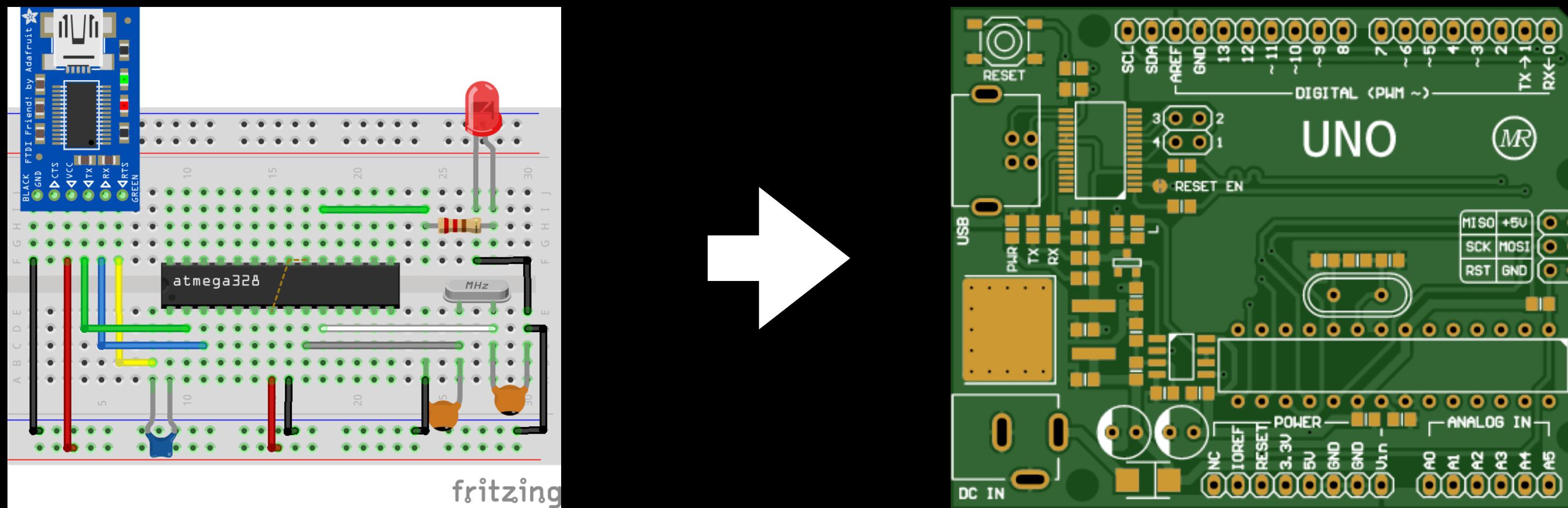


PCB Manufacturing

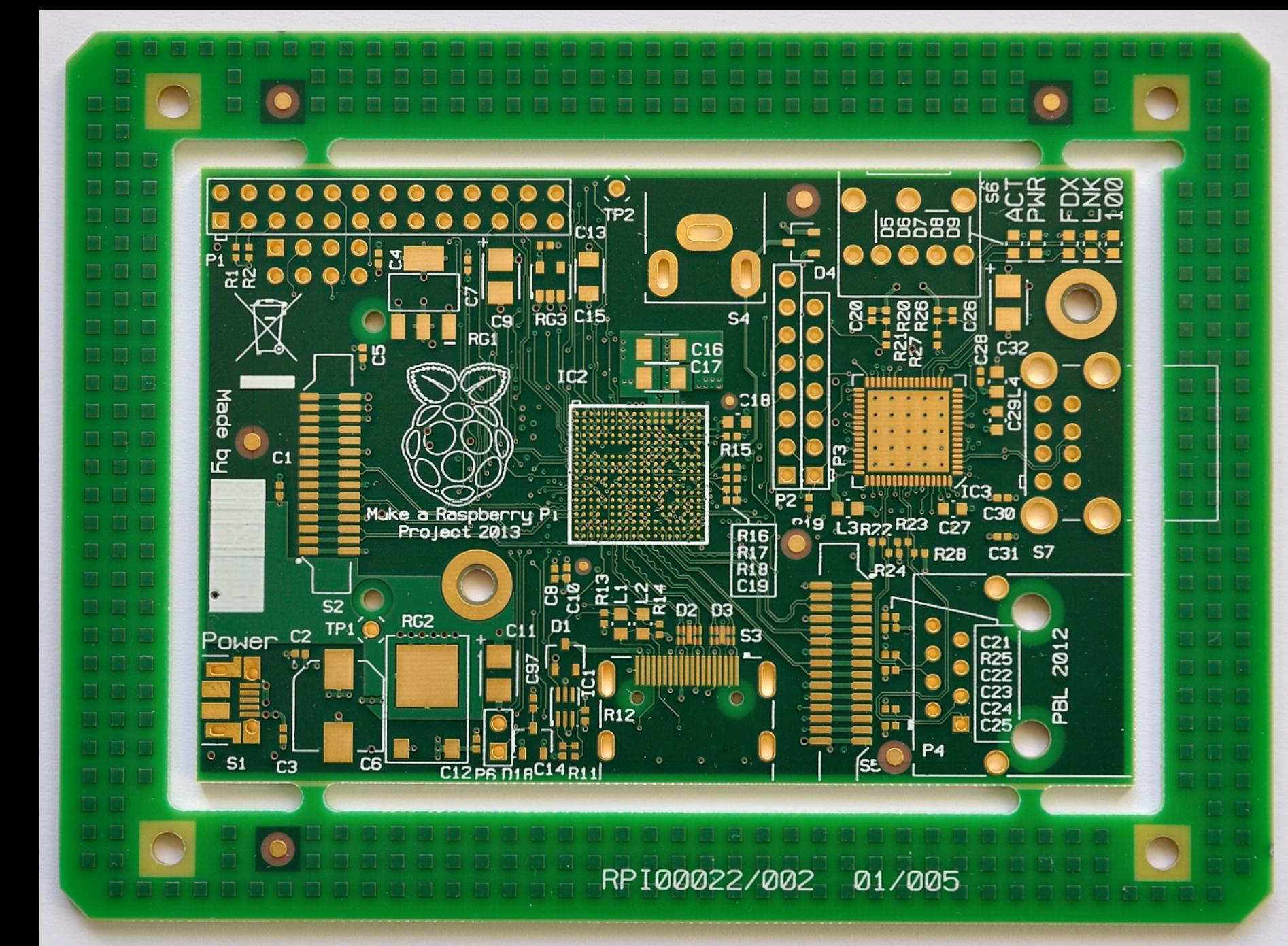
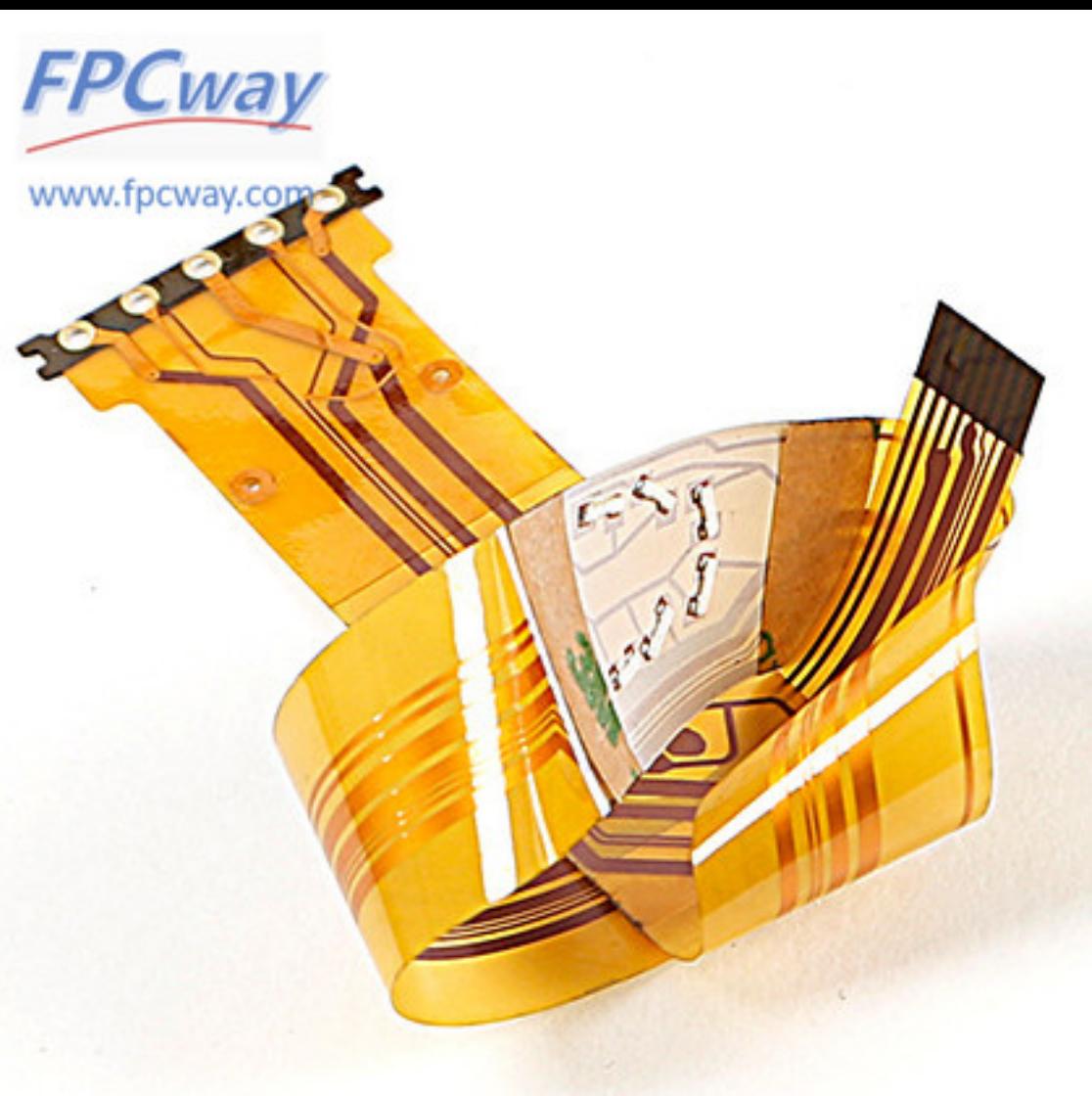
Printed Circuit Boards



https://www.pcbway.com/project/shareproject/DIY_clone_Arduino_Unc_PCB.html

<https://www.electronics-lab.com/project/arduinoatmega328p-on-a-breadboard/>

PCB Types



https://raspi.tv/early-rev2-pi-pcb-front_1500

PCB Layers

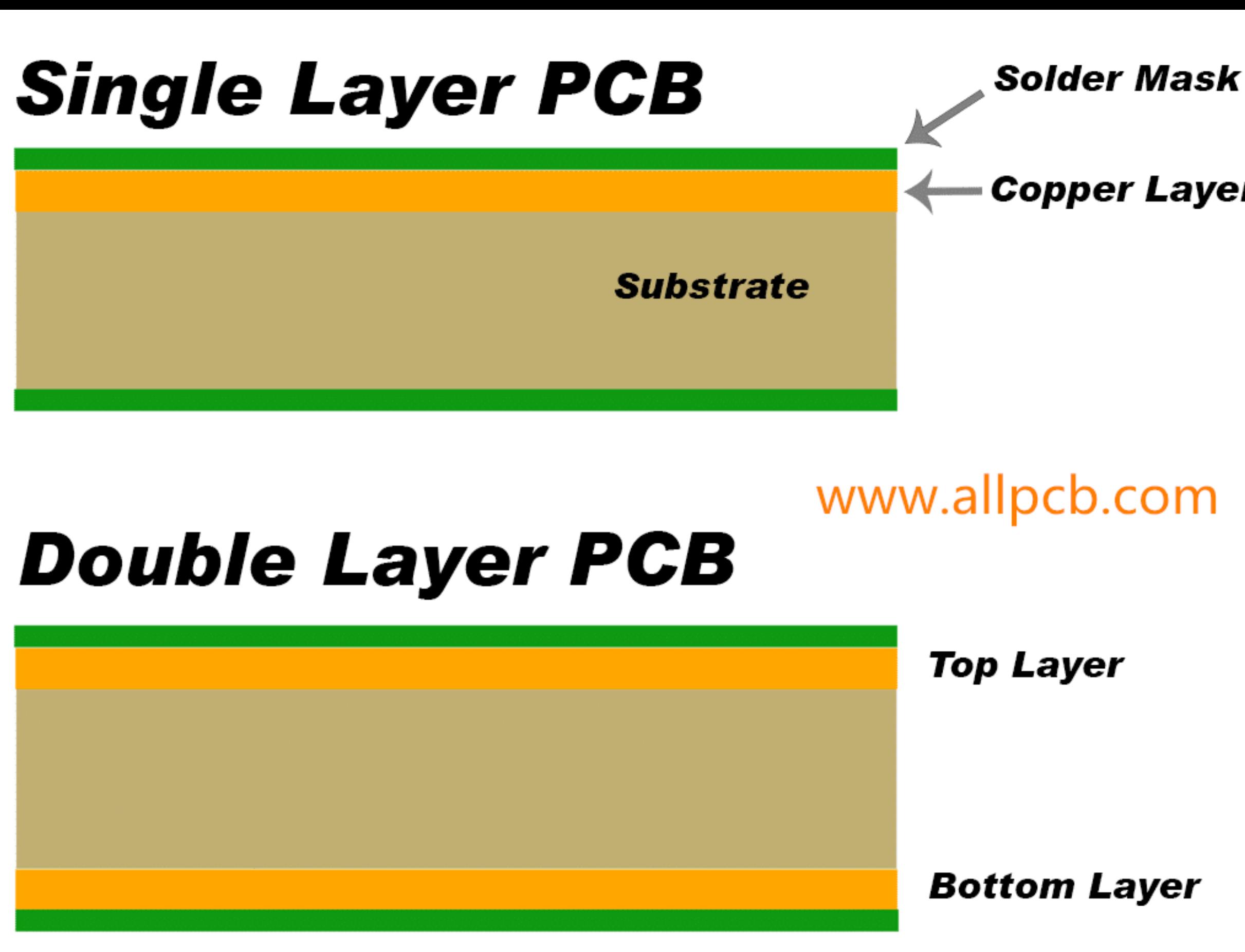
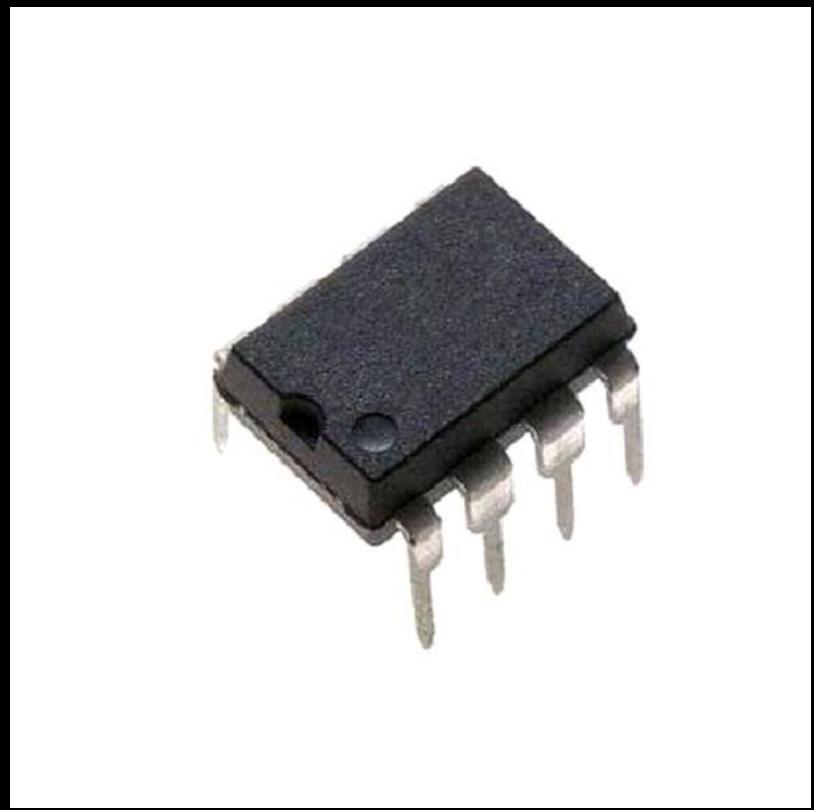


Figure 8. Typical Six-Layer PCB Stack with Routing Assignments

PCB Component “Package”

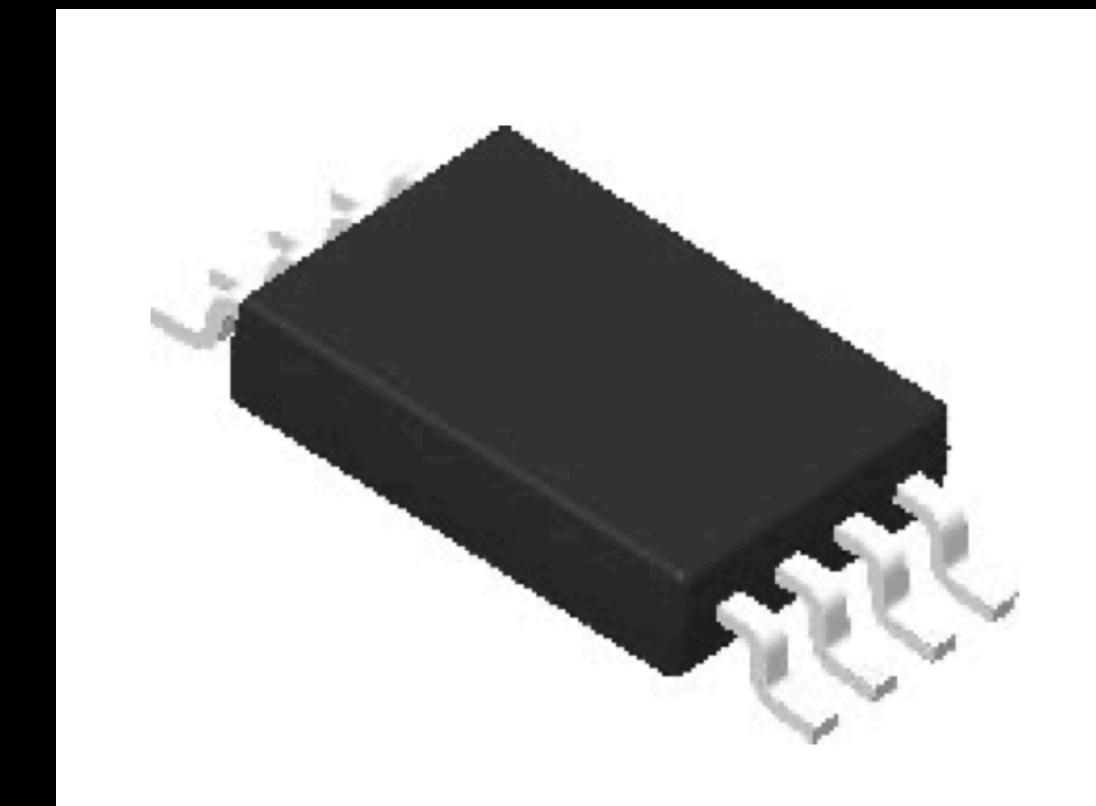
PDIP



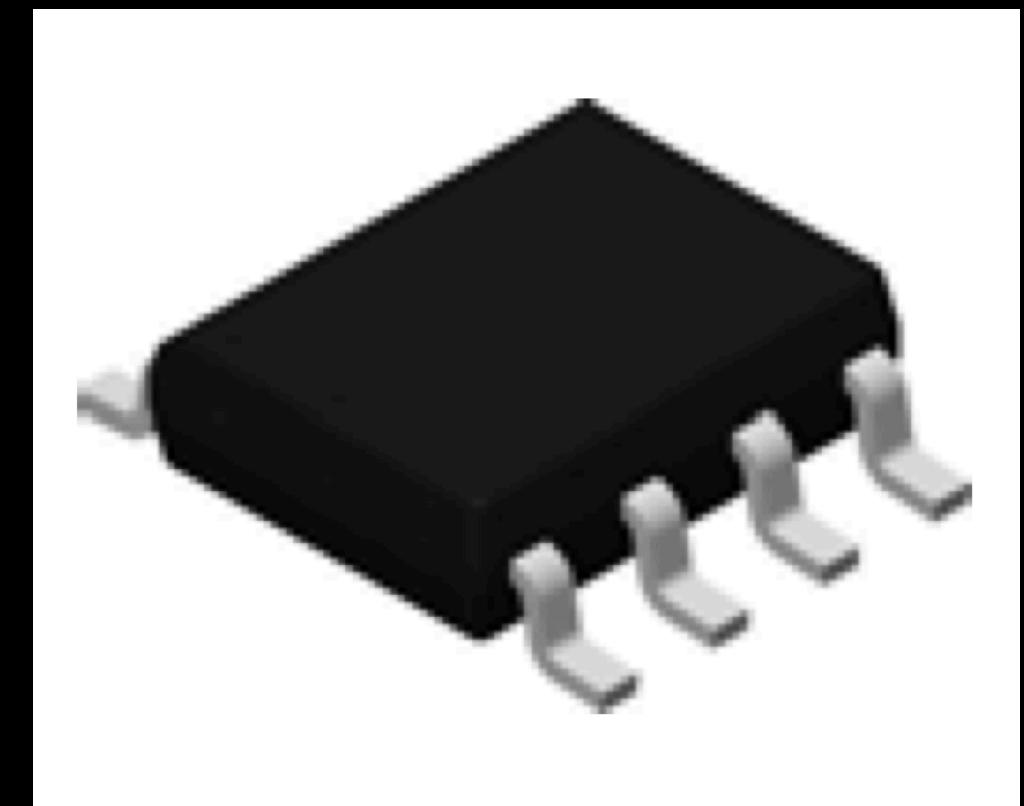
SOP



TSSOP



SOIC



Not to scale!!!

Using a website:

<https://pcbshopper.com>

Compare prices from 23 PCB manufacturers at once:

Advanced Circuits (4PCB) • AISLER • ALLPCB • BasicPCB • Bay Area Circuits • Bittele (7pcb) • Breadboard Killer • Dirty PCBs • Elecrow • Eurocircuits • ExpressPCB • ITEAD Studio • JLPCB (EasyEDA) • Lion Circuits • OSH Park • PCB Zone • PCBCART • PCBJOINT • PCBWay • Seeed Studio • ShenZhen2U • Smart Prototyping • U&I (quickturnpcb)

Dimensions	Layers	Quantity
10 x 10 inches	1 2 4 6 8 10	60

Solder mask color

No mask Least expensive color Black Black Matte Blue Green
Green Matte Purple Red Transparent White Yellow

Silkscreen

None Top Bottom Both Cheapest 1.6mm/0.062"

Surface Finish

Board Thickness

Copper Weight

Min. Trace/Space

Min. Drill

Gold Fingers

Include Stencil

Quality Certifications

Number of Designs Separated Only by Silkscreen

Ship to:

Boards arrive in

United States Default time

GET PRICES

You can sort the results by clicking on the column headers. For example, to find the cheapest PCB manufacturer, click on the "Total with Shipping" column. To find the fastest PCB manufacturer, click on the "Total Days" column.

Prices are shown in US Dollar

Company	Color	Qty	Price	Total with shipping	Total Days
ADVERTISEMENT					
PCBWay	Green	75	US\$511.00 total	Total boards + shipping:	
China			US\$6.81 each	DHL:	US\$735.68 8 days
★★★★★ (1) Read or write reviews				EMS:	US\$765.98 18 days
Select the 3-4 days build time. Price includes PayPal fee.					
Ad PCB prototype is only \$0 by using registration coupon					
PCB assembly only \$30 and free shipping					
JLPCB (EasyEDA)	Green	75	US\$236.00 total	Total boards + shipping:	
China			US\$3.15 each	S.F Express (Economy) :	US\$334.57 20 days
★★★★★ (28)				UPS Worldwide Saver:	US\$379.20 11 days

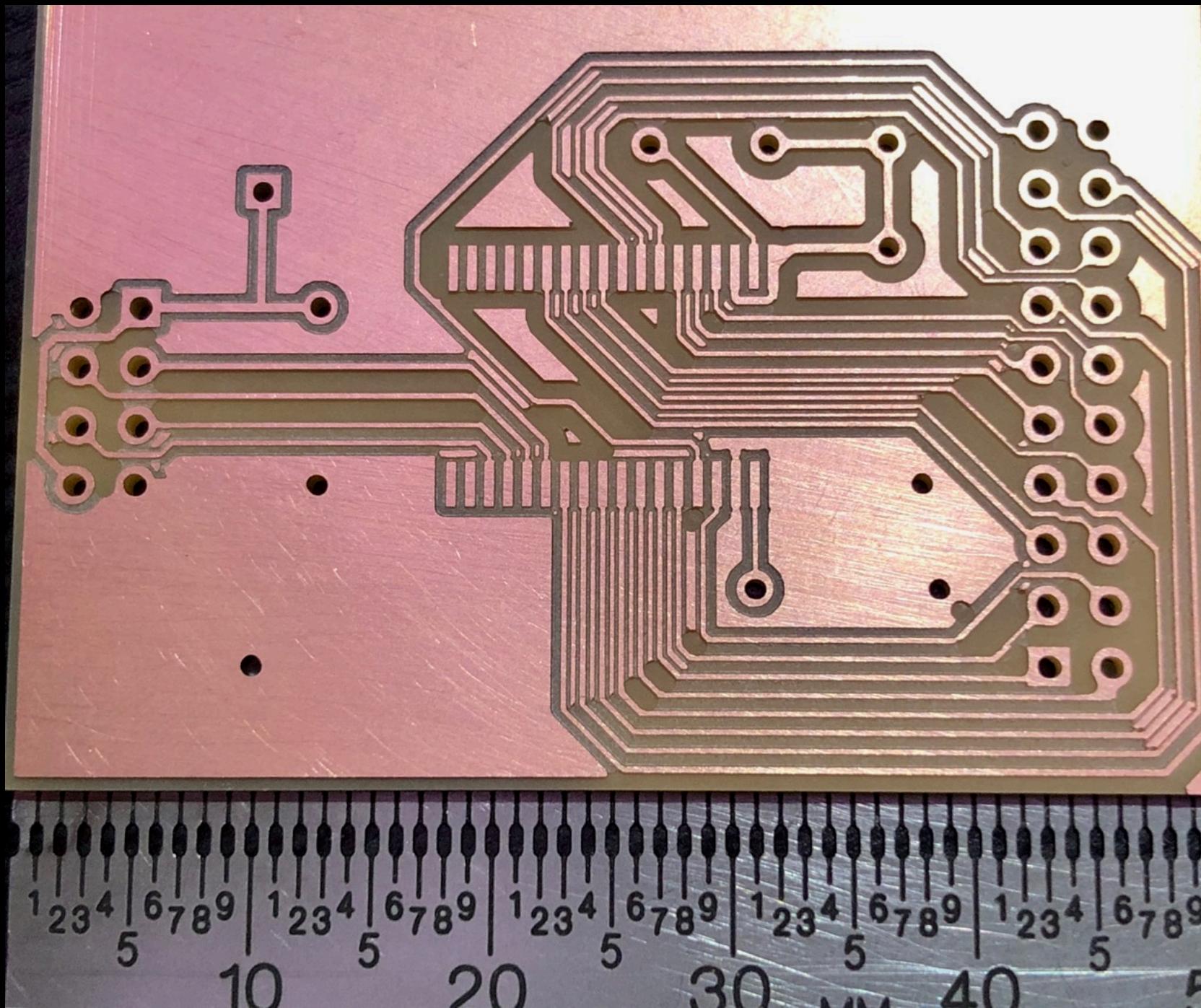
Go to Order Page

PCB DIY

- You can make A PCB your self
- Copper plate with sometimes no cops

PCB DIY

Bareboard



FR4

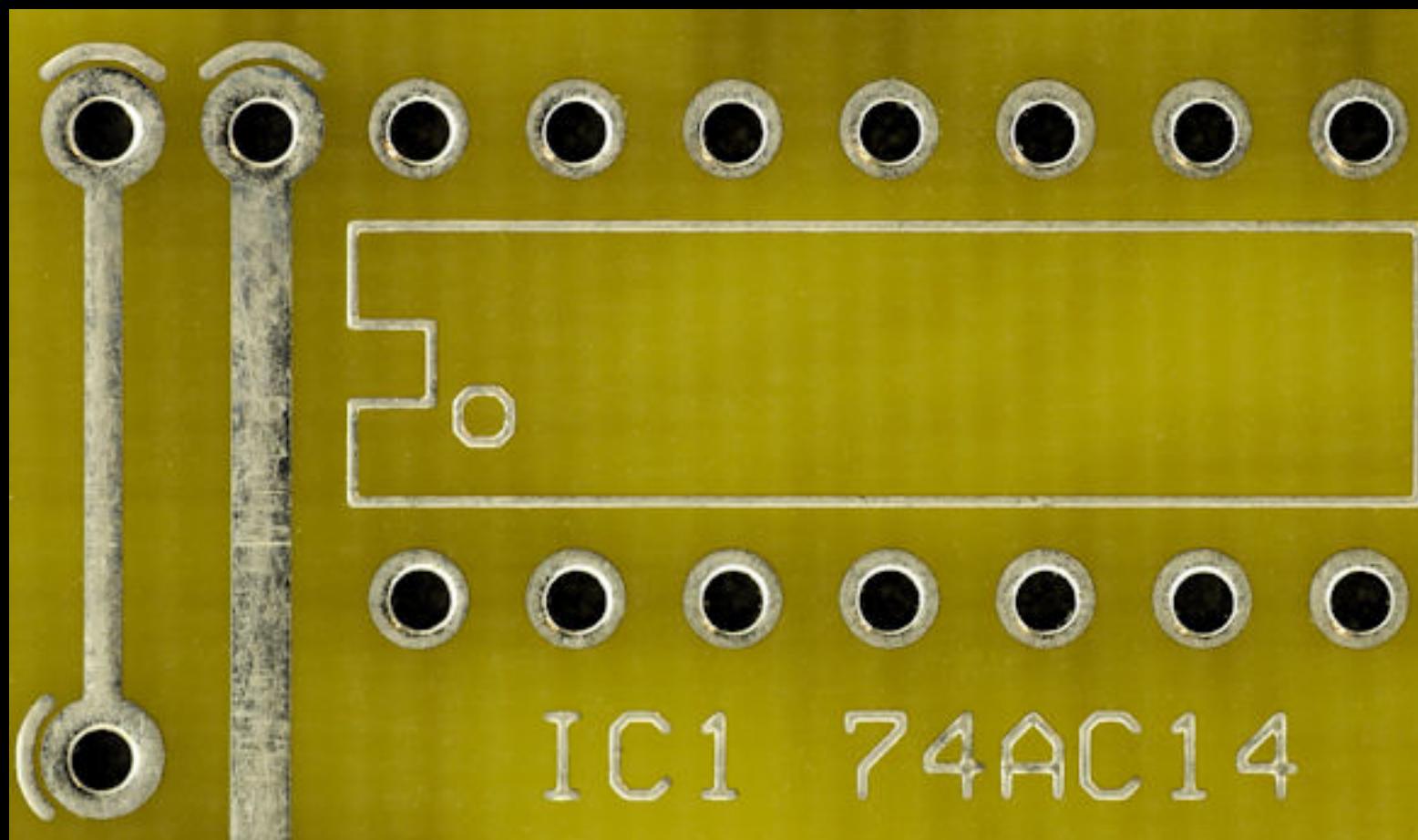
.062" thick

No Mask

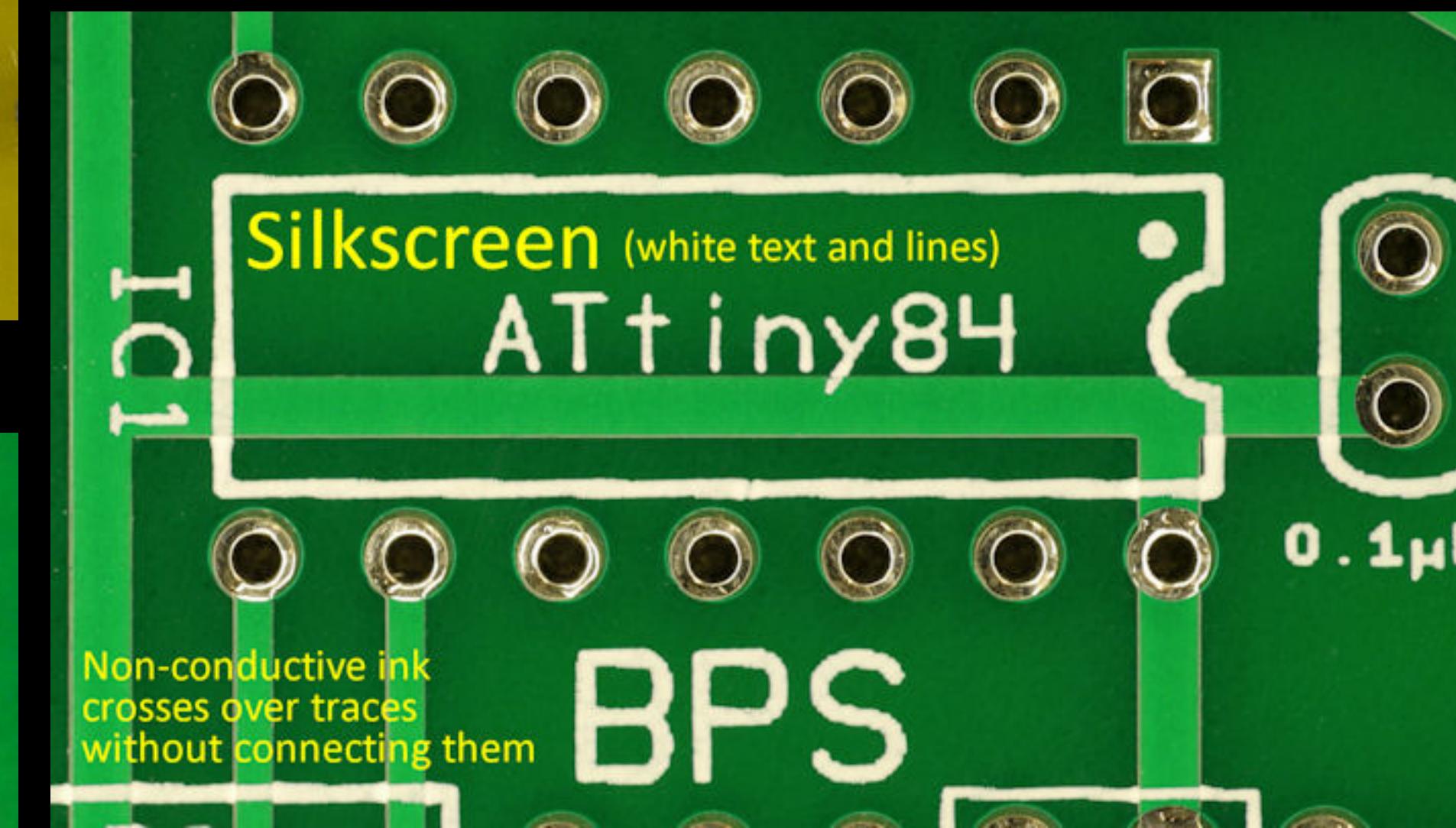
No Screen

Non-Plated holes

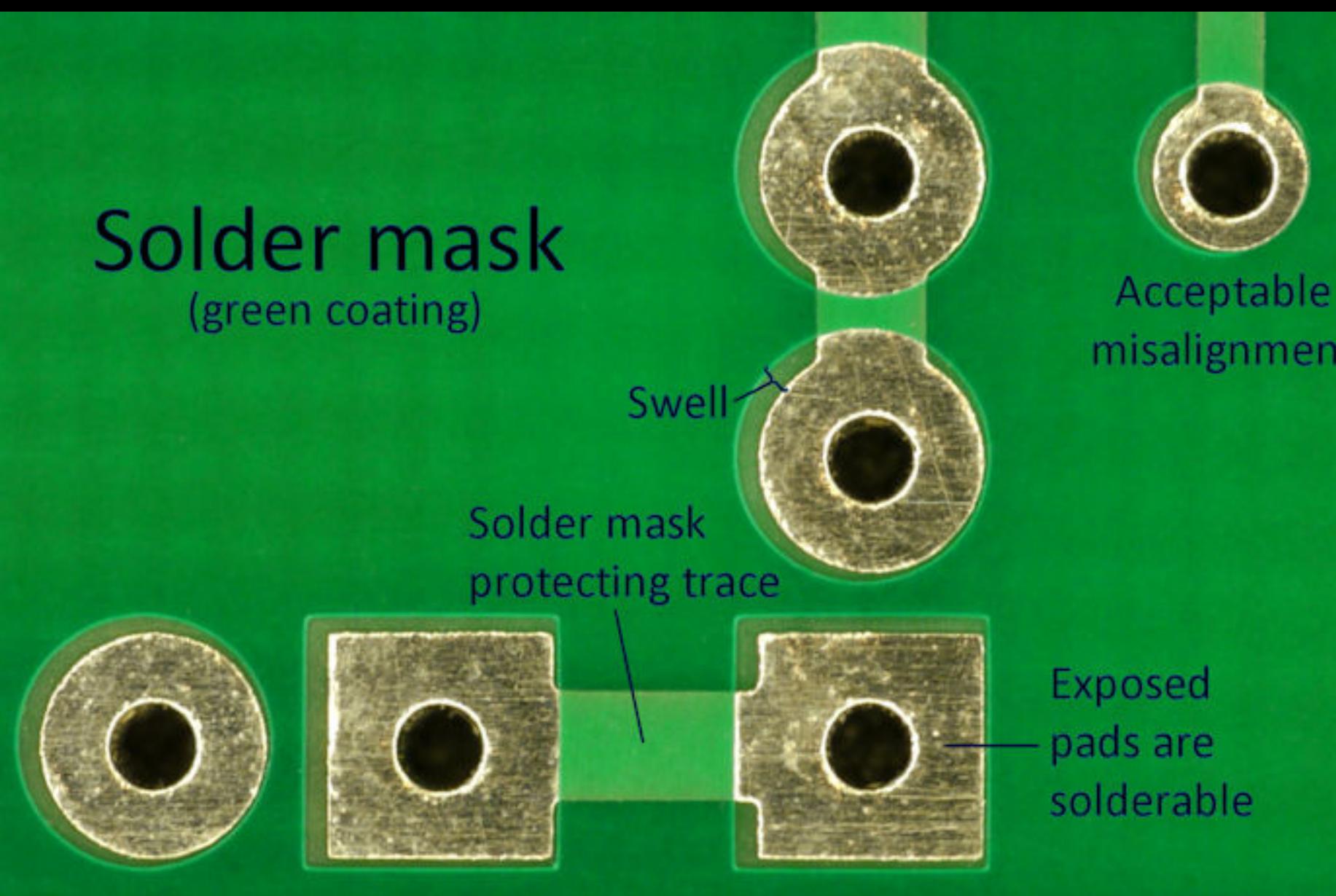
PCB DIY



Standard Board



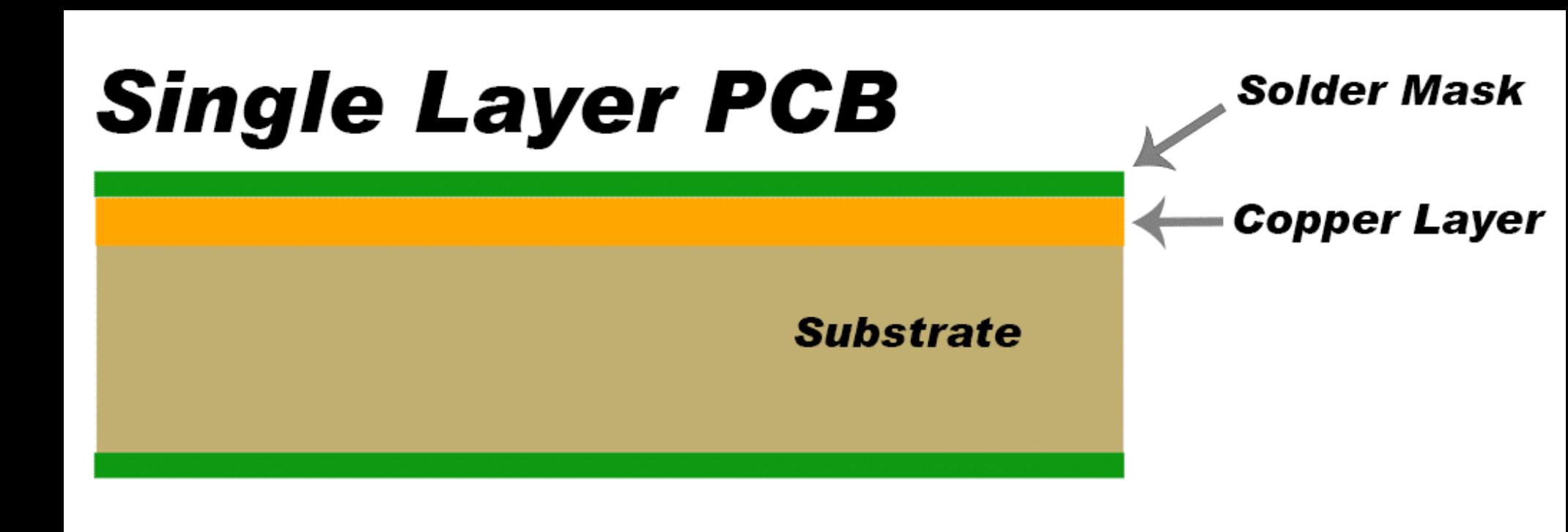
FR4
.062" thick
Green Mask
White Screen
Plated holes



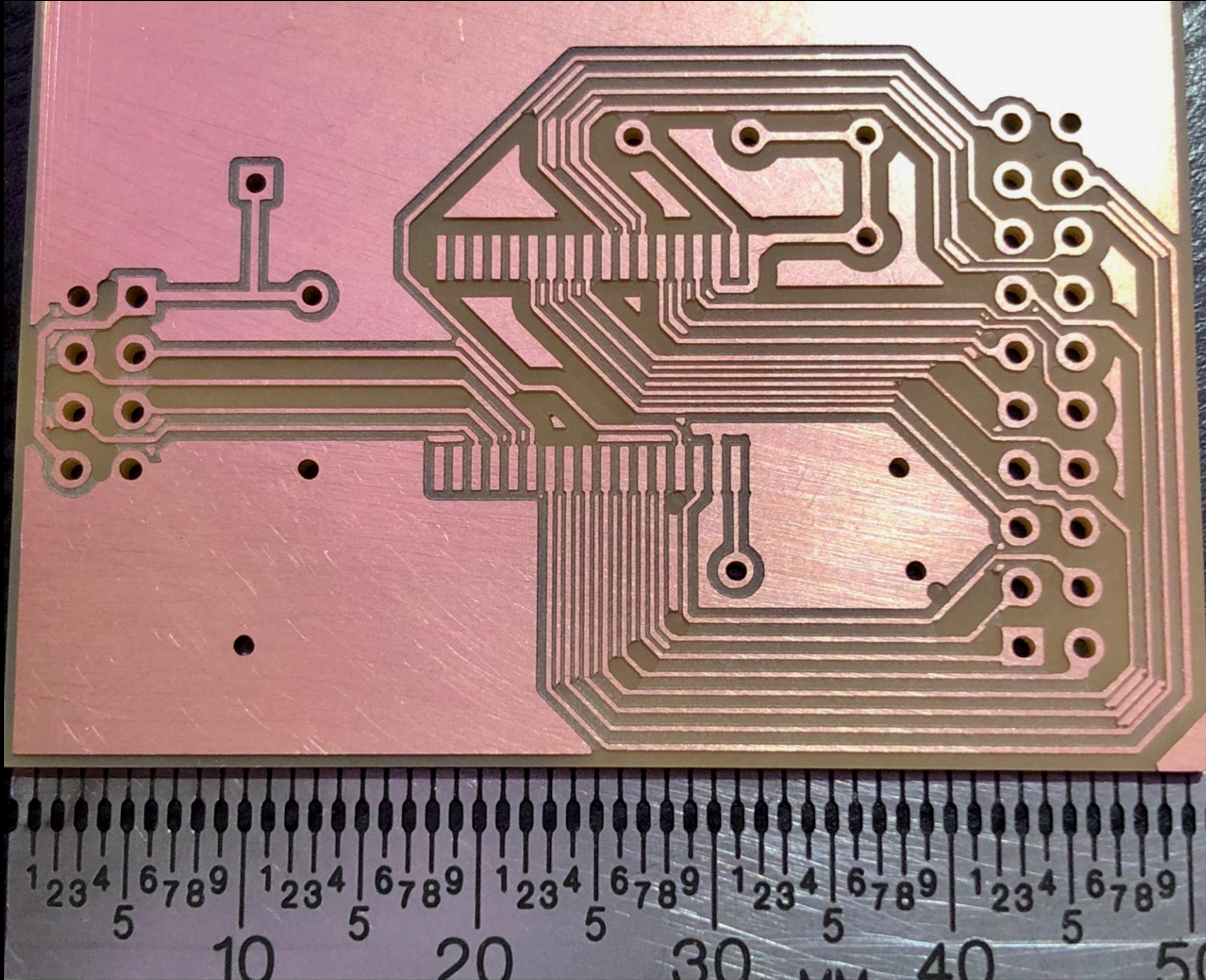
<http://www.robotroom.com/Silkscreen-and-Solder-Mask-1.html>

PCB DIY

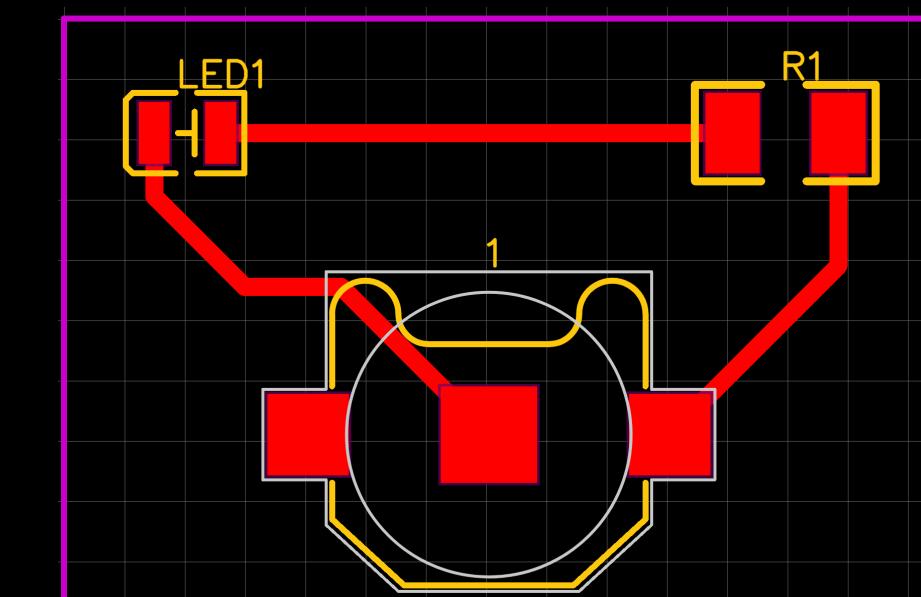
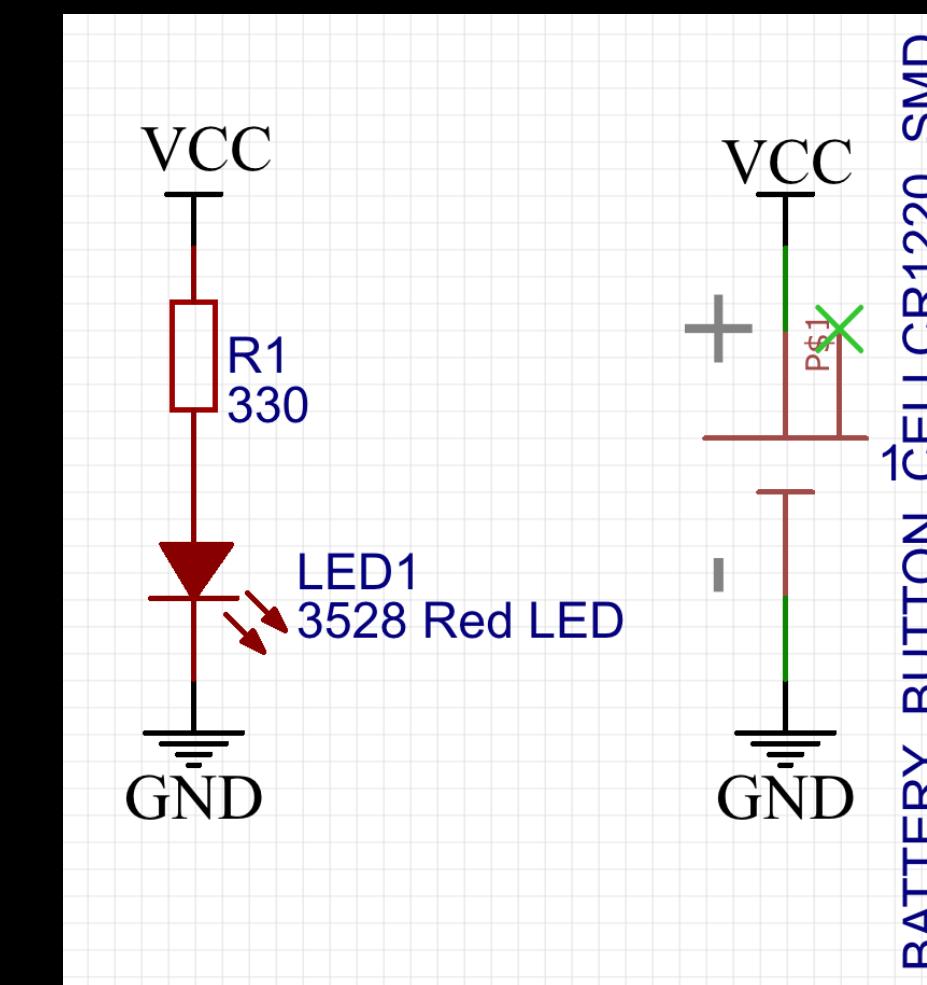
- You can make A PCB your self
- Copper plate with sometimes no copper



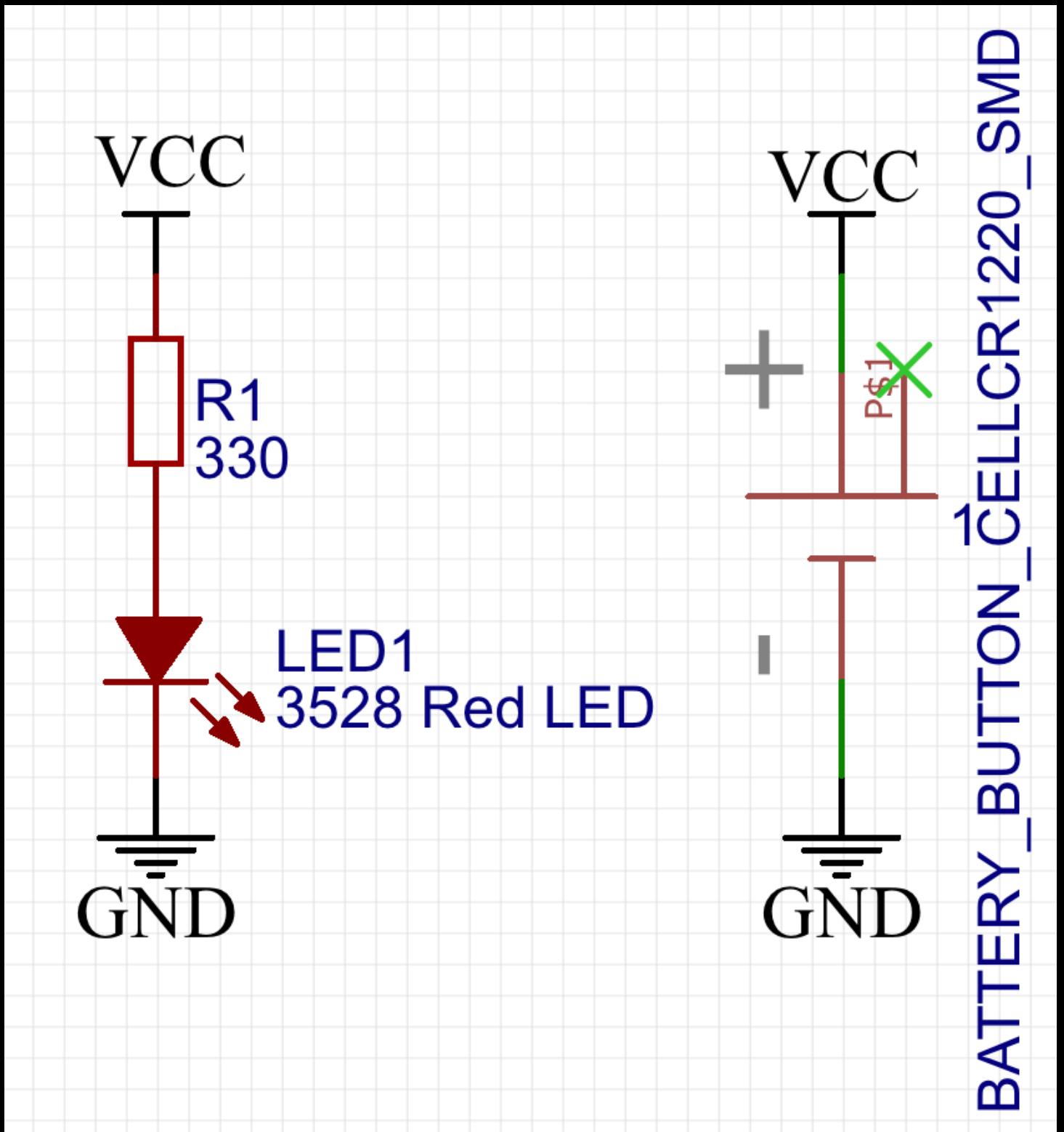
A copper plate with sometimes no copper:



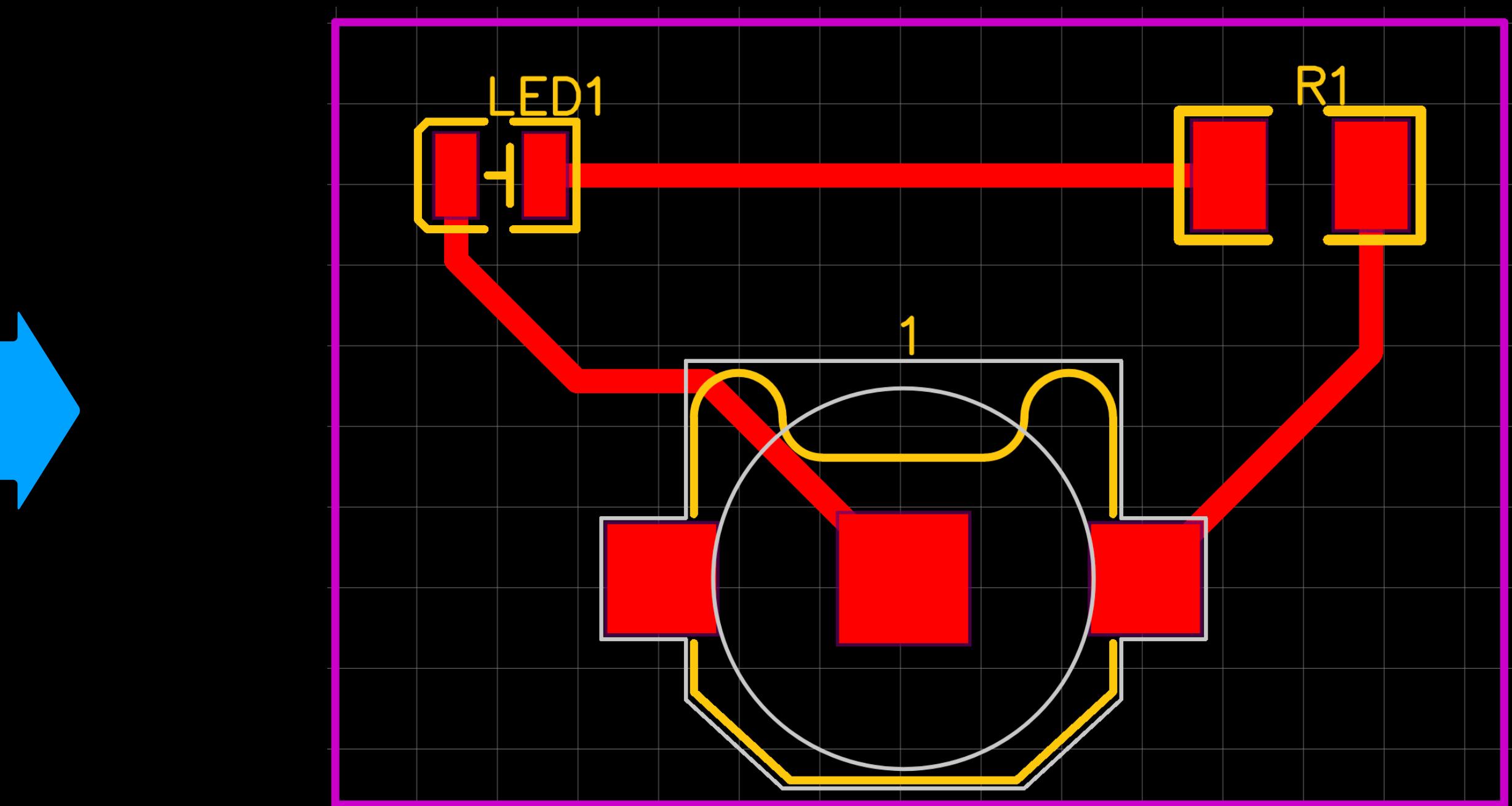
Design your PCB



<https://buildbrighton.com/etching-pcb-resist-with-an-ls3020-laser-cutter/>



BATTERY_BUTTON_CELLCR1220_SMD



Step 1

Get a copper plate

Home > Electronics > Arduino Compatible SCM & DIY Kits > Arduino Compatible SCM Components



15Pcs 7x10CM Single Side Circuit Board Copper Clad Plate Laminate Universal PCB Circuit Board Glass Fiber Reinforced Copper

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Quantity:

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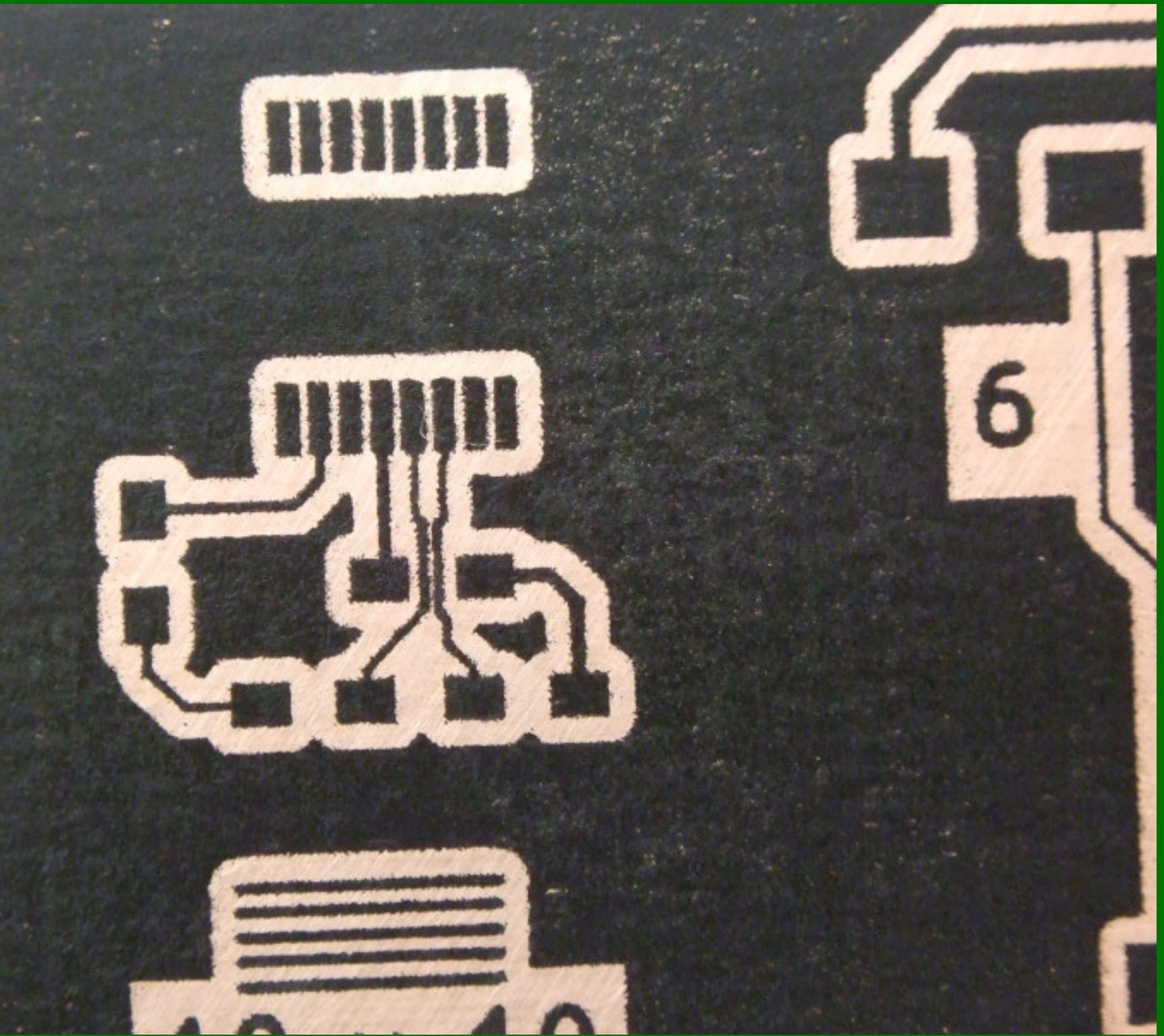
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Buy Now **Add to Cart**  Add to wishlist (20)



Step 3-5

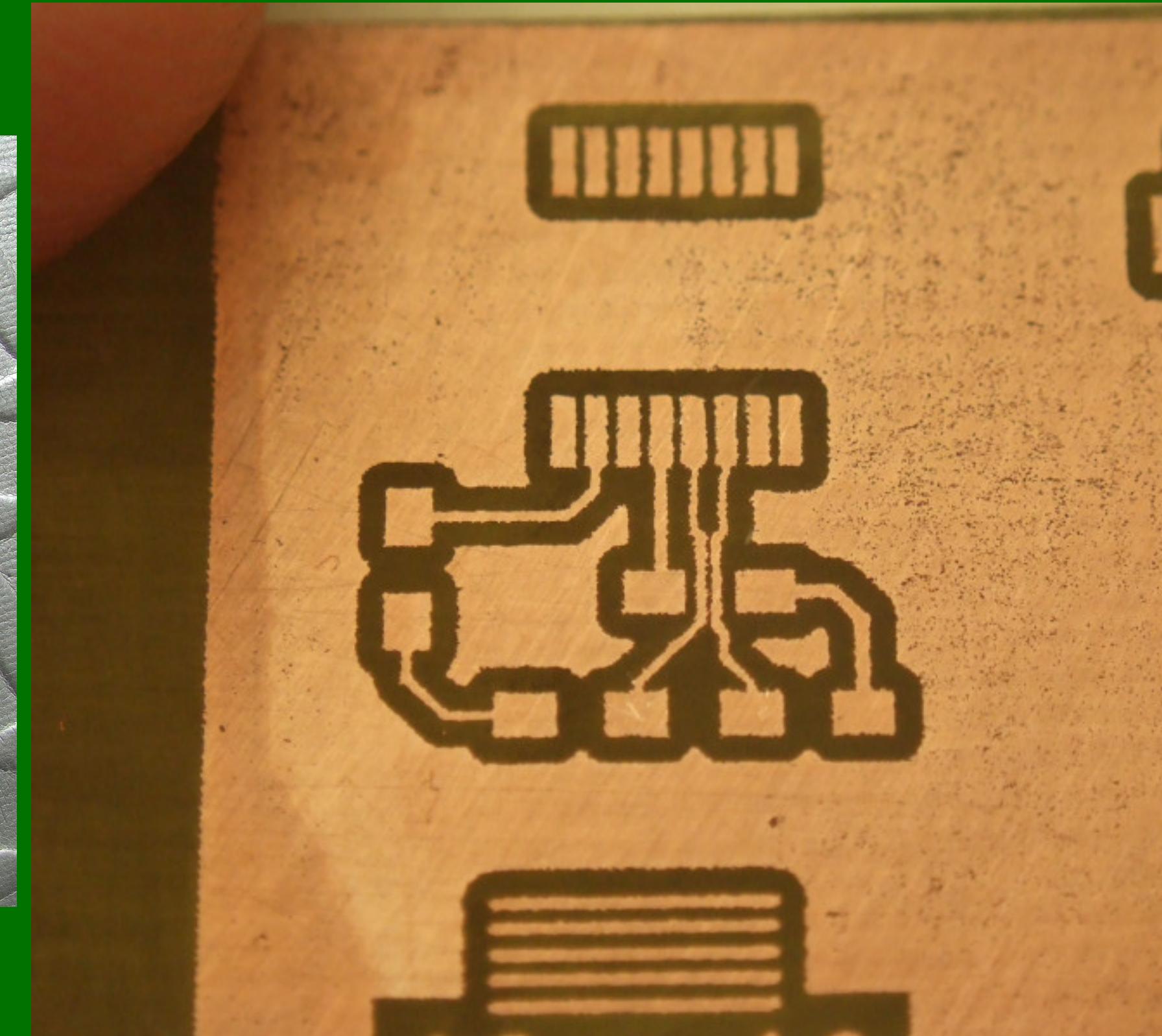
Spray Paint



Etch



sand/dissolve



<https://hackaday.com/2016/09/12/take-your-pcbss-from-good-to-great-toner-transfer/>

<https://www.instructables.com/id/Etching-Precise-Custom-PCBs-With-Laser-Cutter/>

<https://discuss.inventables.com/t/paint-resist-laser-ablation/11759/5>

Now, Ilan Mandel

Thank you!

I will post these and my first slides on to GitHub!