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Punch-Magnet Delay Eliminated by Modification of Circuit

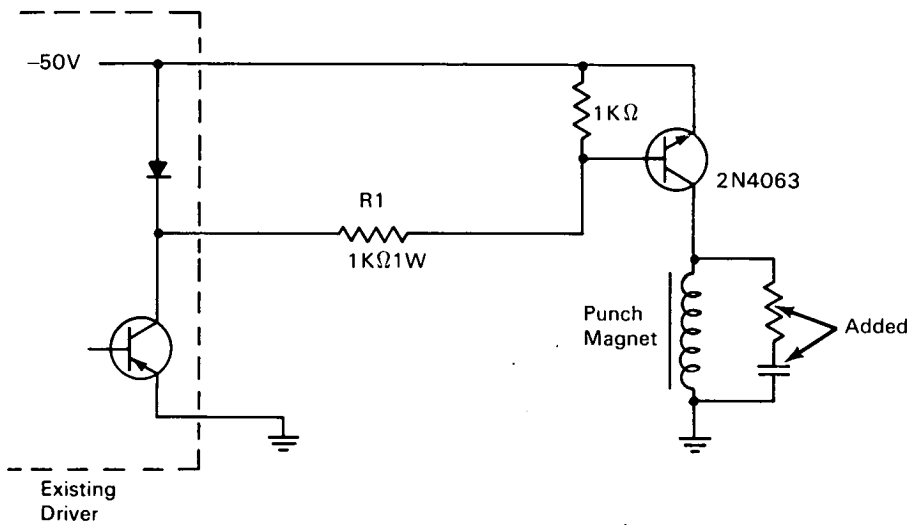

Fig. 1. Modification when a Breakdown Margin Exists

The problem:

To increase the reliability of data on paper tape by modification of punch-magnet circuitry. Voltage-damping-diode or diode-resistor networks have been used in the past to protect punch-magnet driver transistors from damage by inductive transients. These damping networks prolonged activation of the magnet by allowing current to remain in it after the driver transistor was turned off; thus the magnet operated improperly.

The solution:

Reduction of retardation, by the diode-resistor networks, of the current-decay time of the punch magnet by connection of a zener diode in series with the damping network.

How it's done:

In a magnet driver circuit in which a voltage margin exists between the driver-transistor breakdown voltage and the circuit-supply voltage, a 24-V zener diode is connected in series with the damping network (Fig. 1). Thus the network is effective only when the amplitude of the transient voltage exceeds 24 V. Also a resistive-capactive network is added in series with the magnet coil, as recommended by the punch manufacturer.

Notes:

1. For punch-driver circuits having no voltage margin, another modification adds an extra magnet-driver stage (Fig. 2).

(continued overleaf)

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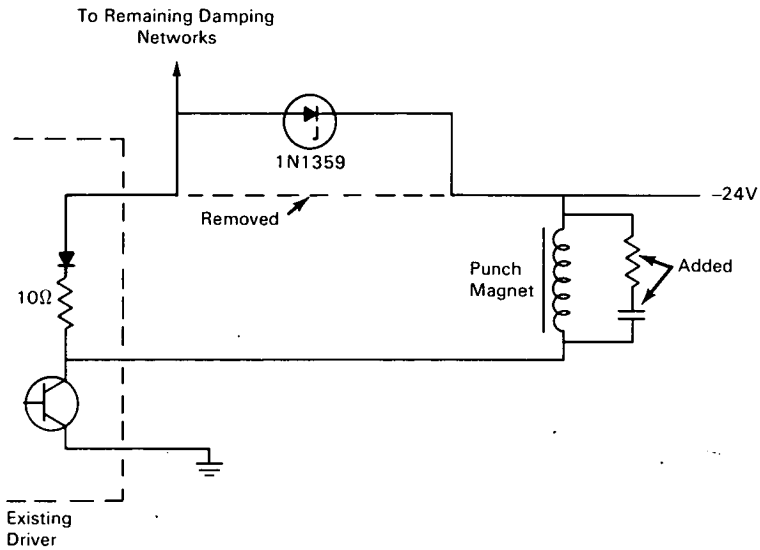

Fig. 2. Modification in the Absence of a Breakdown Margin