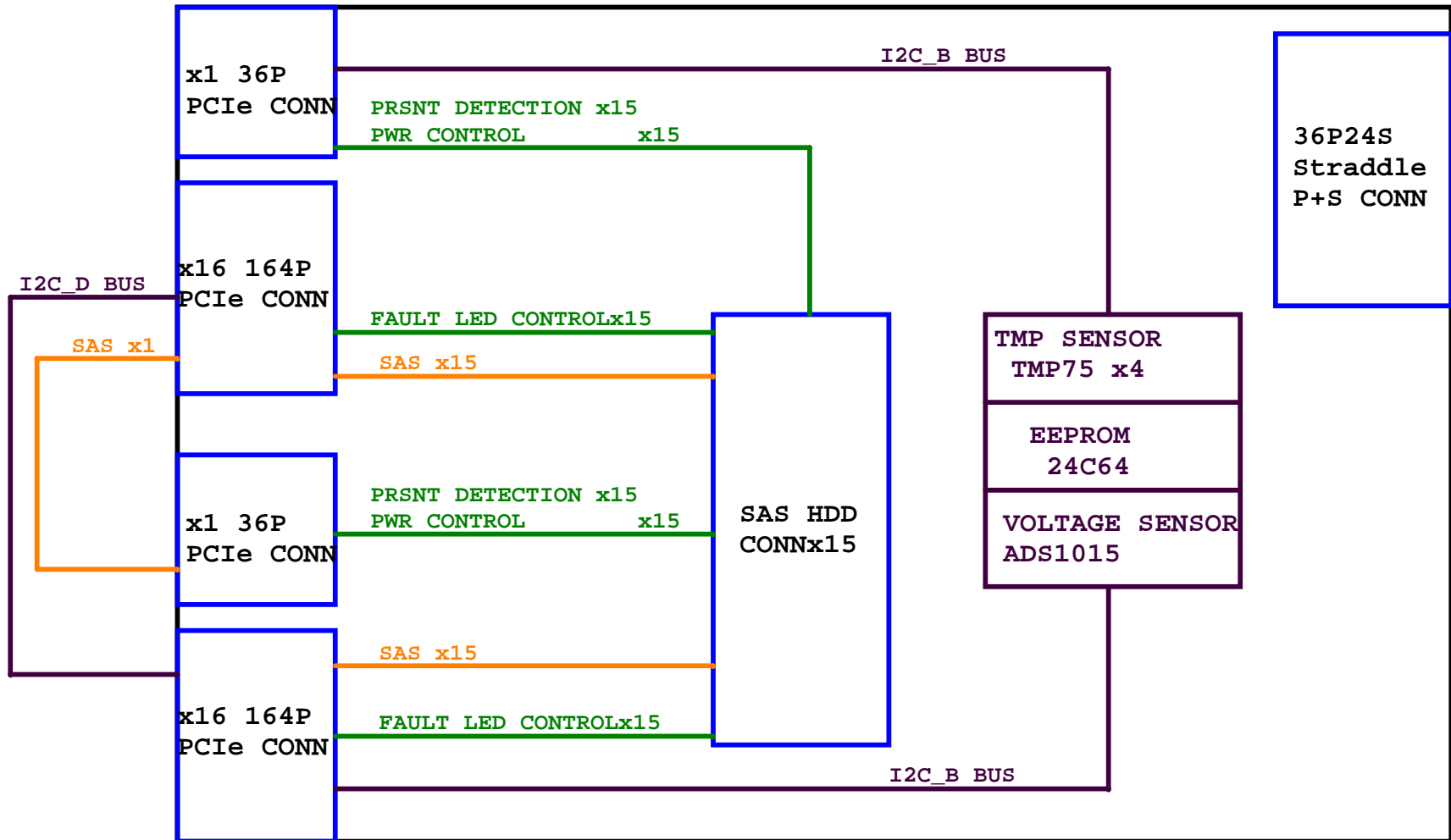


# Block Diagram

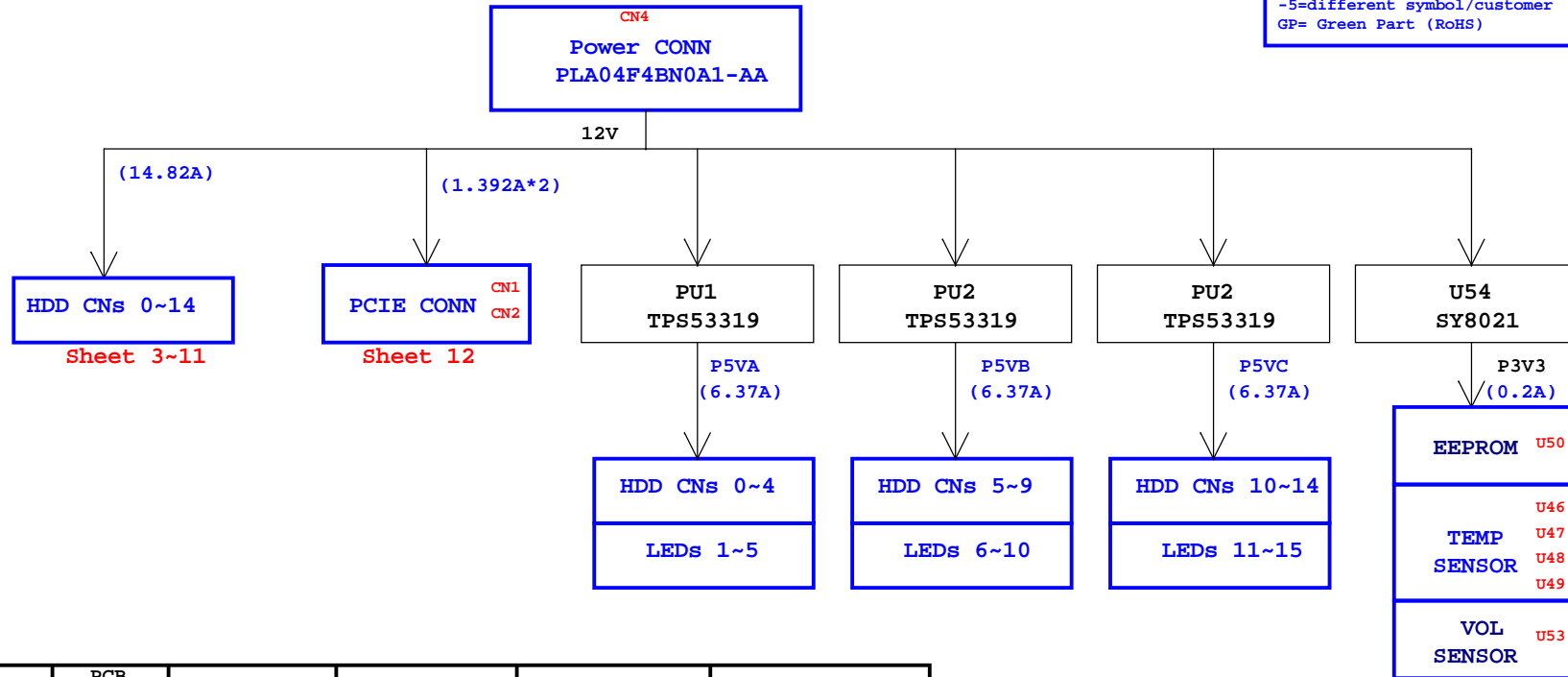


PAGE01:Block diagram  
PAGE02:Power Map  
PAGE03:HDD CNs 0-1  
PAGE04:HDD CNs 2-3  
PAGE05:HDD CNs 4-5  
PAGE06:HDD CNs 6-7  
PAGE07:HDD CNs 8-9  
PAGE08:HDD CNs 10-11  
PAGE09:HDD CNs 12-13  
PAGE10:HDD CNs 14  
PAGE11:I2C\_B DEVICES  
PAGE12:PCIE SLOTS x16  
PAGE13:PCIE SLOTS x1  
PAGE14:STRADDLE CONN  
PAGE15:P3V3\_SY8201  
PAGE16:P5VA for HDD 0-4  
PAGE17:P5VB for HDD 5-9  
PAGE18:P5VC for HDD 10-14  
PAGE19:SCREWS  
PAGE20:CHANGE HISTORY\_1  
PAGE21:CHANGE HISTORY\_2

## Revision Histroy:

EVT-1 V09:2012/03/23 EVT Gerber Release  
EVT-3 V01:2012/04/19 EVT-3 Gerber Release  
DVT V03: 2012/07/21 DVT Gerber Release  
PVT VXX:2012/10/XX PVT Gerber Release

## POWER MAP



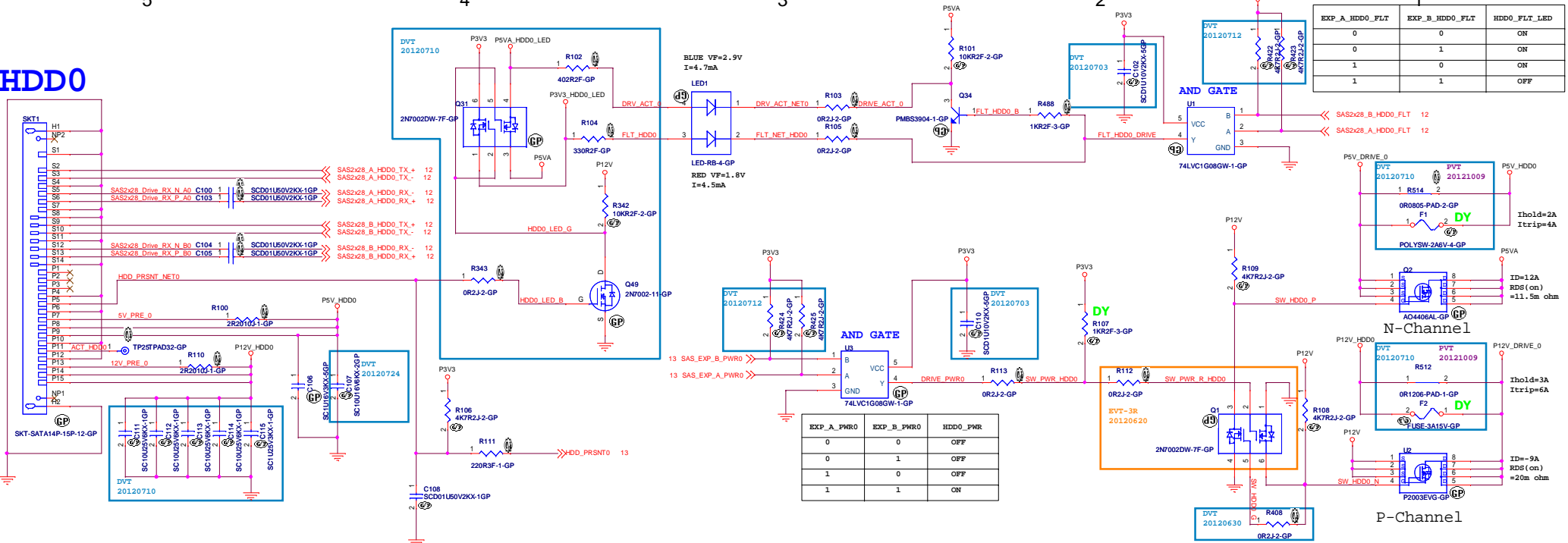
DY=Dummy parts  
=not populated

SCD1U10V2KX-5GP  
D1U = 0.1uF (2D2U means 2.2uF)  
10Voltage (6D3V means 6.3V)  
2 = size 0402, K tolerance  
K=tolerance  
[Wistron C code as below:]  
G=2%  
J=5%  
K=10%  
M=20%  
X=temp characteristics  
[Wistron C Series/Temp]  
N=NFO  
X=X7R/X5R  
Y=Y5V  
-5=different symbol/customer  
GP= Green Part (RoHS)

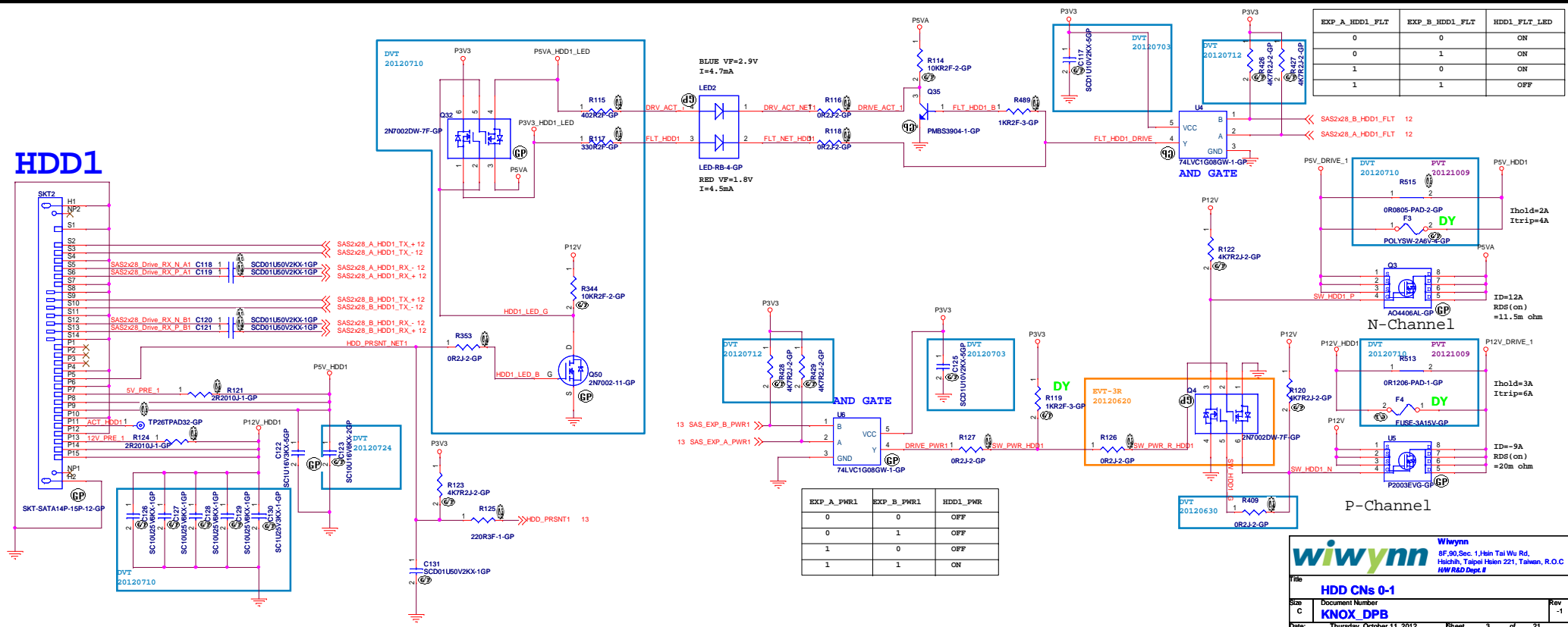
562R2F- GP  
562 = 562 ohm, (2K2R means 2.2K ohm)  
2 = size 0402  
F = 1% tolerance  
GP= Green Part (RoHS)  
Wistron RC size code as below:  
1 = 0201  
2= 0402  
3= 0603  
5= 0805  
6= 1206  
Wistron R tolerance code as below:  
D=0.5%  
F= 1%  
J= 5%

	PCB VENDOR	EVT BUILD	EVT-3 BUILD	DVT BUILD	PVT BUILD
PCBA_DIP	GCE	55.64W03.D01G	55.64W03.DA5G	55.64W03.DA7G	
	Hannstar		55.64W03.DA4G	55.64W03.DA8G	
PCBA_SMT	GCE	55.64W03.S01G	55.64W03.SA5G	55.64W03.SA7G	
	Hannstar		55.64W03.SA4G	55.64W03.SA8G	
PCB_P/N	GCE	48.64W03.0SA	48.64W03.0SB	48.64W03.01A	
	Hannstar		48.64W06.0SB	48.64W06.01A	
PCB_VER		12432-SA	12432-SB	12432-1A	12432-1

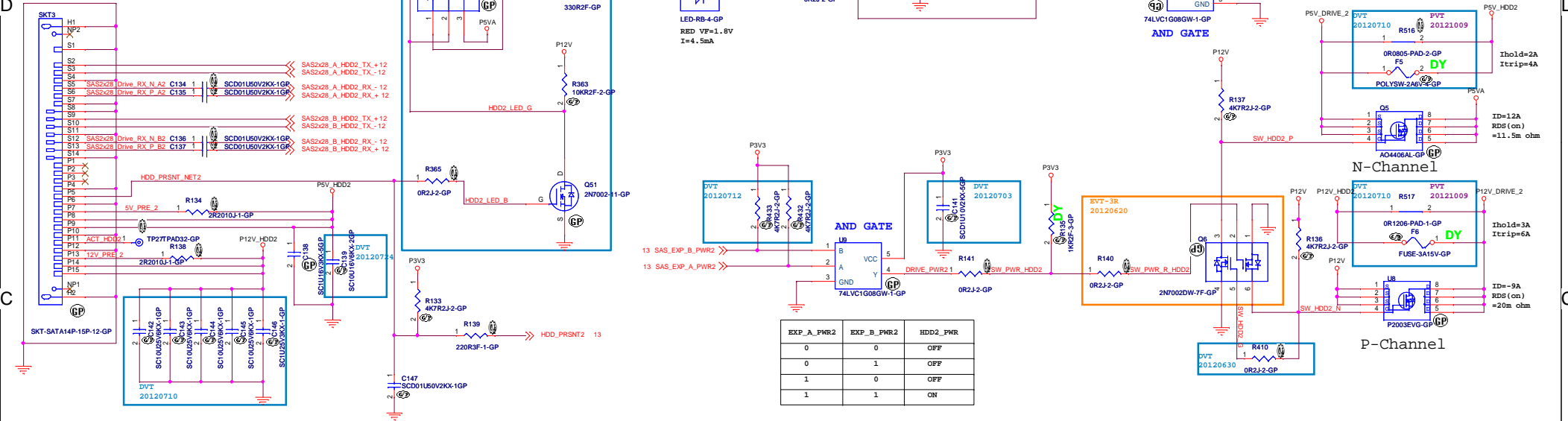
HDD0



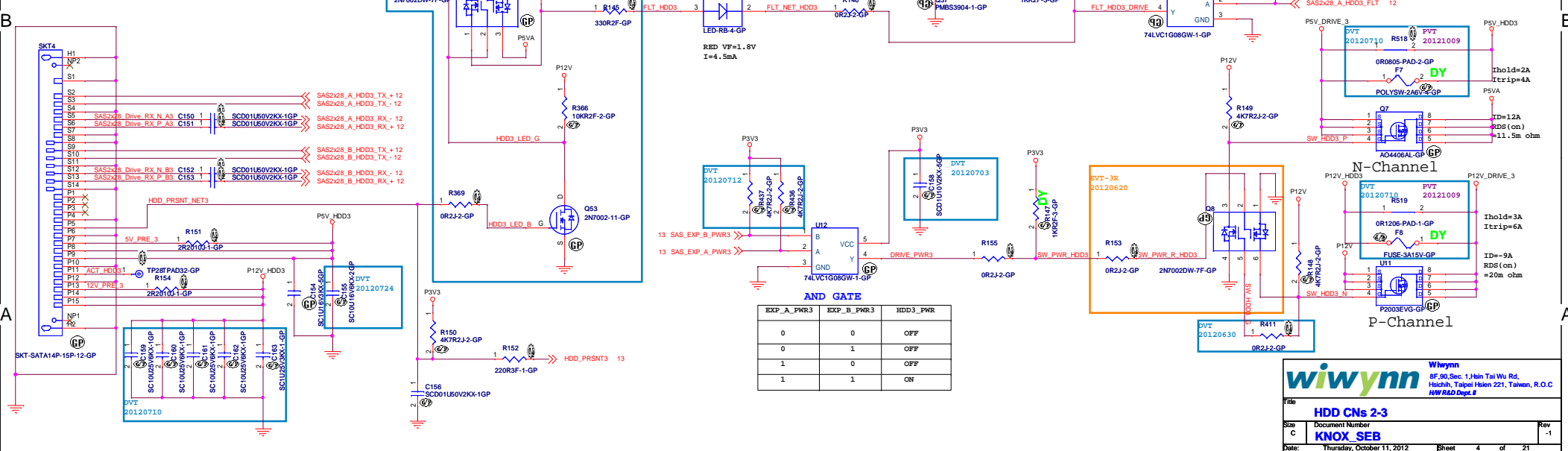
HDD1



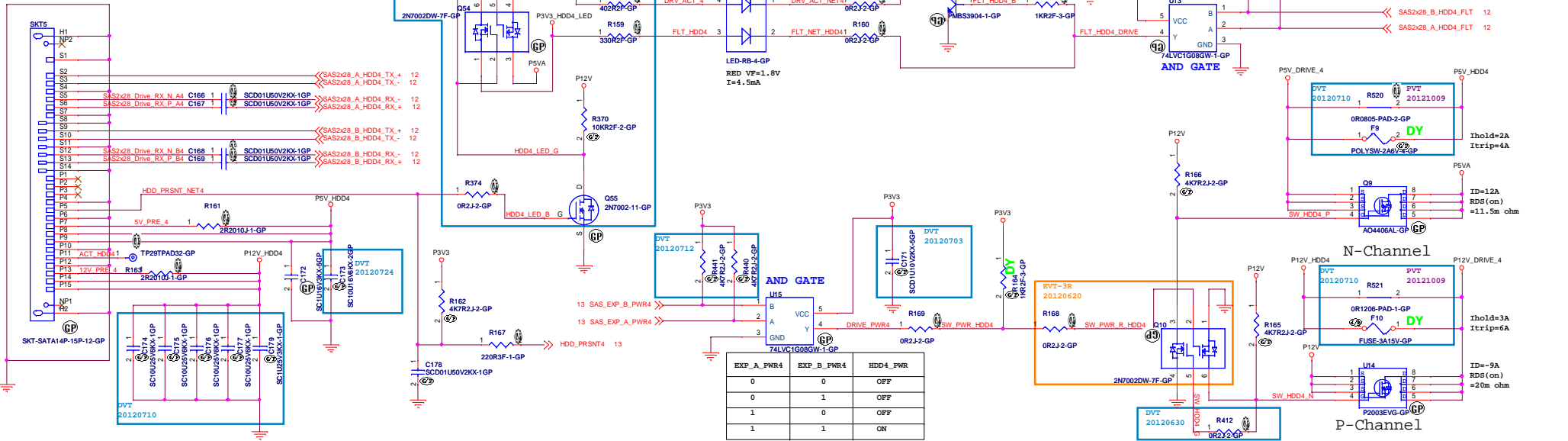
## HDD2



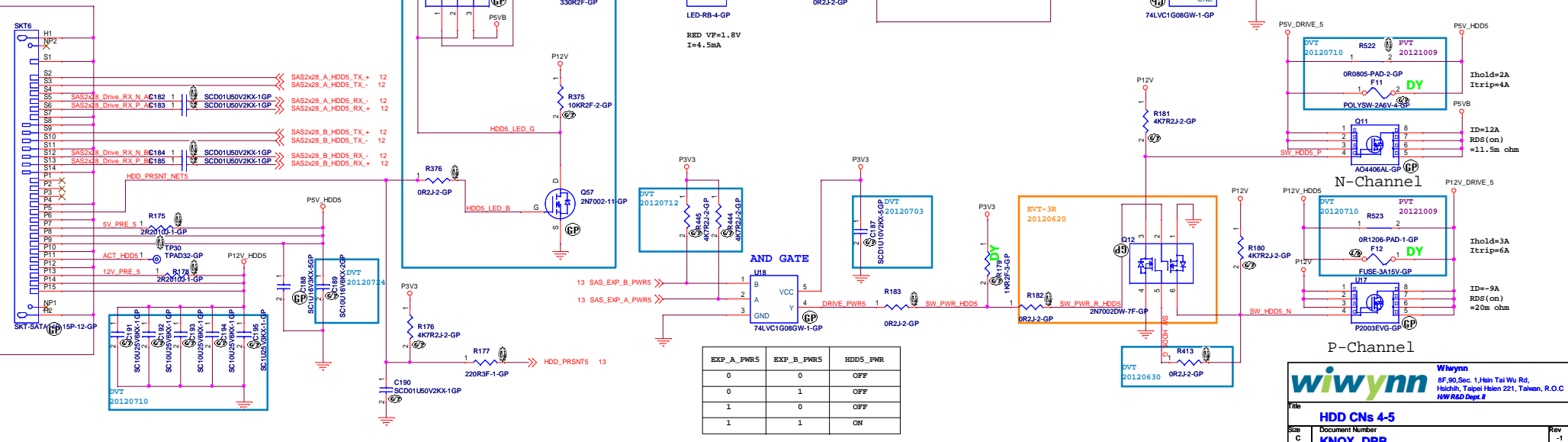
## HDD3



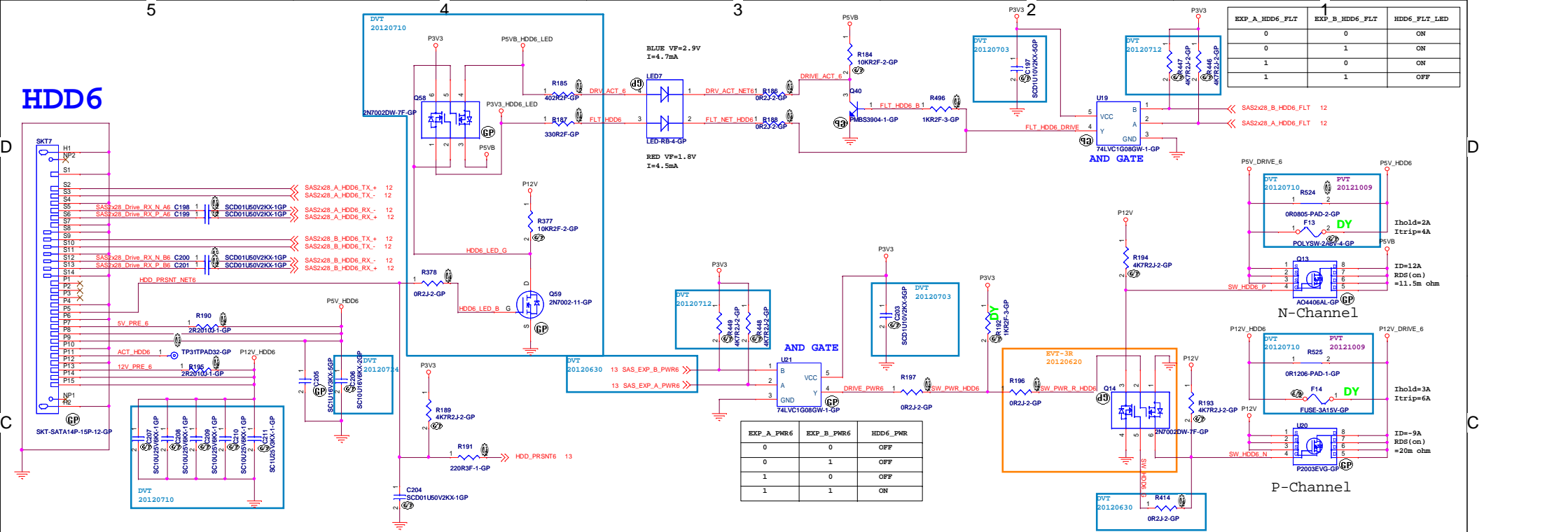
# HDD4



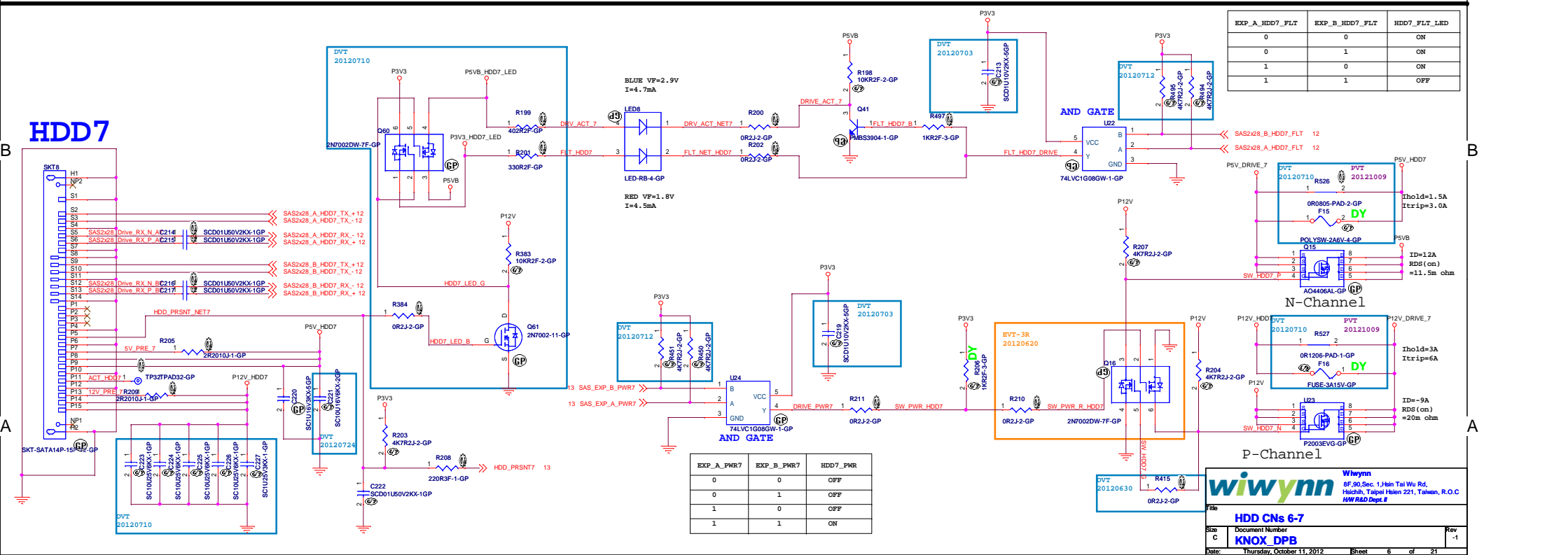
# HDD5



# HDD6



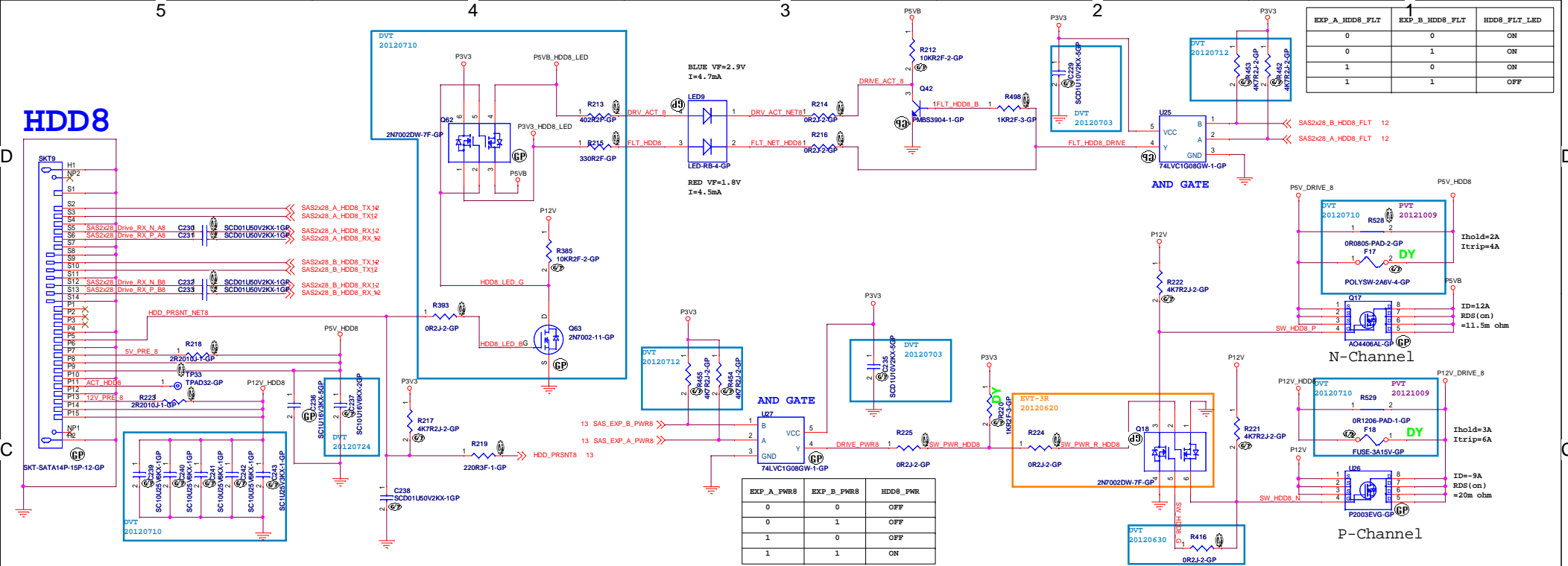
# HDD7



# HDD8

D

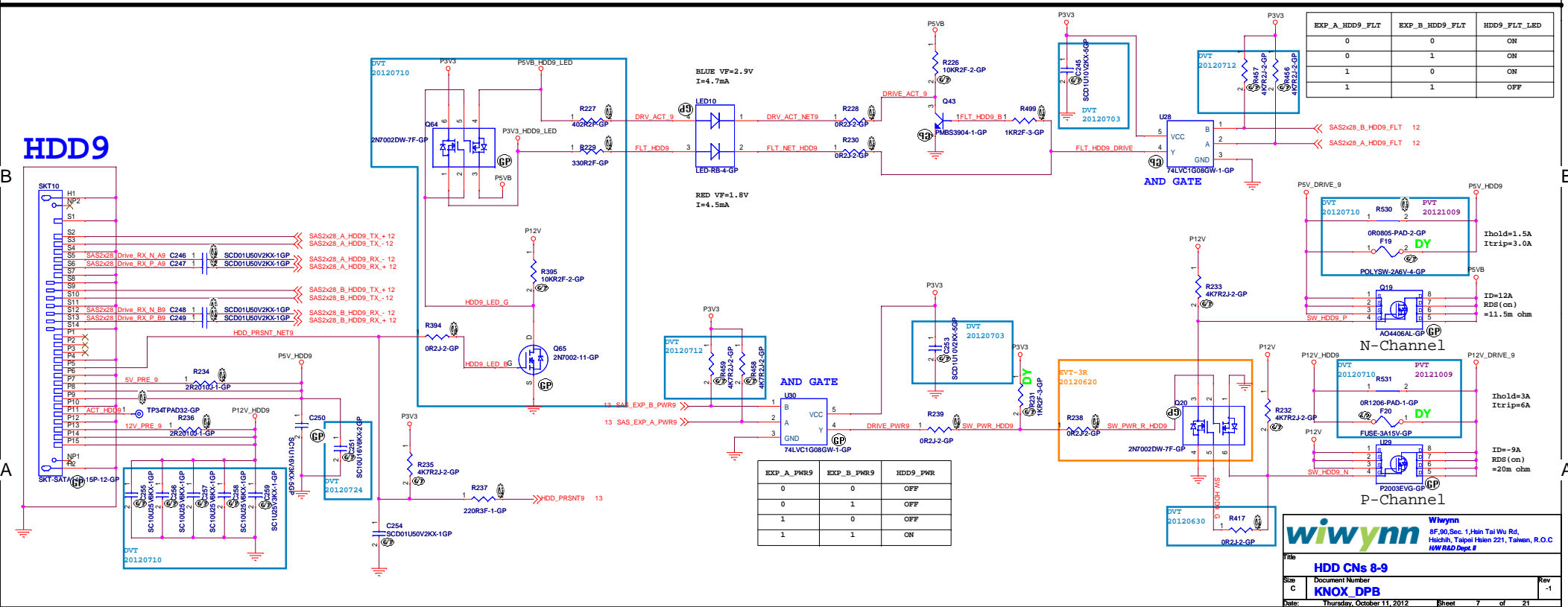
C



# HDD9

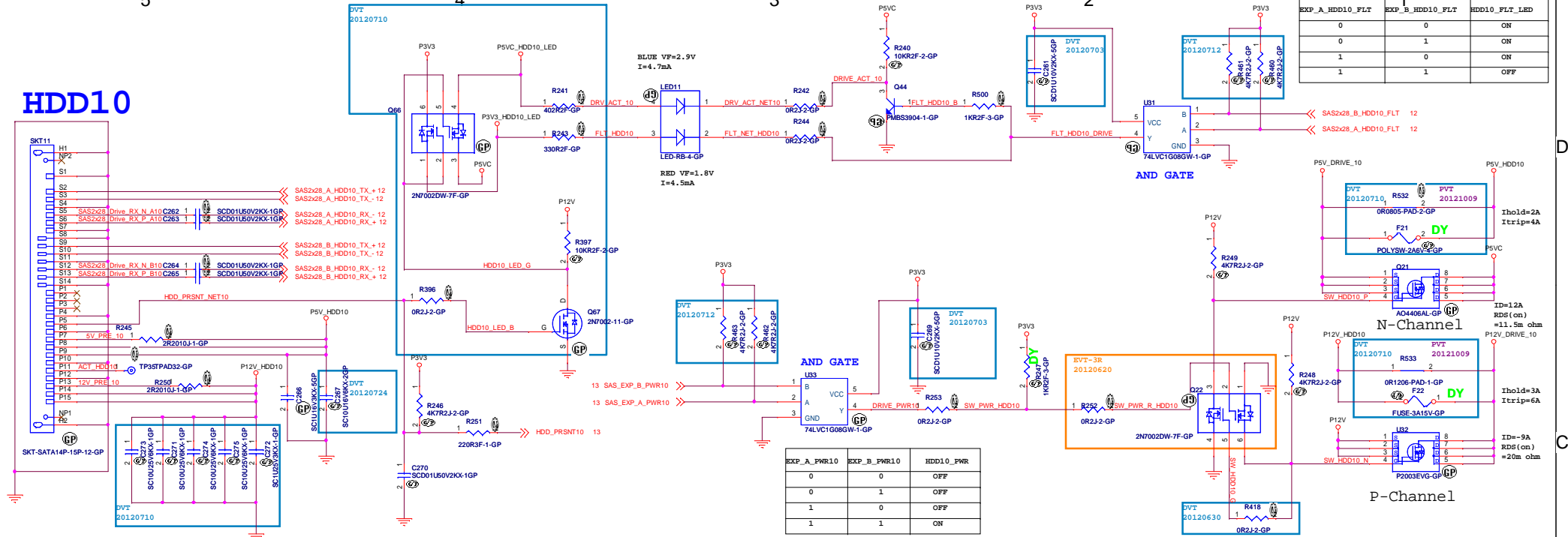
B

A

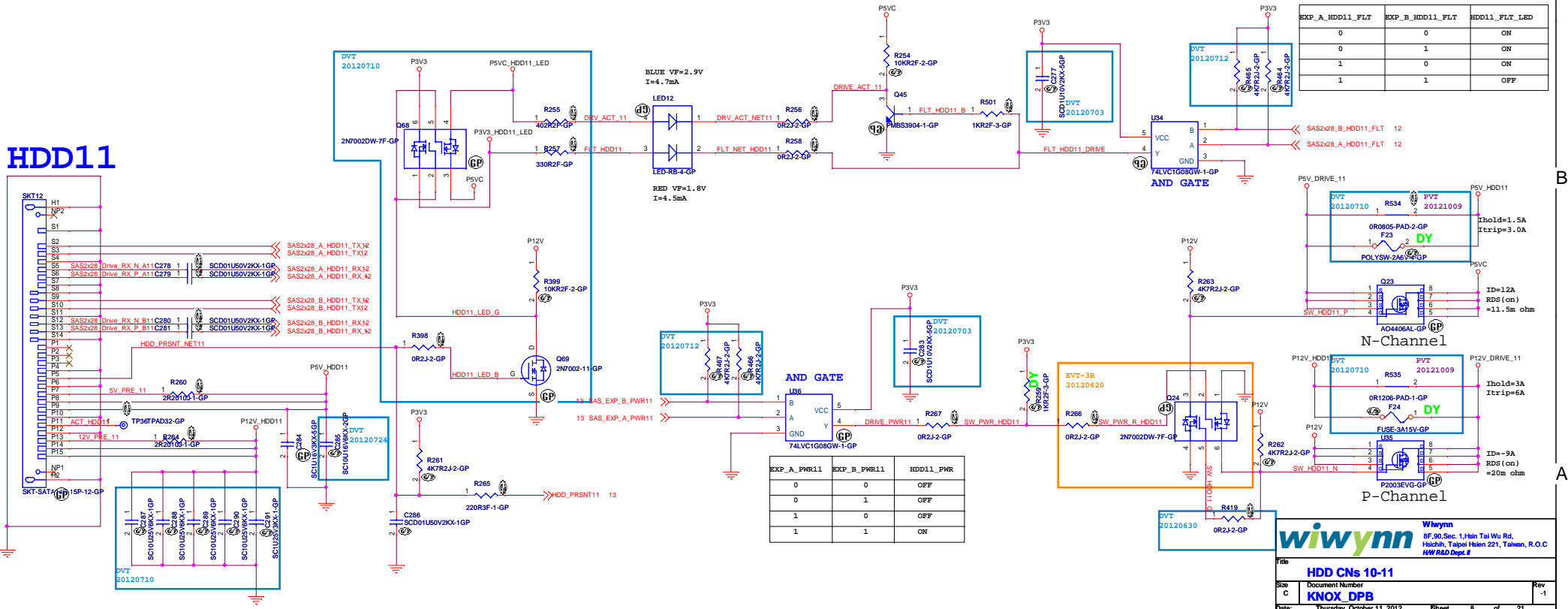




# HDD10



# HDD11



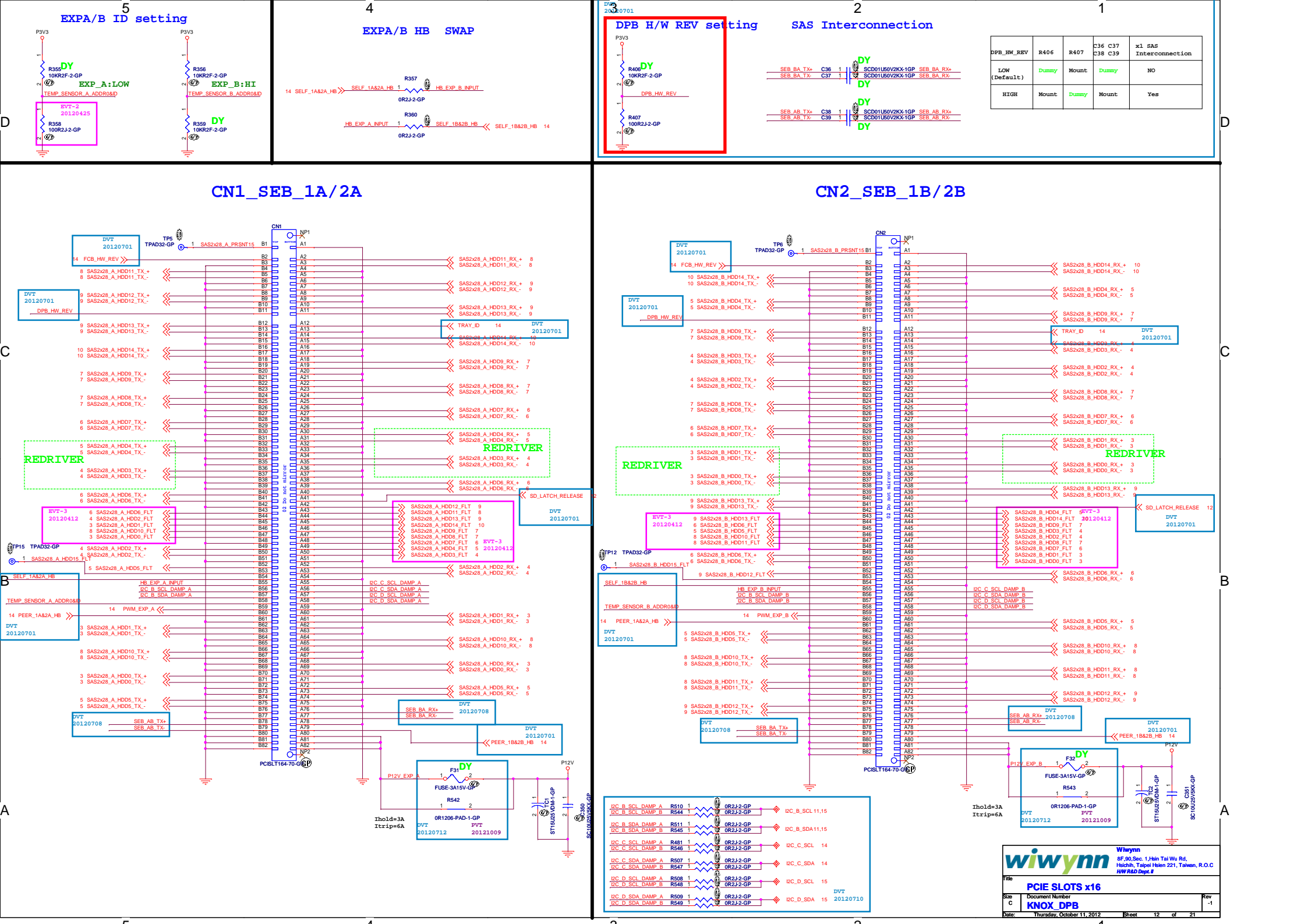






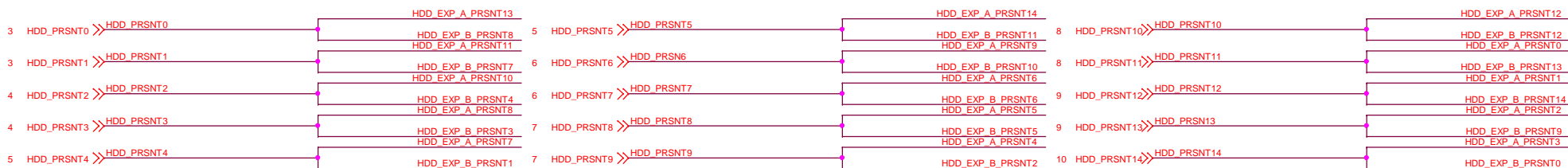
c

A



EVT-3  
20120412

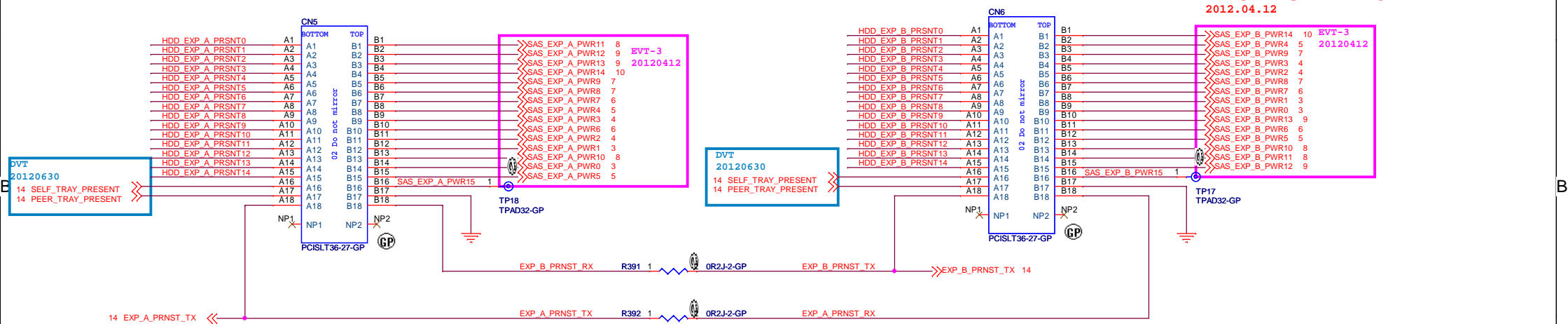
### HDD\_PRSNT MAP TO EXP\_36P PCIE CONN



### EXP\_A\_36P PCIE CONN

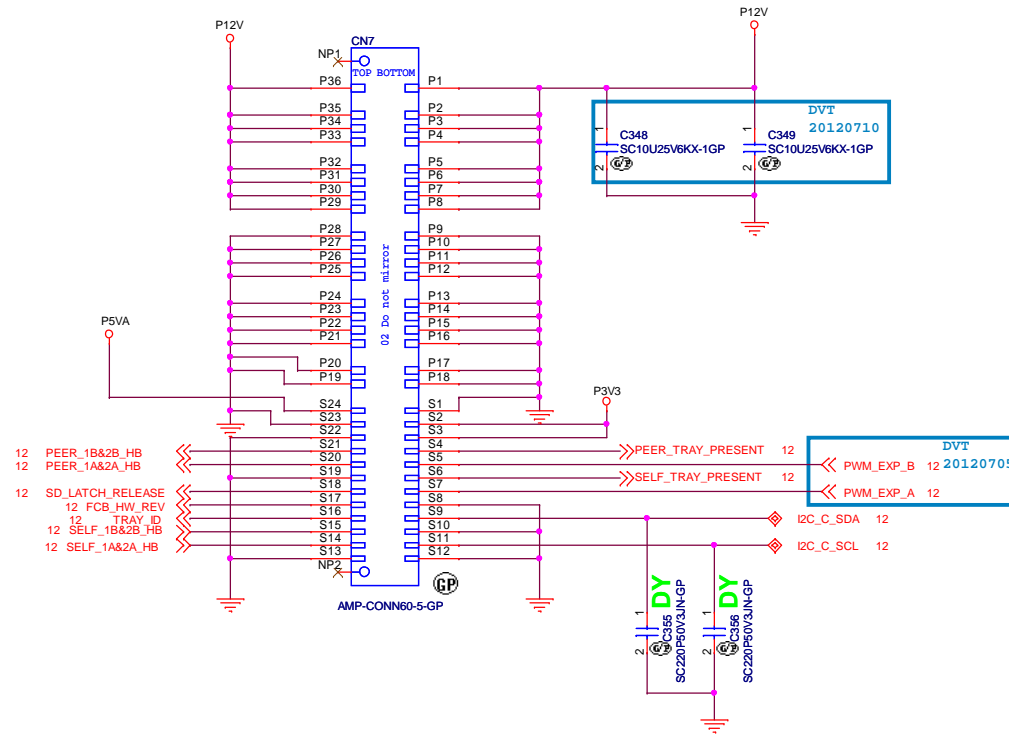
### EXP\_B\_36P PCIE CONN

modify to map HDD PWR signals  
2012.04.12



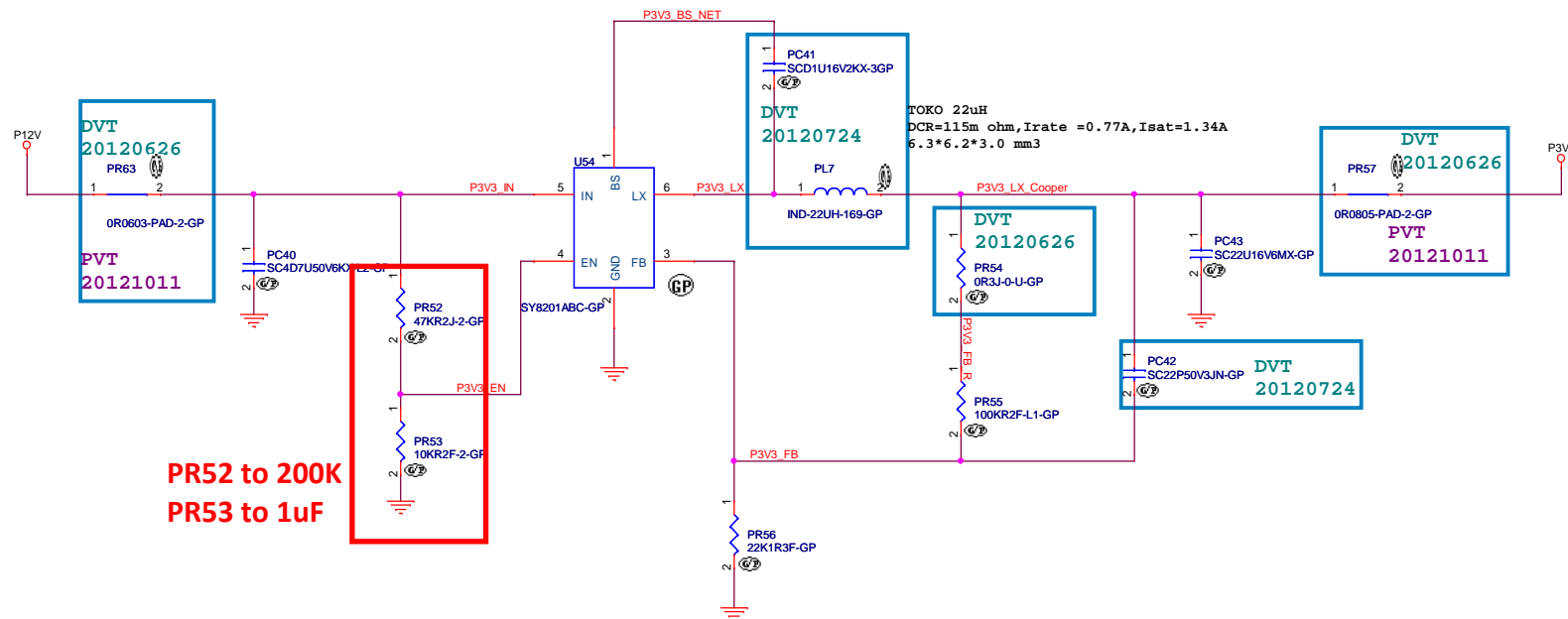
DVT  
20120630

## STRADDLE CONN



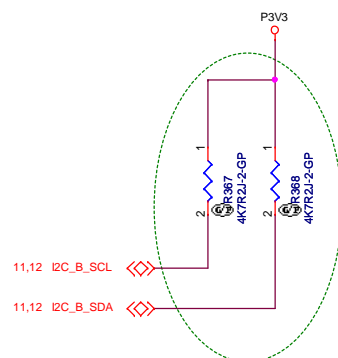
# P3V3 SWITCHING SY8021

VIN=12V  
VOUT=3.3V  
MAX=0.2A  
OCP=1.5A  
FS=500kHz

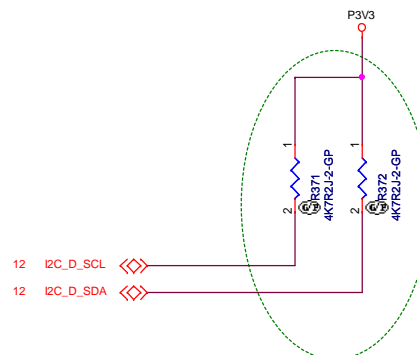


PR52 to 200K  
PR53 to 1uF

## I2C\_B Pull-High



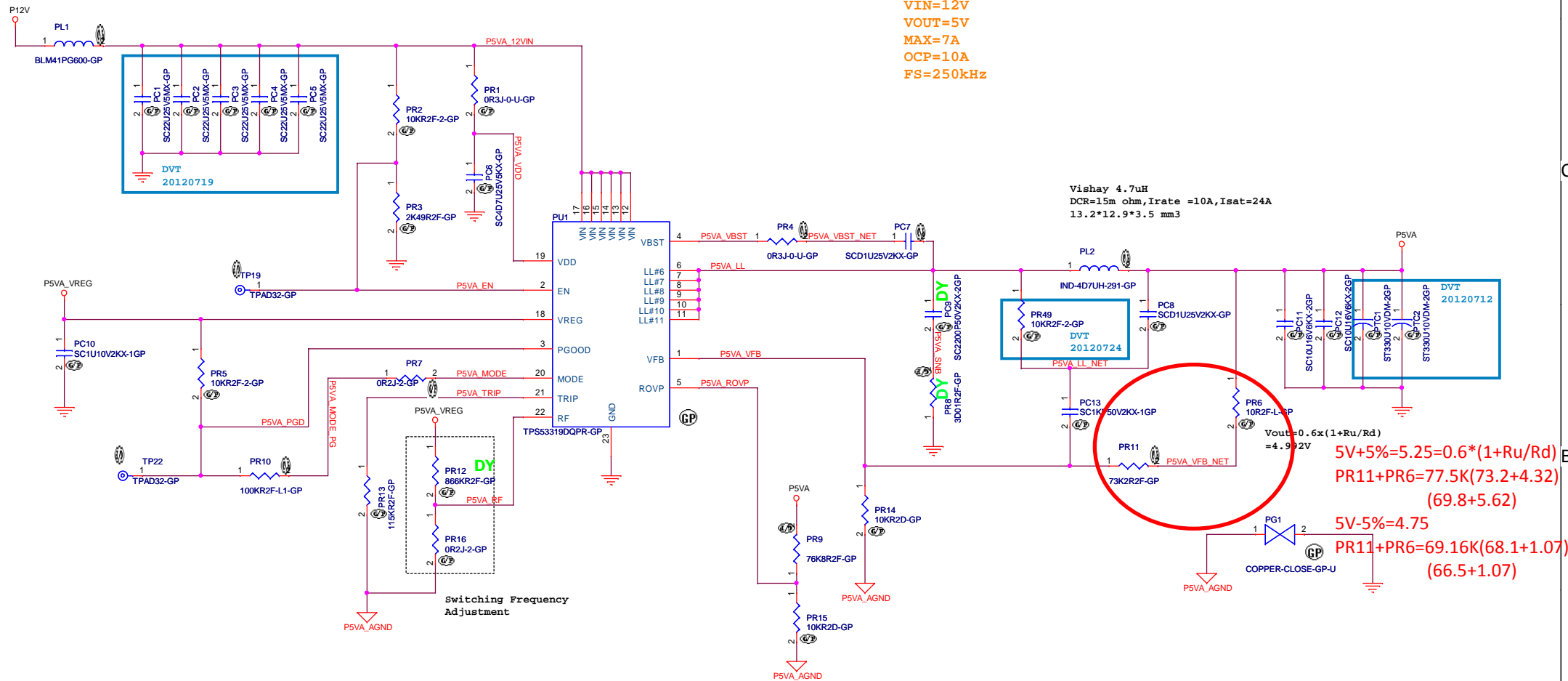
## I2C\_D Pull-High



Between CN1 and CN2

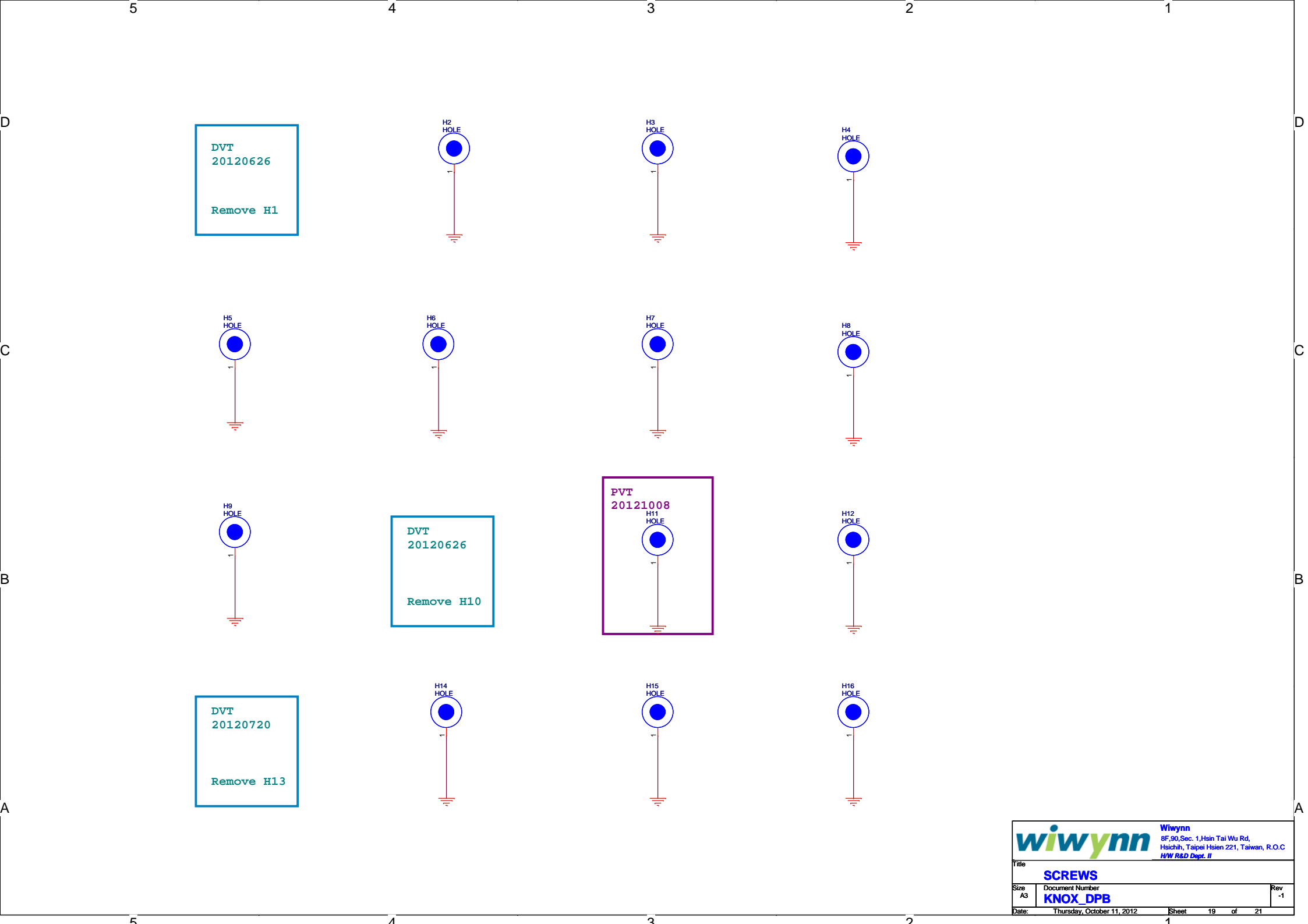


VIN=12V  
VOUT=5V  
MAX=7A  
OCP=10A  
FS=250kHz









D	2012/02/28 3rd schematic review		4	3	2	1	1
	V03: (Johnson #3054)						
	2012/03/05						
D	1. Add I2 to 5V solutions, sheet 16-18.						D
	2. Add P12V to P3V3 solution(LDO to Buck), sheet 15.						
	2012/03/12						
D	1. Change SAS2x28_A_HDD15_TX+/- to PIN.B78/B79, sheet 12.						D
	V04: (Johnson #3054)						
	2012/03/14						
D	1. HDD LED behavior change						D
	Blue LED is for healthy status, it is reverse from fault, seet 3-10.						
	EVT-1_V05: (Johnson #3054)						
D	2012/03/27						D
	1. Re-order RX diff pairs of HDD 15, 6, 5, 10, 11 and 12, for SEB_B, sheet 12.						
	EVT-2_V01: (Bryan #2702) (BOM modified)						
C	2012/04/25						C
	1. Corrected the net name for 12V, 5VA, B and C sense voltage, sheet 11.						
	2. Modified EXP ID setting pull down resistance R358 from 10K to 100 ohm, sheet 12.						
C	3. Change all HDD FLT, PWR signals pull up resistances from dummy to 100K ohm, sheet 3-10.						C
	4. Use wire jump to add HDD3 PWR pull up resistance R436, sheet 4.						
	5. Use wire jump to add HDD13 FLT pull up resistance R505 & R506, sheet 9.						
C	EVT-3_V01: (Bryan #2702) 04/12 Gerber released						C
	2012/04/12						
	1. Added map of Hdd PRSNT signal connect to EXP CONN, sheet 14.						
C	2. Modified CN5.CN6 PWR pin name to map HDD PWR signals, sheet 14						C
	3. Modified CN1.CN2 FLT pin name to map HDD FLT signals, sheet 12.						
	4. Reverse pulling out detection LED16 pin (layout modified), sheet 13.						
B	EVT-3R_V01: (Bryan #2702) (Only BOM Change)						B
	2012/06/20						
	1. Fine tune voltage offset and fix without SEB to cause I2C_C floating issue						
B	a.) Dummy 4.7K ohm pull up resistors on location R342.and R344 beyond buffer, sheet 11.						B
	b.) Mount 10K ohm pull up resistors on location R369 and R370 before buffer, sheet 15.						
	2. Modifed 0 ohm PR54 symbol, because of sourcer strategy, it's still 0 ohm and just for different Wiwynn P/N, sheet 15.						
B	3. Fix HDD 12V can't turn off issue, sheet 3-10.						B
	a.) Modify dual BJT to MOSFETon location Q1.Q4.Q6.Q8.Q10.Q12.Q14.Q16.Q18.Q20.Q22.Q24.Q26.Q28.Q30.						
	b.) Modify MOSFET gate resistor from 1K to 0 ohm on location R112.R126.R140.R153.R168.R182.R196.R210.R224.R238.R252.R266.R280.R294.R308.						
B	4. Add Revision control on page 1.						B
	5. Mount 100K PU R on location R436 for HDD3 PWR control, sheet 4.						
	6. Mount 100K PR R on location R505 and R506 for HDD13 FLT, sheet 9.						
A	DVT_V01: (Andy #6068)						A
	2012/07/01						
	1. Move "Pulling out detection", "PWR&FFC CONN", "I2C_C buffers and PU R" to PTB						
A	a.) Pulling out detection, sheet 13.						A
	Remove: Q31, Q32, Q33, LED16, R366, R363, R478, R374, R375, R376, R377, R378, R365.						
	b.) PWR and FFC CONN, sheet 14.						
A	Remove: CN3 (FFC), CN4 (4P PWR)						A
	R384, R385, TC3, TC4, TC5, C355.						
	c.) I2_C buffers, sheet 11.						
A	Remove: U51 (PCA9525), U55 (PCA9507)						A
	R342, R343, R344, R353, R479, R480, R481.						
	C344, C345, C356, C364, C365, C366.						
A	d.) I2C_C PU, sheet 15.						A
	Remove: R369, R370.						
	2. Add LED power control circuits for each HDD0 to 14, sheet 3-10.						
A	a.) Remove reserved LED 3.3V supply voltage, R393 to R407.						A
	b.) Add BJT base R 1K ohm: R343, R353, R365, R369, R374, R376, R378, R384, R393, R394, R396, R398, R400, R402, R404.						
	c.) Add BJT collect R 10K ohm : R342, R344, R363, R366, R370, R375, R377, R383, R385, R395, R397, R399, R401, R403, R405						
A	d.) Add NPN BJT, Q49, Q50, Q51, Q53, Q55, Q57, Q59, Q61, Q63, Q65, Q67, Q69, Q71, Q73, Q75.						A
	e.) Add N-channel MOSFET, Q31, Q32, Q33, Q52, Q54, Q56, Q58, Q60, Q62, Q64, Q66, Q68, Q70, Q72, Q74.						
A							A
A							A
A							A
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A				A			

DVT\_V02: (Andy #6068)

2012/07/08

- 1. change R389 to 2K to enlarge the voltage after divider from 1.09V to 2V, sheet 11.
- 2. Add change note for interconnection SAS pairs, sheet 12.  
SEB\_AB\_TX+, SEB\_AB\_TX-, SEB\_BA\_RX+, SEB\_BA\_RX-, SEB\_BA\_TX+,SEB\_BA\_TX-,SEB\_AB\_RX+, SEB\_AB\_RX-
- 3. Add change note for "FCB\_HW\_REV" and correct the note for CN2, sheet 12.
- 4. Change the off-page symbol for signal PWM\_EXP\_B and PWM\_EXP\_A from output to input type, sheet 14.
- 5. Reserve 0 ohm resistor R542 and R543 with 1206 package for 12V to SEB, sheet 12.

2012/07/10

- 1. change R389 to 2K to enlarge the voltage after divider from 1.09V to 2V, sheet 11.
- 2. Add change note for interconnection SAS pairs, sheet 12.  
SEB\_AB\_TX+, SEB\_AB\_TX-, SEB\_BA\_RX+, SEB\_BA\_RX-, SEB\_BA\_TX+,SEB\_BA\_TX-,SEB\_AB\_RX+, SEB\_AB\_RX-
- 3. Add change note for "FCB\_HW\_REV" and correct the note for CN2, sheet 12.
- 4. Change the off-page symbol for signal PWM\_EXP\_B and PWM\_EXP\_A from output to input type, sheet 14.
- 5. Reserve 0 ohm resistor R542 and R543 with 1206 package for 12V to SEB, sheet 12.
- 6. Remove reserved 1uF cap for each AND supply power, sheet 3-10.  
C101, C109, C116, C124, C132, C140, C148, C157, C164, C170, C180, C186, C196, C202, C212, C218, C228, C234, C244, C252, C260, C268, C276, C282, C292, C300, C308, C314, C325, C337.
- 7. LED power control circuitry correct, sheet 3-10.
  - a.) Change K ohm R343, R353, R365, R369, R374, R376, R378, R384, R393, R394, R396, R398, R400, R402, R404 to 0 ohm
  - b.) Change BJT to MOSFET on locations Q49, Q50, Q51, Q53, Q55, Q57, Q59, Q61, Q63, Q65, Q67, Q69, Q71, Q73, Q75.
- 8. Depopulate 12V and 5V PTC, populate 0 ohm, sheet 3-10.
  - a.) Mount 0 ohm R with 1206 package on locations R512, R513, R517, R519, R521, R523, R525, R527, R529, R531, R533, R535, R537, R539, R541 for 12V.
  - b.) Mount 0 ohm R with 0805 package on locations R514, R515, R516, R518, R520, R522, R524, R526, R528, R530, R532, R534, R536, R538, R540 for 5V.
  - c.) Depopulate PTC F1 to F30 .
- 9. Change all caps 12votls from 16V to 25V rating to have more margin, sheet 3-10, 14, 16-18.
  - a.) change from 10uF/16V to 10uF/25V on locations  
C111-C114, C126-C129, C142-C145, C159-C162, C174-C177, C191-C194, C207-C210, C223-C226, C239-C242, C255-C258, C271, C273-C275, C287-C290, C302-C306, C318-C321, C333-C336, C348, C349, total 62 pcs.
  - b.) Change from 1uF/16V to 1uF/25V on locations  
C115, C130, C146, C163, C179, C195, C211, C227, C243, C259, C272, C291, C307, C322, C338, total 15 pcs
  - c.) Change from 22uF/16V to 22uF/25V on locations  
PC1-PC5, PC14, PC16, PC18, PC22, PC24, PC27, PC29, PC31, PC35, PC37, total 15 pcs.
- 10.Add addition damping resistors R544, R545, R546, R547, R548 and R549 for I2C\_B, C and D bus to reduce the lenght.

DVT\_V03: (Andy #6068)

2012/07/12

- 1. Change to value of PU R on AND input from 100K to 4.7K ohm to increase the sink current of gate, sheet 3-10.  
Change: R422-R477, R494-R495, R055-R506, total 60 pcs.
- 2. Bypass PTC with 0 ohm R for 12V to SEB, sheet 12.  
Depopulate F31, F32, Populate R542, R543.
- 3. Change the voltage rating of 330uF POS cap, PTC1-PTC6 from 6.3V to 10V for 5V power rail, sheet 16-18.

2012/07/20

- 1. Remove screw hole H13 to accomodate with ME drawing, sheet 19.

2012/07/24 (BOM change only)

- 1. Simplify material type and use one rating sheet 11, 16, 17 and 18.
  - a.) Change PR49, PR50 and PR51 from 10K J tolerance to 10K F tolerane.
  - b.) Change R381, R364 from 4.7K F to J tolerance, the same as other 4.7K parts.
  - c.) Change PC41 0.1U 16V K0402 to non-limited P/N, only P/N changed.
  - d.) Change C107 C123 C139 C155 C173 C189 C206 C221 C237 C251 C267 C285 C299 C317 C331 from 10U 16V Z1206 Y5V to 10U 16V K1206 X7R.
  - e.) Change PC42 to non-limited P/N, only P/N changed.
- 2. Due to the output current is small for 3.3V switching power,  
change PL7 from 68uH to 22uH to prevent double pulses issue as happened on FCB.

PVT\_V01: (Andy #6068)

2012/10/08

- 1. Change the diameter of H11 the same as H5, sheet 19.

PVT\_V02: (Andy #6068)


2012/10/09

- 1. change 0805 size for HDD 5V PTC bypass  
R514, R515, R516, R518, R520, R522, R524, R526, R528, R530, R532, R534, R536, R538, R540, total 15 pcs to "gap close".
- 2. Suggest to change 1206 size for HDD 12V and SEB PTC bypass  
R512, R513, R517, R519, R521, R523, R525, R527, R529, R531, R533, R535, R537,R539, R541, R542, R543, total 17 pcs to "gap close".

PVT\_V03: (Andy #6068)

2012/10/11

- 1. Changed reserve 0 ohm for power measurement to "gap close", sheet 15.
  - a.) Change 0603 size PR63 to "gap close".
  - b.) Change 0805 size PR57 to "gap close".



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*IHW RAD Dept.#*

File		
CHANGE HISTORY_2		
Size	Document Number	Rev
C	KNOX_DPB	1A
Date:	Thursday, October 11, 2012	Sheet 21 of 21