



cmos028fdsoi Technology

LVT models

DK1.2_RF_mmW

Comparison with DK1.1_RF_mmW model(s)

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Sep 21, 2018

Technology R&D Crolles Site – TDP/TDS/SPICE Modeling

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General information on LVT models

- Maximum supply voltage is - V.
- Validity domain is defined as follows:
 - ✓ Drawn gate length varies from 30nm to 10um.
 - ✓ Drawn transistor width varies from 80nm to 10um.
 - ✓ Device temperature varies from -40 °C to 125 °C.

Output parameters definitions

- Model(s): lvtmfet_acc, lvtpfet_acc
 - ✓ V_{t_lin} : Threshold voltage defined as V_{gs} value for which drain current is $i_{vt} \cdot M \cdot 1 \cdot W / (1 \cdot L + 0 + 1 \cdot p_la)$ at $V_{ds} = 0.05V$.
 - ✓ I_{g_on} : Gate current at $V_{ds} = 0V$ and $V_{gs} = 1V$.
 - ✓ τ_{aueff} : Time constant computed as $V_{dd} / I_{eff} \cdot C_{ggmean}$.
 - ✓ I_{lin} : Drain current at $V_{gs} = 1V$, $V_{ds} = 0.05V$.
 - ✓ I_{off_g} : Gate current at $V_{gs} = 0V$, $V_{ds} = v_{ds_sat}V$.
 - ✓ V_{t_sat} : Threshold voltage defined as V_{gs} value for which drain current is $i_{vt} \cdot M \cdot 1 \cdot W / (1 \cdot L + 0 + 1 \cdot p_la)$ at $V_{ds} = v_{ds_sat}V$.
 - ✓ I_{eff} : Average drain current $(I_{low} + I_{high}) / 2$.
 - ✓ I_{sat} : Drain current at $V_{gs} = 1V$, $V_{ds} = V_{dd}V$.
 - ✓ Logioff : $\log_{10}(I_{offsat})$.

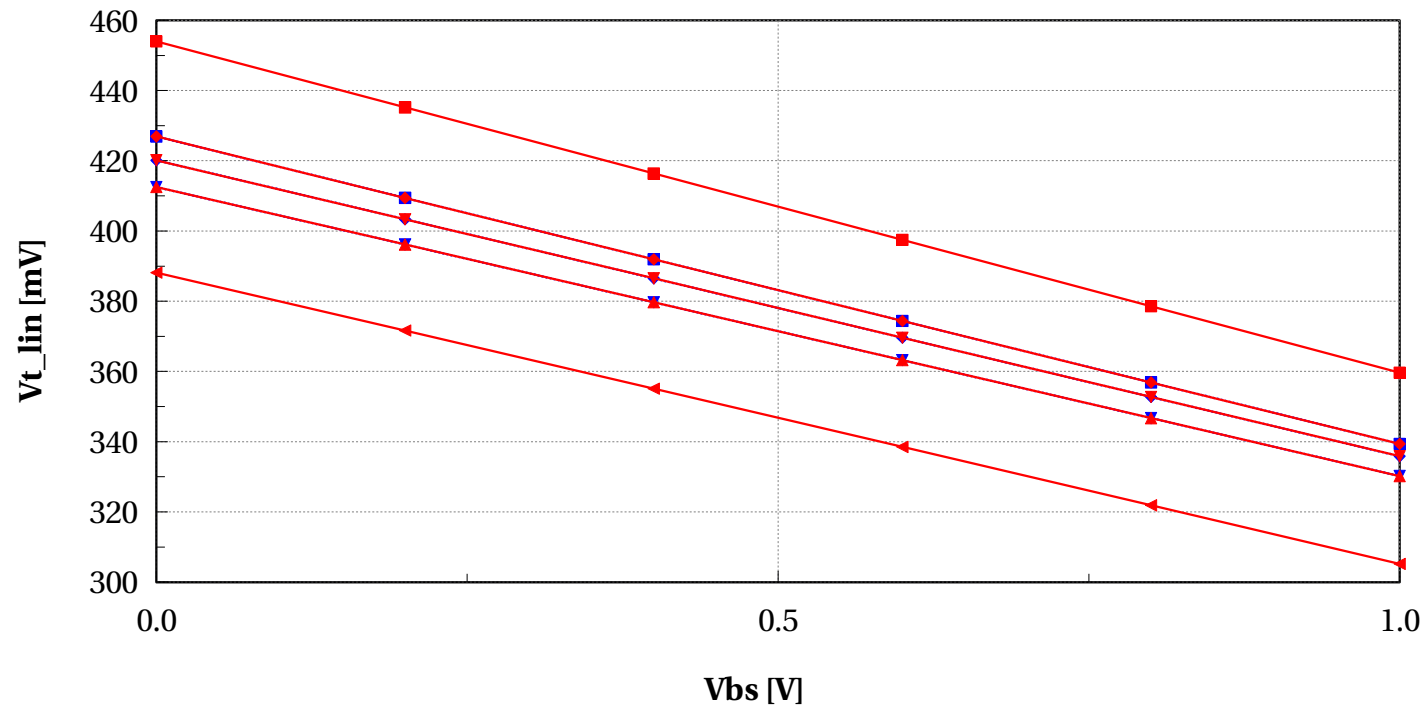
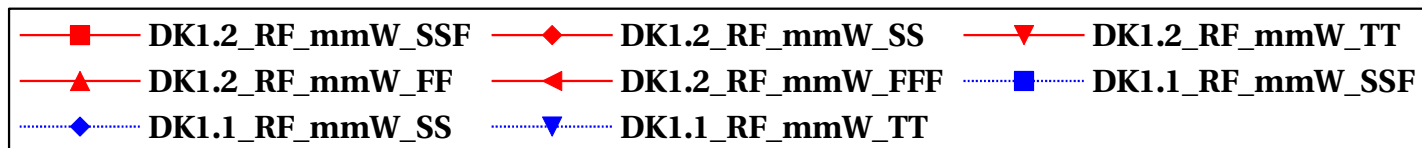
lvtnfet_acc

Electrical characteristics scaling

Scaling versus V_{bs} ($L=1\mu m, W=1\mu m$)

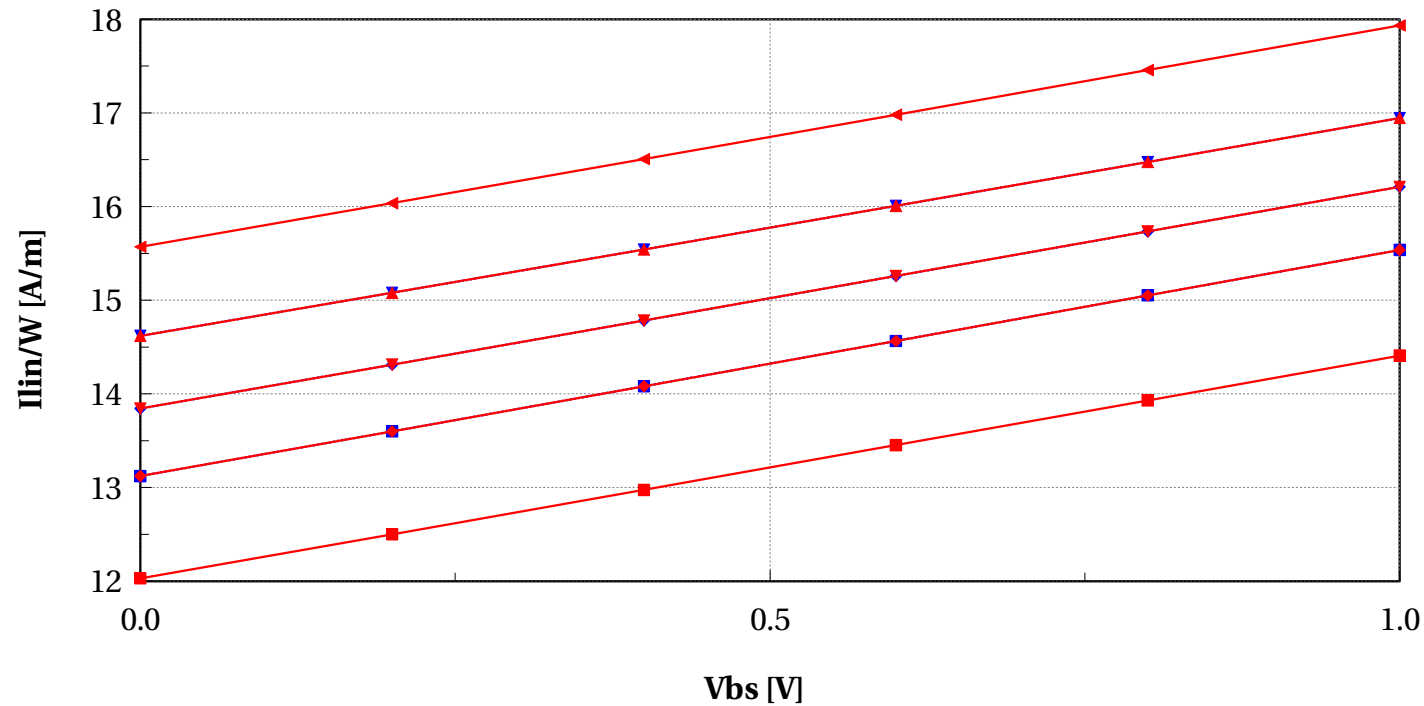
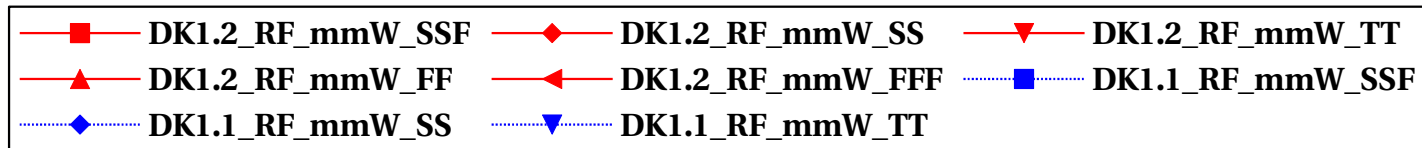
lvtnfet_acc, Vt_lin [mV] vs Vbs [V]

w==1e-6 and L==1e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



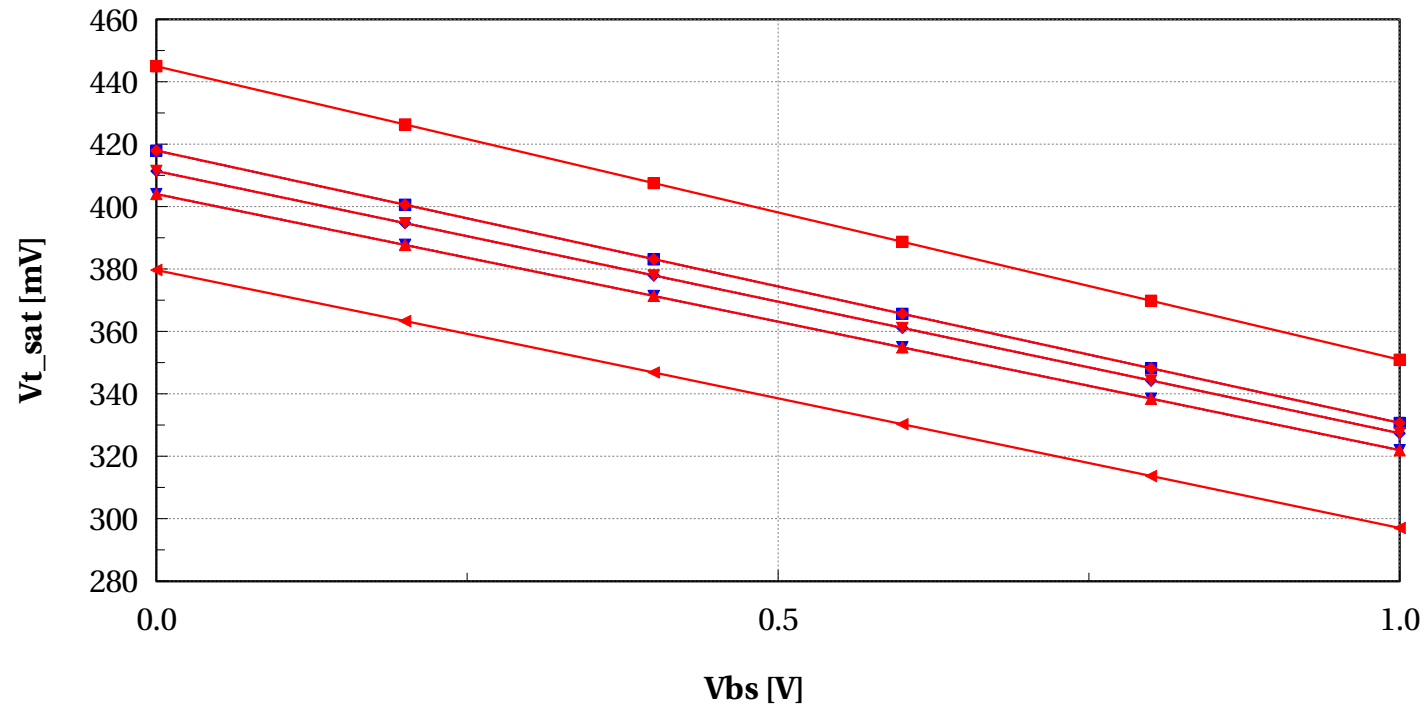
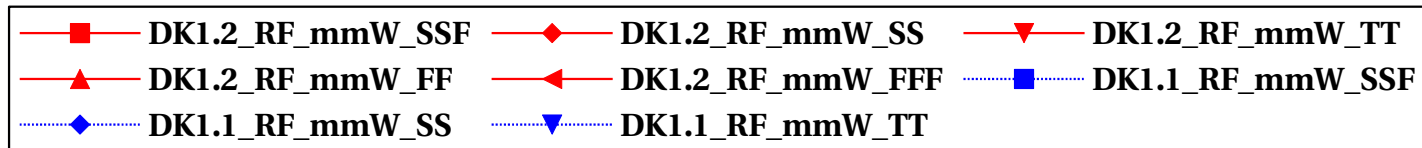
lvtnfet_acc, I_{lin}/W [A/m] vs V_{bs} [V]

w==1e-6 and L==1e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



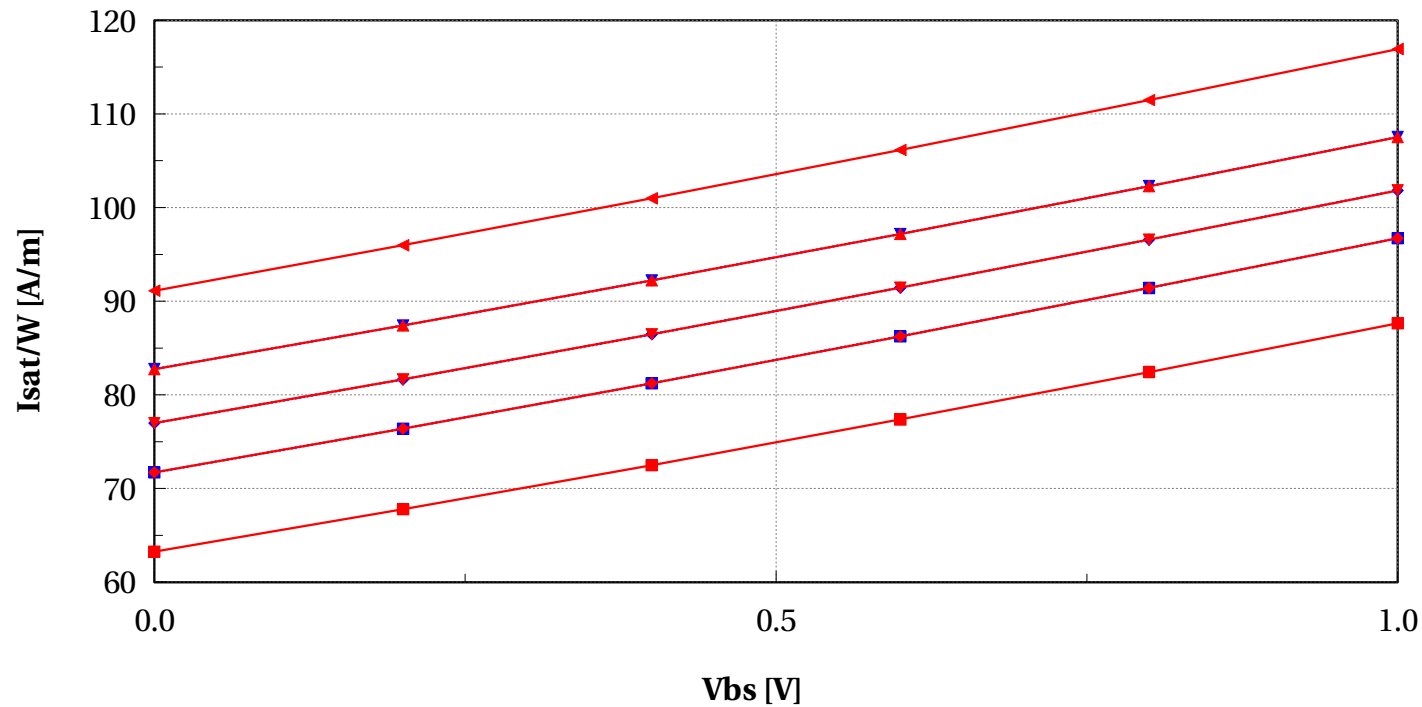
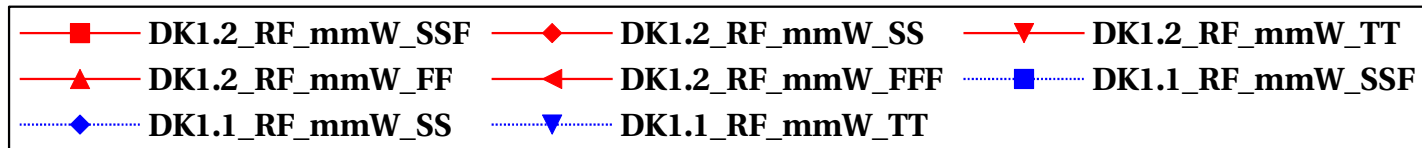
lvtnfet_acc, Vt_sat [mV] vs Vbs [V]

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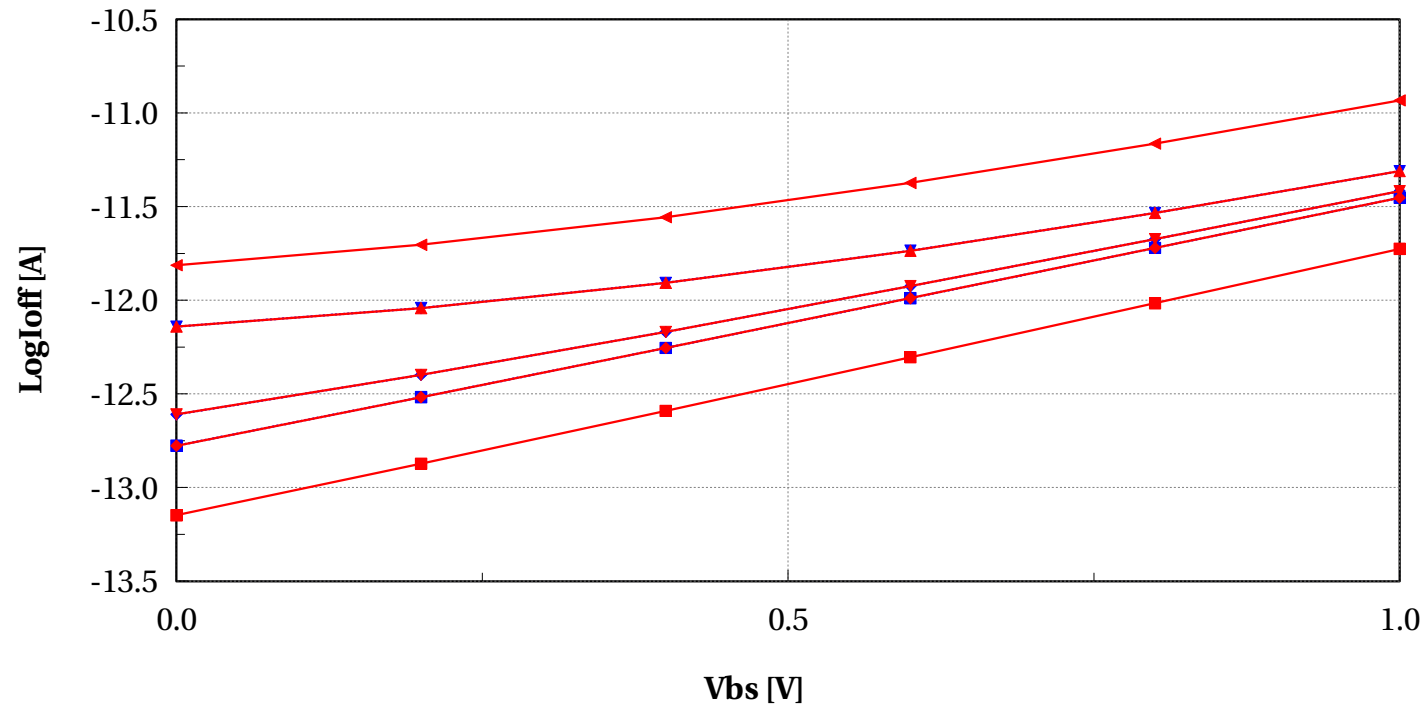
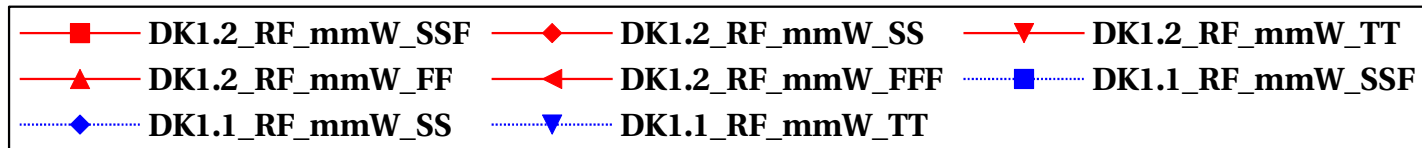
lvtnfet_acc, Isat/W [A/m] vs Vbs [V]

w==1e-6 and L==1e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



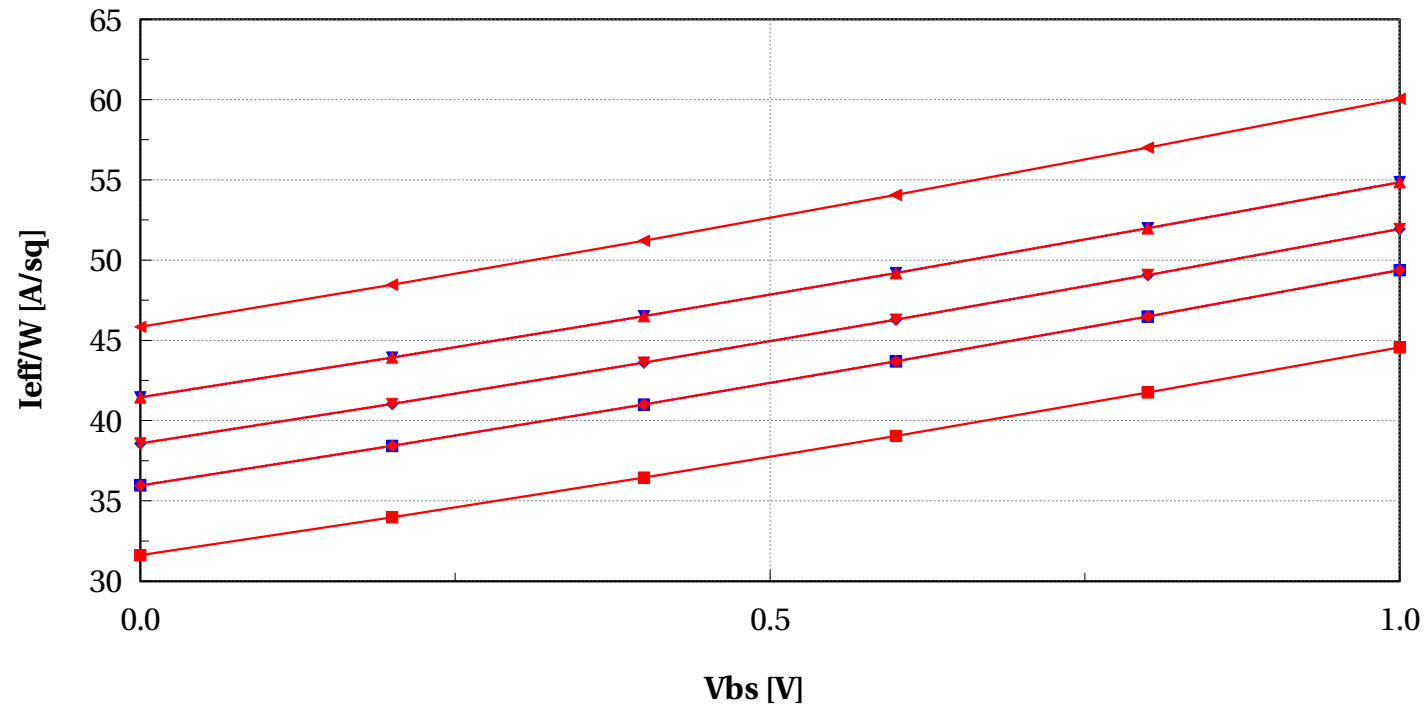
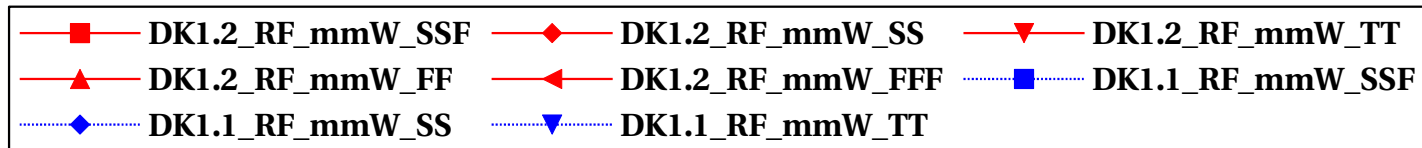
lvtnfet_acc, Logloff [A] vs Vbs [V]

w==1e-6 and L==1e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



lvtnfet_acc, I_{eff}/W [A/sq] vs V_{bs} [V]

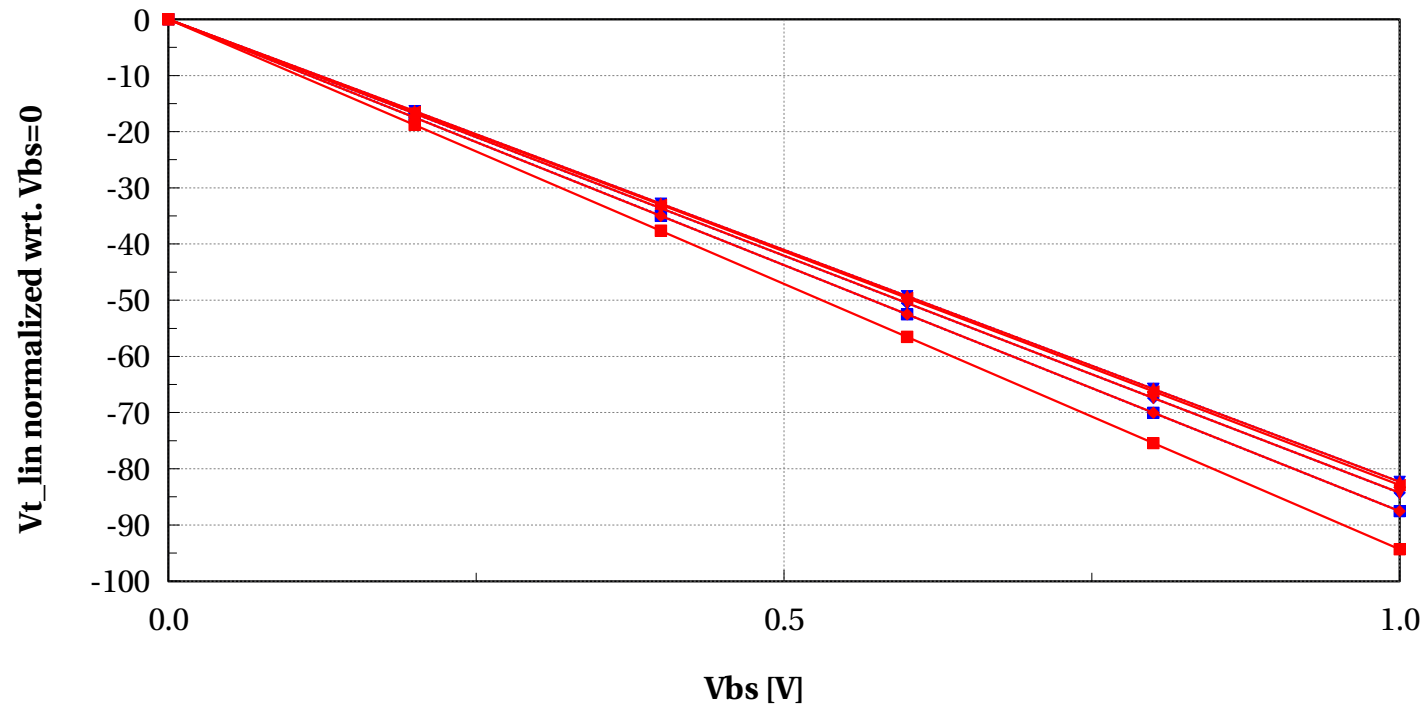
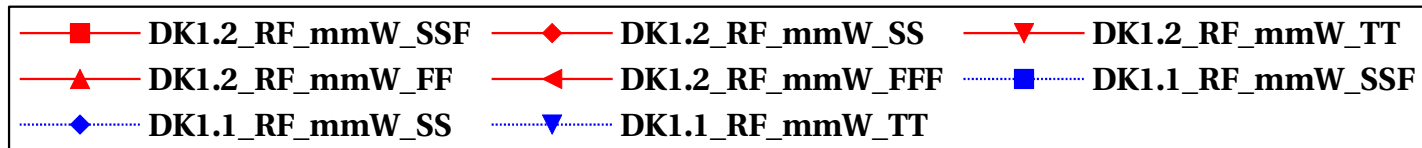
w==1e-6 and L==1e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



Scaling versus V_{bs} normalized ($L=1\mu m, W=1\mu m$)

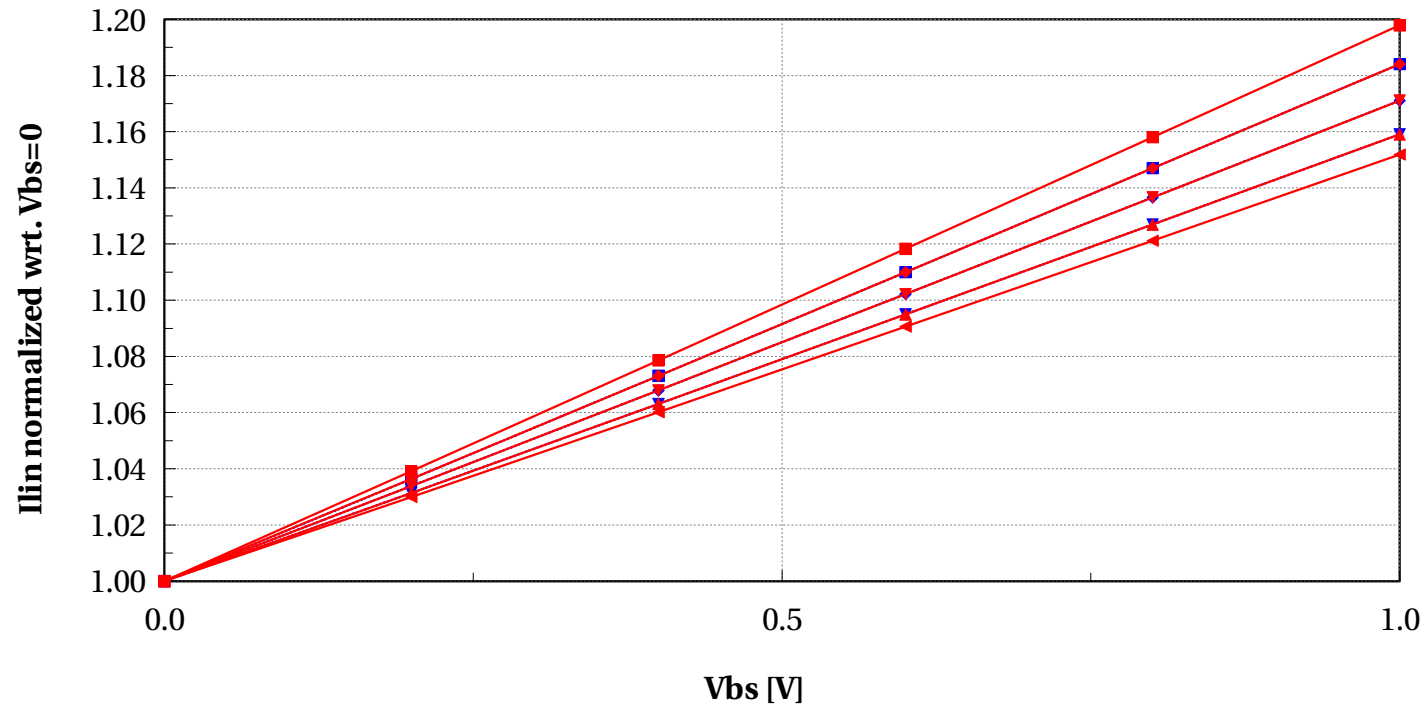
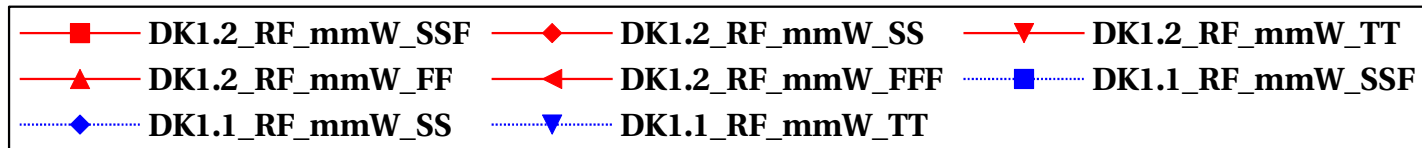
lvtnfet_acc, Vt_lin normalized wrt. Vbs=0 vs Vbs [V]

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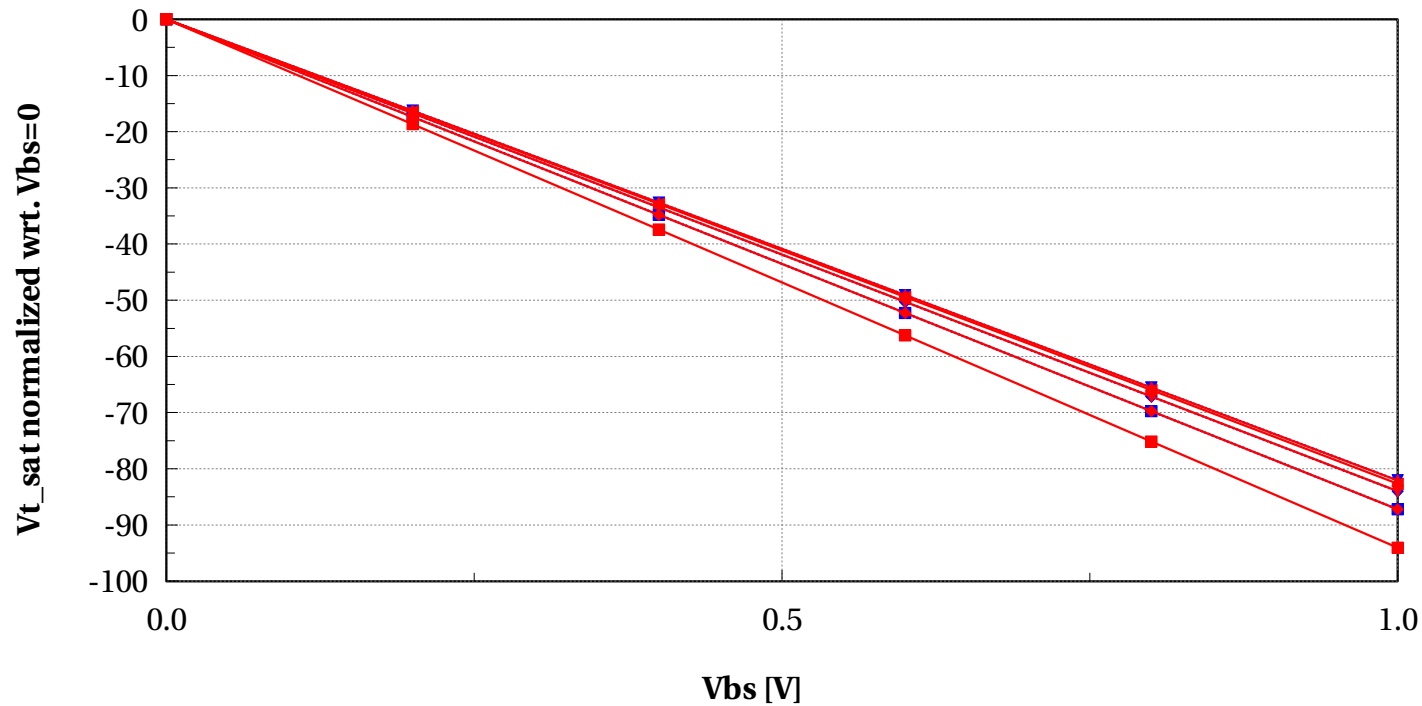
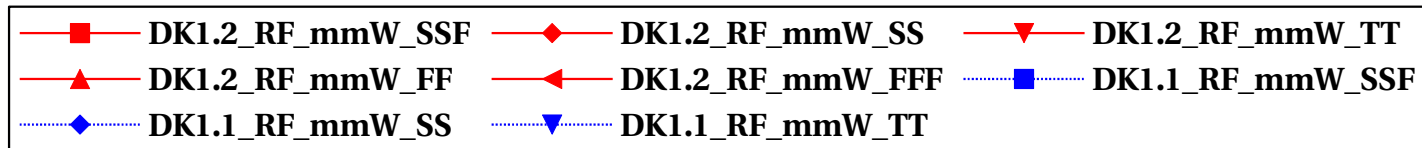
lvtnfet_acc, Ilin normalized wrt. Vbs=0 vs Vbs [V]

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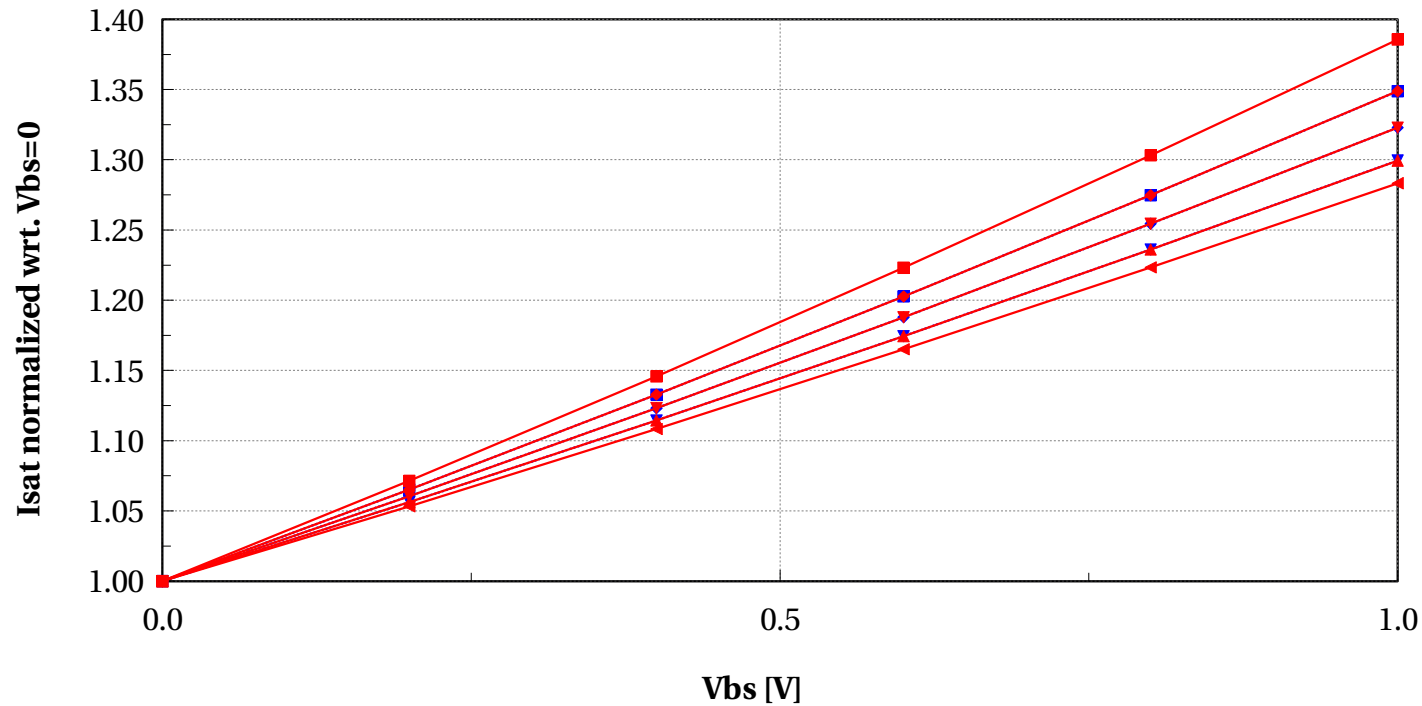
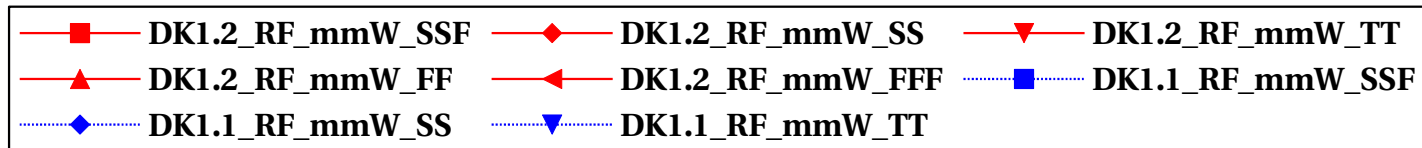
lvtnfet_acc, Vt_sat normalized wrt. Vbs=0 vs Vbs [V]

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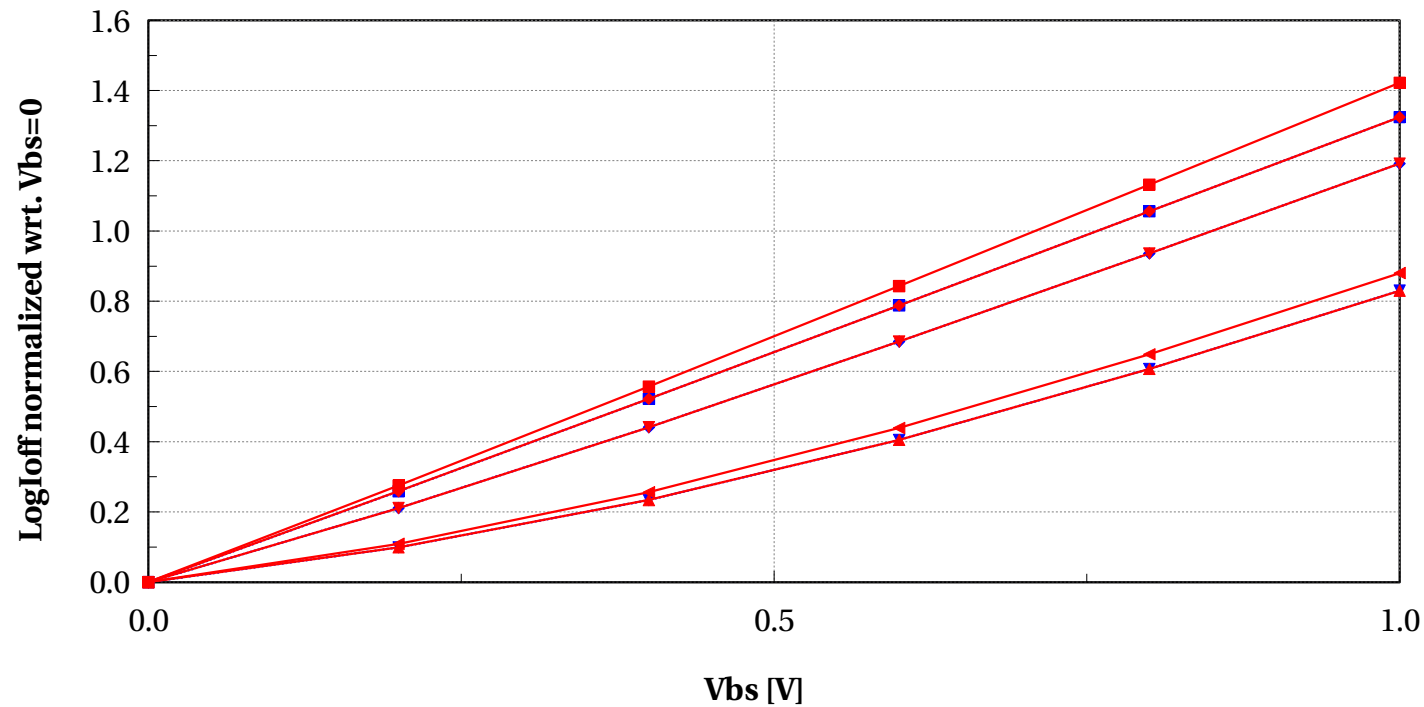
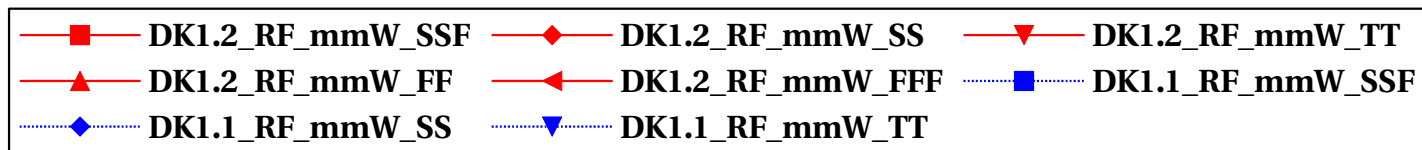
lvtnfet_acc, Isat normalized wrt. Vbs=0 vs Vbs [V]

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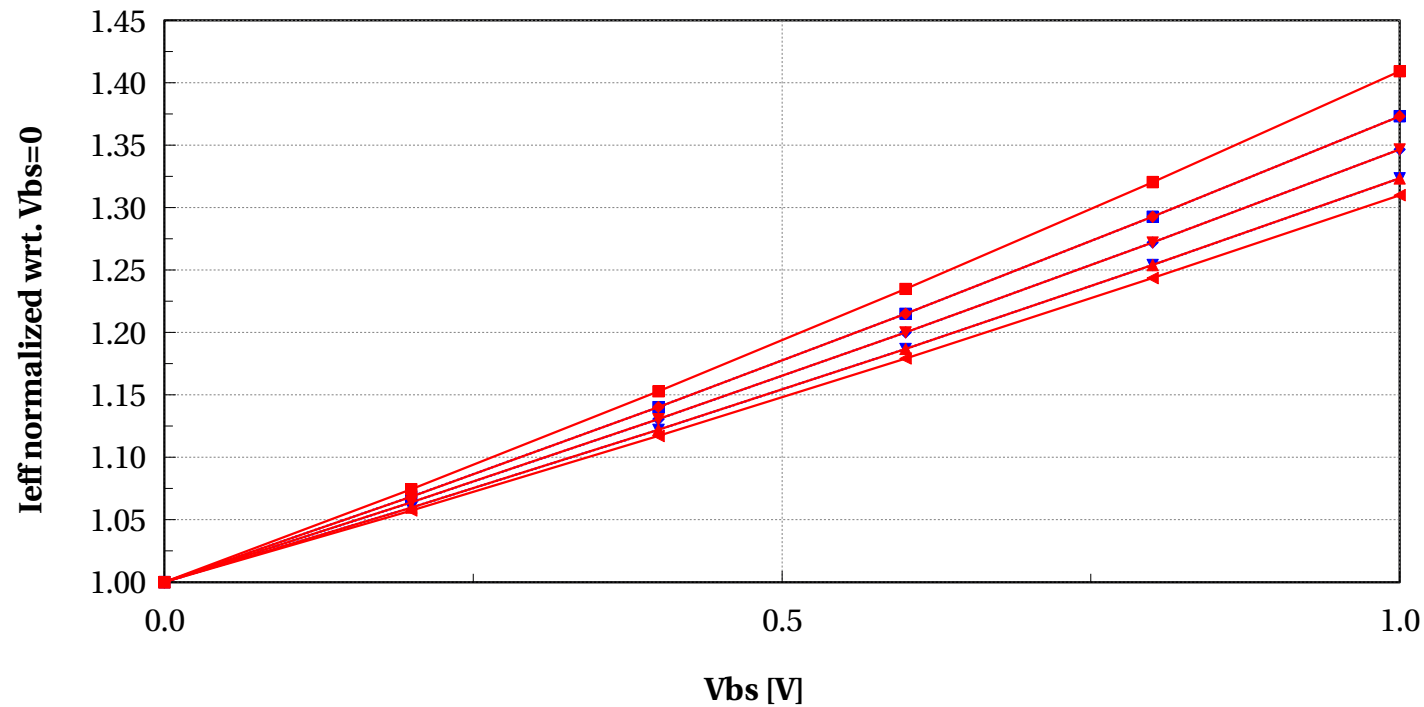
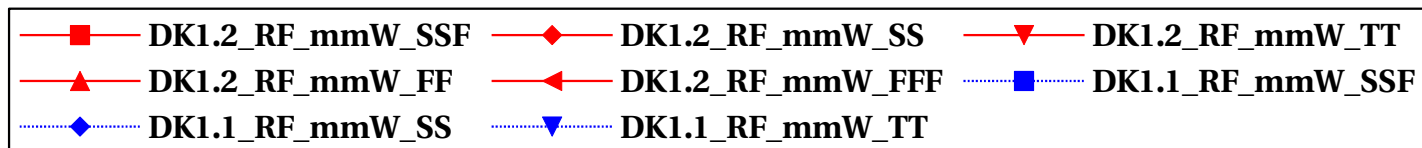
lvtnfet_acc, LogIoff normalized wrt. Vbs=0 vs Vbs [V]

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lvtnfet_acc, Ieff normalized wrt. Vbs=0 vs Vbs [V]

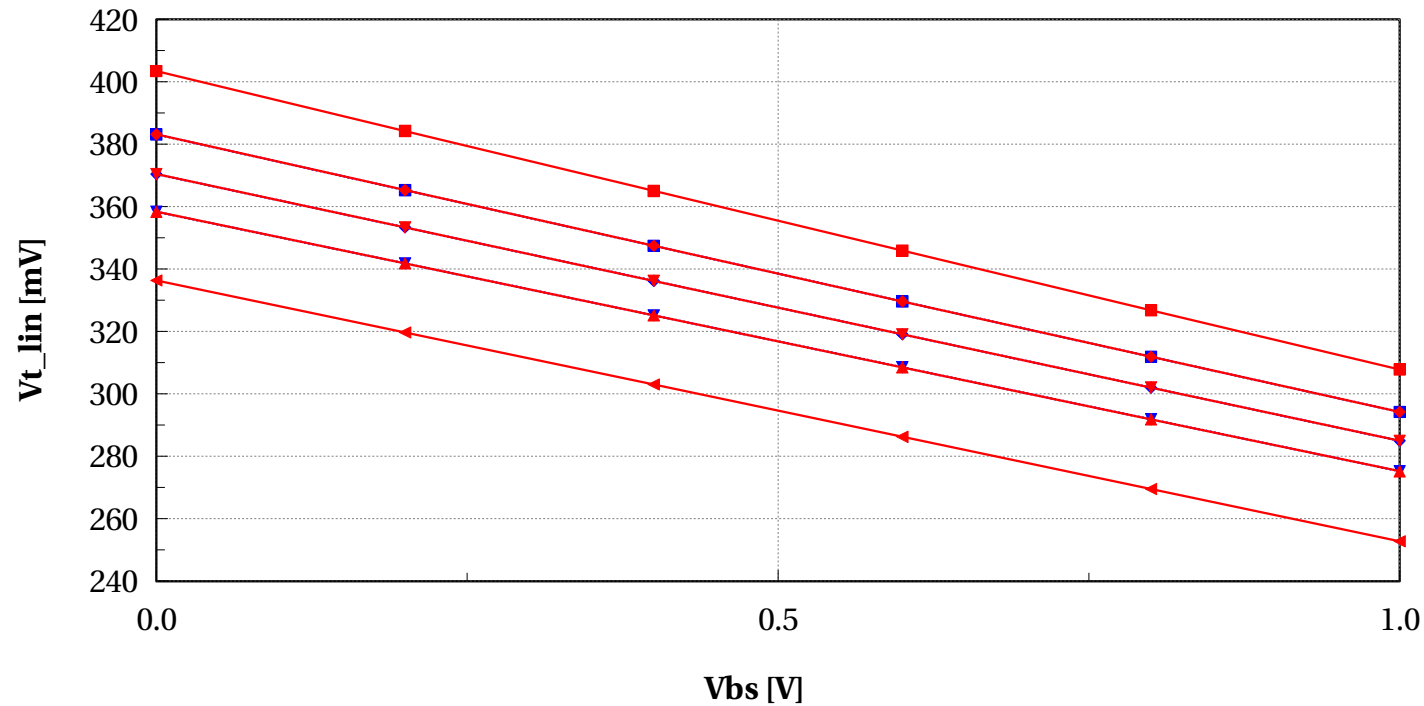
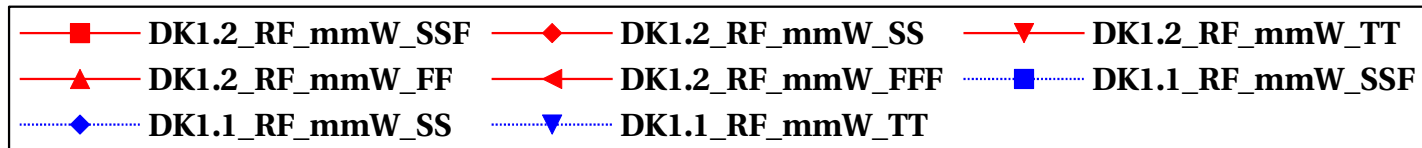
w==1e-6 and L==1e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



Scaling versus V_{bs} ($L=30\text{nm}$, $W=210\text{nm}$)

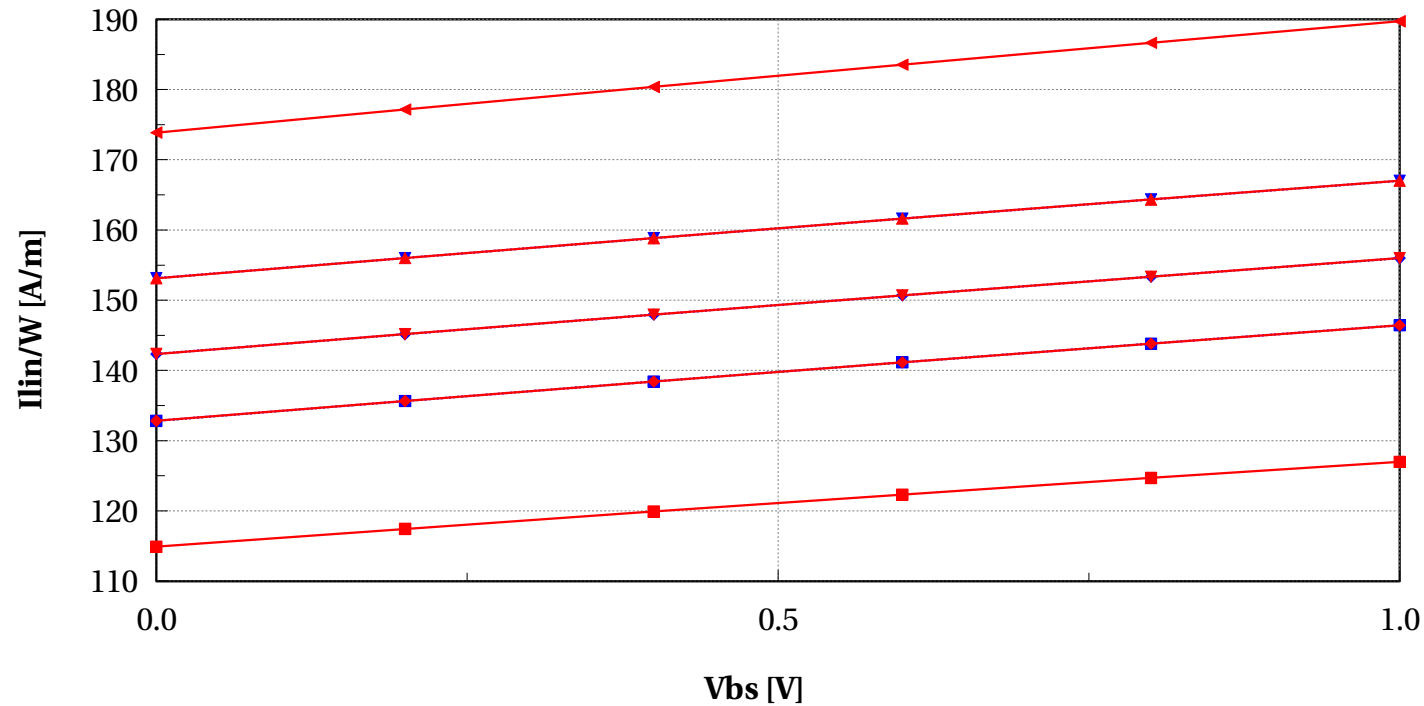
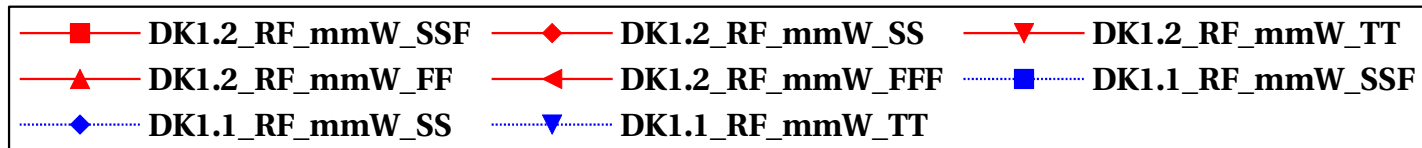
lvtnfet_acc, Vt_lin [mV] vs Vbs [V]

w==210e-9 and L==0.03e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



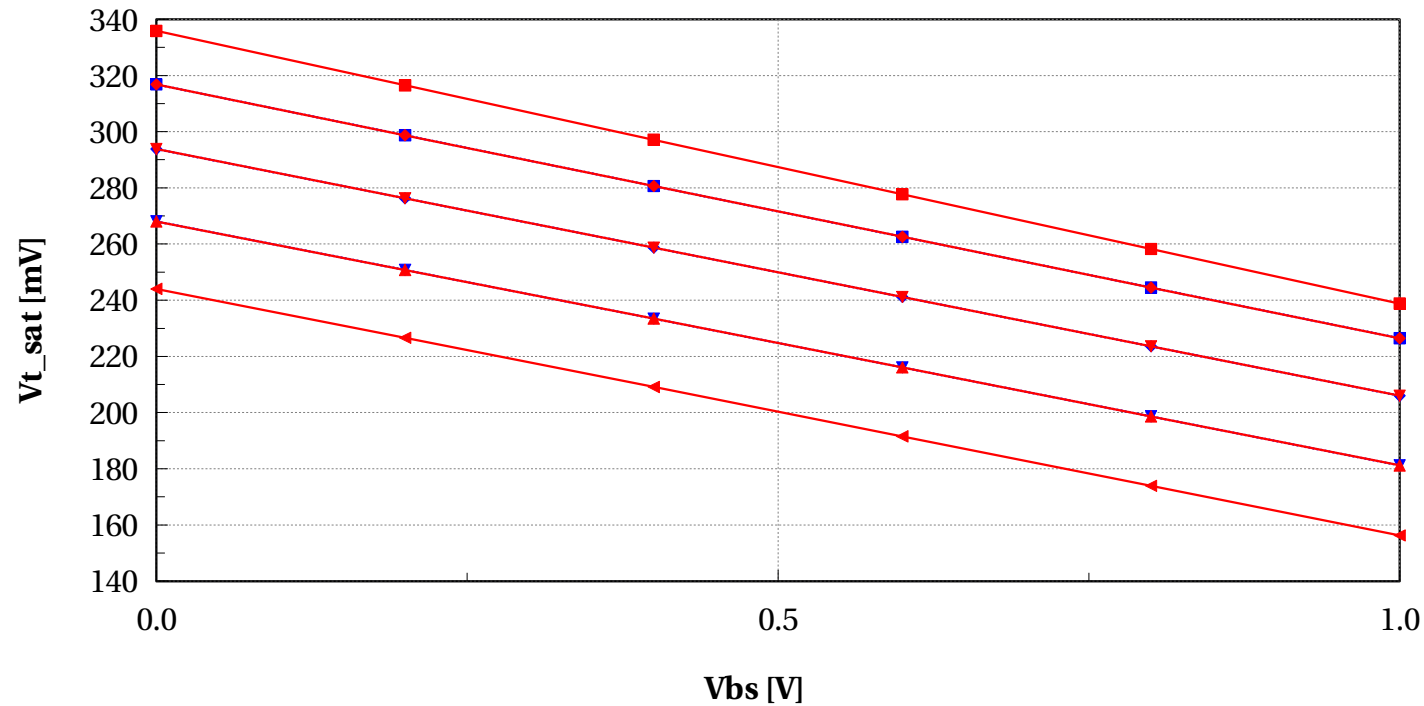
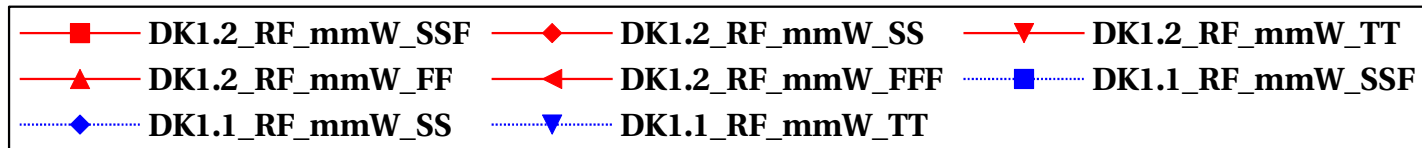
lvtinfet_acc, I_{lin}/W [A/m] vs V_{bs} [V]

w==210e-9 and L==0.03e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



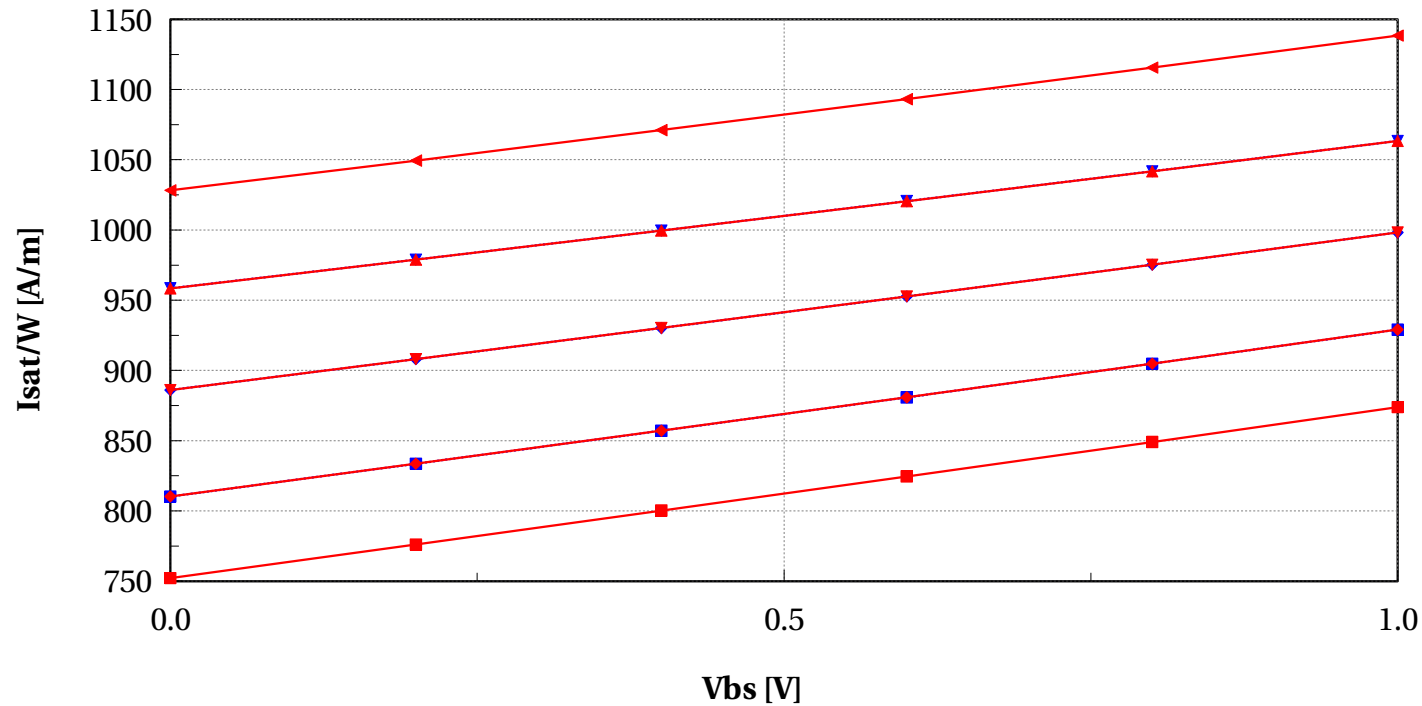
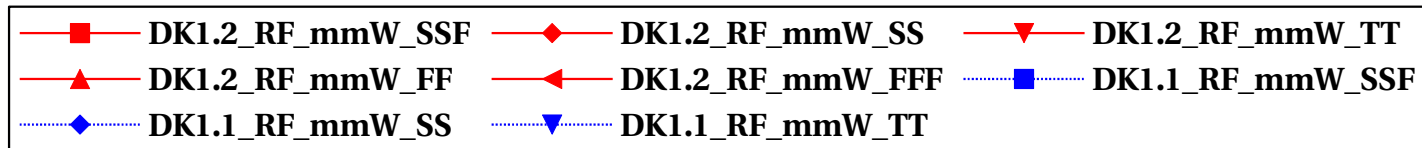
lvtnfet_acc, Vt_sat [mV] vs Vbs [V]

w==210e-9 and L==0.03e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



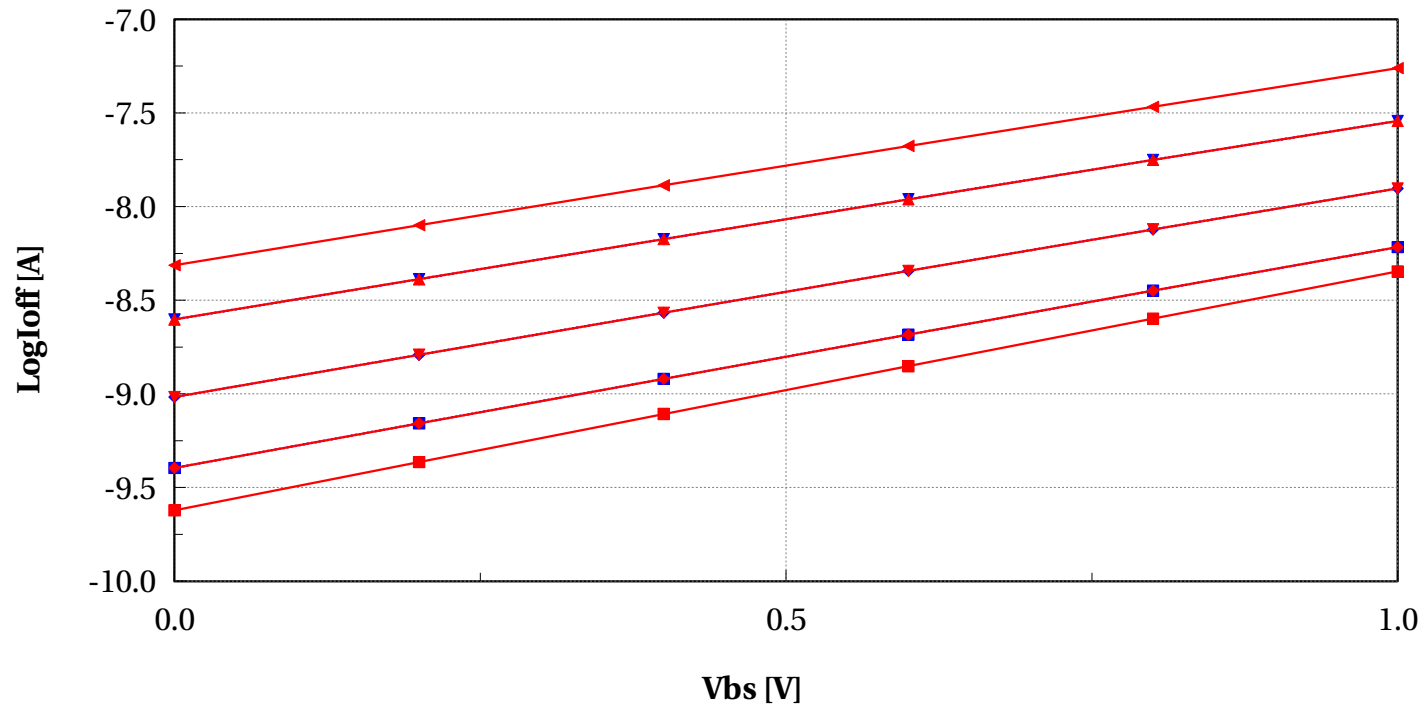
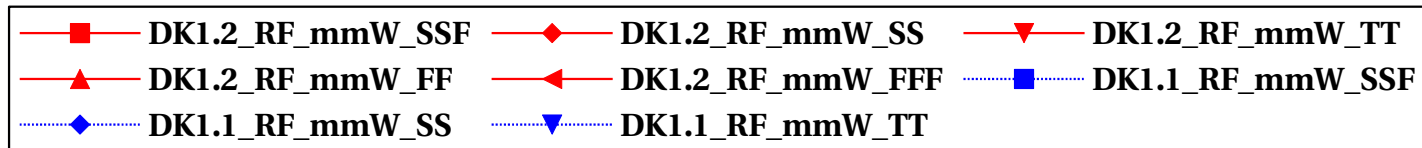
lvtnfet_acc, Isat/W [A/m] vs Vbs [V]

w==210e-9 and L==0.03e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



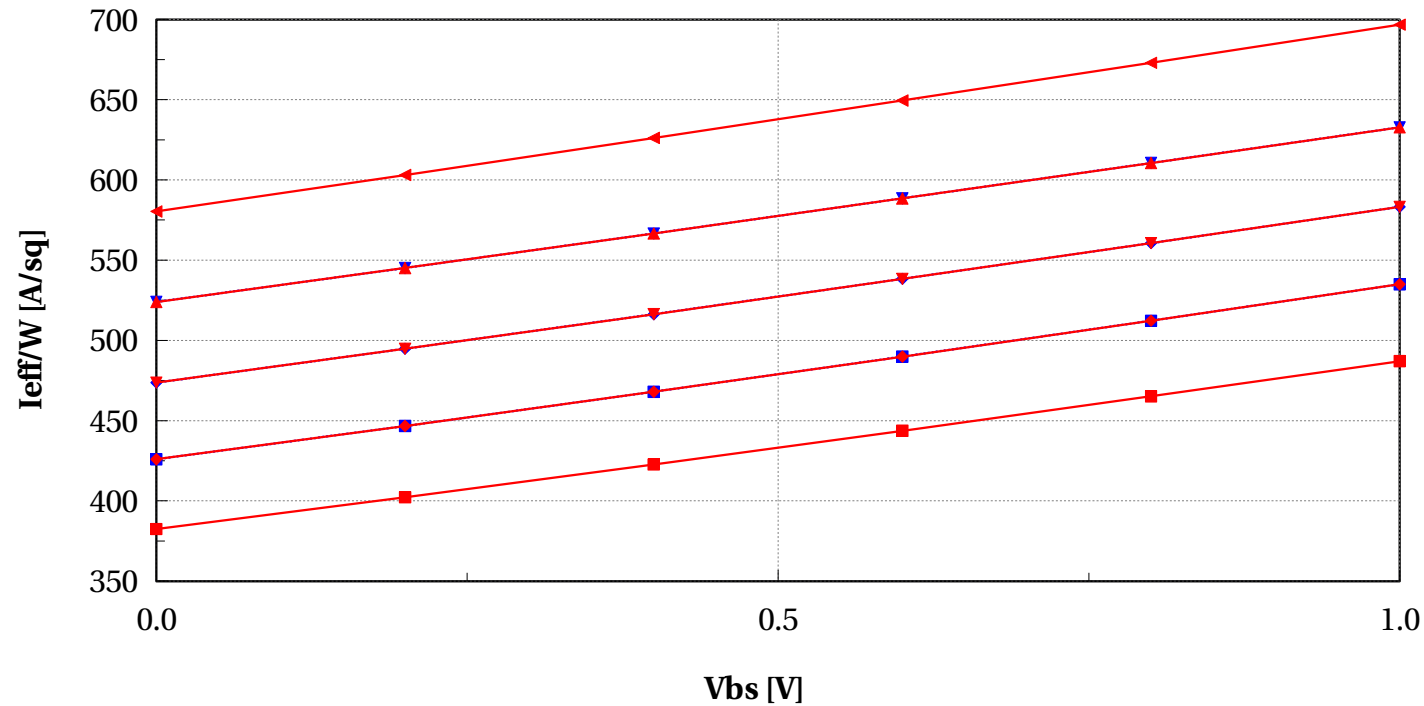
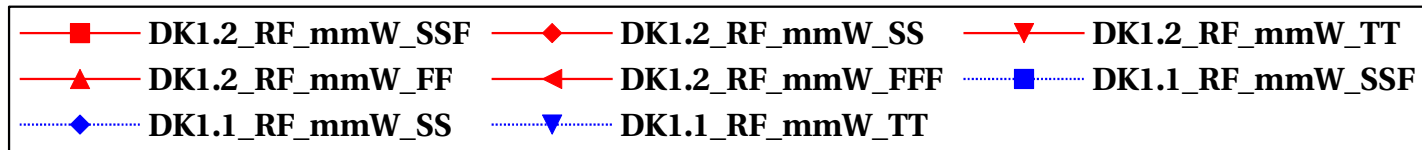
lvtnfet_acc, Logloff [A] vs Vbs [V]

w==210e-9 and L==0.03e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



lvtinfet_acc, I_{eff}/W [A/sq] vs V_{bs} [V]

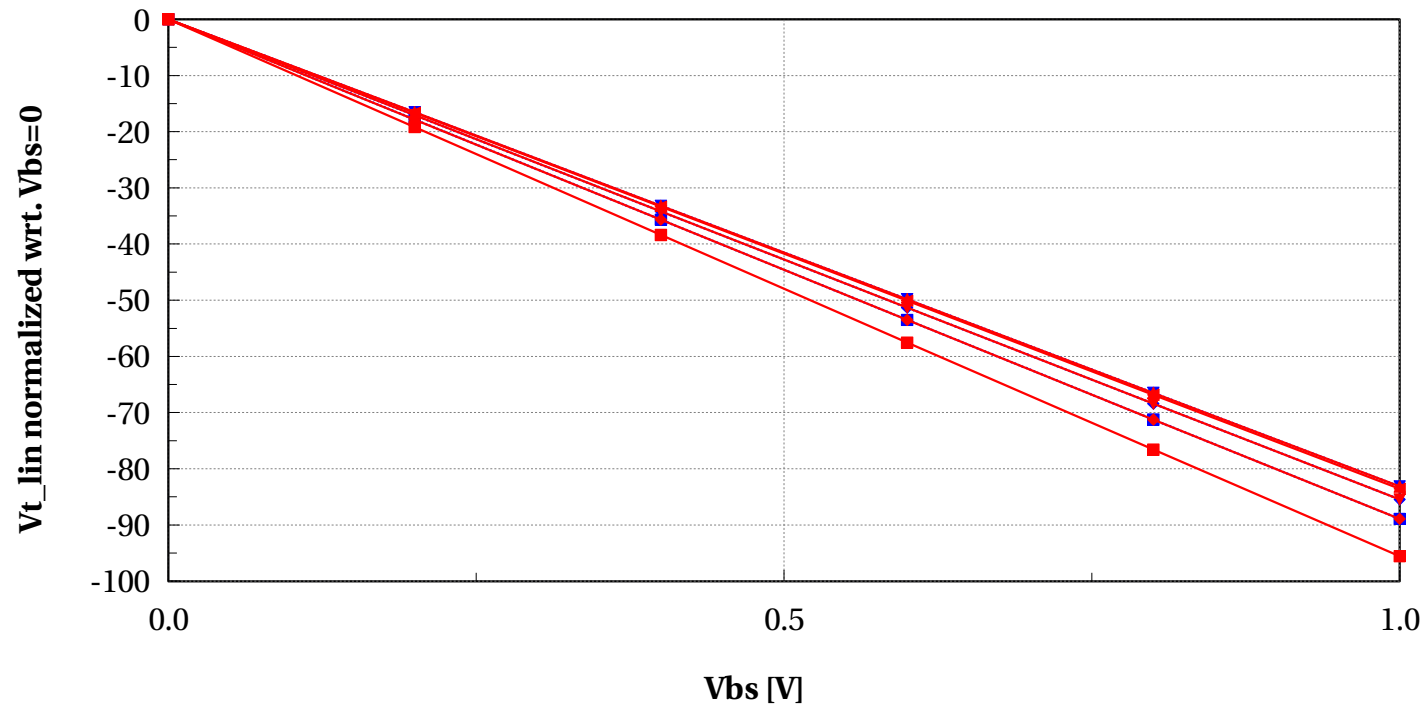
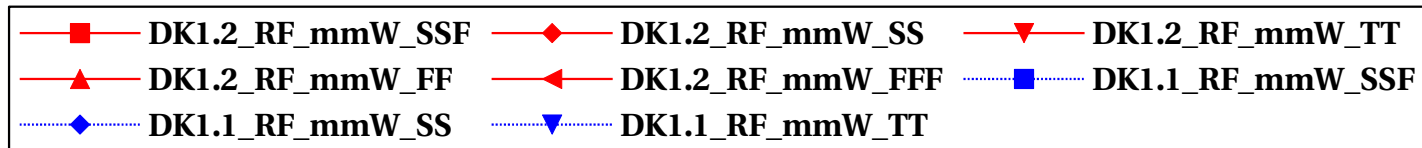
w==210e-9 and L==0.03e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



Scaling versus V_{bs} normalized ($L=30\text{nm}$, $W=210\text{nm}$)

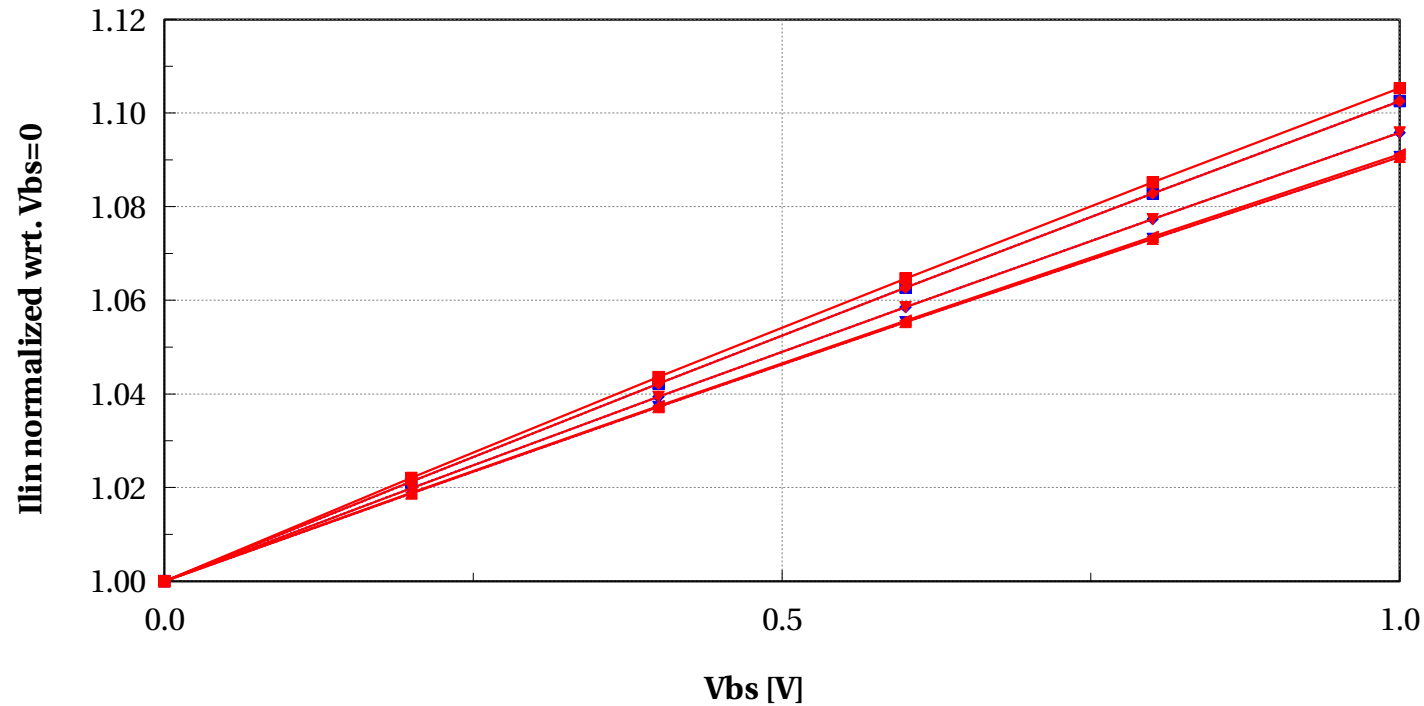
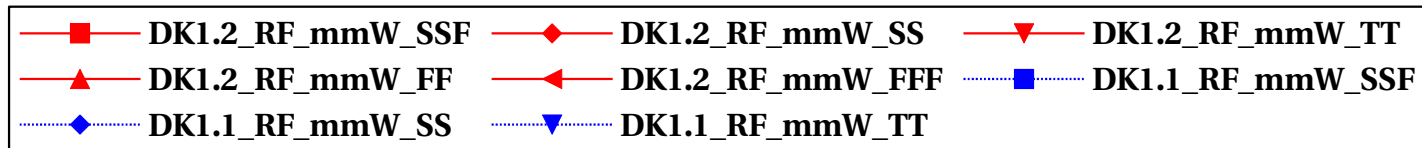
lvtnfet_acc, Vt_lin normalized wrt. Vbs=0 vs Vbs [V]

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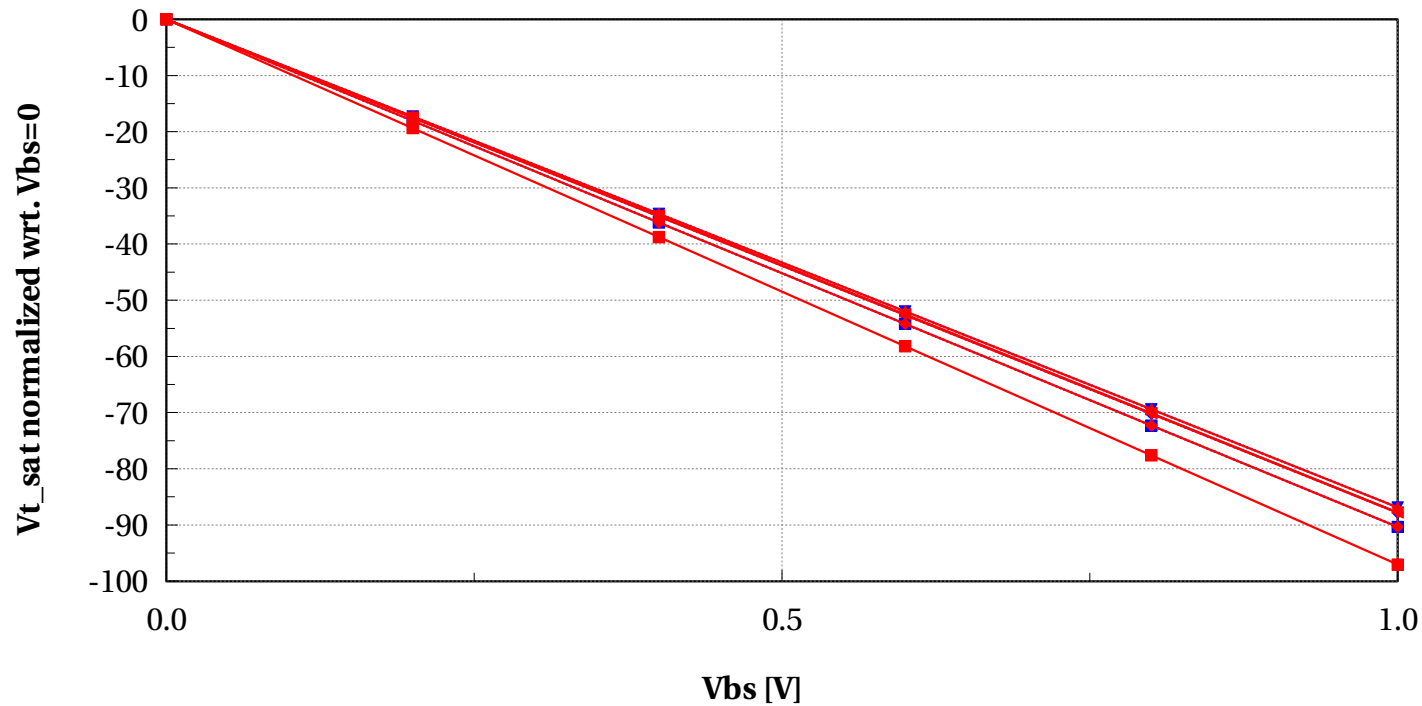
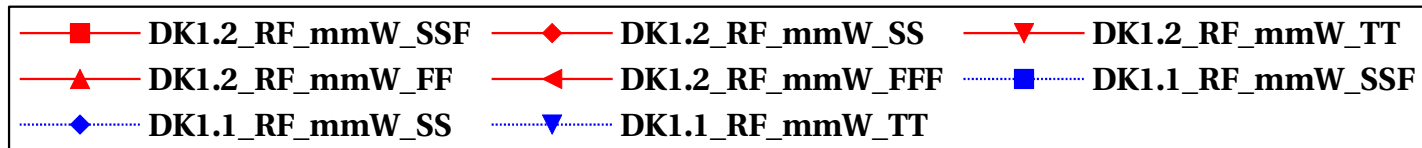
lvtnfet_acc, Ilin normalized wrt. Vbs=0 vs Vbs [V]

w==210e-9 and L==0.03e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



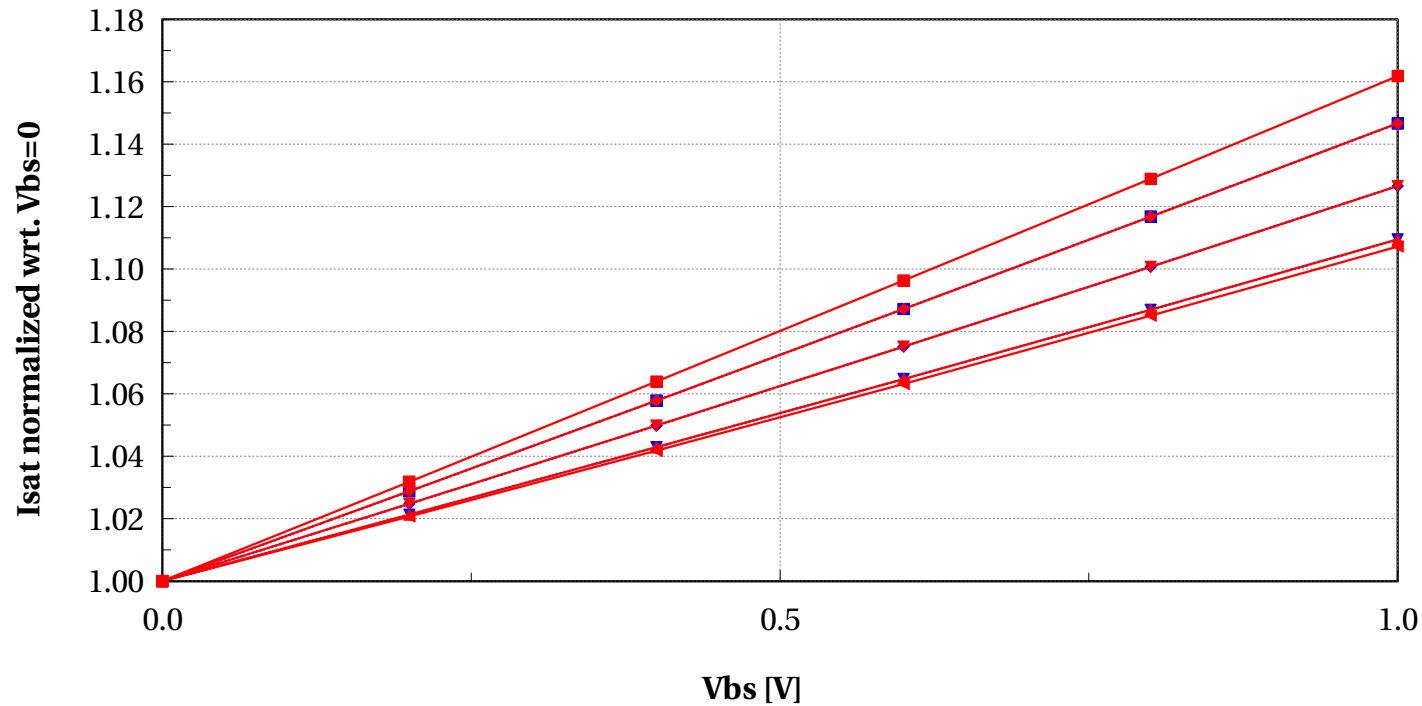
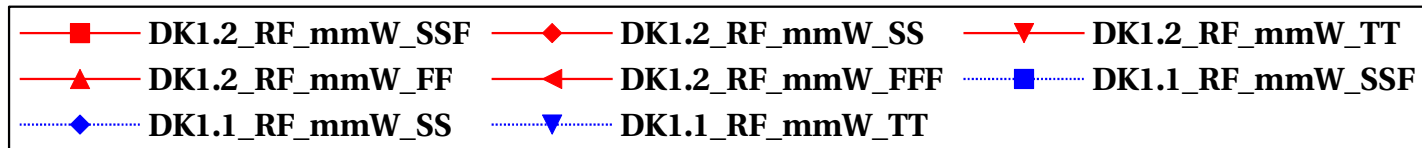
lvtnfet_acc, Vt_sat normalized wrt. Vbs=0 vs Vbs [V]

w==210e-9 and L==0.03e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



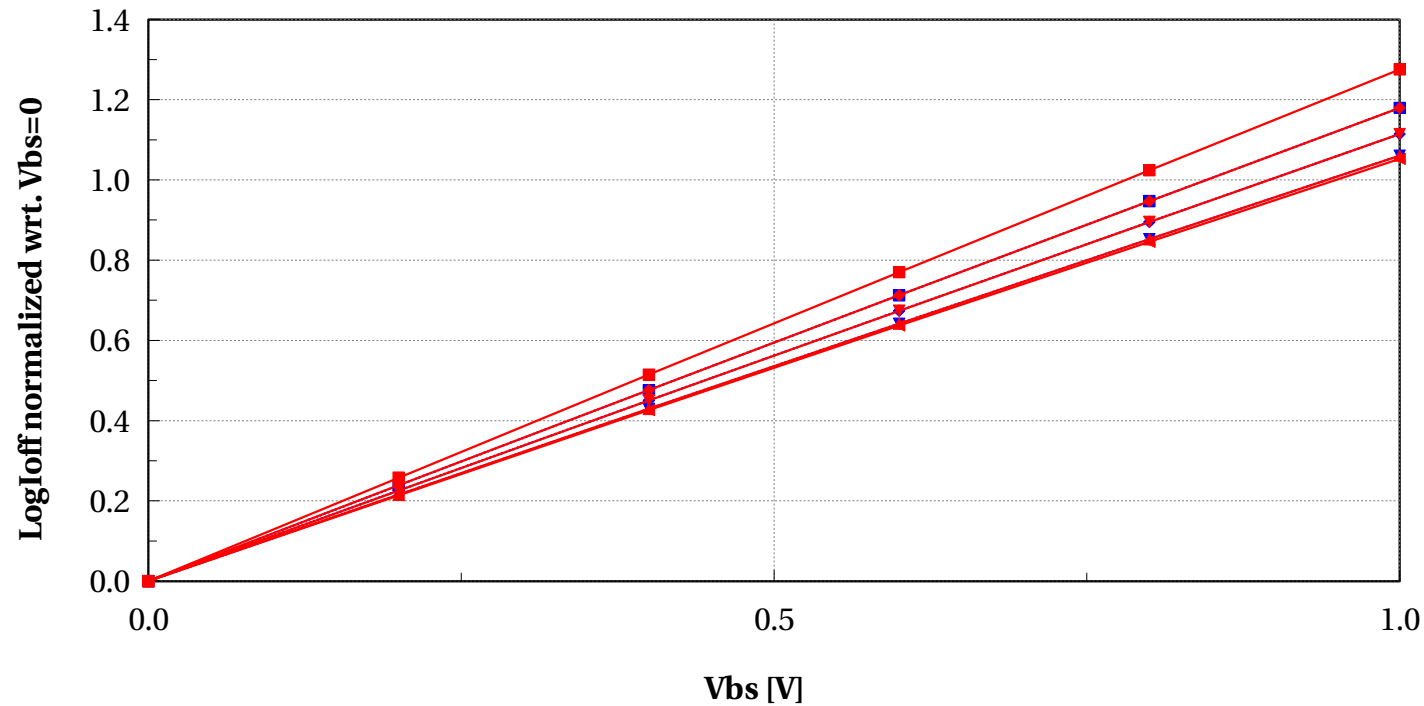
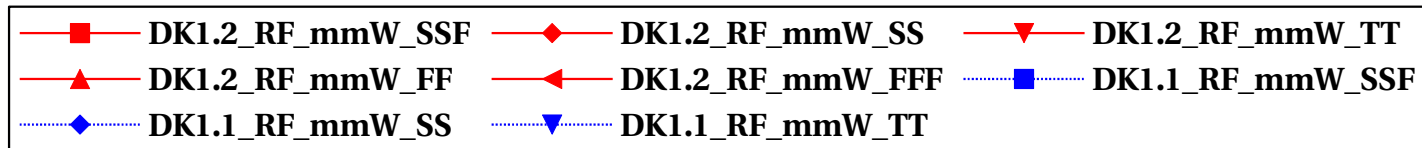
lvtnfet_acc, Isat normalized wrt. Vbs=0 vs Vbs [V]

w==210e-9 and L==0.03e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



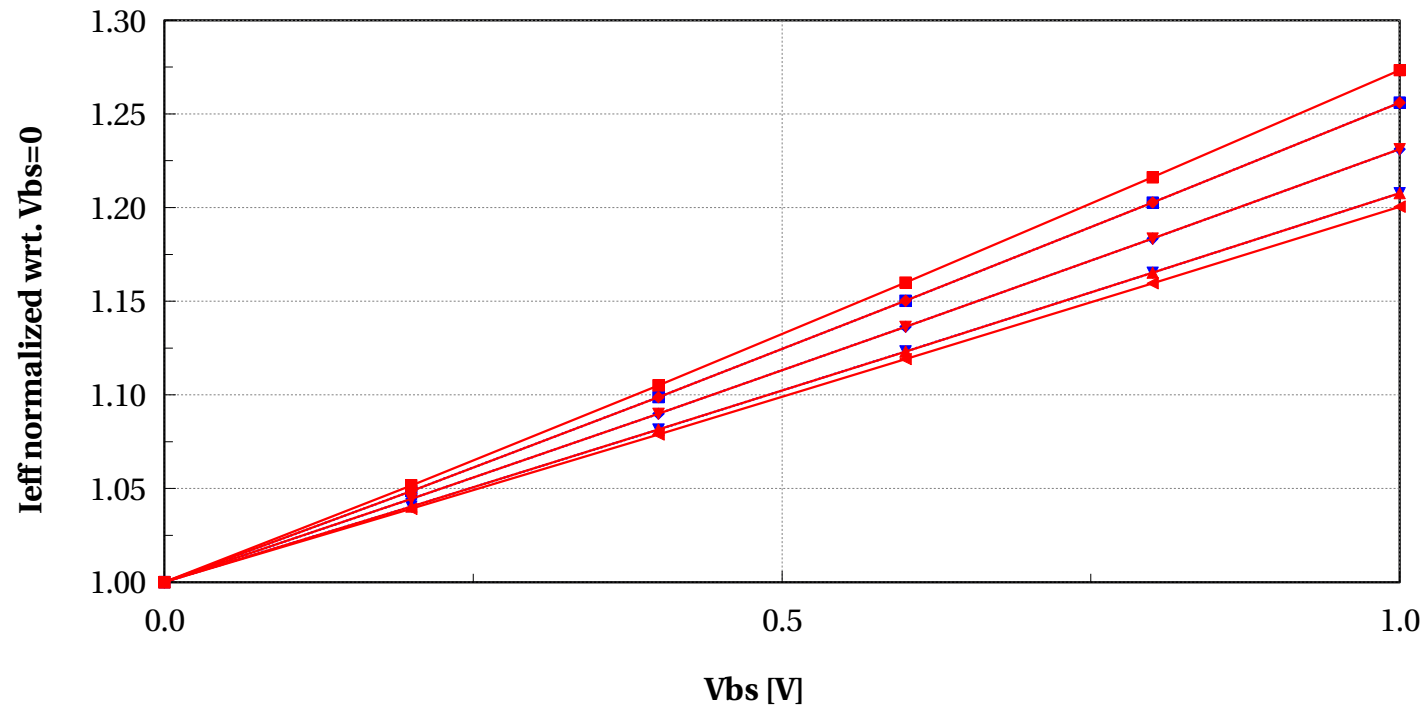
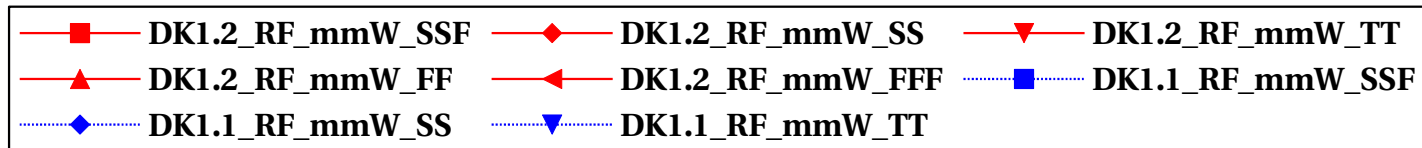
lvtnfet_acc, LogIoff normalized wrt. Vbs=0 vs Vbs [V]

w==210e-9 and L==0.03e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



lvtnfet_acc, Ieff normalized wrt. Vbs=0 vs Vbs [V]

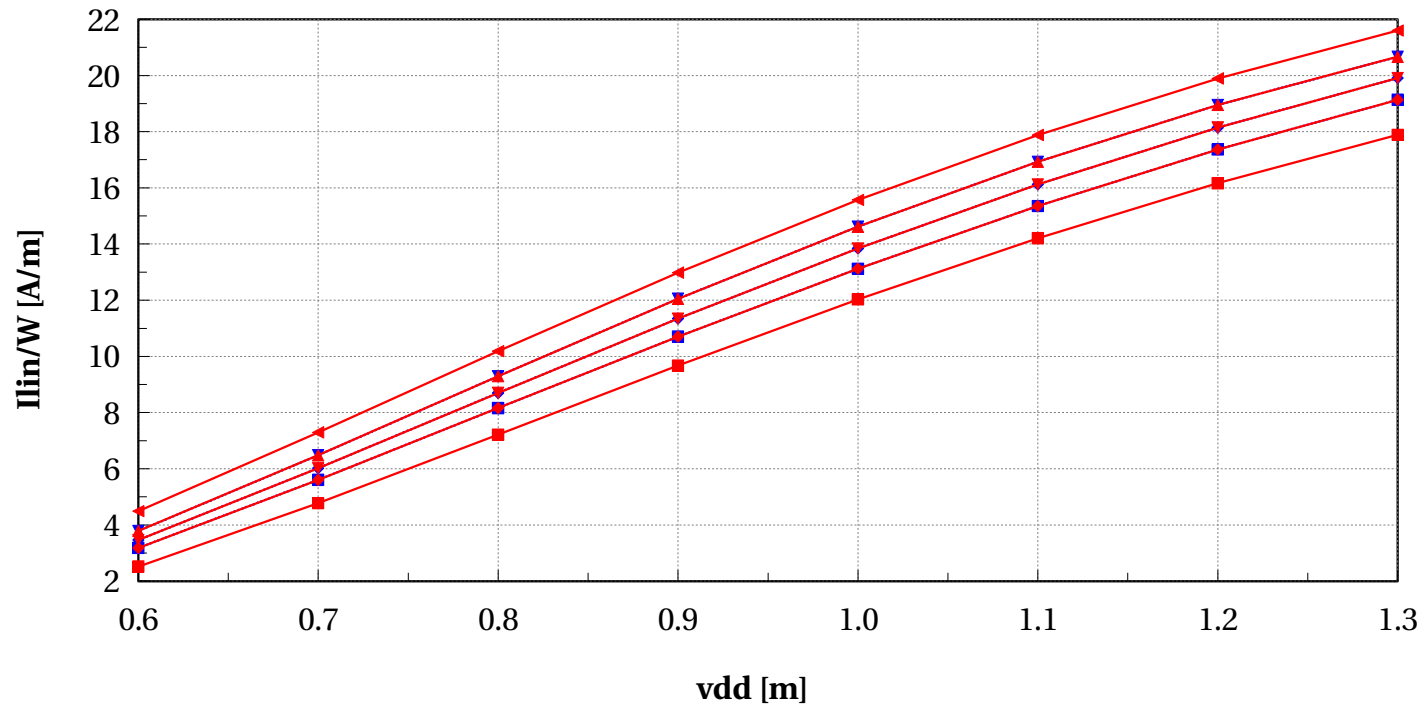
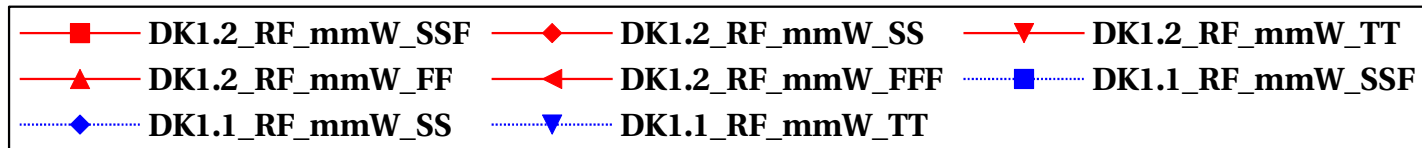
w==210e-9 and L==0.03e-6 and Temp==25 and vbs<1.1 and p_la==0 and Vdd==1



Vdd effect ($l=1\mu\text{m}, w=1\mu\text{m}$)

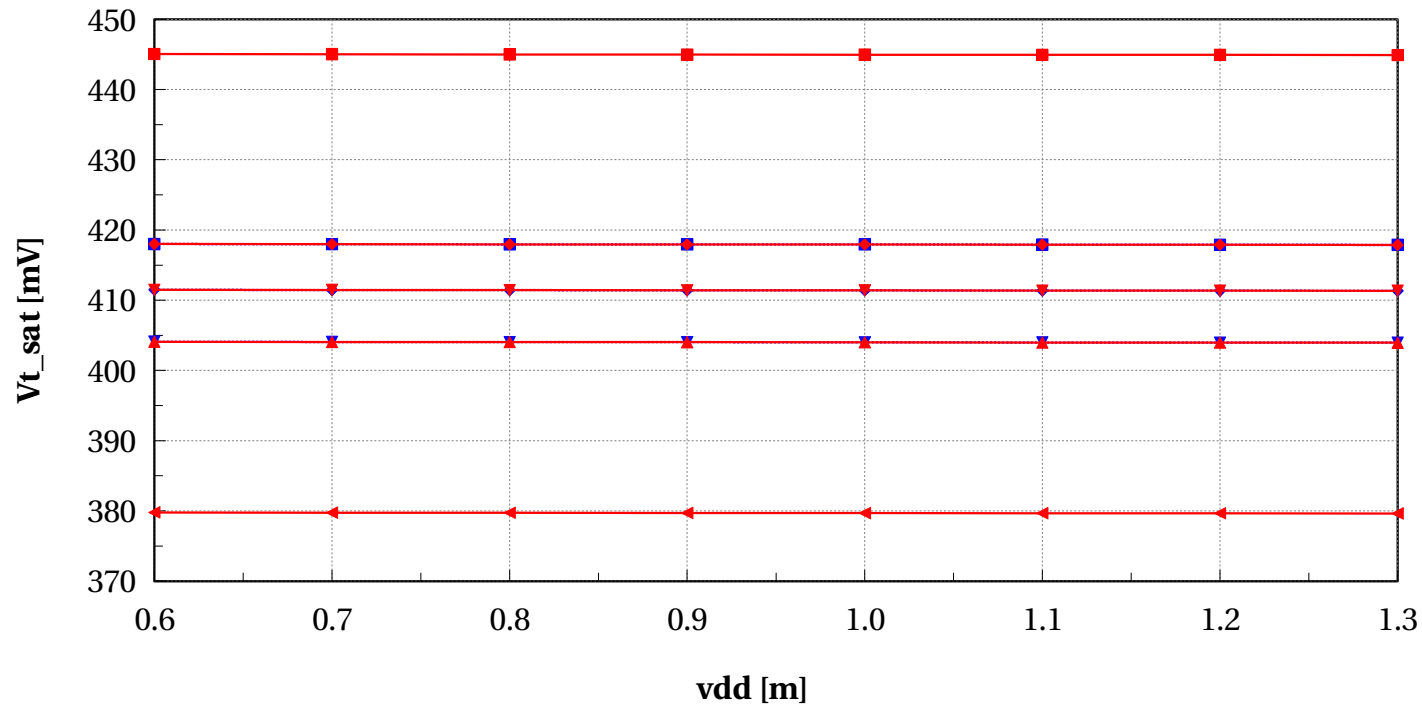
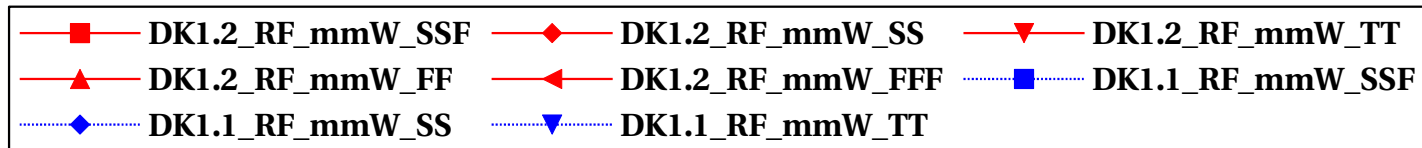
lvtnfet_acc, I_{lin}/W [A/m] vs v_{dd} [m]

$l=1\text{e-}6$ and $w=1\text{e-}6$ and Temp==25 and V_{bs}==0 and p_{la}==0



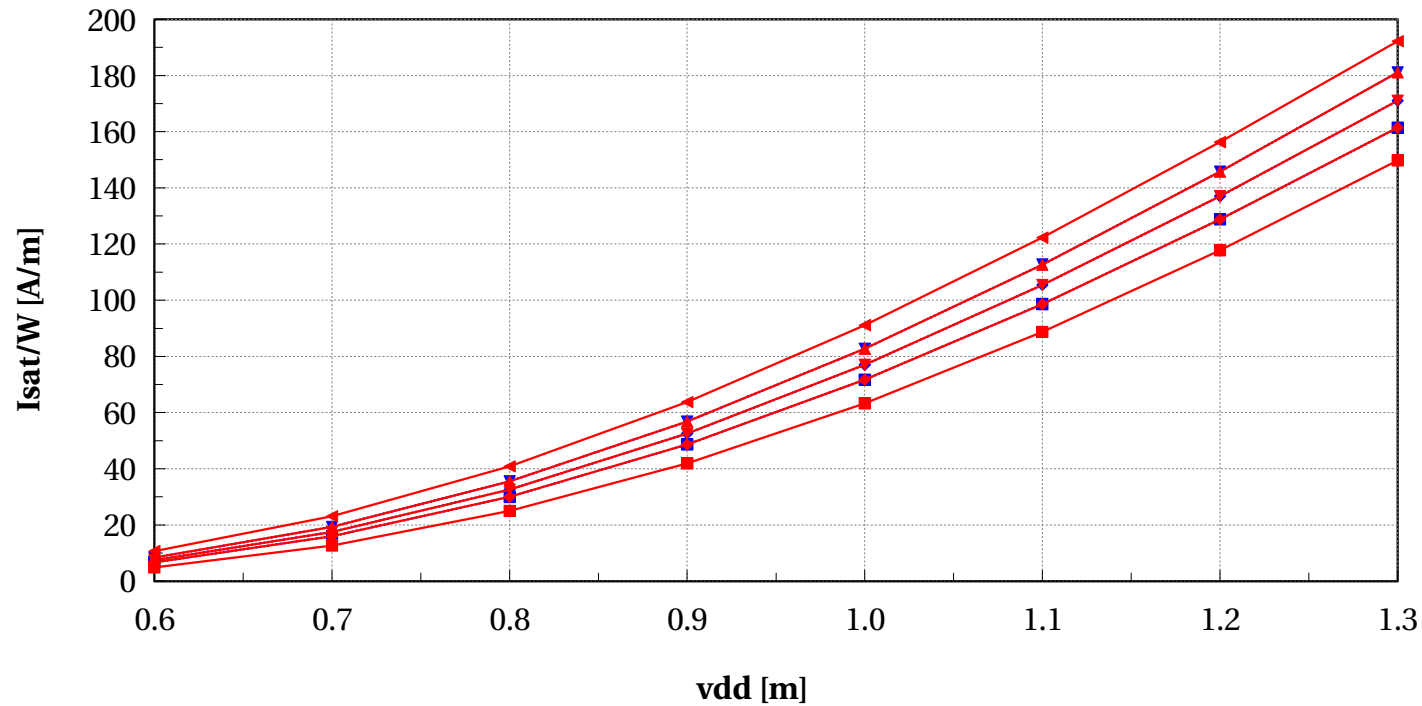
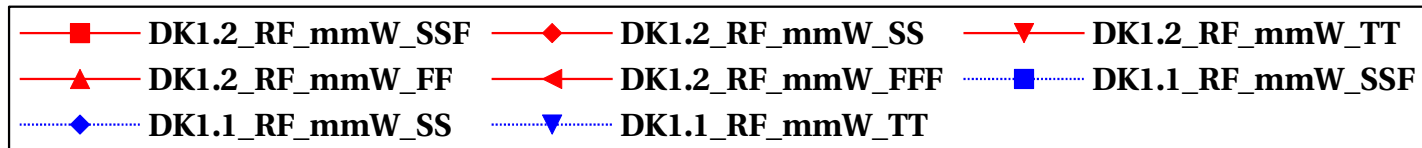
lvtnfet_acc, Vt_sat [mV] vs vdd [m]

$l=1e-6$ and $w=1e-6$ and $Temp=25$ and $Vbs=0$ and $p_la=0$



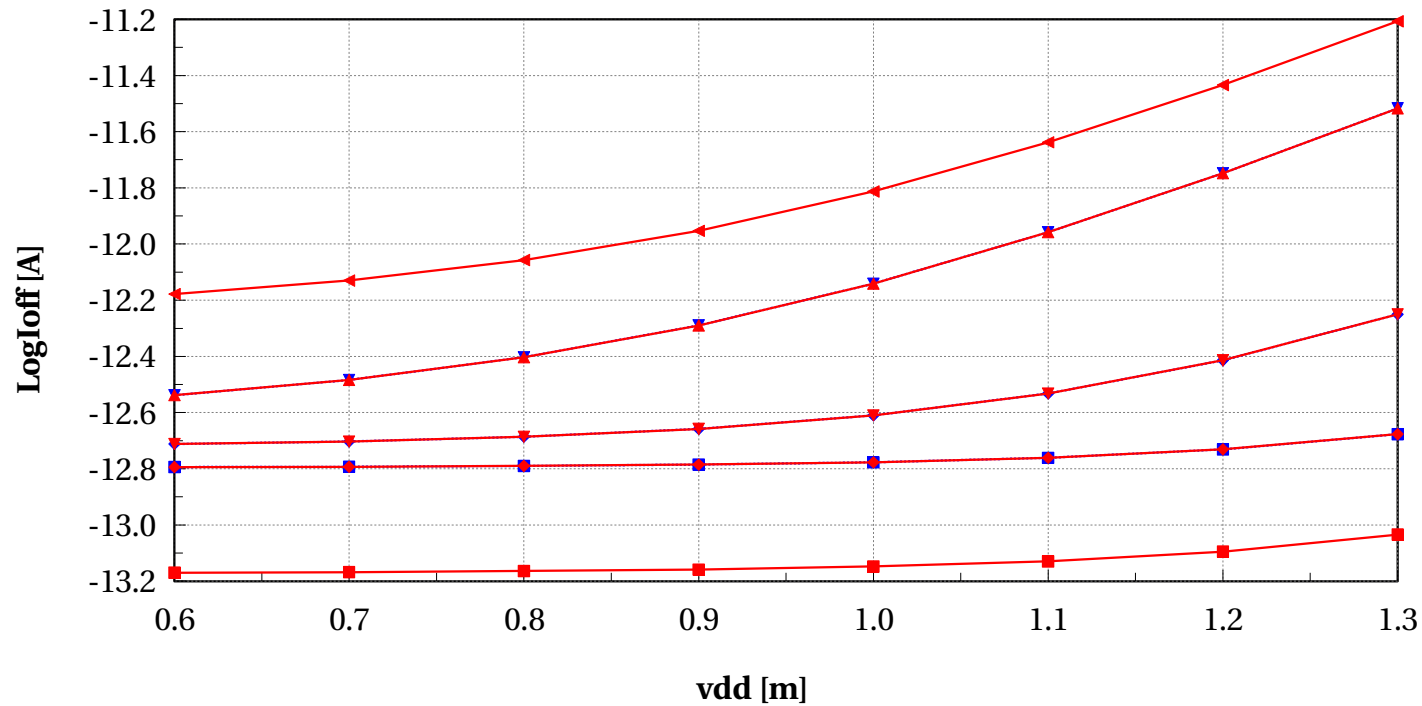
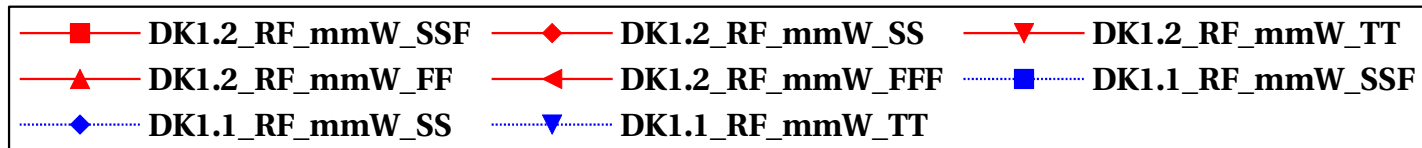
lvtnfet_acc, Isat/W [A/m] vs vdd [m]

$l=1e-6$ and $w=1e-6$ and Temp==25 and Vbs==0 and p_la==0



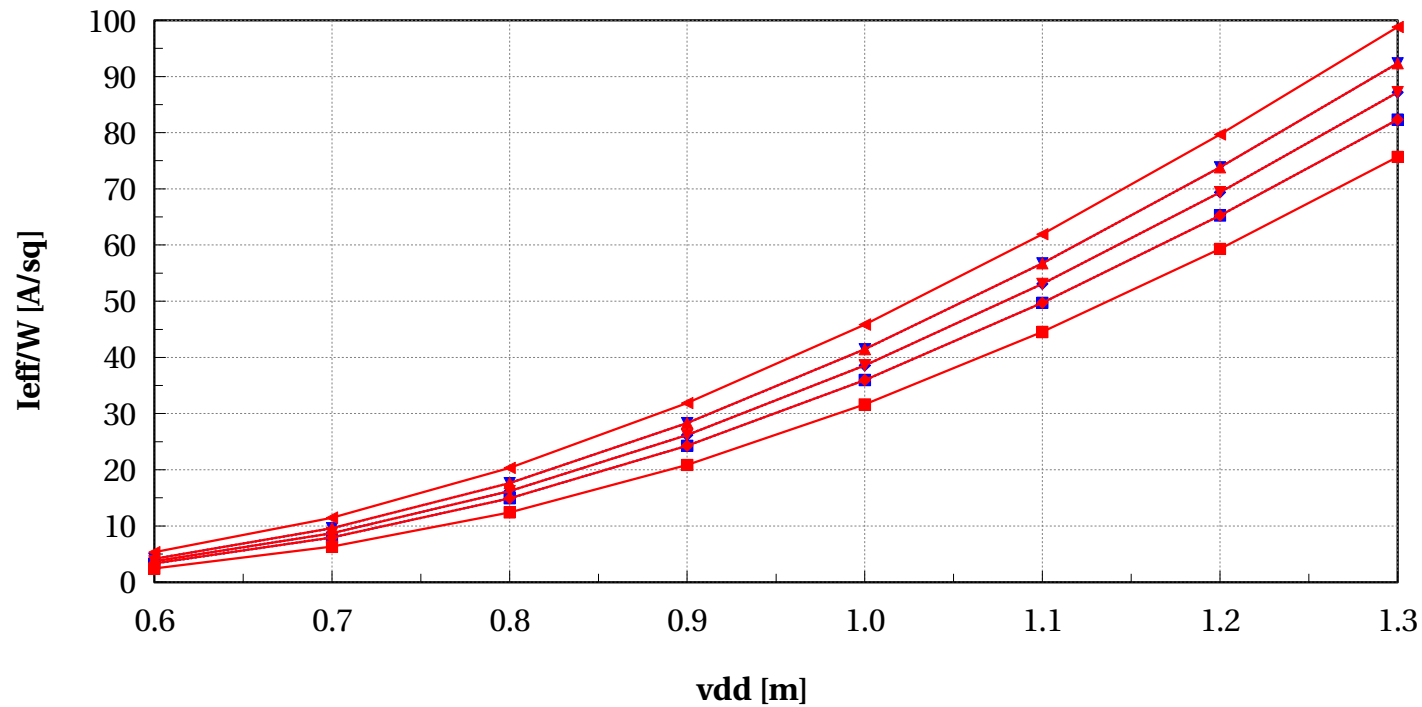
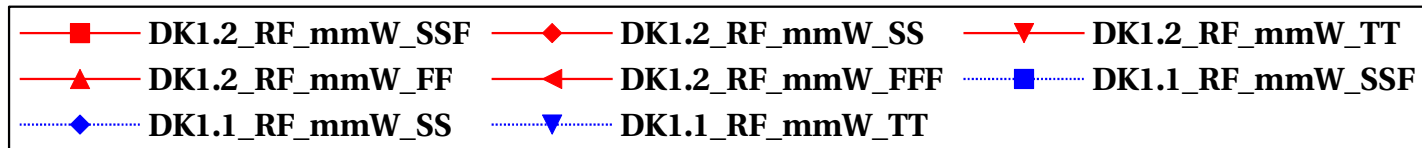
lvtnfet_acc, LogIoff [A] vs vdd [m]

$l=1e-6$ and $w=1e-6$ and $Temp=25$ and $Vbs=0$ and $p_la=0$



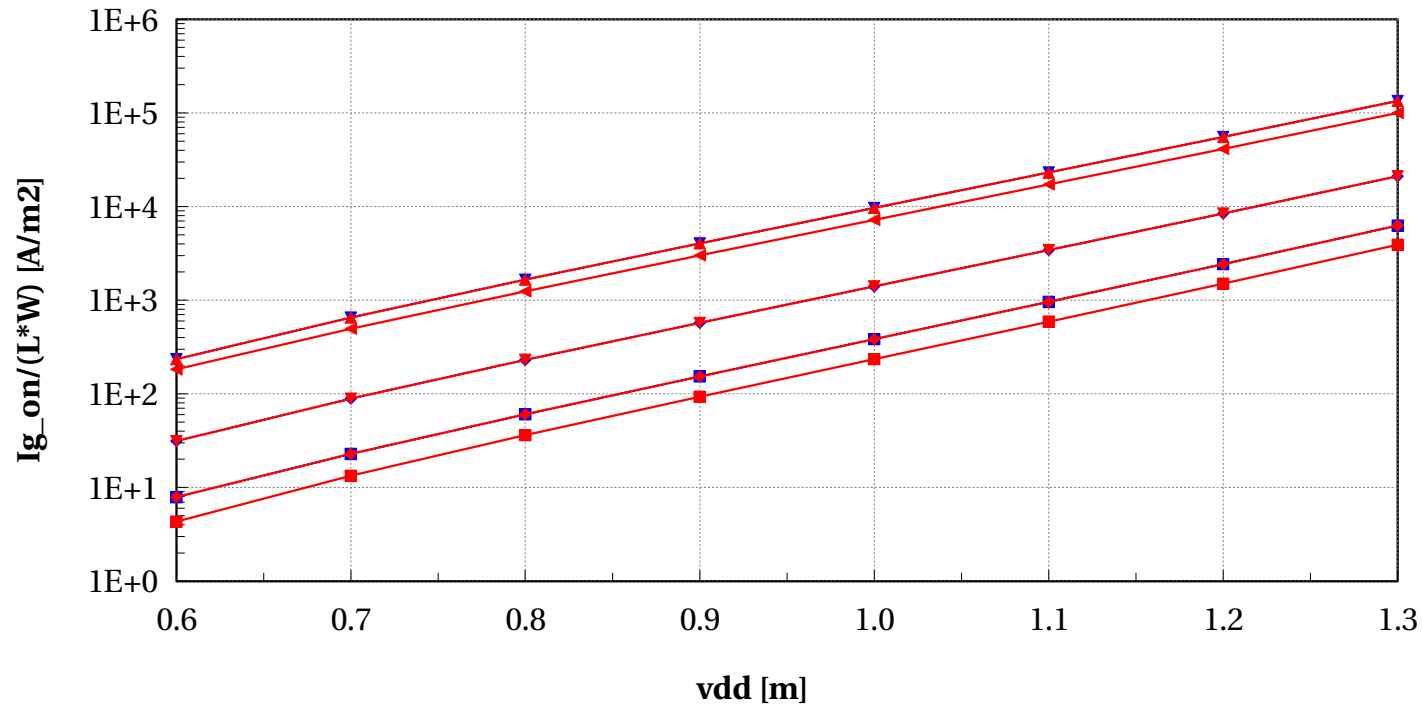
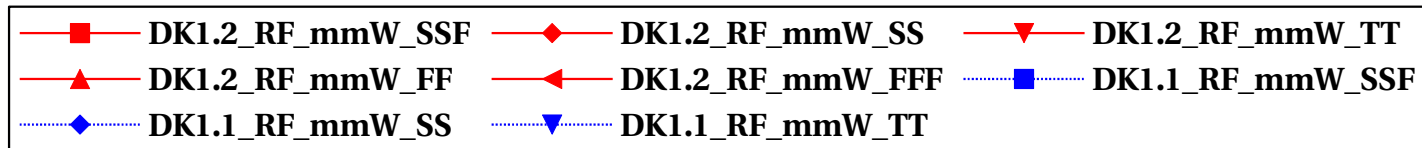
lvtnfet_acc, I_{eff}/W [A/sq] vs v_{dd} [m]

$l=1e-6$ and $w=1e-6$ and Temp==25 and V_{bs}==0 and p_{la}==0



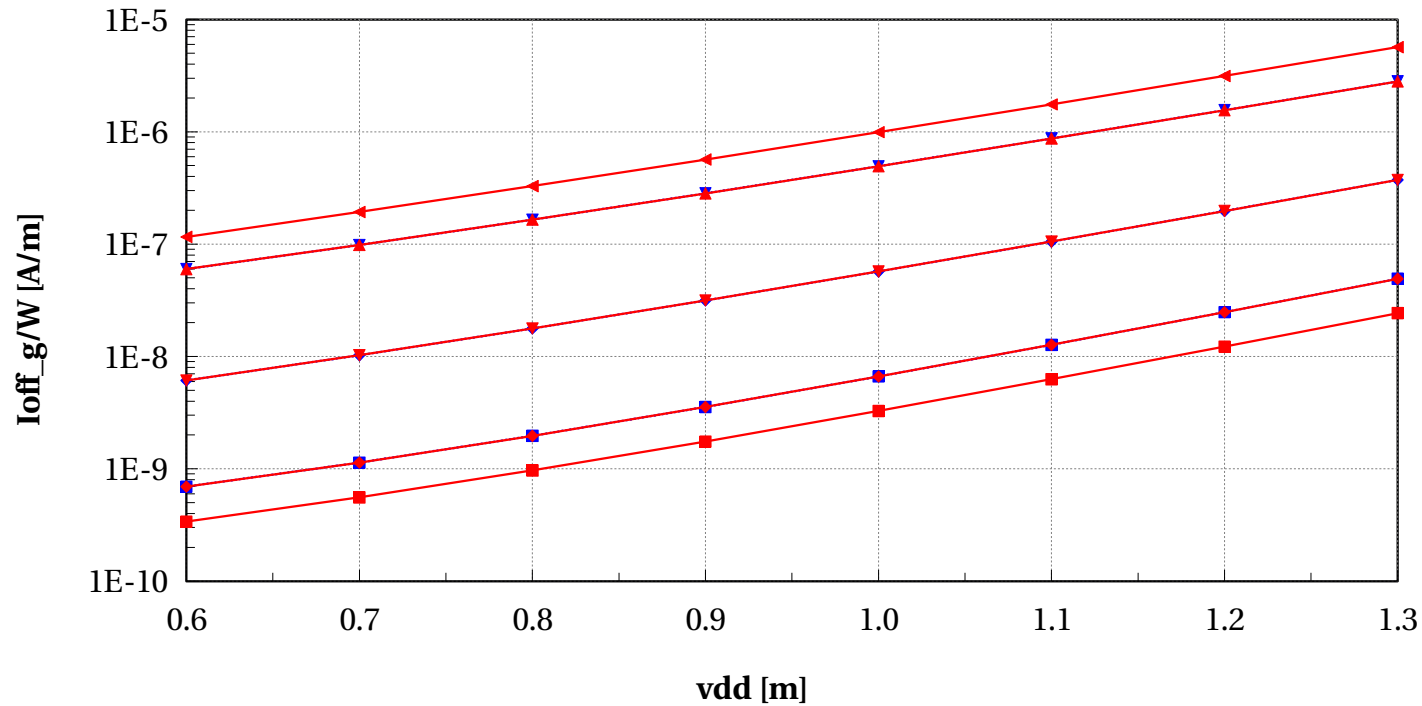
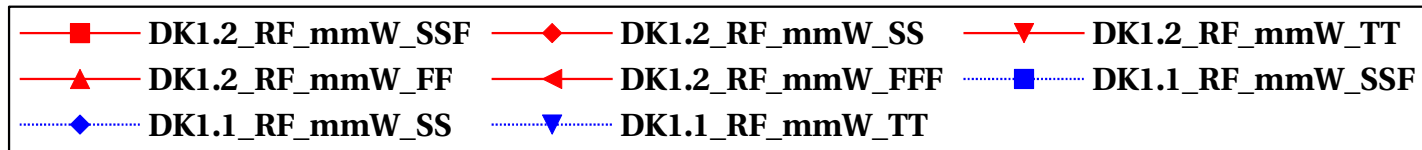
lvtnfet_acc, Ig_on/(L*W) [A/m2] vs vdd [m]

$l=1e-6$ and $w=1e-6$ and $Temp=25$ and $Vbs=0$ and $p_la=0$



lvtnfet_acc, Ioff_g/W [A/m] vs vdd [m]

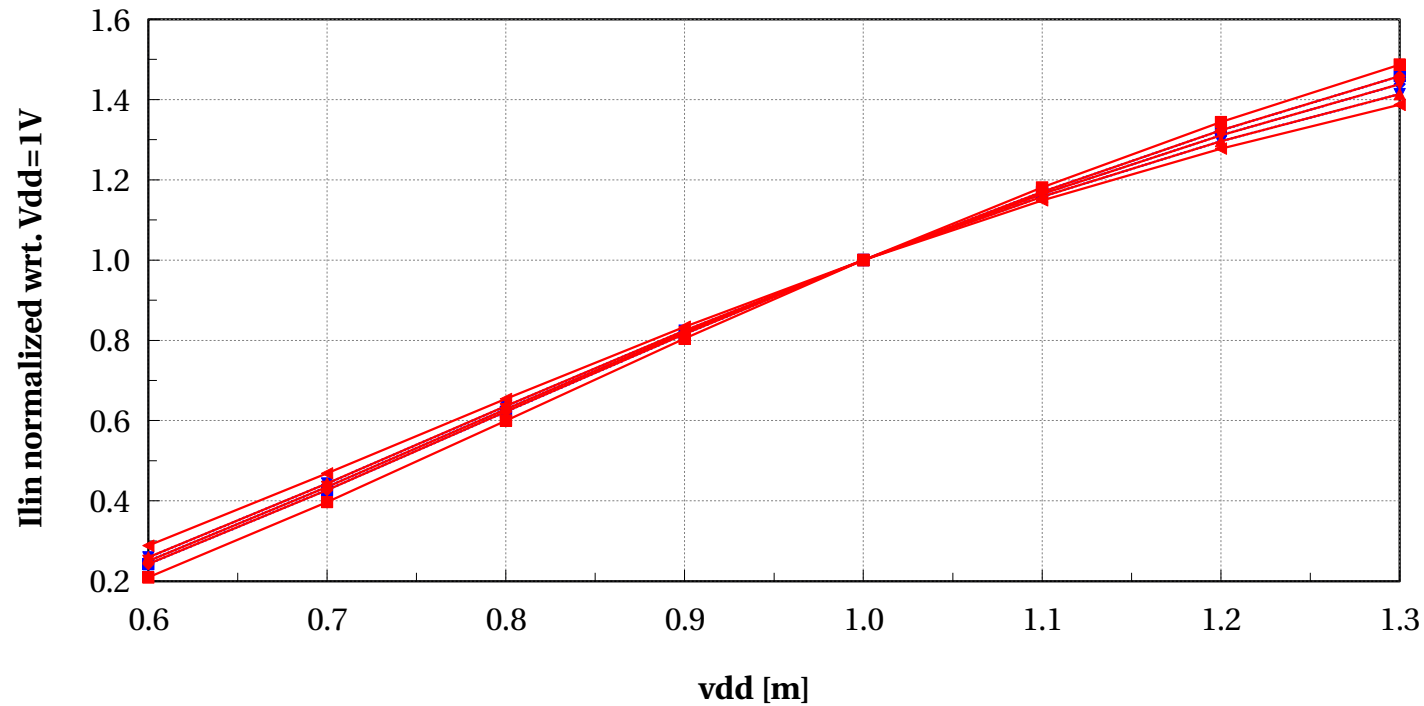
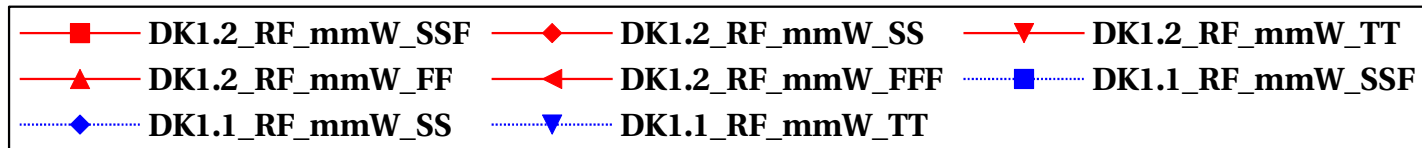
$l=1e-6$ and $w=1e-6$ and $Temp=25$ and $Vbs=0$ and $p_{la}=0$



Vdd effect normalized ($l=1\mu\text{m}, w=1\mu\text{m}$)

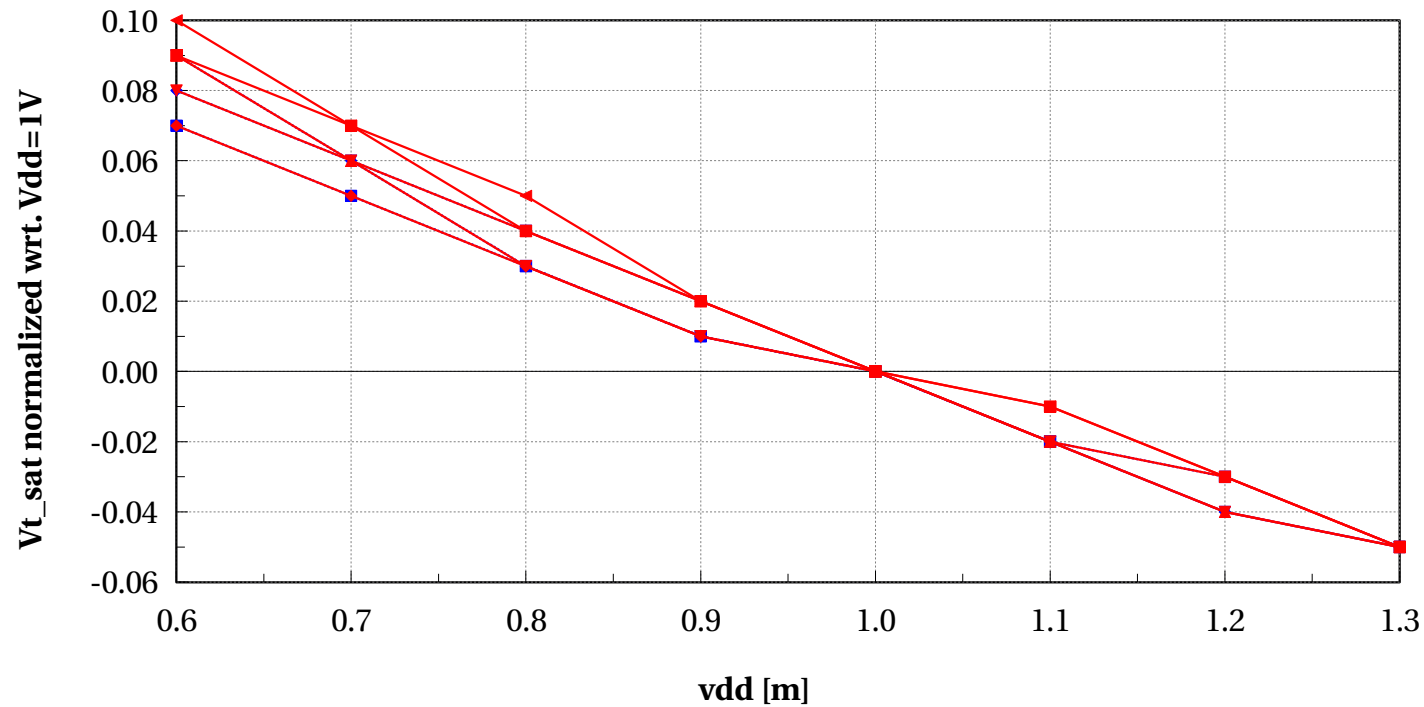
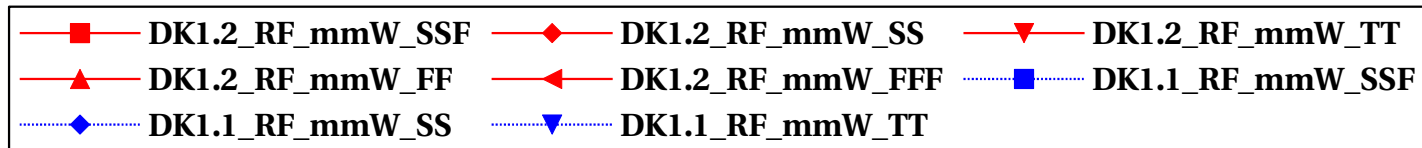
lvtnfet_acc, Ilin normalized wrt. Vdd=1V vs vdd [m]

$l=1\text{e-}6$ and $w=1\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=0$ and $p_{la}=0$



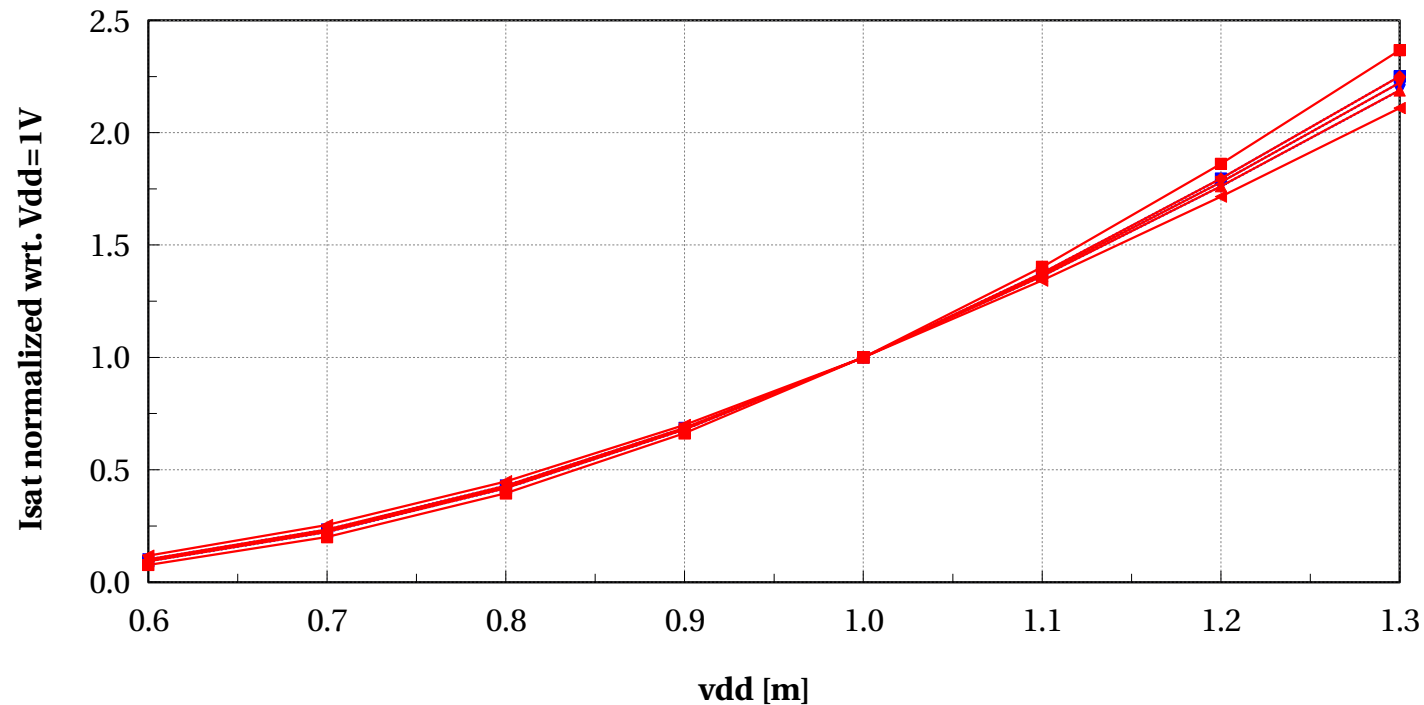
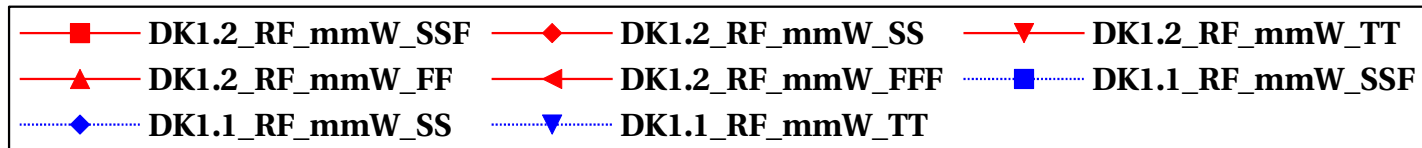
lvtnfet_acc, Vt_sat normalized wrt. Vdd=1V vs vdd [m]

$l=1e-6$ and $w=1e-6$ and $Temp=25$ and $Vbs=0$ and $p_{la}=0$



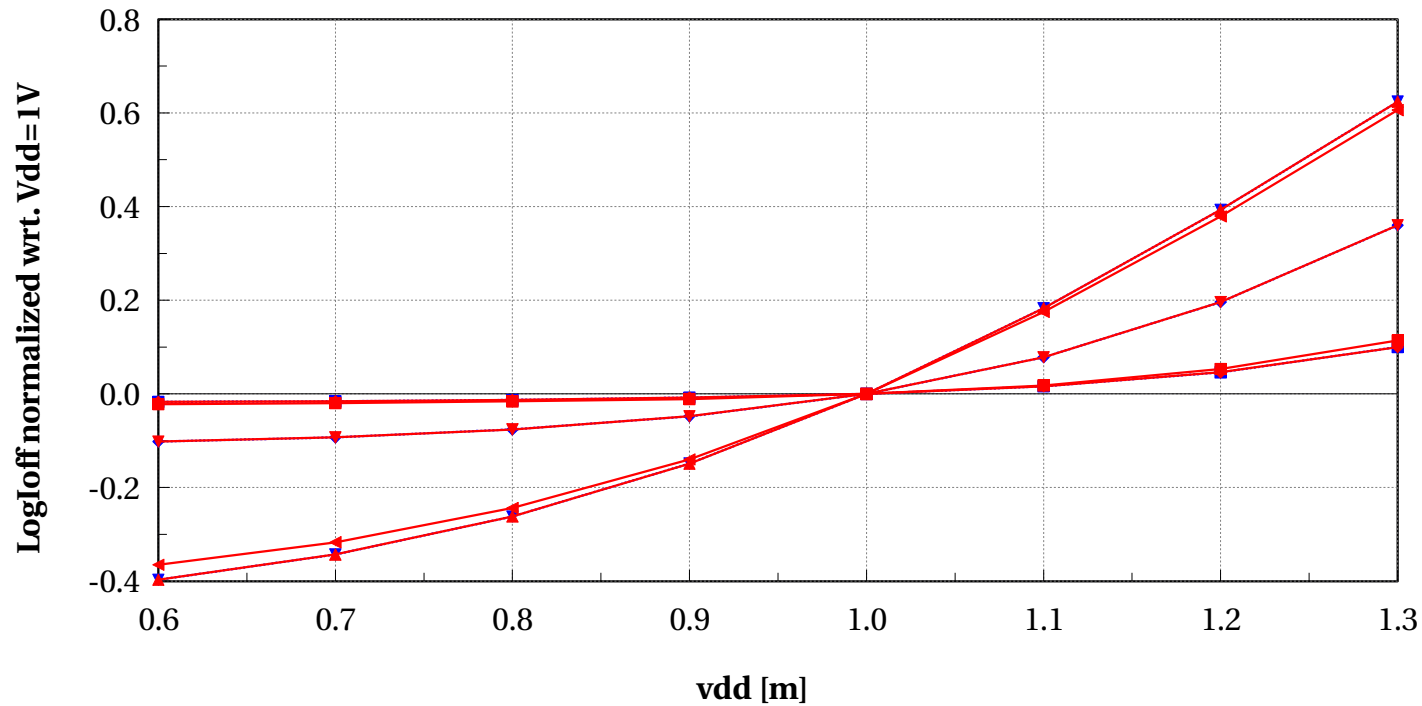
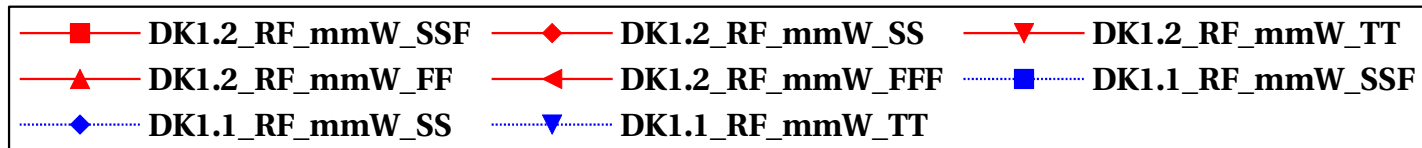
lvtnfet_acc, Isat normalized wrt. Vdd=1V vs vdd [m]

$l=1\text{e-}6$ and $w=1\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=0$ and $p_{la}=0$



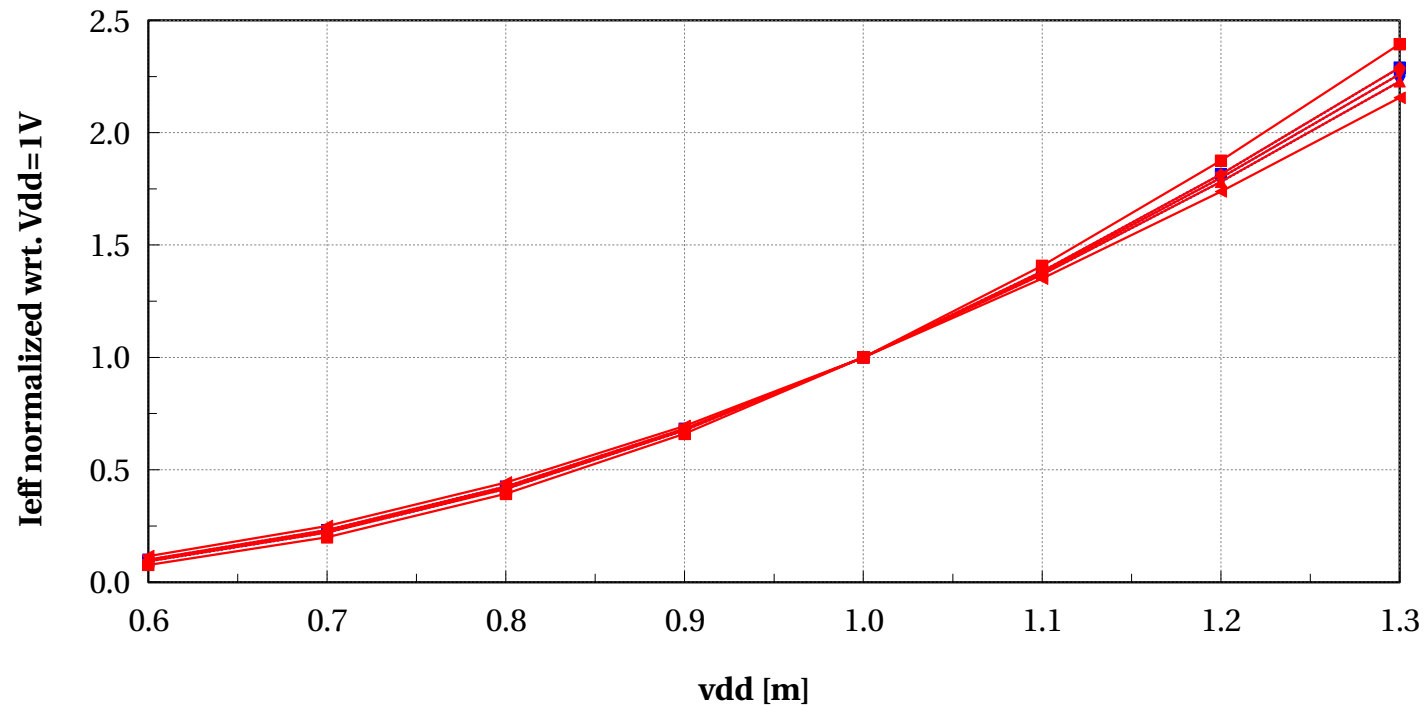
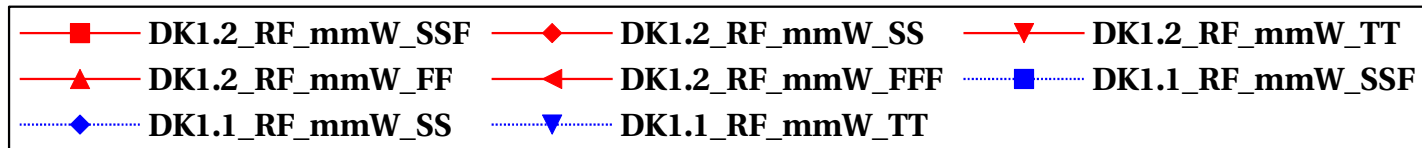
lvtnfet_acc, Logloff normalized wrt. Vdd=1V vs vdd [m]

$l=1e-6$ and $w=1e-6$ and Temp==25 and Vbs==0 and p_la==0



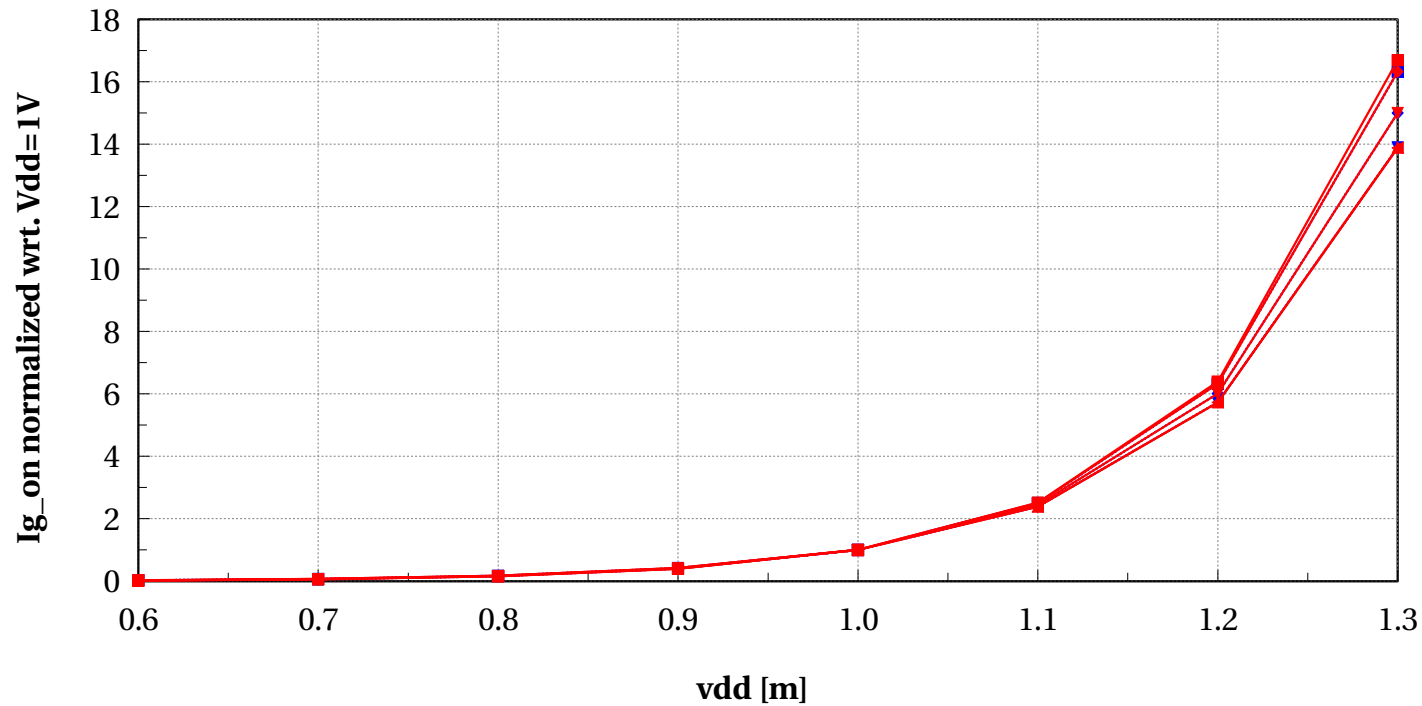
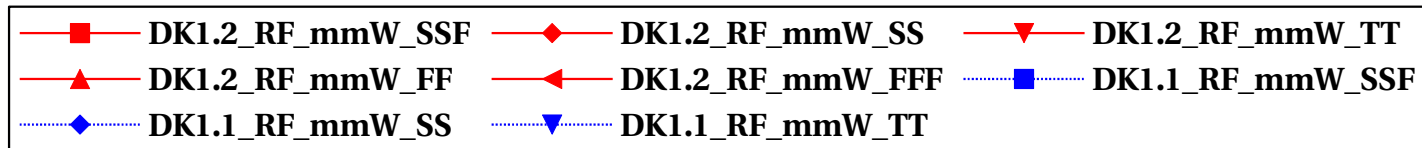
lvtnfet_acc, Ieff normalized wrt. Vdd=1V vs vdd [m]

$l=1\text{e-}6$ and $w=1\text{e-}6$ and Temp==25 and Vbs==0 and p_la==0



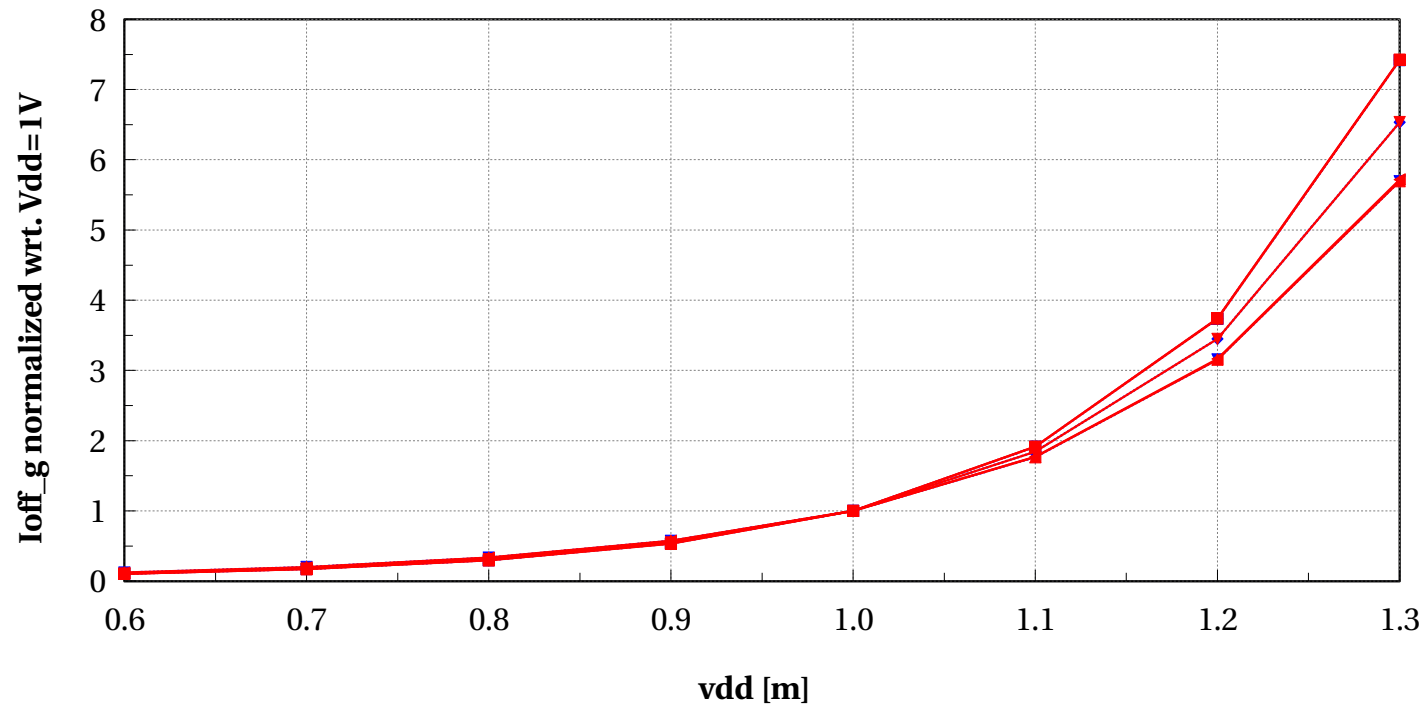
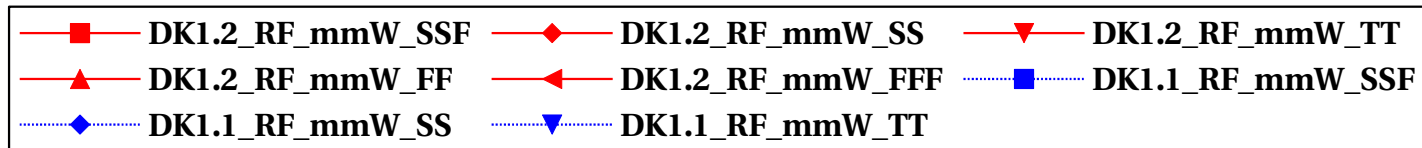
lvtnfet_acc, Ig_on normalized wrt. Vdd=1V vs vdd [m]

$l=1e-6$ and $w=1e-6$ and $Temp=25$ and $Vbs=0$ and $p_{la}=0$



lvtnfet_acc, Ioff_g normalized wrt. Vdd=1V vs vdd [m]

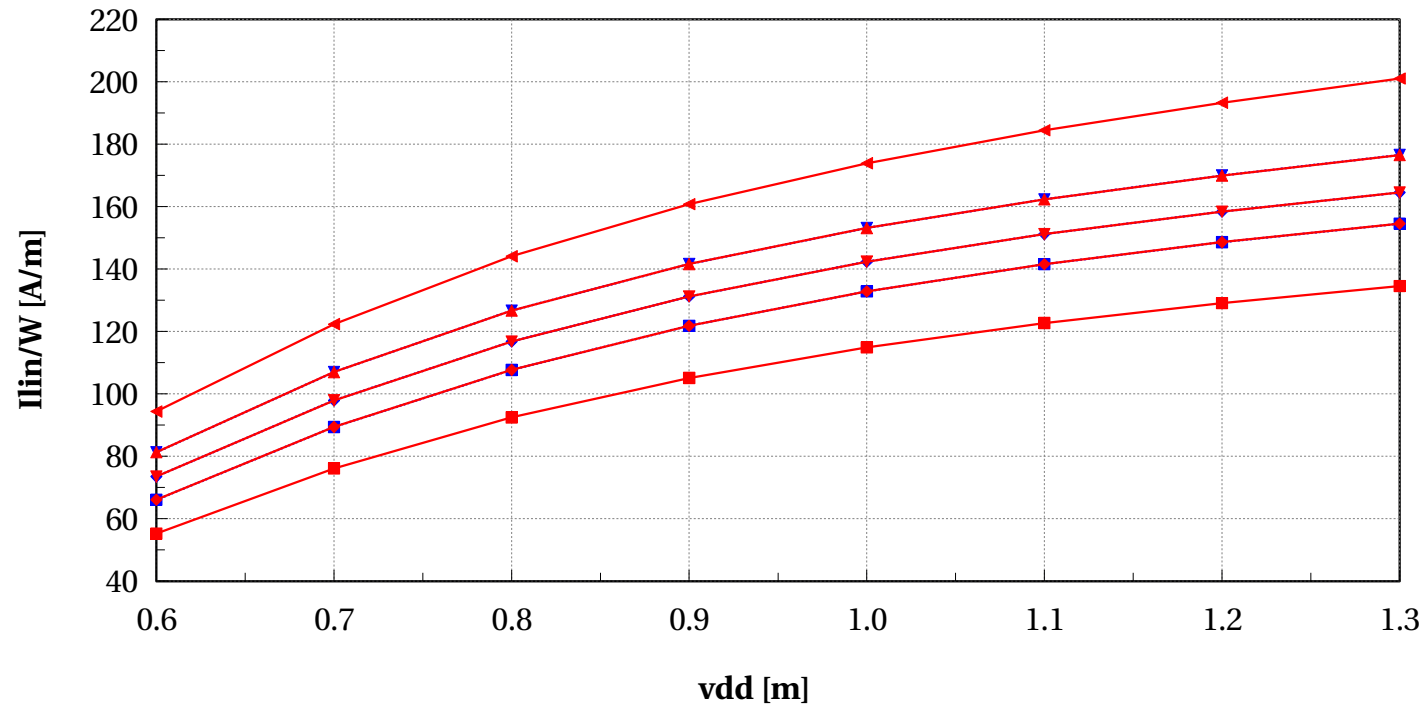
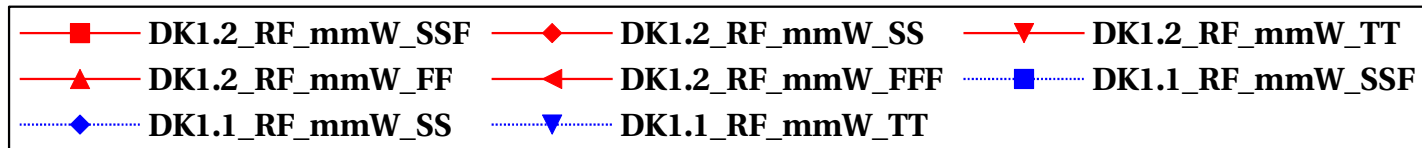
$l=1e-6$ and $w=1e-6$ and $Temp=25$ and $Vbs=0$ and $p_{la}=0$



Vdd effect ($l=30\text{e-}9$ $w=210\text{e-}9$)

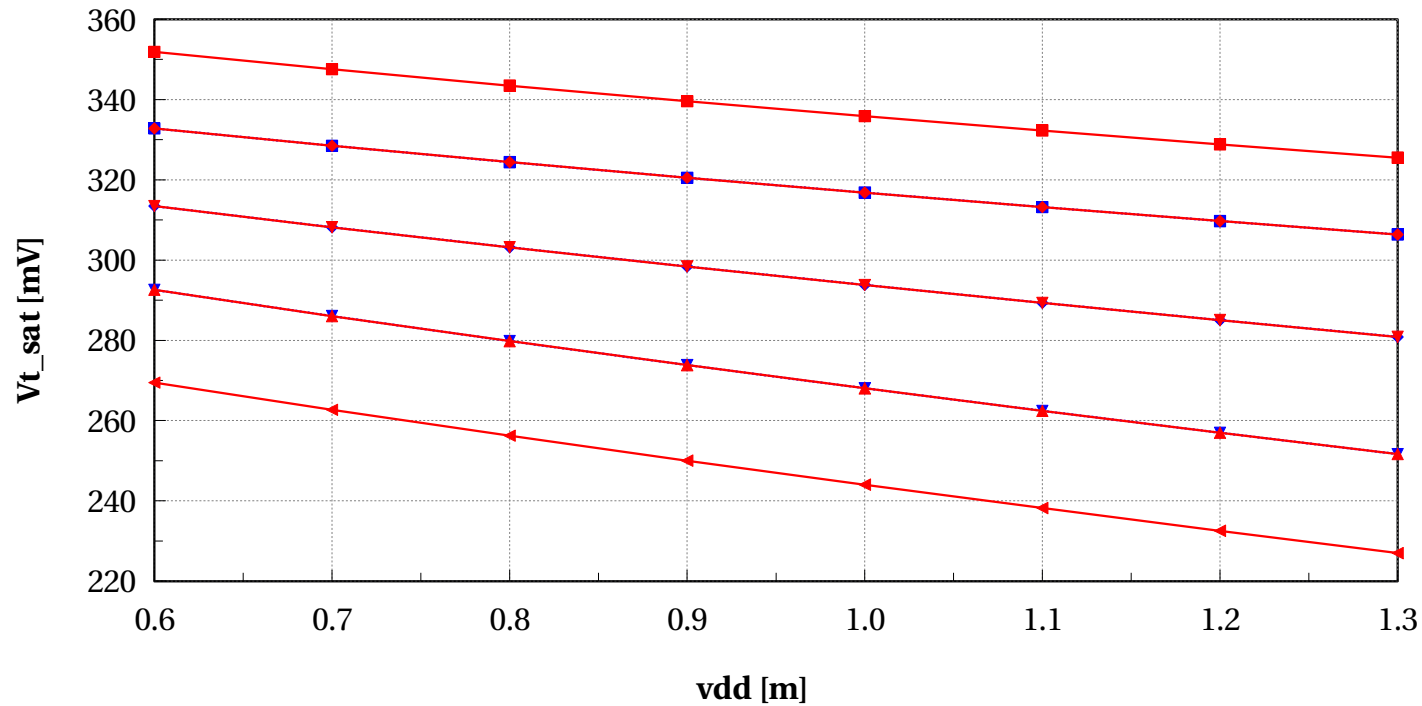
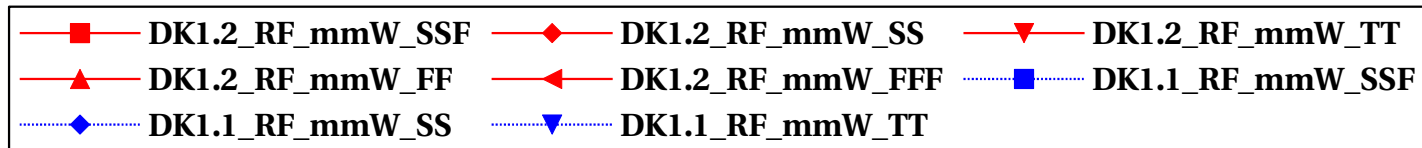
lvtnfet_acc, I_{lin}/W [A/m] vs v_{dd} [m]

$l=30\text{e-}9$ and $w=0.21\text{e-}6$ and Temp= 25 and $V_{bs}=0$ and $p_{la}=0$



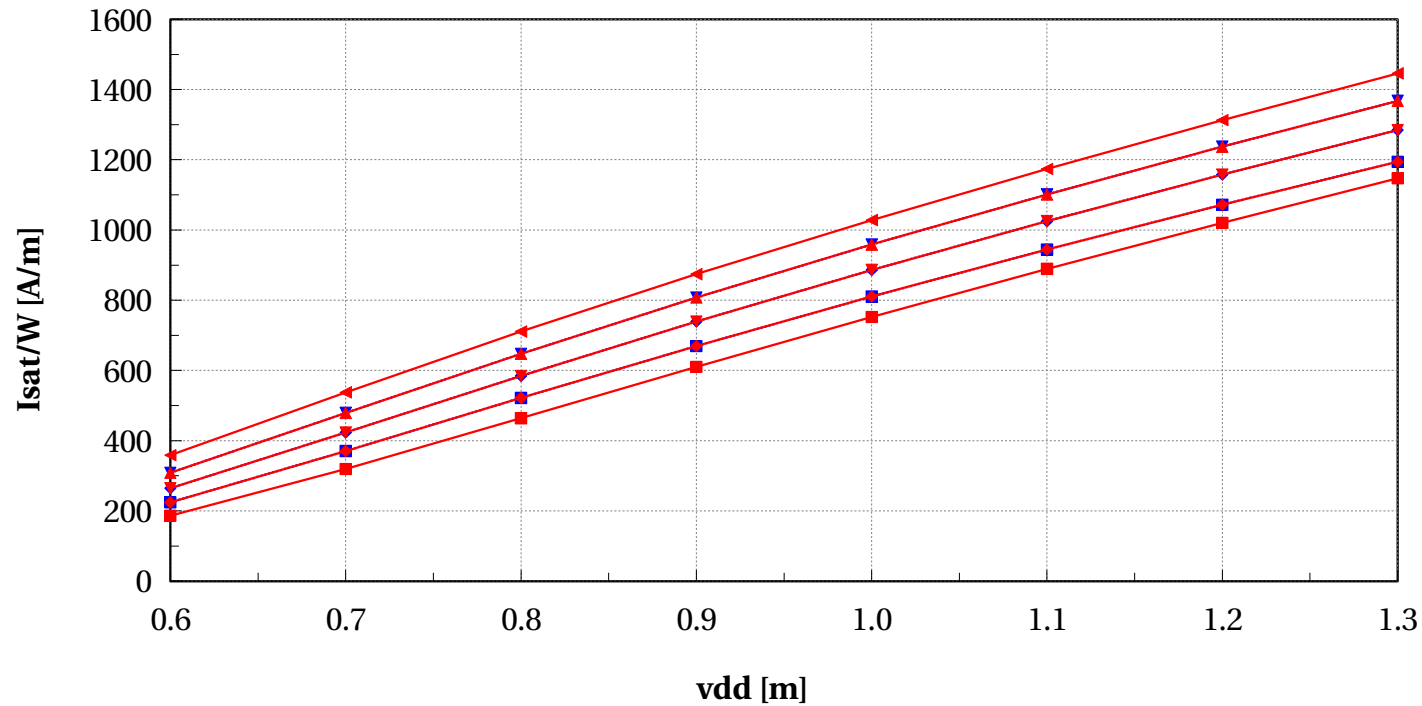
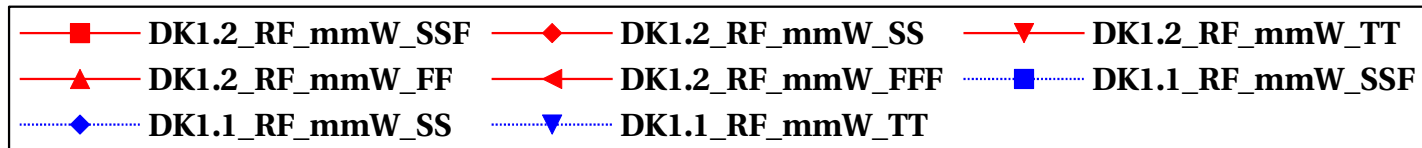
lvtnfet_acc, Vt_sat [mV] vs vdd [m]

$l=30\text{e-}9$ and $w=0.21\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=0$ and $p_{la}=0$



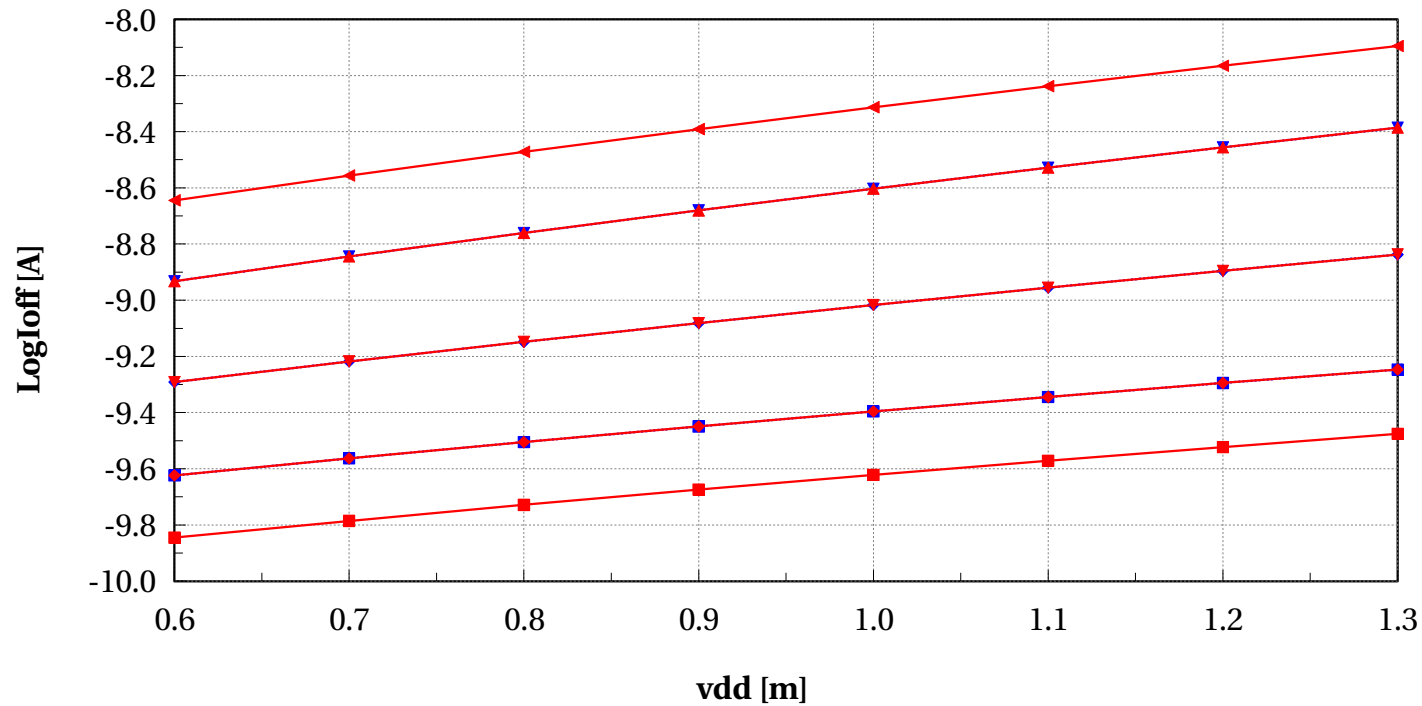
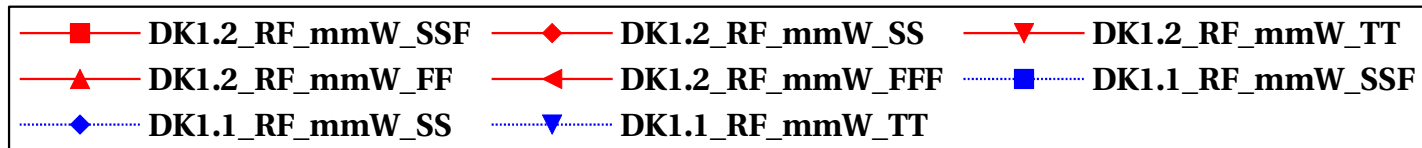
lvtnfet_acc, Isat/W [A/m] vs vdd [m]

$l=30\text{e-}9$ and $w=0.21\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=0$ and $p_{la}=0$



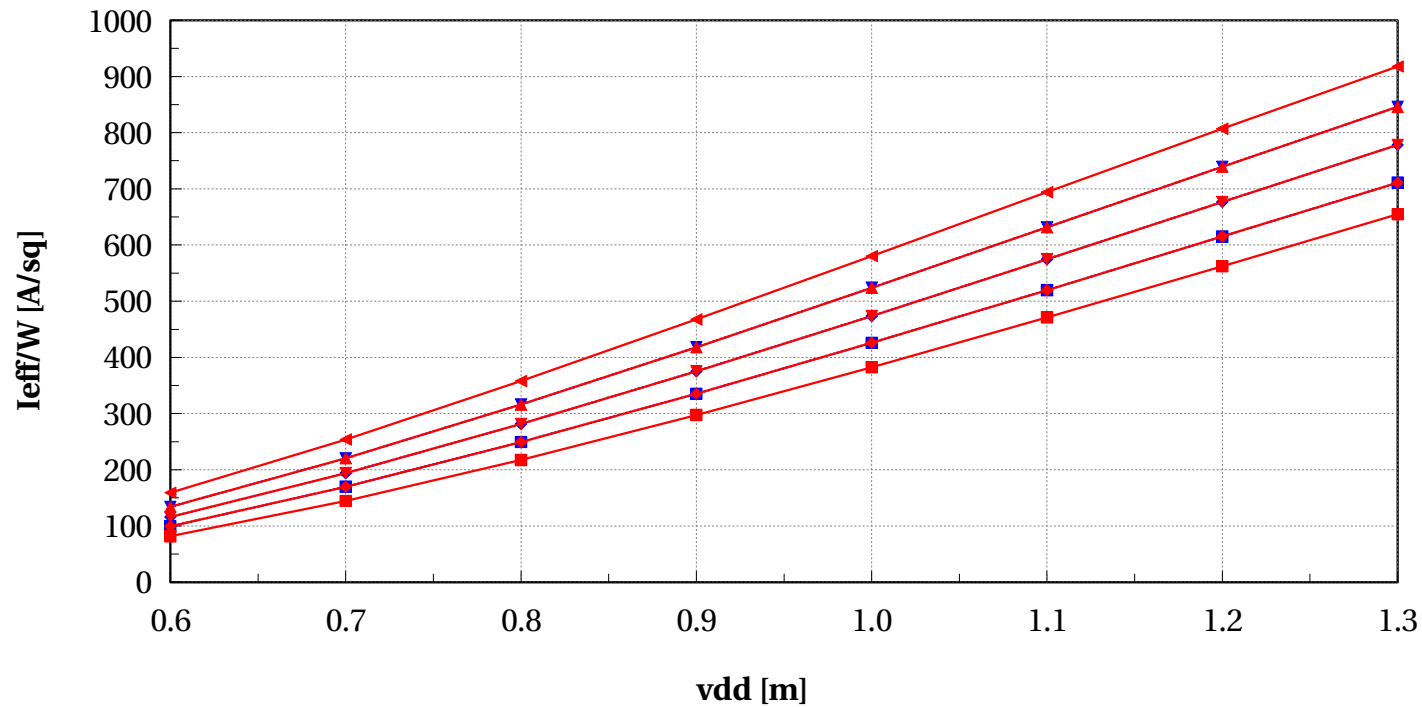
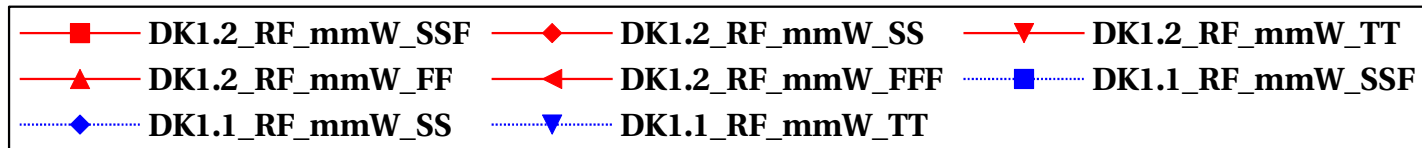
lvtnfet_acc, LogIoff [A] vs vdd [m]

$l=30\text{e-}9$ and $w=0.21\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=0$ and $p_{la}=0$



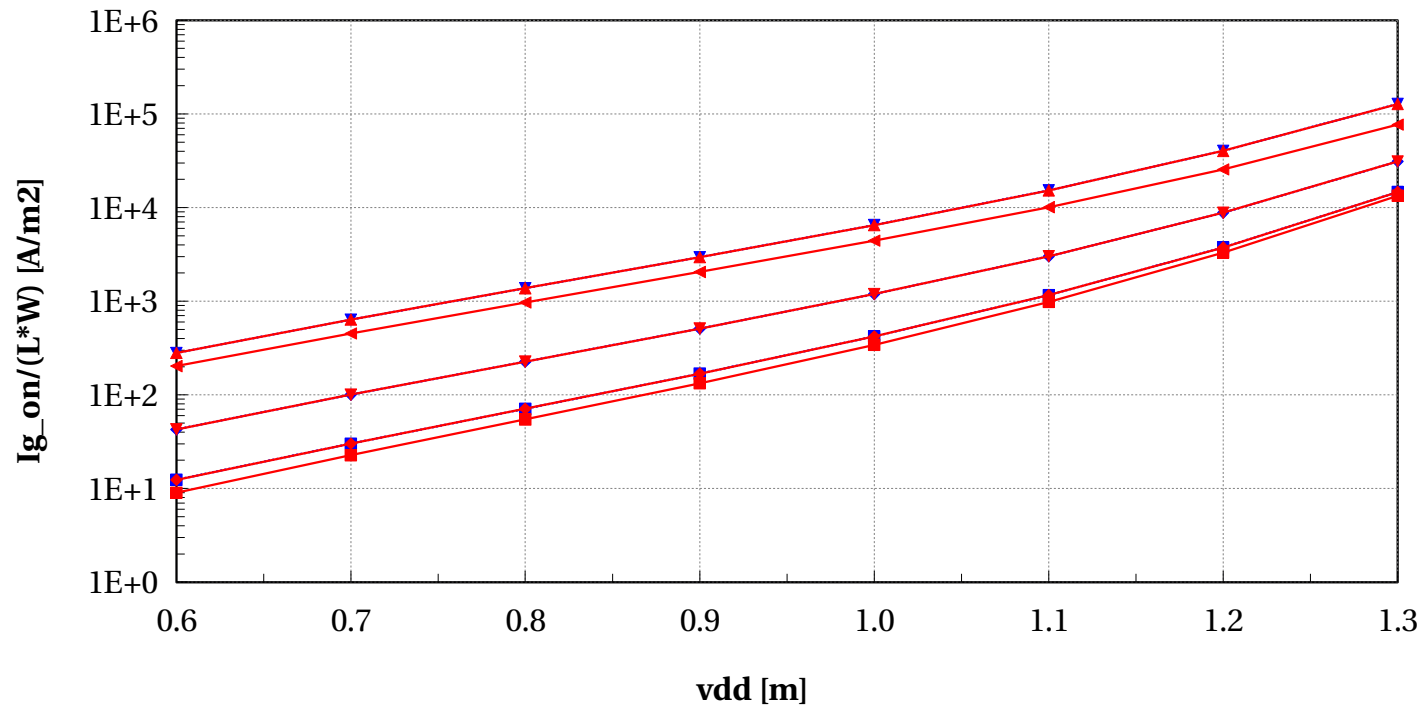
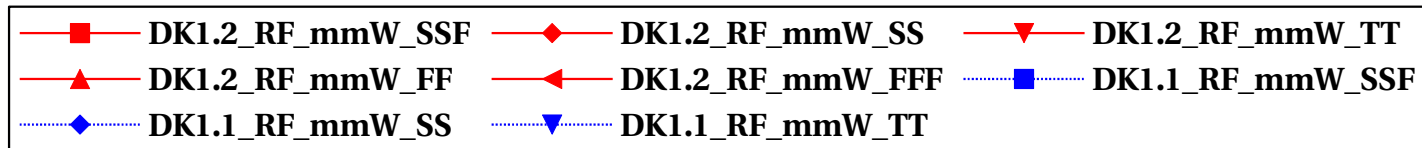
lvtnfet_acc, Ieff/W [A/sq] vs vdd [m]

$l=30\text{e-}9$ and $w=0.21\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=0$ and $p_{la}=0$



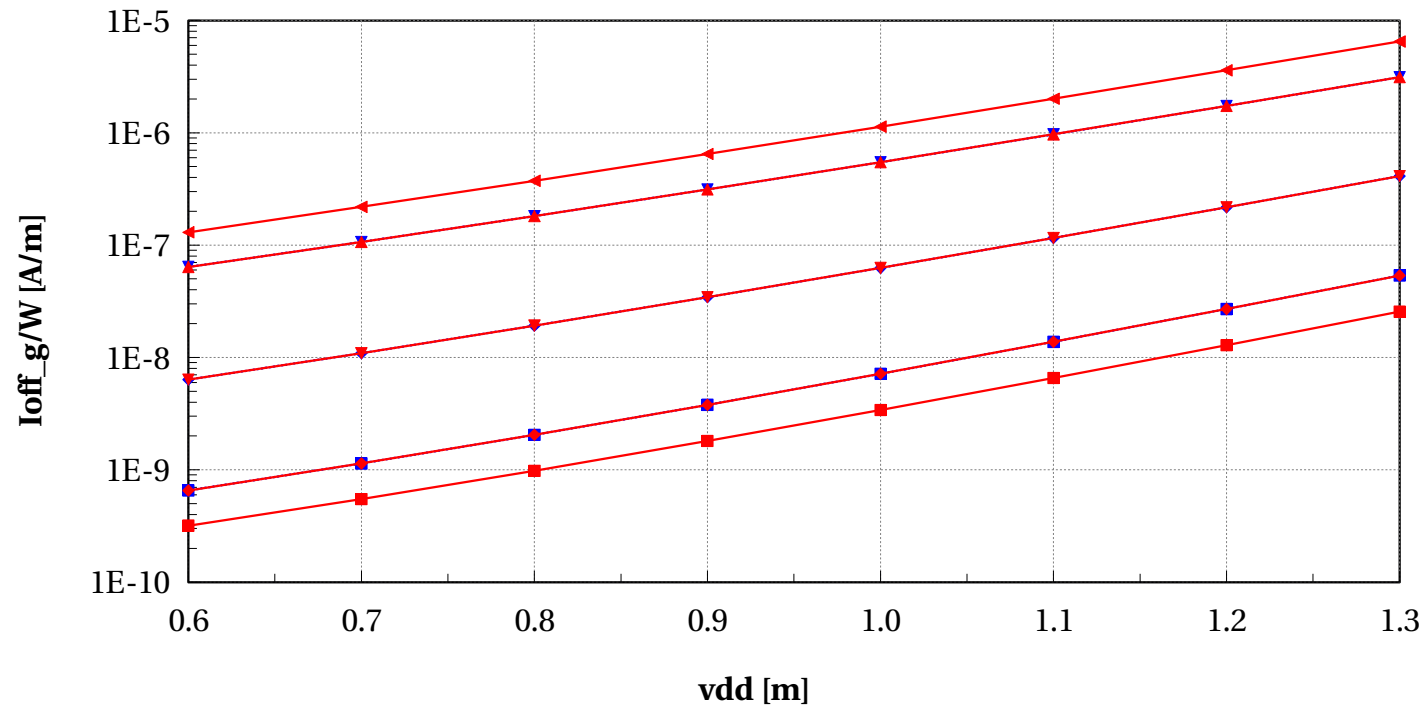
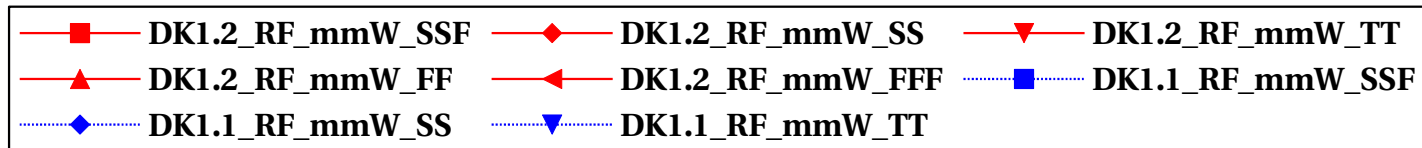
lvtnfet_acc, Ig_on/(L*W) [A/m2] vs vdd [m]

$l=30\text{e-}9$ and $w=0.21\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=0$ and $p_{la}=0$



lvtnfet_acc, Ioff_g/W [A/m] vs vdd [m]

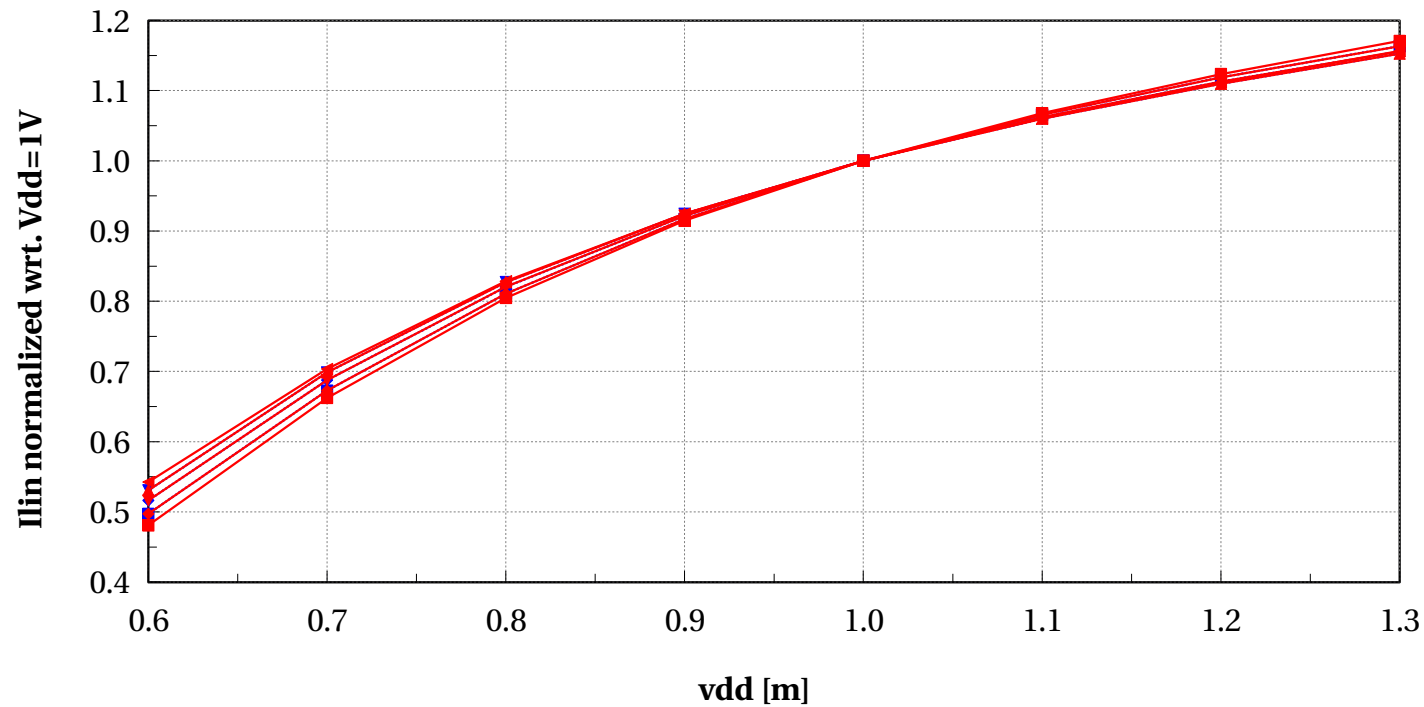
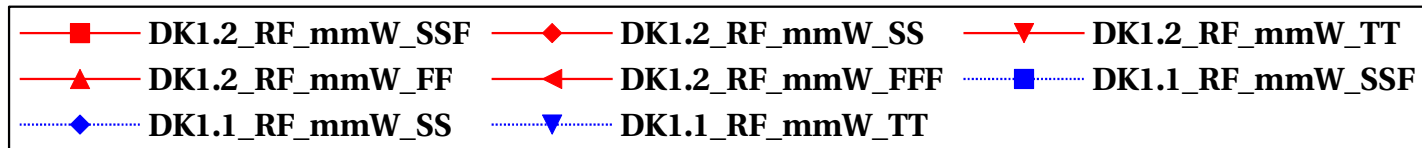
$l=30\text{e-}9$ and $w=0.21\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=0$ and $p_{la}=0$



Vdd effect normalized ($l=30\text{e-}9$ $w=210\text{e-}9$)

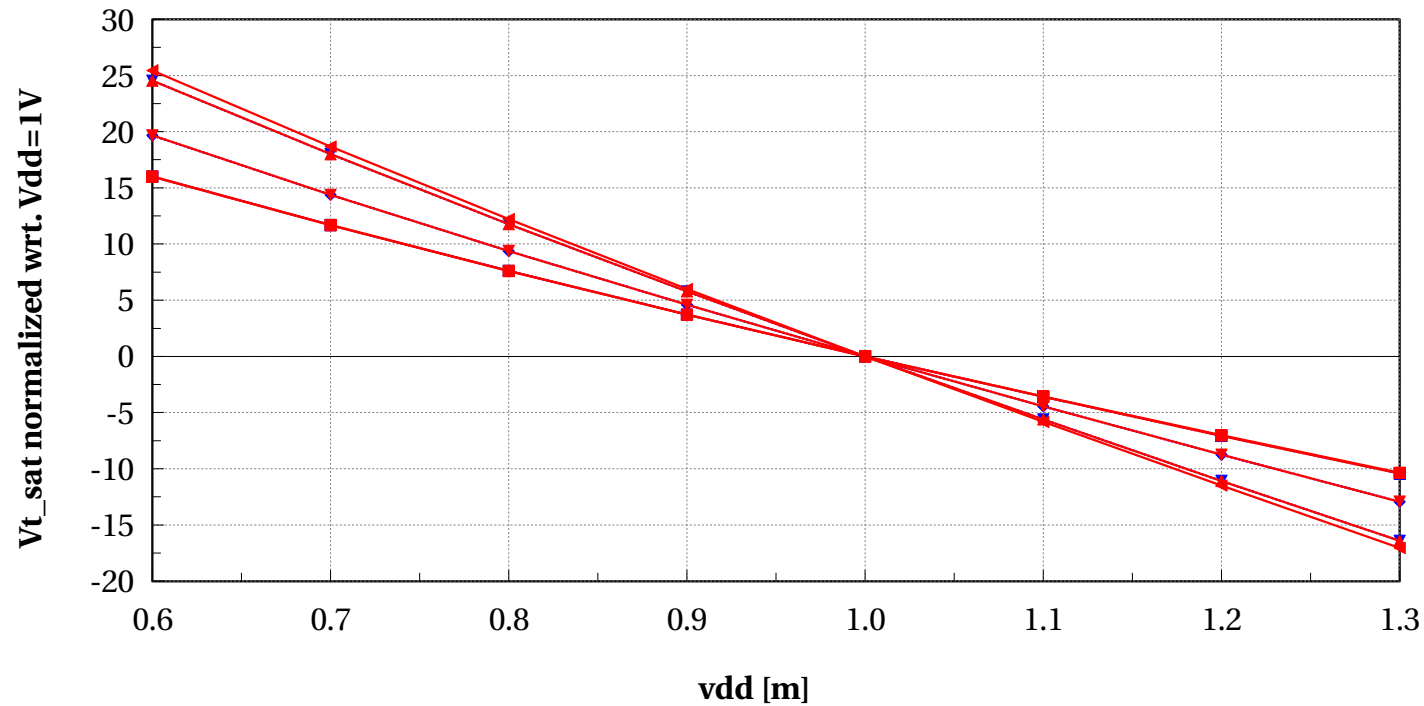
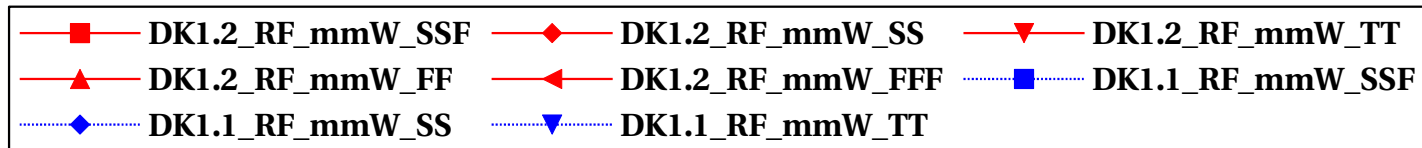
lvtnfet_acc, Ilin normalized wrt. Vdd=1V vs vdd [m]

$l=30\text{e-}9$ and $w=0.21\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=0$ and $p_{la}=0$



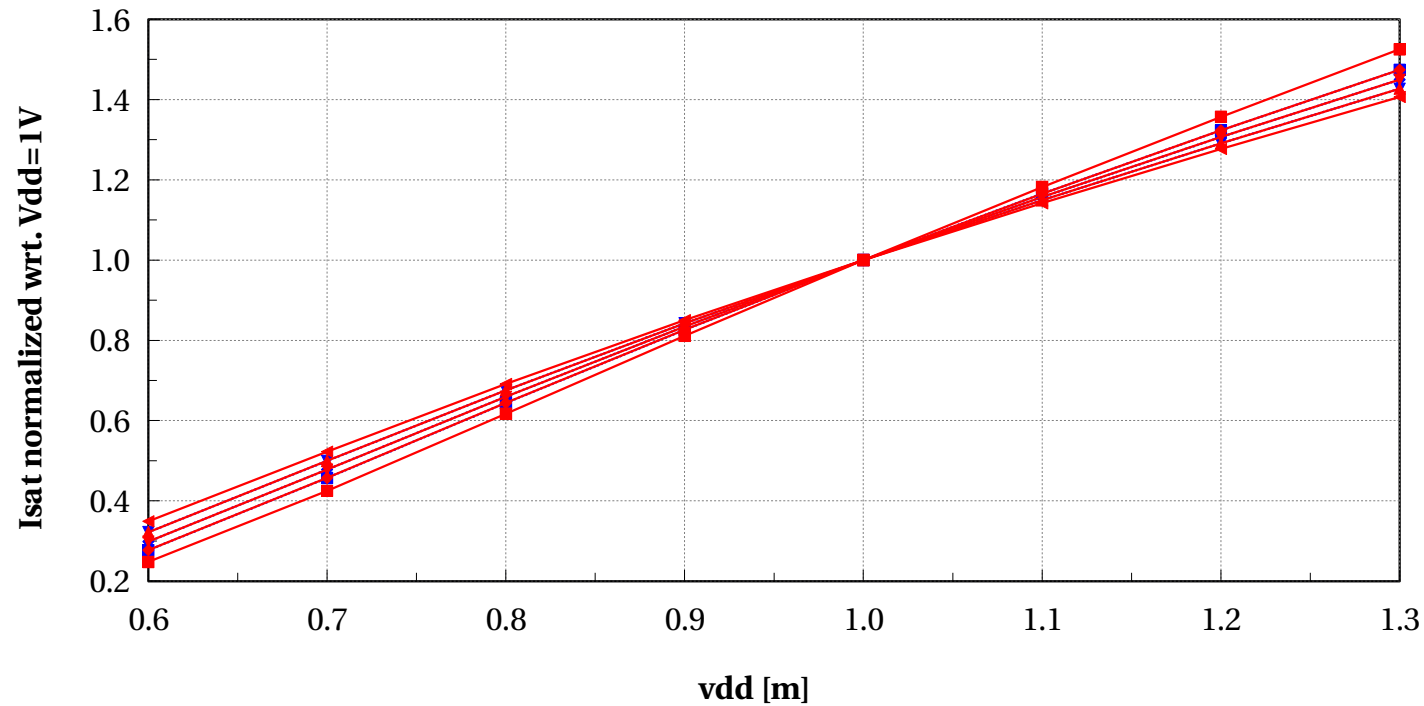
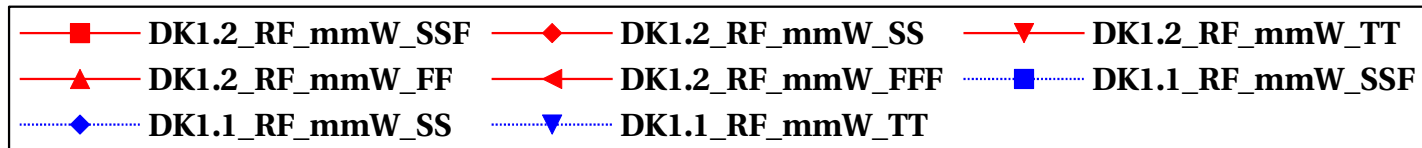
lvtnfet_acc, Vt_sat normalized wrt. Vdd=1V vs vdd [m]

$l=30\text{e-}9$ and $w=0.21\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=0$ and $p_{la}=0$



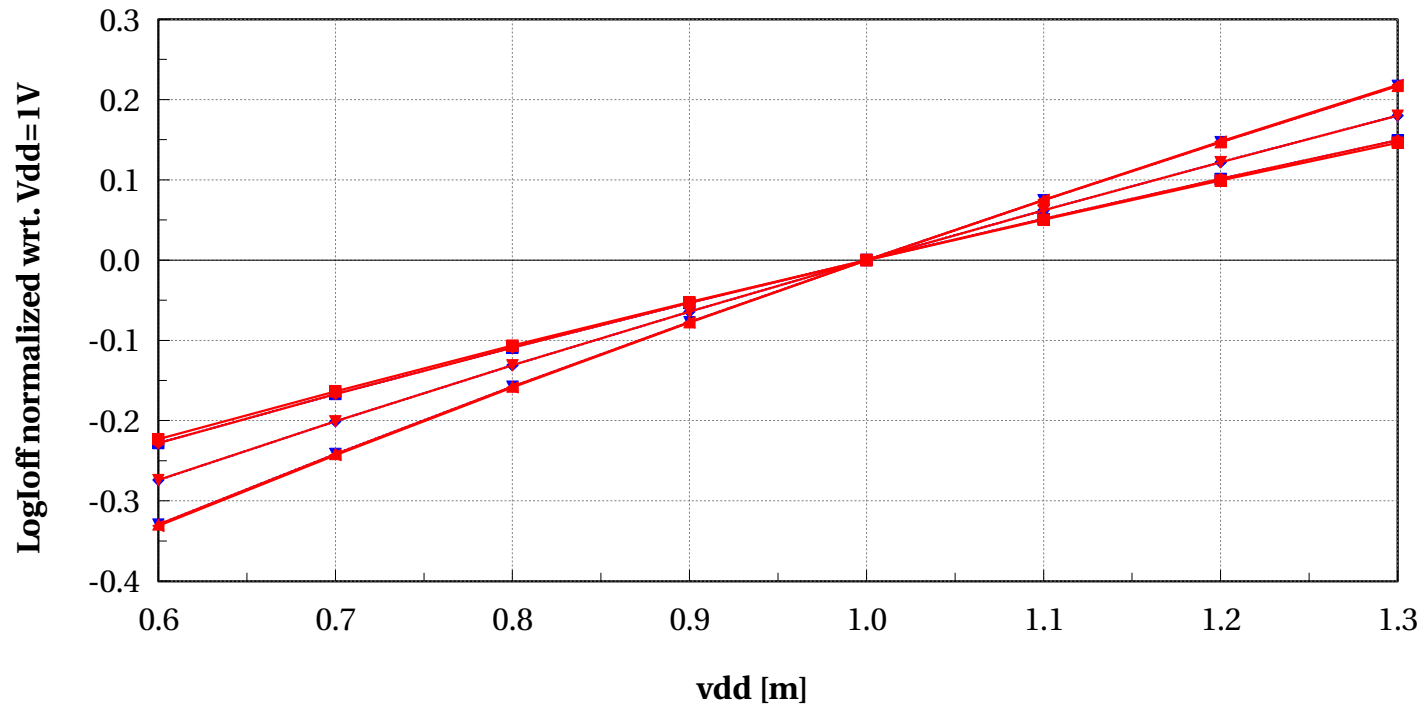
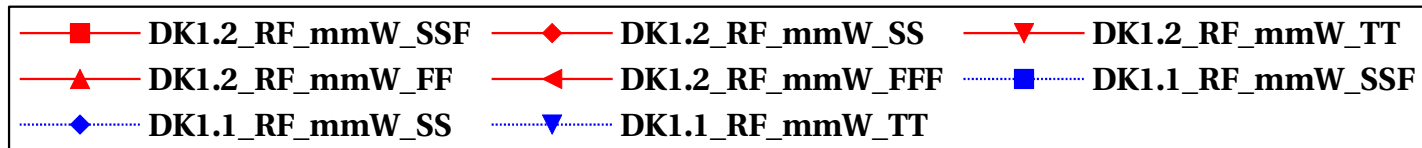
lvtnfet_acc, Isat normalized wrt. Vdd=1V vs vdd [m]

$l=30\text{e-}9$ and $w=0.21\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=0$ and $p_{la}=0$



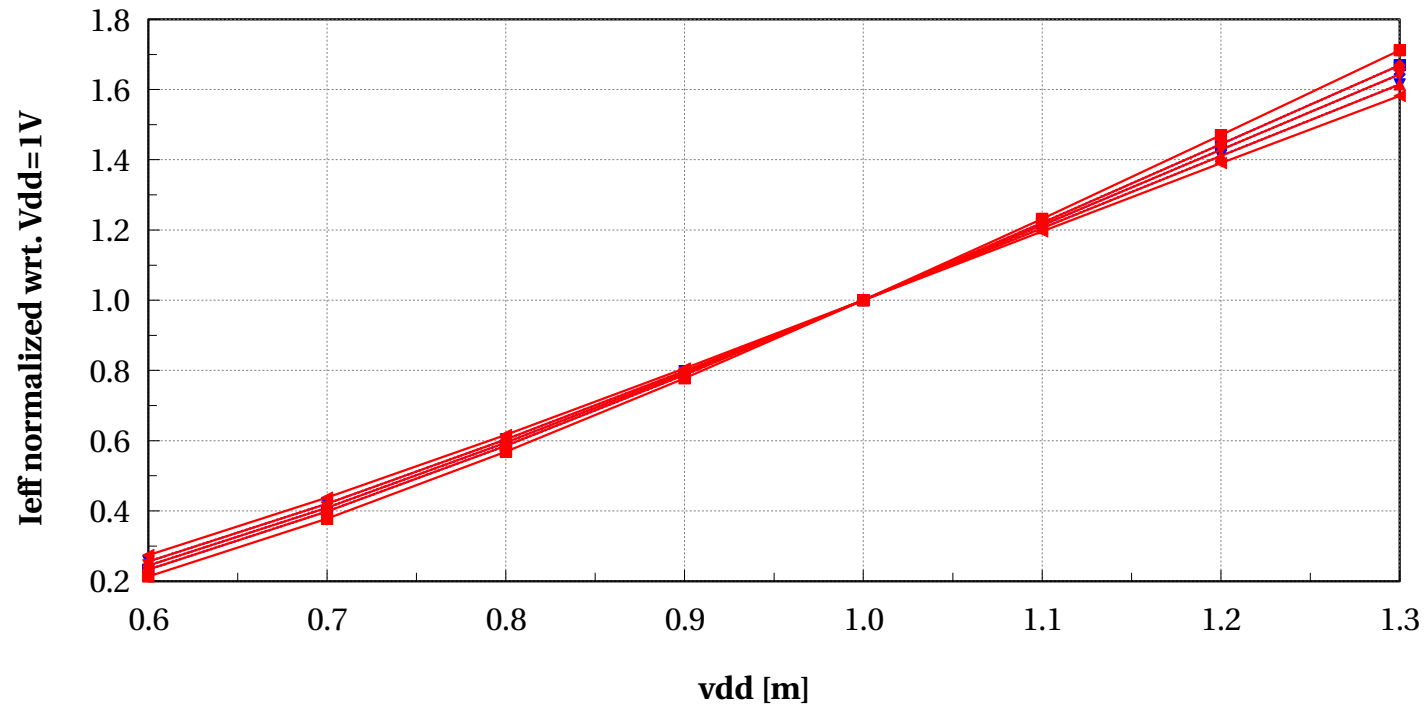
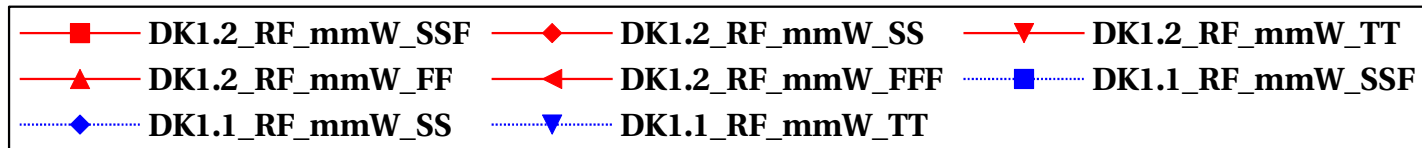
lvtnfet_acc, Logloff normalized wrt. Vdd=1V vs vdd [m]

$l=30\text{e-}9$ and $w=0.21\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=0$ and $p_{la}=0$



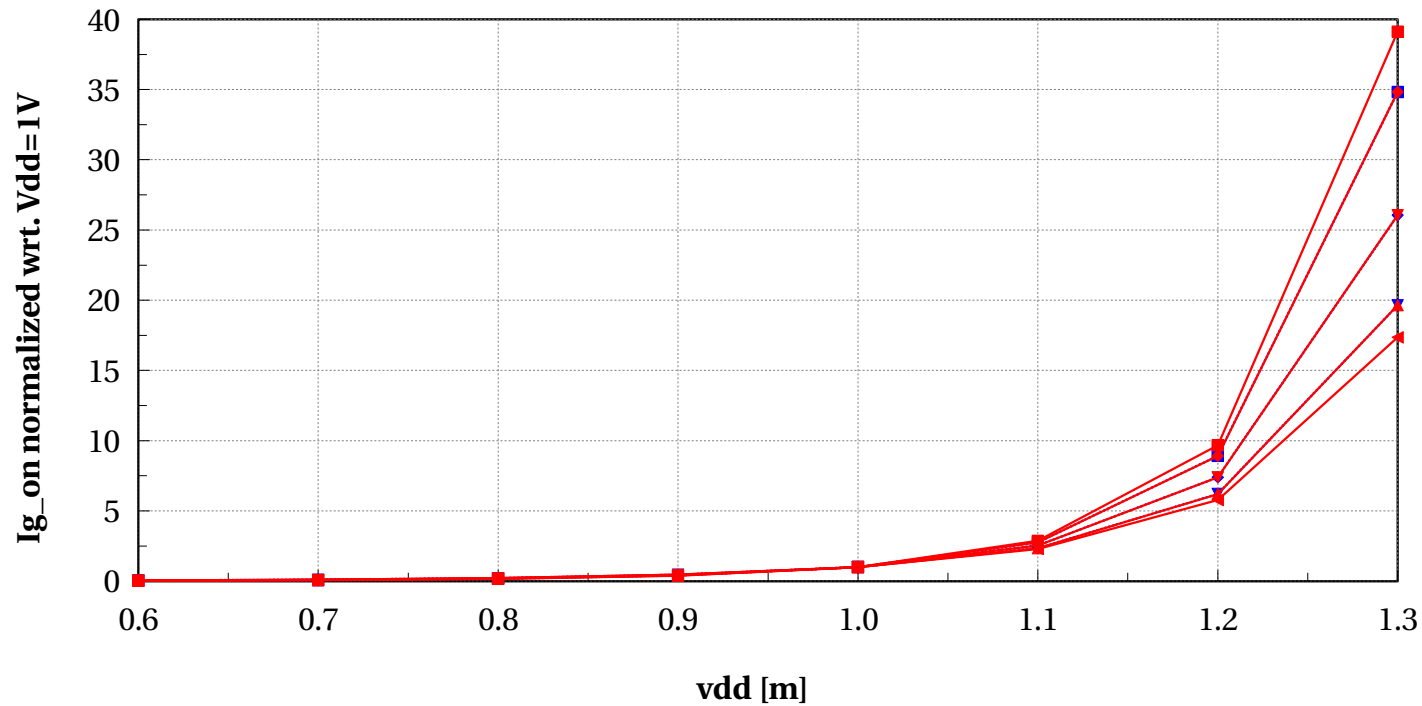
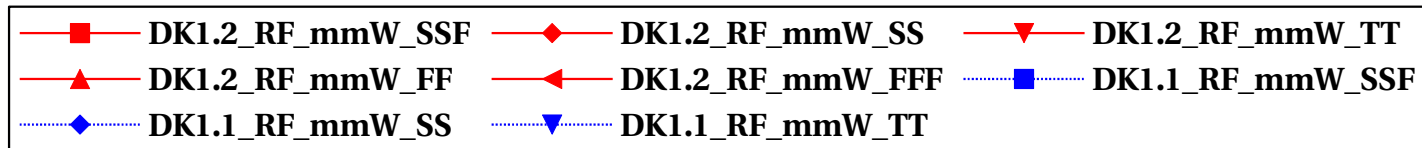
lvtnfet_acc, Ieff normalized wrt. Vdd=1V vs vdd [m]

$l=30\text{e-}9$ and $w=0.21\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=0$ and $p_{la}=0$



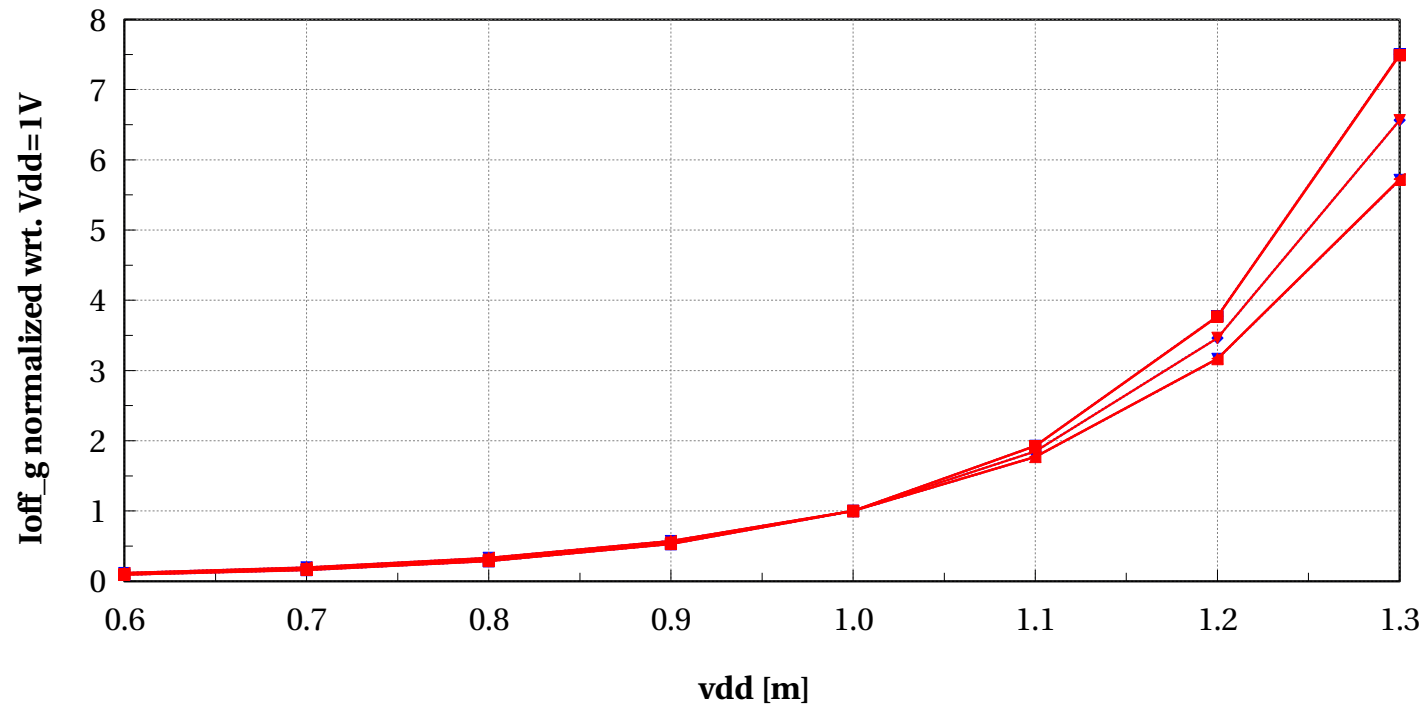
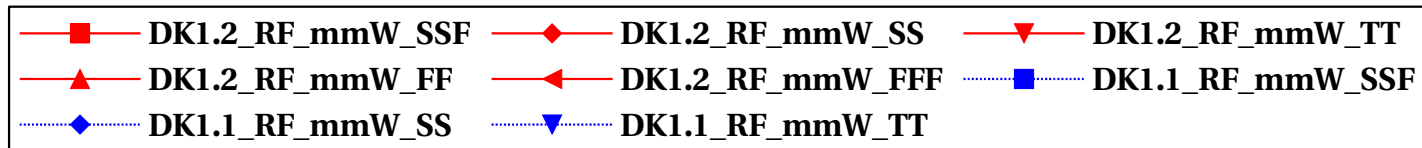
lvtnfet_acc, Ig_on normalized wrt. Vdd=1V vs vdd [m]

$l=30\text{e-}9$ and $w=0.21\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=0$ and $p_{la}=0$



lvtnfet_acc, Ioff_g normalized wrt. Vdd=1V vs vdd [m]

$l=30\text{e-}9$ and $w=0.21\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=0$ and $p_{la}=0$



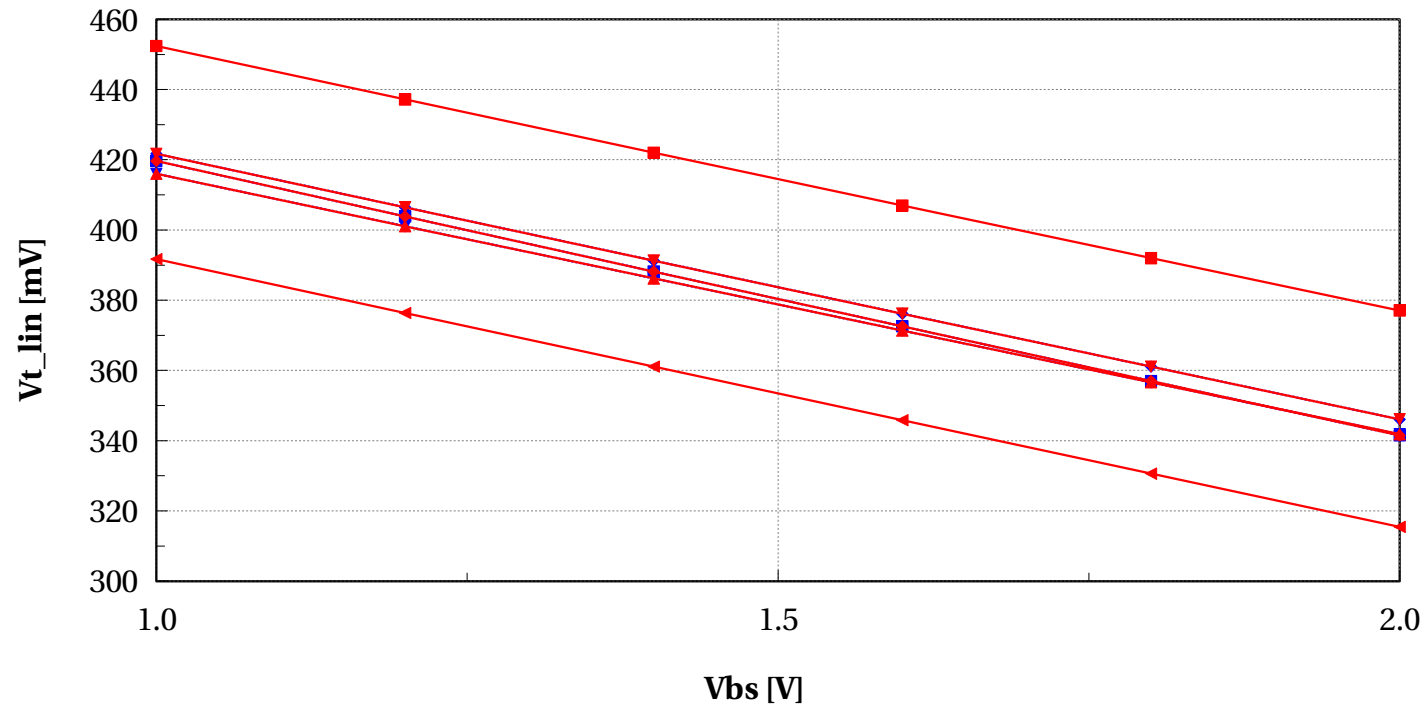
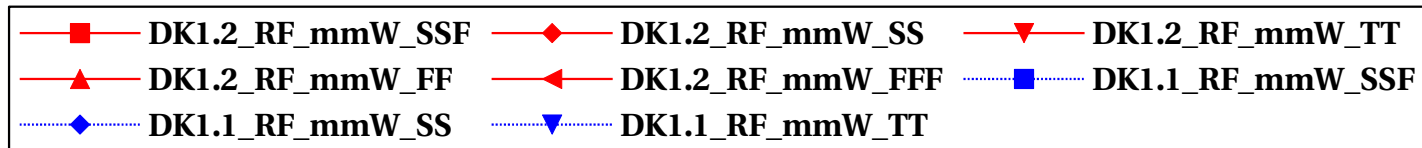
lvtpfet_acc

Electrical characteristics scaling

Scaling versus V_{bs} ($L=1\mu m, W=1\mu m$)

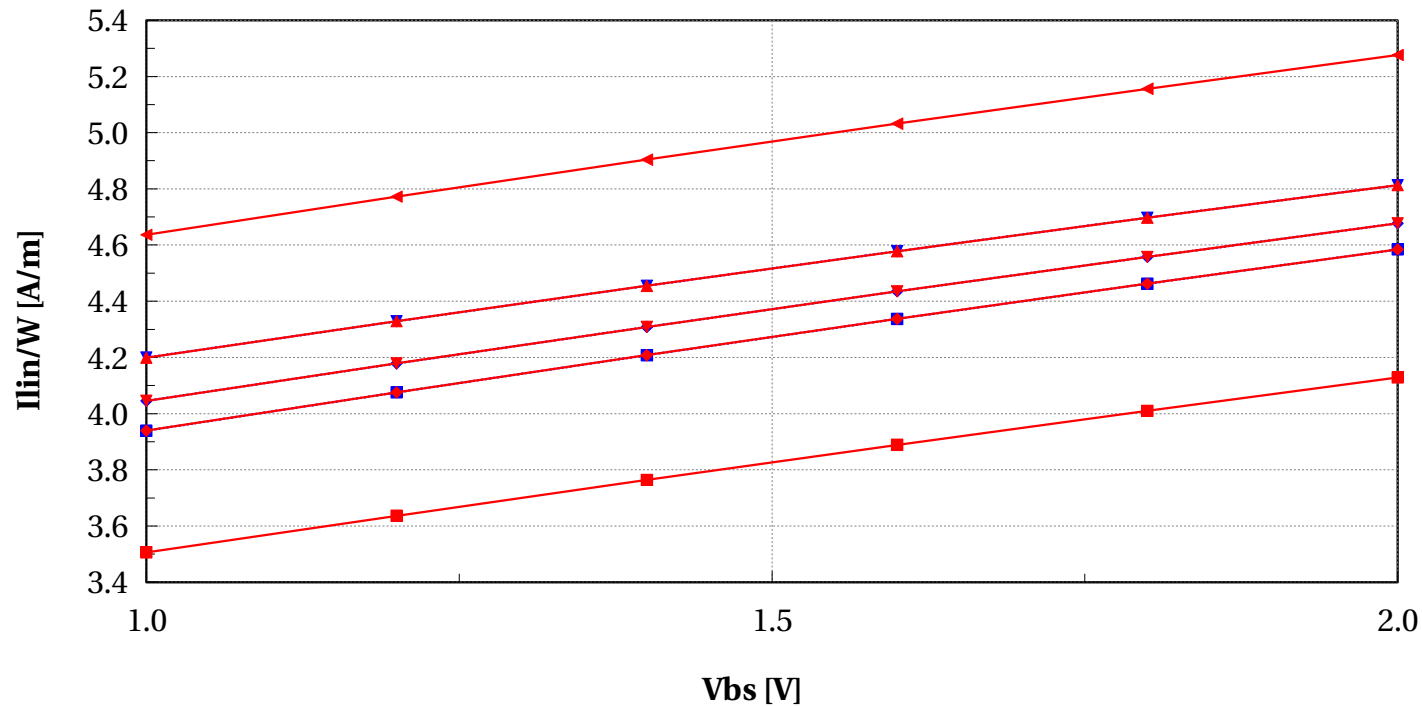
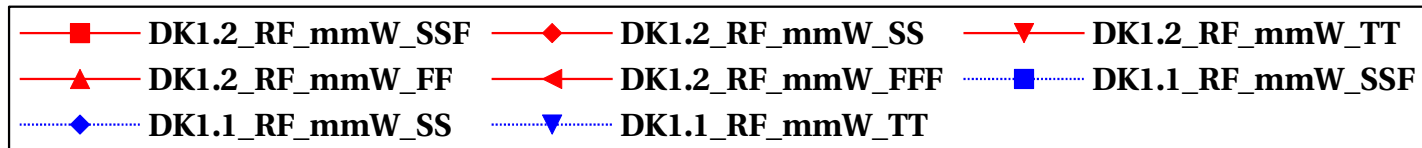
lvtpfet_acc, Vt_lin [mV] vs Vbs [V]

w==1e-6 and L==1e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



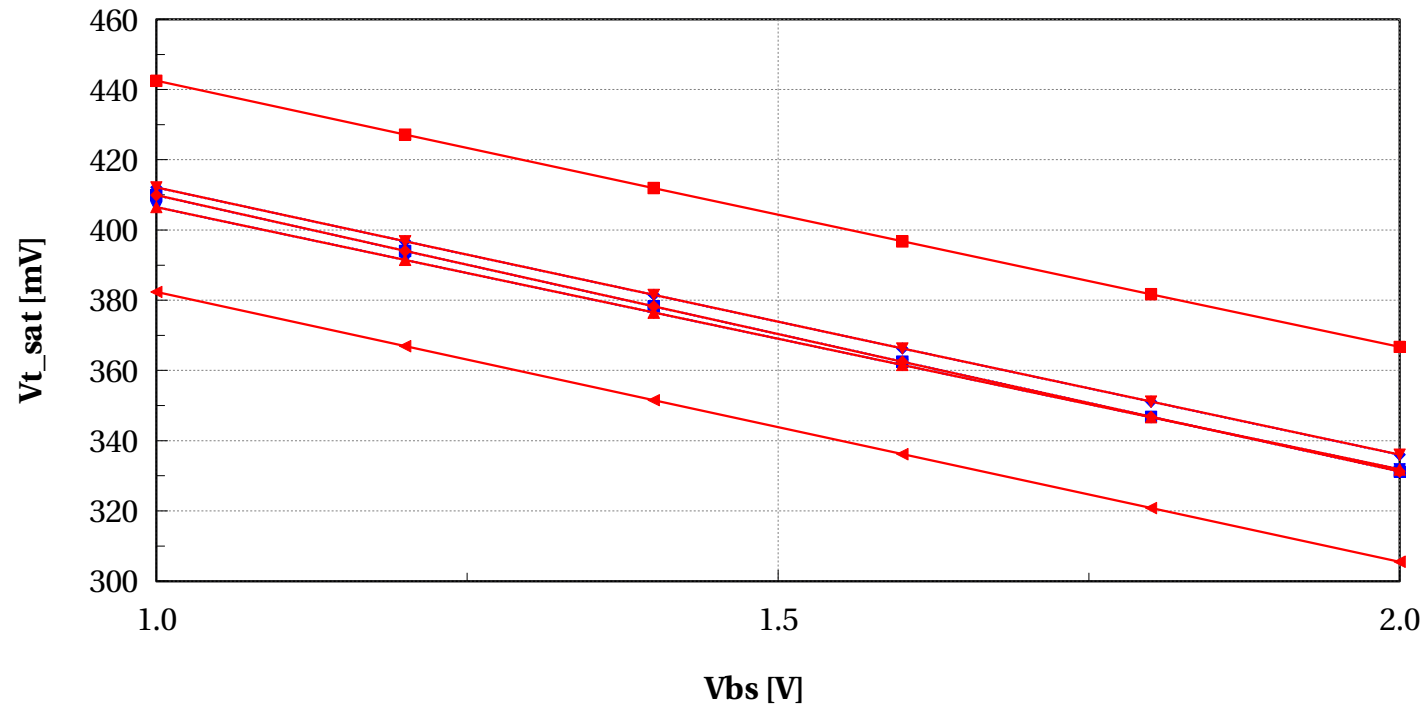
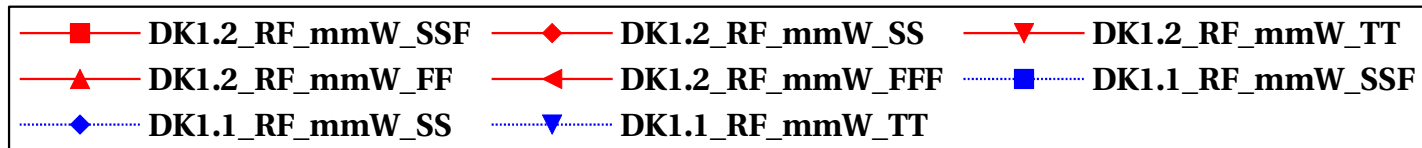
lvtpfet_acc, I_{lin}/W [A/m] vs V_{bs} [V]

w==1e-6 and L==1e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



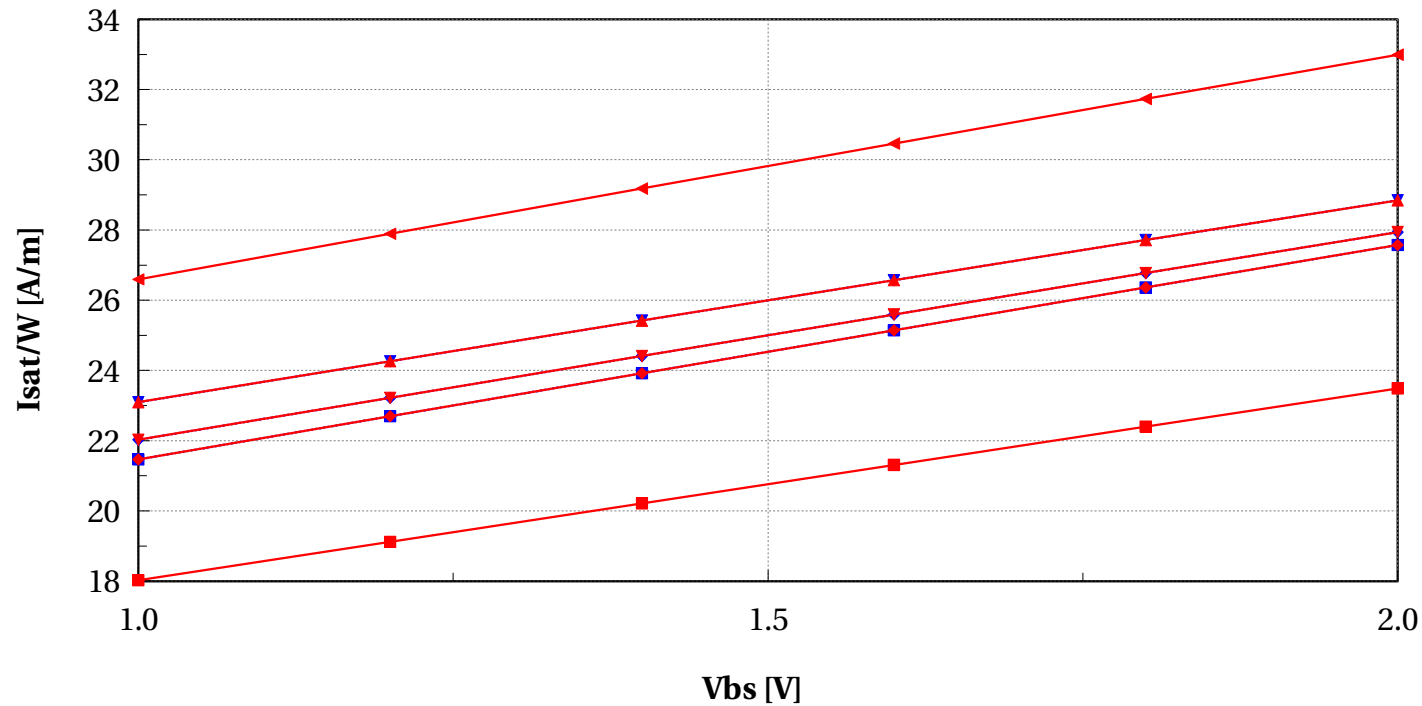
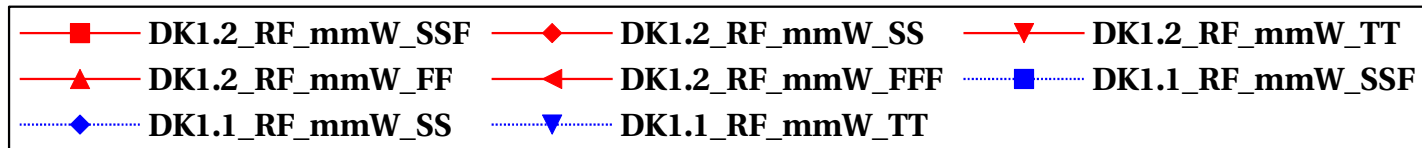
lvtpfet_acc, Vt_sat [mV] vs Vbs [V]

w==1e-6 and L==1e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



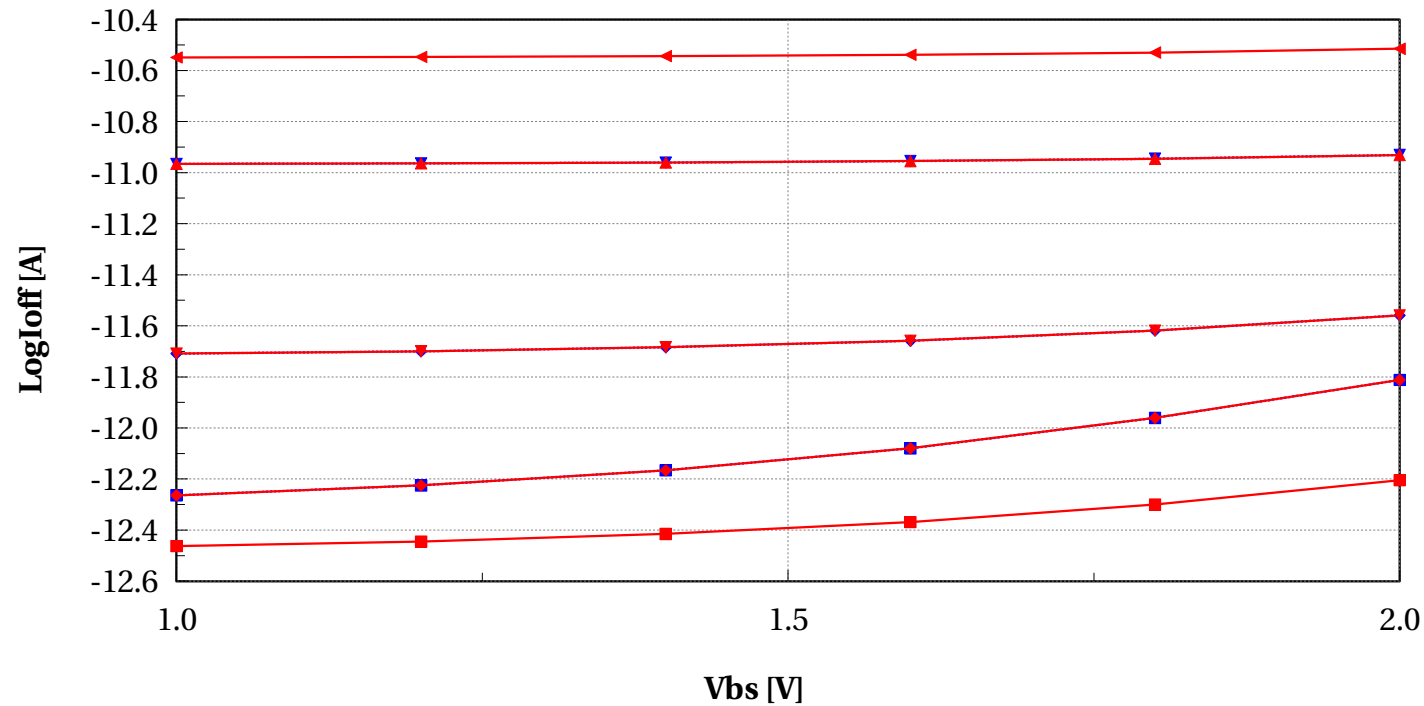
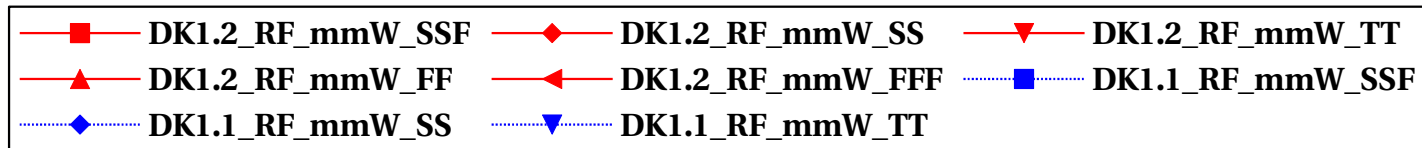
lvtpfet_acc, Isat/W [A/m] vs Vbs [V]

w==1e-6 and L==1e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



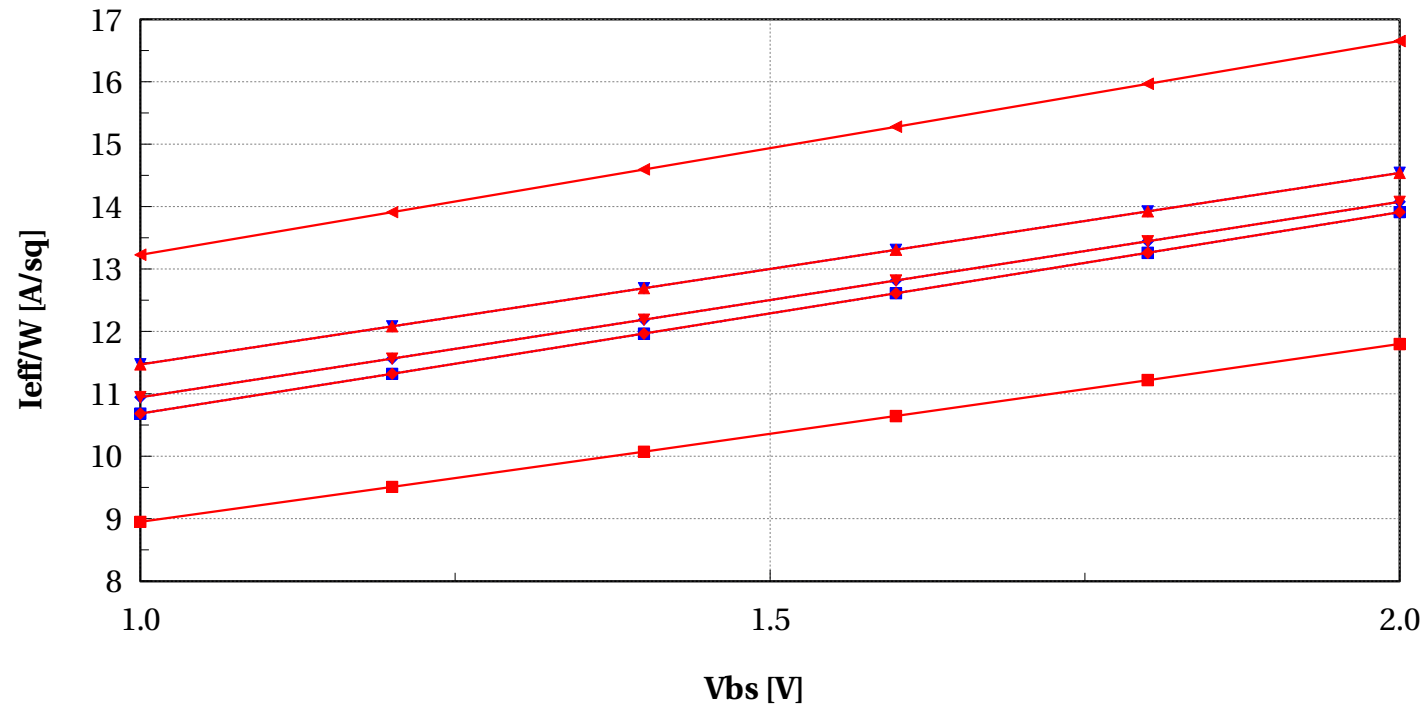
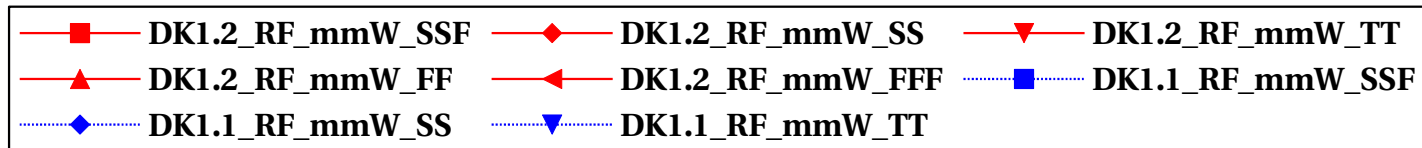
lvtpfet_acc, Logloff [A] vs Vbs [V]

w==1e-6 and L==1e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



lvtpfet_acc, I_{eff}/W [A/sq] vs V_{bs} [V]

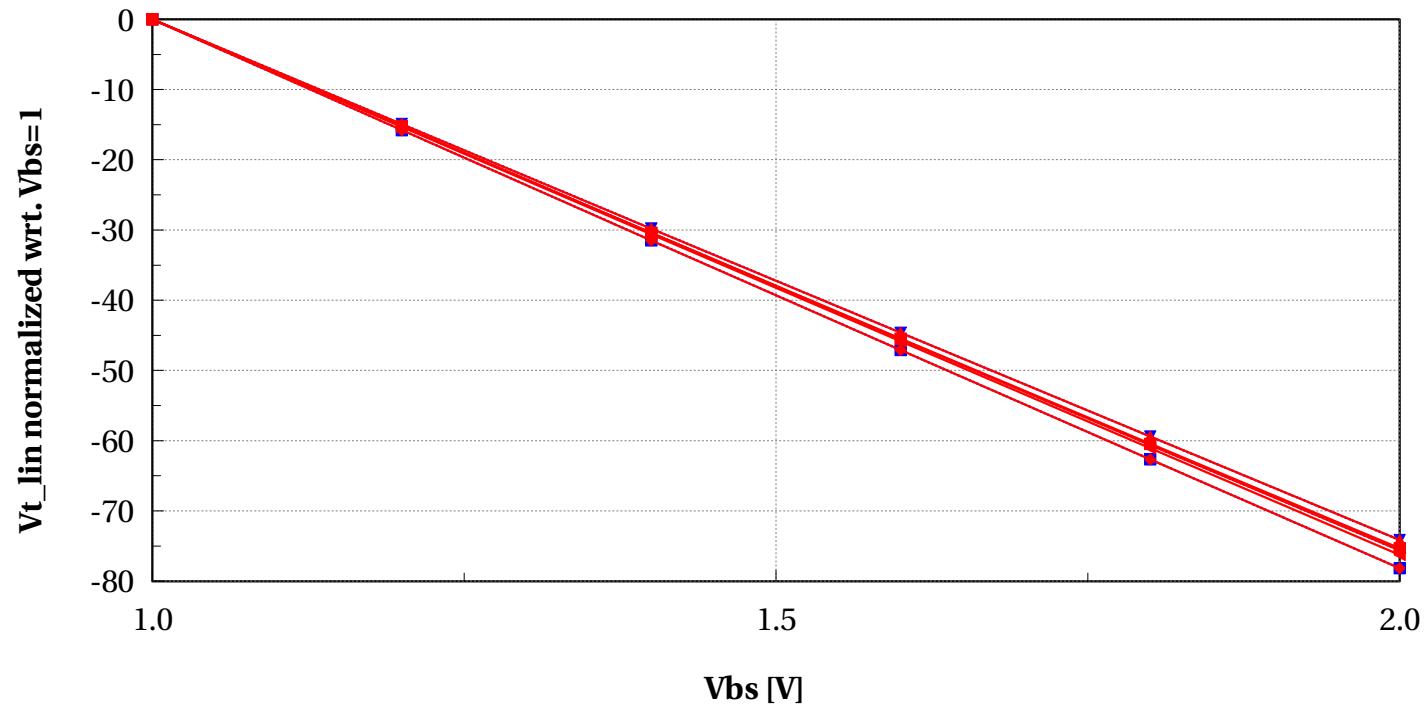
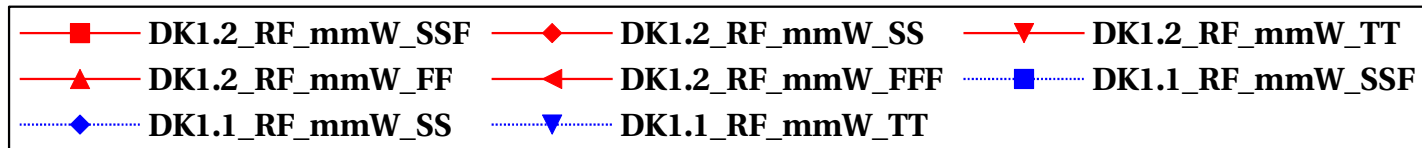
w==1e-6 and L==1e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



Scaling versus V_{bs} normalized ($L=1\mu m, W=1\mu m$)

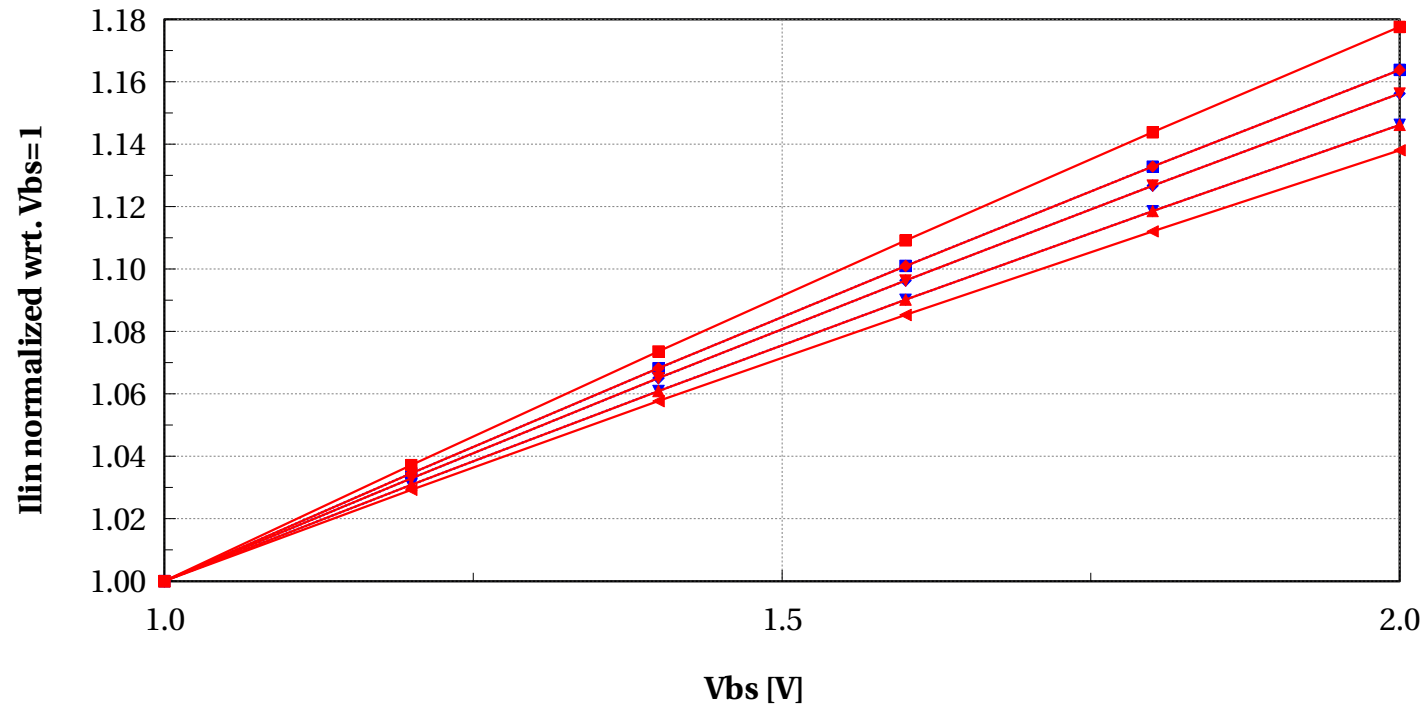
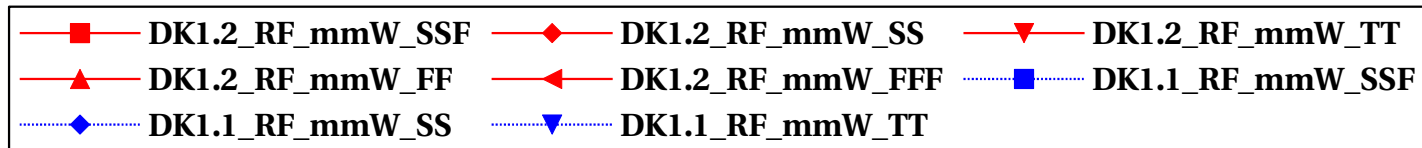
lvtpfet_acc, Vt_lin normalized wrt. Vbs=1 vs Vbs [V]

w==1e-6 and L==1e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



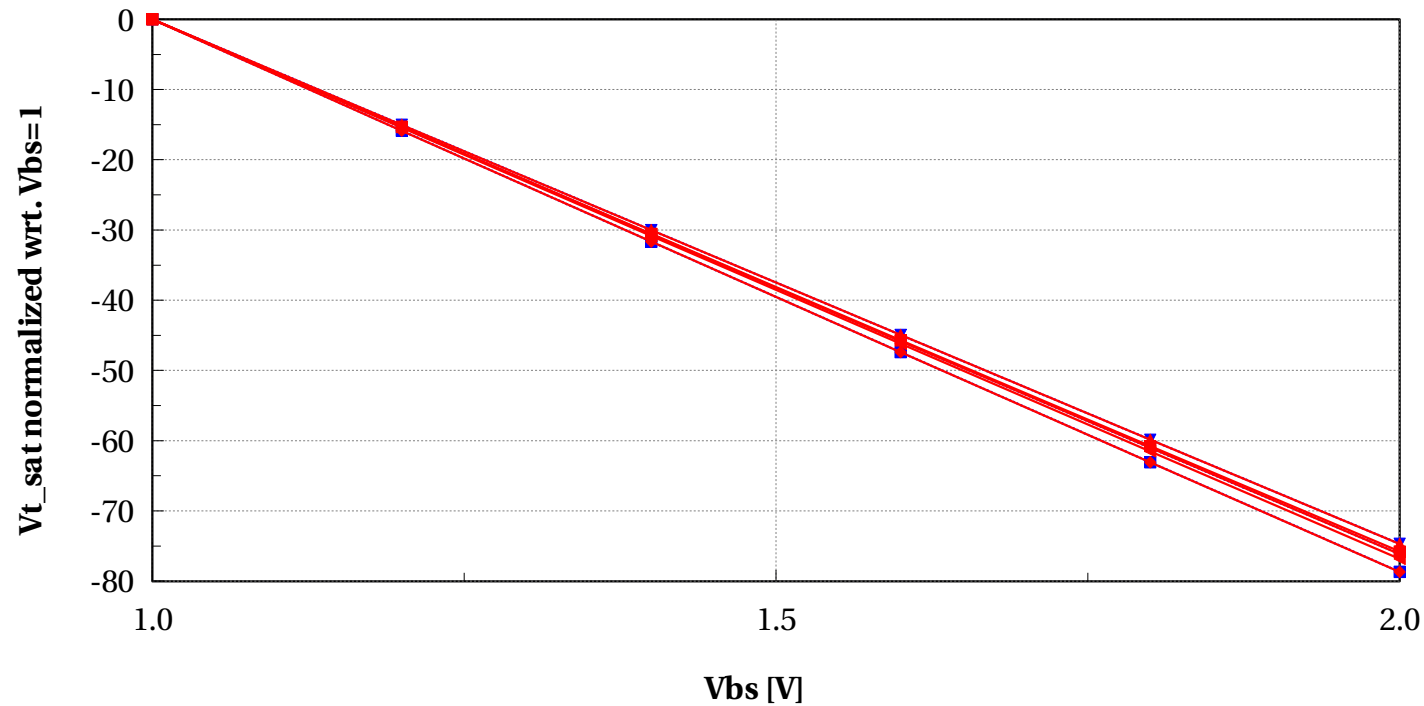
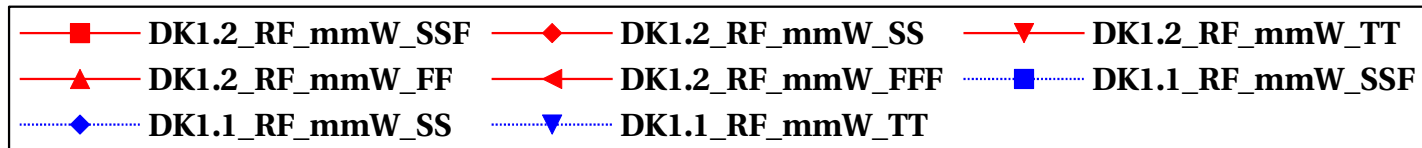
lvtpfet_acc, Ilin normalized wrt. Vbs=1 vs Vbs [V]

w==1e-6 and L==1e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



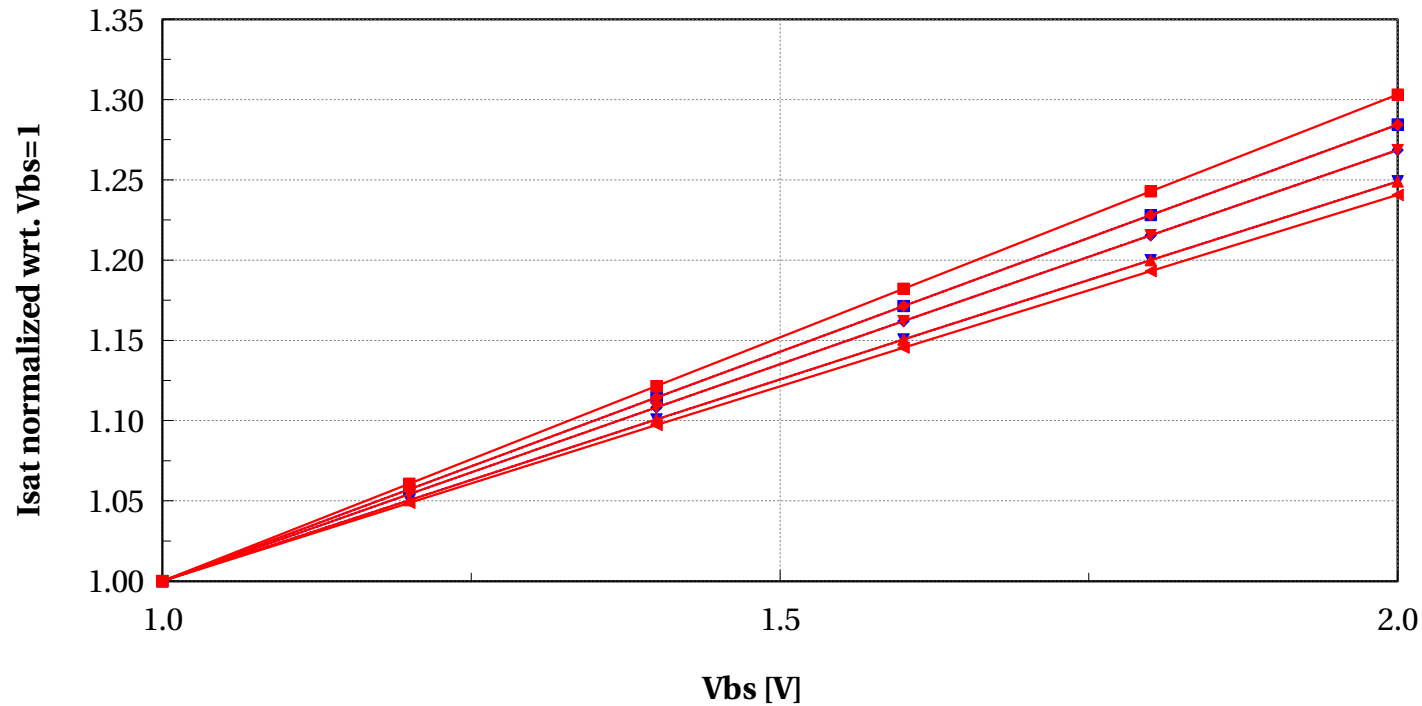
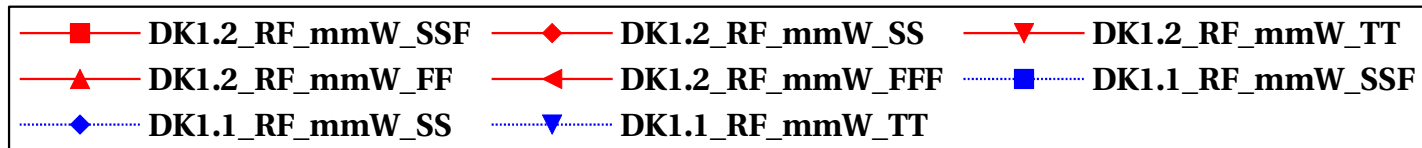
lvtpfet_acc, Vt_sat normalized wrt. Vbs=1 vs Vbs [V]

w==1e-6 and L==1e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



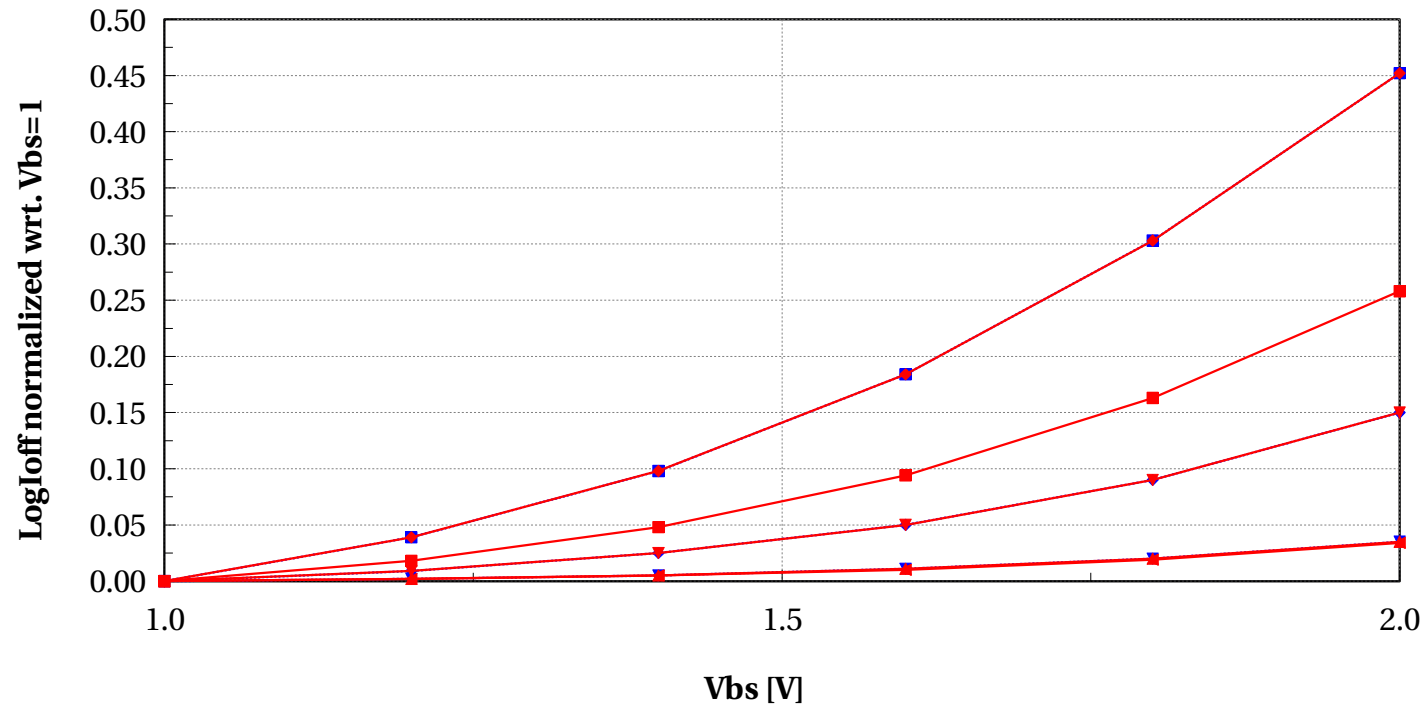
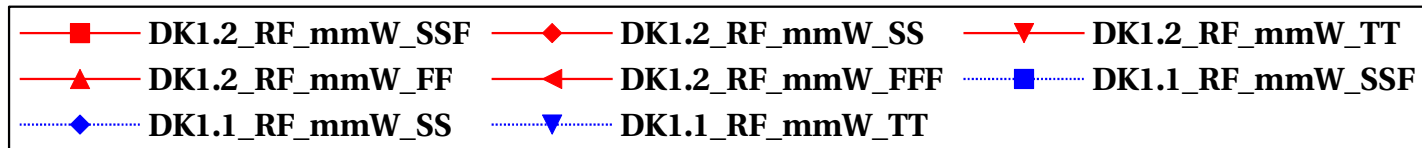
lvtpfet_acc, Isat normalized wrt. Vbs=1 vs Vbs [V]

w==1e-6 and L==1e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



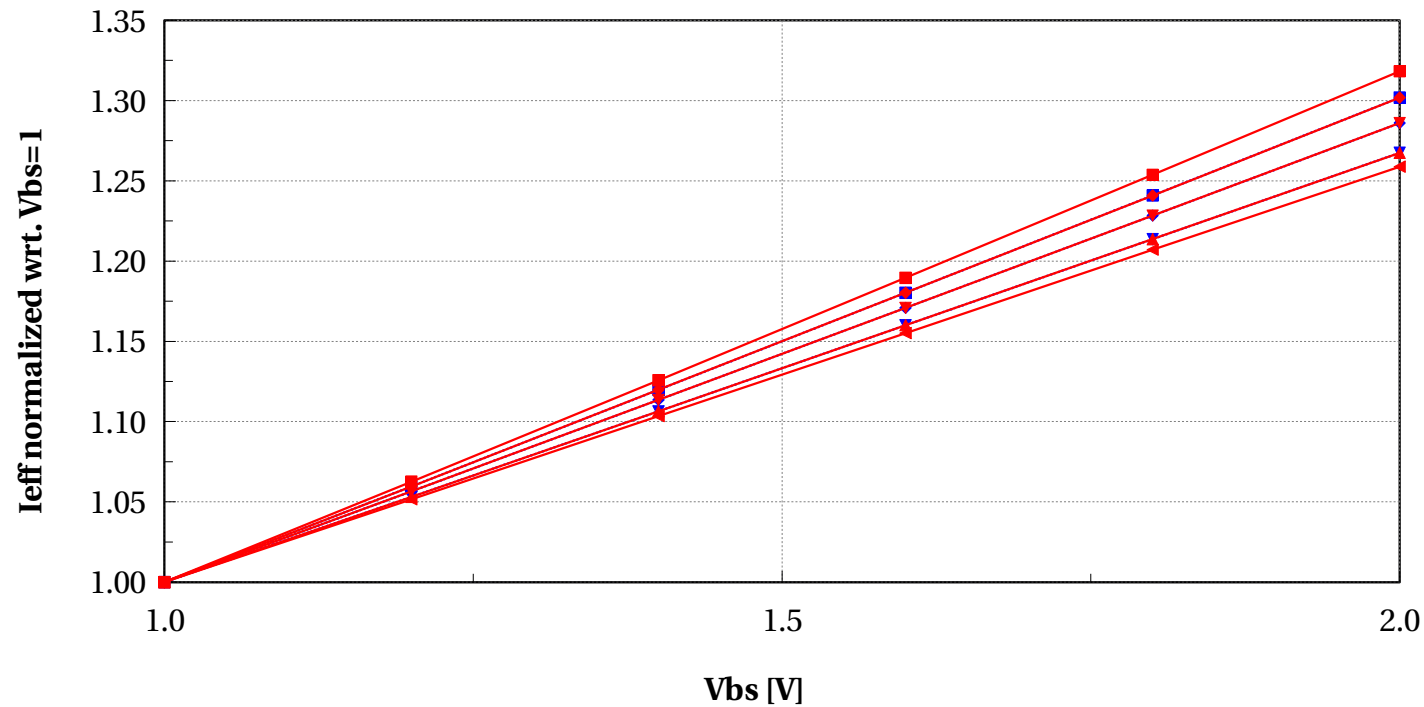
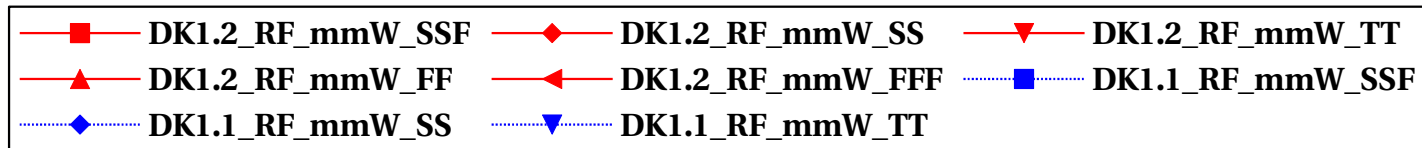
lvtpfet_acc, LogIoff normalized wrt. Vbs=1 vs Vbs [V]

w==1e-6 and L==1e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



lvtpfet_acc, Ieff normalized wrt. Vbs=1 vs Vbs [V]

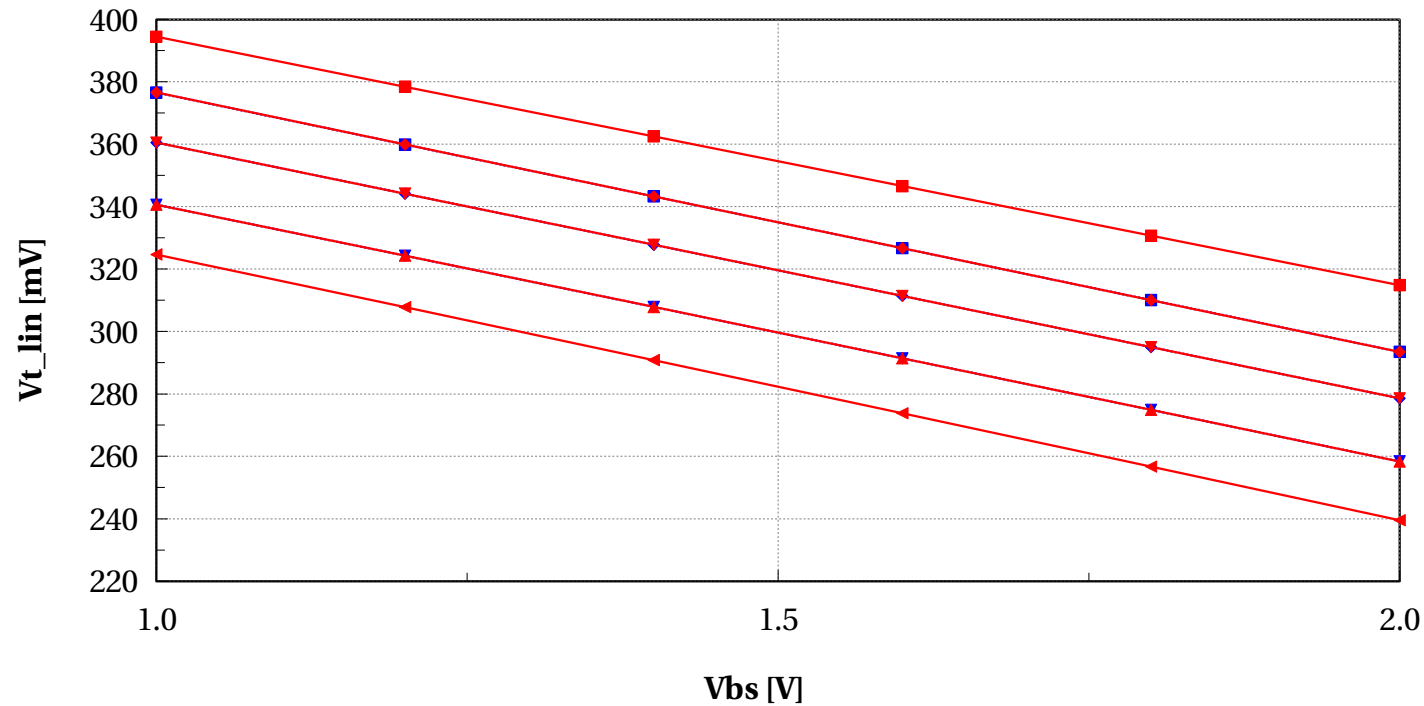
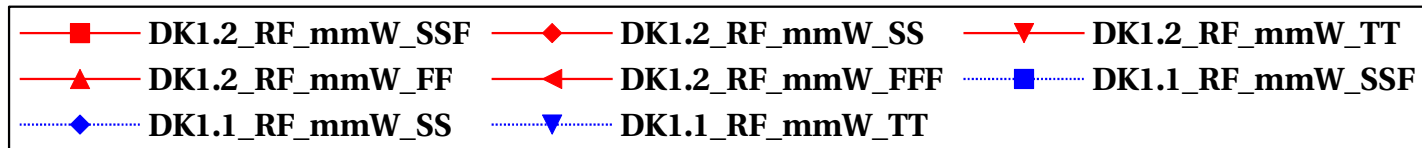
w==1e-6 and L==1e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



Scaling versus V_{bs} ($L=30\text{nm}$, $W=300\text{nm}$)

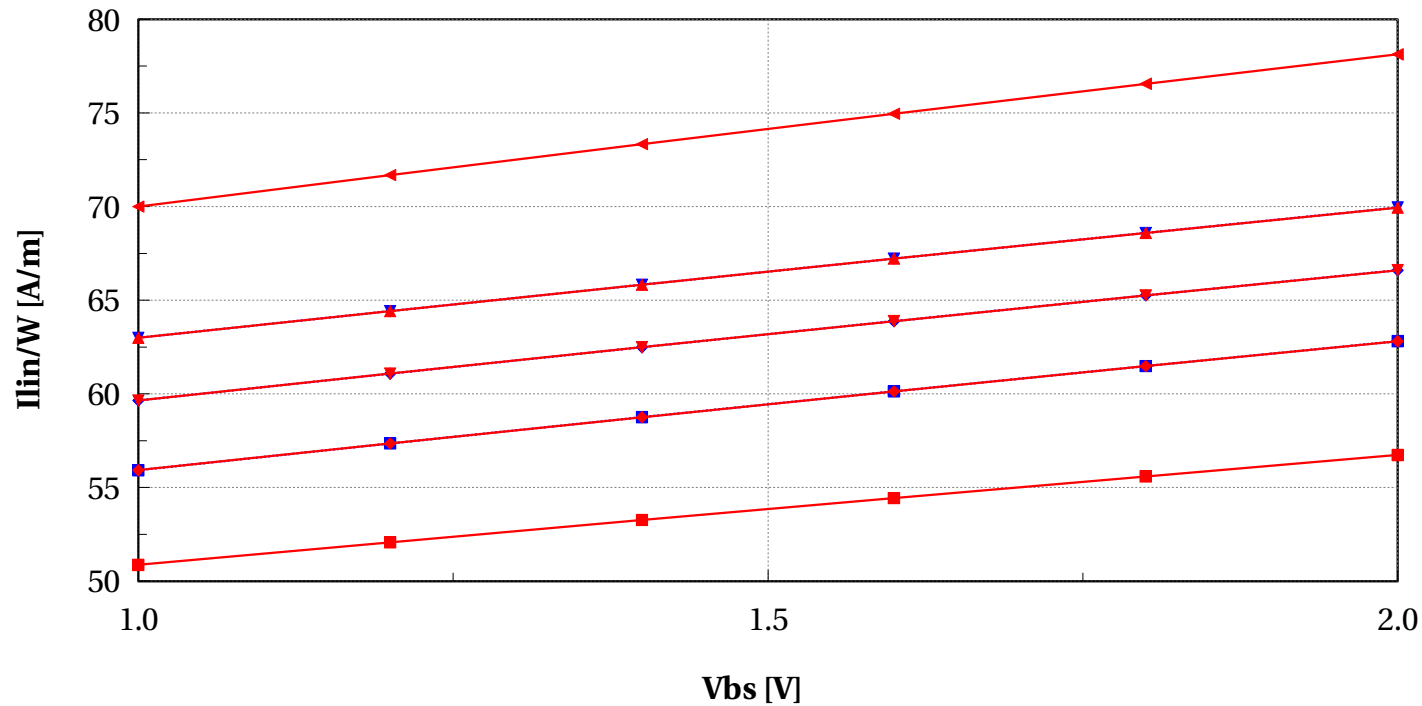
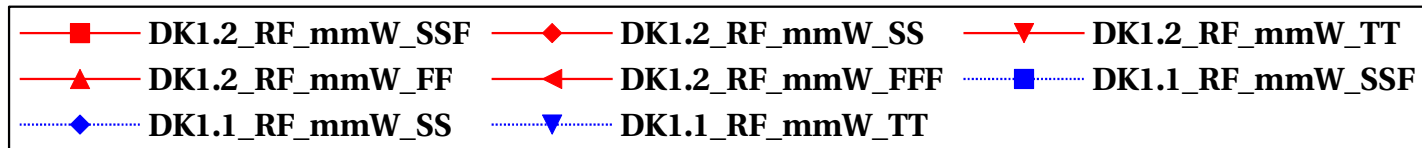
lvtpfet_acc, Vt_lin [mV] vs Vbs [V]

w==300e-9 and L==0.03e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



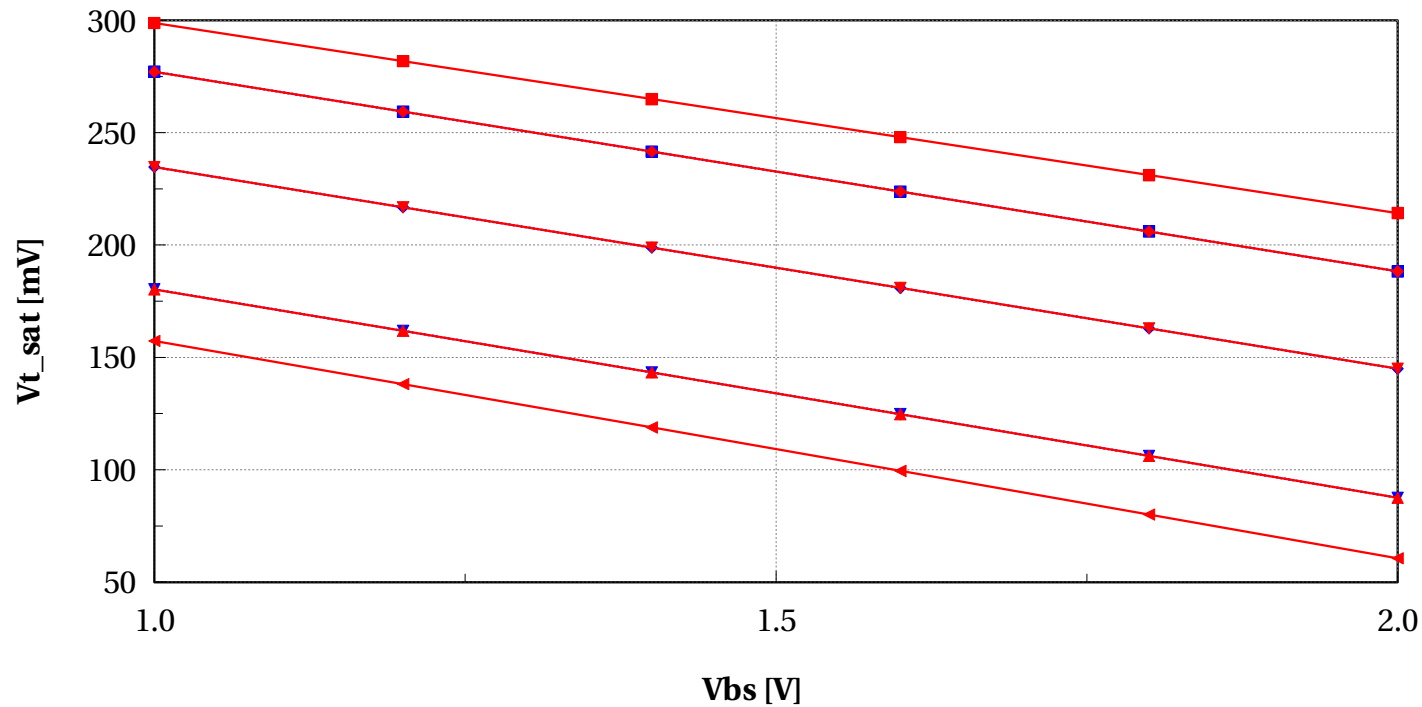
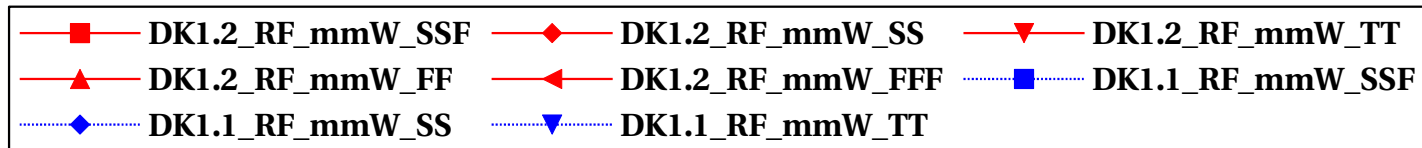
lvtpfet_acc, I_{lin}/W [A/m] vs V_{bs} [V]

w==300e-9 and L==0.03e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



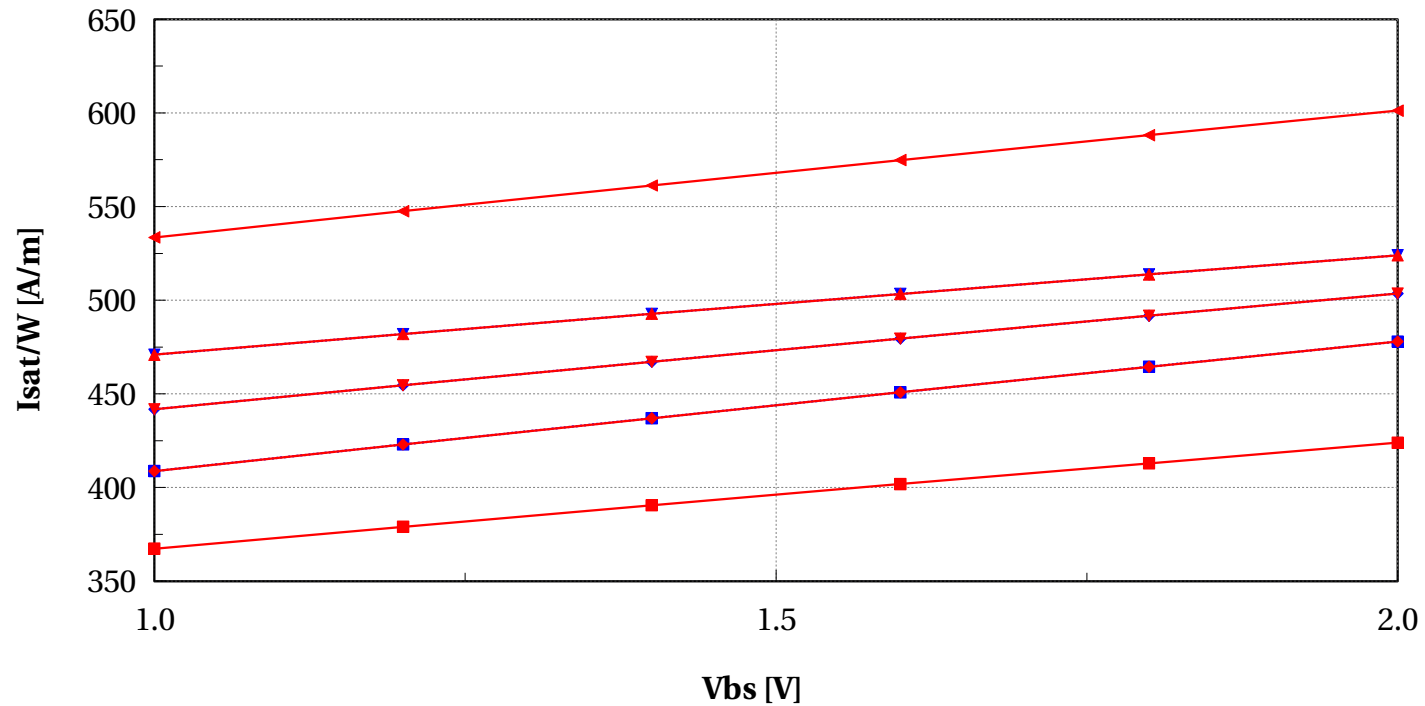
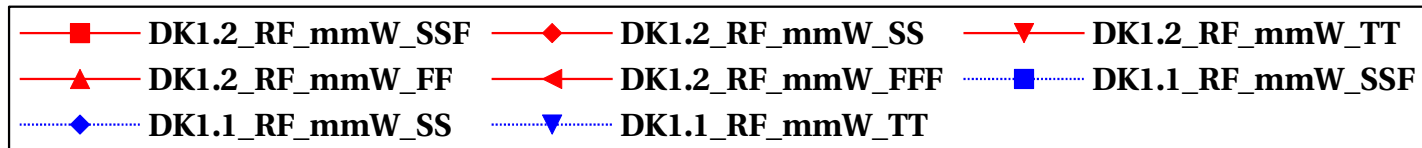
lvtpfet_acc, Vt_sat [mV] vs Vbs [V]

w==300e-9 and L==0.03e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



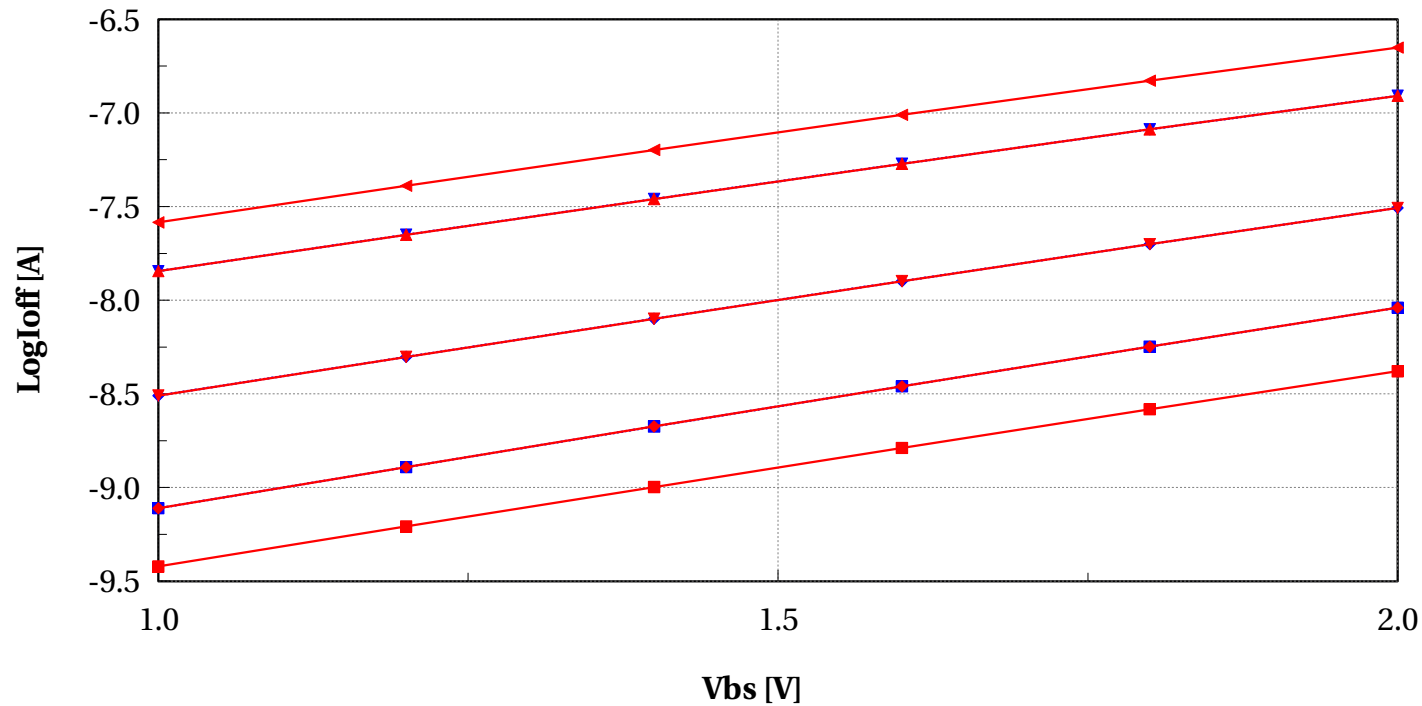
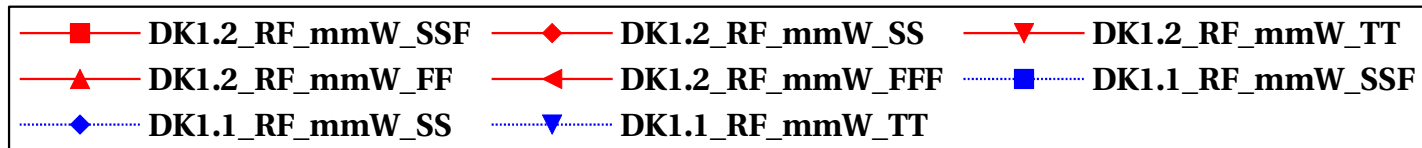
lvtpfet_acc, Isat/W [A/m] vs Vbs [V]

w==300e-9 and L==0.03e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



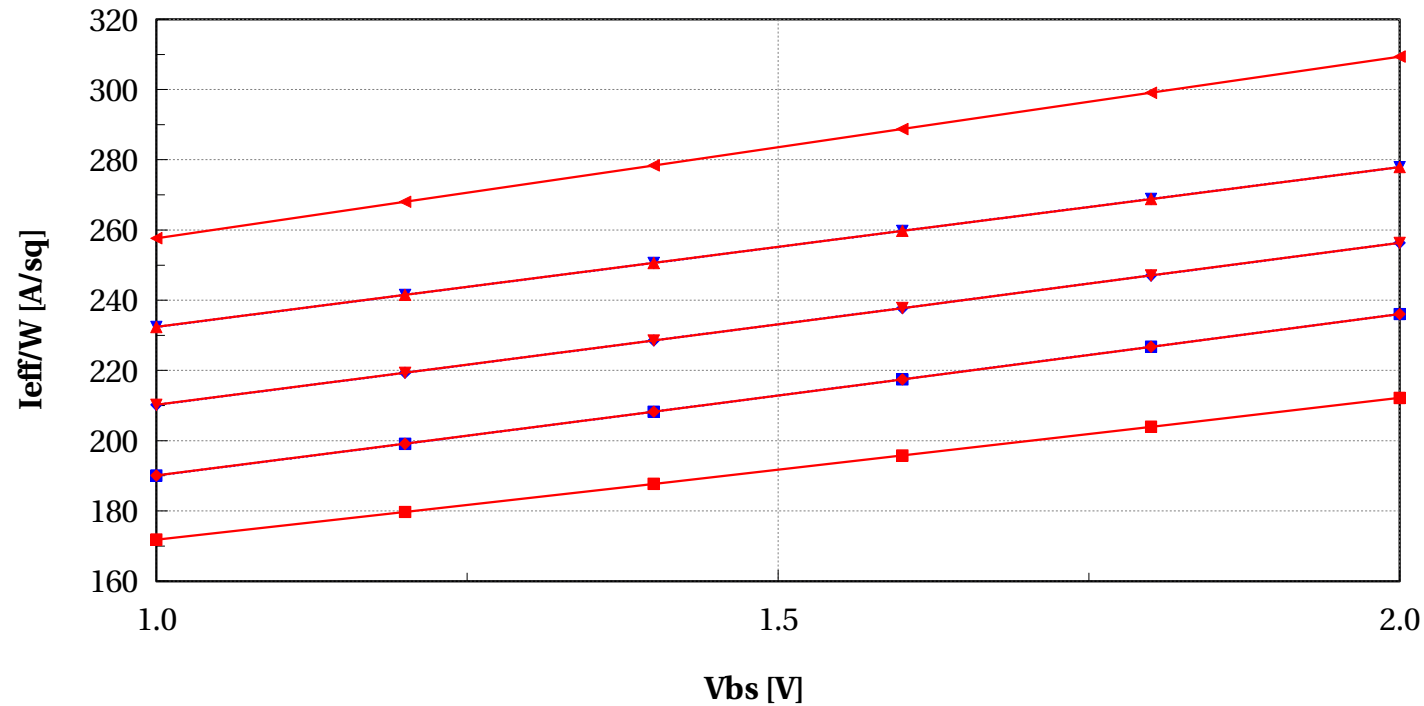
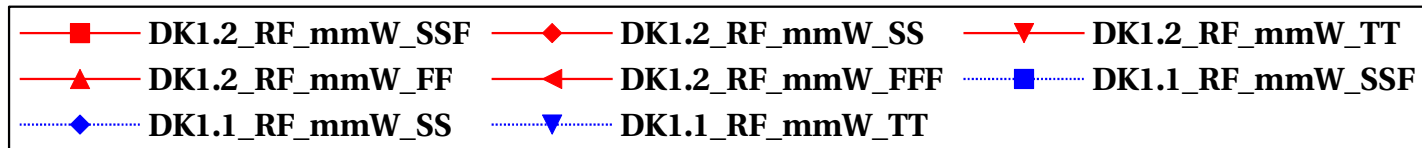
lvtpfet_acc, Logloff [A] vs Vbs [V]

w==300e-9 and L==0.03e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



lvtpfet_acc, I_{eff}/W [A/sq] vs V_{bs} [V]

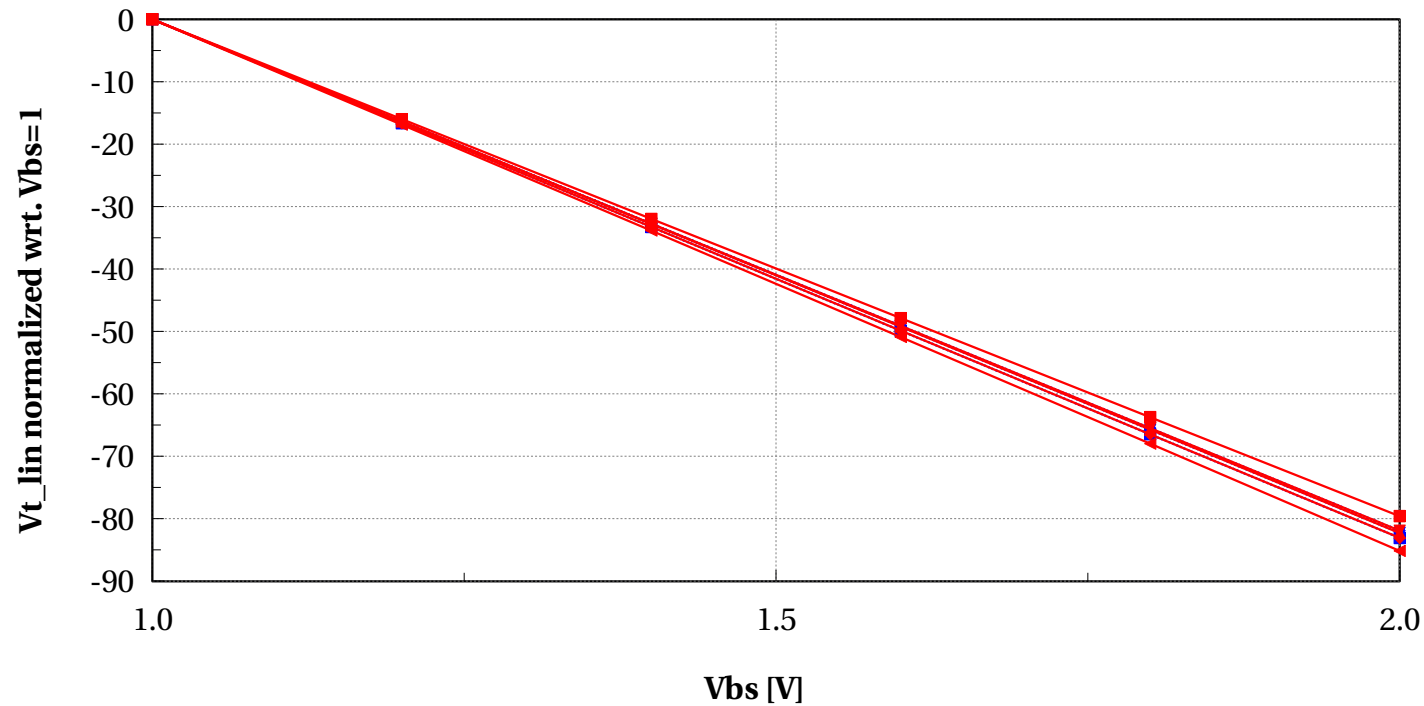
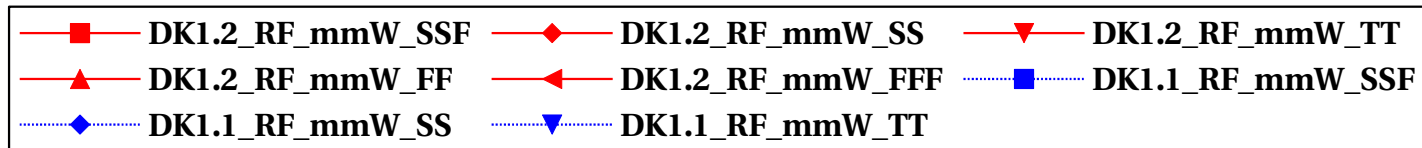
w==300e-9 and L==0.03e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



Scaling versus V_{bs} normalized ($L=30\text{nm}$, $W=300\text{nm}$)

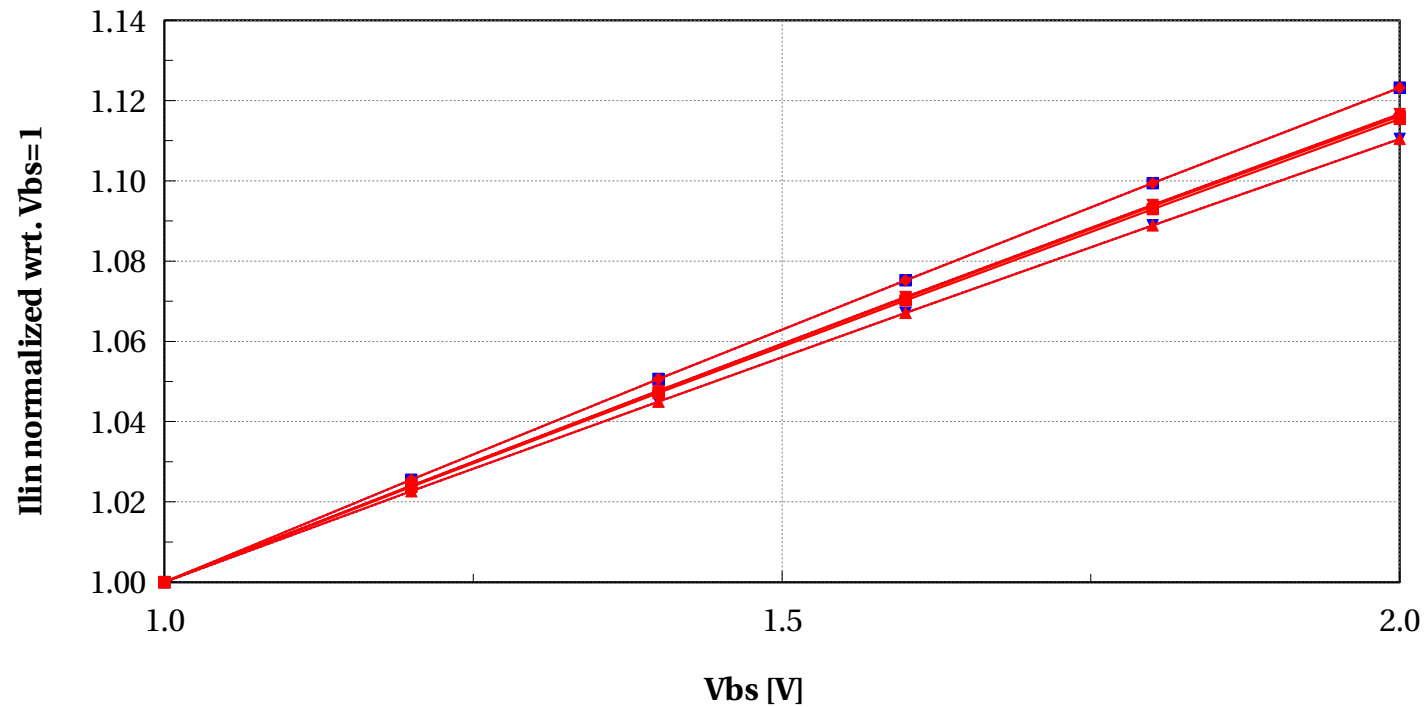
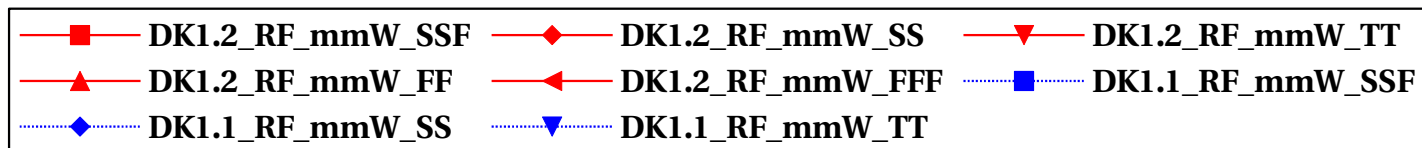
lvtpfet_acc, Vt_lin normalized wrt. Vbs=1 vs Vbs [V]

w==300e-9 and L==0.03e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



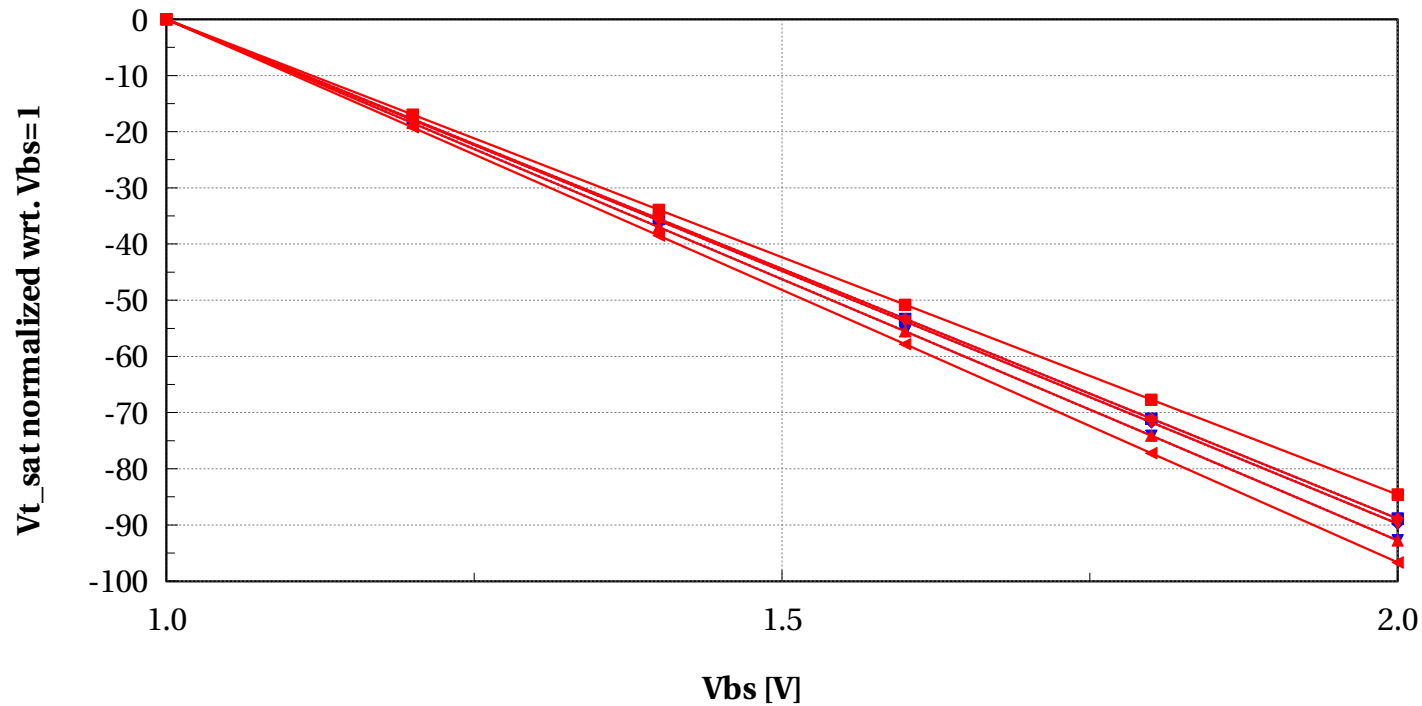
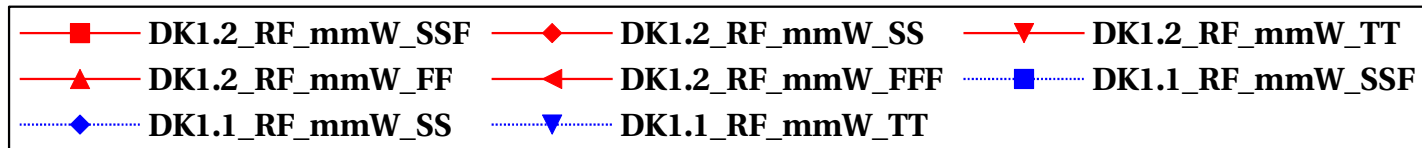
lvtpfet_acc, Ilin normalized wrt. Vbs=1 vs Vbs [V]

w==300e-9 and L==0.03e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



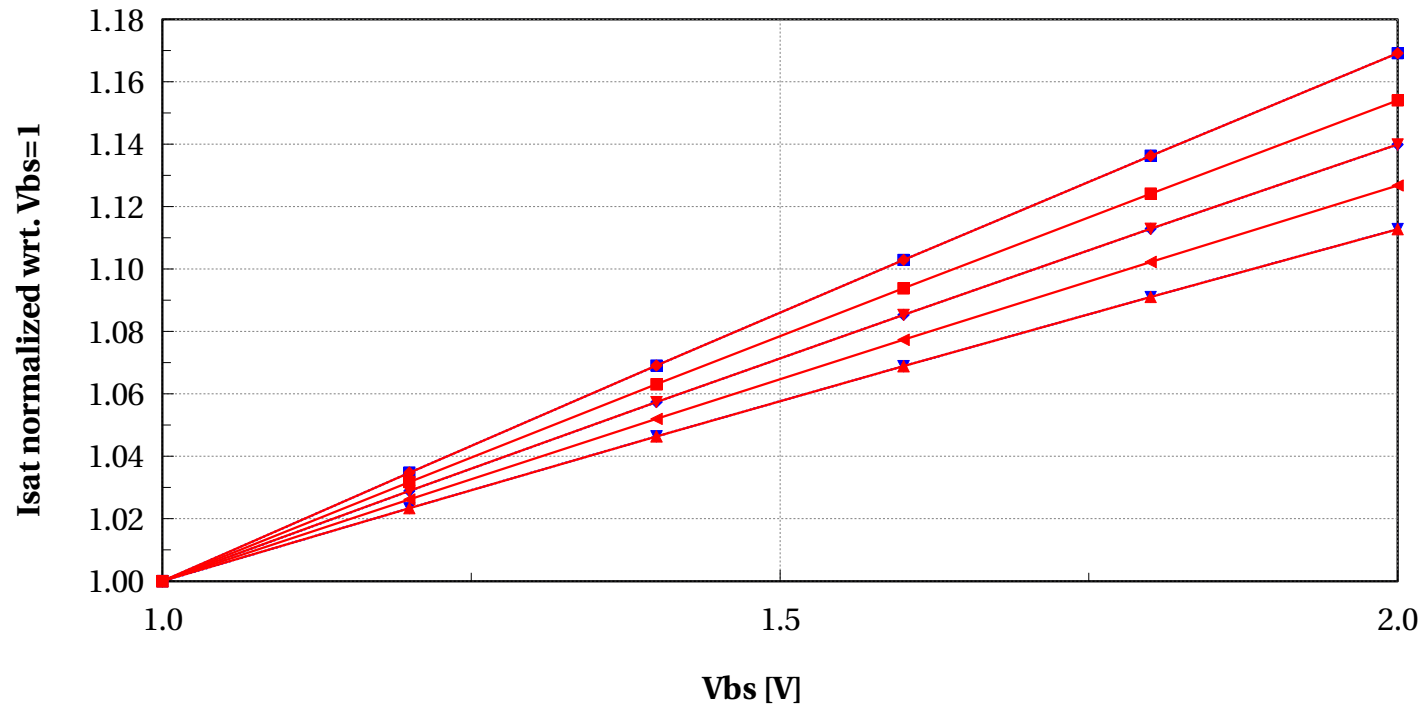
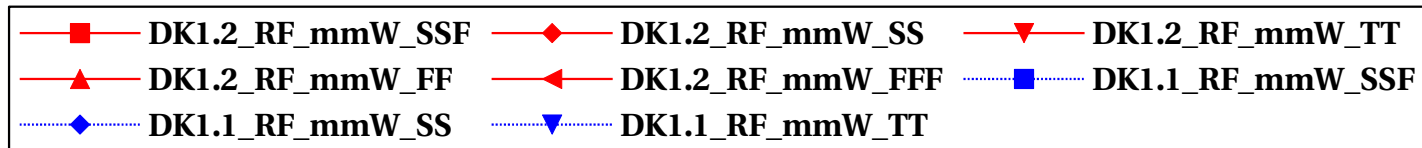
lvtpfet_acc, Vt_sat normalized wrt. Vbs=1 vs Vbs [V]

w==300e-9 and L==0.03e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



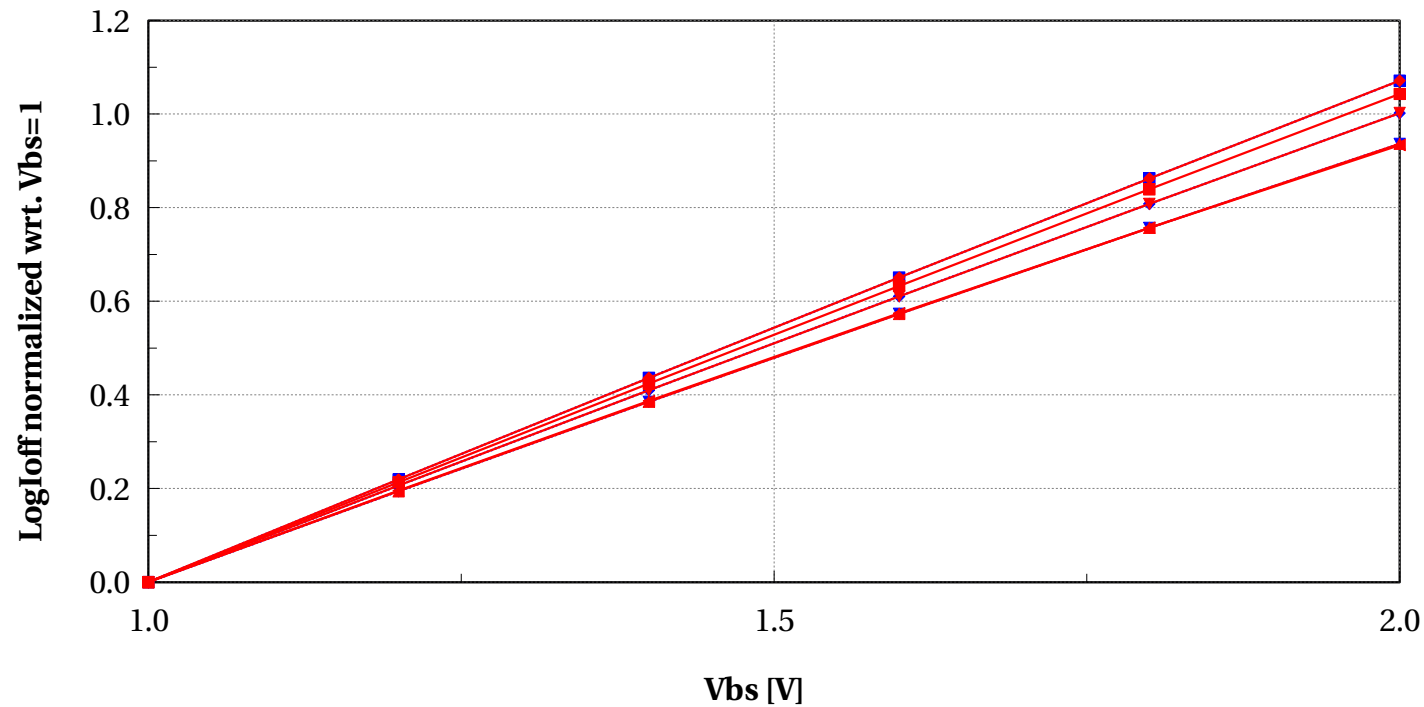
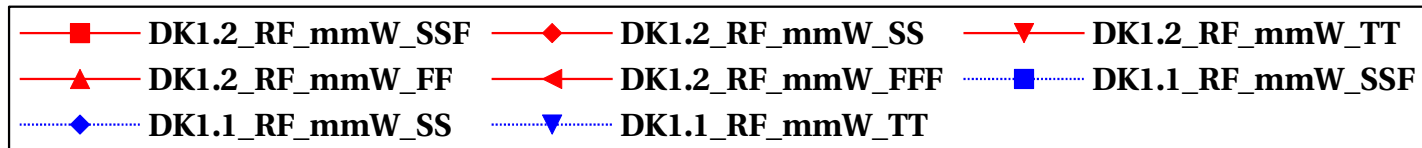
lvtpfet_acc, Isat normalized wrt. Vbs=1 vs Vbs [V]

w==300e-9 and L==0.03e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



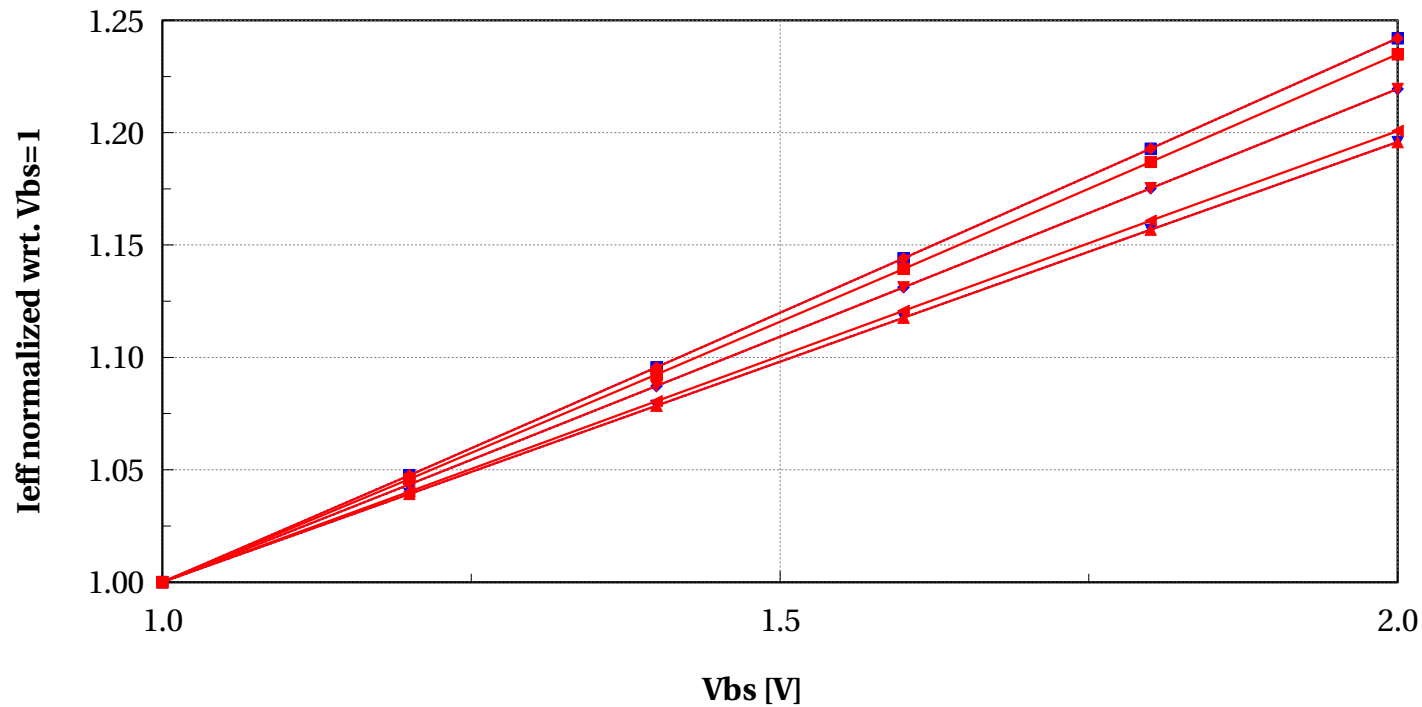
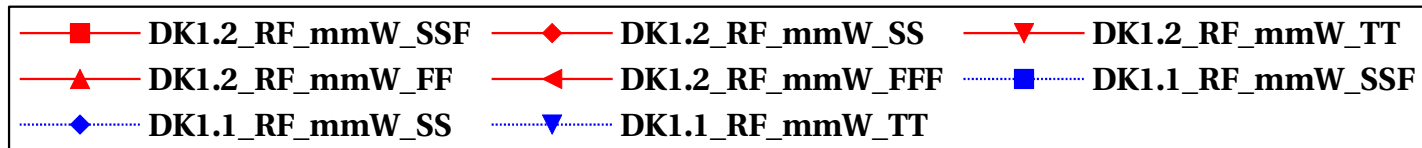
lvtpfet_acc, LogIoff normalized wrt. Vbs=1 vs Vbs [V]

w==300e-9 and L==0.03e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



lvtpfet_acc, Ieff normalized wrt. Vbs=1 vs Vbs [V]

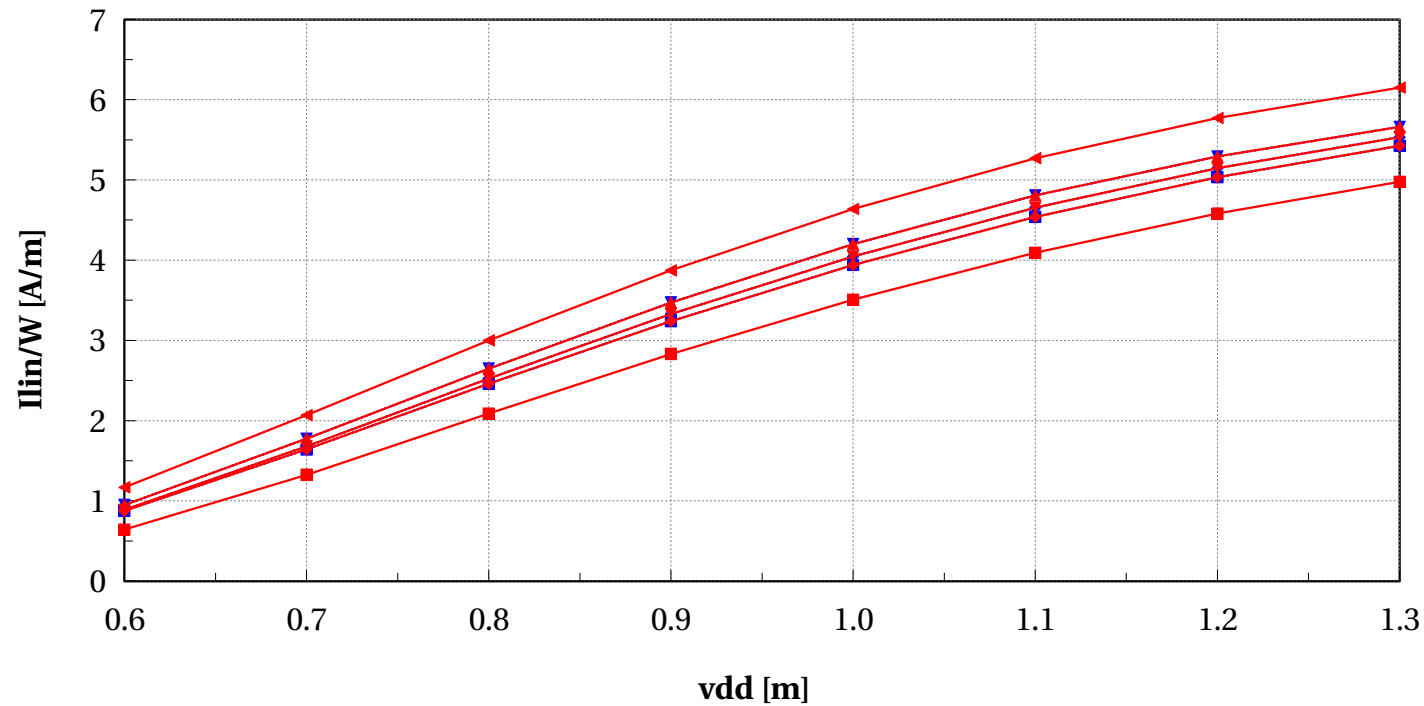
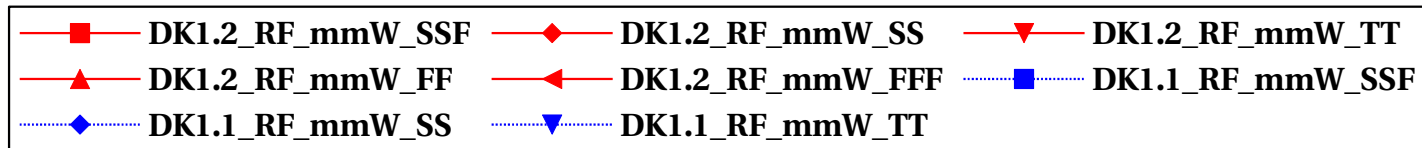
w==300e-9 and L==0.03e-6 and Temp==25 and vbs>0.9 and p_la==0 and Vdd==1



Vdd effect ($l=1\mu\text{m}, w=1\mu\text{m}$)

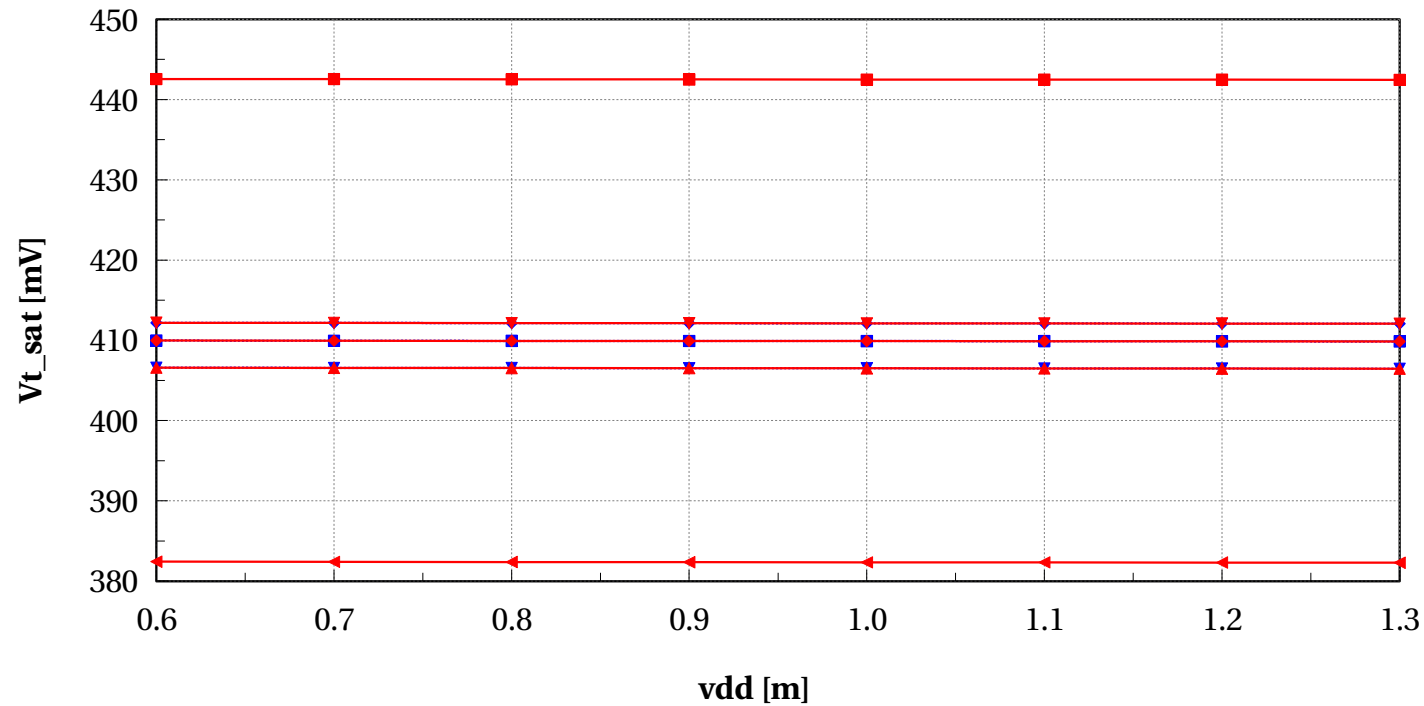
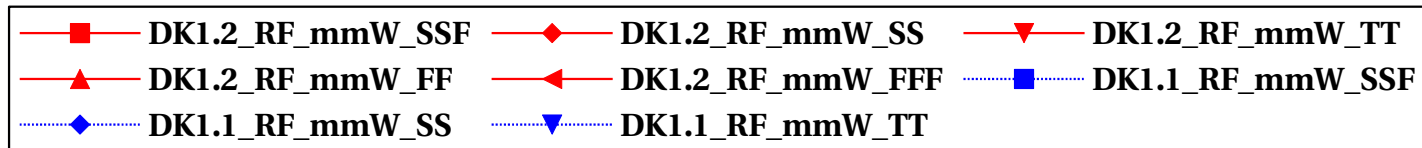
lvtpfet_acc, I_{lin}/W [A/m] vs v_{dd} [m]

$l=1e-6$ and $w=1e-6$ and Temp==25 and V_{bs}=1 and p_{la}=0



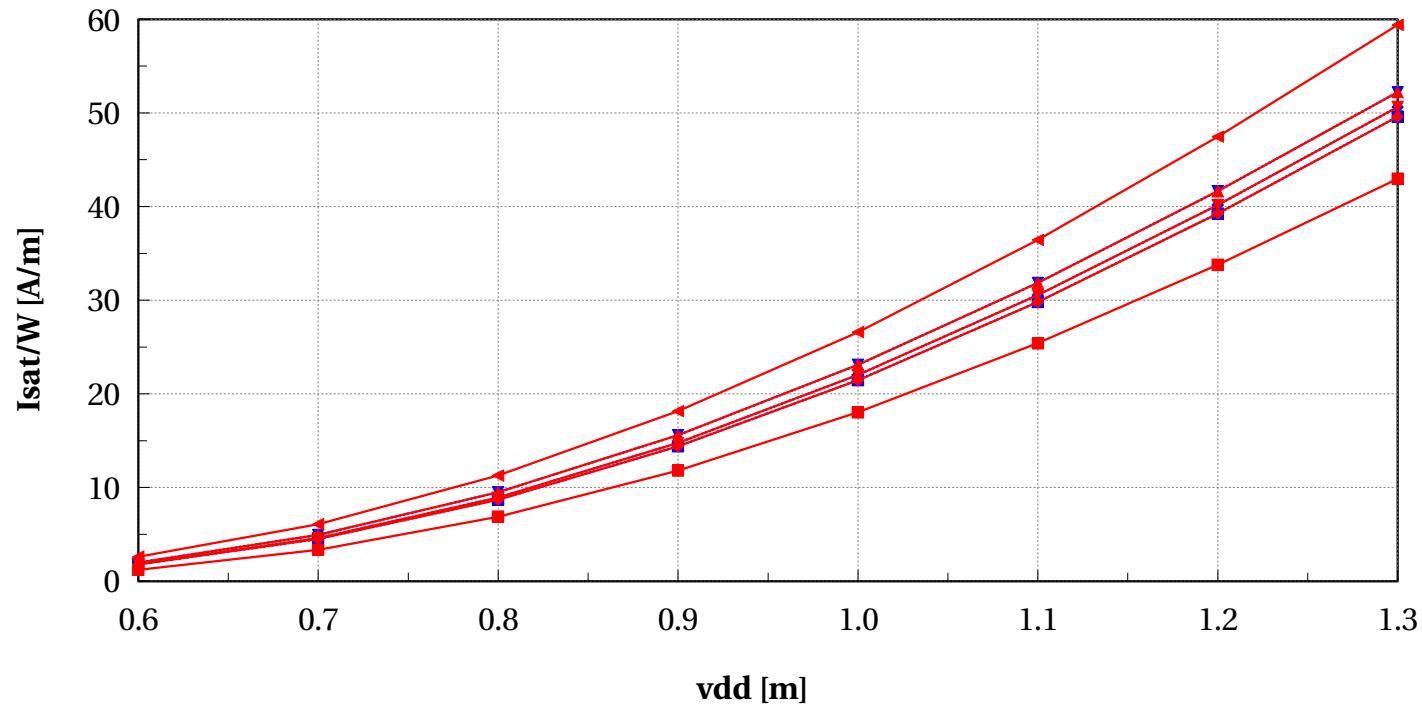
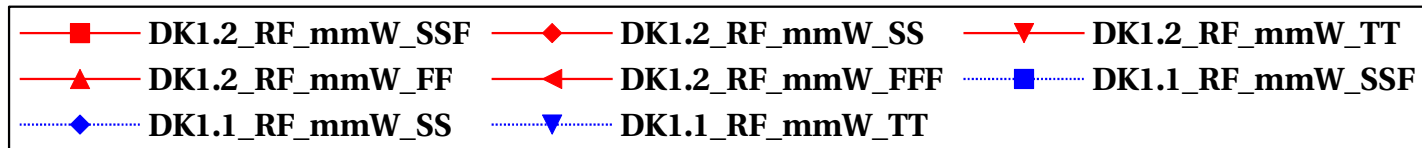
lvtpfet_acc, Vt_sat [mV] vs vdd [m]

$l=1e-6$ and $w=1e-6$ and $Temp=25$ and $Vbs=1$ and $p_la=0$



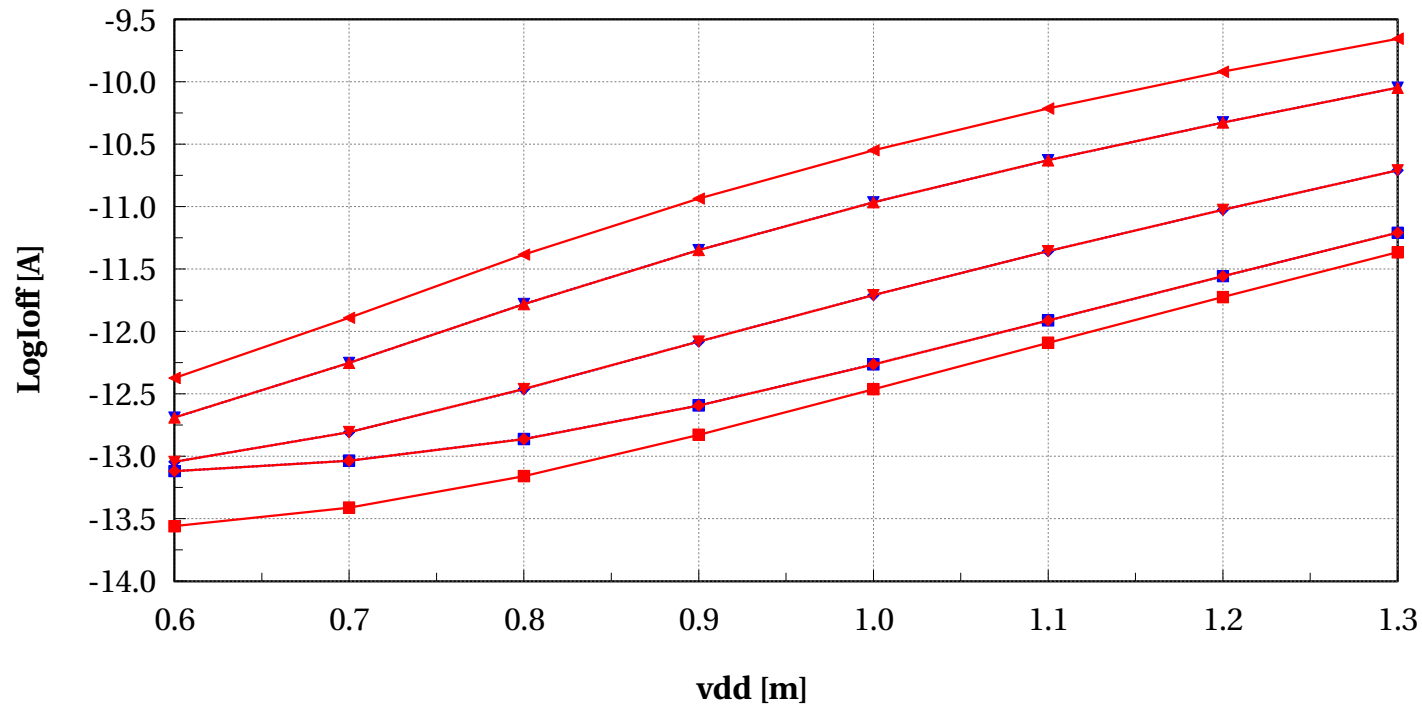
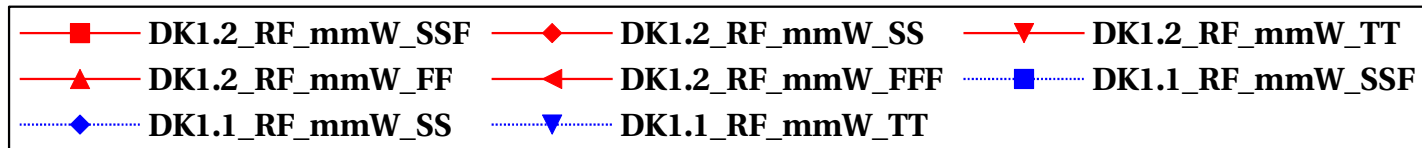
lvtpfet_acc, Isat/W [A/m] vs vdd [m]

$l=1e-6$ and $w=1e-6$ and Temp==25 and Vbs==1 and p_la==0



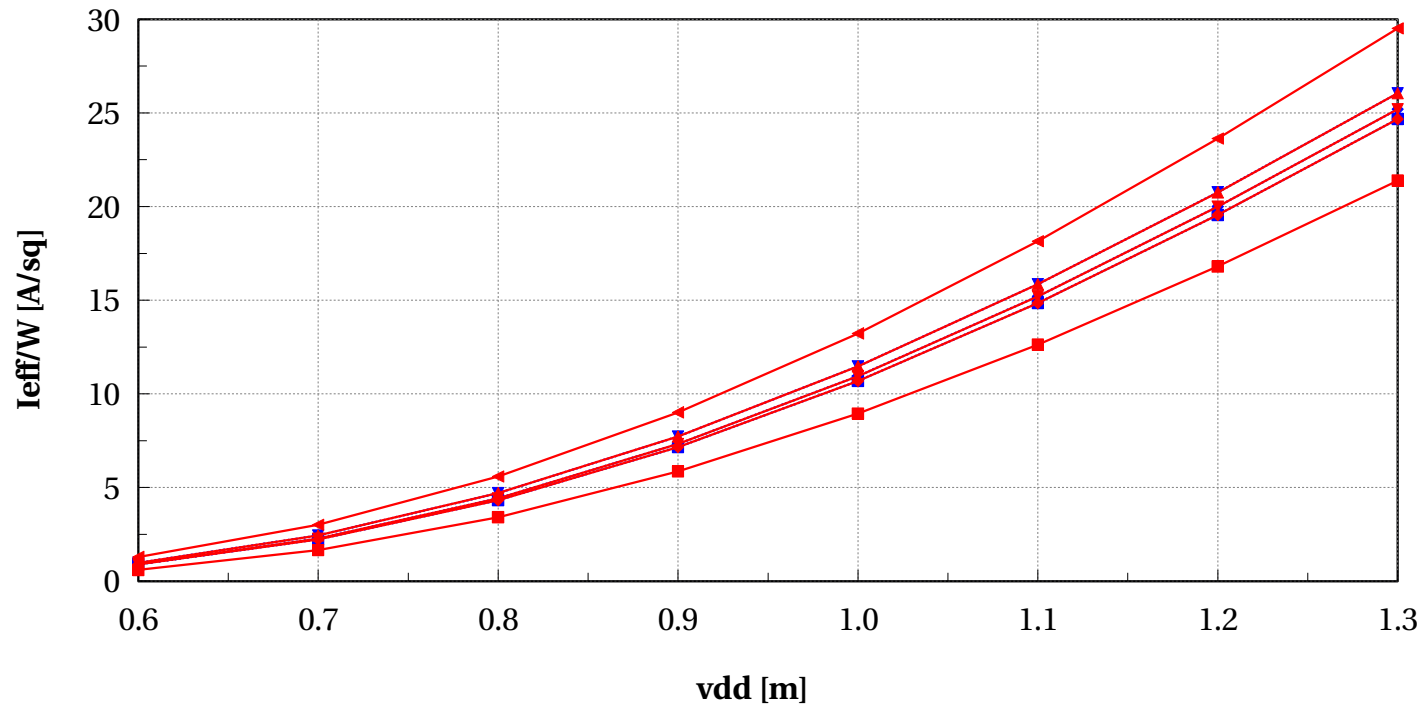
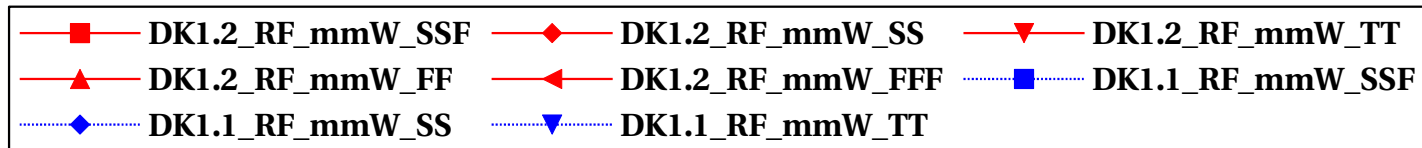
lvtpfet_acc, LogIoff [A] vs vdd [m]

$l=1e-6$ and $w=1e-6$ and $Temp=25$ and $Vbs=1$ and $p_la=0$



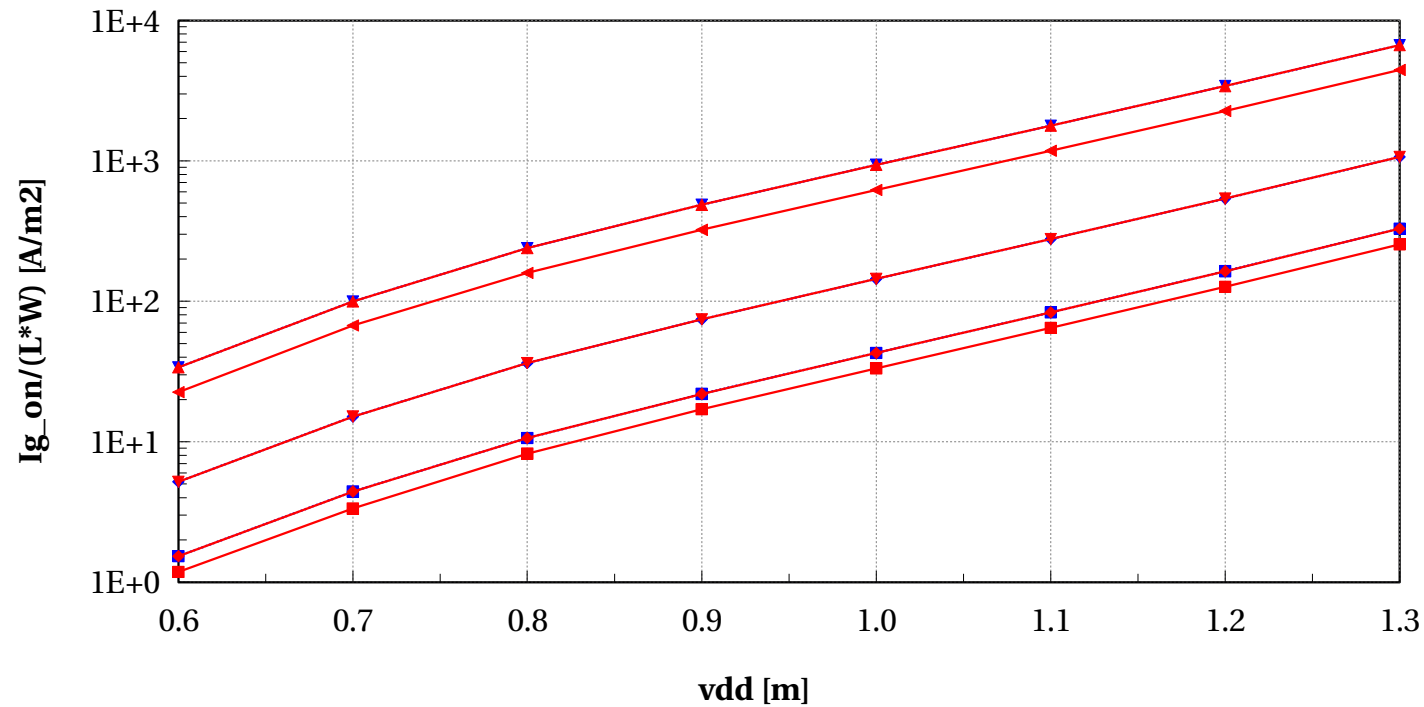
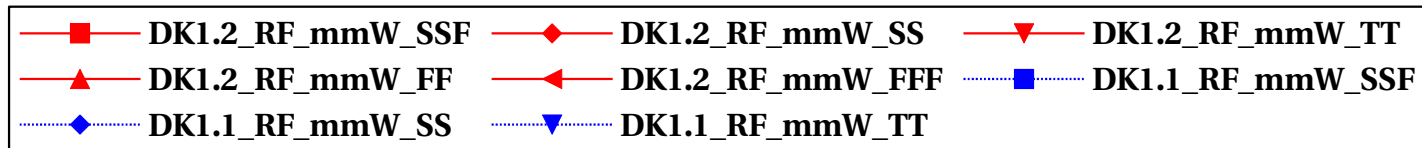
lvtpfet_acc, I_{eff}/W [A/sq] vs v_{dd} [m]

$l=1e-6$ and $w=1e-6$ and Temp==25 and V_{bs}=1 and p_{la}=0



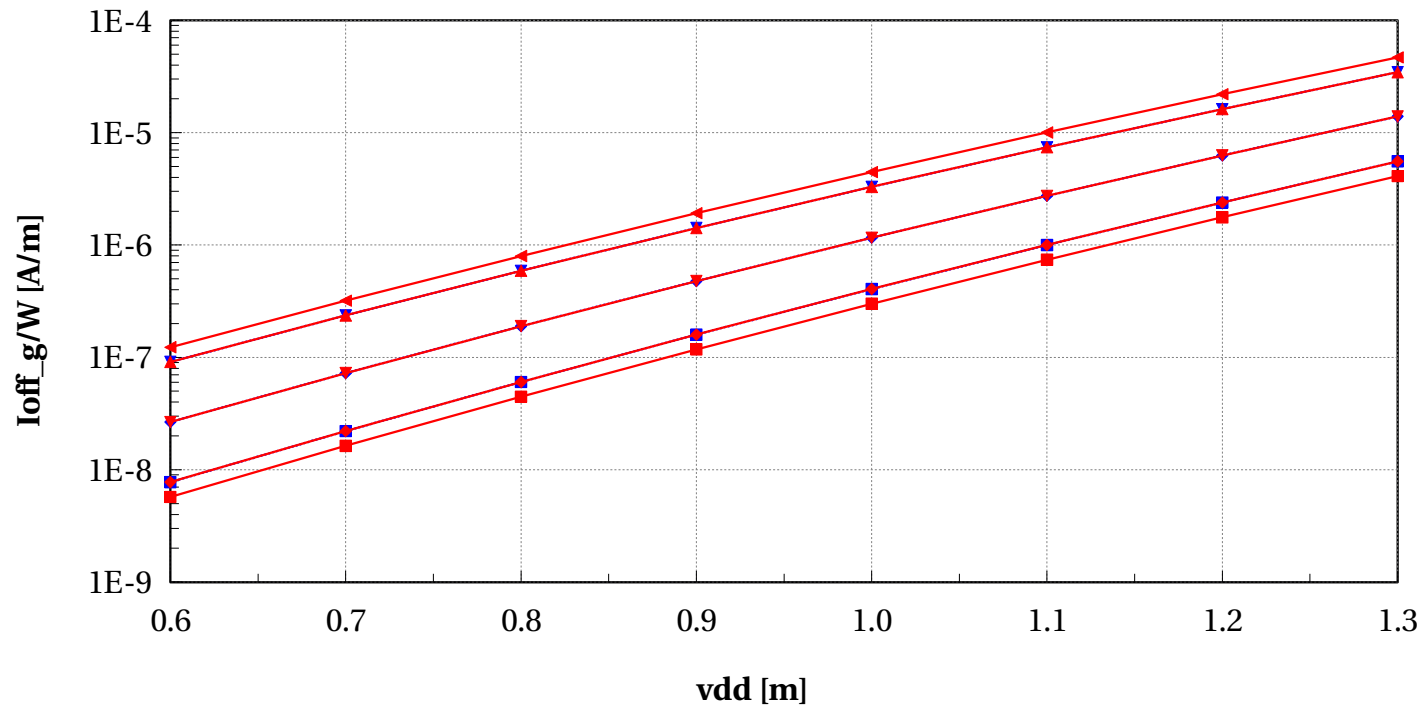
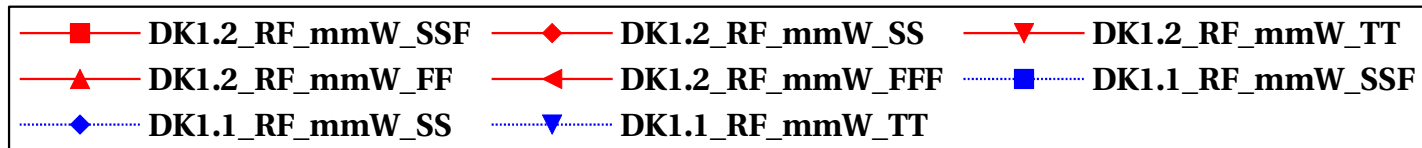
lvtpfet_acc, Ig_on/(L*W) [A/m2] vs vdd [m]

$l=1e-6$ and $w=1e-6$ and Temp==25 and Vbs==1 and p_la==0



lvtpfet_acc, Ioff_g/W [A/m] vs vdd [m]

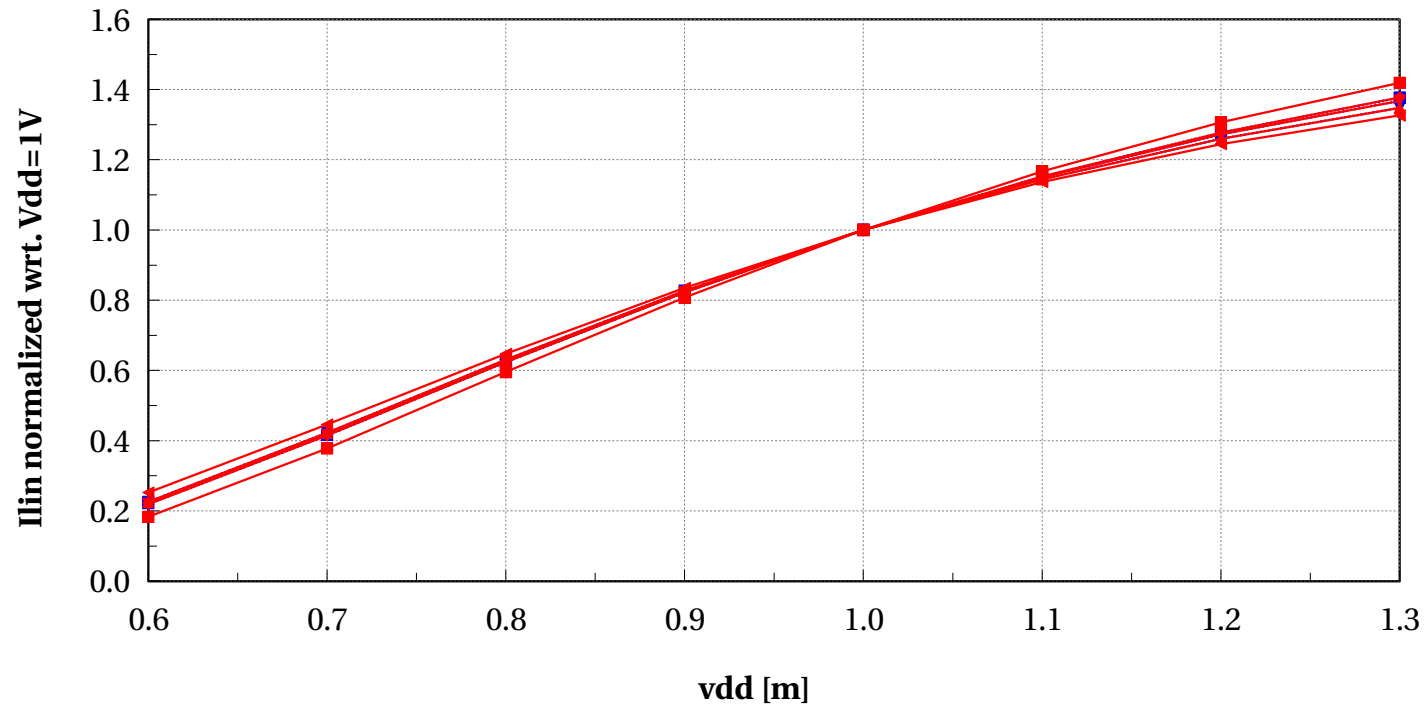
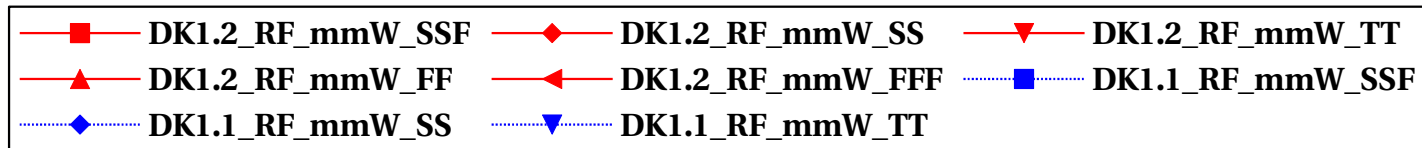
$l=1e-6$ and $w=1e-6$ and Temp==25 and Vbs==1 and p_la==0



Vdd effect normalized ($l=1\mu\text{m}, w=1\mu\text{m}$)

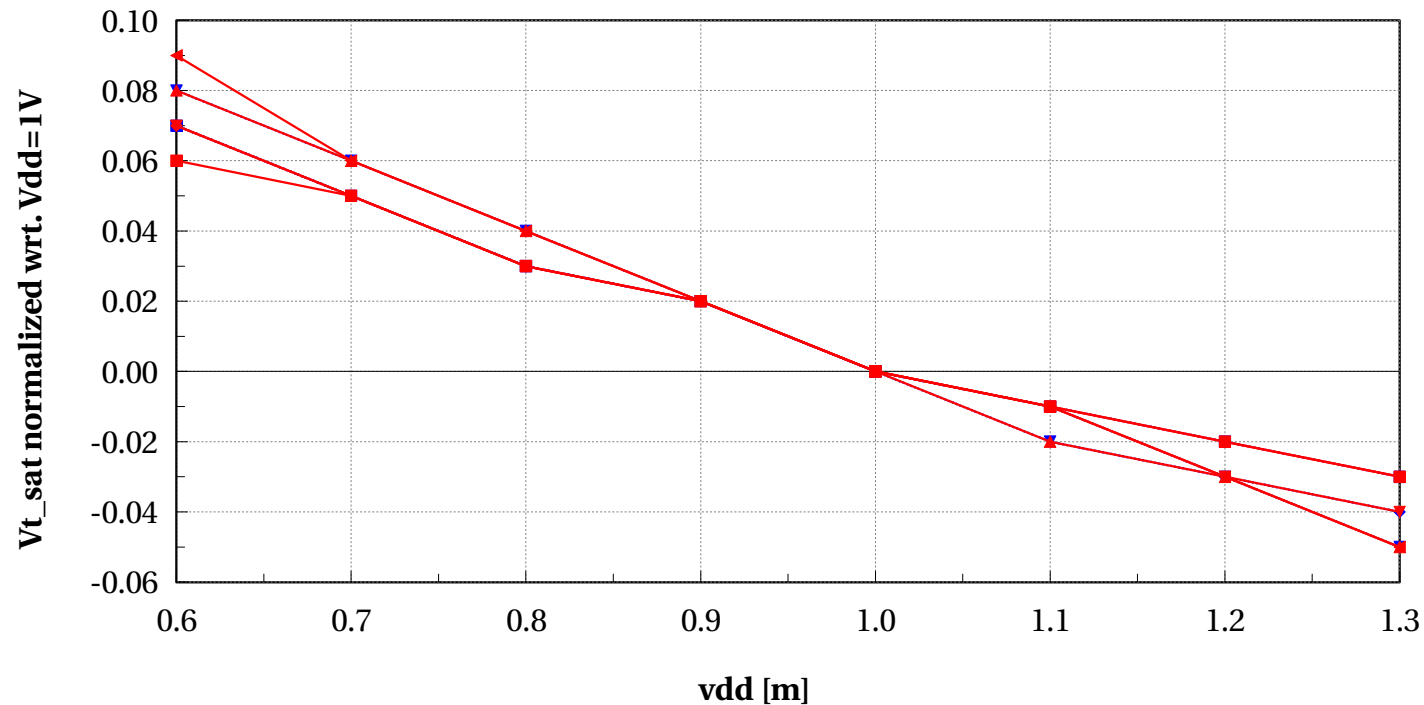
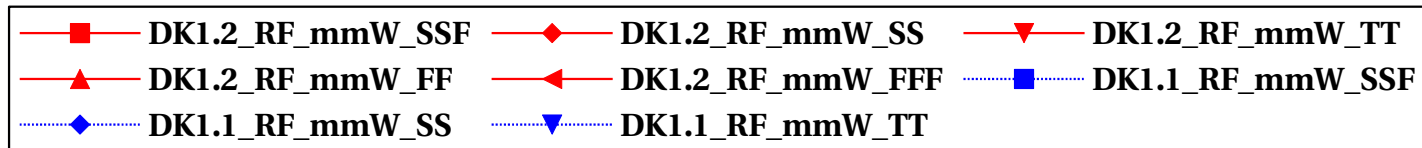
lvtpfet_acc, Ilin normalized wrt. Vdd=1V vs vdd [m]

$l=1\text{e-}6$ and $w=1\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=1$ and $p_{la}=0$



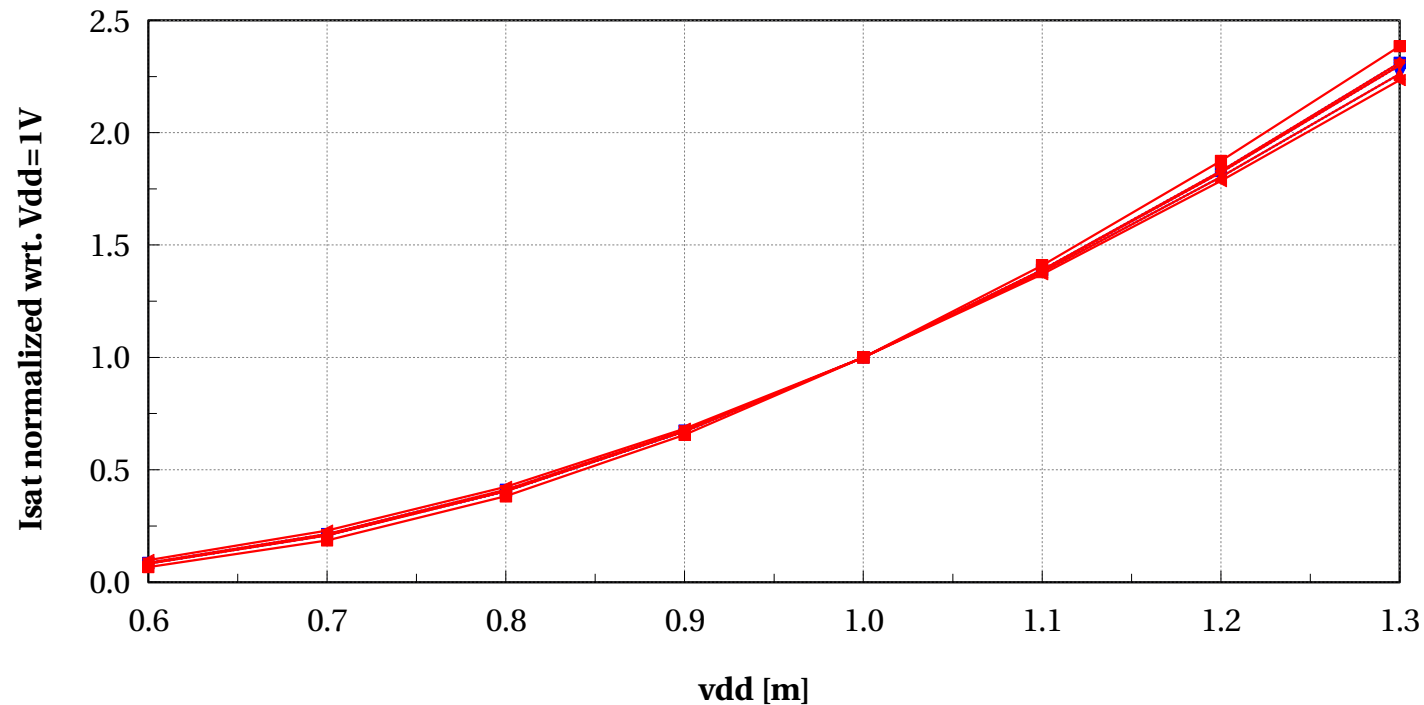
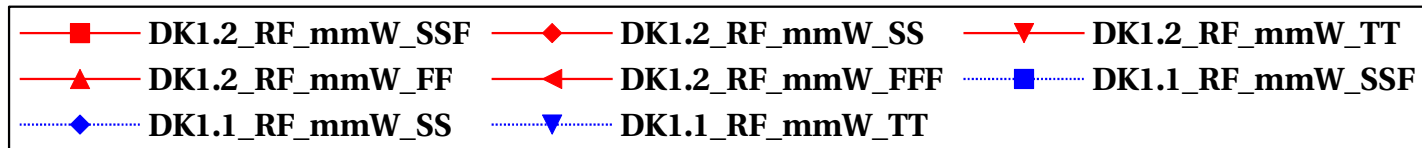
lvtpfet_acc, Vt_sat normalized wrt. Vdd=1V vs vdd [m]

$l=1e-6$ and $w=1e-6$ and $Temp=25$ and $Vbs=1$ and $p_la=0$



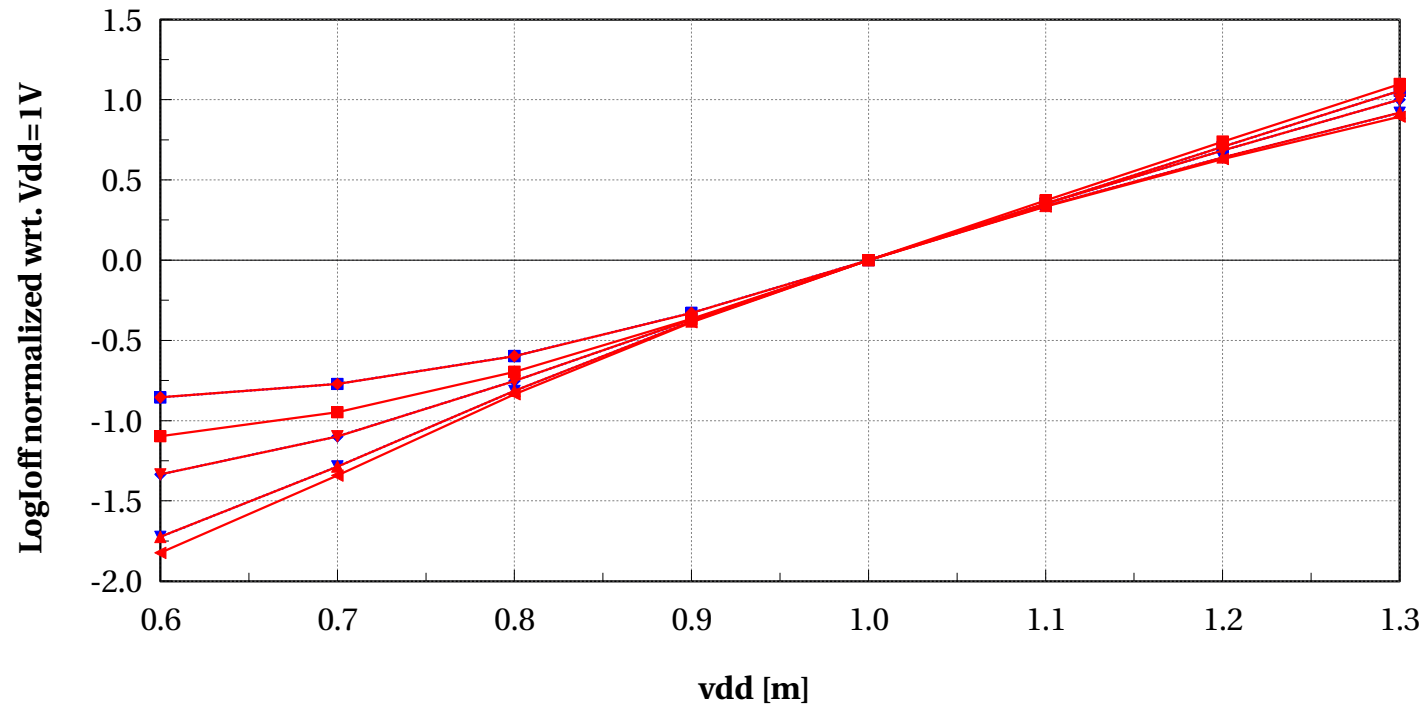
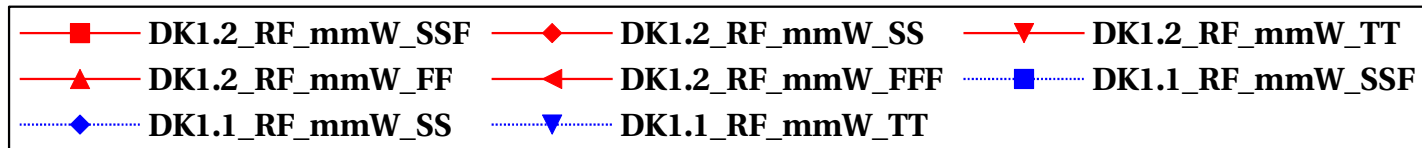
lvtpfet_acc, Isat normalized wrt. Vdd=1V vs vdd [m]

$l=1e-6$ and $w=1e-6$ and $Temp=25$ and $Vbs=1$ and $p_{la}=0$



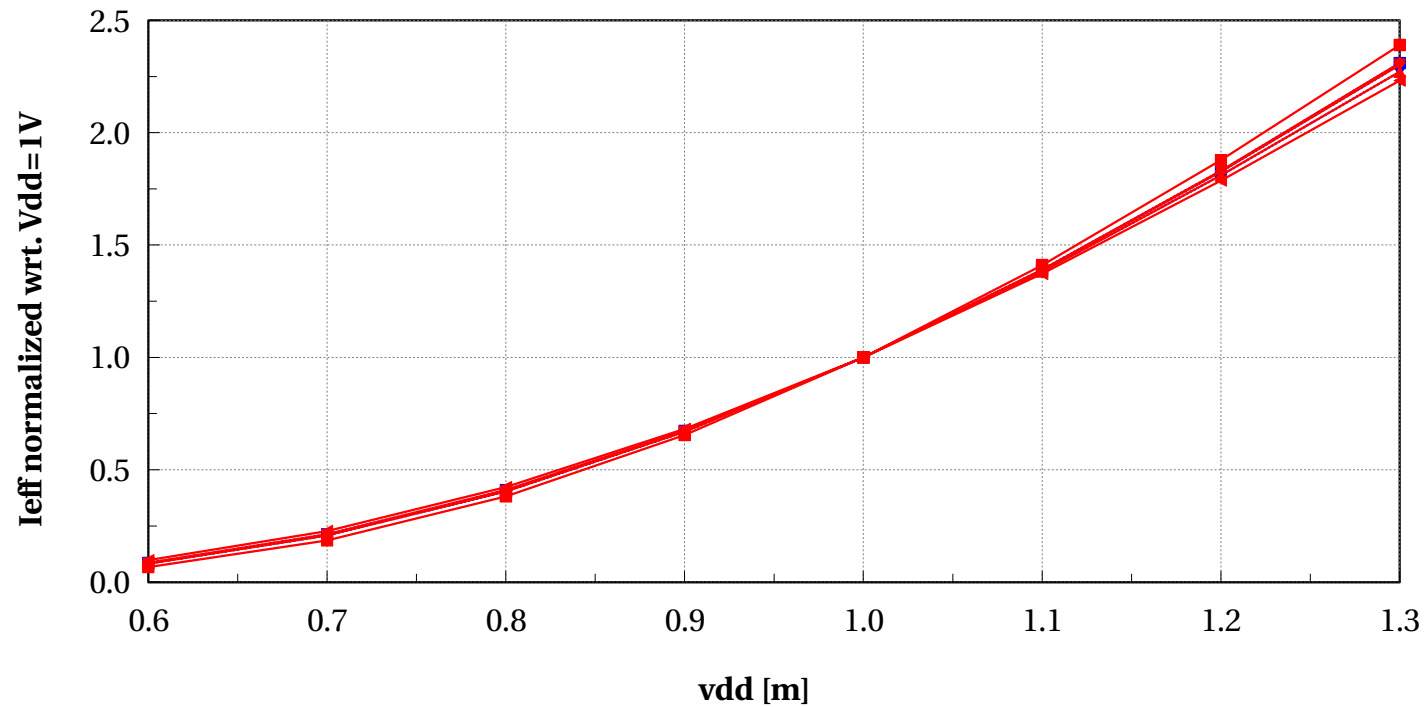
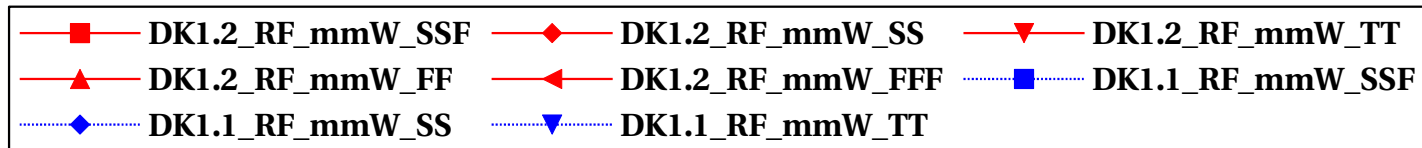
lvtpfet_acc, LogIoff normalized wrt. Vdd=1V vs vdd [m]

$l=1e-6$ and $w=1e-6$ and $Temp=25$ and $Vbs=1$ and $p_{la}=0$



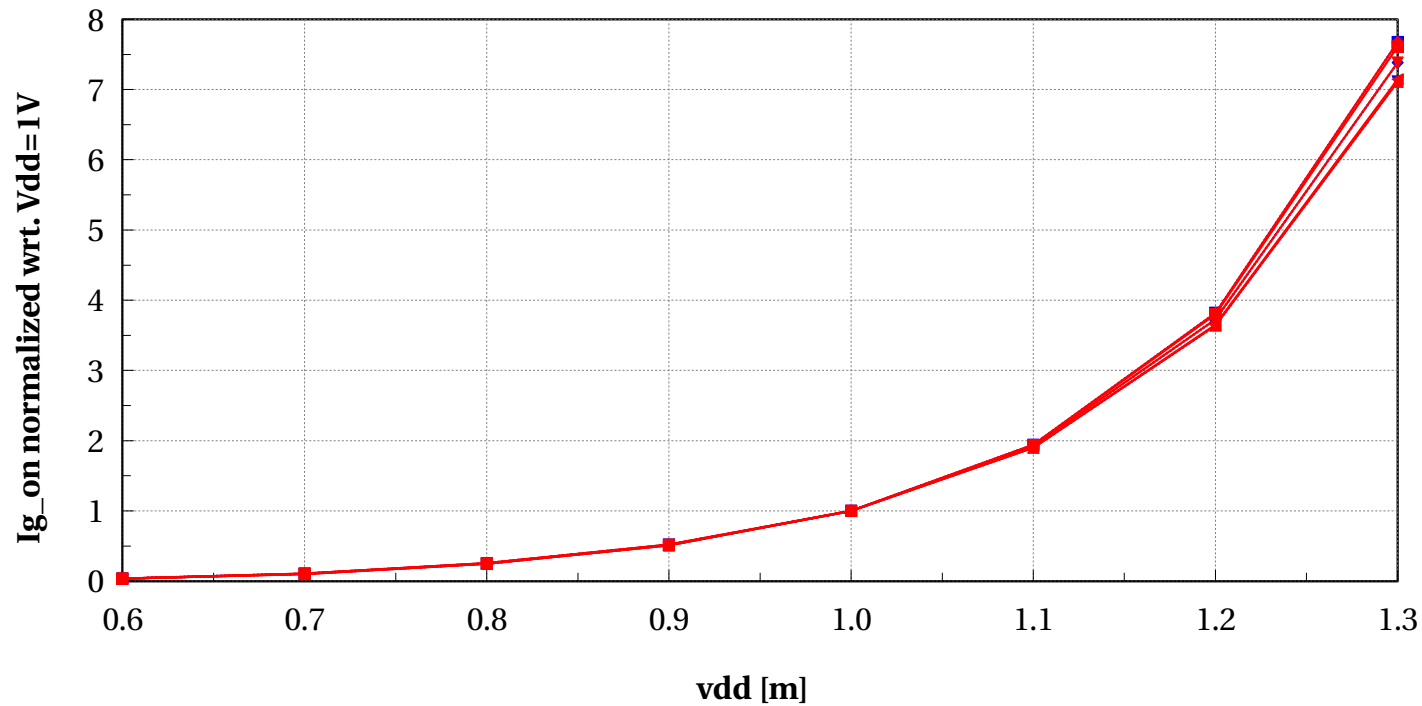
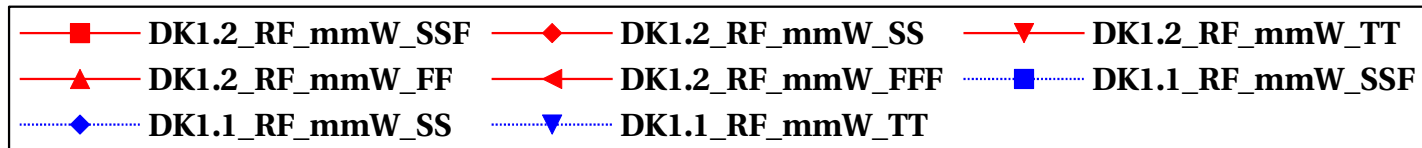
lvtpfet_acc, Ieff normalized wrt. Vdd=1V vs vdd [m]

$l=1e-6$ and $w=1e-6$ and Temp==25 and Vbs==1 and p_la==0



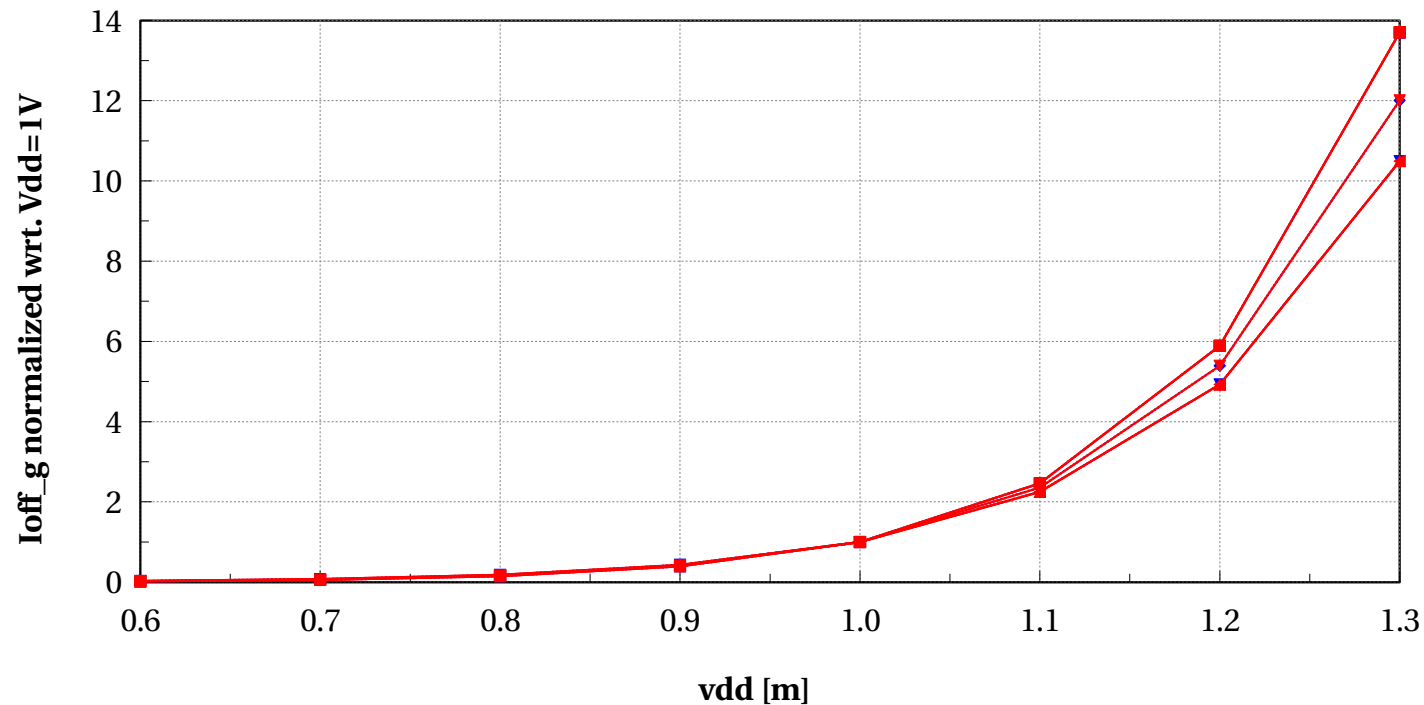
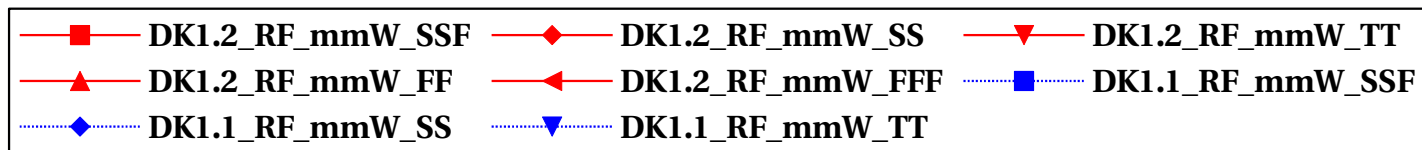
lvtpfet_acc, Ig_on normalized wrt. Vdd=1V vs vdd [m]

$l=1e-6$ and $w=1e-6$ and Temp=25 and Vbs=1 and p_la=0



lvtpfet_acc, Ioff_g normalized wrt. Vdd=1V vs vdd [m]

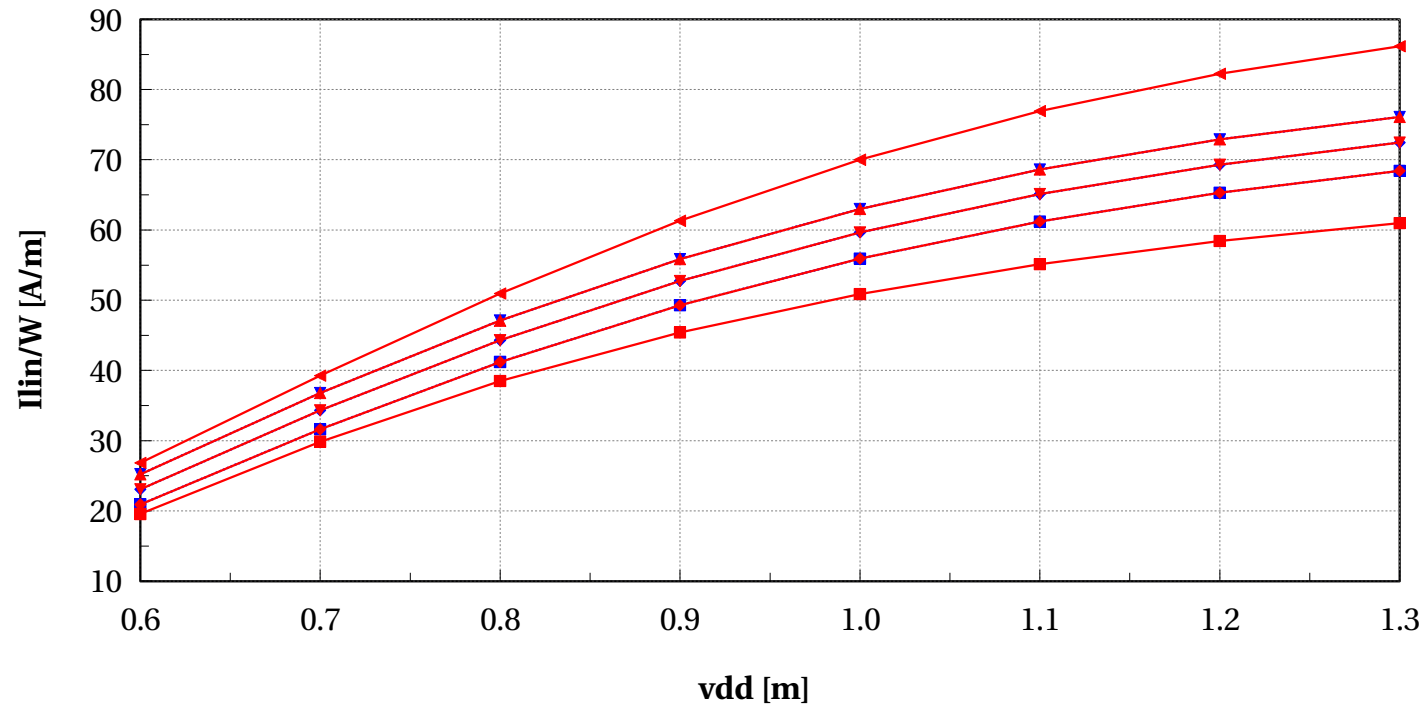
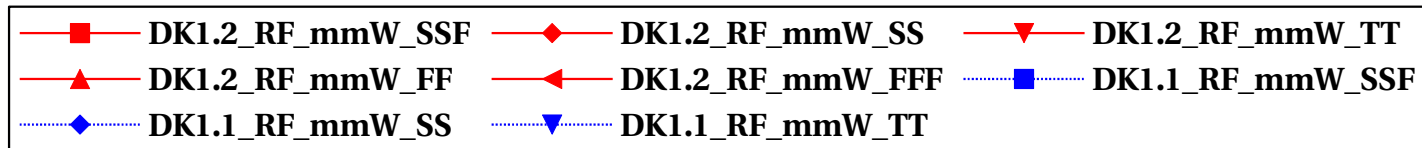
$l=1e-6$ and $w=1e-6$ and $Temp=25$ and $Vbs=1$ and $p_{la}=0$



Vdd effect ($l=30\text{e-}9$ $w=300\text{e-}9$)

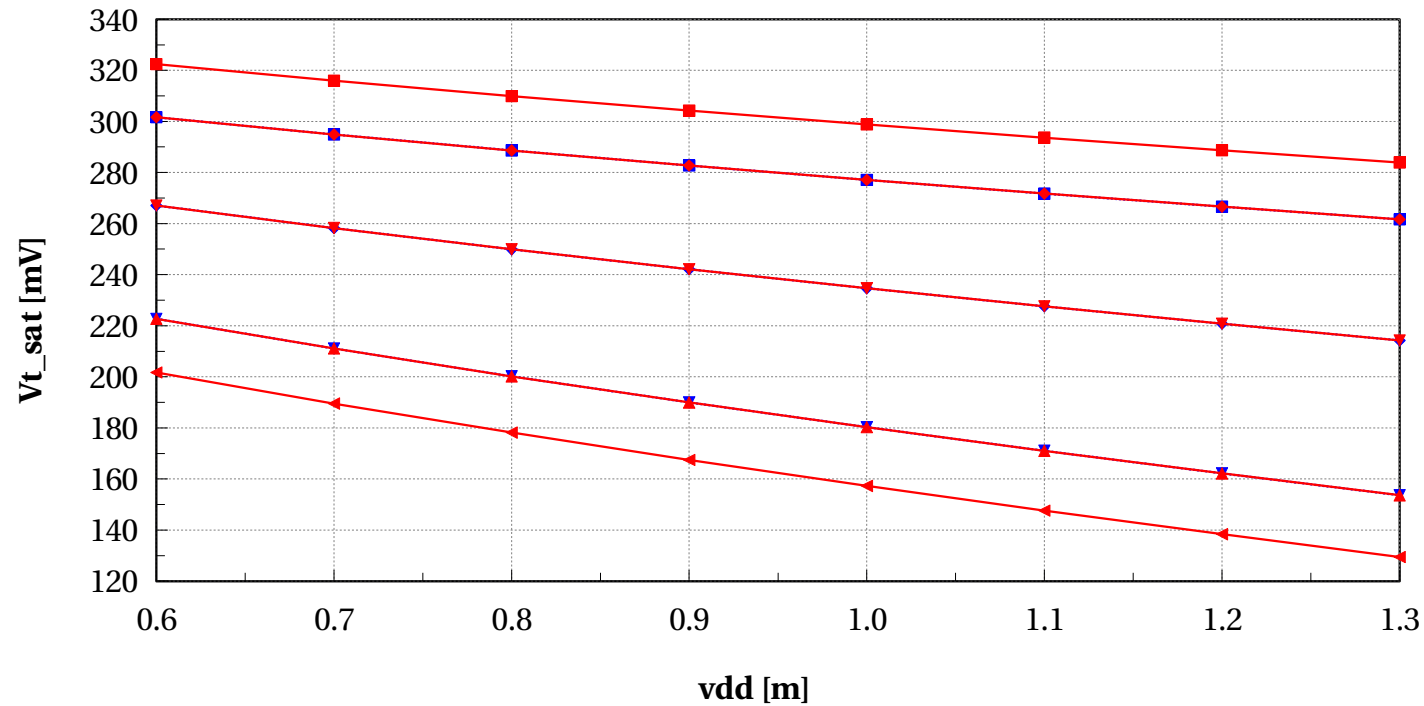
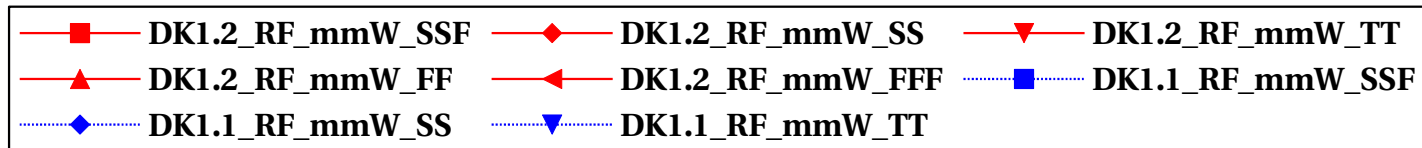
lvtpfet_acc, I_{lin}/W [A/m] vs v_{dd} [m]

$l=30\text{e-}9$ and $w=0.3\text{e-}6$ and Temp==25 and V_{bs}=1 and p_{la}=0



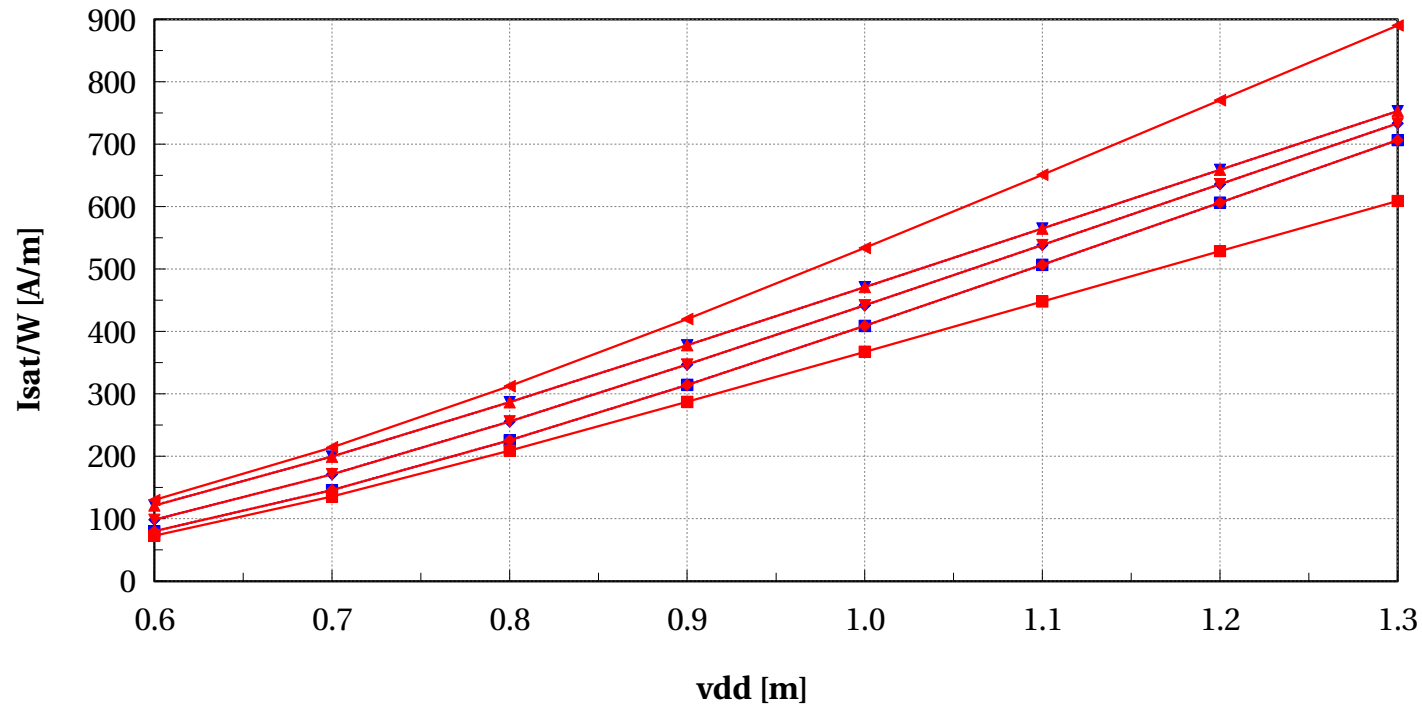
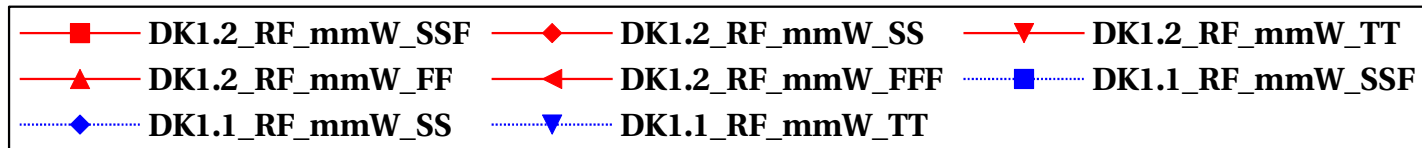
lvtpfet_acc, Vt_sat [mV] vs vdd [m]

$l=30\text{e-}9$ and $w=0.3\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=1$ and $p_{la}=0$



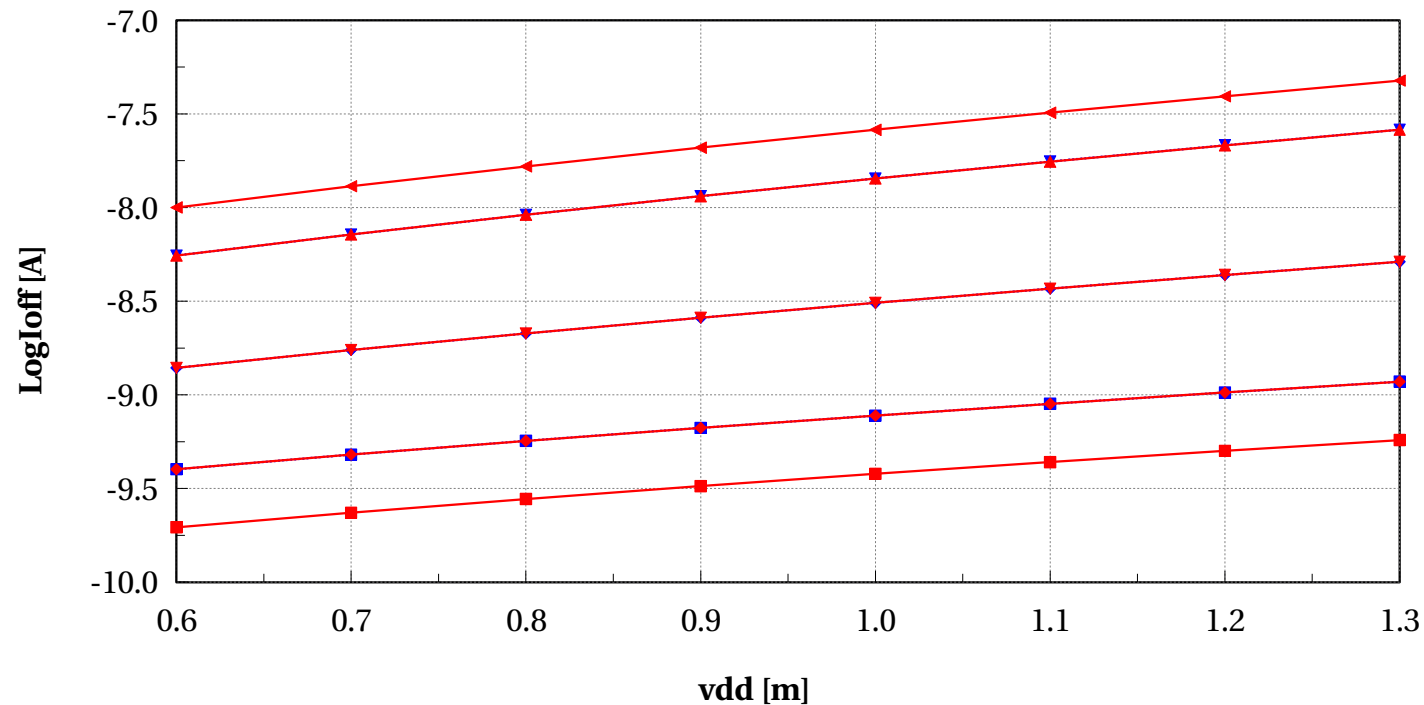
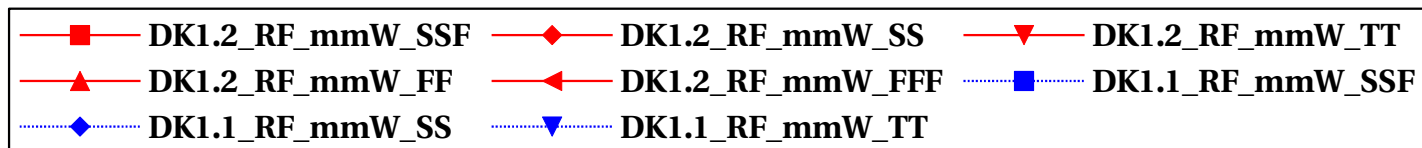
lvtpfet_acc, Isat/W [A/m] vs vdd [m]

$l=30\text{e-}9$ and $w=0.3\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=1$ and $p_{la}=0$



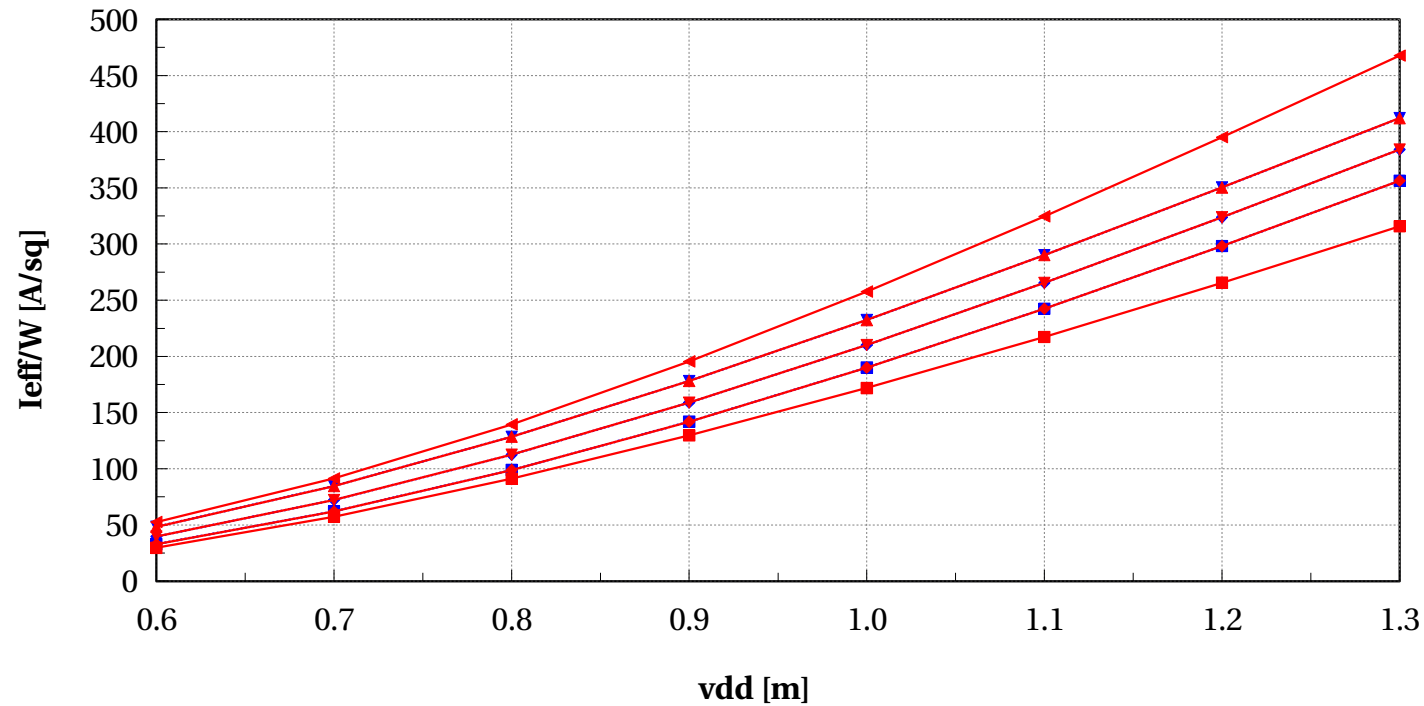
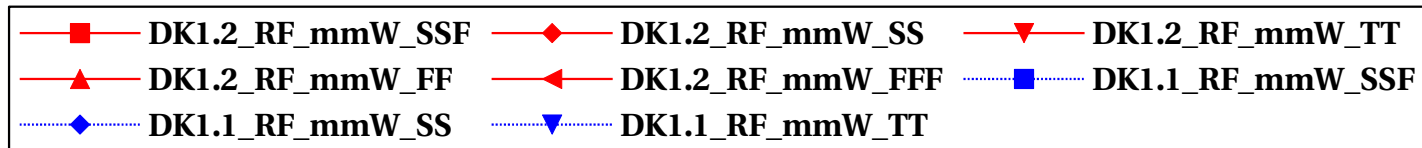
lvtpfet_acc, LogIoff [A] vs vdd [m]

$l=30e-9$ and $w=0.3e-6$ and $Temp=25$ and $V_{bs}=1$ and $p_{la}=0$



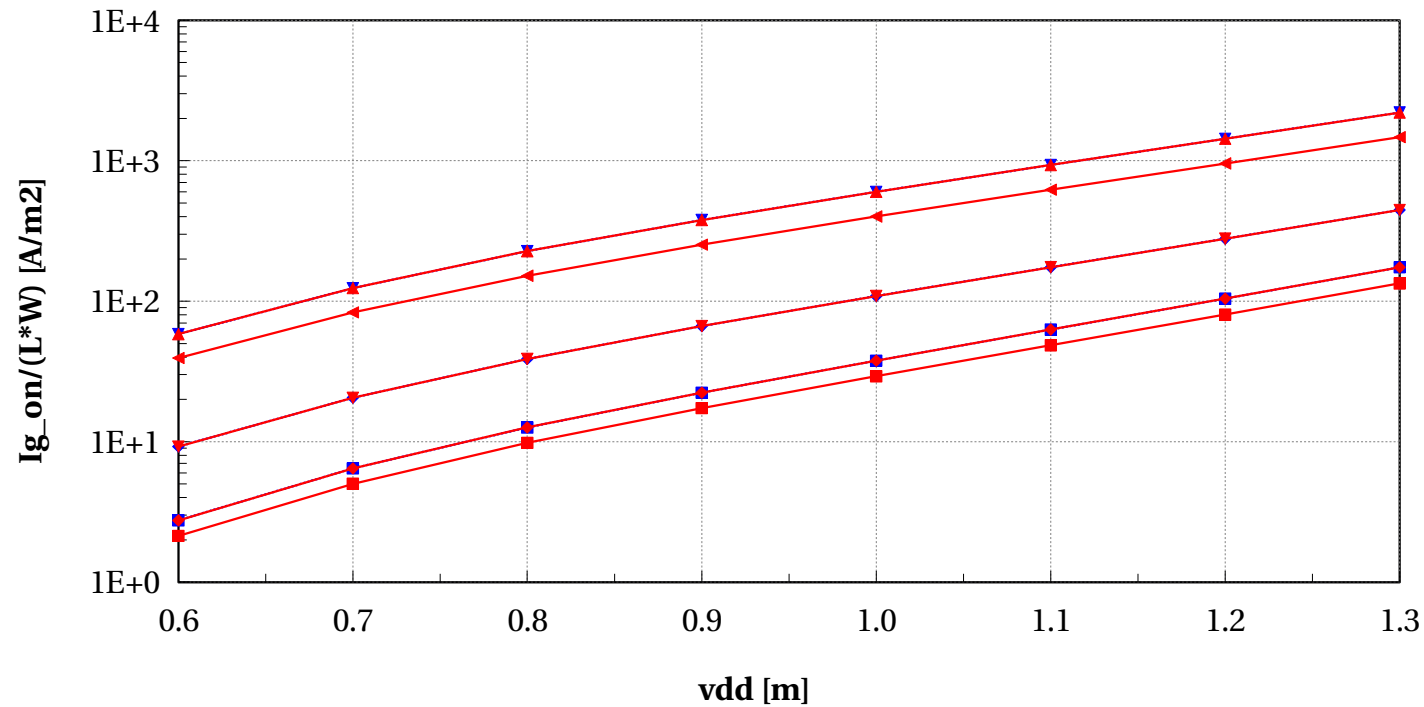
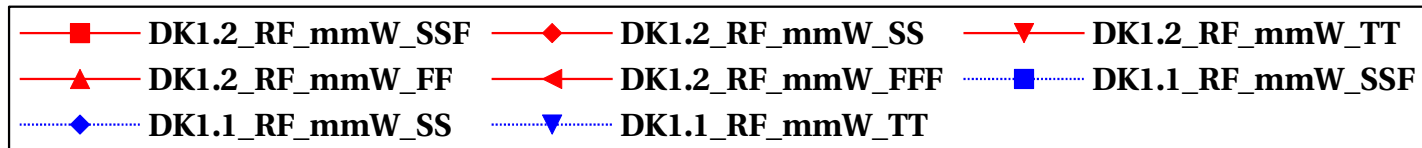
lvtpfet_acc, I_{eff}/W [A/sq] vs v_{dd} [m]

$l=30\text{e-}9$ and $w=0.3\text{e-}6$ and Temp=25 and V_{bs}=1 and p_{la}=0



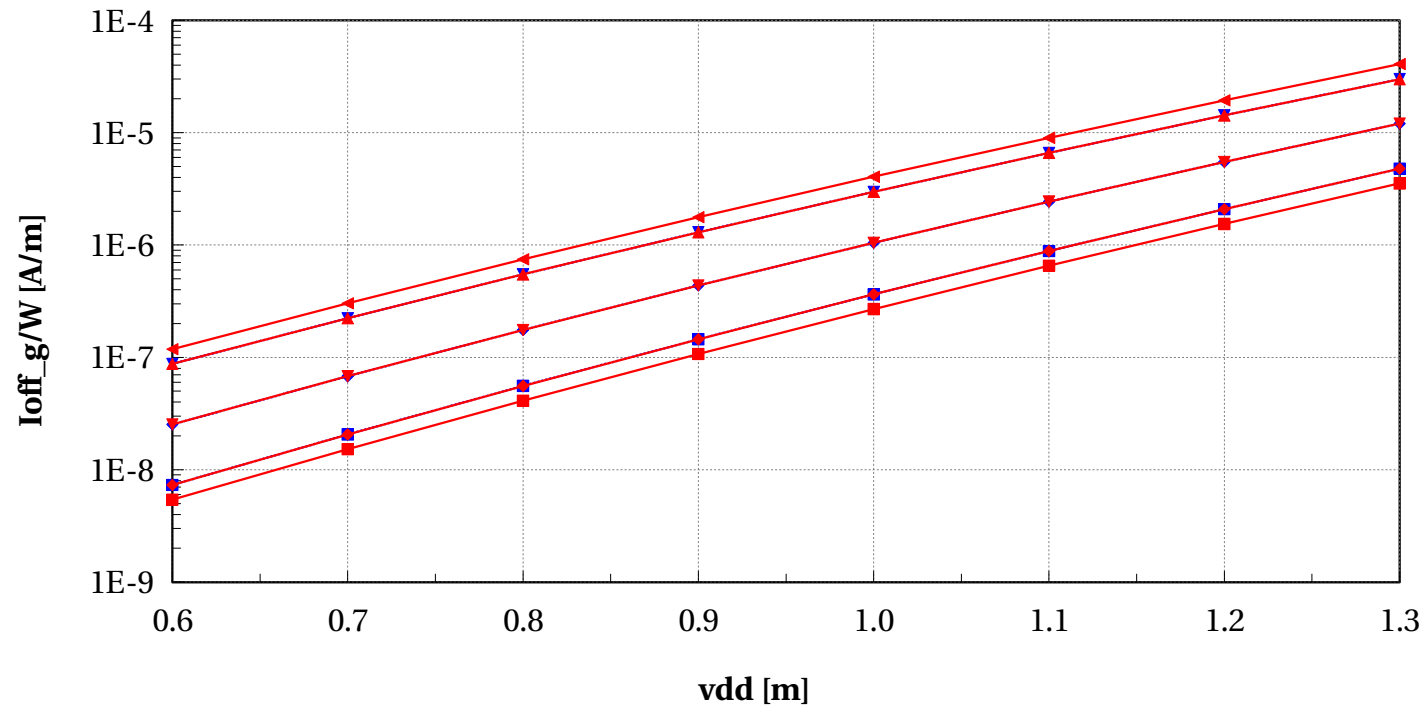
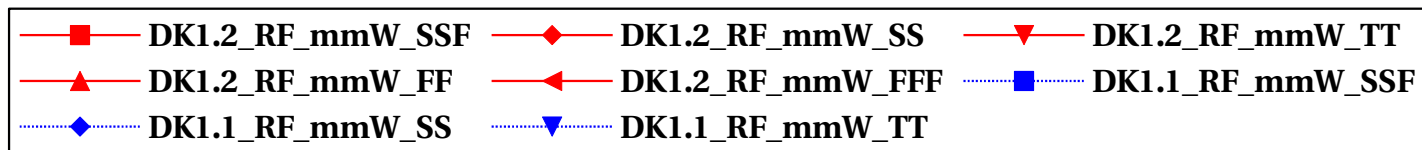
lvtpfet_acc, Ig_on/(L*W) [A/m2] vs vdd [m]

$l=30\text{e-}9$ and $w=0.3\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=1$ and $p_{la}=0$



lvtpfet_acc, Ioff_g/W [A/m] vs vdd [m]

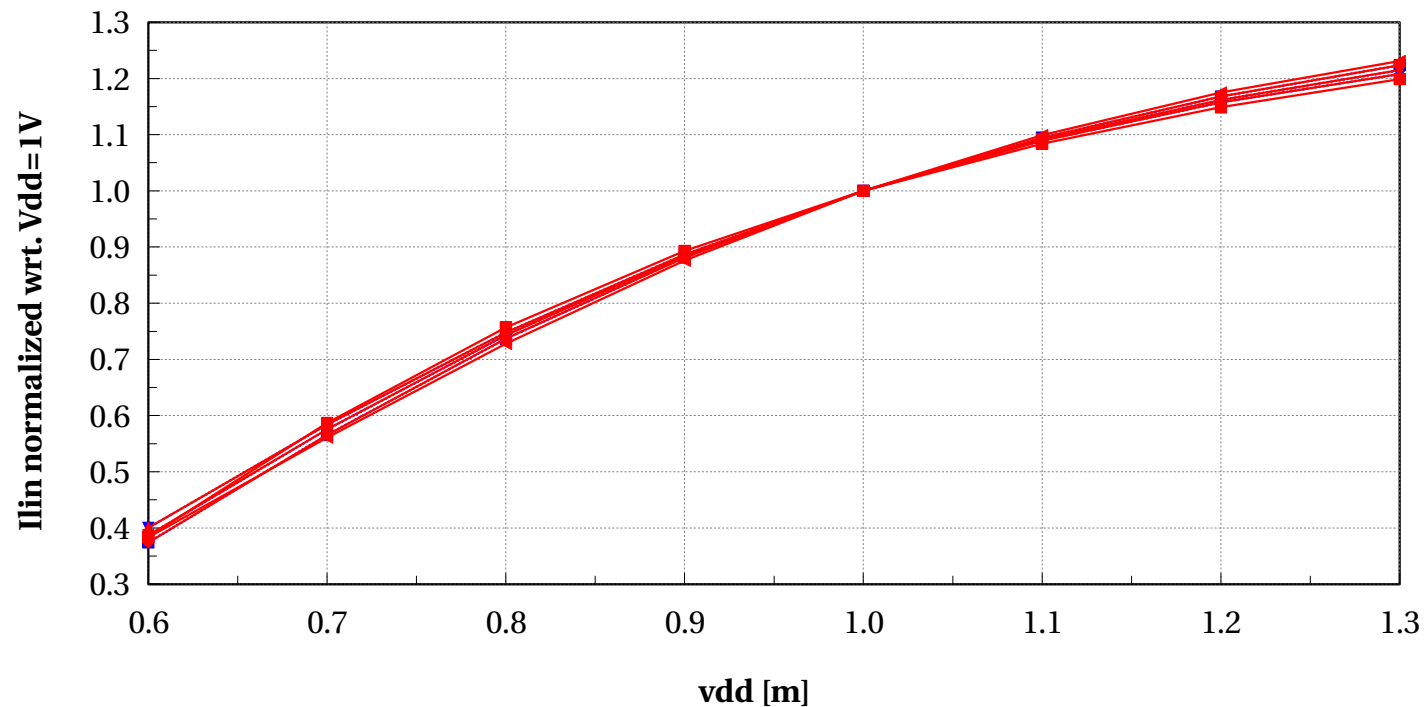
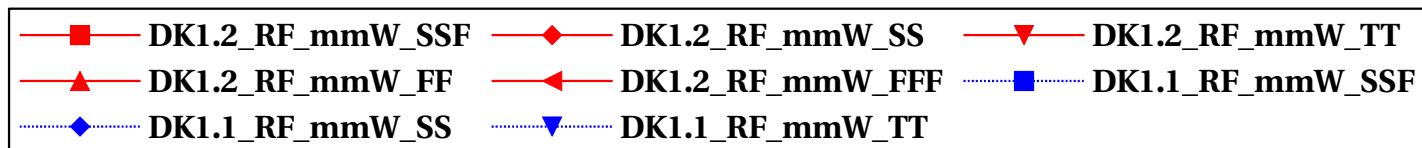
$l=30\text{e-}9$ and $w=0.3\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=1$ and $p_{la}=0$



Vdd effect normalized ($l=30\text{e-}9$ $w=300\text{e-}9$)

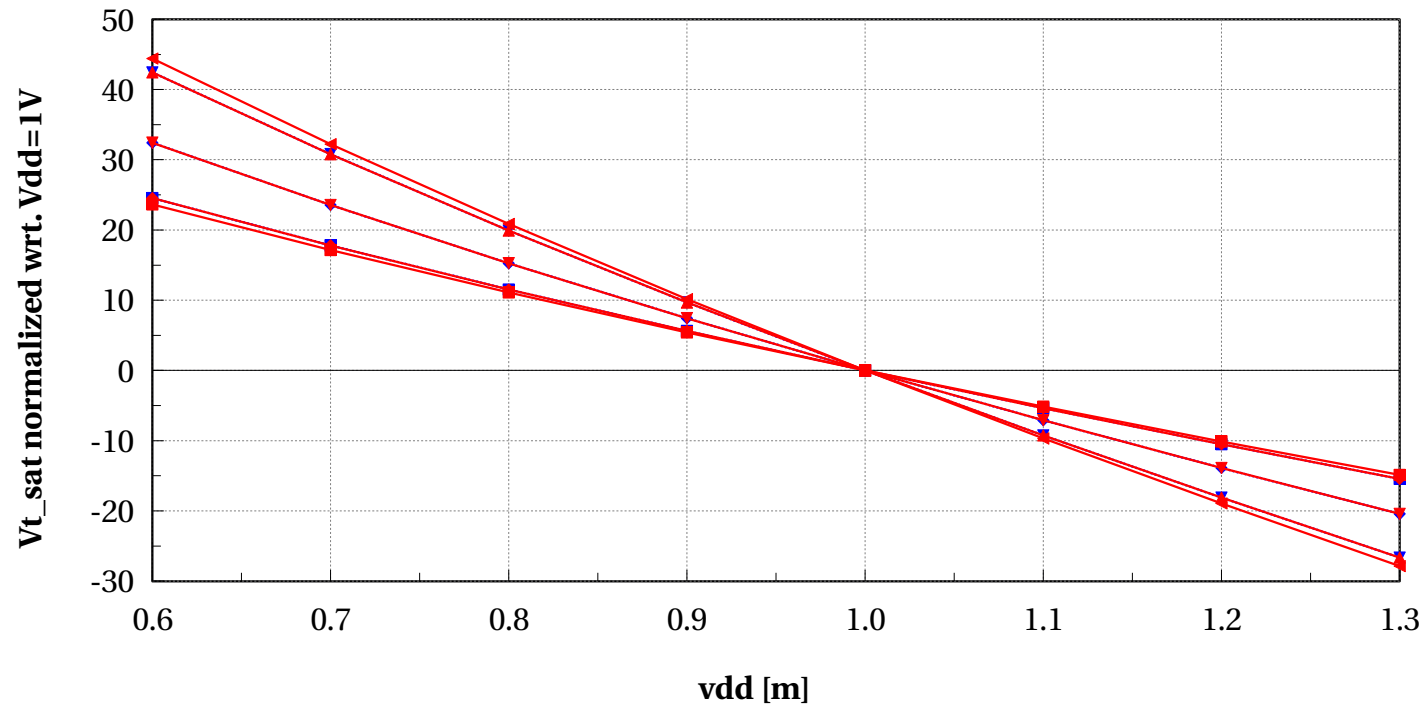
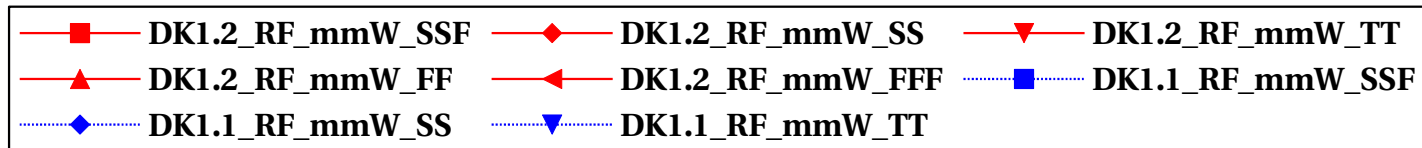
lvtpfet_acc, Ilin normalized wrt. Vdd=1V vs vdd [m]

$l=30\text{e-}9$ and $w=0.3\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=1$ and $p_{la}=0$



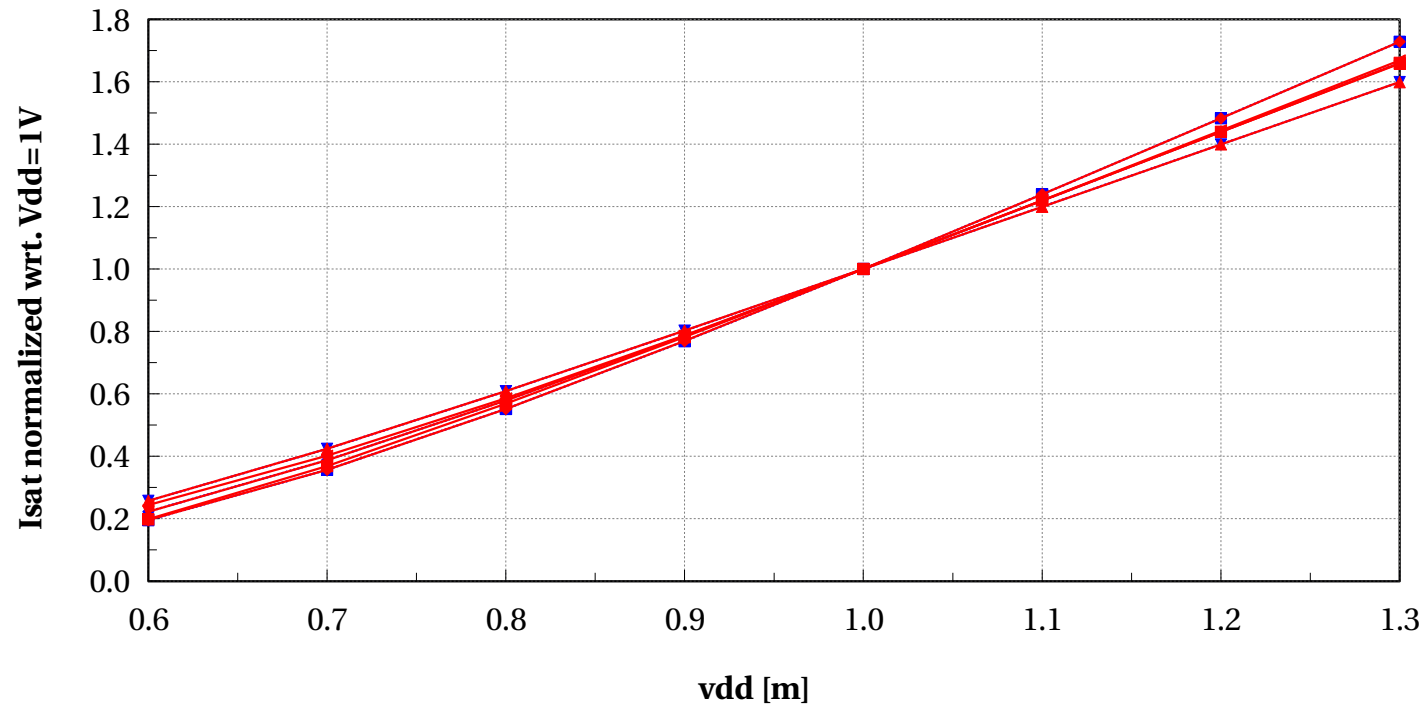
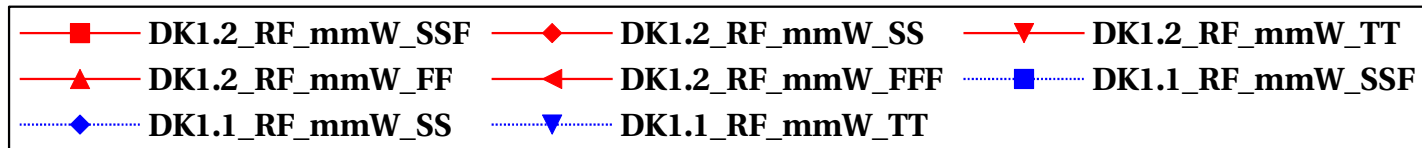
lvtpfet_acc, Vt_sat normalized wrt. Vdd=1V vs vdd [m]

$l=30\text{e-}9$ and $w=0.3\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=1$ and $p_{la}=0$



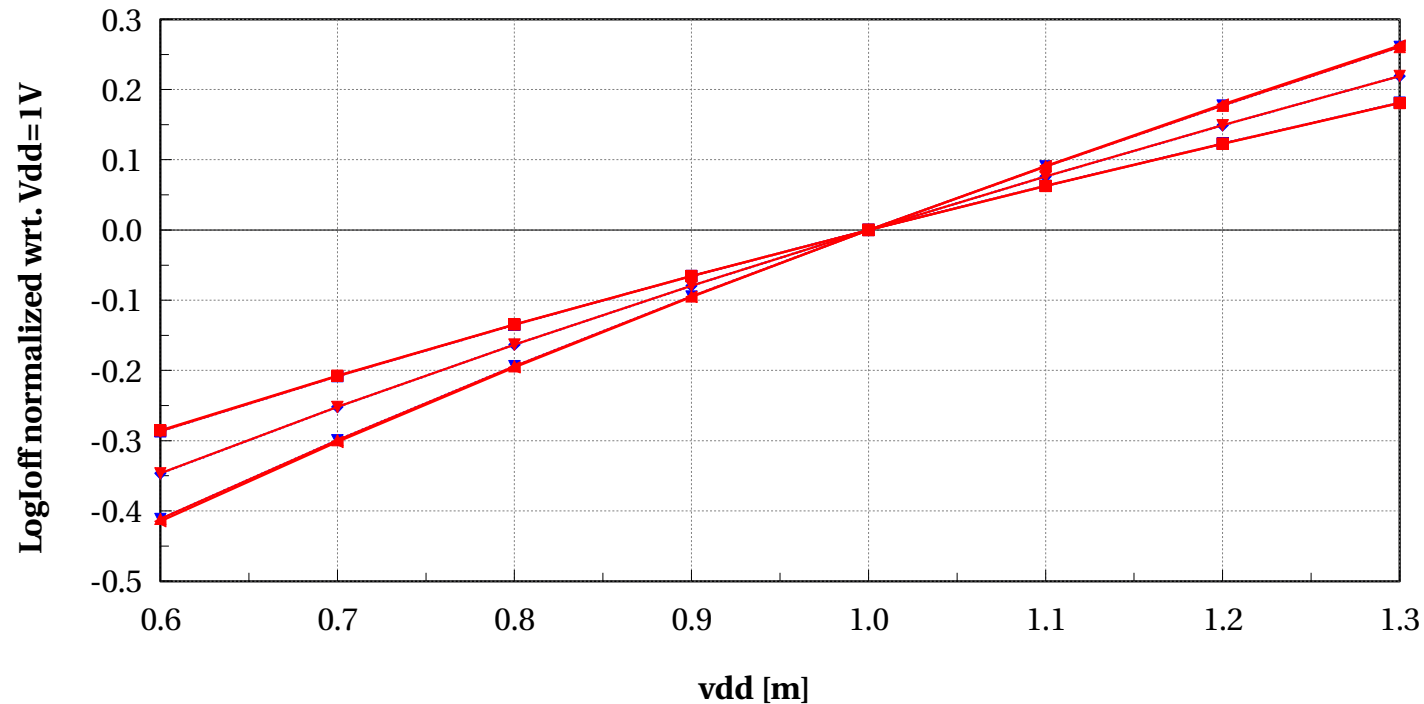
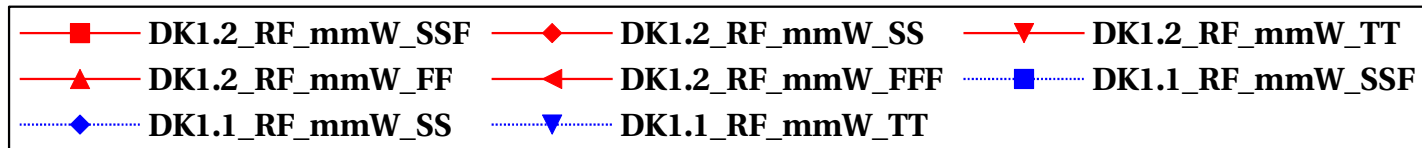
lvtpfet_acc, Isat normalized wrt. Vdd=1V vs vdd [m]

$l=30\text{e-}9$ and $w=0.3\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=1$ and $p_{la}=0$



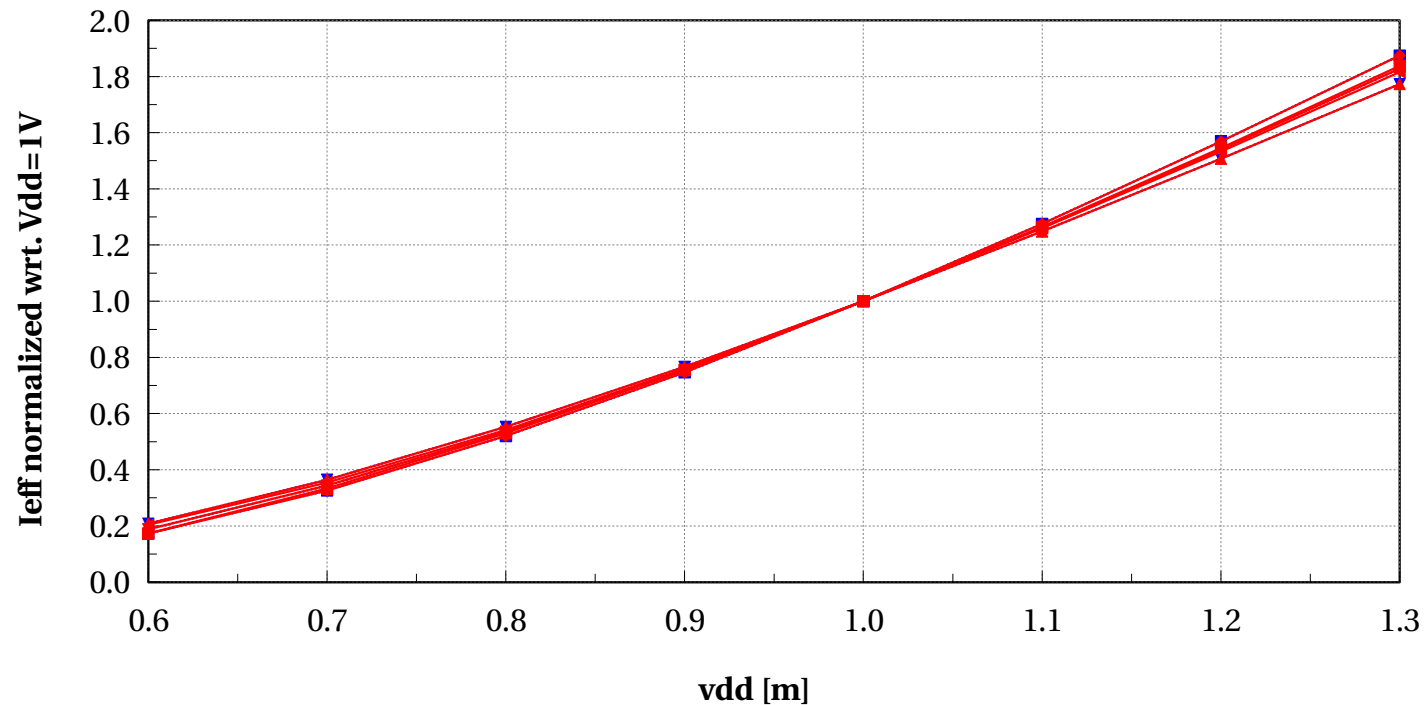
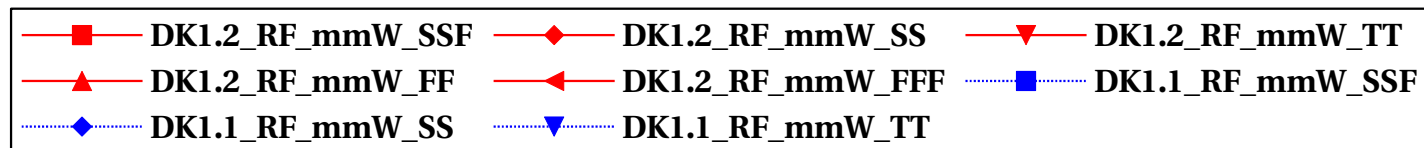
lvtpfet_acc, LogIoff normalized wrt. Vdd=1V vs vdd [m]

$l=30\text{e-}9$ and $w=0.3\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=1$ and $p_{la}=0$



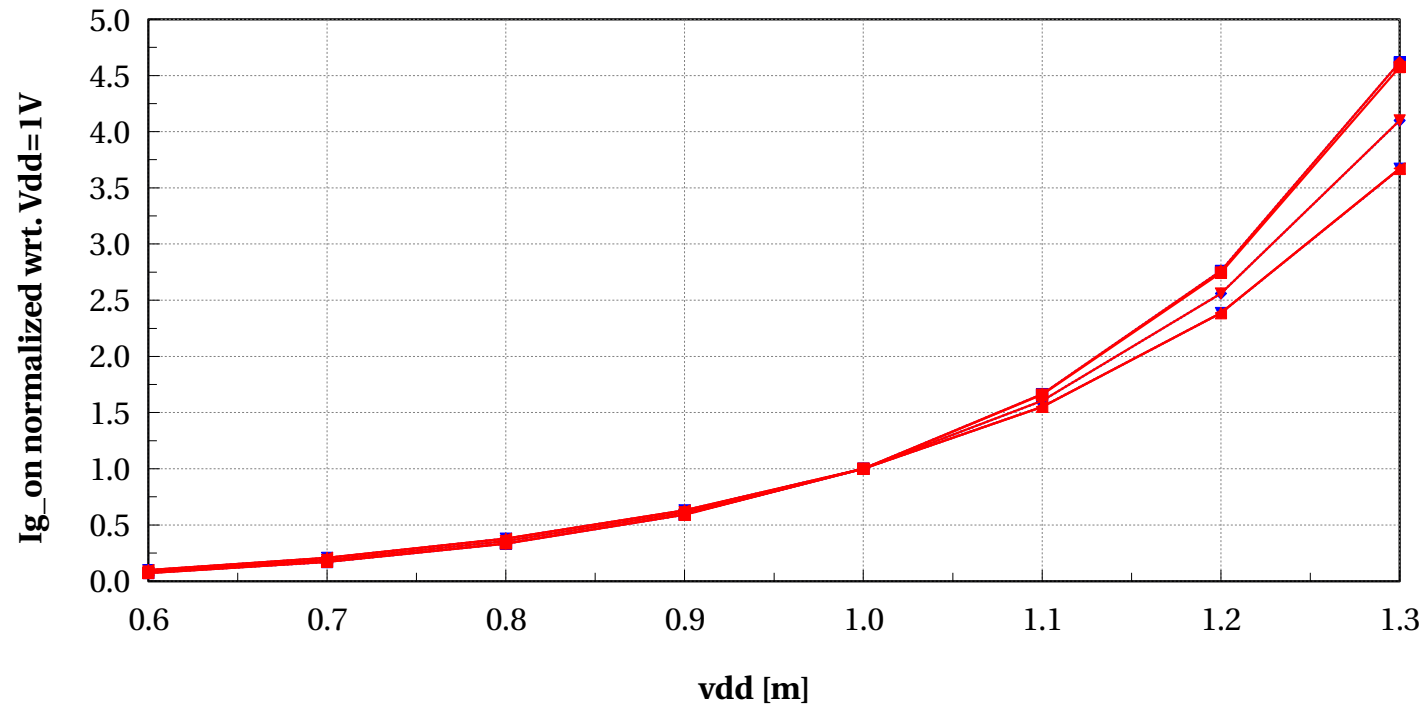
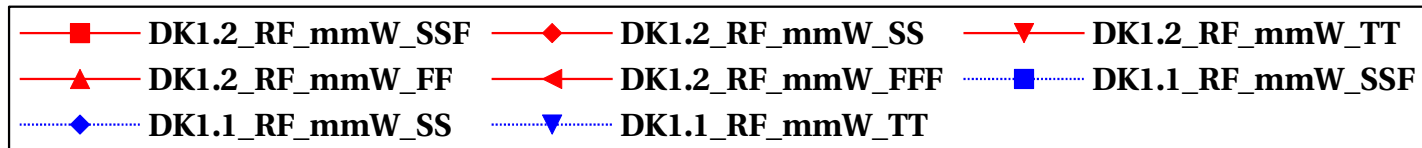
lvtpfet_acc, Ieff normalized wrt. Vdd=1V vs vdd [m]

$l=30\text{e-}9$ and $w=0.3\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=1$ and $p_{la}=0$



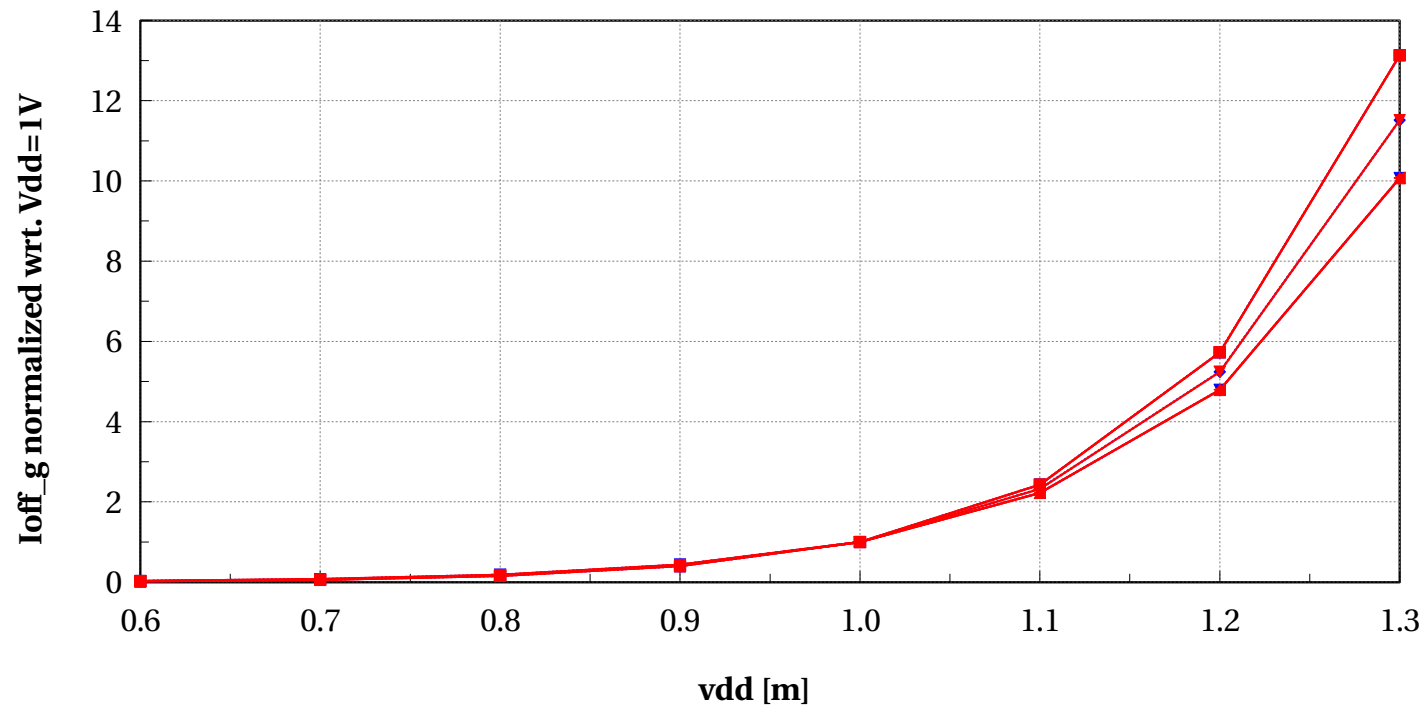
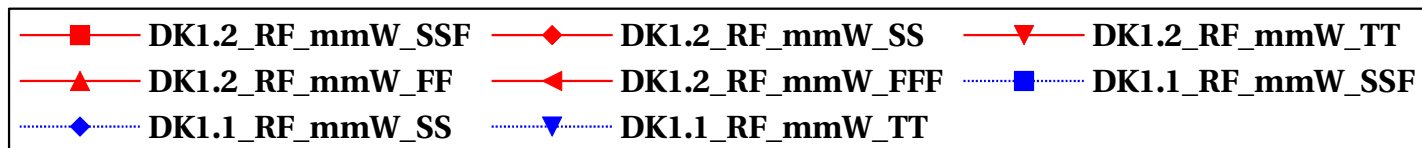
lvtpfet_acc, Ig_on normalized wrt. Vdd=1V vs vdd [m]

$l=30\text{e-}9$ and $w=0.3\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=1$ and $p_{la}=0$



lvtpfet_acc, Ioff_g normalized wrt. Vdd=1V vs vdd [m]

$l=30\text{e-}9$ and $w=0.3\text{e-}6$ and $\text{Temp}=25$ and $V_{bs}=1$ and $p_{la}=0$



Annex

Conditions of simulations

The simulations were done with SBenchLSF Alpha using Eldo simulator 2018.3.

- Model lvtmfet_acc (DK1.2_RF_mmW)

- ✓ Input Parameters

- ✗ $v_{ds_sat} = V_{dd}$ V
- ✗ $i_{vt} = 300e-9$ A
- ✗ $mc_runs = 1000$
- ✗ $v_{step_ivt} = 0.005$ V
- ✗ $v_{ds_off} = v_{ds_sat}$ V
- ✗ $v_{gs_off} = 0$ V
- ✗ $temp = 25$ °C
- ✗ $v_{gs_start} = -0.5$ V
- ✗ $mc_sens = 0$
- ✗ $v_{ds_lin} = 0.05$ V
- ✗ $sbenchlsf_release = Alpha$
- ✗ $plashrink_ivt = 1$
- ✗ $v_{bs} = 0$ V
- ✗ $ams_release = 2018.3$

- ✗ `model_version = 1.3.e`
- ✗ `mc_nsigma = 3`
- ✗ `ithslwi = 10e-9 A`
- ✗ `vgs_stop = vdd V`
- ✗ `shrink_ivt = 1`
- ✗ `vdd = 1 V`
- ✗ `dlshrink_ivt = 0`
- ✓ Sweep Parameters
 - ✗ `vbs = 0.0, 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 1.8, 2.0`
 - ✗ `vdd = 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.3`
- ✓ Extra parameters
 - ✗ `lvt_dev = 0`
 - ✗ `gflag__noisedev__lvt__cmos028fdsoi = 0`
- Model `lvtpfet_acc` (DK1.2_RF_mmW)
 - ✓ Input Parameters
 - ✗ `vds_sat = Vdd V`
 - ✗ `ivt = 70e-9 A`
 - ✗ `mc_runs = 1000`
 - ✗ `vstep_ivt = 0.005 V`
 - ✗ `vds_off = vds_sat V`
 - ✗ `vgs_off = 0 V`
 - ✗ `temp = 25 °C`
 - ✗ `vgs_start = -0.5 V`
 - ✗ `mc_sens = 0`
 - ✗ `vds_lin = 0.05 V`

- ✗ sbenchlsf_release = Alpha
- ✗ plashrink_ivt = 1
- ✗ vbs = 1 V
- ✗ ams_release = 2018.3
- ✗ model_version = 1.3.e
- ✗ mc_nsigma = 3
- ✗ ithslwi = 10e-9 A
- ✗ vgs_stop = vdd V
- ✗ shrink_ivt = 1
- ✗ vdd = 1 V
- ✗ dlshrink_ivt = 0
- ✓ Sweep Parameters
 - ✗ vbs = 0.0, 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 1.8, 2.0
 - ✗ vdd = 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.3
- ✓ Extra parameters
 - ✗ lvt_dev = 0
 - ✗ gflag__noisedev__lvt__cmos028fdsoi = 0
- Model lvtmfet_acc (DK1.1_RF_mmW)
 - ✓ Input Parameters
 - ✗ vds_sat = Vdd V
 - ✗ ivt = 300e-9 A
 - ✗ mc_runs = 1000
 - ✗ vstep_ivt = 0.005 V
 - ✗ vds_off = vds_sat V
 - ✗ vgs_off = 0 V

- ✗ temp = 25 °C
- ✗ vgs_start = -0.5 V
- ✗ mc_sens = 0
- ✗ vds_lin = 0.05 V
- ✗ sbenchlsf_release = Alpha
- ✗ plashrink_ivt = 1
- ✗ vbs = 0 V
- ✗ ams_release = 2018.3
- ✗ model_version = 1.3.d
- ✗ mc_nsigma = 3
- ✗ ithslwi = 10e-9 A
- ✗ vgs_stop = vdd V
- ✗ shrink_ivt = 1
- ✗ vdd = 1 V
- ✗ dlshrink_ivt = 0
- ✓ Sweep Parameters
 - ✗ vbs = 0.0, 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 1.8, 2.0
 - ✗ vdd = 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.3
- ✓ Extra parameters
 - ✗ lvt_dev = 0
 - ✗ gflag__noisedev__lvt__cmos028fdsoi = 0
- Model lvtpfet_acc (DK1.1_RF_mmW)
 - ✓ Input Parameters
 - ✗ vds_sat = Vdd V
 - ✗ ivt = 70e-9 A

- ✗ mc_runs = 1000
- ✗ vstep_ivt = 0.005 V
- ✗ vds_off = vds_sat V
- ✗ vgs_off = 0 V
- ✗ temp = 25 °C
- ✗ vgs_start = -0.5 V
- ✗ mc_sens = 0
- ✗ vds_lin = 0.05 V
- ✗ sbenchlsf_release = Alpha
- ✗ plashrink_ivt = 1
- ✗ vbs = 1 V
- ✗ ams_release = 2018.3
- ✗ model_version = 1.3.d
- ✗ mc_nsigma = 3
- ✗ ithslwi = 10e-9 A
- ✗ vgs_stop = vdd V
- ✗ shrink_ivt = 1
- ✗ vdd = 1 V
- ✗ dlshrink_ivt = 0
- ✓ Sweep Parameters
 - ✗ vbs = 0.0, 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 1.8, 2.0
 - ✗ vdd = 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.3
- ✓ Extra parameters
 - ✗ lvt_dev = 0
 - ✗ gflag__noisedev__lvt__cmos028fdsoi = 0