Product Description

ATEK551P3 is an RF amplifier covering 6 to 18 GHz frequency range.

Amplifier is biased with a single positive bias, input and outputs are matched to 50 ohms internally, has internal DC block capacitors. These features allow users to easily integrate the amplifier into RF transmit receive chains.

Amplifier housed in compact 3x3 mm low cost SMD package, input and output matched to 50 ohms internally.

Evaluation Board, bare die, custom package, and module options are available upon request.

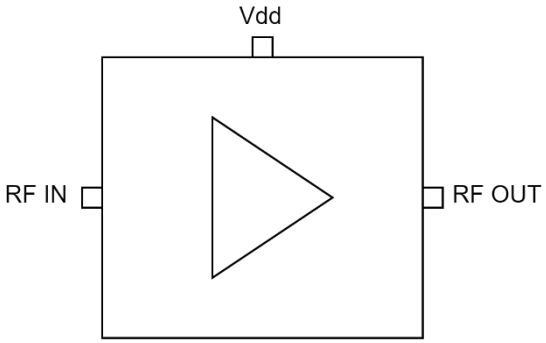
Product Features

- Frequency Range: 6 - 18 GHz
- Gain: 14 dB at 12 GHz
- Output Power: 18 dBm
- Single Supply
- 3x3 mm compact size

Applications

- Wideband Receivers
- Telecommunication
- SDR
- General Purpose Wireless
- Test Equipment

Functional Block Diagram



Electrical Specifications

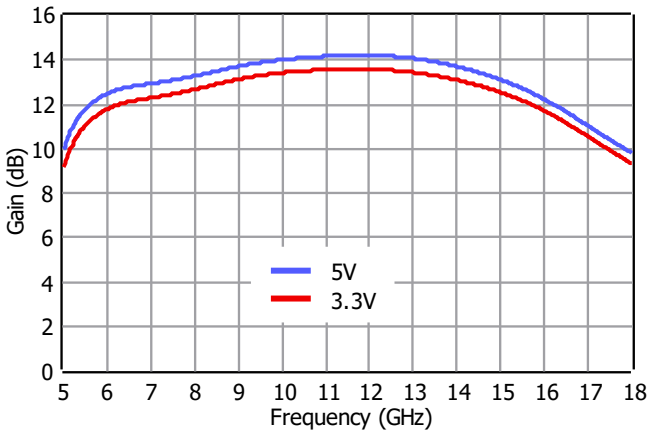
Conditions unless otherwise specified: V_{DD} = 5 V, Typical, T = 25 C, CW.

Parameter		Min	Typ	Max	Units
Operational Frequency Range		6		18	GHz
Small Signal Gain	6 GHz		12.5		dB
	10 GHz		14		
	14 GHz		13.7		
	18 GHz		9.8		
Isolation	6 GHz		45		dB
	10 GHz		38		
	14 GHz		32		
	18 GHz		28		
Input Return Loss			-13		dB
Output Return Loss			-15		dB
Output P1dB			17.5		dBm
Output IP3			31		dBm
Psat			18		dBm
DC Supply Voltage (Vdd)			3.3 to 5		V
DC Supply Current			55 to 97		mA
Operating Temperature		-40		85	°C

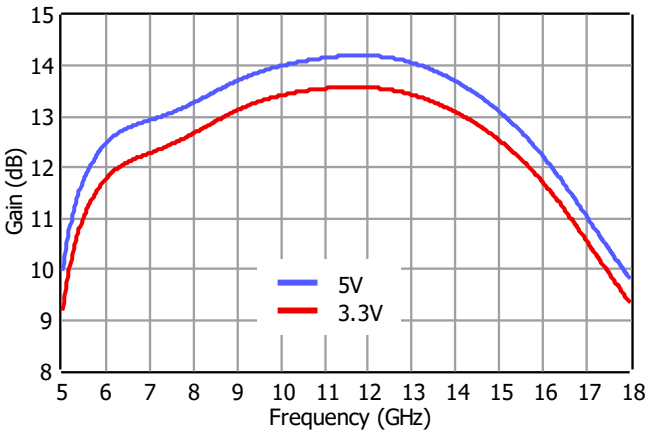
Typical Performance Plots

Conditions unless otherwise specified: V_{DD} = 5 V, Typical, T = 25 C, CW.

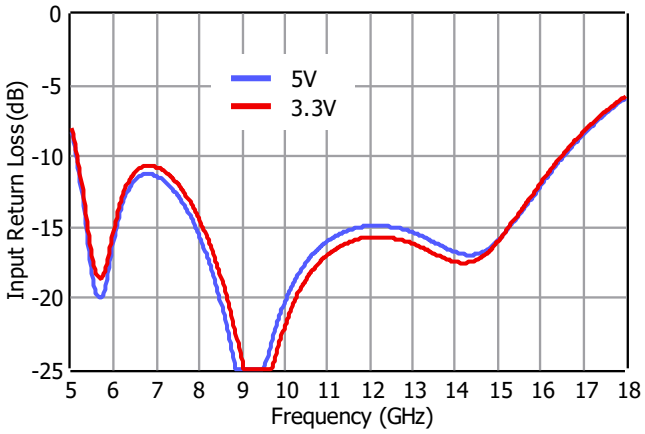
Gain



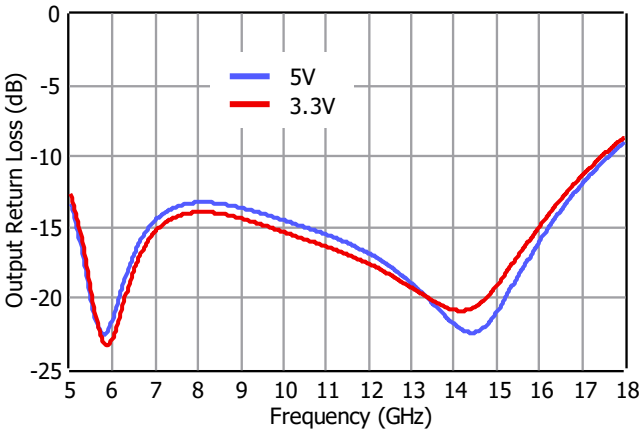
Gain



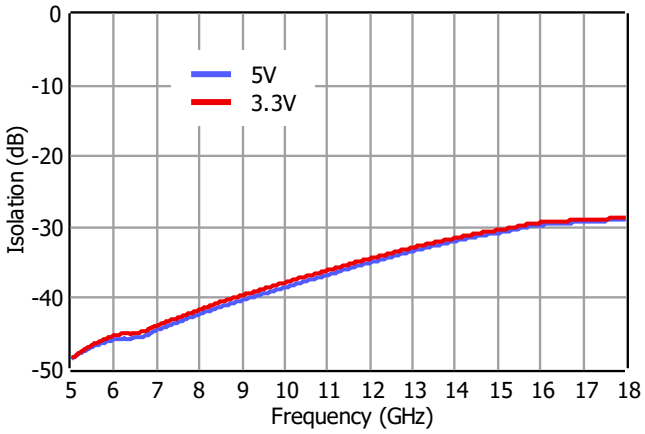
Input Return Loss



Output Return Loss



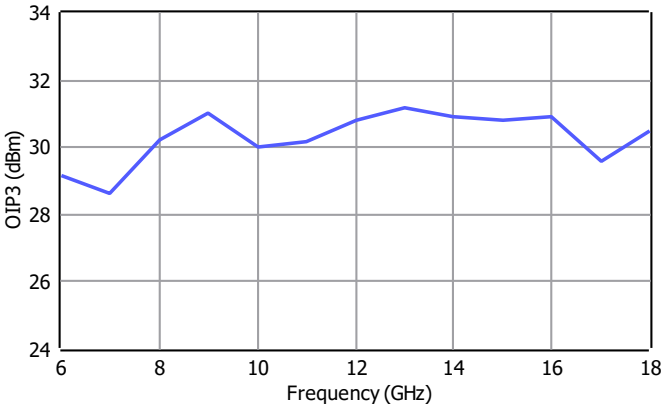
Isolation



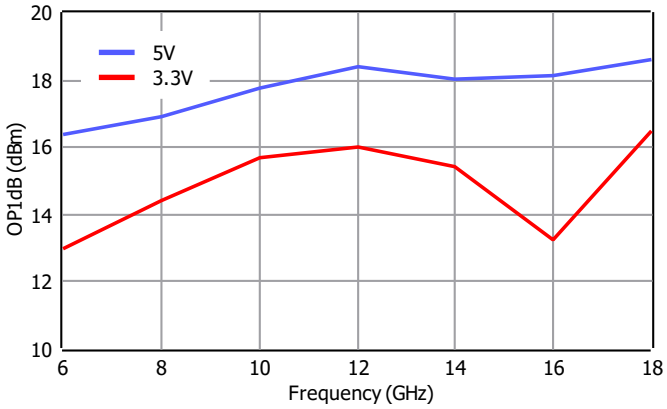
Typical Performance Plots

Conditions unless otherwise specified: V_{DD} = 5 V, Typical, T = 25 C, CW.

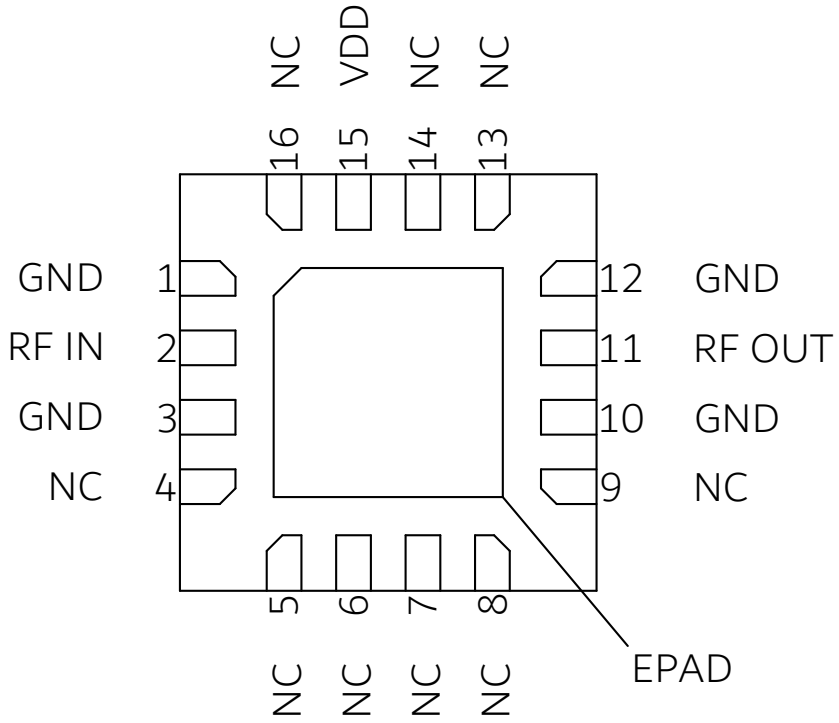
Output IP3



Output P1dB



Pin Description

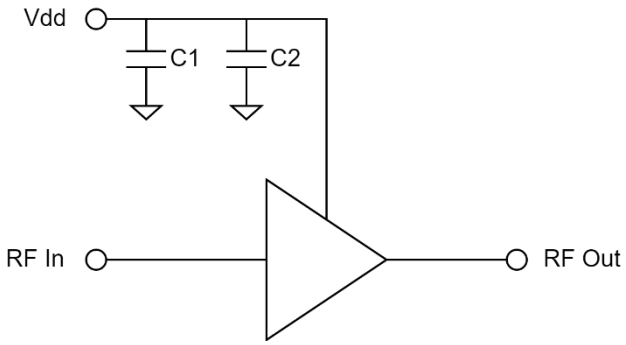


Top View

Pin Number	Pin Name	Description
2	RF IN	RF input pin. AC coupled.
11	RF OUT	RF output pin. AC coupled.
15	VDD	Vdd bias pin.
4-9, 13, 14, 16	NC	These pins are not internally connected. Can be grounded on the PCB.
1, 3, 10, 12	GND	Ground.
17	EPAD	Exposed Pad on the bottom of the package should be connected to ground with multiple number of vias to reduce the inductance to the GND.

Applications Information

Signal entering from RF IN goes to RF OUT with an amplification.
Typical application schematic to operate the amplifier is given below.



C1 and C2 are used to filter out the ripples and unwanted signals coming from the Vdd supply. Using additional capacitors in parallel to C1 and C2 will improve this filtering. If this filtering is of no concern, then amplifier can be operated without C1 and C2.

Small signal performance is measured with Probe PCB.
P1dB and IP3 performance is measured with connectorized evaluation PCB. Then the loss of the PCB is de-embedded to generate the data presented in this document.

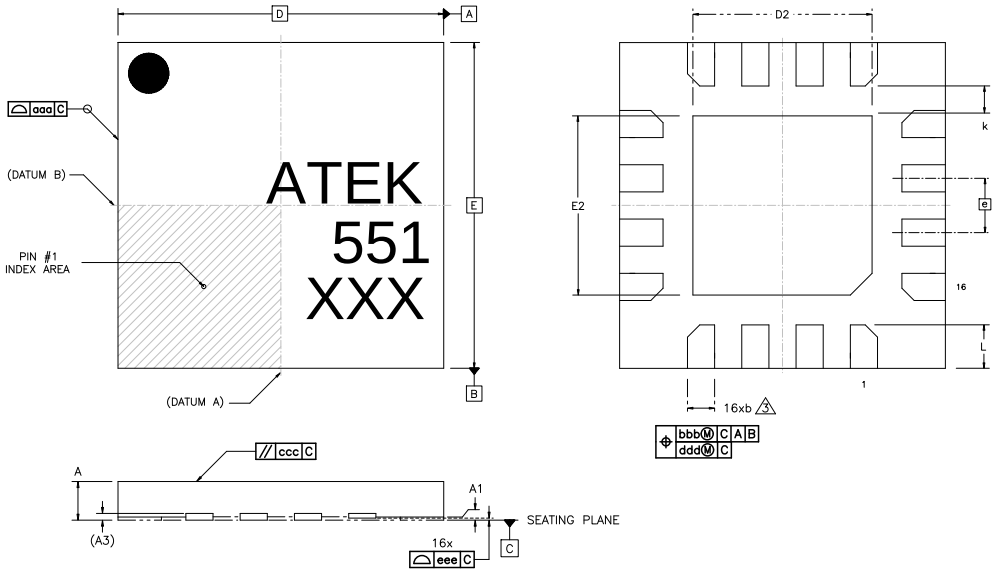
The NC pins of the Amplifier are connected to the GND on the PCBs used to generate the plots shown in this document.

Absolute Maximum Ratings

Parameter	Value/Range
Supply Voltage (Vdd)	TBD
RF Input Power	TBD
Storage Temperature	−55 to +125°C

Operation of this device outside the parameter ranges given above may cause damage. These parameters should not be applied simultaneously.

Mechanical and Marking Information



NOTES:
1) ALL DIMENSIONS IN MM
2) DIMENSIONING AND TOLERANCING PER ASME Y14.5−2009
3) DIMENSION b APPLIES TO METALLIZED TERMINAL AND IS MEASURED BETWEEN 0.15 AND 0.30 MM FROM TERMINAL TIP

SYMBOL	MIN	MAX	SYMBOL	MIN	MAX
A, V	0.80	1.00	E2	1.55	1.75
A, W	0.70	0.80	e	0.50 BSC	
A, L	1.40	1.70	k	0.20	–
A1	0.00	0.05	L	0.35	0.45
A3	0.20 REF		aaa	0.10	
b	0.18	0.30	bbb	0.10	
D	3.00 BSC		ccc	0.10	
D2	1.55	1.75	ddd	0.05	
E	3.00 BSC		eee	0.08	

Handling Precautions

Caution!
ESD-Sensitive Device
Handle Accordingly

Contact Information

For the latest specifications, additional product information, support, and sales.
Web: www.atekmidas.com
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Email: support@atekmidas.com

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Revisions

Revision No	Revision Date	Revision Reason	Section / Page No
1.0	04.06.2022	Initial Release	
1.1	10.08.2022	Plots Revised	
1.2	08.09.2022	Applications Information Revised	