Single i.c. function generator

The c.m.o.s. nand gate CD4011 can be used as an operational amplifier with an open loop gain of ≈ 100. The generator consists of an integrator G_1 with a variable delay-time, Schmitt trigger G_2, G_3, and a triangle to sinewave converter G_4. The sine-wave approximation depends on the transfer function of G_4 and is calibrated by R_3 and R_4. Sawtooth and pulse waveforms are obtained by choosing different values for R_1 and R_2. Values of R_1 and R_2 may be varied between 10kΩ and 10MΩ while C can be between 100pF and 2.2μF (reversible). Typical oscillator frequency f is $\alpha/(R_1 + R_2)$. C hertz where α is the setting of R_5, At the ends of the frequency range, however, waveform distortion and frequency deviation become significant.

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