Replace RF5117 PA with the MAX2247 in 802.11b WLAN Designs.

This application note details the changes required to replace the RFMD RF5117 power amplifier (PA) with the MAX2247 in 802.11b WLAN designs. The MAX2247 SiGe PA, is one of the highest-performance, smallest-size, and lowest-cost solutions for 802.11b/g. It requires fewer components to implement than the RFMD RF5117 PA. The MAX2247 saves 4 transistors, 1 op amp, 11 resistors, 2 inductors, and 2 capacitors, versus the RF5117 solution.

Replacing the RFMD RF5117 Power Amplifier with the MAX2247 PA

The MAX2247 SiGe PA is one of the highest-performance, smallest-size, and lowest-cost solutions for 802.11b/g. It also requires fewer components to implement than the RFMD RF5117 PA. The MAX2247 saves 4 transistors, 1 Op-Amp, 11 Resistors, 2 Inductors, and 2 capacitors, compared to the RF5117 solution. 2 transistors are required to provide a regulated bias voltage to the RF5117. An additional 2 transistors and 1 op-amp are required to convert the differential power detector output of the RF5117 to a single-ended output. All of this circuitry has been integrated into the MAX2247.

A list of components to be removed, as well as a list of components required to implement the MAX2247 are provided. Transistor U13 from the old design will be used as an inverter to eliminate the need to change the baseband processor control software to accommodate the PA Shutdown Control (PA_CTRL) Logic Polarity difference between the RF5117 and the MAX2247. All other interface connections are labeled in the schematic. Contact Maxim for MAX2247 EV kit Gerber files to assist with layout.

Table 1. Remove The Following Components.

Designator/Description	Designator/Description
U8 = RF5117	C145 = 1pF
U11 = MMDT3946-7	L21 = 12nH
U15 = MMDT2907A-7	L22 = 1.2nH
U19 = LMV321IDCKR	L23 = 10nH

C25 = C48 = 0.01uF	R2 = R23 = R62 = R68 = 470
C79 = 3pF	R13 = R14 = 100k
C82 = 10pF	R24 = 20k
C83 = 1.5pf	R25 = 5.1k
C84 = C89 = C139 =1000pF	R28 = R38 = 12.1k
C86 = 33pF	R30 = 51k
C88 = 2.7pF	R39 = 20k
C90 = 15pF	R75 = R78 = 390k
C138 = 100pF	

Table 2. Components Required for MAX2247 Based Solution.

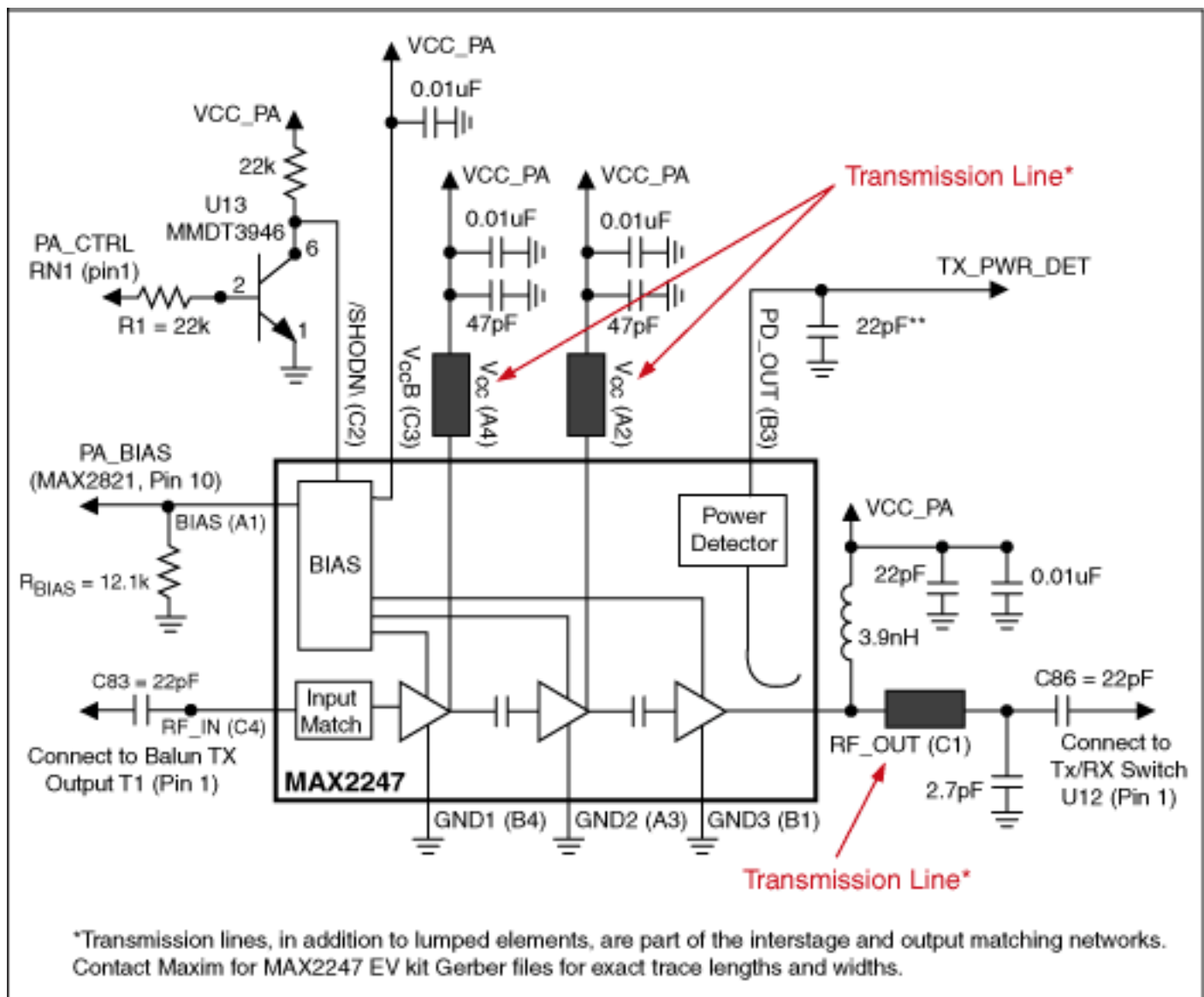| Description	Qty
2.7pF Ceramic Capacitor (0402) GRP1555C1H2R7B	1
22pF Ceramic Capacitors (0402) GRP1555C1H220J	4
47pF Ceramic Capacitors (0402) GRP1555C1H470J	2
0.01uF Ceramic Capacitors (0402) GRP155R71C103K	4
3.9nH Inductor (0402) LL1005_FH3N95	1
12.1k +/- 2% resistor	1
22k +/- 5% resistor	2
MAX2247EBC-T	1

Figure 1. Schematic.

More Information