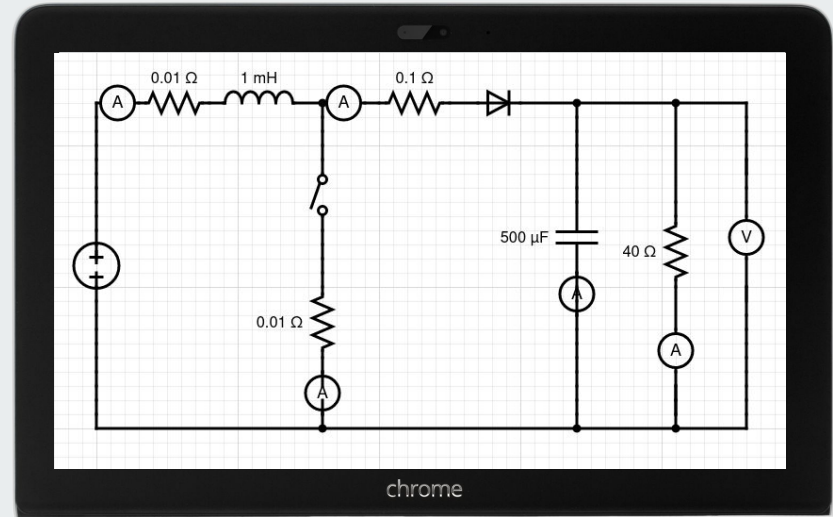
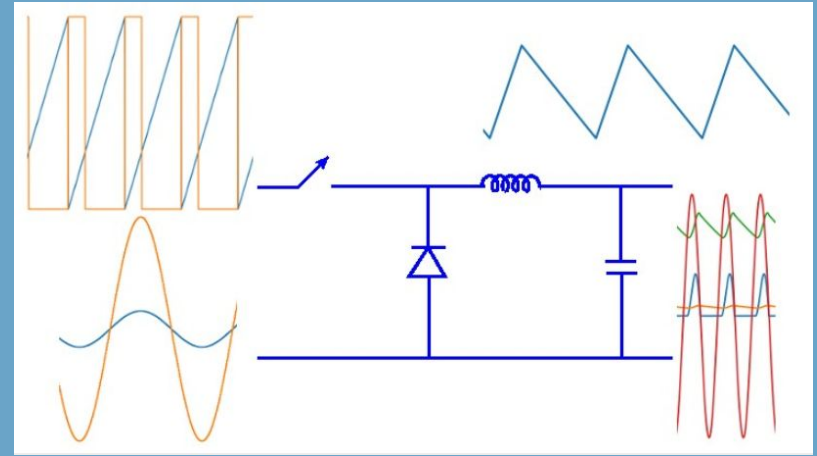


# Boost Converter Analysis

ED18B027  
Sai Rohitth Chiluka



# Simulation Software



## Python Power Electronics

[Simulation Library](#) [Create Simulation](#) [Documentation](#)

Browse your computer and upload the circuit schematic spreadsheets (.csv) files. Read the instructions no edit circuit option. Delete the circuit and add a new one. If you change any circuits, click on "Pr" button so that the simulator checks for errors.

1. File name: sepic\_conv.csv  
File description: SEPIC converter [Remove circuit](#)

Circuit spreadsheet could not be read. Make sure it is in same directory as working directory above

Circuit file path [Choose file](#) No file chosen

Schematic description [Sample circuit](#)

[Save circuit file](#)

[Add circuit schematic](#) Click on this button to open a form to add another circuit schematic.

[Back to main page](#)

[Run](#)

Use the time fields next to each plot to zoom a plot.  
If the time range is invalid, the entire data file will be plotted.  
Click on the "Add plot" button below to create a new plot.

[Add plot](#)

1. Plot title: Inductor L1 current  
Ammeter\_Vin -> iL1

X-Zoom

Y-Zoom

Start:

Start:

Stop:

Stop:

[Plot](#)

2. Plot title: Inductor L2 current  
Ammeter\_L2 -> iL2

X-Zoom

Y-Zoom

Start:

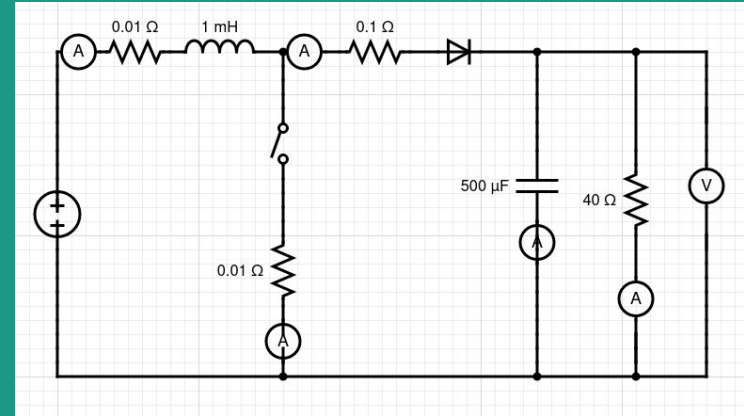
Start:

Stop:

Stop:

[Plot](#)

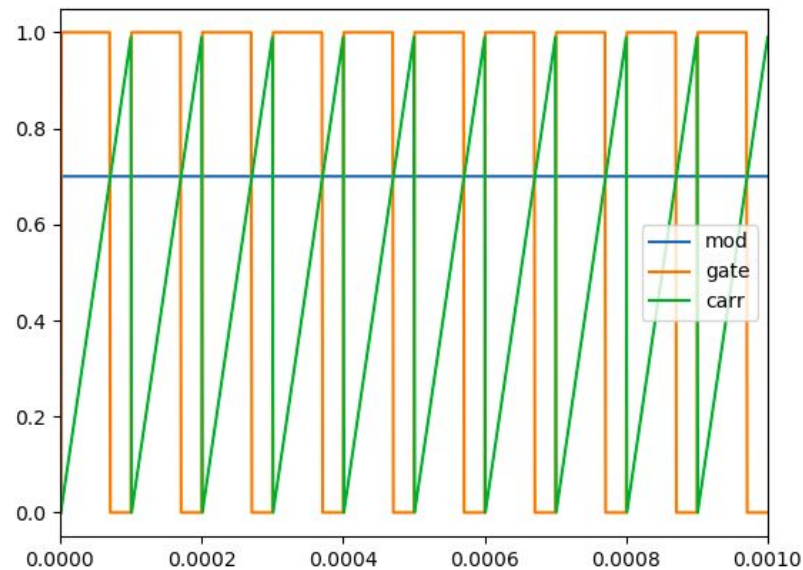
\_\_\_\_\_

[illegible]

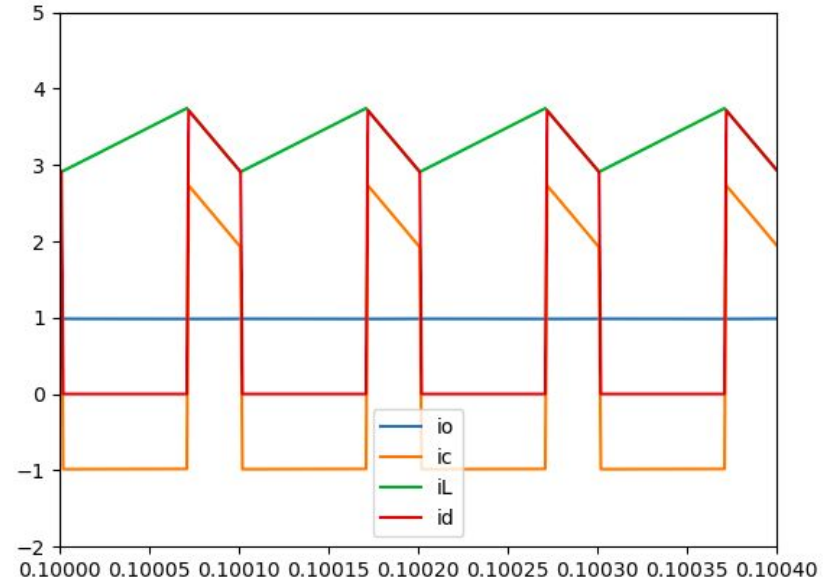
# Gate Signal

Switching Frequency 10000 Hz

Duty Ratio 0.7

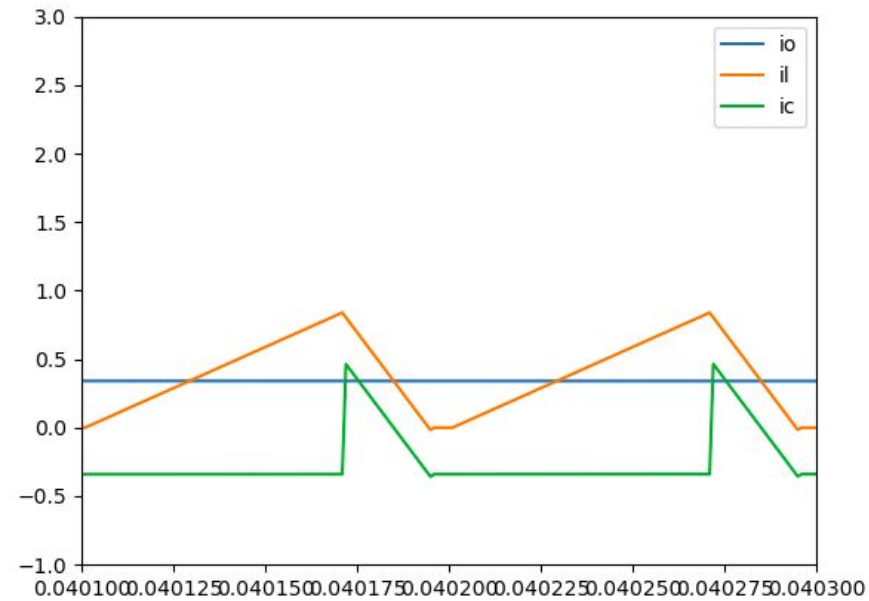


# Current Plots: CCM Mode

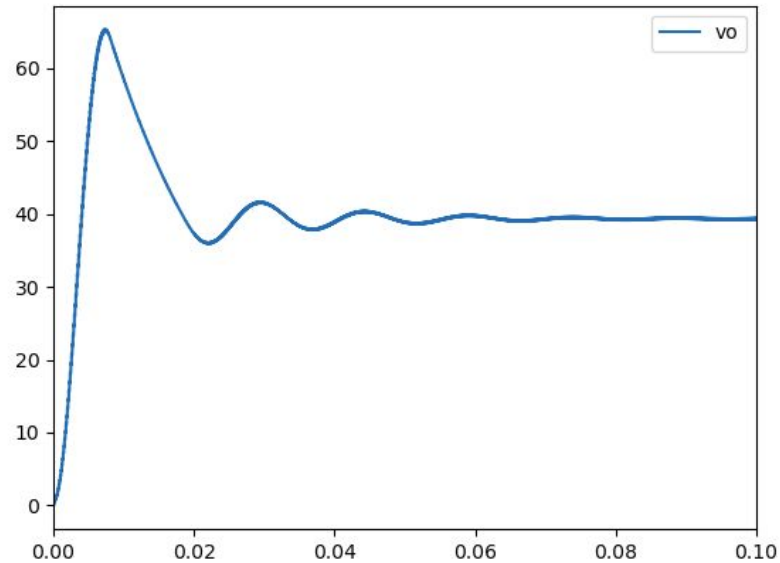


# DCM Mode

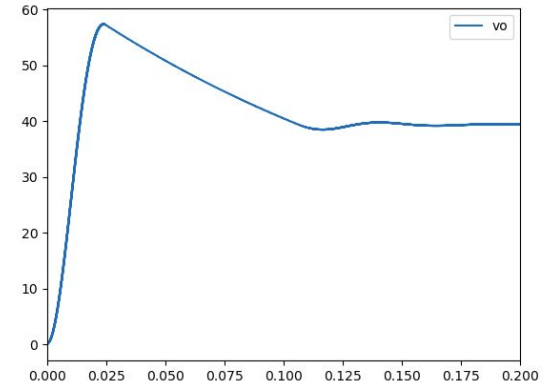
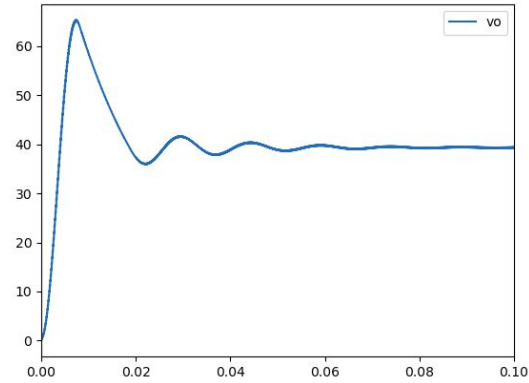
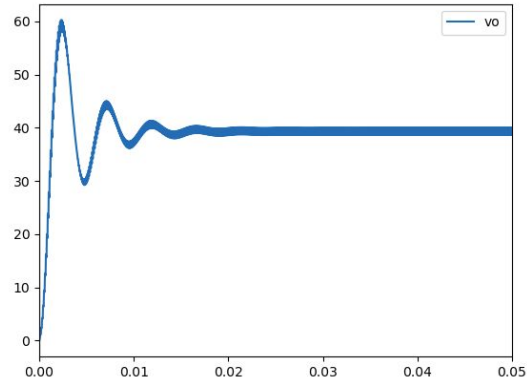
Resistance Increased



# Boosting from 12V to 40V



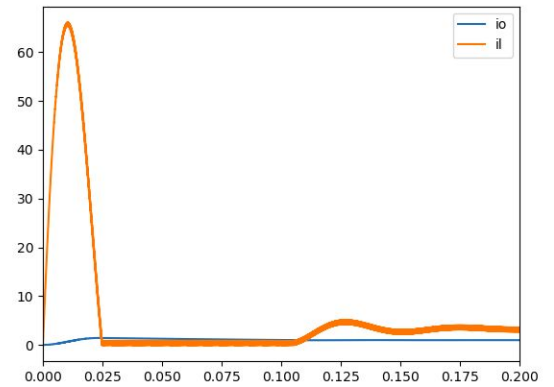
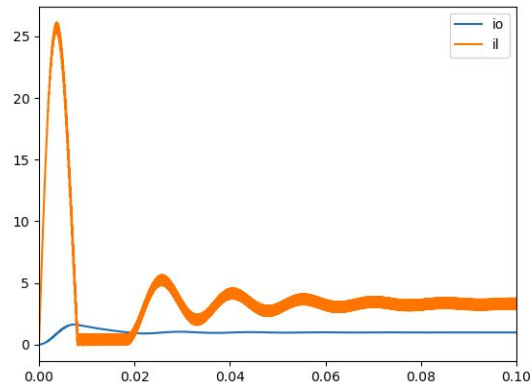
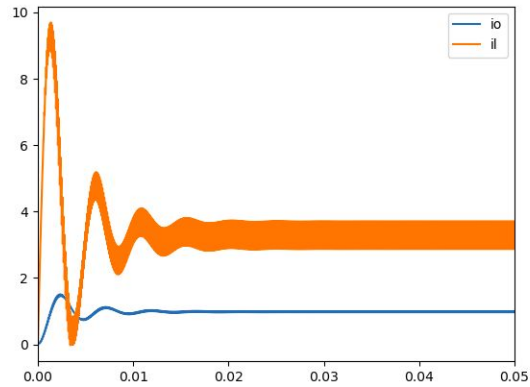
# Effect of Capacitance on Voltage



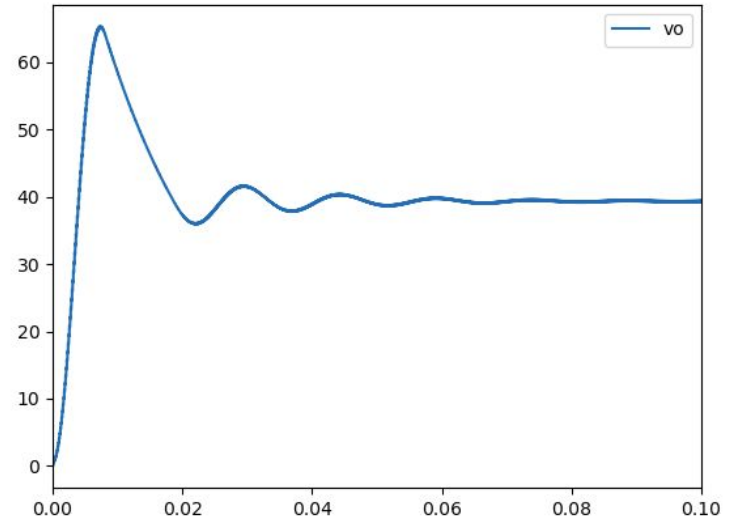
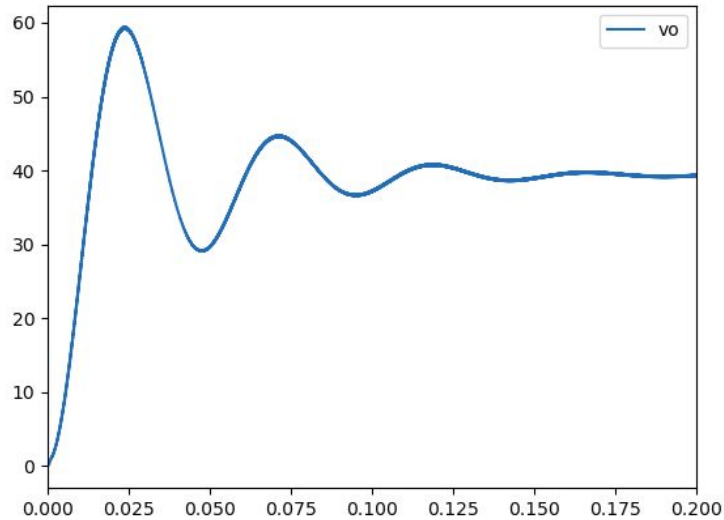
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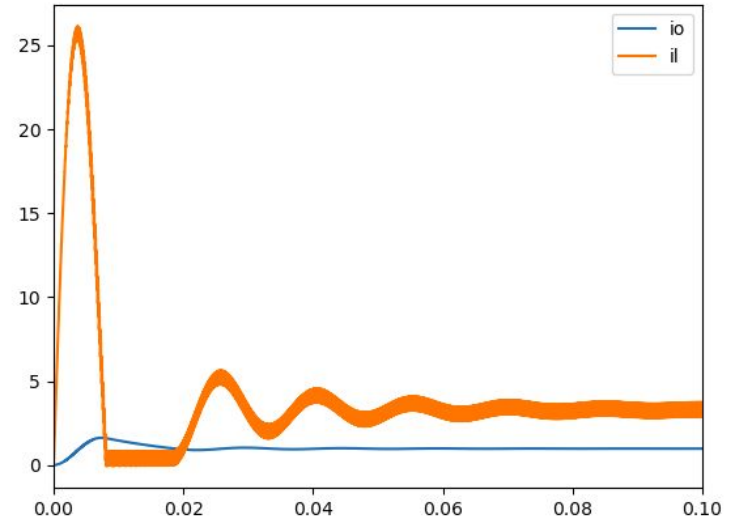
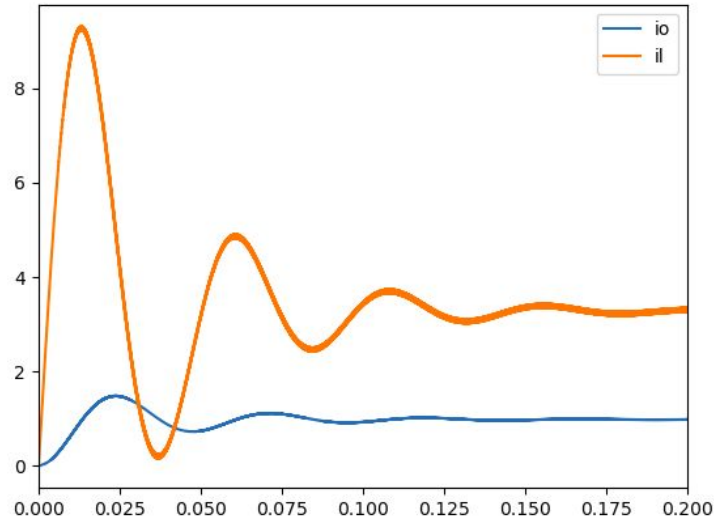
# Effect of Capacitance on Current



# Effect of Inductance on Voltage



# Effect of Inductance on Current



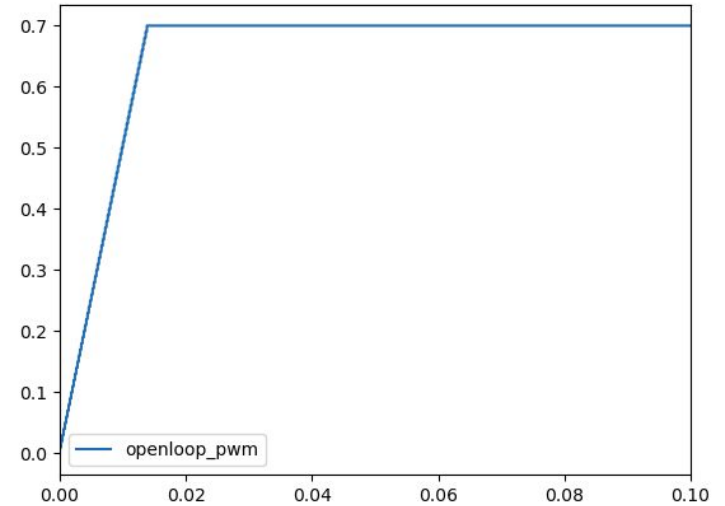
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**The Transient response in DCM mode is also similar.**

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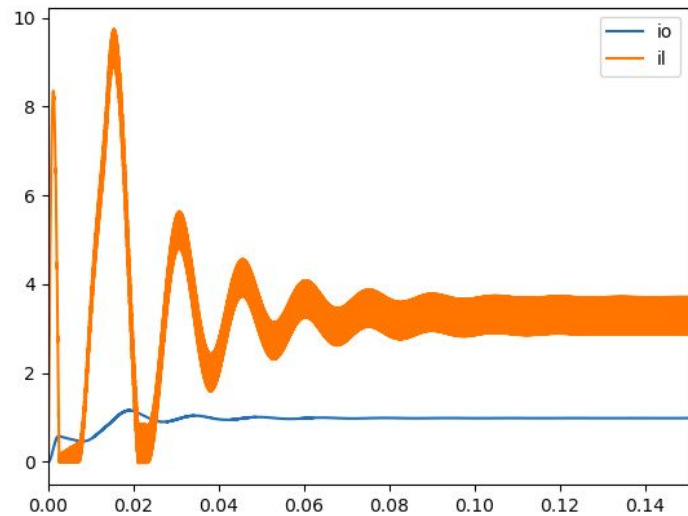
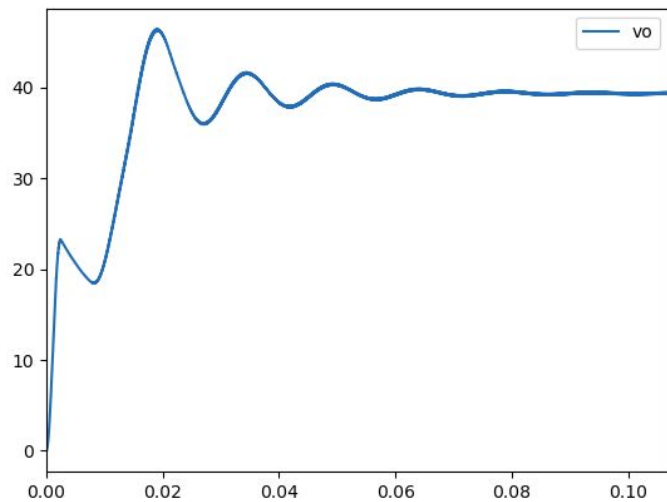
# Open-loop Control

- To Reduce Initial Spike
- Gradual increment of Duty Cycle



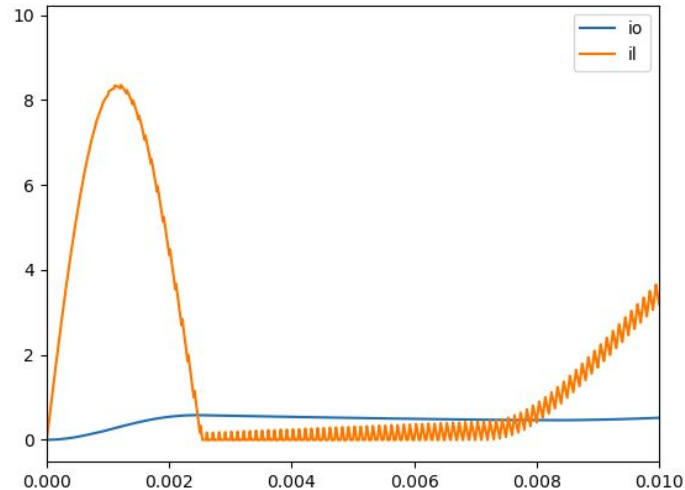
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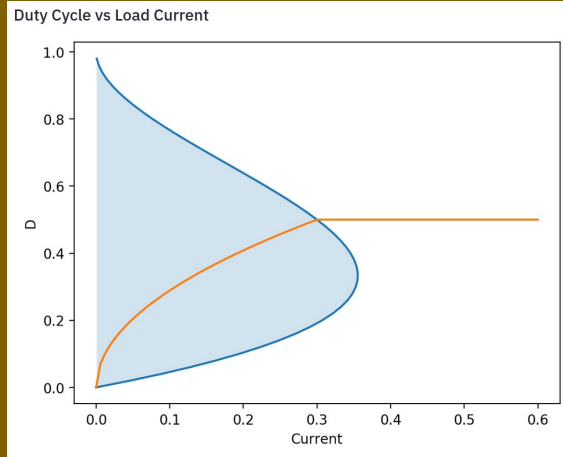
# Results



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# Initial jump is due to DCM-CCM transition

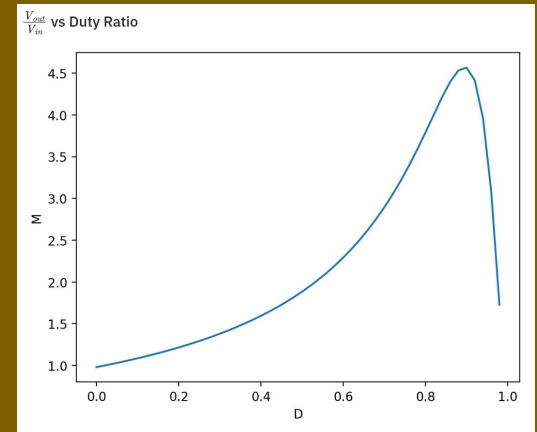
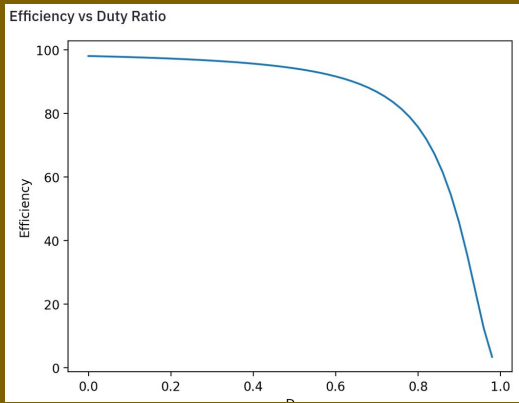




# DCM - CCM Transition

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# Boost Converter Efficiency And Concatenated Boost Converters

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# References

<http://pythonpowerelectronics.com/>

Streamlit

<http://eleceng.dit.ie/kgaughan/notes/FT220pe/The%20Boost%20Converter.pdf>

<http://ecee.colorado.edu/ecen4517/materials/Encyc.pdf>

Fundamentals Of Power Electronics - Robert W. Erickson

**Thank you**

