

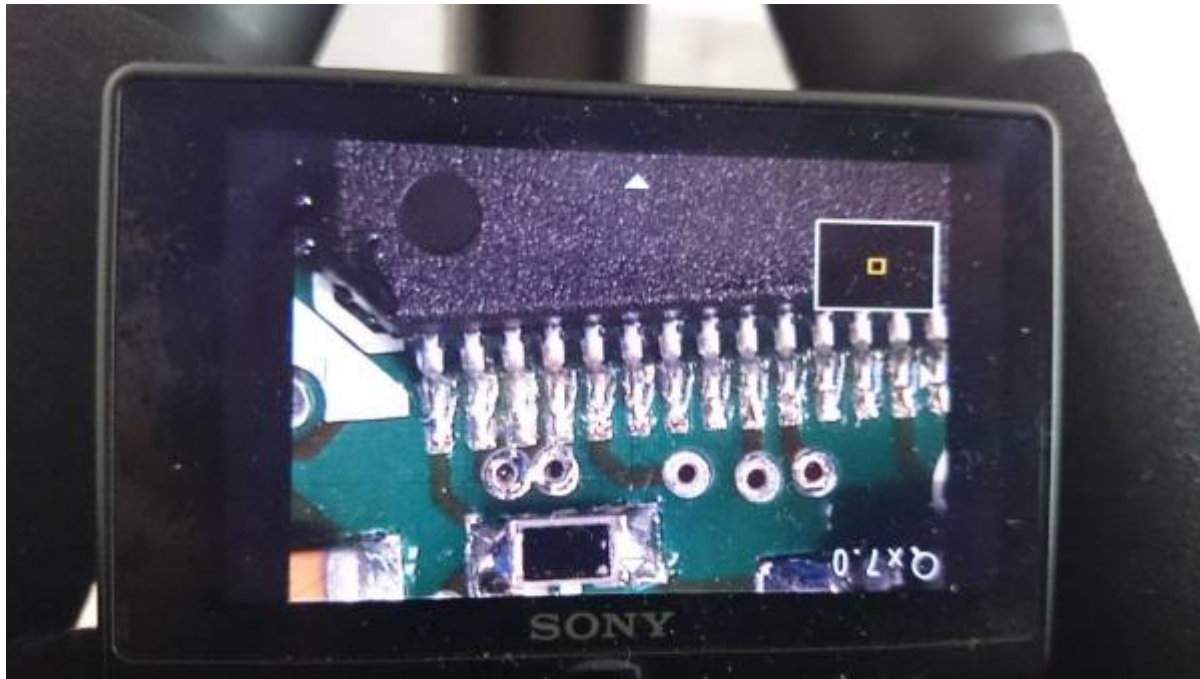
PCB Microscopy

5.3.2015

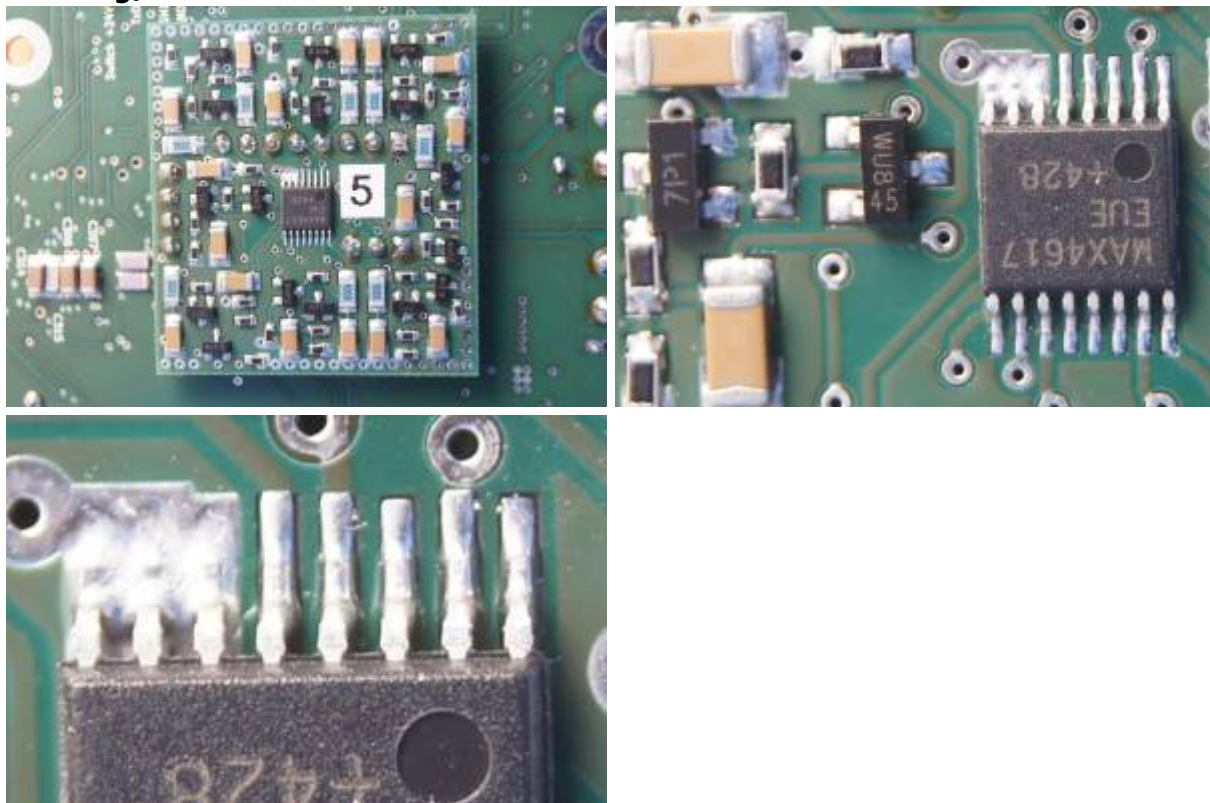
Today I tried to use my DSLR for inspecting a PCB board. For now, I have no special macro lens, but the results were quite acceptable.

Setup and Results





Full frame image of a 0.65mm pitch-chip and 2 cropped versions (but without digital zooming)



The Camera

I am using my Sony A33, which is a single lense translucent type of camera. This means, there is no optical view finder, it is digital. But common SLRs mostly have a switch, to enable the LCD as a digital view finder (live view), just like in a compact point and shoot camera.

What is special with this one is, that it can zoom in to 100% or even 200%. This means, one pixel of the camera sensor is rendered directly to one (or even 4) pixel of the high resolution LCD of the

camera.

The Lens

The lens is the cheap one from Sony, which comes with the A33. It's the SAL-1855. I use it here with 55mm focal length, and it focuses up to 22cm sensor-object distance.

I read about reverse mounting the lens. It is done with special adapter rings. I just ordered one. I'm excited about the results!

Camera vs. USB-Microscope

The big advantage in this setup is, that it leaves enough space between the lens and the PCB for handling and working. Also the speed (no time lag) is perfect. It's easy to grab the PCB and bring the parts of interest into focus. With an external trigger cable, taking pictures is very easy too.

Dave Jones showed here how he is using video cameras with 10x optical zoom. It works great too:
<https://www.youtube.com/watch?v=jkFcwL6tAbw>

And here we can see, how a USB microscope isn't working for soldering under the lens. Mainly due to the short distance, and the time lag.

<http://youtu.be/biTINbhP-el>

Prospects

Here is an example, what can be done with professional equipment, but still with an SLR camera:
<https://www.flickr.com/photos/21891176@N00/379283201>

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