base-collector and base-emitter junctions with an ordinary test meter on the ohms range. Each junction should be checked in both forward and reverse directions. The readings which should be obtained will vary dependent on the type of meter used and the type of transistor. Normally one should expect to see a reverse resistance of greater than 10M for a silicon device and about 1M for a germanium device. If the device is a power device then these values will be less. In the forward direction one would normally expect to see a resistance of about 1K on a low ohms range on the meter but this is very dependent on the meter itself. Provided there is a large difference between the forward and reverse directions then the junctions should be intact. Finally a check should be made between the collector and emitter to ensure that the base region has not been 'burnt' through. The reading obtained in both directions should be of the same order as the value obtained when measuring each junction in the reverse direction.

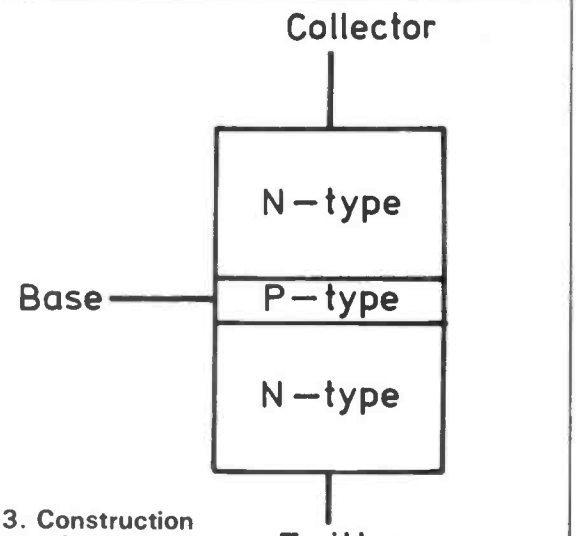


Fig. 3. Construction of a transistor.

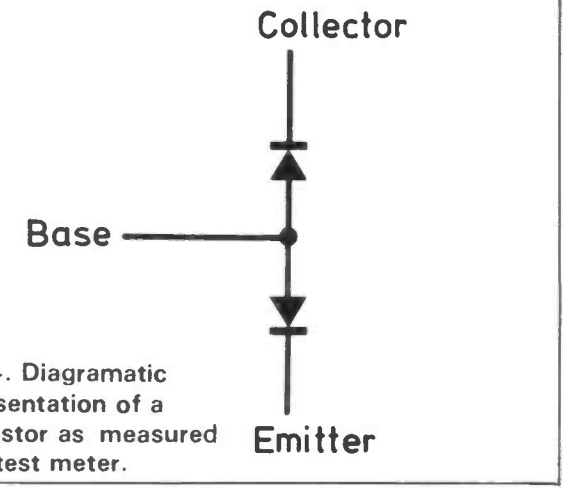


Fig. 4. Diagramatic representation of a transistor as measured by a test meter.

## Front panel labelling

One of the problems of building one's own equipment is that whilst it is possible to construct an excellent piece of equipment from the electronics point of view it will very often lack the professional finish because of the lack of mechanical facilities. One way in which this can be improved is by improving the front panel labelling. This can easily be accomplished by using Letraset. The main draw-back with this is that it rubs off fairly easily but this can be easily overcome by covering the whole of the front panel with clear fablon to give a hard wearing and professional looking finish.

## Boards for prototyping

So many prototypes end up in dreadful messes, and probably not working, or at least not as well as they might because of this. I am a great believer in the fact that if you can see what you are doing then the chance of making a mistake is much less. Having tried many methods, from stick-on-tracks on a PCB to the proverbial rat's nest where a 'ball' of components grows, the best one which I have yet found is plain 0.1 inch matrix or veroboard and the corresponding pins. Using this one is not constrained by the tracks of the tracked versions, and it is possible to lay out the components out in a manner which resembles the circuit diagram, which I find reduces the number of errors made and makes the job of tracing the circuit through later that much easier. In addition to this I mount all the resistors, capacitors and other similar components on pins which makes their replacement easier and keeps all the intercomponent wiring to the reverse side of the board. Using this method of construction it is possible to make a very neat, compact and reliable prototype.

## Preventing moisture entering coax

Several years ago a friend of mine erected a superb 40 metre dipole. No expense was spared — hard drawn copper wire was used together with glass insulators at either end, a porcelain dipole centre, and the coax was the semi-air spaced type with the air space holes running the full length of the coax. All went well, DX was contacted on both 7MHz and 21MHz until one day when it rained. The water droplets clung to the wire and ran down to the lowest point on the wire which was at the centre where the coax was connected, and entered the air spaces in the coax. It then proceeded to flow all the way down to the shack where it formed a pool on the floor. The moral of the story is that one should always seal the remote end of a length of coax if it is going to be exposed to any form of weather. In practice there are two ways of preventing moisture entering the feeder. The first is to seal the end with some form of flexible sealant; I personally have found that something like Evostick applied generously round the whole of the exposed end of the cable works very well. It is worth emphasising that not only should the dielectric spacing the two conductors be protected but also where the outer insulation is cut back as water entering here also will work its way back slowly. The precaution which should be taken is to run the cable as shown in Fig. 5in order to prevent any water which does manage to enter the cable from passing down it any further. It is very worthwhile taking precautions against letting