

QPA9940 – 2.2-2.3GHz Reference Design

Product Overview

The QPA9940 is a high-efficiency, linearizable power amplifier targeting Band 40 small-cell wireless infrastructure systems. Using InGaP/GaAs HBT technology, the product delivers high efficiency of 31% at +28dBm average output power while providing excellent DPD linearized ACPR of -50 dBc for signal bandwidths of up to 100MHz.

The QPA9940 is housed in a 5x5mm SMT package. It is pin-to-pin compatible to QPA9901, QPA9903 and QPA9908 (high-efficiency small cell PA).

Referenced Documents

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

QPA9940 Data Sheet.

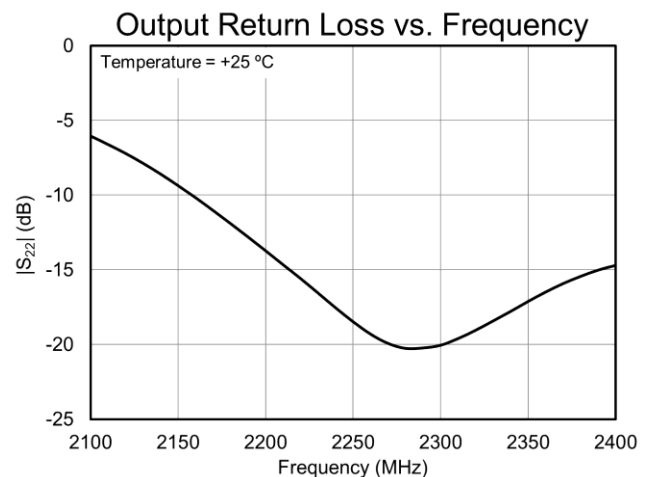
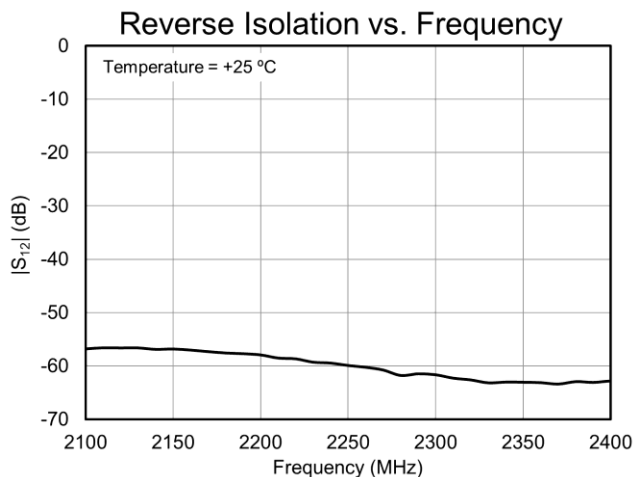
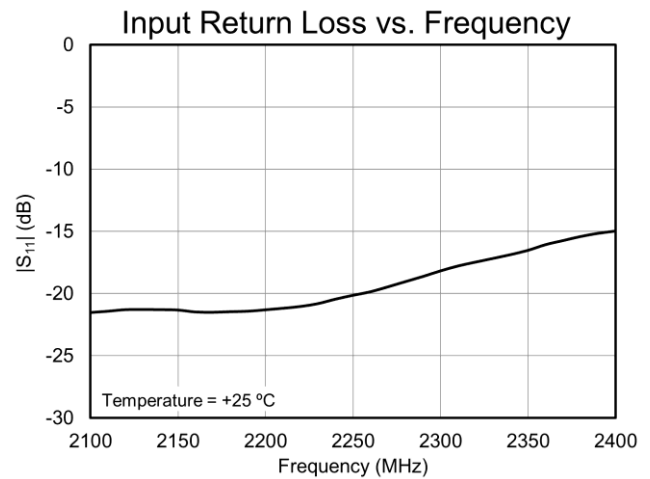
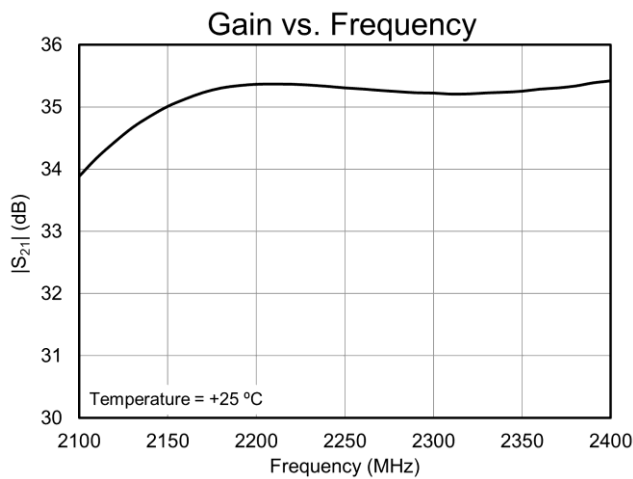
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Application Electrical Performance

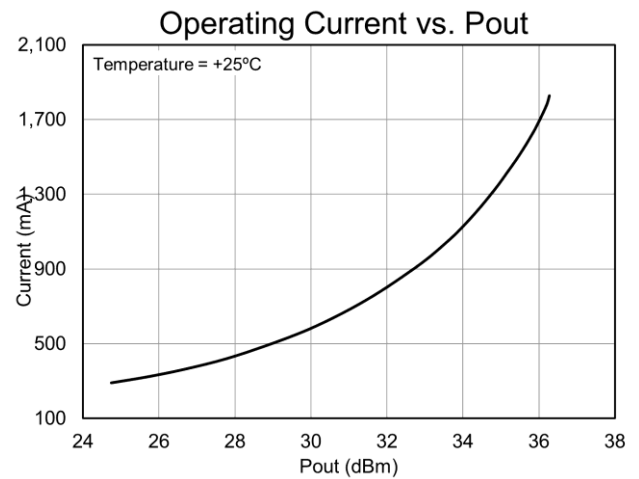
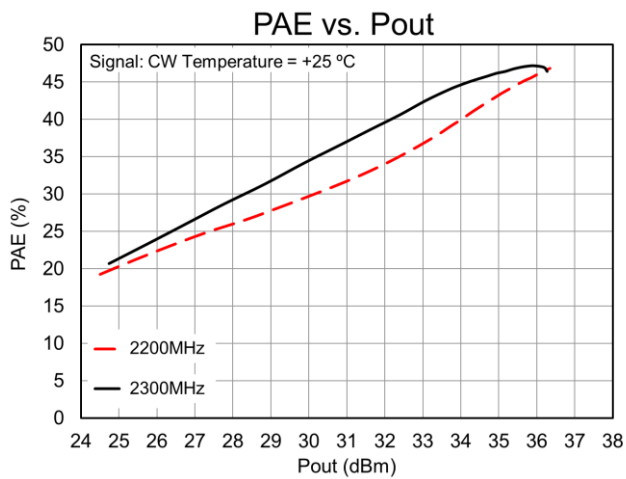
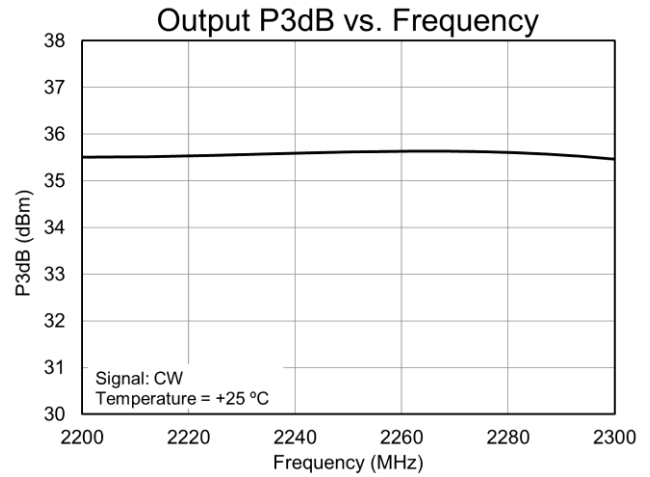
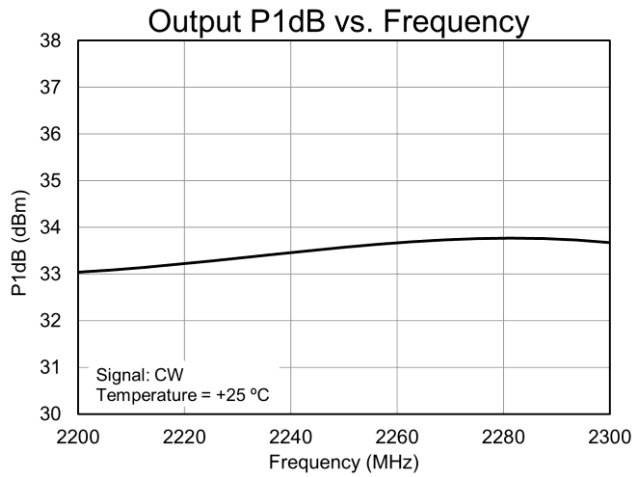
Qorvo Field and Factory Applications Engineers are available to provide technical assistance for determining appropriate matching networks for a particular application.

Parameter	Conditions	Typical Value		Units
Frequency		2200	2300	MHz
Gain		35.4	35.2	dB
Input Return Loss		21.3	18.2	dB
Output Return Loss		13.7	20.1	dB
Output P1dB		33.0	33.7	dBm
Output P3dB		35.5	35.5	dBm
Device Current, I _{DD}		103		mA

Test conditions unless otherwise noted: All V_{CC} & V_{BIAS} = +5.0V, V_{EN} = +1.8V, Temp = +25 °C, 50 Ω system.



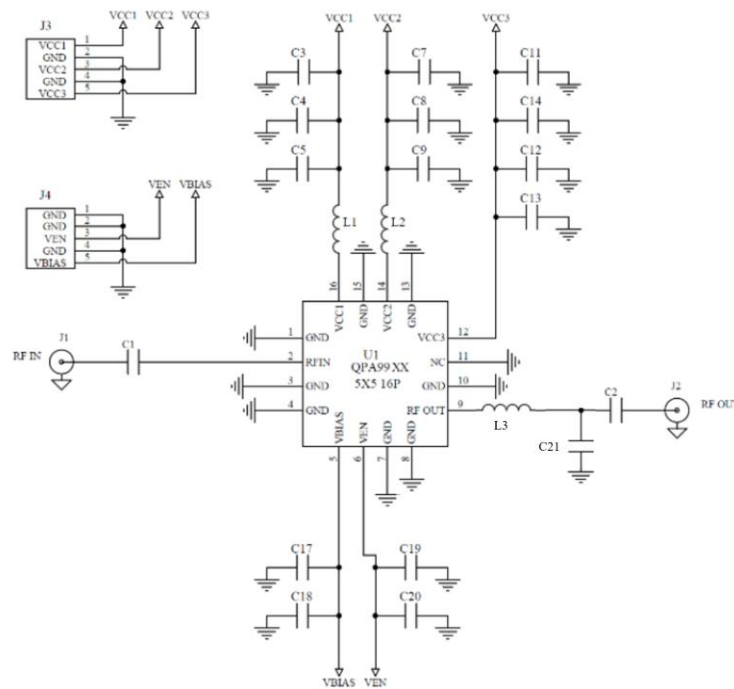
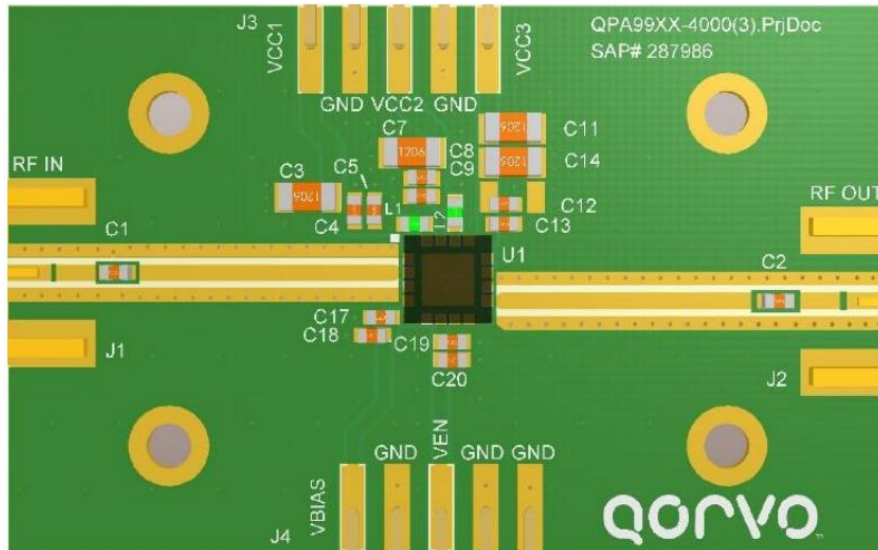
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Evaluation Board Information

Evaluation Board and Schematic



Notes:

1. See Evaluation Board PCB Information section for material and stack-up.

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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	Amplifier, QPA9940 2300-2400MHz, High-Efficiency	Qorvo	QPA9940
C1, C2	100 pF	CAP,100 pF, 0603, 5%, 50V, C0G	Various	
C5, C9, C13, C17, C19	1000 pF	CAP,1000 pF, 0603, 5%, 50V, C0G	Various	
C4, C8, C12, C18, C20	0.1 μ F	CAP,0.1 μ F, 0603, 10%, 50V, X7R	Various	
C3, C7, C14	10 μ F	CAP, 10 μ F, 1206, 25V	Various	
C21	1 nH	IND ,1 nH, 0603, \pm 0.3 nH	Johanson	L-14C1N0SV4S
L1, L2	0 Ω	RES 0 Ω , 0603, 1/16W, Chip	Various	
L3	0.8 pF	CAP,0.8 pF, 0603, \pm 0.1 pF	Johanson	251R14S0R8BV4S

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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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