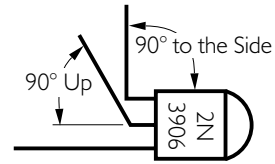


## How to “Free Form” a Solarengine

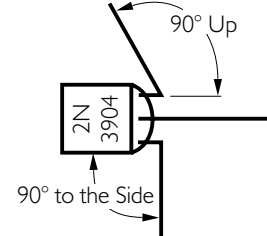
You will need a 2n3904 and 2n3906 transistor, a 2.2k resistor, a FLASHING or BLINKING LED, some 1/8” heatshrink (or use black tape), a storage capacitor (1000 to 4700µF), and a motor and solarcell (solarcell must generate 3V MINIMUM)

### 1 2N3906 Transistor



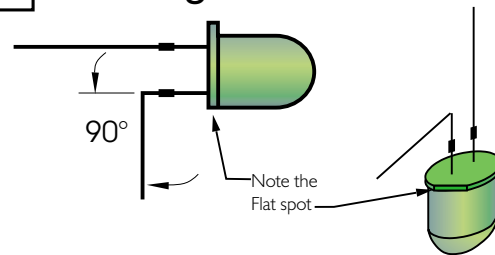
Bend the centre lead of the 2N3906 up at a 90° angle, and the left lead 90° to the left side.

### 2 2N3904 Transistor



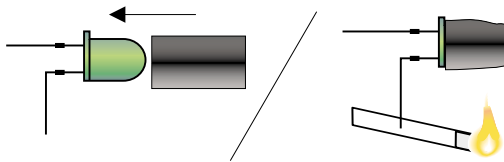
Bend the right side lead 90° up, so it points at you. Bend the left side lead 90° to the left side.

### 3 Flashing L.E.D.



Bend the leg closest the flat spot of the LED 90° to the side.

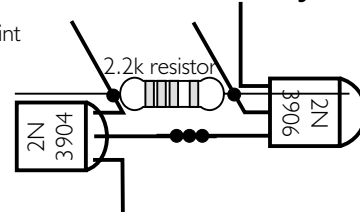
### 4 Flashing L.E.D.



Fold the leg closest to the flat spot over to the side. Then slip the small length of Heat-shrink tubing over the top portion of the FLED and shrink it down with a match or lighter (**very** important!).

### 5 Transistor Assembly

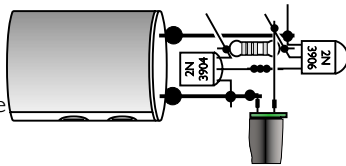
● = Solder point



Solder the middle lead of the 2N3904 to the right lead of the 2N3906 with about 5mm (3/8") overlap. Solder the resistor across the two vertical legs, and trim the excess off.

### 6 Circuit Assembly ● = Solder point

Mount the transistor assembly across the capacitor leads as shown. Make sure the striped (-) capacitor lead is on the bottom.



Solder the Flashing LED to the capacitor lead and 2N3906 as shown.

Make SURE that none of the leads touch each other except

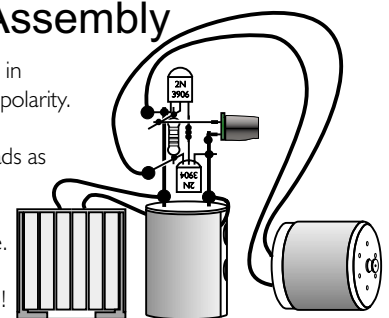
### 7 Final Assembly

Solder the Solar Cell in place, observing the polarity.

Solder the motor leads as shown.

Trim any excess wire.

You are now DONE!



● = Solder point