

# QPL9547 – 2.5-2.7GHz Reference Design

## Product Overview

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The QPL9547 is a high-linearity, ultra-low noise amplifier in a small 2 x 2 mm surface-mount package. At 1.9 GHz, the amplifier typically provides 19.5 dB gain, +39 dBm OIP3 at a 65 mA bias setting, and 0.3 dB noise figure. The LNA can be biased from a single positive supply ranging from 3.3 to 5 volts. The device is housed in a green/RoHS-compliant industry-standard 2x2 mm package.

The QPL9547 is bias adjustable and requires minimal external components to operate. It also has a power down control capability integrated into the die for TDD applications

## Referenced Documents

The reference documents below take precedence over the contents of this application note and should always be consulted for the latest information.

QPL9547Data Sheet.

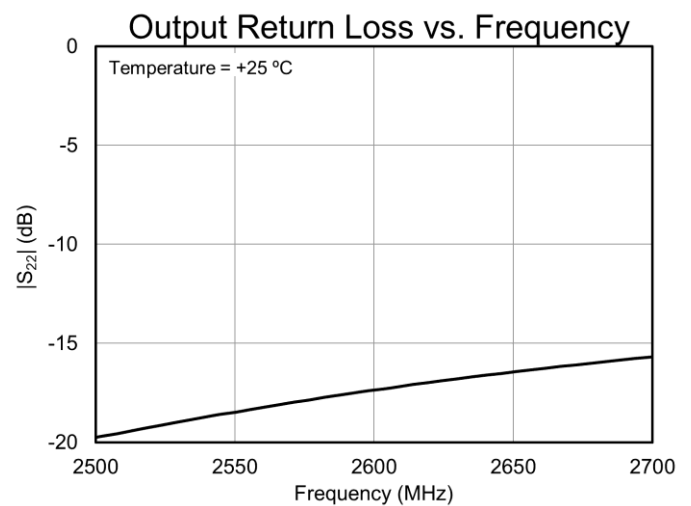
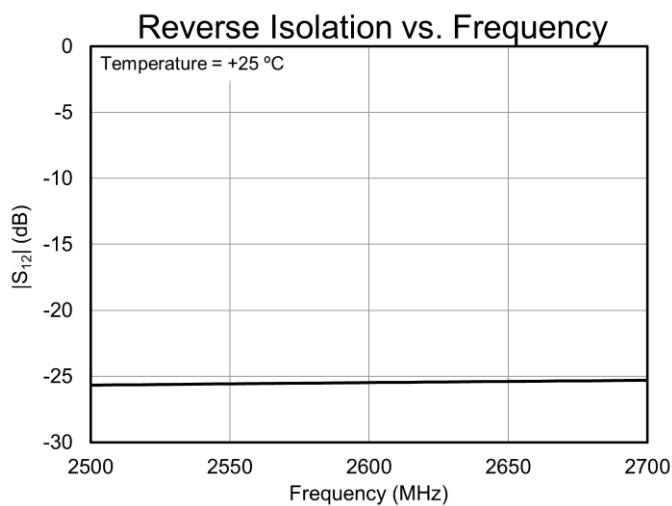
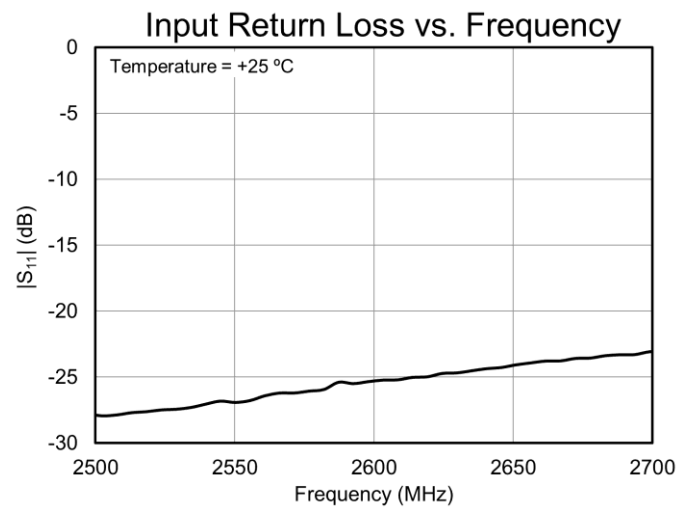
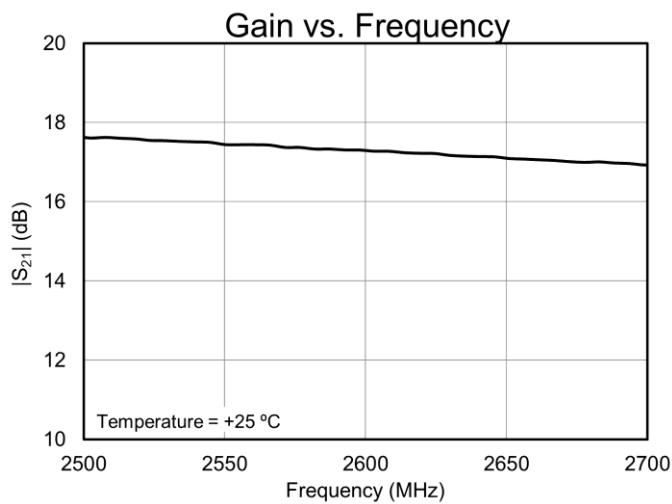
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## Application Electrical Performance

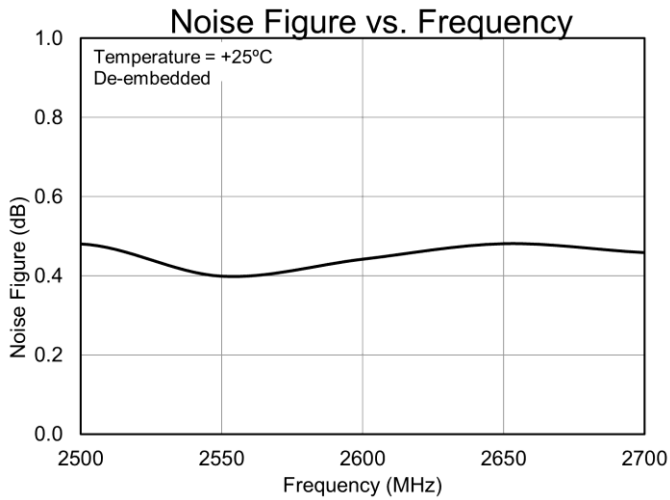
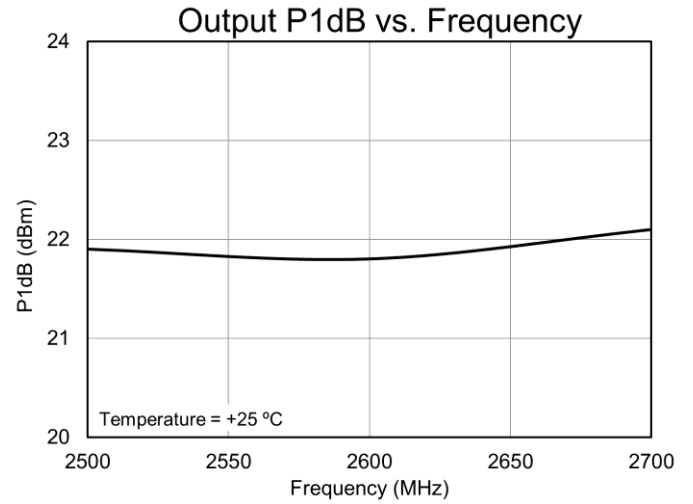
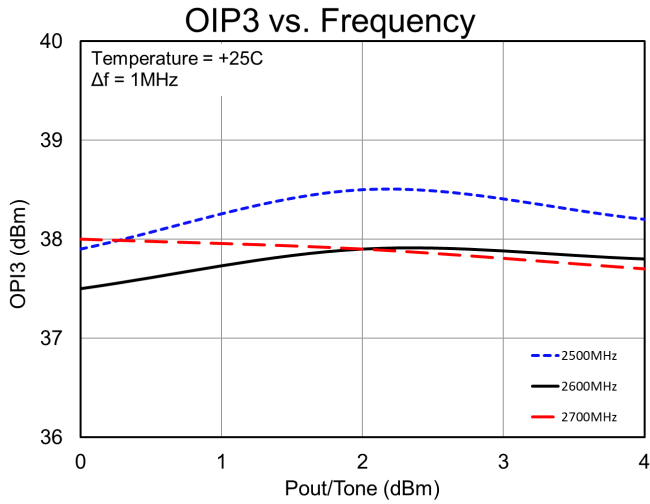
Qorvo Field and Factory Applications Engineers are available to provide technical assistance for determining appropriate matching networks for a particular application.

Parameter	Conditions	Typical Value			Units
Frequency		2500	2600	2700	MHz
Gain		17.6	17.3	16.9	dB
Input Return Loss		27.9	25.4	23.1	dB
Output Return Loss		19.7	17.4	15.7	dB
Noise Figure	EVB Trace Loss De-embedded	0.48	0.44	0.46	dB
Output P1dB		21.9	21.8	22.1	dBm
OIP3	Pout = +2dBm/tone, Δf = 1 MHz	38.5	37.9	37.9	dBm
Device Current, I <sub>DD</sub>		65			mA
		4.3			mA

Test conditions unless otherwise noted: V<sub>DD</sub> = +5V, Temp = +25 °C, 50 Ω system.



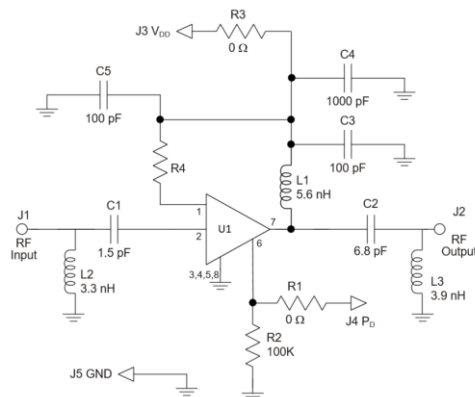
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## Evaluation Board Information

### Evaluation Board and Schematic



#### Notes:

1. See Evaluation Board PCB Information section for material and stack-up.
2. All components are of 0402 size unless stated on the schematic.
3. Distance from right edge of C1 to left edge of U1 is 180mils
4. Distance from right edge of L2 to left edge of U1 is 220mils.
5. Distance from left edge of C2 to right edge of U1 is 180mils.
6. Distance from left edge of L3 to right edge of U1 is 220mils.
7. R4 = 3.32KOhm

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## Evaluation Board – Bill of Material

Reference Des.	Value	Description	Manuf.	Part Number
n/a	n/a	Printed Circuit Board		
U1	n/a	Ultra Low Noise QPL9547 LNA	Qorvo	QPL9547
R4	3.32K	RES, 1%, 1/10W, 0402	various	
R2	100K	RES, 1%, 1/10W, 0402	various	
R1, R3	0 $\Omega$	RES, 1/10W, 0402	various	
C1	1.5 pF	CAP, $\pm 0.1$ pF, 50V, COG, 0402	various	
C2	6.8 pF	CAP, $\pm 0.1$ pF, 50V, COG, 0402	various	
C3, C5	100 pF	CAP, 5%, 50V, NPO/COG, 0402	various	
C4	1000 pF	CAP, 10%, 10V, X5R, 0402	various	
C8	1 pF	CAP, $\pm 0.05$ pF, 50V, HI-Q, 0402	various	
L1	5.6 nH	IND, 5%, WW, 0603	various	
L2	3.3 nH	IND, 5%, WW, 0402	various	
L3	3.9 nH	IND, 5%, WW, 0402	various	

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## Additional Information

For information on ESD, Soldering Profiles, Packaging Standards, Handling and Assembly, please contact Qorvo for general guidelines.

## Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations:

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