Terminal Names in IBIS Buffer Graphics C_comp to ?

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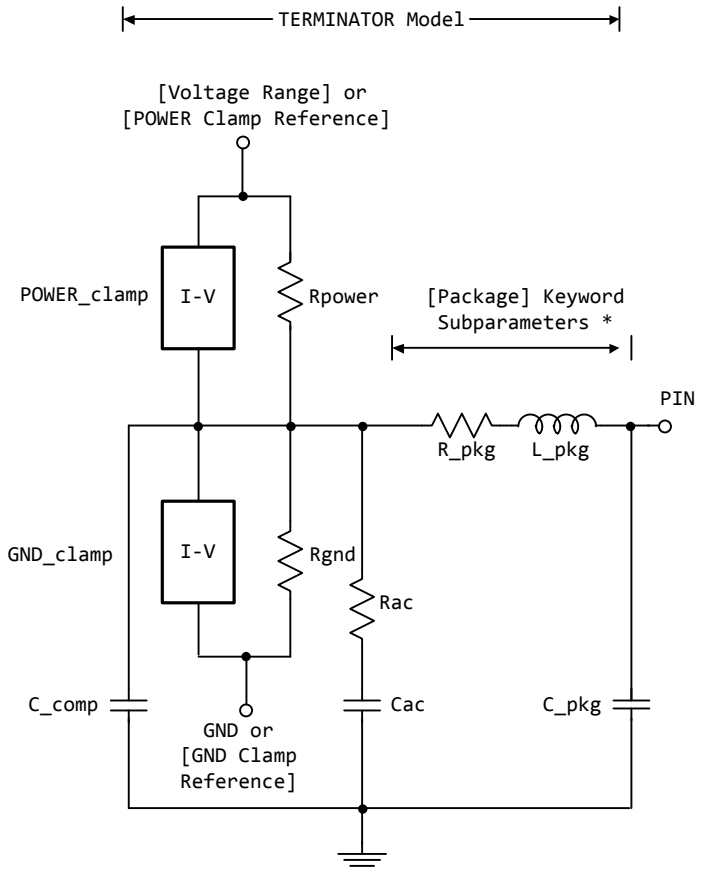
Outline / Conclusions

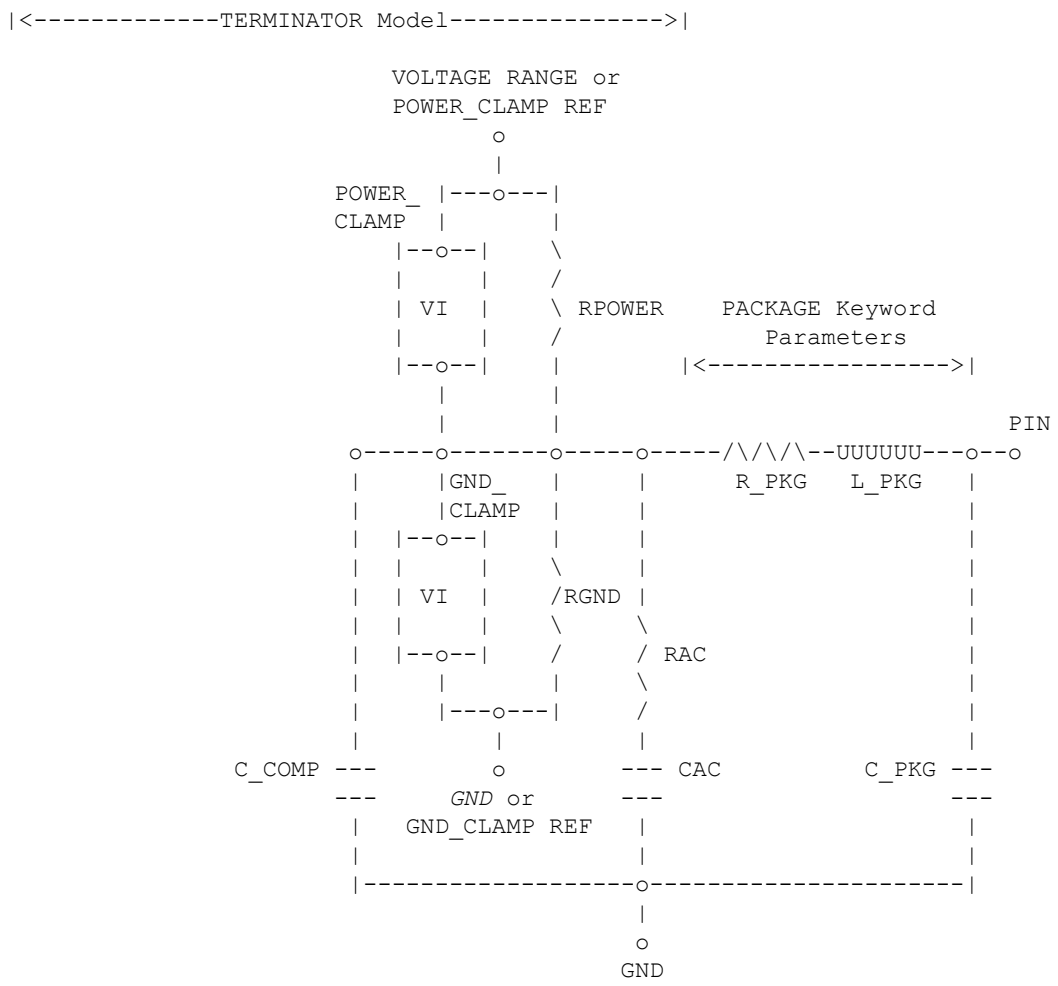
- Using IBIS Terminator Model to Illustrate the Issues
- IBIS Should Use Consistent Model Terminal Names
- Voltages at Terminals are Always Referenced to GND
- GND is a Simulator Reference Node (often Node 0)
- GND Should Not Be Confused with IBIS-ISS Reserved Node GND
- External Model Terminal (Port) A_gnd Should Not Be Used If Doing Power Aware Simulations Since There is No Way to Make a Connection From This Terminal to a Component Pin
- Should Not Confuse IBIS Model Terminals With Voltages Used to Derive IV Curves
- C_comp_* is Preferred Over C_comp for Power Aware Simulations

The Terminator Model in IBIS 5.1/6.0

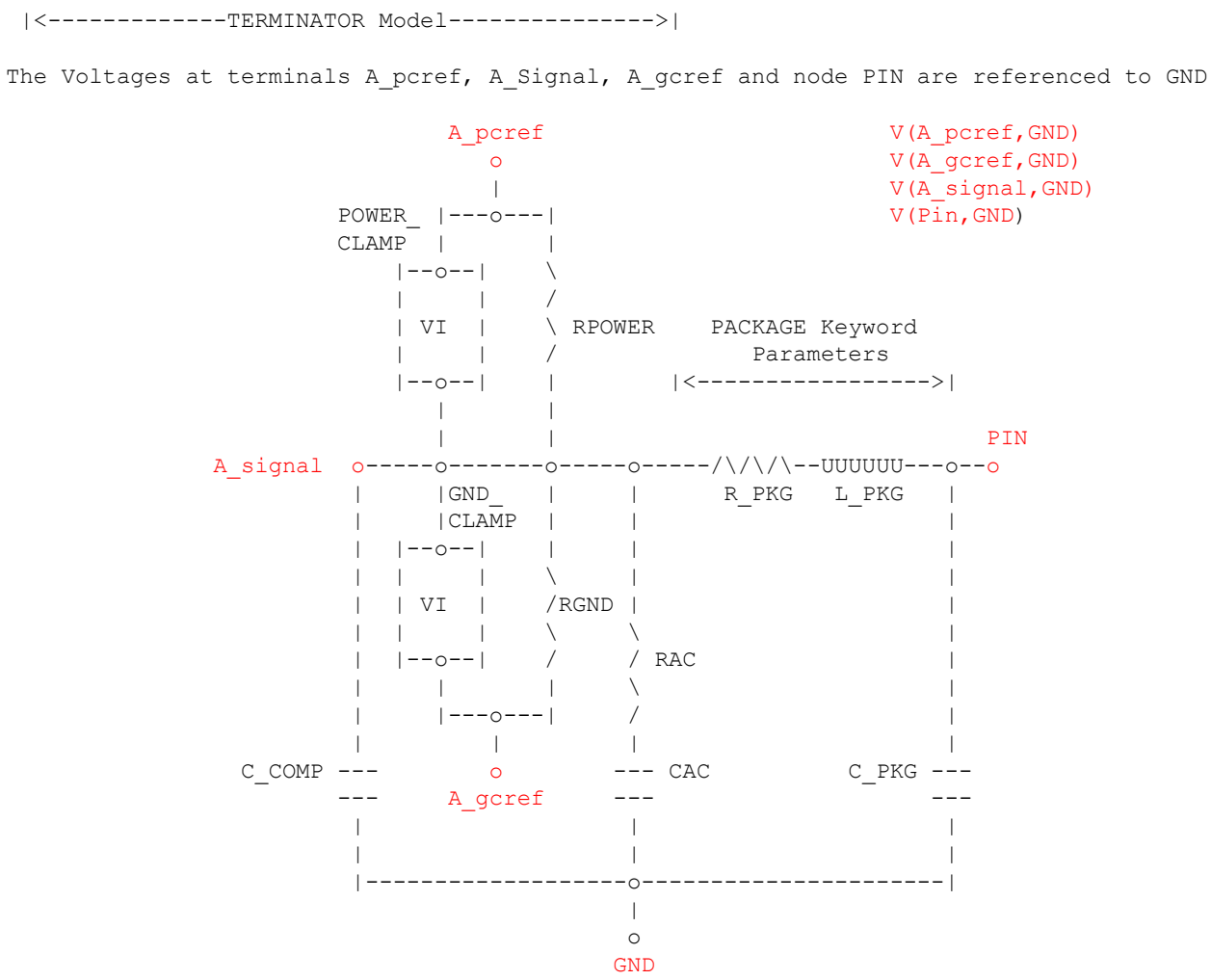


* Note: More advanced package parameters are available within this standard, including more detailed power and ground net descriptions.

The Terminator Model in IBIS 5.0



Terminals Should Be Named A_pcref and A_gcref



IBIS Model Terminals That Need to Connect to Package Models

Discussed in This Presentation

- A_signal
- A_puref
- A_pcref
- A_pdref
- A_gcref

Like Ones on Left

- A_pos
- A_neg
- A_signal_pos
- A_signal_neg

[External Model Only]

- A_extref

No Way to Connect to Package

- A_gnd

Terminal Connections To IV Curves

- [Ground Clamp] IV
  - Current from (A_signal-A_gcref)
  - Derivation Conditions
    - A_gcref = [GND Clamp Reference] referenced to GND
    - A_signal referenced to GND
- [Power Clamp] IV
  - Current from (A_pcref-A_signal)
  - Derivation Conditions
    - A_pcref = [Power Clamp Reference] referenced to GND
    - A_signal referenced to GND

Terminal Connections To IV Curves (cont)

- [Pulldown] IV
  - Current from (A_signal-A_pcref)
  - Derivation Conditions
    - A_pcref = [Pulldown Reference] referenced to GND
    - A_signal referenced to GND
- [Pullup Clamp] IV
  - Current from (A_puref-A_signal)
  - Derivation Conditions
    - A_puref = [Pullup Reference] referenced to GND
    - A_signal referenced to GND

Derivation Voltage Precedence

- [Pullup Reference]
  - [Pullup Reference] parameter
  - [Voltage Range] parameter
- [Power Clamp Reference]
  - [Power Clamp Reference] parameter
  - [Voltage Range] parameter
- [Pulldown Reference]
  - [Pulldown Reference] parameter
  - 0.0
- [GND Clamp Reference]
  - [GND Clamp Reference] parameter
  - 0.0

What Should C_comp Connect To?

1. Correct power aware model should use
   - C_comp_power_clamp
   - C_comp_gnd_clamp
2. C_comp to GND (Simulator Reference Node e.g. Node 0)
3. C_comp to A_gcref
4. C_comp split between A_gcref and A_pcref

Which is worst of three evils (2, 3, 4)?

1. C_comp to local ground
2. C_comp split arbitrarily between local ground and local power
3. C_comp to some “simulator/chassis” ground far, far away.

Does it Matter? Will simulation results change if rail voltages are constant?