Chiplet Design Exchange

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ODSA Weekly Meeting

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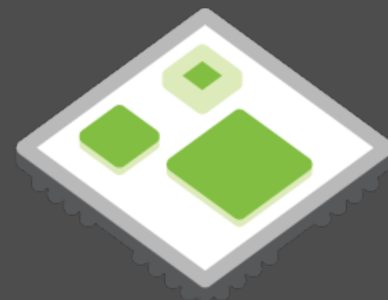


Consume. Collaborate. Contribute.

Problem Statement

Component Selection

Designer need a number of design collaterals to make a choice of components for a give application and to complete a design. These include at minimum;

- Product Briefs (NDA should not be required)
- Data Sheets (NDA needed)
- PCB/Substrate Design Resources (Footprints, app notes, netlists etc.)

With complicated chiplets, the PCB type design flows are limiting and will not easily scale. Also there are too many ways to describe chiplets.

Design Exchange with EDA Tools

There is no standard way to express basic information: Standard format should be simple and usable across different tools

- Design Entry tools
- Layout tools
- Simulators (PI/SI, Thermal, Behavioral)
- Test

Benefits of Chiplet Description Standard

1- Different parties can exchange data via APIs.

2- Will be possible to build design automation flows and tools that will help ecosystem seeding.

3- Can make it easier for to export data between tools.

3- Some kind of design exchange portal may become possible.

How Do We Represent a Chip Today

- Product Briefs (NDA should not be required but depends on what is the level of the brief)
- Data Sheets (NDA needed)
- PCB Design Resources (Footprints, app notes, netlists etc.) (NDA needed)
- IBIS models—come in handy for high speed channels (NDA needed)
- Thermal Models (NDA needed)

How would We Represent a Chiplet Today?

- Product Briefs (NDA should not be required but depends on what is the level of the brief)
- Data Sheets (NDA needed)
- Package Design Resources (Footprints, app notes, netlists etc.) (NDA needed)
- IBIS models—come in handy for high speed channels (NDA needed)
- Thermal Models (NDA needed)

An Example Flow

Demo (demo Chipbuilder)

zGlue’s Proposal for Chiplet Info

1- Each Vendor Supplies the key chiplet information in electronic format.

2- Establish an easier NDA mechanism to share additional information if a validated opportunity exists.

3- Chiplet Information to contains the following categories

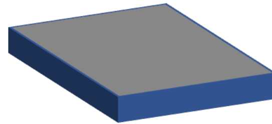
a) Mechanical
b) IO
c) Power

Mechanical Format

The Data to be provided in a CSV format with a number of OCP standardized variable names;

For Example Try Reading the following Chiplet

x	**y**	**z**
1280	1790	520



A More Complete Mechanical :
Reference, Part_value, MPN, Order_Number, Container, Pieces_per_unit, Name, Pkg_type, Pkg_IPC_code, SMT_compatible, Width_x, Width_tolerance, Length_y, Length_tolerance, Thickness_z, Thickness_tolerance, Count_IO, Bump_pitch, Bump_pitch_tol, Bump_dia, Bump_dia_tol, Bump_thickness, Bump_thickness_tol, Bump_material, Mold Material, Reflow Profile

IO Format

For Example Try Reading the following Chiplets

Pnum	Pname	Sig Type	IO Type	Diameter	X center	Y Center
A3	CS#	DI	BALL	0.2	0.3	0.4
B2	GND	V	BALL	0.2	0	0.2
C1	RESET#/SIO3	DIO	BALL	0.2	-0.3	0

A More Complete Mechanical :
IO_Name, IO_Reference, Signal_type, IO_mechanical_type, Populated, Solder_Type, Ball_dia, Ball_thickness, Land_dia, Land_x, Land_y, SMD_clearance, Center_x, Center_y, Signal_type, Singal_group, Netlist_name, Vdd, Gnd, Vmax, Vnom, Vmin, Imax, Inom, Imin, Pmax, Pnom, Pmin, Rmax, Rnom, Rmin, Lmax, Lnom, Lmin, Cmax, Cnom, Cmin, Tmax, Tnom, Tmin, Count_Modes, Mode_Name, Is_RF, Controlled_Impedance, ESD_type, Is_DFT, Overloade_num

Next Steps

Where Do We put our doc for Comments.

Figuring out the legal mechanism.