

## DATA

$$\begin{aligned}V_{dd} &= 1.2V \\t_{ox} &= 40 * 10^{-10}ngstrm \\ \mu_p &= 90 \frac{cm^2}{V \cdot s} \\ \mu_n &= 180 \frac{cm^2}{V \cdot s} \\ V_{tn} &= 0.25V V_{tp} = -0.25V \\ \lambda_p &= 0.25V^{-1} \\ \lambda_n &= 0.25V^{-1} \\ \frac{W_p}{L_p} &= \frac{200nm}{1.4\mu m} \\ \frac{W_n}{L_n} &= \frac{100nm}{1.4\mu m}\end{aligned}$$

## Contents

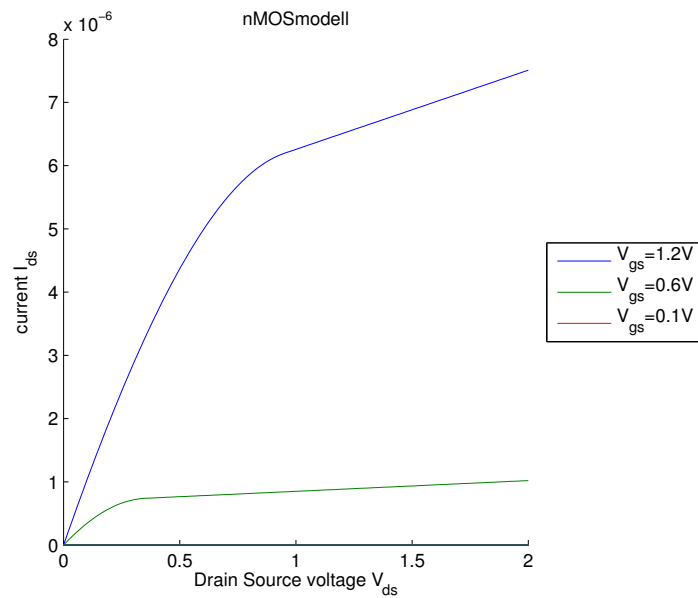
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### her kommer to "like" plot

```
clc
clear all
N=100;

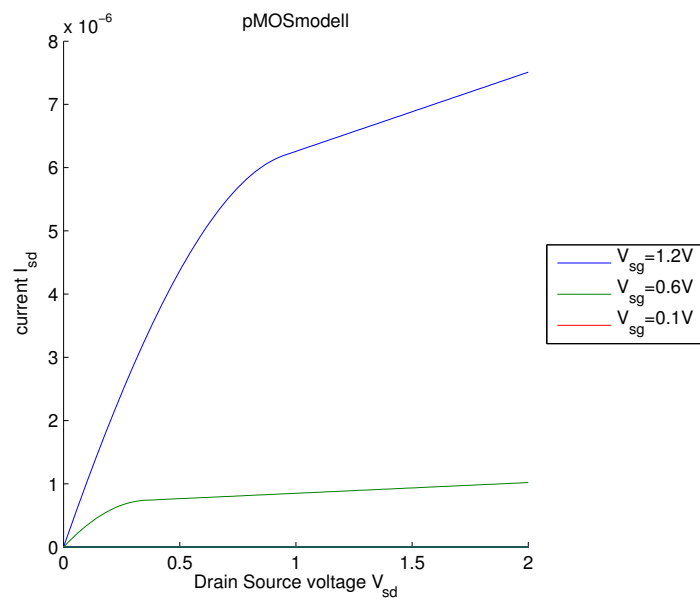
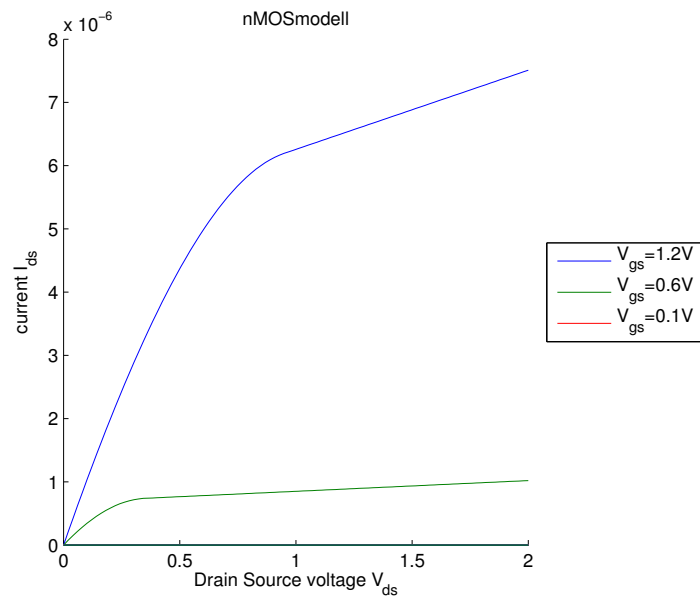
vdsn=linspace(0, 2, N);
vgsn=[1.2, 0.6, 0.1];
idsn=zeros(N);
i=1;
for vgs=vgsn
    for vds=vdsn
        idsn(i)=calcnMOSkanallengde(vgs,vds);

        i=i+1;
    end
end
figure();
hold 'on'
plot(vdsn,idsn )
title('nMOSmodell')
legend('V_{gs}=1.2V', 'V_{gs}=0.6V', 'V_{gs}=0.1V', 'Location', 'EastOutside')
xlabel('Drain Source voltage V_{ds}'), ylabel('current I_{ds}')
```



```
%pMOS modell:
clear all
hold 'off'
figure();
N=100;
vsdp=linspace(0,2, N);
vsgp=[1.2 0.6 0.1];
isdp=zeros(N);
i=1;
for vsg=vsgp
    for vsd=vsdp
        isdp(i)=calcpMOSkanallengde(vsg,vsd);
        i=i+1;
    end
end
hold 'on'
plot(vsdp, isdp)
title('pMOSmodell')
legend('V_{sg}=1.2V', 'V_{sg}=0.6V', 'V_{sg}=0.1V', 'Location', 'EastOutside')
xlabel('Drain Source voltage V_{sd}'), ylabel('current I_{sd}')

%Ids, Vgs
```



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clear all

```

N=200;
v=linspace(0, 1.2,N);
Vut=zeros(1, N);
i=1;
for i=1: length(v)
    Vut(i)=inverter(v(i));
end
figure()
plot(v, Vut)
title('DC(V-V) karakteristik')
text(0.03, 1.2, 'A', 'fontsize', 20)
text(0.5, 1.08, 'B', 'fontsize', 20)
text(0.6, 0.6, 'C', 'fontsize', 20)
text(0.7, 0.04, 'D', 'fontsize', 20)
text(1, 0.04, 'E', 'fontsize', 20)

hold off
figure()
forsterkning=zeros(1, N);
for (j=1: length(v)-1)
    dv=Vut(j)-Vut(j+1);
    dt=v(j)-v(j+1);
    forsterkning(j)=dv/dt;
end
plot (v, forsterkning)
axis( [0, 1.2, -130, 1])

```

