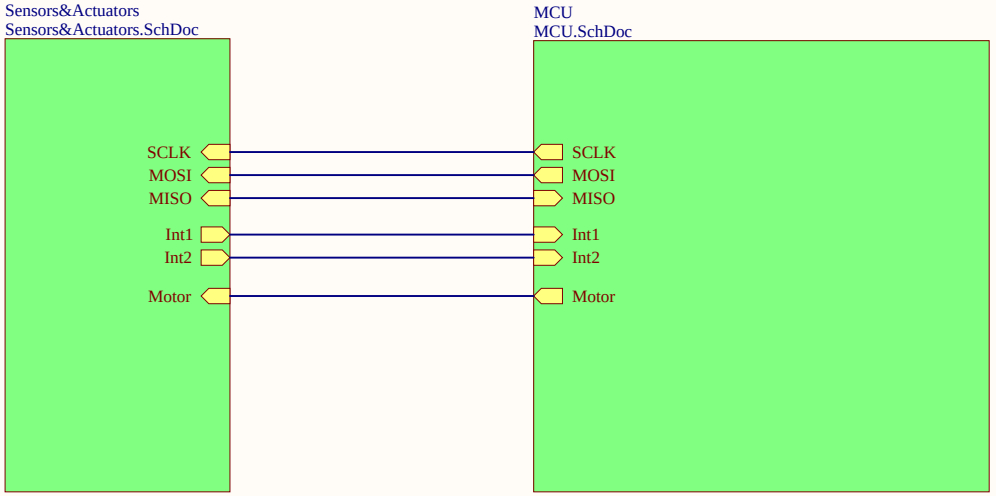

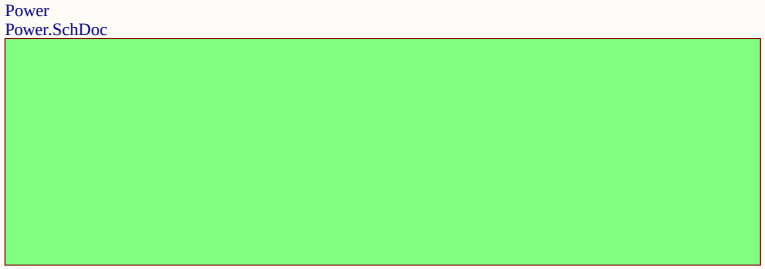

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Size: A4	Number: *	Revision: 1
Date: 20/03/2024		Sheet 1 of 4
Engineers: Alvaro Montesano & Javier Arroyos		
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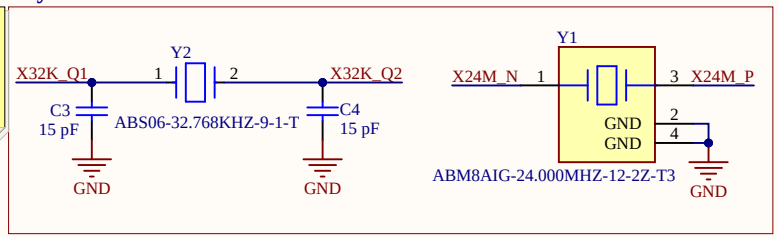
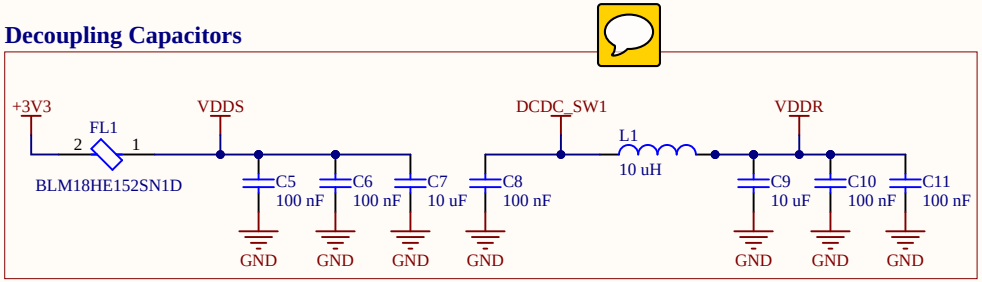
Crystals

With this formula for the capacitors of the crystals: C= 2 * CL - 2 * Cstray, we suppose a Cstray of 5 pF. Capacitors of the 32 kHz crystal [CL=12.5pF, Cstray=]: C32=15pF

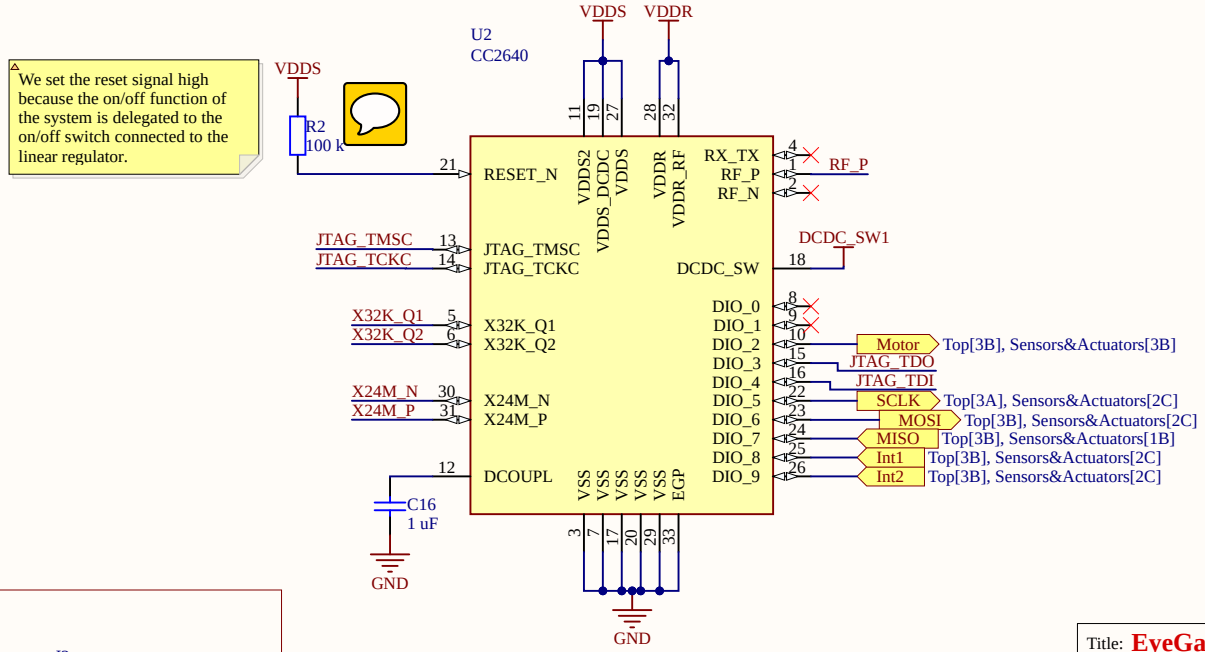


Decoupling Capacitors

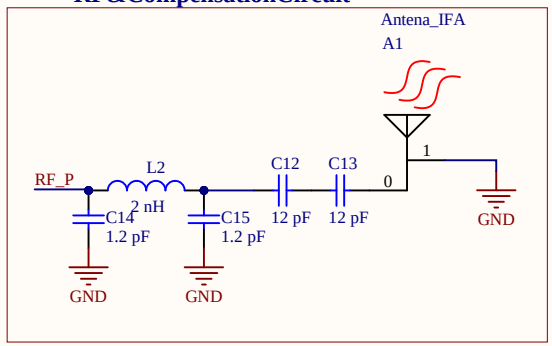


We set the reset signal high because the on/off function of the system is delegated to the on/off switch connected to the linear regulator.

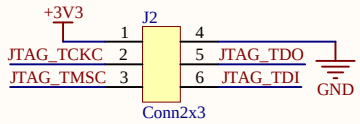
We have decided to implement the 'single-ended operation' model. However, it has less SNR and more interference than the 'differential operation' mode, we have decided that the lower complexity and fewer components are more important for our design. We have also confirmed that this model has the required range for our application. Lastly, we choose to use the internal bias because it reduces the number of components needed.



RF&CompensationCircuit



JTAG



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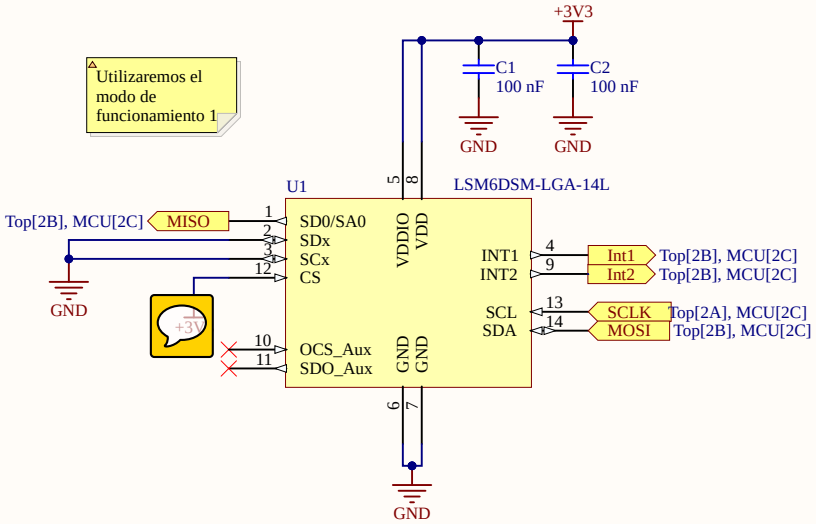
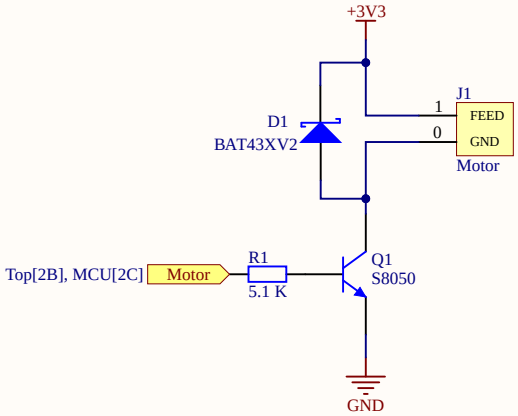
SENSORS



ACTUATORS



To calculate the polarization resistance of a transistor we have to take into account the current that will flow through the collector and the hfe of the transistor.

In our case the Ic will be about 50mA and the hfe a minimum of 120.

In order to be sure to be in the saturation zone, the value of hfe is reduced to 100, to maintain a balance between ensuring saturation and reducing consumption to the maximum.

Applying R=(Vcc-Vbe)/(Ic/hfe) we obtain an R of 5.2K, so adapting it to the nearest 5%, we select 5.1K.

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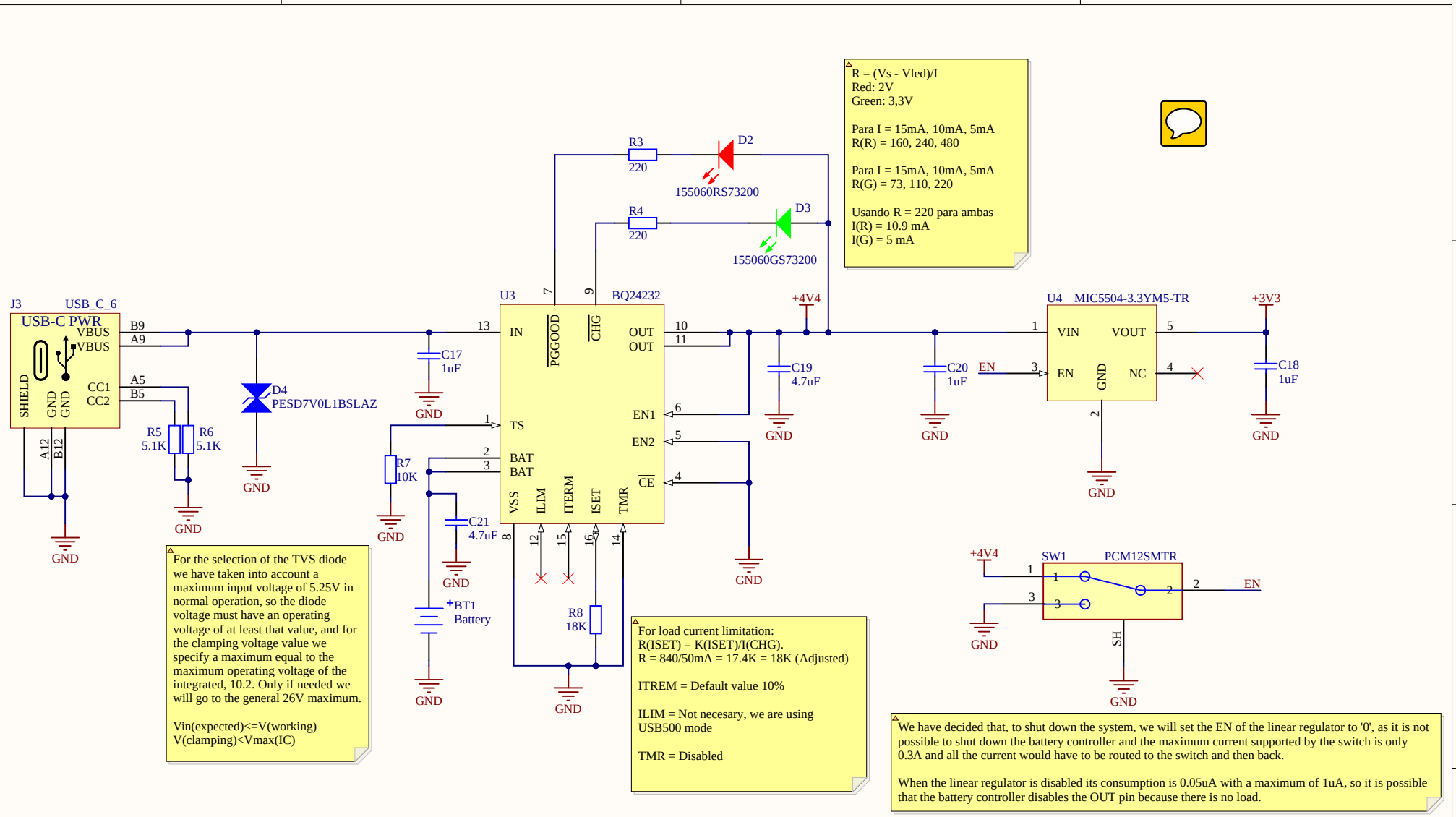

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