

TQP3M9037 –2.5-2.7GHz Reference Design

Product Overview

The TQP3M9037 is a high-linearity, ultra-low noise gain block amplifier in a small 2 x 2 mm surface-mount package. At 1.95 GHz, the amplifier typically provides 20 dB gain, +35 dBm OIP3, and 0.4 dB noise figure while drawing 70 mA current from a +5 V supply. This amplifier does not require a negative supply for operation and can be biased from a single positive supply ranging from +3.3 to +5 volts. The device is housed in a green/RoHS-compliant industrystandard 2 x 2 mm package.

The TQP3M9037 is internally matched using a high performance E-pHEMT process and only requires four external components for operation from a single positive supply: an external RF choke and blocking/bypass capacitors. This low noise amplifier contains an internal active bias to maintain high performance over temperature and integrates a shut-down biasing capability to allow for operation for TDD applications.

The TQP3M9037 covers the 0.7 –6.0 GHz frequency band and is targeted for wireless infrastructure. It is pin compatible with the low-band, 0.4–2.0 GHz TQP3M9036.

Referenced Documents

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

TQP3M9037 Data Sheet.

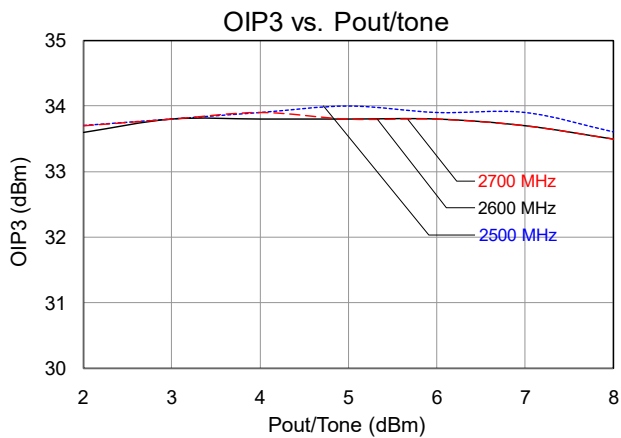
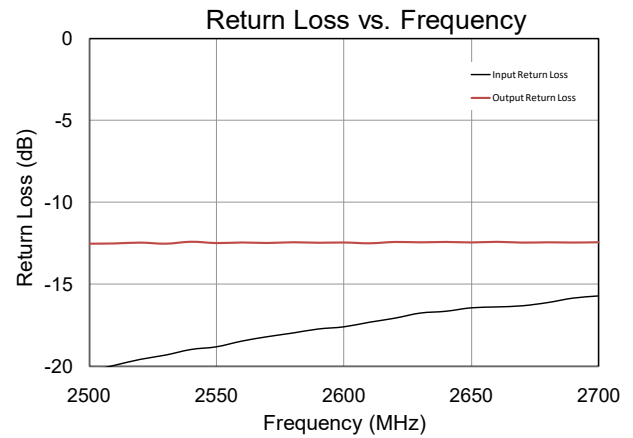
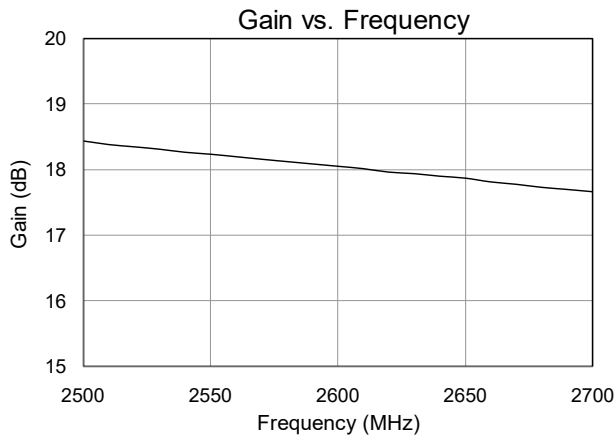
APPLICATION NOTE: TQP3M9037 –2.5-2.7GHz Reference Design

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
		2500	2600	2700	
Frequency		2500	2600	2700	MHz
Gain		18.4	18.0	17.7	dB
Input Return Loss		20.3	17.6	15.7	dB
Output Return Loss		12.5	12.5	12.4	dB
Output P1dB		TBD	TBD	TBD	dBm
OIP3	Pout=+5 dBm/tone, $\Delta f=1$ MHz	34.0	33.8	33.8	dBm
Noise Figure	De-embedded	0.55	0.55	0.55	dB
Device Current, I _{DD}		65			mA

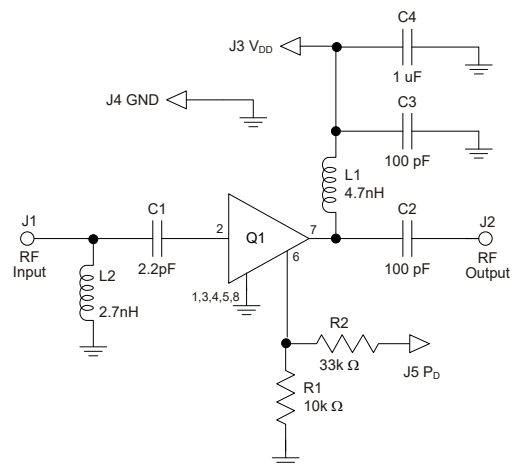
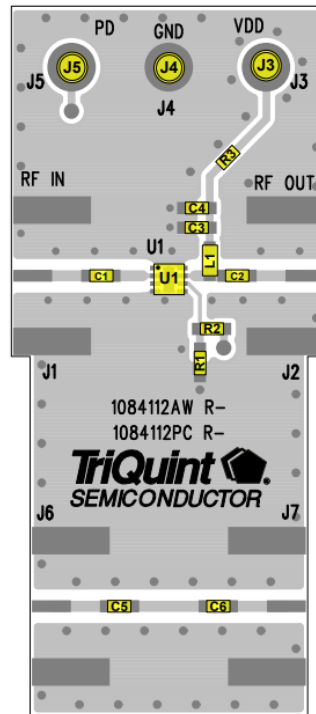
Test conditions unless otherwise noted: V_{cc} = +5 V, Temp = +25°C, 50 Ω system.



APPLICATION NOTE: TQP3M9037 –2.5-2.7GHz Reference Design

Evaluation Board Information

Evaluation Board and Schematic



Notes:

1. See Evaluation Board PCB Information section for material and stack-up.
2. The recommended component values are dependent upon the frequency of operation.
3. Distance from U1 package (left edge) to C1 (right edge): 110 mils
4. Distance from U1 package (left edge) to L2 (right edge): 150 mils

APPLICATION NOTE: TQP3M9037 –2.5-2.7GHz Reference Design

Evaluation Board – Bill of Material

Reference Des.	Value	Description	Manuf.	Part Number
n/a	n/a	Printed Circuit Board	Qorvo	
U1	n/a	High Linearity LNA Gain Block	Qorvo	TQP3M9037
R1	10 K Ω	Resistor, Chip, 0402, 5%, 1/16W	Various	
R2	33 K Ω	Resistor, Chip, 0402, 5%, 1/16W	Various	
R3	0 Ω	Resistor, Chip, 0402, 5%, 1/16W	Various	
L1	5.6 nH	Inductor, 0603, 5%, Ceramic	Various	
L2	2.7 nH	Inductor, 0402, 5%, Ceramic	Various	
C1	2.2 pF	Cap., Chip, 0402, 5%, 50V, NPO/COG	Various	
C4	1.0 uF	Cap., Chip, 0402, 10%, 10V, X5R	Various	
C2, C3, C5, C6	100 pF	Cap., Chip, 0402, 5%, 50V, NPO/COG	Various	

APPLICATION NOTE: TQP3M9037 –2.5-2.7GHz Reference Design

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:

Web: www.qorvo.com

Tel: 1-844-890-8163

Email: customer.support@qorvo.com

Important Notice

The information contained in this Data Sheet and any associated documents (“Data Sheet Information”) is believed to be reliable; however, Qorvo makes no warranties regarding the Data Sheet Information and assumes no responsibility or liability whatsoever for the use of said information. All Data Sheet Information is subject to change without notice. Customers should obtain and verify the latest relevant Data Sheet Information before placing orders for Qorvo® products. Data Sheet Information or the use thereof does not grant, explicitly, implicitly or otherwise any rights or licenses to any third party with respect to patents or any other intellectual property whether with regard to such Data Sheet Information itself or anything described by such information.

DATA SHEET INFORMATION DOES NOT CONSTITUTE A WARRANTY WITH RESPECT TO THE PRODUCTS DESCRIBED HEREIN, AND QORVO HEREBY DISCLAIMS ANY AND ALL WARRANTIES WITH RESPECT TO SUCH PRODUCTS WHETHER EXPRESS OR IMPLIED BY LAW, COURSE OF DEALING, COURSE OF PERFORMANCE, USAGE OF TRADE OR OTHERWISE, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Without limiting the generality of the foregoing, Qorvo® products are not warranted or authorized for use as critical components in medical, life-saving, or life-sustaining applications, or other applications where a failure would reasonably be expected to cause severe personal injury or death. Applications described in the Data Sheet Information are for illustrative purposes only. Customers are responsible for validating that a particular product described in the Data Sheet Information is suitable for use in a particular application.

© 2026 Qorvo US, Inc. All rights reserved. This document is subject to copyright laws in various jurisdictions worldwide and may not be reproduced or distributed, in whole or in part, without the express written consent of Qorvo US, Inc. | QORVO® is a registered trademark of Qorvo US, Inc.