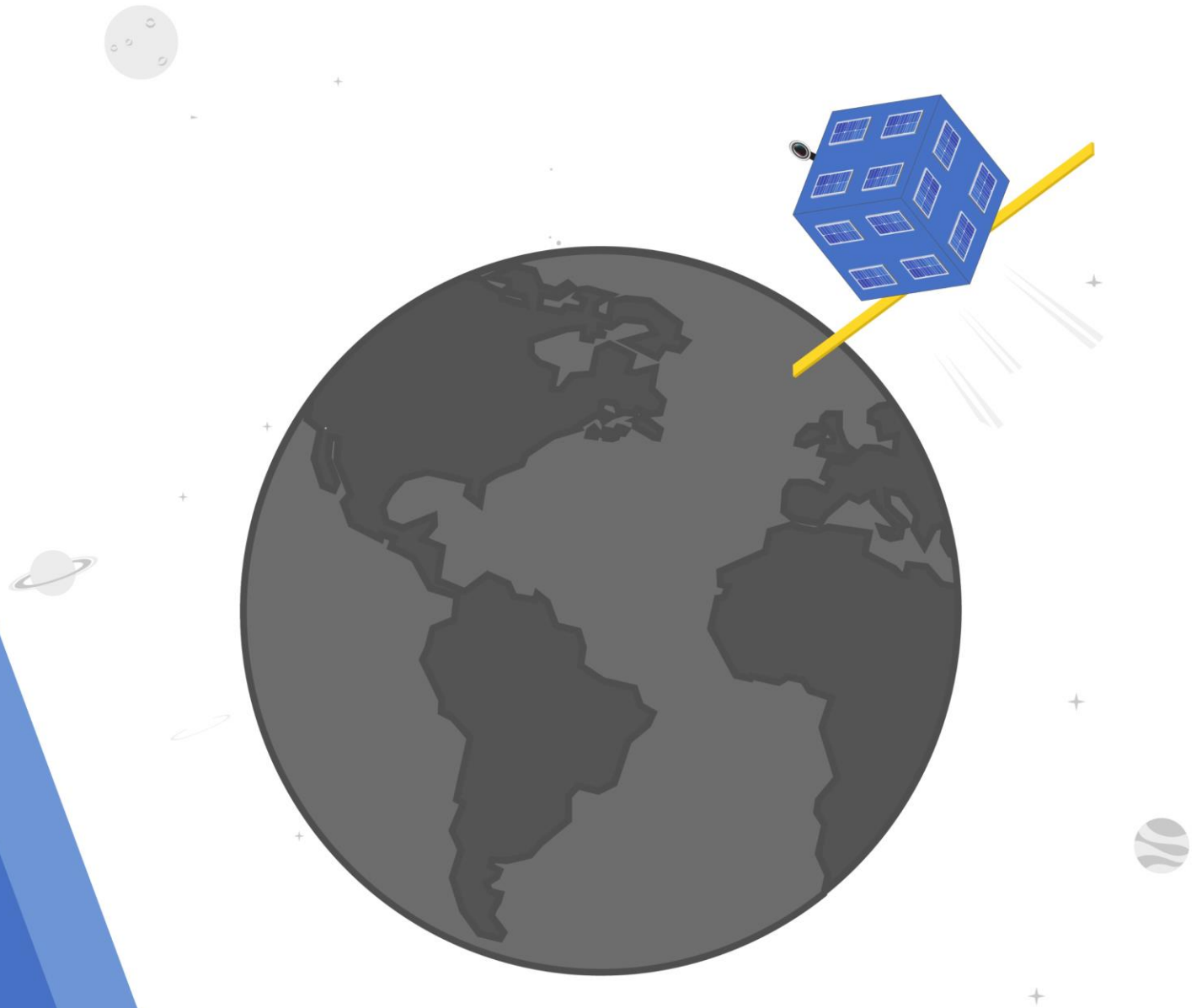


Electrical Power System



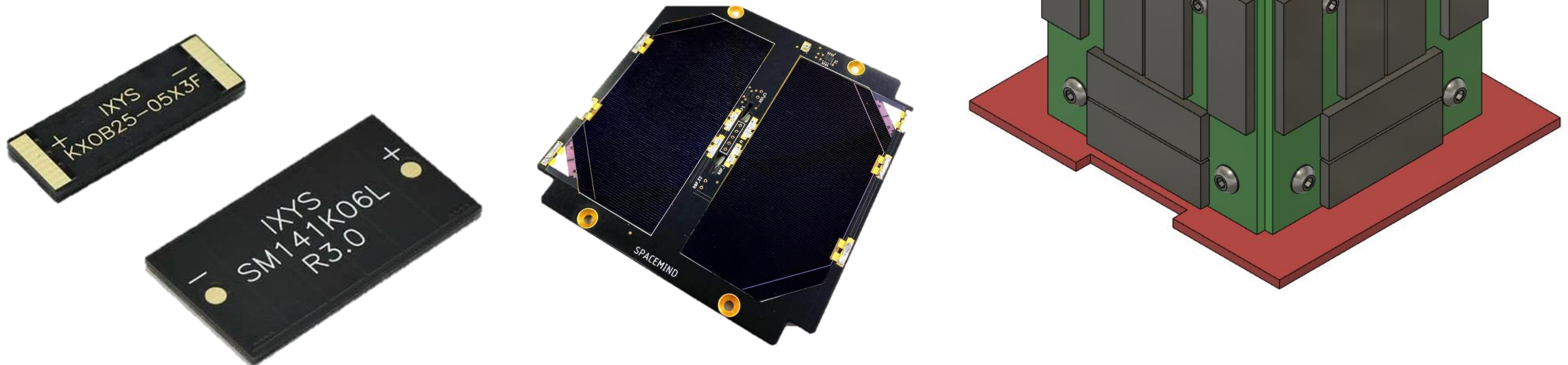
Electrical Power System



Power Harvesting



- Solar energy
- Constraints:
 - Surface area (125cm^3)
 - Solar panel sizes
 - Solar panel efficiencies



Power Harvesting

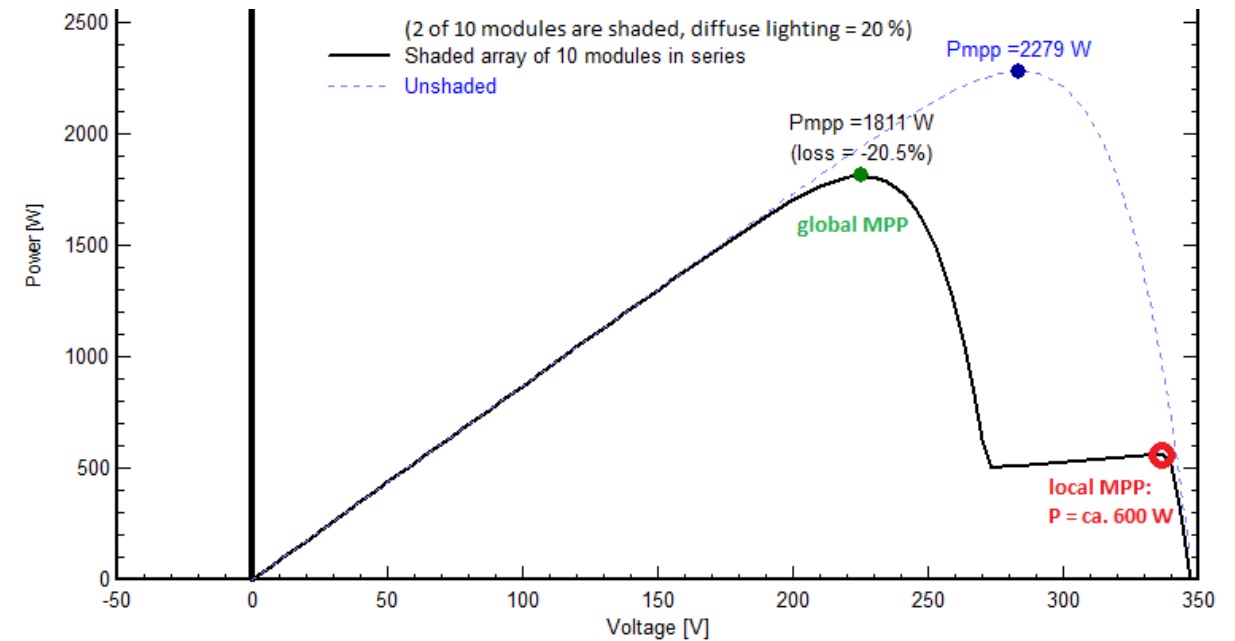
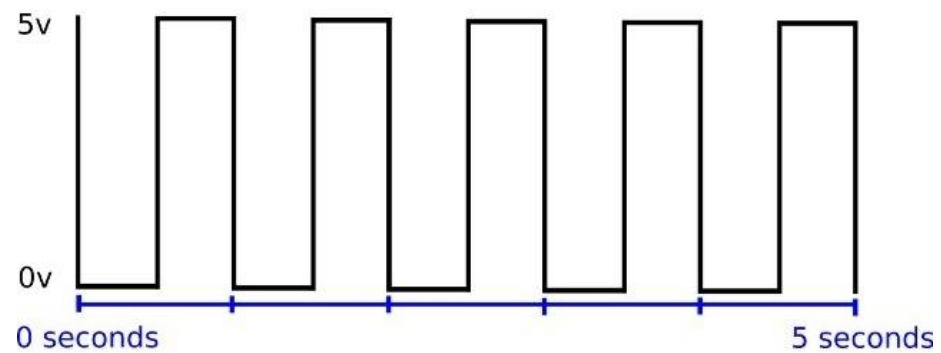


Pulse Width Modulation (PWM)

Vs.

Maximum Power Point Tracking (MPPT)

Pulse Width Modulation



MPPT Designs



01

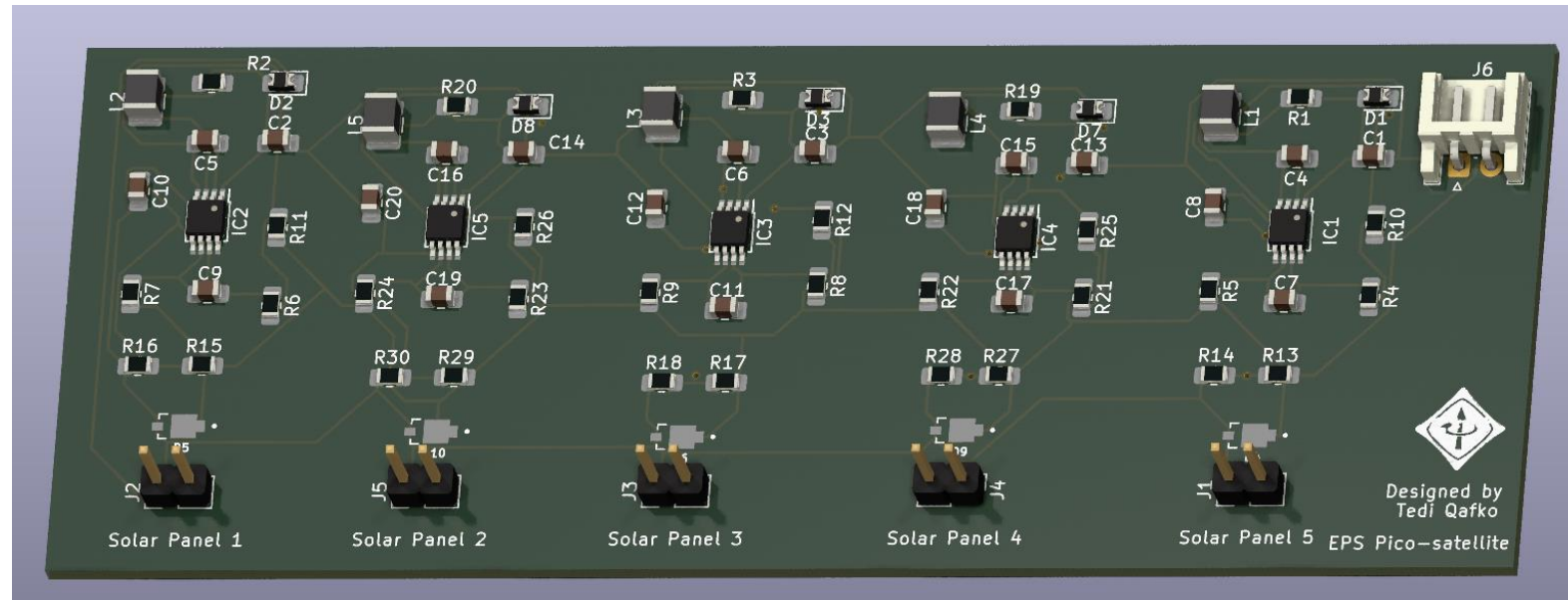
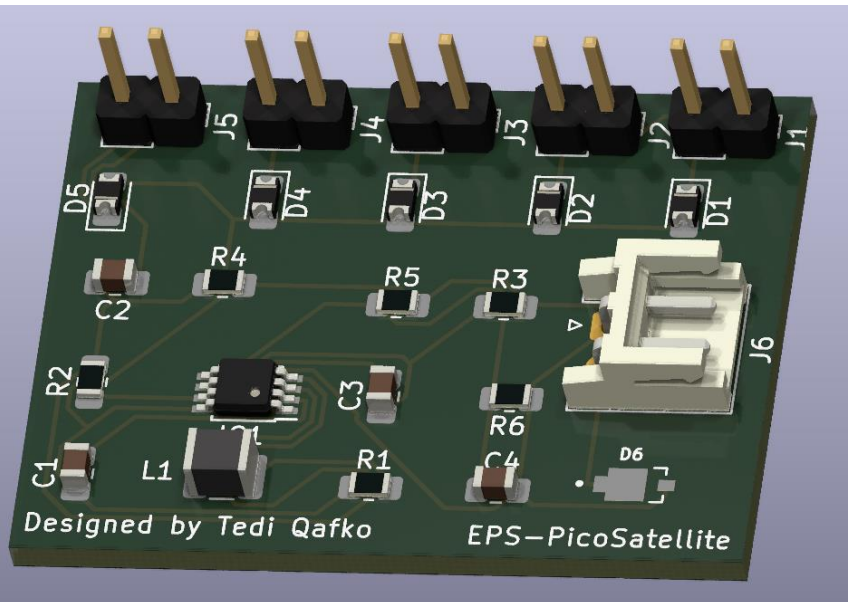
Solar Panel Wiring

02

Single MPPT

03

Multiple MPPT



Battery Management



- Lithium-ion battery
 - Compact and lightweight



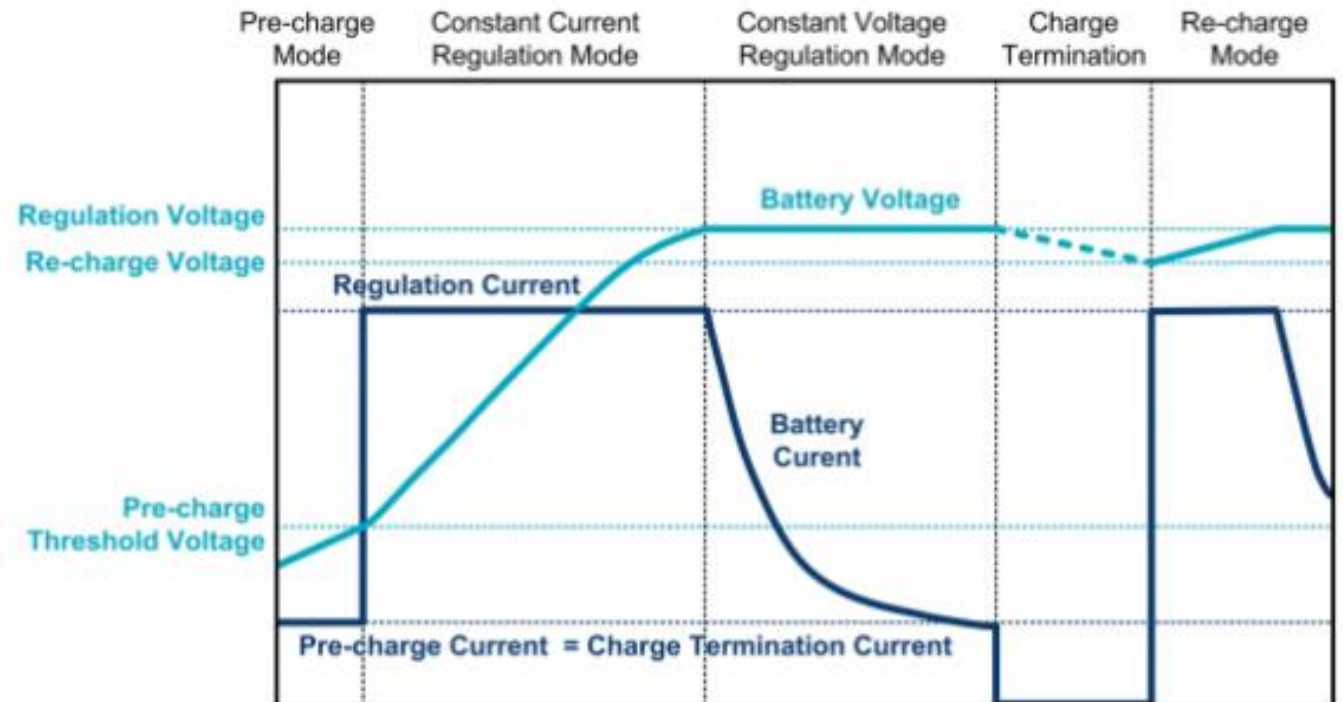
Temperature



Battery charge percentage



Lifespan



Power supplies



DC-DC Converters

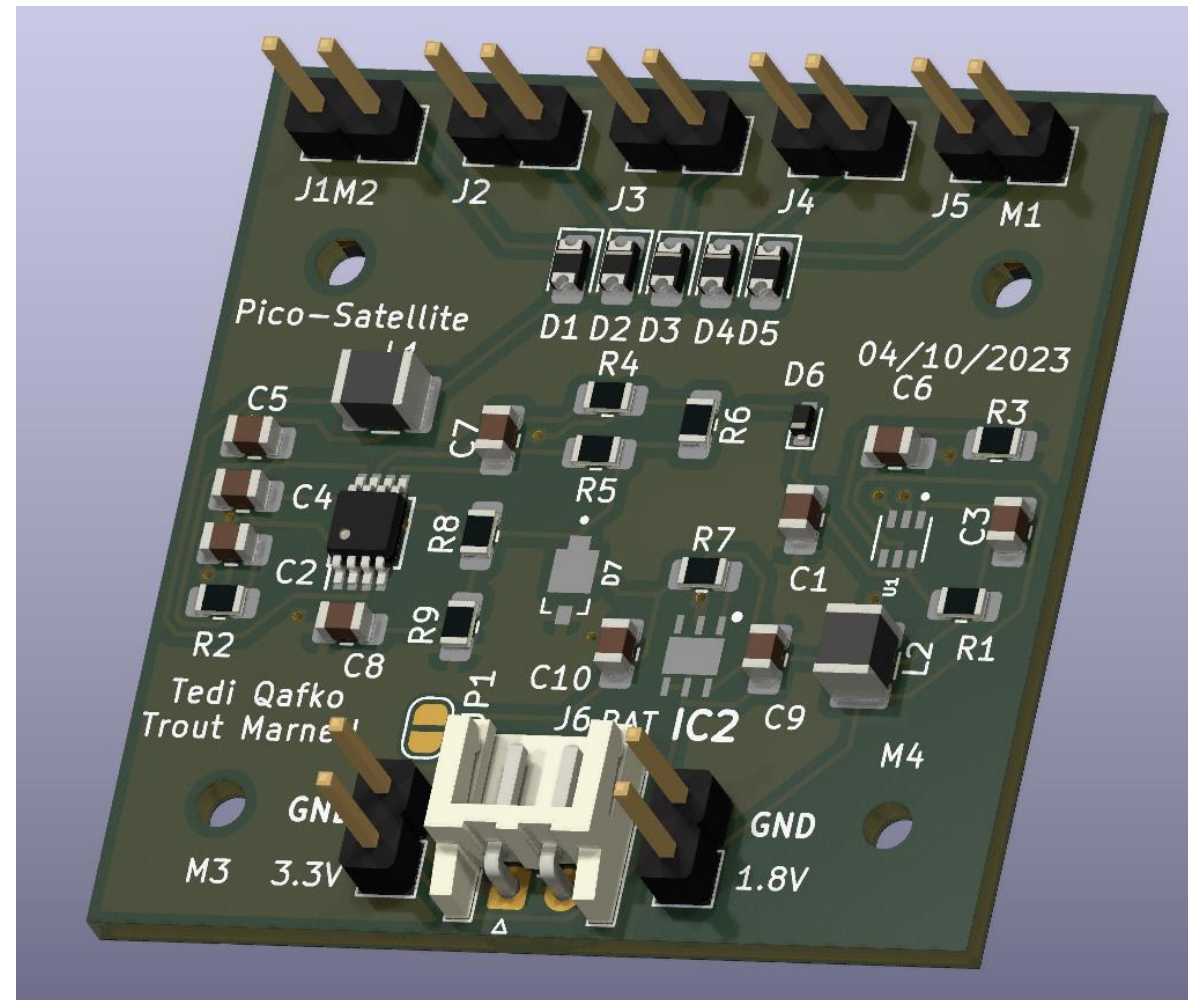
1.8V

3.3V vs. 5V

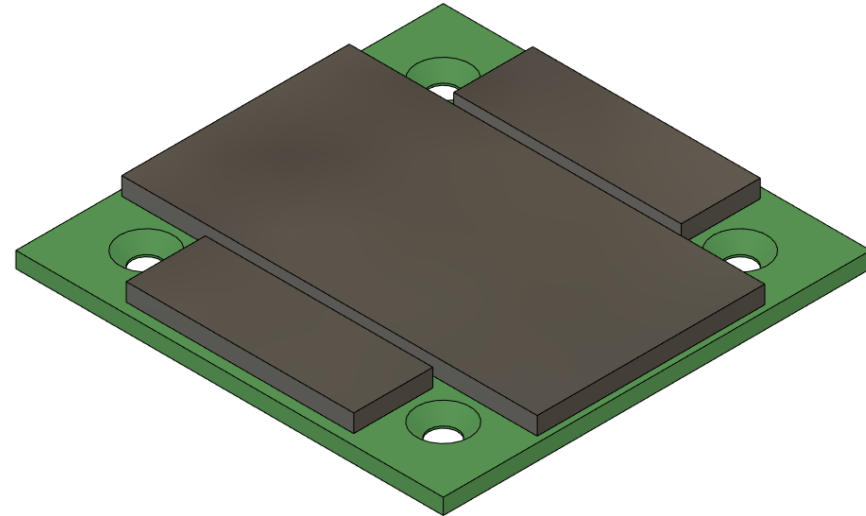
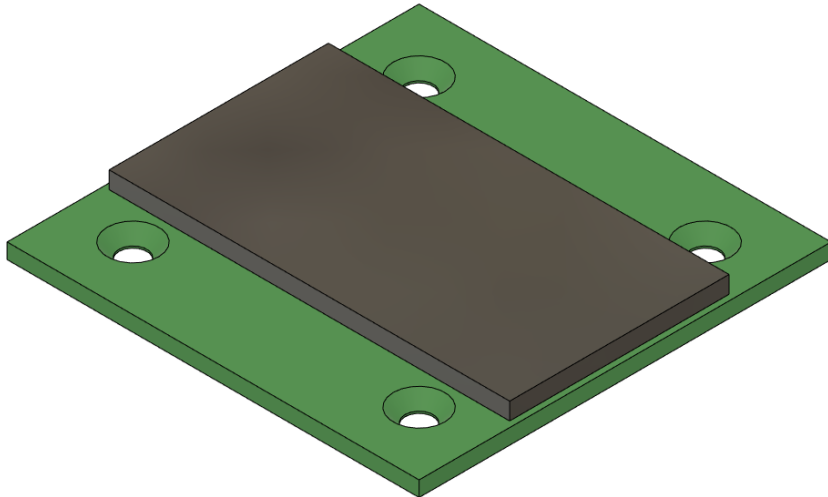
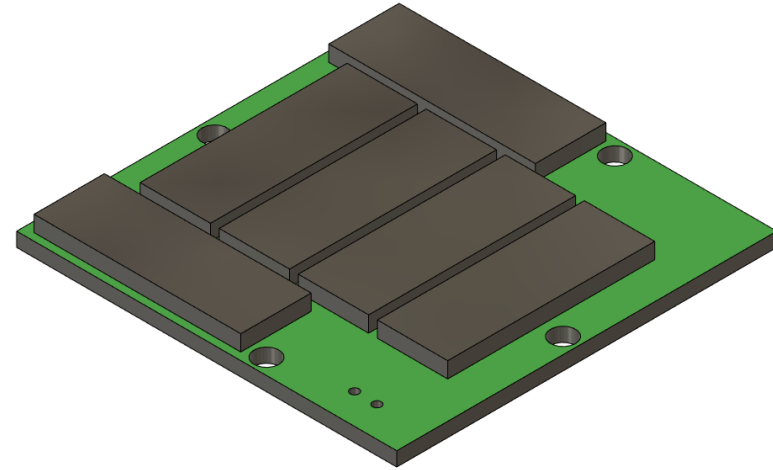
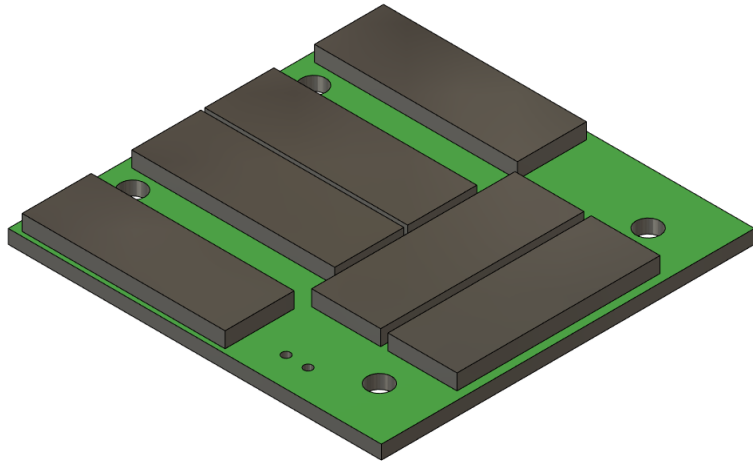
LDO Regulators

1.5V

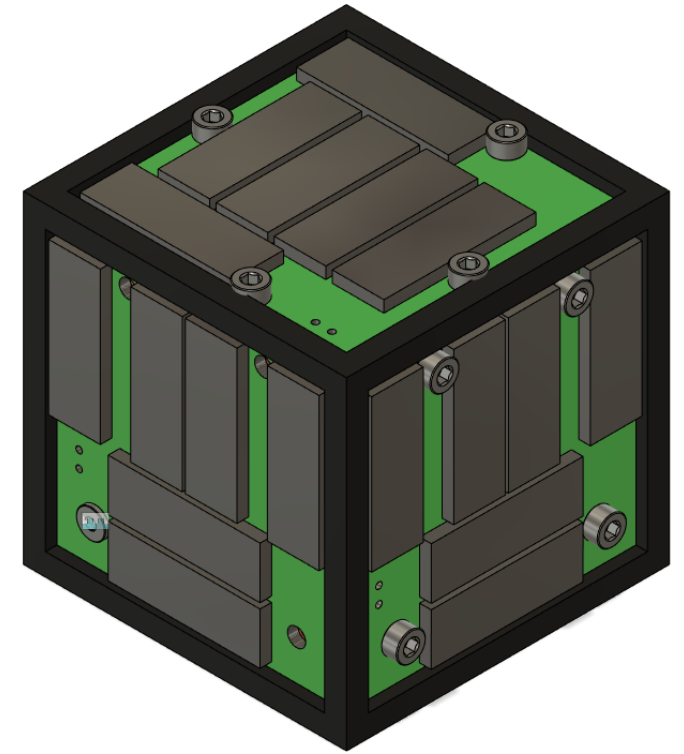
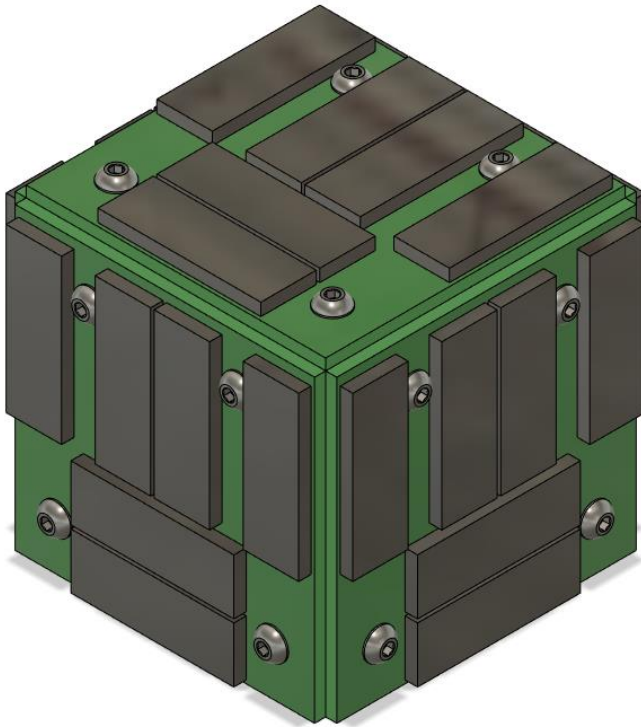
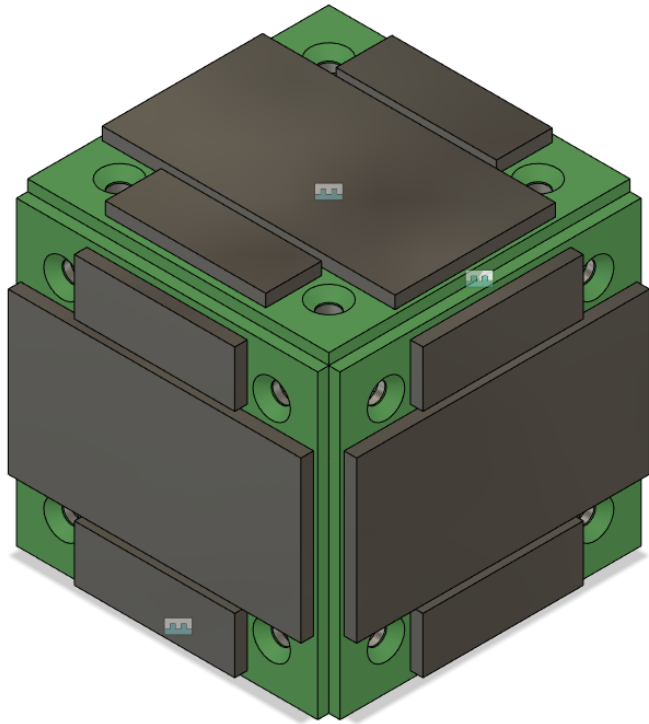
2.8V



Solar Panel efficiency tests



Design Iterations



Frame Design

