Function generator mod. for wide sweep range

The simple function generator shown in the accompanying diagram may be swept over a 1000:1 frequency range by varying V_c. The network, composed of the two transistors with diodes in their bases, has an exponential output current versus input voltage characteristic, and replaces the usual charging resistor of the Miller integrator. The electronic switch is controlled by the Schmitt trigger alternately connecting $+V_c$ and $-V_c$ to the charging circuit.

In my unit, the control voltages are derived from two operational amplifiers in the unity-gain inverting configuration. Input control voltage is derived from a potentiometer mechanically connected to a strip chart recorder, enabling Bode plots of audio equipment over the entire audio range to be made.

The frequency characteristic was found to be within 6% of a true exponential characteristic.

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