

MAX2291 PCS CDMA Dual-Power Path Power Amplifier Tuned for TDMA

The MAX2291 is a single-supply, low-voltage, linear power amplifier (PA) designed for PCS band applications. This application note provides measured performance when used for TDMA systems. The MAX2291 low-power path saves 100mA of supply current for any output power below +15dBm, significantly extending PCS-phone talk time. Graphs show: supply current, ACPR, and gain for high and low power modes.

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The MAX2291 is a single-supply, low-voltage, linear power amplifier (PA) designed for PCS band applications. It possesses a dual power-path architecture which allows efficiency to be optimized at peak output power as well as at intermediate power. This significantly extends talk-time compared to solutions that only optimize efficiency at peak output power.

The MAX2291 high-power path delivers +30dBm of output power at a current draw of 698mA from a +3.3V voltage supply (PAE = 43.4%), while exceeding TDMA ACPR requirements by 3dB in the adjacent channel and 5dB in the alternate channel. In low power mode, the MAX2291 delivers +15dBm of output power at a current draw of 92mA from a +3.3V voltage supply (PAE = 10.4%), while exceeding TDMA ACPR requirements by 3dB in both adjacent and alternate channels. With the high-power path enabled, the MAX2291 delivers +15dBm of output power at a supply current draw of 210mA (PAE = 4.6%). Comparing high and low-power path performance at +15dBm output power, it is evident that the MAX2291 low-power path saves 100mA of supply current for any output power below +15dBm, significantly extending PCS-phone talk time.

Refer to Figures 1 through 12 for performance data for the MAX2291, optimized for dual-power path TDMA operation, over frequency and supply voltage.

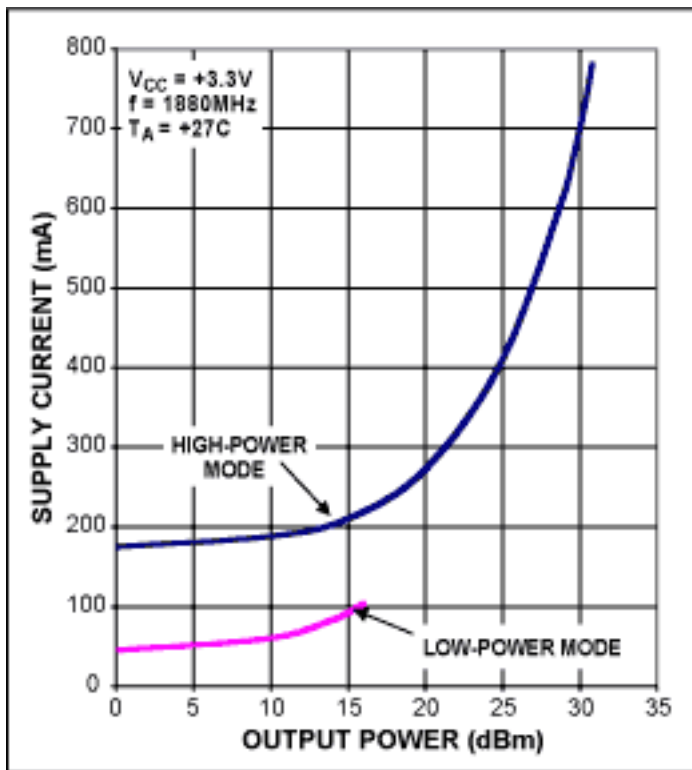


Figure 1. MAX2291 TDMA mode supply current vs output power

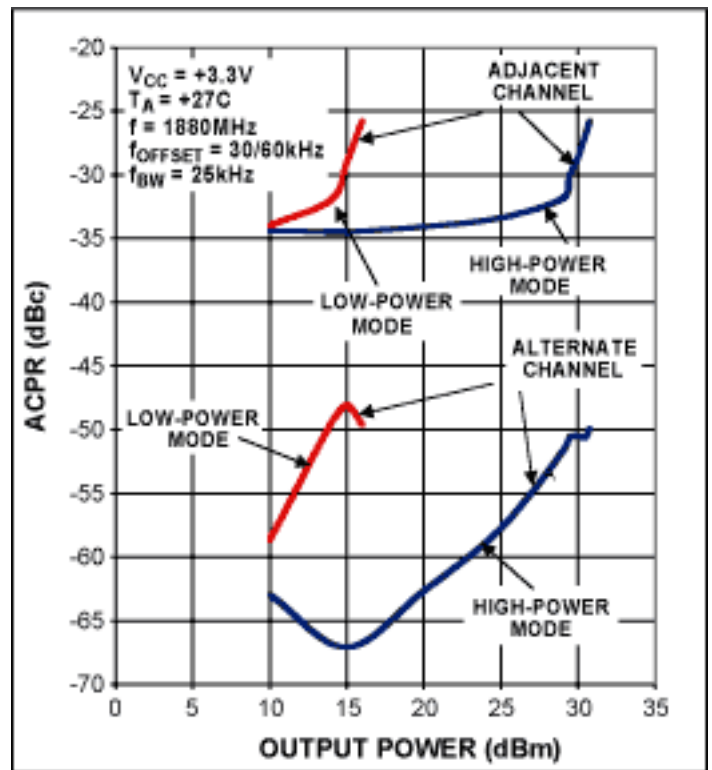


Figure 2. MAX2291 TDMA mode ACPR performance vs output power

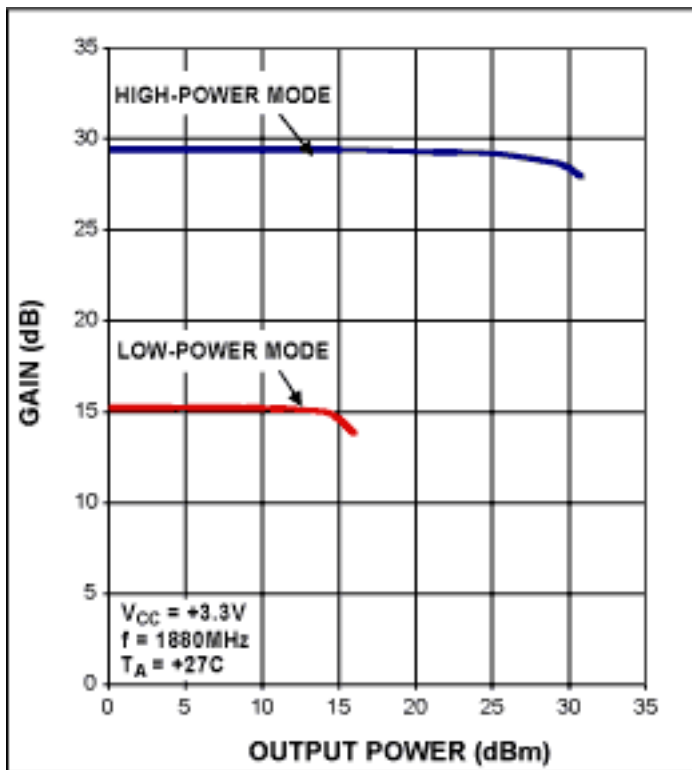


Figure 3. MAX2291 TDMA mode gain vs output power

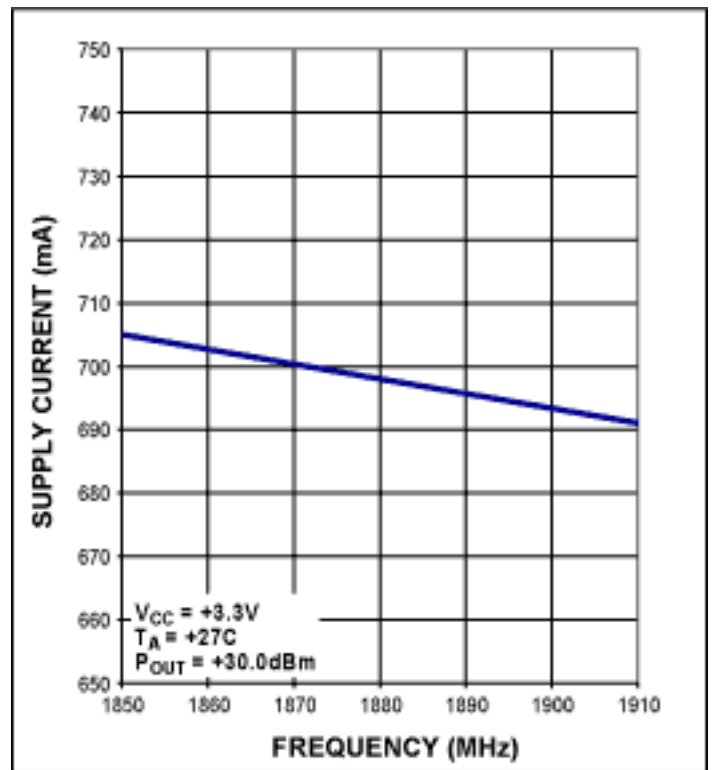


Figure 4. MAX2291 TDMA high-power mode supply current vs frequency

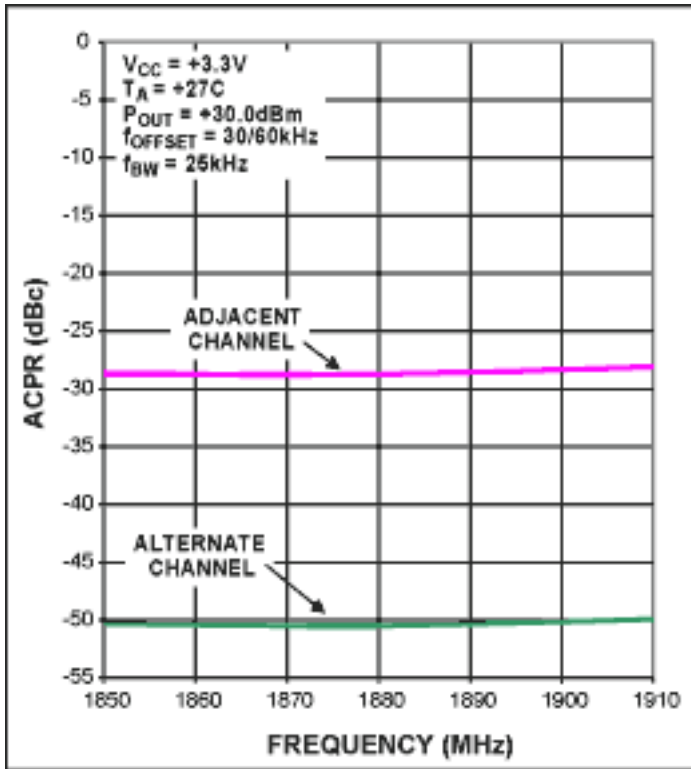


Figure 5. MAX2291 TDMA high-power mode ACPR performance vs frequency

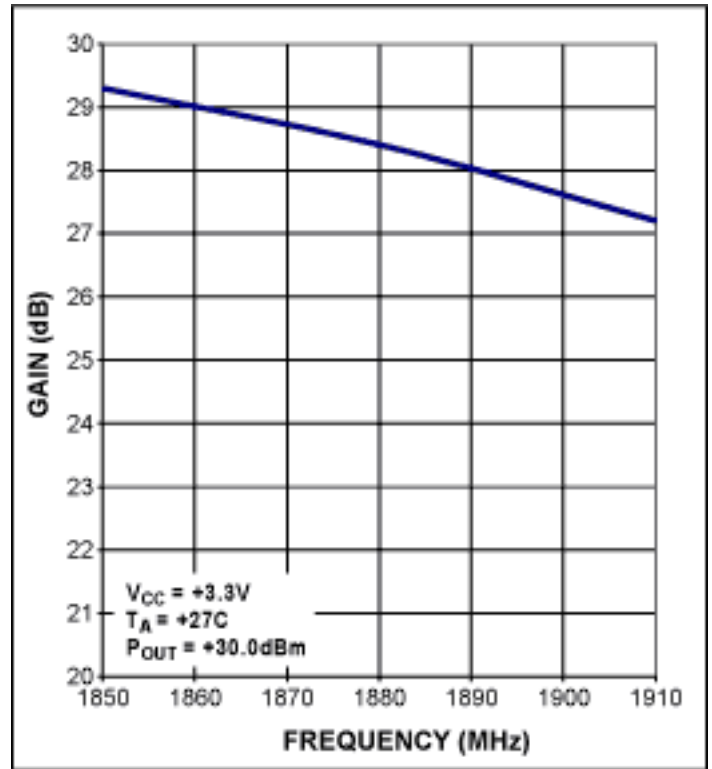


Figure 6. MAX2291 TDMA high-power mode gain vs frequency

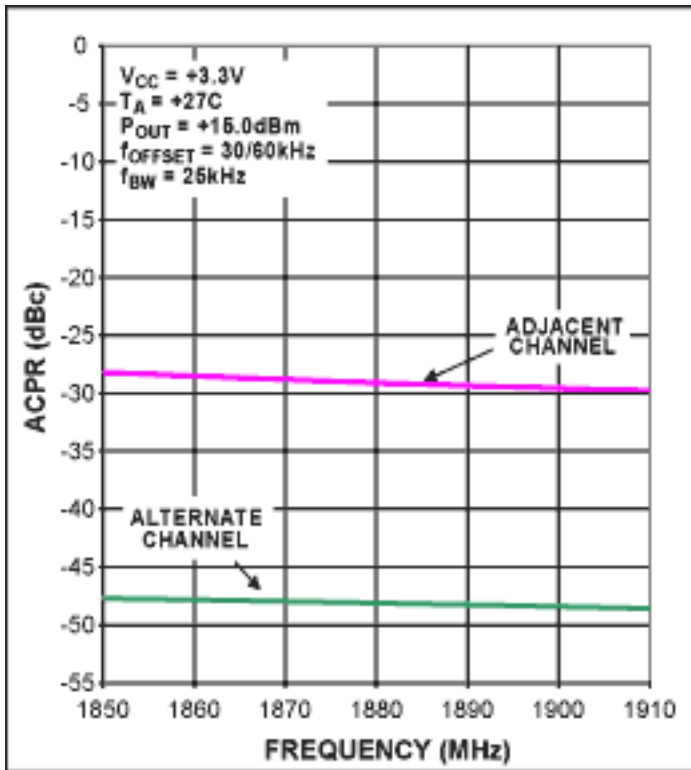


Figure 7. MAX2291 TDMA low-power mode ACPR vs frequency

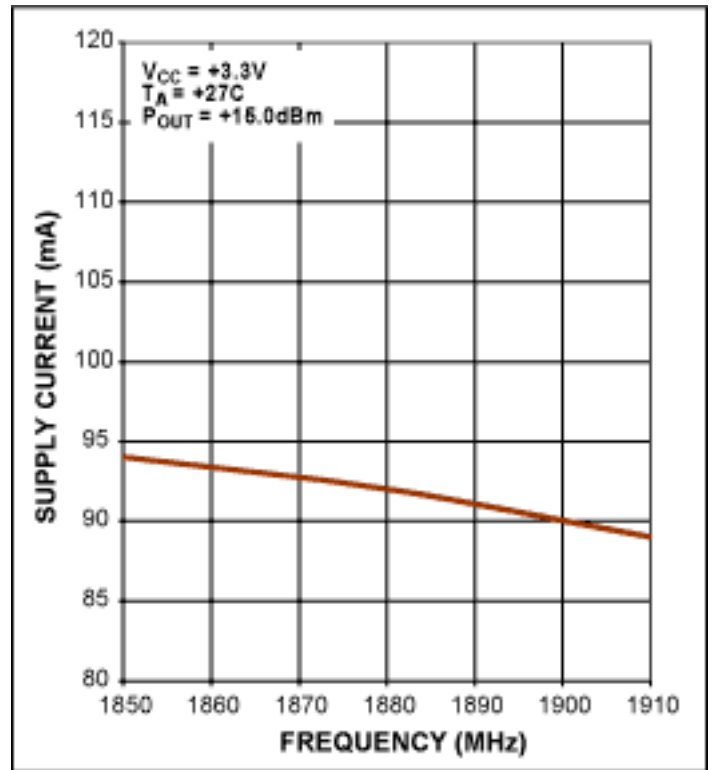


Figure 8. MAX2291 TDMA low-power mode supply current vs frequency

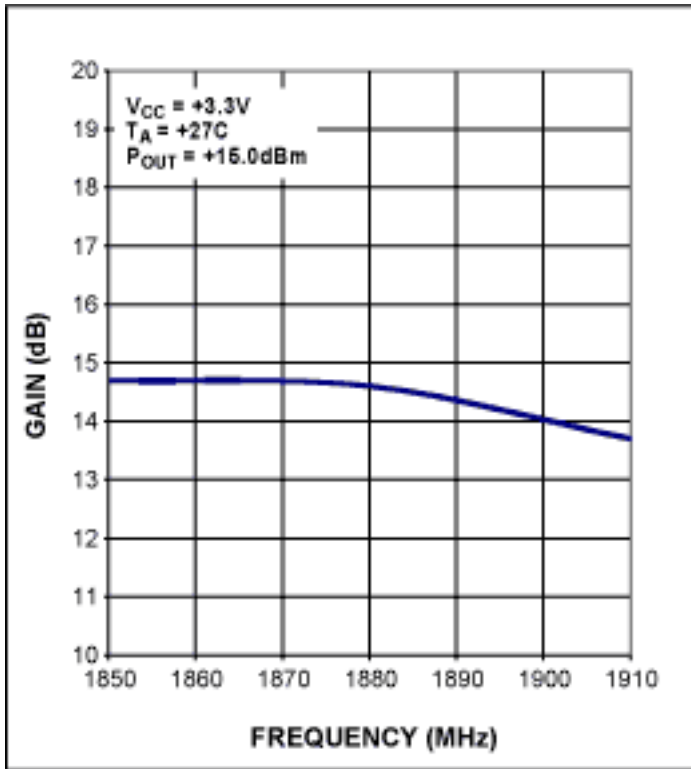


Figure 9. MAX2291 TDMA low-power mode gain vs frequency

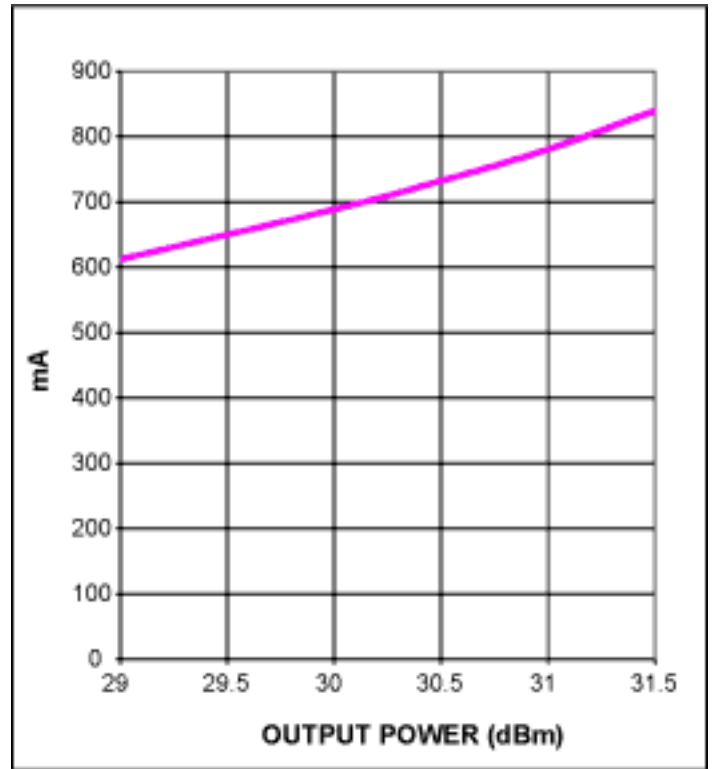


Figure 10. MAX2291 TDMA high-power mode supply current vs output power

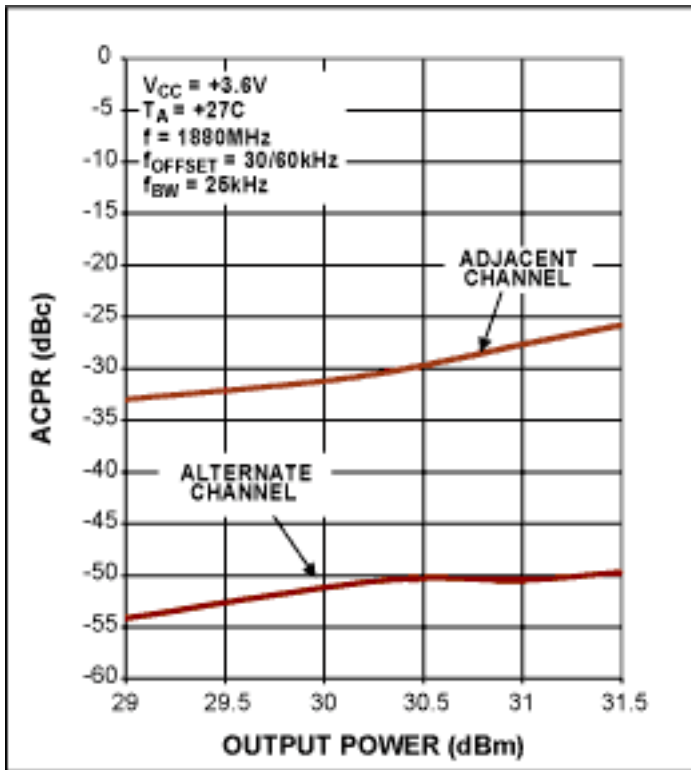


Figure 11. MAX2291 TDMA high-power mode ACPR vs output power

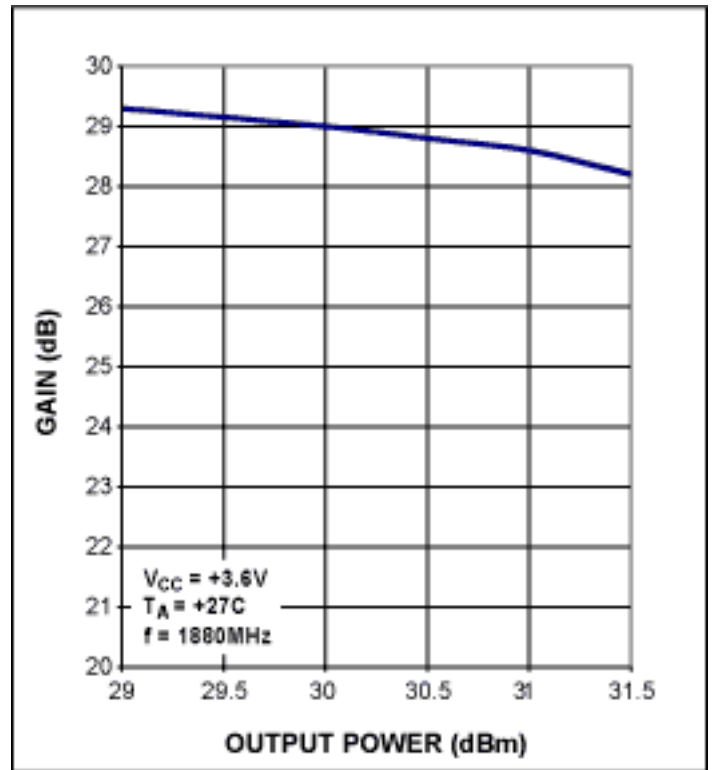
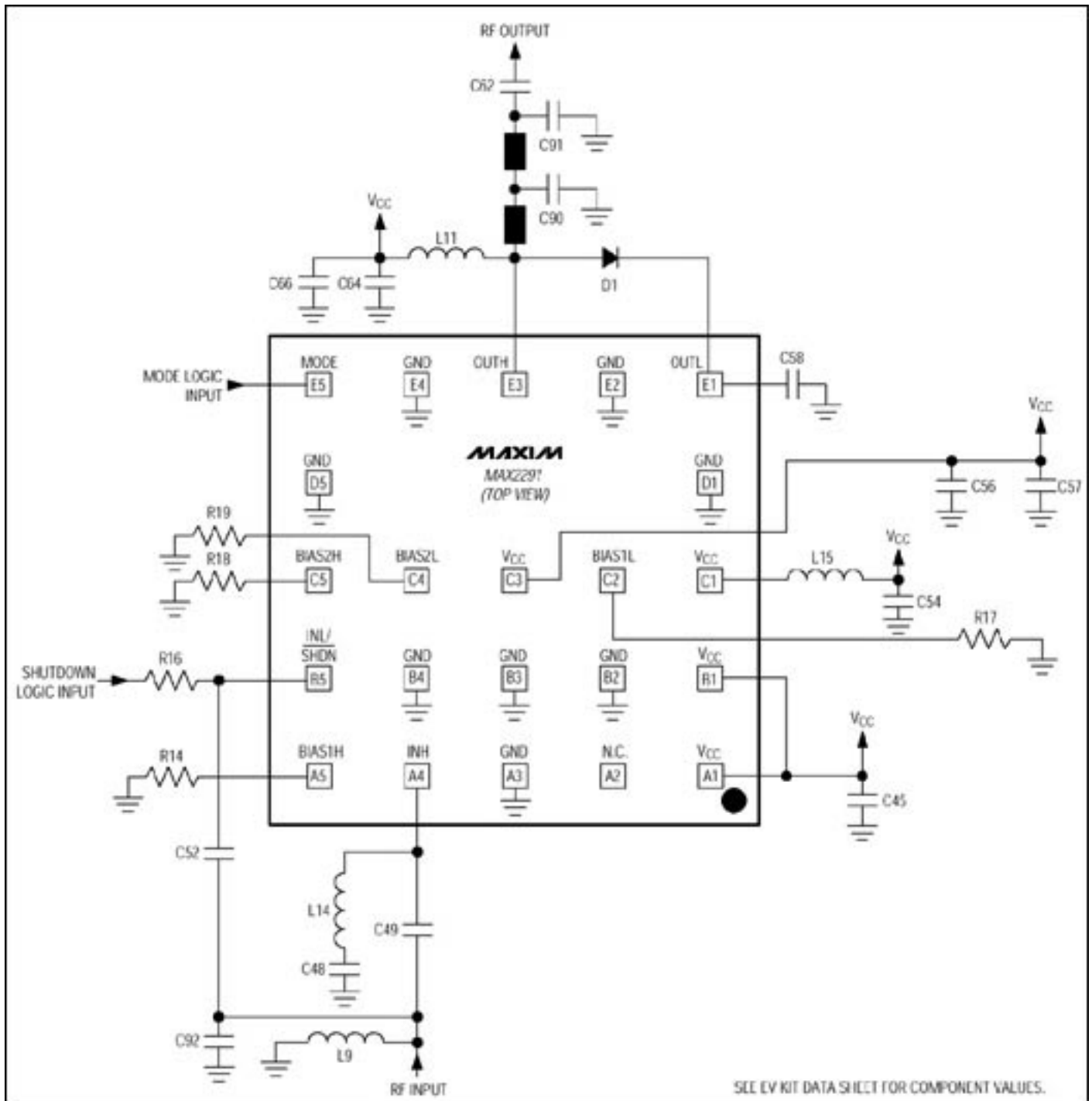


Figure 12. MAX2291 TDMA high-power mode gain vs output power

Refer to Figures 13, and 14, for the MAX2291 TDMA Dual-power path schematic, and

component placement guide.



SEE EV KIT DATA SHEET FOR COMPONENT VALUES.

Figure 13. MAX2291 TDMA dual-power path schematic

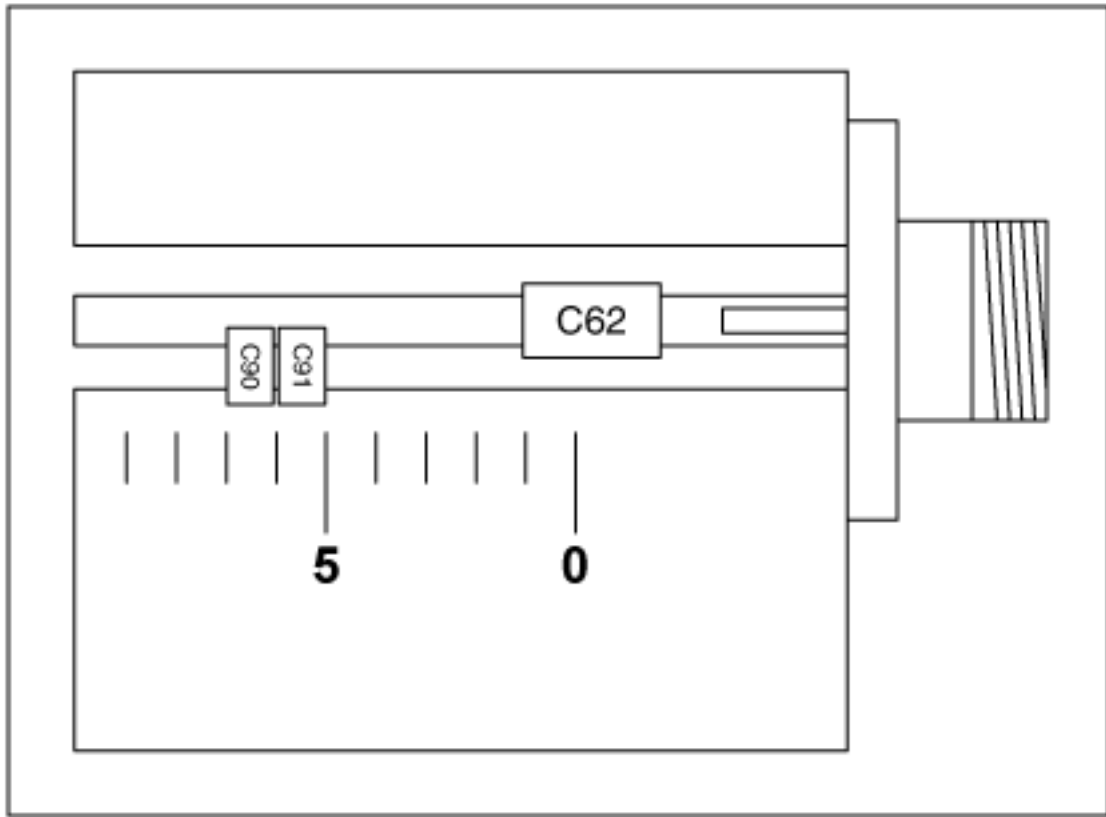


Figure 14. MAX2291 TDMA dual-power path EV kit output component placement guide

Refer to Table 1 for component values.

Table 1 MAX2291 TDMA Dual-Power Path Component Values

Designator	Description
C45	Murata 0.1 μ F GRM36X5R104K10
C48	Murata 470pF GRM36X74471K50
C49	Murata 5.6pF +/- 0.1pF GRM36COG5R6B50
C52	Murata 1.6pF +/- 0.1pF GRM36COG1R6B50
C54	Murata 27pF GRM36COG270J50
C56	Murata 10pF +/- 0.1pF GRM36COG100B50
C57, C64	Murata 0.01 μ F GRM36X7R103K16
C58	Murata 4.7pF +/- 0.1pF GRM36COG4R7B50
C62	Murata 0.1 μ F GRM39X7R104K16
C66	Murata 27pF GRM36COG270J50
L9, L15	0 Ω 5% resistor
L11	Coilcraft 0906-3

L14	Murata 33nH LQP10A33G00
R14	20k Ω 5% resistor
R15, R16	24K Ω 5% resistor
R17, R18	15k Ω 1% resistor
R19	5.6k Ω 1% resistor

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