

Power in multiplexing



File: powermultiplexing.kicad_sch

MCU Circuit



File: PSU_2V0_MCU.kicad_sch

24V OUT Circuit



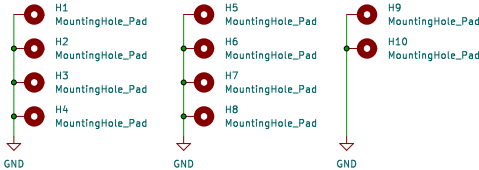
File: PSU_2V0_24VOUT.kicad_sch

5V OUT Circuit



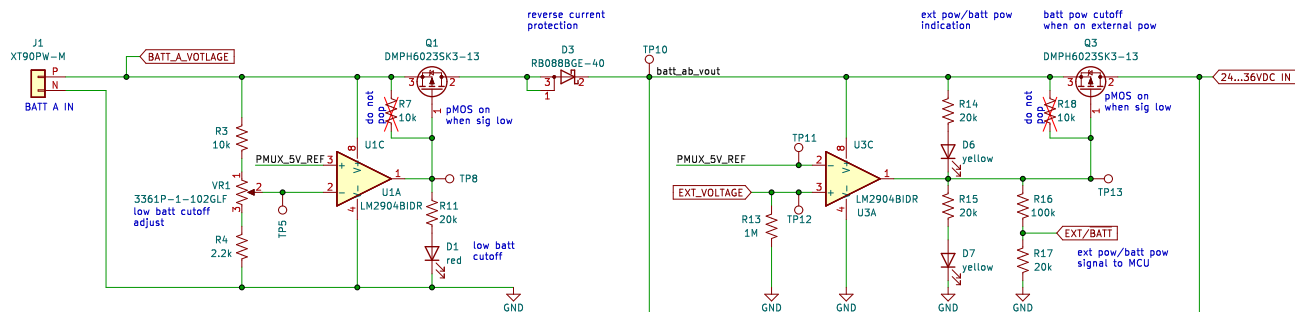
File: PSU_2V0_5VOUT.kicad_sch

Fiducials and mounting points

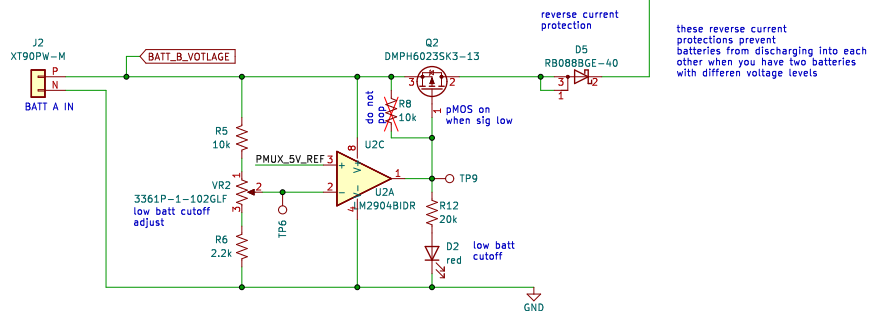


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Portal Space – Kon Tiki		
Sheet:		
File: PSU V2.0.kicad_sch		
Title: PSU V2.0 schematic		
Size: A3	Date: 2023-03-10	Rev: B
KiCad E.D.A.	kicad 7.0.1	Id: 1/5

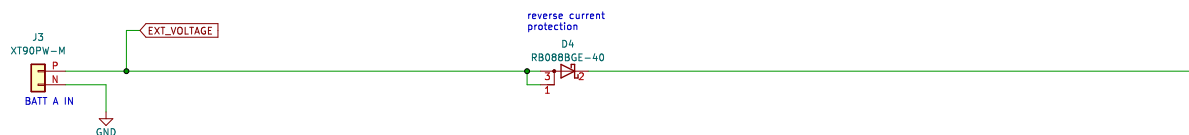
Battery A in (7s, 25.2...29.4V)



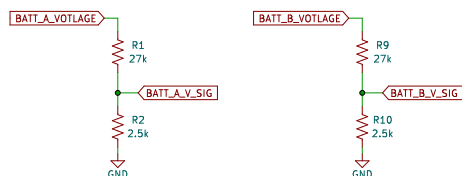
Battery B in (7s, 25.2...29.4V)



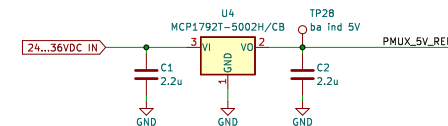
External power in (24...36VDC)



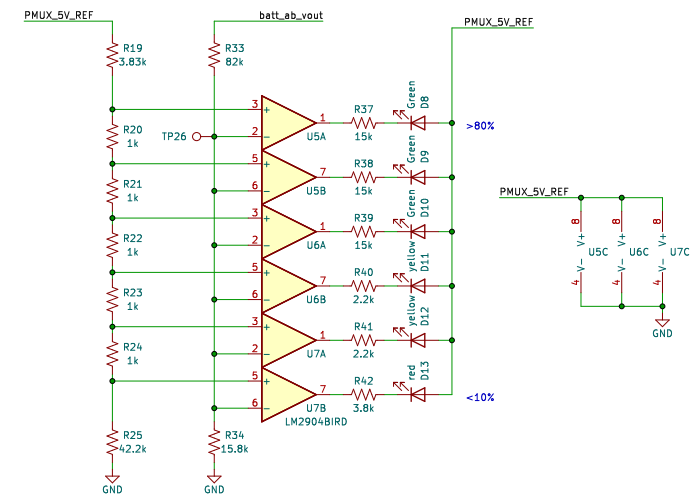
Battery voltage measurement



Power multiplexer 5V reference



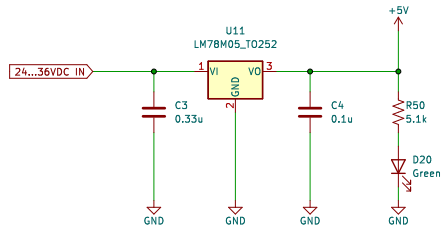
Battery level indicator



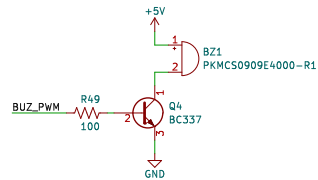
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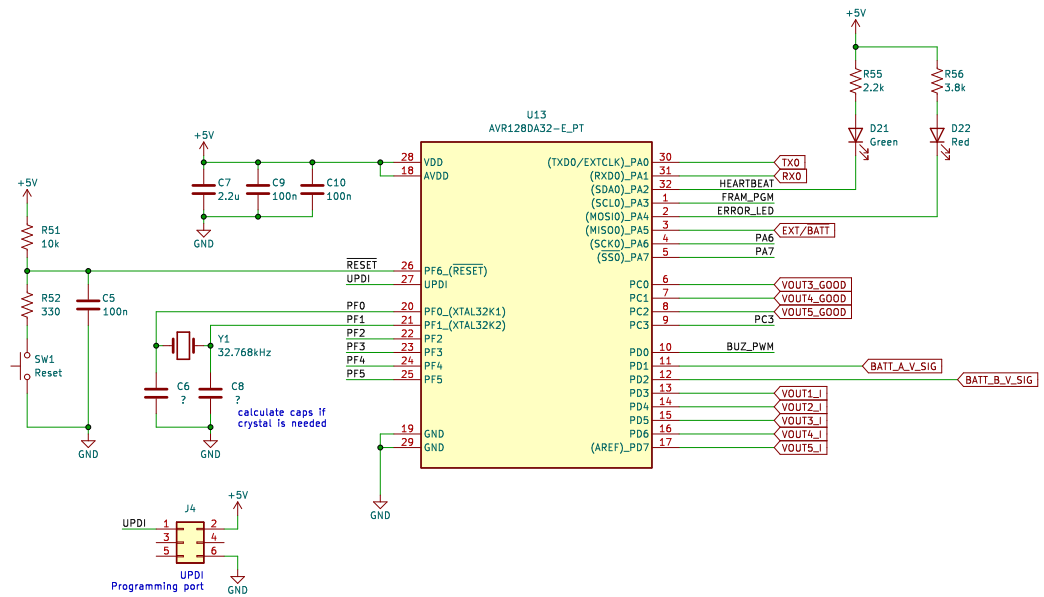
Onboard 5V



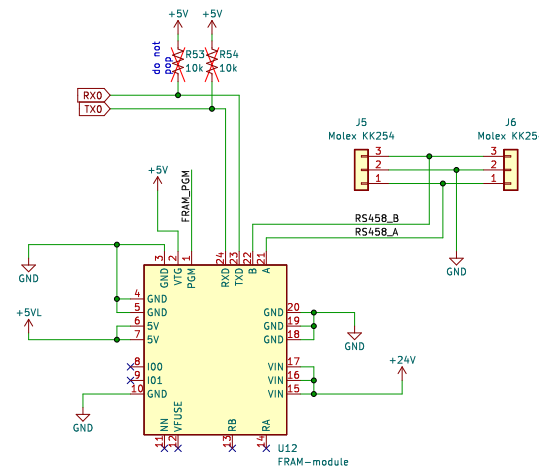
Buzzer



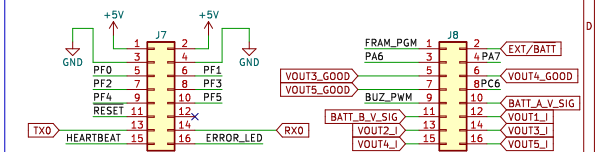
MCU



FRAM bus



Headers



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[illegible]

EN/UVLO: Enable/under-voltage protection. Can use voltage divider to set UVLO. Keep above 1.2V to turn on device.
ILIM: Current limit. See fig 7-10 in datasheet. $R_{lim} = 1460 / (I_{lim} - 0.11) \rightarrow I_{lim} = 1460 / R_{lim} + 0.11$. 330ohm-4.5A, 750ohm-2A, 16kohm-1A.
IMON: Current monitor. $V_{mon} = G' \cdot I_{out} \cdot R_{mon}$. $G = 246\mu A / I_{out}$
RETRY_DELAY: Connect to GND for no retry caps. Cap sets auto-retry delay. $C_{retry}[pF] = t_{retry}[us] / 46.83 - 4pF$. 1nF-50ms, 10nF-500ms
NRETRY: Connect to GND for infinite retries. Cap sets number of retries. $N_r = 4 * C_{NRETRY}[pF] / (C_{retry}[pF] + 4pF)$
LDSTRT: Load detect/handshake signal. Cap sets delay. Connect to GND if not used
PG: Power good. Logic low when $V_{in} < V_{dvp}$
DVRT: Output ramp up rate. Connect to GND for fastest ramp time



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17C test board: https://product.tdk.com/system/files/dam/doc/product/power/switching-power/pwr-acc/Instruction_manual/17x-evk_apl.pdf

Output 5V

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