AP1302_ICP3_120VFBGA_DEMO

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Rev	Who	Date	Description
Rev 0.0	Joe KK	02/14/12	Initial - Derive from AP1300_ICP2_Demo_Rev1 design
Rev 1.0	dmincinski	07/09/2013	Reassigned the Flash Pin to P20, S1_SDA to P24 and S1_SCL to P22. Added SP0 to P27 and Head_SSN to P34.
Rev 2.0	Sesha	02July2021	Based on Rev0, GPIO table in Page7 is updated with correct reset values

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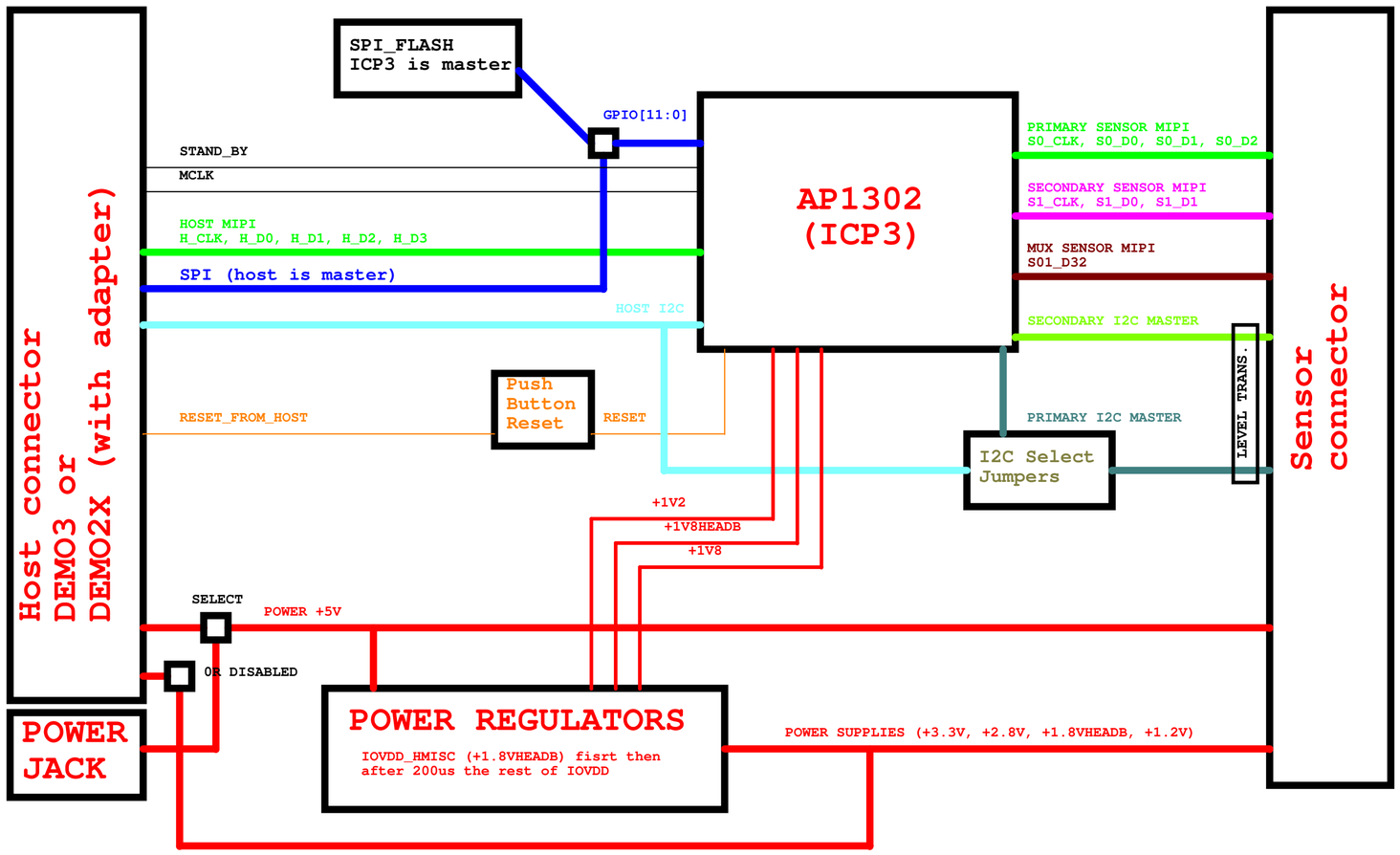
Block Diagram



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Power Supplies

Jumper 1-2

P1
HDR3-1x3-P

P2
JACK-3-PWR-16V-P

R3
560

D1
GRN

C3
47uF

+5V0_HOST
+5V0

1.5A Adjustable from 0.8V to 3.6V used for 1.2V

U1
TPS74801
IN1, IN2, BIAS, EN, SS, GND, PG, OUT1, OUT2, FB, EPAD

R1 0
R2 0
C2 10uF
C4 10uF
C5 150pF
R4 10K
R5 47K
R6 2.4K
C1 10uF

DNL
TP12
TSTPT-5000-RED
+1V2

Soft-start can be up to 18ms,
adjustable with the capacitor.

Note to layout -
EPAD: Should be soldered to wide ground plane for increased thermal performance

Open (default) - when use with Demo3 Headboard
Jumper select the required I/O voltage when use with AP21057 Dual Adapter Board

HEADB_+1V8 +2V8_VDDIO +3V3

P14
HDR4-2x3-P

U15
ADP1714AUJZ-3.3
IN, EN, GND, OUT, TRK

C54 10uF
C56 100nF
R76 0
VDDIO_HB0_SENSE 3,8
C75 100nF
C55 10uF
C57 100nF

DNL
TP21
TSTPT-5000-RED
+VDDIO_HB0_LS

Open (default)
Jumper select the required I/O voltage when use with AP21057 Dual Adapter Board

HEADB_+1V8 +2V8_VDDIO +3V3

P17
HDR4-2x3-P

U16
ADP1714AUJZ-3.3
IN, EN, GND, OUT, TRK

C58 10uF
C60 100nF
R78 0
VDDIO_HB1_SENSE 8
R91 0 DNL
VDDIO_HB0_SENSE 3,8
C76 100nF
C59 10uF
C61 100nF

DNL
TP23
TSTPT-5000-RED
+VDDIO_HB1_LS

500mA adjustable from 1.2V to 5.5V used for +1.8V

U2
TPS79501
IN, EN, NR/FB, OUT, GND1, GND2

R7 10K
R10 10K
R9 10K
C12 150pF
C6 10uF
R8 50K
R13 24K
C7 33pF
C8 10uF

DNL
TP14
TSTPT-5000-RED
+1V8

Around 250us delay, can be
adjusted by changing capacitor on CEXT

U4
ADM1085AKSZ
VIN, CEXT, ENIN, VCC, ENOUT, GND

500mA adjustable from 1.2V to 5.5V used for +1.8V

U3
TPS79501
IN, EN, NR/FB, OUT, GND1, GND2

R11 0
C9 10uF
R12 50K
R14 24K
C10 33pF
C11 10uF

DNL
TP15
TSTPT-5000-RED
HEADB_+1V8

500mA adjustable from 1.2V to 5.5V used for +3.3V

U5
TPS79501
IN, EN, NR/FB, OUT, GND1, GND2

R15 0
C14 10uF
R17 50K
R19 24K
C15 22pF
C13 10uF

DNL
TP16
TSTPT-5000-RED
+3V3

500mA adjustable from 1.2V to 5.5V used for +2.8V

U6
TPS79501
IN, EN, NR/FB, OUT, GND1, GND2

R16 0
C16 10uF
R18 50K
R20 24K
C18 33pF
C17 10uF

DNL
TP17
TSTPT-5000-RED
+2V8_VAA

500mA adjustable from 1.2V to 5.5V used for +2.8V

U14
TPS79501
IN, EN, NR/FB, OUT, GND1, GND2

R72 0
C51 10uF
R74 50K
R73 24K
C53 33pF
C52 10uF

DNL
TP19
TSTPT-5000-RED
+2V8_VDDIO

+5V0_HOST — +5V0_HOST 4
+5V0 — +5V0 8
+3V3 — +3V3 4,8
+2V8_VAA — +2V8 4,8
+2V8_VDDIO — +2V8_VDDIO 4,8
+1V8 — +1V8 4,5,6,7
HEADB_+1V8 — HEADB_+1V8 4,6,8
+1V2 — +1V2 4,5,6,8
+VDDIO_HB0_LS — +VDDIO_HB0_LS 5,7
+VDDIO_HB1_LS — +VDDIO_HB1_LS 7

TP13 TSTPT-5016
TP18 TSTPT-5016

MH1, MH2, MH3, MH4, MH5 — 200RD125P

FD1, FD3, FD5, FD7 — FIDUCIAL / SKIP BLOCK
FD2, FD4, FD6, FD8 — FIDUCIAL / SKIP BLOCK

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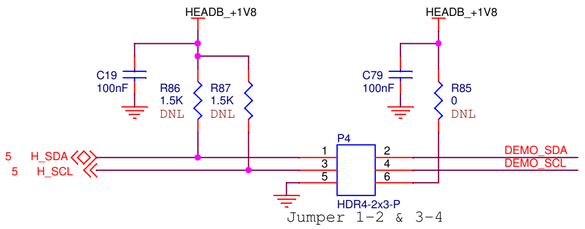
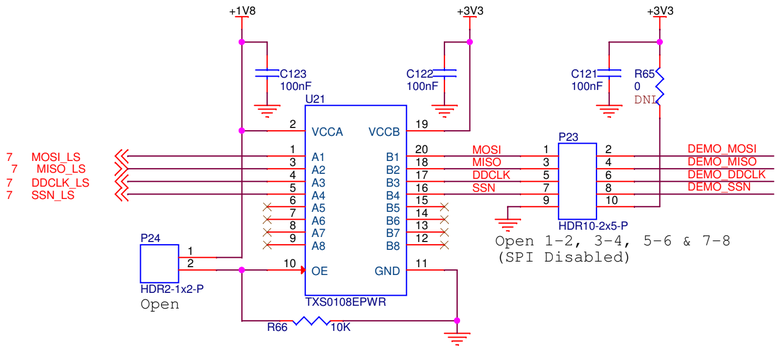
Connector to Host (Demo3 Baseboard)

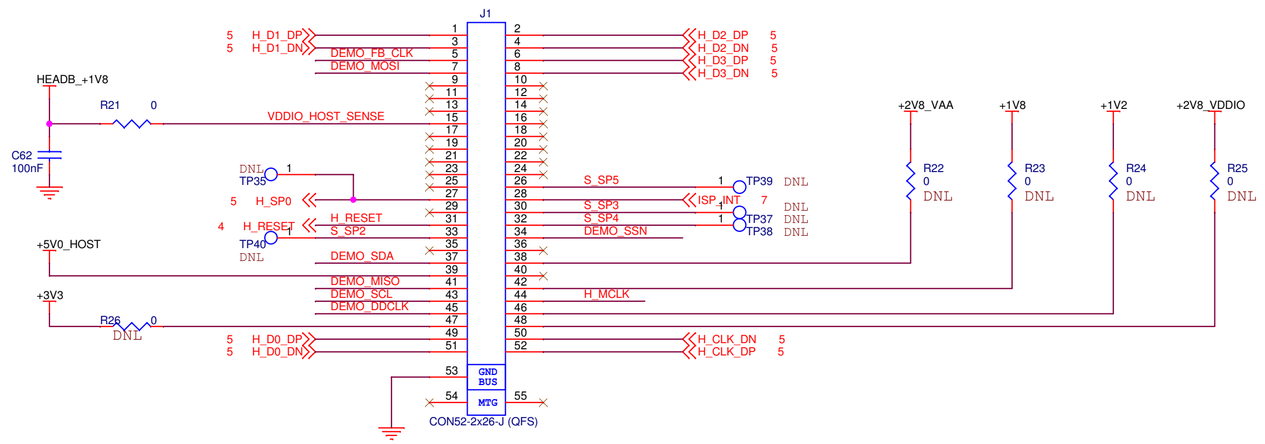
I2C DEBUG

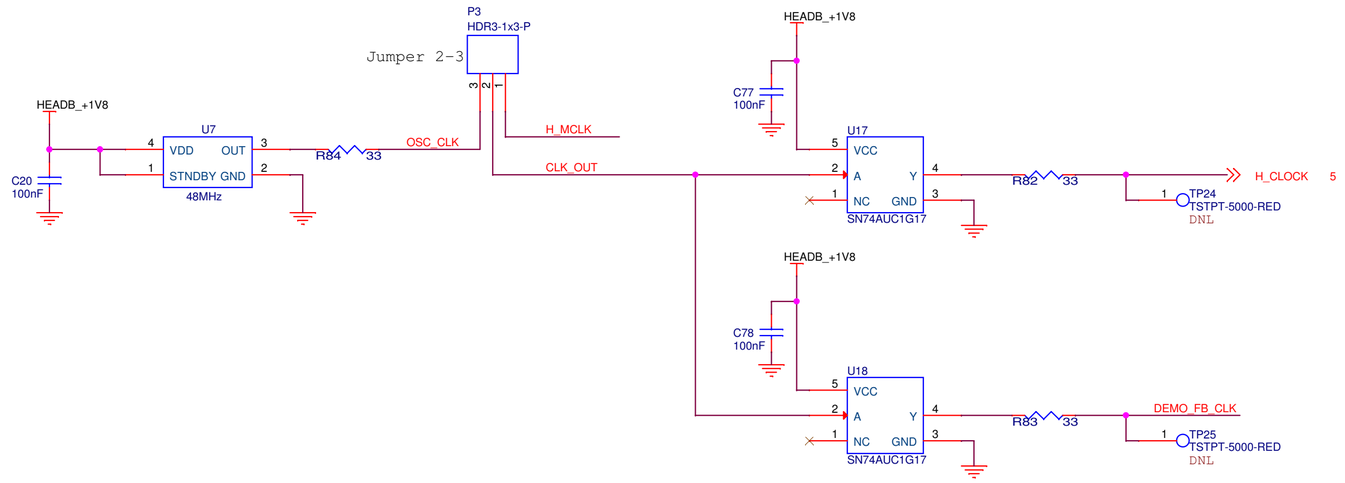


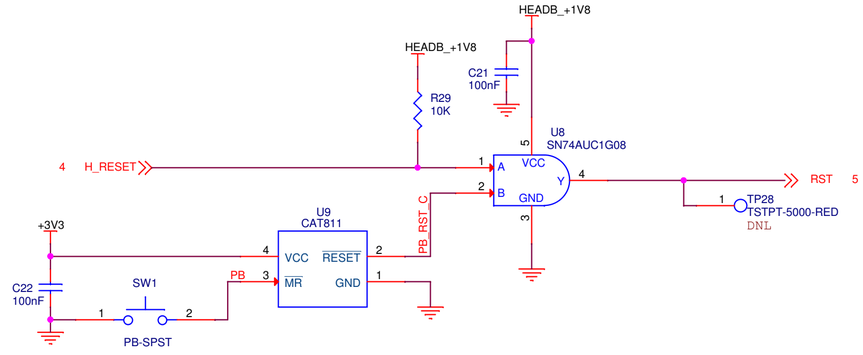
SPI DEBUG



from DEMO3 -> to ICP3







+5V0_HOST
+5V0_HOST 3

+5V0
+5V0 3,8

+3V3
+3V3 3,8

+2V8_VAA
+2V8 3,8

+2V8_VDDIO
+2V8_VDDIO 3,8

+1V8
+1V8 3,5,6,7

HEADB_+1V8
HEADB_+1V8 3,6,8

+1V2
+1V2 3,5,6,8

+VDDIO_HB0_LS
+VDDIO_HB0_LS 3,5,7

+VDDIO_HB1_LS
+VDDIO_HB1_LS 3,7

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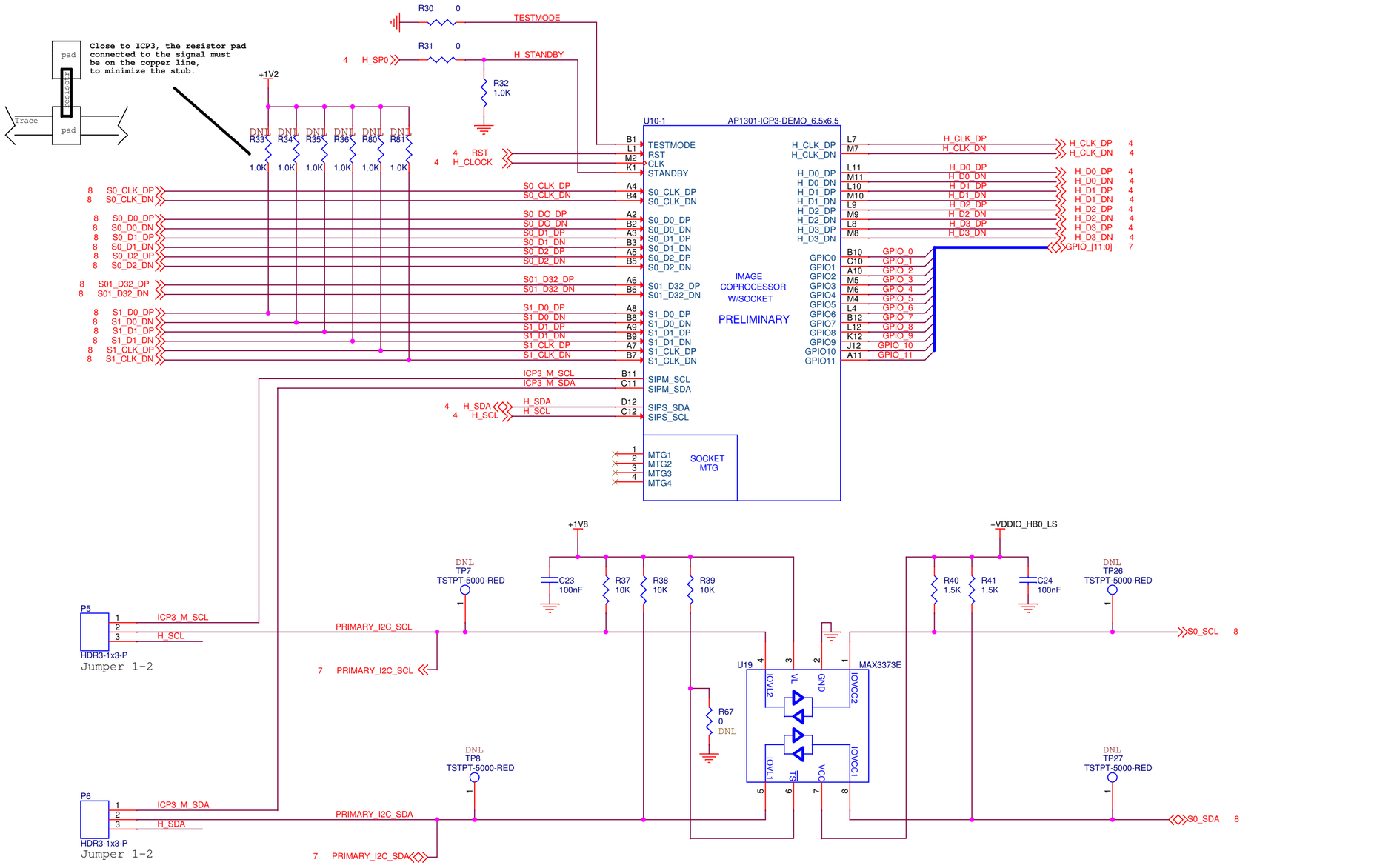
AP1302 Signals



+5V0_HOST — +5V0_HOST 3,4

+5V0 — +5V0 3,8

+3V3 — +3V3 3,4,8

+2V8_VAA — +2V8 3,4,8

+2V8_VDDIO — +2V8_VDDIO 3,4,8

+1V8 — +1V8 3,4,6,7

HEADB_+1V8 — HEADB_+1V8 3,4,6,8

+1V2 — +1V2 3,4,6,8

+VDDIO_HB0_LS — +VDDIO_HB0_LS 3,7

+VDDIO_HB1_LS — +VDDIO_HB1_LS 3,7

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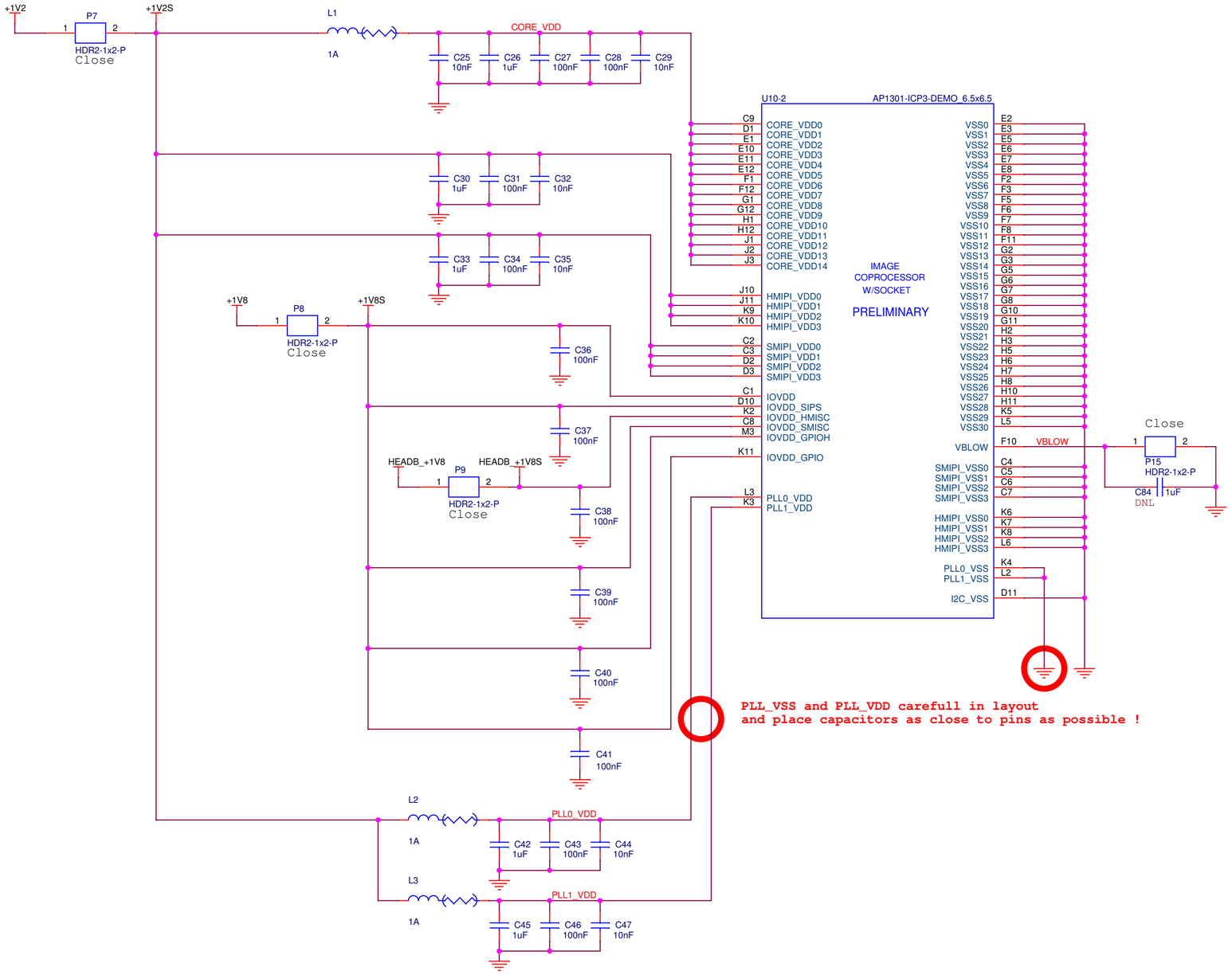
AP1302 Powers

Place the jumpers close to power supplys
and the capacitors as close to ICP2 as possible.



+5V0_HOST
+5V0_HOST 3,4

+5V0
+5V0 3,8

+3V3
+3V3 3,4,8

+2V8_VAA
+2V8 3,4,8

+2V8_VDDIO
+2V8_VDDIO 3,4,8

+1V8
+1V8 3,4,5,7

HEADB_+1V8
HEADB_+1V8 3,4,8

+1V2
+1V2 3,4,5,8

+VDDIO_HB0_LS
+VDDIO_HB0_LS 3,5,7

+VDDIO_HB1_LS
+VDDIO_HB1_LS 3,7

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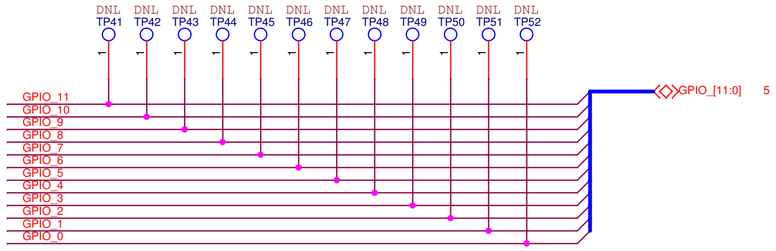
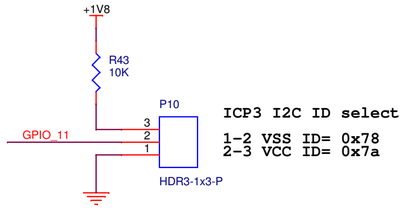
AP1302 GPIOs

ICP3 GPIO Function Mapping Table

GPIO	FUNCTION	RESET VALUE
0	SEN_CLK1	HIGH-Z
1	SHUTDOWN1	0
2	SEN_CLK2	HIGH-Z
3	SHUTDOWN2 / SPIS_CLK	HIGH-Z
4	SPIS_MISO	1
5	SPIS_MOSI / 2ND_I2C_SCL	HIGH-Z
6	SPIS_CS / 2ND_I2C_SDA	HIGH-Z
7	SPIM_CLK	1
8	SPIM_MISO	HIGH-Z
9	SPIM_MOSI	0
10	SPIM_CS	1
11	ICP3 I2C ID SELECT	HIGH-Z

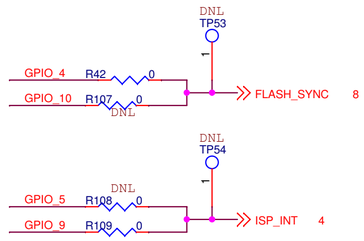


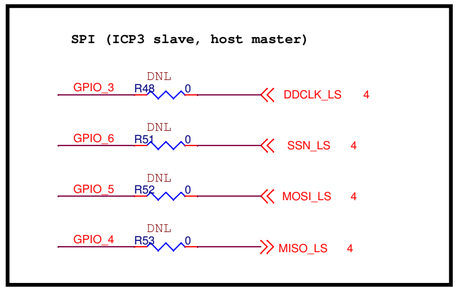
Note to layout:
Place all GPIOs 0R resistors close to ICP3

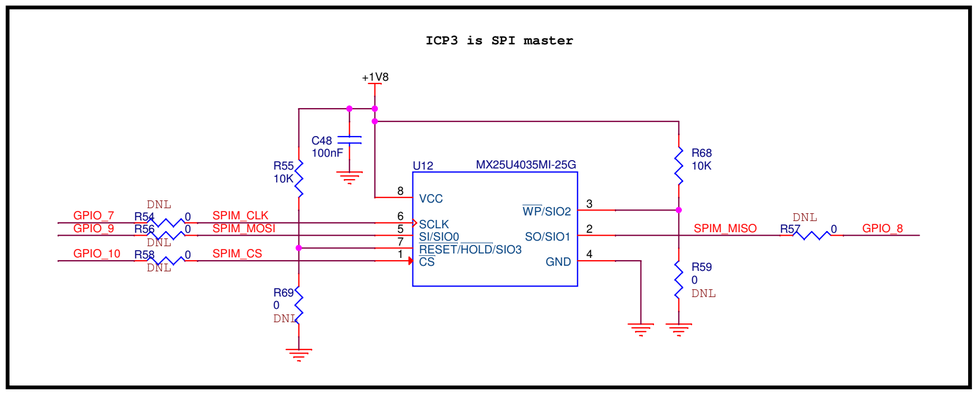


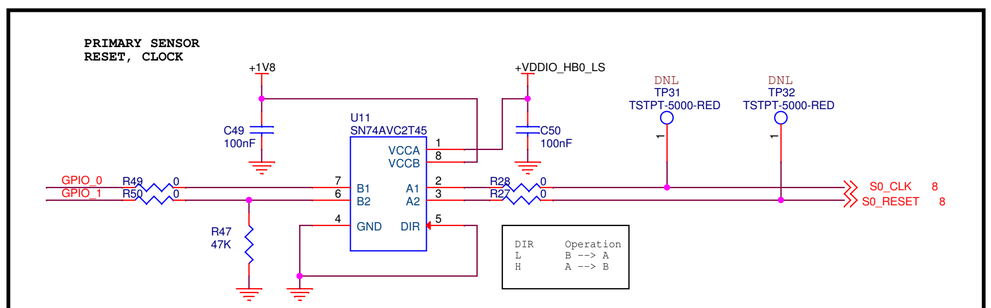
ICP3 I2C ID select

1-2 VSS ID= 0x78
2-3 VCC ID= 0x7a

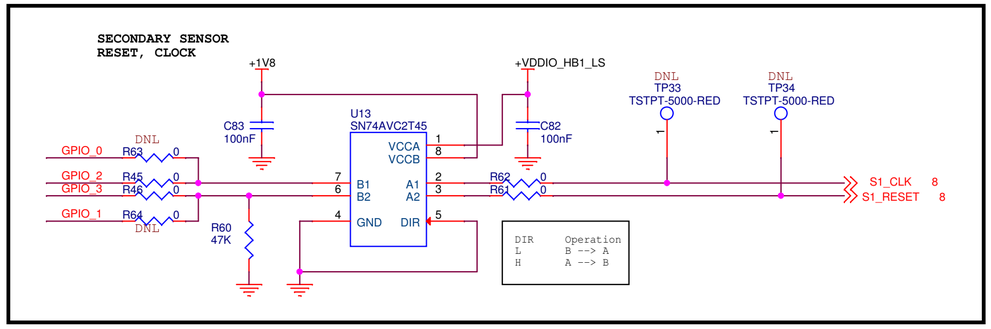


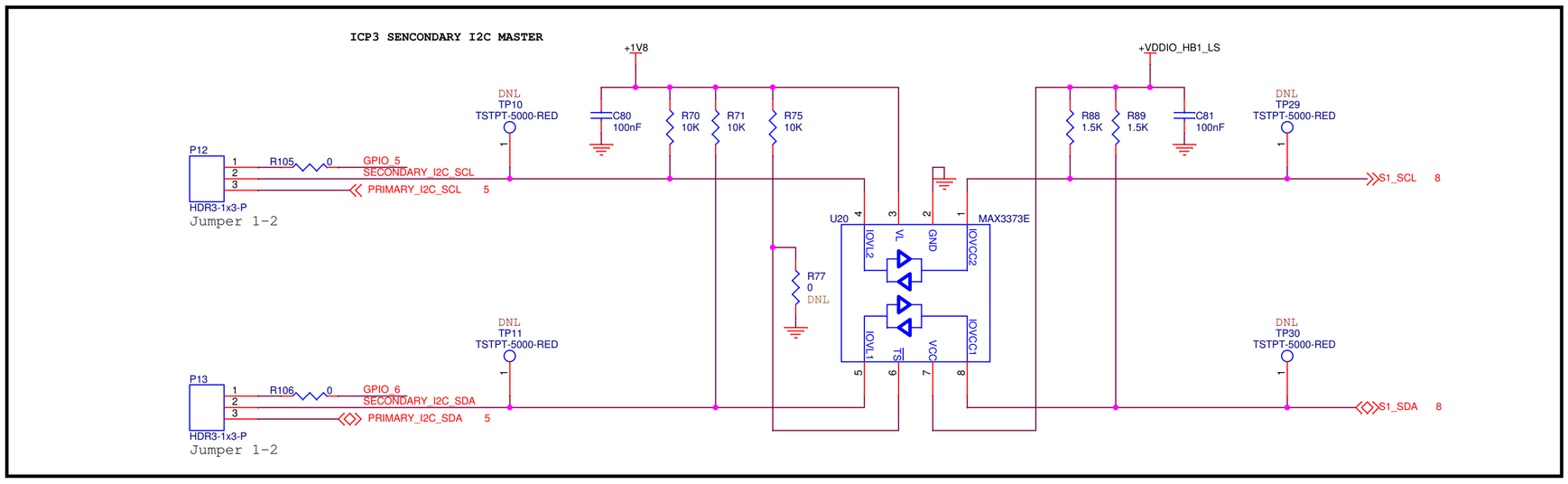


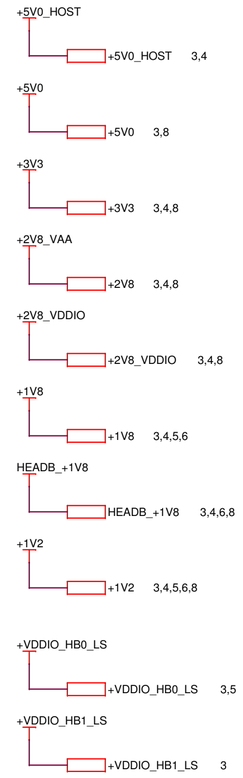




Note to layout: Place U11 and U13 close to each other to shorten GPIO_0 routing







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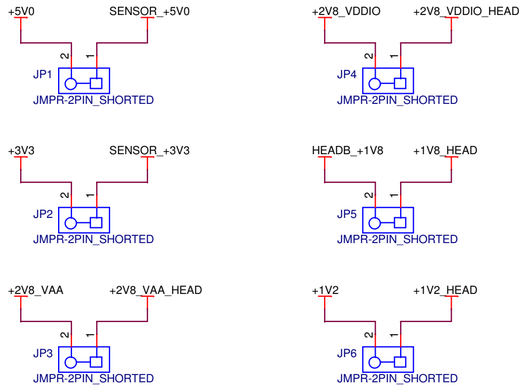
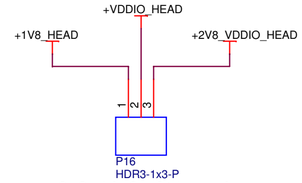
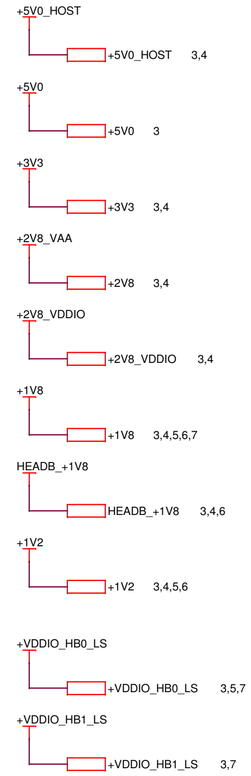


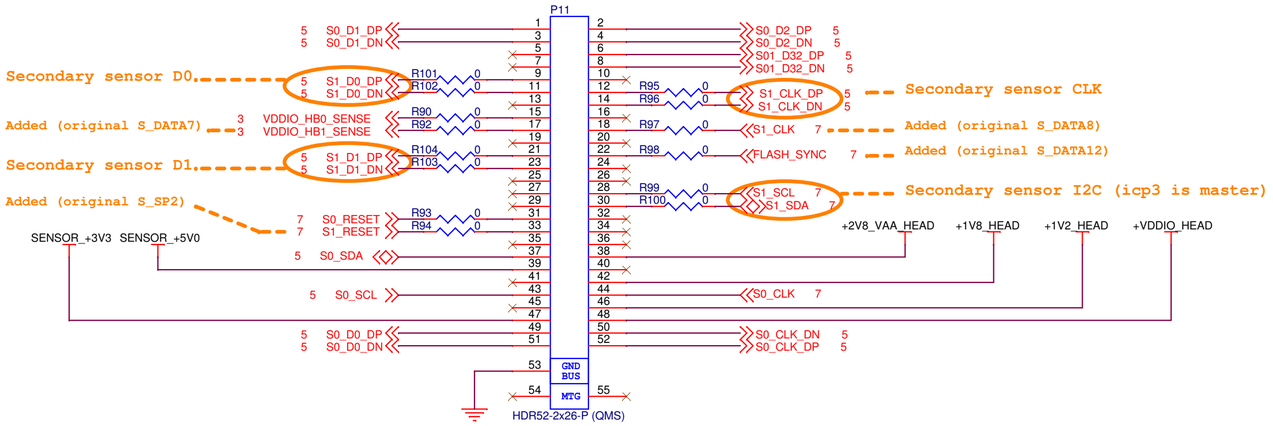
Power Debug Header: Cut away the shorted trace
and mount header for power debugging

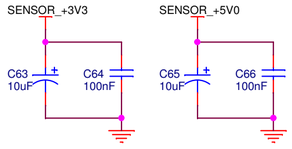


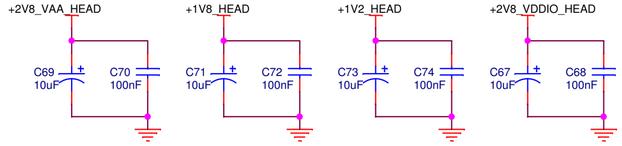
Jumper 2-3 (default) - when use with Demo3 Headboard
Jumper 1-2 - when use with AP21057 Dual Adapter Board



from ICP3 -> to Headboard or Dual Adapter Board







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