Connector Via Footprint Optimization for 25Gbps Channel Design

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25Gbps Channel Design Challenge



- Via discontinuity has significant impact on channel SI.
- Via modeling involves multiple parameters.

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 Accurate and fast via modeling using 3D full-wave EM solver is a must for high speed channel design with IBIS-AMI.



Vias in a Channel



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Via Modeling in Channel

- Challenge: Optimization channel performance involved many variables.
- Via itself has many parameter variables
 - Antipad size
 - Trace entry/exit layer
 - Backdrill depth

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Via Modeling in Channel (cont'd)





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D Exit Layer Impact



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Backdrill Impact



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O Antipad Size Impact

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Channel Performance: S-parameter



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Channel Performance: TDR



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Multi-Channel with Via Crosstalk



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Via Model with Crosstalk



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Channel Performance vs OIF CEI-25G-LR



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Summary

- Via modeling is essential to high speed channel signal integrity. Optimal channel design requires via optimization.
- Via modeling is traditionally time consuming.
 With multiple parameters involved, it becomes even more challenging.
- Accurate and fast via modeling in this work makes the channel optimization possible, such as IBIS-AMI.

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