PCB with CNC

- reference
- fritzing
- online jscut guide
- online ncviewer
- online drill to gcode converter

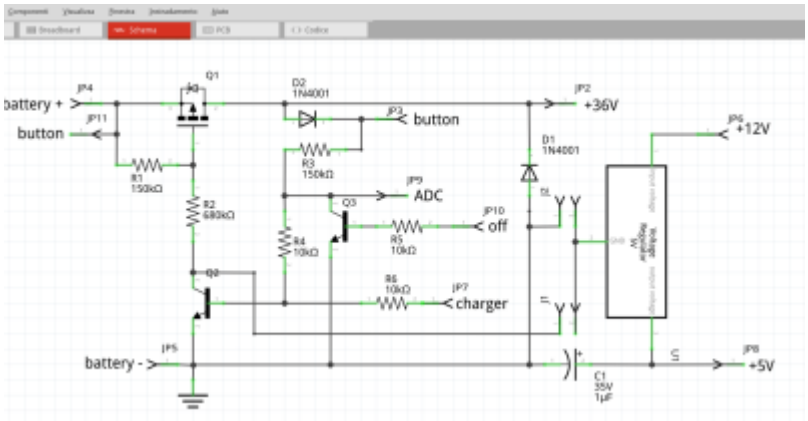
- TODO online carbide3d

CNC for PCB:

- 22000RPM
- V-Bit cutter 30 degree 0.2mm
- first pass 0.04mm
- second pass 0.07mm with more feed

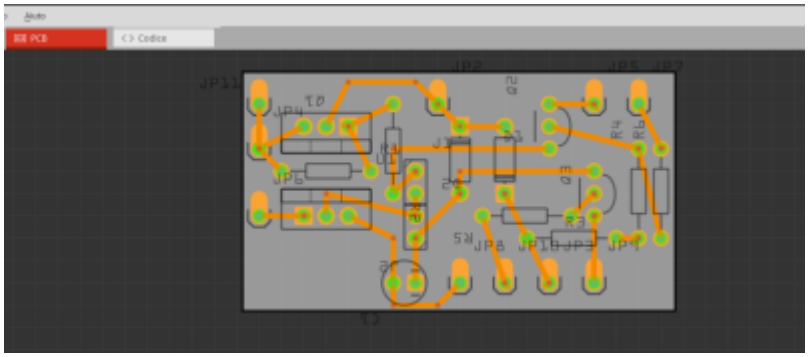
fritzing

Make electronic schema with fritzing

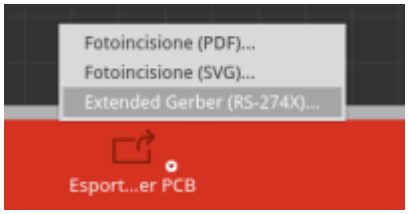


Make pcb routing:

- routing → DRC settings → 32mil large
- routing → DRC (check design at the end)

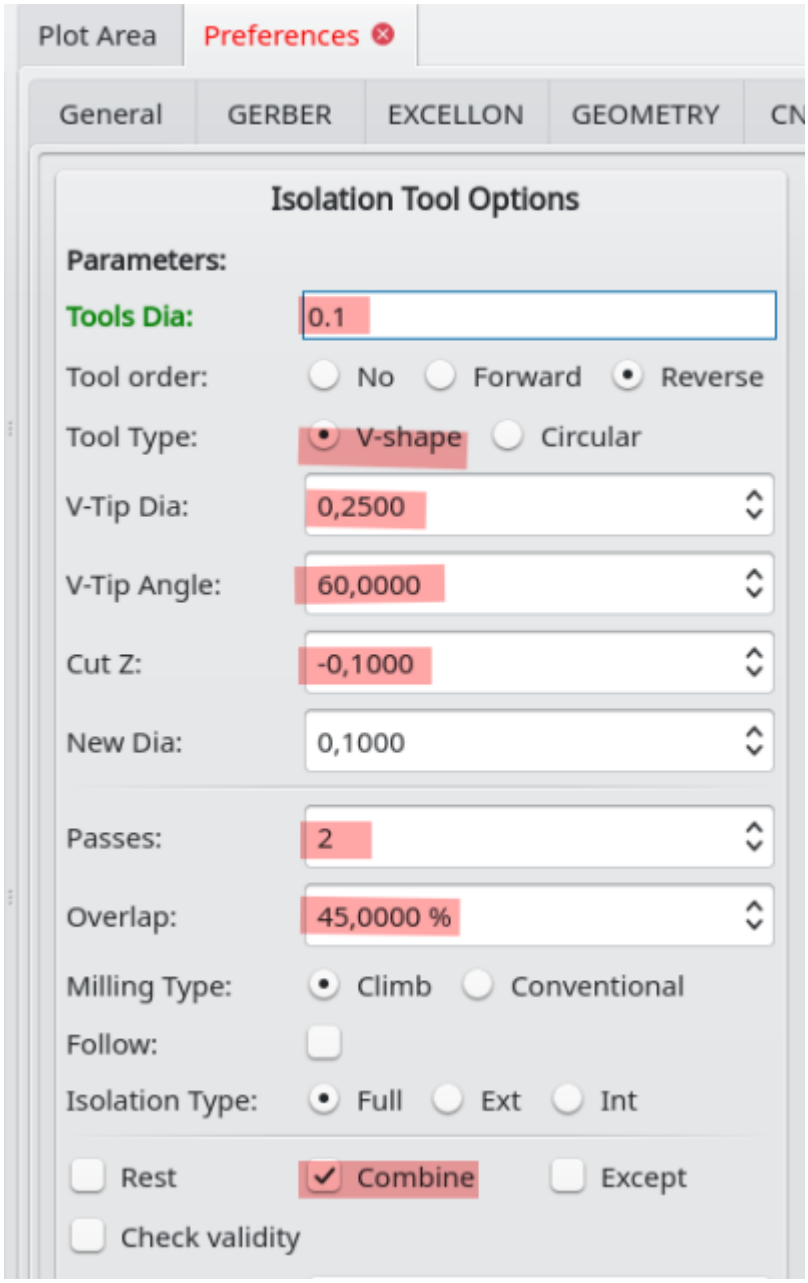


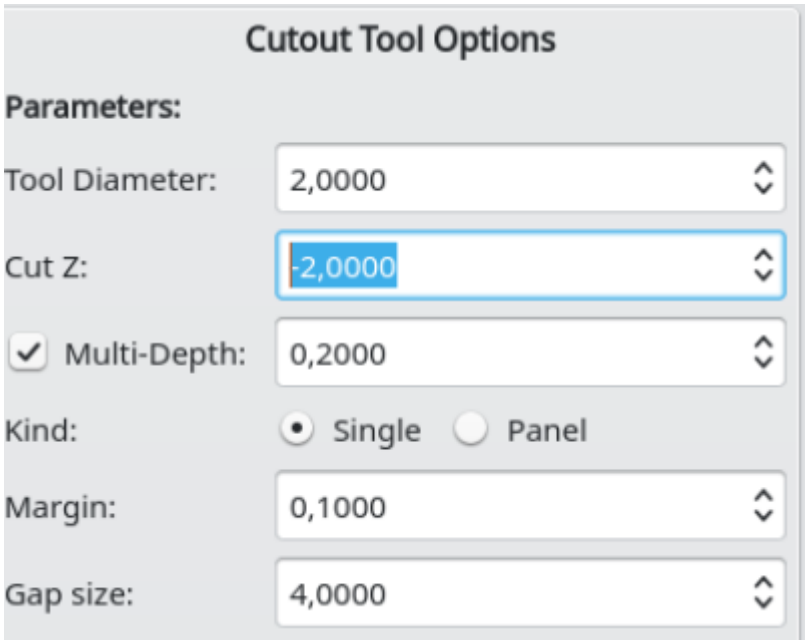
export gerber files

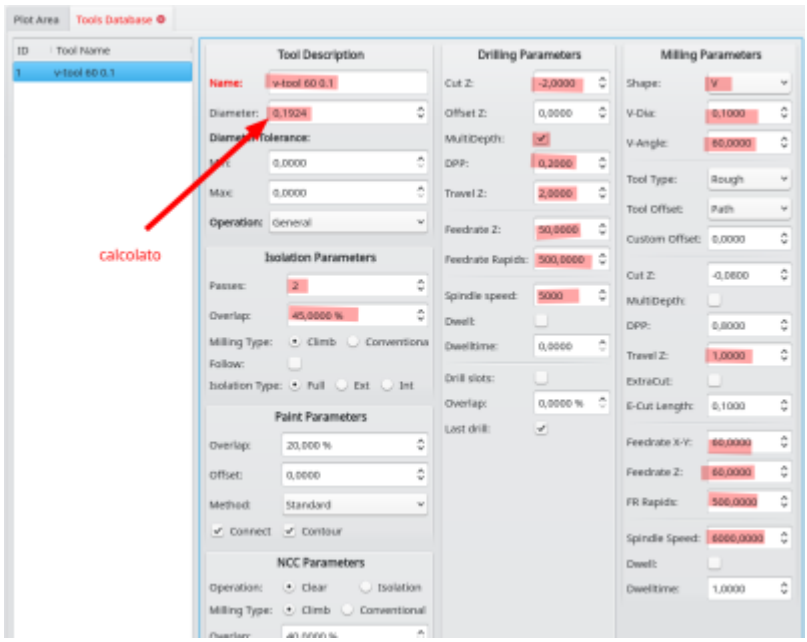


flatcam

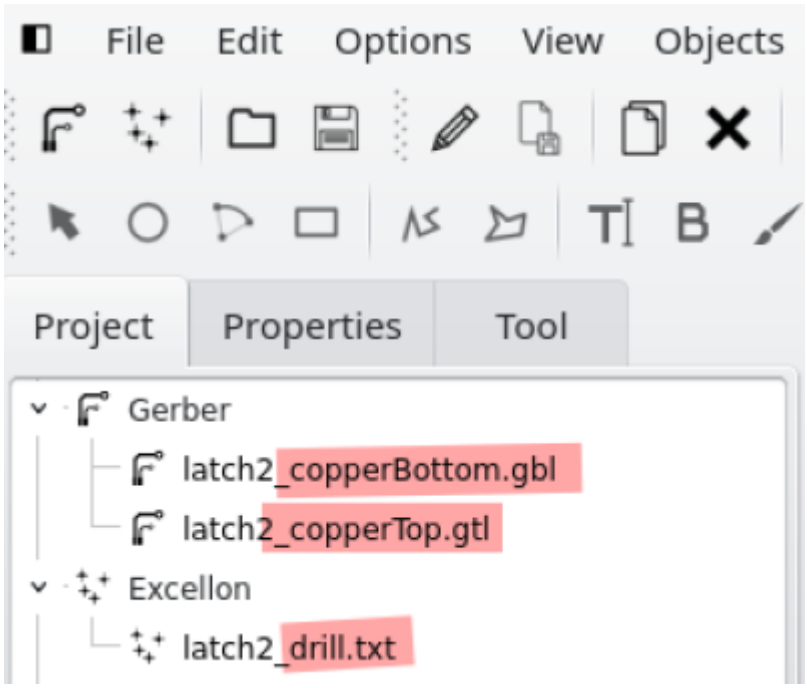
setup flatcam



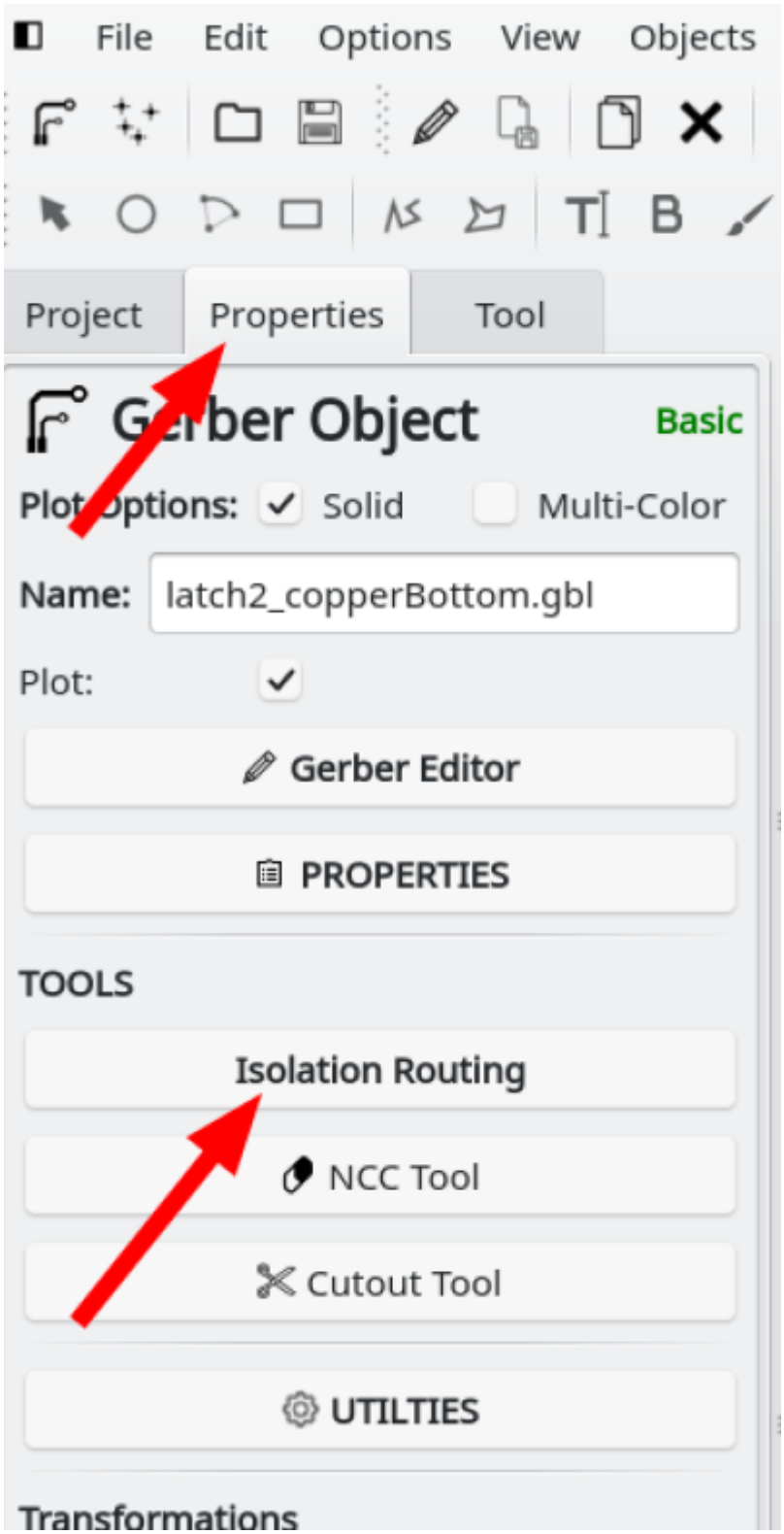




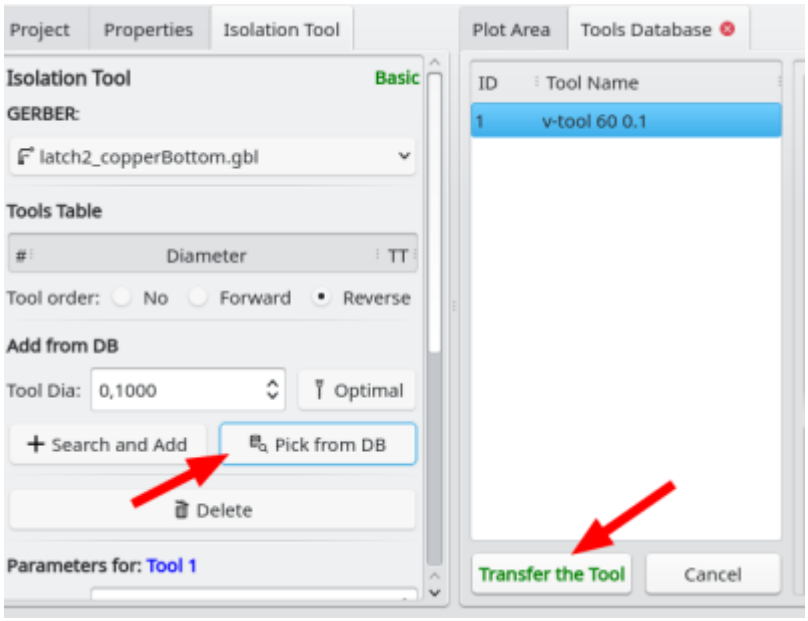
open gerber files (top and bottom if present) and exellon drill file



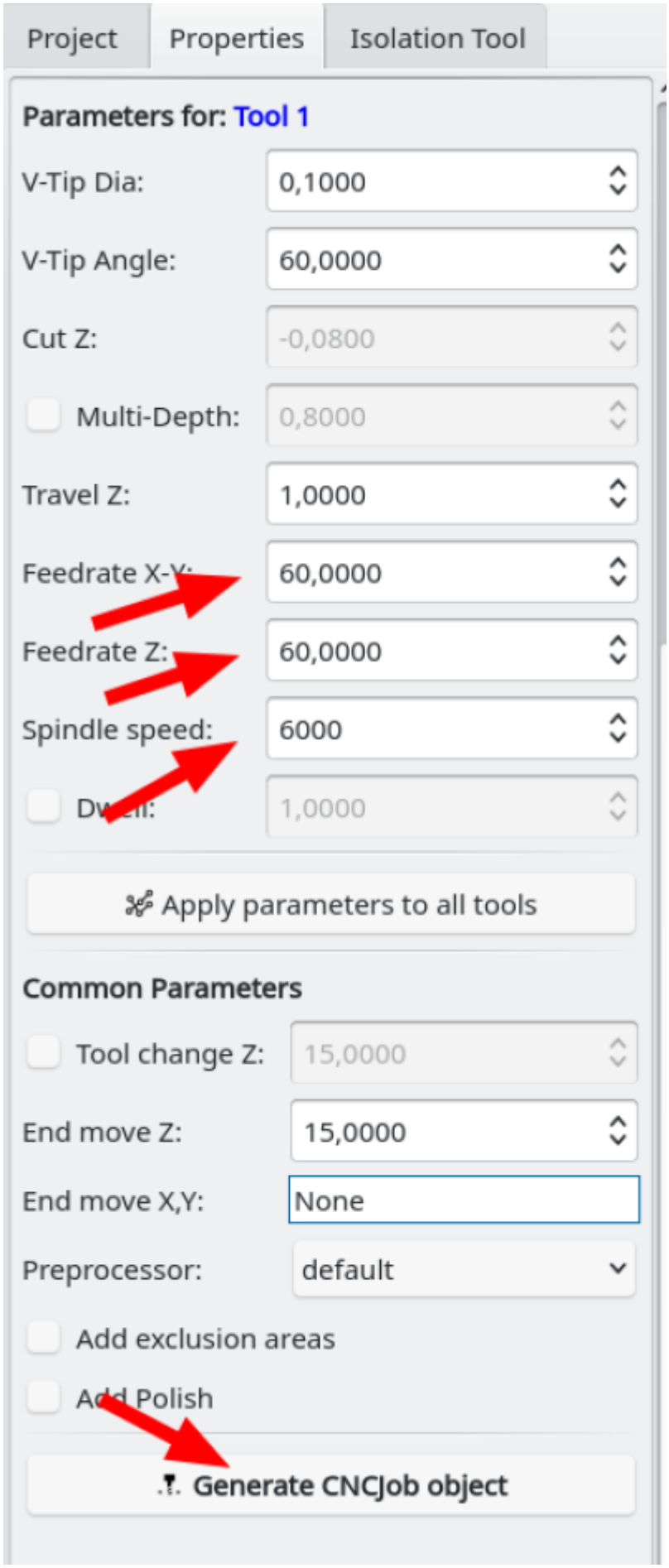
select copper top and



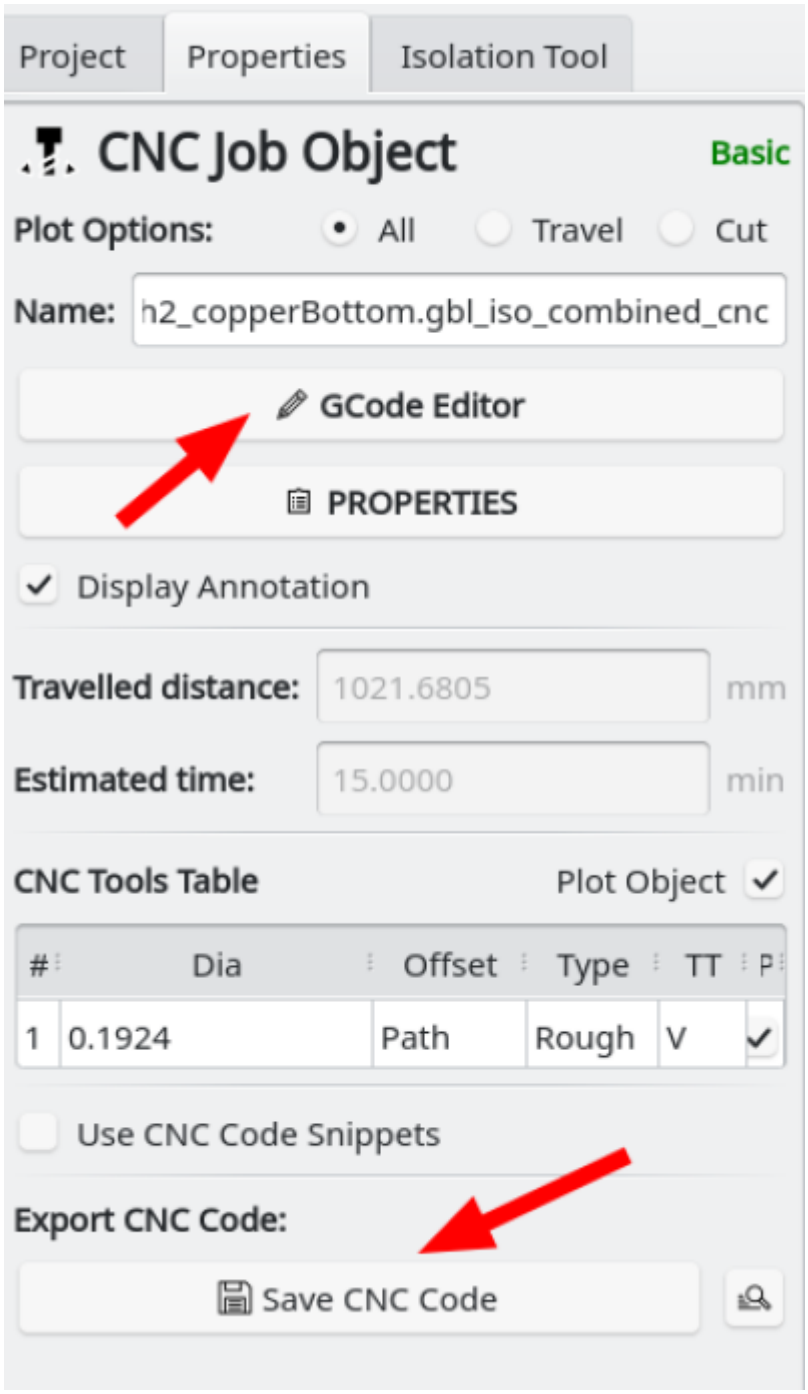
delete tool from tool table 'pick from db' and 'generate geometry'



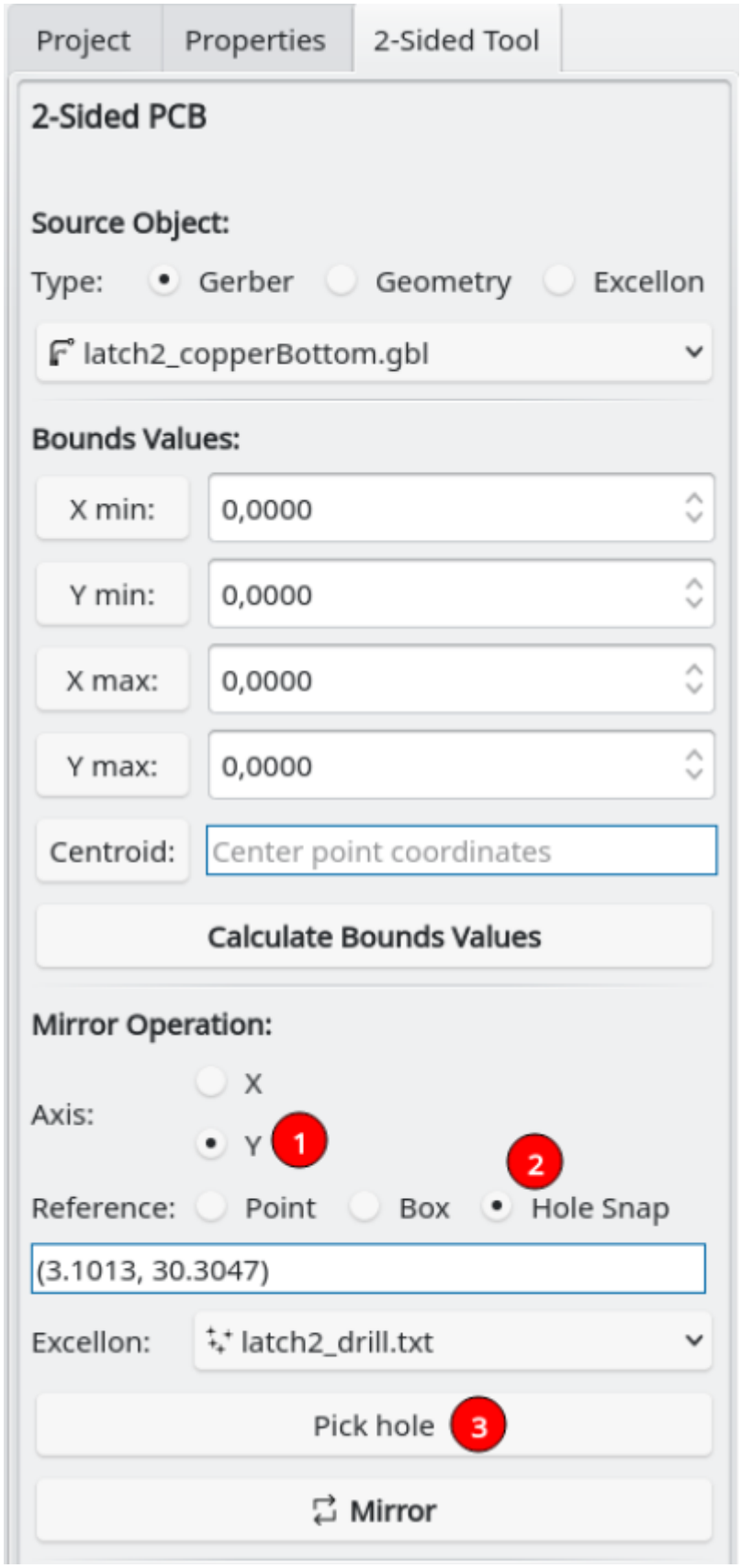
generate cnc job object

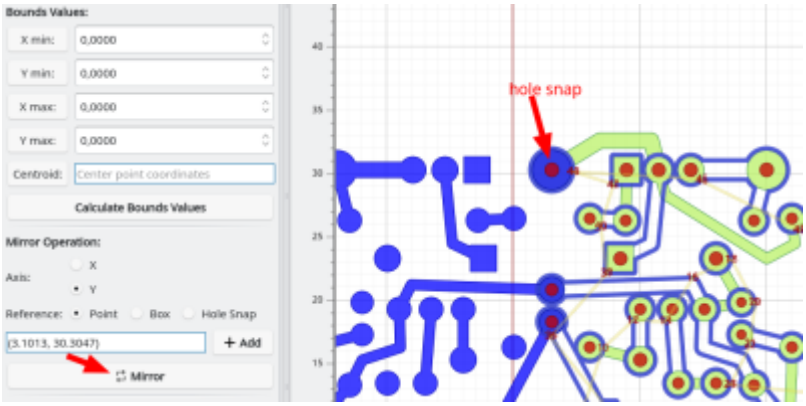


save gcode file

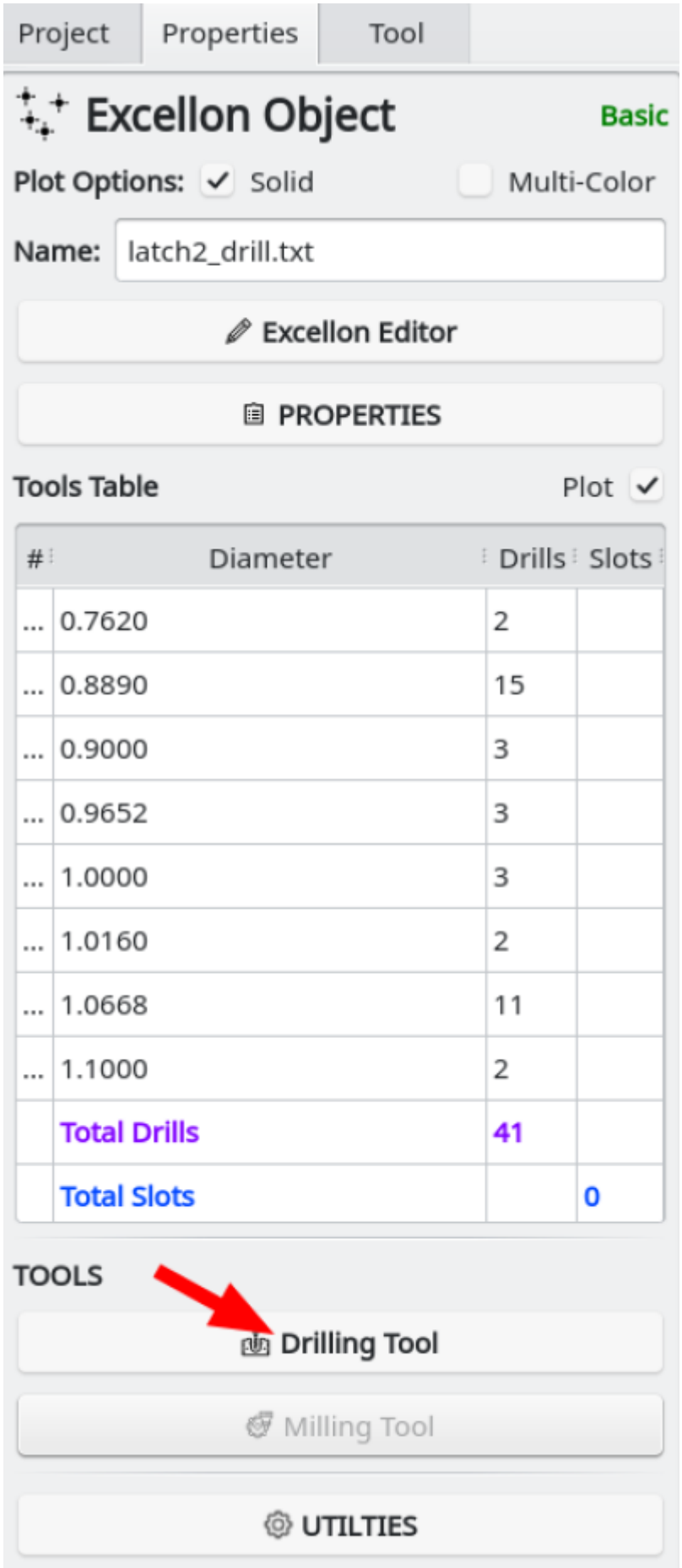


now select *copperBottom.gbl file and make same job to produce gcode for bottom layer. But bottom layer has to be mirrored before geometry object creation.


Project
Properties
2-Sided Tool
2-Sided PCB
Source Object:
Type:
Gerber
Geometry
Excellon
latch2_copperBottom.gbl
Bounds Values:
X min:
0,0000
Y min:
0,0000
X max:
0,0000
Y max:
0,0000
Centroid:
Center point coordinates
Calculate Bounds Values
Mirror Operation:
Axis:
X
Y
1
2
Reference:
Point
Box
Hole Snap
(3.1013, 30.3047)
Excellon:
latch2_drill.txt
Pick hole
3
Mirror


Bounds Values:
X min:
0,0000
Y min:
0,0000
X max:
0,0000
Y max:
0,0000
Centroid:
Center point coordinates
Calculate Bounds Values
Mirror Operation:
Axis:
X
Y
Reference:
Point
Box
Hole Snap
(3.1013, 30.3047)
+ Add
Mirror
hole snap
40
35
30
25
20
15

drill job


Project
Properties
Tool
Excellon Object
Basic
Plot Options:
Solid
Multi-Color
Name:
latch2_drill.txt
Excellon Editor
PROPERTIES
Tools Table
Plot
Diameter Drills Slots
... 0.7620 2
... 0.8890 15
... 0.9000 3
... 0.9652 3
... 1.0000 3
... 1.0160 2
... 1.0668 11
... 1.1000 2
Total Drills 41
Total Slots 0
TOOLS
Drilling Tool
Milling Tool
UTILTIES

deprecated

convert gerber to svg

Upload <name>_copperBottom.gbl to https://tracespace.io, select layers, download zip and extract <name>_copperBottom.gbl

Now with inkscape we need to process the complex SVG with multiples path, objects, layers, group, etc. to convert it into a single path simple SVG. You need to open your SVG into Inkscape (Open-Source, cross-platform), and perform the following series of commands:

- CTRL+A (Select all),
- CTRL+U (Ungroup),
- CTRL+ALT+C (Convert stroke to path),
- CTRL+A (Select all),
- CTRL+U (Union) and
- CTRL+SHIFT+R (Fit page to content).
- CTRL+S save

svg to gcode

Open jscut:

- load SVG <name>_copperBottom.gbl
- make all mm (link)
- zero lower left (link)
- select all objets, drills and path
- create operation
    - outside, 0.1mm
- generate
- save gcode

edit gcode to set splindle speed to 8000 rpm and turn on it clockwise (after G90)

```
; after first G1
M3 S5000
```

carbide3d

set splindle speed to 8000 rpm and turn on it clockwise (after G90)

```
G00 Z1.000
M3 S10000
```

substitute G01 F400 with G01 F40

substiture G00 Z3.000 with G00 Z1.000

deprecated

- export your PCB as .svg files by clicking on “Export for PCB” on the bottom. Click on the small arrow on the Export button and select “Etchable (SVG)”. You will get a bunch of svg's exported in your selected directory but we will only use two of them:
  - yourfilename*_etch_copper_bottom_mirror.svg
  - yourfilename*_etch_mask_bottom_mirror.svg