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Assessment of device RF performance and behavior using TCAD simulation

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Introduction
Characterization above 110 GHz is still a challenge. So TCAD simulation has been done to estimate the measurements.

TCAD Calibration
1. Device geometry as captured in the TEM image is reproduced in TCAD and simulated using verified models.
2. The device FoM are calibrated comparing with measurements.

Results

The comparisons are done w.r.t bias variation and device dimension variation.

Conclusions
1. No clear upper frequency limit up to which the measurements are representing the intrinsic transistor (after de-embedding).
2. An urgent need for improvement of test structure design, calibration methodologies and de-embedding procedures when entering the THz domain.

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