

ATLAS Pixel Detector Flex Hybrids Fabrication Drawings

version 1.1

Revision History

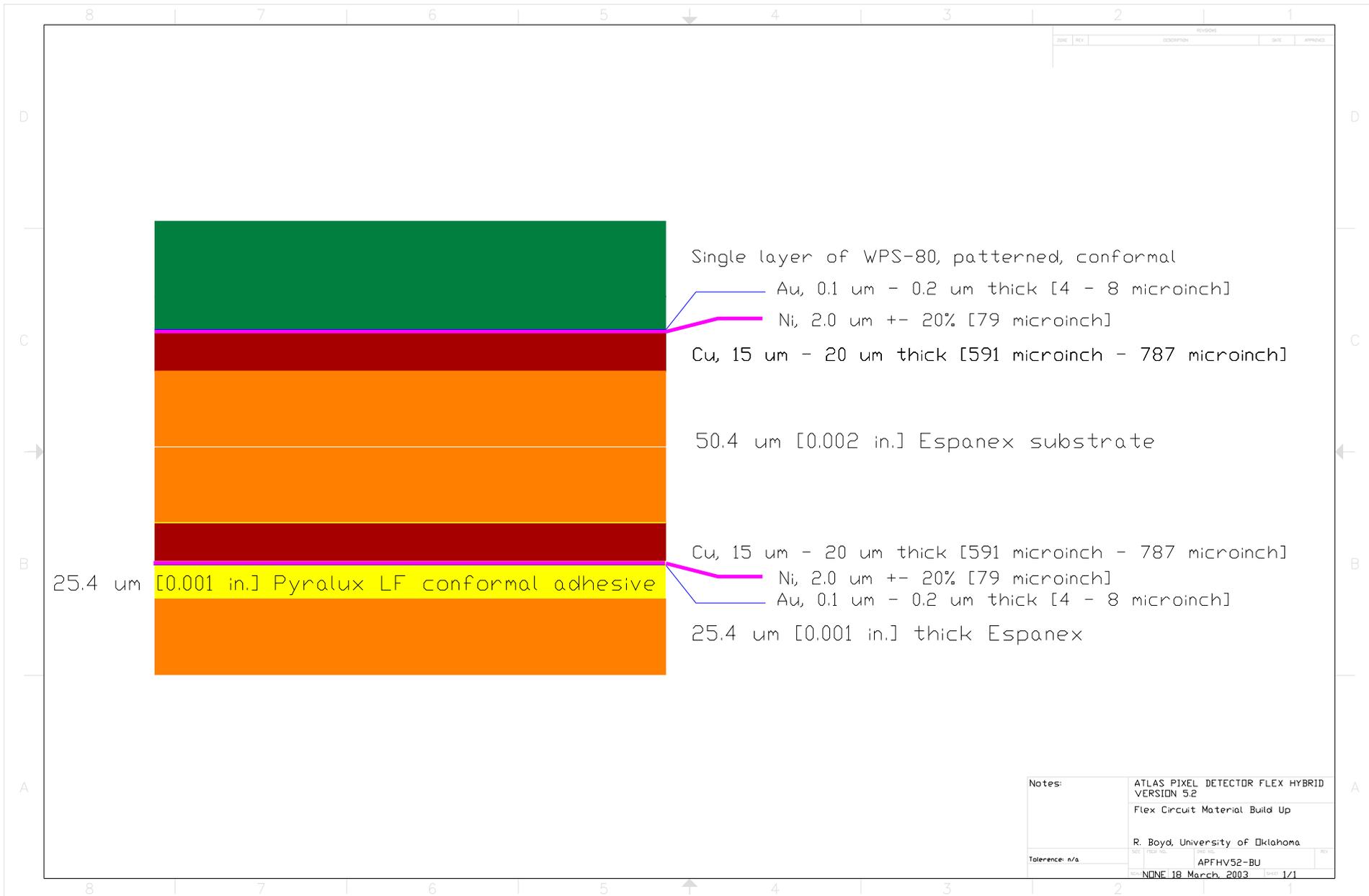
Revision	Details of change	Type of change	Change Date	Release Approved by
0	Intitial release	doc design +	18-Mar-2003	R. Boyd
1	Removed "Slot" option page	doc design +	25-Mar-2003	R. Boyd
1	Added table of contents	doc	14-Apr-2003	R. Boyd
1	Corrected all dimensioned drawings to show notched outline and v5.xH top metal pattern	doc design +	14-Apr-2003	R. Boyd

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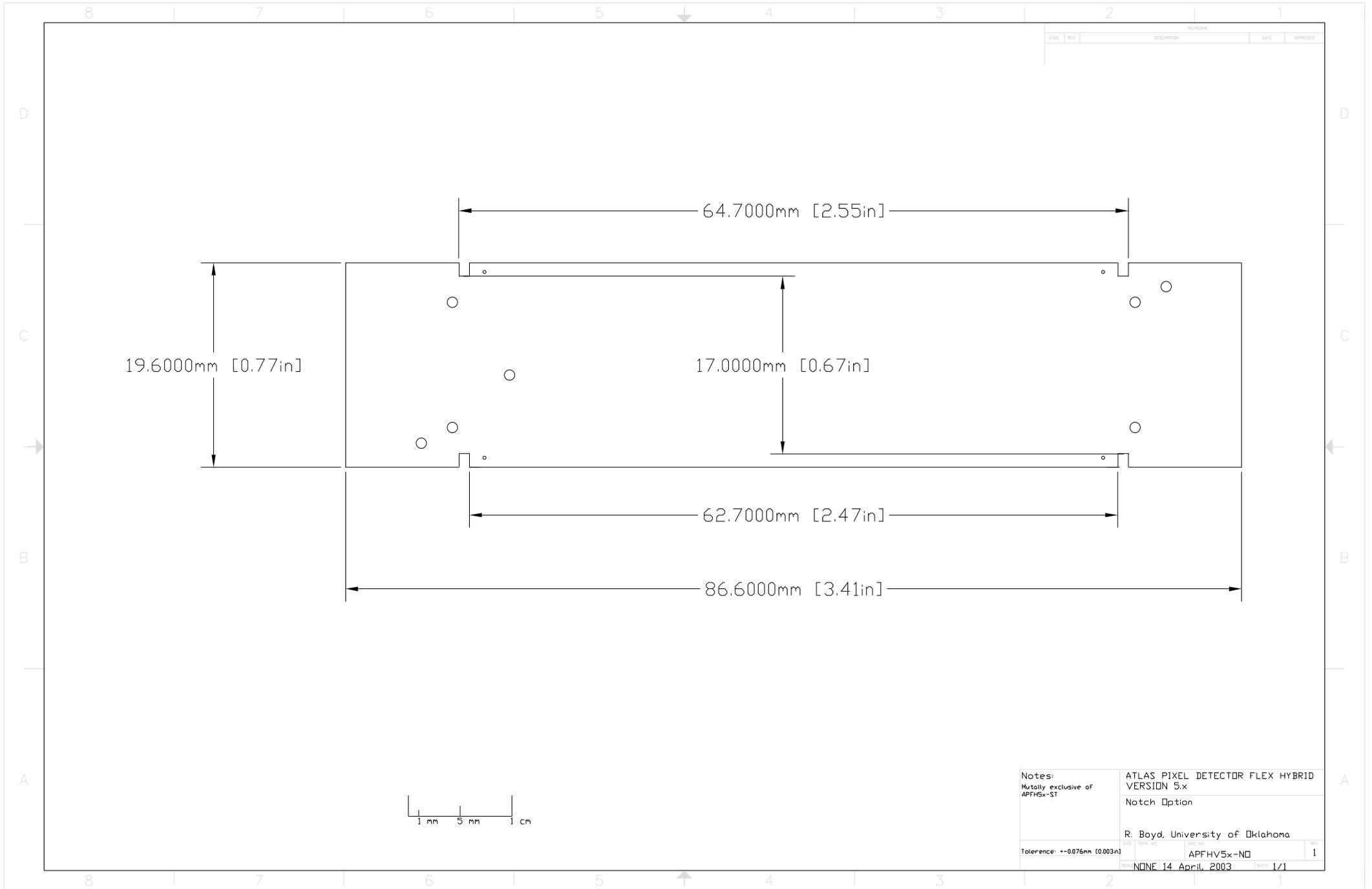
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NOTES

- See notes for each drawing
- Drawing APFH51-BU depicts the flex circuit build up for PO# 801405
- Drawing APFH52-BU depicts the flex circuit build up for PO# 6554-026.
- All drawings printed to pdf at 600 dpi resolution.



Notes:	ATLAS PIXEL DETECTOR FLEX HYBRID VERSION 5.2		
	Flex Circuit Material Build Up		
Tolerance: n/a	R. Boyd, University of Oklahoma		
	APFHV52-BU		
	DATE: 18 March, 2003	REV: 1/1	



ZONE		REV	DESCRIPTION	REVISIONS	DATE	APPROVED

Notes: Mutually exclusive of APFH5x-ST	ATLAS PIXEL DETECTOR FLEX HYBRID VERSION 5.x		
	Notch Option		
	R. Boyd, University of Oklahoma		
Tolerance: +-0.076mm (0.003in)	Part No.	Rev	1
	NONE 14 April, 2003		1/1

8 7 6 5 4 3 2 1

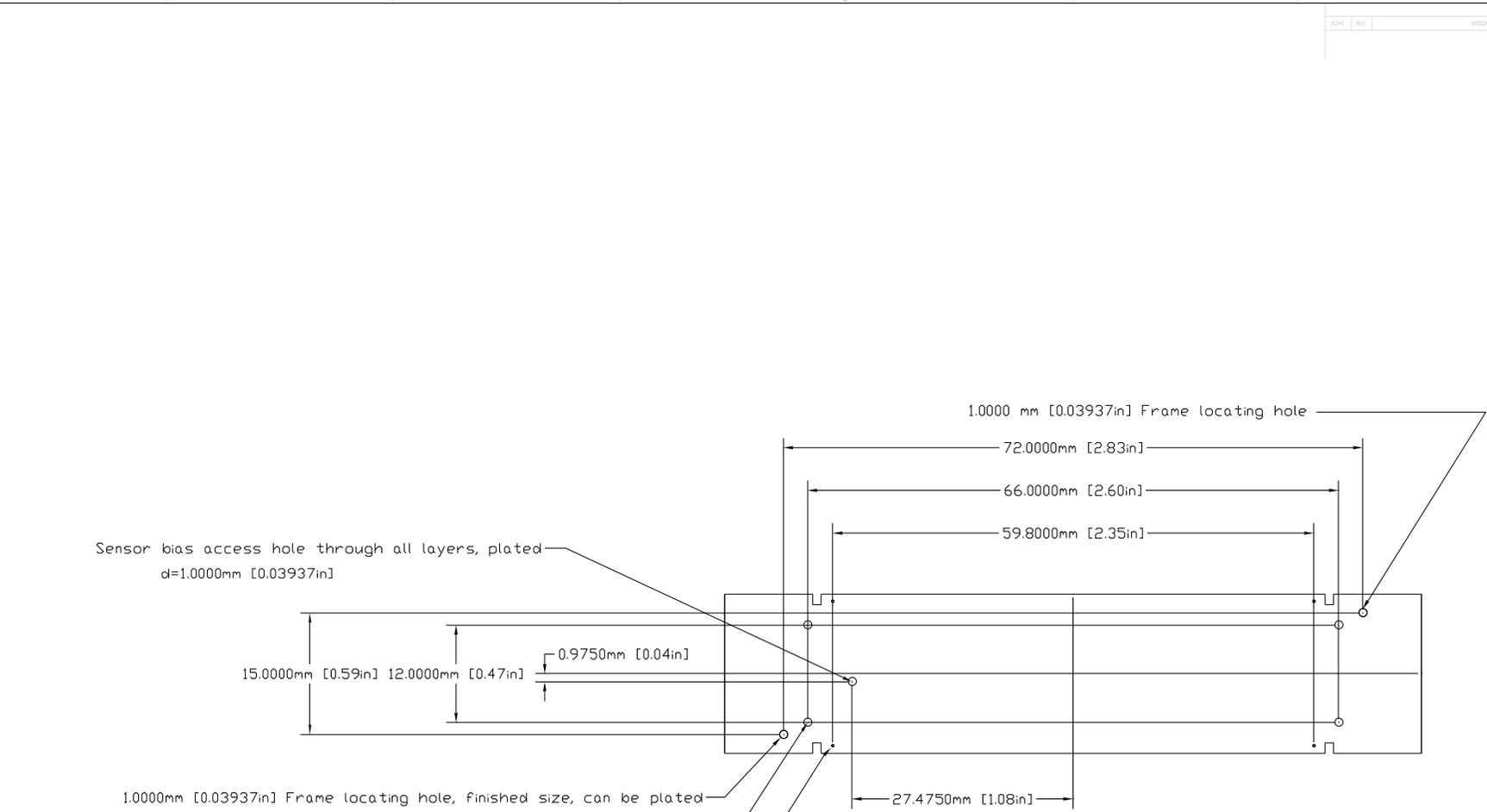
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED

D

C

B

A



Sensor bias access hole through all layers, plated
 $d=1.0000\text{mm}$ [0.03937in]

1.0000 mm [0.03937in] Frame locating hole

15.0000mm [0.59in] 12.0000mm [0.47in] 0.9750mm [0.04in]

72.0000mm [2.83in]

66.0000mm [2.60in]

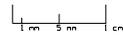
59.8000mm [2.35in]

1.0000mm [0.03937in] Frame locating hole, finished size, can be plated

1.000mm [0.03934in.] electrical test adaptor alignment, finished size, can be plated

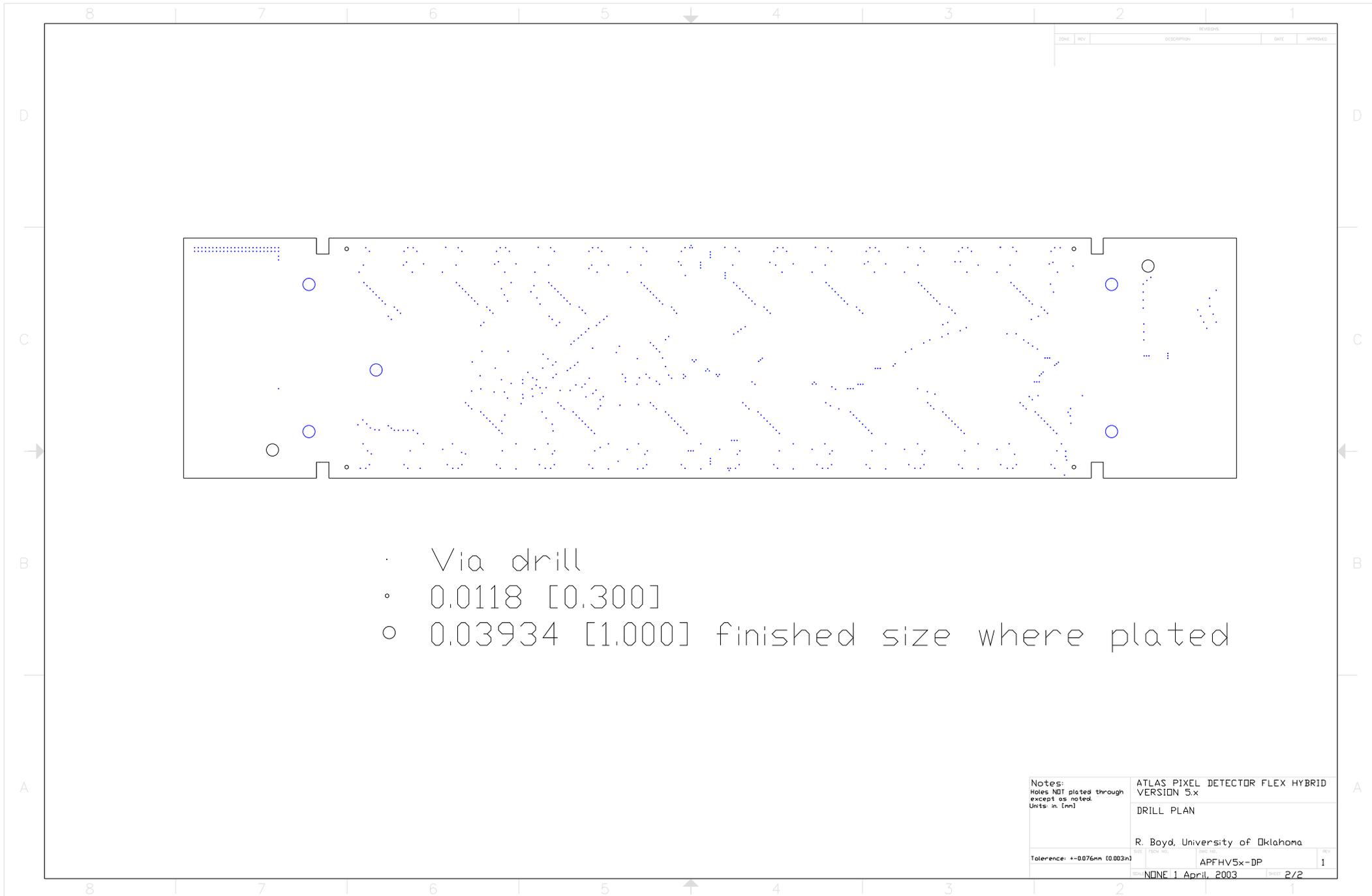
Alignment mark view holes in each corner through all layers
 $d=0.3000\text{mm}$ [0.01181in]

27.4750mm [1.08in]



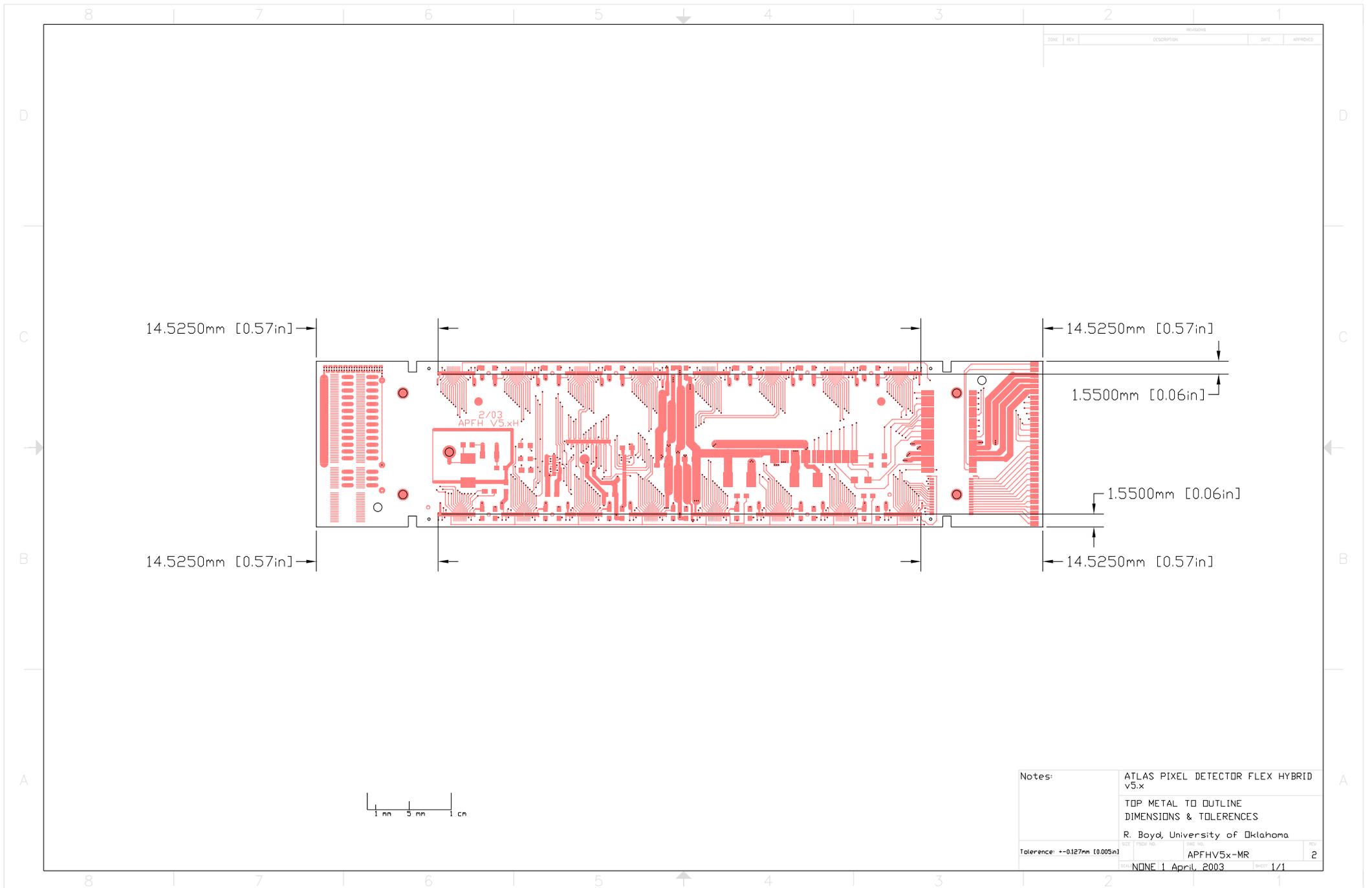
Notes: Holes NOT plated through except as noted.	ATLAS PIXEL DETECTOR FLEX HYBRID VERSION 5.x		
	DRILL PLAN		
Tolerance: $\pm 0.076\text{mm}$ (0.003in)	R. Boyd, University of Oklahoma		REV
	APFHV5x-DP		1
DATE: NONE 12 April, 2003		SHEET: 1/2	

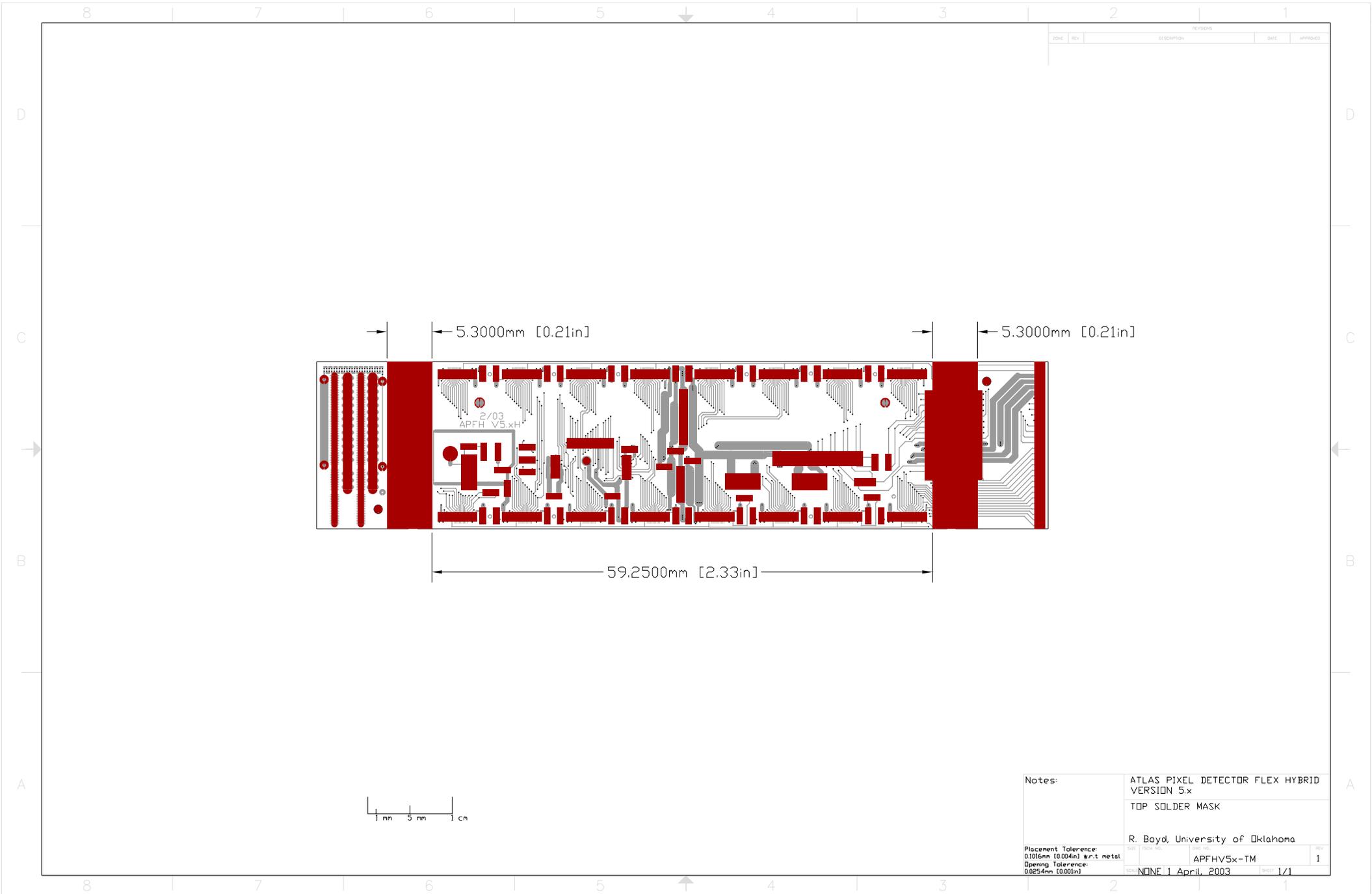
8 7 6 5 4 3 2 1



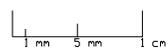
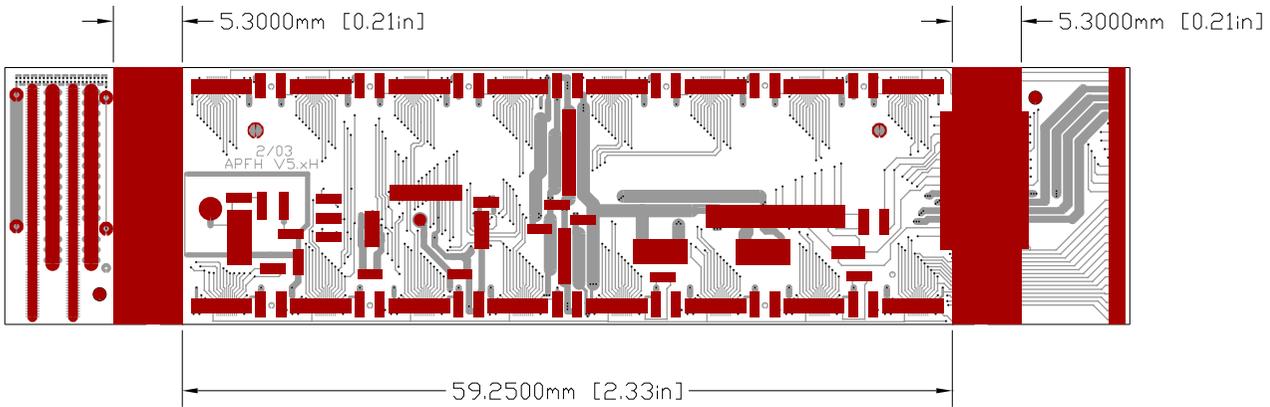
- Via drill
- 0.0118 [0.300]
- 0.03934 [1.000] finished size where plated

Notes: Holes NOT plated through except as noted. Units: in [mm]	ATLAS PIXEL DETECTOR FLEX HYBRID VERSION 5.x		
	DRILL PLAN		
Tolerance: $\pm 0.076\text{mm}$ [0.003in]	R. Boyd, University of Oklahoma		REV
	APFHV5x-DP		1
NONE 1 April, 2003		DATE	2/2

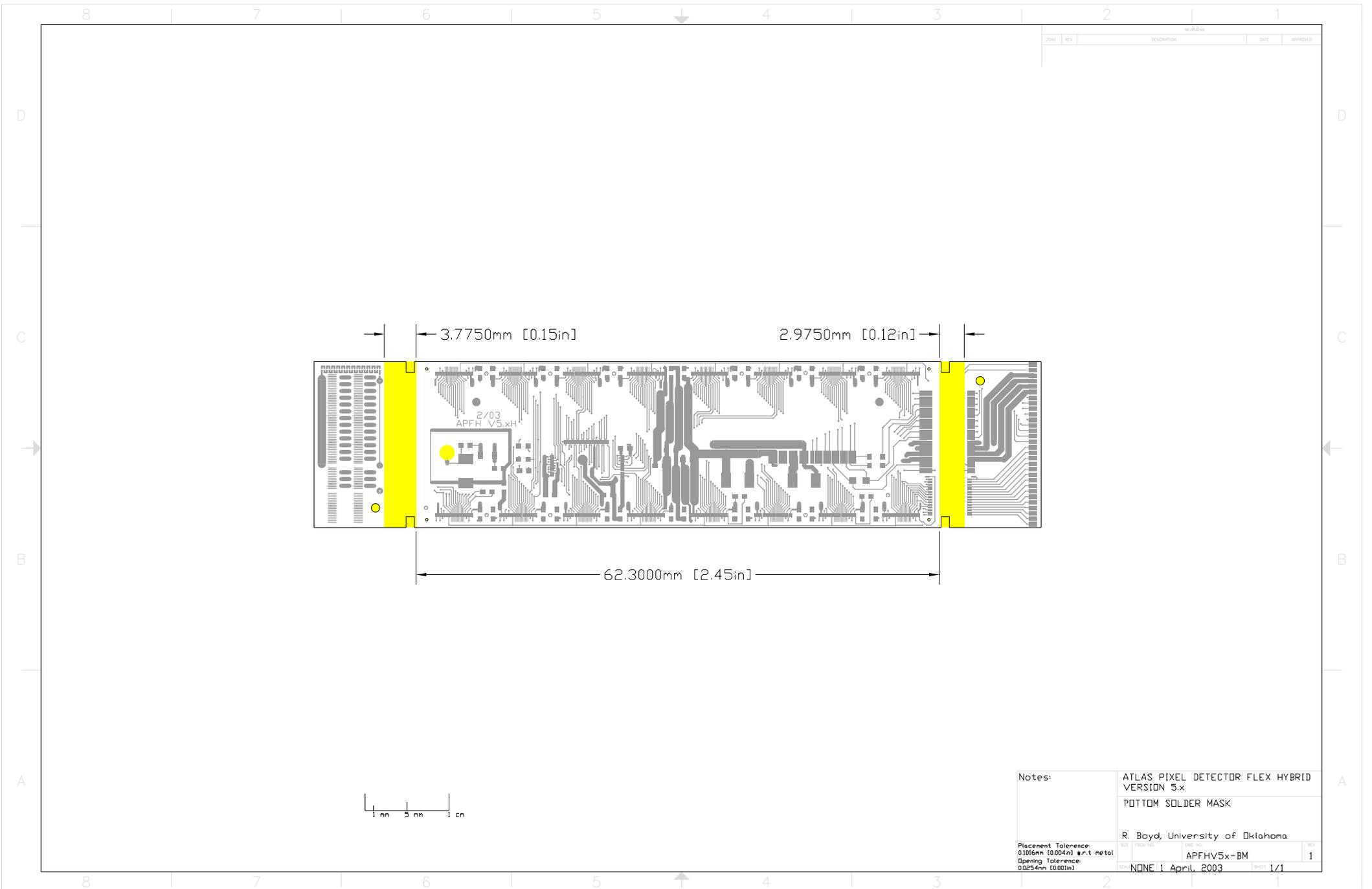




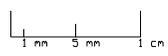
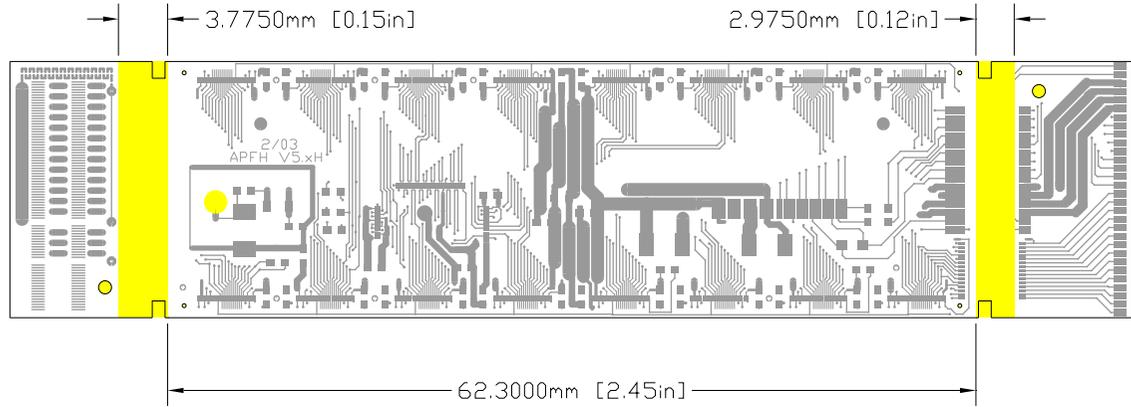
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Notes:	ATLAS PIXEL DETECTOR FLEX HYBRID VERSION 5.x		
	TOP SOLDER MASK		
Placement Tolerance: 0.1016mm [0.004in] w.r.t metal	R. Boyd, University of Oklahoma		REV
	APFHV5x-TM		1
Opening Tolerance: 0.0254mm [0.001in]	NONE 1 April, 2003		SHEET 1/1

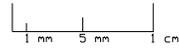
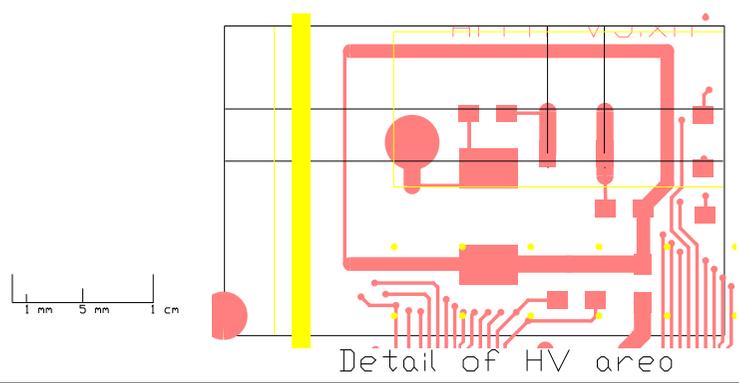
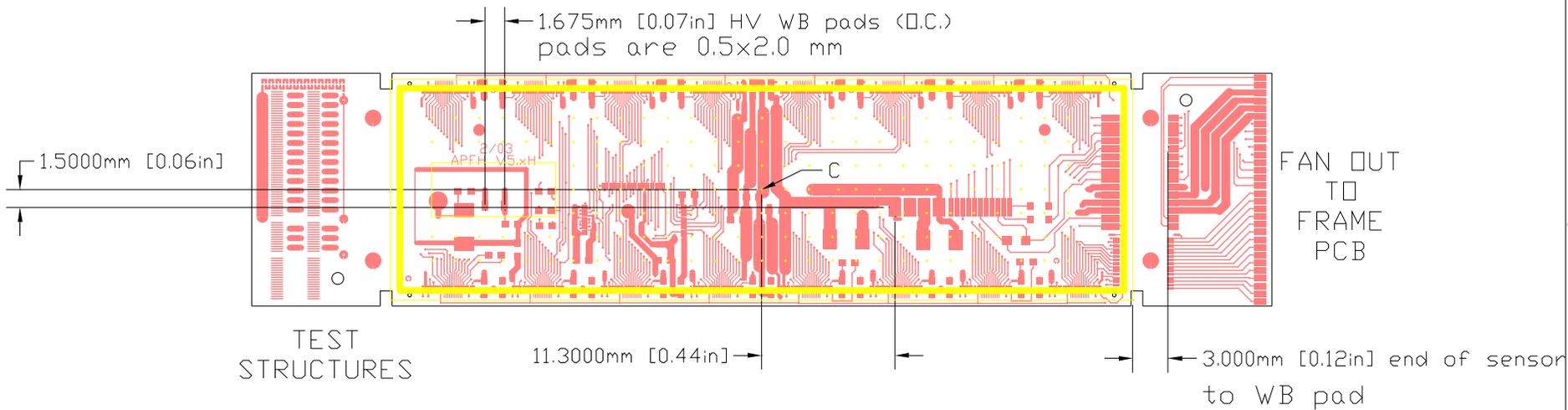


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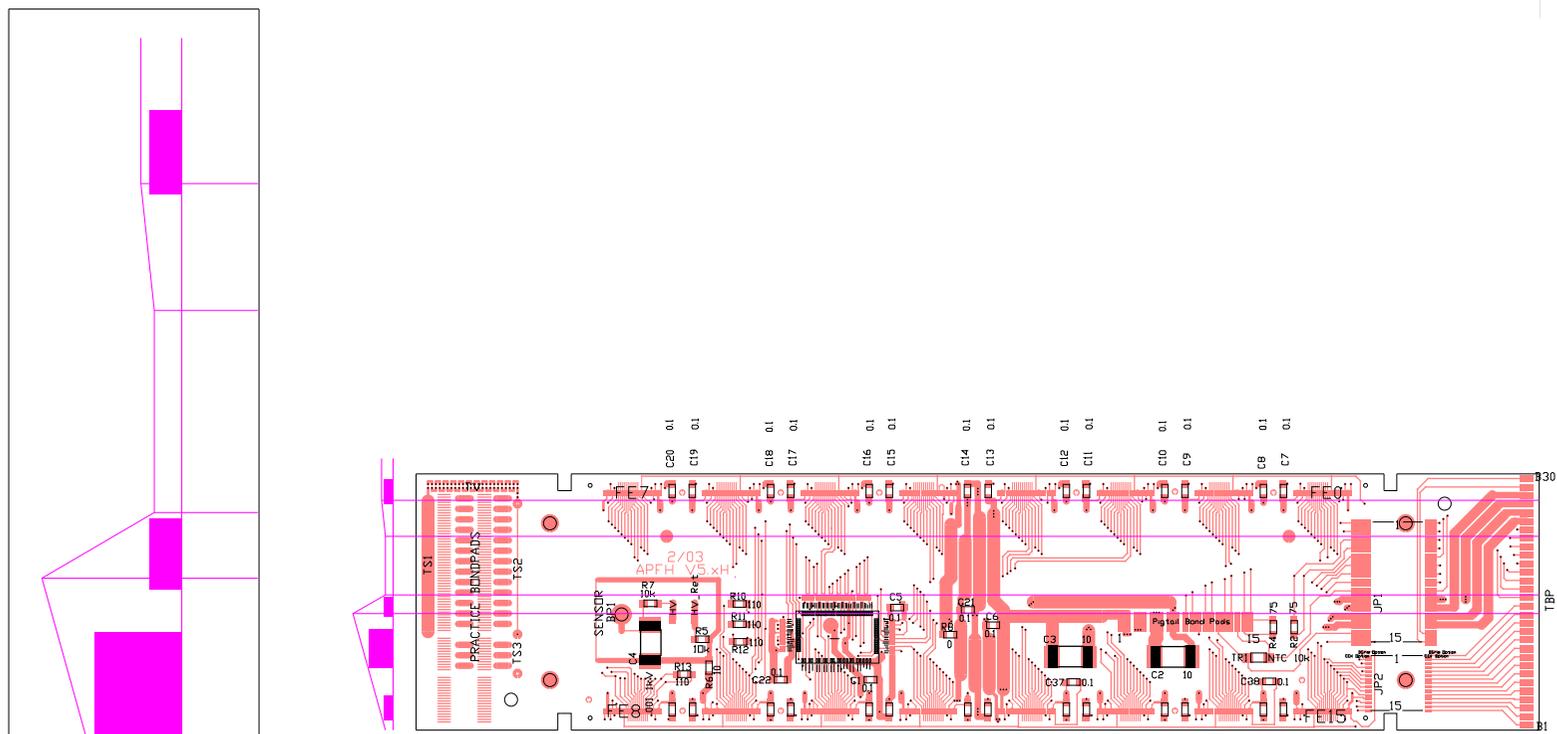
Notes:	ATLAS PIXEL DETECTOR FLEX HYBRID VERSION 5.x		
	POTDM SOLDER MASK		
	R. Boyd, University of Oklahoma		
Placement Tolerance: 0.10mm [0.004in] ±0.1 metal	DATE	PLACED BY	REV
Opening Tolerance: 0.0254mm [0.001in]	DATE	APPROVED	REV
	NONE	1 April, 2003	1/1
			1

REVISES				
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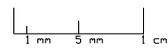


Notes: See following sheets for board pad dimensions Sensor tile & guard ring shown in yellow	ATLAS PIXEL DETECTOR FLEX HYBRID VERSION 5.x	REV
	TOP METAL FEATURES	2
Tolerance: no via breakout	R. Boyd, University of Oklahoma APFHV5x-TF	DATE
	NONE 1 April, 2003	1/1

REVISIONS				
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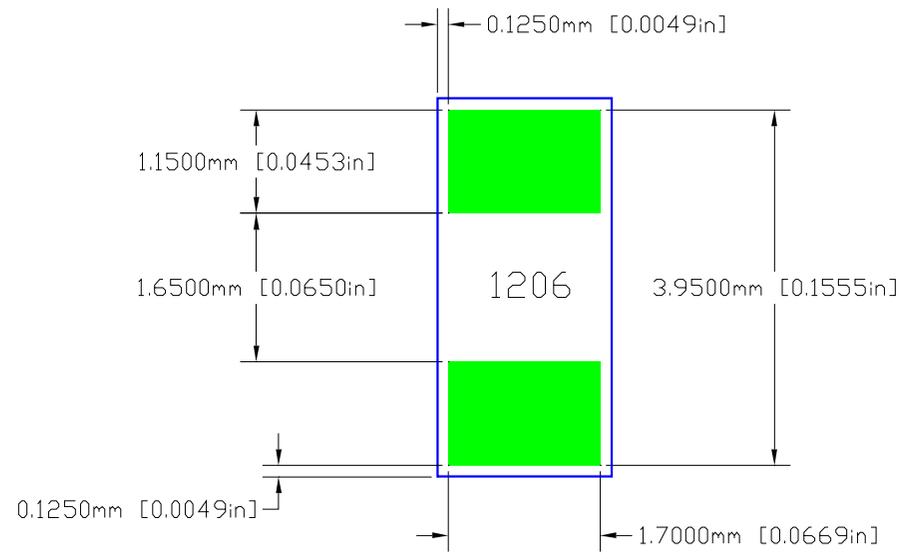


Detail of projection
of component heights
+ tolerances onto
minimum envelope (1)



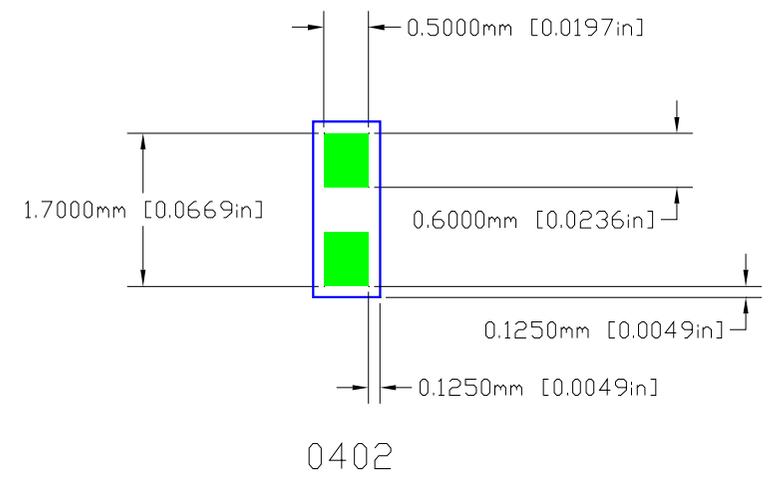
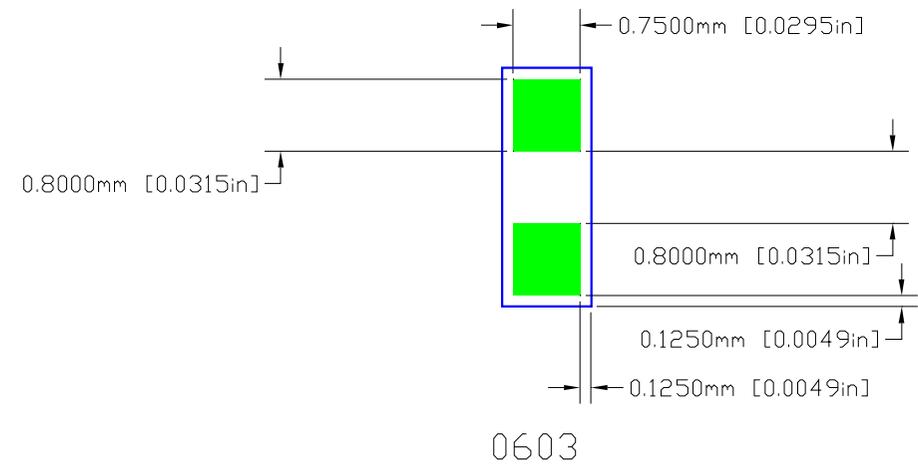
Notes: 1. Component tolerances include: component height soldering height component placement See schematic for component specifications & other assembly notes	ATLAS PIXEL DETECTOR FLEX HYBRID VERSION 5.x		
	ASSEMBLY DRAWING		
Tolerance: n/a	R. Boyd, University of Oklahoma		
	APFHV5x-AD		1
	REV: NONE	DATE: 3 April, 2003	REV: 1/1

ZONE		REV	DESCRIPTION	DATE	APPROVED

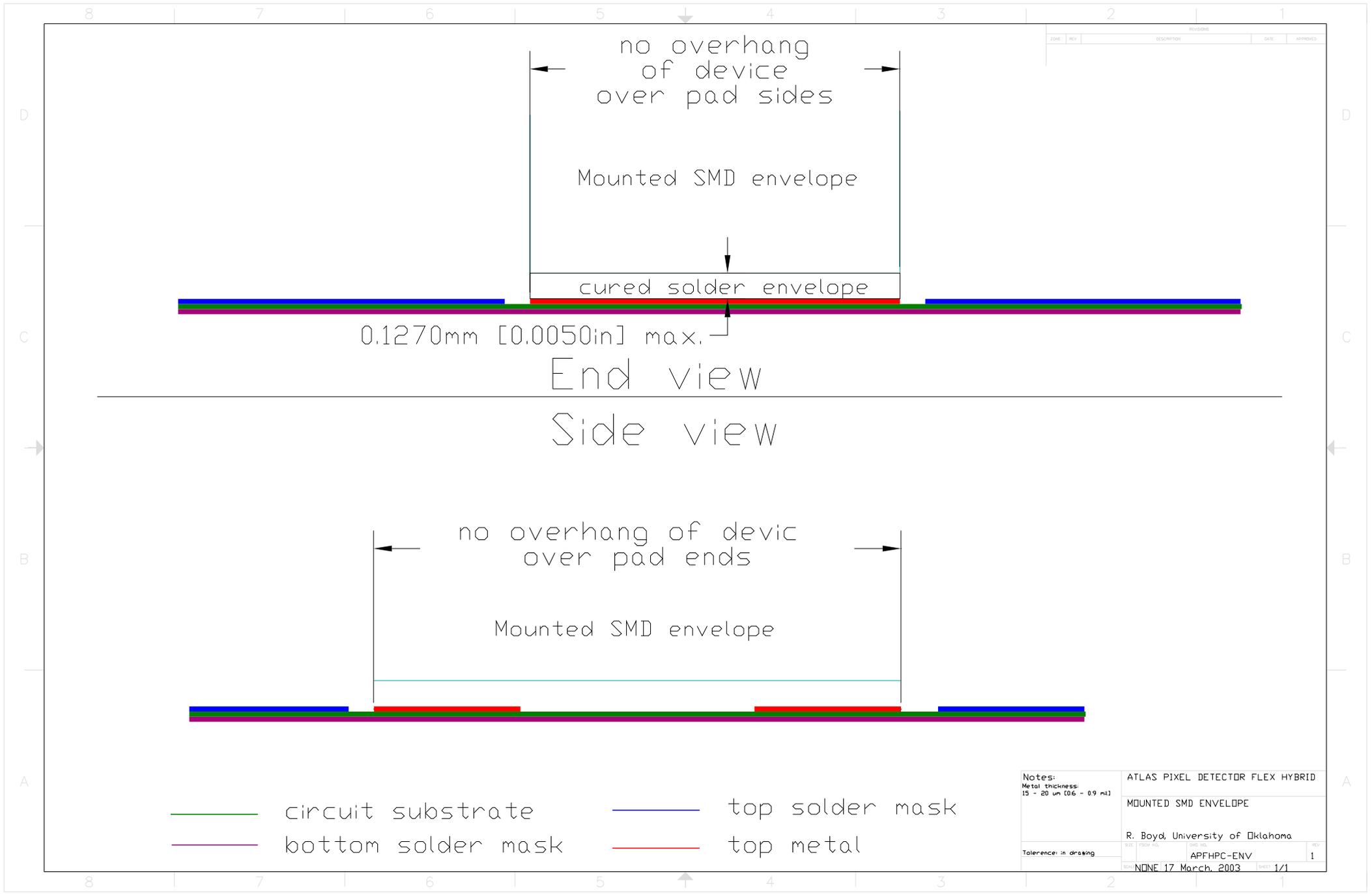


— solder mask opening

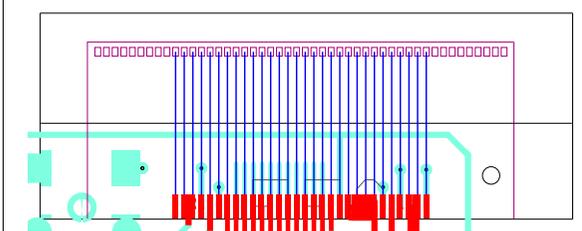
— top metal



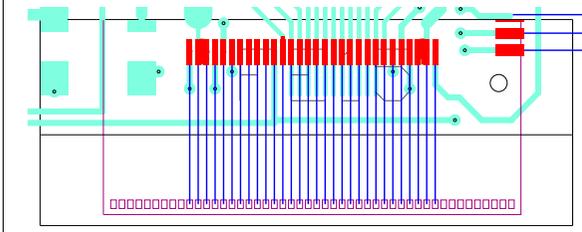
Notes:	ATLAS PIXEL DETECTOR FLEX HYBRID V5.x
Tolerances:	SMD PAD AND SOLDER MASK OPENING SIZES
solder mask w.r.t. metal	R. Boyd, University of Oklahoma
-- 0.127mm [5 mil]	DATE: 17 March, 2003
metal x-y dim	ISSUE NO: 0
-- 20%	REV: 0
Tolerance: see notes	APFH5x-SMD
	DATE: 17 March, 2003
	ISSUE: 1/1



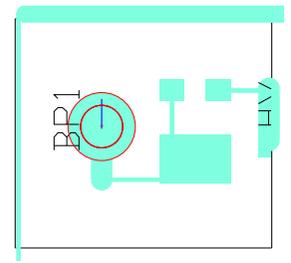
REV		DESCRIPTION	DATE	APPROVED



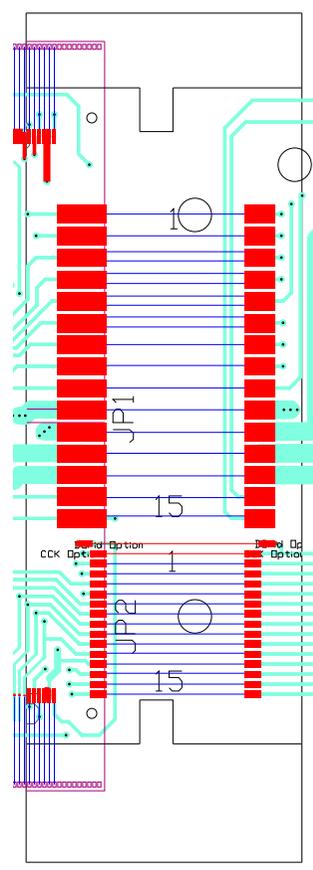
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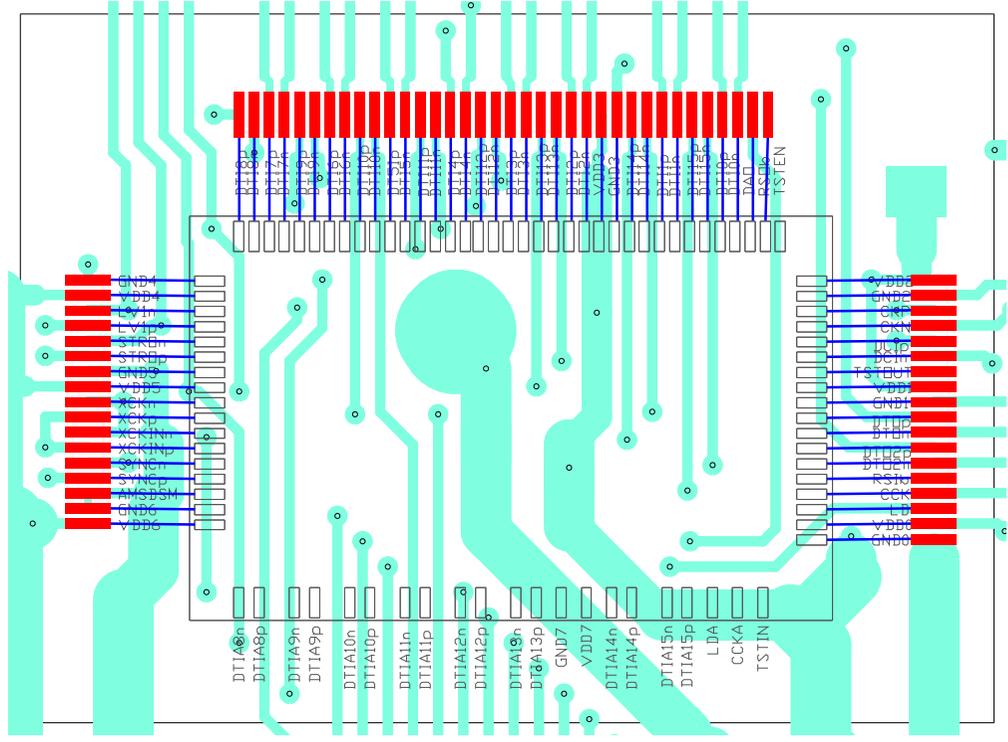
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Sensor HV



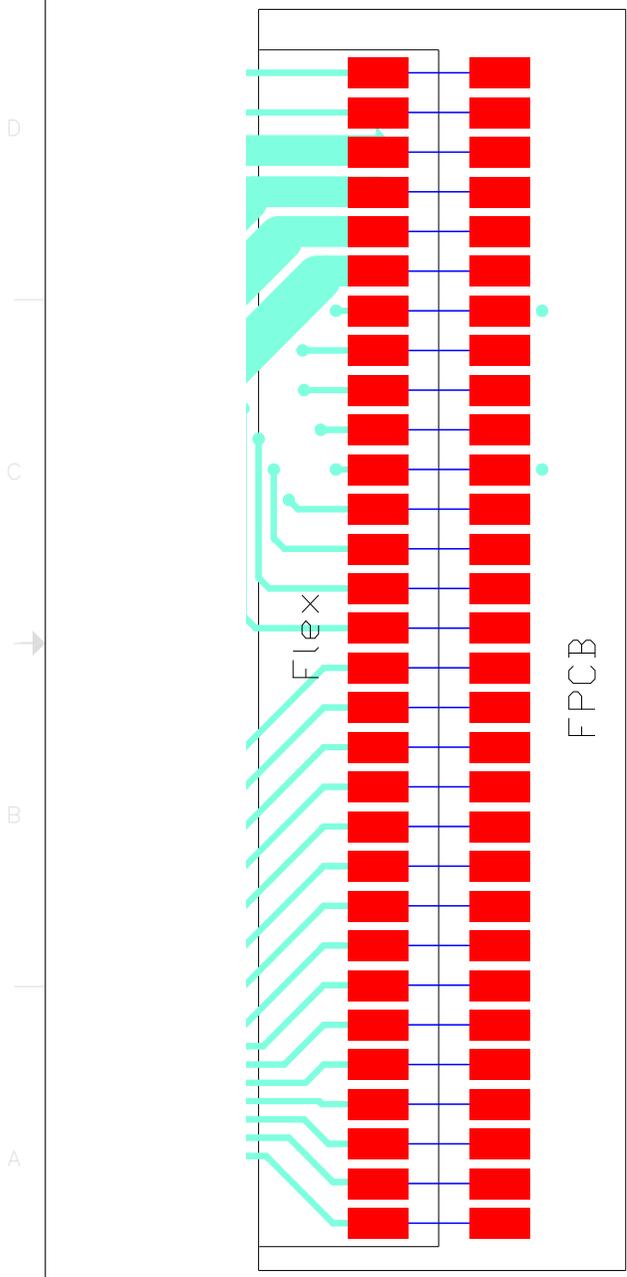
GAP



MCC

Notes: <ul style="list-style-type: none"> — Wire bond — Mutually exclusive wire bonds Wire sizes specified elsewhere Tolerance: n/a	ATLAS PIXEL DETECTOR FLEX HYBRID VERSION 5.x	REV	1
	WIRE BONDING DIAGRAM	DATE	17 March, 2003
	R. Boyd, University of Oklahoma	APPHV5x-WB	1
		1/2	

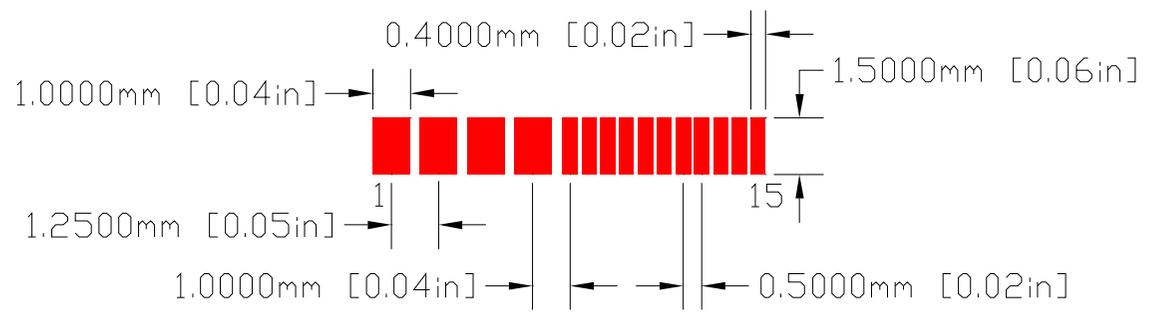
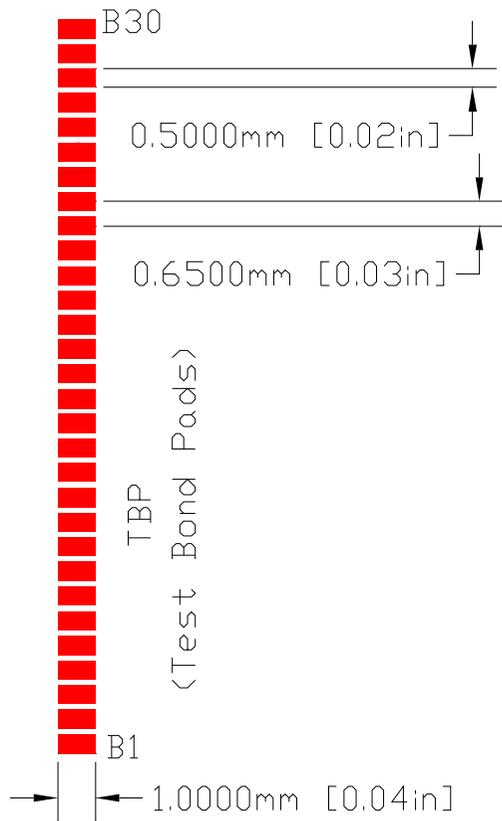
ZONE		REV	DESCRIPTION	DATE	APPROVED



Test wire bonds from flex to FPCB

Notes:		ATLAS PIXEL DETECTOR FLEX HYBRID	
— Wire bond		VERSION 5x	
Wire sizes specified elsewhere		WIRE BONDING DIAGRAM	
Tolerance: n/a		R. Boyd, University of Oklahoma	
DATE	REV	DATE	REV
NONE	17	March, 2003	SHEET 2/2

ZONE		REV	DESCRIPTION	DATE	APPROVED



Pigtail Bond Pads

Notes:	ATLAS PIXEL DETECTOR FLEX HYBRID v3.x		
	Flex Hybrid Module I/O		
Tolerance: +- 20%	R. Boyd, University of Oklahoma		
	DATE	ISSUE NO.	REV
	2003-03-18	APFHV5x-10	0
NONE		18 March, 2003	SHEET 1/1

V5.x Pigtail Connector Signals

Bond Pad #	Signal Name
1	VDDA
2	AGnd
3	VDD
4	DGnd
5	DTO2N
6	DTO2P
7	VCa1
8	DTON
9	DTOP
10	NTC_RET
11	DCIN
12	DCIP
13	NTC
14	CKN
15	CKP

ATLAS PIXEL FLEX HYBRID MODULE PIGTAIL CONNECTOR SIGNAL ASSIGNMENTS		
University of Oklahoma	Scale:	n/a
Dwg.# PTS	Rev.	Units: n/a
Drawn By: R. Boyd	Date:	18 February, 2003

University of Oklahoma	Scale:	n/a
Dwg.# PTS	Rev.	Units: n/a
Drawn By: R. Boyd	Date:	18 February, 2003

V5.x Test Connector Signals

Pad # Module I/O

1 Vcal
 2 NTC_Ret
 3 DGnd
 4 VDD
 5 AGnd
 6 VDDA
 7 NTC
 8 DTOP
 9 DTON
 10 DTO2P
 11 DTO2N
 12 DCIN
 13 DCIP
 14 CKN
 15 CKP

Pad # Monitor Signal

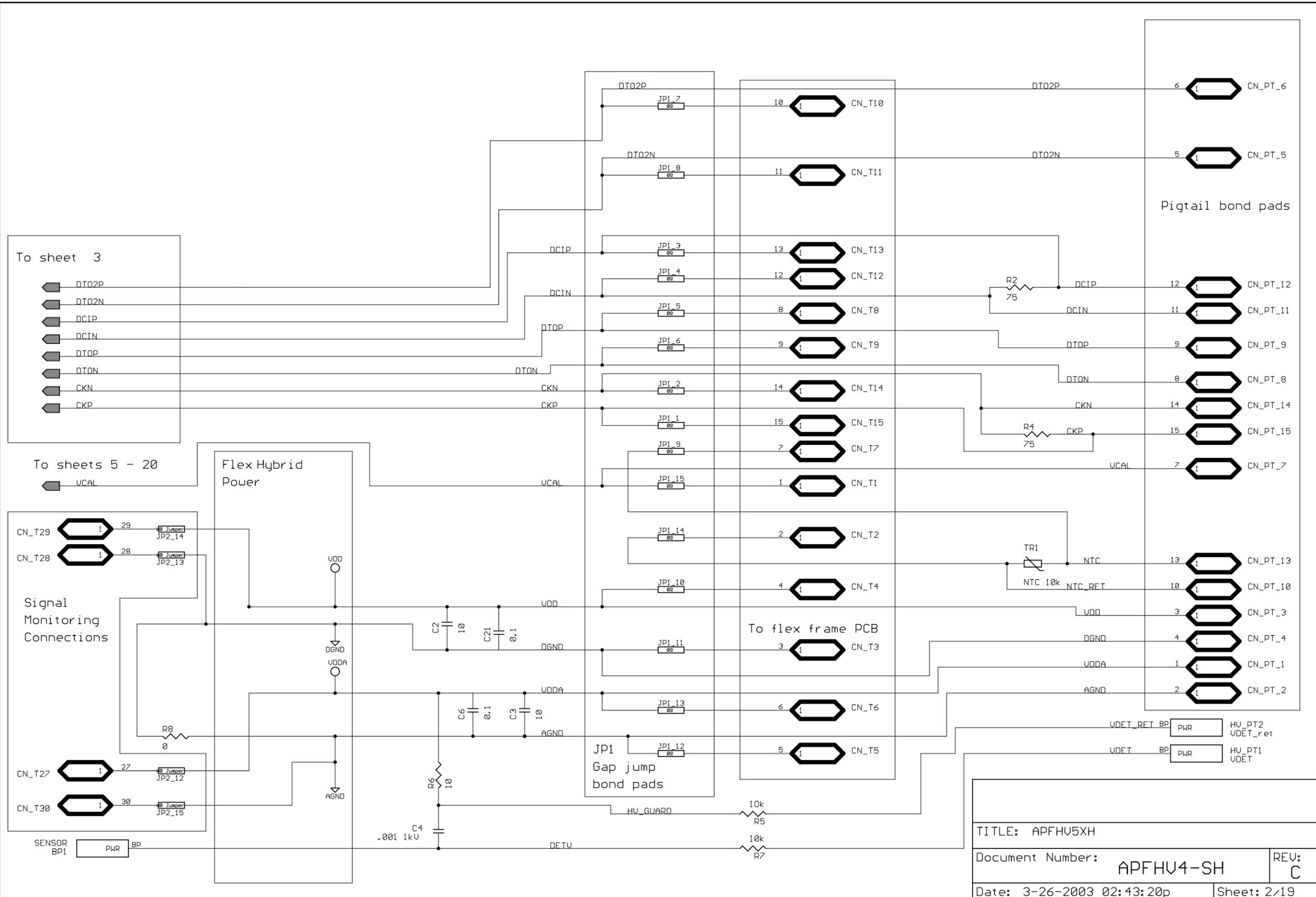
16a DGrid, FE 15
 16b CCK
 17 DAO
 18 LD
 19 SYNCN
 20 SYNCNCP
 21 XCKN
 22 XCKP
 23 LV1N
 24 LV1P
 25 STRN
 26 STRP
 27 VDDA
 28 DGnd
 29 VDD
 30 AGnd

Wire bond either 16a or 16 b, not both

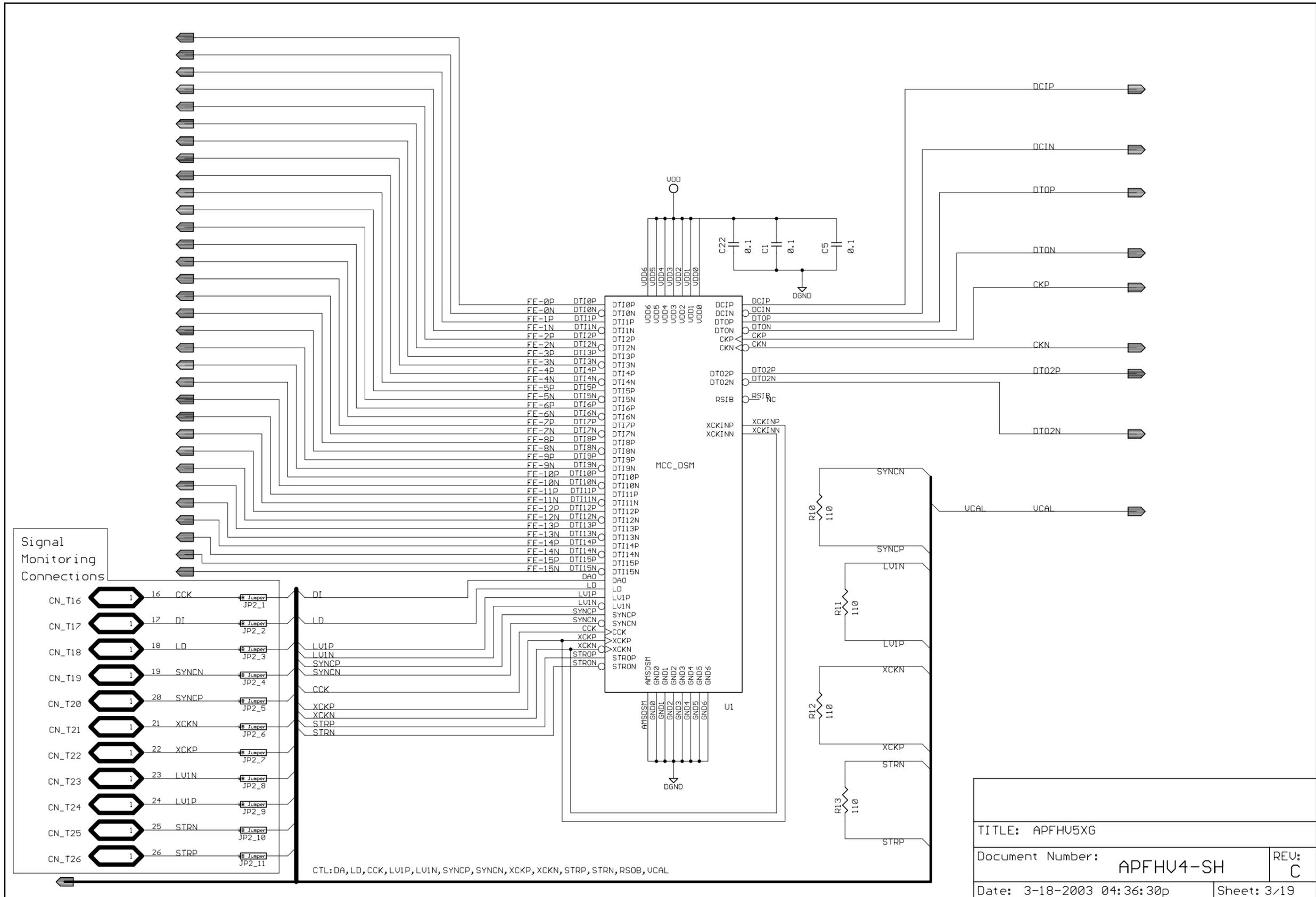
Wire bond either 16a or 16 b, not both

ATLAS PIXEL FLEX HYBRID MODULE TEST CONNECTOR SIGNAL ASSIGNMENTS

University of Oklahoma		Scale: n/a	
Dwg.# TCS	Rev. 1	Units: n/a	
Drawn By:	R. Boyd	Date:	9 April, 2003



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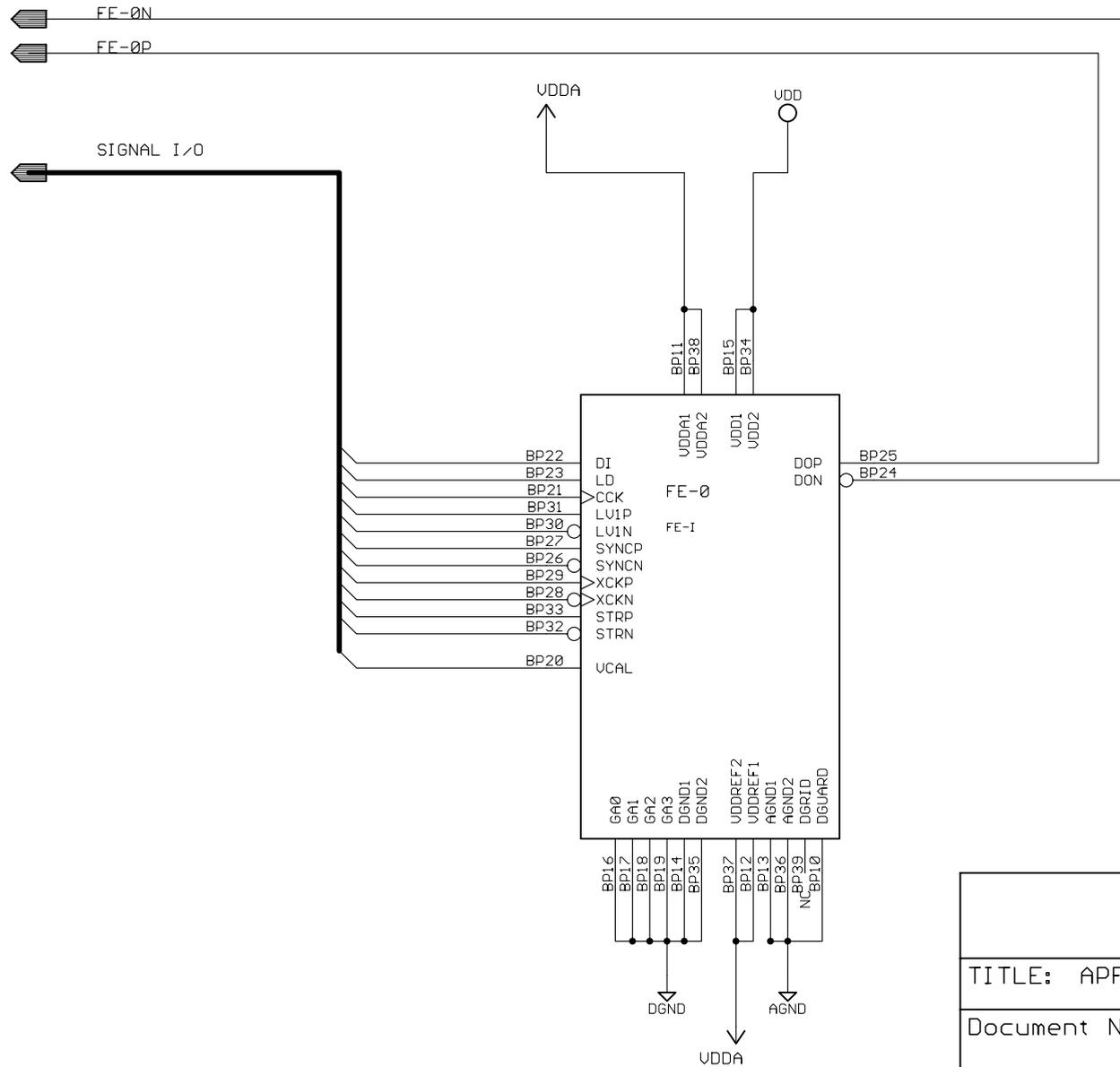
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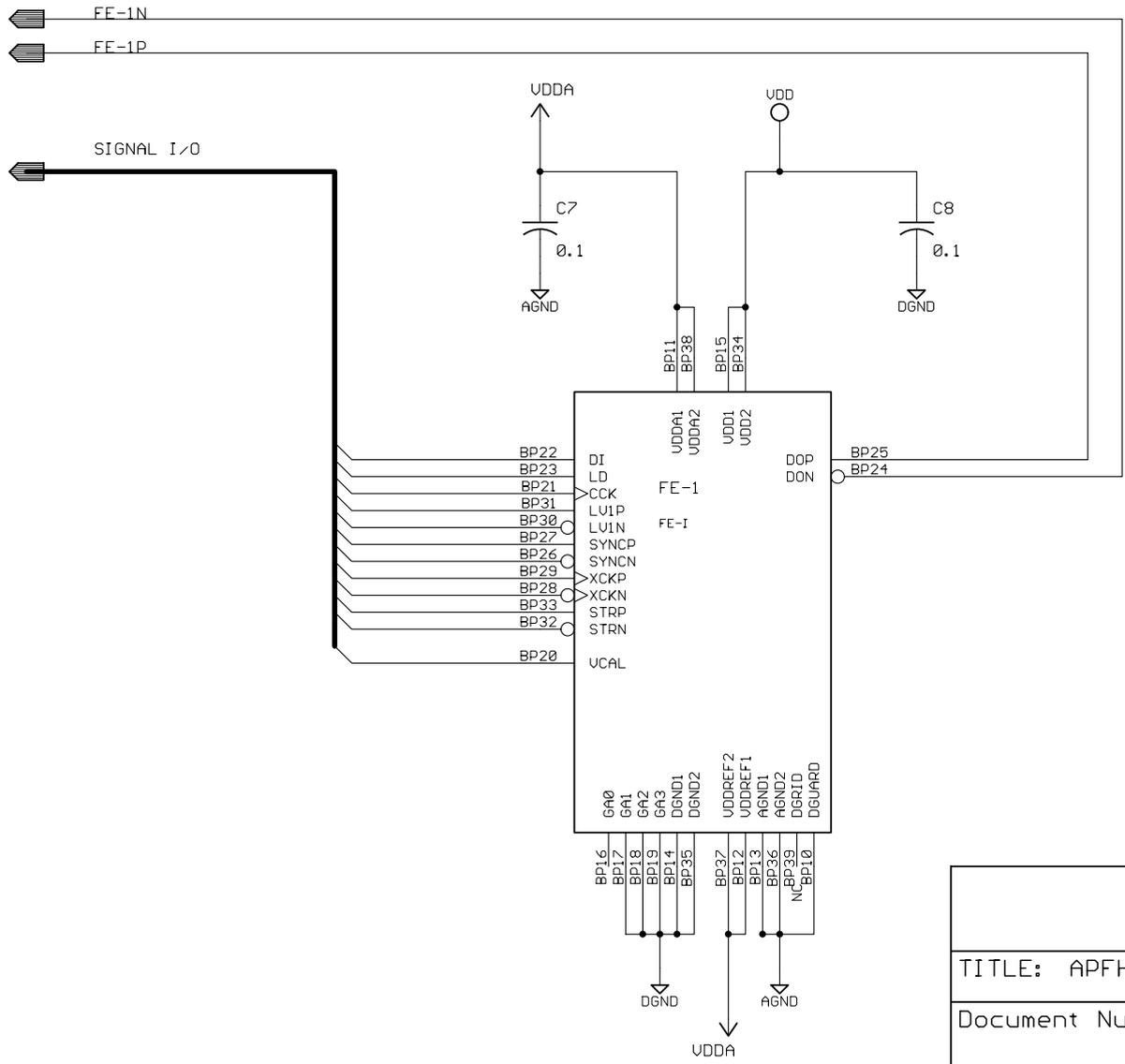
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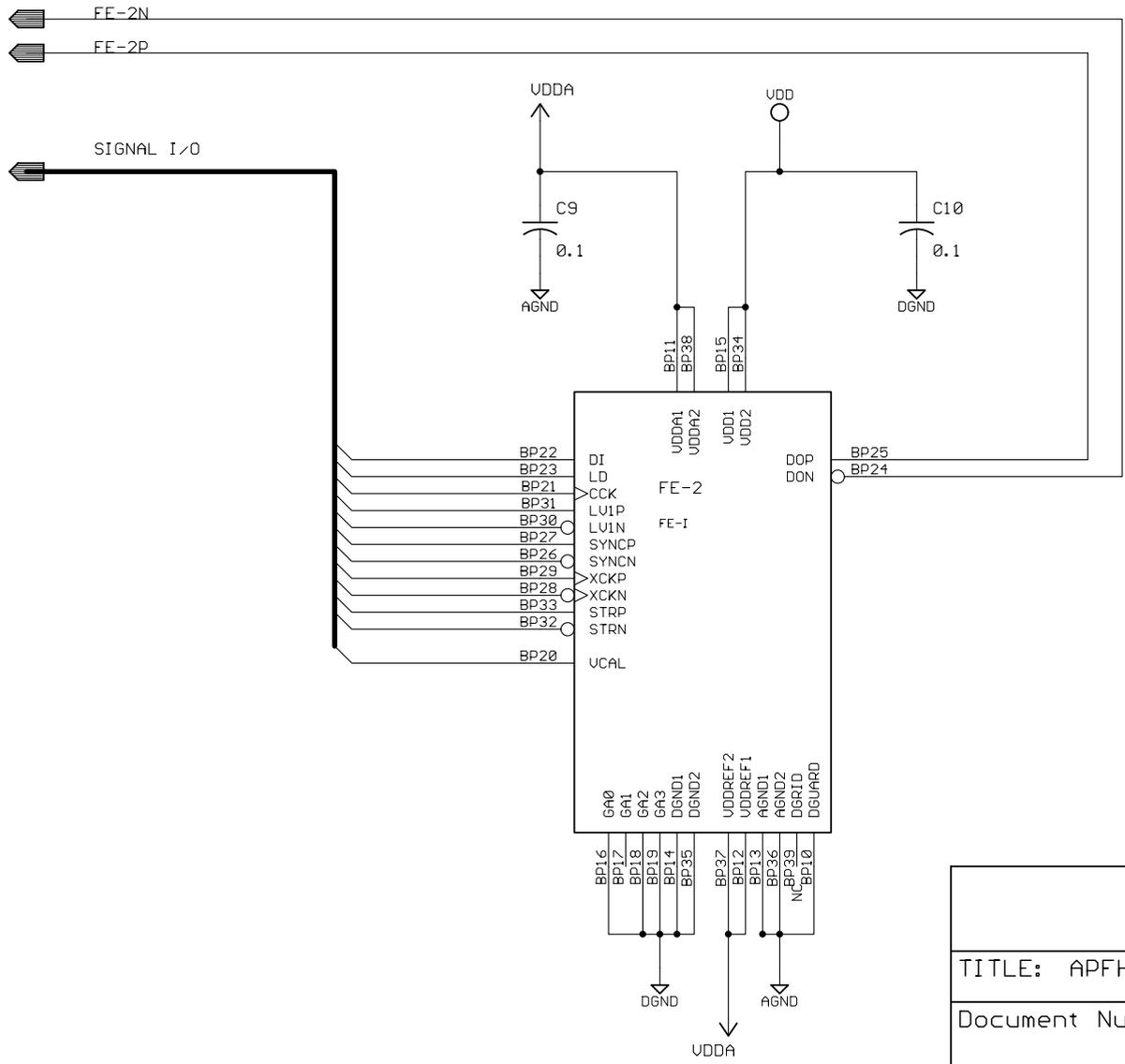
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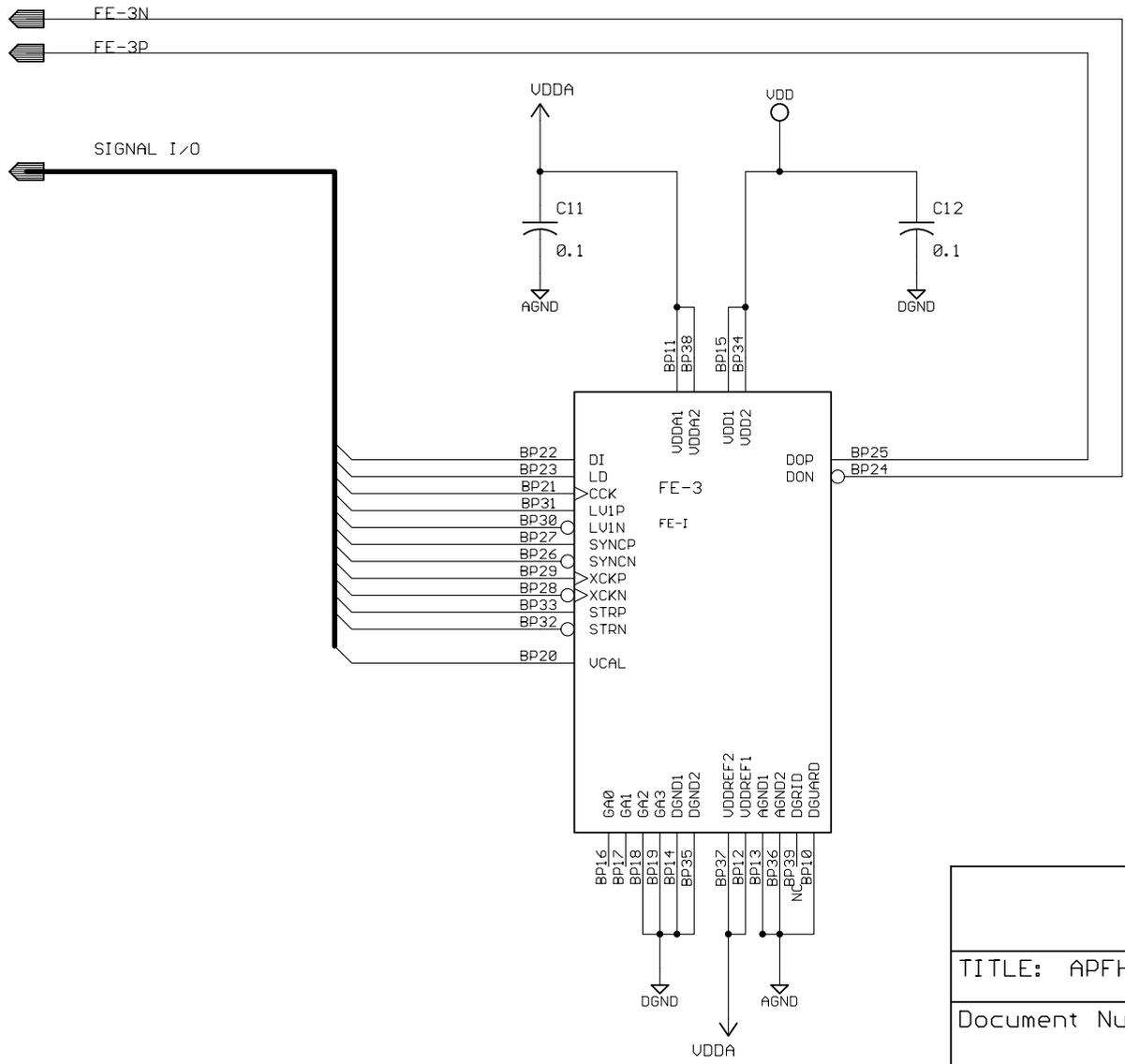
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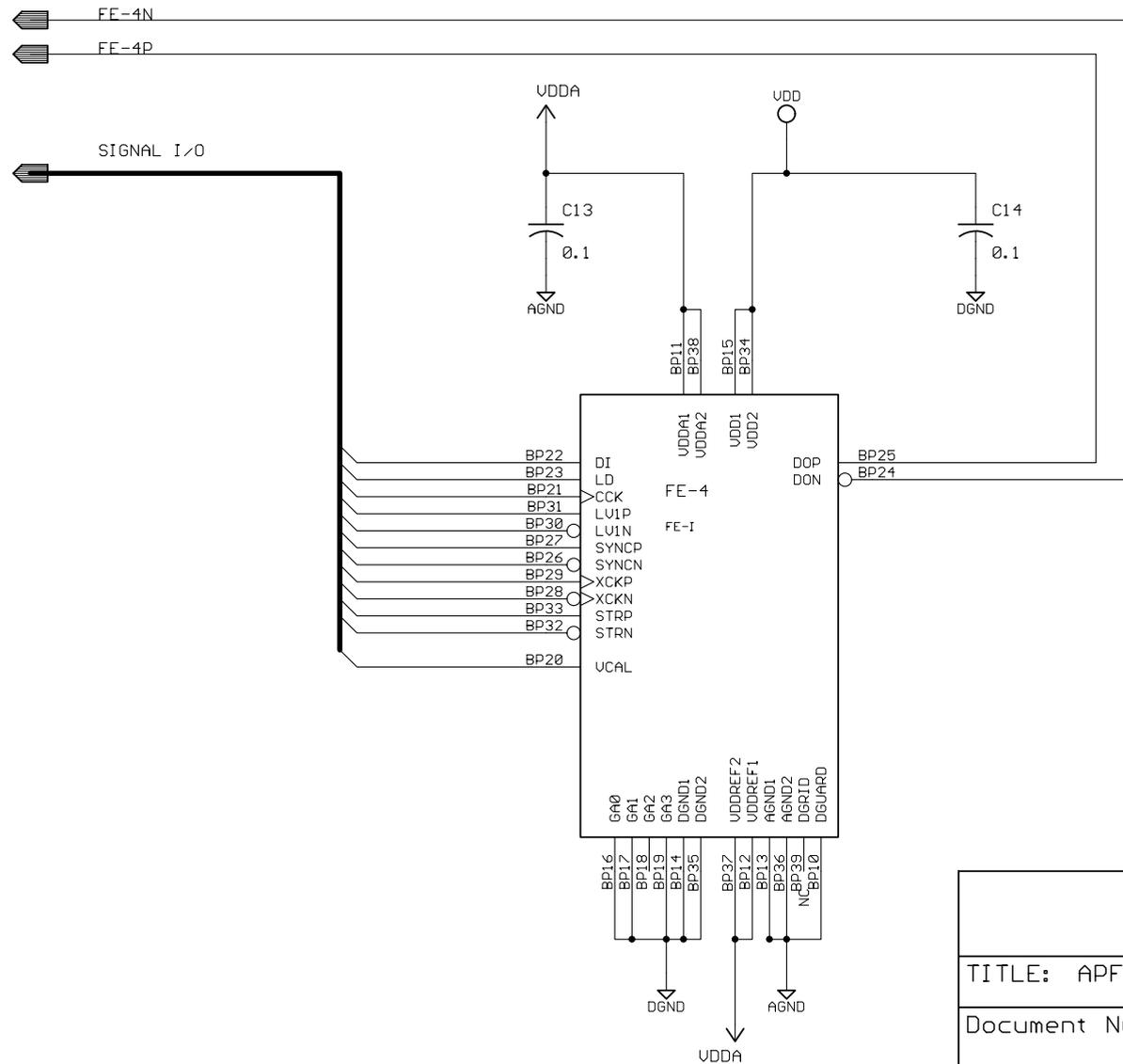
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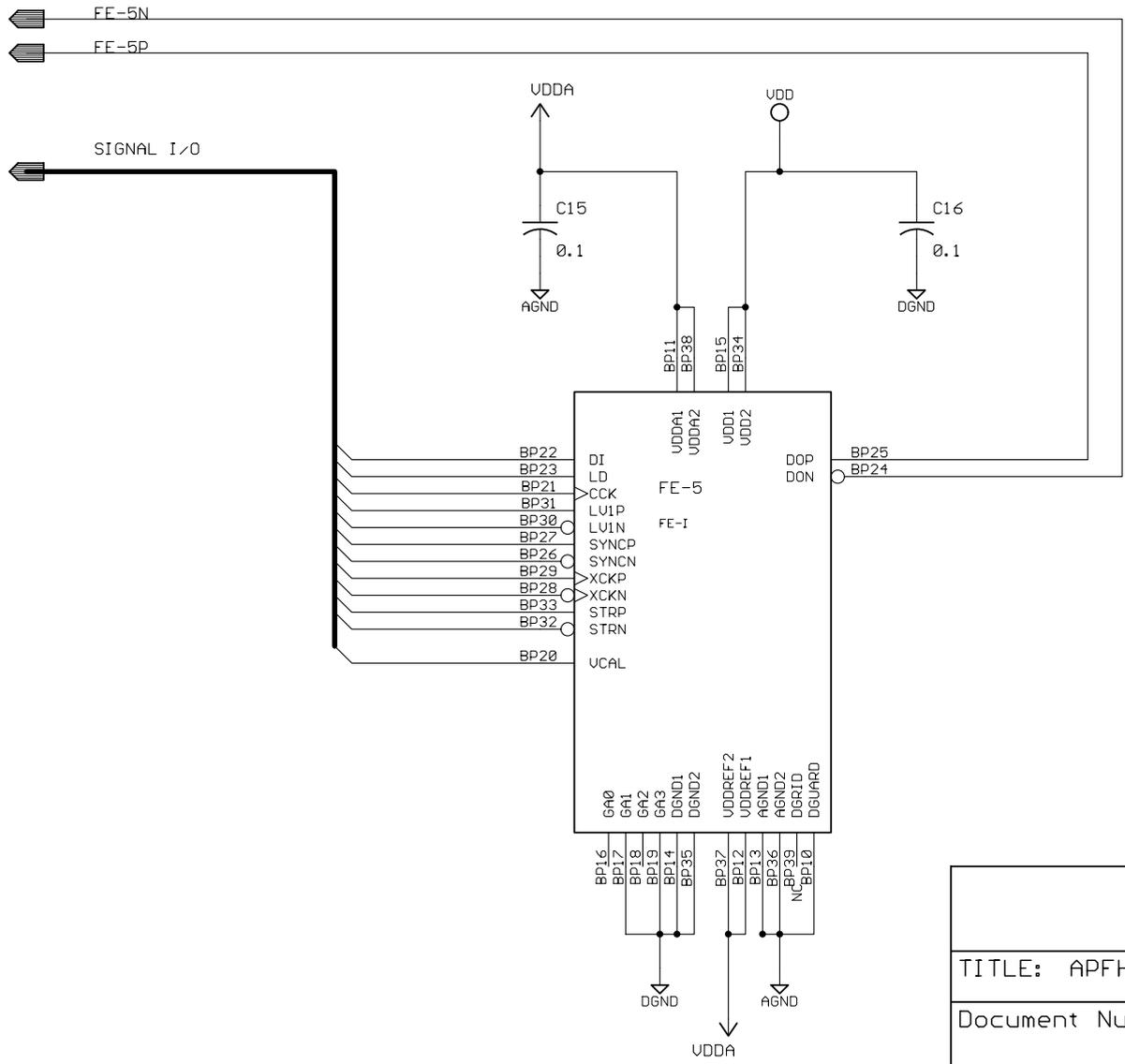
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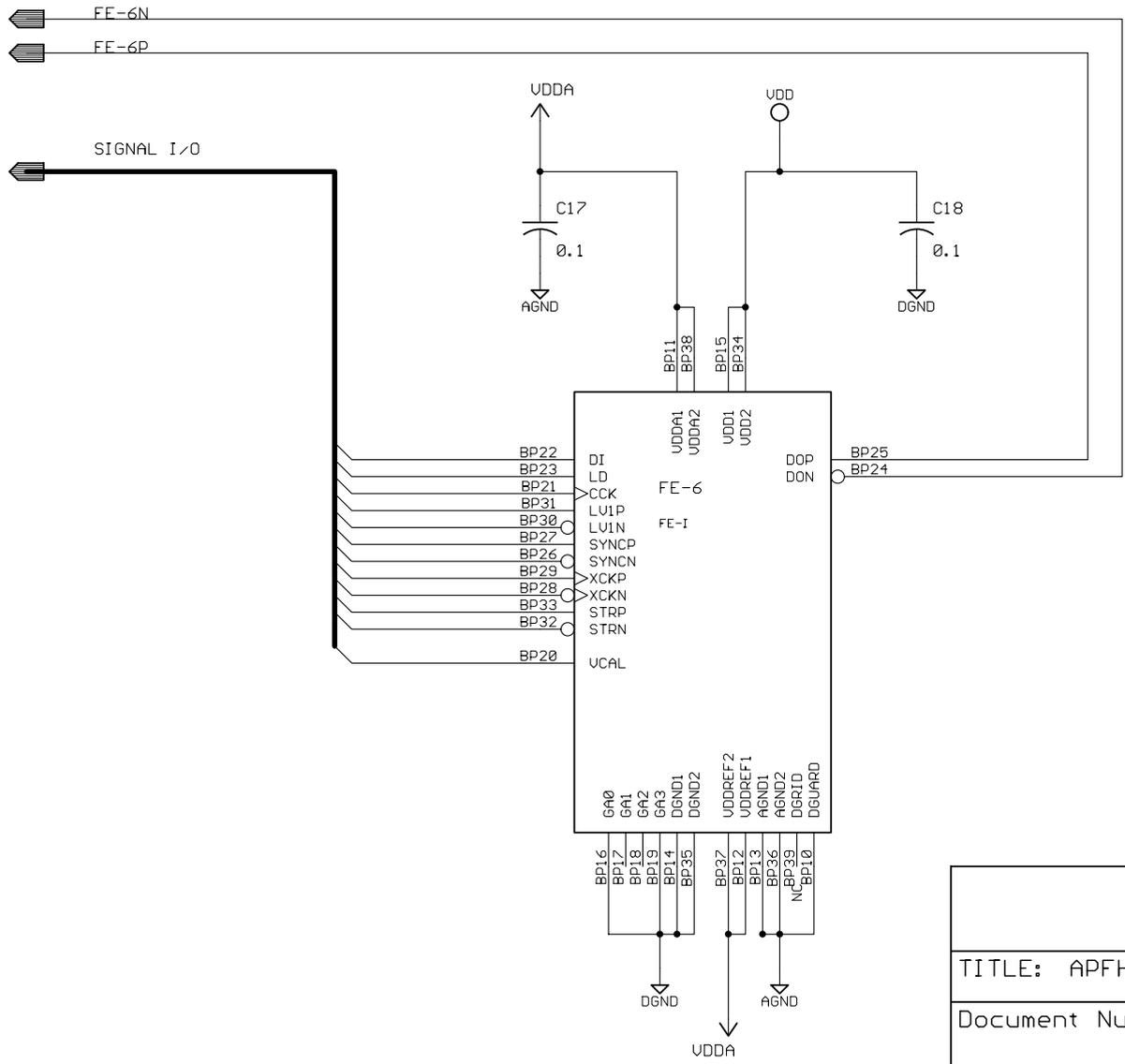
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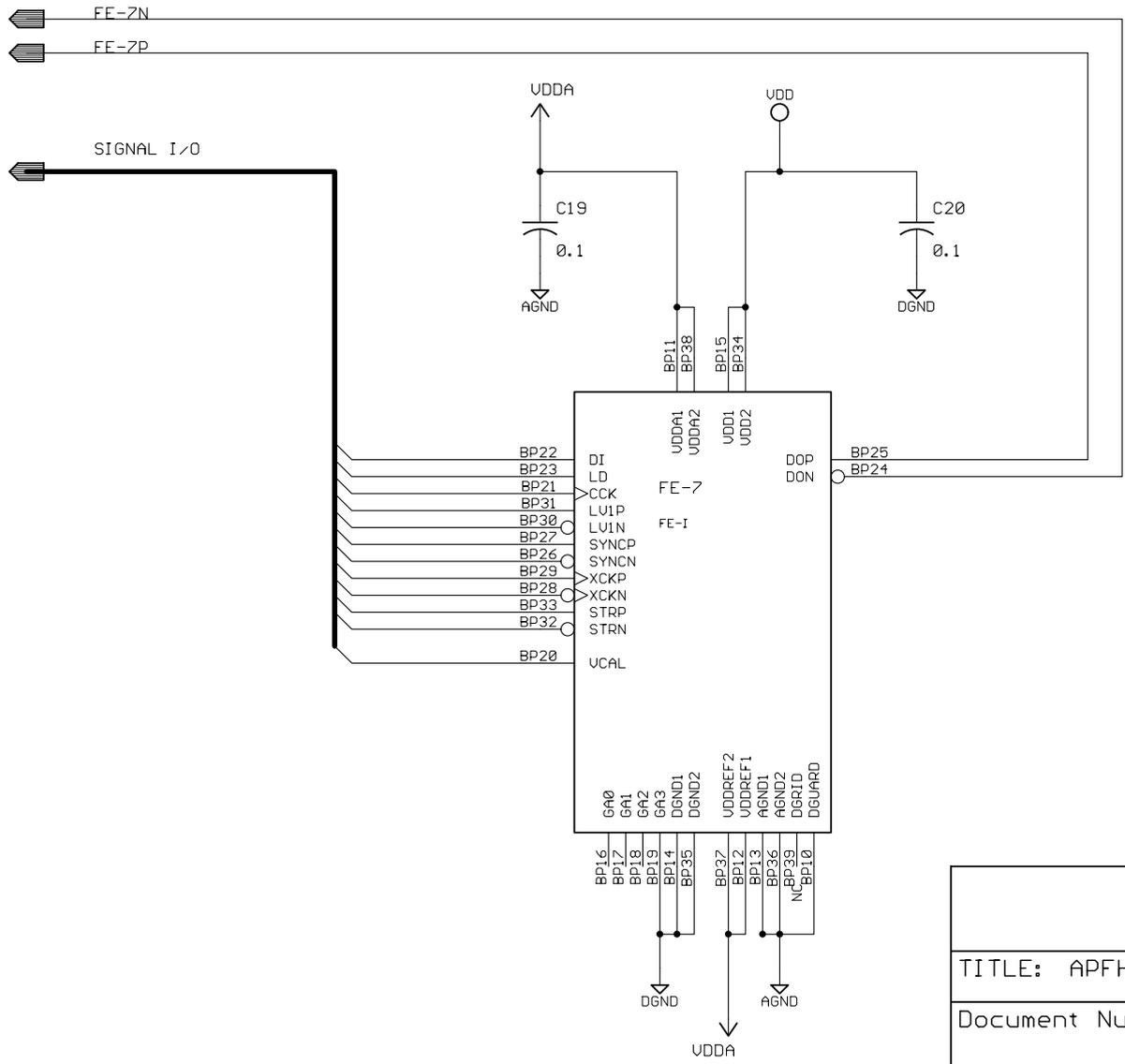
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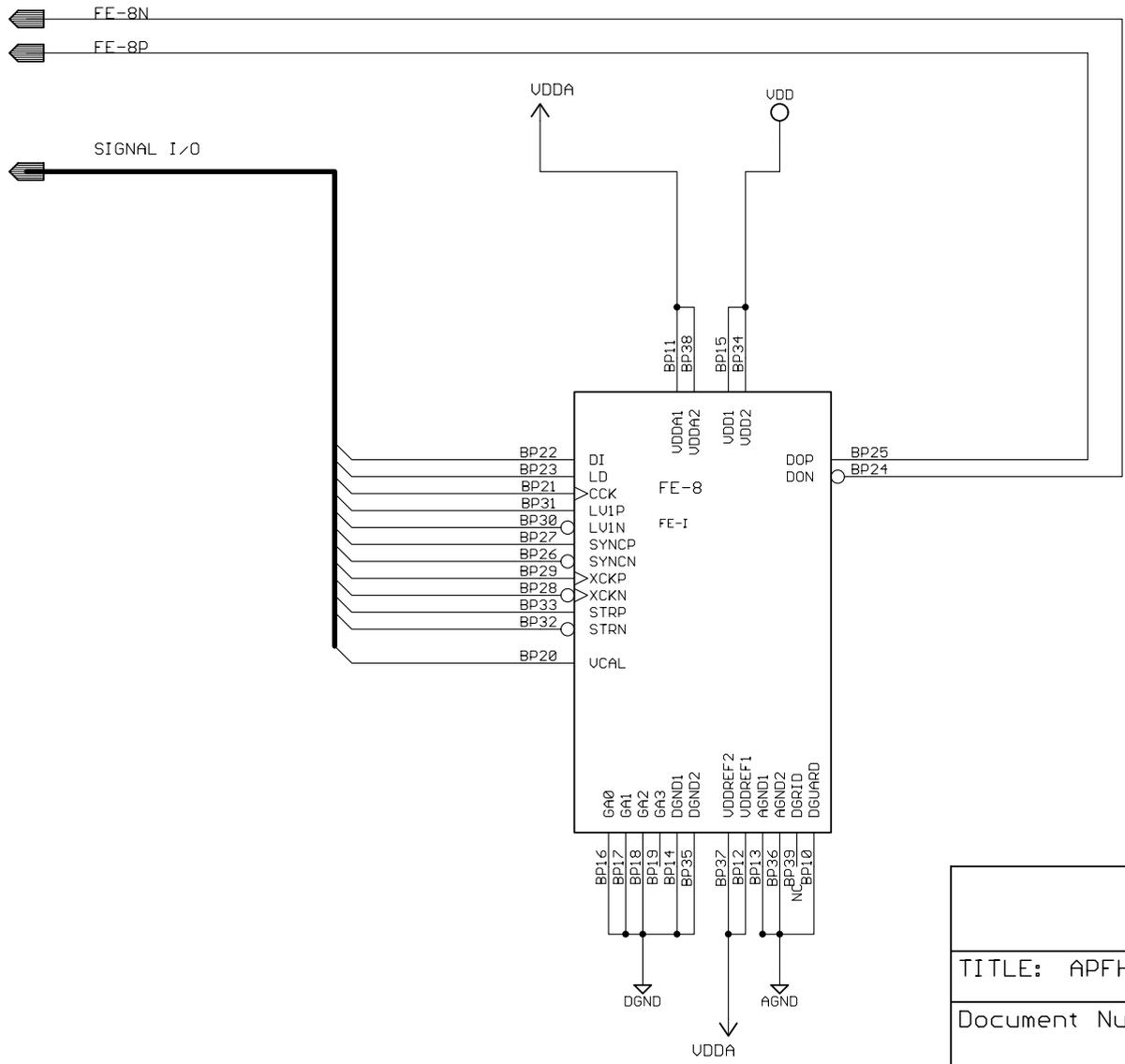
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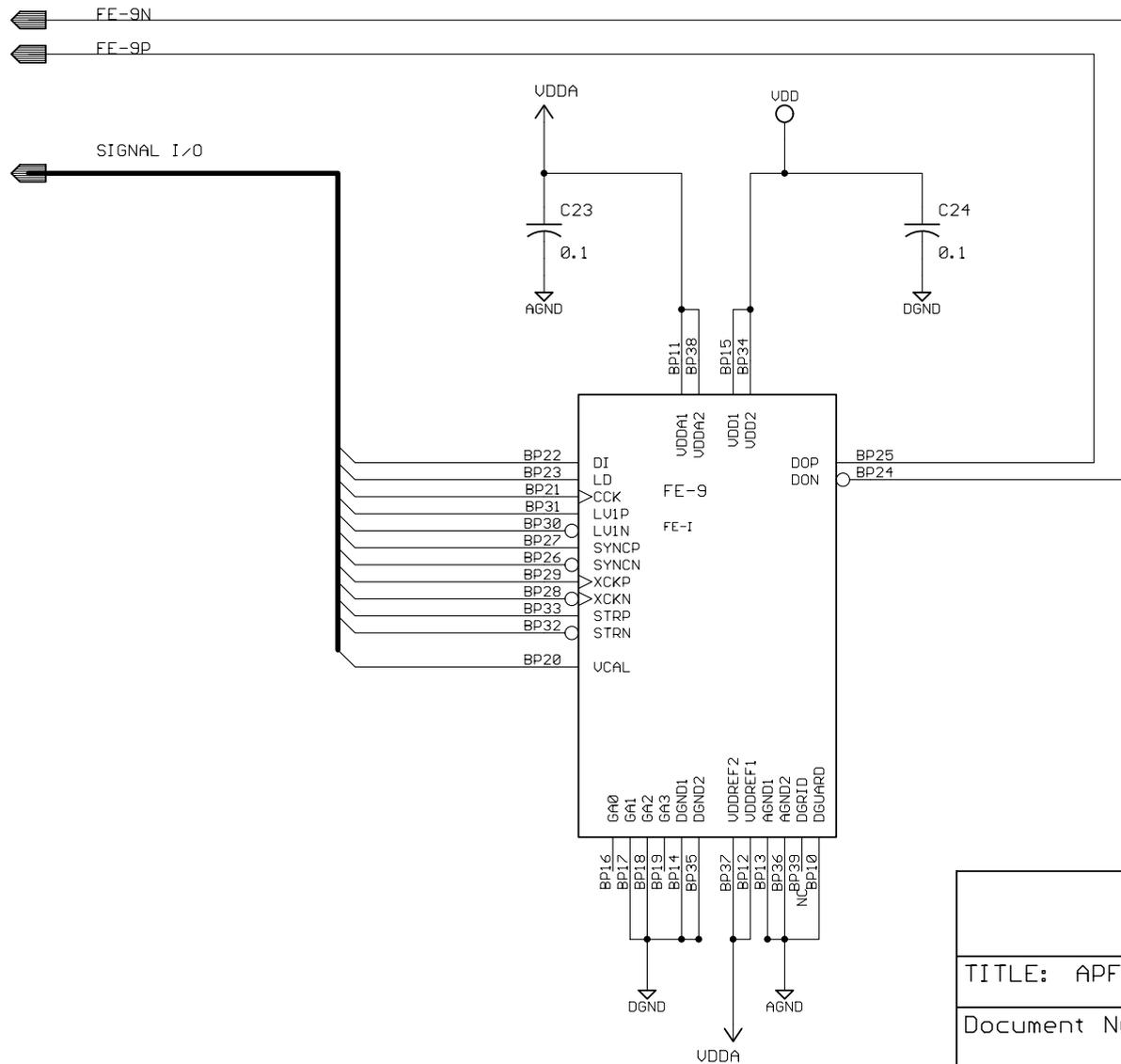
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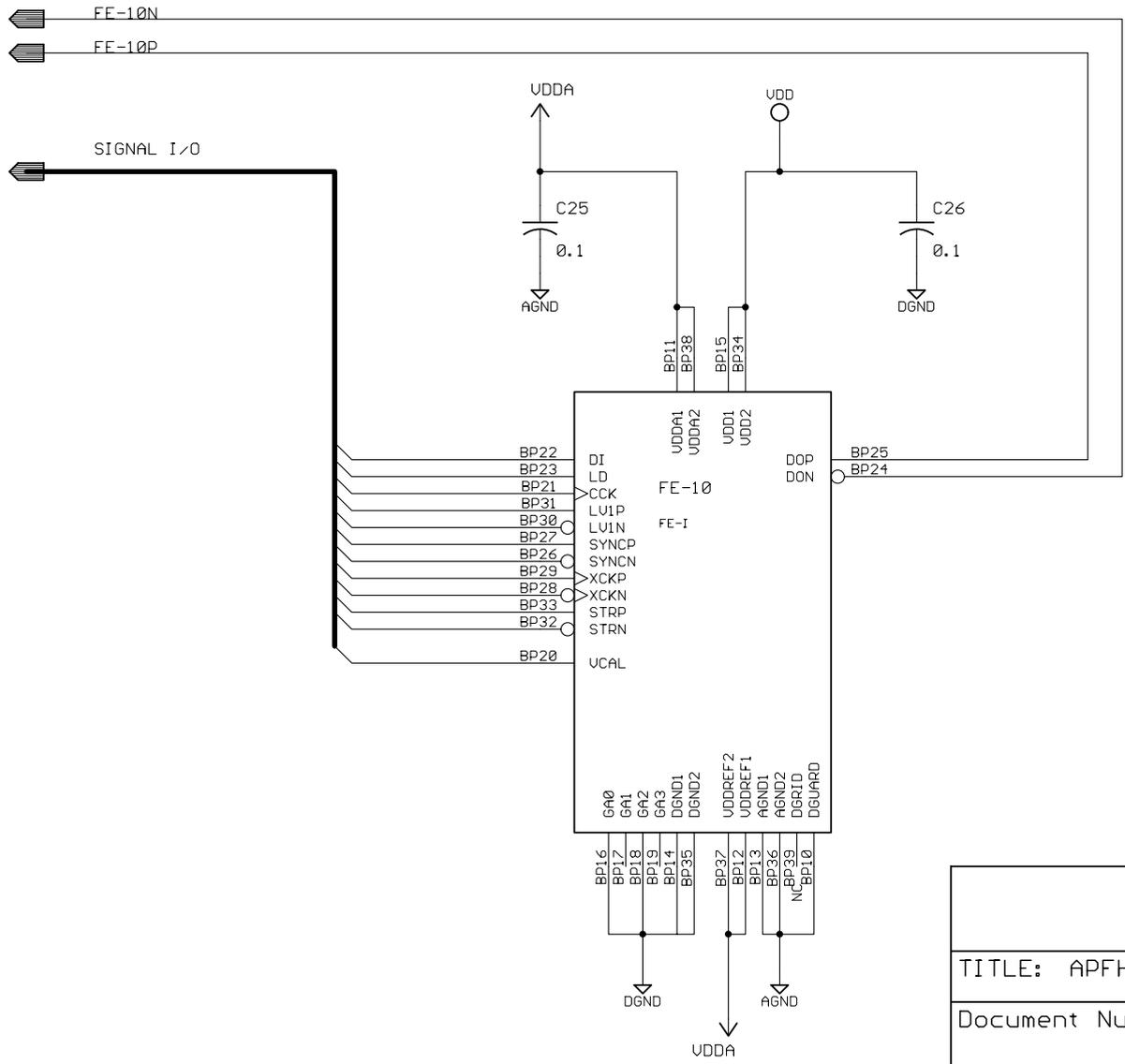
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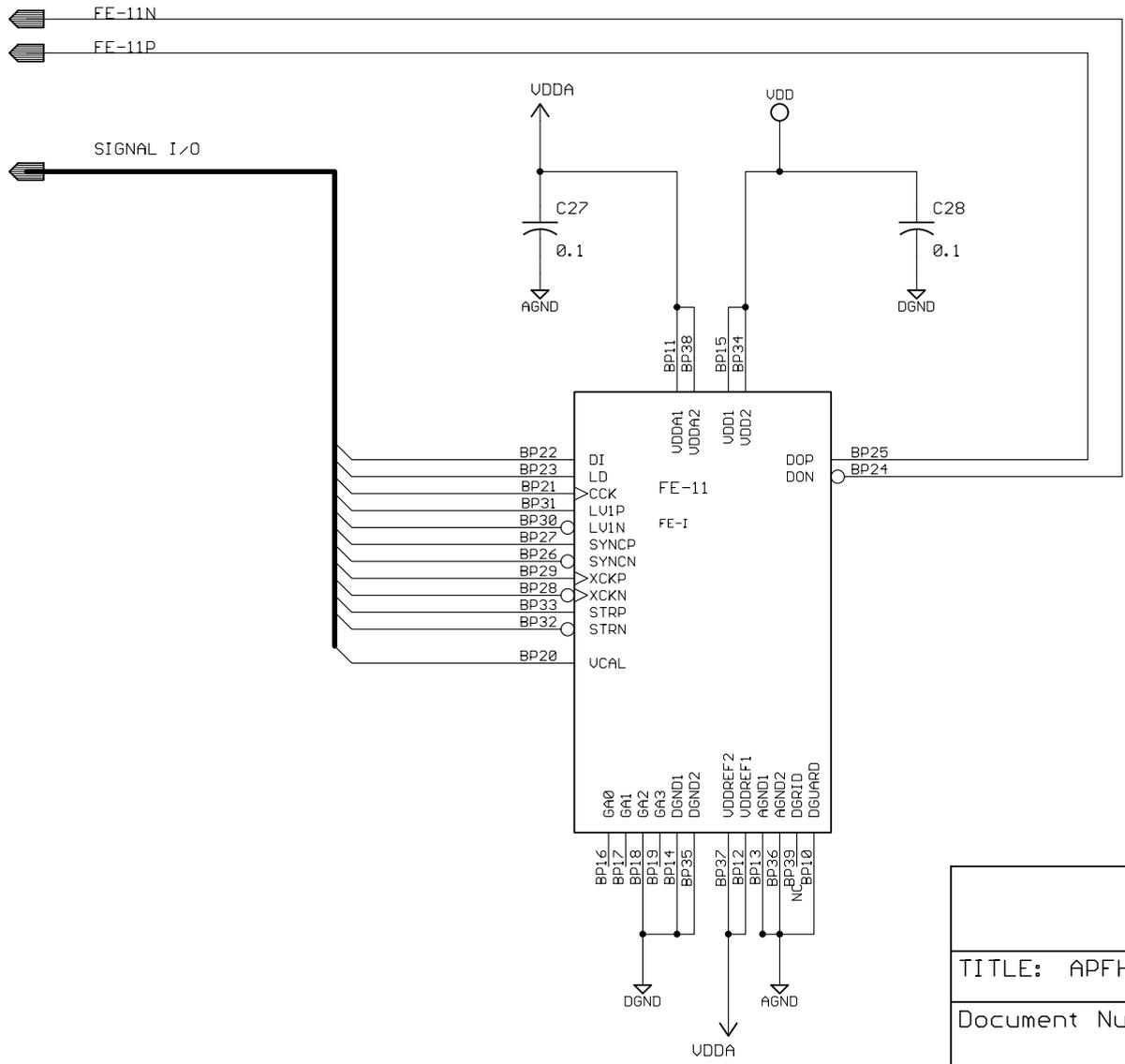
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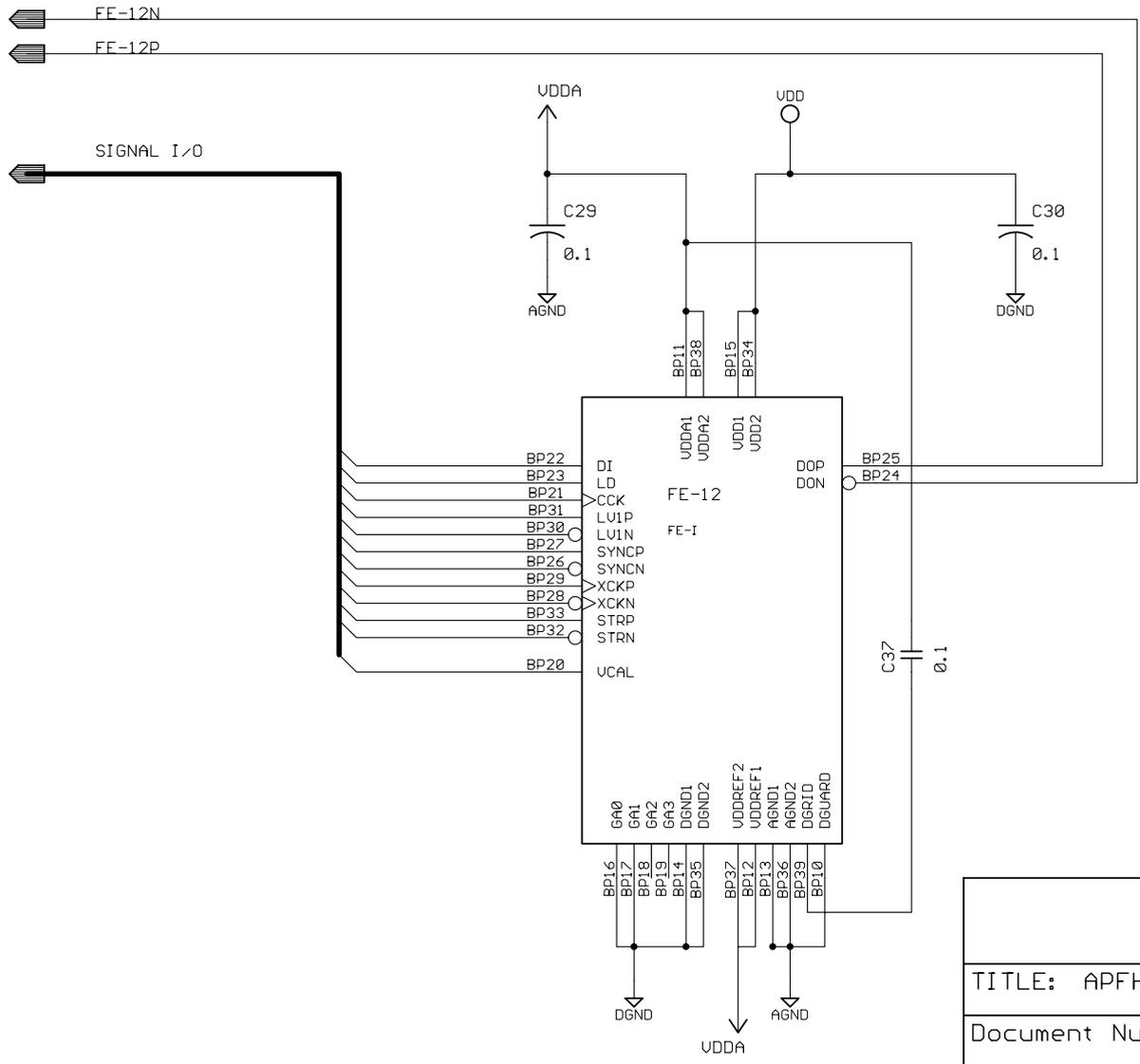
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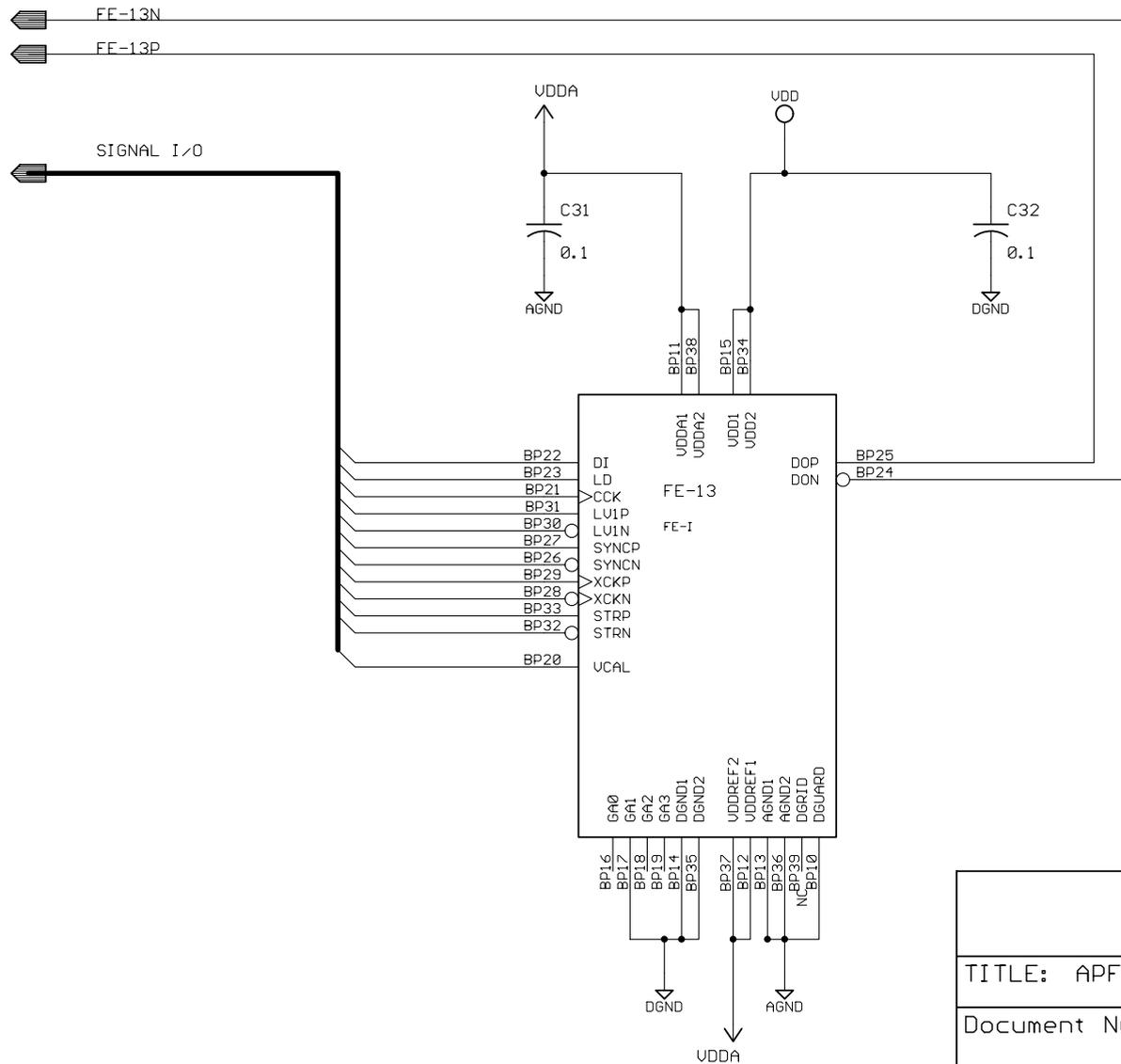
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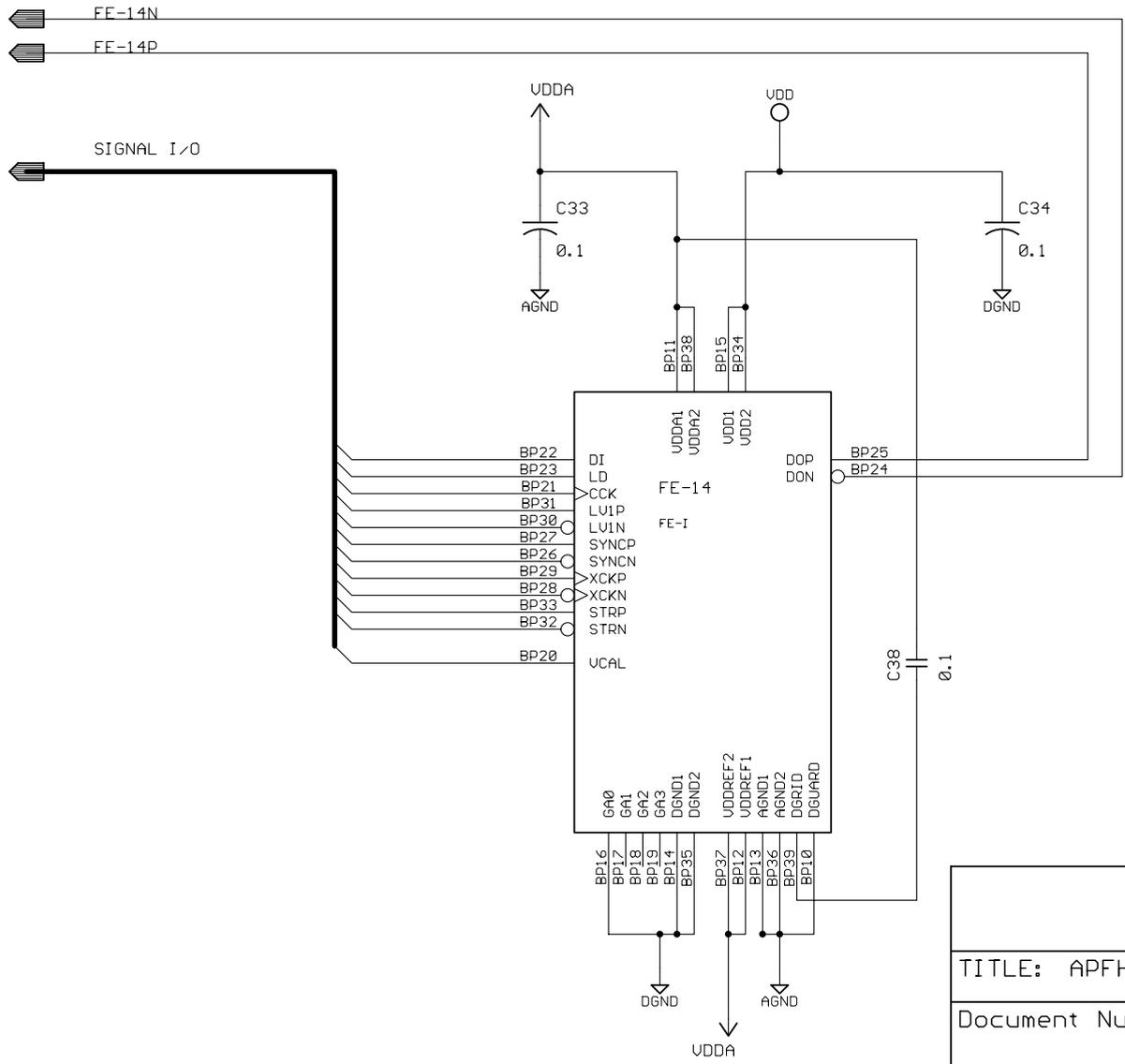
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