cmos028fdsoi Technology

EG models

DK1.2_RF_mmW

Comparison with DK1.1_RF_mmW model(s)

Please use the bookmark to navigate

General information on EG models

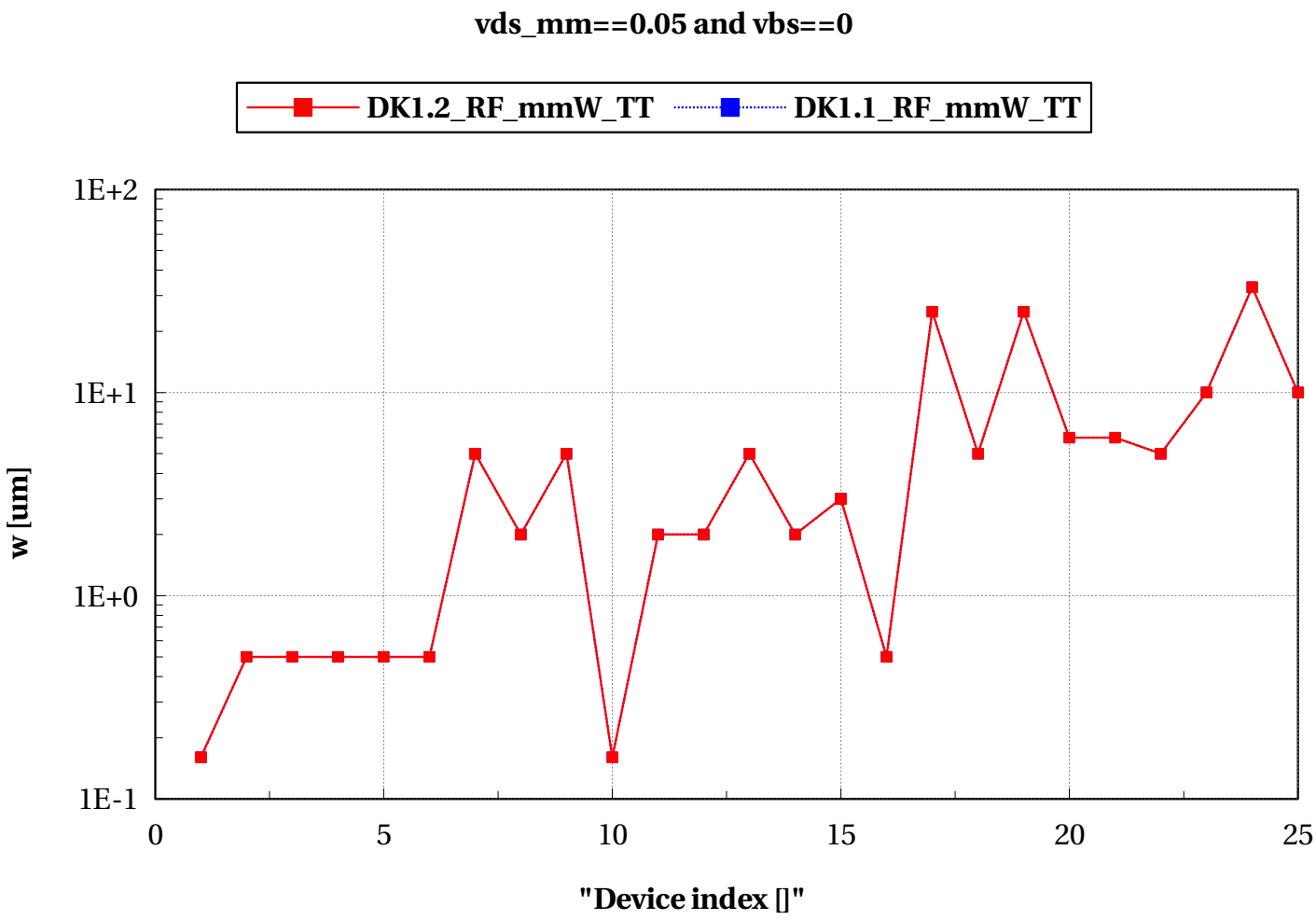
- Maximum supply voltage is 1.8 V.
- Validity domain is defined as follows:
  - ✔ Drawn gate length varies from 30nm to 10um.
  - ✔ Drawn transistor width varies from 80nm to 10um.
  - ✔ Device temperature varies from -40 °C to 125 °C.

Output parameters definitions

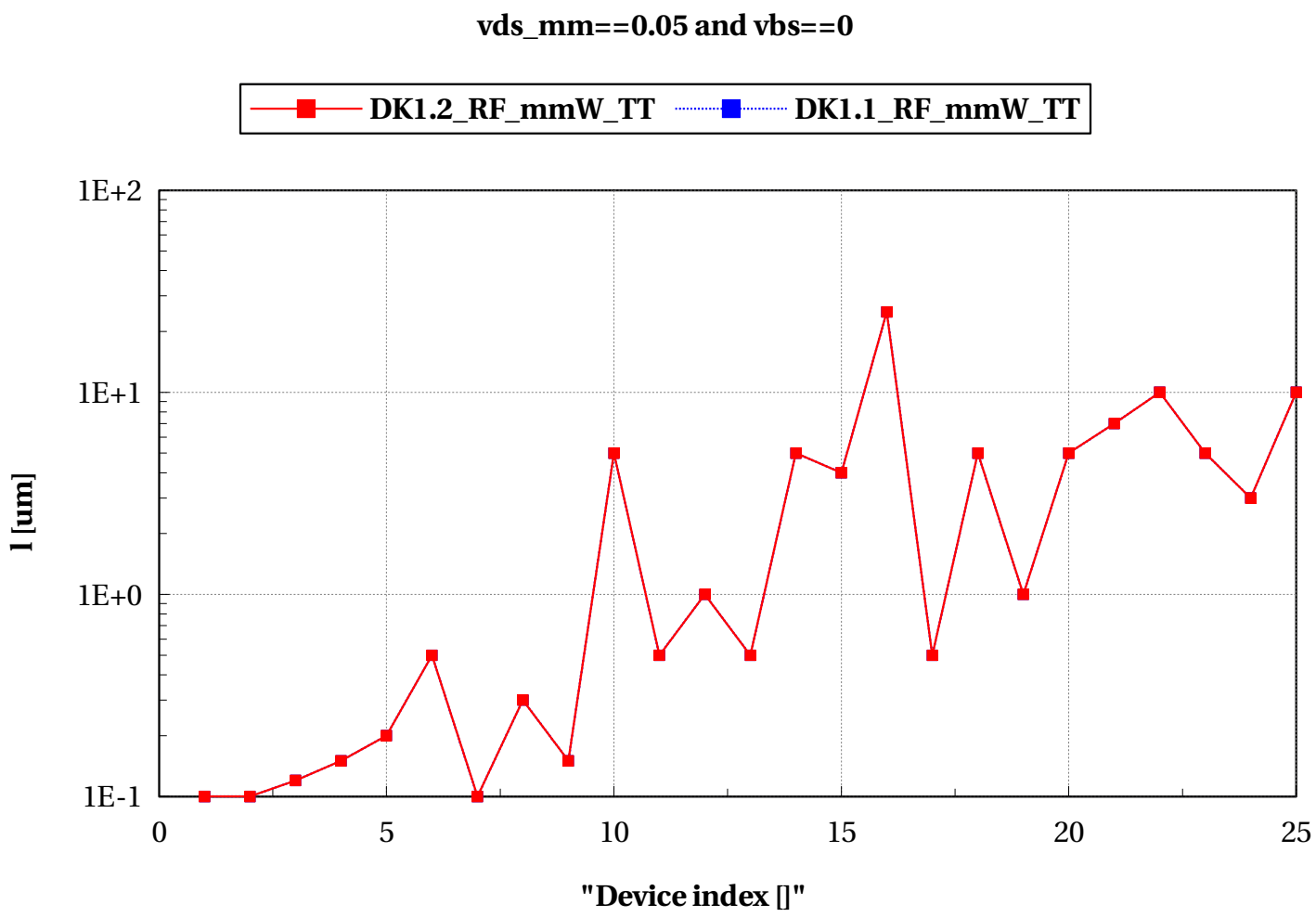
- Model(s): eglvtnfet_acc, eglvtpfet_acc, egnfet_acc, egpfet_acc
  - ✔ Vt_lin : Threshold voltage defined as Vgs value for which drain current is ivt*M*1*W/(1*L+0+1*p_la) at Vds = 0.05V.
  - ✔ Dvtcc : Standard deviation of variation of threshold voltage defined as Vgs value for which drain current is ivt*M*W/L at Vds = 0.05. 5000 Monte-Carlo runs used.
  - ✔ Ilin : Drain current at Vgs = 1.8V, Vds = 0.05V.
  - ✔ Dibl : Vt_lin - Vt_sat.
  - ✔ Didovid : Standard deviation of normalized variation of drain current at Vgs = 1.8V, Vds = 0.05V. 5000 Monte-Carlo runs used.
  - ✔ 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_offV.

eglvtnfet_acc
Electrical characteristics scaling

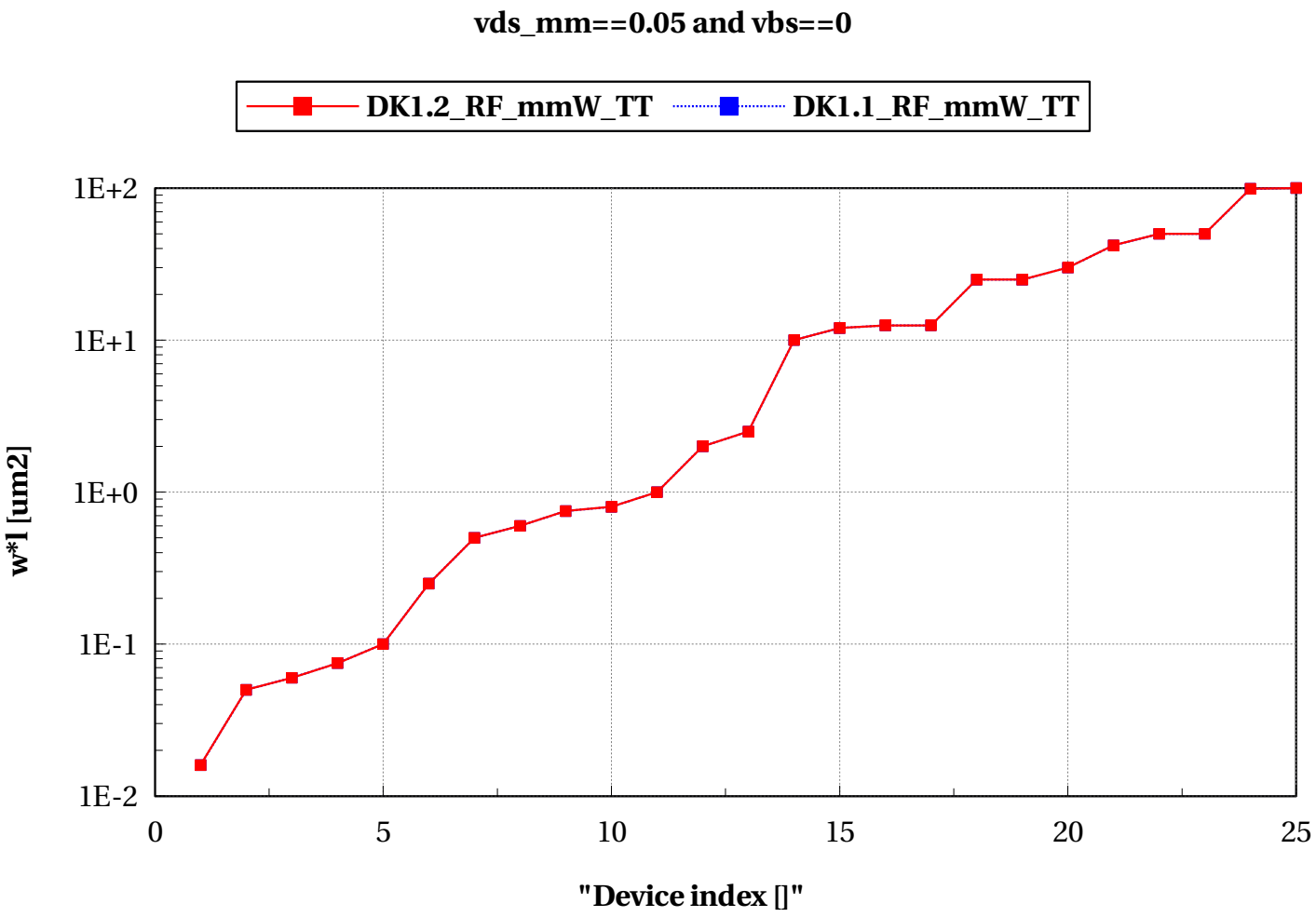
eglvtnfet_acc, w [um] vs "Device index []"



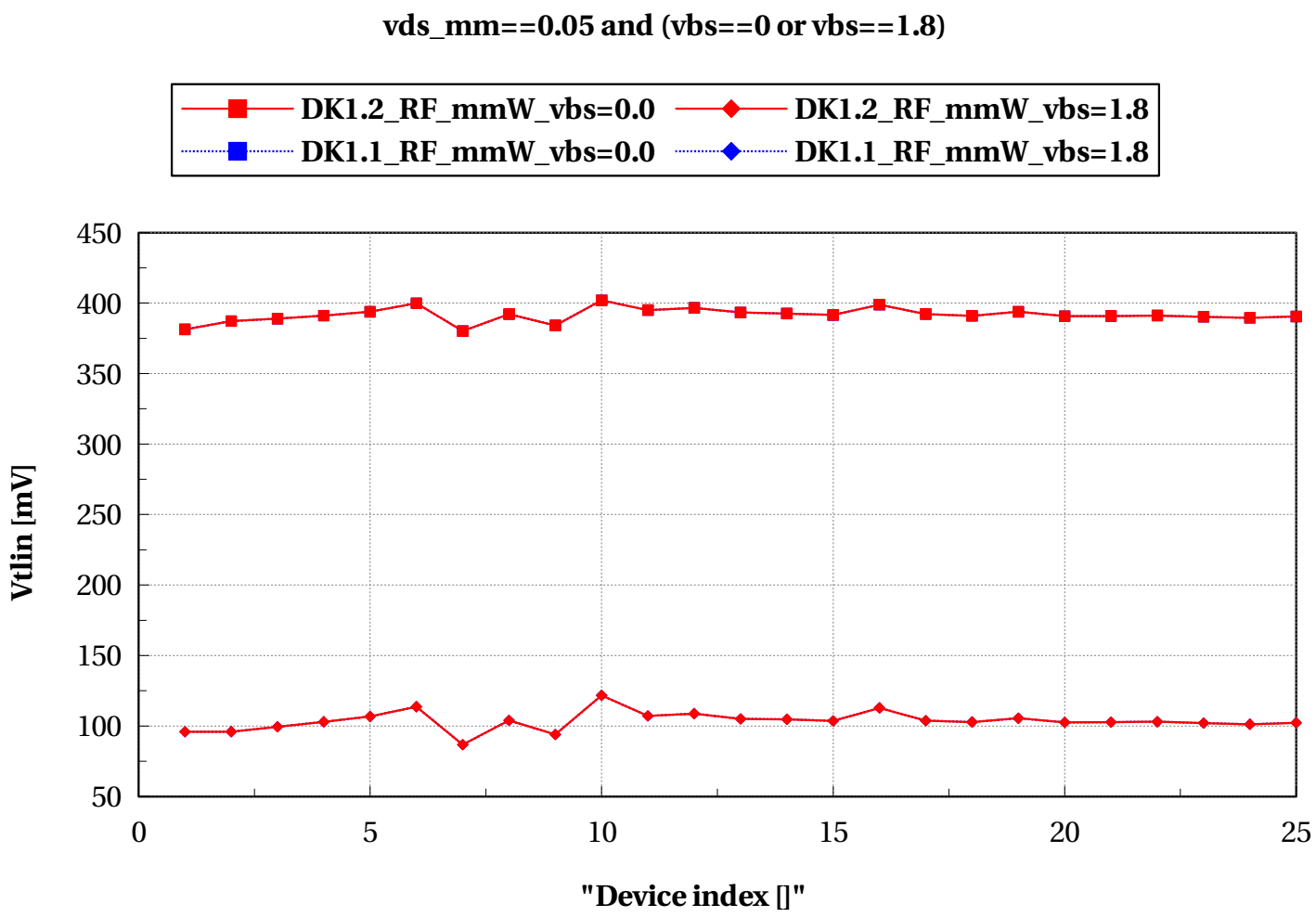
eglvtnfet_acc, l [um] vs "Device index []"



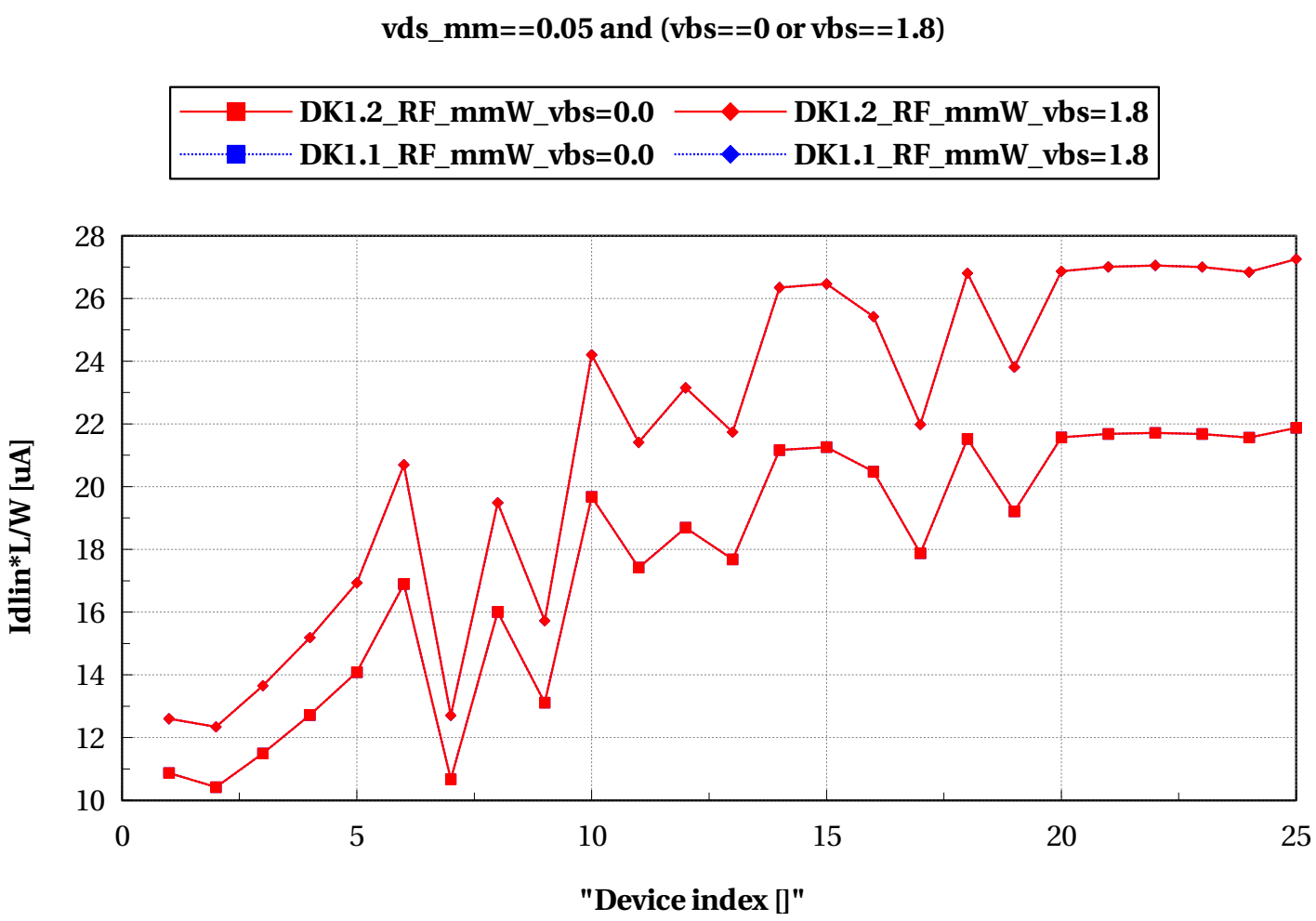
eglvtnfet_acc, w*l [um2] vs "Device index []"



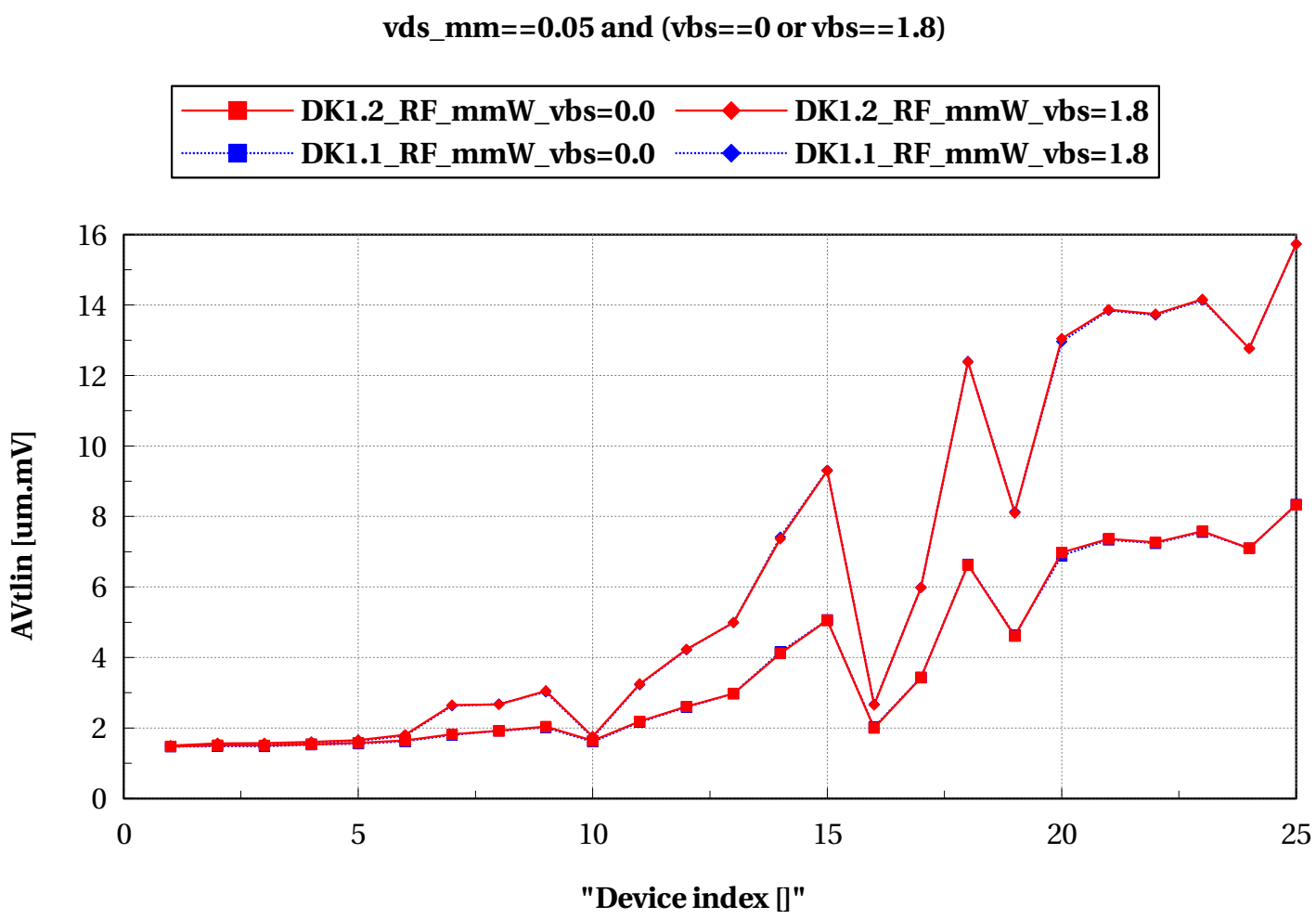
eglvtnfet_acc, Vtlin [mV] vs "Device index []"



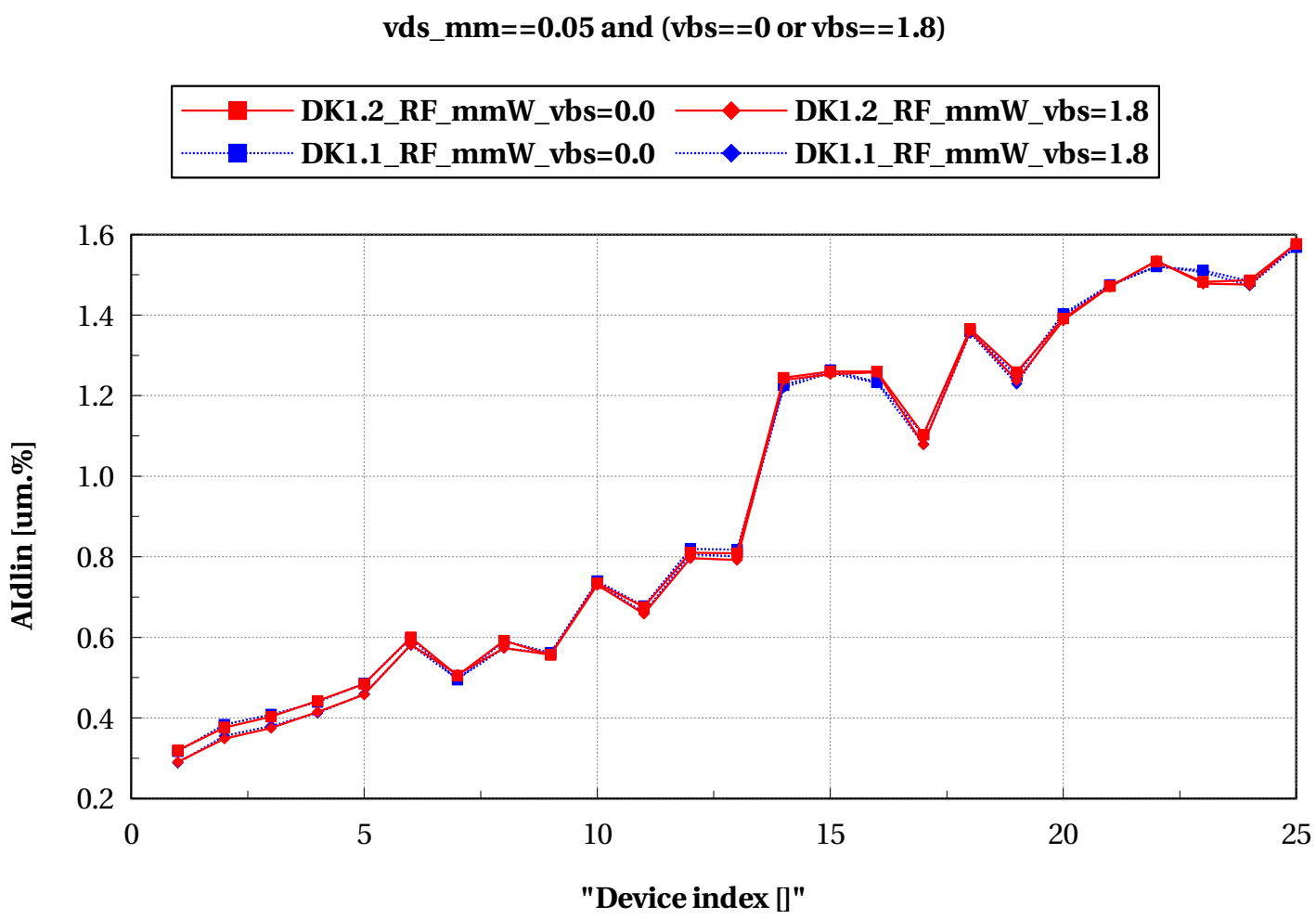
eglvtnfet_acc, Idlin*L/W [uA] vs "Device index []"



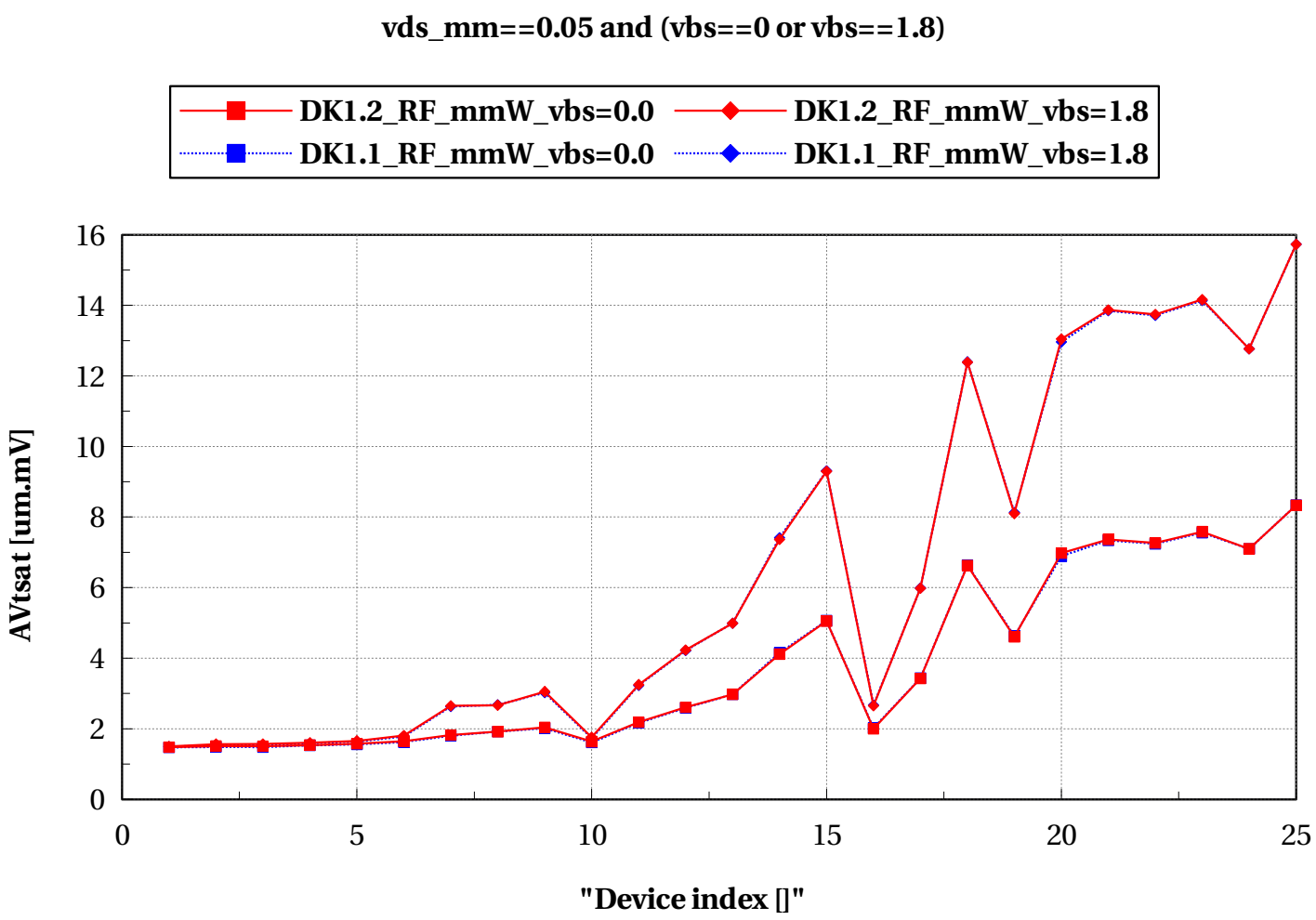
eglvtnfet_acc, AVtlin [um.mV] vs "Device index []"



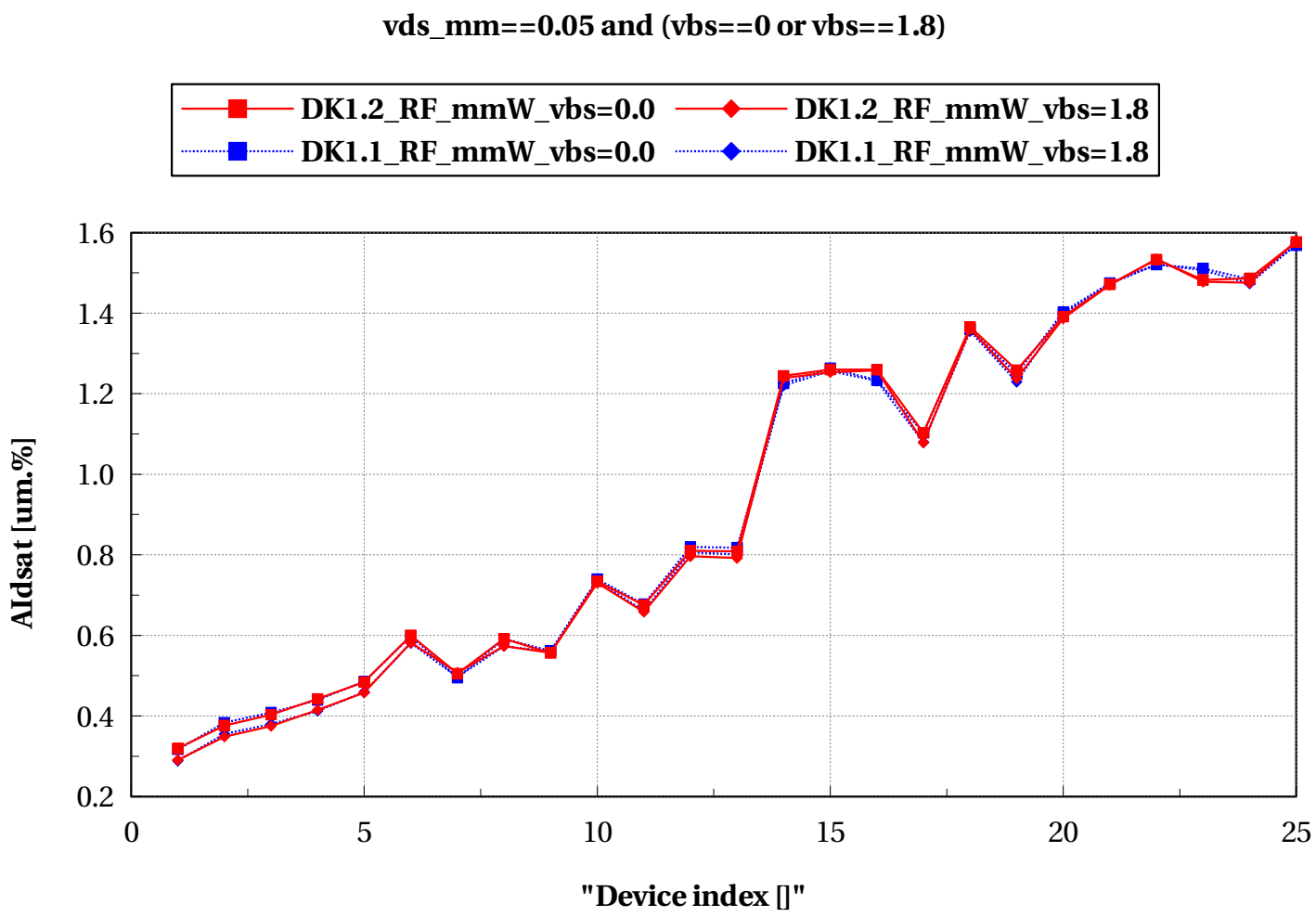
eglvtnfet_acc, AIdlin [um.%] vs "Device index []"



eglvtnfet_acc, AVtsat [um.mV] vs "Device index []"

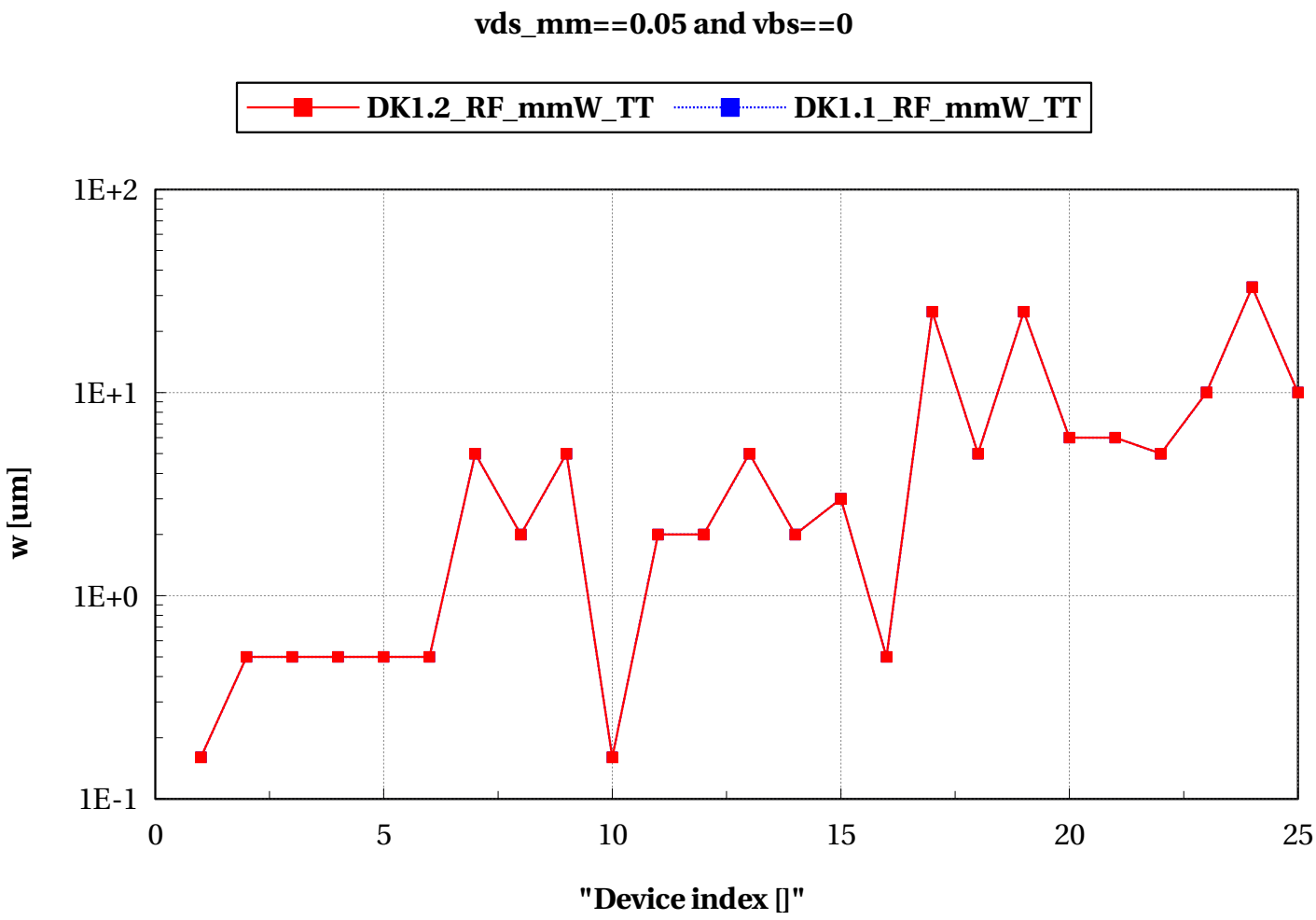


eglvtnfet_acc, AIdsat [um.%] vs "Device index []"

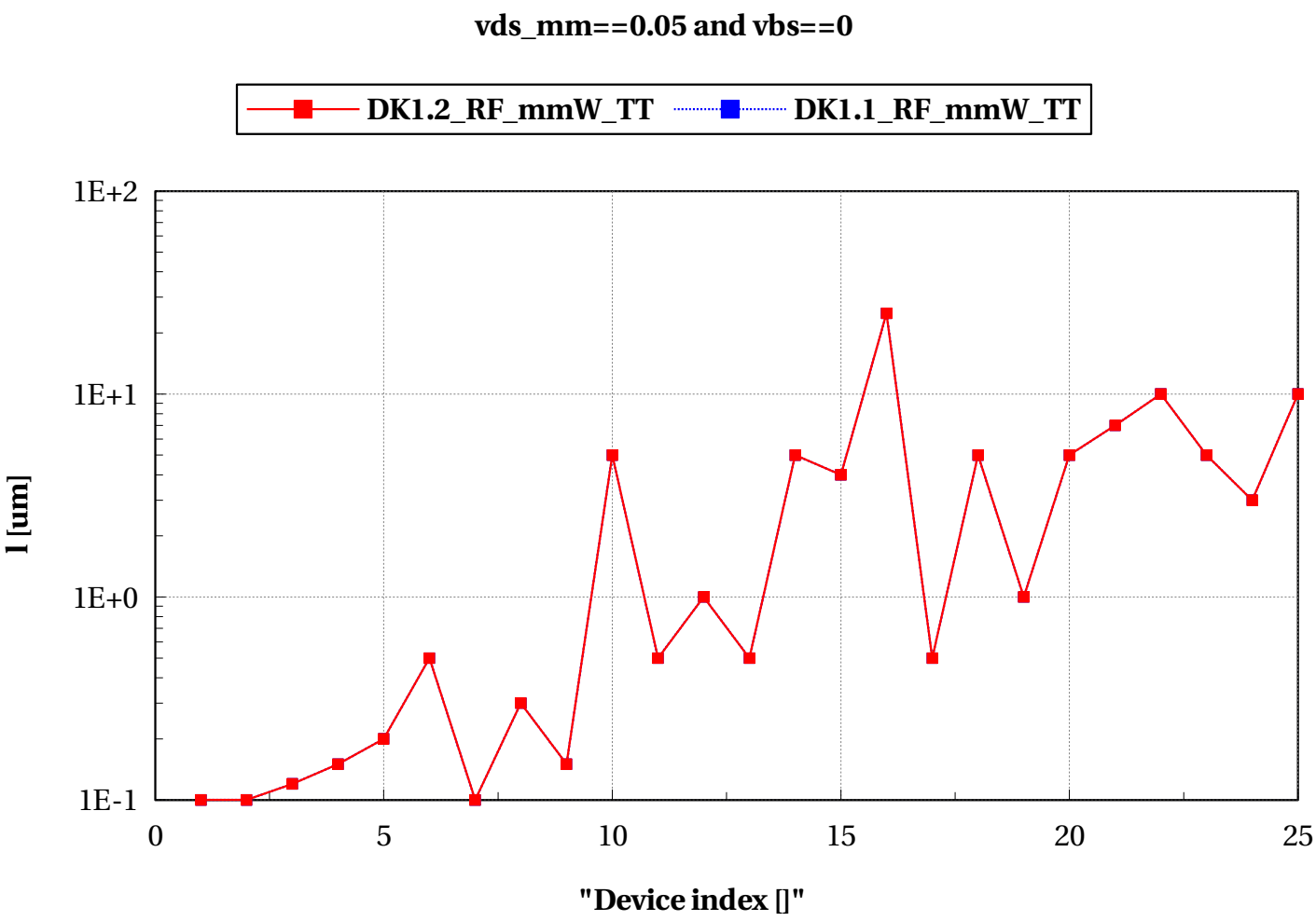


eglvtpfet_acc
Electrical characteristics scaling

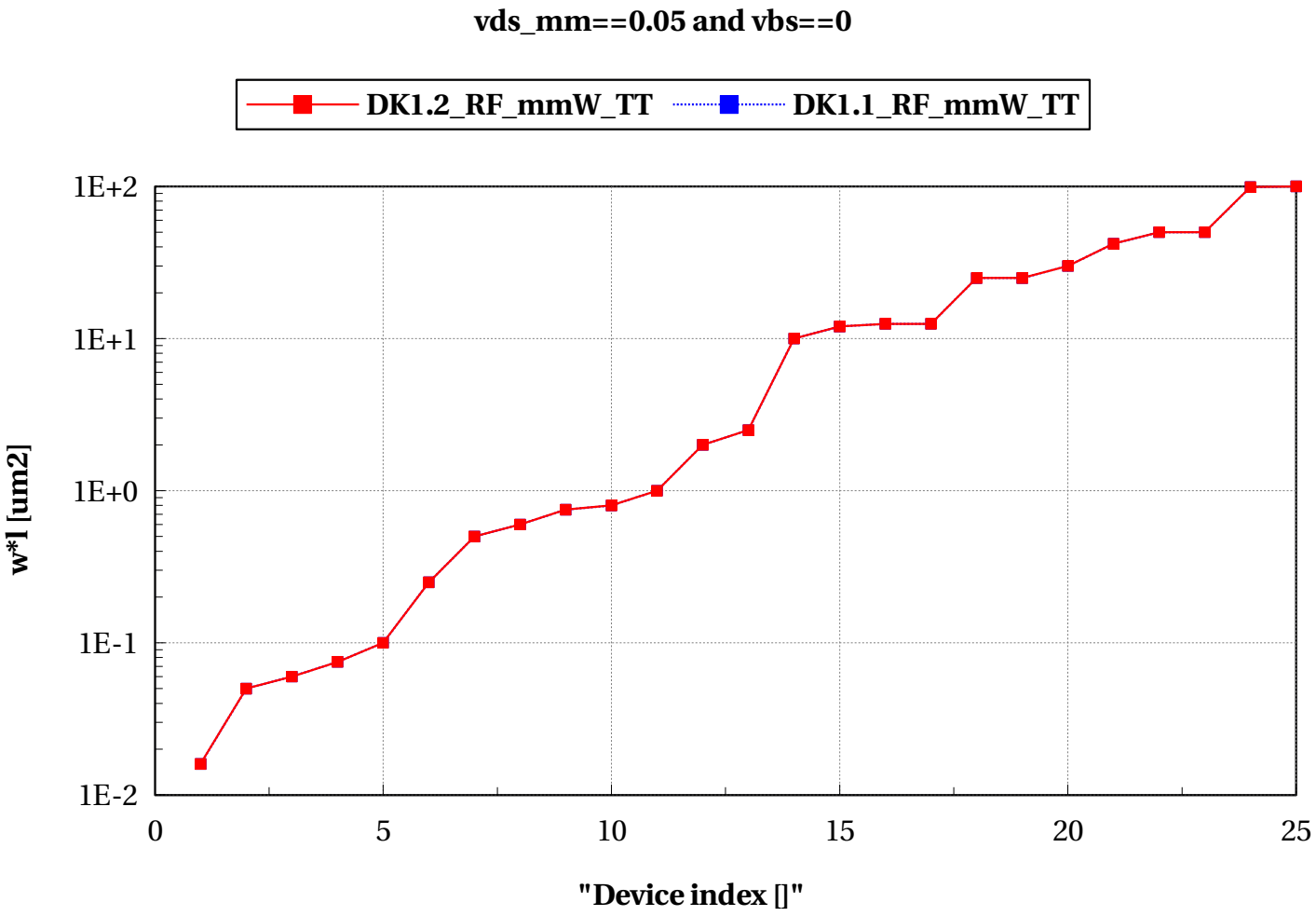
eglvtpfet_acc, w [um] vs "Device index []"



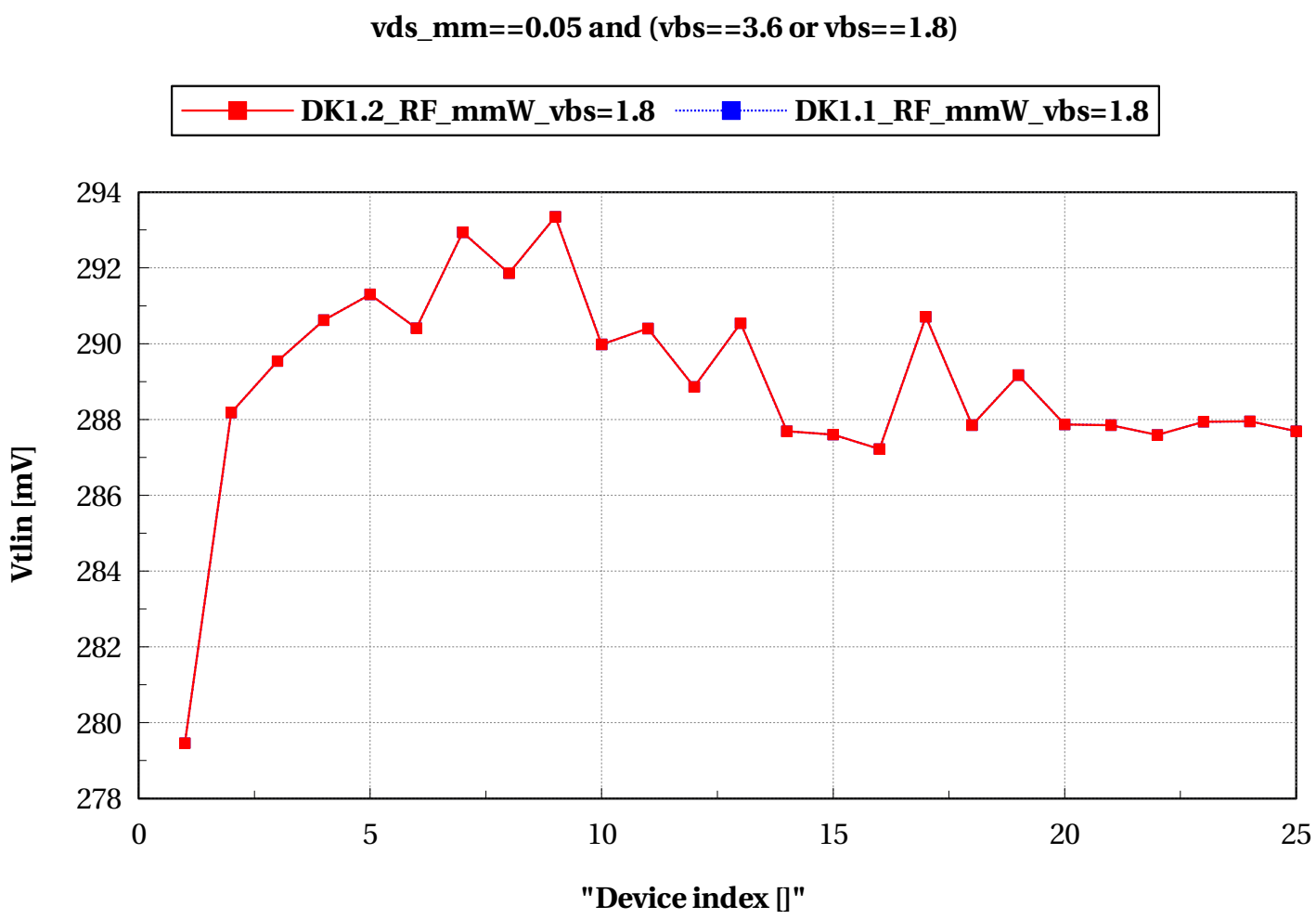
eglvtpfet_acc, l [um] vs "Device index []"



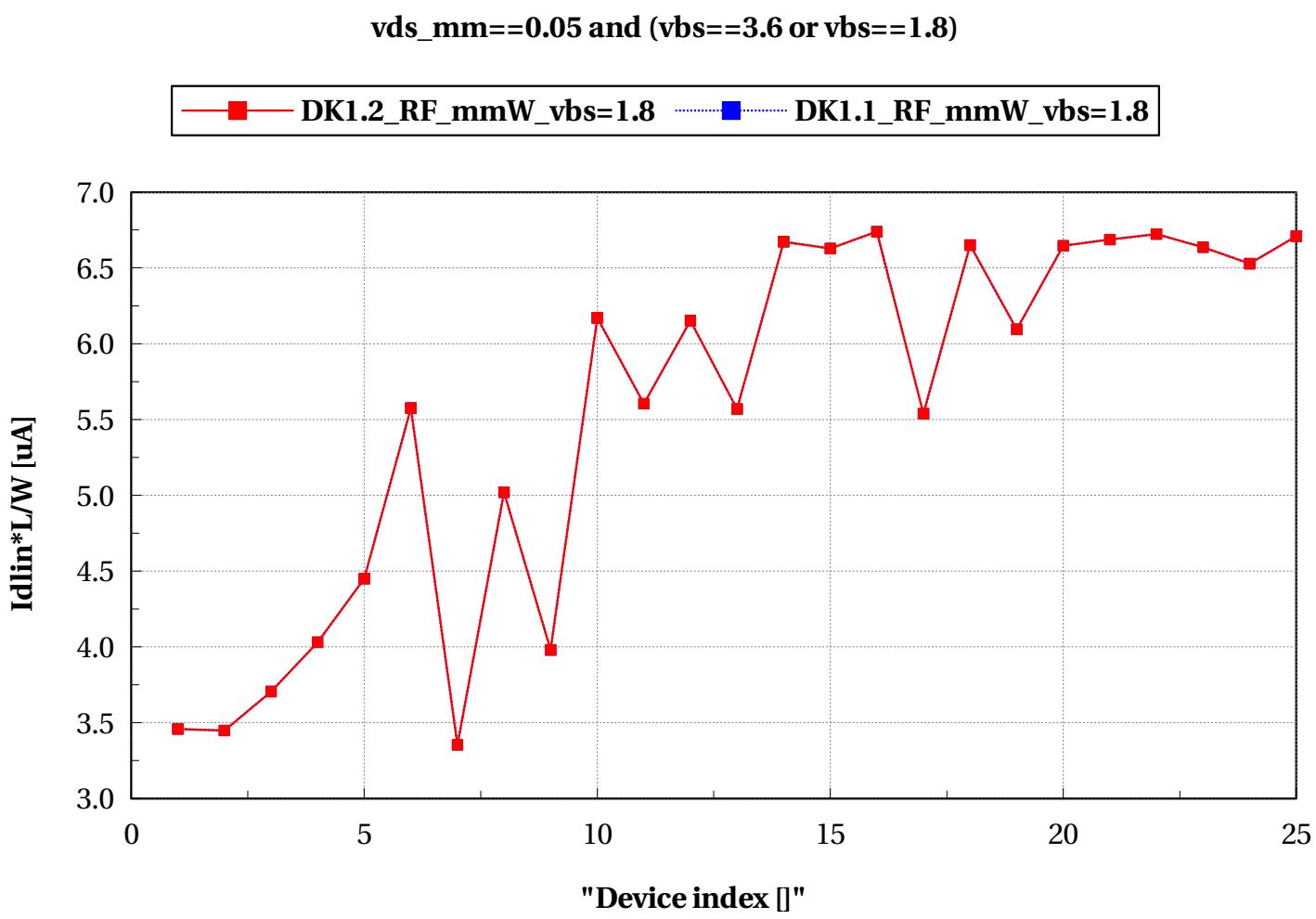
eglvtpfet_acc, w*l [um2] vs "Device index []"



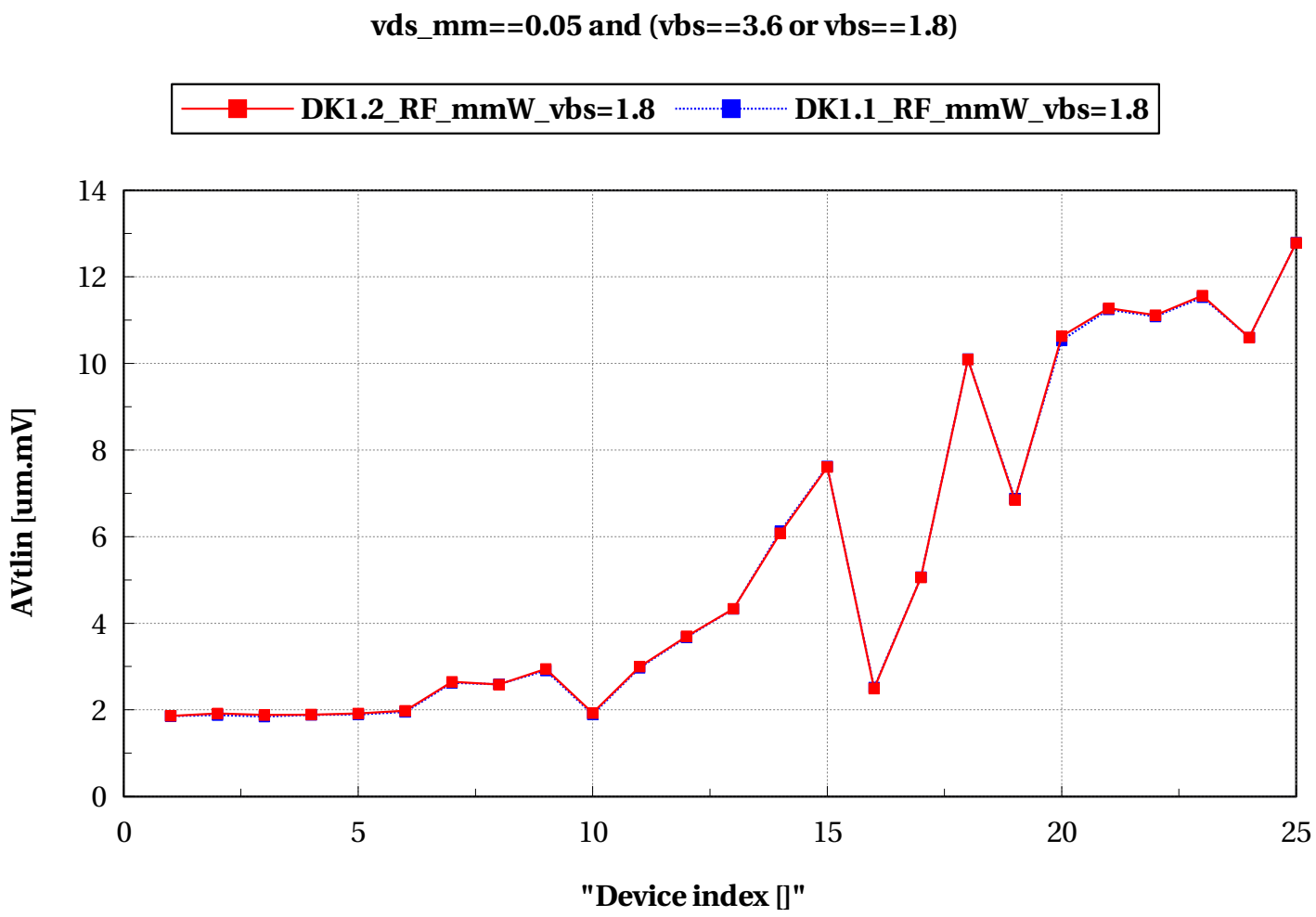
eglvtpfet_acc, Vtlin [mV] vs "Device index []"



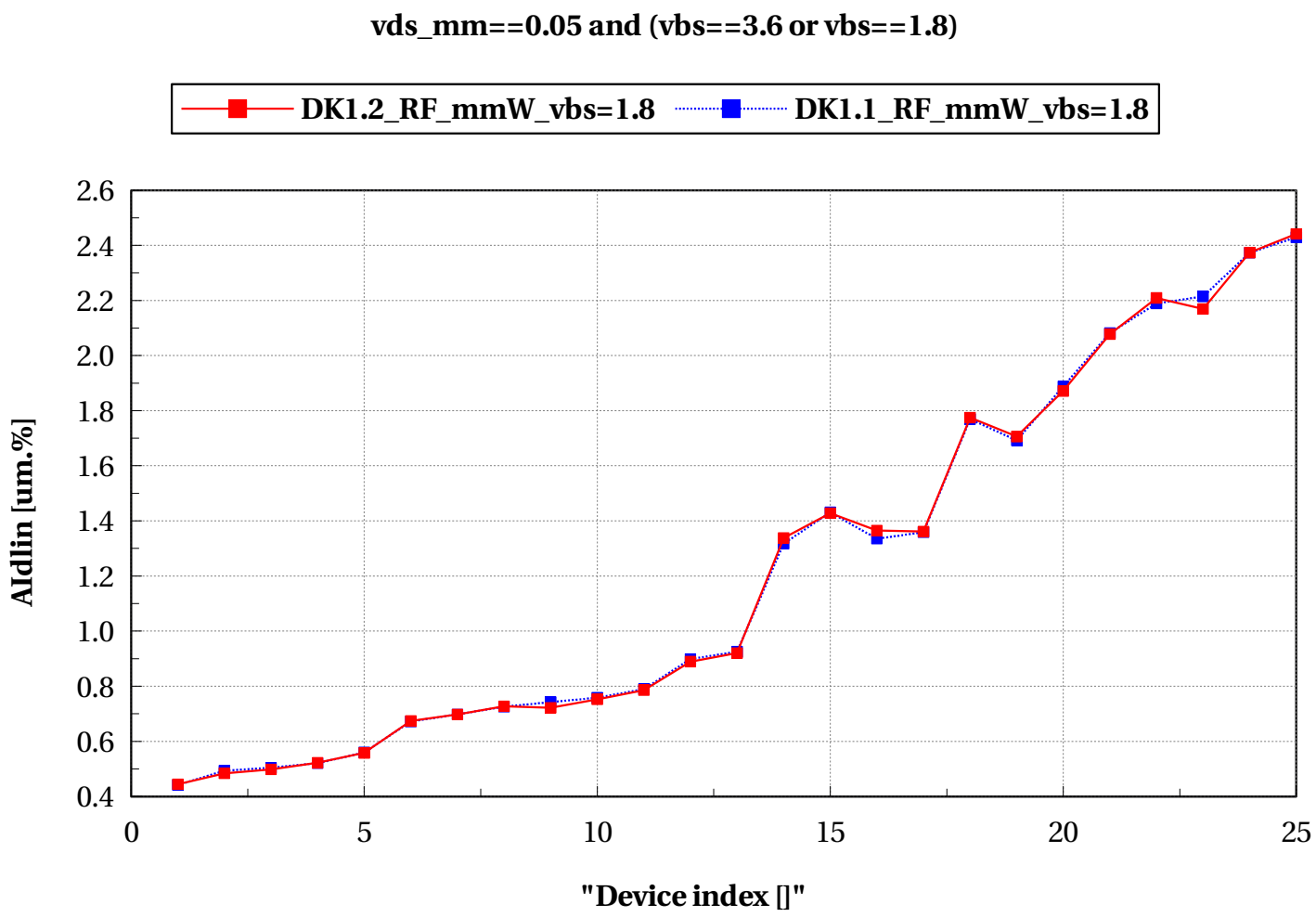
eglvtpfet_acc, Idlin*L/W [uA] vs "Device index []"



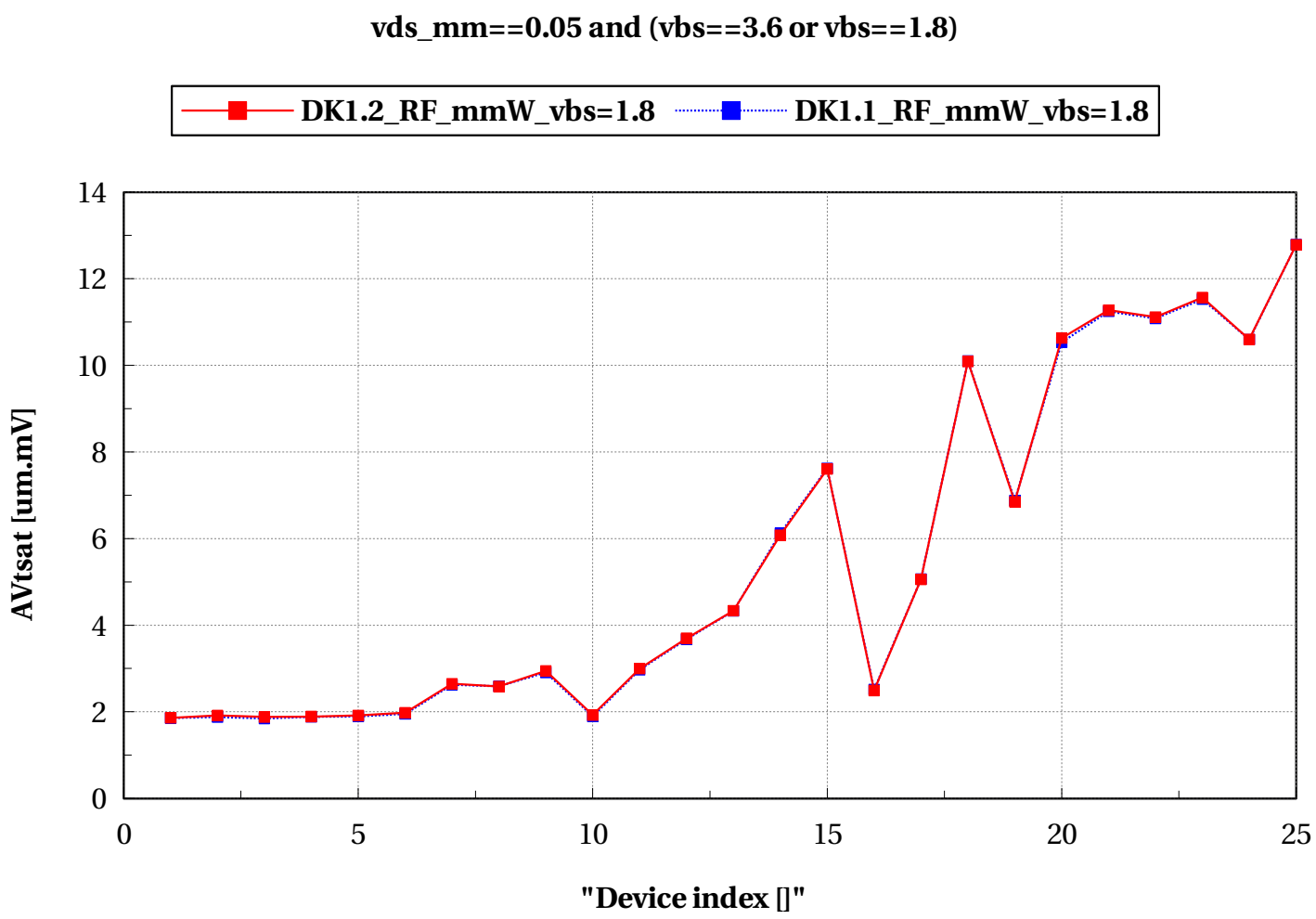
eglvtpfet_acc, AVtlin [um.mV] vs "Device index []"



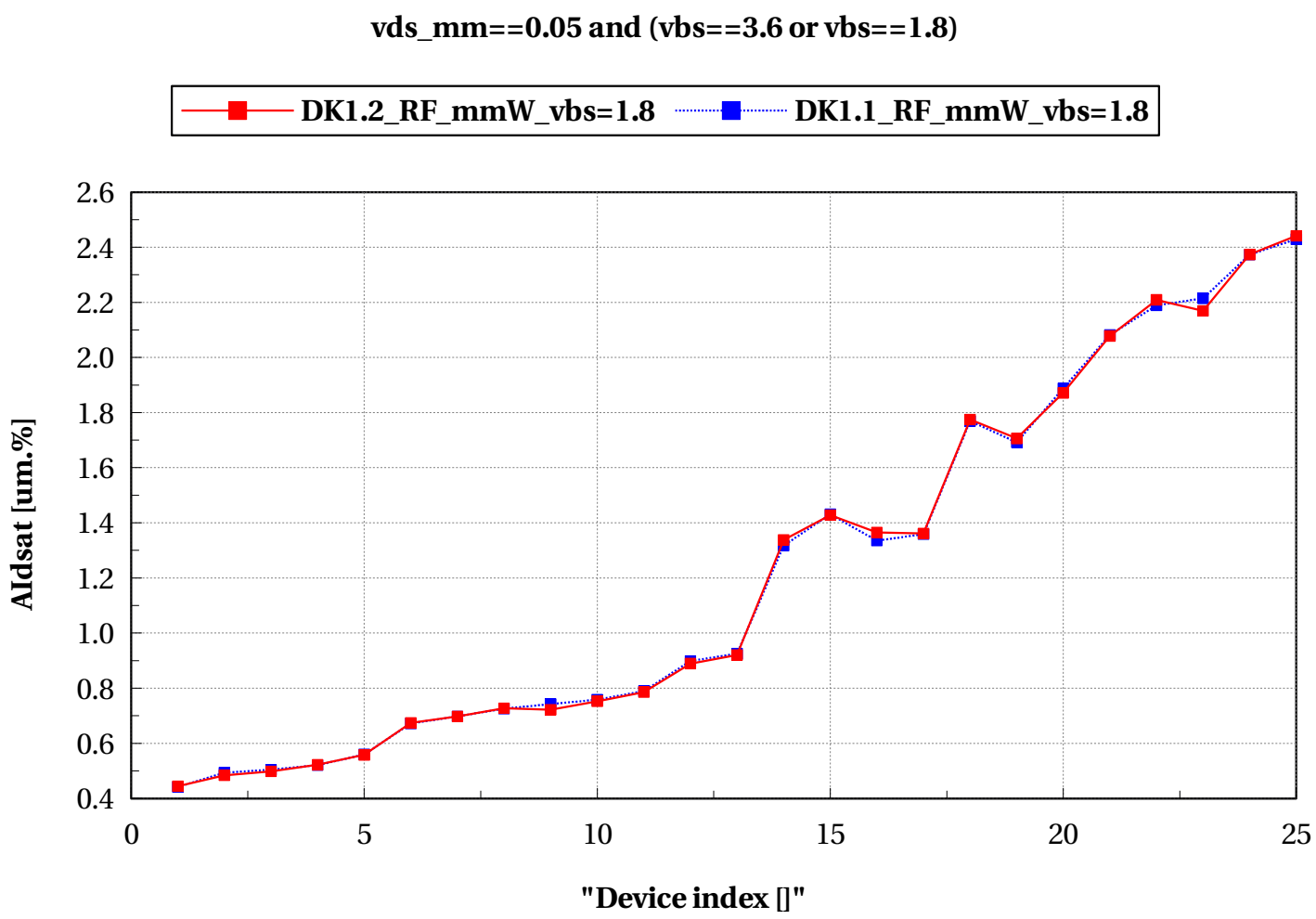
eglvtpfet_acc, AIdlin [um.%] vs "Device index []"



eglvtpfet_acc, AVtsat [um.mV] vs "Device index []"

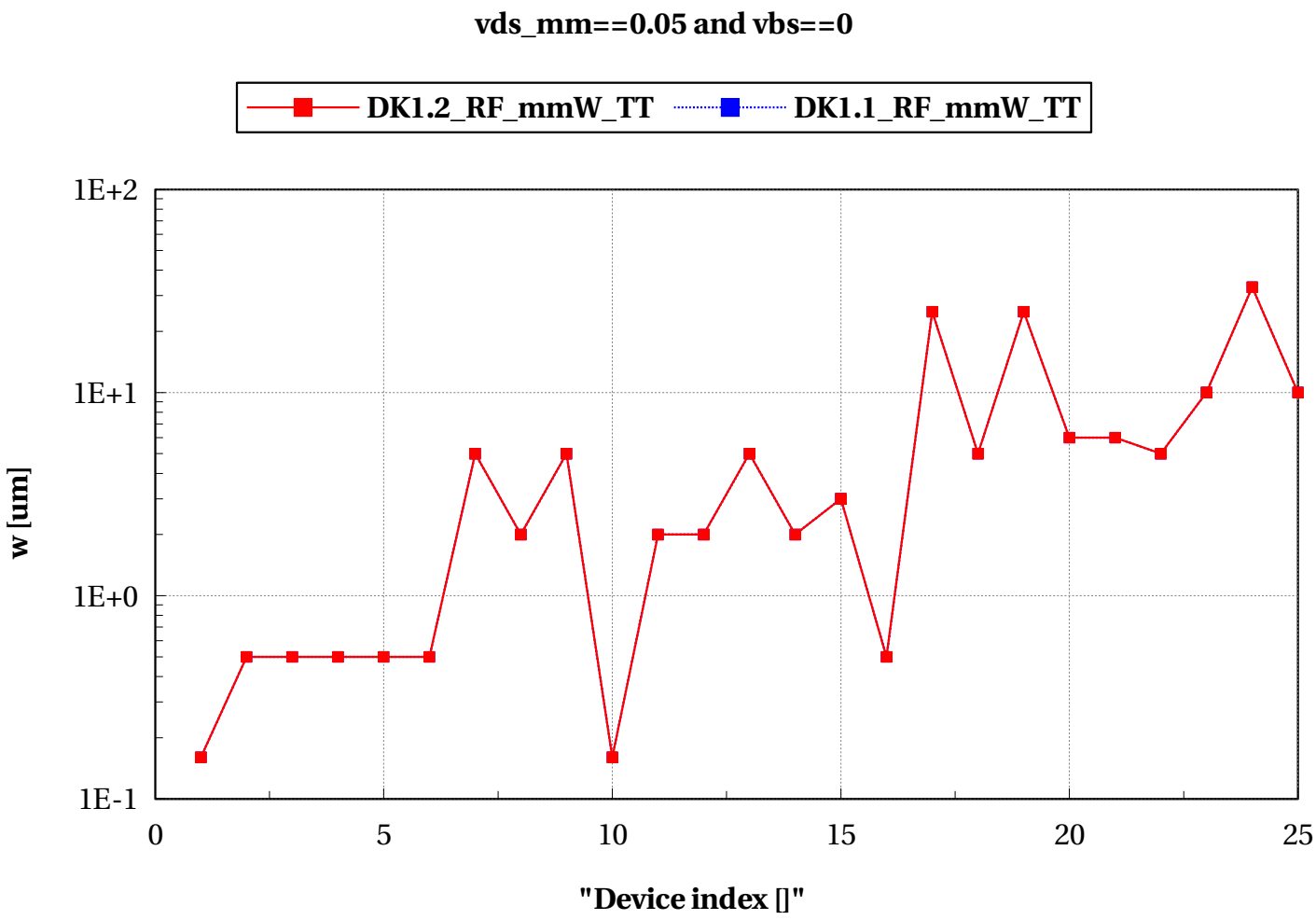


eglvtpfet_acc, AIdsat [um.%] vs "Device index []"

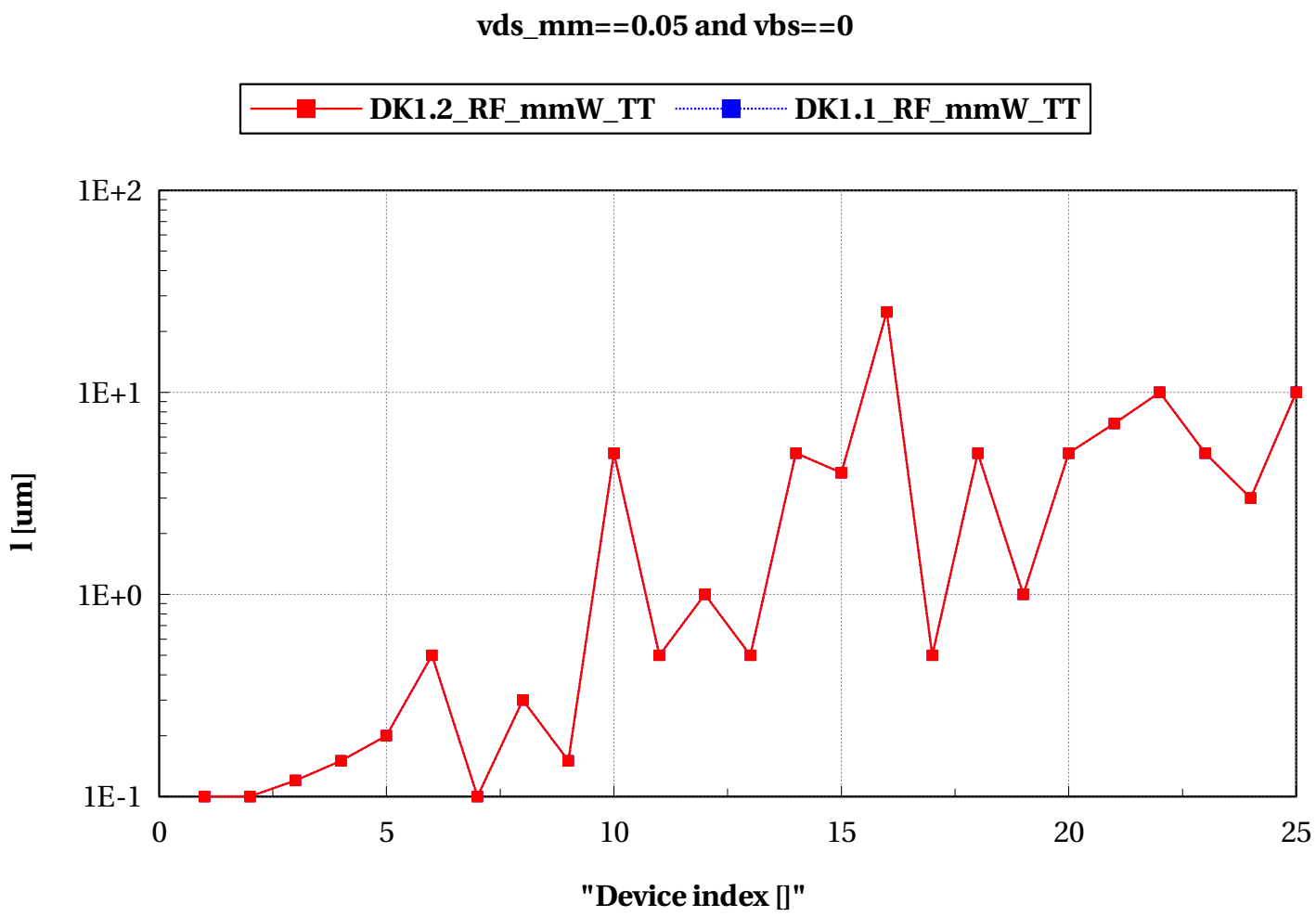


egnfet_acc
Electrical characteristics scaling

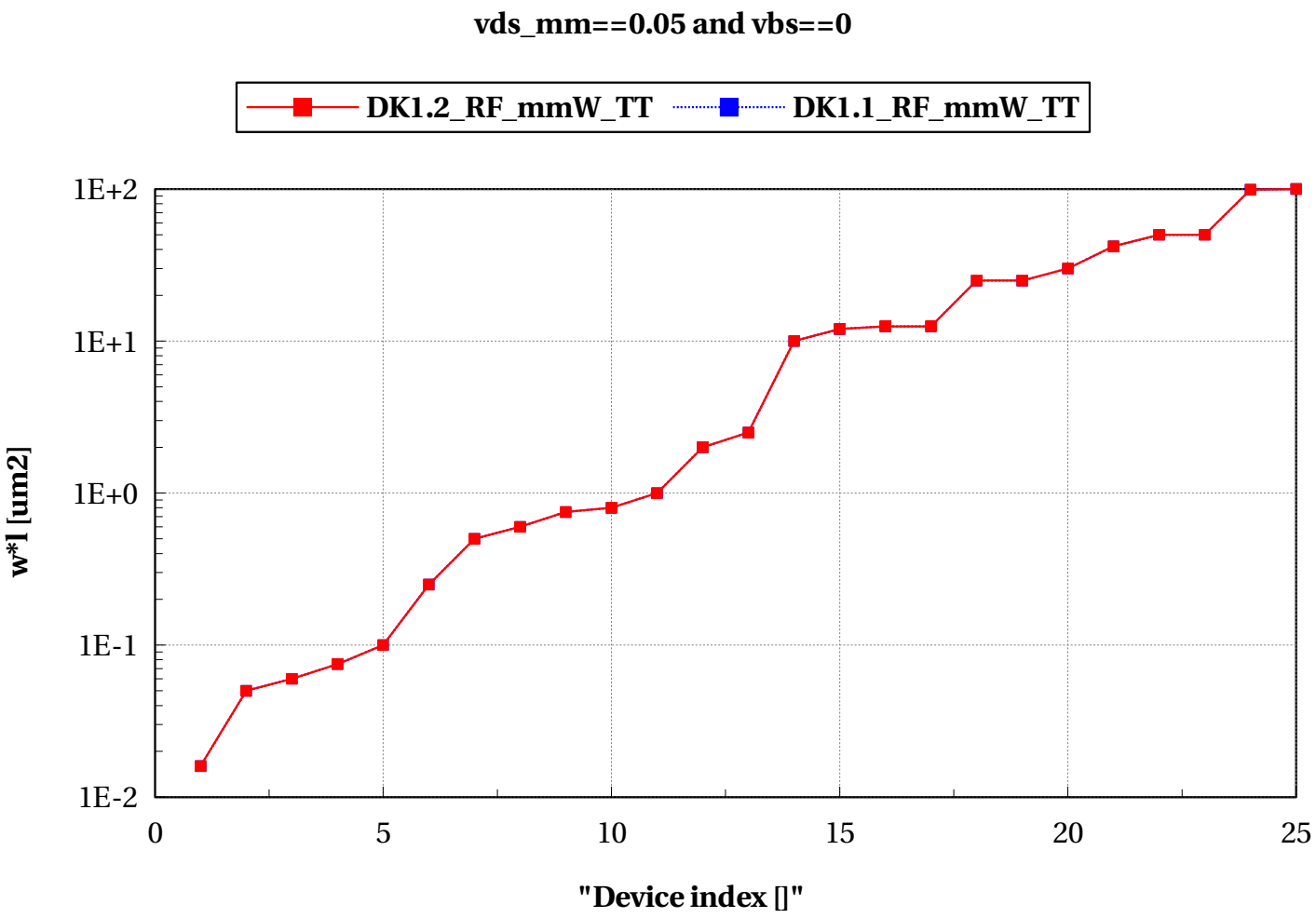
egnfet_acc, w [um] vs "Device index []"



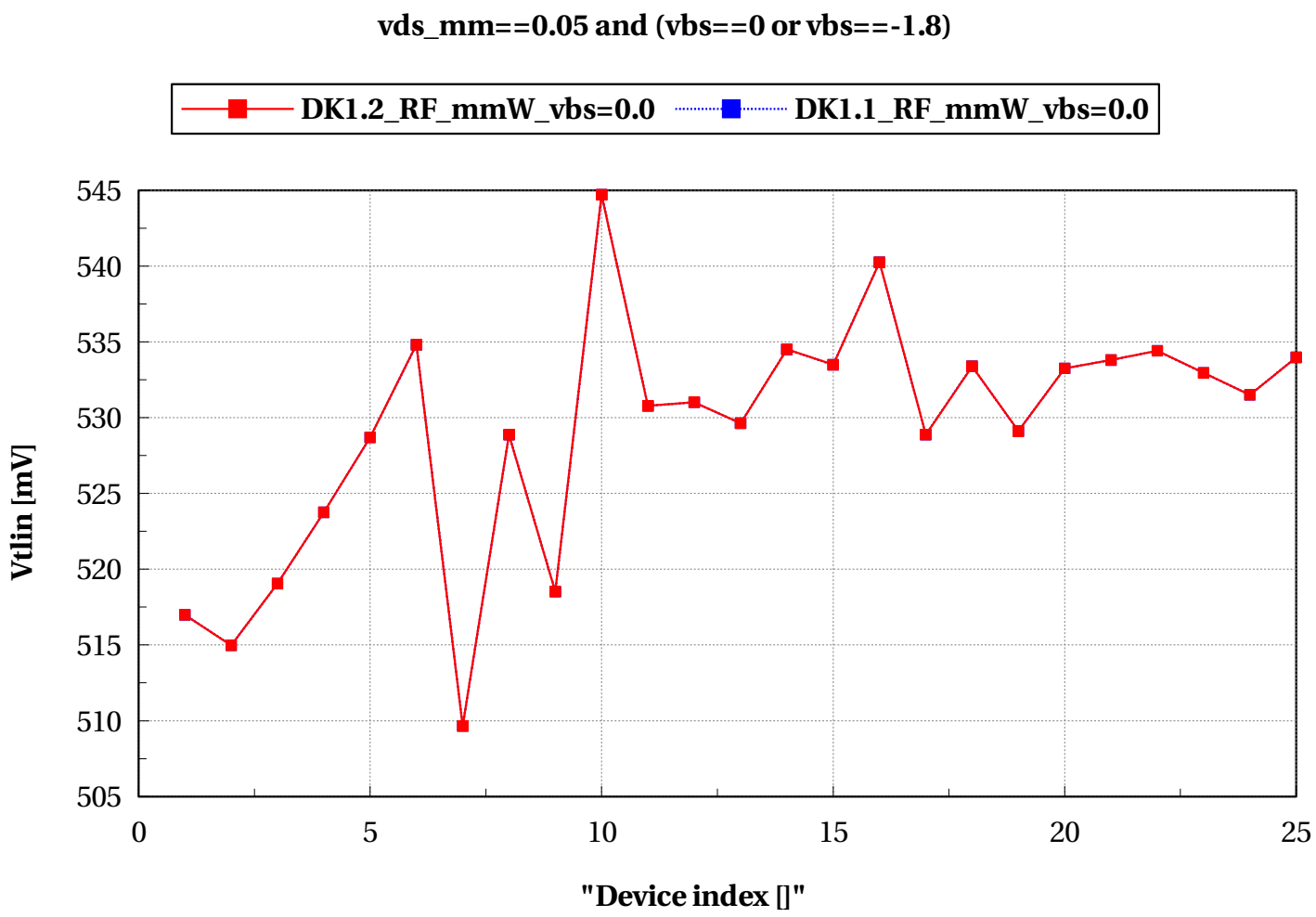
egnfet_acc, l [um] vs "Device index []"



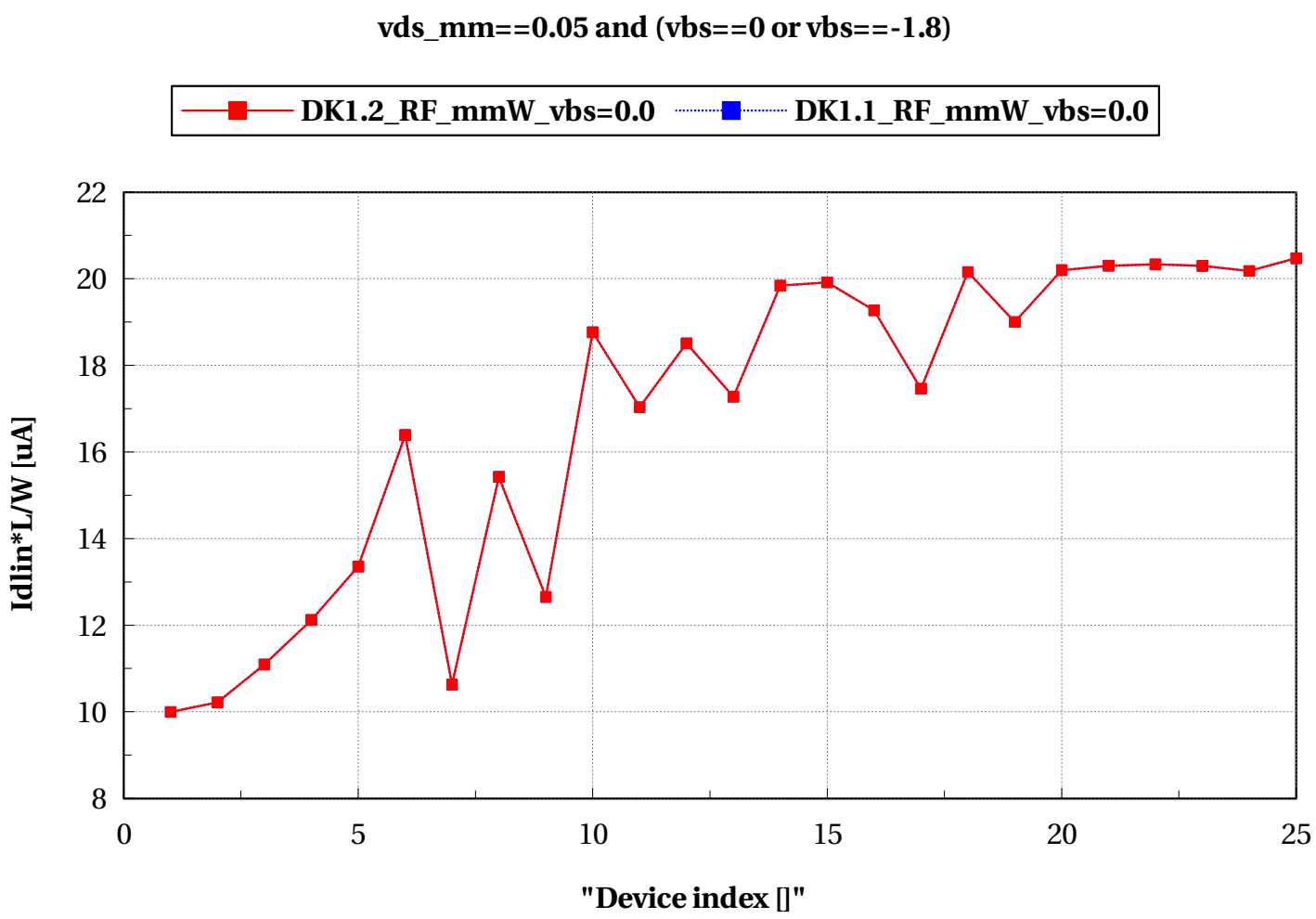
egnfet_acc, w*l [um2] vs "Device index []"



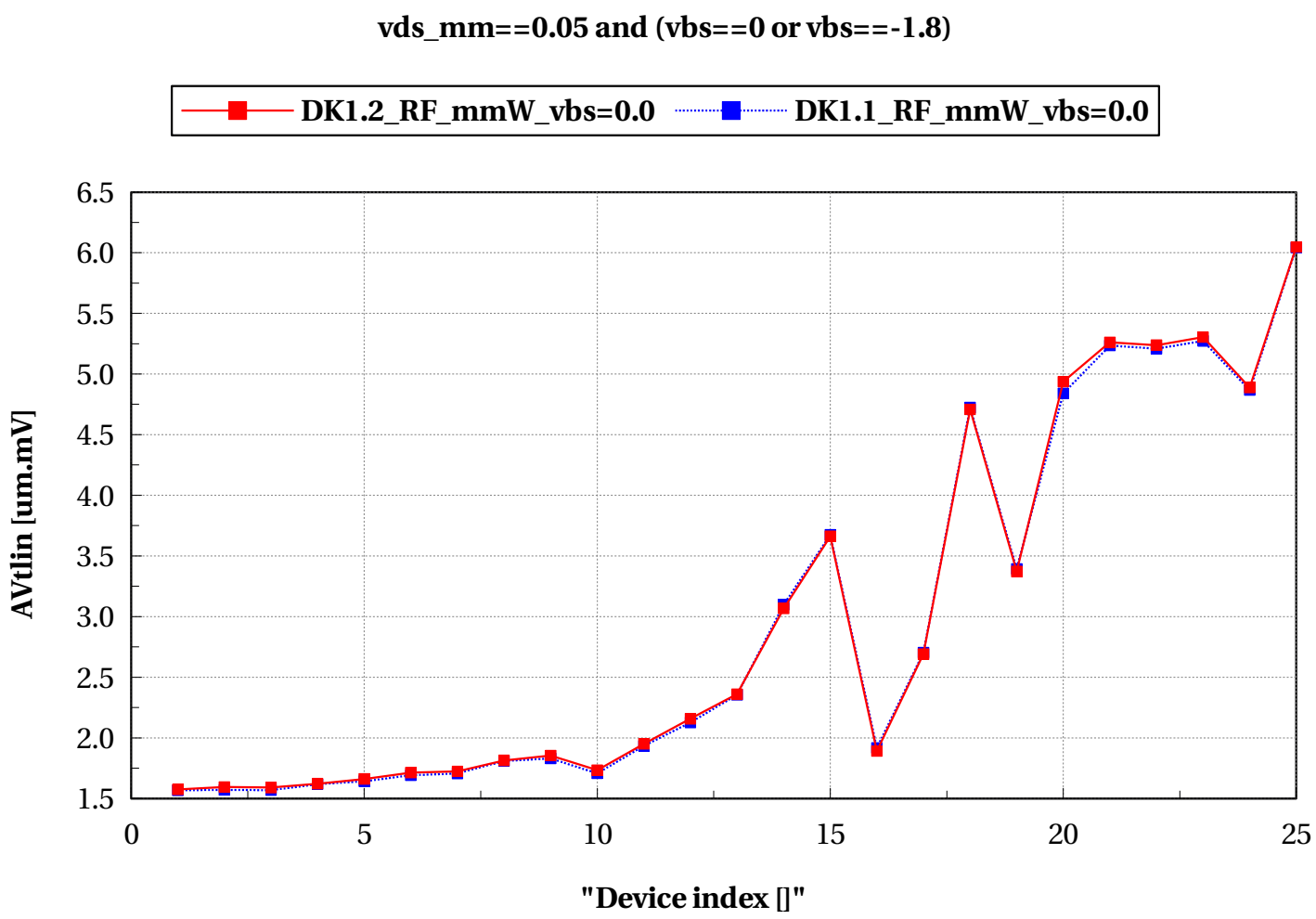
egnfet_acc, Vtlin [mV] vs "Device index []"



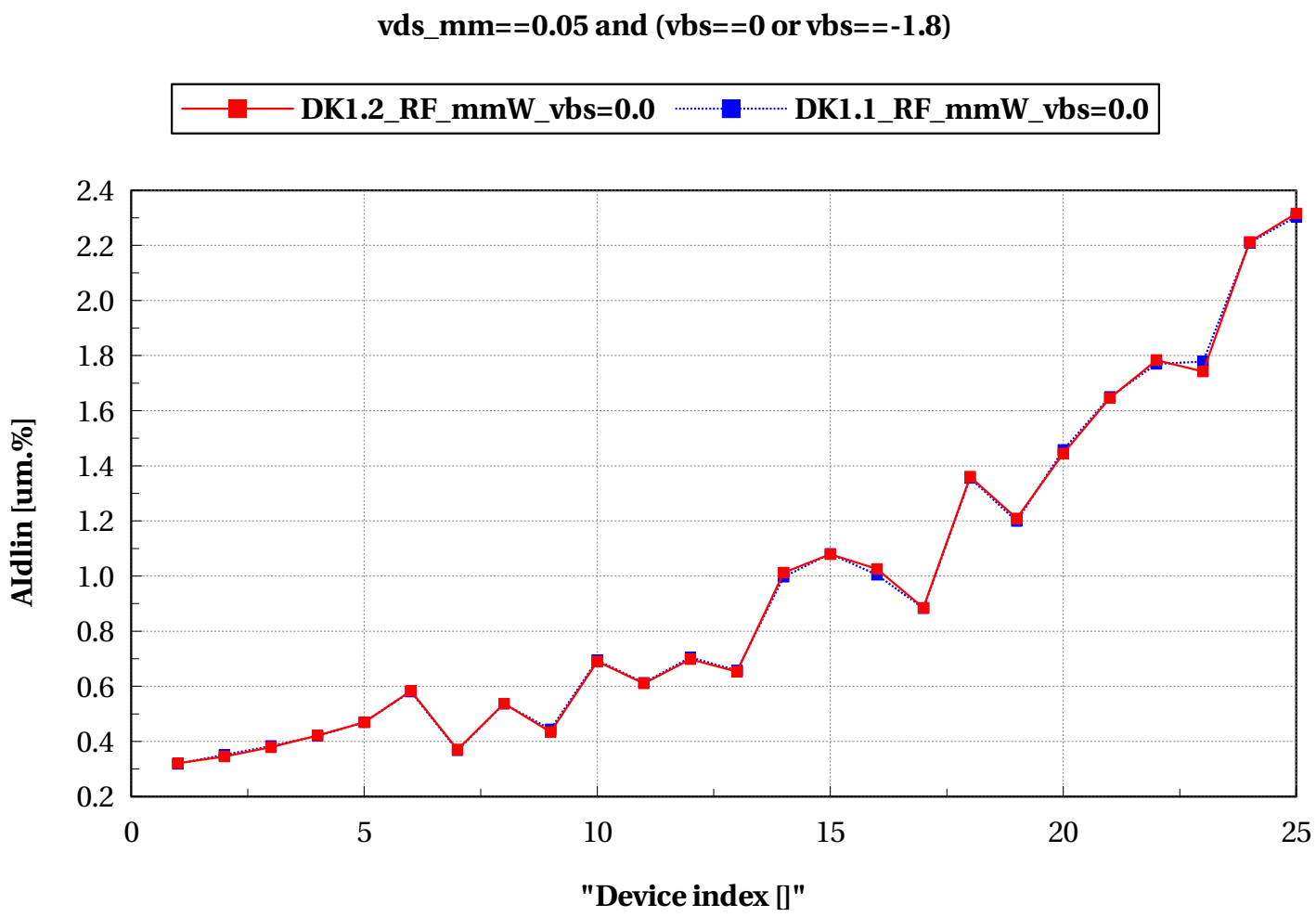
egnfet_acc, Idlin*L/W [uA] vs "Device index []"



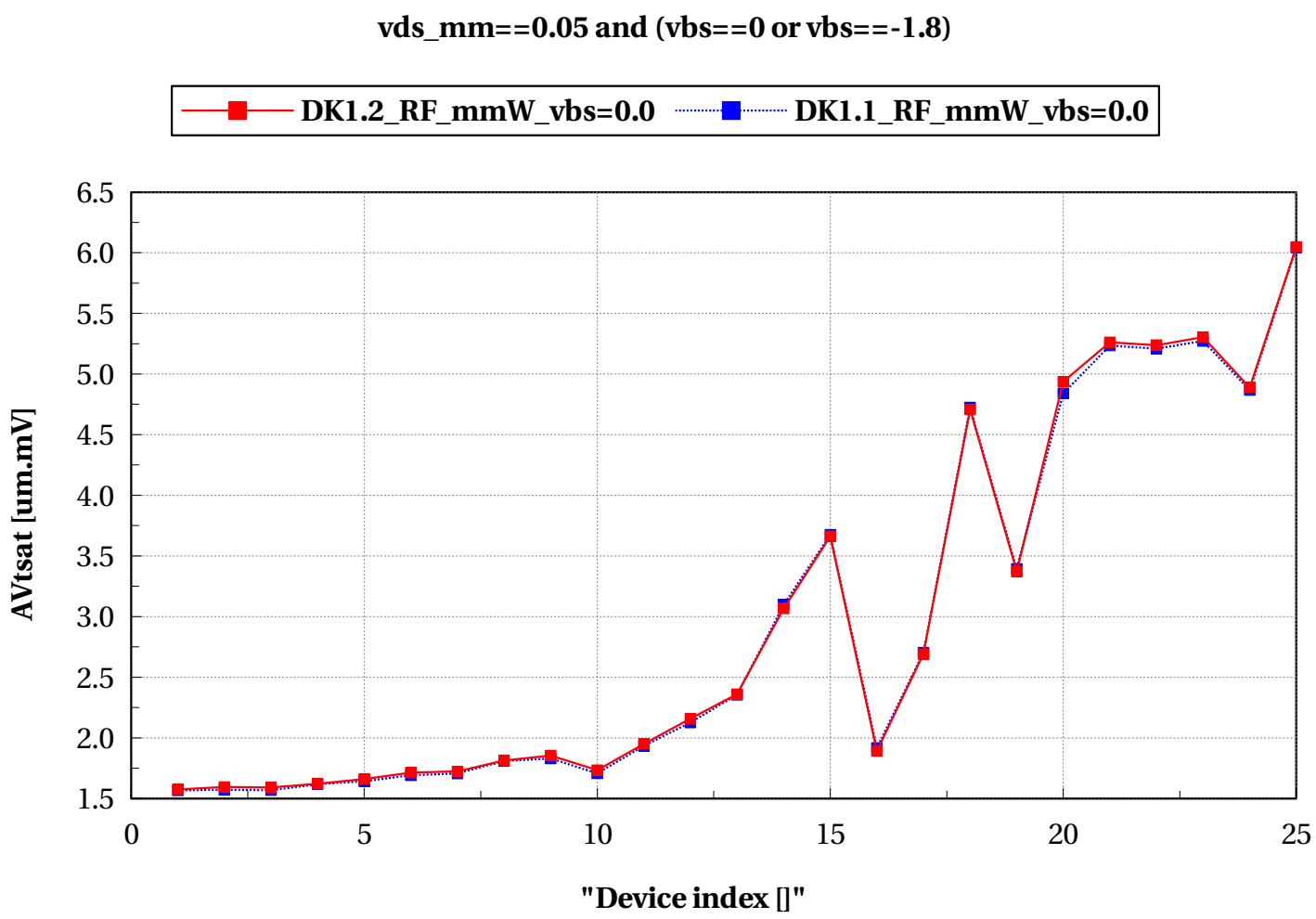
egnfet_acc, AVtlin [um.mV] vs "Device index []"



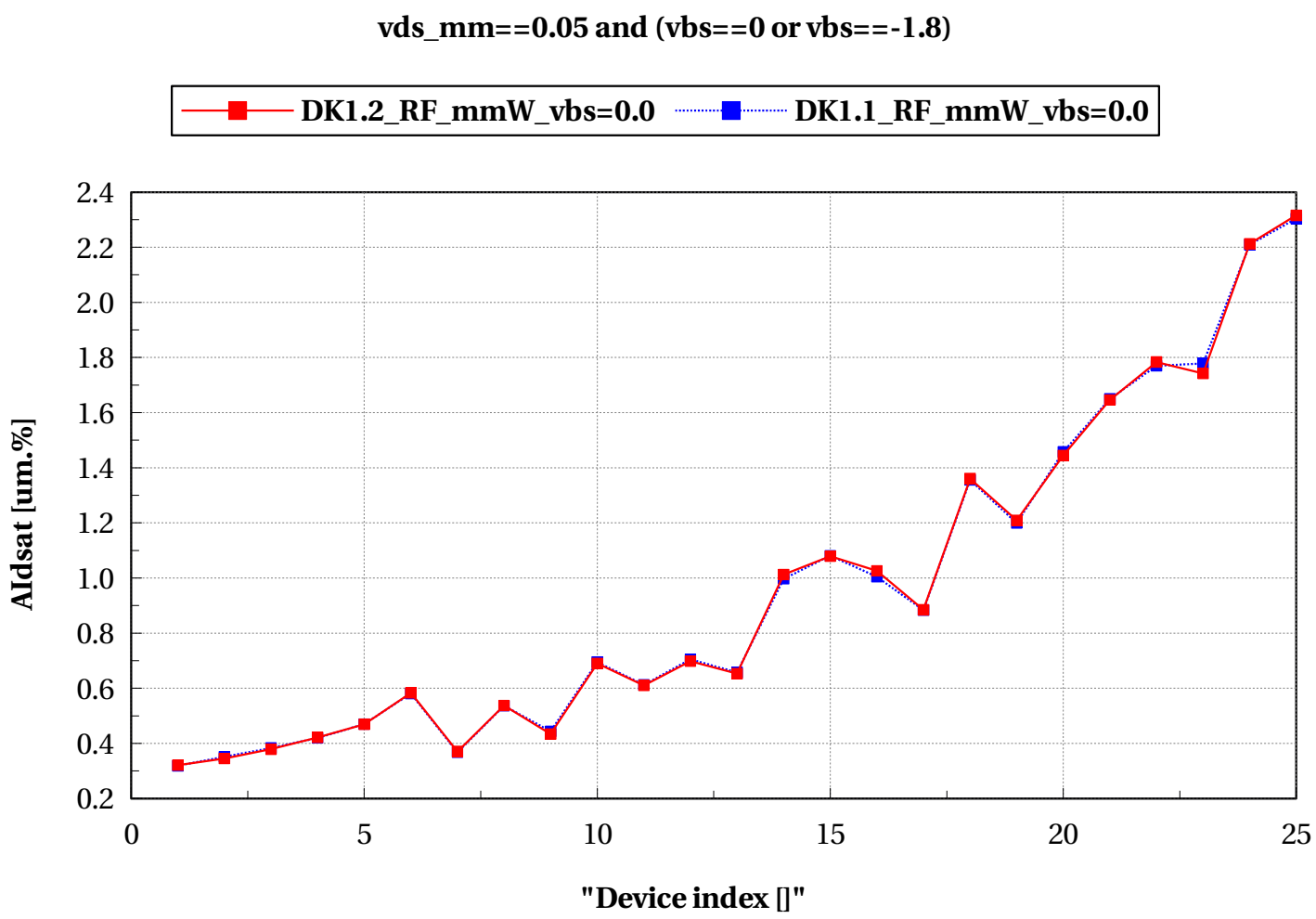
egnfet_acc, AIdlin [um.%] vs "Device index []"



egnfet_acc, AVtsat [um.mV] vs "Device index []"

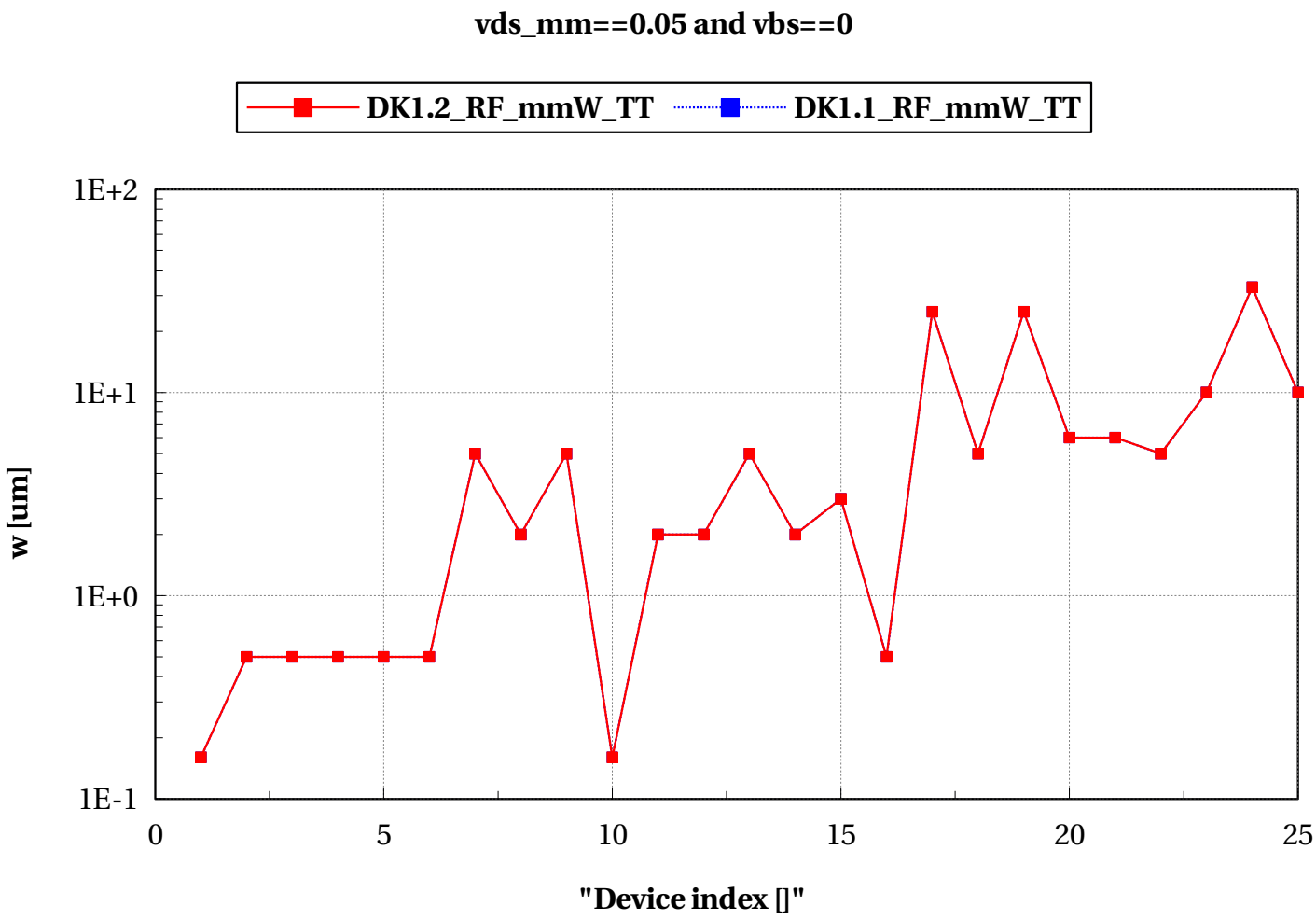


egnfet_acc, AIdsat [um.%] vs "Device index []"

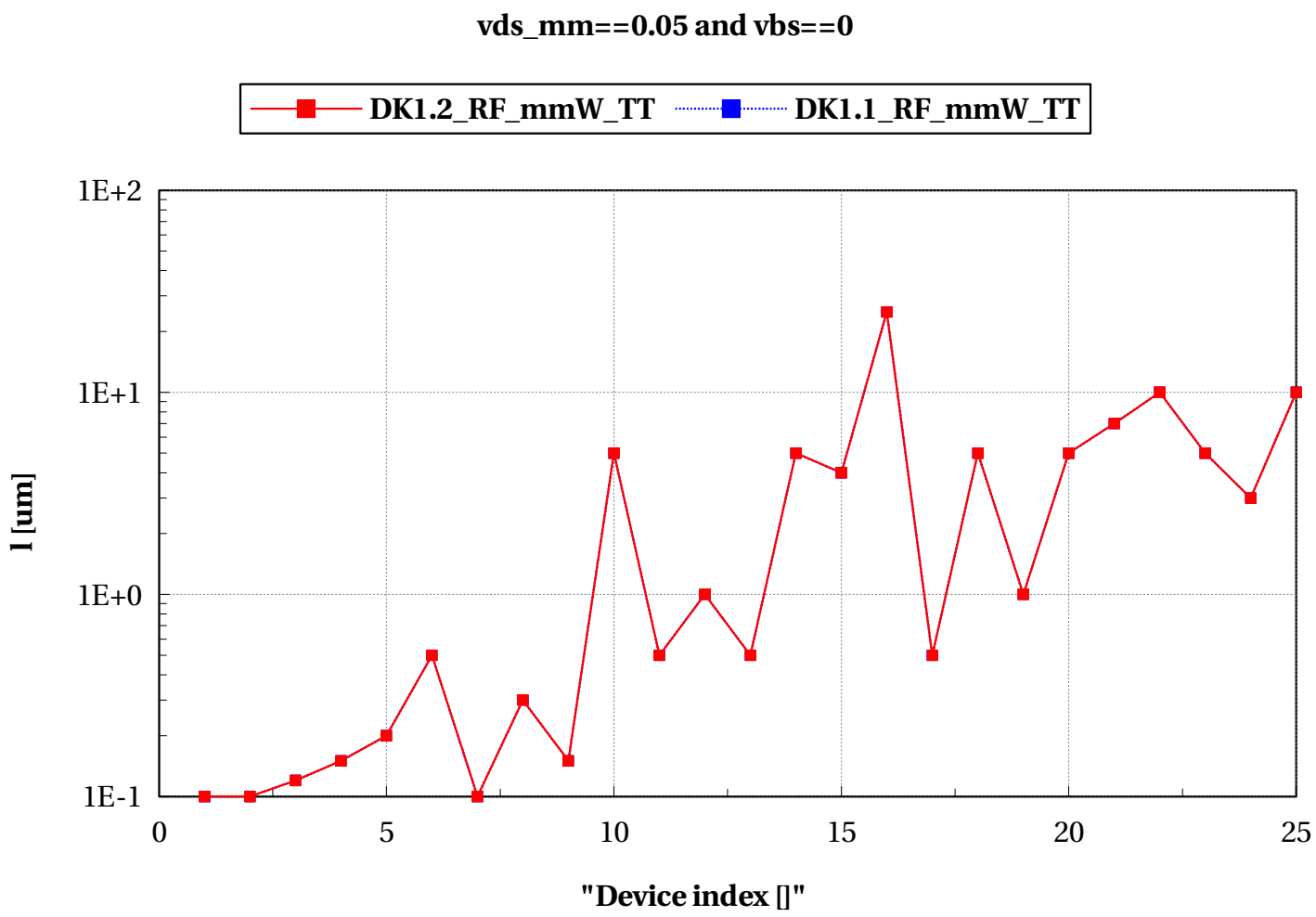


egpfet_acc
Electrical characteristics scaling

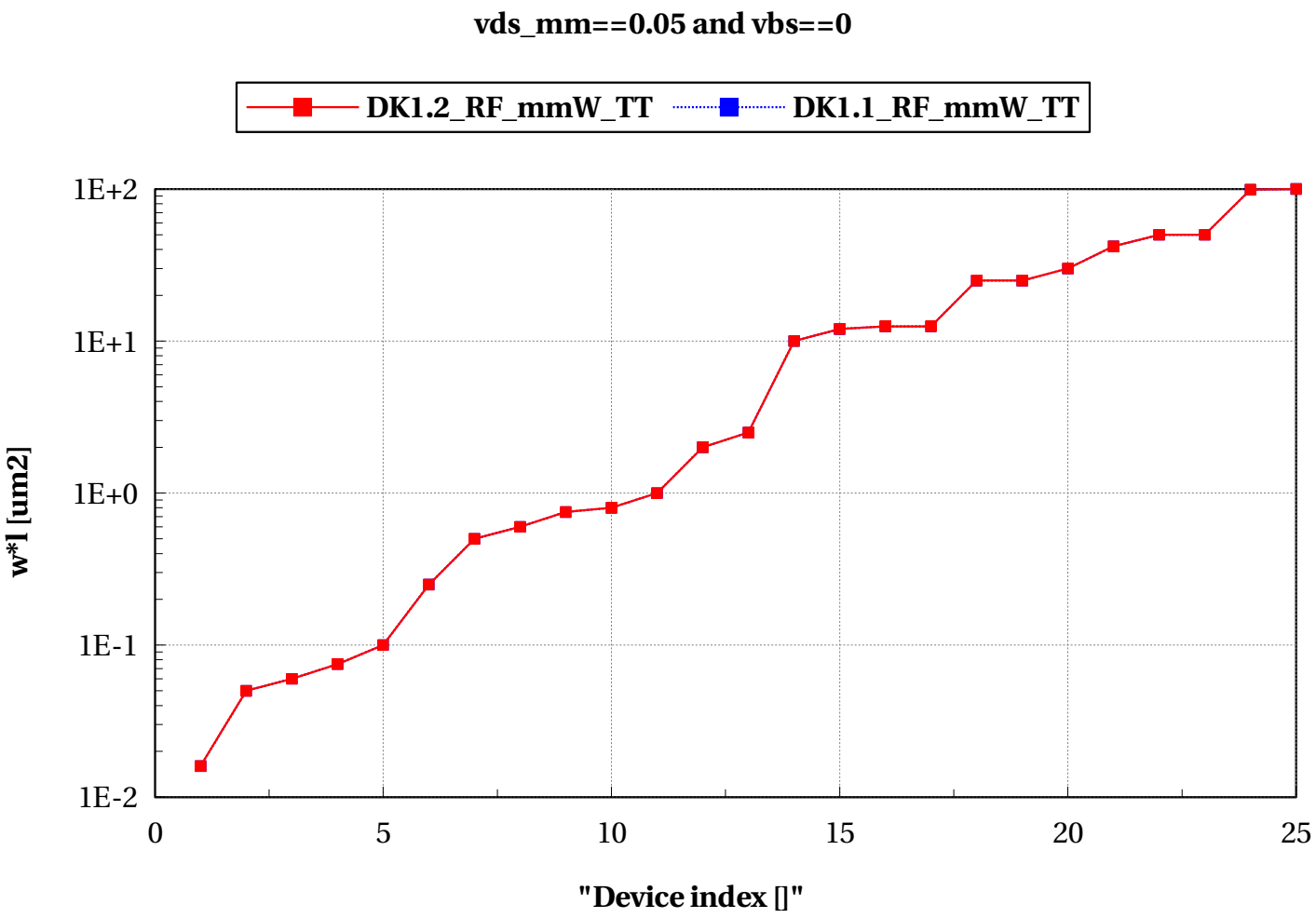
egpfet_acc, w [um] vs "Device index []"



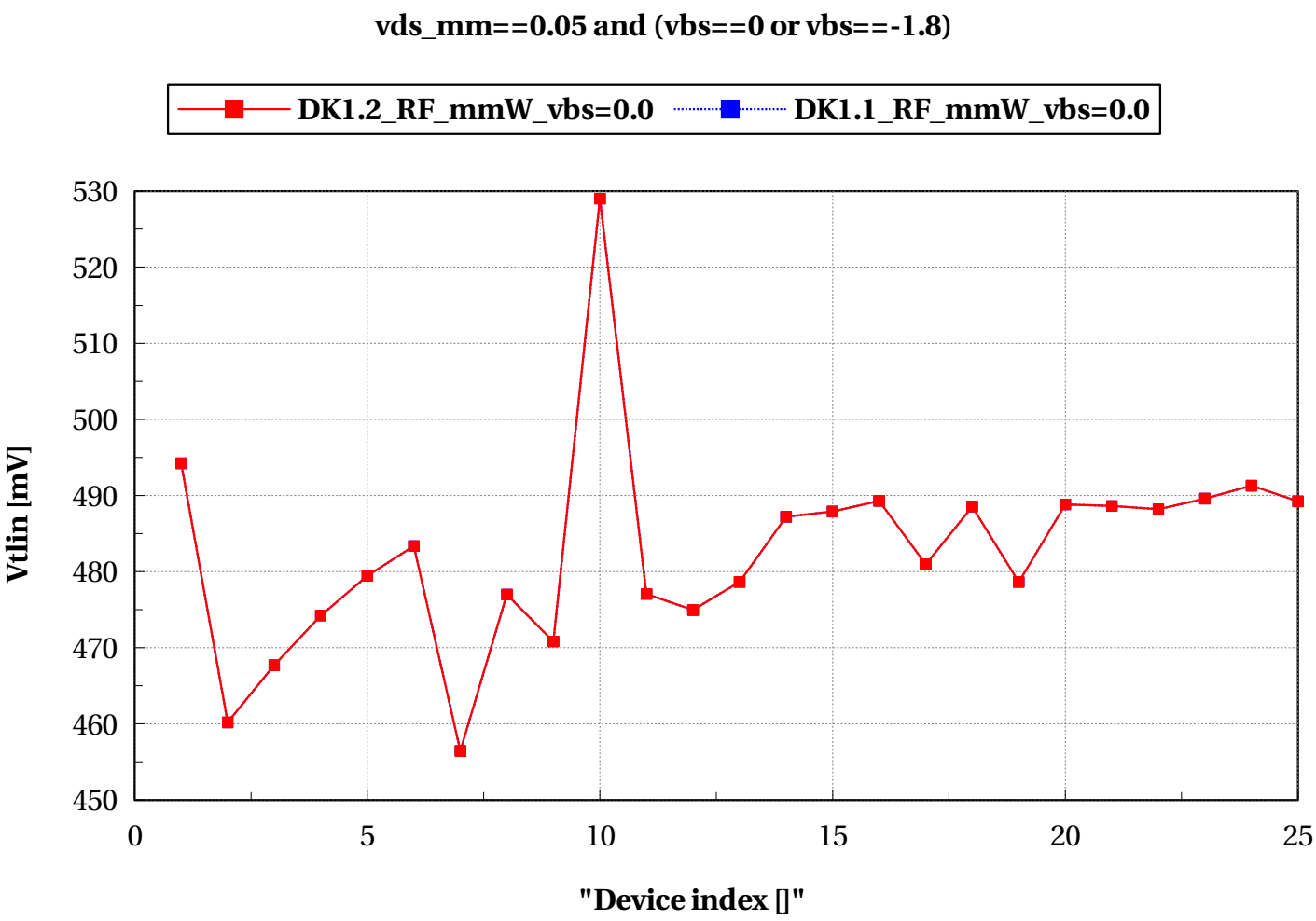
egpfet_acc, l [um] vs "Device index []"



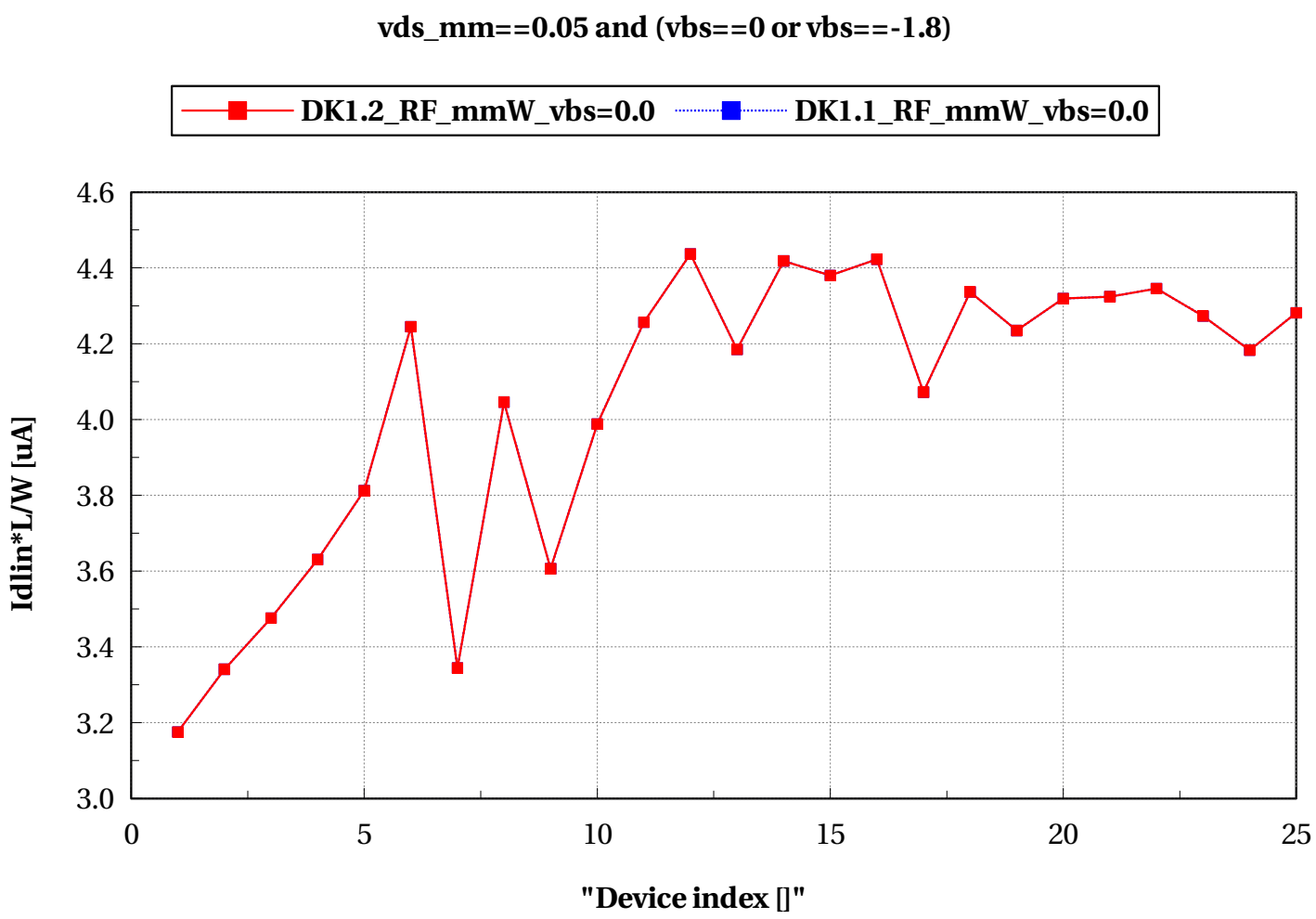
egpfet_acc, w*l [um2] vs "Device index []"



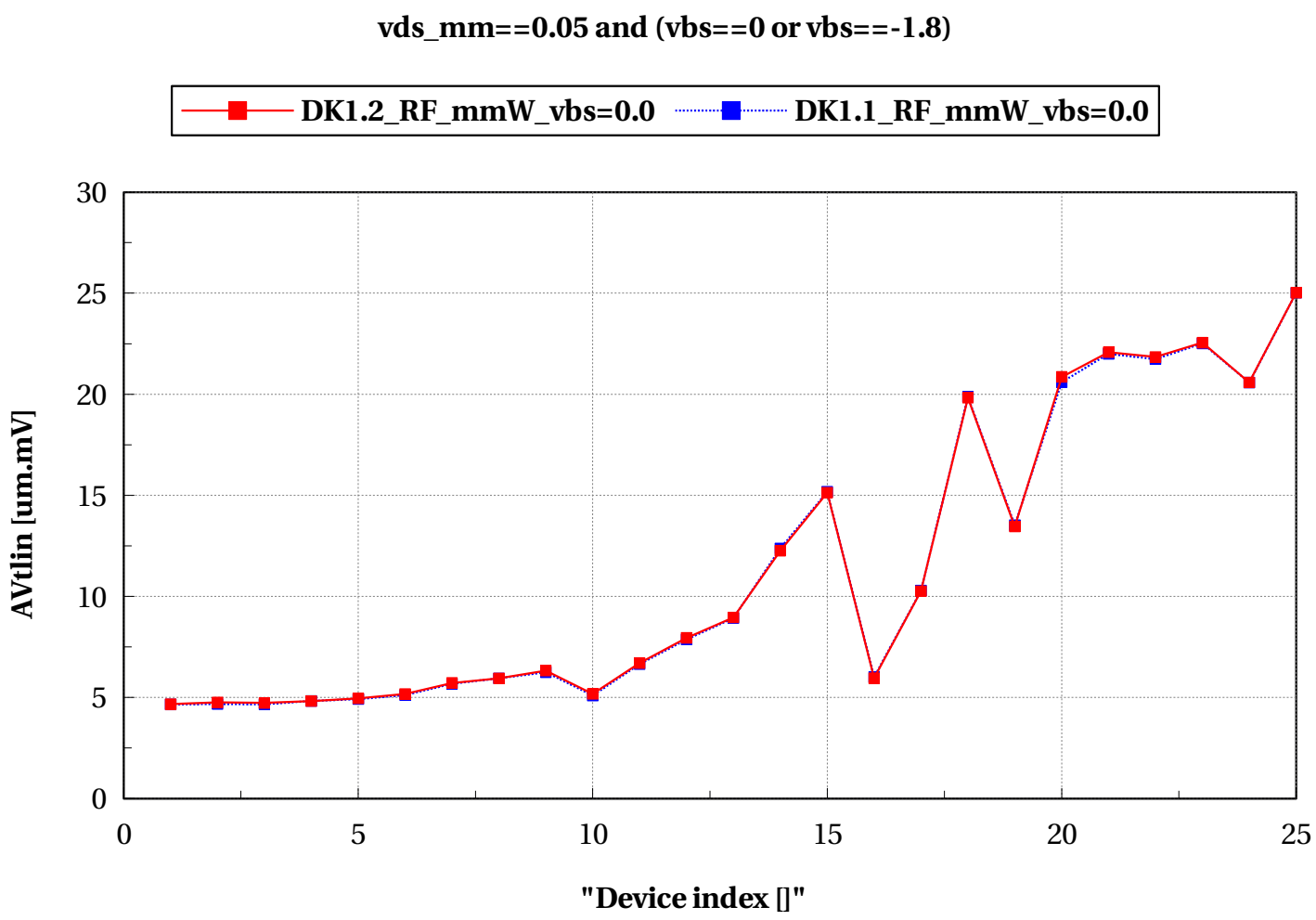
egpfet_acc, Vtlin [mV] vs "Device index []"



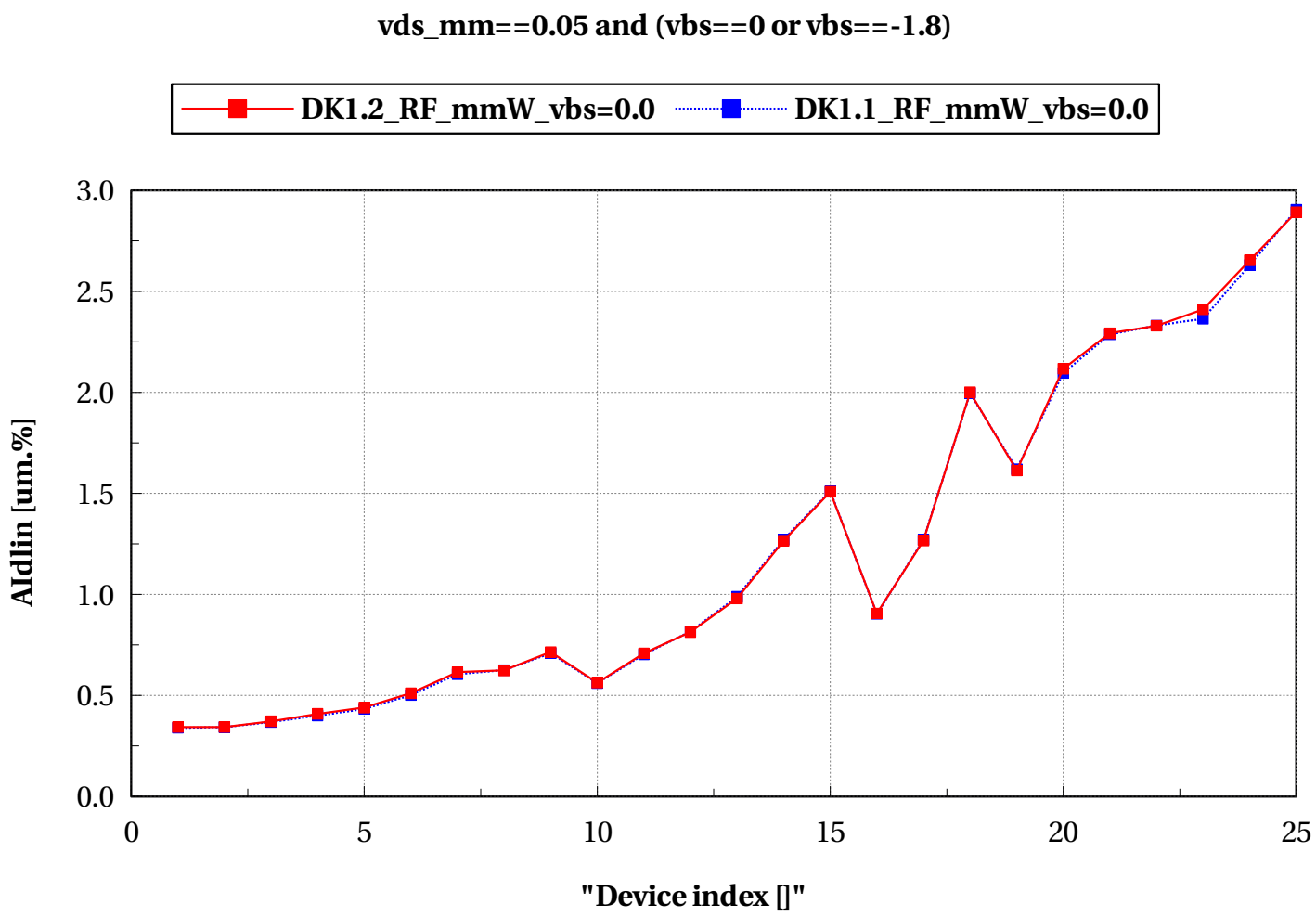
egpfet_acc, Idlin*L/W [uA] vs "Device index []"



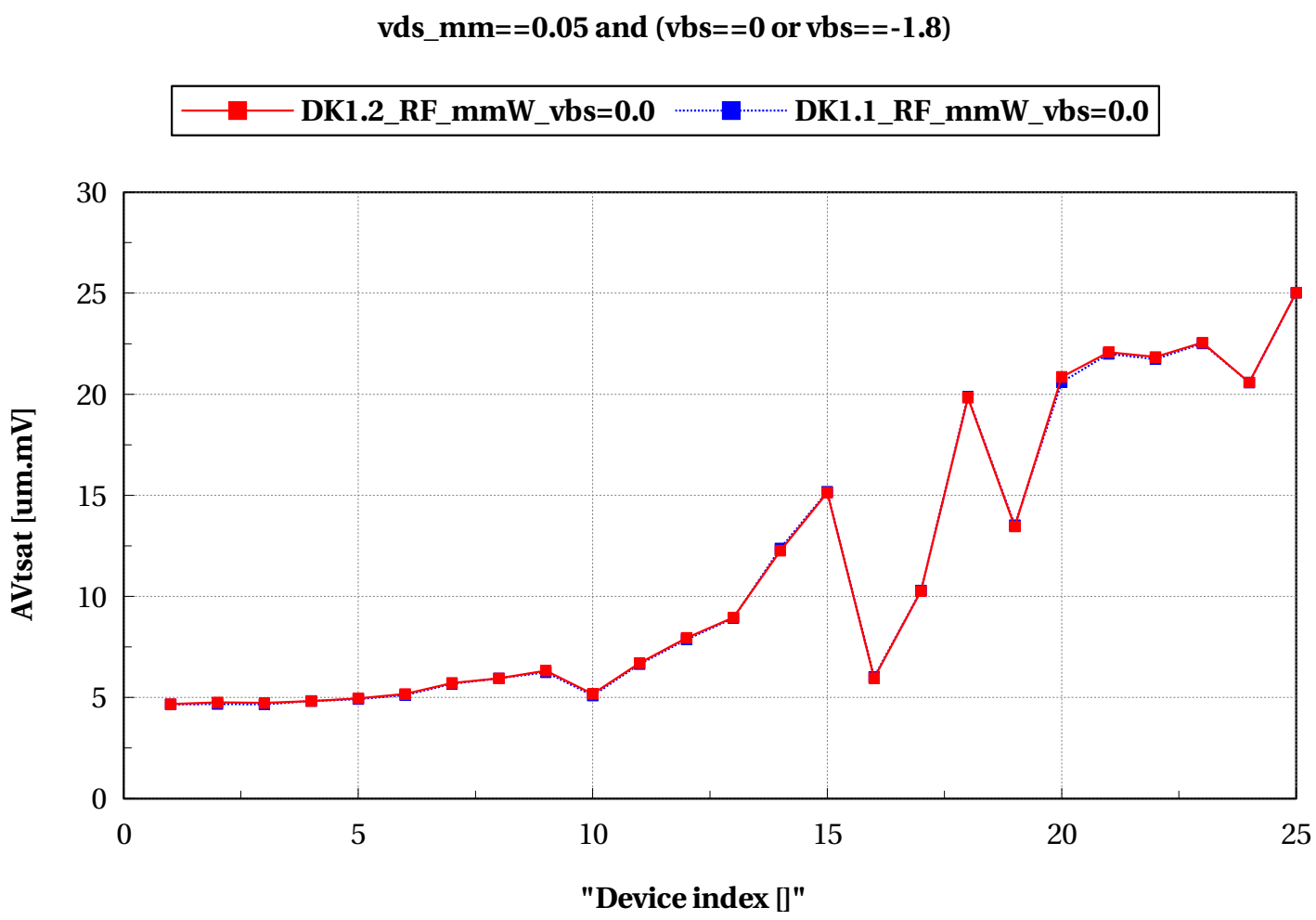
egpfet_acc, AVtlin [um.mV] vs "Device index []"



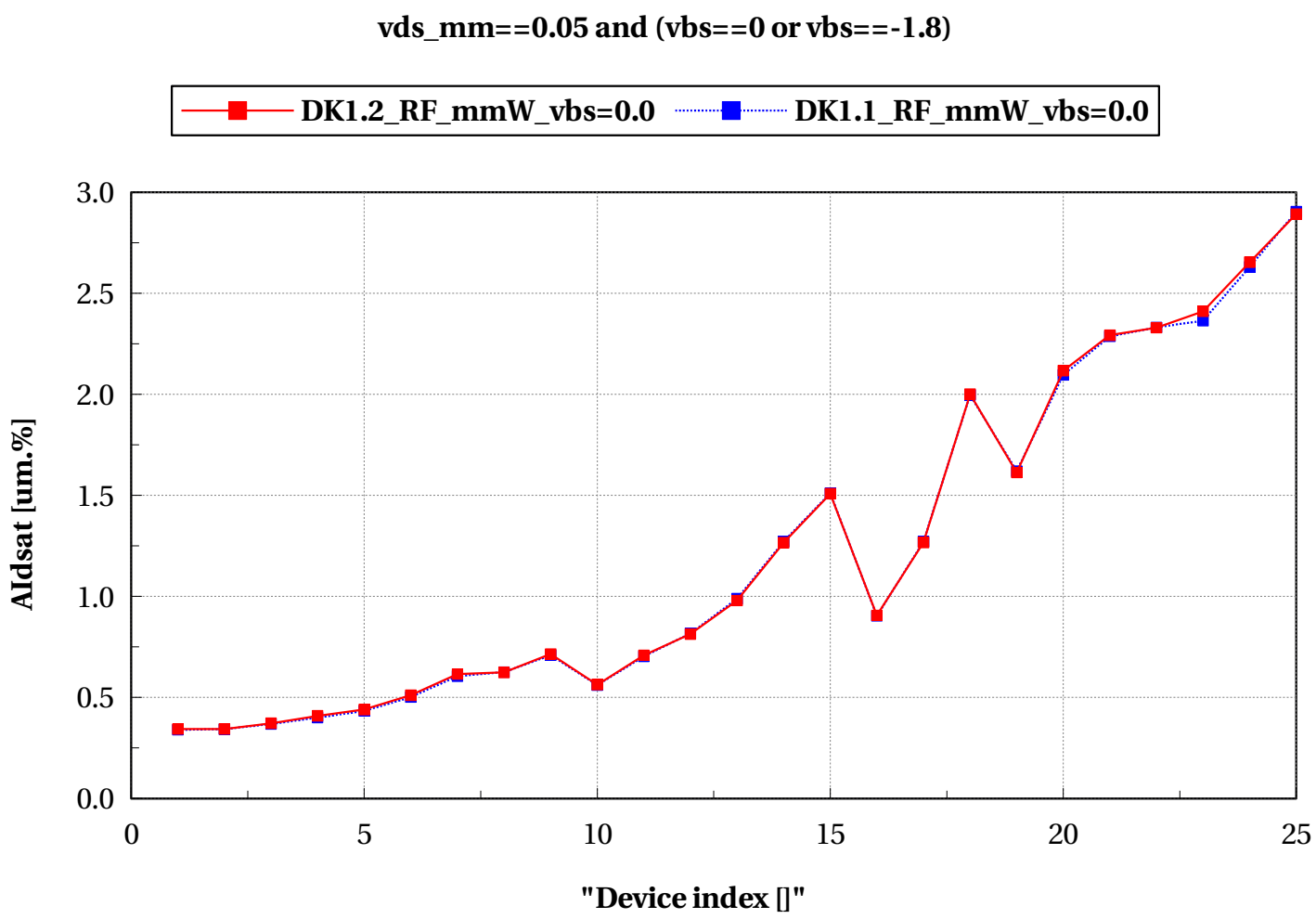
egpfet_acc, AIdlin [um.%] vs "Device index []"



egpfet_acc, AVtsat [um.mV] vs "Device index []"



egpfet_acc, AIdsat [um.%] vs "Device index []"



Annex

Conditions of simulations

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

- Model eglvtnfet_acc (DK1.2_RF_mmW)
  - ✔ Input Parameters
    - ✘ vds_mm = 0.05 V
    - ✘ ams_release = 2018.3
    - ✘ mc_runs = 5000
    - ✘ vgs_stop = Vdd V
    - ✘ dlshrink_ivt = 0
    - ✘ temp = 25 °C
    - ✘ vgs_start = -0.5 V
    - ✘ mc_sens = 0
    - ✘ vds_lin = 0.05 V
    - ✘ sbenchlsf_release = Alpha
    - ✘ plashrink_ivt = 1
    - ✘ ivt = 300e-9 A
    - ✘ model_version = 1.2.e
    - ✘ mc_nsigma = 3

- ✘ ithslwi = 10e-9 A
- ✘ vstep_ivt = 0.005 V
- ✘ vbs = 0 V
- ✘ shrink_ivt = 1
- ✘ vdd = 1.8 V
- ✘ vgs_off = 0 V

✔ Sweep Parameters

- ✘ vbs = 0.0, 1.8
- ✘ vds_mm = 0.05, 1.8

✔ Extra parameters

- ✘ eg_dev = 1
- ✘ eglvt_dev = 1
- ✘ gflag__noisedev__eg__cmos028fdsoi = 1
- ✘ gflag__noisedev__eglvt__cmos028fdsoi = 1

● Model eglvtpfet_acc (DK1.2_RF_mmW)

✔ Input Parameters

- ✘ vds_mm = 0.05 V
- ✘ ams_release = 2018.3
- ✘ mc_runs = 5000
- ✘ vgs_stop = Vdd V
- ✘ dlshrink_ivt = 0
- ✘ temp = 25 °C
- ✘ vgs_start = -0.5 V
- ✘ mc_sens = 0
- ✘ vds_lin = 0.05 V

- ✘ sbenchlsf_release = Alpha
- ✘ plashrink_ivt = 1
- ✘ ivt = 70e-9 A
- ✘ model_version = 1.2.e
- ✘ mc_nsigma = 3
- ✘ ithslwi = 10e-9 A
- ✘ vstep_ivt = 0.005 V
- ✘ vbs = Vdd V
- ✘ shrink_ivt = 1
- ✘ vdd = 1.8 V
- ✘ vgs_off = 0 V

✔ Sweep Parameters

- ✘ vbs = 0.0, 1.8
- ✘ vds_mm = 0.05, 1.8

✔ Extra parameters

- ✘ eg_dev = 1
- ✘ eglvt_dev = 1
- ✘ gflag__noisedev__eg__cmos028fdsoi = 1
- ✘ gflag__noisedev__eglvt__cmos028fdsoi = 1

● Model egnfet_acc (DK1.2_RF_mmW)

✔ Input Parameters

- ✘ vds_mm = 0.05 V
- ✘ ams_release = 2018.3
- ✘ mc_runs = 5000
- ✘ vgs_stop = Vdd V

- ✘ dlshrink_ivt = 0
- ✘ temp = 25 °C
- ✘ vgs_start = -0.5 V
- ✘ mc_sens = 0
- ✘ vds_lin = 0.05 V
- ✘ sbenchlsf_release = Alpha
- ✘ plashrink_ivt = 1
- ✘ ivt = 300e-9 A
- ✘ model_version = 1.2.c
- ✘ mc_nsigma = 3
- ✘ ithslwi = 10e-9 A
- ✘ vstep_ivt = 0.005 V
- ✘ vbs = 0 V
- ✘ shrink_ivt = 1
- ✘ vdd = 1.8 V
- ✘ vgs_off = 0 V

✔ Sweep Parameters

- ✘ vbs = 0.0, 1.8
- ✘ vds_mm = 0.05, 1.8

✔ Extra parameters

- ✘ eg_dev = 1
- ✘ eglvt_dev = 1
- ✘ gflag__noisedev__eg__cmos028fdsoi = 1
- ✘ gflag__noisedev__eglvt__cmos028fdsoi = 1

● Model egpfet_acc (DK1.2_RF_mmW)

- ✔ Input Parameters
  - ✘ vds_mm = 0.05 V
  - ✘ ams_release = 2018.3
  - ✘ mc_runs = 5000
  - ✘ vgs_stop = Vdd V
  - ✘ dlshrink_ivt = 0
  - ✘ temp = 25 °C
  - ✘ vgs_start = -0.5 V
  - ✘ mc_sens = 0
  - ✘ vds_lin = 0.05 V
  - ✘ sbenchlsf_release = Alpha
  - ✘ plashrink_ivt = 1
  - ✘ ivt = 70e-9 A
  - ✘ model_version = 1.2.c
  - ✘ mc_nsigma = 3
  - ✘ ithslwi = 10e-9 A
  - ✘ vstep_ivt = 0.005 V
  - ✘ vbs = 0 V
  - ✘ shrink_ivt = 1
  - ✘ vdd = 1.8 V
  - ✘ vgs_off = 0 V
- ✔ Sweep Parameters
  - ✘ vbs = 0.0, 1.8
  - ✘ vds_mm = 0.05, 1.8
- ✔ Extra parameters

- ✘ eg_dev = 1
- ✘ eglvt_dev = 1
- ✘ gflag__noisedev__eg__cmos028fdsoi = 1
- ✘ gflag__noisedev__eglvt__cmos028fdsoi = 1

● Model eglvtnfet_acc (DK1.1_RF_mmW)

- ✔ Input Parameters
  - ✘ vds_mm = 0.05 V
  - ✘ ams_release = 2018.3
  - ✘ mc_runs = 5000
  - ✘ vgs_stop = Vdd V
  - ✘ dlshrink_ivt = 0
  - ✘ temp = 25 °C
  - ✘ vgs_start = -0.5 V
  - ✘ mc_sens = 0
  - ✘ vds_lin = 0.05 V
  - ✘ sbenchlsf_release = Alpha
  - ✘ plashrink_ivt = 1
  - ✘ ivt = 300e-9 A
  - ✘ model_version = 1.2.d
  - ✘ mc_nsigma = 3
  - ✘ ithslwi = 10e-9 A
  - ✘ vstep_ivt = 0.005 V
  - ✘ vbs = 0 V
  - ✘ shrink_ivt = 1
  - ✘ vdd = 1.8 V

- ✘ vgs_off = 0 V
- ✔ Sweep Parameters
  - ✘ vbs = 0.0, 1.8
  - ✘ vds_mm = 0.05, 1.8
- ✔ Extra parameters
  - ✘ eg_dev = 1
  - ✘ eglvt_dev = 1
  - ✘ gflag__noisedev__eg__cmos028fdsoi = 1
  - ✘ gflag__noisedev__eglvt__cmos028fdsoi = 1

● Model eglvtpfet_acc (DK1.1_RF_mmW)

- ✔ Input Parameters
  - ✘ vds_mm = 0.05 V
  - ✘ ams_release = 2018.3
  - ✘ mc_runs = 5000
  - ✘ vgs_stop = Vdd V
  - ✘ dlshrink_ivt = 0
  - ✘ temp = 25 °C
  - ✘ vgs_start = -0.5 V
  - ✘ mc_sens = 0
  - ✘ vds_lin = 0.05 V
  - ✘ sbenchlsf_release = Alpha
  - ✘ plashrink_ivt = 1
  - ✘ ivt = 70e-9 A
  - ✘ model_version = 1.2.d
  - ✘ mc_nsigma = 3

- ✘ ithslwi = 10e-9 A
- ✘ vstep_ivt = 0.005 V
- ✘ vbs = Vdd V
- ✘ shrink_ivt = 1
- ✘ vdd = 1.8 V
- ✘ vgs_off = 0 V

✔ Sweep Parameters

- ✘ vbs = 0.0, 1.8
- ✘ vds_mm = 0.05, 1.8

✔ Extra parameters

- ✘ eg_dev = 1
- ✘ eglvt_dev = 1
- ✘ gflag__noisedev__eg__cmos028fdsoi = 1
- ✘ gflag__noisedev__eglvt__cmos028fdsoi = 1

● Model egnfet_acc (DK1.1_RF_mmW)

✔ Input Parameters

- ✘ vds_mm = 0.05 V
- ✘ ams_release = 2018.3
- ✘ mc_runs = 5000
- ✘ vgs_stop = Vdd V
- ✘ dlshrink_ivt = 0
- ✘ temp = 25 °C
- ✘ vgs_start = -0.5 V
- ✘ mc_sens = 0
- ✘ vds_lin = 0.05 V

- ✘ sbenchlsf_release = Alpha
- ✘ plashrink_ivt = 1
- ✘ ivt = 300e-9 A
- ✘ model_version = 1.2.b
- ✘ mc_nsigma = 3
- ✘ ithslwi = 10e-9 A
- ✘ vstep_ivt = 0.005 V
- ✘ vbs = 0 V
- ✘ shrink_ivt = 1
- ✘ vdd = 1.8 V
- ✘ vgs_off = 0 V

✔ Sweep Parameters

- ✘ vbs = 0.0, 1.8
- ✘ vds_mm = 0.05, 1.8

✔ Extra parameters

- ✘ eg_dev = 1
- ✘ eglvt_dev = 1
- ✘ gflag__noisedev__eg__cmos028fdsoi = 1
- ✘ gflag__noisedev__eglvt__cmos028fdsoi = 1

● Model egpfet_acc (DK1.1_RF_mmW)

✔ Input Parameters

- ✘ vds_mm = 0.05 V
- ✘ ams_release = 2018.3
- ✘ mc_runs = 5000
- ✘ vgs_stop = Vdd V

- ✘ dlshrink_ivt = 0
- ✘ temp = 25 °C
- ✘ vgs_start = -0.5 V
- ✘ mc_sens = 0
- ✘ vds_lin = 0.05 V
- ✘ sbenchlsf_release = Alpha
- ✘ plashrink_ivt = 1
- ✘ ivt = 70e-9 A
- ✘ model_version = 1.2.b
- ✘ mc_nsigma = 3
- ✘ ithslwi = 10e-9 A
- ✘ vstep_ivt = 0.005 V
- ✘ vbs = 0 V
- ✘ shrink_ivt = 1
- ✘ vdd = 1.8 V
- ✘ vgs_off = 0 V

✔ Sweep Parameters

- ✘ vbs = 0.0, 1.8
- ✘ vds_mm = 0.05, 1.8

✔ Extra parameters

- ✘ eg_dev = 1
- ✘ eglvt_dev = 1
- ✘ gflag__noisedev__eg__cmos028fdsoi = 1
- ✘ gflag__noisedev__eglvt__cmos028fdsoi = 1