A.5.8 Triangle Oscillator

The triangle oscillator produces triangle waves and square waves. The op amp functions as an integrator. When the output voltage of the comparator is low, the output of the op amp charges C until the output voltage exceeds the hysteresis voltage set by R_1 and R_F and the reference voltage ($V_{CC}/2$). At this point, the comparator output switches to a high state and the op amp integrates the voltage in a negative direction. The triangle wave (op amp output voltage swing) is given in Equation A–49. The frequency of oscillation is given in Equation A–50.

$$V_{OUT} = \frac{V_{CC}}{2} \pm \frac{V_{CC}R_1}{2R_F} \qquad \text{A–49}$$

$$f = \frac{R_F}{4CRR_1} \qquad \text{A–50}$$

The op amp reference voltage can be adjusted to equalize the triangle rise and fall times.

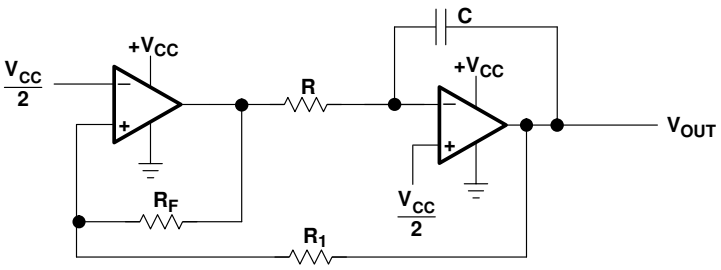

Figure A–44. Triangle Oscillator