



Component Parts

An electronic circuit diagram looks complicated to those who've never seen one. But they are designed to make life easier by providing a way to describe a circuit using a standard set of

symbols and techniques. To illustrate this, we've taken a simple circuit for an intercom and described the individual electronic components it uses. On a circuit diagram, each component is represented by a special symbol. Each component on the diagram is also identified by a

code, such as 'R1' or 'TR2'. This is a convenient way of referring to the components — in a parts list, for example. The lines connecting the components represent wires. These are drawn straight for neatness — they could be actual wires, or tracks on a printed circuit board

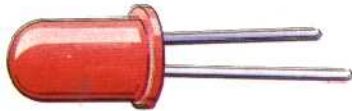
1 Switches

There are many varieties of switch, each with its own function. The two main types are latching, where the state of the switch is retained on being pressed, and non-latching, where contact is only made for as long as the pressure is maintained



2 Light Emitting Diodes

Diodes are the simplest kind of semiconductor. They are the electronic equivalent of a non-return valve, only allowing current to flow in one direction. Some diodes, encapsulated in translucent resin rather than metal, give off a small amount of light, and so find use as indicators



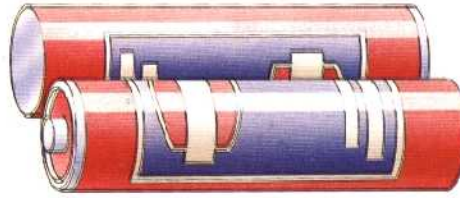
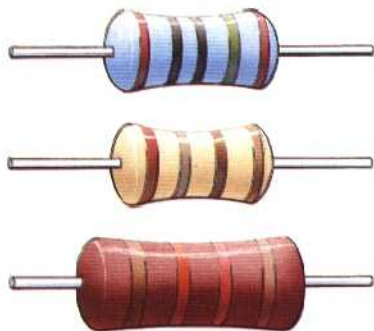
3 Transistors

Depending on its specification and the way in which it is used, the transistor can act as a switch or an amplifier. Its invention in 1947 paved the way for subsequent developments in microelectronics



4 Resistors

If we introduce less conductive materials into the circuit, we can use them to control the flow of electricity. Resistors come in many different sizes. Their value is expressed by bands of colour round their bodies

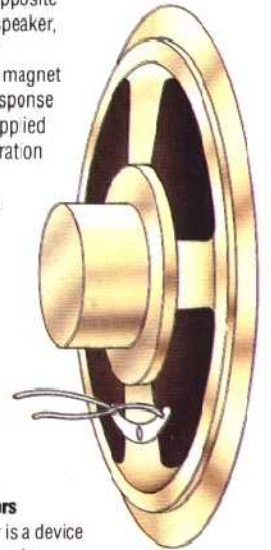


6 Batteries

Most small circuits such as this one can be powered with ordinary batteries because they supply a stable direct current

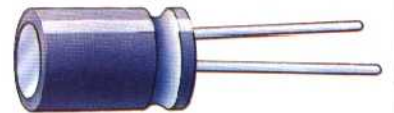
7 Speakers

Speakers are close relatives to microphones — they work in the same way but achieve opposite results. In a speaker, a diaphragm attached to a magnet vibrates in response to a current applied to it. This vibration produces sound waves in the air



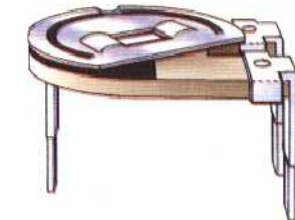
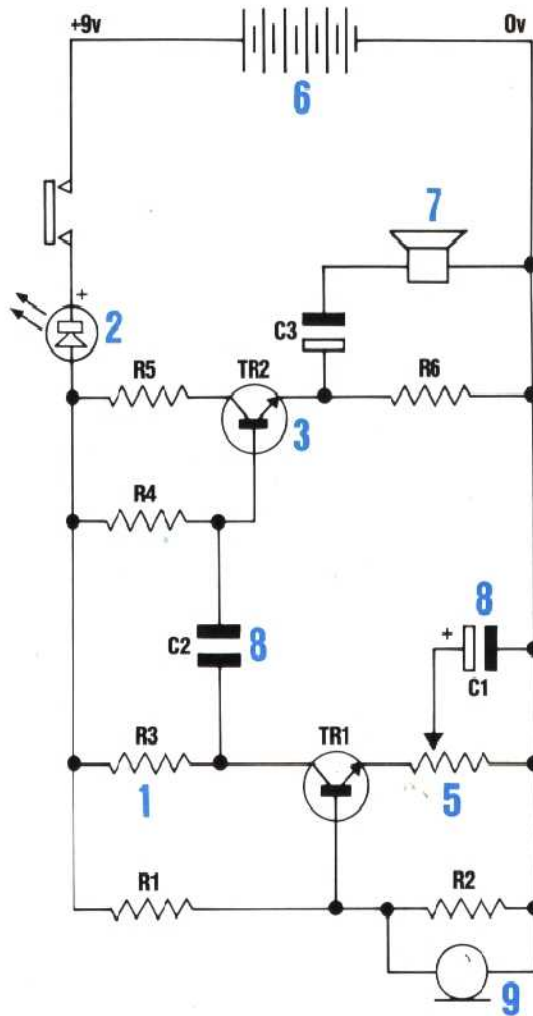
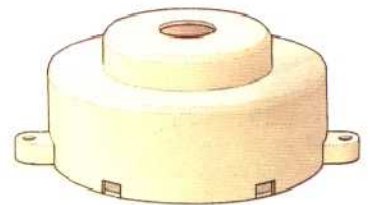
8 Capacitors

The capacitor is a device that is capable of holding an electric charge. A capacitor is charged up when its two terminals are connected to a power source. Once it is fully charged, nothing further will happen, even when the power is disconnected, until the two terminals of the capacitor become connected, when it will discharge



9 Microphones

Microphones work the opposite way to speakers. Sound waves cause the diaphragm to vibrate which, via the magnet, produces different voltages in the circuit



5 Variable Resistors

Not all resistors are constant. Variable resistors, sometimes called potentiometers use a strip of carbon as their conductor. The distance the current has to travel through the carbon before it reaches the take-off terminal determines the resistance of the component