

# 15 GHz Low Noise Amplifier LABware Module

## PSPL8003 Datasheet



The Model PSPL8003 15 GHz Low Noise Amplifier LABware Module is designed for bench-top lab use. This LABware module can simply be plugged in with a line cord (either 110 V or 220 V) and the amplifier is ready for use. The PSPL8003 is a broadband linear amplifier intended for use amplifying signals with a minimum amount of distortion. The PSPL8003 provides exceptional gain flatness and low deviation from linear phase while providing a bandwidth of 10 kHz to 15 GHz. This amplifier is ideal for use as a linear gain block.

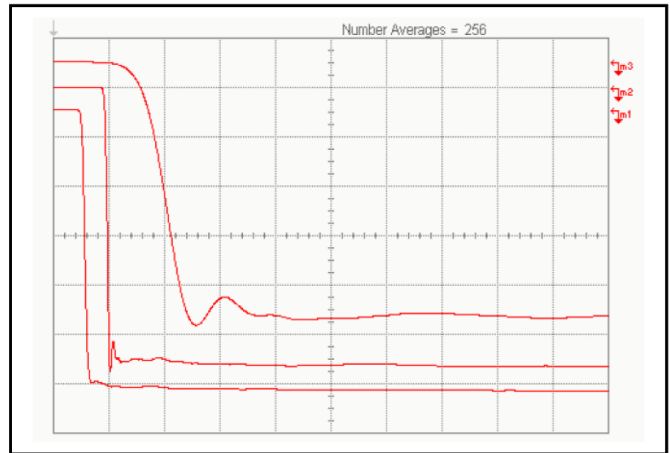
### Key performance specifications

- LABware bench-top instrument
- 15 GHz bandwidth with excellent gain flatness ( $\pm 0.3$  dB)
- Lower 3 dB frequency of 10 kHz
- Low deviation from linear phase ( $\pm 3$  degrees)
- 1 dB compression point of 13 dBm
- Integrated power supplies

## Time domain response

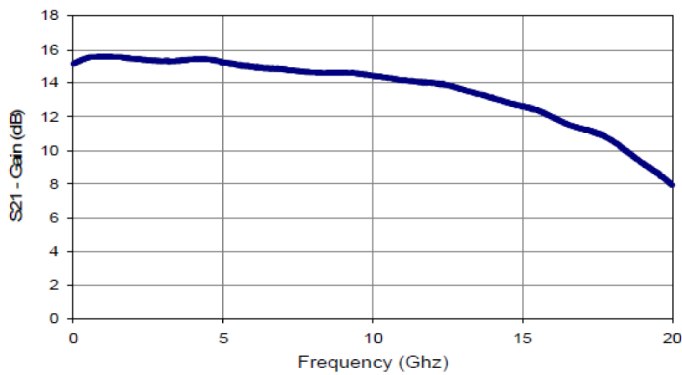
The plot at the right shows the response of the 8003 to a 100mV 20ps risetime step. The 8003 is an inverting amplifier, so the output has negative polarity. From top to bottom the time scales are 50ps/div, 500ps/div, and 2ns/div.

### Step Response

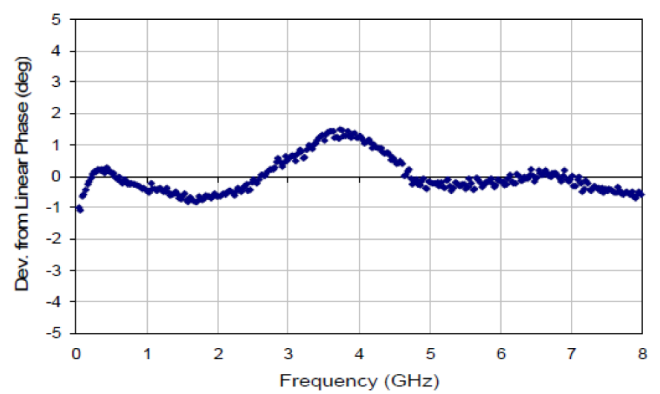


## Typical performance

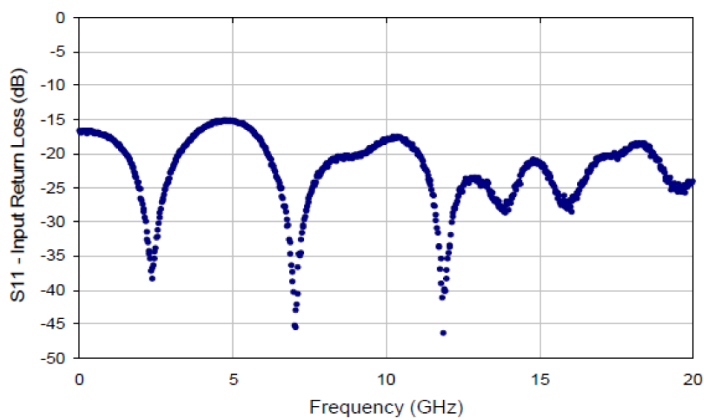
### S21 – Gain



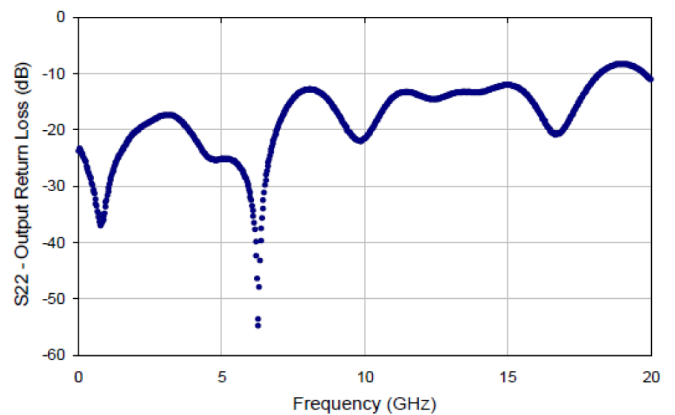
### Deviation from Linear Phase



### Typical S11 – Input Return Loss



### Typical S22 – Output Return Loss



## Specifications

Parameter	Symbol	Units	Minimum	Typical	Maximum	Comments
Impedance	Z	Ohms		50		
Upper 3 dB freq.	$f_{c,h}$	GHz	14	15		
Lower 3 dB freq.	$f_{c,l}$	kHz		10	20	
Small signal gain	$S_{21}$	dB	13	15	16	Average at 1 GHz and 2 GHz
Max Power Out (-1 dB gain comp)	$P_{1dB}$	dBm	10	13		
Gain Flatness		dB		$\pm 0.3$	$\pm 0.5$	50 MHz < f < 10 GHz
Group Delay Flatness		ps		$\pm 3$	$\pm 5$	50 MHz < f < 10 GHz
Input Return Loss	$S_{11}$	dB			-10	50 MHz < f < 20 GHz
Output Return Loss	$S_{22}$	dB			-10 -9.5	50 MHz < f < 14 GHz 14 GHz $\leq$ f < 16 GHz
Noise Figure	NF	dB		5.0	7.0	f > 50 MHz
Polarity	Inverting					
Coupling	AC, input and output					
RF Connectors	SMA jacks (f)					

## Operating specifications

Parameter	Units	Minimum	Maximum	Comments
Max Allowed Input	dBm		15	Damage Threshold (+/-1.78 V)
Input DC Bias Range	$V_{DC}$	-10	9	Input is AC coupled
Output DC Bias Range	$V_{DC}$	-5	13	Output is AC coupled
Environment Operating Storage	$^{\circ}C$	20 0	30 50	Indoors, 80% relative humidity
AC Power	100, 117, 200, or 230 VAC, 50/60 Hz, 15 VA (60Hz)			
Safety Certifications	Conforms to EN-061010-1 (CE mark), UL-1244 and IEC-348. Safety class I. For lab use by qualified personnel.			
Dimensions	9.6 x 7.5 x 1.7 in. (244 x 190 x 33 mm)			
Weight	2.9 lbs. (1.3 kg)			
Accessories	USA power cord			
Warranty	One Year			

# Ordering information

## Models

PSPL8003

LINEAR AMPLIFIER, 15 GHz, LABware

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\* European toll-free number. If not accessible, call: +41 52 675 3777

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