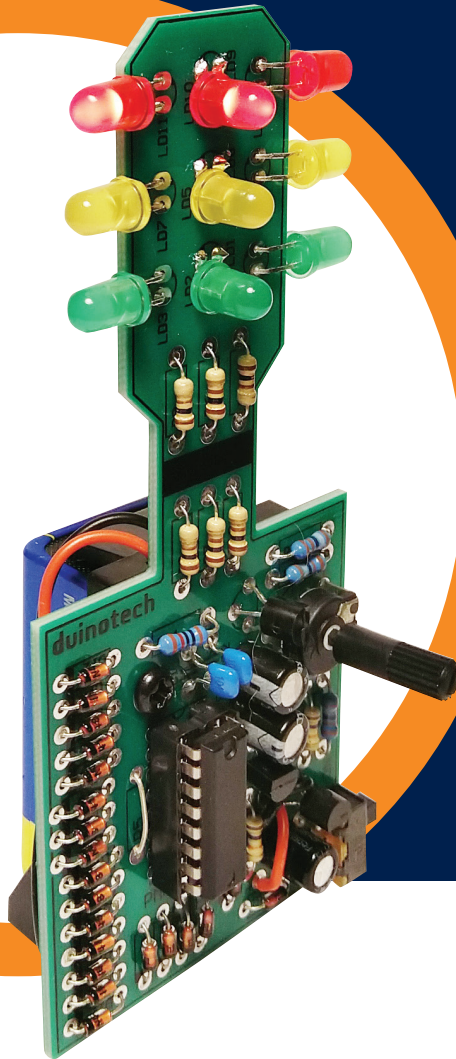


duinotech

learn to solder: Traffic Lights Kit

MEDIUM DIFFICULTY



Thank you for purchasing the Traffic Lights Kit

Kids can take their soldering skill to the next level with this 3D traffic lights kit, then put it to good use on their toy car or train set.

Thanks to the included 4017 integrated circuit (IC), the traffic lights will flash just like real traffic lights. You can also adjust the delay between lights.

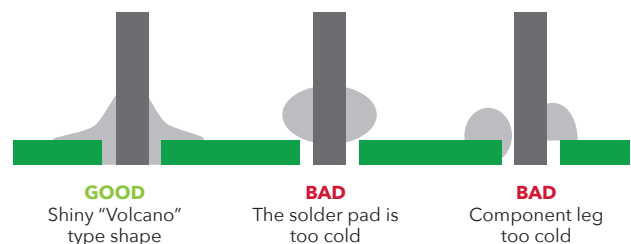
Powered from a 9V battery (Battery not included).

If this is the first time you are getting into electronics and handling a soldering iron, please download our Soldering Guide from our website.

Build Instructions & Soldering Guide available at:
www.jaycar.com.au/p/XC3758

A GOOD SOLDER JOINT

The diagram here shows you a good solder joint and two bad solder joints. A good solder joint is clean and shiny with a "volcano" shape, which means the component's leg is fully soldered to the entire solder pad on the circuit board. If your solder joint is like the one shown in the middle, it means you have not applied enough heat to the solder pad on the circuit board. If your solder joint looks like the one on the right, it means the component leg was not heated enough by your soldering iron for the solder to join properly.



RECOMMENDED TOOLS. You will need the usual Maker essentials, including a soldering iron (TS1652 Soldering Iron Kit), solder (NS3010), and side cutters (TH1897). A third-hand PCB holder (TH1987) is also recommended to make soldering easier.

Disclaimer: Content can change without prior notice. Please visit the website page for the most up-to-date information.

Kit contents:

QTY	PRODUCT	PCB MARKING / COMMENT
1	Circuit Board	
1	CD4017BE IC	Centre of PCB (watch the notch)
1	16 PIN IC Socket	For the 4017 IC
2	BC547 TO-92 Transistors	T1, T2
1	BC557 TO-92 Transistor	T3
2	47µF 50V Electrolytic Capacitors (6 x 7mm)	C3 , C4
1	100µF 35V Electrolytic Capacitor (6 x 7mm)	C5
4	Red LEDs	LD9 to LD12
4	Yellow LEDs	LD5 to LD8
4	Green LEDs	LD1 to LD4
2	0.1µF Monolythic Capacitor	C1, C2
1	220KΩ 10mm Potentiometer (B224)	Controls the speed
1	Toggle Switch	SW1
2	M3 x 6mm Screws	Two screw spaces next to IC
1	9V Battery Holder	9V battery not supplied
21	1N4148 DO-35 Diodes	D1 to D21
6	100Ω Resistors (Brown-Black-Brown-Gold)	R6 to R11
4	2.2KΩ Resistors (Red-Red-Red-Gold)	R1 to R4
1	0Ω Wire Link	R5
3	10KΩ Resistors (Brown-Black-Orange-Gold)	R12 to R14

Most of the components (apart from three LEDs) mount from the front side of the circuit board and solder on the rear side.



RESISTORS. Resistors can go into the circuit board in either direction. The colour bands indicate the resistor value (See parts list for the colour bands). Make sure you insert the correct ones into the circuit board.
Note: R5 is just a wire link that looks like a resistor.

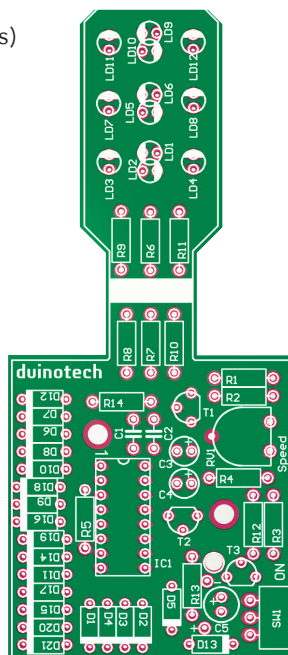


DIODES. The 21 diodes (D1 to D21) need to be inserted with their black band matching the white band on the circuit board.

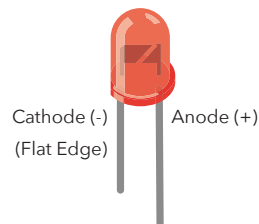
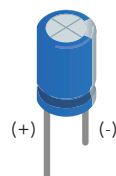
MONOLYTHIC CAPACITORS. The two smaller capacitors (C1 and C2) can be soldered in either way.



FINAL STEP. With the components soldered into the circuit board, solder in the switch, RV1 trimpot, and the battery holder (red to + and black to - marked on the board). Insert a 9V battery and your lights should flash when you switch the switch.



FRONT SIDE



LEDs. 9 of the 12 LEDs go into the front of the circuit board and 3 from the back (LD2, LD5 & LD10). Make sure each LED is inserted so the flat edge on the LED's body matches the diagram printed on the circuit board.



TRANSISTORS. The transistors need to go into the circuit board facing the same way as the diagram printed on the circuit board. There are two transistor types supplied so pay attention not to mix them up.

INTEGRATED CIRCUIT (IC). Instead of soldering the IC into the circuit board we have supplied an IC socket. Solder the IC socket into the circuit board, then insert the 4017 IC into that socket once all of the other soldering is complete. Make sure the IC is inserted with the notch in the end matching the diagram printed on the circuit board.

ELECTROLYTIC CAPACITORS. The long leg is positive (+) and the short leg with white stripe on the capacitor's body is negative (-). There are two different values supplied so pay attention not to mix them up.