



# TQP7M9106

## 700 – 900 MHz Reference Design

### General Overview

The TQP7M9106 is targeted for use as a driver amplifier in wireless infrastructure where high linearity, medium power, and high efficiency are required. The device is an excellent candidate for transceiver line cards and high-power amplifiers in current and next generation multi-carrier base stations.

This application note describes a reference design and evaluation board optimized for operation over the 700- 900MHz frequency band.

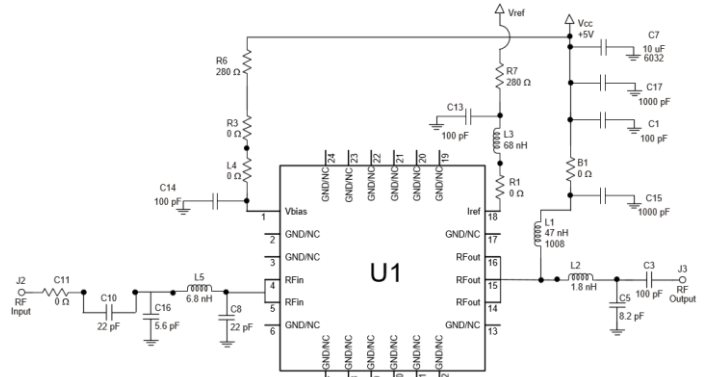
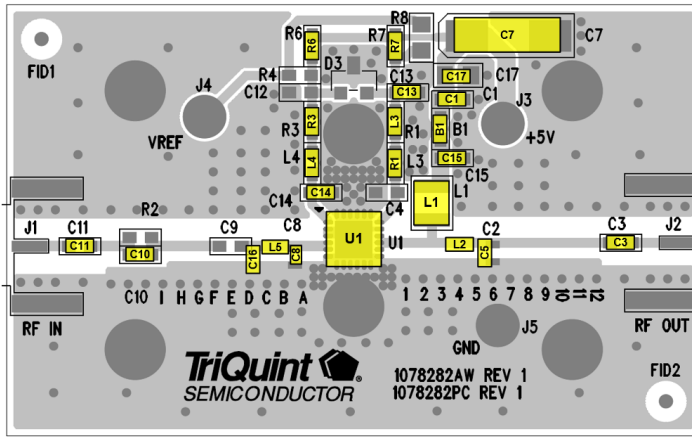
### Typical Performance

Parameter	Conditions <sup>(1)</sup>	Typical Value		Units
Frequency		740	880	MHz
Gain		20.5	20.7	dB
Input Return Loss		8.0	10.0	dB
Output Return Loss		7.3	8.1	dB
Output P1dB		31.5	32.0	dBm
Output IP3	Pout = 19 dBm/tone, $\Delta f = 1$ MHz	46.2	46.1	dBm
WCDMA Channel Power <sup>(2)</sup>	ACLR = -50dBc	22.5	22.5	
Quiescent Collector Current, I <sub>CQ</sub>		475		mA

Notes:

1. Test conditions unless otherwise noted: V<sub>DD</sub> = +5.0 V, Temp = +25 °C, 50  $\Omega$  system.
2. 3GPP WCDMA, TM1 +64 DPCH, +5MHz offset, PAR = 9.7 dB at 0.01% Prob.

# TQP7M9106 - 700-900 MHz Evaluation Board



## Notes:

1. Components shown on the silkscreen but not on the schematic are not used.
2. 0  $\Omega$  resistor can be replaced with copper trace in the target application layout.
3. To power down the device, voltage can be applied to  $V_{ref}$  to control  $I_{ref}$  by placing resistor R8 and removing R7.
4. All components are of 0603 size unless stated on the schematic.
5. L3 is critical for device linearity performance.
6. Critical component placement locations:
  - Distance between U1 (left edge) to C8 (right edge): 87 mil
  - Distance between U1 (left edge) to L5 (right edge): 113 mil
  - Distance between U1 (left edge) to C16 (right edge): 185 mil
  - Distance between U1 (right edge) to L2 (left edge): 208 mil
  - Distance between U1 (right edge) to C5 (right edge): 275 mil

## Bill of Materials

Reference Des.	Value	Description	Manuf.	Part Number
n/a	n/a	Printed Circuit Board	Qorvo	
U1	n/a	2W High Linearity Amplifier	Qorvo	
C15, C17	1000 pF	CAP, 0603, 5%, 50V, NPO	Various	
C1, C13, C14, C3	100 pF	CAP, 0603, 5%, 50V, NPO	Various	
C10	22 pF	CAP, 0603, 5%, 50V, NPO/COG	Various	
C5	8.2 pF	CAP, 0603, 1%	AVX	06035J8R2BBS
C8	22 pF	CAP, 0402, 1%	AVX	0402ZK220GBS
C7	10 uF	CAP, 6032, 20%, 50V, Tantalum	Various	
R6, R7	280 $\Omega$	RES, 0603, 1%, 1/16W. Chip	Various	
B1, R1, L4, R3, C11	0 $\Omega$	RES, 0603, 5%, 1/16W, Chip	Various	
L3	68 nH	IND, 0603, 5%	TOKO	LL1608-FSL68N
L5	6.8 nH	IND, 0603, 5%	TOKO	LL1608-FSL6N8
L2	1.8 nH	IND, 0603, 5%	TOKO	LL1608-FSL1N8
L1	47 nH	IND, 1008, 5%	Coilcraft	1008HQ47NXXKBC
P11, P12	n/a	CONN, HDR, RT-ANG, 10-POS, 0.100",		

## Performance Plots

Test conditions unless otherwise noted:  $V_{DD} = +5V$ , Temp = 25°C, 50  $\Omega$  system.

