Twilight switch

This circuit switches power to a load when ambient light falls below a set level. In some circuits of this type, the light sensor will switch the load off again if light impinges on it. In this circuit, the thyristor is supplied with a sustaining current from the rectified supply, so that the load remains on in the presence of mains power.

Capacitor C_2 and R_4 prevent rapid power-on voltage rises to avoid false thyristor firing. The variable resistor adjusts sensitivity.

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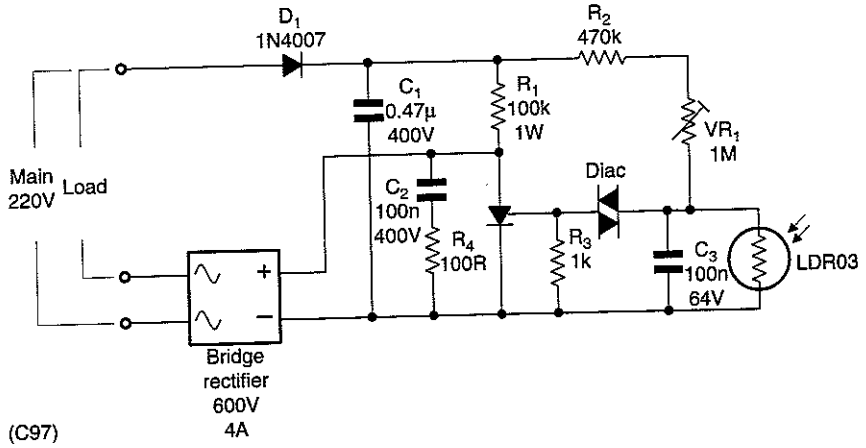

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Once fired, the thyristor in this light switch stays on, regardless of light on the sensor.

Triode audio amplifier with bootstrapping

Positive feedback reduces the demands on low-mu triodes such as the 6080, which are easily obtained, avoids the need for inter-stage transformers and exotic triodes.

The use of triodes as the output stage in valve amplifiers has much to recommend it, but there is the problem of the large drive needed by some types of valve. It is found that a form of bootstrapping overcomes the problem, following similar design techniques used by Macintosh.

Positive feedback, applied to the anode load resistors of the driver stage, comes from taps on the ultra-linear output transformer, many of which are available. This removes the need for the drivers to supply the large voltage swings needed by low-µ triodes such as the 6080. An output transformer having 43% taps is suitable for use with the 6080 types or, with a µ of 4.5, 25% taps can be used.

A single 6080 with a 4300Ω impedance transformer, running from a 350V rail, produced 10W of clean audio, while another with two 6080s in push-pull and a transformer impedance of 2150Ω on a supply of 400V gave 30W. V_3 and V_4 are both sections of a 6080, each section having its own cathode resistor and bypass.

Feedback comes from the 8Ω tap of the transformer to point X, reversal of the output transformer secondary stopping any oscillation.

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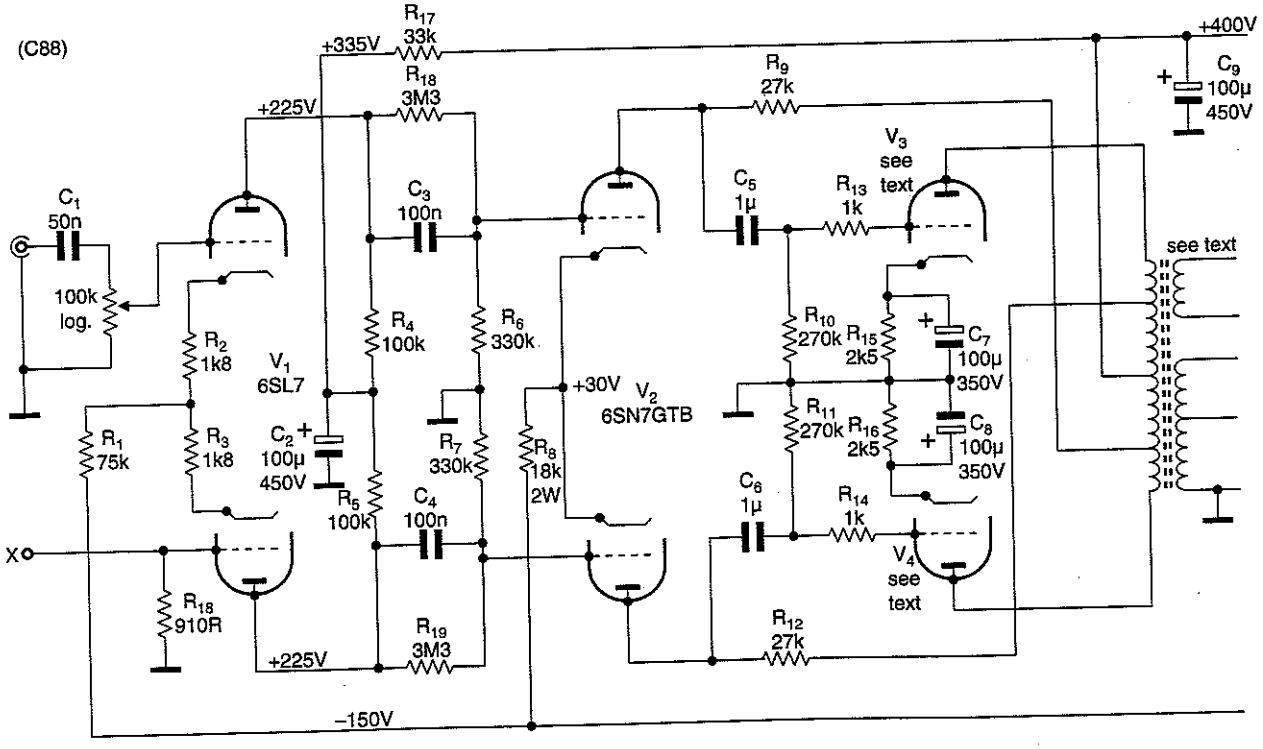

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