



TITLE: pv_array_power_circuit		REV: 1.0
Date: 2018-09-21	Sheet: 1/1	
EasyEDA V5.7.26	Drawn By: Glen Nicholls	

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, it forces interrupt on ATtiny84
 - * Active low INT from DS3231 will assert EN/ON pin on load switch high
 - * Active low INT from push button asserts EN/ON pin on load switch. will also assert pi_rx_dev_mode so pi knows it should halt running tracking so it can be operated on by user
 - * Active high INT from pi: when pi wakes up, it needs to assert pi_tx_hold_on while it is on.
 - * If pi_tx_hold_on goes low, uC holds power on for programmable time to allow safe shutdown of pi. Then EN is tied to GND to turn load switch off
 - * SPI inputs used for programming a .hex via ICSP
- Shutting down pi:
- * Set ALARM time for next wake up.
 - * Deassert pi_tx_hold_on to signal power-down is commencing
- Limitations:
- * NO support yet for shutdown button. Might add this with SW for ATtiny84

TITLE:

New Schematic

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Drawn By: glennicholls0