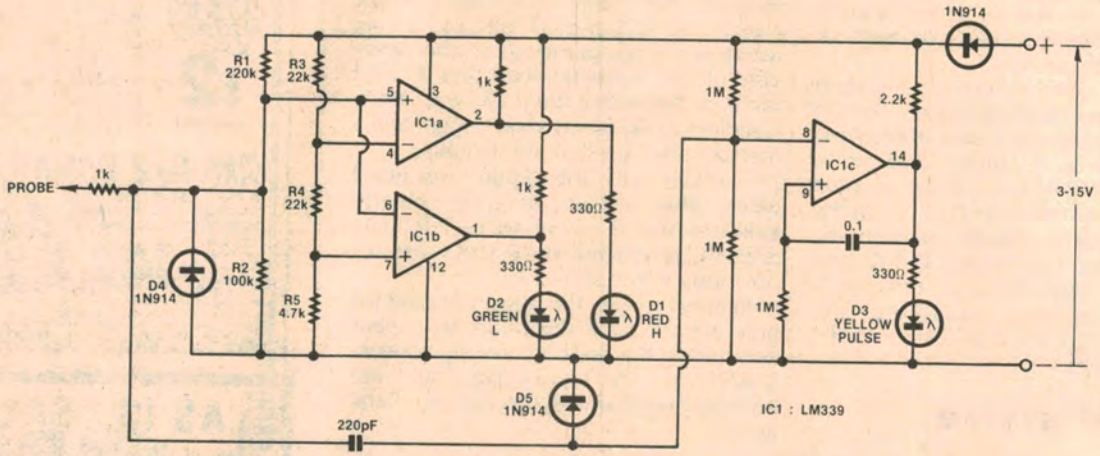
Circuit & Design Ideas

Interesting circuit ideas from readers and technical literature. While this material has been checked as far as possible for feasibility, the circuits have not been built and tested by us. As a consequence, we cannot accept responsibility, enter into correspondence or provide constructional details.

Single IC Logic Tester



This Logic Tester requires only one IC to provide visual indication of the three normal states (high, low and pulse) which may exist in a digital circuit. It works equally well on either TTL or CMOS. The design is based on a circuit originally published in "Popular Electronics" as an audible logic probe but has been modified to include a pulse stretcher by the contributor of this item.

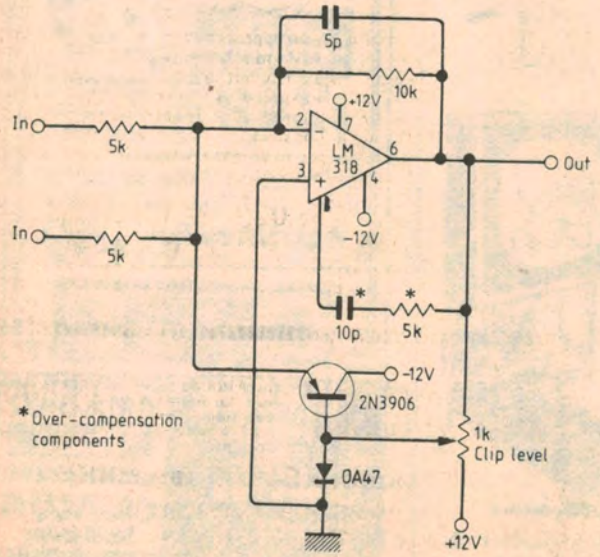
Resistors R1 to R5 form a biasing network for the inputs to the voltage comparators, IC1a and IC1b, such that their outputs are held low; with LEDs D1 and D2 being extinguished. If the input is taken high, the output of IC1a goes high, thus energising D1, a red LED, which indicates a high state. And if the input is taken low, the output of IC1b goes high, energising D2 a green LED, thus indicating a low state.

Pulse indication is provided by a yellow LED D3, which is driven by the pulse stretcher circuit formed by IC1c and capacitor C1. Whilst it gives a short flash whenever the input probe is touched onto a steady high or low state, D3 only remains on if there is a steady train of pulses in the circuit being monitored. It indicates both positive and negative pulses.

Diodes D4 and D5 were included to protect against any high voltage spikes that may be applied to the input. Diode D5 also lengthens the pulse stretcher indication.

C. A. Syms,
Flynn, ACT.

Simple Video Summing Amplifier



A video summing amplifier and limiter with a bandwidth adequate for modest CCTV applications can be constructed around one LM318 high speed op-amp.

To avoid overloading the Monitor, a sharp cut-off is required; to achieve this, the base-emitter junction of a PNP transistor is used as the limit sensing element. Emitter current is $(\beta + 1)x$ base current, provided by the clip-level potentiometer, which reduces the limiting slope by the factor β.

Due to the wide bandwidth (15MHz) of the LM318, it is recommended that the tracks to the LM318 be kept short. Also, the 10kΩ feedback resistor should be mounted across the top of the IC, and the 5pF capacitor mounted underneath the board.

Output capability is such that the LM318 can drive directly into a 75Ω load.

From "Wireless World",
July, 1981.

Handy Calibrator for DC Meters

A mercury cell gives very close to 1.35 volts almost throughout its life. Thus six cells in series would produce 8.1 volts, which is useful for checking the accuracy of the DC 10-volt range of a multimeter.

Paul Smith, Neutral Bay, NSW.

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