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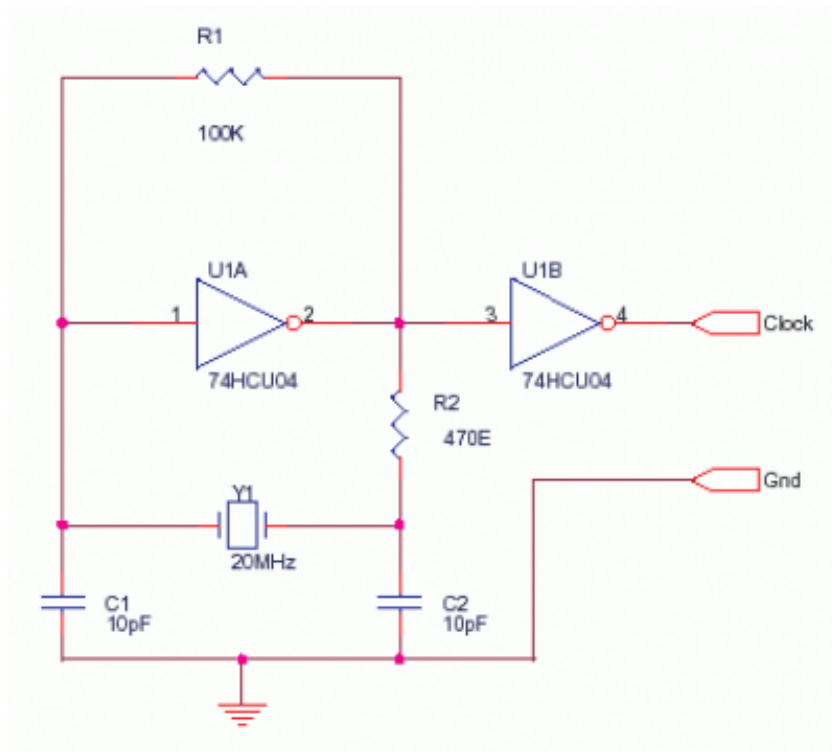
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Crystal Oscillator with IC Digital 74HC04

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74HCU04 is a chip that was made for this purpose, HCT may not work for such a circuit. C1 and C2 can go to upto 33pF and R2 can be increased to make $R2 * C2 = t$.

Time constant much less than the period T of the crystal $T = 1/F$. This is to remove higher frequency components in the Oscillator.

The circuit above is a parallel resonant oscillator circuit. The Crystal works by the piezoelectric principle, piezo means pressure. The electric field causes the impedance of the crystal to change. The LP Record Player needle is the reverse of this, the bumps on the spiral groove of the record applies pressure to needle which generates electricity. Both are piezo-electric effects. see more at Introduction to Fundamental Crystal Oscillators.

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