

1. Resistor divider determines shut-off voltage for LT3652 (low-light conditions). VIN\_reg should be higher than 2.7 V under normal operating conditions. VIN(min) in this 12 V system equals 8.64 V.

Eq 1. RIN1/RIN2 = (VIN(min) / 2.7) - 1

2. Output float voltage for battery charging. Resistor divider is used to set the required float voltage.

Eq 2. RFB2/RFB1 = 3.3 / (VBAT(flt) - 3.3)

E.g: RFB2/RFB1 = 3.3 / (4.0 - 3.3) = 4.7

RFB2 = 3.3 / 10 uA = 330K

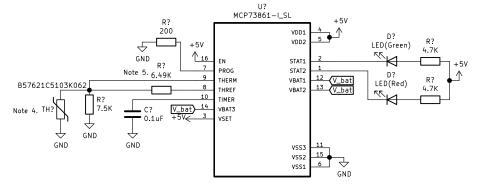
RFB1 = 330K / 4.7 = 70K

Divider Equivalent Resistance =  $(330 \times 70) / (330+70) = 57.75K$ RFB3 = 250K - 57.75K = 192.25K (191K)

- 3. Max charge current can be set. This version uses 1000 mA.
- Eq 3. RSense = 0.1 / ICHG(max)
- 4. Thermistor characteristics equals 10K at 25 degrees Celsius.
- 5. Thermistor shut-off charge conditions equal -10 and +60 degrees Celsius. Eq 3. RT1 =  $(2 \times Rcold \times Rhot) / (Rcold Rhot)$  Eq 4. RT2 =  $(2 \times Rcold \times Rhot) / (Rcold 3 \times Rhot)$

## Datasheets

- 1. LT3652 https://www.analog.com/media/en/technical-documentation/data-sheets/3652fe.pdf 2. MCP73861 https://www.t.microchip.com/downloads/en/DeviceDoc/21893F.pdf 3. B57621C5 https://www.tdk-electronics.tdk.com/inf/50/db/ntc/NTC\_SMD\_Standard\_series\_1206.pdf



MPTT solar charger with battery management and I2C input and output monitoring. Built for use with 12 V solar panels and 18650 cell(s). Features reverse polarity protection and a DC jack for charging when solar is not

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