Electronics & Comm. Dept.
Faculty of Engineering
Cairo University
2023-2024

قسم الالكترونيات و الاتصالات
كلية الهندسة
جامعة القاهرة

ELC4005: Selected Topics in Electronics I
EECS331: Advanced Topics in Electronics I
(Assignment 2)

Characterize the thin-oxide RF NMOS & PMOS devices available in TSMC 65nm technology for RF/mm-wave design by plotting the following:

1. F_t & F_{MAX} versus current density for $|V_{DS}|$=0.5, 0.8, 1, & 1.2V. Find J_{pFT} and J_{pFMAX}
2. G_{MAX} @ 28, 37GHz versus current density for V_{DS}=1.0V
3. NFmin@ 28, 37GHz versus current density for V_{DS}=1.0V
4. Repeat 1 to 3 after running RC extraction for the devices (make sure all the parasitics up to the top metallization with the routing of the 2 multipliers are included) and replot on the same graphs only for V_{DS}=1.0V
5. Show the testbench used to generate the results

For all devices use L_{min}, W_f can be anything between 1um to 3um, & N_f = 32 & M=2.

Assignment due date is **10th Nov. 2024**. You can work in groups of 2.