



CMOS028FDSOI Technology

MIM CAPACITOR models

DK1.2_RF_mmW

Comparison with DK1.1_RF_mmW model(s)

Spice Models Benchmark

Please use the bookmark to navigate

Sep 21, 2018

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

Unauthorized reproduction and communication strictly prohibited

dormieub

ST Confidential

General information on models

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

Output parameters definitions

- Model(s): cmim16acc_acc
 - ✓ I_j : Junction leakage current at $V_j = 0.1V$.

cmiml6acc_acc

Electrical characteristics scaling

I_j vs V_j @ Temp=-30

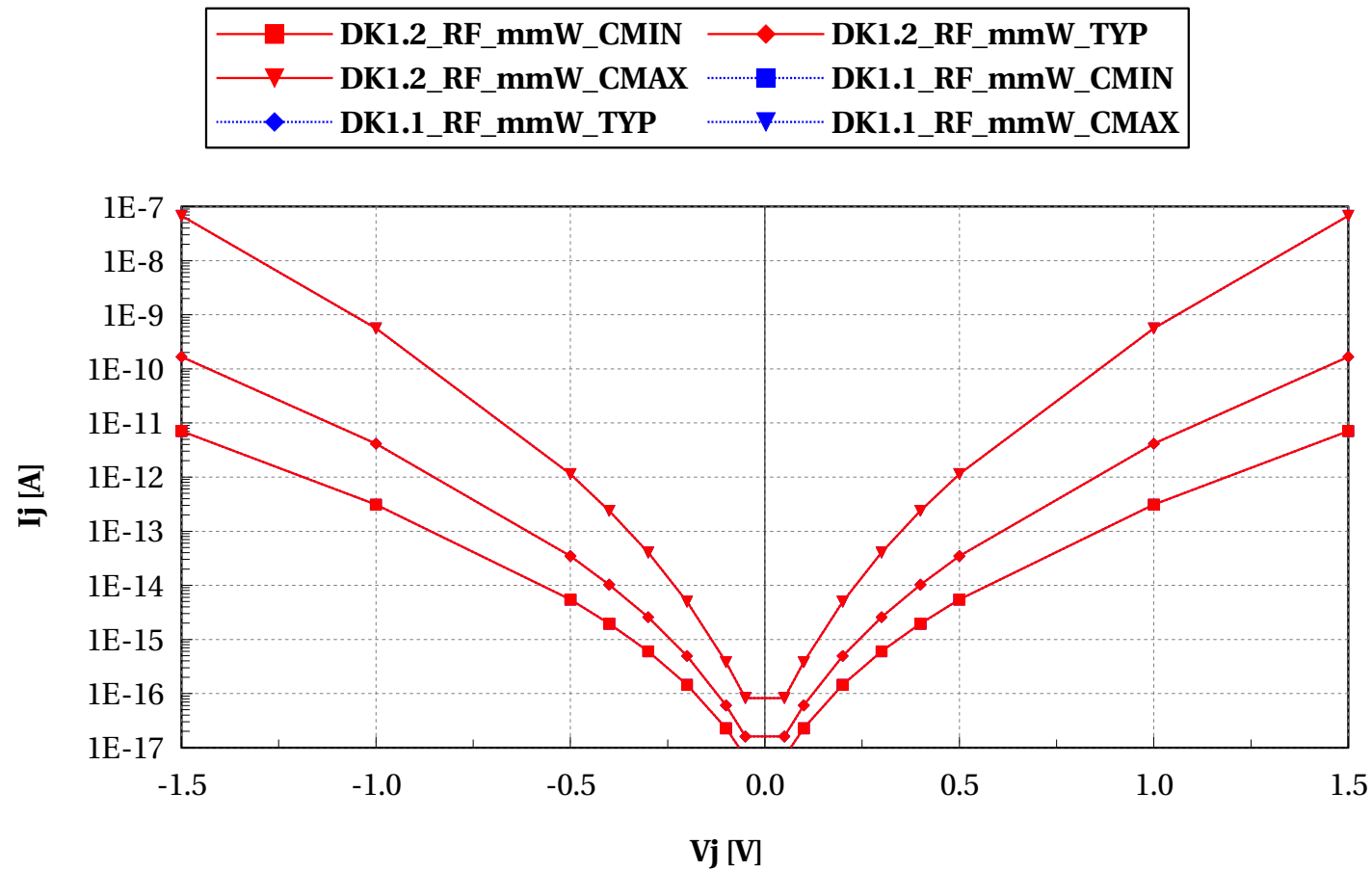
Sep 21, 2018

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

dormieub

cmim16acc_acc, I_j [A] vs V_j [V]

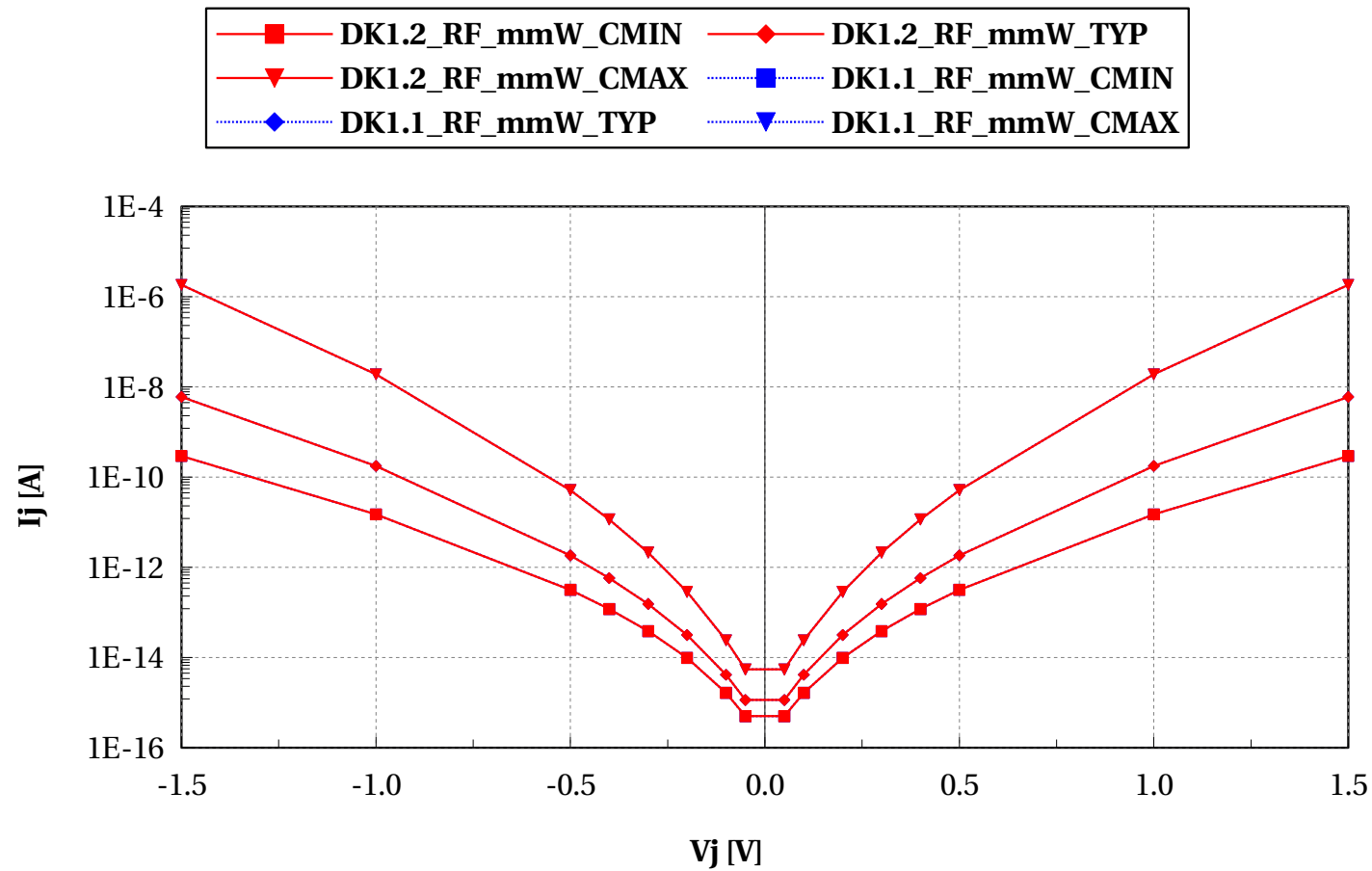
$W=141e-6$ and $relax==0$ and $Temp=-30$



I_j vs V_j @ Temp=-10

cmim16acc_acc, I_j [A] vs V_j [V]

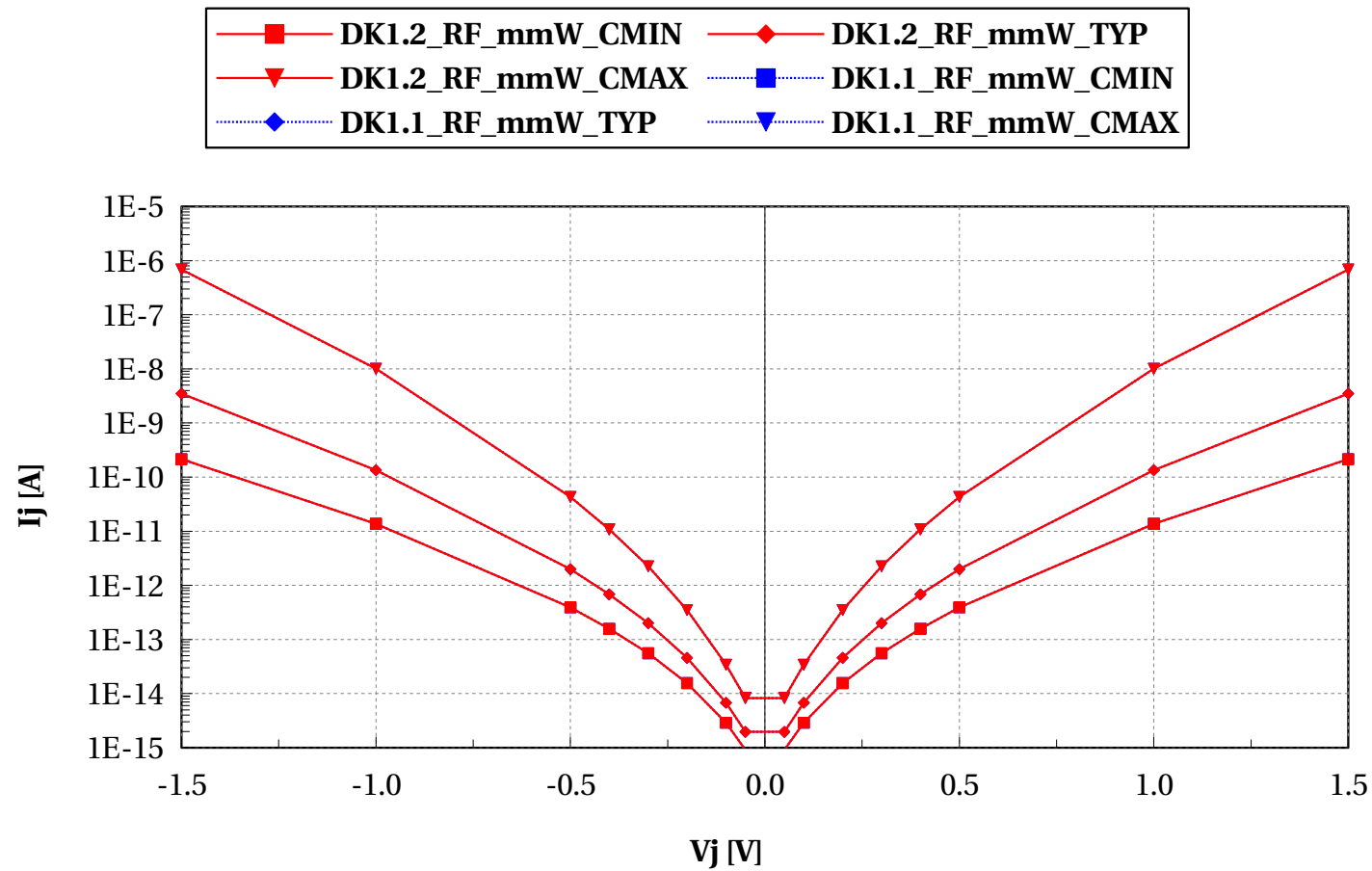
$W=141e-6$ and $relax=0$ and $Temp=-10$



Ij vs Vj @ Temp=25

cmim16acc_acc, I_j [A] vs V_j [V]

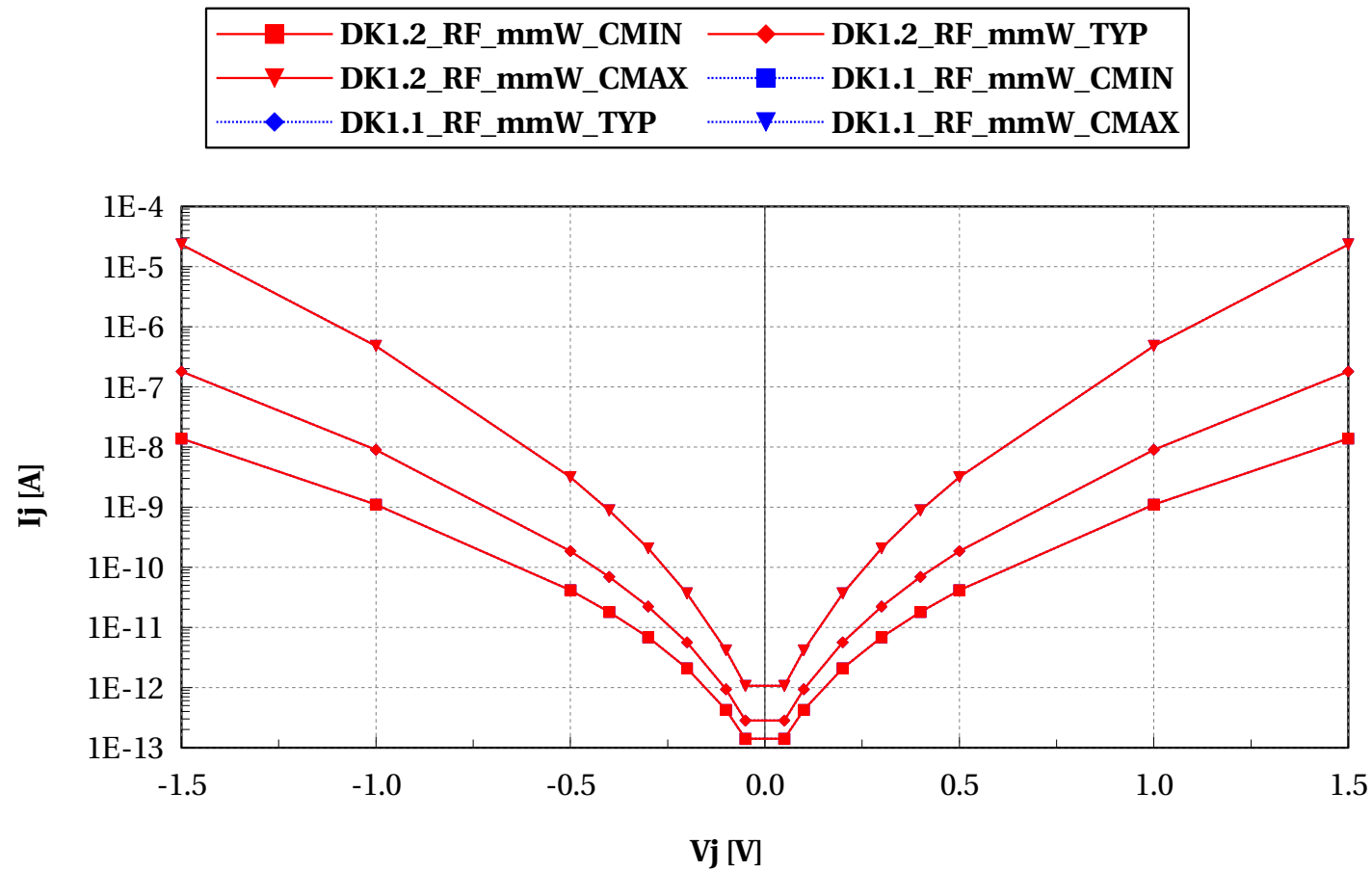
$W=141e-6$ and $relax=0$ and $Temp=25$



Ij vs Vj @ Temp=60

cmim16acc_acc, I_j [A] vs V_j [V]

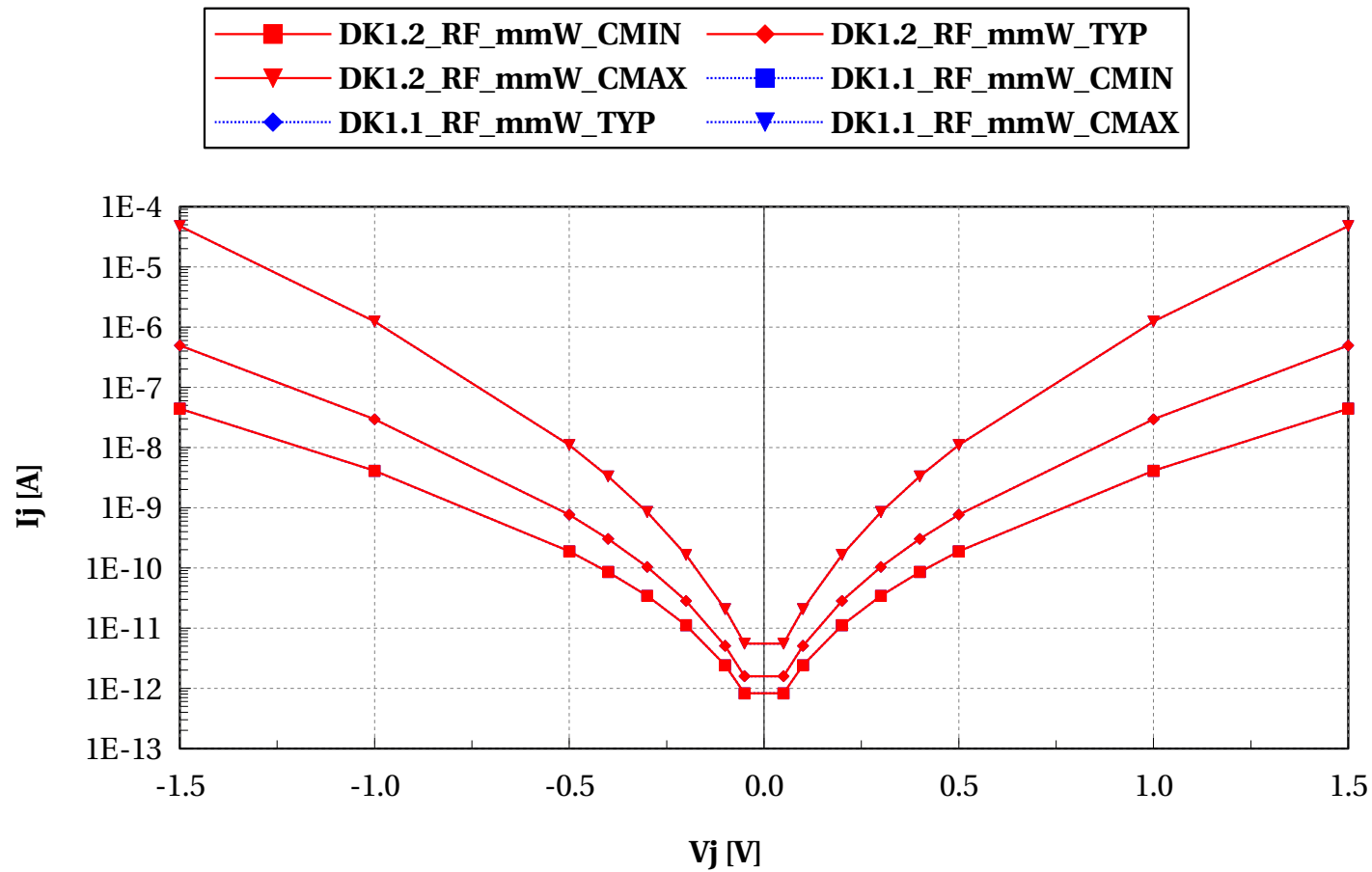
$W=141e-6$ and $relax=0$ and $Temp=60$



Ij vs Vj @ Temp=85

cmim16acc_acc, I_j [A] vs V_j [V]

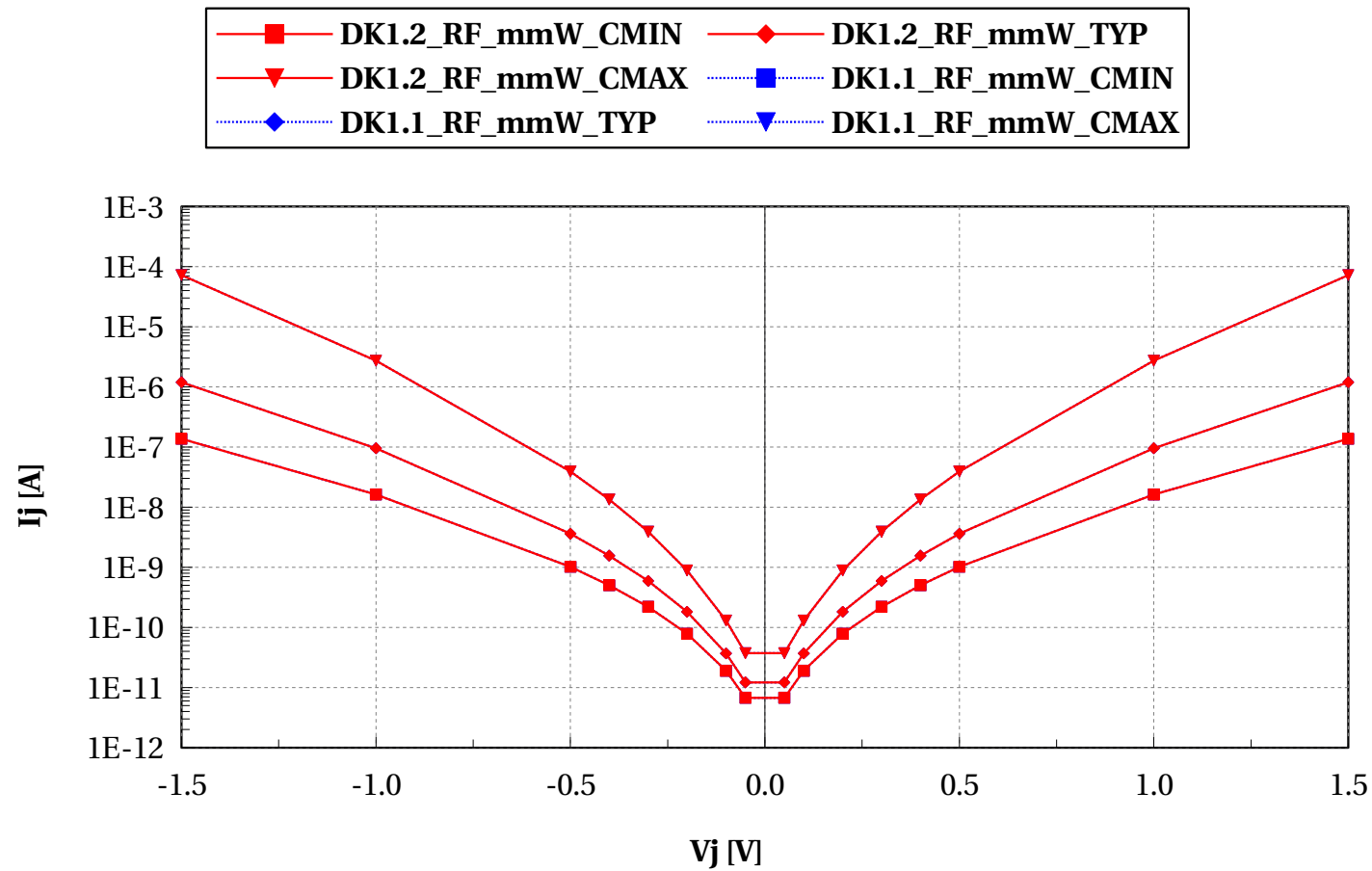
$W=141e-6$ and $relax=0$ and $Temp=85$



I_j vs V_j @ Temp=125

cmim16acc_acc, I_j [A] vs V_j [V]

$W==141e-6$ and $relax==0$ and $Temp==125$



Annex

Conditions of simulations

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

- Model cmim16acc_acc (DK1.2_RF_mmW)

- ✓ Input Parameters

- ✗ mc_runs = 1000

- ✗ vsub1 = 0

- ✗ temp = 25 °C

- ✗ mc_sens = 0

- ✗ vj = 0.1 V

- ✗ f_ext = 100e3 Hz

- ✗ sbenchlsf_release = Alpha

- ✗ ams_release = 2018.3

- ✗ model_version = 1.0

- ✗ mc_nsigma = 3

- ✓ Sweep Parameters

- ✗ vj = -5.0, -4.5, -4.0, -3.5, -3.0, -2.5, -2.0, -1.5, -1.0, -0.5, -0.4, -0.3, -0.2, -0.1, -0.05, 0.05, 0.1, 0.2, 0.3, 0.4, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0

- ✗ temp = -30.0, -10.0, 25.0, 60.0, 85.0, 125.0

- ✓ Extra parameters

- ✗ cmim16acc_dev = 0
- Model cmim16acc_acc (DK1.1_RF_mmW)
 - ✓ Input Parameters
 - ✗ mc_runs = 1000
 - ✗ vsub1 = 0
 - ✗ temp = 25 °C
 - ✗ mc_sens = 0
 - ✗ vj = 0.1 V
 - ✗ f_ext = 100e3 Hz
 - ✗ sbenchlsf_release = Alpha
 - ✗ ams_release = 2018.3
 - ✗ model_version = 1.0
 - ✗ mc_nsigma = 3
 - ✓ Sweep Parameters
 - ✗ vj = -5.0, -4.5, -4.0, -3.5, -3.0, -2.5, -2.0, -1.5, -1.0, -0.5, -0.4, -0.3, -0.2, -0.1, -0.05, 0.05, 0.1, 0.2, 0.3, 0.4, 0.5, 1.0, 1.5, 2.0, 2.5, 3.0, 3.5, 4.0, 4.5, 5.0
 - ✗ temp = -30.0, -10.0, 25.0, 60.0, 85.0, 125.0
 - ✓ Extra parameters
 - ✗ cmim16acc_dev = 0