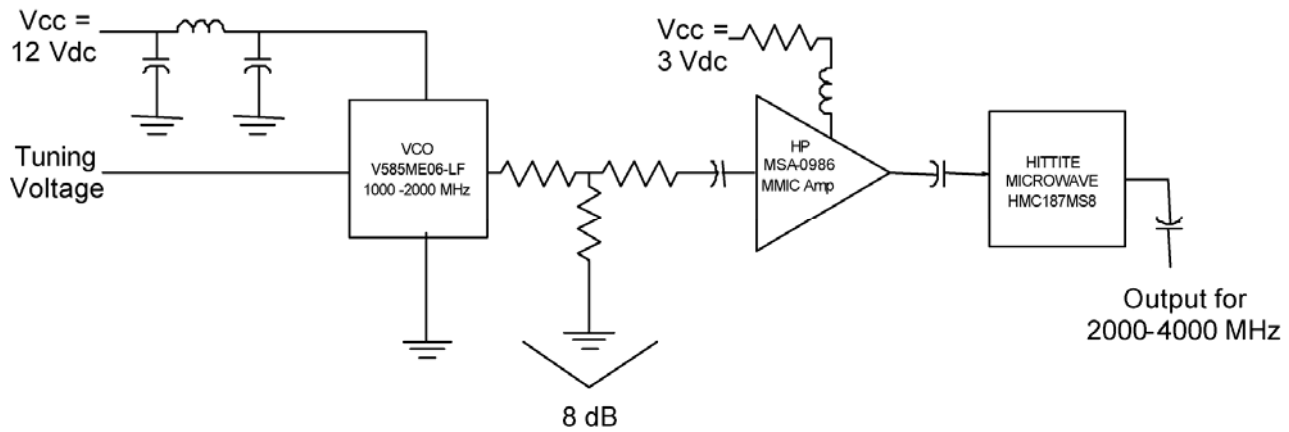


Low Cost, Extremely Wide Bandwidth VCO Design Using Multipliers and Z-COMM VCOs

Many of Z-COMM's higher frequency VCOs can be converted, by the use of multipliers, into an extremely wide band high frequency VCO at a low cost. For the following example, a 1000-2000 MHz VCO will be converted into a 2000-4000 MHz VCO with the use of a low cost multiplier, such as the HITTITE MICROWAVE HMC187MS8. Figure AN-110:1 represents a typical circuit layout.

Figure 1: Schematic Drawing



For this example, we will use the Z-COMM V585ME06 VCO. This VCO is a 1000-2000 MHz VCO that will be converted into a 2000-4000 MHz VCO. Once the V585ME06 is properly mounted and grounded, it is followed by an 8 dB resistive T-pad followed by a buffer amp for proper isolation. The signal will be fed into the multiplier device and provide an output of 2000-4000 MHz.

It is important to note that the single-side band phase noise will decrease $-20 \log N$, where N is the multiplier factor. In this case, $N=2$ therefore giving a single side band phase noise degradation of -6 dBc/Hz . Also it is important to note the tuning sensitivity will increase by a factor of N , where N is the multiplier factor. In this case, the tuning sensitivity will change from 66 MHz/V , average, to 132 MHz/V , average. Utilizing Z-COMM VCOs along with a multiplier, one can realize a low cost, high performance wide band frequency range VCO solution.

For additional information refer to the following Z-COMM applications notes:

AN-101 Mounting and Ground of Z-COMM VCO

AN-102 Proper Loading of Z-COMM VCOs