

# Module Fabrication Document

## Layer Stack Legend

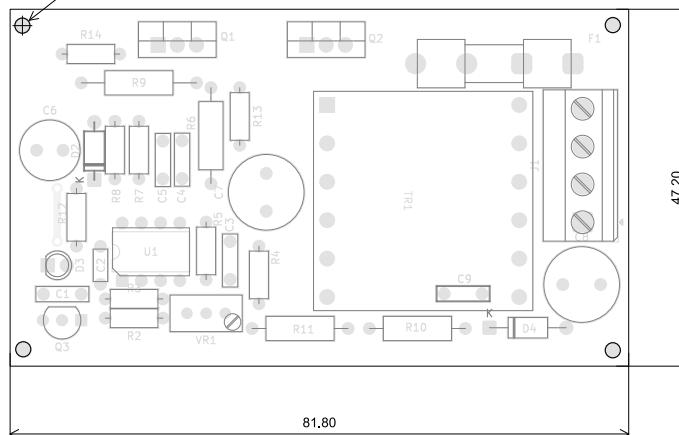
Material	Layer	Thickness	Dielectric	Type	Gerber
	F.Paste			Paste Mask	
	F.Silkscreen		Direct Printing	Legend	GBR
	F.Mask	0.02mm	Solder Resist	Solder Mask	GBR
Copper	L1 (Sig, PWR)	0.07mm (2.00oz)		Signal	GBR
Core		1.48mm	FR4_7628	Dielectric	
Copper	L2 (Sig, PWR)	0.07mm (2.00oz)		Signal	GBR
	B.Mask	0.02mm	Solder Resist	Solder Mask	GBR
	B.Silkscreen		Direct Printing	Legend	GBR
	B.Paste			Paste Mask	

Total thickness: 1.66mm  
Note: external layer thicknesses are specified after plating.

## Impedance Table

Transmission Line	Impedance [ohms]	Tolerance [ohms]	Layer	Trace Width [mm]	Gap [mm]	Ref. Layers
NA	-	-	-	-	-	-

## Top Fabrication (Scale 1:1)



### FABRICATION NOTES (UNLESS OTHERWISE SPECIFIED)

1) FABRICATE PER IPC-6012A CLASS 2.

2) OUTLINE DEFINED IN SEPARATE GERBER FILE WITH "Edge\_Cuts.GBR" SUFFIX.

DIMENSIONS OF CIRCUMSIZED RECTANGLE SHOWN ON THIS DRAWING ARE FOR REFERENCE ONLY.

3) SEE SEPARATE DRILL FILES WITH ".DRL" SUFFIX FOR HOLE LOCATIONS.

SELECTED HOLE LOCATIONS SHOWN ON THIS DRAWING ARE FOR REFERENCE ONLY.

4) SURFACE FINISH: IMMERSION GOLD

5) SOLDERMASK ON BOTH SIDES OF THE BOARD SHALL BE LPI, COLOR TOP: #8071501A / BOTTOM: GREEN.

6) SILK SCREEN LEGEND TO BE APPLIED PER LAYER STACKUP USING WHITE NON-CONDUCTIVE EPOXY INK.

7) ALL VIAS ARE TENTED ON BOTH SIDES UNLESS SOLDERMASK OPENED IN GERBER.

8) VENDOR SHOULD FOLLOW ROHS COMPLIANT PROCESS AND Pb FREE FOR MANUFACTURING

9) PCB MATERIAL REQUIREMENTS:

A. FLAMMABILITY RATING MUST MEET OR EXCEED UL94V-0 REQUIREMENTS.

B. Tg 170 C OR EQUIVALENT.

C. EQUIVALENT MATERIAL SHALL BE RoHS COMPLIANT, HALOGEN FREE AND APPROVED BY FR.

10) DESIGN GEOMETRY MINIMUM FEATURE SIZES:

BOARD SIZE 81.800 x 47.200 mm

BOARD THICKNESS 1.660 mm

TRACE WIDTH 1.000 mm

TRACE TO TRACE 0.200 mm

MIN. HOLE (PTH) 0.800 mm

MIN. HOLE (NPTH) 2.100 mm

ANNULAR RING 0.320 mm

COPPER TO HOLE 0.254 mm

COPPER TO EDGE 0.250 mm

HOLE TO HOLE 0.254 mm

11) REFER TO IMPEDANCE TABLE FOR IMPEDANCE CONTROL REQUIREMENTS.

12) CONFIRM SPACE WIDTHS AND SPACINGS.

All dimensions are in millimeters unless otherwise specified.

	Comments: Comment 1 Comment 2 Comment 3 Comment 4	Company: FR	Variant: CHECKED	Git Hash: ad6fcfe
	Board Name: <b>Module</b>	Project Name: <b>Step-up module 12:450 V</b>		
	Sheet Title: Top Fabrication (Scale 1:1)	File Name: StepUp_module_12to450V.kicad_pcb	Designer: FR	Date: 2024-04-13    Revision: + (Unreleased)
	Sheet Path:	Reviewer: NA	Size: <b>A4</b>	Sheet: <b>1 of 8</b>

# Module Fabrication Document

A

A

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B

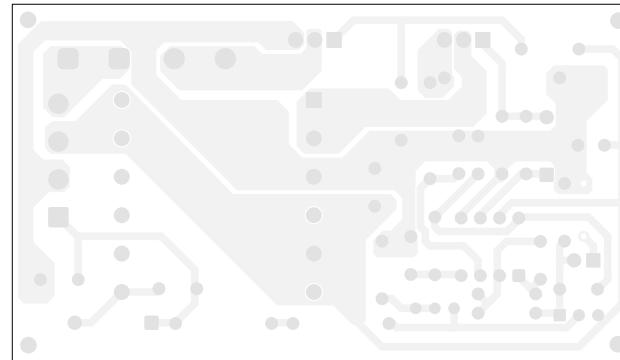
C

C

D

D

## Bottom Fabrication (Scale 1:1)



All dimensions are in millimeters unless otherwise specified.

	Comments: Comment 1 Comment 2 Comment 3 Comment 4	Company: <b>FR</b>	Variant: <b>CHECKED</b>	Git Hash: <b>ad6fcfe</b>
	Board Name: <b>Module</b>	Project Name: <b>Step-up module 12:450 V</b>		
	Sheet Title: Bottom Fabrication (Scale 1:1)	File Name: StepUp_module_12to450V.kicad_pcb	Designer: FR	Date: 2024-04-13      Revision: + (Unreleased)
	Sheet Path:		Reviewer: NA	Size: <b>A4</b> Sheet: <b>2</b> of <b>8</b>

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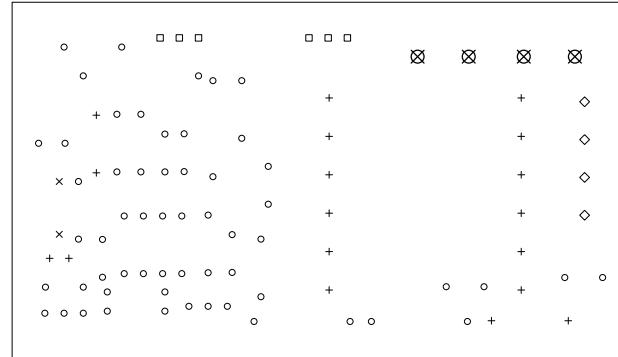
A

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## Drill Table

Symbol	Count	Hole Size	Plated	Hole Shape	Drill Layer Pair	Hole Type
X	2	0.80mm (31.50mils)	PTH	Round	L1 (Sig, PWR) - L2 (Sig, PWR)	Via
O	58	0.80mm (31.50mils)	PTH	Round	L1 (Sig, PWR) - L2 (Sig, PWR)	Pad
+	18	0.90mm (35.43mils)	PTH	Round	L1 (Sig, PWR) - L2 (Sig, PWR)	Pad
□	6	1.20mm (47.24mils)	PTH	Round	L1 (Sig, PWR) - L2 (Sig, PWR)	Pad
◊	4	1.30mm (51.18mils)	PTH	Round	L1 (Sig, PWR) - L2 (Sig, PWR)	Pad
☒	4	1.70mm (66.93mils)	PTH	Round	L1 (Sig, PWR) - L2 (Sig, PWR)	Pad
Total 92						

## Drill Drawing L1 - L2 (Scale 1:1)



B

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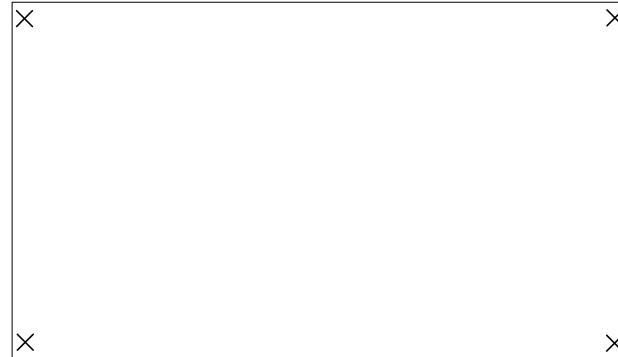
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## Drill Table

Symbol	Count	Hole Size	Plated	Hole Shape	Drill Layer Pair	Hole Type
X	4	2.10mm (82.88mil)	NPTH	Round	L1 (Sig. PWR) - L2 (Sig. PWR)	Mechanical
Total 4						

## Drill Drawing L1 - L2 (Scale 1:1)



B

B

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	Comments: Comment 1 Comment 2 Comment 3 Comment 4	Company: <b>FR</b>	Variant: <b>CHECKED</b>	Git Hash: <b>ad6fcfe</b>
	Board Name: <b>Module</b>	Project Name: <b>Step-up module 12:450 V</b>		
	Sheet Title: Drill Drawing (L1 - L2)	File Name: StepUp_module_12to450V.kicad_pcb	Designer: FR	Date: 2024-04-13    Revision: + (Unreleased)
	Sheet Path:		Reviewer: NA	Size: <b>A4</b> Sheet: <b>4 of 8</b>

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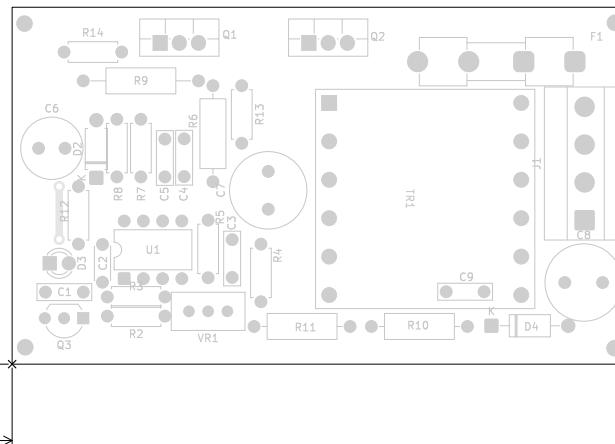
A

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**Top Test Points (Scale 1:1)**

Ref.	Net	X [mm]	Y [mm]

Ref.	Net	X [mm]	Y [mm]



B

B

All dimensions are in millimeters unless otherwise specified.

C

C

D

D

	Comments: Comment 1 Comment 2 Comment 3 Comment 4	Company: <b>FR</b>	Variant: <b>CHECKED</b>	Git Hash: <b>ad6fcfe</b>
	Board Name: <b>Module</b>			Project Name: <b>Step-up module 12:450 V</b>
	Sheet Title: Top Test Points (Scale 1:1)	File Name: StepUp_module_12to450V.kicad_pcb	Designer: FR	Date: 2024-04-13      Revision: + (Unreleased)
	Sheet Path:		Reviewer: NA	Size: <b>A4</b> Sheet: <b>5 of 8</b>

# Module Fabrication Document

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C

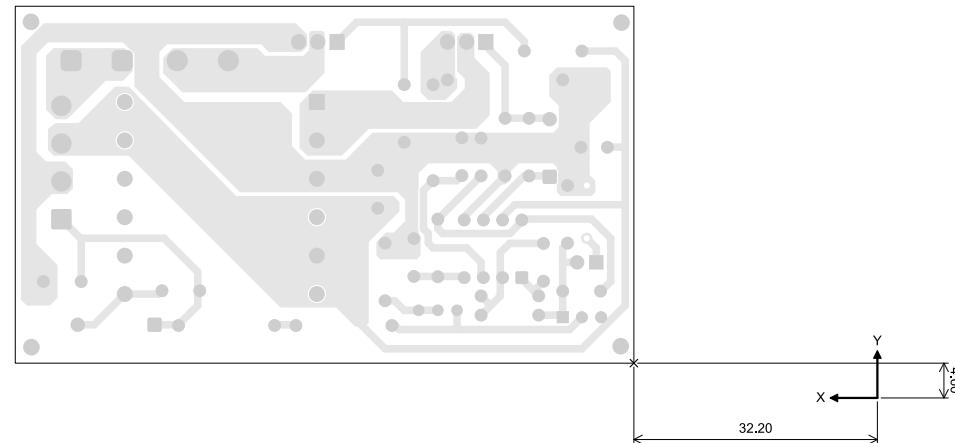
C

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## Bottom Test Points (Scale 1:1)

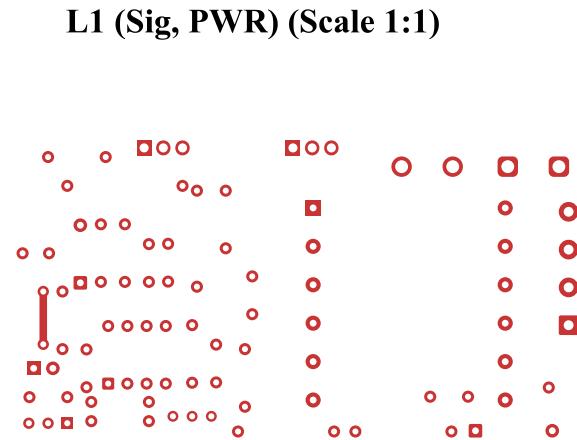
Ref.	Net	X [mm]	Y [mm]
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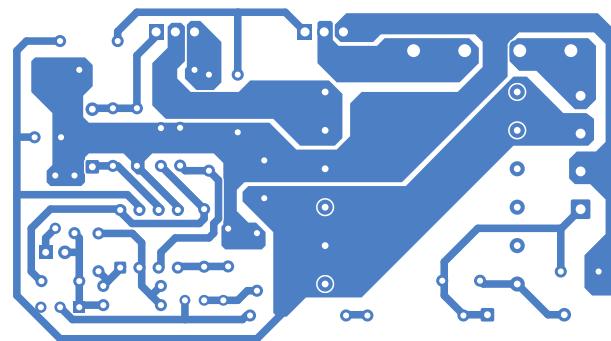


**L1 (Sig, PWR) (Scale 1:1)**

	<p>Comments: Comment 1 Comment 2 Comment 3 Comment 4</p> <p>Sheet Title: L1 (Sig, PWR) (Scale 1:1)</p> <p>Sheet Path:</p>	Company: <b>FR</b>	Variant: <b>CHECKED</b>	Git Hash: <b>ad6fcfe</b>
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		Reviewer: NA	Size: <b>A4</b>	Sheet: <b>7</b> of <b>8</b>

# Module Fabrication Document

**L2 (Sig, PWR) (Scale 1:1)**



		Comments: Comment 1 Comment 2 Comment 3 Comment 4	Company: <b>FR</b>	Variant: <b>CHECKED</b>	Git Hash: <b>ad6fcfe</b>
		Board Name: <b>Module</b>		Project Name: <b>Step-up module 12:450 V</b>	
		Sheet Title: <b>L2 (Sig, PWR) (Scale 1:1)</b>	File Name: <b>StepUp_module_12to450V.kicad_pcb</b>	Designer: <b>FR</b>	Date: <b>2024-04-13</b> Revision: <b>+ (Unreleased)</b>
		Sheet Path:		Reviewer: <b>NA</b>	Size: <b>A4</b> Sheet: <b>8 of 8</b>