

# Vacuum Fluorescent Display Clock

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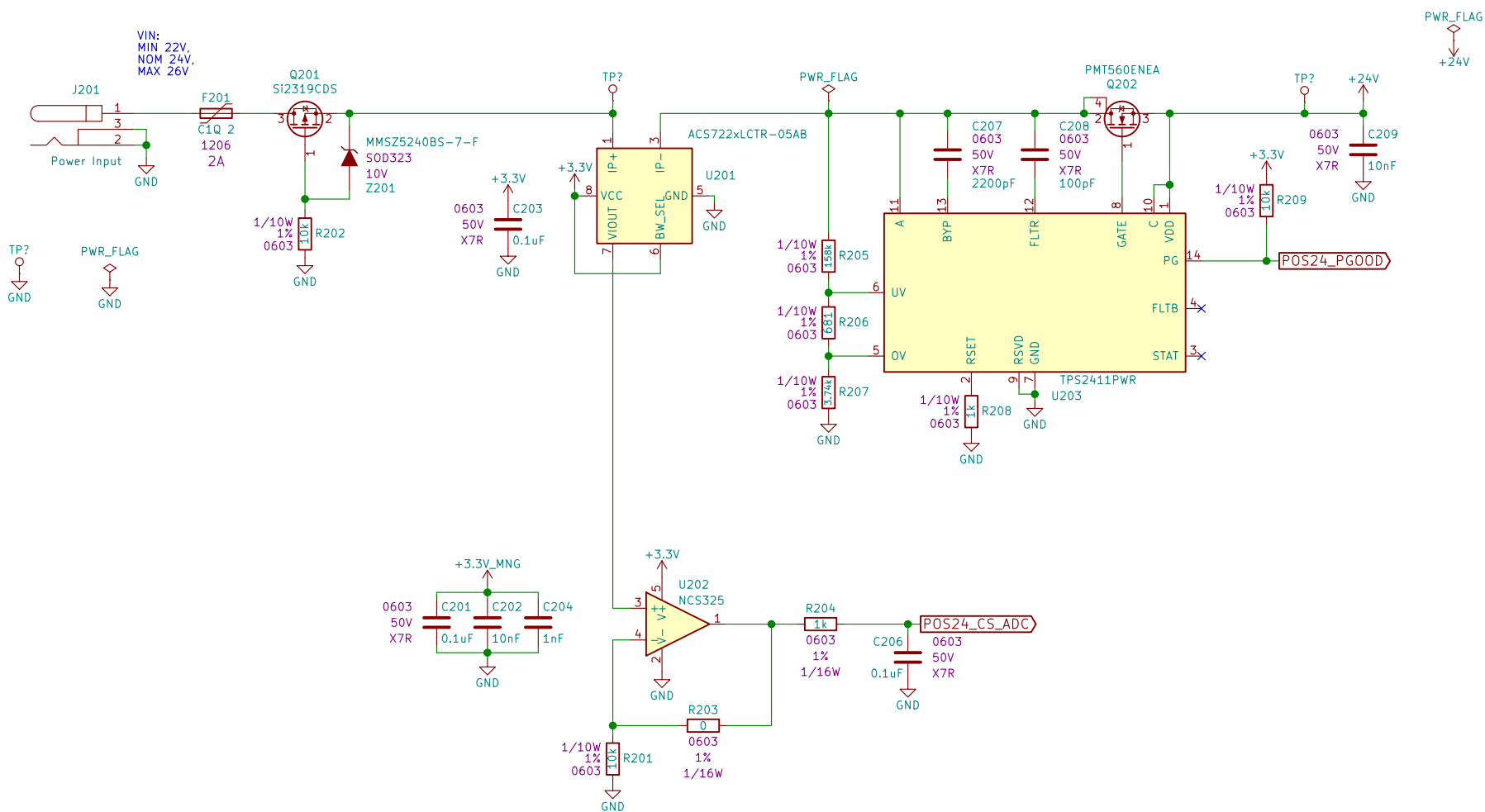
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## Input Overvoltage/Undervoltage/Reverse Polarity Lockout



**Drew Maatman**

Sheet: /Power Input/  
File: PowerInput.sch

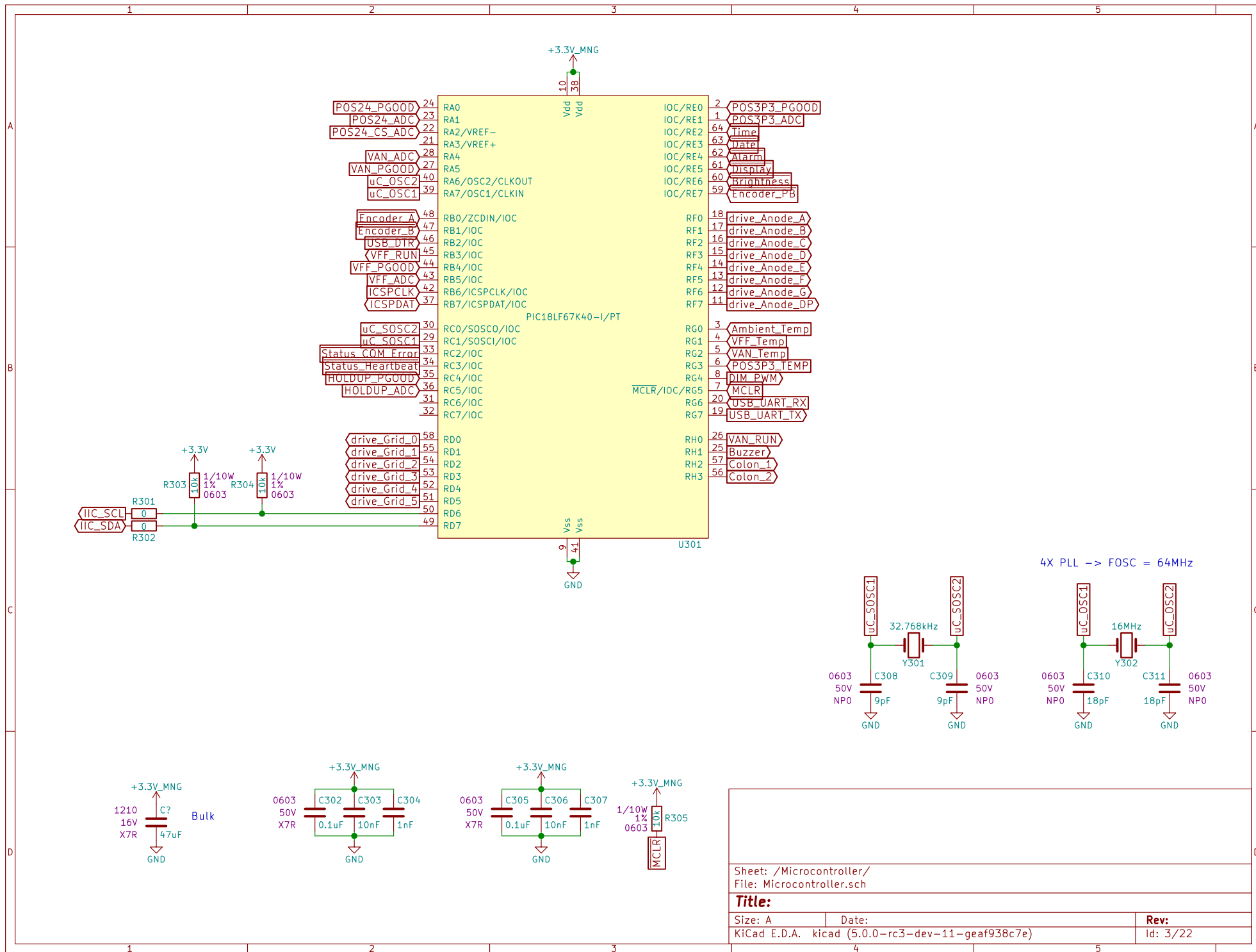
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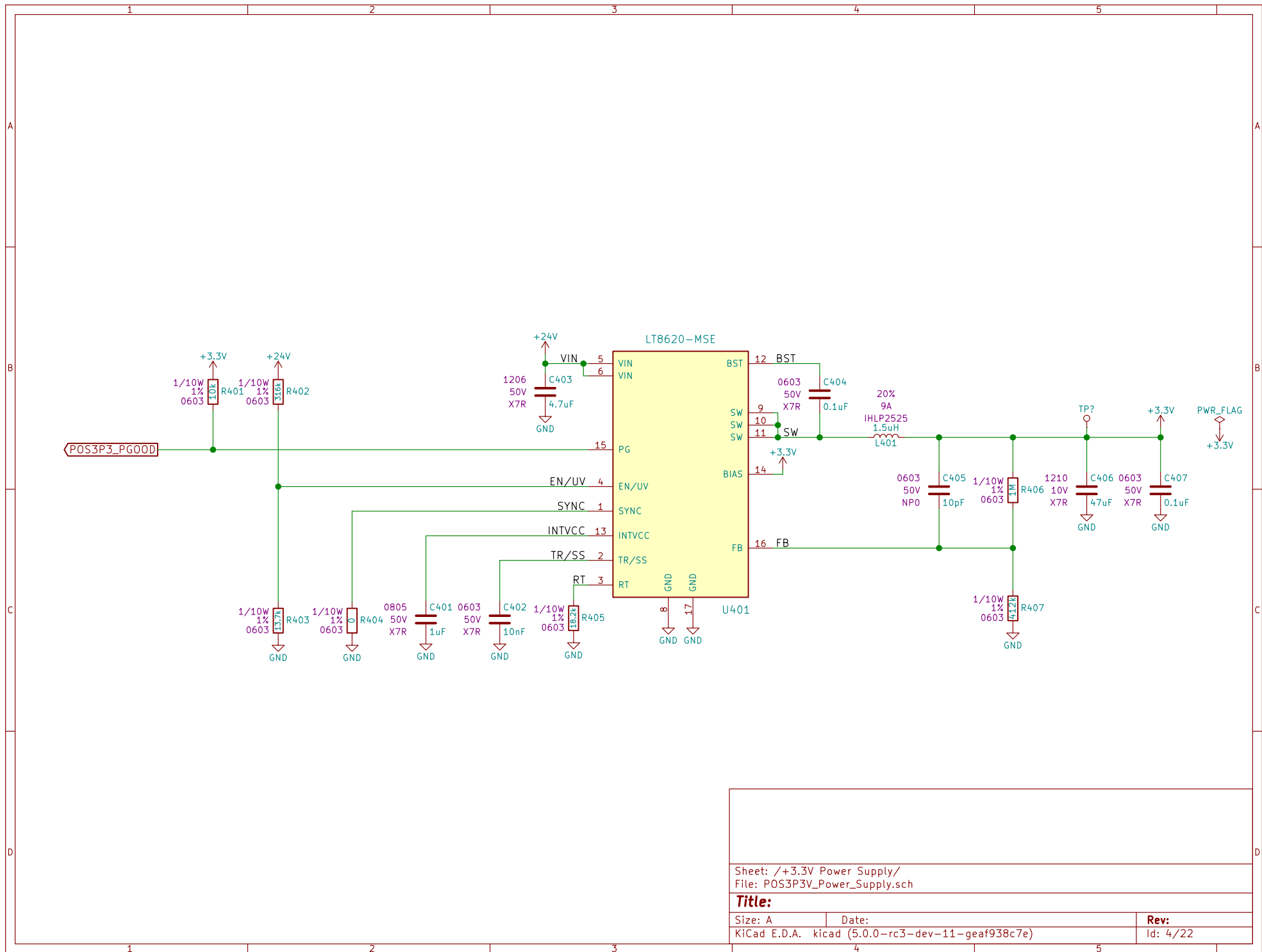
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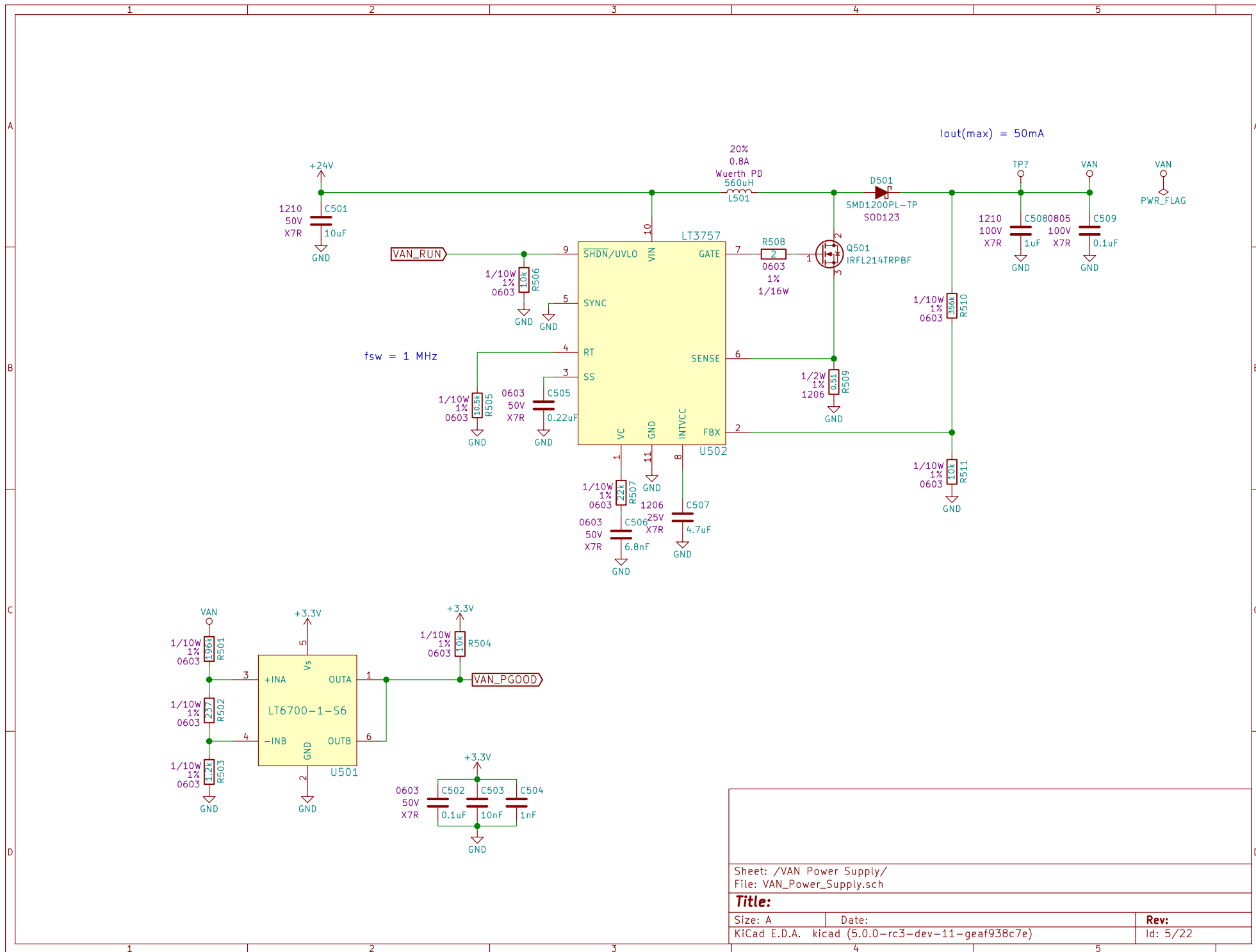
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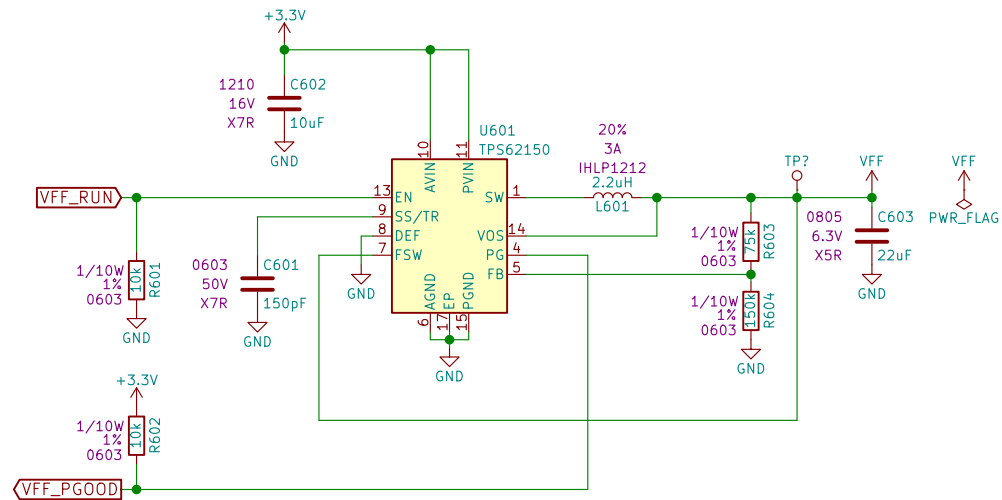
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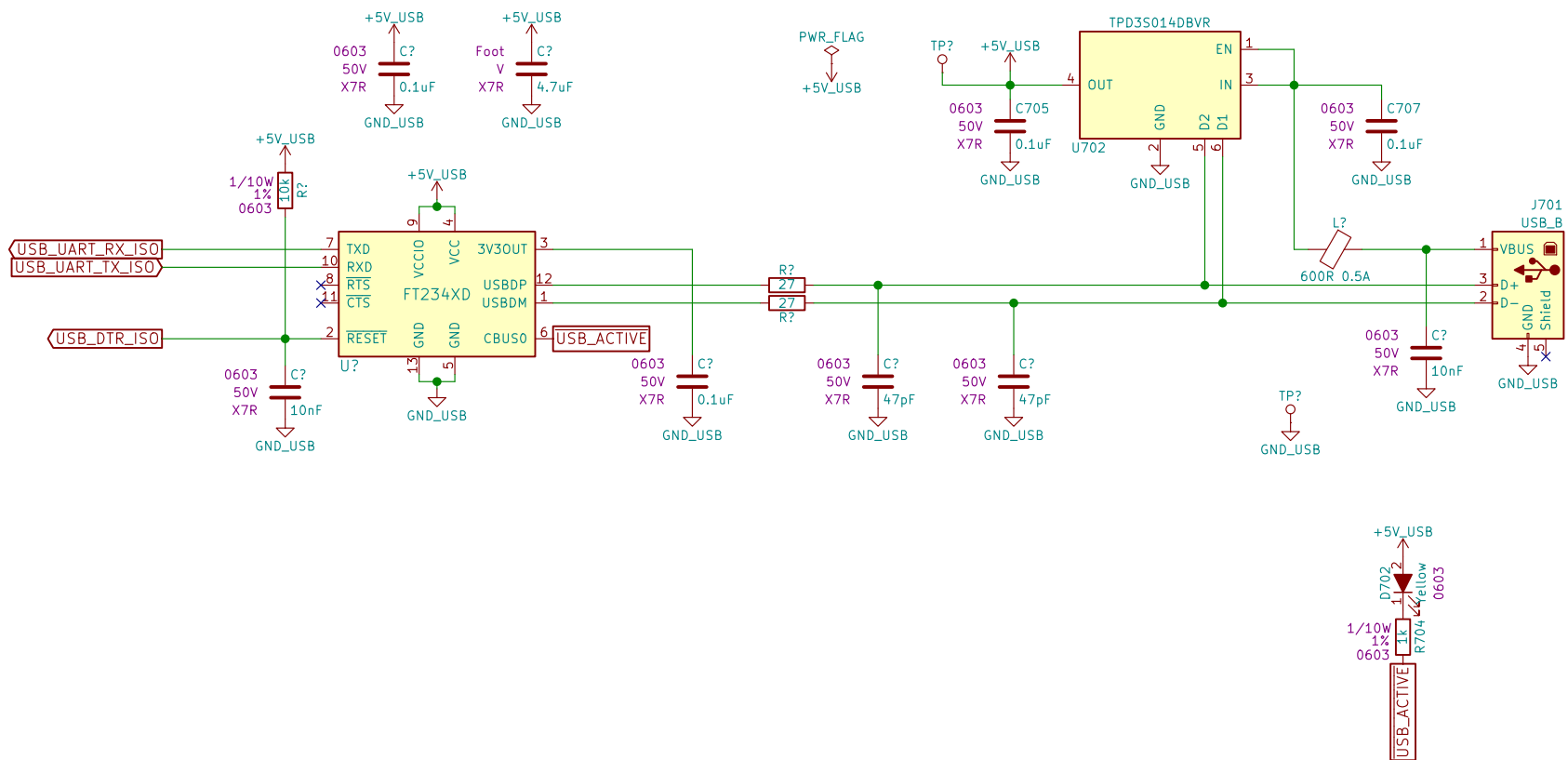
# +1.2V Filament Voltage Power Supply



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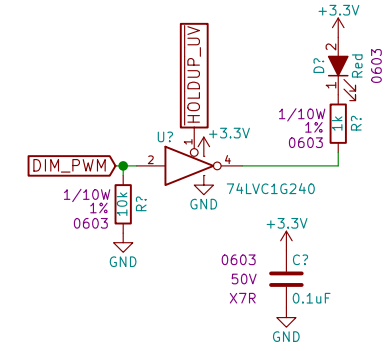
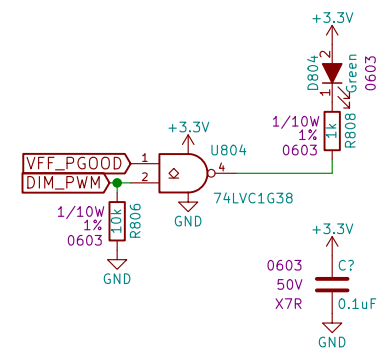
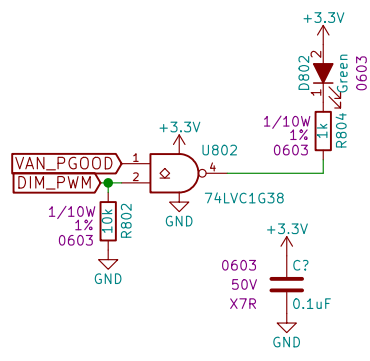
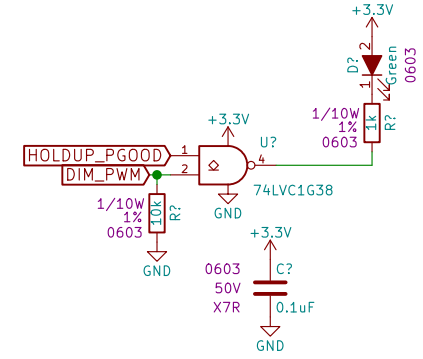
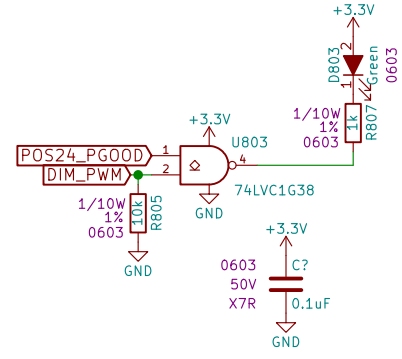
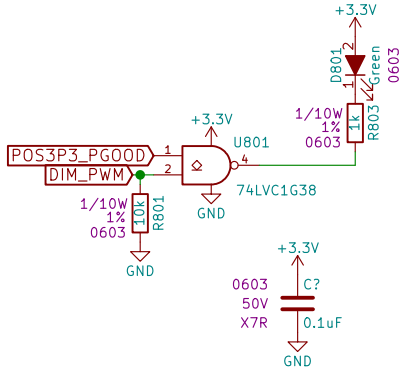
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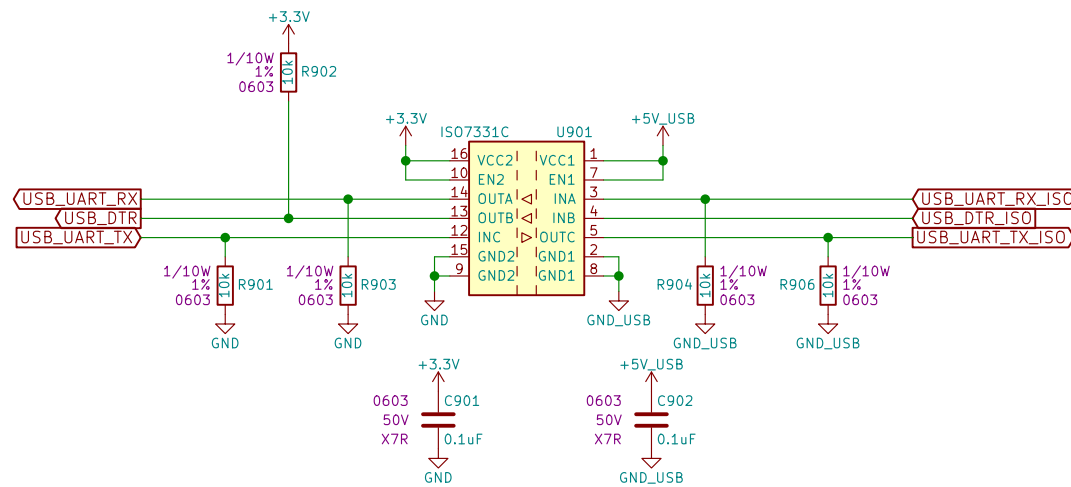
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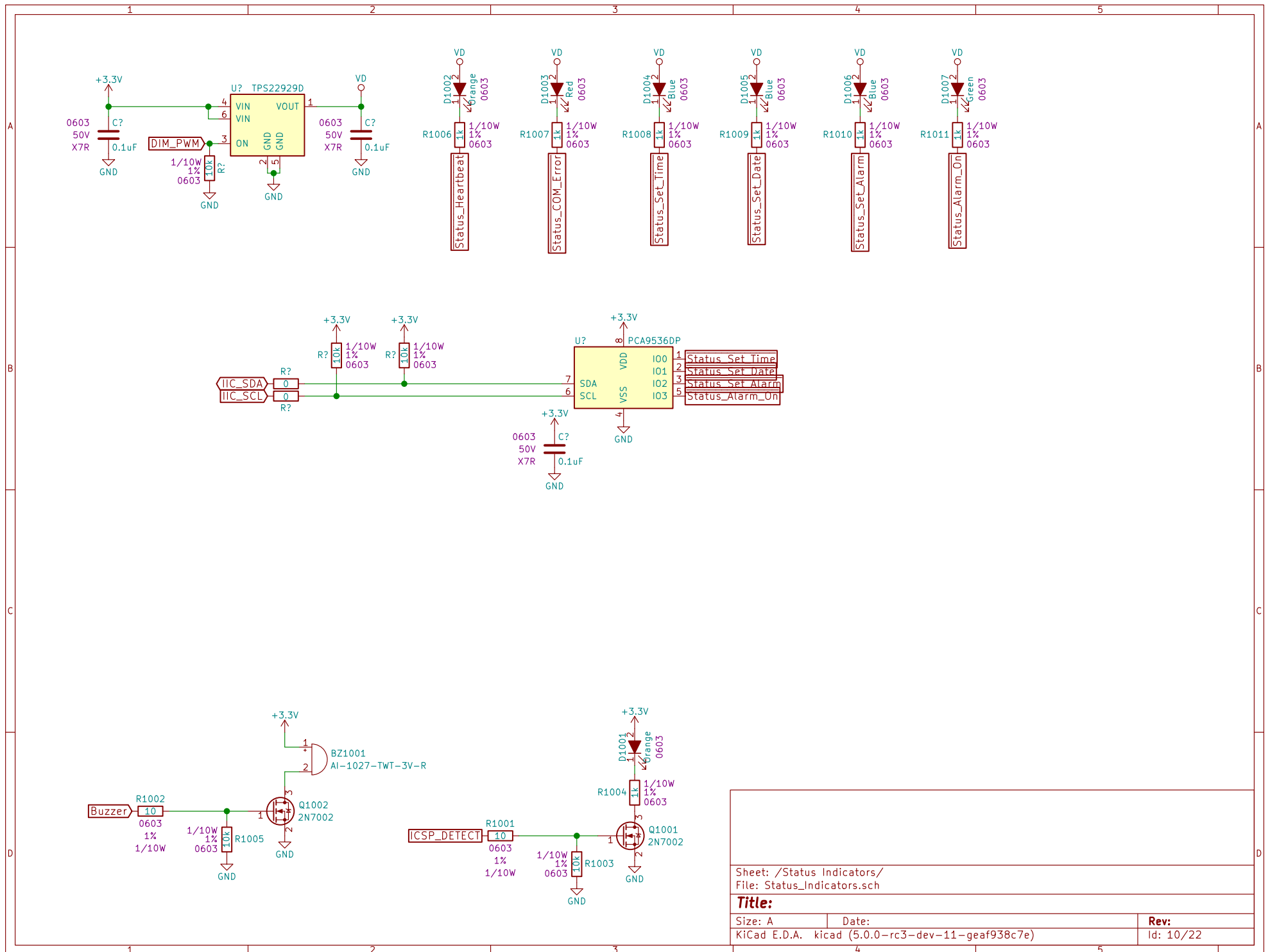
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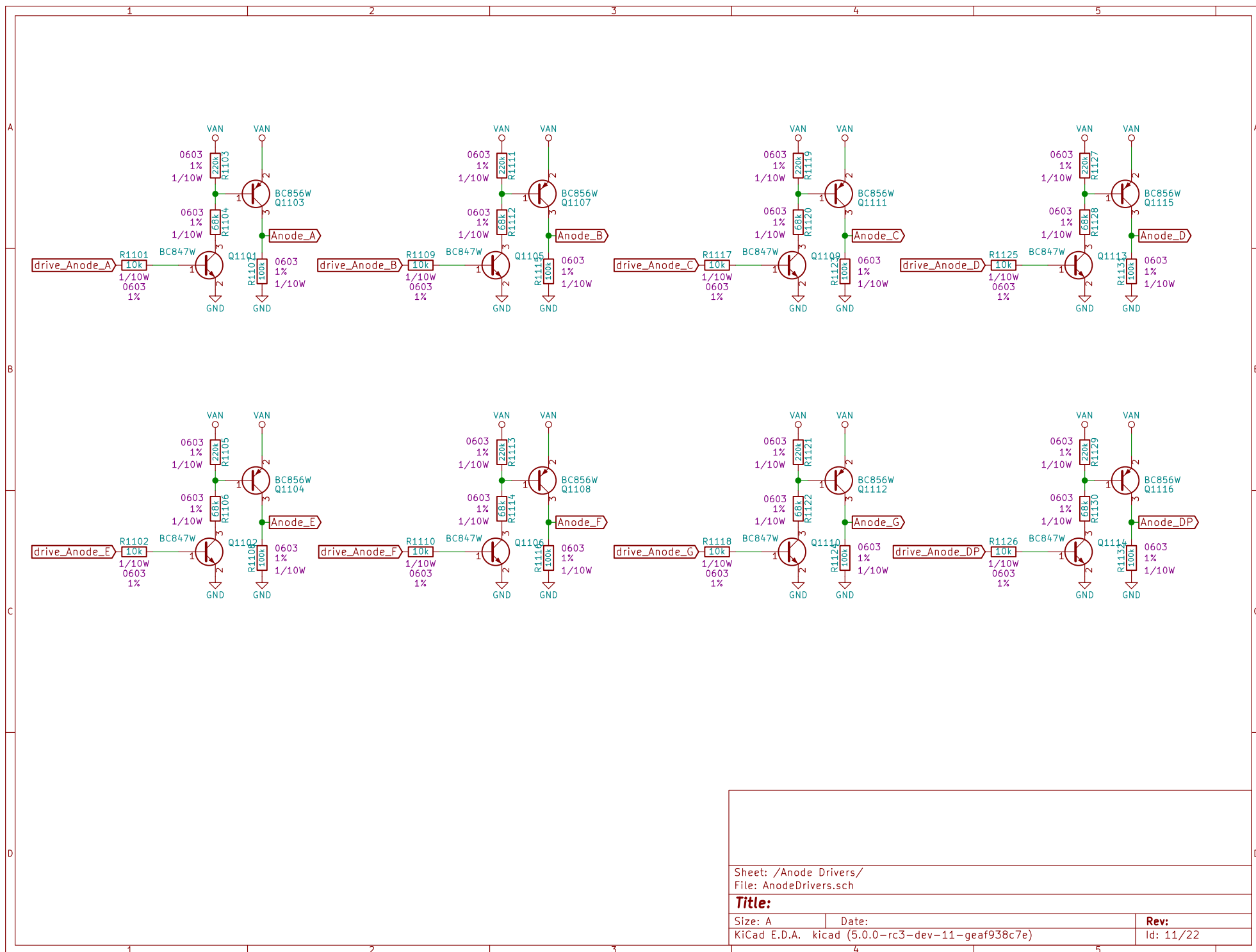
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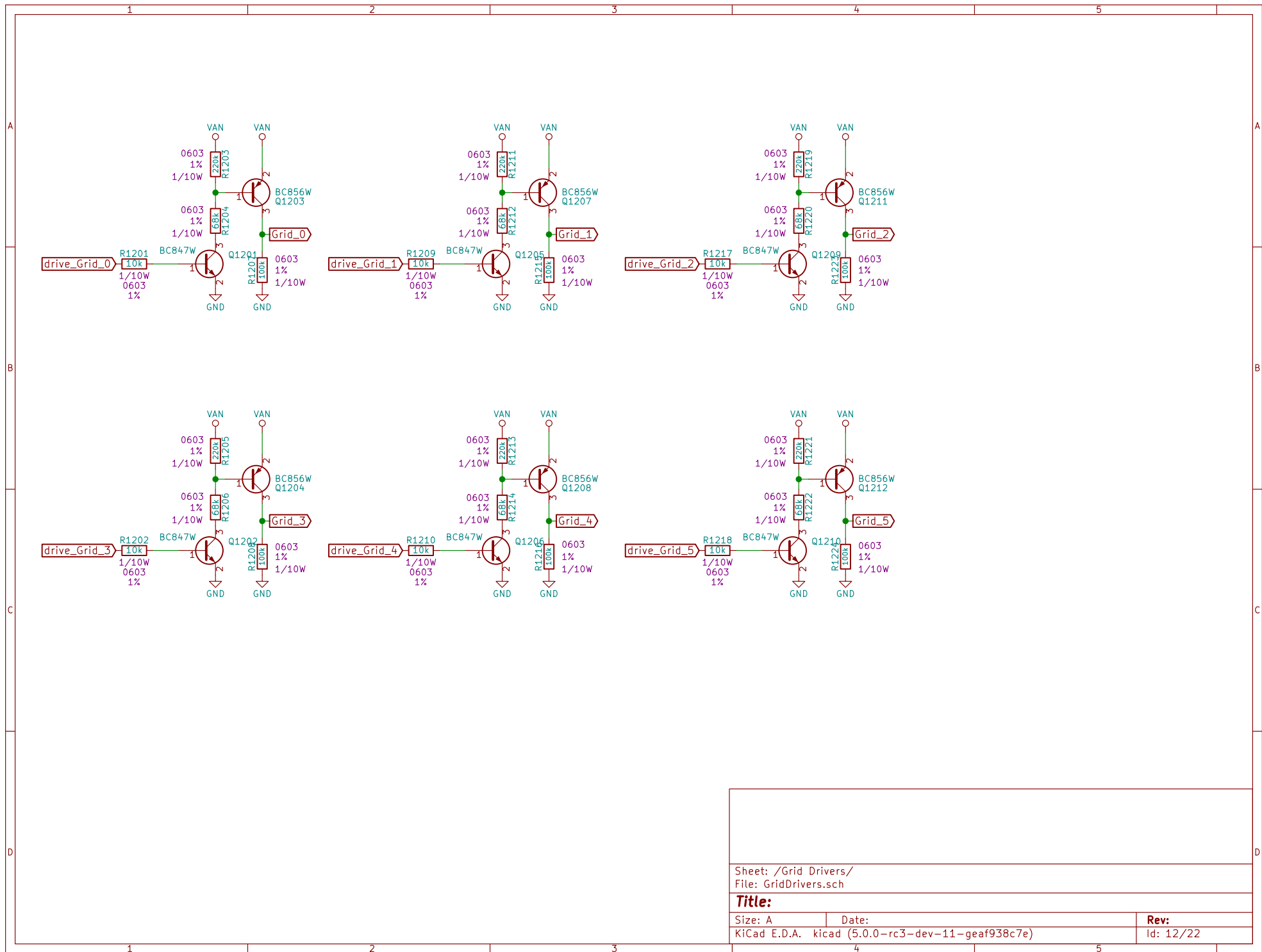
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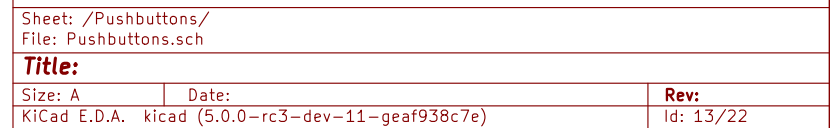
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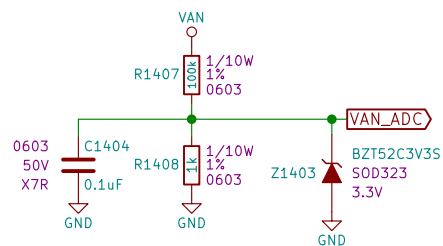
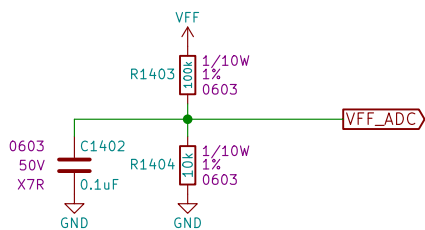
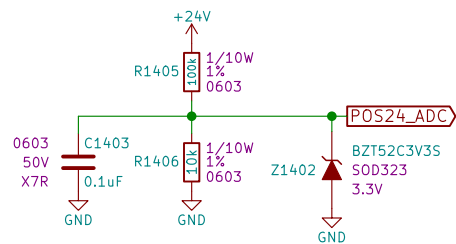
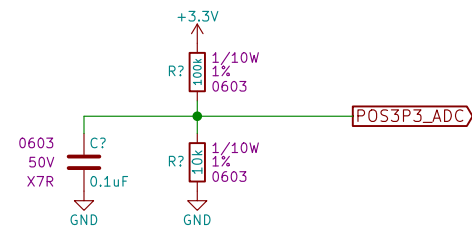
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Sheet: /Analog Inputs/  
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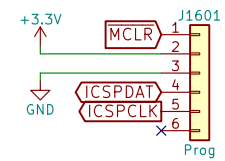
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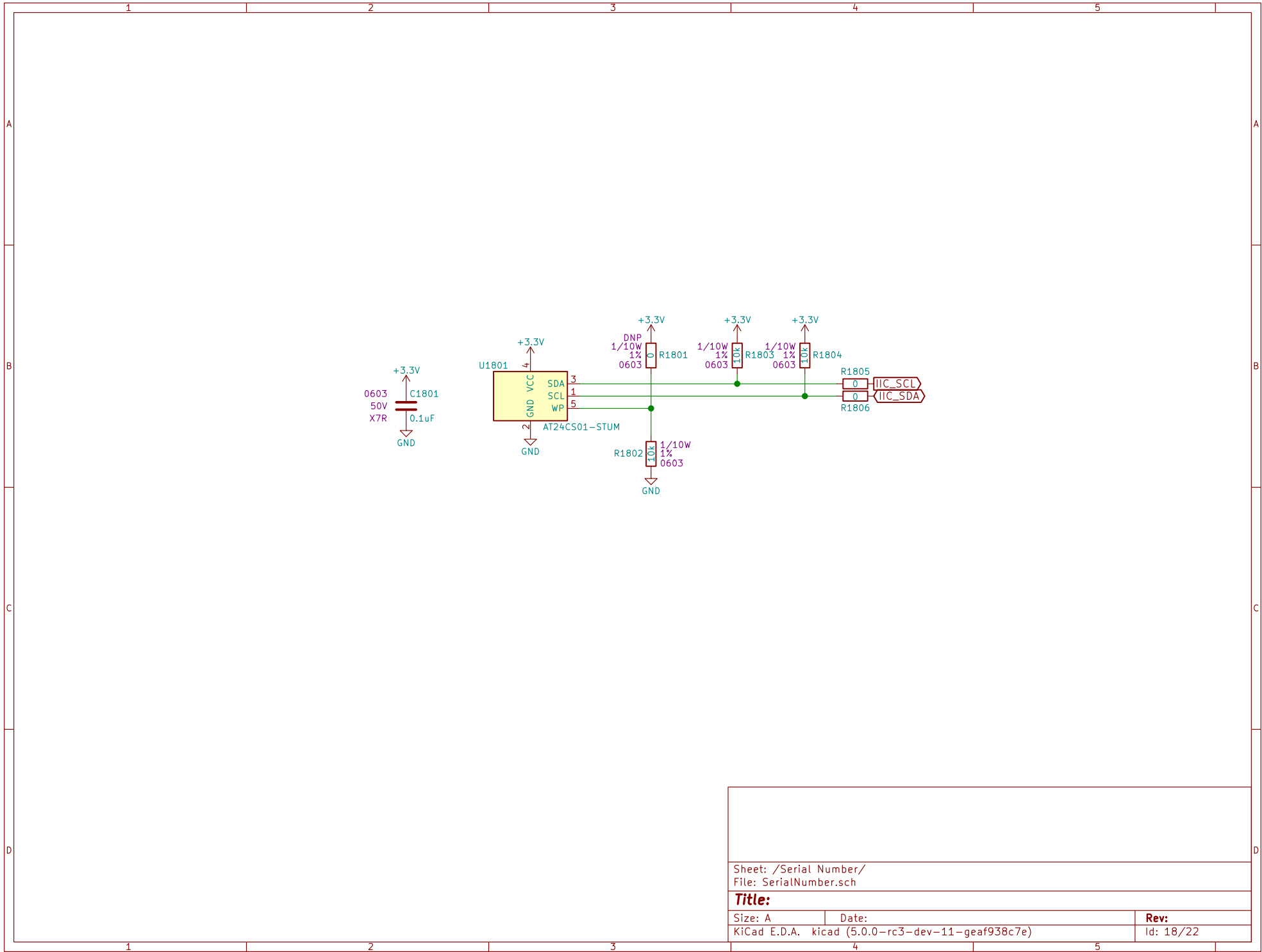
	1	2	3	4	5	
A	<div><ul style="list-style-type: none"><li>* All of PORTC should be configured as open drain outputs for sinking current from LEDs</li><li>* All of PORTA is used for ADC measurments/external oscillator</li><li>* Most of PORTD is used for driving grid switches, can be set up as a 6 bit structure located at the PORTC memory address</li><li>* All of PORTF is used for driving anode switches, so smae thing as above with 8 bits</li><li>* All of PORTE is used for measuring pushbuttons so all should be set as inputs with IOC's enabled</li><li>* Same with PORTB except with only 6 bits, and used for generic input logic signals</li><li>* RD0 and RD1 should be routed to SMT1 and SMT2 so that the signal measurement timers can be used to measure diplsay update rate and refresh rate</li><li>* RG3 should be configured as an output for a CCPx module to produce a PWM signal for dimming LEDs on the board. Display itself will be dimmed in software by adjusting the on time</li><li>* EUSART5 must be used for USB serial communication since only this module can be routed to PORTG</li><li>* RG0 and RG1 will be the inputs to CCPx modules to measure the switching frequency (maybe duty cycle as well) of VFF and VAN supplies</li><li>* RG4 should be set/cleared every other display refresh cycle, and the input snese ciruit queued when cleared, so that energy/charge per display cycle can be measured</li><li>* While operating, the external 16MHz clock with internal 4x PLL will yield an FOSC of 64MHz. While the display is off, FOSC should be switched to something slower internally to minimize power consumption</li></ul></div>					A
B						B
C						C
D	<div><div></div><div>Sheet: /Firmware Notes/ File: FirmwareNotes.sch</div><div><b>Title:</b></div><div><div>Size: A</div><div>Date:</div><div>Rev:</div></div><div>KiCad E.D.A. kicad (5.0.0-rc3-dev-11-geaf938c7e)Id: 15/22</div></div>					D
	1	2	3	4	5	



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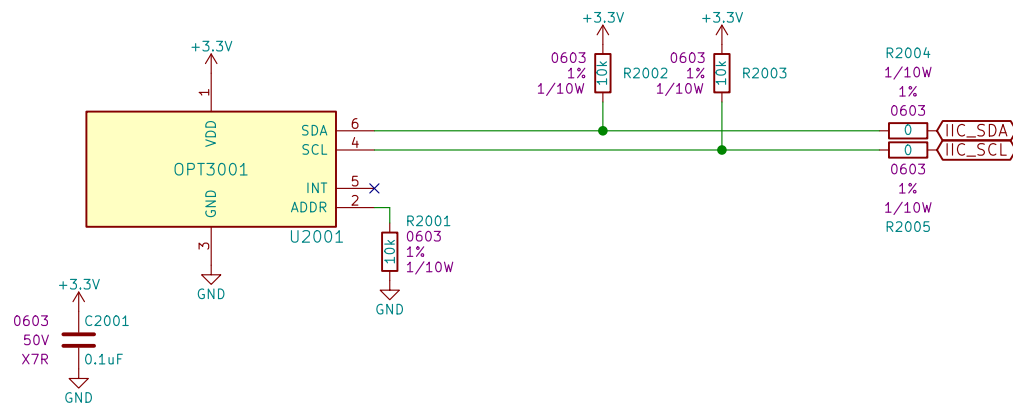






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Sheet: /Ambient Light Sensor/  
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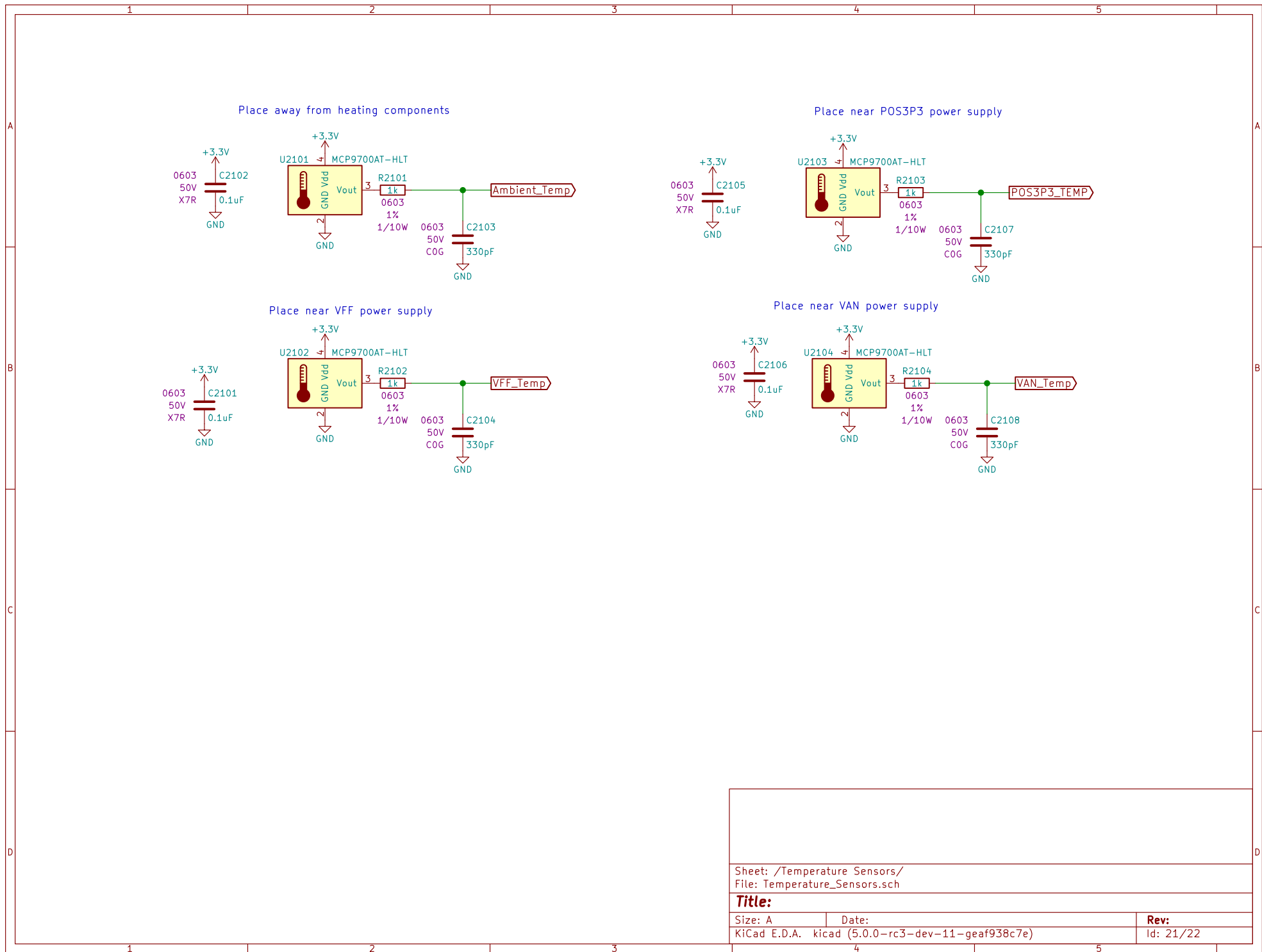
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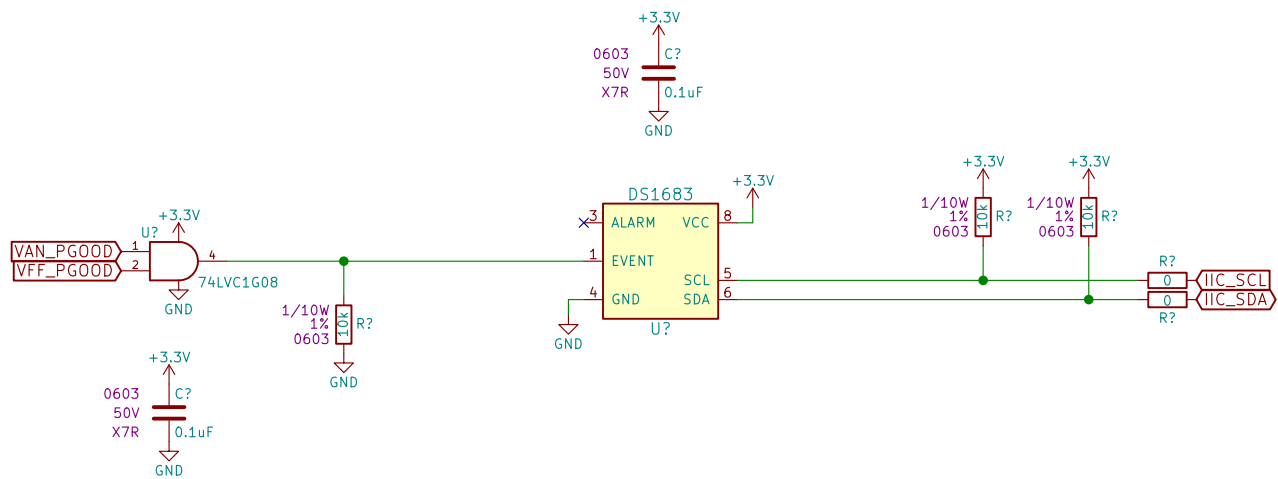
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Sheet: /Tube Life Timer/  
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