



GDS Import Wizard V4.0 Manual

Yongsheng.guo@ansys.com

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You are welcome to contact ANSYS local technical support if you have any problems.

Content

- ANSYS workflow for 2.5D/3D SI Interpower Simulation
- Get the latest GDSImportWizard Tool
- Running in Proficiency Mode
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- Running in batch mode - Linux
- After Importing
- More about Configuration file (JSON)

About GDS Import Wizard

A smart tool to translate GDSII to 3DLayout EDB quickly:

- Extract nets from GDS and import to EDB
- Extract accurate material property from IRCX
- Extract accurate layer thickness and stackup from IRCX
- Automatic generate control xml for AEDT GDSII Importing
- Support four type dielectric merge when importing (Update in V4.0)
- Support overlapping and laminated stackup
- Automatic create Via Group and SnapViaGroups
- Automatic generate components on top and bottom layer for easier port setup
- Automatic generate TSV Insulation coating
- Synchronous import to AEDT when EDB prepared
- Automatic detect and fix of small gaps between layers to avoid mesh Issue (New in V4.0)
- Support sheet layers to simplify thinner metal layer mesh e.g. 0.001um (New in V4.0)

/ ANSYS workflow for 2.5D/3D SI Interpower Simulation

Return

Integrated with ANSYS AEDT



Get the latest GDSImportWizard Tool

Return

<https://github.com/YongshengGuo/GDSImportWizard/releases/latest>

YongshengGuo / GDSImportWizard

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Releases Tags

Click Releases to download earlier version

Latest release

55fcee7 Verified Compare

GDSImportWizard Verxx

YongshengGuo released this 1 hour ago

Auto UnitScale

Assets 2

Source code (zip)

Source code (tar.gz)

Getting From here!

Add GDS Import Wizard to AEDT

ANSYS Electronics Desktop 2020 R2 - Project40

File Edit View Project Tools Window Help

Tools menu options:

- Edit Libraries
- Library Tools
- Project Tools
- Run Script...
- Pause Script
- Record Script To File...
- Record Script to Project...
- Open Command Window
- Password Manager...
- Debug Logging...
- Stop Debug Logging
- Options
- Keyboard Shortcuts...
- External Tools... (1)
- Show Queued Simulations
- Edit Active Analysis Configuration...
- Import Array from Table...
- Job Management
- Calibration Wizard
- Chip Model Analyzer (CMA)
- Layout Links...
- Network Data Explorer
- PFmag...
- GDSImportWizard (5)

Customize User Tools Menu dialog:

- Menu Contents: GDSImportWizard, HBM Workflow
- Menu Text: GDSImportWizard
- Command: ;2XML_V 3\GDSImportWizard.py ... (3)
- Initial Directory: (4)
- Buttons: Add (2), Remove, Move Up, Move Down

Select Program dialog:

- File name: GDSImportWizard.py
- File type: IronPython Script Files (*.py)
- Buttons: Open, Cancel

5 Open GDSImportWizard from here!

Two modes for more flexible choice

Switching two modes by click here

GDSII Import Wizard V3.0

GDS Import

☒ TSMC IRCX

Switch to Wizard Mode CheckUpdate

TSMC IRCX Browse

GDSII Browse

SimplifyDielectric MergeOnLayer ☐ CreateViaGroups ☐ LegacyXml(Laminate)

MergeMethod Weighted Average ☐ MergeTSVLayer ☐ UseDefaultDF 0.02

Generate EBD

AEDT Installed Dir C:\Program Files\AnsysEM\AnsysEM20.2\Win64\ Browse

EBD File Browse

☒ Import to AEDT ☒ Auto Generate Component ☒ Add TSV Insulator Ring 1e-6

Generate Close

Mode1: Proficiency Mode

GDSII Import Wizard V3.0

Step1: TechnologyFile Input Step2: Extract Netlist Step3: Stackup XML Step4: Generate EBD

☒ TSMC IRCX

Switch to Proficiency Mode CheckUpdate

TSMC IRCX Browse

☐ LayerMap+Tech

LayerMap Browse

TechFile Browse

Next Cancel

Mode2: Wizard Mode

Running in Proficiency Mode

Proficiency mode provides quickly import way for users who are familiar with the workflow.

Proficiency Mode

Switch to wizard mode from here

GDSII Import Wizard V3.1

GDS Import

Switch to Wizard Mode CheckUpdate

☒ TSMC IRCX

TSMC IRCX Browse

GDSII Browse

SimplifyDielectric MergeOnLayer ☒ CreateViaGroups ☐ LegacyXml(Laminate)

MergeMethod Weighted Average ☒ NoMergeTSVLayer ☐ UseDefaultDF 0.02

Generate EBD

AEDT Installed Dir C:\Program Files\AnsysEM\AnsysEM20.2\Win64\ Browse

EBD File Browse

☒ Import to AEDT ☒ Auto Generate Component ☒ Add TSV Insulator Ring 1e-6

Generate Close

Refer to "Wizard Mode" section for the detail comments for Options.

Finished whole import flow once

Note: Proficiency mode has the same options as Wizard mode. Please refer to "Wizard Mode " for the detail comments for all Options.

Running in Wizard Mode

Wizard mode provides more options and flexibility to control the detail of GDSII importing.

Step1: Define Technology File

GDSII Import Wizard 2.0

Step1: TechnologyFile Input Step2: Extract Netlist Step3: Stackup XML Step4: Generate EBD

☒ TSMC IRCX

TSMC IRCX Browse

☐ LayerMap+TechFile

LayerMap Browse

TechFile Browse

Next Cancel

Option 1: Using TSMC IRCX File

GDSII Import Wizard 2.0

Step1: TechnologyFile Input Step2: Extract Netlist Step3: Stackup XML Step4: Generate EBD

☐ TSMC IRCX

TSMC IRCX Browse

☒ LayerMap+TechFile

LayerMap Browse

TechFile Browse

Next Cancel

Option 2: Use Apache layermap and Techfile

Note: TSMC IRCX File is suggested workflow.

What about IRCX

IRCX is an EDA data format for interconnect modeling with TSMC's 65- and 40-nm process technologies.

Include:

- ✓ Layer Mapping
- ✓ Layer Thickness
- ✓ Layer Material property

Application:

- ✓ RC parasitic extraction,
- ✓ electromigration analysis,
- ✓ power integrity analysis, and
- ✓ electromagnetic simulation

```
96 [RC SPICE INFORMATION]
97 LAYER {
98 * STACK 34 4 (NAME:V, MEASURED_FROM:V, HEIGHT:V, THICKNESS:V)
99 FIELD      MEASURED_FROM  HEIGHT  THICKNESS
100 NAME
101 ubump      UF1           142.639000  0.001000
102 UF1        PASS4         107.640000  35.000000
103 PASS4      PASS3b        107.040000  0.600000
104 PASS3b     PASS3a        106.640000  0.400000
105 PASS3a     PASS2         105.190000  1.450000
106 metal4     PASS2         105.190000  1.450000
107 PASS2      PASS1         104.490000  0.700000
108 PASS1      IMD3c         104.415000  0.075000
109 IMD3c      IMD3b         103.690000  0.725000
110 IMD3b      IMD3a         103.640000  0.050000
111 metal3     IMD3a         103.565000  0.850000
112 IMD3a      IMD2g         103.020000  0.620000
113 IMD2g      IMD2f         102.970000  0.050000
114 IMD2f      IMD2e         102.245000  0.725000
115 IMD2e      IMD2d         102.195000  0.050000
116 metal2     IMD2d         102.120000  0.850000
117 IMD2d      IMD2c         101.873000  0.322000
118 IMD2c      IMD2b         101.793000  0.080000
119 ctm         IMD2b         101.793000  0.080000
120 IMD2b      IMD2a         101.775000  0.018000
121 IMD2a      IMD1c         101.575000  0.200000
122 cbm         IMD1c         101.575000  0.200000
123 IMD1c      IMD1b         101.525000  0.050000
124 IMD1b      IMD1a         100.800000  0.725000
125 IMD1a      ILD           100.750000  0.050000
126 metal1     ILD           100.675000  0.850000
127 ILD        substrate     100.000000  0.750000
128 substrate  PASSB1         0.000000  100.000000
129 PASSB1     PASSB2b        -0.800000  0.800000
130 mb1        PASSB2b        -0.801000  0.001000
131 PASSB2b    PASSB2a        -2.800000  2.000000
132 PASSB2a    underFill_C    -3.200000  0.400000
133 underFill_C N/A           -3.201000  0.001000
134 ubmb       N/A           -3.201000  0.001000
135
```

```
[LAYER_MAPPING]
#substate is reversed-tone NWELL
#via4 is (ubump AND metal4)
#ubump_top_pin is ubump_pin
#ubmb_top_pin is ubmb_pin
#RC      GDS  LVS      DFII
ubump      170;0      ubump      UBM;drawing
metal4      74;0      metal4      AP;drawing
DUM4        74;1      DUM4        AP;dummy
metal3      33;40     metal3      M3;drawing
DUM3        33;41     DUM3        M3;dummy
metal2      32;40     metal2      M2;drawing
DUM2        32;41     DUM2        M2;dummy
metal1      31;40     metal1      M1;drawing
DUM1        31;41     DUM1        M1;dummy
mb1         31;100    MB1         M1;BSL
ubmb        170;100   UBMB        UBM;BSL
via4         86;0     via4         CB2;drawing
via3         85;0     via3         RV;drawing
via2         52;40     via2         VIA2;drawing
vial         51;40     vial         VIA1;drawing
tsv          251;0     tsv          TSV;drawing
tsv_3t       251;3     tsv_3t       TSV;dummy1
pmb          5;100    PMB          PM;dummy
ubump_pin    125;0     ubm_top_pin   UBM;pin
metal4_pin   126;0     metal4_pin    AP;pin
metal3_pin   133;0     metal3_pin    M3;pin
metal2_pin   132;0     metal2_pin    M2;pin
metal1_pin   131;0     metal1_pin    M1;pin
mb1_pin      131;100   MB1_pin      M1;BSP
ubmb_pin     125;100   UBMB_pin     UBM;test0
ctm          77;0     ctm          CTM;drawing
cbm          88;0     cbm          CBM;drawing
ctm_via      51;40     ctm_via      VIA1;drawing
cbm_via      51;40     cbm_via      VIA1;drawing
```

Step2: Extract Nets information from GDSII

GDSII Import Wizard

Step1: TechnologyFile Input Step2: Extract Netlist Step3: Stackup XML Step4: Generate EBD Help

Extract Nets From GDS

GDSII Browse

NetLayerMap Update

NetRegular

Extract Net

Extract Edit

Previous Next Cancel

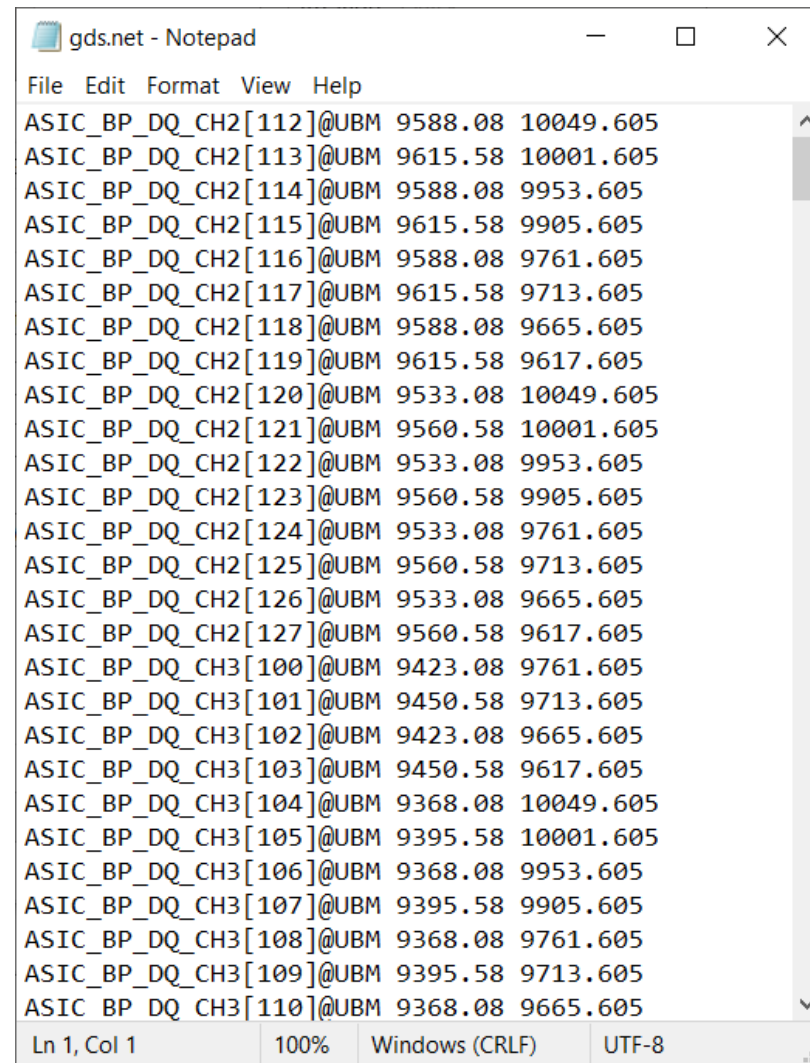
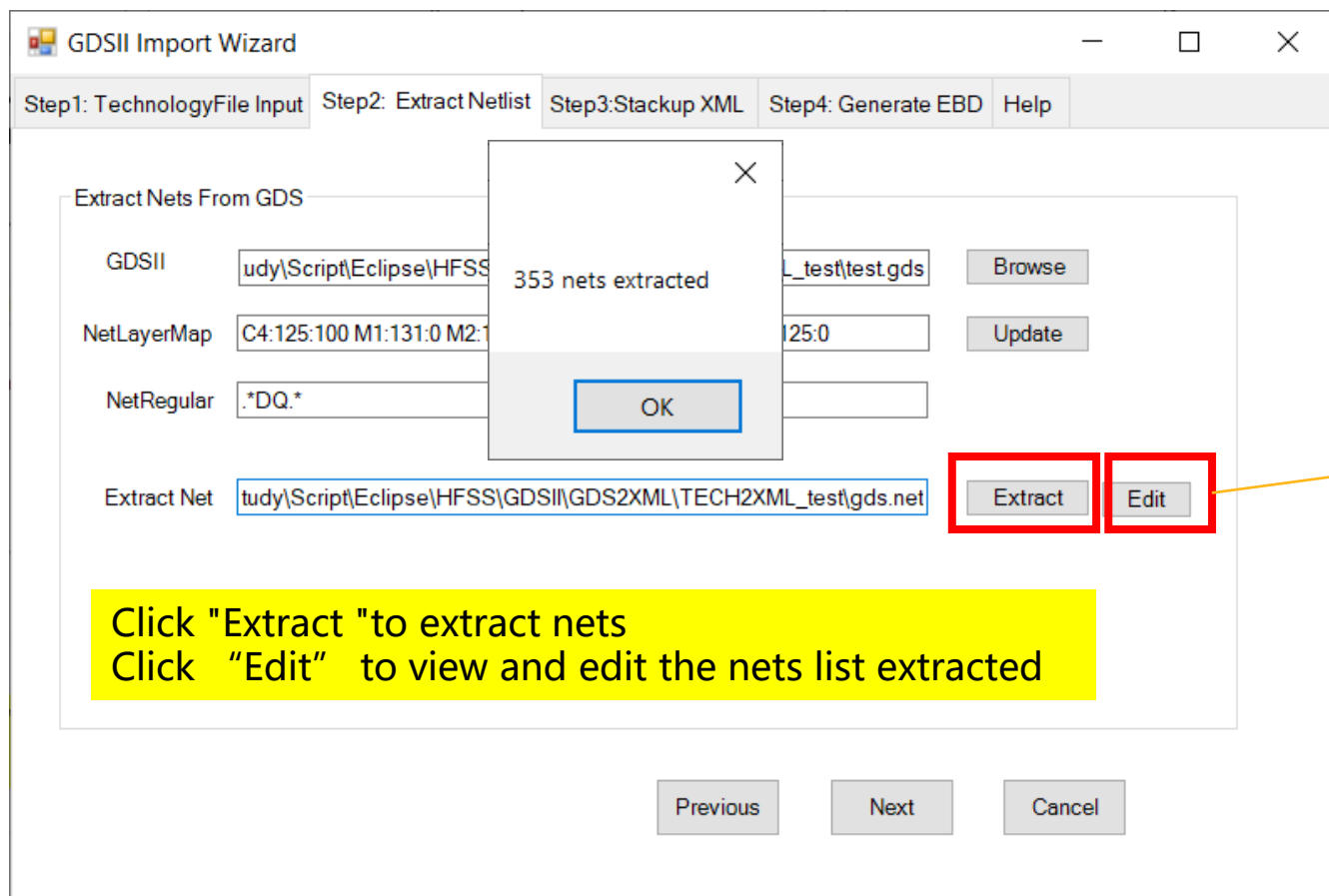
GDSII: selection GDS File

NetLayerMap: GDS Layer include net information, click "Update" button to extract from layermap or IRCX. [1]

NetRegular: Using regular expressions to filter nets extracted. Default is extracted all nets.

Note: 1. Net layermap options are separated by spaces and can be removed as needed.

Step2: Extract Nets information from GDSII



Step3: Generate Stackup XML (Control file)

GDSII Import Wizard V4.0

Step1: TechnologyFile Input Step2: Extract Netlist Step3: Stackup XML Step4: Generate EBD

[Switch to Proficiency Mode](#)

Generate Stackup XML

Stackup XML

SimplifyDielectric
MergeMethod
ThinDielectricThreshold
ThinDielectricThreshold

☒ CreateViaGroups ☐ LegacyXml(Laminate)
☒ NoMergeTSVLayer ☒ UseSheetLayer
☒ UseDefaultDF

Simplify Dielectric Method:

- NoSimplify:** No Merge on Dielectric, exact layers in IRCX
- MergeOnLayer:** Merge Dielectric on each conduct layer, except TSV
- BlockMerge:** use average DK on all layers (except SI material)
- MergeThinLayer:** Merge layer thinner than a specific value

Step3: Generate Stackup XML (Control file)

GDSII Import Wizard V4.0

Step1: TechnologyFile Input Step2: Extract Netlist Step3: Stackup XML Step4: Generate EBD

[Switch to Proficiency Mode](#)

Generate Stackup XML

Stackup XML

SimplifyDielectric ☒ CreateViaGroups ☐ LegacyXml(Laminate)

MergeMethod ☒ NoMergeTSVLayer ☒ UseSheetLayer

ThinDielectricThreshold

ThinDielectricThreshold

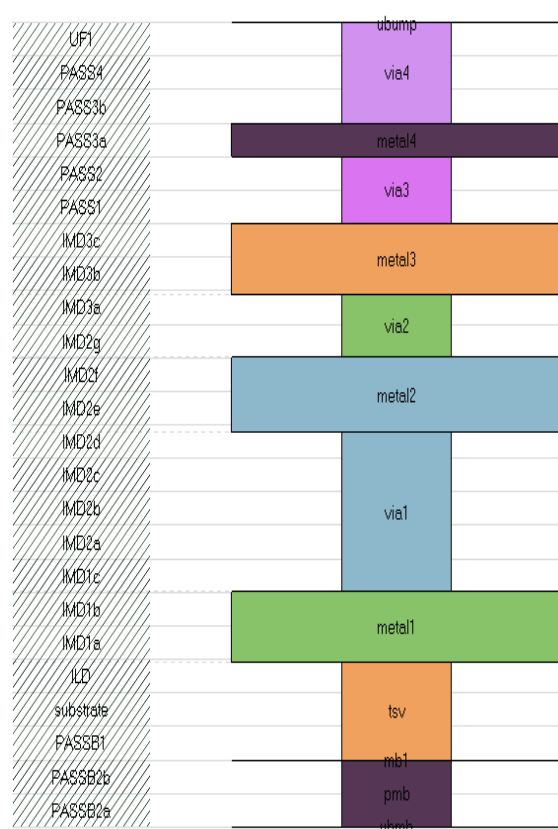
Note: the default unit is um

The two options only available on MergeThinLayer set, they control how the thin layers will be merged.

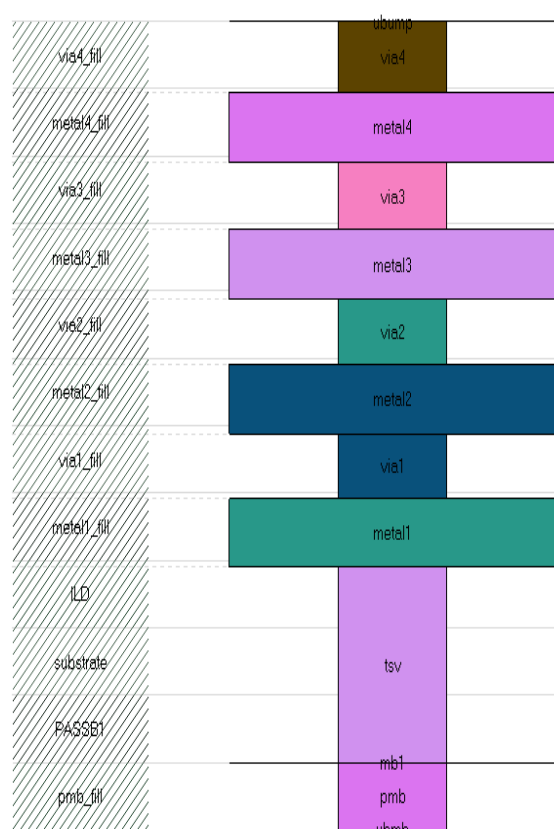
	ThinDielectricThreshold	DkDeviationThreshold	Note
1	0.1	0.1	Merge when layer thickness<0.1um, or 2 layers dk difference less than 10%
2	0.05	-1	Only merge when layer thickness<0.05um
3	-1	0.05	Only merge when 2 layers dk difference less than 5%

Step3: Generate Stackup XML (Control file)

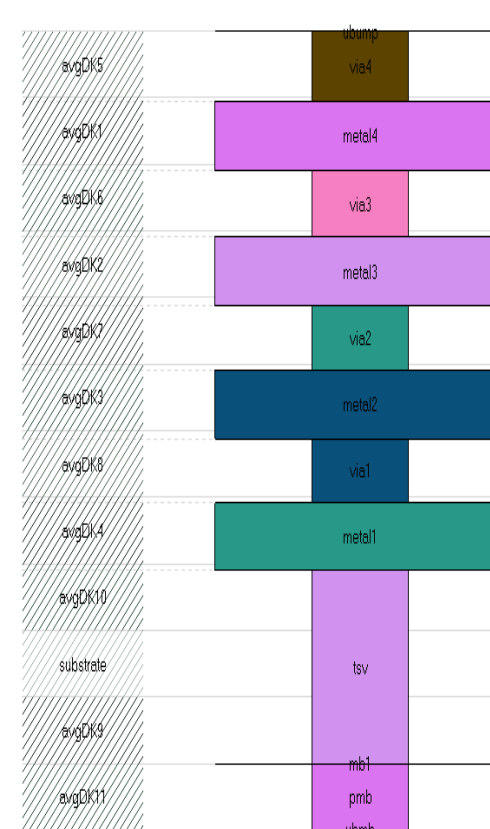
- Simplify Dielectric Method compare



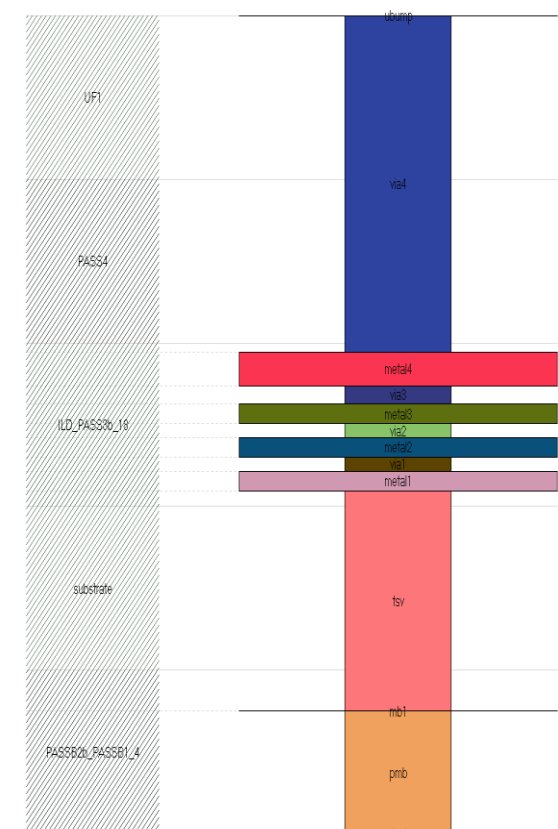
NoSimplify



MergeOnLayer

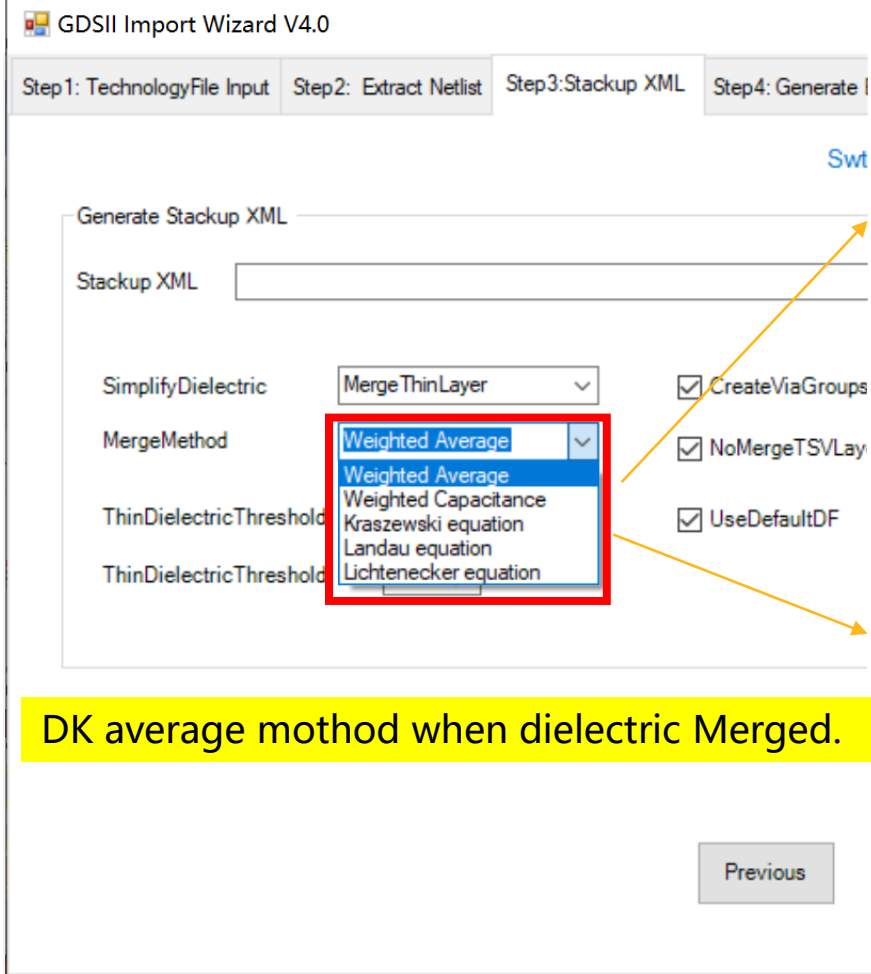


BlockMerge



MergeThinLayer

Step3: Generate Stackup XML (Control file)



DK average mothod when dielectric Merged.

Method	Equation
Weighted Capacitance	$\epsilon_{r_merged} = \frac{\sum_{i=1}^n h_i}{\sum_{i=1}^n \frac{h_i}{\epsilon_i}}$
Weighted Average	$\epsilon_{r_merged} = \frac{\sum_{i=1}^n h_i \epsilon_i}{\sum_{i=1}^n h_i}$

There are Kraszewski (Kraszewski equation)

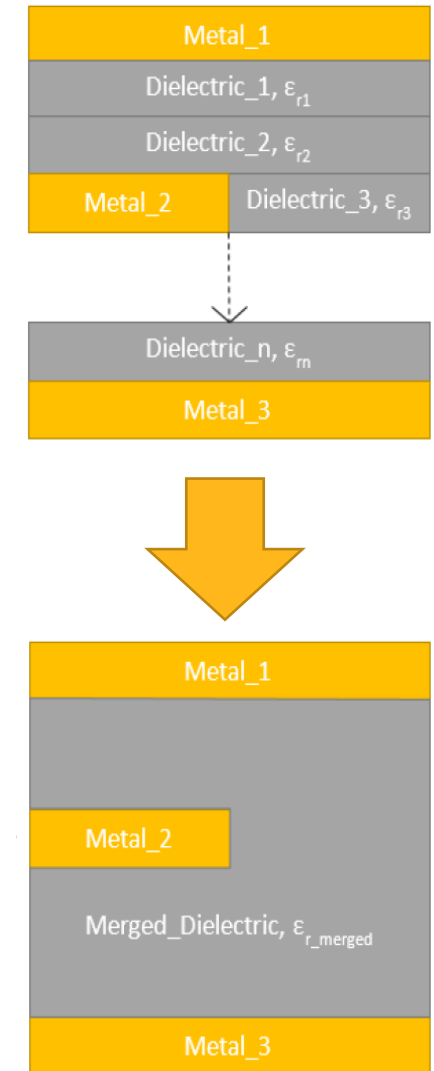
$$\sqrt{\epsilon^*} = v_1 \sqrt{\epsilon_1} + v_2 \sqrt{\epsilon_2} + v_3 \sqrt{\epsilon_3} \quad (1)$$

Landau, Lifshitz and Looyenga, (Landau equation)

$$\sqrt[3]{\epsilon^*} = v_1 \sqrt[3]{\epsilon_1} + v_2 \sqrt[3]{\epsilon_2} + v_3 \sqrt[3]{\epsilon_3} \quad (2)$$

Lichtenecker, (Lichtenecker equation)

$$\ln \epsilon^* = v_1 \ln \epsilon_1 + v_2 \ln \epsilon_2 + v_3 \ln \epsilon_3 \quad (3)$$



Merge Dielectric

Note: Merge Dielectric also can be done in 3d Layout stackup editor.

Step3: Generate Stackup XML (Control file)

GDSII Import Wizard V4.0

Step1: TechnologyFile Input Step2: Extract Netlist Step3: Stackup XML Step4: Generate EBD

Switch to Proficiency Mode

Generate Stackup XML

Stackup XML

SimplifyDielectric ☒ CreateViaGroups ☐ LegacyXml(Laminate)

MergeMethod ☒ NoMergeTSVLayer ☒ UseSheetLayer

ThinDielectricThreshold ☒ UseDefaultDF

ThinDielectricThreshold

material	signal	material_cond	thickness
ILD_PASS3b_18	dielectric	ILD_PASS3b_18	7.04um
substrate	dielectric	substrate	100um
tsv	via	tsv_cond	101.476um
mb1	signal	mb1_cond	0um
PASSB2b_PASSB1_4	dielectric	PASSB2b_PASSB1_4	3.201um
pmb	via	pmb_cond	2.4um
ubmb	signal	ubmb_cond	0um

When checked "UseSheetLayer" . The tool will convert the 0.001um layer into sheet (0um) to accelerate mesh generation. The tool will check and align the layer position to avoid gap after conversion.

Step3: Generate Stackup XML (Control file)

GDSII Import Wizard V4.0

Step1: TechnologyFile Input Step2: Extract Netlist Step3: Stackup XML Step4: Generate EBD

Switch to Proficiency Mode

Generate Stackup XML

Stackup XML

SimplifyDielectric

MergeMethod

ThinDielectricThreshold

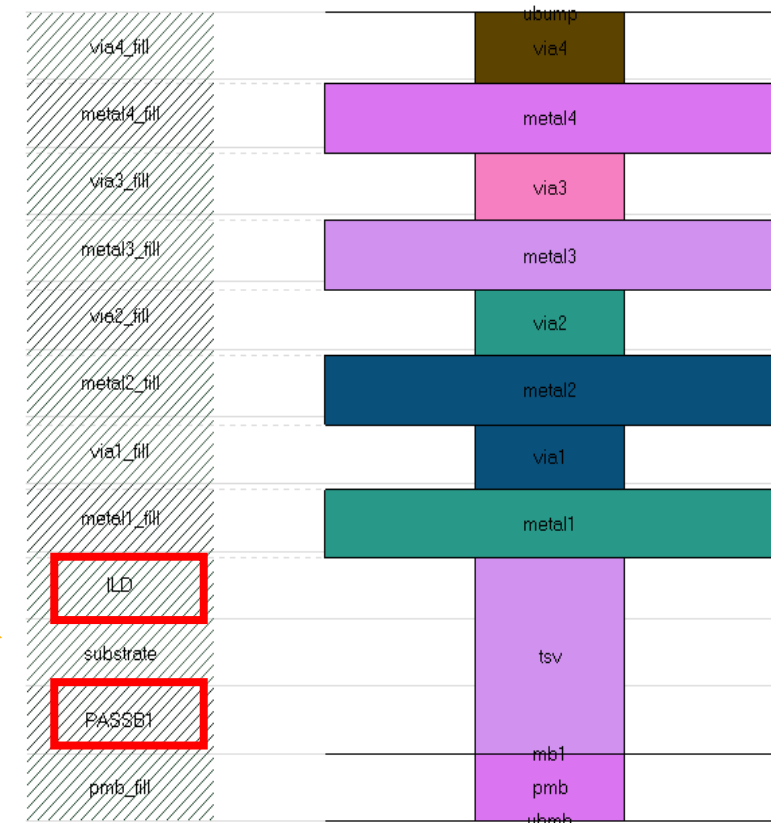
ThinDielectricThreshold

☒ CreateViaGroups ☐ LegacyXml(Laminate)

☒ NoMergeTSVLayer ☒ UseSheetLayer

☒ UseDefaultDF

Keep Insulating layer above and below SI Substrate when Simplify Dielectric.



Step3: Generate Stackup XML (Control file)

GDSII Import Wizard V4.0

Step1: TechnologyFile Input Step2: Extract Netlist Step3: Stackup XML Step4: Generate EBD

[Switch to Proficiency Mode](#)

Generate Stackup XML

Stackup XML

SimplifyDielectric

MergeMethod

ThinDielectricThreshold

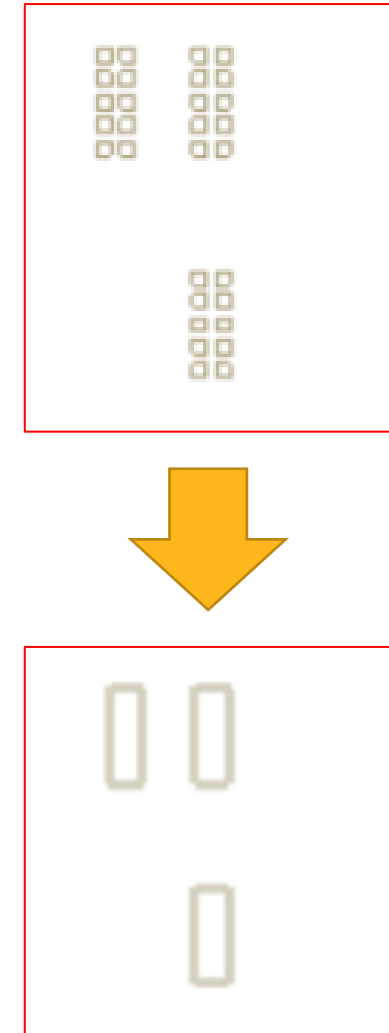
ThinDielectricThreshold

☒ CreateViaGroups ☐ LegacyXml(Laminate)

☒ NoMergeSVLayer ☒ UseSheetLayer

☒ UseDefaultDF

Automatic create via groups on via layers.



Step3: Generate Stackup XML (Control file)

GDSII Import Wizard V4.0

Step1: TechnologyFile Input Step2: Extract Netlist Step3: Stackup XML Step4: Generate EBD

[Switch to Proficiency Mode](#)

Generate Stackup XML

Stackup XML

SimplifyDielectric

MergeMethod

ThinDielectricThreshold

ThinDielectricThreshold

☒ CreateViaGroups ☐ LegacyXml(Laminate)

☒ NoMergeTSVLayer ☒ UseSheetLayer

☒ UseDefaultDF

Technology File almost not provide DF Value for all material. You could give a default value if you want to at here.

Step3: Generate Stackup XML (Control file)

GDSII Import Wizard V4.0

Step1: TechnologyFile Input Step2: Extract Netlist Step3: Stackup XML Step4: Generate EBD

Switch to Proficiency Mode

Generate Stackup XML

Stackup XML

SimplifyDielectric ☒ CreateViaGroups ☐ LegacyXml(Laminate)

MergeMethod ☒ NoMergeTSVLayer ☒ UseSheetLayer

ThinDielectricThreshold ☒ UseDefaultDF

ThinDielectricThreshold

LegacyXml Option is used to generate Laminate stackup. Laminate stackup could be used in any version AEDT and SIwave. But you need to CreateViaGroups in ECAD Explorer manual in this mode.



Note: By default, GDSImportWizard generate Overlapping stackup which would create ViaGroups automatically.

Step3: Generate Stackup XML (Control file)

GDSII Import Wizard V4.0

Step1: TechnologyFile Input Step2: Extract Netlist Step3: Stackup XML Step4: Generate EBD

Switch to Proficiency Mode

Generate Stackup XML

Stackup XML **Generate** Edit

SimplifyDielectric ☒ CreateViaGroups ☐ LegacyXml(Laminate)

MergeMethod ☒ NoMergeTSVLayer ☒ UseShe

ThinDielectricThreshold ☒ UseDefaultDF

ThinDielectricThreshold

Previous Next Cancel

Click to generate Control xml after you setup above options.

If you change the options after the XML generation, you should click generate again.

Step4: Generate EBD

GDSII Import Wizard V4.0

Step1: TechnologyFile Input Step2: Extract Netlist Step3: Stackup XML Step4: Generate EBD

Switch to Proficiency Mode

Generate EBD

AEDT Installed Dir: C:\Program Files\AnsysEM\AnsysEM21.1\Win64 Browse

EBD File: Generate EBD

☒ Import to AEDT ☒ Auto Generate Component

☒ Add TSV Insulator Ring 1e-6

Open ECADExplorer Open in AEDT

Previous Finished Cancel

Pull down and Select AEDT version (installed)

When checked, EBD will import to AEDT after generated

Step4: Generate EBD

GDSII Import Wizard V4.0

Step1: TechnologyFile Input Step2: Extract Netlist Step3: Stackup XML Step4: Generate EBD

Switch to Proficiency Mode

Generate EBD

AEDT Installed Dir: C:\Program Files\AnsysEM\AnsysEM21.1\Win64 Browse

EBD File: Generate EBD

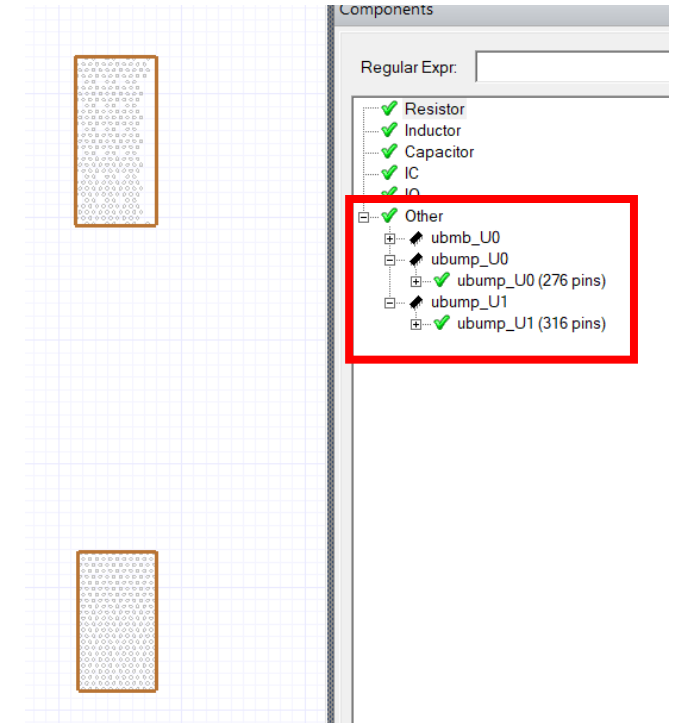
☒ Import to AEDT ☒ Auto Generate Component

☒ Add TSV Insulator Ring 1e-6

Open ECADExplorer Open in AEDT

Previous Finished Cancel

Components will be added on first and last layer after EBD import.



Step4: Generate EBD

GDSII Import Wizard V3.1

Step1: TechnologyFile Input Step2: Extract Netlist Step3: Stackup XML Step4: Generate EBD

Generate EBD

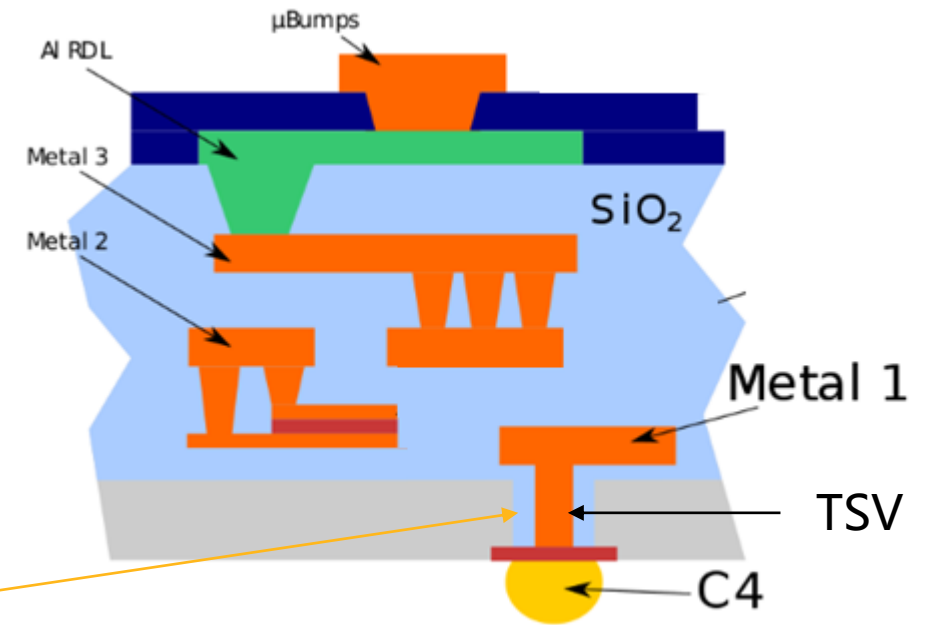
AEDT Installed Dir: C:\Program Files\AnsysEM\AnsysEM20.2\Win64\ Browse

EBD File: Generate EBD

☒ Import to AEDT ☒ Auto Generate Component

☒ Add TSV Insulator Ring 1e-6

Previous Finished Cancel



TSV Insulator Ring will be added in TSV layer after EBD imported. Ring thickness should be set a meaningful value (with unit meter).

Step4: Generate EBD

GDSII Import Wizard V3.1

Step1: TechnologyFile Input Step2: Extract Netlist Step3: Stackup XML Step4: Generate EBD

Generate EBD

AEDT Installed Dir C:\Program Files\AnsysEM\AnsysEM20.2\Win64\ Browse

EBD File

☒ Import to AEDT ☒ Auto Generate Component

☒ Add TSV Insulator Ring 1e-6

Generate EBD

Open ECADExplorer Open in AEDT

Previous Finished Cancel

Click "Generate" to generate EBD and AEDT file according settings, then you can continue to analyze.



Running in Batch Mode

- *set aedtInstallPath=C:\Program Files\AnsysEM\AnsysEM20.2\Win64*
- *set gdsPath=D:\HFSS\GDSII\GDS2XML\TECH2XML_test\test.gds*
- *set ircxPath=D:\HFSS\GDSII\GDS2XML\TECH2XML_test\TSMC_INTERPOSER.ircx*
- *set path=%aedtInstallPath%\common\IronPython;%path%*
- *ipy64 GDSImportWizard.py -batch*
- Optional Setting
 - *set netlistPath=D:\HFSS\GDSII\GDS2XML\TECH2XML_test\test.net*
 - *set xmlPath=D:\HFSS\GDSII\GDS2XML\TECH2XML_test\test.xml*
 - *set edbPath=D:\HFSS\GDSII\GDS2XML\TECH2XML_test\test.aedb*

/ Running in batch mode - Linux

Return

- *export aedtInstallPath='/home/ansys/app/AnsysEM20.1/Linux64'*
- *export gdsPath=/home/ansys/yguo/test/test.gds*
- *export ircxPath=/home/ansys/yguo/test/TSMC_INTERPOSER.ircx*
- *export ipy64="\$aedtInstallPath/common/mono/Linux64/bin/mono \$aedtInstallPath/common/IronPython/ipy64.exe"*
- *\$ipy64 GDSImportWizard.py -batch*
- Optional Setting
- `export netlistPath=D:\HFSS\GDSII\GDS2XML\TECH2XML_test\test.net`
- `export xmlPath=D:\HFSS\GDSII\GDS2XML\TECH2XML_test\test.xml`
- `export edbPath=D:\HFSS\GDSII\GDS2XML\TECH2XML_test\test.aedb`

After Importing

- ✓ Check the stackup thickness and material properties.
- ✓ Clip Design could be done in 3D layout to improve efficiency.
- ✓ If you want use SIwave solver, legacyXML(Laminate) should be checked in step 3.

Stackup and Material

Edit Layers - interposer

Stackup Layer Zone

Primary

Display
☒ Stackup layers
☐ Non-stackup layers
☐ All layers

Stackup
Type:
Units:

							Name	Type	Material	Thickness	Etch	Rough	Solver
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	metal1	signal	metal1_cond	0.85um	<input type="checkbox"/>	<input type="checkbox"/>	0.
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	ILD	dielectric	ILD	0.75um	<input type="checkbox"/>	<input type="checkbox"/>	0.
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	substrate	dielectric	substrate	100um	<input type="checkbox"/>	<input type="checkbox"/>	0.
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	tsv	via	tsv_cond	101.476um	<input type="checkbox"/>	<input type="checkbox"/>	m
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	mb1	signal	mb1_cond	0um	<input type="checkbox"/>	<input type="checkbox"/>	0.
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	PASSB1	dielectric	PASSB1	0.8um	<input type="checkbox"/>	<input type="checkbox"/>	0.
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	pmb	via	pmb_cond	2.4um	<input type="checkbox"/>	<input type="checkbox"/>	ut
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	pmb_fill	dielectric	pmb_fill	2.399um	<input type="checkbox"/>	<input type="checkbox"/>	0r
	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	ubmb	signal	ubmb_cond	0um	<input type="checkbox"/>	<input type="checkbox"/>	0r

Layer

Insert above...

Insert below...

Remove

Select all

Edit selected

Name:
Type:
Material:
Thickness:
Top bottom:

Visibility

☒
☒
☒
☒
☒

Attributes

☐ Negative
☒
☐
 50%

Analysis

☐ Etch
☐ Rough
☐ Solver

View / Edit Material

Material Name

substrate

Properties of the Material

Name	Type	Value	Units
Relative Permittivity	Simple	11.9	
Relative Permeability	Simple	1	
Bulk Conductivity	Simple	10	siemens/m
Dielectric Loss Tangent	Simple	0	
Magnetic Loss Tangent	Simple	0	

View/Edit Material for

☒ Active Design
☐ Active Project
☐ All Properties

Physics:

☒ Electromagnetic
☐ Thermal
☐ Structural

☐ Thermal Modifier
☐ Spatial Modifier

Material Appearance

☐ Use Material Appearance

Color:

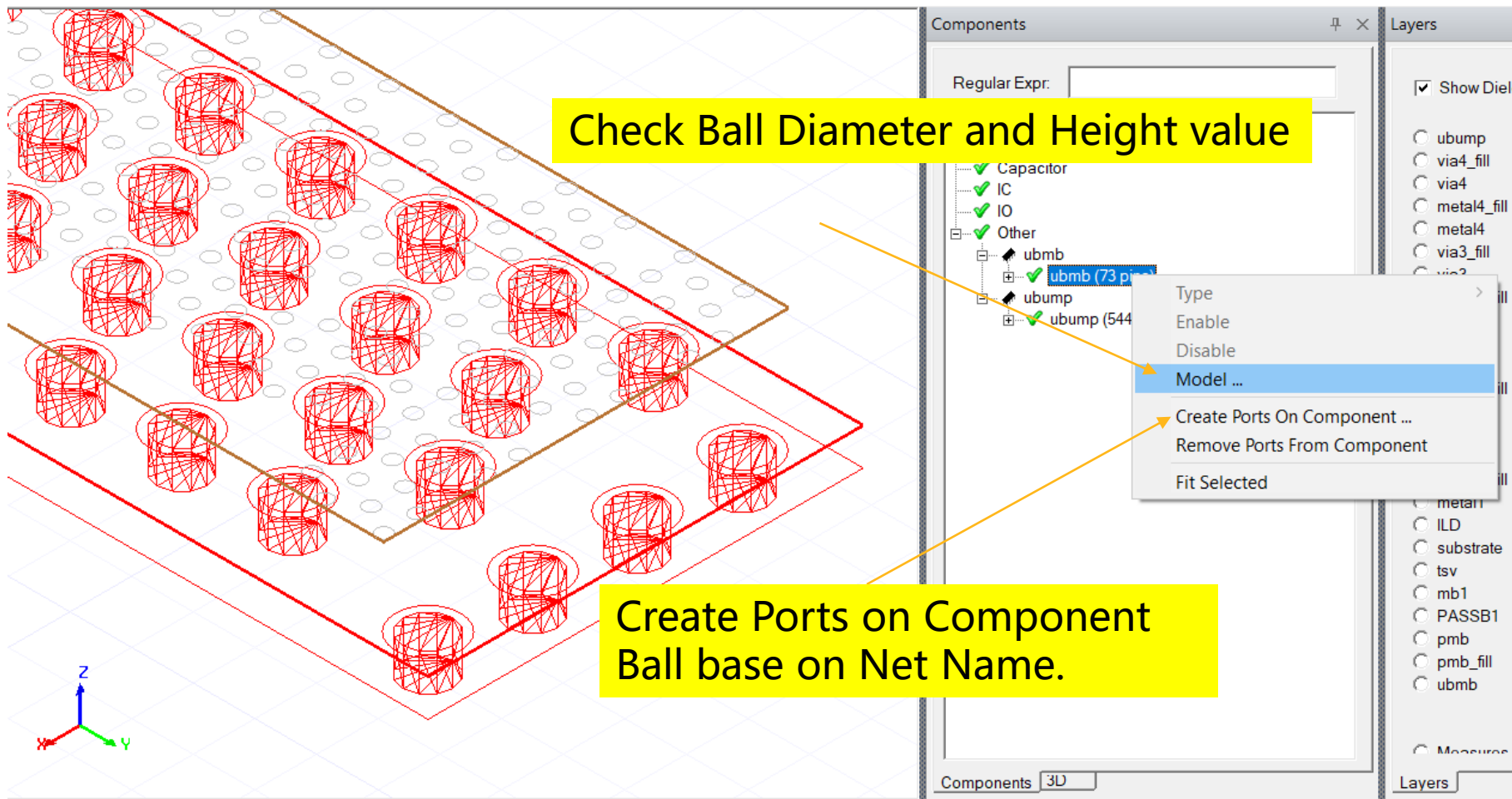
Transparency:

Notes

Total height 0.145913mm

Check Bulk Conductivity for Substrate Material

Component solder ball and port



Component Model

Component Info

Part Name: ubmb

Part Type: Other

Ref Des: ubmb

No. Pins: 73

Model Interface

Interface: Manual

Solder Ball Properties

Shape: Cylinder

Diameter: 80um

Mid Diameter: 0mm

Height: 60um

Material: solder

Port Properties

Reference Offset: 0

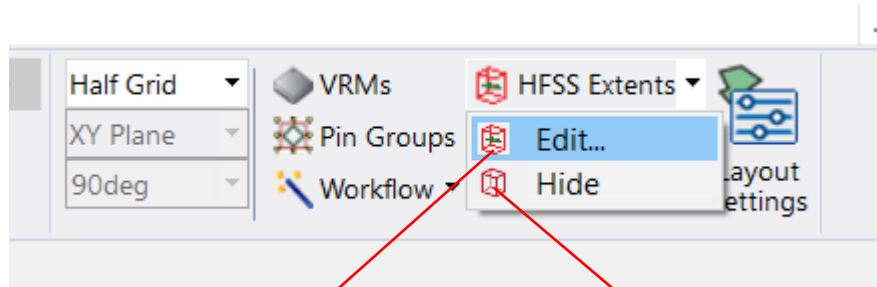
Reference Size: ☒ Auto

X: 0

Y: 0

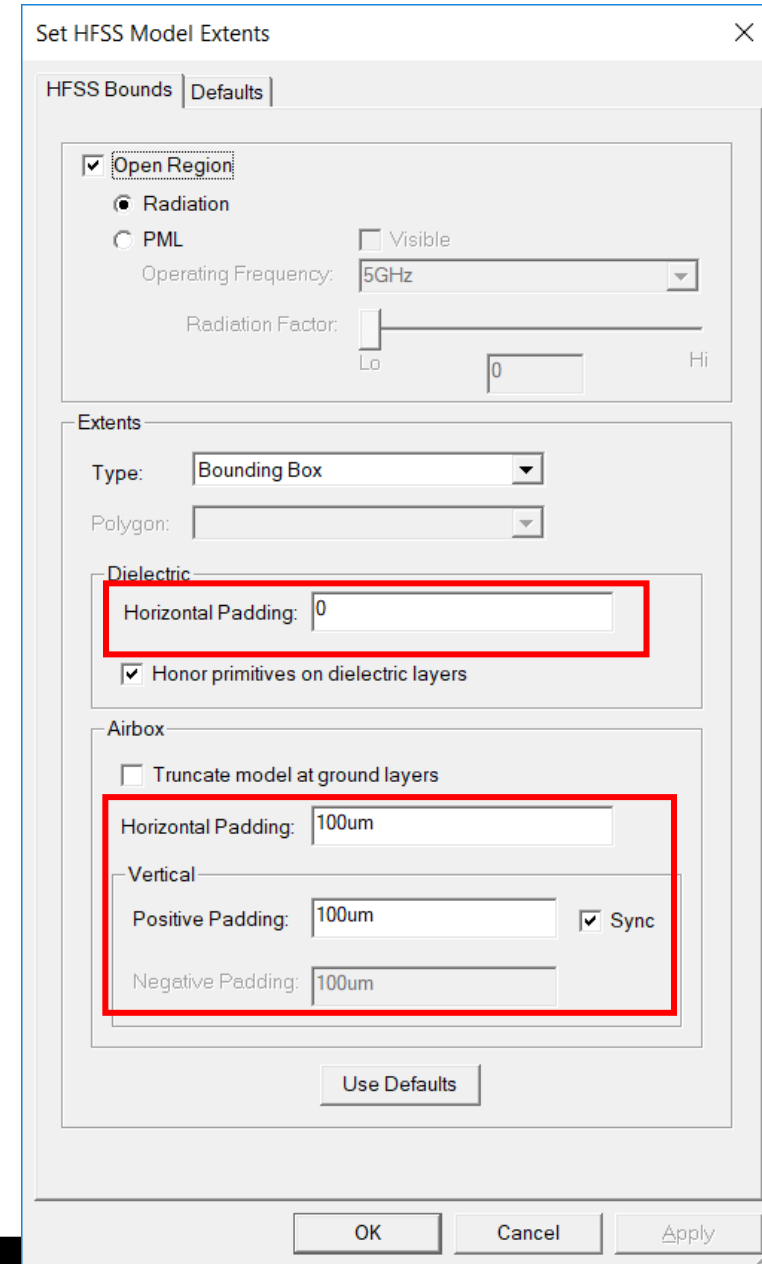
OK Cancel

/ Set HFSS Model Extents(Airbox)

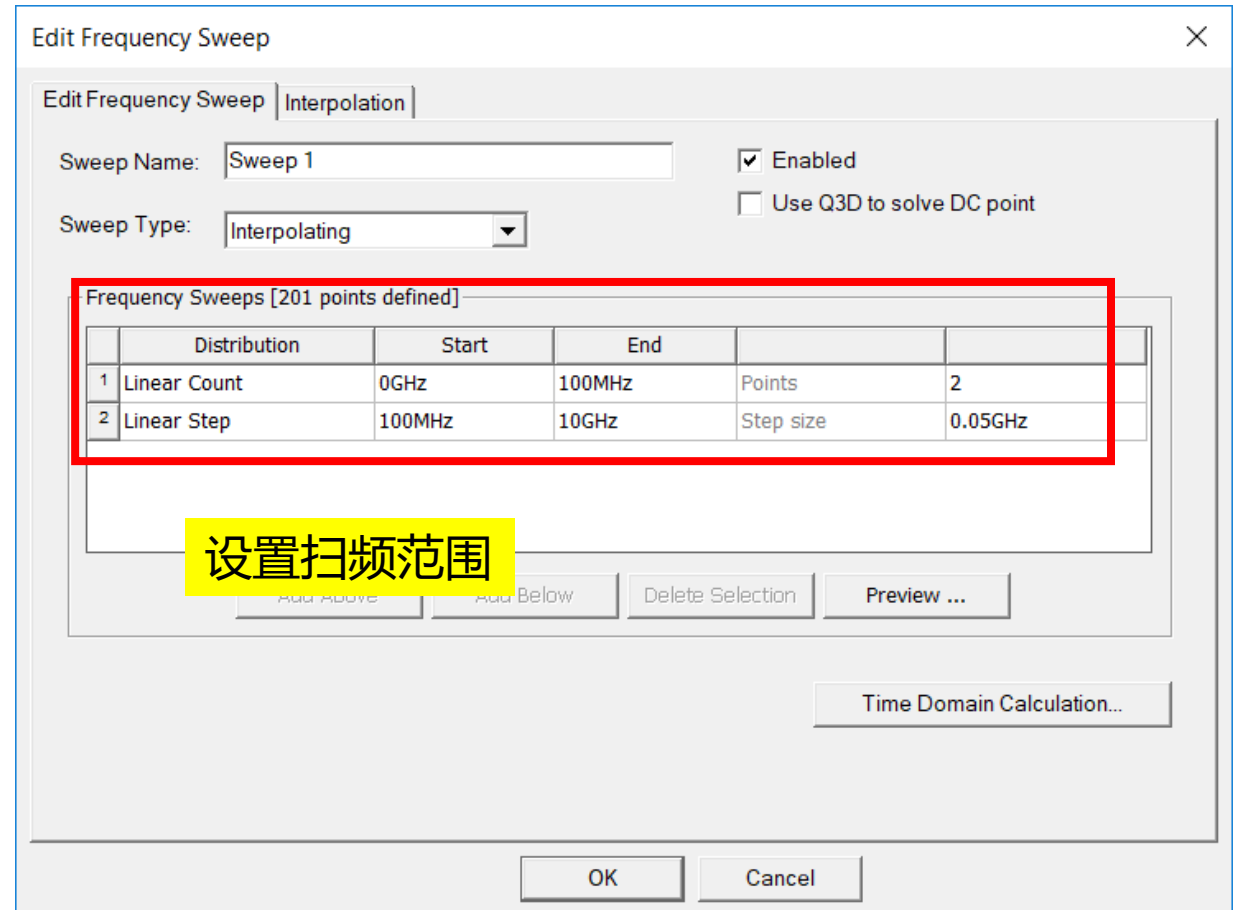
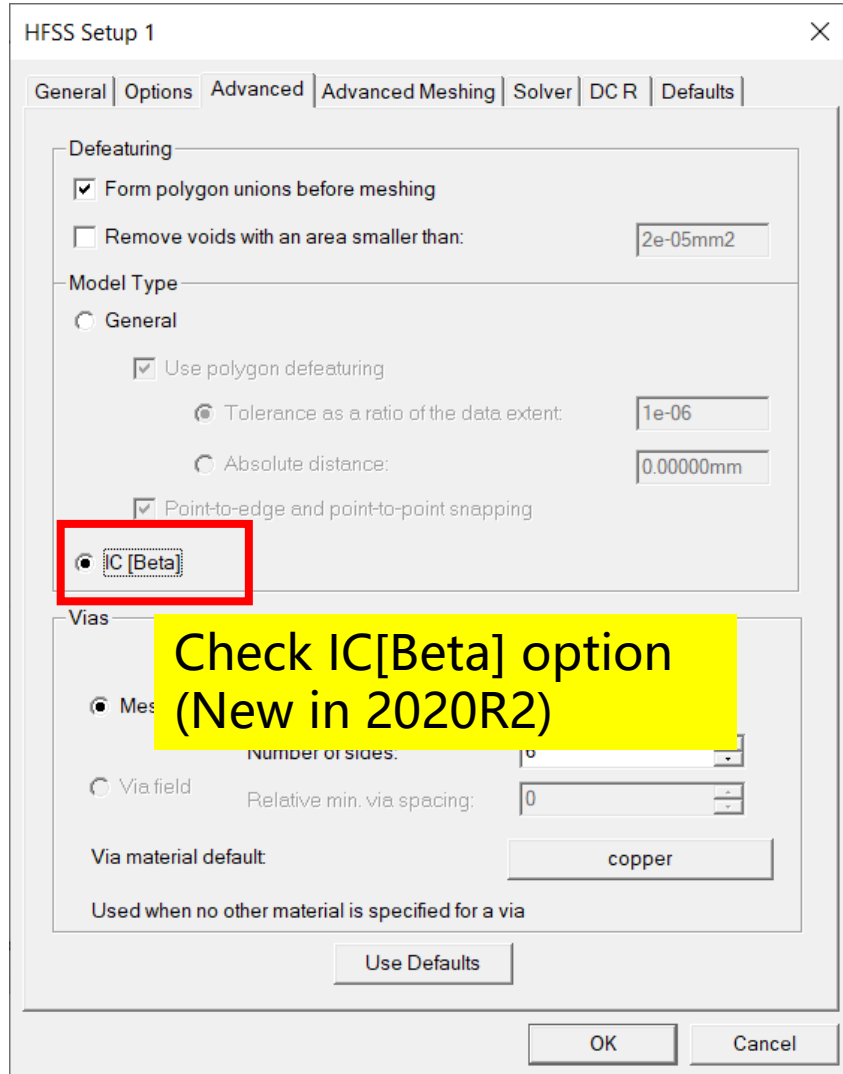


Edit Airbox

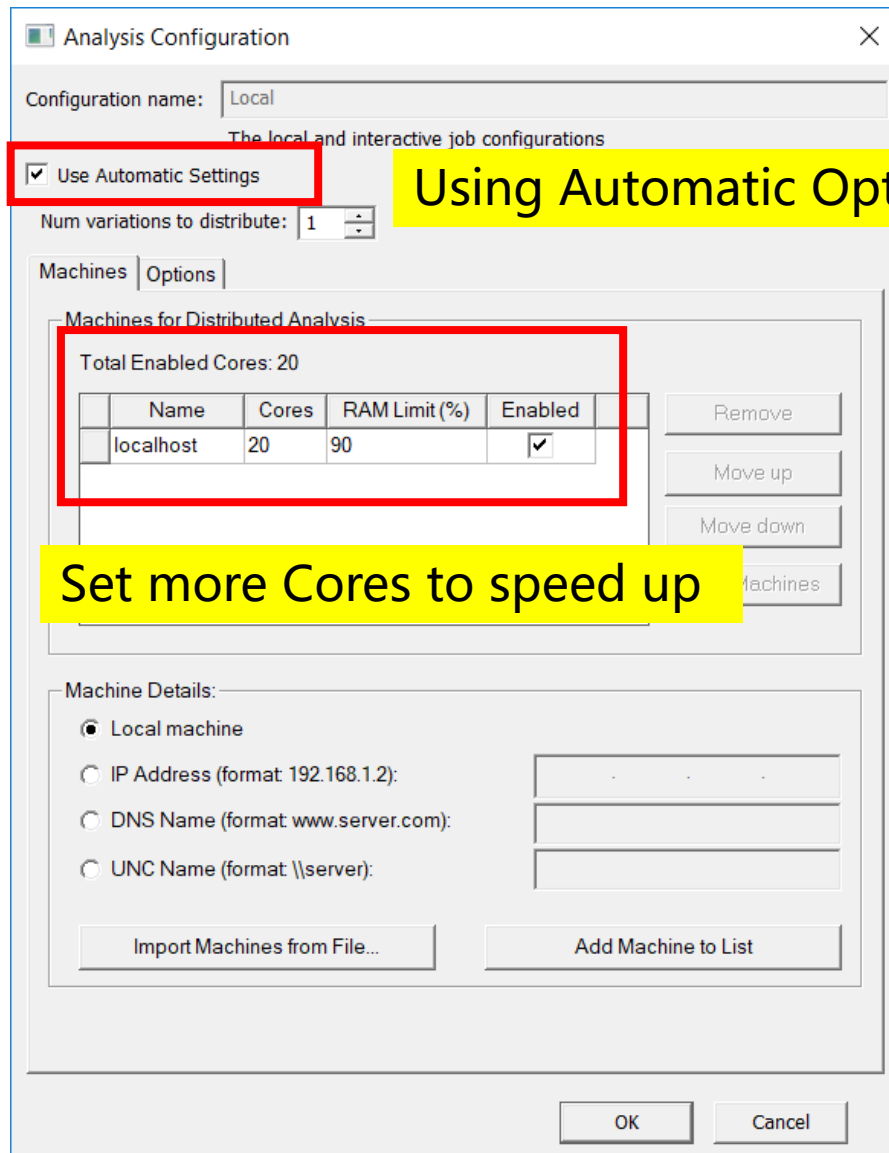
Show Airbox



HFSS Setup

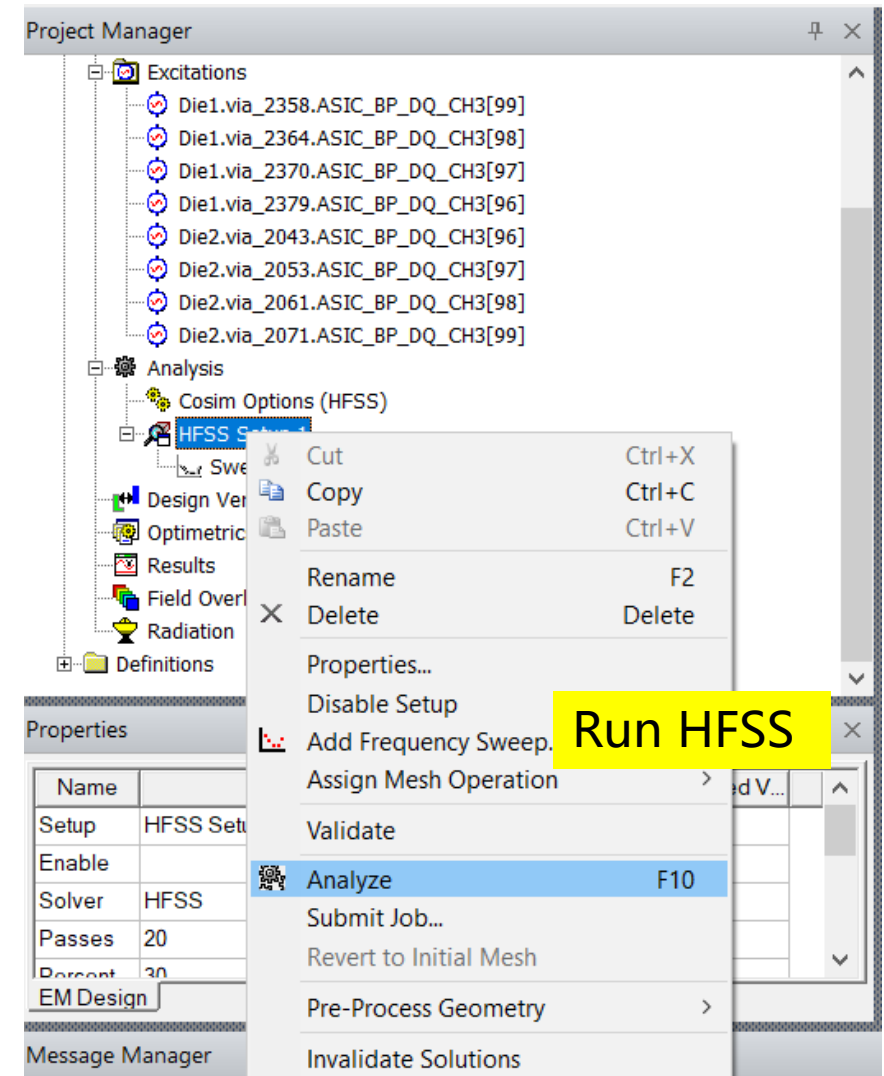


Run Simulation



Using Automatic Option

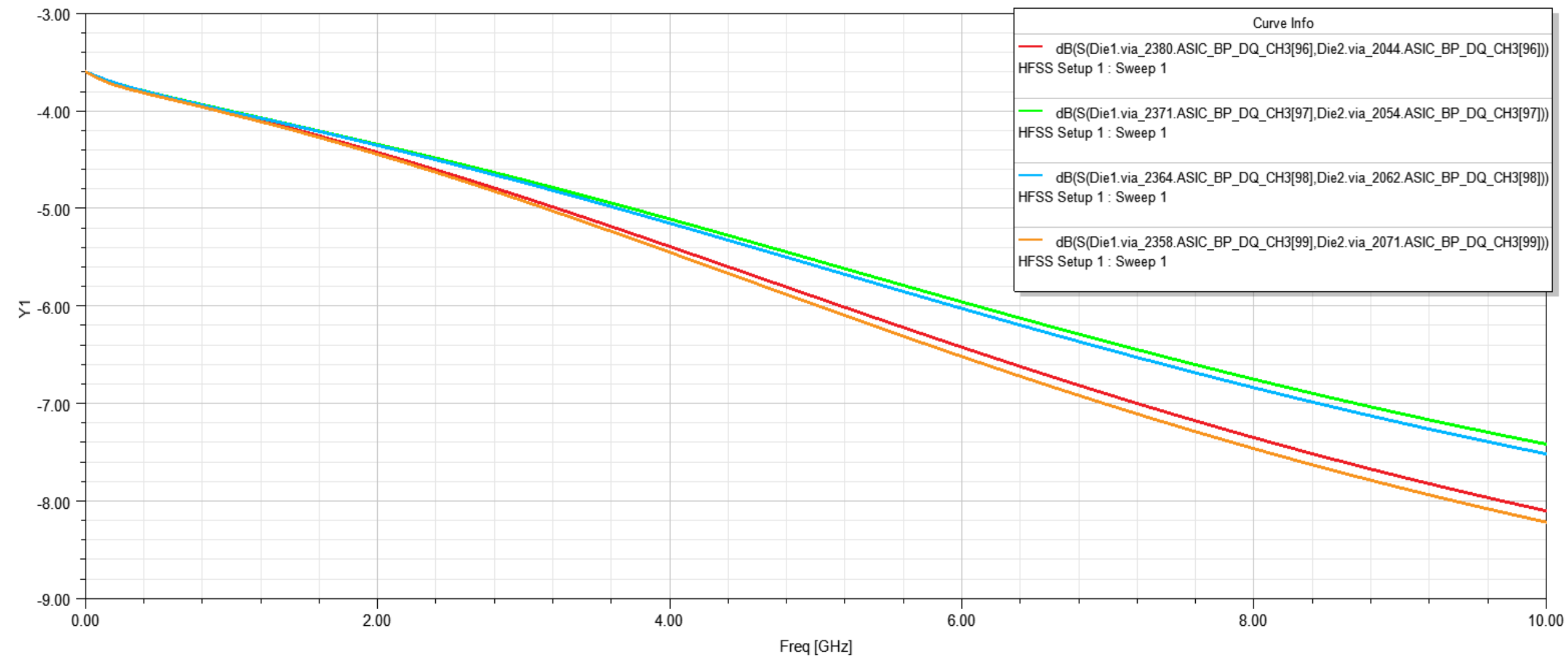
Set more Cores to speed up



Run HFSS

S Parameter Plot 1

interposer_cutout ANSYS






More about Configuration file (JSON)

Introducing JSON to configure the default value for the tools is a new attempt in V4.0.

The configuration file only work on GUI mode.

Configuration from JSON file

When running the tool at the first time, a gds2xml.json configuration file will be generated in the tool directory. The default setting of the tool can be modified by changing values in the JSON file.

名称	修改日期	类型	大小
 gds2xml.json	5/25/2021 9:16 pm	JSON File	1 KB
 GDSImportWizard.py	5/21/2021 1:30 pm	Python File	5 KB
 gdslib.dll	5/25/2021 9:14 pm	应用程序扩展	932 KB

```
1  {
2      "CreatViaGroupLayersReg": ".*via.*",
3      "fixedSmallLayerGap": 0.00500000000000000001,
4      "defaultDF": 0.02,
5      "ignorLayersReg": "ctm|cbm|air",
6      "useDefaultDF": false,
7      "sheetLayerThreshold": 0.0015,
8      "dkDeviationThreshold": "10%",
9      "thinDielectricThreshold": 0.100000000000000001,
10     "useSheetLayer": true,
11     "simplifyIgnoreLayersReg": ".*tsv.*"
12 }
```

gds2xml.json

Configuration from JSON file

`thinDielectricThreshold`, `dkDeviationThreshold`, control the behavior of `mergethinlayer`:

	thinDielectricThreshold	dkDeviationThreshold	Note
1	0.1	0.1	Merge when layer thickness < 0.1um, or 2 layers dk difference less than 10%
2	0.05	-1	Only merge when layer thickness < 0.05um
3	-1	0.05	Only merge when 2 layers dk difference less than 5%

`useSheetLayer`, `sheetLayerThreshold`, controls whether sheetlayer used to solve efficiency :

	default	Note
<code>useSheetLayer</code>	true	true: use SheetLayer, false: not use
<code>sheetLayerThreshold</code>	0.0015	Default value is < 0.0015um will use SheetLayer if <code>useSheetLayer</code> is true. The unit is "um"

Configuration from JSON file

- More will be coming...

 **Ansys**

