

Compal Confidential

Model Name : Z5WAH

File Name : LA-B161P

Compal Confidential

EA50_HB M/B Schematics Document

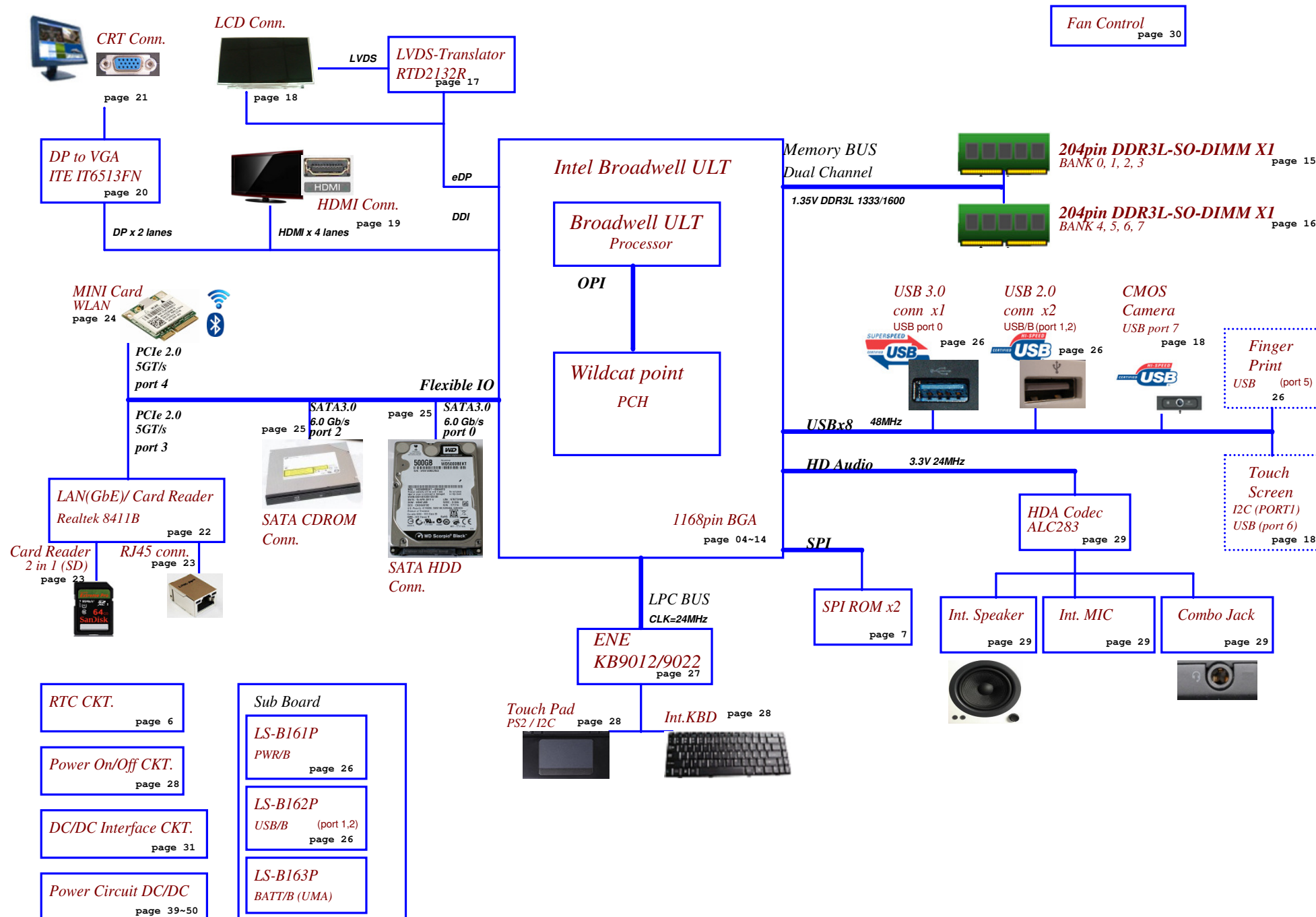
Intel Broadwell ULT (Broadwell + Wildcat point)

2014-03-04

REV : 1 . 0

For 20140225 pre-MP gerber

Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2013/10/30	Deciphered Date	2014/10/30	Title Cover Page	
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[illegible]

EC SM Bus2 address

Device	Address	Device	Address
Smart Battery	0001 011X	On Board Thermal Sensor	0100 110x
		VGA Internal Thermal Sensor	0100 000x
		G Sensor	0011 000x

Device		Address	
ChannelA	DIMM0	1001 000x	JDIMM1
ChannelB	DIMM1	1001 010x	JDIMM2

Board ID / SKU ID Table for AD channel

Vcc	3.3V +/- 5%			
Ra/Rc/Re	100K +/- 5%			
Board ID	Rb / Rd / Rf	V _{AD_BID} min	V _{AD_BID} typ	V _{AD_BID} max
0	0	0 V	0 V	0 V
1	12K +/- 5%	0.347 V	0.354 V	0.360 V
2	15K +/- 5%	0.423 V	0.430 V	0.438 V
3	20K +/- 5%	0.541 V	0.550 V	0.559 V
4	27K +/- 5%	0.691 V	0.702 V	0.713 V
5	33K +/- 5%	0.807 V	0.819 V	0.831 V
6	43K +/- 5%	0.978 V	0.992 V	1.006 V
7	56K +/- 5%	1.169 V	1.185 V	1.200 V
8	75K +/- 5%	1.398 V	1.414 V	1.430 V
9	100K +/- 5%	1.634 V	1.650 V	1.667 V
10	130K +/- 5%	1.849 V	1.865 V	1.881 V
11	160K +/- 5%	2.015 V	2.031 V	2.046 V
12	200K +/- 5%	2.185 V	2.200 V	2.215 V
13	240K +/- 5%	2.316 V	2.329 V	2.343 V

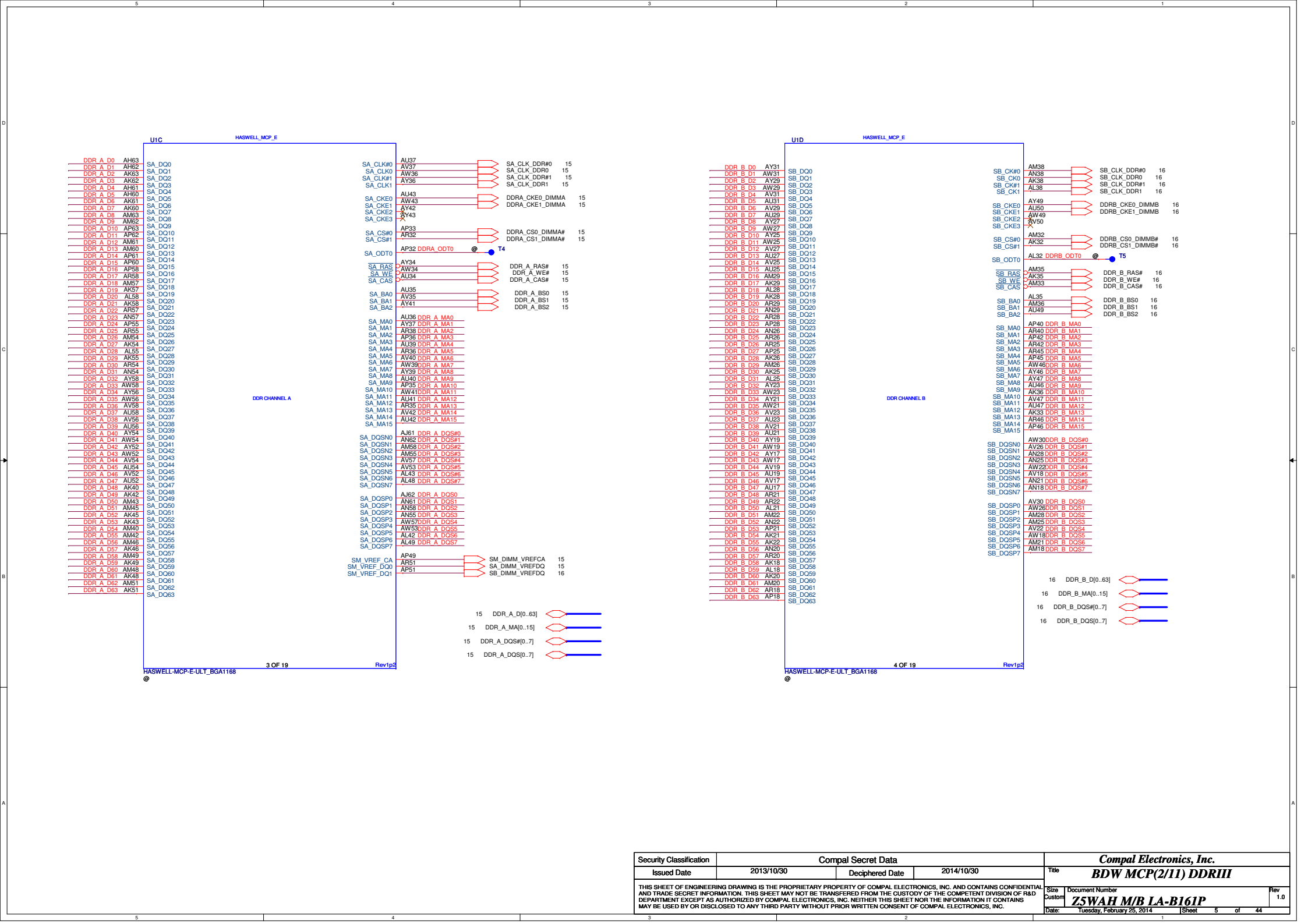
Board ID	PCB Revision
0	0.1
1	0.2
2	0.3
3	1.0
4	
5	
6	
7	

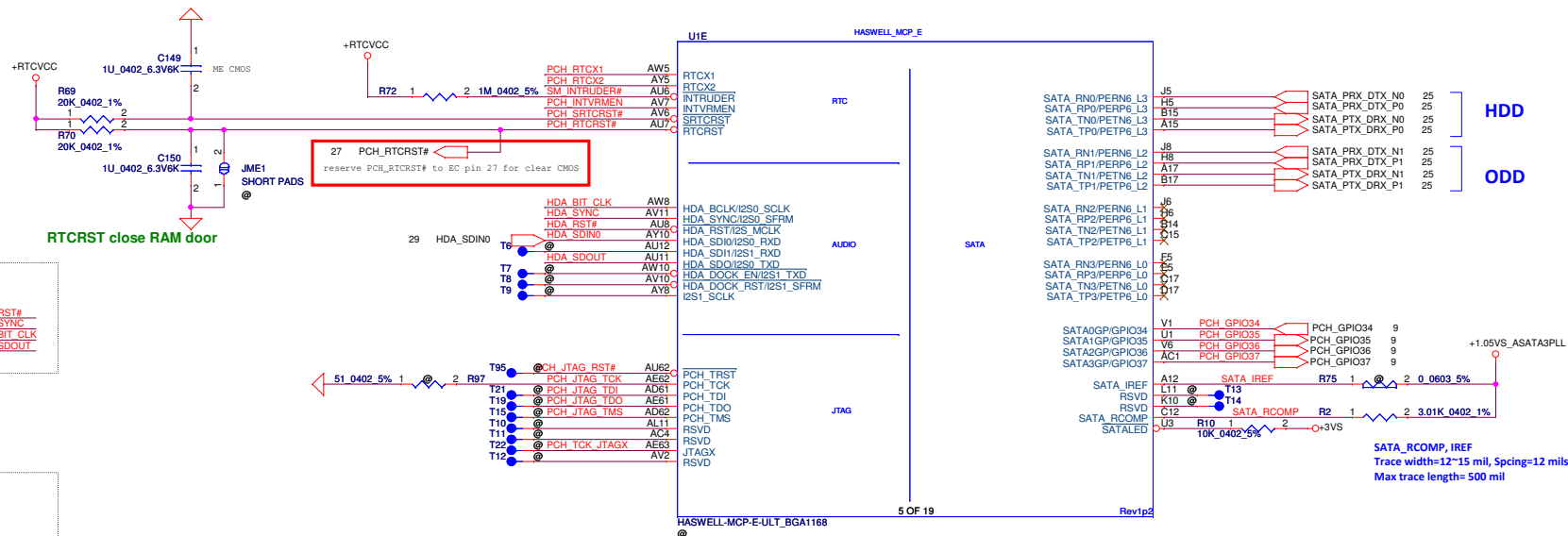
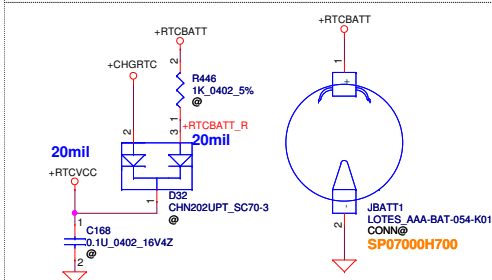
USB 2.0	Port	3 External USB Port
EHCI1	0	USB Port(Left 3.0)
	1	USB Port(Right 2.0)
	2	USB Port(Right 2.0)
	3	
	4	Mini Card (WLAN+BT)
	5	Finger Print
	6	Touch Screen
	7	Camera

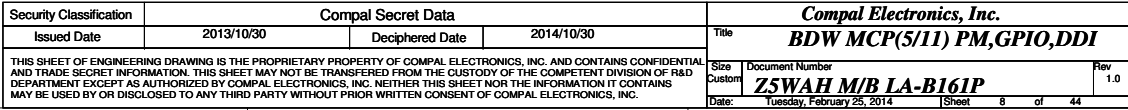
USB 3.0	Port	
XHCI	0	USB Port(Left 3.0)
	1	
	2	
	3	

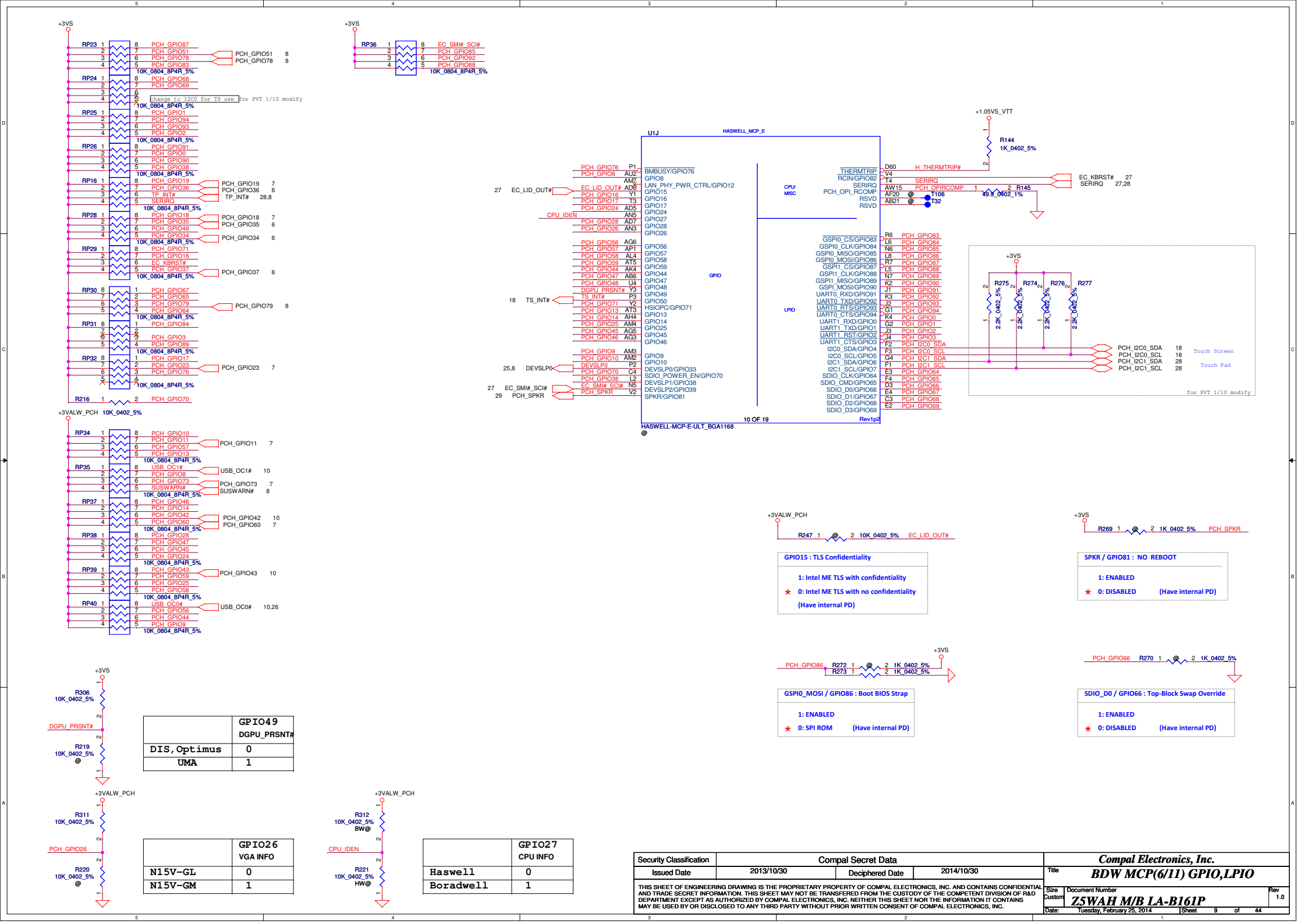
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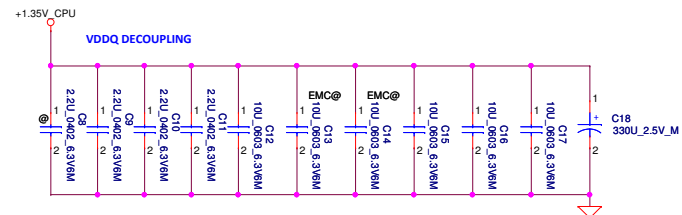
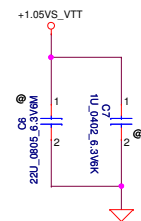
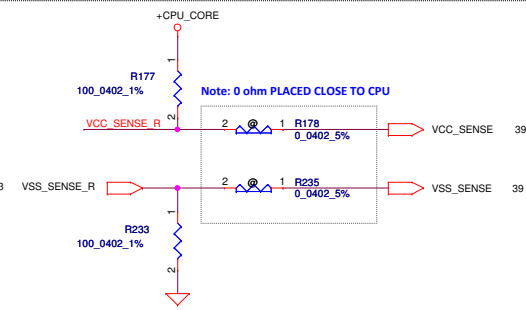
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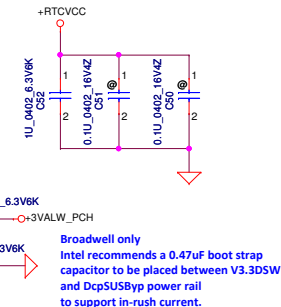




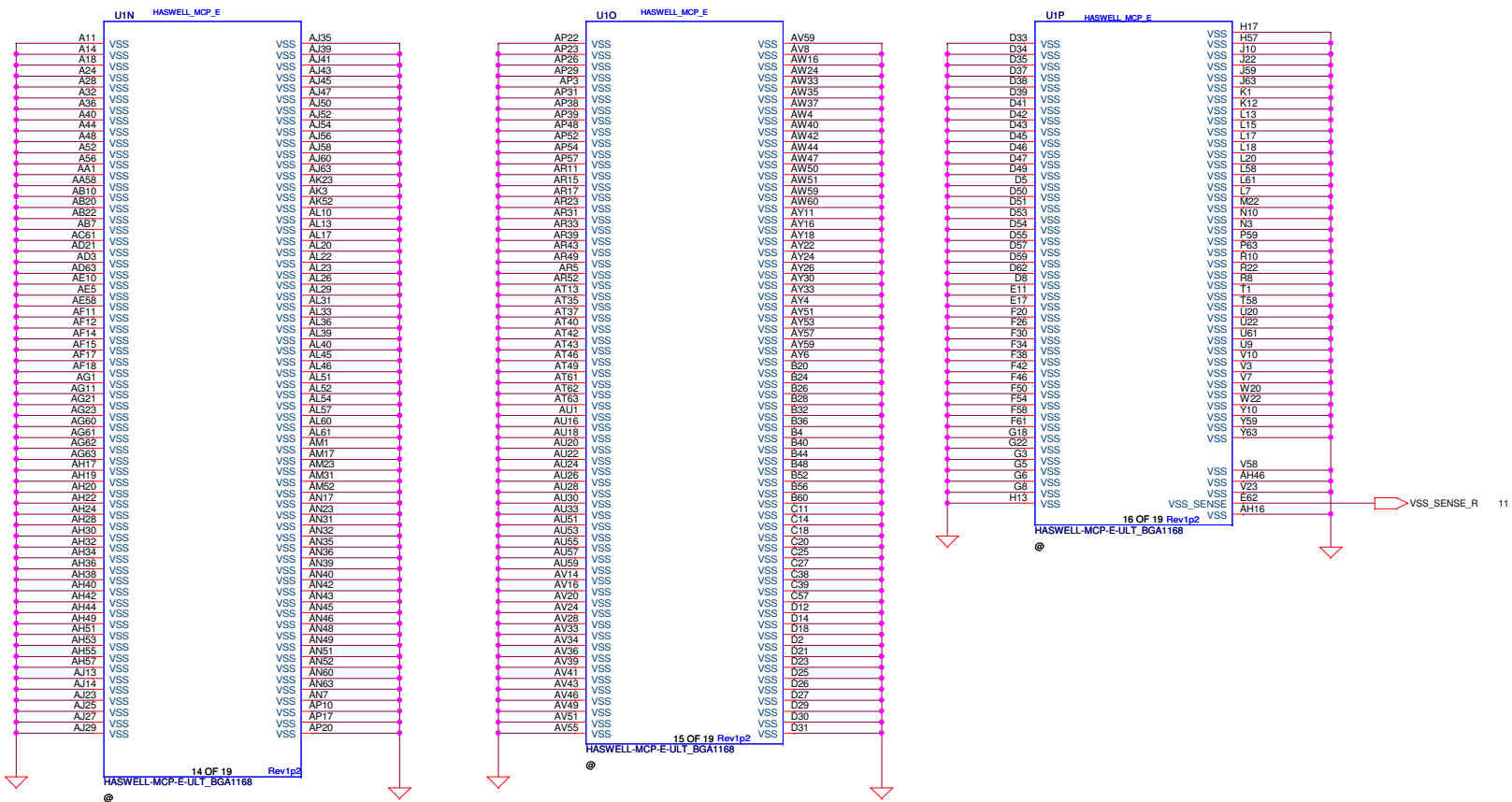


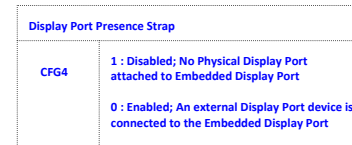
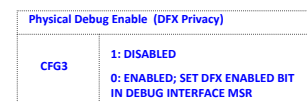
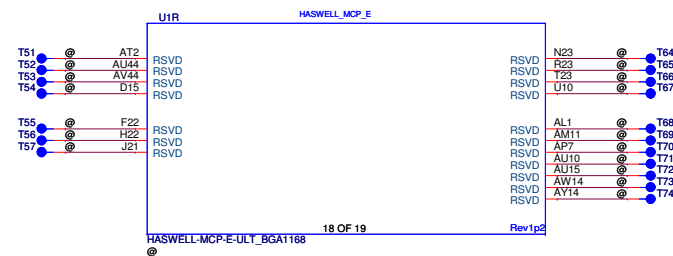


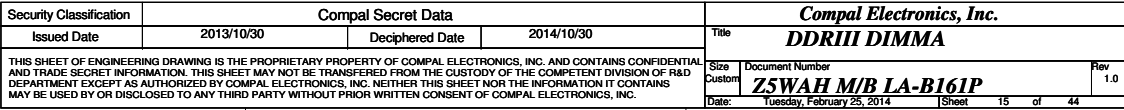
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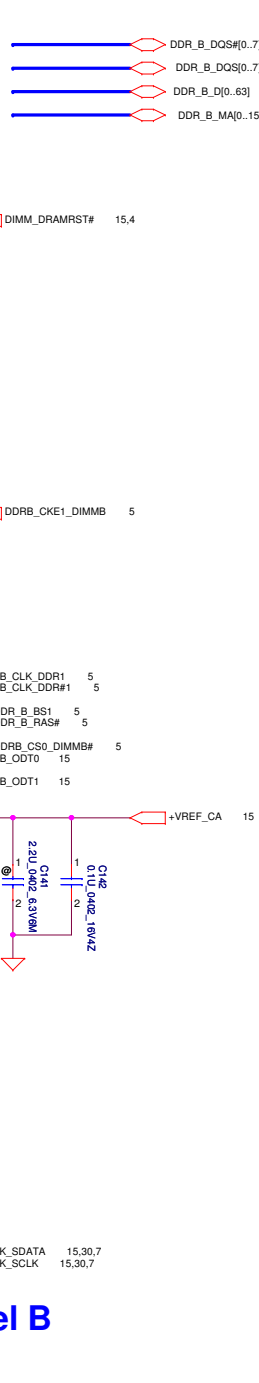
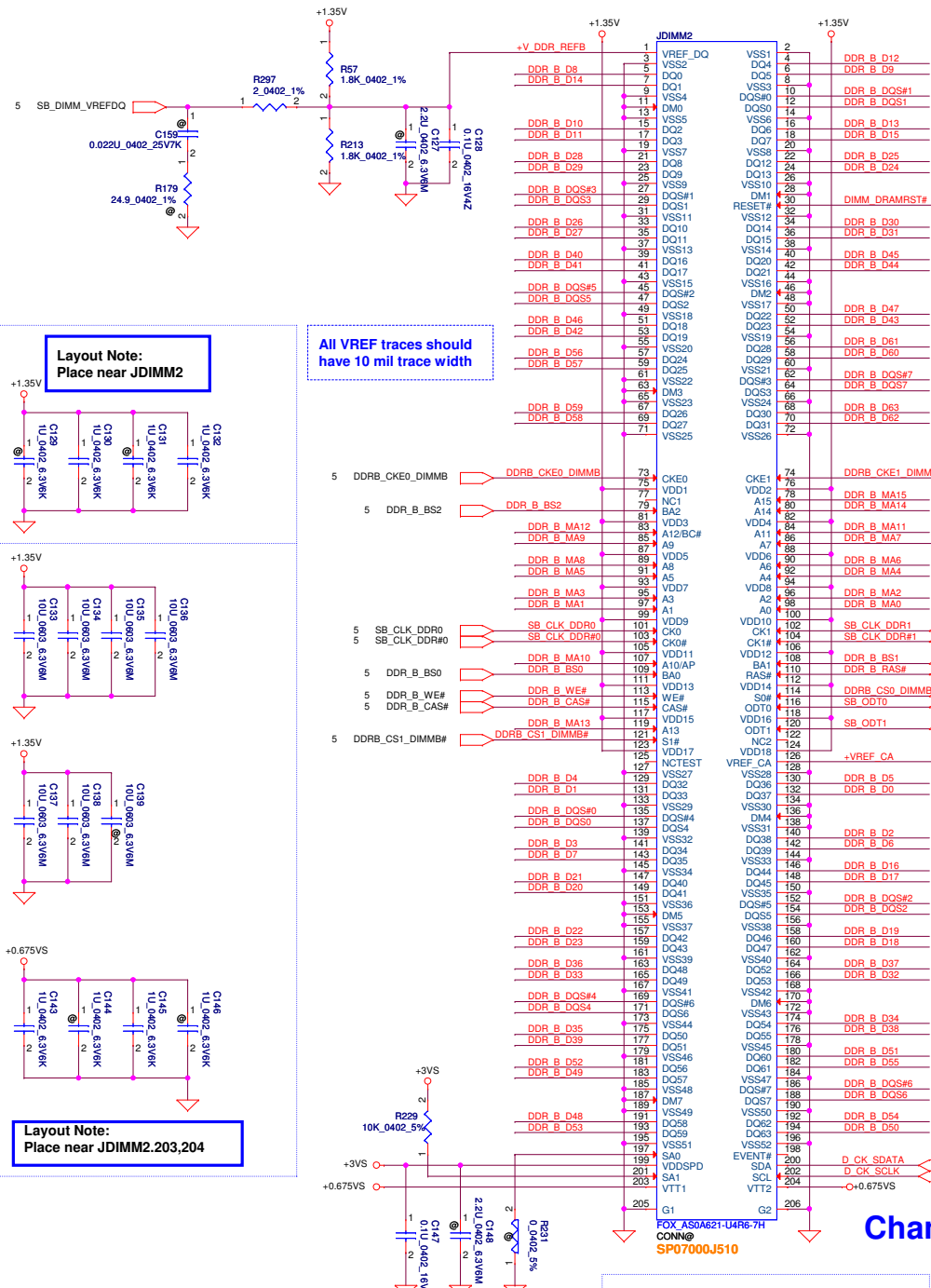


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Channel B

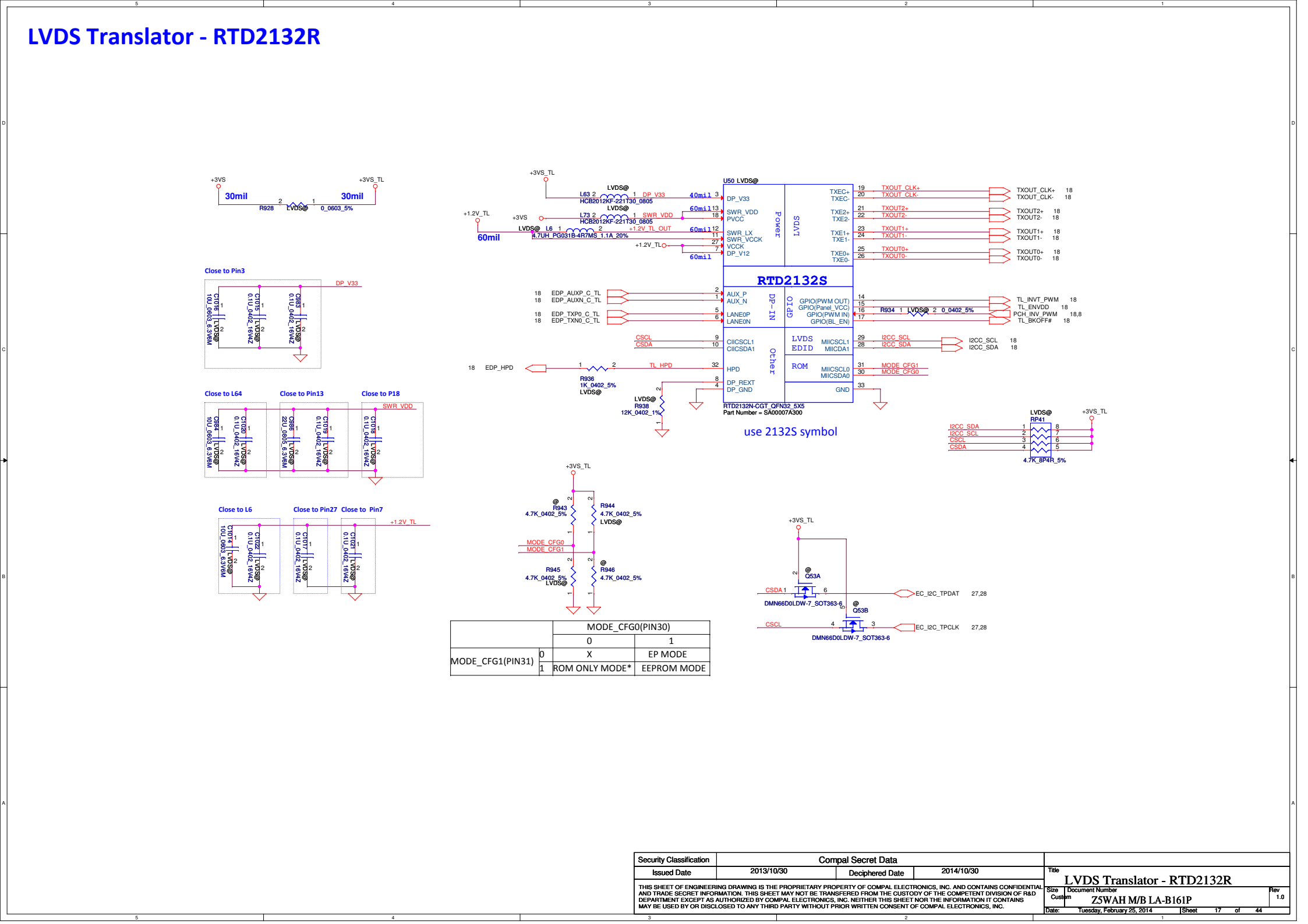
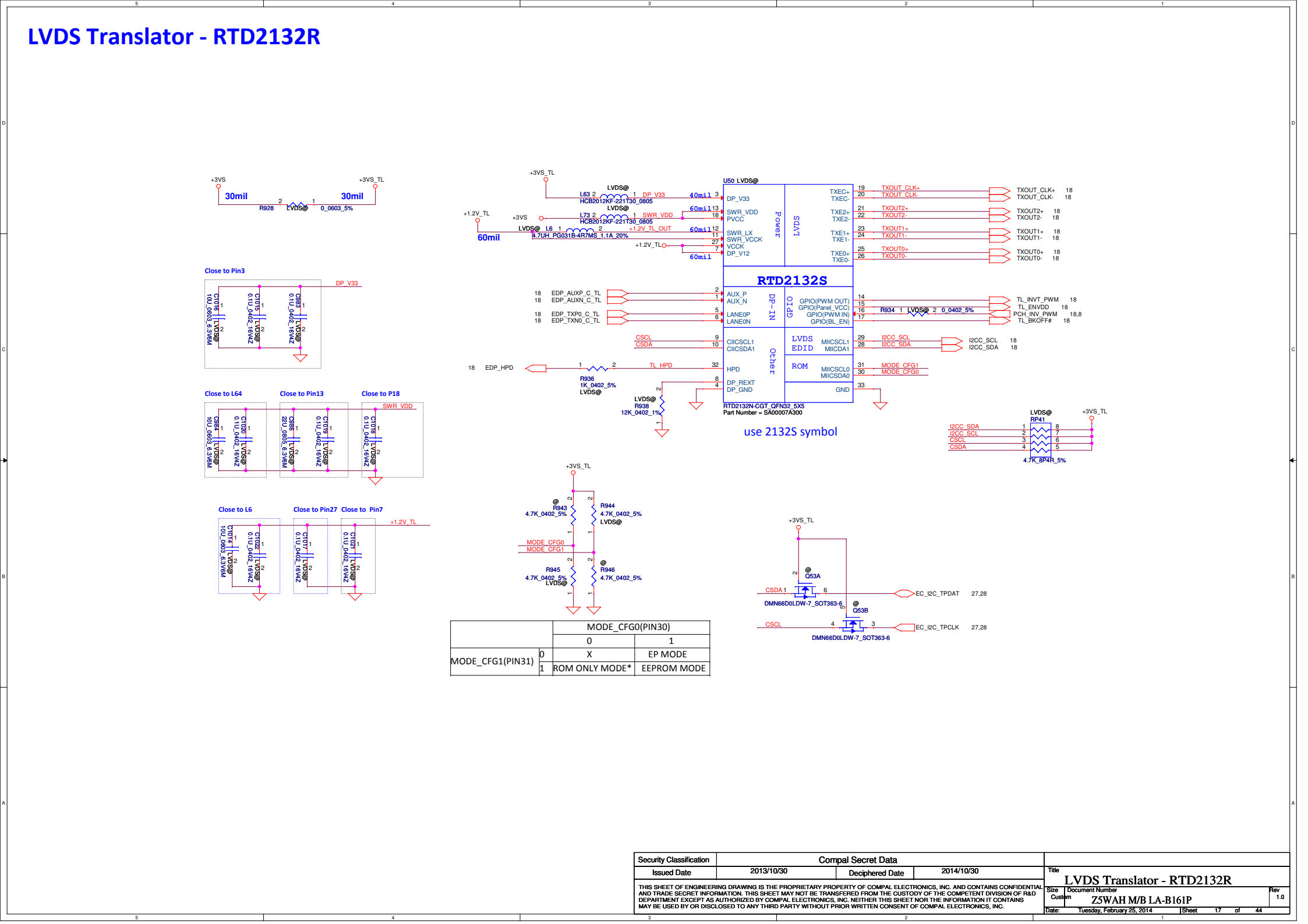
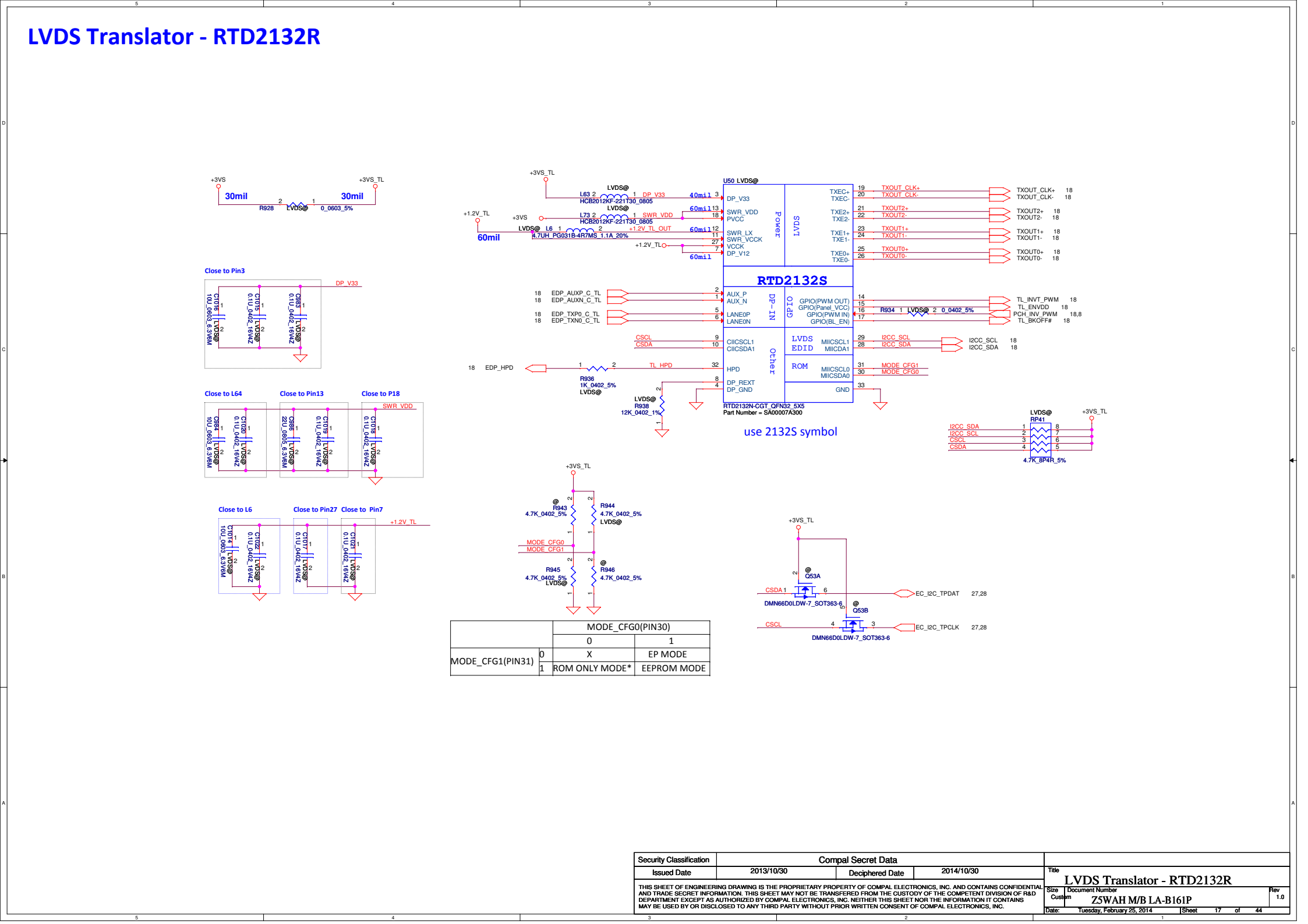
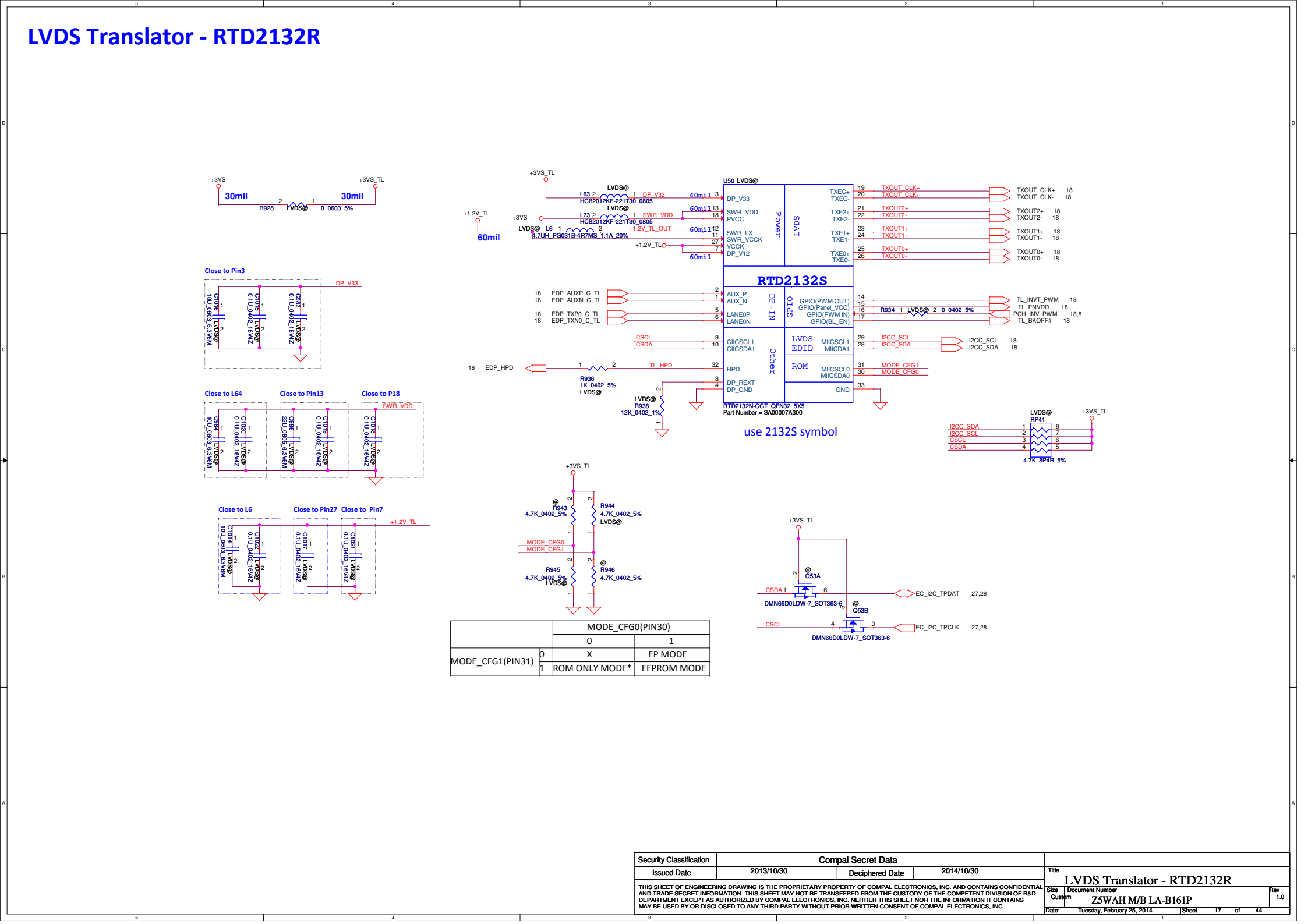
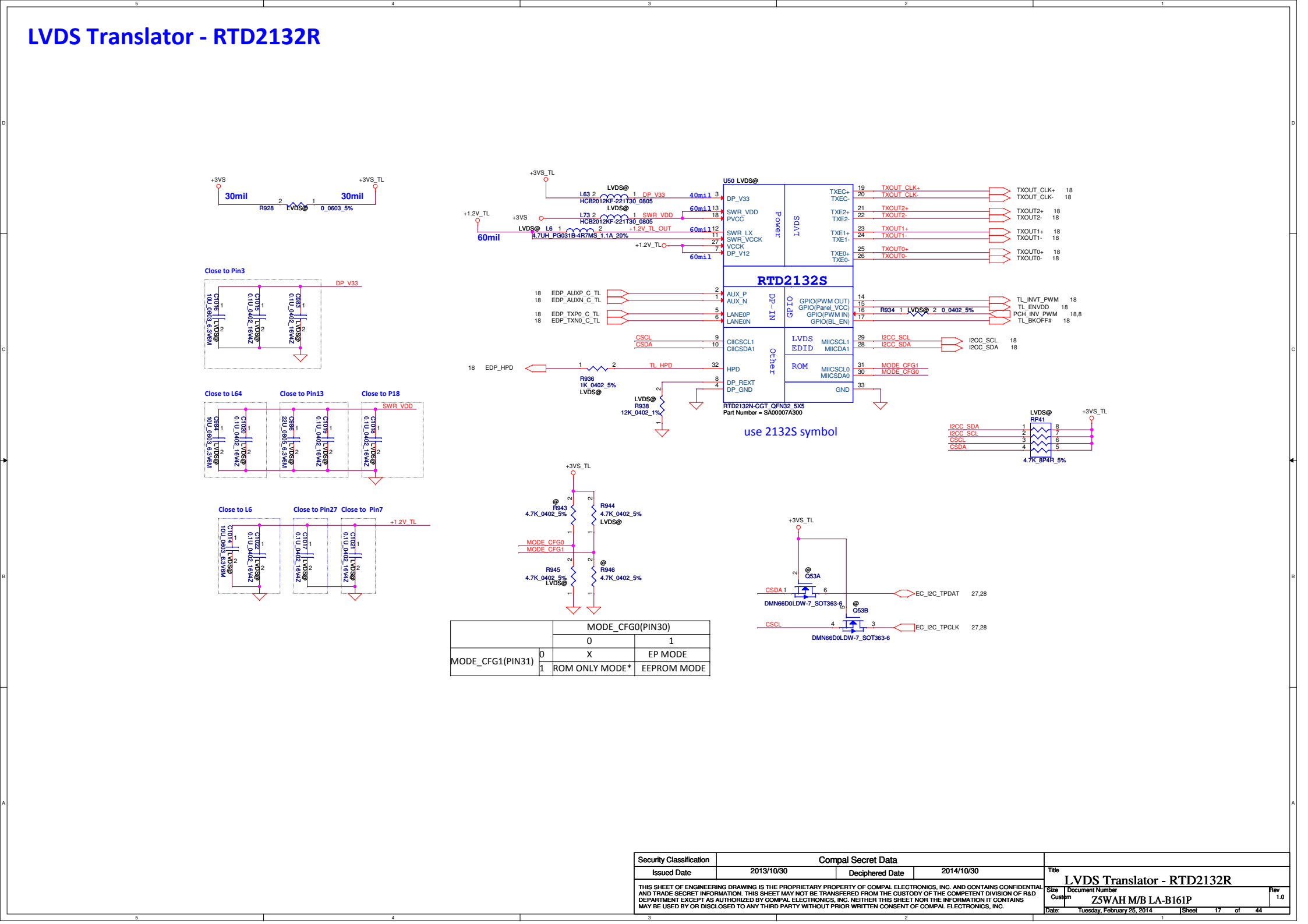
<Address: SA1:SA0=10>
DIMM_2 H:4mm
DIS for Standard type
UMA for Reverse type

LVDS Translator - RTD2132R

MODE_CFG0(PIN30)	
0	1
X	EP MODE
1	ROM ONLY MODE*
	EEPROM MODE

MODE_CFG1(PIN31)	
0	1
X	EP MODE
1	ROM ONLY MODE*
	EEPROM MODE

Security Classification	Compal Secret Data			Title
Issued Date	2013/10/30	Deciphered Date	2014/10/30	LVDS Translator - RTD2132R
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LVDS Translator - RTD2132R

LVDS Translator - RTD2132R

RTD2132S

Power

SDA1

DP-IN

LVDS

EDID

ROM

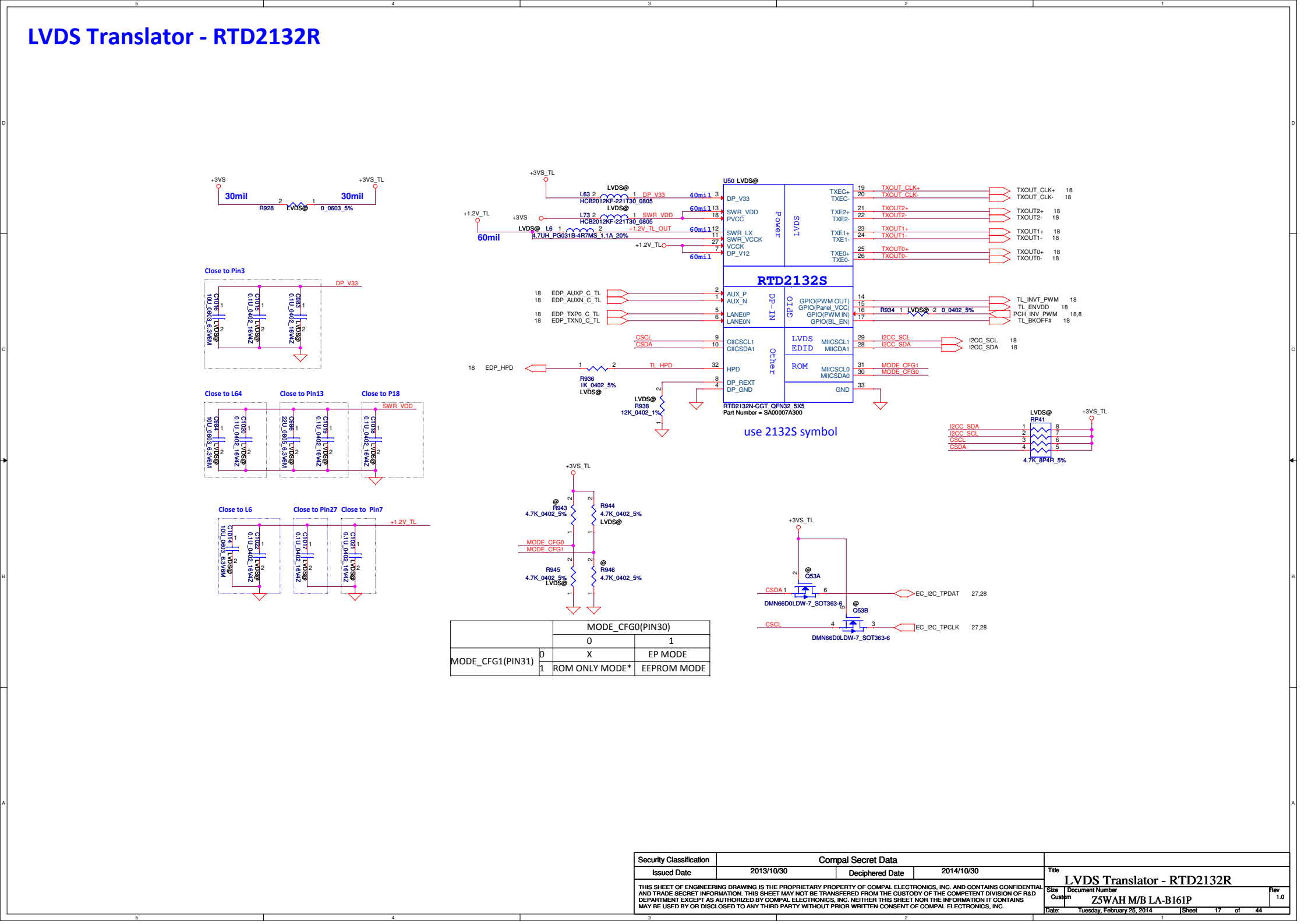
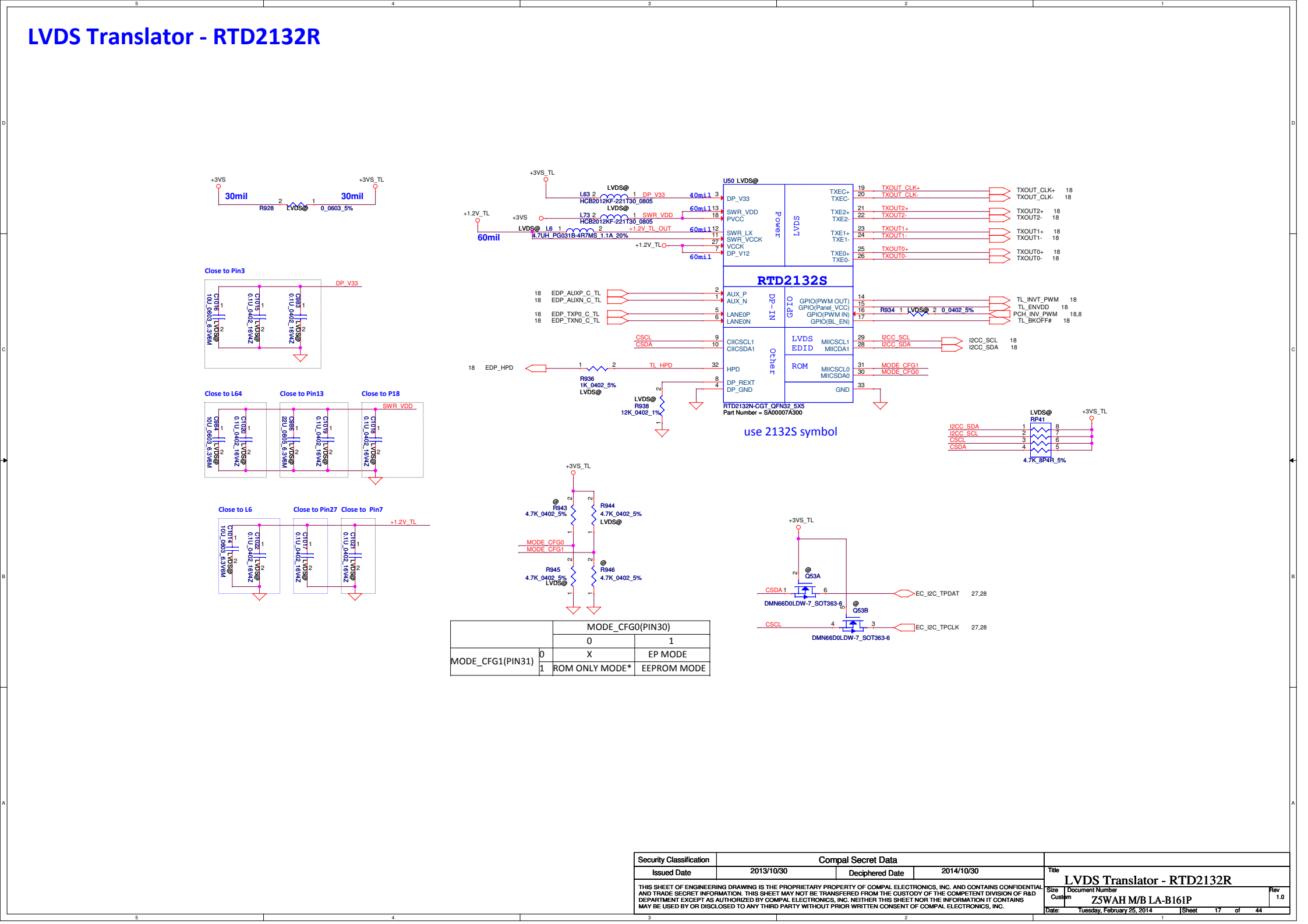
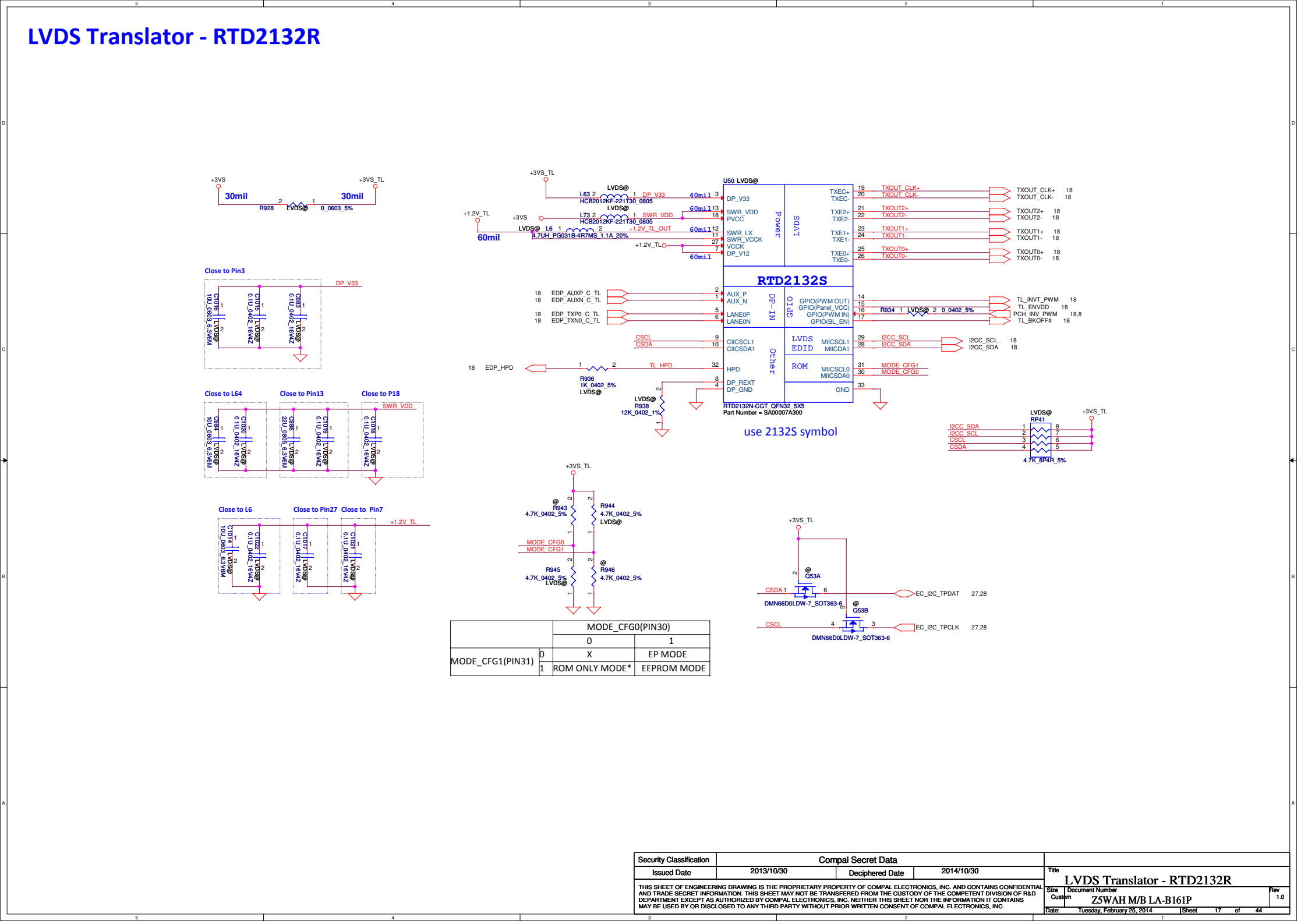
Other

MODE_CFG0(PIN30)

		MODE_CFG0(PIN30)	
		0	1
MODE_CFG1(PIN31)	0	X	EP MODE
	1	ROM ONLY MODE*	EEPROM MODE

use 2132S symbol

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LVDS Translator - RTD2132R

Close to Pin3

Close to L64

Close to Pin13

Close to P18

Close to L6

Close to Pin27

Close to Pin7

MODE_CFG0(PIN30)		
	0	1
MODE_CFG1(PIN31)	X	EP MODE
	ROM ONLY MODE*	EEPROM MODE

Security Classification

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Deciphered Date

2013/10/30

2014/10/30

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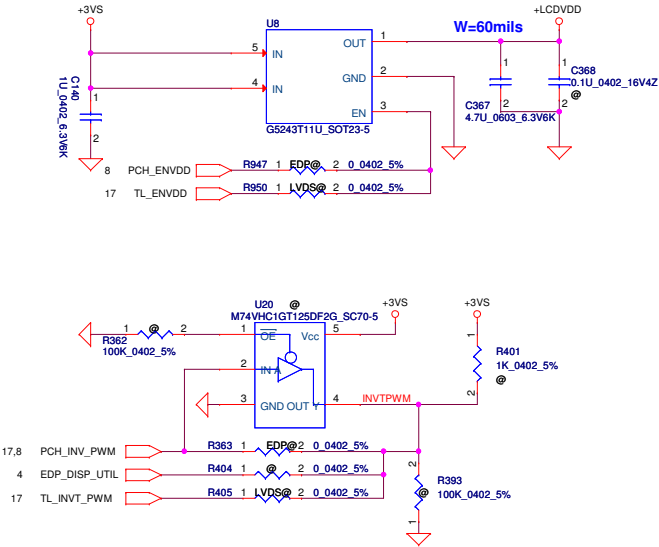
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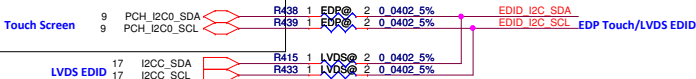
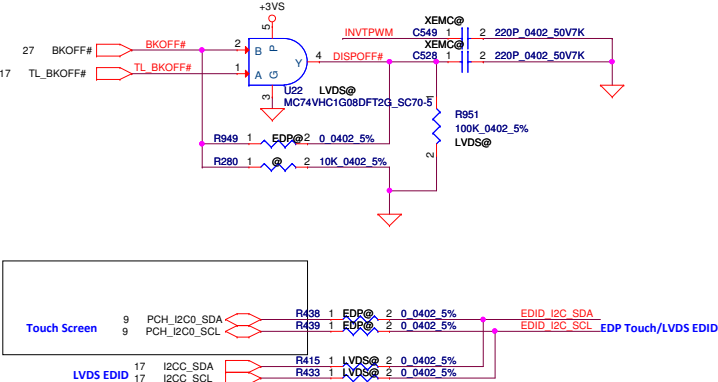
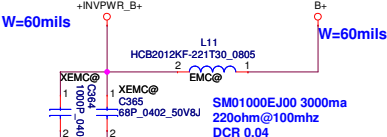
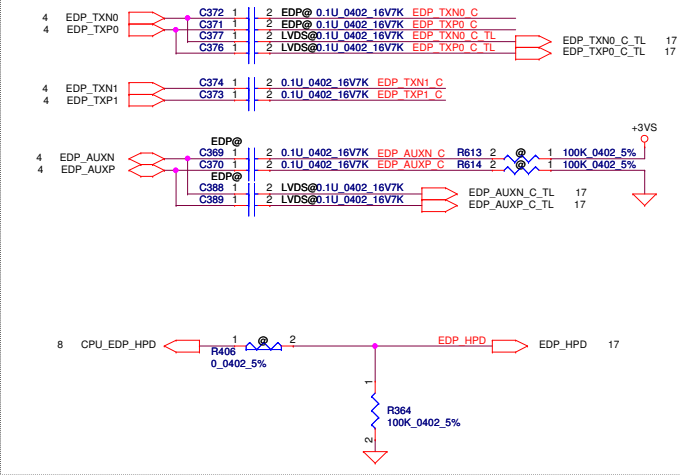
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EDP / LVDS conn.

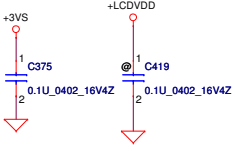
LCD POWER CIRCUIT



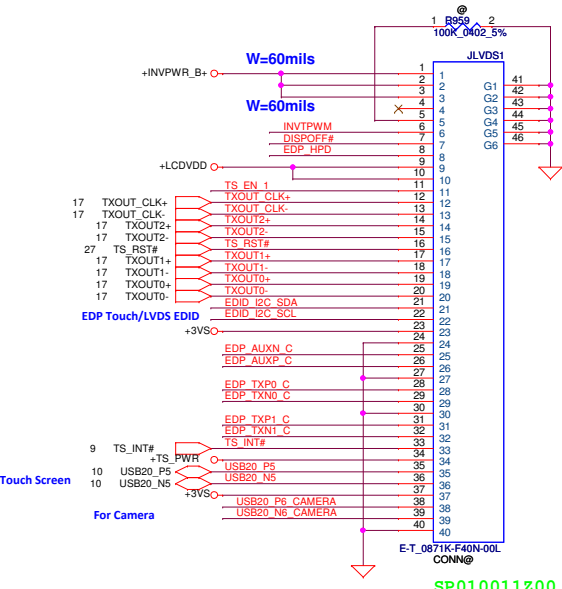
eDP



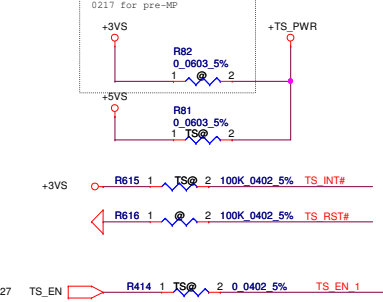
Place closed to JLVDS1



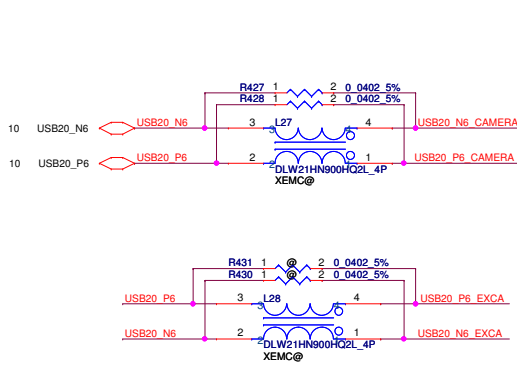
LCD/ LED PANEL Conn.



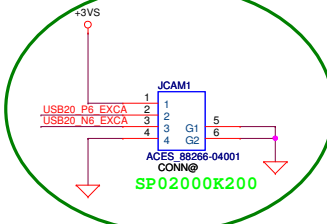
Touch Screen



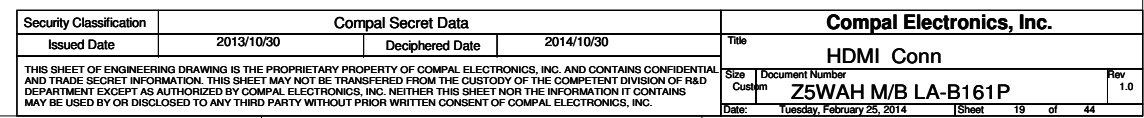
Camera



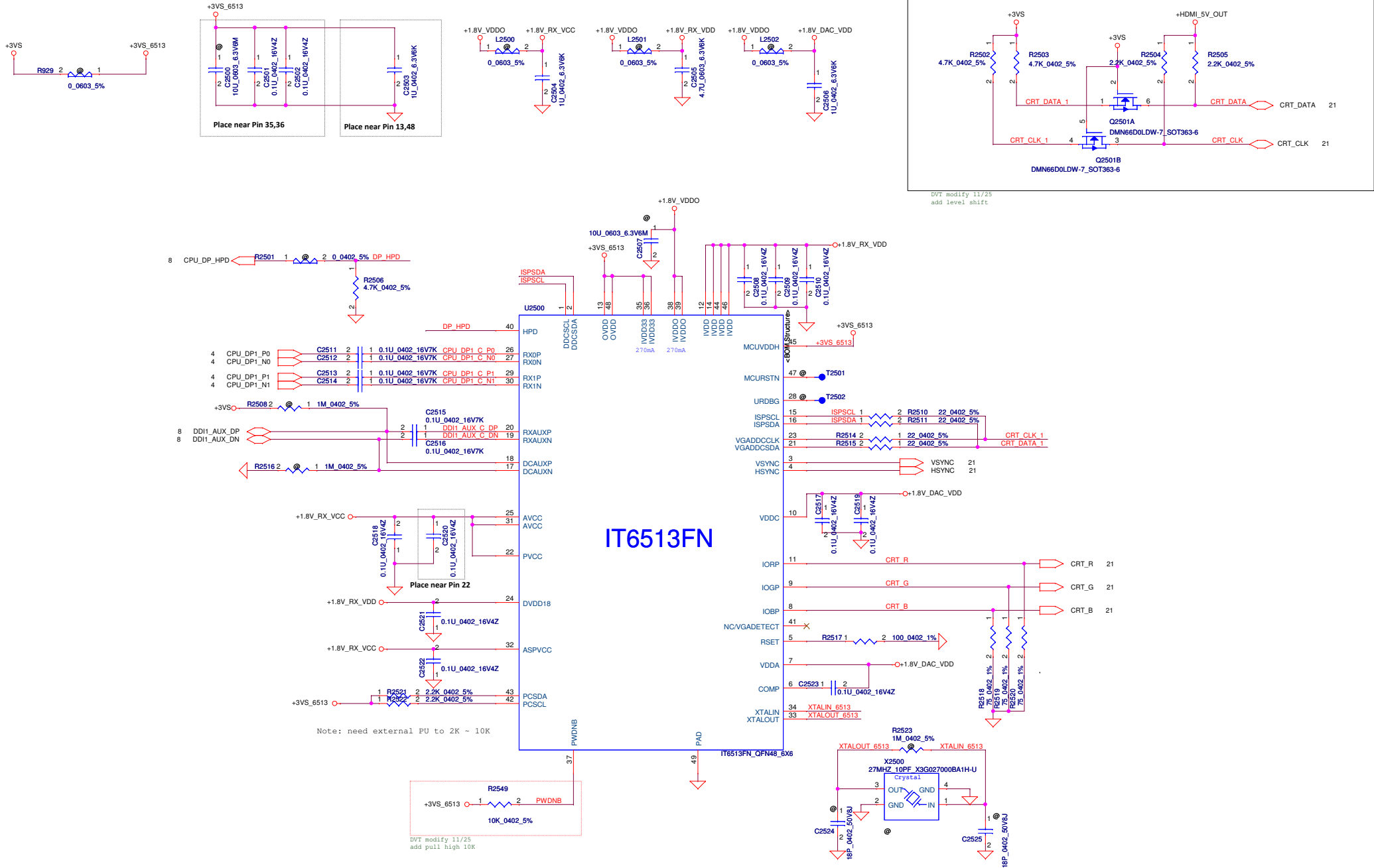
pin define, conn need to confirm



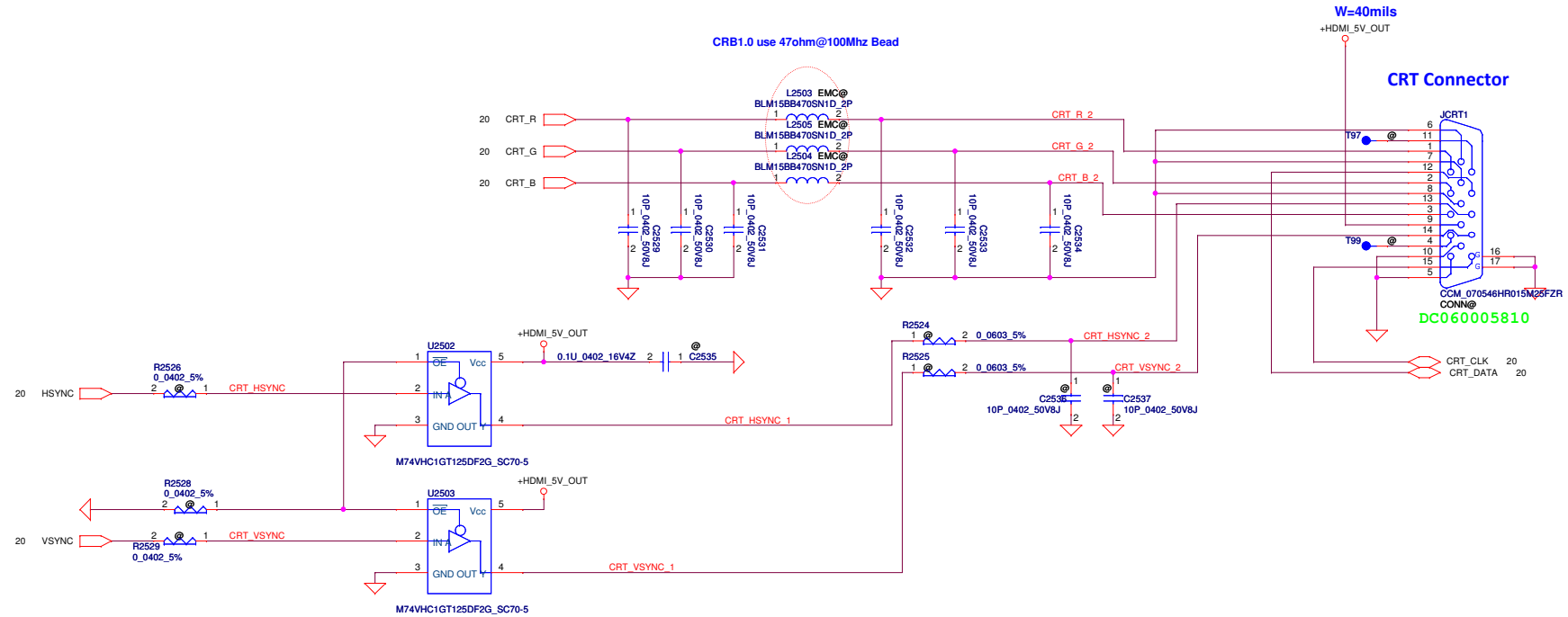
A	B	C	D	E
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DP to VGA-IT6513

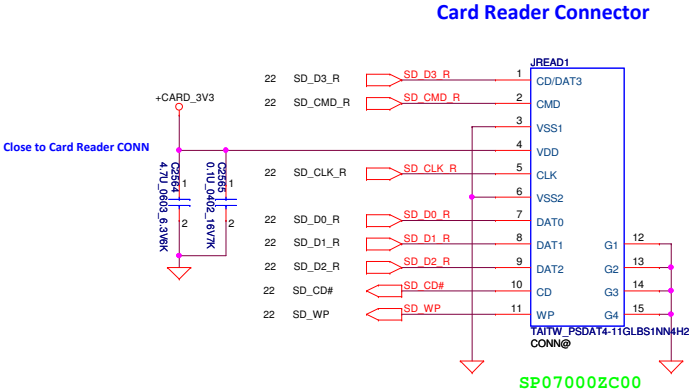
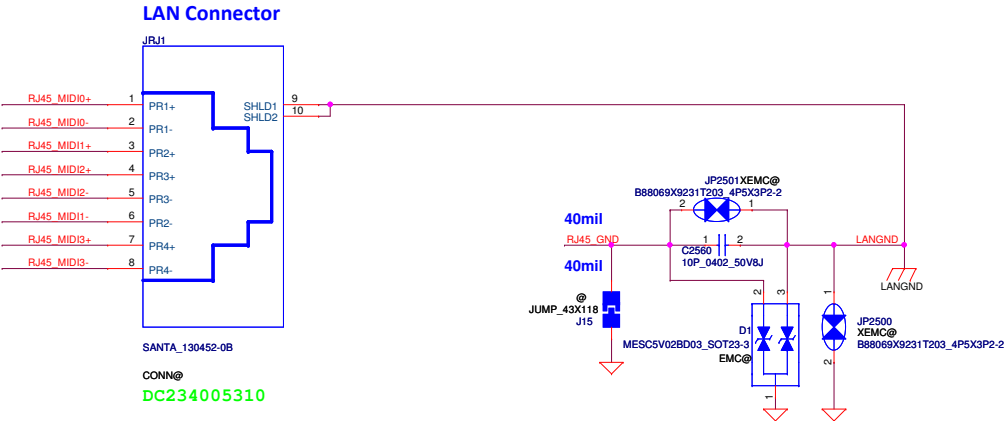
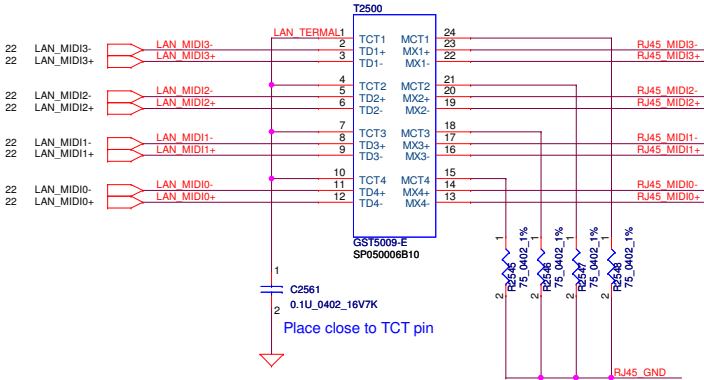


CRT conn.

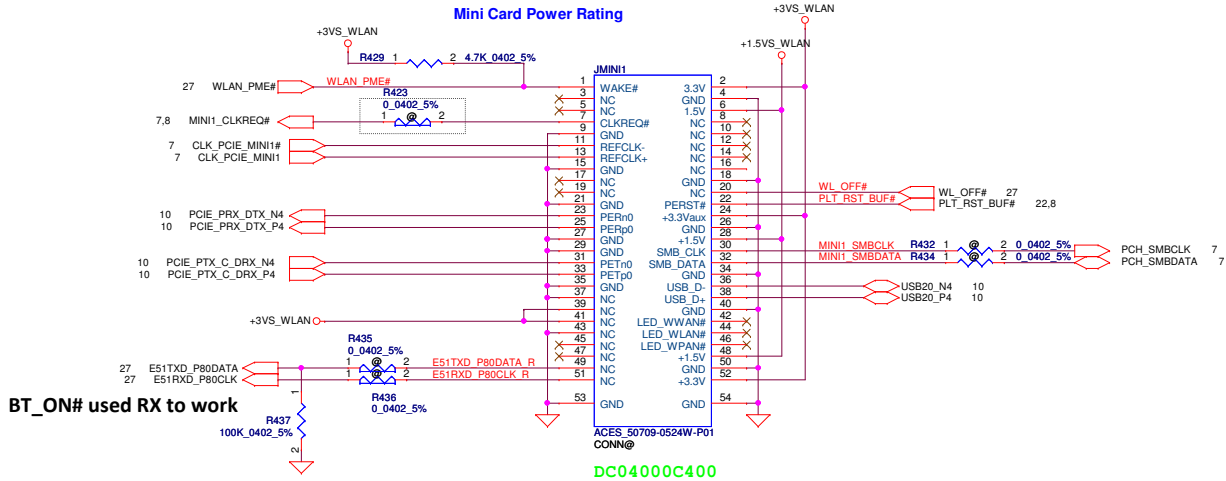
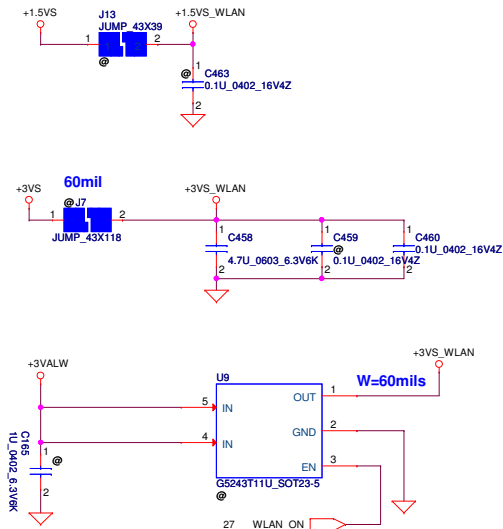


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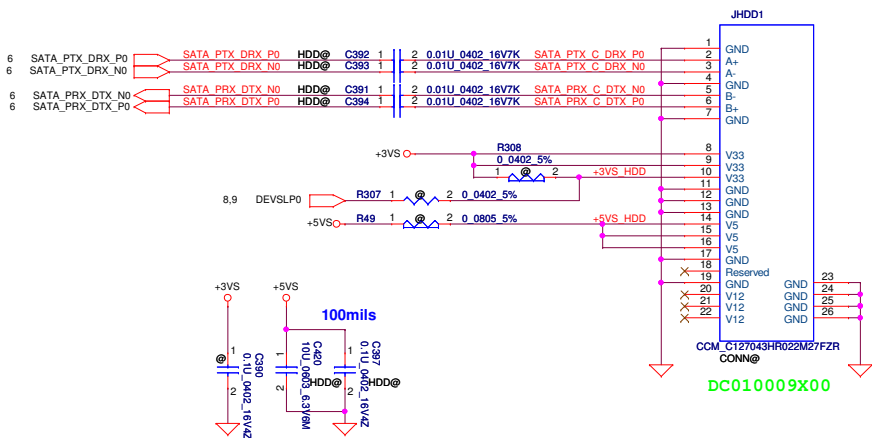
RJ45 / Card Reader conn.



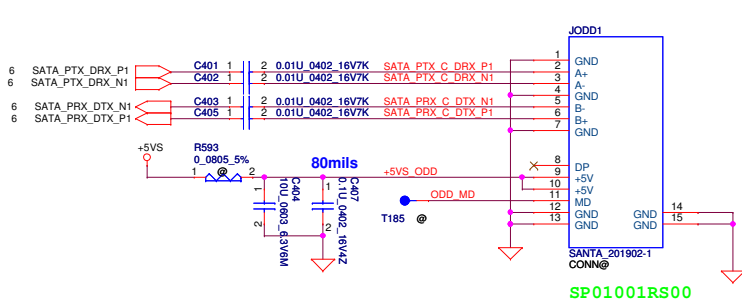
Wireless LAN



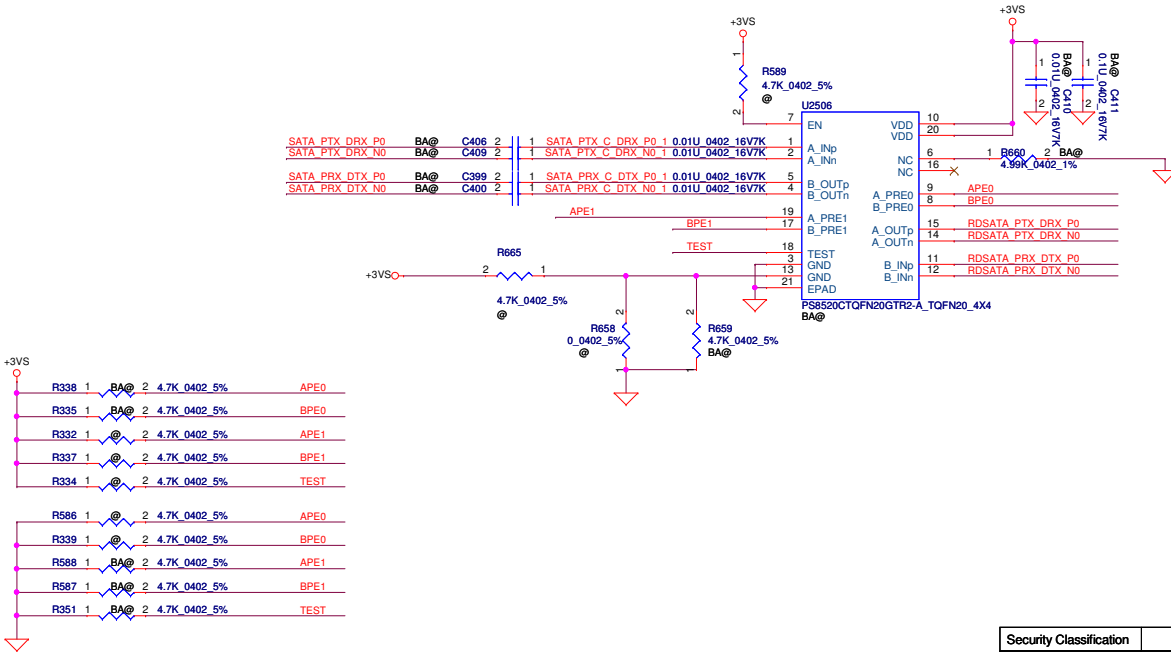
SATA HDD1 Conn.



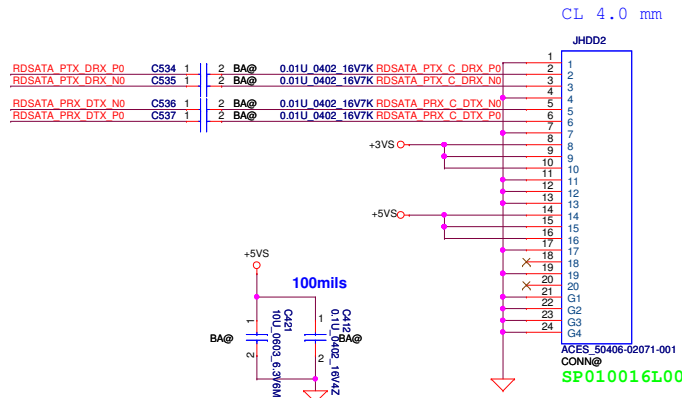
SATA ODD Conn.



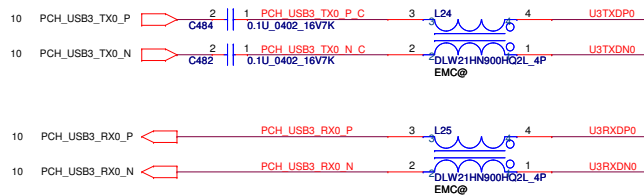
SATA Re-Driver HDD Conn. Reserve



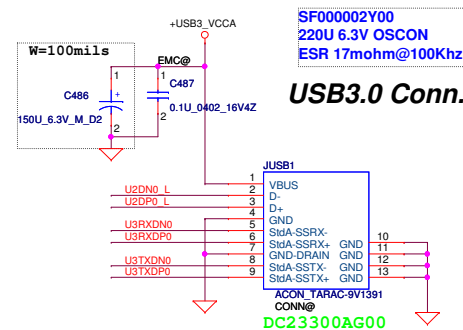
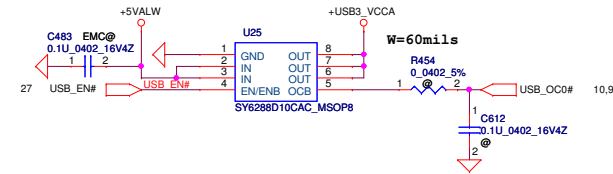
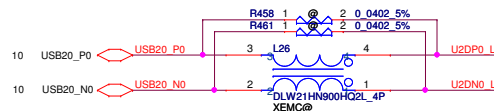
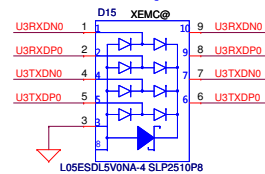
SATA HDD1 Conn.



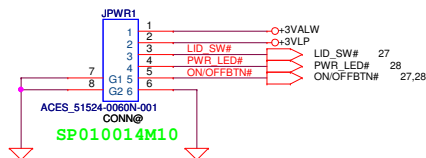
USB3.0 (Port 0)



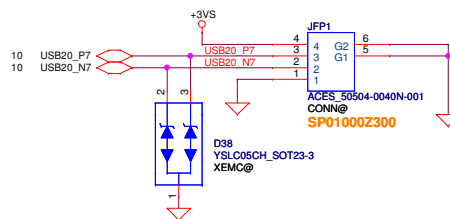
For ESD request



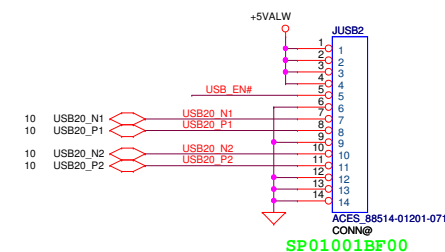
PWR/B



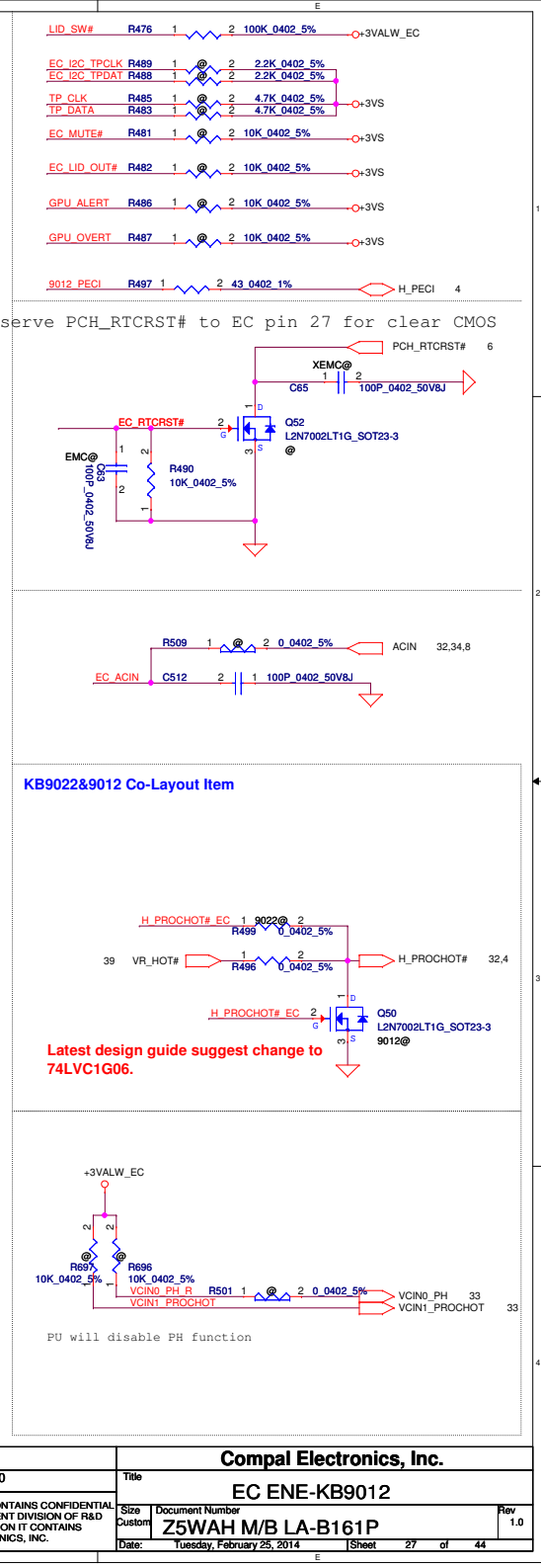
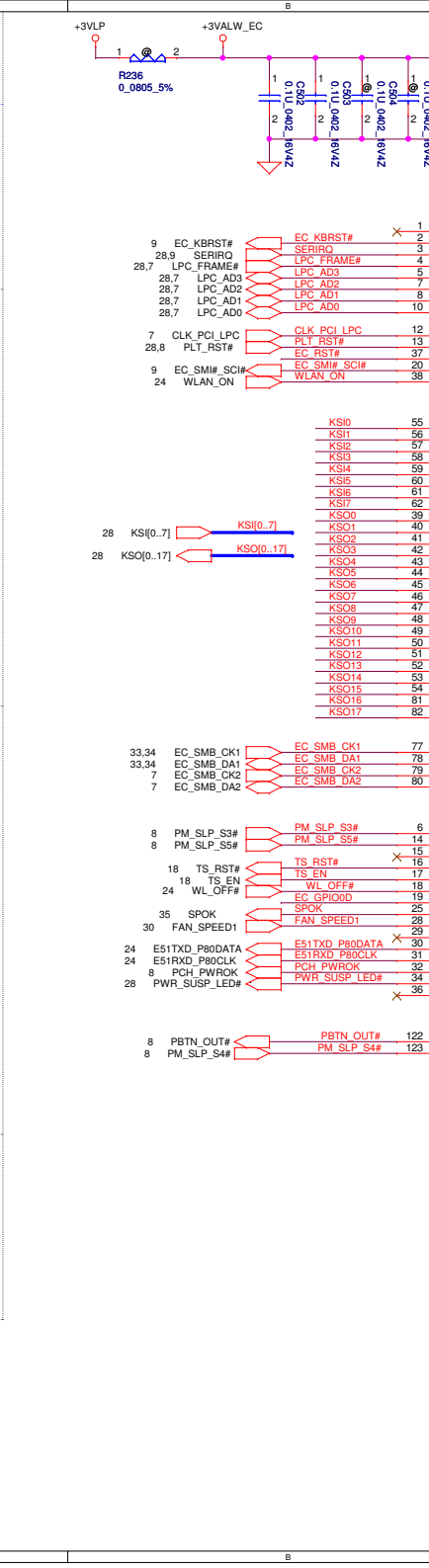
Finger Print /B Reserve



USB/B (USB Port 1, Port2)

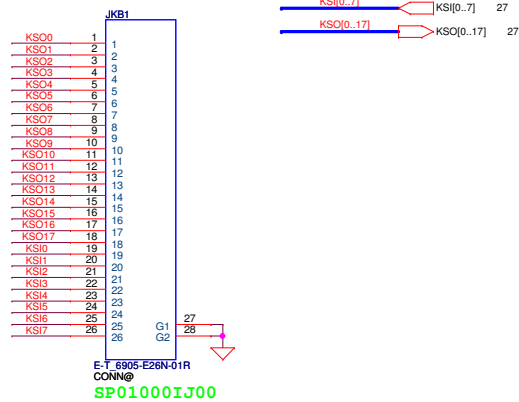


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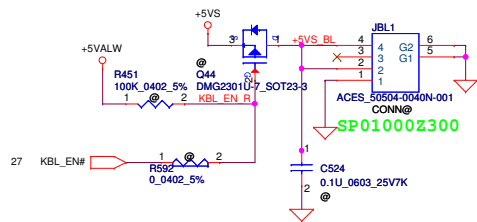


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KB Conn.

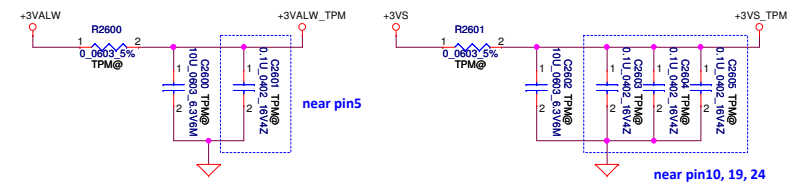


KB BackLight Conn. Reserve

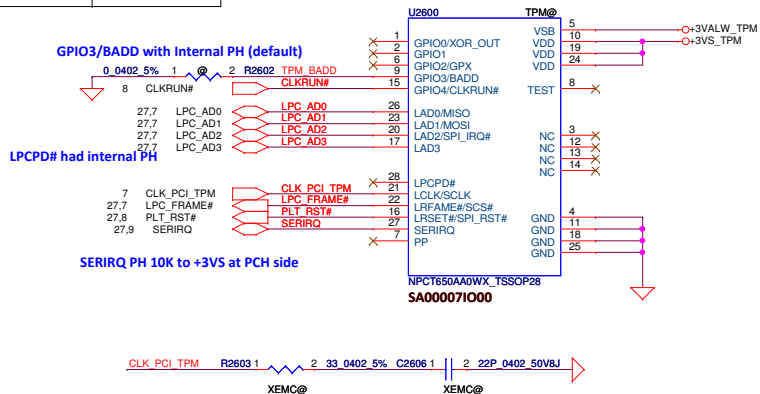


TPM Board for 2015

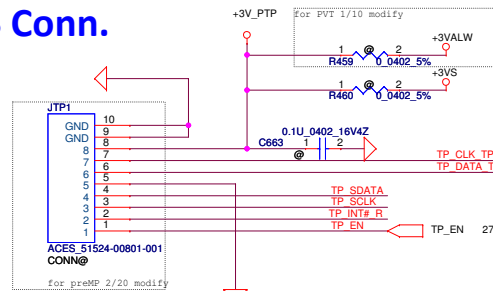
for PVT 1/14 modify



BADD	SELECTION
0	EEh - EFh
* 1	7Eh - 7Fh

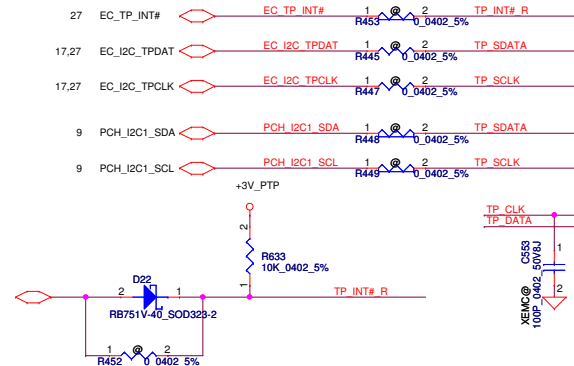


TP/B Conn.

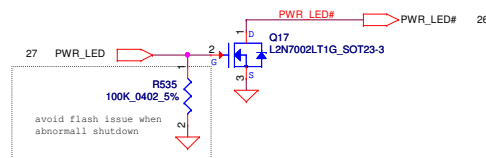


EC I2C

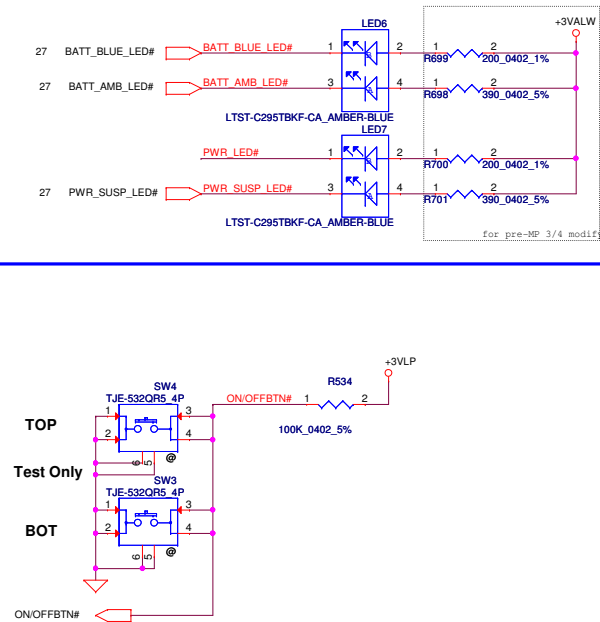
PCH I2C



LED

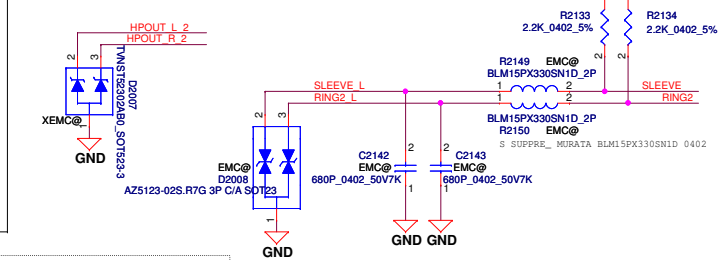
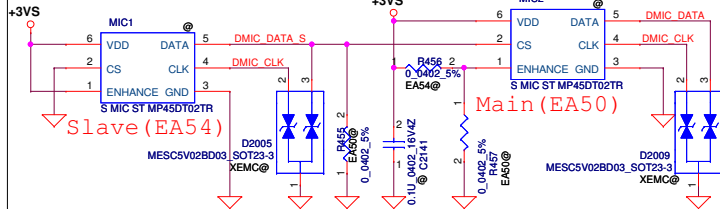
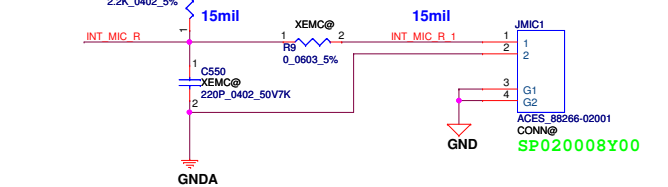
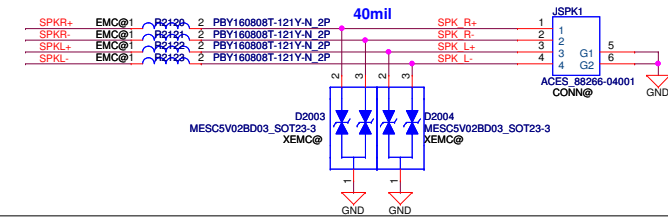
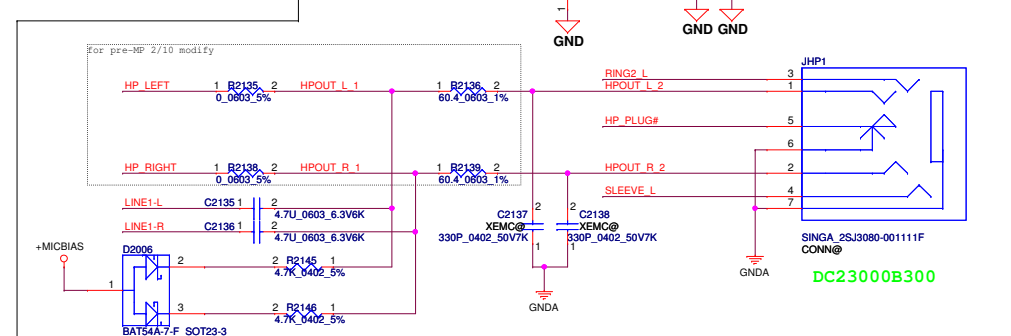
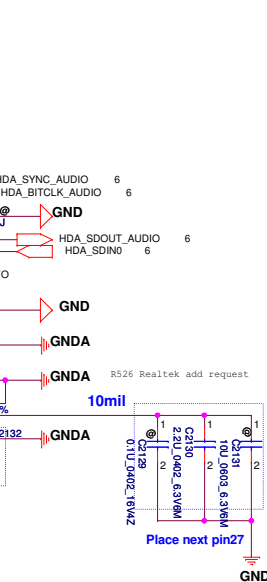
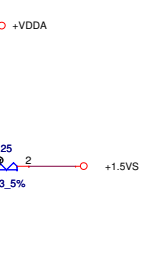
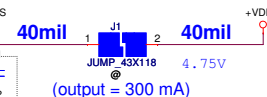
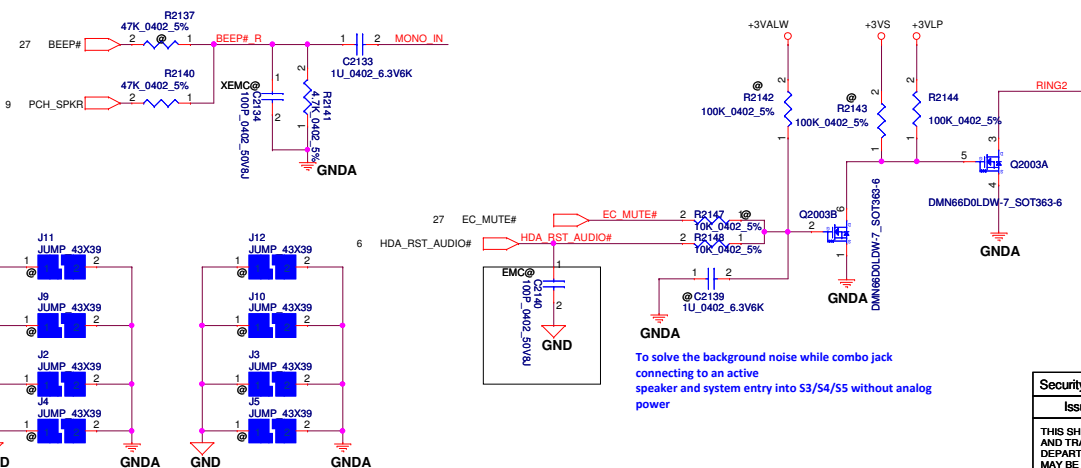
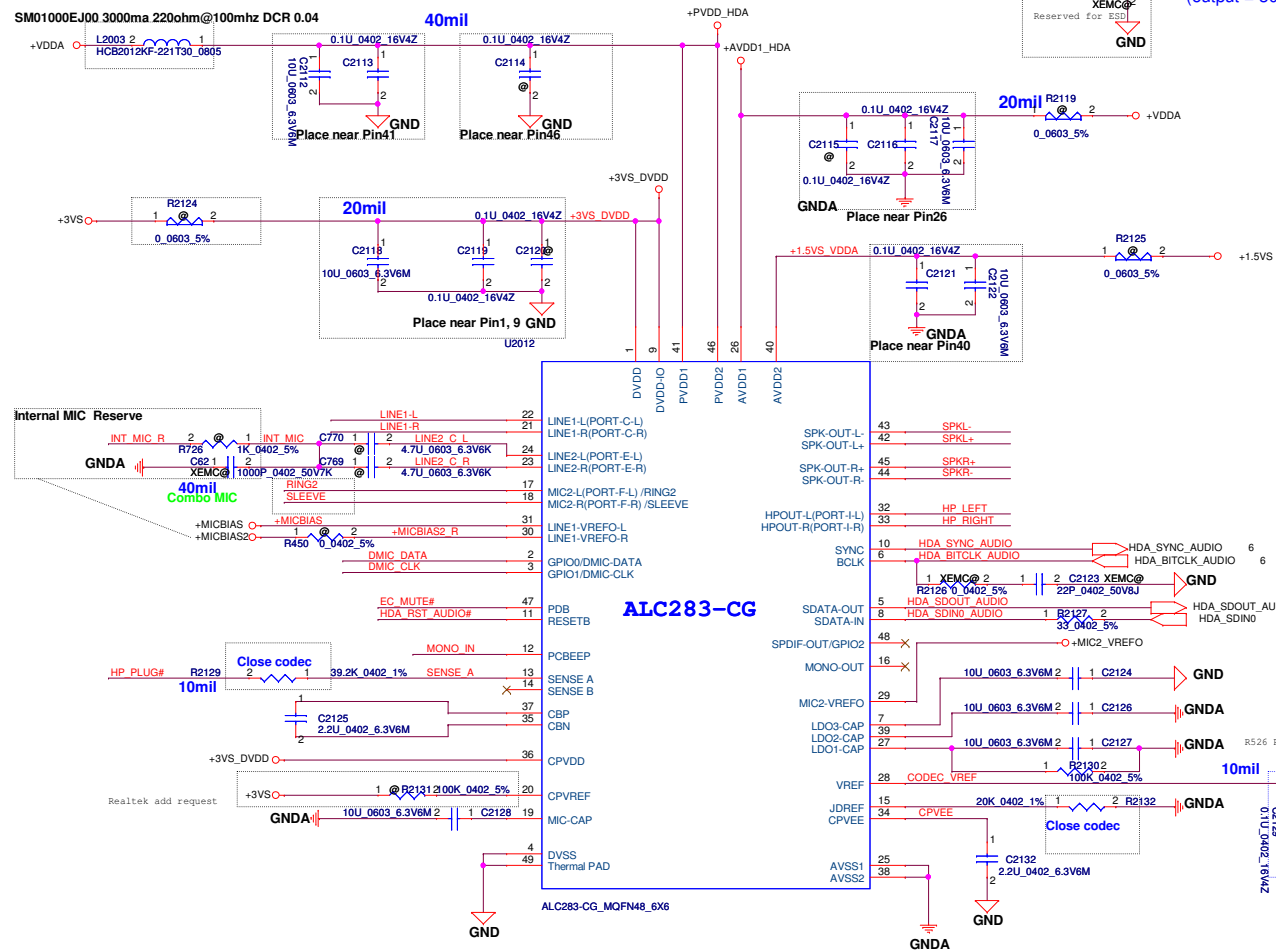


ON/OFF BTN



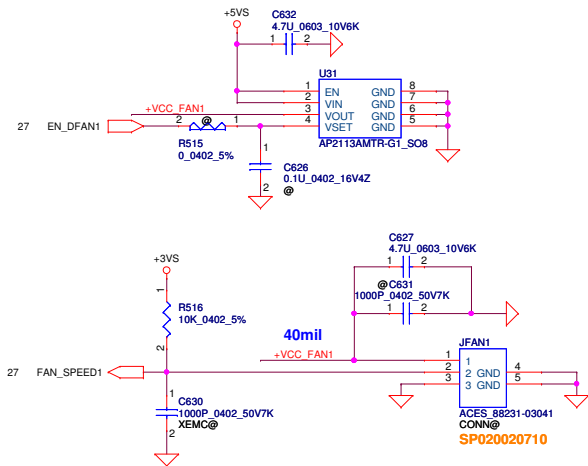
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HD Audio Codec

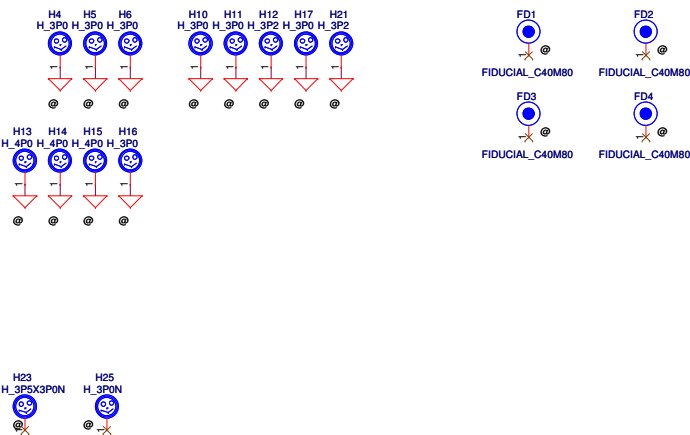


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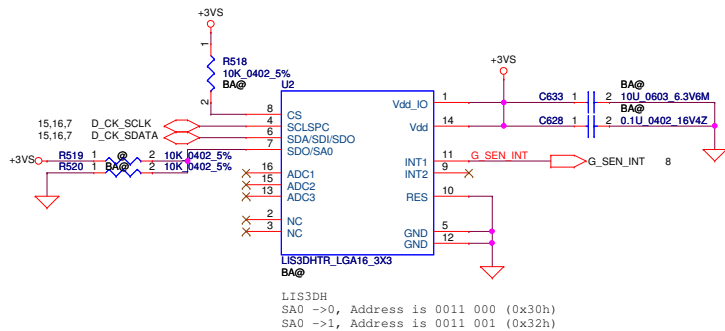
FAN1 Conn



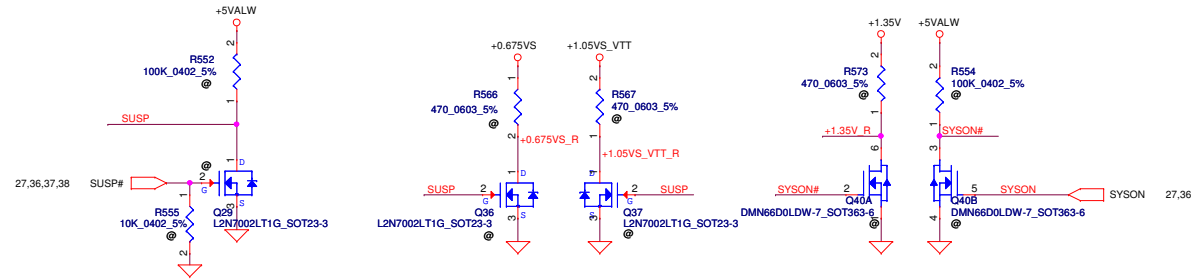
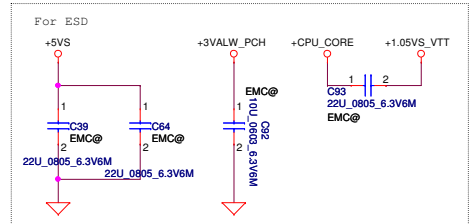
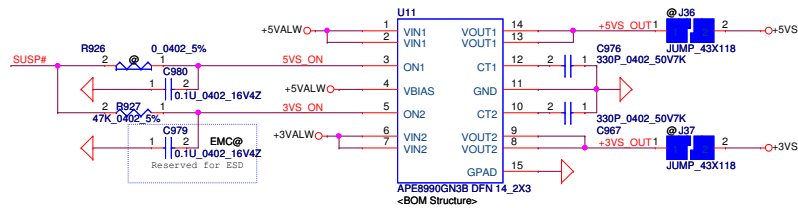
Screw Hole

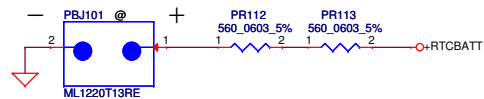
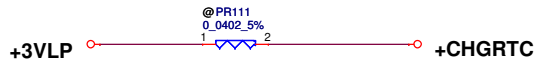
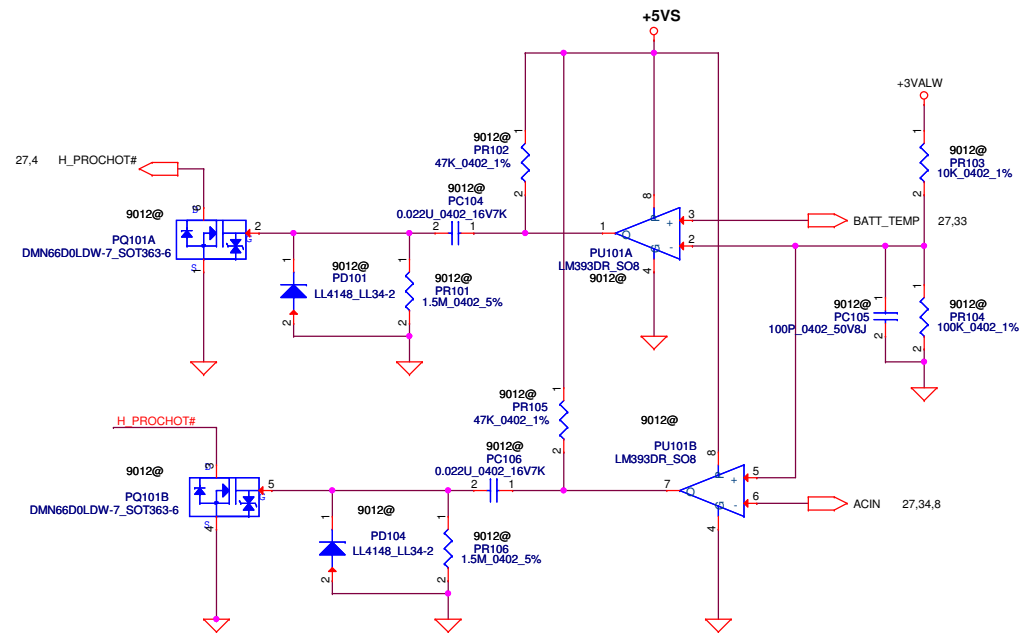
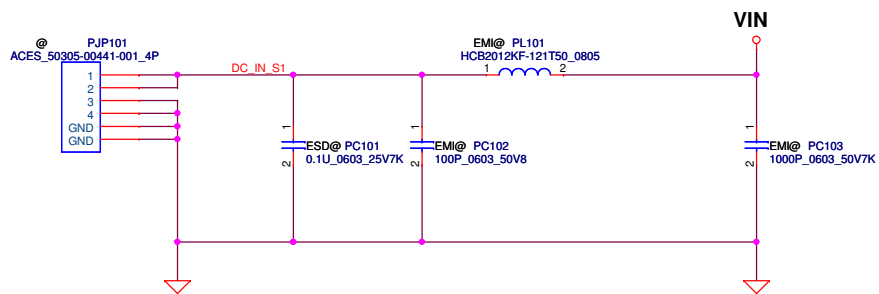


G-Sensor Reserve

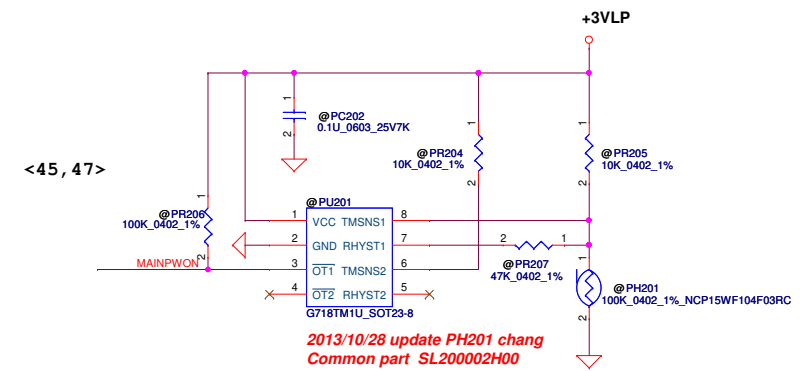


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						FAN & Screw Hole & G-Sensor				
						Size	Document Number			Rev
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PIN8	GND
PIN7	GND
PIN6	SMD
PIN5	SMC
PIN4	TS
PIN3	B/I
PIN2	Batt+
PIN1	Batt+

2013/10/14 update

For KB9022 sense 20mΩ	Active	Recovery
40W PR202 10K ohm	52W, 0.54V	40W, 0.42V
65W PR202 22.6K ohm	84.5W, 0.54V	65W, 0.42V

AD7.

9022@ PR230 80.6K_0402_1%

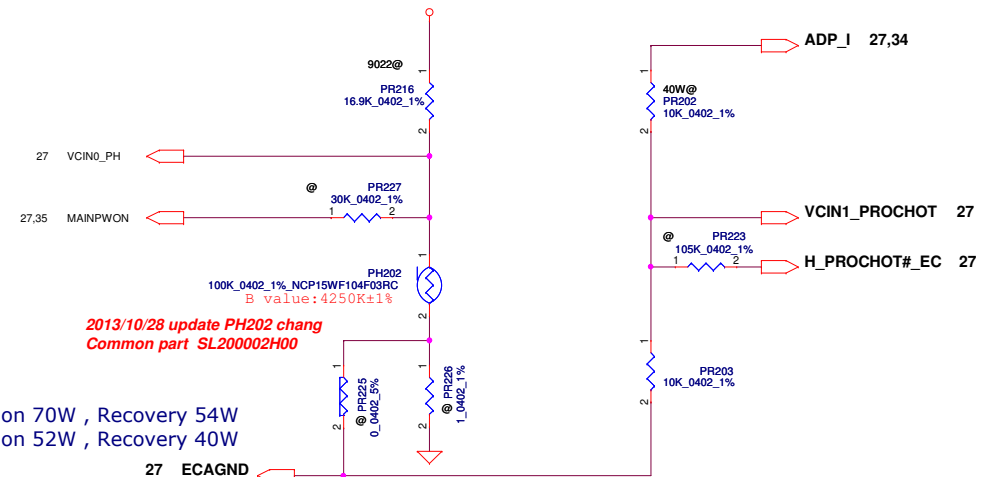
PR229 5%

VCIN1_BATT_DROP 27

9022@ PC203 0.1U_0402_25V6

9022@ PR228 10K_0402_1%

27 ECAGND



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Vin Detector			
	Min.	Typ	Max.
L-->H	17.16V	17.63V	18.12V
H-->L	16.76V	17.22V	17.70V

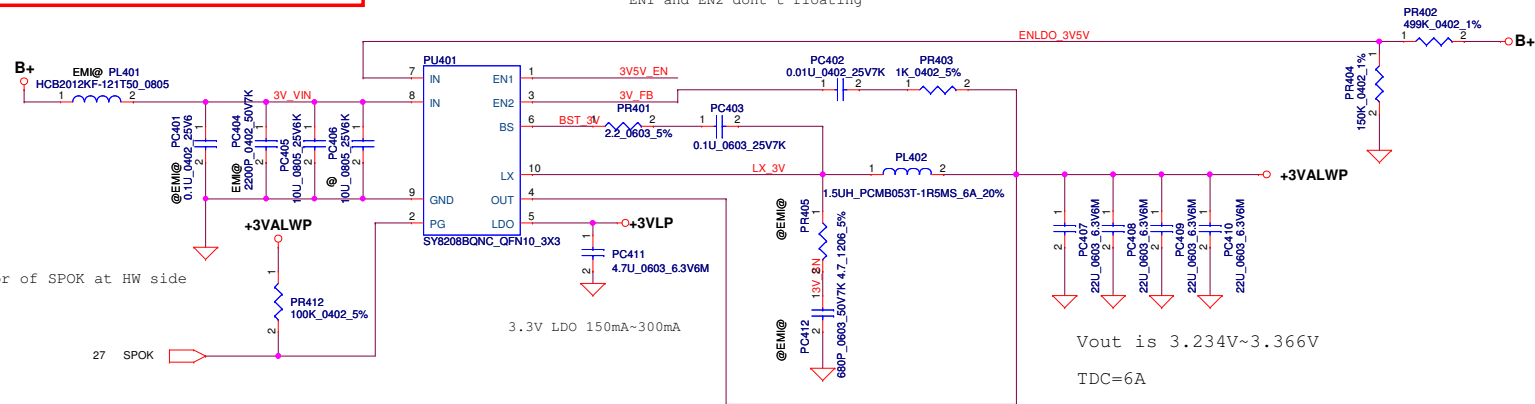
$VILIM = 20 * ILIM * Rsr$
 $ILIM = 3.3 * 100 / (100 + 107) / 20 / 0.02$
 $= 3.986 \text{ A}$

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				Size	Document Number	Rev 1.0
				Common Circuit		
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Module model information

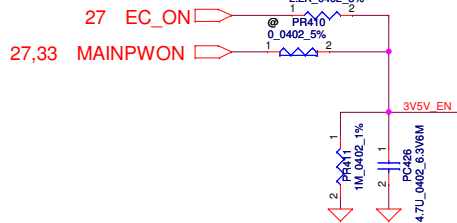
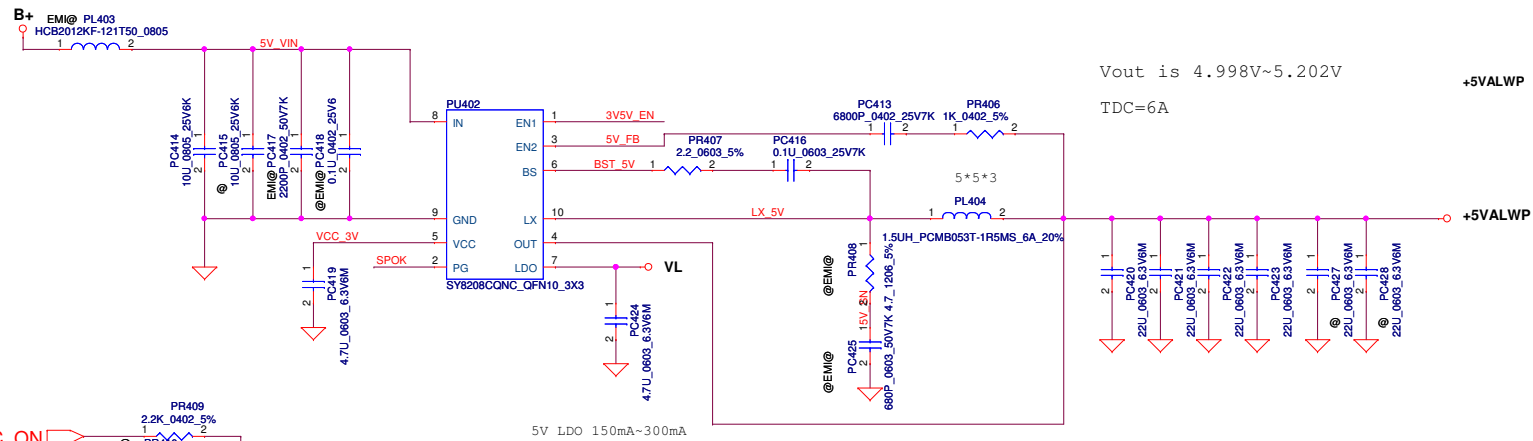
SY8208B_V2.mdd
SY8208C_V2.mdd

EN1 and EN2 don't floating



+3VALWP @PJ401 JUMP_43X118 +3VALW

+5VALWP @PJ402 JUMP_43X118 +5VALW



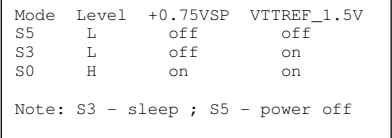
EC VDD0 is +3VL, PC426 UNPOP
EC VDD0 is +3VALW, PC426 POP

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RT8207M_V1.mdd	For Single layer
RT8207M_V2.mdd	For Dual layer

RT8207M_V1.mdd	For Single layer
RT8207M_V2.mdd	For Dual layer

0.75Volt +/- 5%
TDC 0.7A
Peak Current 1A



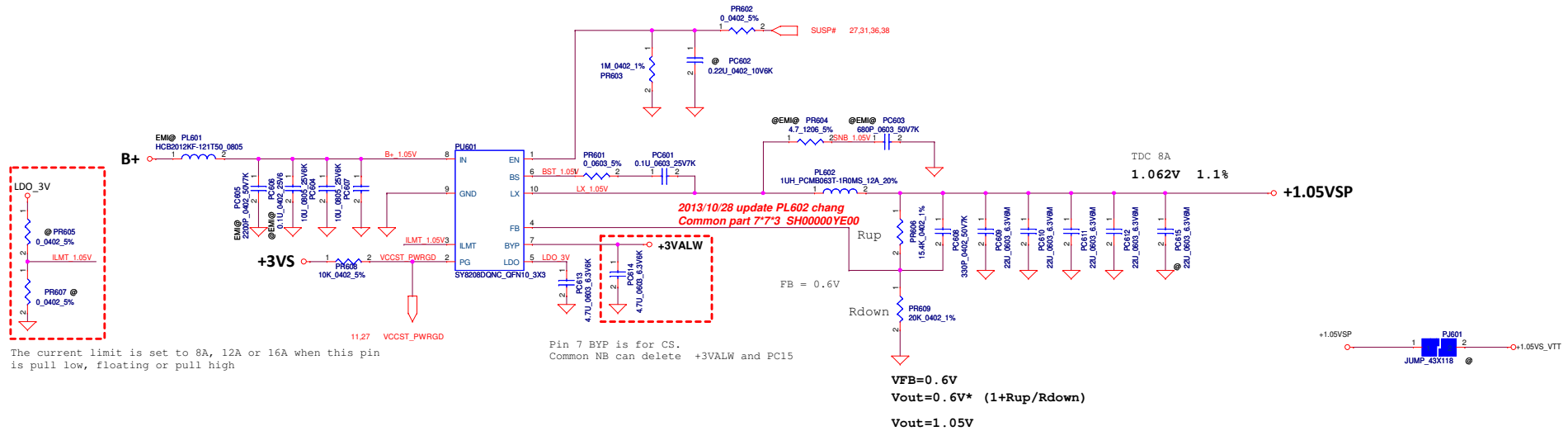
Switching Frequency: 285kHz
Ipeak=10A
Iocp~13A
OVP: 110%~120%
VFB=0.75V, Vout=1.515V
MOSFET footprint: SIS412DN

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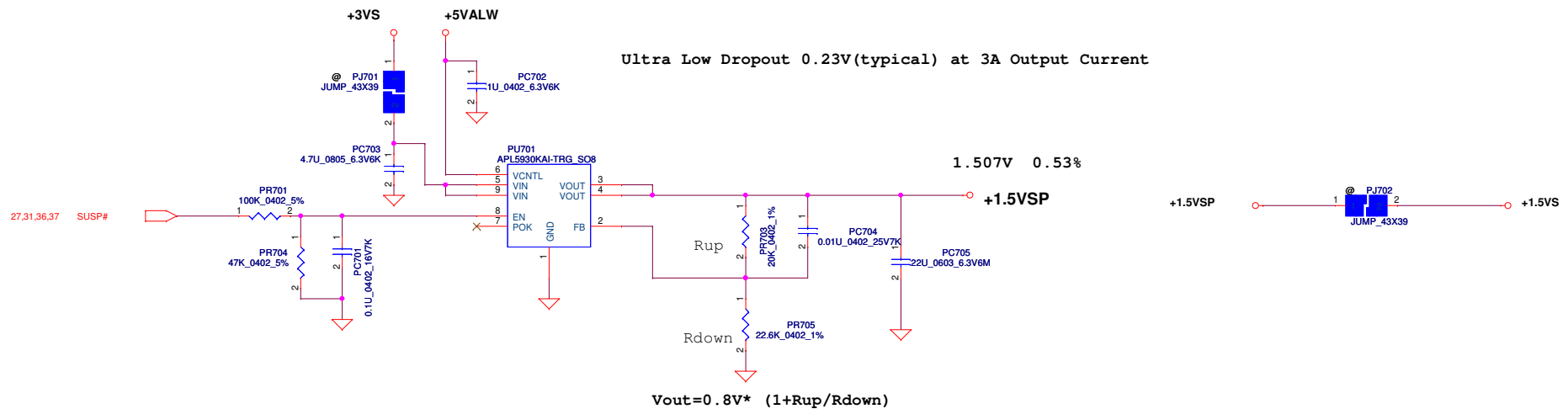
Module model information

SY8208D_V1.mdd

EN pin don't floating
If have pull down resistor at HW side, pls delete PR2



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Module model information:
ISL95813 (for 15W & 28W CPU)

Base on BDW PDDG Rev_0_73

Location	15W	28W	Note
	TDC 14A MAX 32A OCP 38.4A Loadline=-2.0mv/A	TDC 19A MAX 40A OCP 48A Loadline=-2.0mv/A	
PR820	392 Ohm	449 Ohm	OCP
PR816	1.27kOhm	1.58kOhm	Droop
PC816	0.033uF	0.022uF	RC Match
PR804	90.9kOhm	113kOhm	PROG1
PR807	93.1kOhm	95.3kOhm	IMON
PC811	0.1uF (0402)	0.1uF (0402)	RC Filter

H-side MOS: MDV1525URH
Rds(on):
<10.1mohm@Vgs=10V
<14.0mohm@Vgs=4.5V
Id :24A@Vgs=10V

L-side MOS: MDU1511RH
Rds(on):
<2.4mohm@Vgs=10V
<3.3mohm@Vgs=4.5V
Id :100A@Vgs=10V

-->20130828
Choke: 0.15UH (Size:7*7*4)
SH000000U300
Rdc=0.66mohm +-7%
Heat Rating Current=36A
Saturation Current=45A

+1.05VS_VTT Follow intel guideline

Note:
VR_SVID_ALRT# Pull high on HW side

Note:
VR_HOT# Pull high on HW side

Over temperature protection:
OTP Setting: 100C active
Pin5 (NTC) voltage <0.88V, Protect
Pin5 (NTC) voltage >0.92v, recovery

2013/10/28 update PH802 chang
Common part SL200002E00

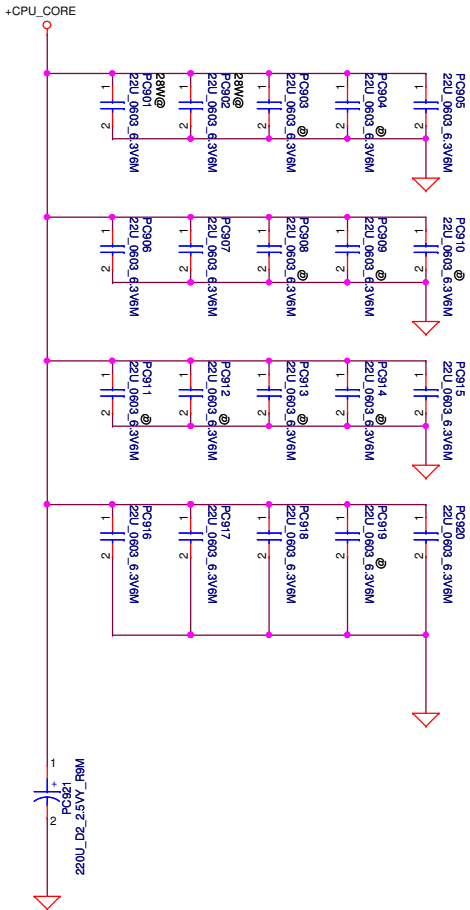
Note:
PR804=113K
=>Icc(max)=40A
fsw=700KHz

2013/12/12 update PL802 change
Common part SH000011H00

2013/10/28 update PH801 chang
Common part SL200002G00

Local sense put on HW site

PWR Rule
需確認最新SPEC.
Modify 8/6.



30 X 22uF 0805
2012/10/23
check the output cap Qty!!!
2012/10/24
23 pcs 22uF and reserve 7 pcs
2013/01/14
22uF*17 unpop:22uF*3

20130828
15W: 22uF*14
28W: 22uF*16

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								Size	
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Item	Fixed Issue	Reason for change	PG#	Modify List	Date	Phase
1	Design Update		P.35 P.37 P.37 P.39 P.34 P.33	Add unpop PC428 PC427,22U_0603_6.3V6M_SE00000M000 Add unpop PC615,22U_0603_6.3V6M_SE00000M000 PC609 PC610,SE00000PL00 change to 0603_6.3V6M_SE00000M000 PL801 PC807,Swap positions. PL302,10uH_10104_SH000005Z80 change to 10uH_773_SH00000YB00 Add PL202_SM01000C000	11/29	EVT
2	Design Update		P.35	PR410 R-short change to PD401_SCS00000Z00	12/09	EVT
3	Design Update	CPU Transient Test	P.39 P.40 P.40 P.40 P.33	PL802_SH00000U300 change to Common part SH000011P00 PC906 PC910 PC915 22U_0603_SE00000M000 SMT PC901 PC902 22U_0603_SE00000M000,SMT change to 28W@ PC916 PC915 22U_0603_SE00000M000 ,28W@ change to SMT PR227_30.9K_0402_1%_SD034309280 change to_30K_0402_1%_SD034300280	12/12	EVT
4	Design Update	CPU Transient Test		PR820_348_0402_SD00000EI80 change to 357_0402_SD034357080 (28W) PR820_348_0402_SD00000EI80 change to 316_0402_SD0000003480 (15W) PR814_2K_0402_1%_SD034200180 change to unpop PC814_330P_0402_50V7K_SE074331K80 change to unpop PR813_5.9K_0402_SD034590180 change to 1.91K_0402_SD000009080 PR807_95.3K_0402_1%_SD034953280 change to 113K_0402_SD034113380 (28W) PR807_95.3K_0402_1%_SD034953280 change to 121K_0402_1%_SD034121380 (15W) PR817_Unpop change to 4.99M_0402_SD00000VO00	12/13	EVT
5	Design Update	VCINO VCIN1 B/I PIN Pull down Update Common part CPU Transient Test		PR211_1K_0402_SD034100180 Change to 0_0402_SD028000080 PR227_30K_0402_1%_SD034300280 change to unpop. PR216_32.4K_0402_1%_SD034324280 change to 16.9K_0402_1%_SD034169280 PR223_105K_0402_1%_SD034105380 change to unpop. PR202_10.5K_0402_1%_SD034105280 change to 10K_0402_1%_SD034100280 PQ303 PQ304 AON4466_SB00000CG80 --> AON4406_SB00000I800 PL301_1UH_SH00000MW00 --> 1UH +-30% 2.8A_SH00000YG00 Add PC426_4.7u_0402_SE00000SO00 15W:PR804_169K_0402_1%_SD034169380 --> 90.9K_0402_1%_SD034909280 28W:PR804_205K_0402_1%_SD034205380 --> 113K_0402_1%_SD034113380 PL802 0.15UH 20%_SH000011P00 -->0.22UH_20%_SH000011H00 15W:PR820_316_0402_1%_SD0000003480 --> 392_0402_1%_SD000000F080 28W:PR820_357_0402_1%_SD034357080 --> 499_0402_1%_SD034499080 Add PC921_220U_D2_2.5VY_R9M_SGA00009800 Un pop PC903 PC904 PC908 PC909 PC9010 PC912 PC913 PC914 PC919	2014/ 01/21	DVT
15	Design Update	Update Common part		PR211 SD028000080 change to R-short PD401 SCS00000Z00 change to PR410 R-short	2014/ 02/17	PVT
16						
17						

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Item	Fixed Issue	Reason for change	PG#	Modify List	Date	Phase
1	Module Design	Module Design change 3/5V solution	3/5V	Un-pop PR1	11/13	DVT
2						
12						
13						
14						
15						
16						
17						

Item	Fixed Issue	Reason for change	PG#	Modify List	Date	Phase
1		extra cap	24	unpop C165	1107	DVT
2	Desidn change	change EC board ID	27	AD_BID0 > change R506 to 12K POP R503	1107	DVT
3	Desidn change	change net "LINE1-L/LINE1-R" cap material	29	change C2135,C2136 to 4.7u 0402 to 0603	1107	DVT
4	Desidn change	modify ON/OFFBYN# circuit	27,28	DEL D24 , ON/OFF change to ON/OFFBTN#	1112	DVT
5	Desidn change	change CRT RGB bead material	21	change L2503,L2504,L2505 to 0402 bead(SM01000FH00)	1112	DVT
6	Desidn change	change +EC_VCCA ,EC_GND bead material	27	change L31 L32 to SM010009U00	1112	DVT
7	Desidn change	change USB port assign	18	Change USB port6 for CCD , Change USB port5 for TS	1112	DVT
8	Desidn change	change USB port assign	26	Change USB port7 for CR(USB)_FP	1112	DVT
9	Desidn change	reserve RTCRST# to EC	27	reserve RTCRST# to EC pin 27 for clear CMOS	1115	DVT
10	Desidn change	reserve RTCRST# to EC	28	add Q52 R490 reserve to EC RTCRST#	1115	DVT
11	Desidn change	share ROM function	7	POP R498,R500,R502,R505 for share ROM	1115	DVT
12	Desidn change	option LVDS EDID/EDP touch	18	change R438,R439,R415,R433 for option LVDS EDID/EDP touch	1115	DVT
13	Desidn change	EC_SMB_DA2	17	change to EC_I2C_TPDAT	1118	DVT
15	Desidn change	EC_SMB_CK2	17	change to EC_I2C_TPCLK	1118	DVT
16	Desidn change	RTD2132 EP_MODE	27	Add R491 reserve for RTD2132 EP_MODE	1118	DVT
17	Desidn change	change TP POWER	28	Change TP power to +3VALW	1118	DVT
18	CRT leakage	CRT_DATA/CRT_CLK add level shift	20	add R2502,R2503,Q2501 for level shift	1126	DVT
19	CRT leakage	change CRT POWER from 5VS to 3VS	20	add R2549	1126	DVT
20	CRT leakage	change CRT POWER from 5VS to 3VS	20	change pin PCSDA,PCSCL to +3VS_6513	1126	DVT
21	CRT leakage	change CRT POWER from 5VS to 3VS	20	change pin MCUVDDH to +3VS_6513	1126	DVT
22	Desidn change	change T/P int net connection support S3 wake	28	Change Q51 to D22 ,TP_INT# ,POP R633,del R452	1126	DVT
23	Desidn change	change EC_PME# pull up	22	add R2550 pull up to +3VLAN	1128	DVT
24	Desidn change	change EC_PME# pull up	27	unpop R484	1128	DVT
25	Desidn change	solve ESD	19	add C413 to +3VS	1204	DVT
26	Desidn change	solve ESD	29	add C2140,C2142,R2149,R2150	1205	DVT
27	Desidn change	solve ESD	29	change D2008 package	1205	DVT
28	Desidn change	ME drawing change	30	Del H9	1205	DVT
29	Desidn change	solve EMI	26	add R459,R460,R462,R463,L7,L8 for EMI request	1206	DVT
30	Desidn change	Change part number	18	change U22 PN	1209	DVT
31	Desidn change	Change part number	11	change C18 to SF000006S00	1209	DVT
32	Desidn change	Change part number	12	change C408 to SF000006R00	1209	DVT
33	Desidn change	Change part number	15	change C118 to SF000006S00	1209	DVT
34	Desidn change	Change part number	26	change C486 to SF000006R00	1209	DVT
35	Desidn change	Change part number	6	change C153 to 15pF to SE071150J80	1210	DVT
36	Desidn change	Change part number	7	change C2,C3 to 15pF to SE071150J80	1210	DVT
37	Desidn change	Change part number	22	change C2558,C2559 to 10pF to SE071100J80	1210	DVT
38	Desidn change	Change part number	29	change R2135,R2138 to 59 Ohm 0603	1210	DVT
39	Desidn change	solve EMI	29	change R2149,R2150 to SM01000NA00	1210	DVT
40	Desidn change	solve ESD	29	change C2142 , C2143 to 680pF	1210	DVT
41	Desidn change	Change part number	28	change SW to SN100000K00	1210	DVT
42	Desidn change	TP leakage from change TP VCC	28	add R452,R459,R460	1211	DVT
43	Desidn change	Change part number	23	change D1 to SCA00002M00	1216	DVT

Item	Fixed Issue	Reason for change	PG#	Modify List	Date	Phase
44	Desidn change	LAN Chip GPO	22	reserve R2551 0 ohm +3VALW to +3VLAN	1231	PVT
45	Desidn change	LAN Chip GPO	22	add R2540 (0 - Ohm) for disable PHY	1231	PVT
46	Desidn change	change CRT POWER from +5VS_6513 to +HDMI_5V_OUT	21	change CRT POWER from +5VS_6513 to +HDMI_5V_OUT	1231	PVT
47	Desidn change	TP PWR	27/28	unpop R459,add C2563,C2562,U2507 , add net "TP_PWR_EN" to EC pin 98	0110	PVT
48	Desidn change	TP connector	28	change connector type	0110	PVT
49	Desidn change	TS change to I2C0	09	change PCH GPIO4/GPIO5 to PCH_I2C0_SDA/PCH_I2C0_SCL	0110	PVT
50	Desidn change	TS change to I2C0	09	Del RP24 pin5 pin6 ,Add R276,R277 for TS I2C	0110	PVT
51	Desidn change	TS change to I2C0	18	change PCH_I2C1_SDA/PCH_I2C1_SCL to PCH_I2C0_SDA/PCH_I2C0_SCL	0110	PVT
52	Desidn change	R-Short		follow ZACH list	0110	PVT
53	Desidn change	solve ESD	15/29/27	add C35/C2140/C63 ,reserve C65/C68	0113	PVT
54	Desidn change	change USB CAP to 150U D2 size	26	change C486 to D2 150uF	0113	PVT
55	Desidn change	change LED brightness	28	change R699/R700 to 330 Ohm ,R698/R701 to 560 Ohm	0114	PVT
56	Desidn change	change Board ID to 0.3	27	change R506 to 15K (board ID)	0114	PVT
57	Desidn change	Change part number	29	change R2135,R2138 to 60.4 Ohm 0603	0114	PVT
58	Desidn change	Change TPM from module to on board	7	change R395 to TPM@	0115	PVT
59	Desidn change	Change TPM from module to on board	8	del net "LPCPD#" , reserve U2600,R2600,R2601,C2600,C2601,C2602,C2603,C2604,C2605 for TPM , R2603,C2606 for EMI , R2602 > @	0115	PVT
60	Desidn change	Change TPM from module to on board	28			
61	Desidn change	solve ESD	27	POP C509 EMC@	0116	PVT
62	Desidn change	solve epon crystal issue	22	add R2552	0116	PVT
63	Desidn change	solve EMI	29	change R2120,R2121,R2122,R2123 to bead SM01000CC00	0116	PVT
64	Desidn change	solve EMI	4	add C2144	0117	PVT
65	Desidn change	R-Short	11	change R126 to 0 - short	0120	PVT
66	Desidn change	Add Toch pad PS2 BUS level shift(solve PS2 leakage)	28	add R2509,R2507,R462,R463 reserve Q2502	0122	PVT
67	solve jack BO noise	solve audio BO noise sync with other project	29	change R2136/R2139 to 60.4 Ohm , R2135,R2138 to 0 Ohm	0210	pre-MP
68	Desidn change	modify DMIC net	29	delete R457	0213	pre-MP
69	Desidn change	reserve +3.3V for touch screen	18	add R82	0217	pre-MP
70	Desidn change	change +3.3V for touch screen	18	pop R82 , unpop R81	0218	pre-MP
71			28	unpop SW4	0218	pre-MP
72	Desidn change	change EC board ID to 1.0	27	change R506 to 20K Ohm	0224	pre-MP
73	Desidn change	change LED brightness	28	change R699/R700 to 200 Ohm ,R698/R701 to 390 Ohm	0304	pre-MP

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