



Functional description:

Behaviour varies by VIN (solar panel voltage).

VIN < 3.7V: U201 in undervoltage lockout. Q204 off, Q203 & Q205 on. Load connected to battery.

VIN rises above 3.7V: after a 200us delay U201 enables and either CHRG or DONE output asserts. Q204 & Q202 both turn on. Battery is disconnected while charging, load connected to VIN.

VIN falls below 3.7V: CHRG & DONE outputs de-assert, become Hi-Z. Q202 & Q204 turn off. VIN powers load via Q202 body diode (0.7V–1V drop) while C201 discharges. After this, Q203 & Q205 turn on and load connects to battery.

Concerns:

- 1) If VBAT deep discharges below 3V (abnormal), VIN < 3.7V may cause current to flow into battery through Q202 body diode, without U201 turning on (undervoltage lockout). Hoping that if this happens the solar cell voltage will drop further under the load, cancelling out the effect.
- 2) 200us transient period between when VIN rises and when U201 enables and battery becomes isolated. Means battery may see short spikes of up to 4.3V (voltage limited by zener.)

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