



3 dB NF, 14 dBm P1dB, 500 MHz to 20 GHz, Low Noise Broadband Amplifier, 14 dB Gain, SMA

TECHNICAL DATA SHEET

PE15A3253

PE15A3253 is a broadband GaAs PHEMT MMIC-based coaxial Low Noise Amplifier, operating in the 500 MHz to 20.0 GHz frequency range. The amplifier offers 3dB typical Noise Figure, 14 dBm of P1dB and 14 dB small signal gain, with gain flatness of ± 1.75 dB. This amplifier requires only a single positive DC supply with internal voltage regulation, is unconditionally stable, operates over the temperature range of -20°C to 70°C , and characterized by a light weight (11 g) and small size (1.08"x0.53"x0.29"). The rugged package is designed to meet a series of MIL-STD-202F environmental conditions including humidity, shock, vibration, and temperature cycle, and features removable SMA connectors for drop mounting onto a PWB.

Features

- 0.5 to 20 GHz Frequency Range
- P1dB: 14 dBm
- Small Signal Gain: 14 dB
- Gain Flatness: ± 1.75 dB
- Noise Figure: 3 dB
- Output IP3: +29 dBm
- 50 Ohm Input and Output Matched
- -20 to $+70^{\circ}\text{C}$ Operating Temperature
- Unconditionally Stable
- Single DC Positive Supply
- Built-in DC Voltage Regulator
- Small Size & Light Weight
- Field Replaceable SMA Connectors

Applications

- Laboratory Applications
- R&D Labs
- Radar Systems
- Electronic Warfare
- Telecom Infrastructure
- Test Instrumentation
- Military & Space
- Communication Systems
- Satellite Communications
- Wireless Communications
- Unmanned Systems
- Microwave Radio Systems
- Power Amplifier
- Low Noise Amplifier
- General Purpose Amplification
- RF Front Ends

Electrical Specifications (TA= 25°C)

Description	Minimum	Typical	Maximum	Units
Frequency Range	0.5		20	GHz
Gain		14		dB
Gain Flatness		± 1.75		dB
Output at 1 dB Compression Point	+12	+14		dBm
Output 3 rd Intercept Point		+29		dBm
Noise Figure		3		dB
Input VSWR			2:1	
Output VSWR			2:1	
Operating DC Voltage 1	12		15	Volts
Operating DC Current		75		mA
Operating Temperature Range (OTR)	-20		+70	$^{\circ}\text{C}$

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Absolute Maximum Rating

Parameter	Rating	Units
Source Voltage	+15	Volts
RF input Power	+23	dBm
Operating Temperature (base-plate)	-20 to +70	°C
Storage Temperature	-55 to +125	°C



ESD Sensitive Material,
Transport material in
Approved ESD bags.
Handle only in approved
ESD Workstation.

Mechanical Specifications

Size *Excluding Connectors*

Length	1.08 in [27.43 mm]
Width	0.36 in [9.14 mm]
Height	0.18 in [4.57 mm]
Weight	0.097 lbs [44 g]
Connector Option	Field Replaceable
Input Connector	SMA Female
Output Connector	SMA Female

Environmental Specifications

Temperature

Operating Range	-20 to +70 deg C
Storage Range	-55 to +125 deg C

Humidity	MIL-STD-202F, METHOD 103B COND B.
Shock	MIL-STD-202F, METHOD 213B COND B.
Altitude	MIL-STD-202F, METHOD 105C COND B.
Temperature Cycling	MIL-STD-202F, METHOD 107D COND A.

Compliance Certifications (see [product page](#) for current document)

Plotted and Other Data

Notes:

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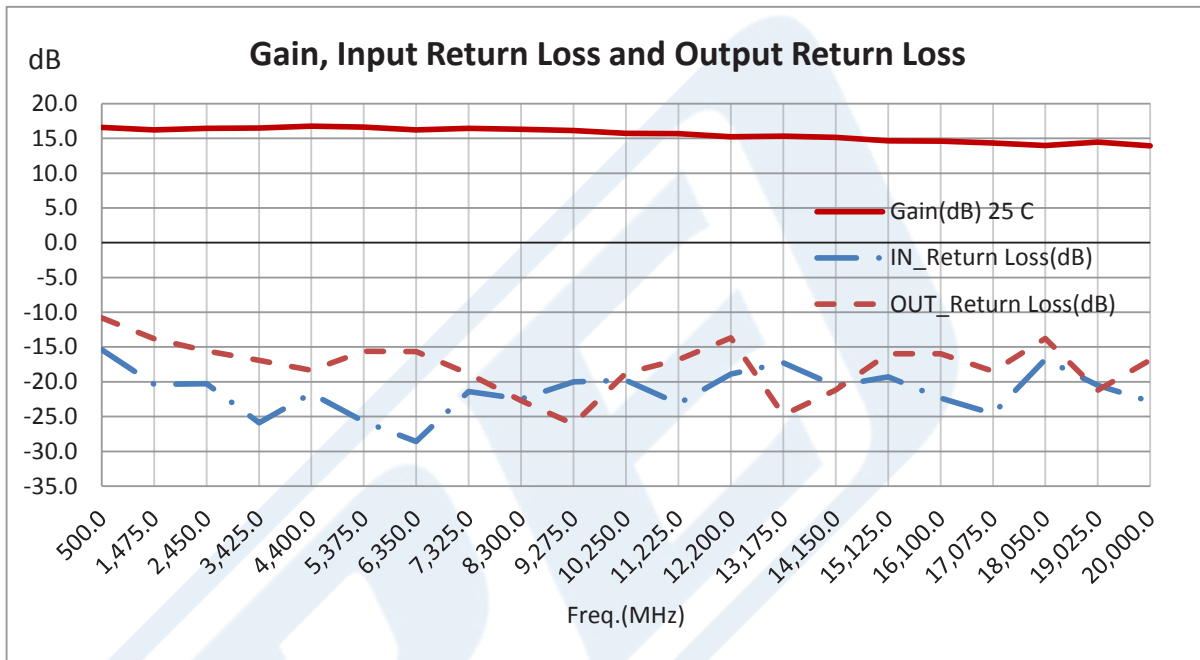


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Typical Performance Data



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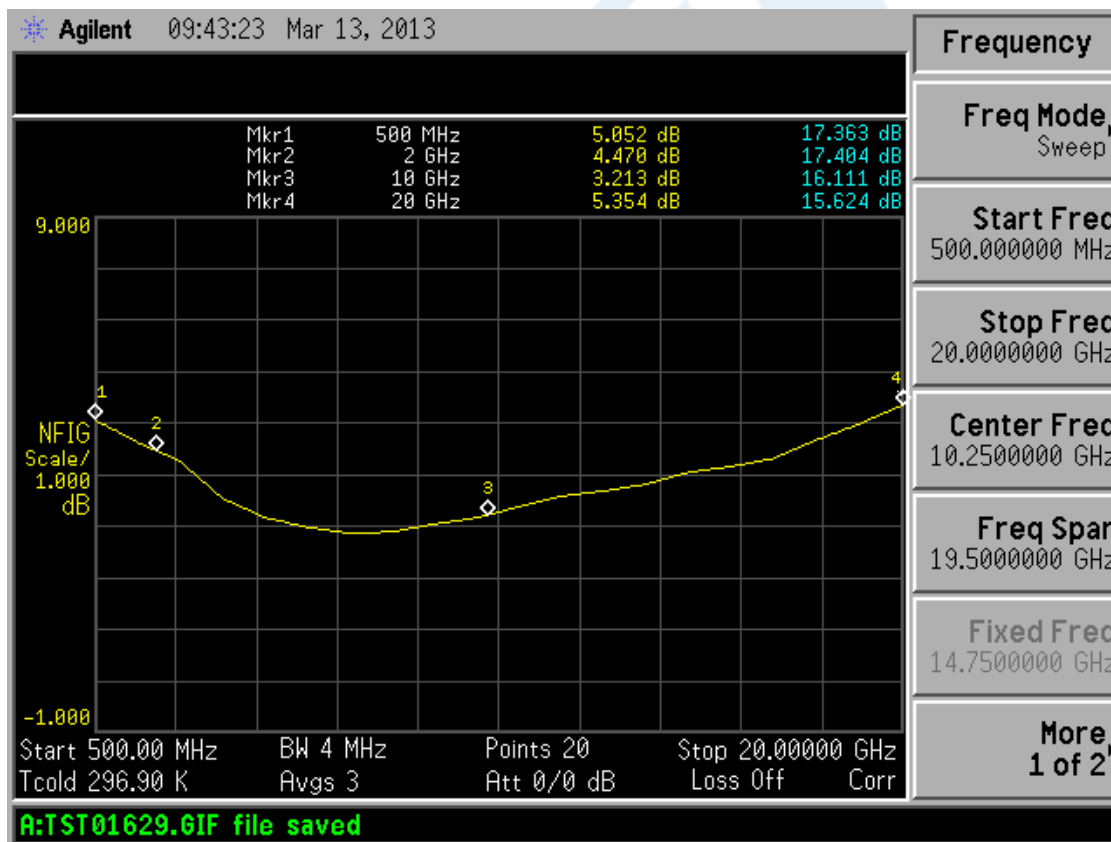


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Noise Figure Plot (500MHz to 20GHz)



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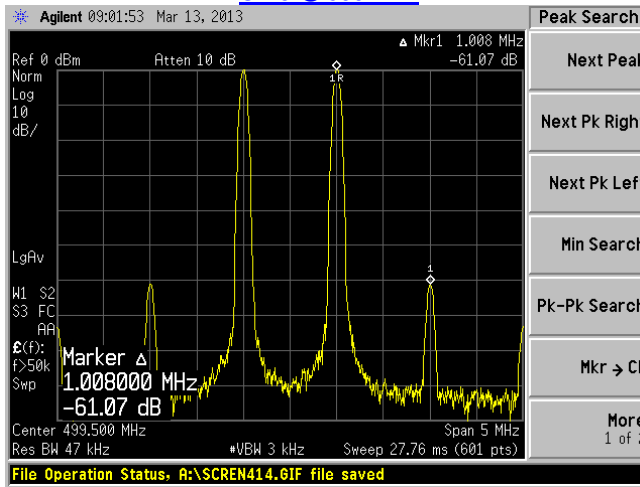


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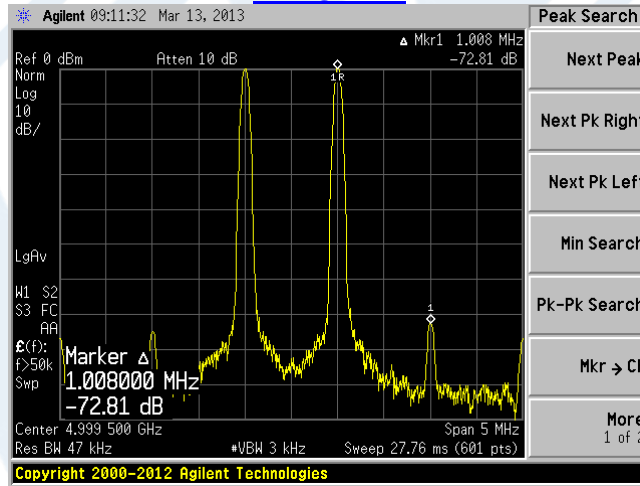
OIP3 @ 500 MHz



$$\text{OIP3} = \text{Pout} + \text{dBc}/2$$

$$+30.53\text{dBm} = 0 + (61.07/2)$$

OIP3 @ 5 GHz



$$\text{OIP3} = \text{Pout} + \text{dBc}/2$$

$$+36.40\text{dBm} = 0 + (72.81/2)$$

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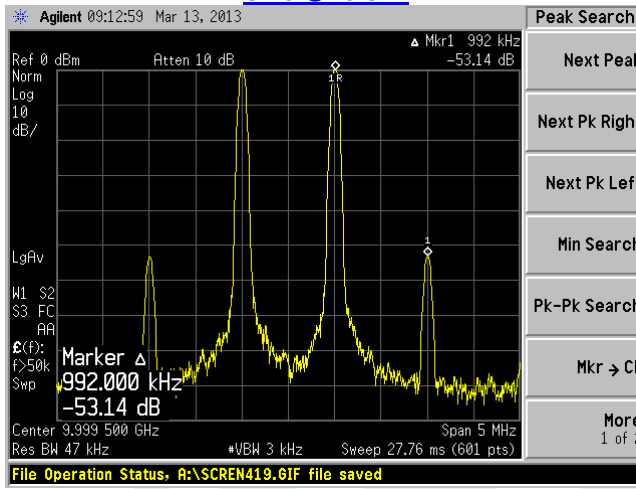


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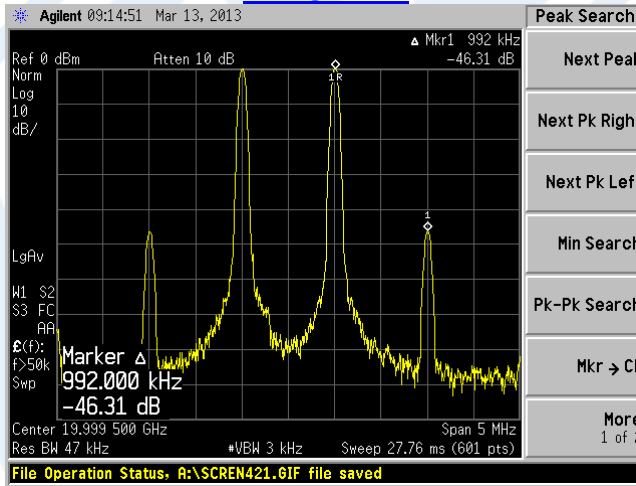
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OIP3 @ 10 GHz



$$\begin{aligned} \text{OIP3} &= \text{Pout} + \text{dBc}/2 \\ +26.57\text{dBm} &= 0 + (53.14/2) \end{aligned}$$

OIP3 @ 20 GHz



$$\begin{aligned} \text{OIP3} &= \text{Pout} + \text{dBc}/2 \\ +23.15\text{dBm} &= 0 + (46.31/2) \end{aligned}$$

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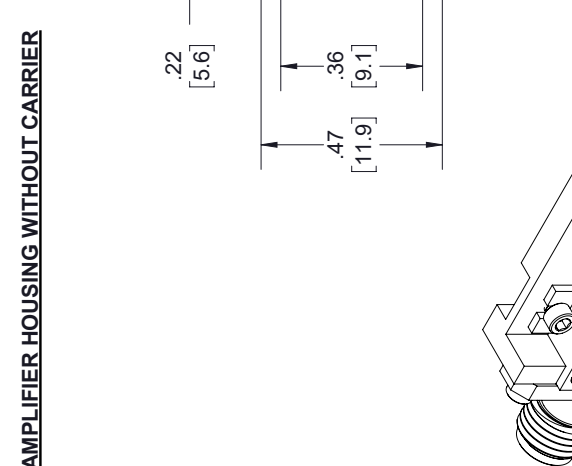
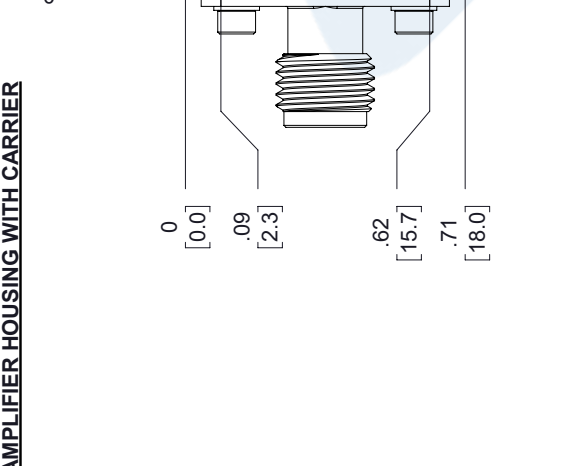
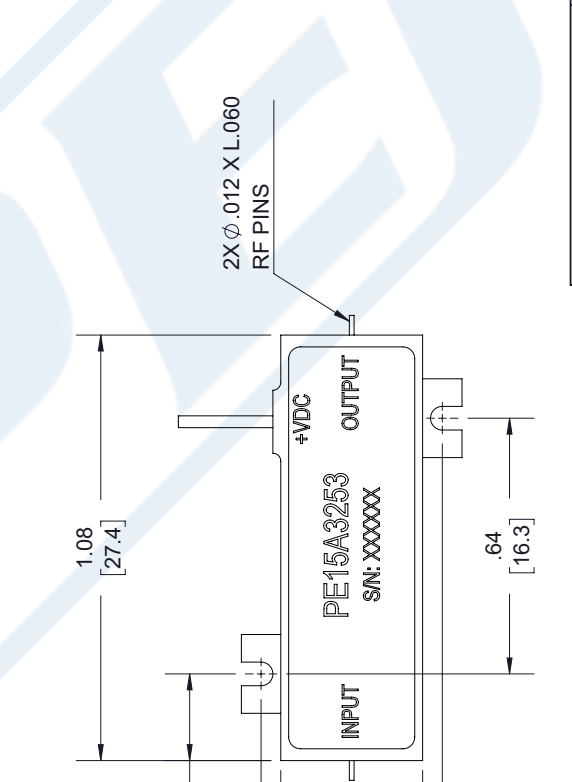
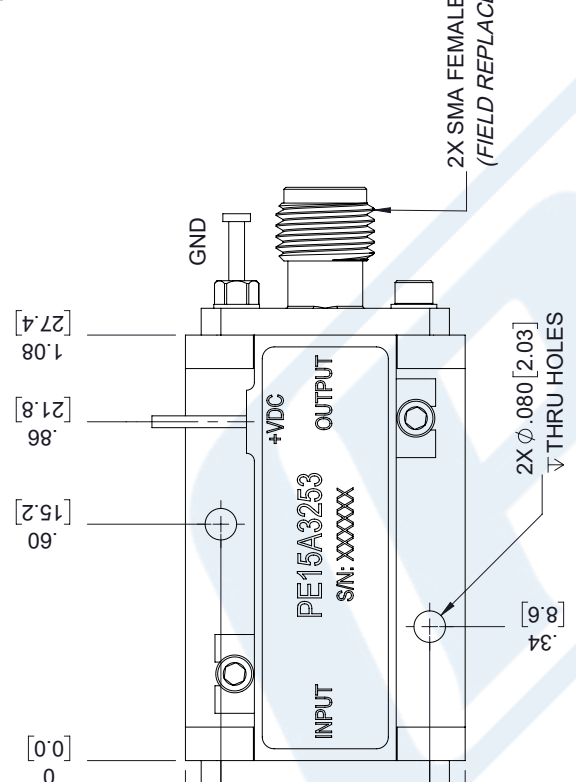
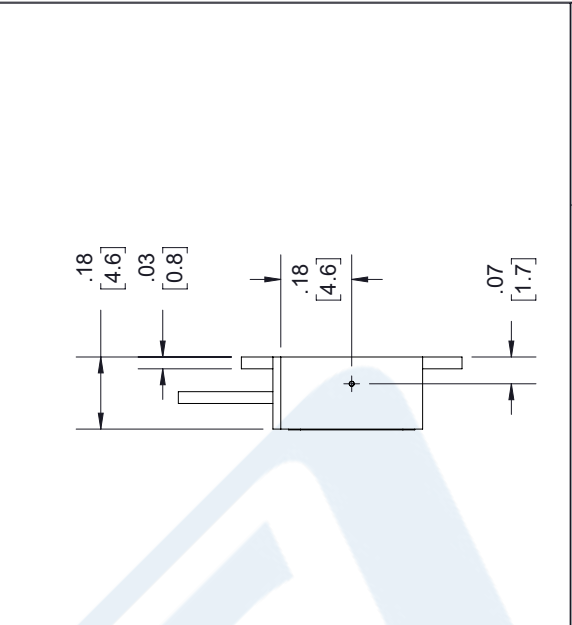
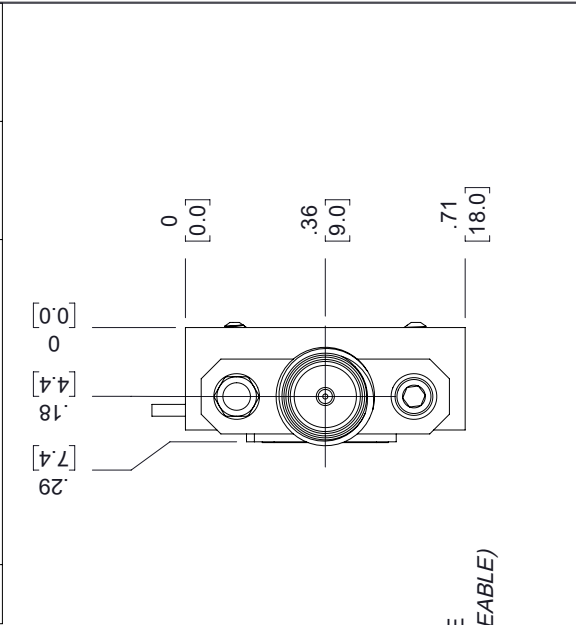
URL: <https://www.pasternack.com/3-db-20-ghz-low-noise-broadband-amplifier-14-db-gain-sma-pe15a3253-p.aspx>

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PE15A3253 CAD Drawing

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REV.	DESCRIPTION	DATE	APPROVED
A	INITIAL RELEASE	11/06/19	T.GALLA



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SHEET 1	OF 1
SCALE	N/A

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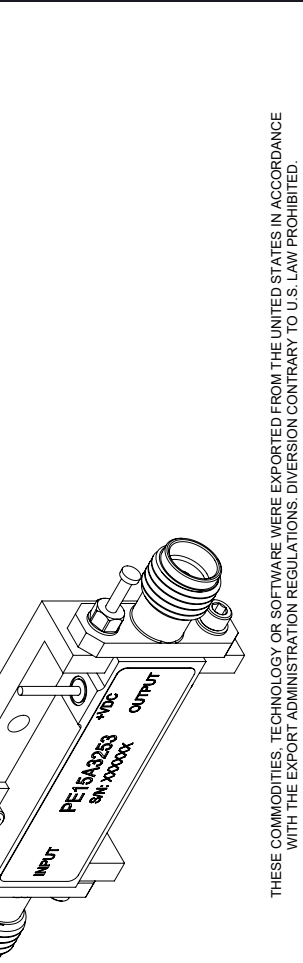
SIZE: A CAGE CODE: 53919 DRAWN BY: K.DANG PART NUMBER: PE15A3253 REV: A

UNLESS OTHERWISE SPECIFIED LEADING DIMENSIONS ARE INCHES DIMENSIONS IN [] ARE MILLIMETERS

TOLERANCES:

.X = ±.2 [5.08] FRACTIONS ± 1/32
.XX = ±.02 [.51] ANGLES ± 1°
.XXX = ±.005 [.13] CABLE LENGTH (L) TOLERANCES:
L ≤ 12 [305] = +1 [25] / -0
12 [305] < L ≤ 60 [1524] = +2 [51] / -0
60 [1524] < L ≤ 120 [3048] = +4 [102] / -0
120 [3048] < L ≤ 300 [7620] = +6 [152] / -0
300 [7620] < L = +5% / L / -0

ALL DIMENSIONS SHOWN ARE FOR REFERENCE ONLY.



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