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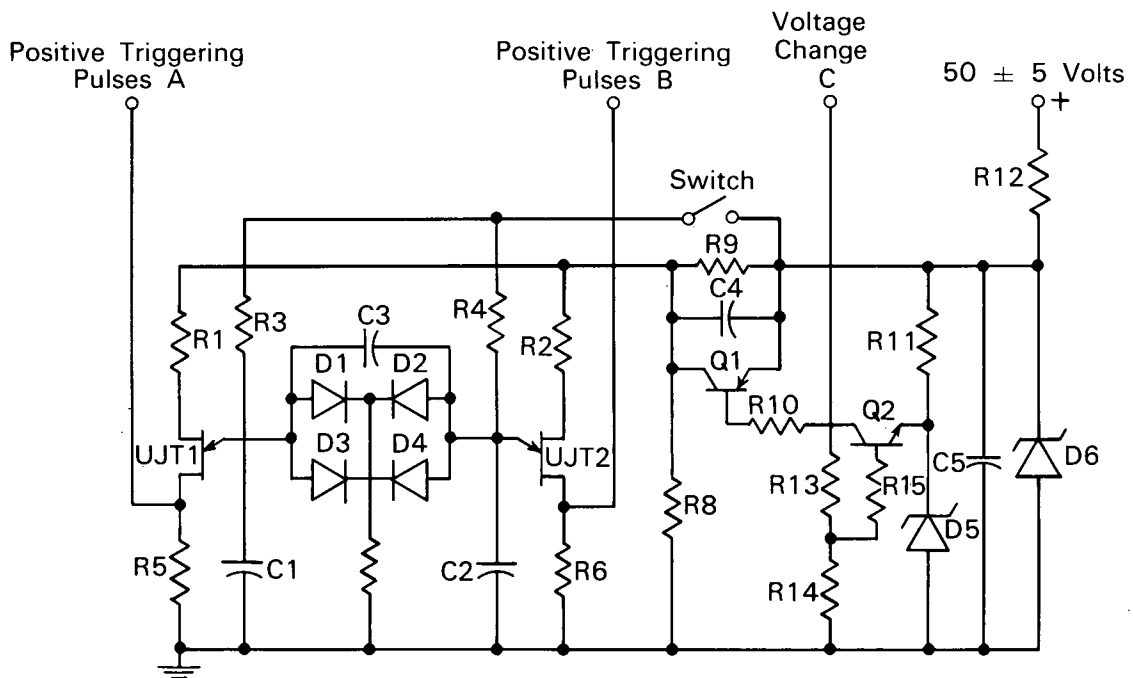
NASA TECH BRIEF

Transistorized Trigger Circuit Is Frequency-Controllable



The problem: Variable electrical control of the frequency of a trigger circuit used to provide alternate gating pulses to two controlled rectifiers.

The solution: Two synchronized unijunction transistor oscillators whose frequency is controlled by variation of their base-to-base voltage.

How it's done: Two unijunction transistor (UJT) oscillators are synchronized by connecting diodes D1, D2, D3, and D4 and capacitor C3 as shown in the diagram. Positive triggering pulses appear alternately at points A and B.

The frequency of these pulses is varied by changing the base-to-base voltages of UJT1 and UJT2. Resistors R9 and R8 serve as a voltage dividing network; voltage appearing across R1, R2, and ground is the voltage appearing across R8. The voltage across R8 increases as progressively higher base current flows in transistor Q1, causing it to appear as a progressively lower impedance in parallel with R9. An increase in voltage at point C beyond a predetermined value will cause a base current flow in Q2, which in turn causes a base current to flow in Q1. The result of this increased voltage at point C is an increased base-to-

(continued overleaf)

base voltage in the UJT oscillators and a resultant decrease in trigger frequency.

When it is necessary to direct the first of a series of pulses to a particular controlled rectifier, a slight asymmetry can be incorporated in the oscillator circuits to insure this condition.

Note:

For further information about this innovation inquiries may be directed to:

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Patent status: NASA encourages commercial use of this innovation. No patent action is contemplated.

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