cmos028fdsoi Technology

EGLVT models

DK1.2_RF_mmW

Comparison with DK1.1_RF_mmW model(s)

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General information on EGLVT models

- Maximum supply voltage is 1.8 V.
- Validity domain is defined as follows:
  - ✔ Drawn gate length varies from 150nm to 10um.
  - ✔ Drawn transistor width varies from 0.16um to 10um.
  - ✔ Device temperature varies from -40 °C to 125 °C.

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Output parameters definitions

- Model(s): eglvtnfet_acc, eglvtpfet_acc
  - ✔ Vt_lin : Threshold voltage defined as Vgs value for which drain current is ivt*M*1*W/(1*L+0+1*p_la) at Vds = 0.05V.
  - ✔ Ig_on : Gate current at Vds = 0V and Vgs = 1.8V.
  - ✔ Gm_c : Drain transconductance at Vgs = Vt_lin + 0.2, Vds = Vdd/2V, f = 100kHz.
  - ✔ Gd_c : Drain conductance at Vgs = Vt_lin + 0.2, Vds = Vdd/2V, f = 100kHz.
  - ✔ Ig_off : Gate current at Vds = VddV, Vgs = 0V.
  - ✔ Logioff : log10(Ioffsat).
  - ✔ Gain_c : Voltage gain defined as Gm_c / Gd_c.
  - ✔ Ieff : Average drain current (Ilow + Ihigh) / 2.
  - ✔ Ilin : Drain current at Vgs = 1.8V, Vds = 0.05V.
  - ✔ Dibl : Vt_lin - Vt_sat.
  - ✔ Ioff_s : Source current at Vgs = 0V, Vds = vds_satV.
  - ✔ Ioffsat : Drain current at Vgs = 0V, Vds = vds_satV.
  - ✔ Ioff_g : Gate current at Vgs = 0V, Vds = vds_satV.
  - ✔ Vt_sat : Threshold voltage defined as Vgs value for which drain current is ivt*M*1*W/(1*L+0+1*p_la) at Vds = vds_satV.
  - ✔ Cgg_inv : Total gate capacitance at Vgs = 1.8V, Vds = 0V, f = 100kHz.
  - ✔ Isat : Drain current at Vgs = 1.8V, Vds = VddV.
  - ✔ Cgd_0v : Gate-to-Drain capacitance at Vgs = 0V, Vds = 0V, f = 100kHz.
  - ✔ Vtgmmax : Threshold voltage at Vds = 0.05 derived from Gm max method.

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eglvtnfet_acc
Electrical characteristics per geometry

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eglvtnfet_acc @ w=2e-06, l=1.5e-07, swshe=0, pre_layout_local=1, sa=1.86e-6, sb=1.86e-6, sd=1.4e-07, devtype=PT, as=3.72e-12, ad=3.72e-12, ps=7.72e-06, pd=7.72e-06, vbs=0, vdd=1.8, temp=25.0

DK1.2_RF_mmW wrt DK1.1_RF_mmW

	SSF	SS	TT	FF	FFF
Vt_lin [mV]	425.9 0.0mV	421.6 0.0mV	376.2 0.0mV	334.1 0.0mV	327.2 0.0mV
Vt_sat [mV]	403.8 0.0mV	400.1 0.0mV	355 0.0mV	312.9 0.0mV	306.6 0.0mV
Isat [mA]	1.24 0.0%	1.27 0.0%	1.36 0.0%	1.43 0.0%	1.48 0.0%
Ilin [µA]	159.2 0.0%	168.2 0.0%	182.1 0.0%	194.9 0.0%	204.5 0.0%
Gm_c [µS]	603.4 0.0%	634.1 0.0%	679.7 0.0%	722.2 0.0%	760 0.0%
Gd_c [µS]	4.41 0.0%	4.63 0.0%	5.29 0.0%	5.98 0.0%	6.22 0.0%
Gain_c []	136.8 0.0%	137 0.0%	128.5 0.0%	120.8 0.0%	122.2 0.0%
VtGmmax [mV]	404 0.0mV	401.9 0.0mV	359.1 0.0mV	318.9 0.0mV	314.4 0.0mV
Cgd_0v [aF]	438 0.0%	460.4 0.0%	458.2 0.0%	449.9 0.0%	478.2 0.0%
Cgg_inv [fF]	3.23 0.0%	3.33 0.0%	3.34 0.0%	3.35 0.0%	3.46 0.0%
Ieff [µA]	754.6 0.0%	777.1 0.0%	854.2 0.0%	925.5 0.0%	960.5 0.0%
Ig_on [fA]	0.37 0.0%	3.12 0.0%	3.23 0.0%	3.65 0.0%	34.54 0.0%
Ioffsat [pA]	14.16 0.0%	15.6 0.0%	56.25 0.0%	200.9 0.0%	229.7 0.0%
Ioff_g [aA]	-7.4 -0.0%	-19.11 -0.0%	-62.89 -0.0%	-221.2 -0.0%	-545.8 -0.0%
Ioff_s [pA]	-14.16 -0.0%	-15.6 -0.0%	-56.25 -0.0%	-200.9 -0.0%	-229.7 -0.0%

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eglvtnfet_acc @ w=2e-06, l=2.0e-06, swshe=0, pre_layout_local=1, sa=2.26e-6, sb=2.26e-6, sd=1.4e-07, devtype=PT, as=4.52e-12, ad=4.52e-12, ps=8.52e-06, pd=8.52e-06, vbs=0, vdd=1.8, temp=25.0

DK1.2_RF_mmW wrt DK1.1_RF_mmW

	SSF	SS	TT	FF	FFF
Vt_lin [mV]	431.3 0.0mV	433.7 0.0mV	392.7 0.0mV	354.7 0.0mV	352.6 0.0mV
Vt_sat [mV]	420.3 0.0mV	422.8 0.0mV	382.4 0.0mV	344.9 0.0mV	342.8 0.0mV
Isat [µA]	237.2 0.0%	234.5 0.0%	264.2 0.0%	292.6 0.0%	293.5 0.0%
Ilin [µA]	19.16 0.0%	18.75 0.0%	20.46 0.0%	21.98 0.0%	21.73 0.0%
Gm_c [µS]	54.8 0.0%	54.69 0.0%	58.68 0.0%	62.42 0.0%	62.48 0.0%
Gd_c [nS]	45.05 0.0%	45.35 0.0%	51.69 0.0%	58.17 0.0%	58.3 0.0%
Gain_c []	1217 0.0%	1206 0.0%	1135 0.0%	1073 0.0%	1072 0.0%
VtGmmax [mV]	438 0.0mV	438.7 0.0mV	400.1 0.0mV	364.1 0.0mV	361.4 0.0mV
Cgd_0v [aF]	438.1 0.0%	460.4 0.0%	458.3 0.0%	450.3 0.0%	478.7 0.0%
Cgg_inv [fF]	30.82 0.0%	31.6 0.0%	32.15 0.0%	32.8 0.0%	33.6 0.0%
Ieff [µA]	127.3 0.0%	125.5 0.0%	142.3 0.0%	158.7 0.0%	158.7 0.0%
Ig_on [fA]	4.24 0.0%	33.28 0.0%	32.85 0.0%	35.04 0.0%	315.9 0.0%
Ioffsat [pA]	0.75 0.0%	0.92 0.0%	1.98 0.0%	5.11 0.0%	5.22 0.0%
Ioff_g [fA]	-8.95e-02 -0.0%	-0.23 -0.0%	-0.76 -0.0%	-2.68 -0.0%	-6.6 -0.0%
Ioff_s [pA]	-0.75 -0.0%	-0.92 -0.0%	-1.98 -0.0%	-5.11 -0.0%	-5.21 -0.0%

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eglvtpfet_acc
Electrical characteristics per geometry

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eglvtpfet_acc @ w=2e-06, l=1.5e-07, swshe=0, pre_layout_local=1, sa=1.86e-6, sb=1.86e-6, sd=1.4e-07, devtype=PT, as=3.72e-12, ad=3.72e-12, ps=7.72e-06, pd=7.72e-06, vbs=1.8, vdd=1.8, temp=25.0

DK1.2_RF_mmW wrt DK1.1_RF_mmW

	SSF	SS	TT	FF	FFF
Vt_lin [mV]	347.7 0.0mV	308.9 0.0mV	293.1 0.0mV	277.7 0.0mV	238.7 0.0mV
Vt_sat [mV]	321.9 0.0mV	283.9 0.0mV	268 0.0mV	252.2 0.0mV	213.6 0.0mV
Isat [µA]	589.6 0.0%	631.6 0.0%	667 0.0%	697.3 0.0%	742.7 0.0%
Ilin [µA]	45.26 0.0%	50.77 0.0%	53.67 0.0%	56.34 0.0%	61.94 0.0%
Gm_c [µS]	159.2 0.0%	172.4 0.0%	183.7 0.0%	194.7 0.0%	207.1 0.0%
Gd_c [µS]	1.84 0.0%	2.01 0.0%	2.31 0.0%	2.63 0.0%	2.81 0.0%
Gain_c []	86.38 0.0%	85.97 0.0%	79.66 0.0%	73.98 0.0%	73.57 0.0%
VtGmmax [mV]	355.1 0.0mV	322.2 0.0mV	309.1 0.0mV	295.9 0.0mV	261.8 0.0mV
Cgd_0v [aF]	374.9 0.0%	393.2 0.0%	394.2 0.0%	391.4 0.0%	415.9 0.0%
Cgg_inv [fF]	2.78 0.0%	2.86 0.0%	2.87 0.0%	2.87 0.0%	2.95 0.0%
Ieff [µA]	321.9 0.0%	358.2 0.0%	382.2 0.0%	404.1 0.0%	442.8 0.0%
Ig_on [aA]	7.21 0.0%	27.94 0.0%	72.03 0.0%	216.2 0.0%	720.8 0.0%
Ioffsat [nA]	4.56e-02 0.0%	0.14 0.0%	0.23 0.0%	0.37 0.0%	1.22 0.0%
Ioff_g [fA]	-0.12 -0.0%	-0.36 -0.0%	-0.92 -0.0%	-2.66 -0.0%	-7.2 -0.0%
Ioff_s [nA]	-4.56e-02 -0.0%	-0.14 -0.0%	-0.23 -0.0%	-0.37 -0.0%	-1.22 -0.0%

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eglvtpfet_acc @ w=2e-06, l=2.0e-06, swshe=0, pre_layout_local=1, sa=2.26e-6, sb=2.26e-6, sd=1.4e-07, devtype=PT, as=4.52e-12, ad=4.52e-12, ps=8.52e-06, pd=8.52e-06, vbs=1.8, vdd=1.8, temp=25.0

DK1.2_RF_mmW wrt DK1.1_RF_mmW

	SSF	SS	TT	FF	FFF
Vt_lin [mV]	325 0.0mV	294.8 0.0mV	287.9 0.0mV	281.9 0.0mV	249.8 0.0mV
Vt_sat [mV]	315.3 0.0mV	285 0.0mV	278.3 0.0mV	272.5 0.0mV	240.3 0.0mV
Isat [µA]	87.69 0.0%	89.92 0.0%	94.98 0.0%	99.56 0.0%	102.4 0.0%
Ilin [µA]	6.23 0.0%	6.18 0.0%	6.47 0.0%	6.72 0.0%	6.69 0.0%
Gm_c [µS]	15.89 0.0%	15.74 0.0%	16.42 0.0%	17.04 0.0%	16.86 0.0%
Gd_c [nS]	18.29 0.0%	18.56 0.0%	21.07 0.0%	23.68 0.0%	23.88 0.0%
Gain_c []	868.9 0.0%	848.1 0.0%	779.4 0.0%	719.3 0.0%	705.8 0.0%
VtGmmax [mV]	375.2 0.0mV	346.4 0.0mV	342.4 0.0mV	339.1 0.0mV	309.1 0.0mV
Cgd_0v [aF]	363.9 0.0%	381.7 0.0%	381.5 0.0%	377.4 0.0%	403 0.0%
Cgg_inv [fF]	29.33 0.0%	30.06 0.0%	30.54 0.0%	31.1 0.0%	31.85 0.0%
Ieff [µA]	46.88 0.0%	48.2 0.0%	50.92 0.0%	53.38 0.0%	55.02 0.0%
Ig_on [fA]	1.06e-02 0.0%	4.29e-02 0.0%	0.11 0.0%	0.32 0.0%	1.12 0.0%
Ioffsat [pA]	3.87 0.0%	7.68 0.0%	10.12 0.0%	14.11 0.0%	28.46 0.0%
Ioff_g [fA]	-1.42 -0.0%	-4.3 -0.0%	-11.13 -0.0%	-32.14 -0.0%	-87.09 -0.0%
Ioff_s [pA]	-3.87 -0.0%	-7.67 -0.0%	-10.1 -0.0%	-14.08 -0.0%	-28.37 -0.0%

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eglvtnfet_acc
Electrical characteristics scaling

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Scaling versus Length (W=2e-6,Temp=25,Vbs=0V)

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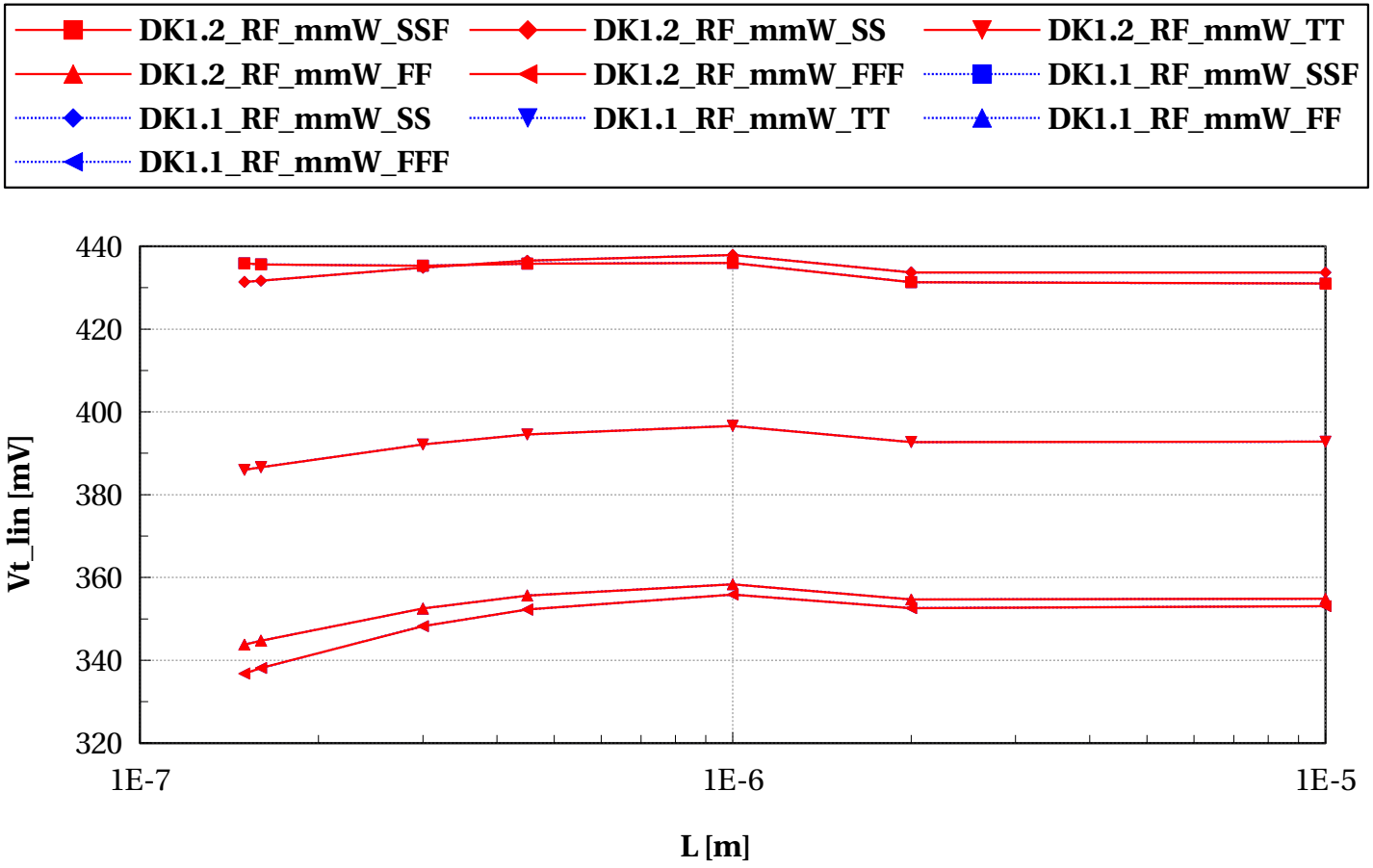
eglvtnfet_acc, Vt_lin [mV] vs L [m]

Temp==25 and Vbs==0 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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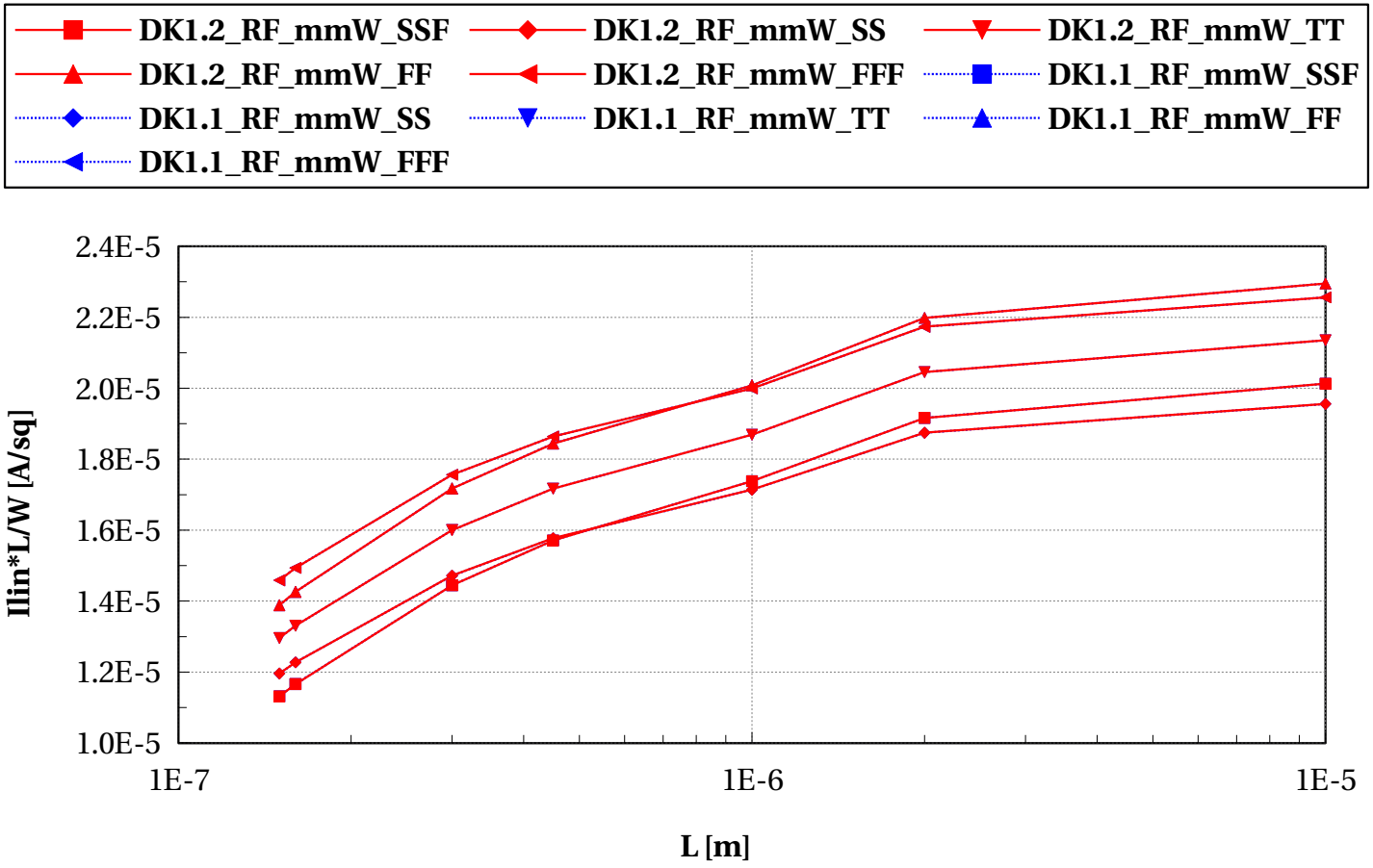
eglvtnfet_acc, Ilin*L/W [A/sq] vs L [m]

Temp==25 and Vbs==0 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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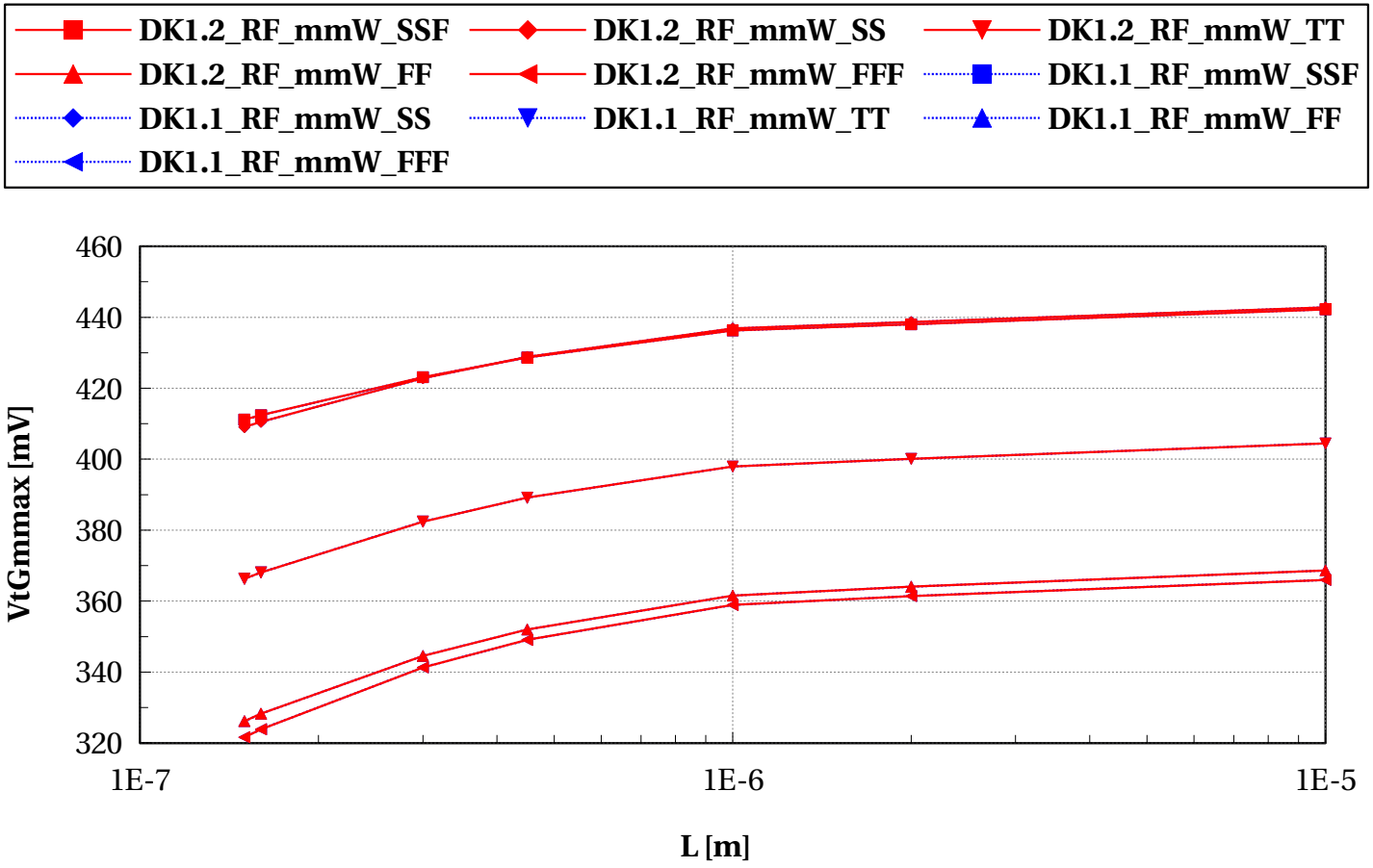
eglvtnfet_acc, VtGmmax [mV] vs L [m]

Temp==25 and Vbs==0 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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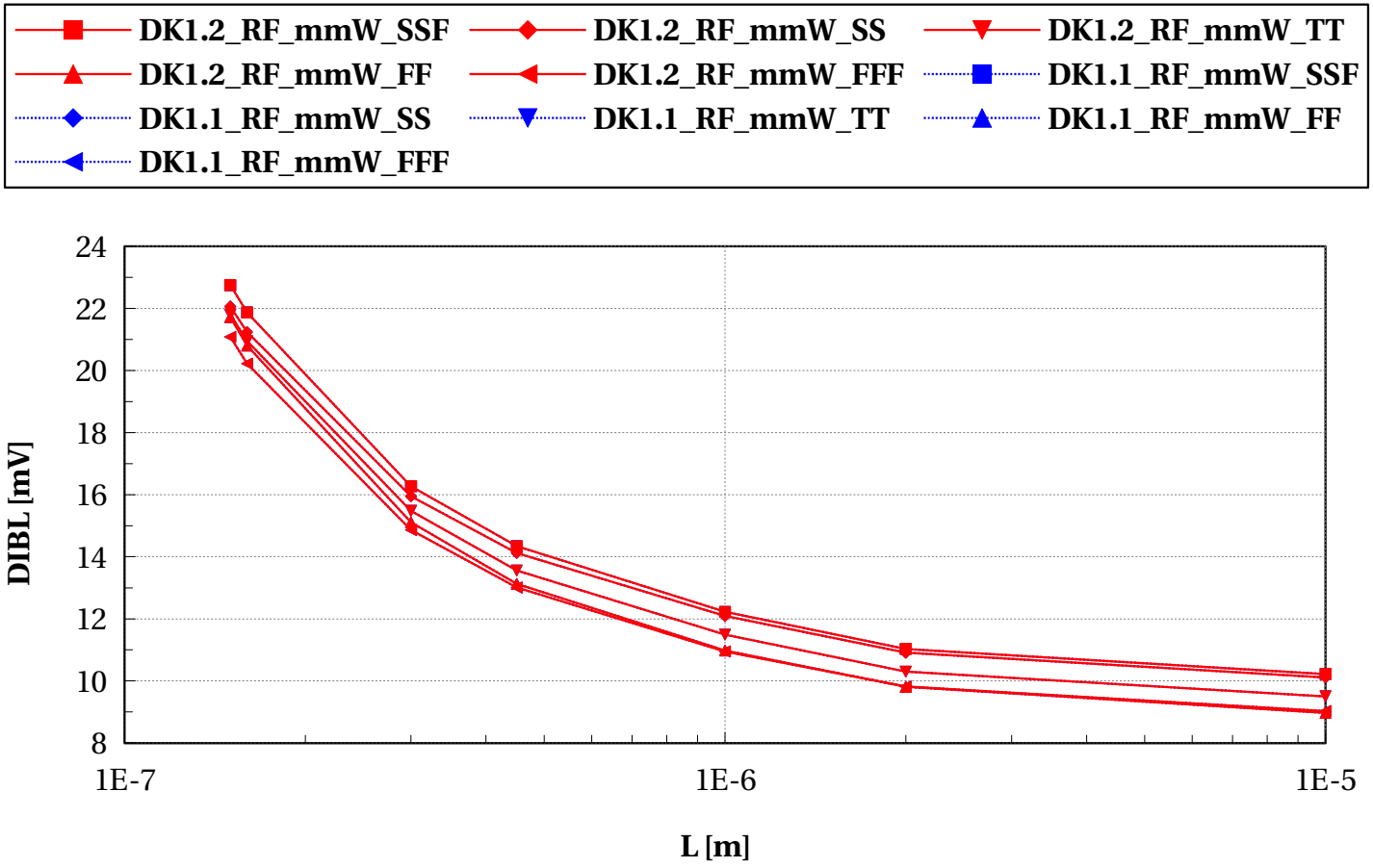
eglvtnfet_acc, DIBL [mV] vs L [m]

Temp==25 and Vbs==0 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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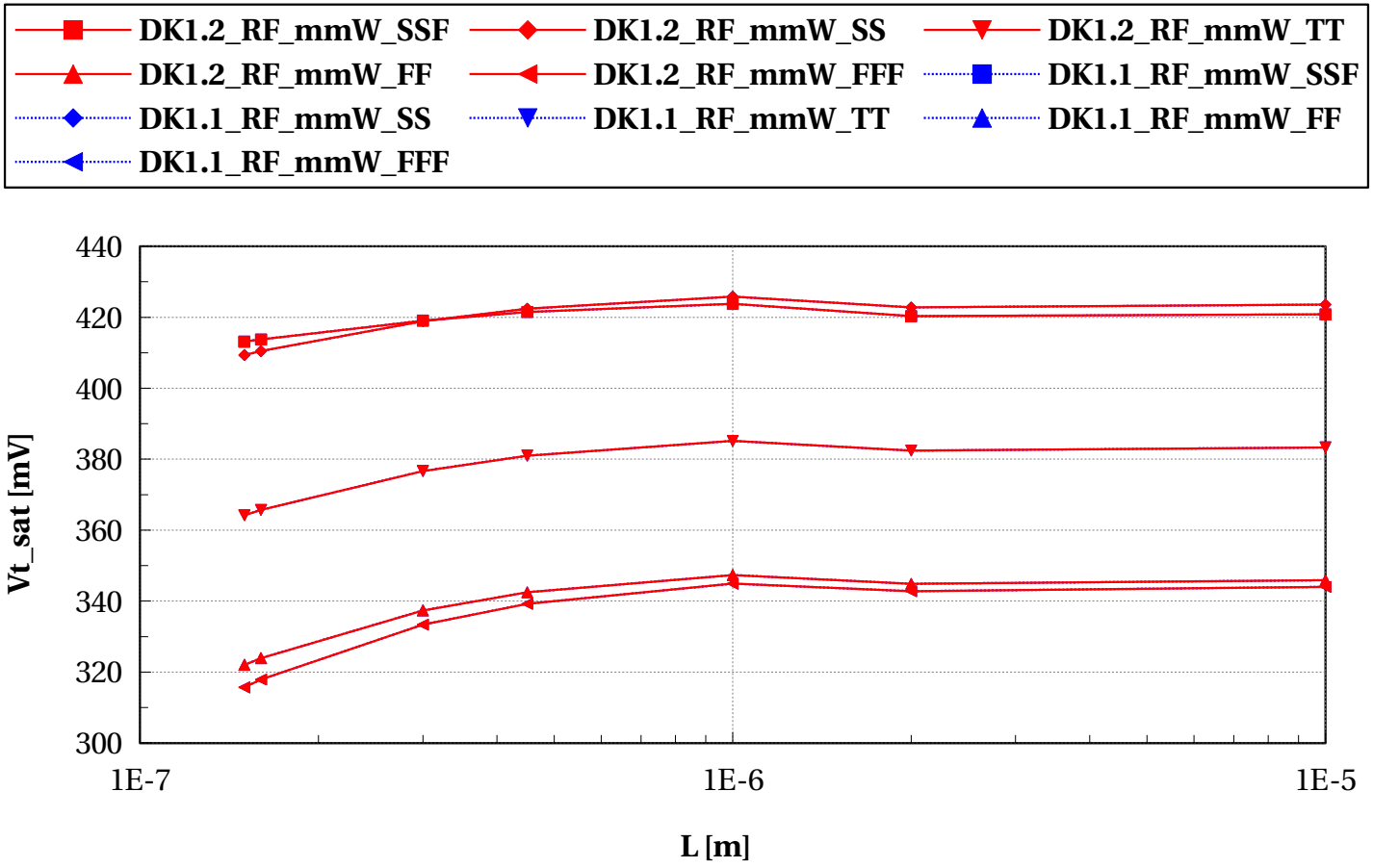
eglvtnfet_acc, Vt_sat [mV] vs L [m]

Temp==25 and Vbs==0 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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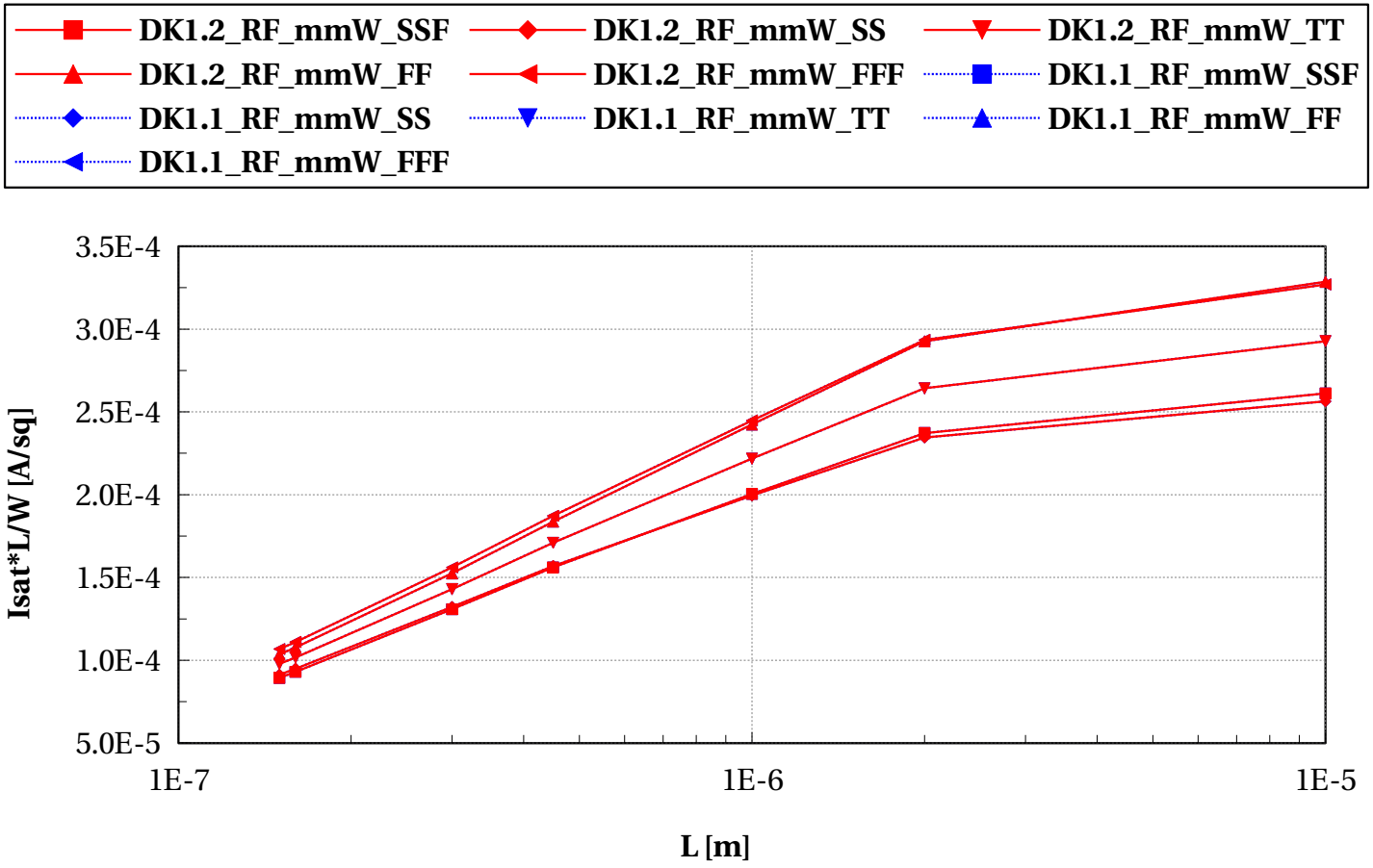
eglvtnfet_acc, Isat*L/W [A/sq] vs L [m]

Temp==25 and Vbs==0 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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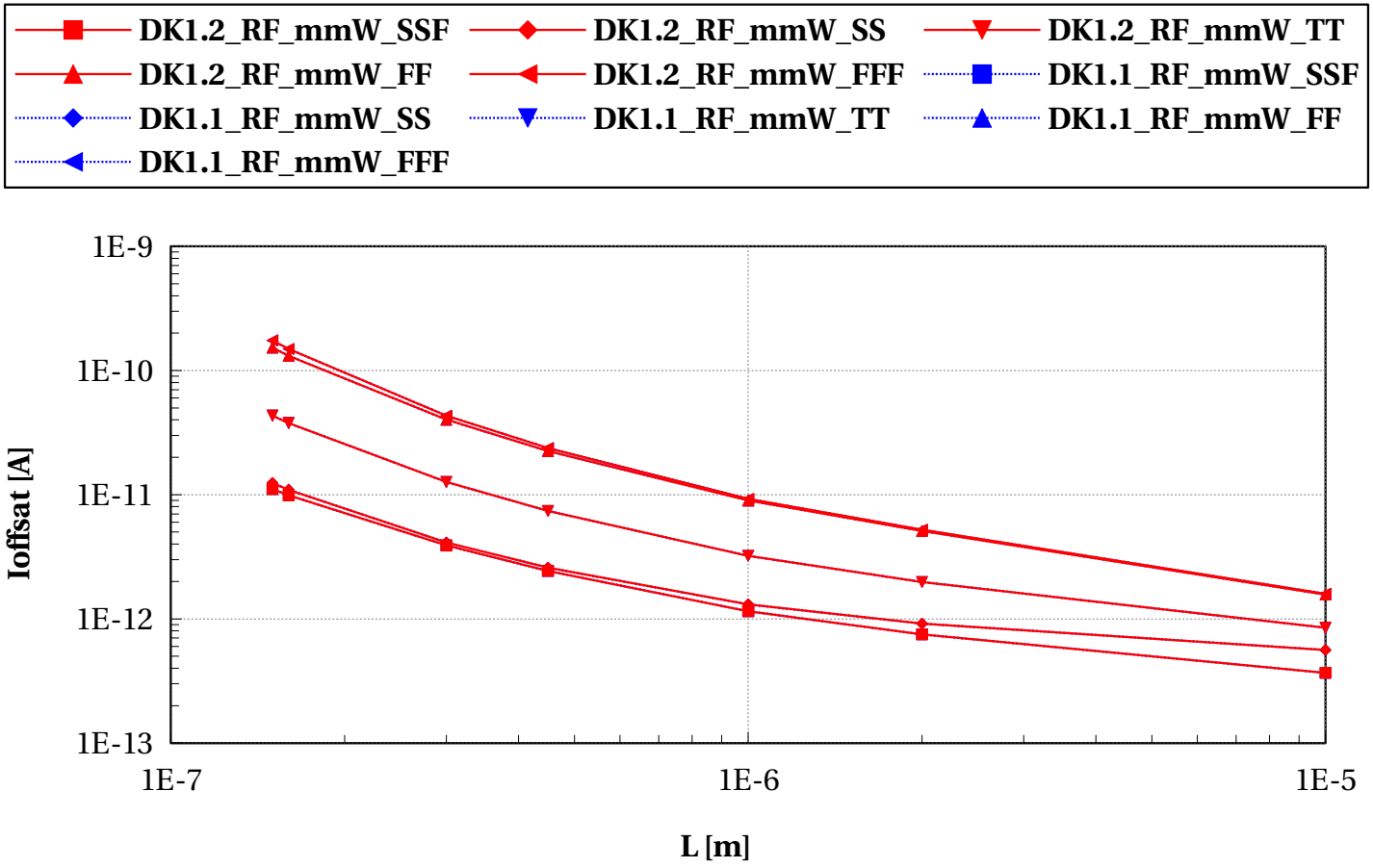
eglvtnfet_acc, Ioffsat [A] vs L [m]

Temp==25 and Vbs==0 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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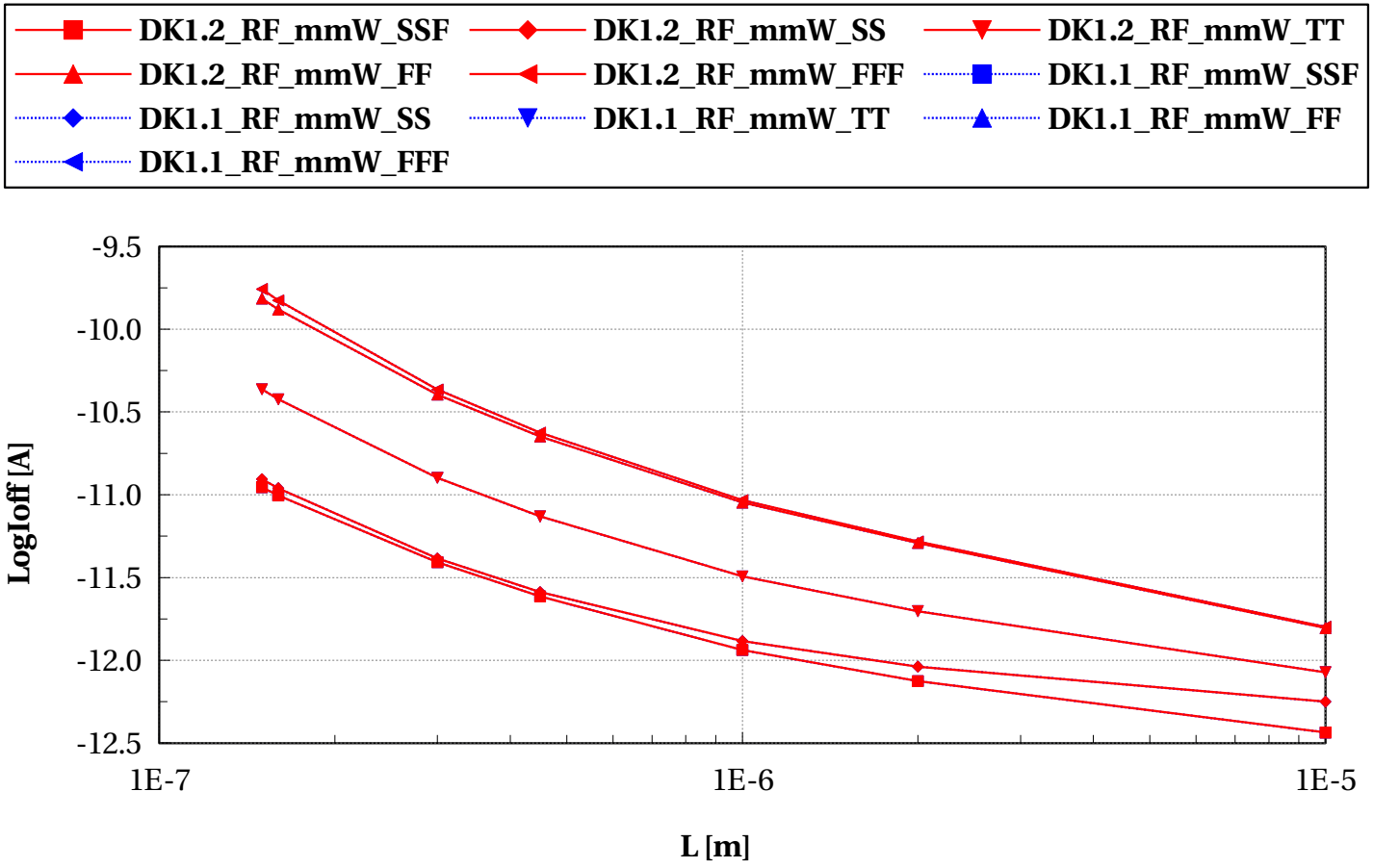
eglvtnfet_acc, LogIoff [A] vs L [m]

Temp==25 and Vbs==0 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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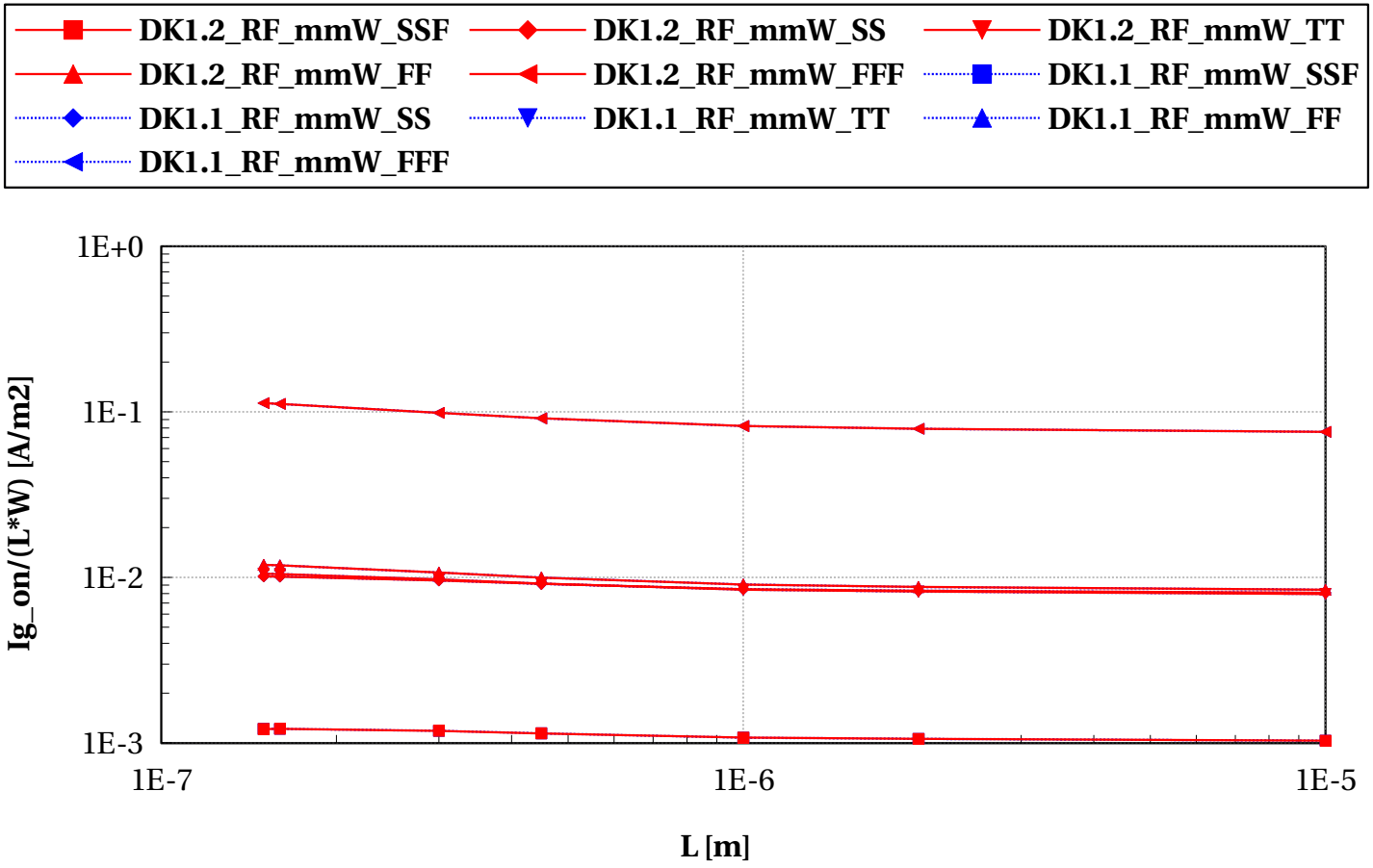
eglvtnfet_acc, Ig_on/(L*W) [A/m2] vs L [m]

Temp==25 and Vbs==0 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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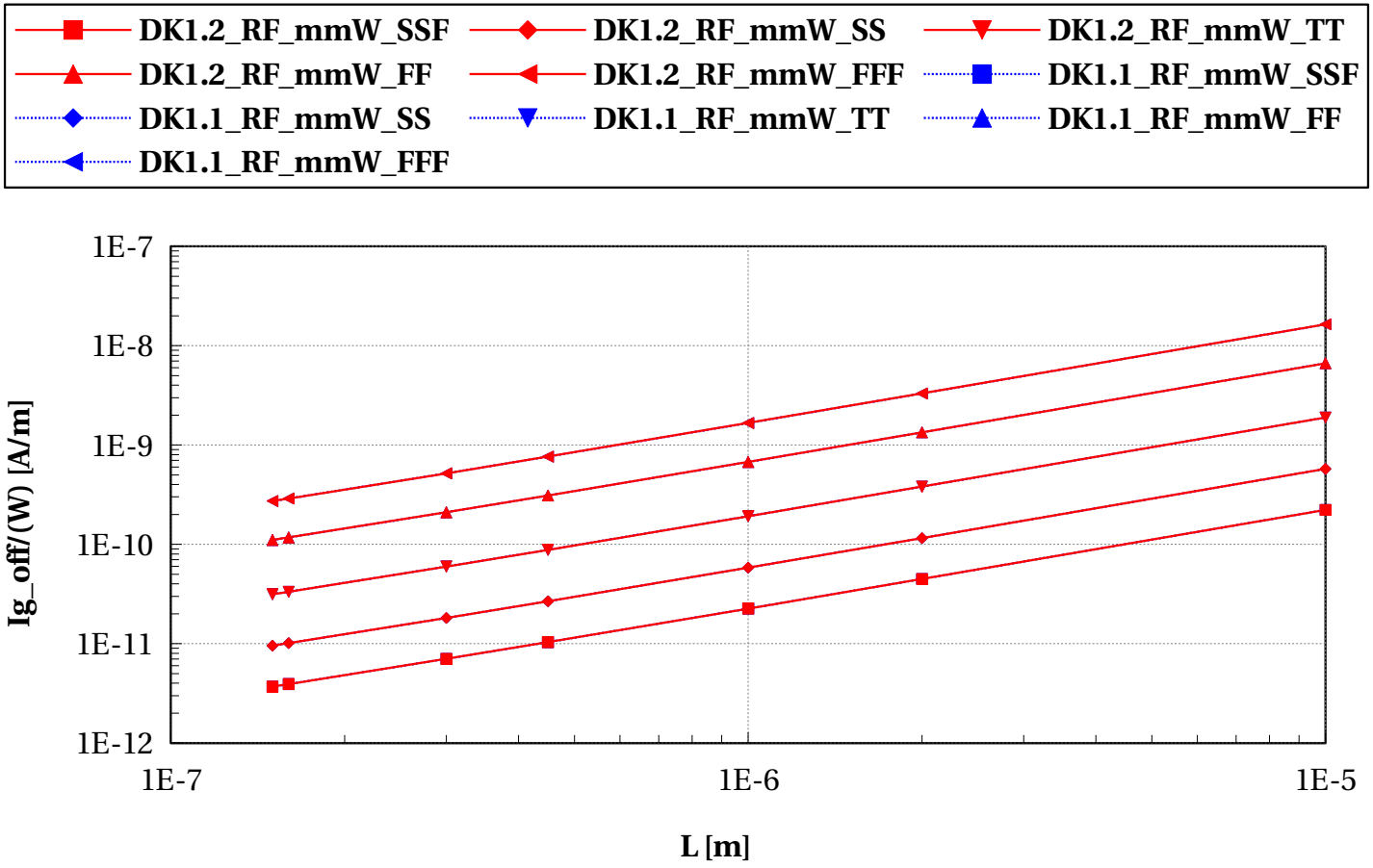
eglvtnfet_acc, Ig_off/(W) [A/m] vs L [m]

Temp==25 and Vbs==0 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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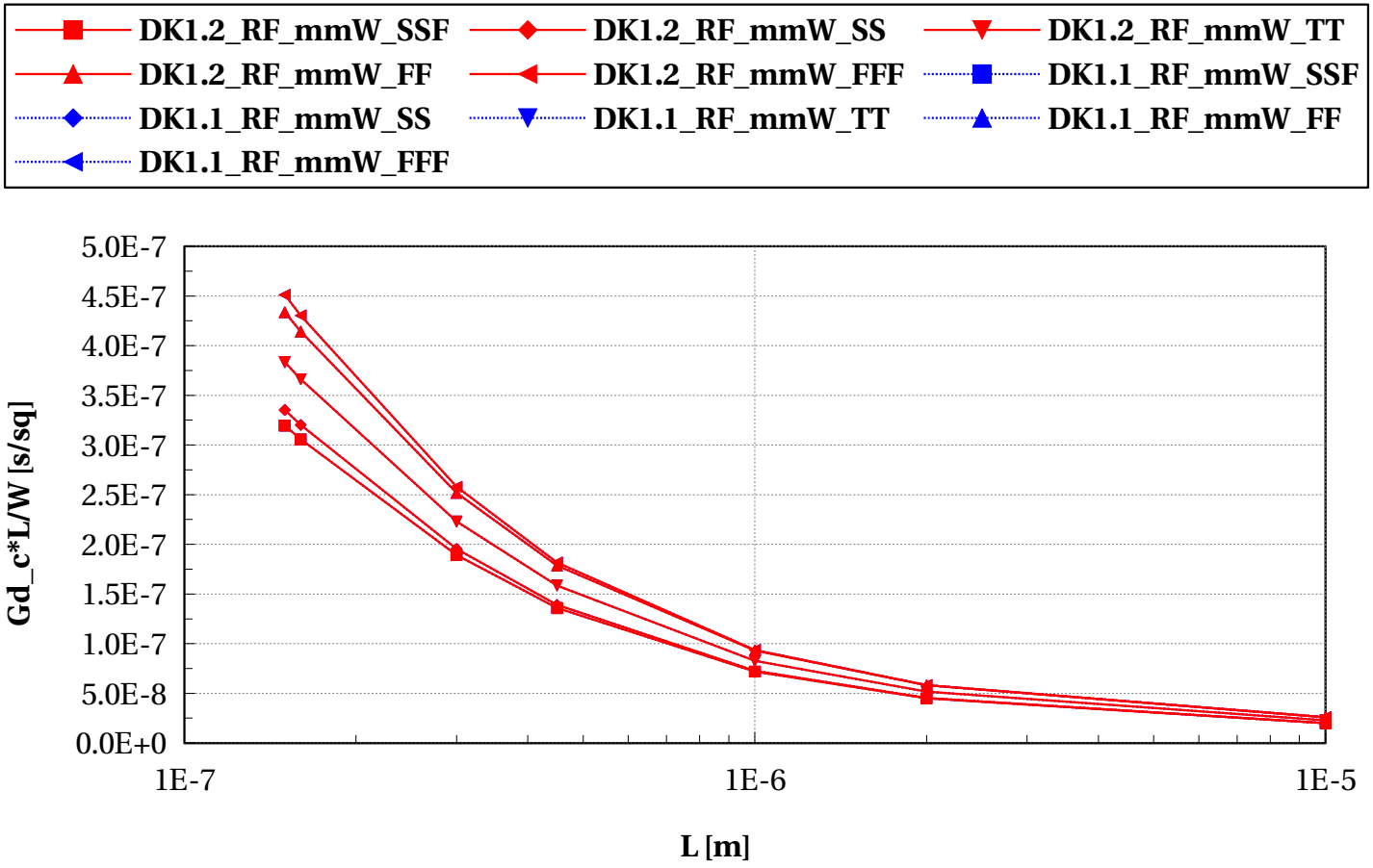
eglvtnfet_acc, Gd_c*L/W [s/sq] vs L [m]

Temp==25 and Vbs==0 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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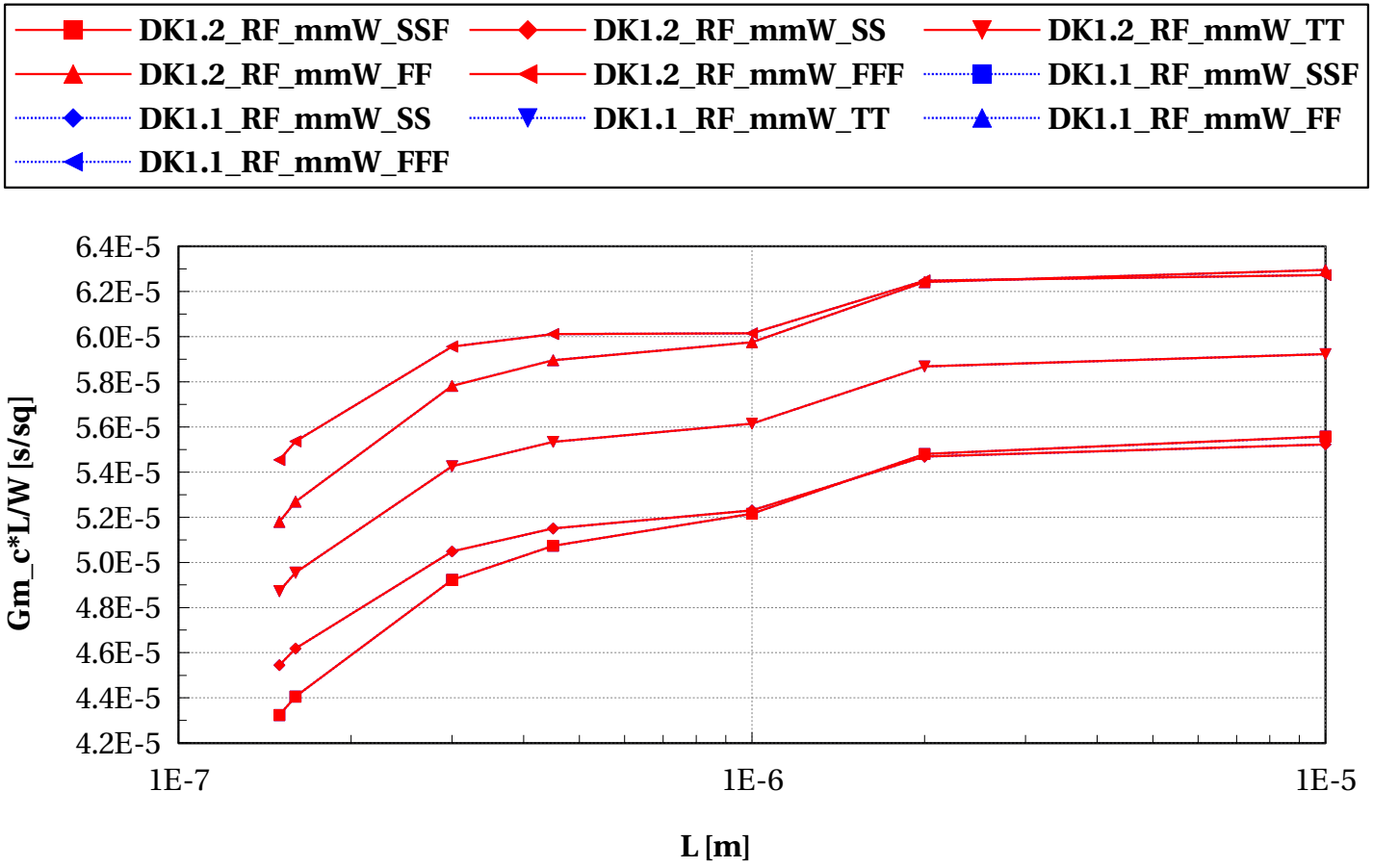
eglvtnfet_acc, Gm_c*L/W [s/sq] vs L [m]

Temp==25 and Vbs==0 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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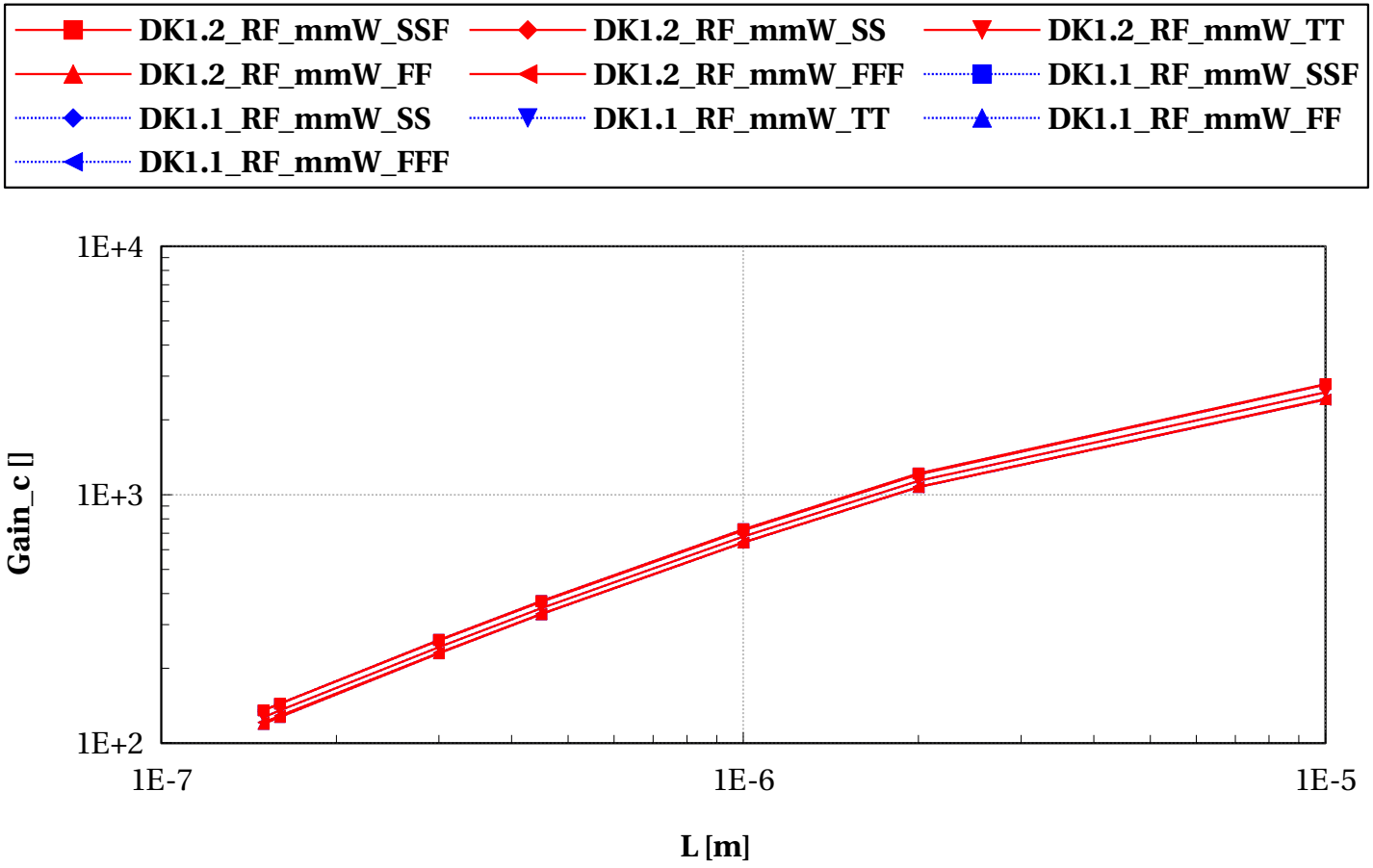
eglvtnfet_acc, Gain_c [] vs L [m]

Temp==25 and Vbs==0 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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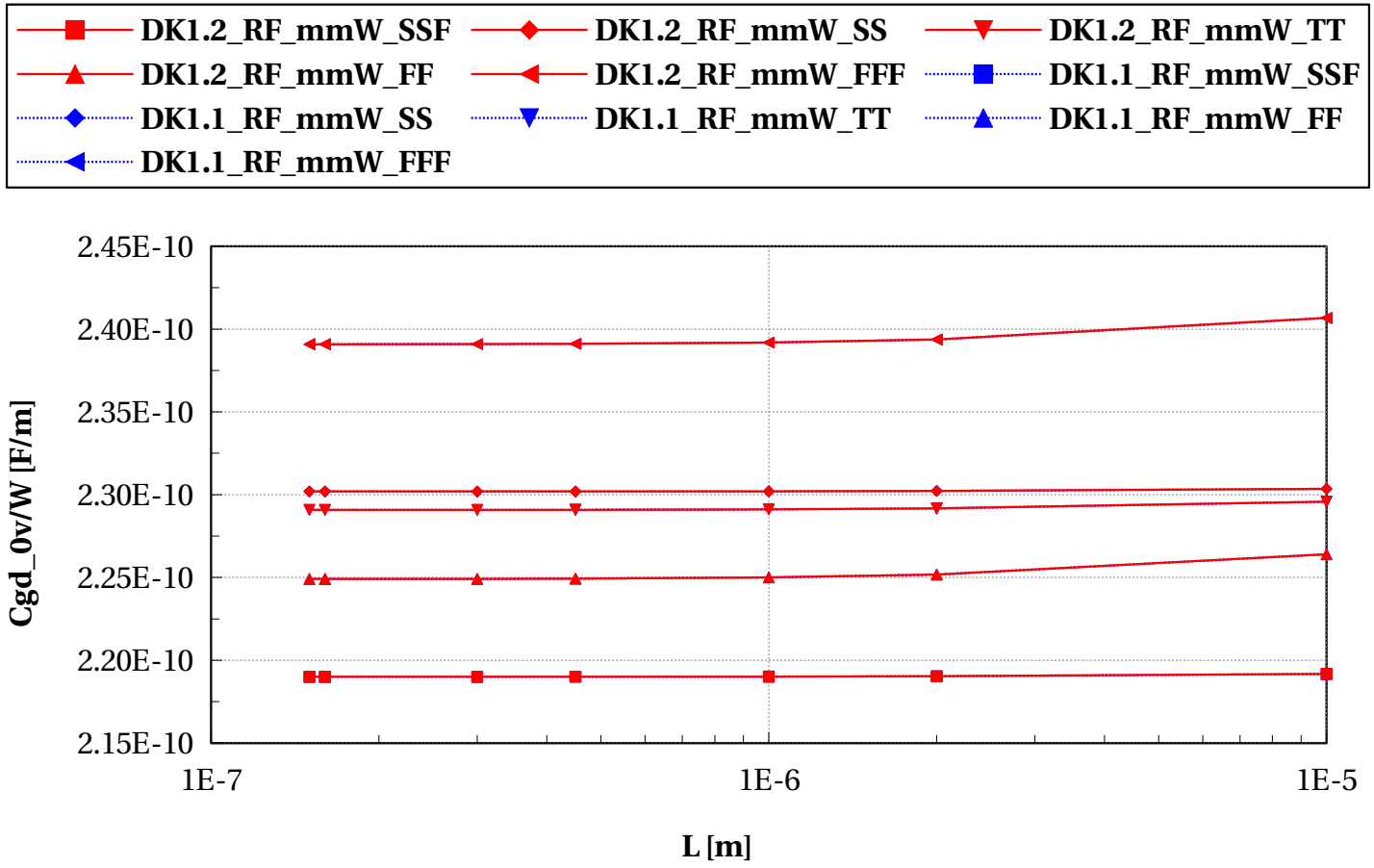
eglvtnfet_acc, Cgd_0v/W [F/m] vs L [m]

Temp==25 and Vbs==0 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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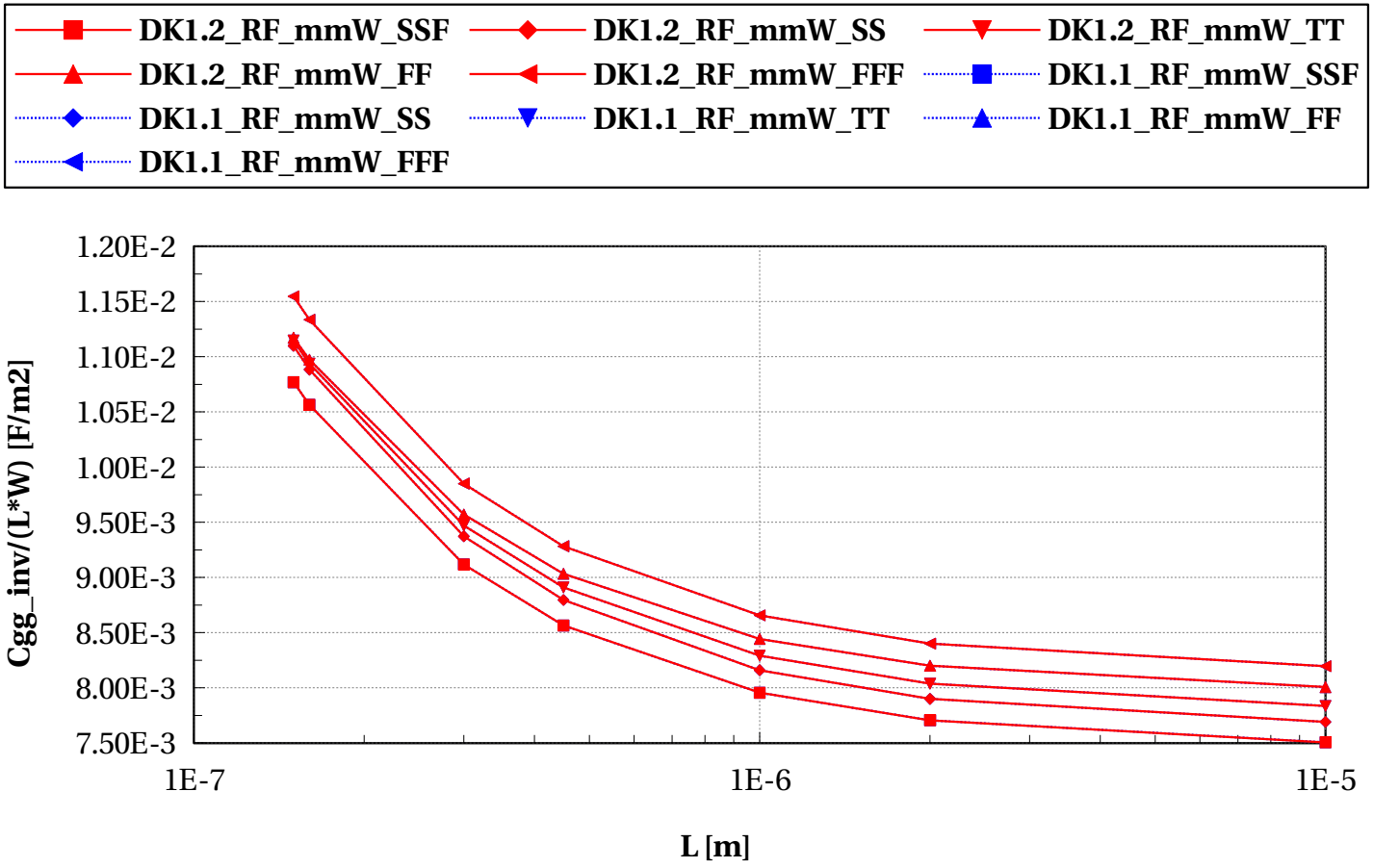
eglvtnfet_acc, Cgg_inv/(L*W) [F/m2] vs L [m]

Temp==25 and Vbs==0 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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Scaling versus Width (L=0.15e-6,Temp=25,Vbs=0)

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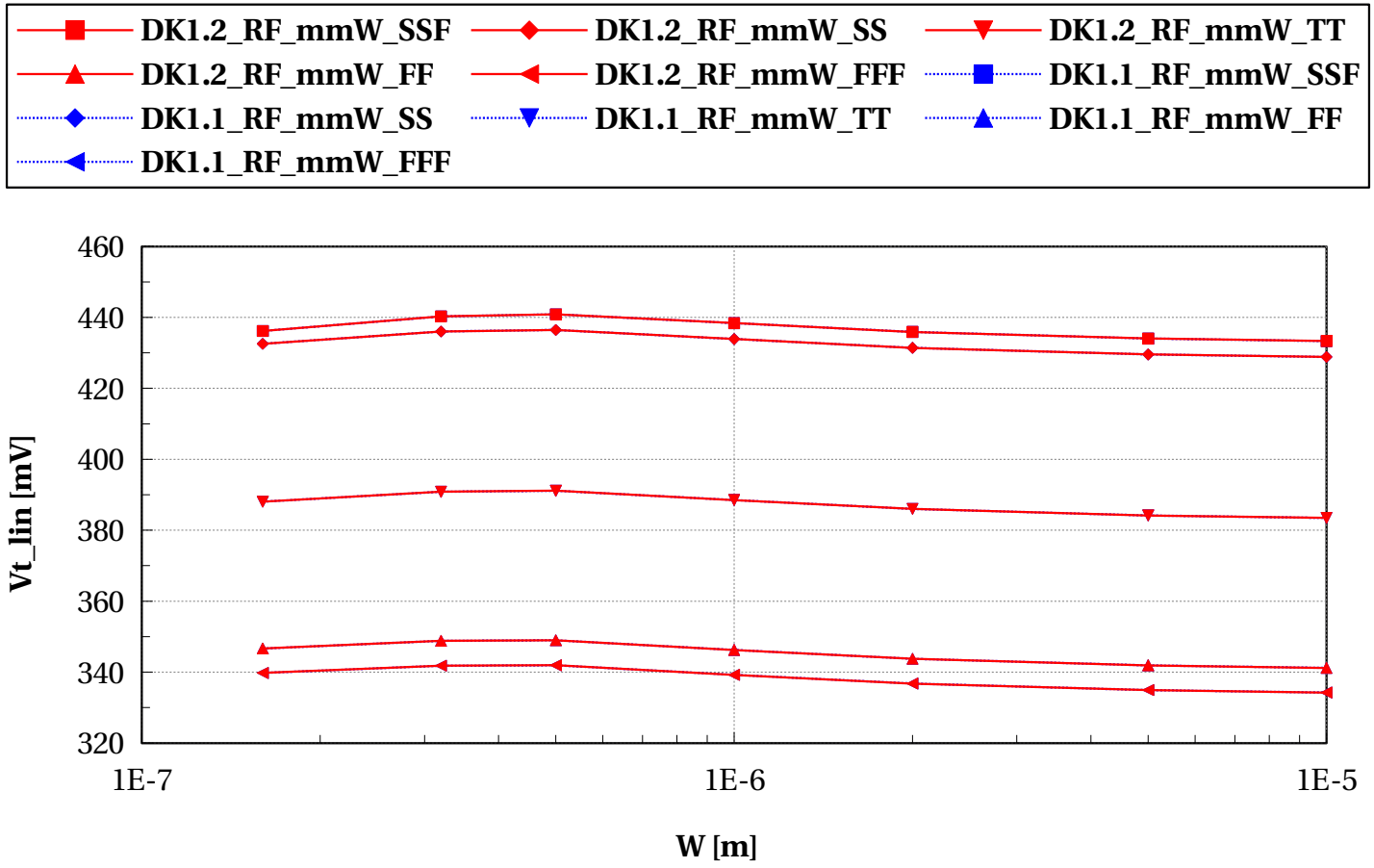
eglvtnfet_acc, Vt_lin [mV] vs W [m]

Temp==25 and l==0.15e-6 and Vbs==0 and w>0.135e-6 and devType=="PCELLwoWPE"



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eglvtnfet_acc, Ilin/W [A/m] vs W [m]

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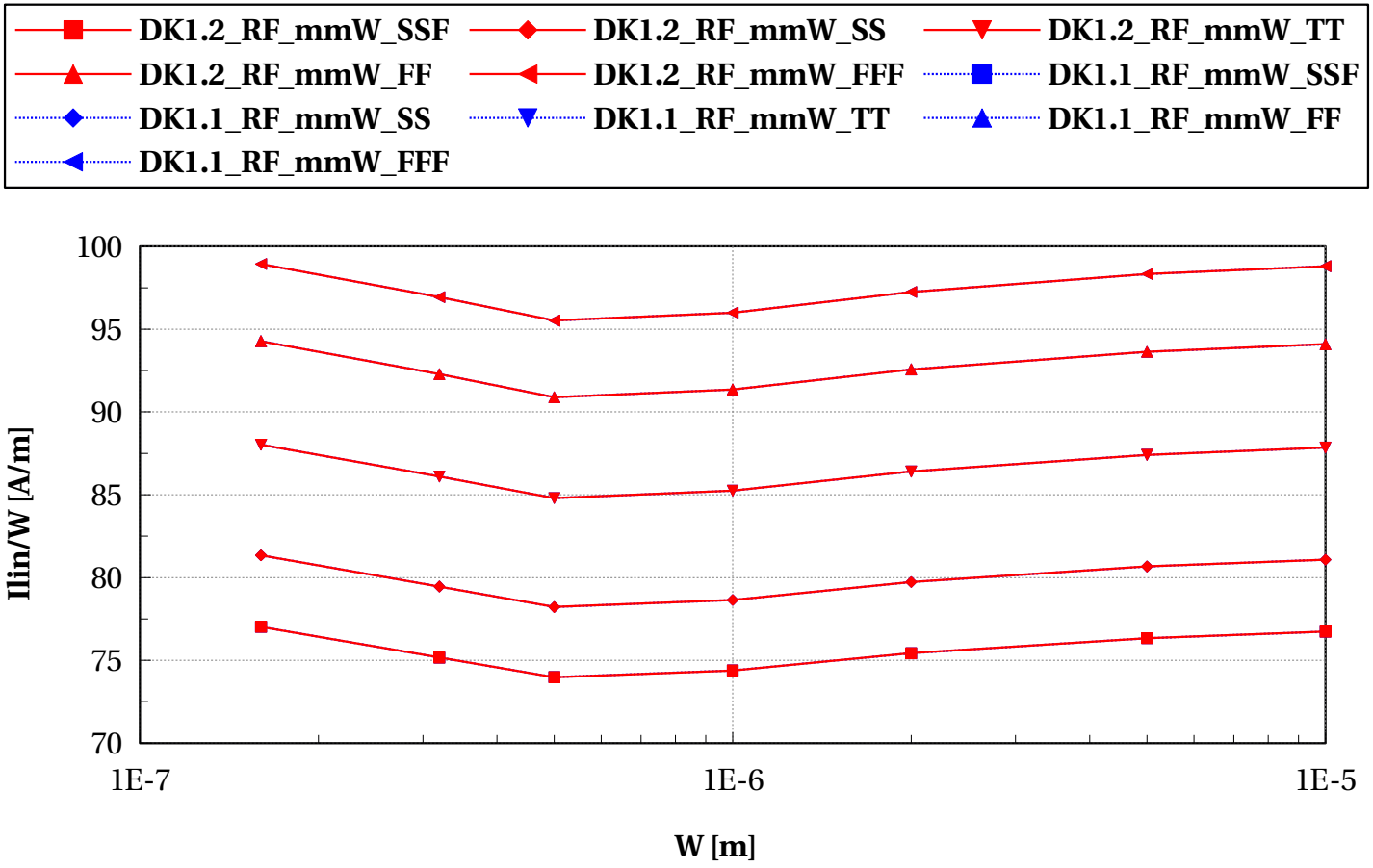

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eglvtnfet_acc, VtGmmax [mV] vs W [m]

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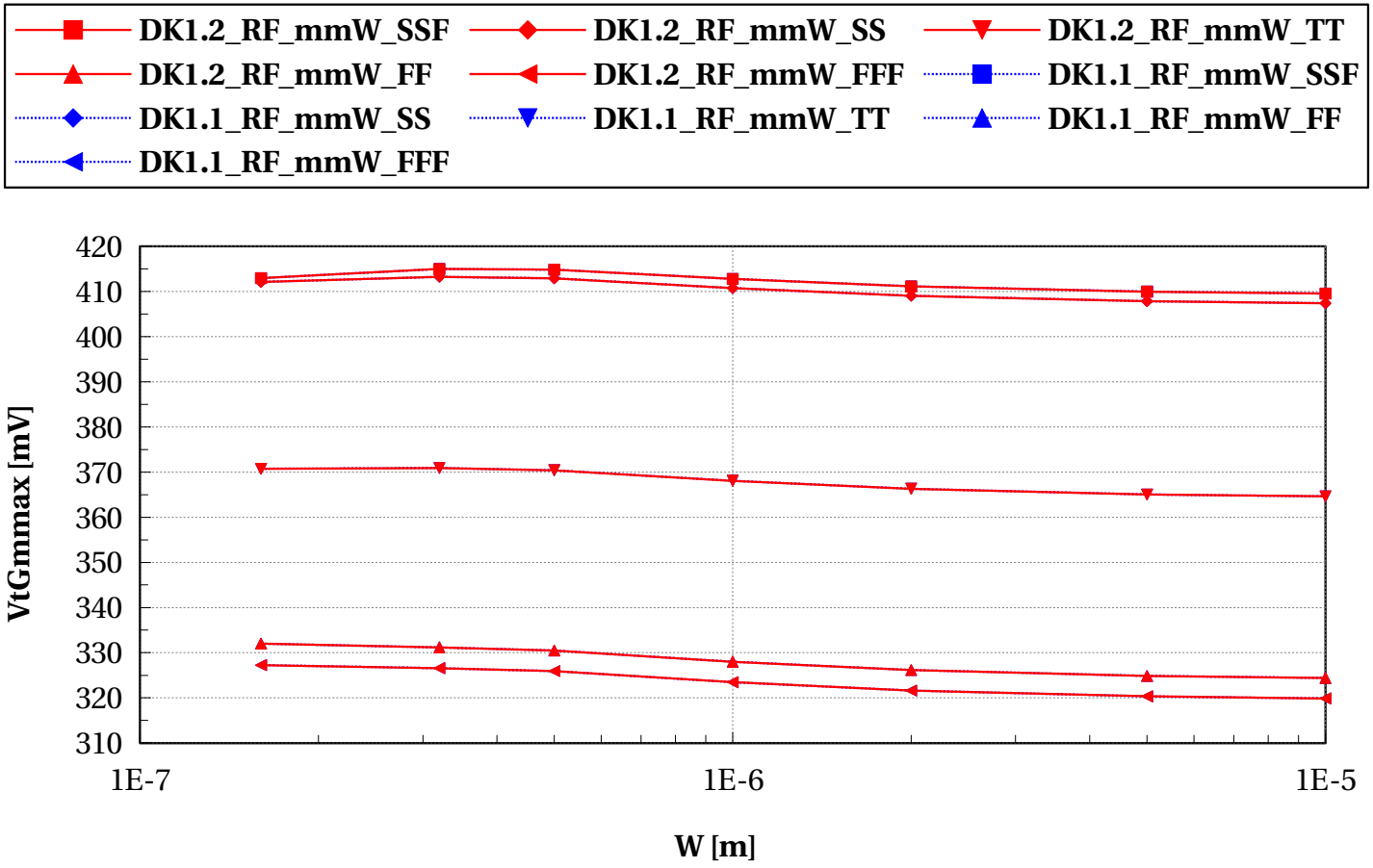

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eglvtnfet_acc, DIBL [mV] vs W [m]

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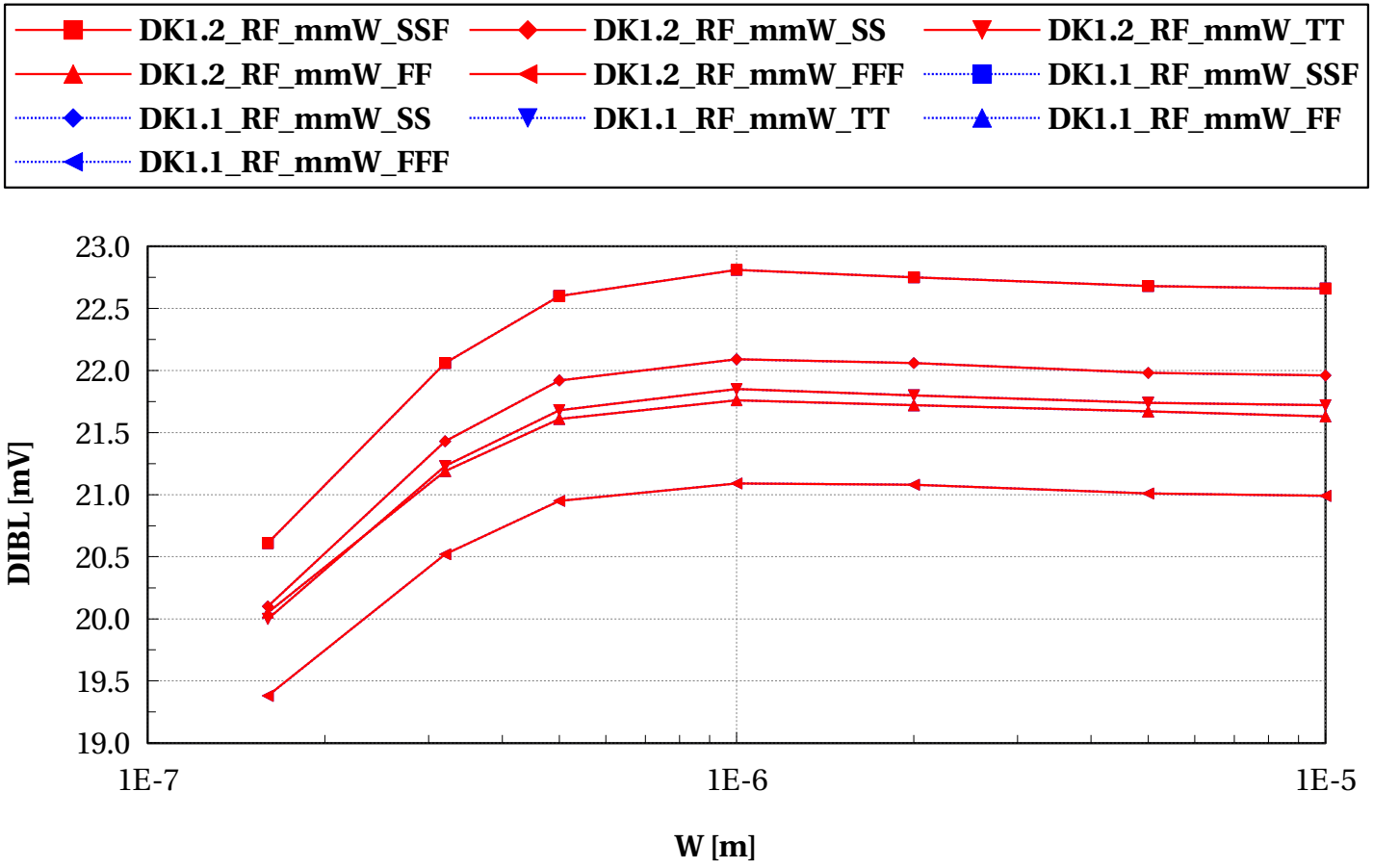

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eglvtnfet_acc, Vt_sat [mV] vs W [m]

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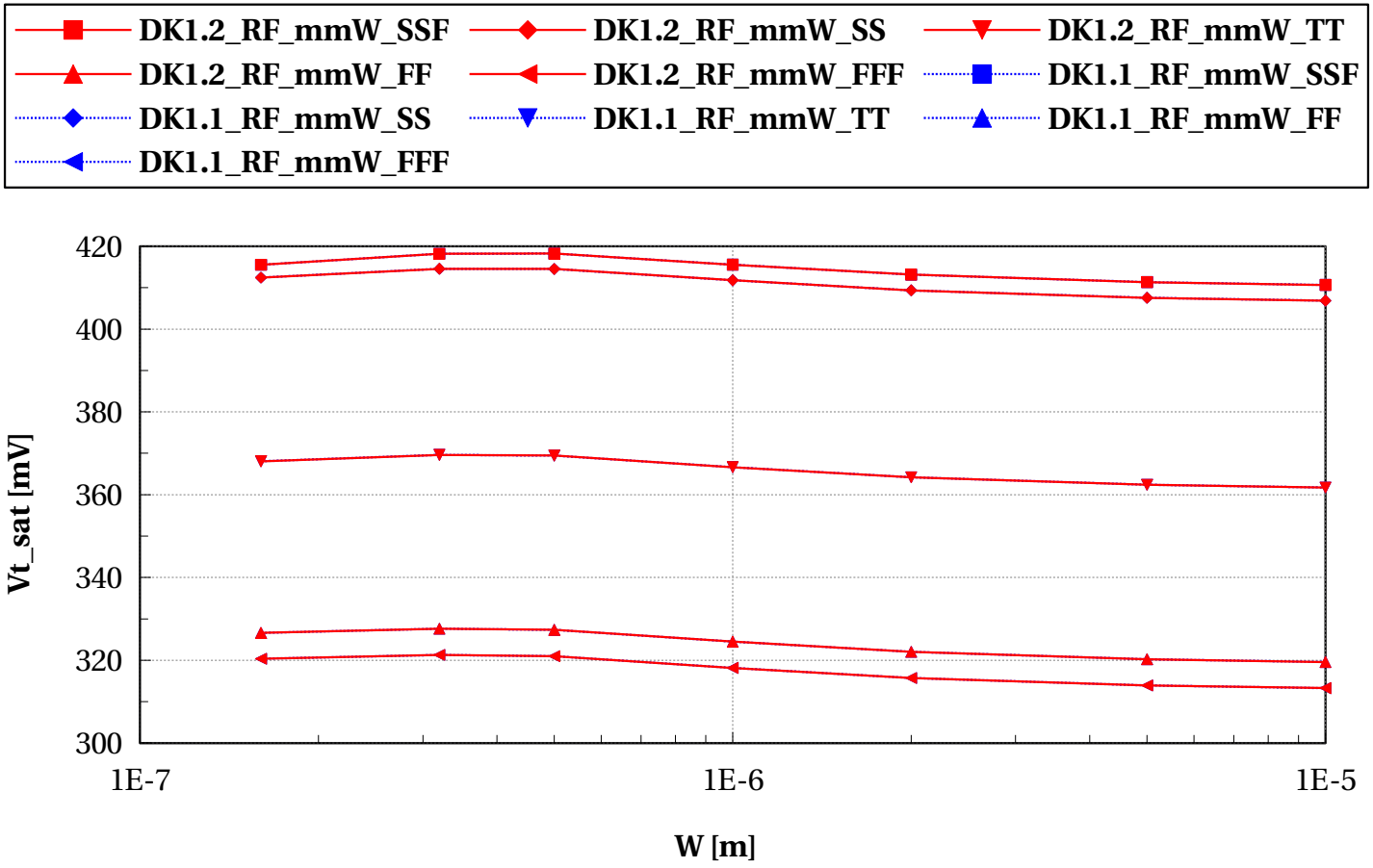

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eglvtnfet_acc, Isat/W [A/m] vs W [m]

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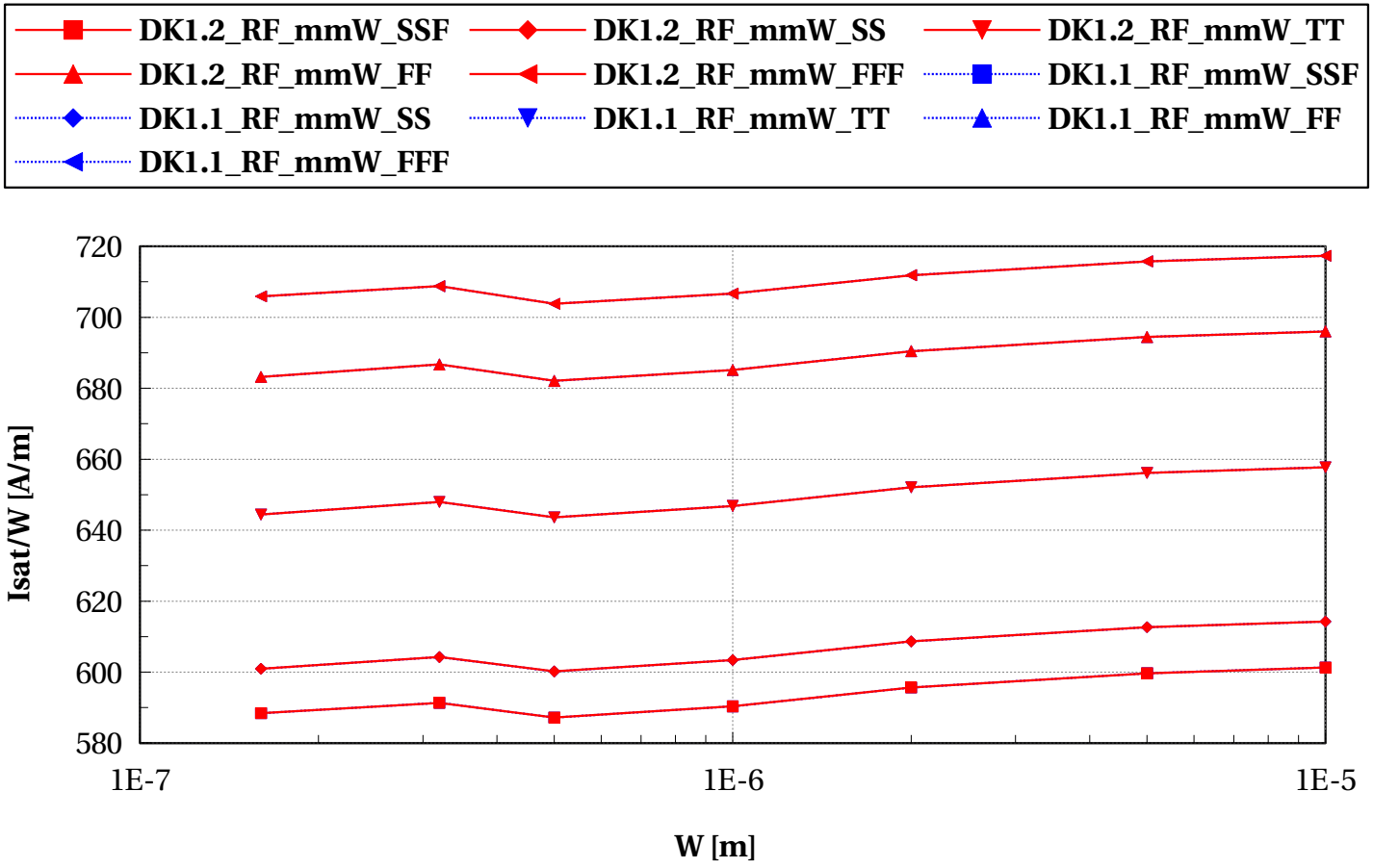

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eglvtnfet_acc, Ioffsat [A] vs W [m]

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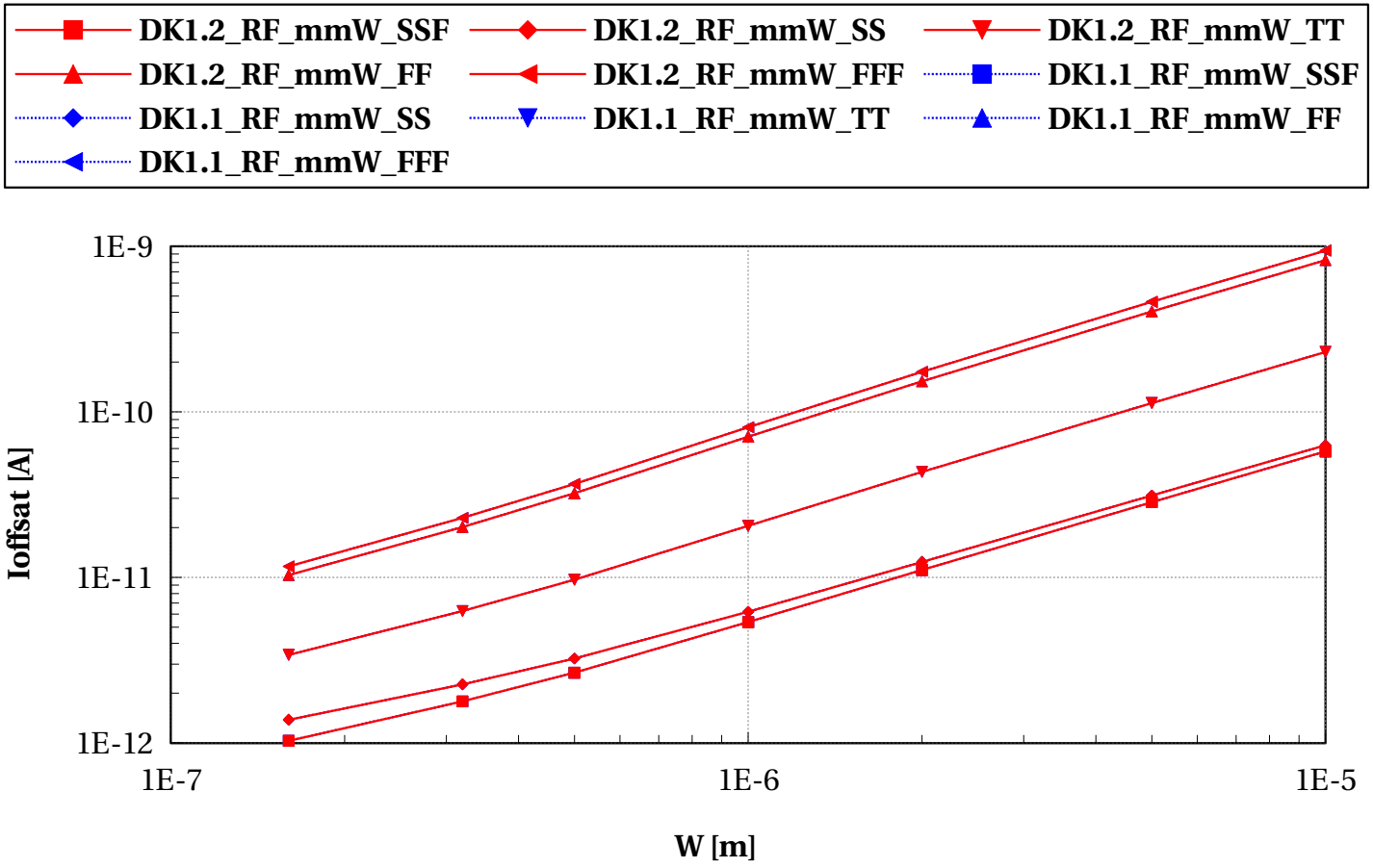

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eglvtnfet_acc, LogIoff [A] vs W [m]

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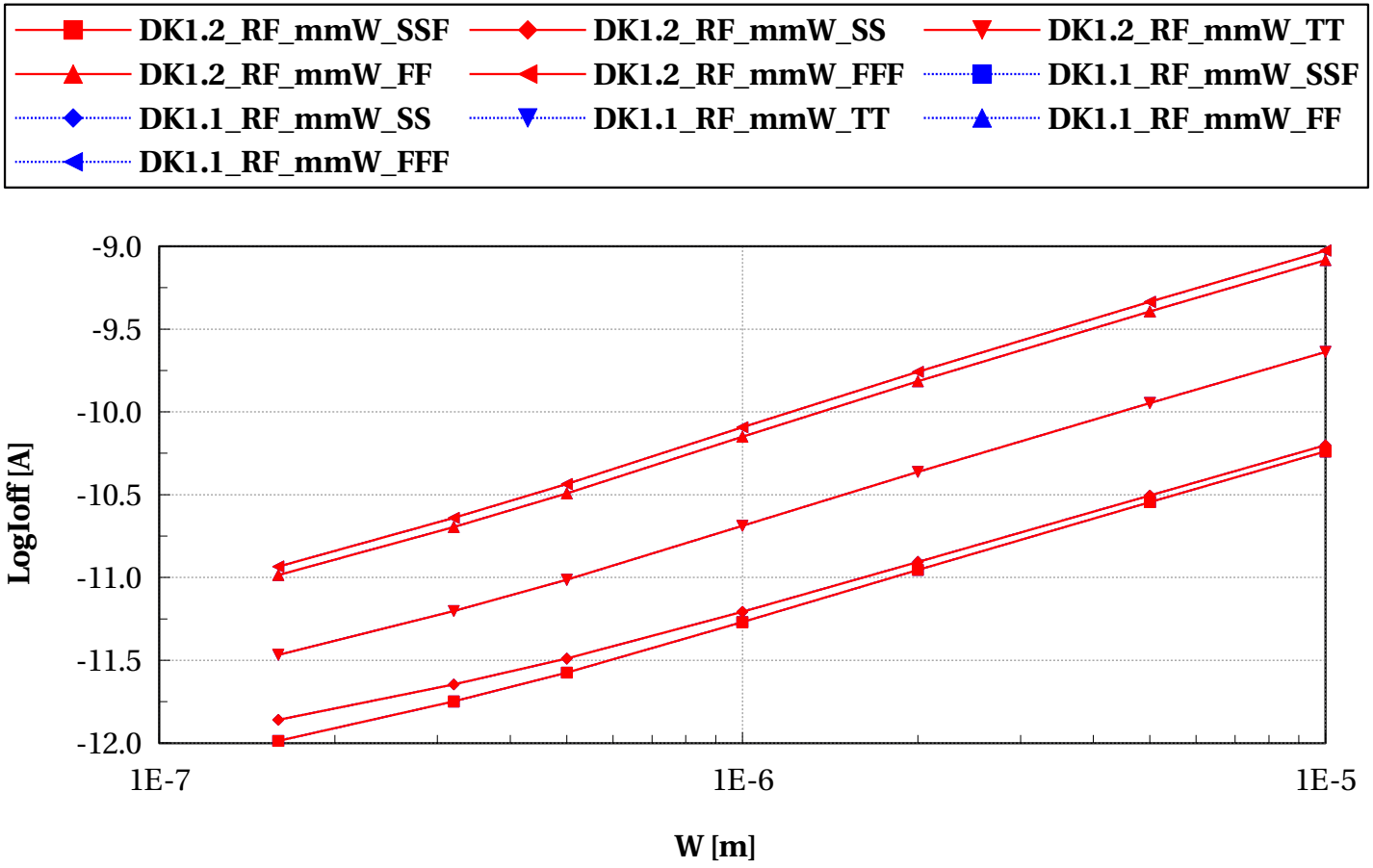

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eglvtnfet_acc, Ig_on/(L*W) [A/m2] vs W [m]

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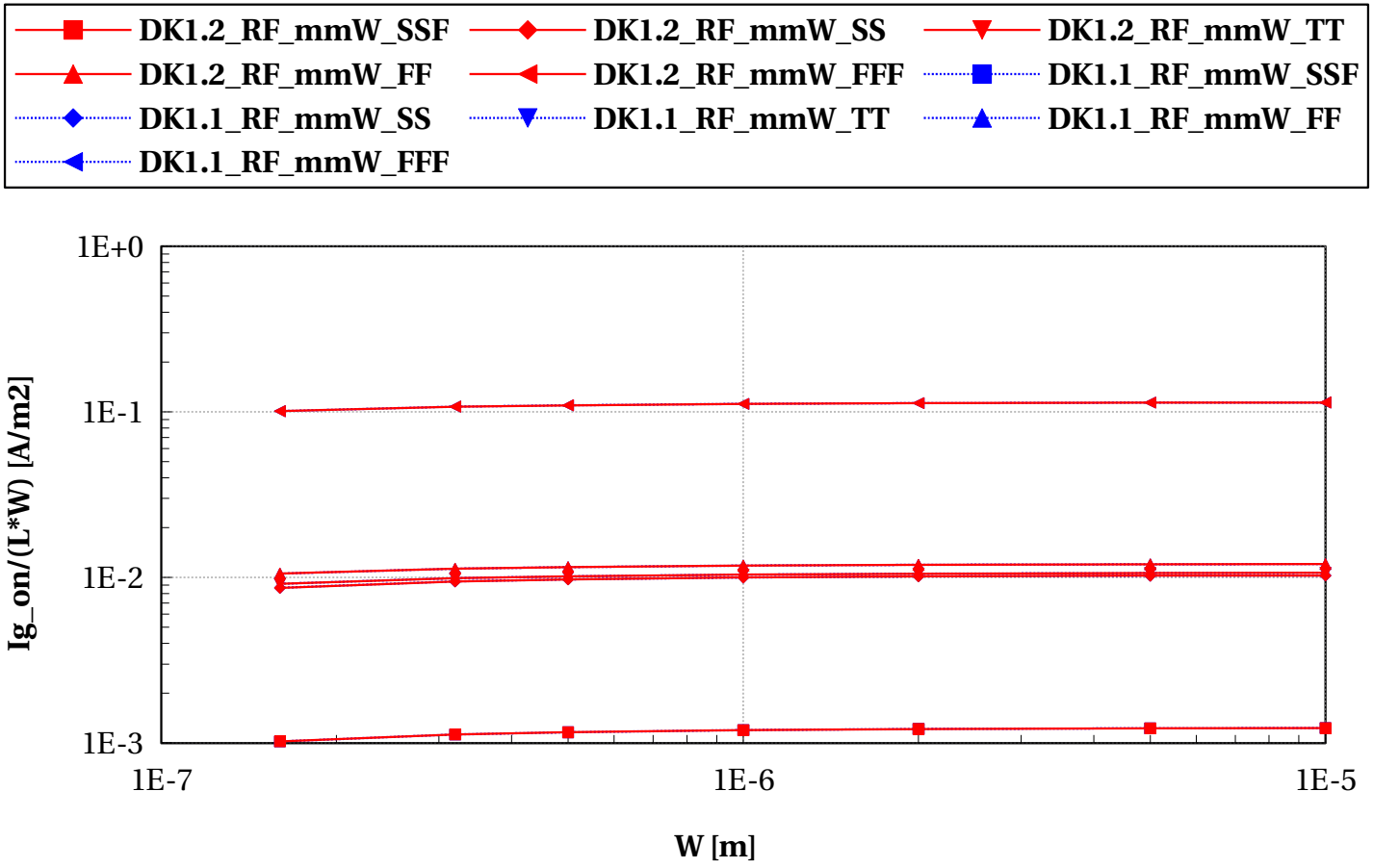

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eglvtnfet_acc, Ig_off/(W) [A/m] vs W [m]

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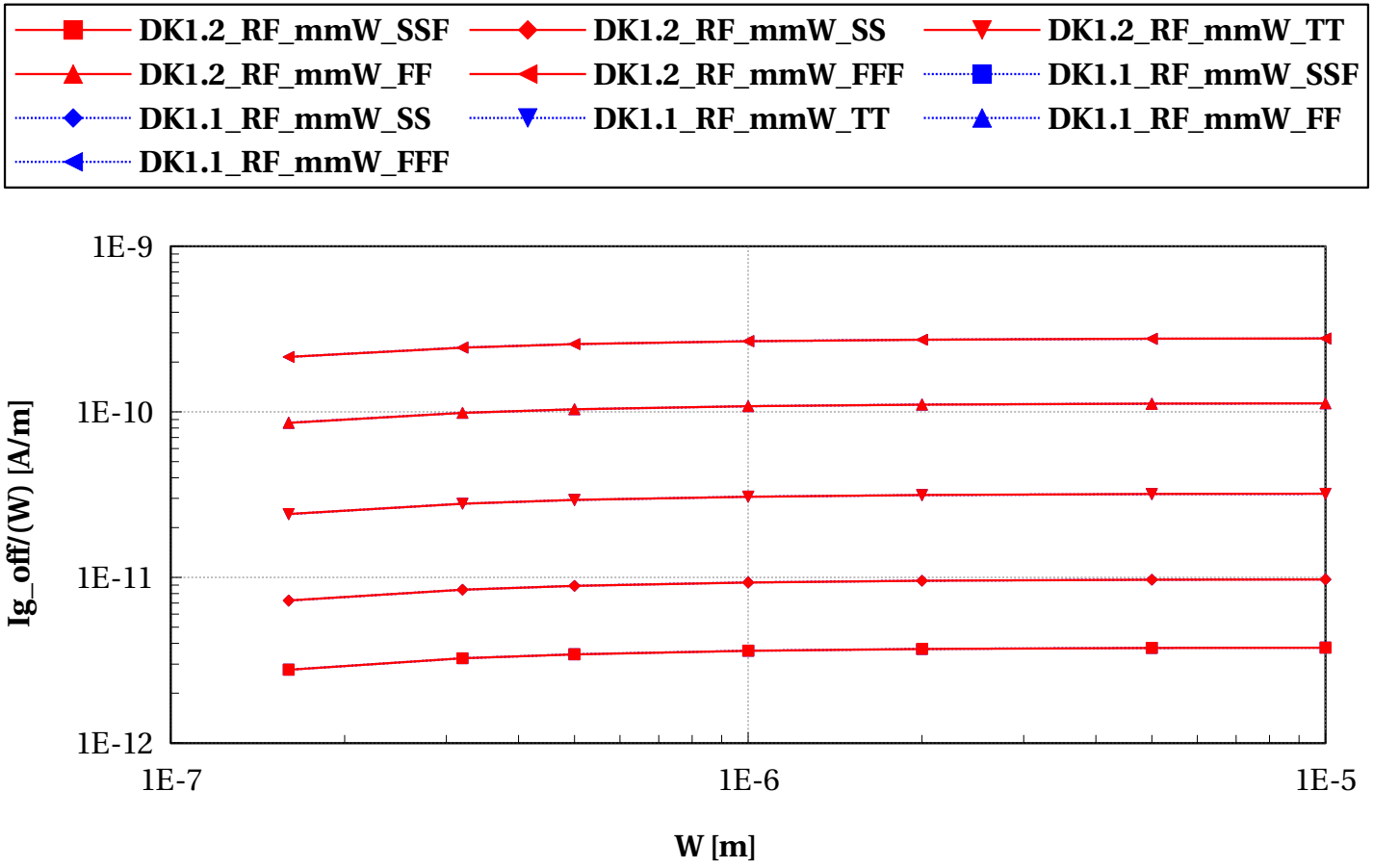

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eglvtnfet_acc, Gd_c/W [s/m] vs W [m]

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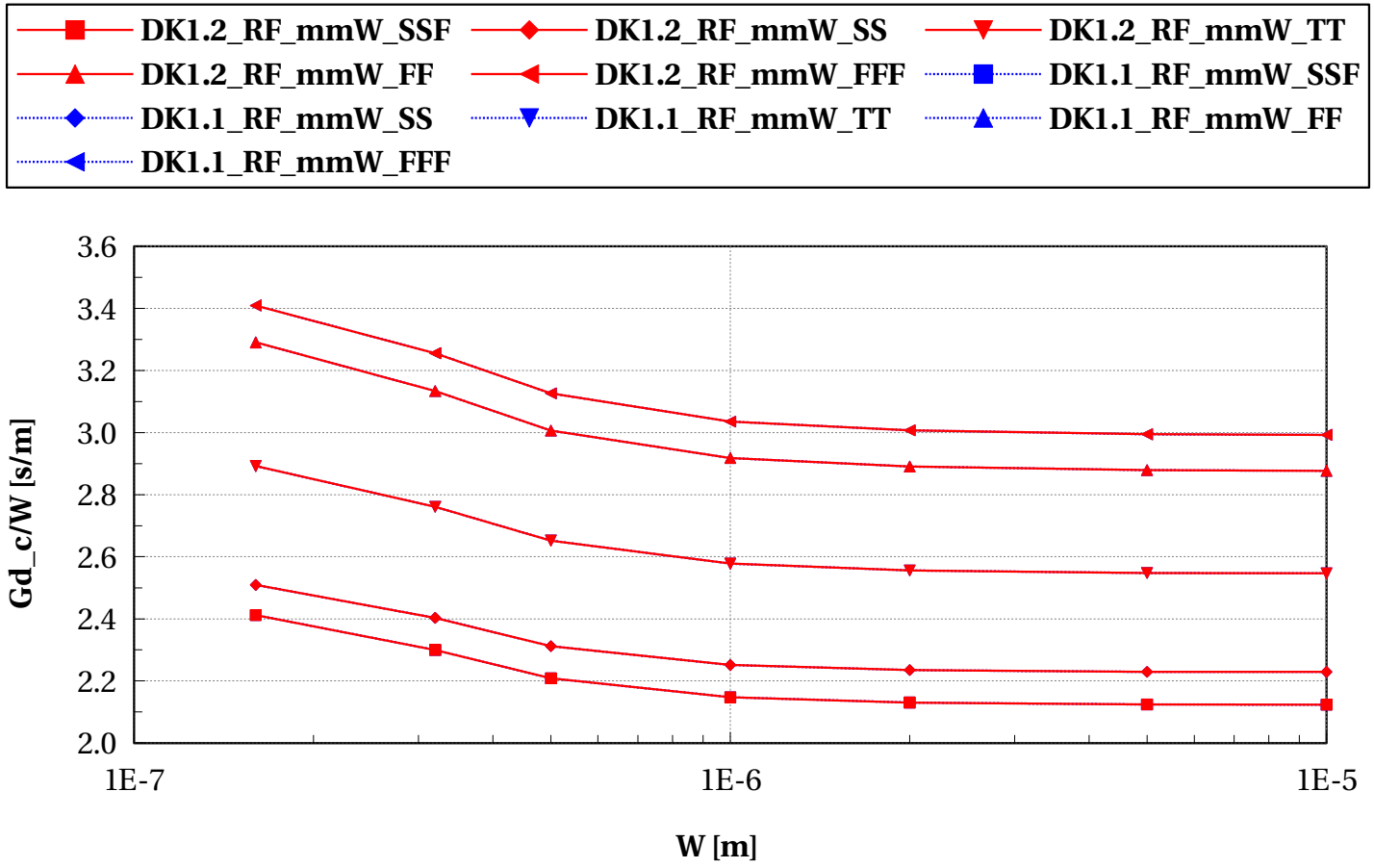

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eglvtnfet_acc, Gm_c/W [s/m] vs W [m]

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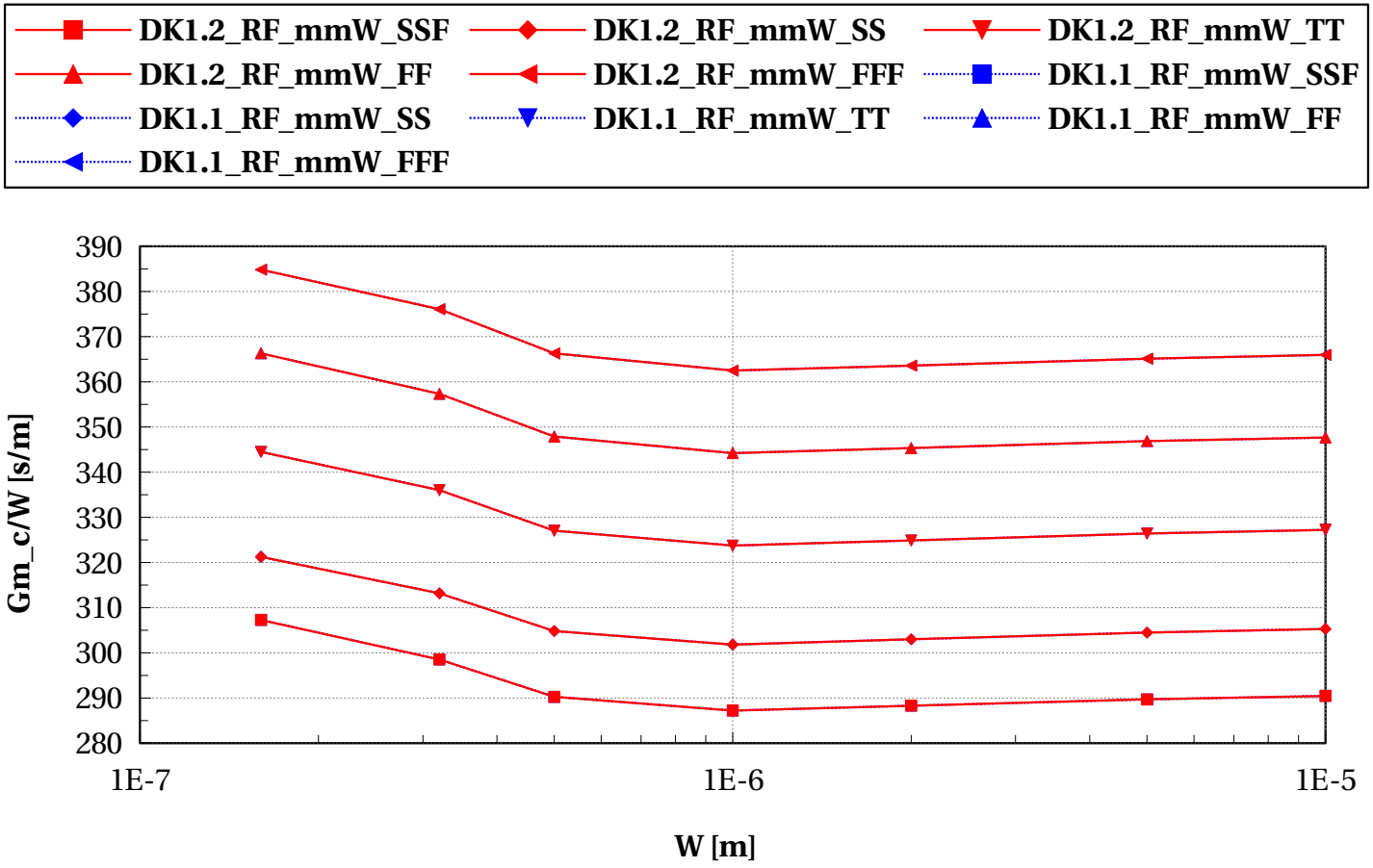

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eglvtnfet_acc, Gain_c [] vs W [m]

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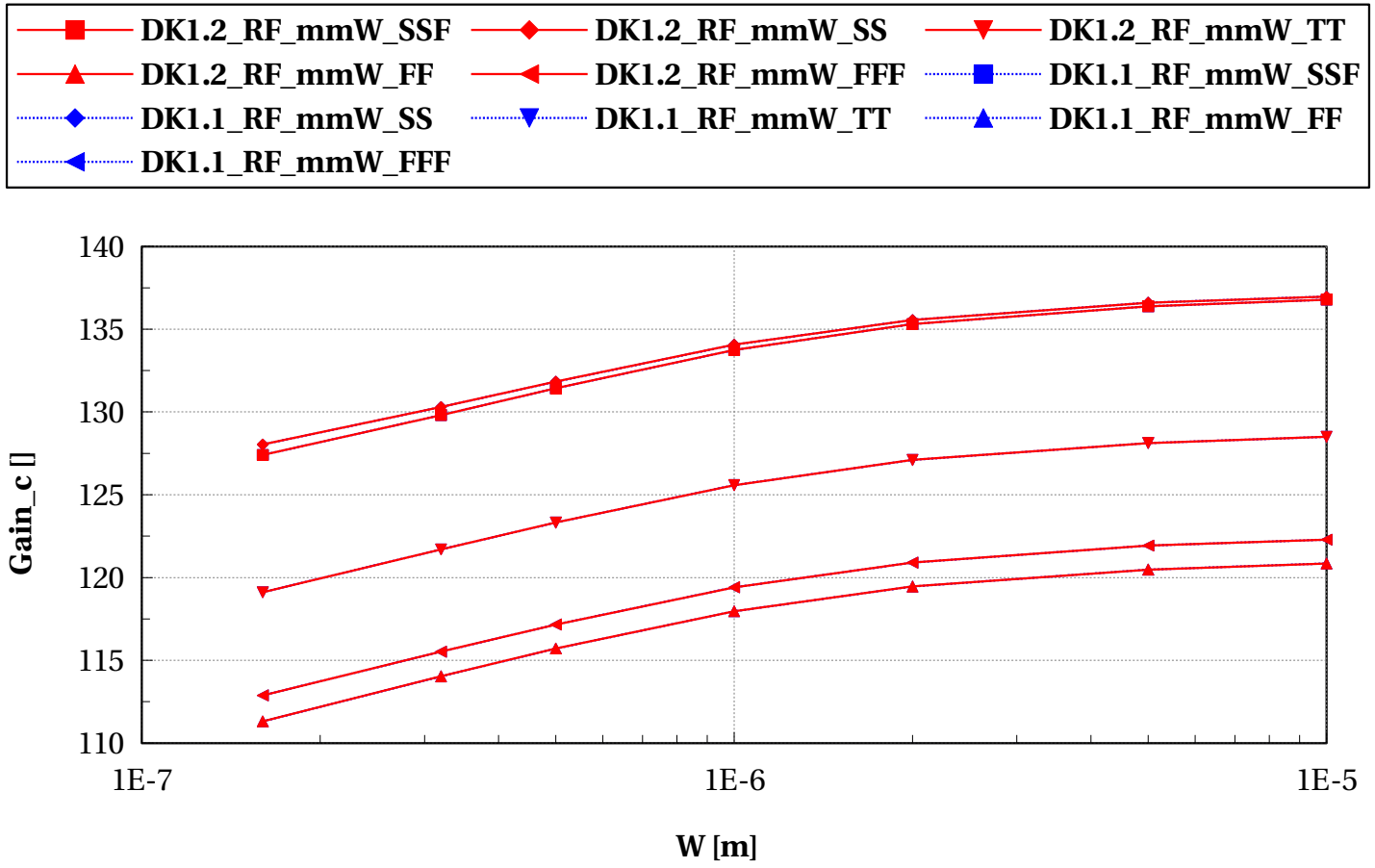

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eglvtnfet_acc, Cgd_0v/W [F/m] vs W [m]

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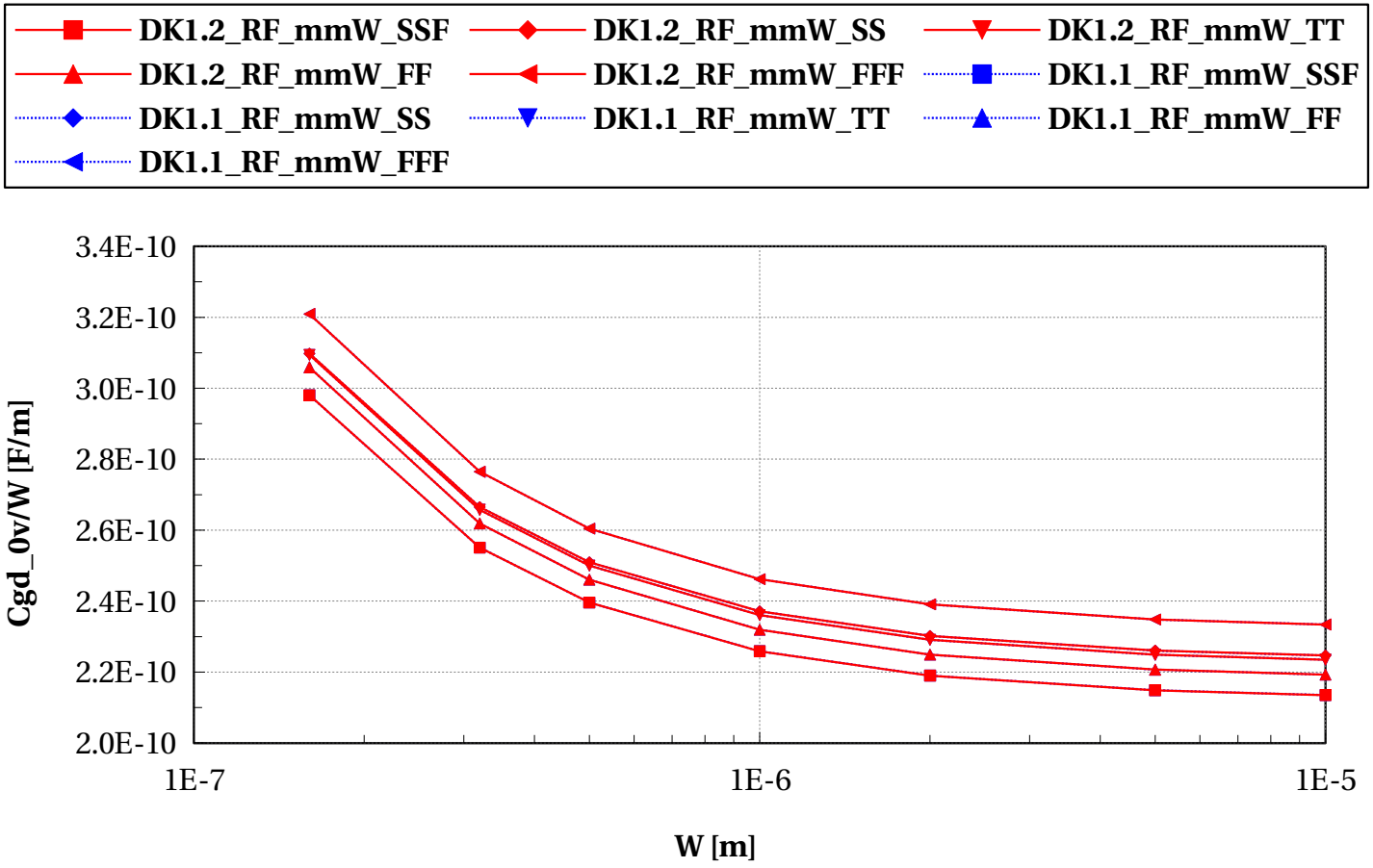

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eglvtnfet_acc, Cgg_inv/(L*W) [F/m2] vs W [m]

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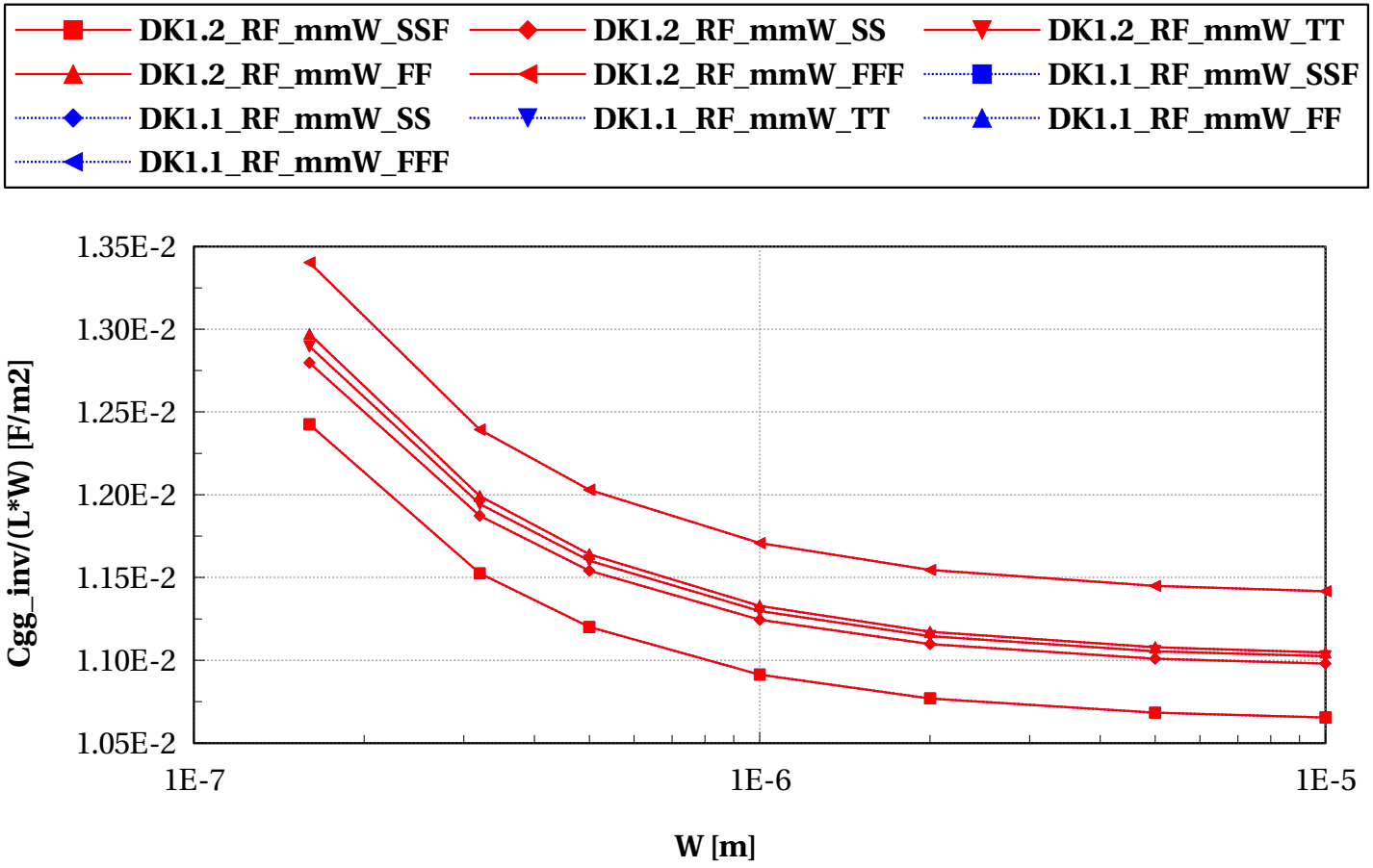

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Scaling versus Temp @ Vbs=0, L=0.15u, W=2u

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eglvtnfet_acc, Vt_lin [mV] vs Temp [degC]

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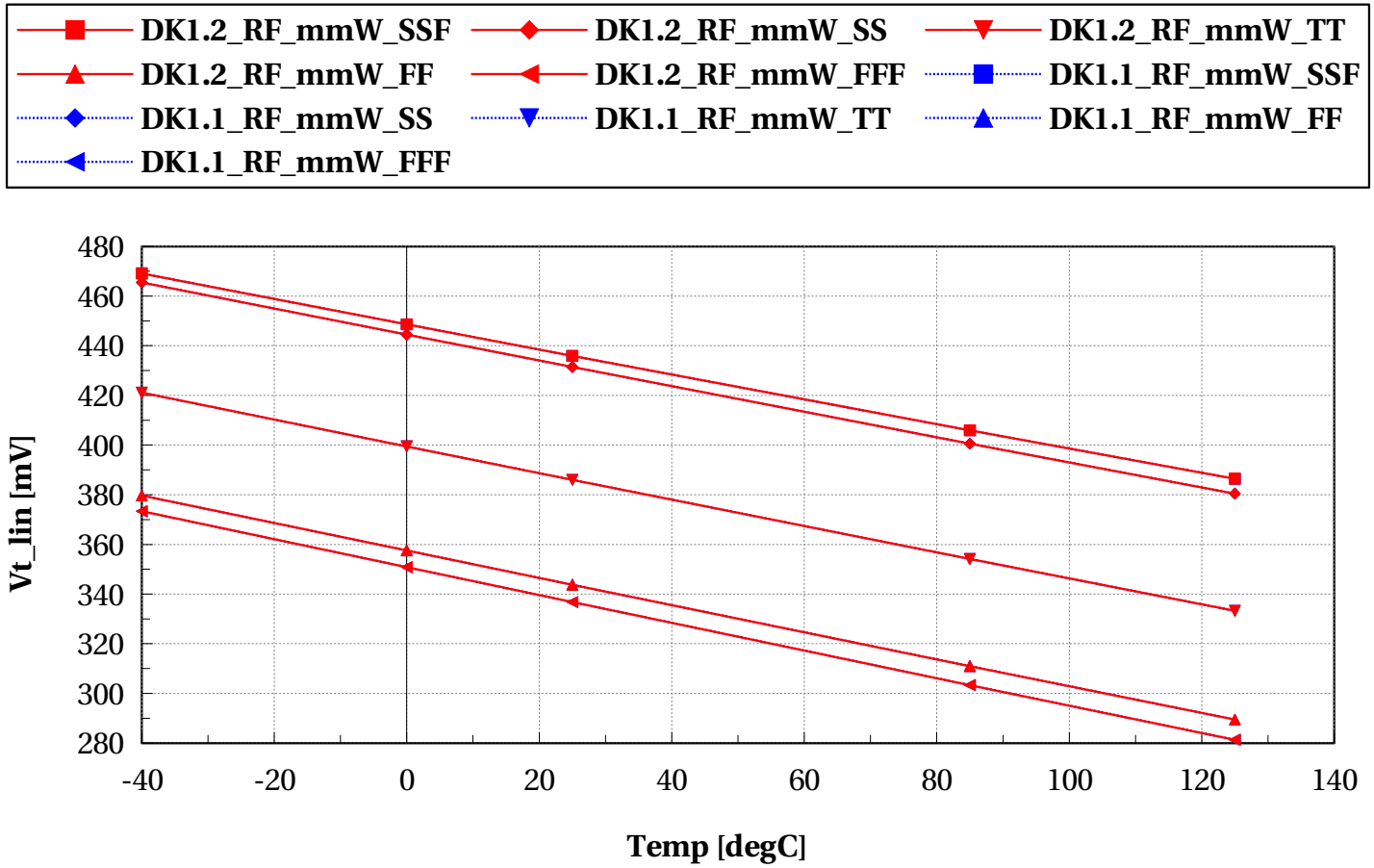

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eglvtnfet_acc, Ilin/W [A/m] vs Temp [degC]

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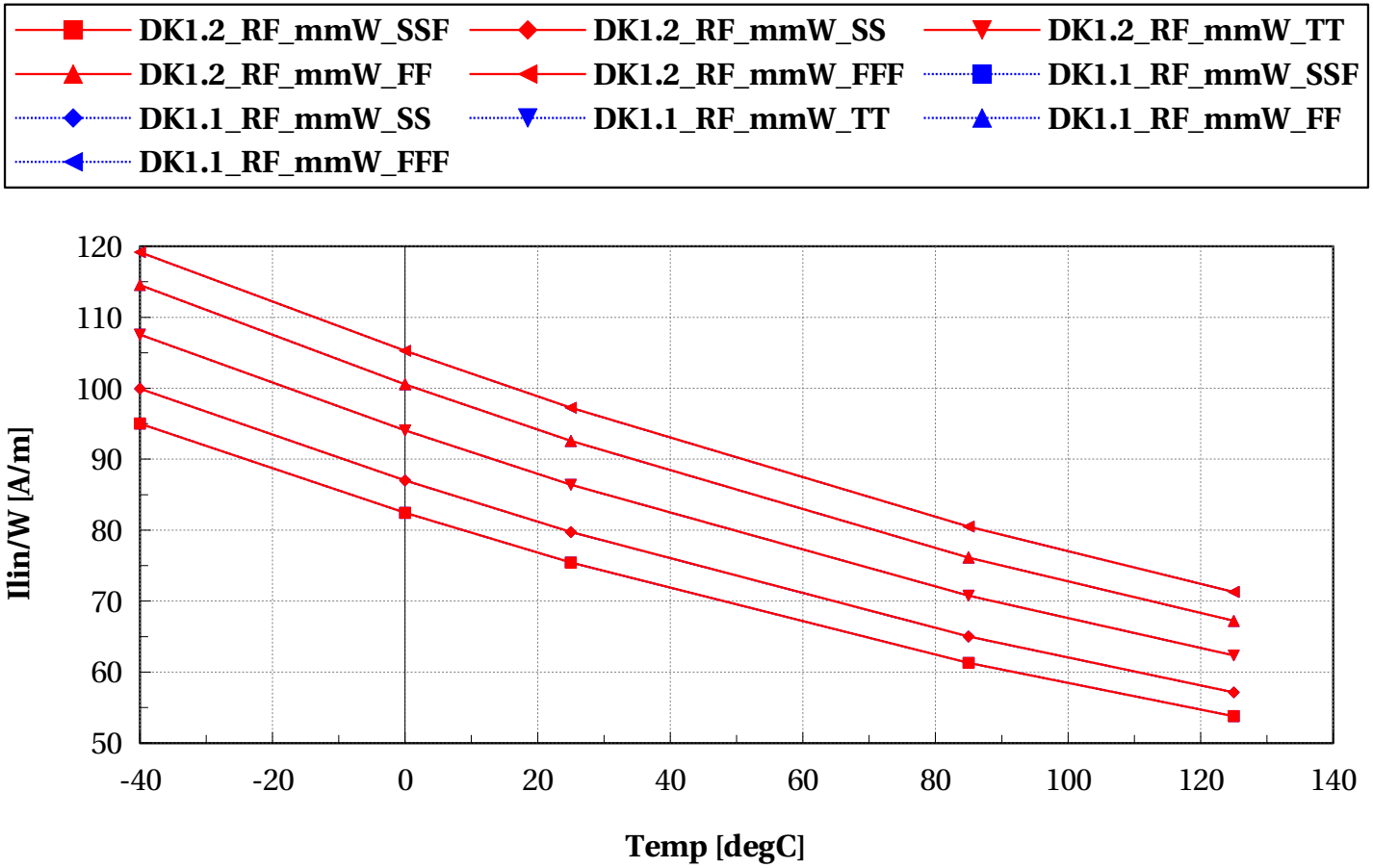

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eglvtnfet_acc, VtGmmax [mV] vs Temp [degC]

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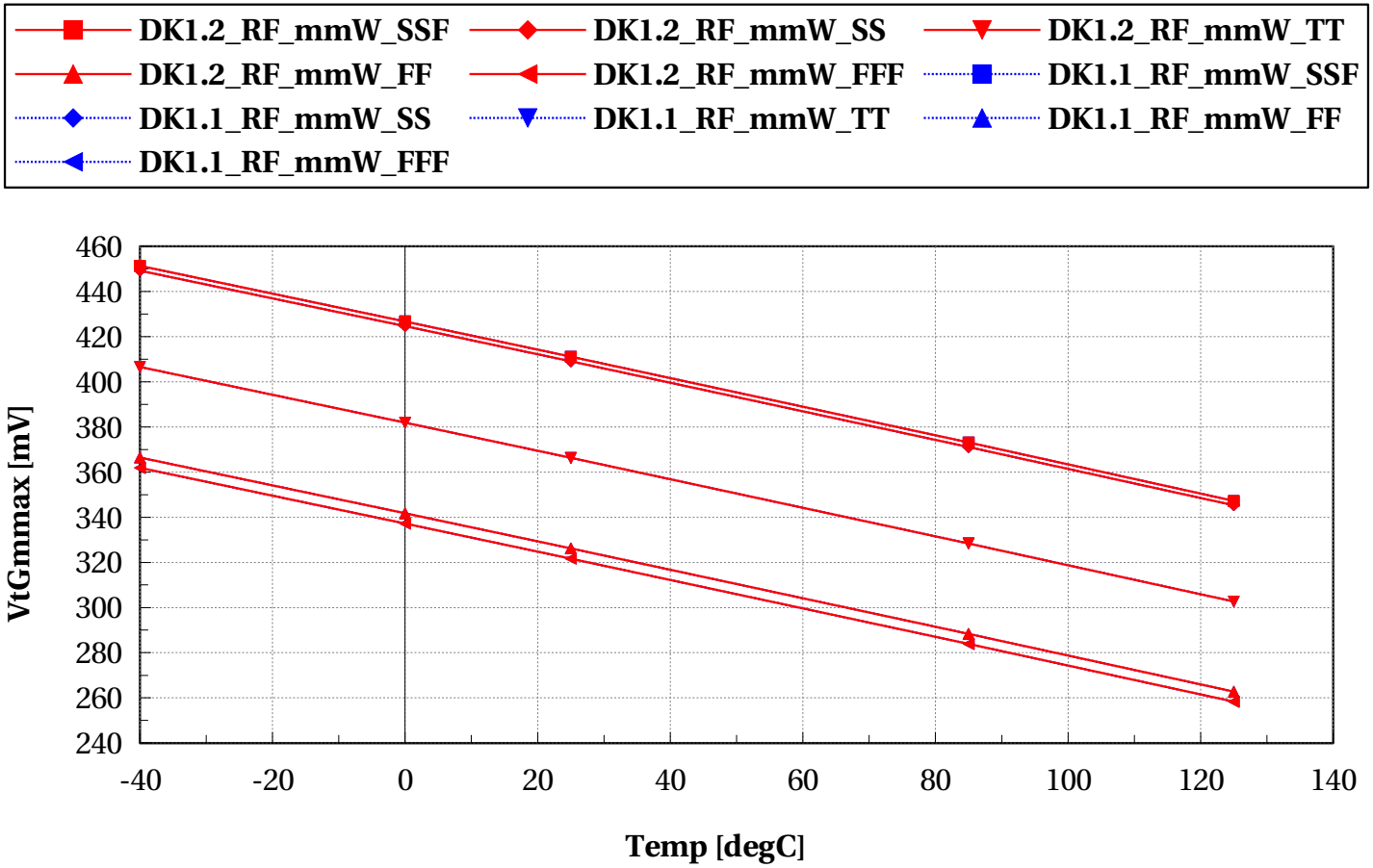

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eglvtnfet_acc, DIBL [mV] vs Temp [degC]

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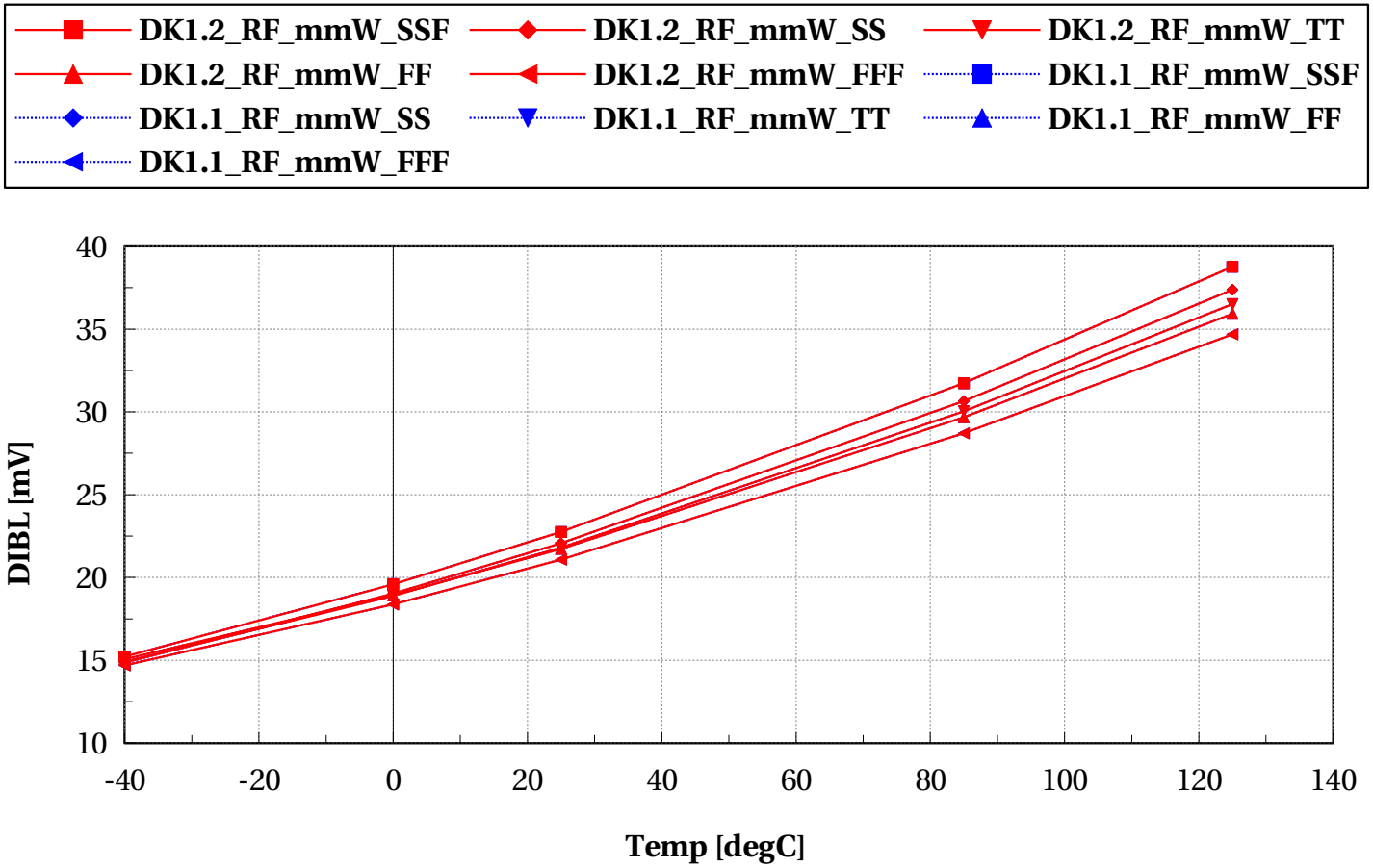

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eglvtnfet_acc, Vt_sat [mV] vs Temp [degC]

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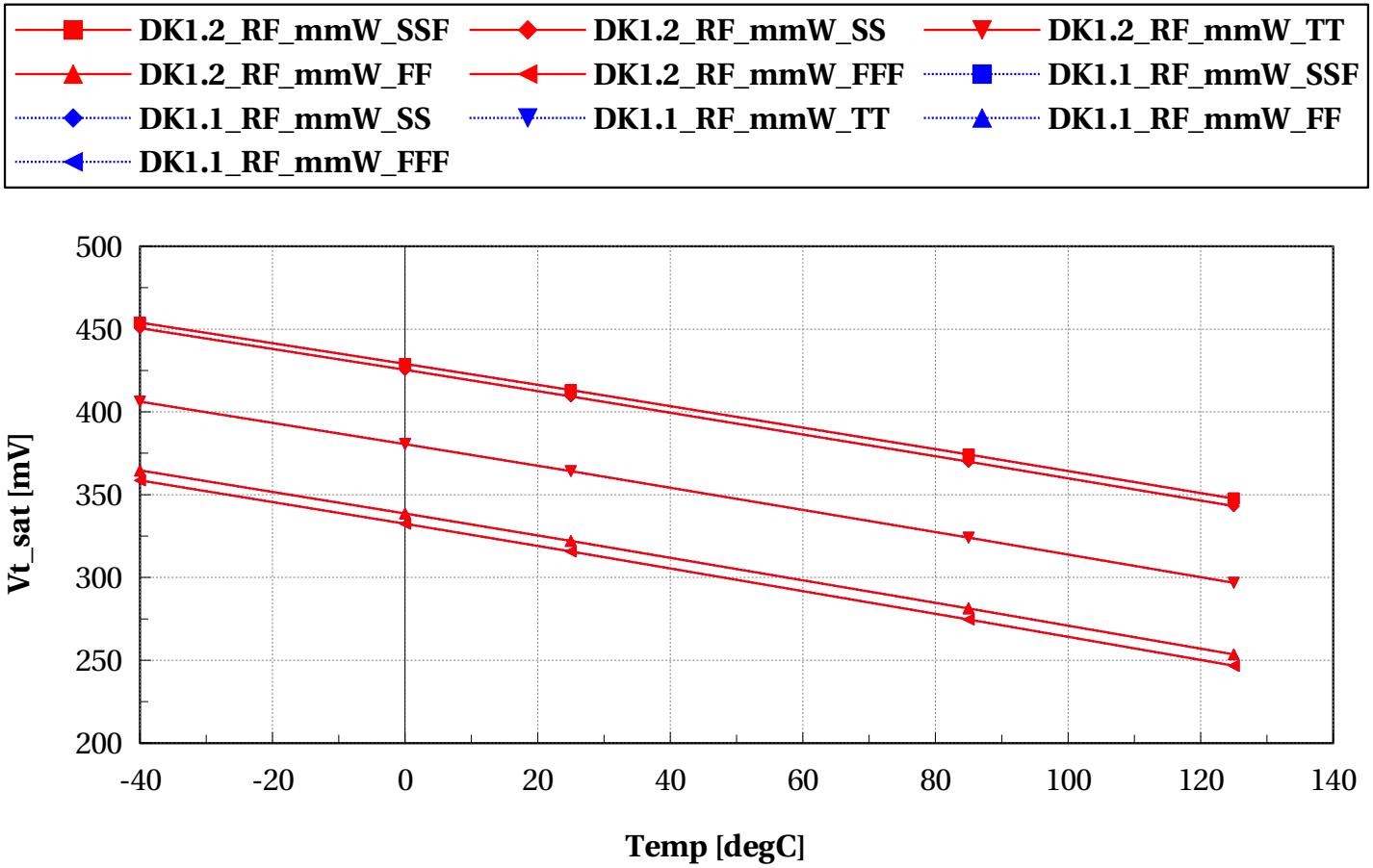

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eglvtnfet_acc, Isat/W [A/m] vs Temp [degC]

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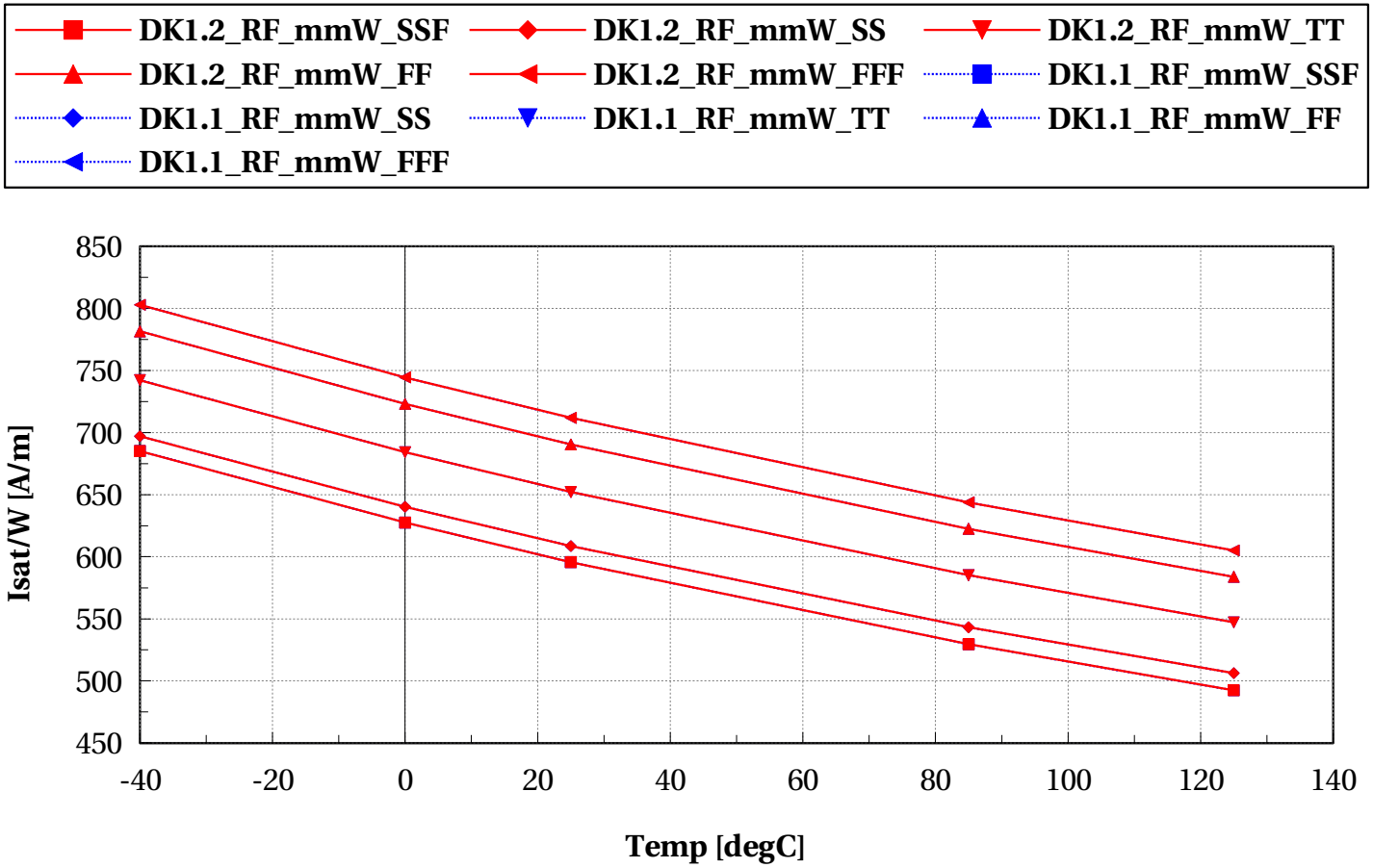

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eglvtnfet_acc, Ioffsat [A] vs Temp [degC]

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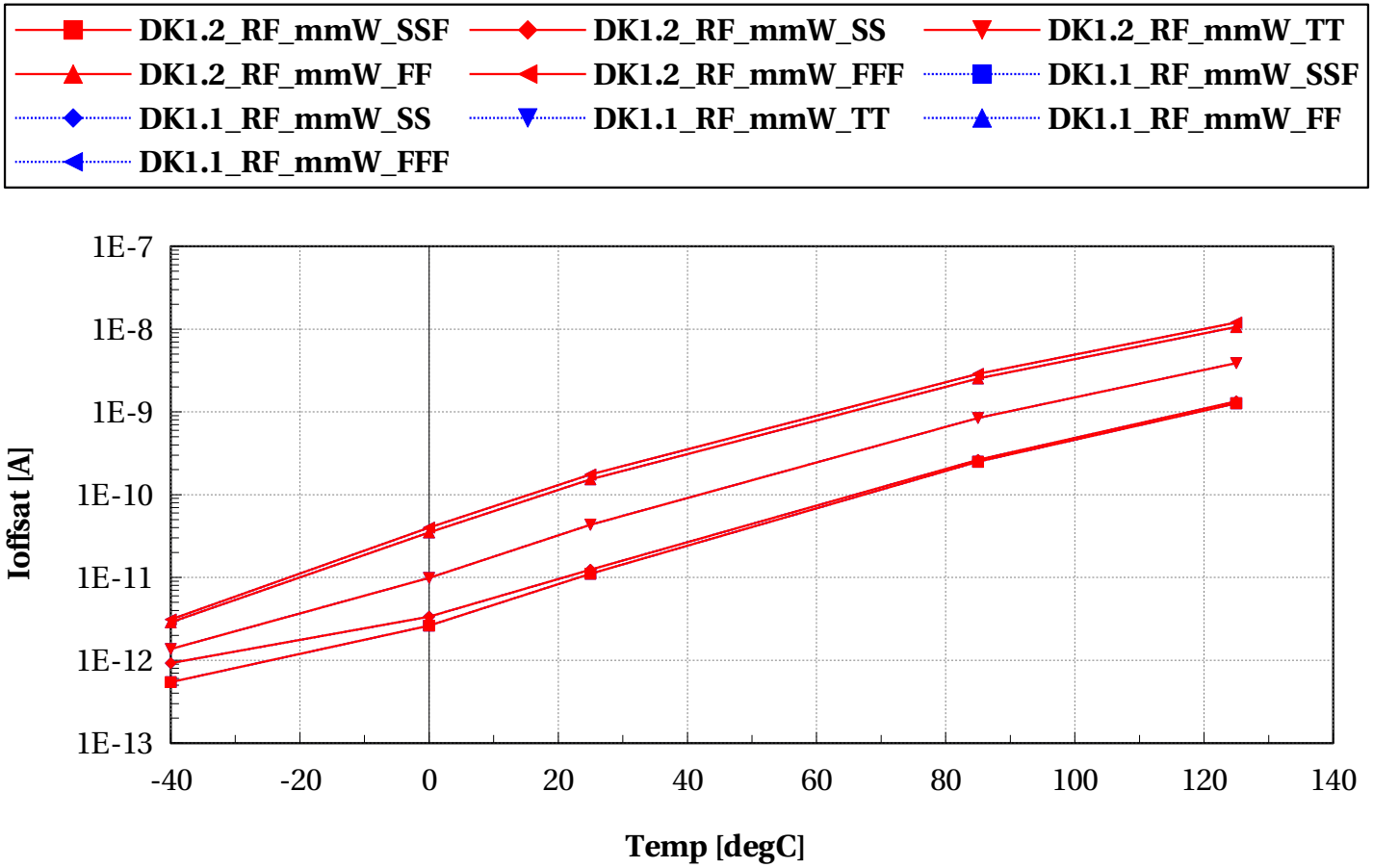

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eglvtnfet_acc, LogIoff [A] vs Temp [degC]

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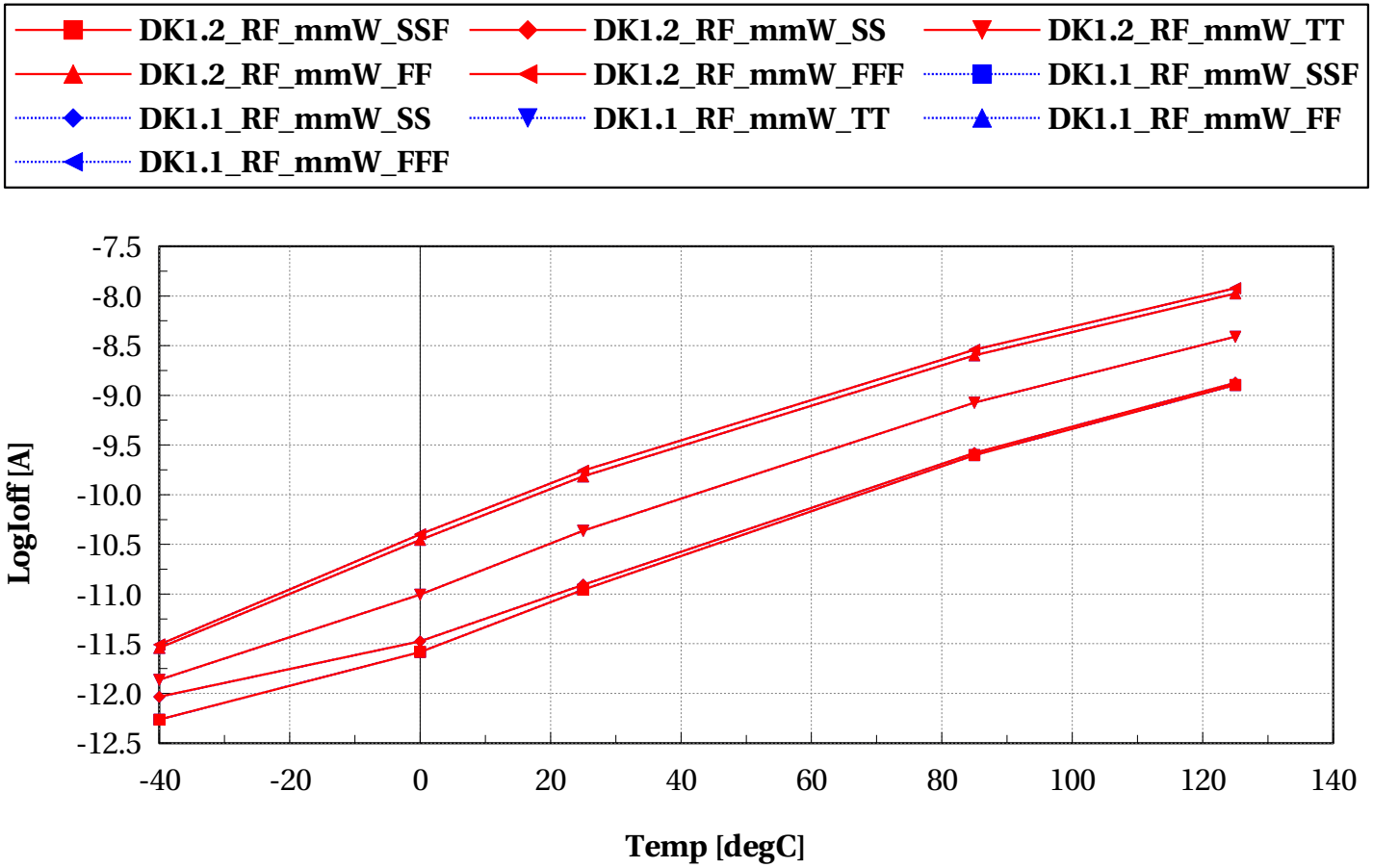

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eglvtnfet_acc, Ig_on/(L*W) [A/m2] vs Temp [degC]

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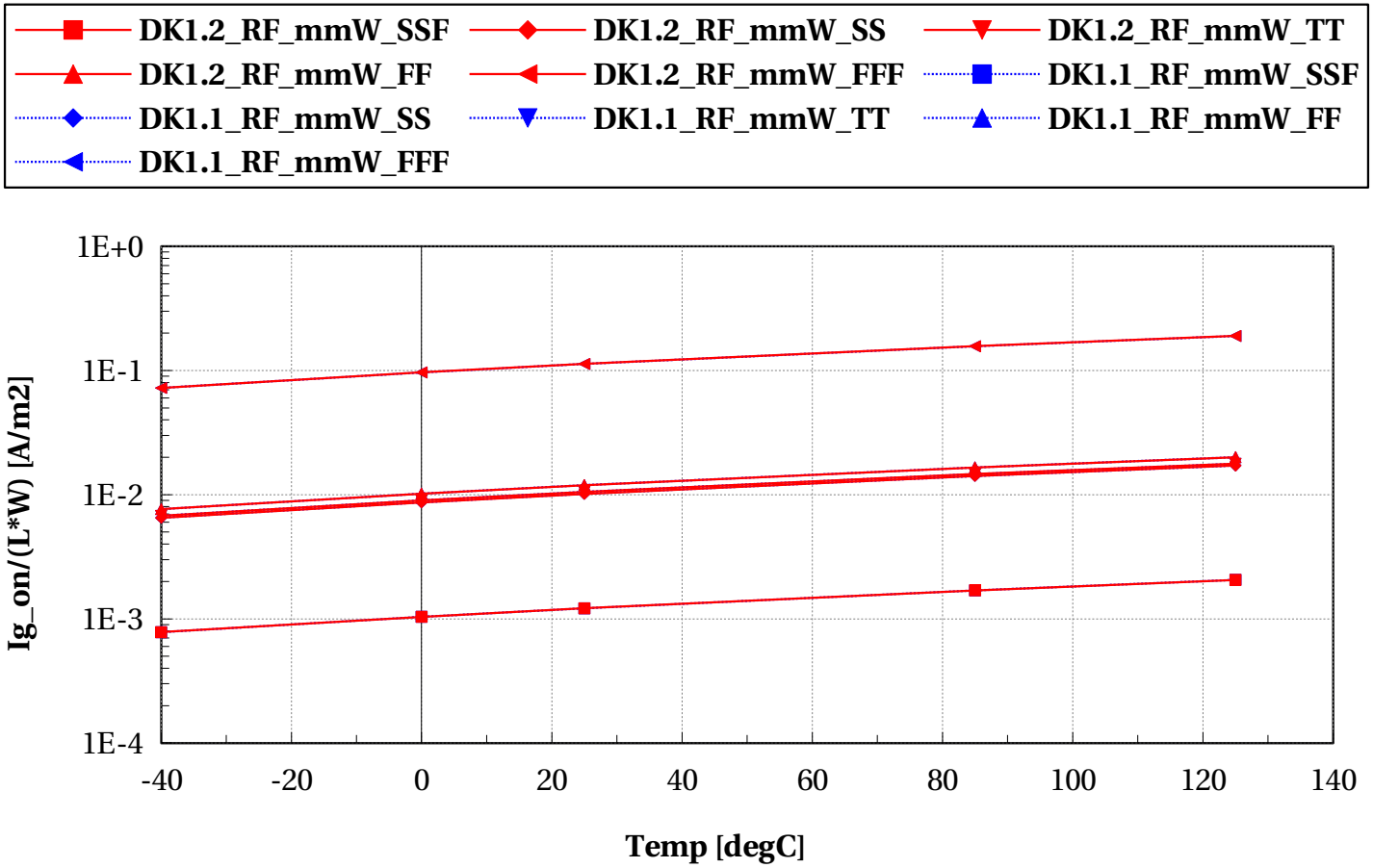

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eglvtnfet_acc, Ig_off/(W) [A/m] vs Temp [degC]

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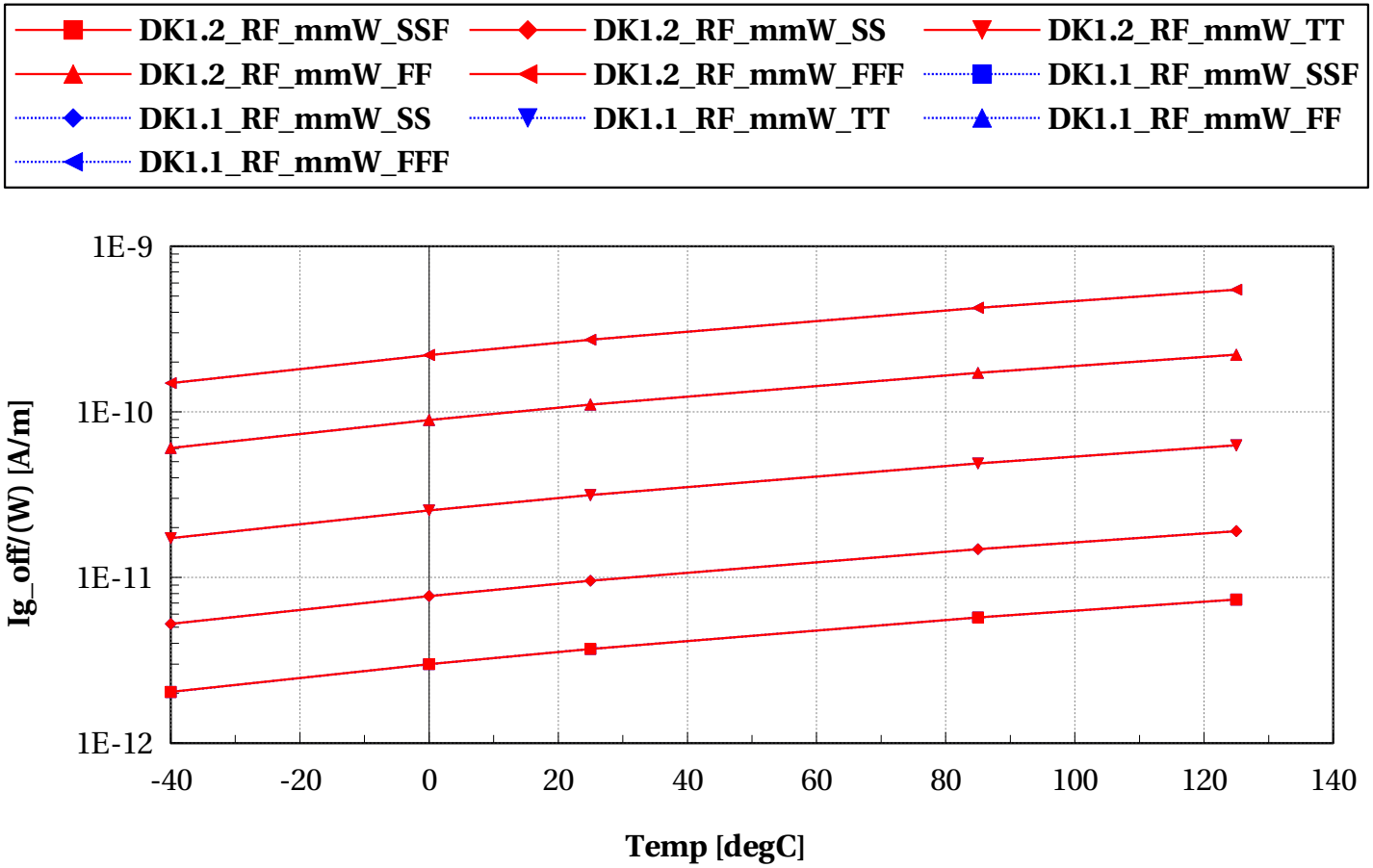

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eglvtnfet_acc, Gd_c/W [s/m] vs Temp [degC]

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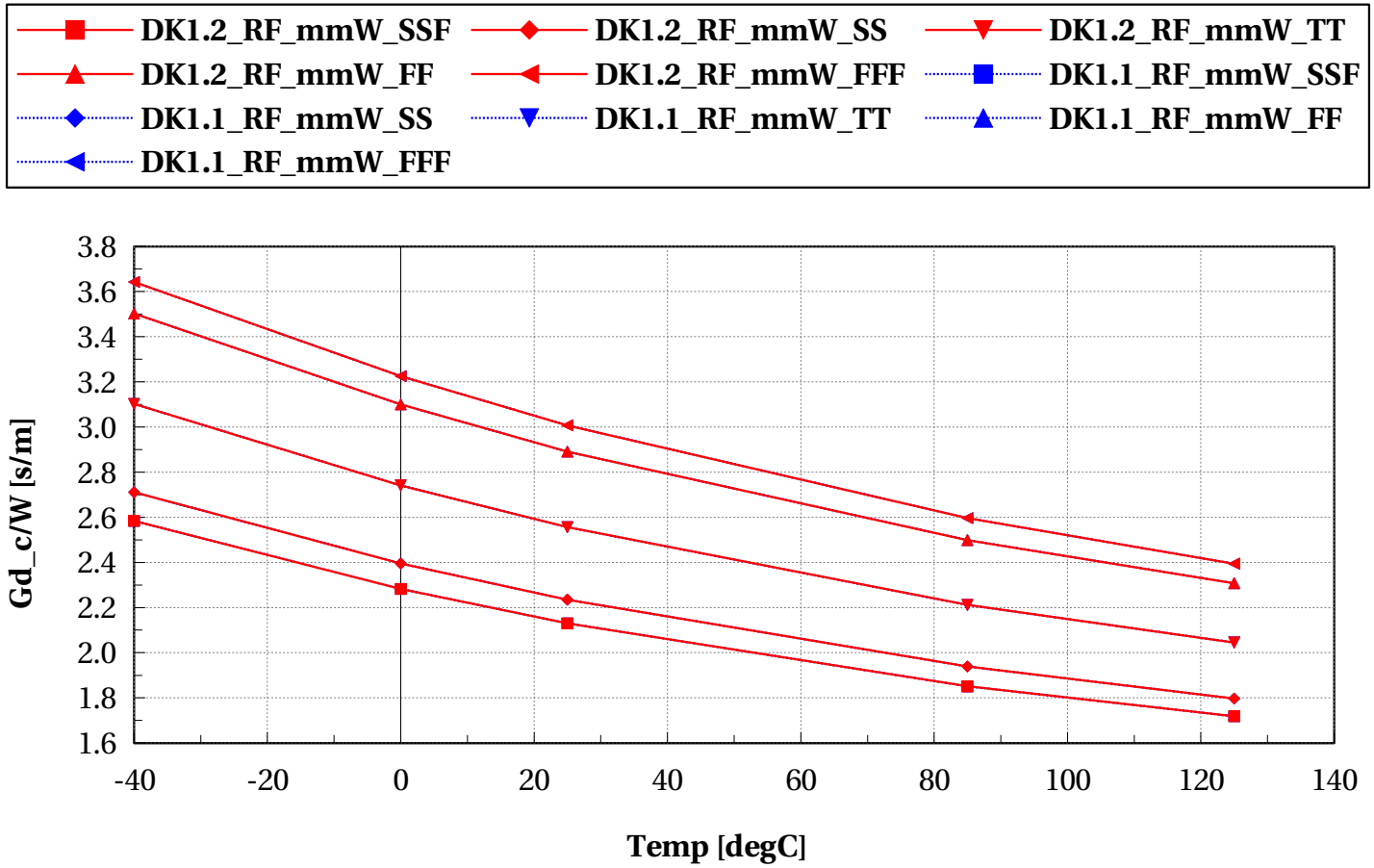

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eglvtnfet_acc, Gm_c/W [s/m] vs Temp [degC]

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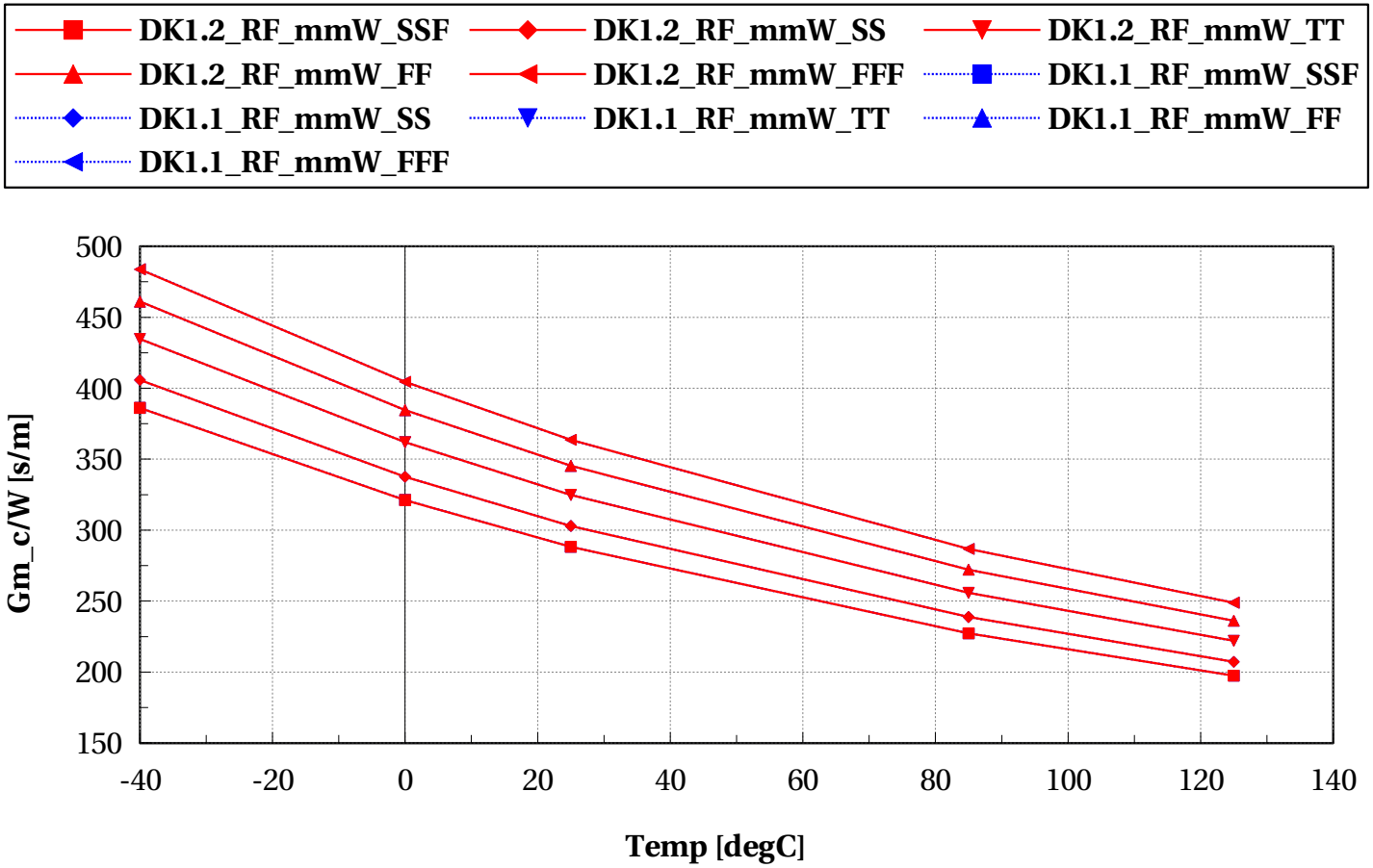

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eglvtnfet_acc, Gain_c [] vs Temp [degC]

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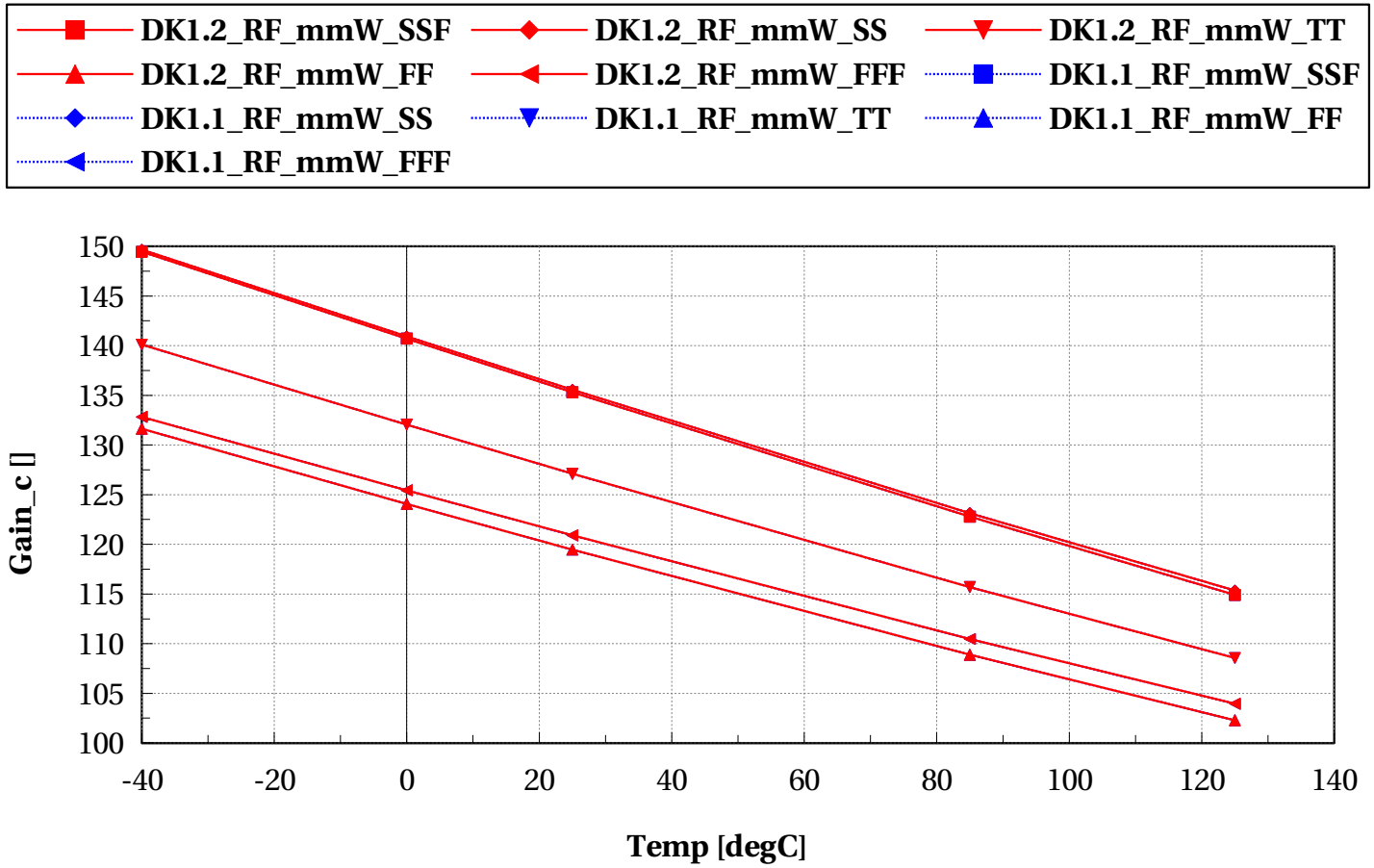

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eglvtnfet_acc, Cgd_0v/W [F/m] vs Temp [degC]

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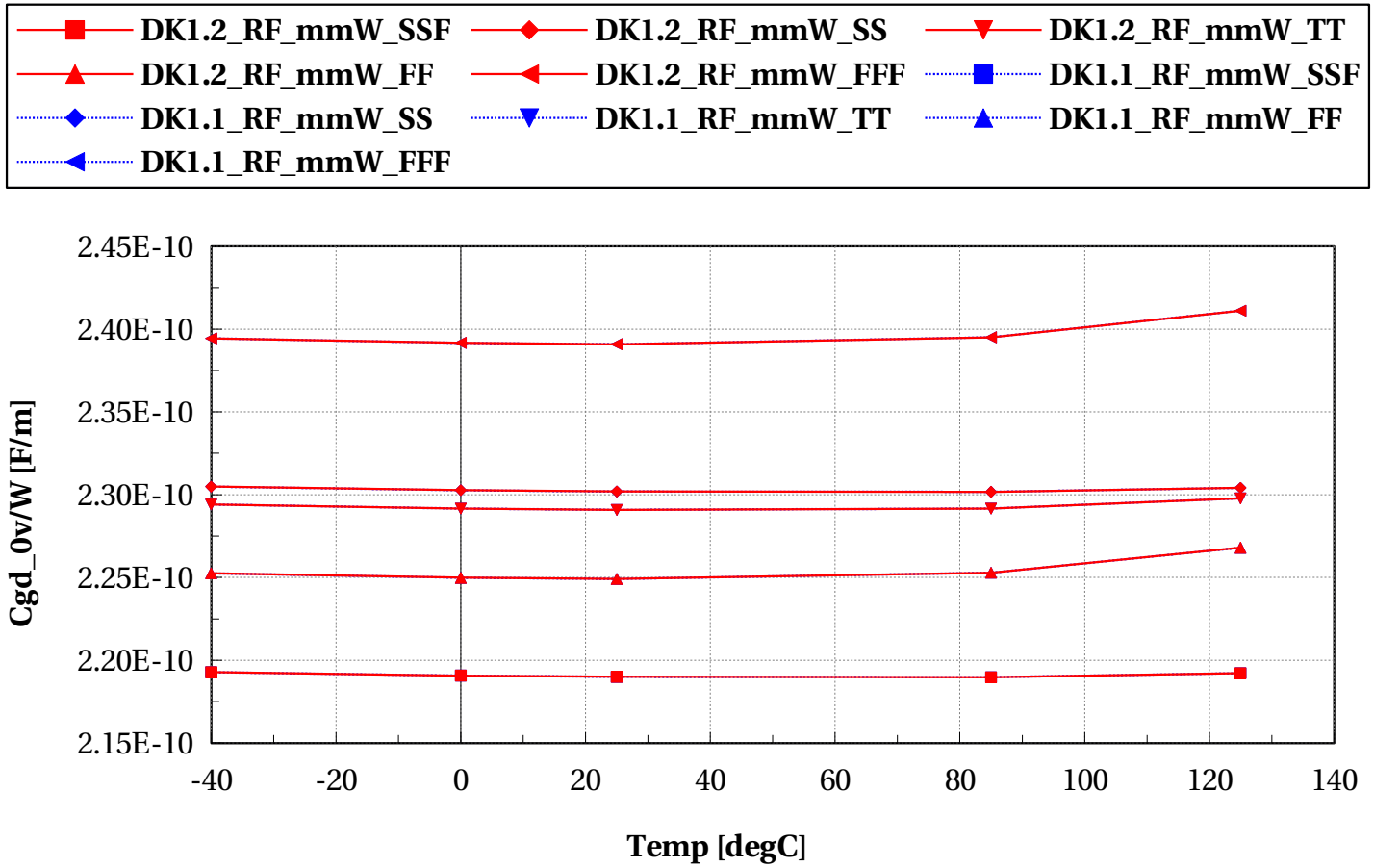

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eglvtnfet_acc, Cgg_inv/(L*W) [F/m2] vs Temp [degC]

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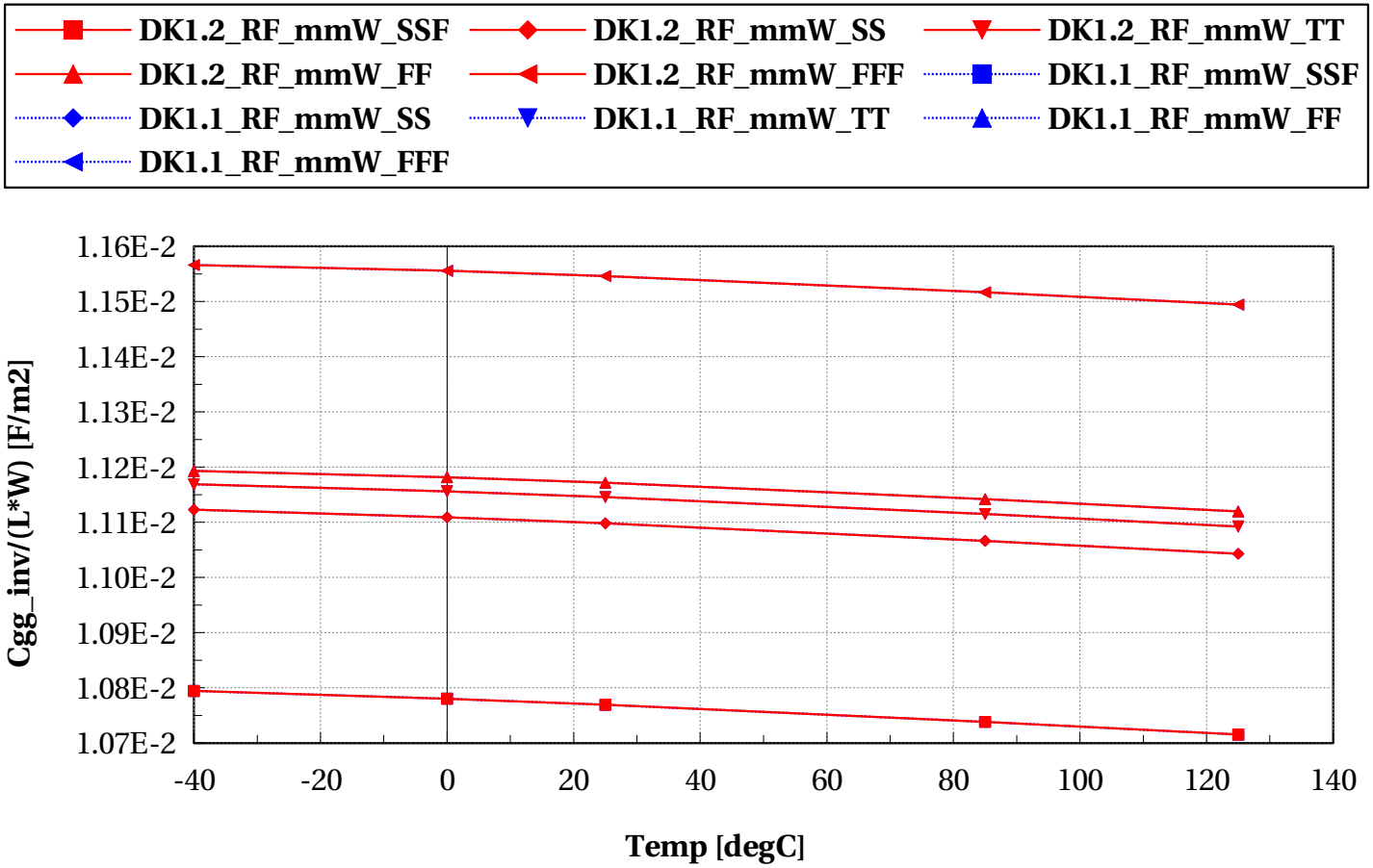

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Normalized scaling versus Temp @ Vbs=0, L=0.15u, W=2u

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eglvtnfet_acc, Vt_lin [mV] vs Temp [degC]

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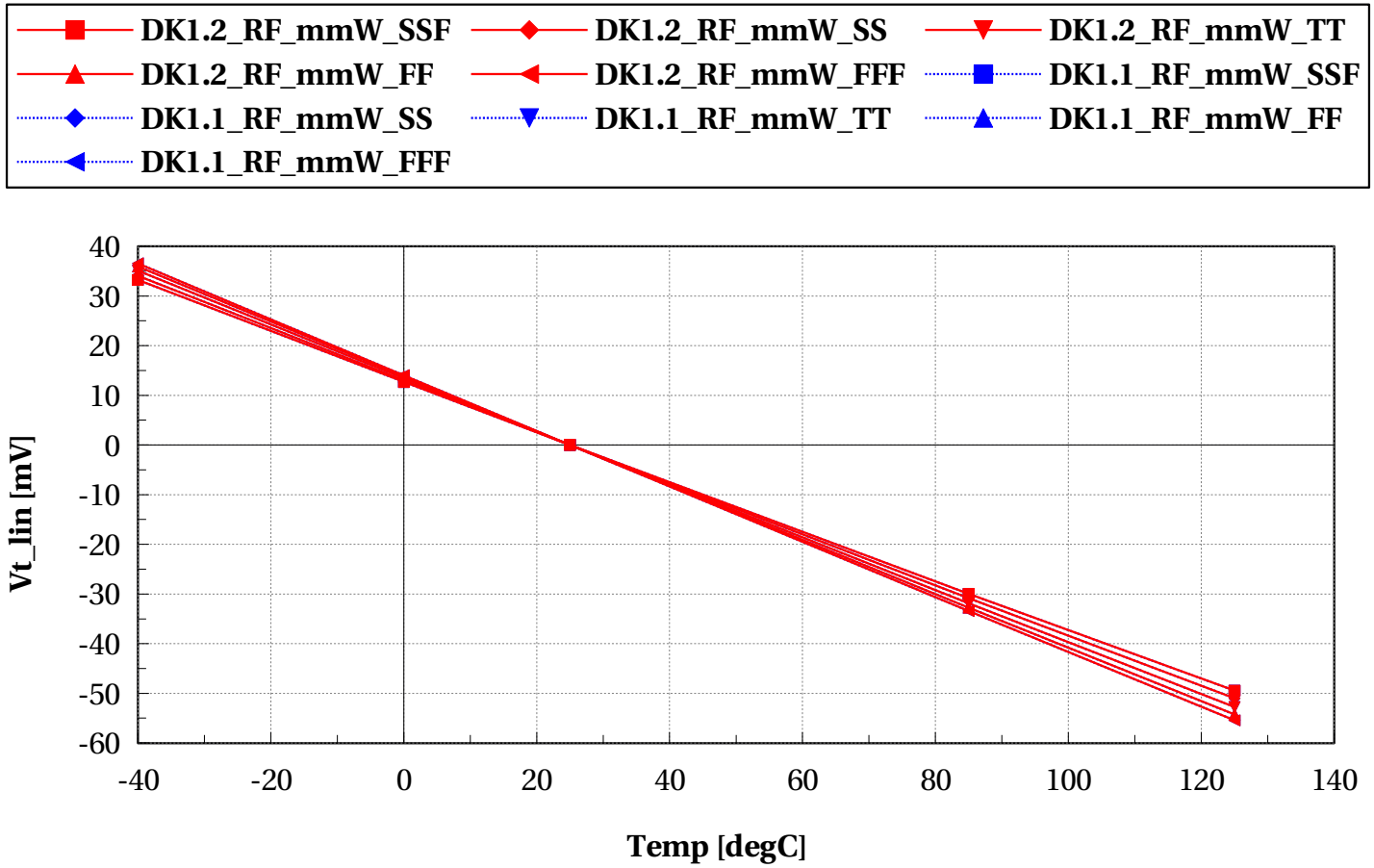

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eglvtnfet_acc, Ilin/W [A/m] vs Temp [degC]

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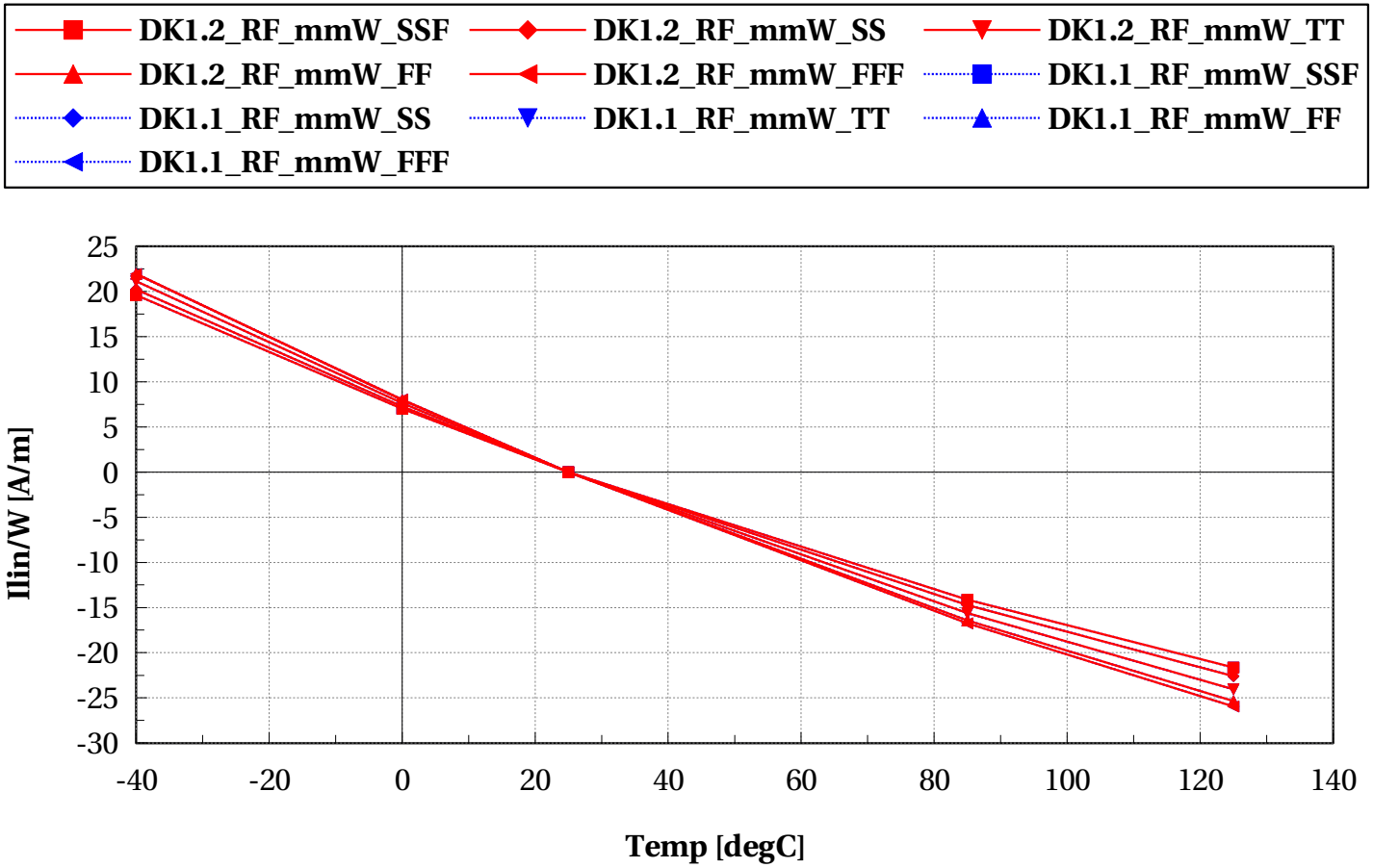

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eglvtnfet_acc, VtGmmax [mV] vs Temp [degC]

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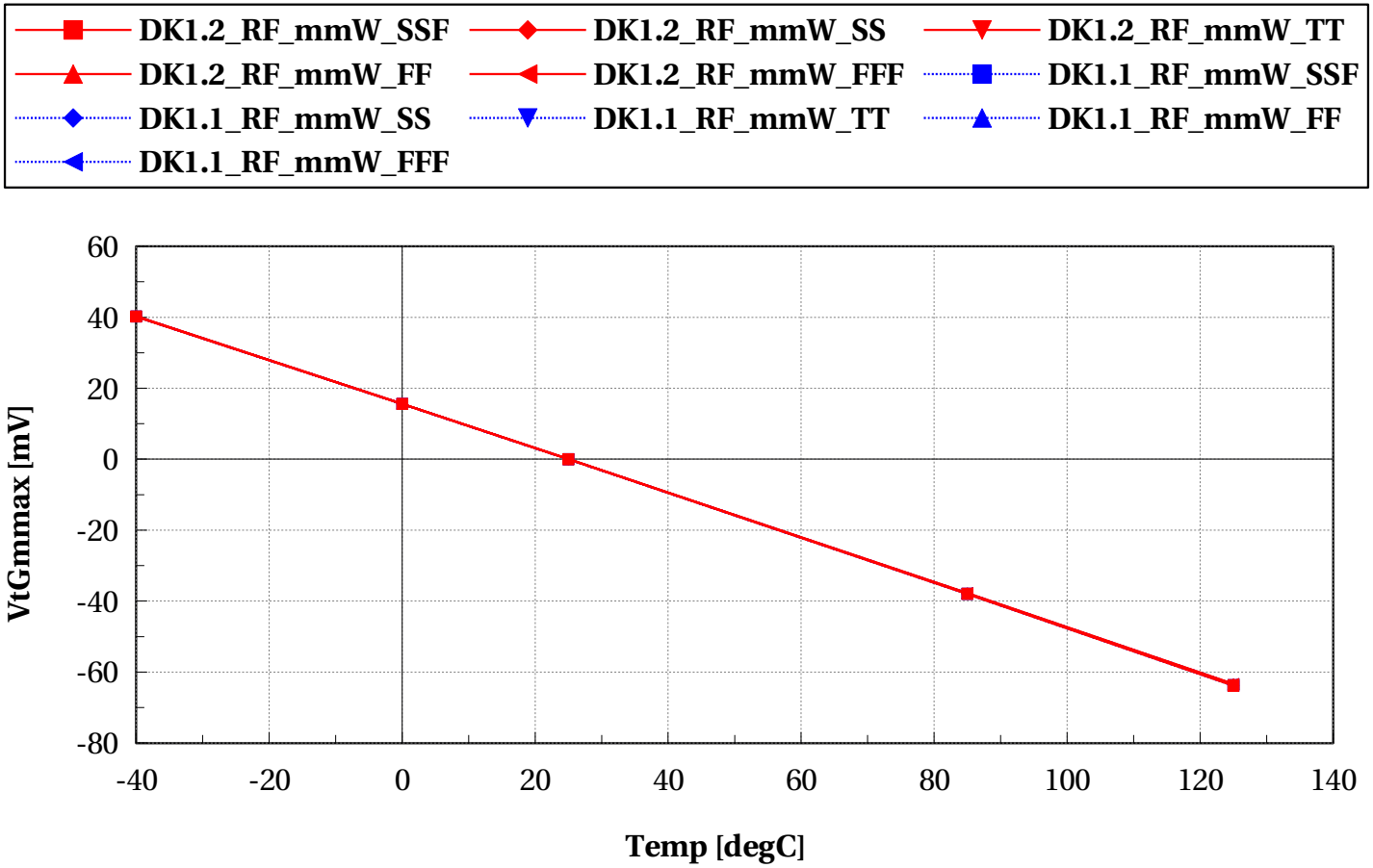

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eglvtnfet_acc, DIBL [mV] vs Temp [degC]

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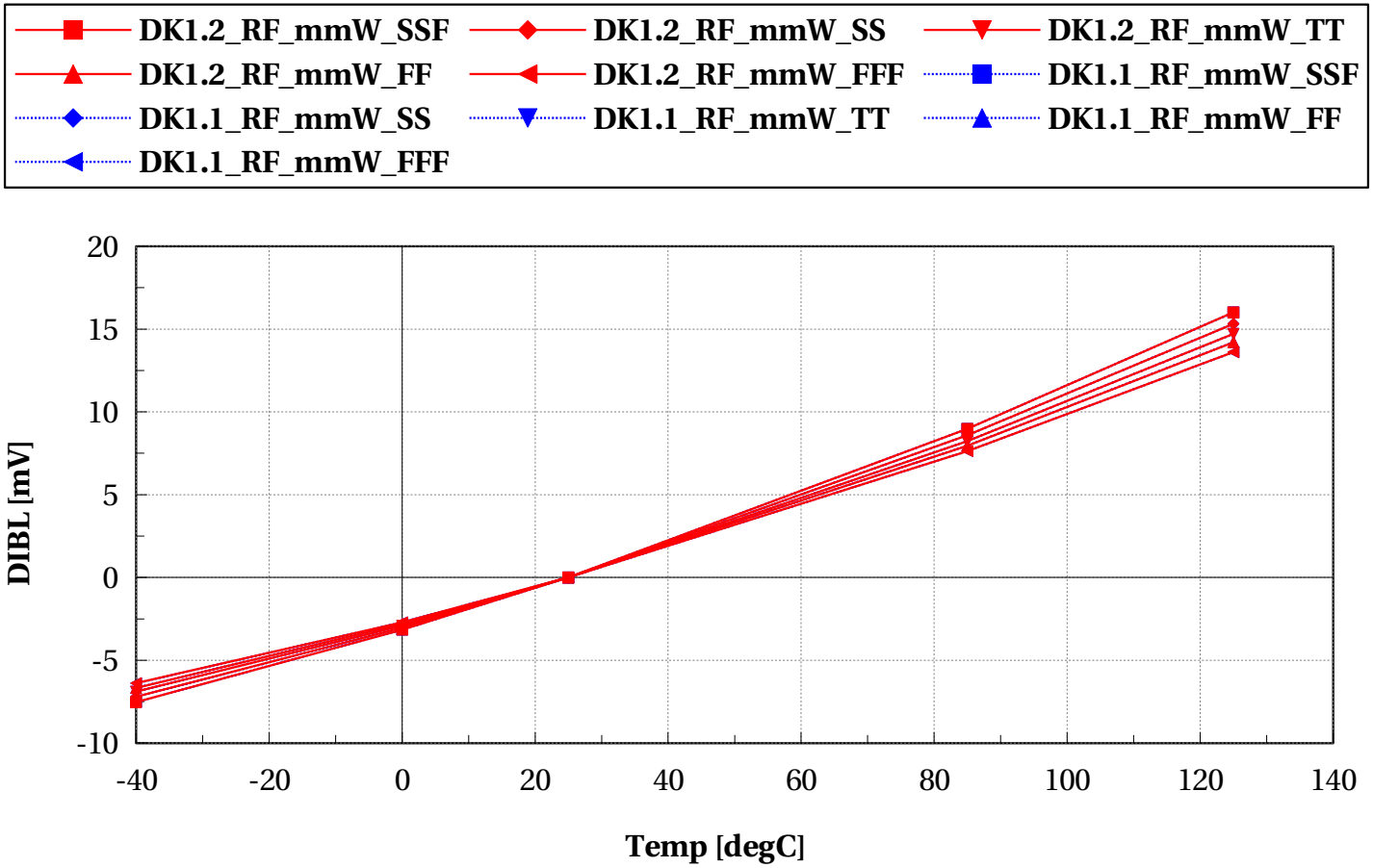

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eglvtnfet_acc, Vt_sat [mV] vs Temp [degC]

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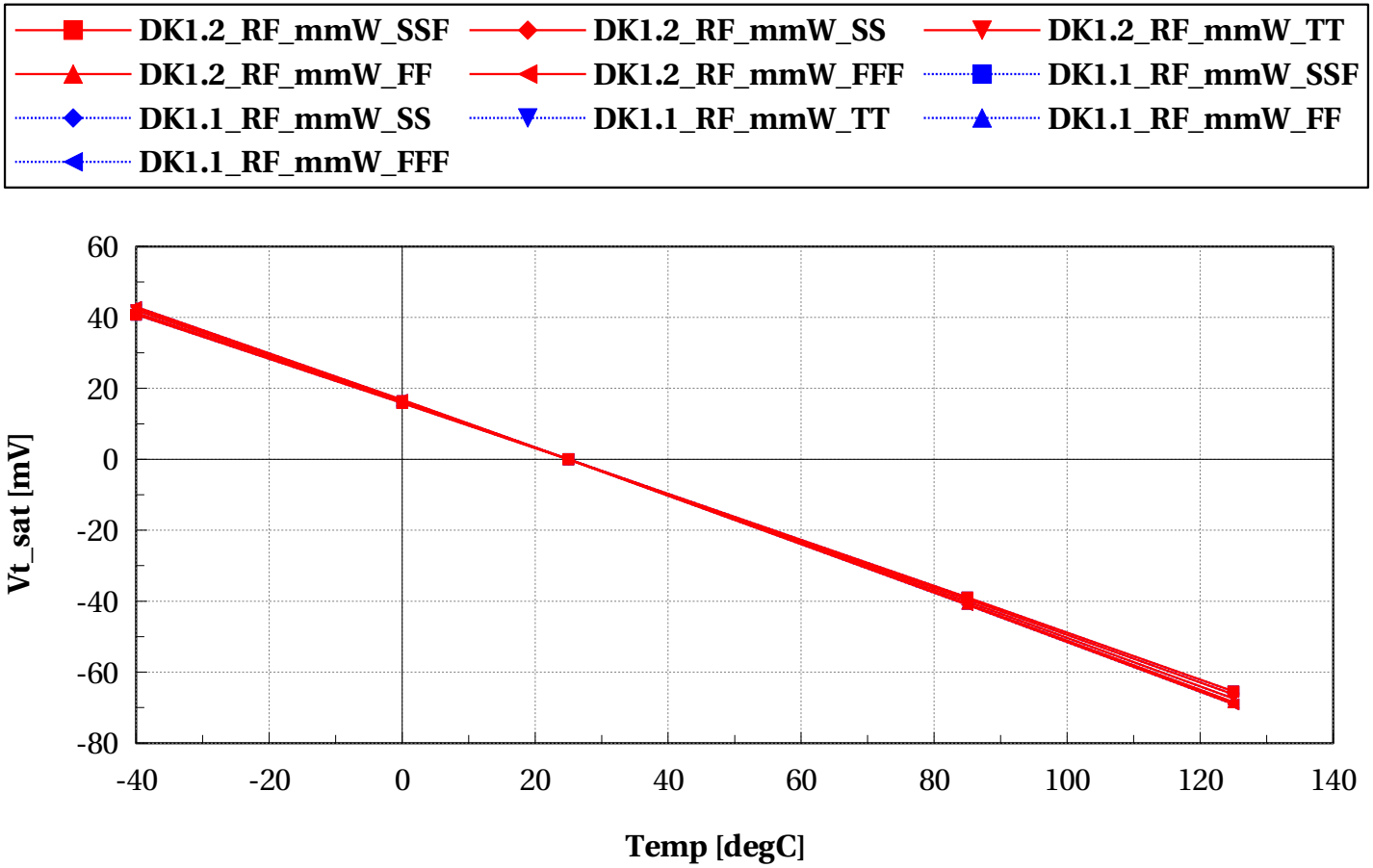

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eglvtnfet_acc, Isat/W [A/m] vs Temp [degC]

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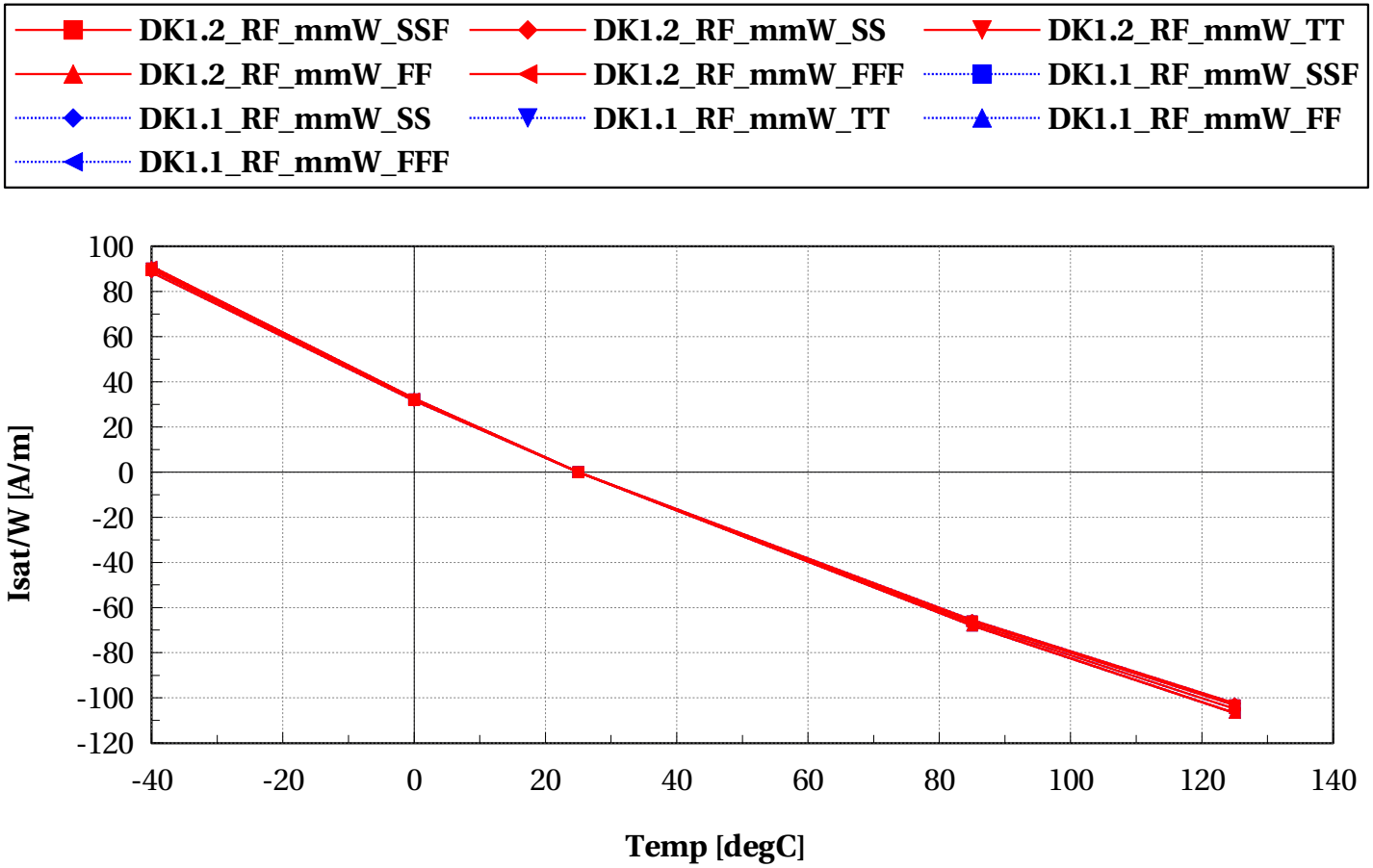

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eglvtnfet_acc, Ioffsat [A] vs Temp [degC]

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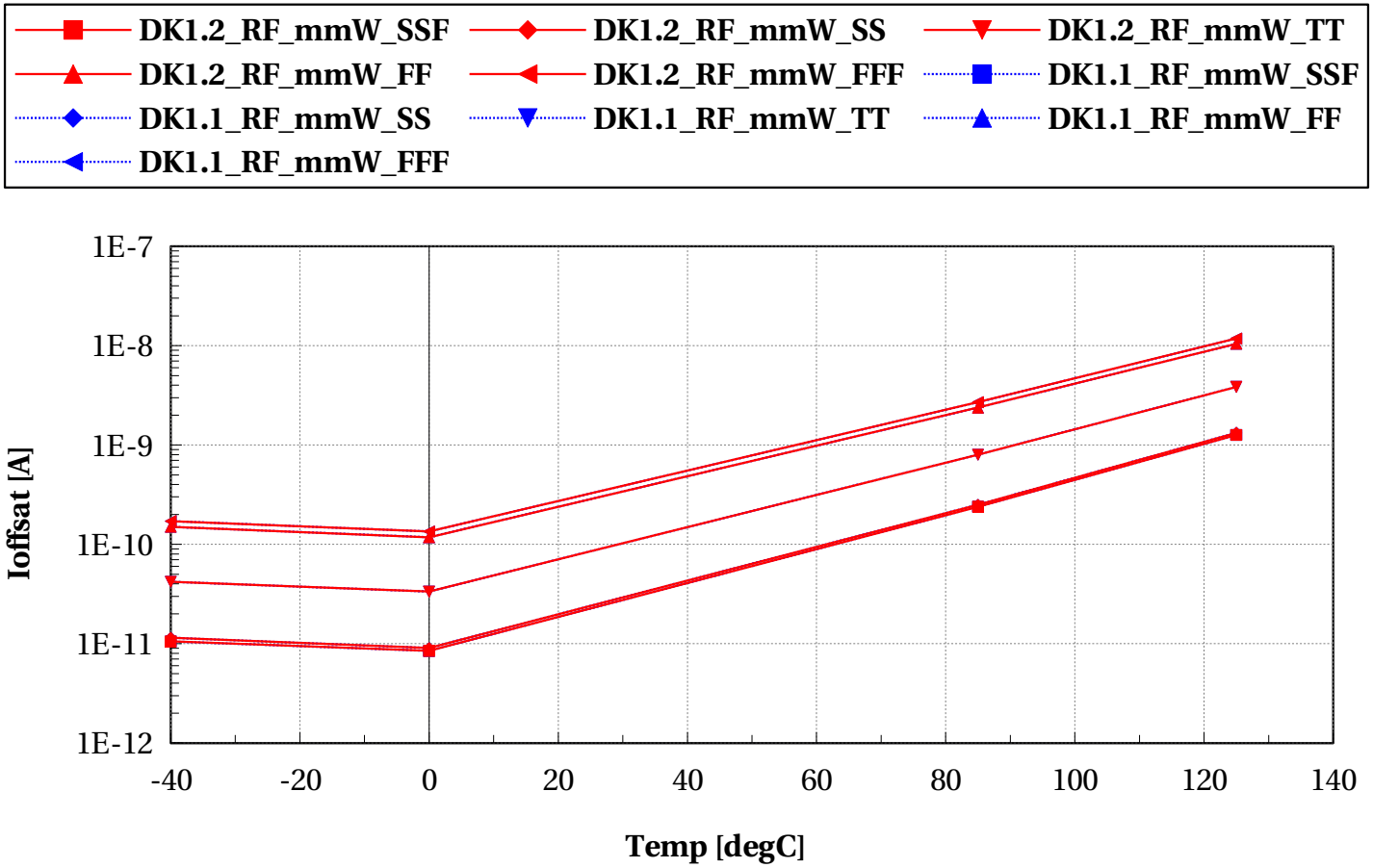

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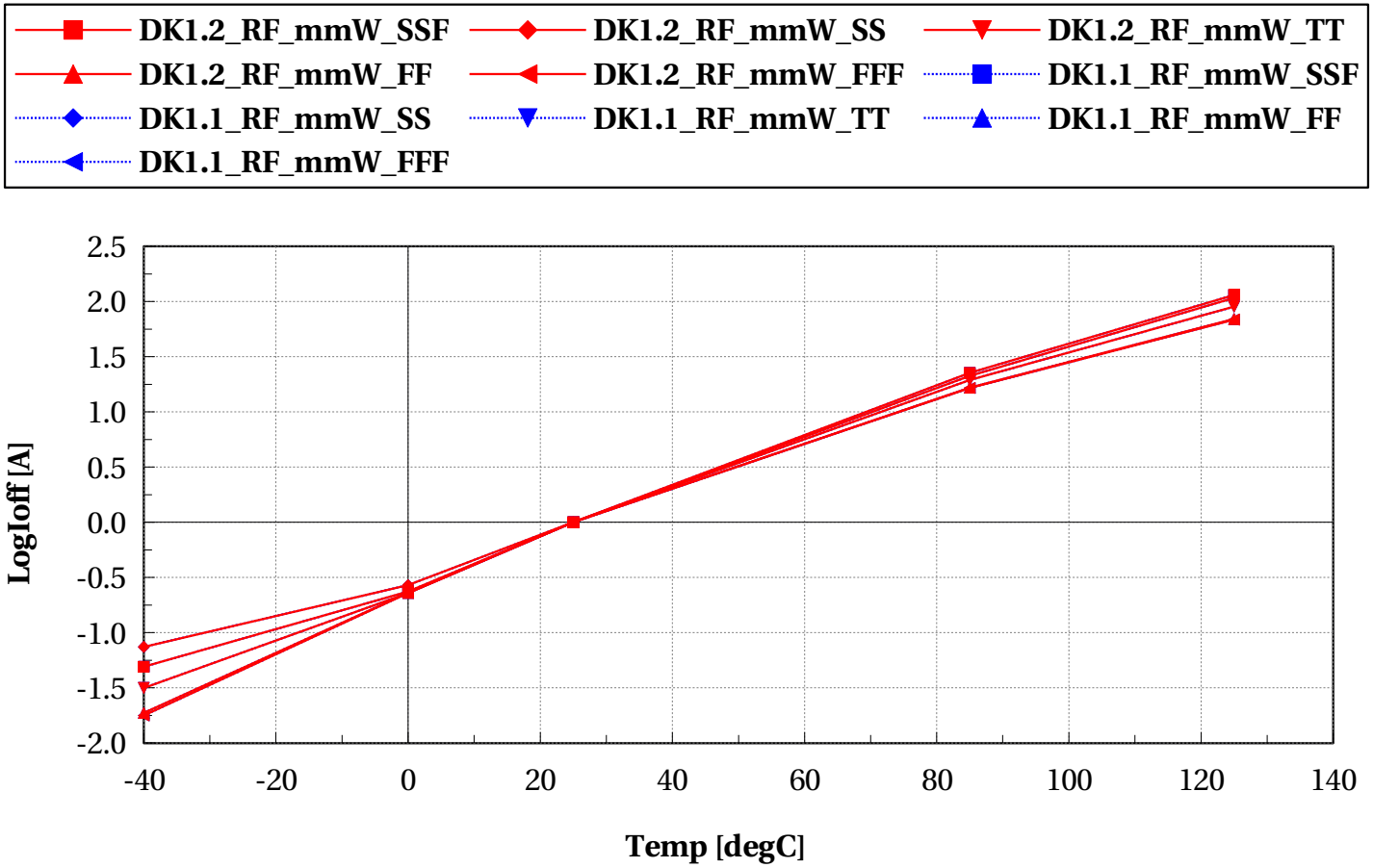
eglvtnfet_acc, LogIoff [A] vs Temp [degC]

Vbs==0 and l==0.15e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtnfet_acc, Ig_on/(L*W) [A/m2] vs Temp [degC]

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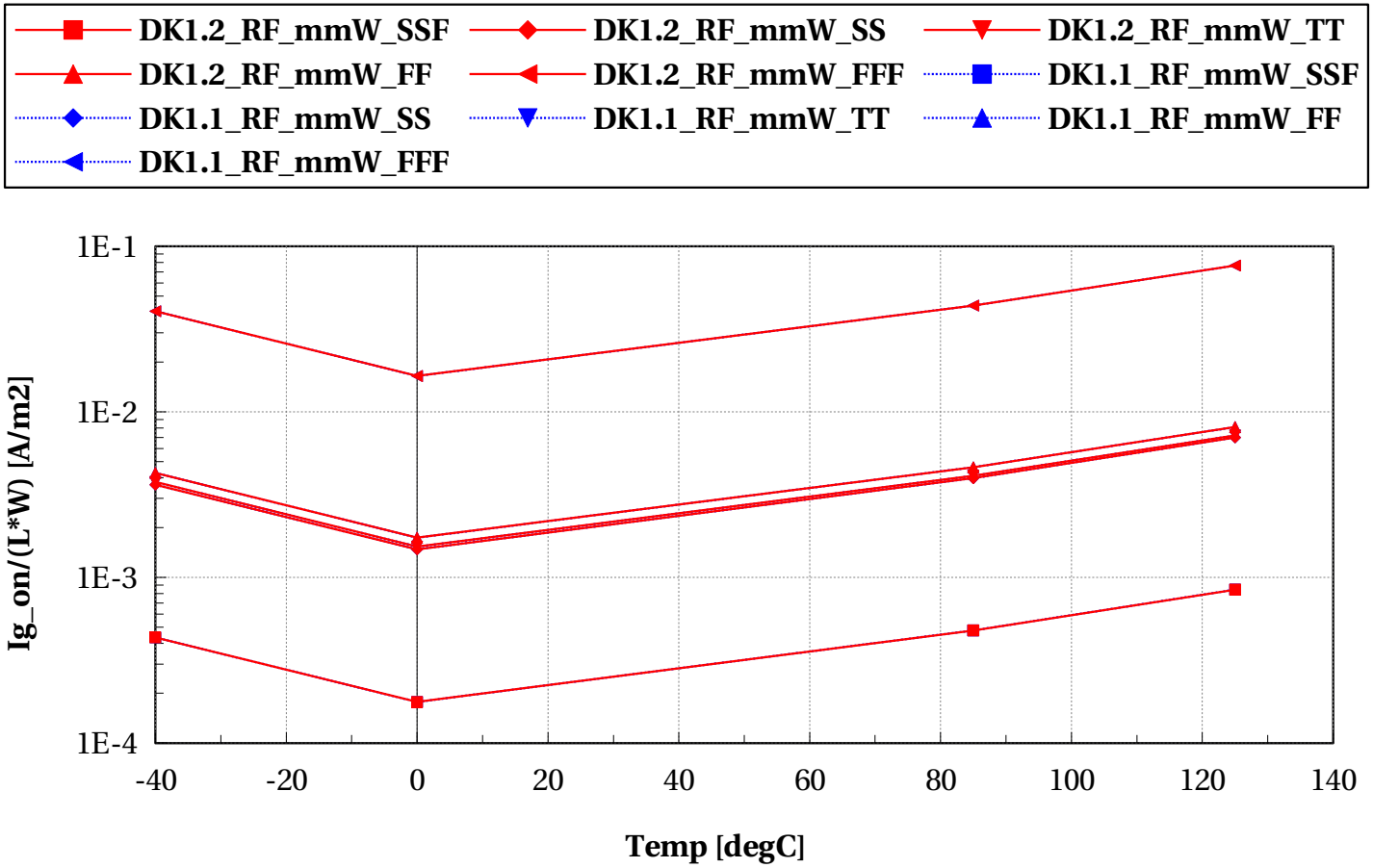

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eglvtnfet_acc, Ig_off/(W) [A/m] vs Temp [degC]

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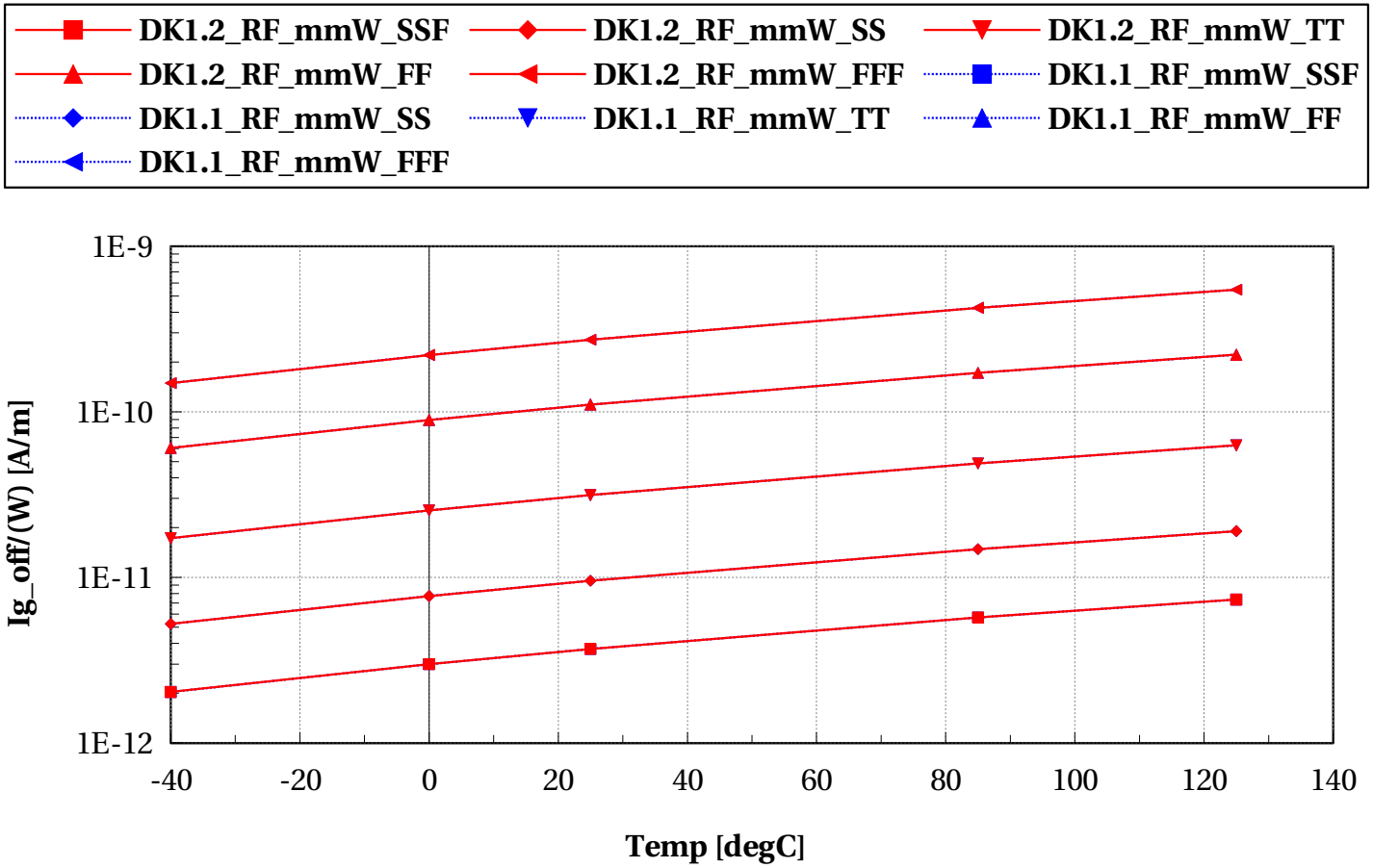

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eglvtnfet_acc, Gd_c/W [s/m] vs Temp [degC]

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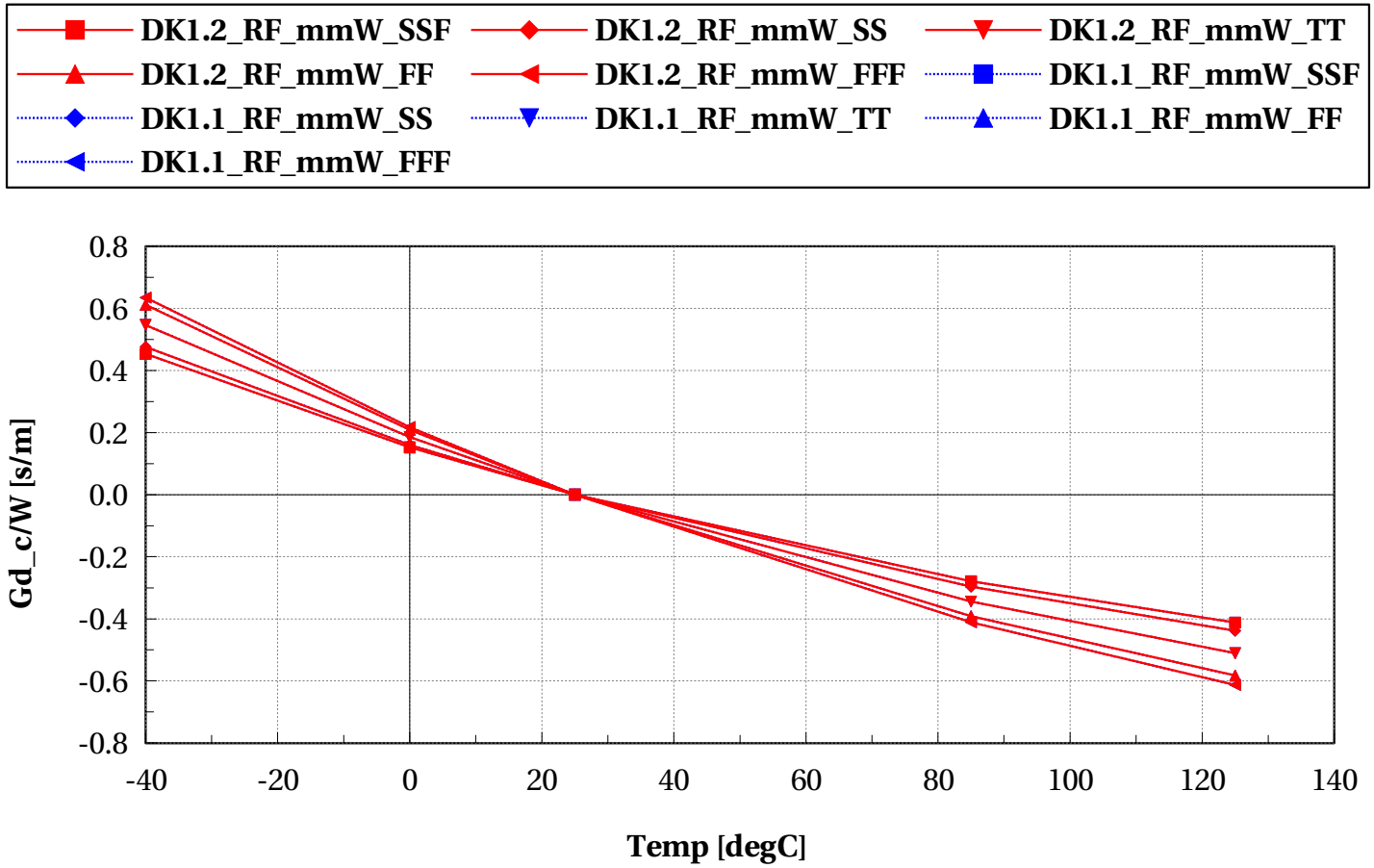

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eglvtnfet_acc, Gm_c/W [s/m] vs Temp [degC]

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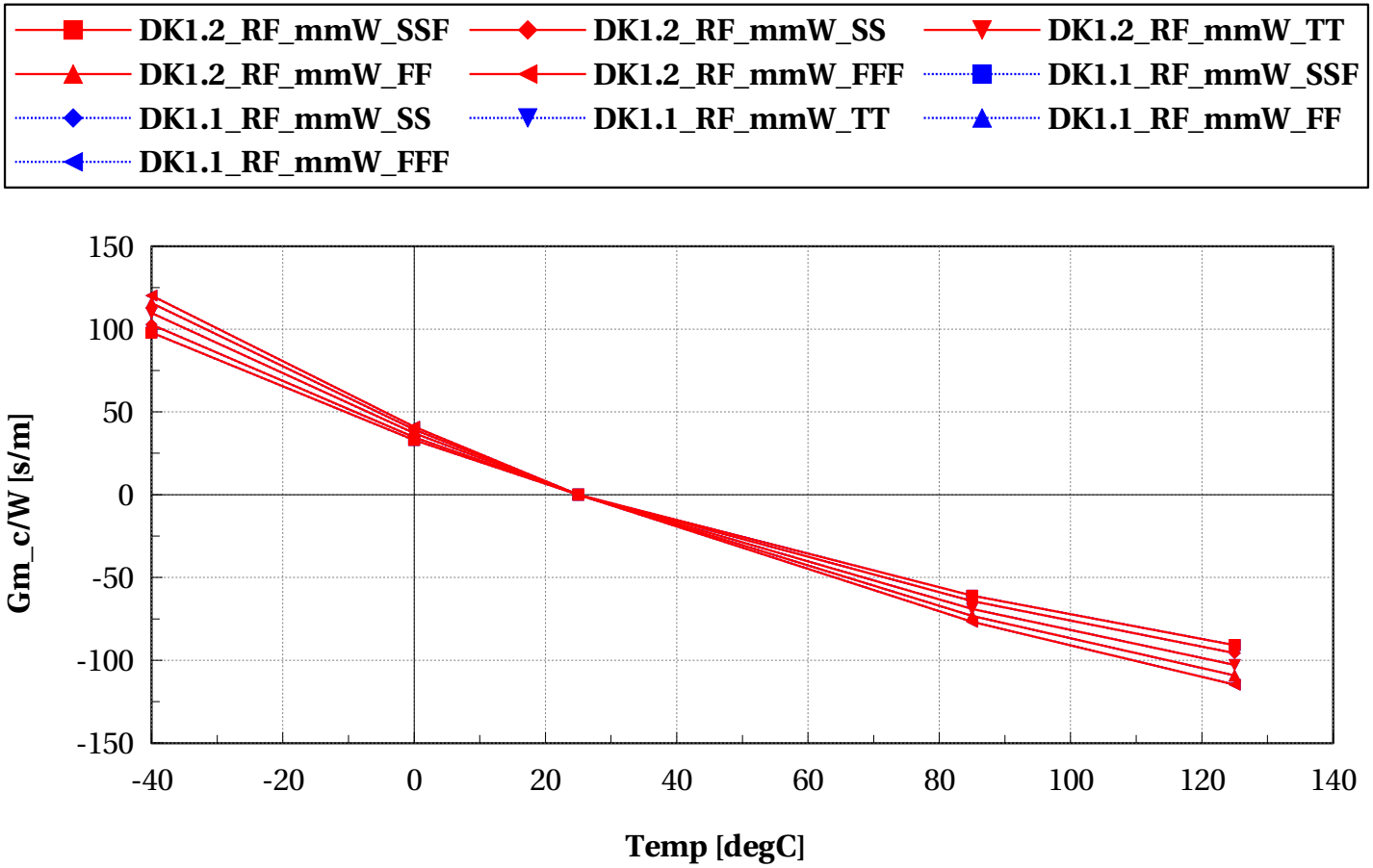

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eglvtnfet_acc, Gain_c [] vs Temp [degC]

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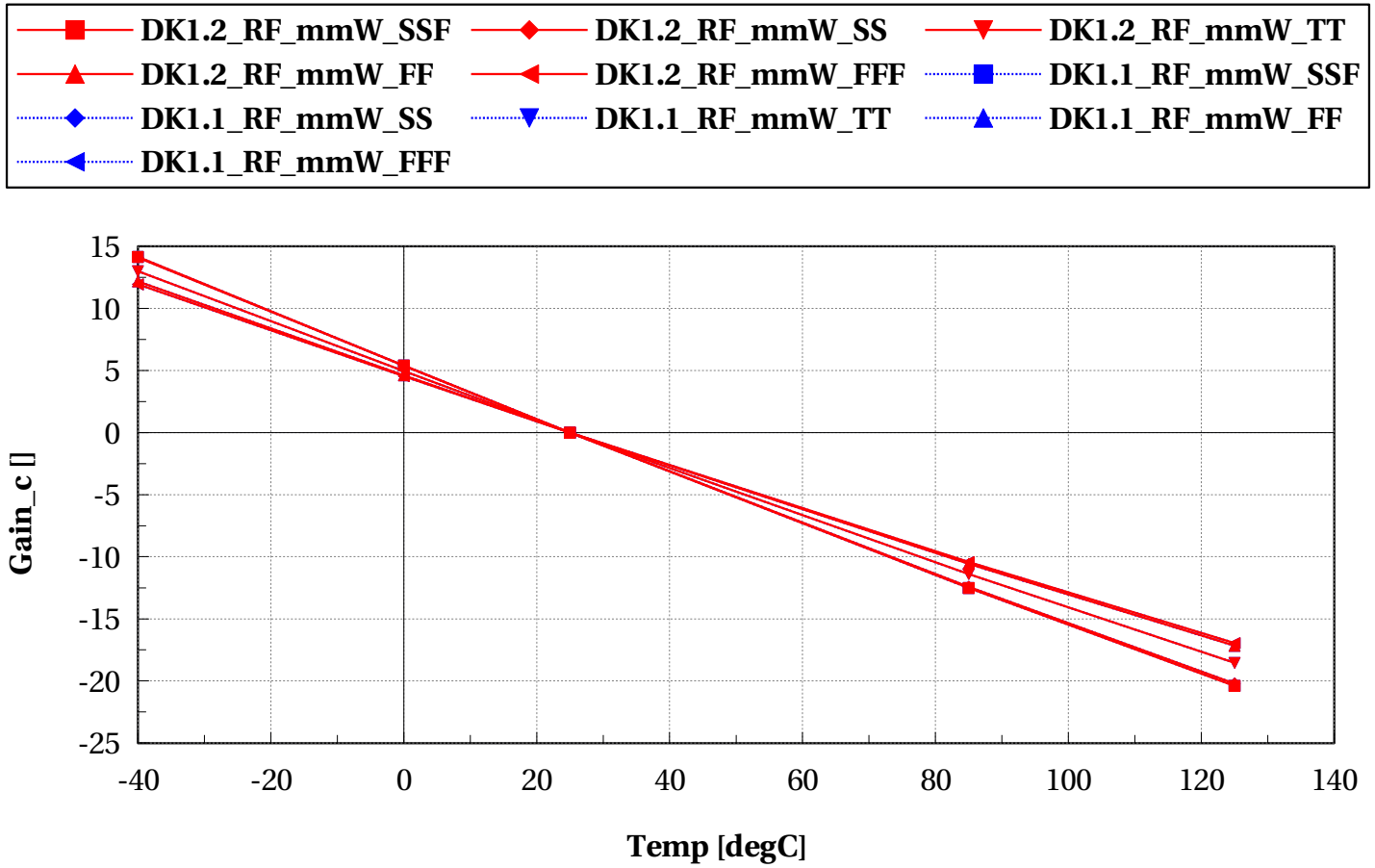

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eglvtnfet_acc, Cgd_0v/W [F/m] vs Temp [degC]

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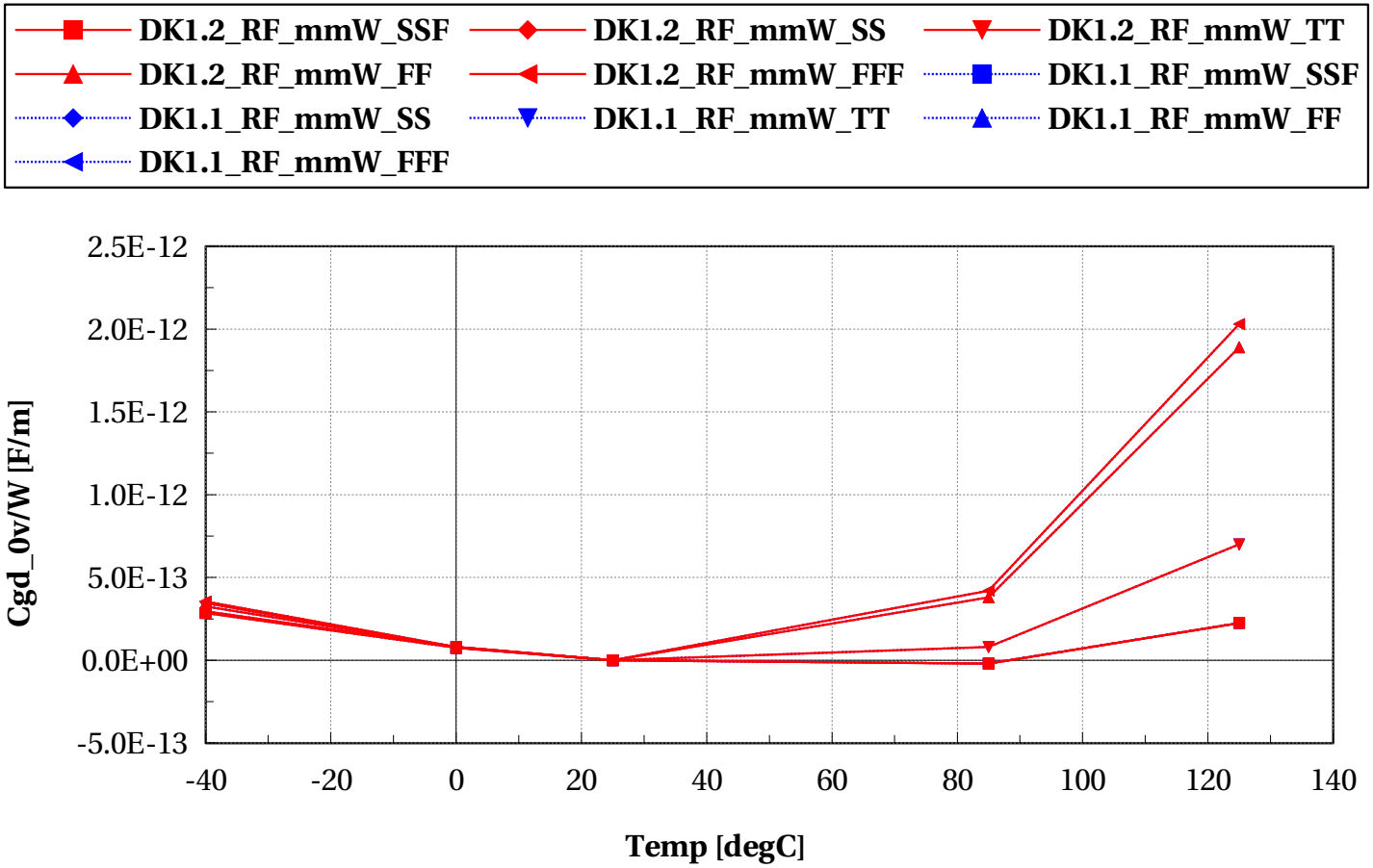

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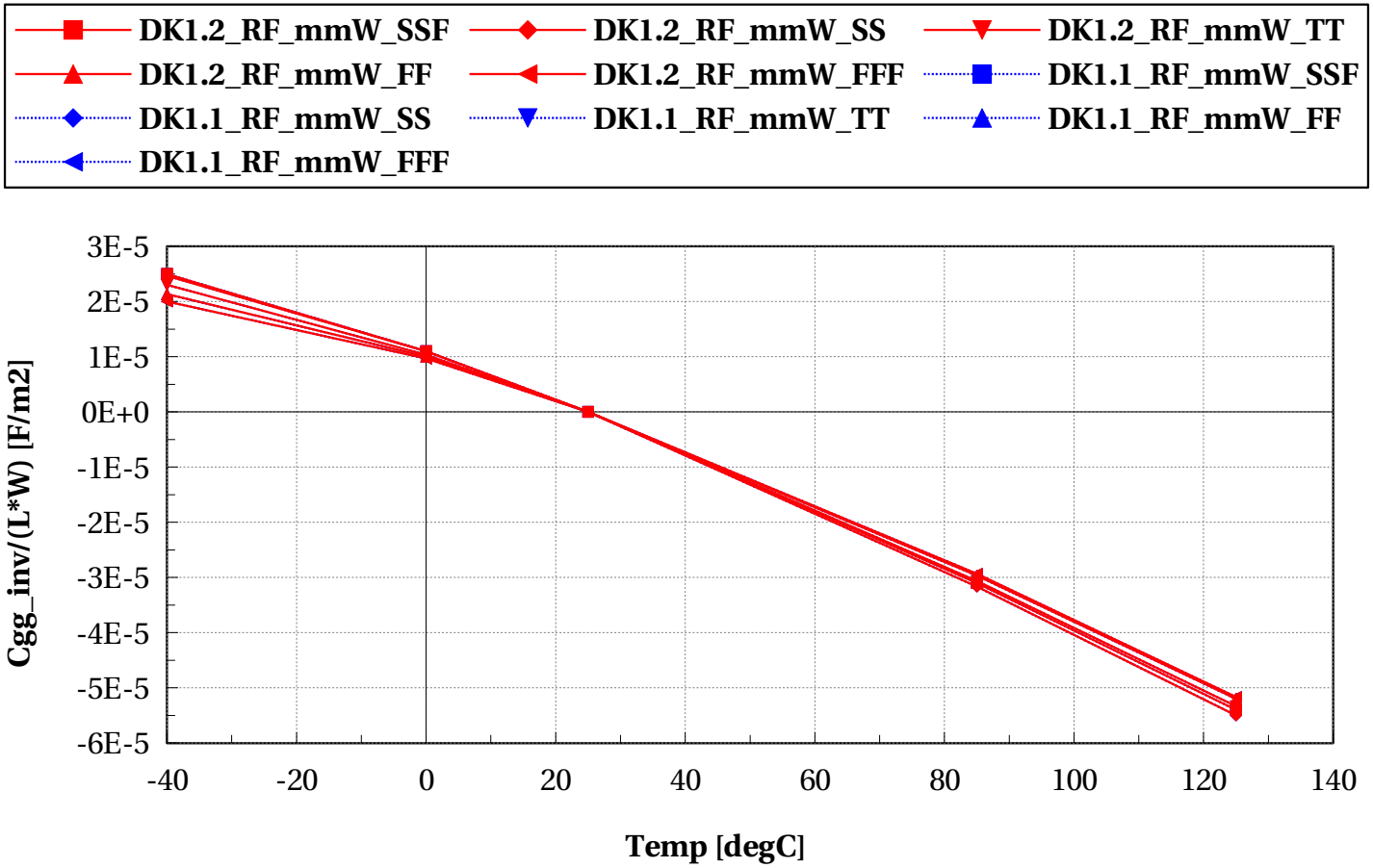
eglvtnfet_acc, Cgg_inv/(L*W) [F/m2] vs Temp [degC]

Vbs==0 and l==0.15e-6 and w==2e-6 and devType=="PCELLwoWPE"



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Scaling versus Temp @ Vbs=0, L=2u, W=2u

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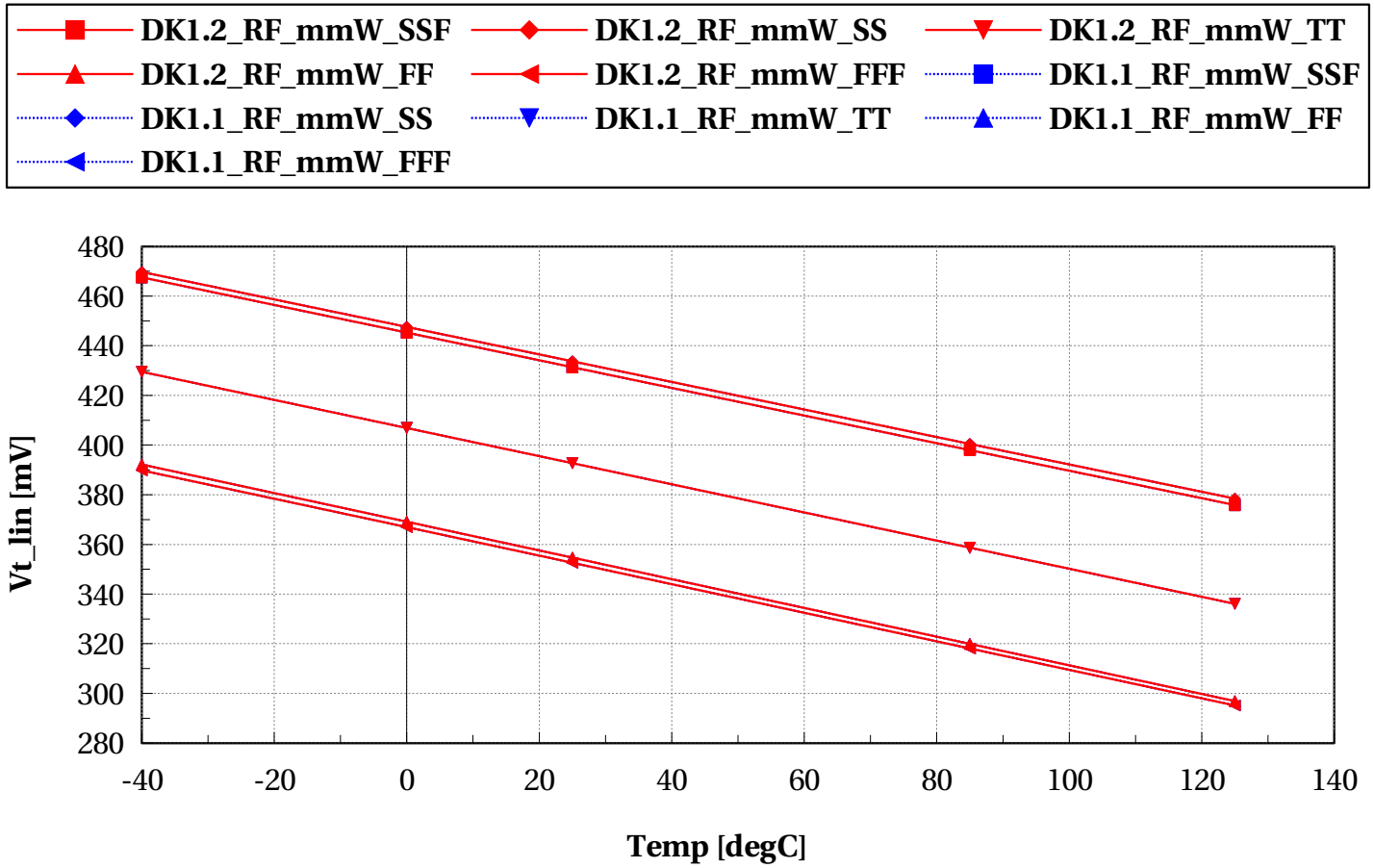
eglvtnfet_acc, Vt_lin [mV] vs Temp [degC]

Vbs==0 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtnfet_acc, Ilin/W [A/m] vs Temp [degC]

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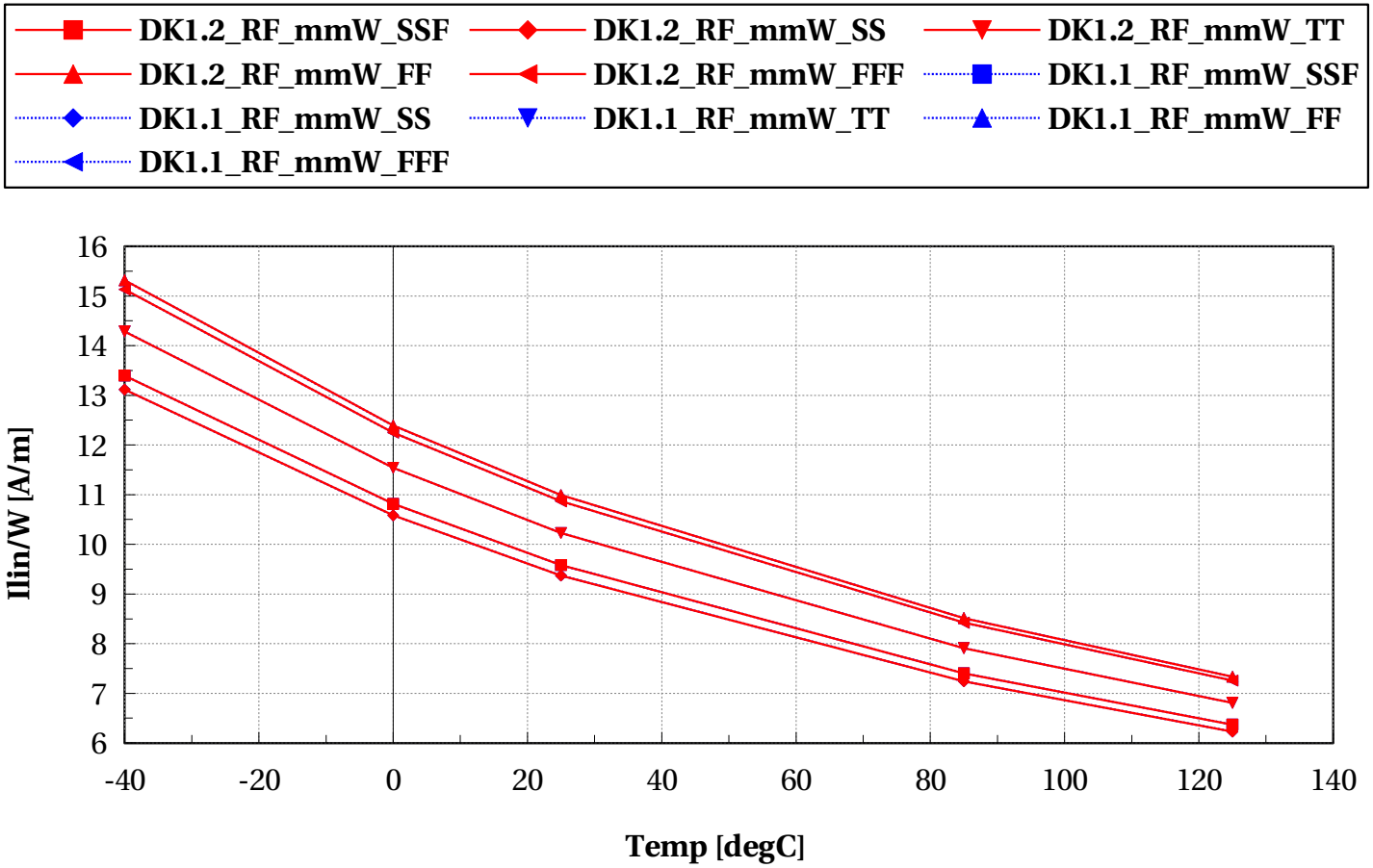

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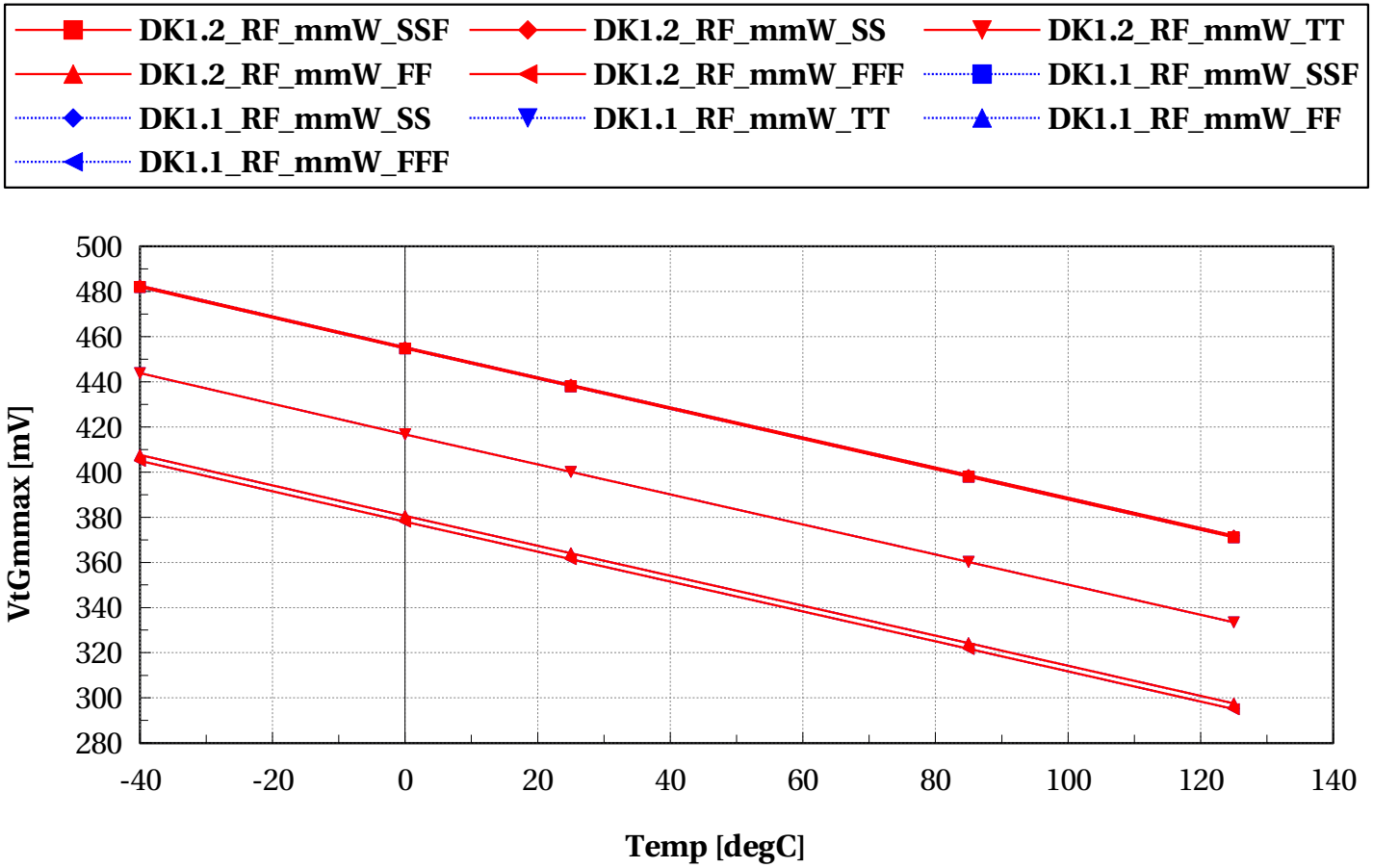
eglvtnfet_acc, VtGmmax [mV] vs Temp [degC]

Vbs==0 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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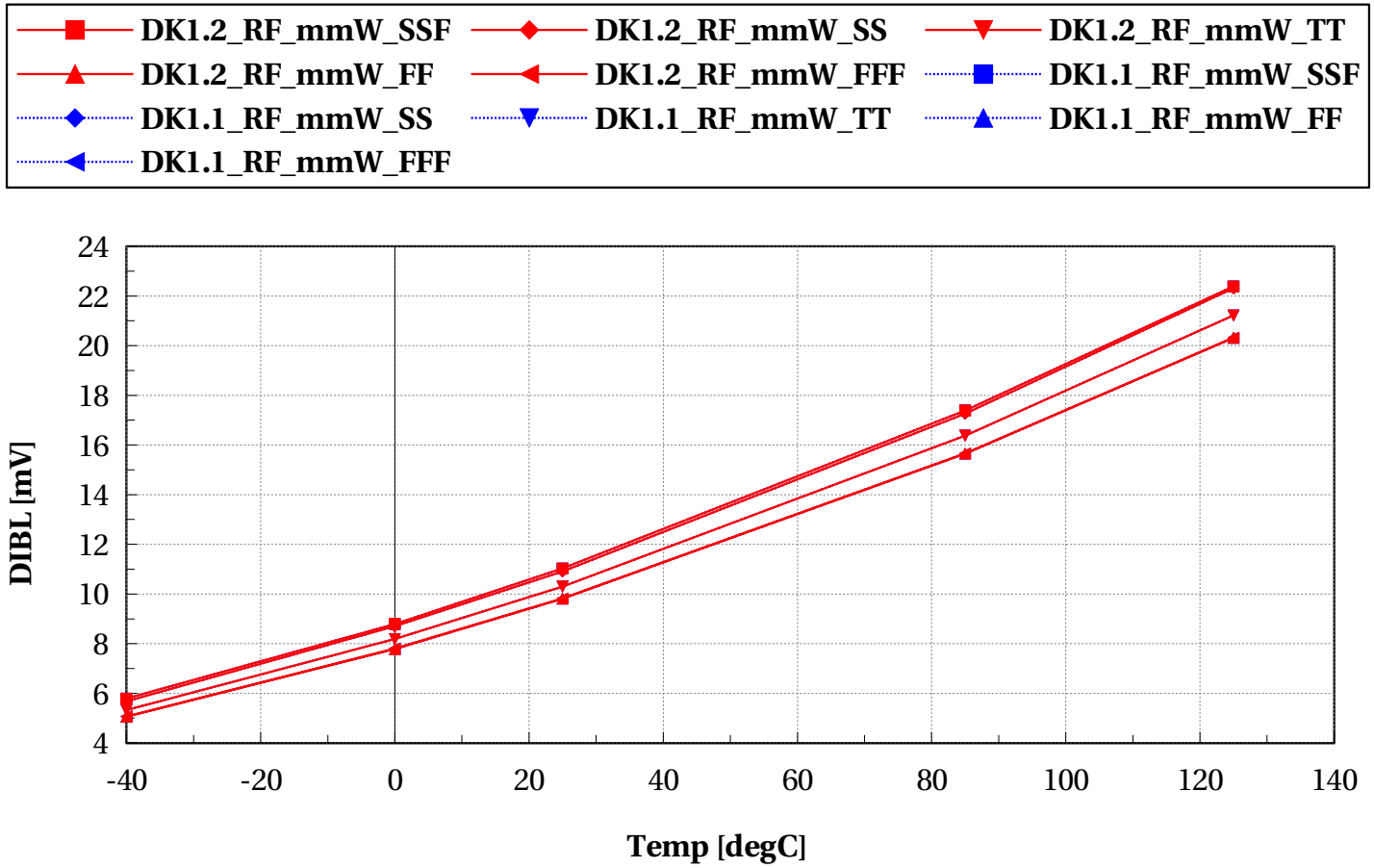
eglvtnfet_acc, DIBL [mV] vs Temp [degC]

Vbs==0 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtnfet_acc, Vt_sat [mV] vs Temp [degC]

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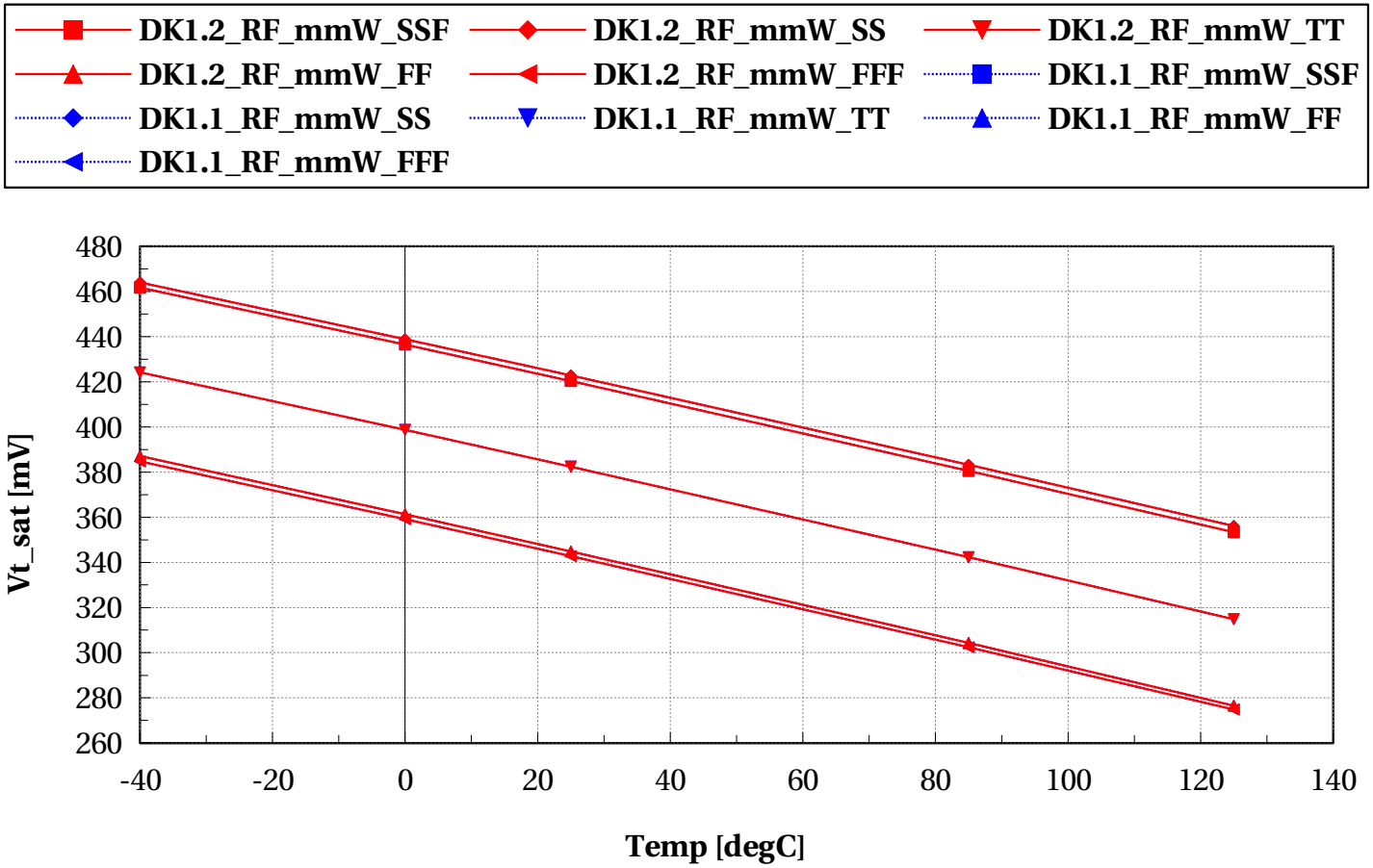

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eglvtnfet_acc, Isat/W [A/m] vs Temp [degC]

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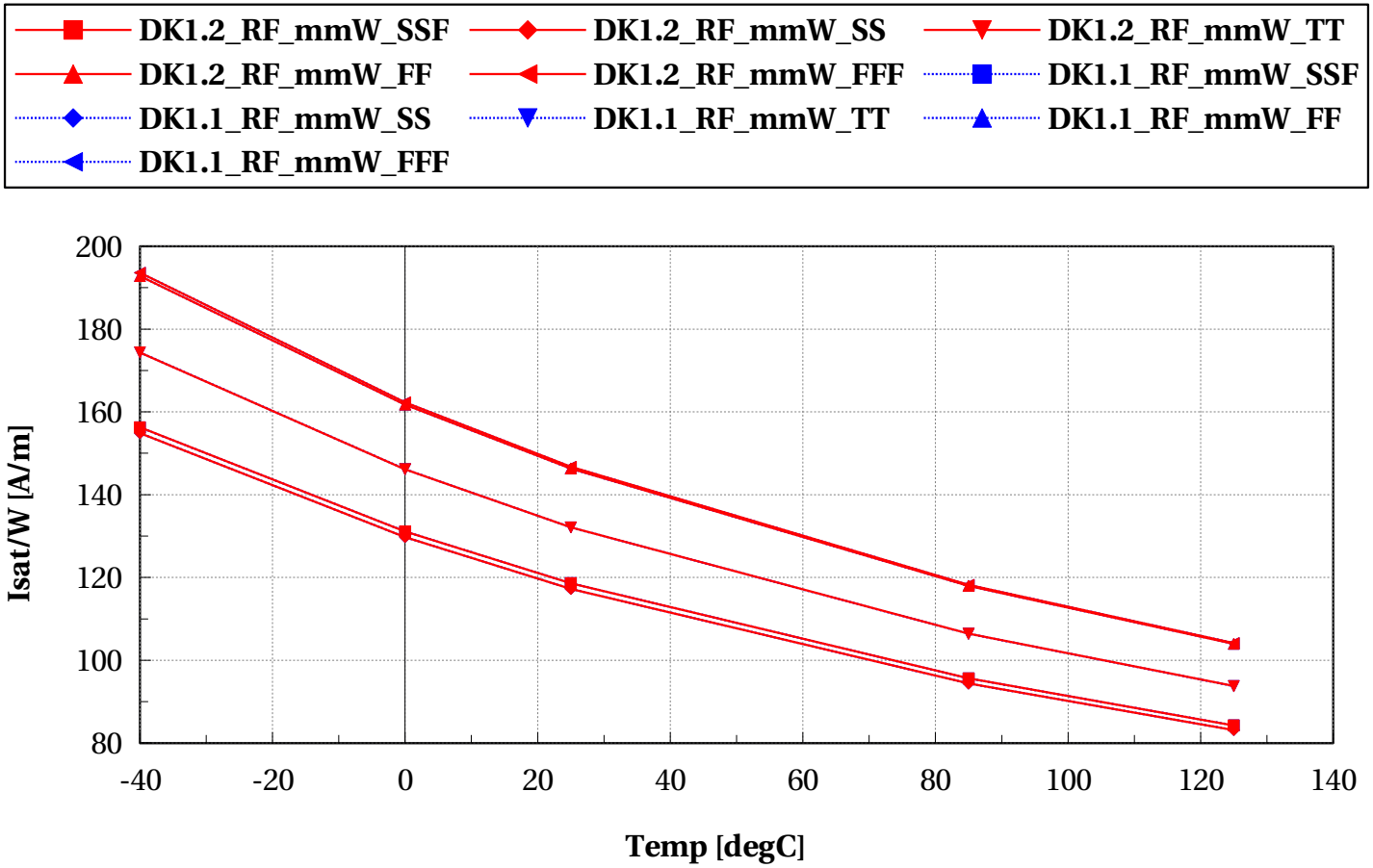

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eglvtnfet_acc, Ioffsat [A] vs Temp [degC]

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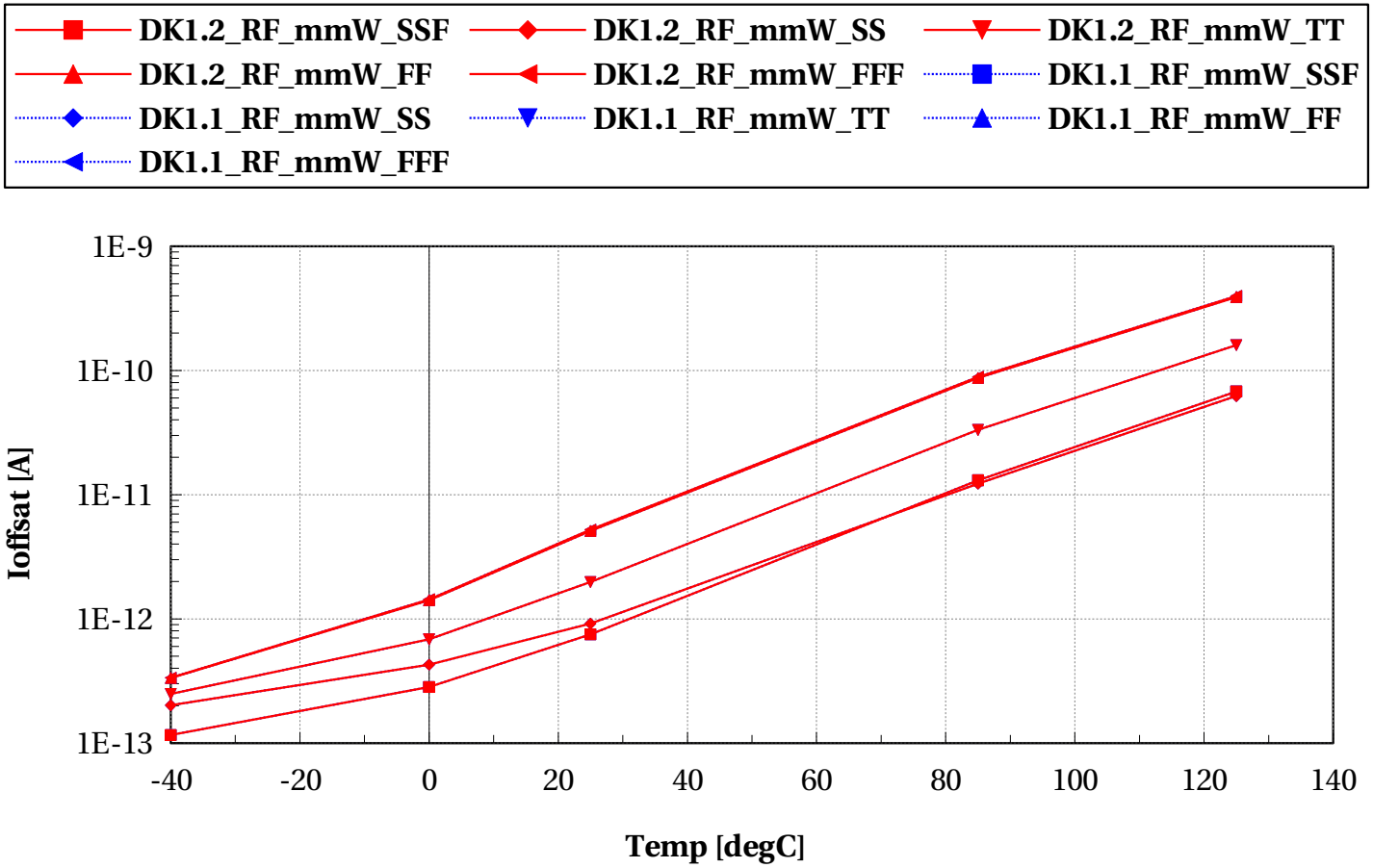

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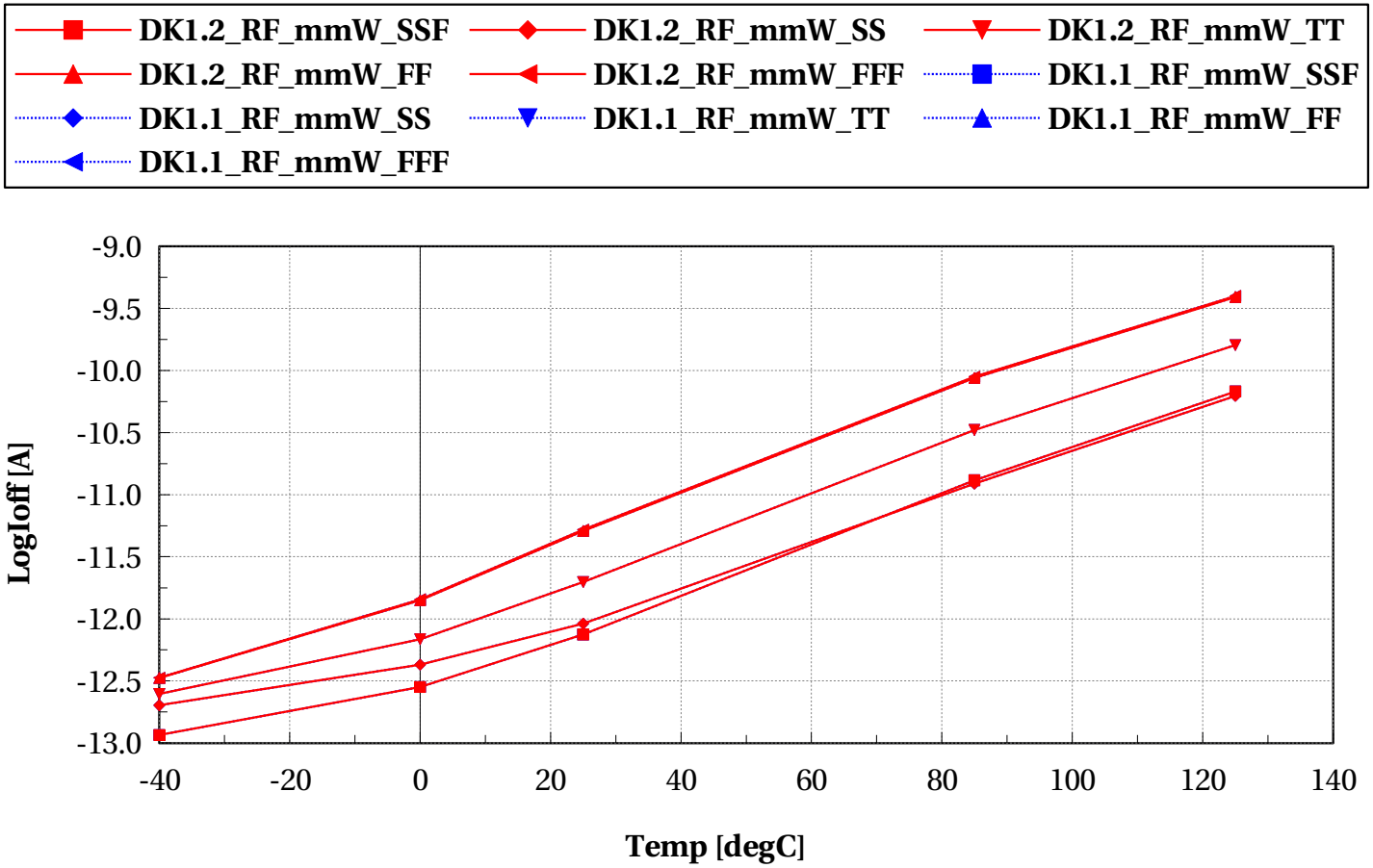
eglvtnfet_acc, LogIoff [A] vs Temp [degC]

Vbs==0 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtnfet_acc, Ig_on/(L*W) [A/m2] vs Temp [degC]

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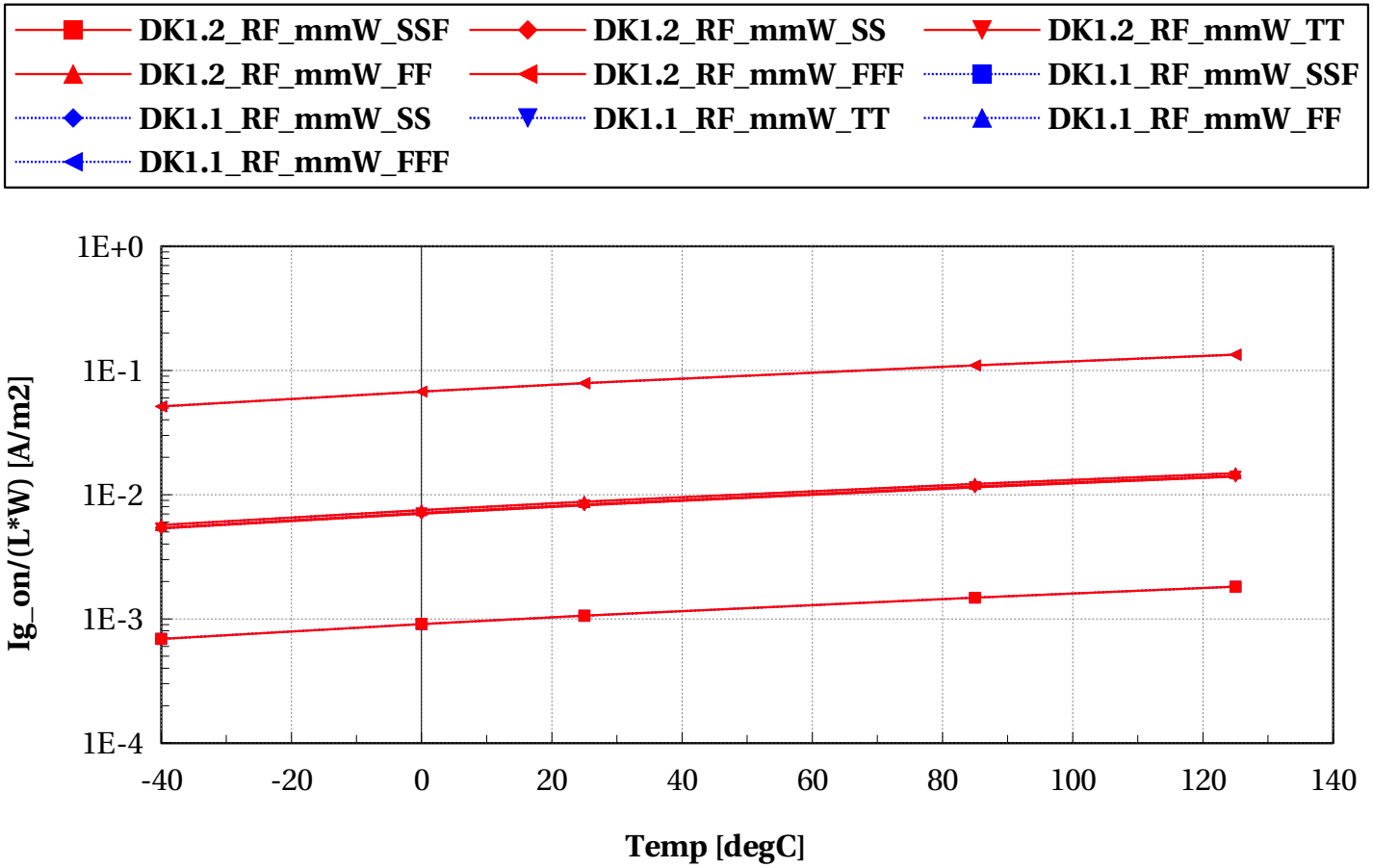

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eglvtnfet_acc, Ig_off/(W) [A/m] vs Temp [degC]

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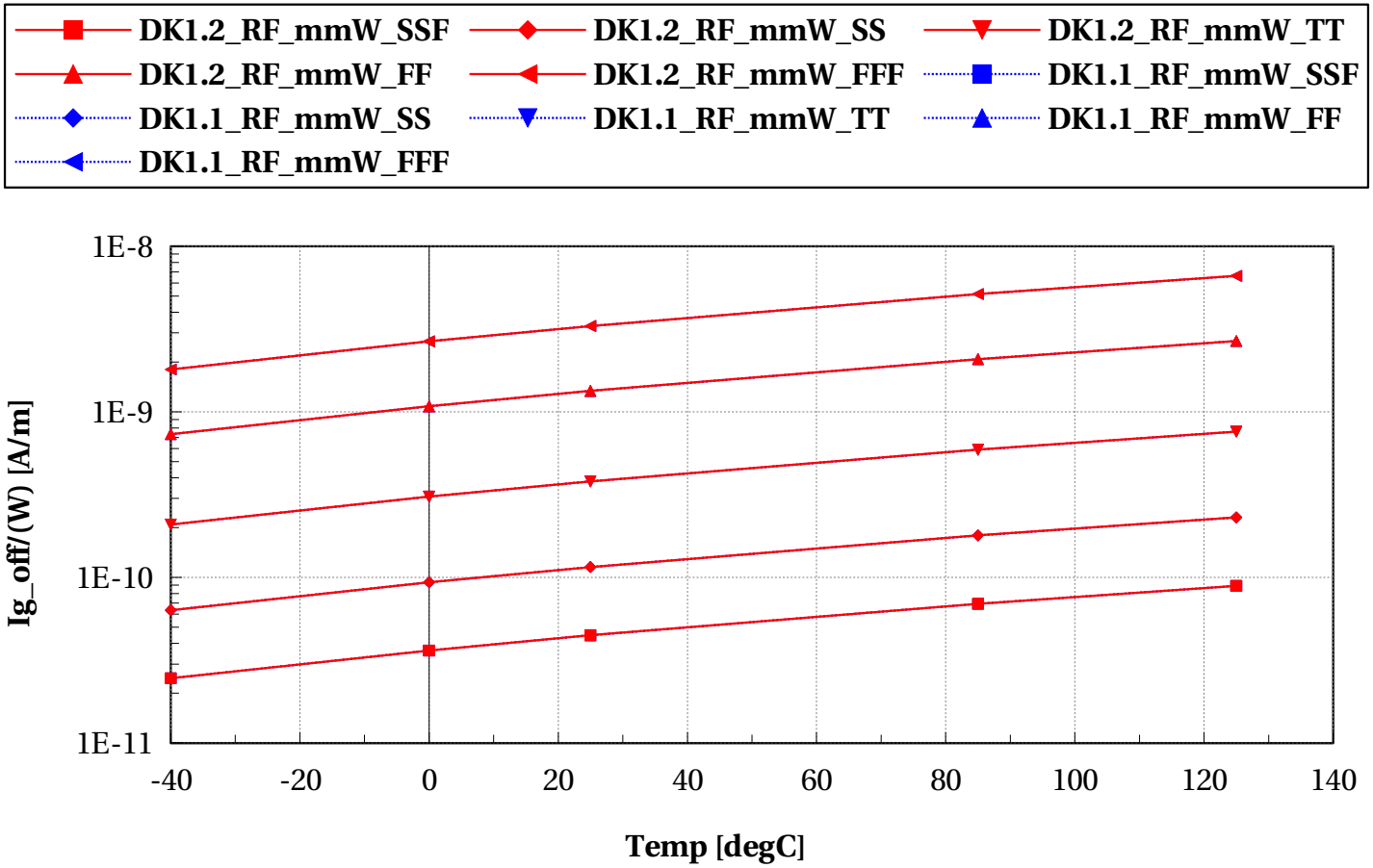

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eglvtnfet_acc, Gd_c/W [s/m] vs Temp [degC]

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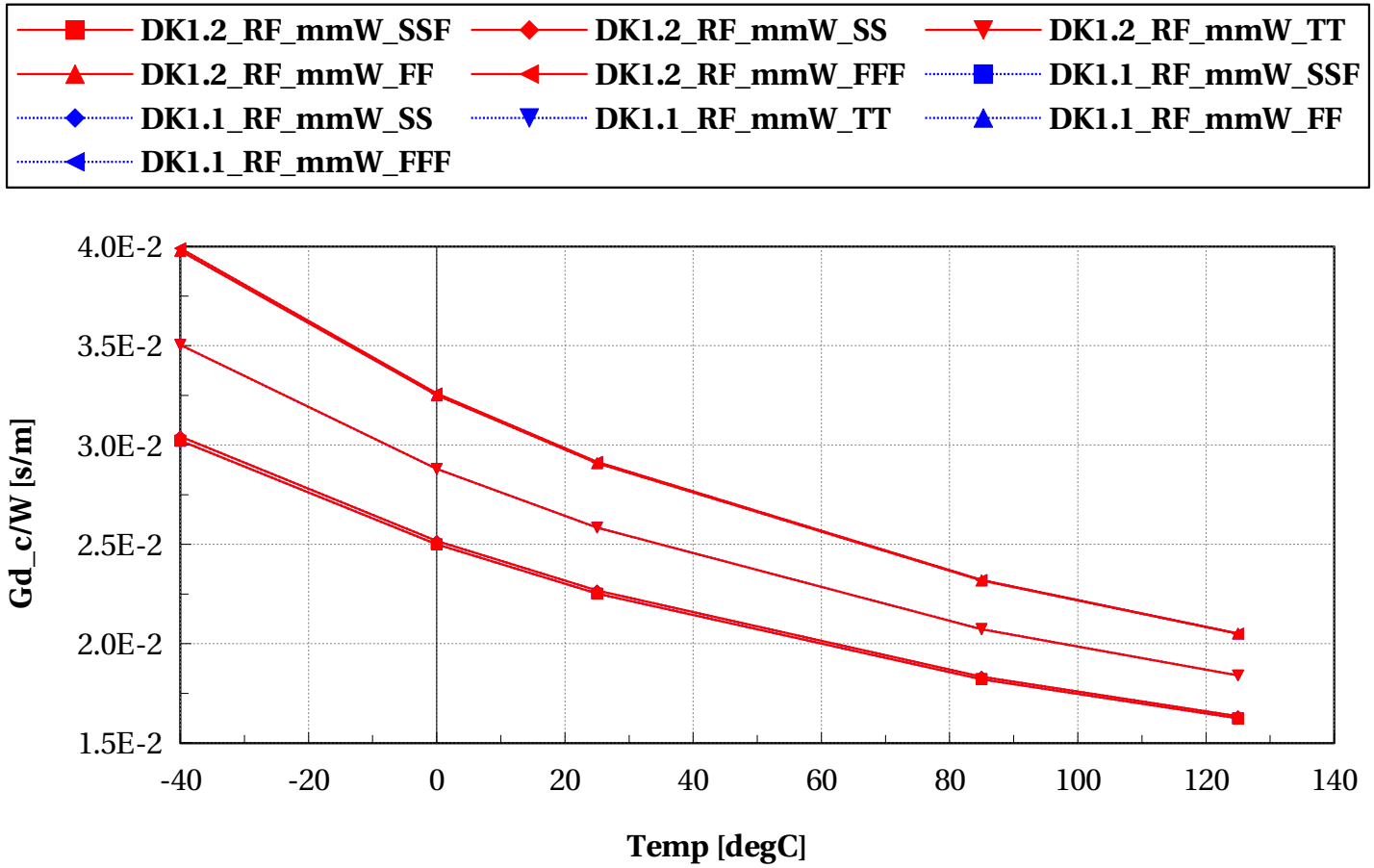

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eglvtnfet_acc, Gm_c/W [s/m] vs Temp [degC]

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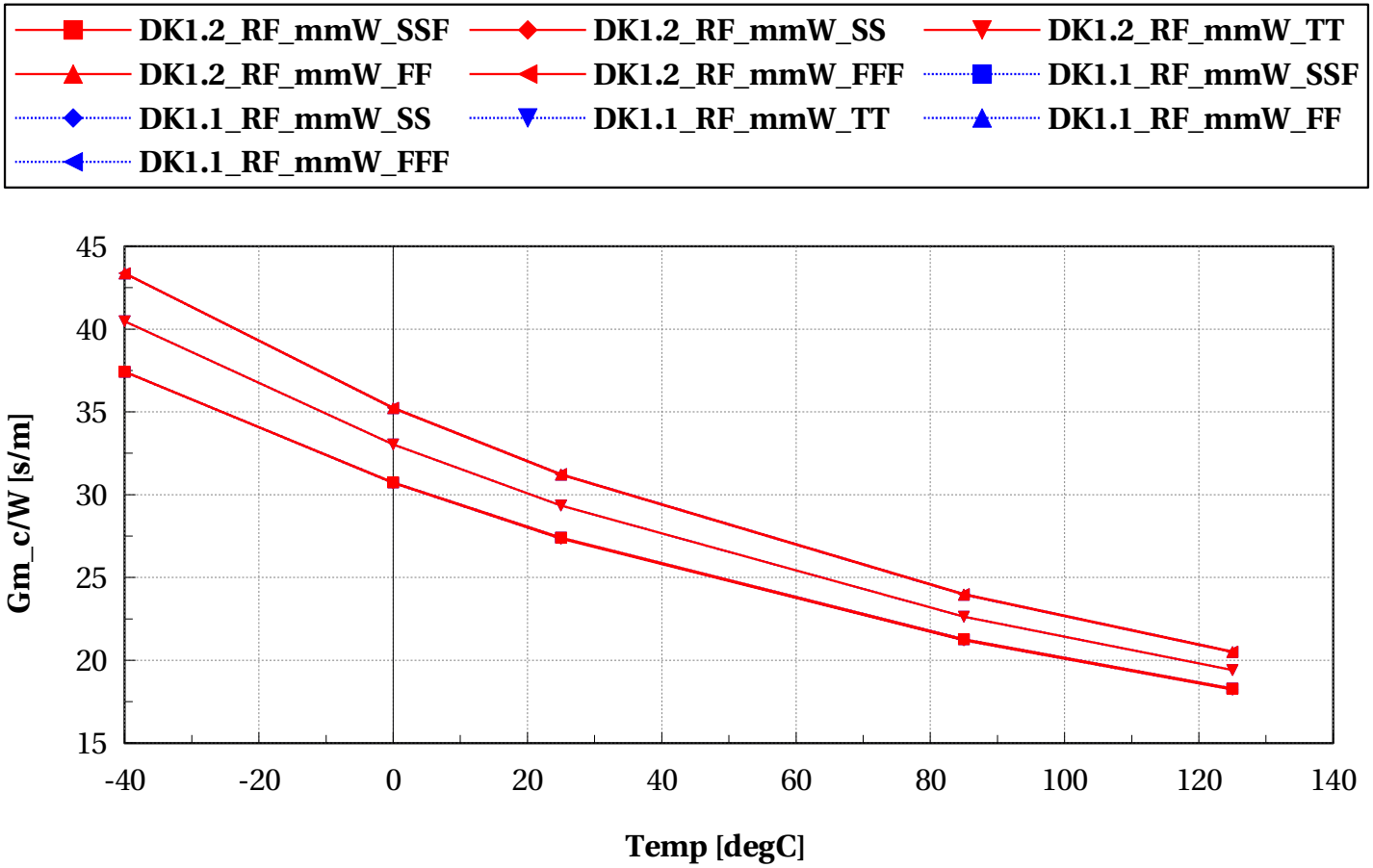

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eglvtnfet_acc, Gain_c [] vs Temp [degC]

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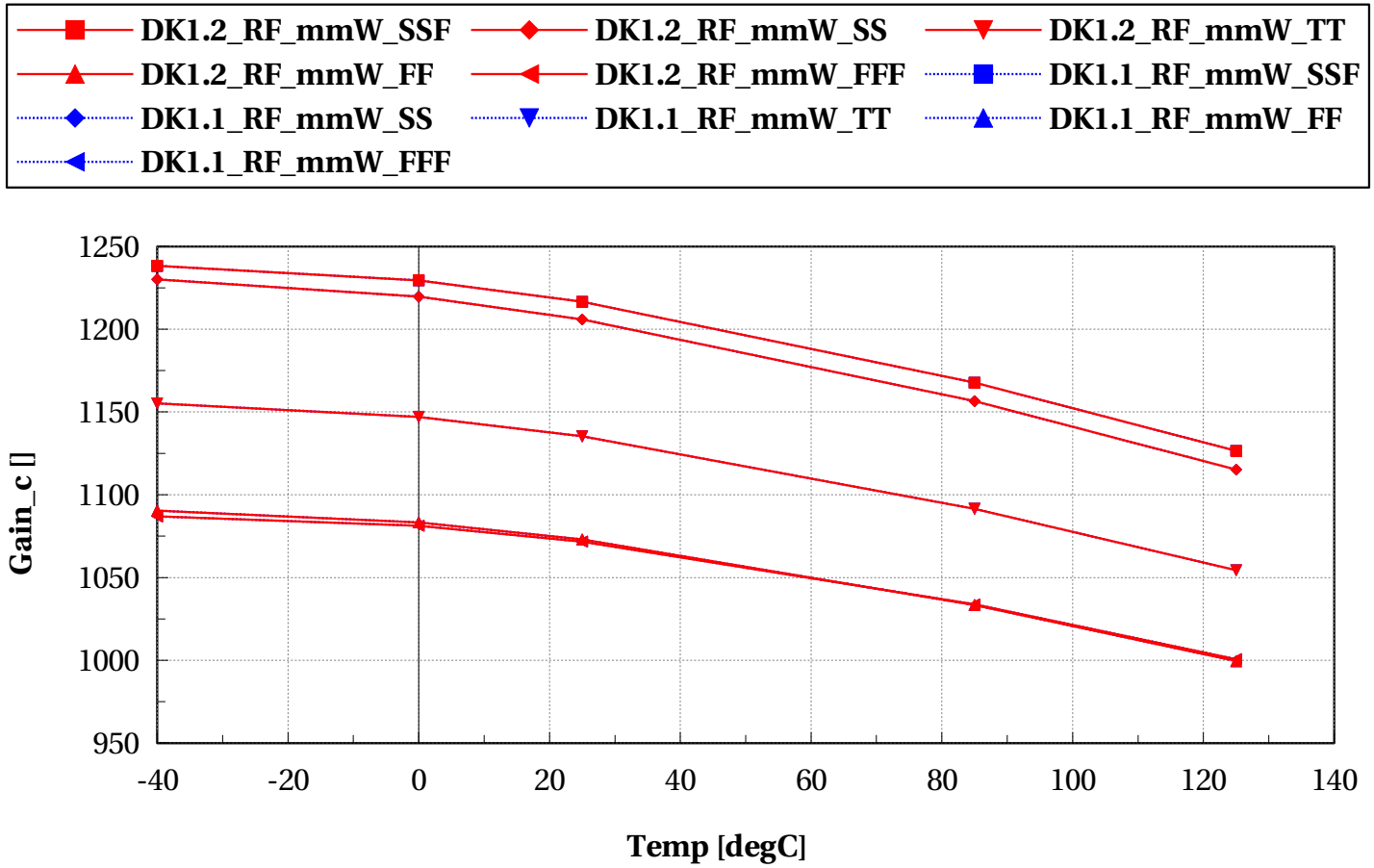

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eglvtnfet_acc, Cgd_0v/W [F/m] vs Temp [degC]

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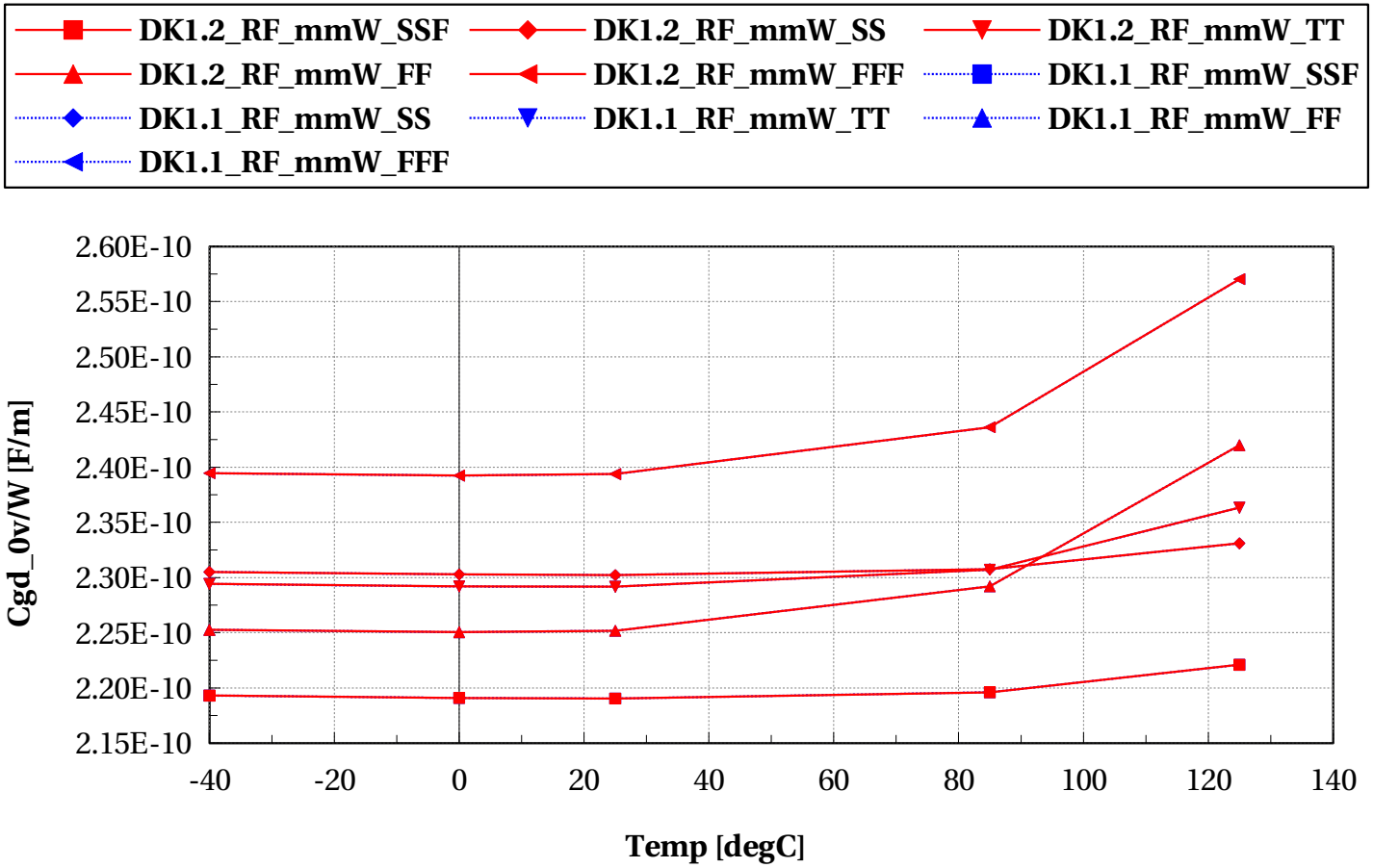

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eglvtnfet_acc, Cgg_inv/(L*W) [F/m2] vs Temp [degC]

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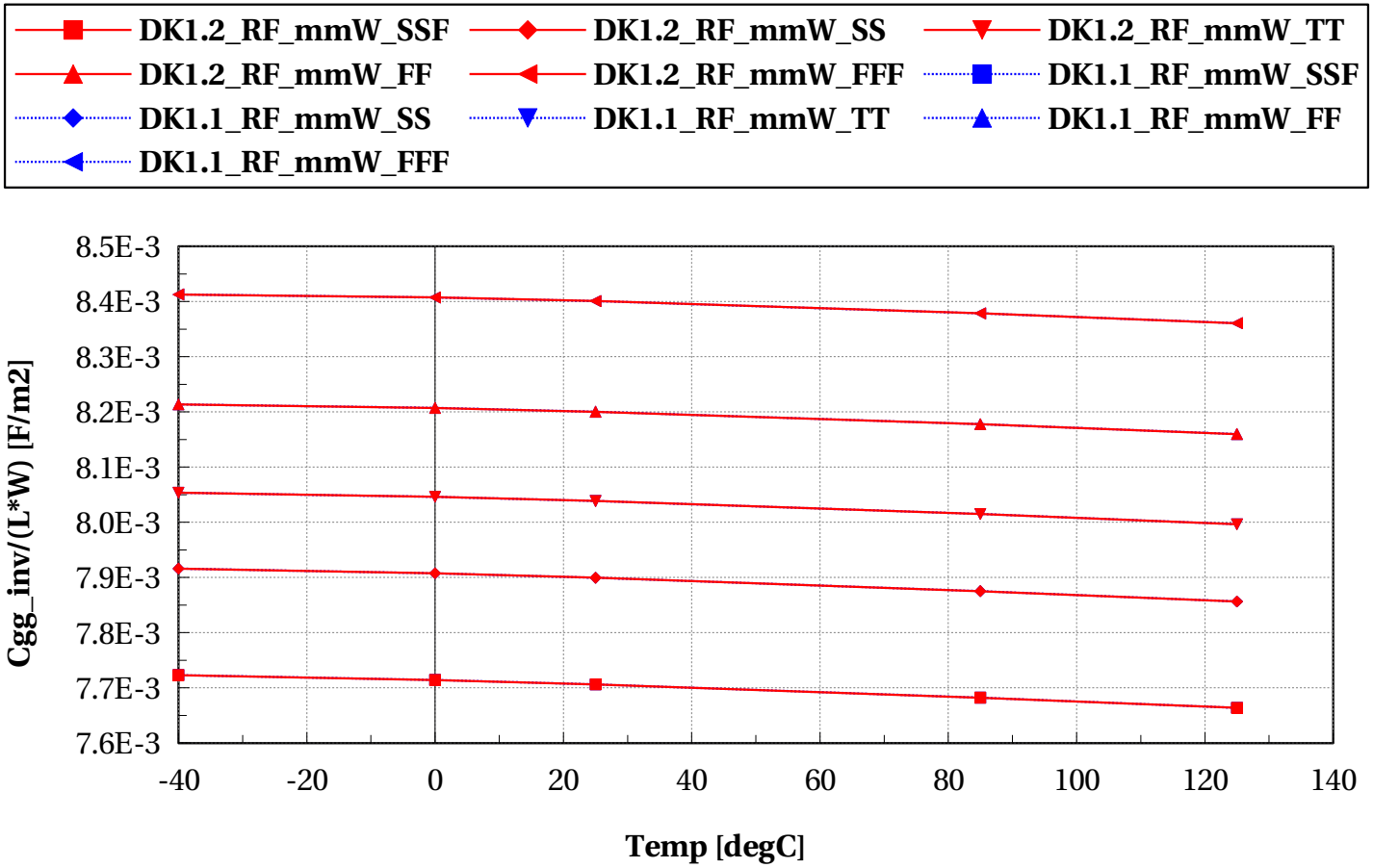

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Normalized scaling versus Temp @ Vbs=0, L=2u, W=2u

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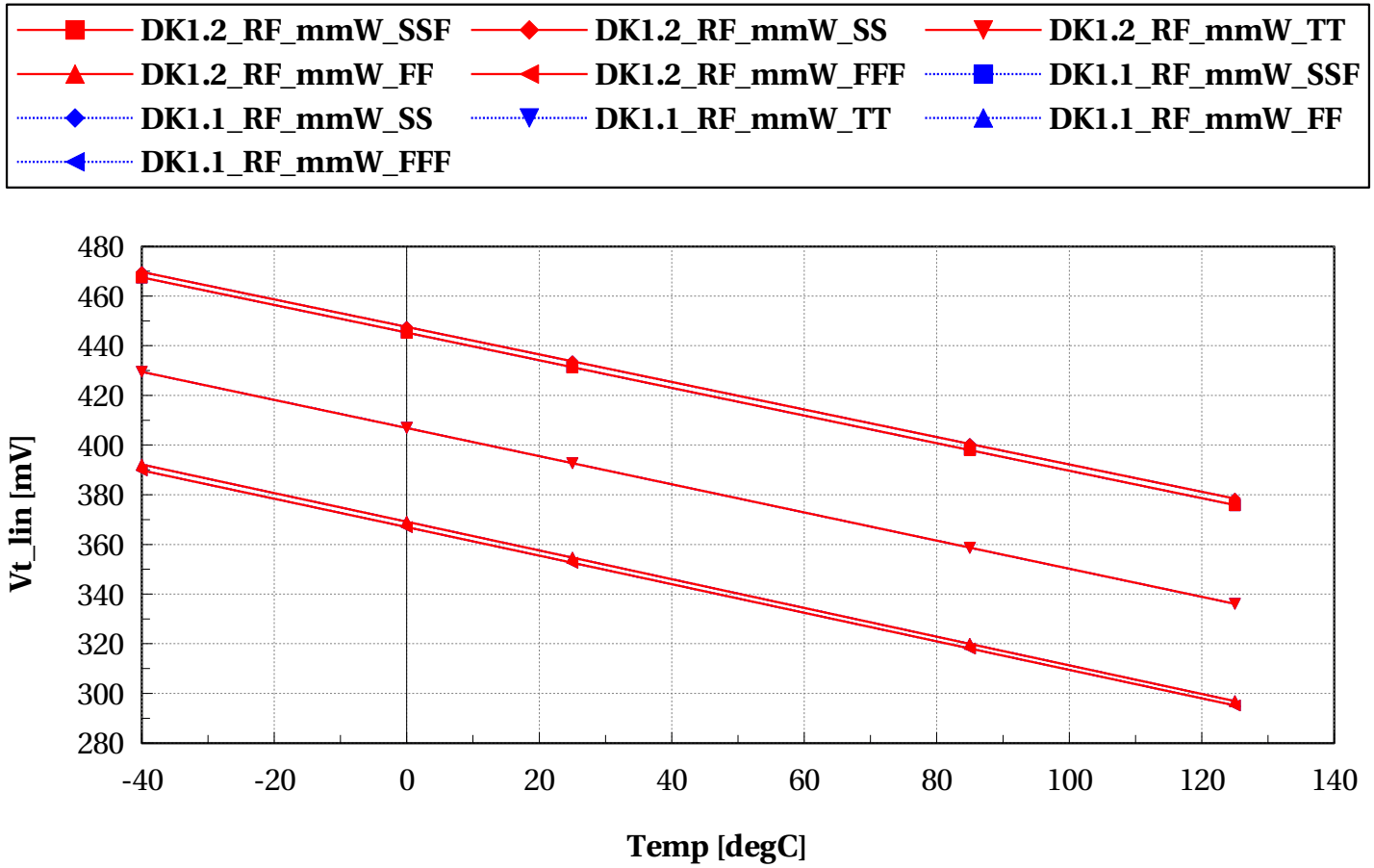
eglvtnfet_acc, Vt_lin [mV] vs Temp [degC]

Vbs==0 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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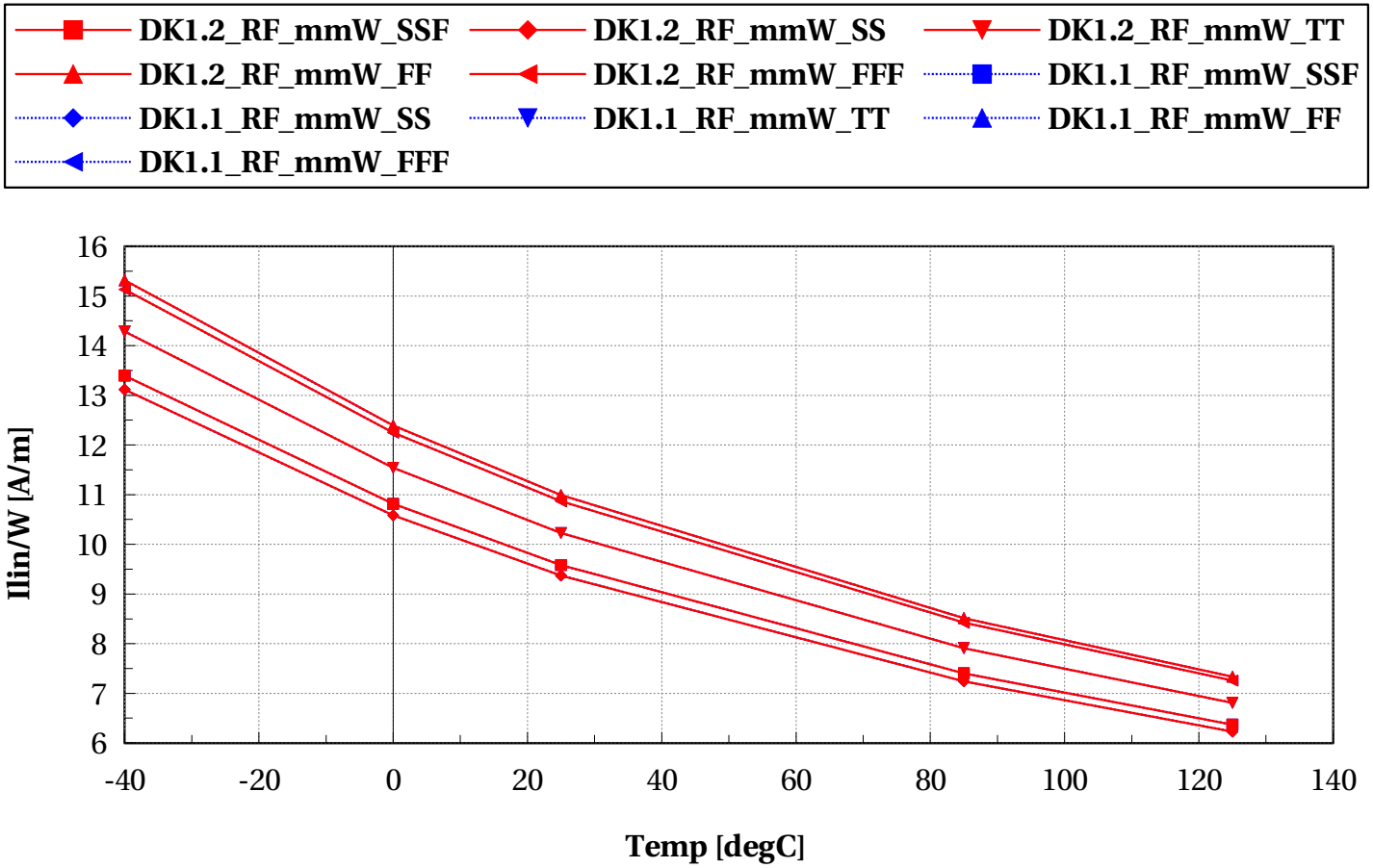
eglvtnfet_acc, Ilin/W [A/m] vs Temp [degC]

Vbs==0 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtnfet_acc, VtGmmax [mV] vs Temp [degC]

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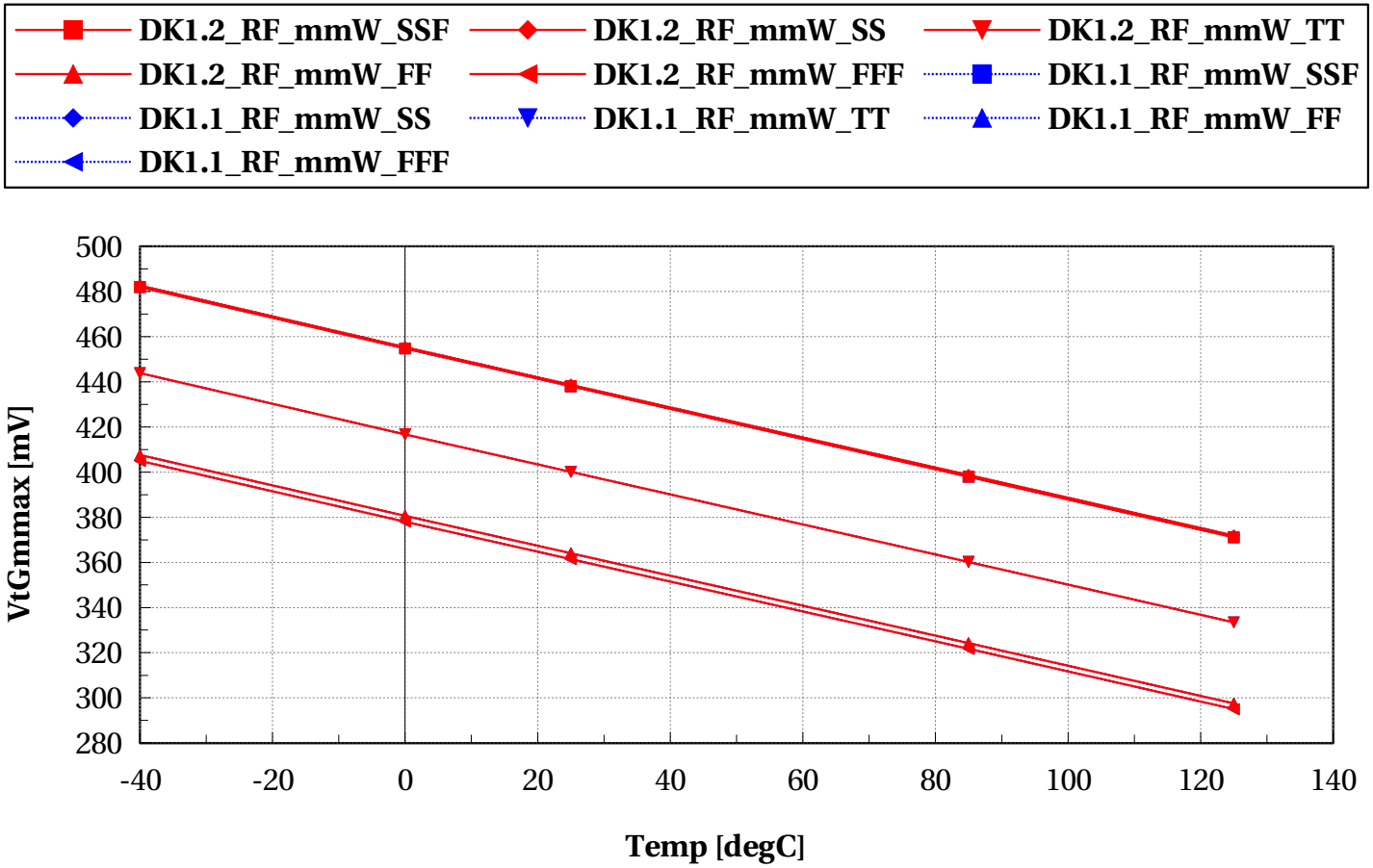

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eglvtnfet_acc, DIBL [mV] vs Temp [degC]

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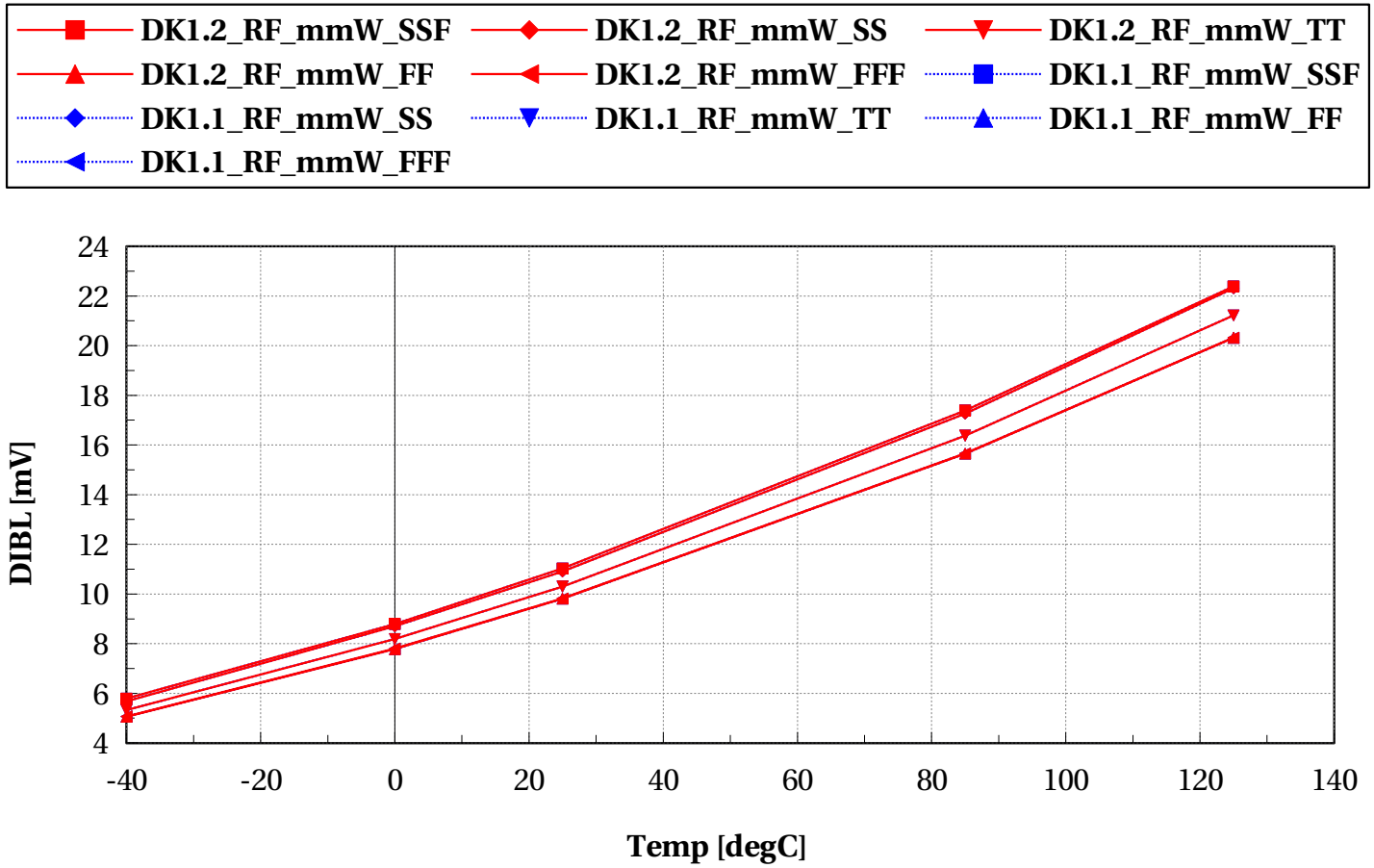

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eglvtnfet_acc, Vt_sat [mV] vs Temp [degC]

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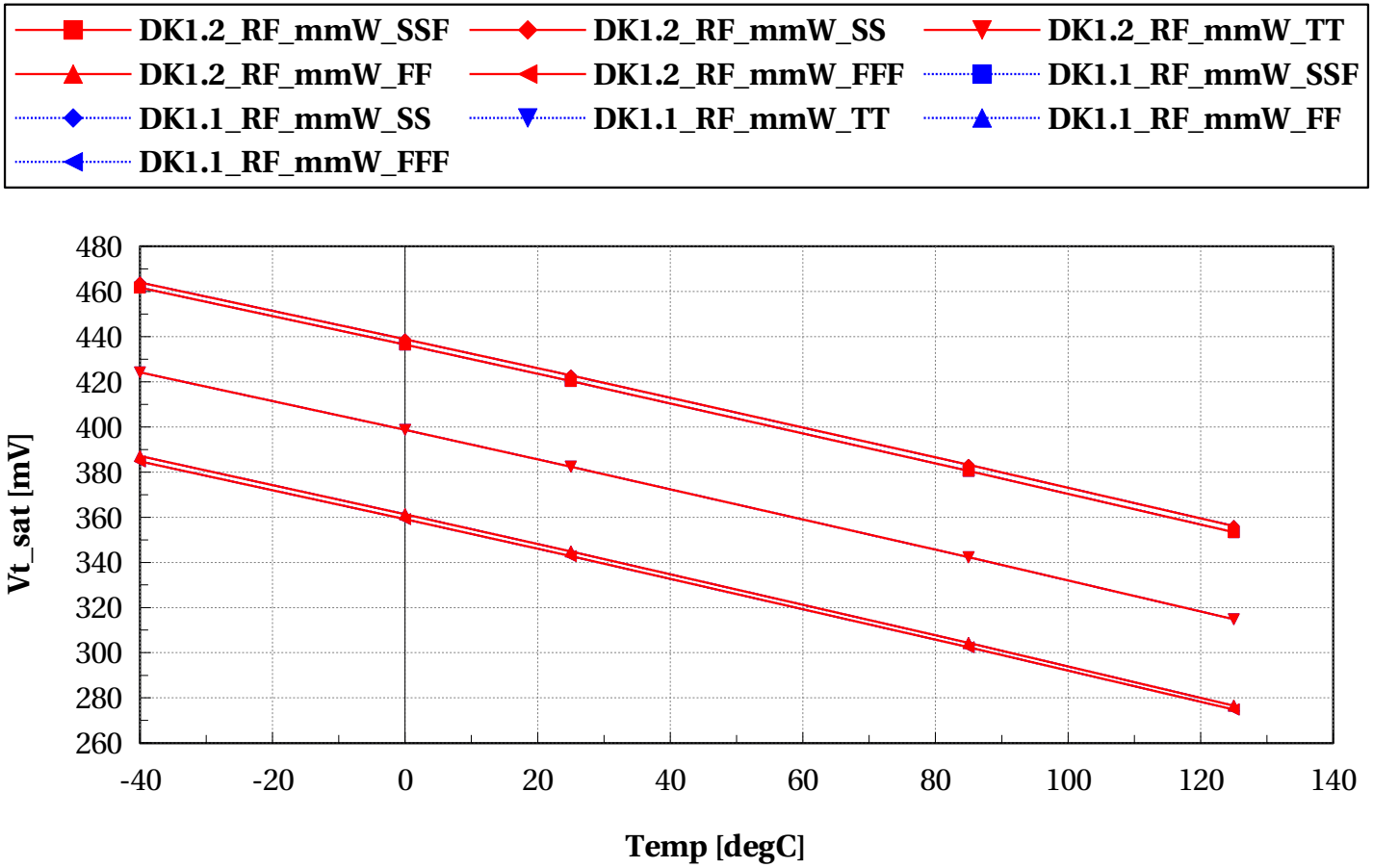

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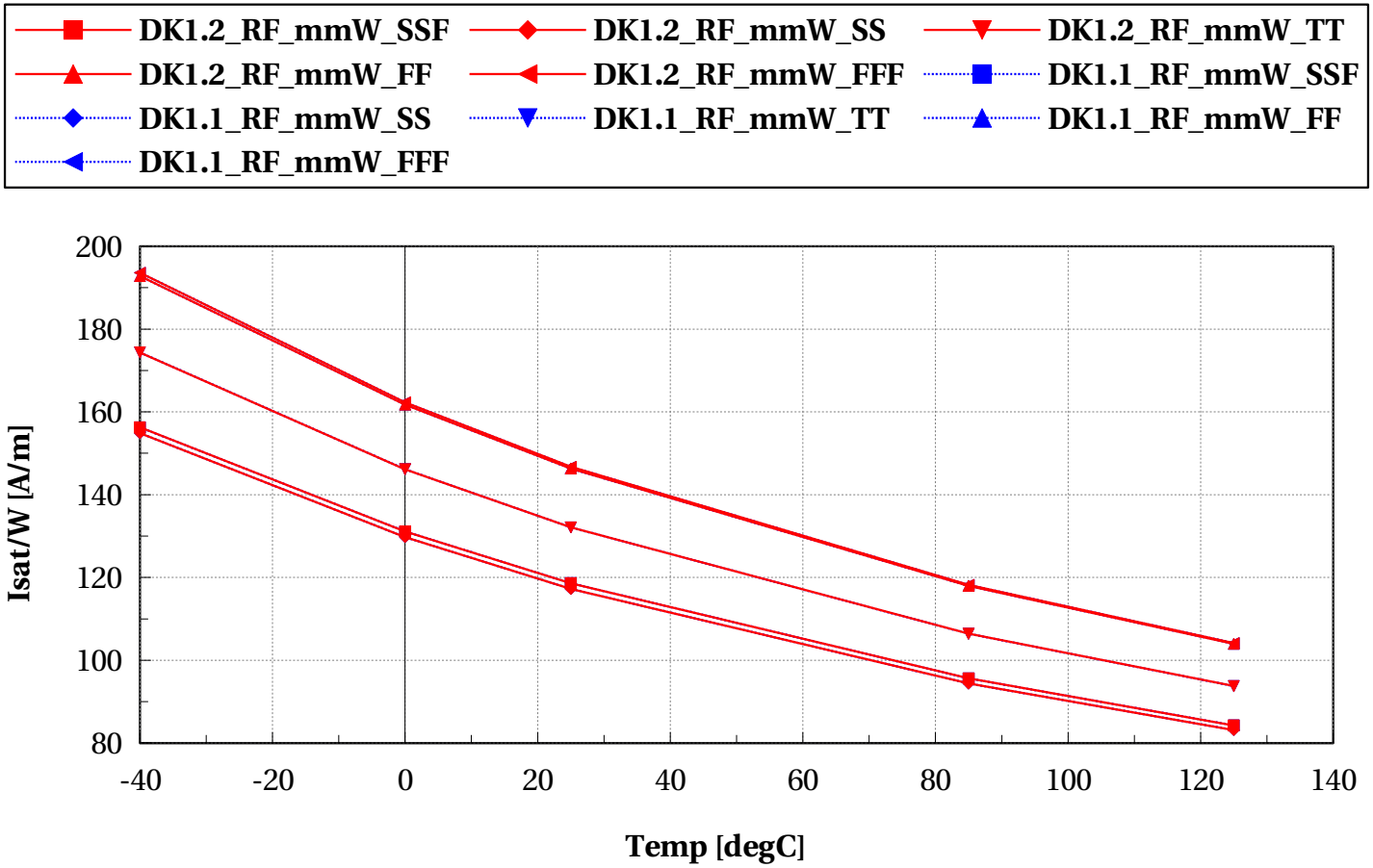
eglvtnfet_acc, Isat/W [A/m] vs Temp [degC]

Vbs==0 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtnfet_acc, Ioffsat [A] vs Temp [degC]

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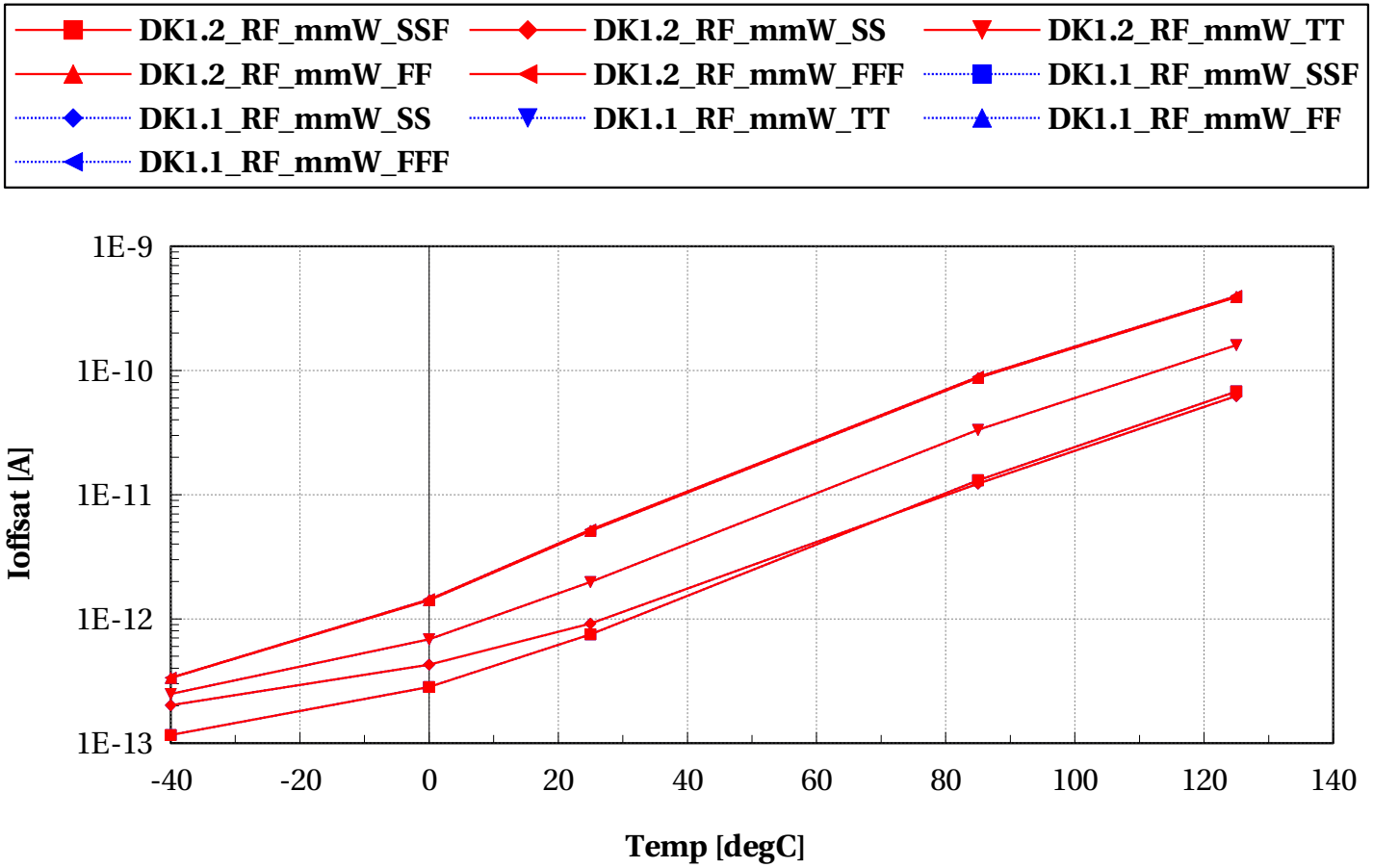

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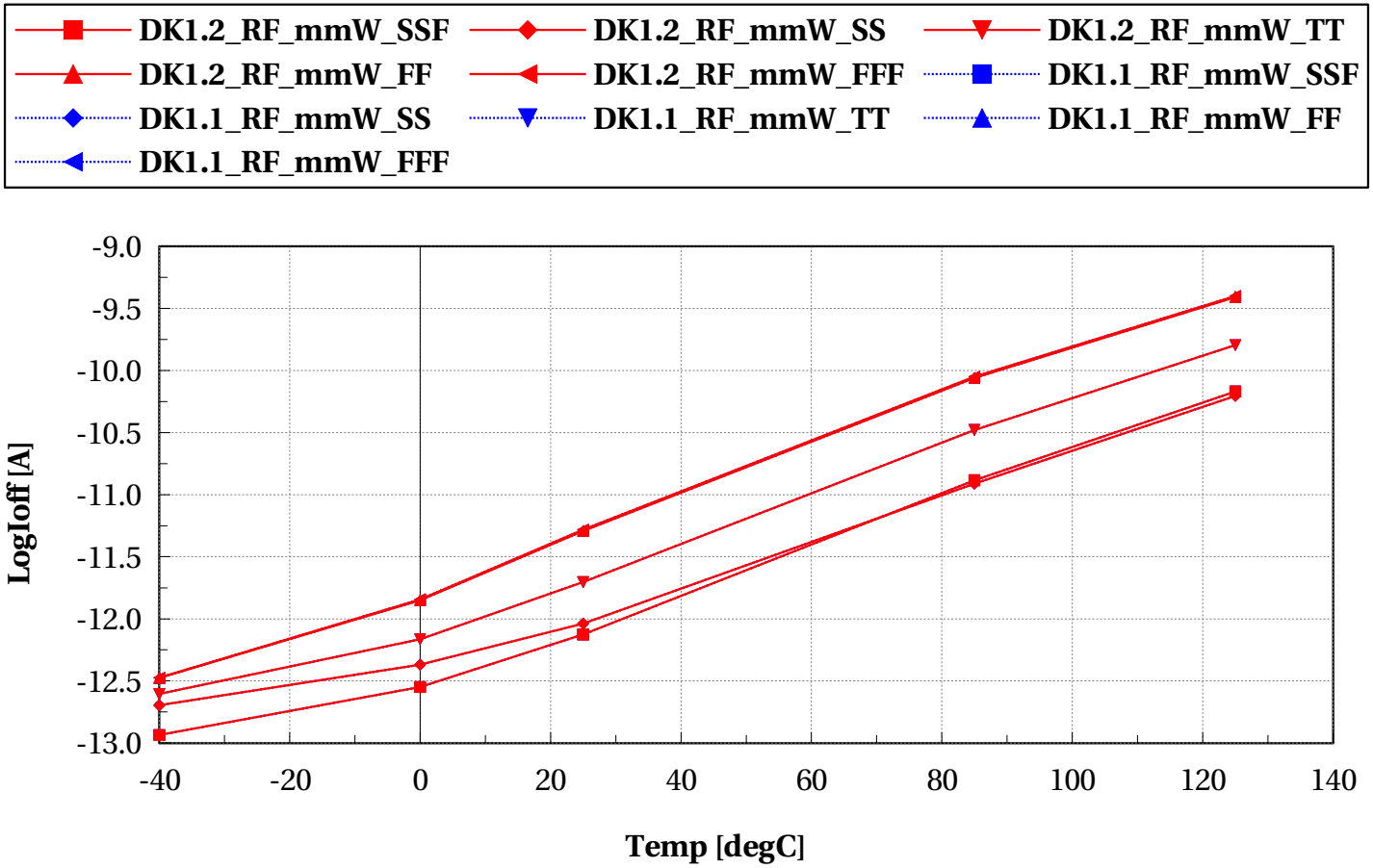
eglvtnfet_acc, LogIoff [A] vs Temp [degC]

Vbs==0 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtnfet_acc, Ig_on/(L*W) [A/m2] vs Temp [degC]

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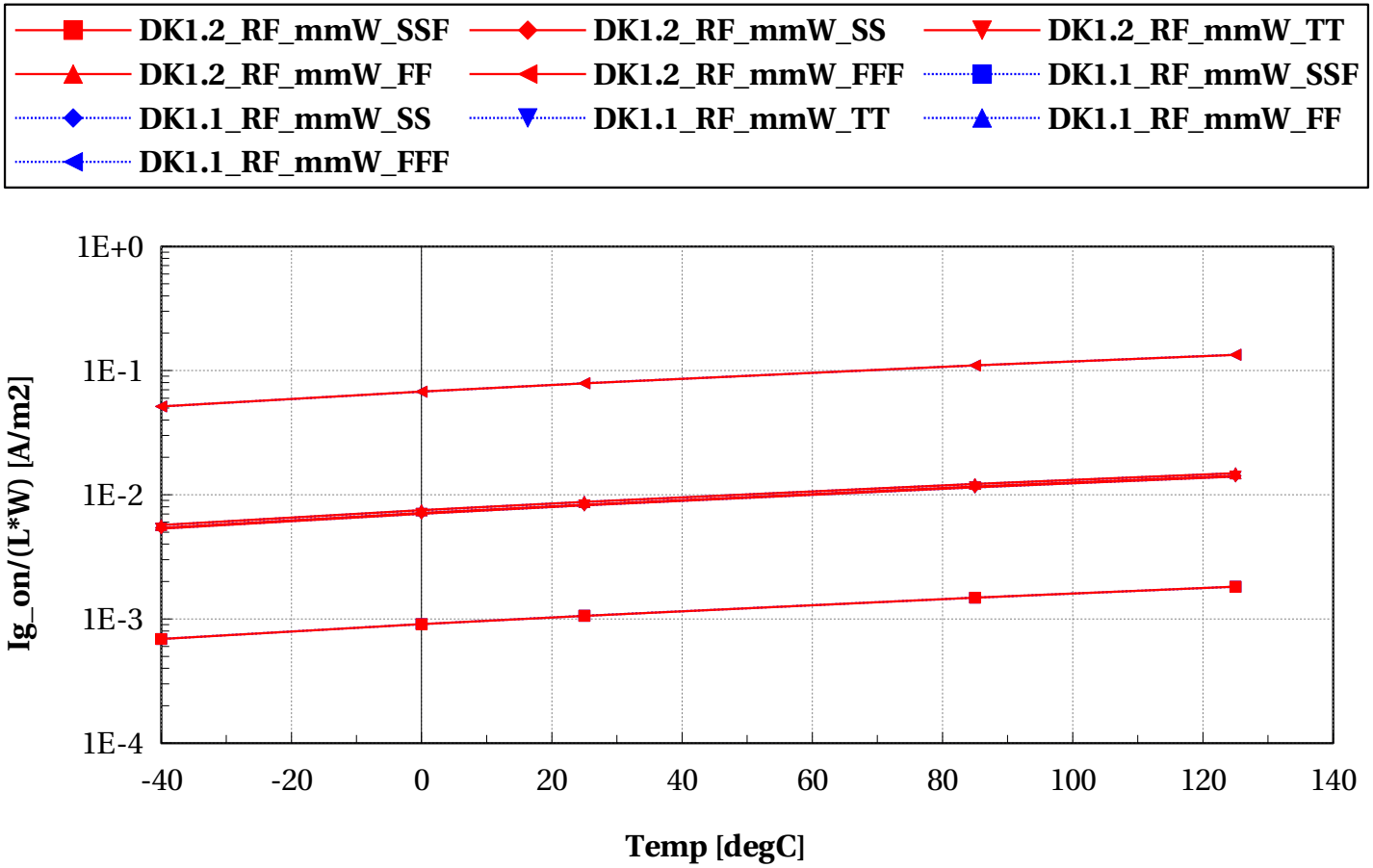

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eglvtnfet_acc, Ig_off/(W) [A/m] vs Temp [degC]

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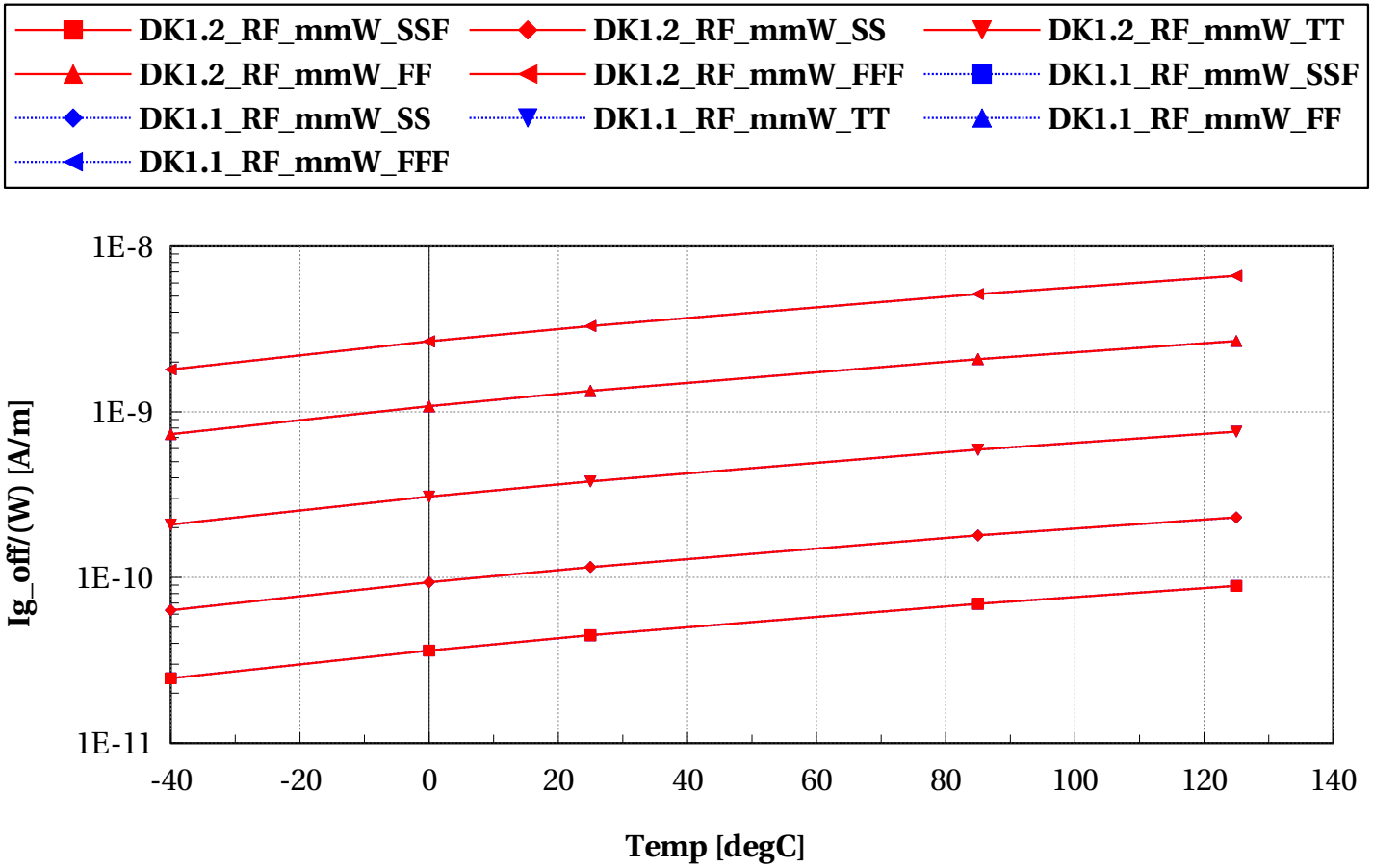

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eglvtnfet_acc, Gd_c/W [s/m] vs Temp [degC]

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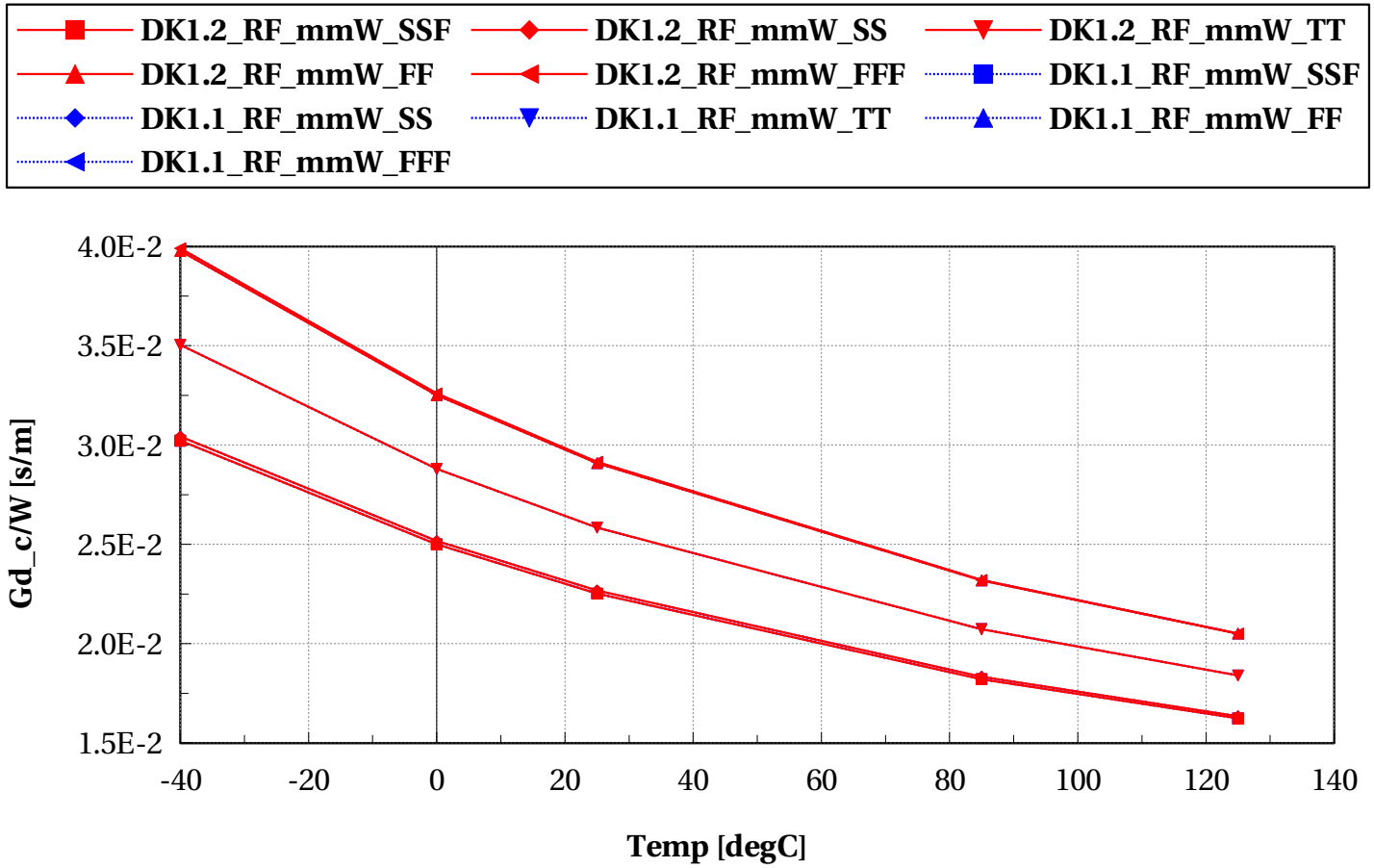

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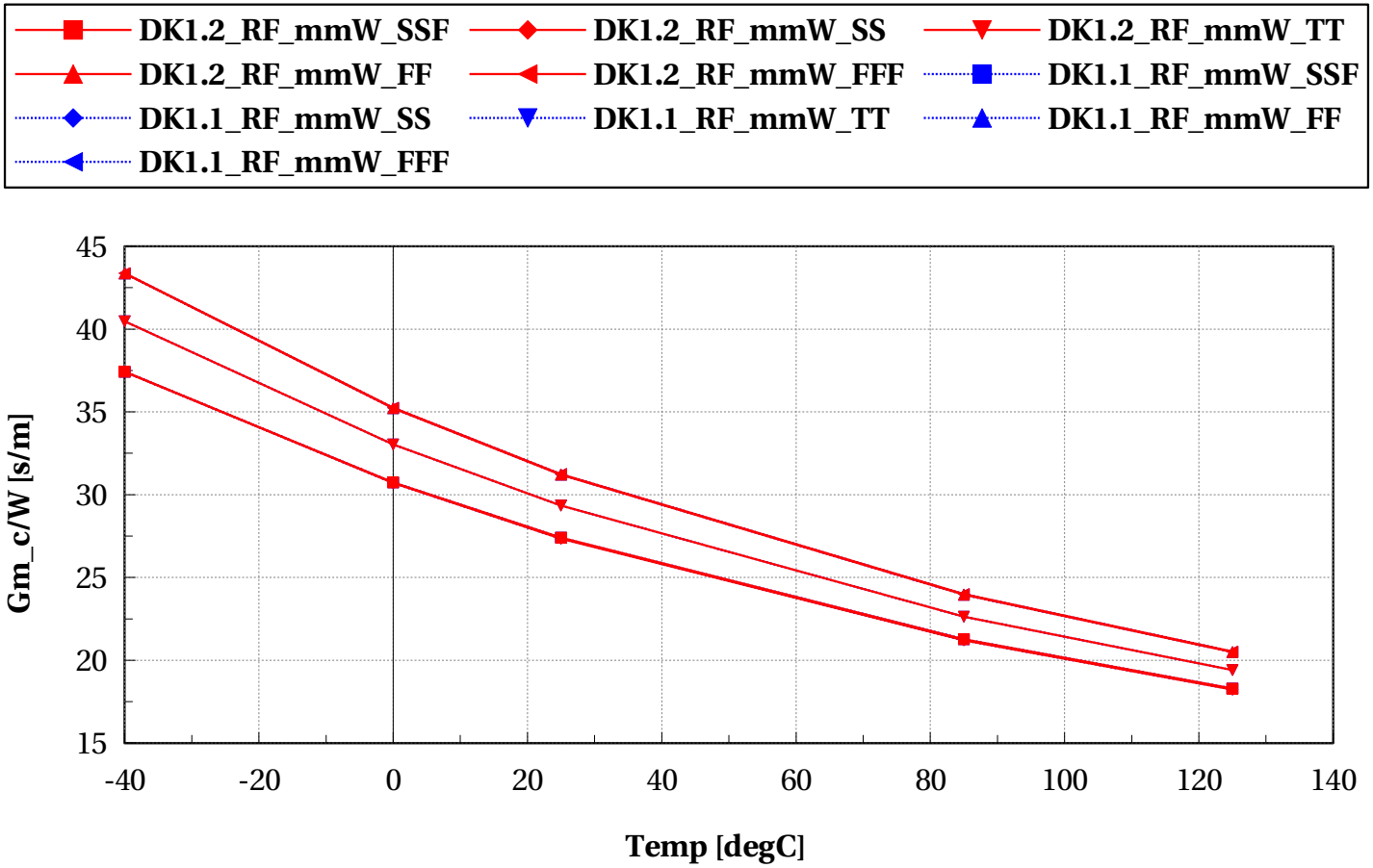
eglvtnfet_acc, Gm_c/W [s/m] vs Temp [degC]

Vbs==0 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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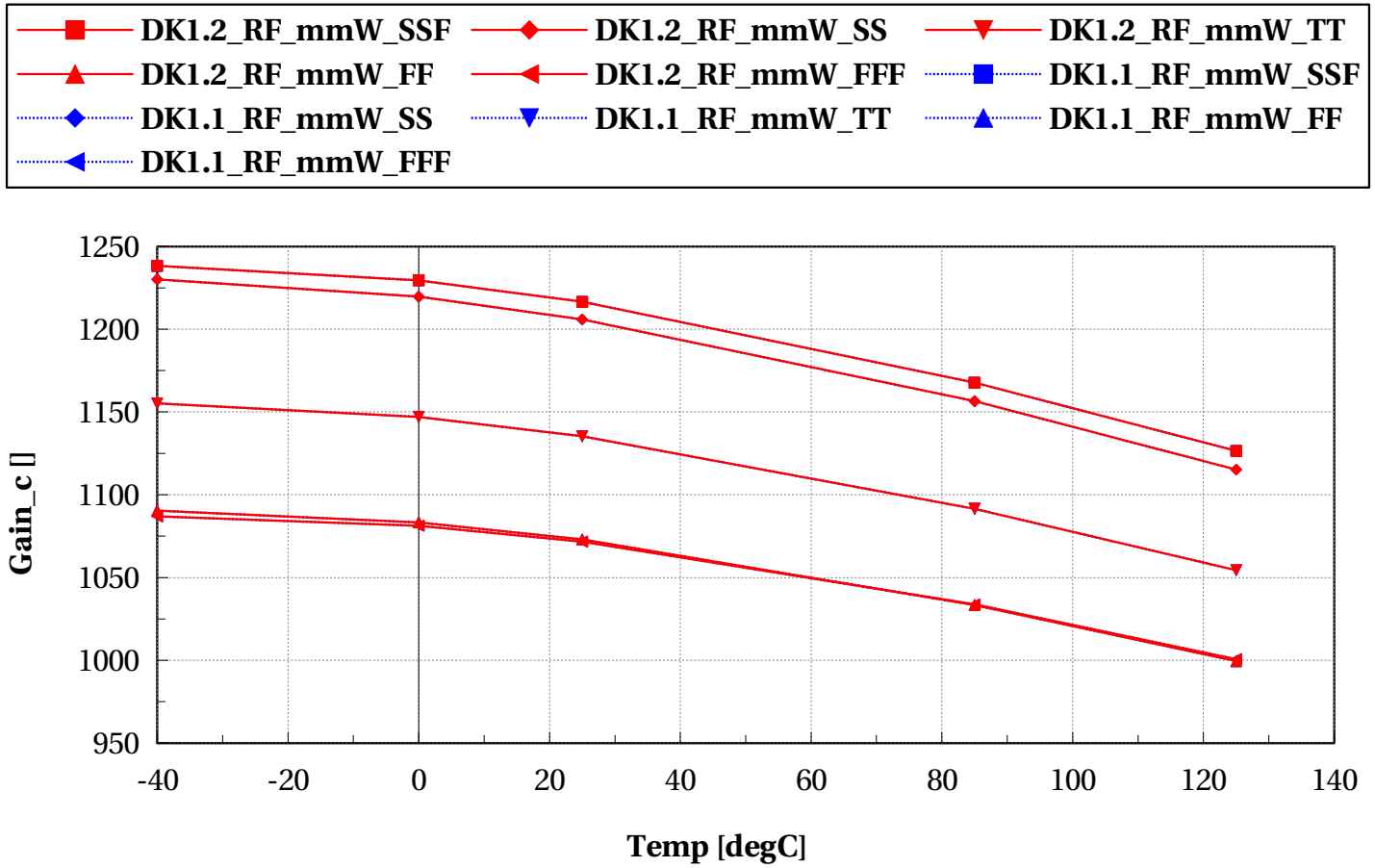
eglvtnfet_acc, Gain_c [] vs Temp [degC]

Vbs==0 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtnfet_acc, Cgd_0v/W [F/m] vs Temp [degC]

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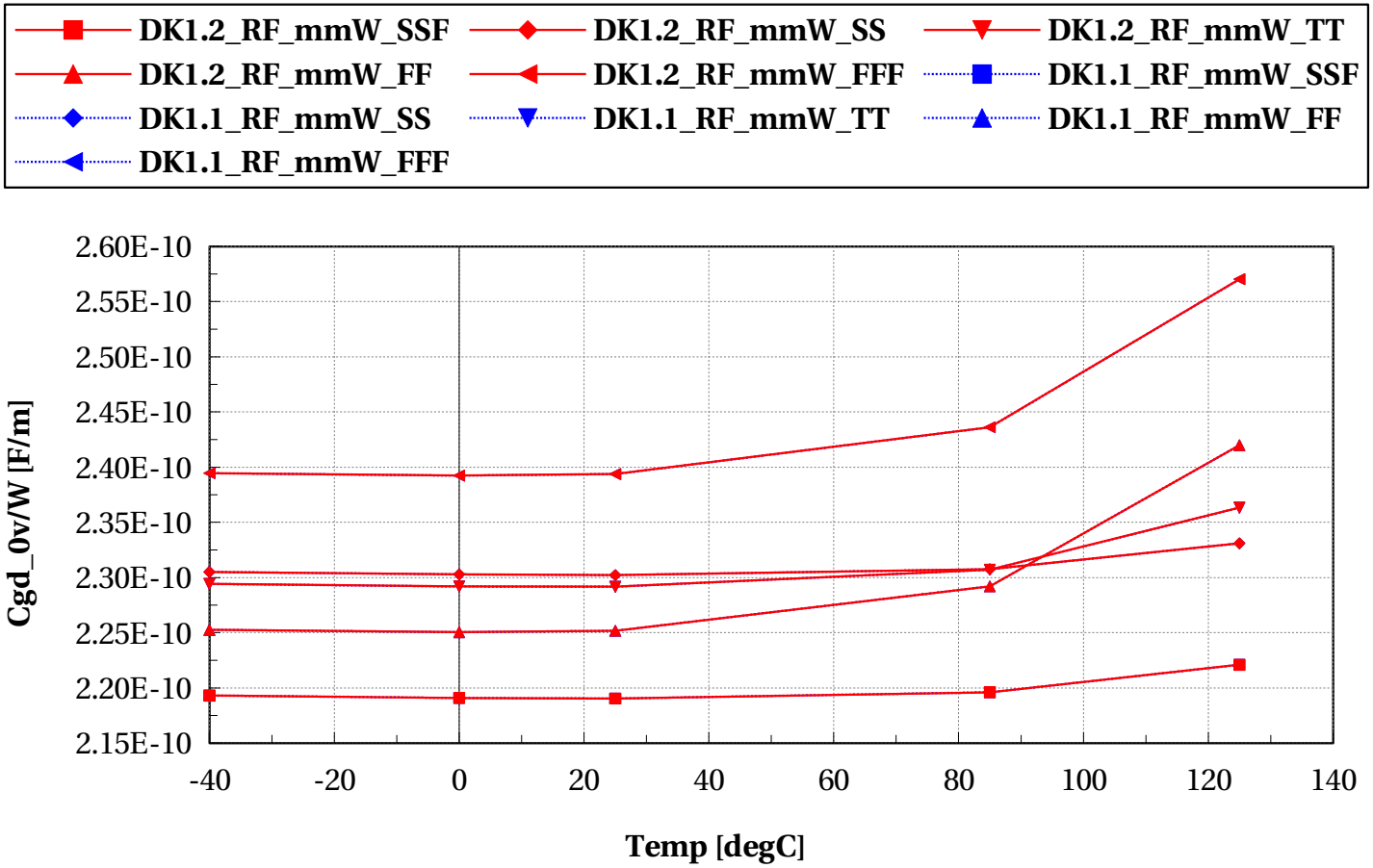

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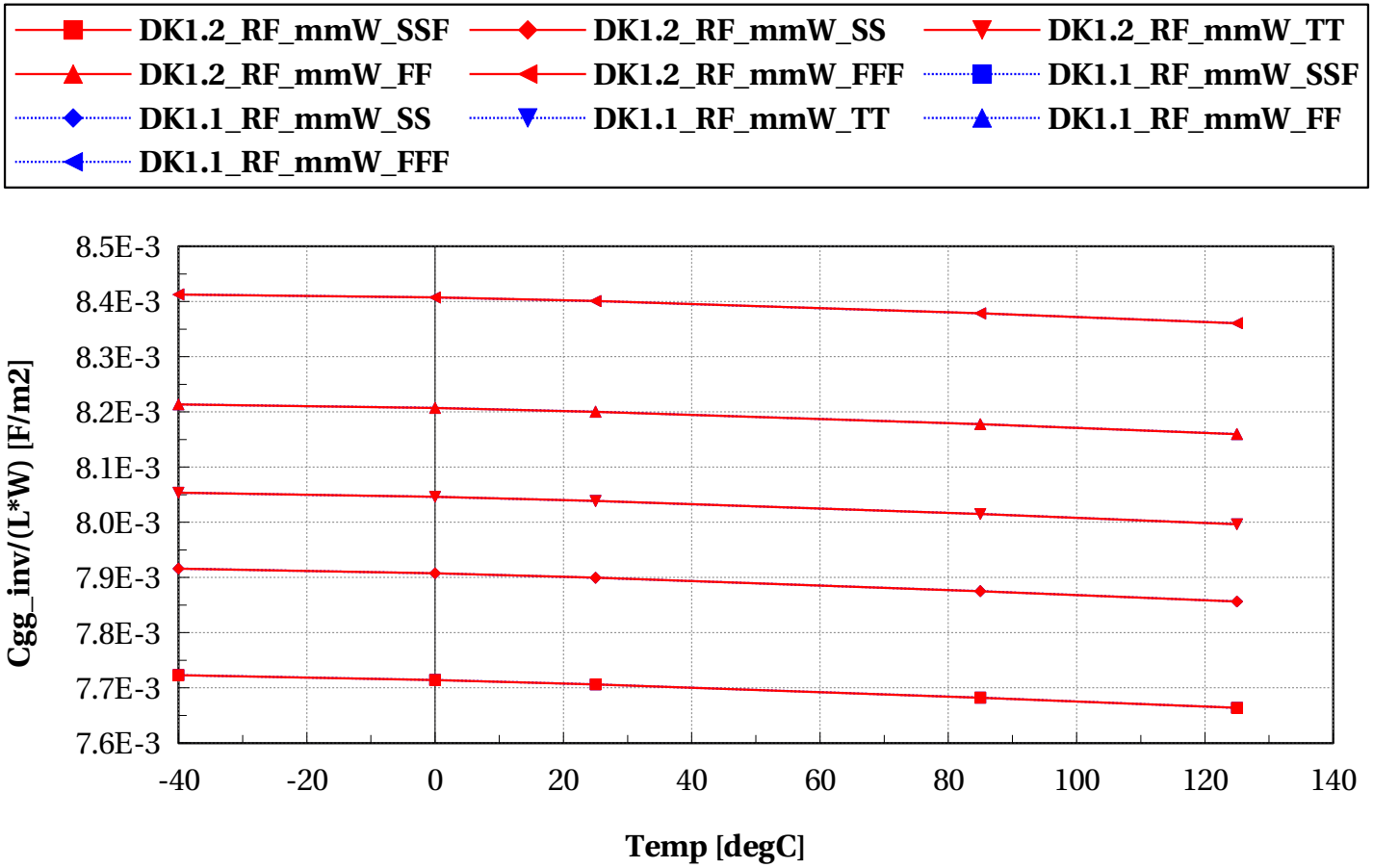
eglvtnfet_acc, Cgg_inv/(L*W) [F/m2] vs Temp [degC]

Vbs==0 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtpfet_acc
Electrical characteristics scaling

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Scaling versus Length (W=2e-6,Temp=25,Vbs=1.8V)

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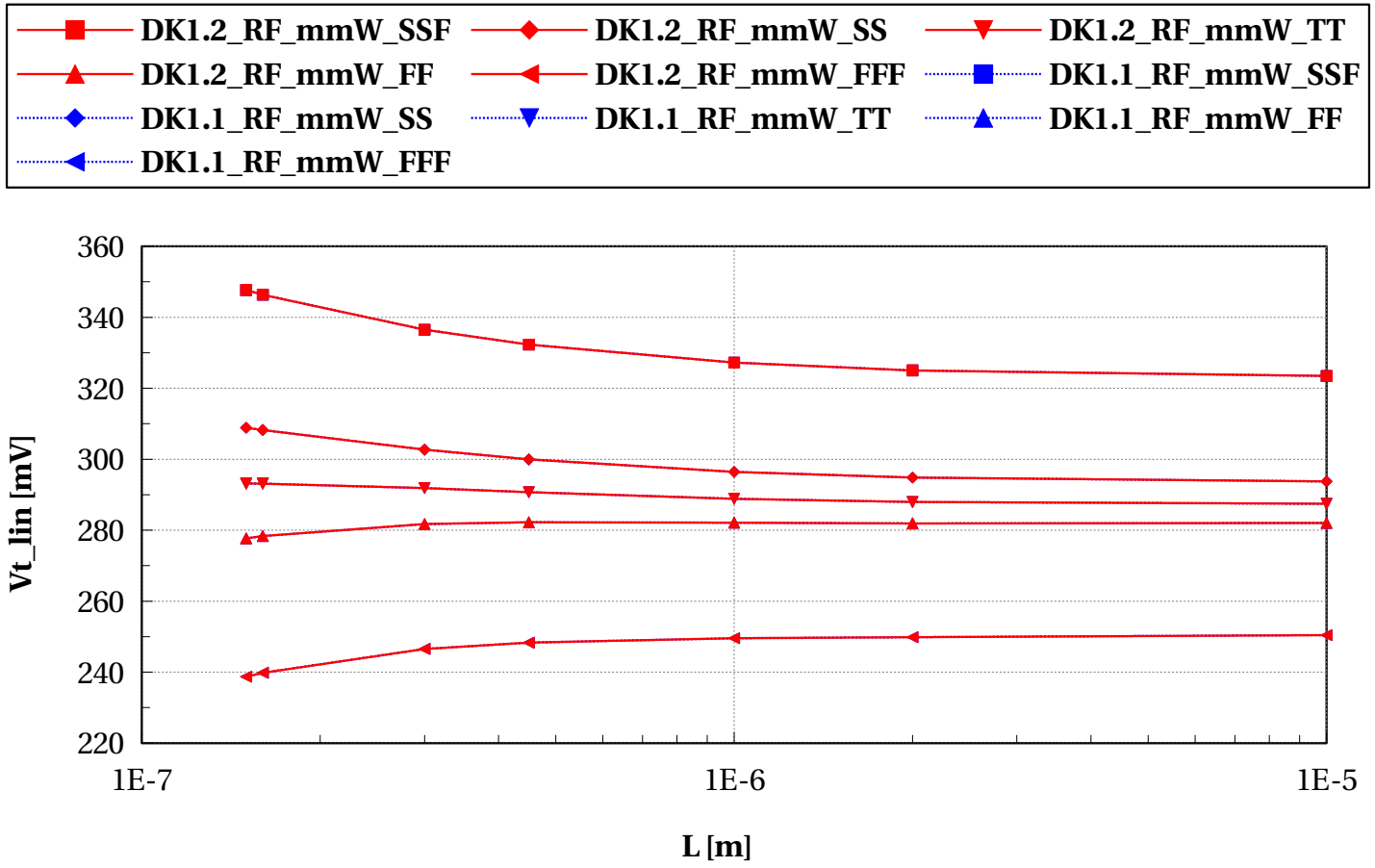
life.augmented

eglvtpfet_acc, Vt_lin [mV] vs L [m]

Temp==25 and Vbs==1.8 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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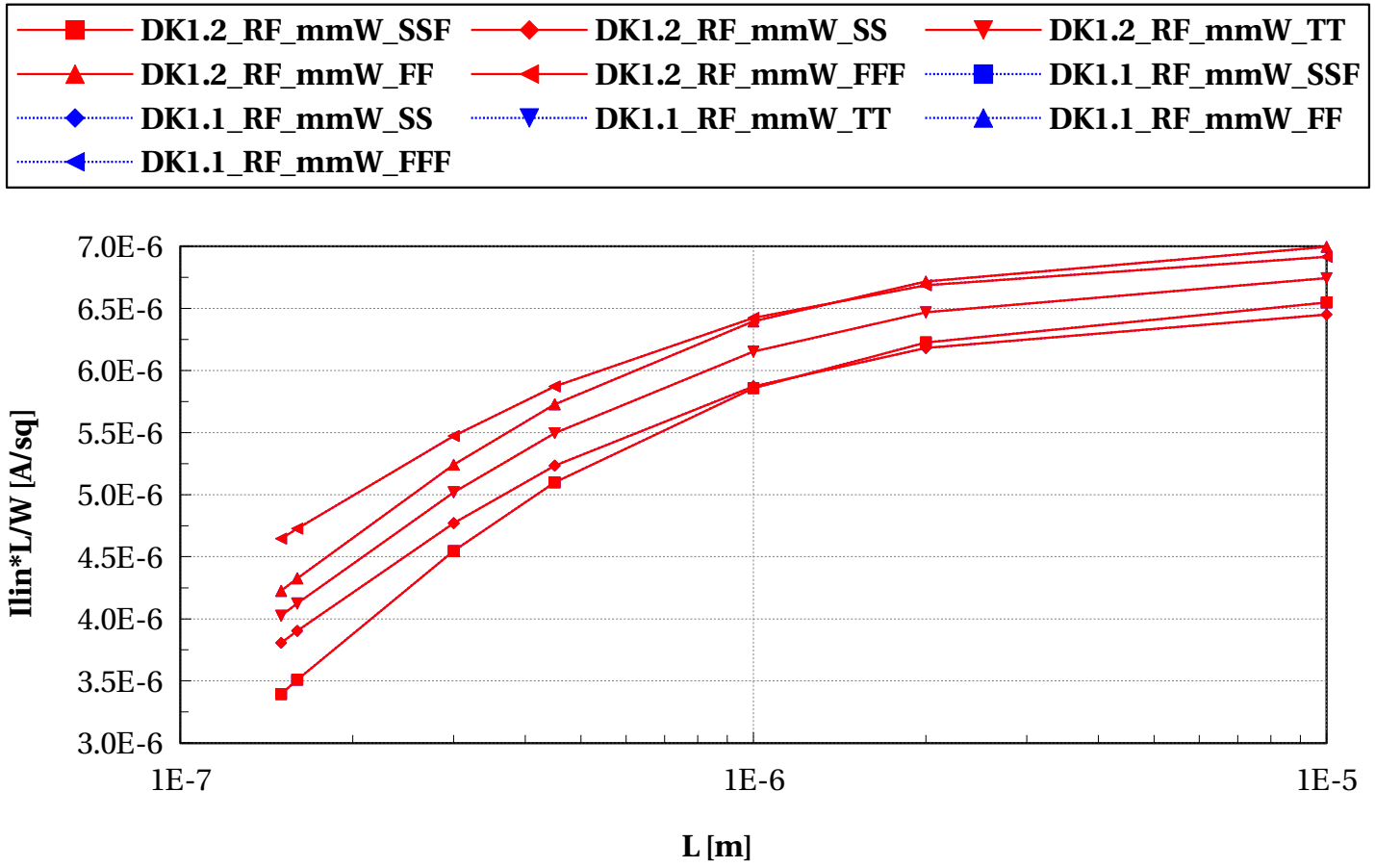
eglvtpfet_acc, Ilin*L/W [A/sq] vs L [m]

Temp==25 and Vbs==1.8 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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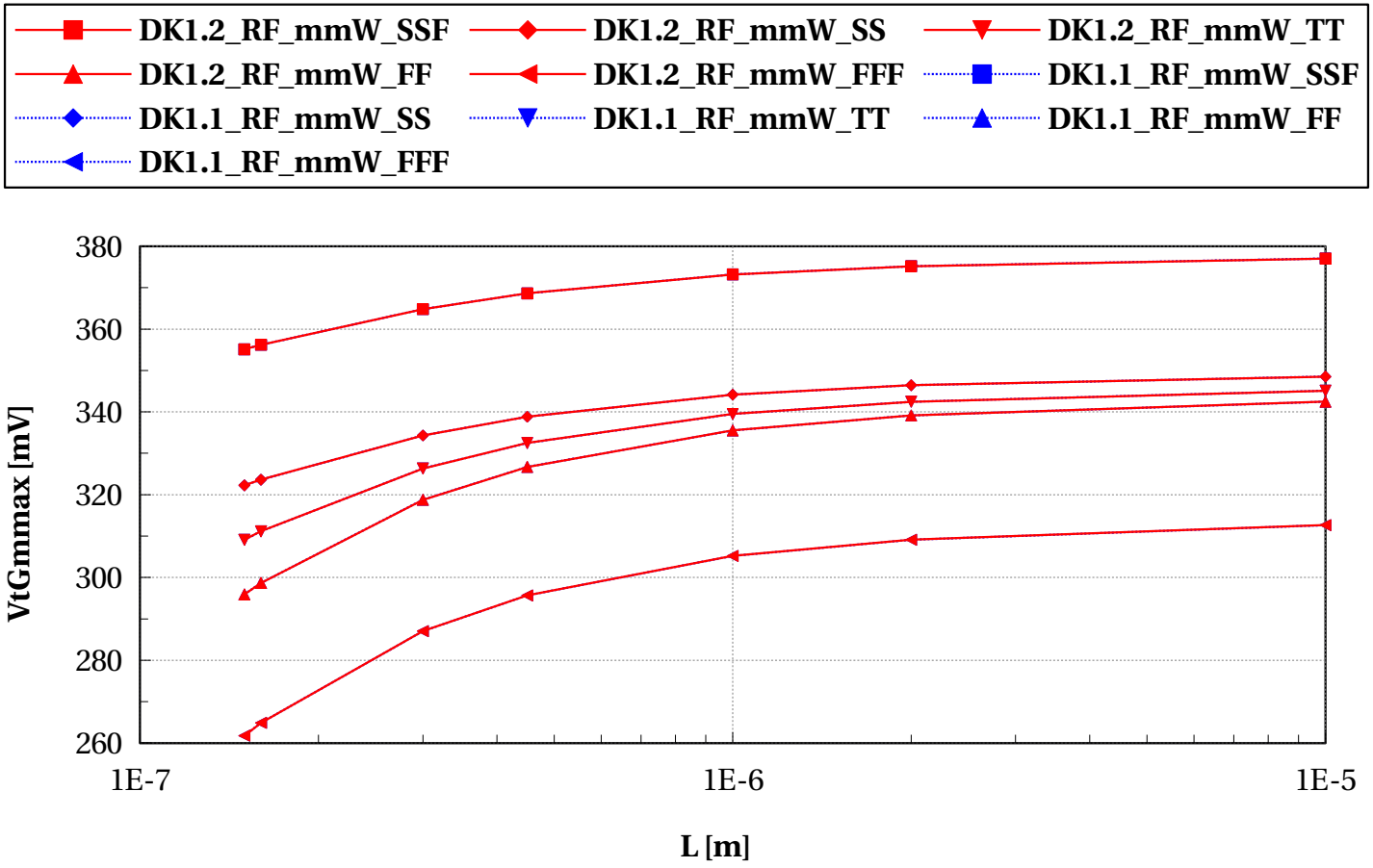
eglvtpfet_acc, VtGmmax [mV] vs L [m]

Temp==25 and Vbs==1.8 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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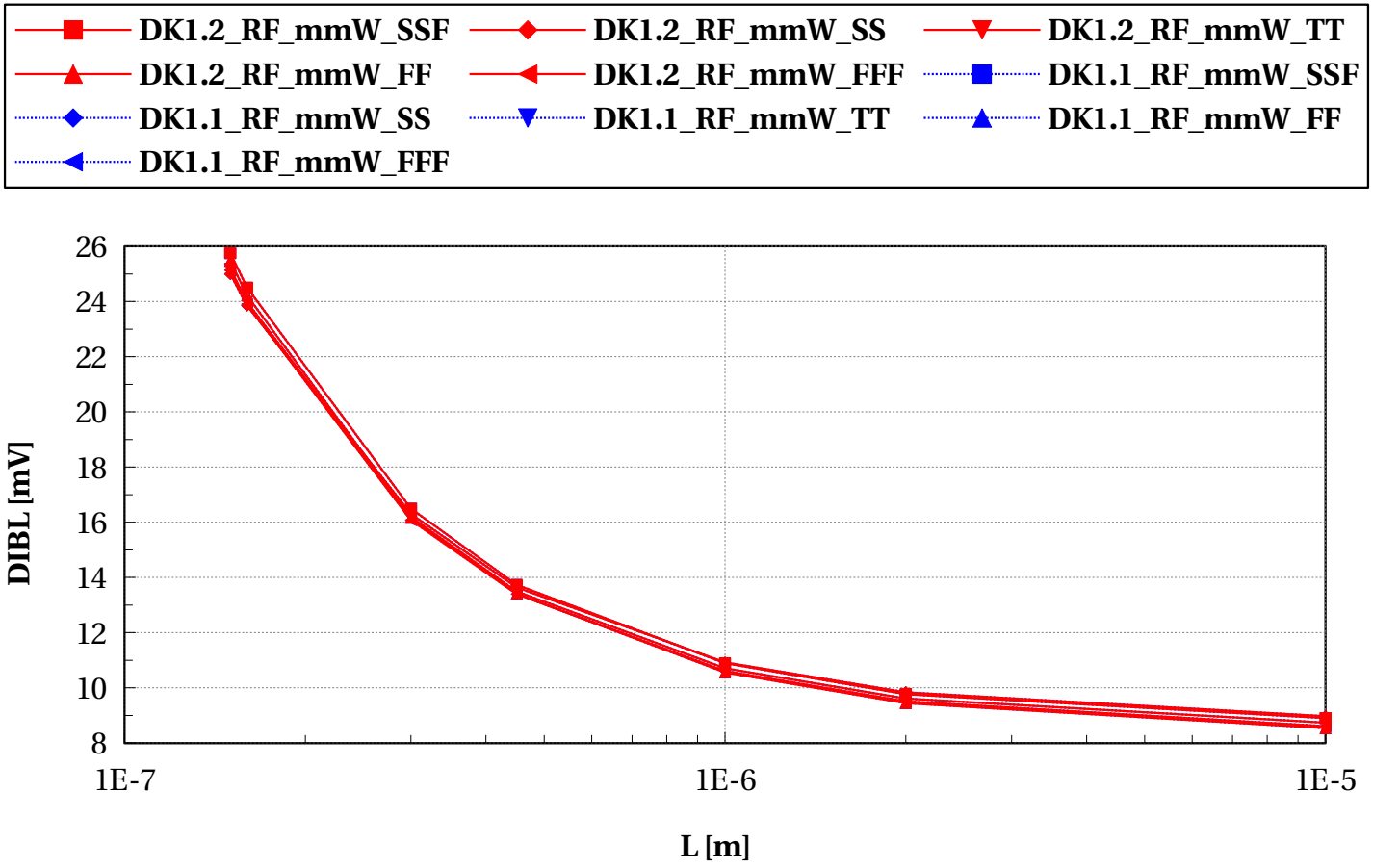
eglvtpfet_acc, DIBL [mV] vs L [m]

Temp==25 and Vbs==1.8 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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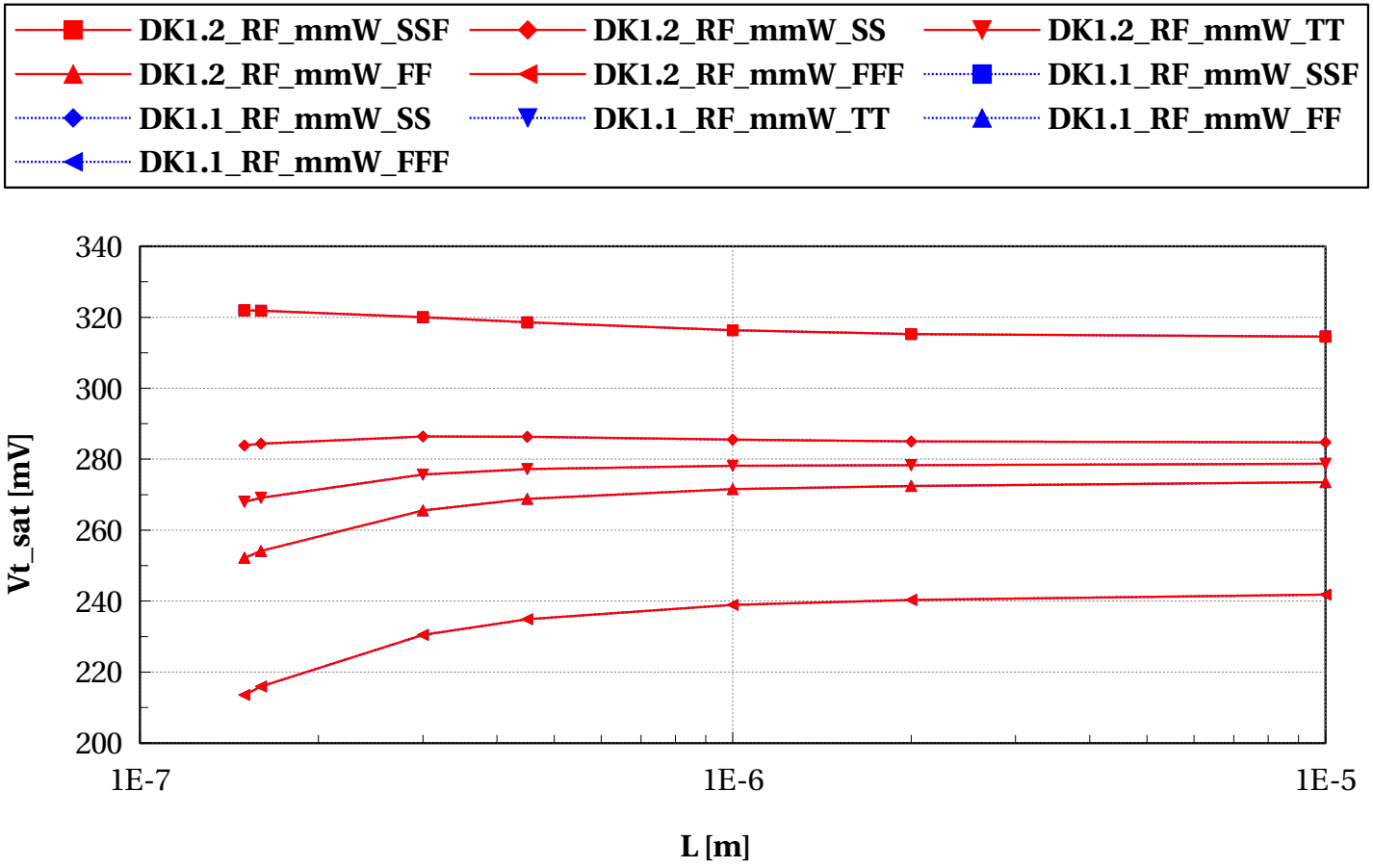
eglvtpfet_acc, Vt_sat [mV] vs L [m]

Temp==25 and Vbs==1.8 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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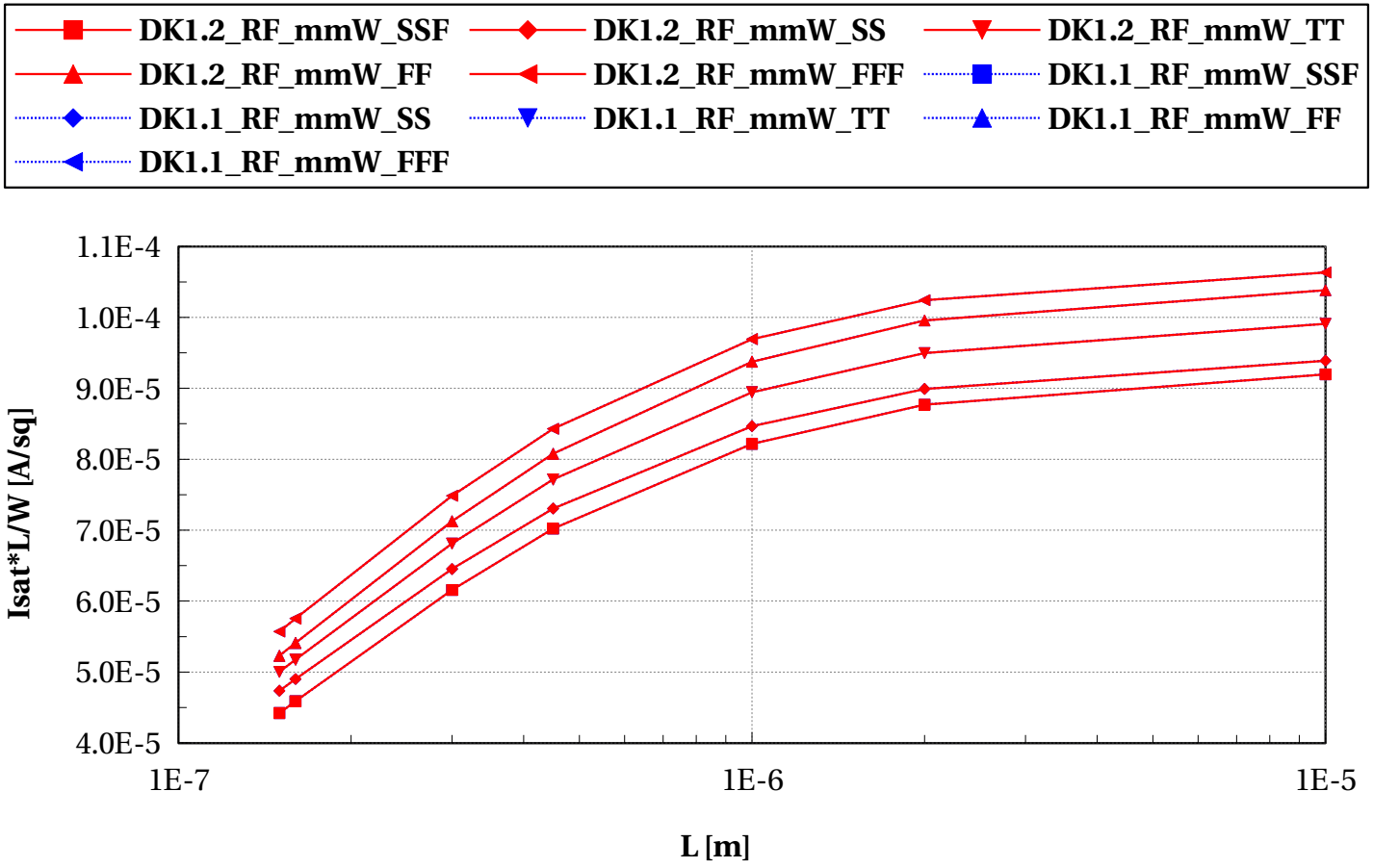
eglvtpfet_acc, Isat*L/W [A/sq] vs L [m]

Temp==25 and Vbs==1.8 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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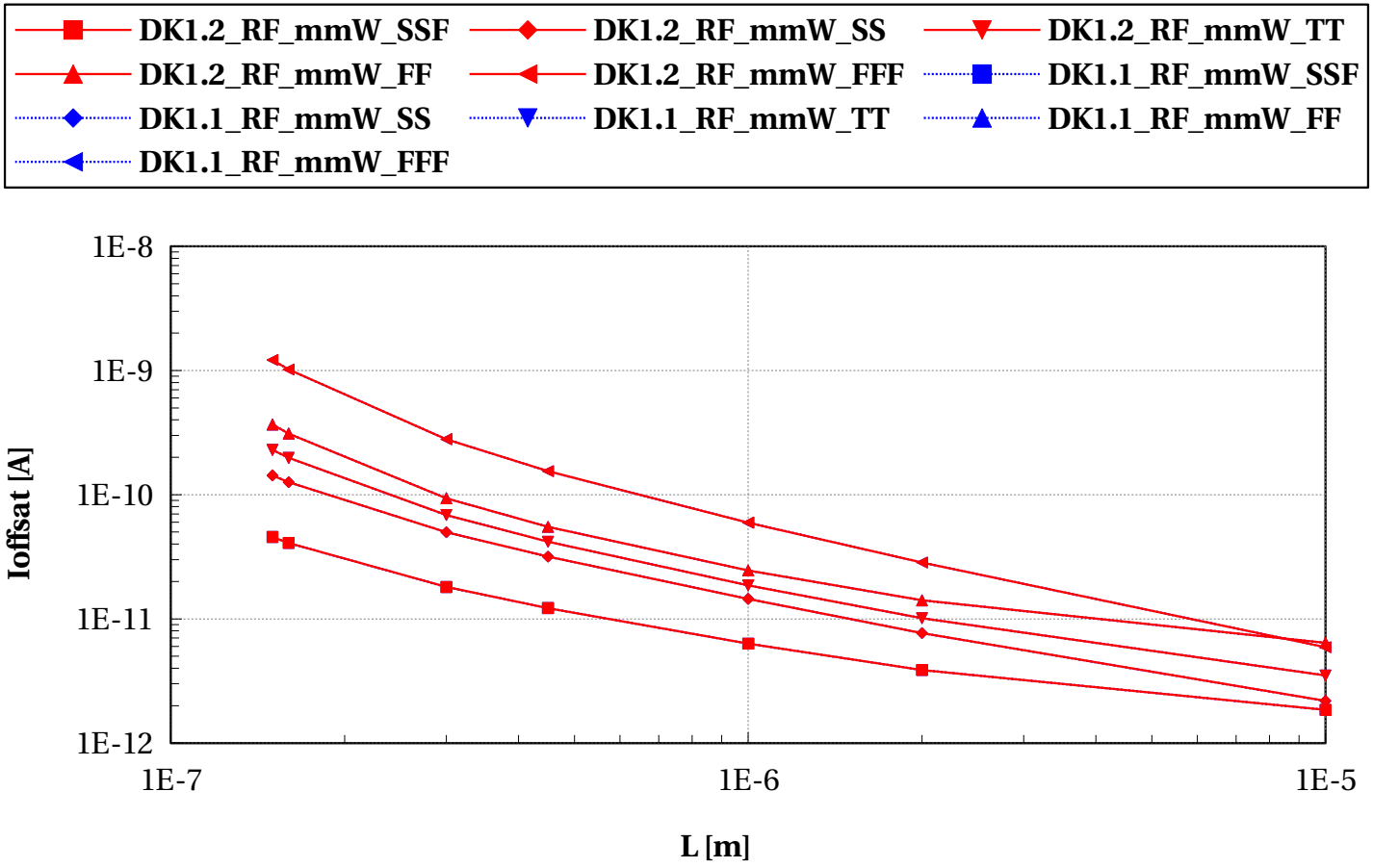
eglvtpfet_acc, Ioffsat [A] vs L [m]

Temp==25 and Vbs==1.8 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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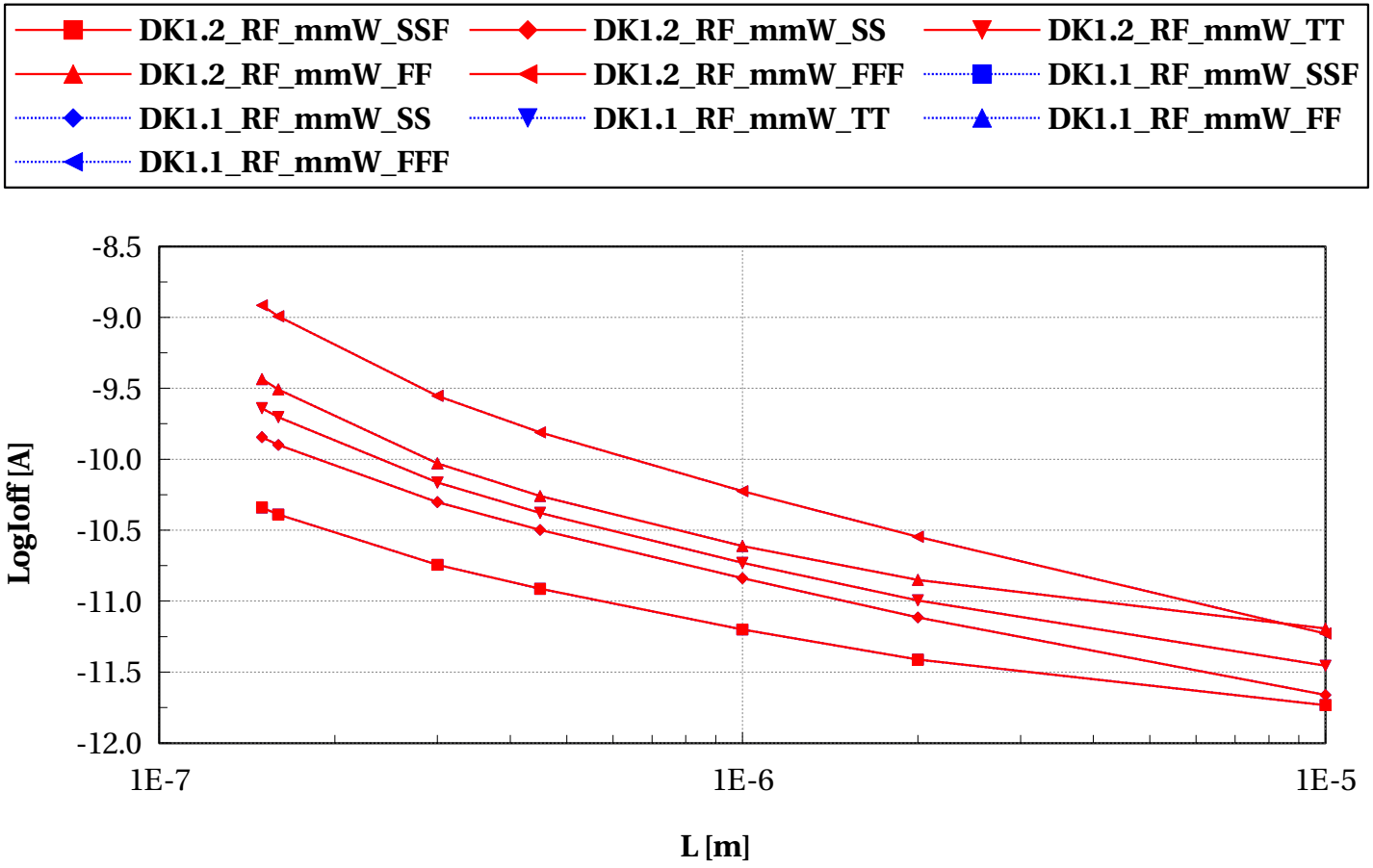
eglvtpfet_acc, LogIoff [A] vs L [m]

Temp==25 and Vbs==1.8 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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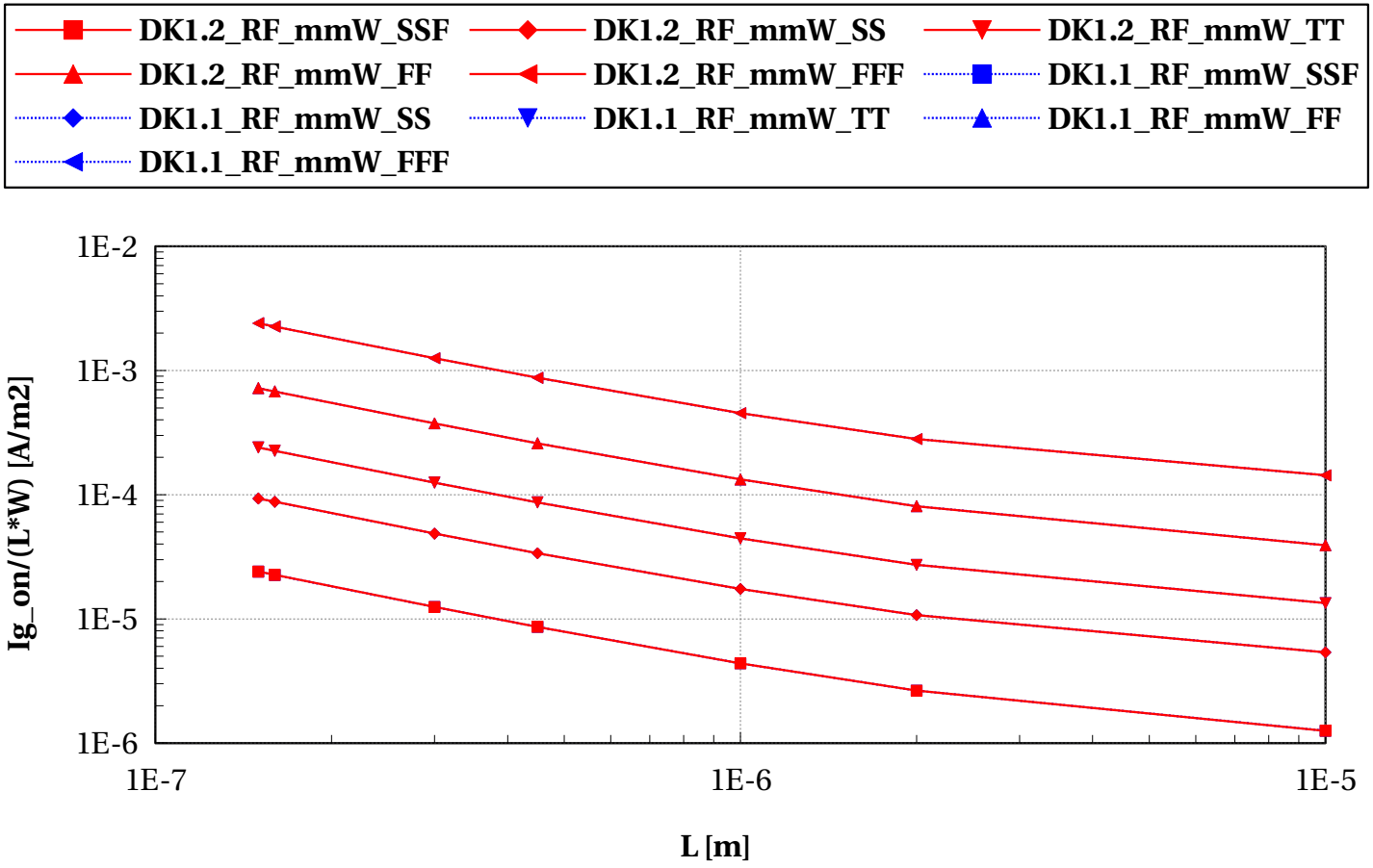
eglvtpfet_acc, Ig_on/(L*W) [A/m2] vs L [m]

Temp==25 and Vbs==1.8 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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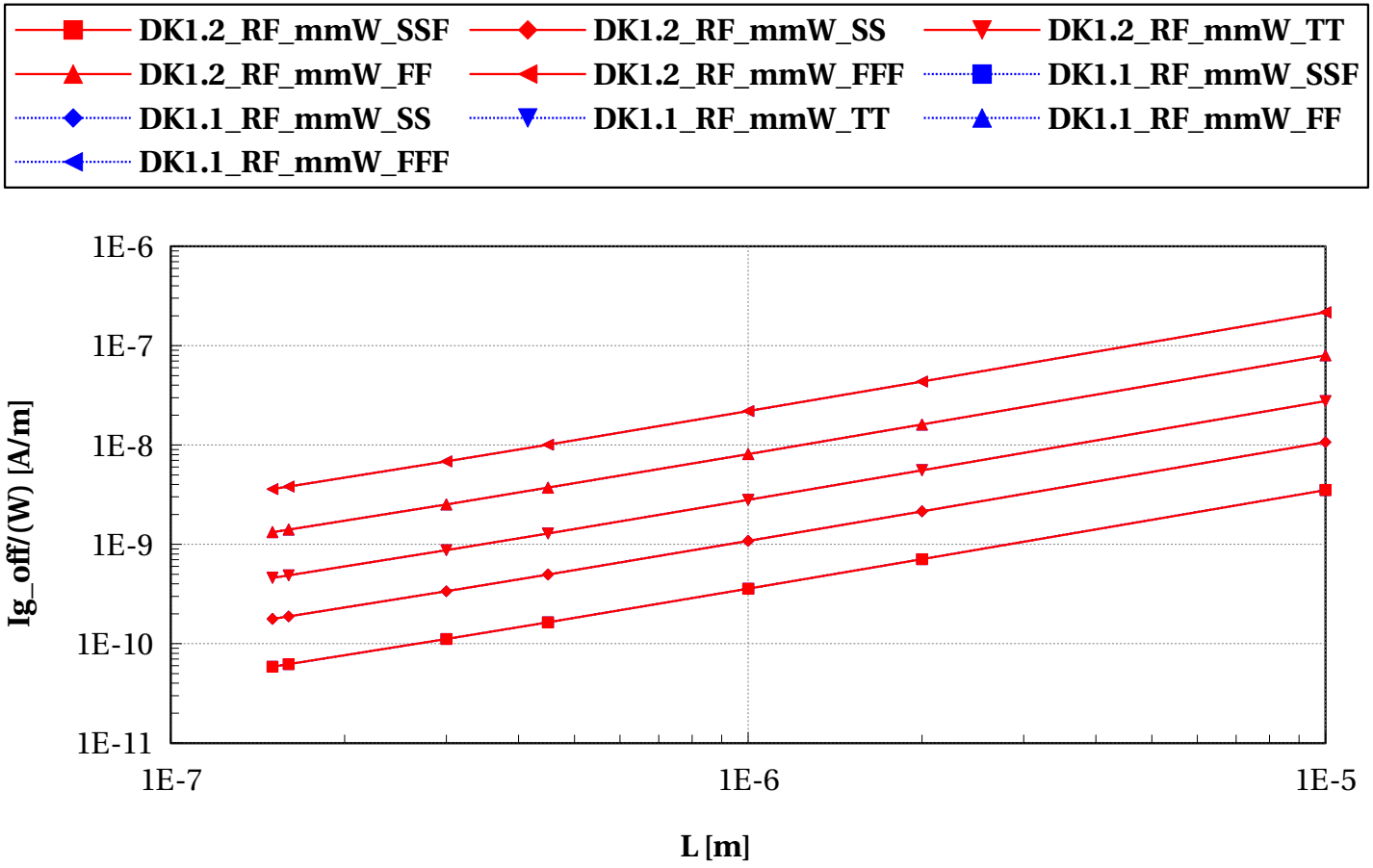
eglvtpfet_acc, Ig_off/(W) [A/m] vs L [m]

Temp==25 and Vbs==1.8 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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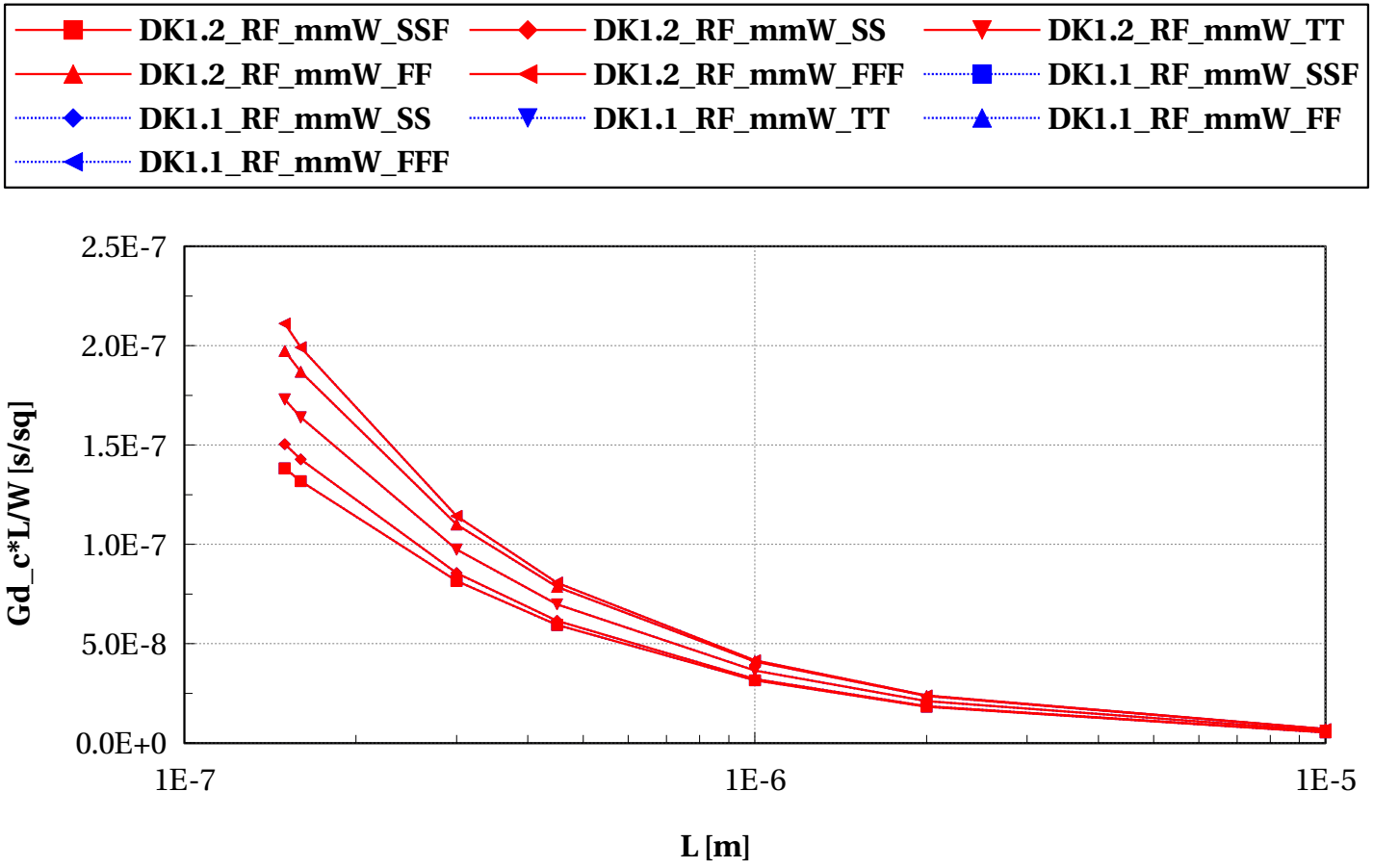
eglvtpfet_acc, Gd_c*L/W [s/sq] vs L [m]

Temp==25 and Vbs==1.8 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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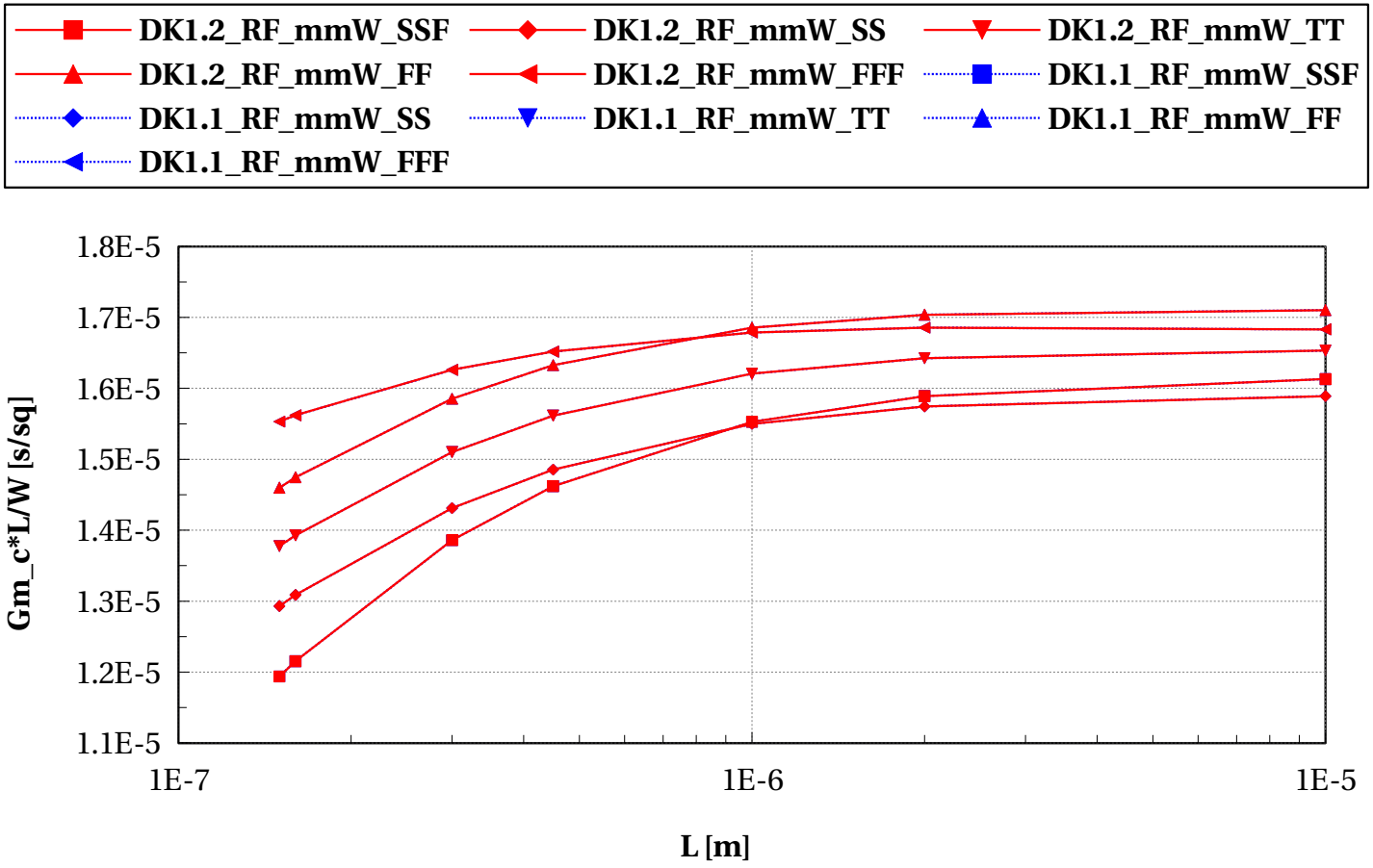
eglvtpfet_acc, Gm_c*L/W [s/sq] vs L [m]

Temp==25 and Vbs==1.8 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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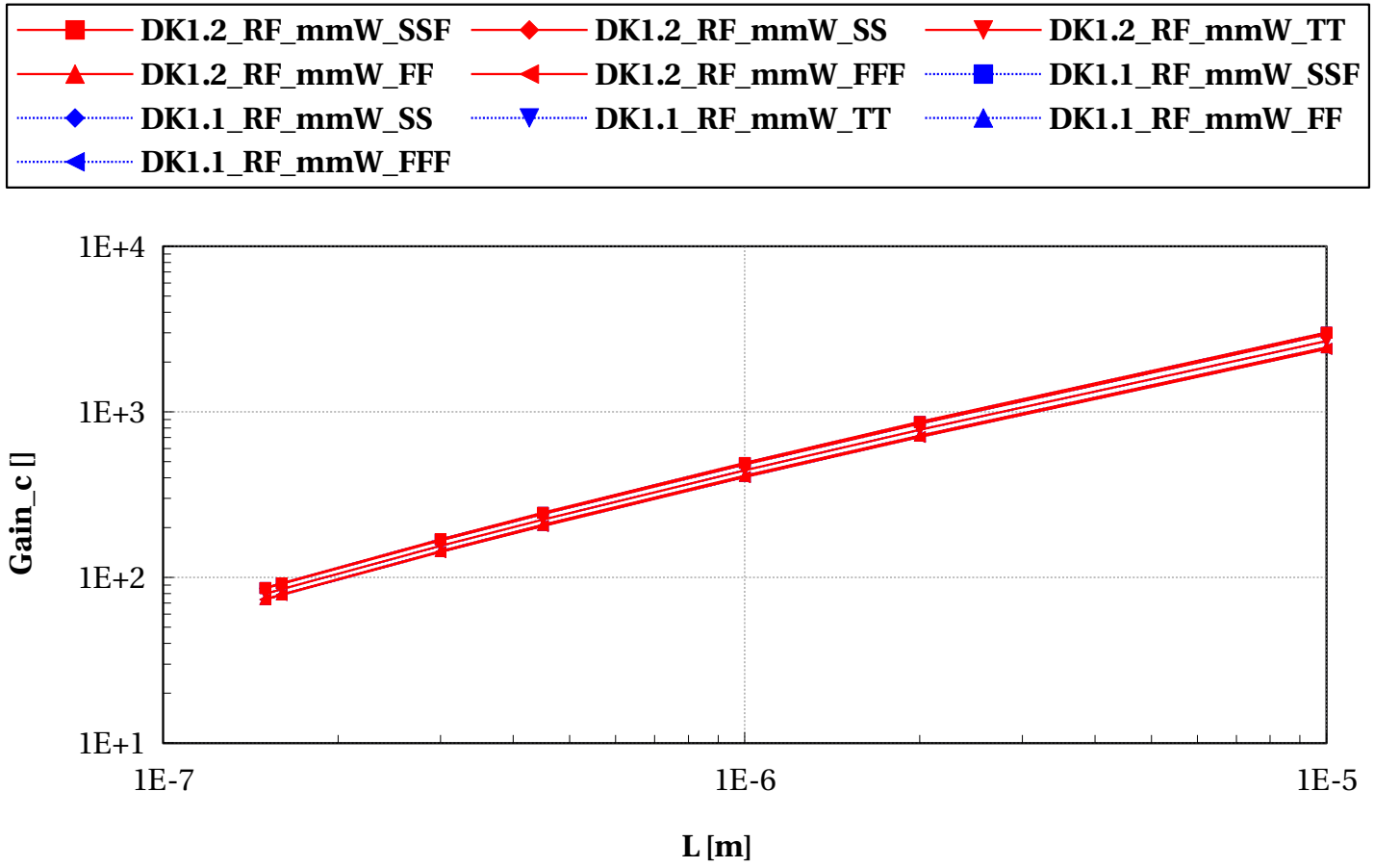
eglvtpfet_acc, Gain_c [] vs L [m]

Temp==25 and Vbs==1.8 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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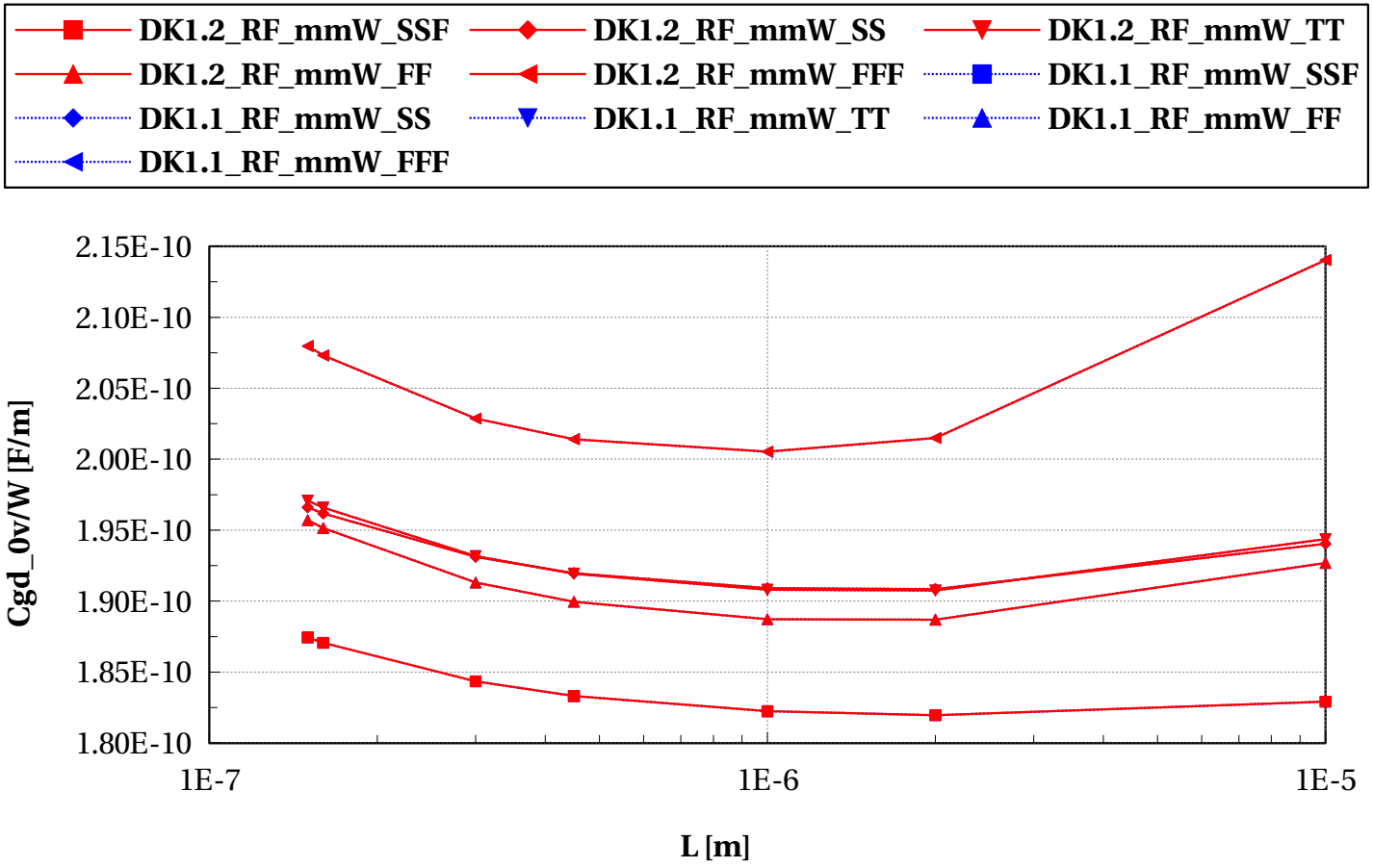
eglvtpfet_acc, Cgd_0v/W [F/m] vs L [m]

Temp==25 and Vbs==1.8 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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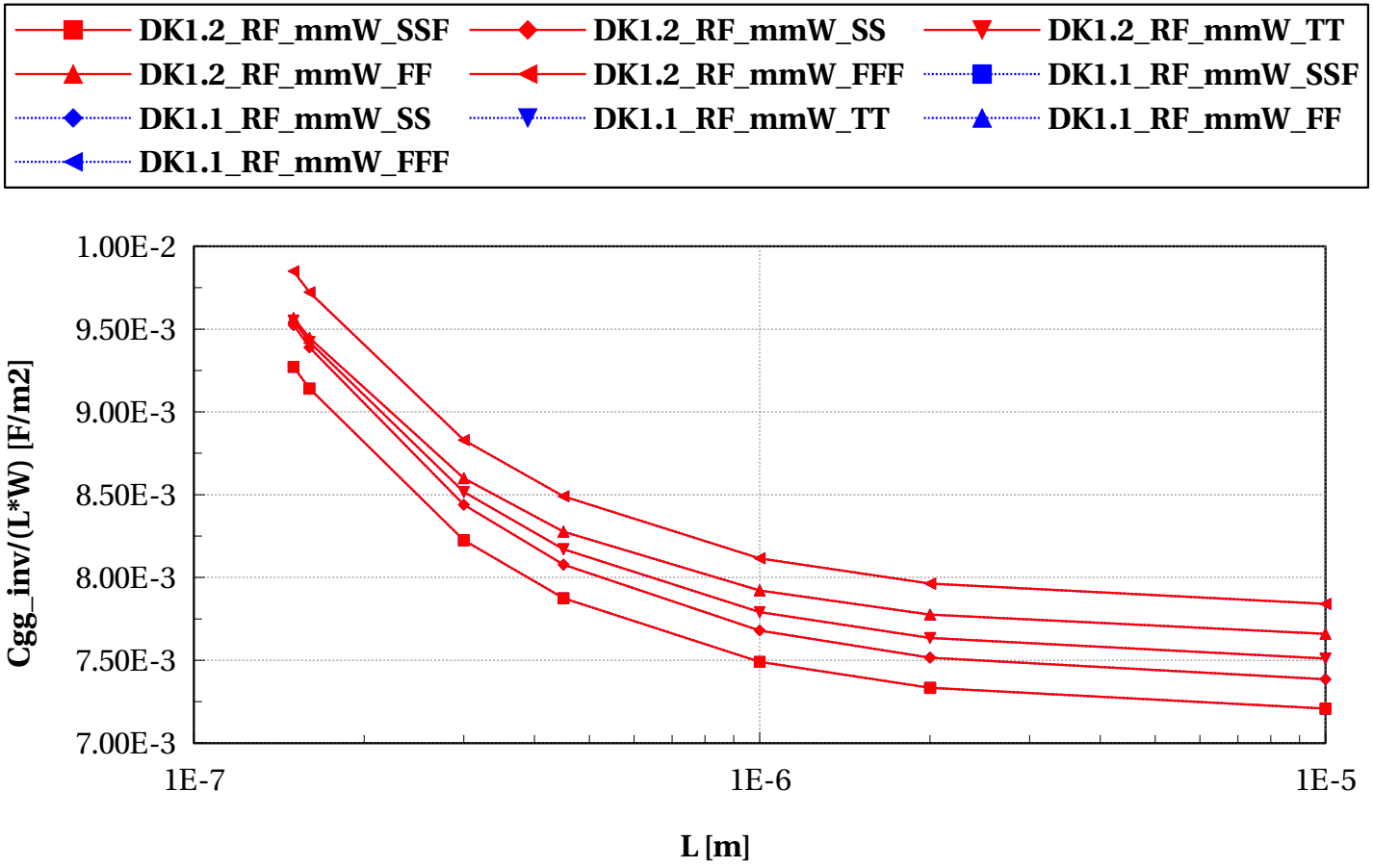
eglvtpfet_acc, Cgg_inv/(L*W) [F/m2] vs L [m]

Temp==25 and Vbs==1.8 and w==2e-6 and l>0.1e-6 and devType=="PCELLwoWPE"



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Scaling versus Width (L=0.15e-6,Temp=25,Vbs=1.8)

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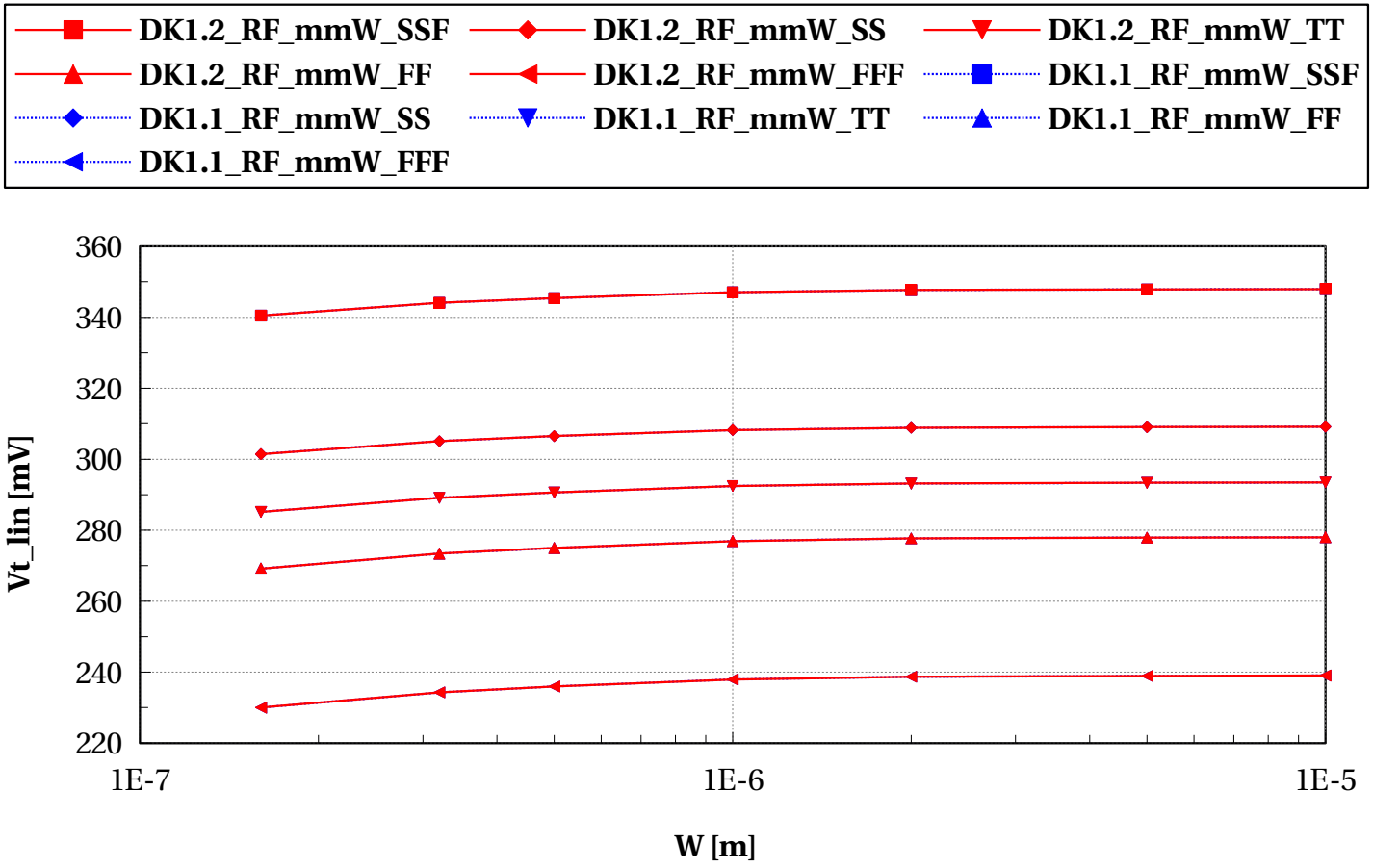
eglvtpfet_acc, Vt_lin [mV] vs W [m]

Temp==25 and l==0.15e-6 and Vbs==1.8 and w>0.135e-6 and devType=="PCELLwoWPE"



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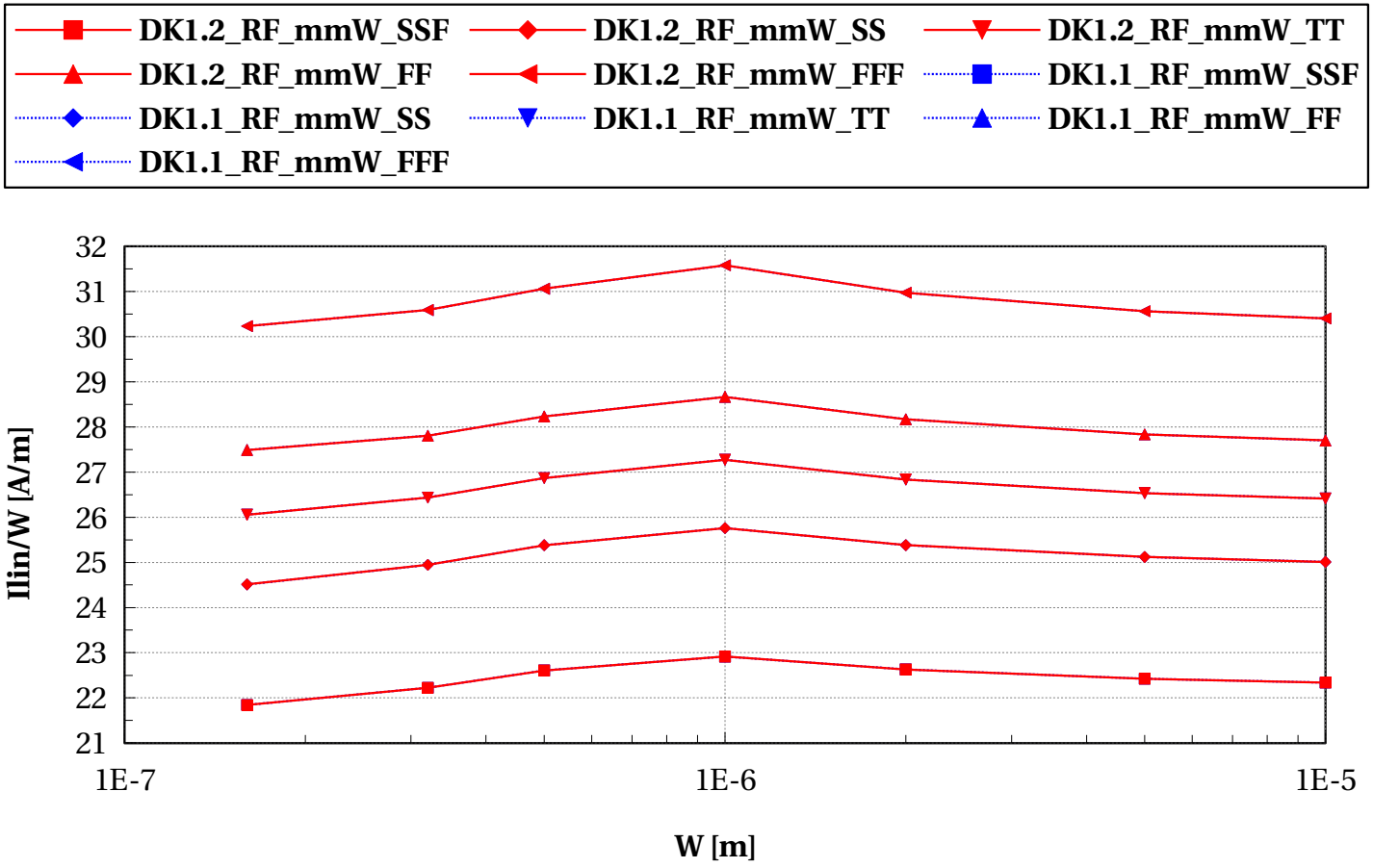
eglvtpfet_acc, Ilin/W [A/m] vs W [m]

Temp==25 and l==0.15e-6 and Vbs==1.8 and w>0.135e-6 and devType=="PCELLwoWPE"



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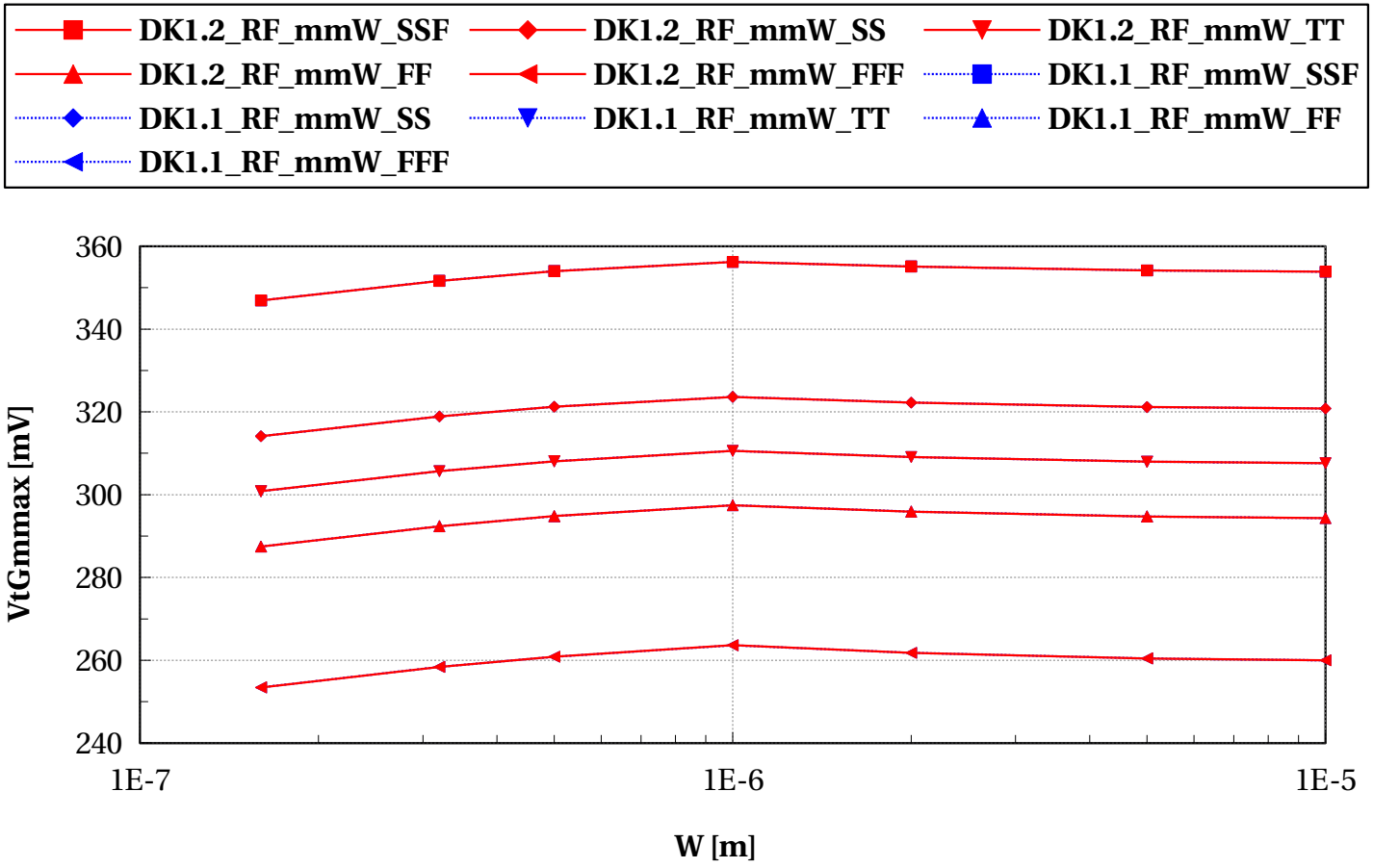
eglvtpfet_acc, VtGmmax [mV] vs W [m]

Temp==25 and l==0.15e-6 and Vbs==1.8 and w>0.135e-6 and devType=="PCELLwoWPE"



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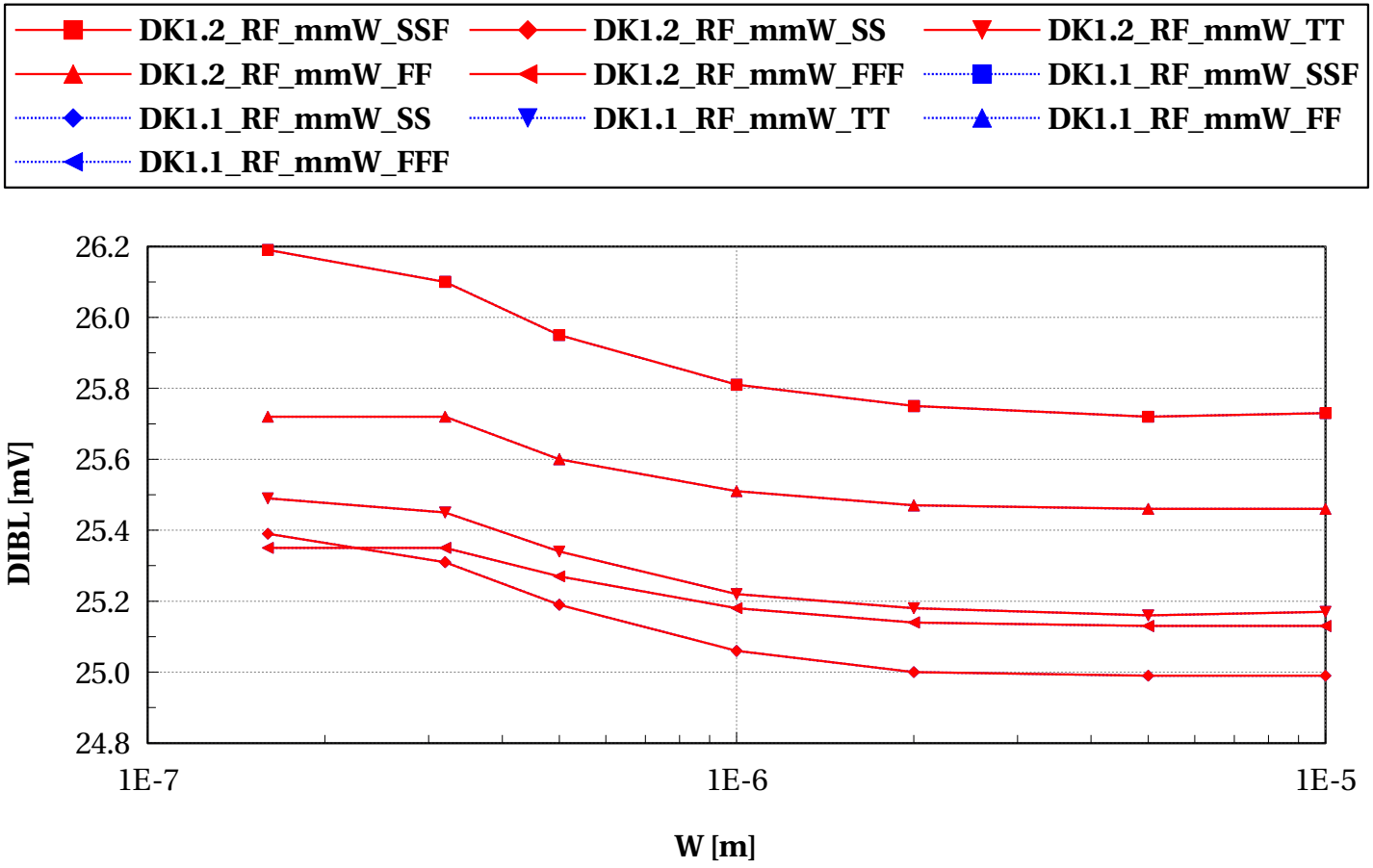
eglvtpfet_acc, DIBL [mV] vs W [m]

Temp==25 and l==0.15e-6 and Vbs==1.8 and w>0.135e-6 and devType=="PCELLwoWPE"



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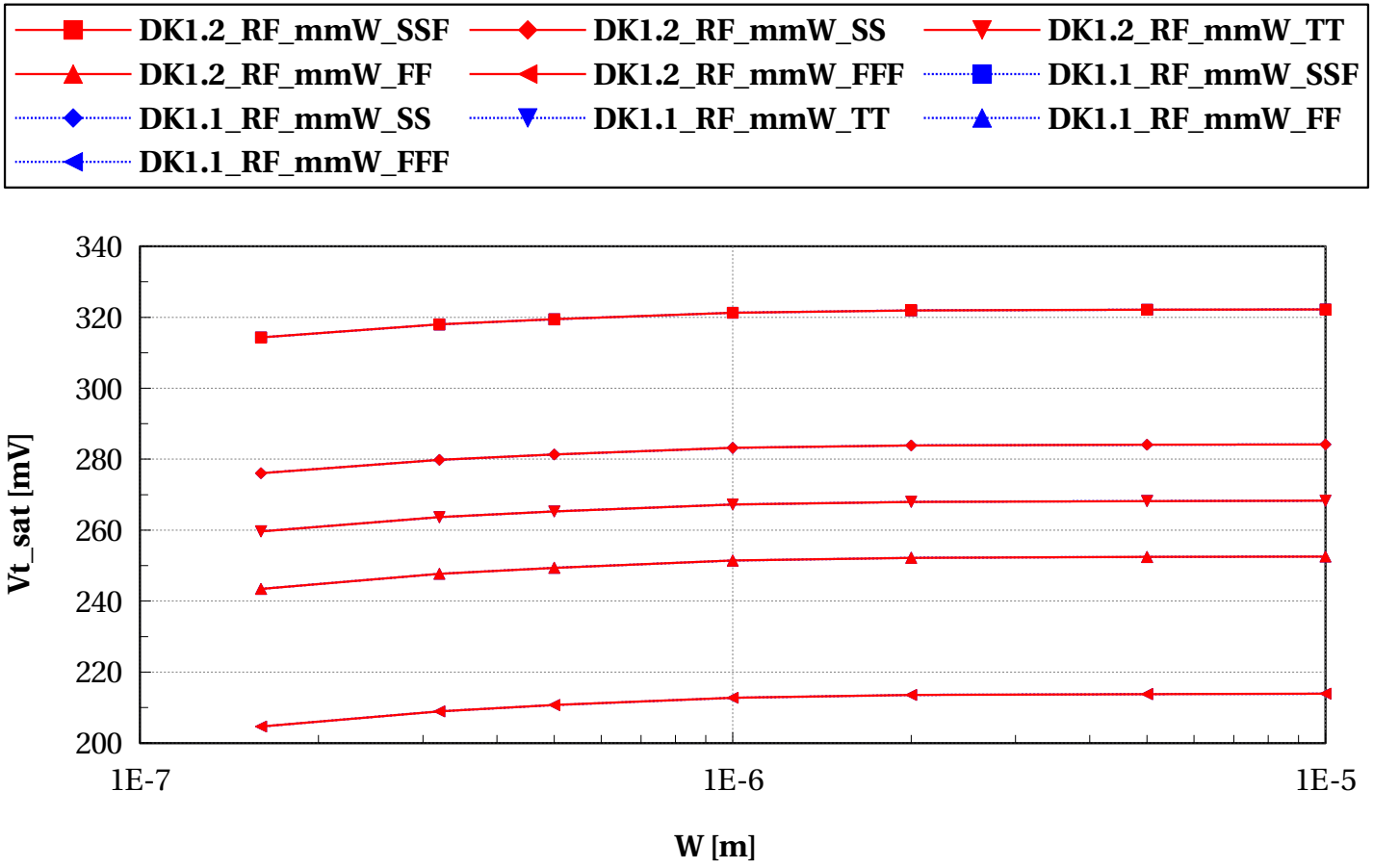
eglvtpfet_acc, Vt_sat [mV] vs W [m]

Temp==25 and l==0.15e-6 and Vbs==1.8 and w>0.135e-6 and devType=="PCELLwoWPE"



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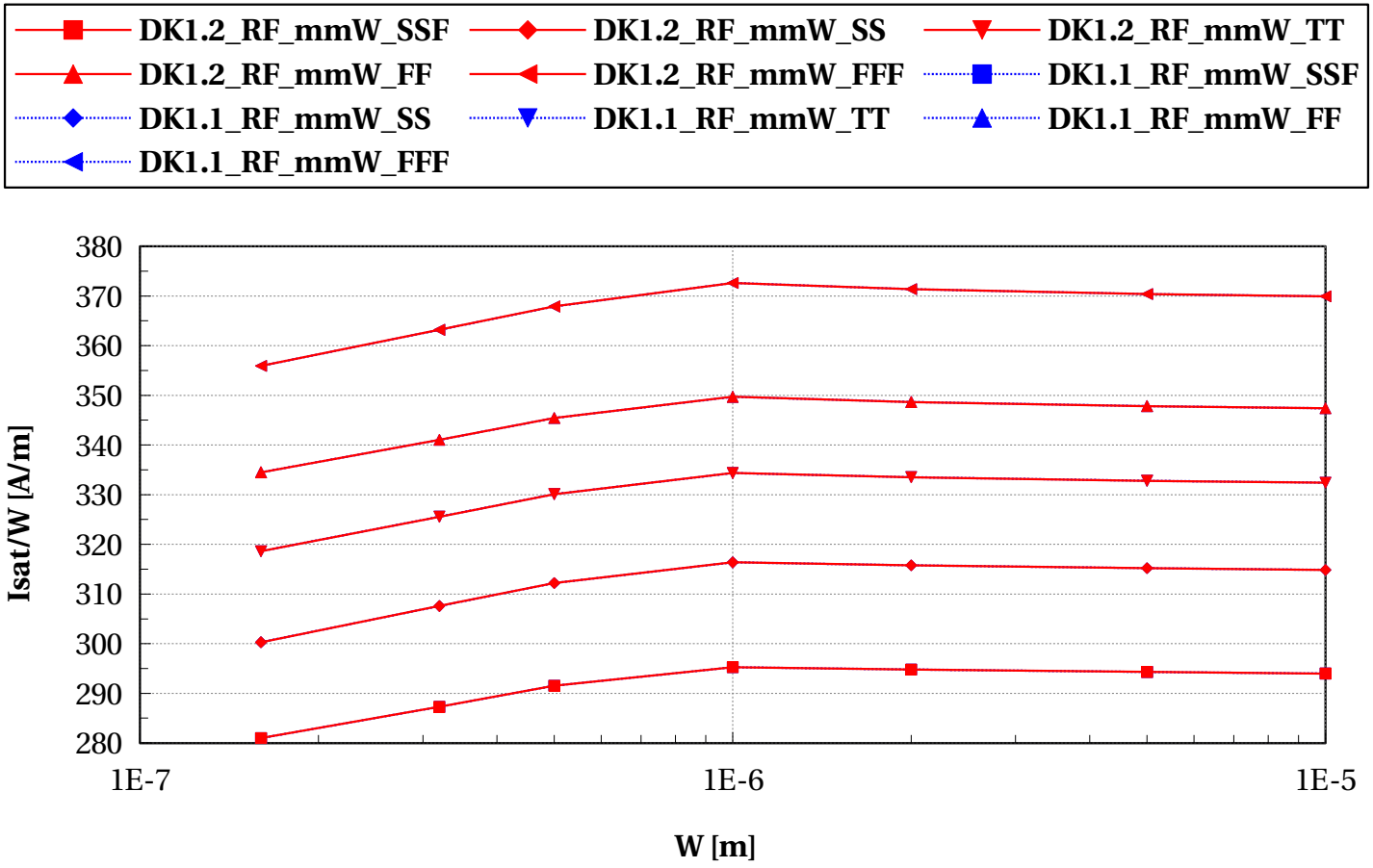
eglvtpfet_acc, Isat/W [A/m] vs W [m]

Temp==25 and l==0.15e-6 and Vbs==1.8 and w>0.135e-6 and devType=="PCELLwoWPE"



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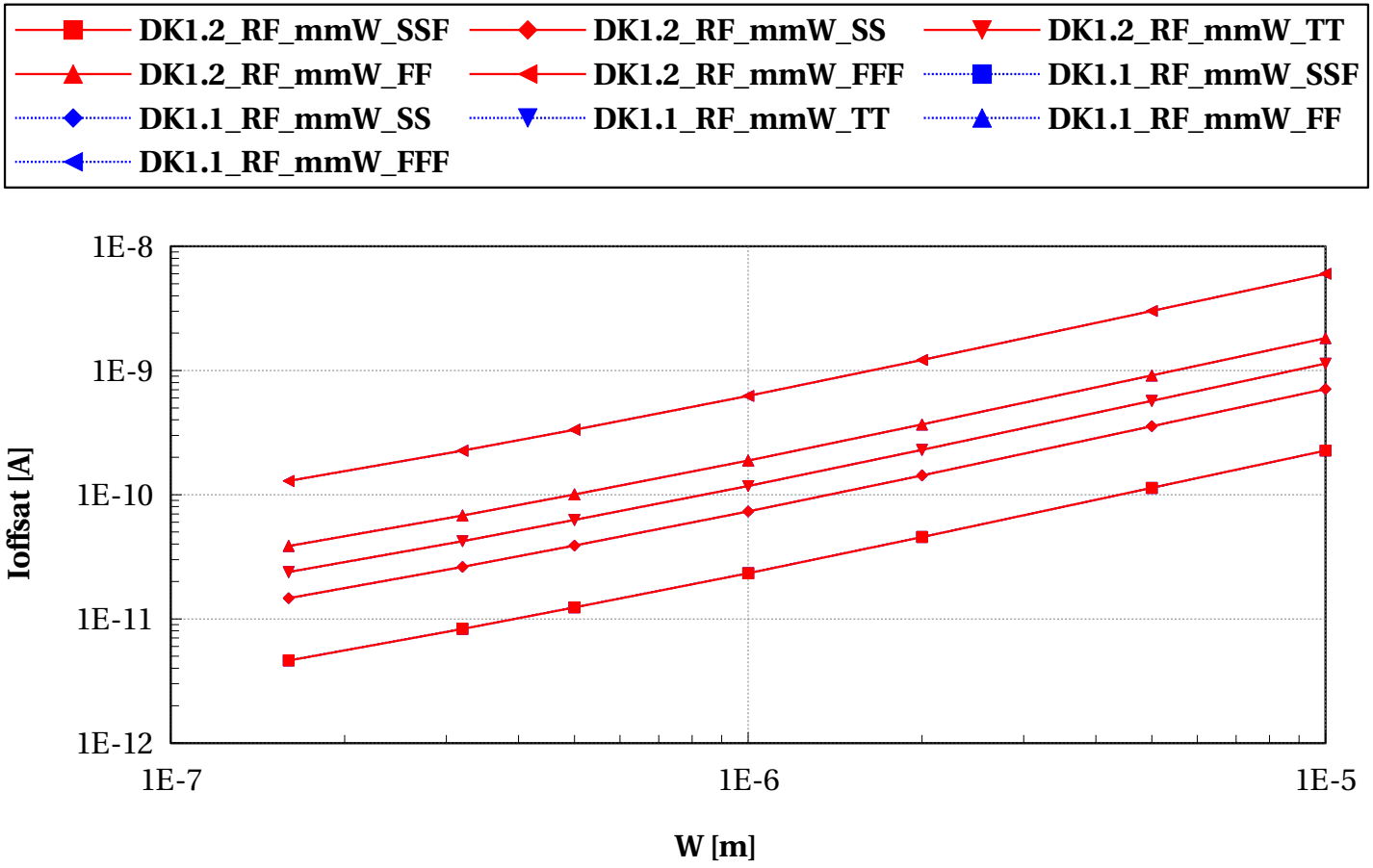
eglvtpfet_acc, Ioffsat [A] vs W [m]

Temp==25 and l==0.15e-6 and Vbs==1.8 and w>0.135e-6 and devType=="PCELLwoWPE"



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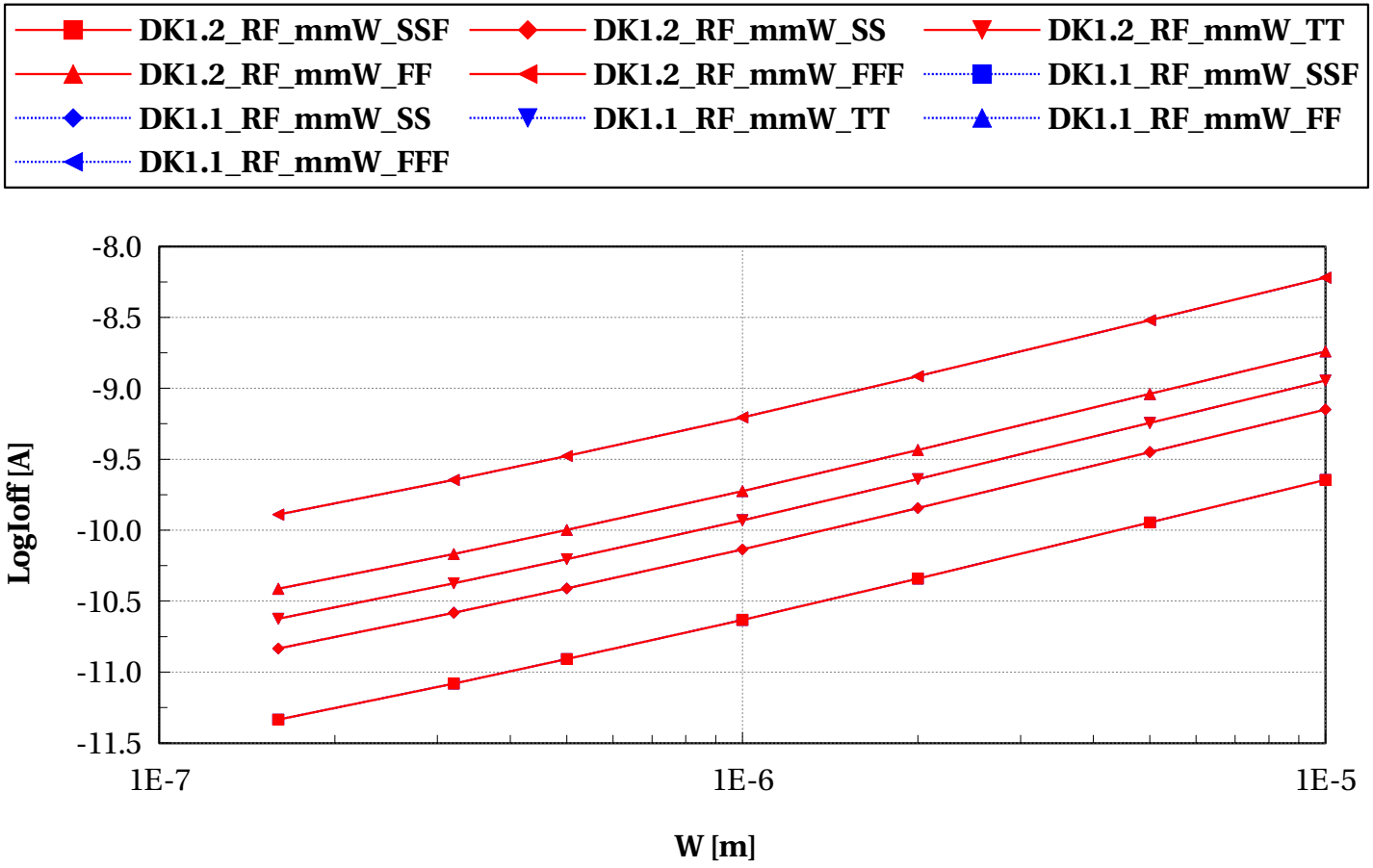
eglvtpfet_acc, LogIoff [A] vs W [m]

Temp==25 and l==0.15e-6 and Vbs==1.8 and w>0.135e-6 and devType=="PCELLwoWPE"



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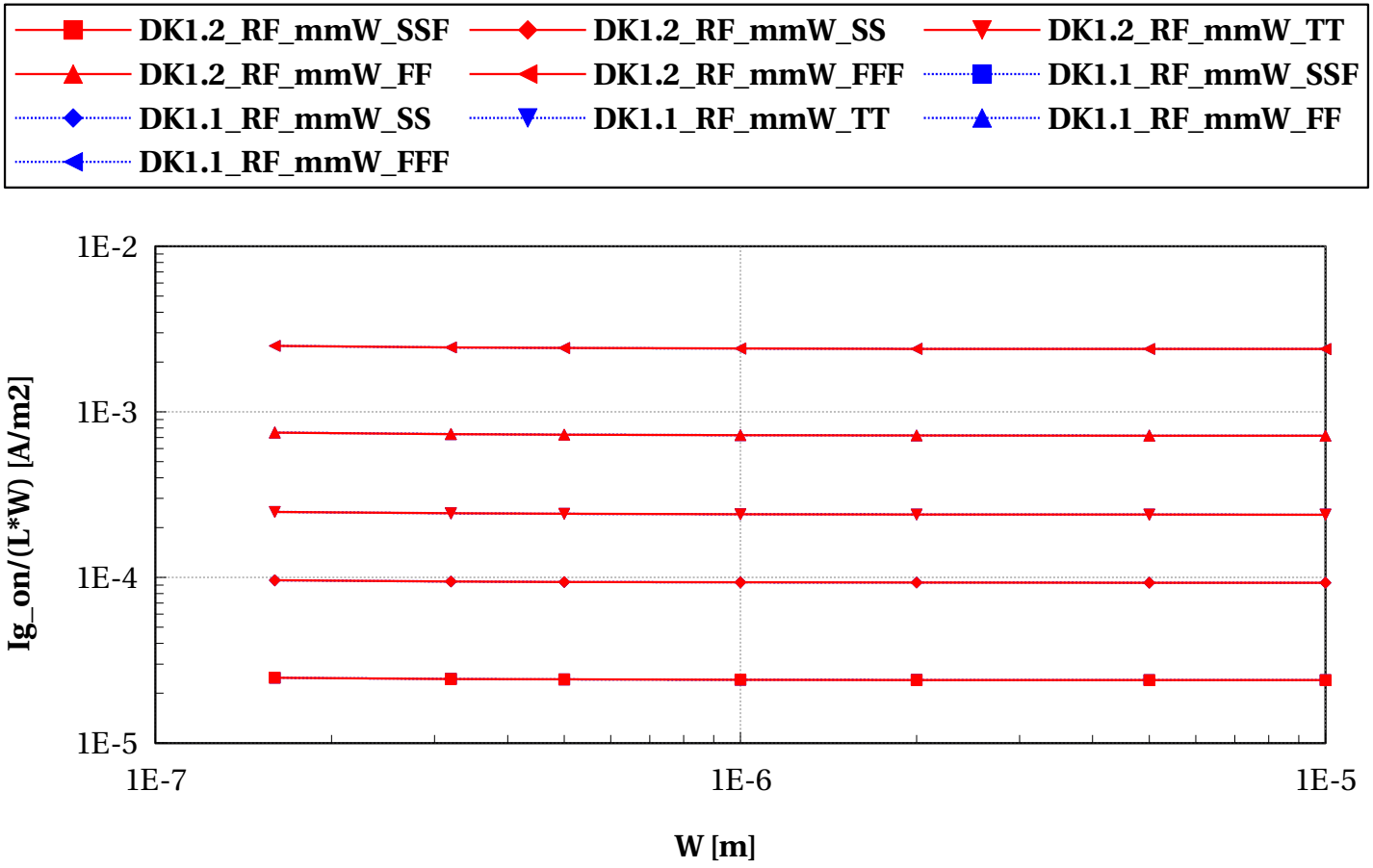
eglvtpfet_acc, Ig_on/(L*W) [A/m2] vs W [m]

Temp==25 and l==0.15e-6 and Vbs==1.8 and w>0.135e-6 and devType=="PCELLwoWPE"



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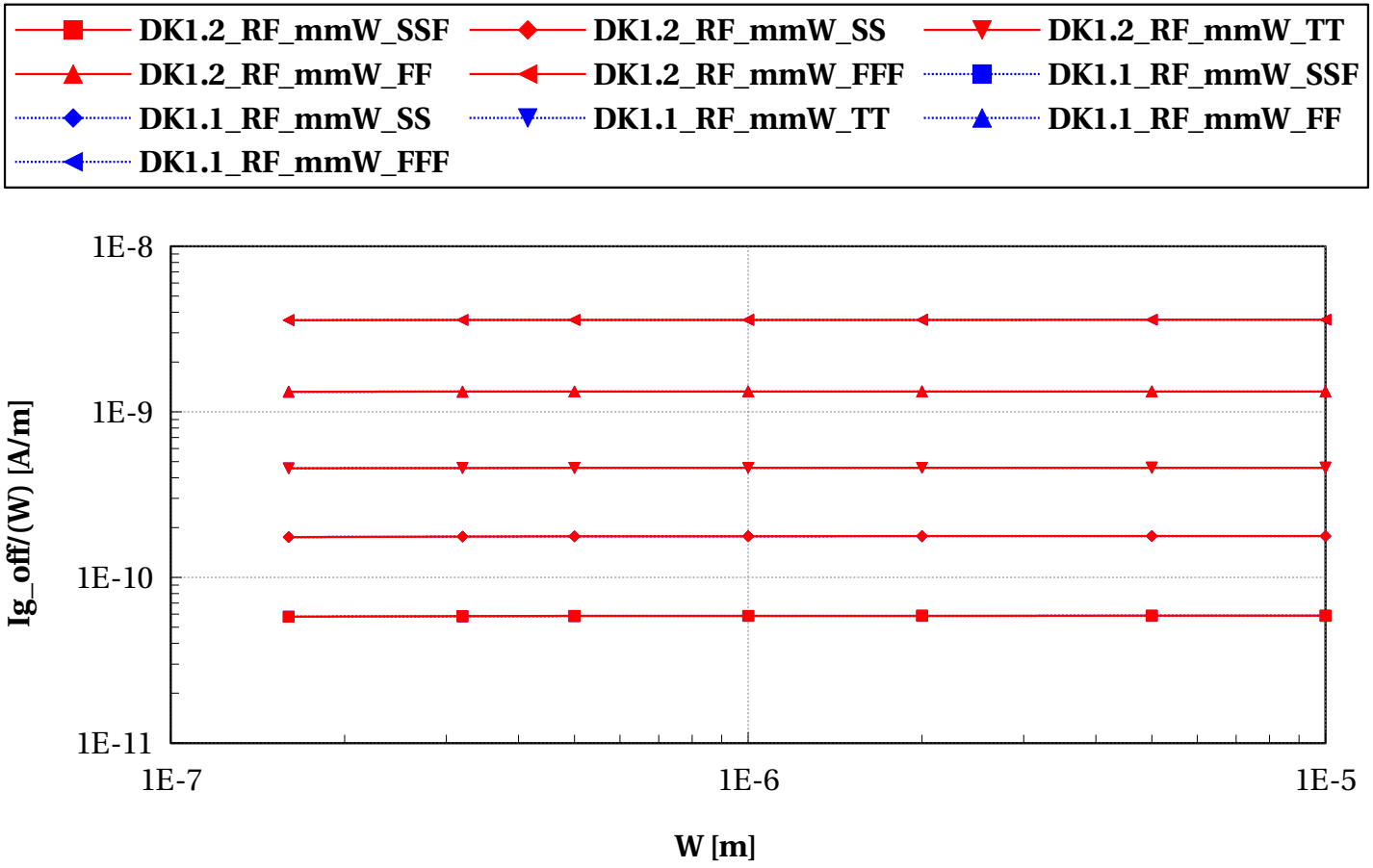
eglvtpfet_acc, Ig_off/(W) [A/m] vs W [m]

Temp==25 and l==0.15e-6 and Vbs==1.8 and w>0.135e-6 and devType=="PCELLwoWPE"



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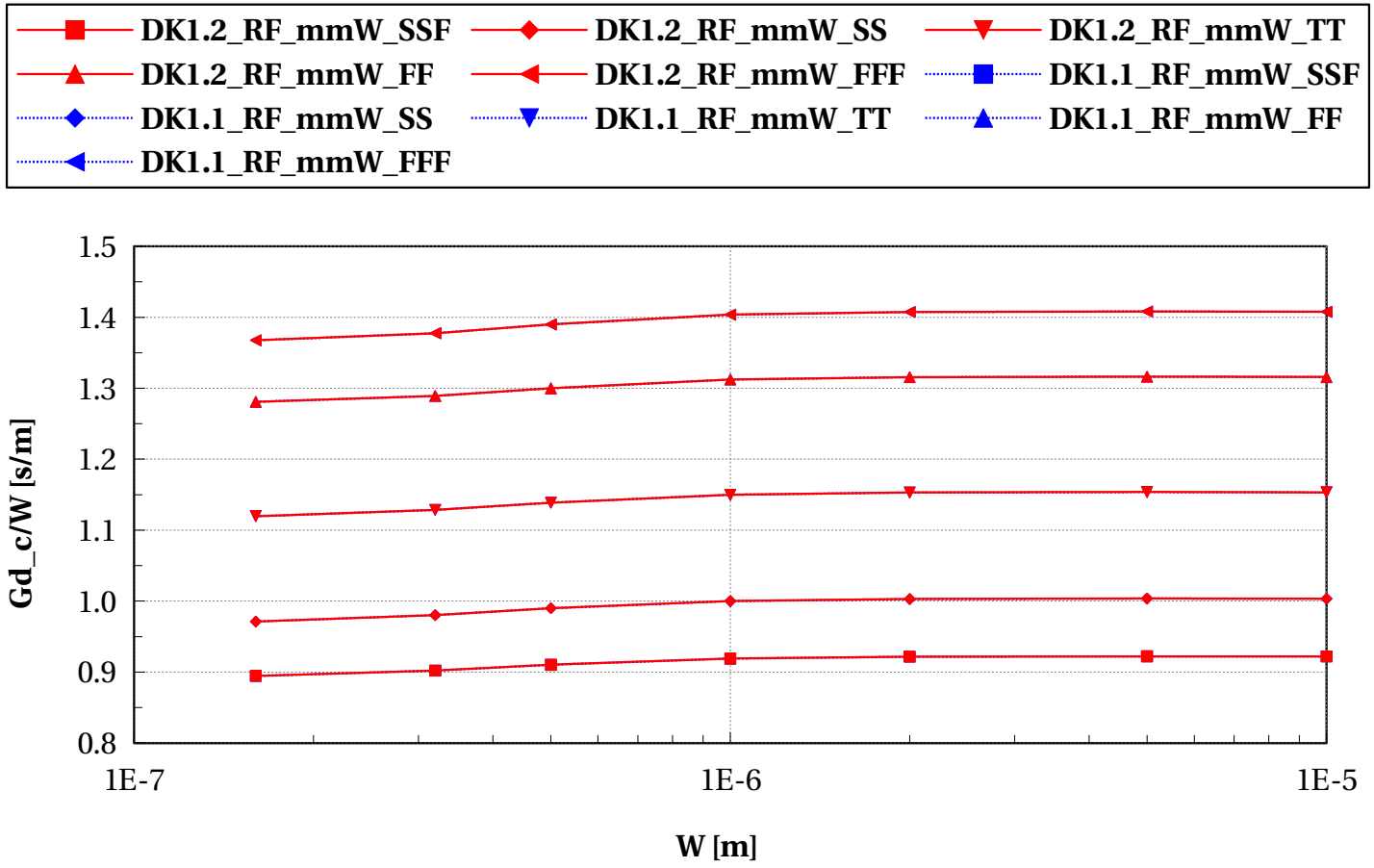
eglvtpfet_acc, Gd_c/W [s/m] vs W [m]

Temp==25 and l==0.15e-6 and Vbs==1.8 and w>0.135e-6 and devType=="PCELLwoWPE"



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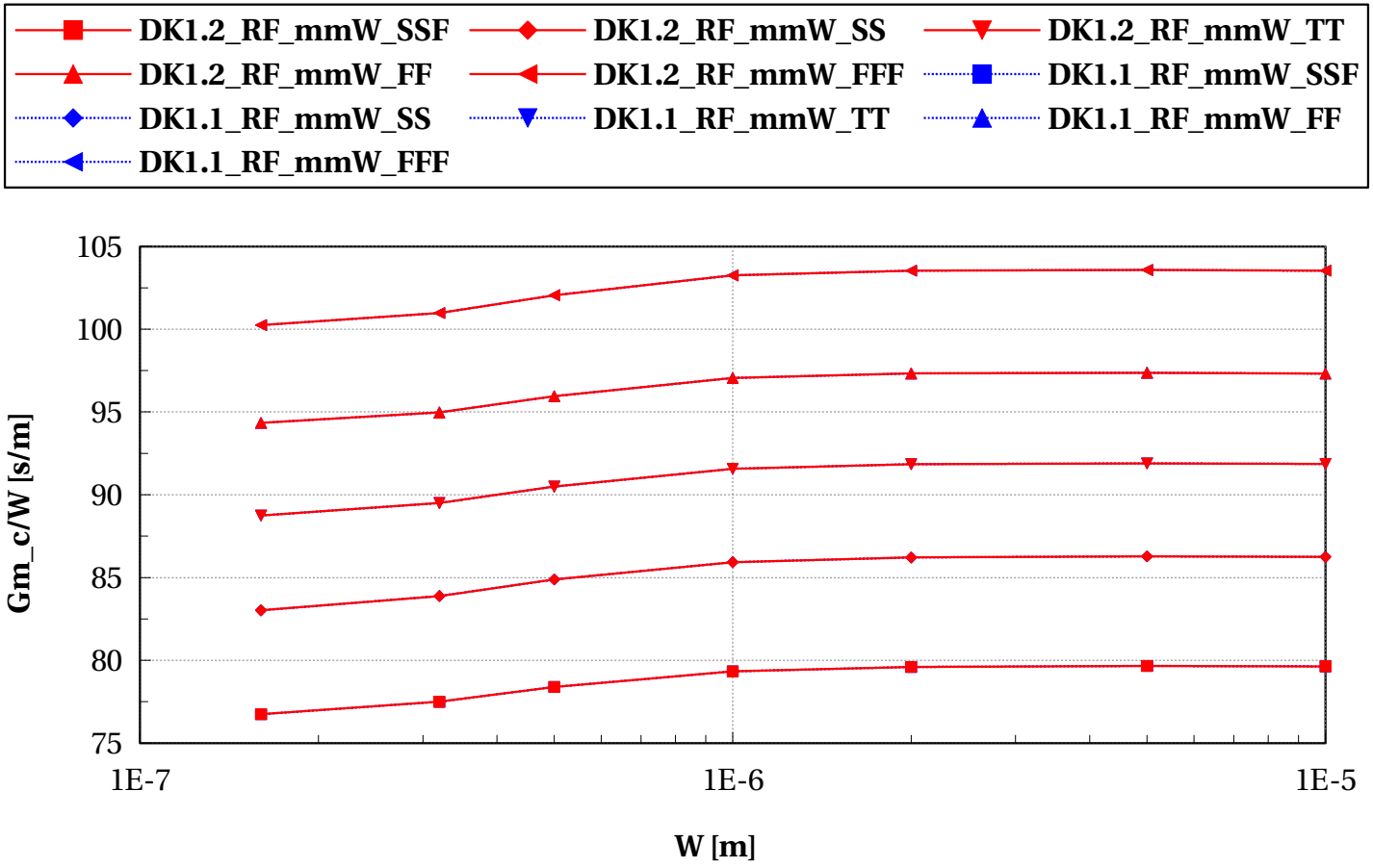
eglvtpfet_acc, Gm_c/W [s/m] vs W [m]

Temp==25 and l==0.15e-6 and Vbs==1.8 and w>0.135e-6 and devType=="PCELLwoWPE"



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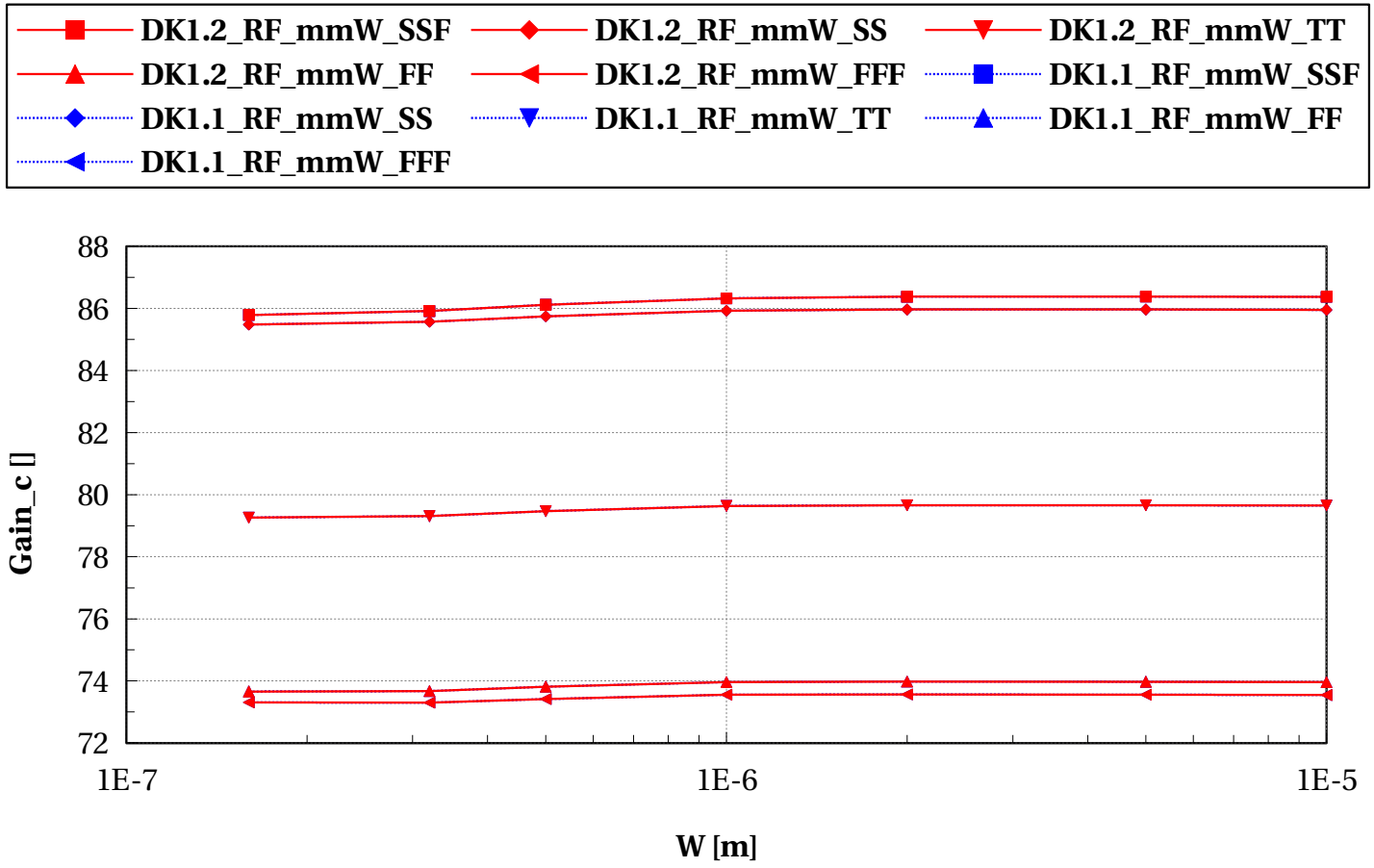
eglvtpfet_acc, Gain_c [] vs W [m]

Temp==25 and l==0.15e-6 and Vbs==1.8 and w>0.135e-6 and devType=="PCELLwoWPE"



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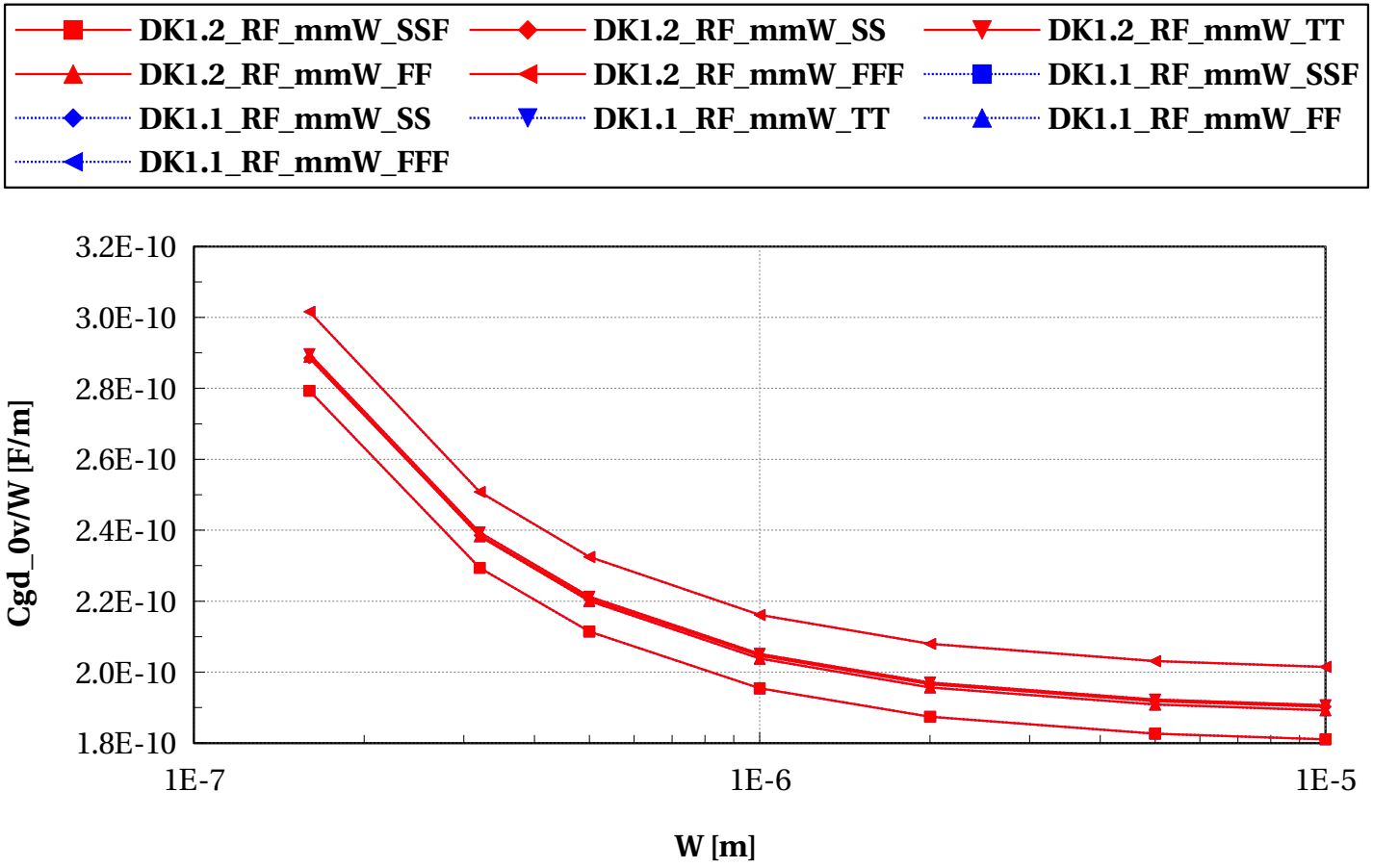
eglvtpfet_acc, Cgd_0v/W [F/m] vs W [m]

Temp==25 and l==0.15e-6 and Vbs==1.8 and w>0.135e-6 and devType=="PCELLwoWPE"



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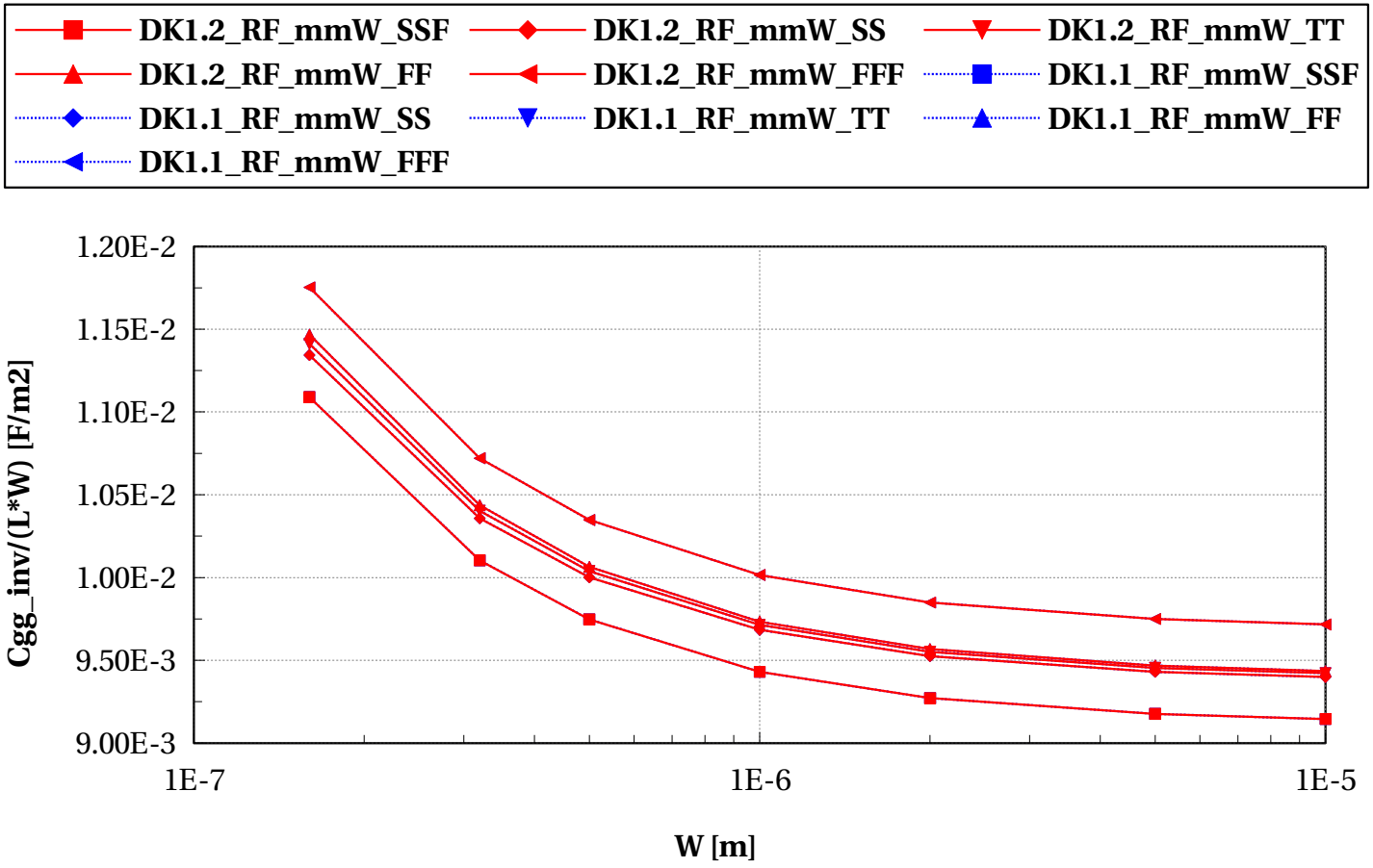
eglvtpfet_acc, Cgg_inv/(L*W) [F/m2] vs W [m]

Temp==25 and l==0.15e-6 and Vbs==1.8 and w>0.135e-6 and devType=="PCELLwoWPE"



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Scaling versus Temp @ Vbs=1.8, L=0.15u, W=2u

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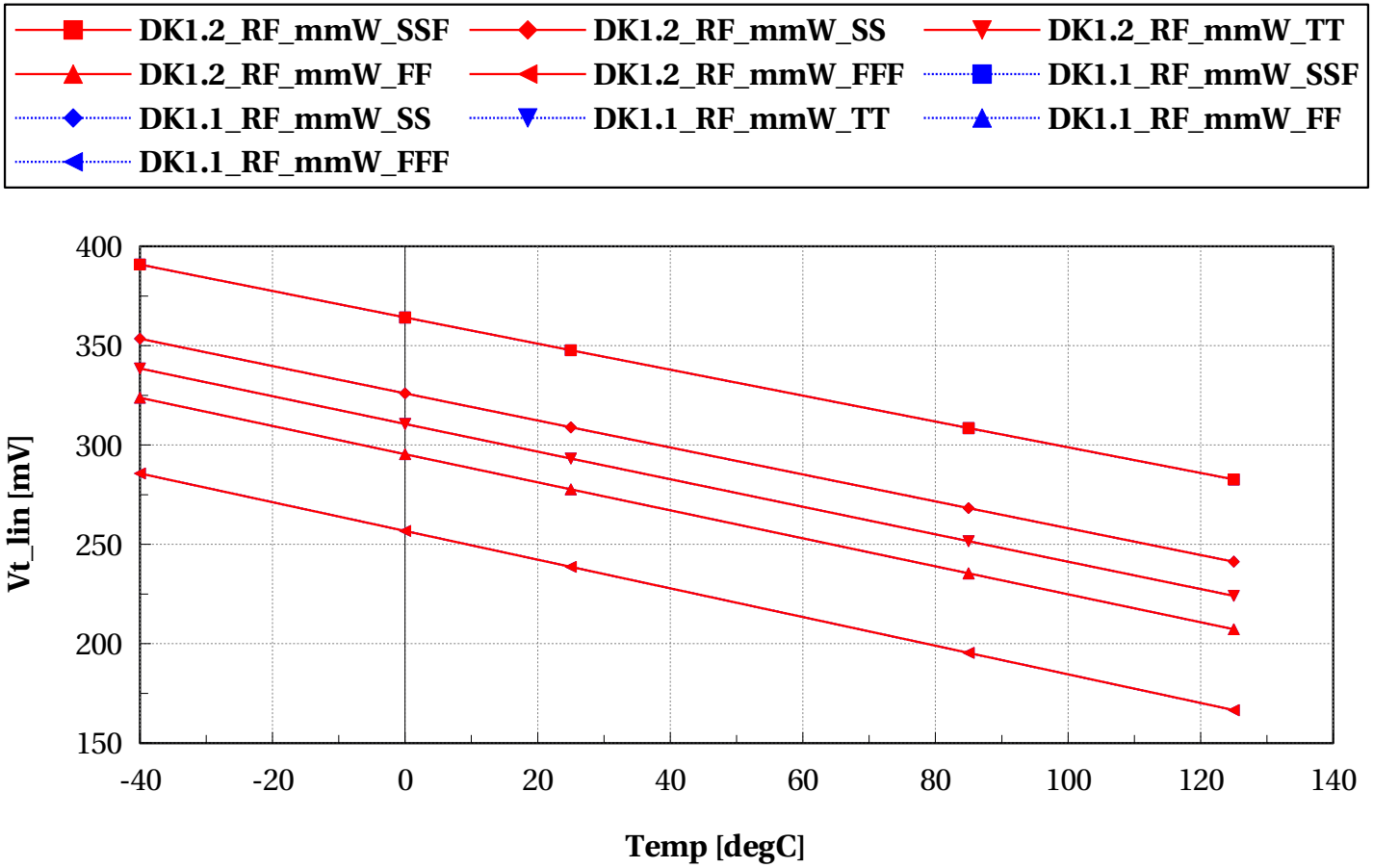
eglvtpfet_acc, Vt_lin [mV] vs Temp [degC]

Vbs==1.8 and l==0.15e-6 and w==2e-6 and devType=="PCELLwoWPE"



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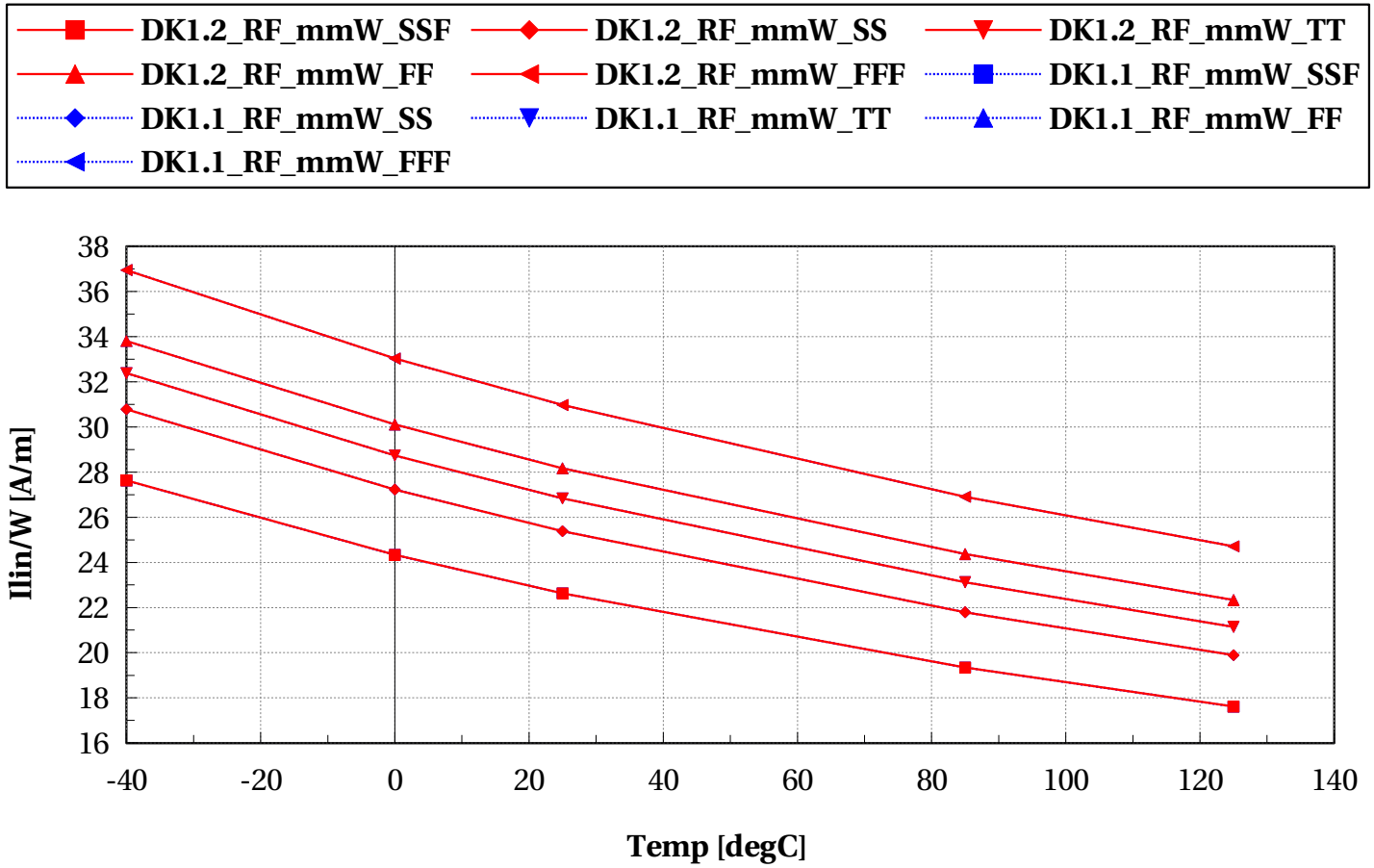
eglvtpfet_acc, Ilin/W [A/m] vs Temp [degC]

Vbs==1.8 and l==0.15e-6 and w==2e-6 and devType=="PCELLwoWPE"



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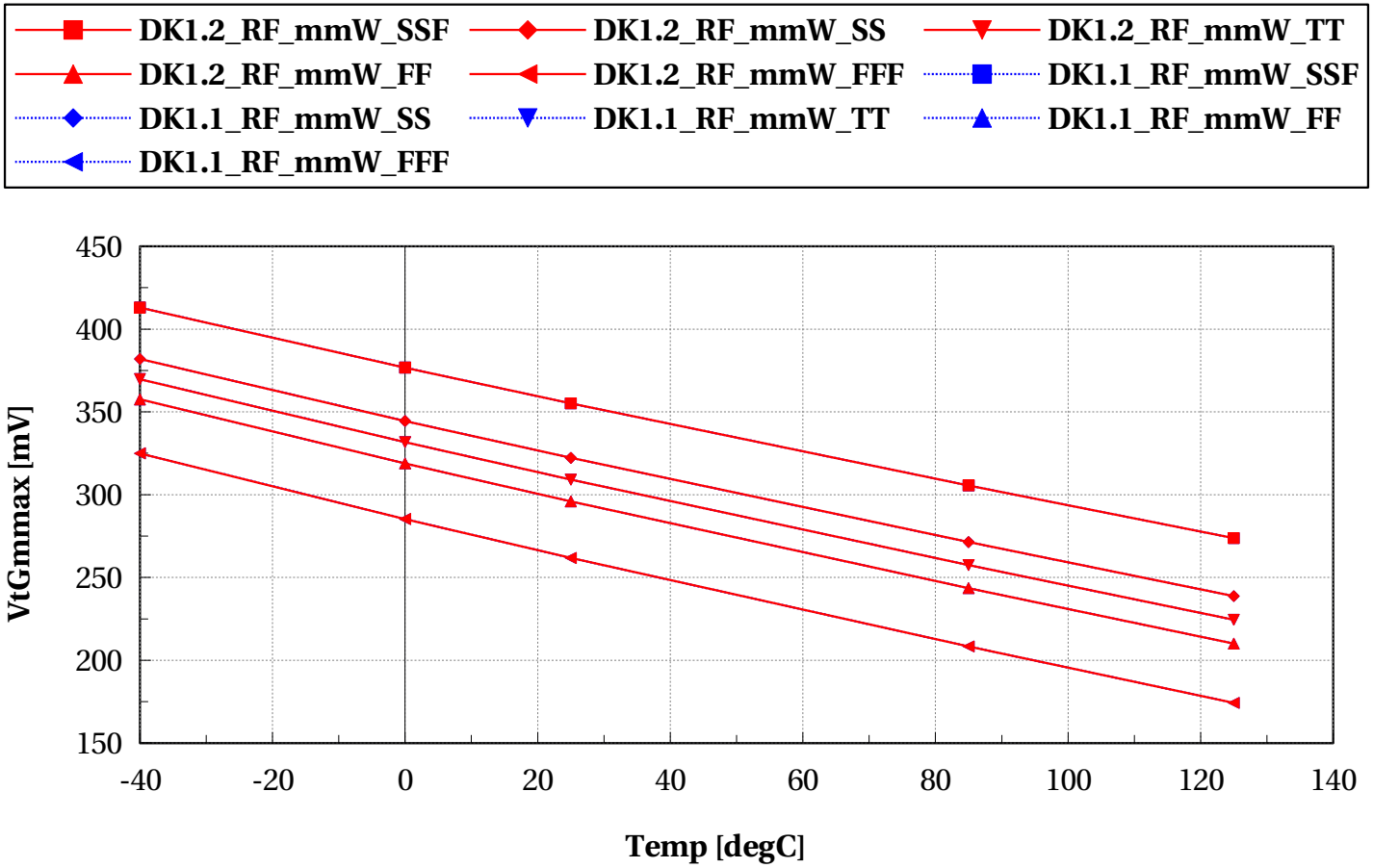
eglvtpfet_acc, VtGmmax [mV] vs Temp [degC]

Vbs==1.8 and l==0.15e-6 and w==2e-6 and devType=="PCELLwoWPE"



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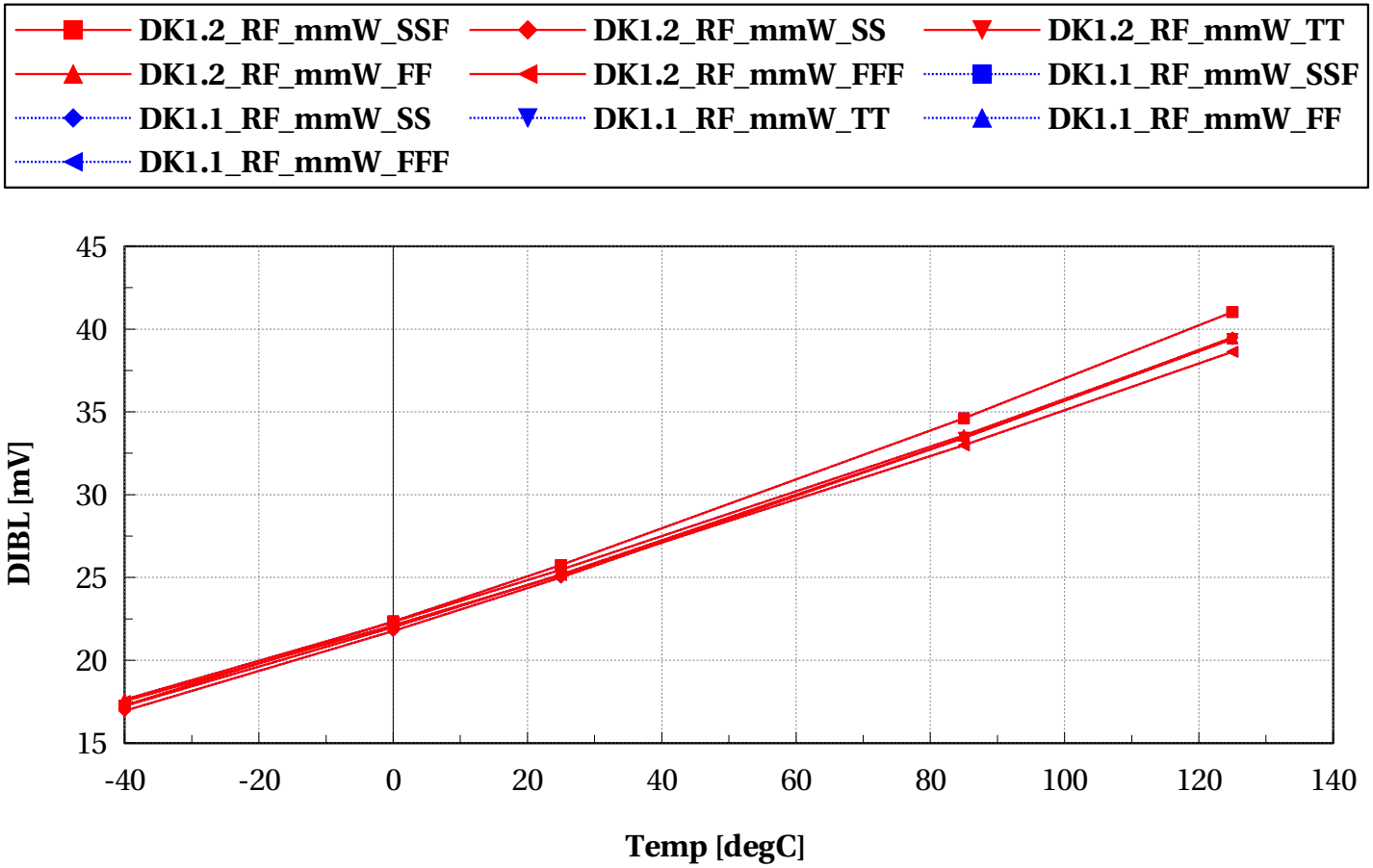
eglvtpfet_acc, DIBL [mV] vs Temp [degC]

Vbs==1.8 and l==0.15e-6 and w==2e-6 and devType=="PCELLwoWPE"



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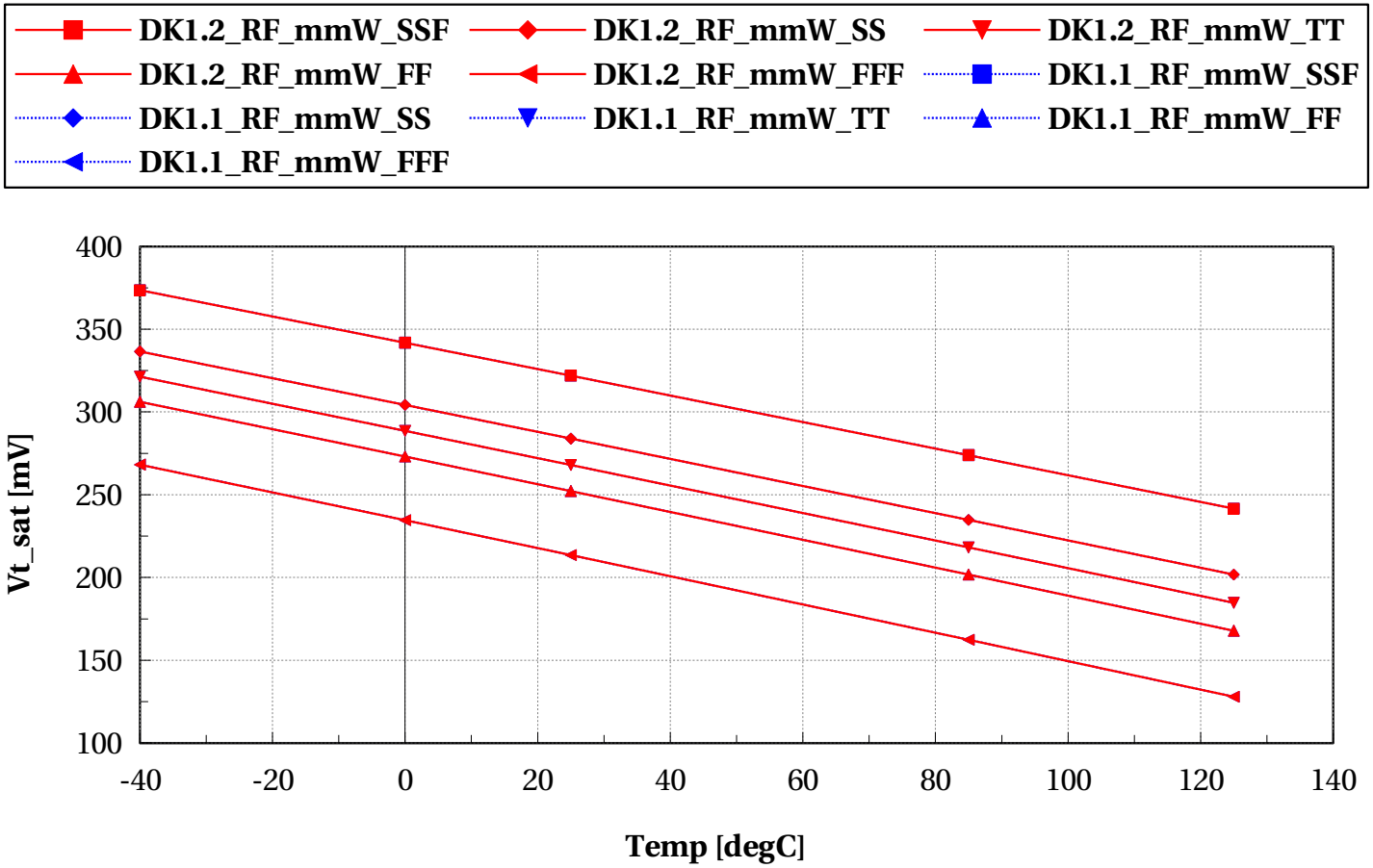
eglvtpfet_acc, Vt_sat [mV] vs Temp [degC]

Vbs==1.8 and l==0.15e-6 and w==2e-6 and devType=="PCELLwoWPE"



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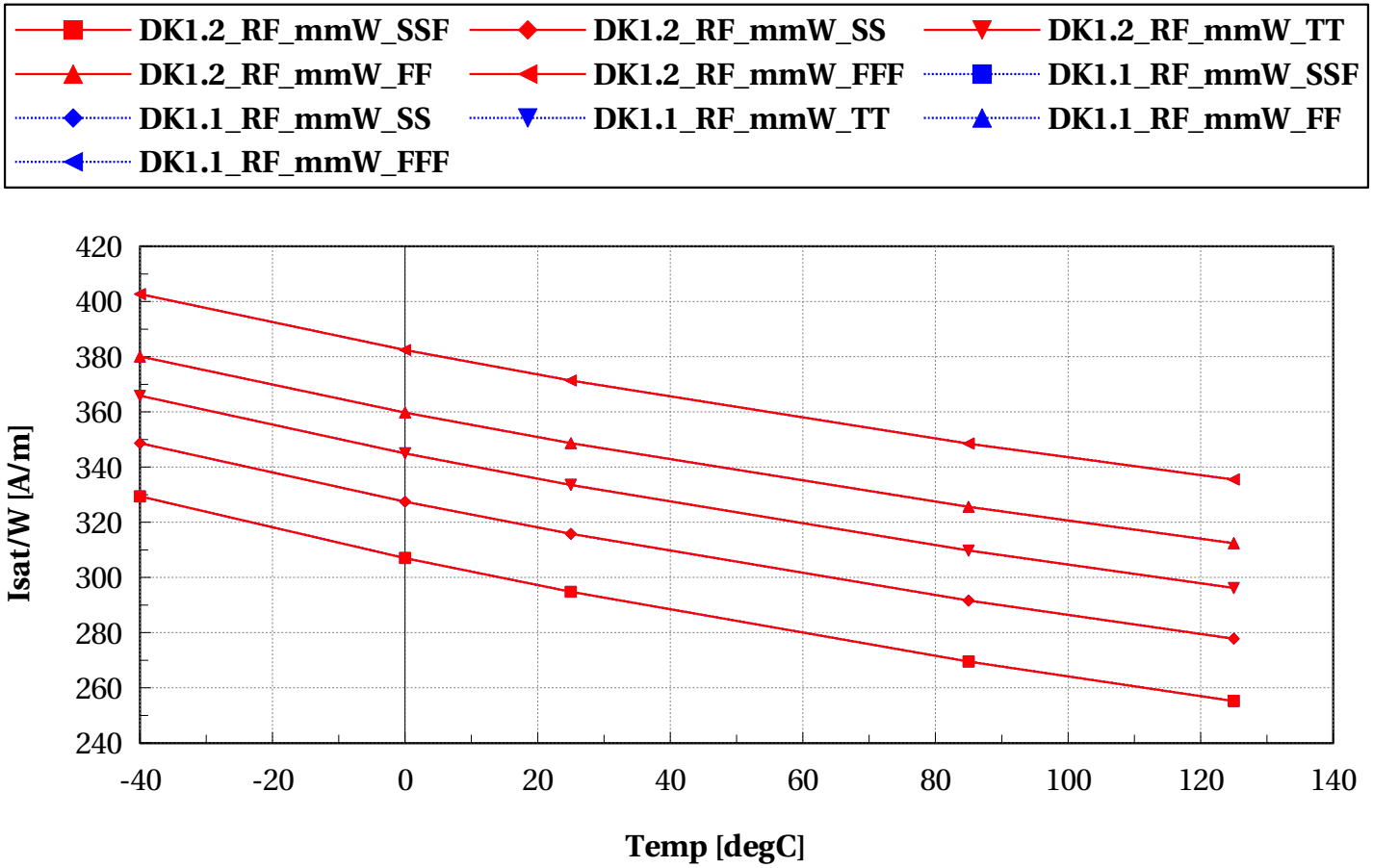
eglvtpfet_acc, Isat/W [A/m] vs Temp [degC]

Vbs==1.8 and l==0.15e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtpfet_acc, Ioffsat [A] vs Temp [degC]

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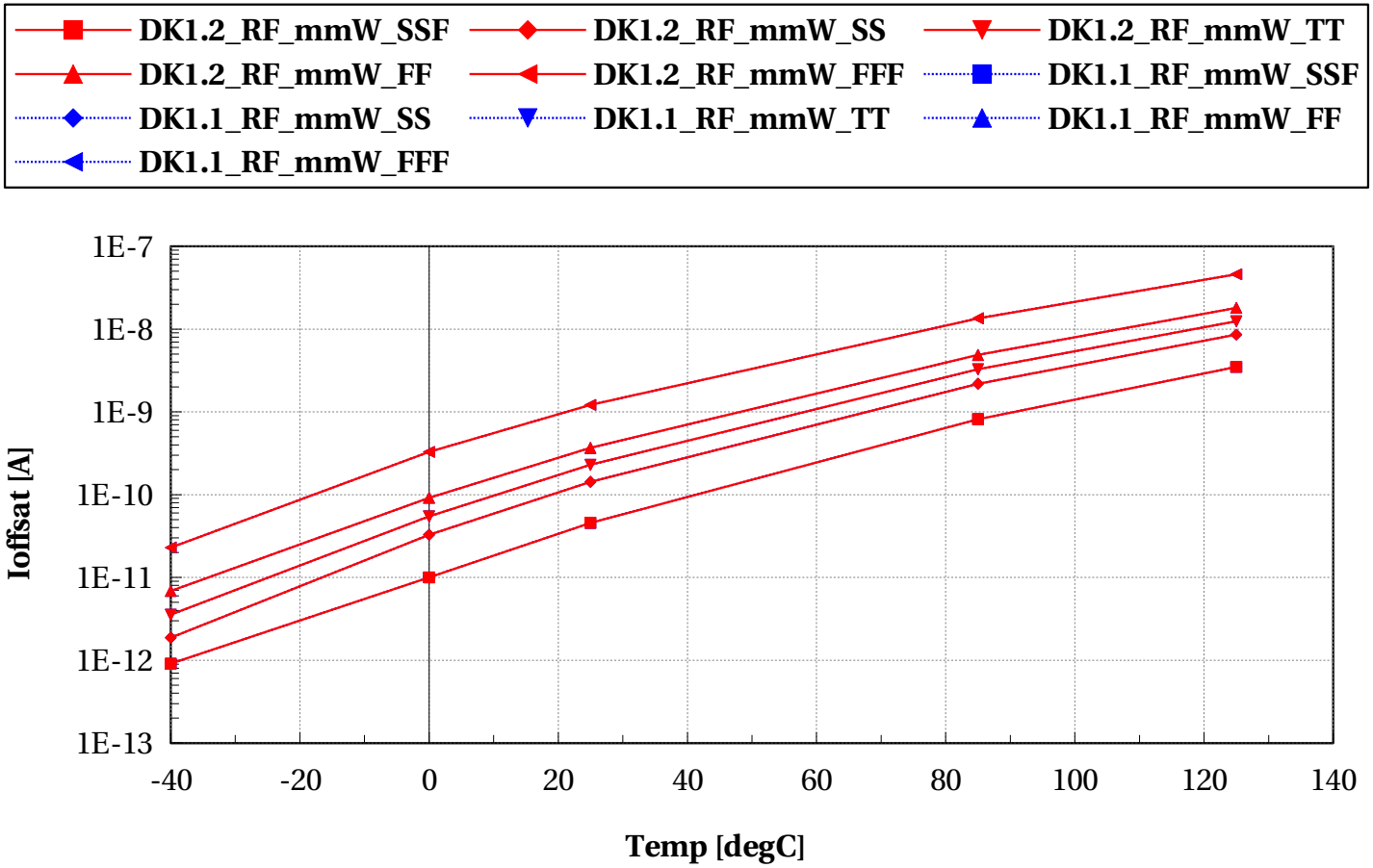

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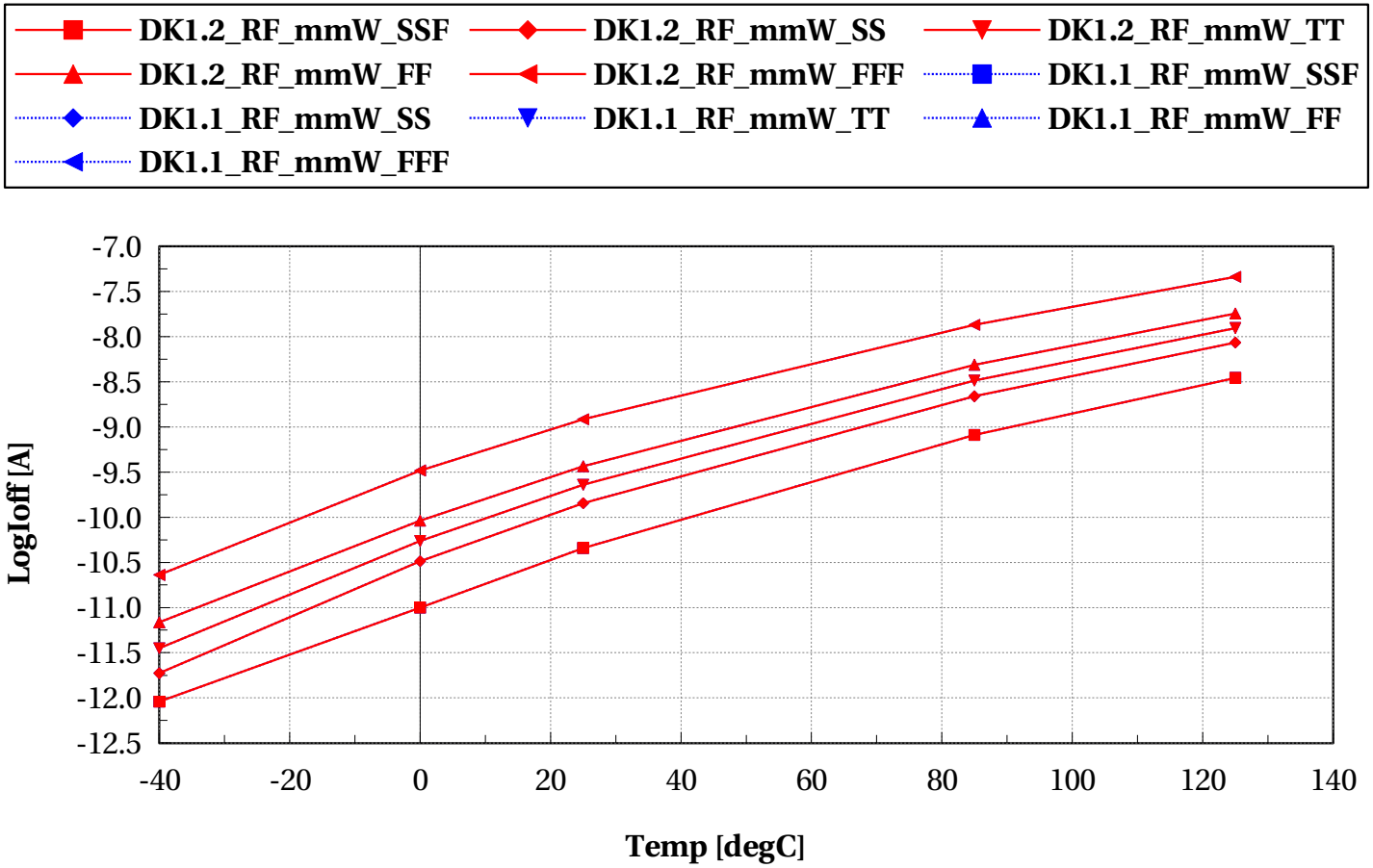
eglvtpfet_acc, LogIoff [A] vs Temp [degC]

Vbs==1.8 and l==0.15e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtpfet_acc, Ig_on/(L*W) [A/m2] vs Temp [degC]

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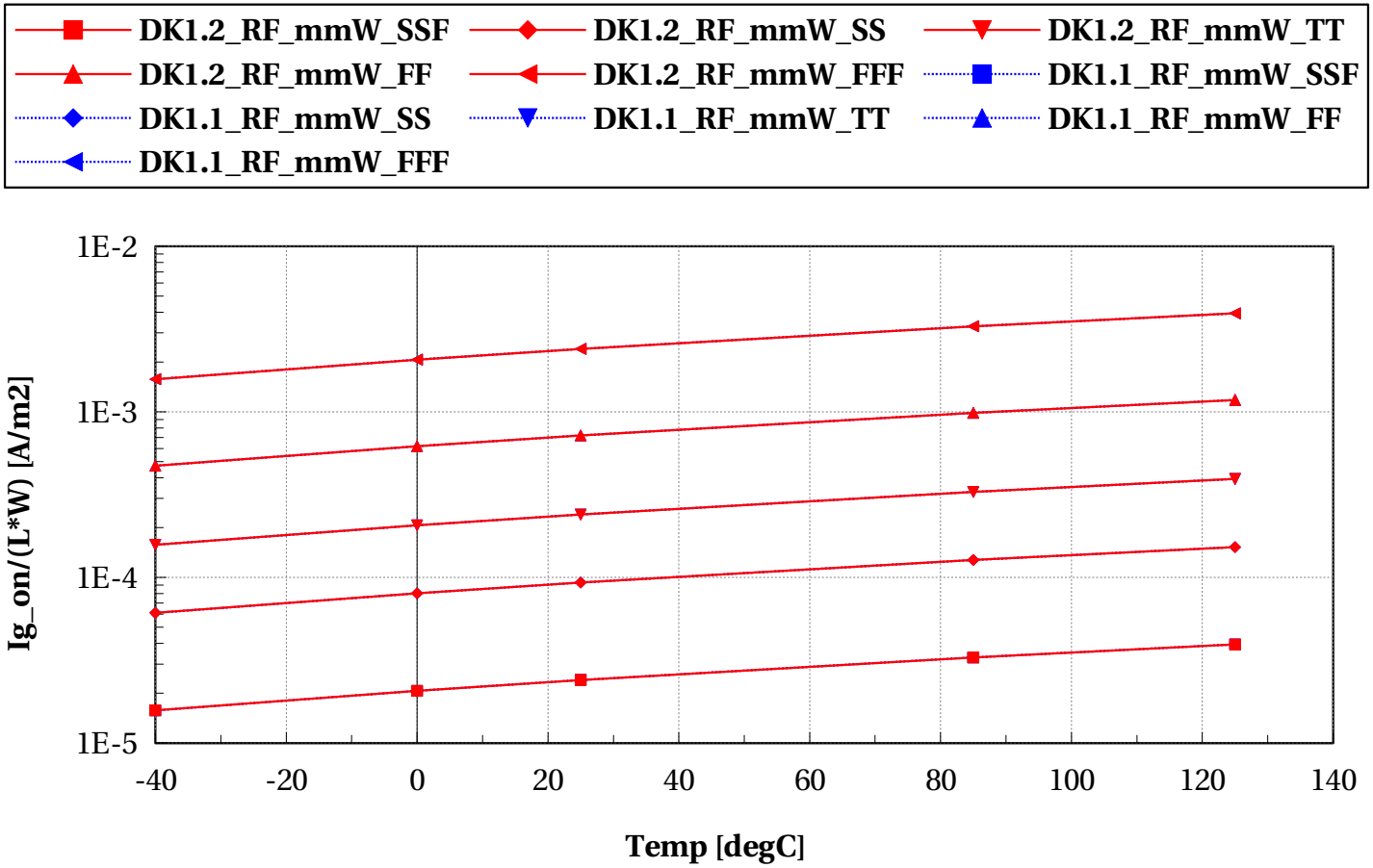

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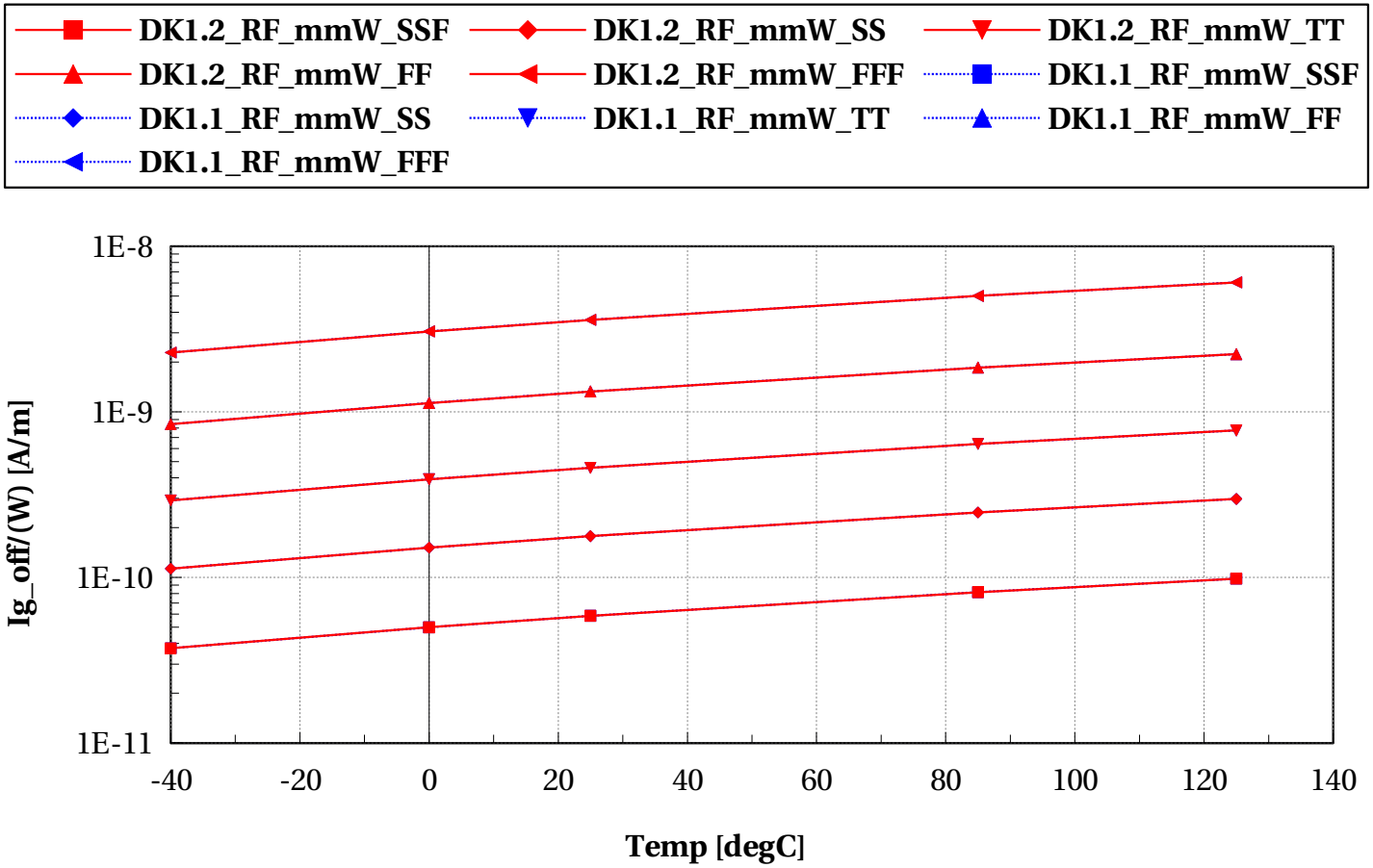
eglvtpfet_acc, Ig_off/(W) [A/m] vs Temp [degC]

Vbs==1.8 and l==0.15e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtpfet_acc, Gd_c/W [s/m] vs Temp [degC]

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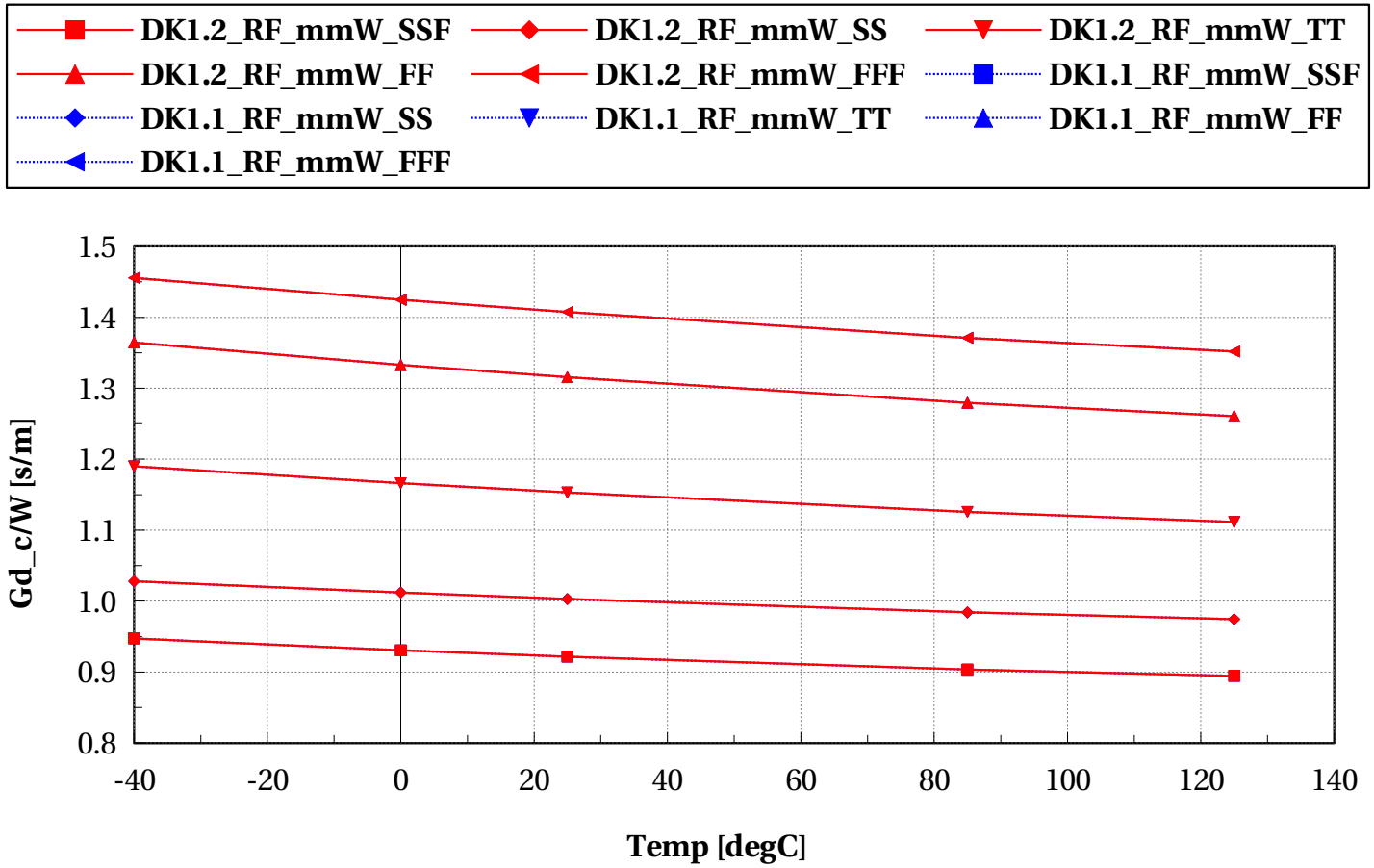

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eglvtpfet_acc, Gm_c/W [s/m] vs Temp [degC]

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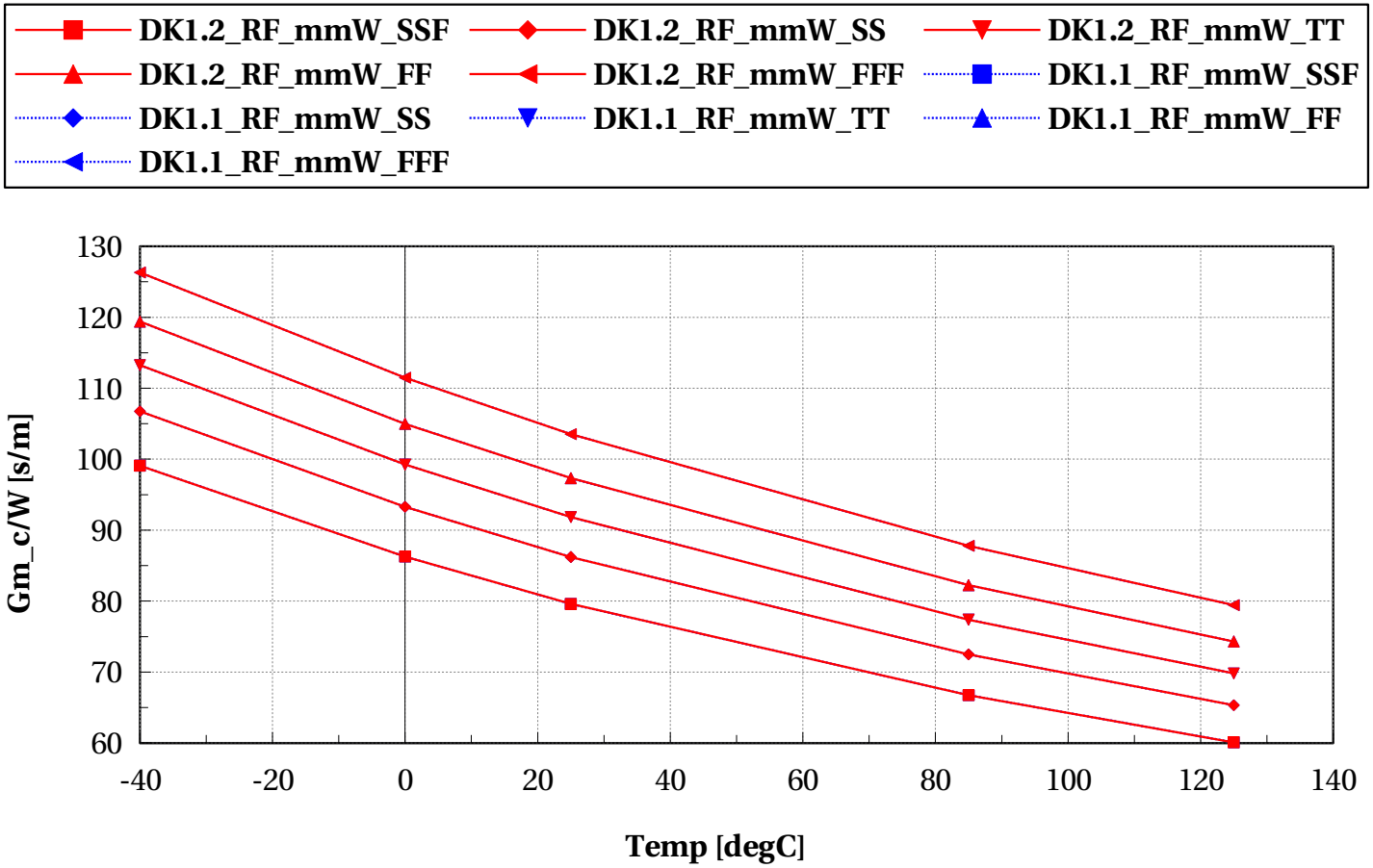

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eglvtpfet_acc, Gain_c [] vs Temp [degC]

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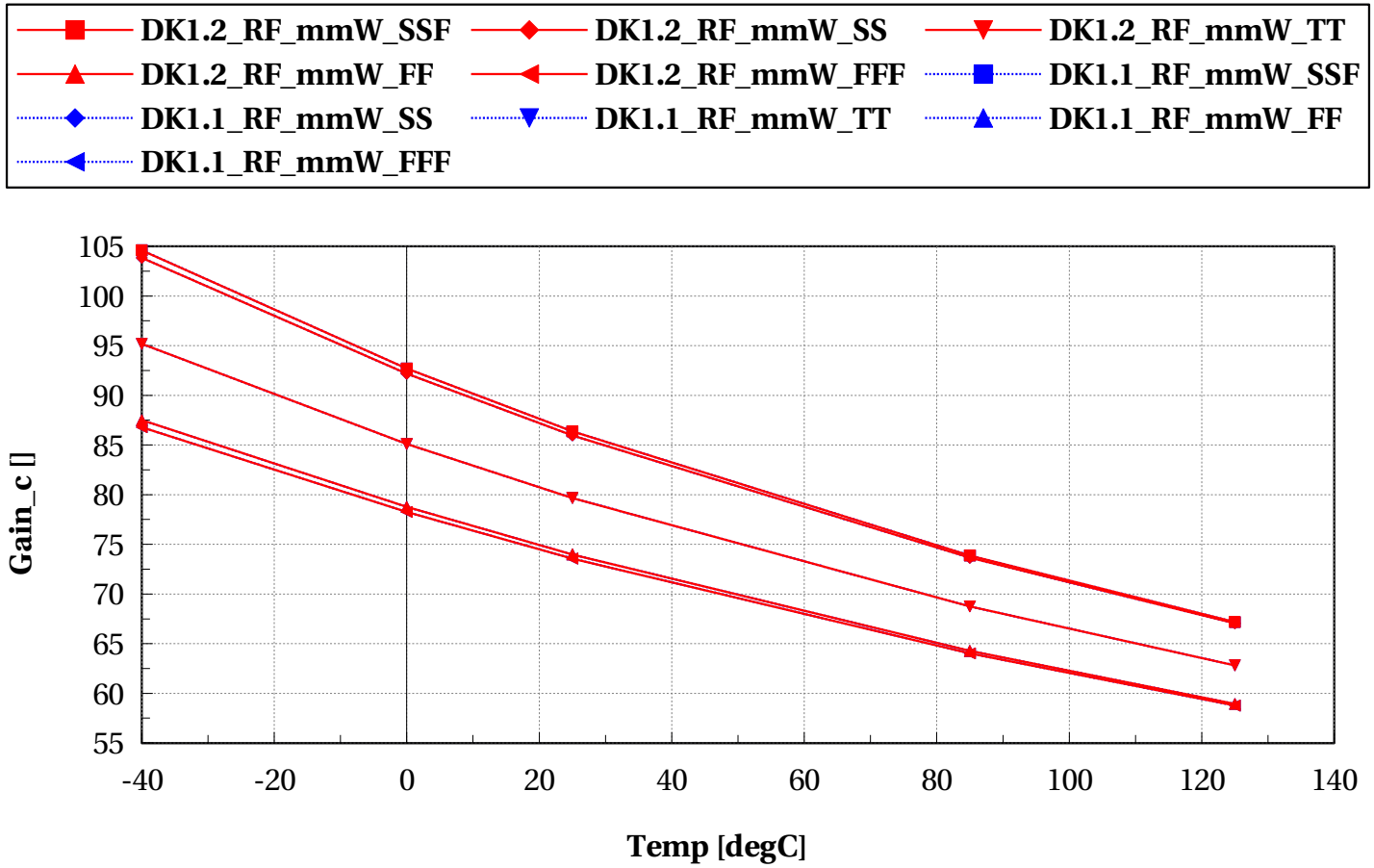

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eglvtpfet_acc, Cgd_0v/W [F/m] vs Temp [degC]

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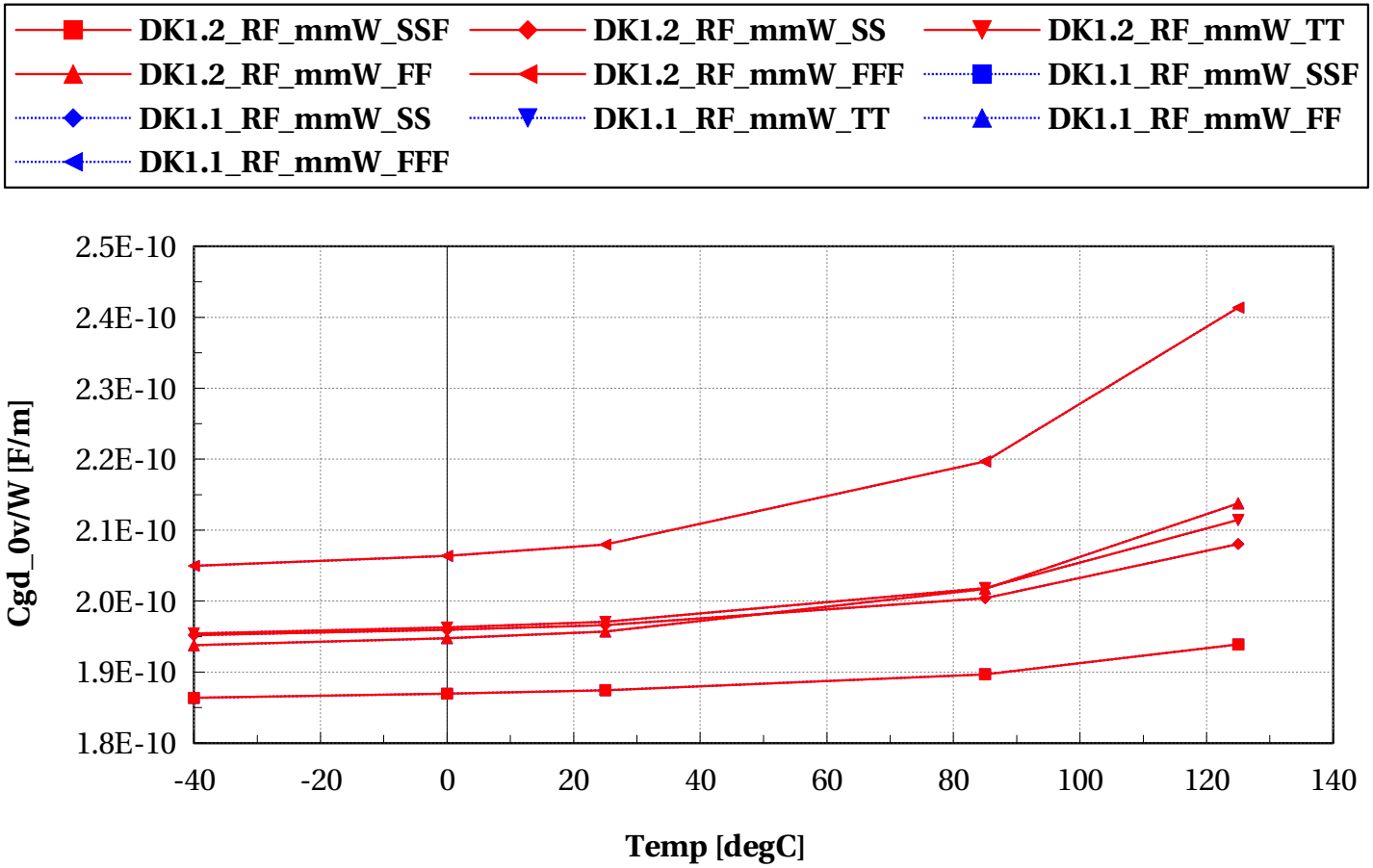

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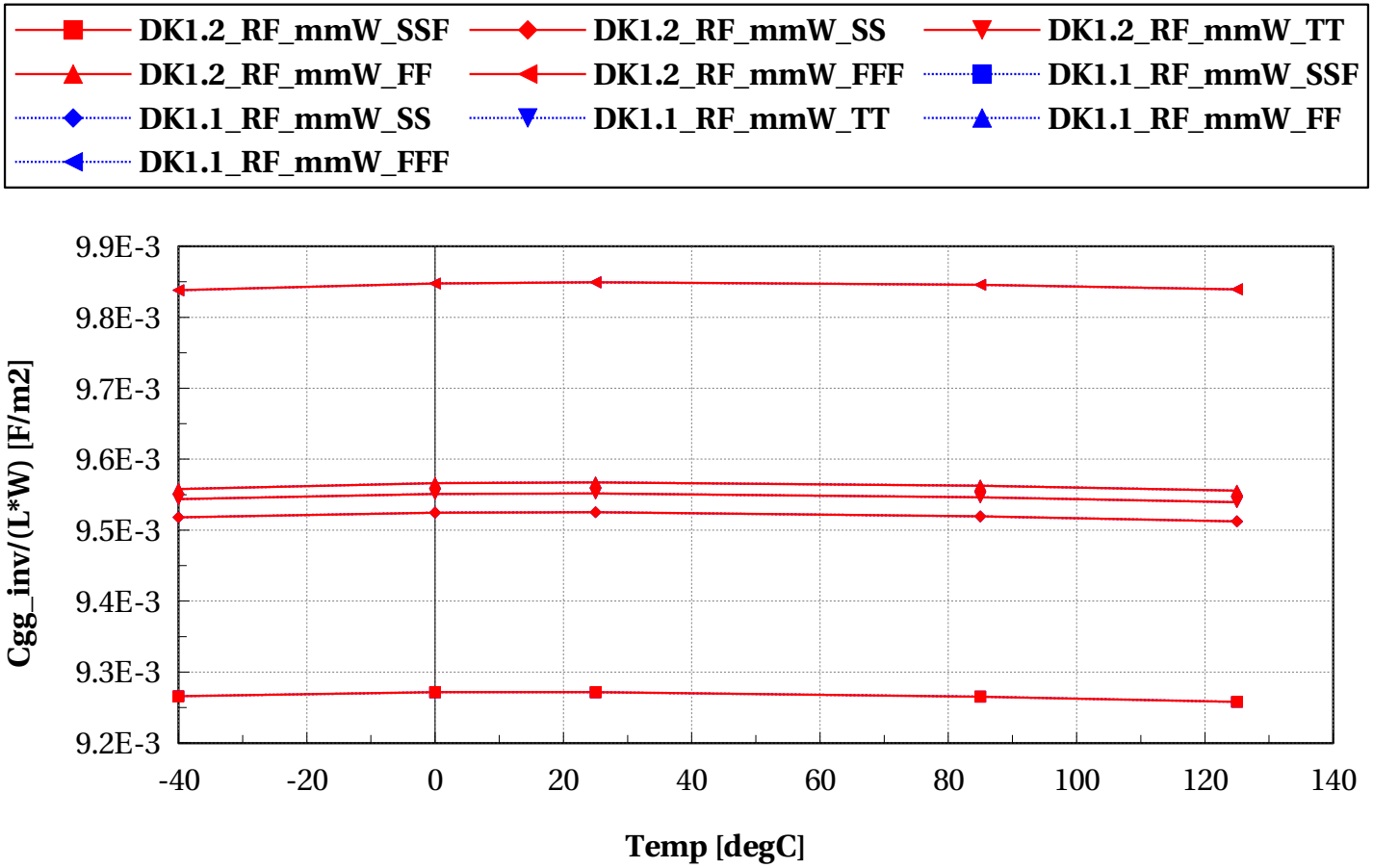
eglvtpfet_acc, Cgg_inv/(L*W) [F/m2] vs Temp [degC]

Vbs==1.8 and l==0.15e-6 and w==2e-6 and devType=="PCELLwoWPE"



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Normalized scaling versus Temp @ Vbs=1.8, L=0.15u, W=2u

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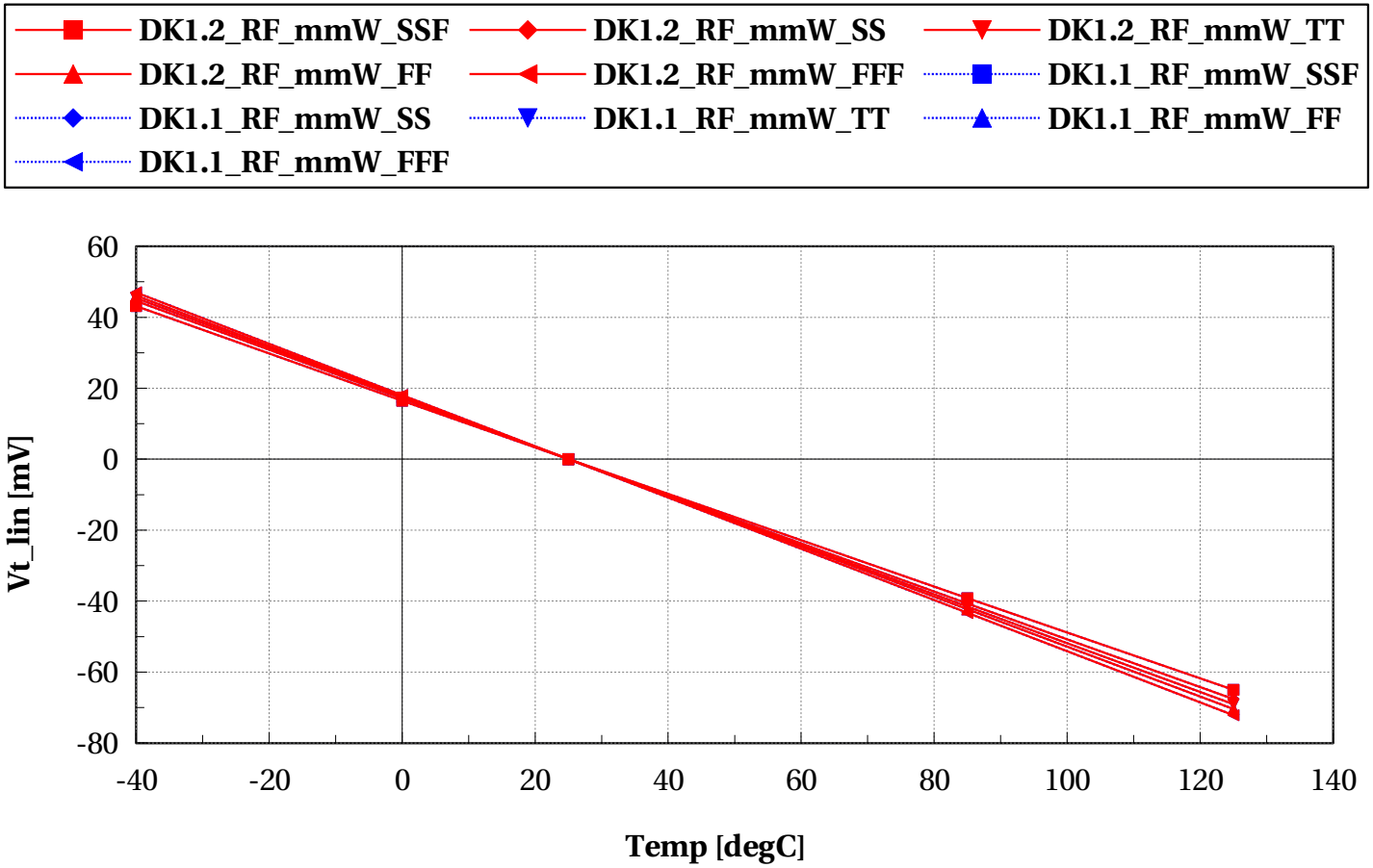
eglvtpfet_acc, Vt_lin [mV] vs Temp [degC]

Vbs==1.8 and l==0.15e-6 and w==2e-6 and devType=="PCELLwoWPE"



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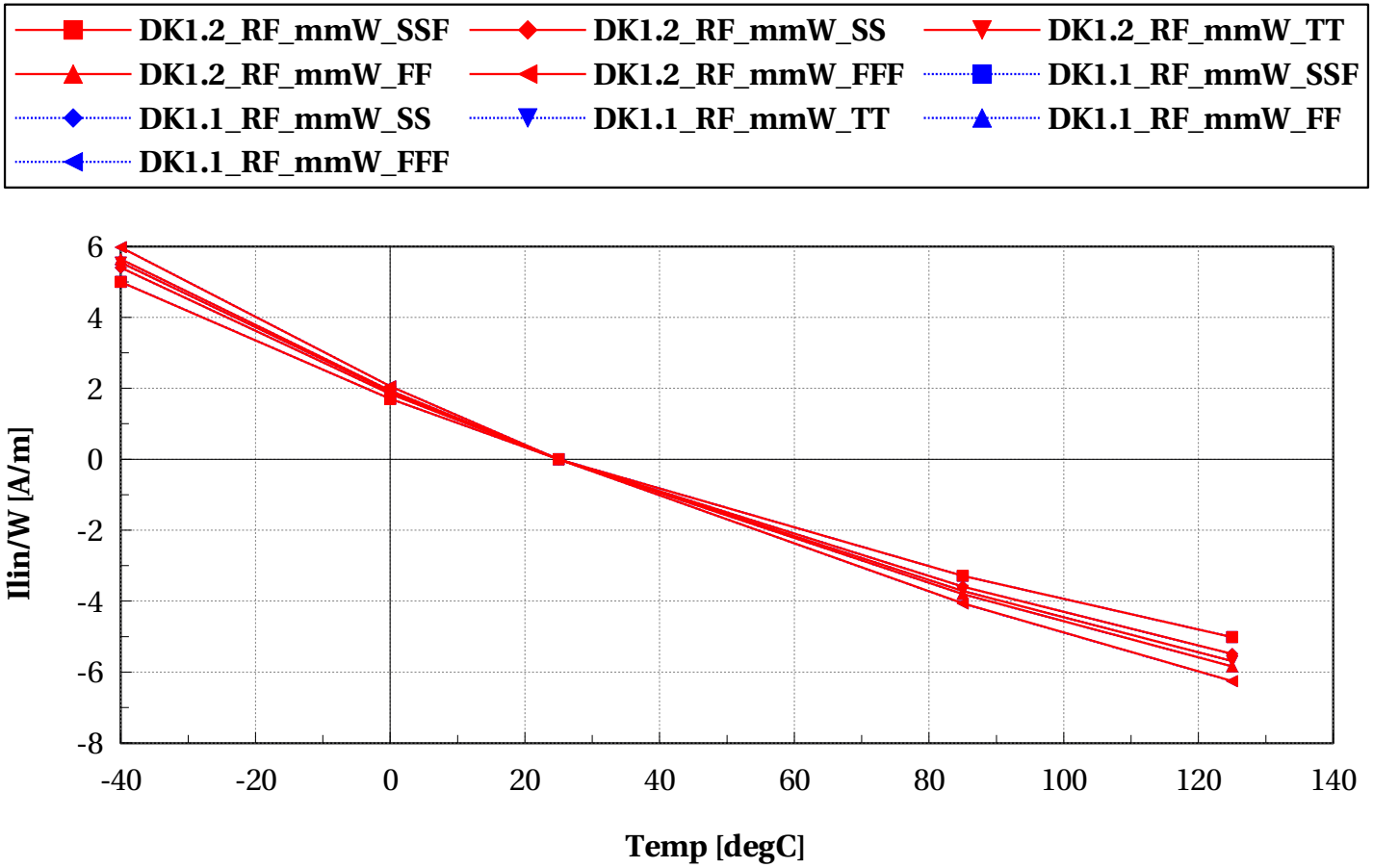
eglvtpfet_acc, Ilin/W [A/m] vs Temp [degC]

Vbs==1.8 and l==0.15e-6 and w==2e-6 and devType=="PCELLwoWPE"



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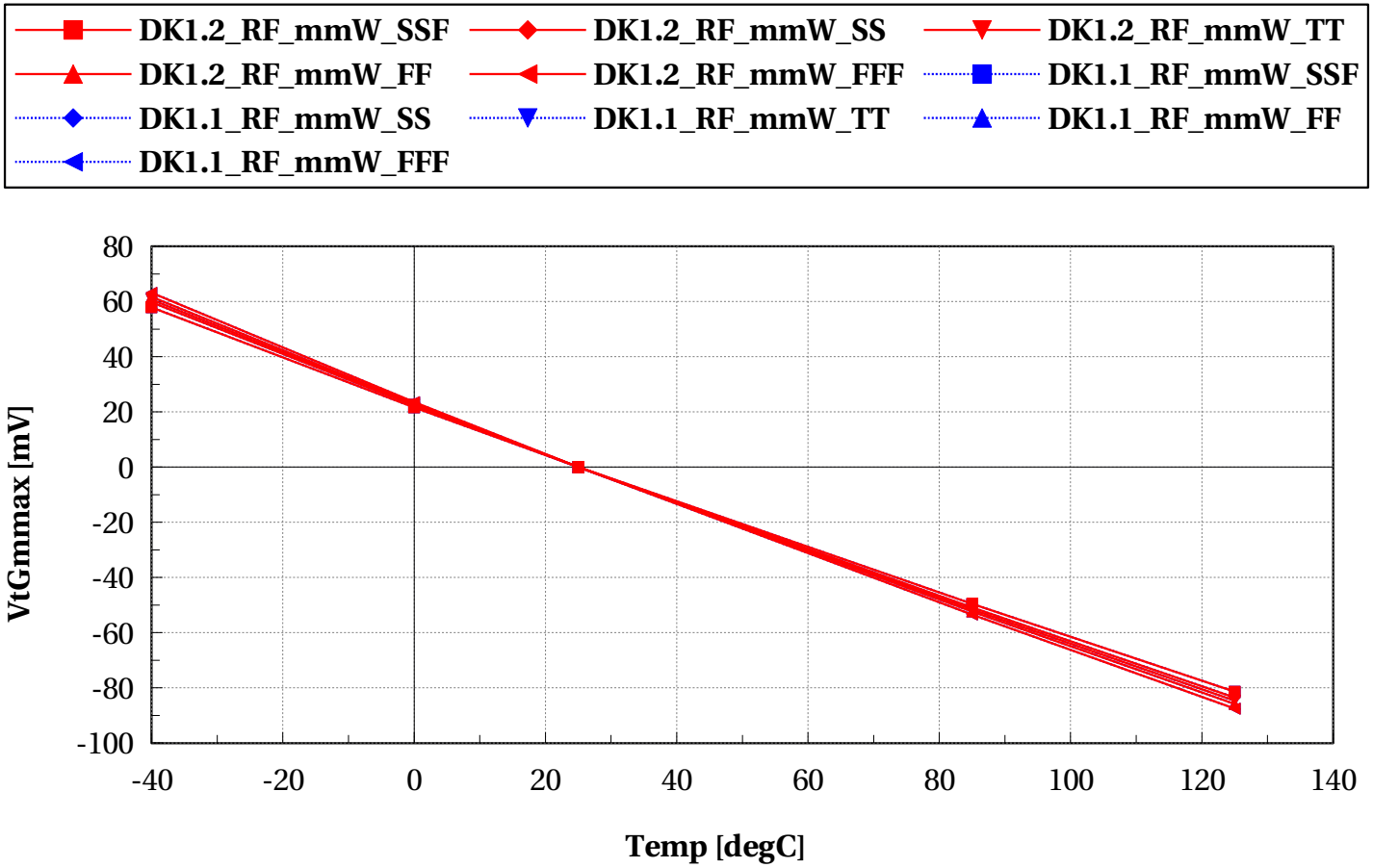
eglvtpfet_acc, VtGmmax [mV] vs Temp [degC]

Vbs==1.8 and l==0.15e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtpfet_acc, DIBL [mV] vs Temp [degC]

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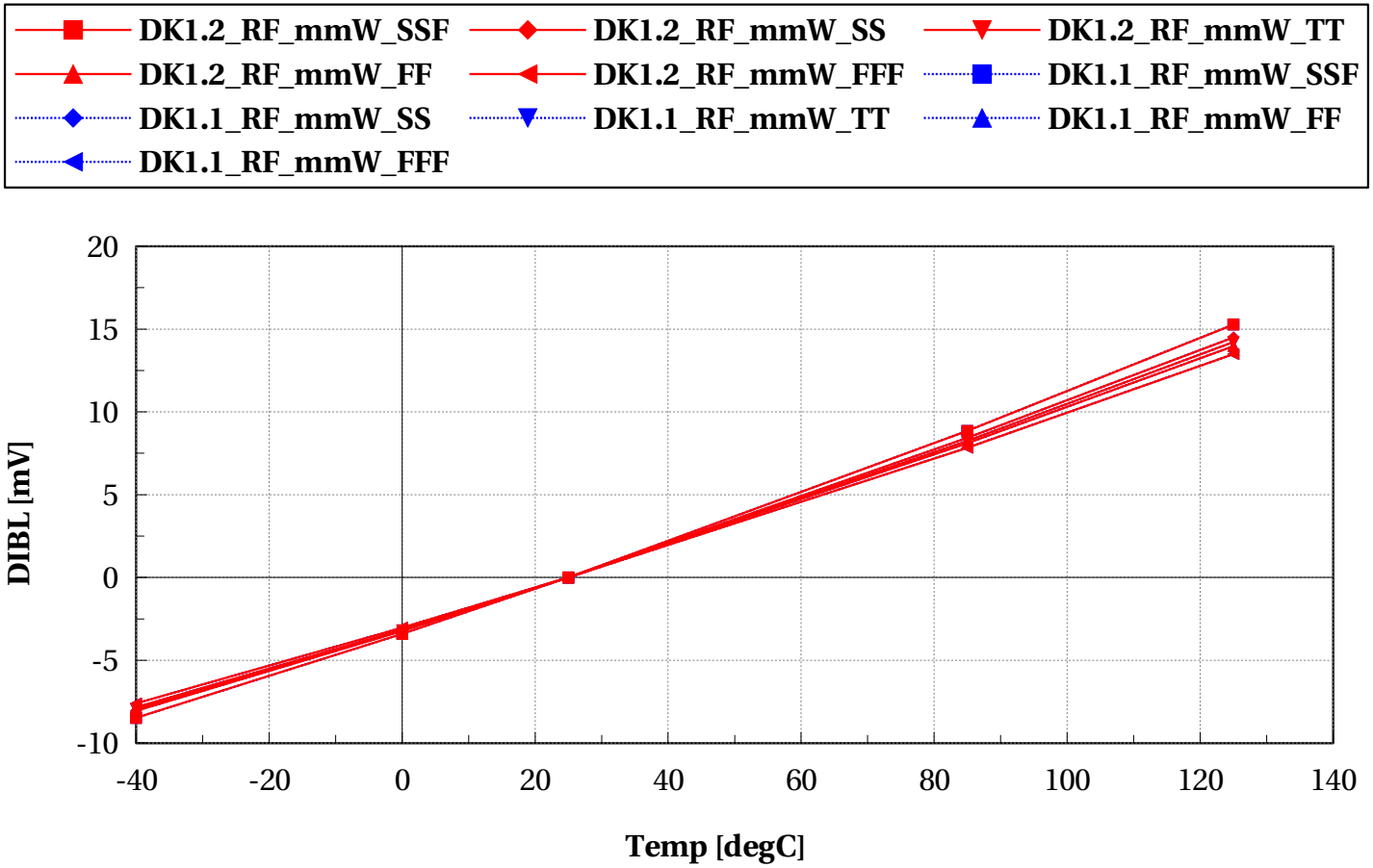

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eglvtpfet_acc, Vt_sat [mV] vs Temp [degC]

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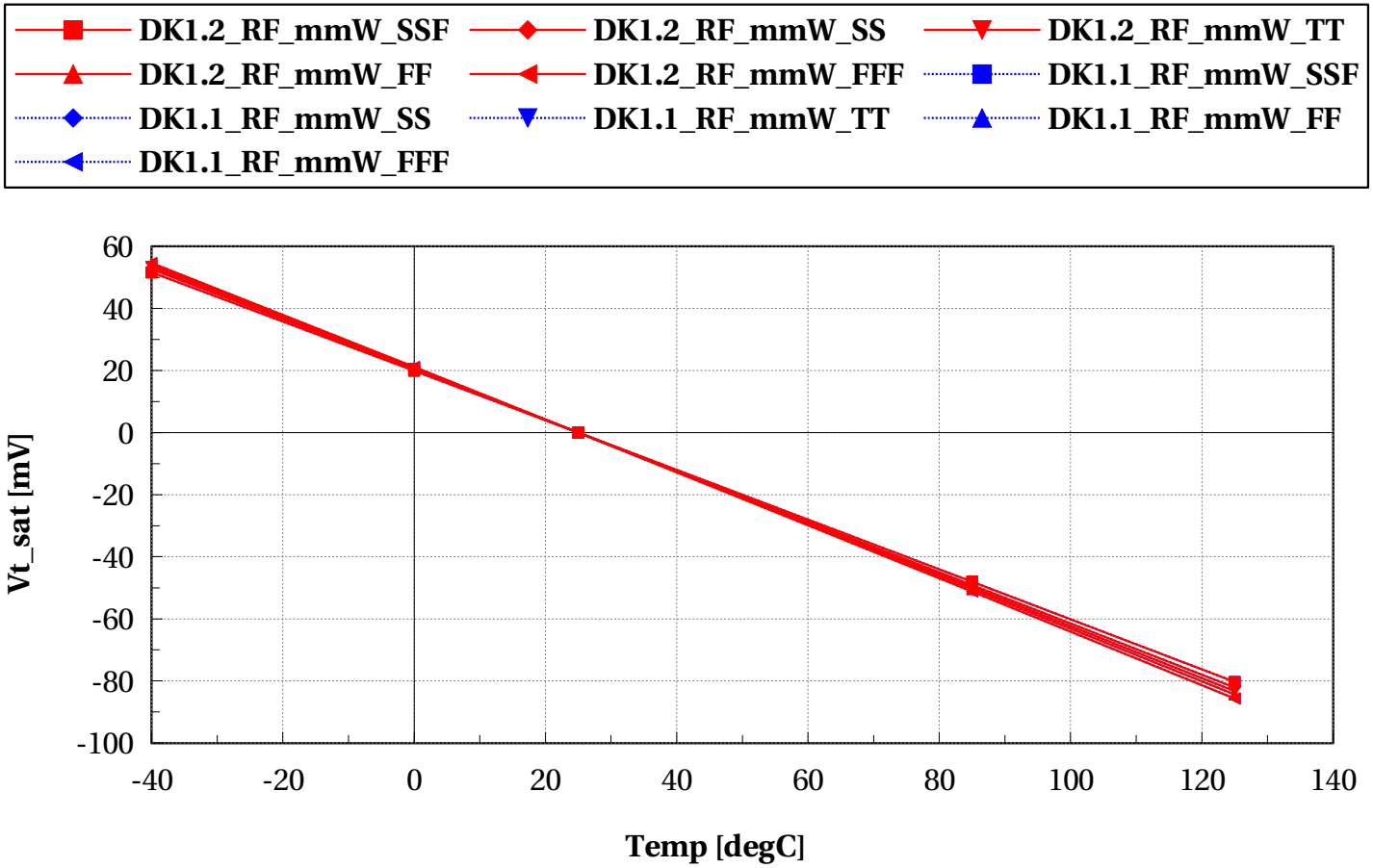

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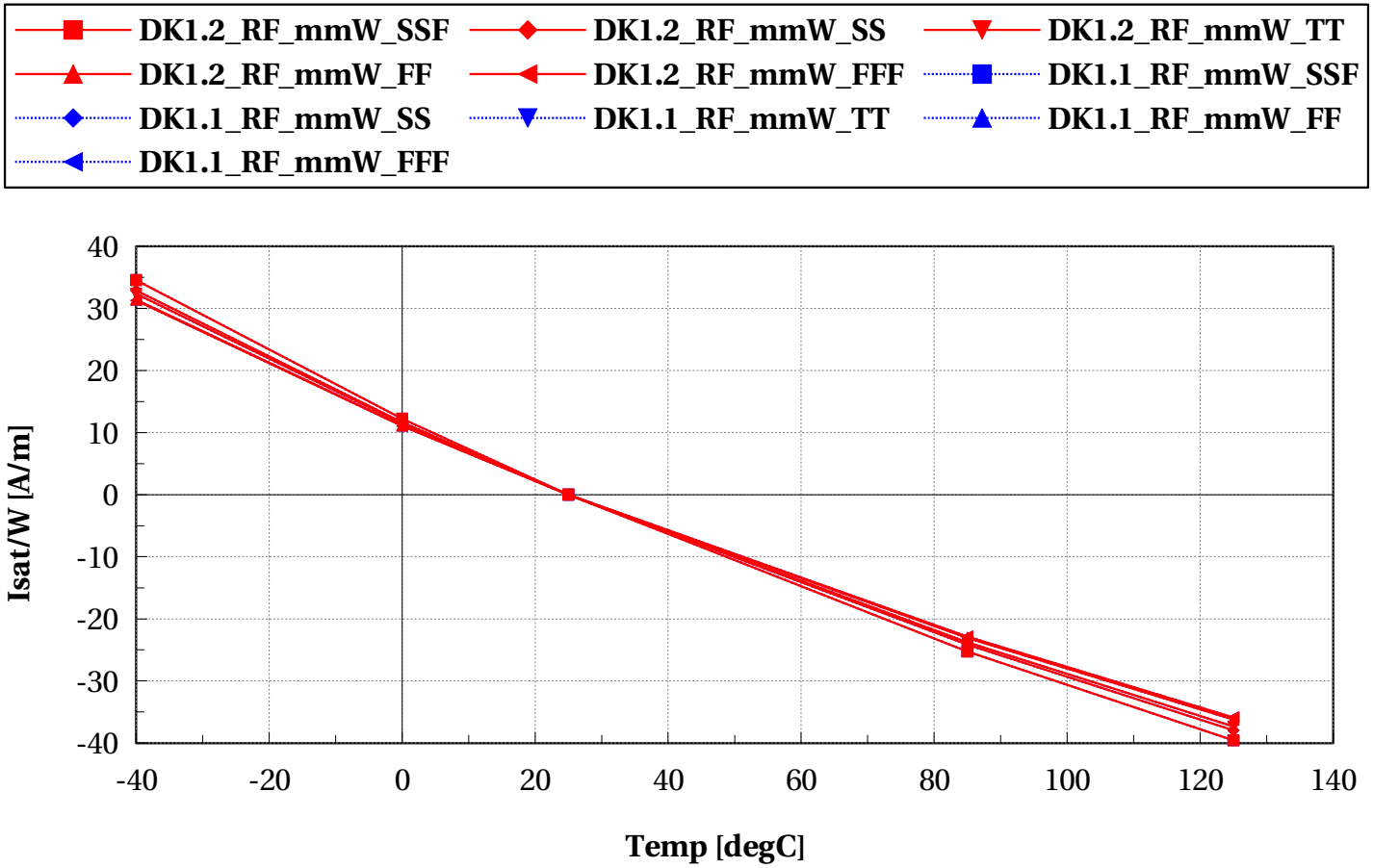
eglvtpfet_acc, Isat/W [A/m] vs Temp [degC]

Vbs==1.8 and l==0.15e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtpfet_acc, Ioffsat [A] vs Temp [degC]

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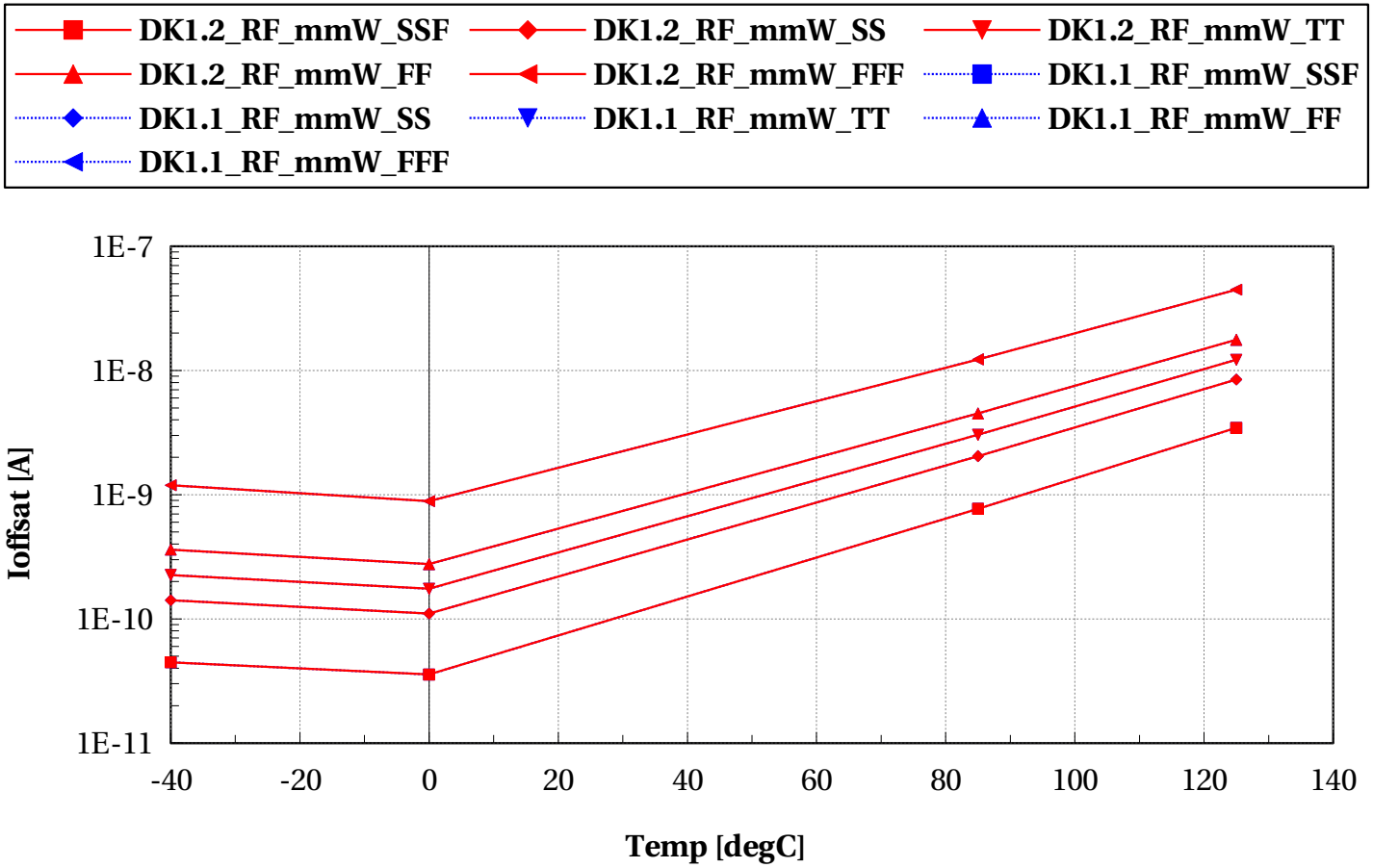

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eglvtpfet_acc, LogIoff [A] vs Temp [degC]

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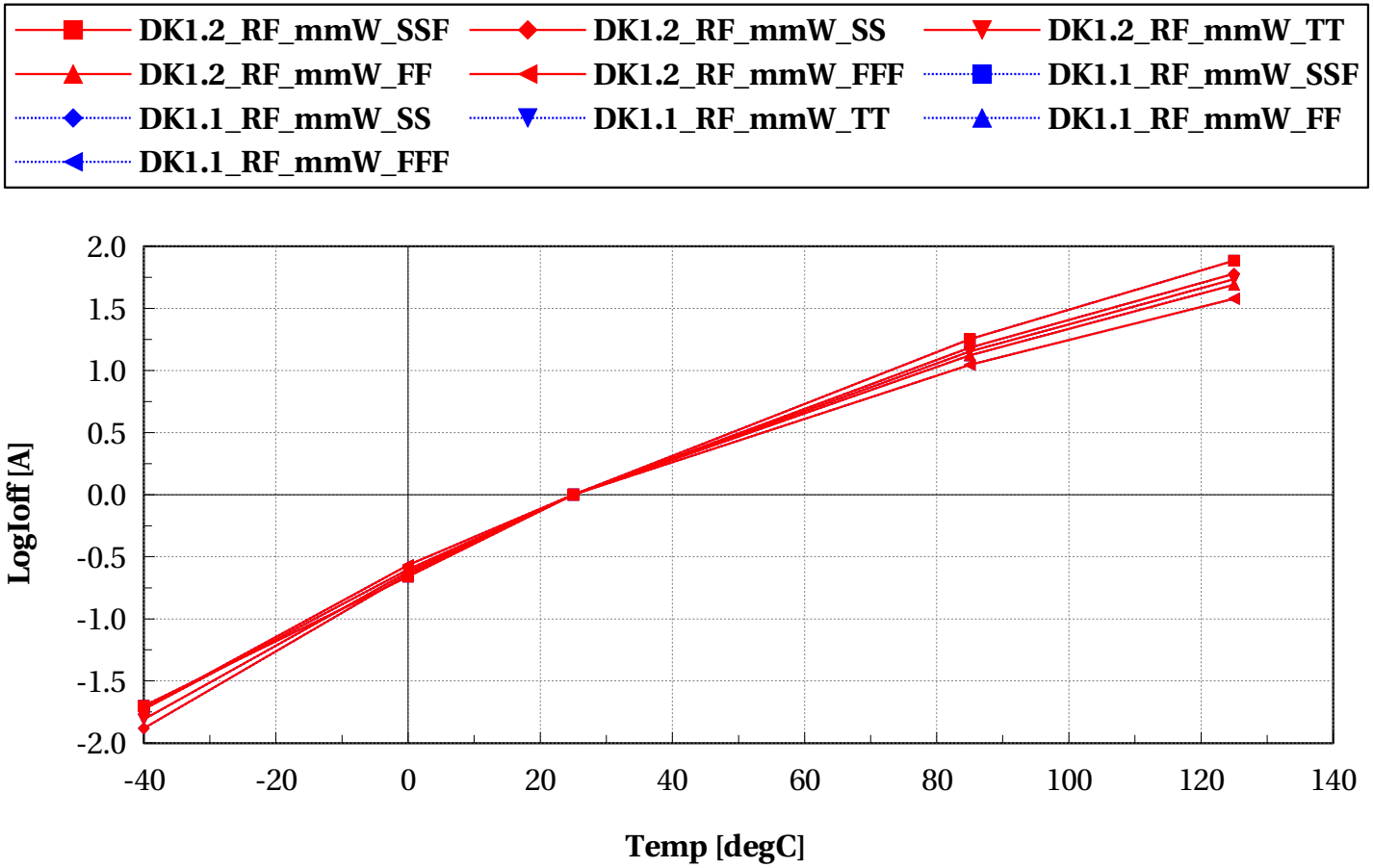

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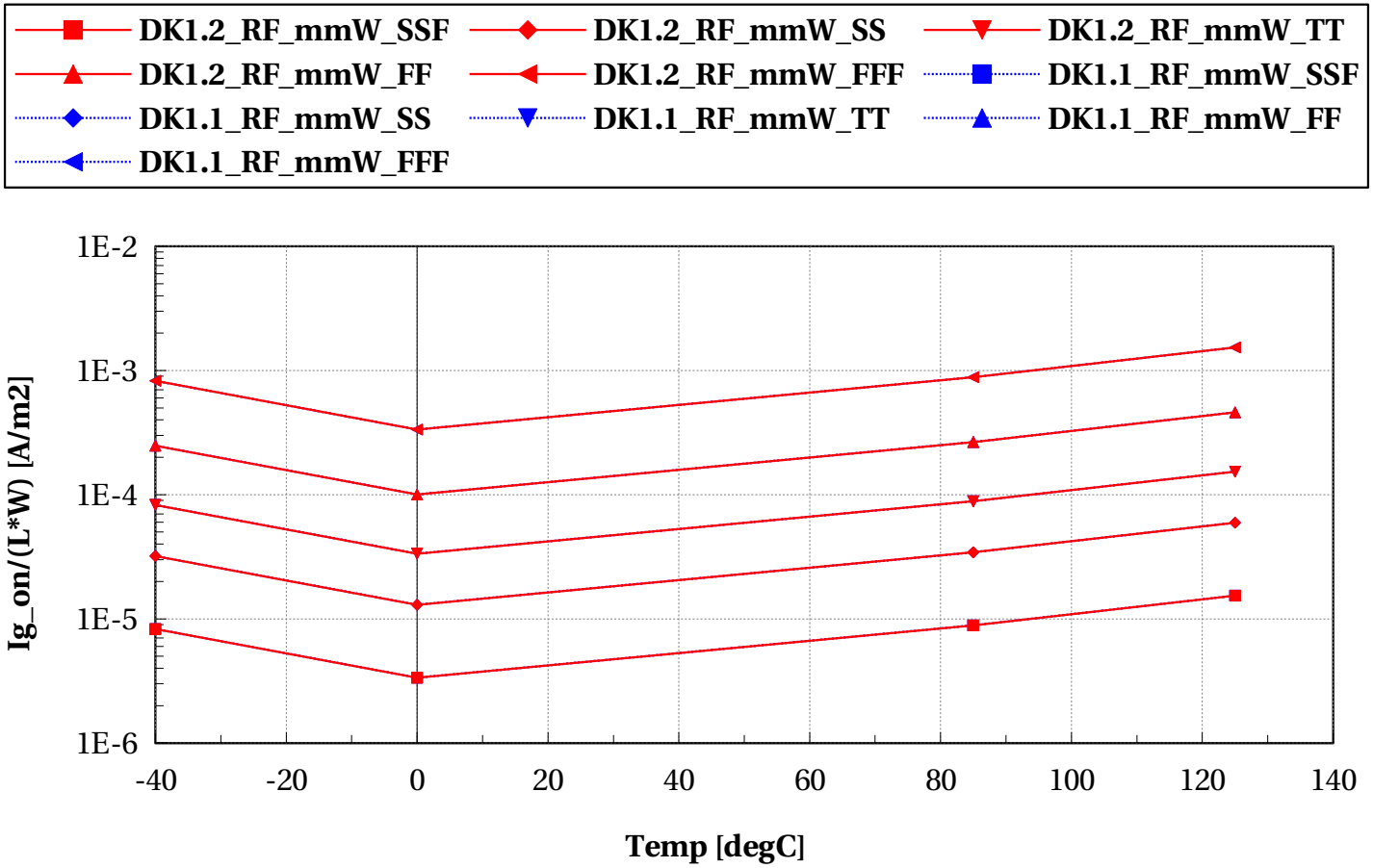
eglvtpfet_acc, Ig_on/(L*W) [A/m2] vs Temp [degC]

Vbs==1.8 and l==0.15e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtpfet_acc, Ig_off/(W) [A/m] vs Temp [degC]

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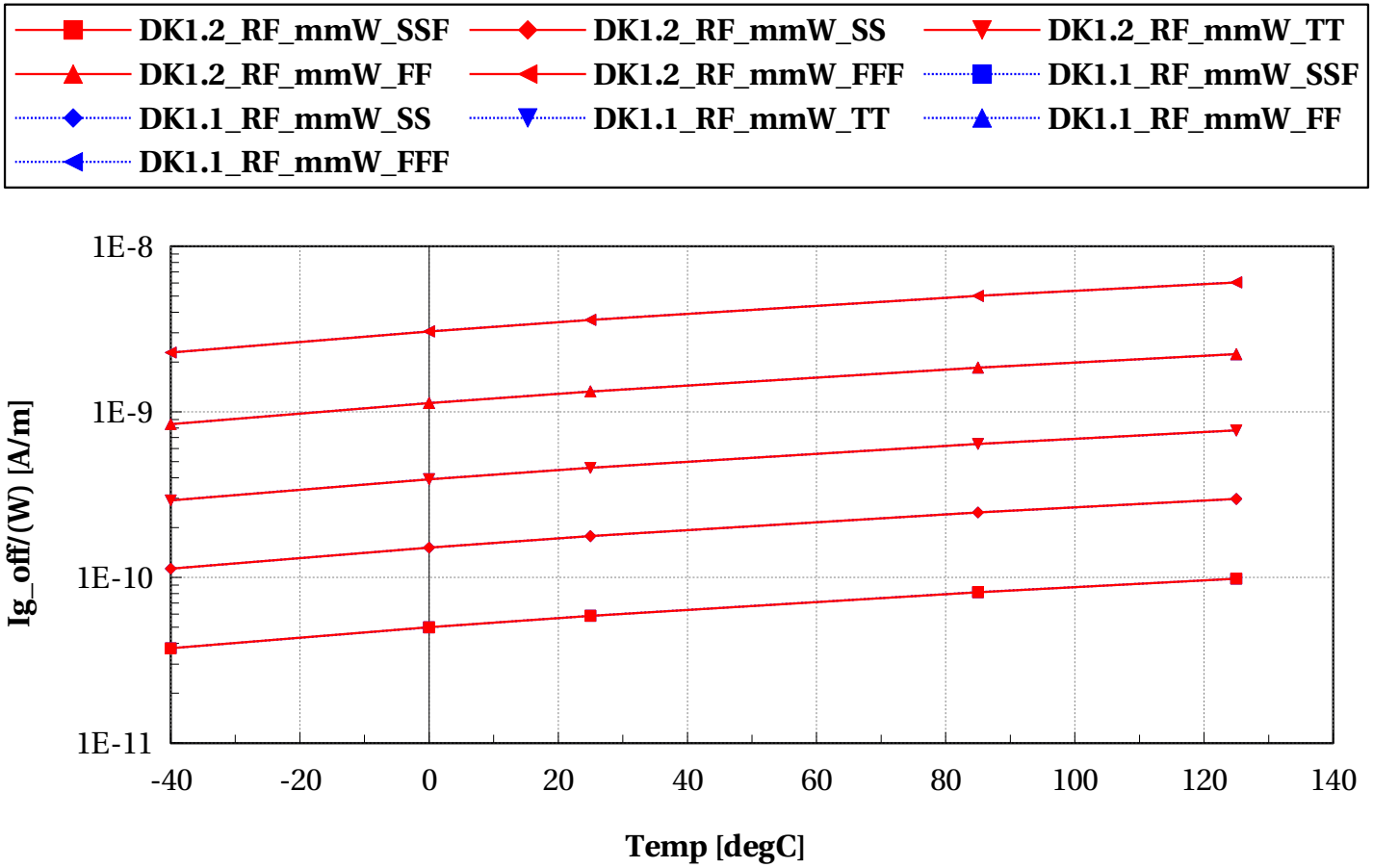

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eglvtpfet_acc, Gd_c/W [s/m] vs Temp [degC]

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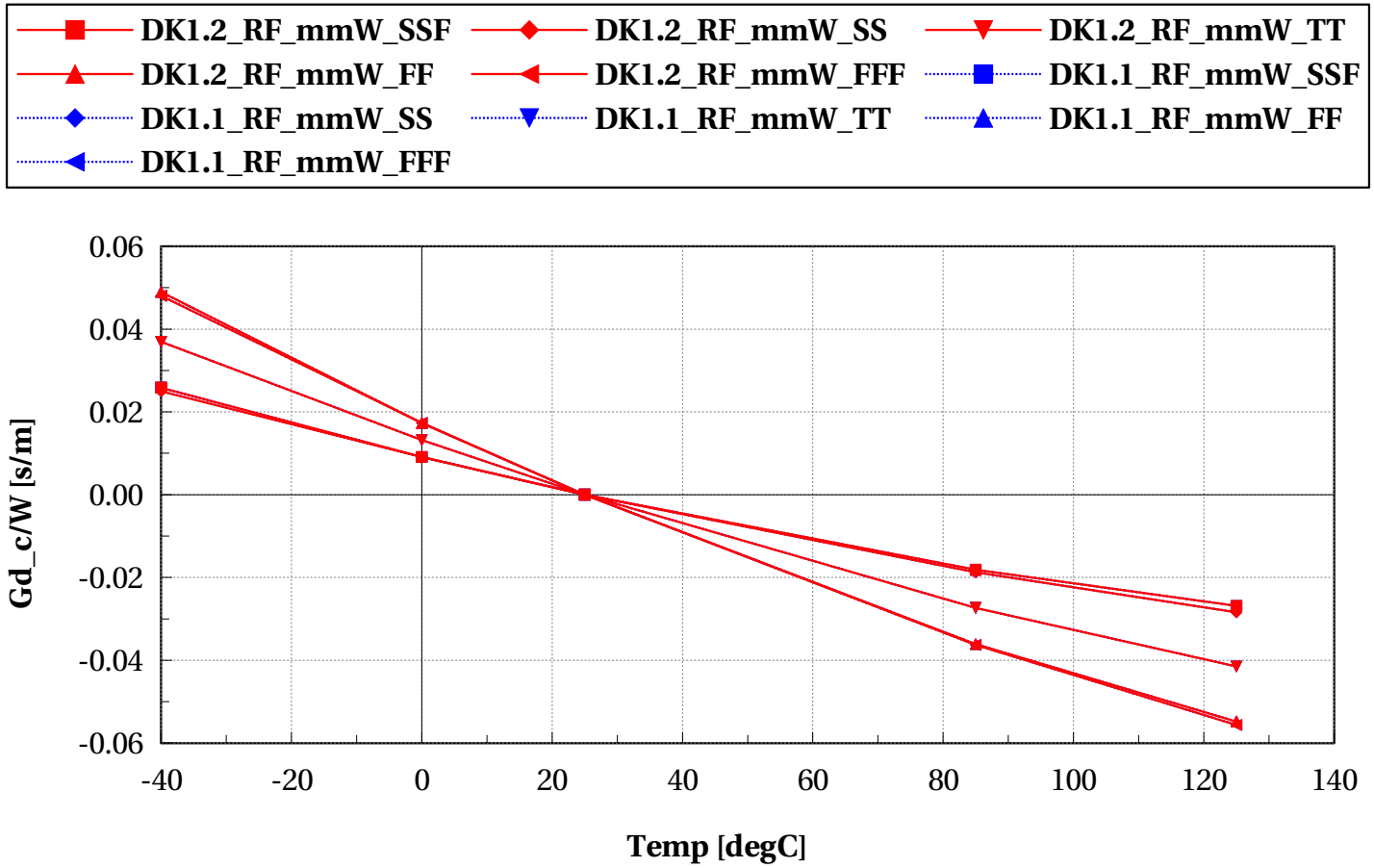

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eglvtpfet_acc, Gm_c/W [s/m] vs Temp [degC]

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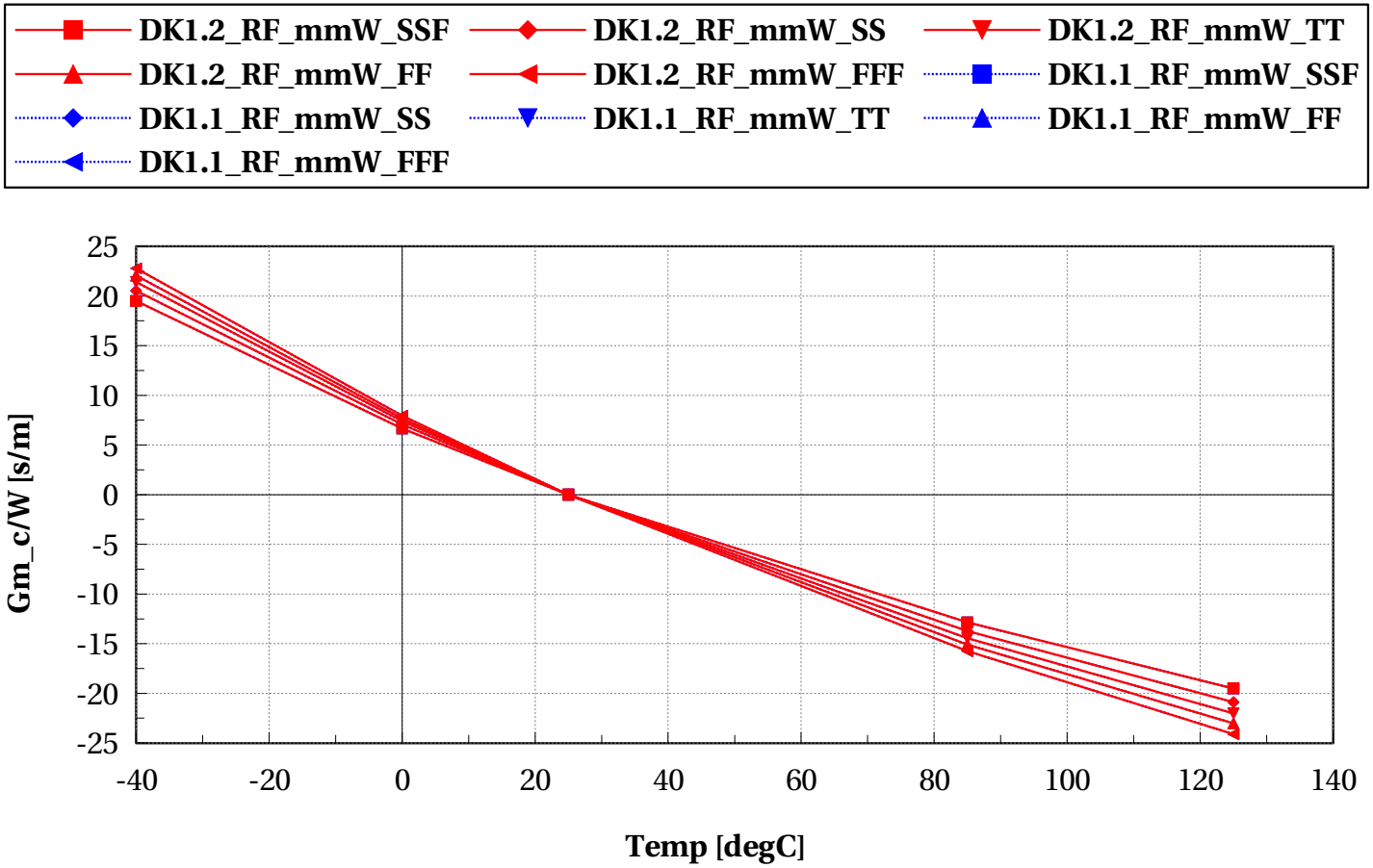

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eglvtpfet_acc, Gain_c [] vs Temp [degC]

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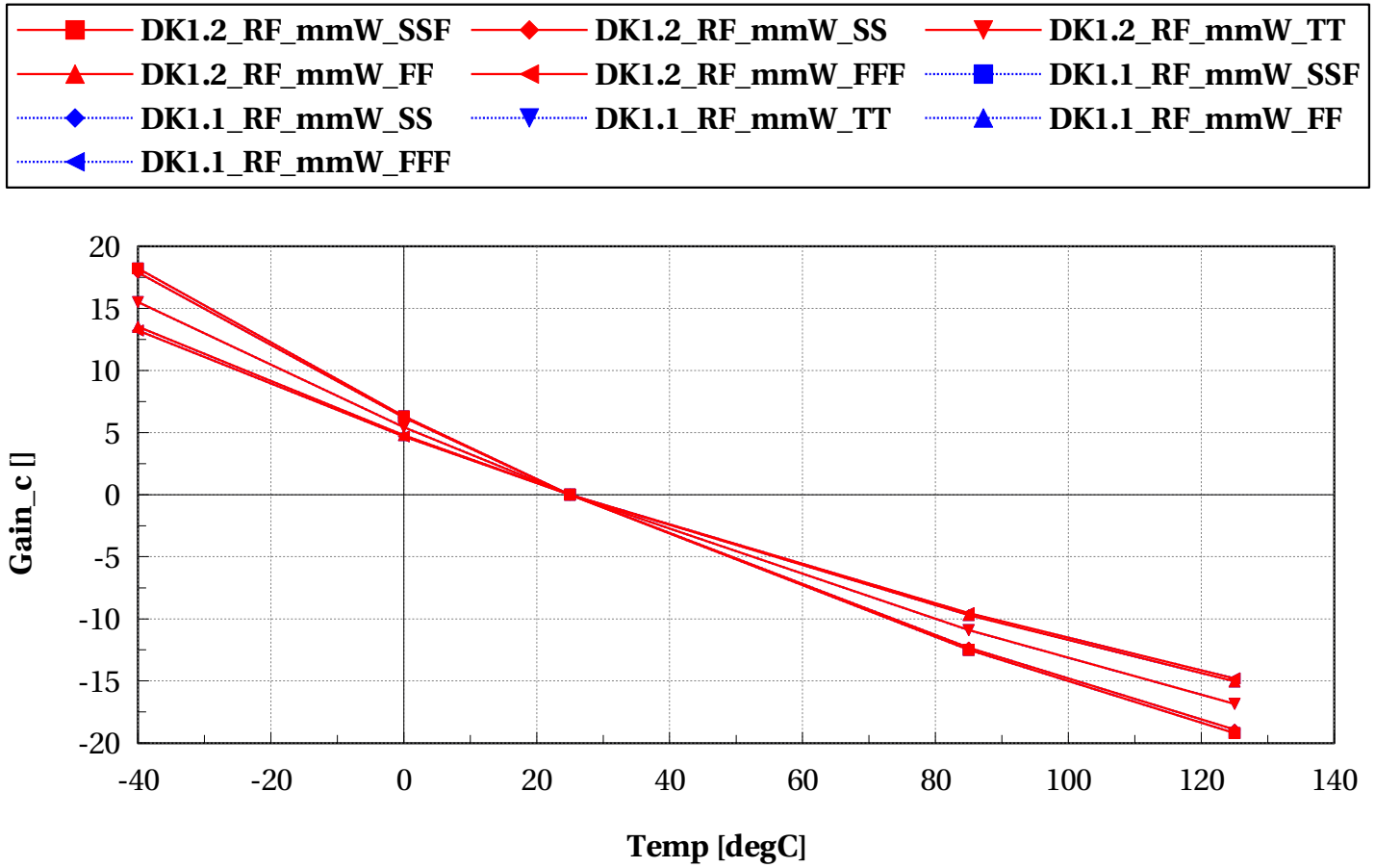

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eglvtpfet_acc, Cgd_0v/W [F/m] vs Temp [degC]

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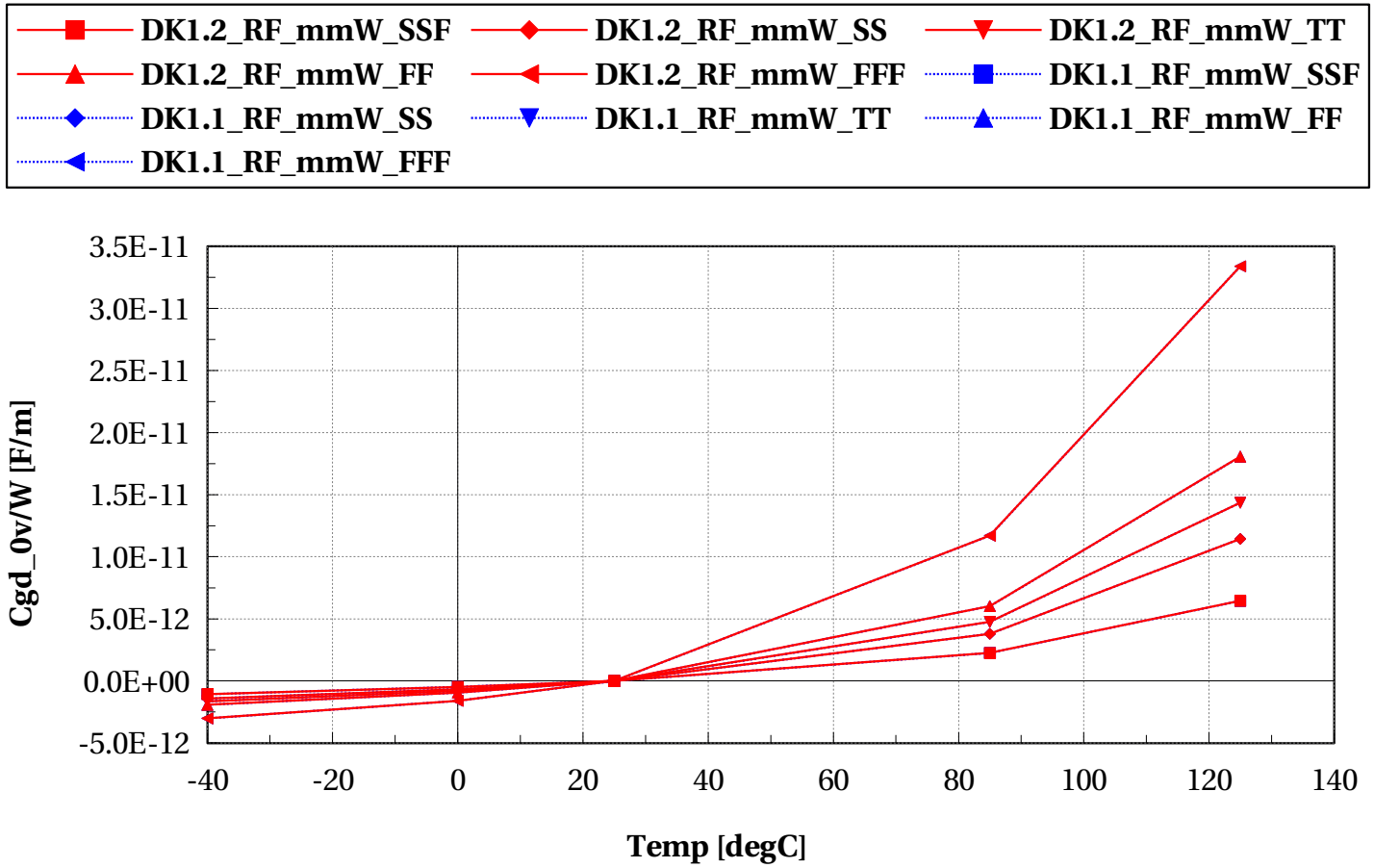

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eglvtpfet_acc, Cgg_inv/(L*W) [F/m2] vs Temp [degC]

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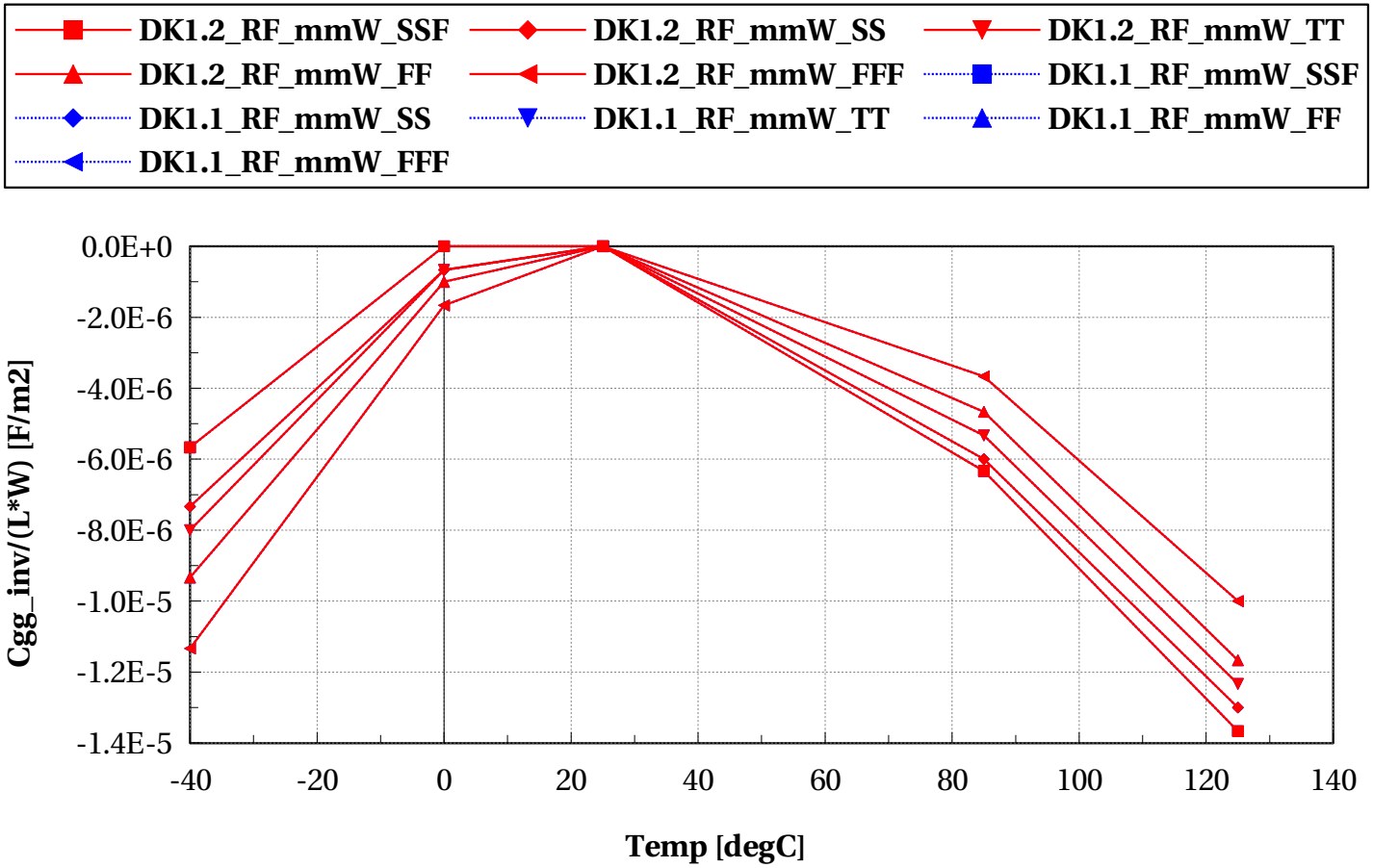

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Scaling versus Temp @ Vbs=1.8, L=2u, W=2u

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eglvtpfet_acc, Vt_lin [mV] vs Temp [degC]

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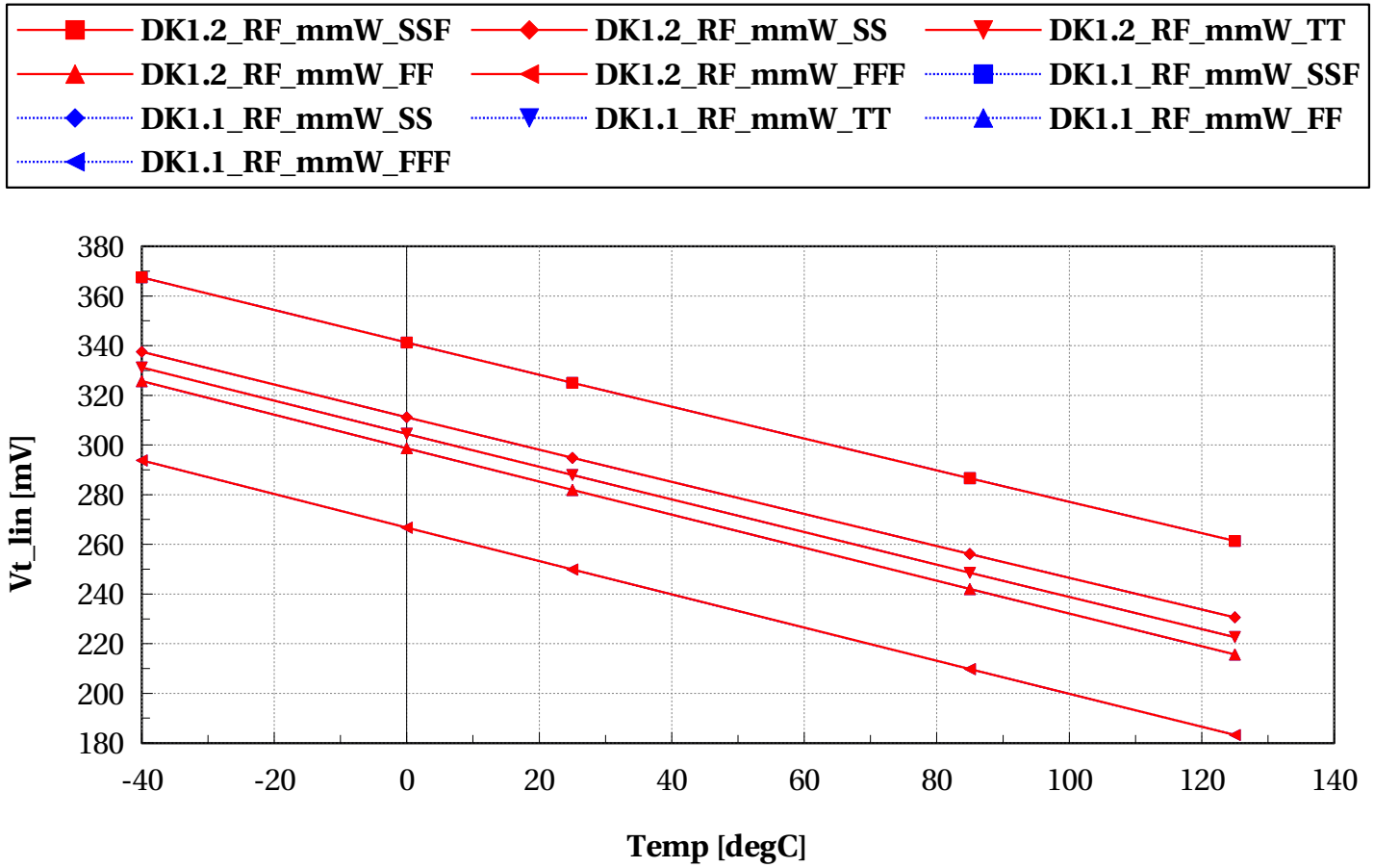

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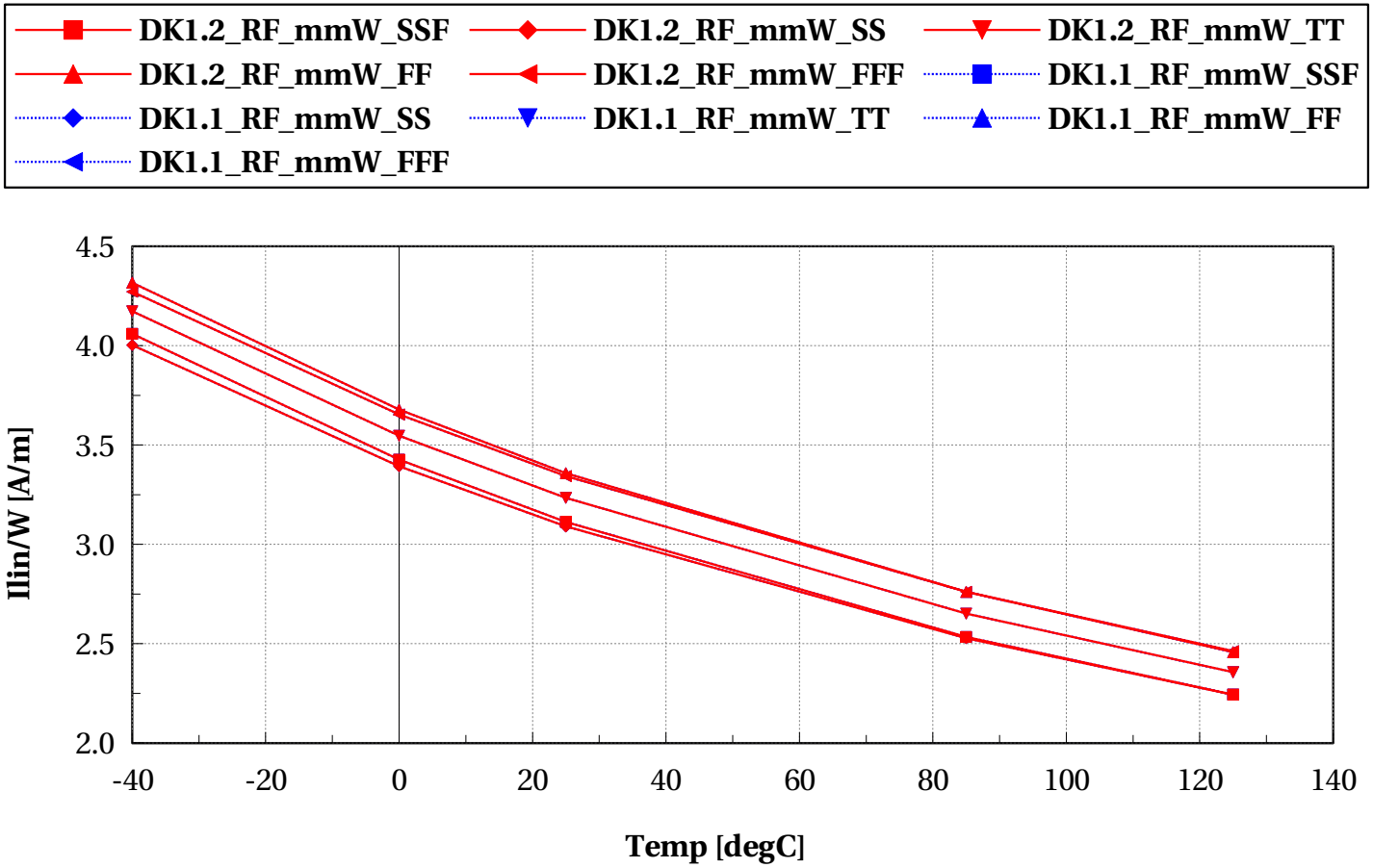
eglvtpfet_acc, Ilin/W [A/m] vs Temp [degC]

Vbs==1.8 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtpfet_acc, VtGmmax [mV] vs Temp [degC]

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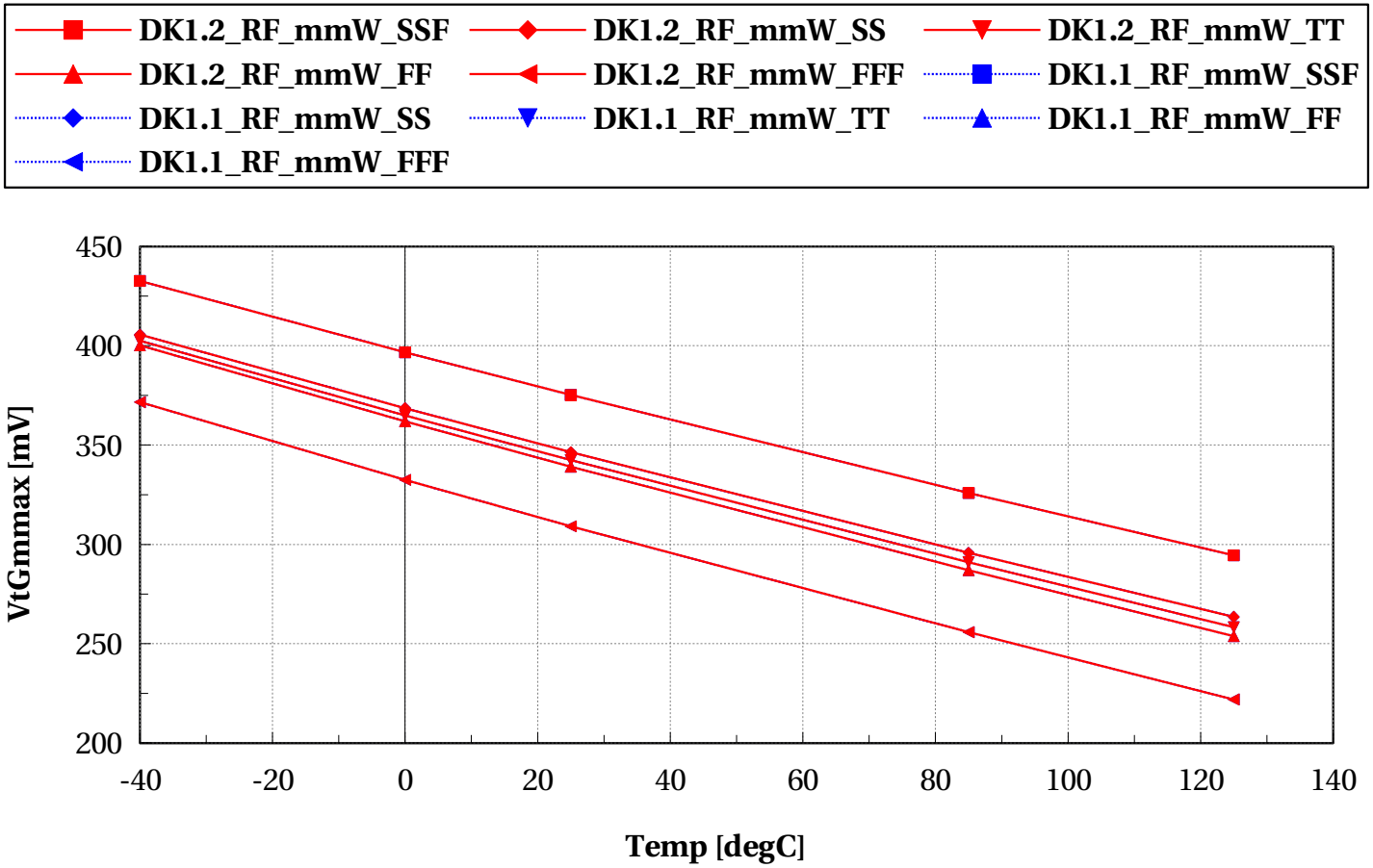

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eglvtpfet_acc, DIBL [mV] vs Temp [degC]

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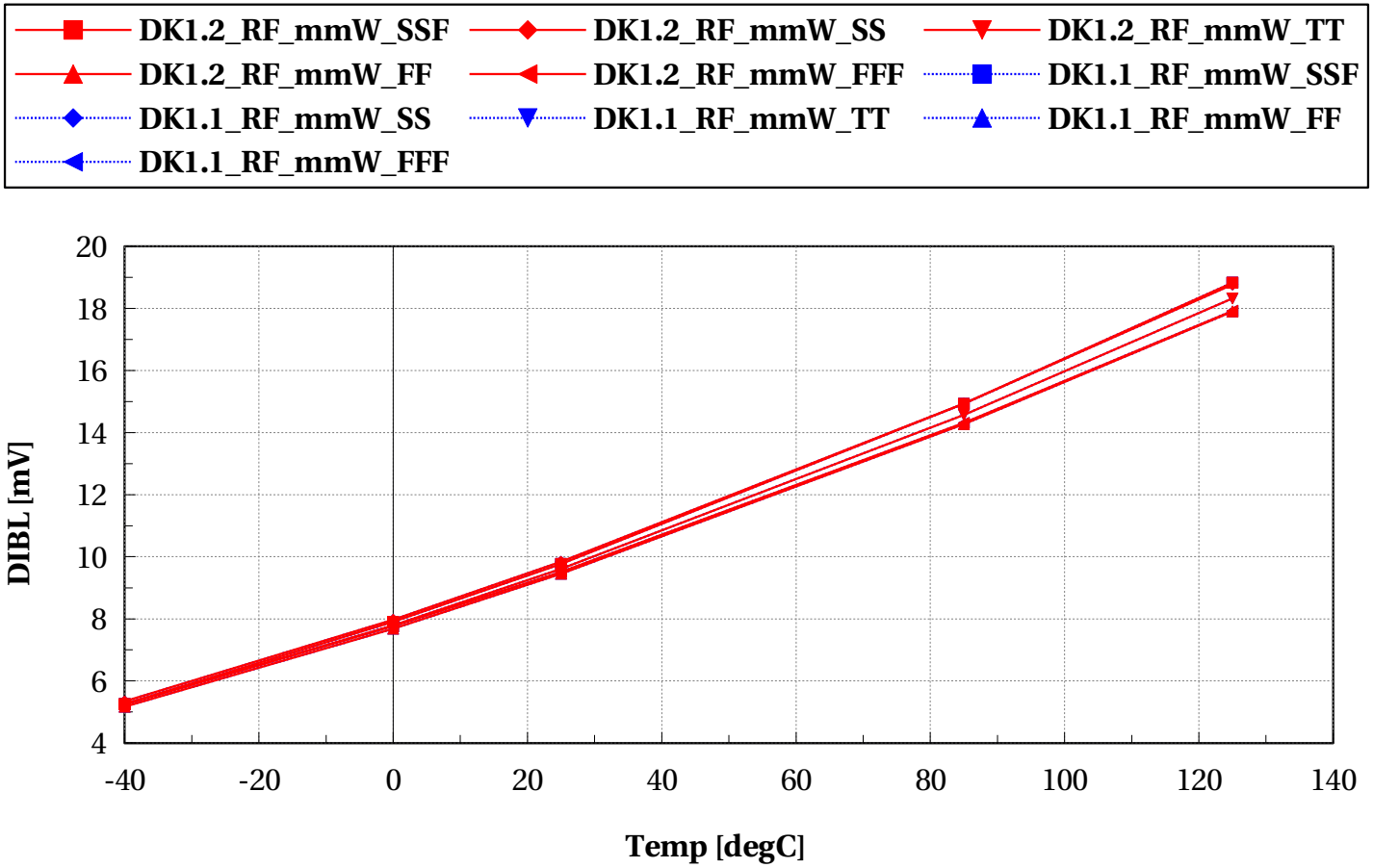

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eglvtpfet_acc, Vt_sat [mV] vs Temp [degC]

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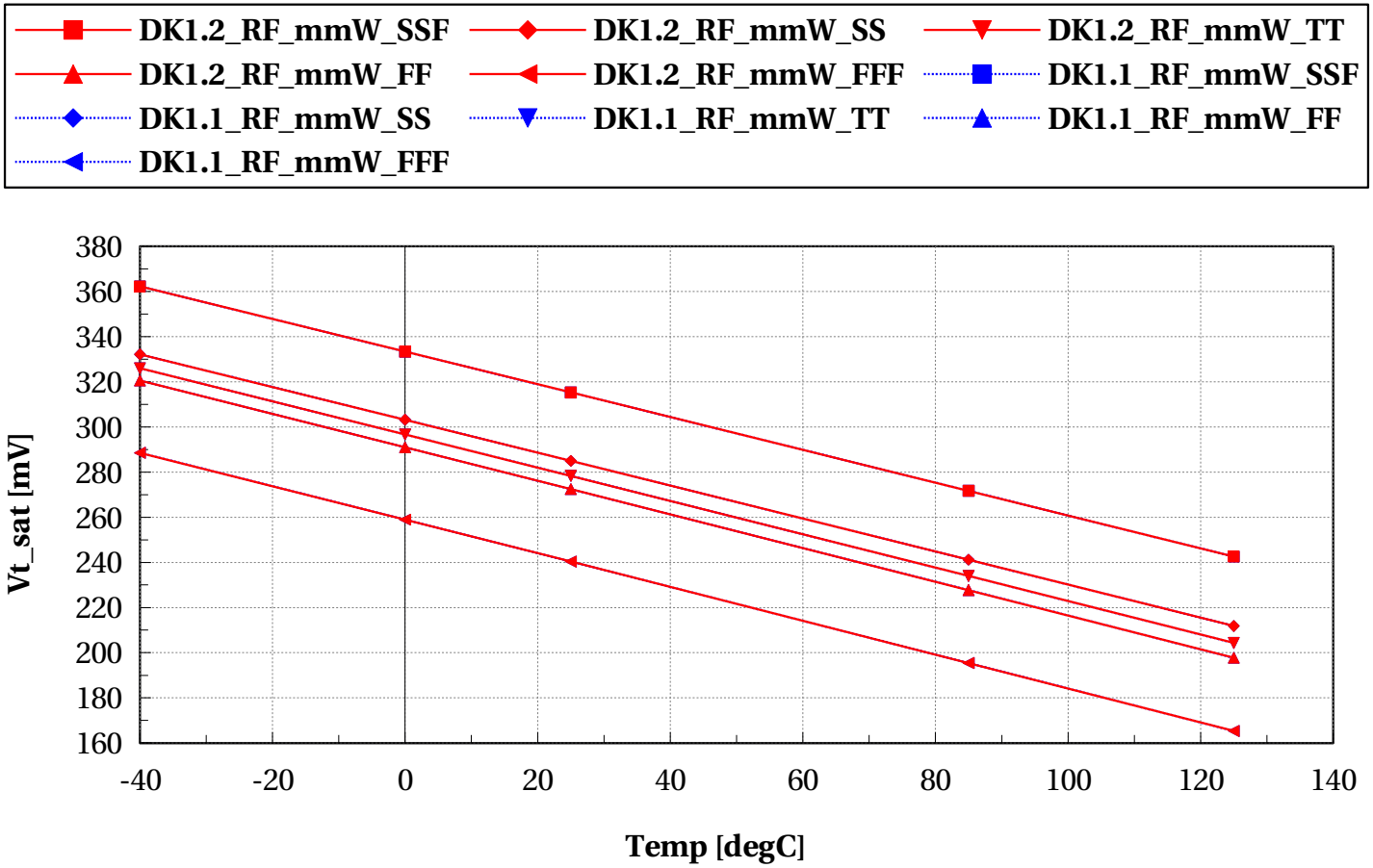

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eglvtpfet_acc, Isat/W [A/m] vs Temp [degC]

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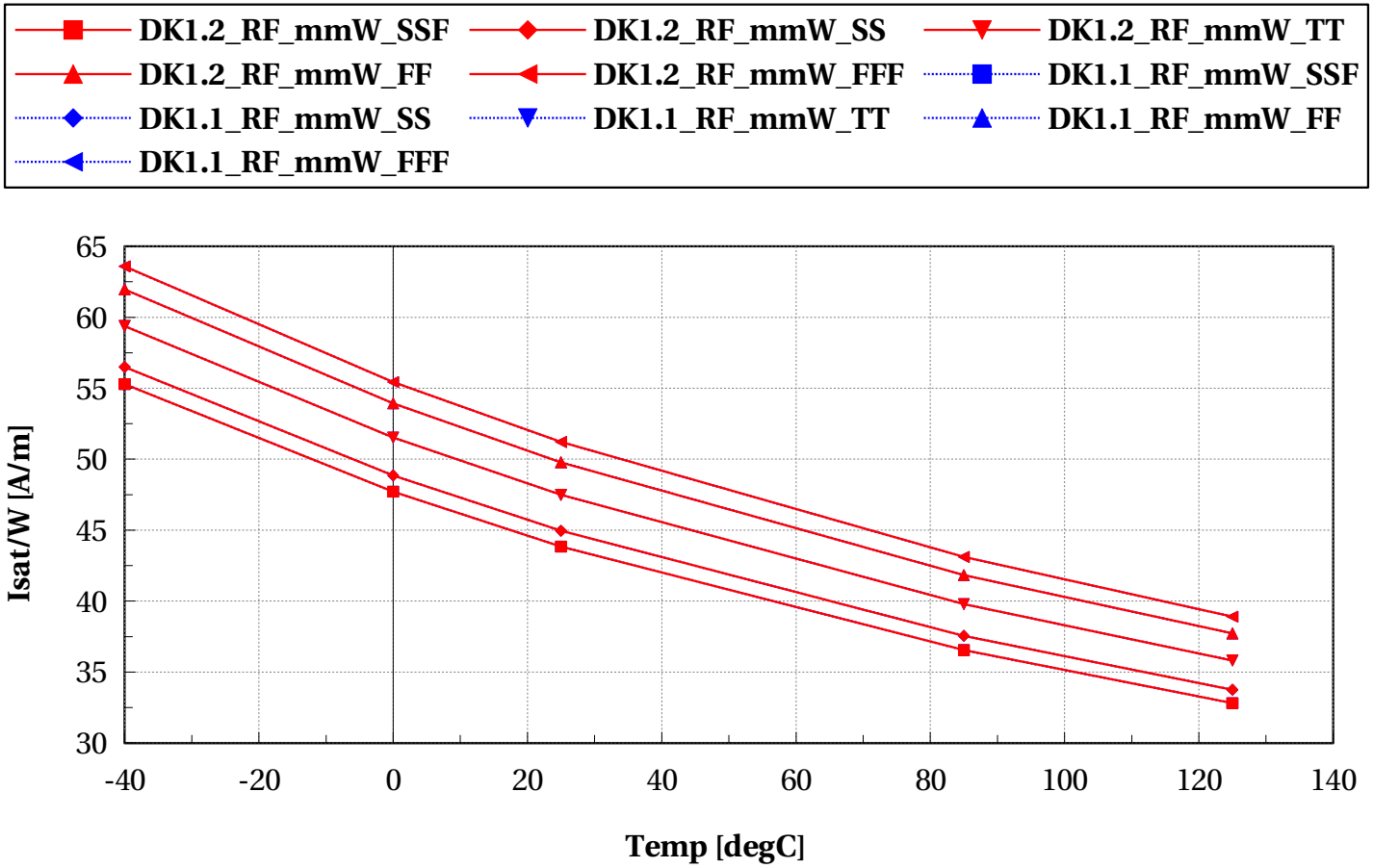

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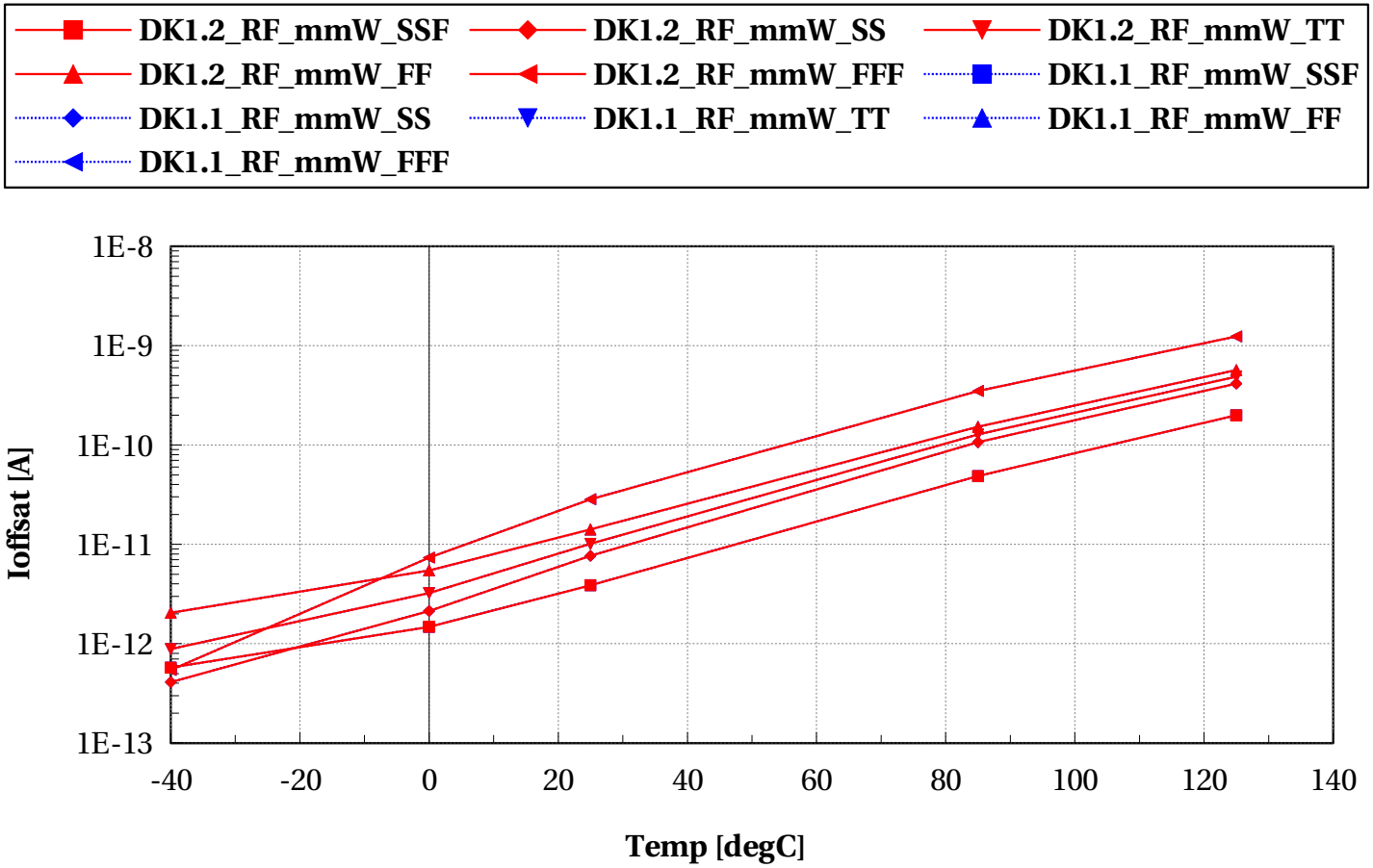
eglvtpfet_acc, Ioffsat [A] vs Temp [degC]

Vbs==1.8 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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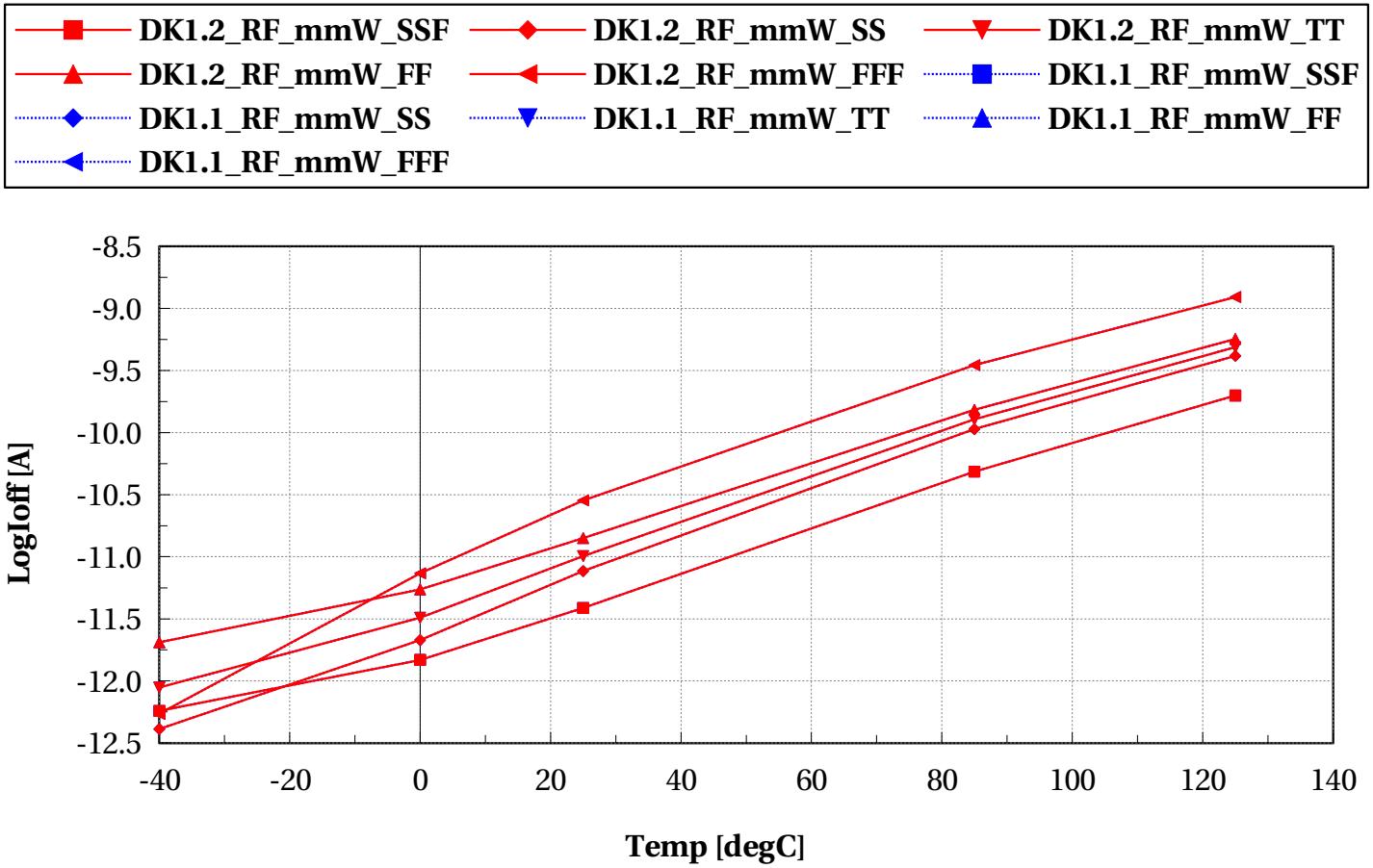
eglvtpfet_acc, LogIoff [A] vs Temp [degC]

Vbs==1.8 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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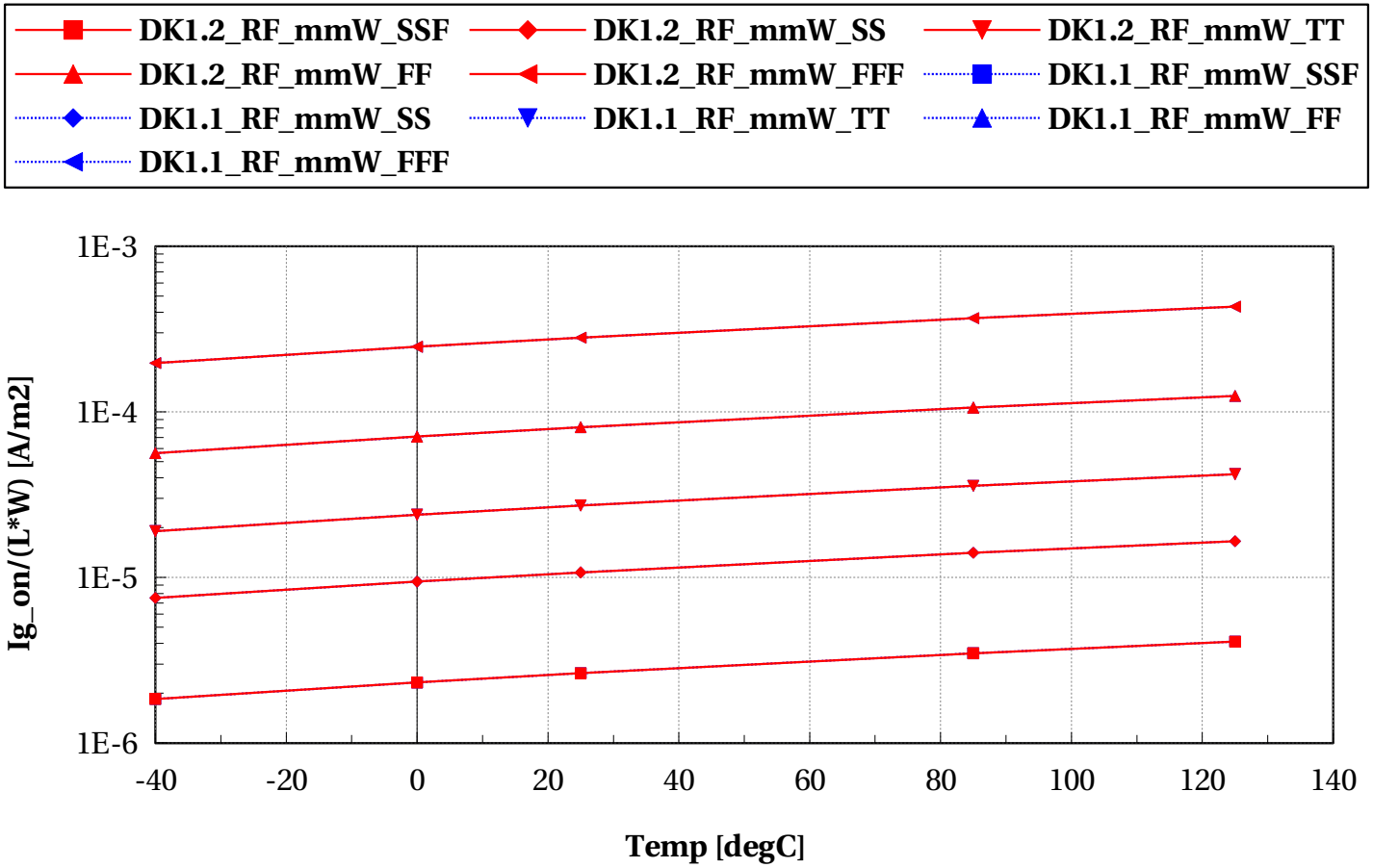
eglvtpfet_acc, Ig_on/(L*W) [A/m2] vs Temp [degC]

Vbs==1.8 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtpfet_acc, Ig_off/(W) [A/m] vs Temp [degC]

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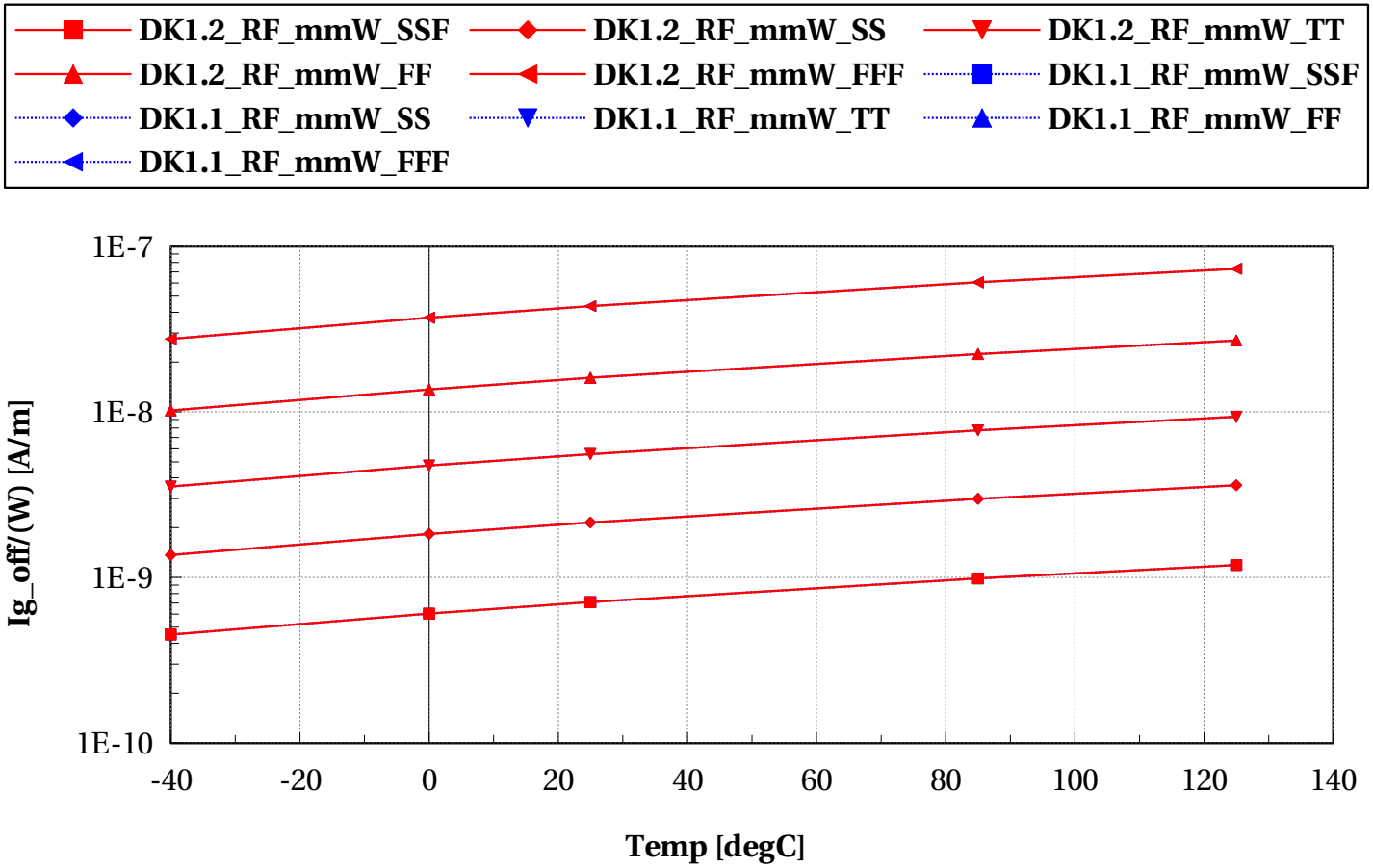

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eglvtpfet_acc, Gd_c/W [s/m] vs Temp [degC]

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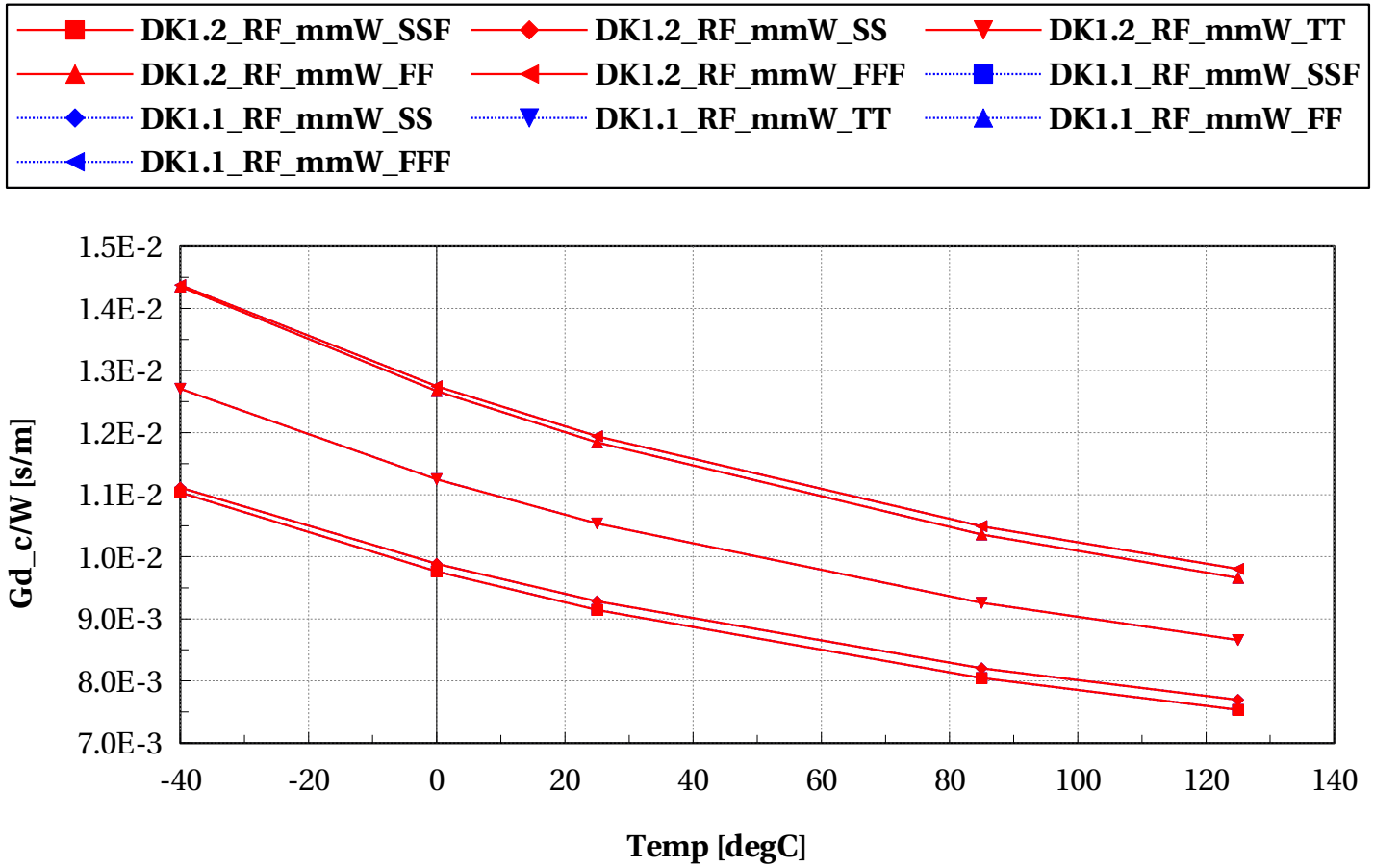

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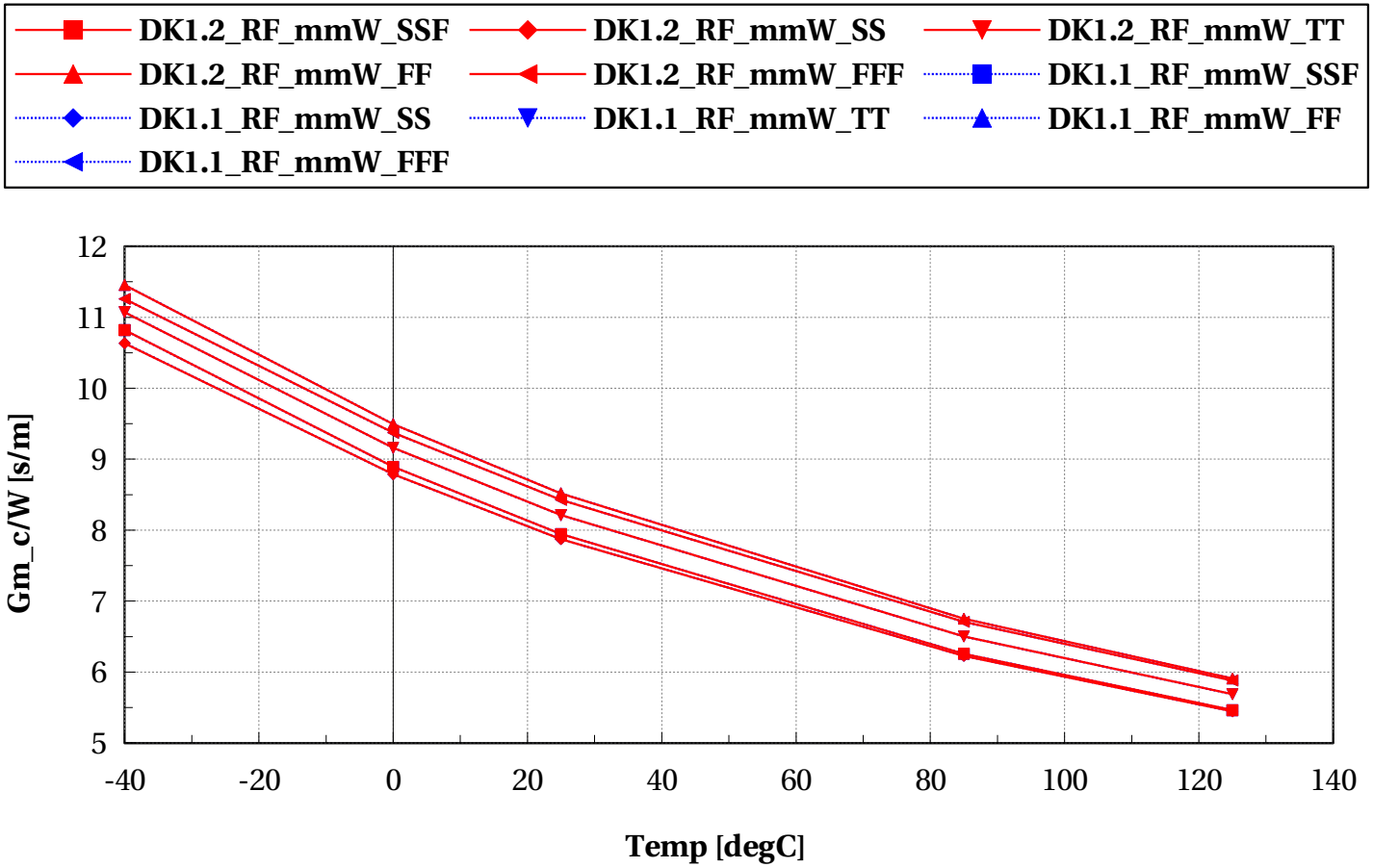
eglvtpfet_acc, Gm_c/W [s/m] vs Temp [degC]

Vbs==1.8 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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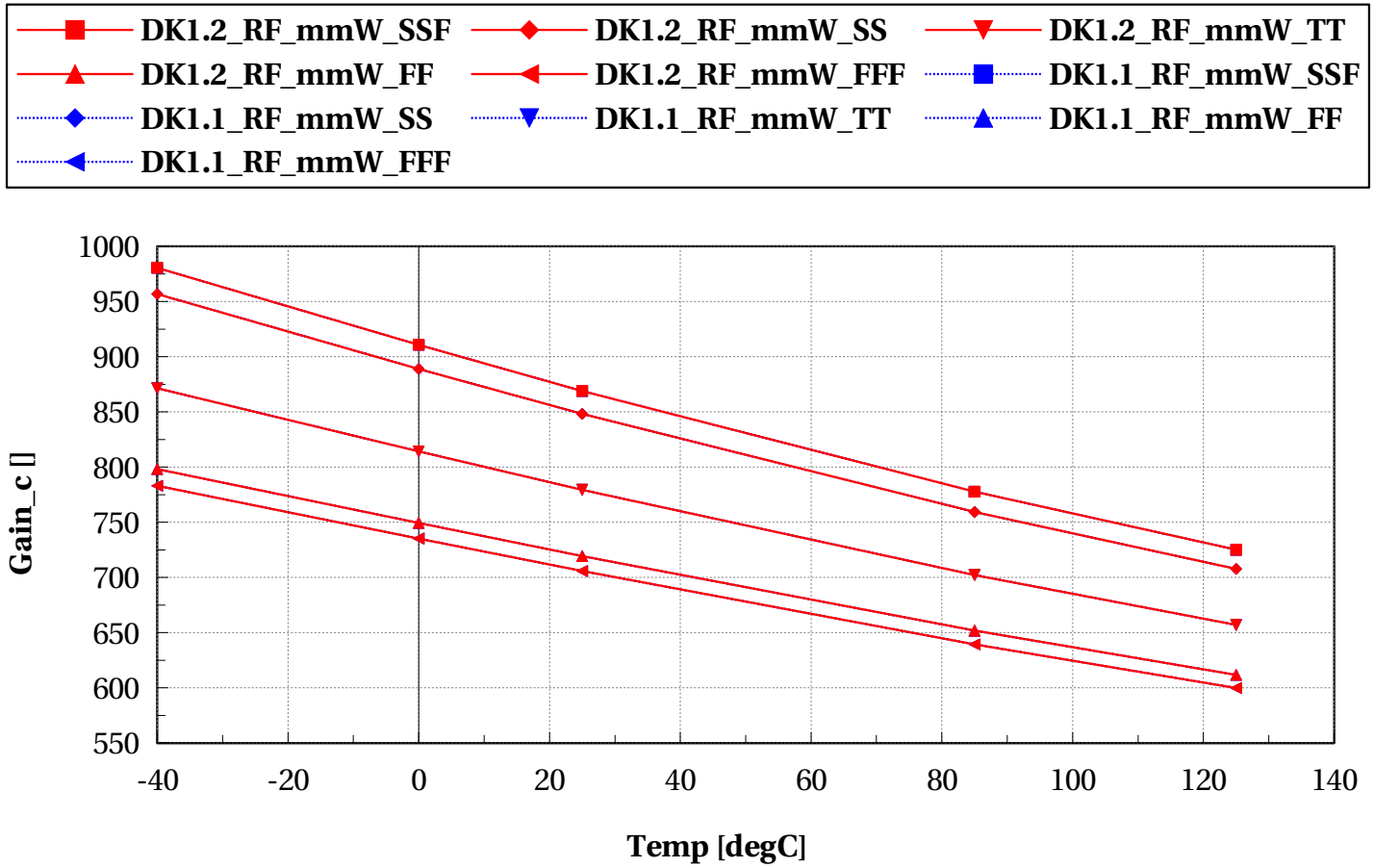
eglvtpfet_acc, Gain_c [] vs Temp [degC]

Vbs==1.8 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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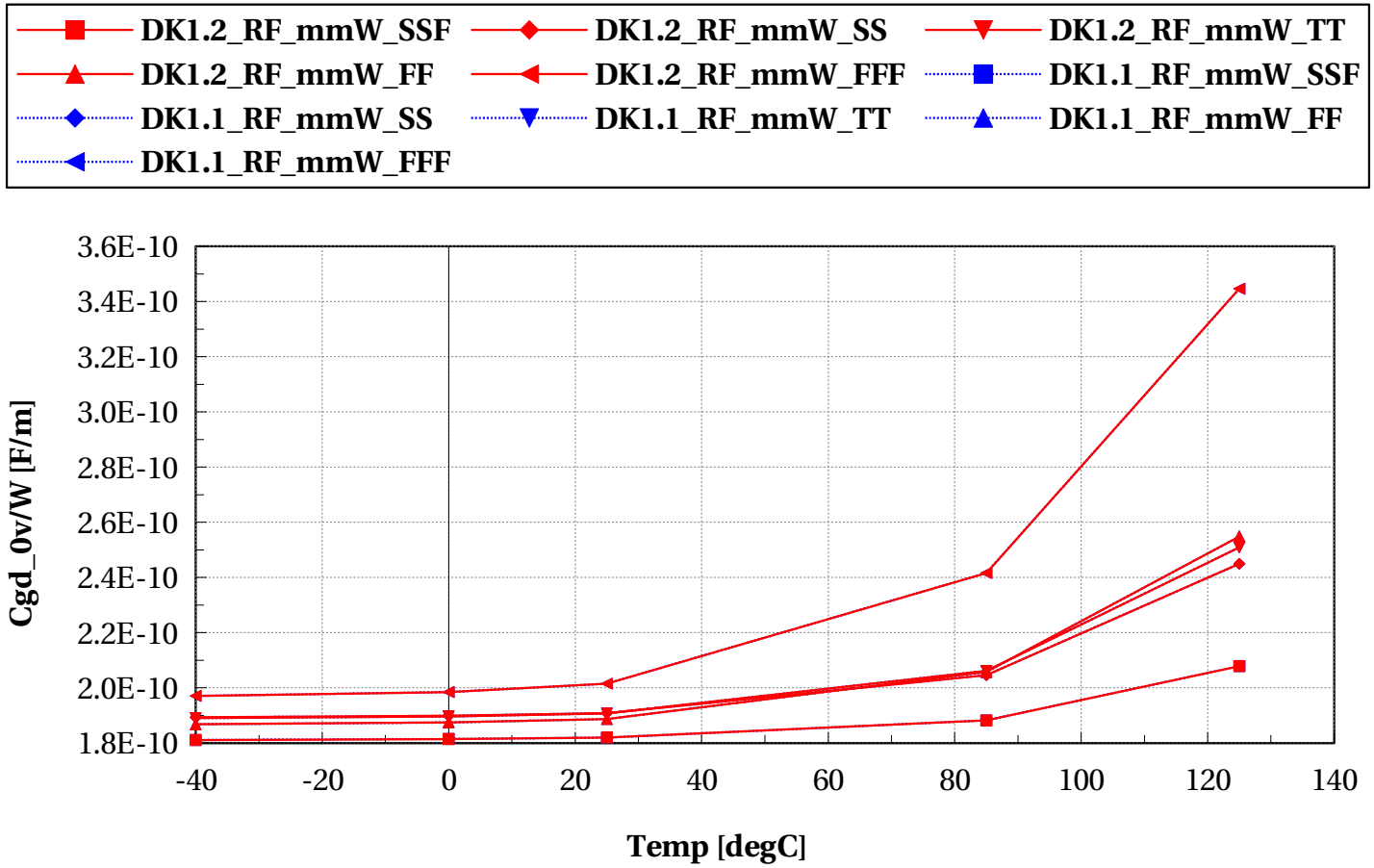
eglvtpfet_acc, Cgd_0v/W [F/m] vs Temp [degC]

Vbs==1.8 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtpfet_acc, Cgg_inv/(L*W) [F/m2] vs Temp [degC]

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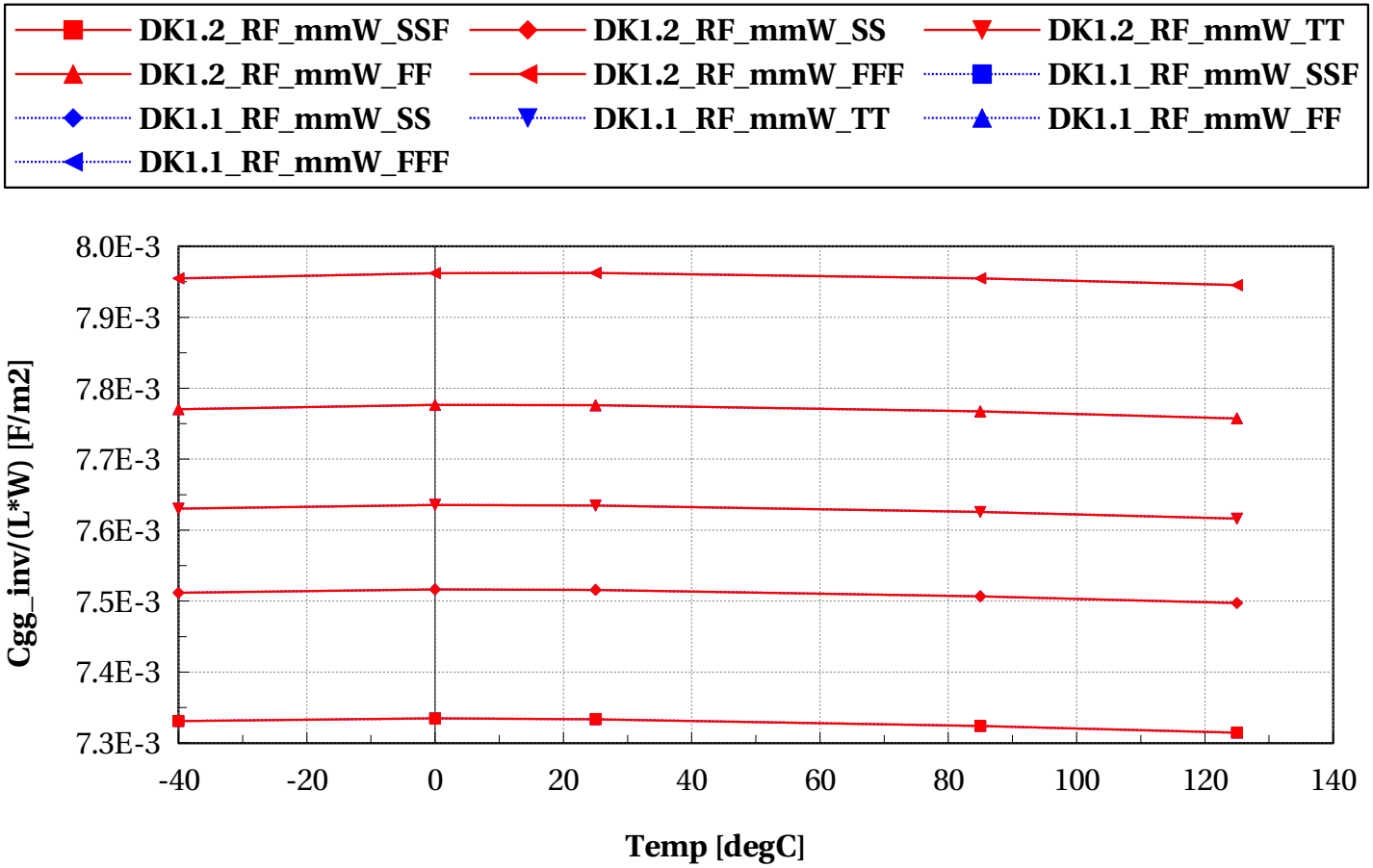

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Normalized scaling versus Temp @ Vbs=1.8, L=2u, W=2u

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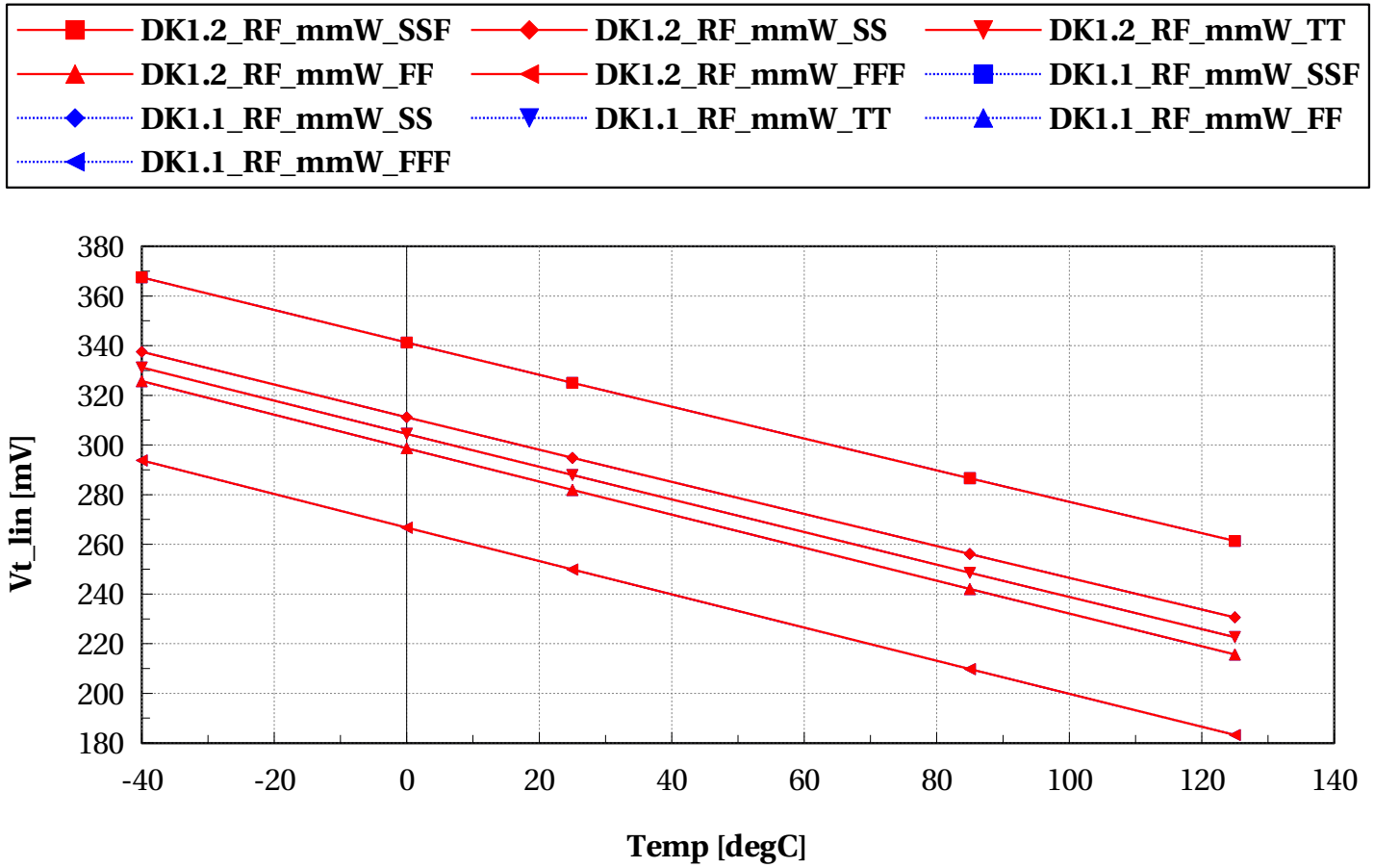
eglvtpfet_acc, Vt_lin [mV] vs Temp [degC]

Vbs==1.8 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtpfet_acc, Ilin/W [A/m] vs Temp [degC]

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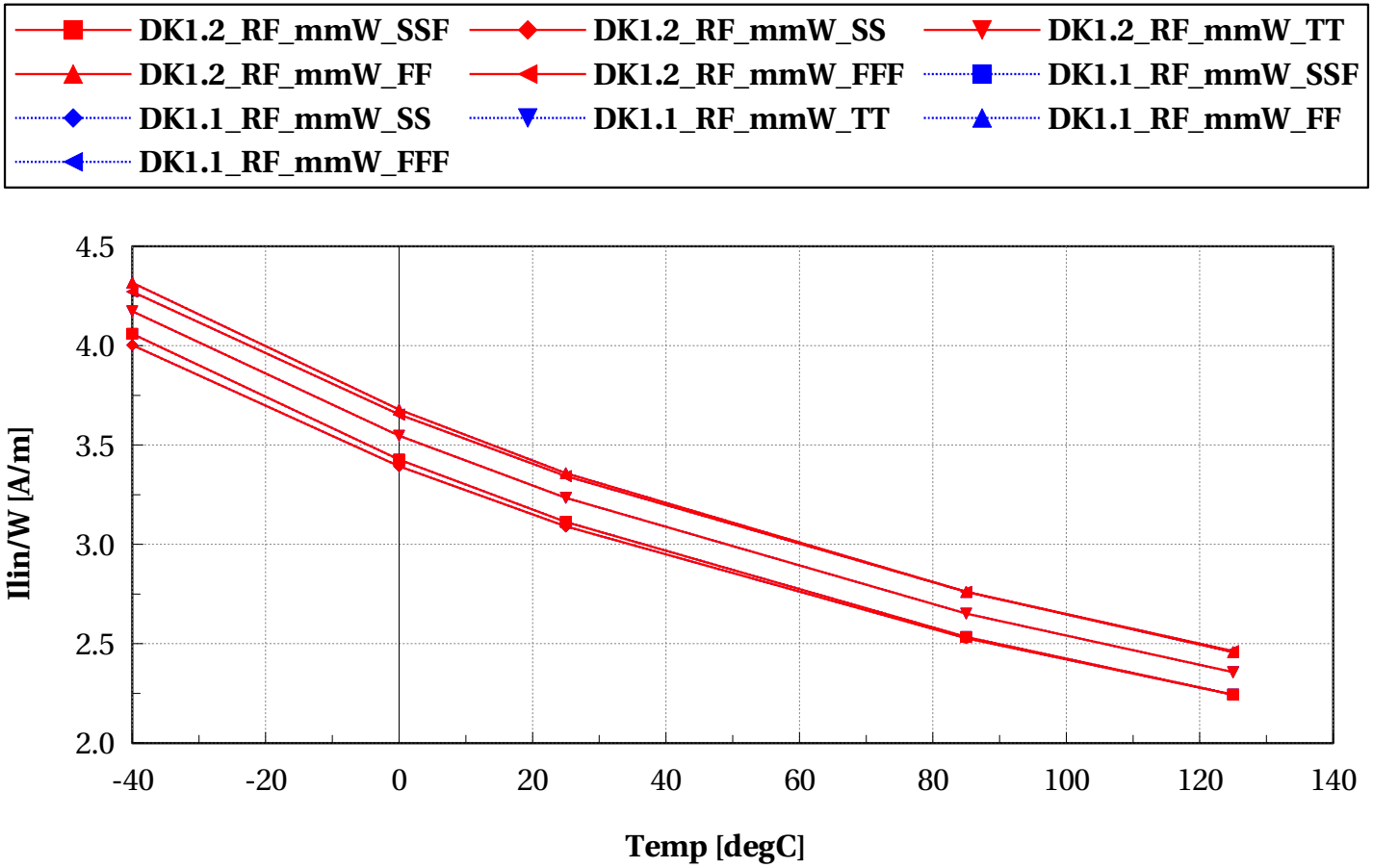

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eglvtpfet_acc, VtGmmax [mV] vs Temp [degC]

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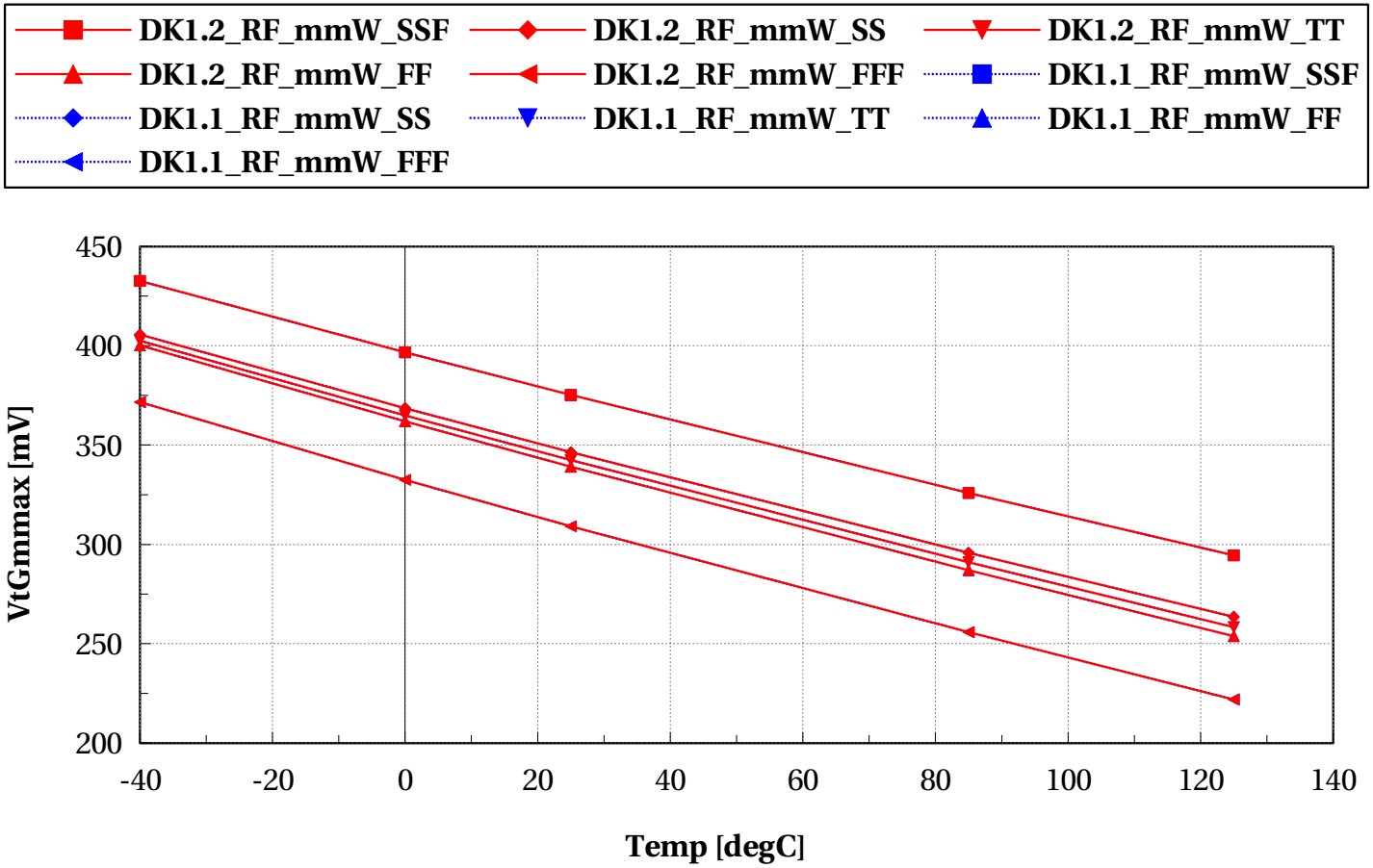

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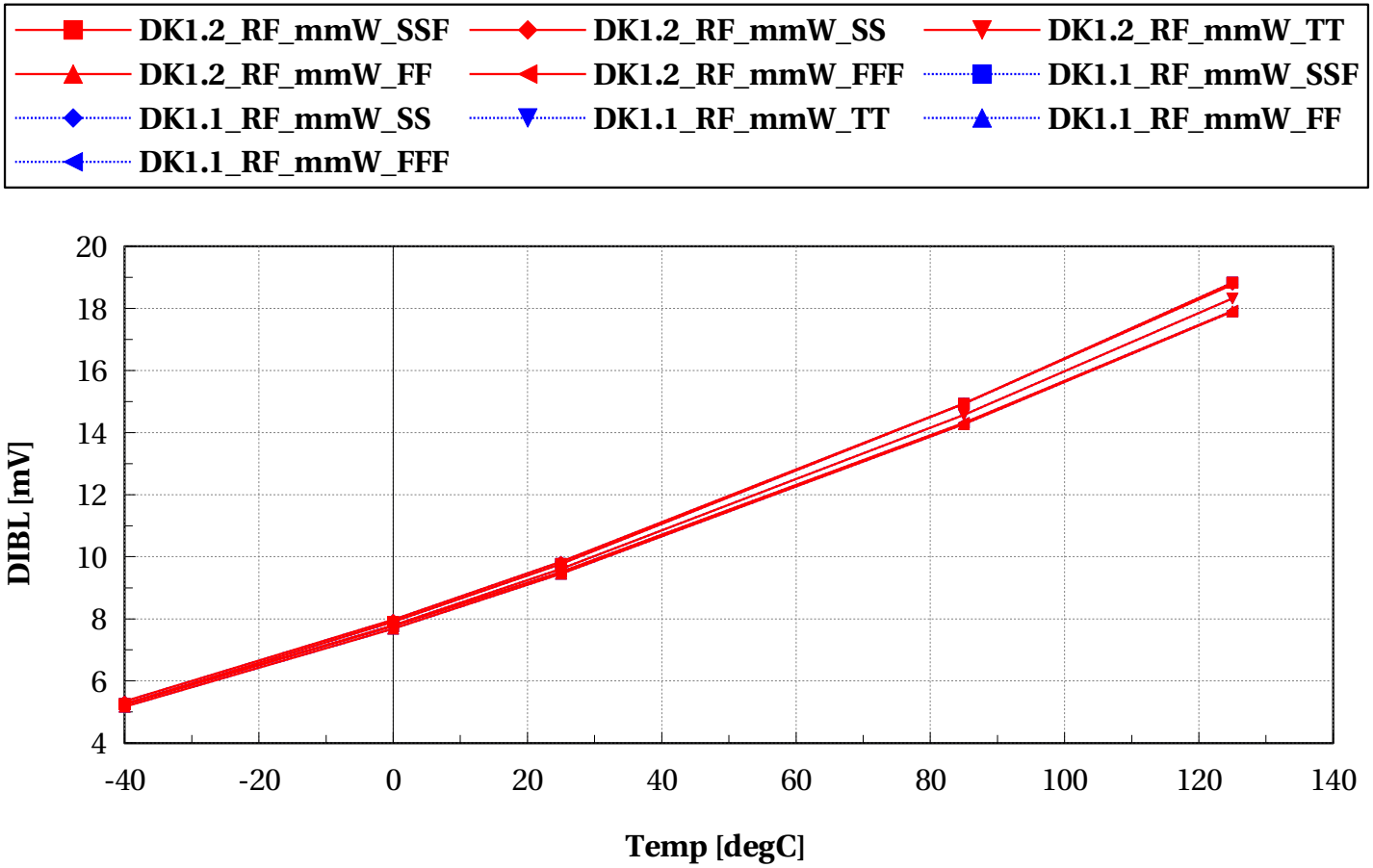
eglvtpfet_acc, DIBL [mV] vs Temp [degC]

Vbs==1.8 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtpfet_acc, Vt_sat [mV] vs Temp [degC]

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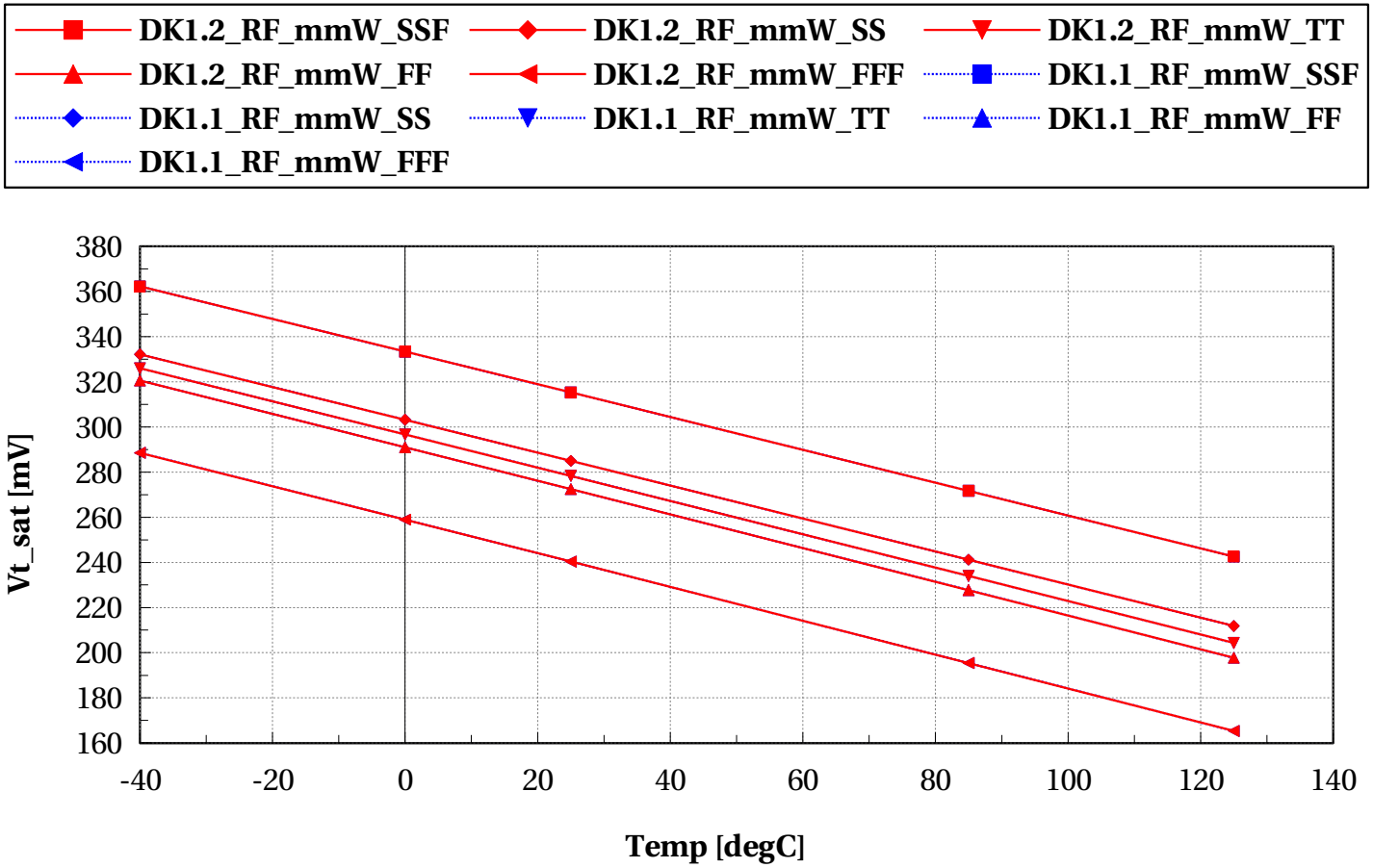

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eglvtpfet_acc, Isat/W [A/m] vs Temp [degC]

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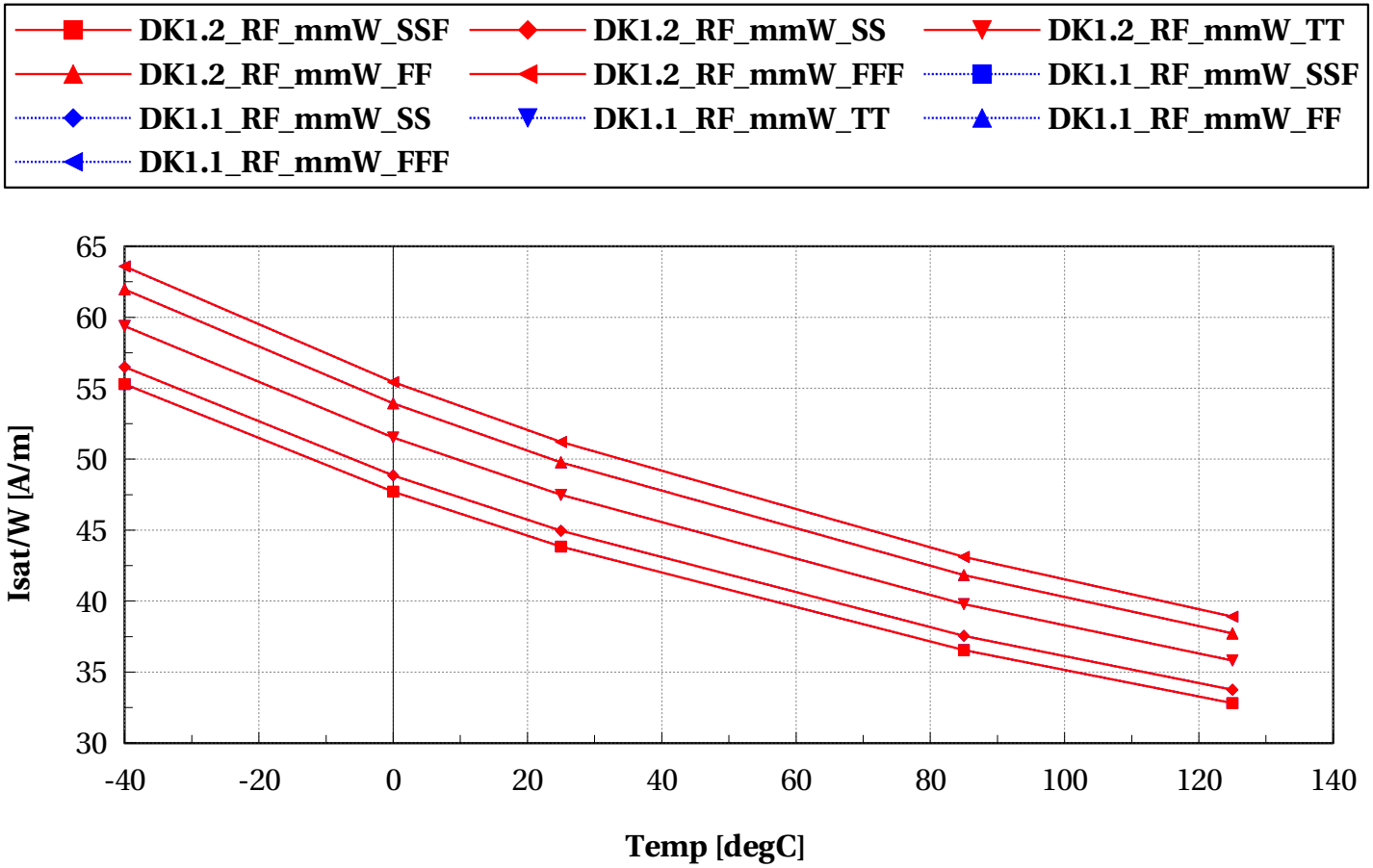

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eglvtpfet_acc, Ioffsat [A] vs Temp [degC]

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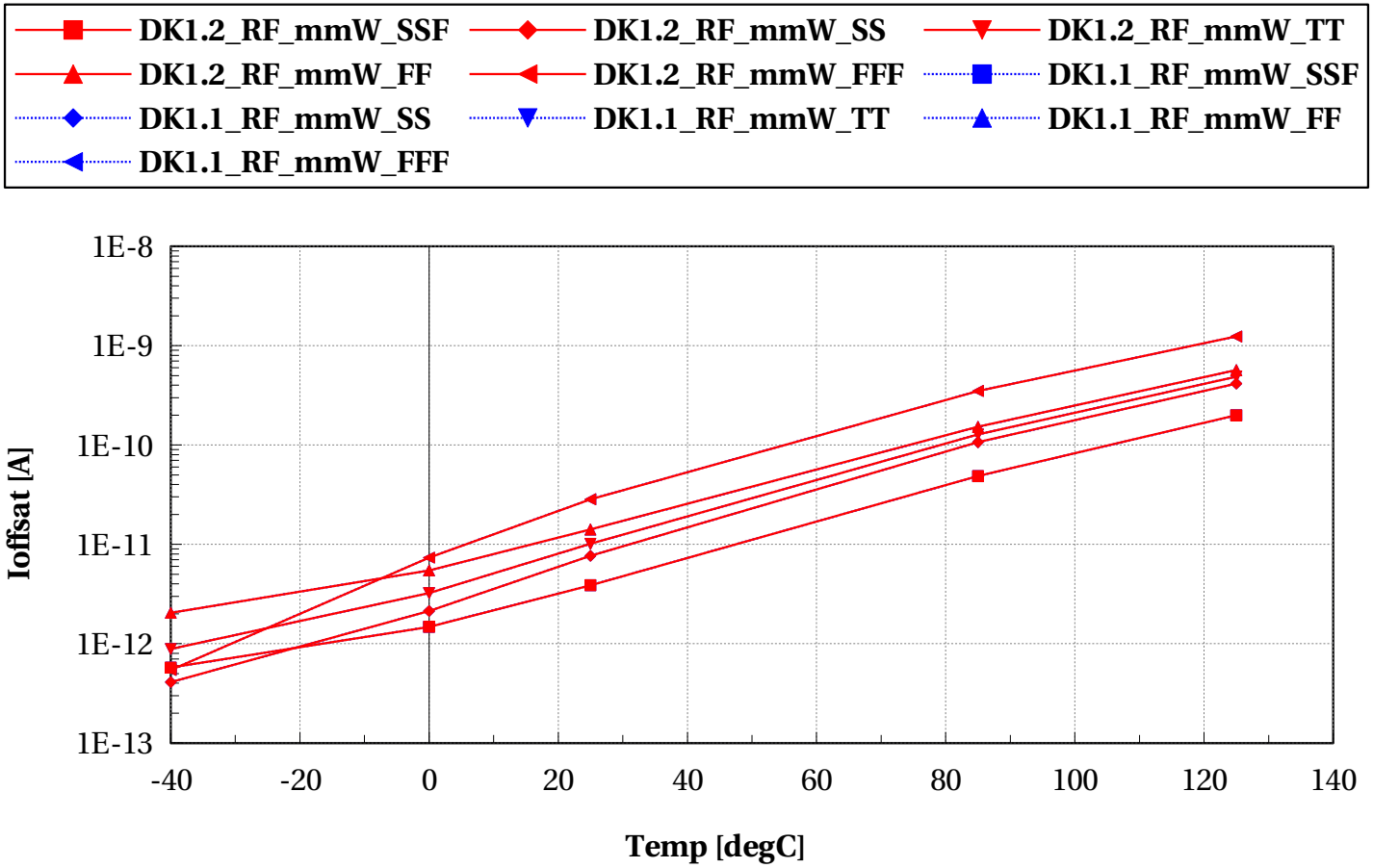

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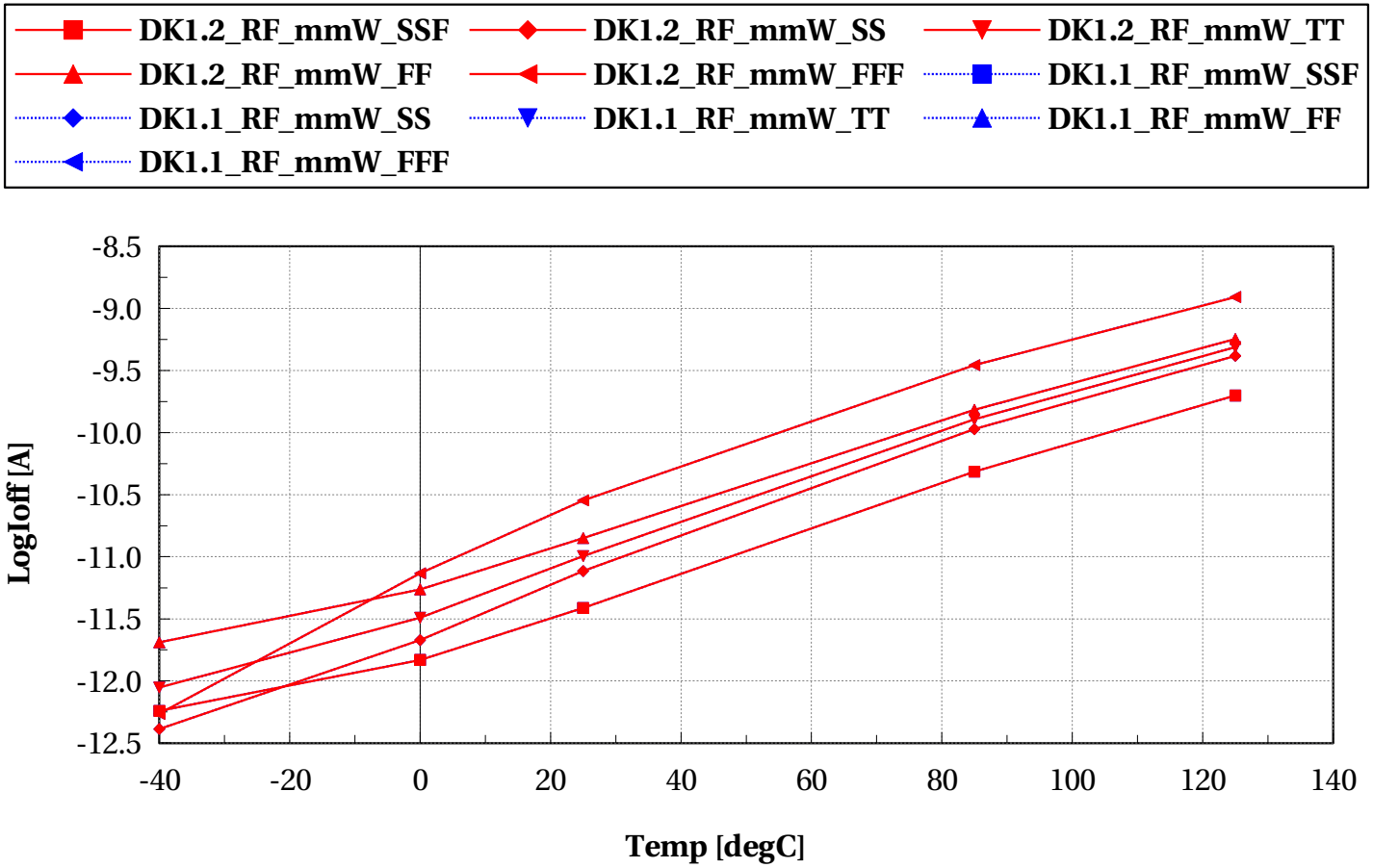
eglvtpfet_acc, LogIoff [A] vs Temp [degC]

Vbs==1.8 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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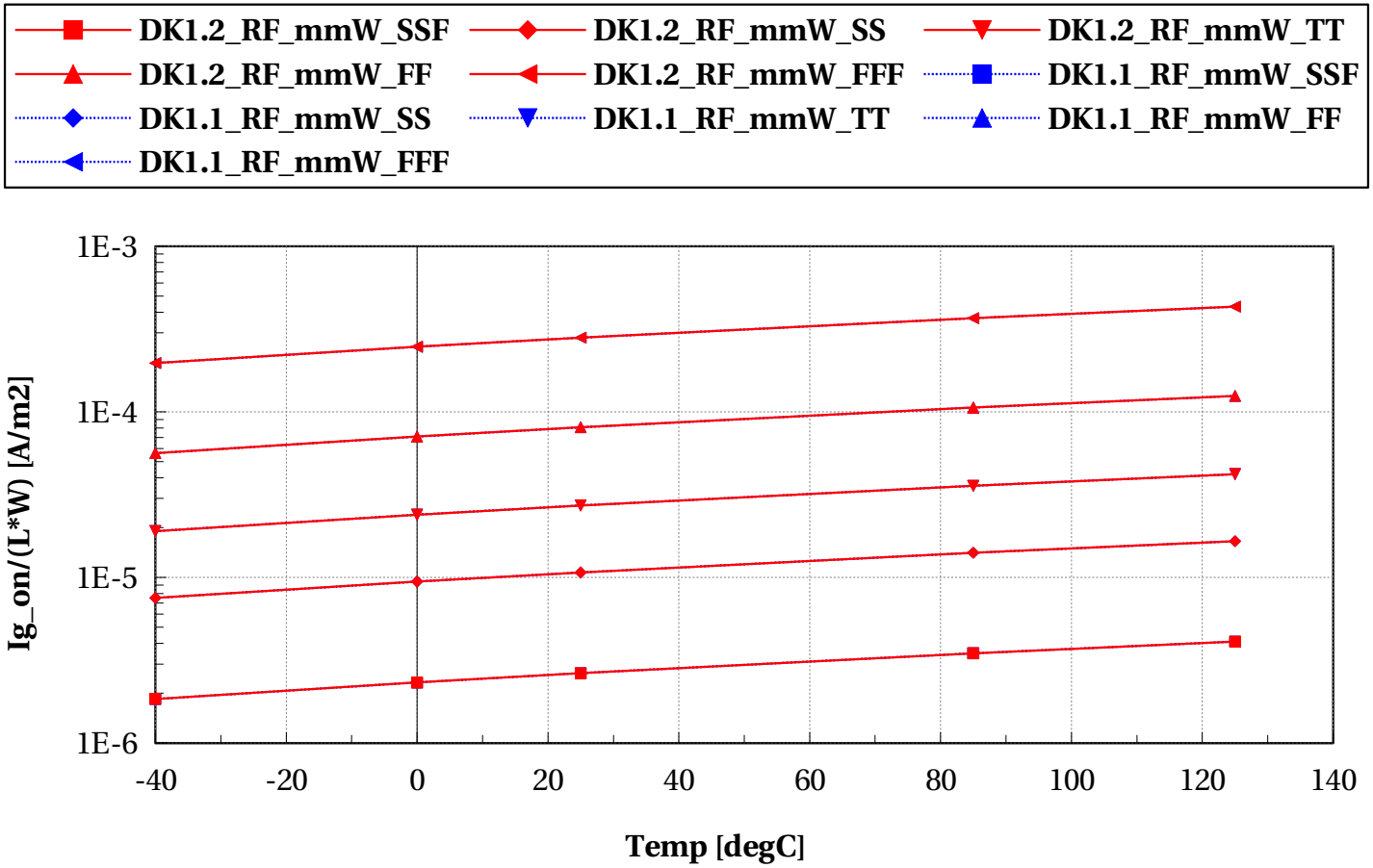
eglvtpfet_acc, Ig_on/(L*W) [A/m2] vs Temp [degC]

Vbs==1.8 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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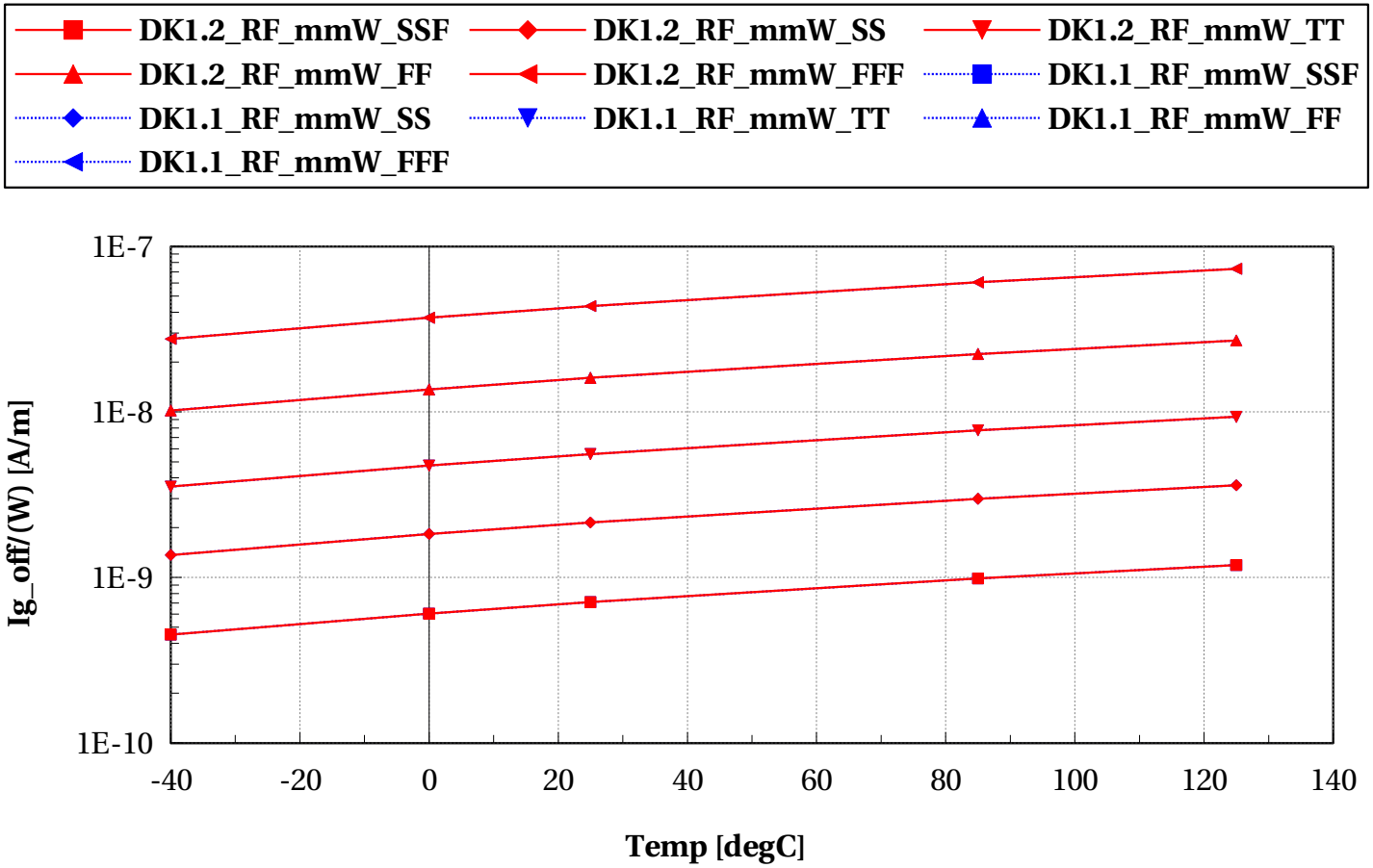
eglvtpfet_acc, Ig_off/(W) [A/m] vs Temp [degC]

Vbs==1.8 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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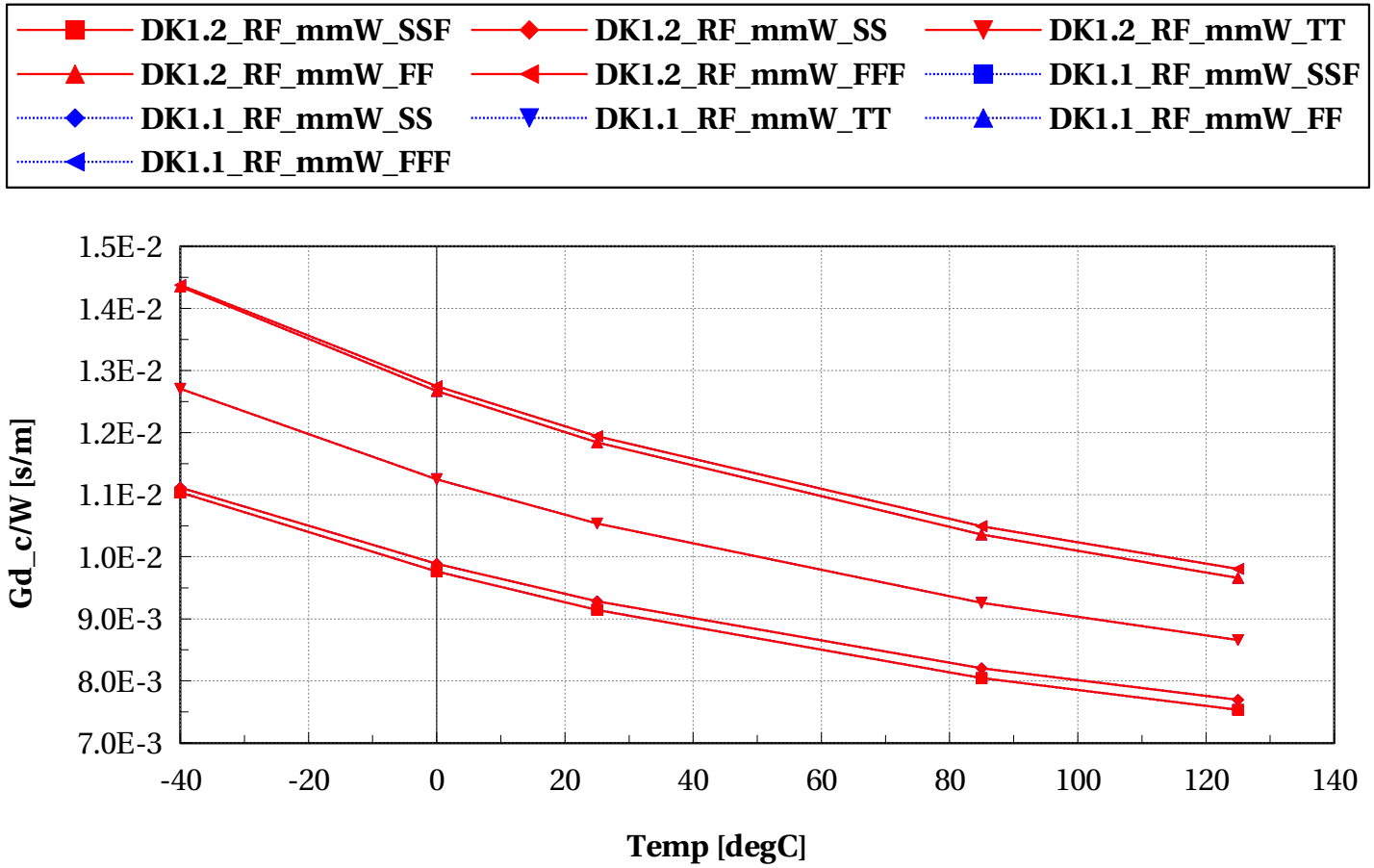
eglvtpfet_acc, Gd_c/W [s/m] vs Temp [degC]

Vbs==1.8 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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eglvtpfet_acc, Gm_c/W [s/m] vs Temp [degC]

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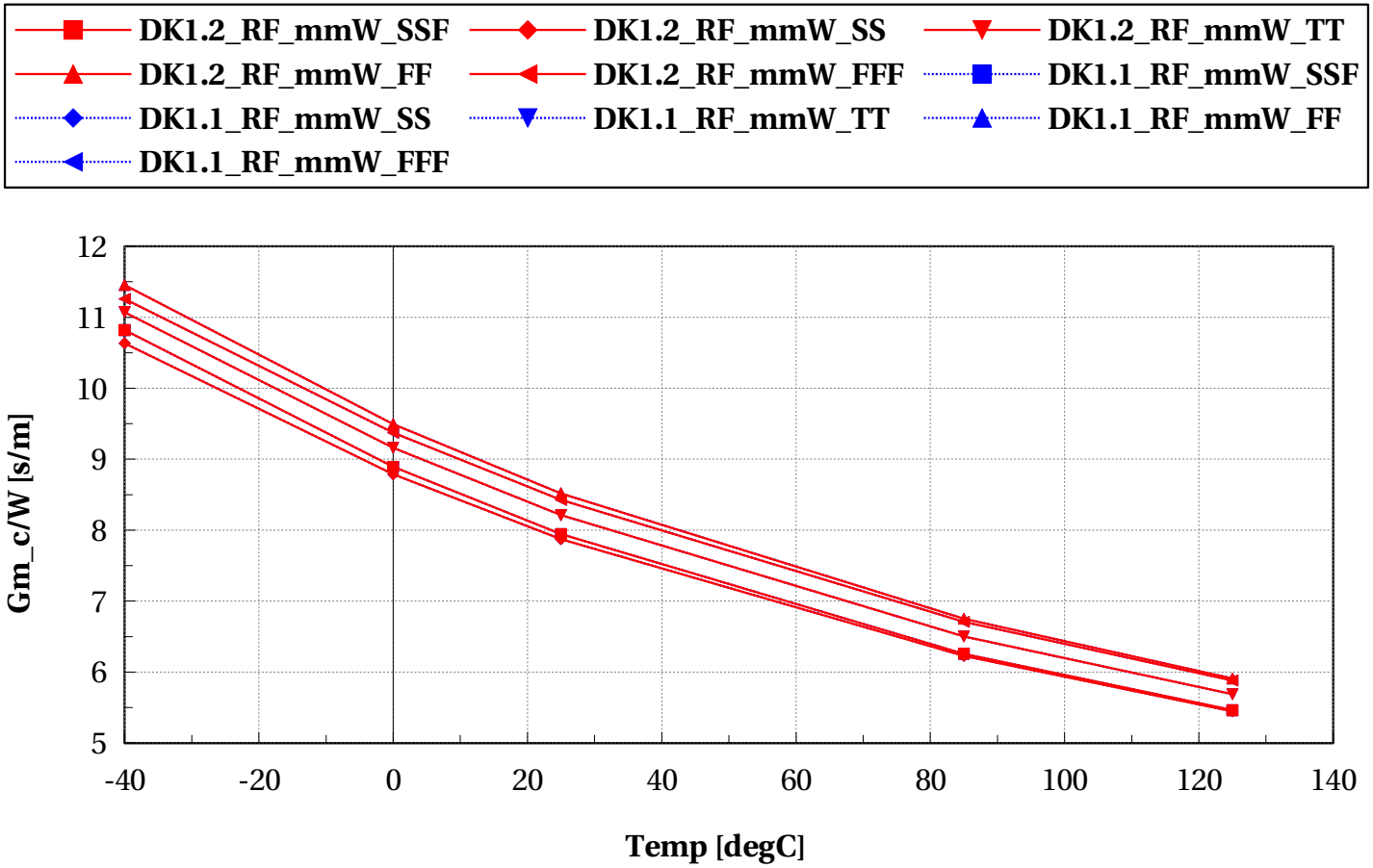

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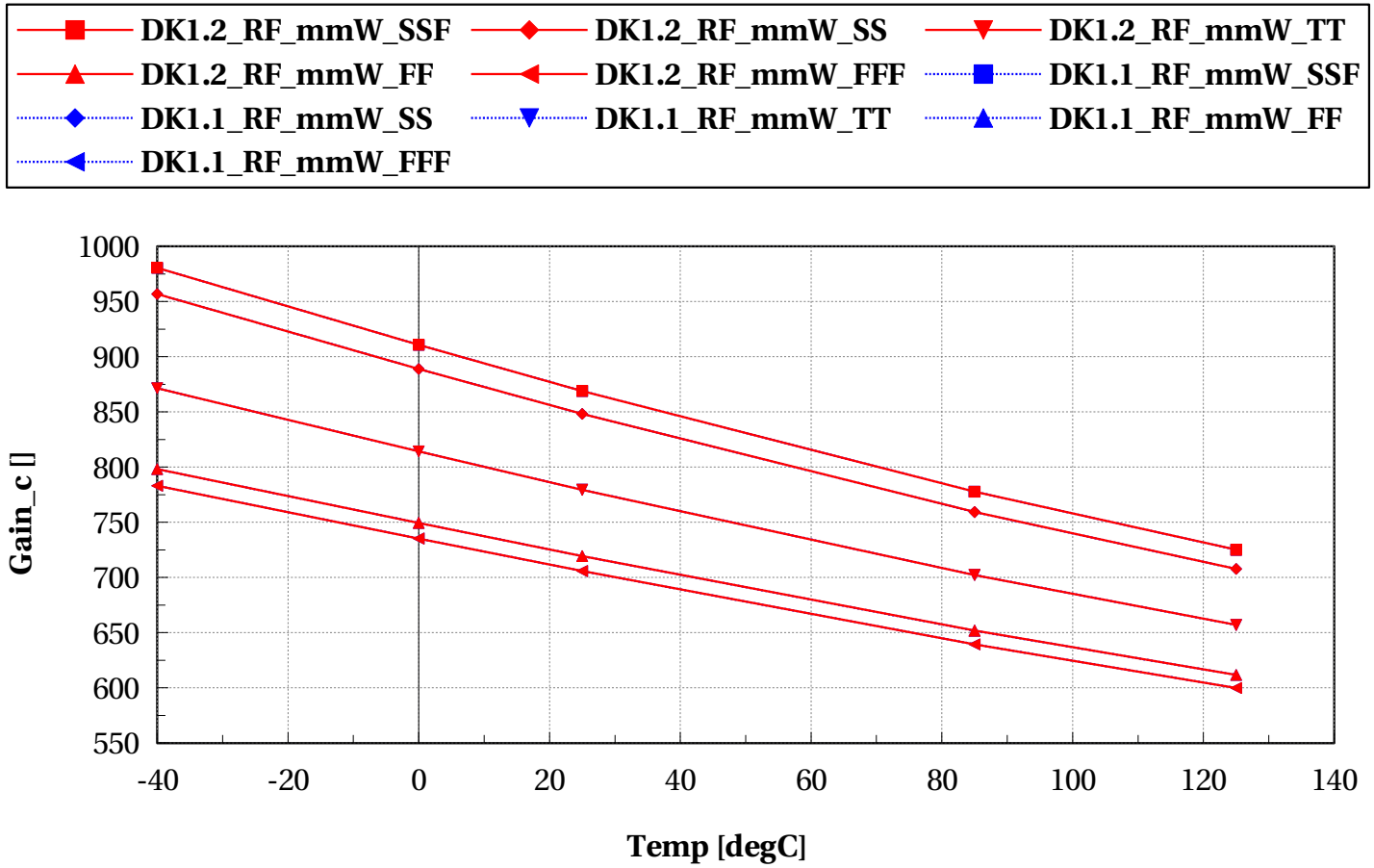
eglvtpfet_acc, Gain_c [] vs Temp [degC]

Vbs==1.8 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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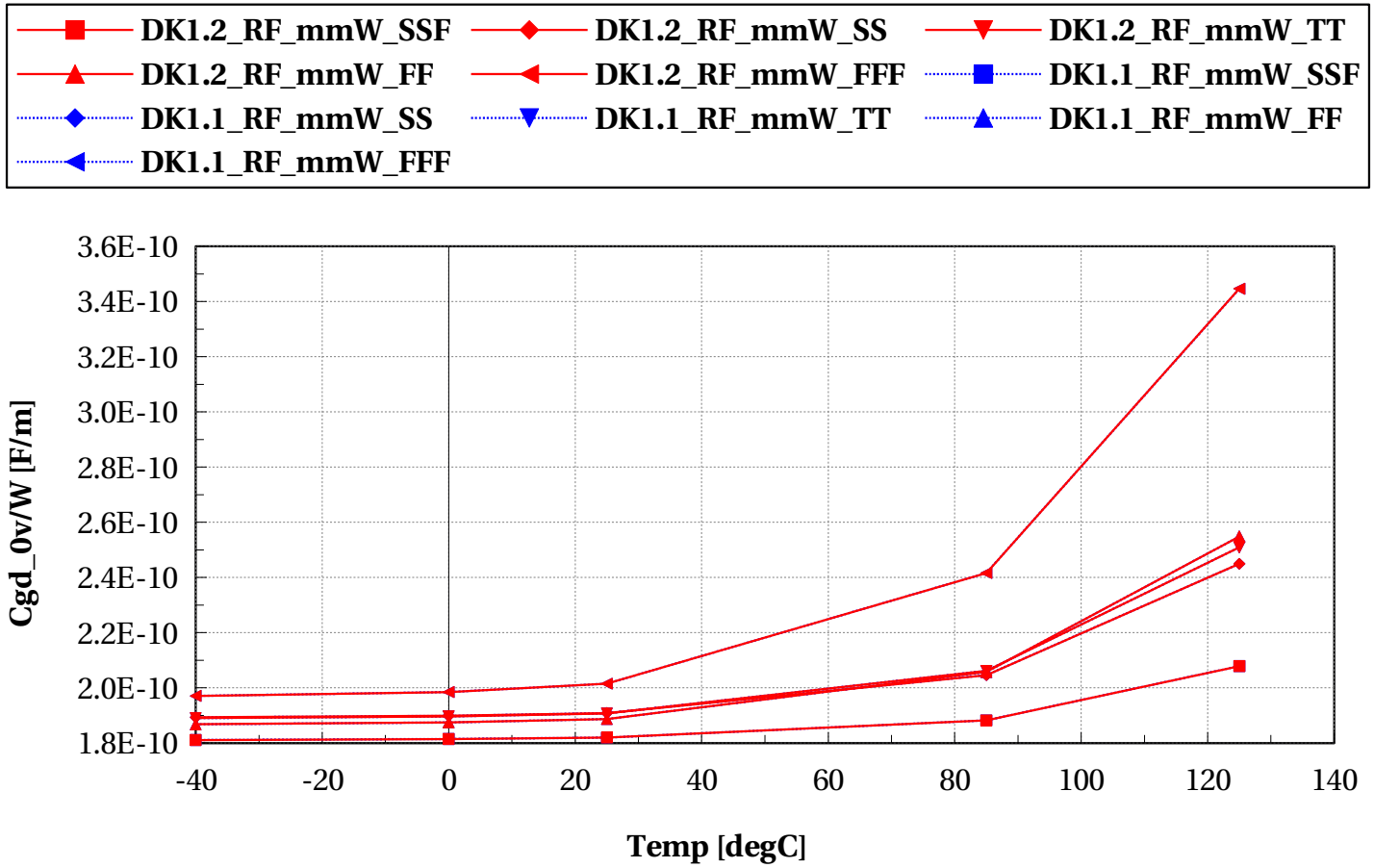
eglvtpfet_acc, Cgd_0v/W [F/m] vs Temp [degC]

Vbs==1.8 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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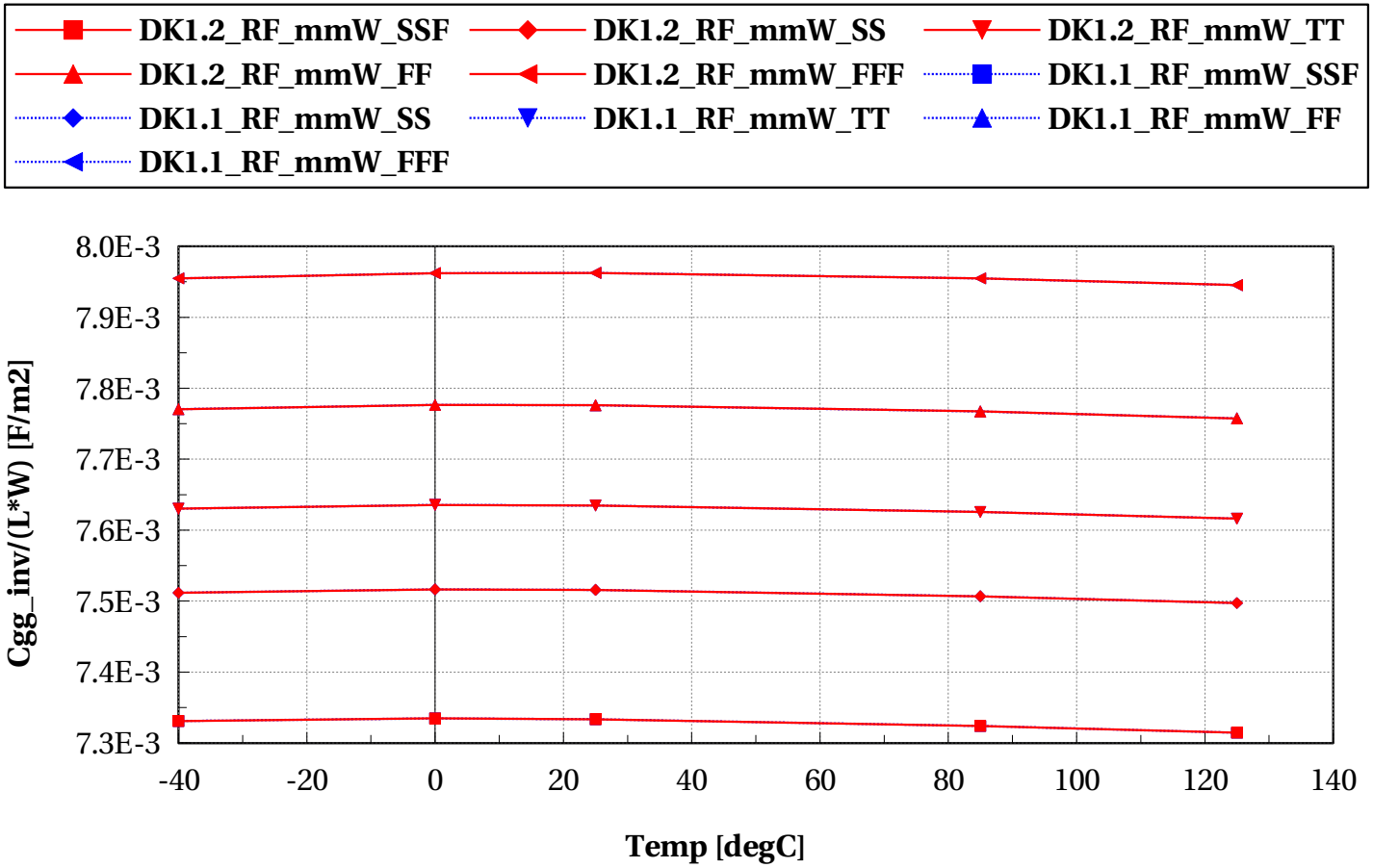
eglvtpfet_acc, Cgg_inv/(L*W) [F/m2] vs Temp [degC]

Vbs==1.8 and l==2e-6 and w==2e-6 and devType=="PCELLwoWPE"



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Annex

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Conditions of simulations

The simulations were done with SBenchLSF Alpha using Eldo simulator 2018.2.

- Model eglvtnfet_acc (DK1.2_RF_mmW)
  - ✔ Input Parameters
    - ✘ vds_off = vds_sat V
    - ✘ vds_cgd = 0 V
    - ✘ vds_cgg = 0 V
    - ✘ mc_sens = 0
    - ✘ vds_lin = 0.05 V
    - ✘ ivt = 300e-9 A
    - ✘ model_version = 1.2.d
    - ✘ ams_release = 2018.2
    - ✘ vgs_stop = vdd V
    - ✘ dlshrink_ivt = 0
    - ✘ sbenchlsf_release = Alpha
    - ✘ vds_sat = Vdd V
    - ✘ mc_nsigma = 3
    - ✘ shrink_ivt = 1

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- ✘ dlshrink_tinv = 0
- ✘ vgs_start = -0.5 V
- ✘ plashrink_ivt = 1
- ✘ ithslwi = 10e-9 A
- ✘ vds_cbd = 0 V
- ✘ vddmax = vdd
- ✘ voffset = 0.2 V
- ✘ mc_runs = 1000
- ✘ vstep_ivt = 0.005 V
- ✘ vgs_off = 0 V
- ✘ temp = 25 °C
- ✘ f_ext = 100k Hz
- ✘ vbs = 0 V
- ✘ vdd = 1.8 V
- ✘ shrink_tinv = 0.9
- ✘ vds_gmgd = Vdd/2 V

✔ Sweep Parameters

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

✔ Extra parameters

- ✘ eglvt_dev = 0
- ✘ gflag__noisedev__eglvt__cmos028fdsoi = 0

● Model eglvtpfet_acc (DK1.2_RF_mmW)

✔ Input Parameters

- ✘ vds_off = vds_sat V
- ✘ vds_cgd = 0 V

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- ✘ vds_cgg = 0 V
- ✘ mc_sens = 0
- ✘ vds_lin = 0.05 V
- ✘ ivt = 70e-9 A
- ✘ model_version = 1.2.d
- ✘ ams_release = 2018.2
- ✘ vgs_stop = vdd V
- ✘ dlshrink_ivt = 0
- ✘ sbenchlsf_release = Alpha
- ✘ vds_sat = Vdd V
- ✘ mc_nsigma = 3
- ✘ shrink_ivt = 1
- ✘ dlshrink_tinv = 0
- ✘ vgs_start = -0.5 V
- ✘ plashrink_ivt = 1
- ✘ ithslwi = 10e-9 A
- ✘ vds_cbd = 0 V
- ✘ vddmax = vdd
- ✘ voffset = 0.2 V
- ✘ mc_runs = 1000
- ✘ vstep_ivt = 0.005 V
- ✘ vgs_off = 0 V
- ✘ temp = 25 °C
- ✘ f_ext = 100k Hz
- ✘ vbs = 1.8 V

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- ✘ vdd = 1.8 V
- ✘ shrink_tinv = 0.9
- ✘ vds_gmgd = Vdd/2 V

✔ Sweep Parameters

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

✔ Extra parameters

- ✘ eglvt_dev = 0
- ✘ gflag__noisedev__eglvt__cmos028fdsoi = 0

● Model eglvtnfet_acc (DK1.1_RF_mmW)

✔ Input Parameters

- ✘ vds_off = vds_sat V
- ✘ vds_cgd = 0 V
- ✘ vds_cgg = 0 V
- ✘ mc_sens = 0
- ✘ vds_lin = 0.05 V
- ✘ ivt = 300e-9 A
- ✘ model_version = 1.2.d
- ✘ ams_release = 2018.2
- ✘ vgs_stop = vdd V
- ✘ dlshrink_ivt = 0
- ✘ sbenchlsf_release = Alpha
- ✘ vds_sat = Vdd V
- ✘ mc_nsigma = 3
- ✘ shrink_ivt = 1
- ✘ dlshrink_tinv = 0

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- ✘ vgs_start = -0.5 V
- ✘ plashrink_ivt = 1
- ✘ ithslwi = 10e-9 A
- ✘ vds_cbd = 0 V
- ✘ vddmax = vdd
- ✘ voffset = 0.2 V
- ✘ mc_runs = 1000
- ✘ vstep_ivt = 0.005 V
- ✘ vgs_off = 0 V
- ✘ temp = 25 °C
- ✘ f_ext = 100k Hz
- ✘ vbs = 0 V
- ✘ vdd = 1.8 V
- ✘ shrink_tinv = 0.9
- ✘ vds_gmgd = Vdd/2 V

✔ Sweep Parameters

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

✔ Extra parameters

- ✘ eglvt_dev = 0
- ✘ gflag__noisedev__eglvt__cmos028fdsoi = 0

● Model eglvtpfet_acc (DK1.1_RF_mmW)

✔ Input Parameters

- ✘ vds_off = vds_sat V
- ✘ vds_cgd = 0 V
- ✘ vds_cgg = 0 V

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- ✘ mc_sens = 0
- ✘ vds_lin = 0.05 V
- ✘ ivt = 70e-9 A
- ✘ model_version = 1.2.d
- ✘ ams_release = 2018.2
- ✘ vgs_stop = vdd V
- ✘ dlshrink_ivt = 0
- ✘ sbenchlsf_release = Alpha
- ✘ vds_sat = Vdd V
- ✘ mc_nsigma = 3
- ✘ shrink_ivt = 1
- ✘ dlshrink_tinv = 0
- ✘ vgs_start = -0.5 V
- ✘ plashrink_ivt = 1
- ✘ ithslwi = 10e-9 A
- ✘ vds_cbd = 0 V
- ✘ vddmax = vdd
- ✘ voffset = 0.2 V
- ✘ mc_runs = 1000
- ✘ vstep_ivt = 0.005 V
- ✘ vgs_off = 0 V
- ✘ temp = 25 °C
- ✘ f_ext = 100k Hz
- ✘ vbs = 1.8 V
- ✘ vdd = 1.8 V

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- ✘ shrink_tinv = 0.9
- ✘ vds_gmgd = Vdd/2 V

✔ Sweep Parameters

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

✔ Extra parameters

- ✘ eglvt_dev = 0
- ✘ gflag__noisedev__eglvt__cmos028fdsoi = 0

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