



EASYLOGIX.DE



PCB-Investigator Physics

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PCBi - Physics

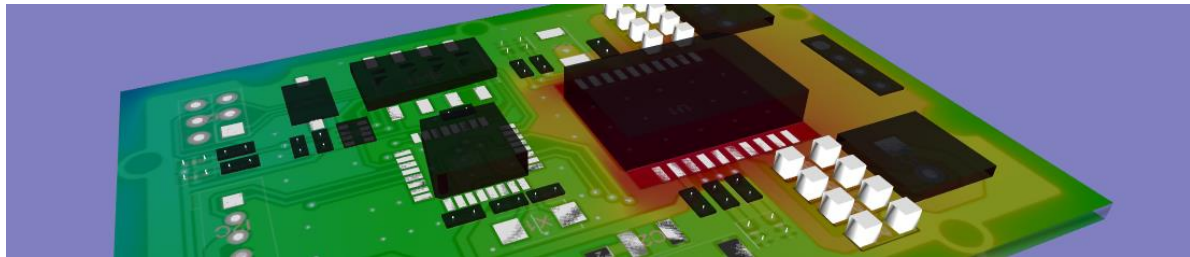
Why do I need PCBi - Physics?

PCB-Investigator Physics is the perfect tool to simulate the **physical behaviour** of your Printed Circuit Boards during development phase.

It enables you to find **thermal hotspots**, critical trace **resistances** and **voltage drops** that are too high, even before prototyping begins!

With the built-in editing functions of PCB-Investigator Physics it's even possible to **optimize the layout** and stack-up to achieve the best possible physical behaviour with only a few clicks!

Save valuable time and prototype costs with the simulations of PCBi-Physics!



Why do I need
PCBi-Physics?

Which data is
needed?

How to run the
Simulation?

What does the
result look like?

We piqued your
interest?

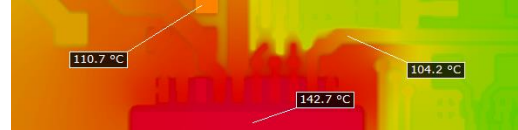


PCBi - Physics

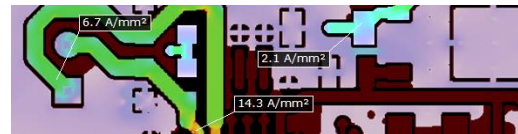
Why do I need PCBi - Physics?

To get information about the physical behaviour of your Printed Circuit Board during operation, PCB-Investigator Physics enables you to simulate the following physical properties:

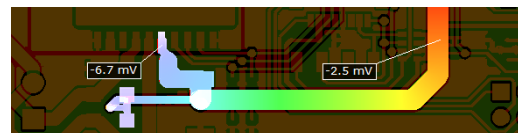
- The **Temperature** raise at each location of the PCB caused by power loss of components or by high currents



- The **Current Density**, e.g. at copper bottlenecks or in drills



- The **Voltage Drop** and **Copper Resistance** between any pins on any layer



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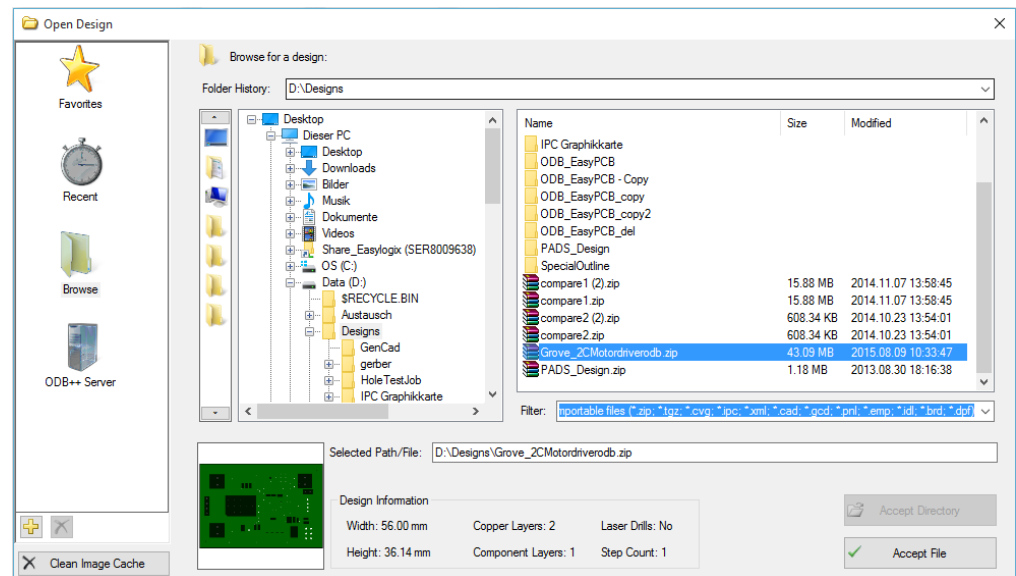
We piqued your
interest?

Which data is needed?

As input data you can select any CAD format supported by PCB-Investigator.

Supported formats are:

- ODB++
- GenCAD
- IPC2581
- IDF 2.0 / 3.0
- Gerber274x
- ...





PCBi - Physics

How to run the Simulation?

1) Enter general Project parameters

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The screenshot shows the 'PCBi-Physics - Simulation' window with a tabbed interface. The 'Project' tab is active, displaying the following settings:

- Project Settings:**
 - Projectname:
 - CAD Data Step:
- Standard Color Settings:**
 - Color of Source Pins:
 - Color of Sink Pins:
 - Color of Power Dissipation Components:
- Calculation Settings:**
 - Tasks: ☒ Voltage Drop, ☒ Temperature
 - Area: ☒ Complete Board, ☐ Area of used Nets
 - Accuracy: ☐ Standard, ☒ Very Fine, ☐ Fine, ☐ User μm

At the bottom, there are buttons for 'Save Setting', 'Import Setting', 'Export Setting', and 'Close'. A blue arrow button is also present on the right side of the settings area.



PCBi - Physics

How to run the Simulation?

2) Enter Stack-Up information (Copper foils, Prepregs)

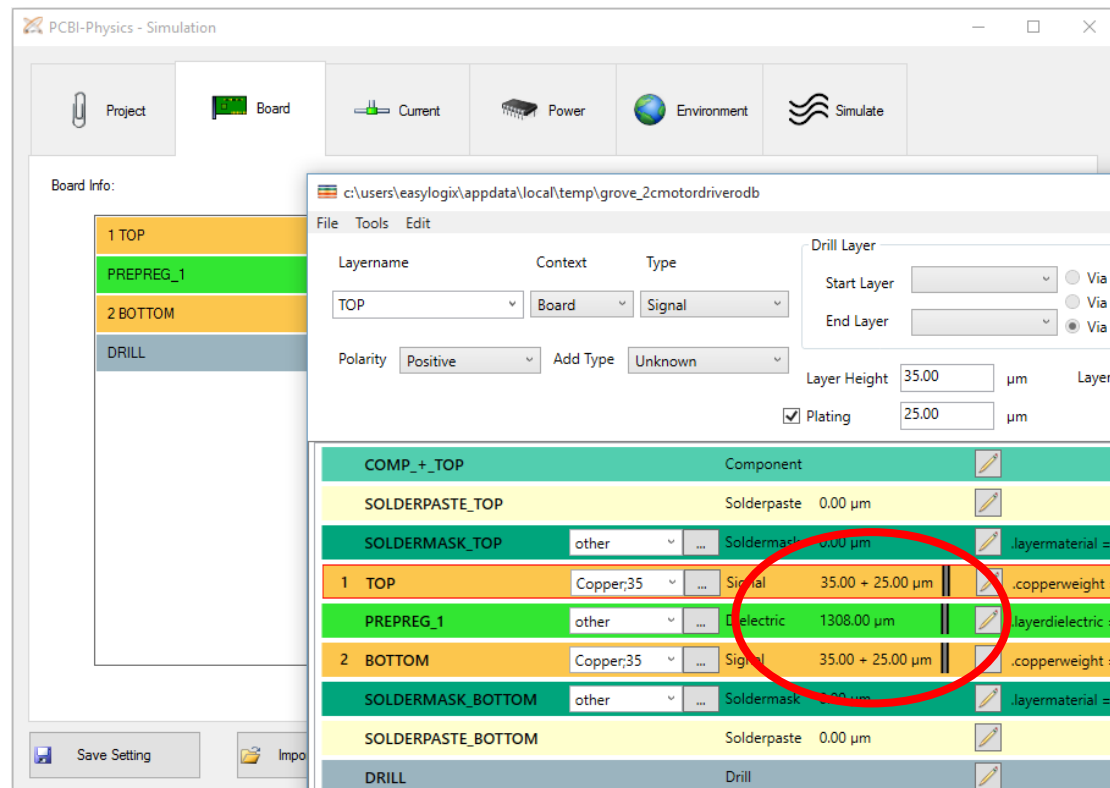
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PCBi - Physics

How to run the Simulation?

3) Enter Current Sources / Sinks for each important net

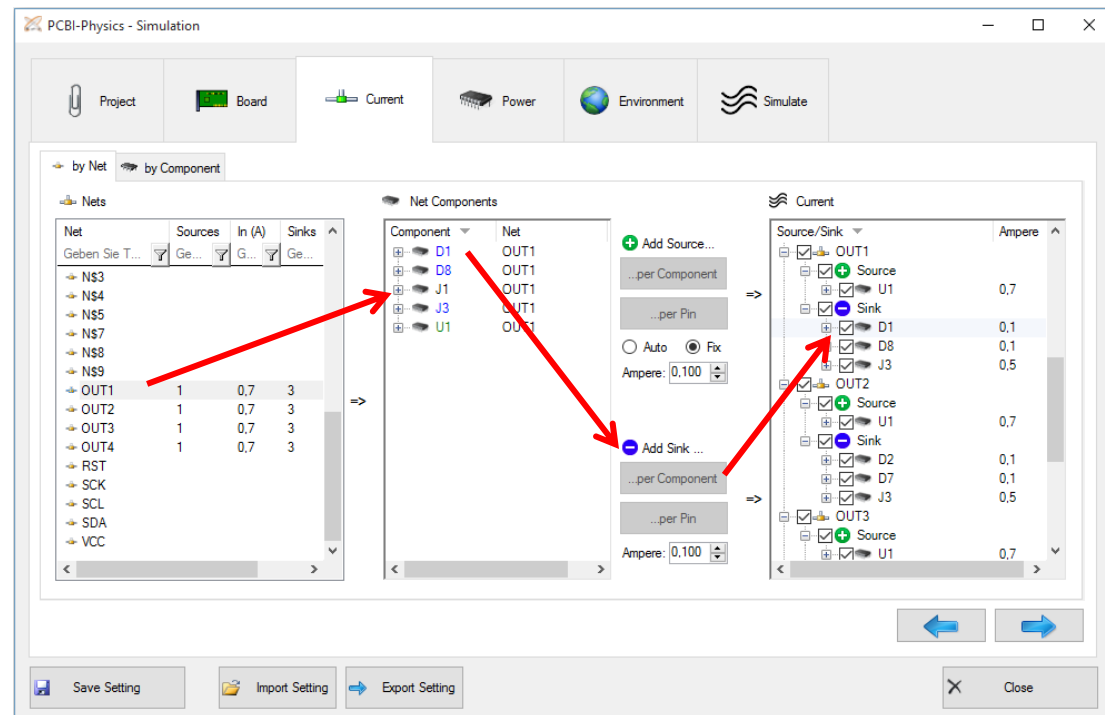
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How to run the Simulation?

4) Enter Power Dissipation for each Component

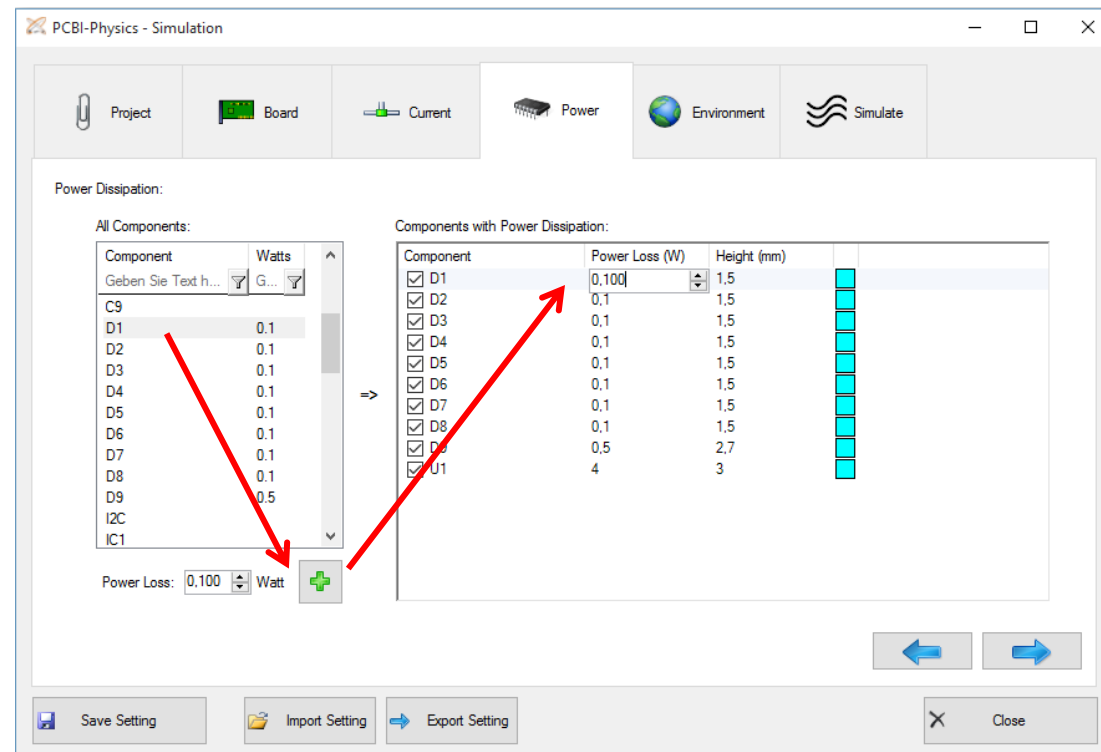
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PCBi - Physics

How to run the Simulation?

5) Enter environmental Temperatures and Heat Exchange values

The screenshot shows the 'PCBi-Physics - Simulation' window with the 'Environment' tab selected. The window has a top toolbar with icons for Project, Board, Current, Power, Environment, and Simulate. The main area is titled 'Environment Info:' and contains two side-by-side input sections for 'Top Side' and 'Bot Side'. Each section has two input fields: 'Ambient Temperature' (set to 20.0 °C) and 'Heat exchange' (set to 14.0 W/m²K). Below these sections is a 'Heat exchange calculator' button and a text label 'Current Power Dissipation: 5,300 W'. At the bottom of the window are buttons for 'Save Setting', 'Import Setting', 'Export Setting', and 'Close', along with left and right navigation arrows.

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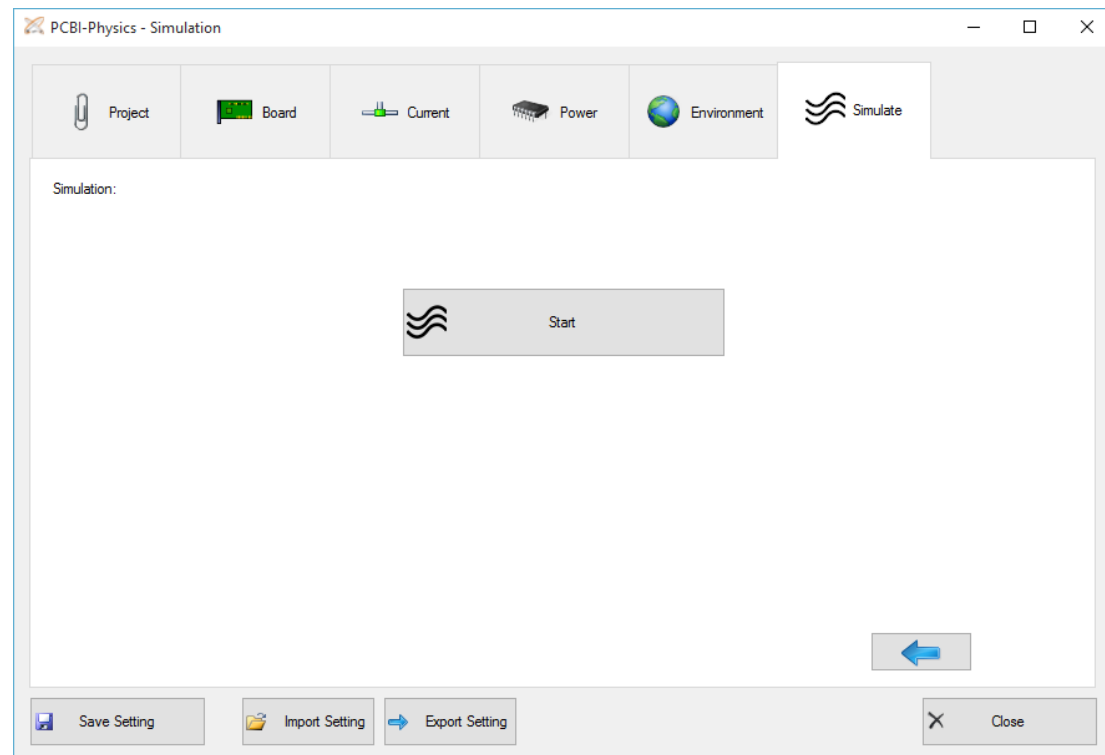
How to run the
Simulation?

What does the
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How to run the Simulation?

6) Click "Start" to initiate the simulation process



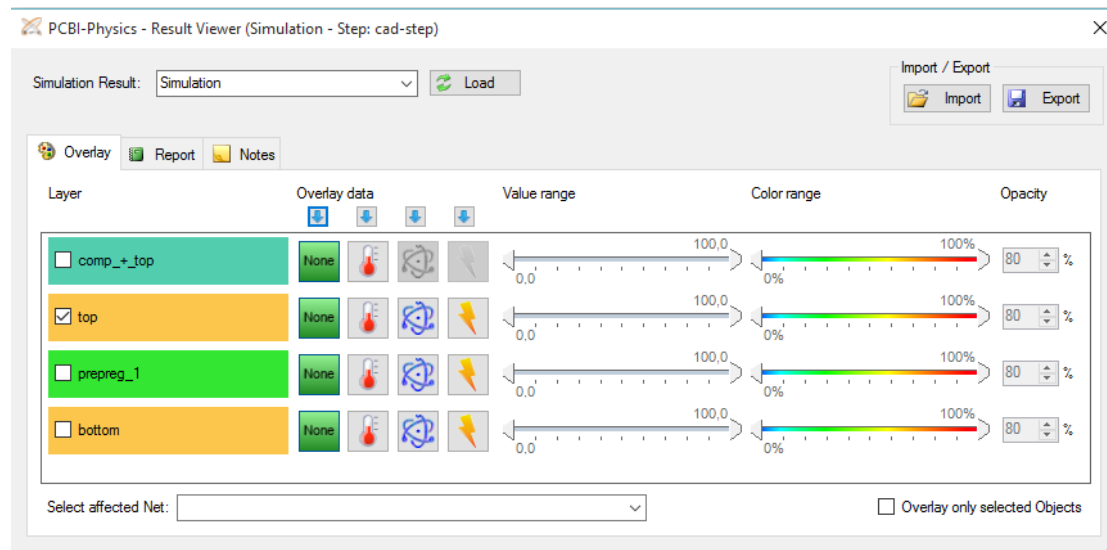


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What does the result look like?

The simulation result can be evaluated in the "Result Viewer" by a graphical overlay on the CAD data or with the help of a report.

For documentation issues it is possible to add Notes showing the simulated values at important locations.



The following slides will give a few examples...

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What does the result look like?

Example 1: Temperature Overlay with Notes

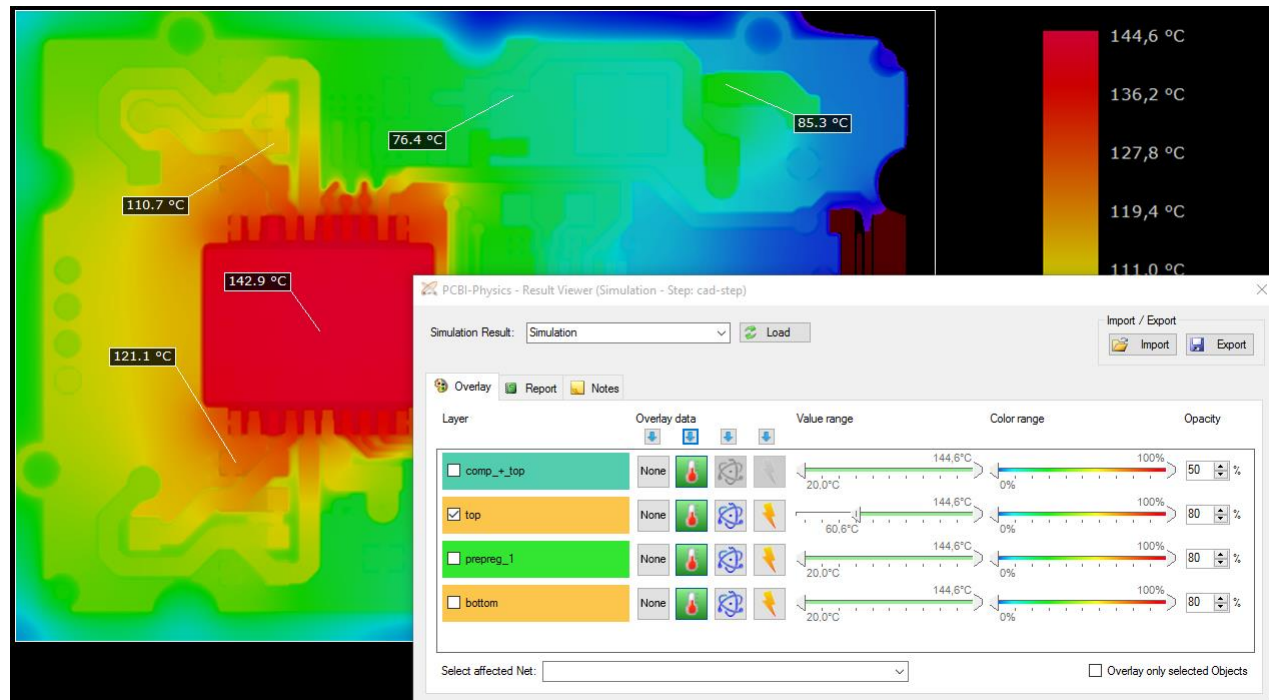
Why do I need
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Temperature on the top signal layer (Filter: Temperature > 60°C)



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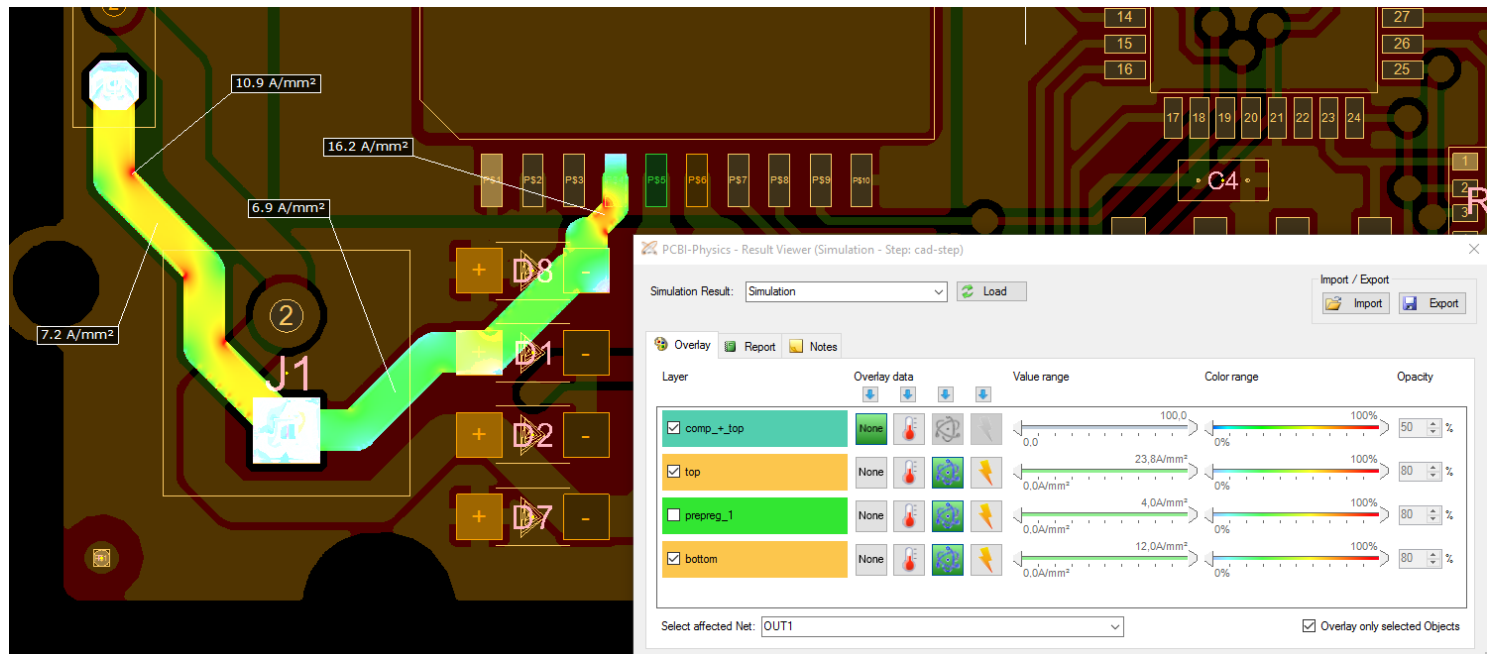
How to run the
Simulation?

What does the
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We piqued your
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What does the result look like?

Example 2: Current Density in the net "OUT1"



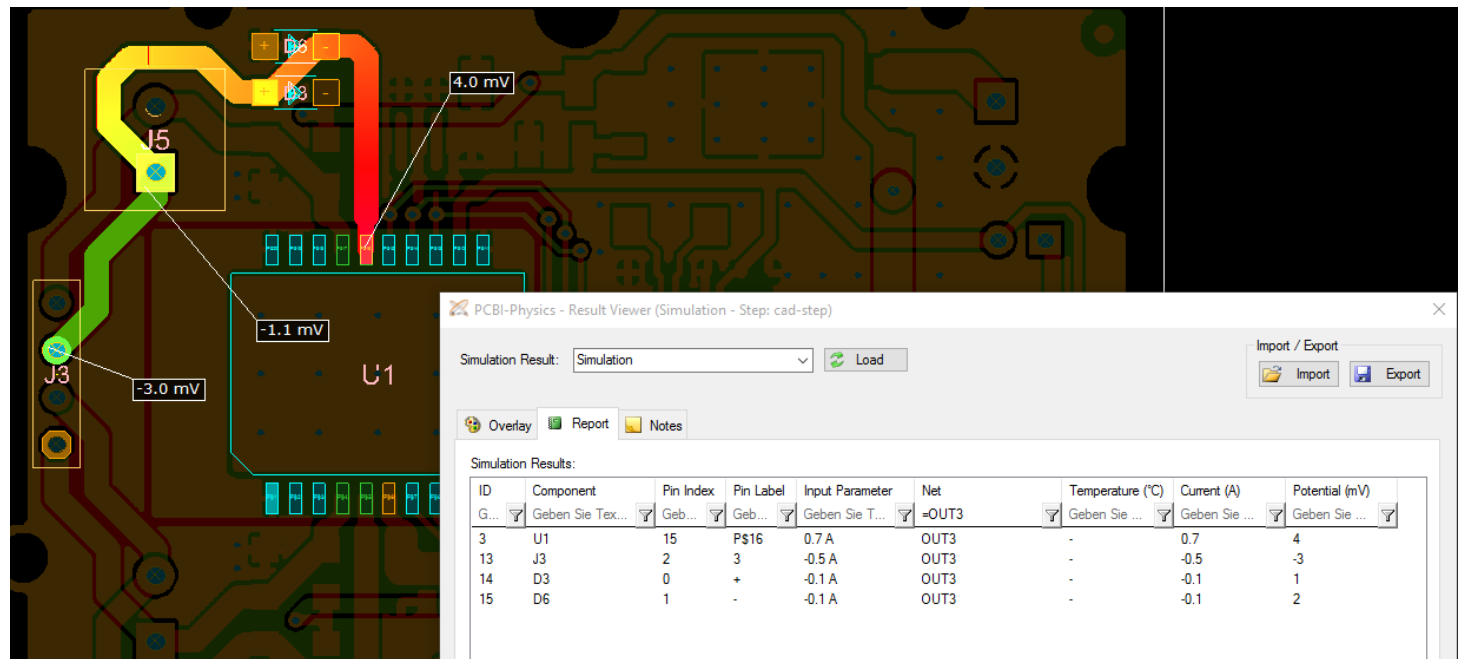
Current Density in the net "OUT1" over all layers



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What does the result look like?

Example 3: Voltage Drop in the net "OUT3"



Voltage Drop in the net "OUT3" (Graphically and as Report)
With this information the Resistance between e.g. U1 and J3 can be calculated ($R = U/I$)

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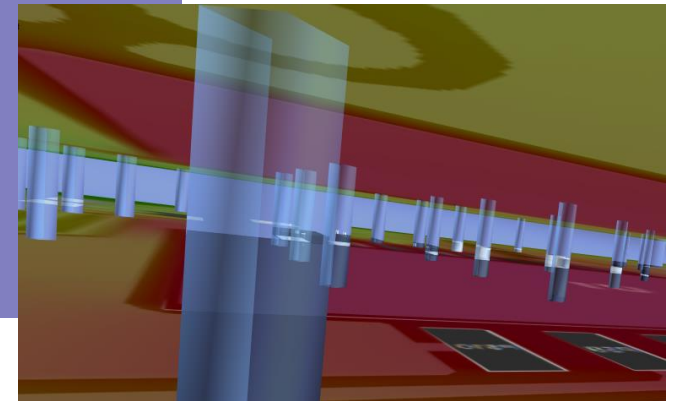
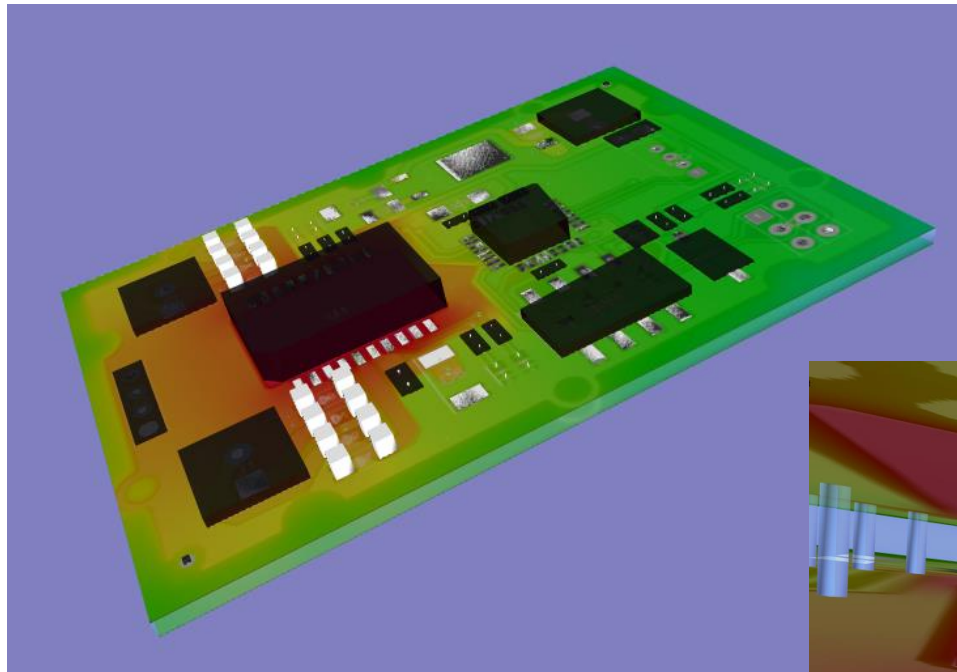
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What does the result look like?

Example 4: 3D Views with Temperature Overlay



3D Views with Temperature Overlay

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PCBi - Physics

What does the result look like?

Example 5: PDF Documentation

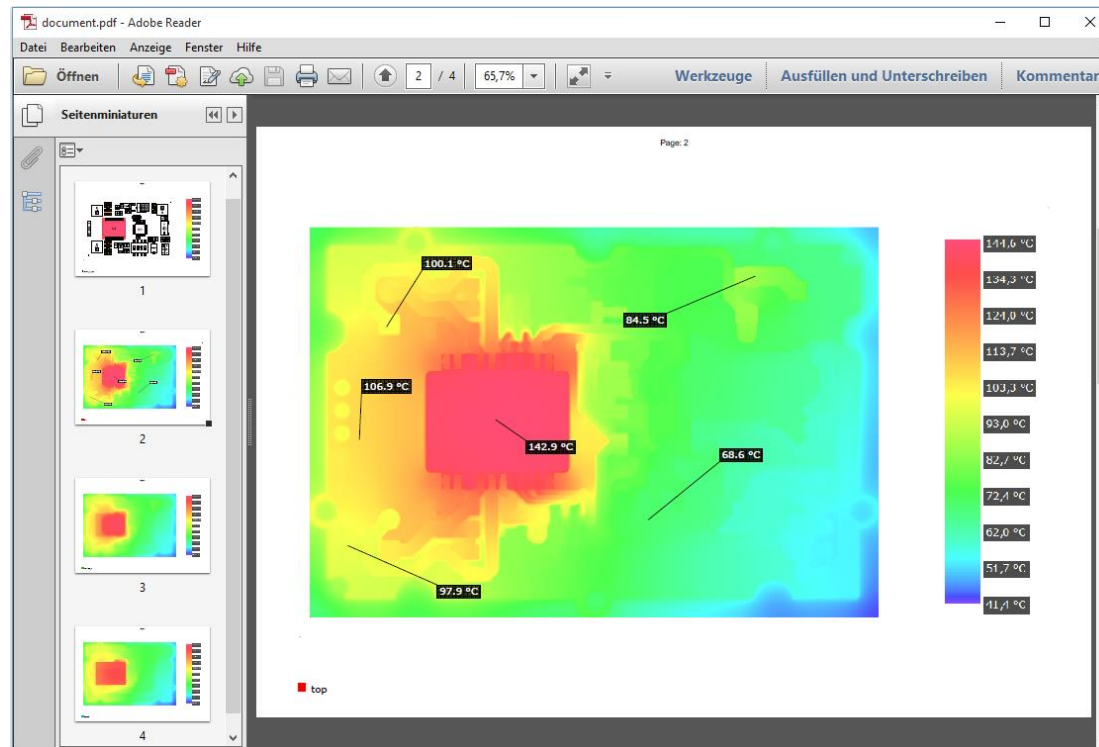
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PDF Document with Temperature for each layer



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We piqued your interest?

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Get in touch!

info@easylogix.de

Günther Schindler

Tel. +49 941 604 889 719

or find more information here:

www.PCBi-Physics.com



www.easyLogix.de

Useful Links:

PCBi-Physics

www.PCBi-Physics.com

PCB-Investigator

www.pcb-investigator.com

Native Board Import (3D Interface to CATIA, SiemensNX, SolidWorks, SolidEdge)

www.sts-development.biz

GerberLogix

www.gerberLogix.com

Online Gerber Viewer

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Software Development, CAD Converter, data connection

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