

Voltage-controlled triangle/square generator

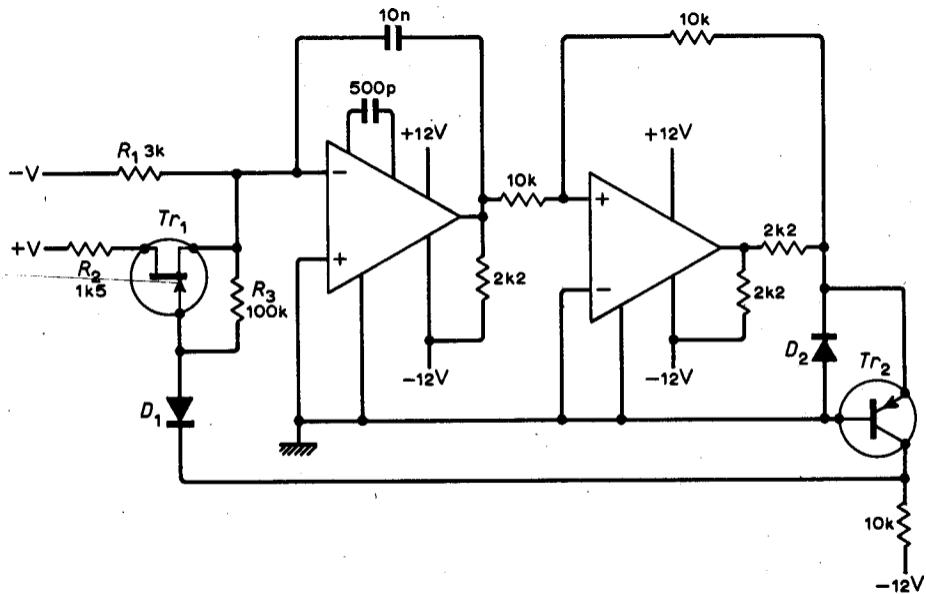
The triangle/square generator described by G. B. Clayton (*W.W.* December 1969) consisting of an integrator and comparator may be modified to give voltage control of frequency by replacing the diode bridge with f.e.t. switches.

A practical circuit for producing symmetrical waveforms only, may be made using one f.e.t. switch. The mark-space ratio is given by:

$$\frac{1}{(R_1/R_2) - 1}$$

so for $R_1 = 2R_2$ the ratio is unity, and R_2 may include a preset to fix the ratio exactly. SL701C amplifiers are used to maintain good waveform at the higher frequencies (100kHz) and a diode and transistor used to clip the square wave and produce the f.e.t. control voltage. Compensation is not required for the comparator but a small capacitor (10–50pF) across D_1 or R_3 may be needed to balance-out any stray capacitance.

Single-voltage frequency control may easily be provided by the use of a unity gain inverting amplifier, and the frequency may then be varied using one potentiometer or a sweep unit. Using one of the standard techniques for triangle-sine-wave conversion, the unit forms the basis of an audio sweep generator.



The circuit as it stands suffers from poor frequency stability against temperature due to the temperature coefficients of D_2 and Tr_2 , but this may be improved by increasing the amplitude of the square-wave using 3V zener diodes.

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