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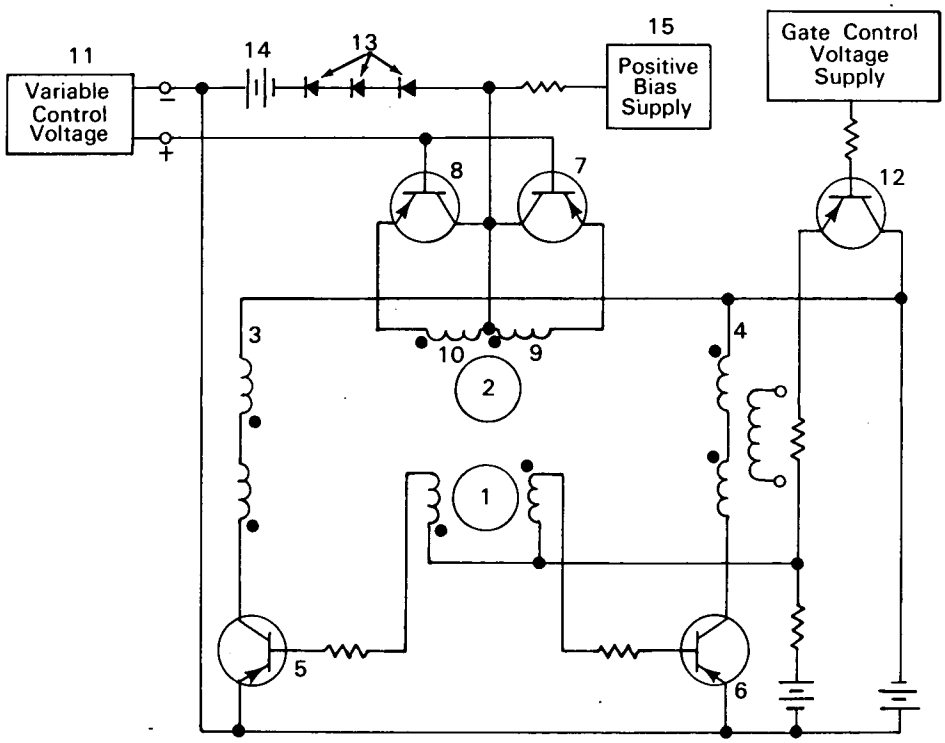
Variable Frequency Magnetic Multivibrator Generates Stable Square-Wave Output



The problem: To design a variable frequency magnetic multivibrator which provides a stable square wave output over wide variations in temperature and in change of power supply potential.

The solution: A frequency control circuit which operates in a full wave fashion rather than only over a portion of the multivibrator cycle of operation; this results in greater stability of operation in the low end of the multivibrator operating frequency, and in rejection of undesirable high frequency modes.

How it's done: The multivibrator includes an uncontrolled magnetic core (1) and a controlled magnetic core (2). A pair of conductive loops (3) and (4), each consisting of drive windings for cores (1) and (2) and one of the controlled transistor switches (5) and (6), provide the necessary alternate mode of operation for the multivibrator. The frequency of the multivibrator is controlled by a circuit which consists of a full wave voltage limiter arrangement of transistors (7) and (8) and windings (9) and (10). The operation of the voltage limiter is controiled by the level of the

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variable control voltage (11). Changes in magnitude of this variable control voltage change the operating frequency of the multivibrator. Also included is an electronic gate (12) for starting and stopping the multivibrator, and a temperature compensation circuit consisting of thermal elements (13), a fixed bias potential (14), and a positive bias supply (15).

Notes:

1. This invention may find application in devices using or concerning clocks, synchronous motor control, stable square wave variable signal generators, test instruments, power generation control, matching magnetic bearing devices, and radio and television communications.
2. Inquiries concerning this invention may be directed to:

   Technology Utilization Officer
   Goddard Space Flight Center
   Greenbelt, Maryland, 20771
   Reference: B65-10124

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Source: Steven Paull
(GSFC-AE-21)