
Jedat, DaouXilicon and Legend Design Jointly Provide the True LCD Panel Simulation

SANTA CLARA, Calif.-Jedat Inc., DaouXilicon Inc., and Legend Design Technology Inc. today announced a breakthrough technology for LCD Panel Simulation with the release of their joint solution: LCD design environment Asca, WLModeler and Simface from Jedat, LCD modeling module ExpertLCD from DaouXilicon, and LCD simulator MSIM from Legend Design Technology. The joint solution from three partnered companies enables accurate simulation of LCD panel with time variant LC model. Through the seamless link between MSIM LCD circuit analysis and ExpertLCD model extraction, LCD designers can analyze the simulation results to spy those unwelcome cross-talk, flicker and uniformity issues.

To improve the productivity in LCD panel design and simulation, Jedat has provided a complete design environment consisting of (1) Asca for schematic capture, which defines pixel equivalent circuit including dynamic capacitance of liquid crystal. (2) WLModeler for netlist reduction, which generates the reduced LCD panel netlist for circuit simulation. The wire RC back-annotation is also available. (3) Simface for simulator interface, which creates stimuli, conditions and controls for circuit simulation. Both Legend's MSIM circuit simulator and DaouXilicon's ExpertLCD modeling module have been integrated into Jedat's package to become a total solution.

In Liquid Crystal Display (LCD), the LC (Liquid Crystal) is aligned to the direction of electric field in pixel because of LC's anisotropic characteristic. By simulating the time-dependent LC behavior and transmittance of a pixel, DaouXilicon's ExpertLCD accurately extracts dynamic capacitance (C_{lc}) between pixel and common electrode. ExpertLCD's excellent performance has been well proven in display market for decades. Since no other circuit simulators have considered dynamic capacitance for high accuracy yet, the joint solution of ExpertLCD and MSIM circuit simulator will be the first to consider the dynamic capacitance and optical characteristic at each pixel. The whole package will enable users to optimize LCD panel design in both optical and electrical aspects simultaneously.

Each pixel in LCD cell is normally modeled by a TFT, a storage capacitor and a LC capacitor (C_{lc}). Conventionally, the LC capacitor is modeled statically by polynomial or behavior equations. However, the static model cannot reflect the reality of time-variation during simulation. To enable the dynamic modeling, Legend's MSIM circuit simulator has successfully built the protocol for co-simulation with the LC capacitor model extraction module from DaouXilicon. Periodically, MSIM will pass the simulation conditions to LC capacitor model API and then retrieve the updated LC capacitor model based upon the field solver. This complete co-simulation toolset has been thoroughly proven accurate and efficient.

Product quality in LCD industry is very critical, with the high expectations for brightness, contrast, response time and power consumption. Our joint solution for accurate and fast LCD panel simulation has enabled not only detecting possible malfunctions but also optimizing various design parameters in product development stage. We have all committed to provide a premier solution with highest quality to meet the demands in LCD market.

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