# Power Distribution System for a CubeSat

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# Contents

# Objective

To design and implement a fully autonomous power generation, storage and distribution system for a CubeSat

# System Architecture

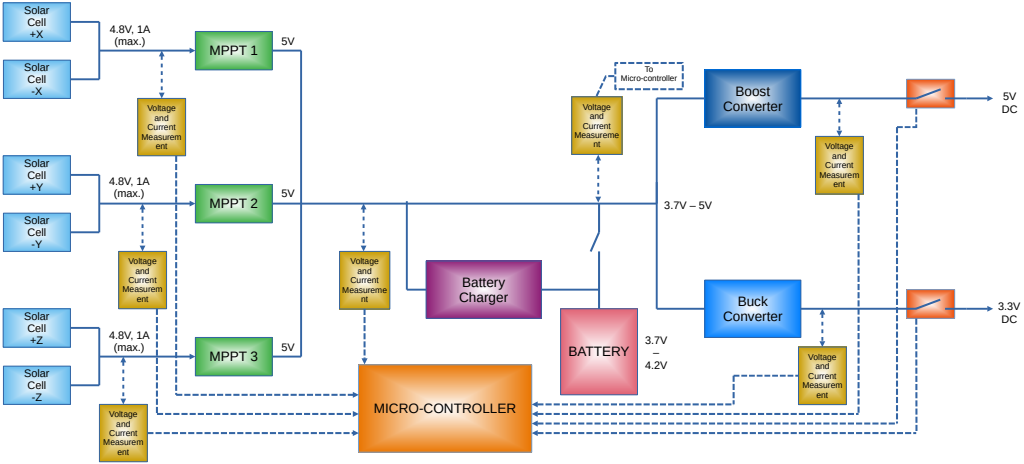


Figure 1: CubeSat EPS Architecture

# Hardware Design - Buck and Boost Converters with Monitoring

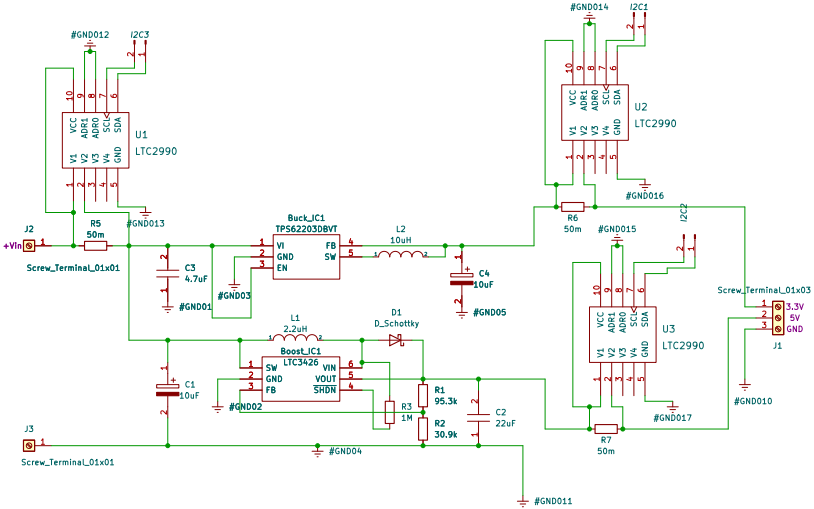


Figure 2: Circuit design of buck and boost converters with monitoring

# Hardware Design - Buck and Boost Converters with Monitoring (Contd.)

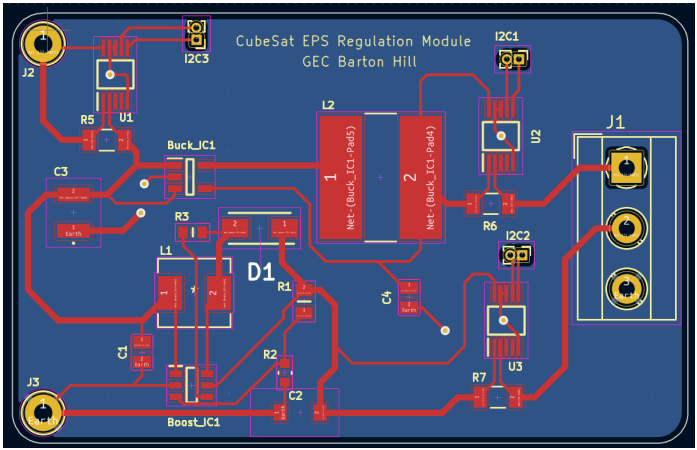


Figure 3: PCB Layout of buck and boost converters with monitoring

# Hardware Design - Buck and Boost Converters with Monitoring (Contd.)

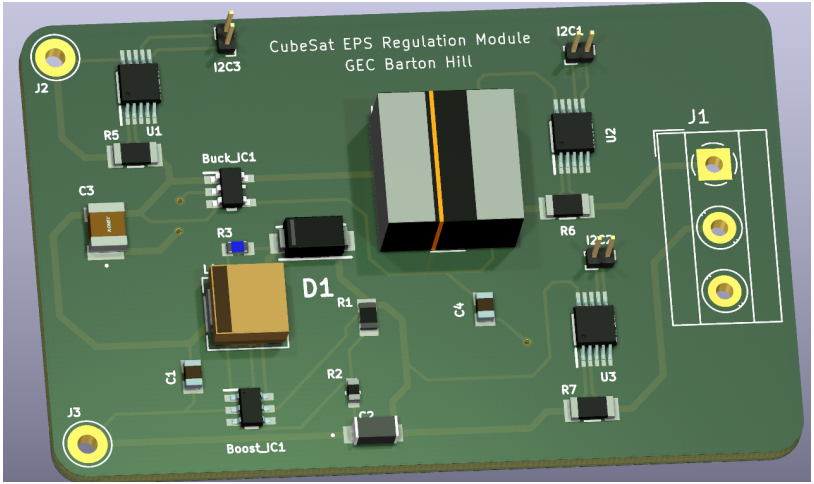


Figure 4: 3-D model of buck and boost converters with monitoring

# Hardware Design - Battery Charger

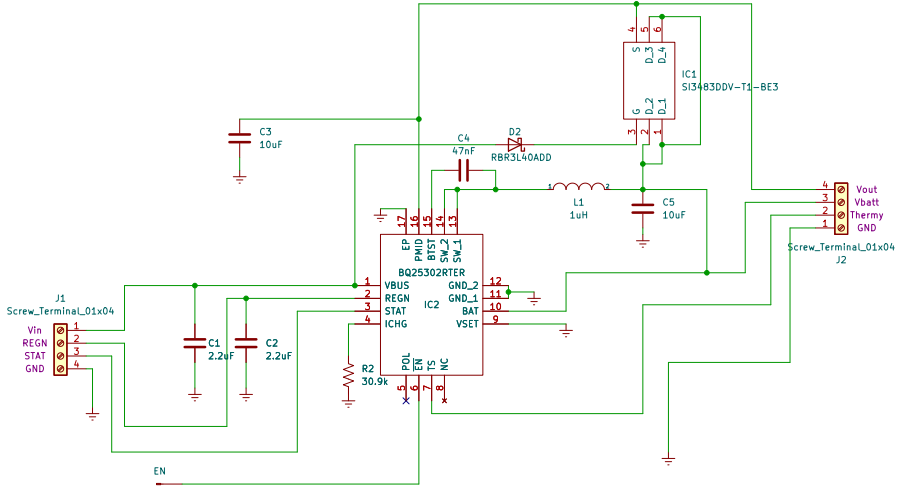


Figure 5: Circuit design of Battery Charger

# Hardware Design - Battery Charger (Contd.)

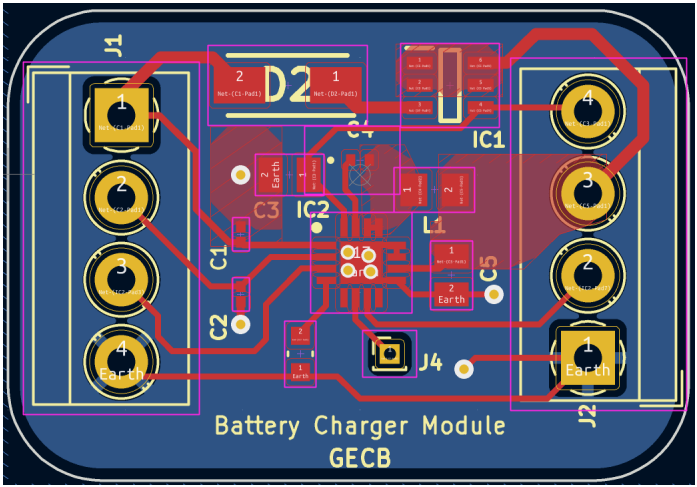


Figure 6: PCB Layout of Battery Charger

# Hardware Design - Battery Charger (Contd.)

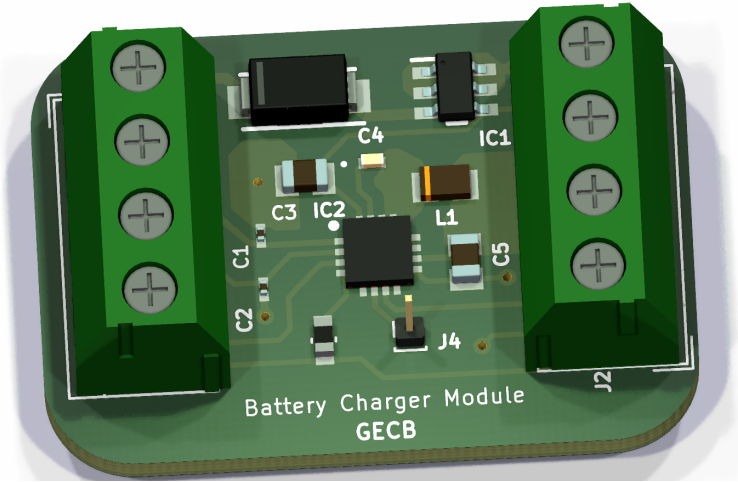


Figure 7: 3-D model of Battery Charger

# Hardware Design - MPPT

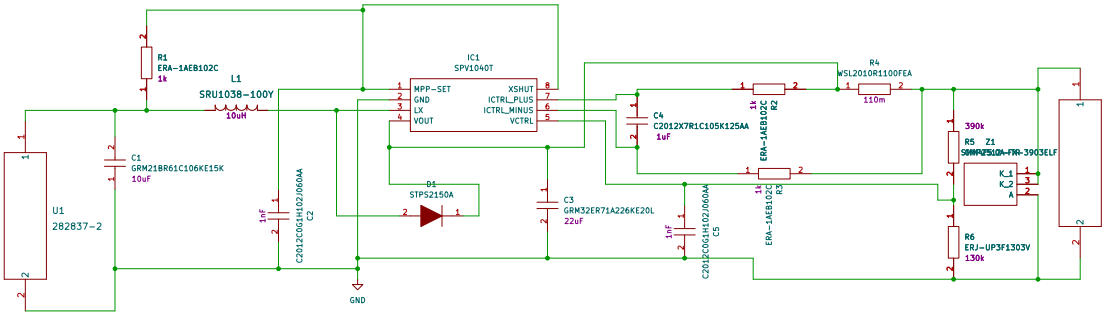


Figure 8: Circuit design of MPPT

# Hardware Design - MPPT (Contd.)

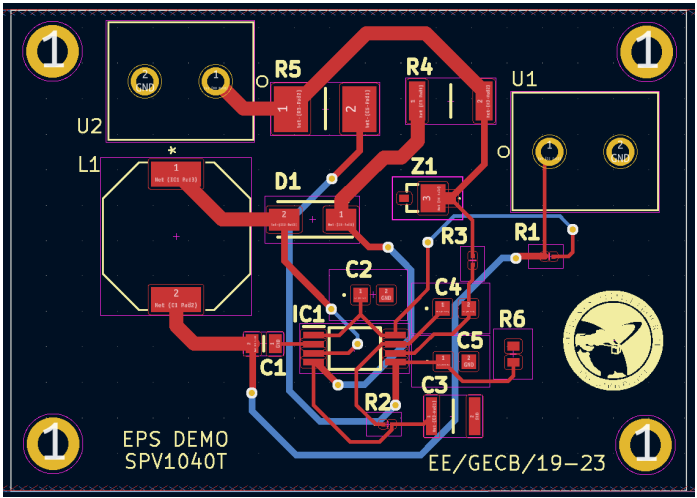


Figure 9: PCB Layout of MPPT

# Hardware Design - MPPT (Contd.)

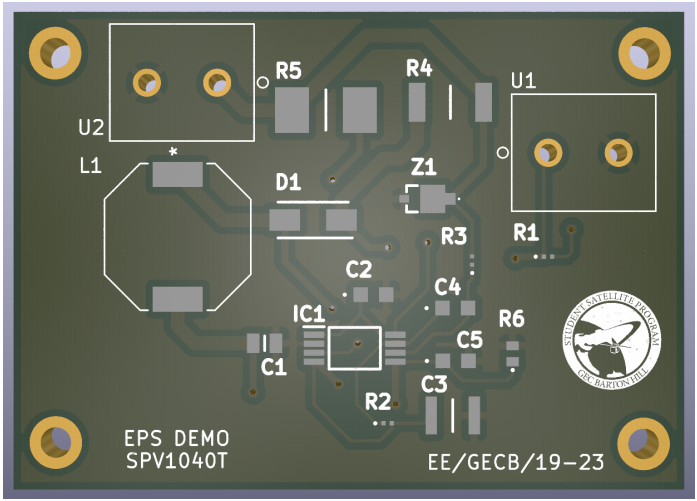


Figure 10: 3-D model of MPPT

# Hardware Design - Protection

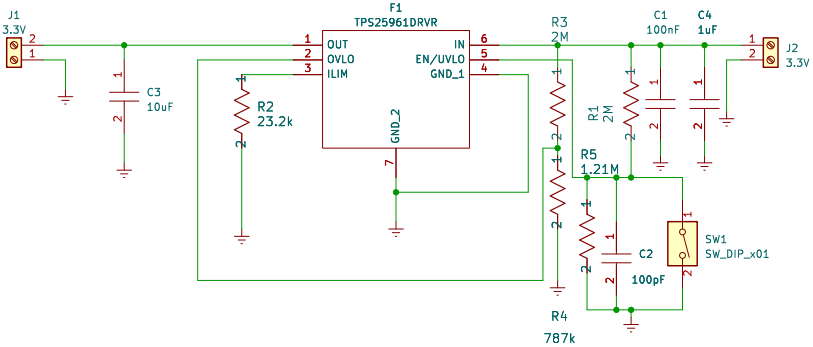


Figure 11: Circuit design for protection

# Hardware Design - Protection (Contd.)

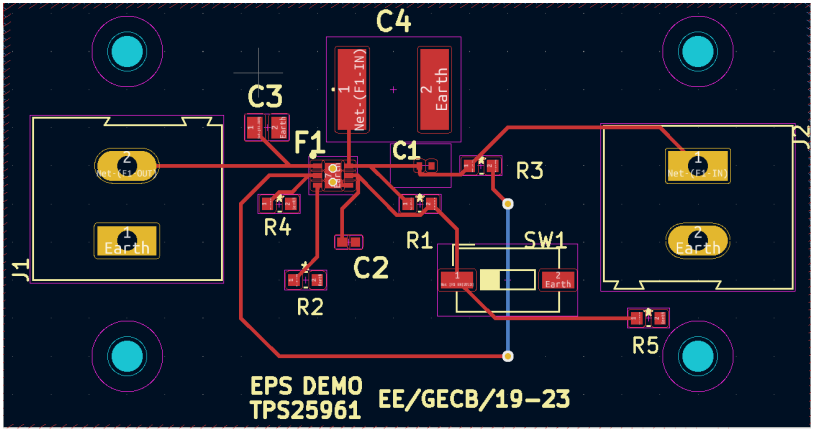


Figure 12: PCB Layout of protection circuit

# Hardware Design - Protection (Contd.)

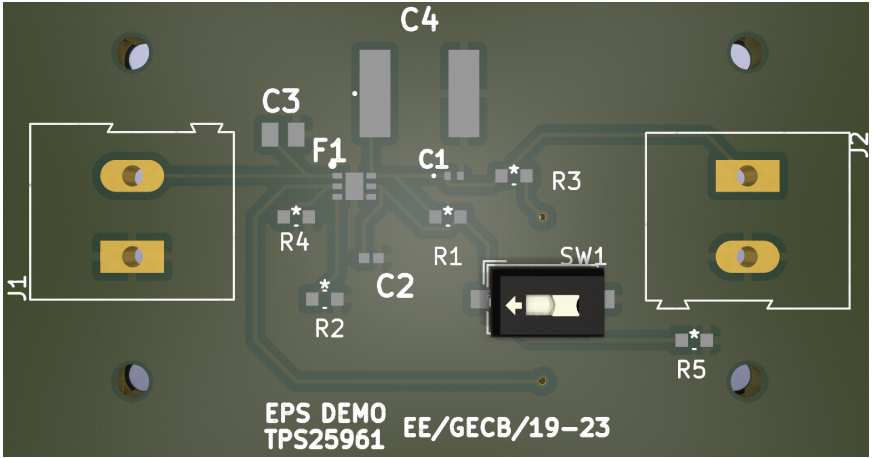


Figure 13: 3-D model of protection circuit

# Project Timeline

| Activity | Jan week 3-4 | Feb week 1-2 | Feb week 3-4 | Mar week 1-2 | Mar week 3-4 |
|---|---|---|---|---|---|
| PCB design and fabrication | | | | | |
| Procurement of components | | | | | |
| Microcontroller programming | | | | | |
| Soldering | | | | | |
| Hardware testing | | | | | |
| Report Writing | | | | | |

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# Thank You