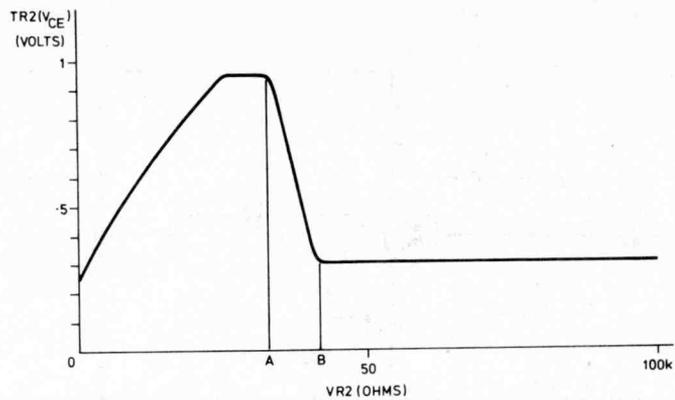


REFERRING to the circuit diagram, TR1 is a simple variable-gain preamplifier. The amount of gain is controlled by VR1, and this in turn influences the sustain time produced.

TR2 and its associated components form the clipping stage which produces the fuzz effect. The coupling capacitors are kept small to prevent lower notes from the guitar overpowering the unit when chords are played. R3 and VR2 form a potential divider which provides bias for TR2. For the clipping stage to operate correctly, it is necessary for the bias to be set quite precisely (as described later).

The reason for this can be best understood by considering the graph. This shows the variation in the voltage at the collector of TR2 as VR2 is varied from zero resistance to 100k $\Omega$ . The limiting occurs if the resistance is set between the points A and B. If an a.c. voltage is then applied via C4, then positive half-cycles will cause the collector voltage to limit at about 0.3V, and negative half cycles will cause limiting at 0.8V. Between these two points, the gain is approximately linear and so the decay characteristic of the guitar note is preserved (after a period of sustain).

The simplest method of setting VR2 is to connect the unit to a guitar and am-



plifier and adjust VR2 until the note is audible. (The required position is approximately half-way). VR2 can then be finely adjusted so that the note decays without moving off or becoming distorted. Once set, the unit will only require adjusting occasionally, to compensate for falling battery voltage. Even so, it is advisable to have VR2 accessible from the outside of the cabinet.

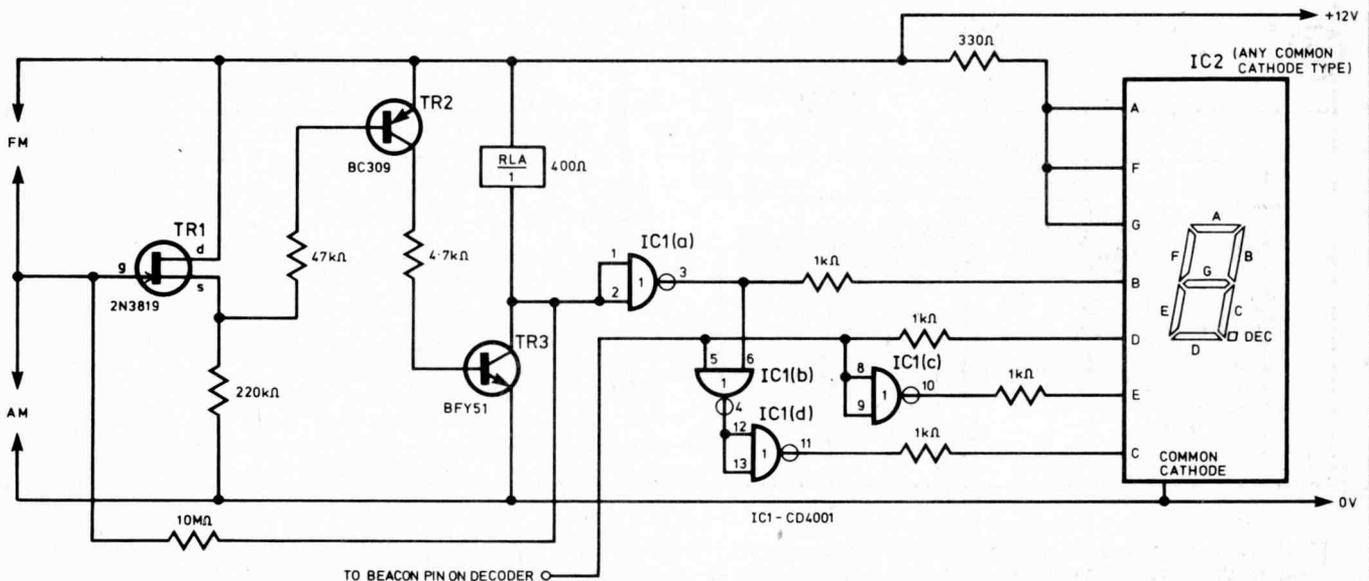
The values of C\* and R\* depend on the tone required. In the prototype 0.002 $\mu$ F

and 2.2k $\Omega$  were used to give a sharp, biting tone. A silicon diode can be substituted for the 0A81 but with a consequent loss of sustain time.

The unit is very simple, has a very low movement consumption (0.5mA) and gives extremely good results, particularly when used with the Phasing Unit (PE 'Sound Design') or Treble Booster (PE April 1976).

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## STEREO INDICATOR



THE following is a description of an AM/FM Stereo Indicator for use with a stereo radio tuner. It is based on a seven segment i.e.d. display.

The segments are so connected that an "A" lights up for AM, an "F" for FM, and an "S" for FM stereo.

A touch switch, identical to that which appeared in the April 1975 issue of "Everyday Electronics", actuates a relay.

This is connected in place of the AM/FM switch in the tuner. The voltage at the collector of TR3 is taken to a NOR gate connected as an inverter. A further signal is taken from the stereo decoder which is removed. IC1 encodes these two signals into a form suitable to give the required display.

It will be noticed that segments A, F

and G are permanently connected to the positive supply line. This should be at no more than 15V, or else the i.c. will be damaged. The supply should be capable of supplying both the relay current and 60mA for the i.e.d. display. The remaining circuitry consumes little current.

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