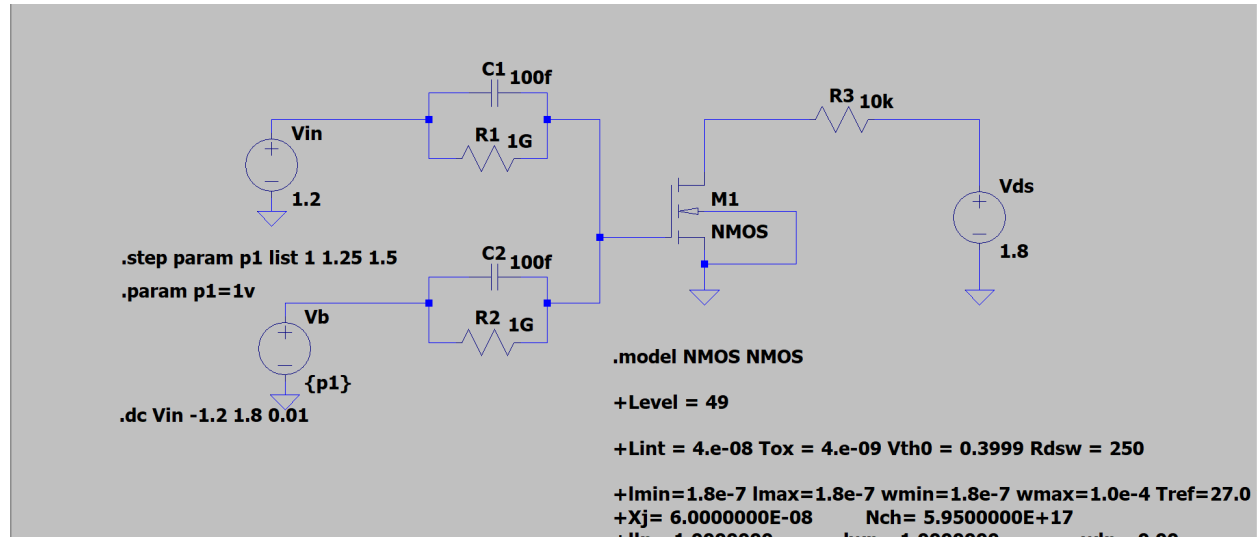


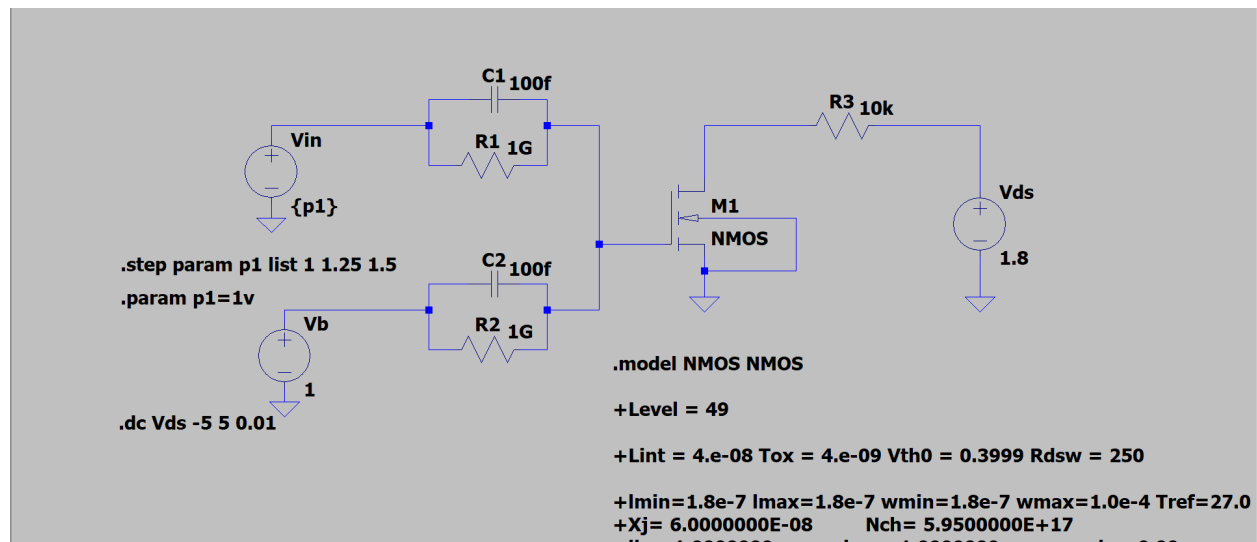
Schematics:

FG-NMOS

1a) Parametric analysis on Vb



2a) Parametric analysis on Vin



Conventional NMOS

3a) Parametric analysis on Vin

```

.param p1=1v
.step param p1 list 1 1.25 1.5

```

```

.model NMOS NMOS
+Level = 49
+Lint = 4.e-08 Tox = 4.e-09
+Vth0 = 0.3999 Rds = 250
+Imin=1.8e-7 Imax=1.8e-7 wmin=1.8e-7 wmax=1.0e-4

```

4a) I_d vs V_{gs}

```

*.param p1=1v
*.step param p1 list 1 1.25 1.5

```

```

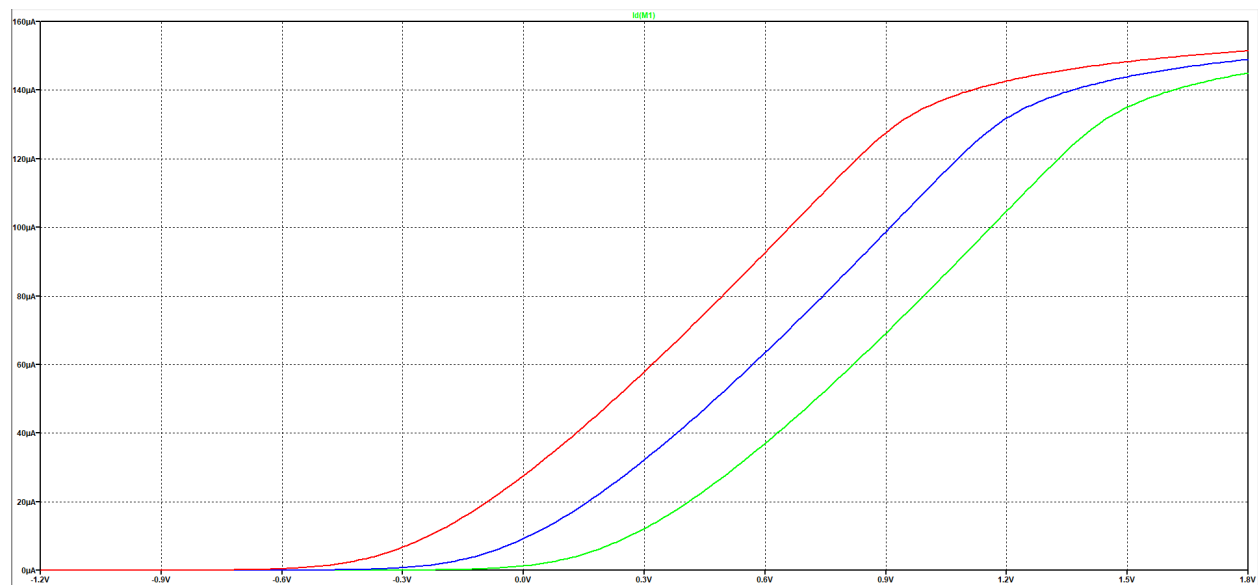
.model NMOS NMOS
+Level = 49
+Lint = 4.e-08 Tox = 4.e-09
+Vth0 = 0.3999 Rds = 250
+Imin=1.8e-7 Imax=1.8e-7 wmin=1.8e-7 wmax=1.0e-4

```

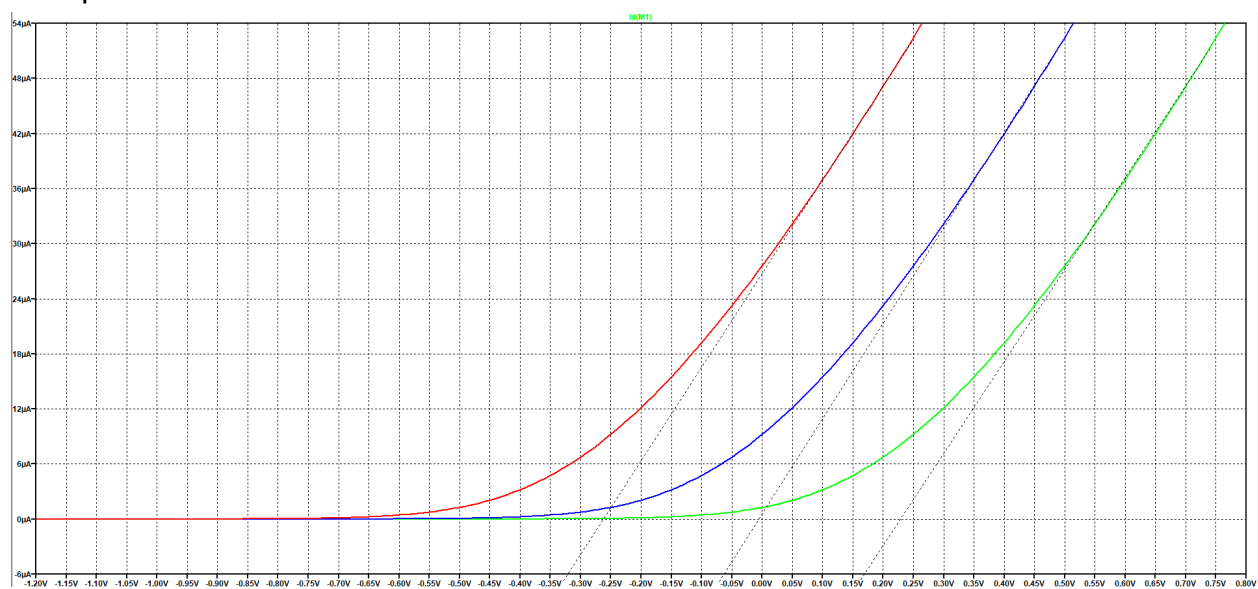
Outputs:

FG-NMOS

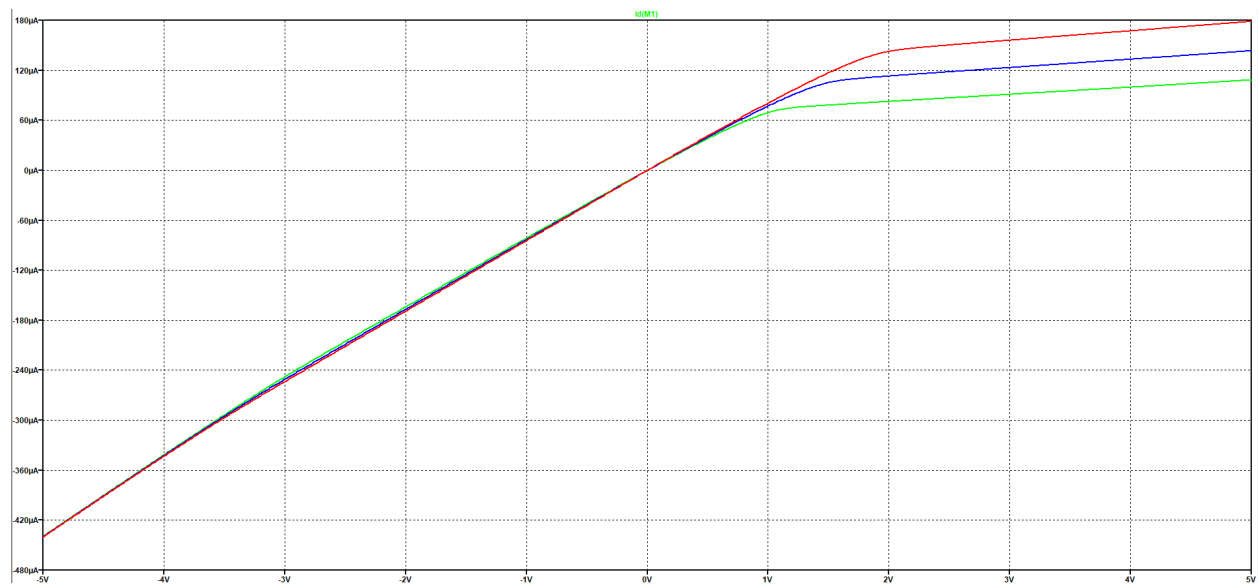
1b)



Extrapolation

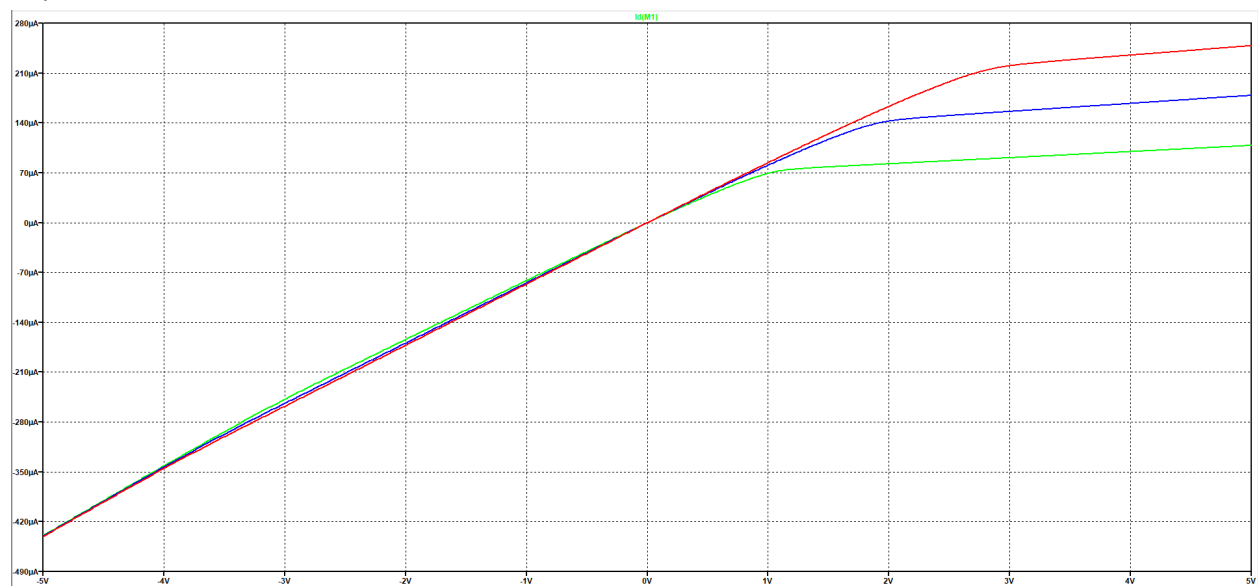


2b)

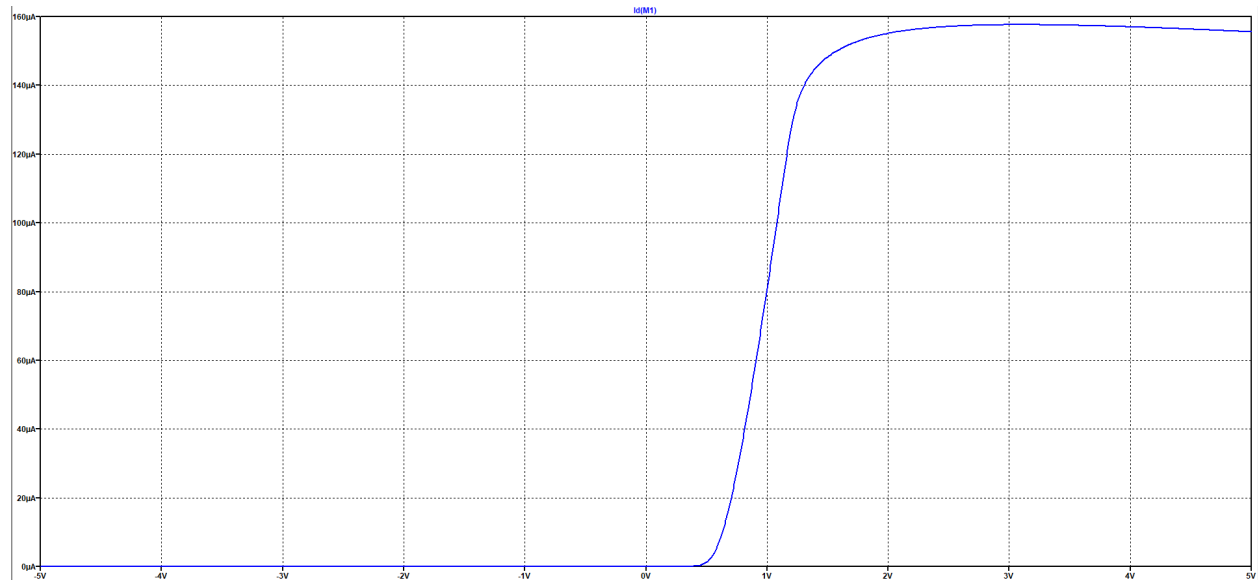


Conventional NMOS

3b)



4b)



Results:

FG-NMOS

$V_{in}(V)$	$V_b(V)$	$V_{th}(V)$
1.2	1	0.165
1.2	1.25	-0.065
1.2	1.5	-0.325

For conventional NMOS with $V_{in}=1V$, $V_{th}=0.57V$.