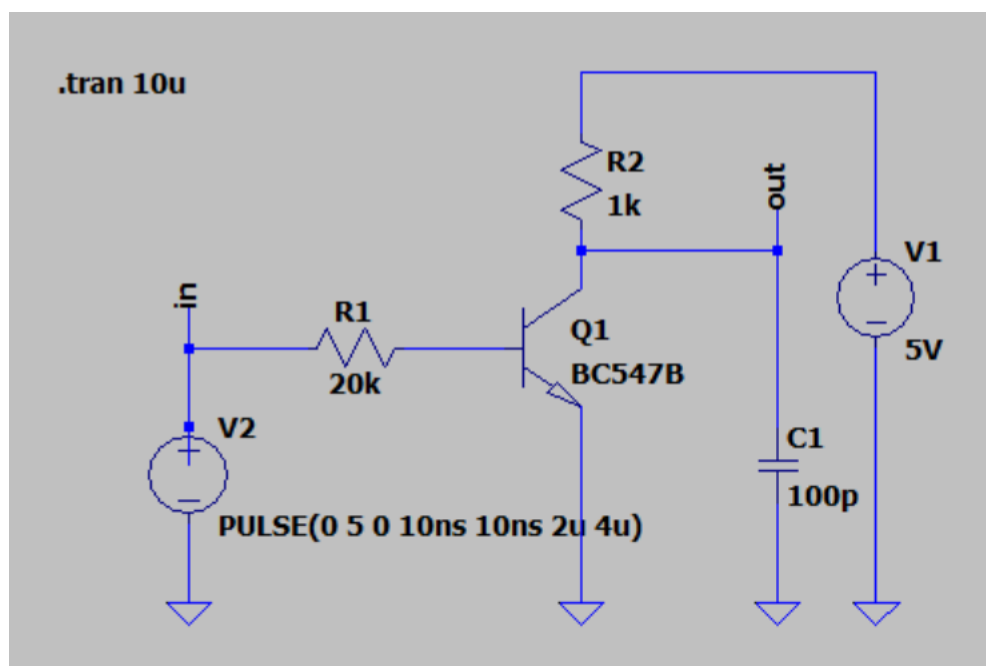


Referat Laborator 3 - Electronica Digitala

Dumitrache Adrian-George

324CC

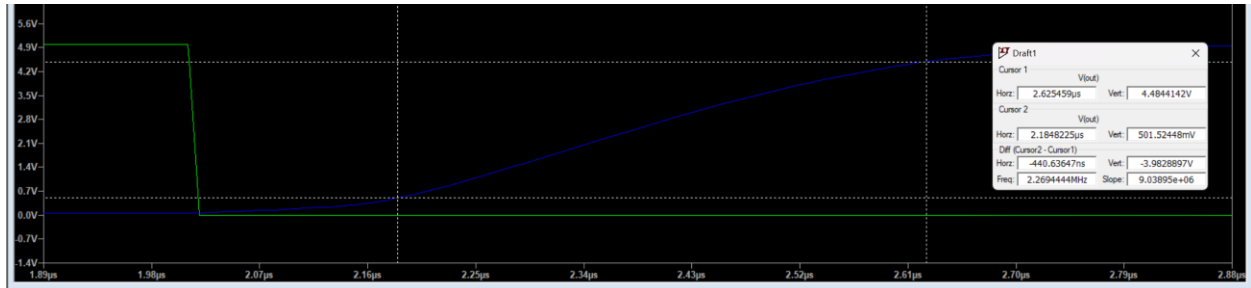
1. Desenarea schemei de baza



Pur si simplu am reprodus schema din referat in LTSpice, e doar a 5-a oara când uit cum selectezi modelul unui tranzistor in acest program.

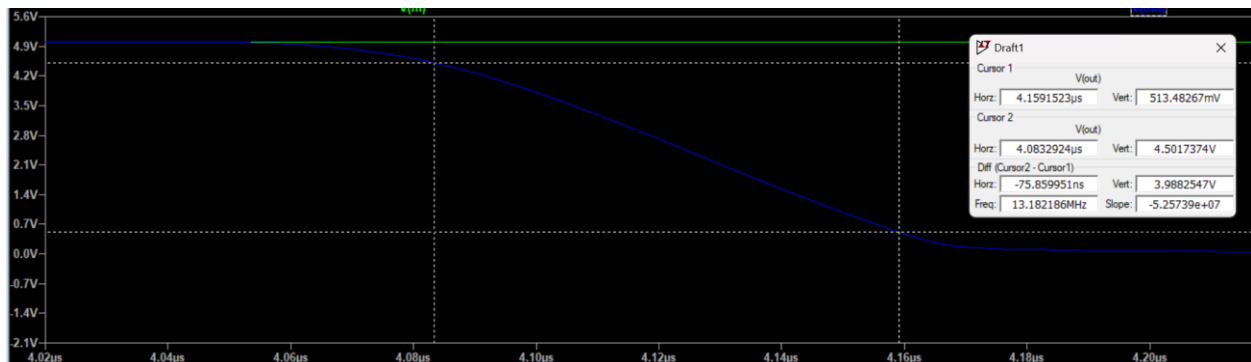
2. Parametrii semnalului de ieșire

Timpul de creștere:



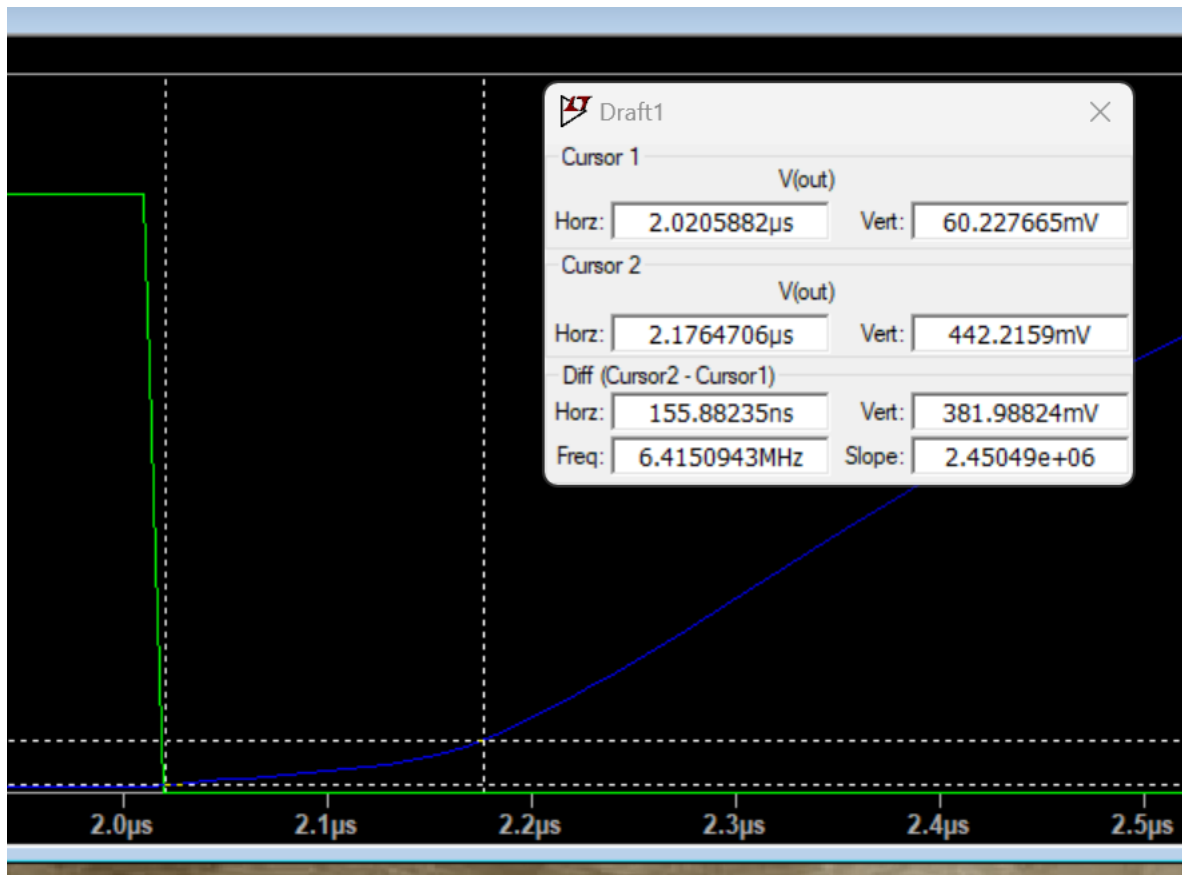
Acesta este de aproximativ 0.45 microsecunde (măsurat de la 0.5V la 4.5V).

Timpul de cădere:



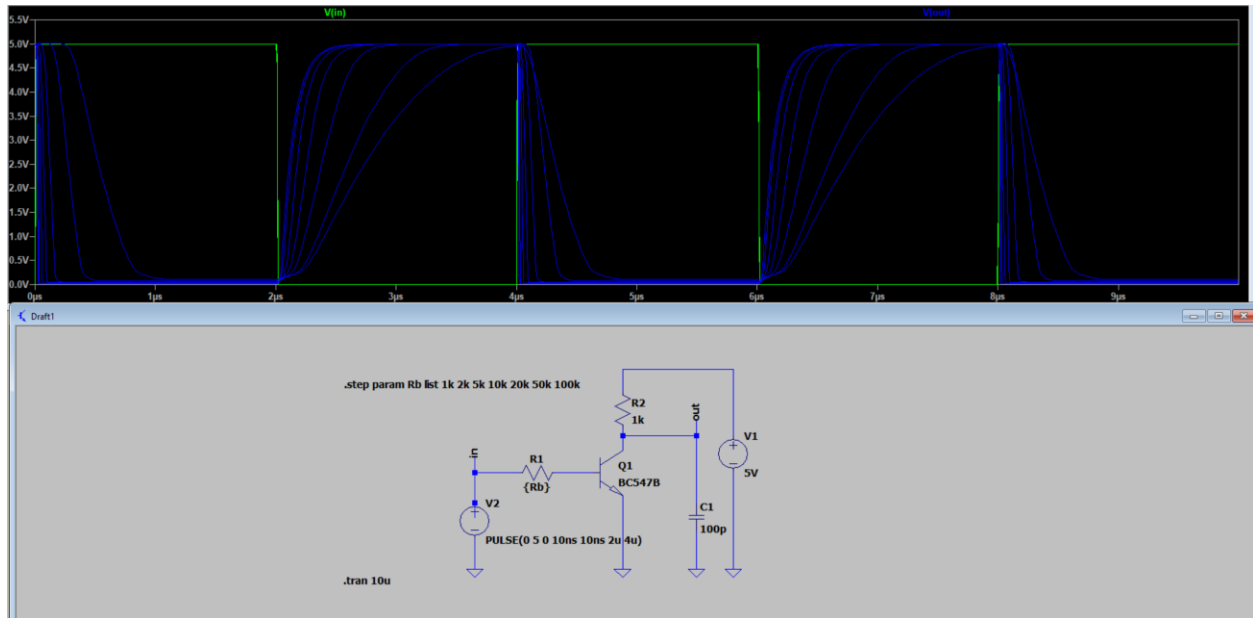
Aceste este de aproximativ 0.8 microsecunde (măsurat de la 0.5V la 4.5V).

3. Măsurarea timpului de stocare



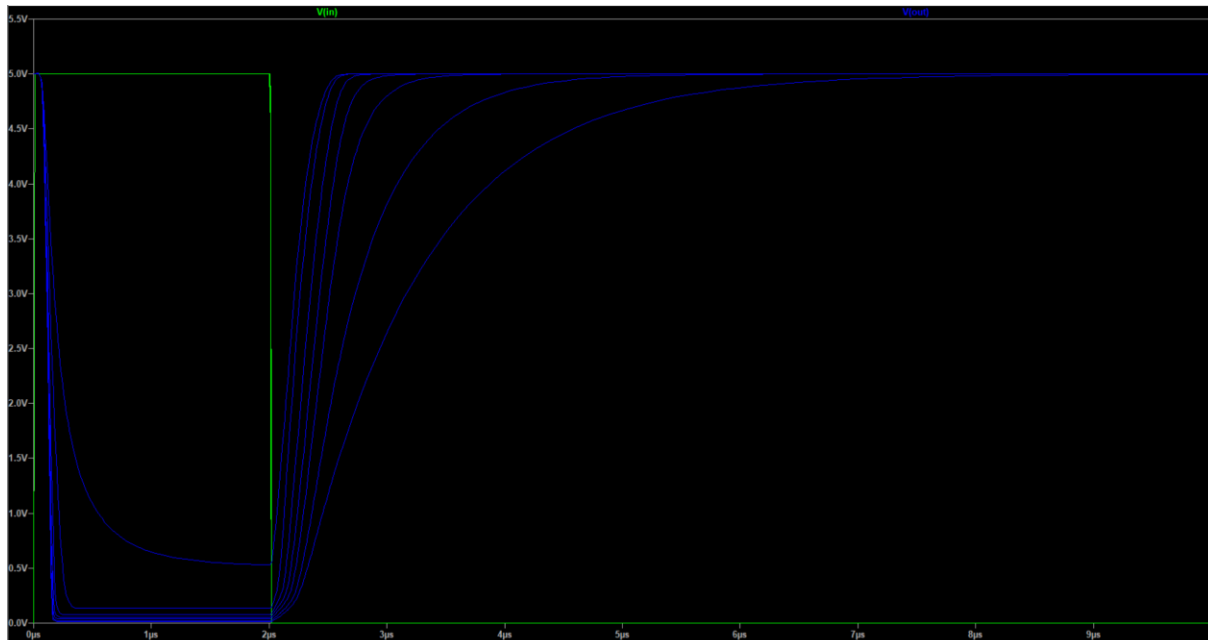
Timpul de stocare este aproximativ 150 de nanosecunde.

4. Influenta rezistentei de baza



Timpii de creștere și de cădere cresc odată cu valoarea rezistenței R_1

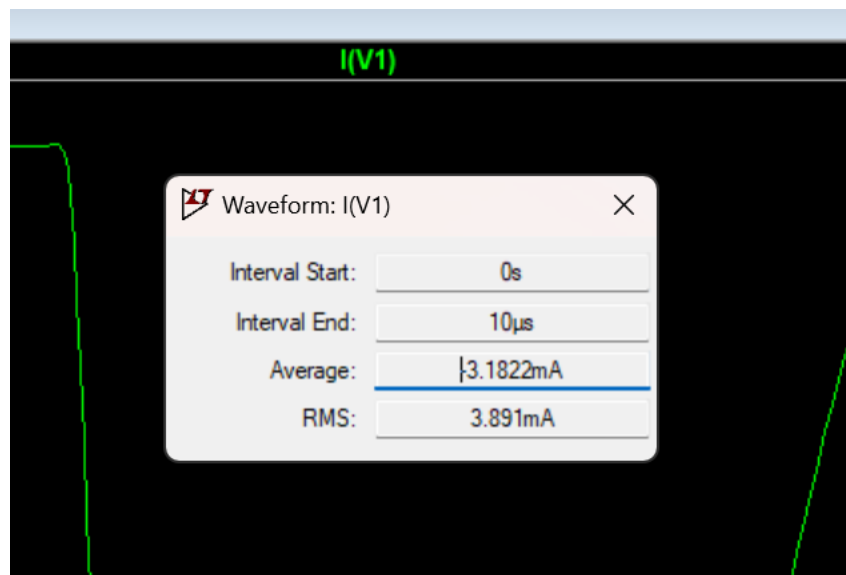
5. Influenta rezistentei de colector asupra V_{out}



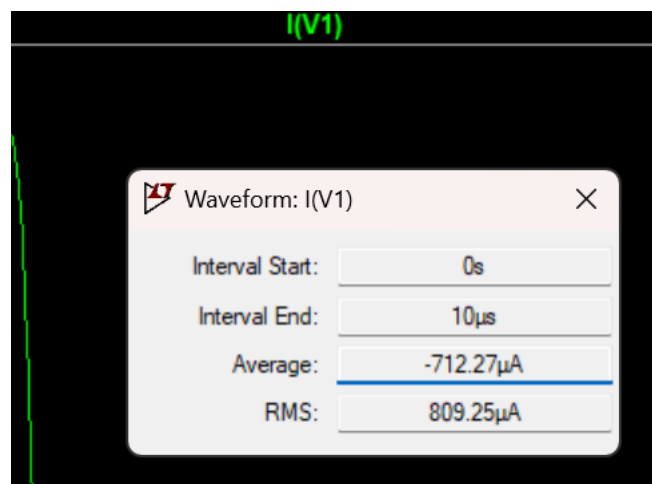
Am schimbat perioada semnalului la 20 de microsecunde pentru a observa mai bine fenomenul. Din grafic reiese faptul ca timpii de cădere scad, iar timpii de creștere cresc când crește valoarea rezistenței de colector.

6. Influenta rezistenței de colector asupra curentului consumat

Rezistenta de colector de 1k:

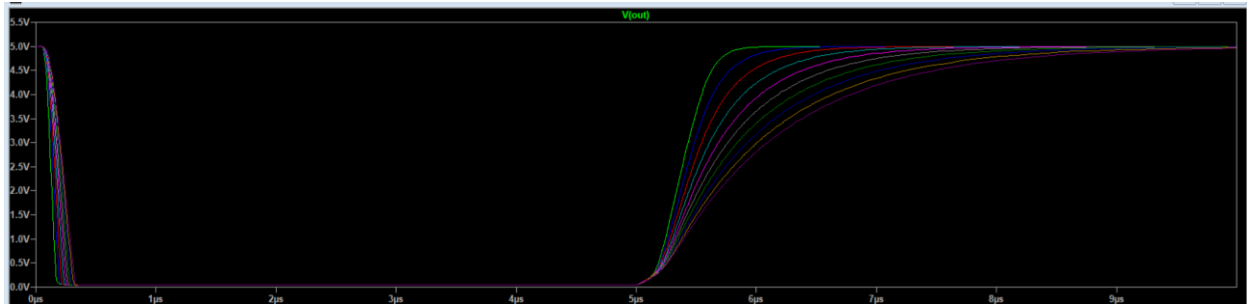


Rezistenta de colector de 5k:

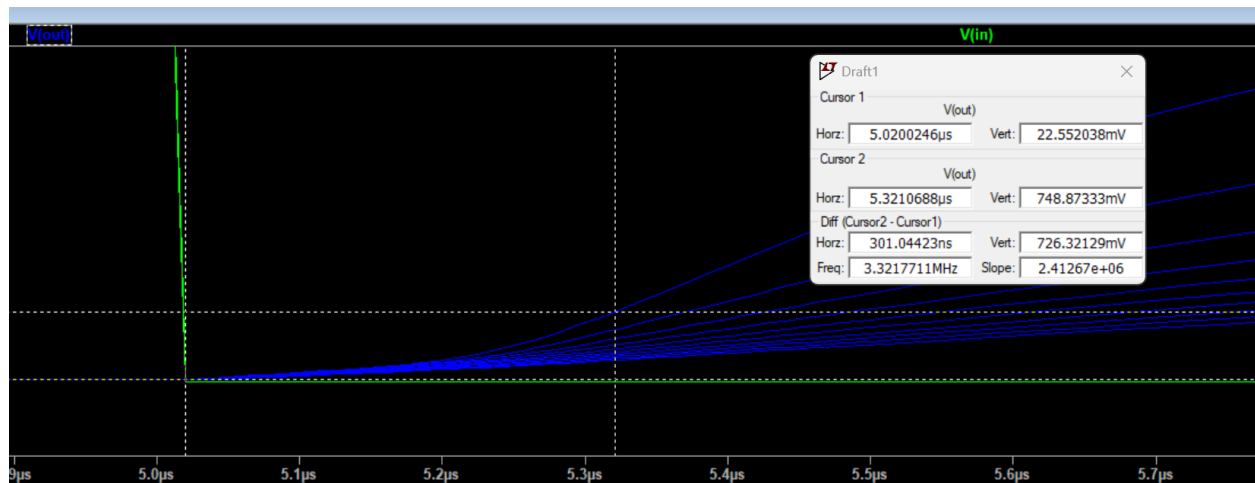


Deci curentul consumat scade cand rezistenta de colector creste.

7. Influenta capacitatii de sarcina asupra timpilor de comutatie

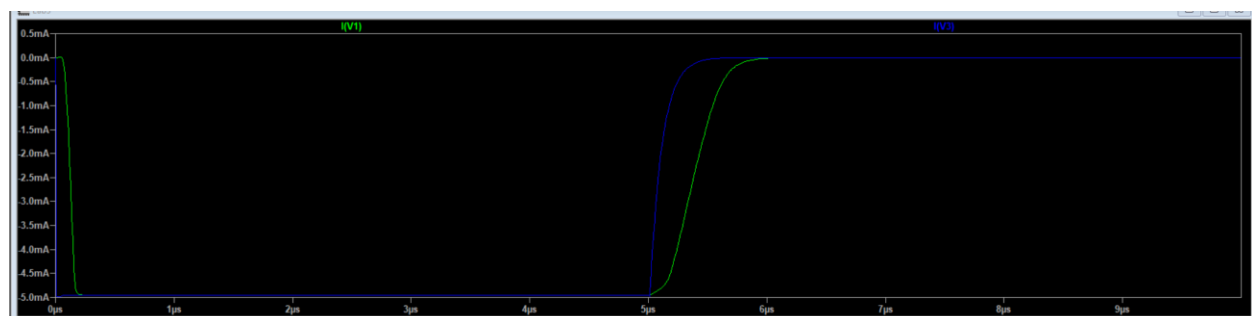


Timpii de creştere si de cădere cresc odată cu capacitatea de sarcina.



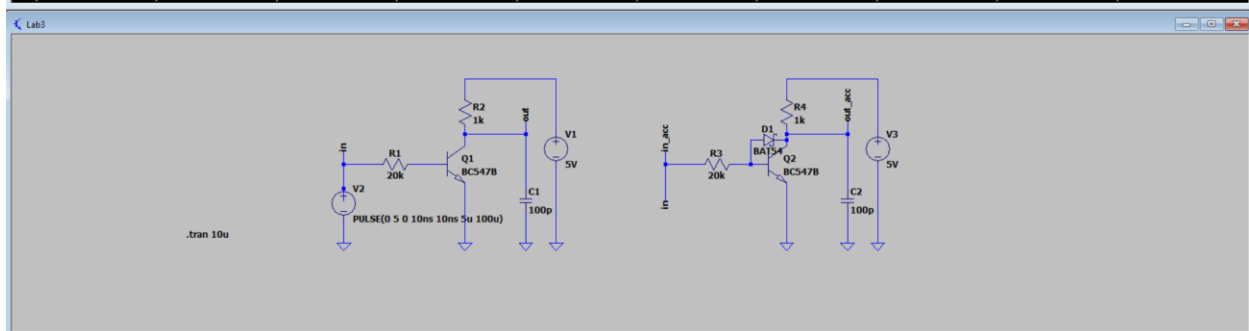
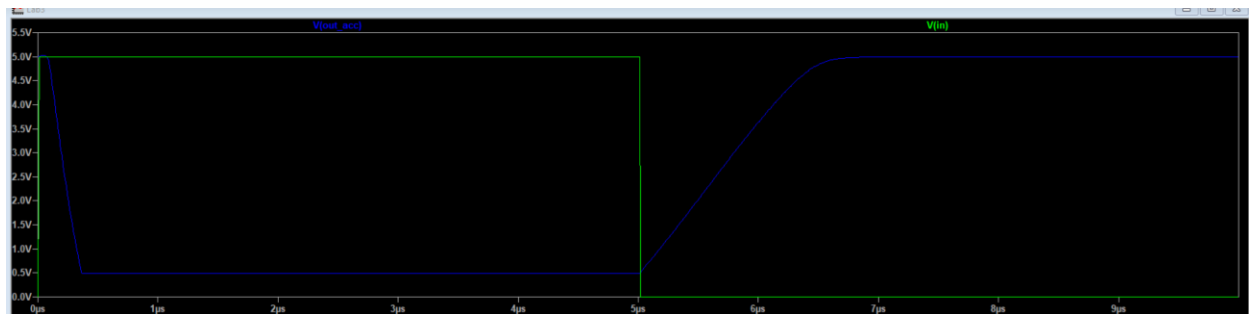
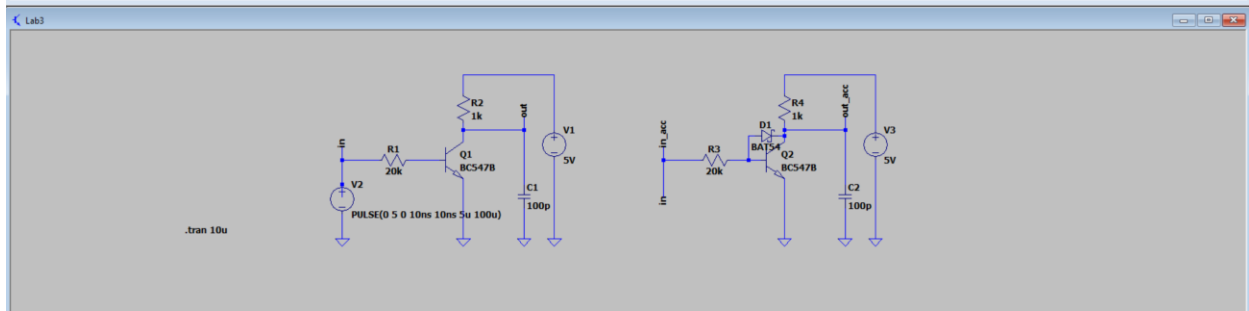
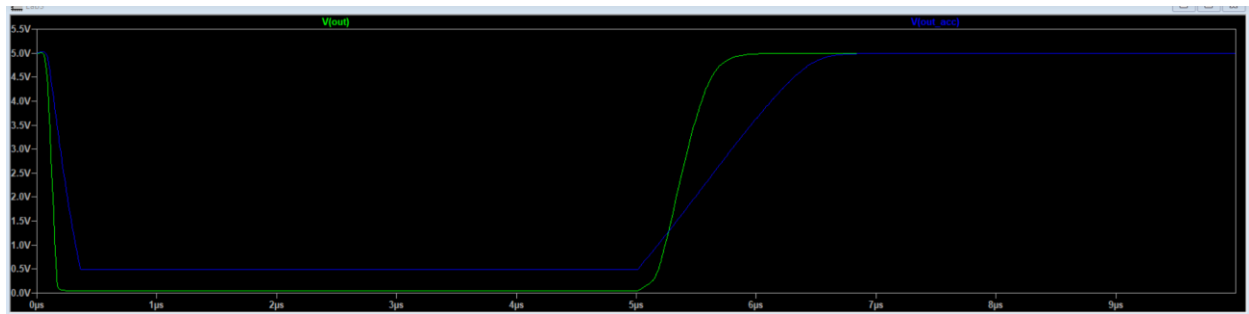
Timpul de stocare scade odată cu creşterea capacitaţii de sarcina.

8. Influenta condensatorului de accelerare

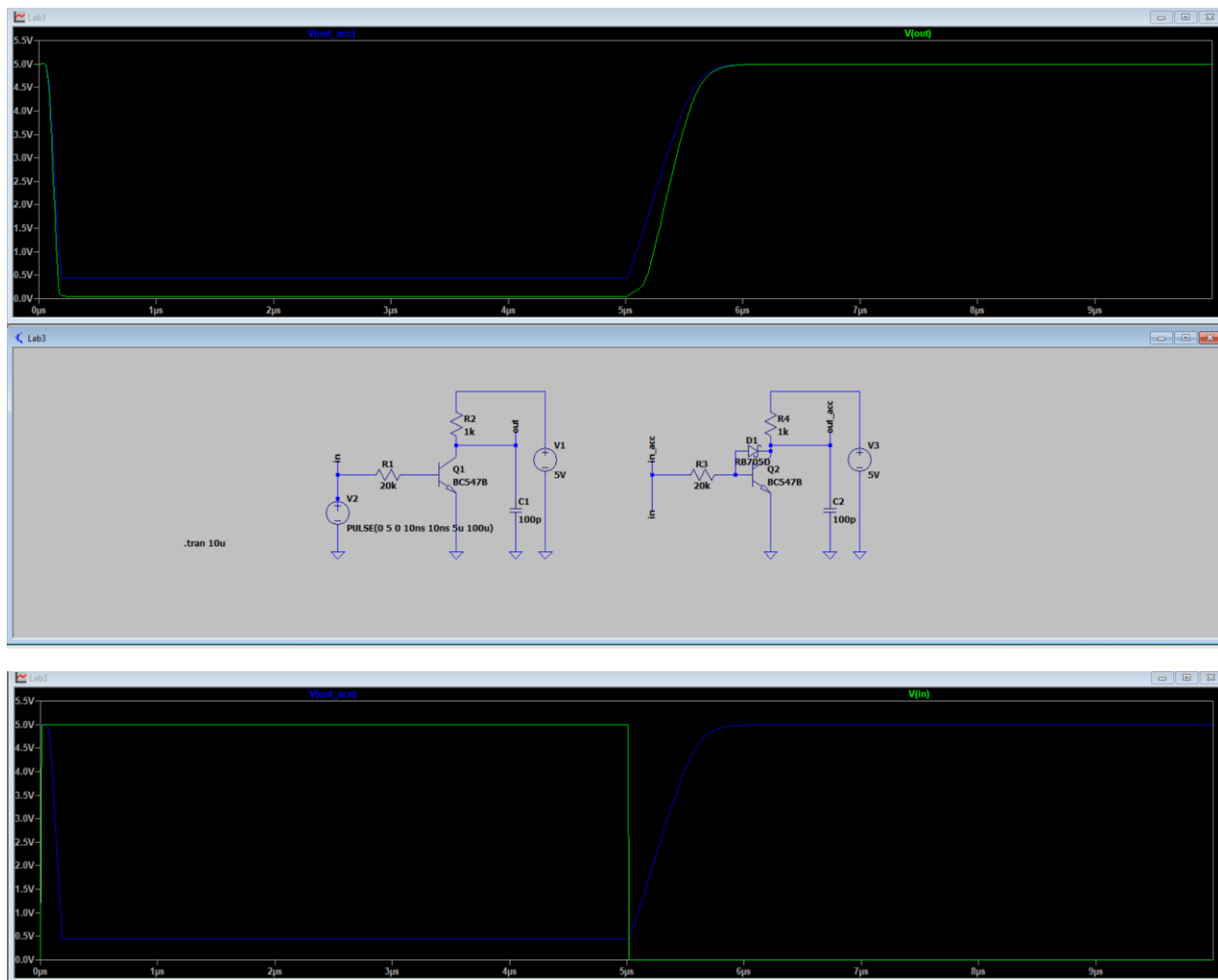


Se observa din grafic viteza de comutare mai mare a variantei de circuit cu condensator de accelerare.

9. Efectul diodei Schottky

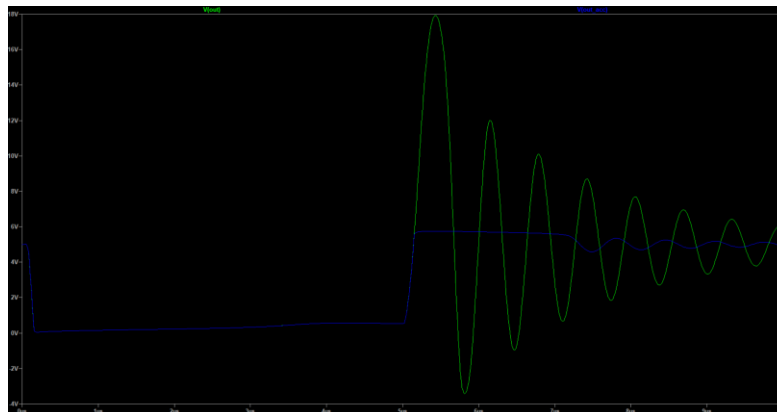


Se observa faptul ca atunci când folosim o dioda de putere nu mai avem timp de stocare, dar timpul de comutare a crescut.



Insa, utilizand o dioda de semnal, avem un timp de comutare chiar mai rapid decat inainte fara sa pierdem timpul de stocare nul.

10. Comutarea unei sarcini inductive



Se observa efectul diodei de protectie.