

Swapping 2011 Scion tC Clock LEDs and Recolor

<http://sickstick.com>

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New cars have LEDs instead of bulbs. For some reason it seems like every car manufacturer loves the color Amber, or burnt orange. Changing your LEDs can be a simple task if you are comfortable using a soldering iron. The task escalates 3x fold if you have never held a soldering iron.

What you'll need:

Essential:

Soldering iron

Solder

PLCC2 LEDs x 4 (for this tutorial)

0805 Surface Mount LEDs x 1

SickStick.com Color Change Light Gel

Small Pocket Straight Edge Screwdriver

Helpful:

Tweezers

Solder Sucker

Explanation of Tools and Background

(Note: I don't work for or am I sponsored by any of the companies I tell you about in this tutorial. I run Sickstick.com. We make and design custom decals and graphics. I chose RadioShack because they are everywhere, and honestly, I trust the name. I chose Oznum because they are extremely helpful and have a great company.)

For my soldering gun I use a RadioShack 64GH-150, which is a cordless soldering iron. It's the equivalent to a 15-watt soldering iron, heating up to 1050 degrees Fahrenheit. It eats batteries but you should only need to use 4 AA for this project. Also, using this type keeps your heat under control, you don't want to use too high of a power soldering iron because it will get too hot and burn your LEDs, board, or burn the resin out of the solder. It's available via this link <http://www.radioshack.com/product/index.jsp?productId=2911246>.

For my solder .062" solder, also sold at RadioShack. Its good solder works fine for wire and small electronics work. Its available here <http://www.radioshack.com/product/index.jsp?productId=2911246>

For your LEDs there are many different suppliers, for my PLCC2 and LEDs though I order everything except for wedge bulbs from Oznum.com. These guys have great service and support. The link for the LEDs is here <http://www.oznum.com/plcc-2>

A small flat edge is used to remove the screw and take apart the clock cluster.

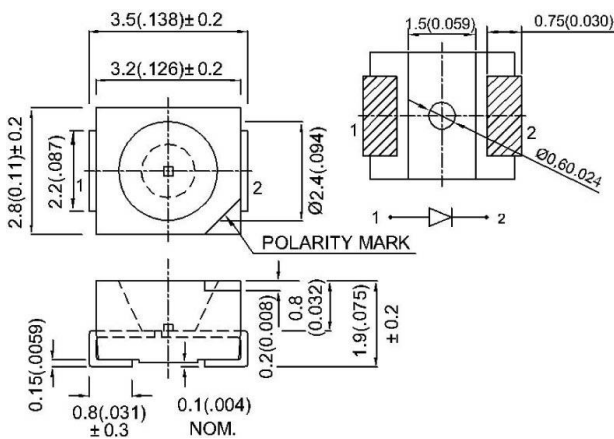
Two things that will help you but are not needed are a pair of tweezers to hold your LEDs while you solder them down and a solder sucker to remove the old solder. I will explain how to remove the LEDs without either.

PLCC2 LEDs will only work one way, meaning the electricity has to flow a certain way or the LED will not work. LED is short for Light Emitting Diode, the definition of a diode is "In electronics, a diode is a two-terminal electronic component that conducts electric current in only one direction." Electricity still flows through them but they will only light up if you have them installed right. If you get the flow backwards the LED will not work. If this happens do not worry, the LED is still good you just need to turn the LED around. On the 2011 Scion tC there are arrows on the circuit board that point in the direction the notch in the LED should point. The notch in the PLCC2 should be pointed in the direction of the arrow, for example

For an arrow point to the right, >, the notch would be in the lower right hand corner

For an arrow pointing to the left, <, the notch would be in the upper left hand corner.

I have included a tech drawing from Ozniium.com showing the polarity of the LEDs.



The clock in the new 2011 Scion tC and many other cars is a vacuum florescent display (VFD). It is not possible to change the color of this display through LED modification. Changing this color is accomplished though special light filters called lighting gels. I did the research for this when I first bought the car, you can settle for the bluish green or amber if you like but if you're like me you don't want to be normal. I the different lighting gels from my website <http://sickstick.com> under the "Scion Clock ReColor" category. These are reasonably priced and make it look a lot better.

With This background info and the correct tools you should have no problem replacing your LEDs.

2011 Scion tC Clock LED Swap



2011 Scion tC Clock Bezel

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Step 1:

Pop loose the Radio/Clock Bezel. This is done by placing fingers under the radio bezel and lifting up and pulling towards you. Be careful not to crack this piece. The Clock assembly is attached to this bezel! There is only one plug behind the clock, unplug this and your bezel is free.



Step 2:

Remove the clock assembly from the bezel there are clips that hold the clock assembly onto the bezel using a straight edge screw driver gently pull the tabs away from the clock assembly while applying pressure to the front of the clock display to remove the assembly. The location of the tabs are shown in the picture.



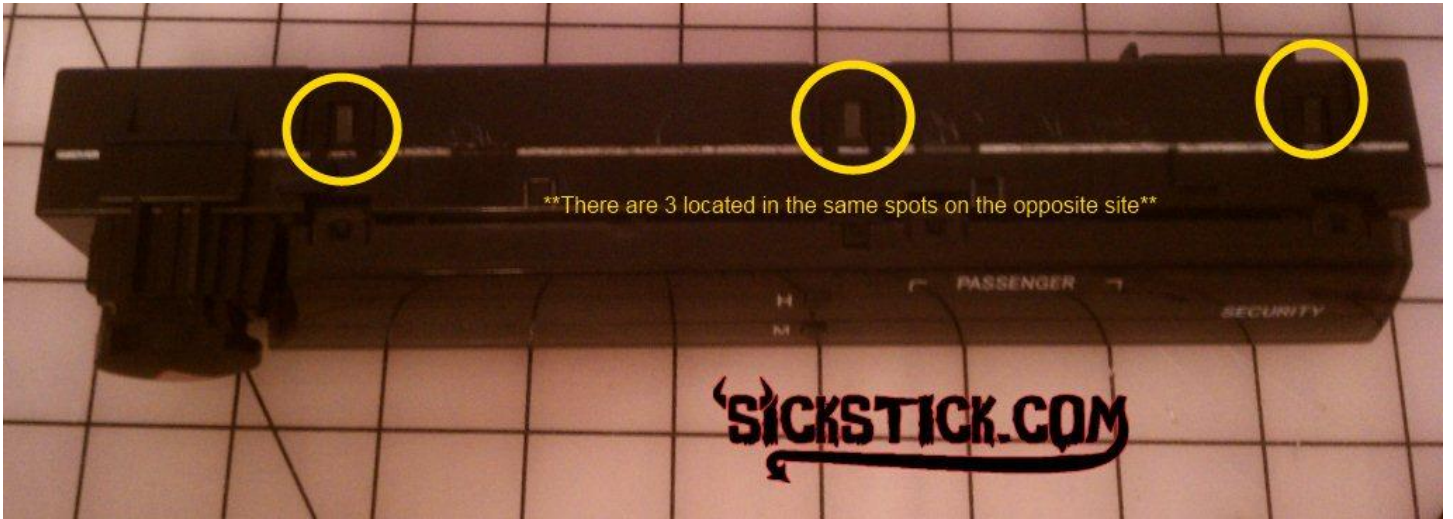
Step 4:

With the module out remove the two screws shown in the picture.



Step 5:

The clock assembly is held together with tabs also, they are shown in the picture. Gently pull these away from the assembly while pulling the pieces apart.



Step 6:

Remove the board from the front cover by pulling on the board and cover apart. Using your index finger and thumb pull the board from directly behind the caution signal button. The caution signal button is the only thing holding the board in place. This should come apart fairly easily, DO NOT USE TOO MUCH FORCE YOU WILL BREAK THE BOARD. The front cover has two buttons with green plastic caps with black dots (these are conductive surfaces!!). Do not loose these or you will not be able to change the time). These are just sitting in the cover so if they fall out put them back into place and make sure they are flush on the front of the clock, the green pads have tabs on the back the slide into the holes on the back of the buttons.



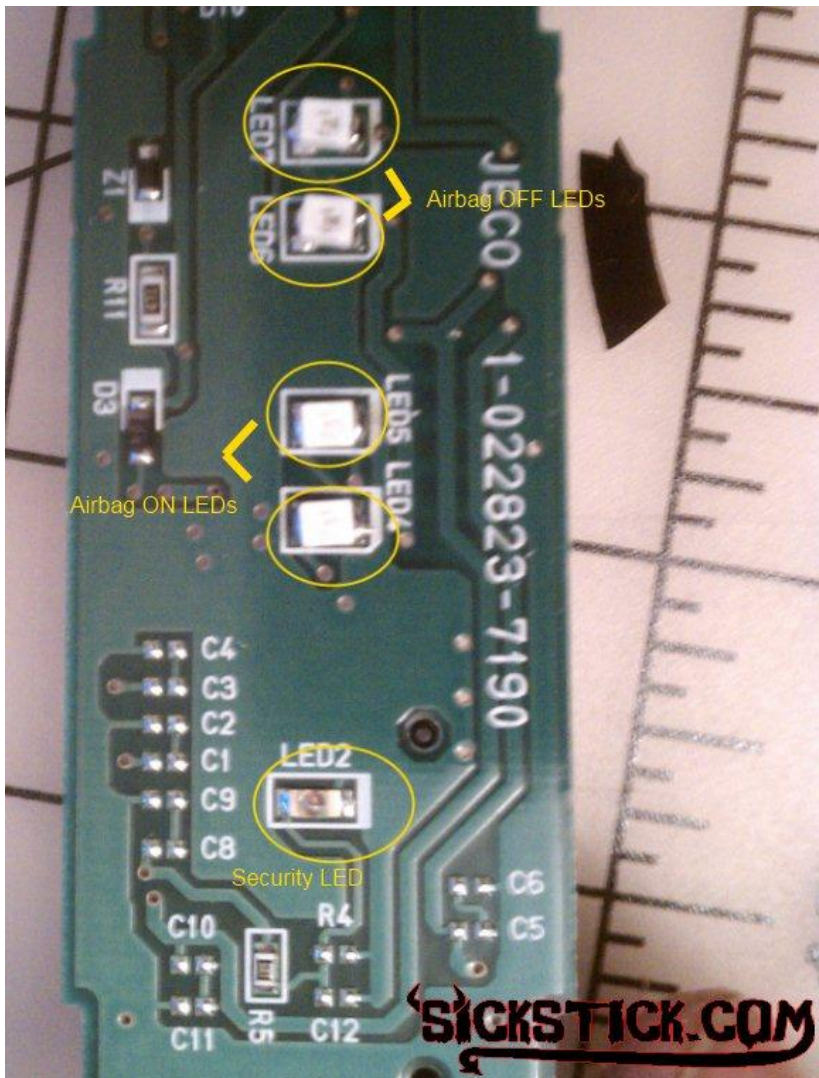
I apologize for the fuzzy picture, my camera does not like taking close ups.

Step 7:

Viola! You have removed the circuit board and now can replace the old boring LEDs. The circles in the picture indicate what LEDs we will change and what they do.

Using your soldering iron heat one side of the LED, then the other side. Do this back and forth apply upwards pressure to remove the LED from the board. Do not apply too much pressure as you can rip the solder pad from the board. I'm writing this assuming the reader has a little knowledge of soldering. A solder sucker or desoldering braid would be ideal for the removal. Once you have the LED removed, solder the new LED in heating up the solder left on the pad (or new solder if there is not enough left) and pushing the LED into it. If you used a solder sucker you will need to add more. Tweezers help a lot at this point to hold the LEDs still.

Use PLCC2 for the airbag indicators and the 0805 LED for the security light. If you would like the "AirBag Off" to no longer light up installing the LED reverse or just leaving it out fixes this. It gets a bit annoying sometimes. **When removing the LEDs you'll notice these are 4 point PLCC2 LEDs, soldering in your new LEDs be sure each side has two points soldered in or it will not light up.**



Optional Step 8 for Clock Recolor:

If you are going to change the clock color you need to remove the stock filter from the front of the clock display. The circle in the picture indicates where the stock light filter is. Using a screw driver, pop this out of its spot. It comes out relatively easy.



This is what the filter looks like removed:



If you leave this out and reassemble the front cover has a clear spot. The color that the display puts out is called a natural white, which to me looks like aqua or light green or blue. I don't like the color at all; it reminds me of an old VCR. These displays are cheap and I'm sure that's why Scion chose to go with these. Aside from reconstructing the display and changing the hot cathodes and anodes and resealing under high vacuum pressure, the only way to change the color is using a filter. Believe me I was about to try changing the anode(phosphor) it's a complicated process. Using a light filter from <http://sickstick.com>, insert the new filter where the old amber one was placed, leaving the stock amber one out. Using two pieces of scotch tape to tape the top of the filter to the top of the cover and bottom of the filter to the bottom, careful not to get too much tape on the surface of the filter.



This is a simple and cheap mod and looks a lot better than the stock amber or regular aqua-whatever-color.

REASSEMBLY:

Follow Steps 1-6 in reverse order and reassembly is simple. Take special care to not get finger prints on the clear cover. Also make sure you don't lose the green contact pads for your time.

So you go from this:



To This!

