

Compal Confidential

Z5WAE Schematics Document

AMD "Beema" Platform

AMD 25W APU With Puma+ Core

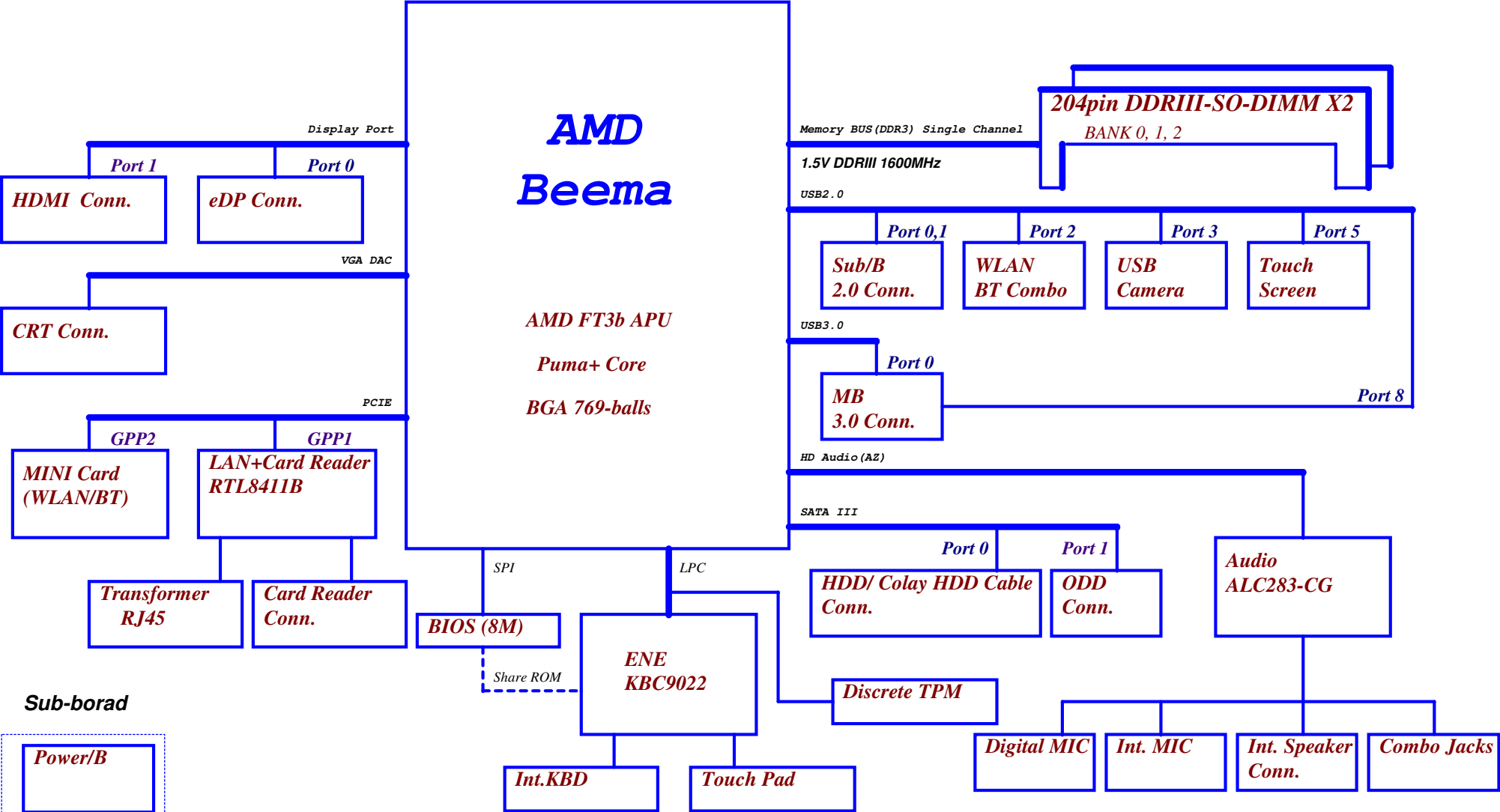
LA-B232P REV: 1.0

2014-03-27

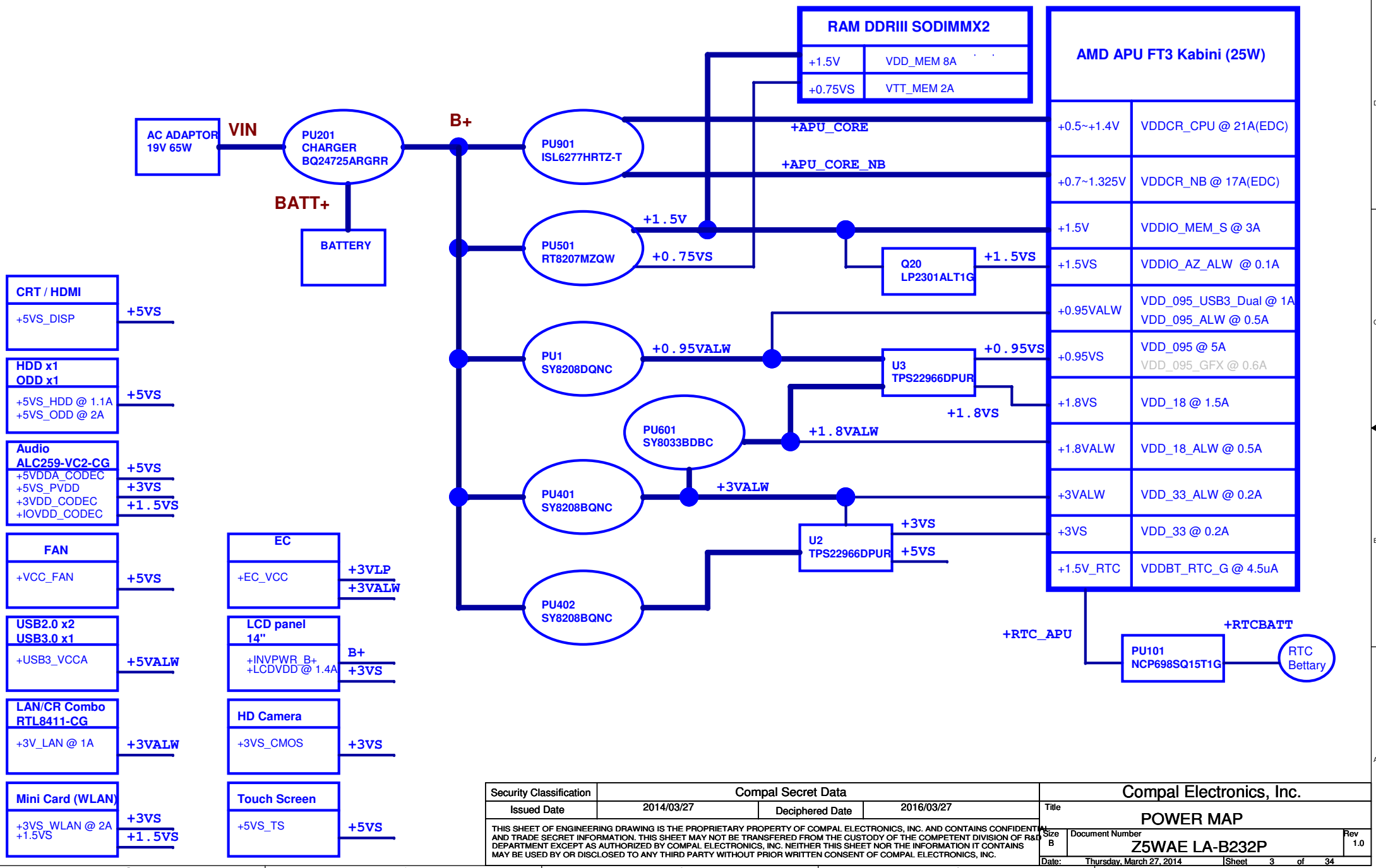
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Model Name : Z5WAE



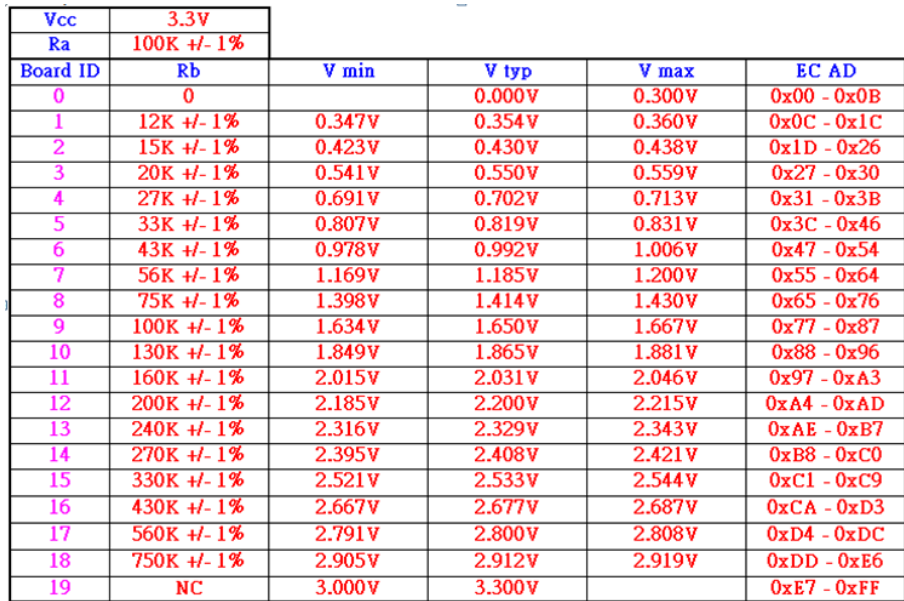
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								Size	Document Number						Rev
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[illegible]

EC SMBus Port1 (+3VALW)			EC SMBus Port2 (+3VS)		
Device	Address	HEX	Device	Address	HEX
Smart Battery	0001 011X b	16H	SB-TSI (APU)	1001 100X b	98H

APU SMBus Port0 (+3VS)			APU SMBus Port1(+3VALW)		
Device	Address	HEX	Device	Address	HEX
DDR DIMM1	1010 000Xb	A0H			
DDR DIMM2	1010 001Xb	A2H			

[illegible]

Board ID	PCB Revision
0	EVT
1	DVT
2	PVT
3	Pre-MP
4	
5	
6	
7	

<i>STATE</i> \ <i>SIGNAL</i>	<i>SLP_S3#</i>	<i>SLP_S5#</i>	<i>+VALW</i>	<i>+V</i>	<i>+VS</i>	<i>Clock</i>
<i>Full ON</i>	<i>HIGH</i>	<i>HIGH</i>	<i>ON</i>	<i>ON</i>	<i>ON</i>	<i>ON</i>
<i>S1 (Power On Suspend)</i>	<i>HIGH</i>	<i>HIGH</i>	<i>ON</i>	<i>ON</i>	<i>ON</i>	<i>LOW</i>
<i>S3 (Suspend to RAM)</i>	<i>LOW</i>	<i>HIGH</i>	<i>ON</i>	<i>ON</i>	<i>OFF</i>	<i>OFF</i>
<i>S4 (Suspend to Disk)</i>	<i>LOW</i>	<i>HIGH</i>	<i>ON</i>	<i>OFF</i>	<i>OFF</i>	<i>OFF</i>
<i>S5 (Soft OFF)</i>	<i>LOW</i>	<i>LOW</i>	<i>ON</i>	<i>OFF</i>	<i>OFF</i>	<i>OFF</i>

G-A ———— +RTC
EC_ON

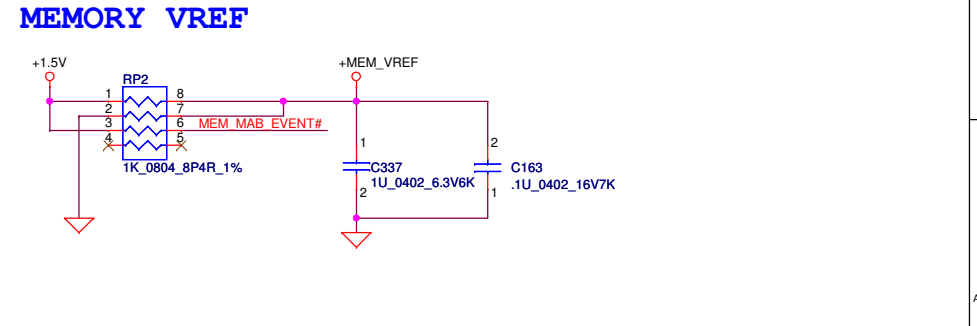
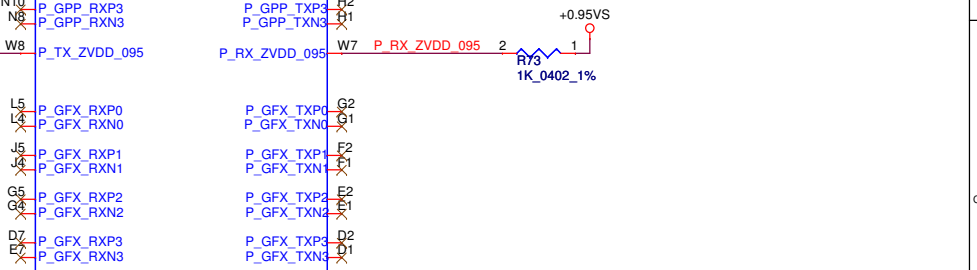
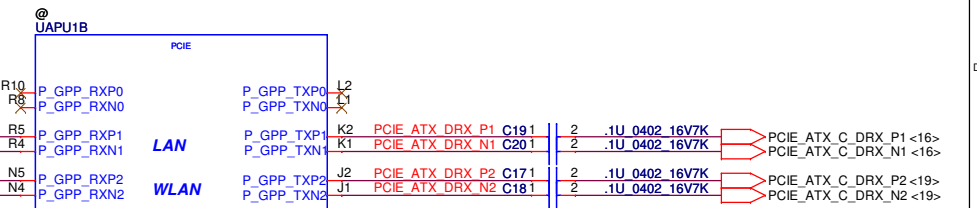
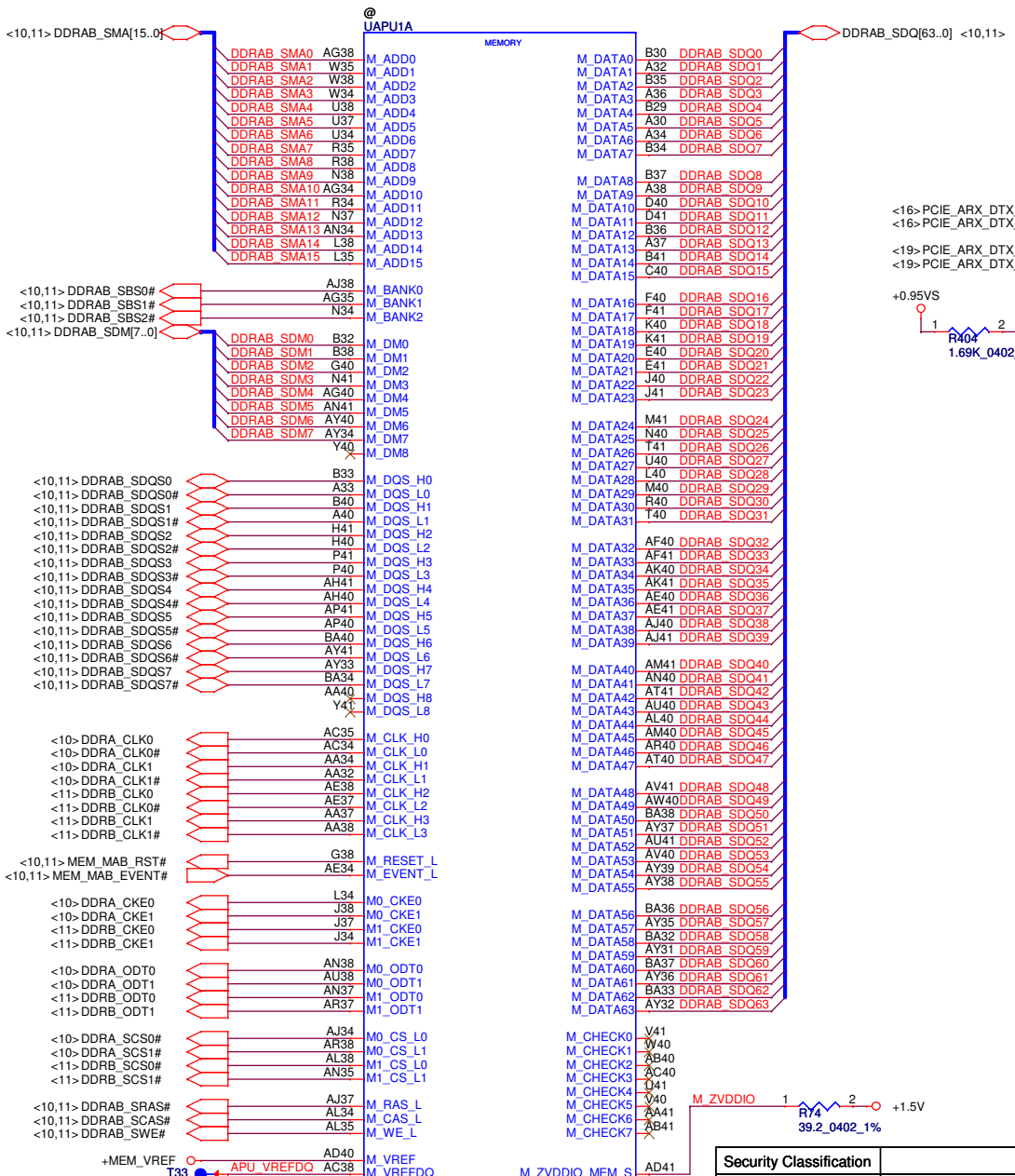
G-B ———— +3VALW/+5VALW
+1.8VALW
+0.95VALW
SYSON

G-C ———— +1.5V
SUSP#

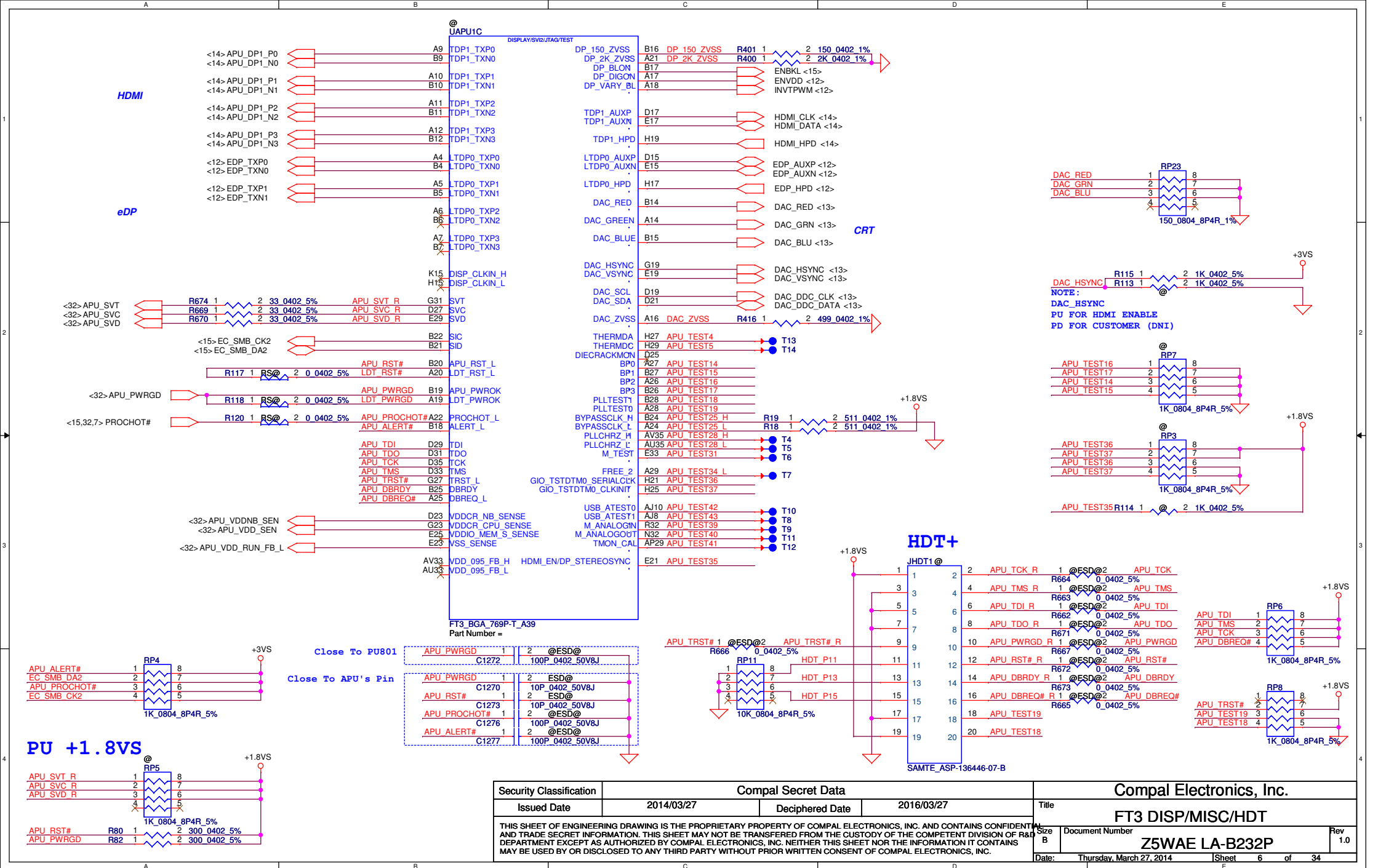
G-D ———— +3VS
+1.8VS
+1.5VS
+0.95VS
VR_ON

G-E ———— +APU_CORE
+APU_CORE_NB

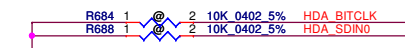
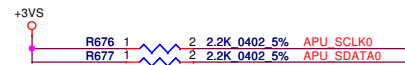
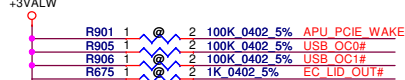
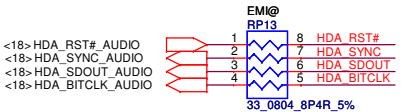
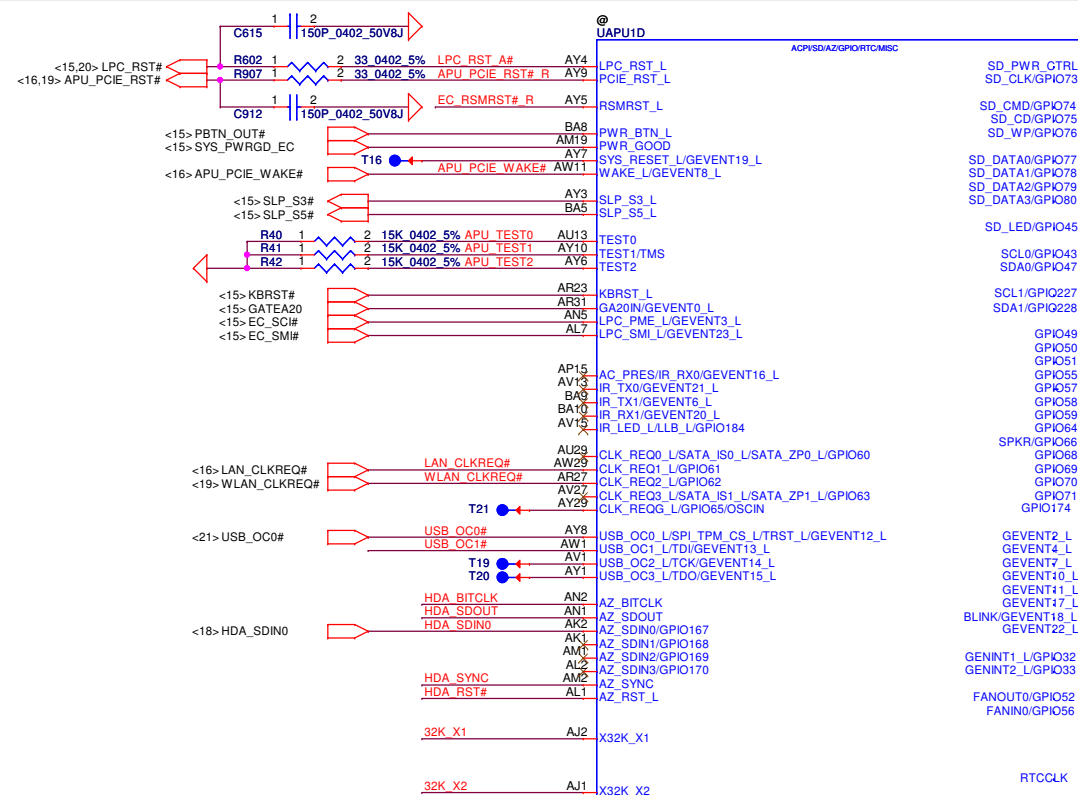
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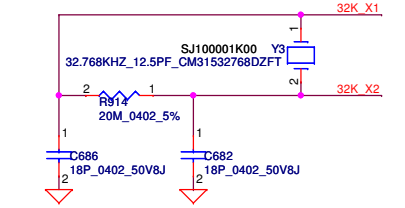
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								Size		Document Number		Rev	
								B		Z5WAE LA-B232P		1.0	
								Date:		Thursday, March 27, 2014		Sheet	
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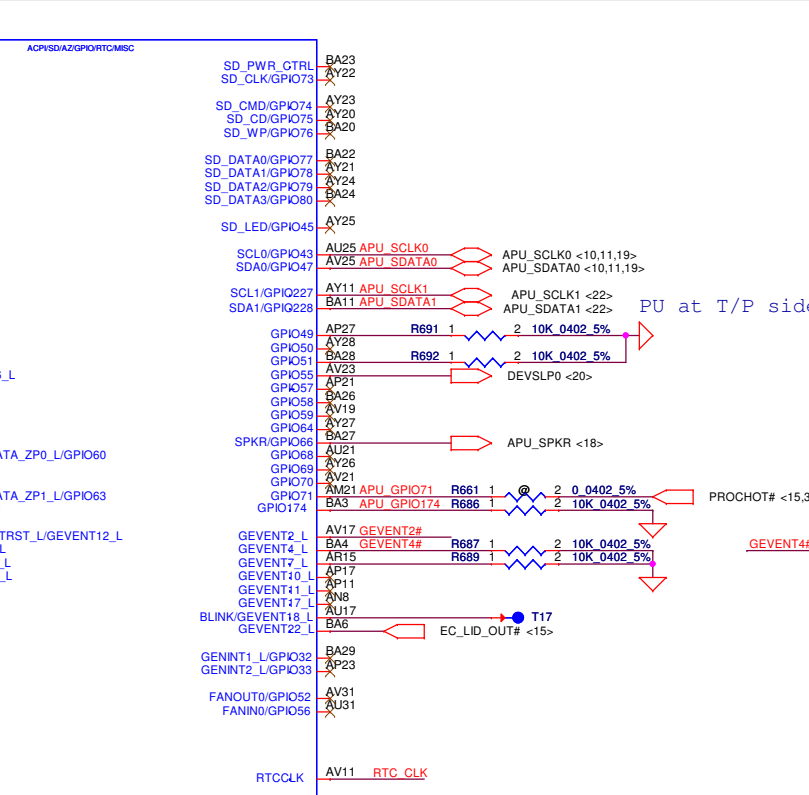
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32.768KMHZ CRYSTAL

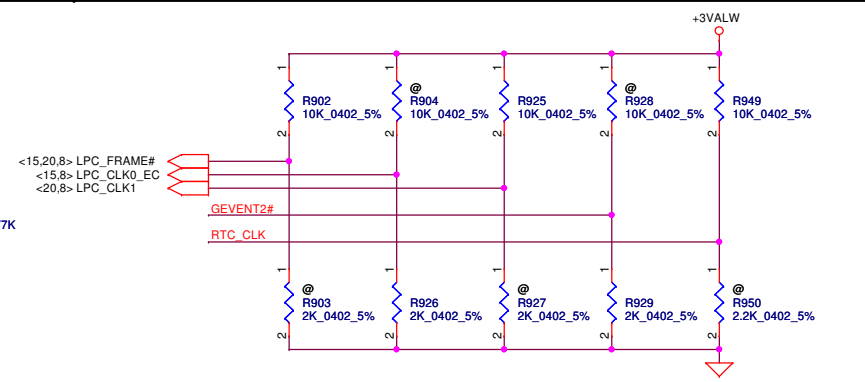
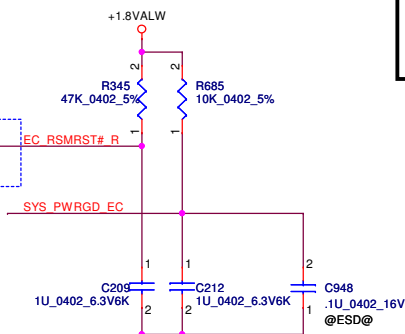


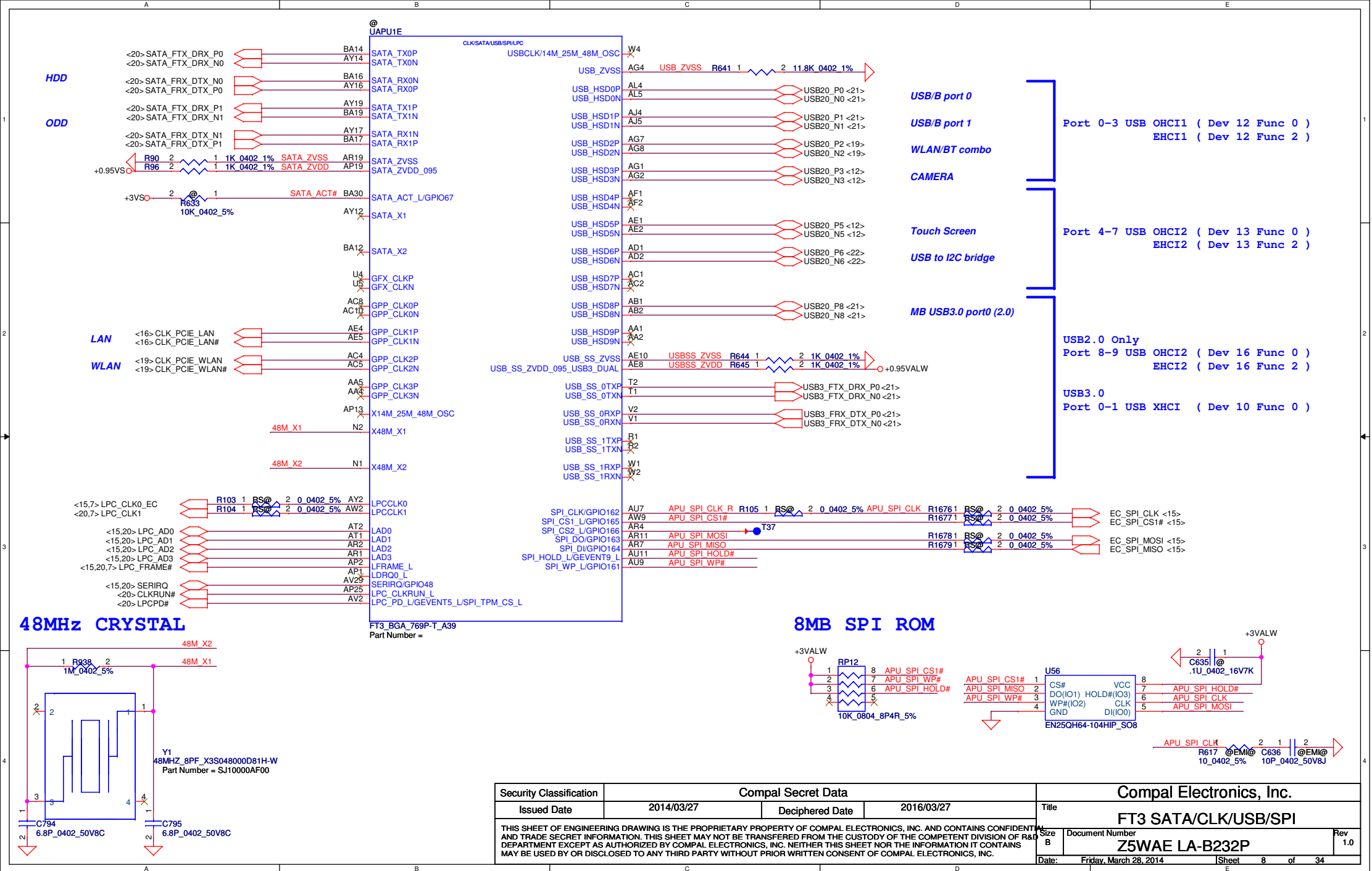
FT3_BGA_769P-T_A39
Part Number =



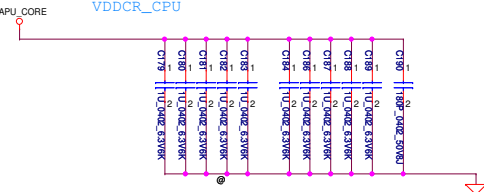
STRAPS OF APU

	LPC_FRAME#	LPC_CLK0_EC	LPC_CLK1	GEVENT2_L	RTC_CLK
H	SPI ROM (DEFAULT)	BOOT FAIL TIMER ENABLED	CLKGEN ENABLE (DEFAULT)	1.8V SPI ROM	NORMAL POWER UP/RESET TIMING (DEFAULT)
L	LPC ROM	BOOT FAIL TIMER DISABLED (DEFAULT)	CLKGEN DISABLED	3.3V SPI ROM (DEFAULT)	FAST POWER UP/RESET TIMING FOR SIMULATION

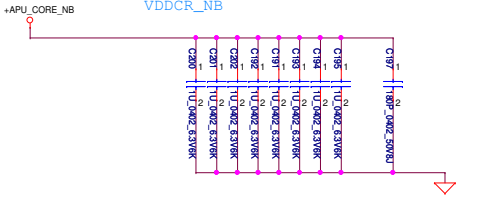




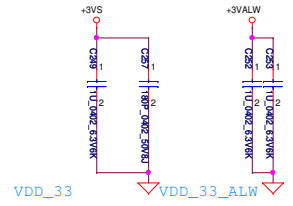
CORE POWER OF APU



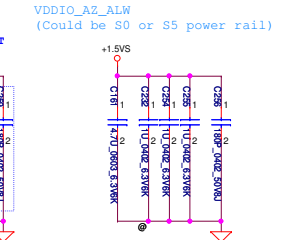
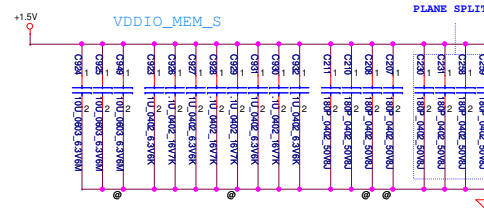
INTEGRATED GPU POWER OF APU



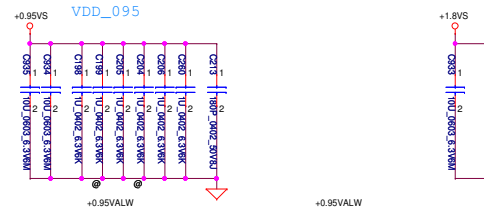
+3VALW/+3VS OF APU



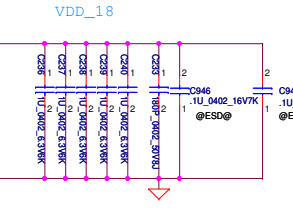
+1.5V/+1.5VS OF APU



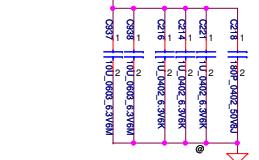
+0.95VALW/+0.95VS OF APU



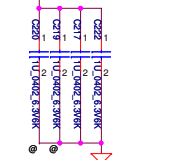
+1.8VALW/+1.8VS OF APU



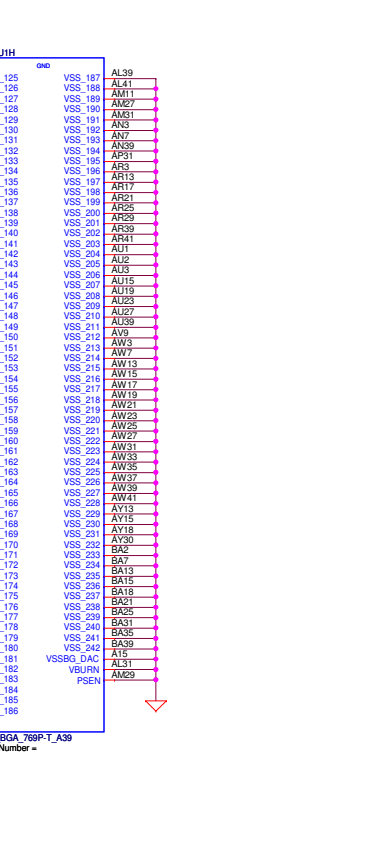
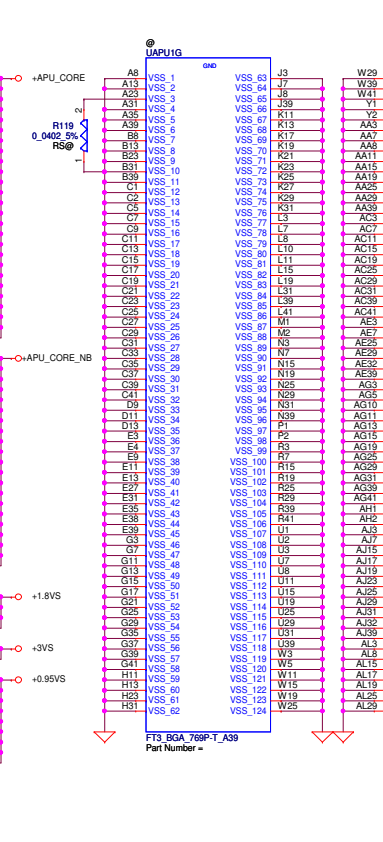
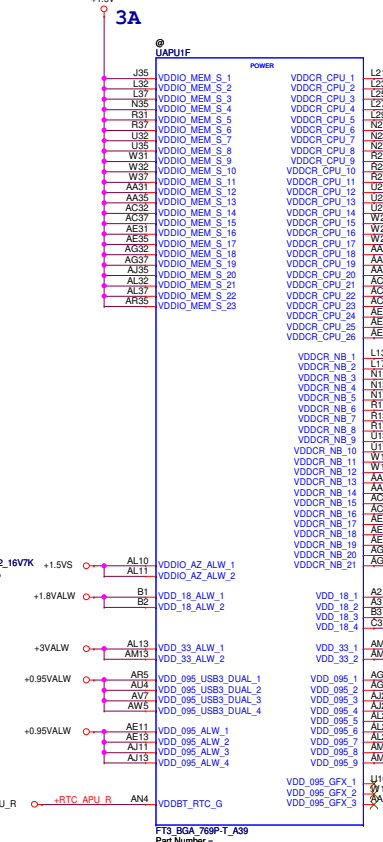
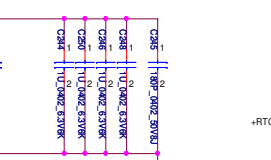
VDD_095_USB3_DUAL



VDD_095_ALW



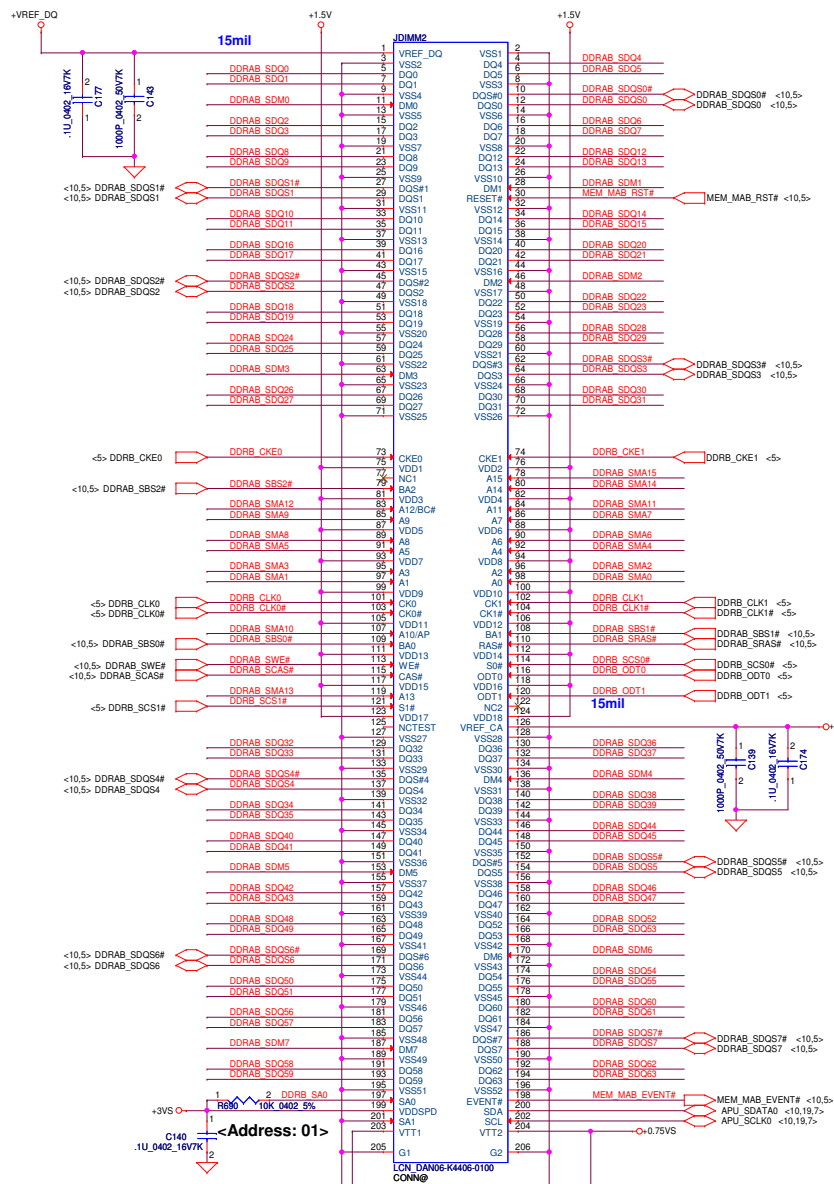
VDD_18_ALW



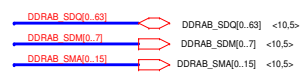
RTC OF APU



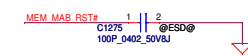
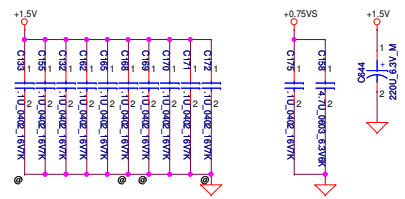
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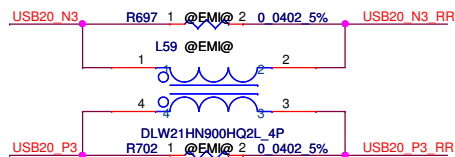
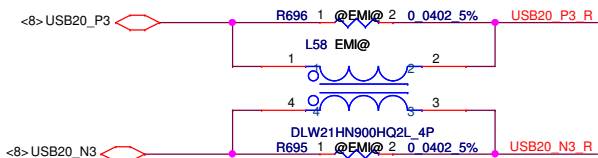
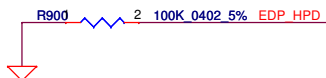
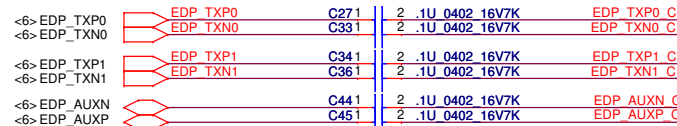
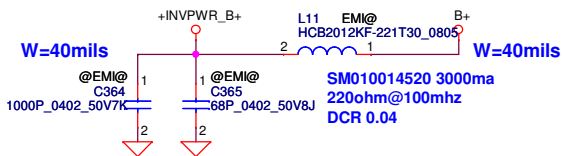
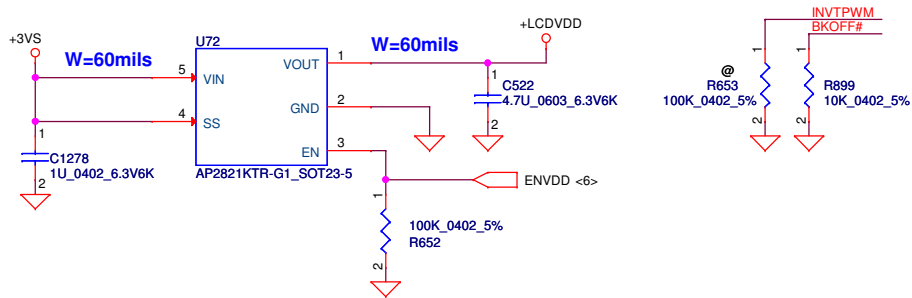
DIMM_B H:4mm STD



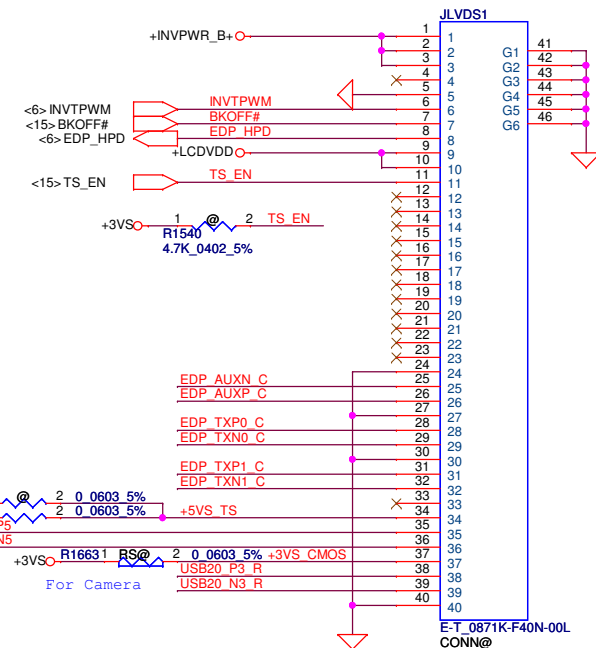
+1.5V/+0.75VS OF DIMM2



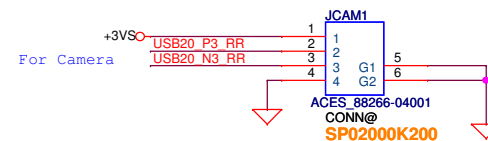
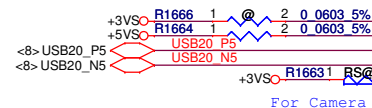
LCD POWER CIRCUIT



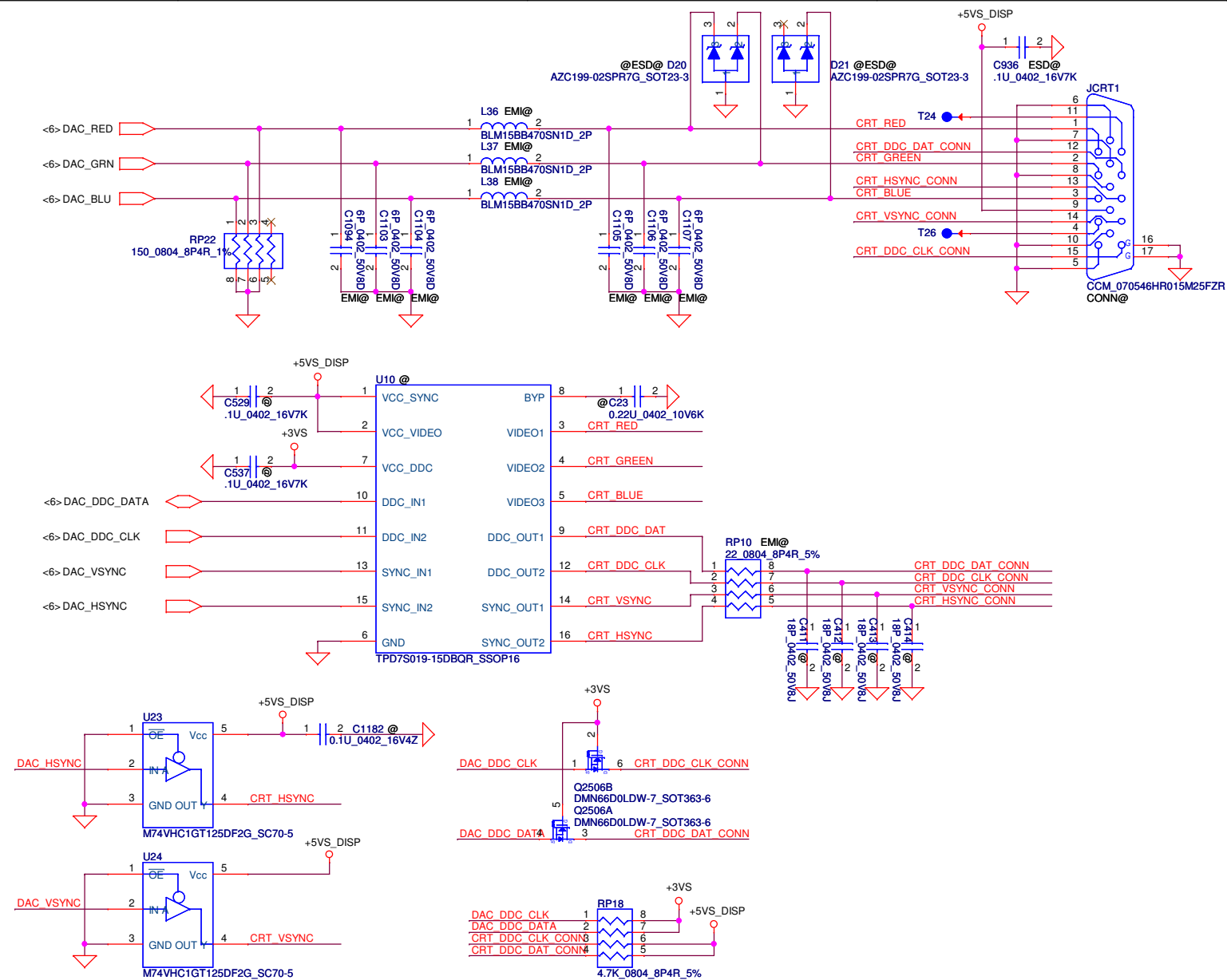
eDP PANEL Conn.



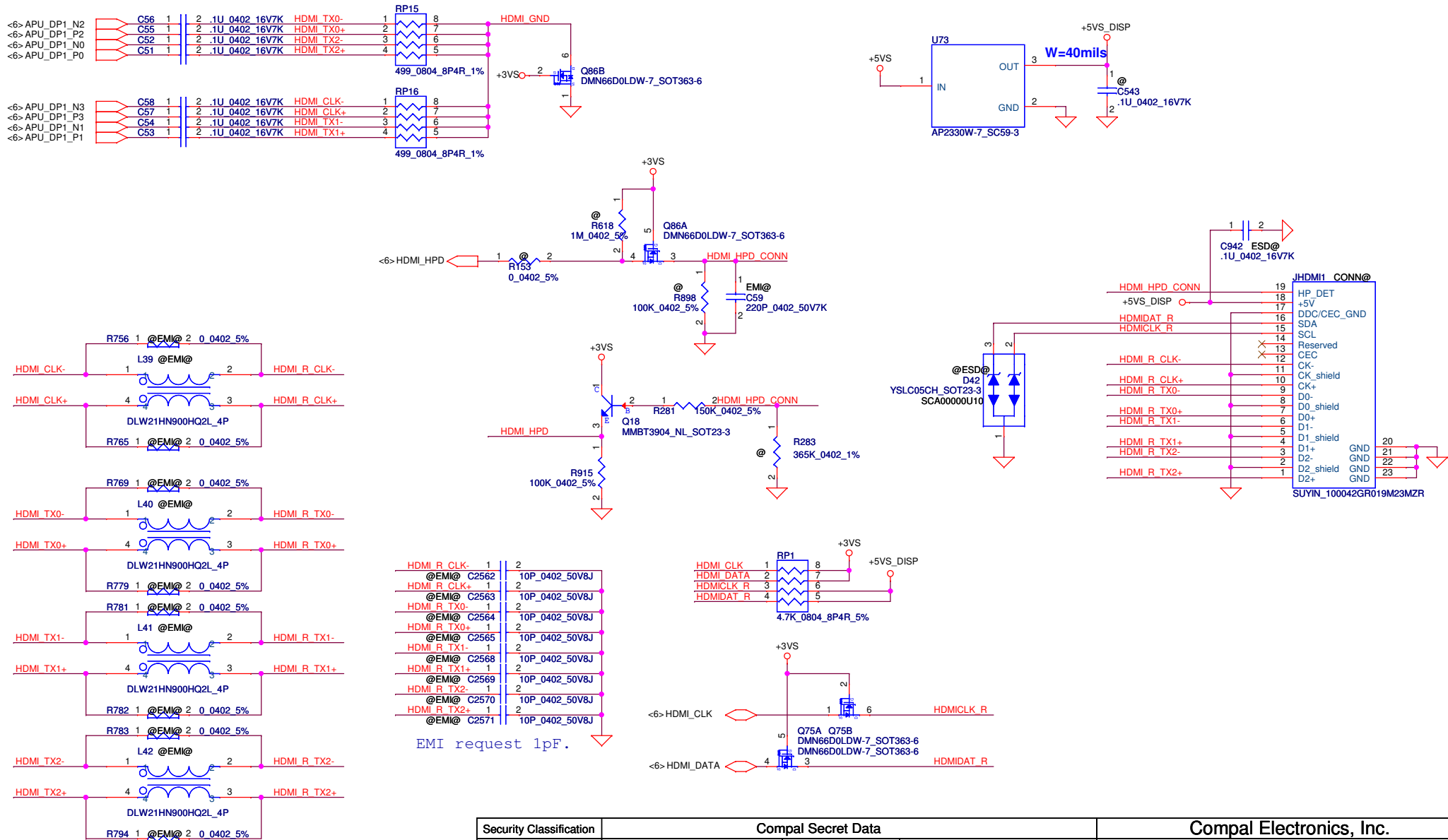
Touch Screen



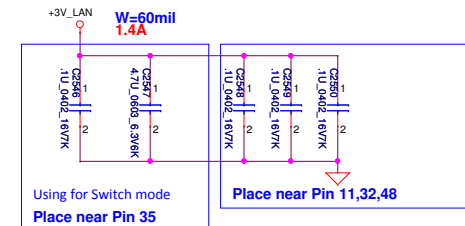
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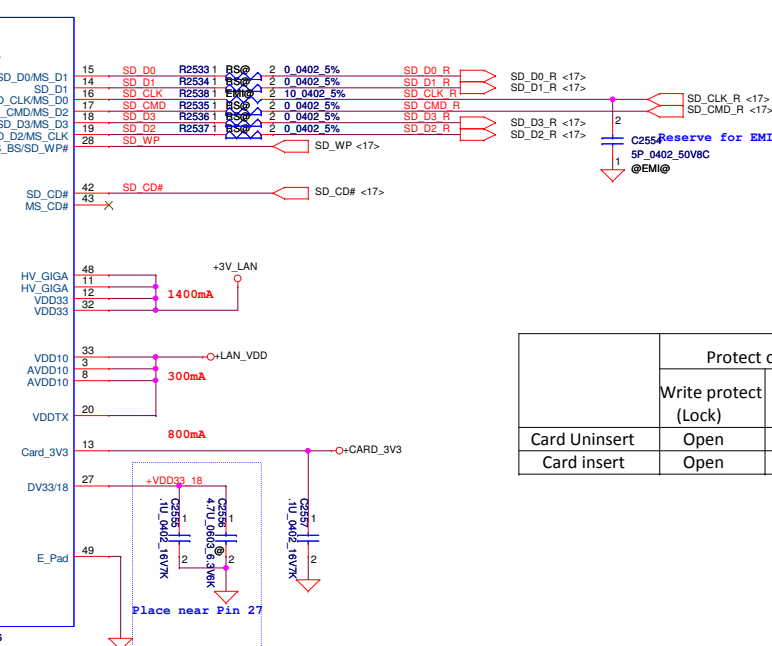
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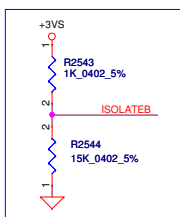
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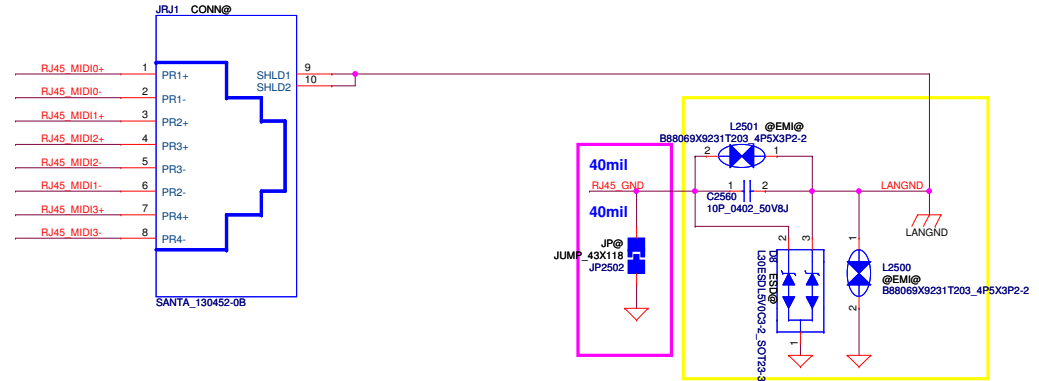
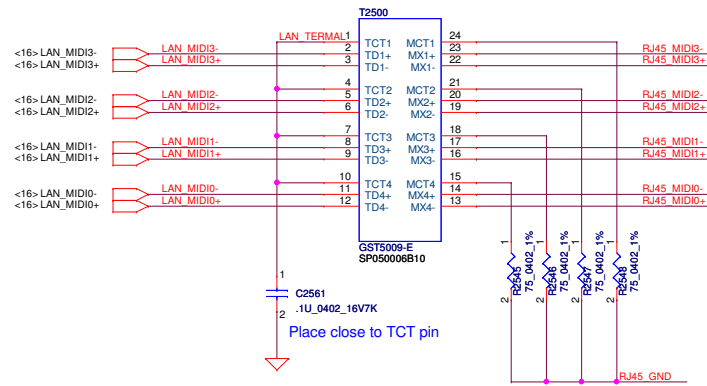
+3V_LAN Rising time must >0.5ms and <100ms



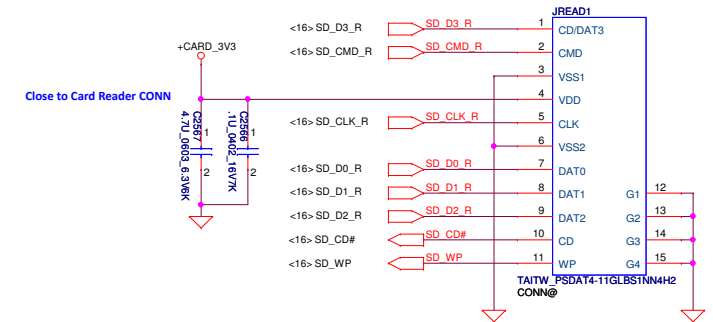
	Protect cotact		Card contact
	Write protect (Lock)	Write Enable (Unlock)	
Card Uninsert	Open	Open	Open
Card insert	Open	Close	Close



LAN Connector

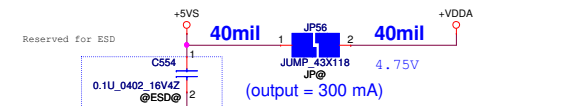
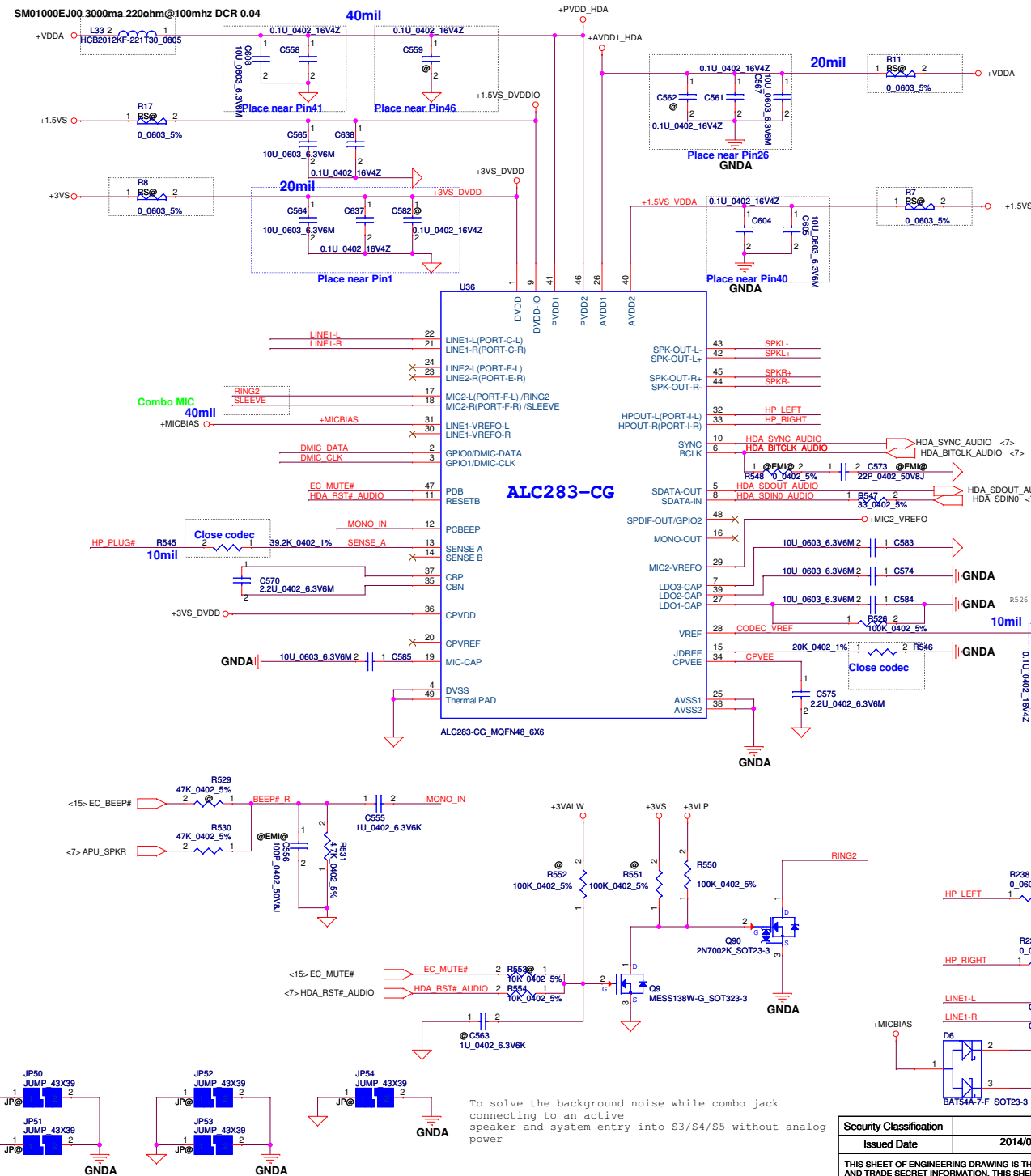


Card Reader Connector

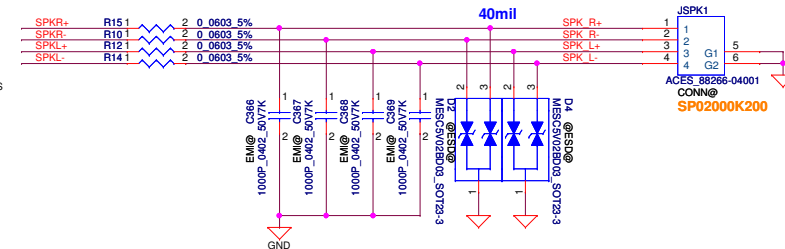


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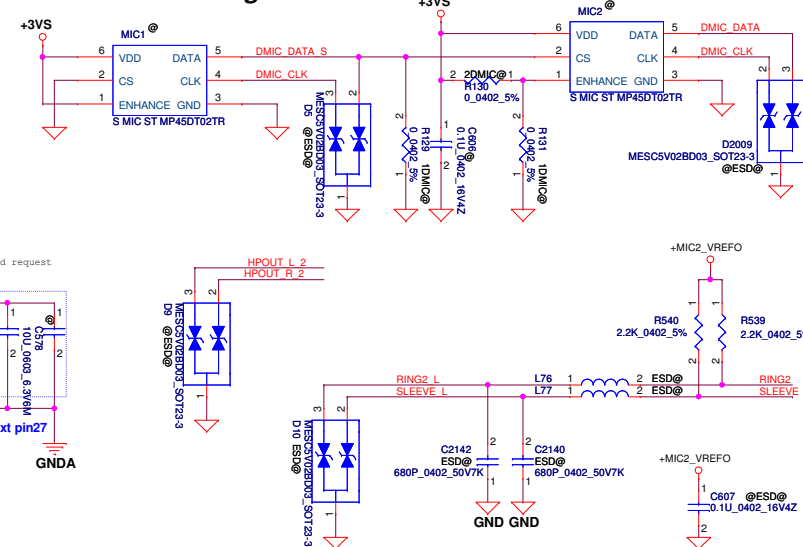
HD Audio Codec



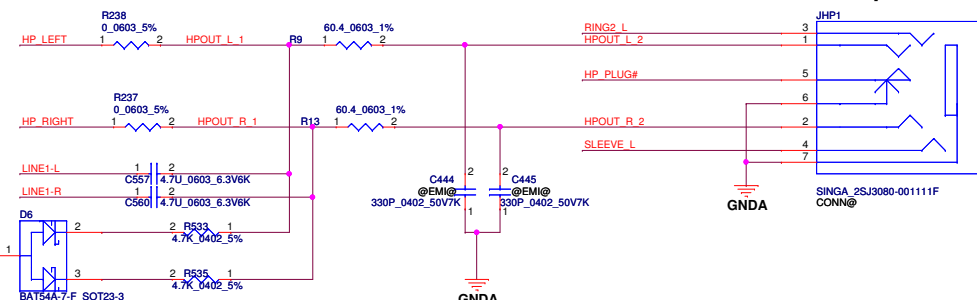
Int. Speaker Conn.



Digital MIC

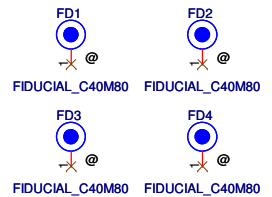
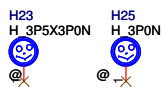
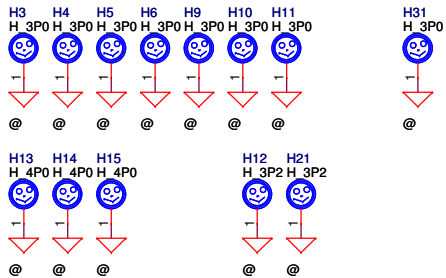
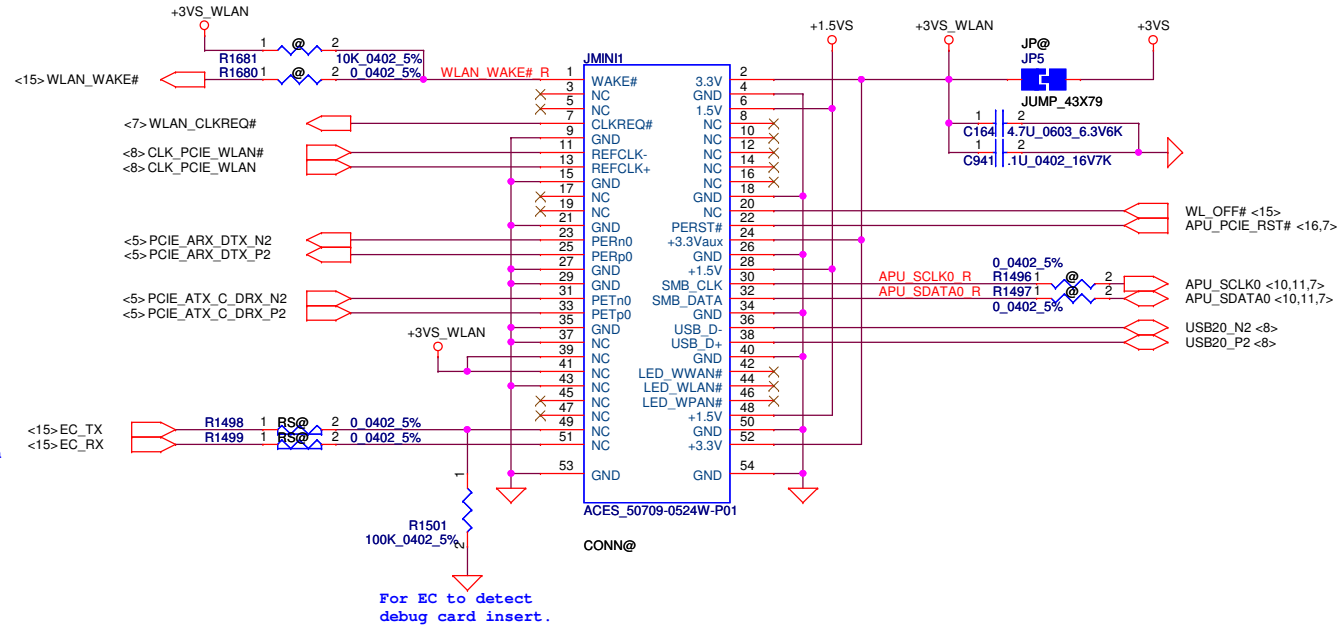
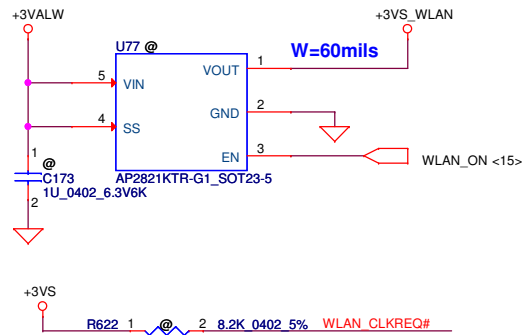


Headphone Out



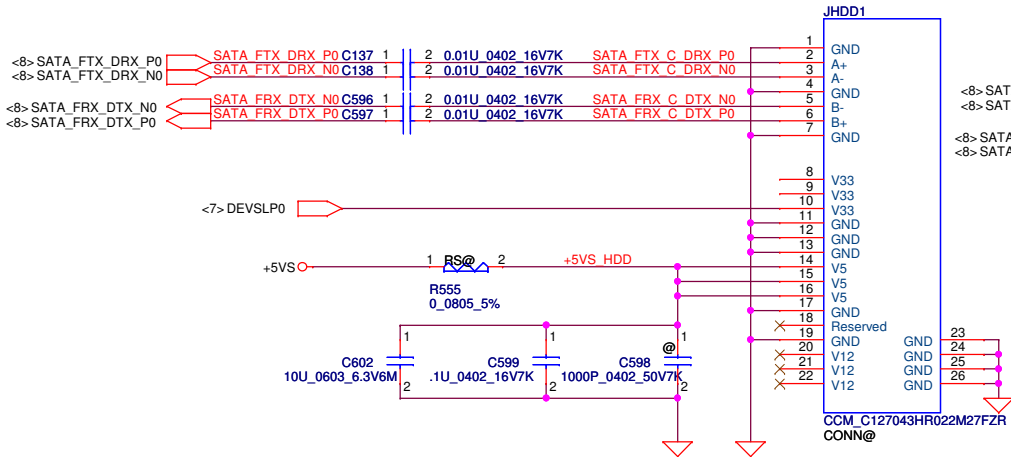
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Issued Date	2014/03/27	Deciphered Date	2016/03/27	Title	HD Audio Codec ALC283
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Mini-Express Card(WLAN/WiMAX) H=4mm

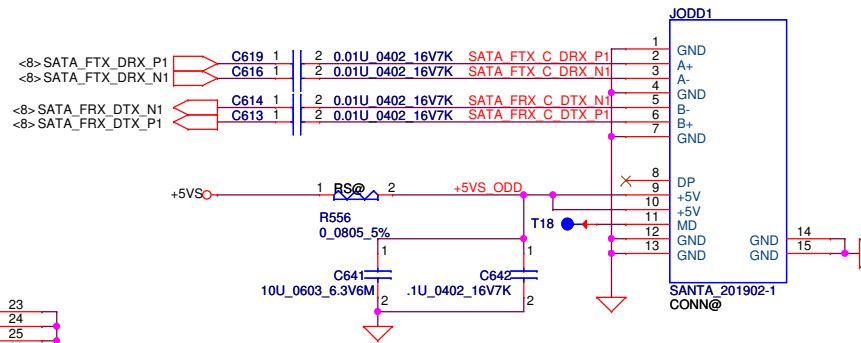


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				Rev 1.0	

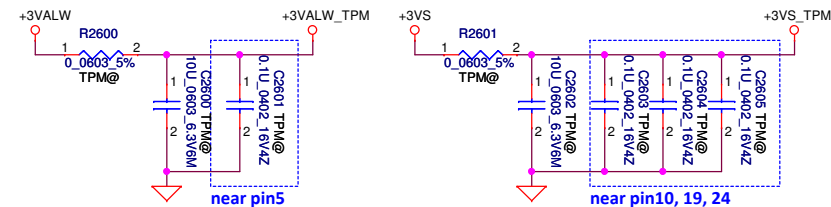
SATA HDD Conn.



SATA ODD Conn.



TPM



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

GPIO3/BADD with Internal PH (default)

AMD CLKRUN# no need PH (DG1.1)

LPCPD# had internal PH

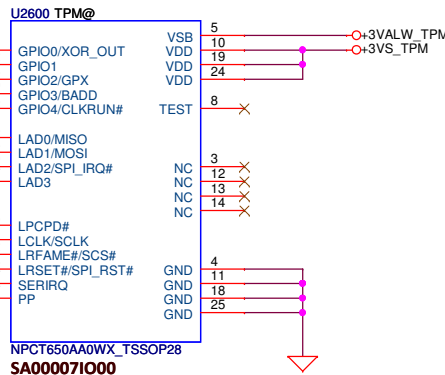
SERIRQ no need PH

CLKRUN# PH request by TPM chip DG 1/22

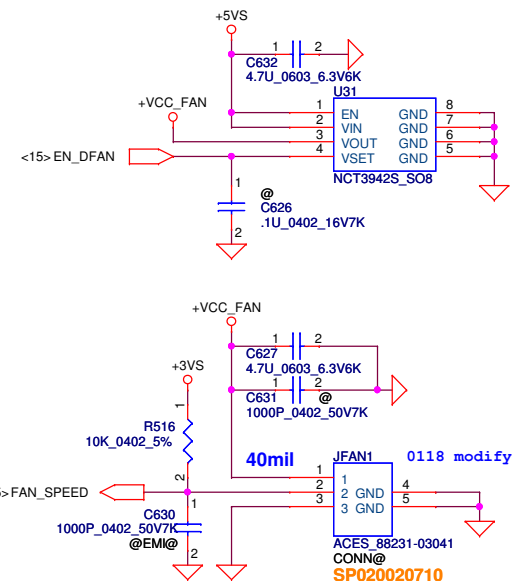
CLKRUN# PH request by TPM chip DG 1/22

close to EC

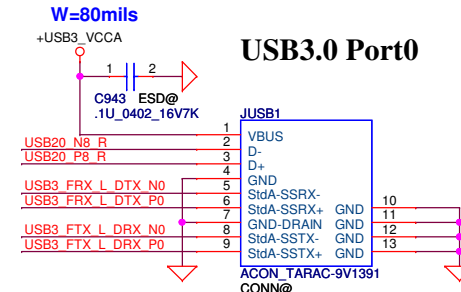
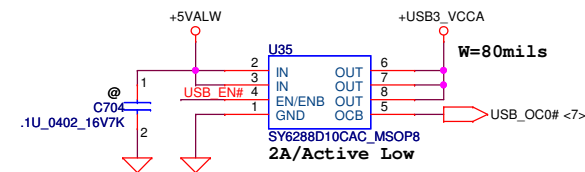
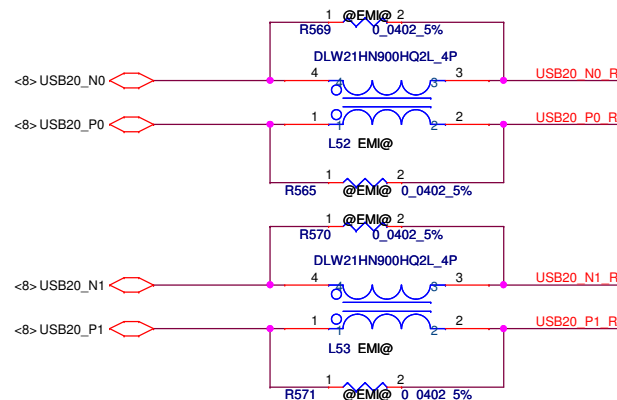
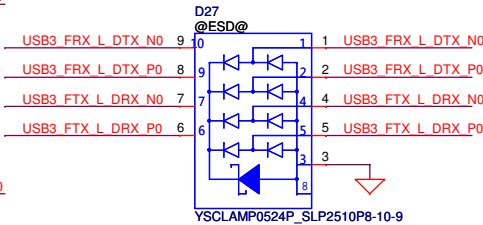
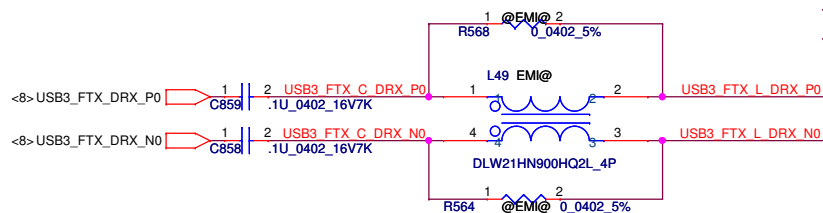
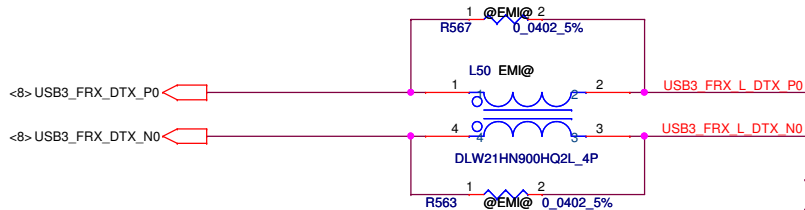
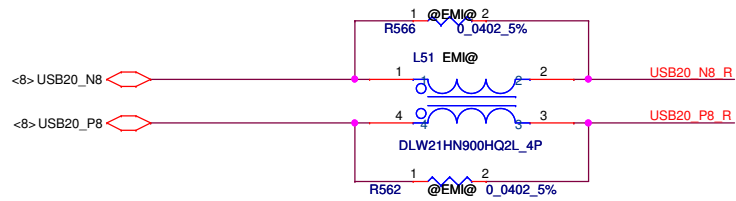
LPC_AD3_R R1684 1 TPM@ 2 0 0402 5% LPC_AD3
LPC_AD2_R R1685 1 TPM@ 2 0 0402 5% LPC_AD2
LPC_FRAME# R1686 1 TPM@ 2 0 0402 5% LPC_FRAME#
LPC_AD1_R R1687 1 TPM@ 2 0 0402 5% LPC_AD1
LPC_AD0_R R1688 1 TPM@ 2 0 0402 5% LPC_AD0
SERIRQ_R R1689 1 TPM@ 2 0 0402 5% SERIRQ



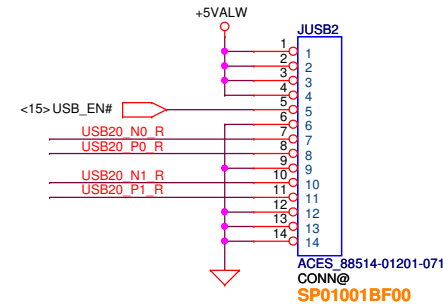
FAN Conn



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B		1.0		
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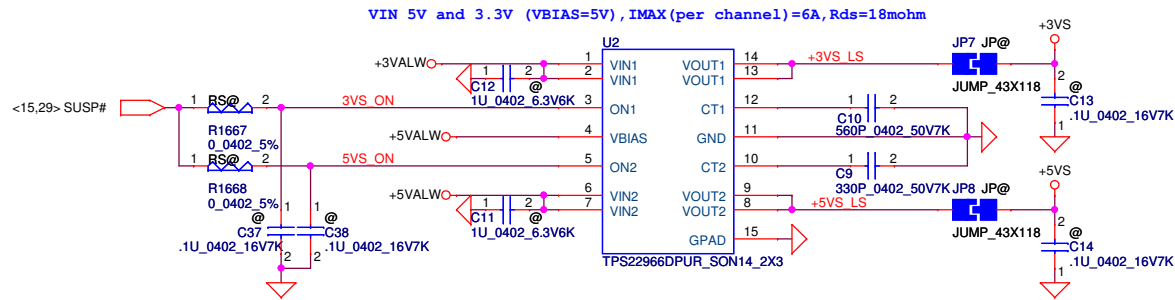


USB/B(USB Port 0, Port1)

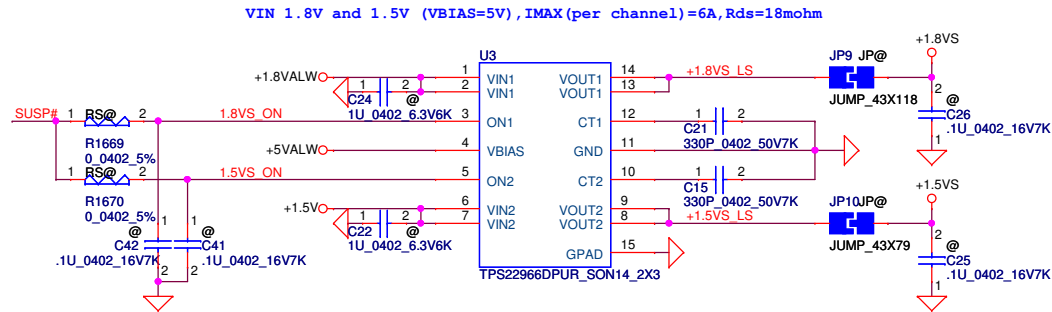


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2014/03/27				2016/03/27				Title			
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				B				Z5WAE LA-B232P			
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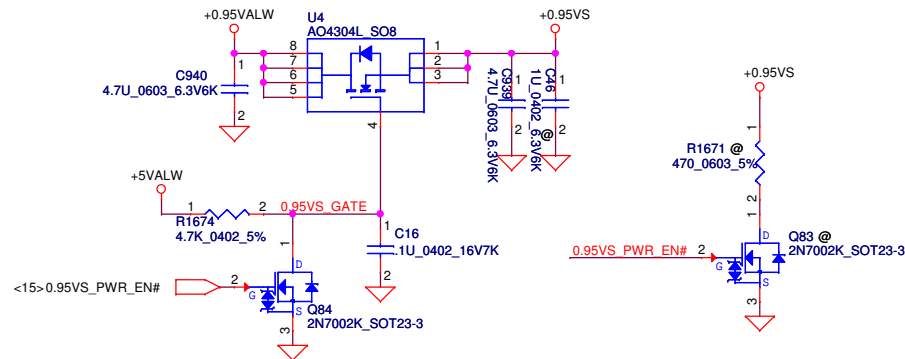
+5VALW TO +5VS
+3VALW TO +3VS
Load switch



+1.8VALW TO +1.8VS
+1.5V TO +1.5VS
Load switch



+0.95VALW to +0.95VS



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0.1

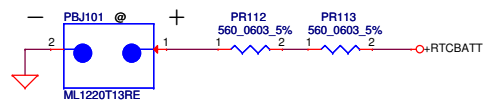
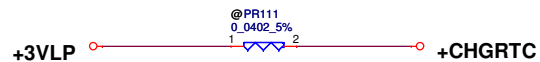
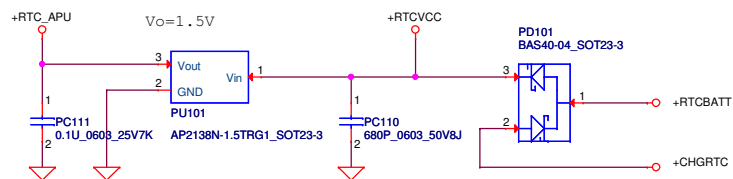
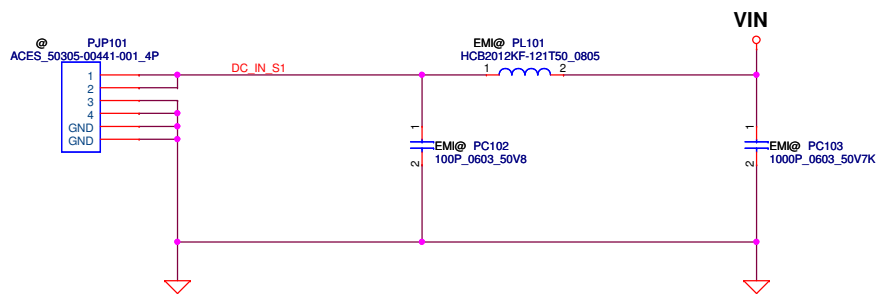
- 1. Add R139 for colay CY7C65211 and MA723C
- 2. Change Y3 to SJ100001K00
- 3. Change Q9 to MESS138
- 4. Reserve C607 pad for ESD request
- 5. Swap D10.2, D10.3 and change D10.3 to RING2
- 6. Delete L22, C950, C203
- 7. Change R404, R73 connect to +0.95VS
- 8. Connect R139 to U69.2
- 9. Change R452 to 10K
- 10. Change C43 to 4.7U
- 11. Change C43 to 1U
- 12. Add T18, T24, T25
- 13. Chagne U2 and U3 P/N to SA00006FD00
- 14. Change U2 and U3 P/N to SA00004MM00
- 15. Unpop Q2505,Q87, RP24; Pop R122,R123,R134,R1683

0.2

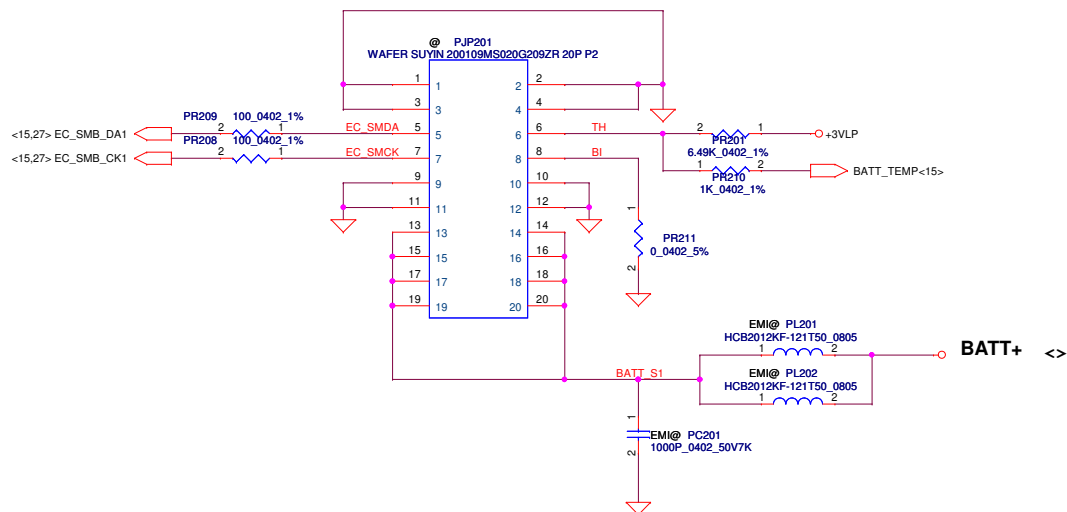
- 1. Change R119 to Rshort
- 2. Add U23,U24,Q2506,D20 and D21 for D-sub
- 3. Change U69 power to +3VALW and +5VALW; modify Q2505 body diode issue.
- 4. Add L52,L53,R565,R569,R570 and R571 for EMI request.
- 5. Add R127,R128,R140,R141,R142,R143 for reserve USB TP
- 6. Add R209 to prevent EC out of control
- 7. Change LAN_WAKE# PU to +3V_LAN
- 8. Change BID to 1 for DVT
- 9. Change C99,C100 to 10p for crystal test
- 10. Change R238 and R237 to 59ohm
- 11. Add L76,L77,C2142 and C2140 for ESD request
- 12. Change R756,R765,R769,R779,R781,R782,R783 and R794 to Rshort for EMI request
- 13. Pop Q89, unpop R1690
- 14. Change D10 to SCA00001B00
- 15. Add C609 for ESD request
- 16. Change L11 to SM01000EJ00
- 17. Add C668 and C832 for vendor request
- 18. Remove APU_ALERT#_R
- 19. Add H12,remove H30,swap H21 and H31

0.3

- 1. Change JTP1
- 2. Add U78 for TP +3V power plane
- 3. Change C736 to 150u D2 type.
- 4. Change R699, R700 to 330ohm; R698, R701 to 560ohm
- 5. Change U69 +3VALW to +3VS
- 6. Add C366, C367, C368, C369 for EMI request
- 7. Add on board TPM
- 8. Add R619



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---Battery_pin define---

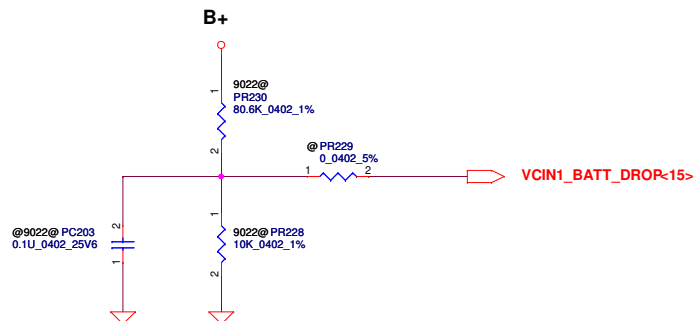
PIN1 GND
PIN2 GND
PIN3 SMD
PIN4 SMC
PIN5 TS
PIN6 B/I
PIN7 Batt+
PIN8 Batt+

---Battery Con_pin define---

PIN8 GND
PIN7 GND
PIN6 SMD
PIN5 SMC
PIN4 TS
PIN3 B/I
PIN2 Batt+
PIN1 Batt+

2013/10/02
Add for ENE9022 Battery Voltage drop detection.
Connect to ENE9022 pin64 AD1.

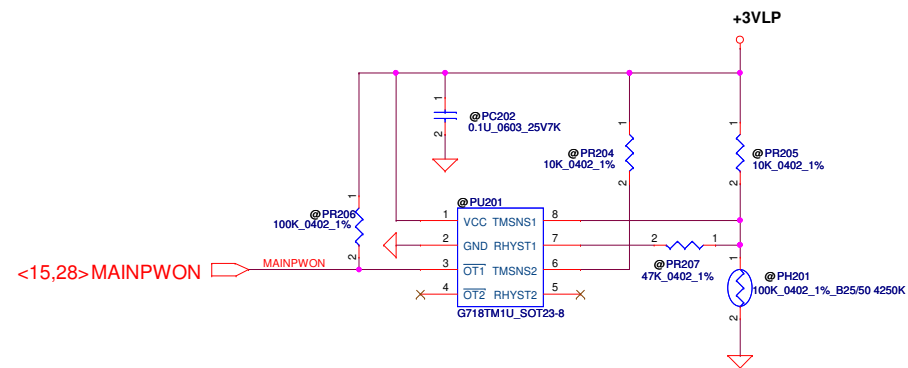
Battery is 3-cell design.
B+=9V



PH201 under CPU bottom side :
CPU thermal protection at 92 degree C (shutdown)
Recovery at 56 degree C

2013/10/25 Modify
PR227(9012@) change to 26.1K ohm.
2014/02/07 Modify
Delete @PR227.(remove HW hysteresis)

For 40W adapter==>action 43W , Recovery 34.4W



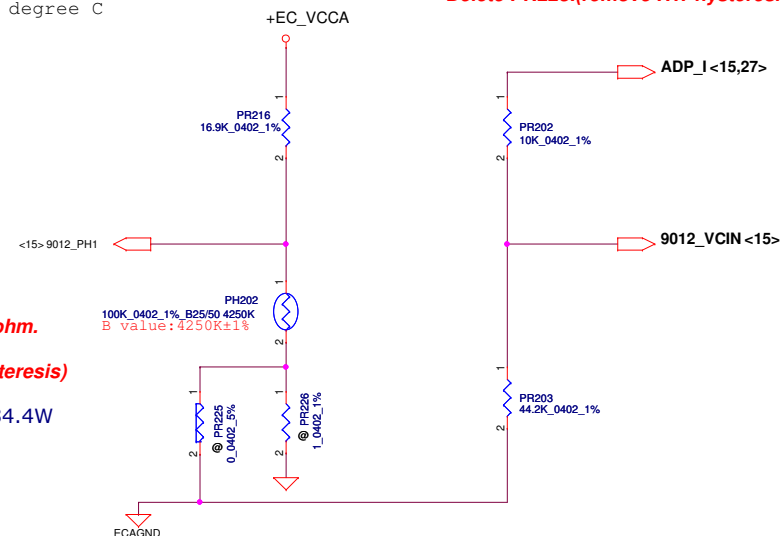
	For KB9012 OTP	For KB9022 OTP
92°C		1.0V
56°C		2.0V
PR216		16.9K ohm

2014/01/02 update

For KB9022 sense 20mΩ	Active	Recovery
40W	43W, 0.73V	34.4W, 0.59V

2013/10/22 Modify
PH201,PH202 change to common part.

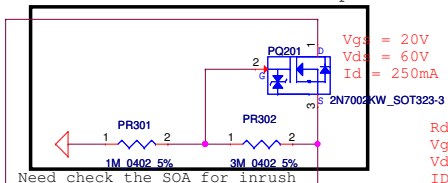
2013/12/16 Modify
Delete PR223.(remove HW hysteresis)



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BATTERY CONN / OTP

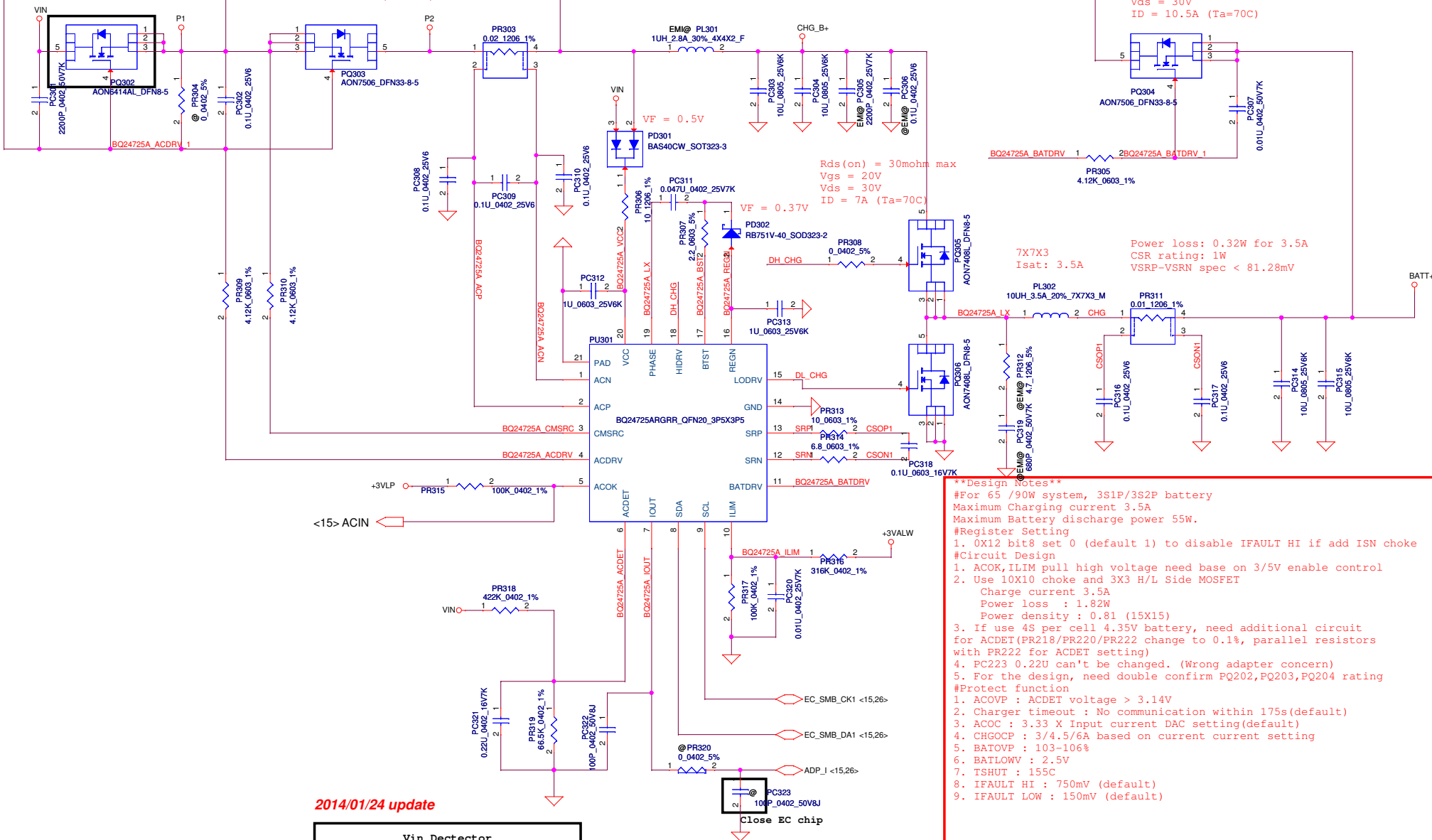
Protection for reverse input



Need check the SOA for inrush

2013/10/14
PR303 10m ohm chang -->20m ohm
SD00000S120

Rds(on) = 15.8mohm max
Vgs = 20V
Vds = 30V
ID = 10.5A (Ta=70C)



2014/01/24 update

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+316)/20/0.01
= 3.966 A

2013/10/16 Modify
PQ305,PQ306 change to AON7408L.
2013/10/22 Modify
PL302 change to common part.
2013/11/29 Modify
PL301 change to common part.

Rds(on) = 15.8mohm max
Vgs = 20V
Vds = 30V
ID = 10.5A (Ta=70C)

Power loss: 0.32W for 3.5A
CSR rating: 1W
VSRP-VSRN spec < 81.28mV

****Design Notes****
#For 65 /90W system, 3S1P/3S2P battery
Maximum Charging current 3.5A
Maximum Battery discharge power 55W.
#Register Setting
1. 0X12 bit8 set 0 (default 1) to disable IFAULT HI if add ISN choke
#Circuit Design
1. ACOK,ILIM pull high voltage need base on 3/5V enable control
2. Use 10X10 choke and 3X3 H/L Side MOSFET
Charge current 3.5A
Power loss : 1.82W
Power density : 0.81 (15X15)
3. If use 4S per cell 4.35V battery, need additional circuit for ACDET (PR218/PR220/PR222 change to 0.1%, parallel resistors with PR222 for ACDET setting)
4. PC223 0.22u can't be changed. (Wrong adapter concern)
5. For the design, need double confirm PQ202,PQ203,PQ204 rating
#Protect function
1. ACOVP : ACDET voltage > 3.14V
2. Charger timeout : No communication within 175s(default)
3. ACOC : 3.33 X Input current DAC setting(default)
4. CHGOC : 3/4.5/6A based on current current setting
5. BATOV : 103-106%
6. BATLOW : 2.5V
7. TSHUT : 155C
8. IFAULT HI : 750mV (default)
9. IFAULT LOW : 150mV (default)

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Deciphered Date				2016/03/27				CHARGER			
Size				Document Number				Rev 1.0			
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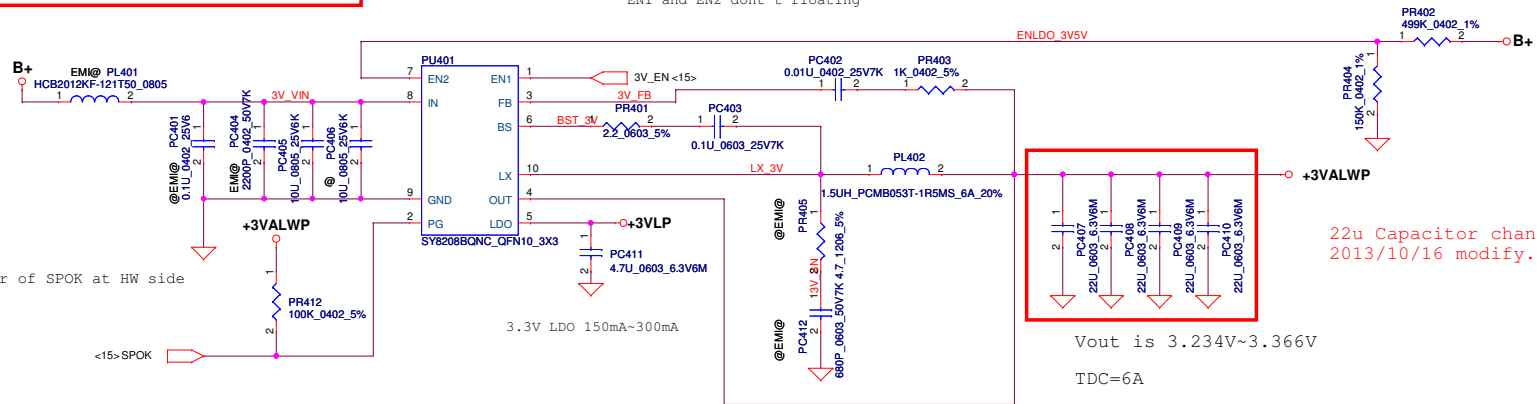
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Module model information

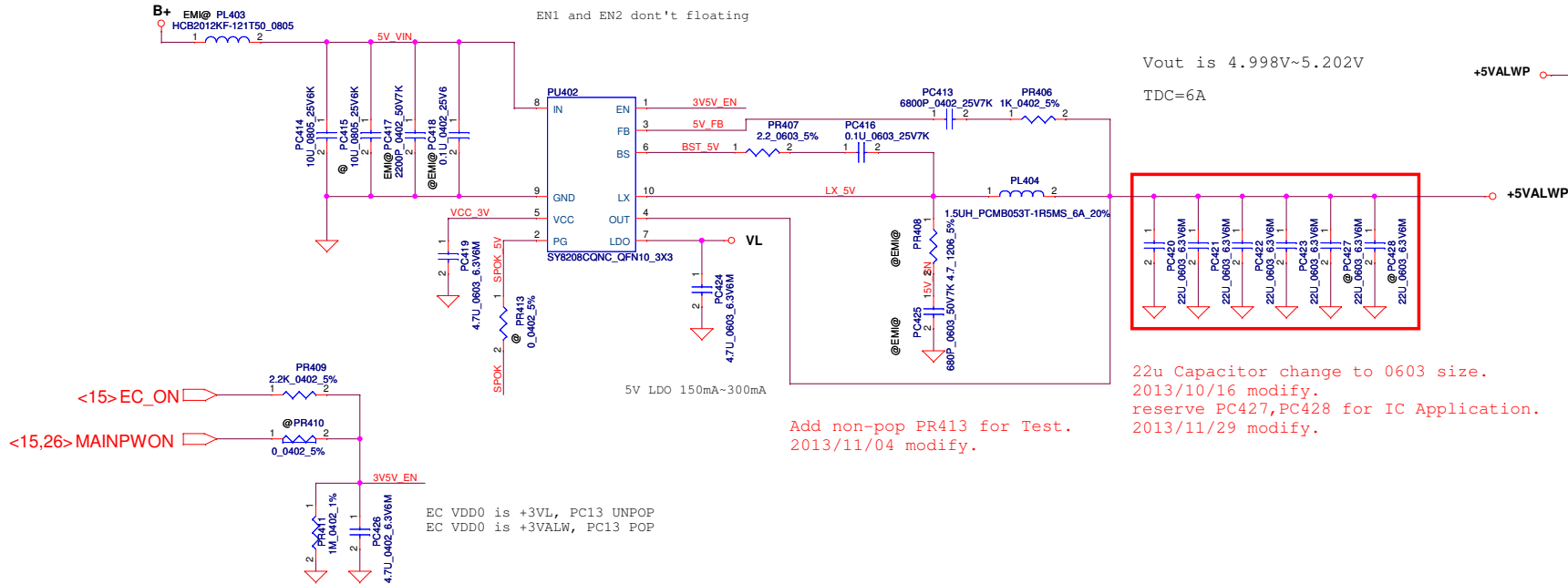
SY8208B_V2.mdd

SY8208C_V2.mdd

EN1 and EN2 don't floating



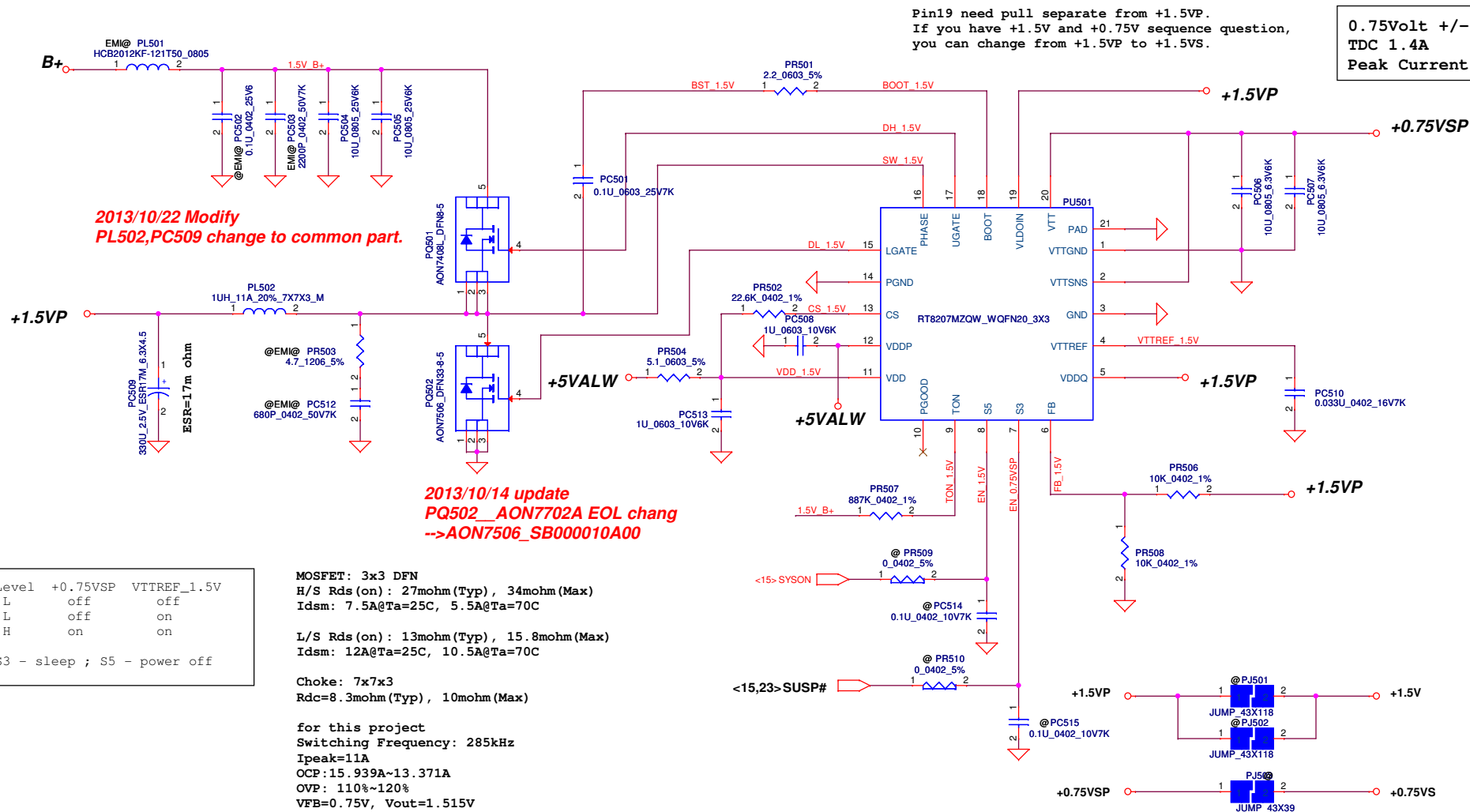
EN1 and EN2 don't floating



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Module model information

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



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								Document Number		1.0	
								Custom			
								Date:		Thursday, March 27, 2014	

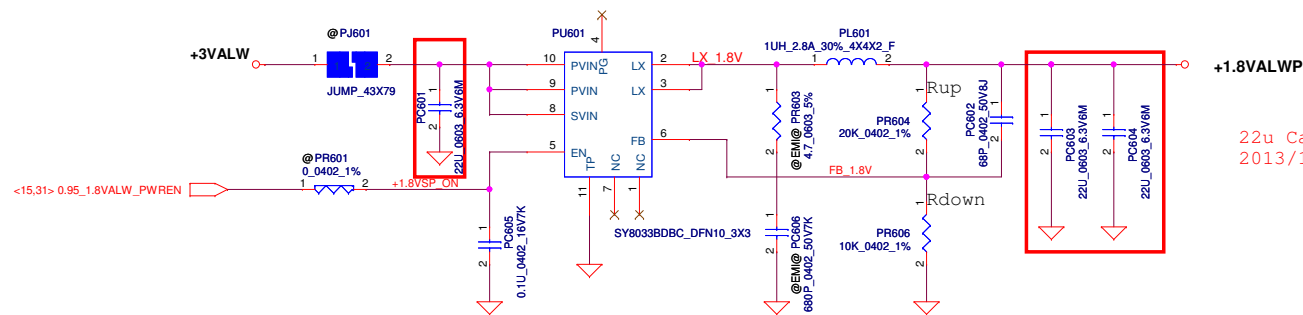
Module model information

SY8033_V1.mdd

22u Capacitor change to 0603 size.
2013/10/16 modify.

2013/10/22 Modify
PL601 change to common part.

FB=0.6V
Note:Iload(max)=3.5A



22u Capacitor change to 0603 size.
2013/10/16 modify.

Note:
When design Vin=5V, please stuff snubber
to prevent Vin damage

$$V_{out} = 0.6V * (1 + R_{up}/R_{down})$$

Delete PR605, because same net name have two PD resistor in circuit.
2013/11/29 modify.

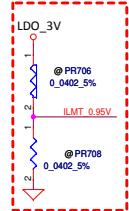


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Module model information

SY8208D_V1.mdd

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



The current limit is set to 8A, 12A or 16A when this pin is pull low, floating or pull high

Pin 7 BYP is for CS.
Common NB can delete +3VALW and PC714

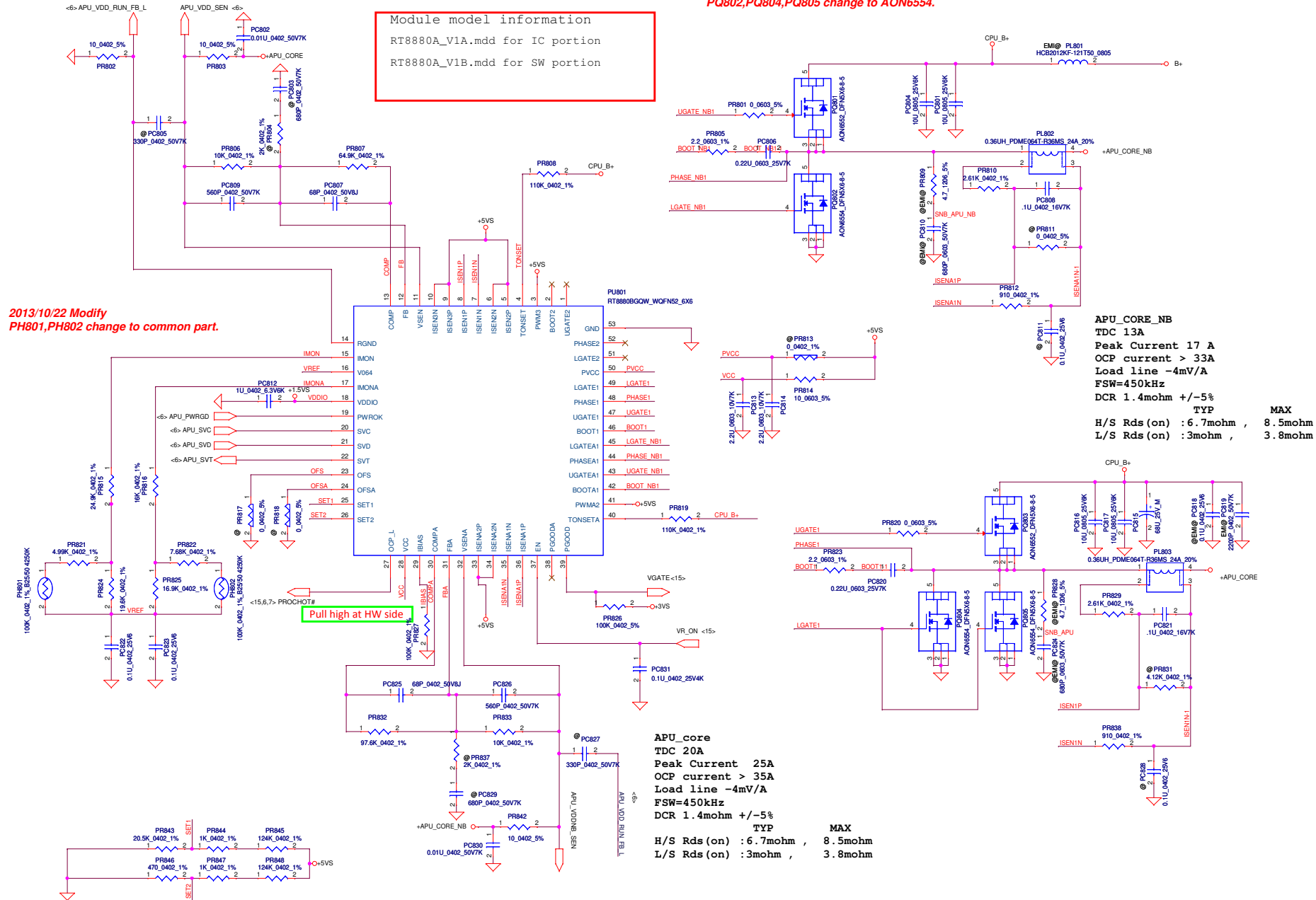
for this project
Ipeak=8A
Add 22u*2 capacitor,
Chock change to 0.68u.
meet DC-DC design check form.
2013/10/02 Modify.

22u Capacitor change to 0603 size.
2013/10/16 modify.

$$V_{FB}=0.6V$$
$$V_{out}=0.6V \cdot (1+R_{up}/R_{down})$$
$$V_{out}=0.954V$$

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2013/10/16 Modify
 PQ801,PQ803 change to AON6552.
 PQ802,PQ804,PQ805 change to AON6554.

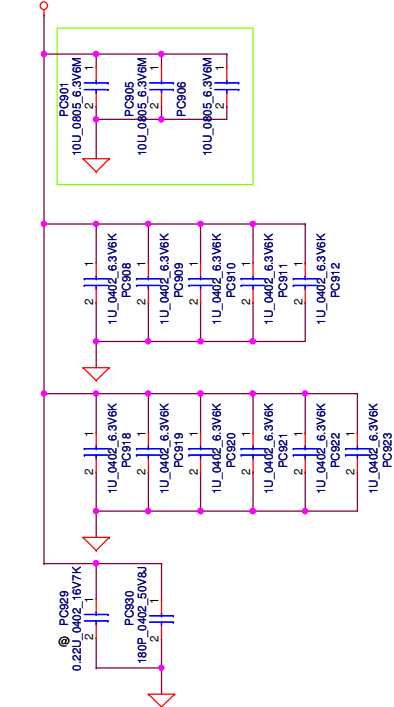


Delete PR834.PR835.PR836.PR839.PR840.PR841,
 follow vender FAE suggest.
 2013/11/29 modify.

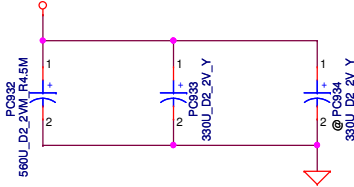
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+APU_CORE (36.4)

+APU_CORE

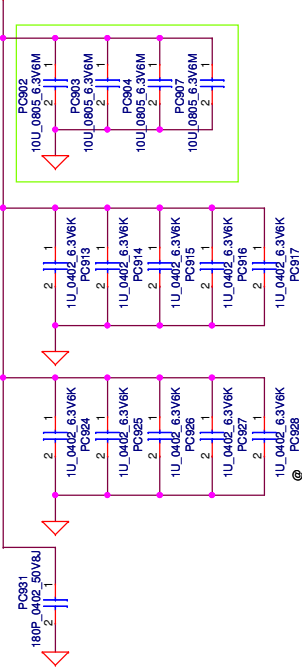
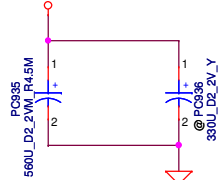


+APU_CORE



+APU_CORE_NB (36.5)

+APU_CORE_NB

**+APU_CORE_NB**

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Version change list (P.I.R. List)

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for PWR

Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
1	Design Change.	Design Change of Diode Application.	0.2	25	Change PD101 to SCSS4004010(S SCH DIO BAS40-04 SOT23).	2013/11/29	DVT
2	Design Change.	Design Change of IC Application.	0.2	28	Add non-pop component PC427,PC428.	2013/11/29	DVT
3	Design Change.	reduce part count.	0.2	30	Delete PR605 PD resister.	2013/11/29	DVT
4	Design Change.	reduce part count.	0.2	32	Delete @PR834.@PR835.@PR836.@PR839.@PR840.@PR841.	2013/11/29	DVT
5	Design Change.	Design Change of common part.	0.2	27	Change PL301 to SH00000YG00 (S COIL 1UH +-30% 2.8A 4X4X2 FERRITE).	2013/11/29	DVT
6	Design Change.	Design Change of EC Type Application.	0.2	28	Add PD401 SCS00000Z00(S SCH DIO RB751V-40 SOD-323)	2013/11/29	DVT
7	Design Change.	Design Change of Circuit Application.	0.2	26	Delete PR223.(remove HW hysteresis)	2013/12/16	DVT
8	Design Change.	Design Change of Circuit Application.	0.2	27	Change PQ303,PQ304 to SB000010A00(S TR AON7506 1N DFN).	2013/12/19	DVT
9	Design Change.	Design Change of Circuit Application.	0.2	26	Add PL202 SM01000C000 (S SUPPRE_ TAI-TECH HCB2012KF-121T50 0805)	2013/12/19	DVT
10	Design Change.	Design Change of Circuit Application.	0.2	26	Change PR211 to SD028000080(S RES 1/16W 0 +-5% 0402).	2013/12/25	DVT
11	Design Change.	Design Change of Circuit Application.	0.2	28	Change PC426 to pop.	2013/12/25	DVT
12	Design Change.	Design Change of Circuit Application.	0.2	26	Change PR216 to SD034162280(S RES 1/16W 16.2K +1% 0402).	2013/12/25	DVT
13	Design Change.	Design Change of Circuit Application.	0.2	26	Change PR216 to SD034169280(S RES 1/16W 16.9K +-1% 0402).	2014/01/02	DVT
14	Design Change.	Design Change of Circuit Application.	0.2	26	Change PR202 to SD034100280(S RES 1/16W 10K +-1% 0402).	2014/01/02	DVT
15	Design Change.	Design Change of Circuit Application.	0.2	26	Change PR203 to SD034442280(S RES 1/16W 44.2K +-1% 0402).	2014/01/02	DVT
16	Design Change.	Design Change of Circuit Application.	0.3	30.31.32	Change PR813,PR601,PR706,PR702, to SD028000080(S RES 1/16W 0 +-5% 0402).	2014/02/07	PVT

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