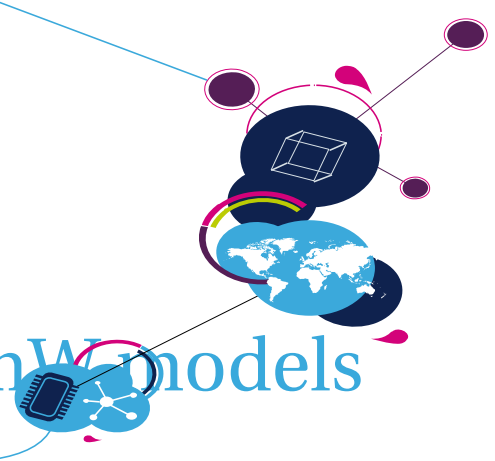
CMOS028FDSOI Technology

STI and GATED ESD diodes for DK1.2_RF_mmW models

NOVA

Comparison with VA model(s)



Please use the bookmark to navigate

General information on models

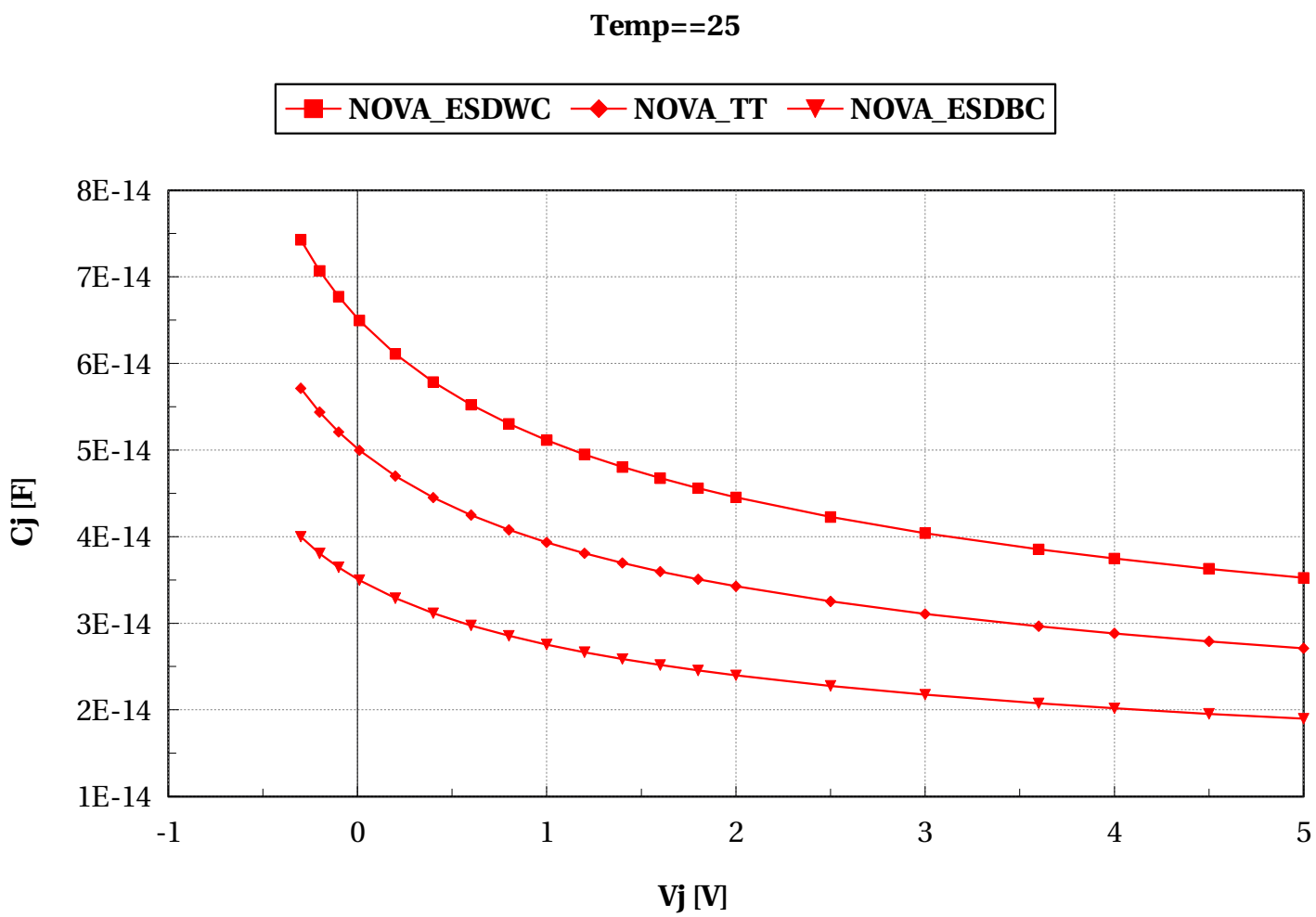
- Maximum supply voltage is - V.
- Validity domain is defined as follows:
  - ✔ Device temperature varies from -40 C °C to 150 C °C.

Output parameters definitions

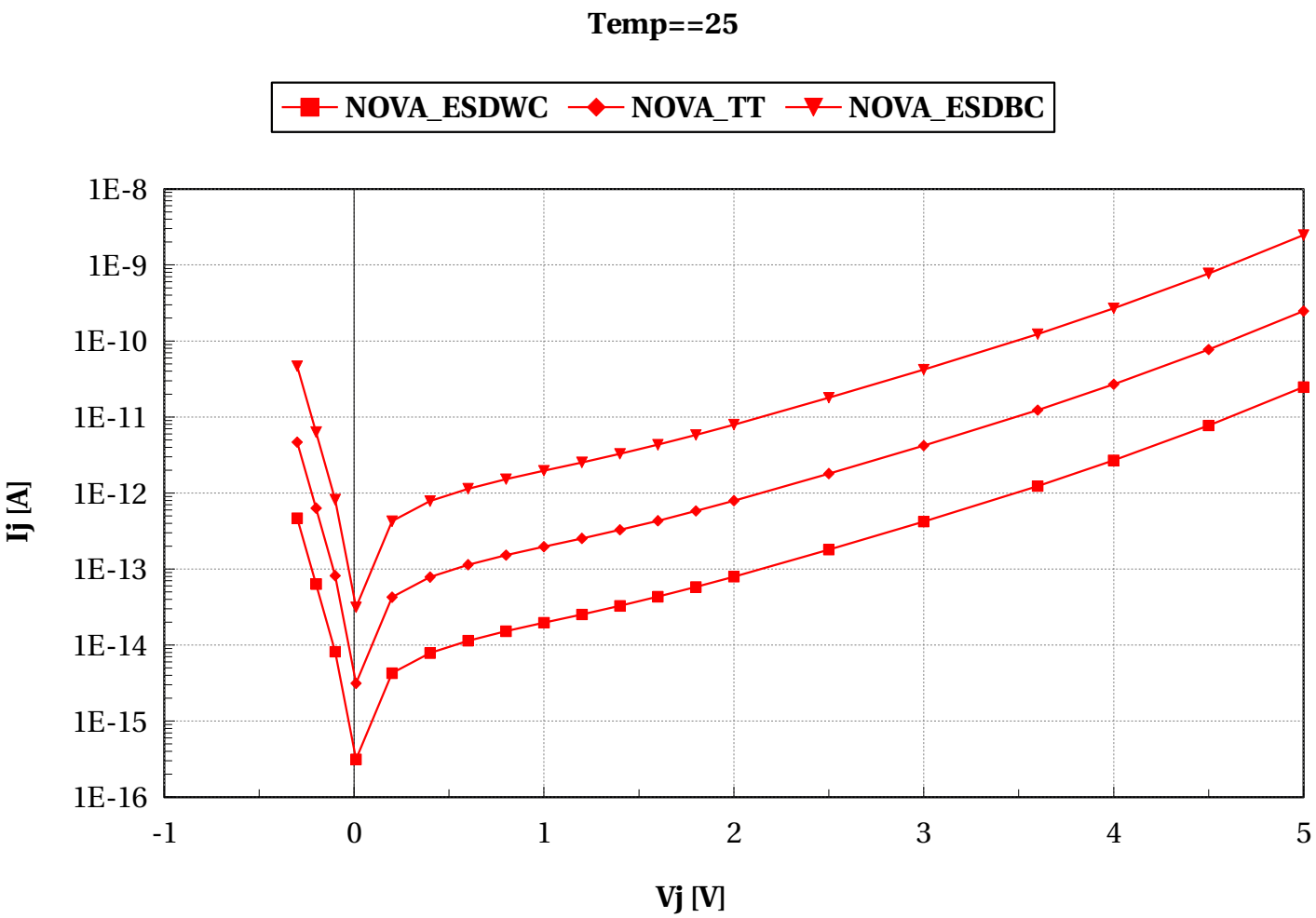
- Model(s): dioesdndsx, dioesdndsx_eg, dioesdndsx_eg_va, dioesdndsx_va, dioesdvnpn, dioesdvnpn_eg, dioesdvnpn_eg_va, dioesdvnpn_va, dioesdvpnp, dioesdvpnp_eg, dioesdvpnp_eg_va, dioesdvpnp_va
  - ✔ Cj : Junction capacitance at Vj = 1.0V, f = 100KHz.
  - ✔ Ij : Junction leakage current at Vj = 1.0V.

dioesdndsx
Electrical characteristics scaling

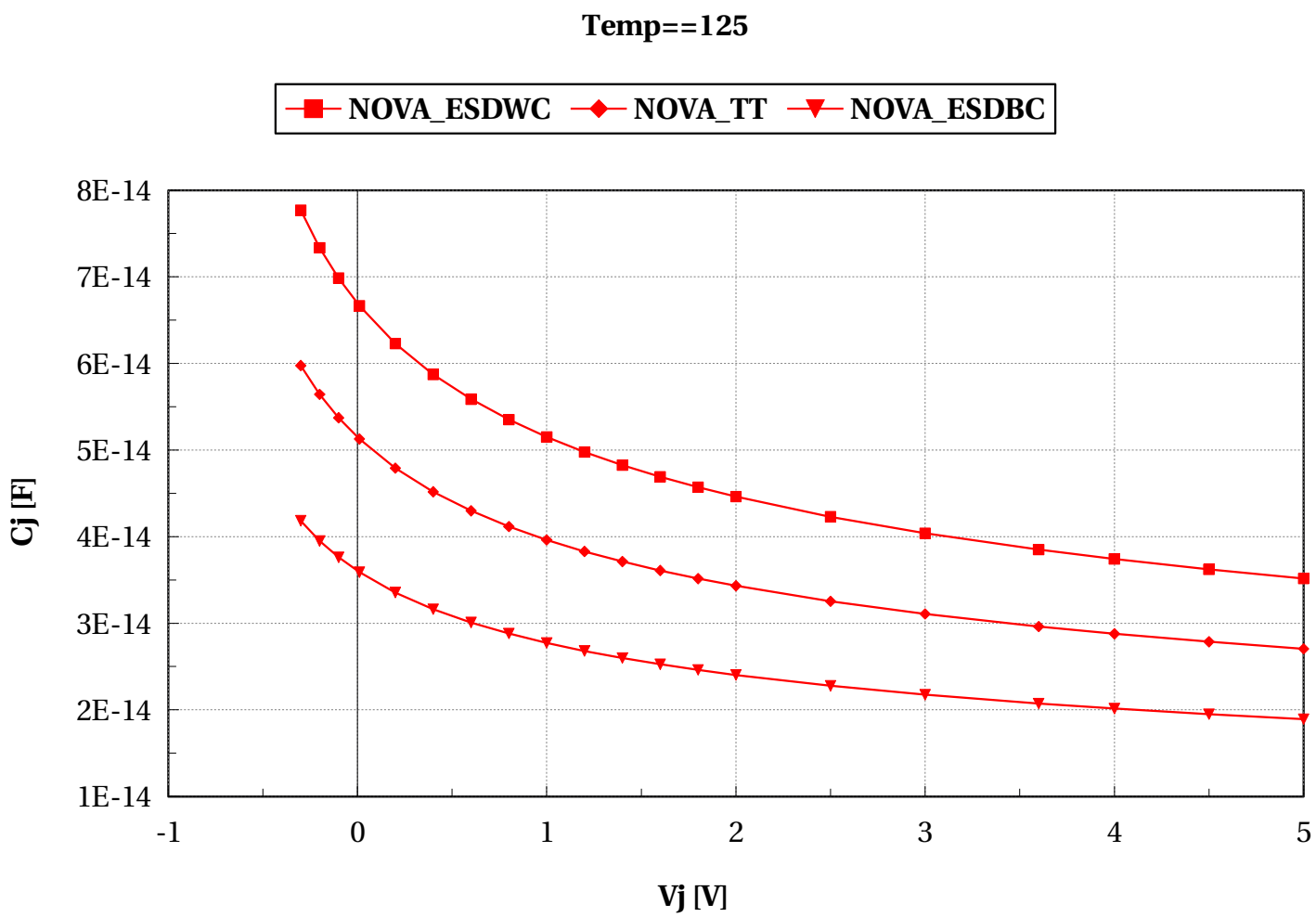
dioesdndsx, Cj [F] vs Vj [V]



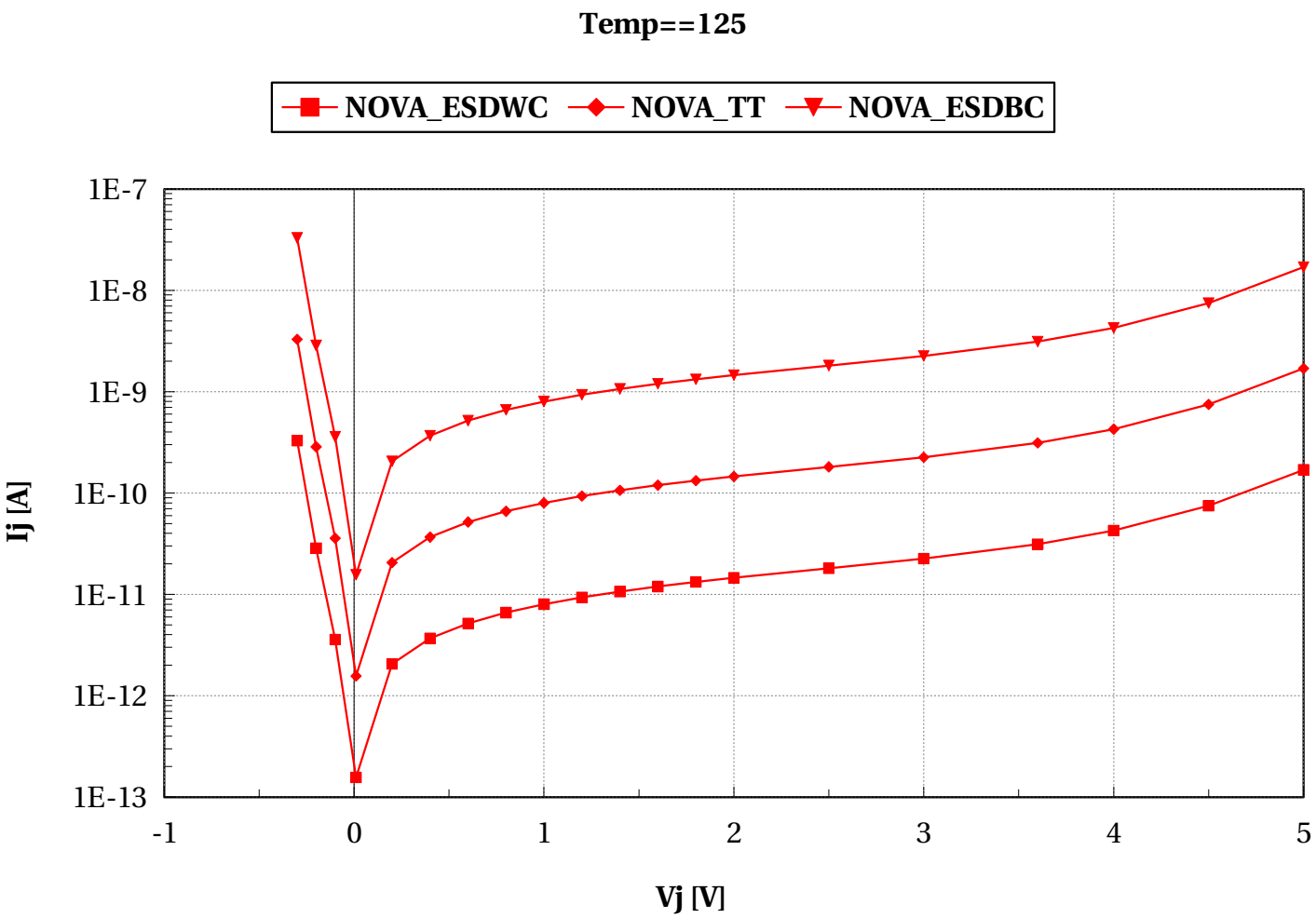
dioesdndsx, Ij [A] vs Vj [V]



dioesdndsx, Cj [F] vs Vj [V]

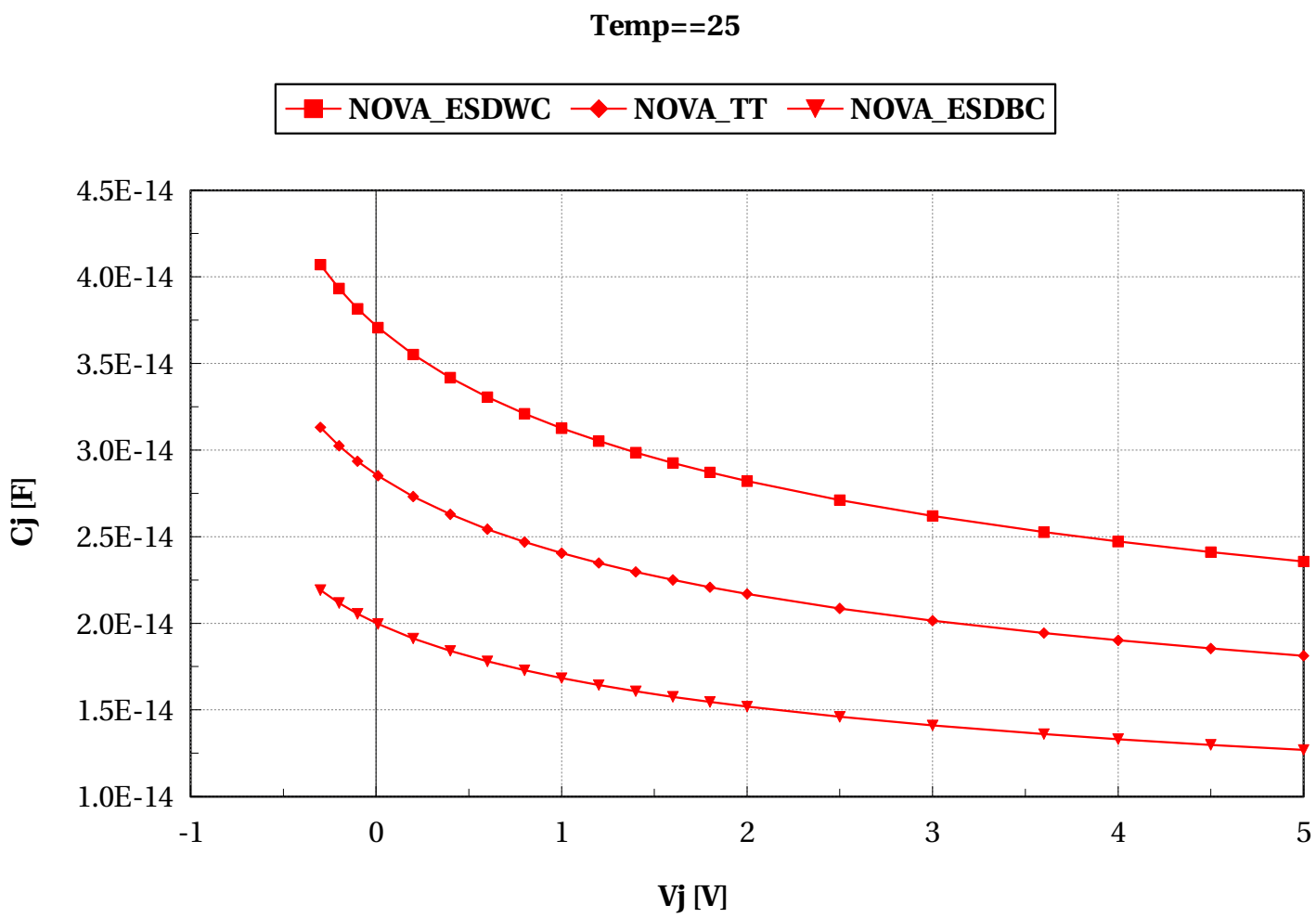


dioesdndsx, Ij [A] vs Vj [V]

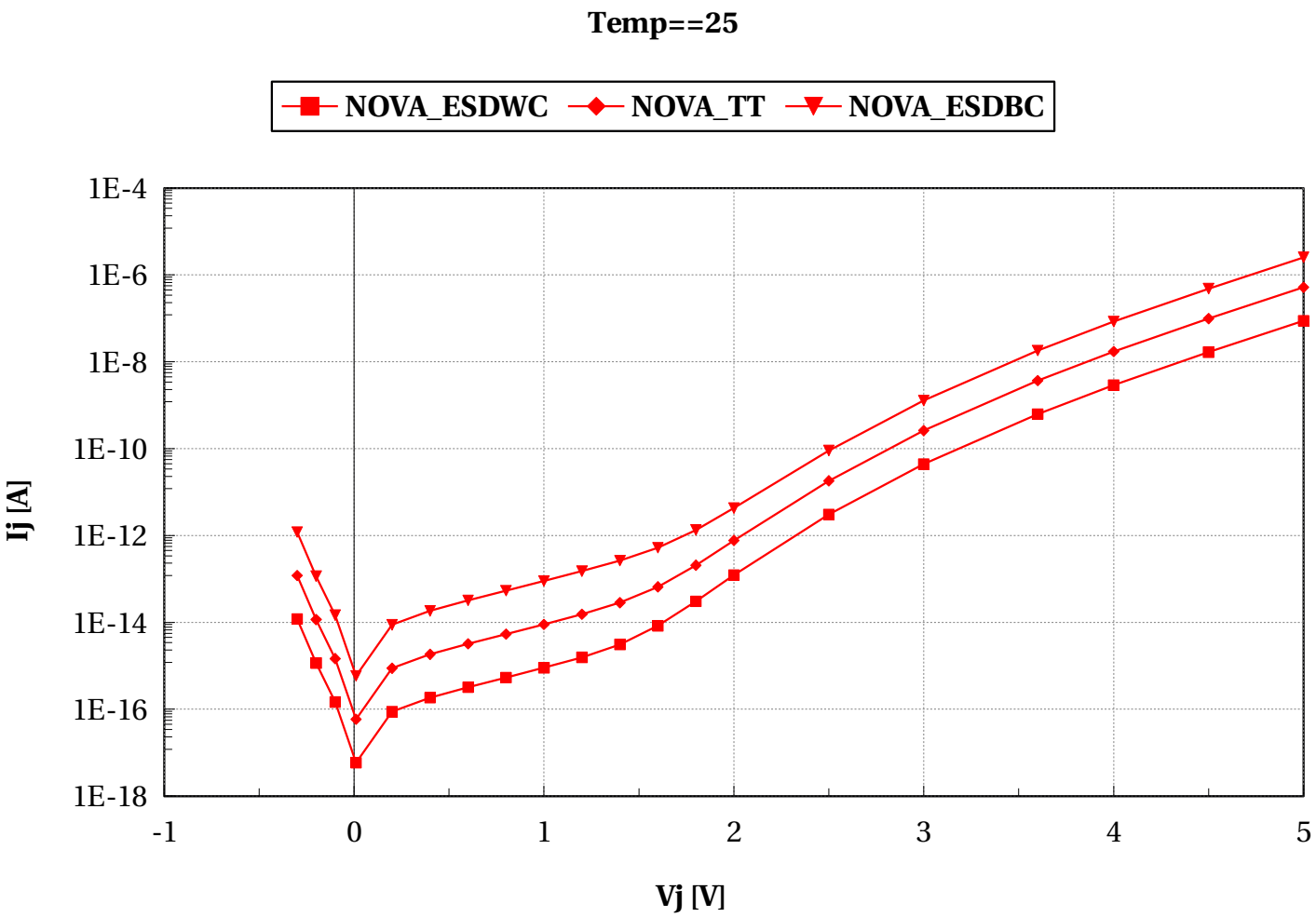


dioesdndsx_eg
Electrical characteristics scaling

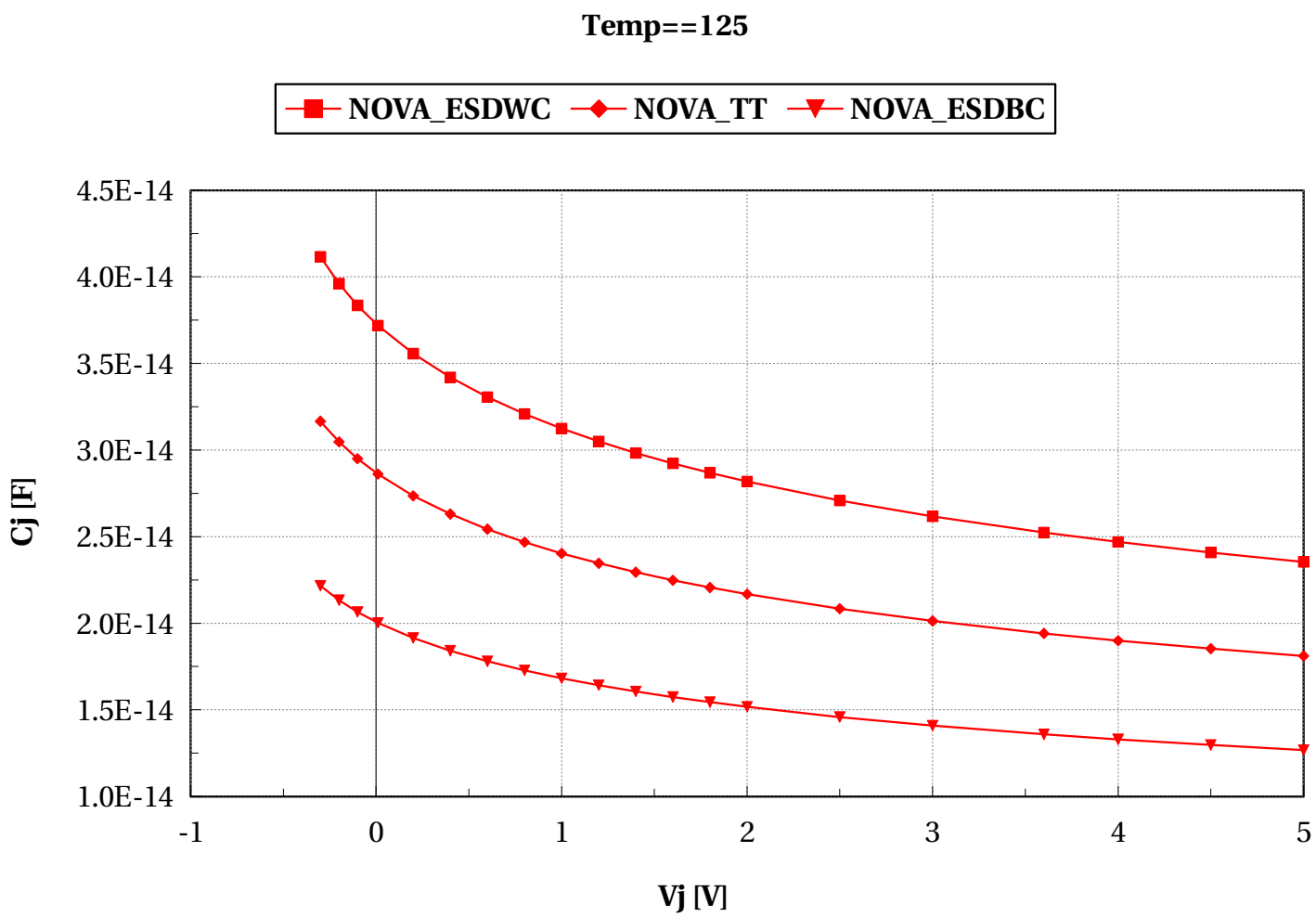
dioesdndsx_eg, Cj [F] vs Vj [V]



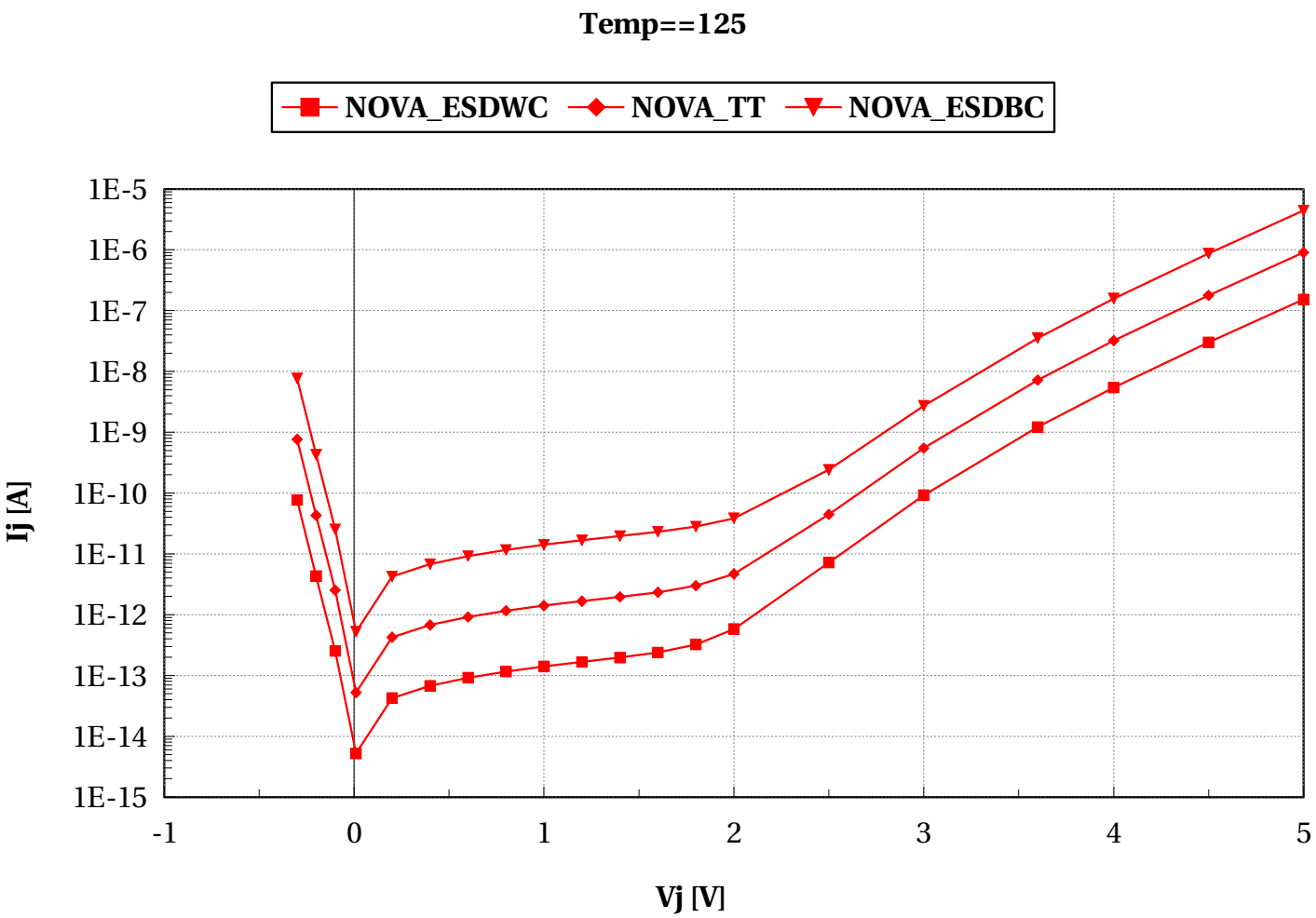
dioesdndsx_eg, Ij [A] vs Vj [V]



dioesdndsx_eg, Cj [F] vs Vj [V]



dioesdndsx_eg, Ij [A] vs Vj [V]

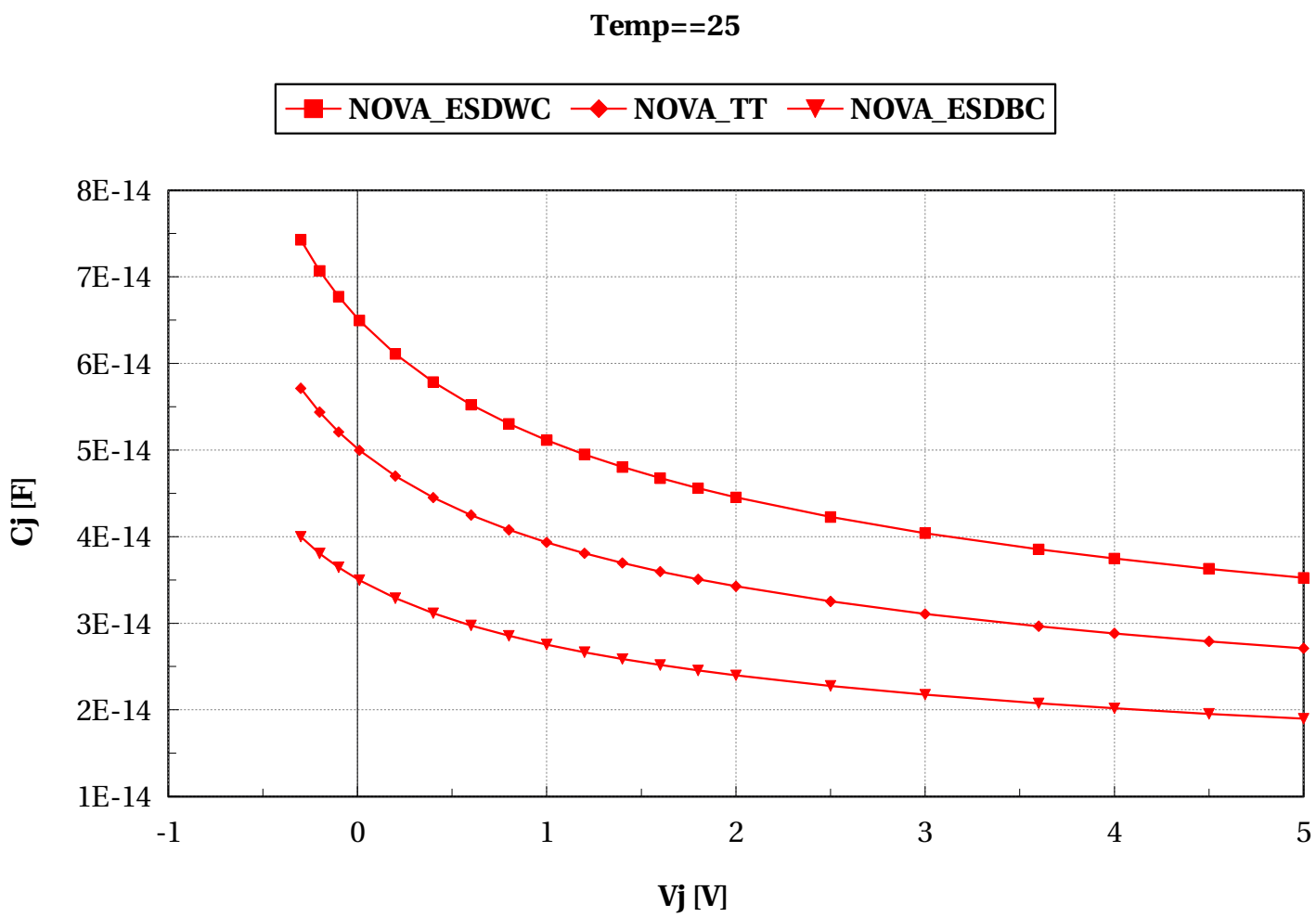


dioesdndsx_eg_va
Electrical characteristics scaling

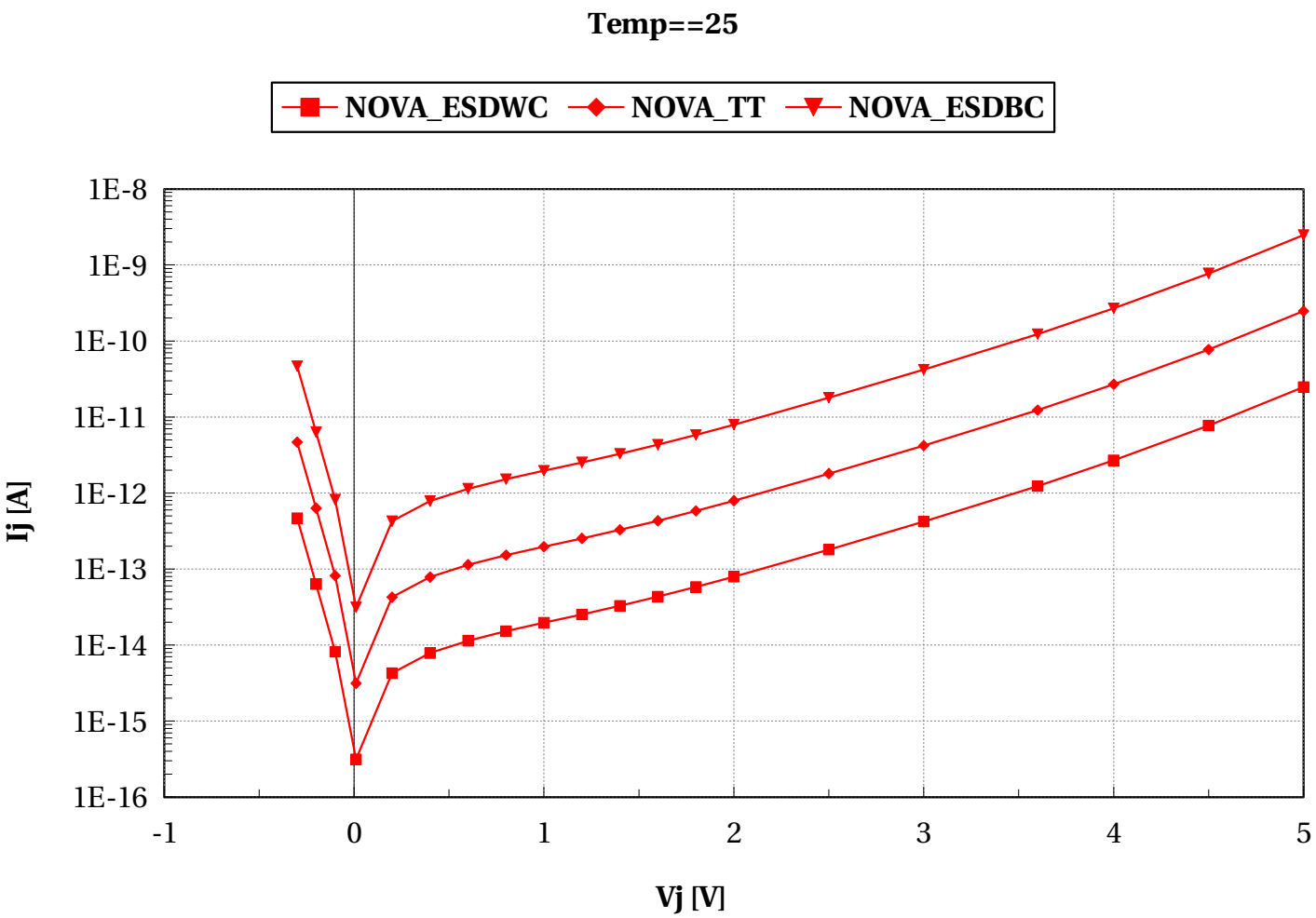
dioesdndsx_va
Electrical characteristics scaling

dioesdvnpn
Electrical characteristics scaling

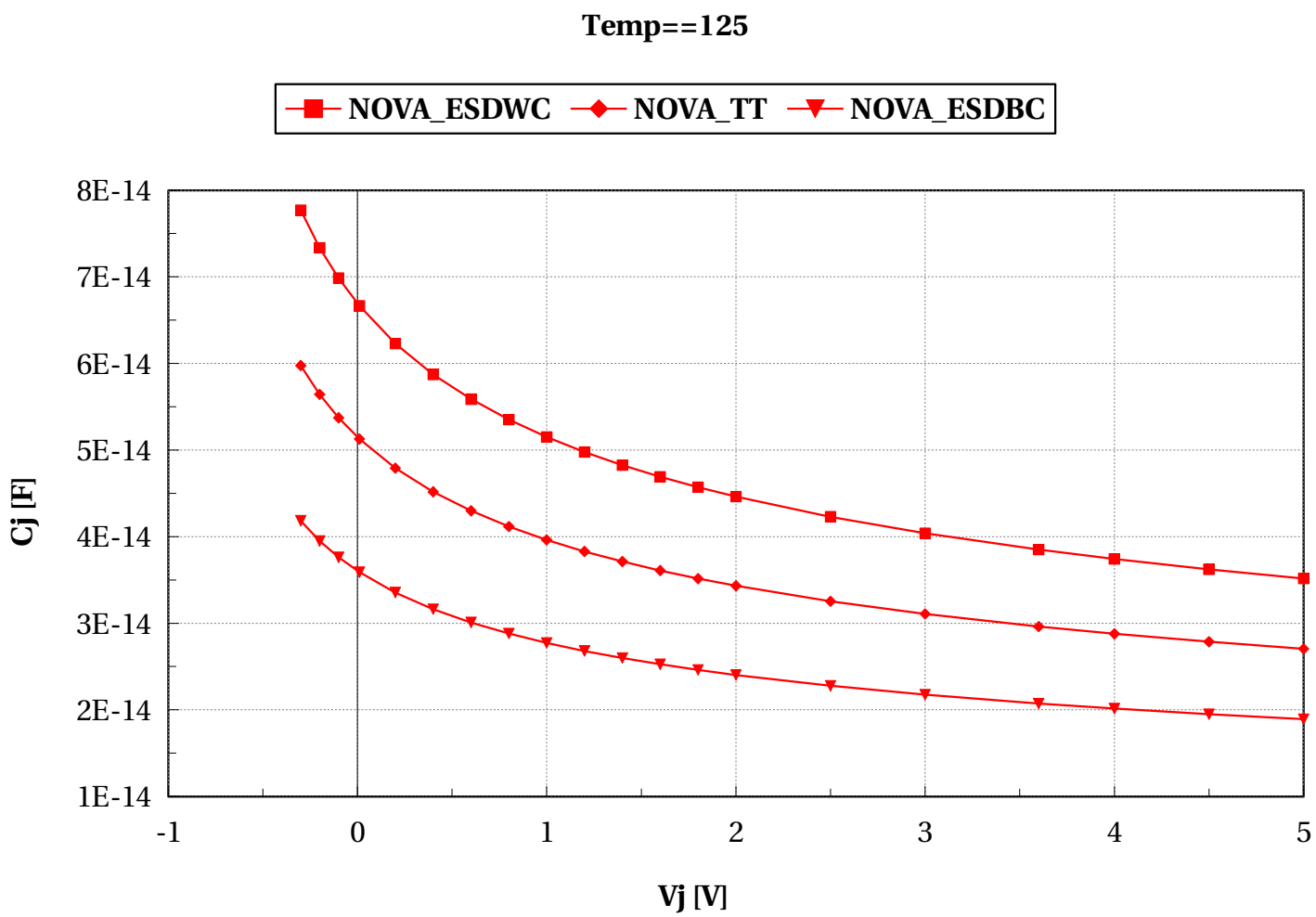
dioesdvnpn, Cj [F] vs Vj [V]



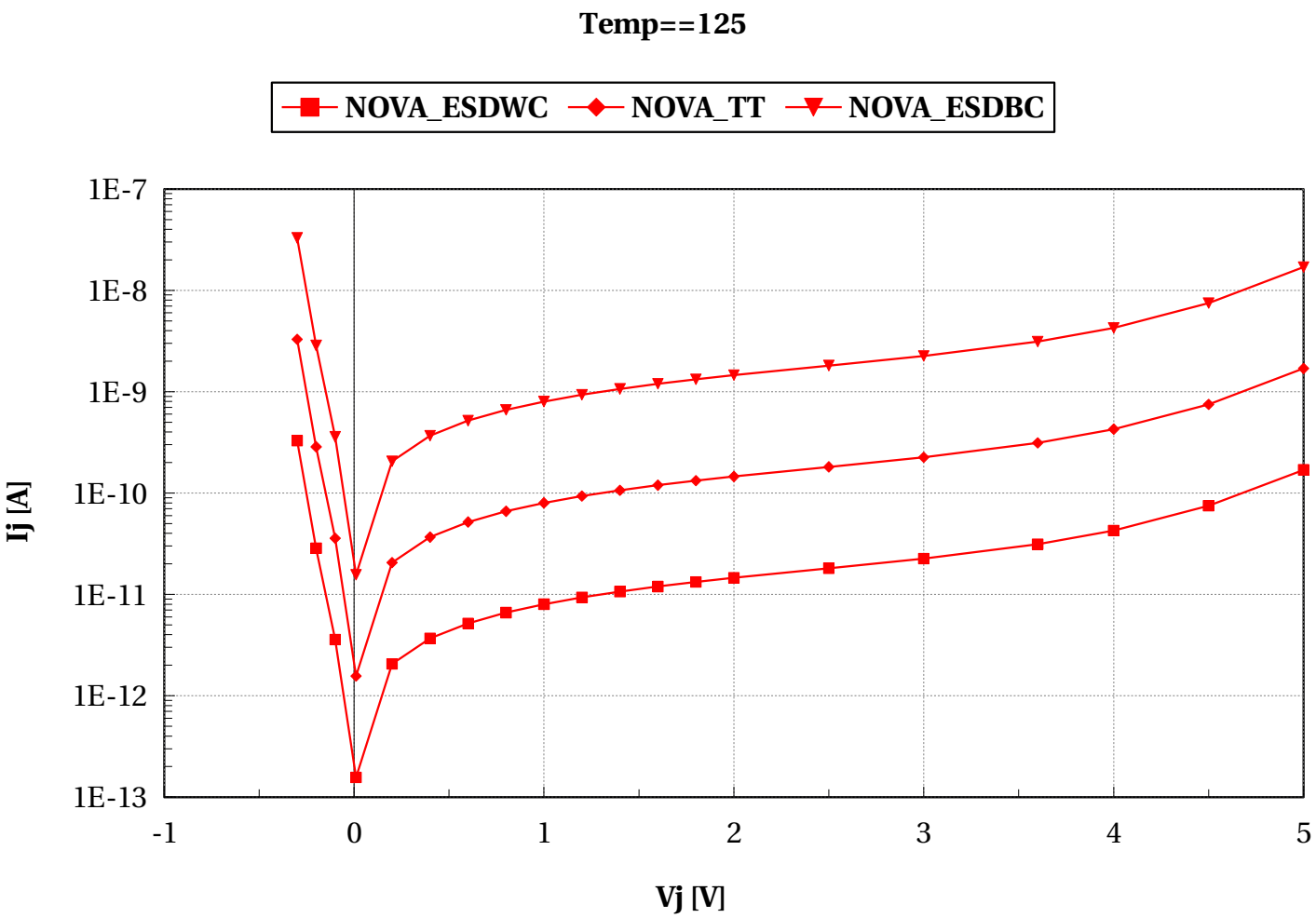
dioesdvnpn, Ij [A] vs Vj [V]



dioesdvnpn, Cj [F] vs Vj [V]

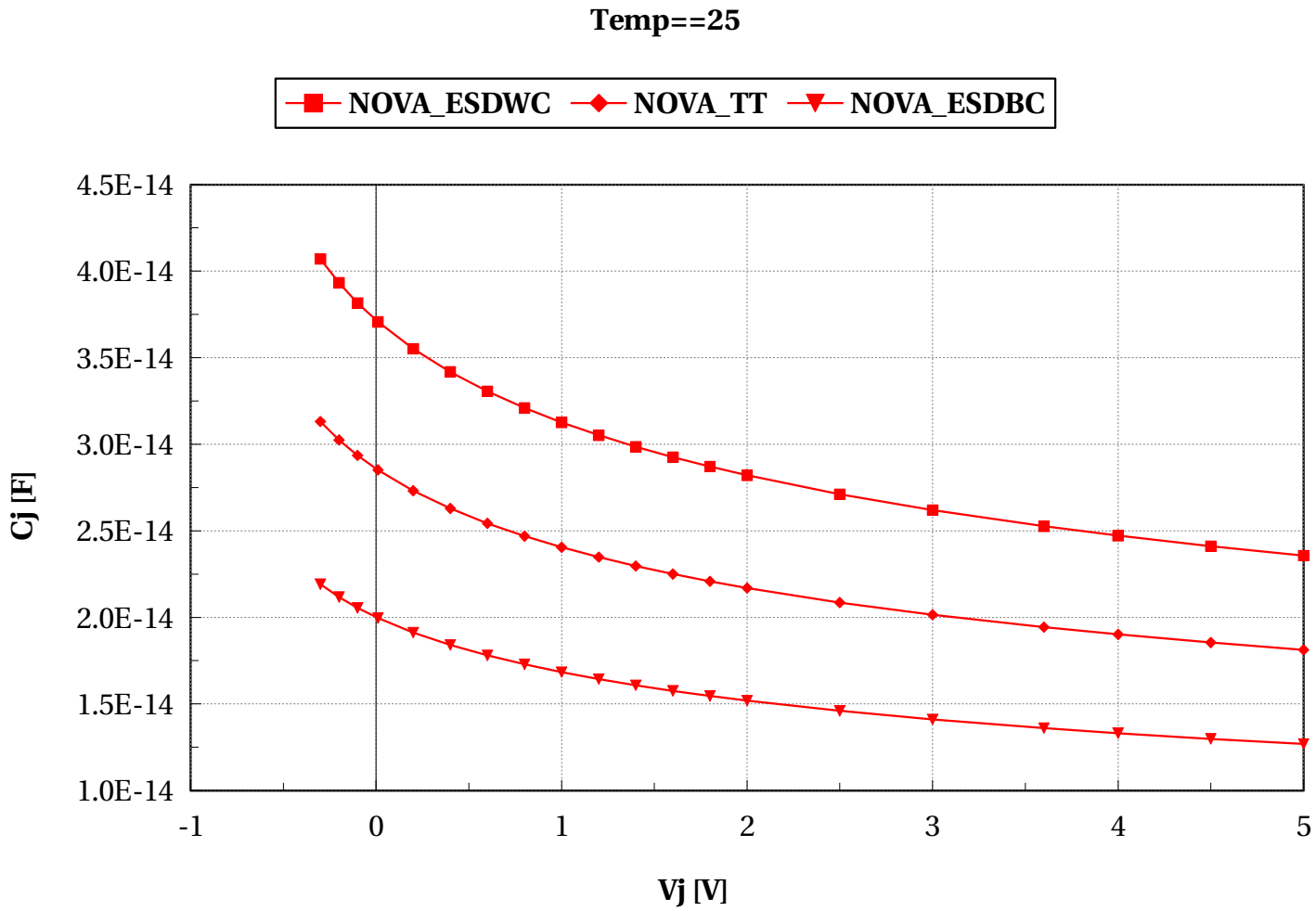


dioesdvnpn, Ij [A] vs Vj [V]

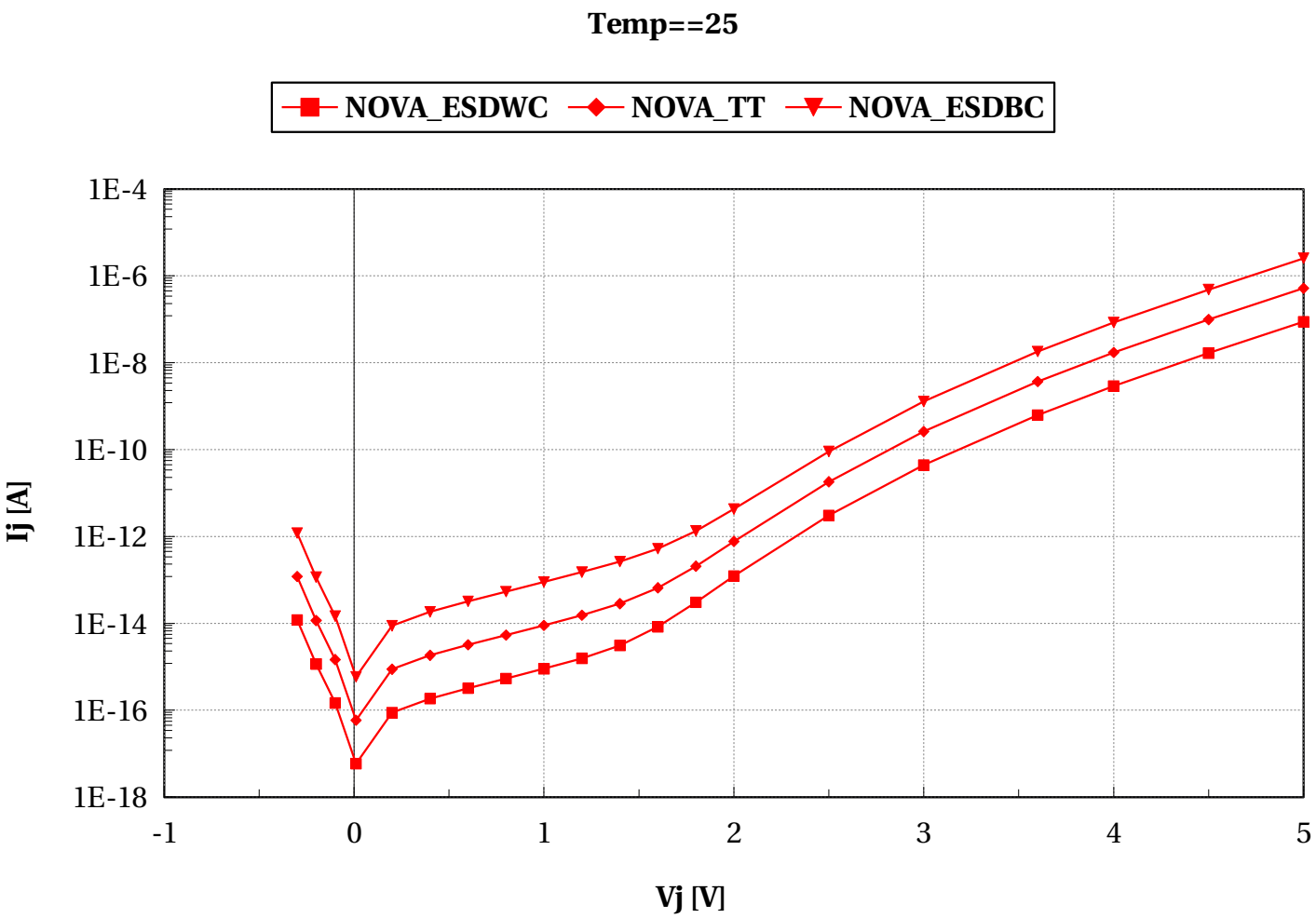


dioesdvnpn_eg
Electrical characteristics scaling

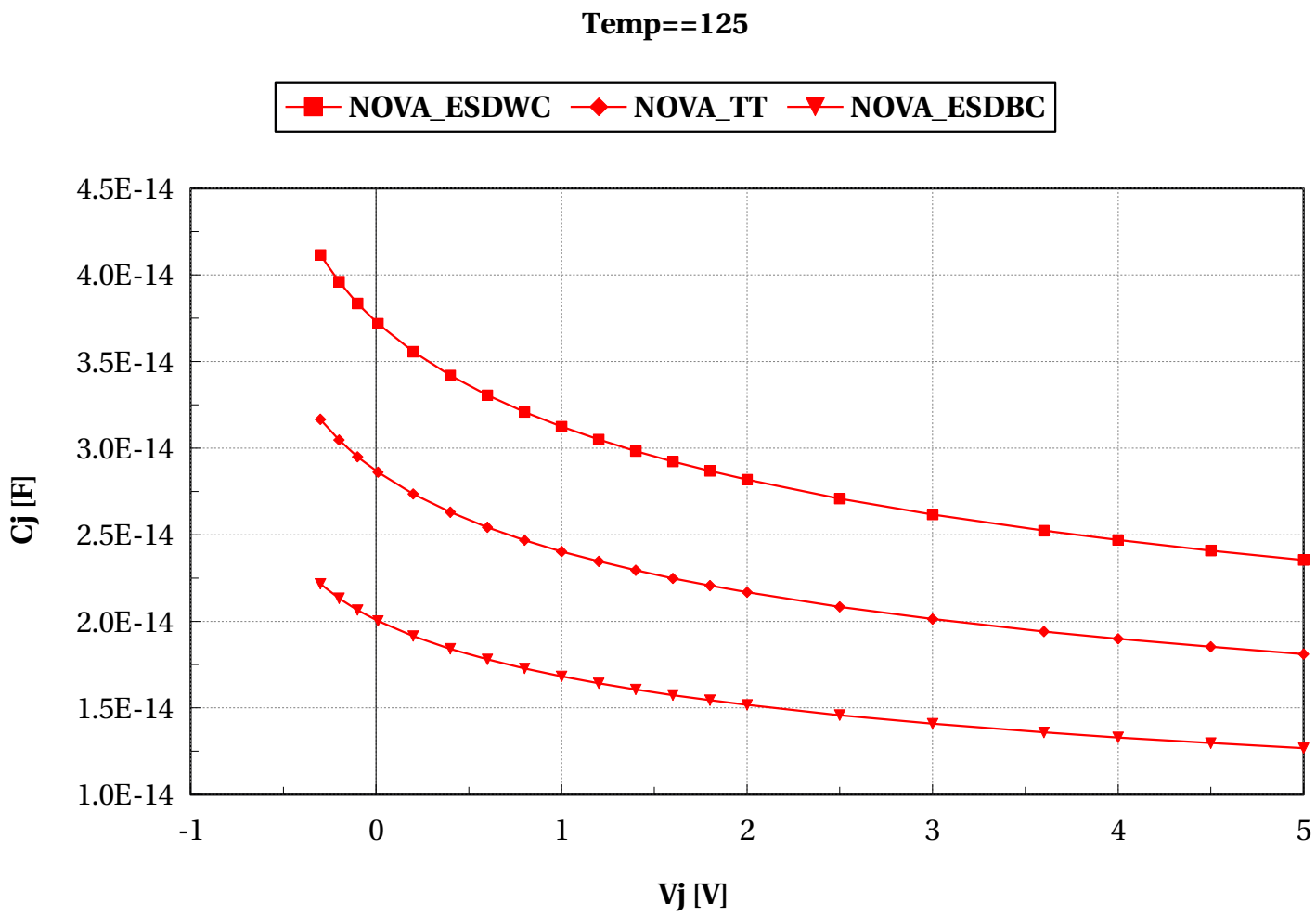
dioesdvnpn_eg, Cj [F] vs Vj [V]



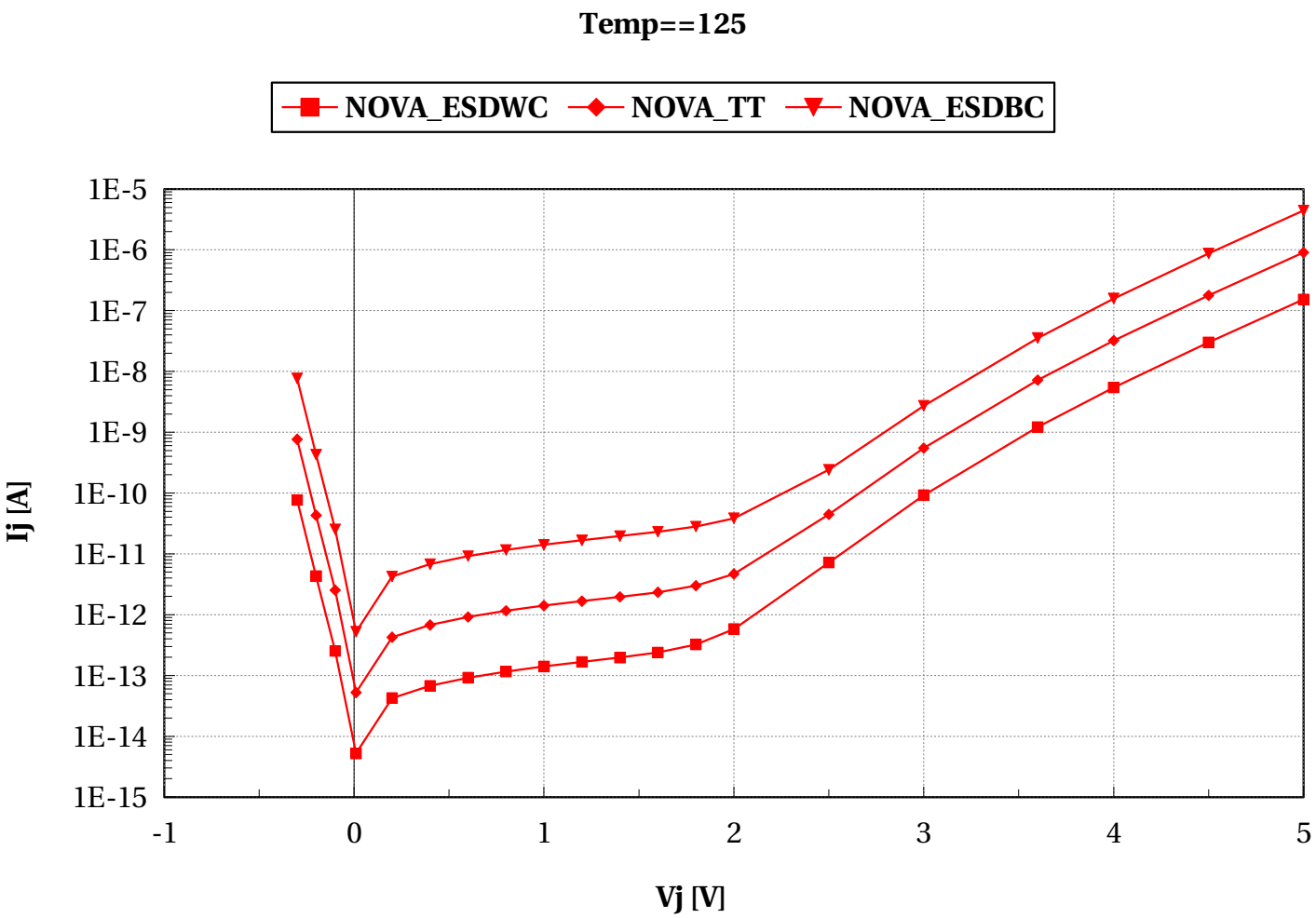
dioesdvnpn_eg, Ij [A] vs Vj [V]



dioesdvnpn_eg, Cj [F] vs Vj [V]



dioesdvnpn_eg, Ij [A] vs Vj [V]

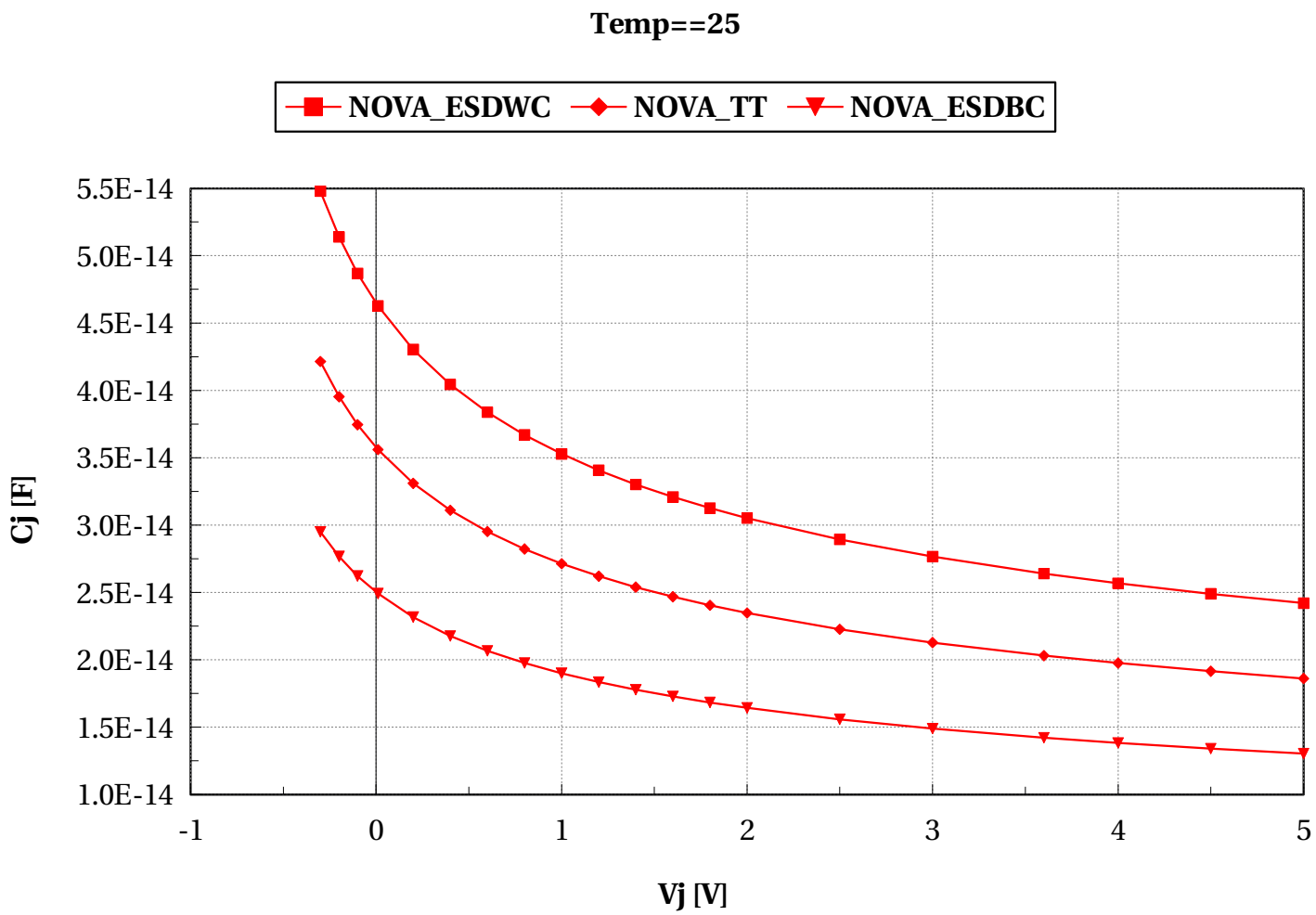


dioesdvnpn_eg_va
Electrical characteristics scaling

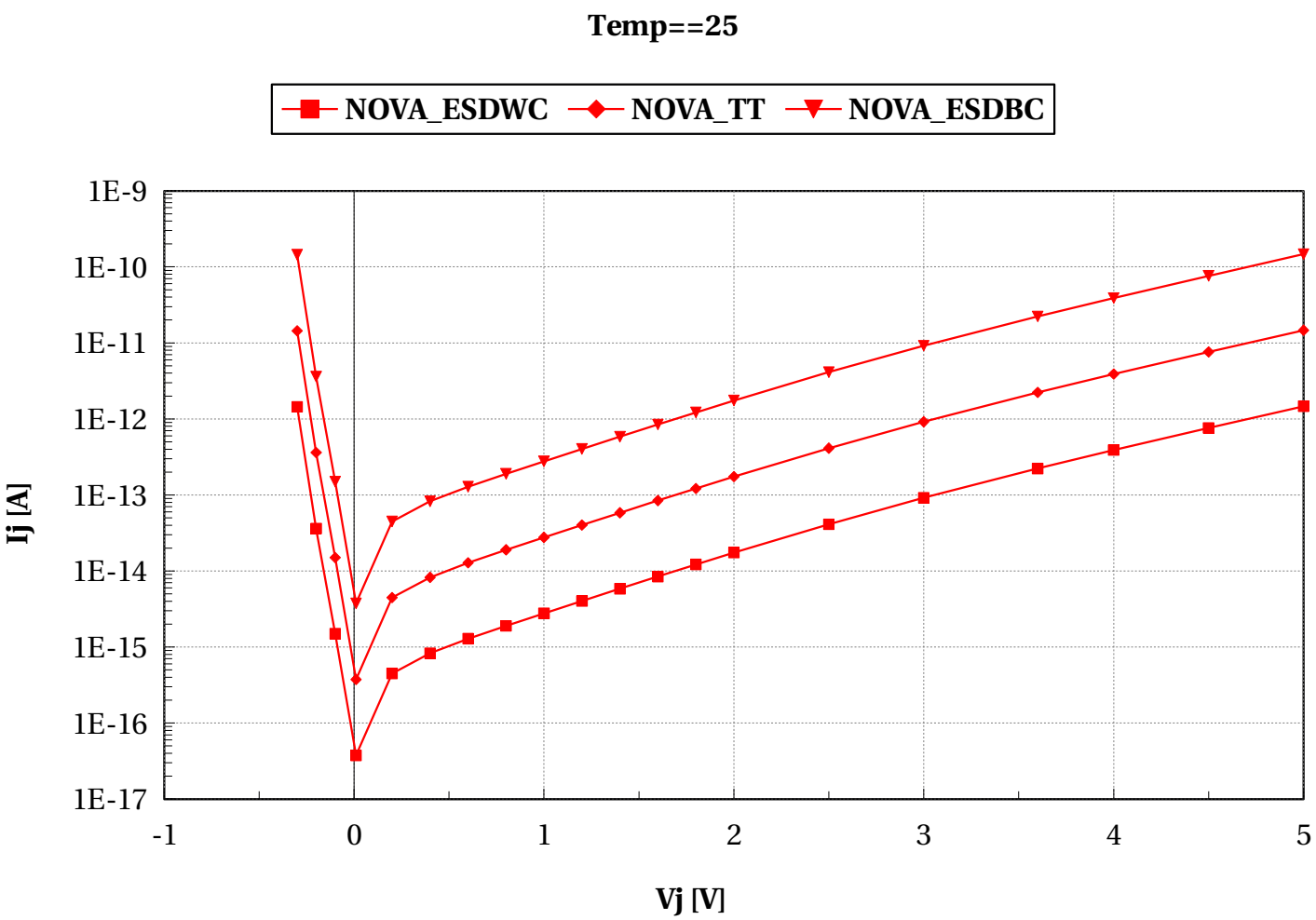
dioesdvnpn_va
Electrical characteristics scaling

dioesdvpnp
Electrical characteristics scaling

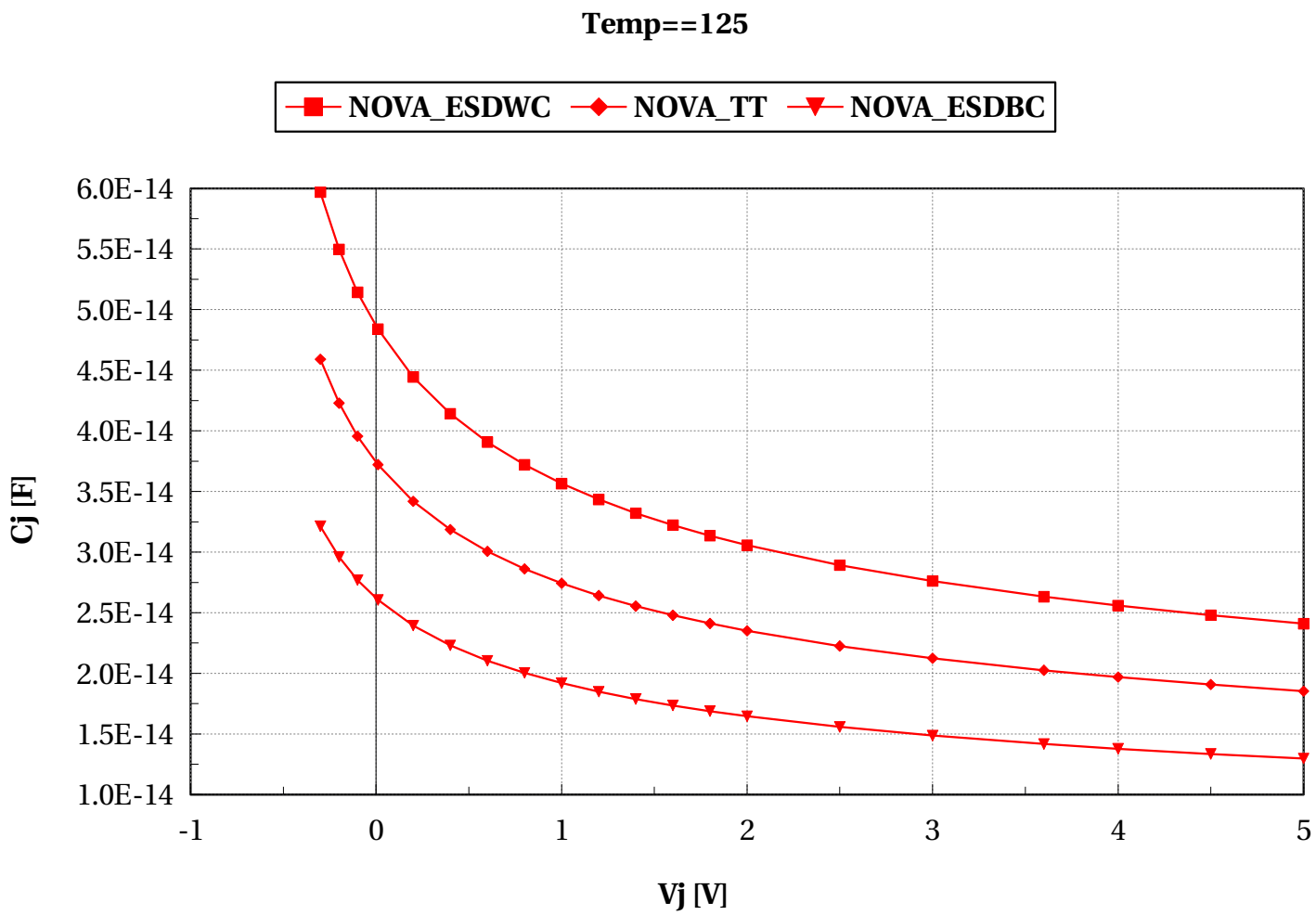
dioesdvpnp, Cj [F] vs Vj [V]



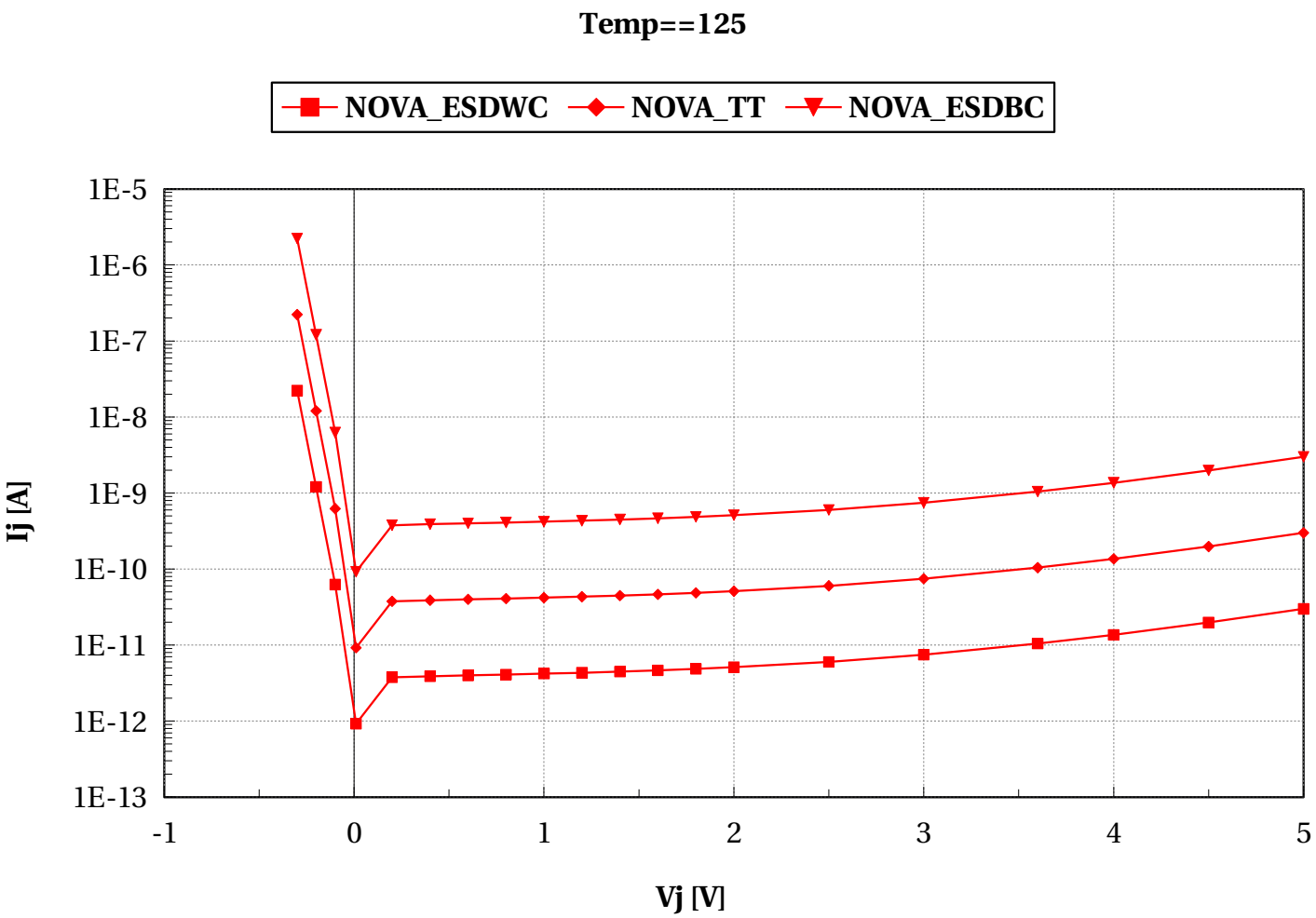
dioesdvpnp, Ij [A] vs Vj [V]



dioesdvpnp, Cj [F] vs Vj [V]

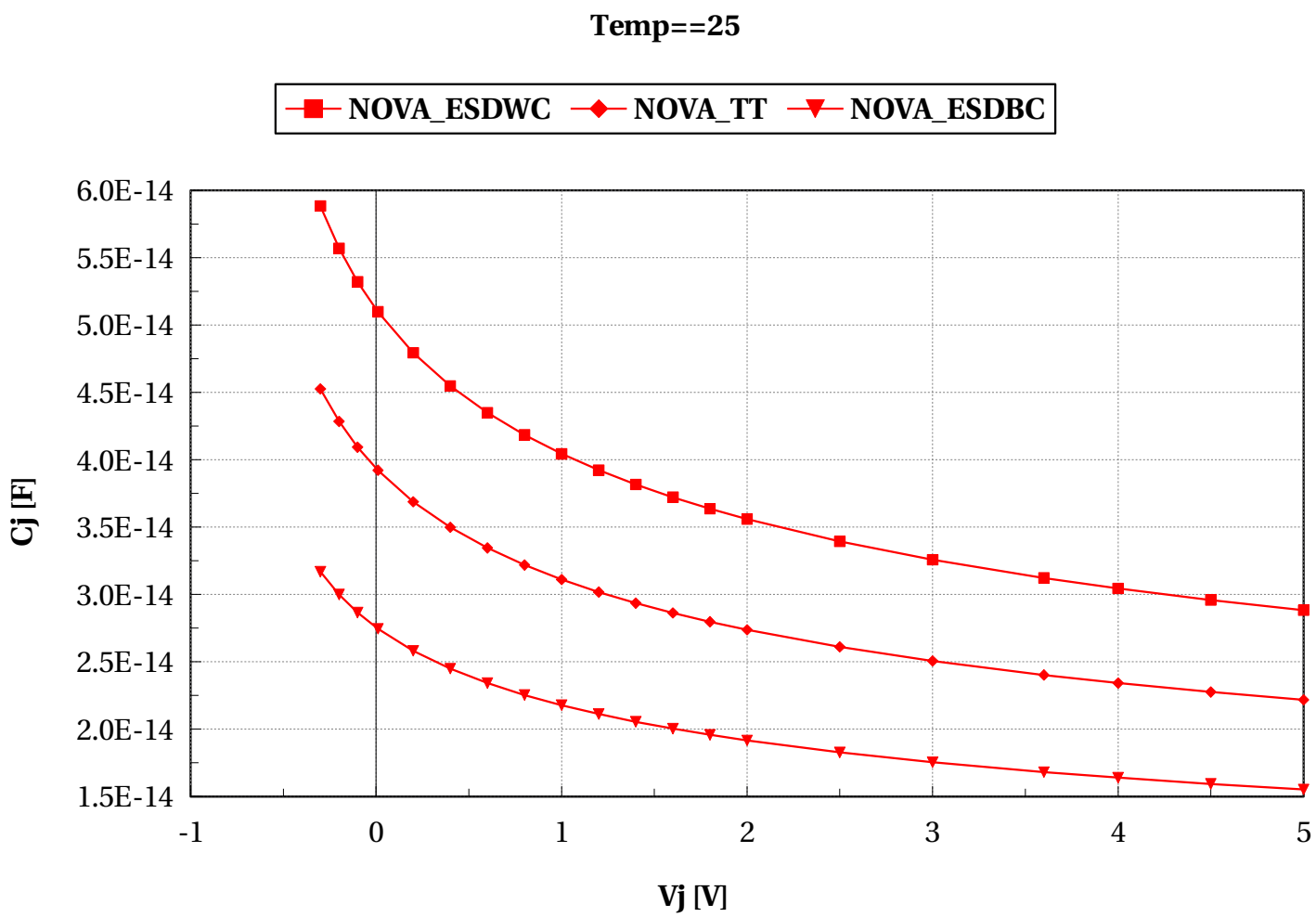


dioesdvpnp, Ij [A] vs Vj [V]

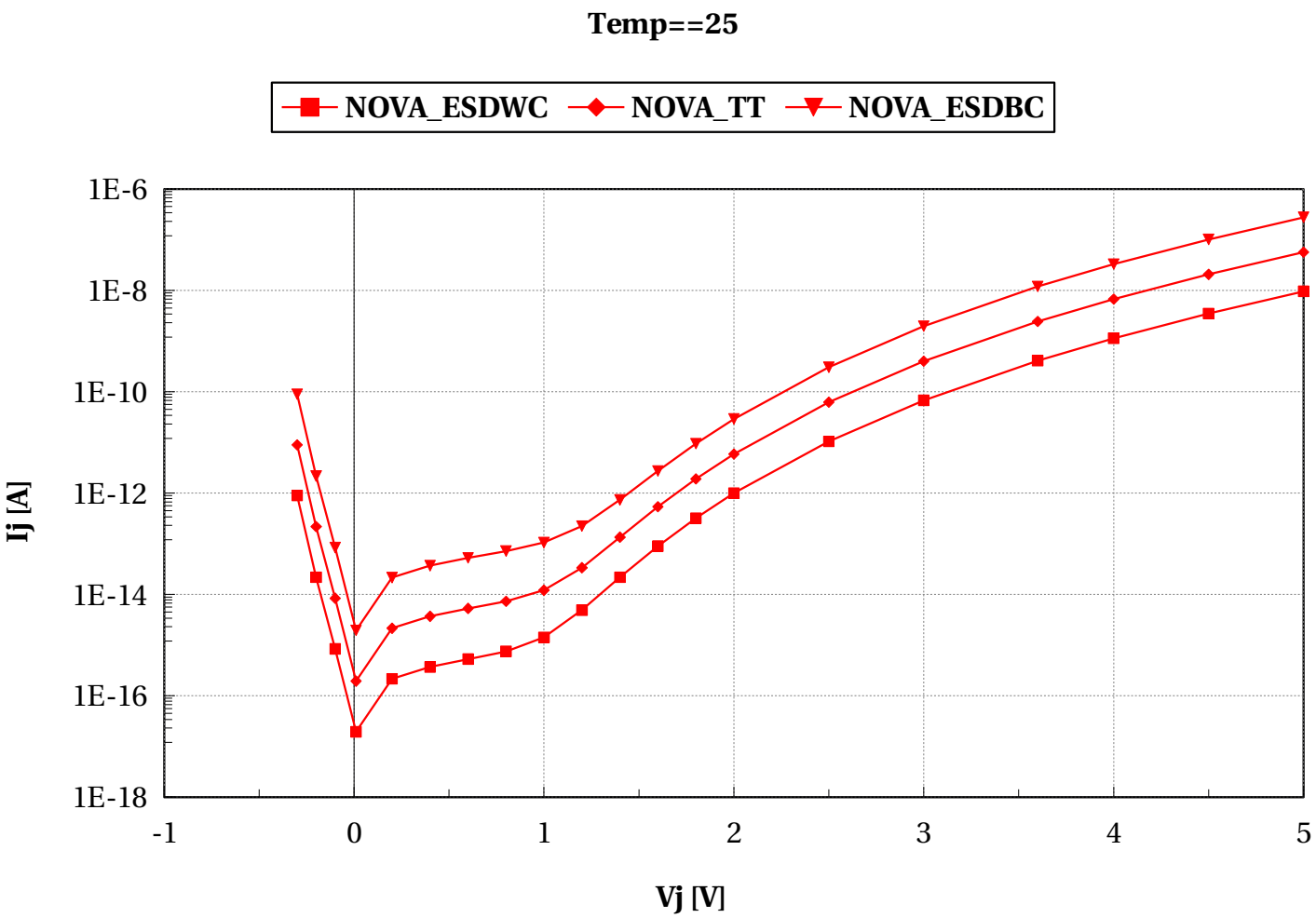


dioesdvpnp_eg
Electrical characteristics scaling

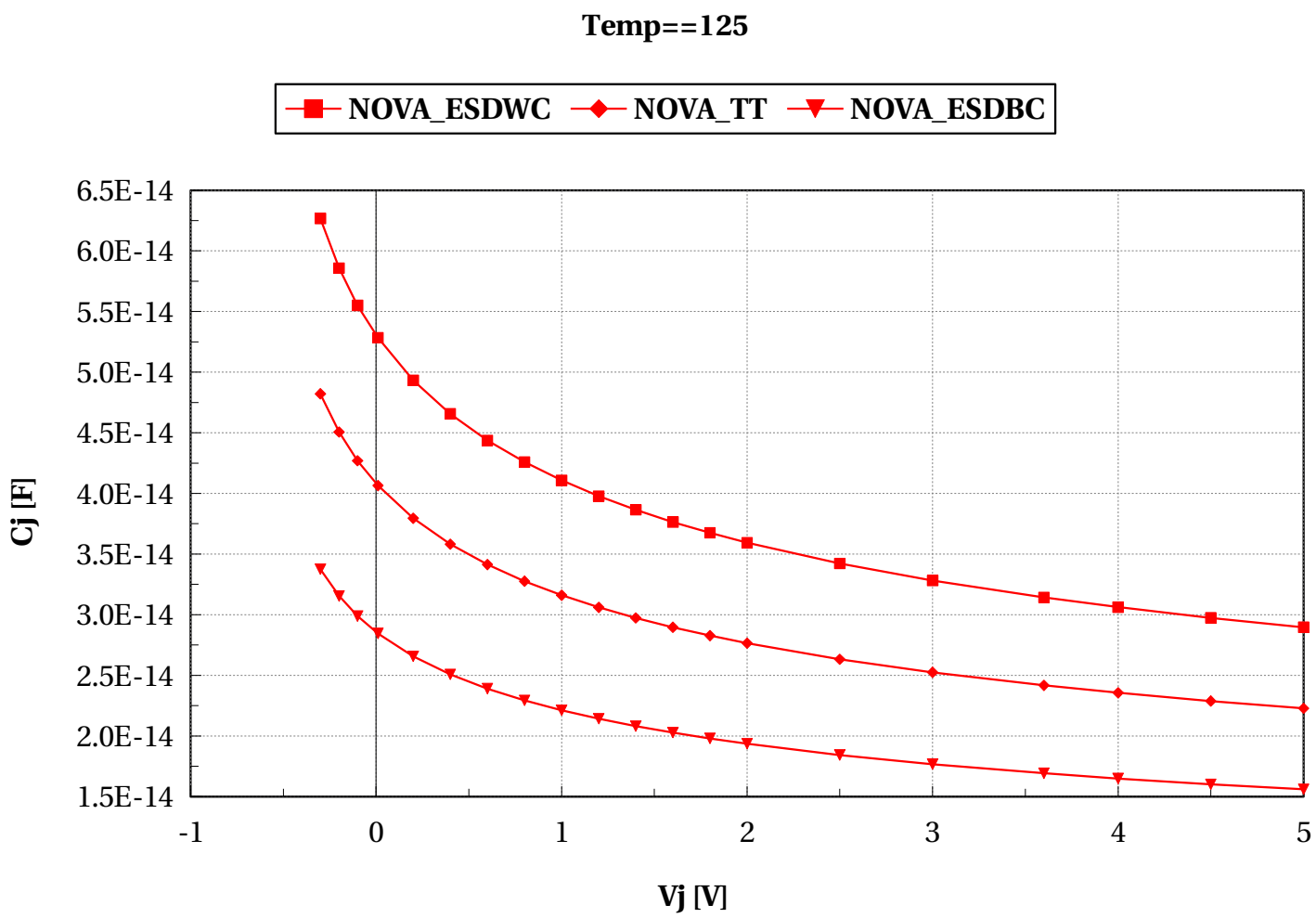
dioesdvpnp_eg, Cj [F] vs Vj [V]



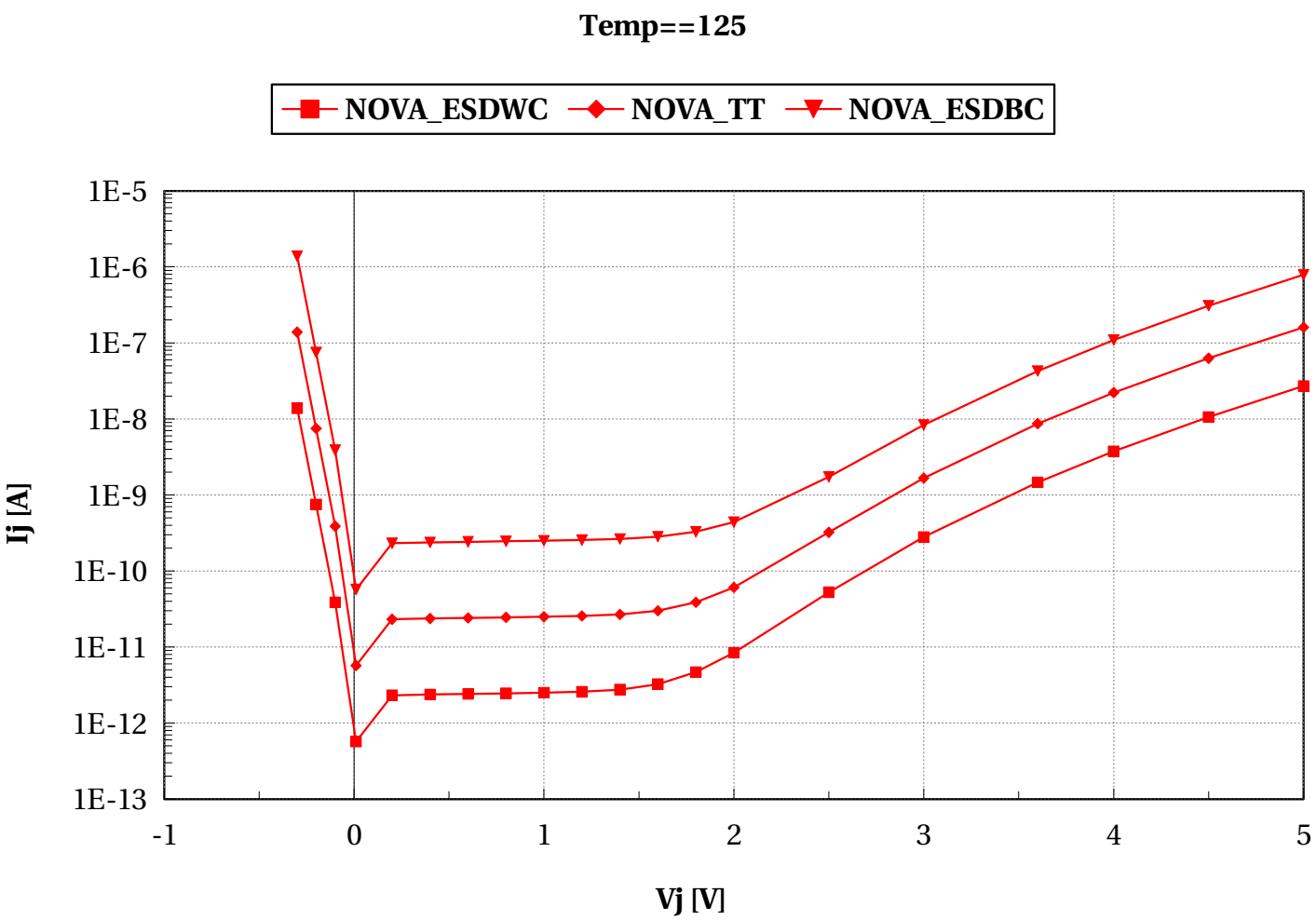
dioesdvpnp_eg, Ij [A] vs Vj [V]



dioesdvpnp_eg, Cj [F] vs Vj [V]



dioesdvpnp_eg, Ij [A] vs Vj [V]



dioesdvpnp_eg_va
Electrical characteristics scaling

dioesdvpnp_va
Electrical characteristics scaling

Annex

Conditions of simulations

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

- Model dioesdndsx (NOVA)
  - ✔ Input Parameters
    - ✘ mc_runs = 1000
    - ✘ temp = 25 °C
    - ✘ mc_sens = 0
    - ✘ vj = 1.0 V
    - ✘ f_ext = 100K Hz
    - ✘ sbenchlsf_release = Alpha
    - ✘ ams_release = 2018.3
    - ✘ mc_nsigma = 3
  - ✔ Sweep Parameters
    - ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
    - ✘ temp = -40.0, 25.0, 125.0, 150.0
  - ✔ Extra parameters
- Model dioesdndsx_eg (NOVA)
  - ✔ Input Parameters

- ✘ mc_runs = 1000
- ✘ temp = 25 °C
- ✘ mc_sens = 0
- ✘ vj = 1.0 V
- ✘ f_ext = 100K Hz
- ✘ sbenchlsf_release = Alpha
- ✘ ams_release = 2018.3
- ✘ mc_nsigma = 3

✔ Sweep Parameters

- ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
- ✘ temp = -40.0, 25.0, 125.0, 150.0

✔ Extra parameters

● Model dioesdndsx_eg_va (NOVA)

✔ Input Parameters

- ✘ mc_runs = 1000
- ✘ temp = 25 °C
- ✘ mc_sens = 0
- ✘ vj = 1.0 V
- ✘ f_ext = 100K Hz
- ✘ sbenchlsf_release = Alpha
- ✘ ams_release = 2018.3
- ✘ mc_nsigma = 3

✔ Sweep Parameters

- ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
- ✘ temp = -40.0, 25.0, 125.0, 150.0

- ✔ Extra parameters

- Model dioesdndsx_va (NOVA)
  - ✔ Input Parameters
    - ✘ mc_runs = 1000
    - ✘ temp = 25 °C
    - ✘ mc_sens = 0
    - ✘ vj = 1.0 V
    - ✘ f_ext = 100K Hz
    - ✘ sbenchlsf_release = Alpha
    - ✘ ams_release = 2018.3
    - ✘ mc_nsigma = 3
  - ✔ Sweep Parameters
    - ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
    - ✘ temp = -40.0, 25.0, 125.0, 150.0
  - ✔ Extra parameters
- Model dioesdvnpn (NOVA)
  - ✔ Input Parameters
    - ✘ mc_runs = 1000
    - ✘ temp = 25 °C
    - ✘ mc_sens = 0
    - ✘ vj = 1.0 V
    - ✘ f_ext = 100K Hz
    - ✘ sbenchlsf_release = Alpha
    - ✘ ams_release = 2018.3
    - ✘ mc_nsigma = 3

- ✔ Sweep Parameters
  - ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
  - ✘ temp = -40.0, 25.0, 125.0, 150.0
- ✔ Extra parameters

● Model dioesdvnpn_eg (NOVA)

- ✔ Input Parameters
  - ✘ mc_runs = 1000
  - ✘ temp = 25 °C
  - ✘ mc_sens = 0
  - ✘ vj = 1.0 V
  - ✘ f_ext = 100K Hz
  - ✘ sbenchlsf_release = Alpha
  - ✘ ams_release = 2018.3
  - ✘ mc_nsigma = 3
- ✔ Sweep Parameters
  - ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
  - ✘ temp = -40.0, 25.0, 125.0, 150.0
- ✔ Extra parameters

● Model dioesdvnpn_eg_va (NOVA)

- ✔ Input Parameters
  - ✘ mc_runs = 1000
  - ✘ temp = 25 °C
  - ✘ mc_sens = 0
  - ✘ vj = 1.0 V
  - ✘ f_ext = 100K Hz

- ✘ sbenchlsf_release = Alpha
- ✘ ams_release = 2018.3
- ✘ mc_nsigma = 3

✔ Sweep Parameters

- ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
- ✘ temp = -40.0, 25.0, 125.0, 150.0

✔ Extra parameters

● Model dioesdvnpn_va (NOVA)

✔ Input Parameters

- ✘ mc_runs = 1000
- ✘ temp = 25 °C
- ✘ mc_sens = 0
- ✘ vj = 1.0 V
- ✘ f_ext = 100K Hz
- ✘ sbenchlsf_release = Alpha
- ✘ ams_release = 2018.3
- ✘ mc_nsigma = 3

✔ Sweep Parameters

- ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
- ✘ temp = -40.0, 25.0, 125.0, 150.0

✔ Extra parameters

● Model dioesdvpnp (NOVA)

✔ Input Parameters

- ✘ mc_runs = 1000
- ✘ temp = 25 °C

- ✘ mc_sens = 0
- ✘ vj = 1.0 V
- ✘ f_ext = 100K Hz
- ✘ sbenchlsf_release = Alpha
- ✘ ams_release = 2018.3
- ✘ mc_nsigma = 3

✔ Sweep Parameters

- ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
- ✘ temp = -40.0, 25.0, 125.0, 150.0

✔ Extra parameters

● Model dioesdvpnp_eg (NOVA)

✔ Input Parameters

- ✘ mc_runs = 1000
- ✘ temp = 25 °C
- ✘ mc_sens = 0
- ✘ vj = 1.0 V
- ✘ f_ext = 100K Hz
- ✘ sbenchlsf_release = Alpha
- ✘ ams_release = 2018.3
- ✘ mc_nsigma = 3

✔ Sweep Parameters

- ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
- ✘ temp = -40.0, 25.0, 125.0, 150.0

✔ Extra parameters

● Model dioesdvpnp_eg_va (NOVA)

- ✔ Input Parameters
  - ✘ mc_runs = 1000
  - ✘ temp = 25 °C
  - ✘ mc_sens = 0
  - ✘ vj = 1.0 V
  - ✘ f_ext = 100K Hz
  - ✘ sbenchlsf_release = Alpha
  - ✘ ams_release = 2018.3
  - ✘ mc_nsigma = 3
- ✔ Sweep Parameters
  - ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
  - ✘ temp = -40.0, 25.0, 125.0, 150.0
- ✔ Extra parameters

● Model dioesdvpnp_va (NOVA)

- ✔ Input Parameters
  - ✘ mc_runs = 1000
  - ✘ temp = 25 °C
  - ✘ mc_sens = 0
  - ✘ vj = 1.0 V
  - ✘ f_ext = 100K Hz
  - ✘ sbenchlsf_release = Alpha
  - ✘ ams_release = 2018.3
  - ✘ mc_nsigma = 3
- ✔ Sweep Parameters
  - ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3

- ✘ temp = -40.0, 25.0, 125.0, 150.0
- ✔ Extra parameters

● Model dioesdndsx (VA)

- ✔ Input Parameters
  - ✘ mc_runs = 1000
  - ✘ temp = 25 °C
  - ✘ mc_sens = 0
  - ✘ vj = 1.0 V
  - ✘ f_ext = 100K Hz
  - ✘ sbenchlsf_release = Alpha
  - ✘ ams_release = 2018.3
  - ✘ mc_nsigma = 3
- ✔ Sweep Parameters
  - ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
  - ✘ temp = -40.0, 25.0, 125.0, 150.0
- ✔ Extra parameters

● Model dioesdndsx_eg (VA)

- ✔ Input Parameters
  - ✘ mc_runs = 1000
  - ✘ temp = 25 °C
  - ✘ mc_sens = 0
  - ✘ vj = 1.0 V
  - ✘ f_ext = 100K Hz
  - ✘ sbenchlsf_release = Alpha
  - ✘ ams_release = 2018.3

- ✘ mc_nsigma = 3
- ✔ Sweep Parameters
  - ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
  - ✘ temp = -40.0, 25.0, 125.0, 150.0
- ✔ Extra parameters

● Model dioesdndsx_eg_nova (VA)

- ✔ Input Parameters
  - ✘ mc_runs = 1000
  - ✘ temp = 25 °C
  - ✘ mc_sens = 0
  - ✘ vj = 1.0 V
  - ✘ f_ext = 100K Hz
  - ✘ sbenchlsf_release = Alpha
  - ✘ ams_release = 2018.3
  - ✘ mc_nsigma = 3
- ✔ Sweep Parameters
  - ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
  - ✘ temp = -40.0, 25.0, 125.0, 150.0
- ✔ Extra parameters

● Model dioesdndsx_nova (VA)

- ✔ Input Parameters
  - ✘ mc_runs = 1000
  - ✘ temp = 25 °C
  - ✘ mc_sens = 0
  - ✘ vj = 1.0 V

- ✘ f_ext = 100K Hz
- ✘ sbenchlsf_release = Alpha
- ✘ ams_release = 2018.3
- ✘ mc_nsigma = 3

✔ Sweep Parameters

- ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
- ✘ temp = -40.0, 25.0, 125.0, 150.0

✔ Extra parameters

● Model dioesdvnpn (VA)

✔ Input Parameters

- ✘ mc_runs = 1000
- ✘ temp = 25 °C
- ✘ mc_sens = 0
- ✘ vj = 1.0 V
- ✘ f_ext = 100K Hz
- ✘ sbenchlsf_release = Alpha
- ✘ ams_release = 2018.3
- ✘ mc_nsigma = 3

✔ Sweep Parameters

- ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
- ✘ temp = -40.0, 25.0, 125.0, 150.0

✔ Extra parameters

● Model dioesdvnpn_eg (VA)

✔ Input Parameters

- ✘ mc_runs = 1000

- ✘ temp = 25 °C
- ✘ mc_sens = 0
- ✘ vj = 1.0 V
- ✘ f_ext = 100K Hz
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✔ Extra parameters

● Model dioesdvnpn_eg_nova (VA)

✔ Input Parameters

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- ✘ temp = -40.0, 25.0, 125.0, 150.0

✔ Extra parameters

- Model dioesdvnpn_nova (VA)
  - ✔ Input Parameters
    - ✘ mc_runs = 1000
    - ✘ temp = 25 °C
    - ✘ mc_sens = 0
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    - ✘ mc_nsigma = 3
  - ✔ Sweep Parameters
    - ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
    - ✘ temp = -40.0, 25.0, 125.0, 150.0
  - ✔ Extra parameters
- Model dioesdvpnp (VA)
  - ✔ Input Parameters
    - ✘ mc_runs = 1000
    - ✘ temp = 25 °C
    - ✘ mc_sens = 0
    - ✘ vj = 1.0 V
    - ✘ f_ext = 100K Hz
    - ✘ sbenchlsf_release = Alpha
    - ✘ ams_release = 2018.3
    - ✘ mc_nsigma = 3
  - ✔ Sweep Parameters

- ✘ vj = 5.0, 4.5, 4.0, 3.6, 3.0, 2.5, 2.0, 1.8, 1.6, 1.4, 1.2, 1.0, 0.8, 0.6, 0.4, 0.2, 0.01, -0.1, -0.2, -0.3
- ✘ temp = -40.0, 25.0, 125.0, 150.0

✔ Extra parameters

● Model dioesdvpnp_eg (VA)

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- ✘ temp = 25 °C
- ✘ mc_sens = 0
- ✘ vj = 1.0 V
- ✘ f_ext = 100K Hz
- ✘ sbenchlsf_release = Alpha
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- ✘ mc_nsigma = 3

✔ Sweep Parameters

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- ✘ temp = -40.0, 25.0, 125.0, 150.0

✔ Extra parameters

● Model dioesdvpnp_eg_nova (VA)

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✔ Sweep Parameters

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✔ Extra parameters