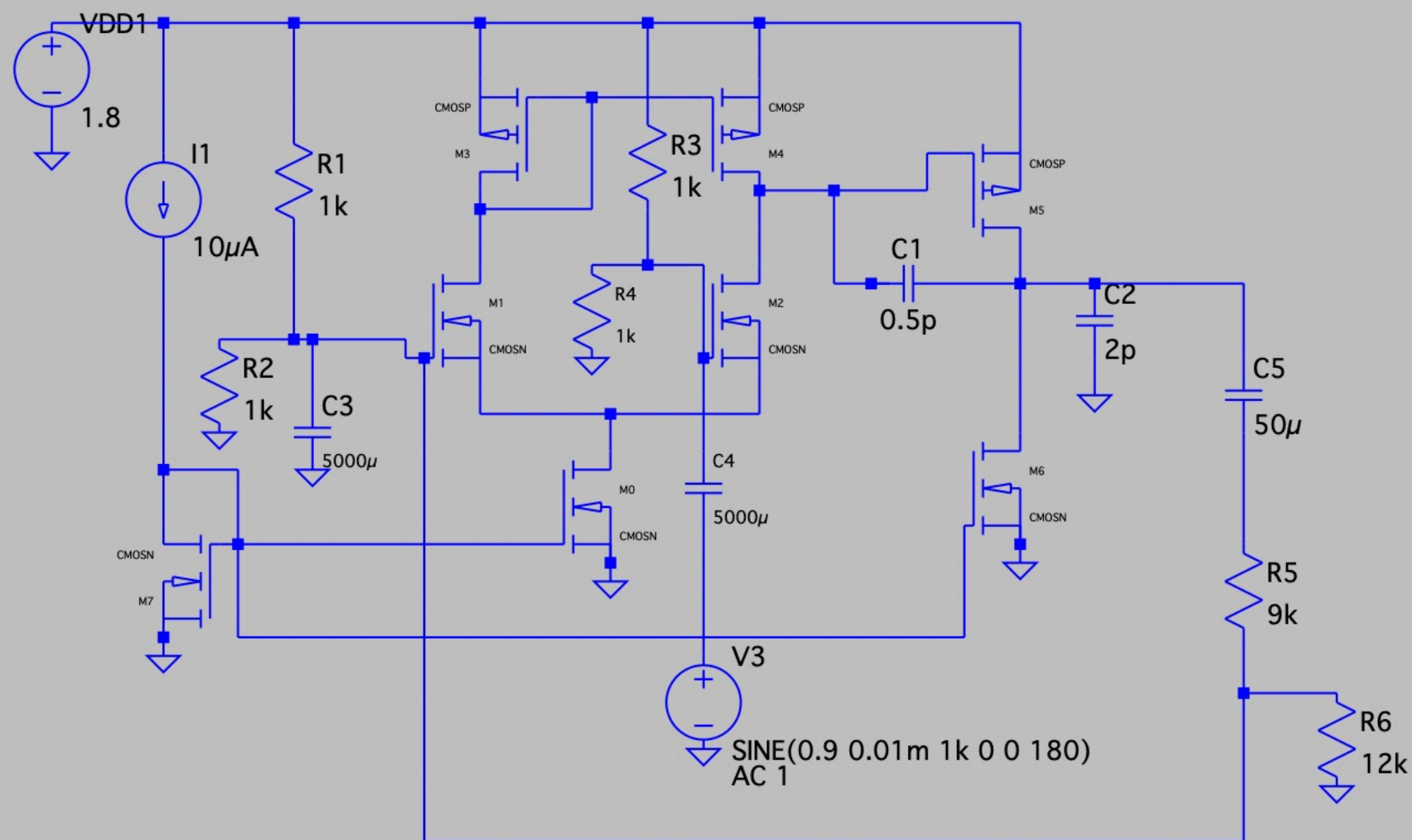


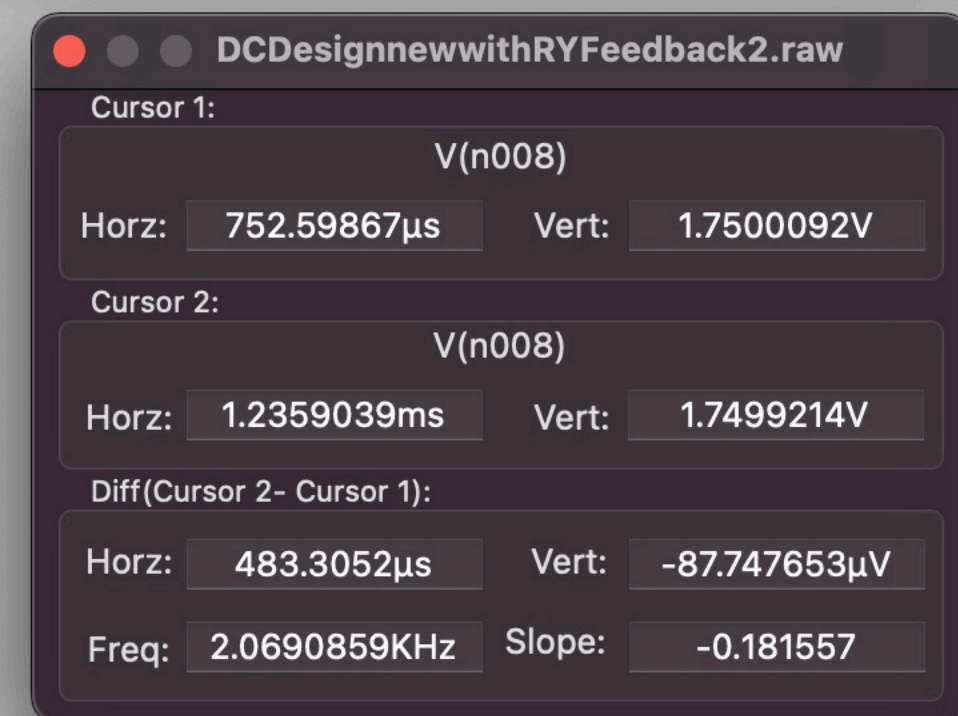
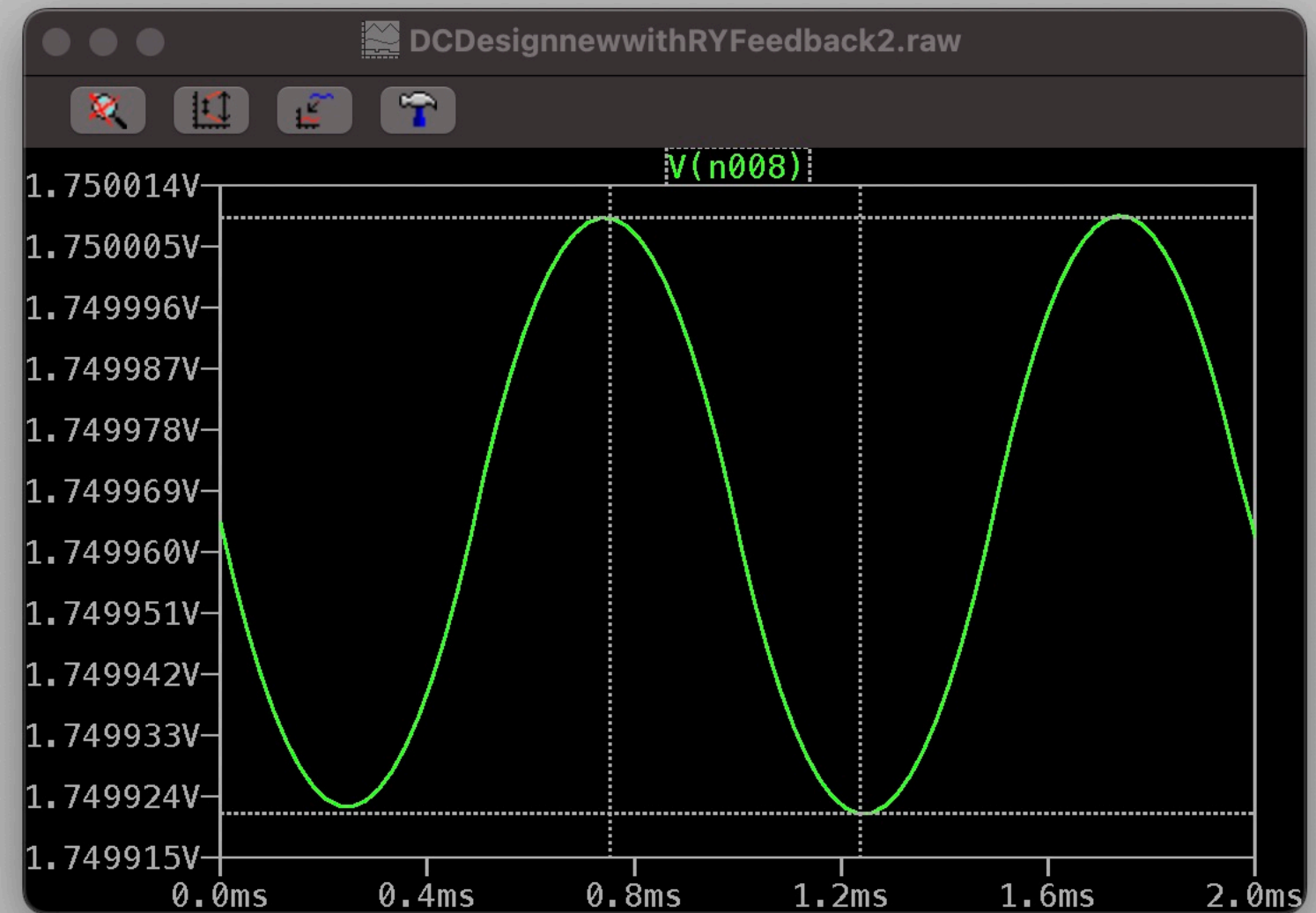
Closed Loop gain(given gain=2)

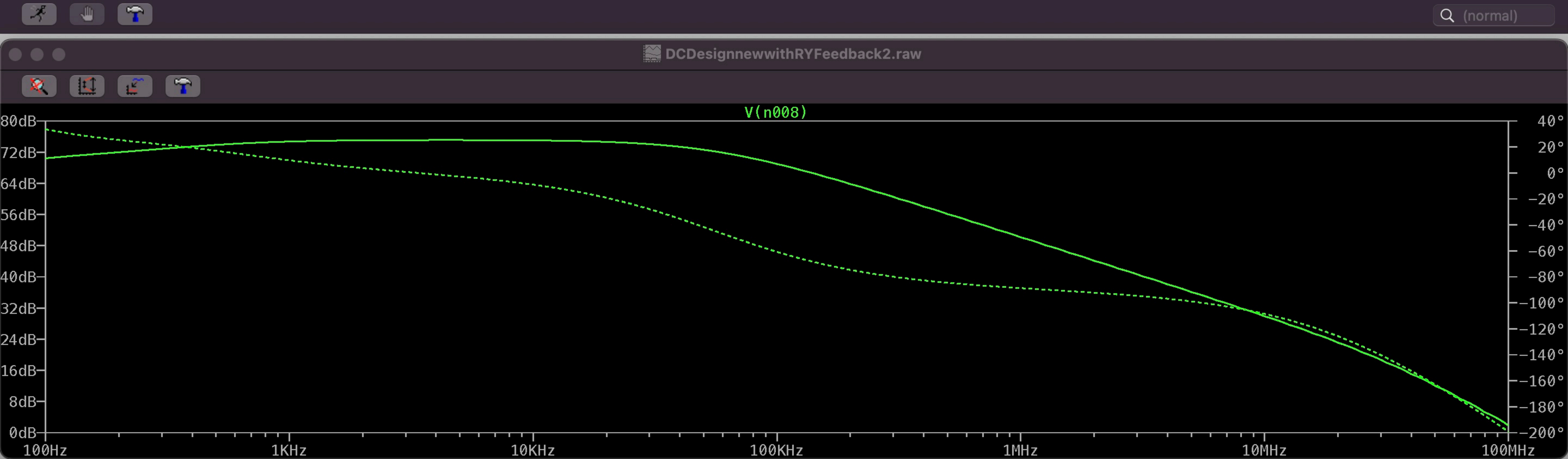
$$A = 87.74\mu/0.04\text{m}$$

$$A = 2.193$$



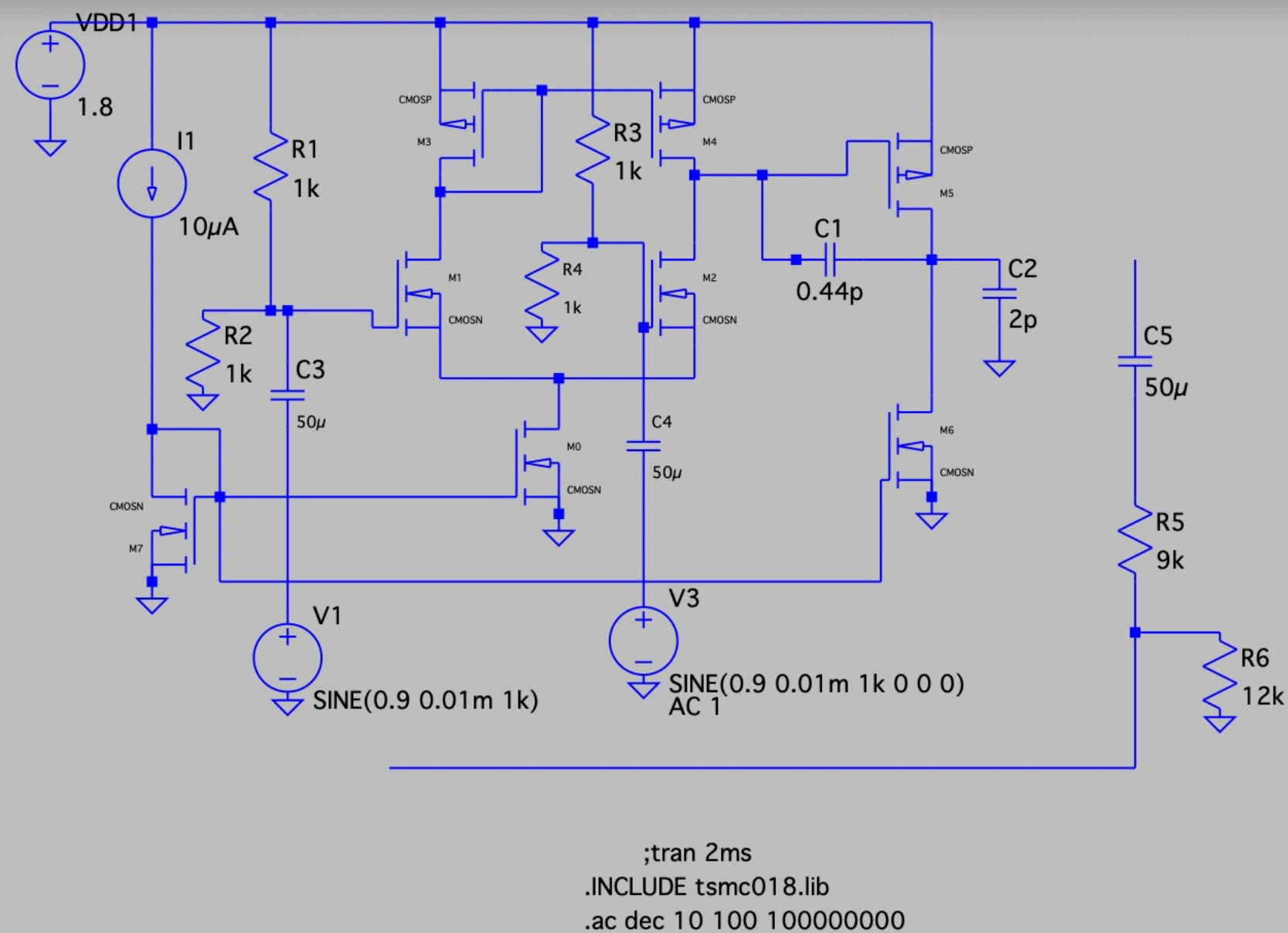
```
.tran 2ms
.INCLUDE tsmc018.lib
;ac dec 10 100 1000000
```



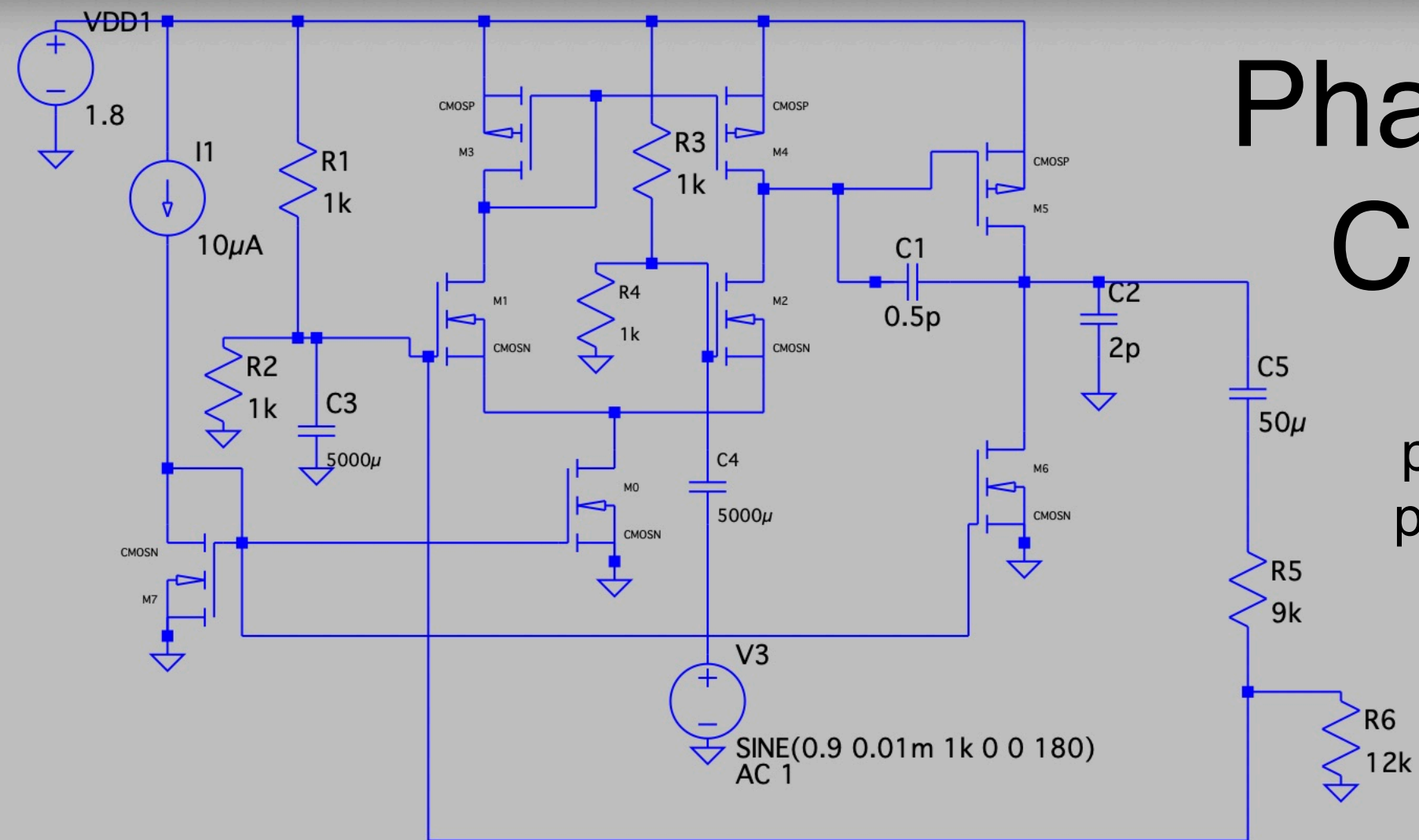
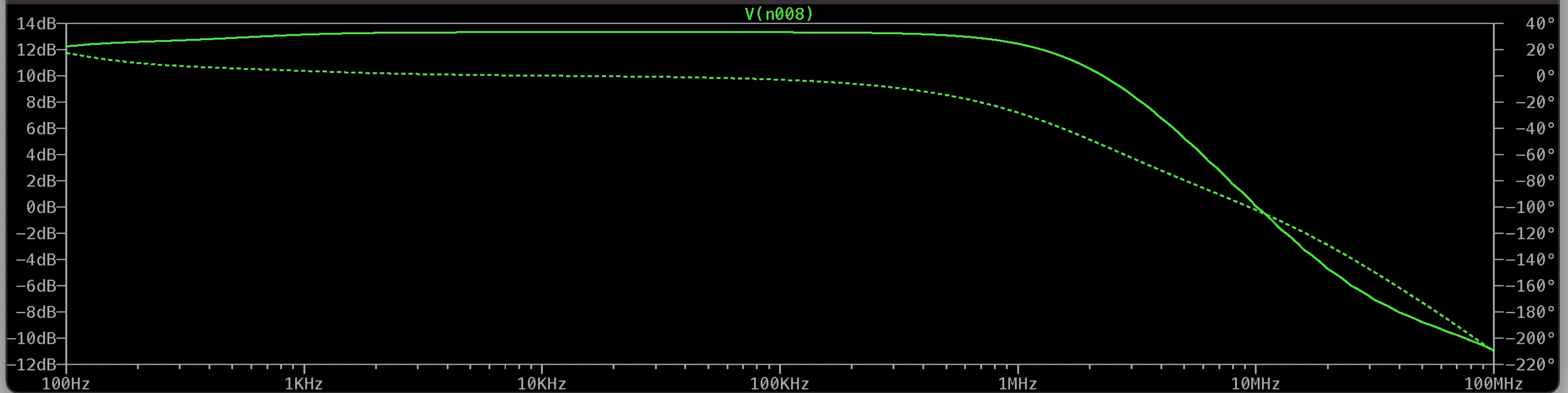


Frequency Response of Open Loop

Magnitude Plot
70.8dB



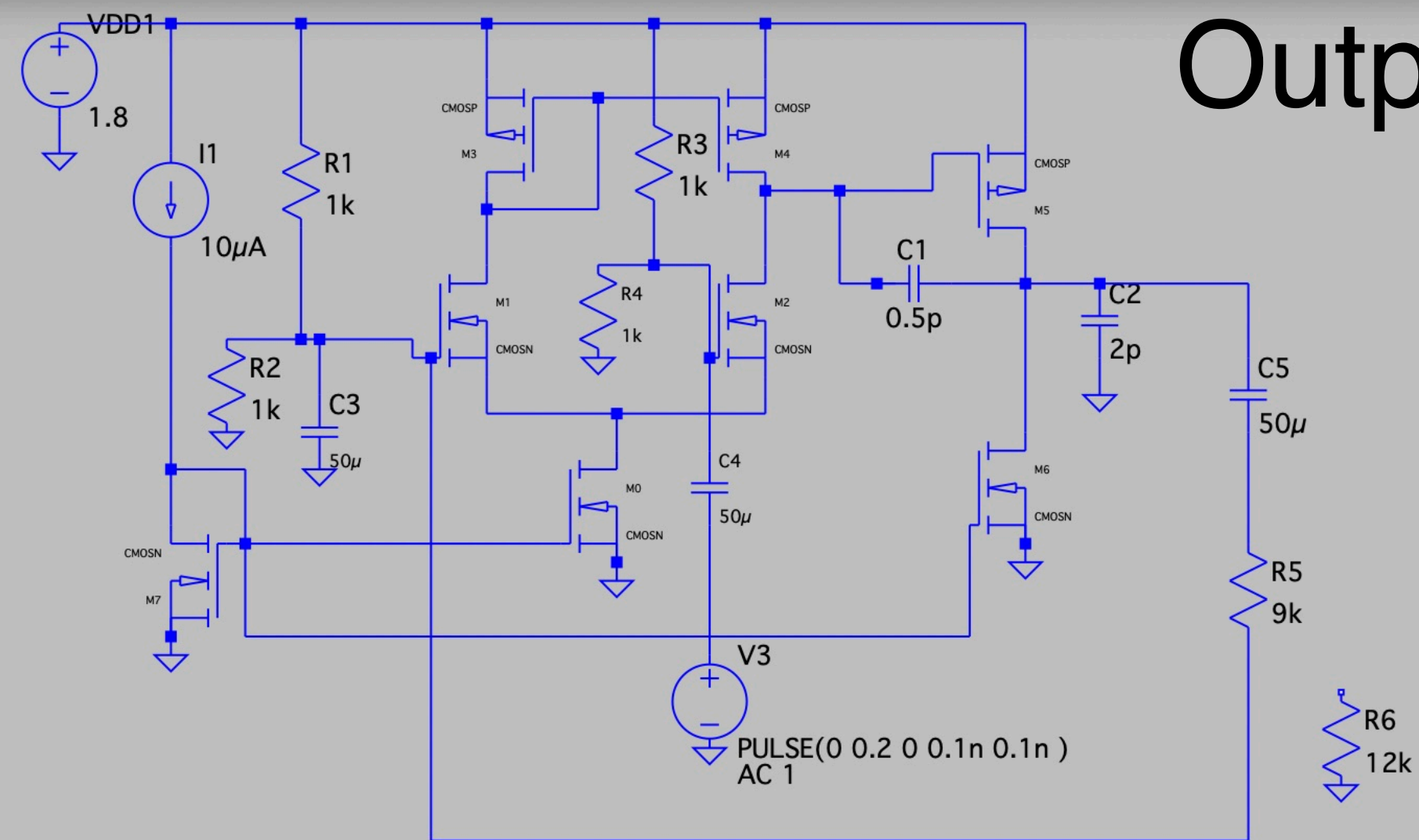
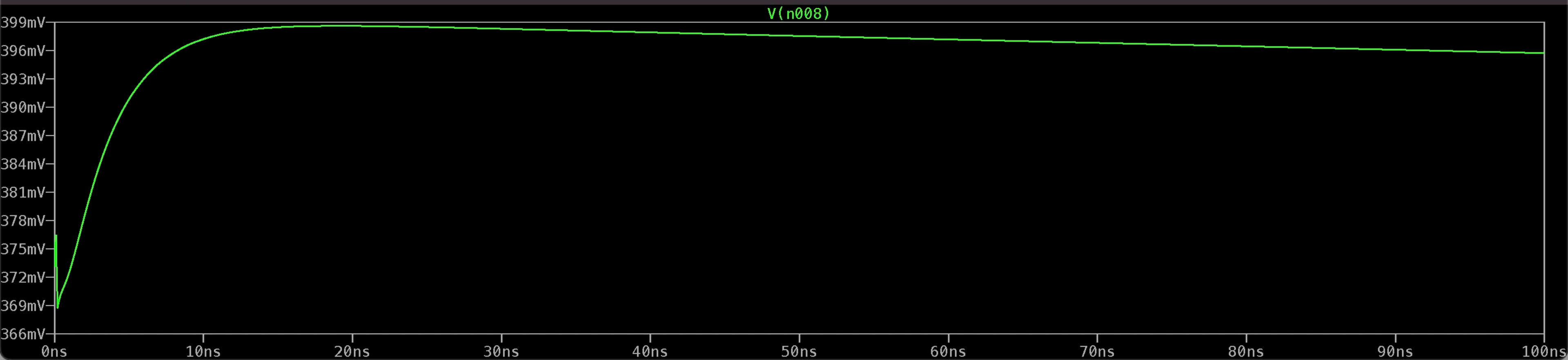
x = 10.957MHz y = -553.977mdB, -105.540°



Phase Margin of Closed Loop

phase margin = $180 - 105.540$
phase margin = 74.46 degree

```
;tran 2ms  
.INCLUDE tsmc018.lib  
.ac dec 10 100 100000000
```

Output of Step Input

```
.tran 100ns  
.INCLUDE tsmc018.lib  
;ac dec 10 100 100000000
```