

**LED COLOR ORGAN KIT | JAMECO PART NO. 2155541**



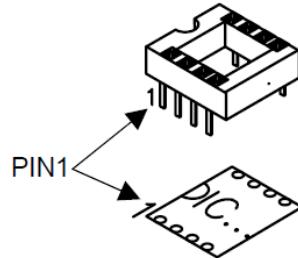
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**Experience Level: Intermediate | Time Required: 2 Hours**

Building the circuit by following the schematic may seem simple enough, but problems may arise if the following attention to detail is not taken.

**1) ICs U1, U2:**

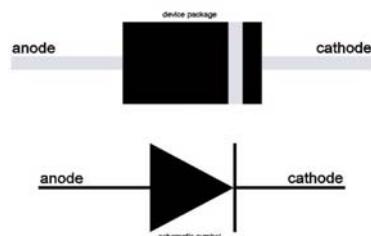
Take note of the orientation of the ICs and IC sockets by looking at the notch and matching the notch of the IC to the notch of the PCB. See Figure 1.



**Figure 1: IC Polarity**

**2) Diodes D1, D2, D3: 1N4002**

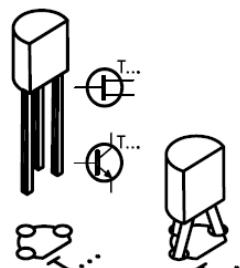
The correct configuration of the diodes is shown in Figure 2. Pay attention to the stripe on one end of the diode indicating the cathode end.



**Figure 2: Diode Polarity**

**3) Transistors Q1, Q2, Q3:**

Polarities of the Bipolar Junction Transistors (BJTs) are extremely important. Here, we use the 2N3904, 3-pin package. Match the component to the symbol in Figure 3.



**Figure 3: Correct BJT Pinout**

**4) Non-Polarized Resistor Color Code:**

- R1, R2, R3, R16, R17:  $1\text{k}\Omega$  (Brown, Black, Red)
- R4, R5, R6:  $560\text{k}\Omega$  (Green, Blue, Yellow)
- R7, R8, R9:  $680\Omega$  (Blue, Gray, Brown)
- R10, R11, R12:  $39\text{k}\Omega$  (Orange, White, Orange)
- R13, R14, R15, R27, R28:  $100\text{k}\Omega$  (Brown, Black, Yellow)
- R18, R19:  $470\Omega$  (Yellow, Violet, Brown)
- R20, R21:  $160\Omega$  (Brown, Blue, Brown)
- R22:  $1\text{M}\Omega$  (Brown, Black, Green)
- R23:  $47\text{k}\Omega$  (Yellow, Violet, Orange)
- R24, R25, R26:  $20\text{k}\Omega$  (Red, Black, Orange)

### 5) Capacitors:

**C1 through C7, C15:** Non-polarized capacitors.

- C1, C2:  $0.0022\mu\text{F}$  (222)
- C3, C4:  $0.01\mu\text{F}$  (103)
- C5, C6:  $0.047\mu\text{F}$  (473)
- C7, C15:  $0.1\mu\text{F}$  (104)

**C8 through C14:** These electrolytic capacitors are polarized with the negative side (shorter lead) indicated by a stripe on one side, see Figure 4.

- C8, C9, C10:  $2.2\mu\text{F}$
- C11:  $1\mu\text{F}$
- C12, C14:  $4.7\mu\text{F}$
- C13:  $22\mu\text{F}$

### 6) LEDs:

- D4, D5, D6, D7: Yellow (represents the Treble)
- D8, D9, D10, D11: Red (represents the Mids)
- D12, D13, D14, D15: Blue (represents the Bass)

Be sure to have the cathode end (shorter lead) facing the side with the flat edge. See Figure 5.

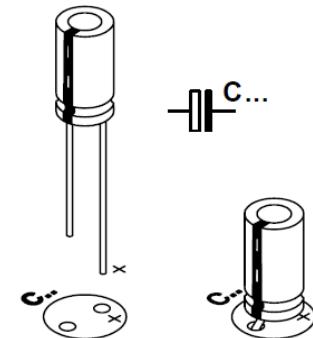


Figure 4: Electrolytic Capacitor Polarity

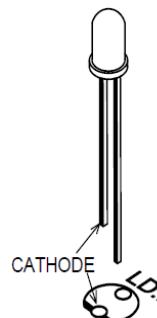


Figure 5: LED Polarity

**7) Audio Jack and Power Jack U4, U5:** There is only one way to insert each of these components into the board, so just be sure to apply enough solder to ensure a good connection with each tab.



Figure 7: Audio Jack pinout

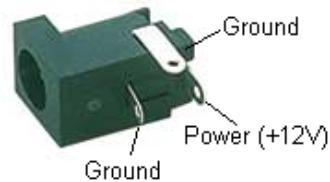


Figure 8: DC Power Jack pinout

Keep in mind that this project makes a mono-channel LED light organ, which means if you plug in your headphones, music will only come out of one side. If you wish to make it a stereo light organ, you will

have to duplicate this circuit for the second channel. As always, remember to take extra precaution when soldering! And most importantly, have fun!

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