband Voltage Amplifier

Specifications	<i>Test Conditions</i>	<i>V_s = ± 15 V, T_a = 25°C, System Impedance = 50 Ω</i>	
Gain	Gain Values	20, 30, 40, 50, 60 dB	
	Gain Accuracy	± 0.1 dB	(between Settings)
		± 1 dB	(Overall)
Frequency Response	Gain Flatness	± 0.15 dB	
	Lower Cut-Off Frequency	1 kHz	
	Upper Cut-Off Frequency	1.2 GHz	
Time Response	Upper Cut-Off Frequency Rolloff	40 dB/Oct.	
	Rise / Fall Time (10% - 90%)	380 ps	
	Group Delay	2.2 ns	
Input	Input Impedance AC	50 Ω	
	Input Impedance DC	100 kΩ	
	Input VSWR (@ 20 dB Gain)	1.12 : 1	(f < 1 GHz)
		1.7 : 1	(f < 2 GHz)
	Input VSWR (@ 30 – 60 dB Gain)	1.2 : 1	(f < 1 GHz)
		1.75 : 1	(f < 2 GHz)
	50 Ω Noise Figure	3.0 dB	(@ 60 dB Gain)
		3.5 dB	(@ 30 – 50 dB Gain)
	Equivalent Input Voltage Noise	450 pV/√Hz	(@ 60 dB Gain)
		500 pV/√Hz	(@ 30 – 50 dB Gain)
Output	1/f-Noise Corner	40 kHz	
	Output Impedance	50 Ω	
	Output Power P _{1dB}	13 dBm	(@ 100 MHz)
		10 dBm	(@ 500 MHz)
	Output Peak-Peak Voltage for linear Amplification	2 V	(@ 100 MHz)
		1.7 V	(@ 500 MHz)
	Output VSWR	1.77 : 1	(f < 1 GHz)
		2.0 : 1	(f < 2 GHz)
	Third Order Intercept Point IP ₃	21 dBm	
	Reverse Isolation	80 dB	
Monitor Output	Dynamic Range (w/o Average)	70 dB (P _{1dB} – Min. Detectable Signal)	
	Monitor Output Gain	1	
	Monitor Output Voltage Range	± 10 V	
	Monitor Output Current	± 25 mA	
Digital Control	Monitor Output Bandwidth	DC ... 100 kHz	
	Control Input Voltage Range	Low: - 0.8 ... + 0.8 V High: + 1.8 ... + 12 V	
Power Supply	Supply Voltage	± 15 V	
	Supply Current	+ 350 / -100 mA	
	Stabilized Power Supply Output	± 12 V / max. 100 mA, + 5V / max. 50 mA	
Case	Weight	510 gr. (1.2 lbs)	
	Material	AlMg4.5Mn, nickel-plated	

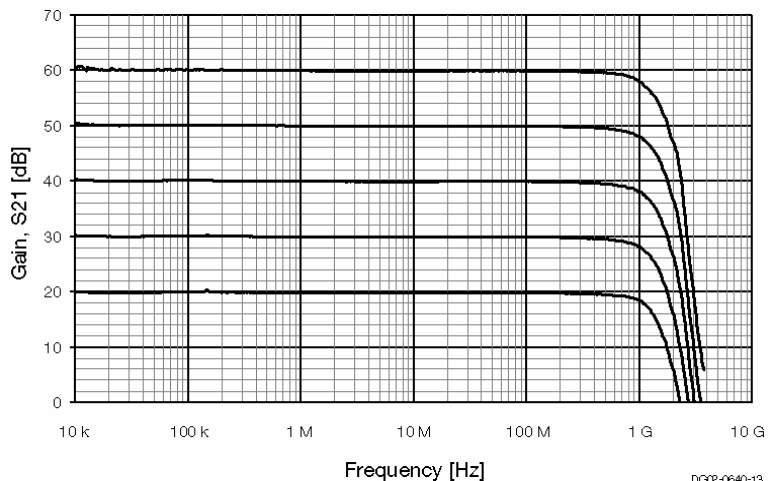
Variable-Gain Ultra-Wideband Voltage Amplifier

Specifications (continued)																											
Temperature Range	Storage Temperature	-40 ... +100 °C																									
	Operating Temperature	0 ... +60 °C																									
Absolute Maximum Ratings	Signal Input Power	+ 13 dBm (f > 1 kHz)																									
	Signal Input DC Voltage	± 16 V																									
	Signal Output Reverse Power	+ 20 dBm																									
	Signal Output Reverse DC Voltage	+ 20 V / - 12 V																									
	Control Input Voltage	+ 16 V / - 5 V																									
	Power Supply Voltage	± 17 V																									
Connectors	Input	SMA																									
	Output	SMA																									
	Power Supply	LEMO Series 1S, 3-pin fixed Socket Pin 1: + 15V Pin 2: - 15V Pin 3: GND																									
																											
	Control Port	Sub-D 25-pin, female, Qual. Class 2 Pin 1: +12V (Stabilized Power Supply Output) Pin 2: -12V (Stabilized Power Supply Output) Pin 3: AGND (Analog Ground) Pin 4: +5V (Stabilized Power Supply Output) Pin 5: Monitor Output Pin 6 - 8: NC Pin 9: DGND (Ground f. Digital Control Pin 10 - 25) Pin 10 - 13: NC Pin 14: Digital Control Input: Gain, LSB Pin 15: Digital Control Input: Gain Pin 16: Digital Control Input: Gain, MSB Pin 17 - 25: NC																									
Remote Control Operation	General	Remote Control Input Bits are opto-isolated and connected by logical OR to local switch setting. For remote control of the gain setting, set the local switch to "Ext." and select the wanted gain setting via a 3-bit-code at the corresponding digital inputs:																									
	Gain Setting - Corresponding Inputs	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="border-bottom: 1px solid black;">Gain</th> <th style="border-bottom: 1px solid black;">Pin 14</th> <th style="border-bottom: 1px solid black;">Pin 15</th> <th style="border-bottom: 1px solid black;">Pin 16</th> </tr> </thead> <tbody> <tr> <td>20 dB</td> <td>Low</td> <td>Low</td> <td>Low</td> </tr> <tr> <td>30 dB</td> <td>High</td> <td>Low</td> <td>Low</td> </tr> <tr> <td>40 dB</td> <td>Low</td> <td>High</td> <td>Low</td> </tr> <tr> <td>50 dB</td> <td>High</td> <td>High</td> <td>Low</td> </tr> <tr> <td>60 dB</td> <td>Low</td> <td>Low</td> <td>High</td> </tr> </tbody> </table>		Gain	Pin 14	Pin 15	Pin 16	20 dB	Low	Low	Low	30 dB	High	Low	Low	40 dB	Low	High	Low	50 dB	High	High	Low	60 dB	Low	Low	High
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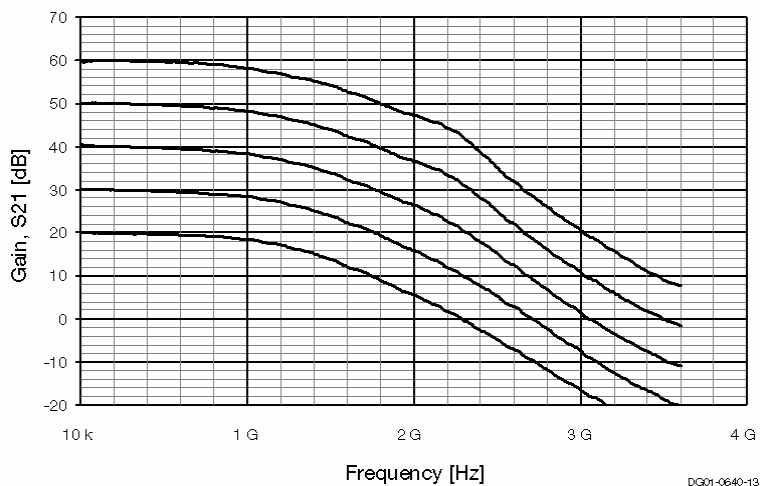
Variable-Gain Ultra-Wideband Voltage Amplifier

Typical Performance
Characteristics

Frequency Response (Logarithmic)



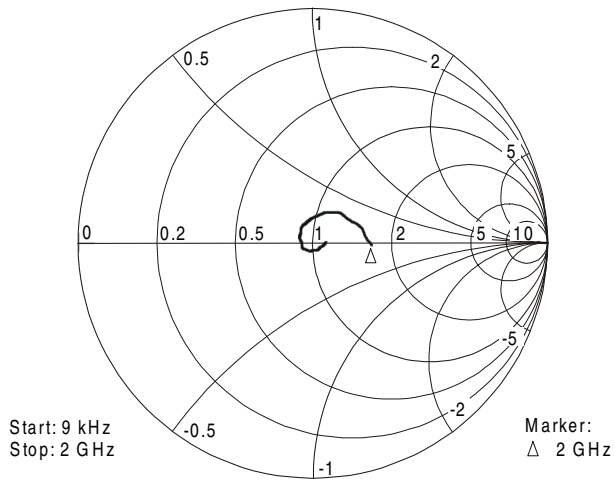
Frequency Response (Linear)



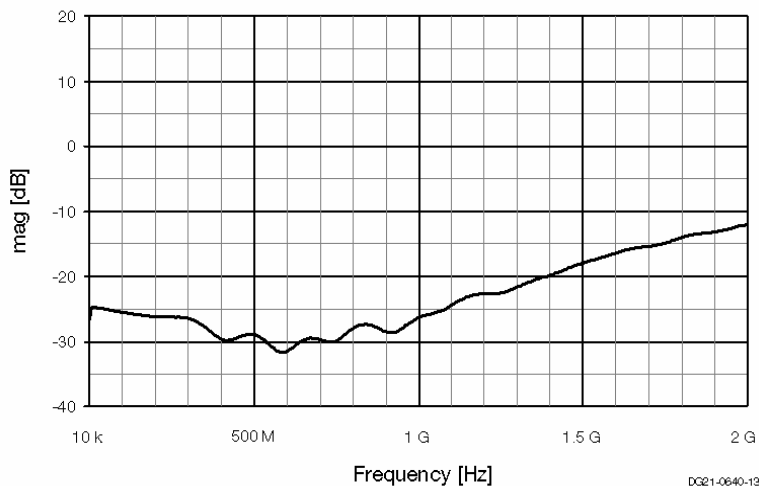
Variable-Gain Ultra-Wideband Voltage Amplifier

Typical Performance
Characteristics

Input Reflection, S11



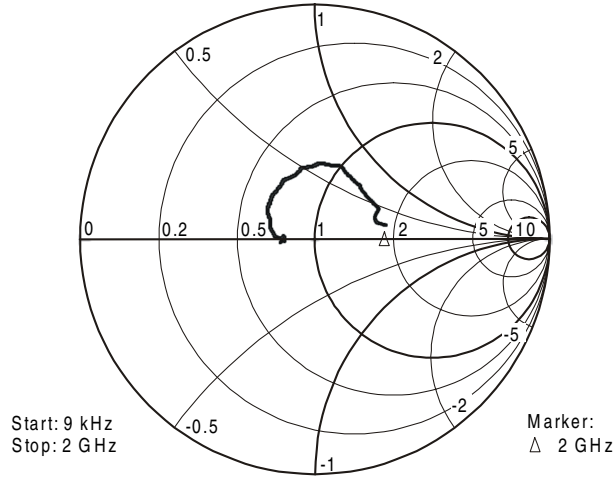
Input Return Loss, S11 (Linear Magnitude)



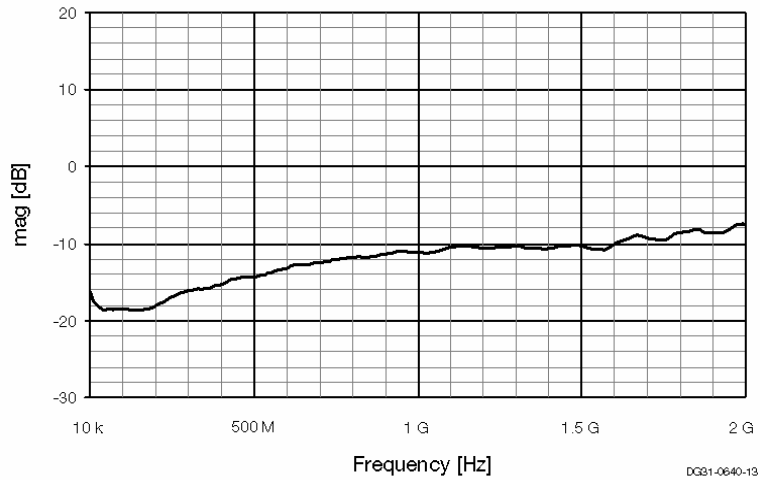
Variable-Gain Ultra-Wideband Voltage Amplifier

Typical Performance
Characteristics

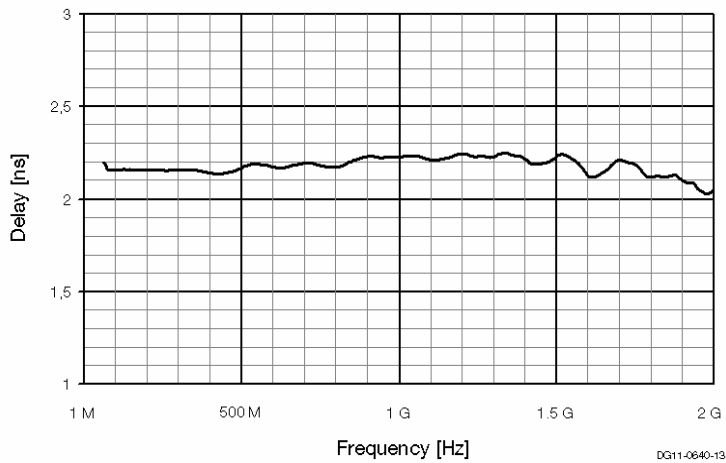
Output Reflection, S22



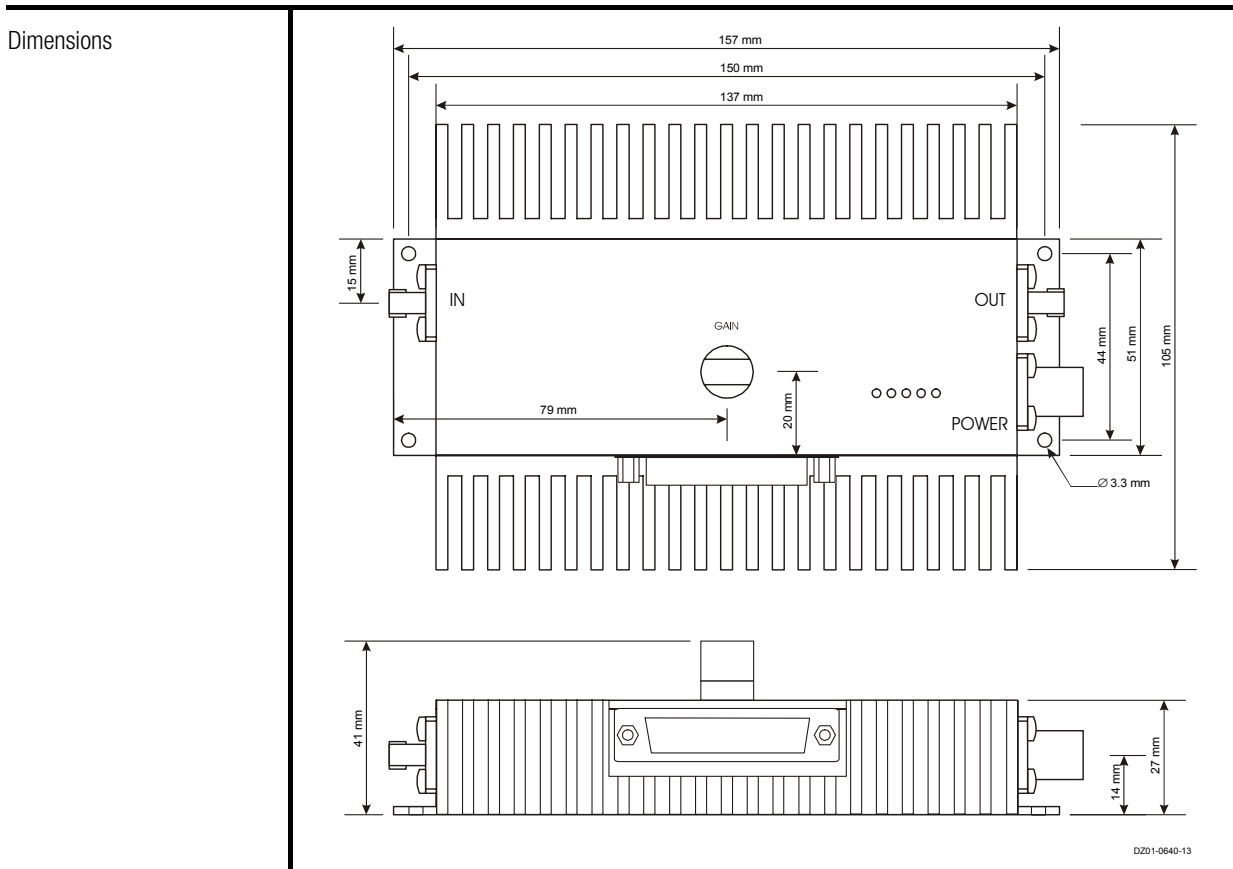
Output Return Loss, S22 (Linear Magnitude)



Group Delay



Variable-Gain Ultra-Wideband Voltage Amplifier



<p>Accessories</p>	<p>BNC-Adapterset Model No.: ADAP-SMA-BNC-1 - Set of 2 SMA to BNC Adapters</p>
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