Cheapo VCO

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This circuit provides a cheap solution to a non precision voltage controlled oscillator. C1 charges towards the voltage set on VR1 until inverter 1 output goes low whereupon the output of inverter 3 goes low and discharges C1 via D and R4. Inverters 2 and 3 form a Schmitt trigger circuit with positive feedback supplied by R3. Inverter 4 forms a linear amplifier with its gain set by the ratio of R5 to R6 which squares up the signal appearing on inverter 1 output. The signal is further squared up by the Schmitt trigger action of inverters 5 and 6 to provide a square wave of approximately 50% duty cycle at the output of inverter 6. With the values shown a frequency range of at least 100 Hz to 15 kHz is guaranteed with VR1 but other ranges can be covered with suitable values of R1 and C1. The circuit works well at lower supply voltages but the frequency range covered for a given set of components may be slightly less. If a square wave is not required a negative pulse of approximately 200 nS is available at the output of inverter 3 thus enabling two VCOs to be built with one chip.