UJT Relaxation Oscillator With Op Amp Pulse Shaper

Parts

UJT 2N4871 (1)  OpAmp LM741CN (1)  100 Ω (1)  4.7 kΩ (3)
1 kΩ (1)

Description and Operation

The UJT is configured to generate a sawtooth wave at a frequency of 104 Hz. When the circuit is initially powered up the capacitor begins to charge through the 4.7 kΩ resistor. When the voltage across the capacitor rises to a certain point the current suddenly flows from the UJT emitter (E) to the UJT Base (B1). This produces a voltage across the 100Ω resistor which is roughly the same at the output of the UJT relaxation oscillator on the Emitter. The sawtooth waveform is applied to op amp pin 3. Pin 2 of the op amp has a voltage applied from the voltage divider. When the sawtooth is higher than the reference from the divider of 2.5 volts, the op amp produces a positive going output on pin 6. The op amp is configured as comparator.

UJT Output at the Emitter

Op Amp Output