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Installation tutorial for 3 Mode PS3 Rapid fire Microchip for Sixaxis and Dualshock 3 controllers

www.PS3RapidFire.com

ATTENTION:

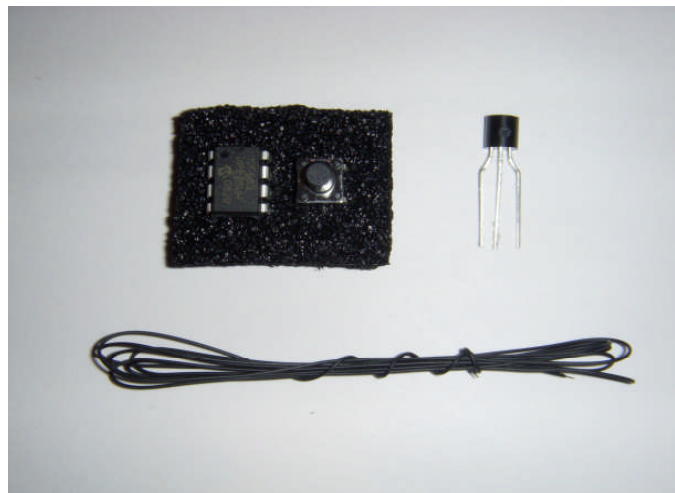
Proceed with installation of this kit at your own risk. Installation requires soldering of small wires to tiny and confined solder joints. I will not be held responsible for any damage to you, your controller, or any of your equipment during the installation of this kit.

Tools needed:

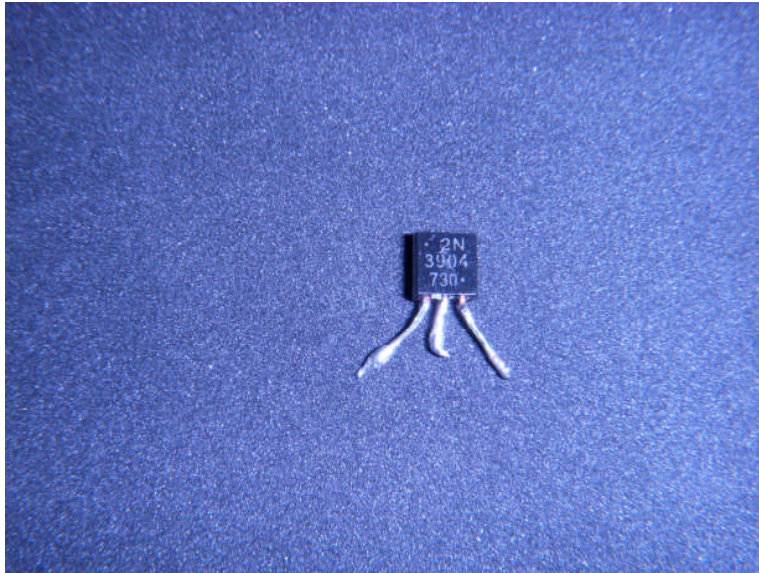
- Small Phillips head screwdriver
- Soldering iron (A cheap 15w soldering iron from radio shack will do the trick)
- Solder (Rosin core solder from radio shack works best)
- Wire cutters
- Hot glue gun
- 3/16 drill bit (or something close to 3/16)

MATERIALS:

- You should have the following items included in your kit
 1. (1) 8 pin PIC 12F683 microcontroller
 2. (1) 2N3904 NPN transistor
 3. (2) tactile switches
 4. 30 AWG Kynar Wire

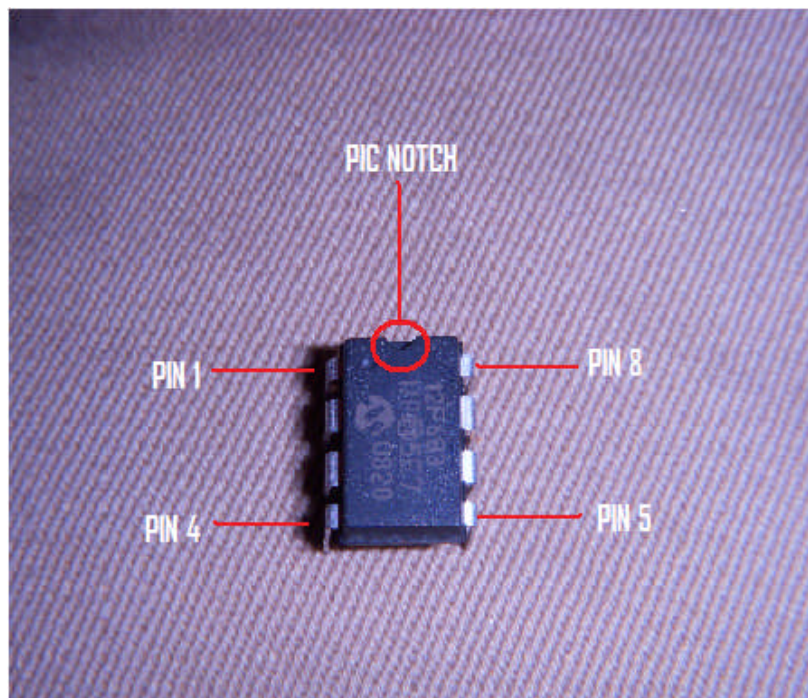


Preparing the NPN Transistor

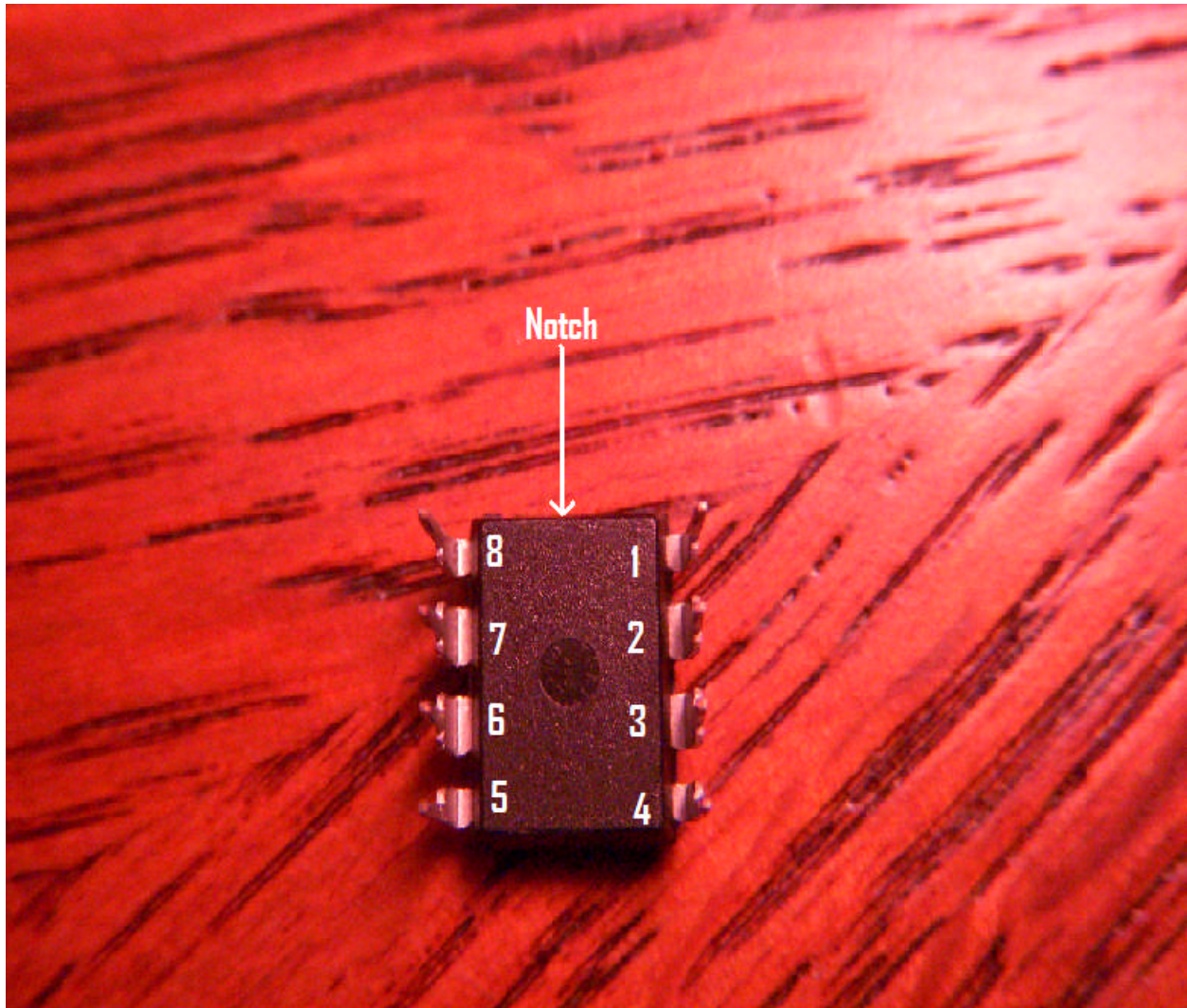


You are going to want to take the NPN transistor and place it on its round side with the numbers facing up at you. You will get the transistor with all pins at full length. To make the NPN more convenient, you may want to cut all 3 pins in half from their original length.

Preparing the Microcontroller



Take a look at the above picture of the PIC microcontroller. When placed on its legs, the “live bug” position, you can see where the notch is located. With the notch facing away from you, the pins are aligned as above. Use the above picture as reference for the wire setup for the chip a little later.



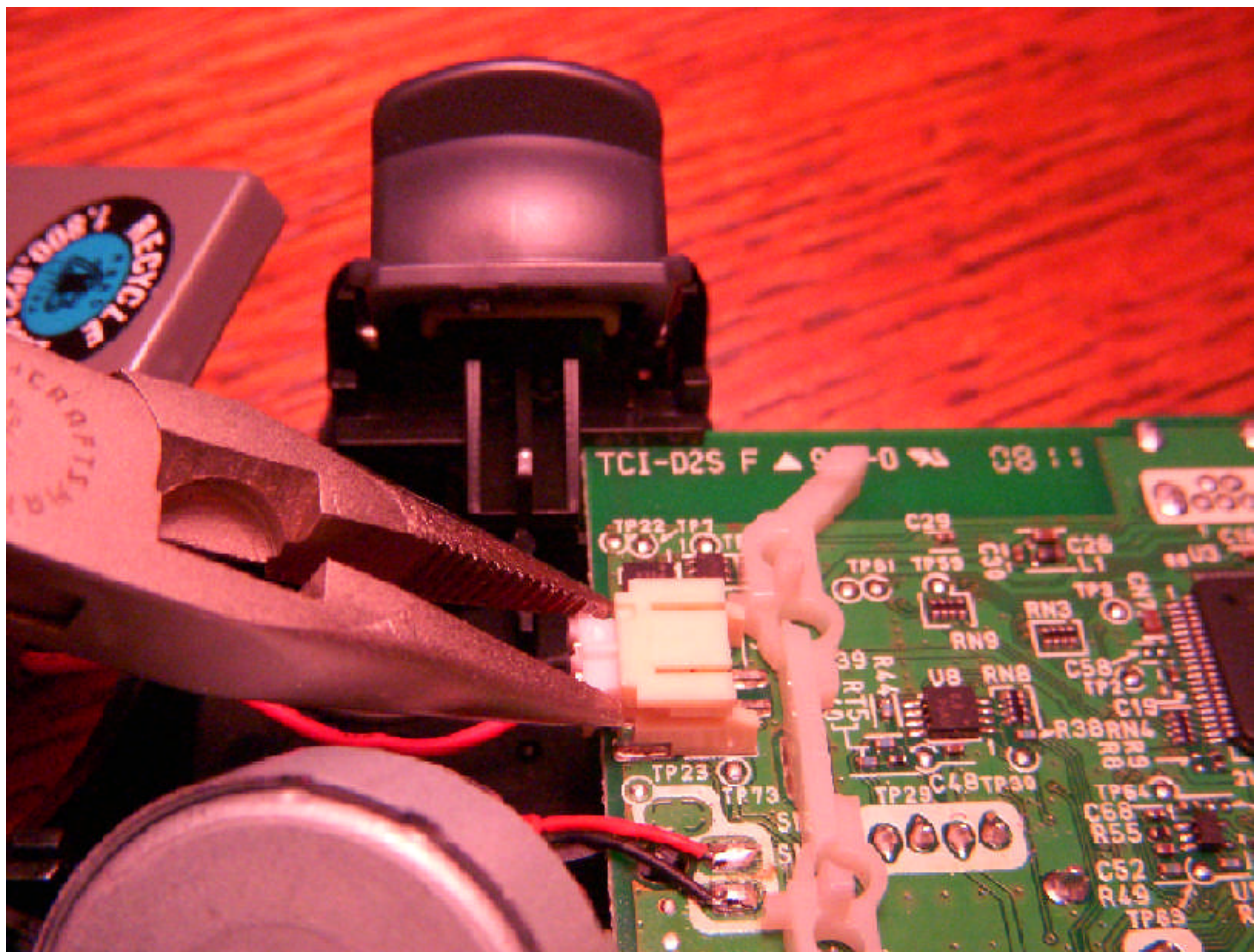
Above is a photo of the chip in the “dead bug” position, with the pins facing upward. Notice the pin alignment. This is an important photo to keep in mind throughout the rest of the install. Use this photo as reference for when you are soldering the necessary wires to the appropriate pins. The above photo shows the pin alignment when chip is placed on its back and the notch on the top is facing AWAY from you. Please study this photo well.

Opening the Controller

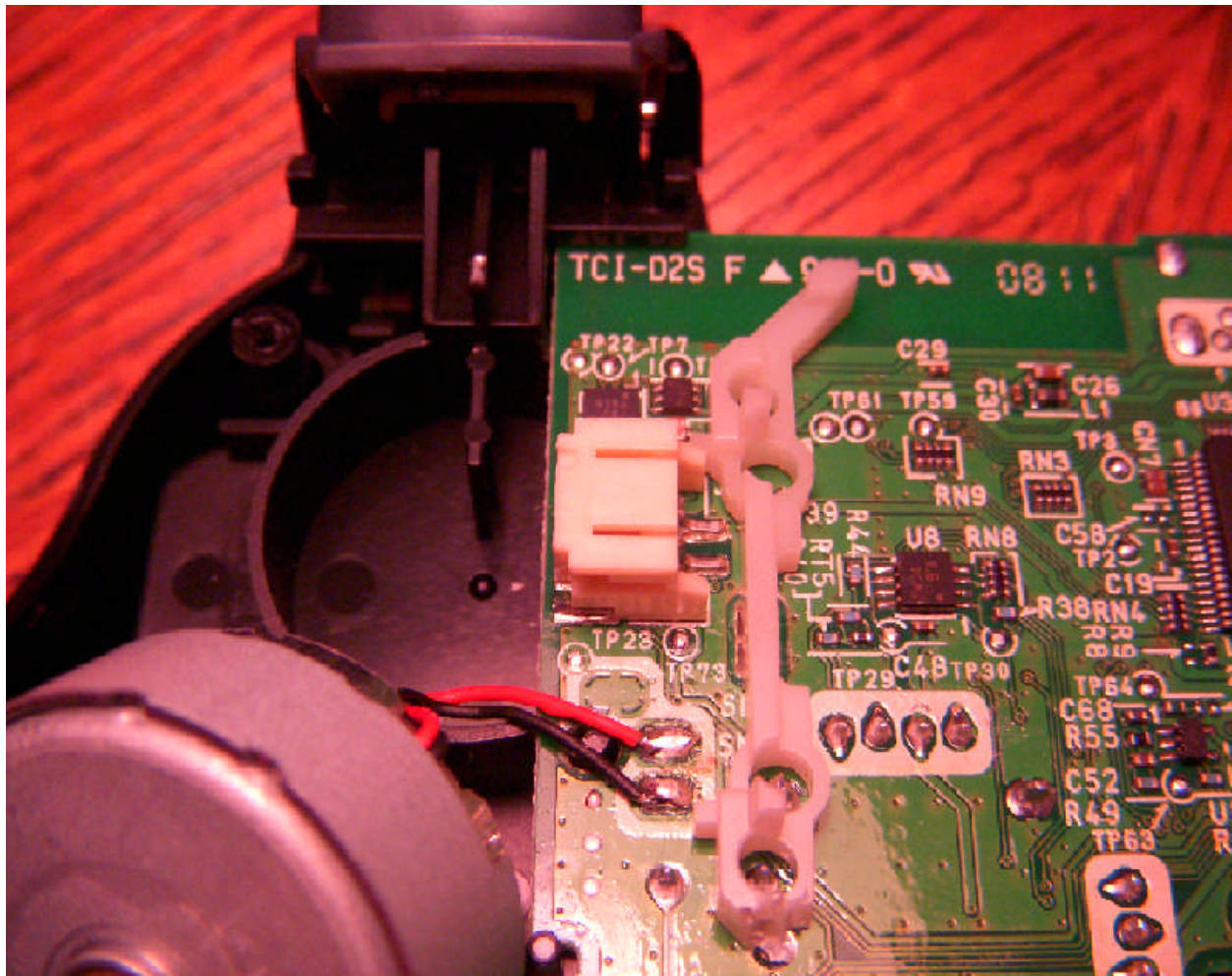
1. Now it's time to pop open that controller

Remove the 5 screws located on the back of the controller. The controller also has a clip holding it together in between the two thumbsticks at the bottom of the controller. Squeeze the two controller pieces at that point to unclip.

Battery Removal



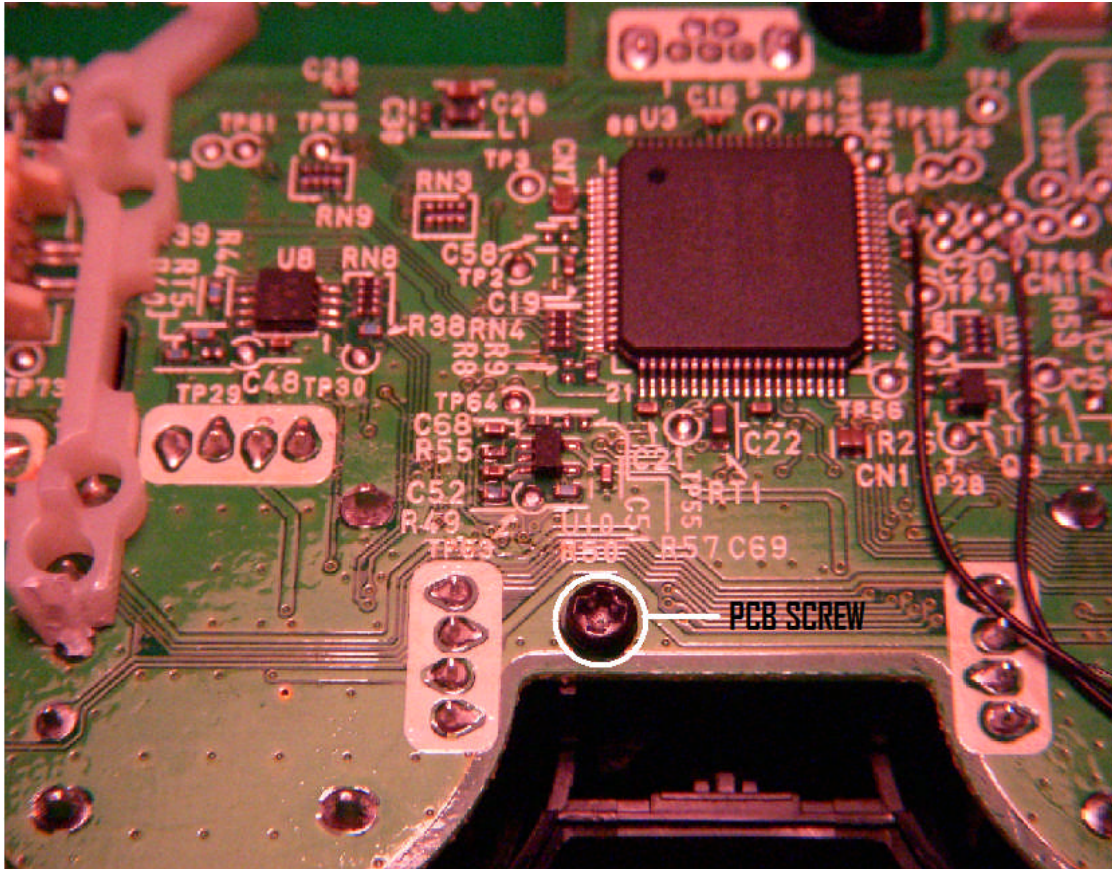
Before you do anything with the controller, we are going to want to remove the battery. Grab a small pair of pliers and grab onto the little white battery connector piece. Pull slow and evenly so you do not damage the connector or the battery wires.



Above is a photo of the battery fully removed. Now that the battery is out of the way, we can proceed with the installation.

Accessing the LED on the PCB

The first thing we are going to do is remove the controller PCB from the front shell. To do this, we must remove the tiny screw holding it in place. Please take a look at the photo below. The photo shows the location of the screw when you have the backing removed and you are looking at it directly from above. You must remove this screw and then slowly shimmy the PCB out of the front part of the shell. Be VERY CAREFUL!!

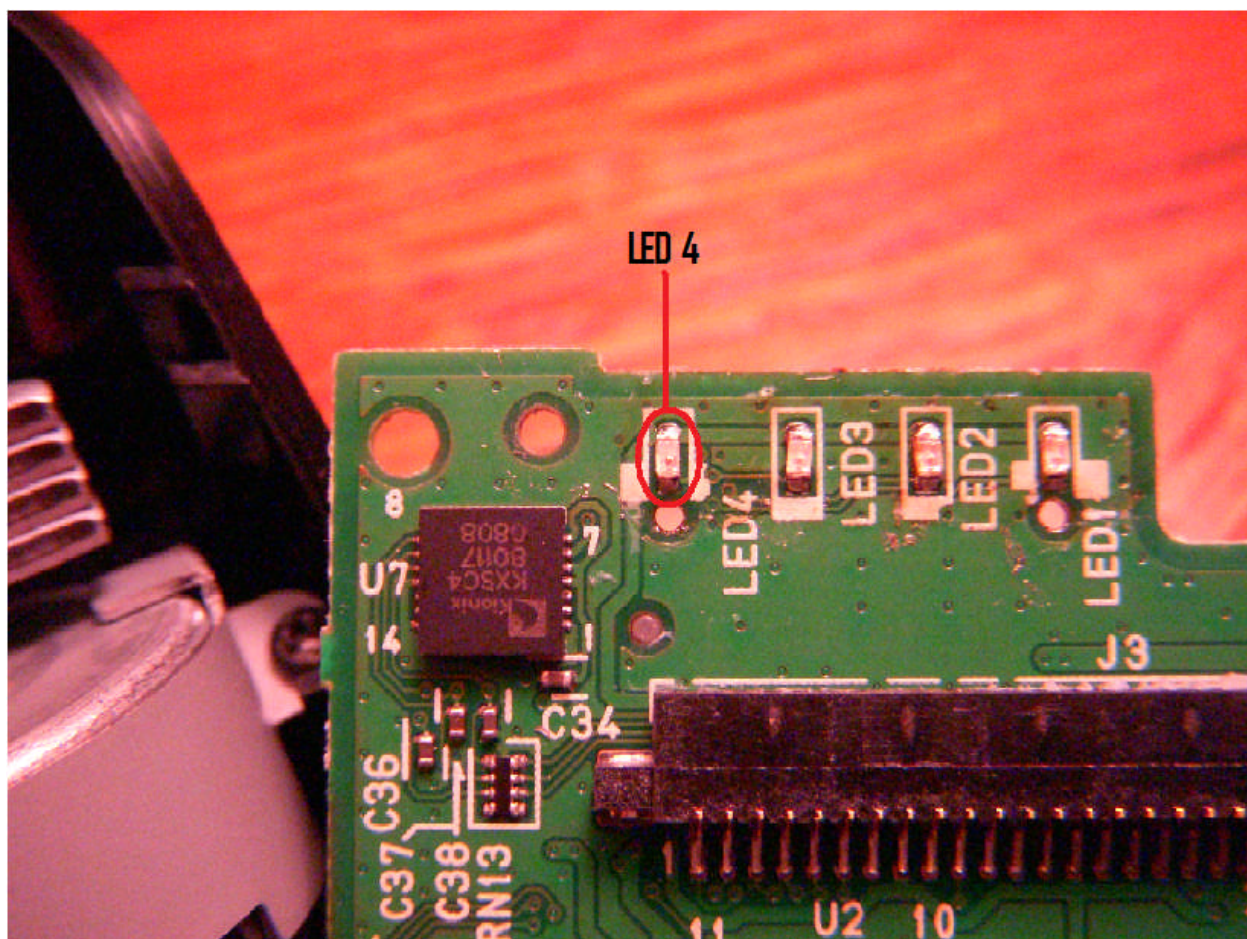


Next we will look at the front of the controller PCB after you have removed it. The front of the PCB can be identified by the position of the thumbsticks.

The thumbsticks will be facing you when looking directly at the PCB See the photo below.

When looking directly at the PCB, it is fairly easy to locate the LED's. Have a look at the photo. Sony has done us a favor by labeling the LED's. Locate "LED4".

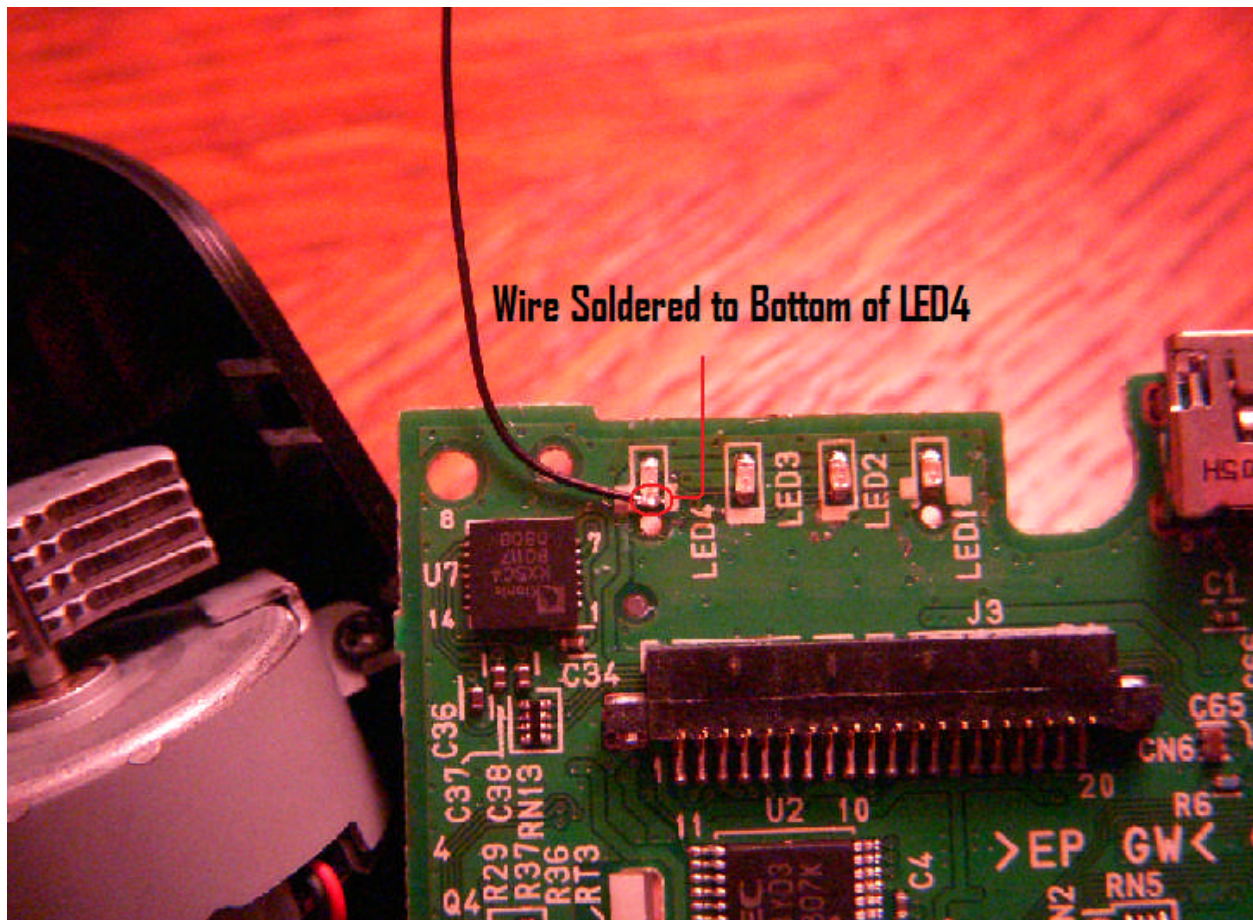
SEE PHOTO ON THE NEXT PAGE!!!



We will start off the install process by soldering the wire to the player 4 LED in order for the mode indicator to be active. With LED 4 located above, you are going to want to cut yourself a roughly 3 inch piece of wire. Strip some of the insulation off the ends of the wire, exposing the metal wiring.

Now, you are going to solder the wire you just prepared to the BOTTOM of the Player 4 LED. Apply a little dab of solder to the bottom of the LED 4 to give you something to solder the wire to. Be careful when applying the solder not to leave the soldering iron close to the LED for too long as too much heat exposure could melt it and damage the LED.

Solder the wire to the BOTTOM of LED 4 as shown on the next page. After you get the wire soldered to the LED, carefully place the PCB back into the controller, making sure everything lines up perfectly. Once everything is lined up, place the holding screw back in and screw it in tightly.

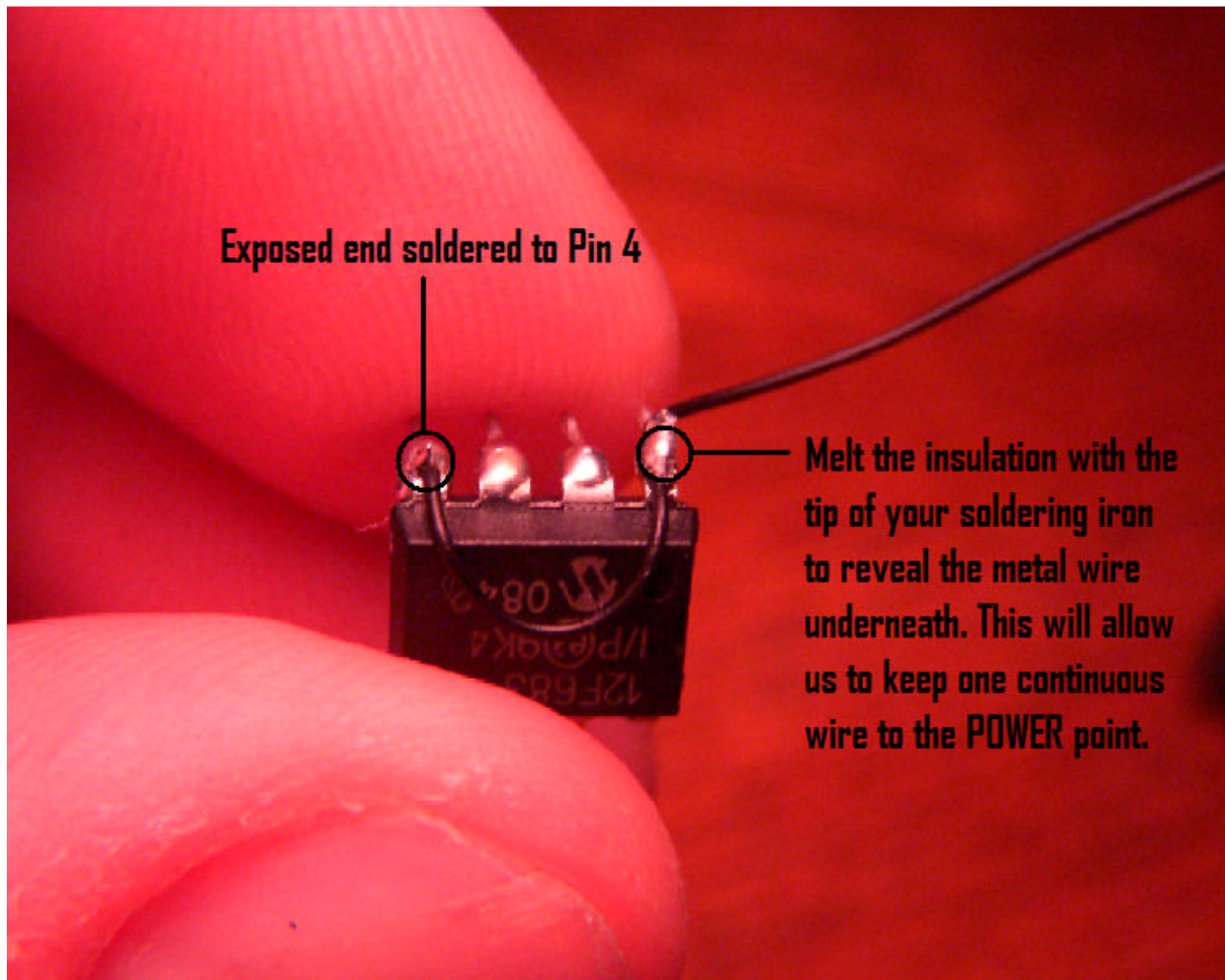


Microchip Setup

Now it is time to get our necessary wires soldered to the microchip. Place the microchip in front of you with the notch on the top facing AWAY from you. Now, flip the microchip onto its BACK so that the pins are facing UPWARD (NOTE: Refer to photos on pages 3 and 4 if you don't know what I'm talking about).

The **First thing** we want to do is locate Pin 1 and Pin 4 on the microchip. Our first part of the install is going to require us to solder a wire, about 3-4 inches in length to pins 1 and 4.

Take a look at the photo on the next page. You are going to strip one end of the wire to expose the metal. Then, you will solder that exposed end to Pin 4. In order to make this more efficient, we can install this part as one continuous wire from Pin 4, through Pin 1 and straight to the POWER point on you controller's PCB. See the photo below and follow the description.



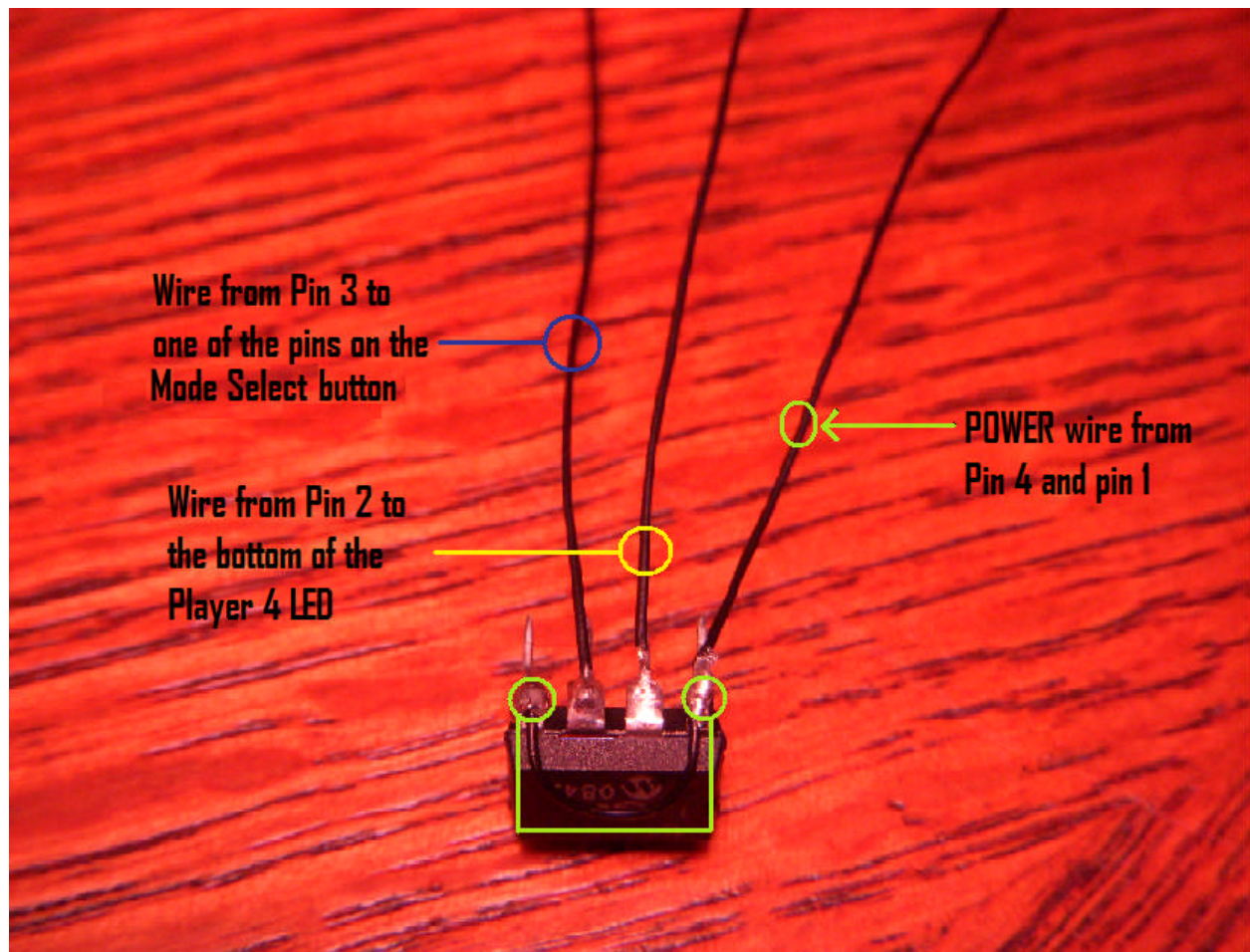
Take a look at the photo above. This shows I have soldered an exposed end of the wire to Pin 4 as stated earlier.

Now, I loop a small part of the wire under the controller to keep it out of the way. In order to keep one continuous wire from Pin 4 to Pin 1 and then to the POWER point on the board, you must melt off some of the plastic insulation to reveal the metal wiring. Once the metal wiring is exposed, you can then solder the wire directly to Pin 1 as shown above.

Now that you have soldered a continuous wire from Pin 4 to Pin1 on the chip, you should have excess wire left. This excess is needed to connect the chip to the POWER point on the board.

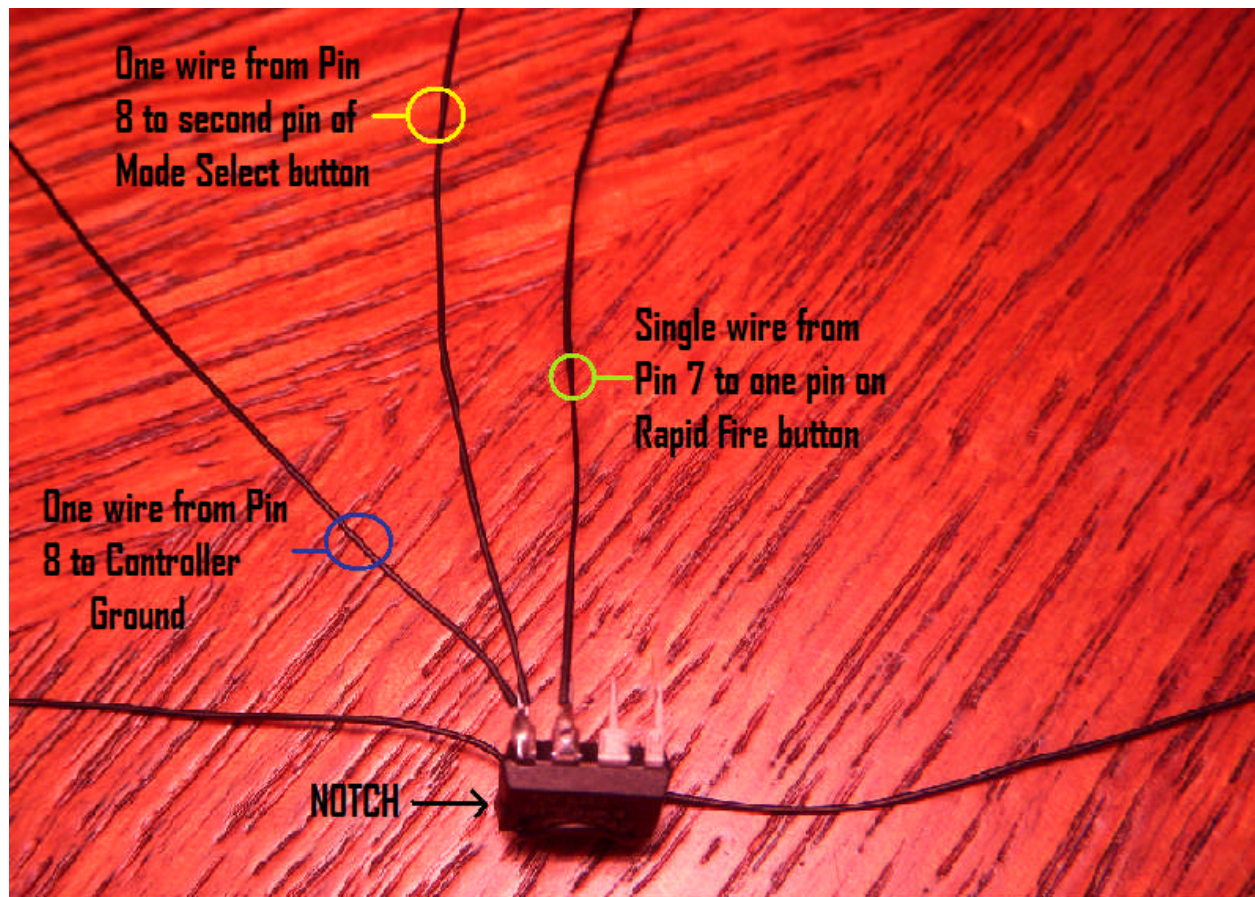
If you have gotten this far, you have successfully completed the first step. Let's move on to setting up the rest of the wires on the microchip!!

Remainder of setup for pins 1 – 4



Solder wires to the correct pins as you see in the above photo. We have already installed the power wire in the previous step. The wire from Pin 2 to the LED has already been installed into the LED, so this is just for reference. The only new wire we see right now is the wire coming from Pin 3 and going to one pin on the Mode Select button (to be installed later). The wire coming from Pin 3 should be about 3-4 inches long in order to reach across the controller and allow it to close comfortably.

Setup for Pins 7 and 8



Study the above photo. Notice there are TWO wires coming from Pin 8 of the microchip. One wire needs to be only 2-3 inches, as that one is going to be soldered to the GROUND point on the controller. The other wire needs to be around 3-4 inches long and is going to be soldered to the remaining pin on the Mode Select button (to be installed). The last wire to be soldered to the chip is the wire to Pin 7. This wire should be around 4-5 inches long and will be soldered to one of the pins on our rapid fire button (to be installed).

Identifying Controller PCB

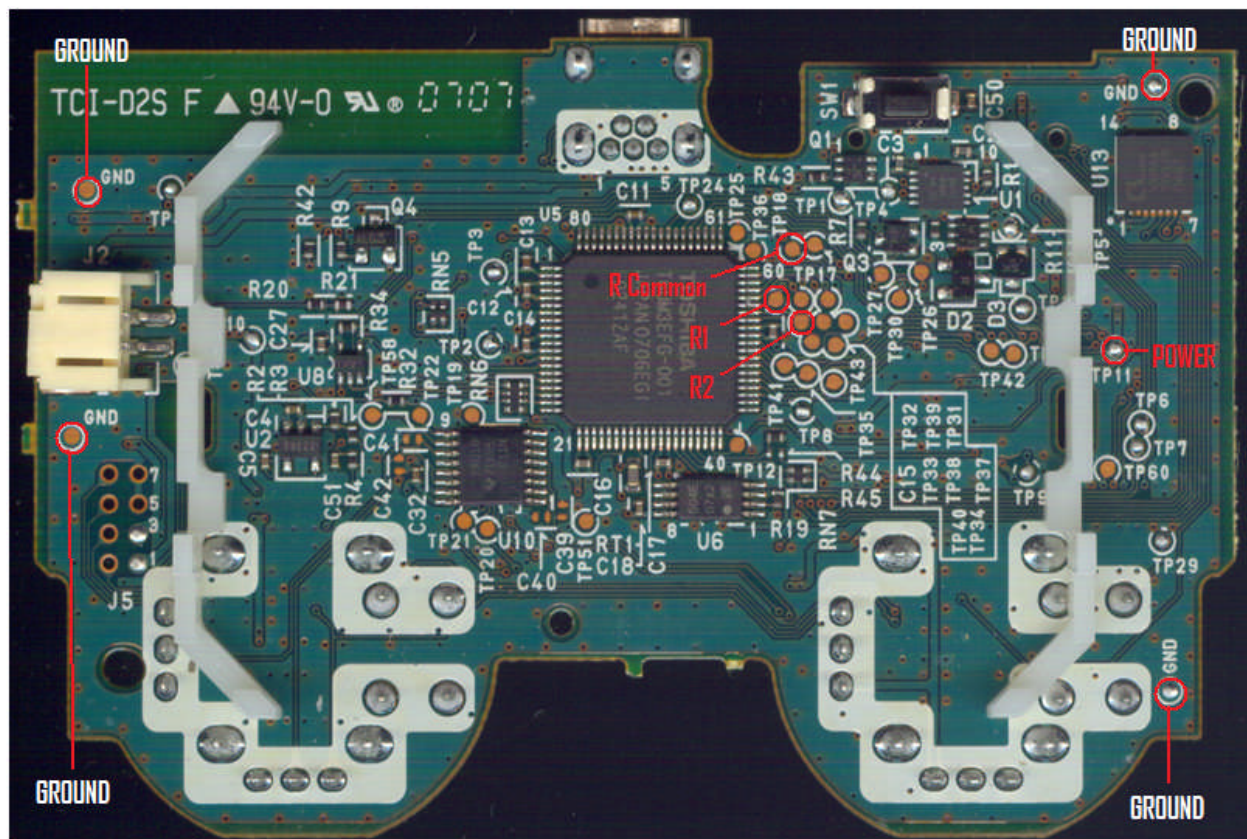
Identifying which controller you have (Old Sixaxis or Dualshock 3/Newer Sixaxis) – Photos Courtesy of RDC on Xbox-Scene.

Note: The **old sixaxis PCB** can be identified by the 8 solder points located directly under the plug. Also note, this controller style only has 3 vertical and horizontal solder points for the thumbsticks.

Note: The **new sixaxis/dualshock 3 PCB** can be identified by the 4 vertical and horizontal solder points for the thumbsticks.

PLEASE TAKE A CAREFUL LOOK AT THE FOLLOWING DIAGRAMS. THESE WILL BE WHAT YOU USE TO IDENTIFY WHERE YOU NEED TO SOLDER YOUR WIRES TO.

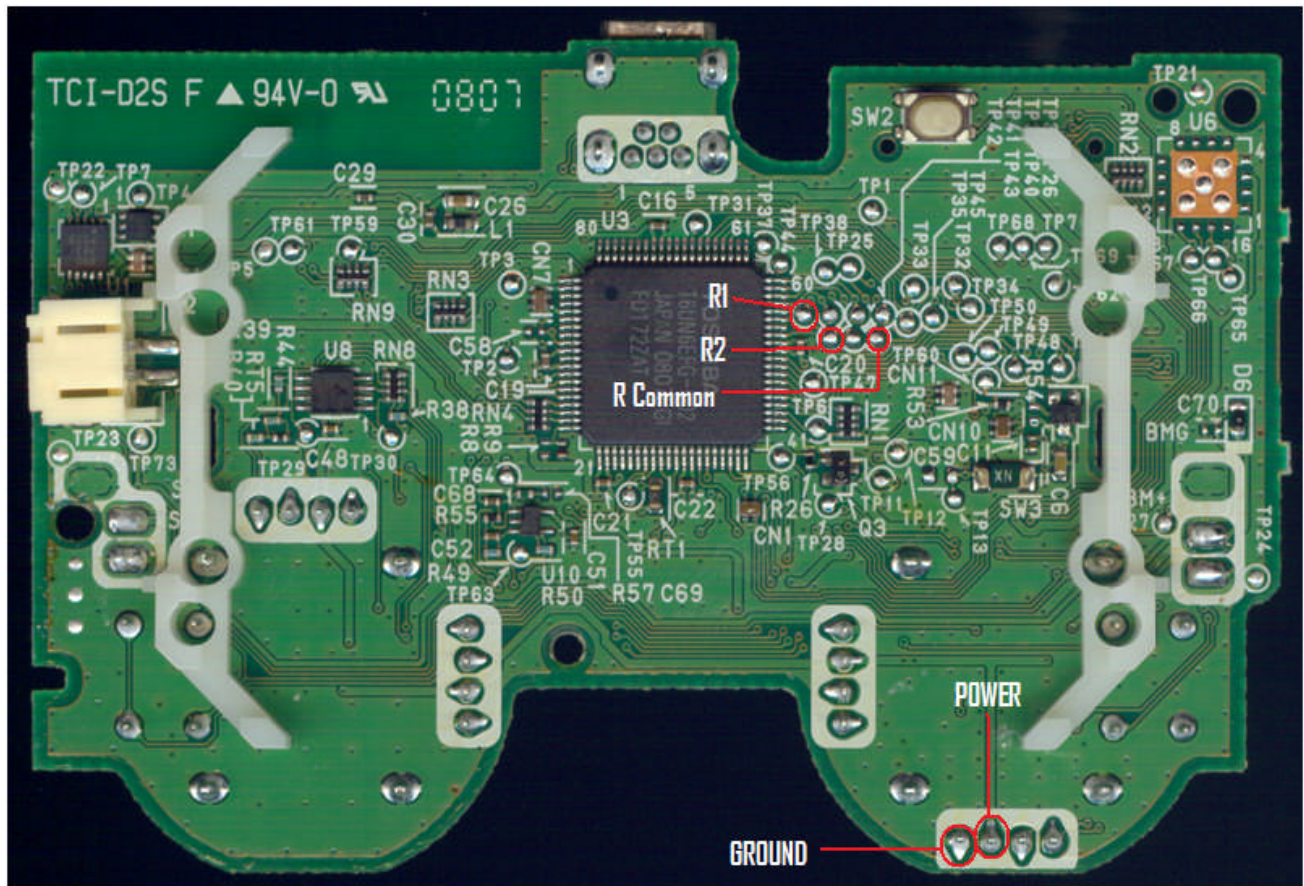
OLD SIXAXIS PCB



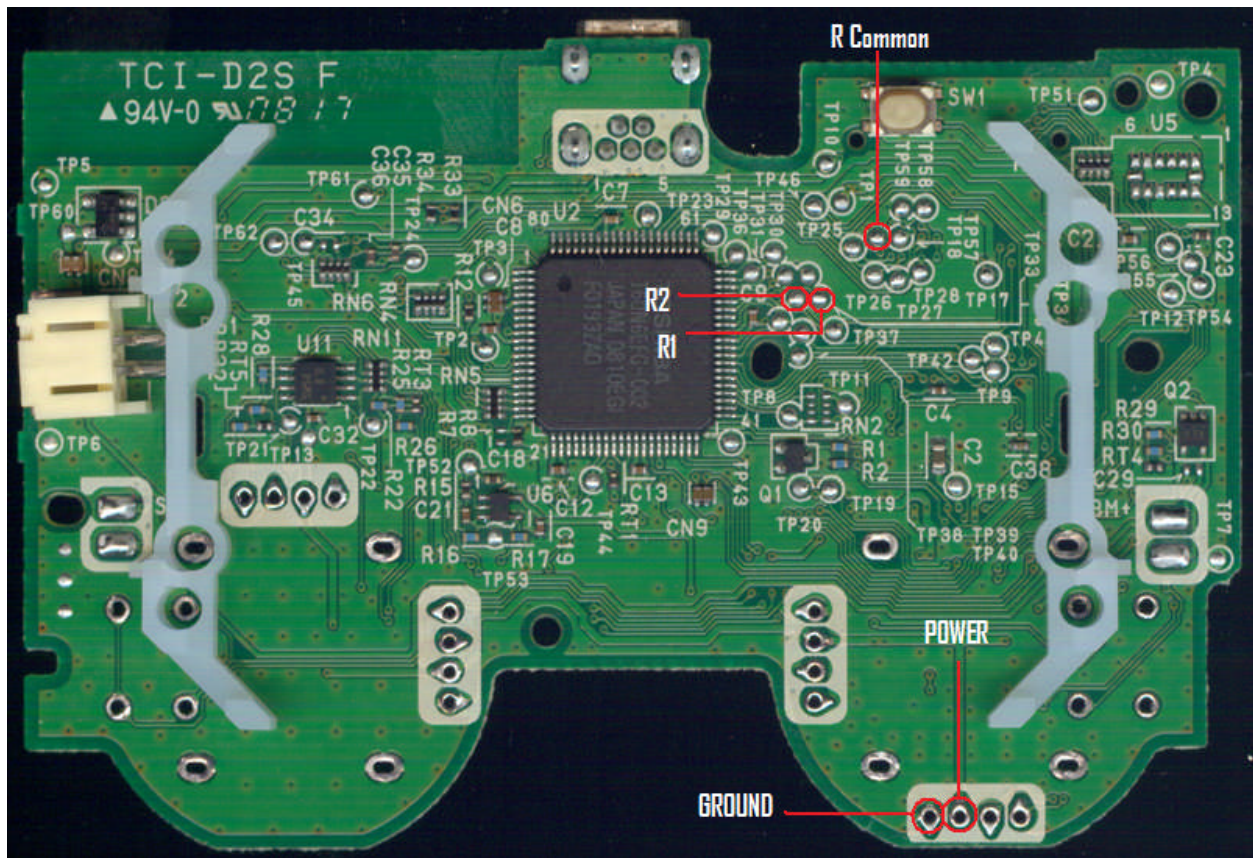
The above picture shows the pinout for the very first Sixaxis version controller. There is only one power point, but there are multiple ground

points. You can use whichever ground points you like as they all work the same.

NEW SIXAXIS/ OLD DUALSHOCK 3 PCB



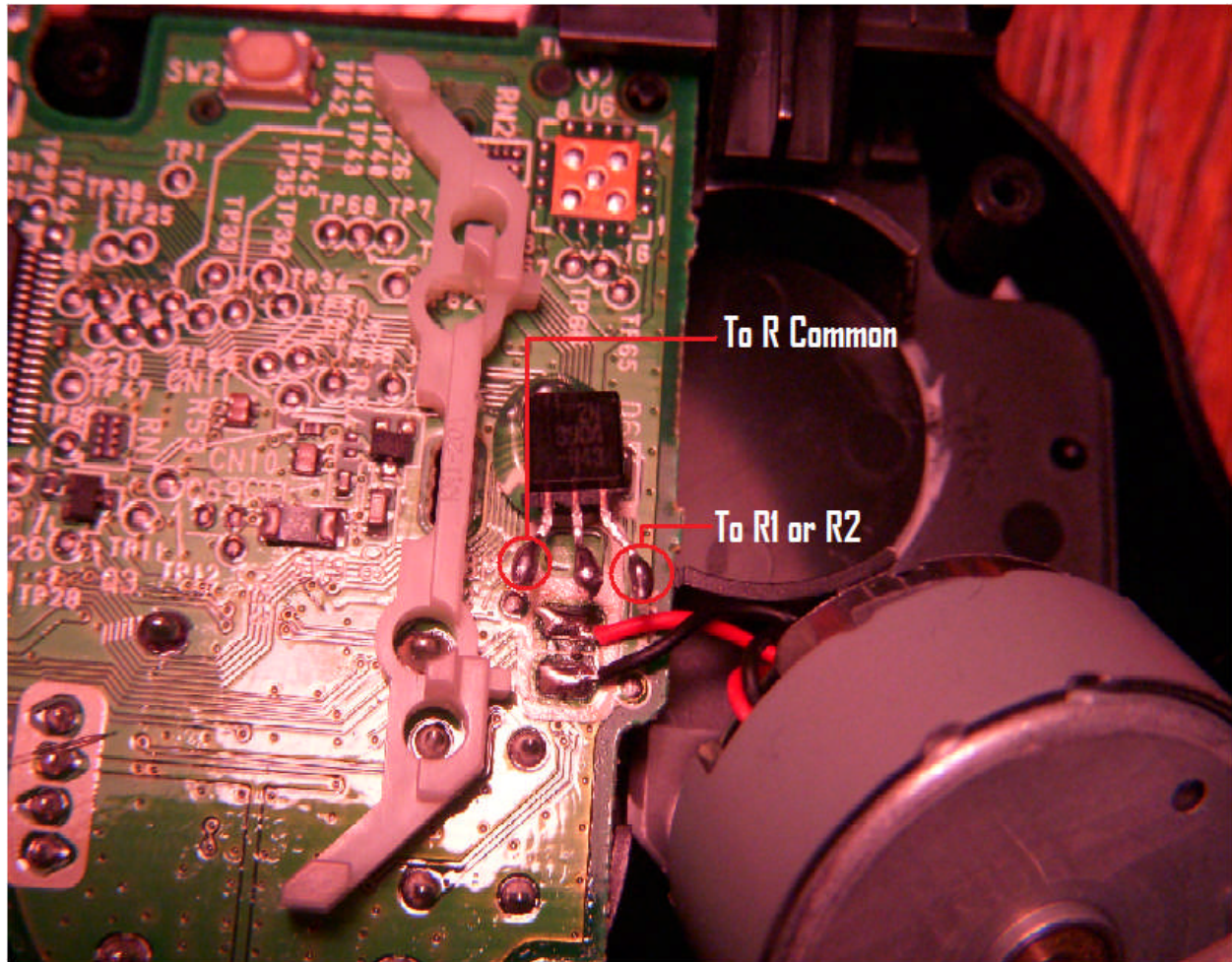
2nd GENERATION DUALSHOCK 3 PCB



We're lucky Sony left us at least one, the R common. In order to solder for the R1 and R2 triggers, you must solder directly to the small copper circles I have highlighted in the above picture.

The R1 solder point is located directly between the two “T’s” in points “TP18” and “TP19”. The solder point for R2 is located just to the left of the top cross bar of the “T” in solder point “T17”.

Transistor Installation

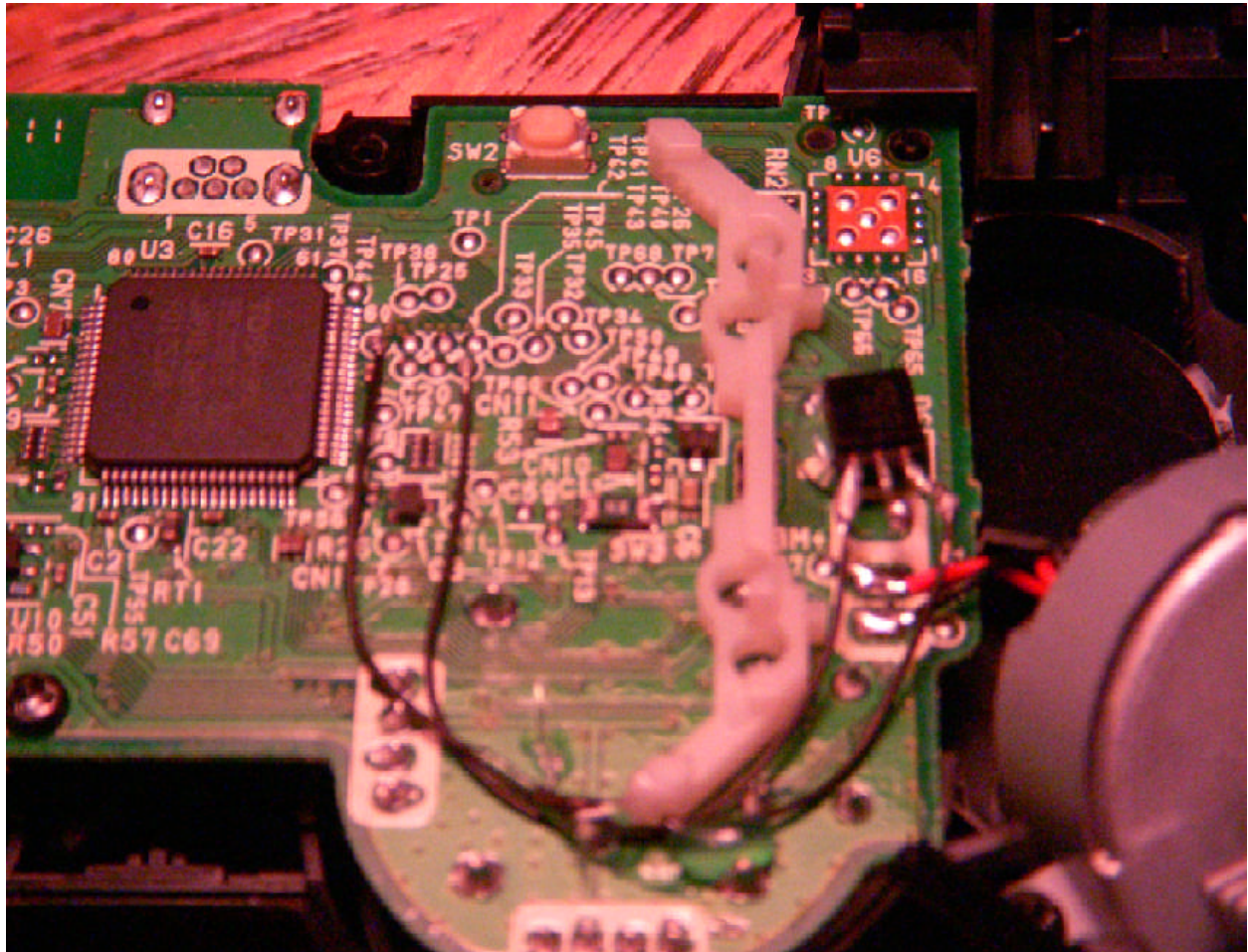


You are going to want to trim down the pins on the NPN transistor so they are only about 1/3 of their original length. Next, you will want to apply solder to the shortened legs to prepare them for wire installation. Apply a small dab of hot glue to the PCB and place the NPN transistor (numbers up) in the hot glue. This will keep it in perfect position out of the way. The transistor can go anywhere you can find space, I just like this spot.

Above, notice the 2 outer pins of the transistor. I have labeled the pins so you can see what point on your controller board the pins go to.

As you can see in the above photo, on the right, I have cut out some of the plastic ring to allow for proper fitting of the microchip during later installation. This step is necessary for dualshock controllers due to the lack of room. Be careful to leave enough plastic for L2 to make contact with.

Completed Installation of NPN to R1 and R Common points

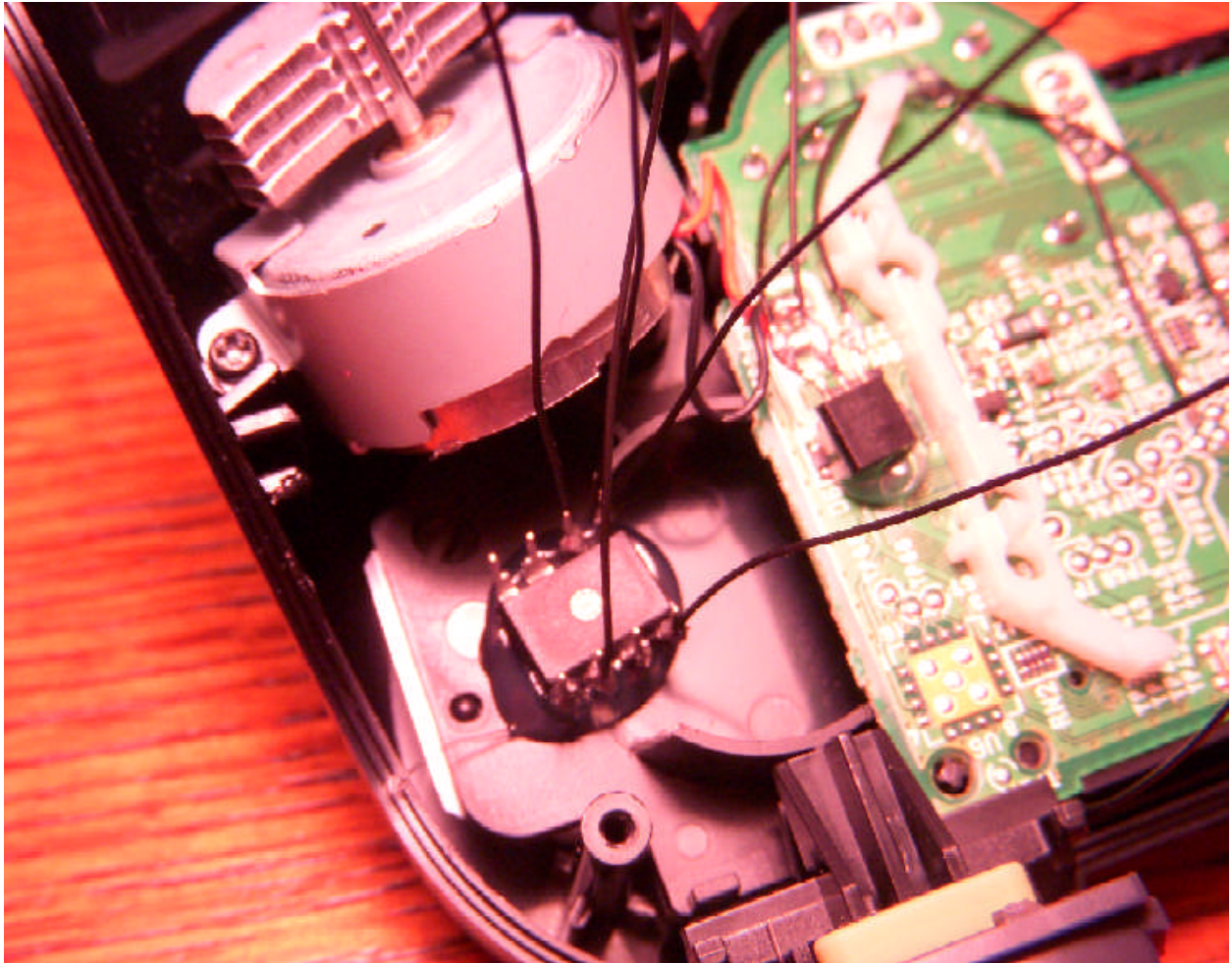


Above is the completed installation of the NPN transistor to the R1 and R Common points on my particular controller. Yours will be different based on the controller board you have, but the overall installation will be the same.

Notice I place a small dab of hot glue to keep the wires down close to the board. This helps to eliminate any clutter.

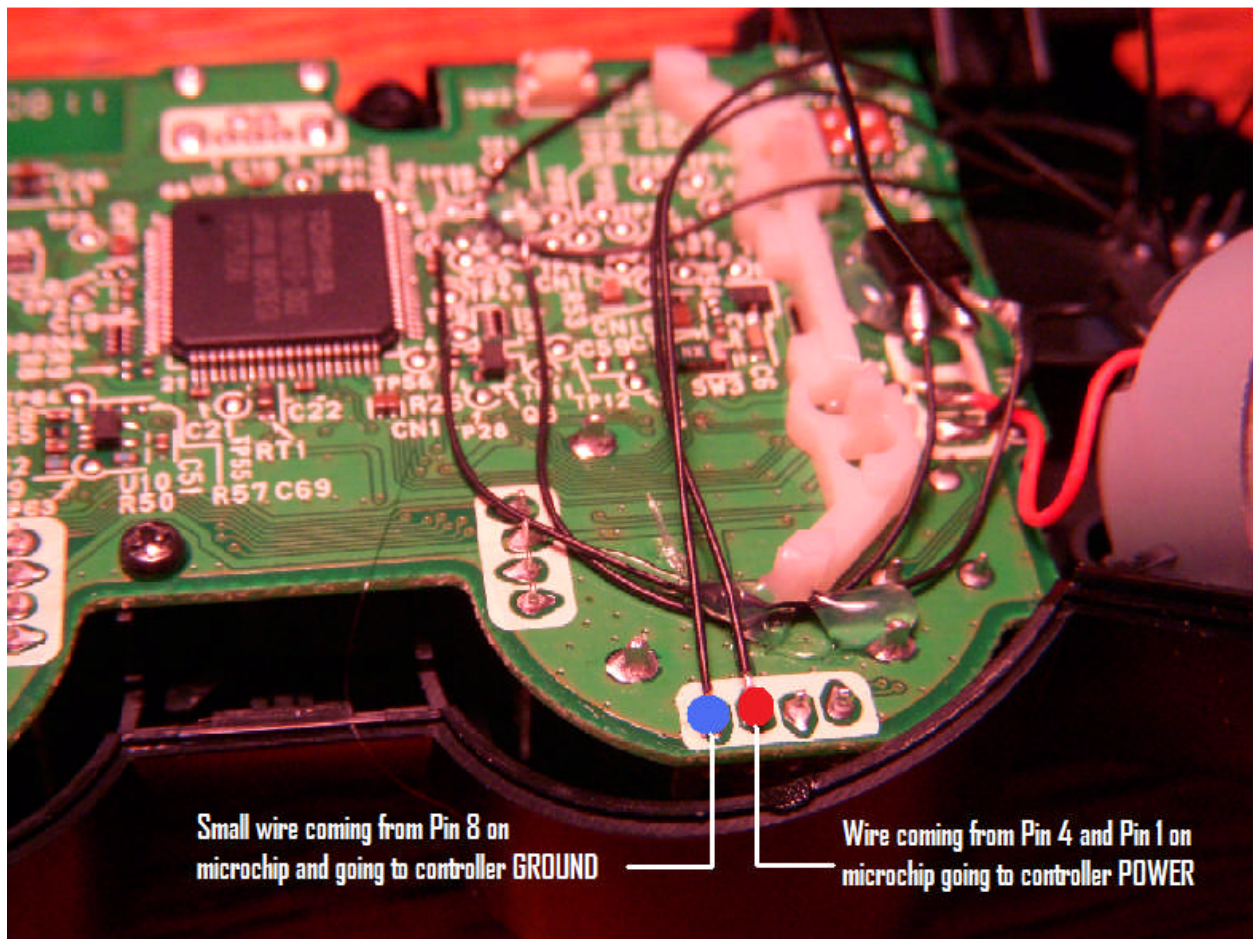
Now, let's move on to installing the microchip.

Installing the microchip



As you can see above, you will want to hot glue the chip, pins facing up, into the space we cleared earlier. This gives us a great fit inside the controller and prevents any crushing of pins or wires when closing the controller. It will be easiest for you to hot glue the chip in with the notch facing the NPN transistor (so, pointing in toward the PCB, not out toward nothing).

Power and Ground Wire Installation



The above photo illustrates the **POWER** and **GROUND** points completely installed into my controller. Again, your points may be different depending on what PCB you have. You want to take the SHORTER of the 2 wires you soldered to Pin 8 of the microchip and solder that to the GROUND point on the controller. Next, you will take the one continuous wire you soldered from Pin 4 through Pin 1 on the microchip and solder that to the POWER on the controller.

Installation of the Tactile Switches to the back part of the controller

You can install the buttons wherever you like, but I find it is most comfortable where my middle finger lies while holding the controller how I would when playing a game.

Take your 3/16th (or something close to it) drill bit and drill a hole, trimming down any plastic buildup once hole is made.

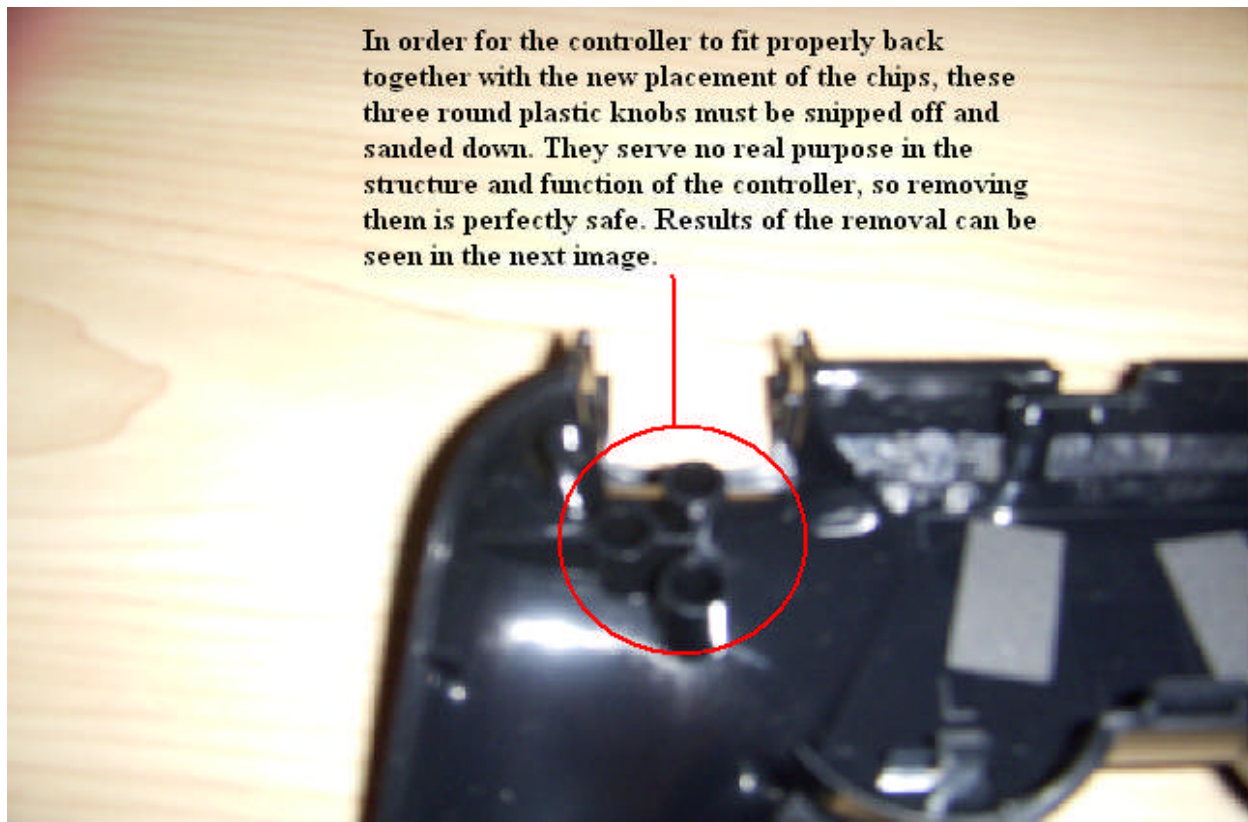
Each button has 4 legs. Each pair of legs is located along the same side. You may remove one side of legs, leaving one pair of legs on one edge and 3 empty edges on the tact switch. Glue the button in place with hot glue and fold the legs over the top of the button.



The above photo shows my preferred placement for the buttons for the rapid fire. I have already drilled my holes and hot glued the buttons in place in the above photo. I have also illustrated a couple “optional” spots you could try if you don’t like my placement. The buttons can really go anywhere, but the placement I have given fits great and allows you to keep both rumble motors in place.

When installing the “Mode Select” button, if you use the low placement like I did, make sure you drill your hole low enough to still leave space for the battery to fit above it when you place the controller back together.

Trimming excess unnecessary plastic off back of controller



Locate the 3 little plastic circles on the inside of the controller. In order for a perfect fit, you will want to trim these off and sand them down. These are just some of the unnecessary plastic pieces most manufacturers use to assess proper alignment. They are totally not needed inside the controller.

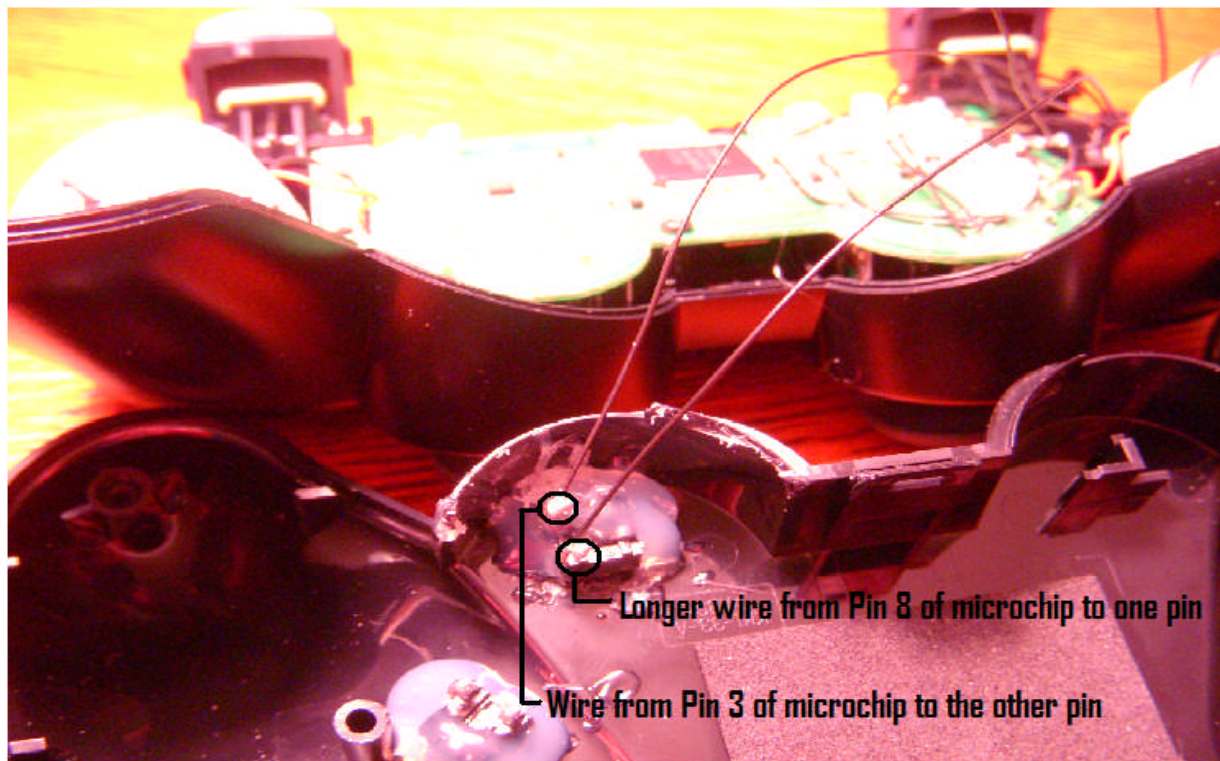
This is the same area that you saw in the last photo, except the round knobs have been cut off and sanded down with a small dremel. Once you have soldered all the wires to the chips that you need, you can then glue your chips into place in your newly cleared spot and finish the installation. The controller fits neat and easily back together with the new space you hollowed out without compromising performance.



The above photo is a demonstration of what the area inside your controller should look like once you have trimmed and sanded down the 3 little round plastic pieces. This is an important step because later in the tutorial when we are placing the controller back together, it will not fit properly if this step is not taken.

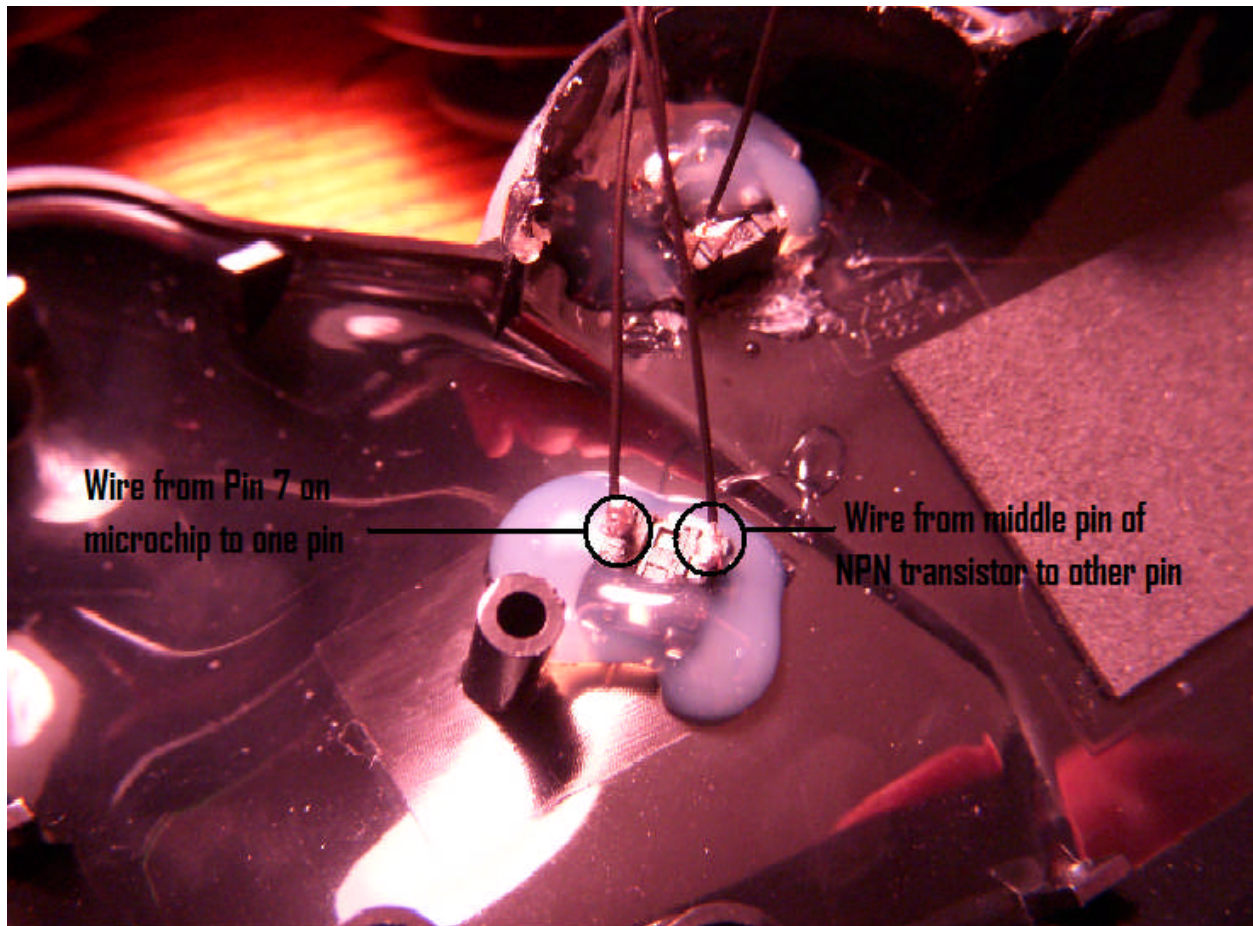
NOTE: People whom have the sixaxis controllers do not have to cut these plastic pieces and scrape them down (unless they want to) because there is plenty of space located in the handles of the controller for the placement of the chips. This step is primarily for Dualshock 3 owners.

Installation of wires to “Mode Select” button



As you can see in the photo above, I have my 2 buttons soldered in place. This photo is focusing on the install of the “Mode Select” button. As you can see, you have the longer wire from Pin 8 and the wire from Pin 3 of the microchip going to each leg on the button. It doesn’t matter which wire goes to which of the 2 legs, just make sure one wires gets soldered to each leg.

Installation of wires to “Rapid Fire” button



In the above photo, I have illustrated the install for the wires needed for the “Rapid Fire” button. As you can see, you must solder a 3-4 inch wire to the middle pin of the NPN transistor. That 3-4 inch wire goes to one pin of the “Rapid Fire” button. The other wire you see is the wire you soldered earlier to Pin 7 of the microchip. It does not matter which wire gets soldered to which of the 2 legs, just make sure you have one wire soldered to each of the 2 legs of the “Rapid Fire” button.

That was the last step of the installation. Congratulations!! Now it is time to put everything back together and get testing out your new 3-mode Rapid Fire controller!!

Finishing Up

Plug the battery back into its socket. Place all buttons that may have fallen out during the install back where they need to be. Carefully begin to place the two halves of the controller back together, making sure you are not crushing any wires or pins on the buttons when you are closing it up. Once you have it all back together, you will have a completed controller that looks like the one in the photo below.



3 Mode PS3 Rapid Fire Video: [Watch it in action!!!](#)