

Soldering Is Easy!

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Co-founder of **3Ware** (successful Silicon Valley startup)

Pioneer of **VR** (in the mid-1980s)

Founding mentor at **HAX** (1st and biggest hardware accelerator)

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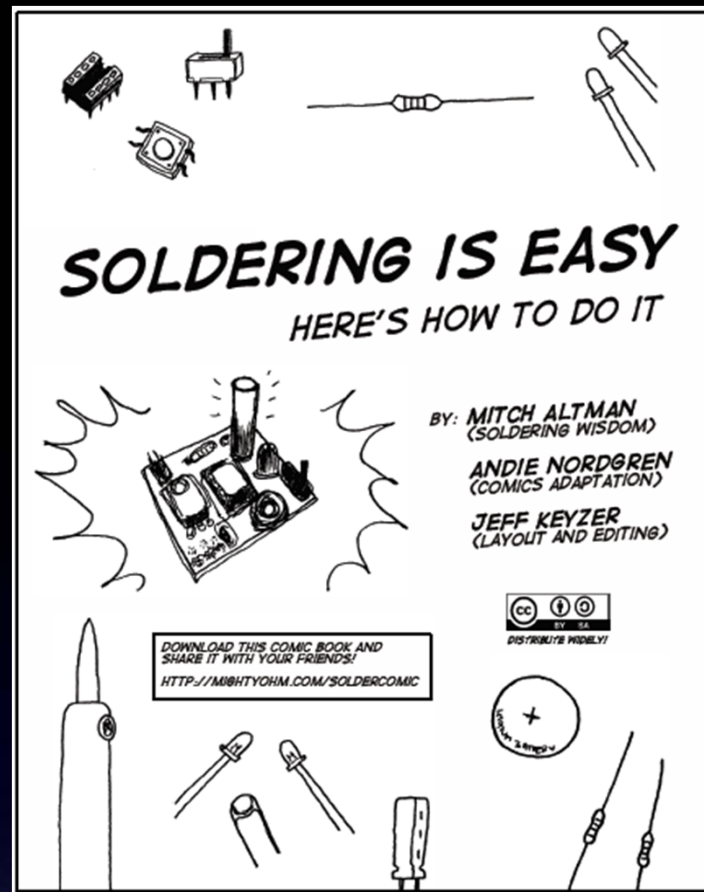
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CORNFIELD ELECTRONICS

useful electronics for a better world

Learn To Solder



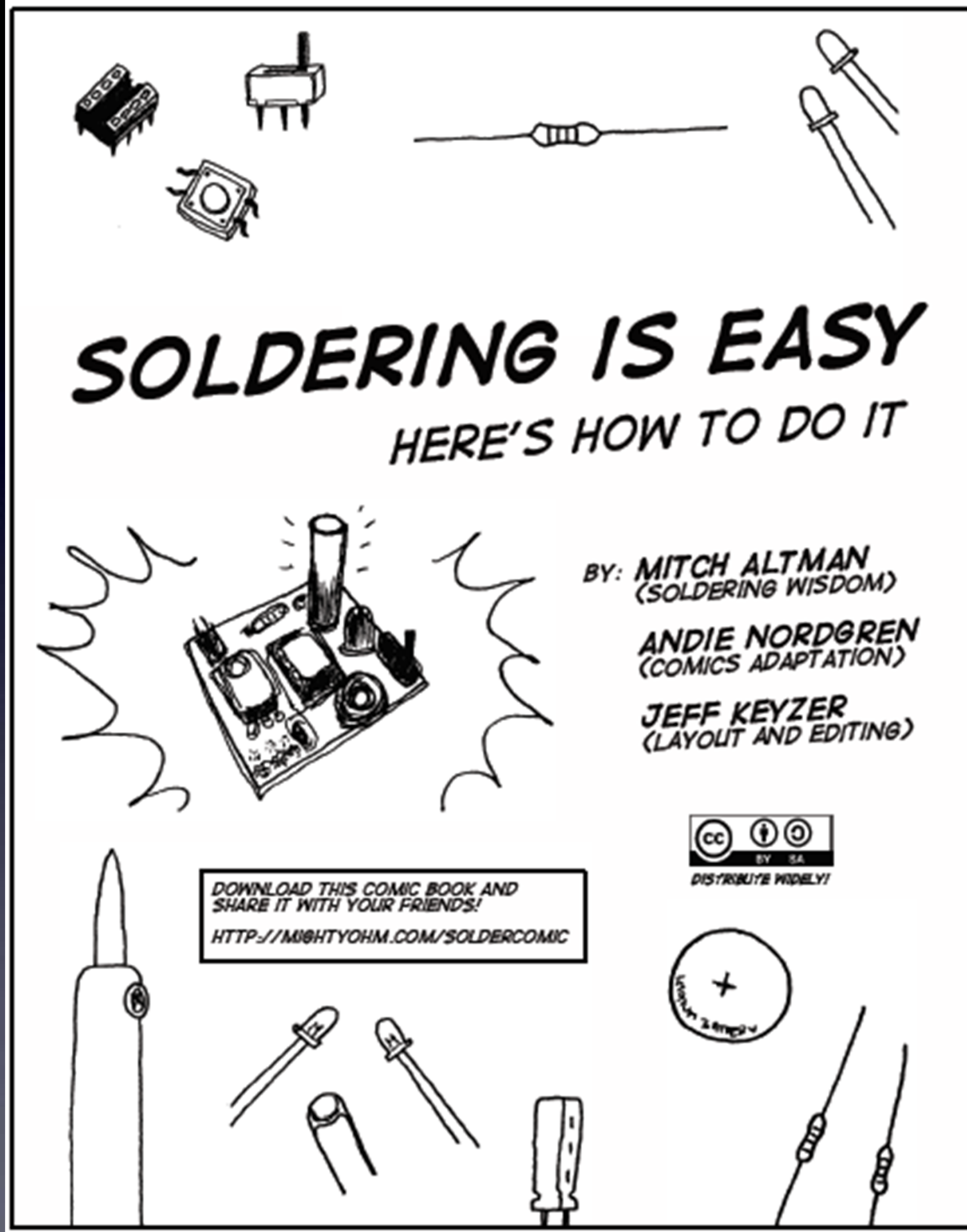
The following photos will show you how to solder.

But feel free to download the “Soldering Is Easy” comic book for free!

(In many different languages.)

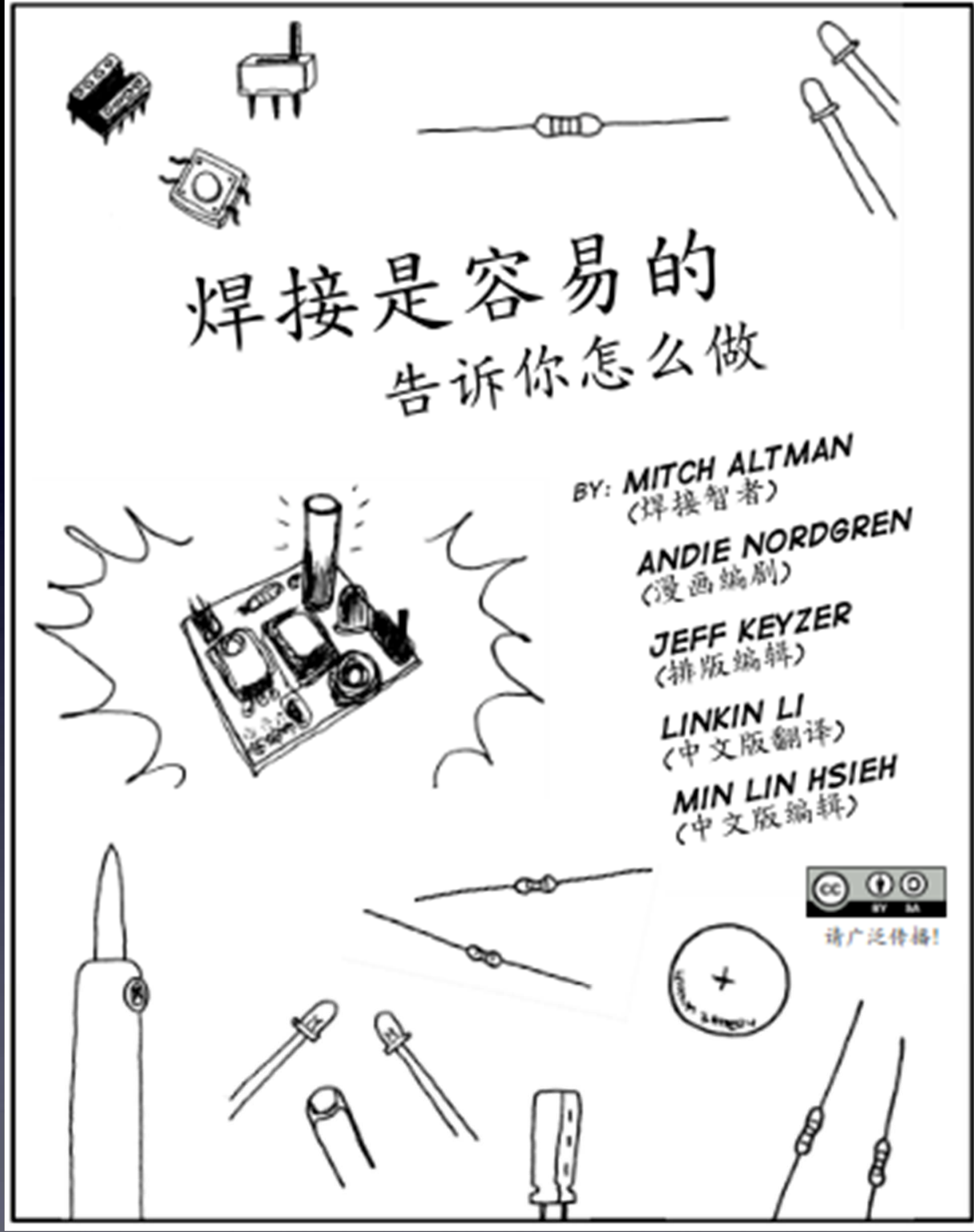
download for free at:
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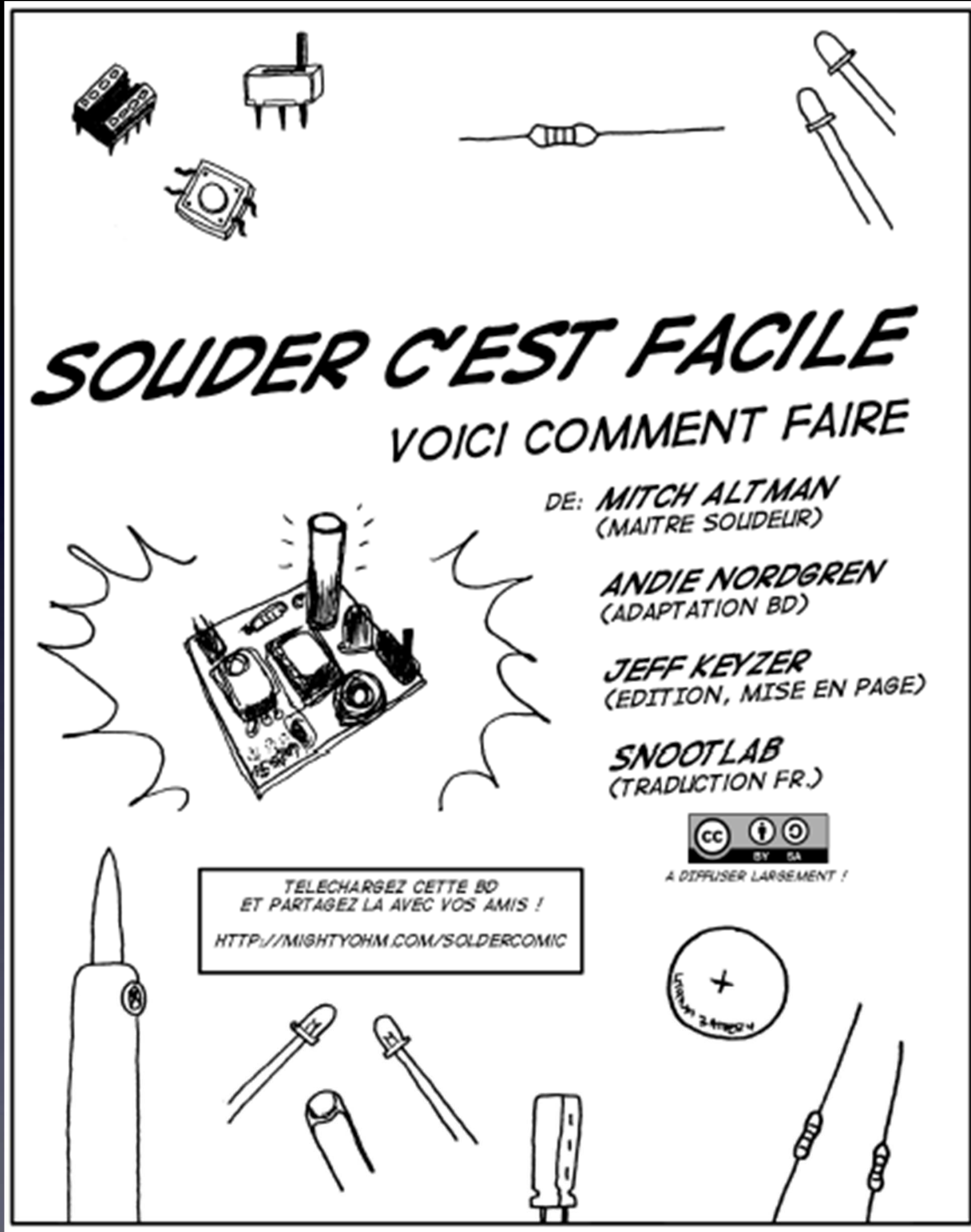
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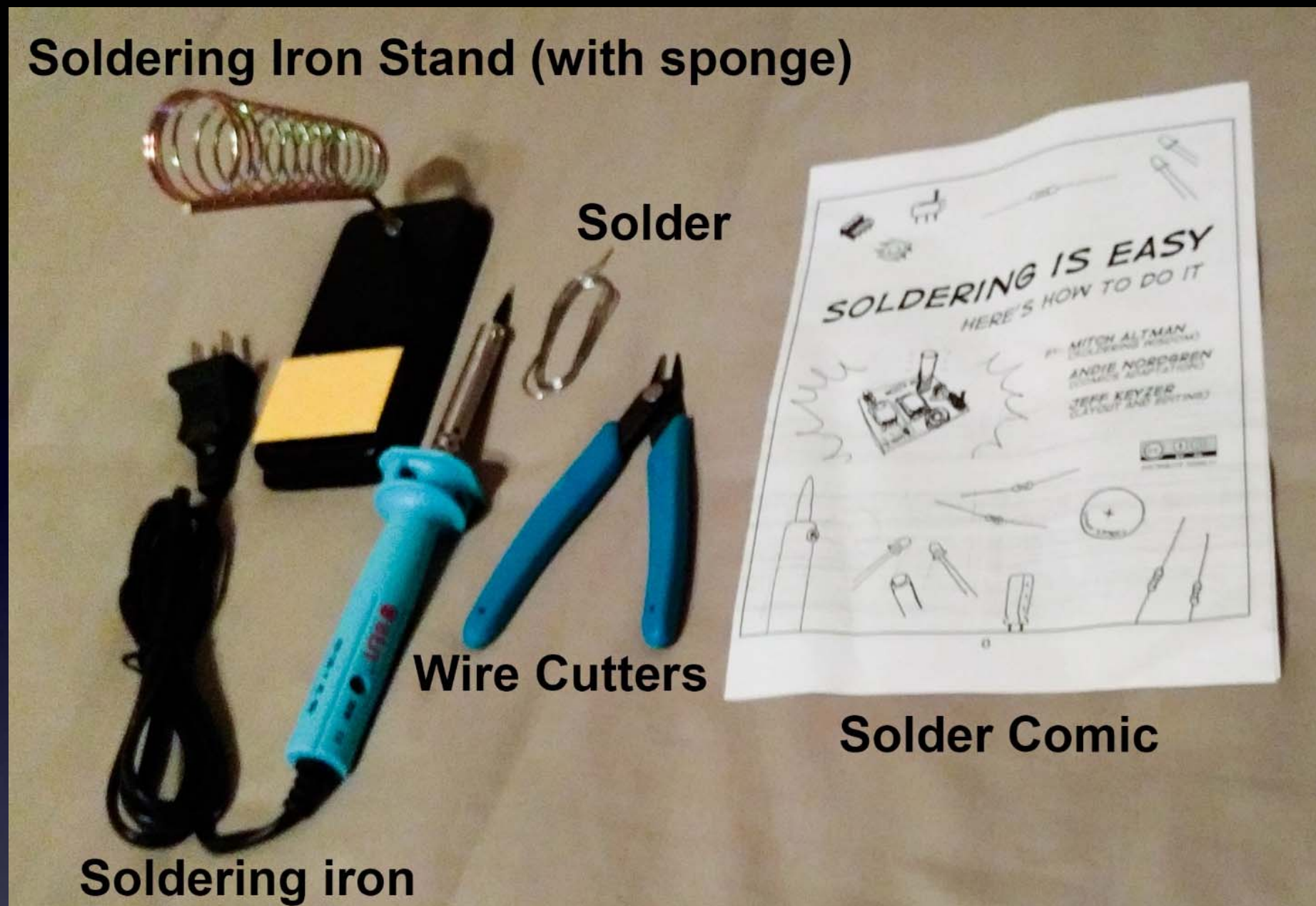
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Note:
Most
lead-free solder
has poisonous fumes!

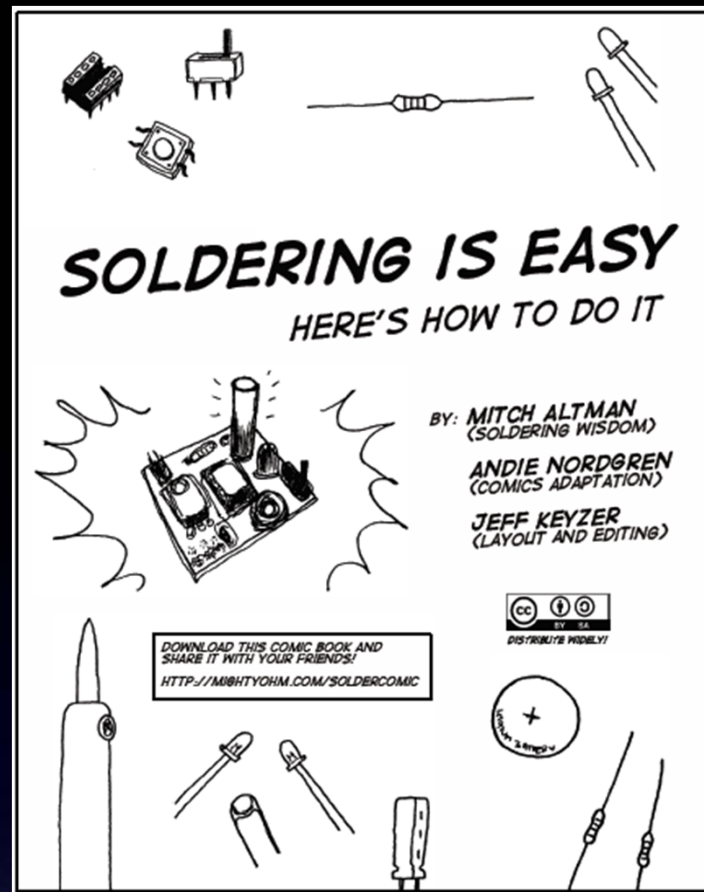
The tools you'll need:

- soldering Iron (35W or less) (0.7mm)
- solder (60/40 Sn/Pb, rosin core, 0.031" diameter or less) (63/37 is also good)
- soldering iron stand
- cellulose kitchen sponge (*not plastic!*)
- *small* wire cutter



These are available at:
<https://CornfieldElectronics.com>

Learn To Solder



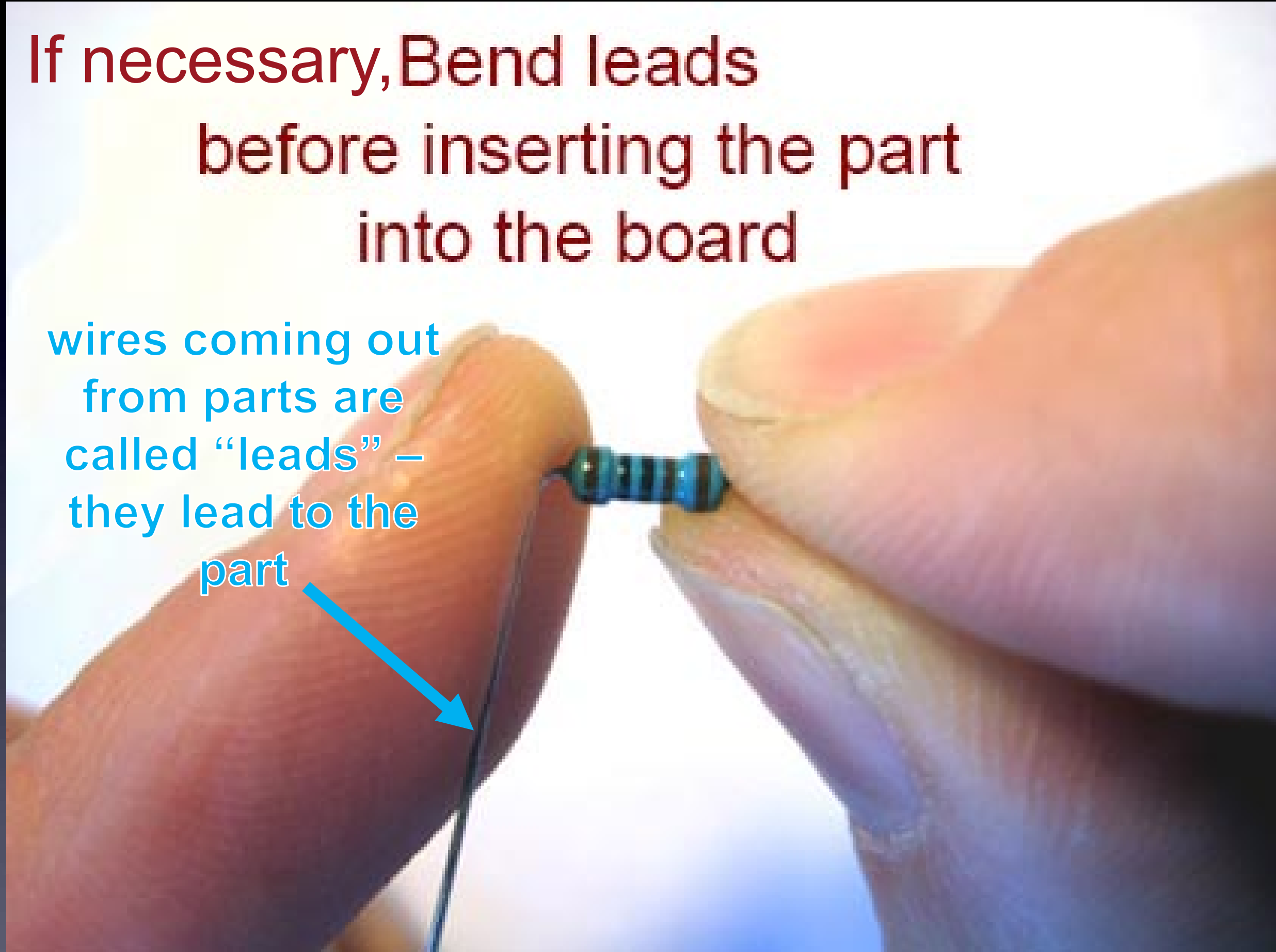
The following photos will show you how to solder a resistor.

There are no resistors in some kits. But the soldering procedure is the same for all parts.

Most kits have resistors, like this part:

If necessary, Bend leads
before inserting the part
into the board

wires coming out
from parts are
called “leads” –
they lead to the
part



Most kits have resistors, like this part:

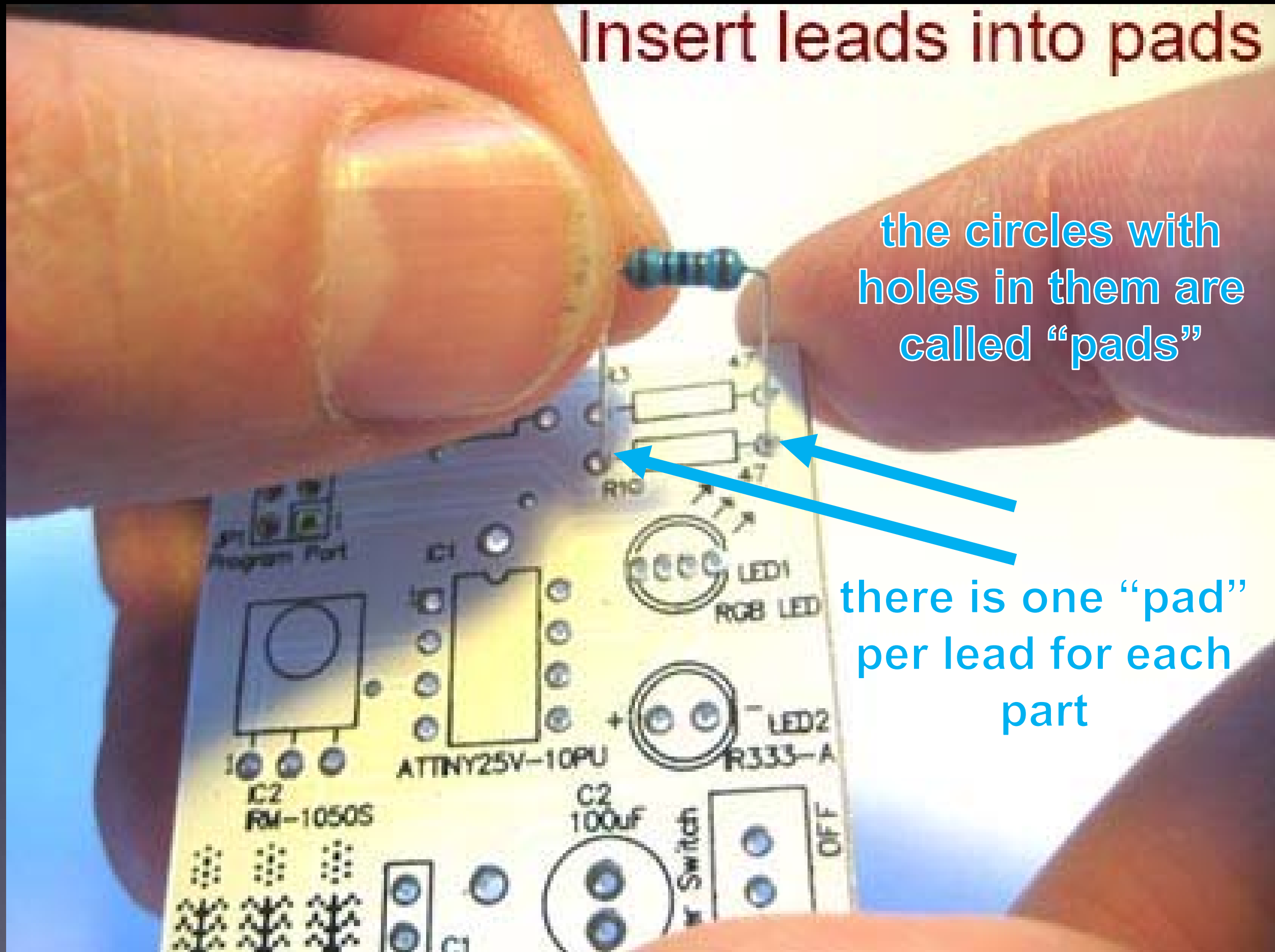


**this is how a resistor will look *before*
inserting it into the board**

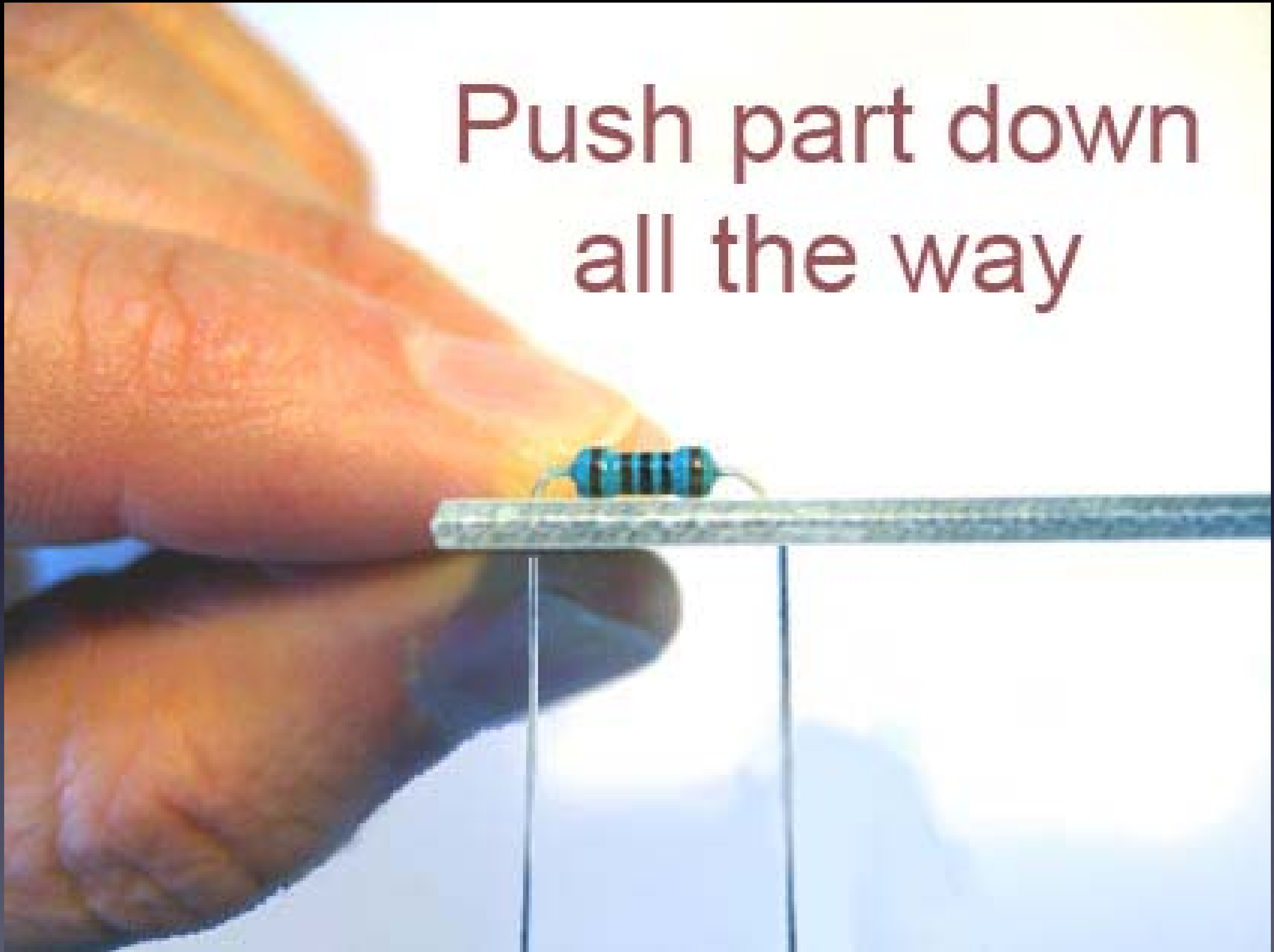
Insert leads into pads

the circles with
holes in them are
called "pads"

there is one "pad"
per lead for each
part



Push part down
all the way





Upside down

Wires bent
half way
out (only half way)
like a “V”

so that the part won't fall out while soldering it



How to hold a soldering iron

(Like a pencil – held from underneath)

Important

The perfect kind of solder for
electronics:

60/40 rosin core,
0.031" (0.7mm) diameter (or smaller)

(63/37 is also good)

Note:

Most
lead-free solder
has poisonous fumes!

The perfect kind of solder for electronics:

*This is the only good **Lead-Free** solder I have found!*
(after years of searching)



Chip Quik Germanium-Doped Solder
Sn/Cu0.7/Ni0.05/Ge0.006

3 Safety Tips...

Safety Tip #1:

Hot !!

(When you touch the tip,
you will let go quickly every time!)

Safety Tip #2:

Lead (Pb) is toxic

But it easily washes off your hands
with soap and water

Safety Tip #3:

(coming soon)

2 secrets
to good soldering...

Secret #1:

Clean the tip!

(before every solder connection)

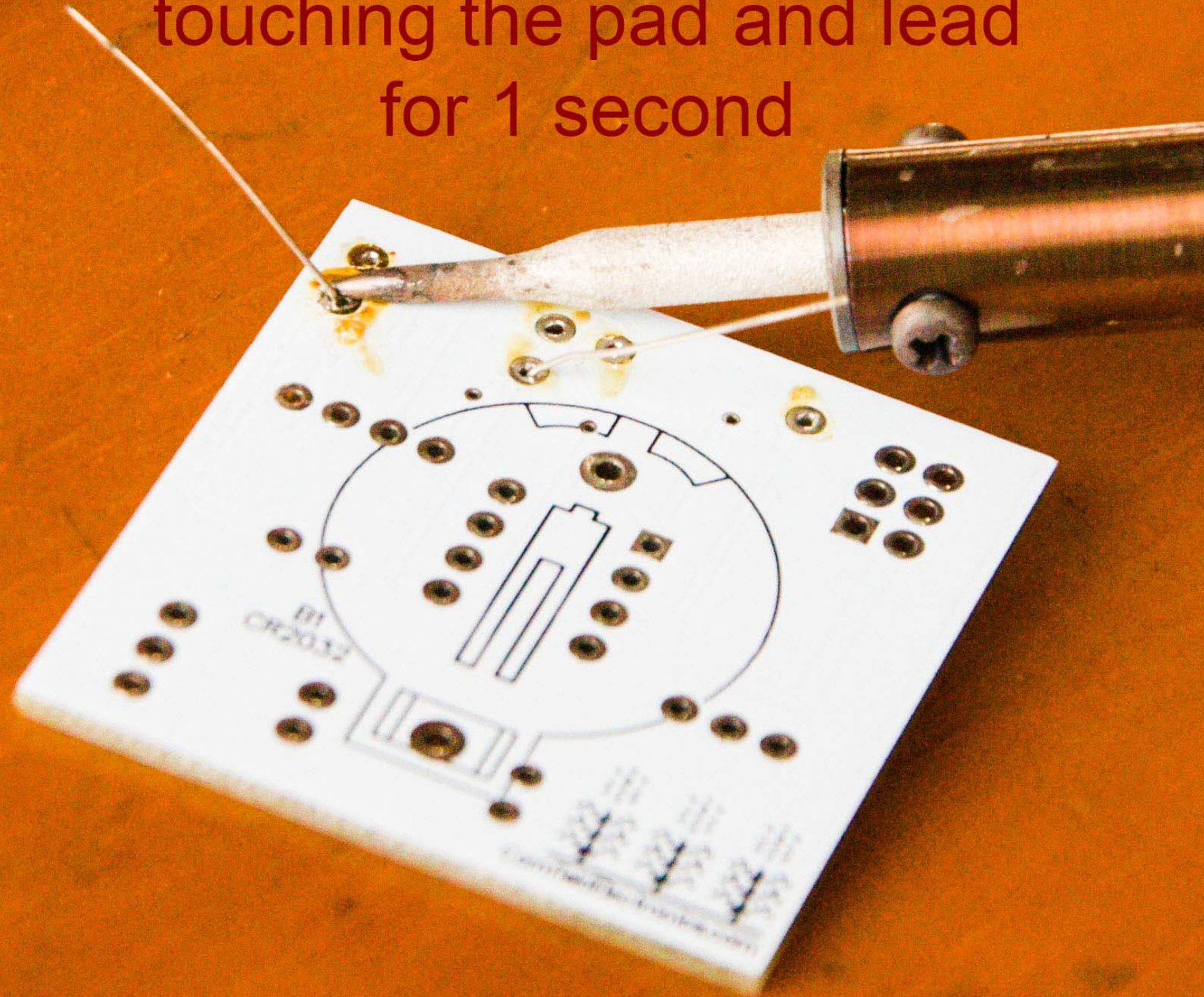
Bang (lightly) 3 times,

Swipe, Rotate, Swipe (on the sponge):

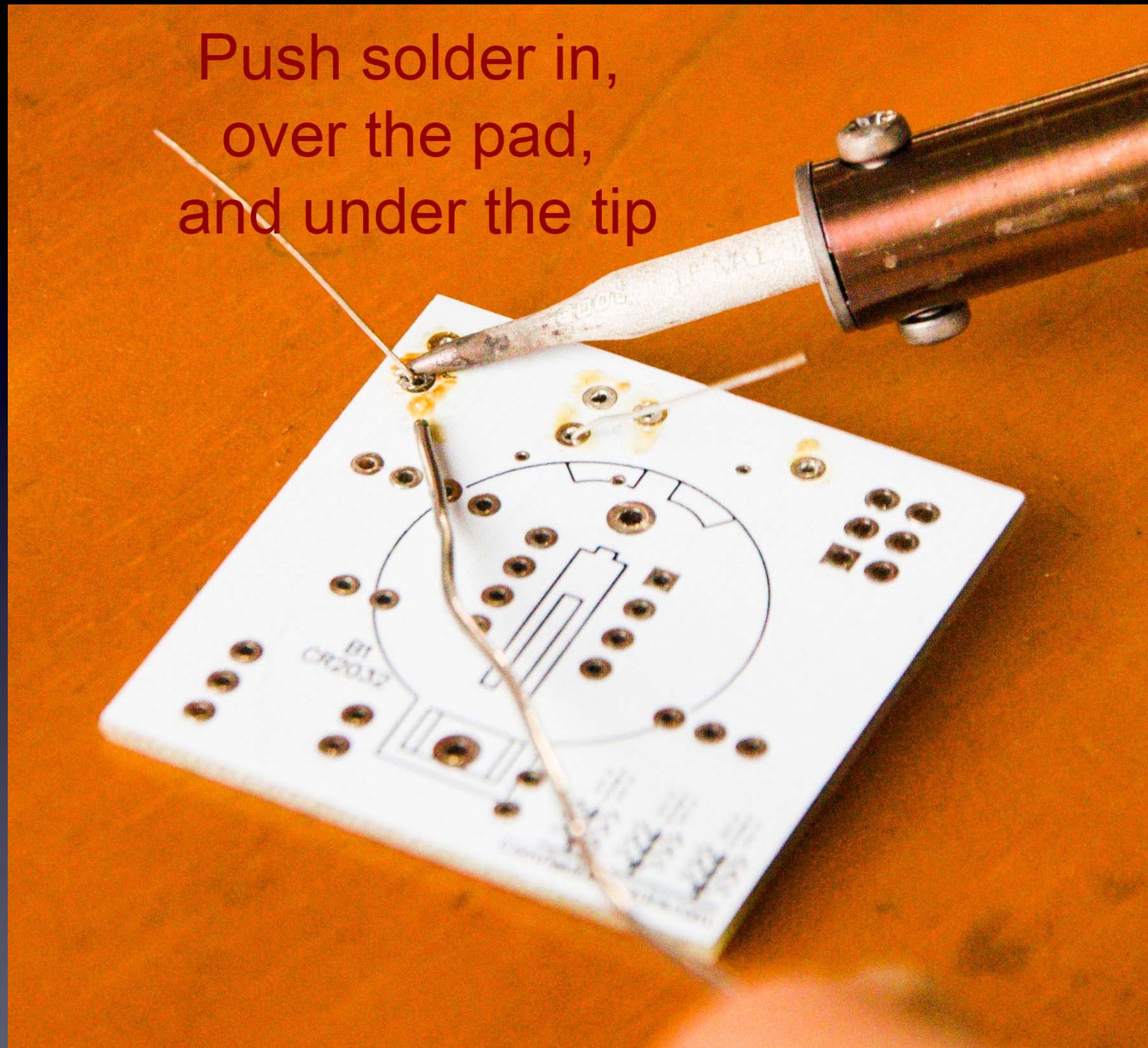
Keep the tip shiny silver!

knock solder off the tip

Lay clean tip across half of the pad,
touching the pad and lead
for 1 second

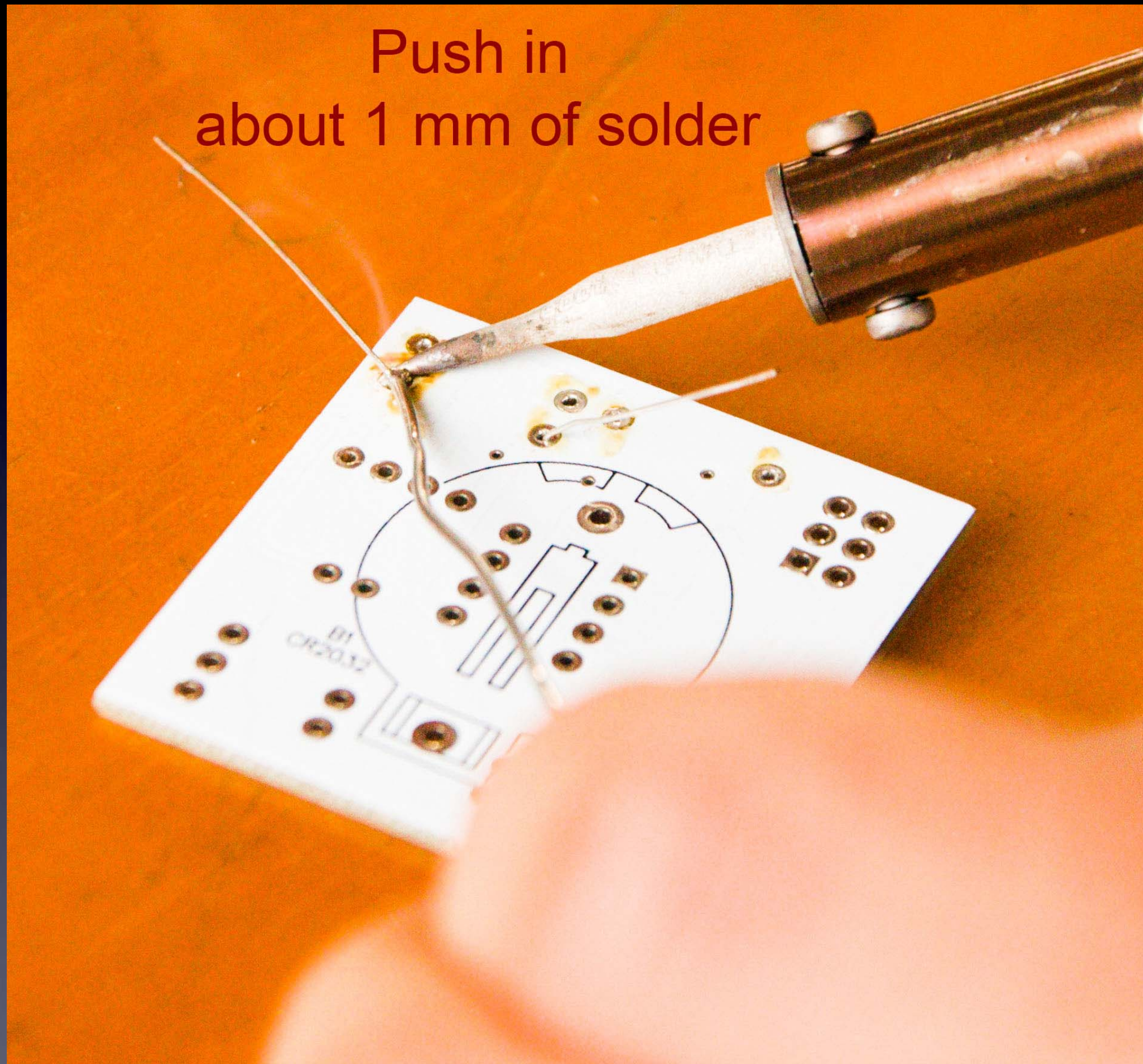


Do this quickly (slowly doesn't work well) – solder in & out in about 1 second

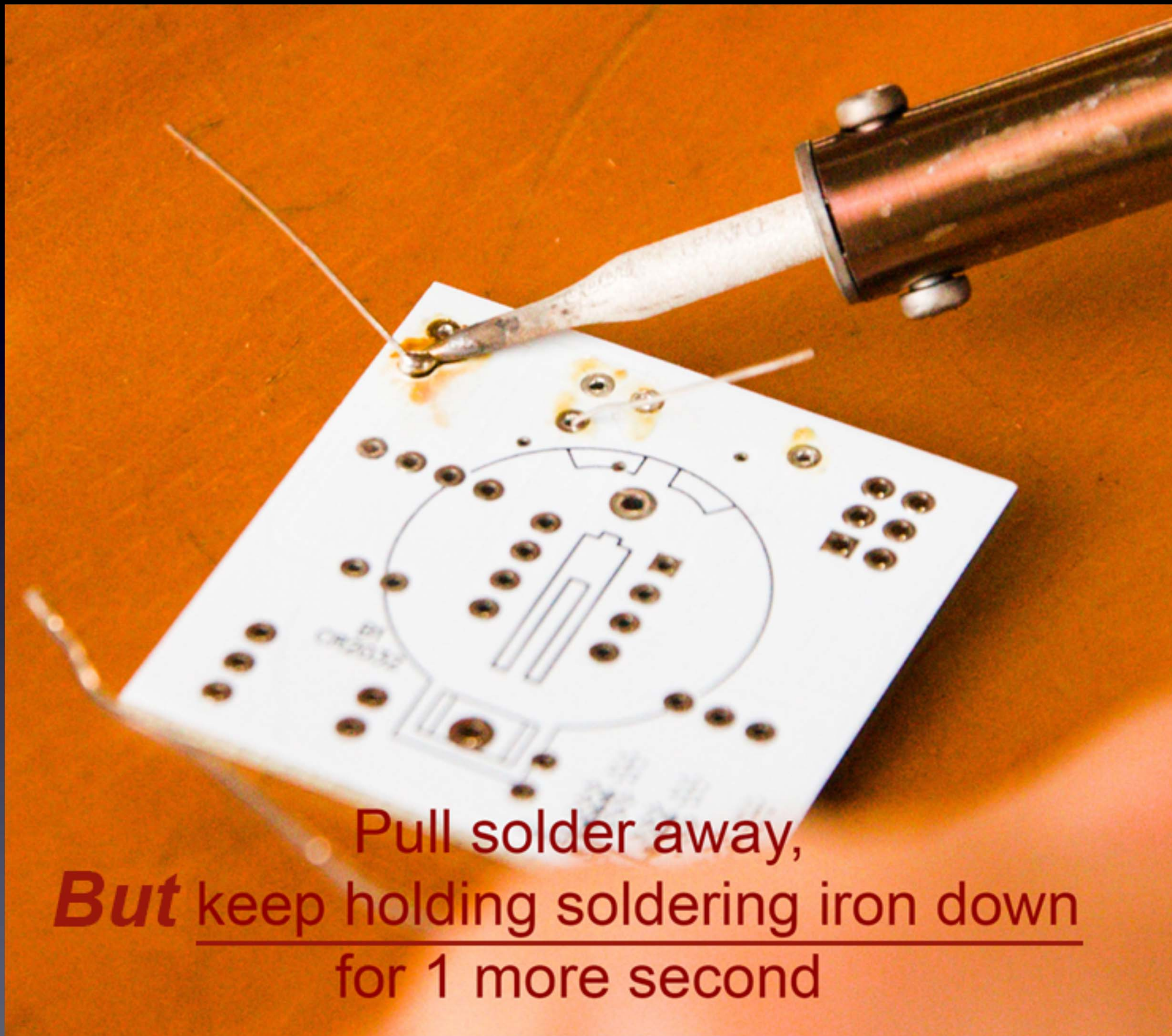


Make sure solder melts on the underside of the soldering iron tip
(not the side or top of the soldering iron tip)!

Do this quickly (slowly doesn't work well) – solder in & out in about 1 second



Make sure solder melts on the underside of the soldering iron tip
(not the side or top of the soldering iron tip)!



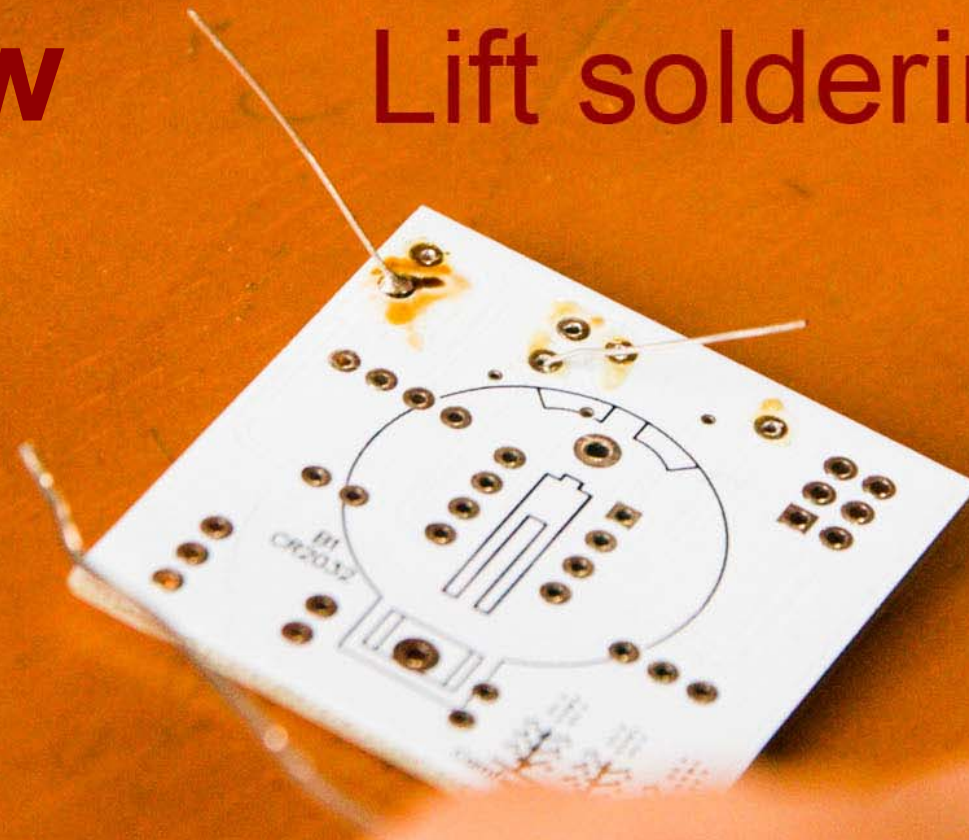
Pull solder away,
But keep holding soldering iron down
for 1 more second

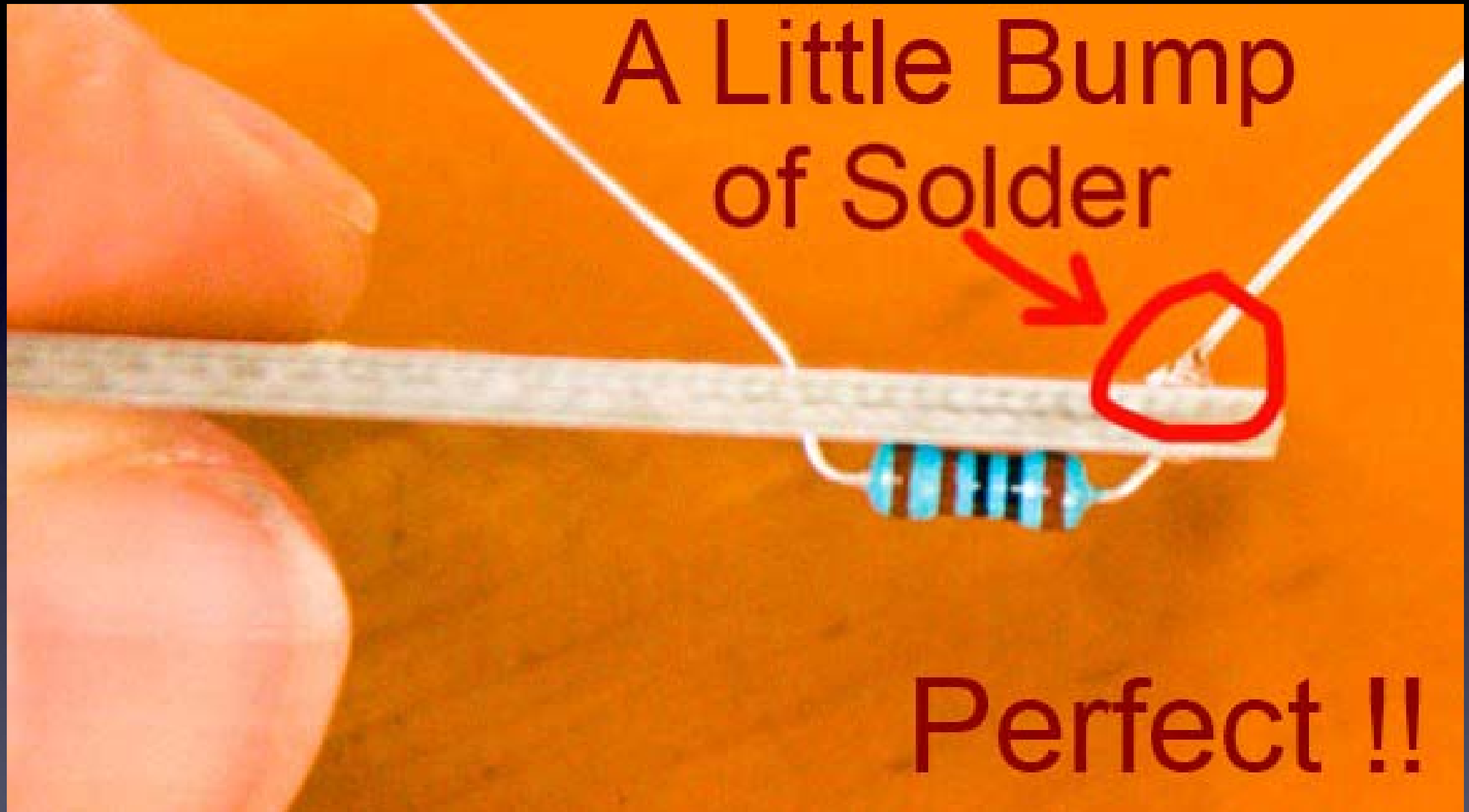
Secret #2:

Keep hot tip down
1 second
for solder to flow !!

Now

Lift soldering iron





If you can see any of the pad, or the hole, you need more solder
– so, just do all the steps again to make it perfect.

The Rhythm !

is just as important as the preceding steps!

The Rhythm !

Here is the Rhythm and speed (about 1 second per step):



The Rhythm !

Here is the Rhythm and speed (about 1 second per step):

Clean the tip



The Rhythm !

Here is the Rhythm and speed (about 1 second per step):



Tip Down

The Rhythm !

Here is the Rhythm and speed (about 1 second per step):



Solder In

The Rhythm !

Here is the Rhythm and speed (about 1 second per step):



Solder Out

The Rhythm !

Here is the Rhythm and speed (about 1 second per step):



WAIT !

about 1 second for the solder to flow!

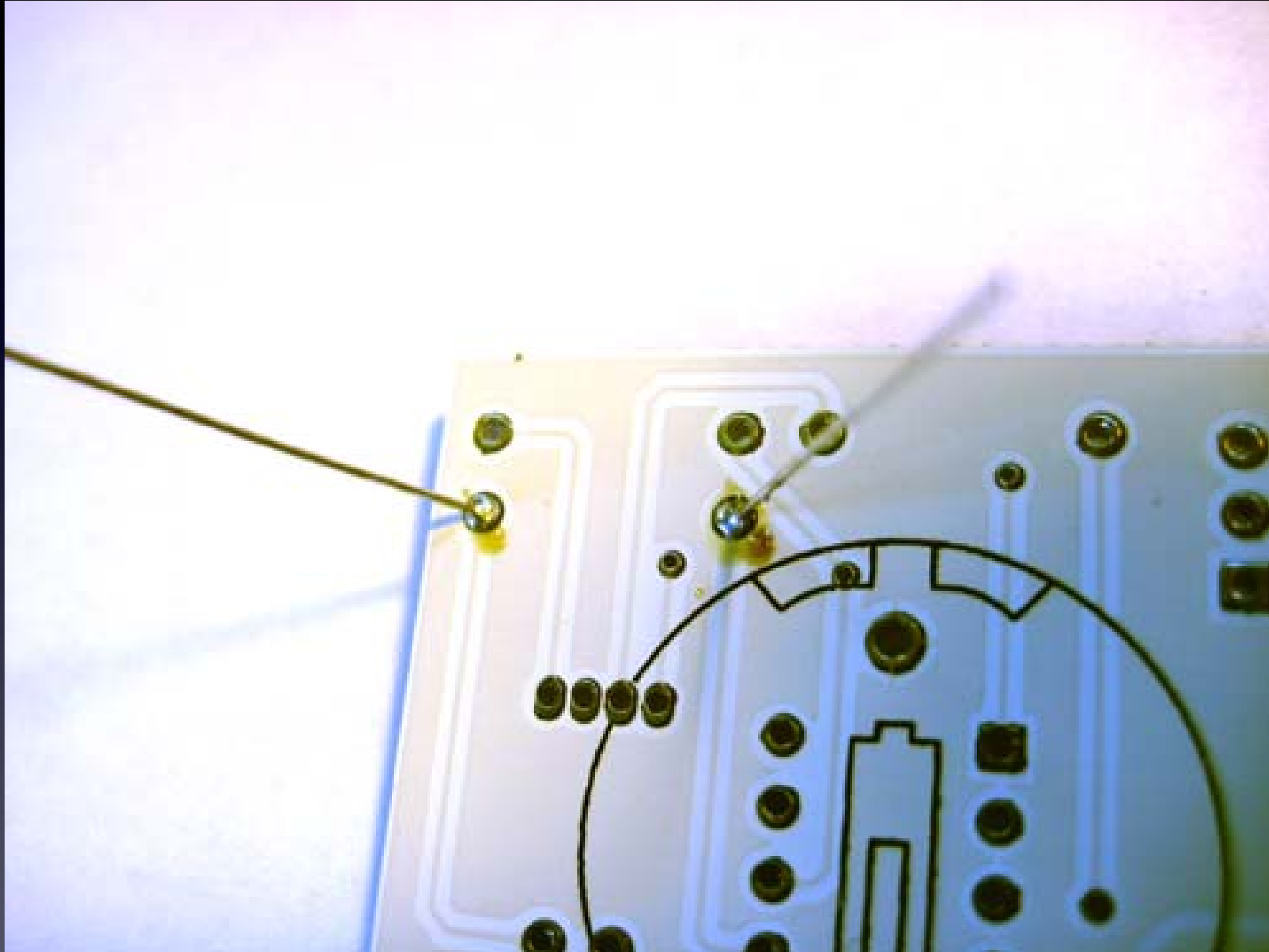
The Rhythm !

Here is the Rhythm and speed (about 1 second per step):



Lift Tip

Solder all of the leads of the part to the board

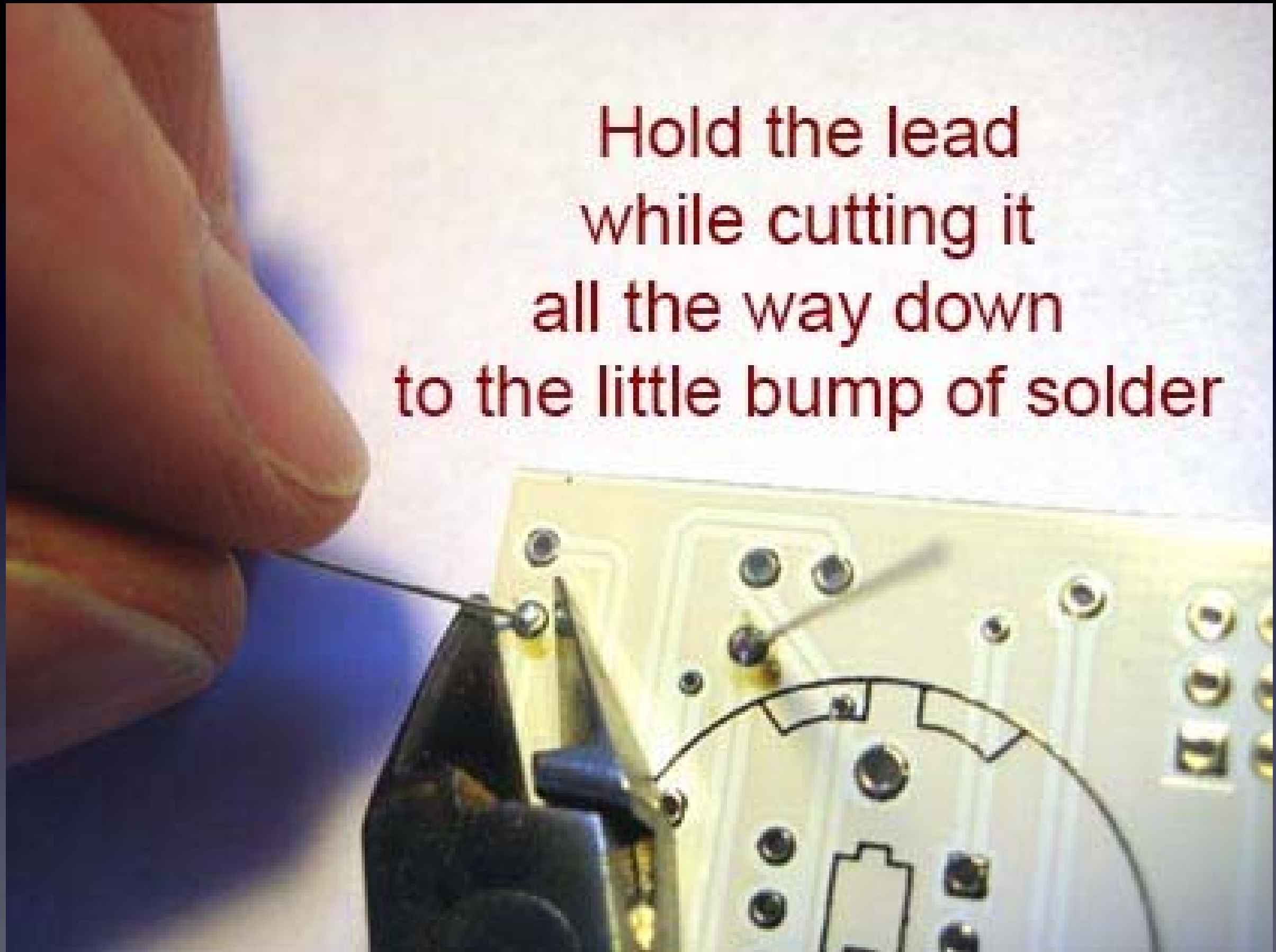


For this part, there are two leads

Here you can see two good solder connections

Now cut the leads short

Hold the lead
while cutting it
all the way down
to the little bump of solder



Cutting with the tip of the wire cutter gives you more control

Safety Tip #3:

Hold or cover the lead !

(or it will fly into your eye!)

(They like doing that – so please hold or cover the lead when you cut.)



All done !

No wires sticking out

One part at a time

Till all the parts are soldered

Then put in the batteries,

Turn it on,

And it works!

(Or you start debugging.)

