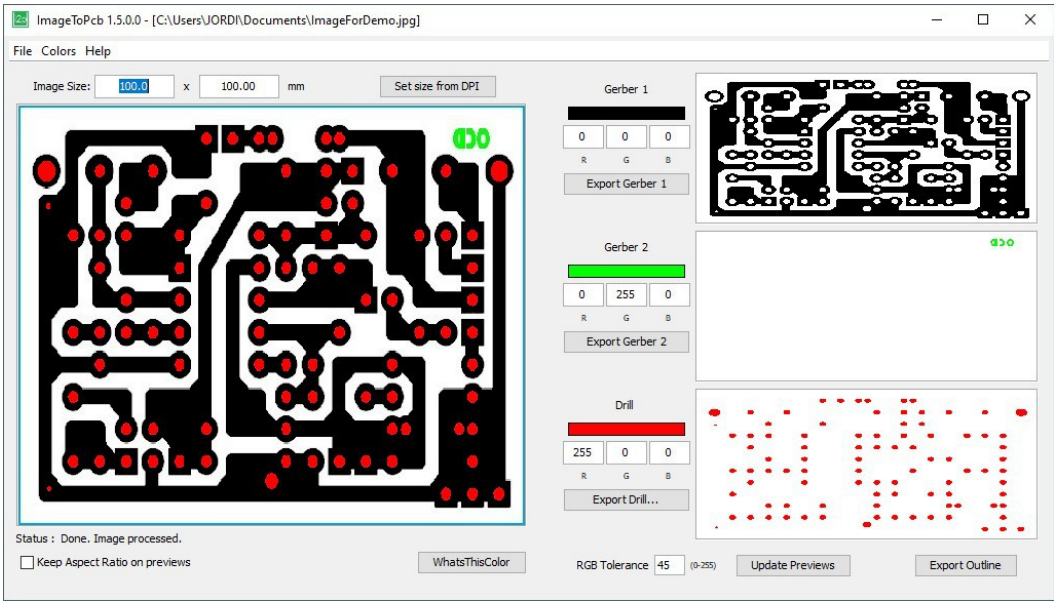
ImageToPCB & ImageToGerber

GENERAL OVERVIEW:

The general procedure for exporting gerber and excellon files from an image using ImageToPcb or ImageToGerber is :

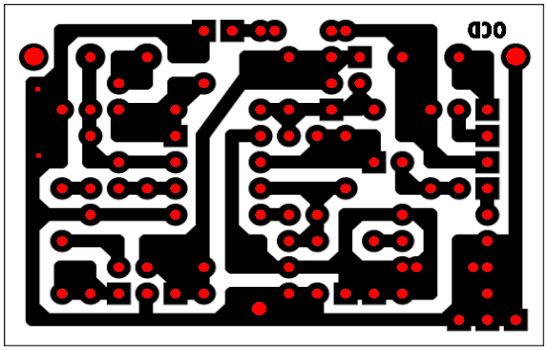
- If needed, pre-process the image and crop with an image editor
- Load the image in ImageToPCB / ImageToGerber.
- Set image dimensions.
- Set target colors and tolerance, if they don't already match the default color scheme, and export gerbers.
- Open Export drill dialog, refine drill grouping and finall drill diameters if needed, and export drills.
- Export outline.
- Check out your gerbers files in a gerber viewer.
- Send to your preferred PCB manufacturer.



GETTING YOUR IMAGE READY:

First of all, load your image into your favourite image editor and inspect its suitability.

Different elements should be easily distinguishable and their colors distinctive enough. On the other hand, similar elements's should be as uniform as possible, and their color range as reduced as possible. It's better to have hard color transitions instead of gradients or smooth color transitions.



For those cases where some pre-processing is needed, it can be done with any image editors, for example the default one in your OS. Our preferred editor is GIMP, it's free and just with Fuzzy selection tool (Magic Wand), Select by Color tool and Bucket fill tool you can get your image ready with just a few clicks, but feel free to use the image editor of your choice.

EXAMPLE:

It's a common starting point to have an image like the one below, with copper painted in black and drills and copper-free areas painted in white.

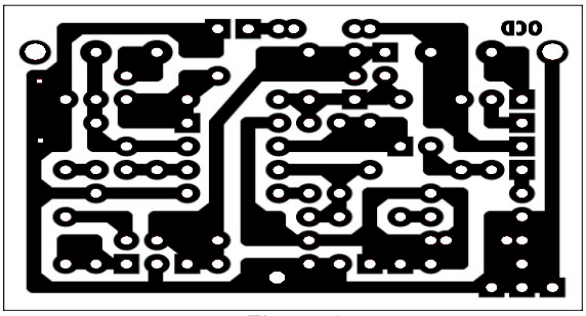


Figure 1

We'll have to do some pre-processing to differentiate drills. We can bucket paint each drill one by one, but it will be way easier and faster to paint copper-free areas in a different color (yellow for example), do not forget to also bucket paint the voids in “O” and “D” letters or the software might interpret them as drills.

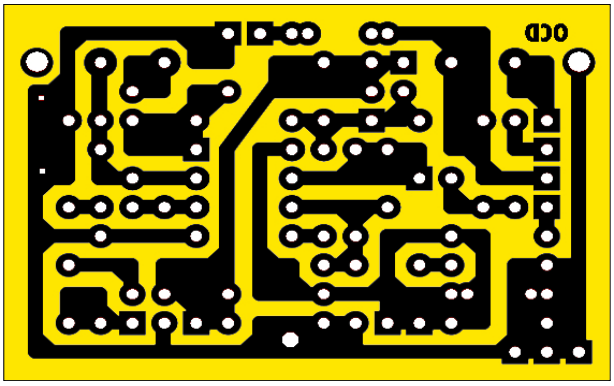


Figure 2

After that, use the “Select by Color” tool to paint red all the white elements (drills) at once.

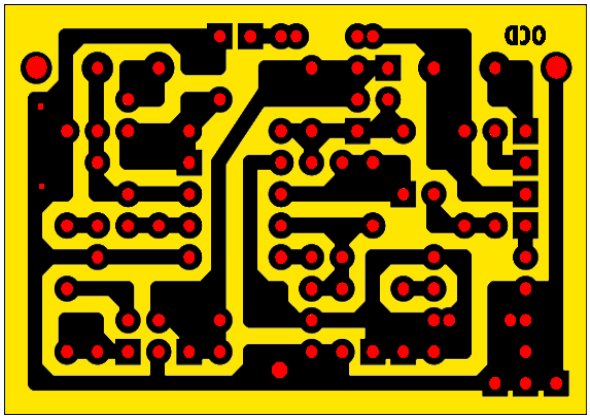


Figure 3

Another option would be skipping this step and setting Drill color to white in ImageToPCB.

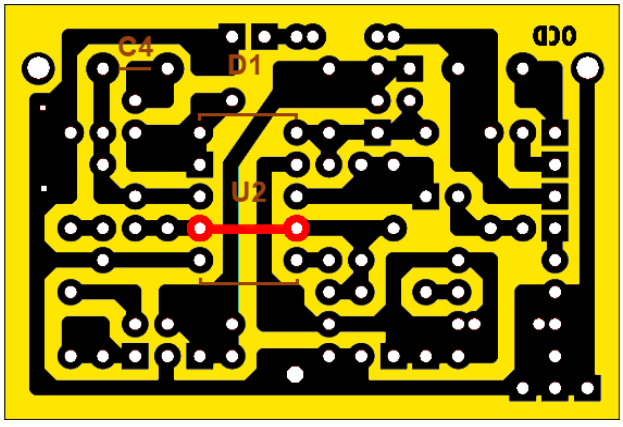
IMPROVING / UPDATING OUR DESIGN:

Besides its conversion value, ImageToPCB also expands the potential of your design or image, so we can take advantage of it and make improvements or update our design. With an image editor, we can now add a silkscreen layer, resize drill diameters, create a soldermask layer to protect copper areas and to avoid accidental shorts, convert a single-side design into a double-side or multi-layer design, add and remove connections, etc.

Let's take Figure 2 as our base image, until now our PCB was a single-sided design with copper on bottom side, but with some quick editing we can convert it into a double-sided one, and add silkscreen in the top side, to help us place the components once we have our PCBs.

As silkscreen and top copper are going to overlap bottom copper elements, we won't modify our base image, we'll make a copy and add our text and new copper elements there.

We've added a few silkscreen elements in brown and a few copper elements on top side in red to add an extra connection between a couple of pins of component U2, to illustrate the possibilities ImageToPCB unlocks.



In this example, we will end up with two different images, the base image will be used to export bottom copper and drills, while the second image will be used to export silkscreen and top copper. In this example silkscreen doesn't overlap top copper, but we might need to create extra images to properly export extra layers.

Check out the ImageToPCB video demo in our website to see ImageToPCB in action and to get familiar with usage and its interface.

DIFFERENT BASE IMAGES:

The base image style and quality may be unique for each project and each one might require a different level of pre-processing or no pre-processing at all, but a few simple editing tools are always enough to get our image ready.

If you have the possibility to choose amongst different images for your project, keep in mind that the best image is NOT the one with the greatest amount of pixels. The best image is the one with more contrast between its different elements and the one with the hardest transition between colors.