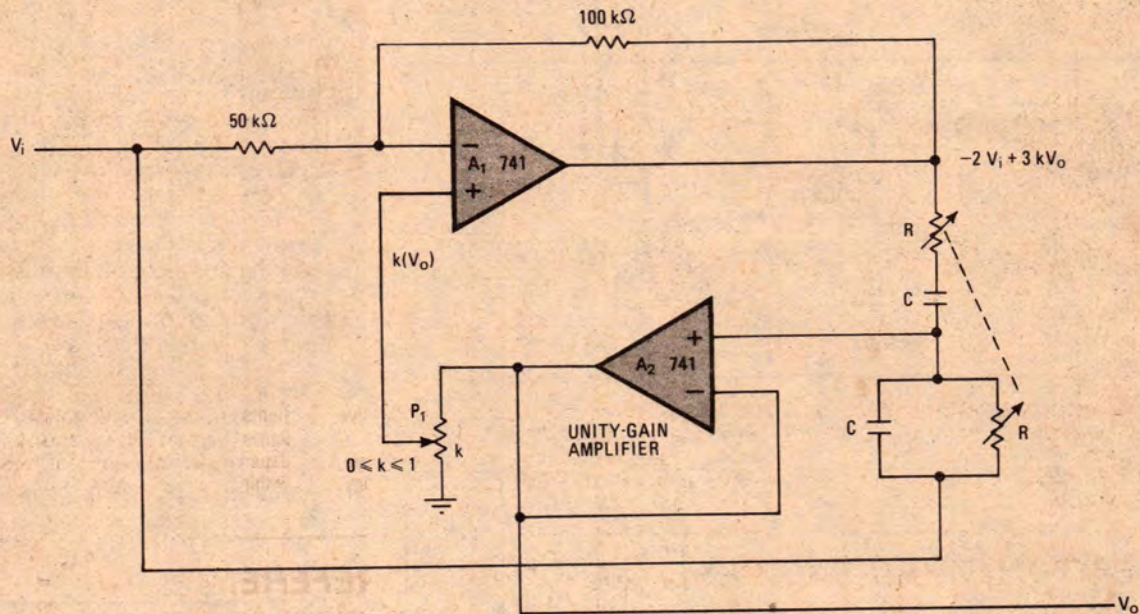


Circuit & Design Ideas

Conducted by Ian Pogson

Interesting circuit ideas and design notes selected from technical literature, reader contributions and staff jottings. As they have not necessarily been tested in our laboratory, responsibility cannot be accepted. Your contributions are welcome, and will be paid for if used.

Wien bridge and op amp select filter's bandwidth



The band over which a notch filter provides rejection of unwanted frequencies can be selected with this circuit, which uses a Wien bridge plus an operational amplifier with fixed gain. Such a circuit represents one of the simplest configurations for easily adjusting the selectivity of the filter, which has a notch depth of nearly 60dB, independent of component precision.

The notch filter operates at up to 200kHz and selects a bandwidth over which frequencies are rejected. RC components determine the centre frequency of the filter. P1 selects the notch bandwidth and the notch depth is fixed at about 60dB.

It will be noted that the popular twin-T variety of notch filter is almost iden-

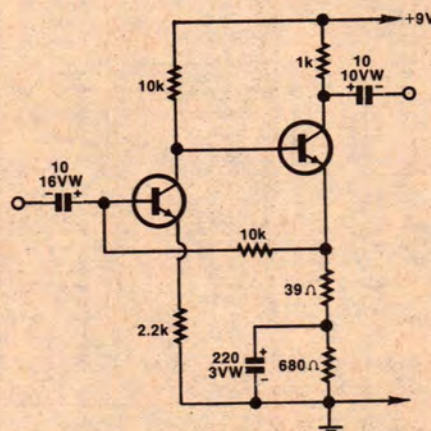
tical but in practice, the twin-T is not very easily adjusted. This is because a greater number of components must be trimmed, and more careful adjustments made, to achieve the desired degree of selectivity and notch depth required.

(By Dominique Fellot, in "Electronics".)

Preamplifier for microphones, mixers, etc.

This preamplifier has a gain of approximately 30 and it can be built on a very small board space, using general purpose silicon transistors. The type used in the prototype are equivalent of the 2N2222, which I obtained from Tandy Electronics.

The circuit configuration is that of a "DC feedback pair", a circuit which provides good frequency response with high input impedance. As such, it is ideal for use as a microphone preamplifier and it could also be used as the basis for a microphone mixer. Current drain is approximately 3mA and a type 216 9V battery could be used with a long life expectancy. The circuit gives a maximum output swing of about 3V peak-to-peak, for an input signal of about 100mV.



For higher gain the 39 ohm resistor can be omitted. If a volume control is

required, the wiper of a 100k potentiometer can be connected to the input, one of the ends connected to the input signal and the other to ground.

(By Mr R. Linz, 27 Albert Street, Ingleburn, NSW 2565.)

Simple method of testing thyristors

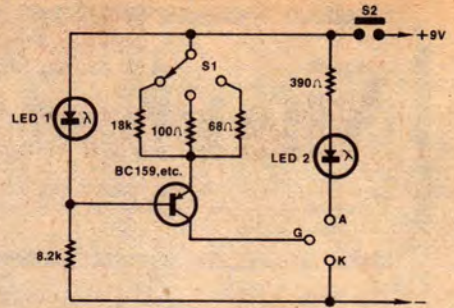
This circuit is for making simple checks on thyristors. Three levels of triggering are provided, being approximately 50uA, 10mA and 15mA. Thus a wide variety of devices can be accommodated. The triggering current levels are selected by S1, with position 1 corresponding to the 50uA level. A

device which is functioning correctly will be indicated by the illumination of LED2, when S2 is depressed.

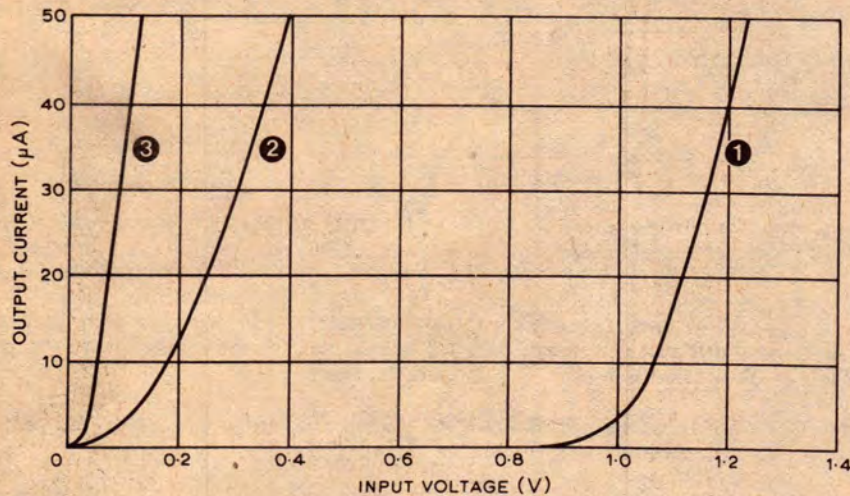
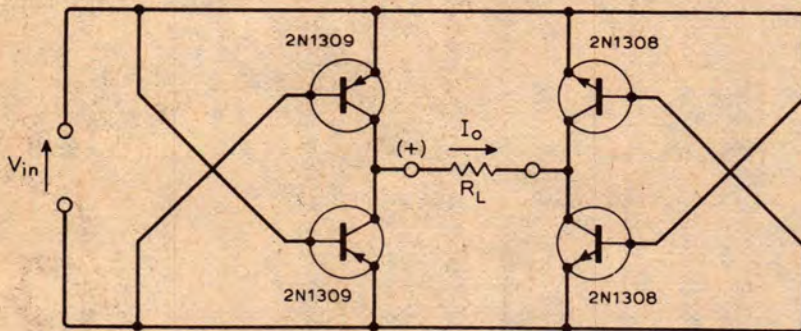
The LEDs may be any of the readily available red types. It should be noted

that PUTs cannot be tested on this circuit as it is, as extra facilities are needed for the purpose.

(By Mr L. Murokami, 19/368 Military Road, Tennyson, SA 5022.)



Cross coupled transistor rectifier bridge



This circuit shows a full wave rectifying bridge which has an offset voltage an order smaller than conventional diode bridges.

The graph shows transfer characteristics for a conventional full wave silicon diode bridge in curve 1, a germanium diode bridge in curve 2, and the cross coupled transistor bridge in curve 3. The off-set voltage of the transistor is about 30mV with good linearity above the knee.

The circuit was developed for use in a simple but sensitive field strength meter. The meter is protected by the base-emitter junctions of the transistors. With the devices shown, the frequency response is up to 30MHz and the optimum value of RL is about 2k.

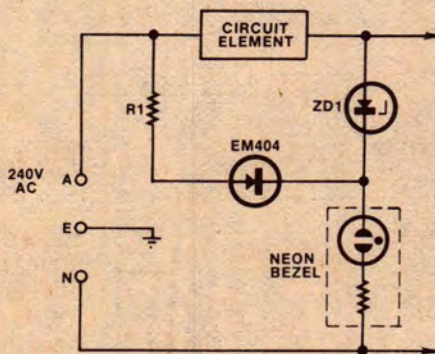
(By L. D. Thomas, in "Wireless World".)

Dual function neon indicator

Where it is desired to have "standby" and "operate" indication and it is undesirable to have two separate neon lamps, this circuit can be added to an existing neon indicator.

"Circuit element" may be a switch, fuse, thermostat, etc. ZD1 may be a 400mW zener diode rated at about 100V. R1 should be of such a value to give a dull glow. Values between 1M and 3M could be tried.

With "circuit element" open, one electrode of the neon lamp will glow weakly, when closed it will operate at full brilliance. If ZD1 is replaced by an EM404, two levels of indication will be given but the neon lamp will not operate at full brilliance.



(By Mr R. A. Vickers, 31 Aylmer Street, North Balwyn, Vic 3104.)

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