

DSG-RICH R&D Meeting

Date: September 20, 2021

Time: 11:00 AM – 12:00 PM

Attendees: Aaron Brown, Peter Bonneau, Pablo Campero, Brian Eng, George Jacobs, Tyler Lemon, Marc McMullen, and Amrit Yegneswaran

1. RMC ready for fabrication

Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, Tyler Lemon, and Marc McMullen

1. Final design checks complete
2. Design sent to manufacturer for their review.

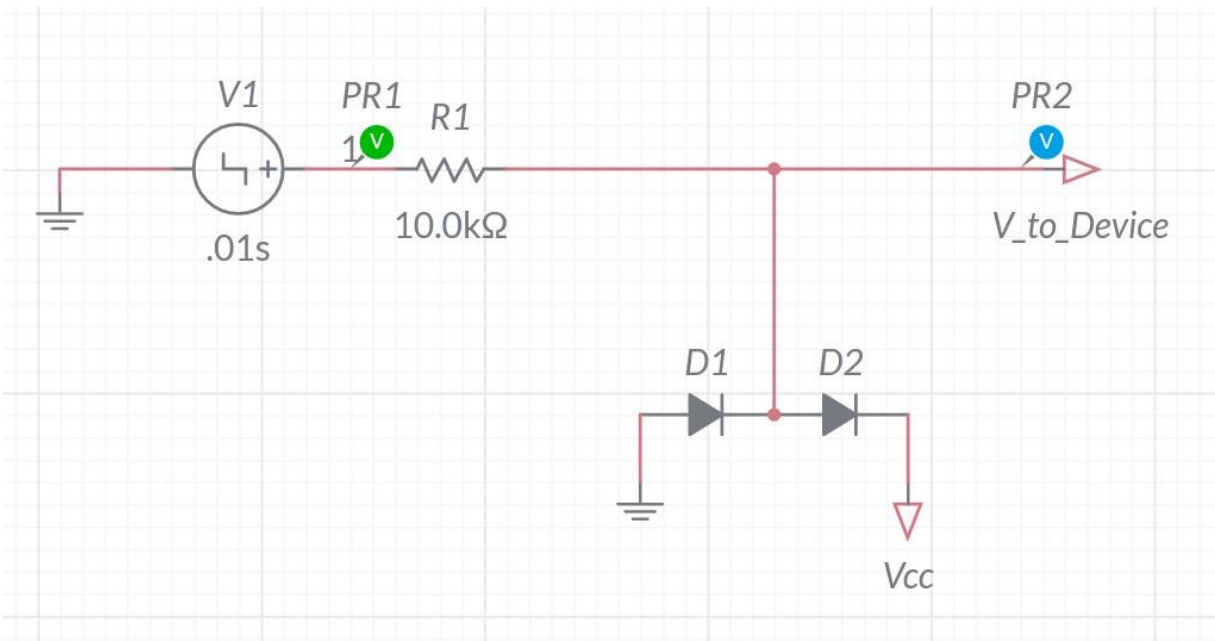
2. Backplane PCB ready for fabrication

Peter Bonneau, Aaron Brown, Pablo Campero, Brian Eng, Tyler Lemon, and Marc McMullen

1. Final design checks underway
2. Quote requested from manufacturer for one-week PCB fabrication

3. RMC Schottky diode circuit simulation

1. Circuit simulated in Multisim Live and Altium.
 - Multisim Live is an online SPICE simulator from NI
 - Altium simulation utilizes SPICE models with schematics designed in Altium
2. Simulations use a 24 V DC step as input to circuit and measures/plots voltage input and the voltage that would be seen at device on circuit
 - A 24 V DC voltage jump would be an extreme case of failure.
 - Most likely over-/under-voltage source would be capacitance and inductance in I²C bus causing ~ 1 V over/undershoot in the square wave signal from the sbRIO and/or SHT35 sensor.

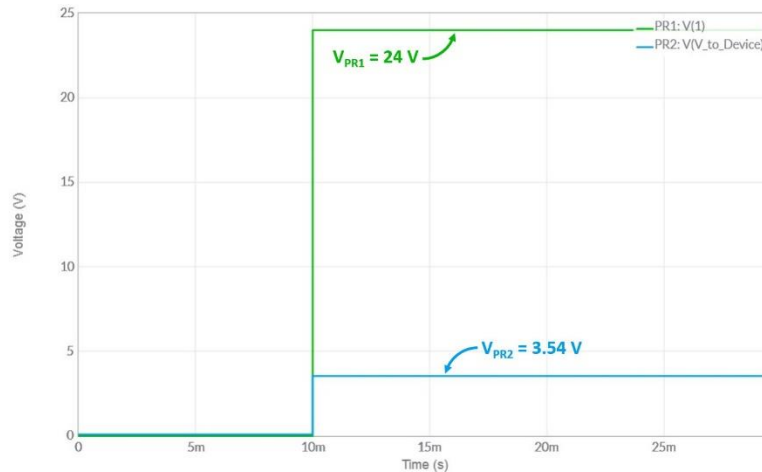


Basic schematic used in both simulations.

Schematic above is from Multisim Live, but Altium used the same configuration.

3. Multisim Live simulation complete

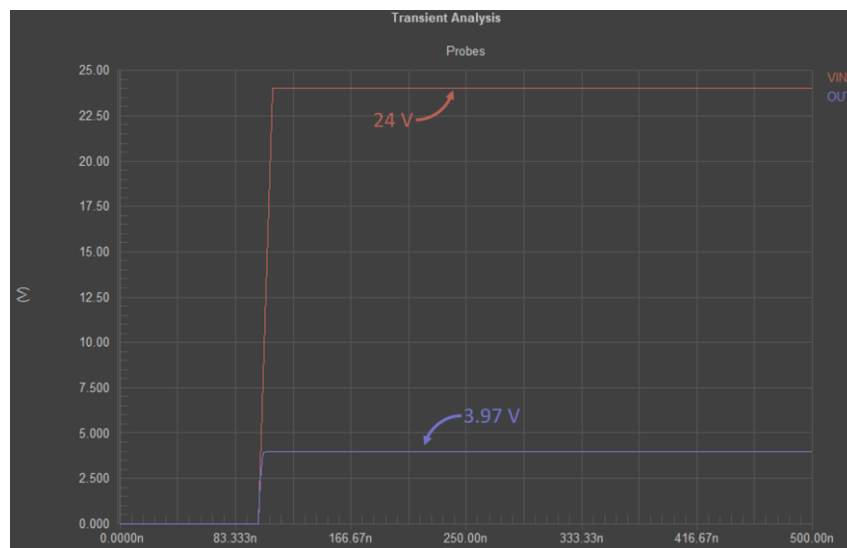
- Able to change its basic Schottky diode model to match model of Schottky diodes used on RMC
 - Model of RMC's diodes gotten from part manufacturer
- Results as expected; voltage is clamped at ~ 0 V - ~ 3.3 V



Result of Multisim Live simulation

4. Altium simulation in progress

- It is less straight forward to change model of diodes to match ones used on RMC, so result of simulation is only an approximation
 - Still looking in to how to import correct model
- Results still as expected; voltage is clamped at ~ 0 V - ~ 3.3 V
 - Different voltage levels were observed in Altium since different diode models were used.



Result of Altium simulation