KM4CFT
Technologies LLC

KM4CFT Mini Microphone – IC-705 Edition Kit

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Thank you for your purchase of your KM4CFT Mini Microphone kit, IC-705 Edition! This kit is an ultra-portable mini microphone that takes heavy inspiration from the work of Adam, K6ARK. While this version has more features, it also has a very similar size and is extremely easy to put together!

After the incredible success of the original Mini Mic, we have expanded the design to support other radios, in this case the ICOM IC-705.

This guide will walk you through assembling your KM4CFT Mini Microphone, IC-705 Edition.

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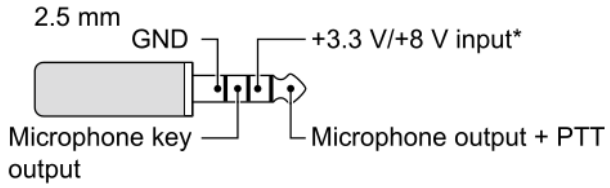
Overview

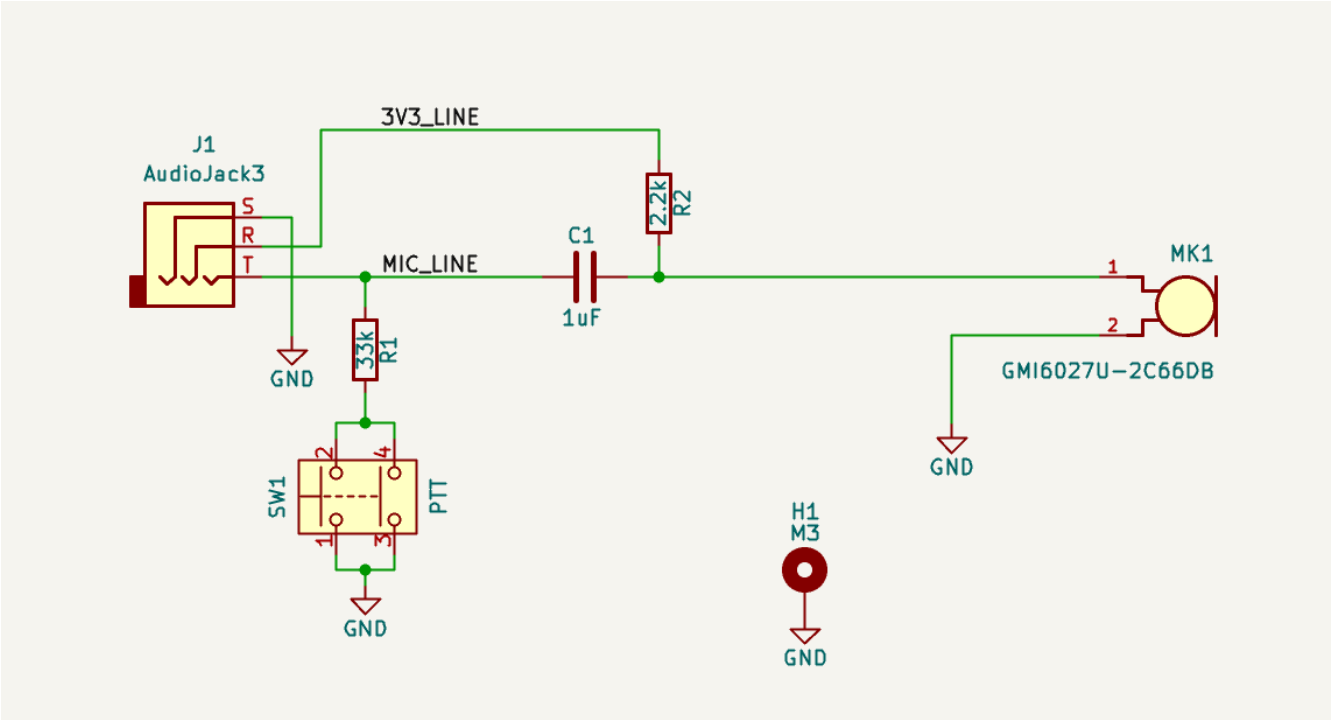
This Microphone features a -48dB Sensitivity Electret Microphone, which is the standard sensitivity of most microphone elements. Electret elements need a DC bias and blocking capacitor to function, so this microphone PCB adds that to work with the 705.

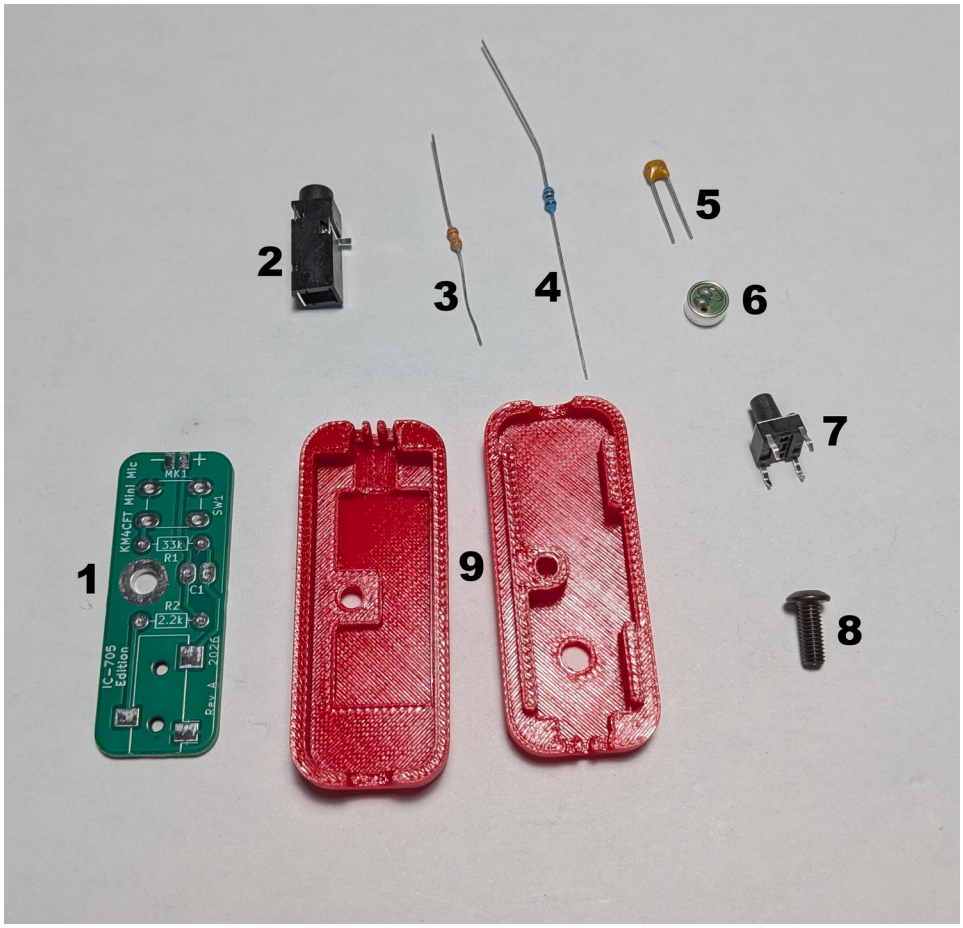
The IC-705 uses a 2.5mm TRRS (four conductor) connector for the microphone:



For a simple microphone, we do not need to utilize the “Microphone key output” line, so a standard TRS (three conductor) connector will do.

Schematic





Parts List:

	Item	Qty/Length
1	Printed Circuit Board	1x
2	3.5mm Audio Socket	1x
3	33k Resistor (Orange-Orange)	1x
4	2.2k Resistor (Red-Red)	1x
5	1µF Ceramic Capacitor	1x
6	-48dB Electret Microphone	1x
7	Tactile Push Button	1x
8	M3x8mm Screw	1x
9	3D Printed Housing	Top and Bottom

3D Print Files:

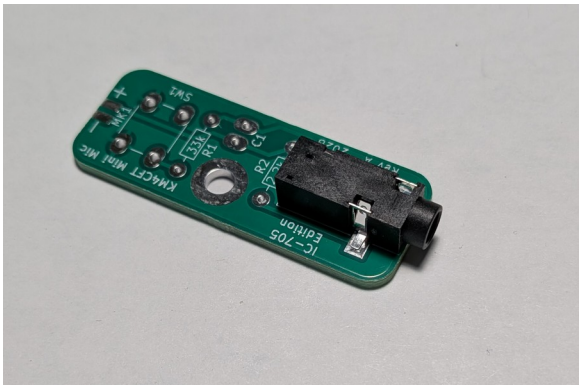
This kits comes supplied with the 2 required 3D printed pieces for the enclosure, printed in PETG. Should you wish to print your own in a different material/color, you can download the STL files here: https://www.printables.com/model/1768313-km4cft-mini-microphone-enclosure

Mini Microphone Build Instructions

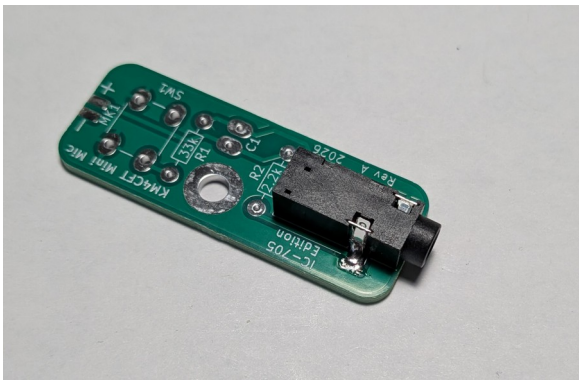
To build this kit, you will only need a soldering iron, solder and a 2mm Allen Key/Hex Wrench. A pair of tweezers can also be super useful.

Step 1: Solder on 3.5mm Socket

First, take the PCB and the 3.5mm Socket. Place the connector onto the board such that the two bottom pins register with the holes in the PCB.

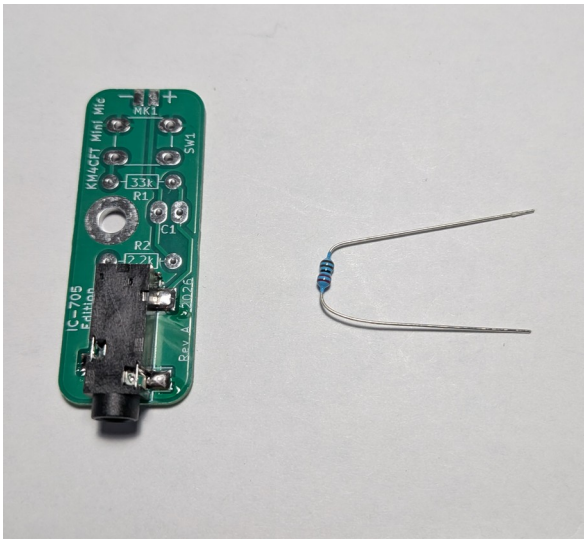


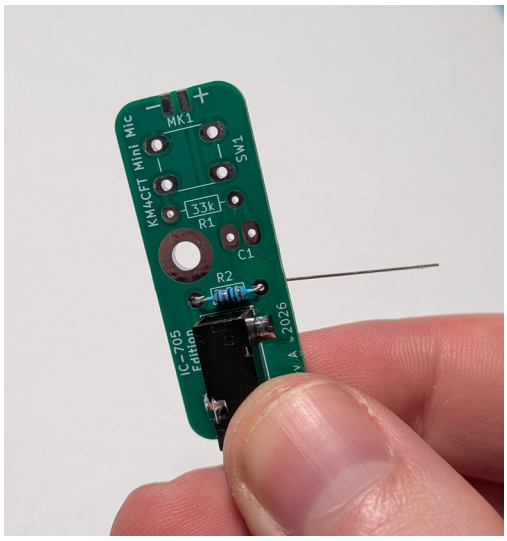
Next, carefully solder the 3 tabs to the board.



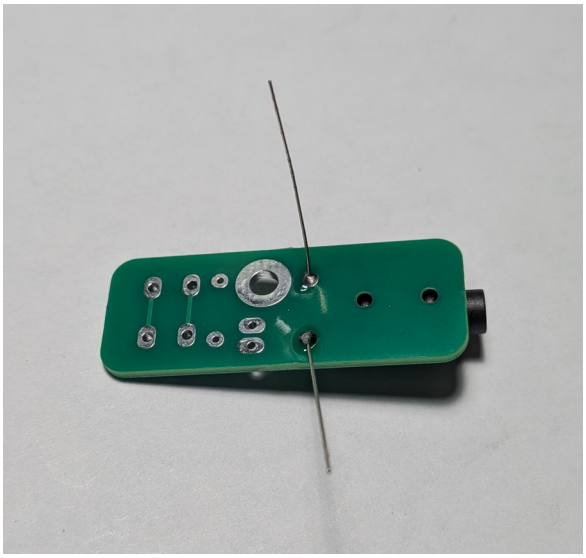
Step 2: Solder 2.2k Resistor

Next, find the 2.2k resistor. This will have two Red stripes on it. Bend the resistor such that it has a U shape then insert it into the holes for R2. Then, bend the leads at a 45° angle.



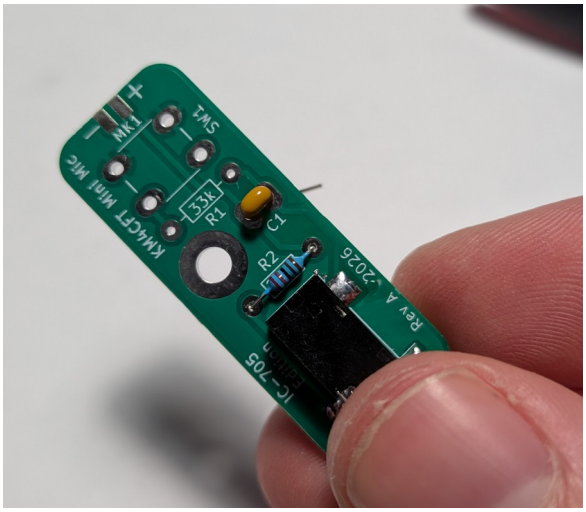


Flip the board over and solder the resistor in place. Then, trim off the excess leads.



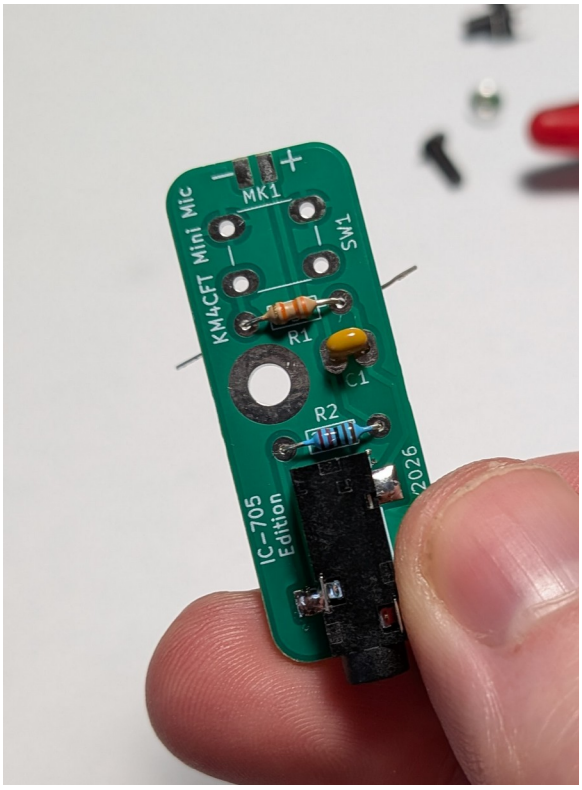
Step 3: Solder on 1µF Capacitor

Just like with Step 2, find the ceramic capacitor (labeled 105) and solder it to C1 by inserting the leads, bending, soldering and trimming.



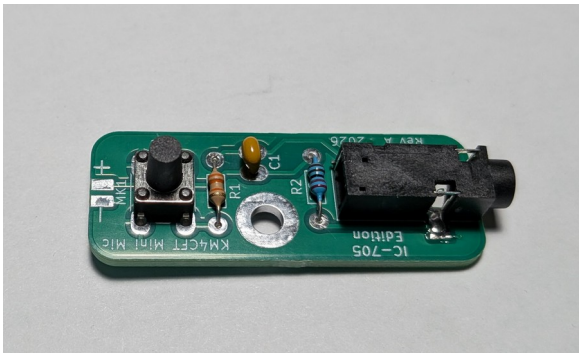
Step 4: Solder 33k Resistor

This time, find the 33k resistor, which will have two Orange stripes. Just like in step 2, bend into a U shape, insert, bend at an angle, solder and trim.



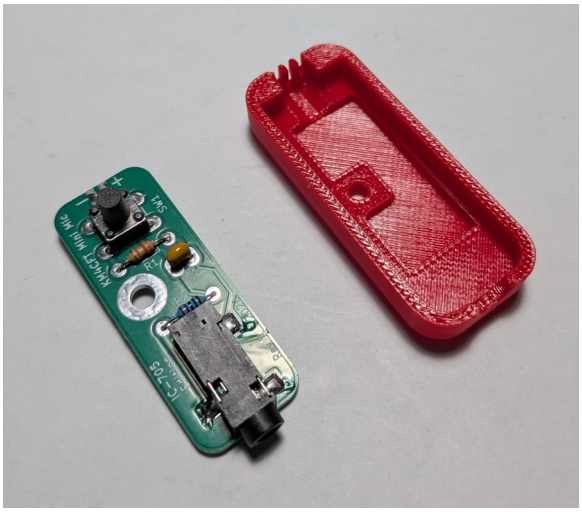
Step 5: Solder on Button

Take the 6mm tactile button and solder it to the top of the board.

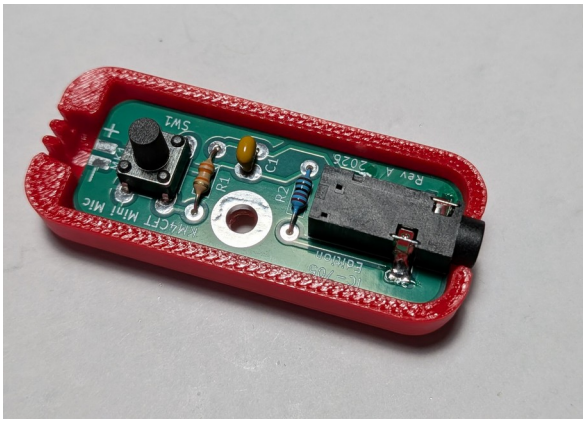


Step 6: Solder Microphone Element

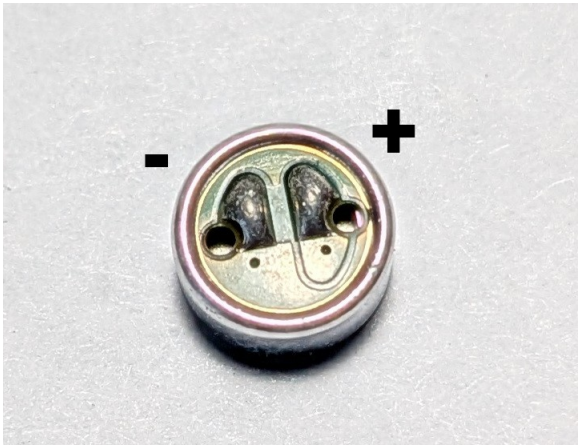
First, you will need to take the board and the bottom 3D printed piece (the one with the C-shaped channel for the bottom through hole pins).

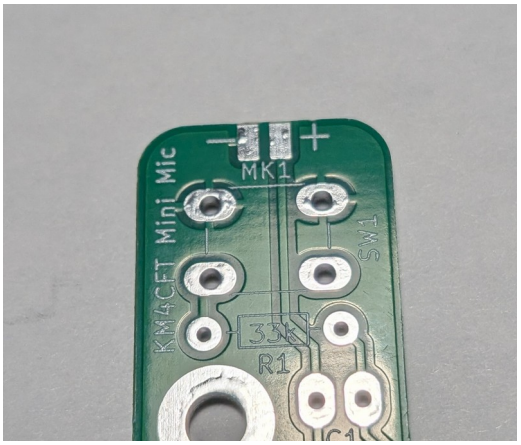


Take the board and press it into place.

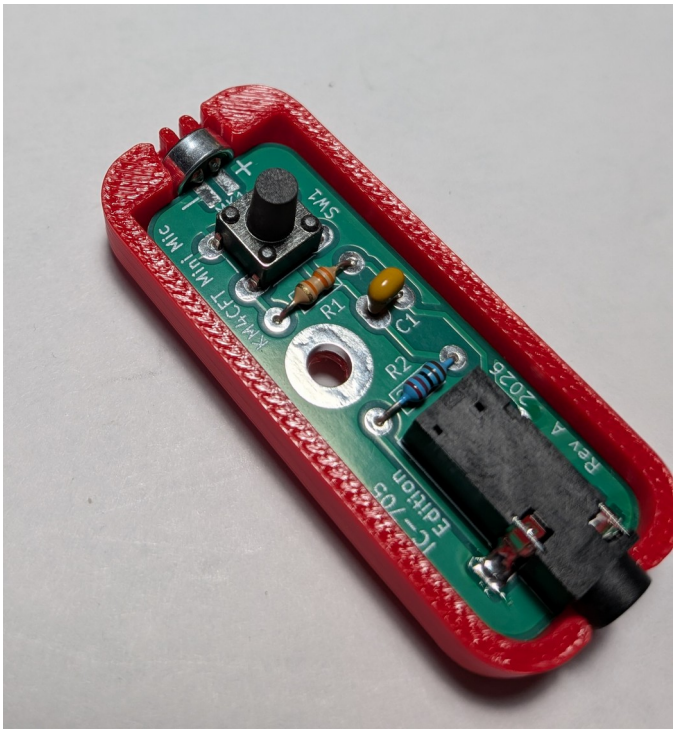


For this next part, pay close attention! Take note of the plus and minus markings in the photo of the Microphone element and the plus/minus markings on the PCB:



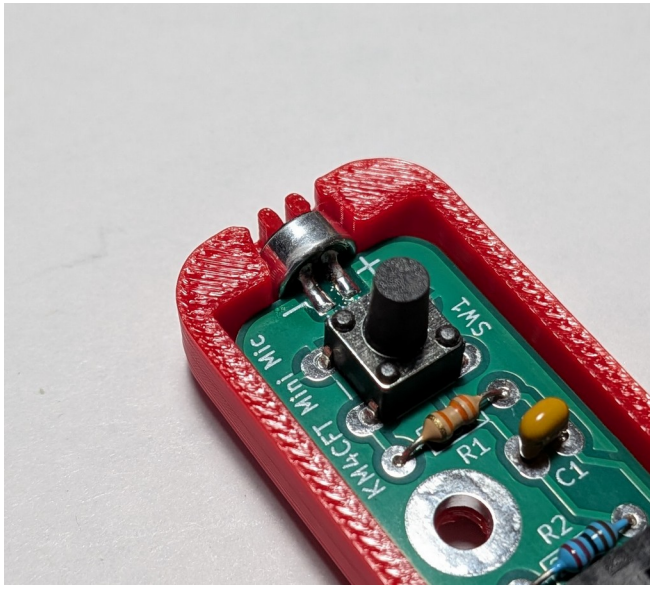


Using your tweezers, carefully push the microphone into the opening in front of the PCB, making sure to keep the polarity aligned with the two pads.



Note: You can also check polarity by using a multimeter; negative will have continuity to the metal case of the electret element.

Finally, solder the microphone to the PCB.



Step 7: Close up Microphone

For the final step, take the top 3D printed housing and put it into place.

Flip the enclosure over and screw the M3x8mm pan head into place. Do not over tighten!

With this, you have completed assembly of your KM4CFT Mini Microphone, IC-705 Edition! Good Job!