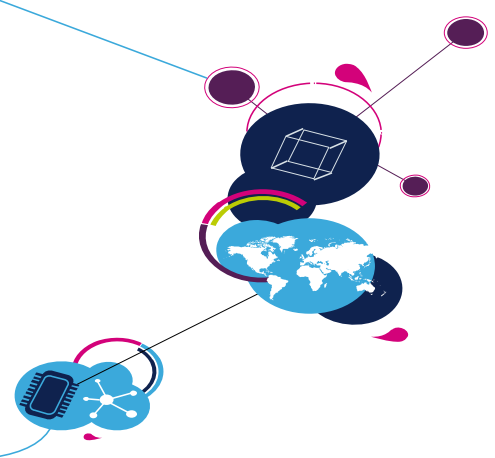


CMOS028FDSOI Technology

EG Poly/Well Capacitance models

DK1.2_RF_mmW

Comparison with DK1.1_RF_mmW model(s)

Please use the bookmark to navigate

General information on EG Poly/Well Capacitance models

- Maximum supply voltage is - V.
- Validity domain is defined as follows:

Output parameters definitions

- Model(s): egncap, egpcap
  - ✔ Cj : Junction capacitance at Vj = 0.3V, f = 1e5Hz.
  - ✔ Ij : Junction leakage current at Vj = 0.3V.

egncap
Electrical characteristics per geometry

egncap @ w=20e-6, l=2e-6, nrep=1, nf=1, vj=1.8, temp=25

DK1.2_RF_mmW wrt DK1.1_RF_mmW

	cmin	TT	cmax
Cj [fF]	299.1 0.0%	318.2 0.0%	342.2 0.0%
Cj*1e3/(W*L*nrep*nf*0.81) []	9.23 0.0%	9.82 0.0%	10.56 0.0%
Ij [pA]	6.21e-02 0.0%	0.29 0.0%	3.95 0.0%
log10(abs(Ij+1e-18)*1e-12/ (W*L*nrep*nf*0.81)) []	-14.72 -0.0%	-14.04 -0.0%	-12.91 -0.0%

egncap @ w=20e-6, l=2e-6, nrep=1, nf=1, vj=0.0, temp=25

DK1.2_RF_mmW wrt DK1.1_RF_mmW

	cmin	TT	cmax
Cj [fF]	158.8 0.0%	167.5 0.0%	177.5 0.0%
Cj*1e3/(W*L*nrep*nf*0.81) []	4.9 0.0%	5.17 0.0%	5.48 0.0%

egpcap
Electrical characteristics per geometry

egpcap @ w=20e-6, l=2e-6, nrep=1, nf=1, vj=-1.8, temp=25

DK1.2_RF_mmW wrt DK1.1_RF_mmW

	cmin	TT	cmax
Cj [fF]	294.6 0.0%	327.2 0.0%	355.1 0.0%
Cj*1e3/(W*L*nrep*nf*0.81) []	9.09 0.0%	10.1 0.0%	10.96 0.0%
Ij [fA]	1.67e-02 0.0%	4.53 0.0%	804.1 0.0%
log10(abs(Ij+1e-18)*1e-12/ (W*L*nrep*nf*0.81)) []	-18.26 -0.0%	-15.85 -0.0%	-13.61 -0.0%

egpcap @ w=20e-6, l=2e-6, nrep=1, nf=1, vj=0.0, temp=25

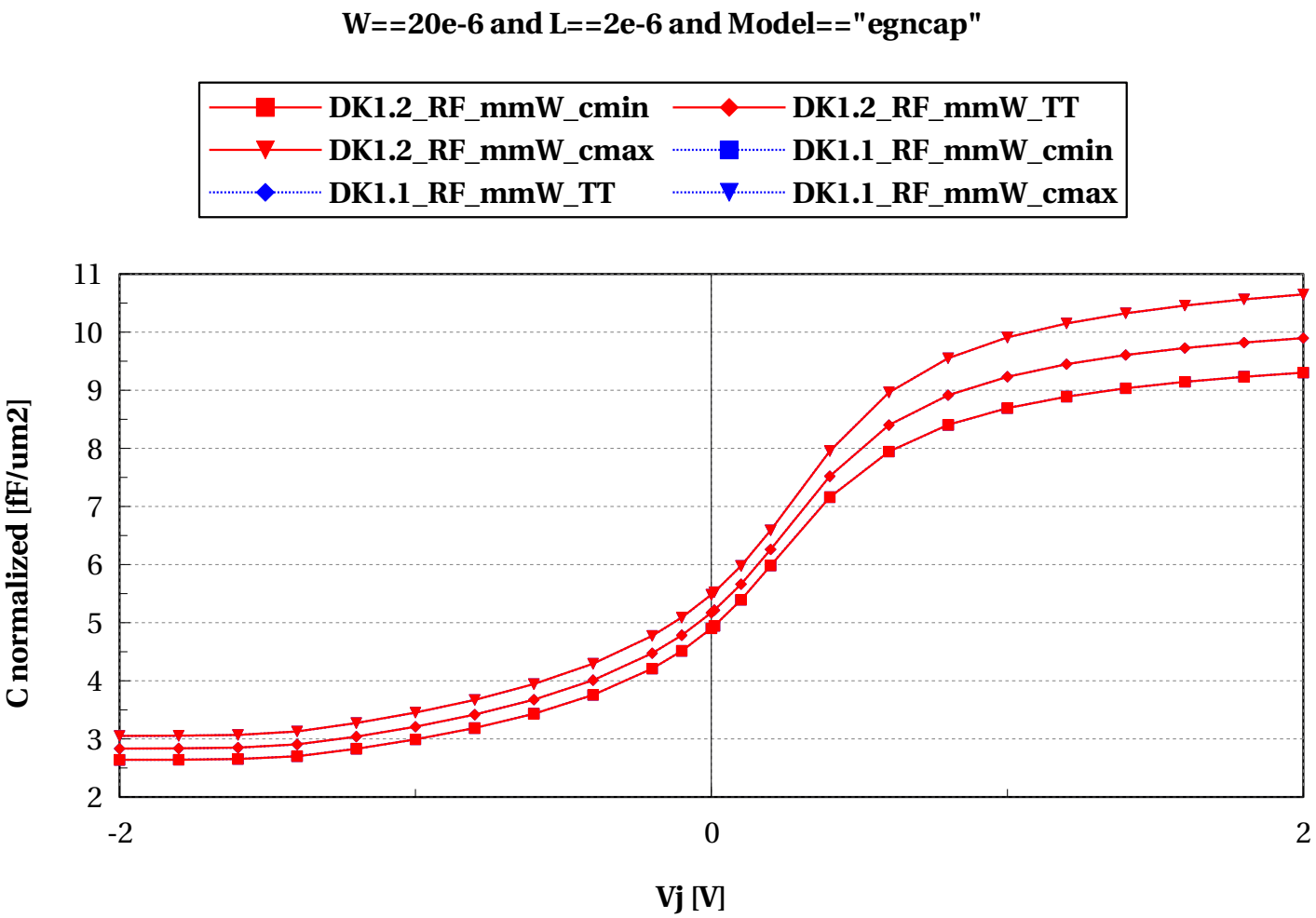
DK1.2_RF_mmW wrt DK1.1_RF_mmW

	cmin	TT	cmax
Cj [fF]	132.6 0.0%	156.2 0.0%	173.2 0.0%
Cj*1e3/(W*L*nrep*nf*0.81) []	4.09 0.0%	4.82 0.0%	5.34 0.0%

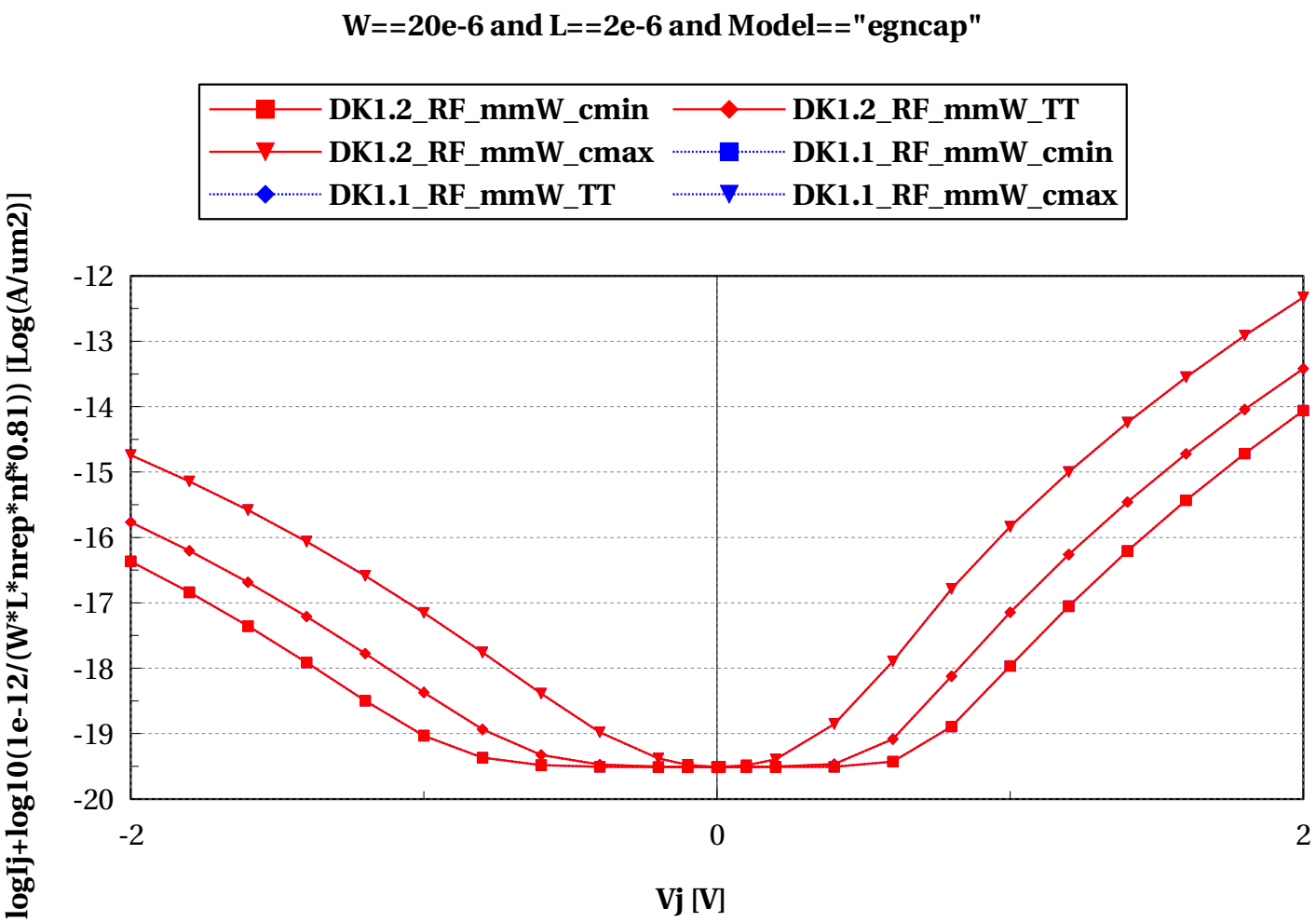
egncap
Electrical characteristics scaling

Ij/Cj scaling versus Vj (W=20um,L=2um,Temp=25C)

egncap, C normalized [fF/um2] vs Vj [V]



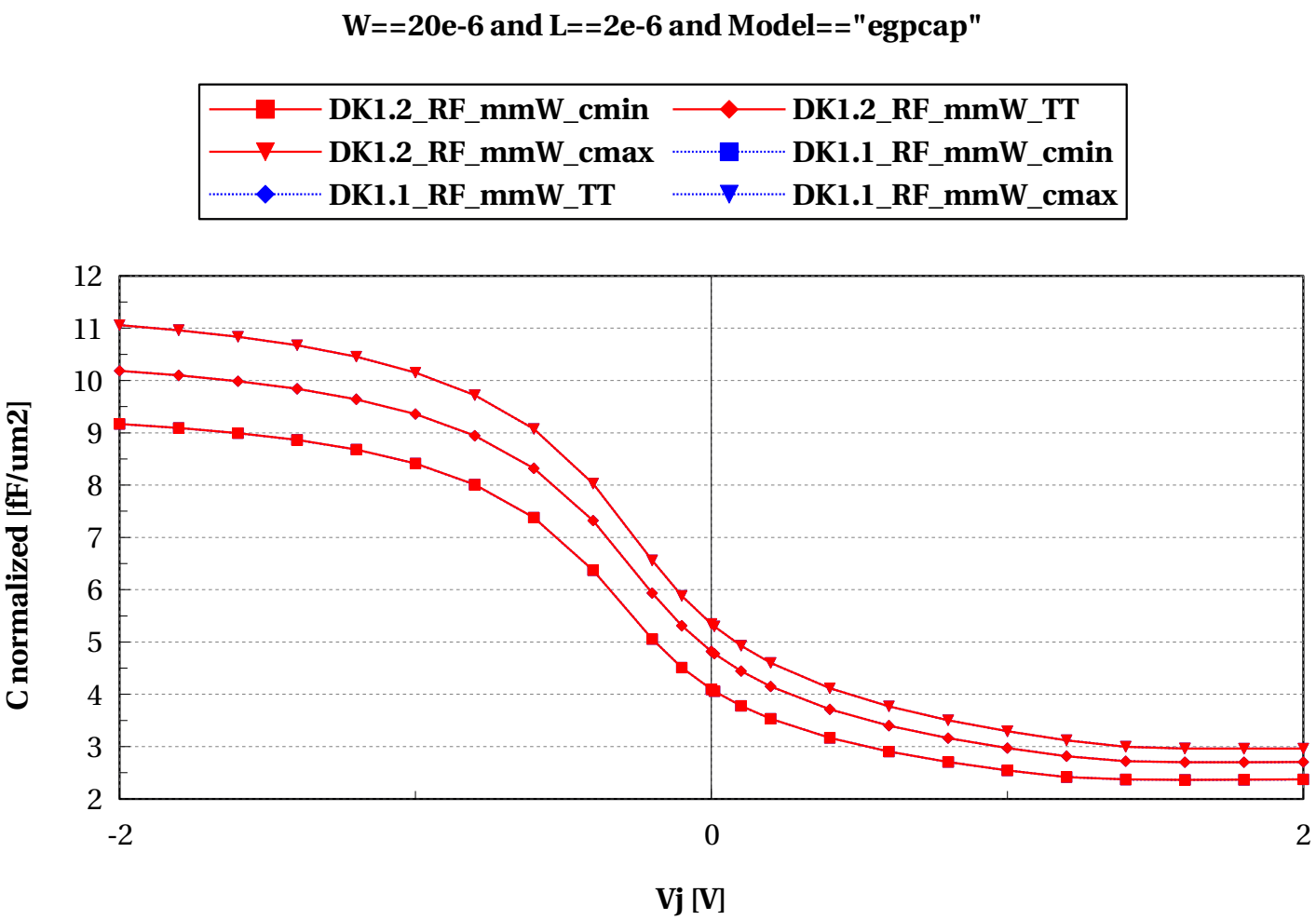
egncap, logIj+log10(1e-12/(W*L*nrep*nf*0.81)) [Log(A/um2)] vs Vj [V]



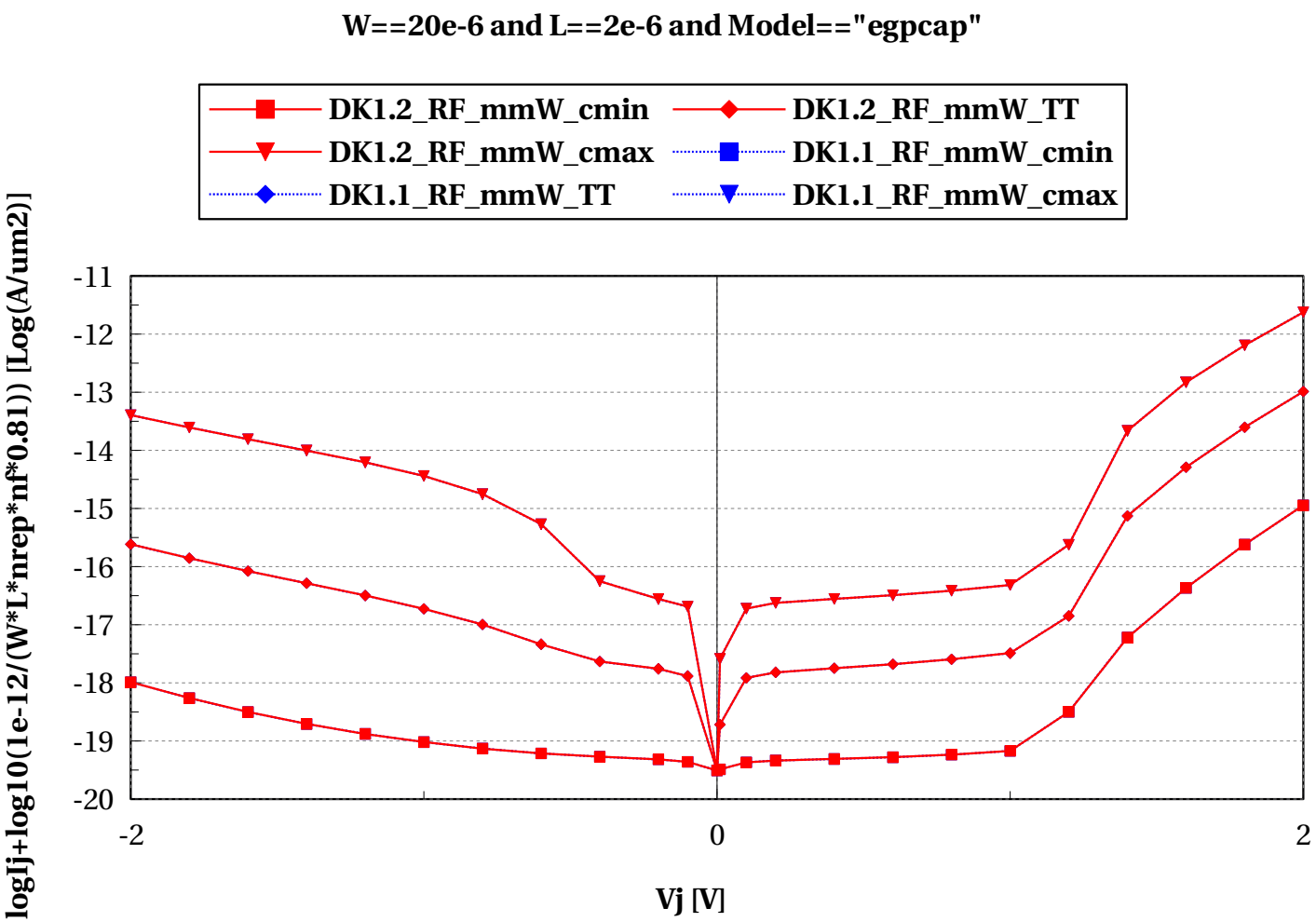
egpcap
Electrical characteristics scaling

Ij/Cj scaling versus Vj (W=20um,L=2um,Temp=25C)

egpcap, C normalized [fF/um2] vs Vj [V]



egpcap, logIj+log10(1e-12/(W*L*nrep*nf*0.81)) [Log(A/um2)] vs Vj [V]



Annex

Conditions of simulations

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

- Model egncap (DK1.2_RF_mmW)
  - ✔ Input Parameters
    - ✘ mc_runs = 1000
    - ✘ vsub1 = 0
    - ✘ temp = 25 °C
    - ✘ mc_sens = 0
    - ✘ vj = 0.3 V
    - ✘ f_ext = 1e5 Hz
    - ✘ sbenchlsf_release = Alpha
    - ✘ ams_release = 2018.3
    - ✘ model_version = 1.2
    - ✘ mc_nsigma = 3
  - ✔ Sweep Parameters
    - ✘ vj = -2.0, -1.8, -1.6, -1.4, -1.2, -1.0, -0.8, -0.6, -0.4, -0.2, -0.1, 0.0, 0.01, 0.1, 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 1.8, 2.0
  - ✔ Extra parameters
- Model egpcap (DK1.2_RF_mmW)

- ✔ Input Parameters
  - ✘ mc_runs = 1000
  - ✘ vsub1 = 0
  - ✘ temp = 25 °C
  - ✘ mc_sens = 0
  - ✘ vj = 0.3 V
  - ✘ f_ext = 1e5 Hz
  - ✘ sbenchlsf_release = Alpha
  - ✘ ams_release = 2018.3
  - ✘ model_version = 1.2
  - ✘ mc_nsigma = 3
- ✔ Sweep Parameters
  - ✘ vj = -2.0, -1.8, -1.6, -1.4, -1.2, -1.0, -0.8, -0.6, -0.4, -0.2, -0.1, 0.0, 0.01, 0.1, 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 1.8, 2.0
- ✔ Extra parameters

● Model egncap (DK1.1_RF_mmW)

- ✔ Input Parameters
  - ✘ mc_runs = 1000
  - ✘ vsub1 = 0
  - ✘ temp = 25 °C
  - ✘ mc_sens = 0
  - ✘ vj = 0.3 V
  - ✘ f_ext = 1e5 Hz
  - ✘ sbenchlsf_release = Alpha
  - ✘ ams_release = 2018.3
  - ✘ model_version = 1.2

- ✘ mc_nsigma = 3
- ✔ Sweep Parameters
  - ✘ vj = -2.0, -1.8, -1.6, -1.4, -1.2, -1.0, -0.8, -0.6, -0.4, -0.2, -0.1, 0.0, 0.01, 0.1, 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 1.8, 2.0
- ✔ Extra parameters

● Model egpcap (DK1.1_RF_mmW)

- ✔ Input Parameters
  - ✘ mc_runs = 1000
  - ✘ vsub1 = 0
  - ✘ temp = 25 °C
  - ✘ mc_sens = 0
  - ✘ vj = 0.3 V
  - ✘ f_ext = 1e5 Hz
  - ✘ sbenchlsf_release = Alpha
  - ✘ ams_release = 2018.3
  - ✘ model_version = 1.2
  - ✘ mc_nsigma = 3
- ✔ Sweep Parameters
  - ✘ vj = -2.0, -1.8, -1.6, -1.4, -1.2, -1.0, -0.8, -0.6, -0.4, -0.2, -0.1, 0.0, 0.01, 0.1, 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4, 1.6, 1.8, 2.0
- ✔ Extra parameters