EMI Parameters for IBIS

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Proposed EMI parameters

- Cpd
  Power Dissipation Capacitance.
  - This is the internal parasitic capacitance + the equivalent capacitance associated with the *through currents* when both transistors are momentarily conducting.
  - Parameter is given in the datasheets.
  - Used to calculate the noise voltage on the power bus ($I(t) = C_{eff}\, dv/dt$ where C_{eff} is the total decoupling capacitance).

- DIE HEIGHT
  Represented by package thickness.
  - Used for loop area calculation.

Proposed EMI parameters

- **HEATSINK**
Heatsink dimensions (Length, Width, Thickness).
Dimensions used to calculate capacitance.
Also need to indicate which components have a heatsink.
Heatsinks can act as antennas and are driven by potential differences on the power plane.

- **CON_PIN**
Assigns a model name to a pin of a connector.

- **CON_SPEC**
Assigns parameters to CON_PIN. Parameters indicate whether the pin is unshielded, shielded, connected to the shield, has a ferrite filter, and has an explicit filter capacitor.
Used to calculate an antenna impedance for the pin.

Proposed EMI parameters - examples

- Example 1

  [Component] comp_1
  CPD   6.4   # pF
  ICCD   61.5   # mA/MHz

- Example 2

  [Component] comp_2
  DIE_HEIGHT   78.74   # mils
  HEATSINK   L: 590.55   W: 590.55   T: 472:44   # mils

Proposed EMI parameters - examples

- Example 3

```
[Component]  connector_1
CON_PIN  1  sig_out
CON_PIN  2  sig_shield
CON_PIN  3  sig_out
CON_PIN  G1  grounded


[Model]   sig_out
CON_SPEC  unshielded  C: 6.0        # unshielded pin, C in pF
[Model]   sig_shield
CON_SPEC  is_to_shield  C: 9.0      # pin connected to the shielded, C in pF
[Model]   grounded
CON_SPEC  is_shielded  C: 7.0       # individually shielded pin, C in pF
```

What's next?

- Use proper SI units
  E.g. e-12F instead of pF, Metric units, etc.

- Prepare a more detailed specification
  - Need to add more details as to why these parameters are important.
  - How to measure the parameters.

- Submit a Bird