

PCB NOTES:

- * D for charge circuit are DB2J314 or similar SMD diode
- * +5V comes from USB micro type B
- * +5V_switch_voltage is the regulated 5V power for pi/peripherals
- * D2 - select diode of small inverse current ($I_R=1\mu A$ below/5V)
- * DNP should be in schematic and PCB, but not placed
- * 5mAh battery is ML621 or P044-ND from digikey
- * Reference AAA4000COL19.pdf for R3/R4 changes for different battery
- * To ensure $<330mA$ of inrush current, 470pF Chosen based on $SR=0.146 \cdot C_t + 14.78$ for CT
- * SR requires $>220\mu s$ for to achieve $<330mA$ inrush current
- * CT capacitor should be X5R/X7R dielectric rating with $>25V$ rating
- * $dV = I_{load} \cdot R_{on}$ to give the voltage drop from in/out
- * Reference TPS22958DGKR datasheet for layout example
- * NOTE: All the 5V traces from USB and to PI power need to support 3A at 5V

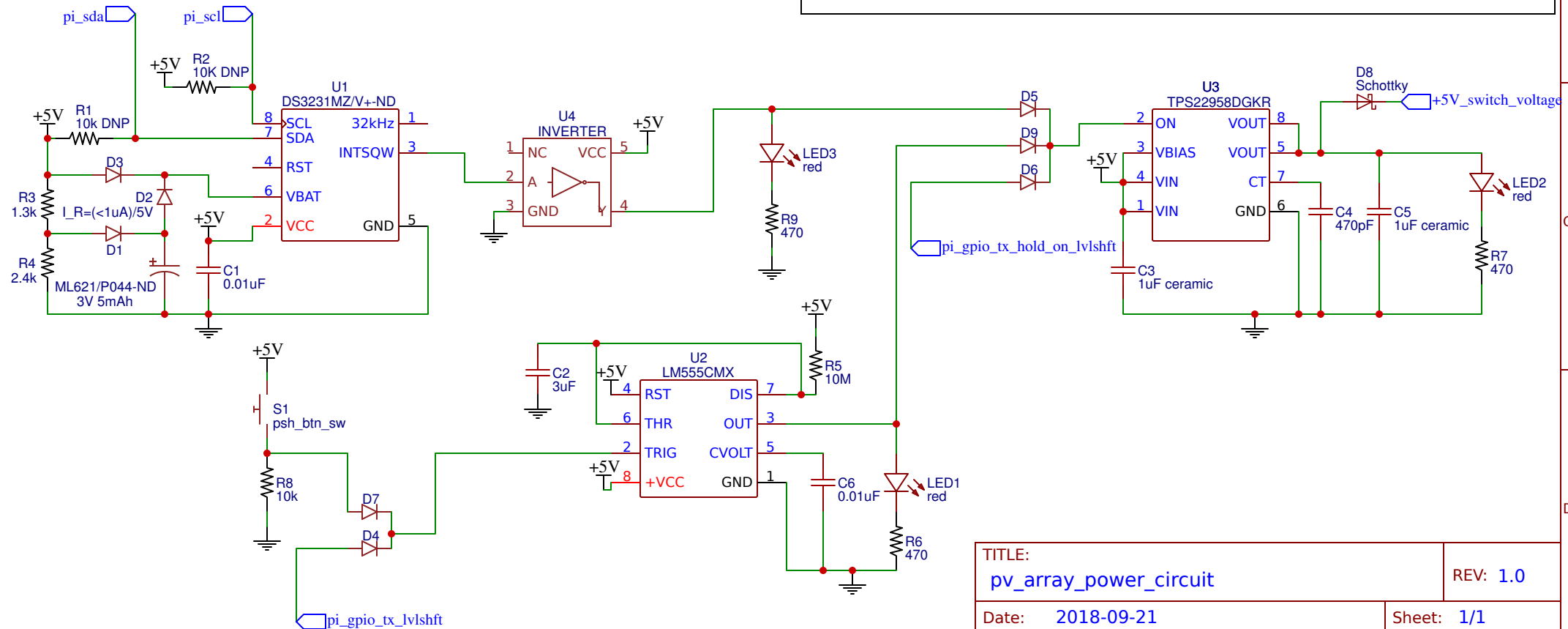
OPERATION:

DS3231 ALARM to turn on power:

- * When an ALARM(active low) is triggered, the inverted output enables the load switch. Remains low until pi is on to clear ALARM flag
 - * The timer is configured to delay pulse by 33s.
 - * Pi GPIO must assert GPIO to hold enable high on load switch before servicing DS3231 flag.
- Shutting down pi:
- * Set ALARM time for next wake up.
 - * previously asserted GPIO or pulse of GPIO should be done right before shutdown command to kick off 555 timer.
 - * Timer will hold the load switch on to allow safe shutdown of the pi before cutting power after 33s.

Manual power on:

- * Pressing tactile switch will assert a high followed by a low-going edge to kick off timer which will supply power.
- * Pi needs to immediately assert GPIO enable pin high to keep load switch on
- * Not able to be used as a shutdown interrupt



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