cmos028fdsoi Technology

EGLVT Power Switch models

DK1.2_RF_mmW

Comparison with DK1.1_RF_mmW model(s)

Please use the bookmark to navigate

General information on EGLVT Power Switch models

- Maximum supply voltage is 1.15 V.
- Validity domain is defined as follows:
  - ✔ Drawn gate length varies from 100 nm to 100 nm.
  - ✔ Drawn transistor width varies from 55.35 um to 55.35 um.
  - ✔ Device temperature varies from -40 °C to 125 °C.

Output parameters definitions

- Model(s): eglvtpspfet
  - ✔ Vt_lin : Threshold voltage defined as Vgs value for which drain current is 70e-9*M*1*W/(1*L+0+1*p_la) at Vds = 0.05V.
  - ✔ Ig_on : Gate current at Vds = 0V and Vgs = 1.15V.
  - ✔ Ilin : Drain current at Vgs = 1.15V, Vds = 0.05V.
  - ✔ Dibl : Vt_lin - Vt_sat.
  - ✔ Ioffsat : Drain current at Vgs = -0.83V, Vds = vds_satV.
  - ✔ Ioff_g : Gate current at Vgs = -0.83V, Vds = vds_satV.
  - ✔ Vt_sat : Threshold voltage defined as Vgs value for which drain current is 70e-9*M*1*W/(1*L+0+1*p_la) at Vds = vds_satV.
  - ✔ Isat : Drain current at Vgs = 1.15V, Vds = 1.15V.
  - ✔ Logioff : log10(Ioffsat).

eglvtpspfet
Electrical characteristics per geometry

eglvtpspfet @ w=55.35e-06, l=0.1e-06, nf=3, swshe=0, pre_layout_local=1, sa=3.96e-6, sb=4.2e-6, sd=1.4e-07, devtype=PT, as=7.3062e-11, ad=7.3062e-11, ps=4.482e-05, pd=4.482e-05, vbs=1.15, vdd=1.15, temp=25.0

DK1.2_RF_mmW wrt DK1.1_RF_mmW

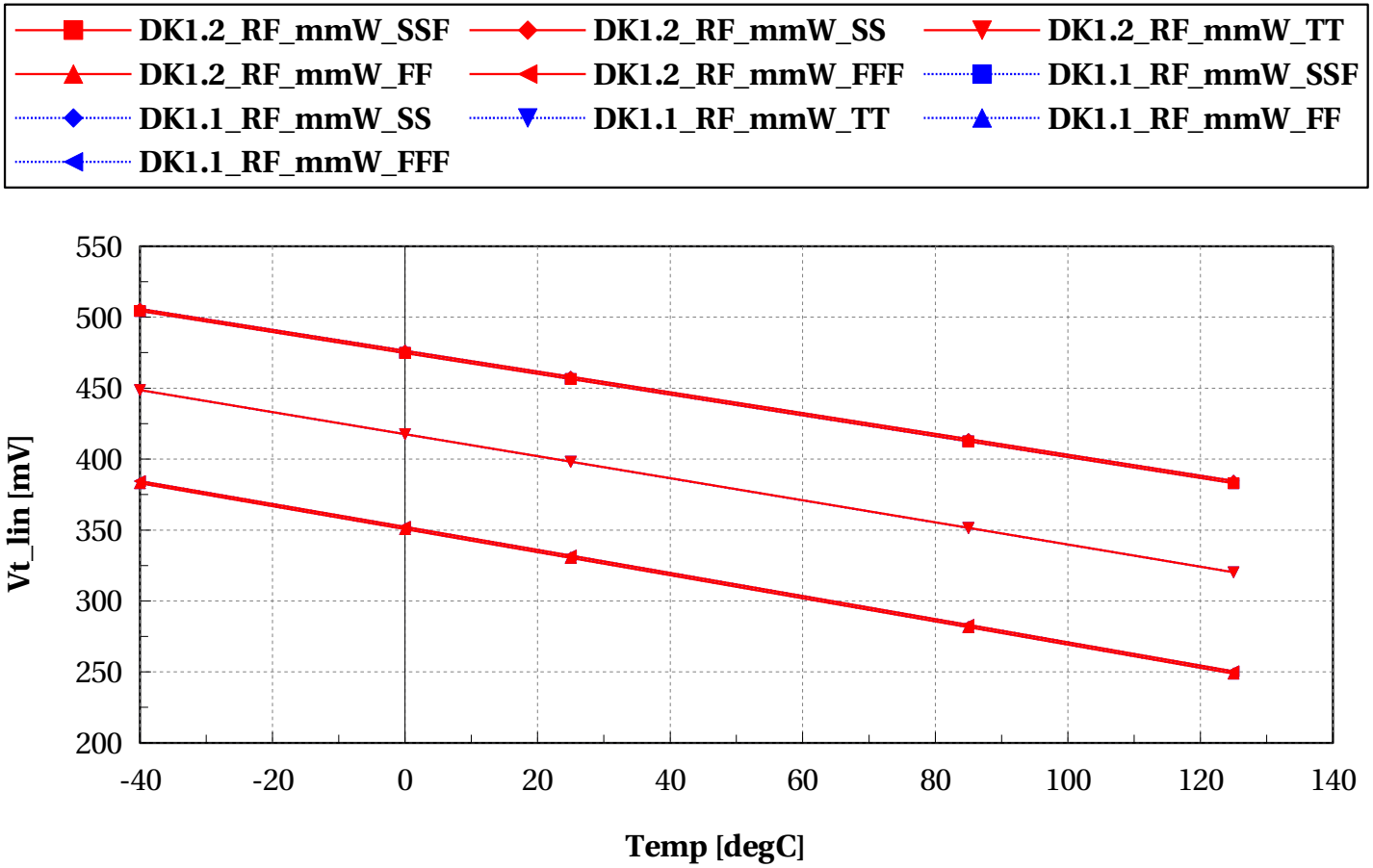
	SSF	SS	TT	FF	FFF
Vt_lin [mV]	456.5 0.0mV	458.1 0.0mV	398.1 0.0mV	330.5 0.0mV	332 0.0mV
Ilin [mA]	0.9 0.0%	0.89 0.0%	1.09 0.0%	1.31 0.0%	1.31 0.0%
Vt_sat [mV]	421.9 0.0mV	423.5 0.0mV	363.1 0.0mV	294.5 0.0mV	295.9 0.0mV
Isat [mA]	6.32 0.0%	6.3 0.0%	7.78 0.0%	9.37 0.0%	9.34 0.0%
Ioffsat [pA]	28.25 0.0%	28.25 0.0%	80.15 0.0%	321.3 0.0%	321.3 0.0%
LogIoff [log(A)]	-10.55 -0.0%	-10.55 -0.0%	-10.1 -0.0%	-9.49 -0.0%	-9.49 -0.0%
Ig_on [aA]	138 0.0%	137.9 0.0%	145 0.0%	152.6 0.0%	152.5 0.0%
Ioff_g [fA]	-44.45 -0.0%	-50.79 -0.0%	-68.58 -0.0%	-92.58 -0.0%	-105.8 -0.0%

eglvtpspfet
Electrical characteristics scaling

Scaling versus Temp @ Vbs=1.15

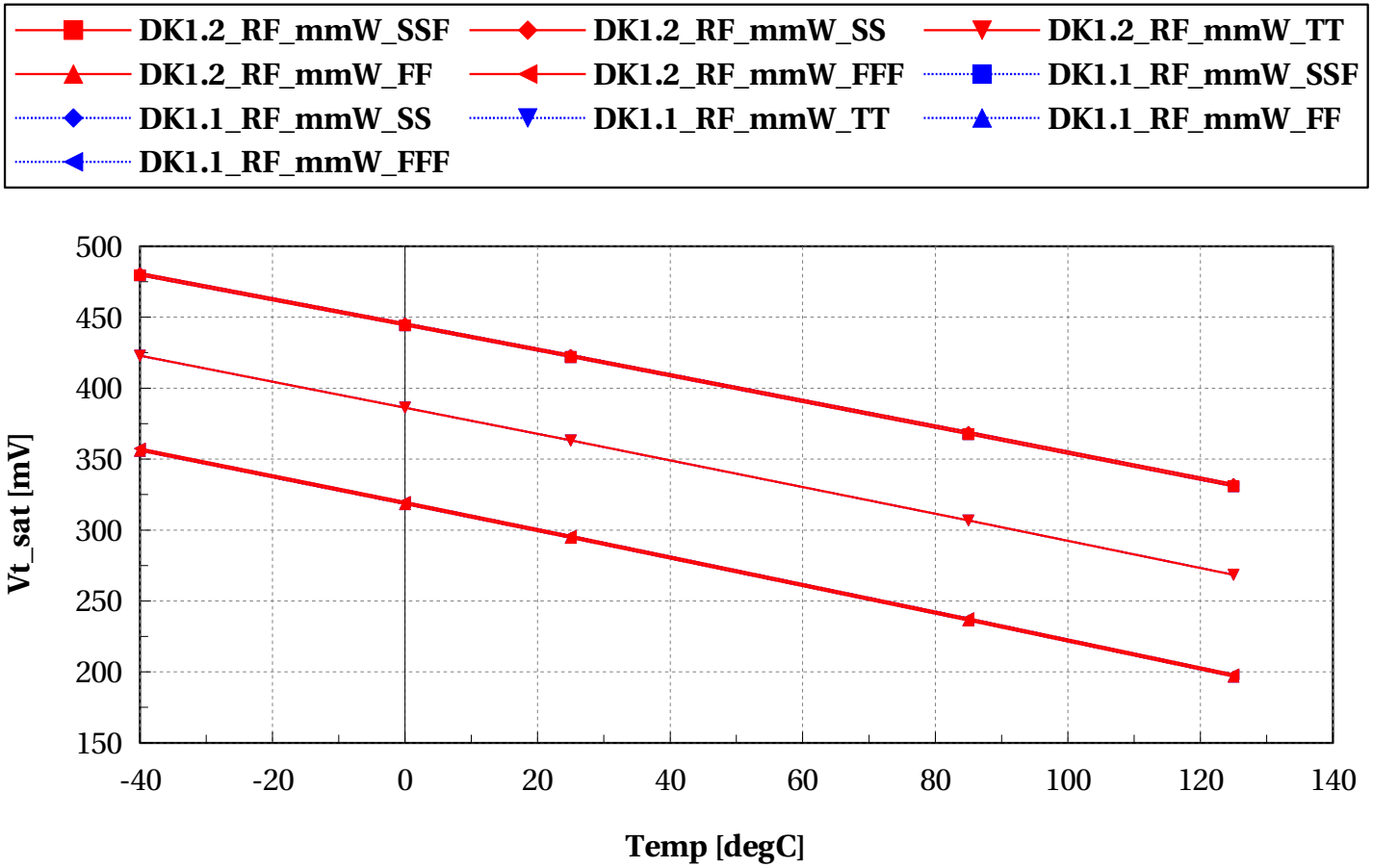
eglvtpspfet, Vt_lin [mV] vs Temp [degC]

Vbs==1.15 and l==0.1e-06 and w==55.35e-06 and nf==3 and devType=="PCELLwoWPE"



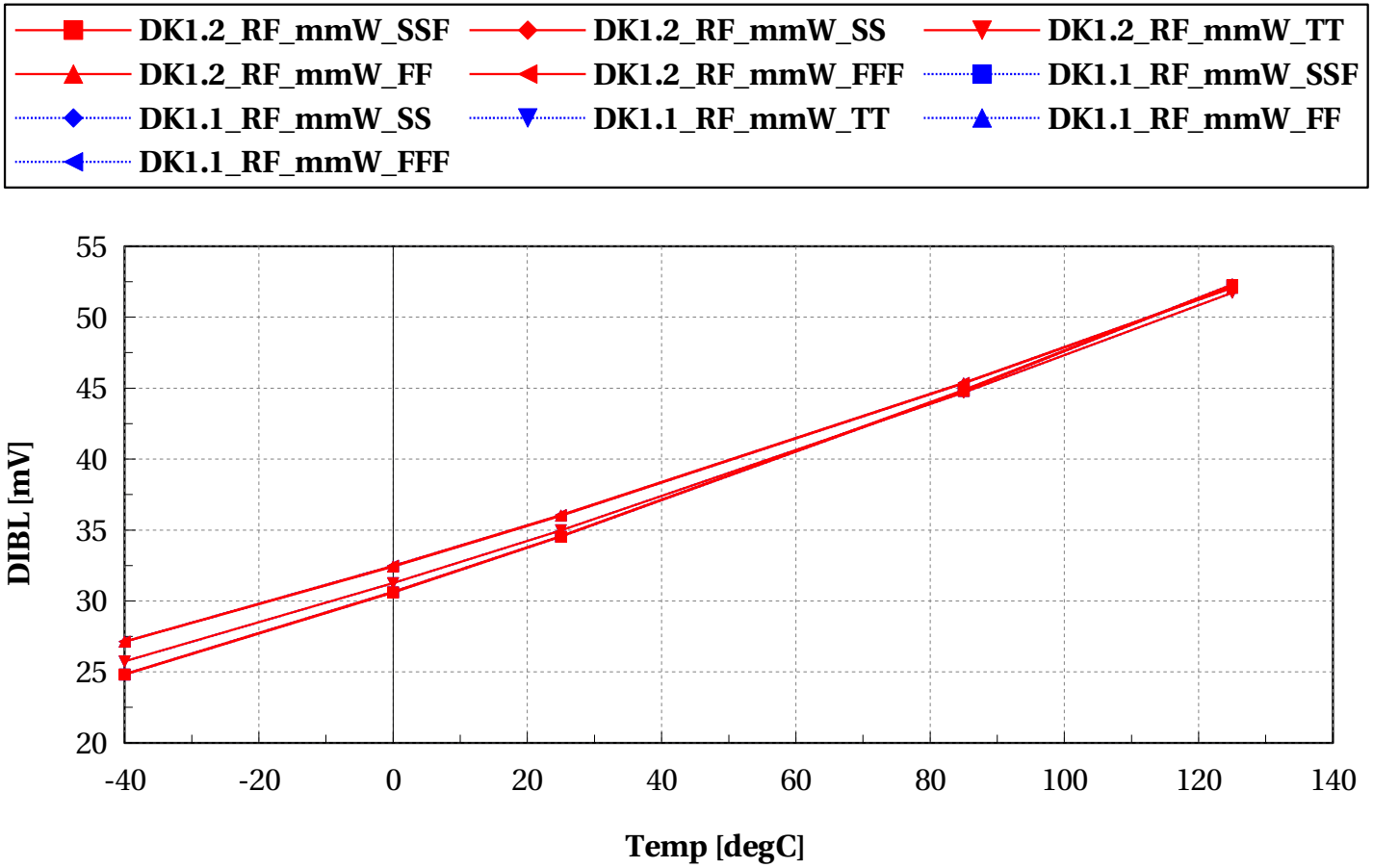
eglvtpspfet, Vt_sat [mV] vs Temp [degC]

Vbs==1.15 and l==0.1e-06 and w==55.35e-06 and nf==3 and devType=="PCELLwoWPE"



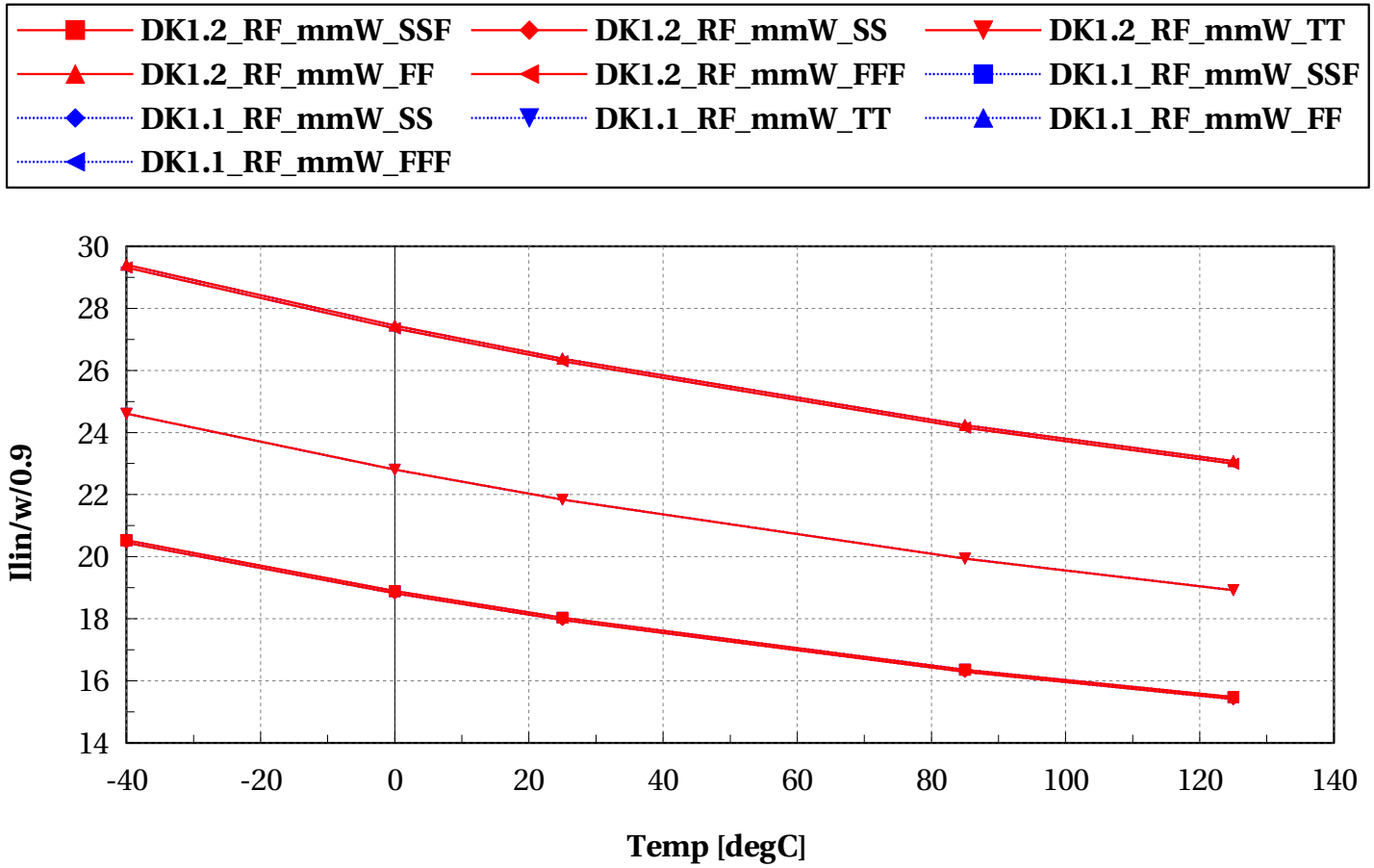
eglvtpspfet, DIBL [mV] vs Temp [degC]

Vbs==1.15 and l==0.1e-06 and w==55.35e-06 and nf==3 and devType=="PCELLwoWPE"



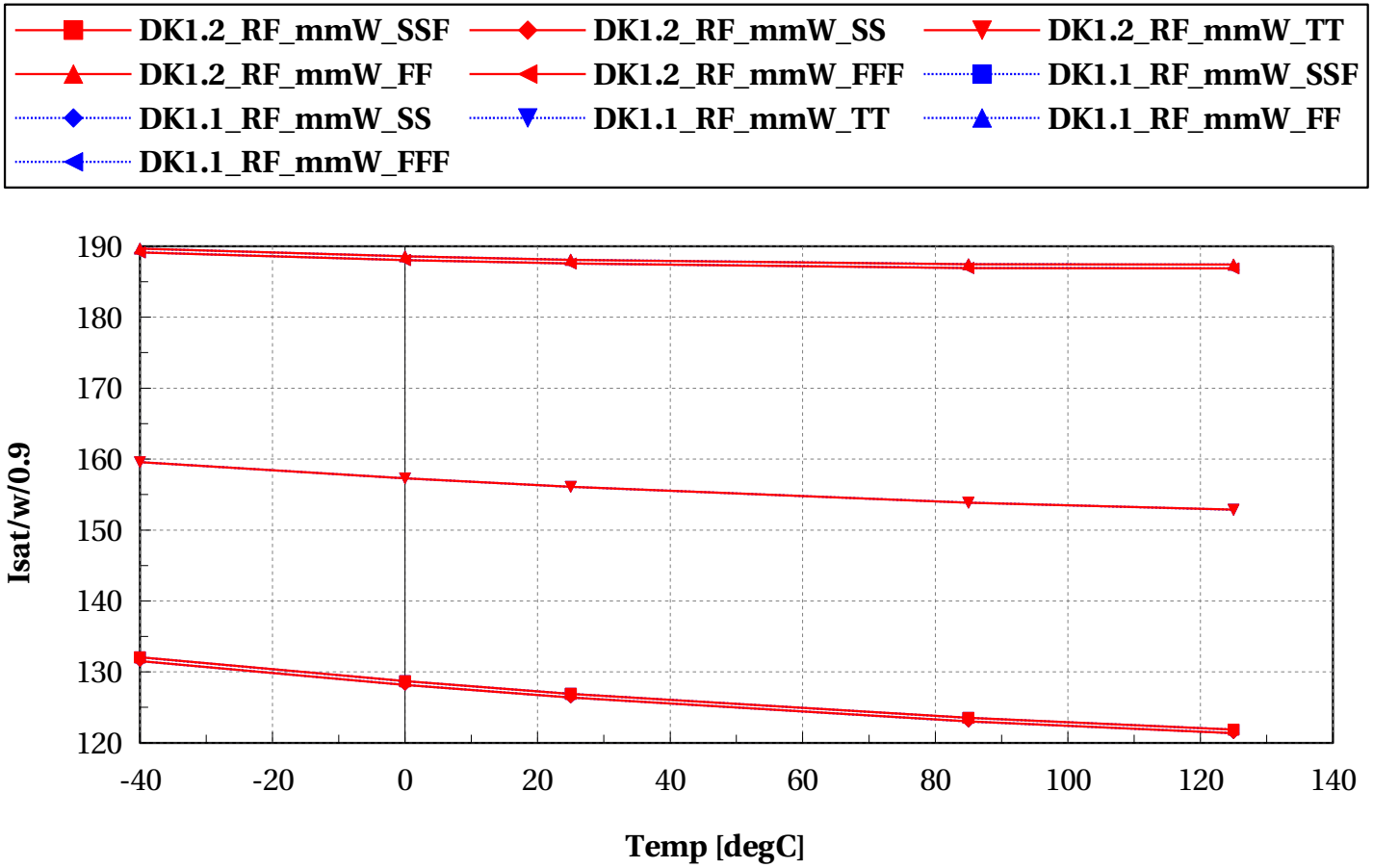
eglvtpspfet, Ilin/w/0.9 vs Temp [degC]

Vbs==1.15 and l==0.1e-06 and w==55.35e-06 and nf==3 and devType=="PCELLwoWPE"



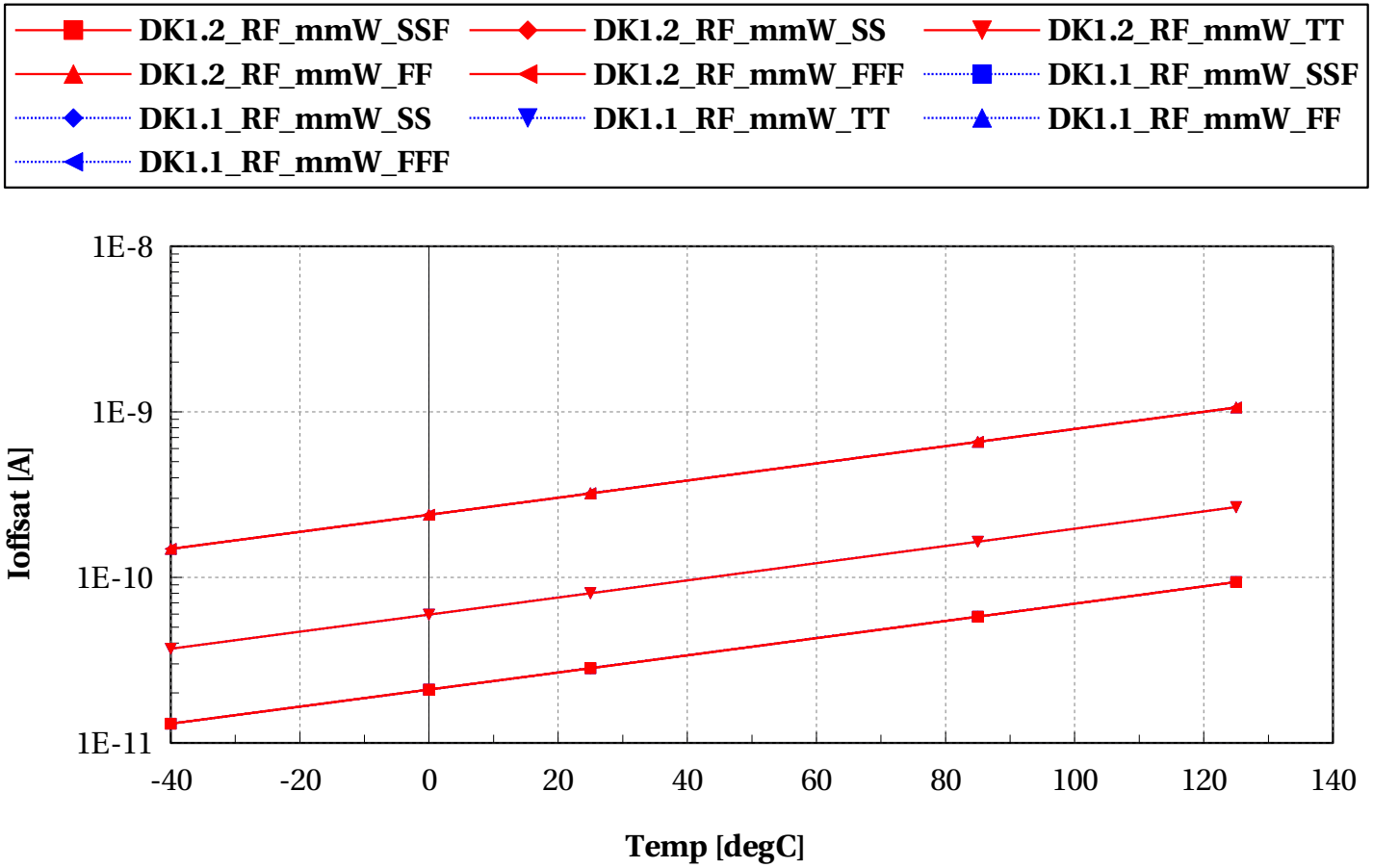
eglvtpspfet, Isat/w/0.9 vs Temp [degC]

Vbs==1.15 and l==0.1e-06 and w==55.35e-06 and nf==3 and devType=="PCELLwoWPE"



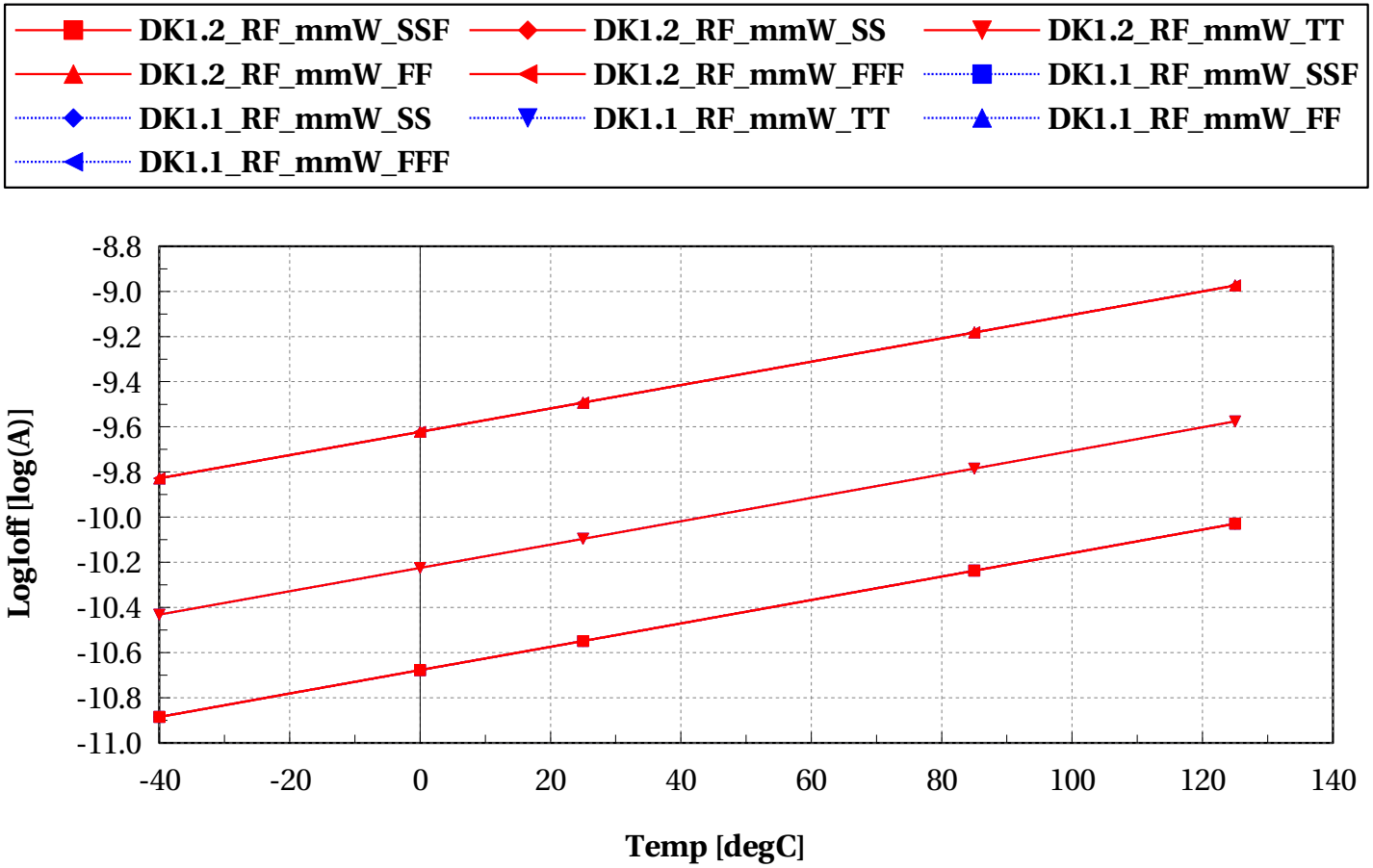
eglvtpspfet, Ioffsat [A] vs Temp [degC]

Vbs==1.15 and l==0.1e-06 and w==55.35e-06 and nf==3 and devType=="PCELLwoWPE"



eglvtpspfet, LogIoff [log(A)] vs Temp [degC]

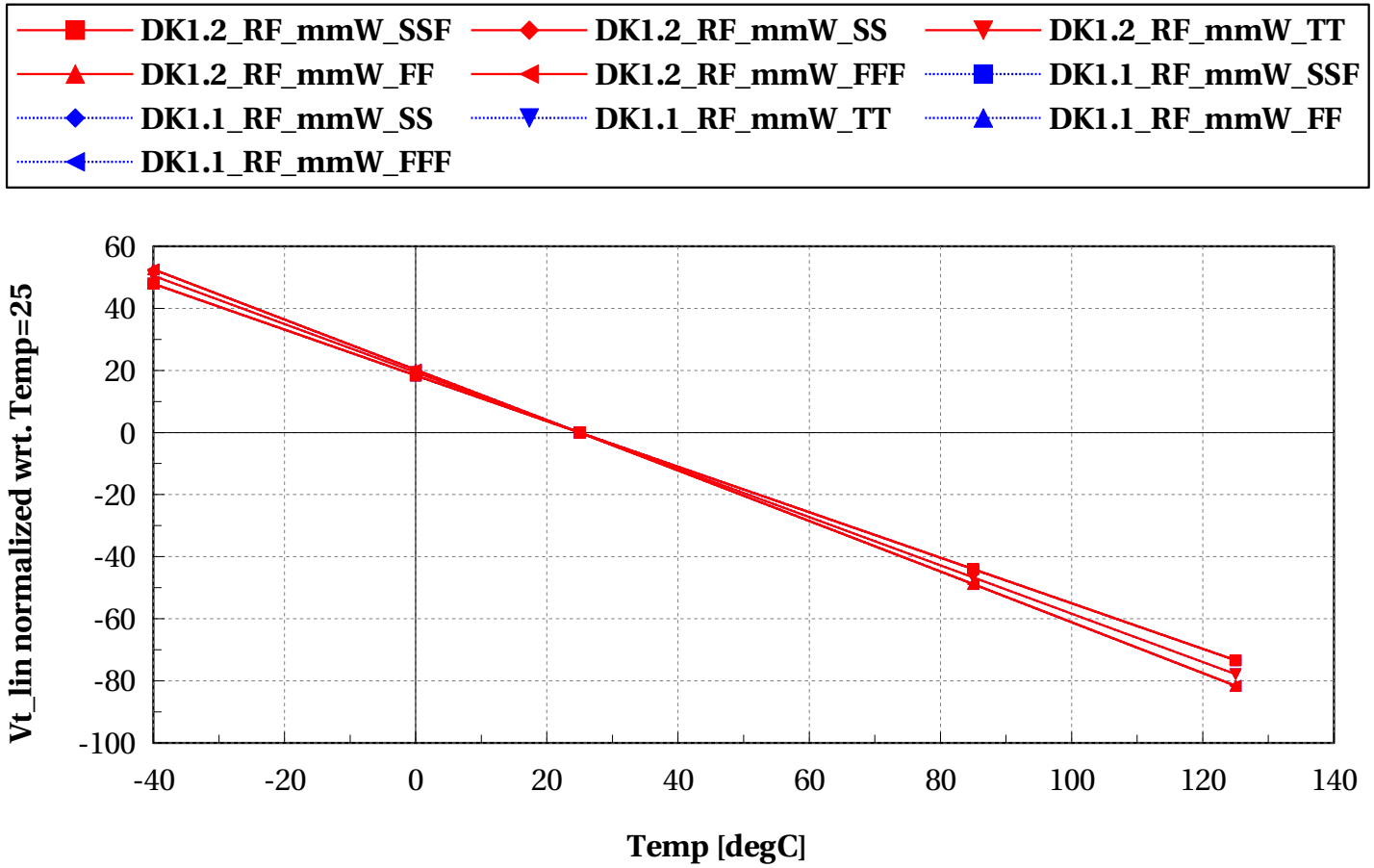
Vbs==1.15 and l==0.1e-06 and w==55.35e-06 and nf==3 and devType=="PCELLwoWPE"



Norm. scaling versus Temp @ Vbs=1.15

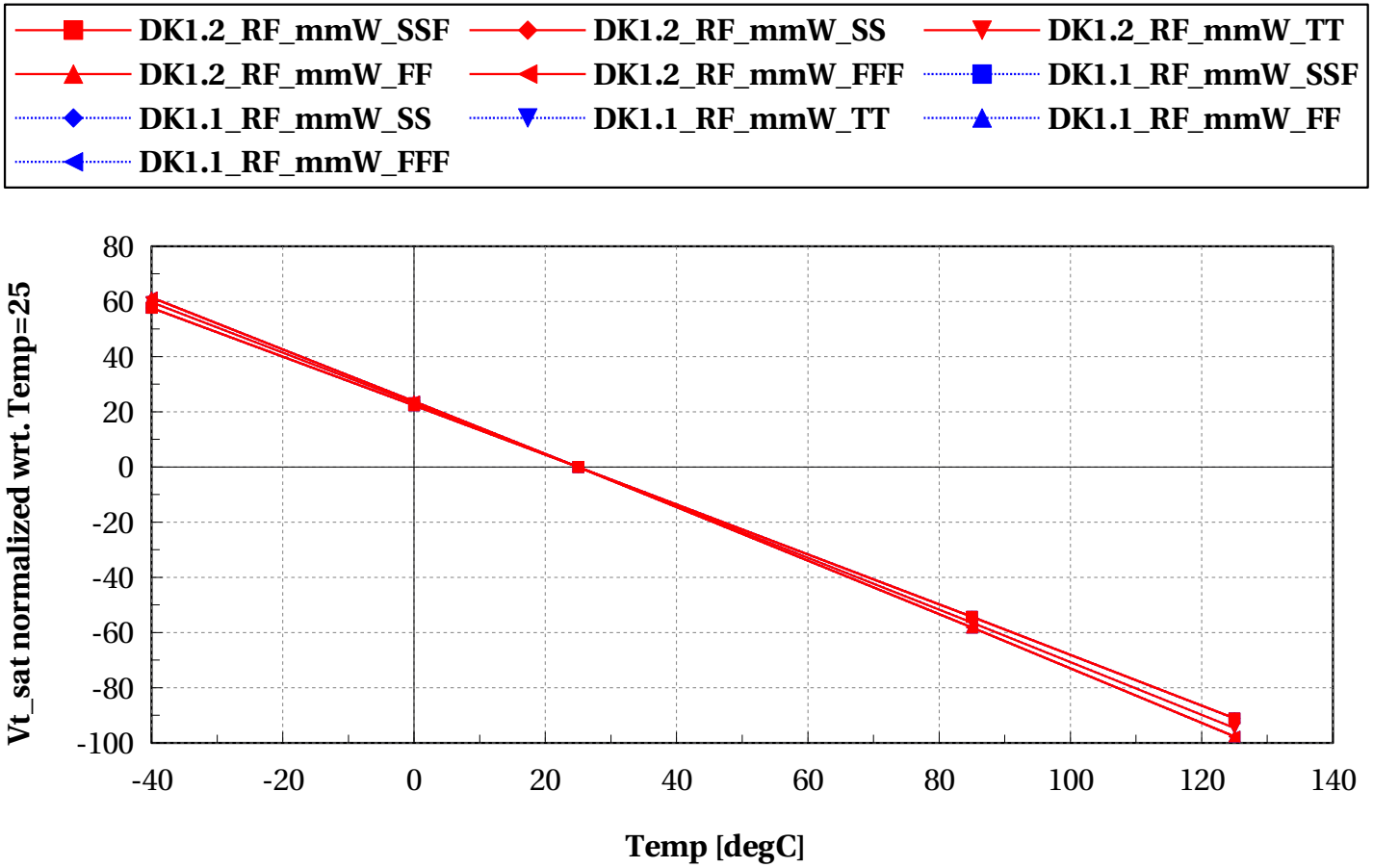
eglvtpspfet, Vt_lin normalized wrt. Temp=25 vs Temp [degC]

Vbs==1.15 and l==0.1e-06 and w==55.35e-06 and nf==3 and devType=="PCELLwoWPE"



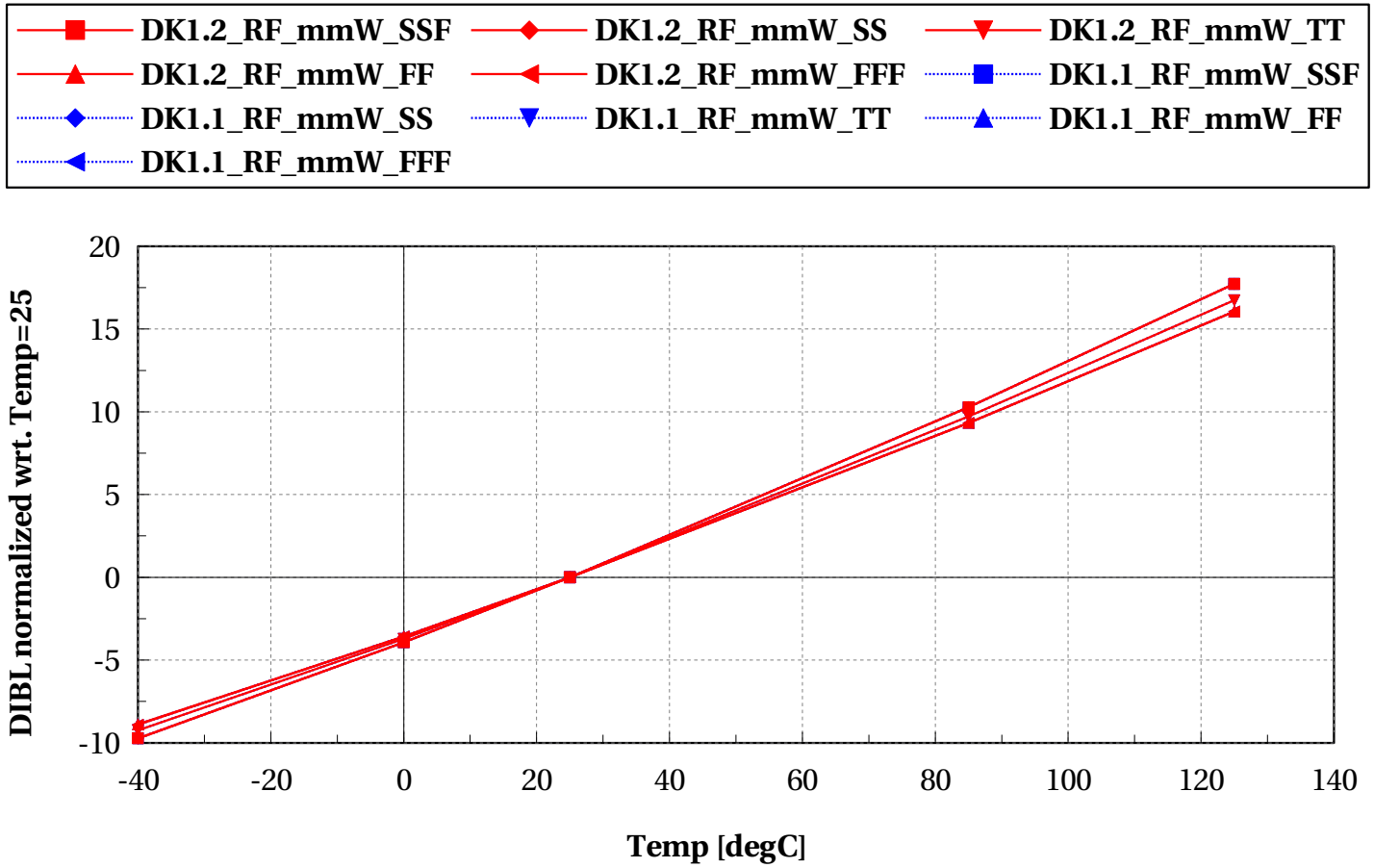
eglvtpspfet, Vt_sat normalized wrt. Temp=25 vs Temp [degC]

Vbs==1.15 and l==0.1e-06 and w==55.35e-06 and nf==3 and devType=="PCELLwoWPE"



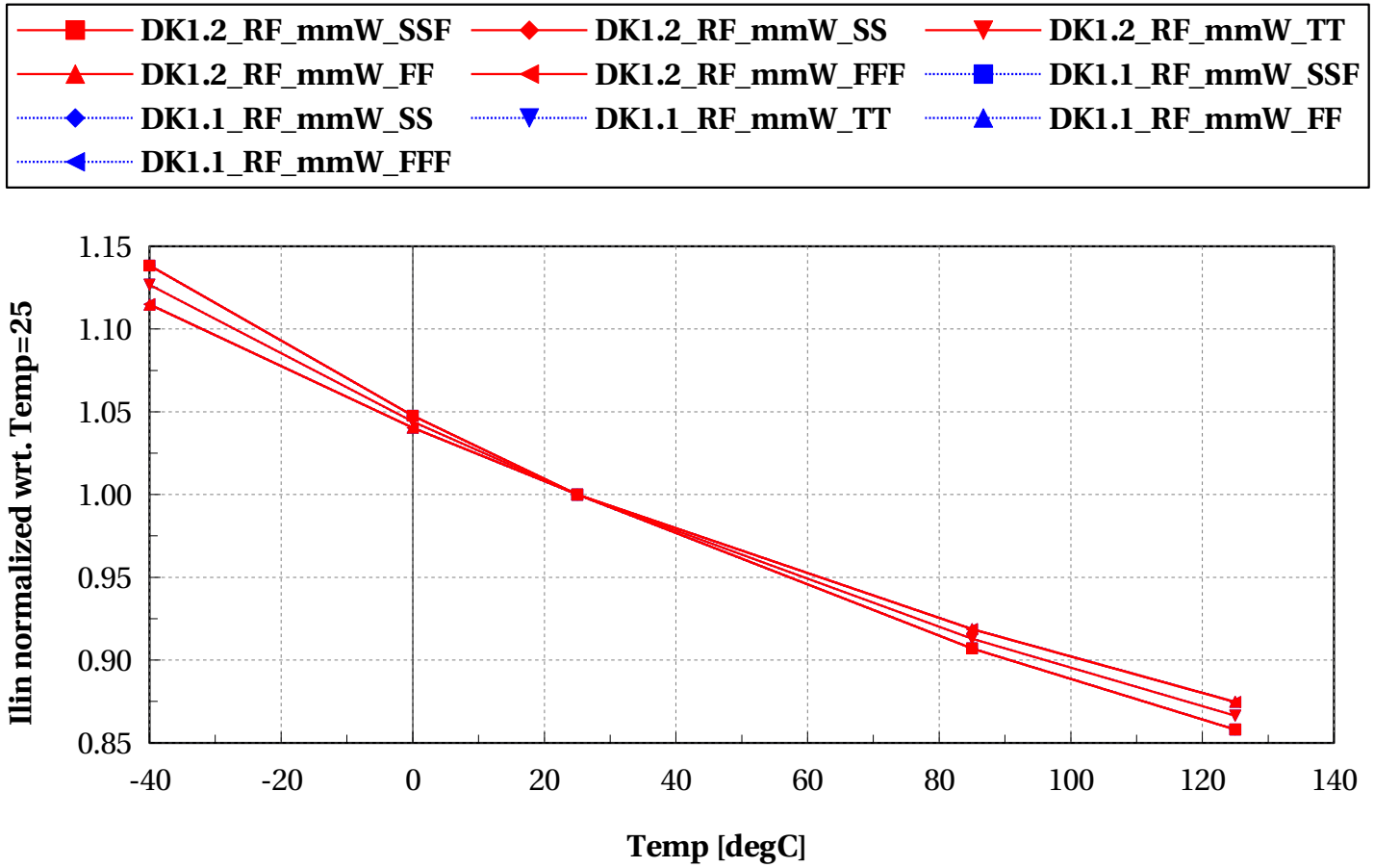
eglvtpspfet, DIBL normalized wrt. Temp=25 vs Temp [degC]

Vbs==1.15 and l==0.1e-06 and w==55.35e-06 and nf==3 and devType=="PCELLwoWPE"



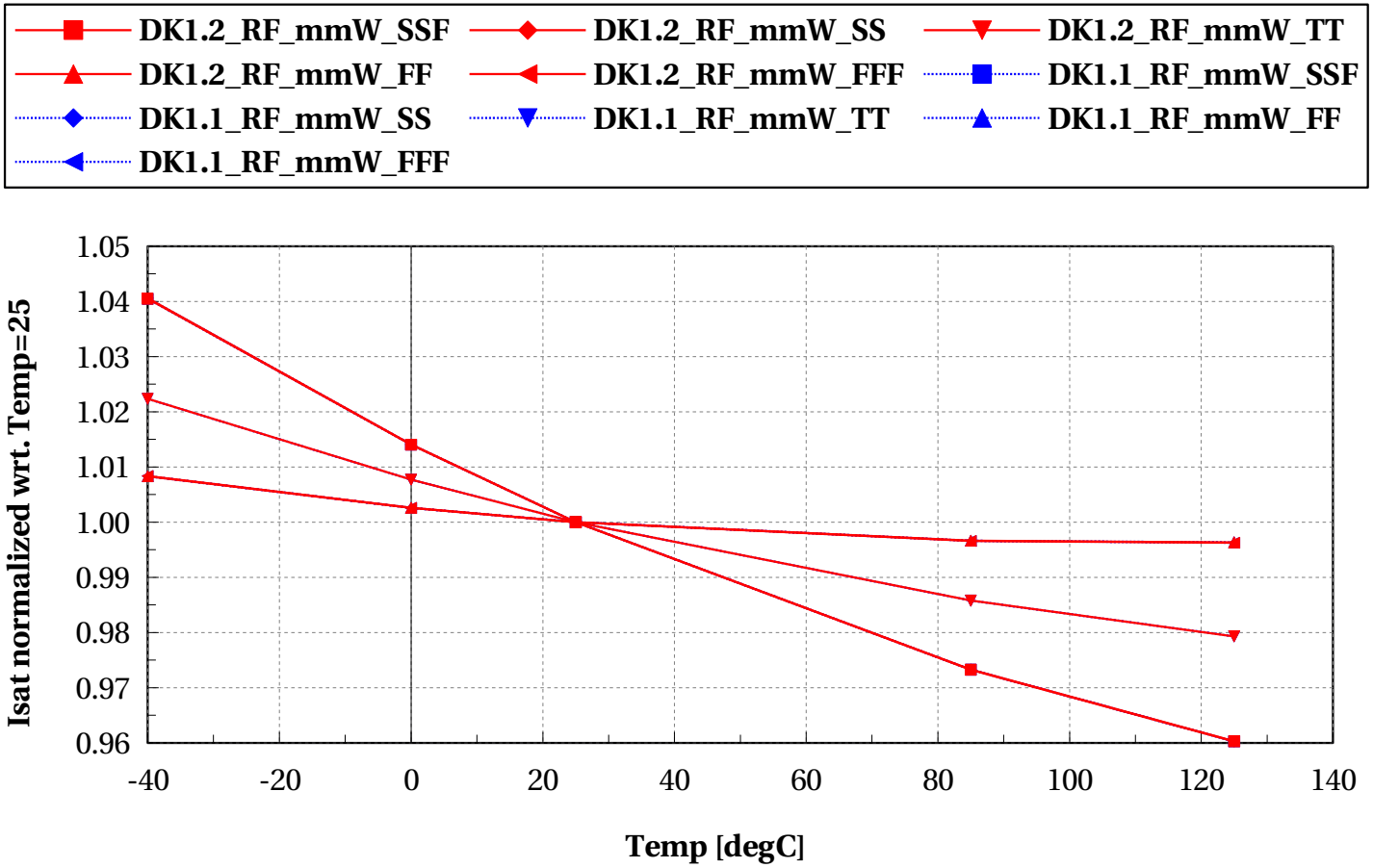
eglvtpspfet, Ilin normalized wrt. Temp=25 vs Temp [degC]

Vbs==1.15 and l==0.1e-06 and w==55.35e-06 and nf==3 and devType=="PCELLwoWPE"



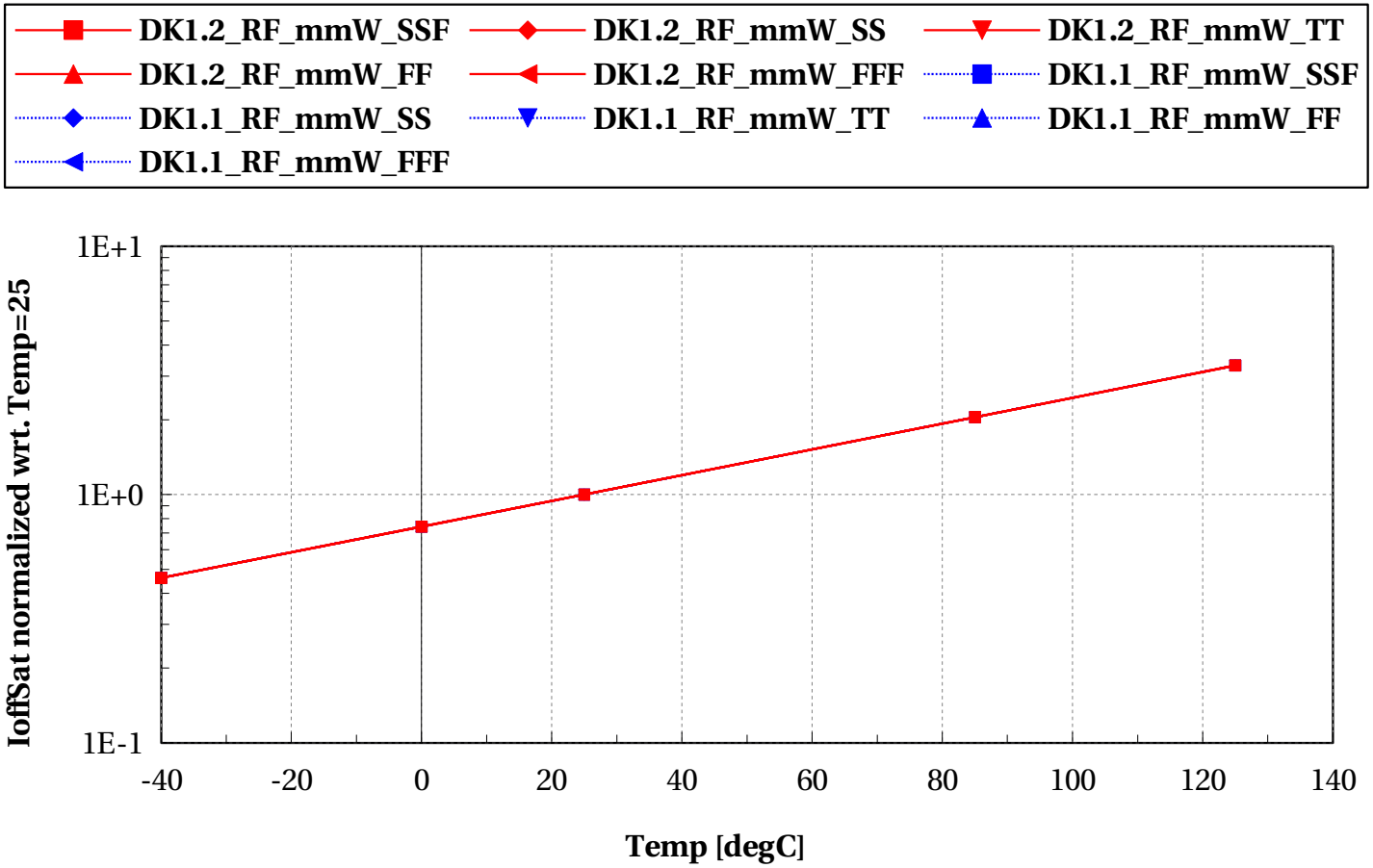
eglvtpspfet, Isat normalized wrt. Temp=25 vs Temp [degC]

Vbs==1.15 and l==0.1e-06 and w==55.35e-06 and nf==3 and devType=="PCELLwoWPE"



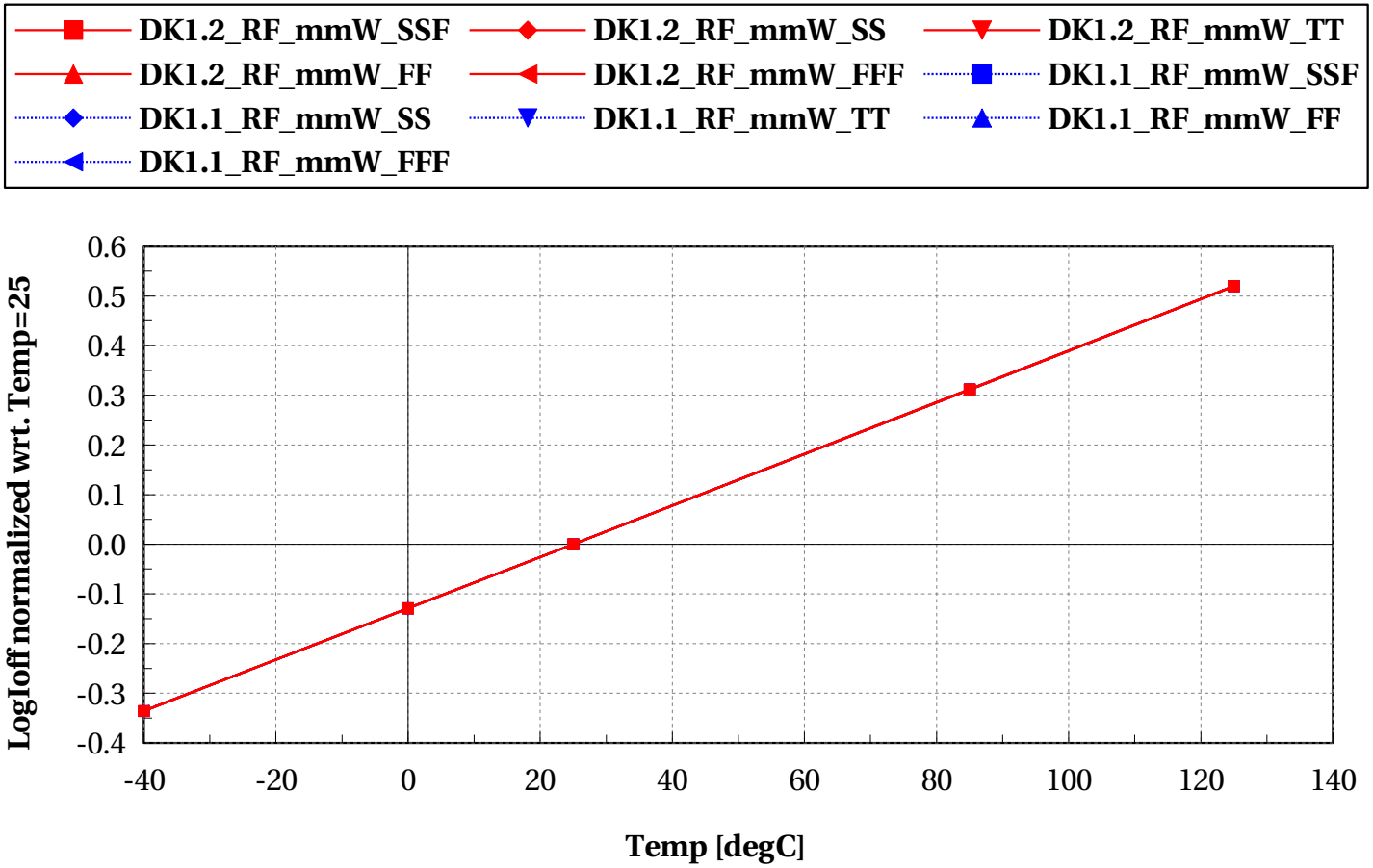
eglvtpspfet, IoffSat normalized wrt. Temp=25 vs Temp [degC]

Vbs==1.15 and l==0.1e-06 and w==55.35e-06 and nf==3 and devType=="PCELLwoWPE"



eglvtpspfet, LogIoff normalized wrt. Temp=25 vs Temp [degC]

Vbs==1.15 and l==0.1e-06 and w==55.35e-06 and nf==3 and devType=="PCELLwoWPE"



Annex

Conditions of simulations

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

- Model eglvtpspfet (DK1.2_RF_mmW)
  - ✔ Input Parameters
    - ✘ vds_sat = 1.15 V
    - ✘ ivt = 70e-9 A
    - ✘ mc_runs = 1000
    - ✘ vstep_ivt = 0.005 V
    - ✘ vds_off = vds_sat V
    - ✘ vgs_off = -0.83 V
    - ✘ temp = 25 °C
    - ✘ vgs_start = -0.5 V
    - ✘ mc_sens = 0
    - ✘ vds_lin = 0.05 V
    - ✘ sbenchlsf_release = Alpha
    - ✘ plashrink_ivt = 1
    - ✘ vbs = 1.15 V
    - ✘ ams_release = 2018.3

- ✘ model_version = 1.2.d
- ✘ mc_nsigma = 3
- ✘ ithslwi = 10e-9 A
- ✘ vgs_stop = vdd V
- ✘ shrink_ivt = 1
- ✘ vdd = 1.15 V
- ✘ dlshrink_ivt = 0

✔ Sweep Parameters

- ✘ temp = -40.0, 0.0, 25.0, 85.0, 125.0

✔ Extra parameters

- ✘ eglvt_dev = 0
- ✘ gflag__noisedev__eglvt__cmos028fdsoi = 0

● Model eglvtpspfet (DK1.1_RF_mmW)

✔ Input Parameters

- ✘ vds_sat = 1.15 V
- ✘ ivt = 70e-9 A
- ✘ mc_runs = 1000
- ✘ vstep_ivt = 0.005 V
- ✘ vds_off = vds_sat V
- ✘ vgs_off = -0.83 V
- ✘ temp = 25 °C
- ✘ vgs_start = -0.5 V
- ✘ mc_sens = 0
- ✘ vds_lin = 0.05 V
- ✘ sbenchlsf_release = Alpha

- ✘ plashrink_ivt = 1
- ✘ vbs = 1.15 V
- ✘ ams_release = 2018.3
- ✘ model_version = 1.2.c
- ✘ mc_nsigma = 3
- ✘ ithslwi = 10e-9 A
- ✘ vgs_stop = vdd V
- ✘ shrink_ivt = 1
- ✘ vdd = 1.15 V
- ✘ dlshrink_ivt = 0

✔ Sweep Parameters

- ✘ temp = -40.0, 0.0, 25.0, 85.0, 125.0

✔ Extra parameters

- ✘ eglvt_dev = 0
- ✘ gflag__noisedev__eglvt__cmos028fdsoi = 0