

## Proper Output Loading of Z-Comm VCOs

Z-COMM VCOs are designed to operate with an output VSWR of less than 1.67:1 (RL = 12.0 dB). To tolerate impedance mismatch introduced by loading device(s) (e.g. mixers, prescalers) some form of isolation is needed at the RF output. A 10 dB pad and buffer amplifier are recommended (Zout = 50Ω for all Z-COMM VCOs) to fulfill this requirement.

Problems associated with insufficient isolation include increased power output fluctuation, degraded phase noise performance, and increased pulling (load dependent frequency variation). Figures 1 and 2 represent a typical circuit and layout for a VCO operating near 1 GHz.

Figure 1: Schematic Drawing

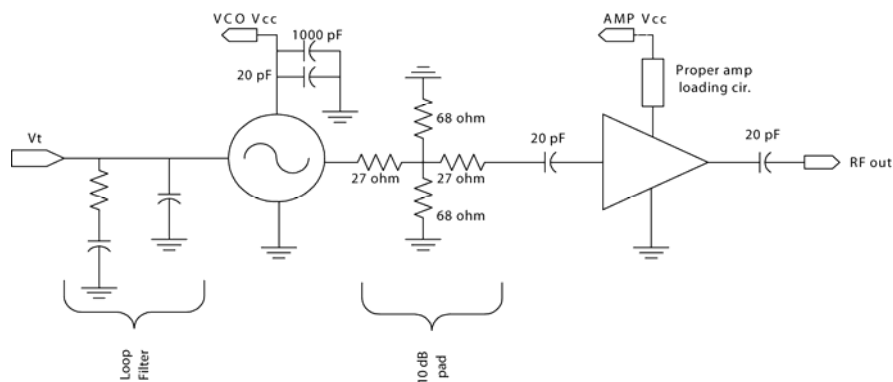
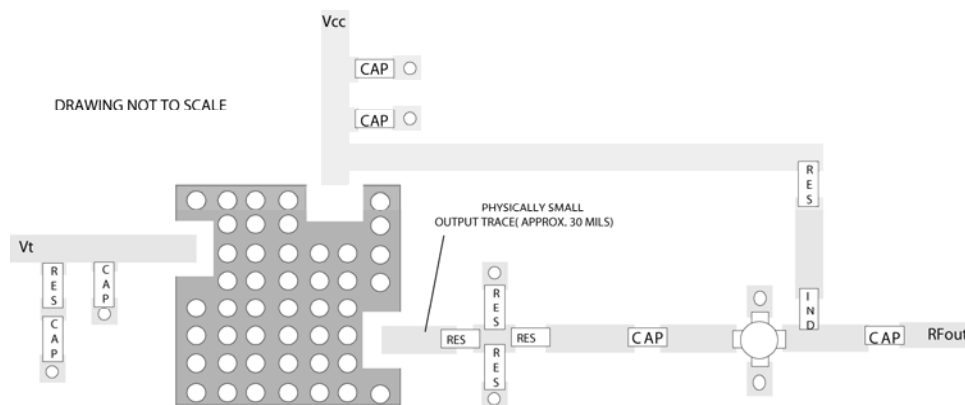


Figure 2: Typical Layout (MINI Package VCO)



**Notes:**

1. Coupling capacitors and bypass capacitors are frequency dependent.
2. Minimize the distance between the 10dB pad and VCO RF output.

Layout design must adhere to standard RF design practices (i.e., 50Ω microstripline line must be used, proper grounding [see **AN-101 Mounting and Grounding of VCOs**], and careful component selection is necessary.)