

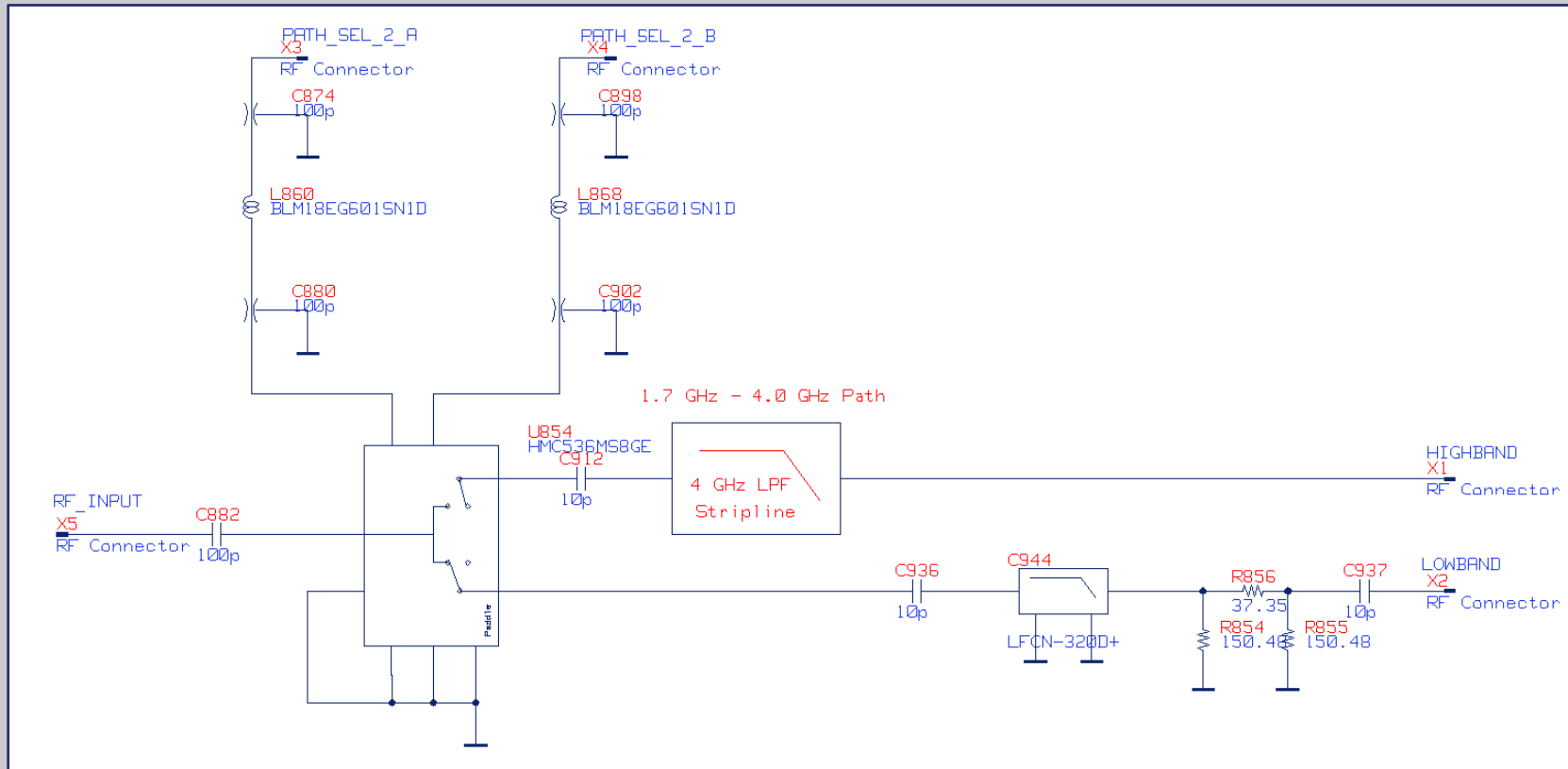
# Particular Manufacturing strengths of the LTCC Layout Software HYDE

With the features you require:

- o Transfer easily PCB layouts into LTCC layouts through excellent Gerber Import
- o Convert complex filled shielding planes into cross hatched shielding planes in seconds
- o Scaling of the layout with different factors in X- and Y-direction because of sintering process
- o Comfortable Creation of Drill data for every several green tape
- o Quick film generation of printed conductive layers and via templates with consideration of sintering process
- o Quick film generation of printed resistors, pad geometry and glass masks
- o Easy Generation of several Documentation drawings like part placement, trimming of printed resistors and mechanical dimensioning
- o Very flexible and customizable SMD Pick & Place control
- o 3D documentation

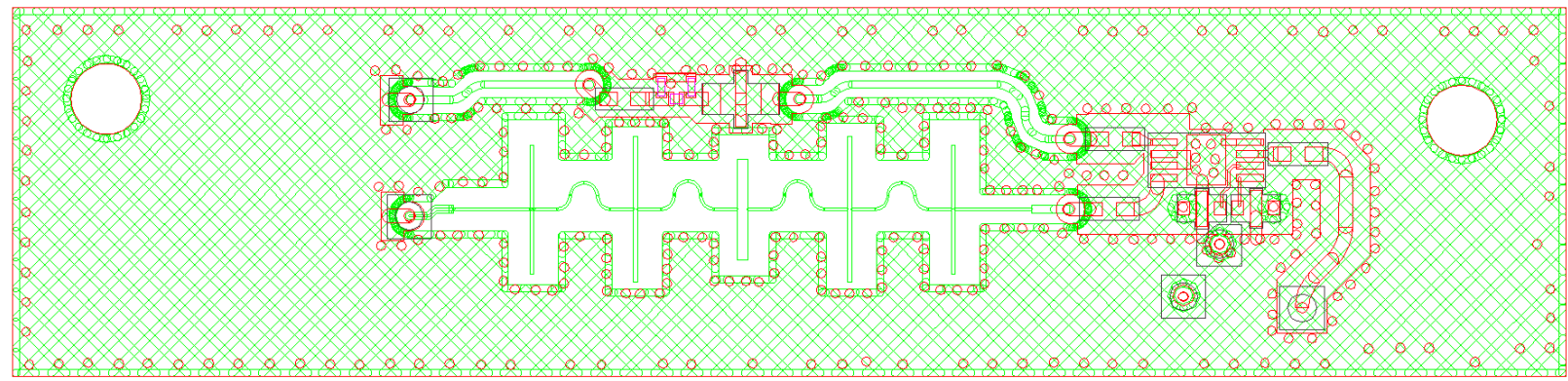
# Layout Software HYDE offers an excellent Schematic Entry and sophisticated LTCC Layout Module

## Schematic Entry



# Layout Software HYDE offers an excellent Schematic Entry and sophisticated LTCC Layout Module

## Layout Module

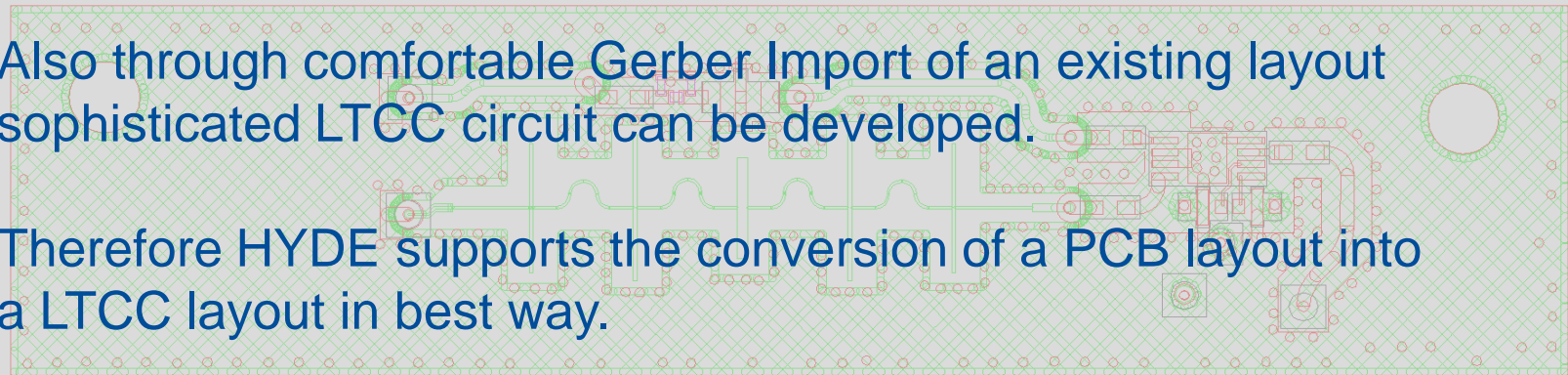


# Layout Software HYDE supports the conversion tasks from PCB to LTCC

But it's not compulsory to create a schematic or layout within the software HYDE for LTCC circuit design.

Also through comfortable Gerber Import of an existing layout sophisticated LTCC circuit can be developed.

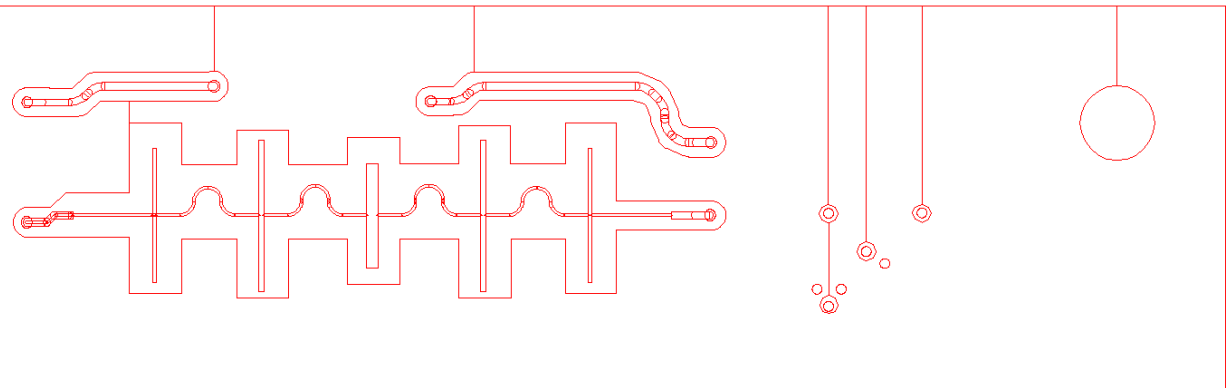
Therefore HYDE supports the conversion of a PCB layout into a LTCC layout in best way.



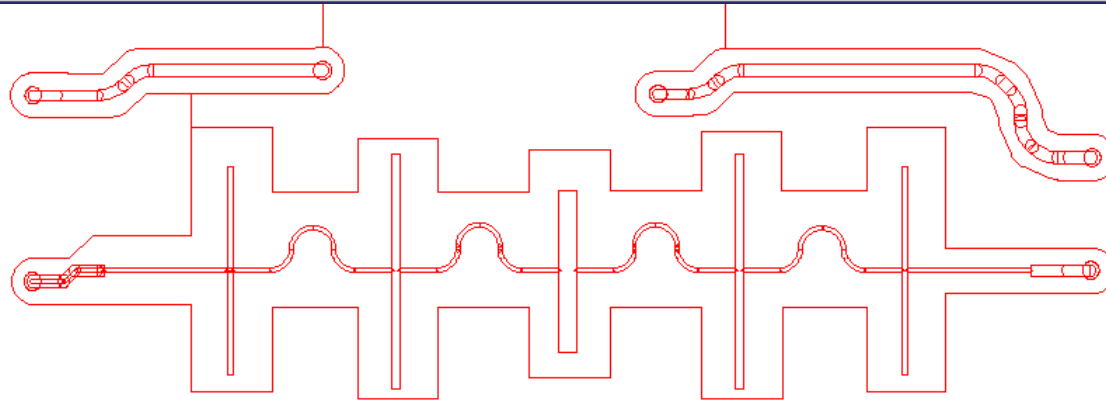
# Excellent Gerber Import for Data Preparation of LTCC Circuits

Ext. GERBER Import	
Gerber units:	MM
Gerber precision:	3
Line bumps:	✓
Thin lines:	—
Filled comp.:	✓
Start layer:	400
Use layer table:	—
Dest. layer:	—
Reset	Save as default
Close	START

Build up your specific LTCC layer structure through import of several Gerber files

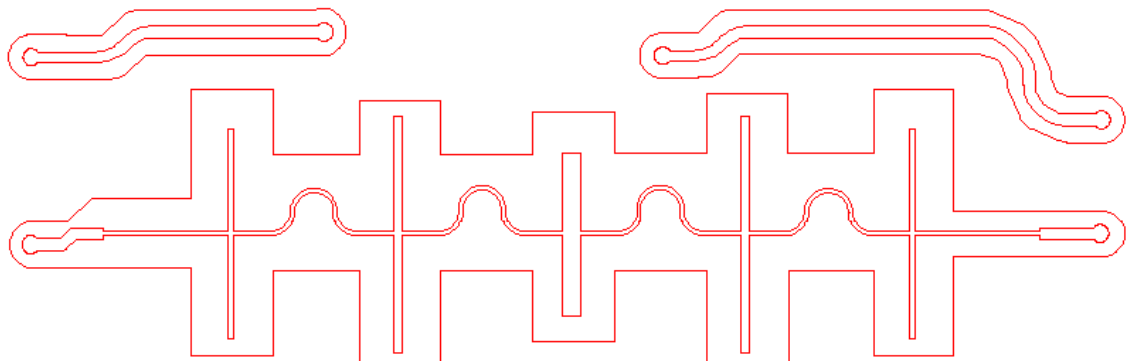


# Excellent Gerber Import for Data Preparation of LTCC Circuits



With Auto Merge Command  
all overlapping Components  
will be combined to Polygon  
Components

Also Import of DXF, DWG,  
and GDSII Data is possible.  
In the same way you can  
prepare Data like Gerber  
Data.



# Excellent Gerber Import for Data Preparation of LTCC Circuits

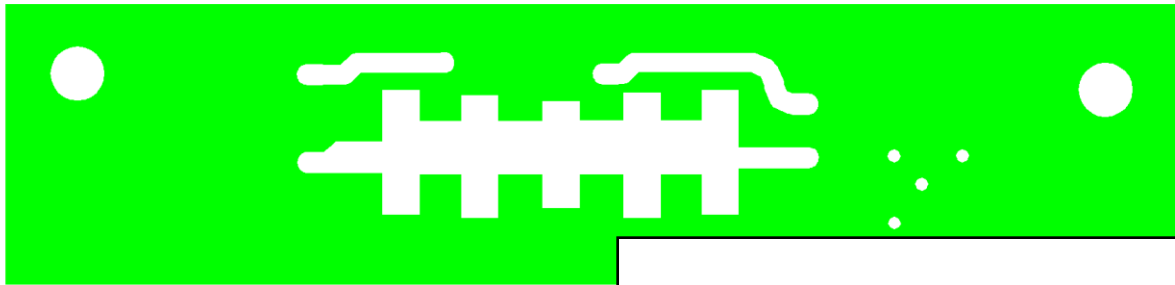
Build up your specific LTCC layer structure through import of several Gerber files.

With Auto Merge Command all overlapping Components will be combined to Polygon Components.

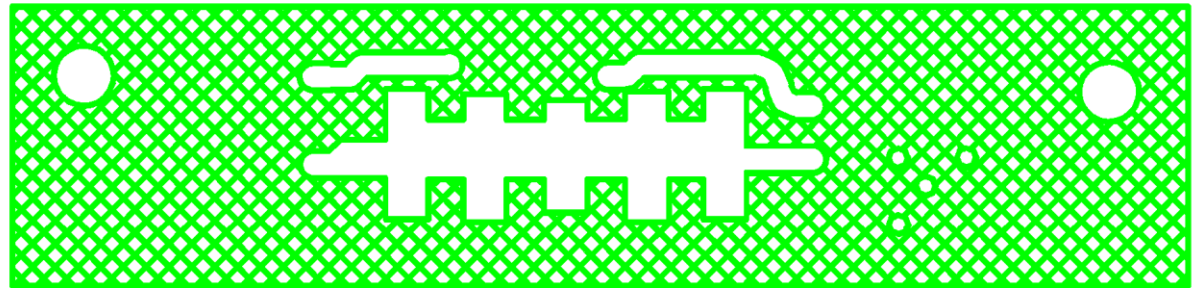
Afterwards all Components can be enlarged/minimize with equidistant command, stretched, scaled, rotated, mirrored, copied or deleted.

# Convert filled Power Planes into Cross hatched Power Planes

For the LTCC technology cross hatched areas are needed for a good adhesion of the green tapes among each other.



With HYDE the line width, distance and angle of the cross hatch can be defined.



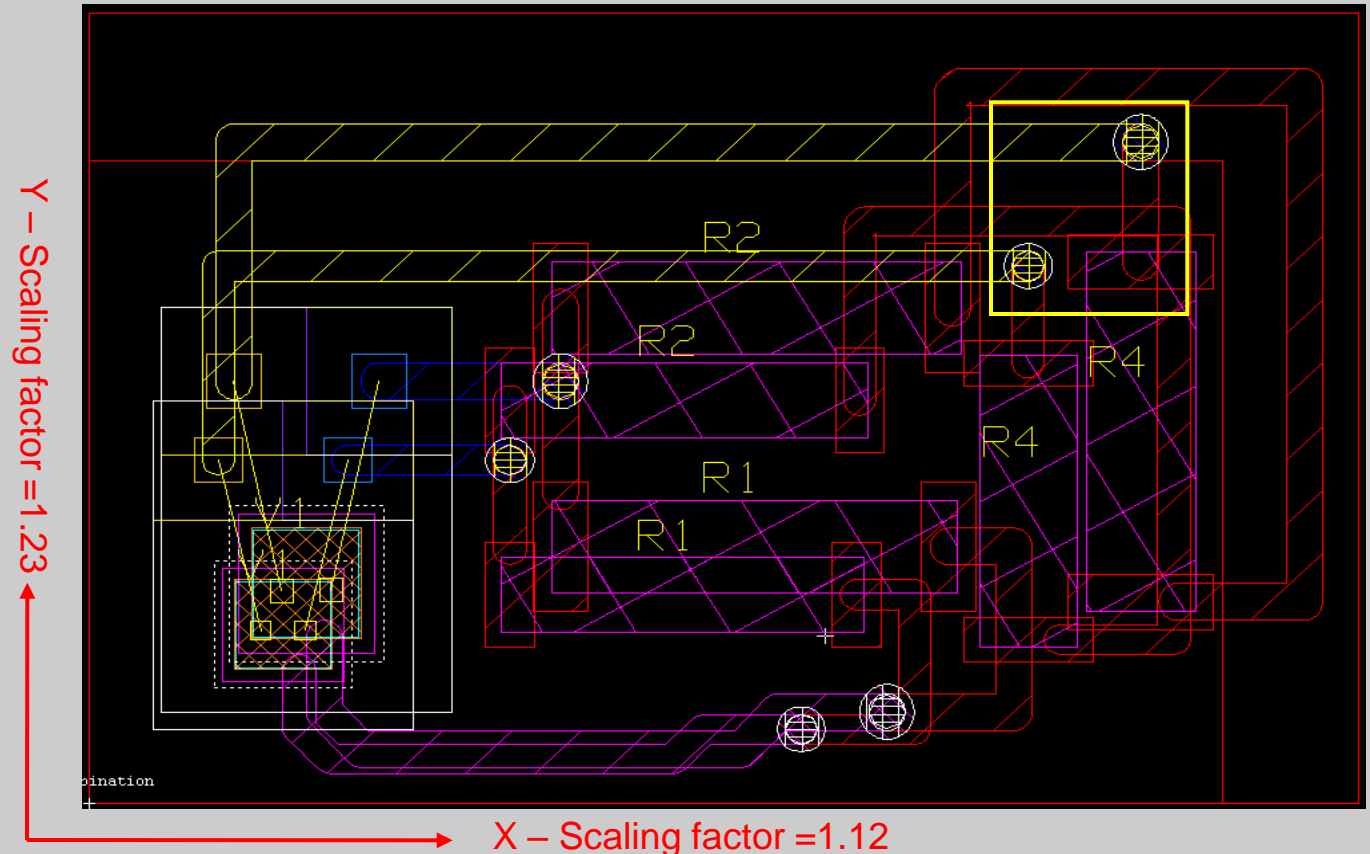


# Geometrical Scaling of physical Layouts

Different Scaling in X- and Y-Direction of the Layout is provided for the final Shrinking Process of the Greentapes

Layout scaled with Different Scaling Factors in X- and Y- Direction

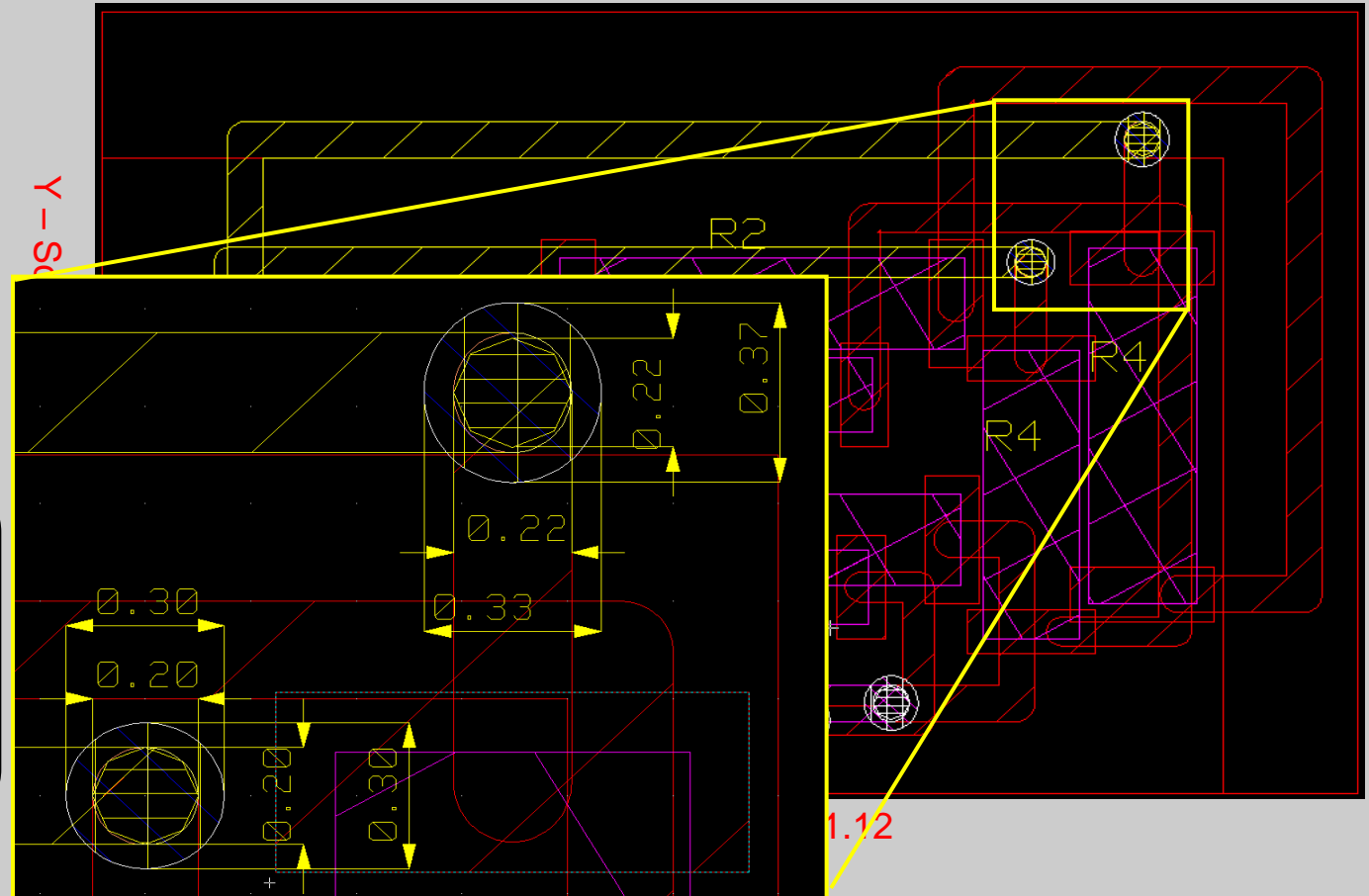
Layout Scaling	
Layout:	drawing1
Scaled Layout:	drawing1_sc
X-Scale:	1.12
Y-Scale:	1.23
Min. scal. layers:	-C[Drill] -C[Via]
Reset	Save as default
Close	START



# Geometrical Scaling of physical Layouts

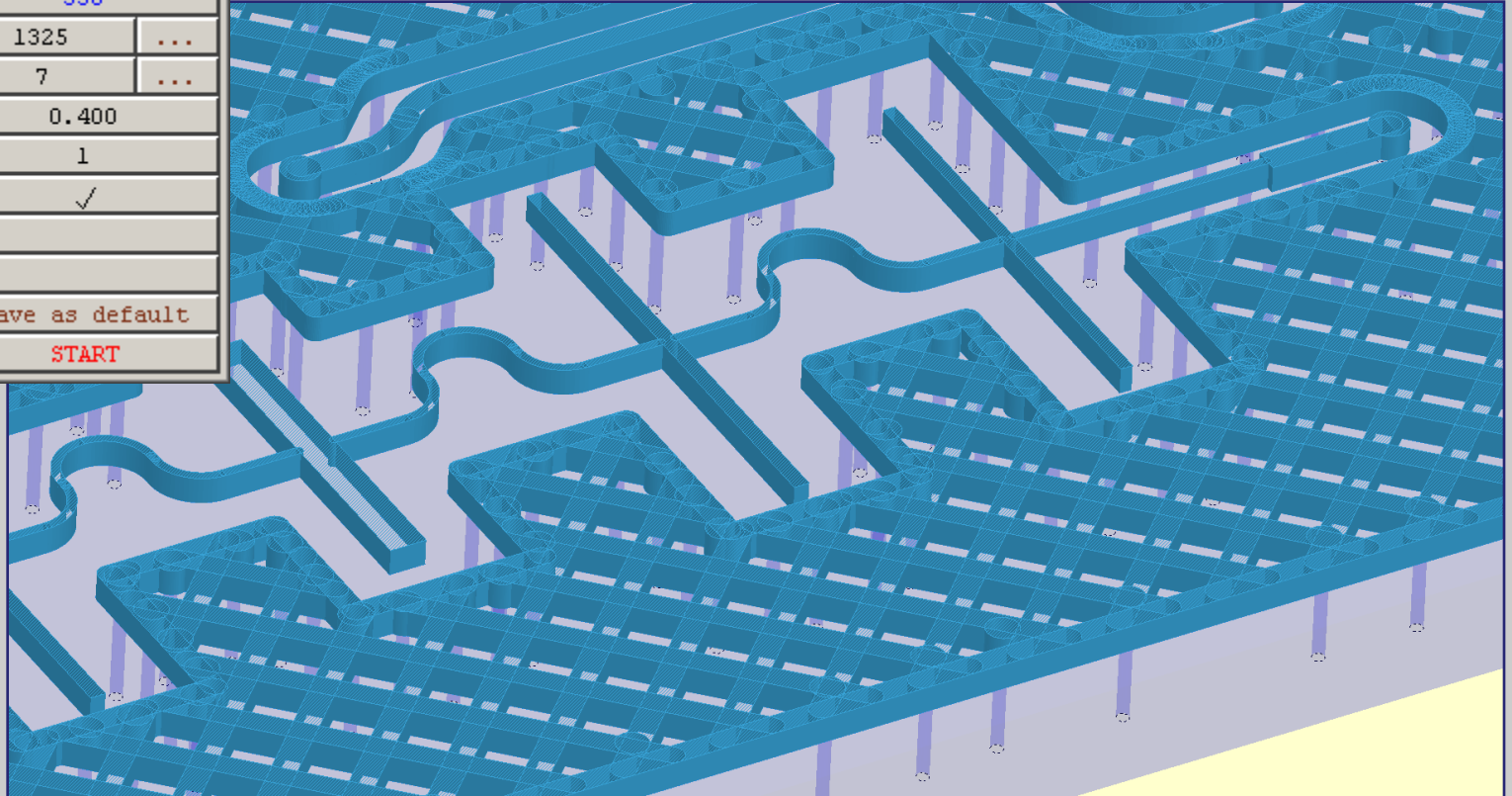
Different Scaling in X- and Y-Direction of the Layout is provided for the final Shrinking Process of the Greentapes

All DRILL Circles are not deformed to Ellipses but only scaled with minimum Scaling Factor and Center Points are fully transformed.



# Comfortable Generation of DRILL Data and corresponding Documentation

Drillhole table	
Number of holes:	330
Drill hole layer:	1325 ...
Table layer:	7 ...
Font size:	0.400
Table scale:	1
Write position:	✓
Reset	Save as default
Close	START



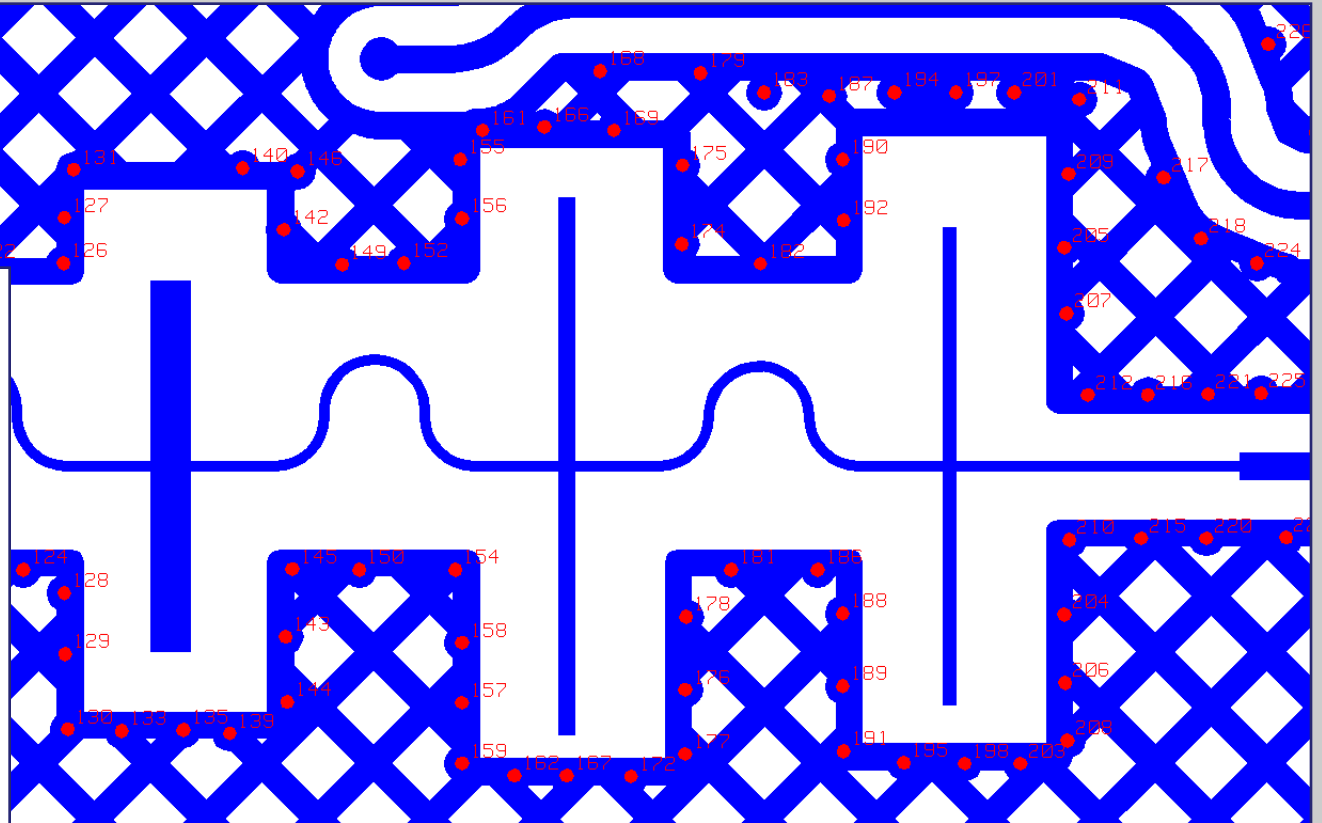
# Comfortable Generation of DRILL Data and corresponding Documentation

## DRILL Data Documentation

Hole	X-coordinate	Y-coordinate	Dia[mm]
1	1.50334	8.28566	0.203
2	1.5162	11.75165	0.203
....	....	....	....
....	....	....	....
156	46.31521	13.127	0.203
157	46.31549	6.127	0.203
158	46.31576	7.127	0.203
159	46.31617	5.127	0.203
160	46.33861	17.127	0.203
161	46.62987	15.127	0.203
162	47.112	5.127	0.203
163	47.49796	20.127	0.203
164	47.50054	18.127	0.203
165	47.50192	1.127	0.203
166	47.56813	15.127	0.203
167	47.90715	5.127	0.203
168	48.41513	16.127	0.203
169	48.62445	15.127	0.203
170	48.78182	18.127	0.203
171	48.84526	1.127	0.203
172	48.88411	5.127	0.203
173	49.13445	20.127	0.203
174	49.6539	13.127	0.203
175	49.66731	14.127	0.203

## EXCELLON Data

X4631549Y654034  
 X4365955Y655347  
 X4970607Y673598  
 X4631576Y745219  
 X4363342Y754344  
 X4971907Y784333  
 X4621164Y855940  
 X4475336Y855941  
 X5040903Y855968  
 X5172406Y855968  
 X4373753Y857227  
 X4449274Y1319963  
 X5085196Y1321372  
 X4543099Y1322575



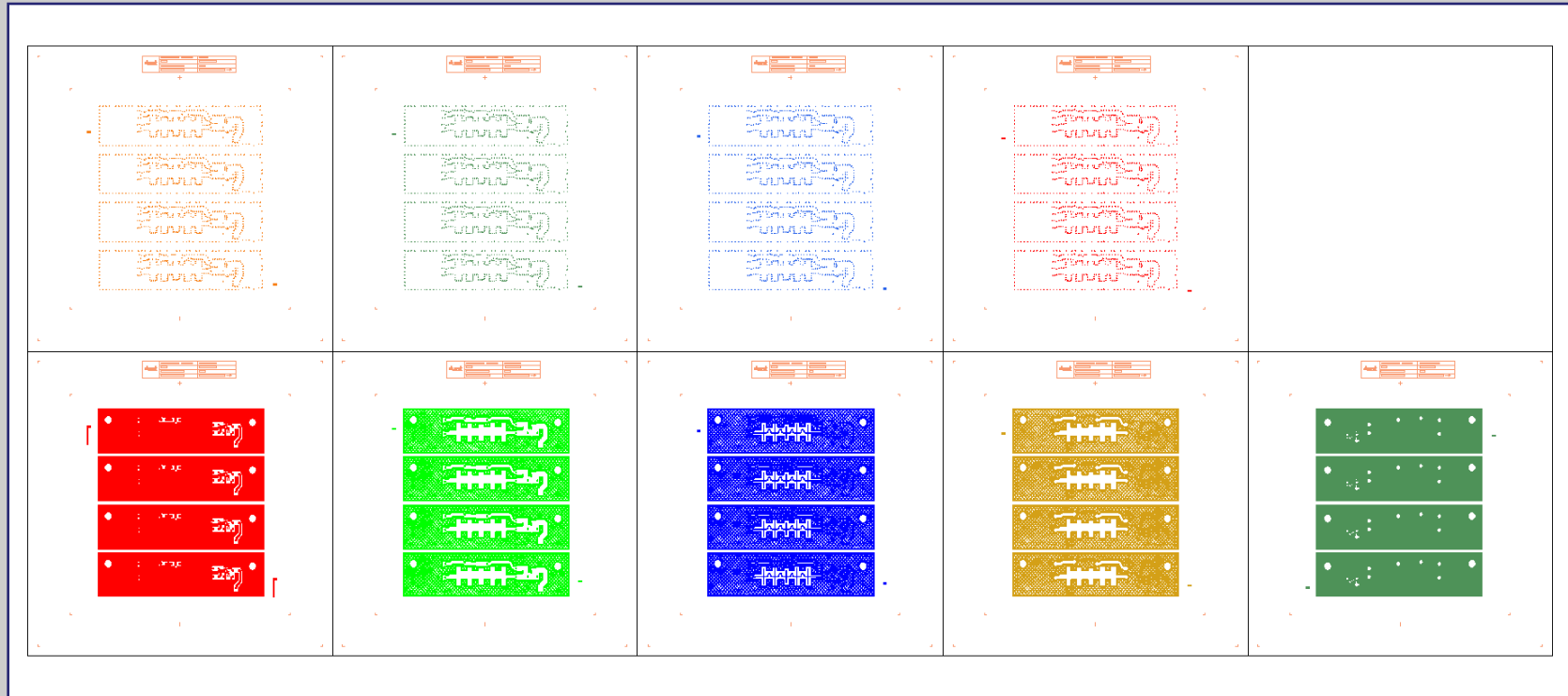
# Comfortable Generation of step&repeat **scaled** Film Masks like electrical Connectivity Layers and Via Templates

Via Template  
Tape 1

Via Template  
Tape 2

Via Template  
Tape 3

Via Template  
Tape 4



Connectivity Layer  
Tape 1 - Top

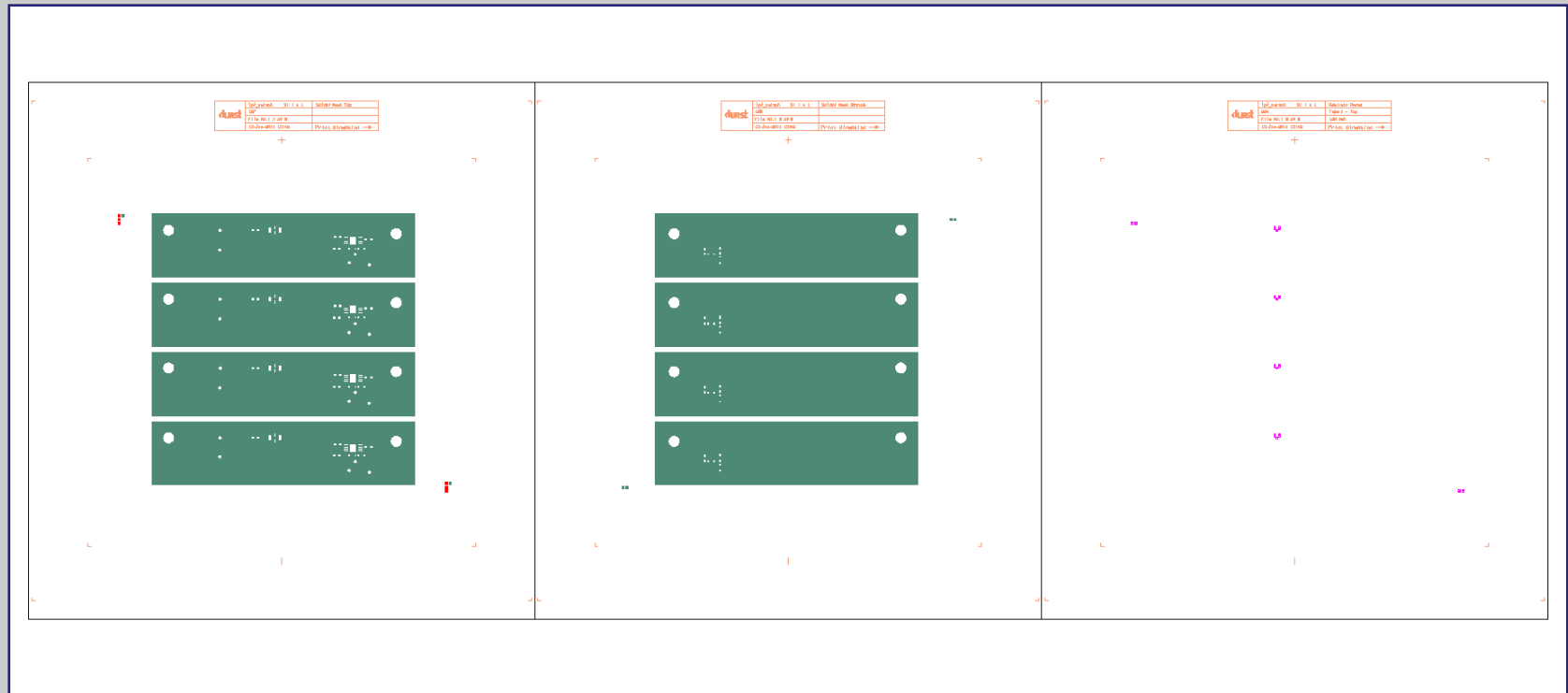
Connectivity Layer  
Tape 2 - Top

Connectivity Layer  
Tape 3 - Top

Connectivity Layer  
Tape 4 - Top

Connectivity Layer  
Tape 4 - Bottom

# Comfortable Generation of **un-scaled** step&repeat Films like printed Resistor-Paste- and Solder-Masks



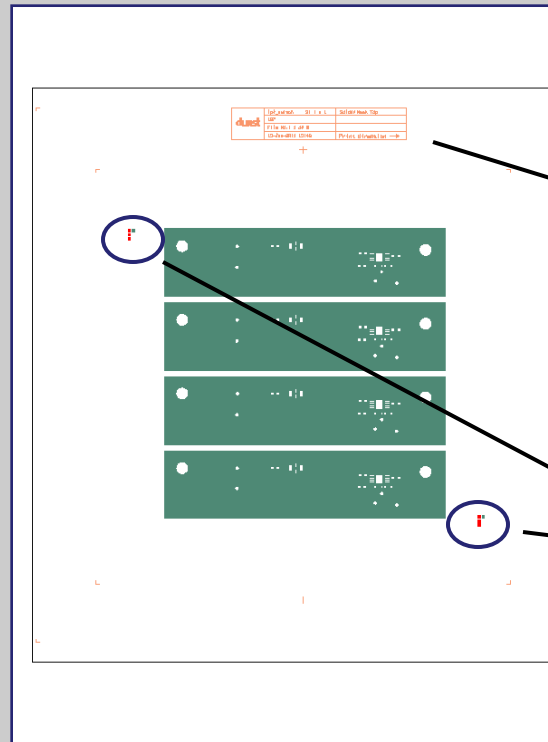
Solder Mask  
Tape 1 - Top

Solder Mask  
Tape 4 - Bottom

Printed Resistor  
Tape 1 - Top

# Comfortable Generation of step&repeat Film Masks

In the layout matrix there can be placed a **film legend** for the data determination of each layout matrix field.



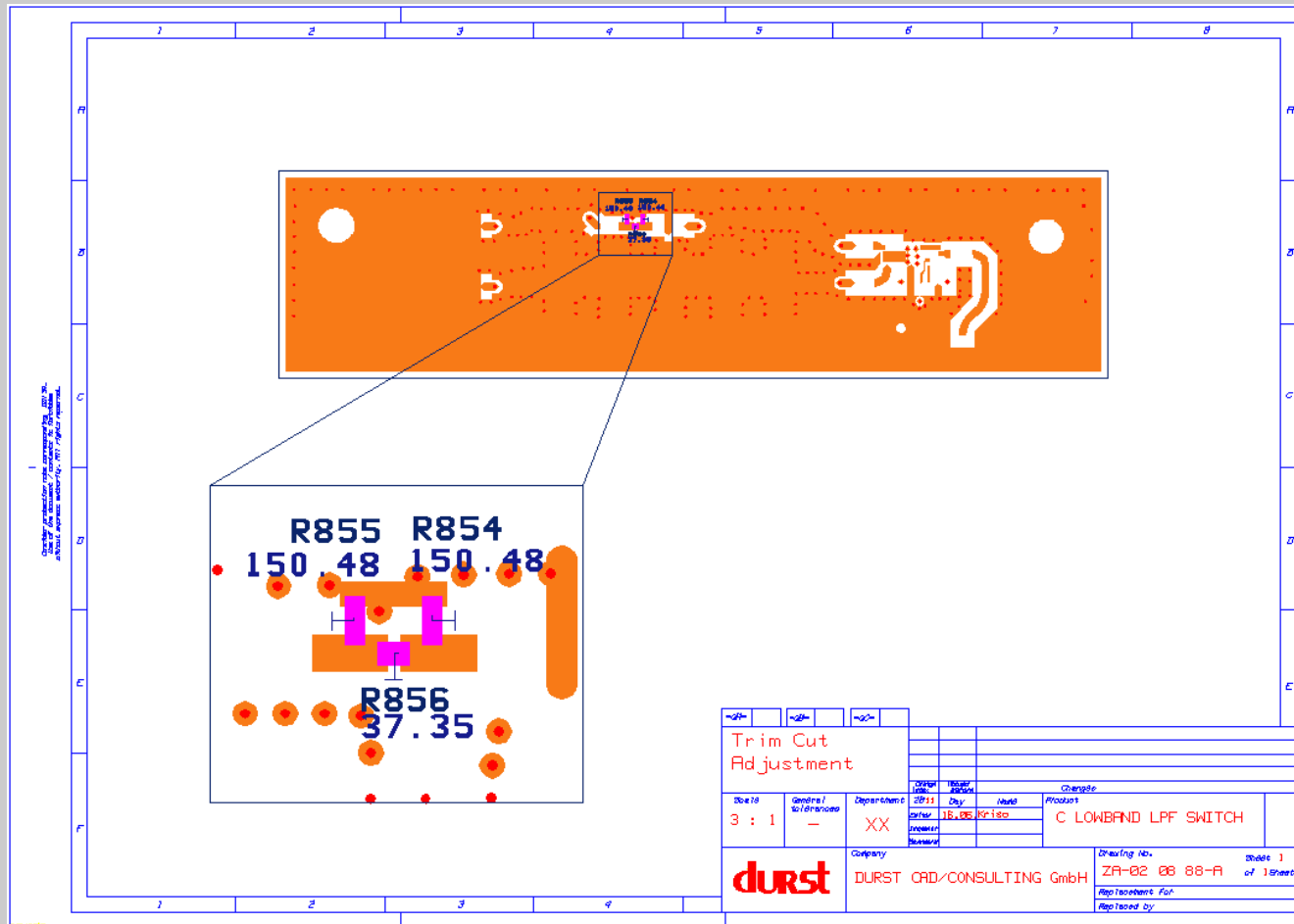
<b>durst</b>	lpf_switch	S: 1 : 1	Solder Mask Top
	187		
	Film No.: 1 of 3		
	15-Jun-2011 15:46	Print direction →	

and additional corresponding **fiducial marks**.



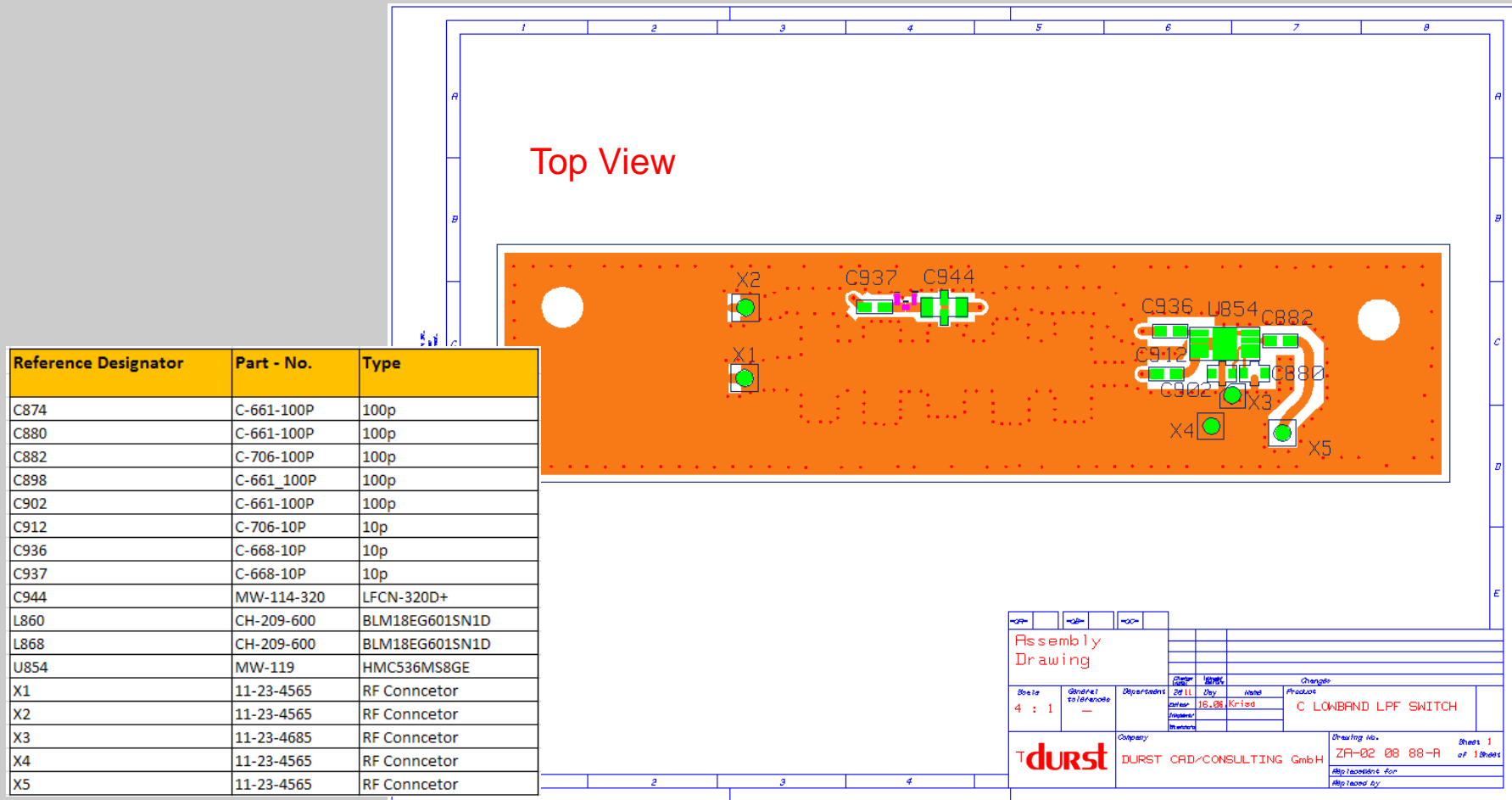
The Film Mask can be performed in **GERBER, GDSII, DXF or DWG format**.

# Documentation of Resistor Trim Cut Adjustment





# Documentation of Part Assembly and Bill of Material as Excel file



# SMD Pick & Place Data Generation - Configurable for Adaptation to several Pick & Place Machines

**SMD Pick & Place** [?] [X]

Layout name:	lpf_switch
Pick&Place file:	lpf_switch_pipl.txt
Column order:	8 1 2 3 4 5 6 7
Header line:	<input checked="" type="checkbox"/>
Footer line:	<input checked="" type="checkbox"/>
Coordinate delimiter:	.
Column delimiter:	
Overwrite file:	—
<input type="button" value="X"/> <input type="button" value="↺"/> <input type="button" value="↻"/> <input type="button" value="💾"/> <input type="button" value="START"/>	

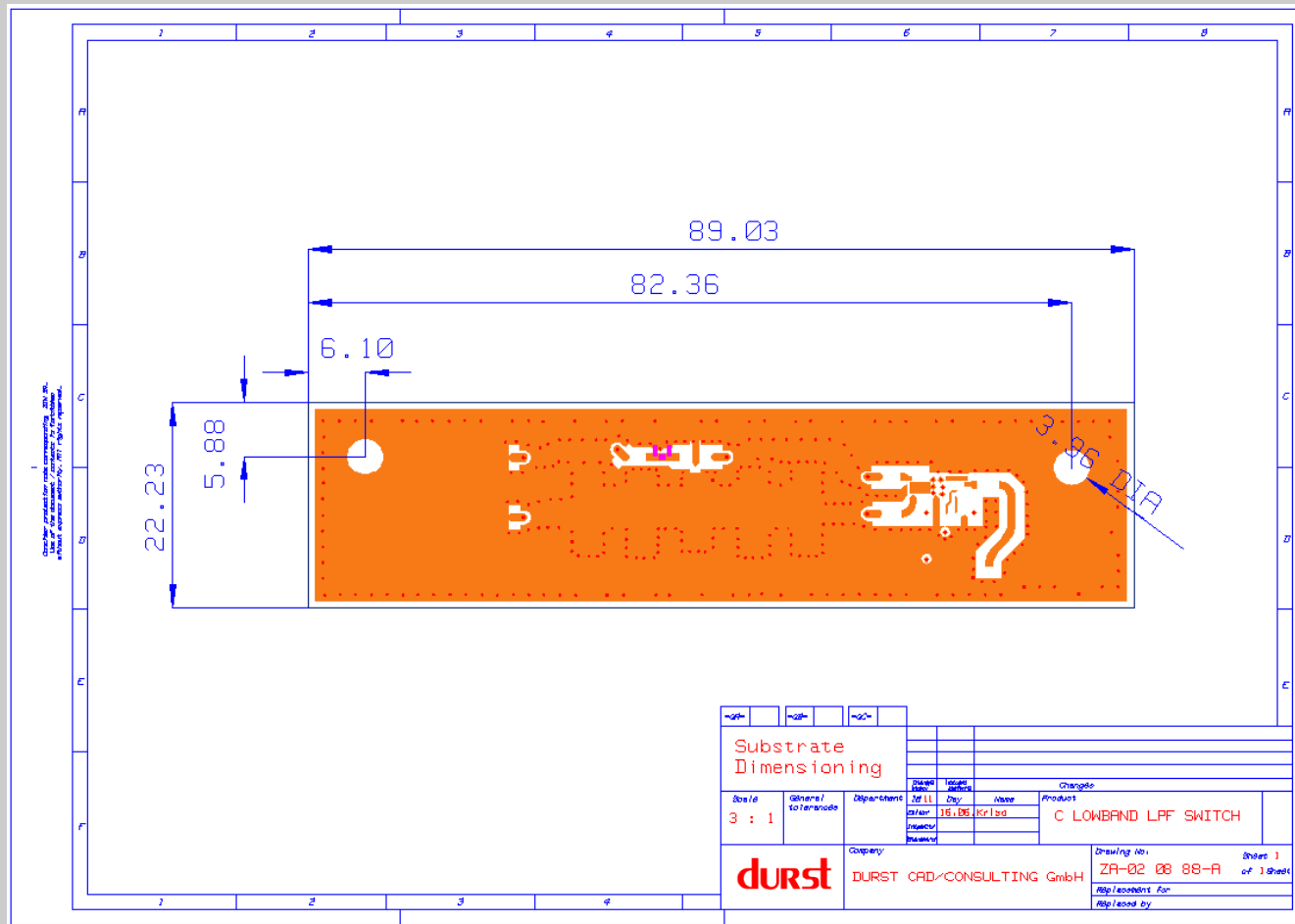
## SMD Pick & Place Data

No.	RefDes	PartDecal	Pins	Side	Orient.	X	Y
1	C874	0603_3_tp4_b	3	BOTTOM	0	69.7484	8.1788
2	C898	0603_3_tp4_b	3	BOTTOM	90	66.7453	6.1743
3	L860	0603_tp4_b	2	BOTTOM	90	71.8933	9.14135
4	L868	0603_tp4_b	2	BOTTOM	90	66.7309	9.3828
5	C880	0603_3_t	3	TOP	0	70.7644	10.20162
6	C882	0603_t	2	TOP	180	73.1545	13.2512
7	C902	0603_3_t	3	TOP	180	67.7418	10.1854
8	C912	0603_t	2	TOP	180	62.5348	10.1346
9	C936	0603_t	2	TOP	180	62.8726	14.0919
10	C937	0603_t	2	TOP	180	35.2298	16.3322
11	C944	fv1206_t	4	TOP	180	41.798	16.3347
12	U854	msop8_wgnd_t	9	TOP	180	67.9983	12.9161
13	X1	connect_hf	1	TOP	0	23.1152	9.7536
14	X2	connect_hf	1	TOP	0	23.2104	16.30417
15	X3	dc_connect	1	TOP	0	68.7324	8.1788
16	X4	connect_hf	1	TOP	0	66.70208	5.23248
17	X5	connect_hf	1	TOP	0	73.38054	4.5928

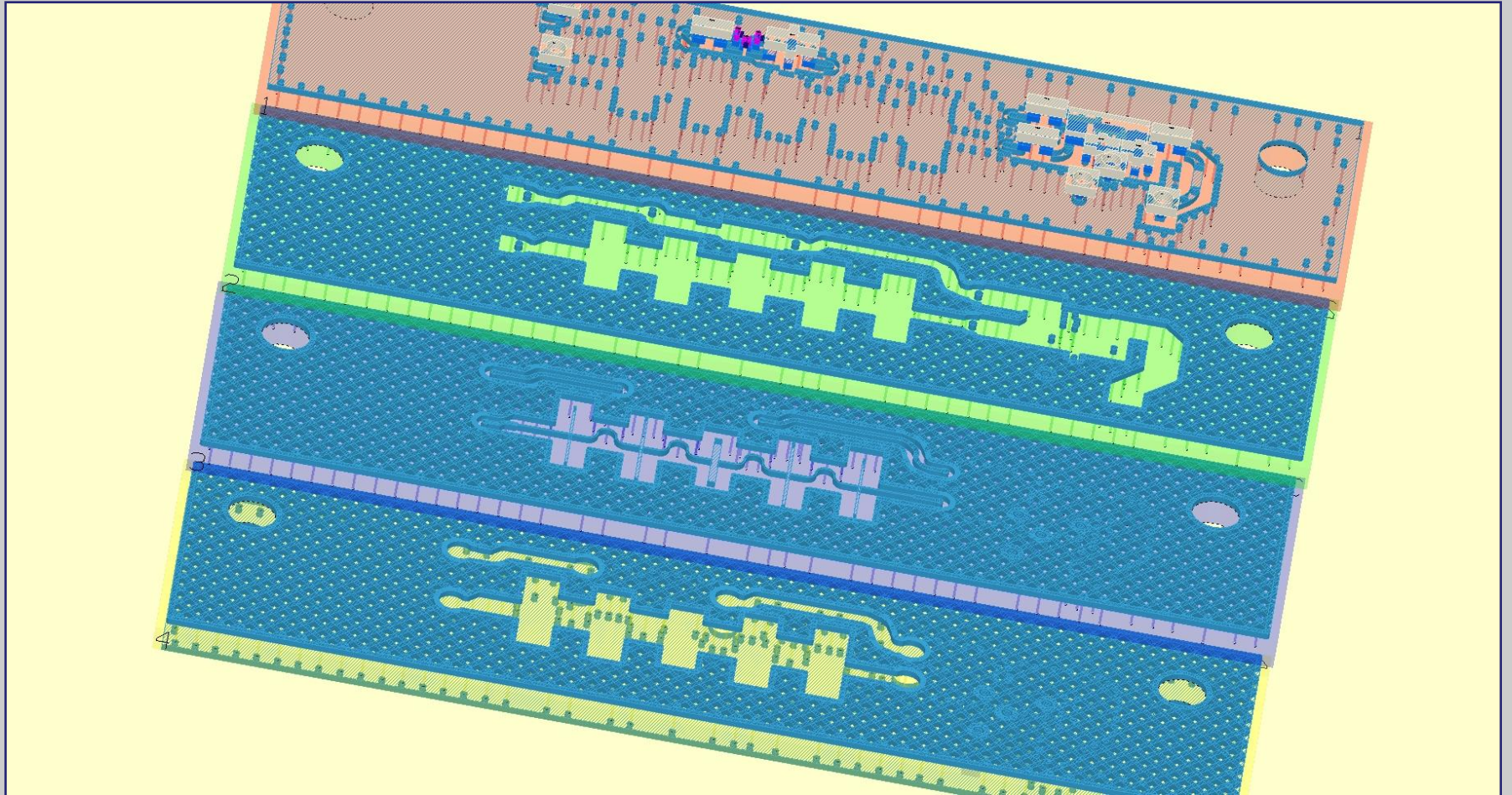
Drawing

Scale	4 : 1	Drawing	16.08	Product	C LOWBAND LPF SWITCH
Company	DURST CAD/CONSULTING GmbH	Drawing No.	ZA-02 08 88-R	Sheet 1	of 1 Sheet
Replaced by		Replaced by			

# Documentation of Substrate with mechanical Dimensioning

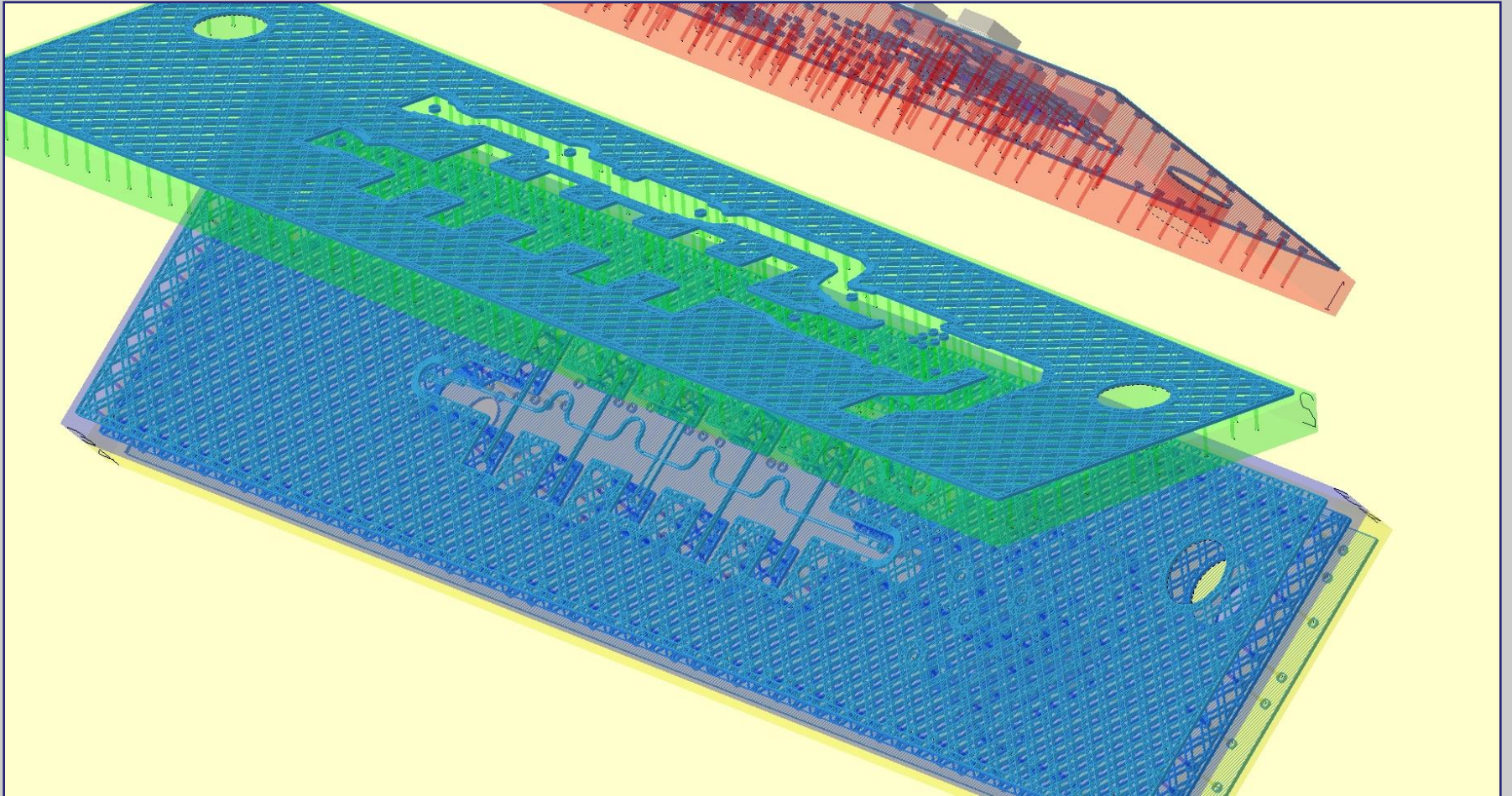


# 3D Documentation of embedded wiring within the Ceramic Substrate





# 3D Documentation of embedded wiring within the Ceramic Substrate





# 3D Documentation of embedded wiring within the Ceramic Substrate

