

## Swapping LEDs 2011 Scion tC example

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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 19 (for this tutorial)

Small Pocket Straight Edge Screwdriver

Helpful:

Tweezers

Solder Sucker

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### 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 lighting 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 gauge cluster.

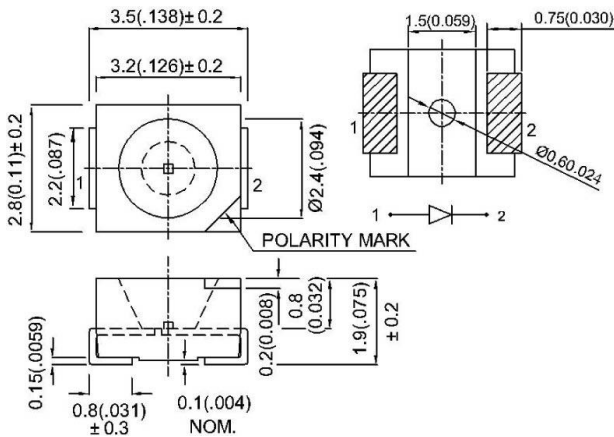
Two things that will help you but are not needed are a pair of tweezers to hold your LEDs while you solder them down and a solder sucker to remove the old solder. I will explain how to remove the LEDs without either.

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 Ozniun.com showing the polarity of the LEDs.



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

## 2011 Scion tC Gauge Cluster LED Swap



2011 Scion tC gauge cluster

For this tutorial make sure you have your steering wheel in the lowest possible position and pulled all the way toward the driver's seat. The 2011 has a telescoping/tilting steering wheel.

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a safety feature, create a hazardous condition, harm or even kill yourself or others. Examples would be the vehicle failing on you, getting an electric shock, or disabling an airbag to name a few.\*\*

### Step 1:

Pop loose the side view mirror controls and blank button panel as shown in the picture. This does not have to be completely removed. If you feel the need to remove it completely, there are just plugs with clips holding it in place after it is popped loose from the dash.

Place fingers under the panel and pull toward you and up as shown.



### Step 2:

Pop loose the Radio 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! If you must remove unplug the clock/air bag/security display from the rear of this panel. Otherwise the bezel can hang with no problems.



**Step 3:**

Remove the gauge cluster bezel, by pulling towards yourself, sitting in the driver's seat, on the sides of bezel pointed out in the pictures. Then lifting up on the bezel.





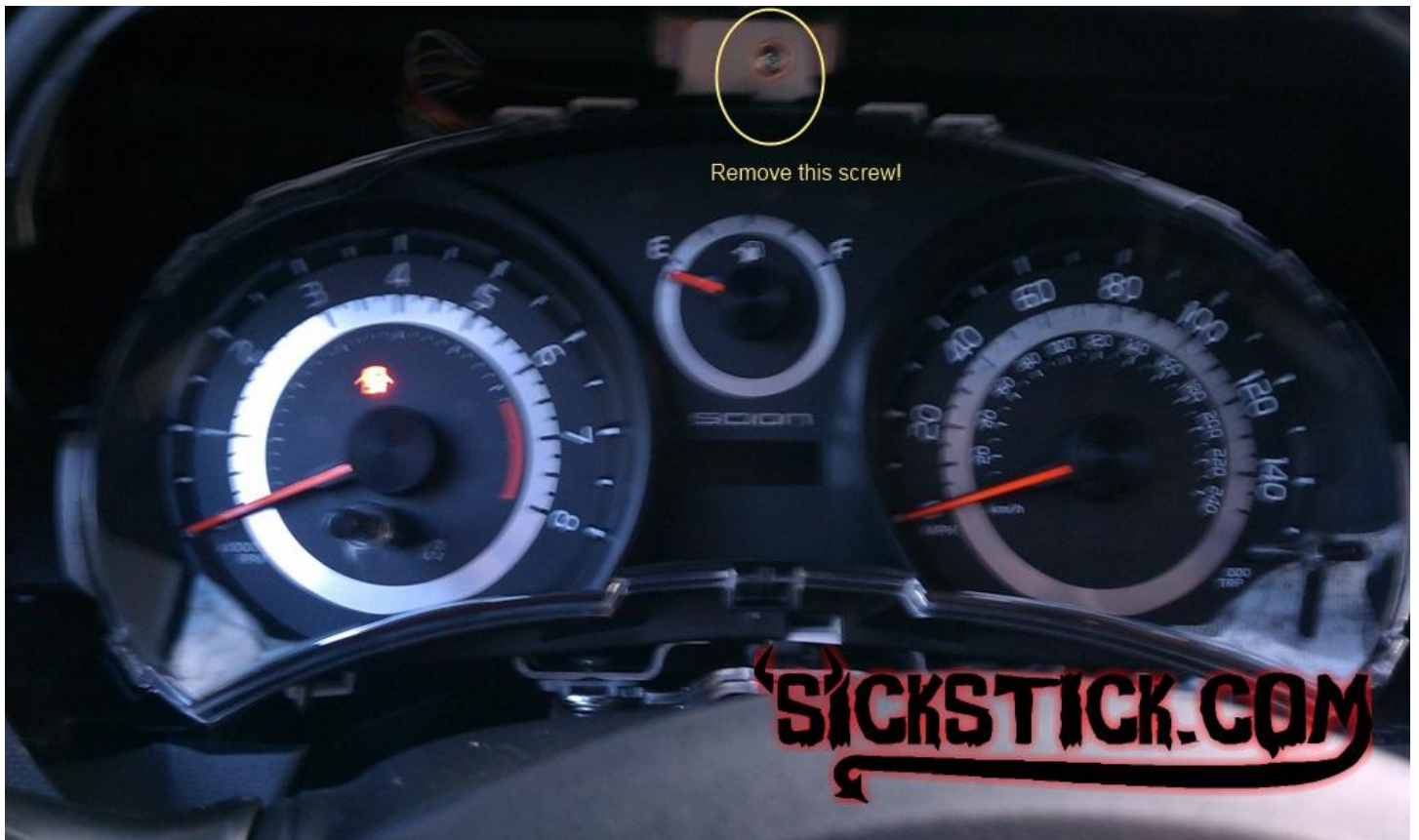


Pull up after you have pulled the bezel away from the dash. The bezel should be out now.



**Step 4:**

Remove the Screw from the dash gauge cluster to free it from the car.





**Step 5:**

Pull forward on the tabs labeled "Pull". You will feel almost a pop when the cluster is free.



Once the cluster is loose unplug the wire harness on the back and the cluster is out.





**Step 6:**

Remove the plastic front covers by applying pressure to the plastic clips shown in the picture and pushing up on the clips.



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**Step 7:**

Remove the needles by pulling up on the needles with the cluster laying flat. The needles should be zeroed when removed from the car.

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**Step 8:**

Carefully lift up the plastic translucent cover, careful to make sure you do not bend it. It is held in place by little plastic catches shown in the picture.



Remove the brightness adjustment knob by pulling it off the assembly.



### Step 9:

Remove the white translucent back cover from the cluster, the location of the clips are shown in the pic; you should be left with a circuit board attached the front white plate.



### Step 10:

The only thing holding the board on is the connections to the front LED display. BE VERY CAREFUL AS YOU CAN CRACK THIS DISPLAY IF YOU DO NOT TAKE CARE!!! Remove the circuit board from the front plate by carefully pulling part the spots indicated in the picture.





## Step 11:

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.



Change the LEDs marked in yellow to change the gauge color. Change the LEDs marked in red to change the display color. Change the LEDs in white to change the Needle color (note unless doing white you will need to remove the orange insert in the needles, this is not shown in this tutorial). The fuel gauge uses the needle color for the gauge color.

## REASSEMBLY:

Follow Steps 1-10 in reverse order and reassembly is simple. Take special care to not get finger prints on the clear cover.

### Needle Reinstallation

When replacing the needles take extreme care not to push them too far down because they will get stuck on the black cover. Also make sure you put them back on the settings they were when you removed them from the car. If you do not put them back or accidentally turn the needles the tachometer, speedometer, or Fuel could be off. If this happens and you are not certain where the needles go, with the needles off install the board back into the car with the clear cover off, turn the key to the on position but do not start the car. This zeros the tachometer and speedometer; you can now install the needles on "0", DO NOT INSTALL THE FUEL NEEDLE AT THIS POINT!!!!!! You can install the fuel needle two ways if you mess up the setting. With the power to the board off, after you have zeroed the tachometer and speedometer, install the fuel needle approximately 1/8<sup>th</sup> of an inch to the left of the "E". The other alternative is to fill the gas tank and with the power to the board on install the needle at "F" it is fine for the needle to be a 1/8<sup>th</sup> to the right of the F if you feel the need for this.

So you go from this:



To This!

