Ultrabroadband RF Amplifier 30kHz to 45 GHz

3.3 Vp-p output, 17dB Gain

DATASHEET

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This is a high-gain, low-noise 2-stage amplifier delivering 3.3 Vp-p output across a broad frequency range of 30 kHz to 45 GHz. It is a general-purpose broadband driver amplifier optimized for Mach-Zehnder optical modulator applications, offering low power dissipation, high drive capability, very low added jitter, and fast rise time. The amplifier requires a 12 V DC power supply at 1W and features a GPPO male connector. A compatible power supply is included for user convenience.

Features

- 3.5 Vp-p (23 dBm saturated output power)
- < 8 ps rise/fall time
- < 0.5 ps added rms jitter
- 17 dB gain (to 45 GHz)
- 3.4 W Power Dissipation
- Useful gain to 65 GHz
- Small Size Package

Applications

- Mach-Zehnder optical modulator driver
- High frequency/optical communications test instrumentation
- General purpose gain block

Specifications

Parameter		Min	Typical	Max	Unit
Frequency Range		30KHz		45GHz	kHz-GHz
Small Signal Gain (S21)	0.01 – 26 GHz	18	21		dB
	26 – 45 GHz	15	17		
	40 – 45 GHz	13	15		
Rise/Fall Time		5	6	9	ps
Added Jitter (rms method) [1], [2]		0.2	< 0.5	< 1	ps
Input Signal		300	450	600	mV
Input Match (S11)	0.01 – 26 GHz		-10	-8	dB
	26 – 45 GHz		-10		
Output Match (S22)	0.01 – 26 GHz		-12	-10	dB
	26 – 45 GHz		-10		
Output Vpp			3	3.5	Vpp
Power consumption				0.8	W
Input Return Loss			-10		dB
Output Return Loss			-10		dB
Spec Temp			25		°C
Weight (Without Heatsink)			100		g
Power Supply			+12		V
Operating Temperature			-40 to +75		°C
Storage Temperature			-55 to +125		°C
Input Port			GPPO Male		
Output Port			GPPO Male		

Notes:

[1]. $(\text{Jitter}_{\text{added}})^2 = (\text{Jitter}_{\text{output}})^2 - (\text{Jitter}_{\text{input}})^2$

[2]. Under typical 400mV Input Amplitude.

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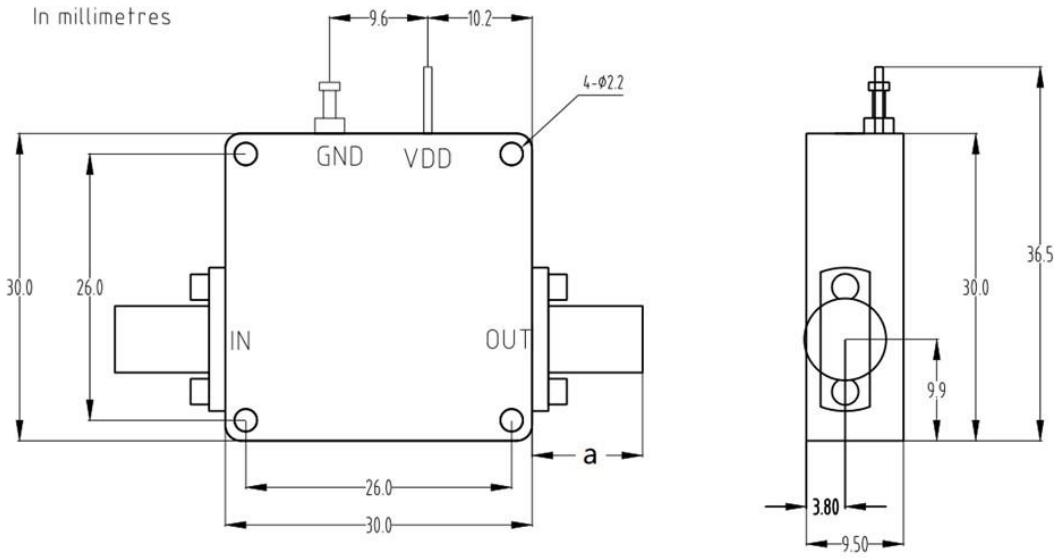
Dimensions (mm)



	<26.5GHz	<40GHz	<50GHz	<67GHz
Connector	SMA	2.92mm	2.4mm	1.85mm
Lenth of a	9.4mm	9.5mm	10.8mm	11.3mm

Note: Female Default. Contact with us for other types.

Ordering Information *

	3K	45	3	3	11	1
Prefix	**Low Frequency**	**High Frequency**	**Amplifier Stage**	**Output**		**Module***
BRFA-	30kHz = 3K	45GHz = 45	3 = 3	3V = 3		No = 1 Yes = 2

* The module is a small metal box integrated with a power supply.

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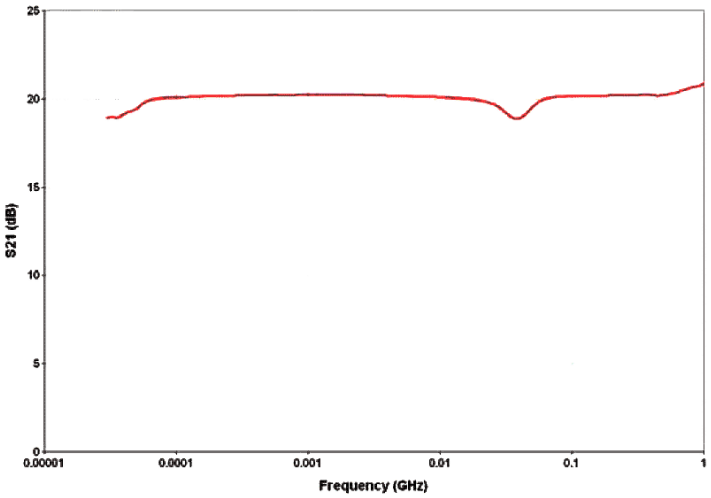
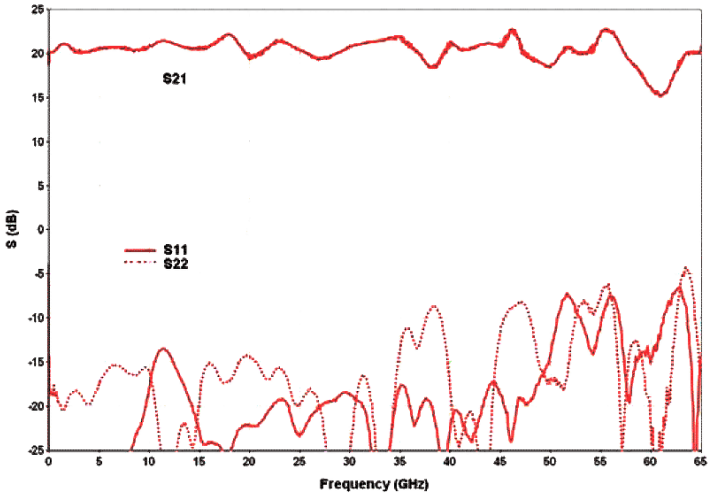
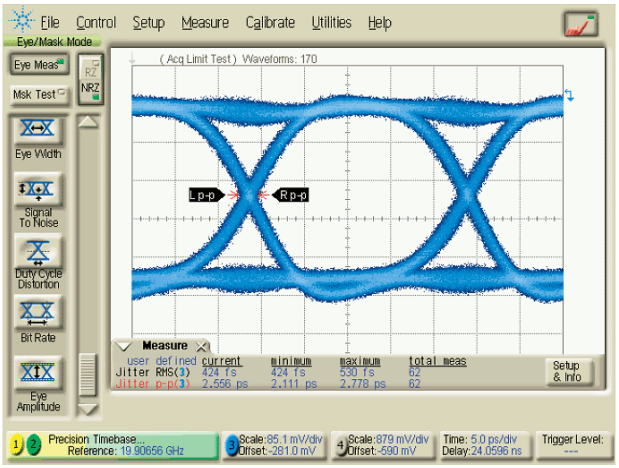
Typical Response

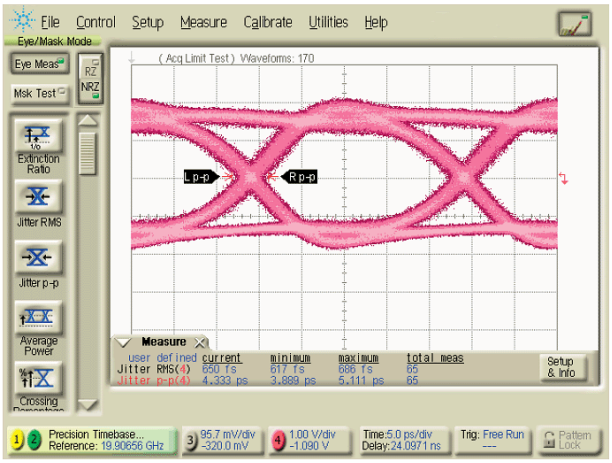




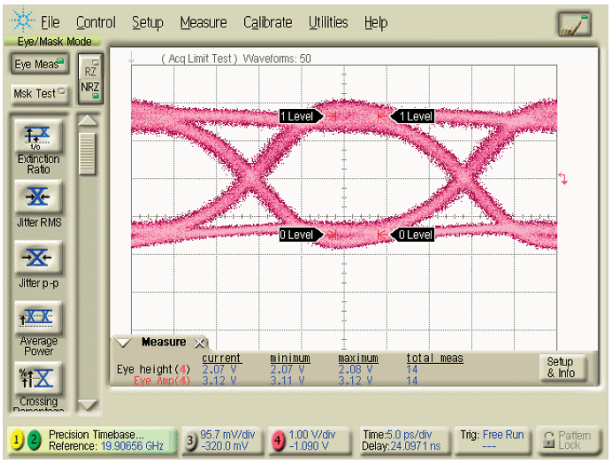


40Gbps input signal:

- 322mV height, 393mV amplitude
- 424fS RMS, 2.556ps p-p jitter
- 7.56ps rise, 6.56ps fall



Output Jitter
650fS RMS, 4.3ps p-p jitter



Output Amplitude
2.1V height, 3.1V amplitude
8.22ps rise, 8.33ps fall

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Caution Electrostatic Sensitivity

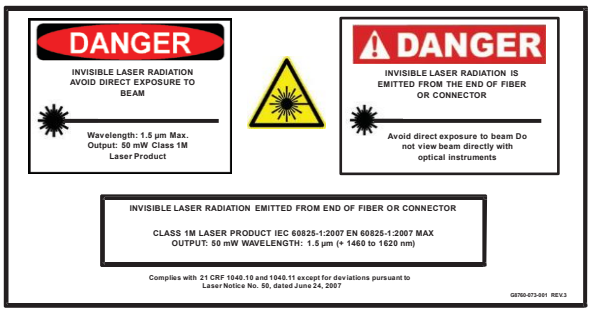
- Never touch laser diode and the module using hands
- Always use protections when handle a laser diode
- Recommend mounting the laser diode using an ionic gun and ESD finger cots

Laser Safety

This product meets the appropriate standard in Title 21 of the Code of Federal Regulations (CFR). FDA/CDRH Class 1M laser product. This device has been classified with the FDA/CDRH under accession number 0220191. All versions of this laser are Class 1M laser products, tested according to IEC 60825-1:2007 / EN 60825-1:2007. An additional warning for Class 1M laser products. For diverging beams, this warning shall state that viewing the laser output with certain optical instruments (for example eye loupes, magnifiers, and microscopes) within a distance of 100 mm may pose an eye hazard. For collimated beams, this warning shall state that viewing the laser output with certain instruments designed for use at a distance (for example telescopes and binoculars) may pose an eye hazard.

Wavelength = 1.3/1.5 µm.

Maximum power = 30 mW.



*Caution - Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.
*IEC is a registered trademark of the International Electrotechnical Commission.