Suggested Packages for 100GEL

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07/25/2018

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Suggested PKG Model Cases

	Length	Ball Side Discontinuity	Xtalk (Suggest using random noise)	Suggested Decision & (Priority)
PHY **(WIP)**	8-12mm	Low Pitch BGA	High	A Must have for high reflections & Xtalk (1)
Typ Switch	20mm	1mm pitch BGA	Medium	Check if covered by any of the 30mm (2)
High Lane Count Switch up to 70x70mm **(WIP)**	30mm	1mm pitch BGA	Low	Provide an initial model to check for impact (1)
High Lane Count Switch > 70x70	30mm	LGA	Low	Discuss whether should be covered (3). if yes… How? If not… how to manage the impact?

Future Large 100G/lane Devices

- Big packages will be one possible target implementation for 100Gbps/lane
- Need to consider the implications of a decision not to model future LGA
- https://www.ectc.net/files/68/ECTC_2018_Luncheon_Keynote_BCOoi_Broadcom.pdf

IC Package Need	2018	2022	Challenges
Data Rate 	56 Gbps	112 Gbps	• Channel Insertion Loss & Return Loss • Crosstalk • Power Integrity
Body Size 	67.5mm x 67.5 mm	> 90mm x 90mm	• Package Warpage • Board Level Reliability • Socket Cost & Performance Penalty
2.5D Integration 	Up to 5 dies	More/Larger dies (incl. Optical)	• Interposer Reticle Size • Assembly challenges • More Memory BW
Micro-bump Pitch 	40um	<=30um	• Assembly challenges • Routing challenges
Power Dissipation 	300 W	> 500 W	• Thermal Interface Material • Heatsink Solutions

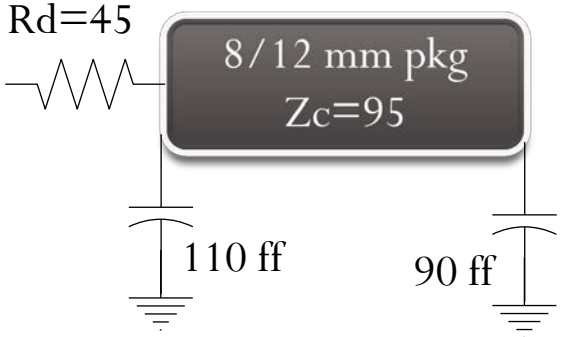
Nominal or WorstCase?

- We may consider starting with a nominal/slight worst case parameters package and evaluate the manufacturing/implementation variance COM impact
- Impact of model simplicity (for example having multiple discontinuities integrated into one) once proven should be:
  - Taken as a part of the COM margin

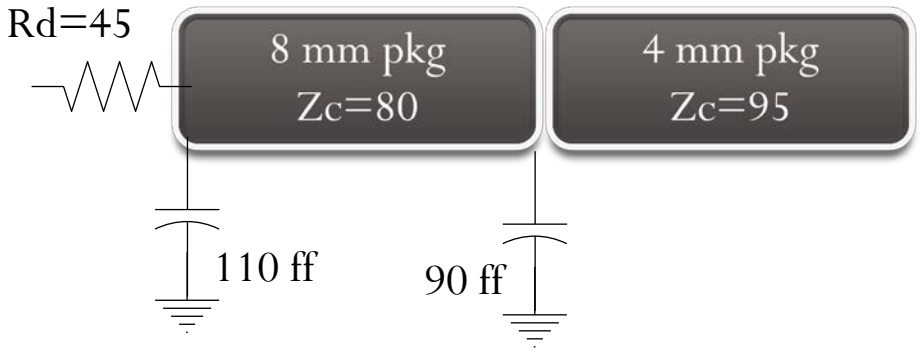
  or
  - Suggest a model correction
- Crosstalk per PKG case suggested to be implemented as random noise with the applicable σ

Single Ended Package Model WIP

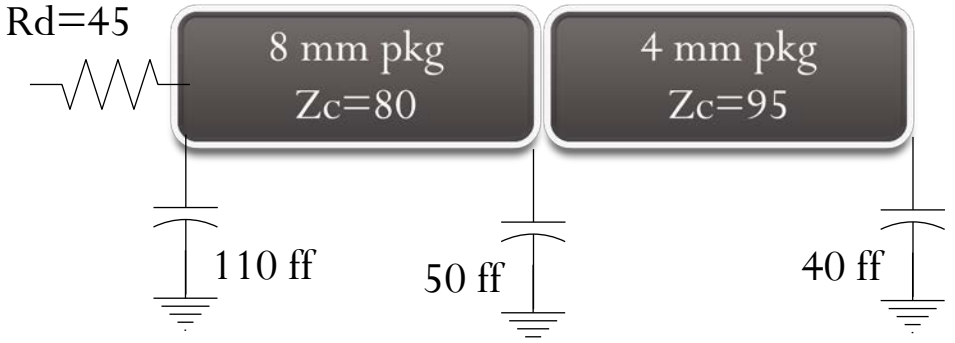
Option A
Two Test Cases



Option B
One Test Case



Option C
One Test Case



- Should values for alpha1, alpha2, and tau be adjusted?
- What should the values for Z, C, and lengths be for these?

Thank You!