#### Group work (Julien Tenkanen, Kun Zhu, Andre Pruunsild, Fedor Chervyakov)

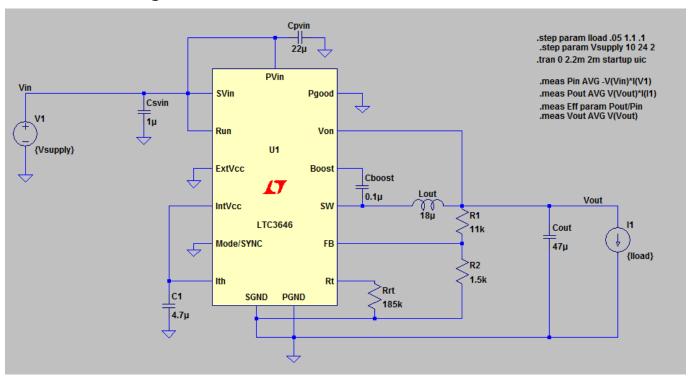
### Circuit design & simulation

### Circuit specification:

- DC-DC buck converter
- Input Vin = 10...24V
- Output Vout = 5 V
- lout min 500 mA

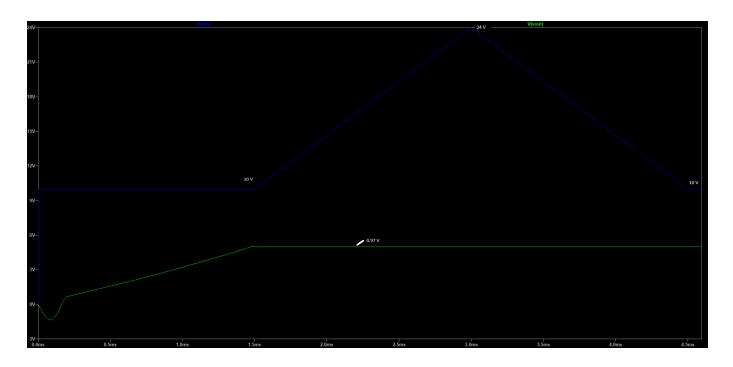
frequency = 500kHz voltage ripple = 50mV/1%  $I_{out}$  = max 1A

### - Circuit diagram

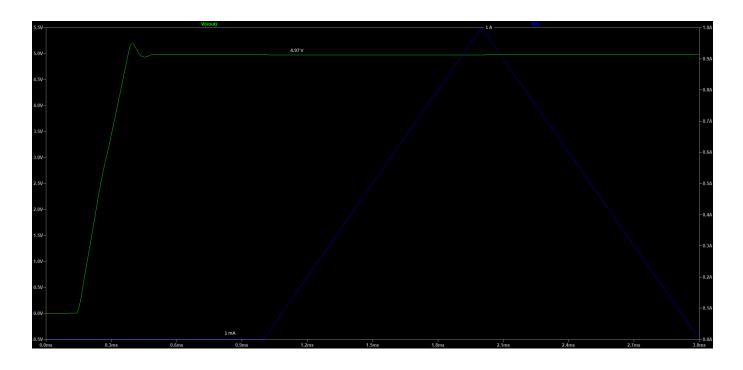


# Performance of the circuit (graphs, measurements, etc.), simulation results

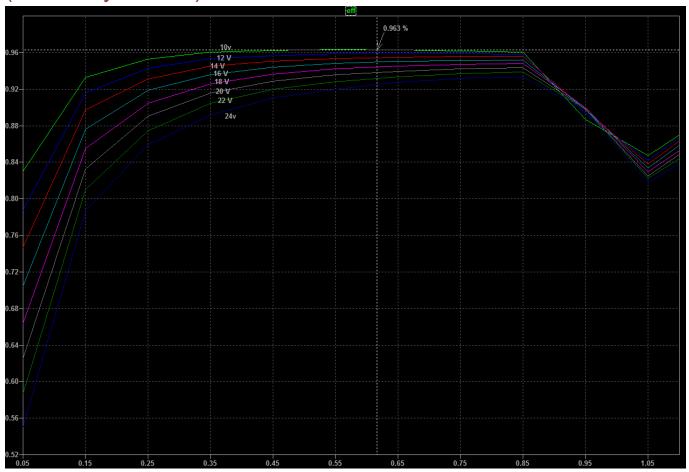
# ( $V_{out} vs V_{in}$ )



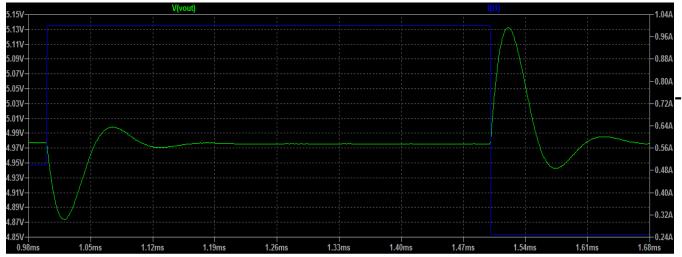
## (Vout vs Iload)



### (Efficiency vs I<sub>load</sub>)



(Step response @  $V_{in} = 24 \text{ V}$ ) 500mA - 1 A - 250 mA



Where the circuit could be used

Due to the low voltage range, there are some limitations in application. But for example: laptop USB power supplies.

- Possible future development Improve the filtering in the control loop. Utilize burst mode of the LTC3646 to improve efficiency.