Case study of IBIS V4.1 by JEITA EDA-WG

Part-2 :Questions about IBIS V4.1

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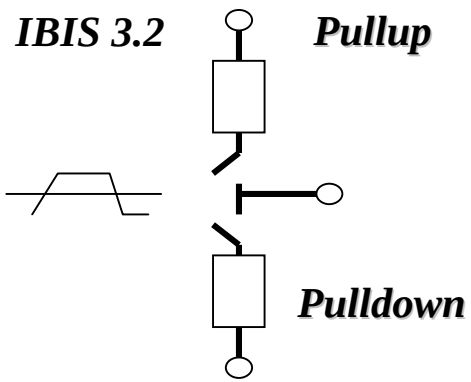
Q1

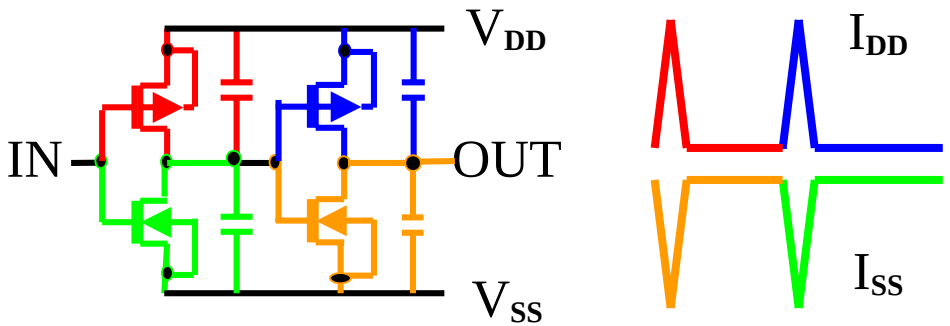
How can we hide transistor parameters in IBIS 4.1 SPICE3, if we want to describe a slightly complex equivalent circuit model using transistors.

One solution may be SPICE like transistor models in *AMS, but it may not so accurate. Car electronics also needs this to describe power transistors. How can we describe IMIC model in IBIS 4.1 *AMS/SPICE 3?



Power/Ground Current Model
with loading effects of power/ground/signal

4 transistors(2 stage Inverters)



Q2

How can we describe S-parameter models in IBIS 4.1 instead of ICM?
One solution may be a use of an equivalent expression in IBIS 4.1 SPICE3.
Can IBIS 4.1 *AMS describe S-parameters (by Laplace/Z-Transform)?

Q3

Is it OK to describe an IBIS model by mixture of *AMS and SPICE?

Q4

How can we describe an IBIS model for one pin for two sets of IBIS output models?

Q5

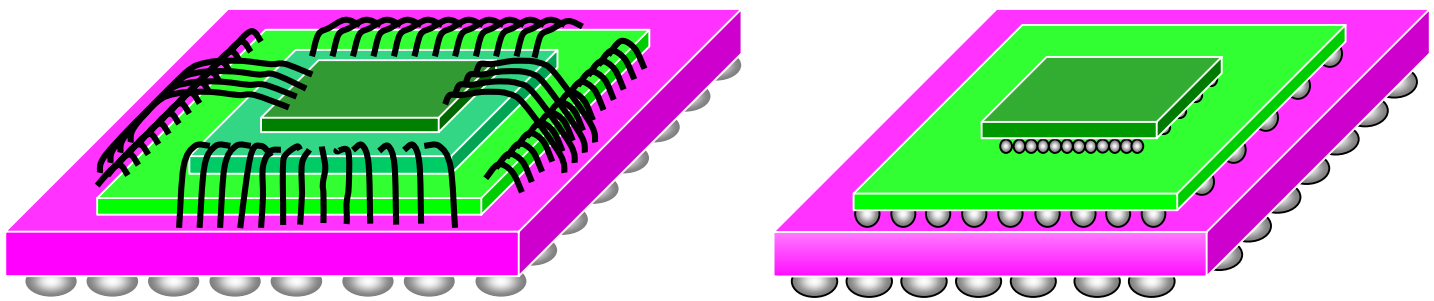
How can we describe partial differential equations in *AMS?

Transmission lines can be characterized by partial differential equations. SPICE/*AMS seems to treat ordinary differential equations.

$$-\frac{\partial V(x,t)}{\partial x} = R(x)\cdot I(x,t) + L(x)\cdot\frac{\partial I(x,t)}{\partial t}$$
$$-\frac{\partial I(x,t)}{\partial x} = G(x)\cdot V(x,t) + C(x)\cdot\frac{\partial V(x,t)}{\partial t}$$

Q6

How can we describe SIP model (System in package)?



Q7

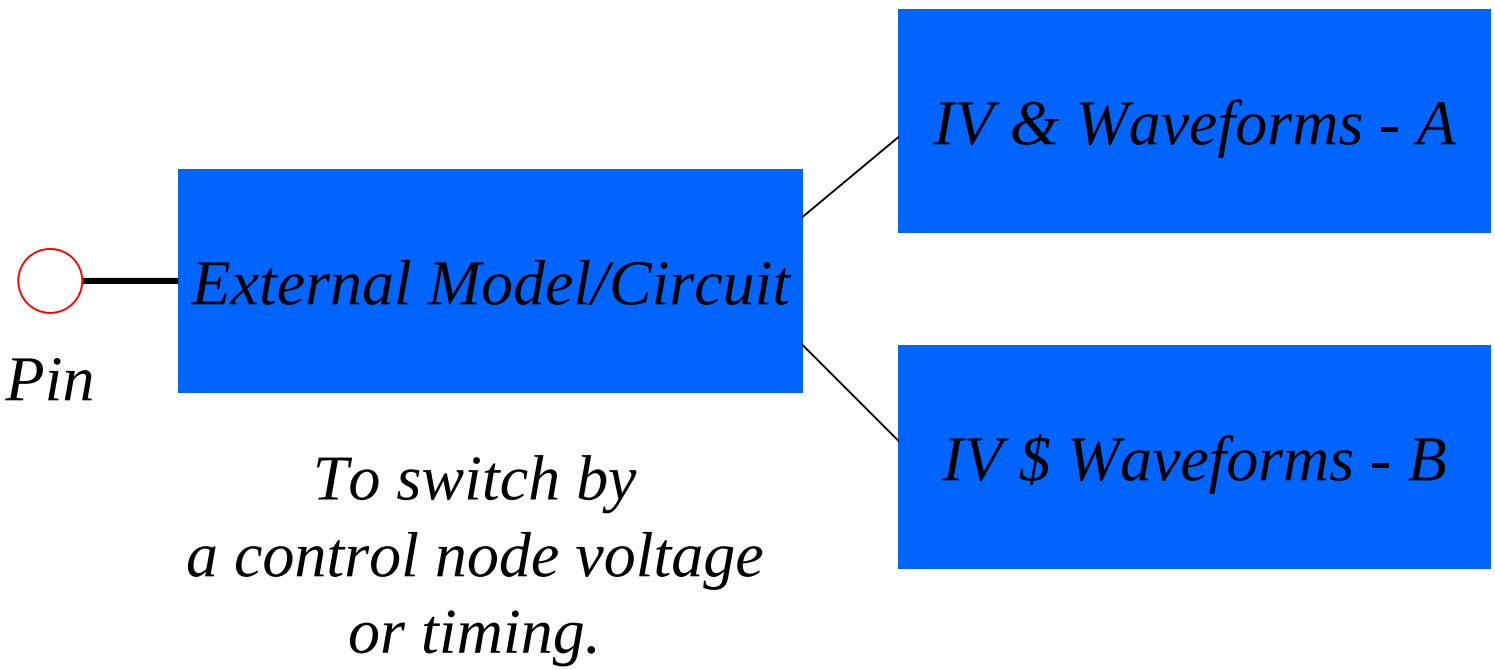
How can we describe package power/ground planes/island models?
IBIS still seems to focus only on SI assuming perfect/ideal power/ground. Imperfect/non-ideal power/ground becomes important.

Real problems in digital consumer electronics and car (automobile) electronics are EMI which needs power/ground models for core logic of ICs.

Secondary, PI (power integrity) is important in SiP.

Q8

How can we describe an IBIS External Model/Circuit for a model which needs to control the other two sets of IV & VT (traditional IBIS Model)?



Q9

When is the IBIS Accuracy information available?
It is expected that IBIS data should have a new parameter which indicates accuracy level.

Q10

How can ICM describe terminators in module/package?
How can IBIS 4.1 or ICM describe connector/cable models with embedded an equalizer circuit?