LTSPÝCE DEVRE TASARIMI

Vgiriþ: 28V

Vçýkýþ: 12V

300kHz anahtarlama frekansý

Maksimum çýkýþ akýmý 5A

Kullanýlacak kontrolcü entegre LT3741-1

Gözlemlenecek olaylar:

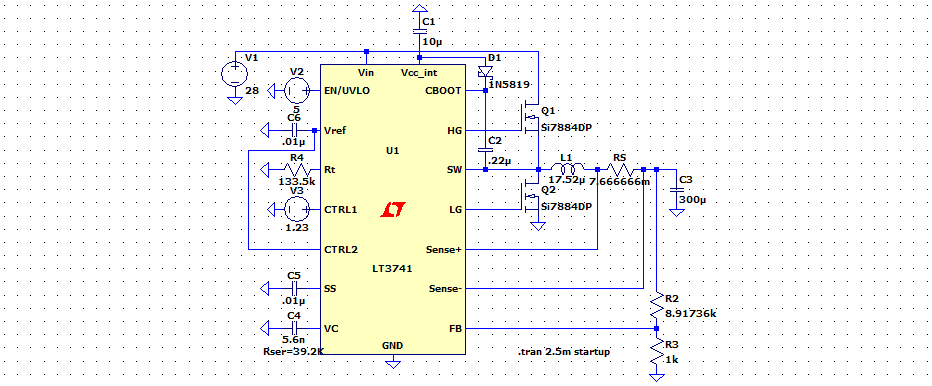
Ýndüktör akýmý(Yüklü ve yüksüz durumda)

Anlýk deðiþen akým yüklerine karþý sistemin vereceði giriþ/çýkýþ gerilim tepkisi(ripple, transient)

Anahtarlama frekansý

Maksimum yük aþýmý durumda çýkýþ gerilimi ve akýmý

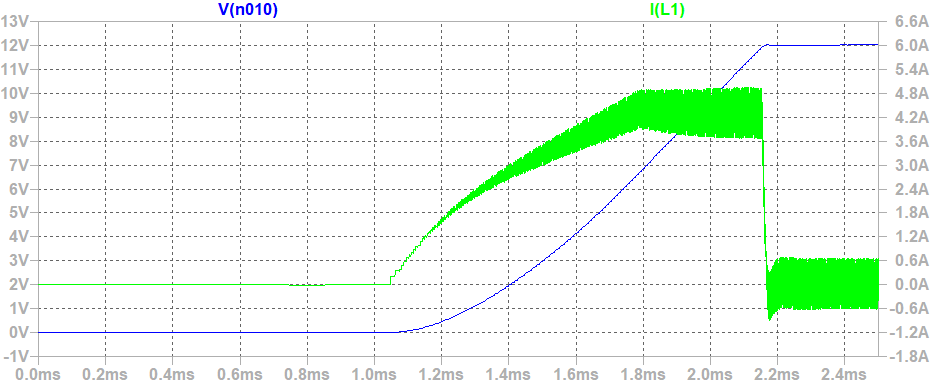
Maksimum yük durumunda sistem verimliliði

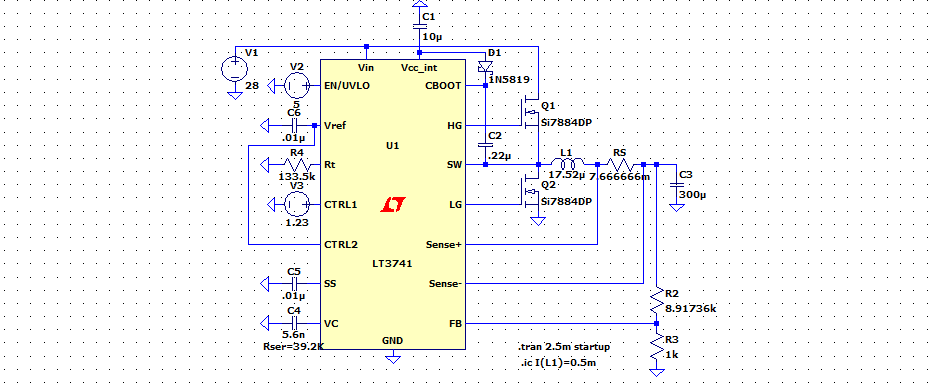


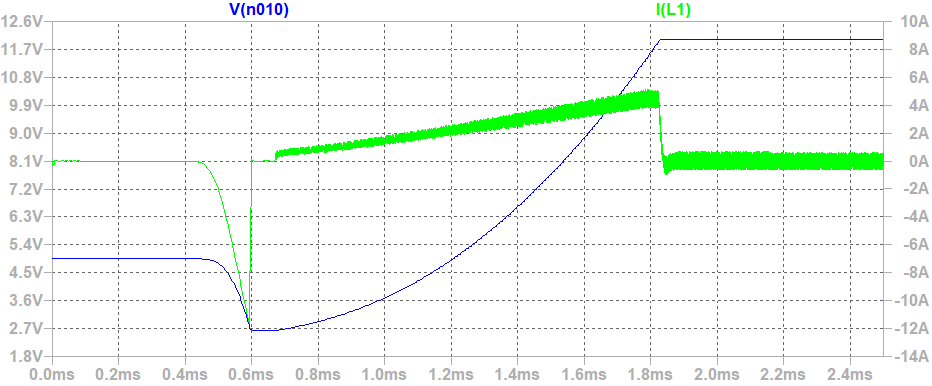
Let choose . For desired values, and F

And I adjusted R2, R3 to divide voltage (1.21(1+R2/R3)=12 => R2/R3 = 8.91736…).

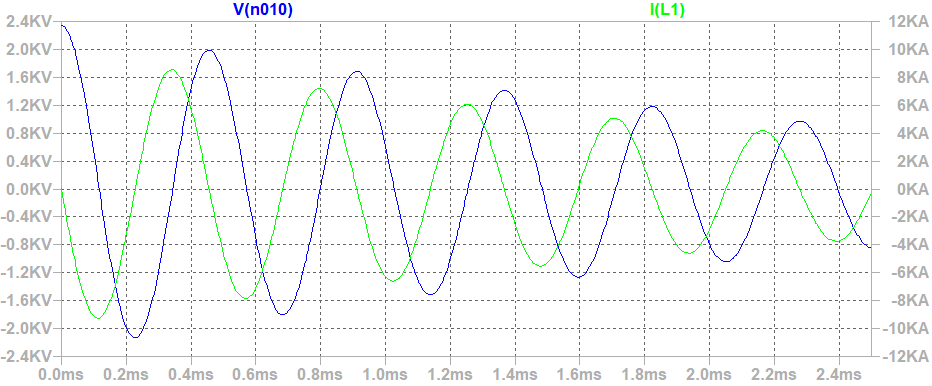
for desired switching frequency (table 4). I find its exact correct value experimentally.



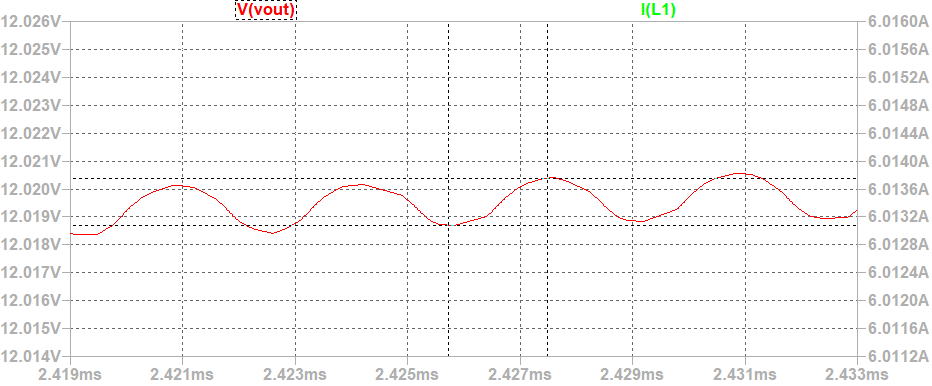




.ic I(L1)=0.5m



.ic I(L1)=1

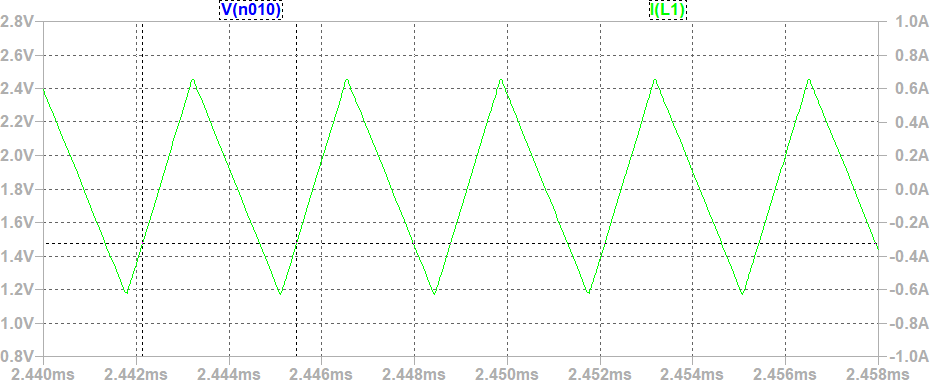


Ripple of the output waveform: 1.6931282mV

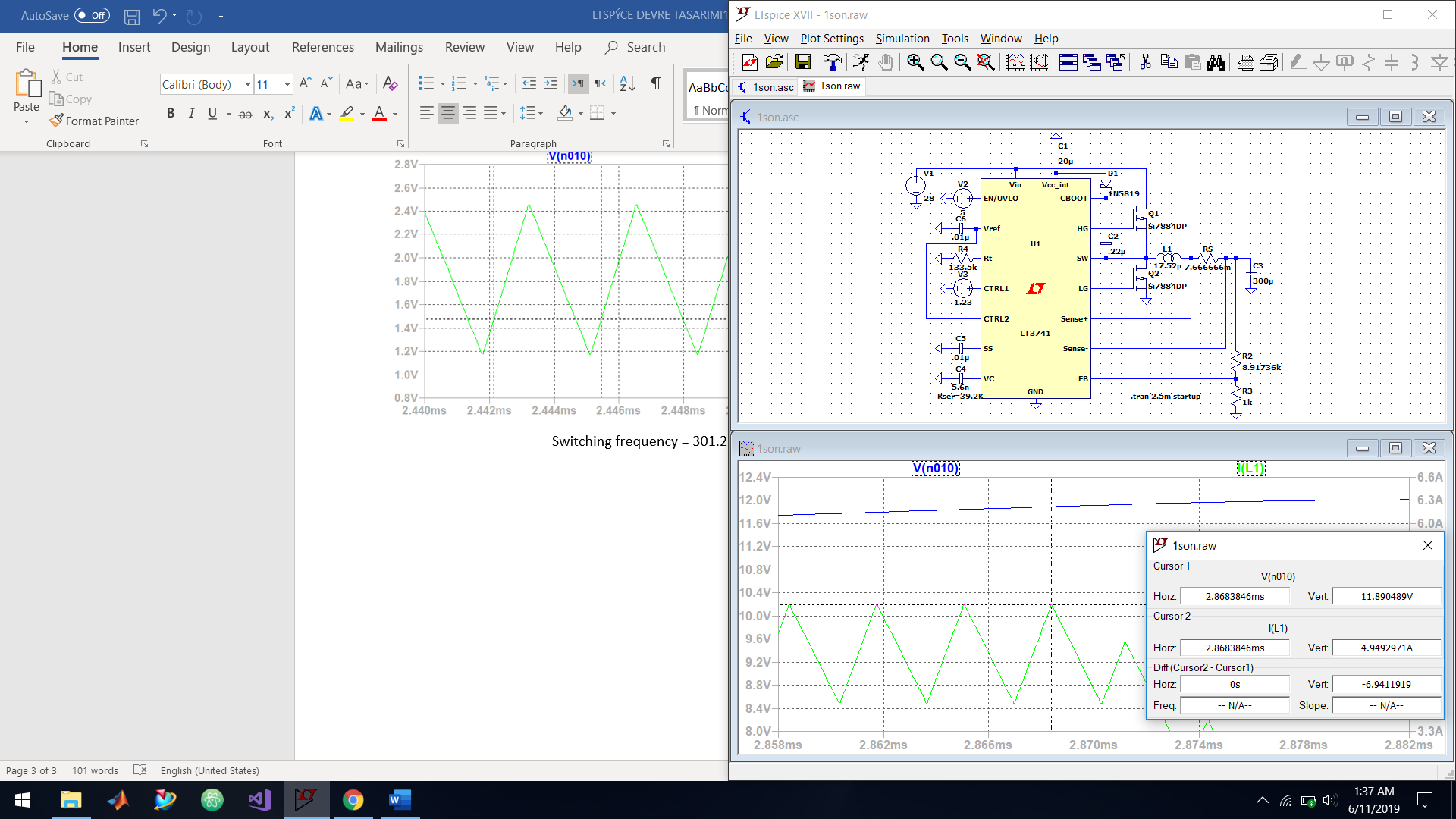
=> ripple factor = 1.6931282mV/12V = 1.41\*10-4

(theoretically this is expected since

ripple factortheoretical )

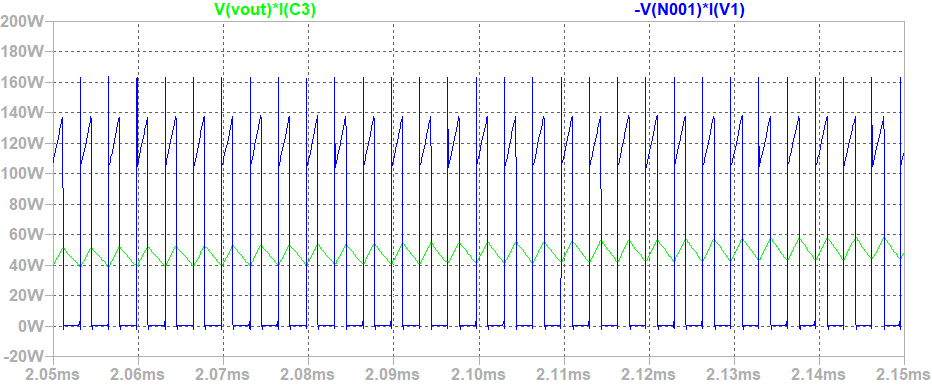


Switching frequency = 301.22655KHz (using 2 cursors)



Maksimum yük akımı durumda çıkış gerilimi =11.9V

Çıkış akımı = 4.95A



Maksimum yük durumunda sistem verimliliği = Pout/Pin = 47.994W/49.755W = %96.46