Electronique

Etude de la PLL CD4046B

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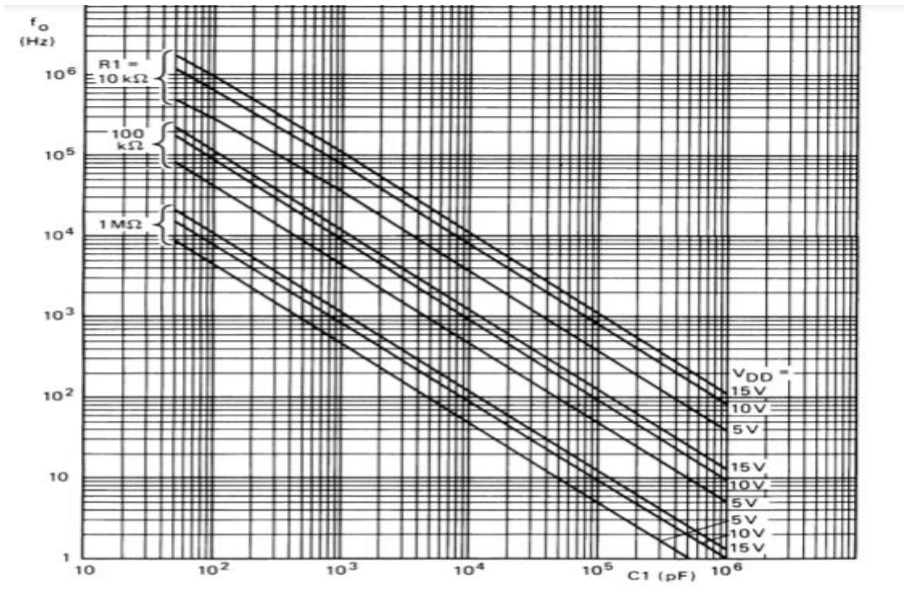
Q1



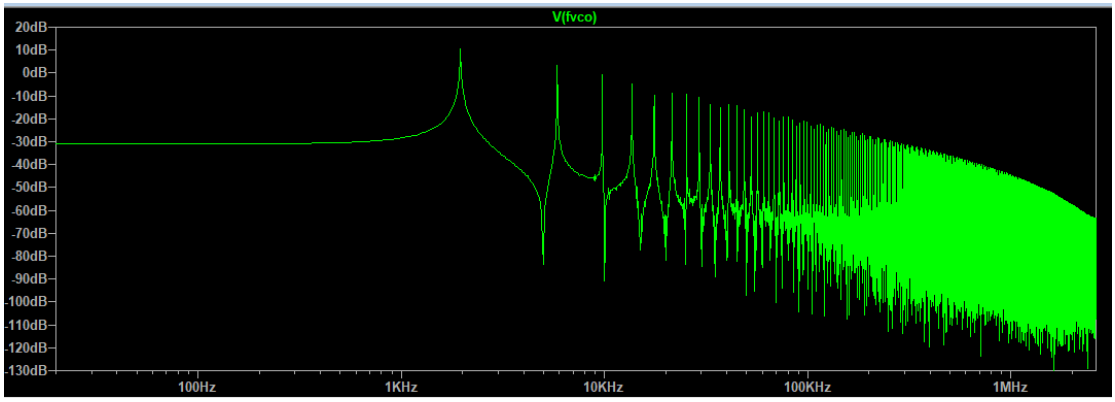
Conditions contraintes : C1 = 1 nF, R1 = 10 kΩ, R2 infinie

On peut trouver f_0 = 80kHz

Fmax = 160kHz

Q2.

V1 = 1v



Fvco = 1.951kHZ. (La fréquence où le décibel plus important)

Par régler le V1, comme le graph dessus, on peut obtenir les fvco dans les conditions différentes :

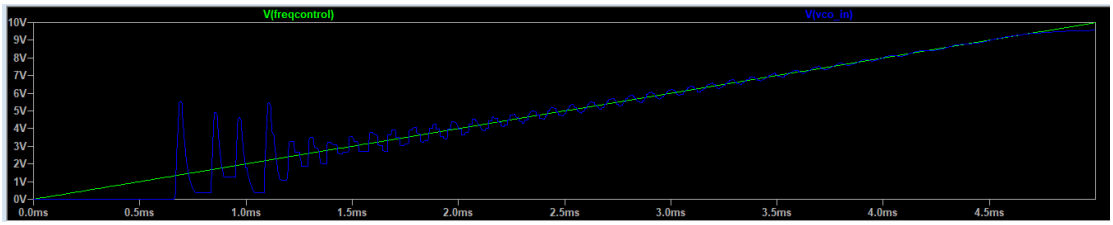
V1(V)	2	3	4	5	6	7	8	9	10
Fvco(kHz)	21.486	40.311	60.818	80.216	99.952	118.964	139.429	157.620	159.84

Du coup, Fmax = 159.84kHZ

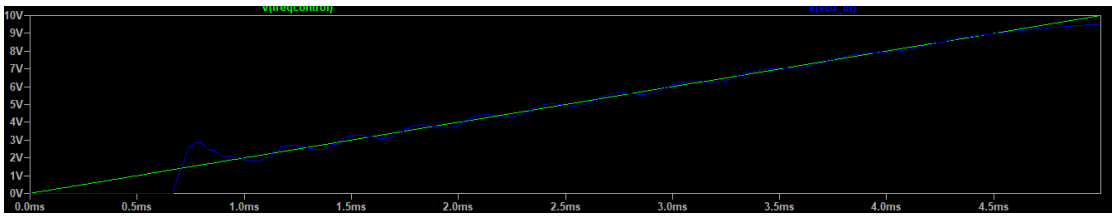
f_0 = Fmax/2 = 80 kHz

Q3

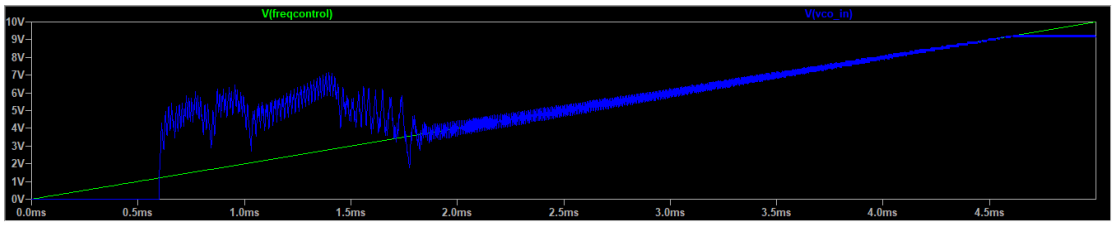
C2 = 10 nF pc2



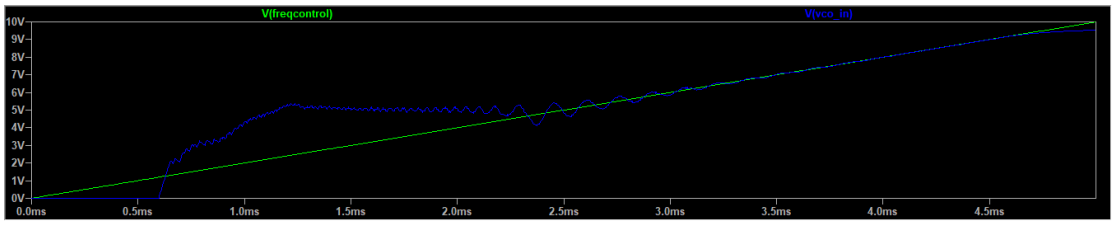
C2 = 100 nF pc2



C2 = 10 nF pc1

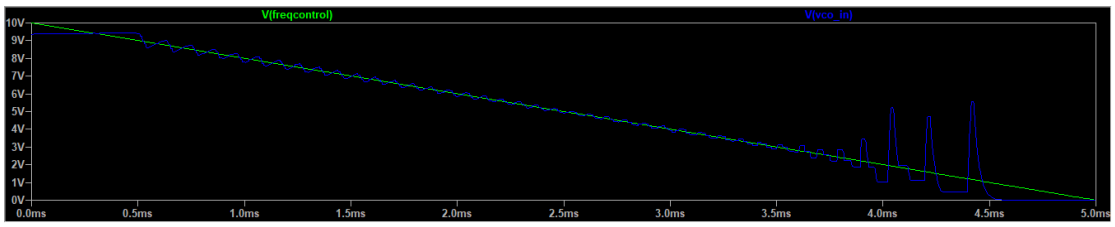


C2 = 100 nF pc1

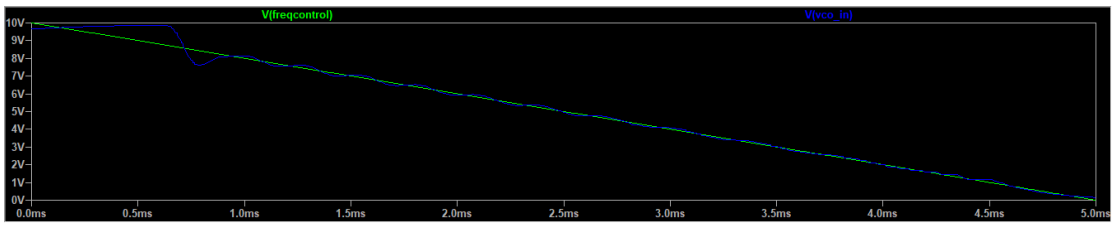


Q4

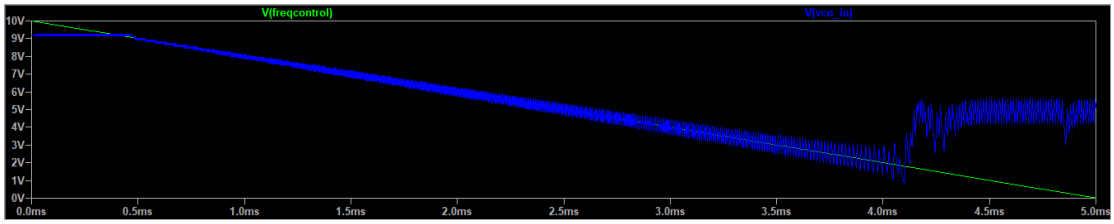
C2 = 10 nF pc2



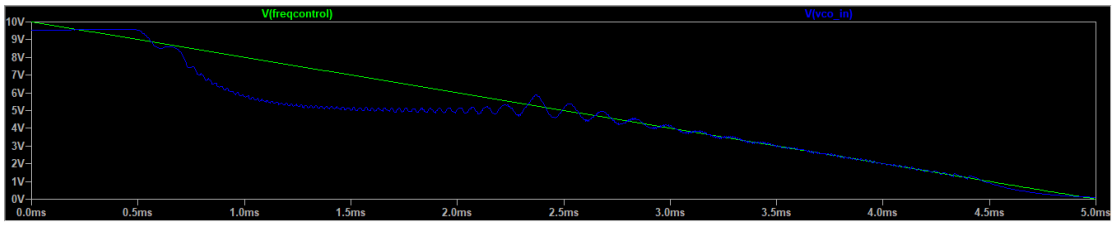
C2 = 100 nF pc2



C2 = 10nF pc1

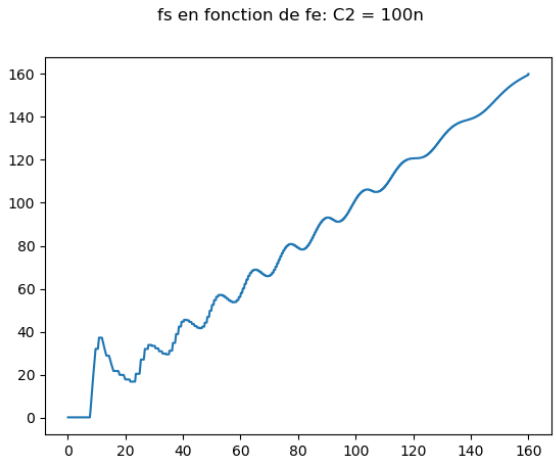


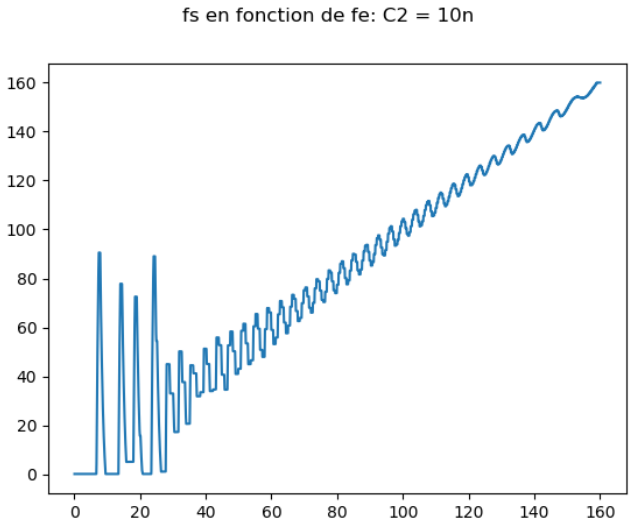
C2 = 100nF pc1



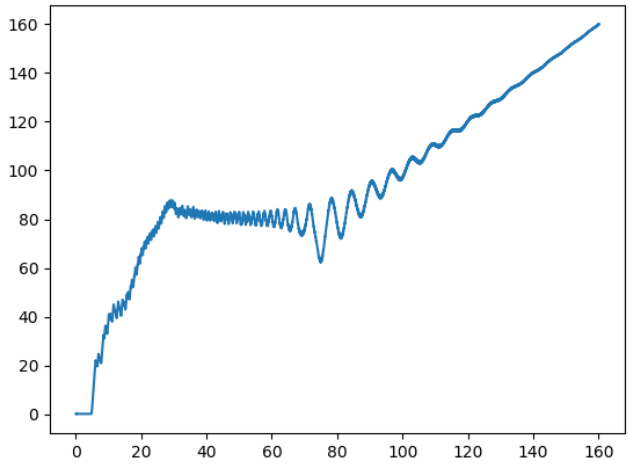
Q5.

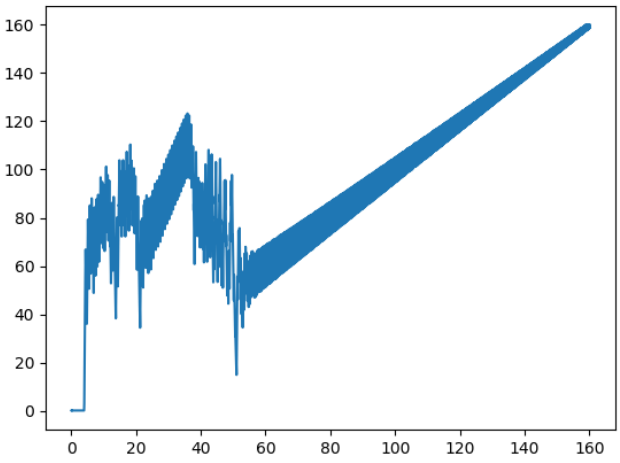
Croissant : pc2



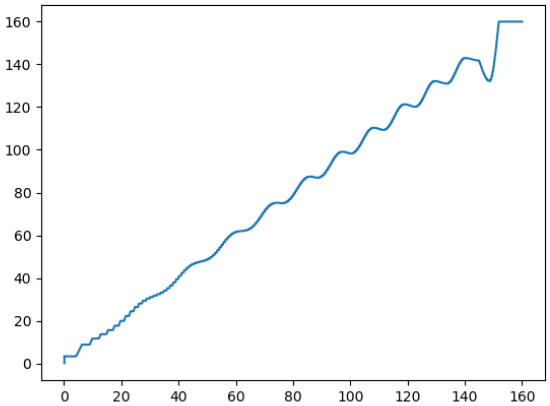


Croissant : pc1

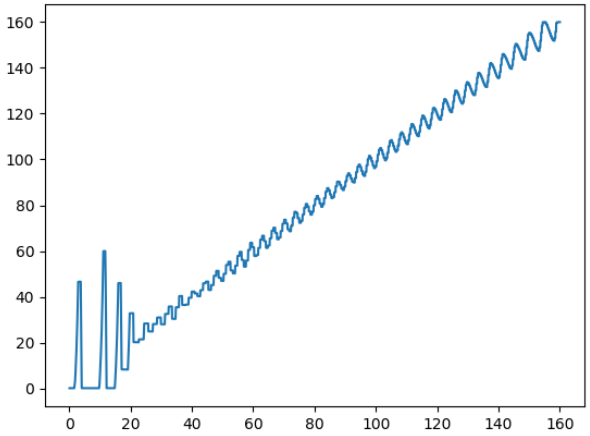




Decroissant: pc2

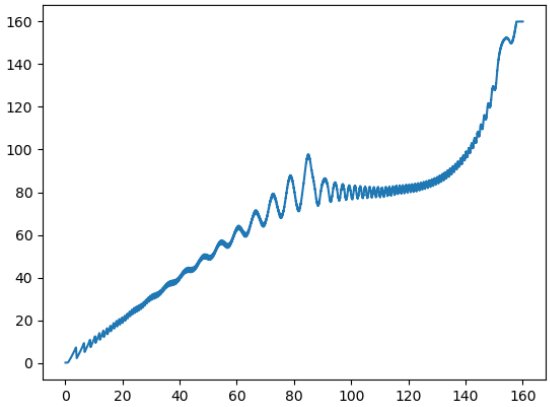


fs en fonction de fe: C2 = 10n

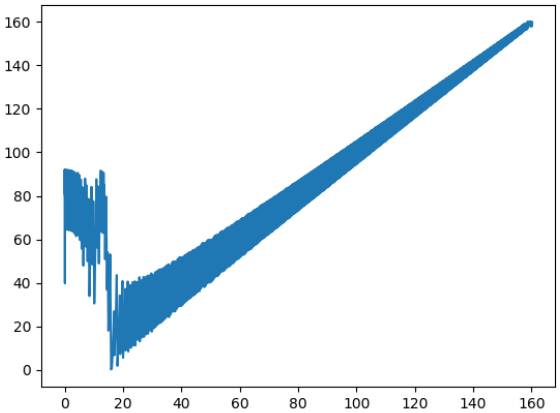


Decroissant: pc1

fs en fonction de fe: C2 = 100n



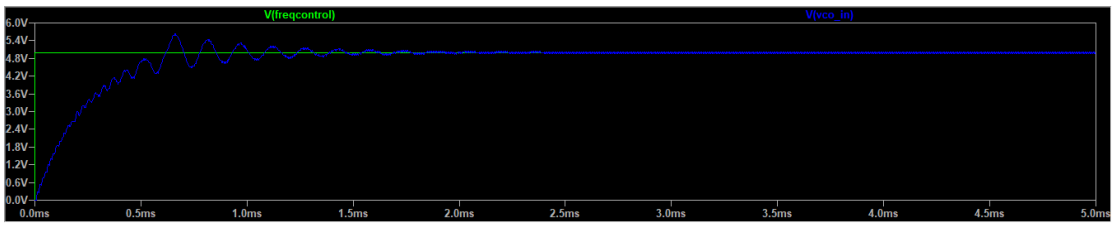
fs en fonction de fe: C2 = 10n



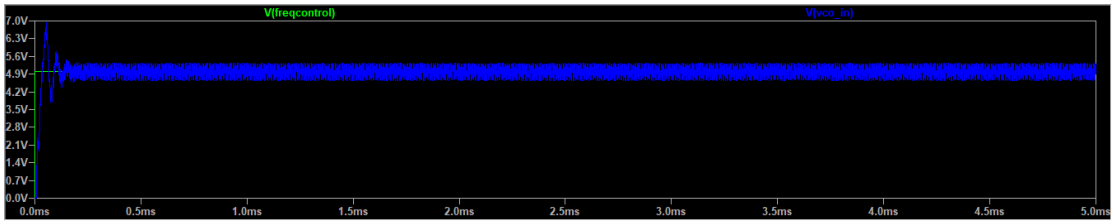
Parti3

Q1

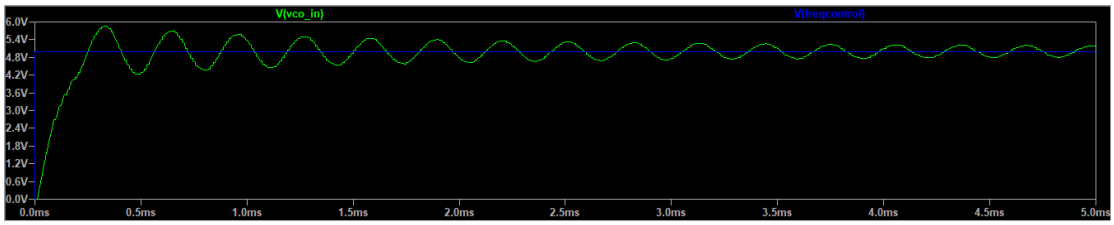
C2 = 100 nF comparateur 1



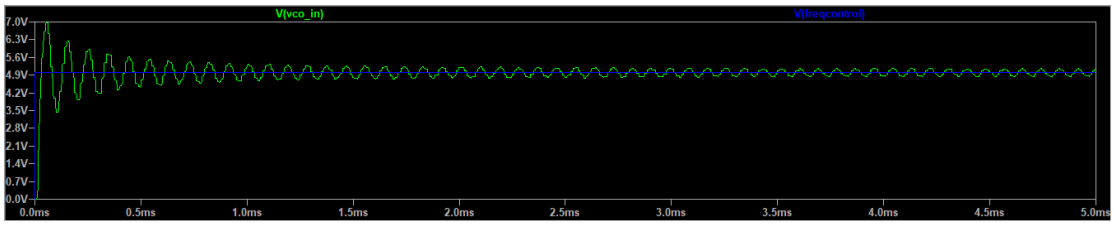
C2 = 10 nF comparateur 1



C2 = 100 nF comparateur 2



C2 = 10 nF comparateur 2



Q2.

Comparateur 1:

C2 = 10 nF

Trep = 29.3µs

C2 = 100 nF

Trep = 487.25µs

Comparateur 2:

C2 = 10 nF

Trep = 27.60µs

C2 = 100 nF

Trep = 221.98μs

Q3

Pour le filtre RC d'ordre 1, tau = RC, du coup, on peut voir que C2 = 100nF, le temps pour attendre 90% est beaucoup plus lent que 10nF.

Pour comparateur, pc1 est mois vite que pc2 surtout dans la condition de C2 = 100nF.