



# EASYLOGIX.DE



## PCB-Investigator

### Testability

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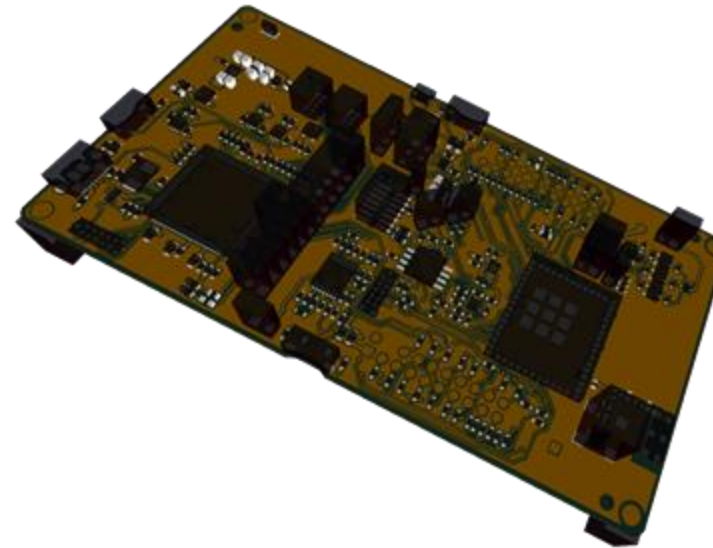
# PCB-Investigator Production Control Suit

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Testability from Test Analysis

Use common data: ODB++, IPC2581, GenCAD 1.4, IDF 3.x, IPC 356

Full automated Report  
Export HTML  
Everything is rule based  
See all information at once



# Testability for PCB Assembly

## Test coverage

The screenshot shows the 'Test Coverage' application window. The 'Select Result' dropdown is set to 'no machine'. The 'Table' tab is active, displaying an 'Overview' section with the following statistics:

Components:	0 / 0	Components:	0 %	Coverage Presence:	0 %	Coverage Value:	0 %
Pins:	0 / 0	Pins:	0 %	Coverage Polarity:	0 %	Coverage Soldering:	0 %
Global Coverage:	0 %	Production Yield:	0 %				

Below the overview is an empty table with the following headers:

Reference	Part Name	Type	Polarized	Pin Count	Description	Presence	Polarity	Value	Soldering	Total Coverage	Ste
Geben Sie...	Geben Sie...	Geben Sie Text...	Geb...	Geb...	Geben Sie Text hier ein	Geb...	Geb...	Geb...	Geben Sie T...	Geben Sie T...	Ge

At the bottom of the table, it shows 'Total: 0 / Filtered: 0 / Selected: 0'.

Direct start of test coverage report will show you an empty GUI without any machines (no machine for all tabs)

To start use following instruction and you get an good overview of testability for you design.

# Prepare data for test coverage report

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AOI/AXI

DFT (ICT/FPT)

AOI  
only SMT

AXI  
only BGAs

ICT  
components  
/nets

Use following steps to generate an test coverage report

First step: Analyze the PCB with integrated checks using you company/customer rules

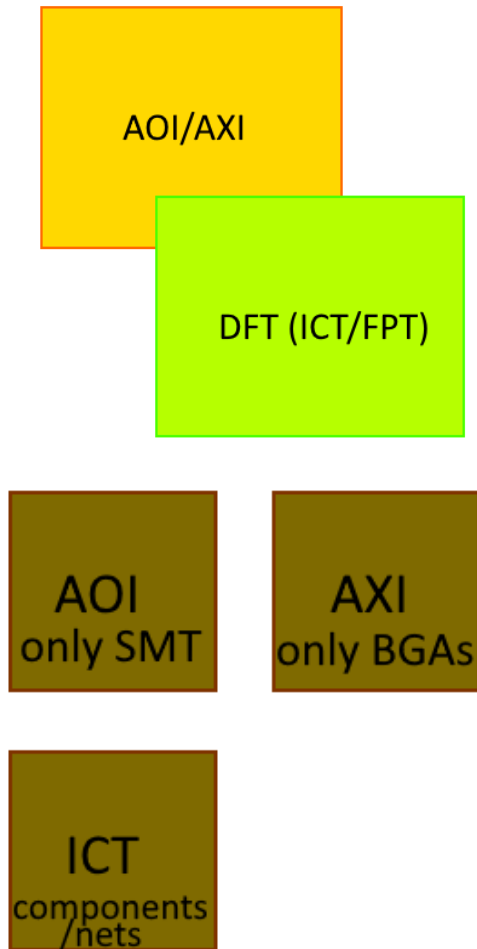
- AOI/AXI Analysis e.g., 3D Ray with THT/SMD Filter  
(not all AOI checks define machine settings, and the filter is important)
- DFT e.g., define an ICT Adapter with probes and test modells for all components, if you do not define test models the report interpret the missing checks as "ok" for the ICT/FPT

After analyzing the PCB use the results as machines result in the test coverage report wizard

Then you can switch between the machine tabs and see the important information e.g., global coverage and production yield

The overview tab gives you the possibility to combine all machines used in the process. With the overview chart and filter methods search for multi machine checks to remove some double tested elements from specific machines to improve testing time.

# Prepare data for test coverage report



A test coverage report for a PCB is a document that provides information about the testing process that was used to verify the PCB's design and functionality. The report may include details about the specific tests that were performed, the results of those tests, and any issues or defects that were identified.

There are several reasons why it is important to generate a test coverage report for a PCB. Some of the key benefits of a test coverage report include:

- **Verifying the design:** A test coverage report can help to verify that the PCB has been designed and manufactured according to specified standards and requirements. It can identify any issues or defects that may need to be addressed, such as incorrect component placement or insufficient clearance between traces.

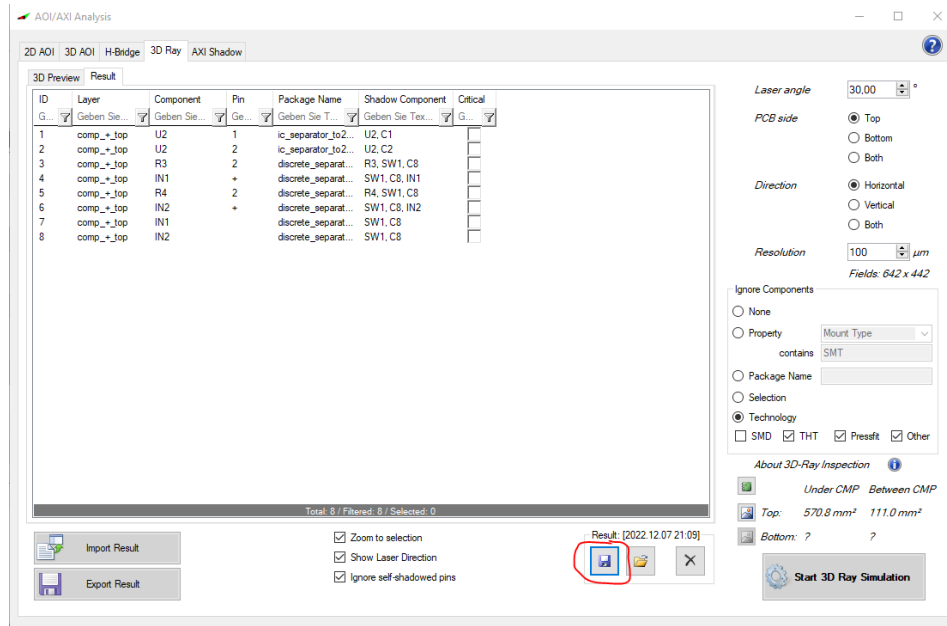
**Improving quality:** A test coverage report can help to identify areas where the quality of the PCB could be improved. By identifying and addressing issues or defects, manufacturers can improve the overall quality of the PCB and reduce the risk of failures or defects in the field.

**Reducing risk:** A test coverage report can help to reduce the risk of issues or defects occurring during the manufacturing process. By identifying and addressing potential issues before the PCB is shipped, manufacturers can minimize the risk of delays or costly rework.

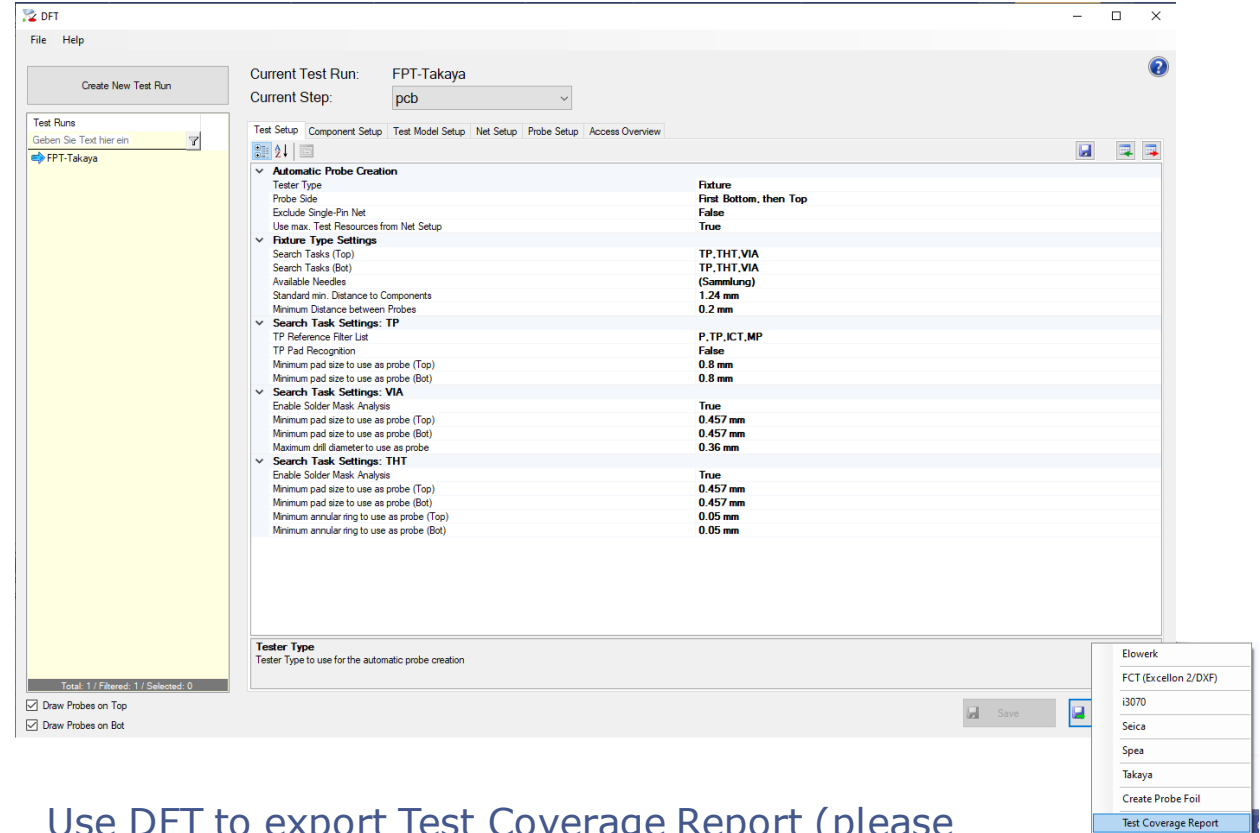
**Meeting regulatory requirements:** In some cases, a test coverage report may be required by regulatory agencies or industry standards to ensure that the PCB meets certain requirements or standards. By generating a thorough and accurate test coverage report, manufacturers can demonstrate compliance with these requirements.

# Testability for PCB Assembly

## How to bring in machine results?



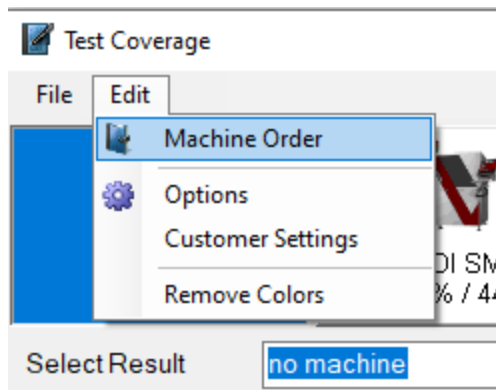
Use AOI/AXI analysis to create results (3D AOI, 3D Ray and AXI Shadow check will create required machine results)



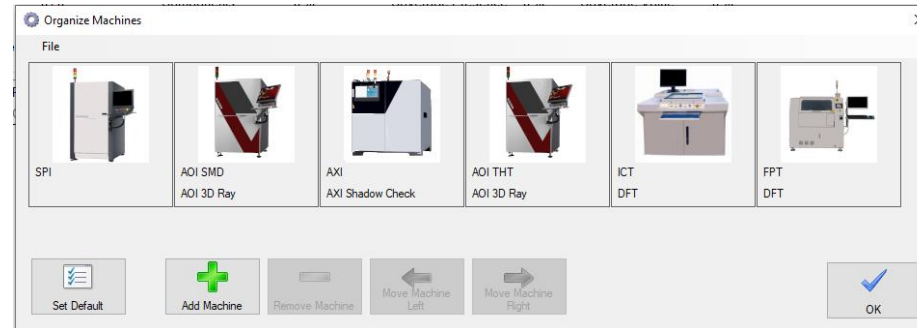
Use DFT to export Test Coverage Report (please use test models for all components to have fully described result)

# Testability for PCB Assembly

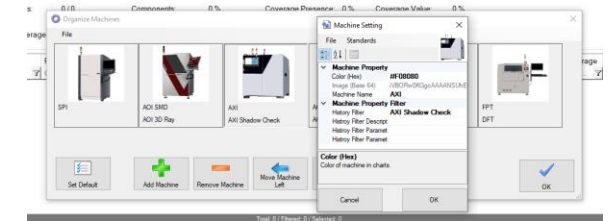
Define machines for your production line:



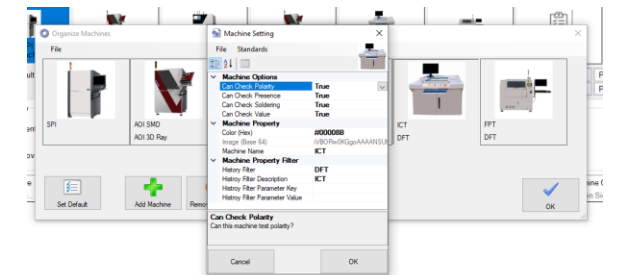
If your loaded list is not as you need, open the machine order dialog and define all machines you have.



You can switch positions of machines and remove/add machines. In file menu you can import/export your machine setting and with "Set Default" you have a standard definition with all important machines.



In context menu you have further options for the machines e.g. filter and display name



In next version you have also the option to define machine check option e.g. deactivate value check for AOI

# Testability

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If the list of machines that is loaded in a PCB design or manufacturing software tool is not what you need, you can typically open the machine order dialog to make changes to the list. The machine order dialog is a window or panel that allows users to define and configure the machines that are being used in the process.

To define all of the machines that you have, you will typically need to provide information such as the machine type, the machine's capabilities and specifications, and any other relevant details. You may also need to specify the order in which the machines are used, as well as any dependencies or constraints that may impact the machine order.

Once you have defined all of the machines that you have in the machine order dialog, you can use the software tool to configure and optimize the manufacturing process using these machines. This may involve creating and configuring manufacturing orders, setting up production schedules, and managing other aspects of the process.



# Testability

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In a PCB Investigator, you can switch the positions of machines and add or remove machines as needed. To do this, you may need to use the machine order dialog that allows you to manage the list of machines that are being used in the process.

In the file menu of PCBI, you have the option to import or export machine settings. Importing machine settings allows you to load a saved configuration of machines into the software tool, while exporting machine settings allows you to save a configuration for use in other projects or for backup purposes.

The "Set Default" option in PCBI will allow you to define a standard configuration of machines that includes all of the important machines that you typically use in your manufacturing process. This standard configuration can serve as a template that you can use to quickly set up new projects or modify existing ones.

# Testability for PCB Assembly

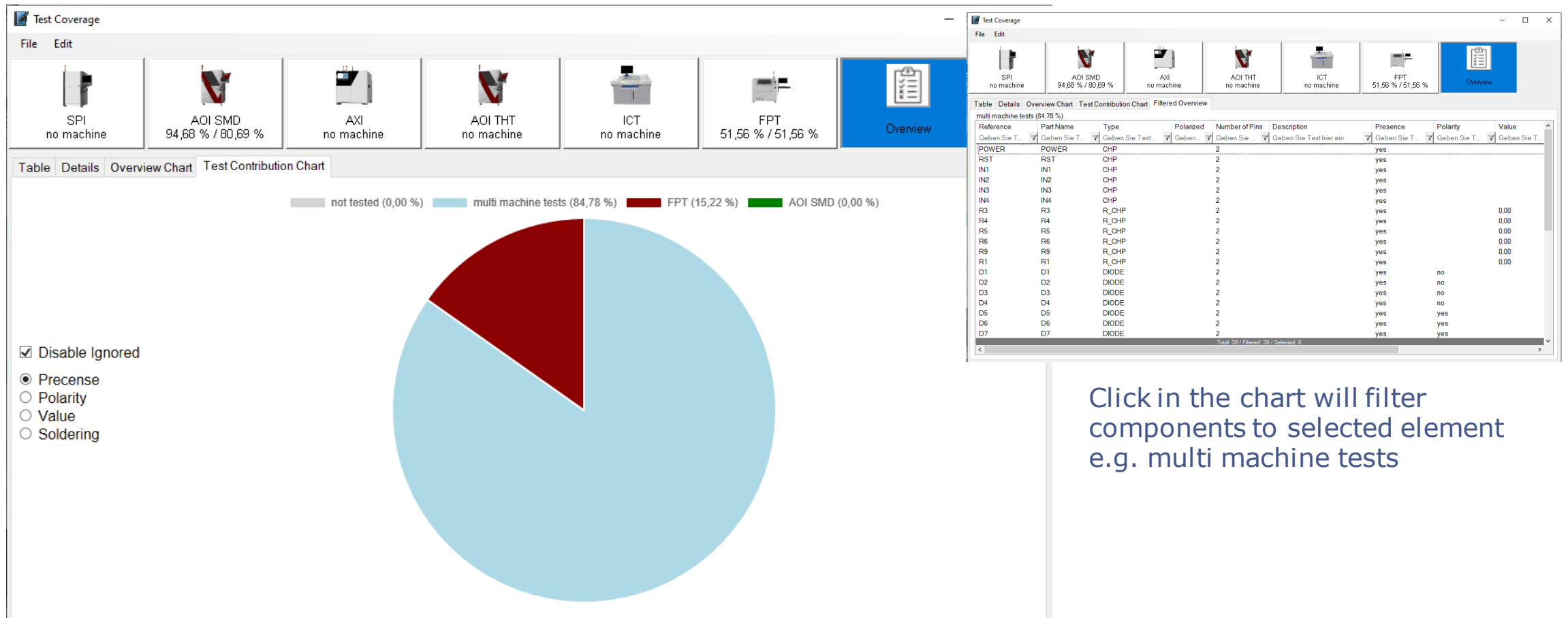
Last Result is selected automatically, otherwise change the machine result:

The screenshot shows the 'Test Coverage' software interface. At the top, there is a menu bar with 'File' and 'Edit'. Below it is a toolbar with icons for different testing machines: SPI (no machine), AOI SMD (94,68 % / 80,69 %), AXI (no machine), AOI THT (no machine), ICT (no machine), FPT (51,56 % / 51,56 %), and Overview. The 'AOI SMD' machine is currently selected and highlighted in blue. Below the toolbar, there is a 'Select Result' dropdown menu showing 'AOI 3D Ray Analysis; 186; 07.12.2022 21.09.55' and 'no machine'. To the right of the dropdown are buttons for 'TOP' and 'BOT', each with sub-buttons 'P', 'V', and 'S'. Below the dropdown is a 'Table' tab and a 'Chart' tab. The 'Table' tab is active, showing a table with columns: Reference, Part Name, Type, Polarized, Pin Count, Description, Presence, Polarity, Value, Soldering, and Total Coverage. The table contains 14 rows of data. At the bottom of the table, there is a status bar that reads 'Total: 42 / Filtered: 42 / Selected: 0'.

Reference	Part Name	Type	Polarized	Pin Count	Description	Presence	Polarity	Value	Soldering	Total Coverage
IN1	IN1	CHP		2		no			50,00 % (1 of 2)	25,00
IN2	IN2	CHP		2		no			50,00 % (1 of 2)	25,00
POWER	POWER	CHP		2		yes			0,00 % (0 of 2)	50,00
RST	RST	CHP		2		yes			0,00 % (0 of 2)	50,00
U\$1	U\$1	IGNORE		0		yes				50,00
U2	ASMTMW22...	DPAK		3	LED MOONSTONE NEU WHI...	yes			33,00 % (1 of 3)	66,50
R3	R3	R_CHP		2		yes			50,00 % (1 of 2)	75,00
R4	R4	R_CHP		2		yes			50,00 % (1 of 2)	75,00
R2	R2	SOIC		8		yes			50,00 % (4 of 8)	75,00
U1	U1_1	SOP		21		yes			95,00 % (20 of ...)	97,50
IN3	IN3	CHP		2		yes			100,00 % (2 of 2)	100,00
IN4	IN4	CHP		2		yes			100,00 % (2 of 2)	100,00

# Testability for PCB Assembly

## Overview chart with selectable elements



# Extensions

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## Request Customized Functions

Get in touch,

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Tel. +49 941 568 136 26

Useful Links:

PCB-Investigator

[www.pcb-investigator.com](http://www.pcb-investigator.com)

PCBi-Physics

[www.PCBi-Physics.com](http://www.PCBi-Physics.com)

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

[www.sts-development.biz](http://www.sts-development.biz)

GerberLogix

[www.gerberLogix.com](http://www.gerberLogix.com)

Online Gerber Viewer

[www.Gerber-Viewer.com](http://www.Gerber-Viewer.com)

Software Development, CAD Converter, data connection

[www.easylogix.de](http://www.easylogix.de)