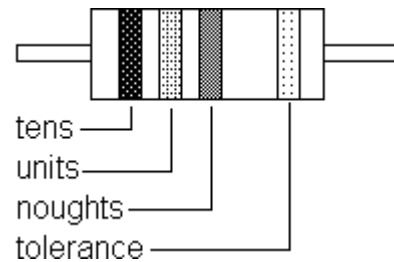


## Discrete components

Resistors: The table shows the coloured rings on each of the resistors used in circuits. A power rating of 250 mW is sufficient.

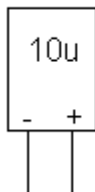
tens	units	noughts					tolerance
		brown	red	orange	yellow	green	
brown	black	100R	1K0	10K	100K	1M0	red gold or silver
red	red	220R	2K2	22K	220K	2M2	
yellow	purple	470R	4K7	47K	470K	4M7	

100R represents a resistance of 100  $\Omega$ .  
 Similarly, 4K7 represents 4.7 k $\Omega$  and 2M2 represents 2.2 M $\Omega$ .  
 The capital letter (R, K or M) shows where the decimal point is.



Capacitors: The table shows the range of capacitors you will need. The code for each one will be written on it. The variable capacitor can be set to any value between 5 pF and 65 pF. A voltage rating of 16 V is sufficient.

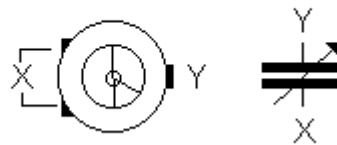
electrolytic



ceramic disc



variable

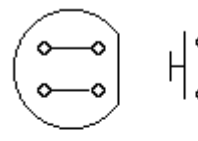


construction	value	code
electrolytic	1000 $\mu$ F	1000u
"	100 $\mu$ F	100u
"	10 $\mu$ F	10u
"	1 $\mu$ F	1u
ceramic disc	100 nF	104
"	10 nF	103
"	1 nF	102
"	100 pF	101

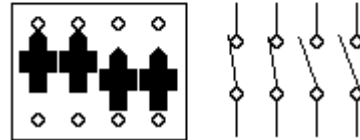
## Electronics Explained: Data Sheets

Switches: Note how the flat side of the press switch tells you which way to insert it in the breadboard – parallel to the supply rails.

press switch

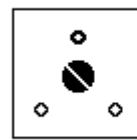


dual in-line switch

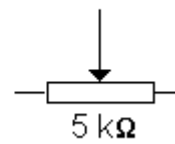


Potentiometer: The resistance between the track terminals needs to be 5 k $\Omega$ . The power rating need only be 500 mW.

wiper



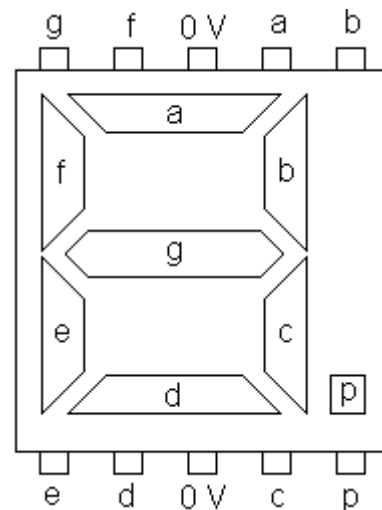
track terminals



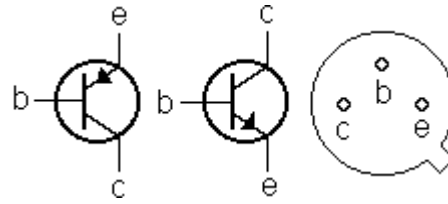
Diodes: All diodes have a bar painted at one end to denote the cathode. Use 1N4148 signal diodes, 1N4001 power diodes and BAT51 radiofrequency diodes.



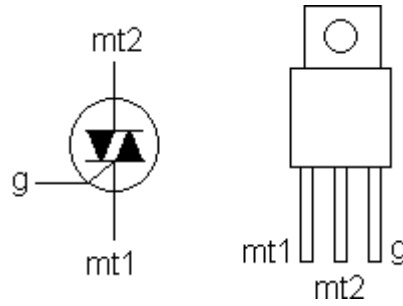
LEDs: These have a flat section on their rim next to the cathode. Either of the COMMON terminals on the seven-segment LED may be used for the joined cathodes.



**Bipolar transistors:** Transistors are viewed from the top. The tag is always nearest to the emitter. It helps if you paint the PNP transistors purple. Use BC108/BC477 signal transistors and BC441/BC461 power transistors.



**Triac:** T206 viewed from the front.



**MOSFETs:** 2N7000 viewed from the top.

