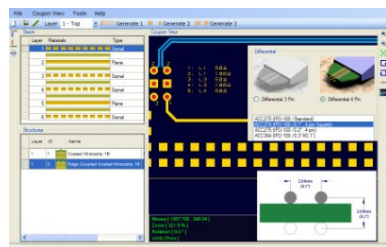
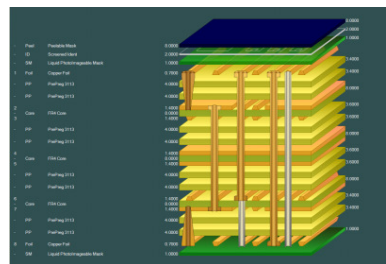
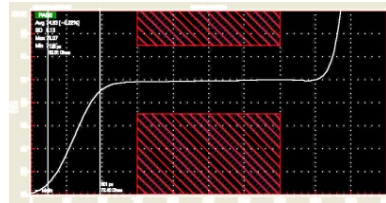
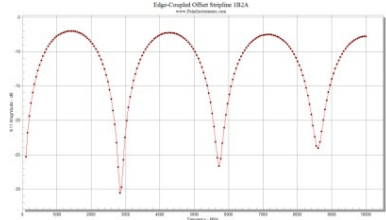
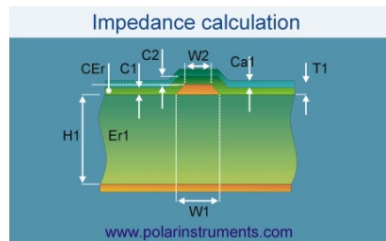


Si8000m / Si9000e / Speedstack 2015 Projects feature

Richard Attrill / John Lee



Introducing the Si8000m / Si9000e & Speedstack Projects feature

Key benefits:

- Group together a set of related structures for a particular design
- Multiple instances of the same structure type with different parameter values
- Maintain simplicity of operation
- Existing functionality remains, enhanced with project functions
- Import a complete set of Speedstack structures in a single step
- Available for both Si8000m and Si9000e

New 'Project' group

The Project group will allow multiple structures of the same type, allowing the user to quickly build a list of structures associated with a particular design. In this case layer L1 has a two coated microstrips, one for 50 ohms, one for 75 ohms. Selecting the structure thumbnail from Project group will load the details into the main Si interface.

New right-click menu will allow structures in the Project group to be added, deleted or edited

Parameter	Value	Tolerance	Minimum	Maximum	Action	
Substrate 1 Height	H1	4.3098	± 0.0000	4.3098	4.3098	Calculate
Substrate 1 Dielectric	Er1	4.2000	± 0.0000	4.2000	4.2000	Calculate
Lower Trace Width	W1	7.0000	± 0.0000	7.0000	7.0000	Calculate
Upper Trace Width	W2	6.0000	± 0.0000	6.0000	6.0000	Calculate
Trace Thickness	T1	1.2000	± 0.0000	1.2000	1.2000	Calculate
Coating Above Substrate	C1	1.0000	± 0.0000	1.0000	1.0000	Calculate
Coating Above Trace	C2	1.0000	± 0.0000	1.0000	1.0000	Calculate
Coating Dielectric	CEr	4.2000	± 0.0000	4.2000	4.2000	Calculate
Impedance	Zo	50.01		50.01	50.01	Calculate More...

v15.x Beta 06 Jan 2015

Frequency Dependent Calculation Sensitivity Analysis Via Checks

Polar Si9000 PCB Transmission Line Field Solver - [C:\Users\Richard\Desktop\Si9000 v15_x Beta 06Jan2015\Untitled.Si9]

File Edit Configuration Help

Parameter Entry Units
☒ Mils ☐ Inches ☐ Microns ☐ Millimetres

L1 50 ohms

A selected structure belonging to a Project is denoted by the grey background

Added structure is placed in the Project group

Minimum Maximum Calculate

4.3098	4.3098	Calculate
4.2000	4.2000	Calculate
7.0000	7.0000	Calculate
6.0000	6.0000	Calculate
1.2000	1.2000	Calculate
1.0000	1.0000	Calculate
1.0000	1.0000	Calculate
1.0000	1.0000	Calculate
4.2000	4.2000	Calculate
50.01	50.01	Calculate

More...

Lossless Calculation Frequency Dependent Calculation Sensitivity Analysis Via Checks

Project

v15.x Beta 06 Jan 2015

Continue the process of adding until all structures required for the design are in the Project

Right-click menu on Project group provides options to edit structures

Line Field Solver - [C:\Users\Richard\Desktop\Si9000 v15_x Beta 06Jan2015\Untitled.Si9]

Parameter Entry Units: ☒ Mils ☐ Inches ☐ Microns ☐ Millimetres

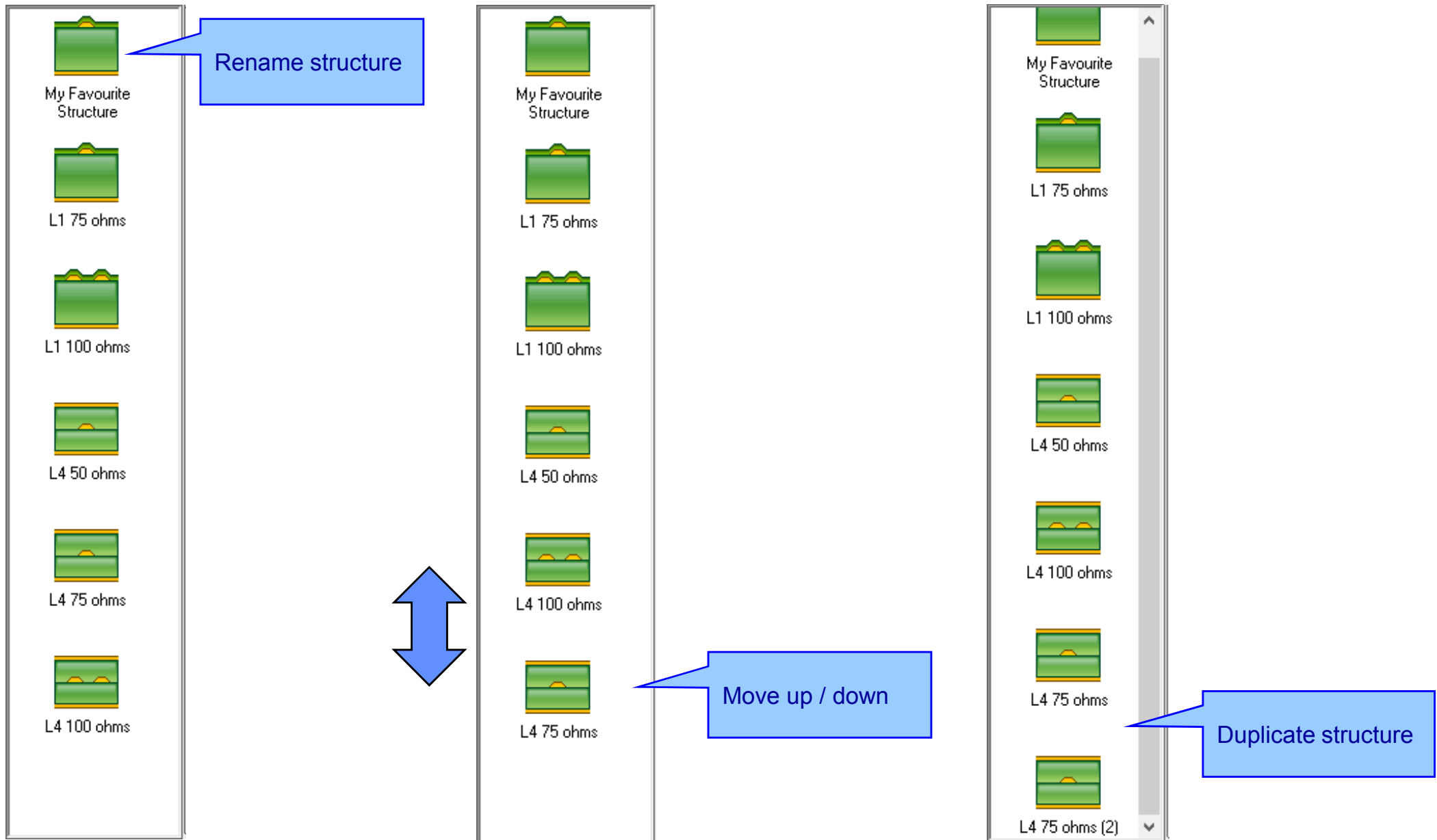
		Tolerance	Minimum	Maximum	
Substrate 1 Height	H1	15.0000	± 0.0000	15.0000	15.0000 Calculate
Substrate 1 Dielectric	Er1	4.2000	± 0.0000	4.2000	4.2000 Calculate
Substrate 2 Height	H2	15.0000	± 0.0000	15.0000	15.0000 Calculate
Substrate 2 Dielectric	Er2	4.2000	± 0.0000	4.2000	4.2000 Calculate
Lower Trace Width	W1	7.0000	± 0.0000	7.0000	7.0000 Calculate
Upper Trace Width	W2	6.0000	± 0.0000	6.0000	6.0000 Calculate
Trace Separation	S1	8.0000	± 0.0000	8.0000	8.0000 Calculate
Trace Thickness	T1	1.2000	± 0.0000	1.2000	1.2000 Calculate
Differential Impedance	Zdiff	99.99		99.99	99.99 Calculate

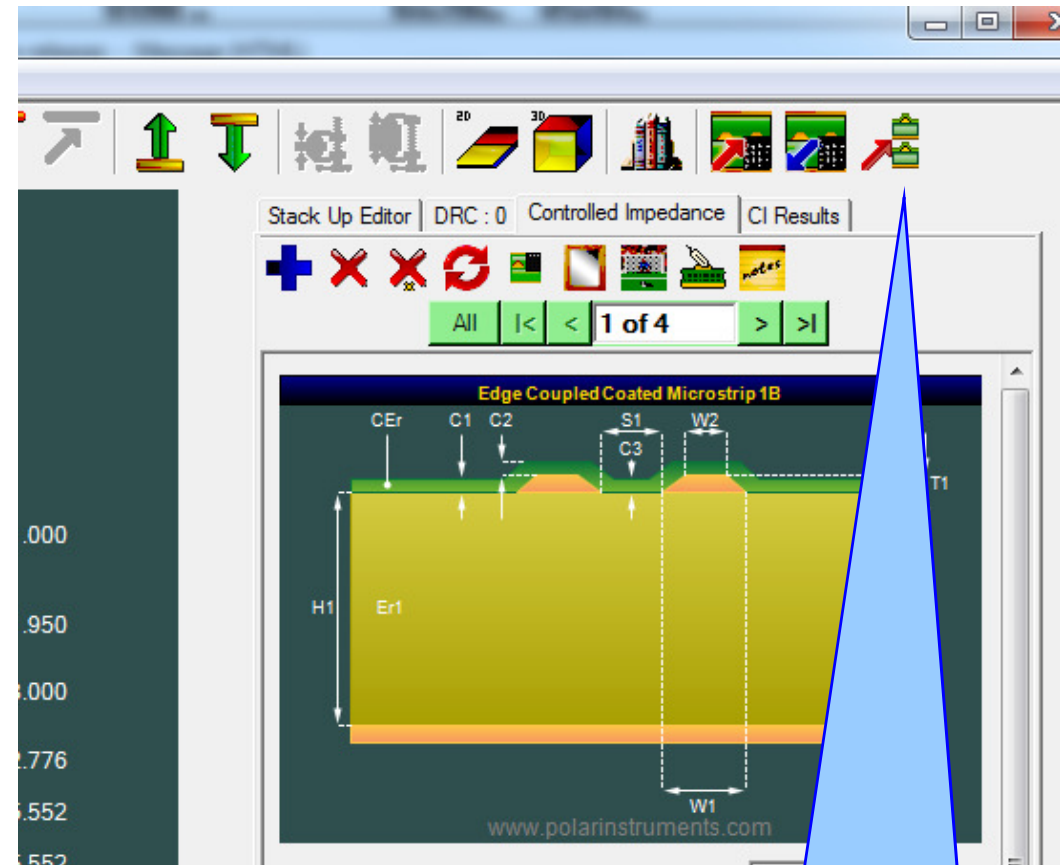
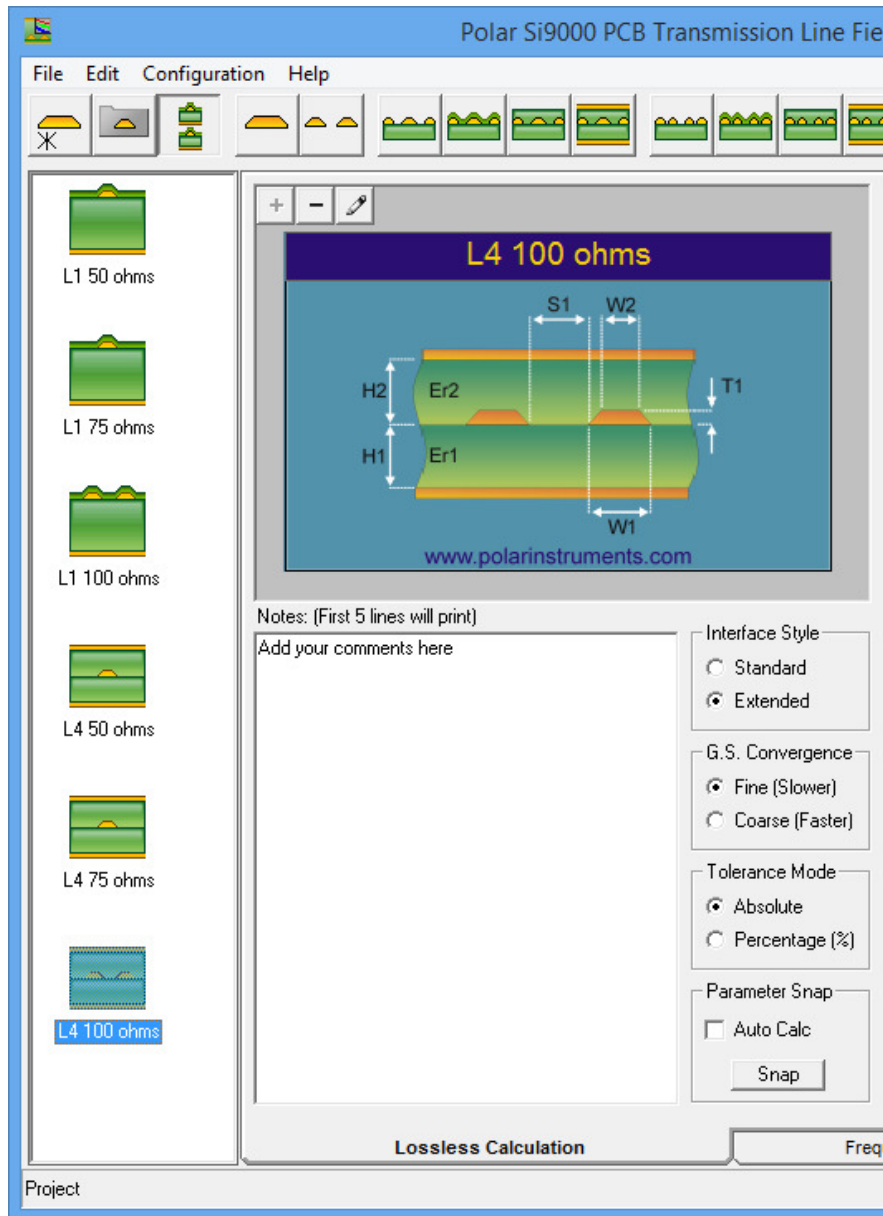
More...

Project

Lossless Calculation Frequency Dependent Calculation Sensitivity Analysis Via Checks

v15.x Beta 06 Jan 2015





In addition to creating project groups within Si8000m / Si9000e, you can also import a group of structures from Speedstack.

This will allow all structures for a stack to be further analysed for loss / sensitivity analysis

New Copy / Paste structure parameter options

Polar Si9000 v15_x Beta 06Jan2015\Untitled.Si9

File Edit Configuration Help

Parameter Entry Units: ☒ Mils ☐ Inches ☐ Microns ☐ Millimetres

Substrate 1 Height H1 4.3098 ± 0.0000 4.3098 4.3098 Calculate

Substrate 1 Dielectric Er1 4.2000 ± 0.0000 4.2000 4.2000 Calculate

Lower Trace Width W1 7.0000 ± 0.0000 7.0000 7.0000 Calculate

Upper Trace Width W2 6.0000 ± 0.0000 6.0000 6.0000 Calculate

Trace Thickness T1 1.2000 ± 0.0000 1.2000 1.2000 Calculate

Coating Above Substrate C1 1.0000 ± 0.0000 1.0000 1.0000 Calculate

Coating Above Trace C2 1.0000 ± 0.0000 1.0000 1.0000 Calculate

Coating Dielectric CEr 4.2000 ± 0.0000 4.2000 4.2000 Calculate

Impedance Zo 50.01 50.01 50.01 Calculate More...

Notes: (First 5 lines will print)
Add your comments here

Interface Style
☐ Standard
☒ Extended

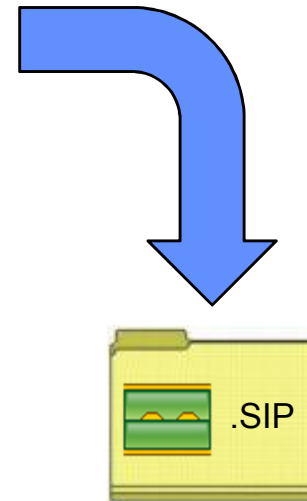
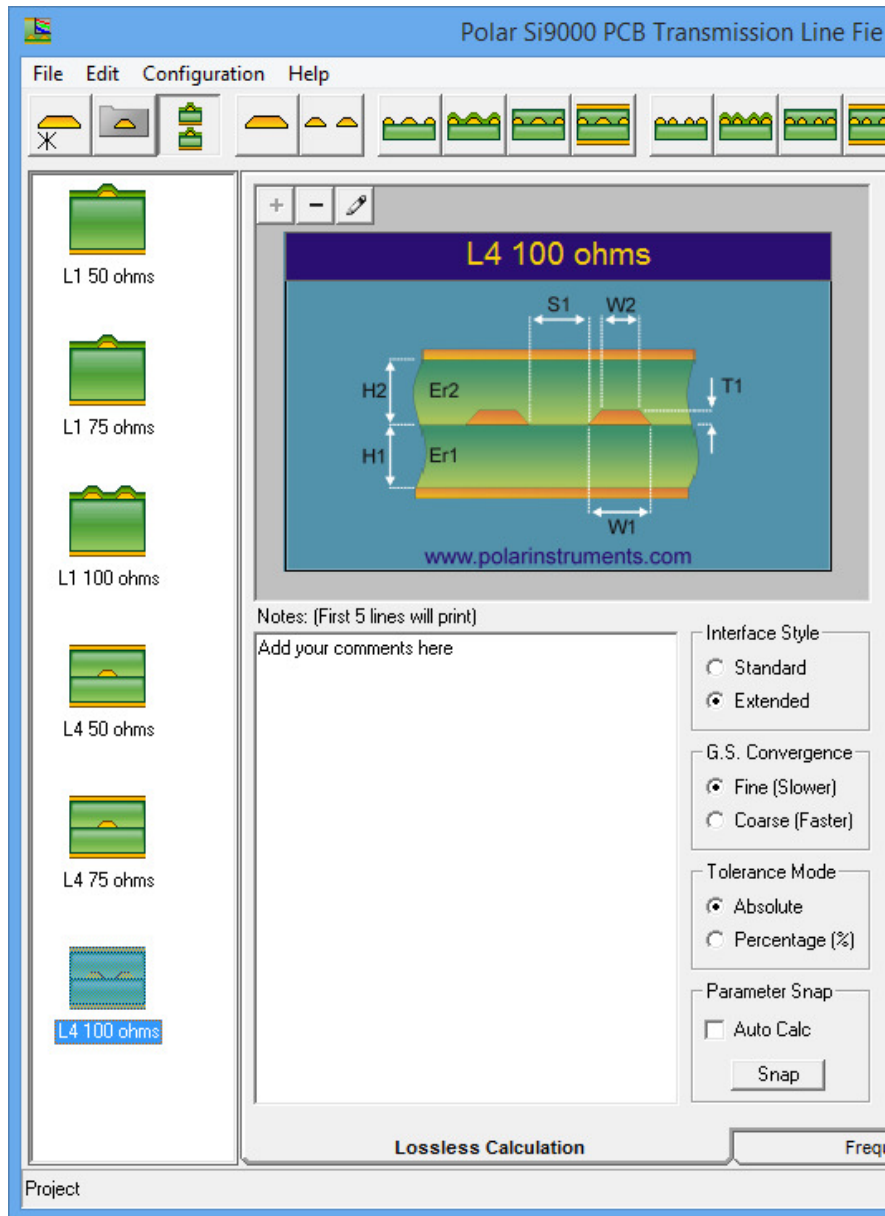
G.S. Convergence
☒ Fine (Slower)
☐ Coarse (Faster)

Tolerance Mode
☒ Absolute
☐ Percentage (%)

Parameter Snap
☐ Auto Calc
Snap

Lossless Calculation Frequency Dependent Calculation Sensitivity Analysis Via Checks

Project



A new Si Project file format (.SIP) contains all the info in the Project group. New options to Open and Save the Project group have been created and placed on the File menu.

New Copy / Paste structure parameter options

The screenshot displays the Polar SI9000 software interface for designing a microstrip line. The main window shows a cross-sectional diagram of the structure with parameters labeled: H1 (Substrate 1 Height), Er1 (Substrate 1 Dielectric), CEr (Coating Dielectric), C1 (Coating Above Substrate), C2 (Coating Above Trace), W1 (Lower Trace Width), W2 (Upper Trace Width), and T1 (Trace Thickness). The design is titled "L1 50 ohms".

On the left, a vertical toolbar shows various structure templates: L1 50 ohms, L1 75 ohms, L1 100 ohms, L4 50 ohms, L4 75 ohms, and L4 100 ohms.

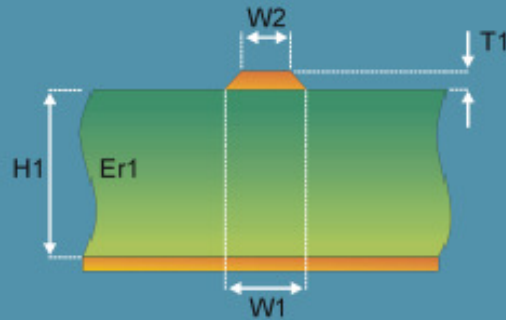
On the right, a table lists the parameters and their values:

Parameter	Value	Tolerance	Minimum	Maximum	Action	
Substrate 1 Height	H1	4.3098	± 0.0000	4.3098	4.3098	Calculate
Substrate 1 Dielectric	Er1	4.2000	± 0.0000	4.2000	4.2000	Calculate
Lower Trace Width	W1	7.0000	± 0.0000	7.0000	7.0000	Calculate
Upper Trace Width	W2	6.0000	± 0.0000	6.0000	6.0000	Calculate
Trace Thickness	T1	1.2000	± 0.0000	1.2000	1.2000	Calculate
Coating Above Substrate	C1	1.0000	± 0.0000	1.0000	1.0000	Calculate
Coating Above Trace	C2	1.0000	± 0.0000	1.0000	1.0000	Calculate
Coating Dielectric	CEr	4.2000	± 0.0000	4.2000	4.2000	Calculate
Impedance	Zo	50.01		50.01	50.01	Calculate

Below the table, there are options for Interface Style (Standard, Extended), G.S. Convergence (Fine (Slower), Coarse (Faster)), Tolerance Mode (Absolute, Percentage (%)), and Parameter Snap (Auto Calc, Snap).

At the bottom, there are tabs for Lossless Calculation, Frequency Dependent Calculation, Sensitivity Analysis, and Via Checks.

Surface Microstrip 1B

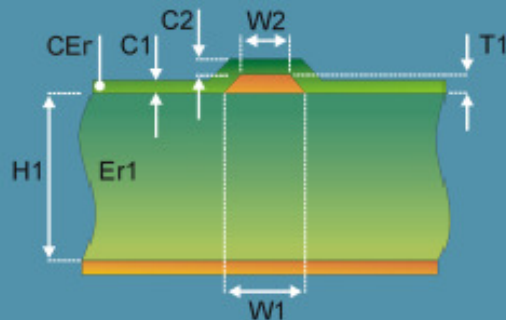


			Tolerance	Minimum	Maximum	
Substrate 1 Height	H1	8.5000	± 0.0000	8.5000	8.5000	Calculate
Substrate 1 Dielectric	Er1	4.2000	± 0.0000	4.2000	4.2000	Calculate
Lower Trace Width	W1	6.0000	± 0.0000	6.0000	6.0000	
Upper Trace Width	W2	5.0000	± 0.0000	5.0000	5.0000	Calculate
Trace Thickness	T1	1.2000	± 0.0000	1.2000	1.2000	Calculate
Impedance	Zo	80.03		80.03	80.03	



Often it is useful to pass parameters between structures. In this case the parameters will be copied from Surface Microstrip 1B

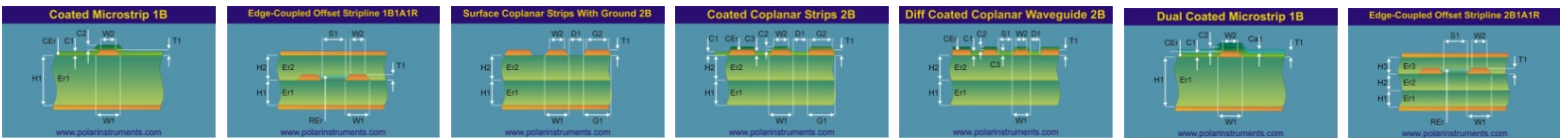
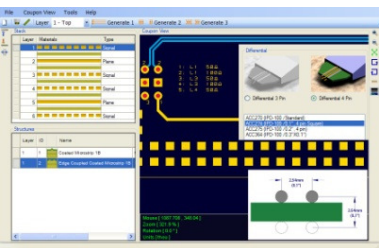
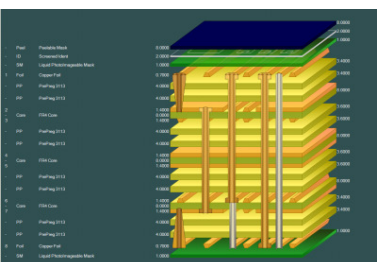
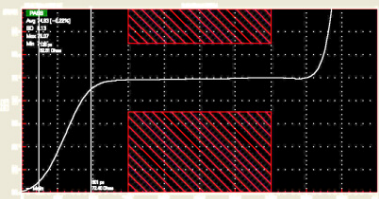
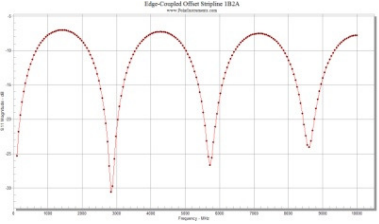
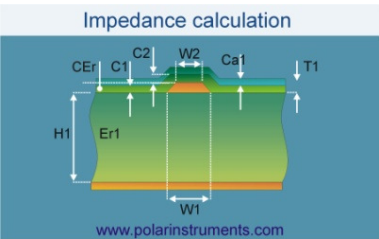
Coated Microstrip 1B



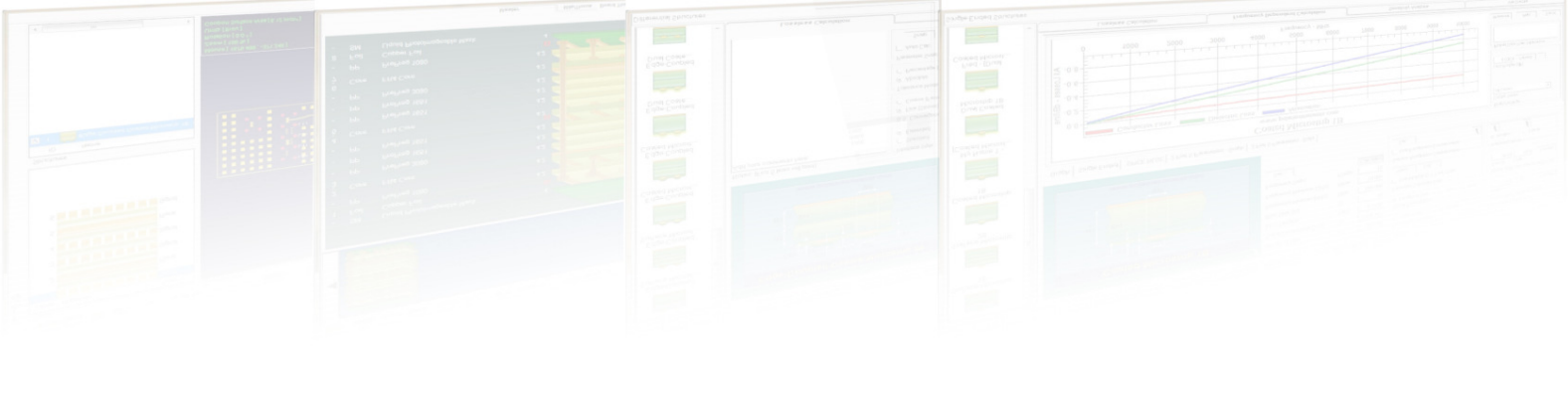
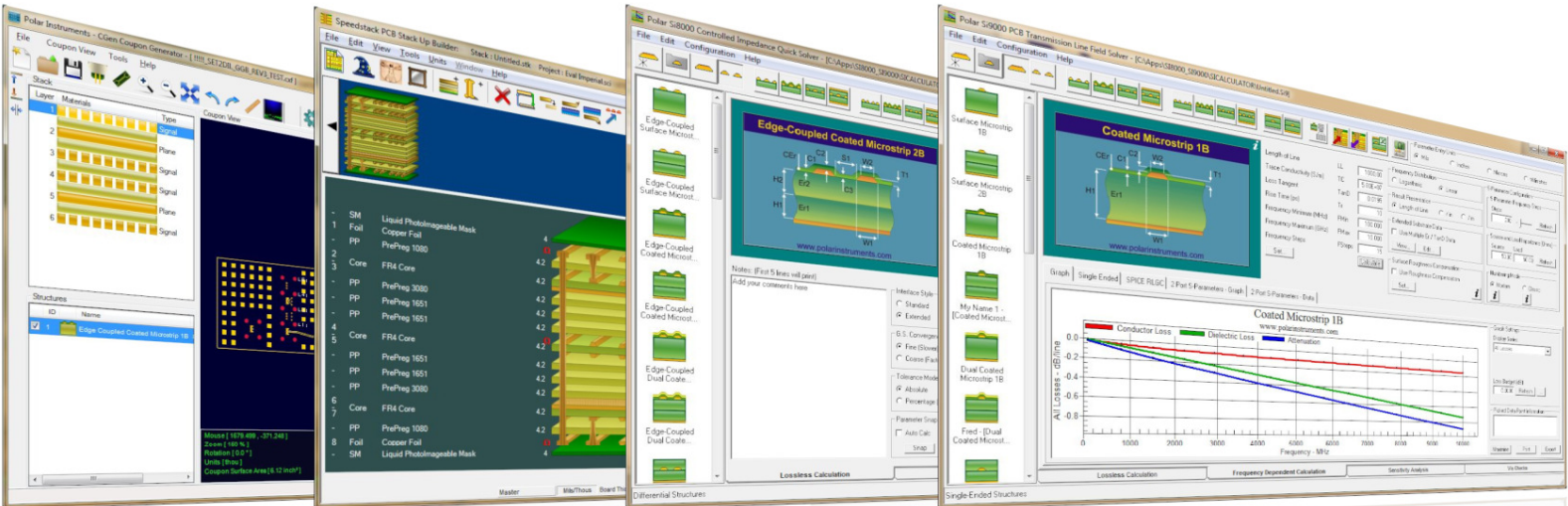
			Tolerance	Minimum	Maximum	
Substrate 1 Height	H1	8.5000	± 0.0000	8.5000	8.5000	Calculate
Substrate 1 Dielectric	Er1	4.2000	± 0.0000	4.2000	4.2000	Calculate
Lower Trace Width	W1	6.0000	± 0.0000	6.0000	6.0000	
Upper Trace Width	W2	5.0000	± 0.0000	5.0000	5.0000	Calculate
Trace Thickness	T1	1.2000	± 0.0000	1.2000	1.2000	Calculate
Coating Above Substrate	C1	1.0000	± 0.0000	1.0000	1.0000	
Coating Above Trace	C2	1.0000	± 0.0000	1.0000	1.0000	
Coating Dielectric	CEr	4.2000	± 0.0000	4.2000	4.2000	
Impedance	Zo	75.28		75.28	75.28	



... and then pasted to Coated Microstrip 1B. This should reduce the need to note down the parameter values before keying them in on the new structure

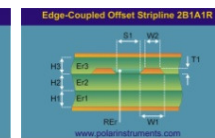
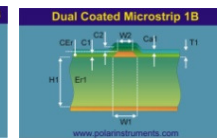
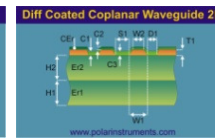
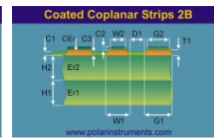
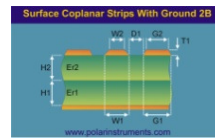
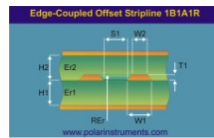
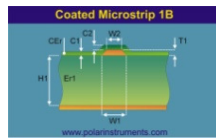
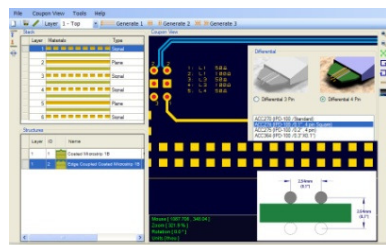
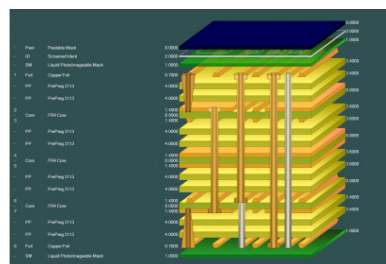
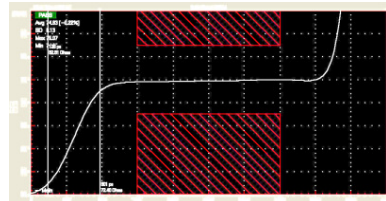
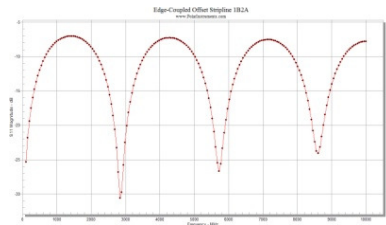
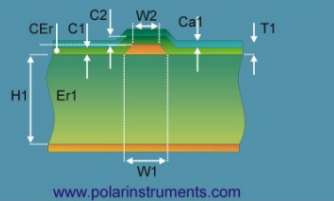


Thank you





Impedance calculation



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