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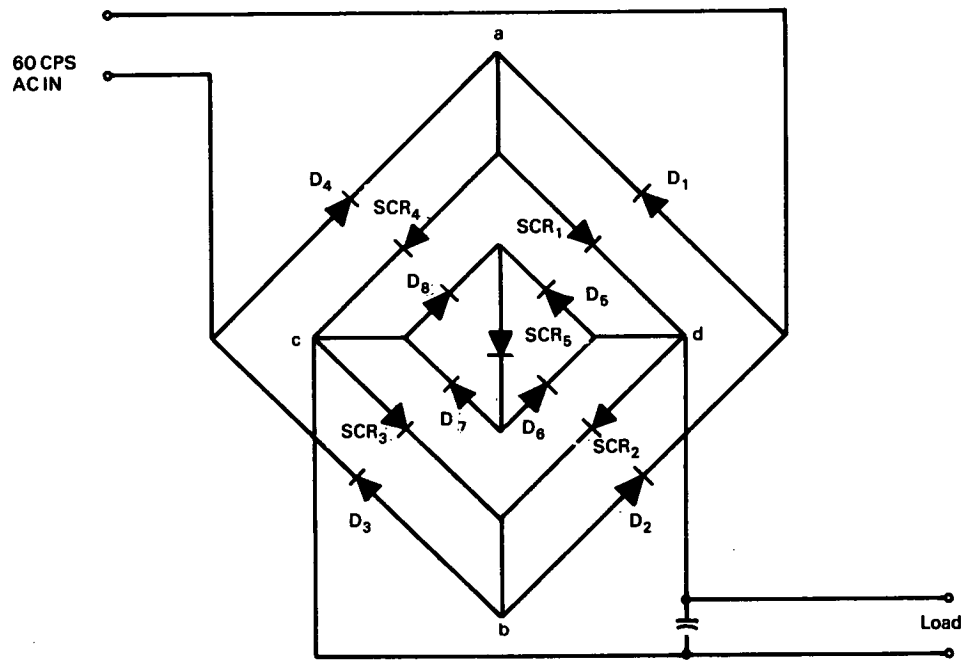
Brief 66-10486

NASA TECH BRIEF

Solid State Circuit Controls Direction, Speed, and Braking of DC Motor



The problem:

Various solid state devices are used to control the speed of dc motors, but do not provide for reversing or braking which are required for accurate positional control of large inertial loads.

The solution:

A full-wave bridge rectifier circuit in which the gating of silicon controlled rectifiers (SCR's) controls output polarity. Braking is provided by an SCR that is gated to short circuit the reverse voltage generated by reversal of motor rotation.

How it's done:

Diodes D_1 through D_4 form a conventional full-wave bridge providing full-wave pulsating dc voltage between points a (positive) and b (negative). Point a is connected to a bridge consisting of SCR_1 through SCR_4. By gating SCR_1 and SCR_3, an external load will see point d positive with respect to point c. If SCR_2 and SCR_4 are gated, the opposite condition will exist. Braking is accomplished by gating SCR_5 after removal of the gate signals from SCR_1 through SCR_4. SCR_5 then short circuits the voltage generated by the armature rotation. The capacitor keeps voltage transients from misfiring the SCR's.

(continued overleaf)

Note:

Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Jet Propulsion Laboratory
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Reference: B66-10486

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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