

IBIS Power Integrity BIRDs 234 and 235 **European Hybrid IBIS Summit with IEEE SPI 2026**

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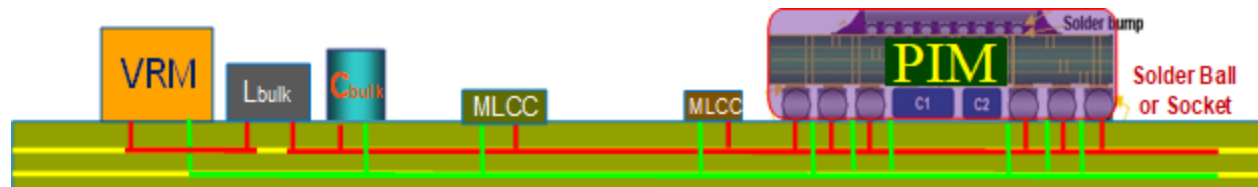
Walter Katz, MathWorks

Introduction

- There are two Power Integrity BIRDs currently under consideration
 - BIRD 234: Walter Katz, MathWorks
 - BIRD 235: Kinger Cai, ARM Ltd.
- High level requirements of Power Integrity models for IBIS, EMD and other electronic Devices
- Status of resolving BIRDs 234 and 235

IBIS Power Integrity BIRD Introduction

Power Integrity engineers use EDA tools to evaluate their PCB layout and power supply circuits. To accurately model the rail current distribution in the PCB, the EDA tools require **sufficiently** accurate package interconnect models and **sufficiently** accurate silicon DC and AC loading requirements. Both BIRDs 234 and 235 satisfy the requirements of generally accepted methods of analyzing power delivery to electronic devices. An electronic device is either an .ibs component, .emd model or other electronic components.



A PI Model consists of a silicon load model and a Device Power Delivery Network (Device PDN). A Device PDN is either an IBIS-ISS subcircuit or a Touchstone file.

The Device PDN is the interface between the silicon load model and the Board PDN/VRM.

The silicon load model has one or more stimuli and optionally one or more rules that can be applied at the stimulus/Device PDN interface, pin/Device PDN interface and/or Device PDN probes.

Additional Requirements

- These models enable EDA Tools to do DC, AC (Impedance) and TD (Time Domain) Analysis of a Device along with VRM Models and Board PDN Models supplied by the EDA tool.
- Rules supplied by the IC Vendor in the model determine if the Power Delivery to the Device satisfies the Device Power Delivery Requirements.

Both BIRDS 234 and 235 Satisfy Basic Power Integrity Analysis Requirements

- Define multiple load sections of an IC (Stimuli)
- Allow IBIS-ISS and Touchstone Device PDN Models
- Define how to mate the Device PDN to the Board PDN
- Define current, voltage and impedance rules (targets) at the silicon interface, board interface and probe points defined in the Device PDN
- IBIS-ISS Device PDN models can be “2N, N+1 and N” terminal formats

Differences Between BIRDs 234 and 235

- Keywords are different
 - “A Nose By Any Other Name Still Smells”
- Hierarchy is different.
 - A BIRD 235 Device PDN models are limited to be used with a single analysis type.
 - A BIRD 234 Device PDN models can be used with DC, AC, and TD analysis.
- Corner conditions handled differently
 - BIRD 235 models are limited to
 - Thermal Design Current
 - Leakage Current
 - Electrical Design Current (for short thermally insignificant time)
 - BIRD 234
 - Models have a minimum and maximum current
 - Allows for multiple configurations (e.g., different target voltage)

Major Obstacle is to Get IC Vendors to Supply Device Power Integrity Models

- Keywords need to comply with industry standard names
- Clear to IC vendor how to generate the data in the model
- Model should be able to hide Intellectual Property

Next Steps

- The IBIS-ATM committee is currently studying the similarities and differences of the two BIRDS with an attempt to find a way to combine them into a single proposal that satisfies everyone's needs.
- We request that IBIS members and followers review these two BIRDS carefully and contribute by sending e-mails to me (wkatz@mathworks.com), Kinger Cai (kinger.cai@arm.com) the IBIS Reflector (ibis-eda@freelists.org), or the IBIS-ATM Reflector (IBIS-ATM ibis-macro@freelists.org), or coming to and contributing to the IBIS-ATM committee meetings ([Click here to join the meeting](#)) held Tuesdays at 3 PM EST.