GTS TCAD Framework
A Suite of Tools Providing the Answers You Need

Optimization • Reliability & Variability • Path-Finding • DTCO

Working Environment, Project Management, DOE

Process Emulation
Advanced topology simulation (Level-set)
Efficient moment-based implantation model
Anisotropic epi-growth through direction-dependent rates
Realistic geometries
Inclusion of parasitics
Short Runtime

Device and Circuit Simulation
General-purpose semiconductor device simulator
Reliability (BTI, HCD, SET, SEU, SER, etc.)
Variability (RDD, MGG, LER, etc)
NVM (FG, SONOS, 3D-NAND)
FD-SOI (N28, N14)
Performance optimization

Structure Generation / Editing
Template-based structure generation
3D device CAD for geometry and doping
Unstructured meshes for modeling true geometry
Automatic refinement
Customizable templates
Import of 3rd-party files

Nano Device Simulator
Physical device simulation
FinFET (14/10nm nodes)
Stacked nano-wires (7/5/3nm nodes)
Tunneling FETs
Novel channel materials
Stress, strain
Crystal orientation
Import ab-initio data

Compatible
Integration of 3rd-party software
Import / export of industry-standard files with native grid (full accuracy)

Fully Customizable
SDK for easy implementation of custom models with full access to internal models and solvers
Tools integrable in 3rd-party workbenches

Powerful Computational Infrastructure
Automatic optimization of resource assignment in grid and cloud environments

Predictions based on physics.
DOE, Optimizer, Scripting, Distributed Computing (Grid & Cloud)

Analog Devices, RF Applications, TFTs, Power Devices, Wide band-gap (SiC, GaN)

NOR Flash, NAND Flash, SONOS, 3D-NAND
Program / erase, endurance, data retention, variability

Variability (RDD, MGG, LER, GER, Process)
Statistical device & circuit analysis and optimization

Reliability (BTI, HCD, TDDDB, RTN)
Radiation effects (SET, SEU, TID)

Emerging Devices / Path Finding
Nano-wire transistors, novel materials (SiGe, III/V, GeSn), TFETs; Physical device simulation (SB-BTE, BTBT)

Non-Volatile Memory

2D/3D Device & Process Simulation
Planar CMOS, FD-SOI, FinFET, nanowire transistors

Circuit / Mixed Mode Simulation
SRAM full-cell analysis, parasitics extraction

DOE, Optimizer, Scripting, Distributed Computing (Grid & Cloud)