

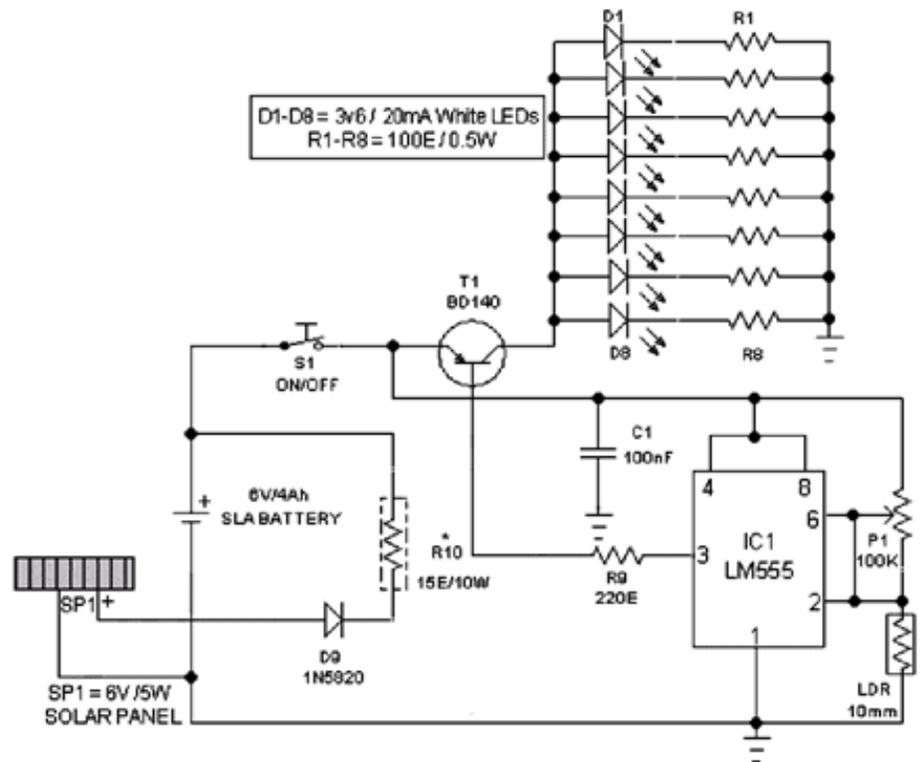
Backyard Garden Light

Materials you will need: (All parts can be ordered off of Jameco Electronics)

- Four, 100 ohm resistors. (number depends on the number of LEDs you order)
- One switch of your choosing
- A 6 volt portable solar panel. This will be your most expensive part in this circuit.
- One 555 microchip, along with the microchip holder
- One potentiometer
- A 100 μ F capacitor
- One 220 Ohm resistor
- Four white LEDs. (can have up to eight but works best with three or four)
- Four AA rechargeable batteries, including the battery holder.
- A transistor
- A 15 Ohm resistor
- A single diode

Steps:

1. Start with the solar panel, already the negative should be connected to negative. With the positive leg connect to the single diode. Also leg 1 on the microchip connects to negative right away since it's the easiest.
2. From the diode connect that to 15 ohm resistor and then to the battery holder, which will be connected to negative and then also to the switch.
3. This step might get tricky because the switch connects to four different parts of the circuit. Connect the switch to the transistor first, making sure that it is connected to the E leg and the rest are correctly placed. Then connect the switch to the capacitor, which then connects to negative. Starting at the microchip now, connect legs 4 and 8 on the microchip together, you



will then connect both of those legs to the switch. Lastly, you can connect the potentiometer with the 4 and 8 legs that is already connected to the switch, or connect it directly to the switch.

4. The middle wire on the potentiometer should connect to leg 6 on the chip, and connect chip leg 2 with chip leg 6. With the last wire on the potentiometer connect it to chip leg 2 and the LDR (light dependant resistor). When those three are connected together, they can now go to negative.
5. Going back to the transistor, you are now connecting the B leg to the 220 ohm resistor which then connects to leg 3 on the microchip.
6. Last but not least the LEDs. Using the last leg on the transistor you will connect the positive leg of the LED to it and then connect the negative leg of the LED to the 100 ohm resistors which will then connect to negative.
7. Time for testing and configuring.

Comments/ Tips:

During testing make sure that the batteries are recharging. Do this by taking a digital multimeter, set it on the correct resistance. Place the positive to the positive of the batteries and vise versa with the negative. If the circuit is placed in the sun light it should slowly be charging.

The potentiometer is very very precise on where it needs to be set in order for it to work properly. Finding the correct spot for it will take a few tries so don't get mad at it.

Final results should look similar to this...

With the solar panel close to the board itself along with the battery pack. Depending on the battery pack that go there could be either one switch or two. This one happens to have two. The switch itself and the switch that is on the battery pack.

