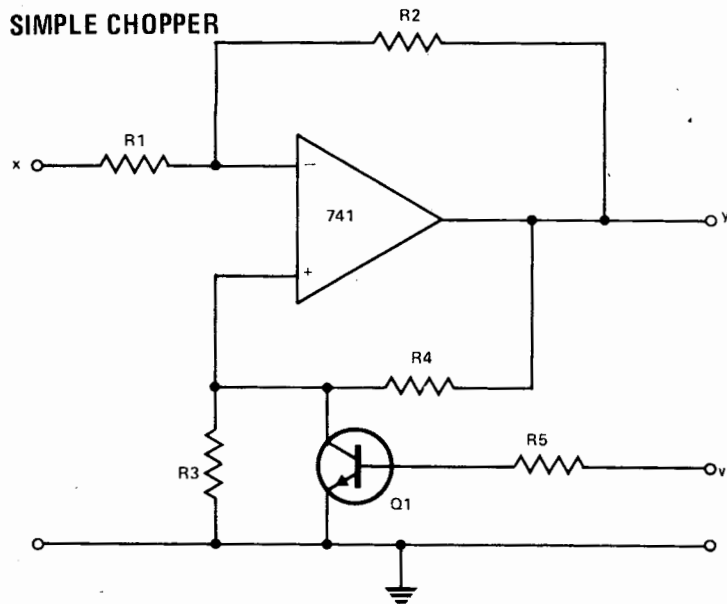


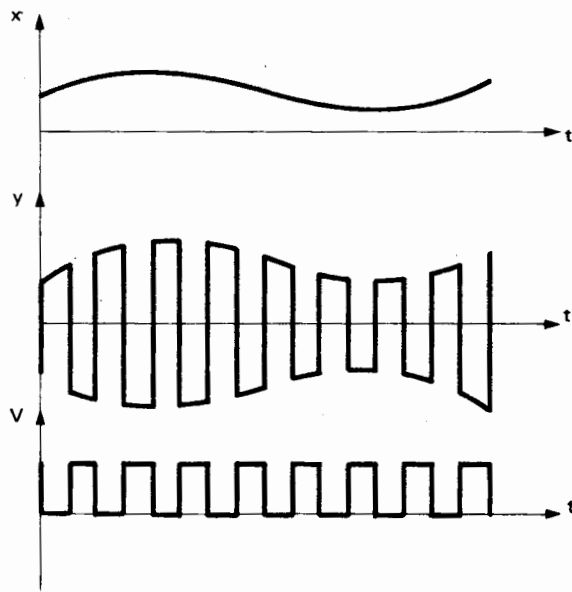
SIMPLE CHOPPER



The circuit shown is a simple amplifier, the gain of which can be switched between two precisely controlled values by the application of a signal voltage: V . If V is such that $Q1$ is saturated, then the voltage gain of the circuit is simply $-\frac{R_2}{R_1}$. If the transistor is cut off, then the voltage gain be-

comes $(1 + \frac{R_3}{R_4}) / (\frac{R_3}{R_4} - \frac{R_1}{R_2})$.

One obvious application of the circuit is if the resistors are adjusted such that the two gains are equal in magnitude, but opposite in sign, (e.g. $R_1 = 20k$, $R_2 = 10k$, $R_3 = 50k$, $R_4 = 10k$ gives voltage gains of $+2$ and -2). Then the circuit could be



used as a chopper for the input of a DC amplifier.

The value of R_5 is largely arbitrary, depending on the magnitude of the chopper signal, V . Its sole purpose is to prevent excess current being drawn by the base of $Q1$. Suitable components for the op amp and transistor are the 741 and BC182L.