CMOS028FDSOI Technology

STI and GATED ESD diodes, with and without Guard Ring for DK1.0.a_RF_mmW models

NOVA

Comparison with ESD 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.

Conditions of simulations

The simulations were done with SBenchLSF Alpha using Eldo simulator 17.1_1.

- Model dioesdndsx_eg_nova (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 = 17.1_1
    - ✘ 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, 0.1, 0.01, -0.1
  - ✔ Extra parameters
- Model dioesdndsx_nova (NOVA)
  - ✔ Input Parameters
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✔ Extra parameters

● Model dioesdvnpn_eg_nova (NOVA)

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- ✘ mc_runs = 1000
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● Model dioesdndsx_eg (ESD)

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  - ✘ f_ext = 100K Hz
  - ✘ sbenchlsf_release = Alpha
  - ✘ ams_release = 17.1_1

- ✘ mc_nsigma = 3
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✔ Extra parameters

Output parameters definitions

- Model(s): dioesdndsx_eg_nova, dioesdndsx_nova, dioesdvnpn_eg_nova, dioesdvnpn_nova, dioesdvpnp_eg_nova, dioesdvpnp_nova
  - ✔ Cj : Junction capacitance at Vj = 1.0V, f = 100KHz.
  - ✔ Ij : Junction leakage current at Vj = 1.0V.

dioesdndsx_eg_nova
Electrical characteristics per geometry

dioesdndsx_eg_nova wrt dioesdndsx_eg @ perim=1.08e-5, area=2e-12, vj=2.0, nfing=10, temp=25.0

NOVA wrt ESD

	ESDWC	TT	ESDBC
Cj [fF]	39.46 -0.4%	30.35 -8.6%	21.25 -20.6%
Ij [pA]	0.14 -64.3%	0.94 -87.0%	5.93 -95.6%

dioesdndsx_nova
Electrical characteristics per geometry

dioesdndsx_nova wrt dioesdndsx @ perim=1.08e-5, area=2e-12, vj=2.0, nfing=10, temp=25.0

NOVA wrt ESD

	ESDWC	TT	ESDBC
Cj [fF]	44.54 6.6%	34.26 6.6%	23.98 6.6%
Ij [pA]	7.93e-02 -32.0%	0.79 -32.0%	7.93 -32.0%

dioesdvnpn_eg_nova
Electrical characteristics per geometry

dioesdvnpn_eg_nova wrt dioesdvnpn_eg @ perim=1.08e-5, area=2e-12, vj=2.0, nfing=10, temp=25.0

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Electrical characteristics per geometry

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NOVA wrt ESD

	ESDWC	TT	ESDBC
Cj [fF]	41.74 -0.1%	32.1 -11.0%	22.47 -26.1%
Ij [pA]	25.2 2760.9%	149.1 934.4%	730.8 208.0%

dioesdvpnp_nova
Electrical characteristics per geometry

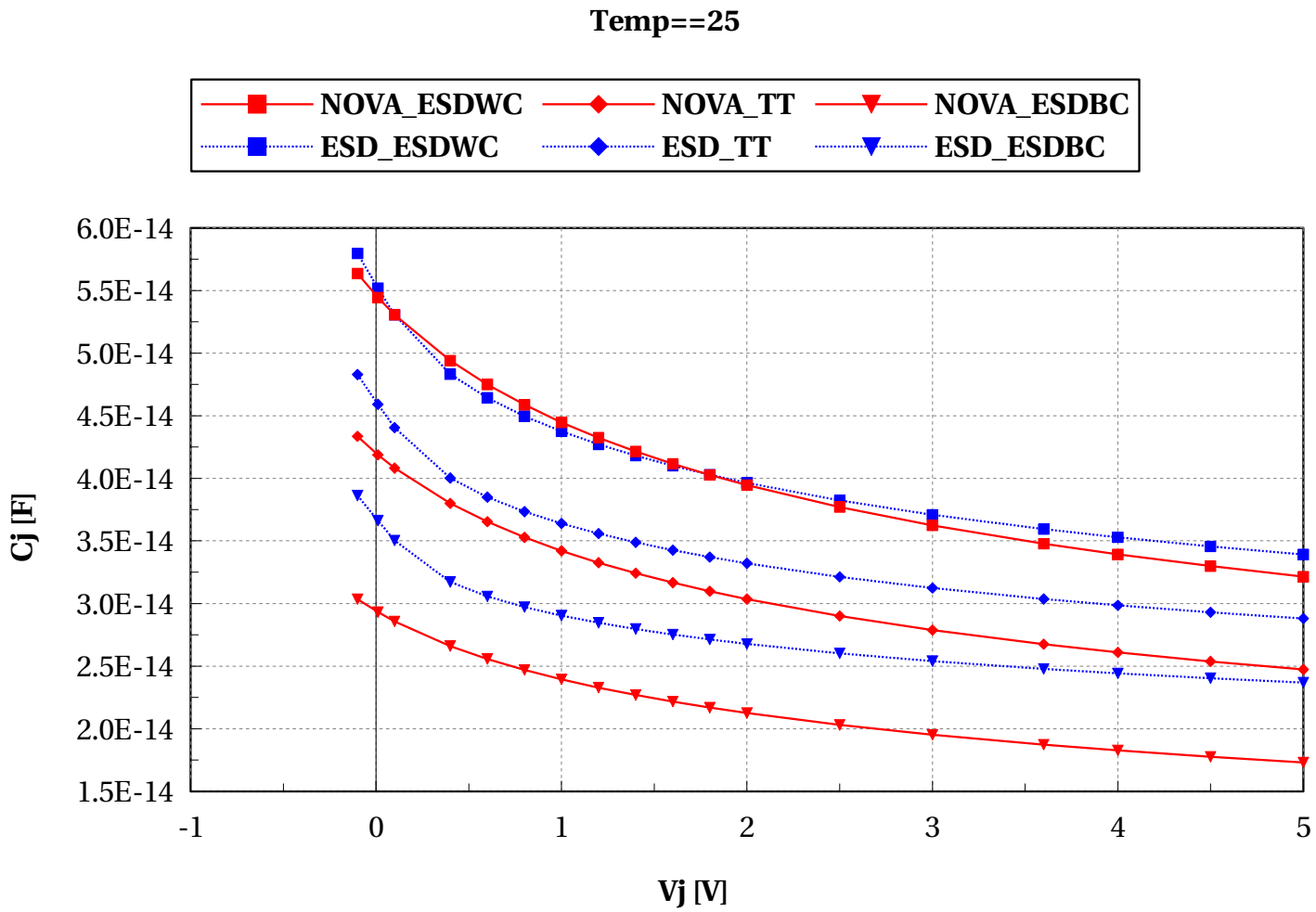
dioesdvpnp_nova wrt dioesdvpnp @ perim=1.08e-5, area=2e-12, vj=2.0, nfing=10, temp=25.0

NOVA wrt ESD

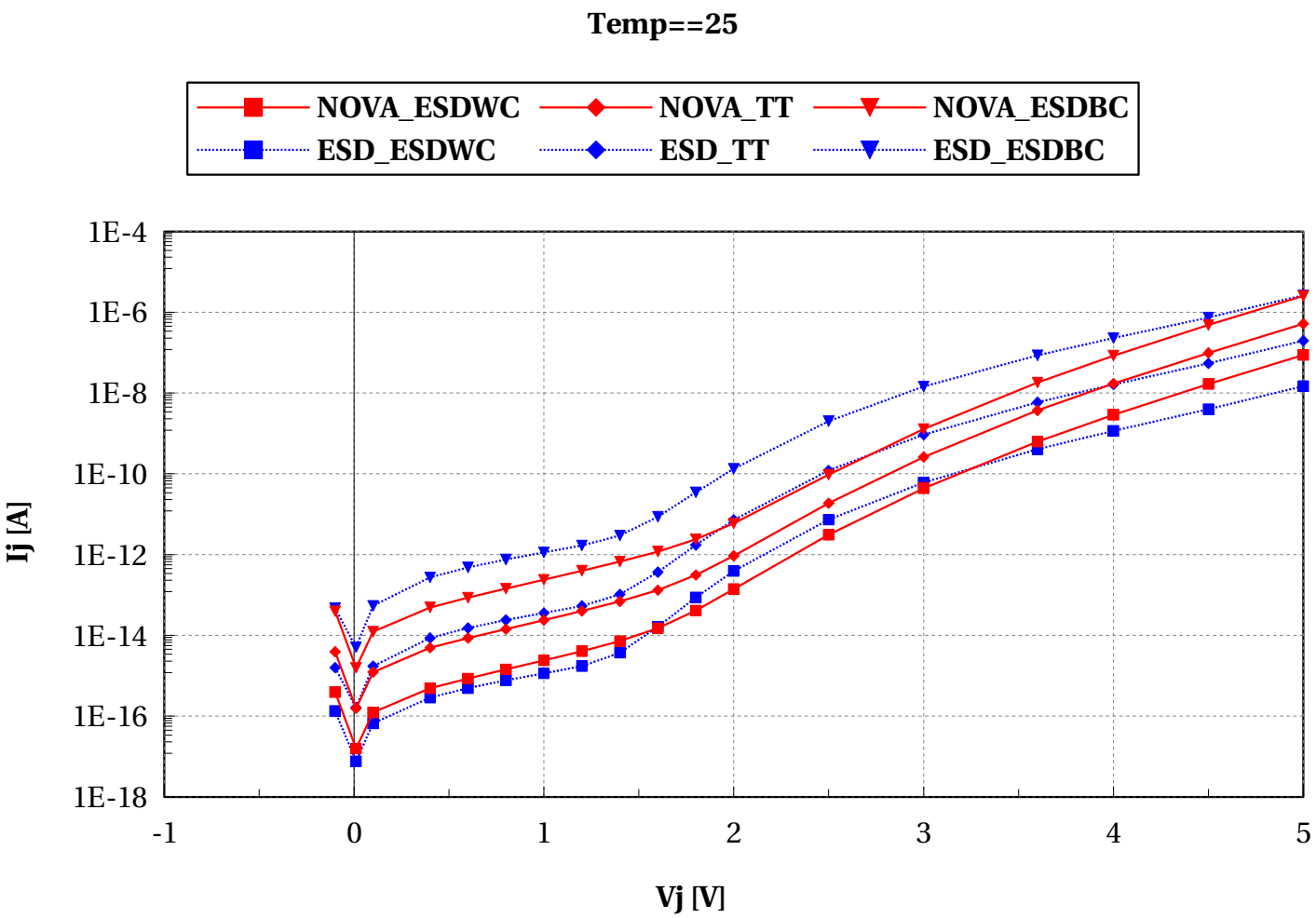
	ESDWC	TT	ESDBC
Cj [fF]	30.52 5.8%	23.47 5.8%	16.43 5.8%
Ij [pA]	1.74e-02 893.8%	0.17 900.2%	1.74 900.9%

dioesdndsx_eg_nova
Electrical characteristics scaling

dioesdndsx_eg_nova, Cj [F] vs Vj [V]

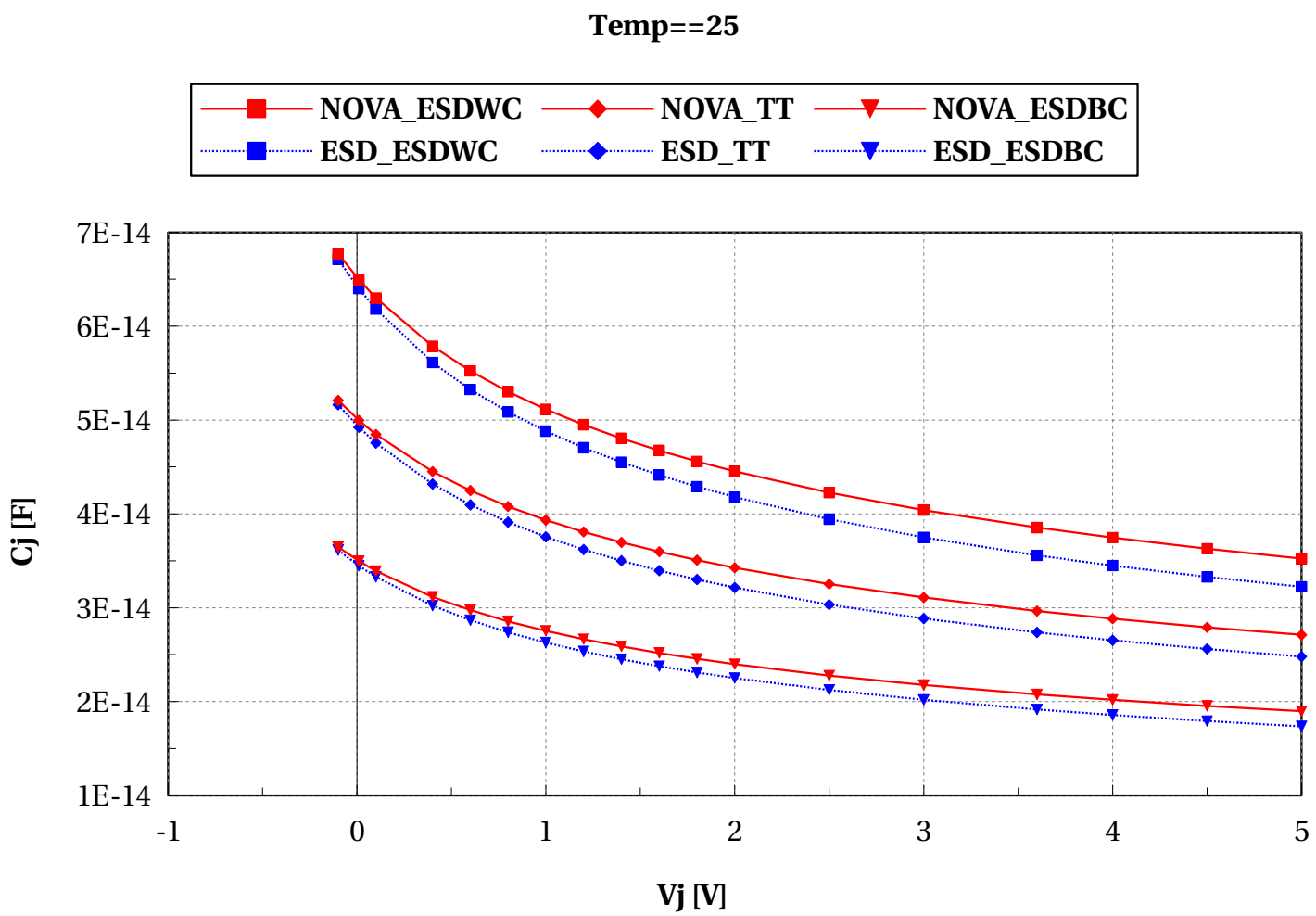


dioesdndsx_eg_nova, Ij [A] vs Vj [V]

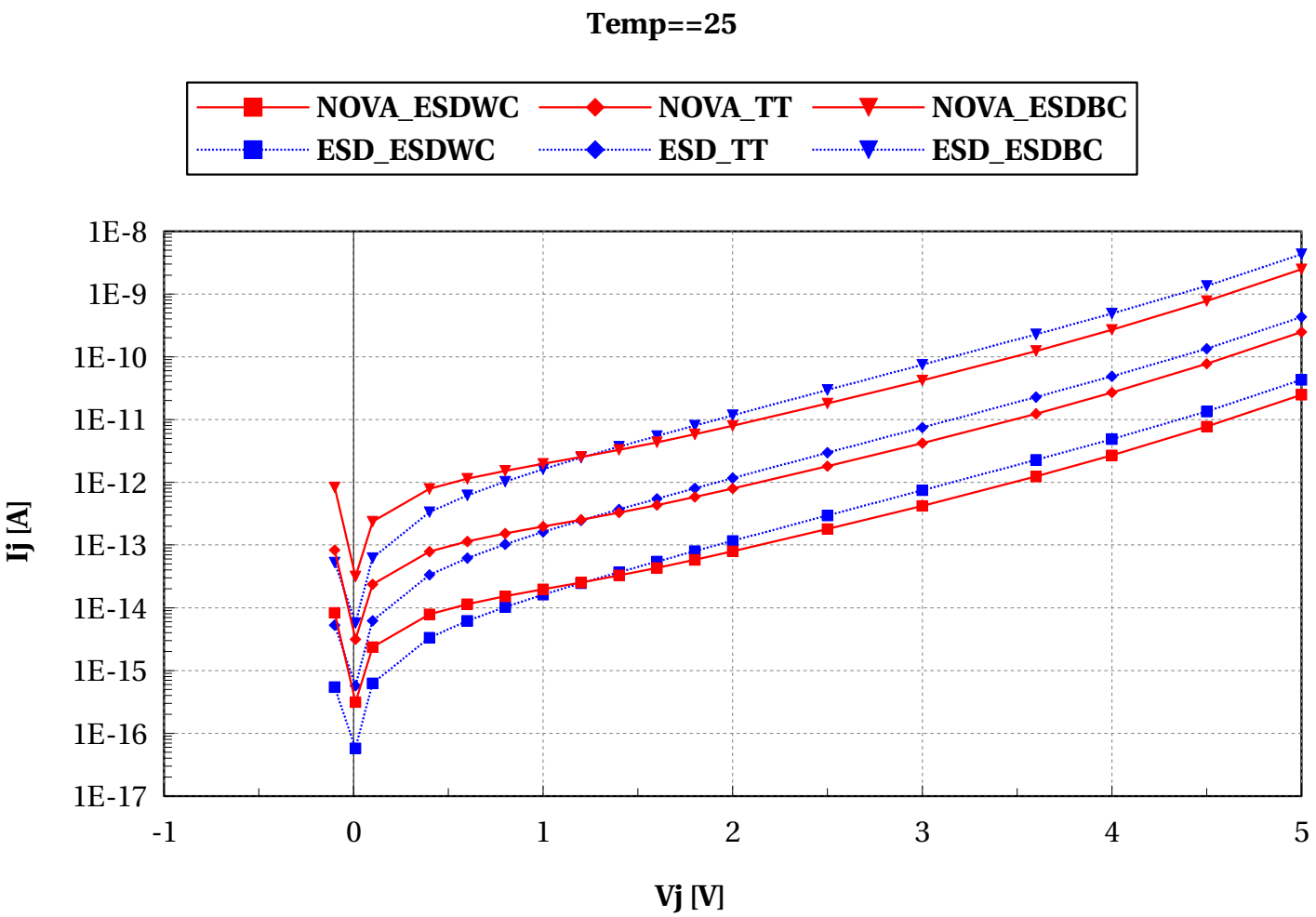


dioesdndsx_nova
Electrical characteristics scaling

dioesdndsx_nova, Cj [F] vs Vj [V]

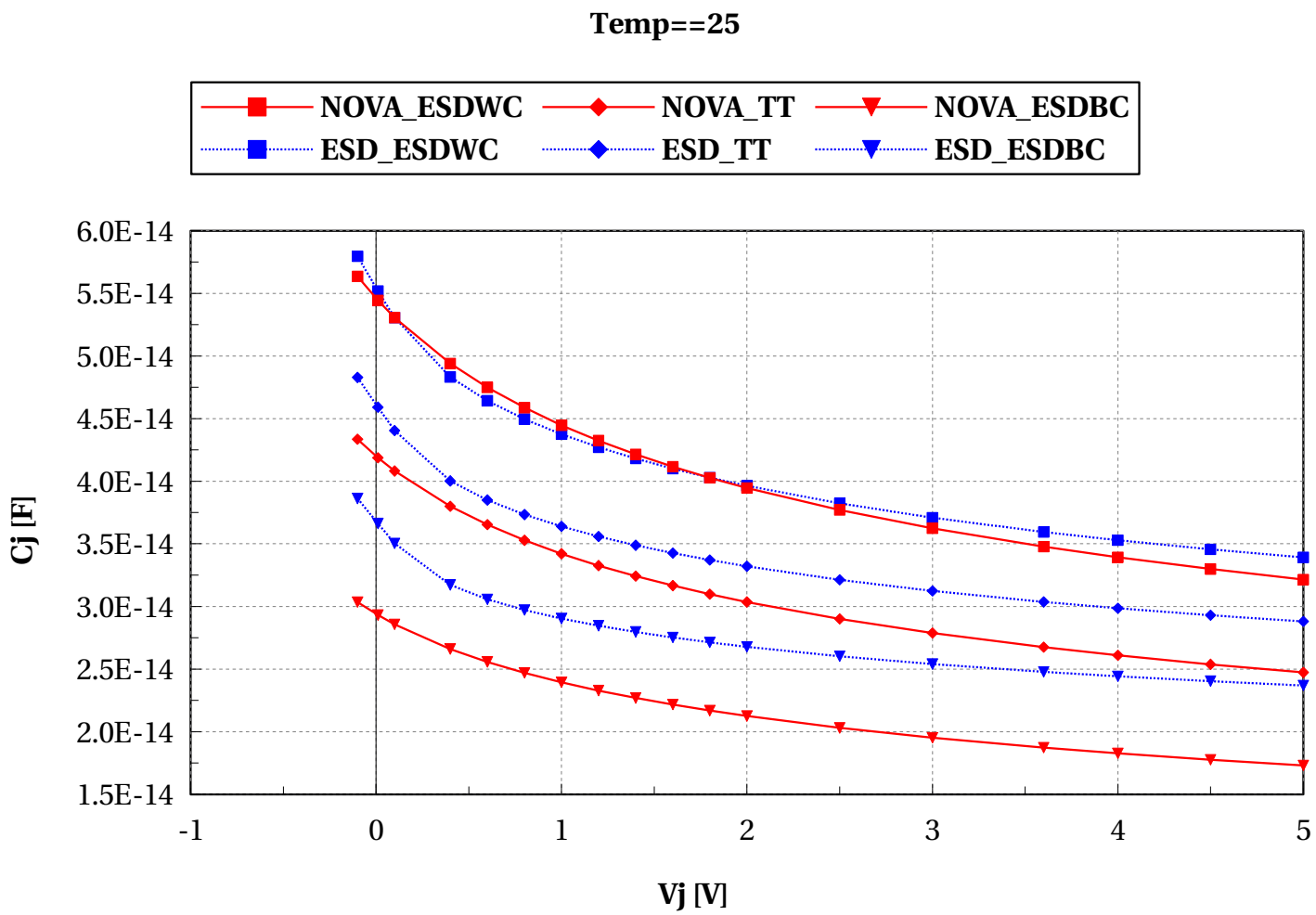


dioesdndsx_nova, Ij [A] vs Vj [V]

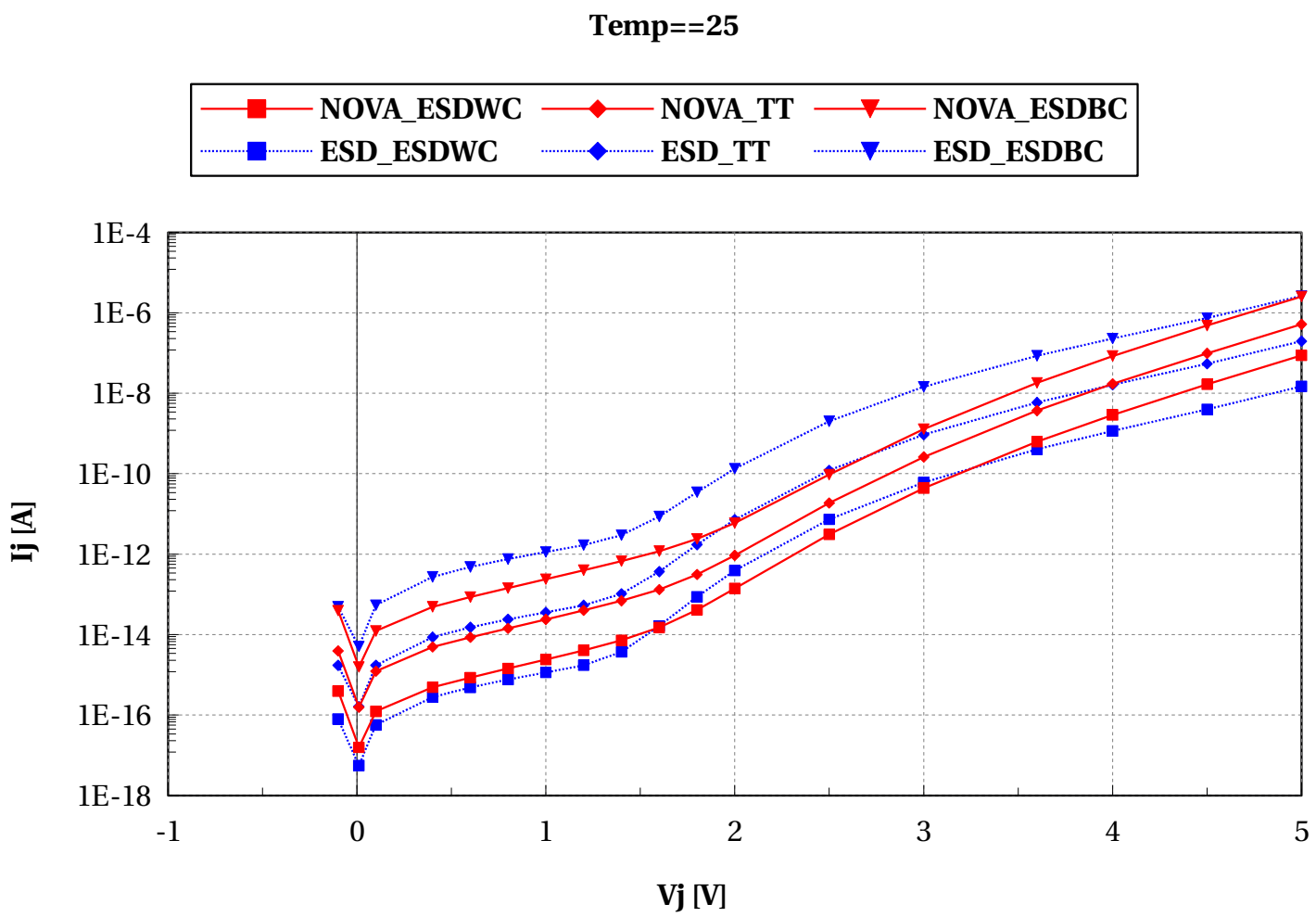


dioesdvnpn_eg_nova
Electrical characteristics scaling

dioesdvnpn_eg_nova, Cj [F] vs Vj [V]

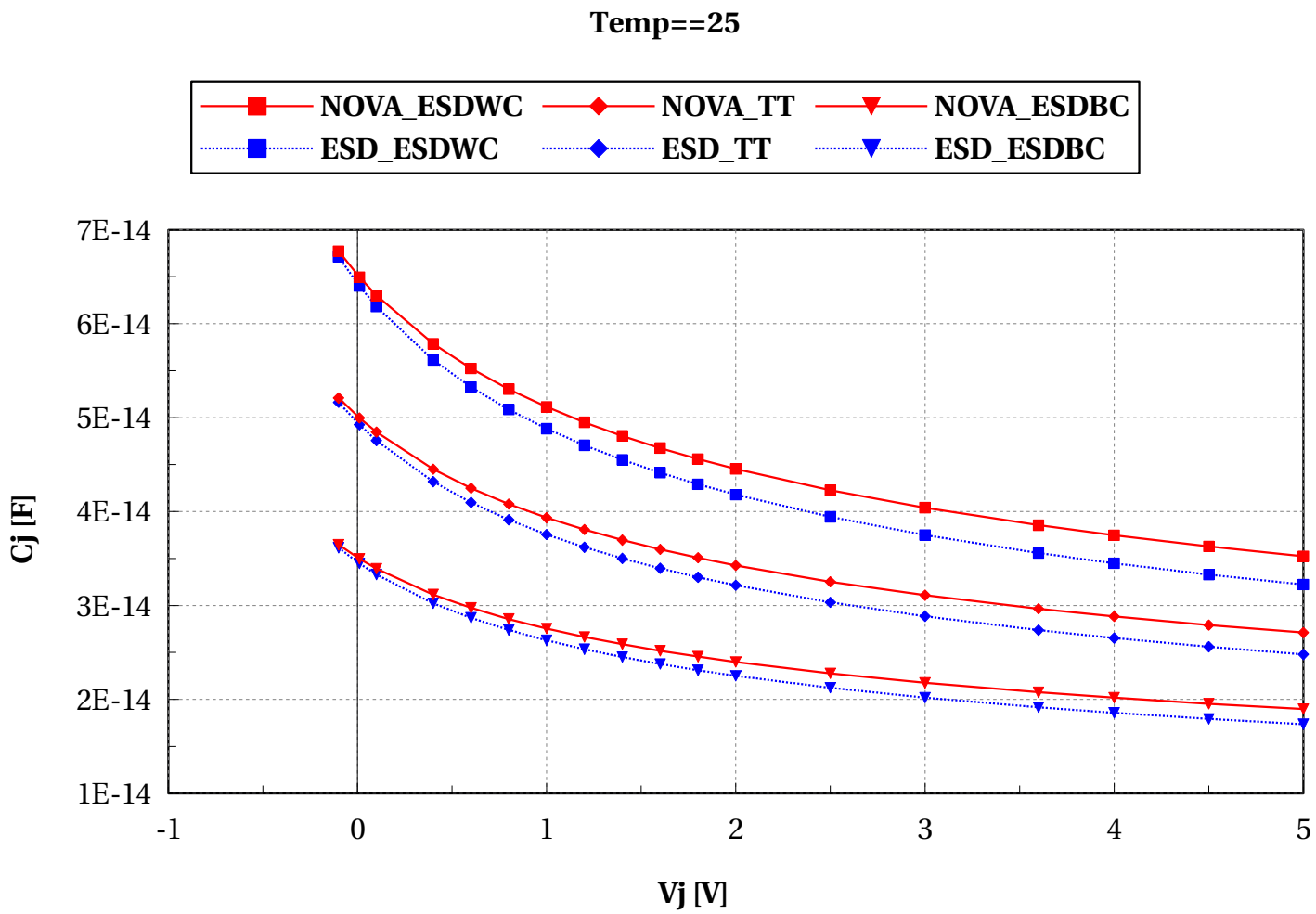


dioesdvnpn_eg_nova, Ij [A] vs Vj [V]

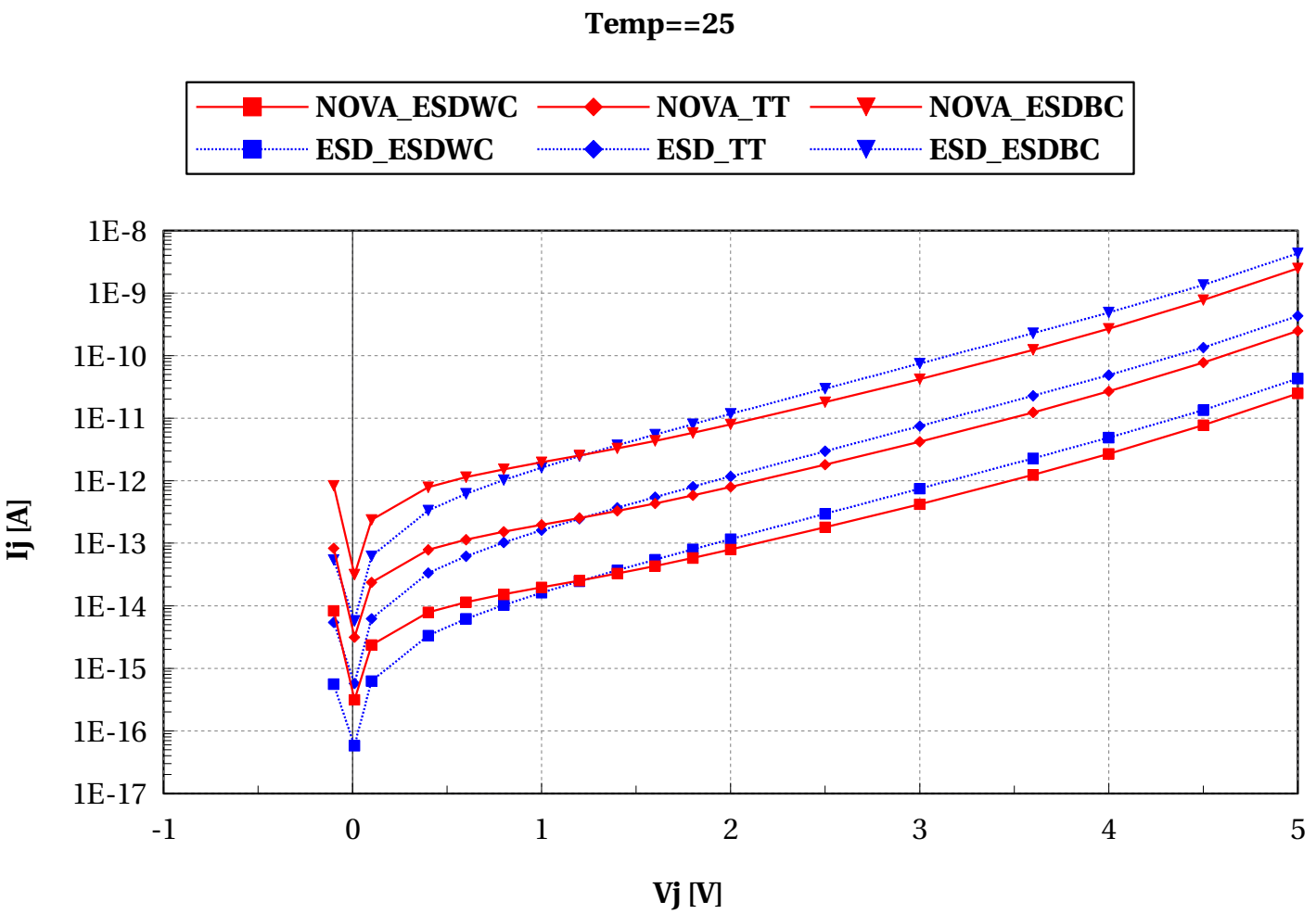


dioesdvnpn_nova
Electrical characteristics scaling

dioesdvnpn_nova, Cj [F] vs Vj [V]

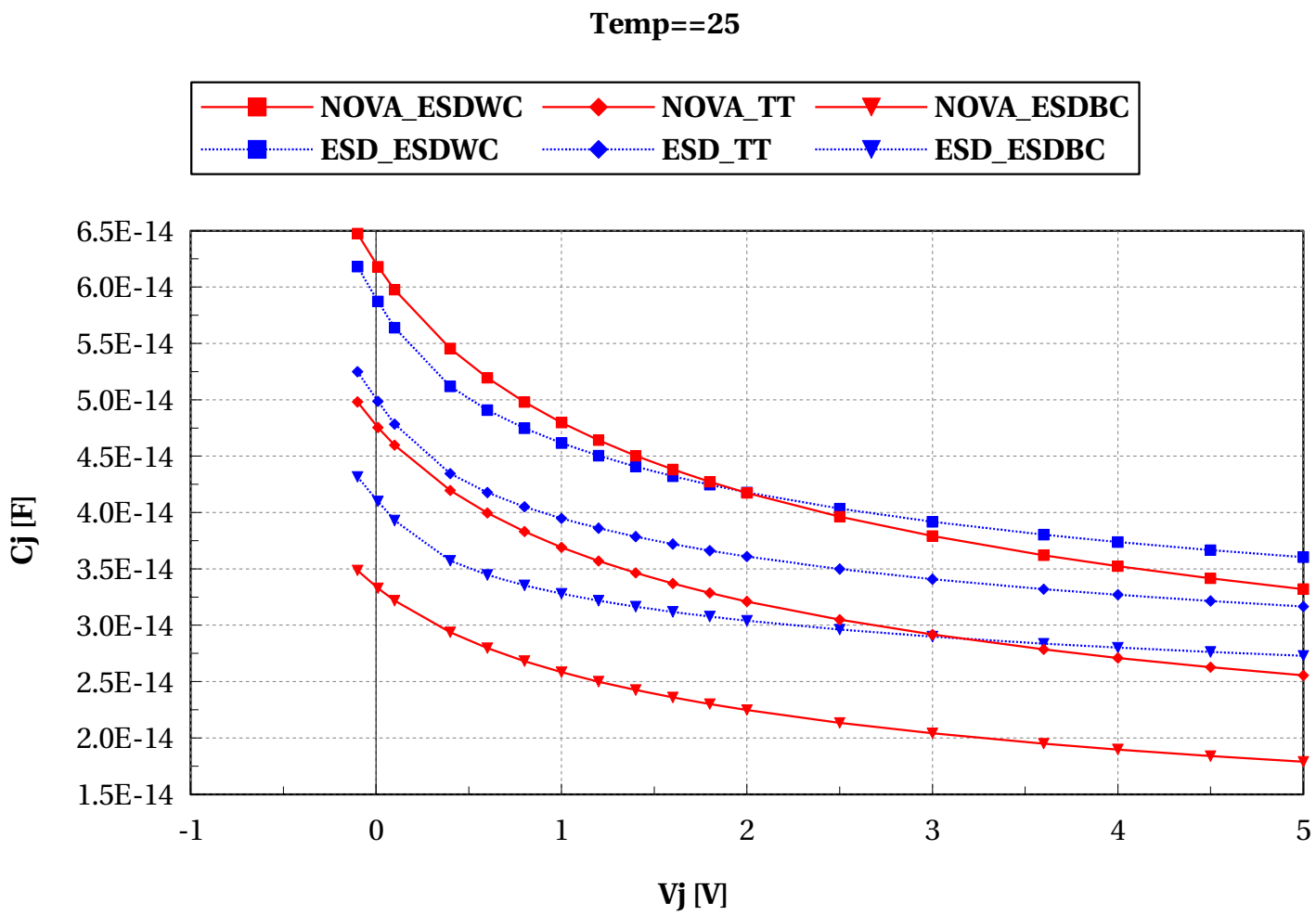


dioesdvnpn_nova, Ij [A] vs Vj [V]

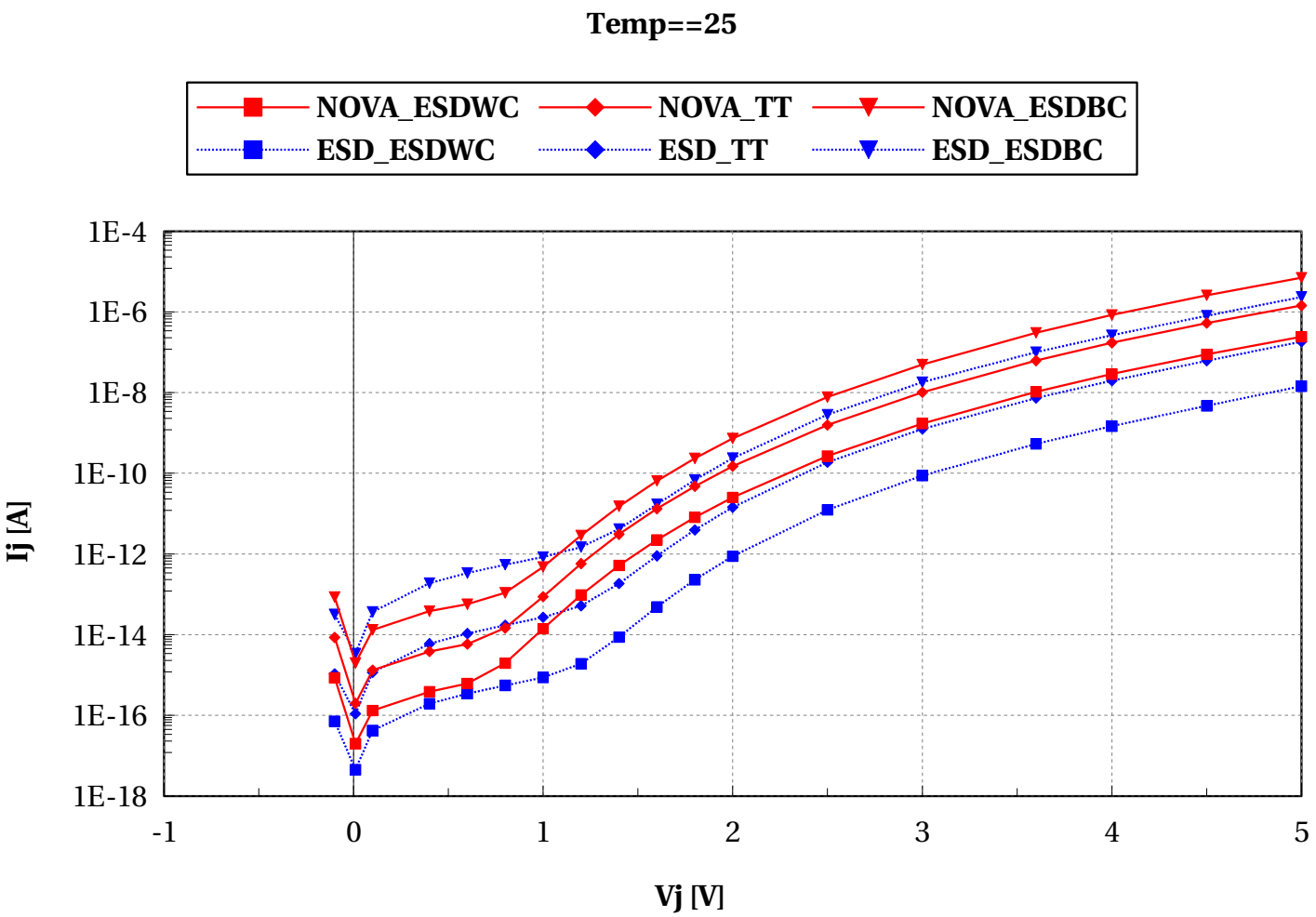


dioesdvpnp_eg_nova
Electrical characteristics scaling

dioesdvpnp_eg_nova, Cj [F] vs Vj [V]



dioesdvpnp_eg_nova, Ij [A] vs Vj [V]



dioesdvpnp_nova
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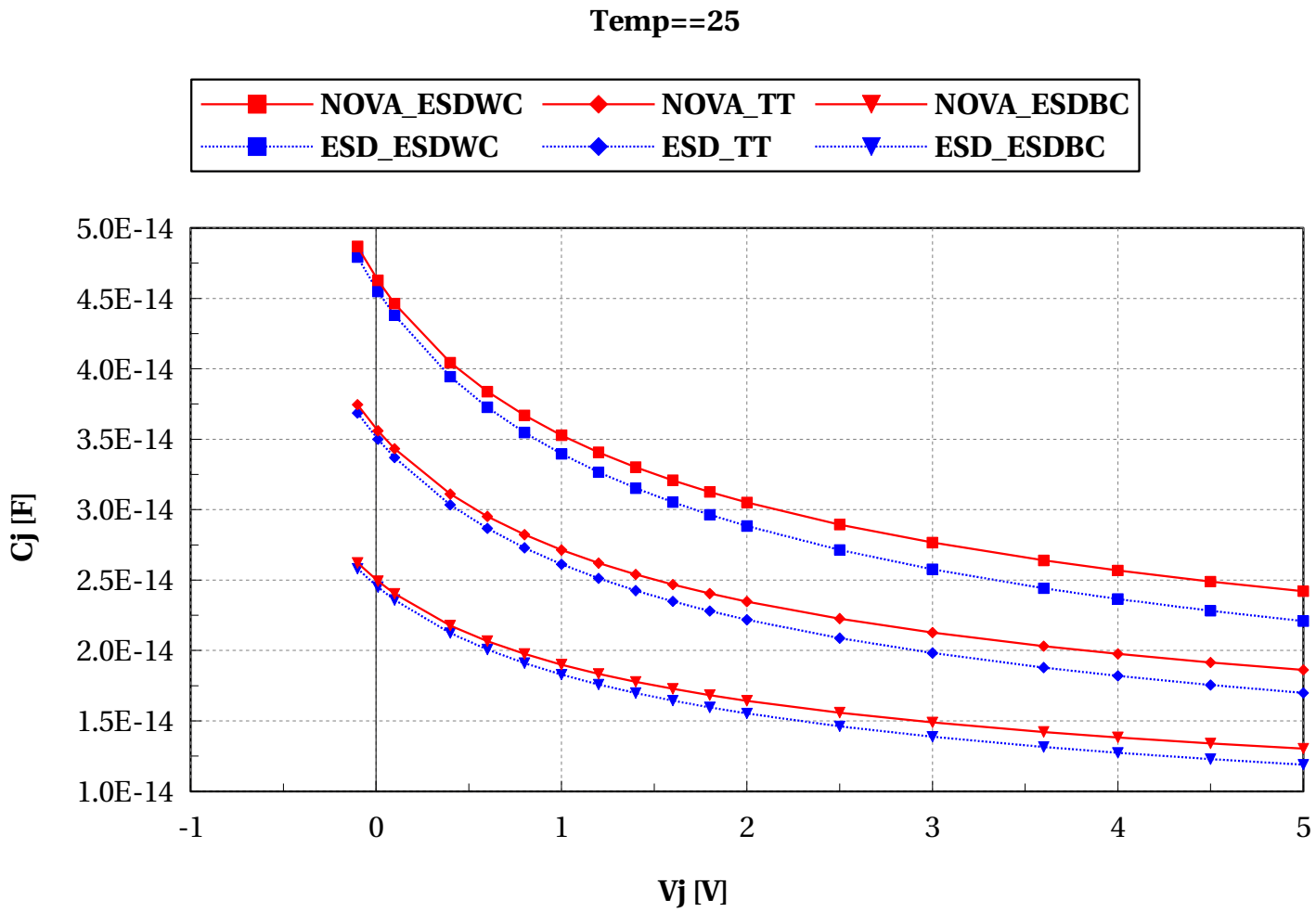

dioesdvpnp_nova, Ij [A] vs Vj [V]