

Product Description

ATEK561P3 is an RF amplifier covering 4 to 10 GHz frequency range.

Amplifier is biased with a single positive supply, 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.

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

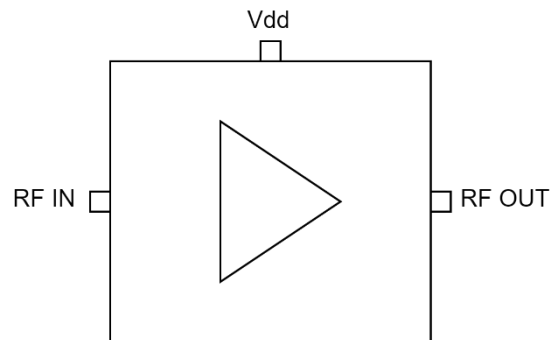
Product Features

- Frequency Range: 4 - 10 GHz
- Gain: 15 dB
- Single Supply
- 3x3 mm compact size

Applications

- Wideband Receivers
- Telecommunication
- SATCOM
- SDR
- Test Equipment
- Radar

Functional Block Diagram



Electrical Specifications

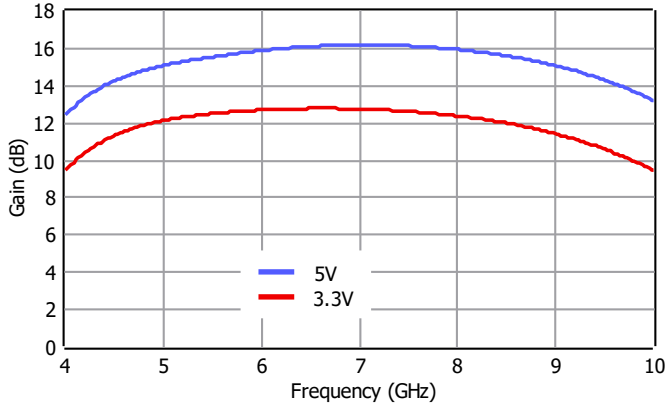
Conditions unless otherwise specified: $V_{DD} = 5\text{ V}$, Typical, $T = 25\text{ C}$, CW.

Parameter		Min	Typ	Max	Units
Operational Frequency Range		4		10	GHz
Small Signal Gain	4 GHz		13.6		dB
	6 GHz		16		
	8 GHz		16.3		
	10 GHz		14.2		
Isolation	4 GHz		-48		dB
	6 GHz		-52		
	8 GHz		-46		
	10 GHz		-49		
Input Return Loss			-14		dB
Output Return Loss			-18		dB
Output IP3			24.5		dBm
Output P1dB			14.5		dBm
DC Supply Voltage (Vdd)			3.3 5		V
DC Supply Current			44 79		mA
Operating Temperature		-40		85	°C

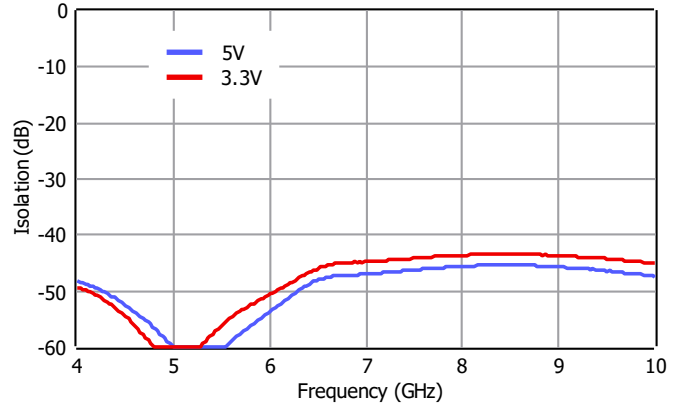
Typical Performance Plots

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

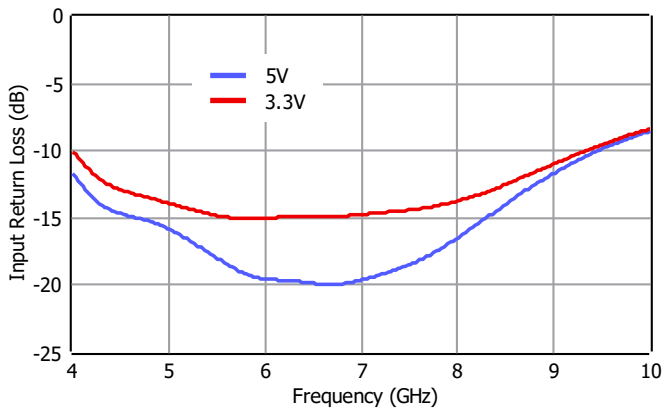
Gain



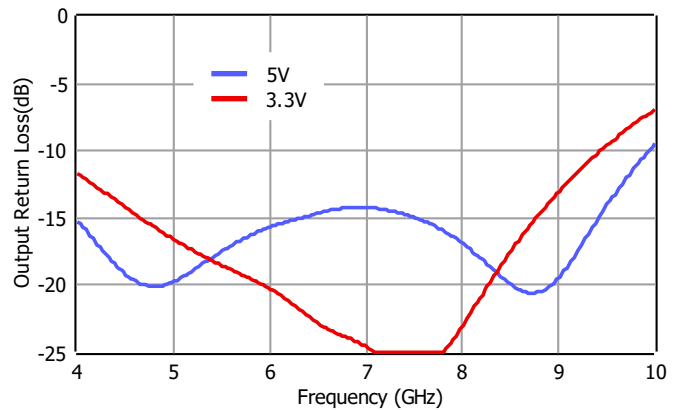
Isolation



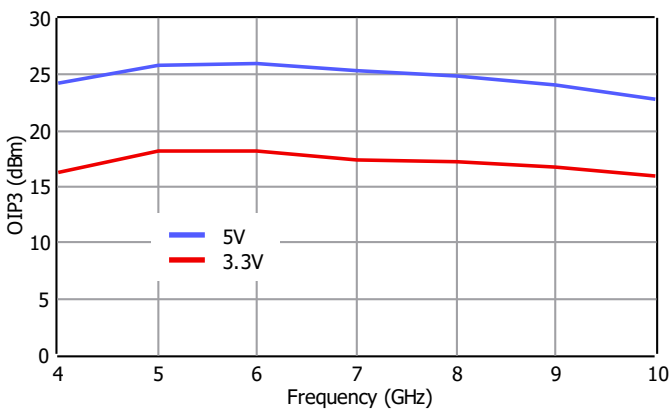
Input Return Loss



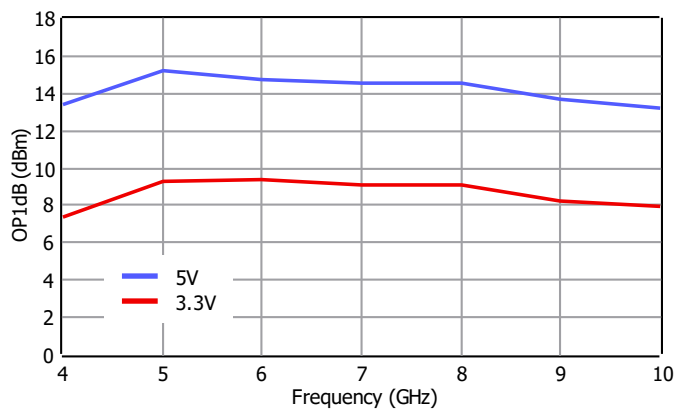
Output Return Loss



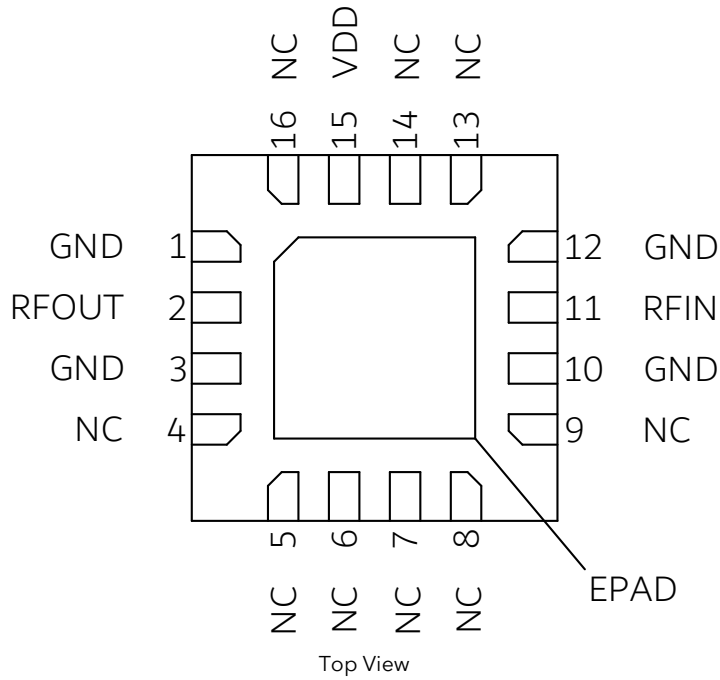
Output IP3



Output P1dB



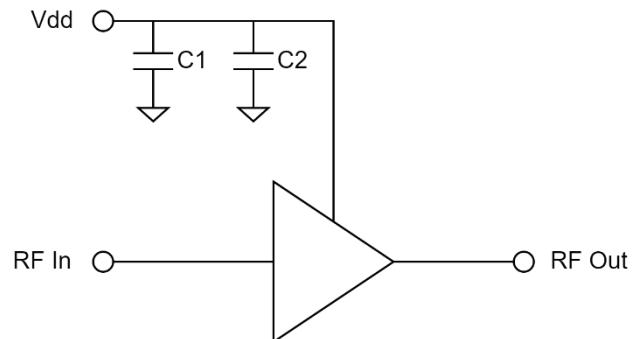
Pin Description



Pin Number	Pin Name	Description
11	RF IN	RF input pin. AC coupled.
2	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.

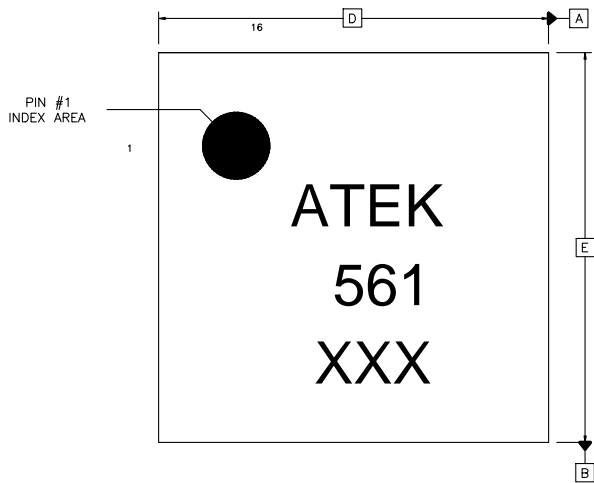
The NC pins of the Amplifier are connected to the GND on the PCBs used to generate the plots shown in this document.

Absolute Maximum Ratings

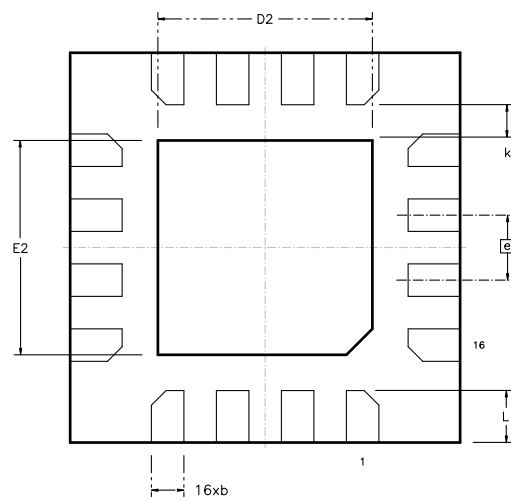
Parameter	Value/Range
Supply Voltage (Vdd)	TBD
RF Input Power	TBD
Storage Temperature	-55 to +125°C

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

Mechanical and Marking Information



Top View



Bottom View



Side View

NOTES:
1) ALL DIMENSIONS IN MM

SYMBOL	MIN	MAX	SYMBOL	MIN	MAX
A, V	0.80	1.00	E2	1.55	1.75
b	0.18	0.30	e	0.50	BSC
D	3.00	BSC	k	0.20	-
D2	1.55	1.75	L	0.35	0.45
E	3.00	BSC			

Handling Precautions



Caution!
ESD-Sensitive Device
Handle Accordingly

Contact Information

For the latest specifications, additional product information, support, and sales.

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Revisions

Revision No	Revision Date	Revision Reason	Section / Page No
1.0	07.12.2021	Initial Release	
1.1	18.05.2022	Plots Added and Revised	
1.2	13.05.2024	Plots Added and Revised	