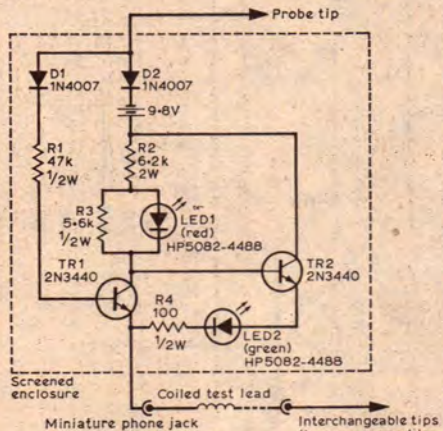


General-purpose fault-finding probe

This probe may be used as a convenient substitute for the normal multimeter when fault tracing, since it eliminates the need to keep stopping to switch meter ranges etc. It provides an indication of the presence of either AC or DC potentials (indicating which) between 1.5V and about 500V, whether there is continuity between two points and some indication of the resistance between the two points. Of course it does not measure potentials and only gives a rough indication of ohms — but when carrying out quick checks on a piece of equipment this is not necessary, at least during preliminary checks.

The whole unit can be built into a small insulated case, for example the housing of a penlight flashlight, and operated from a miniature mercury battery. For other forms of construction a conventional battery could be used.

When the test leads are placed across



two points between which there is continuity but no potential difference, current from the internal battery forward biases TR2 and turns it on. The green LED then lights, but the small base current is not sufficient to cause

the red LED to light. The lower the resistance between the two points, the brighter the green LED. If the resistance is more than about 5k neither LED lights. One can use this facility not only to test component and wiring continuity, but also the operation of wipers on potentiometers etc. If the external circuit includes a semiconductor, the green LED lights only when the probe tip is connected to the N-type material, and this provides a further useful test.

Should the probe tip be connected to a point more than about +1.5V with respect to the test lead, the emitter-base junction of TR2 is turned on and the red LED lights, with the green LED staying dark. If neither LED lights, even when the test lead and test probe are interchanged, the two points are either open circuit or have more than 5k resistance between them. If the red LED lights no matter which way round the test lead and test probe are connected, then the potential difference between

the two points must be AC.

A few minutes' practical use with the fault finder is likely to underline its usefulness rather more than this description. The feature that seems really attractive is that the various checks can be carried out quickly, without having

to keep fiddling with the range switch of a multimeter.

The test leads should be kept from touching when not in use to prevent drain on the battery. For this reason, the test lead should be made

removable although a possible alternative, eliminating the need for the miniature jack and socket, would be to have an insulated cap fitting over the probe tip when not in use.

(From "Radio Communication".)