

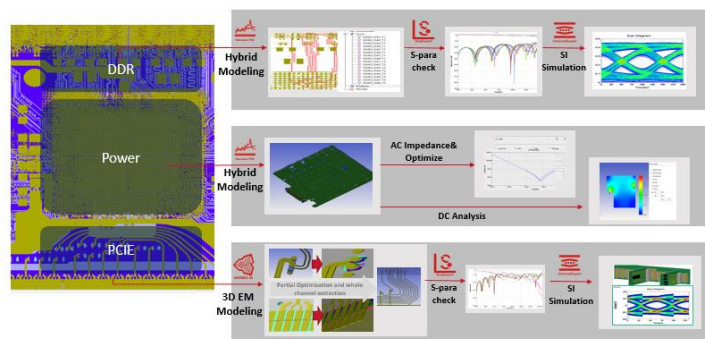
High-Speed Digital SI/PI Simulation Platform

Highlights

- 1 With the development of emerging technologies, high-speed digital standards are evolving rapidly and bring new design challenges.
- 2 With channel rates evolving from 28 Gbps NRZ to 112 Gbps PAM4, all impedance discontinuities will cause more signal reflections and distortions, and multi-channels will bring more serious crosstalk noise.
- 3 DDR5 increases memory density to a potential maximum of 6.4 Gbps and doubles DDR4's frequency, which brings a number of data transmission performance enhancements, as well as new design challenges.
- 4 ViaExpert can quickly complete 3D model creation and optimization of interconnect structures
- 5 ChannelExpert can quickly build multi-channel models and evaluate their metrics, like RL, IL, ICN, ILD, COM, etc.
- 6 All SI/PI analysis for high-speed design can be implemented on this simulation platform, including S-parameters extraction, eye diagram analysis, AC impedance analysis, DC IR-drop analysis, etc.

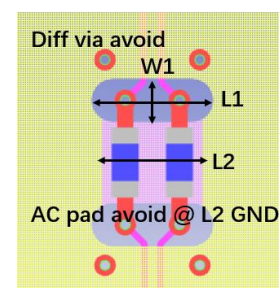
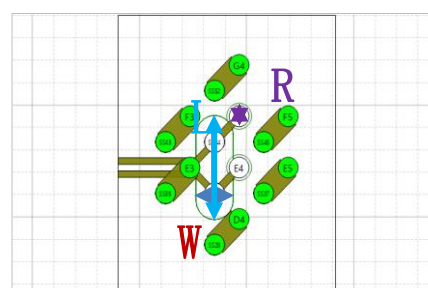
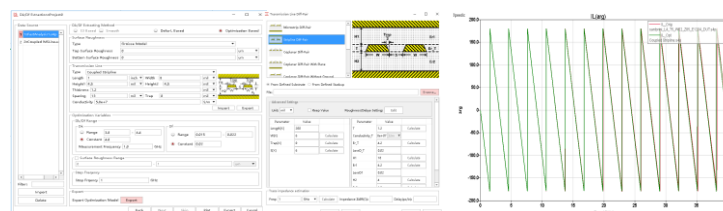
Overview - High-Speed Serial/Parallel Interfaces

- Xpeedic provides a comprehensive platform supporting high-speed serial/parallel interfaces, including
 1. Channel interconnect modeling and optimization
 2. DDRx bus modeling and analysis
 3. High-speed Serdes bus modeling and analysis
 4. PDN system power integrity analysis



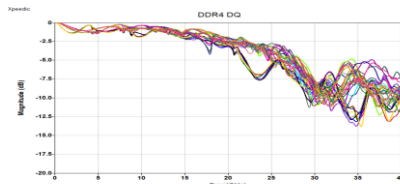
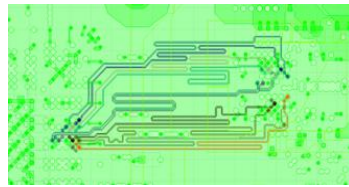
Channel Interconnect Modeling and Optimization

- Channel interconnect such as transmission line, via, BGA fan-out, AC coupling capacitance can be quickly modeled and optimized

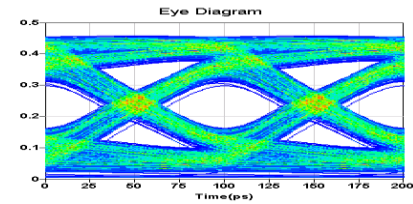


DDRx Bus Modeling and Analysis

- Fast DDRx S-parameter extraction in Hermes PSI
- DDRx bus crosstalk histogram calculation in SnpExpert
- Quick DDRx bus model creation for waveforms and eye diagrams in ChannelExpert

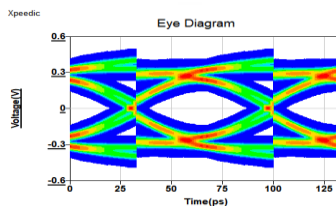
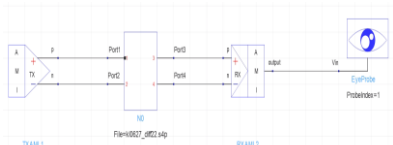
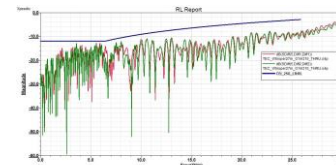
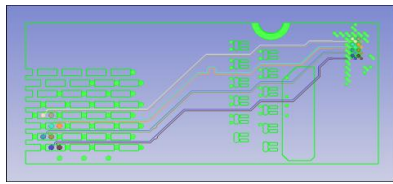


Pin Name(S1)	Signal Name(S2)	Pin Name(S3/C4)	Signal Name(S4/C5)
1	Pin1	C2	DDR4DQ0
2	Pin2	C3	DDR4DQ1
3	Pin3	C4	DDR4DQ2
4	Pin4	C5	DDR4DQ3
5	Pin5	C6	DDR4DQ4
6	Pin6	C7	DDR4DQ5
7	Pin7	C8	DDR4DQ6
8	Pin8	C9	DDR4DQ7
9	Pin9	C10	DDR4DQ8
10	Pin10	C11	DDR4DQ9



High-Speed Serdes Bus Modeling and Analysis

- Accurate S-parameter extraction for Serdes channel in Hermes 3D
- Compliance check in SnpExpert including IL, RL, ILD, Crosstalk, COM, etc.
- Statistical eye-diagram analysis in ChannelExpert



PDN System Power Integrity Analysis

- Hermes PSI provides both AC impedance and DC IR-drop simulation
- AC impedance simulation can optimize the value, location of decoupling capacitor to stabilize the power fluctuations at the chip pins within the noise tolerance
- DC IR-drop simulation can check the amount of voltage drop on a power system by given DC current consumption.

