



EASYLOGIX.DE

PCB – Investigator Documentation

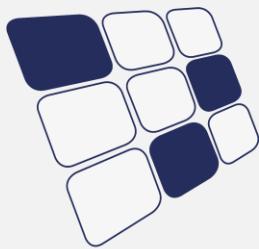


PCB-Investigator



Table of contents

1.	Introduction	5
1.1	Formats.....	6
1.2	Menu	6
1.3	PCB - INVESTIGATOR Toolbar.....	7
2.	Menus	8
2.1	Start Menu.....	8
Import.....	8	
Export	9	
Mouse Tools	10	
Zoom.....	11	
Selection	11	
Extras.....	12	
Setting	12	
2.2	View Menu	13
Zoom.....	13	
View.....	13	
Highlight	14	
Info Layer.....	14	
2.3	Selection Menu.....	15
Mouse Tool.....	15	
Selection	16	
Highlight	16	
Color Assignment	16	
Search	16	
2.4	Developer Menu.....	17
Components	17	
Nets	18	
2.5	Fabrication Menu	18
Edit.....	19	



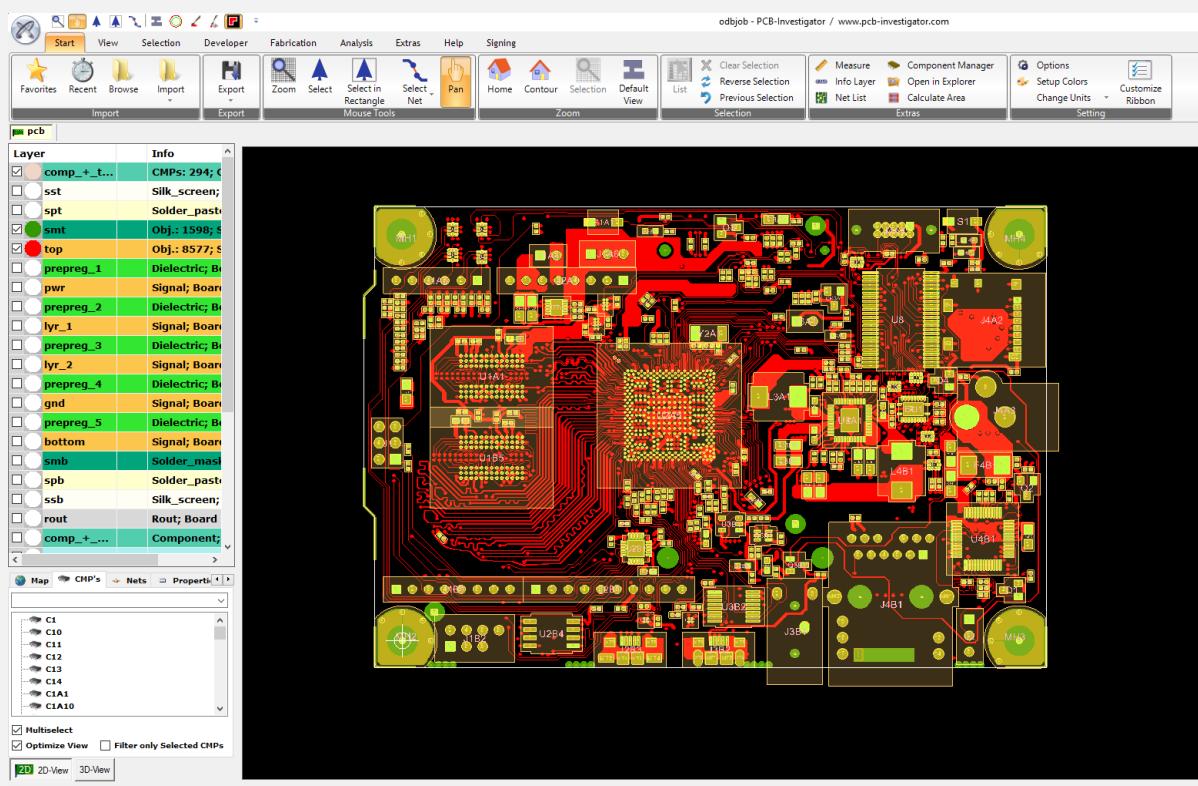
Fabrication.....	19
2.6 Analysis Menu	20
DFM	20
Assembly	20
Other	20
2.7 Extras Menu.....	21
Inspect	21
Compare	21
Annotation.....	22
Documentation.....	22
Windows.....	23
Scripting.....	23
2.8 Help Menu.....	23
Strokes.....	23
Info	24
2.9 Signing Menu.....	24
Signing	24
3. Functions.....	25
3.1 Opening a job	25
3.2 View Data	26
3.3 Move and Rotate Objects.....	28
3.4 Edit Objects	30
3.5 Compare Layers.....	30
3.6 Show and Edit Matrix	31
3.7 Add Bitmap Data	32
3.8 Transform Image Layer.....	33
3.9 View Component Manager	33
3.10 Add ODB++ data	34
3.11 Add Gerber274x, Excellon and Sieb & Meyer data	35
3.12 Find	36
3.13 Strokes.....	37



4.	Terms and definitions.....	38
4.1	ODB++.....	38
4.2	Gerber274x.....	38
4.3	Excellon.....	38
4.4	DXF.....	38
4.5	Sieb & Meyer.....	38
4.6	IPC356.....	38
5.	Shortcuts.....	39
6.	Plug-Ins	40
6.1	Component Analysis	40
6.2	Bare Board Analysis.....	43
6.3	Hazard Analysis.....	46
6.4	Graphic Board Compare	48
6.5	Tombstone Analysis.....	50
6.6	Database Compare	52
6.7	DFX-Import.....	54
6.8	GenCad	55
6.9	Design Report.....	56
6.10	Testpoint Report.....	57
6.11	Panel Builder	59
6.12	AOI Import/Export.....	60
6.13	Net List.....	61
6.14	Net Length	62
6.15	Color Group	63
6.16	PDF Sync	64
6.17	Embedded	66
6.18	IPC 2581.....	66
6.19	Short Cut Top/Bottom View	67



1. Introduction



PCB-Investigator is a tool to view and edit PCB data on your computer. It helps you in the whole development process. From the start on, you can track your changes with different methods. There is also a possibility to pass notes and change requests easily to your customers with Embedded PCB-Investigator.

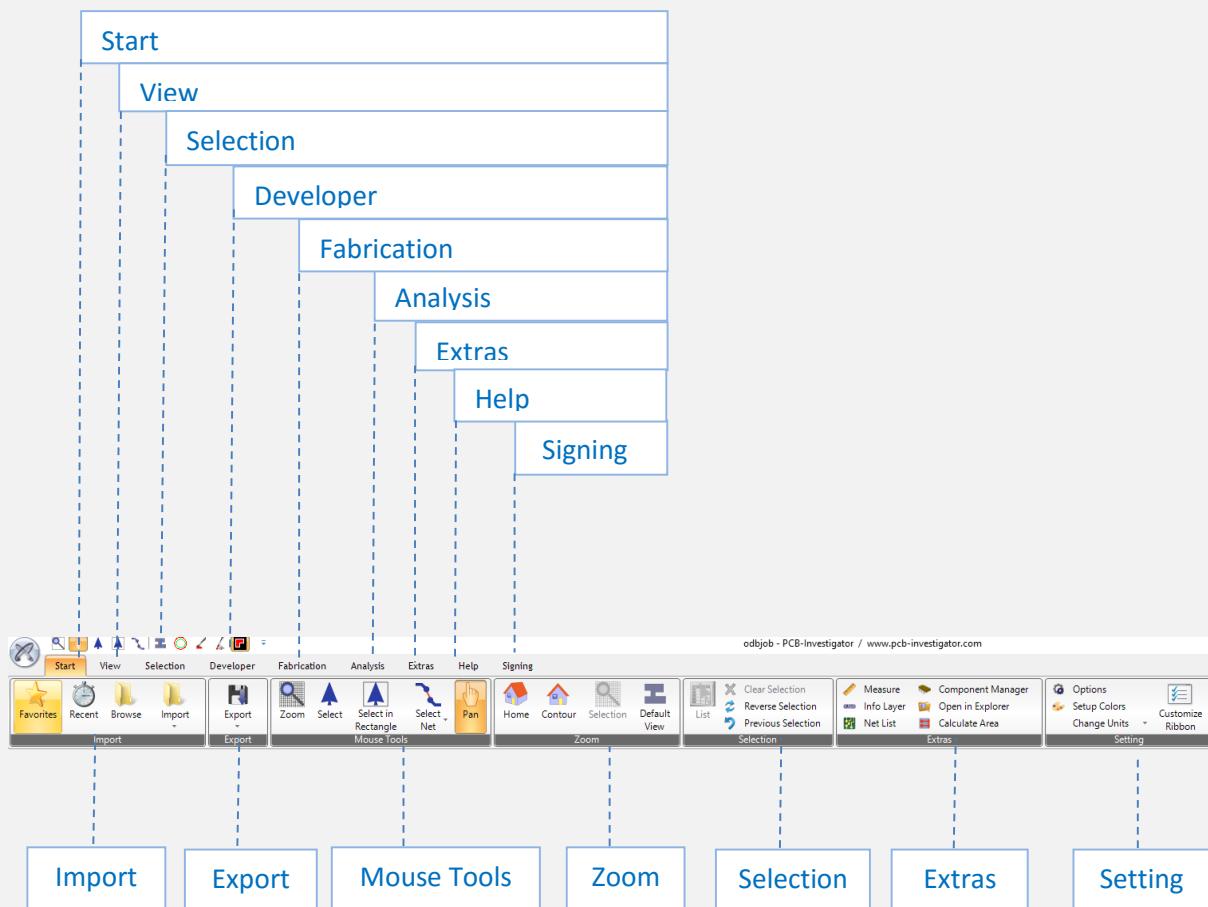


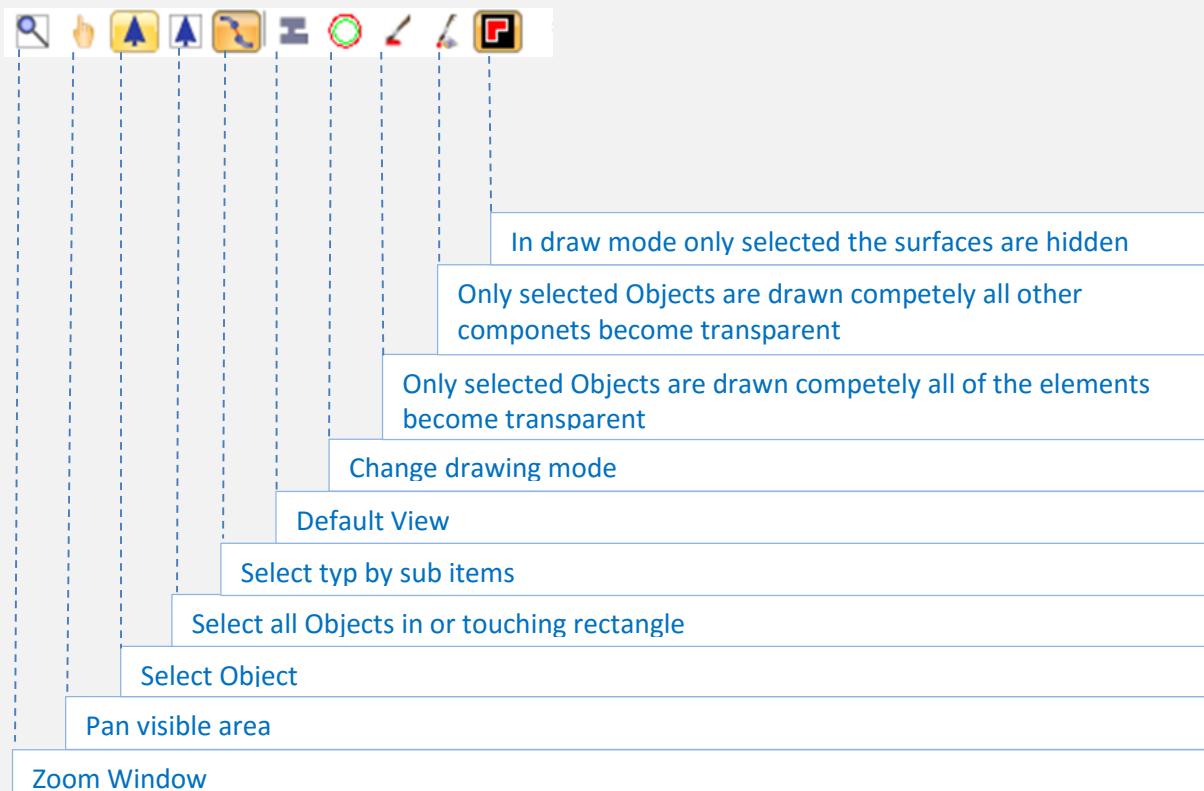
1.1 Formats

Input: ODB++, Gerber274x, Excellon 1, Excellon 2, Sieb & Meyer

Output: ODB++, Jpg, PNG, TIF, DXF, CatiaScript, IPCD356

1.2 Menu



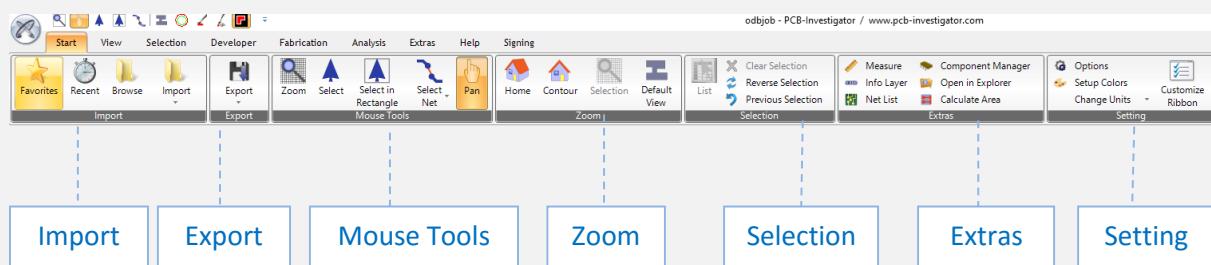


	Component Manager	Component Manager
	Info Layer	Info Layer shows some details for each element
	Measure	Measure Dialog
	Net List	Net List dialog lists all in the Design included nets.
	Screenshot	Make a image of the screen
	List	List

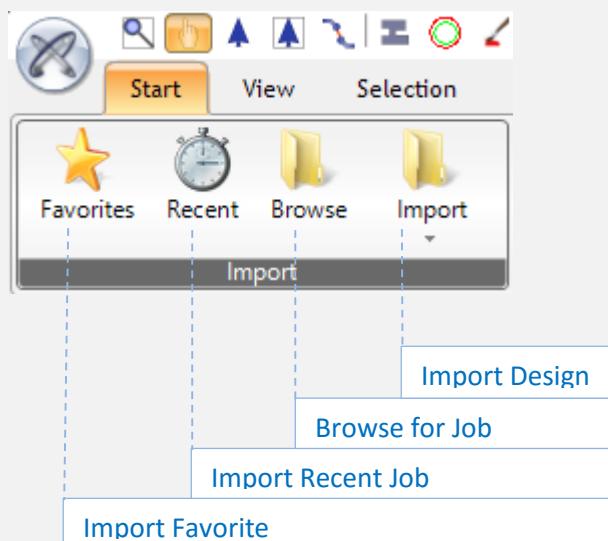


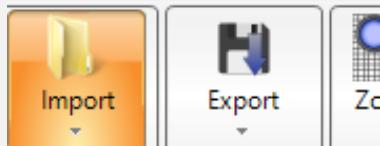
2. Menus

2.1 Start Menu



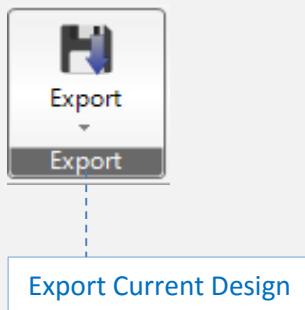
Import





	Create empty Design	Create empty project with one empty layer
	Cam Input	Open simple file import like gerber, excellon, etc.
	Add Image	Add a image layer to current Design
	Add Layer from ODB++	Add a extra layer from another ODB++ design to the current design
	IDF Import	Import IDF files
	Import AVL Attribute-List	Import AVL data
	Import DPF (Barco)	Import DPF files
	Import PDF	Import schematics from PDF
	CMP Attribute Import	Import excel data and create objects from the data
	Import GenCad	Import GenCad 1.4 files
	Import DXF	Import DXF files
	IPC2581 Import	Import IPC2581 files to the PCB-Investigator
	Import IPC356	Import IPC356 nets data
	Import Components	Import data from CSV and edit the imported components

Export





Export



Zoom

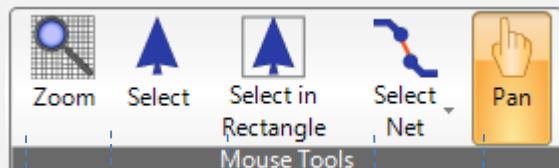


Select

Select in
Rectangle

	Save	Save Design
	Save As ODB++	Save as ODB++
	Export Embedded	Save PCB-Investigator Embedded Design
	Export Embedded Zip	Save PCB-Investigator Embedded Design in Zip directory
	Export DXF	Export layer or selection to DXF
	Export High Resolution Picture	Save high resolution picture (PNG, JPG, BMP,...)
	Export IPC356	Save IPC356 netlist
	Export BOM	Save BOM as CSV File
	Export Component List	Save Components list as CSV File
	Export Pick and Place	Save Pick and Place list as CSV File
	Export Gerber	Save Gerber File(s) from aktive project
	Export IDF	Export IDF files
	Export Google SketchUp	Export a google sketch up file oft he current design
	AOI	Export a very high resolution image, e.g. for AOI machines
	Export GenCad	Export GenCad files

Mouse Tools



Mouse Tools

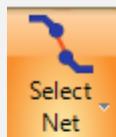
Pan visible area

Select type by sub items

Select all Objects in or touching rectangle

Select Object

Zoom Window



Pan



Select Net

Net Mode: Default

Select net by net number

Net Mode: Crossover

Select net by net number and check for connections via components

Net Mode: Current Layer

Select net only on current layer

Net Mode: Best View

Select net and activate all relevant layers and zoom to the net

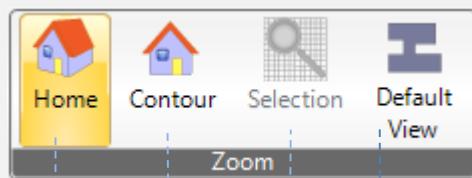
Net Mode: Shape

Select a net by connected objects on a layer

Net Mode: Shape through Drills

Select a net by all connected objects, also through drills to other layers

Zoom



Zoom

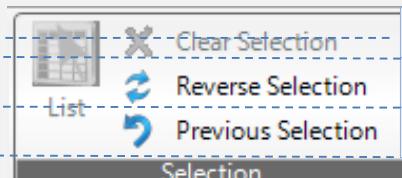
Default View

Selection

Zoom Contour

Zoom Home

Selection



Selection

Clear Selection

Reverse Selection

Previous Selection



Extras

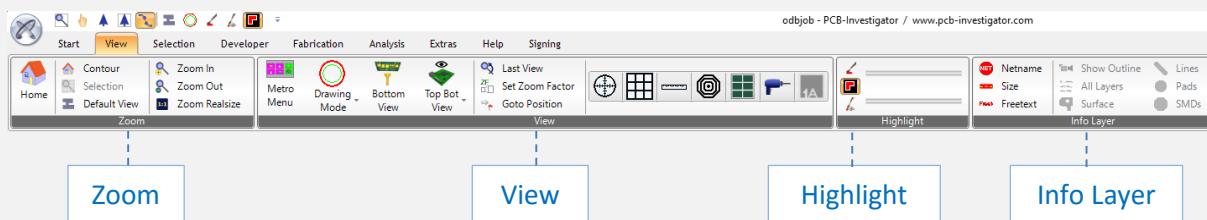
Measure	Component Manager	Component Manager
Info Layer	Open in Explorer	Open currently loaded design path in Windows
Net List	Calculate Area	Calculate area of selection or complete layers/board
Extras		
Measure Dialog		
Info Layer shows some details for each element		
Net list dialog lists all in the Design included nets (rename, delete, create)		

Setting

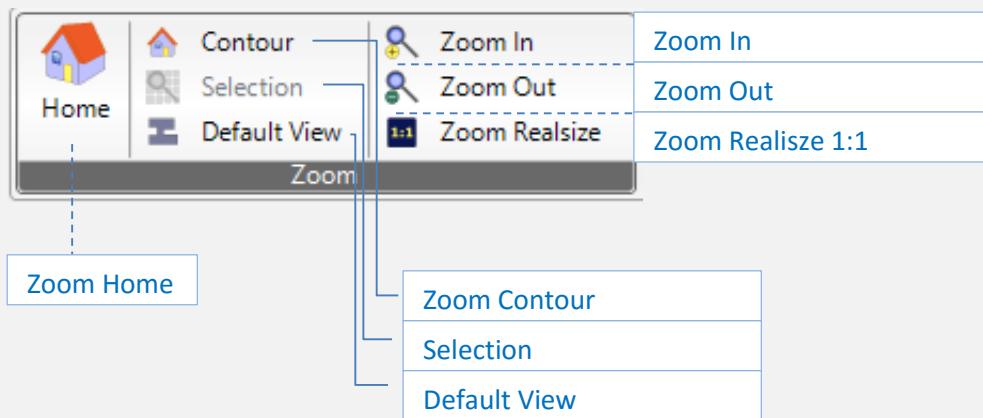
Customize the Ribbon Menu		
Options		
Setup Colors		
Change Units		
Customize Ribbon		
Setting		
Options		
Setup Colors		
Change Units		
Change Units	cu:	R
mm	Change Unit to MM	Change between mils and mm
inch	Change Units to Mils	Change between mils and mm



2.2 View Menu



Zoom



Zoom Home

Zoom In

Zoom Out

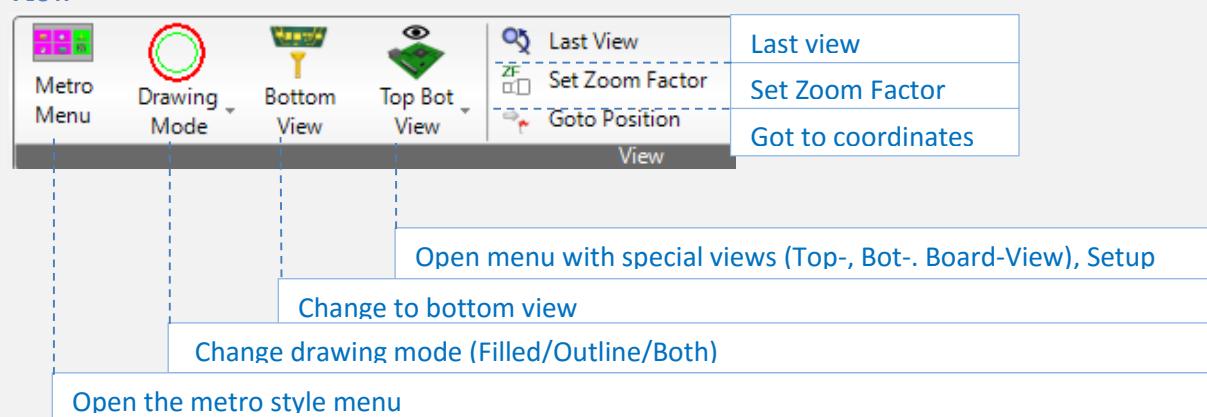
Zoom Realsize 1:1

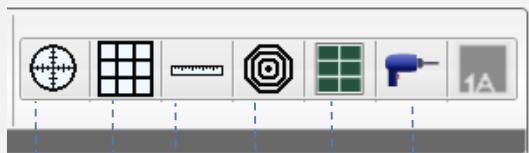
Zoom Contour

Selection

Default View

View



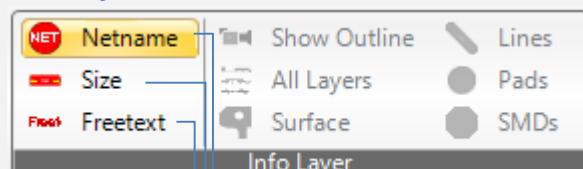


Drills should be highlighted by layercolor or mixed like every other layer
Draw the board contour or not
Round Measure Cursor
Ruler on/off
Grid on/off
Cross-hair on/off

Highlight

	Only selected objects are drawn completely, all other elements become transparent
	In draw mode only the selected surfaces are hidden
	Only selected components are drawn completely, all other compontes become transparent

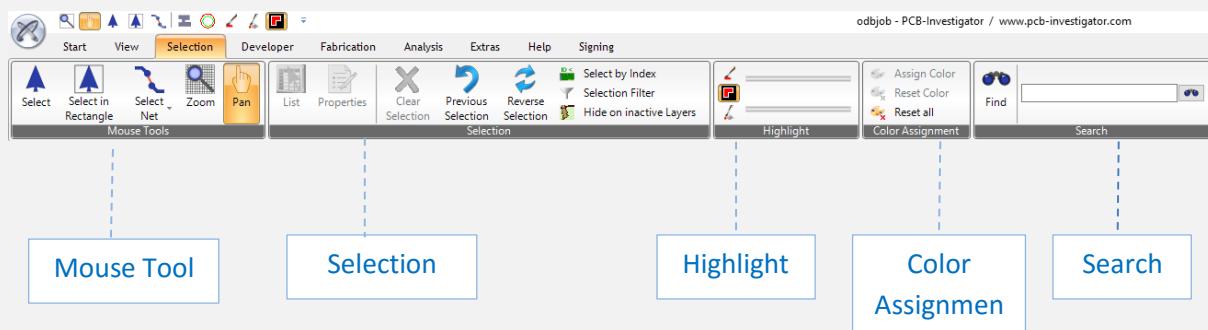
Info Layer



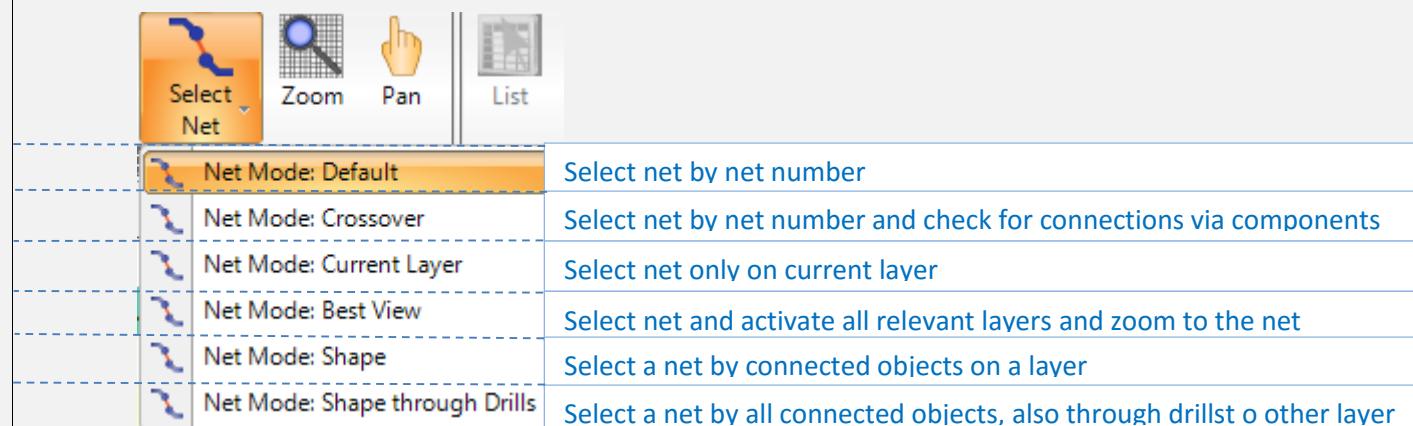
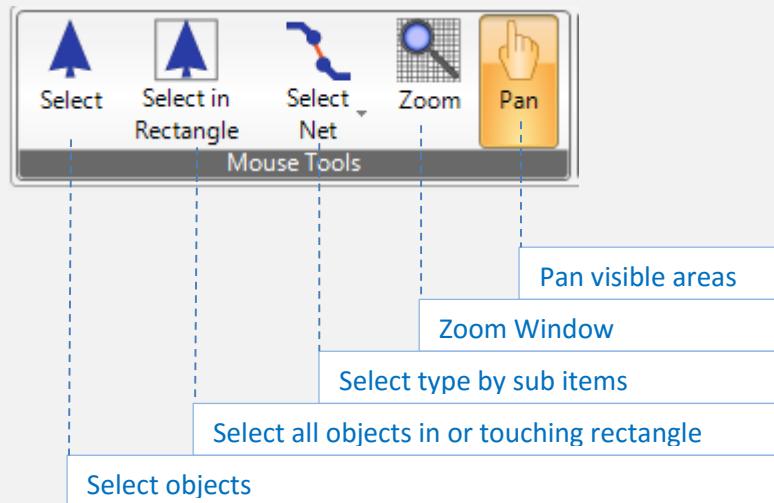
Show the name oft the net
Show the size of the object
Show 'freetext', which can be set by script or plugins



2.3 Selection Menu



Mouse Tool





Selection

The Selection toolbar includes the following icons and options:

- List
- Properties
- Clear Selection
- Previous Selection
- Reverse Selection
- Select by Index
- Selection Filter
- Hide on inactive Layers

A tooltip for "Select Object by Index" provides the following details:

- Select Object by Index
- Selection Filter
- Show Selections only on active Layers on/off

Below the toolbar, a context menu is open with the following options:

- Reverse Selection
- Previous Selection
- Clear Selection

An additional button labeled "Open Properties" is also visible.

Gives you an overview of currently selected Objects

Highlight

The Highlight toolbar includes the following icons and options:

- Highlight
- Invert
- Color

A tooltip for "Highlight" provides the following details:

- Only selected objects are drawn completely, all other elements become transparent
- In draw mode only the selected surfaces are hidden
- Only selected components are drawn completely, all other components become

Color Assignment

The Color Assignment toolbar includes the following icons and options:

- Assign Color
- Reset Color
- Reset all

A tooltip for "Color Assignment" provides the following details:

- Assign Color
- Reset Color
- Reset all Color Assignment

Search

The Search toolbar includes the following icons and options:

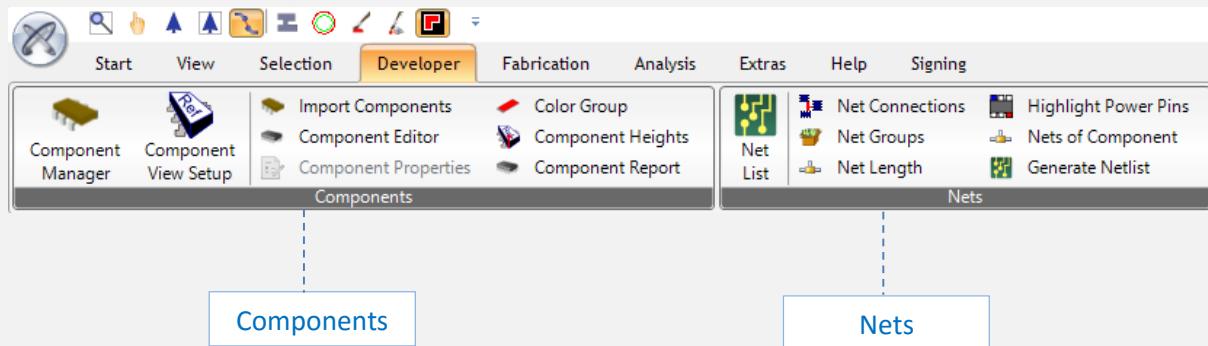
- Find
- Search

A tooltip for "Open Find Dialog" provides the following details:

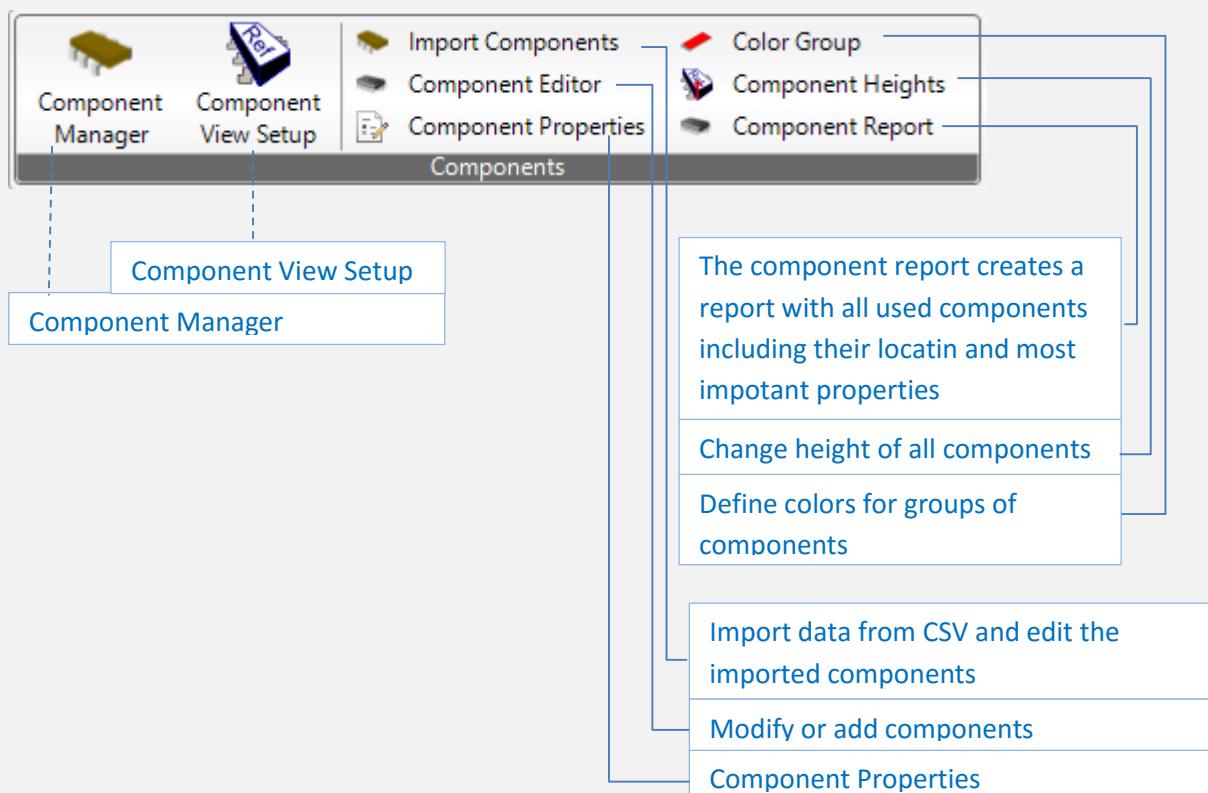
- Open Find Dialog



2.4 Developer Menu

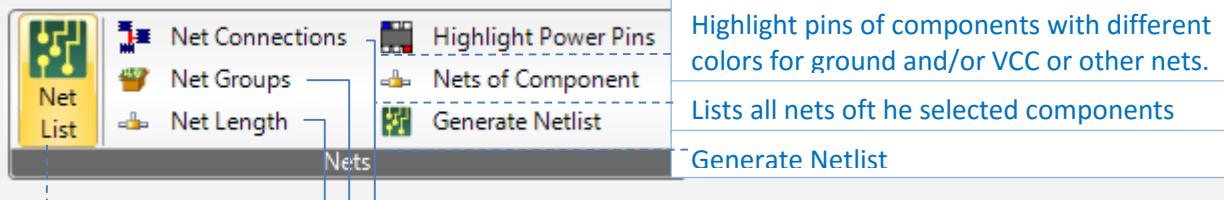


Components





Nets



Nets

Highlight Power Pins

Nets of Component

Generate Netlist

Highlight pins of components with different colors for ground and/or VCC or other nets.

Lists all nets of the selected components

Generate Netlist

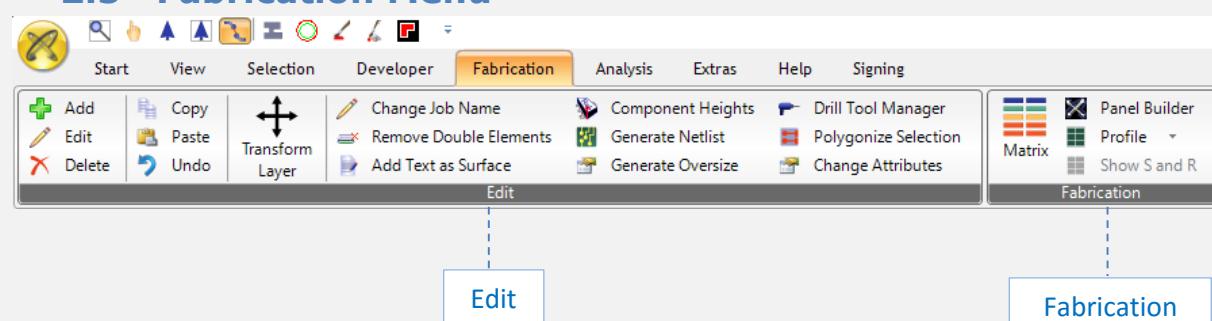
Create a net list report

Create and manage net groups for easy handling of BUS, POWER or other netgroups

Net length calculation

Net List dialog lists all in the Design included nets. There are options to rename/delete and create nets.

2.5 Fabrication Menu

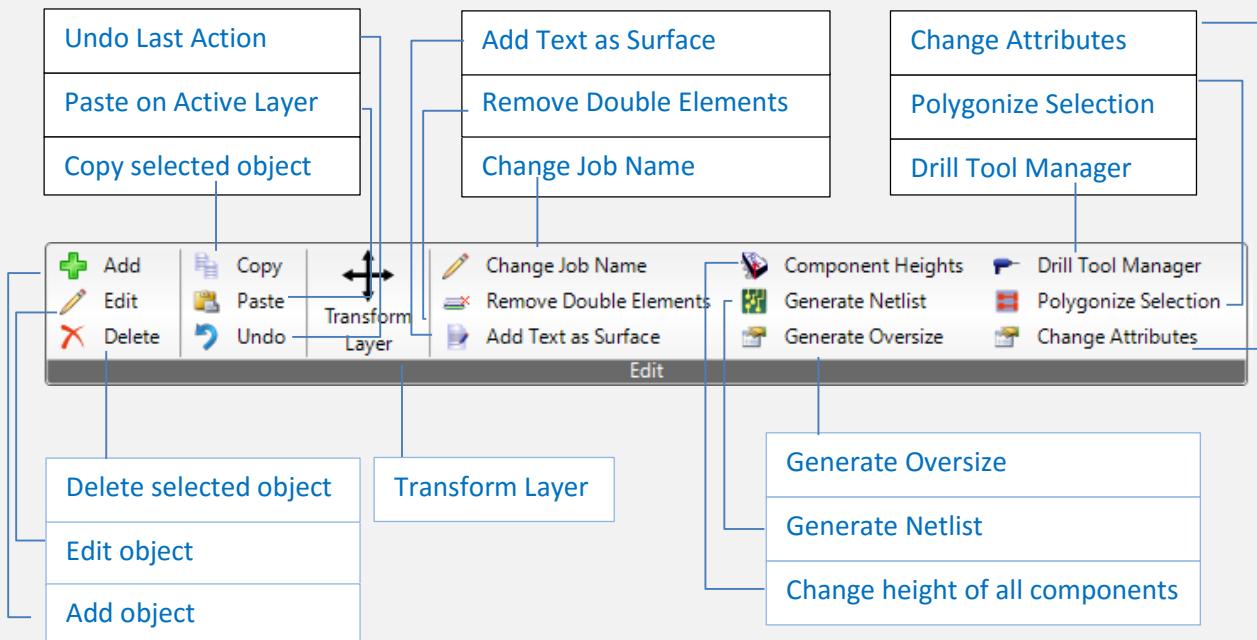


Edit

Fabrication



Edit



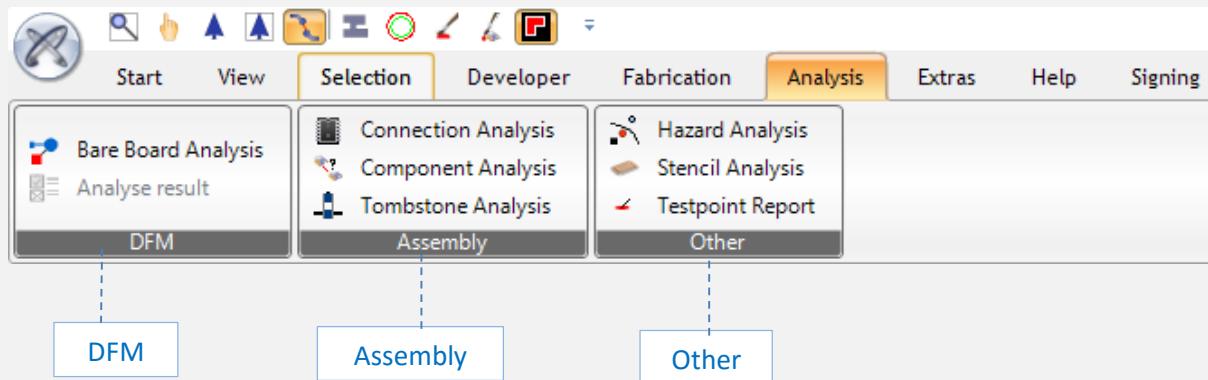
Fabrication

The screenshot shows the 'Fabrication' panel interface. On the left, there is a toolbar with icons for 'Panel Builder', 'Profile', 'Matrix', and 'Show S and R'. To the right of the toolbar, there is a list of options: 'Make your own panel or modify existing panels', 'Edit the profile', and 'Show S and R'. Below this, there is a detailed list of 'Profile' tools:

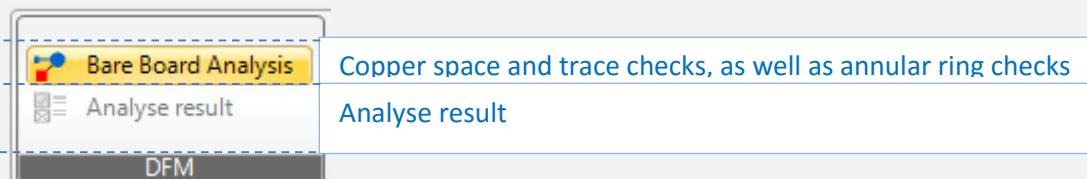
	Set by Rectangle	Set the outline via rectangle by mouse clicks
	Set by Lines	Set the outline via lines by mouse clicks
	Set by all Objects	Set the outline around all elements on active layer
	Get Bounds	Calculate the outline bounds and show them in message box
	Clear Outline	Clear outline of PCB, all elements from the PCB outline/contour are removed
	Add active Layer to Outline	All elements from the active layer will be copied to the PCB outline/contour
	Add Selection to Outline	Add selection to Outline
	Create Layer from Outline	Create a layer named outline, which contains the outline as ODB objects
	Set from Selection Middle	Set from Selection Middle
	Add from Selection Middle	Add from Selection Middle



2.6 Analysis Menu

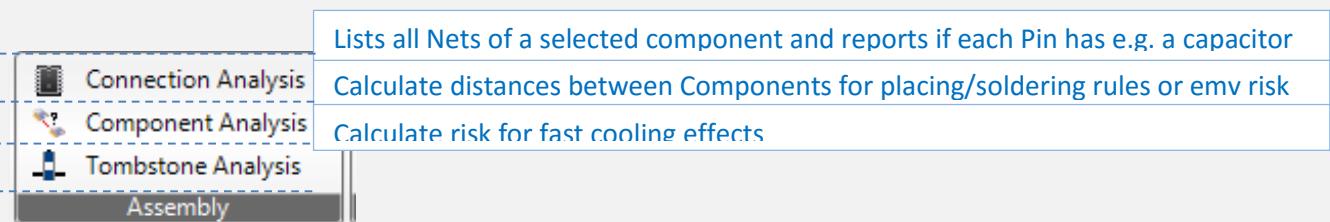


DFM



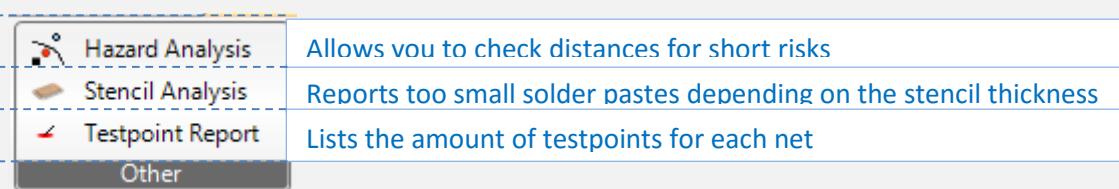
DFM

Assembly



Assembly

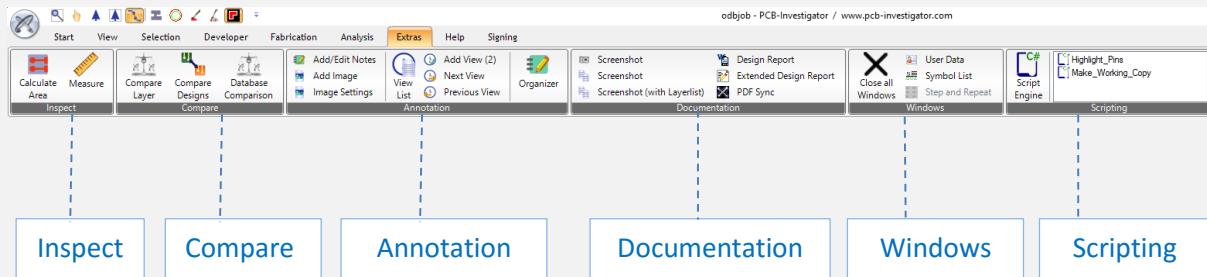
Other



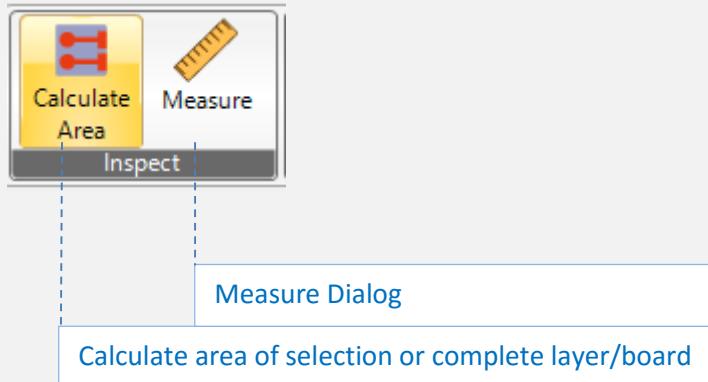
Other



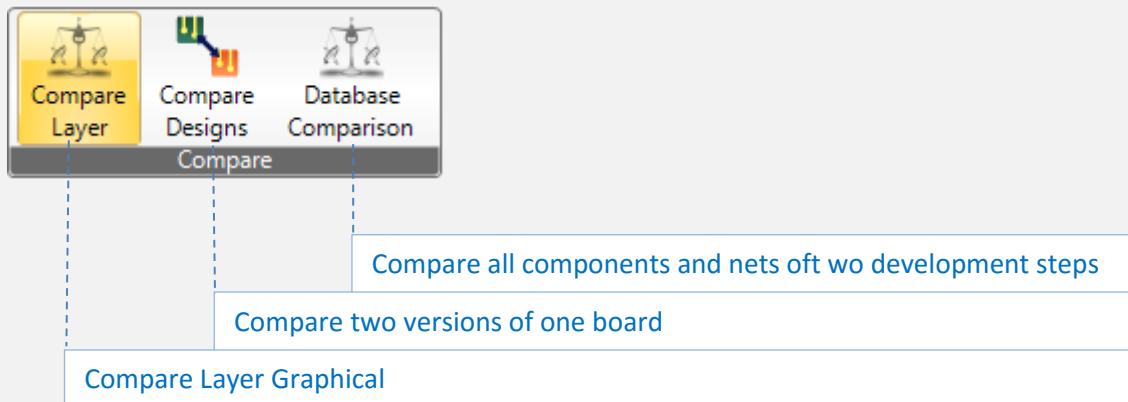
2.7 Extras Menu



Inspect

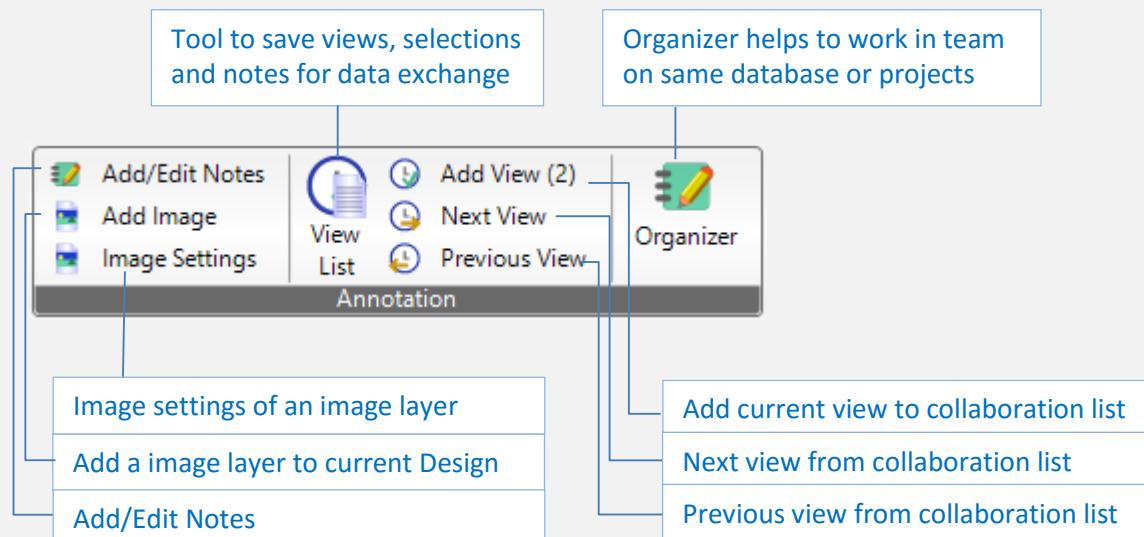


Compare

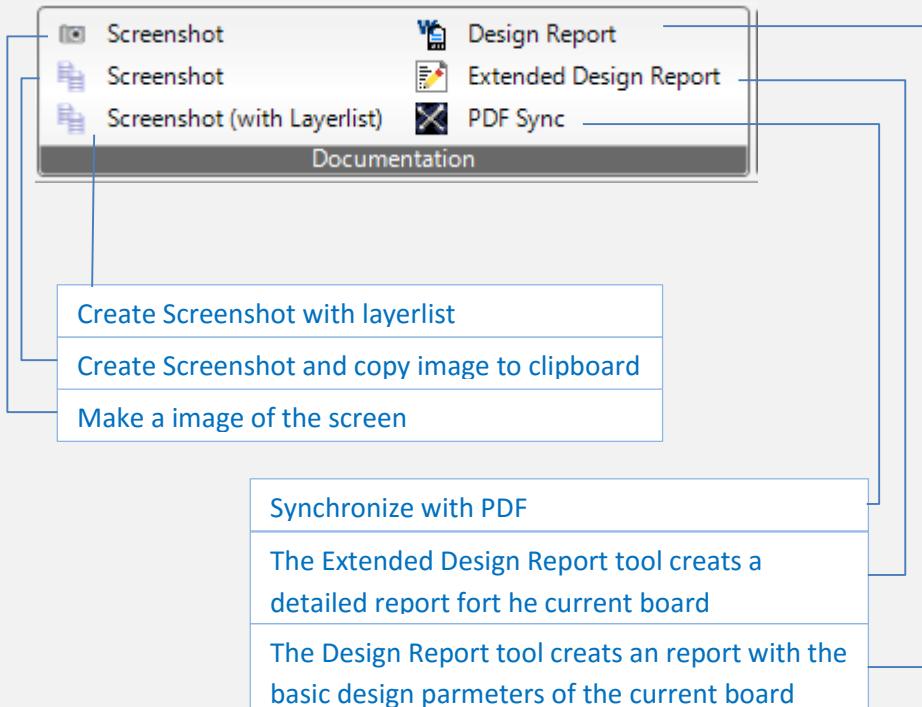




Annotation



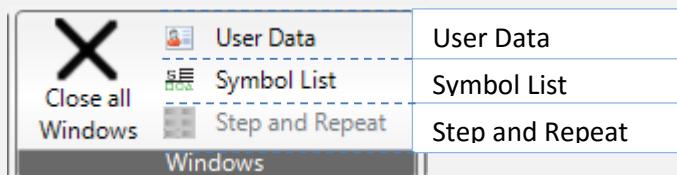
Documentation



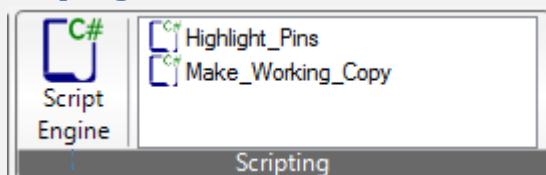


EASYLOGIX.DE

Windows

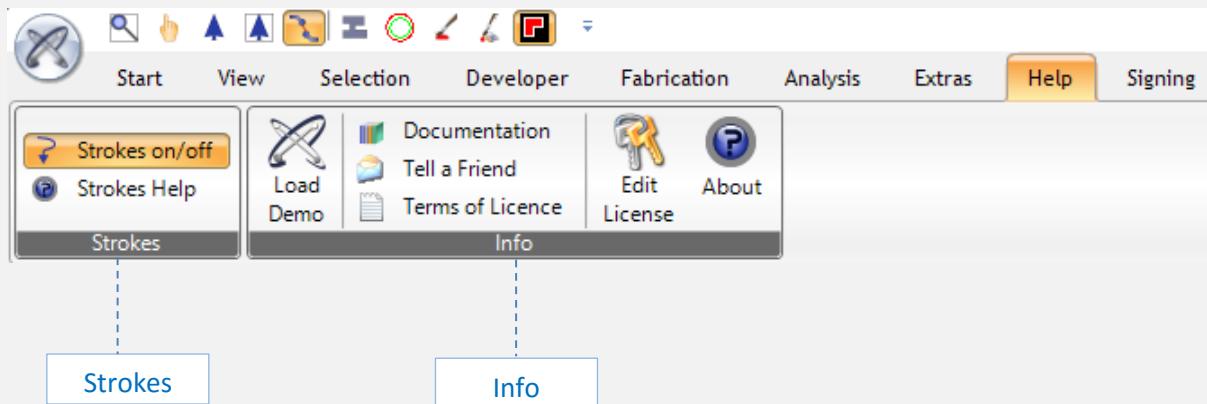


Scripting



Write your own script to automate PCB-Investigator

2.8 Help Menu

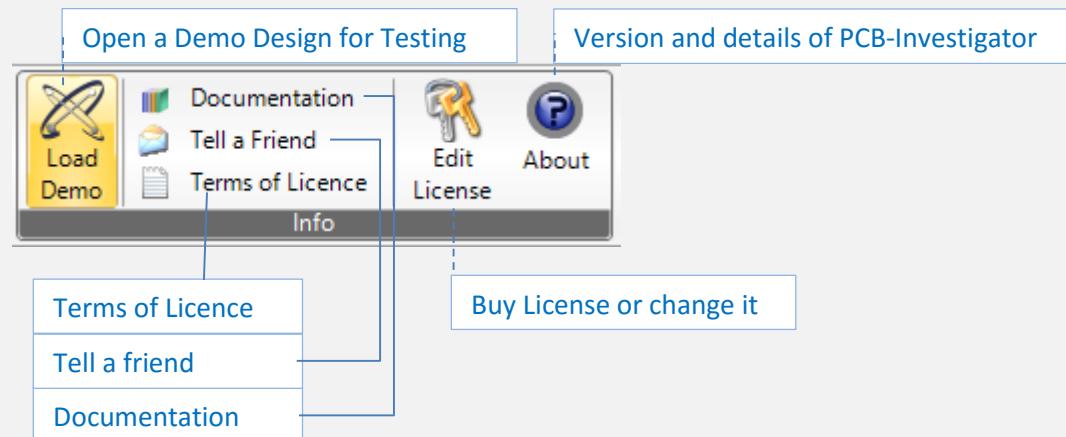


Strokes

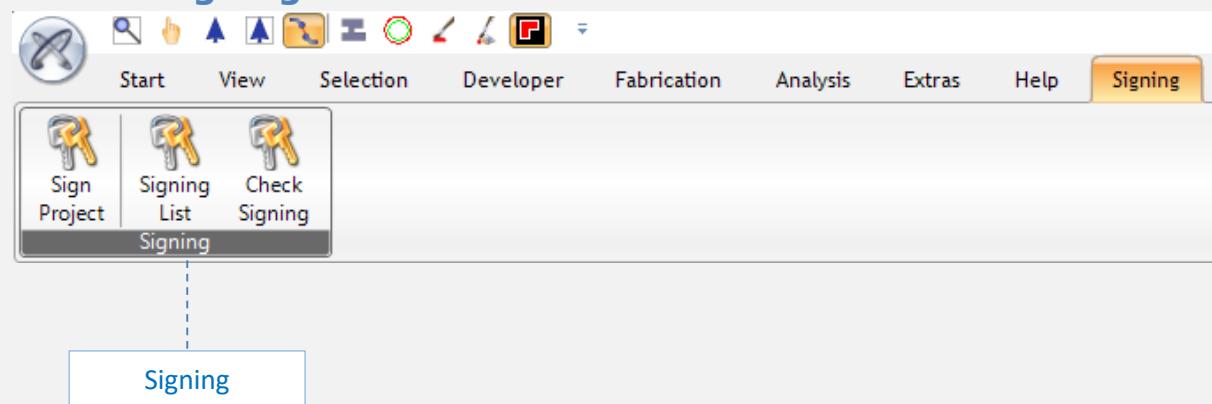




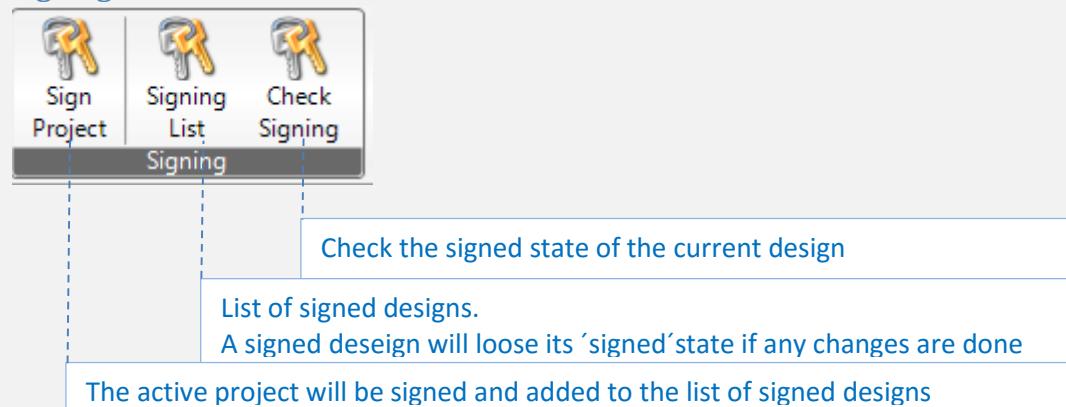
Info



2.9 Signing Menu



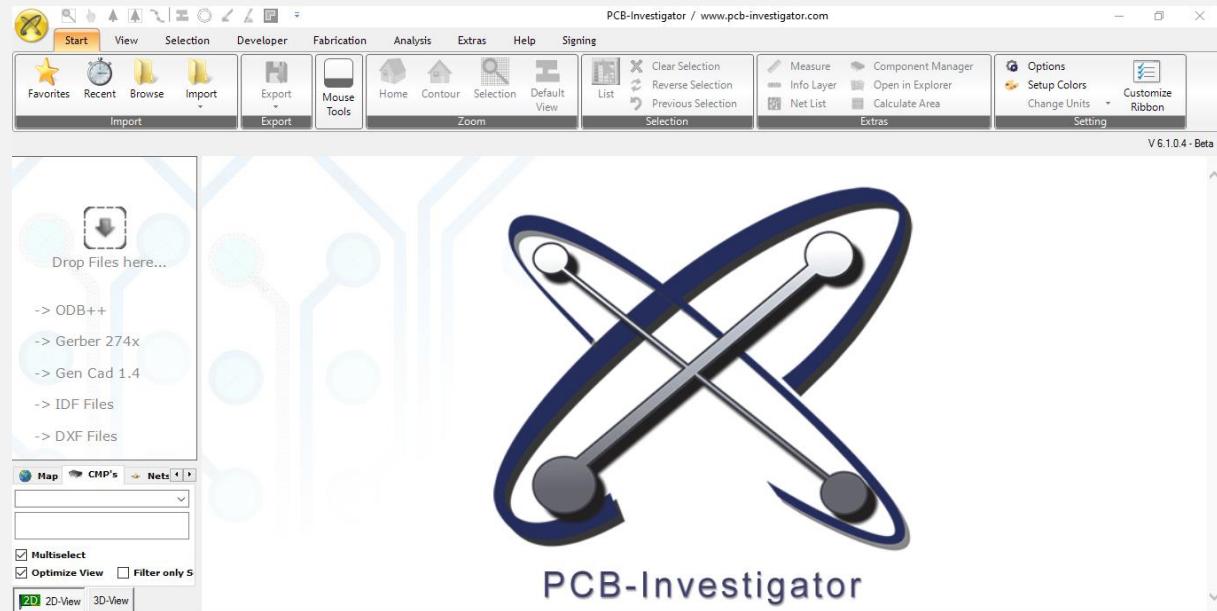
Signing





3. Functions

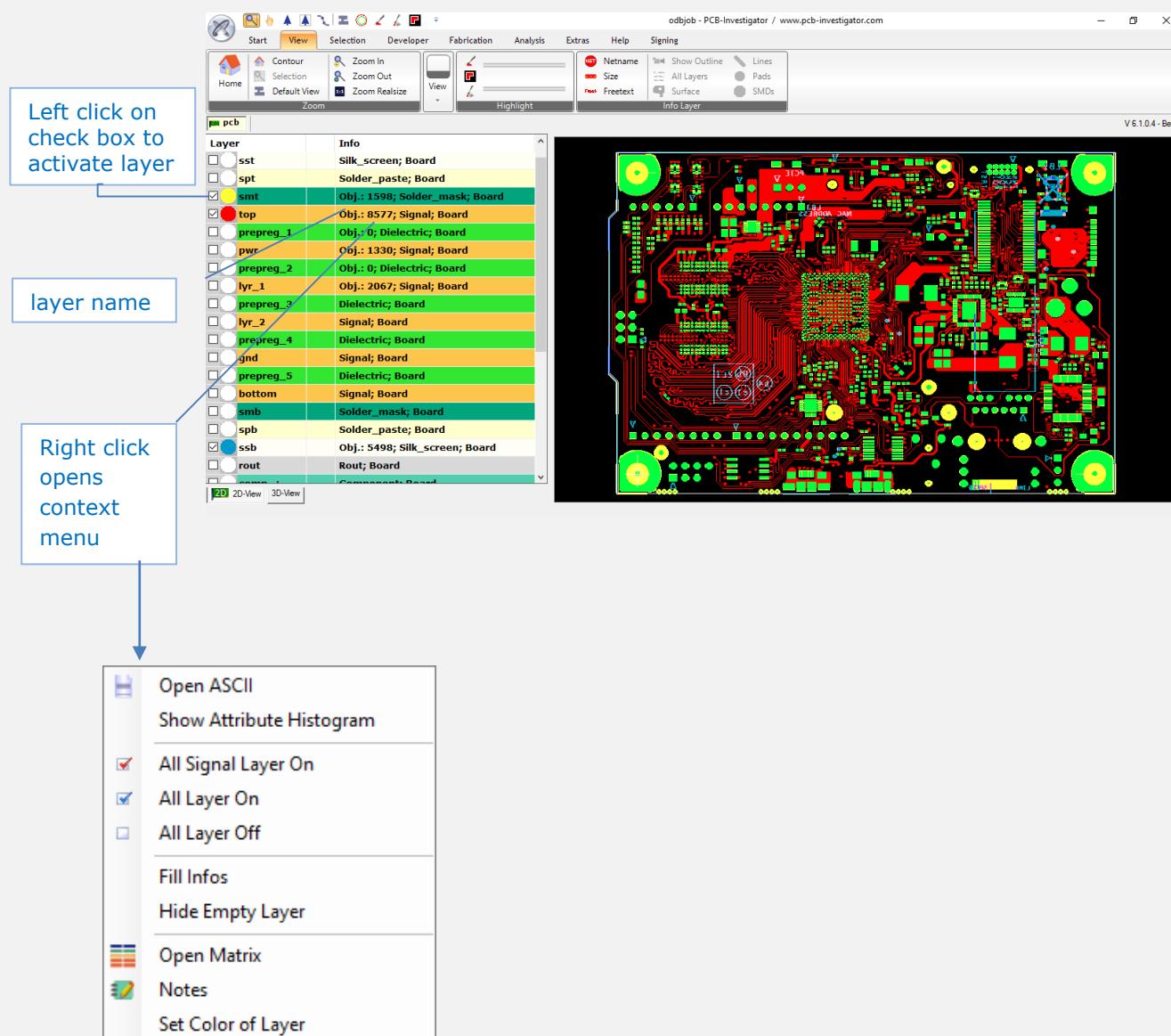
3.1 Opening a job





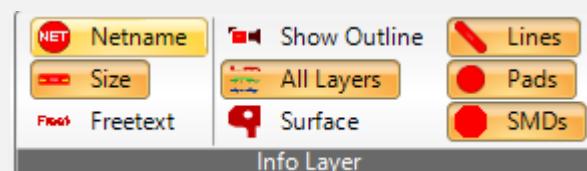
3.2 View Data

Select easily layers to view or set active. Active means that these layers are editable while the others are protected. Different background colors indicate different kinds of layers. Board layers have an orange background, document layers are light blue highlighted, drill layers are gray highlighted and the background color of mask layers is green.

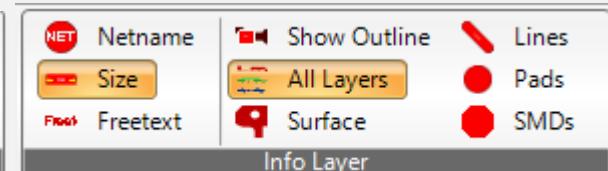




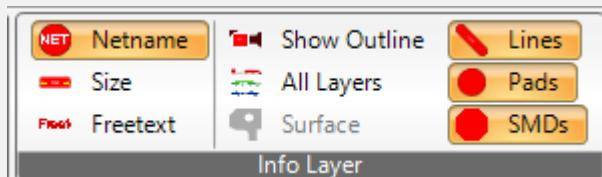
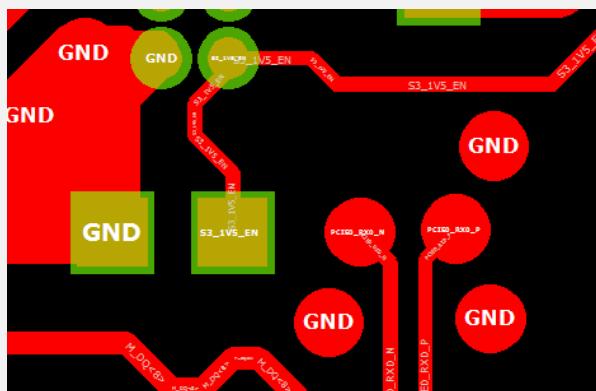
There is an easy way to get information about sizes of objects. Use the Info layer dialog to get dimensioning of each object on your screen.



Example 1 displays the dimensioning of all objects.



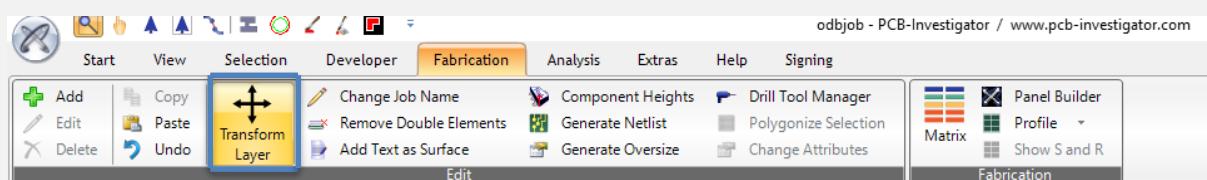
Example 2 displays dimensioning without pads and lines.

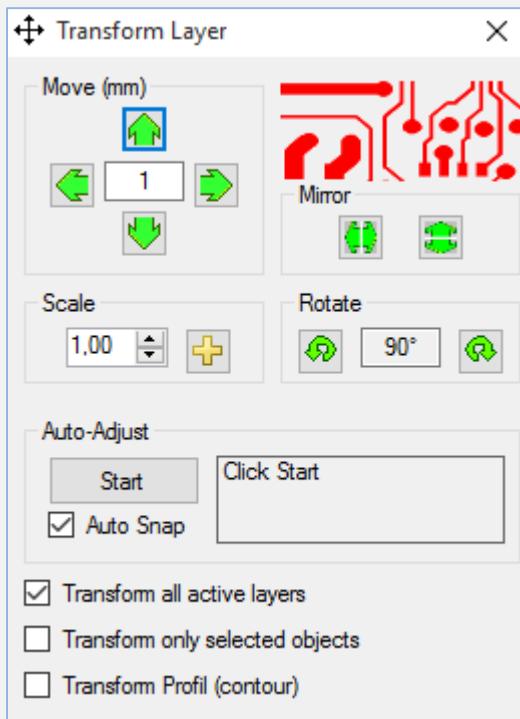


Example 3 displays the Netname labeling

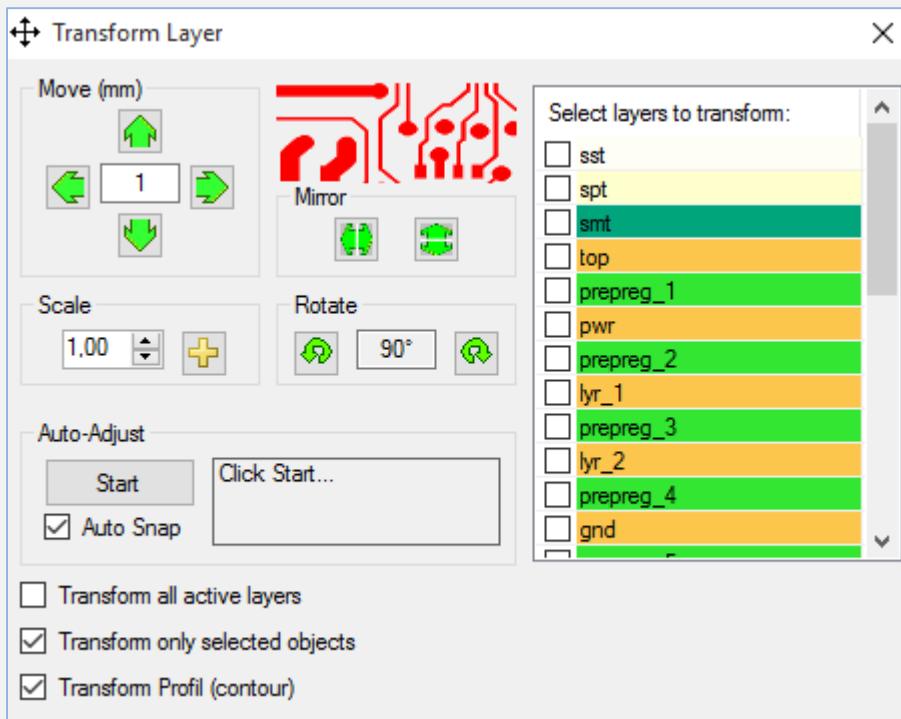
3.3 Move and Rotate Objects

Maybe you have imported layers from ODB++, Gerber274x or Excellon you may have different origins. With Transform Layer you can move the layer in any direction till all layers fit together.





Transform each active layer

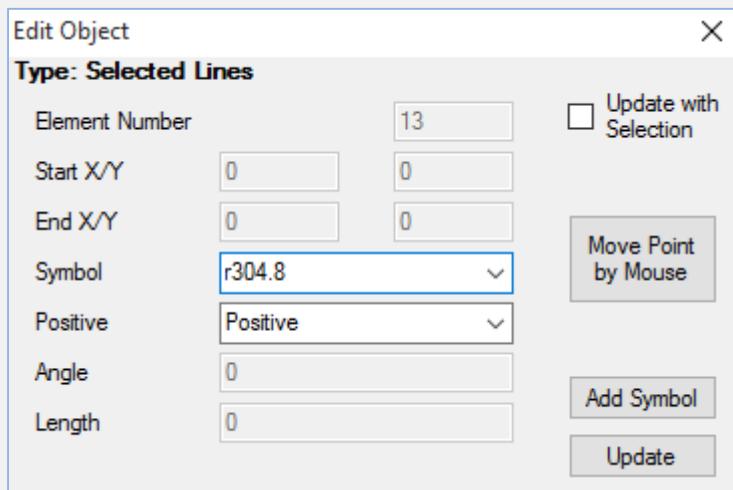


Deactivate the check box to get a selection of layers you want to transform



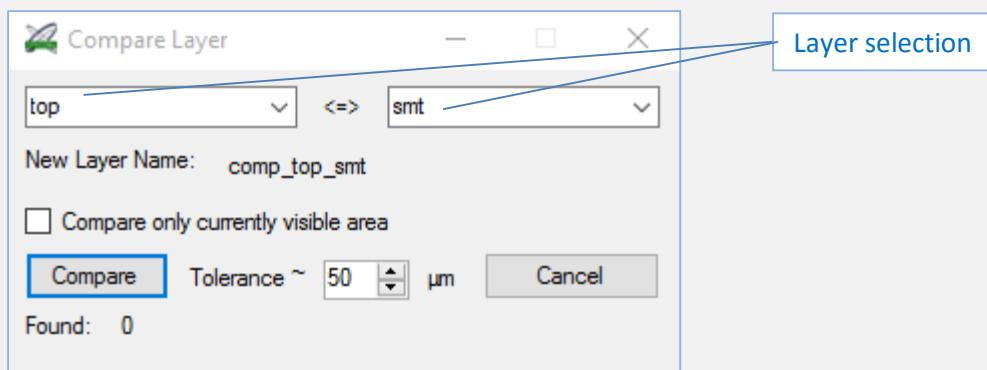
3.4 Edit Objects

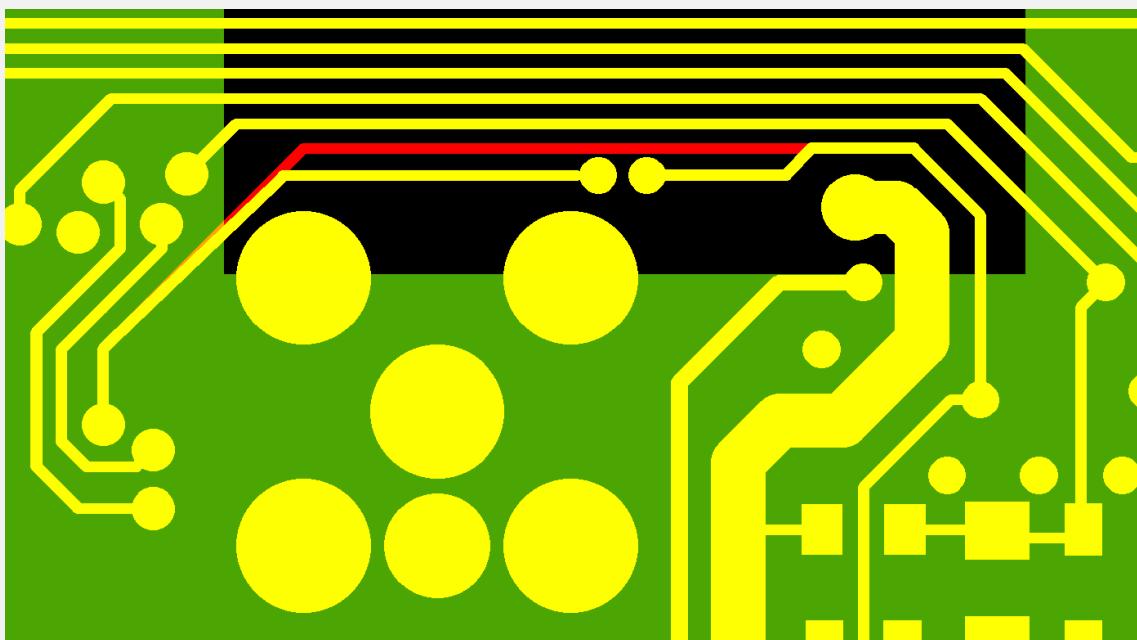
'Edit Object' provides all information about a selected object. The properties of this object can be changed. Use the 'Update' button to verify your changes. By using ,Add Symbol' additional kinds of objects can be created.



3.5 Compare Layers

After selecting two different layers and pressing the ,Compare' button a new layer is created which contains the matches of both selected layers. Thereby you can easily check for accordance and differences.





The figure above displays the result of comparing two layers. The green highlighted area indicates that there are no differences, whereas the black space refers to a region where changes were detected.

3.6 Show and Edit Matrix

The Matrix provides an overview about layers in your project. It offers the chance to copy, move and edit layer data in a convenient way.

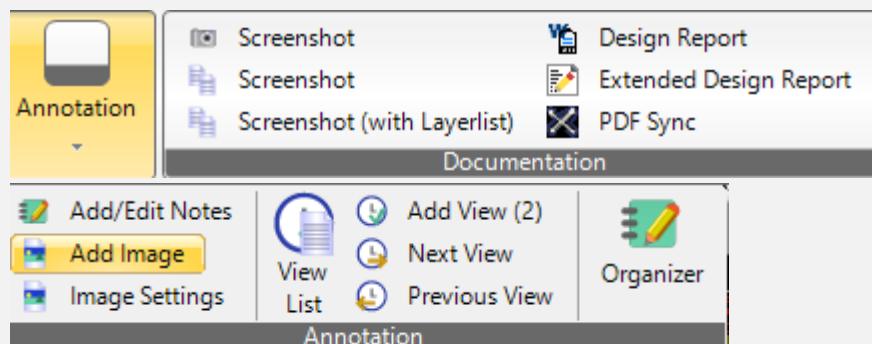




COMP + TOP		Component	
SST		Silkscreen	0.00 µm
SPT		Solderpaste	0.00 µm
SMT	UV-FLEX-HF	Soldermask	15.00 µm
1 TOP	Copper;18	Signal	18.00 + 25.00 µm
PREPREG_1	1080 [FZ 97]	Dielectric	102.00 µm
2 PWR	Copper;35	Signal	35.00 µm
PREPREG_2	7628 [FZ 01]	Dielectric	204.00 µm
3 LYR_1	Copper;35	Signal	35.00 µm
PREPREG_3	7628 [FZ 97]	Dielectric	218.00 µm
4 LYR_2	Copper;35	Signal	35.00 µm
PREPREG_4	7628 [FZ 01]	Dielectric	204.00 µm

3.7 Add Bitmap Data

PCB - Investigator can add Bitmap Data to the CAD vector data to compare production result with the CAD data. You can import pictures created with a digital/infrared camera or a scanner. Use 'Extras' → 'Annotation' → 'Add Image' to do so.

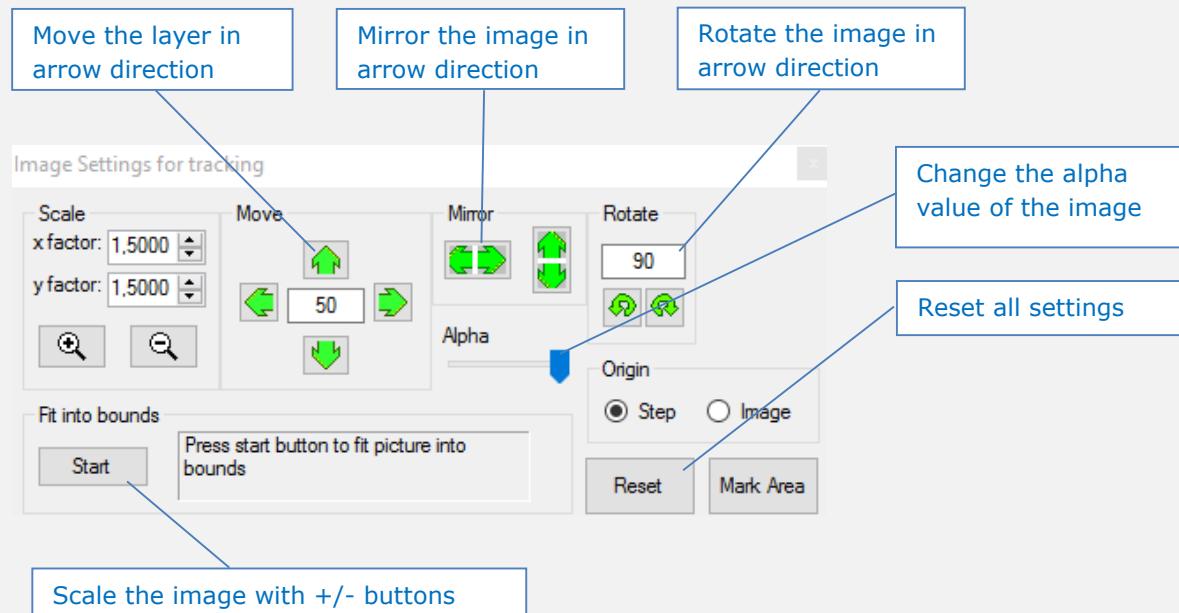




3.8 Transform Image Layer

The transform image layer dialog is over the layer List context menu accessible. Or after adding an image layer (Add Bitmap Data).

Choose a image file and then opens the Picture Layer Dialog to set position and size of the new layer.



3.9 View Component Manager

'Component Manager' provides a list of each component on the according component layers. This list can be customized according to your wishes. Items can be summed up by e.g. Part-Name to get a BOM. There is also a possibility to save the listed data as .csv or .xml file and to print the data.



Choose which data shall be displayed

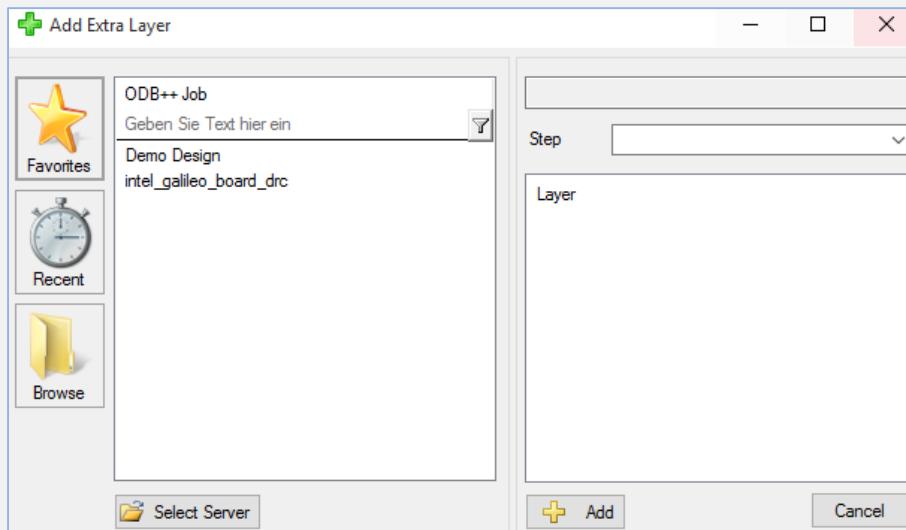
Import & export your own settings

The screenshot shows the 'Component Manager pcb' window. On the left, there is a list of filter options: 'None of all', 'Package', 'Pincount', 'PartName', 'Rotation', 'X', 'Y', 'Height', 'CenterpointX', 'CenterpointY', 'PlacementpX', 'PlacementpY', 'OnTop', 'MirrorX', 'MirrorY', 'Geometry.Height', 'PART_NAME', 'PARENT_PART_TYPE', and 'PARENT_PPT'. The 'Y' filter is selected. On the right, a table lists 23 components with columns for ID, REFERENCE, Package, X, and Y. The table includes rows for various components like LB1, L3M1, L3M2, TP2, TP1, LB3, U2L1, U2M1, Y3L1, LB6V1, J2L1, FB3M1, FB3L1, U1L4, U1L3, U1L2, U1L1, C2M7, C3L28, C3L29, C3L24, C3L26, C3L20, and C3L18.

ID	REFERENCE	Package	X	Y
0	LB1	MK_EU_WEEE...	87.757	59.9059
1	L3M1	SML03025_4P	43.3578	4.0386
2	L3M2	SML03025_4P	40.5892	2.8702
3	TP2	TEST_PAD_S20	47.2186	42.7228
4	TP1	TEST_PAD_S20	47.8282	39.6748
5	LB3	628492-001	53.0606	60.9346
6	U2L1	BGA8_1_05MM	53.848	33.655
7	U2M1	BGA8_1_05MM	53.8988	30.6832
8	Y3L1	SMY2414_2P	38.989	48.6664
9	LB6V1	LB_1500X500_...	77.5462	36.2966
10	J2L1	SKT_MPCIE_F...	54.0766	60.9346
11	FB3M1	SMF0402	31.623	30.6324
12	FB3L1	SMF0402	39.0144	35.6362
13	U1L4	BGA4_1_05MM	86.6902	50.7238
14	U1L3	BGA4_1_05MM	90.8558	45.4406
15	U1L2	BGA4_1_05MM	87.4014	44.323
16	U1L1	BGA4_1_05MM	89.8906	50.6984
17	C2M7	SMC1210_110T	51.181	7.9248
18	C3L28	SMC0201	41.8719	33.0708
19	C3L29	SMC0201	40.8432	33.0708
20	C3L24	SMC0201	42.6212	34.1122
21	C3L26	SMC0201	40.0812	33.8836
22	C3L20	SMC0201	41.3512	35.0774
23	C3L18	SMC0201	41.8338	35.6108

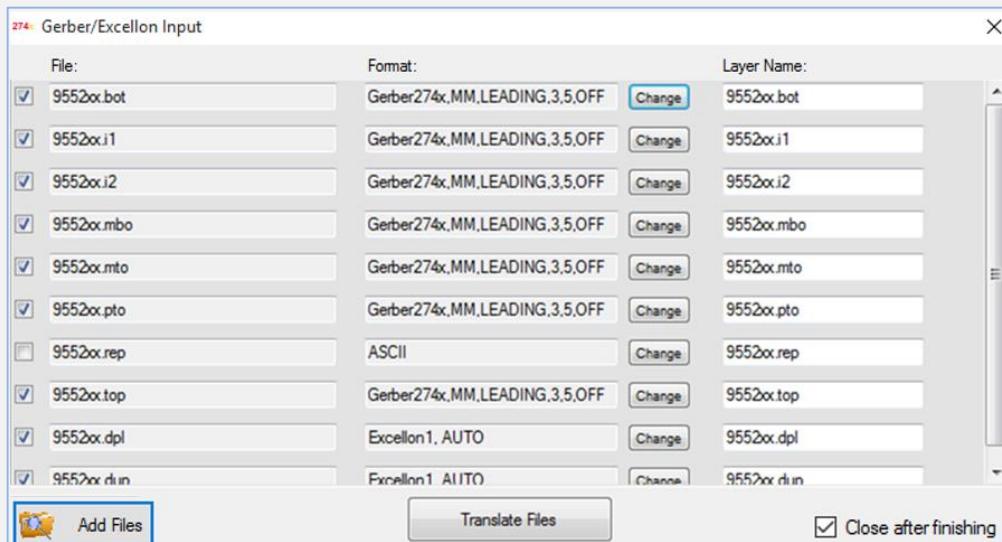
3.10 Add ODB++ data

Use 'Start' → 'Import' → 'Add Layer from ODB++'. Afterwards you can use the 'Compare Layers' option (see section 3.4) to detect alterations to former versions of layers.



3.11 Add Gerber274x, Excellon and Sieb & Meyer data

Use the add CAM input menu to add Gerber274x, Sieb & Meyer and Excellon data with an automated recognition of the format. It is also possible to change it manually.



Gerber274x, Sieb & Meyer and Excellon

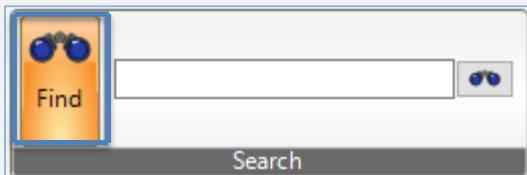
Improve Area Fills means



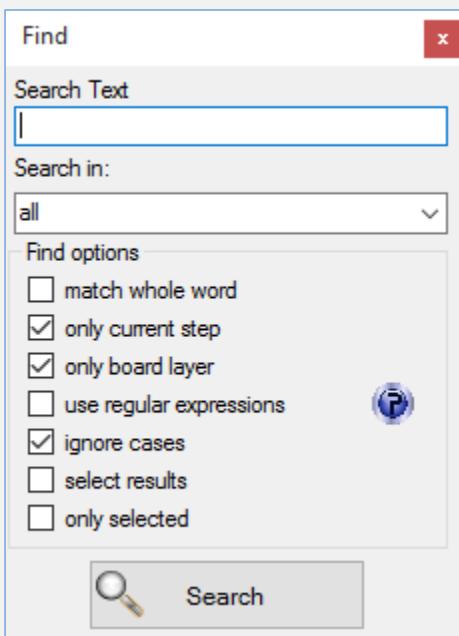
Double lines removing



3.12 Find

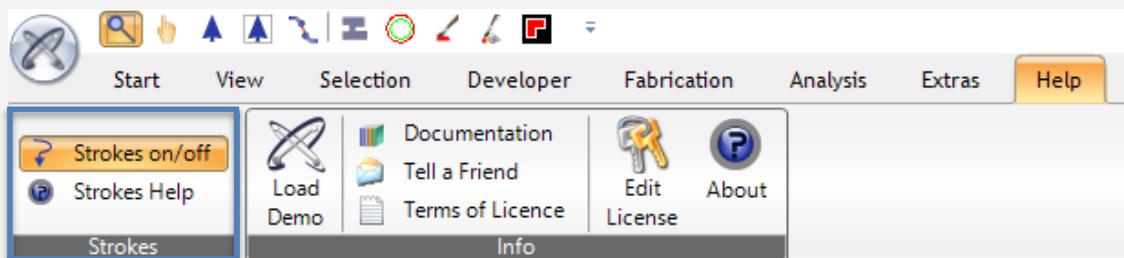


Use the Find dialog to search for objects, components, properties, nets or geometries.

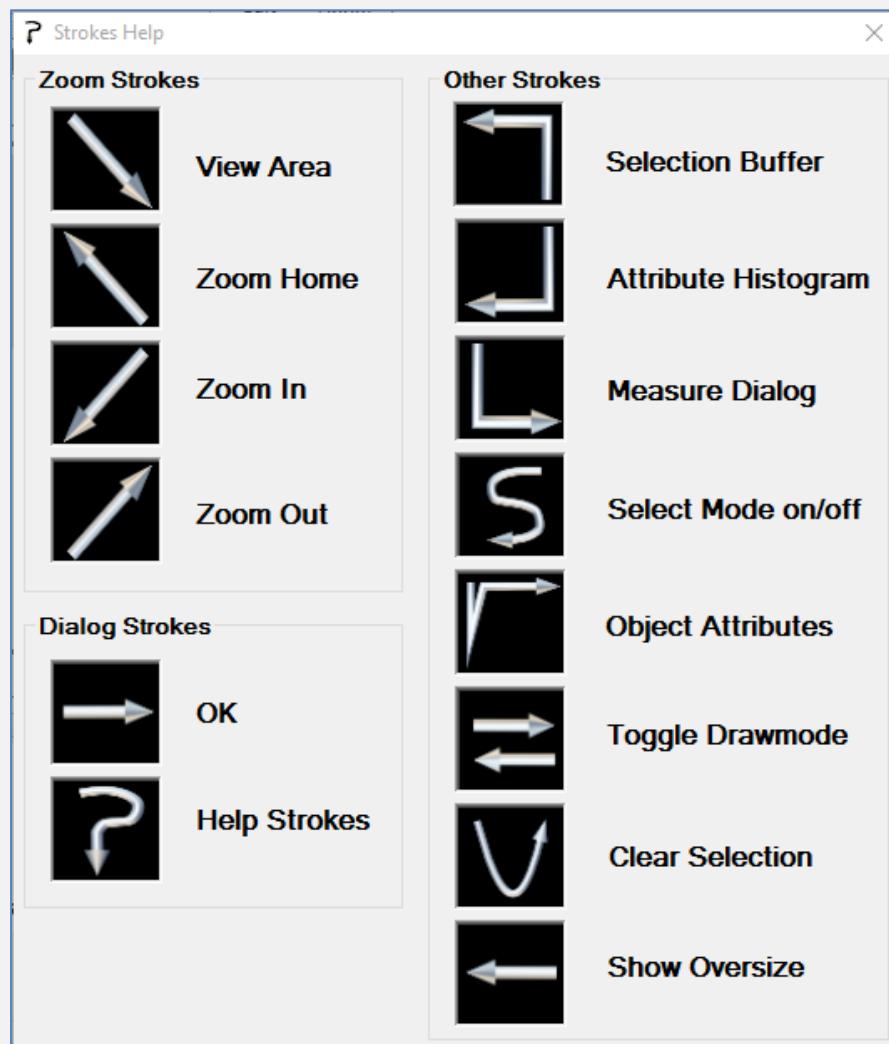




3.13 Strokes



There is a short access to a lot of menus available. Push the middle button or the mouse wheel of your mouse and draw one of the gestures shown below.





4. Terms and definitions

4.1 ODB++

All modern layout tools have options to write ODB++. You can use the option write to directory or the option to write it to .Tgz file. The advantage is to get detailed information within the job. So it can be used during developing process.

4.2 Gerber274x

Gerber274x is ASCII vector graphic format. This format includes also the definition of the apertures which will be used for drawing.

4.3 Excellon

Excellon is used for drill data.

4.4 DXF

DXF is a 2D and 3D Data Exchange Format.

4.5 Sieb & Meyer

Sieb & Meyer data is used for describing CNC manufacturing.

4.6 IPC356

A special definition of netlist data.



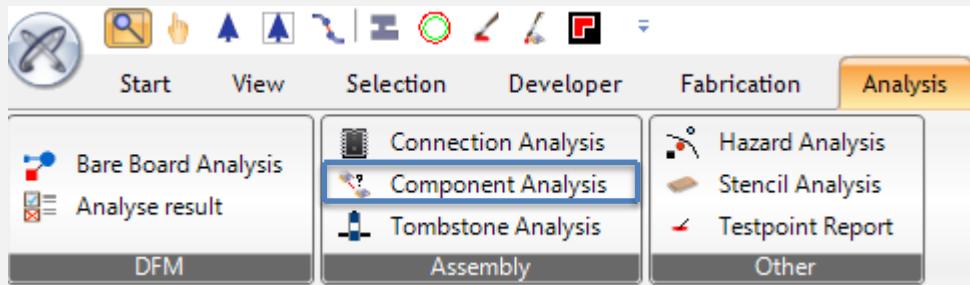
5. Shortcuts

funktion	shortcut
ID_COPY_INCLUDE_LAYERLIST	P, Shift
ID_DELETE	Delete
ID_ZOOM_IN	PageUp
ID_ZOOM_OUT	Next
ID_ZOOM_PROFILE	Home, Control
ID_ZOOM_HOME	Home
ID_GRID	G, Control
ID_LAST_VIEW	Back
ID_FIND	F, Control
ID_CLEAR_SELECTION	C, Control
ID_PREVIOUS_SELECTION	P, Control
ID_MATRIX	M, Control
ID_MEASURE	M
ID_STEP_AND_REPEAT	S, Control
ID_MOUSE_TOOL_ZOOM	Z
ID_MOUSE_TOOL_SELECT	S
ID_FLATTEN_PANEL	Q, Control
ID_CHANGE_DRAWING_MODE	W, Control
ID_SHOW_SELECTION_ONLY_ON_ACTIVE_LAYERS	O, Alt
ID_UNDO_LAST_ACTION	Z, Control
ID_CREATE_EMPTY_PROJECT	N, Control
ID_IMPORT_FAVORITES	F, Shift
ID_IMPORT_RECENT	R, Shift
ID_IMPORT_BROWSE	B, Shift



6. Plug-Ins

6.1 Component Analysis



The screenshot shows the 'Distance Check Components' dialog box. The dialog has a toolbar with 'File', 'Options', and 'Help' buttons, and tabs for 'Filters' and 'Last Results'. The 'Filters' tab is active, showing options to filter by 'Packages' (selected), 'CMP Heights', 'None', and 'Include Pins' (checked). The main area displays a table of components and their maximum distances:

Package	Max. Distance
102276-001	200 µm
102276-003	200 µm
1X10RCPT_2P54_VT_TH	200 µm
1X6RCPT_2P54_VT_TH	200 µm
1X8RCPT_2P54_VT_TH	200 µm
2X4HDR7	200 µm
2X5HDR_SHRD_1P27MM_V	200 µm
628492-001	200 µm
BGA393_15X15MM	200 µm
BGA4_1_05MM	200 µm
BGA8_1_05MM	200 µm

Annotations with arrows point to various parts of the dialog:

- Show components by packages or height
- Show all components on top or bottom
- Includes Pins in the analysis
- Start calculation of distances
- Open Settings
- Save the settings
- Enter maximum distance for all components and confirm with OK
- Enter maximum distance for every single component



Find bottlenecks between components with the „Component Analysis“ Plug-In and guarantee a smooth production. First set a filter to sort components by packages or heights or no filter for showing all components of one layer. Enter the maximum distance either simultaneously for all components or for every single one.

List of results after the analysis:

Filter the list by using the drop-down menu or by manual input

ID	Layer Name	Distance in mm	CMP1	CMP1 Package	CMP1 Height	CMP2	CMP2 Package	CMP2 Height	CMPs Parallel
1	comp_+top	0.000	U8	SSOP48_30_25IA	2.794	Q4	SOT23	1.270	True
2	comp_+top	0.000	U8	SSOP48_30_25IA	2.794	J4A2	CONN_SDCAR...	1.778	False
3	comp_+top	165.100	U8	SSOP48_30_25IA	2.794	C11	SMC0402A	0.610	True
4	comp_+top	0.000	J2B1	1X10RCPT_2P5...	8.712	J1B1	1X8RCPT_2P54...	8.712	True
5	comp_+top	0.000	J2B1	1X10RCPT_2P5...	8.712	C2B4	SMC0603	0.889	False
6	comp_+top	101.600	J2B1	1X10RCPT_2P5...	8.712	C2B5	SMC0402A	0.610	False
7	comp_+top	0.000	J1A5	1X6RCPT_2P54...	8.712	MH1	SPOKE_N156...	0.025	False
8	comp_+top	0.000	J1A5	1X6RCPT_2P54...	8.712	R1A1	SMR0402A	0.610	False
9	comp_+top	101.600	J1A5	1X6RCPT_2P54...	8.712	R1A18	SMR0402A	0.610	True
10	comp_+top	101.600	J1A5	1X6RCPT_2P54...	8.712	R1A2	SMR0402A	0.610	True
11	comp_+top	101.600	J1A5	1X6RCPT_2P54...	8.712	R1A20	SMR0402A	0.610	True
12	comp_+top	101.600	J1A5	1X6RCPT_2P54...	8.712	R1A3	SMR0402A	0.610	True
13	comp_+top	101.600	J1A5	1X6RCPT_2P54...	8.712	R1A5	SMR0402A	0.610	True
14	comp_+top	101.600	J1A5	1X6RCPT_2P54...	8.712	R1A4	SMR0402A	0.610	True
15	comp_+top	101.600	J1A5	1X6RCPT_2P54...	8.712	R1A6	SMR0402A	0.610	True
16	comp_+top	101.600	J1A5	1X6RCPT_2P54...	8.712	R1A19	SMR0402A	0.610	True
17	comp_+top	15.748	J2A1	1X8RCPT_2P54...	8.712	U2A2	BGA8_1_05MM	0.508	True
18	comp_+top	50.800	J2A1	1X8RCPT_2P54...	8.712	J1A6	102276-003	8.636	False
19	comp_+top	139.700	J2A1	1X8RCPT_2P54...	8.712	C1A1	SMC0805	1.346	True
20	comp_+top	139.700	J2A1	1X8RCPT_2P54...	8.712	C1A2	SMC0805	1.346	True
21	comp_+top	101.600	J2A1	1X8RCPT_2P54...	8.712	J1A4	102276-001	10.439	False
22	comp_+top	0.000	U2A2	BGA8_1_05MM	0.508	U2A4	BGA8_1_05MM	0.508	True
23	comp_+top	7.620	U2A2	BGA8_1_05MM	0.508	C2A2	SMC0402A	0.610	False

Select and Zoom	Visualize selected component in the pcb
Print Print Preview Page Setup	Print the list with Print Preview and Page Setup
Export List Copy	Export the list as CSV and copy
Remove Filter	Show the list without filter



Distance Check Components

File Options Help

Filters

ID G

1 2 3

4 comp_+top 0.000 J2B1
5 comp_+top 0.000 J2B1
6 comp_+top 101.600 J2B1
7 comp_+top 0.000 J1A5
8 comp_+top 0.000 J1A5
9 comp_+top 101.600 J1A5
10 comp_+top 101.600 J1A5
11 comp_+top 101.600 J1A5
12 comp_+top 101.600 J1A5
13 comp_+top 101.600 J1A5
14 comp_+top 101.600 J1A5
15 comp_+top 101.600 J1A5
16 comp_+top 101.600 J1A5
17 comp_+top 15.748 J2A1

CMP1 Package CMP1 Height CMP2

Geben Sie T... Geben S... Geben S...

SSOP48_30_25IA 2.794 Q4
SSOP48_30_25IA 2.794 J4A2
SSOP48_30_25IA 2.794 C11
1X10RCPT_2P5... 8.712 J1B1
1X10RCPT_2P5... 8.712 C2B4
1X6RCPT_2P54... 8.712 C2B5
1X6RCPT_2P54... 8.712 MH1
1X6RCPT_2P54... 8.712 R1A1
1X6RCPT_2P54... 8.712 R1A18
1X6RCPT_2P54... 8.712 R1A2
1X6RCPT_2P54... 8.712 R1A20
1X6RCPT_2P54... 8.712 R1A3
1X6RCPT_2P54... 8.712 R1A5
1X6RCPT_2P54... 8.712 R1A4
1X6RCPT_2P54... 8.712 R1A6
1X6RCPT_2P54... 8.712 R1A19
1X8RCPT_2P54... 8.712 U2A2

Activate a by double-click selected layer in the layer list

Keep activated layers activate when selecting another layer

Include only selected components in the analysis

Settings

CSV-Separator : (GER) ▾

Unit

MM Mils

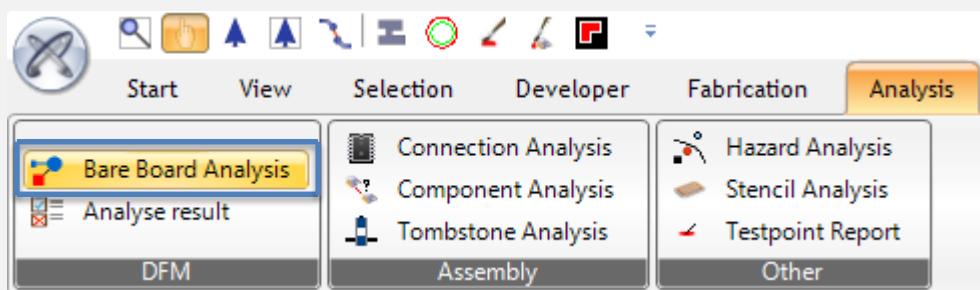
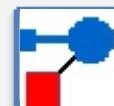
OK Cancel

Specify the country setting for the export as CSV

Set the unit



6.2 Bare Board Analysis



The „Bare Board Analysis“ Plug-In finds bottlenecks between signal layers, drills, annular rings and nets.

Determine the objects, whose distances should be measured.

Still acceptable distance

Result overview of the different measurements

all values in µm

Start the analysis

Result	Count
SolderMask	3568
Spacing	32
Shorts	1
Stubs	0



Analyse Bare Board

File Options Tools Help

Signal Layer Solder Paste Solder Mask Spaces
 Unplated Drill to Signal all Layers Solder Mask to Signal 75
 Distances Drill to Drill Shorts on active layers Solder Mask to SMD 75
 Annular Rings Opens Solder Mask to Drill 75
 Stubs

Result	Count
SolderMask	3568
Spacing	32
Shorts	1
Stubs	0

all values in μm

Layer Overview SolderMask Spacing Shorts

ID	Layer Name	Net1	Net2	Distance in μm	From	To	Type
1	smb	IO7_GPIO	IO7_GPIO	76,200	179.578, 5...	180.34, 59...	SpacingPol...
2	bottom	IO2_MUX	IO2_MUX	0,000	798.576, 5...	798.576, 5...	SpacingPol...
3	smb	VSHLD_S5	VSHLD_S5	76,200	813.816, 4...	813.054, 4...	SpacingPol...
4	top	IO11_ICSP_R	IO11_ICSP_R	0,000	-36.322, 30...	-36.322, 30...	SpacingPol...
5	top	\$NONE\$	\$NONE\$	0,000	462.788, 1...	462.788, 1...	SpacingPol...
6	bottom	IO2_MUX	IO2_MUX	0,000	767.08, 56...	767.08, 56...	SpacingPol...
7	smb	VTT	VTT	25,400	44.45, 509...	44.45, 509...	SpacingPol...
8	smb	VTT	VTT	25,400	95.25, 509...	95.25, 509...	SpacingPol...
9	smb	VTT	VTT	25,400	107.95, 50...	107.95, 50...	SpacingPol...
10	top	\$NONE\$	\$NONE\$	0,000	462.788, 1...	462.788, 1...	SpacingPol...
11	smb	VTT	VTT	25,400	82.55, 509...	82.55, 509...	SpacingPol...
12	smb	VTT	VTT	25,400	69.85, 509...	69.85, 509...	SpacingPol...
13	smb	VTT	VTT	25,400	57.15, 509...	57.15, 509...	SpacingPol...
14	smb	VTT	VTT	25,400	133.35, 50...	133.35, 50...	SpacingPol...
15	smb	VTT	VTT	25,400	120.65, 50...	120.65, 50...	SpacingPol...
16	smb	VTT	VTT	25,400	227.33, 50...	227.33, 50...	SpacingPol...
17	smb	VRIHS1	VRIHS1	76,200	386.588, 1	387.35, 13	SpacingPol...

Select and Zoom	Visualize and remove selected component in the pcb	Filter the list by using the dropdown menu or by manual input
Print Print Preview Page Setup	Print the list with Print Preview and Page Setup	
Export List Copy	Export the list as CSV and copy data to clipboard	
Remove Filter	Show the list without filter	



Save the distance settings and open them the next time working with the Plug-In

Export the results as text or CSV or copy them to the clipboard

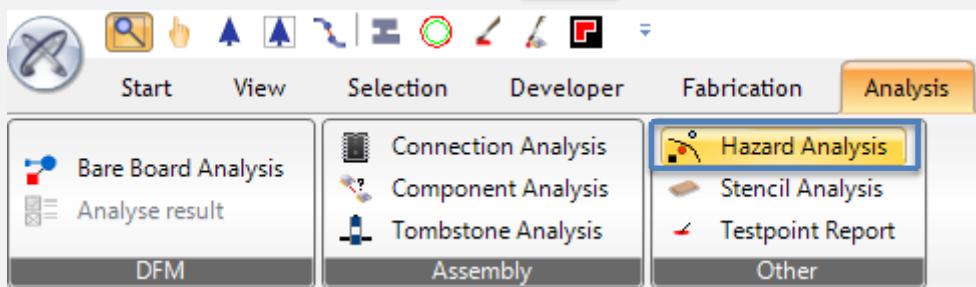
ID	Layer Name	Net1	Net2	Distance in μm	From	To	Type
1	smb	IO7_GPIO	IO7_GPIO	76,200	179.578 , 5...	180.34 , 59...	SpacingPol...
2	bottom	IO2_MUX	IO2_MUX	0,000	798.576 , 5...	798.576 , 5...	SpacingPol...
3	smb	VSHLD_S5	VSHLD_S5	76,200	813.816 , 4...	813.054 , 4...	SpacingPol...
4	top	IO11_ICSP_R	IO11_ICSP_R	0,000	-36.322 , 30...	-36.322 , 30...	SpacingPol...
5	top	\$NONE\$	\$NONE\$	0,000	462.788 , 1...	462.788 , 1...	SpacingPol...
6	bottom	IO2_MUX	IO2_MUX	0,000	767.08 , 56...	767.08 , 56...	SpacingPol...
7	smb	VTT	VTT	25,400	44.45 , 509...	44.45 , 509...	SpacingPol...
8	smb	VTT	VTT	25,400	95.25 , 509...	95.25 , 509...	SpacingPol...
9	smb	VTT	VTT	25,400	107.95 , 50...	107.95 , 50...	SpacingPol...
10	top	\$NONE\$	\$NONE\$	0,000	462.788 , 1...	462.788 , 1...	SpacingPol...
11	smb	VTT	VTT	25,400	82.55 , 509...	82.55 , 509...	SpacingPol...
12	smb	VTT	VTT	25,400	69.85 , 509...	69.85 , 509...	SpacingPol...
13	smb	VTT	VTT	25,400	57.15 , 509...	57.15 , 509...	SpacingPol...
14	smb	VTT	VTT	25,400	133.35 , 50...	133.35 , 50...	SpacingPol...
15	smb	VTT	VTT	25,400	120.65 , 50...	120.65 , 50...	SpacingPol...
16	smb	VTT	VTT	25,400	227.33 , 50...	227.33 , 50...	SpacingPol...
17	smb	VRIIIS1	VRIIIS1	76,200	386.588 , 1...	387.35 , 13...	SpacingPol...

Don't include \$NONE\$-nets, same nets or objects lying on top of each other in the analysis

Save the distance settings and load them automatically the next time working with the Plug-In



6.3 Hazard Analysis



„Hazard Analysis“ finds all possible shorts created from conductive material. The list of possible shorts helps to predict effects on the production.

The screenshot shows the 'Hazard Analysis' dialog box with the following interface elements:

- File, Options, Help menu bar.
- Analyse tab selected.
- Space input field set to 1000 µm.
- Analyse button.
- Settings button.
- Filter for Net dropdown set to V3P3_S3.
- Filter for CMP dropdown set to L4B1.
- A table listing 12 rows of analysis results:

ID	Layer Name	CMP-From	Net1	CMP-To	Net2	Distance
1	SMT	U8 - 40	IO2_MUX	U8 - 41, U...	IO3_MUX, I2C_...	154.00 -...
2	SMT	U8 - 41	IO2_MUX	U8 - 40, U...	IO3_MUX, IO4_...	154.00 -...
3	SMT	U8 - 42	IO2_MUX	U8 - 40, U...	I2C_MUX, I2C_...	154.00 -...
4	SMT	U8 - 38	IO2_MUX	U8 - 40, U...	A1_GPIO, A1_G...	154.00 -...
5	SMT	U8 - 39	IO2_MUX	U8 - 40, U...	A0_GPIO, A0_G...	154.00 -...
6	SMT	U8 - 1	IO2_INTC	U9 - 4, U8...	IO10_GPIO_PW...	154.00 -...
7	SMT	U8 - 28	IO2_INTC	U8 - 26, U...	INT, SW_RESET...	154.00 -...
8	SMT	U8 - 26	IO2_INTC	U8 - 28, U...	INT, \$NONE\$, \$...	154.00 -...
9	SMT	U8 - 29	IO2_INTC	U8 - 28, U...	SW_RESET_N...	154.00 -...
10	SMT	U8 - 27	IO2_INTC	U8 - 28, U...	\$NONE\$, \$NON...	154.00 -...
11	SMT	U8 - 30	IO2_INTC	U8 - 28, U...	RESET_N_SHL...	154.00 -...
12	SMT	U8 - 3	IO3_PWM	U8 - 4, U8...	IO9_GPIO_PW...	154.00 -...
	CMT	110 - 4	IO2_PWM	110 - 2, 110	109_GPIO_PWM	154.00

This value defines the area taken into the calculation

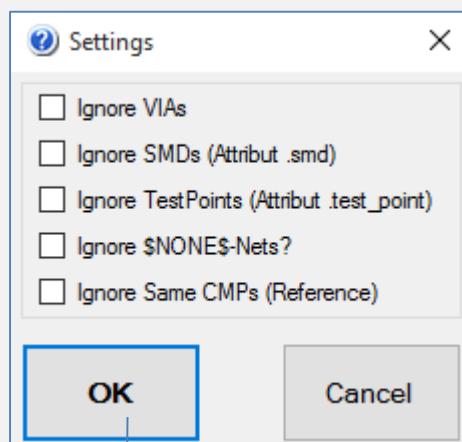
Start the Analysis

Analyse only certain nets or components

Filter the results, either by manual input or with the drop-down menu



Select CMPs Select Objects	Show components or objects color marked in the pcb
Copy Export as CSV ▶	Copy, export or print the results
Print Print Preview Page Setup	Print the list with Print Preview and Page Setup
Remove Filter	See the results without the filter

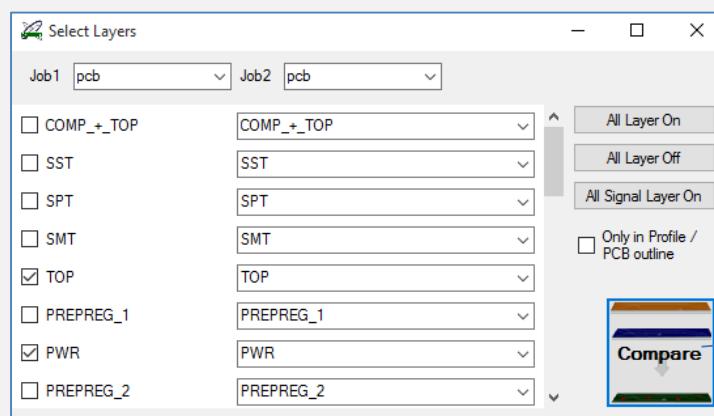
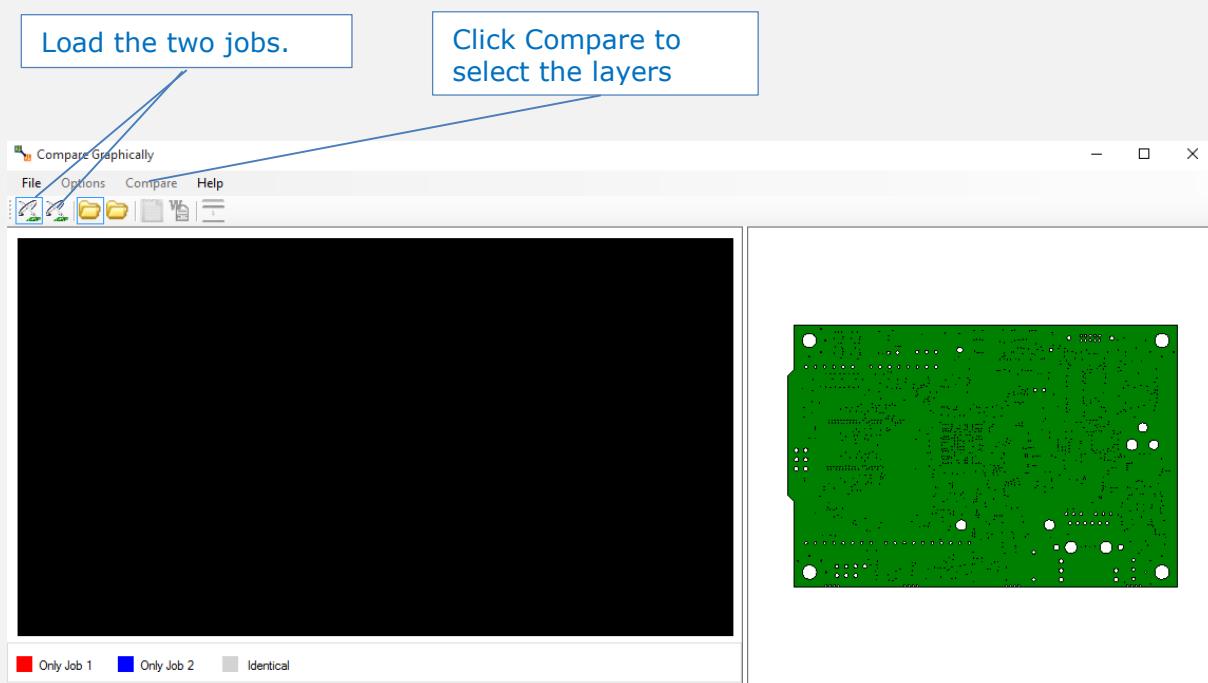
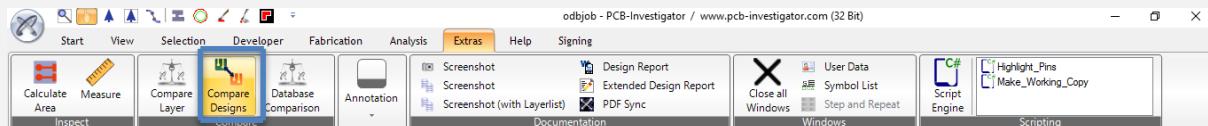


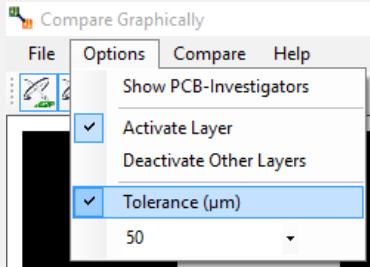
Analyse without
these parts



6.4 Graphic Board Compare

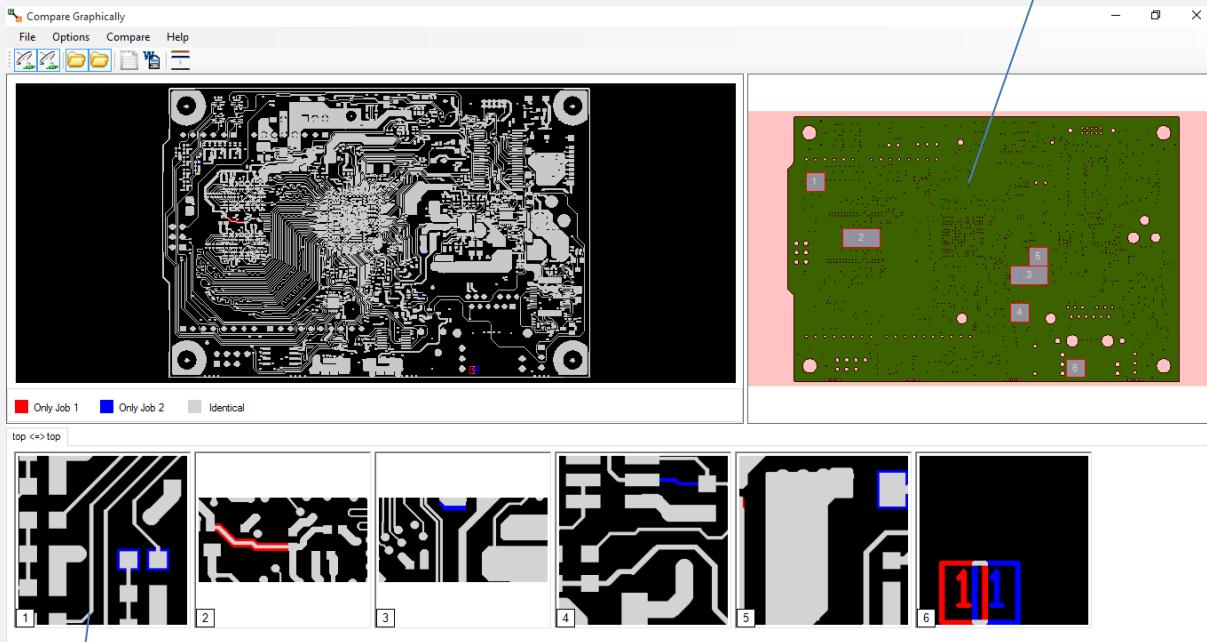
The Graphic Board Compare Plug-In shows differences between two process steps of one job by comparing the board graphically.





- Open a new PCBI for both Job1 and Job2 (see slide #4)
- See the drills on the board
- Get explanation about the color marking
- Activate the layer in the two new PCBIs by clicking on the according clip in the overview
- Deactivate every other layer when activating a new one
- Exclude differences smaller than 5μ from the analysis

The whole board.

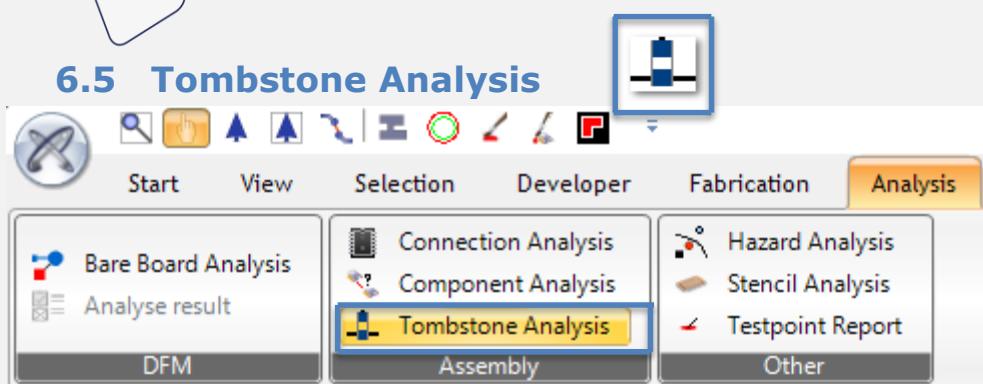


Click on a clip in the list to see it zoomed in in the left handed part of the window and red marked on the whole board

List of the clips that show differences



6.5 Tombstone Analysis



The „Tombstone Analysis“ Plug-In finds components with two pins, which have different sizes. Problems in the production will arise, if the difference in size is too big.

Possibility to filter the packages by name, count and size, according to your demands

Geometries	Count	Size
Geben Sie Text hier ein	G...	Geben Sie T...
<input type="checkbox"/> SSW2RPB	2	6045 x 3886 x 2...
<input type="checkbox"/> SMY2414_2P	1	6835 x 4335 x 1...
<input type="checkbox"/> SMY_FC255	1	6156 x 2845 x 0...
<input checked="" type="checkbox"/> SMR0603	1	3175 x 1651 x 0...
<input checked="" type="checkbox"/> SMR0402A	239	1016 x 1905 x 0...
<input type="checkbox"/> SMLED0603	5	4064 x 1803 x 0...
<input type="checkbox"/> SMI_255_255	3	9652 x 7493 x 2...
<input type="checkbox"/> SMF2411	1	8661 x 3810 x 2...
<input checked="" type="checkbox"/> SMF0805	1	2794 x 1270 x 1...
<input checked="" type="checkbox"/> SMF0402	2	1905 x 1108 x 0...
<input type="checkbox"/> SMC1210_110T	1	3175 x 6223 x 2...
<input checked="" type="checkbox"/> SMC0805P	1	1905 x 4445 x 1...
<input checked="" type="checkbox"/> SMC0805	22	1905 x 4445 x 1...
<input checked="" type="checkbox"/> SMC0603	16	1651 x 3175 x 0...
<input checked="" type="checkbox"/> SMC0402A	158	1016 x 1905 x 0...
<input checked="" type="checkbox"/> SMC0201	8	1132 x 1132 x 0...
<input type="checkbox"/> 102276-001	2	5842 x 3505 x 1...



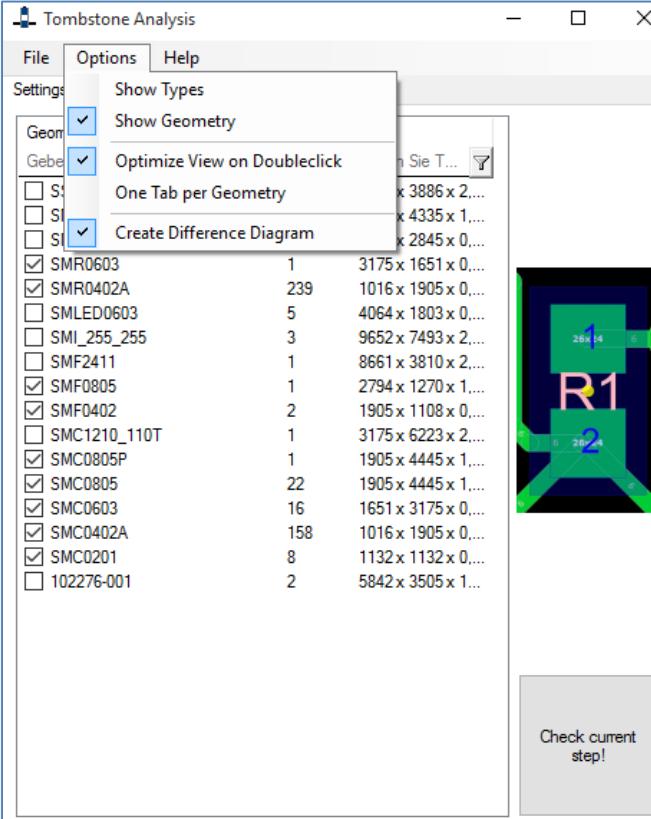
Tombstone Analysis

File Options Help

Settings Show Types
 Show Geometry
Geom Geb...
 Optimize View on Doubleclick
 One Tab per Geometry
 Create Difference Diagram

<input checked="" type="checkbox"/>	SMR0603	1
<input checked="" type="checkbox"/>	SMR0402A	239
<input type="checkbox"/>	SMLED0603	5
<input type="checkbox"/>	SMI_255_255	3
<input type="checkbox"/>	SMF2411	1
<input checked="" type="checkbox"/>	SMF0805	1
<input checked="" type="checkbox"/>	SMF0402	2
<input type="checkbox"/>	SMC1210_110T	1
<input checked="" type="checkbox"/>	SMC0805P	1
<input checked="" type="checkbox"/>	SMC0805	22
<input checked="" type="checkbox"/>	SMC0603	16
<input checked="" type="checkbox"/>	SMC0402A	158
<input checked="" type="checkbox"/>	SMC0201	8
<input type="checkbox"/>	102276-001	2

Check current step!



Check the boxes to
→ see the different widths of the
single conductive paths
→ see the belonging package
→ zoom in the component with
double click

Tombstone Analysis

File Options Help

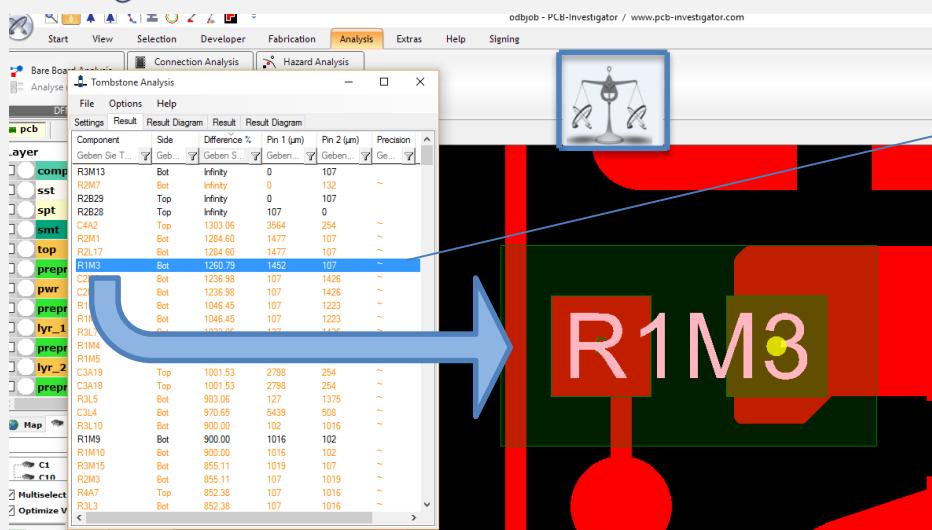
Settings Result Result Diagram Result Result Diagram

Component	Side	Difference %	Pin 1 (µm)	Pin 2 (µm)	Precision
R3M13	Bot	Infinity	0	107	~
R2M7	Bot	Infinity	0	132	~
R2B29	Top	Infinity	0	107	~
R2B28	Top	Infinity	107	0	~
C4A2	Top	1303.06	3564	254	~
R2M1	Bot	1284.60	1477	107	~
R2L17	Bot	1284.60	1477	107	~
R1M3	Bot	1260.79	1452	107	~
C2M9	Bot	1236.98	107	1426	~
C2M2	Bot	1236.98	107	1426	~
R1M2	Bot	1046.45	107	1223	~
R1M1	Bot	1046.45	107	1223	~
R3L7	Bot	1023.06	127	1426	~
R1M4	Bot	1023.06	1426	127	~
R1M5	Bot	1002.06	1400	127	~
C3A19	Top	1001.53	2798	254	~
C3A18	Top	1001.53	2798	254	~
R3L5	Bot	983.06	127	1375	~
C3L4	Bot	970.65	5439	508	~
R3L10	Bot	900.00	102	1016	~
R1M9	Bot	900.00	1016	102	~
R1M10	Bot	900.00	1016	102	~
R3M15	Bot	855.11	1019	107	~
R2M3	Bot	855.11	107	1019	~
R4A7	Top	852.38	107	1016	~
R3L3	Bot	852.38	107	1016	~

List of results

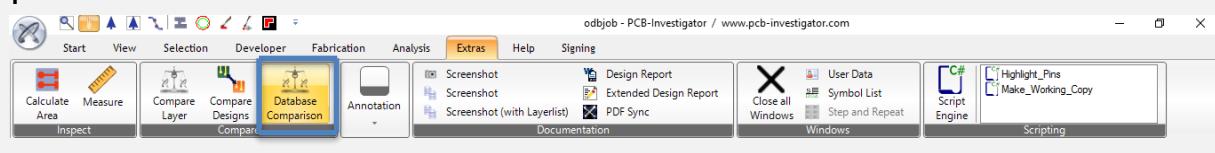


EASYLOGIX.DE

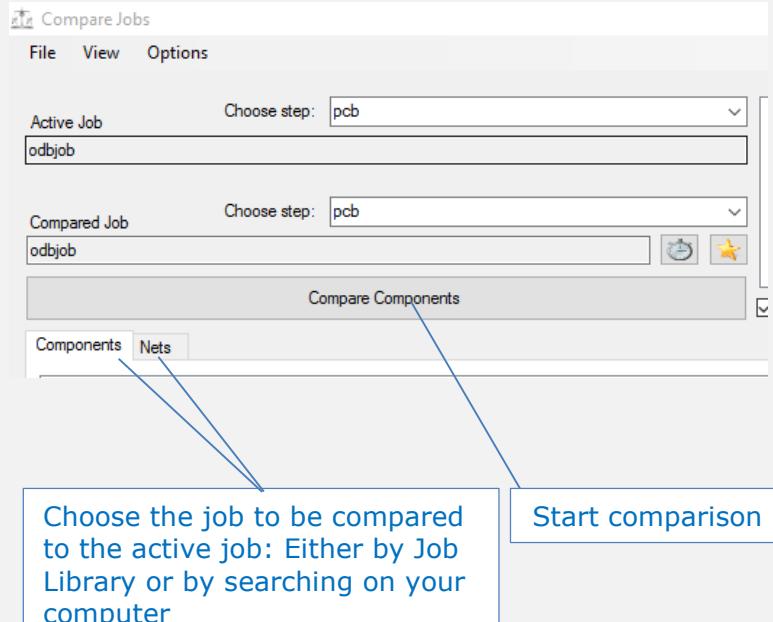


Doubleclick on the component to see it selected in PCB Investigator

6.6 Database Compare



Compare PCB Data shows changes in component and net information of two jobs on one view



Start comparison

Overview

Filter the display either by manual input or with the drop-down menu



EASYLOGIX.DE

Compare Jobs

File View Options

Active Job Choose step: pcb
odbjob

Compared Job Choose step: pcb
odbjob

Compare Components

Components Nets

State	Reference	Partnumber	X	Y	Value	Nets	Attributes
different!	Q3B1	C52264-001	57.3024	15.748		GND, MON_V1...	Geometry.Height '1.092Z;PART_NAME 'NPN'.PARENT_PART_TYPE NPN_
different!	J4A1	G84017-001	76.8858	64.135		V3P3_SS_JTAG...	Geometry.Height '5.334Z;PART_NAME '2X5HDR'.PARENT_PART_TYPE 2X5
different!	U4B1	G60296-001	90.805	15.875		\$NONE\$, RMIL...	Geometry.Height '1.447Z;PART_NAME 'D'P8384B''.PARENT_PART_TYPE D
different!	R3B6	A93548-023	57.023	19.1008	1K	V1P5_SS, MON...	Geometry.Height '0.609Z;SIGNAL_MODEL 'RESISTOR50''.VALUE '1K.WATT
different!	R3B5	A93548-014	55.118	19.1008	1.5K	MON_V1P5_S5...	Geometry.Height '0.609Z;SIGNAL_MODEL 'RESISTOR50''.VALUE '1.5K.WA..
different!	no_refdes+4	??	5.0038	4.4196		\$NONE\$	comp_mount_type=SMT
different!	no_refdes+5	??	61.4934	18.2118		\$NONE\$	comp_mount_type=SMT
different!	no_refdes+6	??	64.6938	64.77		\$NONE\$	comp_mount_type=SMT
different!	J2L1	C59768-003	54.0766	60.9346		WAKE_N, V3P3...	Geometry.Height '9.245Z;PART_NAME 'MPCIE_52P_LATCH_KIT'.PARENT_
different!	U1L4	D30400-001	86.6902	50.7238		GND, CLN_SD...	Geometry.Height '1.193Z;PART_NAME 'CM1230_02'.PARENT_PART_TYPE
different!	R3M13	A93548-001	43.7642	21.6408	33.2	\$NONE\$, GPIO...	Geometry.Height '0.609Z;SIGNAL_MODEL 'RESN_0402LF-33.2.1%_0402LF_
different!	no_refdes+1	??	-2.286	52.2478		\$NONE\$	comp_mount_type=SMT
different!	no_refdes+2	??	64.1604	-0.8636		\$NONE\$	comp_mount_type=SMT
different!	no_refdes+3	??	82.7532	58.293		\$NONE\$	comp_mount_type=SMT
only in active Job	C3B11	C97875-001	65.3542	23.1902	22UF	V1P0_SO, GND	Geometry.Height '1.346Z;SIGNAL_MODEL 'CAPACITOR20PF''.VALUE '22UF.'

Selected Item Active Job Compared Job

All components with reference, partnumber, coordinates, value and attributes. Listed by existance in one or both jobs and by matches.

Click on one component to see the changes in the box below

Compare Jobs

File View Options

Active Job Choose step: pcb
odbjob

Compared Job Choose step: pcb
odbjob

Compare Nets

Components Nets

State	Netname	Netname Job2	Matches %
different!	\$NONE\$	Net_652	3.45
- match found in -	\$NONE\$	Net_651	3.45
- match found in -	\$NONE\$	Net_650	3.45
- match found in -	\$NONE\$	\$NONE\$_141	3.45
- match found in -	\$NONE\$	\$NONE\$_140	3.45
- match found in -	\$NONE\$	\$NONE\$_139	3.45
- match found in -	\$NONE\$	\$NONE\$_138	3.45
- match found in -	\$NONE\$	\$NONE\$_137	3.45
- match found in -	\$NONE\$	\$NONE\$_136	3.45
- match found in -	\$NONE\$	\$NONE\$_135	3.45
- match found in -	\$NONE\$	\$NONE\$_134	3.45
- match found in -	\$NONE\$	\$NONE\$_133	3.45

Active Job Compared Job

Netnumber

Netname

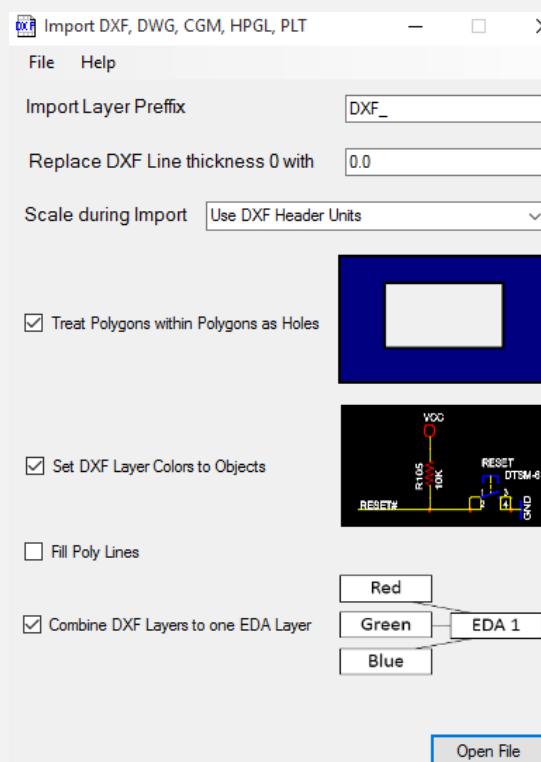
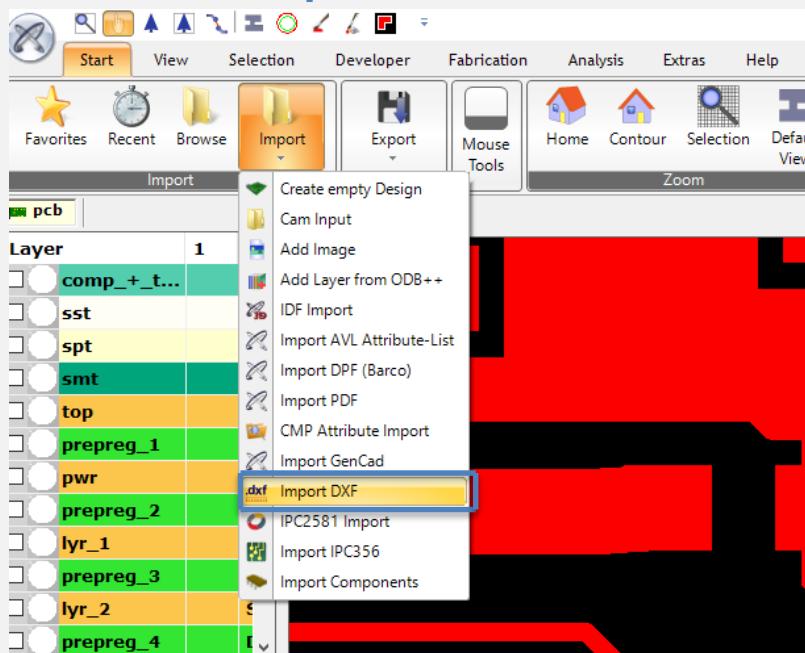
Components

Equal Components

Different Components



6.7 DFX-Import



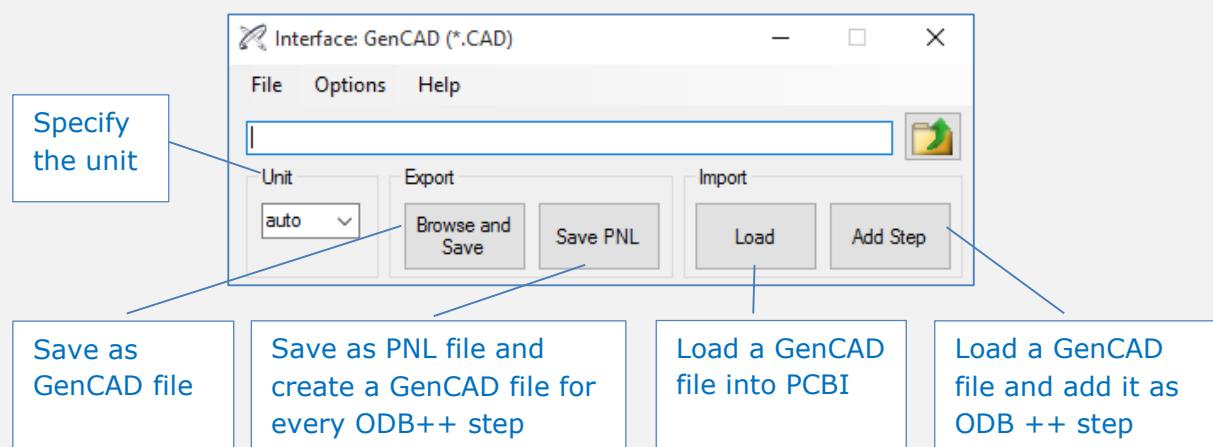
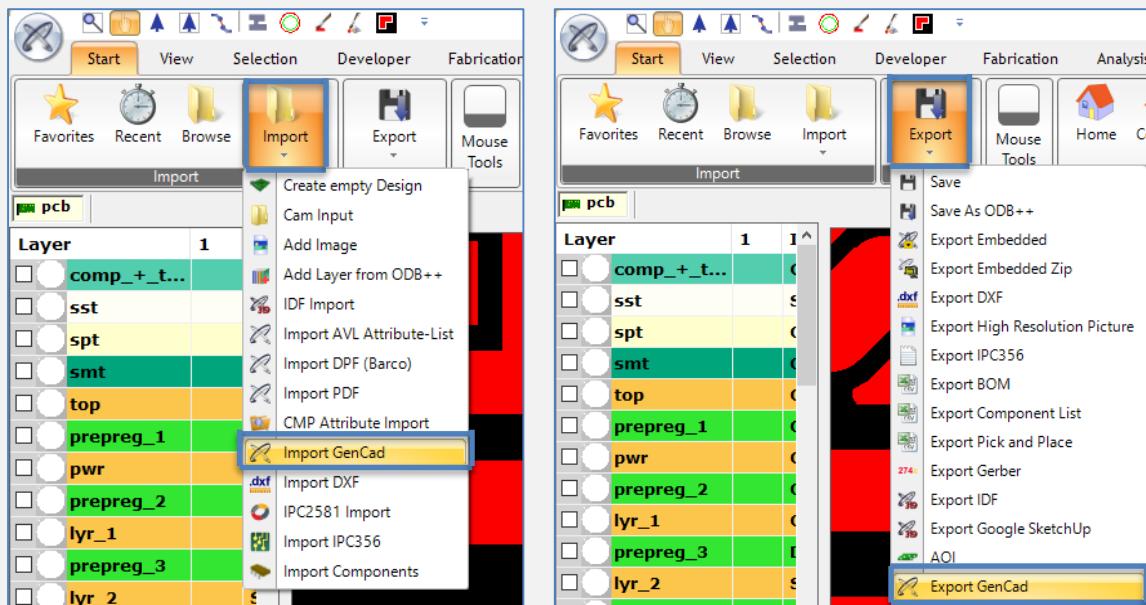


6.8 GenCad



The GenCAD Plug-In provides a GenCAD interface based on 4.1. version.

There are different ways to work with GenCAD files and PCB-Investigator.

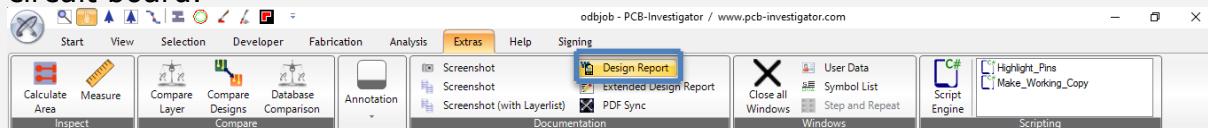




6.9 Design Report



„Design Report“ provides an overview with all relevant data of your printed circuit board.



Design Report

Created with PCB-Investigator

Company Name:
Editor:
E-Mail:
Telephone:

Username: [REDACTED]
Date: 08.12.2015
Data location: \\[REDACTED]

Design overview:

Step count: 1
Layer count: 31
Signal Layer count: 6
Net count: 433

Component layer attributes:

Component count top: 294

Generates the report

Enter these data by yourself

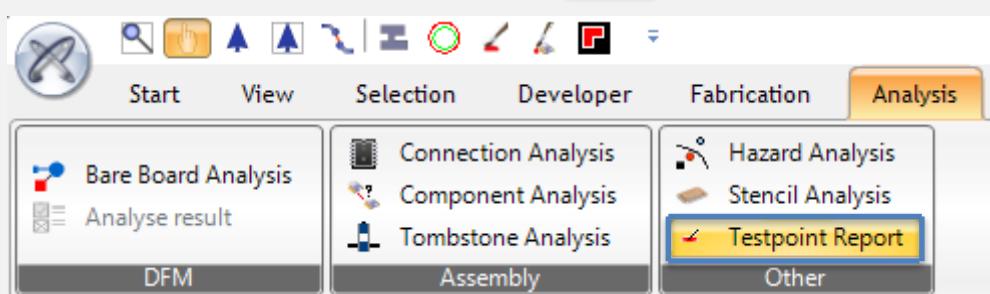


Pin count top: 1535
Component count bot: 246
Pin count bot: 564

Layer Matrix:

Step name	PCB count	PCB Size	
pob	1	10,67816 x 7,198587 cm	
<hr/>			
Layer name	Layer type	Layer feature count	Smallest Object (cm)
COM + TOP	Component	254	0,359
SFT	Silk screen	2915	0,152
SPT	Solder paste	1423	0,254
SMT	Solder mask	1598	0,354
TOP	Signal	8577	0,102
PREFREC_1	Dielectric	0	
PWR	Signal	1330	0,152
PREFREC_2	Dielectric	0	
LVR_1	Signal	2067	0,152
PREFREC_3	Dielectric	0	
LVR_2	Signal	1873	0,152
PREFREC_4	Dielectric	0	
GND	Signal	1423	0,152
PREFREC_5	Dielectric	0	
BOTTOM	Signal	7875	0,101
SFT	Solder mask	2462	0,233
SPT	Solder paste	574	0,203
SMB	Silk screen	5498	0,152
ROUT	Route	10	0,000
COM + BOT	Component	246	0,533
ASSEMBLY+TOP	Document	44125	0,021
TP	Document	1744	0,25
HEIGHT_TOP	Document	3	15,770
HEIGHT_BOT	Document	1	31,524
SQA AREAS	Document	6	0,737
DRC ROUTE	Document	452	0,203
DR_IP_TOP	Document	13	2,718
DR_IP_BOT	Document	1479	0,234
INTELGALILEO_FABD_BACK	Document	0	
INTELGALILEO_FABD_FRONT	Document	0	
T	Document	66	5,080
comp_top_smt	Document	66	5,080

6.10 Testpoint Report



The „Testpoint Report“ Plug-In creates a list of all nets of a pcb with testpoints.



Testpoint Report

Netname	TP Count	TP	TP
Geben Sie Text hier ein	0		
\$NONE\$	0		
VSHLD_S5	0		
GND	2	Pad #7614	Pad #7156
V3P3_S0	0		
RESET_N_SHLD	2	Pad #1016	Pad #486
V1P5_S0	0		
VTT	0		
AVIN3	0		
AVIN0	0		
VREF	0		
V1P5_S3	0		
AVIN2	0		
AVIN1	0		
AVIN4	0		
AVIN5	0		
V3P3_S3	0		
RMII_S0_CT2	0		
RMII_S0_CT1	0		

Search Testpoints by...

...Component Reference: TP
 ...Component Partname: Testpoint
 ...Pad Attribute: geometry=C64P49TH
 ...Pad Geometry: TP;Testpoint

Ignore Case [aA] Show Testpoint Positions

Enter the name,
you want the Plug-
In to search for

Show coordinates of
the testpoints in the
list of results



6.11 Panel Builder

The screenshot shows the PCB-Investigator software interface with the 'Fabrication' tab selected. A sub-menu bar at the top right indicates the current job: 'odbjob - PCB-Investigator / wwwpcb-investigator.com'. The main window is titled 'Panel Builder' and contains the following elements:

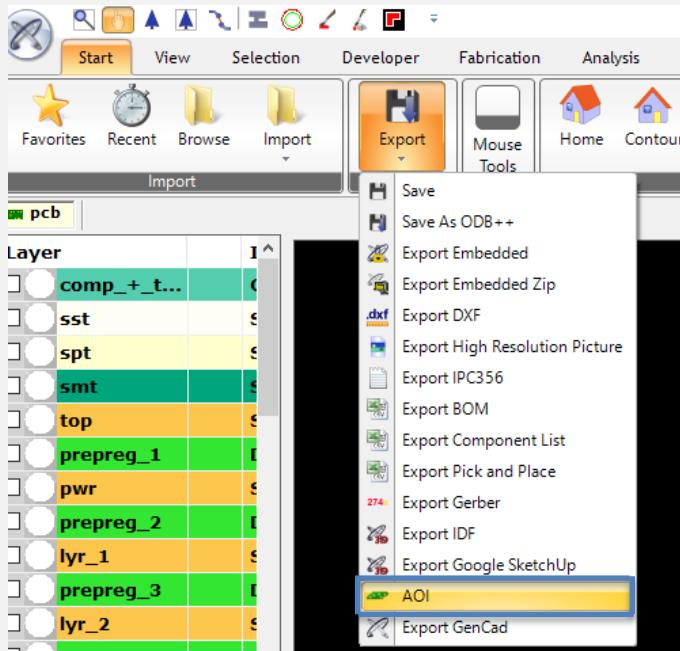
- Step Management:** Buttons for 'Add new Step' (highlighted in blue), 'Import Step', and 'Add optimized Panel'.
- Edit Step:** A dropdown menu set to 'pcb'. It includes fields for 'OriginX (mm)', 'OriginY (mm)', 'X_DATUM', and 'Y_DATUM', all currently set to 0.
- Update Step Values:** A button to update the step values.
- Current Panel:** Set to 'pcb'. Below it is a table with columns: Step, X (mm), Y (mm), NX-Count, NY-Count, DX (mm), DY (mm), ANGLE, and MIRROR. The first row shows values: Step 'pcb', X (mm) 0, Y (mm) 0, NX-Count 1, NY-Count 1, DX (mm) 106.7816, DY (mm) 71.9859, ANGLE 0, and MIRROR NO.
- Transform:** A group of buttons for rotation, scaling, and movement, with a '50 mm' scale indicator. A checkbox for 'Minimum Distance' is set to 2 mm.
- Apply:** A large button to apply the changes.



6.12 AOI Import/Export



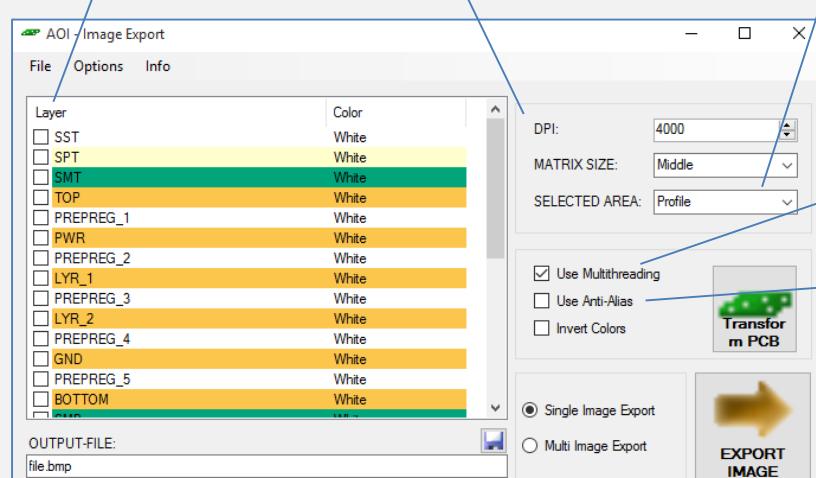
„AOI“ creates high resolution BMP graphics as 1 BPP format from PCB data (with Anti-Alias: 8 BPP).



Select the exported layers

Set the internal calculation quantity for the matrix

Export the complete board or only the visible area



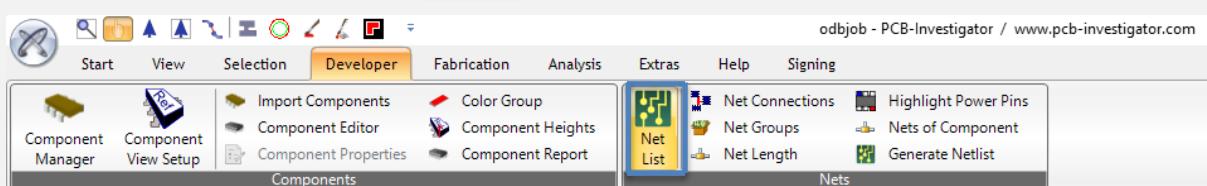
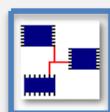
Multithreading for a faster processing

Change black-white color assignment



Change Color	Change black-white color assignment for each layer
Move Up Move Down	Change order of the layers
Select All Unselect All	Select/unselect all layers

6.13 Net List

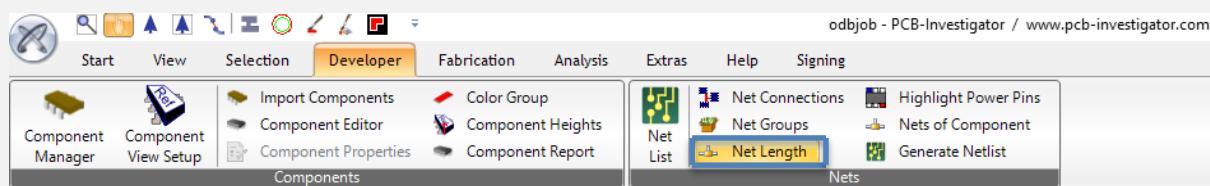


„Export Net List“ enables you to export a list with all nets as Excel CSV or text.

CAD Net											
Item	Name	Object...	Layers	critical_net	net_type	physical_t...	diff_pair	electrical_...	eclass_im...
1	\$NONE\$	713	spb, botto...								
2	VSHLD_S5	322	spb, botto...								
3	GND	5764	spb, botto... yes		PWR-GND	PWR-GND					
4	V3P3_S0	751	spb, botto... yes		PWR-GND	PWR-GND					
5	RESET_N_SHLD	126	bottom, g...								
6	V1P5_S0	255	spb, botto... yes		PWR-GND	PWR-GND					
7	VTT	273	spb, botto... yes		PWR-GND	PWR-GND					
8	AVIN3	35	assembly4... yes		10MILS	10MILS					
9	AVIN0	45	assembly4... yes		10MILS	10MILS					
10	VREF	157	spb, botto...								
11	V1P5_S3	657	spb, botto... yes		PWR-GND	PWR-GND					
12	AVIN2	59	bottom, g... yes		10MILS	10MILS					
13	AVIN1	63	bottom, g... yes		10MILS	10MILS					
14	AVIN4	40	assembly4... yes		10MILS	10MILS					
15	AVIN5	36	assembly4... yes		10MILS	10MILS					
16	V3P3_S3	316	spb, botto... yes		PWR-GND	PWR-GND					
17	RMII_S0_CT2	32	spb, botto...								
18	RMII_S0_CT1	25	spb, botto...								
19	RMII_S0_PFB	68	spb, botto...								
20	V3P3_S0_A	32	spb, botto...								
21	AGND_VCC	61	spb, botto...								
22	V3P3_S5	499	spb, botto... yes		PWR-GND	PWR-GND					



6.14 Net Length



„Net Length“ calculates the lengths of all nets of a printed circuit board with the following presettings:

- Lines are added up
- Surfaces are not taken into account
- Intersections are plurally counted

Length of selected Lines 0 mm (only signal layers)	
Net Length	Net on Component
Geben Sie Text hier ein	Geben Sie Text hier ...
\$NONE\$	541.2128
A0_GPIO	88.56028
A0_MUX	83.98751
A0_N	76.56898
A0_N_R	11.12465
A1_GPIO	81.92095
A1_MUX	88.06196
A2_GPIO	83.31597
A2_MUX	89.25674
A3_GPIO	87.63276
A3_MUX	95.3322
A4_ADC_GPIO	9.418695
A4_GPIO	94.72949
A4_MUX	100.7401
A5_ADC_GPIO	8.581841
A5_GPIO	98.13013
A5_MUX	105.208
ADC_RST_M	2.138214
AGND_VCC	5.71276
ANALOG_A0	3.190189
ANALOG_A1	6.415474
ANALOG_A2	3.654609
ANALOG_A3	7.553375

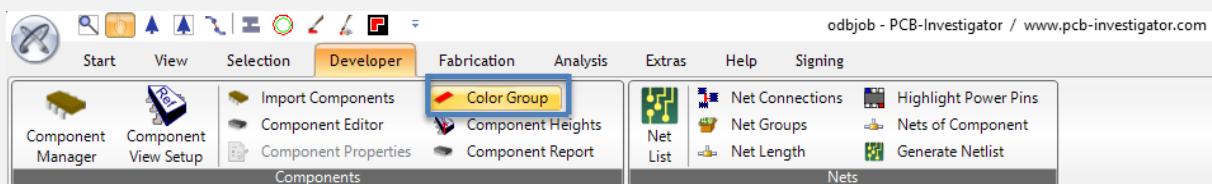
Display for the nets and their lengths

Length of selected Lines 0 mm (only signal layers)			
Net Length	Net on Component	Pin	Net Length
U2B1 (top)	AVIN3(7)	1	87.722
	AVIN4(13)	2	93.644
	AVIN5(14)	3	93.501
	AVIN6(248)	4	11.082
	AVIN7(249)	5	9.201
	GND(2)	6	494.818
	VREF_INTERNAL(27)	7	3.846
	DCAP(26)	8	2.815
	GND(2)	9	494.818
	V3P3_S0(3)	10	104.536
	SPI0_CS_N(238)	11	17.774
	\$NONE\$(0)	12	541.213
	SPI0_MOSI(241)	13	15.835
	SPI0_MISO_R(320)	14	12.486
	SPI0_SCK(235)	15	21.269
	V3P3_S0(3)	16	104.536
	ADC_RST_M(247)	17	2.138
	AVIN0(8)	18	82.815
	AVIN1(12)	19	79.519
	AVIN2(11)	20	82.403
	GND(2)	21	494.818
U8 (top)	IO10_GPIO_PWM(370)	1	19.696
	IO5_GPIO_PWM(361)	2	96.629
	IO3_PWM(429)	3	4.876

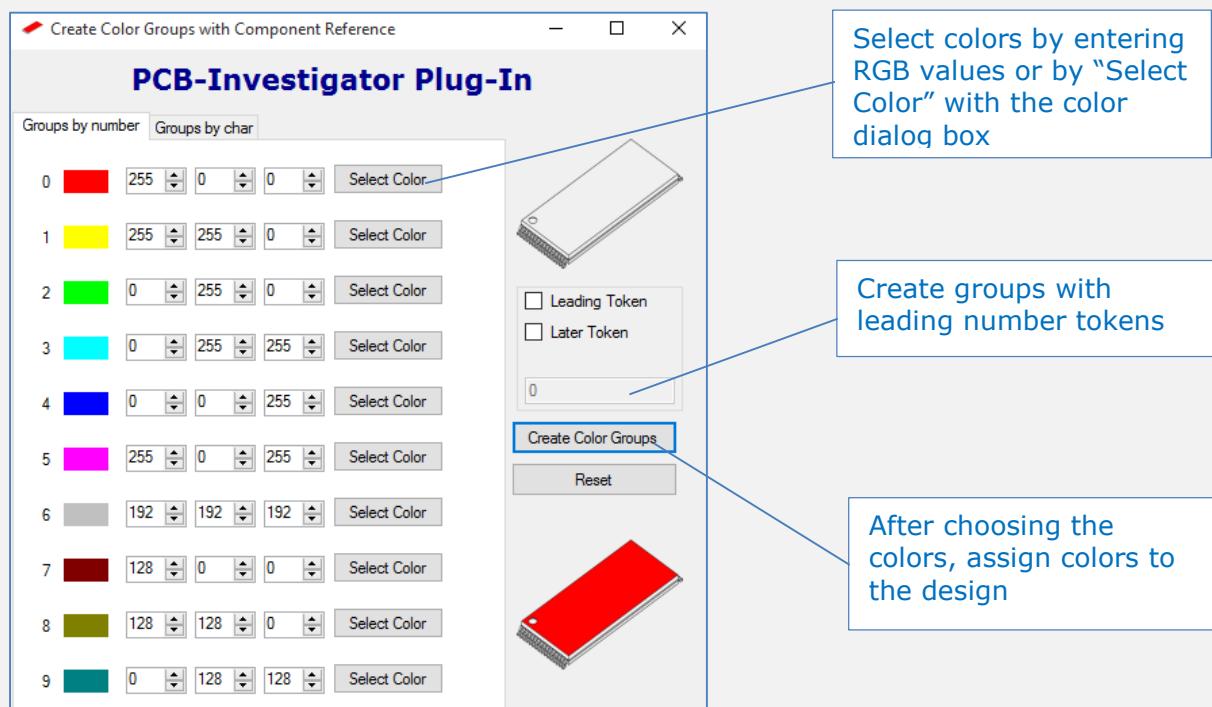
Display for all nets which are connected to a certain component.

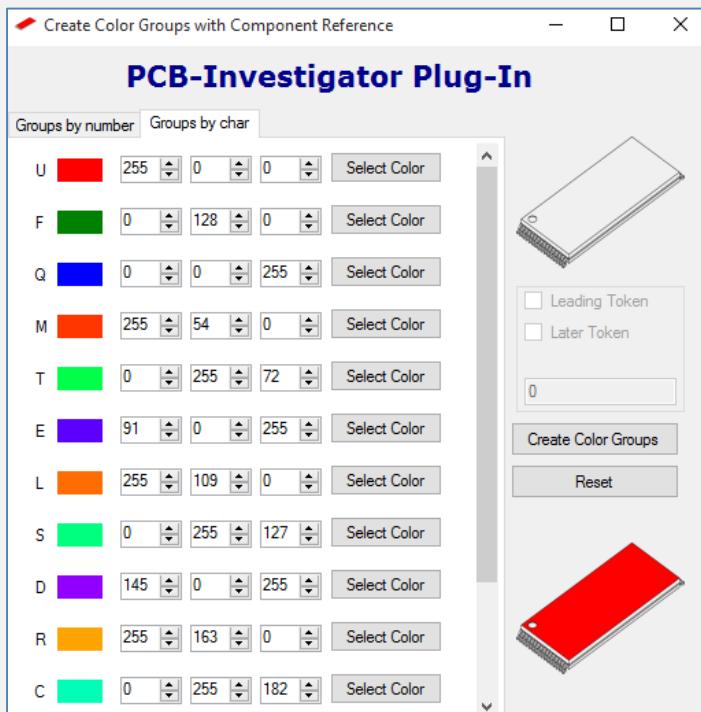


6.15 Color Group



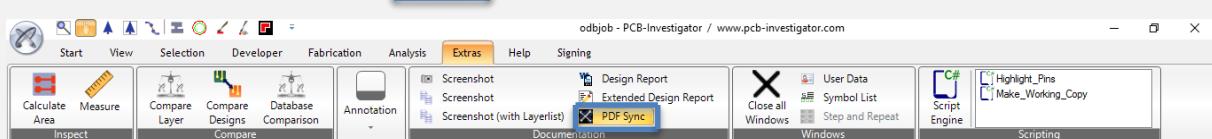
„Color Group“ assigns certain colors to certain components. The color selection allows all windows colors.



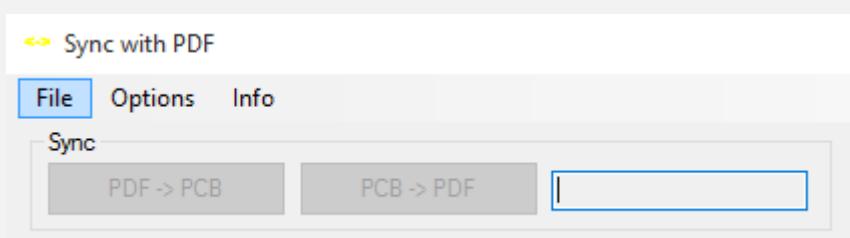


According to the same principle you can use the first letter of a component to assign colors.

6.16 PDF Sync

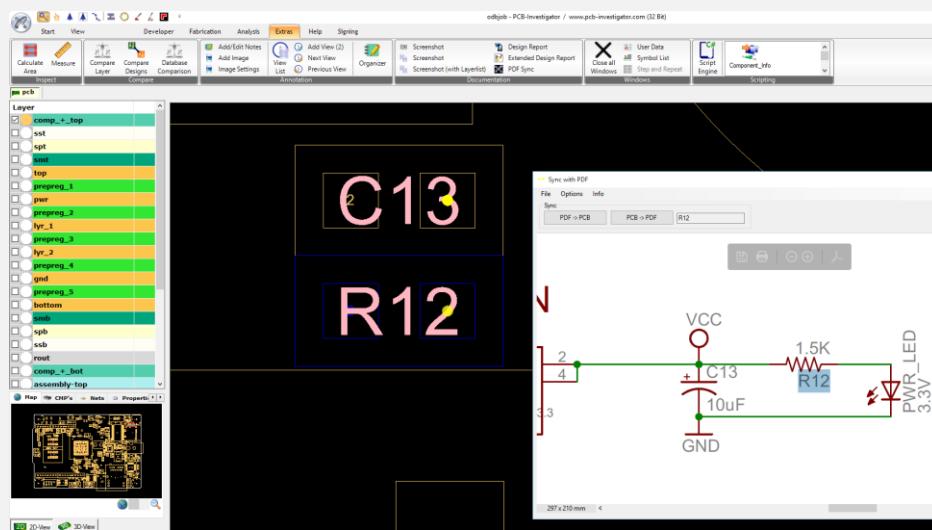


The „PDF Sync“ Plug-In shows PCBI information in the according pdf circuit diagram and backwards information of the circuit diagram in the pcb.



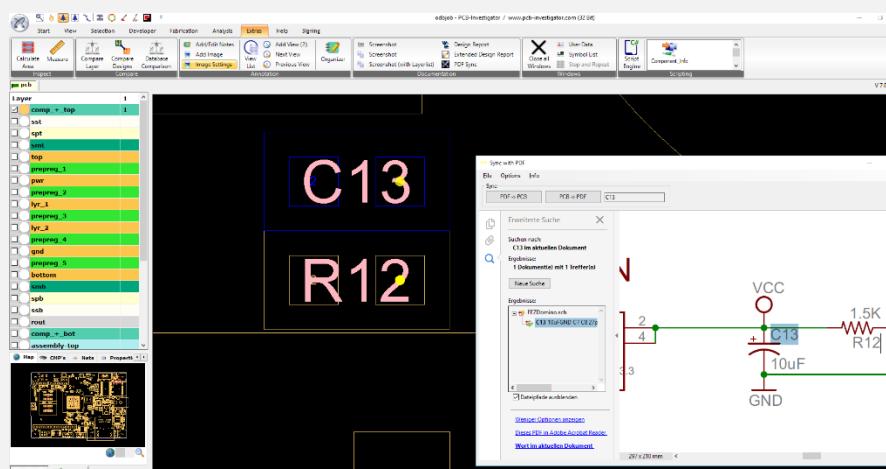


EASYLOGIX.DE



Mark a net or component in your pdf file

Press
„PDF -> PCB“
To see the
net/component
you selected in
PCBInvestigator

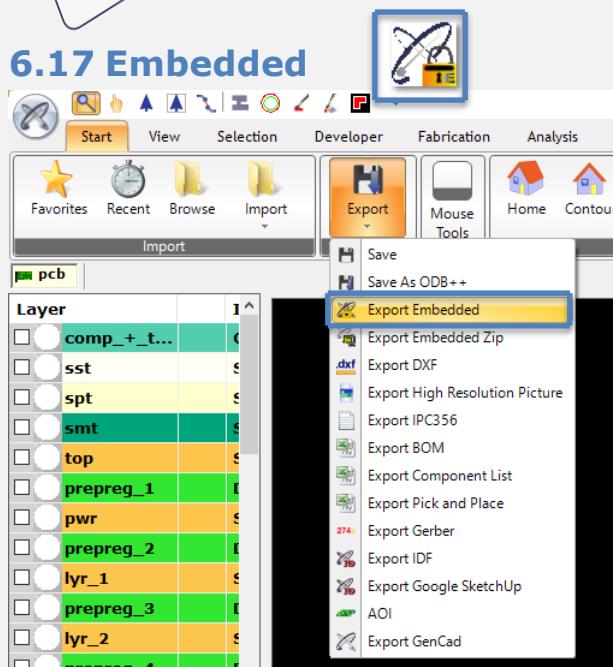


Select a net or component in
PCB

Press
„PCB -> PDF“
To see the
net/component
you selected in
your pdf file

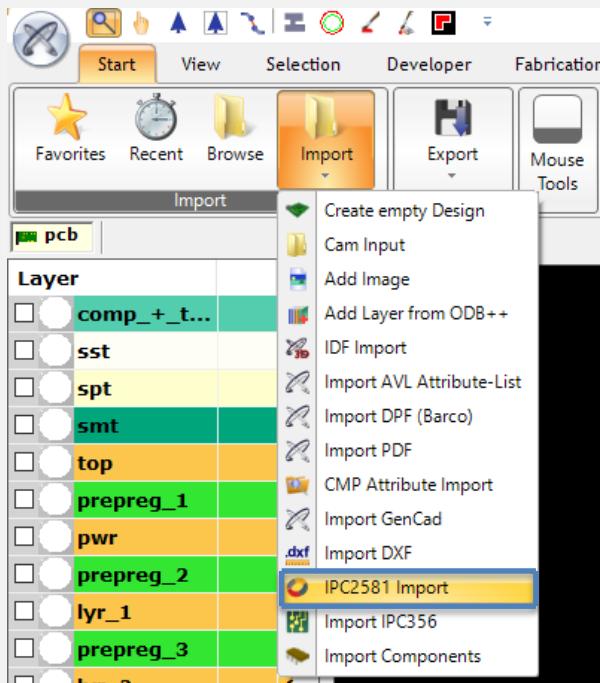


6.17 Embedded



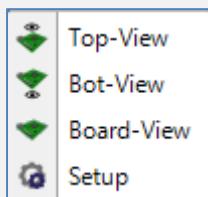
A printed circuit board runs through many different steps and departments from its development to its production. With PCB-Investigator Embedded, you enable every of these departments working with PCB-Investigator without buying more licenses or running more time-consuming installations.

6.18 IPC 2581





6.19 Short Cut Top/Bottom View



The Short Cut Top Bottom View Plug-In is a free Plug-In, that makes your workflow more effective. The two icons on the tool bar allow a one-click-switch from Top to Bottom view. As you can see in the setup-screenshot, key shortcuts for a quick switch are available as well. The setup offers different possibilities like defining the concerned layers or mirroring the layers by Bottom View

