Department of Electronics and Electrical engineering

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M.tech

Power engineering

➢ **Simulation of buck converter in Altium :**
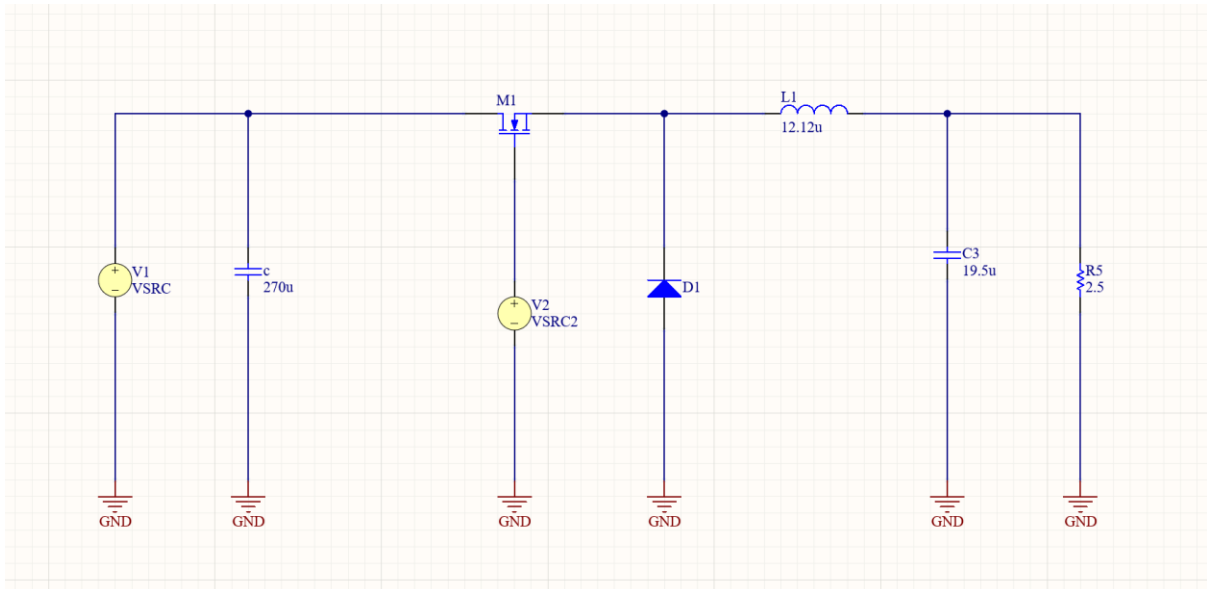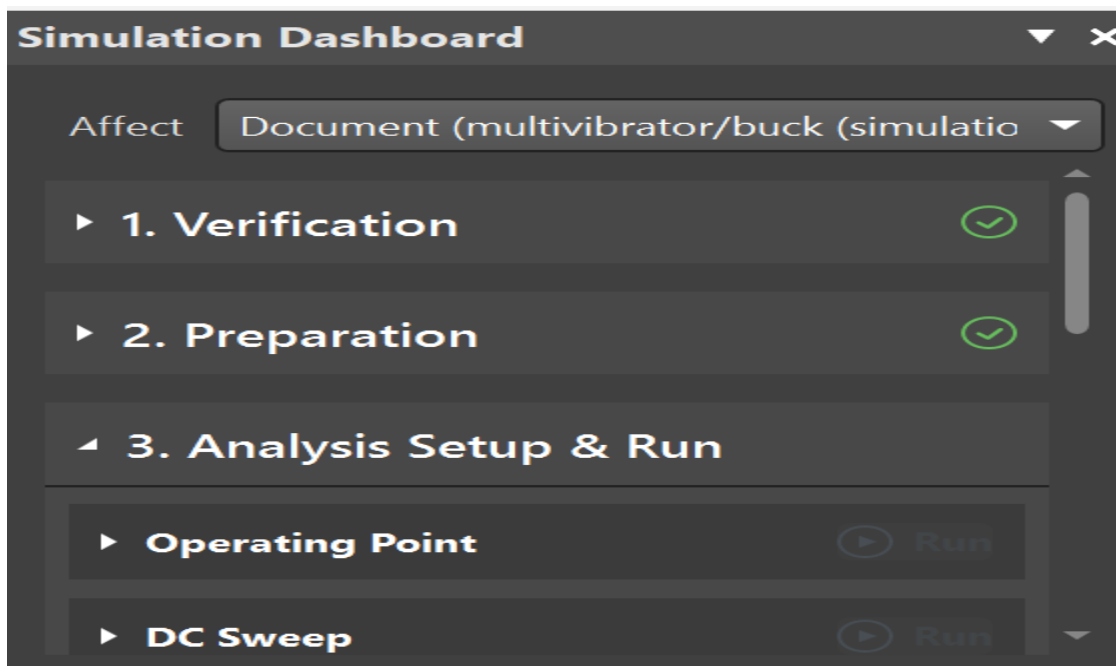
Circuit Diagram:

Fig:Schematic of buck converter.

SCHEMATIC VERIFICATION BEFORE GETTING SIMULATION RESULTS:

STEPS AND PROCEDURE:

Place all the components as per the data sheet provided with values. After schematic representation, we have to do **Verification check** ie.,
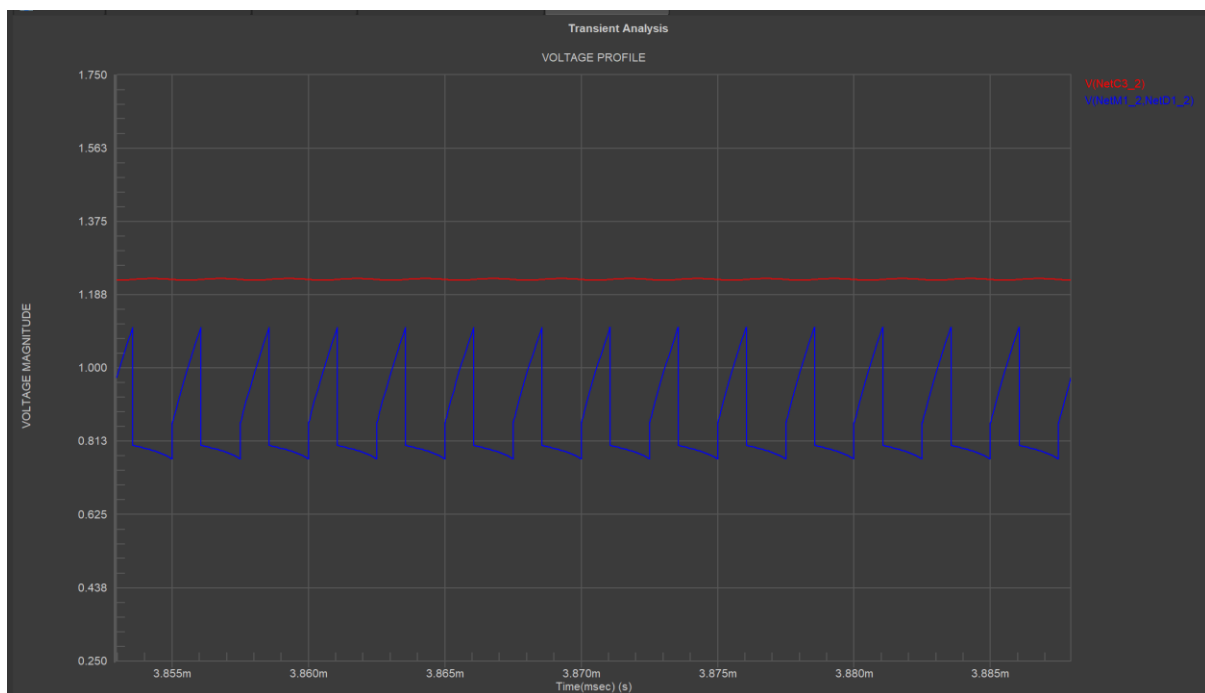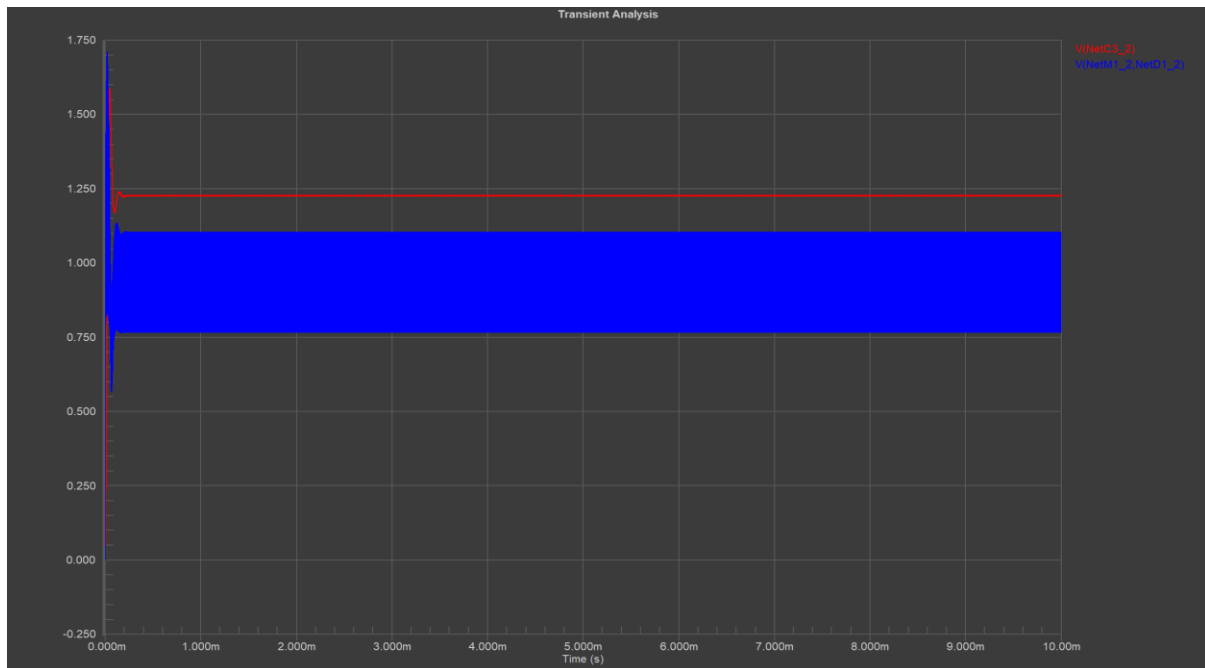
 Open Simulate>Simulation_Dashboard>Start Verification. Next

After successful verification of Electrical Rule check and Simulation model Next

Go to **Analysis Setup & Run> Transient > Set Time period 1msec to 100nsec > run**
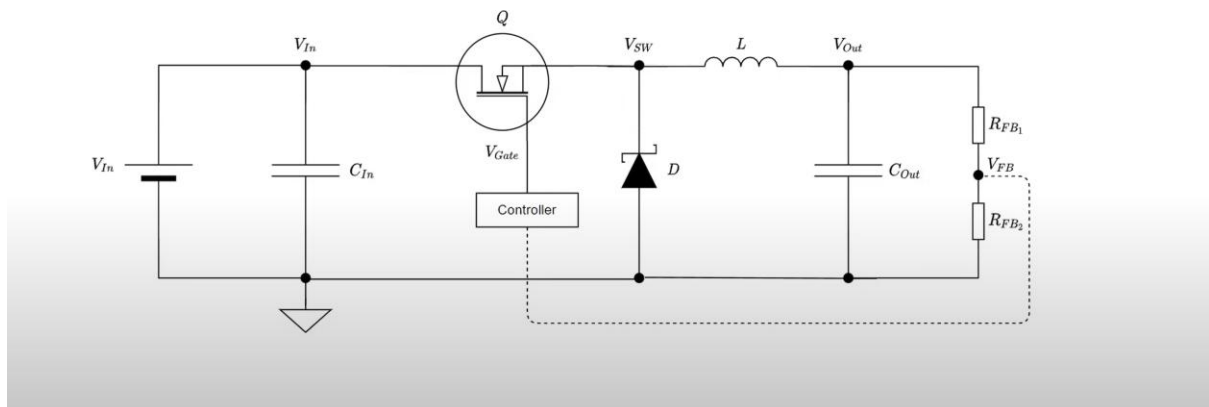
Results:

Blue Colour-Voltage across Switch.

Red Colour -Output Voltage.

Drive document: https://drive.google.com/file/d/1mA1iPQQgpS3Nfb-AqffbJzySsP0CKuUP/view

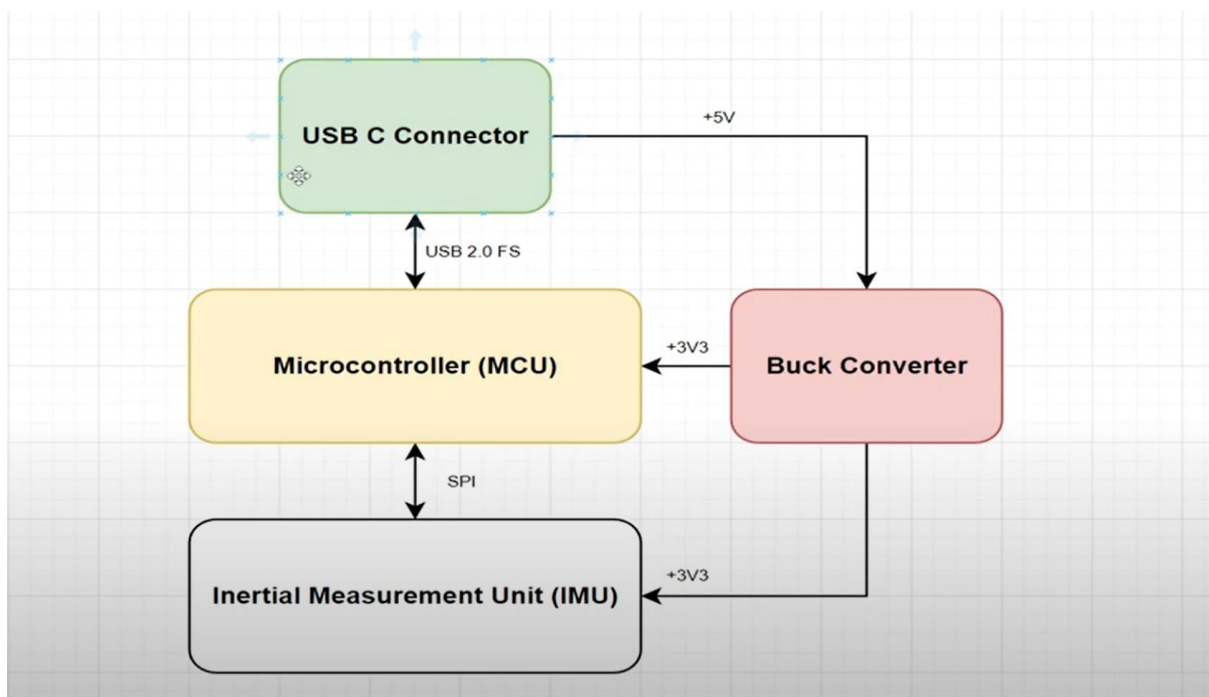## ➢ Microcontroller based circuit diagram of buck converter:
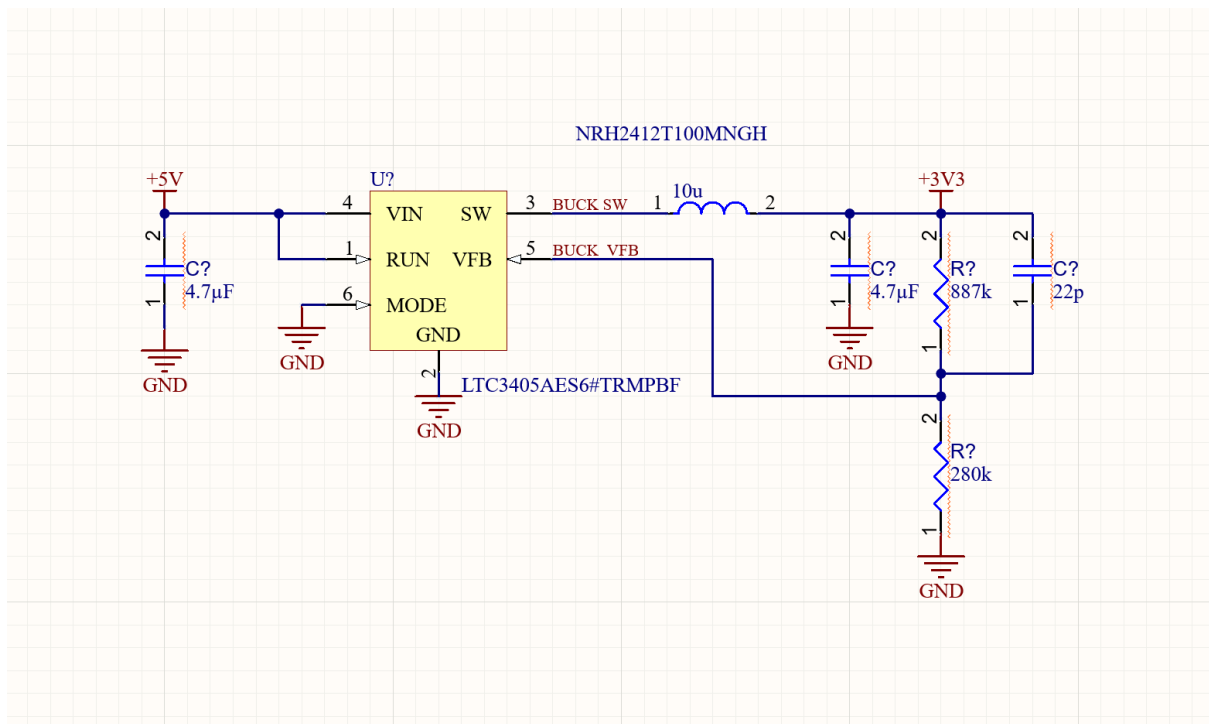
Circuit Diagram of Buck Converter:

Micro-controlller: STM32F0422G6U6

USB-C Connector: To Supply power i/p and Connect to micro controller.

Basic block diagram of interconnection of elements:

Microcontroller based Buck Converter:

NRH2412T100MNGH

Link for Data Sheet of Microcontroller:
https://www.st.com/resource/en/datasheet/stm32f042t6.pdf

Link for Data Sheet of Switching Regulator:

 https://www.analog.com/media/en/technical-documentation/data-sheets/3405afa.pdf

Link for Data Sheet of Inductor: https://www.mouser.in/ProductDetail/TAIYO-YUDEN/NRH2412T100MNGH?qs=CNQs48zzdnrqx0tE%252BgVC6w%3D%3D&srsltid=AfmBOor0vEXebx6fAj6soMOupcZiTu5nCjBRLJ9xWIqlrvjvAjCBzgDu

Link for Data Sheet of Switching Regulator:

CAPACITOR: CAPC0805(2012)145_L

RESISTOR:RES_0603

Link for Data Sheet of USB_C (USB4105-GF-A):
https://ww1.microchip.com/downloads/en/appnotes/00001953a.pdf