

# Nordic Semiconductor ASA

## nPM1304 Evaluation Board (PCA10195)

Sheet 1: Cover sheet

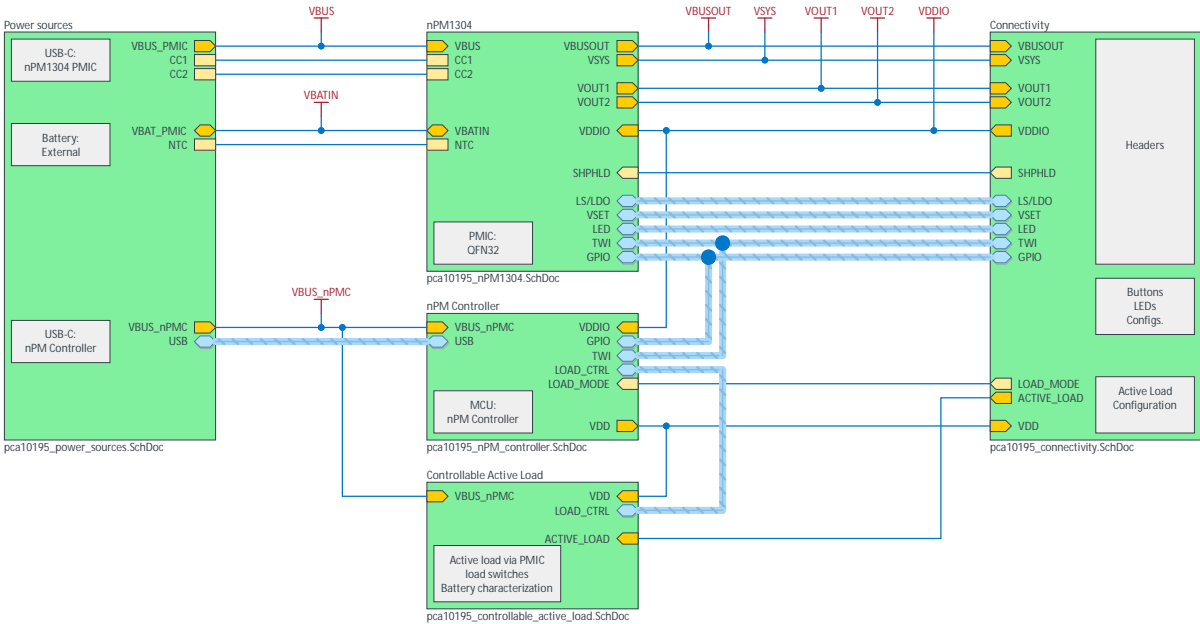
Sheet 2: nPM1304

Sheet 3: Power sources

Sheet 4: Connectivity

Sheet 5: nPM Controller

Sheet 6: Controllable active load



### Testpoints

TP1	VBUS
TP2	VBATIN
TP3	VBUSOUT
TP4	VSYS
TP5	VOUT1
TP6	VOUT2
TP7	VDDIO
TP8	VBUS_nPMC
TP49	
TP50	

Sheet #	Designator	Function	Location
Sheet 1	TP1-TP8	Production test	Bottom
Sheet 2	TP9-TP28	Production test	Bottom
Sheet 3	N/A	N/A	N/A
Sheet 4	TP29-TP34	Probe loops	Top
Sheet 5	TP35-TP43	Production test	Bottom
Sheet 6	TP44-TP48	Probe point	Top
	TP51-TP55	Probe point	Bottom

The schematics have following net naming hierarchy:

- 1) Power ports
- 2) Ports
- 3) Net labels

The top level sheet has highest priority.  
Net labels are local to sheets.

✗ The No ERC object is a design directive.  
This directive is placed on a node in the circuit to suppress harmless warnings and/o r error violation conditions that are detected when the schematic project is validated.

#### Port Type Explanation



#### Label

PCA10195  
0.9.0  
<year>, <week>  
<UID>

#### Alignment Fiducials



#### Mechanical holes



#### Bumpers



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### Title nPM1304 Evaluation Board

Size  
A3  
File: pca10195.SchDoc  
Classification: PUBLIC

PCB Assembly Number  
PCA10195

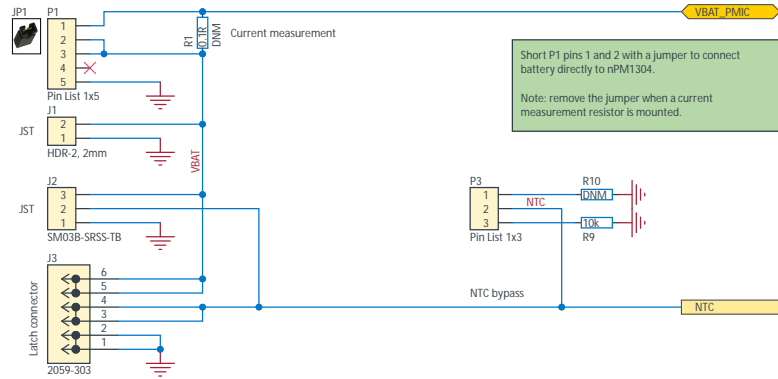
Revision  
0.9.0  
Sheet 1 of 6  
Drawn By: ETSK





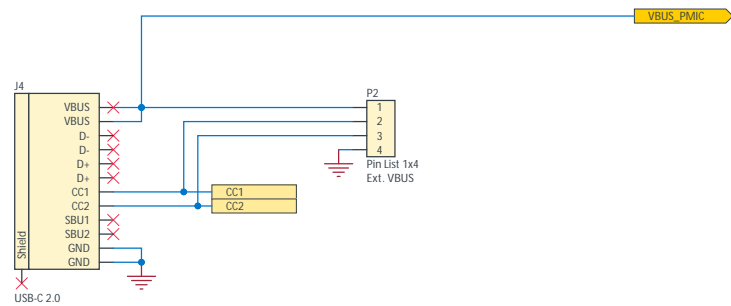
## Battery connectors

Supports battery connections with or without NTC thermistor



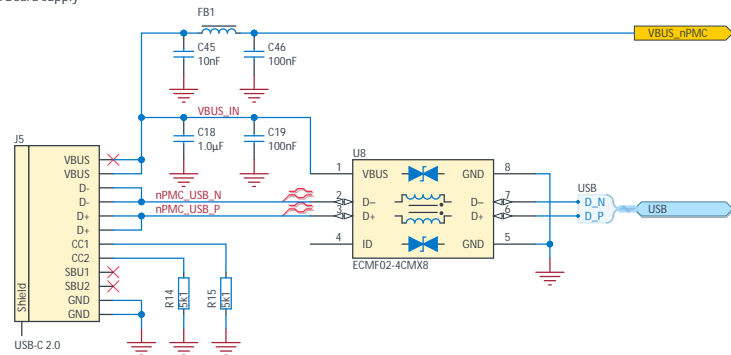
## USB-C to nPM1304 Power Management IC

Supplies VBUS on PMIC only



## USB-C to nPM Controller (nPMC)

Evaluation Board supply



Title  
nPM1304 Evaluation Board: Power sources

Size  
A3

PCB Assembly Number  
PCA10195

Revision  
0.9.0

Date: 2025-05-16  
File: pca10195\_power\_sources.SchDoc  
Classification: PUBLIC

Sheet 3 of 6  
Drawn By: ETSK

A

A

B

B

C

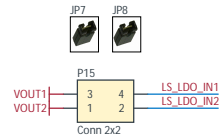
C

D

D

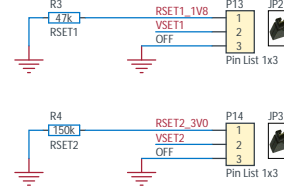
### nPM1304 load switch input configuration

Connects bucks to PMIC load switches



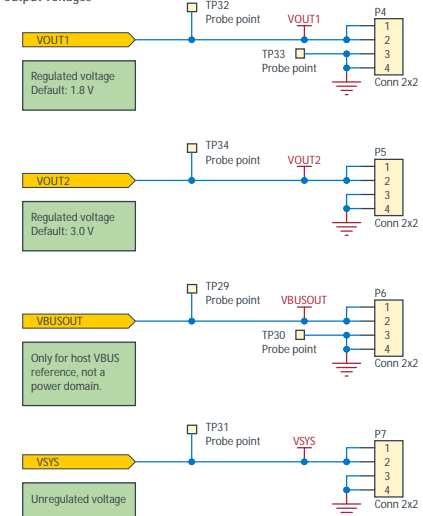
### Buck regulator startup voltage configuration

Selects default boot voltage on respective regulators



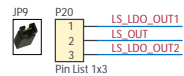
### Output voltages

Headers to access PMIC output voltages



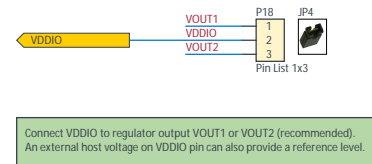
### nPM1304 load switch output configuration

Select LSOUT1 or LSOUT2 as source to the controllable active load



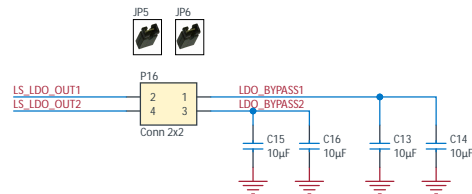
### TWI and GPIO voltage selection

Connects PMIC I/O supply to VOUT1 or VOUT2



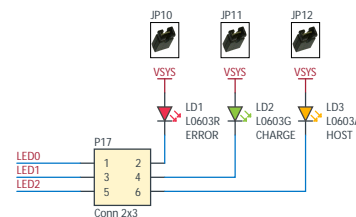
### LDO bypass capacitors

Jumper connections to bypass capacitors when using LDOs



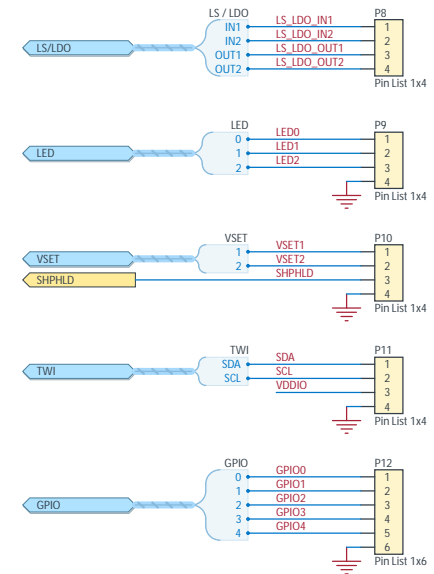
### LED configuration

Connects LEDs to PMIC



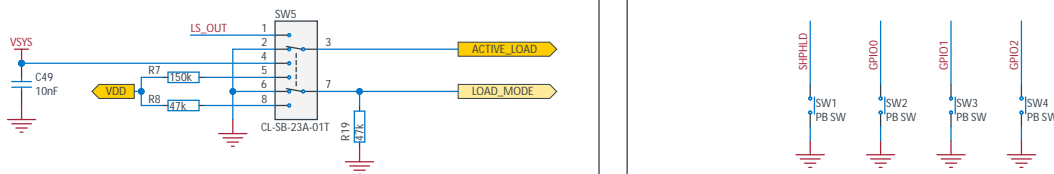
### I/O pins

Headers to access all PMIC I/O pins



### Active load input configuration

Selects source to the controllable active load



Active load input	
SW5 selects pin map	
Positions	Map
1-3, 5-7	LS OUT
2-3, 6-7	OFF
4-3, 8-7	VSYS

### Buttons

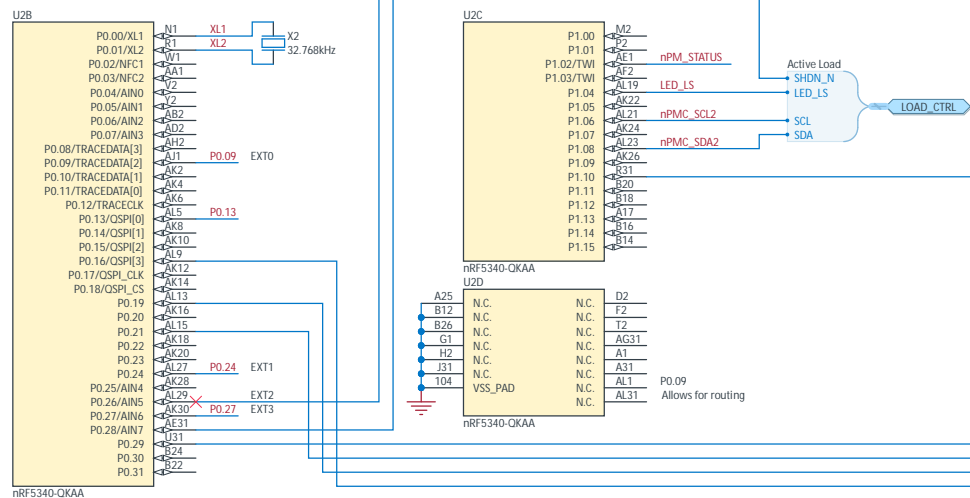
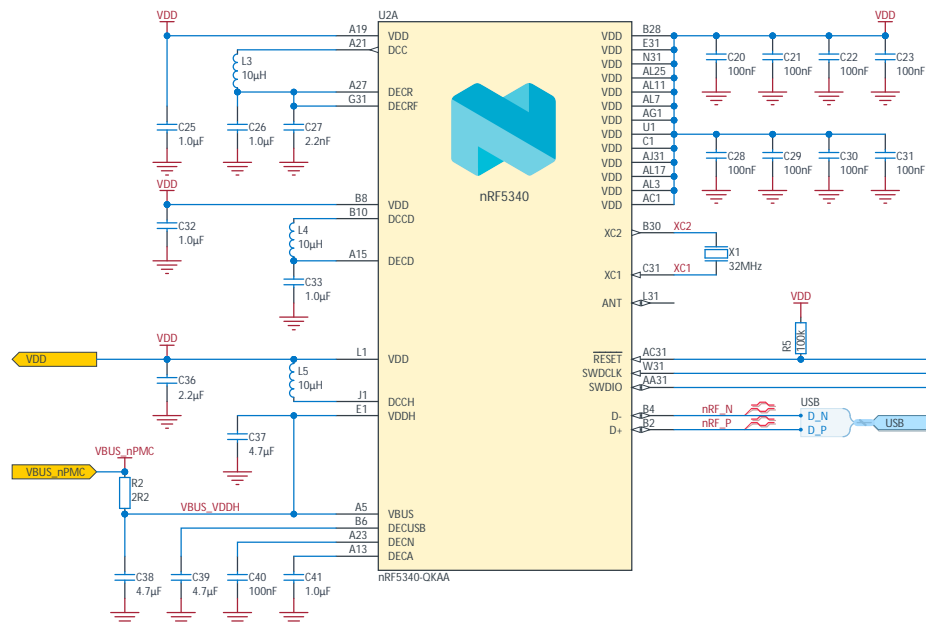
Push buttons connected to PMIC



Single button reset:  
Long press SW1.

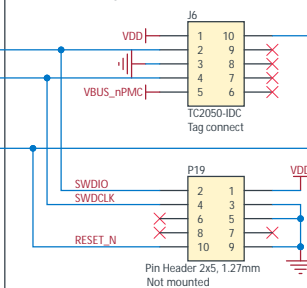
Two-button reset (if configured):  
Long press both SW1 and SW2.

Controls PMIC and all board functionalities



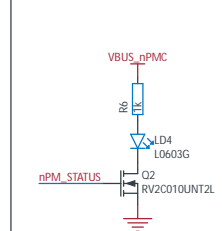
## Serial Wire Debug to nPM Controller

Serial Wire Debug to nPM Controller



Indicates connection status

Indicates connection status

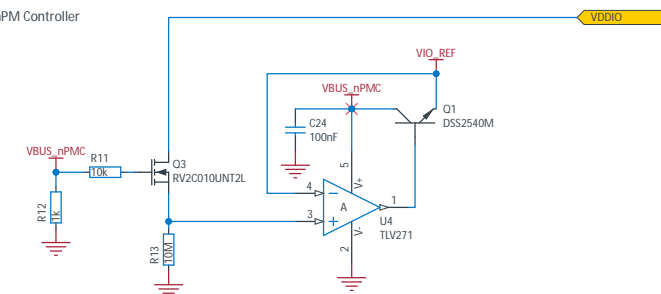


100% 90% 80% 70% 60% 50% 40% 30% 20% 10% 0%

TP35	<input type="checkbox"/>	VDD
TP36	<input type="checkbox"/>	VIO_REF
TP37	<input type="checkbox"/>	RESET_N
TP38	<input type="checkbox"/>	SWDCLK
TP39	<input type="checkbox"/>	SWDIO
TP40	<input type="checkbox"/>	nRF_N
TP41	<input type="checkbox"/>	nRF_P
TP42	<input type="checkbox"/>	RESERVED 1
TP43	<input type="checkbox"/>	RESERVED 2
TP44	<input type="checkbox"/>	PQ.24
TP45	<input type="checkbox"/>	LOAD_MODE
TP46	<input type="checkbox"/>	GPIOEN
TP47	<input type="checkbox"/>	PQ.13
TP48	<input type="checkbox"/>	nPMC_SHDN_N
TP49	<input type="checkbox"/>	LED_LS
TP50	<input type="checkbox"/>	nPMC_SCL2
TP52	<input type="checkbox"/>	nPMC_SDA2
TP54	<input type="checkbox"/>	VBUS_nPMC
TP55	<input type="checkbox"/>	VIO_REF

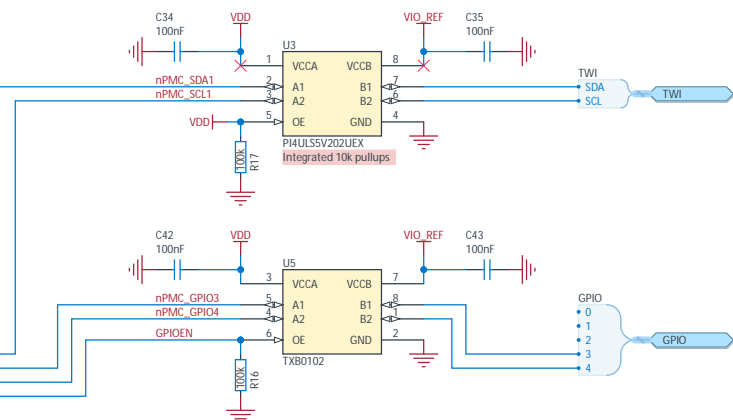
Buffers the PMIC and nPM Controller

Buffers the PMIC and nPM Controller



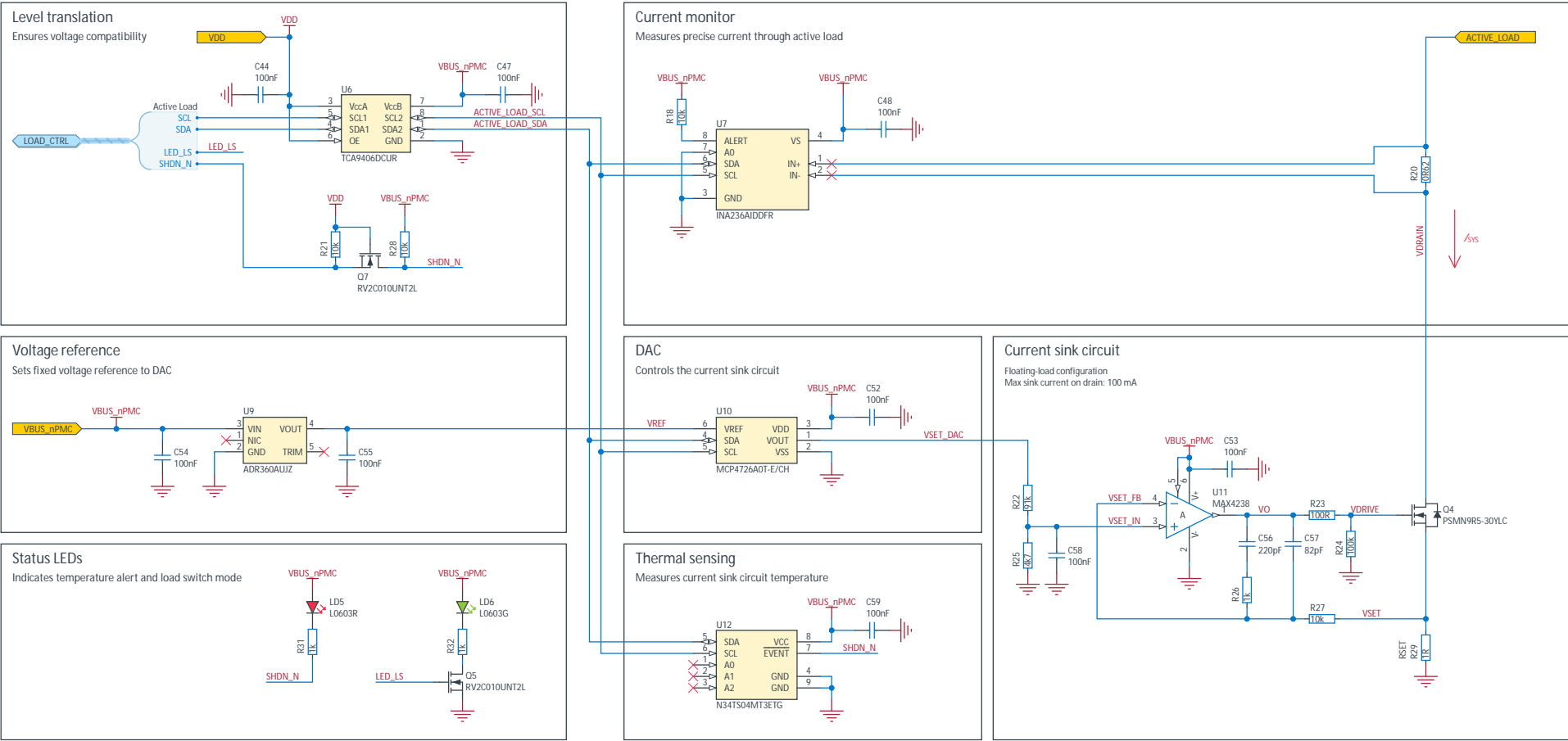
Ensures voltage compatibility

Ensures voltage compatibility



Title <b>nPM1304 Evaluation Board: nPM Controller</b>	
Size <b>A3</b>	PCB Assembly Number <b>PCA10195</b>
Date: 2025-05-16	
File: pca10195_nPM_controller.SchDoc	
Classification: PUBLIC	

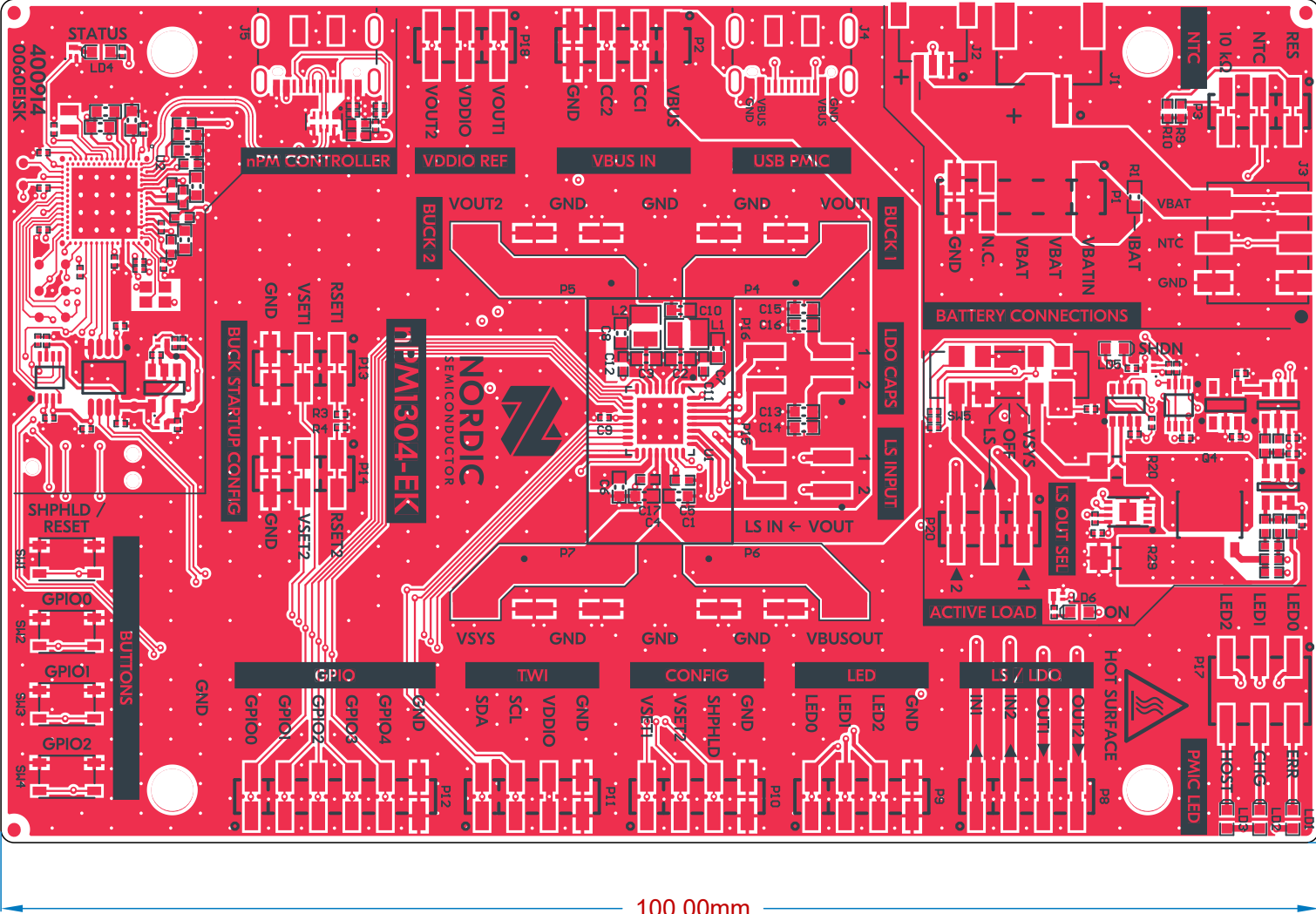
See sheet 4: "Connectivity and configuration" for how to configure the source for the controllable active load. Source selection is done with **SW5**.



Title nPM1304 Evaluation Board: Controllable active load		
Size A3	PCB Assembly Number PCA10195	Revision 0.9.0
Date: 2025-05-16	File: pca10195_controllable_active_load_SchDoc	Sheet 6 of 6
Classification: PUBLIC	Drawn By: ETSK	



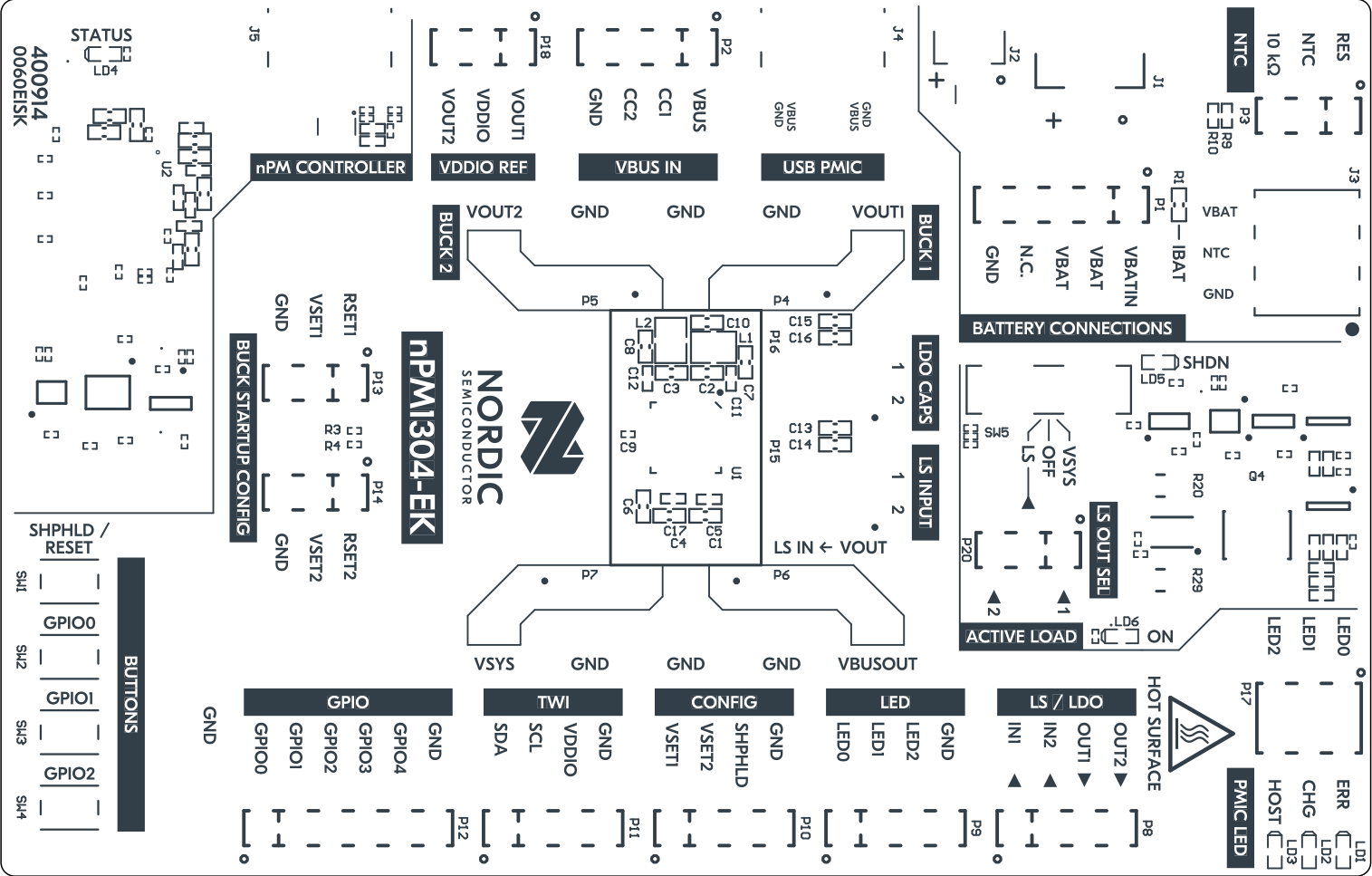
Top Layer (Scale 2:1)




Title nPM1304 Evaluation Board		
PCA Project: PCA10195	Rev: 0.9.0	Size: A4
PCB Number: 400914	Rev: 0060EISK	Unit: mm
Date: 2025-05-16		
File: 400914_PCB_prints.PCBdxf		



Top Overlay (Scale 2:1)



Title nPM1304 Evaluation Board				
PCA Project: PCA10195	Rev: 0.9.0	Size: A4		
PCB Number: 400914	Rev: 0060EISK	Unit: mm		
Date: 2025-05-16			Sheet 2 of 15	PUBLIC
File: 400914_PCB_prints.PCBdwf			Drawn By: EISK	



1

2

3

4

1

2

3

4

A

B

C

D

E

F

A

B

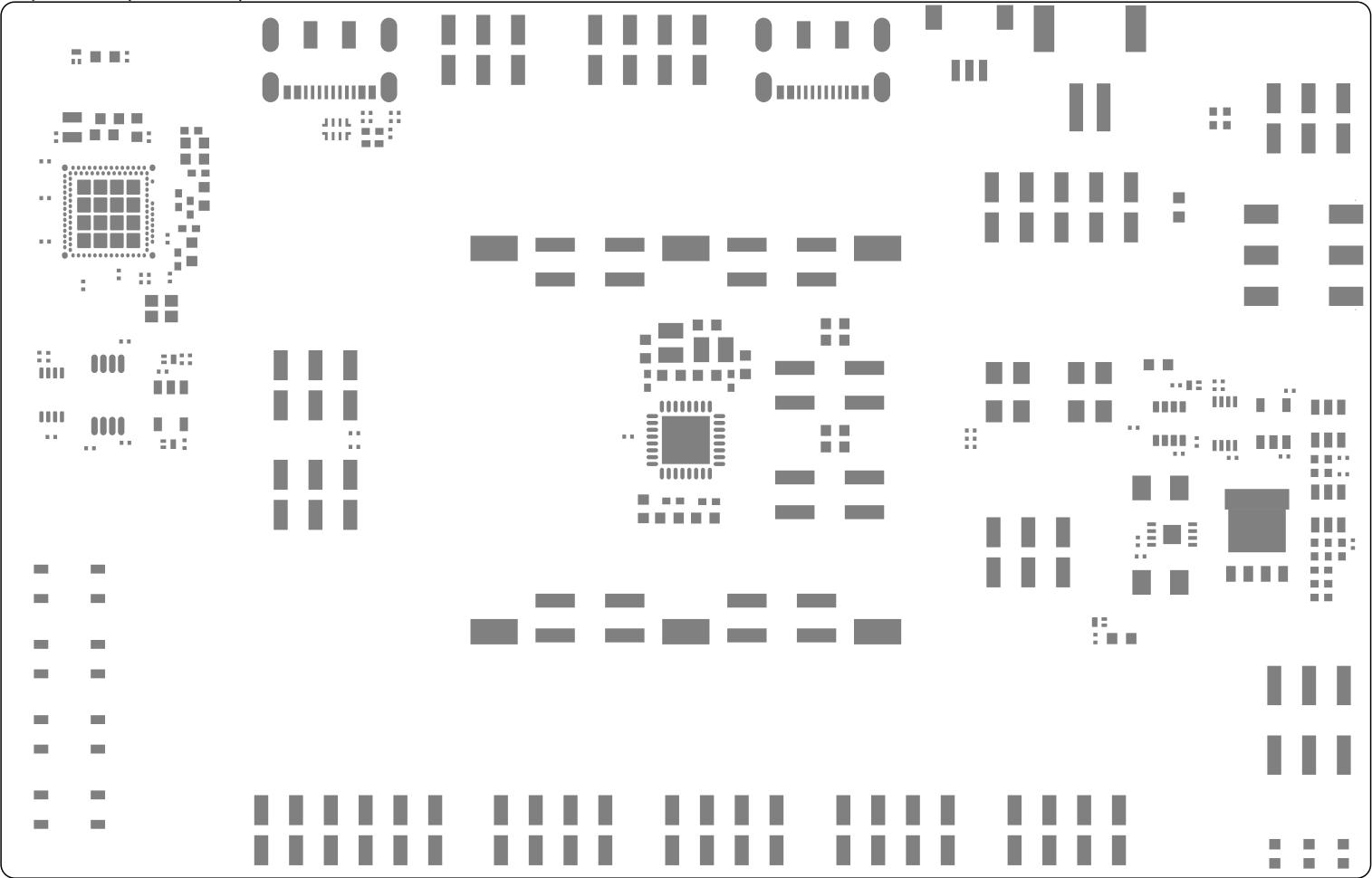
C


D

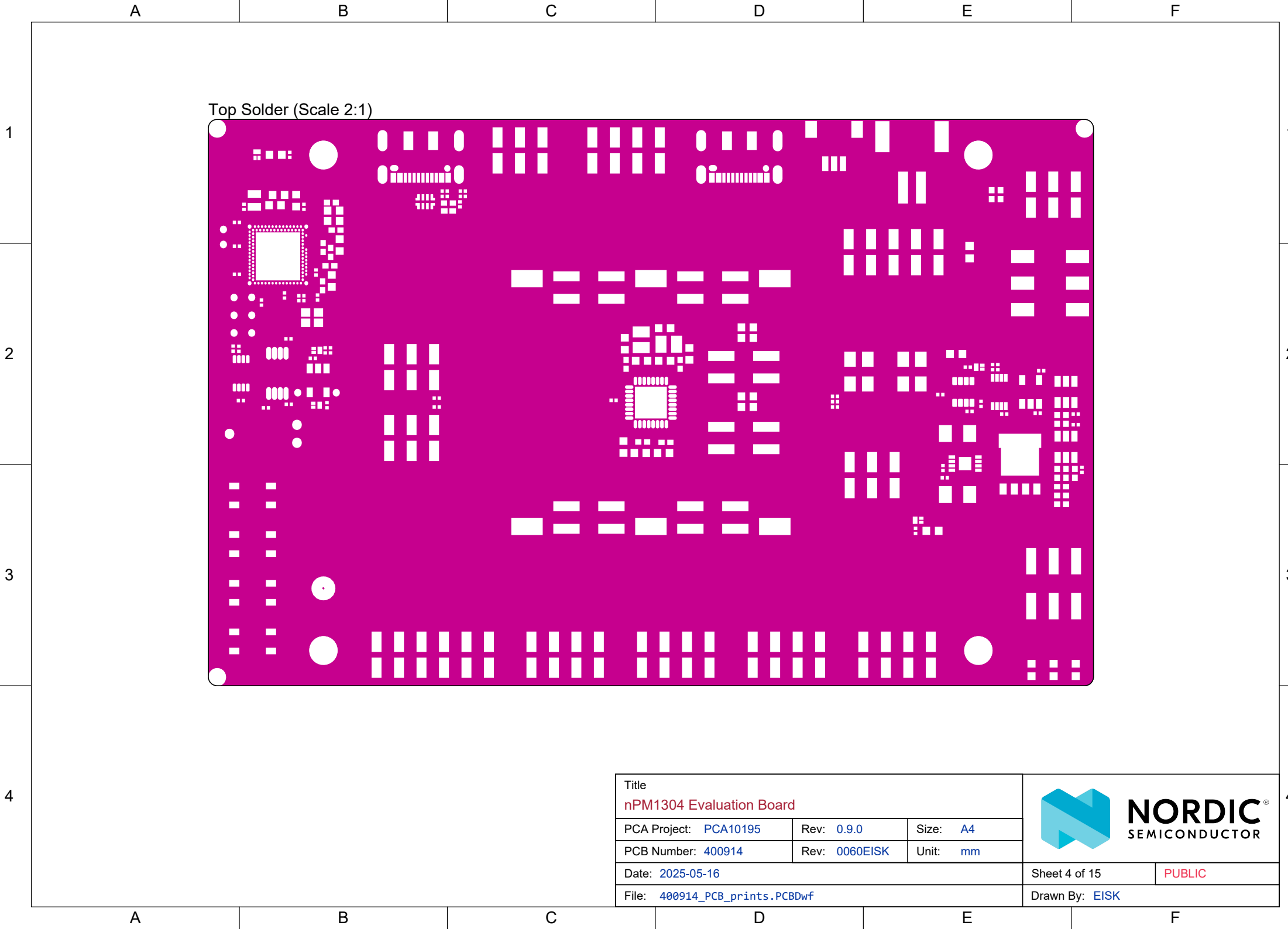
E


F

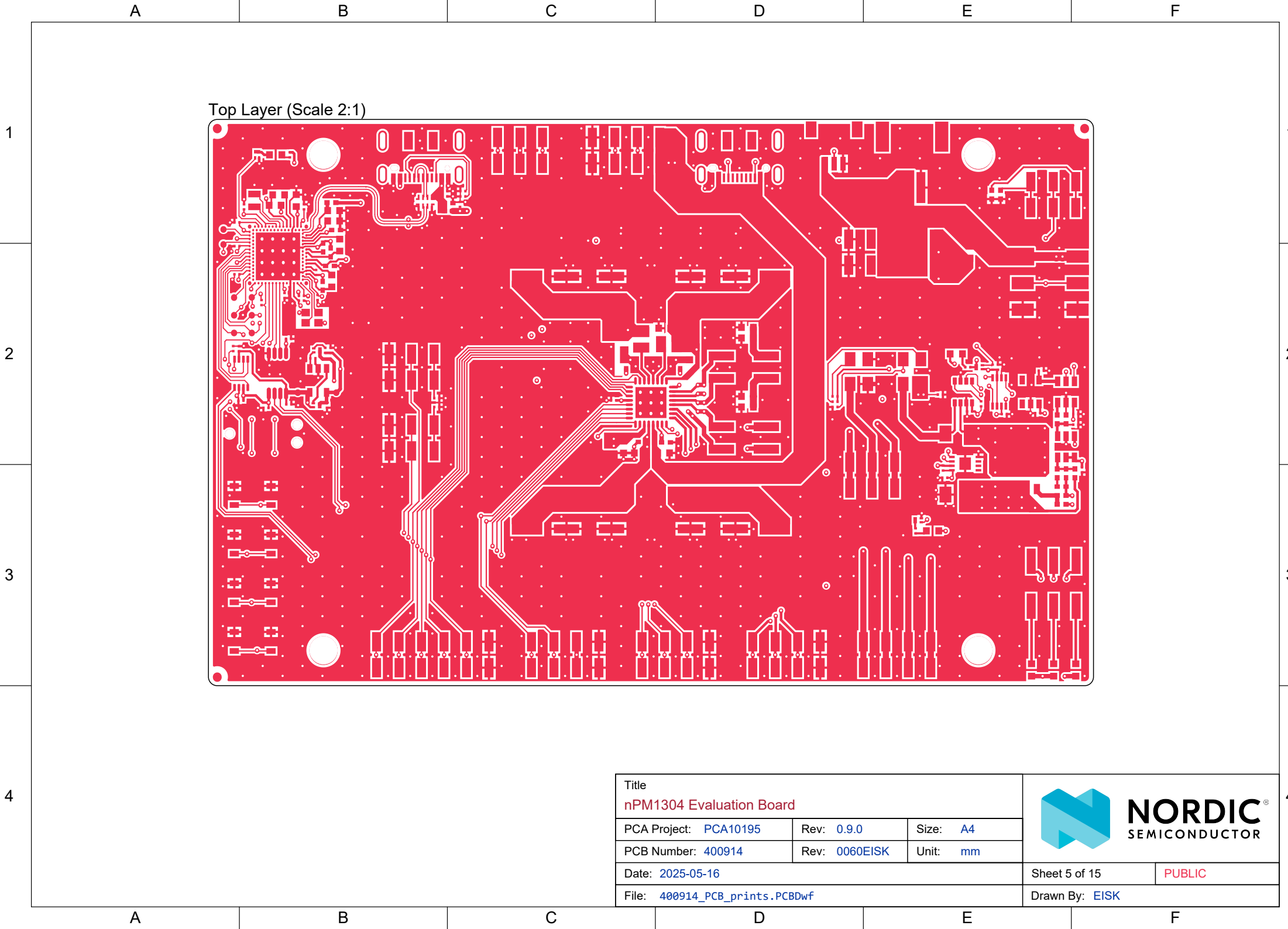
Top Paste (Scale 2:1)



Title nPM1304 Evaluation Board			 <b>NORDIC</b> SEMICONDUCTOR		
PCA Project: PCA10195	Rev: 0.9.0	Size: A4			
PCB Number: 400914	Rev: 0060EISK	Unit: mm	Sheet 3 of 15 <b>PUBLIC</b>		
Date: 2025-05-16					
File: 400914_PCB_prints.PCBdwf			Drawn By: EISK		



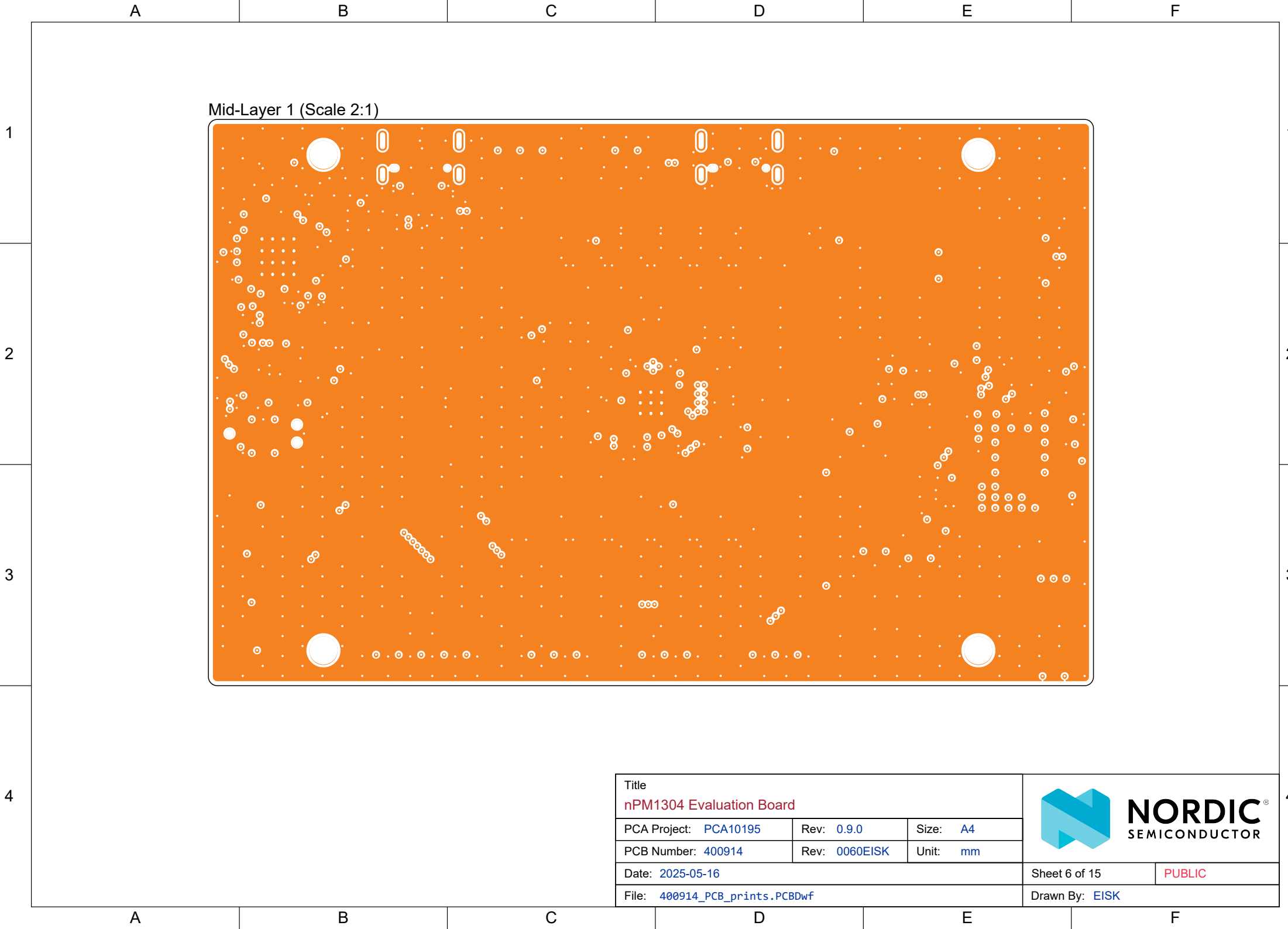
Title nPM1304 Evaluation Board				
PCA Project: PCA10195	Rev: 0.9.0	Size: A4		
PCB Number: 400914	Rev: 0060EISK	Unit: mm		
Date: 2025-05-16			Sheet 4 of 15	PUBLIC
File: 400914_PCB_prints.PCBdwf			Drawn By: EISK	




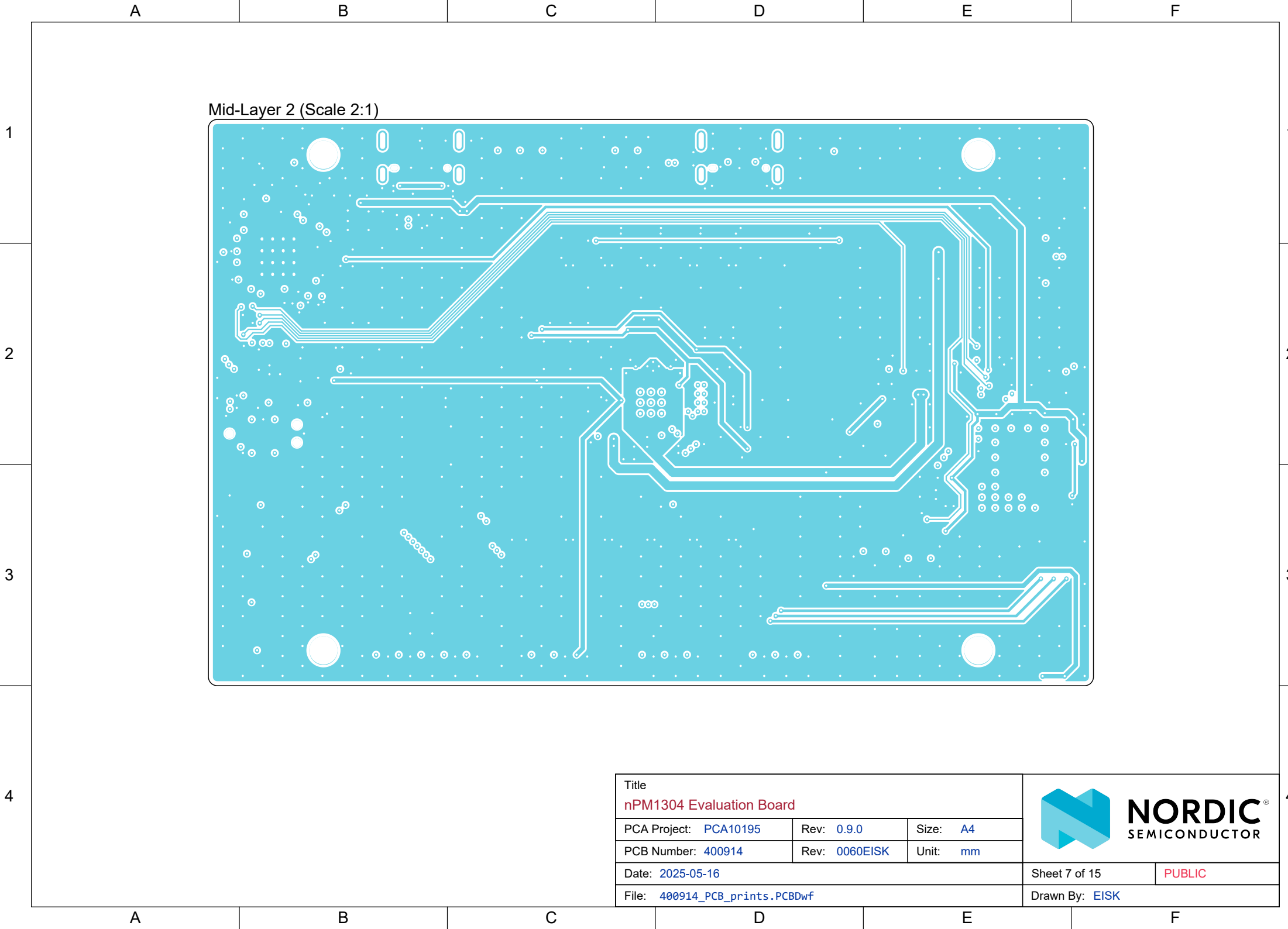
Title		
nPM1304 Evaluation Board		
PCA Project: PCA10195	Rev: 0.9.0	Size: A4
PCB Number: 400914	Rev: 0060EISK	Unit: mm
Date: 2025-05-16		
File: 400914_PCB_prints.PCBdxf		




**NORDIC**  
SEMICONDUCTOR



Title				 <b>NORDIC</b> SEMICONDUCTOR	
nPM1304 Evaluation Board					
PCA Project:	PCA10195	Rev:	0.9.0		
PCB Number:	400914	Rev:	0060EISK	Unit:	mm
Date:				2025-05-16	
File:				400914_PCB_prints.PCBdwf	
Sheet 6 of 15				PUBLIC	
Drawn By:				EISK	



Title nPM1304 Evaluation Board				
PCA Project: PCA10195	Rev: 0.9.0	Size: A4		
PCB Number: 400914	Rev: 0060EISK	Unit: mm		
Date: 2025-05-16			Sheet 7 of 15	PUBLIC
File: 400914_PCB_prints.PCBdwf			Drawn By: EISK	

A

B

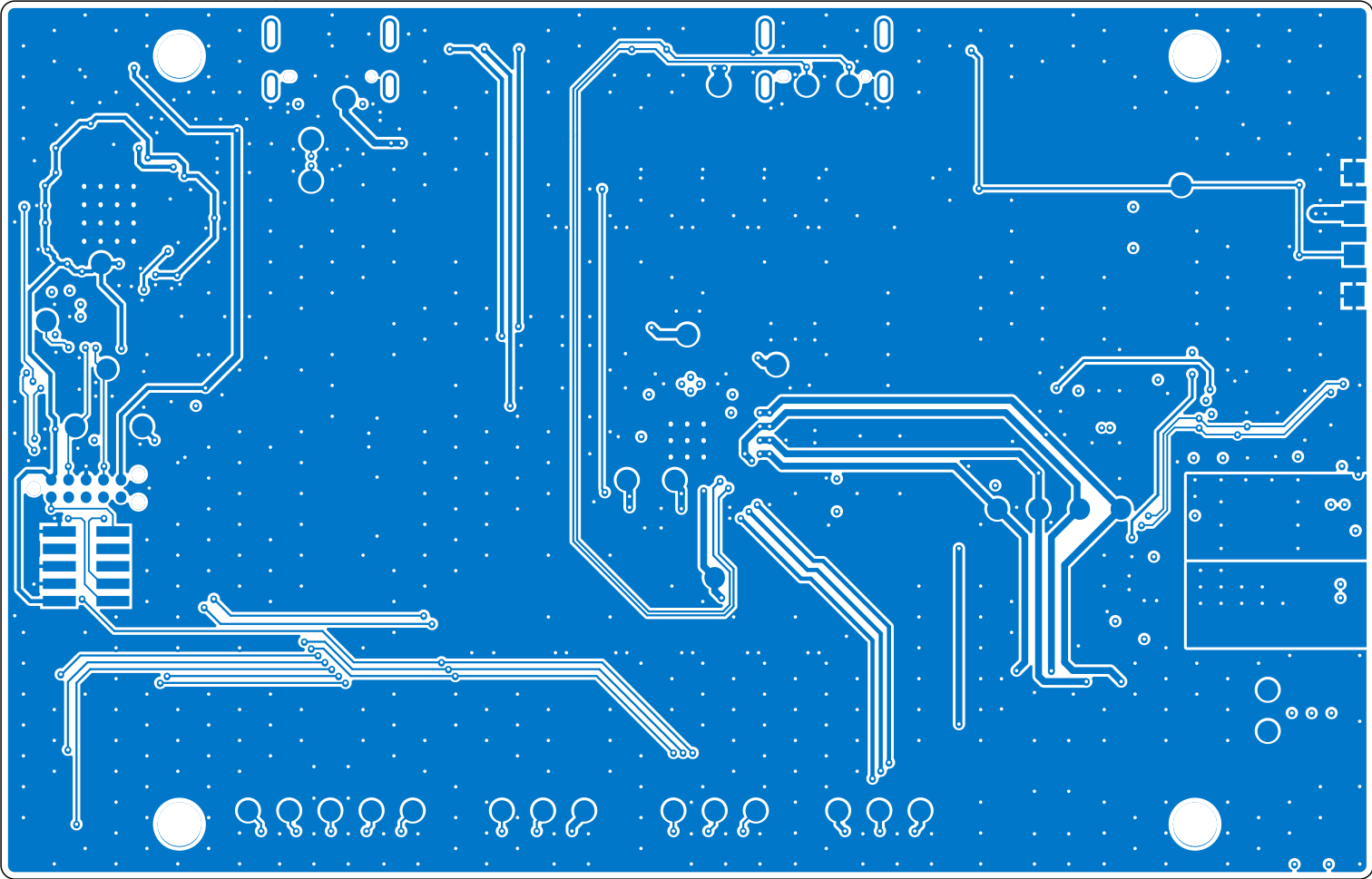
C


D

E

F

Bottom Layer (Scale 2:1)



Title					
nPM1304 Evaluation Board					
PCA Project:	PCA10195	Rev:	0.9.0	Size:	A4
PCB Number:	400914	Rev:	0060EISK	Unit:	mm
Date:				2025-05-16	
File:				400914_PCB_prints.PCBDwf	
				Sheet 8 of 15	
				PUBLIC	
				Drawn By: EISK	
				PUBLIC	

A

B

C

D

E

F

A

B

C

D

E

F

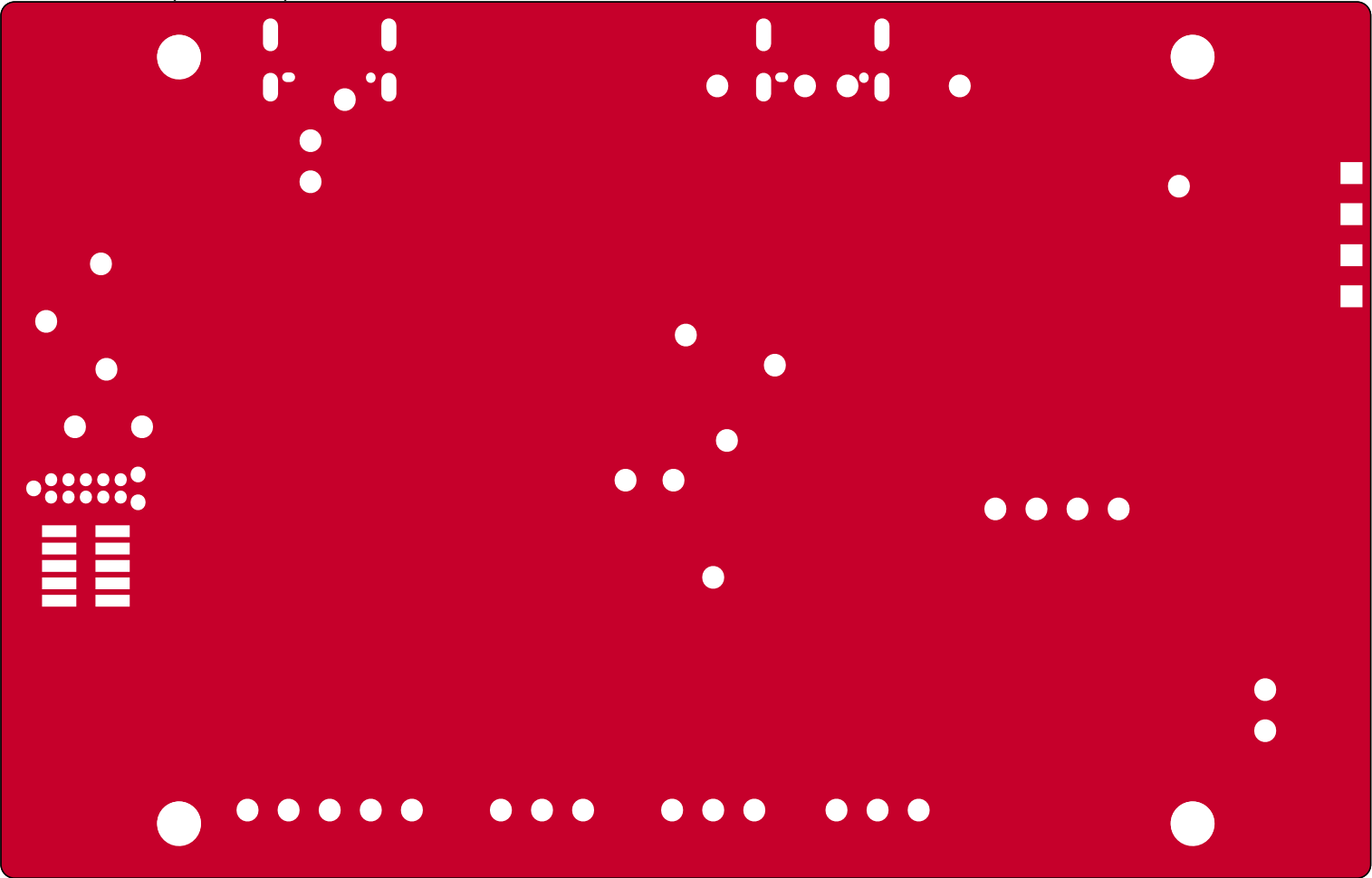
1

2

3

4

Bottom Solder (Scale 2:1)



A


B

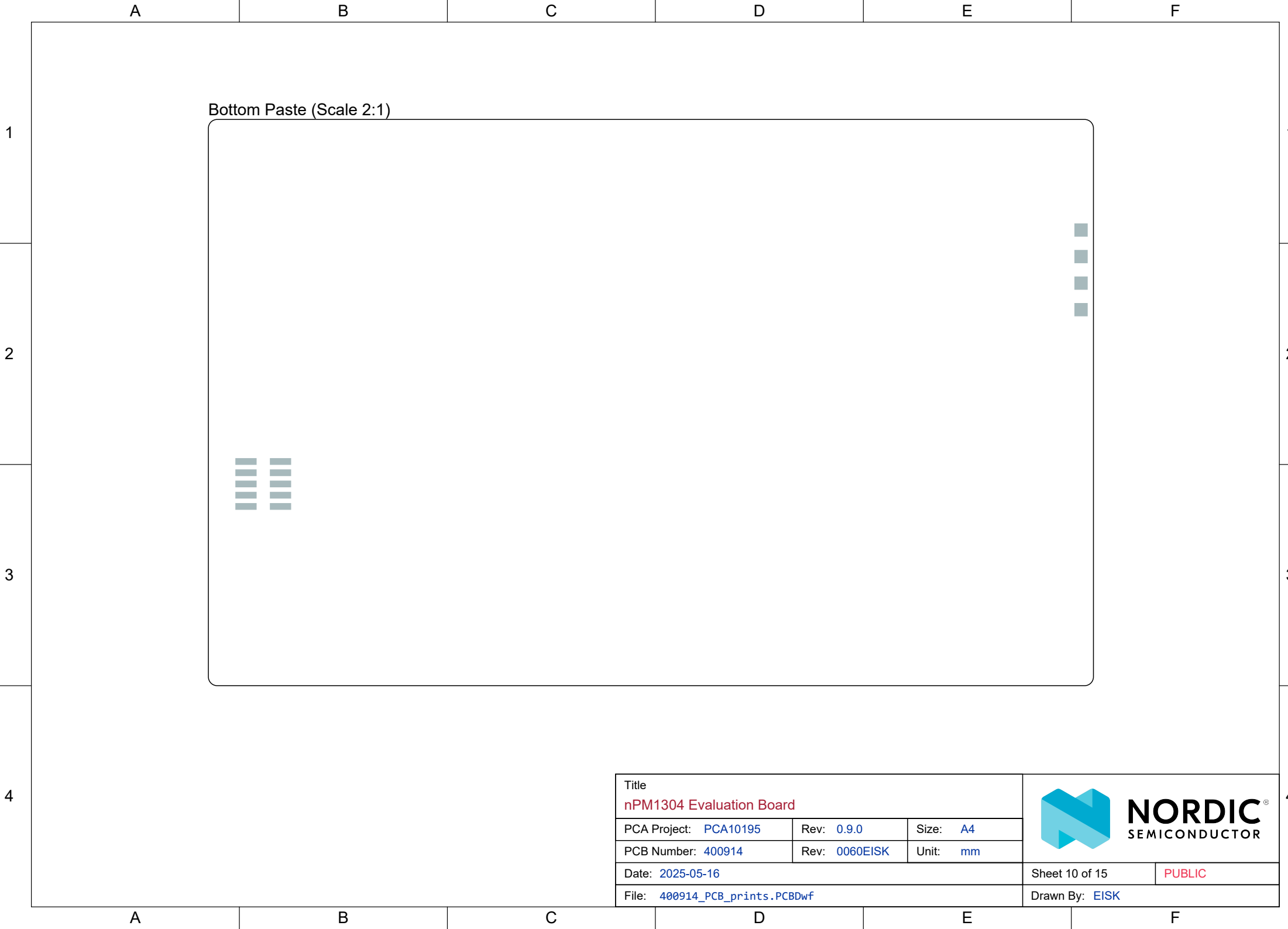
C


D

E

F

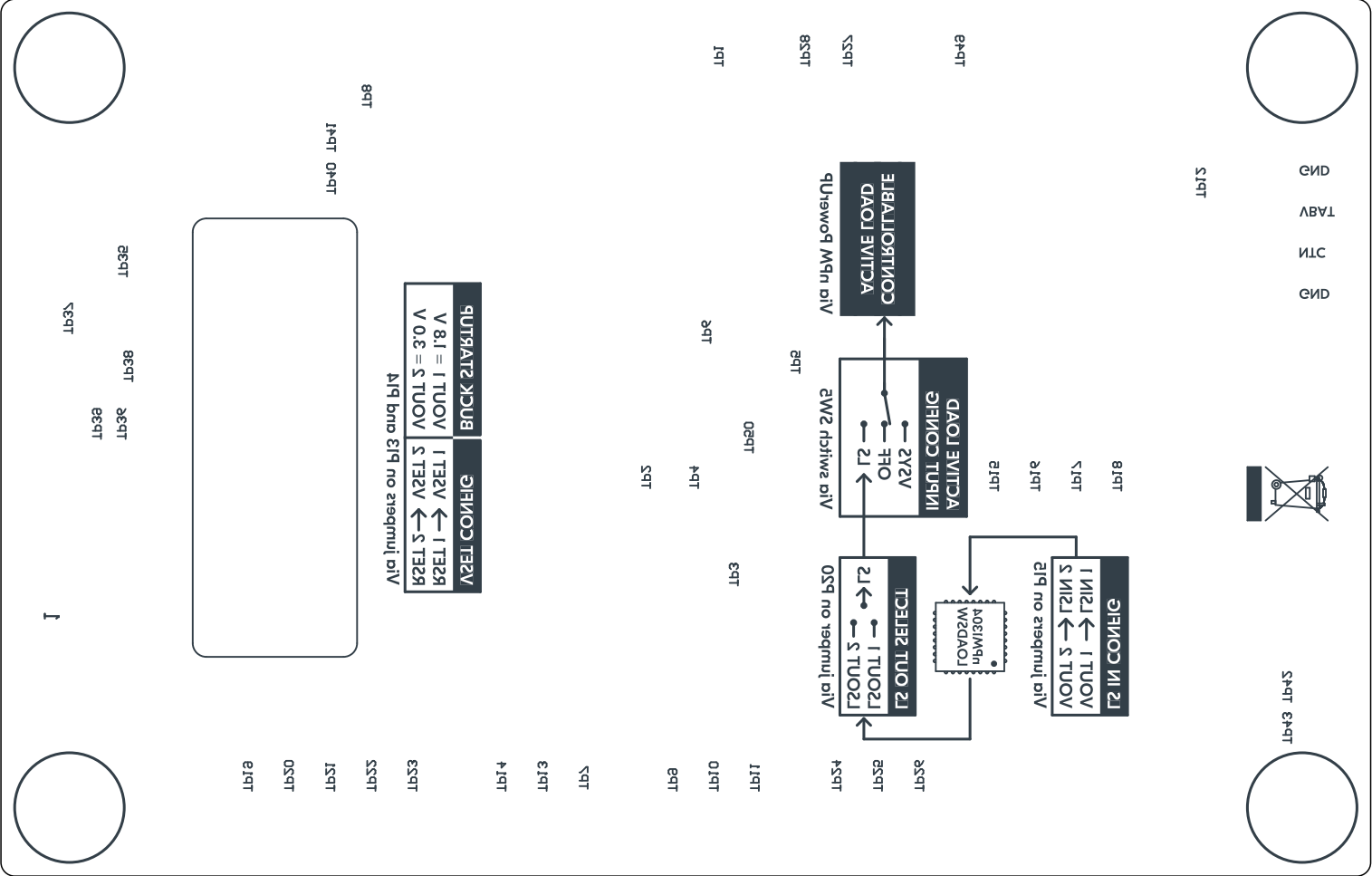
Title				 <b>NORDIC</b> SEMICONDUCTOR	
nPM1304 Evaluation Board					
PCA Project:	PCA10195	Rev:	0.9.0		
PCB Number:	400914	Rev:	0060EISK	Unit:	mm
Date:				2025-05-16	
File:				400914_PCB_prints.PCBdwf	
Sheet 9 of 15				PUBLIC	
Drawn By:				EISK	



Title					
nPM1304 Evaluation Board					
PCA Project:	PCA10195	Rev:	0.9.0		
PCB Number:	400914	Rev:	0060EISK	Unit:	mm
Date:				2025-05-16	
File:				400914_PCB_prints.PCBdwf	
Sheet 10 of 15				PUBLIC	
Drawn By:				EISK	



Bottom Overlay (Scale 2:1)



VIA numbers on B13 and B14

B2ET 5	→	V2ET 5	= 3.0 V
B2ET 1	→	V2ET 1	= 1.8 V
V2ET CONFIG BUCK STARTUP			

VIA numbers on B12

B2OUT 5	→	G2	
B2OUT 1	→	G2	
G2 OUT SELECT			

VIA numbers on B10


B2OUT 5	→	G2	
B2OUT 1	→	G2	
G2 OUT SELECT			

VIA numbers on B11

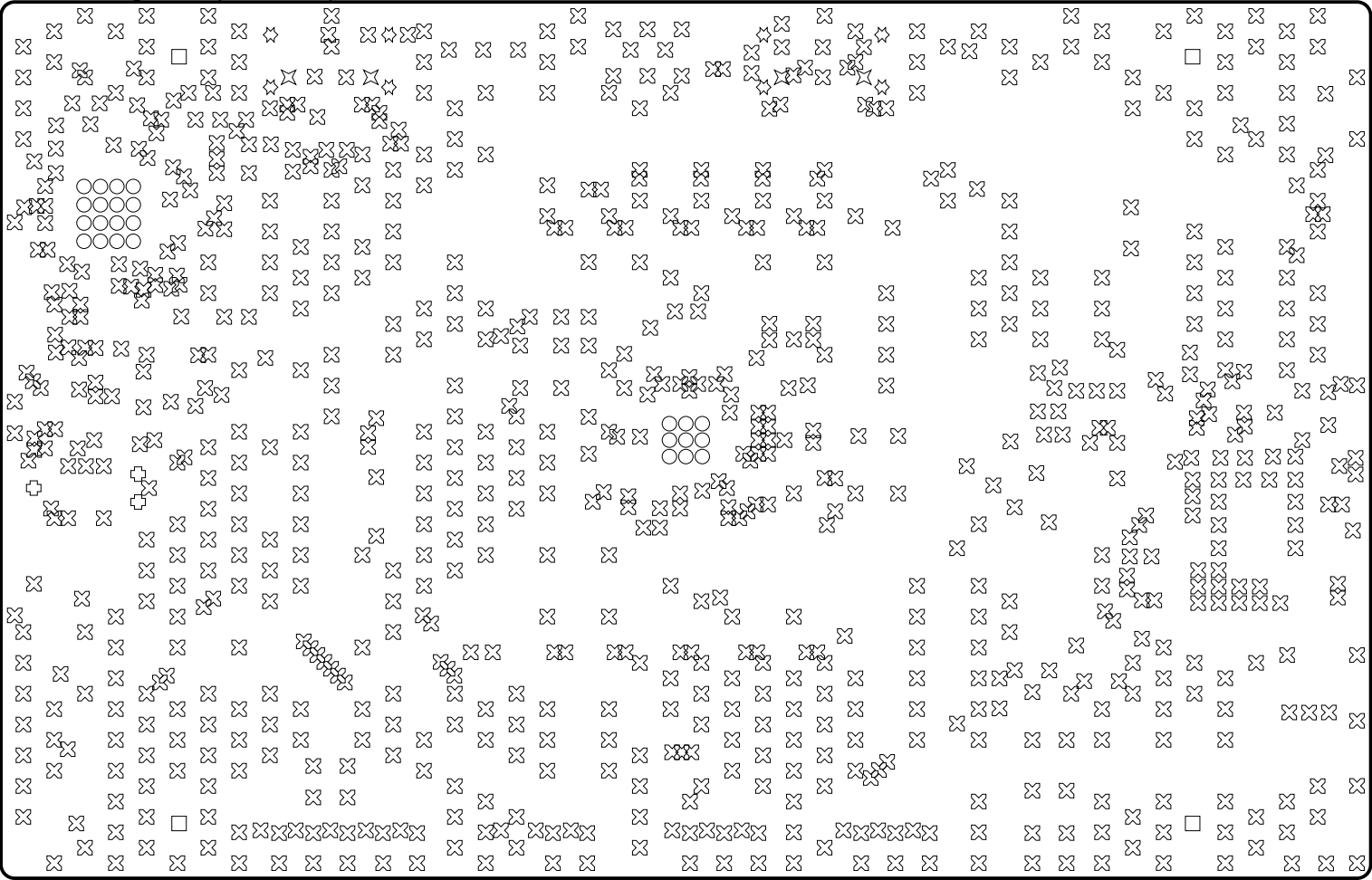
B2OUT 5	→	G2	
B2OUT 1	→	G2	
G2 OUT SELECT			

VIA numbers on B12

B2OUT 5	→	G2	
B2OUT 1	→	G2	
G2 OUT SELECT			

Title <b>nPM1304 Evaluation Board</b>			
PCA Project: <a href="#">PCA10195</a>	Rev: <a href="#">0.9.0</a>	Size: <a href="#">A4</a>	
PCB Number: <a href="#">400914</a>	Rev: <a href="#">0060EISK</a>	Unit: <a href="#">mm</a>	
Date: <a href="#">2025-05-16</a>			
File: <a href="#">400914_PCB_prints.PCBDwf</a>			Sheet 12 of 15 <div style="float: right; color: red; font-weight: bold;">PUBLIC</div>
			Drawn By: <a href="#">EISK</a>

Drill Drawing View (Scale 2:1)



Drill Table

Symbol	Count	Hole Size	Plated	Hole Type	Drill Layer Pair
⊗	899	0.25mm	Plated	Round	Top Layer - Bottom Layer
○	25	0.30mm	Plated	Round	Top Layer - Bottom Layer
⊗	4	0.60mm	Non-Plated	(Mixed)	Top Layer - Bottom Layer
☆	8	0.60mm	Plated	Slot	Top Layer - Bottom Layer
⊕	3	0.99mm	Non-Plated	Round	Top Layer - Bottom Layer
□	4	3.20mm	Non-Plated	Round	Top Layer - Bottom Layer
	943 Total				

Title

nPM1304 Evaluation Board

PCA Project: PCA10195

Rev: 0.9.0

Size: A4

PCB Number: 400914

Rev: 0060EISK

Unit: mm


Date: 2025-05-16

Sheet 13 of 15

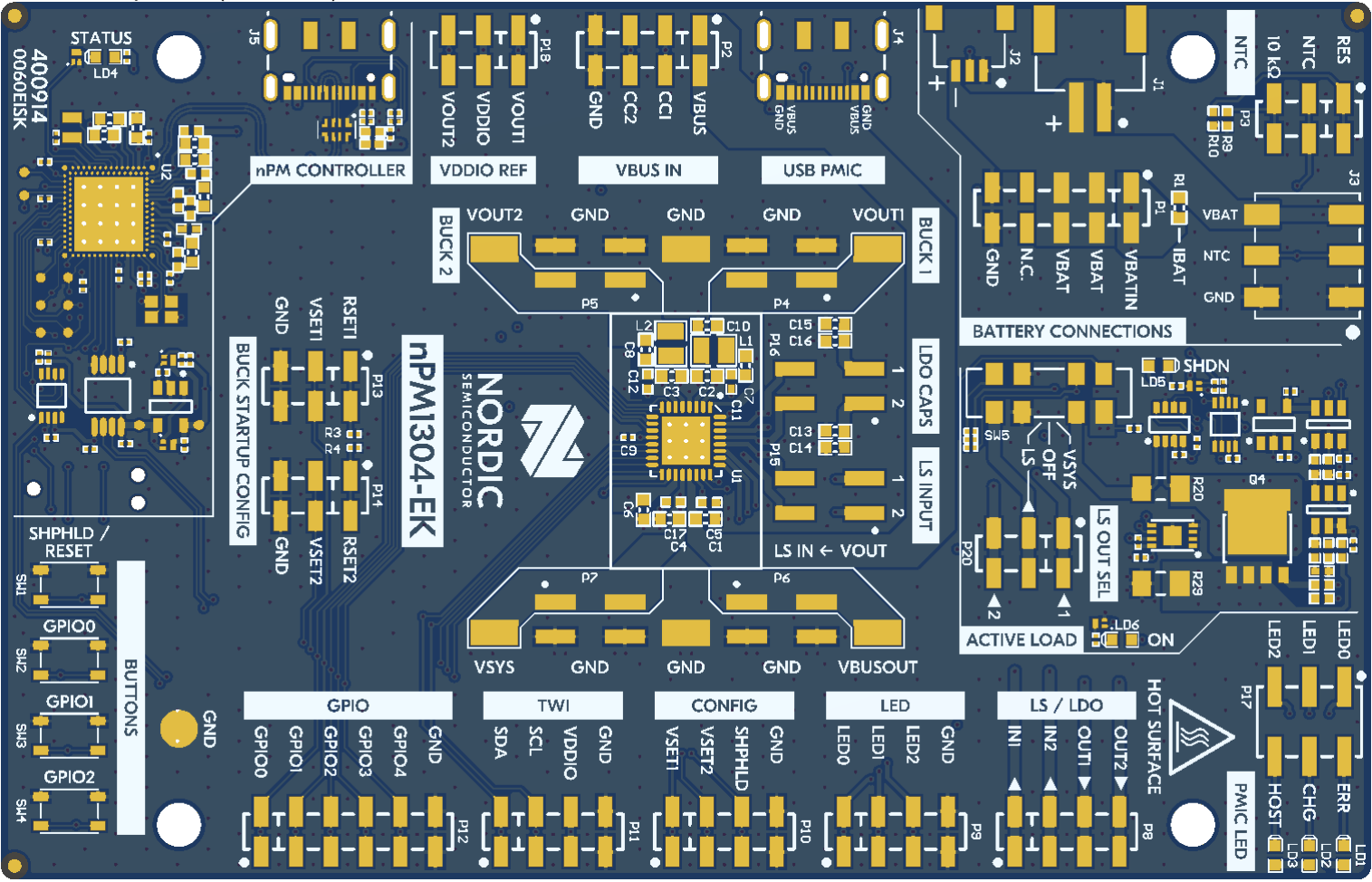
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File: 400914\_PCB\_prints.PCBdwf

Drawn By: EISK

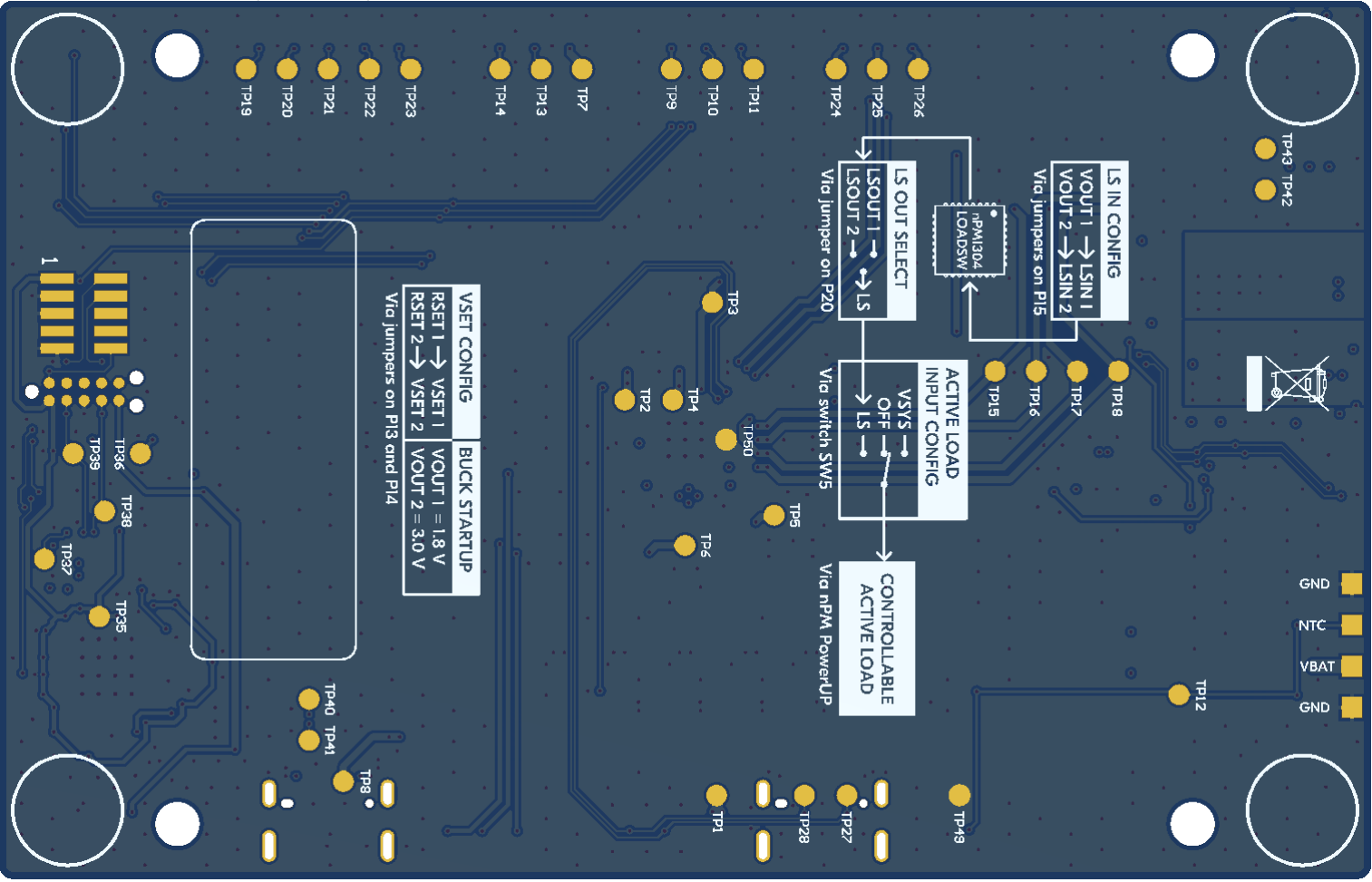



Realistic Top View (Scale 2:1)



Title nPM1304 Evaluation Board				
PCA Project: PCA10195	Rev: 0.9.0	Size: A4		
PCB Number: 400914	Rev: 0060EISK	Unit: mm		
Date: 2025-05-16			Sheet 14 of 15	PUBLIC
File: 400914_PCB_prints.PCBdwf			Drawn By: EISK	

Realistic Bottom View (Scale 2:1)



Title nPM1304 Evaluation Board				
PCA Project: PCA10195	Rev: 0.9.0	Size: A4		
PCB Number: 400914	Rev: 0060EISK	Unit: mm		
Date: 2025-05-16			Sheet 15 of 15	PUBLIC
File: 400914_PCB_prints.PCBdWf			Drawn By: EISK	