

MODEL NAME : Aventador  
PCB NO : LA-D781P  
BOM P/N : TBD

	R1	R3	R3	R3
CPN	DAA000CE010	DAA000CE011	DAA000CE012	DAA000CE013



# Dell/Compal Confidential

## Schematic Document

### Aventador (Kabylake Y)

AR Option

UT1 AR_SLL42B	UT1 AR_QST72B	UT1 AR_QT5T0	UT1 AR_SLLSP0
SA0000996L D8L6340 SLL42 B1	SA0000996L JHLE6340 CSTZ C0	SA0000996L JHLE6340 QT5T C1	SA0000996L JHLE6340 SLLSP C1

nVpro CPU Option

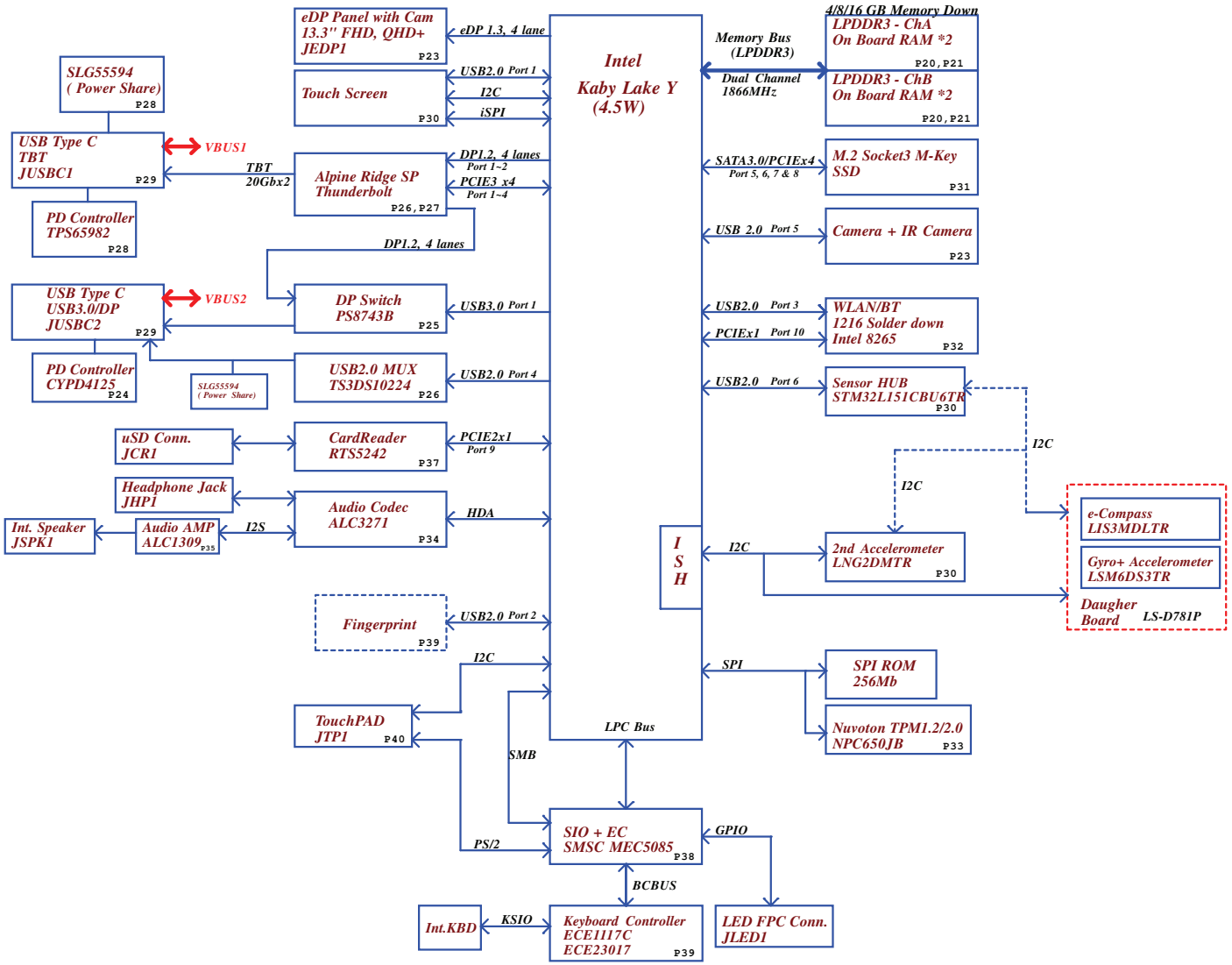
UC1 QLD0B	UC1 QLD0B	UC1 QLD0B	UC1 SR2ZX
SA0000452L HEB067702739525 QLDQ	SA0000452L HEB067702739823 QLDH	SA0000452L HEB067702739824 QLDH	SA0000452L HEB067702739823 SR2ZX

Vpro CPU Option

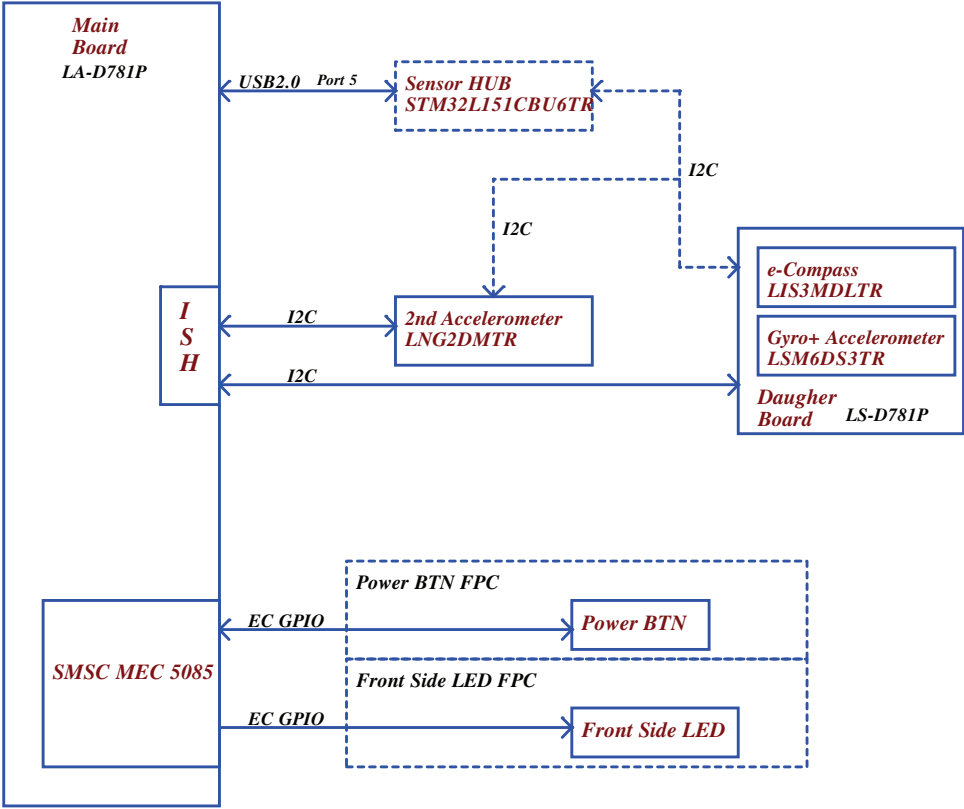
UC1 QLD0B	UC1 QLY7B	UC1 QLY7B
SA0000452L HEB067702739825 QLDH	SA0000452L HEB067702739527 QLYB	SA0000452L HEB067702739526 QLY7

2016-08-31  
Rev: A00

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Doc No.	LA-D781P	Rev	01	
Date	Wednesday, November 16, 2016	Page	2	of 38



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				Document Number
				Rev
				0.1
				Date
				Wednesday, November 16, 2016
				Sheet
				3
				of
				58

POWER STATES

State	Signal	SLP S3#	SLP S4#	SLP S5#	SLP A#	ALWAYS PLANE	M PLANE	SUS PLANE	RUN PLANE	CLOCKS
S0 (Full ON) / M0		HIGH	HIGH	HIGH	HIGH	ON	ON	ON	ON	ON
S3 (Suspend to RAM) / M3		LOW	HIGH	HIGH	HIGH	ON	ON	ON	OFF	OFF
S4 (Suspend to DISK) / M3		LOW	LOW	HIGH	HIGH	ON	ON	OFF	OFF	OFF
S5 (SOFT OFF) / M3		LOW	LOW	LOW	HIGH	ON	ON	OFF	OFF	OFF
S3 (Suspend to RAM) / M-OFF		LOW	HIGH	HIGH	LOW	ON	OFF	ON	OFF	OFF
S4 (Suspend to DISK) / M-OFF		LOW	LOW	HIGH	LOW	ON	OFF	OFF	OFF	OFF
S5 (SOFT OFF) / M-OFF		LOW	LOW	LOW	LOW	ON	OFF	OFF	OFF	OFF

PM TABLE

State	Power plane	+3VALW_DS <sub>W</sub> +5VALW +3VALW +3VLP	+3V_PCH +1.8V_PRIM +1.0V_PRIM +1.0VA_GATE +VCC_PRIM	+1.2V_DDR +3.3V_CV2 +1.8V_MEM +1.0V_VCCST	+5VS +1.8VS +3VS +1.0V_VCCSTG +0.85VS_VCCIO +0.6VS_VTT +VCC_SA +VCC_GT +VCC_CORE
S0		ON	ON	ON	ON
S3 / AC		ON	ON	ON	OFF
DS3		ON	OFF	ON	OFF
S5 S4/AC		ON	OFF	OFF	OFF
S5 S4/AC doesn't exist		OFF	OFF	OFF	OFF

Control Table

		MEC5085	BATT	XDP	USH	TI PD	CCG4	ECE1117	AMP	Charger
SMLOCLK SMLODATA	PCH									
SML1_SMBCLK SML1_SMBDATA	PCH	V								
SMBCLK SMBDATA	PCH			V						
MC23017_SMBDAT MC23017_SMBCLK	MEC5085							V		
UPD_SMBDAT UPD_SMBCLK	MEC5085					V				
EC_I2C_CLK EC_I2C_DAT	MEC5085								V	
PBAT_SMBCLK PBAT_SMBDAT	MEC5085		V							
CCG4_I2C_CLK CCG4_I2C_DATA	MEC5085						V			
CHARGER_SMBCLK CHARGER_SMBDAT	MEC5085									V

Board ID Table

Vcc	3.3V +/- 5%			
Board ID	R	C	PCB Revision	REV
0	240K +/- 5%	4700p	0.1	EVT1.0
1	130K +/- 5%	4700p	0.2	DVT1.0/DVT1.3
2	62K +/- 5%	4700p		
3	33K +/- 5%	4700p		
4	8.2K +/- 5%	4700p		
5	4.3K +/- 5%	4700p		
6	2K +/- 5%	4700p		
7	NC			

SOC DDI Port Mapping	DDI PORT#	DESTINATION
	1	Alpine Ridge
	2	Alpine Ridge

SOC PCIE Port Mapping	PCI EXPRESS	DESTINATION
	Lane 1	Alpine Ridge
	Lane 2	
	Lane 3	
	Lane 4	NGFF (SSD)
	Lane 5	
	Lane 6	
	Lane 7	
	Lane 8/ SATA 1	
	Lane 9	Cardreader
	Lane 10	WLAN

CLK	DIFFERENTIAL	DESTINATION
	CLKOUT_PCIE1	Alpine Ridge
	CLKOUT_PCIE2	WLAN
	CLKOUT_PCIE3	SDD
	CLKOUT_PCIE4	Card Reader
	CLKOUT_PCIE5	

USB 3.0 PORT#	DESTINATION
1	USB DP MUX
2	USB Debug
3	
4	

USB 2.0 PORT#	DESTINATION
1	USB Type C (nAR)
5	Sensor Hub
7	Fingerprint
3	Touch Panel
9	CAM & IR CAM
2	NGFF(WLAN)

FLEX CLOCKS	DESTINATION
CLKOUT_LPC_0	EC LPC
CLKOUT_LPC_1	LPC Debug

Symbol Note :

@ : means de-pop

⏏ : means Digital Ground

⏏ : means Analog Ground

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				Sheet	4 of 58
				Rev	0.1

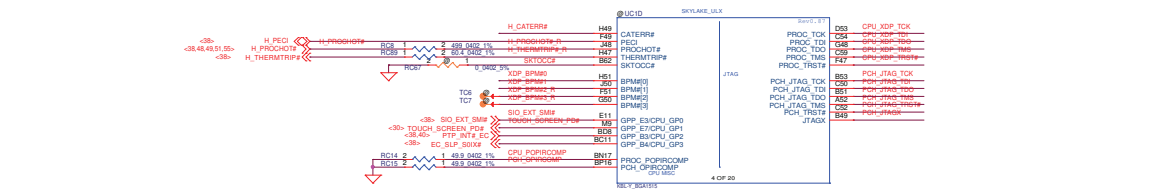
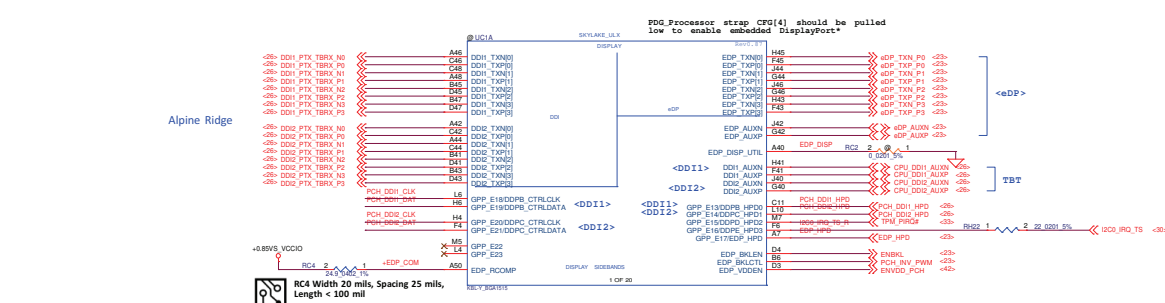
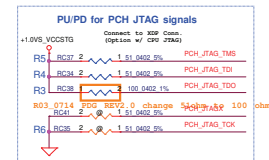
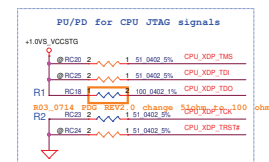
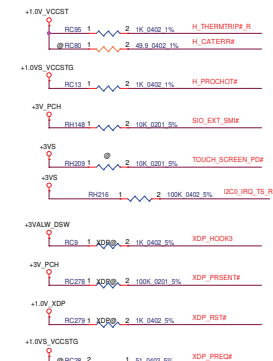
### Functional Strap Definitions

GPP\_E19 (Internal Pull Down): DDPB\_CTRLDATA

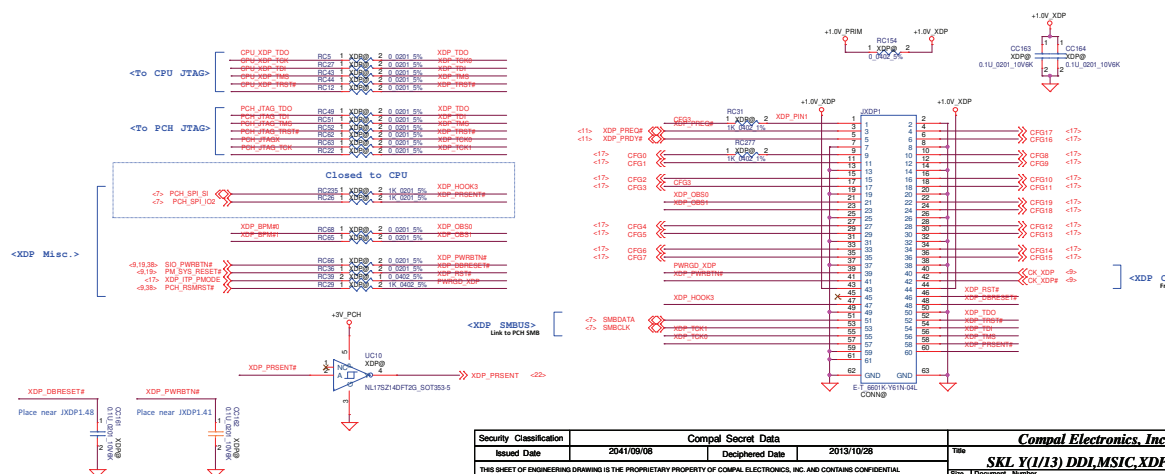
0 = Port B is not detected.  
1 = Port B is detected.

GPP\_E21 (Internal Pull Down): DDPC\_CTRLDATA

0 = Port C is not detected.  
1 = Port C is detected.

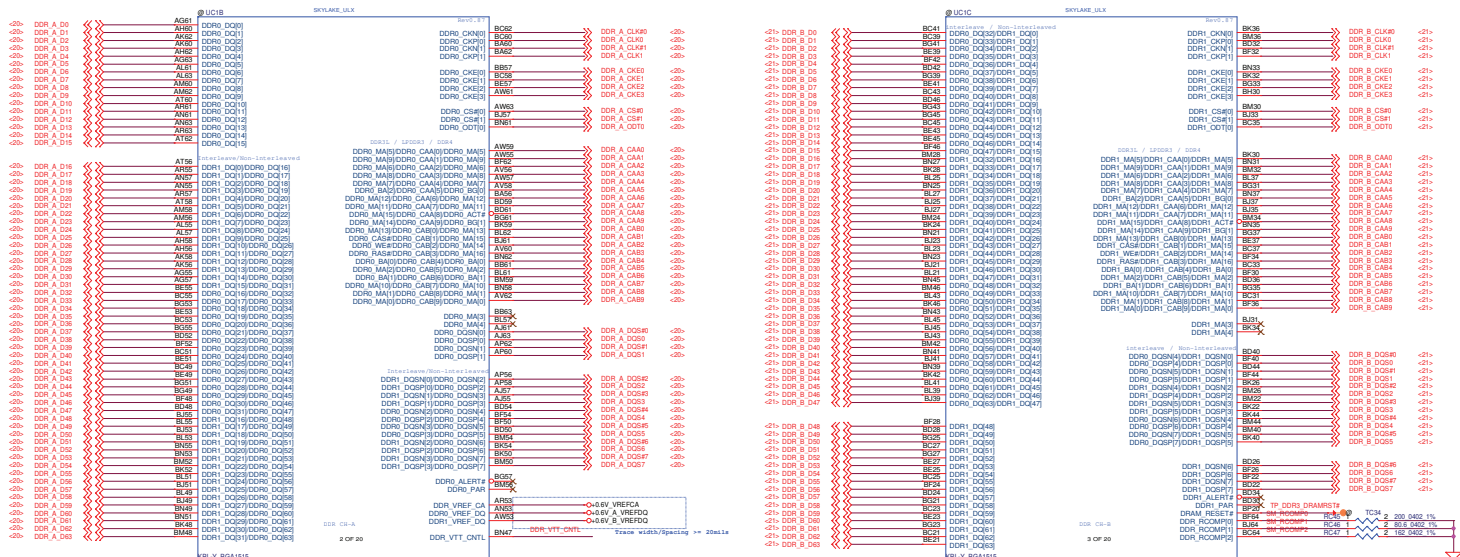


## XDP CONN

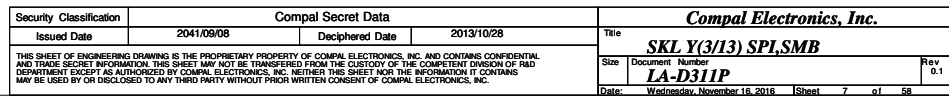


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## Non-Interleave Memory

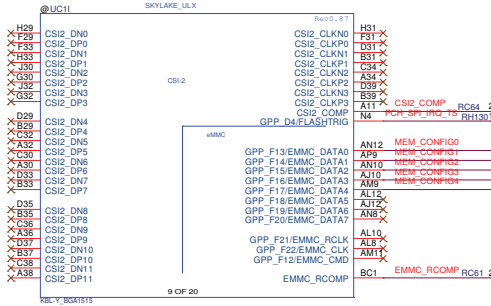


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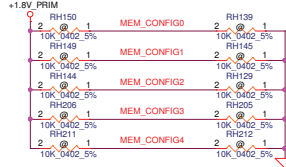


## Functional Strap Definitions

**GPP\_B14 (Internal Pull Down): SPKR**  
**TOP Swap Override**  
0 = Disable TOP Swap mode, AAU30 Use  
1 = Enable TOP Swap Mode.



DDR Memory Configuratio Type Strap pin

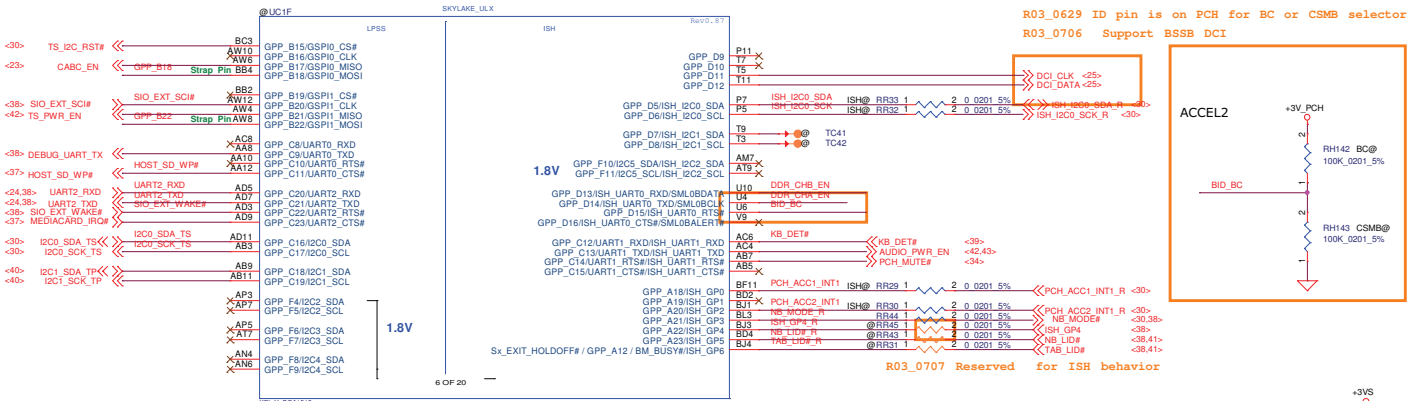


Pin Name	Micron 4GB BA00008F3SL	Micron 8GB BA00008G1L	Micron 16GB BA00008H1L	Rynix 4GB BA00008E4SL	Rynix 8GB BA00008F1L	Rynix 16GB BA00008T1L	Samsung 4GB BA00008G1L	Samsung 8GB BA00008H1L	Samsung 16GB BA00008T1L
MEM_CONFIG0	0	1	0	1	0	1	0	1	0
MEM_CONFIG1	0	0	1	1	0	0	1	1	0
MEM_CONFIG2	0	0	0	0	1	1	1	1	0
MEM_CONFIG3	0	0	0	0	0	0	0	0	1
MEM_CONFIG4	0	0	0	0	0	0	0	0	0

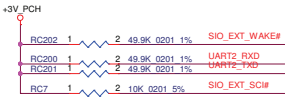
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																Date	Wednesday, November 16, 2016	
																Sheet	8 of 58	





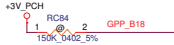


R03\_0622 Del RC286,RC287 change power rail to +3V\_TS



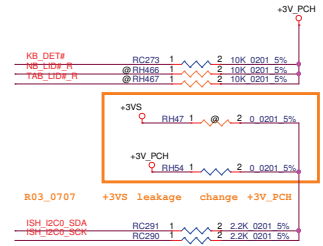
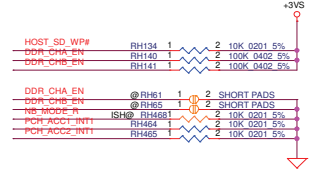
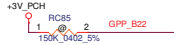
### Functional Strap Definitions

**GPP\_B18 (Internal Pull Down): GSSPIO\_MOSI**  
No Reboot  
0 = Disable No Reboot mode. --> AAU30 Use  
1 = Enable No Reboot Mode. (PCH will disable the TCO Timer system reboot feature). This function is useful when running ITP/XDP.

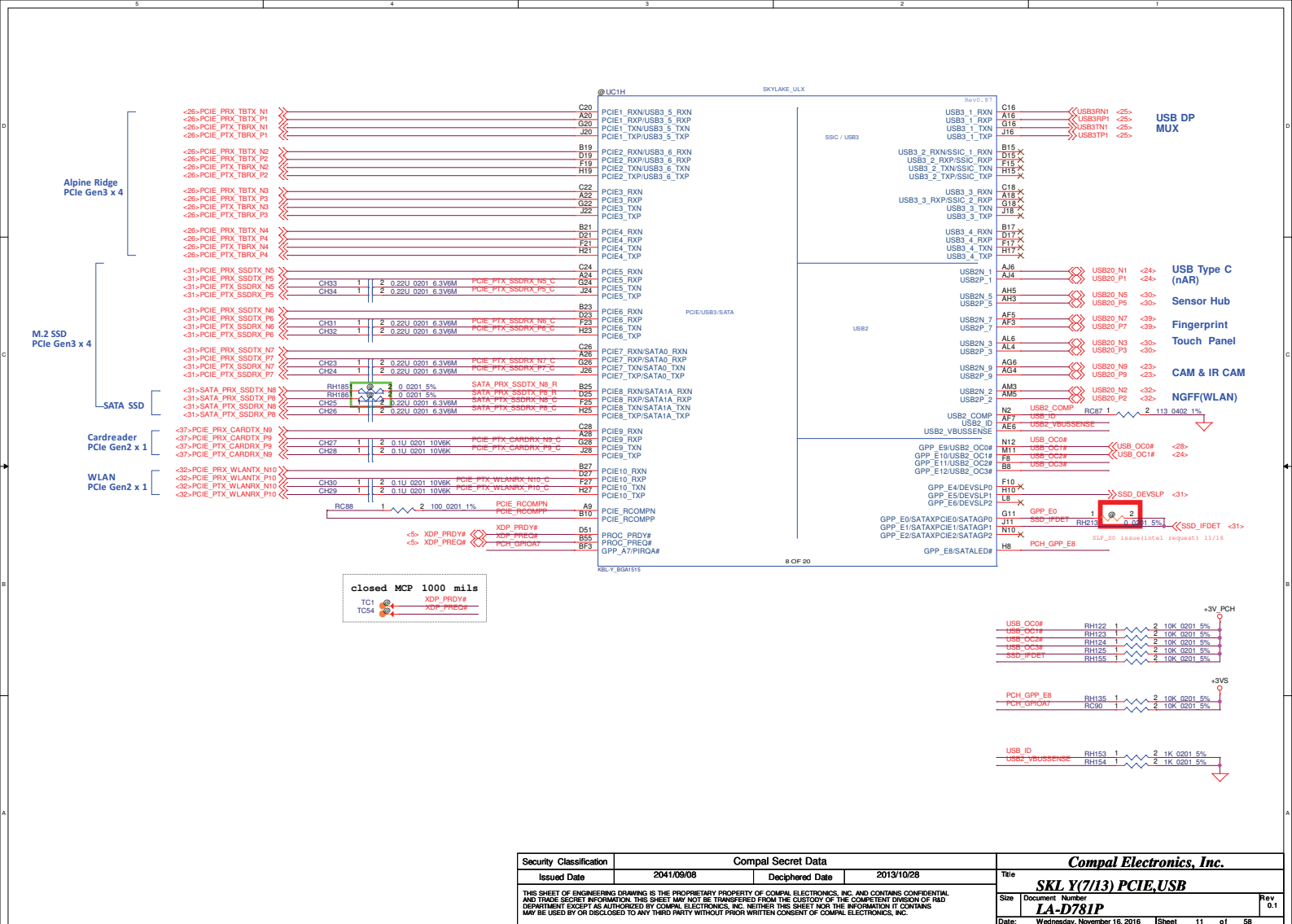


### Functional Strap Definitions

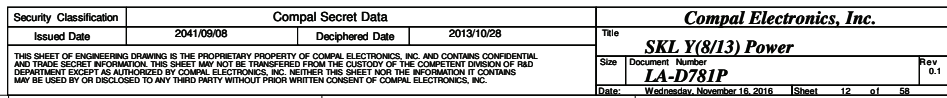
**GPP\_B22 (Internal Pull Down): GSSPI1\_MOSI**  
Boot BIOS Strap Bit  
0 = SPI Mode --> AAU30 Use  
1 = LPC Mode

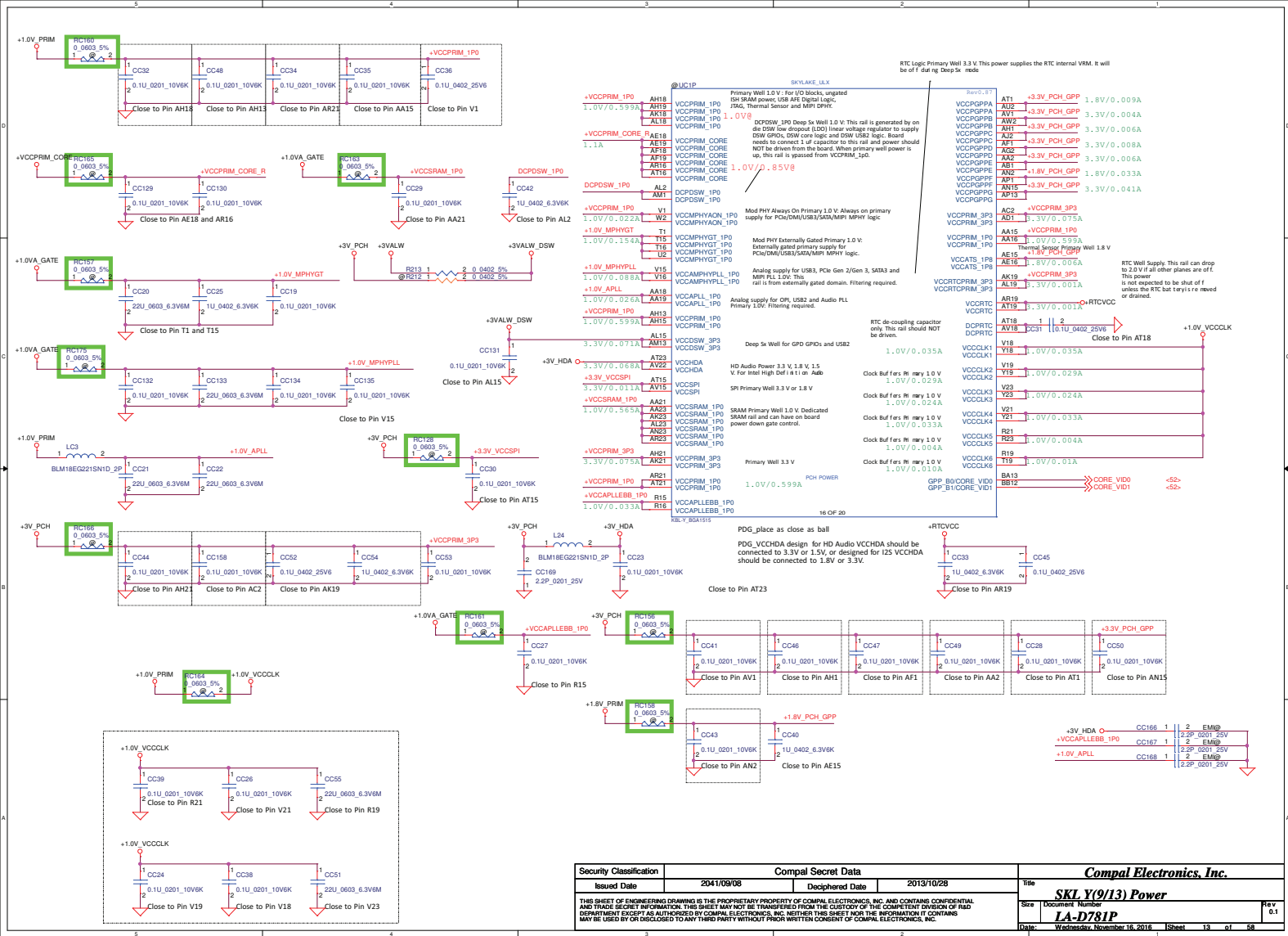


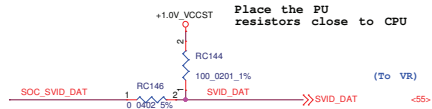
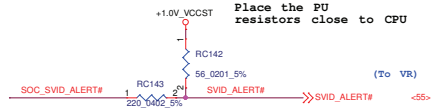
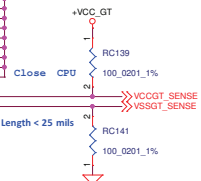
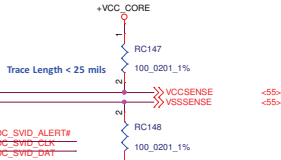
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								Date: Wednesday, November 16, 2016			
								Sheet 10 of 58			



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				Date:	Wednesday, November 16, 2016
				Sheet	11 of 58

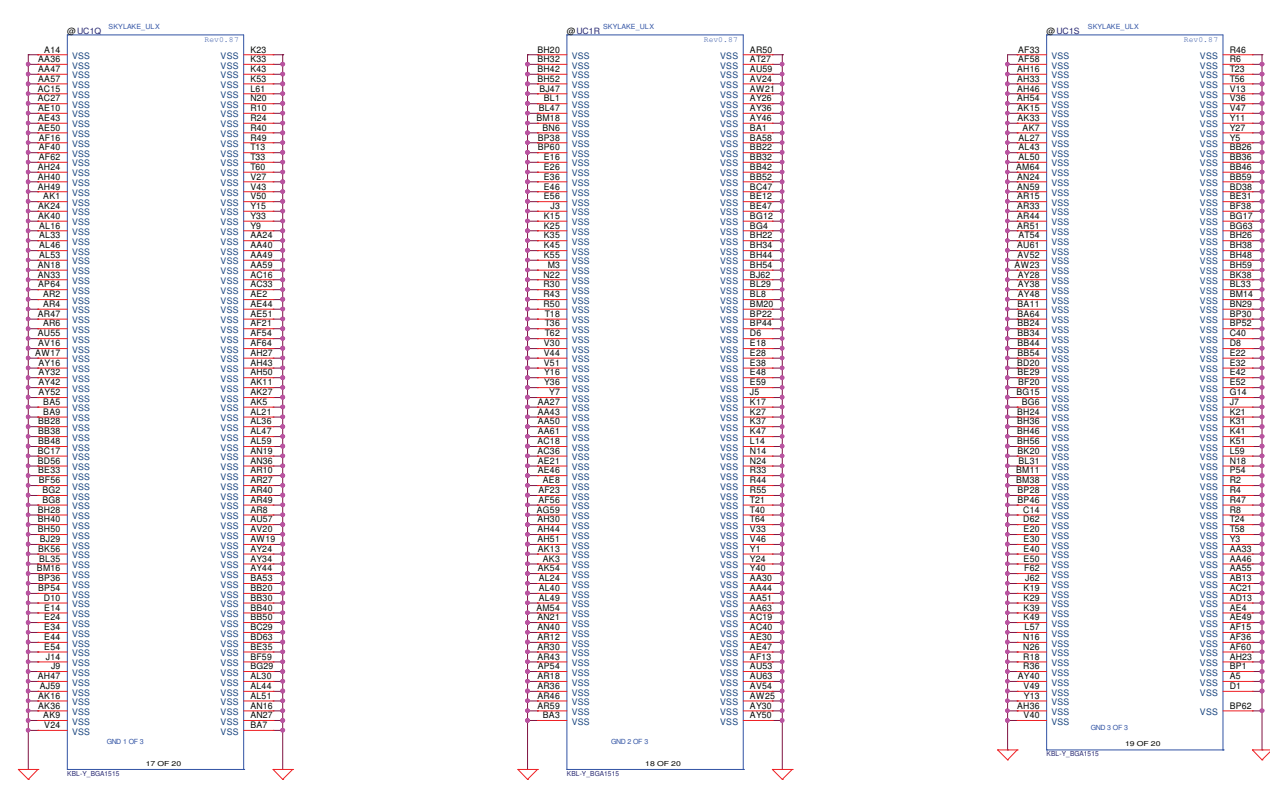






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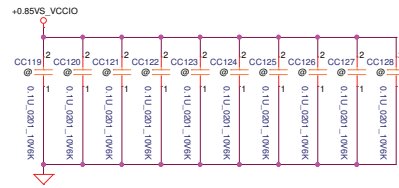
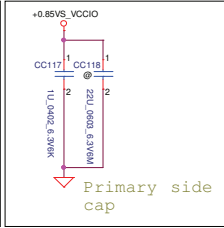
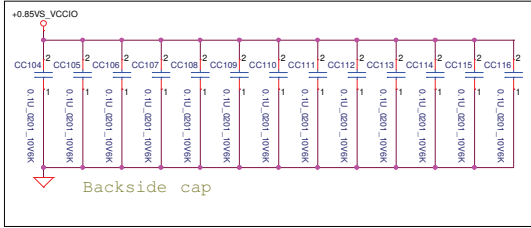
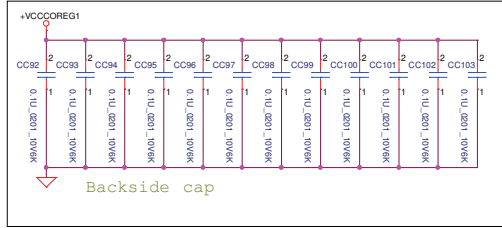
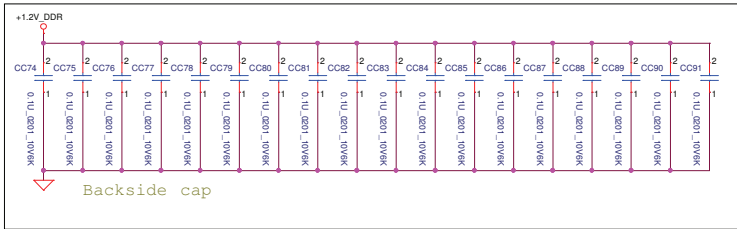
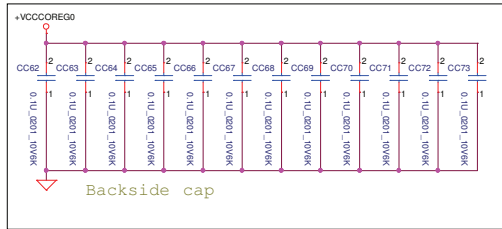
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				LA-D781P	
				Rev	0.1
Date				Wednesday, November 16, 2016	Sheet 16 of 58





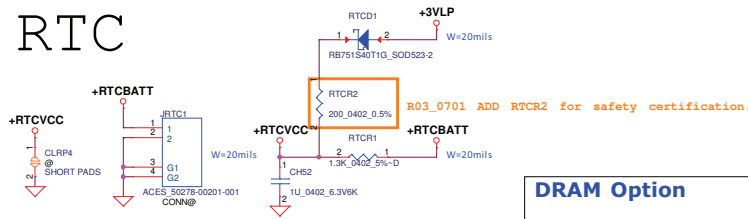
CFG[4] : Display Port Presence strap  
0 = Enabled - A Display Port device is connected to the Embedded Display Port.  
No connect for disable.  
1 = Disabled - No Physical Display Port attached to Embedded DisplayPort\*.  
Pull-down to GND through a 1 K $\Omega$   $\pm$ 5% resistor to enable port.

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				Date:	<b>Wednesday, 16 June 2016</b>		
				Sheet	17 of 58		

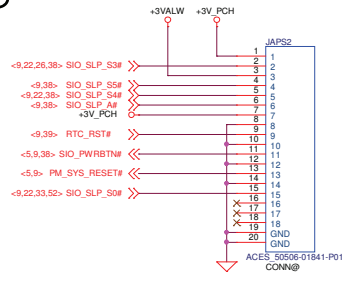


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				Date:	Wednesday, November 16, 2016
				Sheet	18 of 58
				Rev	0.1

RTC

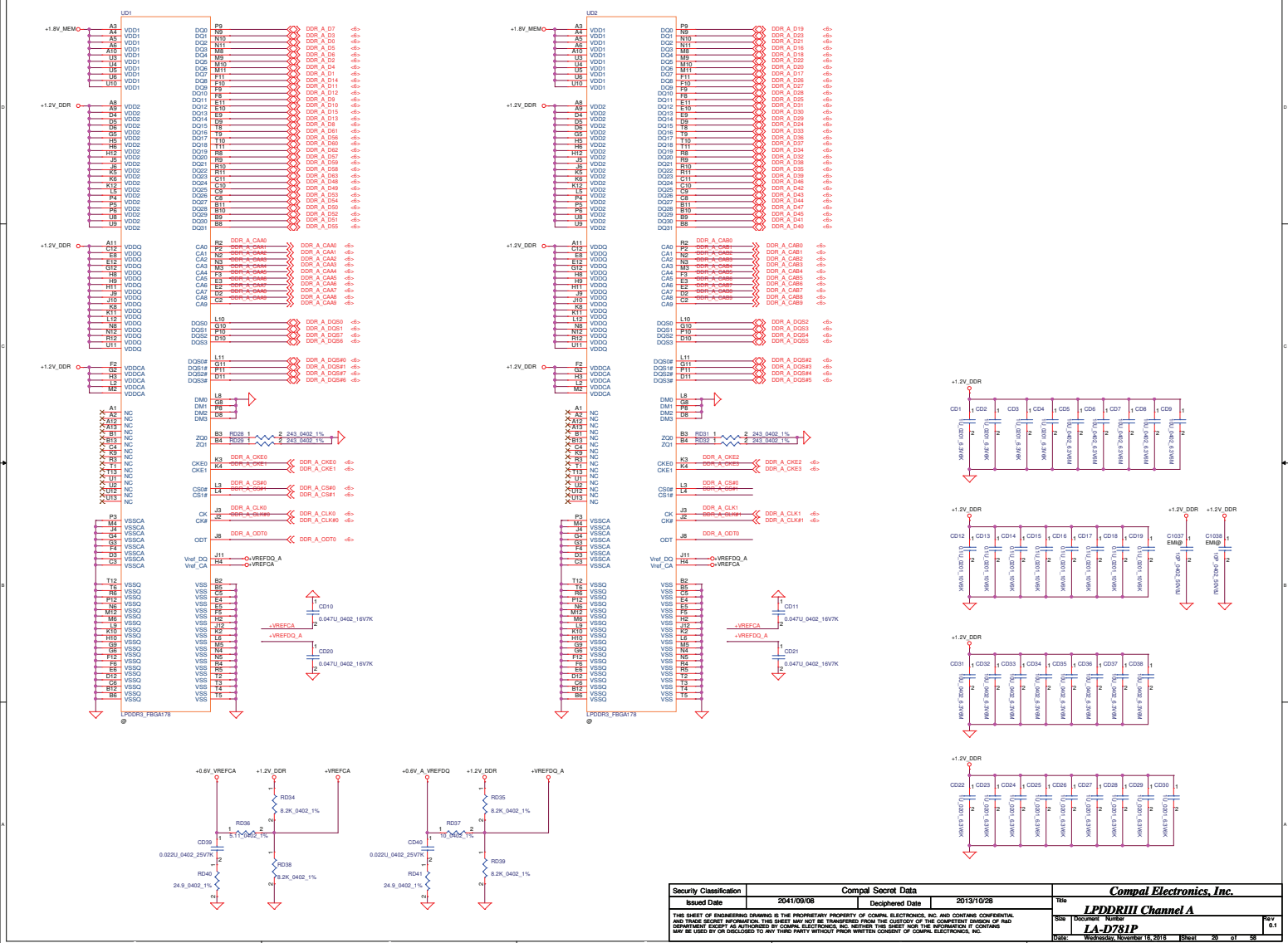


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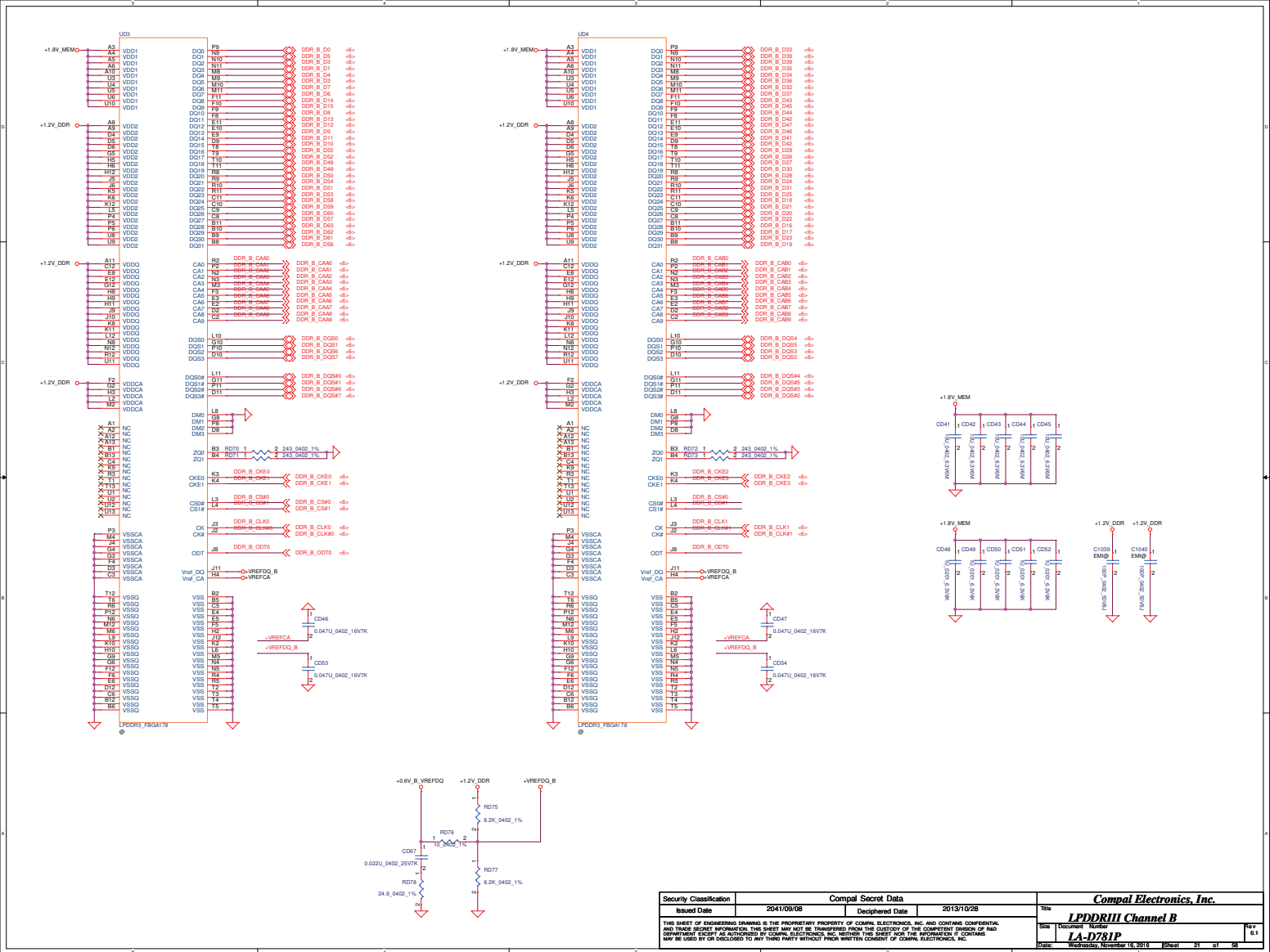


DRAM Option	DRAM Config Option				X76
	MEM_CONFIG0	MEM_CONFIG1	MEM_CONFIG2	MEM_CONFIG3	
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<b>Micron 8G/1866</b> X76_M8G@UD1 MT52L512M32D2PF-107W SA00009U70L X76_M8G@UD2 MT52L512M32D2PF-107W SA00009U70L X76_M8G@UD3 MT52L512M32D2PF-107W SA00009U70L X76_M8G@UD4 MT52L512M32D2PF-107W SA00009U70L	X76_M8G@RH150 10K_0402_5% SD028100280	X76_M8G@RH145 10K_0402_5% SD028100280	X76_M8G@RH129 10K_0402_5% SD028100280	X76_M8G@RH205 10K_0402_5% SD028100280	X7666031L06
<b>Micron 16G/1866</b> X76_M16G@UD1 MT52L1G32D4PG-107WT SA00009VXL X76_M16G@UD2 MT52L1G32D4PG-107WT SA00009VXL X76_M16G@UD3 MT52L1G32D4PG-107WT SA00009VXL X76_M16G@UD4 MT52L1G32D4PG-107WT SA00009VXL	X76_M16G@RH139 10K_0402_5% SD028100280	X76_M16G@RH145 10K_0402_5% SD028100280	X76_M16G@RH129 10K_0402_5% SD028100280	X76_M16G@RH205 10K_0402_5% SD028100280	X7666031L09
<b>Hynix 4G/1866</b> X76_H4G@UD1 H5CCNNNBGTMLAR-NUD SA00008G60L X76_H4G@UD2 H5CCNNNBGTMLAR-NUD SA00008G60L X76_H4G@UD3 H5CCNNNBGTMLAR-NUD SA00008G60L X76_H4G@UD4 H5CCNNNBGTMLAR-NUD SA00008G60L	X76_H4G@RH150 10K_0402_5% SD028100280	X76_H4G@RH145 10K_0402_5% SD028100280	X76_H4G@RH129 10K_0402_5% SD028100280	X76_H4G@RH205 10K_0402_5% SD028100280	X7666031L01
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<b>Samsung 16G/1866</b> X76_S16G@UD1 K4E8E304EB-EGCF SA00008X11L X76_S16G@UD2 K4E8E304EB-EGCF SA00008X11L X76_S16G@UD3 K4E8E304EB-EGCF SA00008X11L X76_S16G@UD4 K4E8E304EB-EGCF SA00008X11L	X76_S16G@RH139 10K_0402_5% SD028100280	X76_S16G@RH145 10K_0402_5% SD028100280	X76_S16G@RH129 10K_0402_5% SD028100280	X76_S16G@RH205 10K_0402_5% SD028100280	X7666031L08

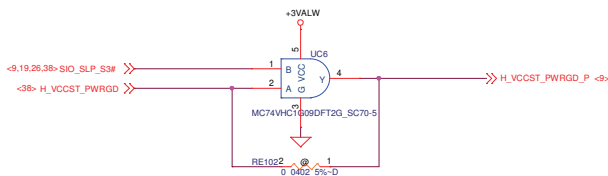
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				Sheet 19 of 58



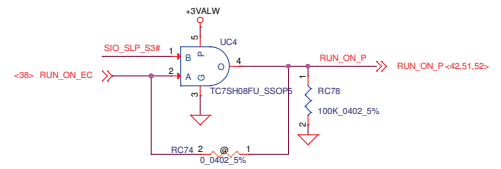
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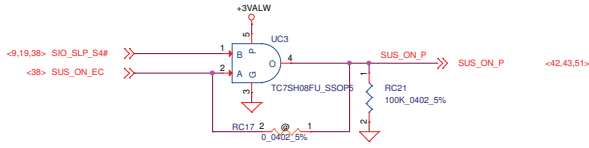
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				Rev.	0.1
				Date	Wednesday, November 16, 2016
				Page	21 of 26



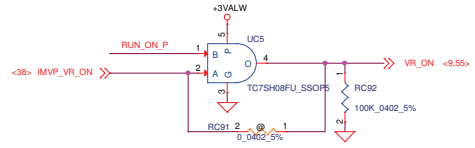
Change CPU VCCST\_PWRGD enable from EC & PCH



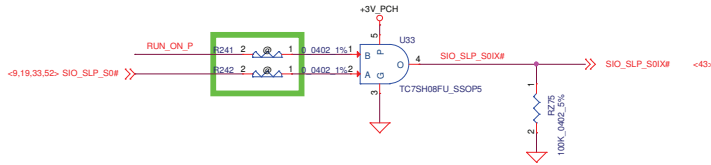
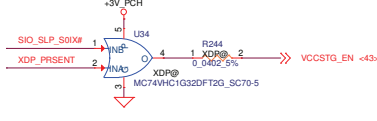
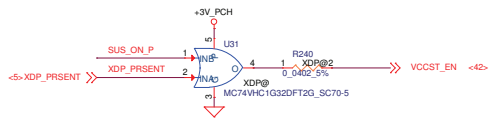
Change VCCIO & VCCSTGT power enable from EC & PCH



Change VCCST & 1.2\_VR power enable from EC & PCH

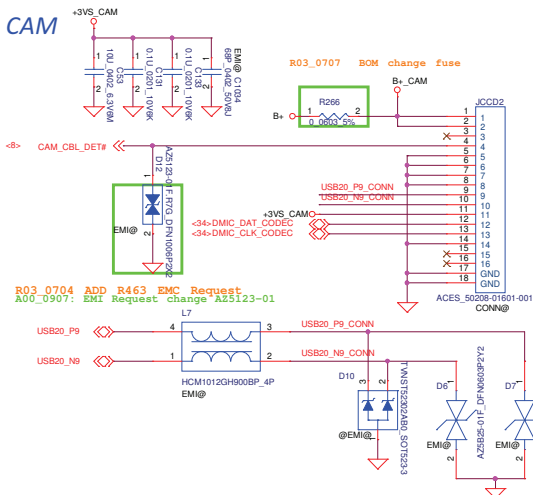


Change VCORE power enable from EC & PCH

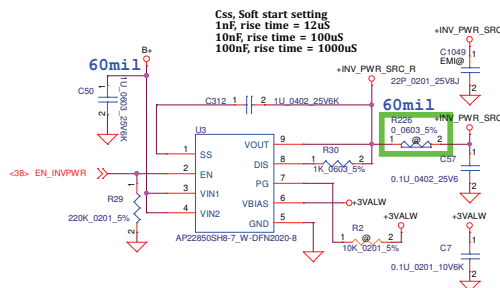


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				Size Document Number
				LA-D781P
Date	Wednesday, November 16, 2016	Sheet	22 of 58	Rev 0.1

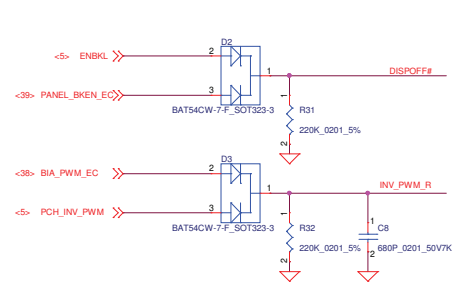
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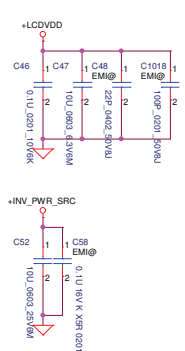
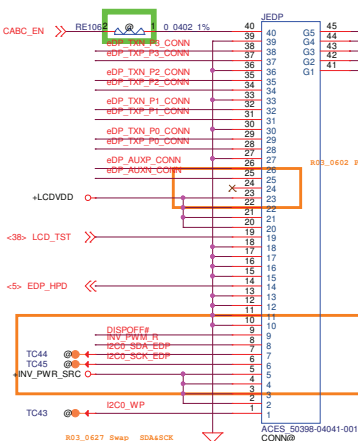
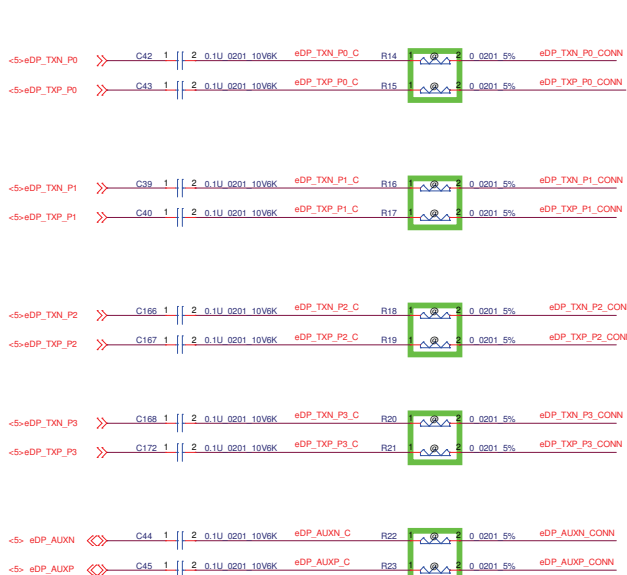
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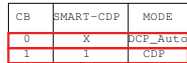
## | BackLight PWM Control



eDP Conn



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				Rev	0.1

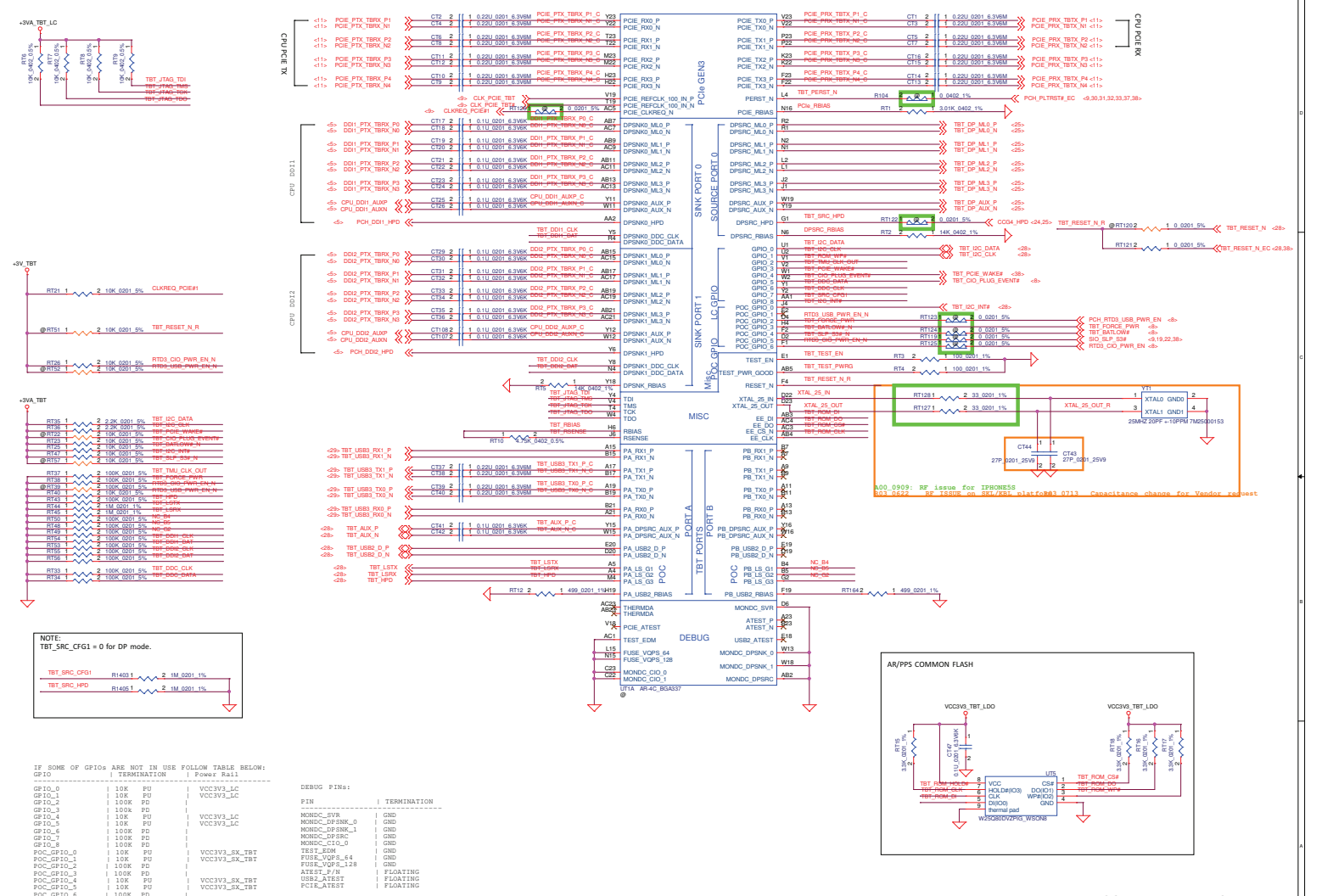


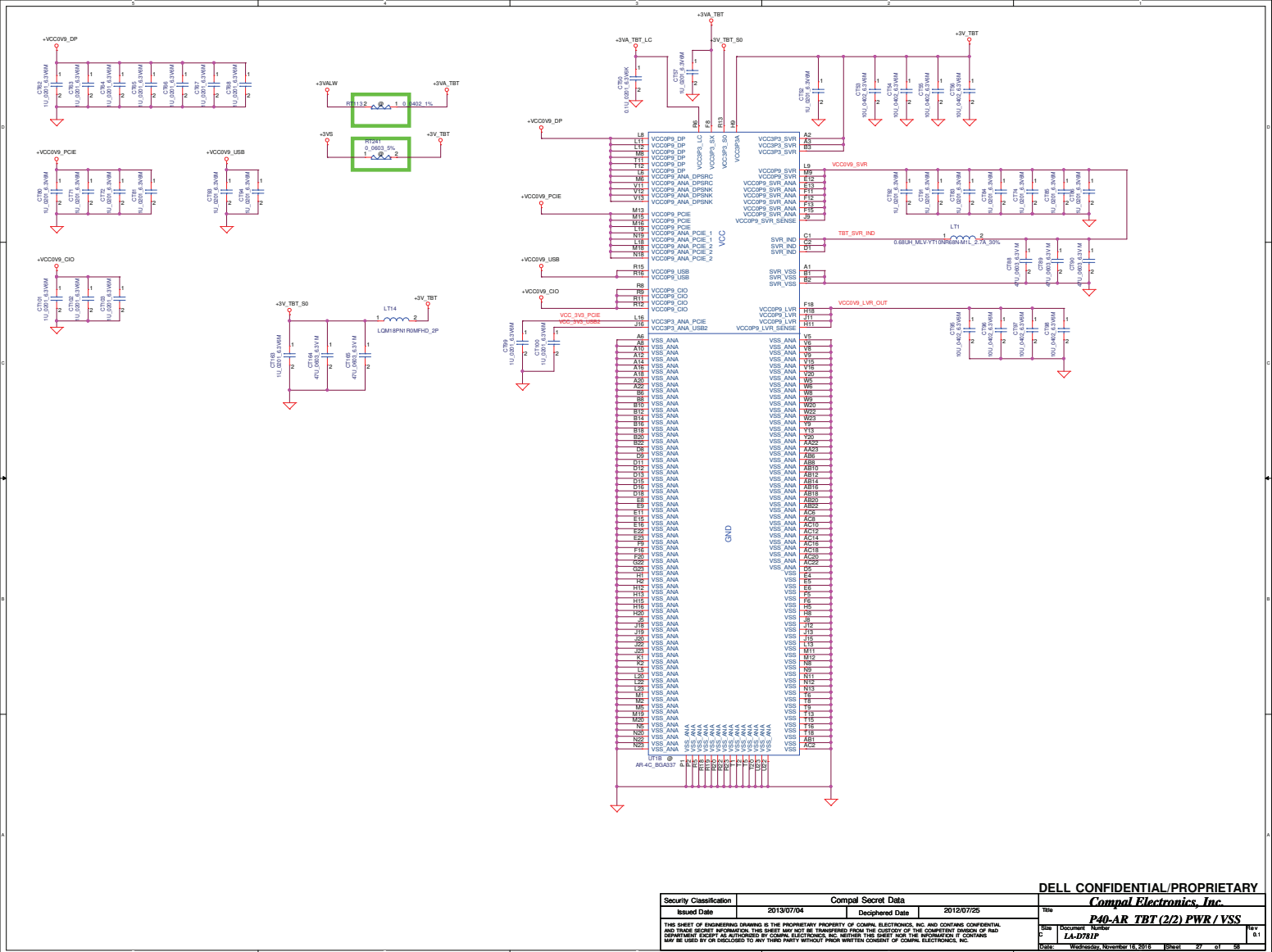
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X	H	X	X
0	L D=1D	X	USB
1	L D=2D	USB	X

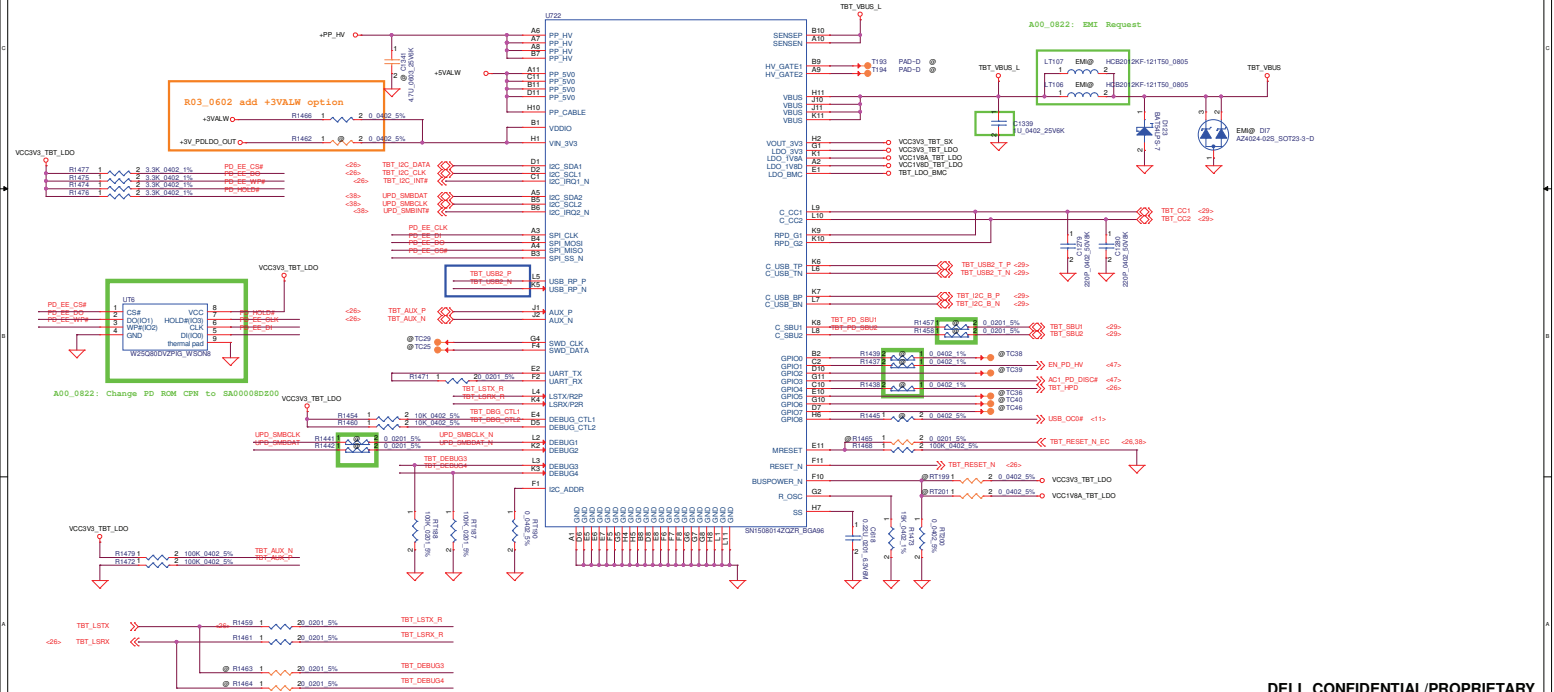
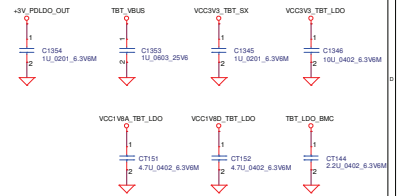
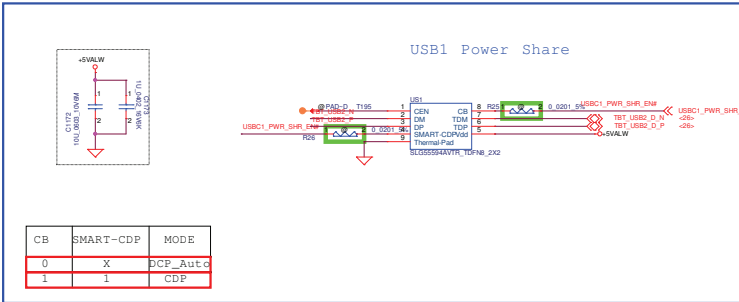
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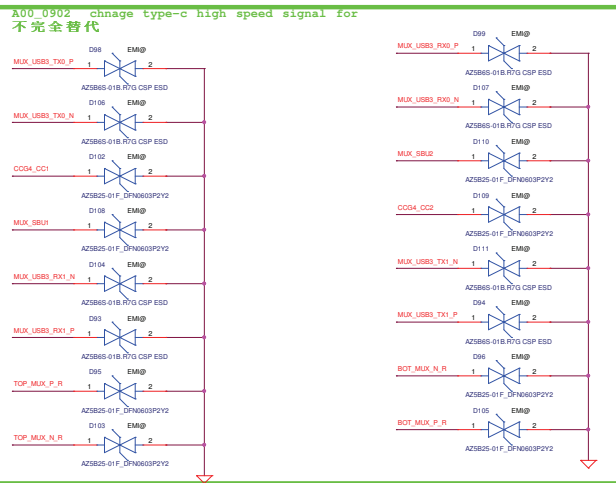
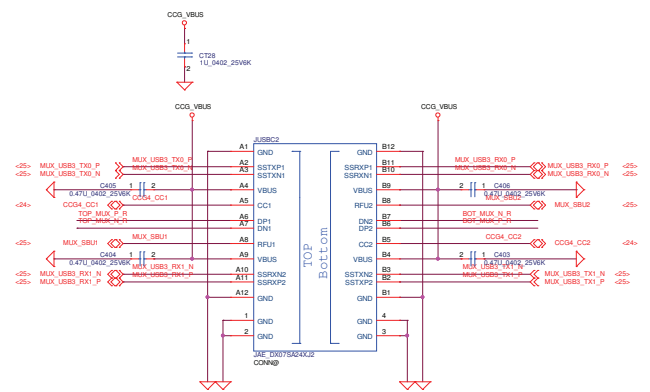






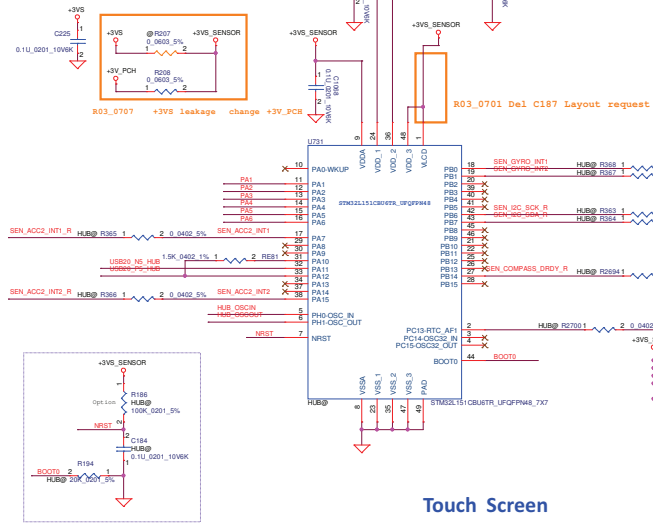
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 Document: **LA-D781P**  
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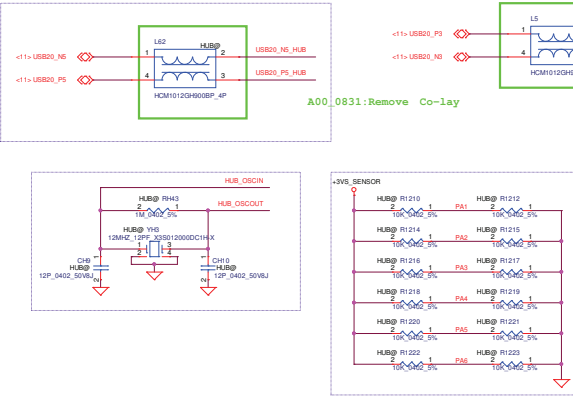


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Date: Wednesday, June 16, 2015				Sheet	29 of 58

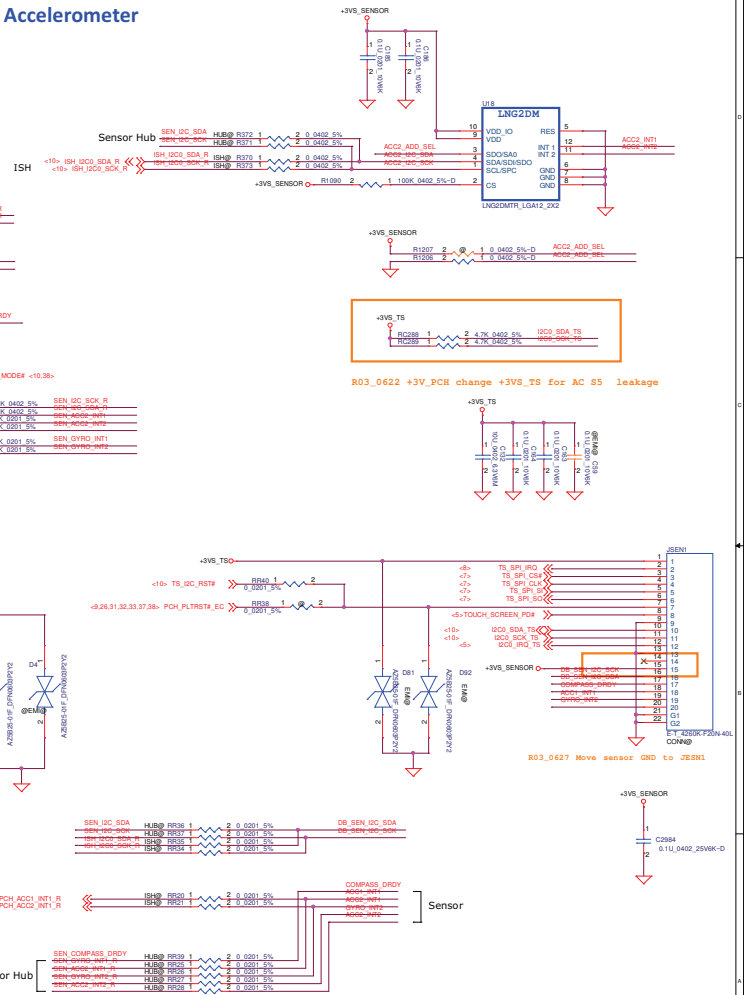
## Sensor Hub



## Touch Screen



## 2nd Accelerometer



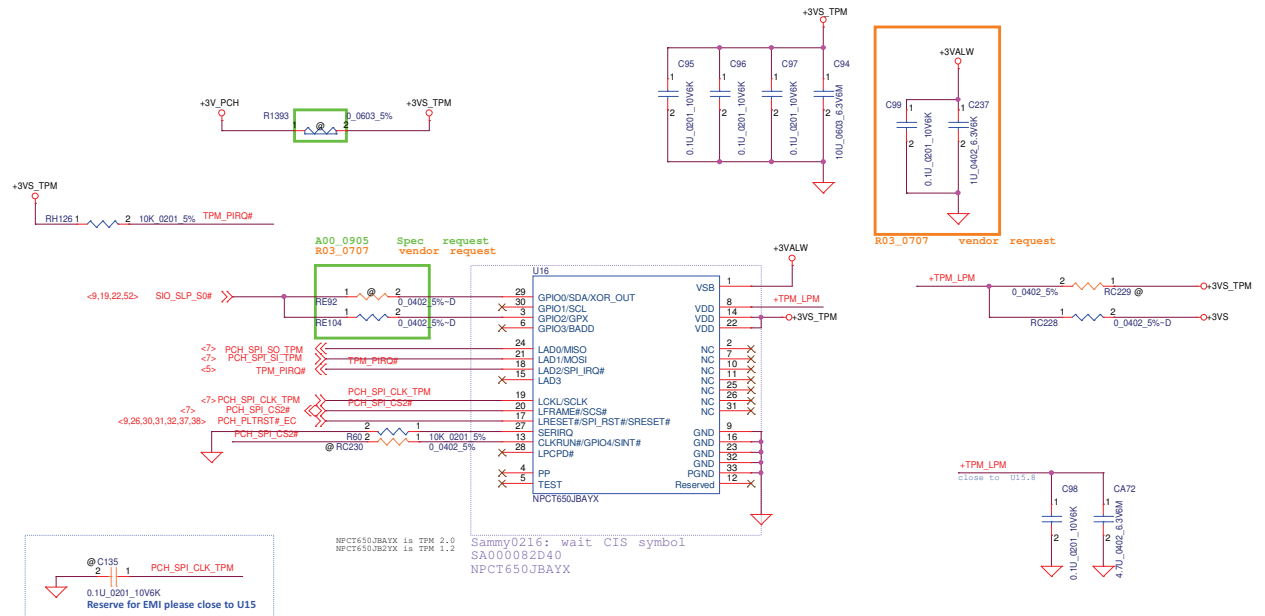
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				Date: November 16, 2016	Sheet 30 of 38







NOTE:  
Place 0.1 uF capacitors as close as possible to the device power pins



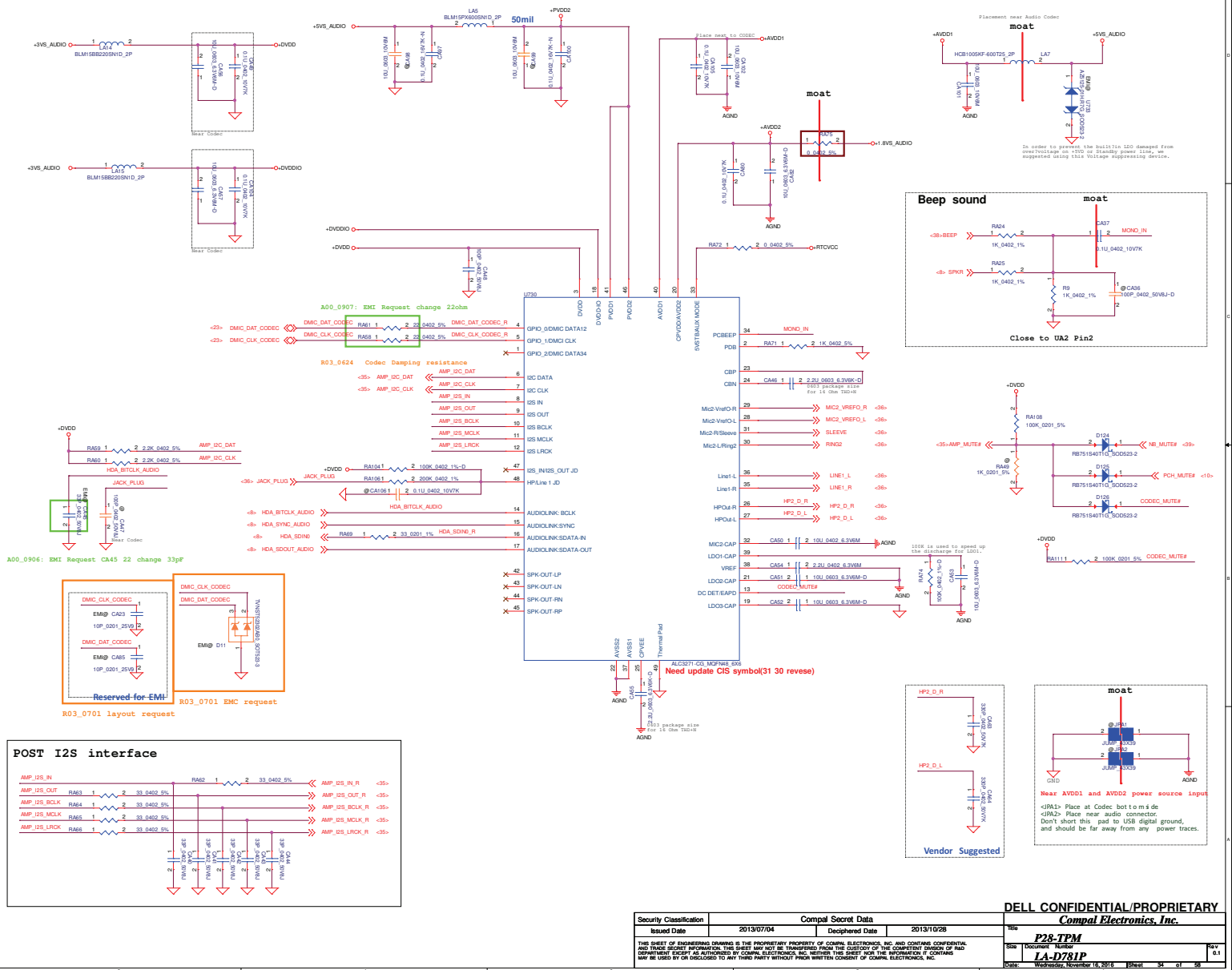
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				Document Number	0.1
				<b>LA-D781P</b> Date: Wednesday, November 16, 2016    Sheet 33 of 58	

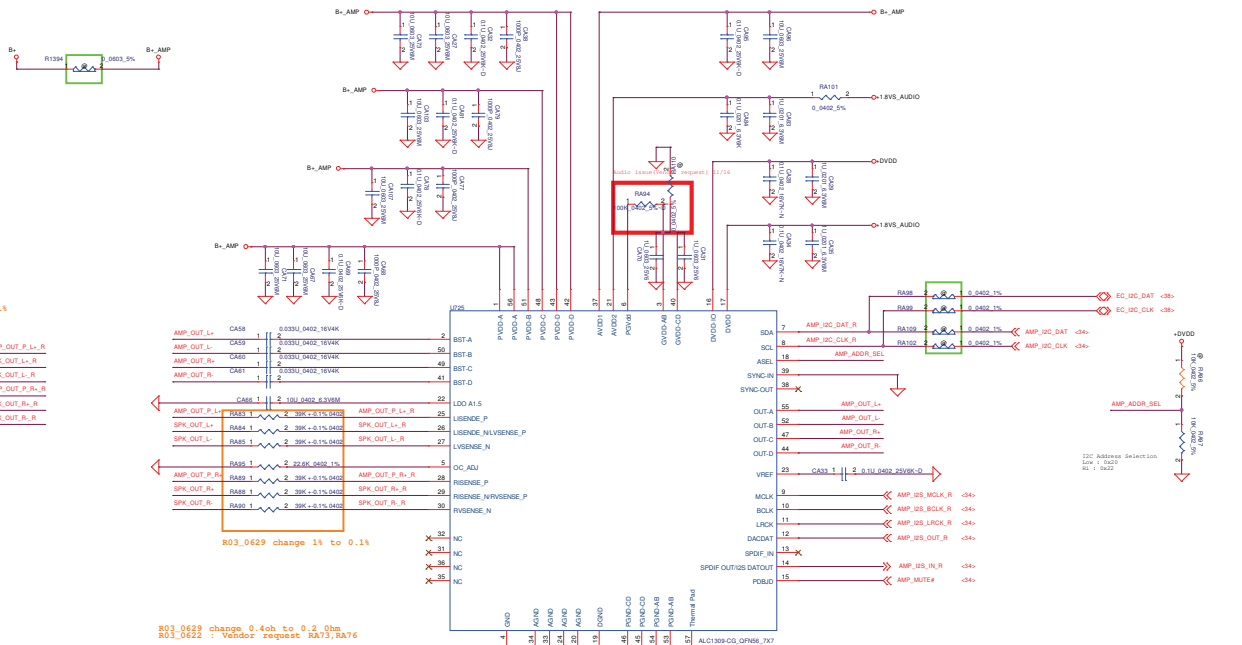
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Date:	Wednesday, November 16, 2016	Sheet 33 of 58

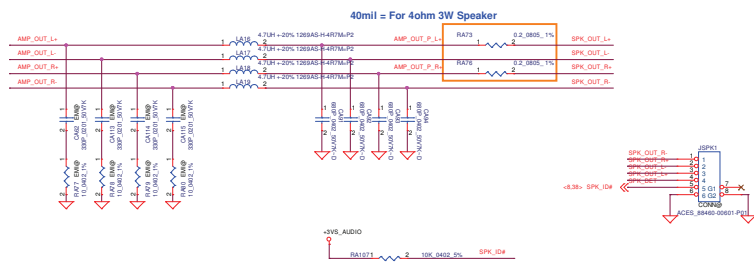
## HD Audio Codec



# SMART AMP

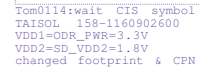


## Int. Speaker Conn.

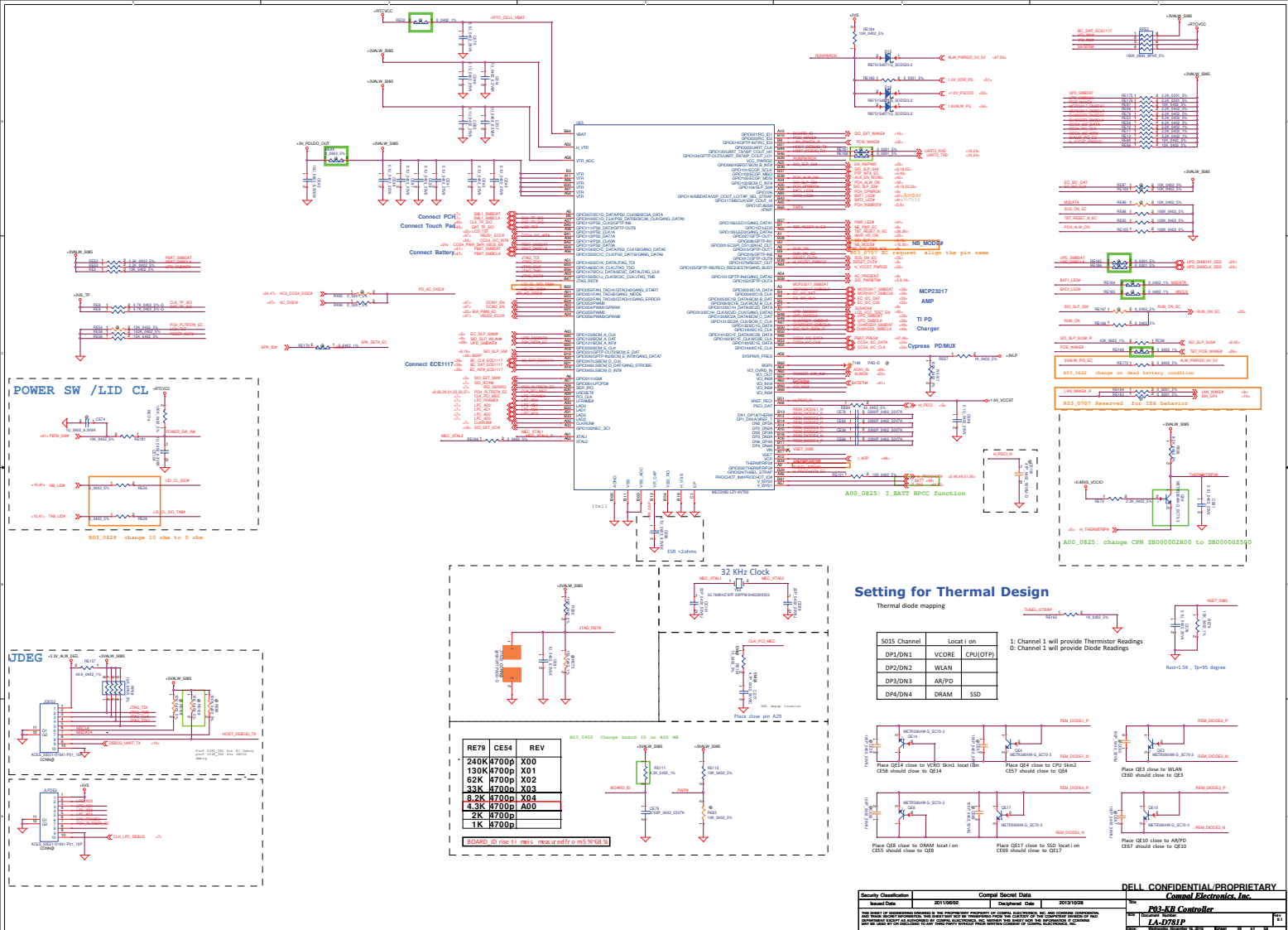


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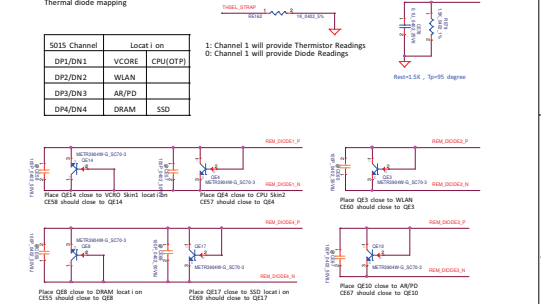


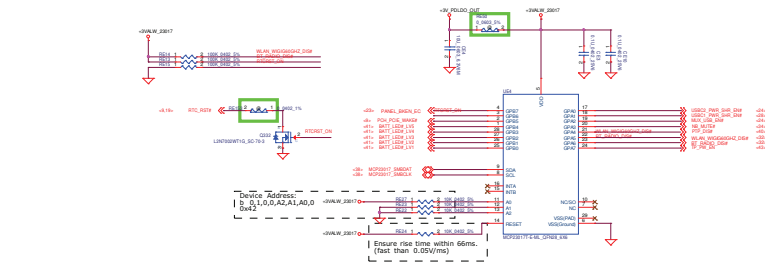
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			Size	
			Doc Number	
			Date	
			Rev	
			0.1	
			1A-D781P	
			11/16/2016	
			Sheet 37 of 58	

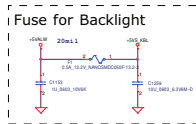
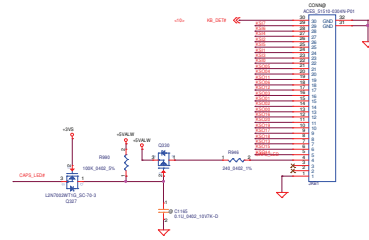
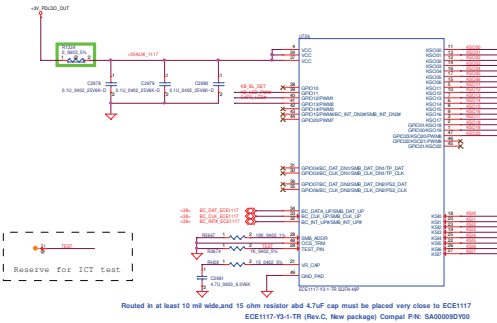


### Setting for Thermal Design

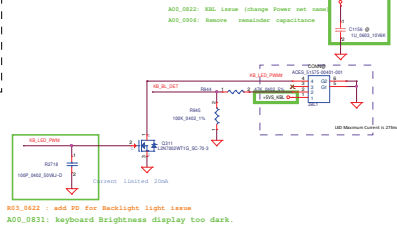




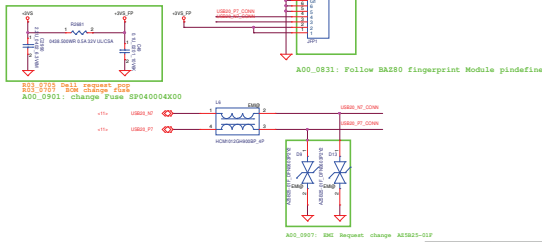
Connector Pin	Keyboard Signal	ECE1117 Pin Name
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2	NC	
3	NC	
4	CapLock LED	GP103
5	KSO10	KSO14
6	KSO11	KSO15
7	KSO12	KSO16
8	KSO13	KSO17
9	KSO14	KSO18
10	KSO15	KSO19
11	KSO16	KSO20
12	KSO17	KSO21
13	KSO18	KSO22
14	KSO19	KSO23
15	KSO20	KSO24
16	KSO21	KSO25
17	KSO22	KSO26
18	KSO23	KSO27
19	KSO24	KSO28
20	KSO25	KSO29
21	KSO26	KSO30
22	KSO27	KSO31
23	KSO28	KSO32
24	KSO29	KSO33
25	KSO30	KSO34
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29	KSO34	KSO38
30	KSO35	KSO39



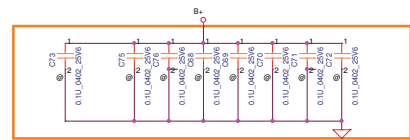
### Connector for Keyboard Backlight



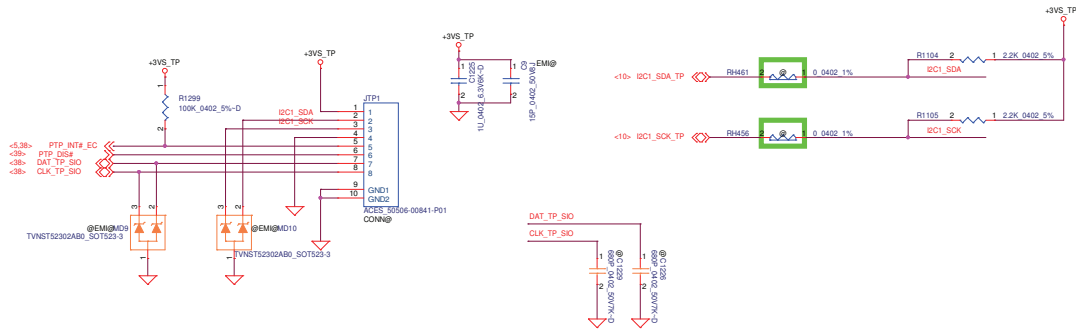
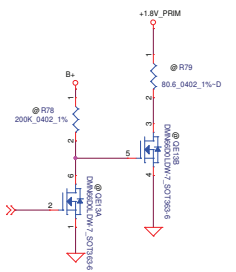
### Fingerprint



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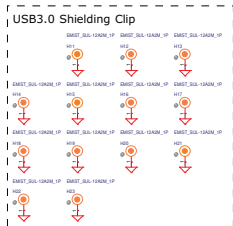
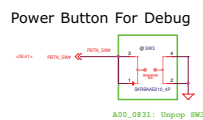


+1.8VA Discharge

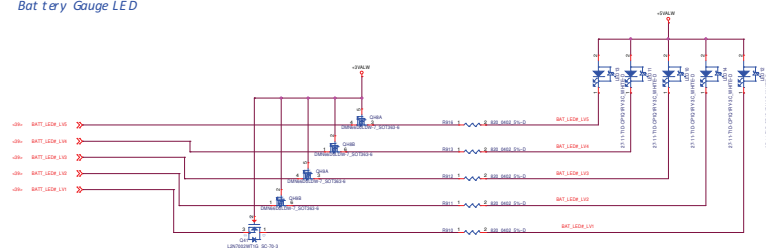
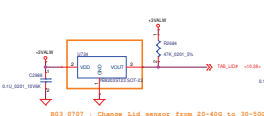


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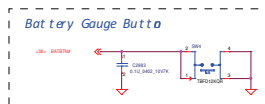
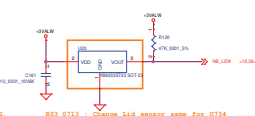




### Bat tery Gauge LED

**Tablet LID SW**

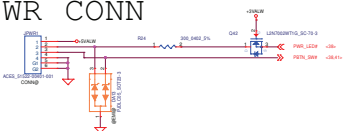
**NB LID SW**



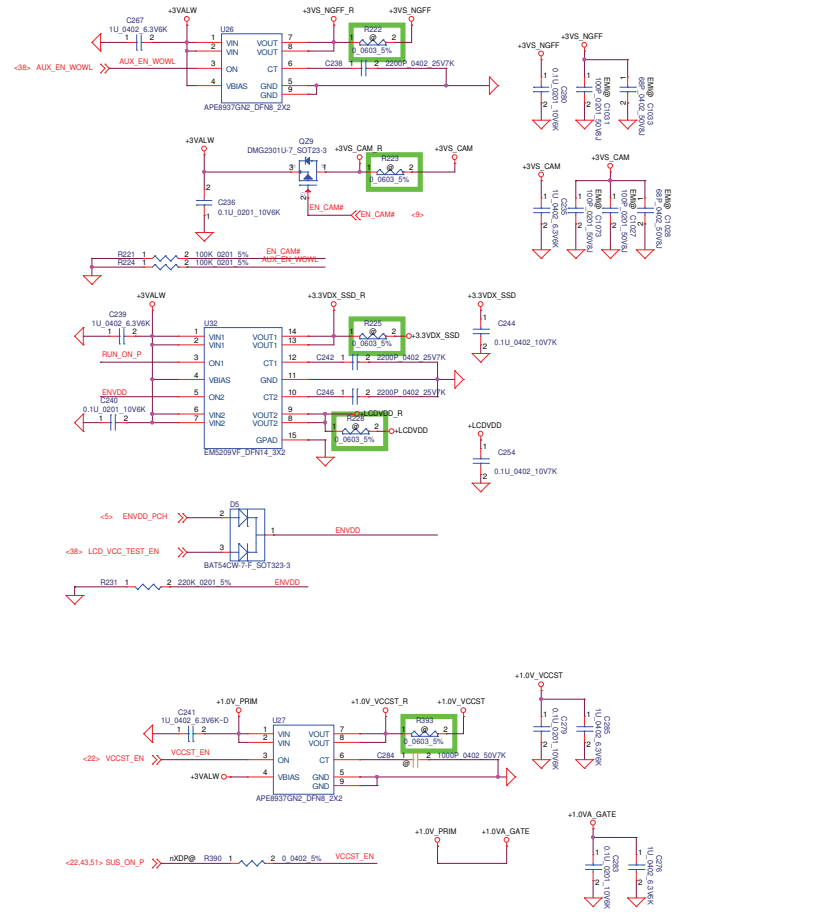
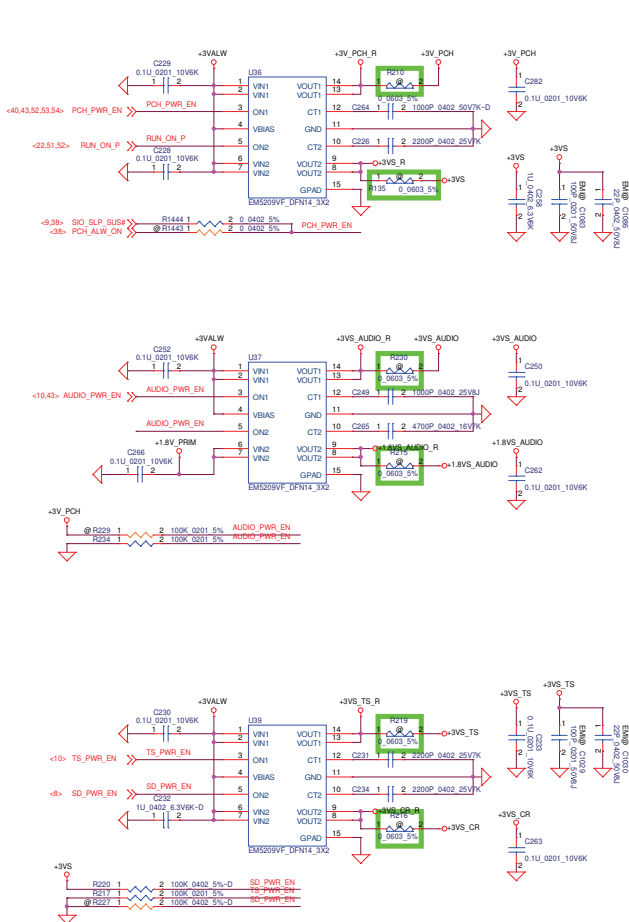
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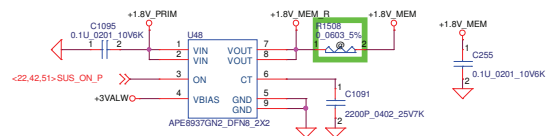
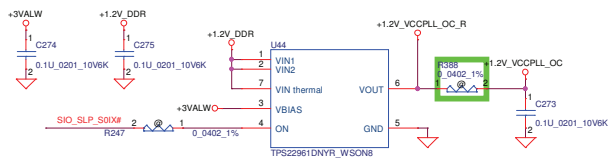
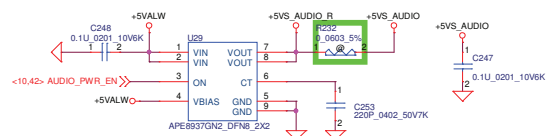
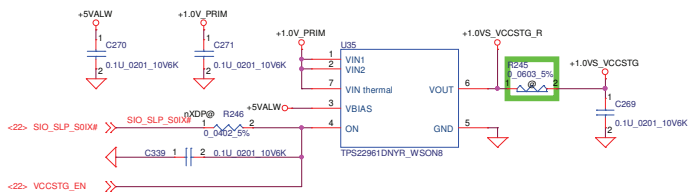
PWR CONN



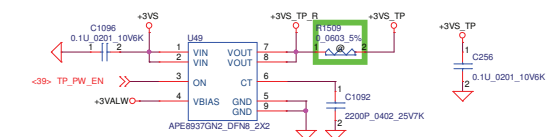
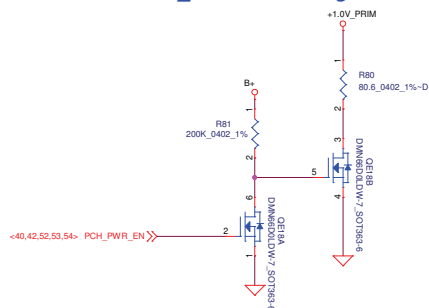
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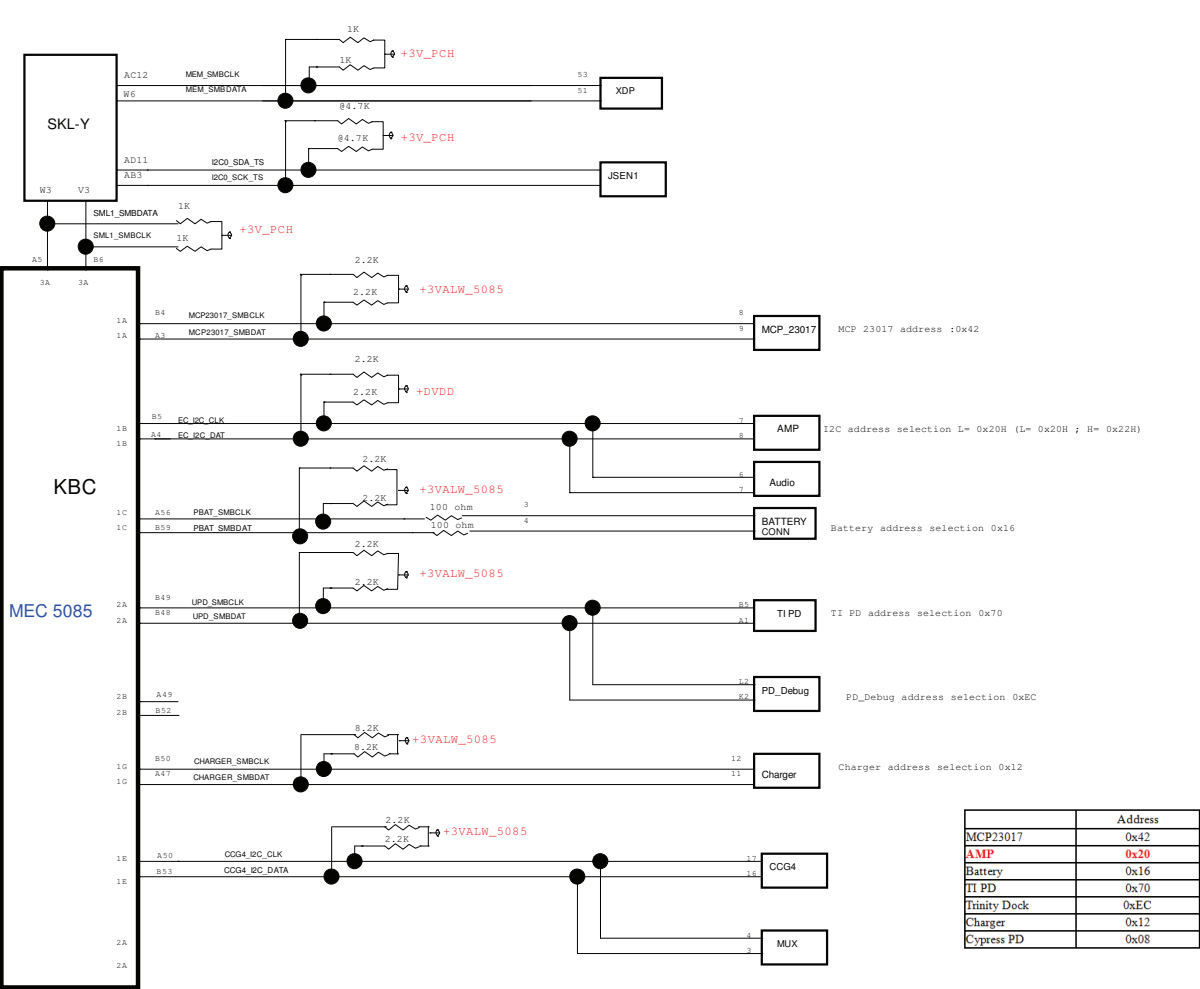
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			LA-D311P	0.1
			Date: Wednesday, November 16, 2016	Sheet 42 of 58



### +1.0V\_PRIM Discharge



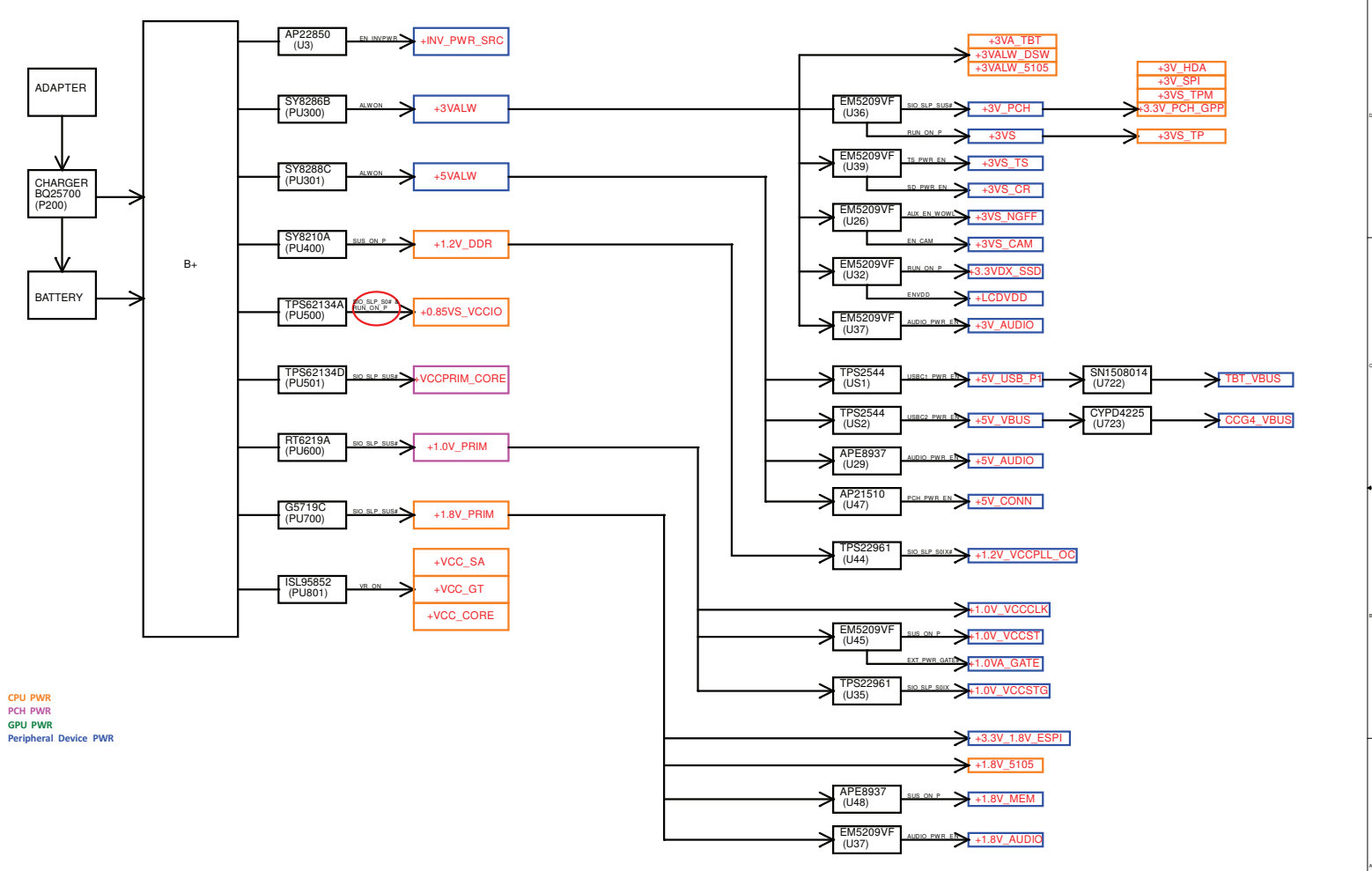
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				Size Document Number
				LA-D311P
				Date: Wednesday, November 16, 2016 Sheet 49 of 58



	Address
MCP23017	0x42
AMP	0x20
Battery	0x16
TI PD	0x70
Trinity Dock	0xEC
Charger	0x12
Cypress PD	0x08

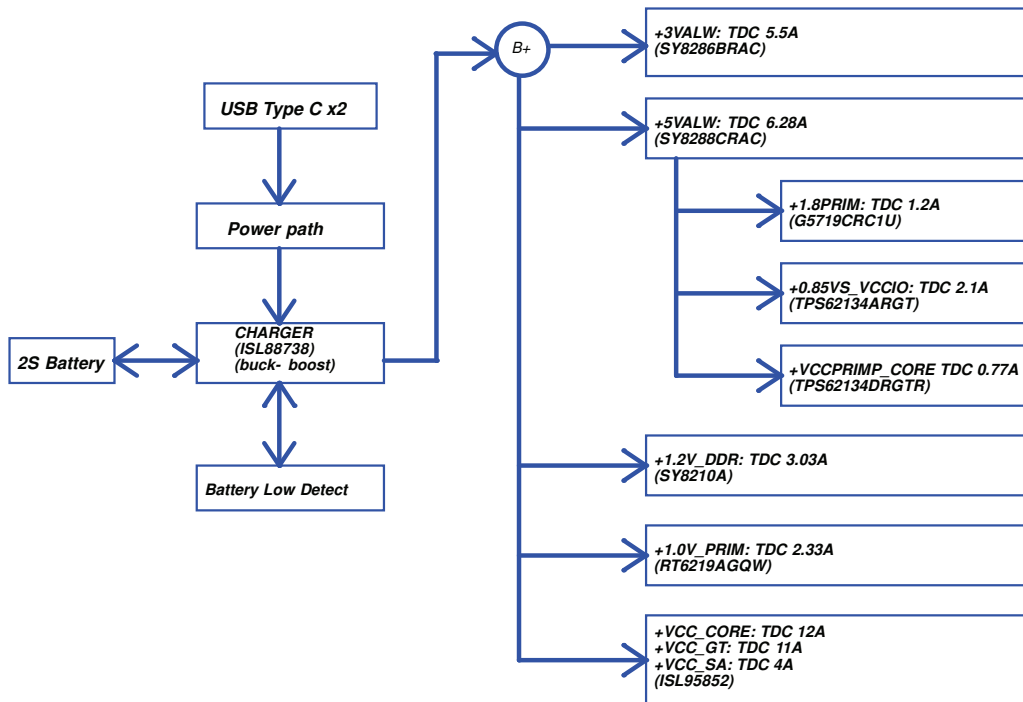
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				Size	Doc No	
				LA-C881P		
				Date:	Wednesday, November 16, 2016	Sheet
				44		of 58

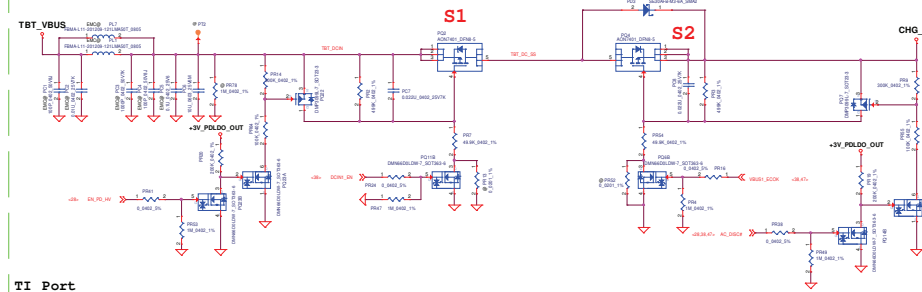


CPU PWR  
PCH PWR  
GPU PWR  
Peripheral Device PWR

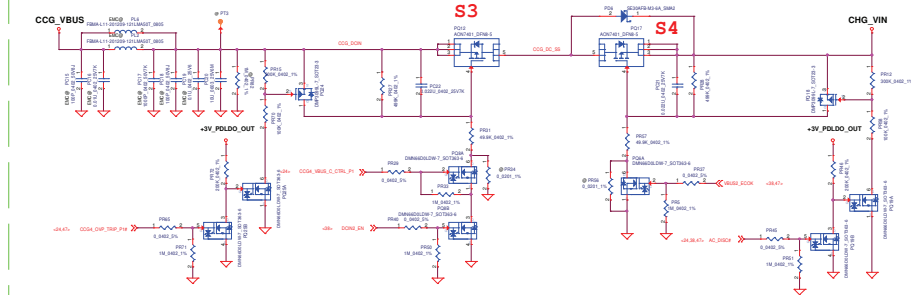
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				Rev	5.1
				Doc No.	LA-C881P
				Date:	Wednesday, November 16, 2016 15:01
				Sheet	45 of 58



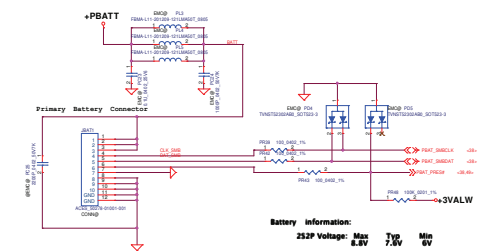
Security Classification	Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2015/12/10	Deciphered Date	2015/12/10	Title
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LA-D781P				Rev 0.1
Date: Wednesday, November 18, 2015				Sheet 46 of 56



TI Port

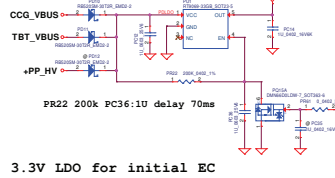


Cypress Port



SMART  
Battery  
01\_BATT+  
02\_BATT-  
03\_BATT+  
04\_BATT-  
05\_BATT+  
06\_BATT-  
07\_BATT+  
08\_BATT-  
09\_GND  
10\_GND

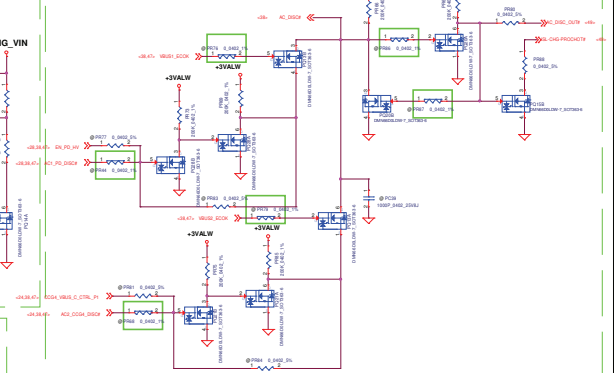
Battery Information:  
212P Voltage: Max 8.4V Typ 7.3V Min 6V



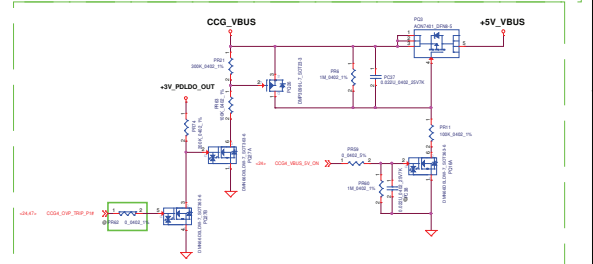
PR22 200k PC36:1U delay 70ms

3.3V LDO for initial EC

AC Disconnect Logic



Cypress 5V Provide Path Control



Security Classification	Control Secret Data	Control Secret Data
Secret	20151218	20151218
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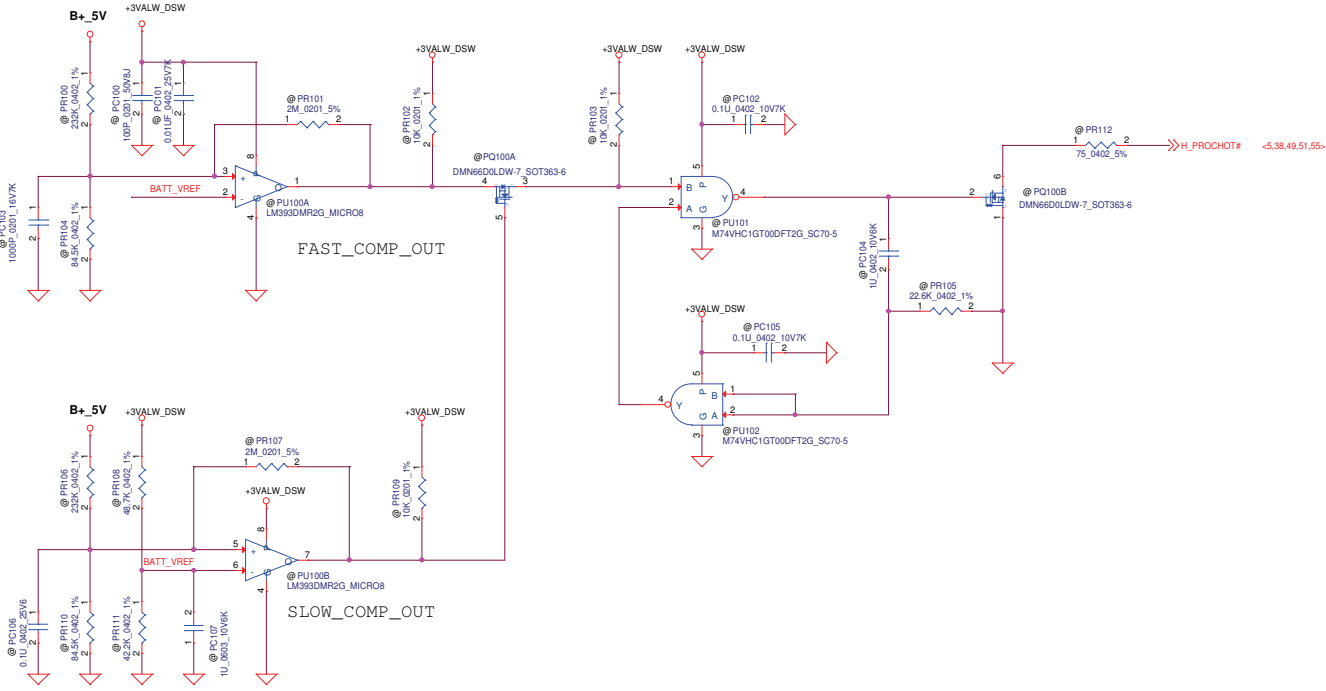
Campal Electronics, Inc.

P47 - PWR\_DCIN/BATT\_CONN/OT

LA-D781P

Rev: 1.0

## BATT low voltage detect



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				Size	Document Number	Rev
				<b>LA-D781P</b>		
Date	Wednesday, November 16, 2016	Sheet	48	n.f	56	0.1

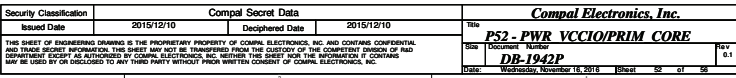
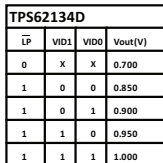


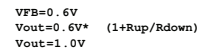




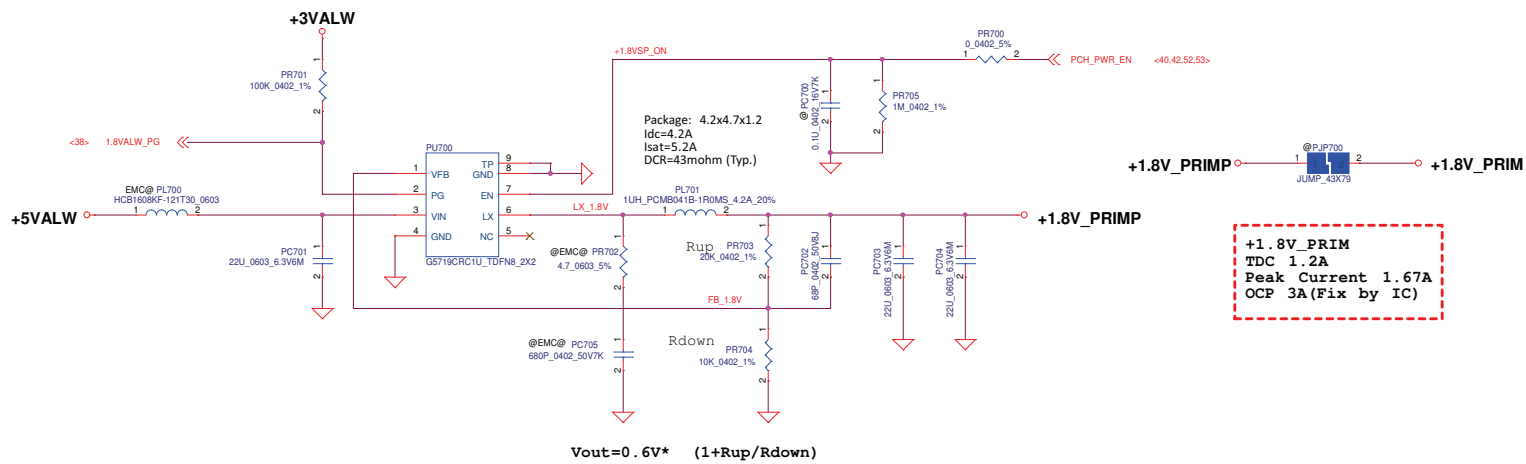


Size	Document Number	Rev
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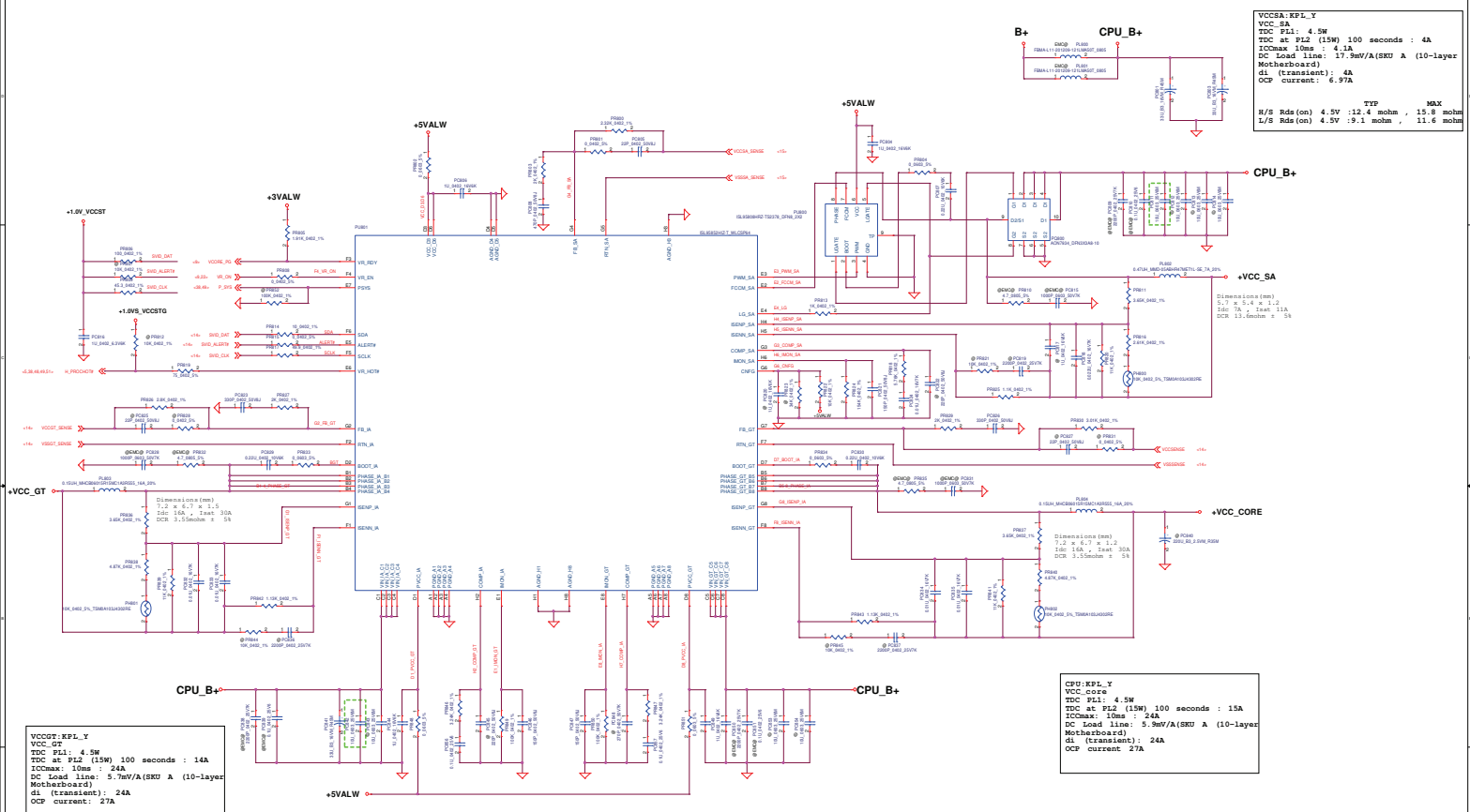
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Issued Date	2011/12/10	Deciphered Date	2012/12/10	Size	P53 - PWR +1.0V PRIM	
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Date	Wednesday, November 16, 2016		Sheet	53	of 56	



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					<b>LA-D781P</b>
				Date:	Wednesday, November 16, 2016
				Sheet	54 of 56
				Rev	0.1

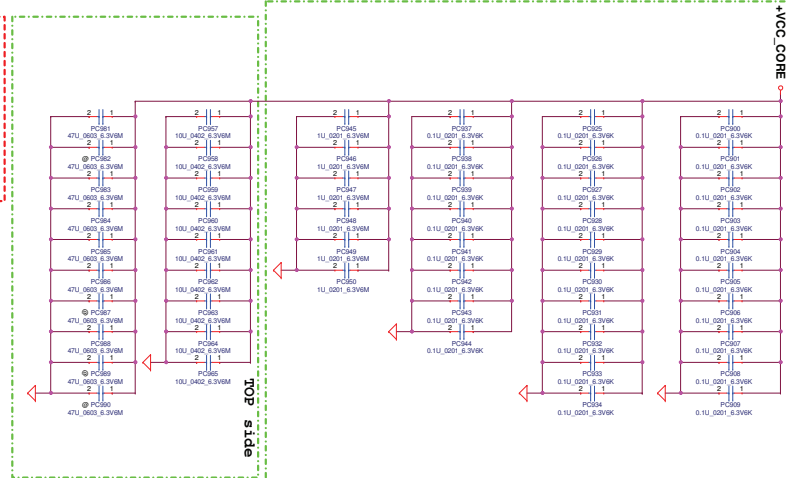


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Comptel Electronics, Inc.		<b>P55-PWR_VCORESAGGT</b> <b>LA-B230P</b>

VCC\_CORE  
0.10 0.0201 \* 28 pcs +10.0201\*6 pcs+100.0402\*9pcs+470.0603\*10pcs

Back side

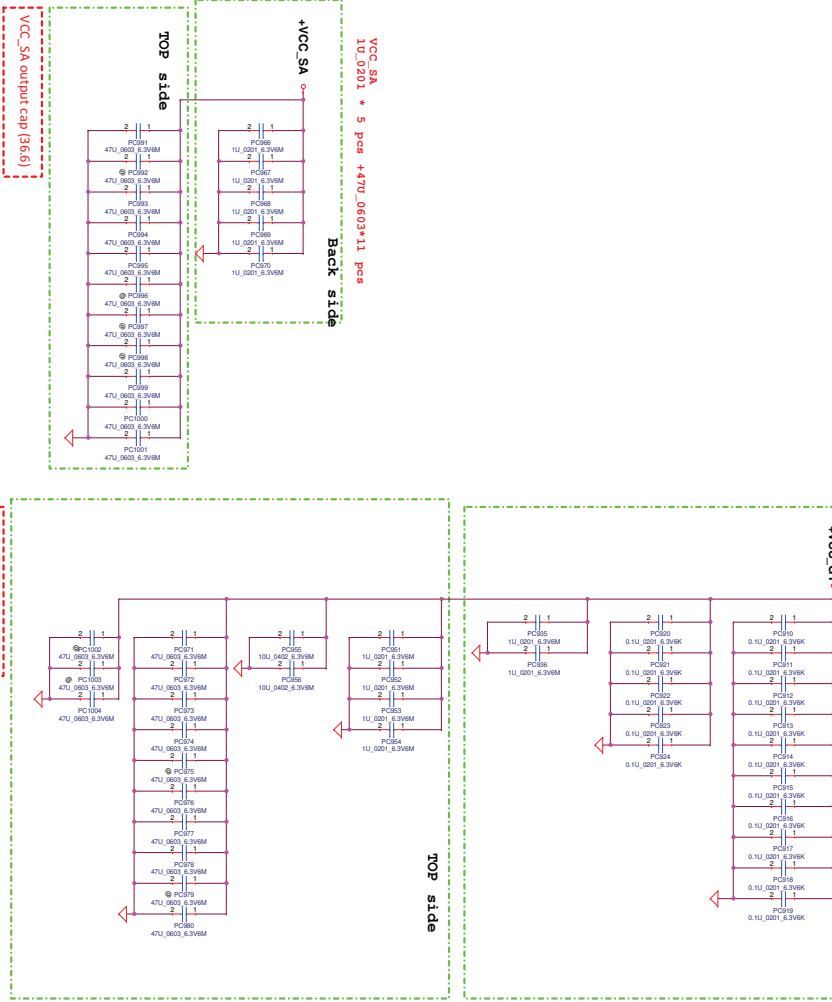
+VCC\_CORE



VCC\_CORE output cap (36.4)

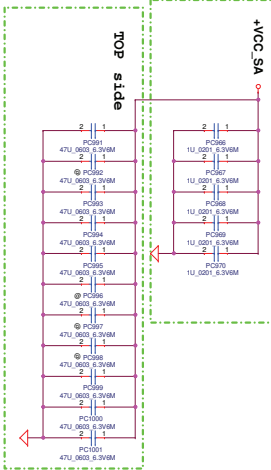
VCC\_GT  
0.10 0.0201 \* 15 pcs +10.0201\*6 pcs+10.0402\*2pcs+470.0603\*13pcs

Back side



VCC\_SA  
10.0201 \* 5 pcs +470.0603\*11 pcs

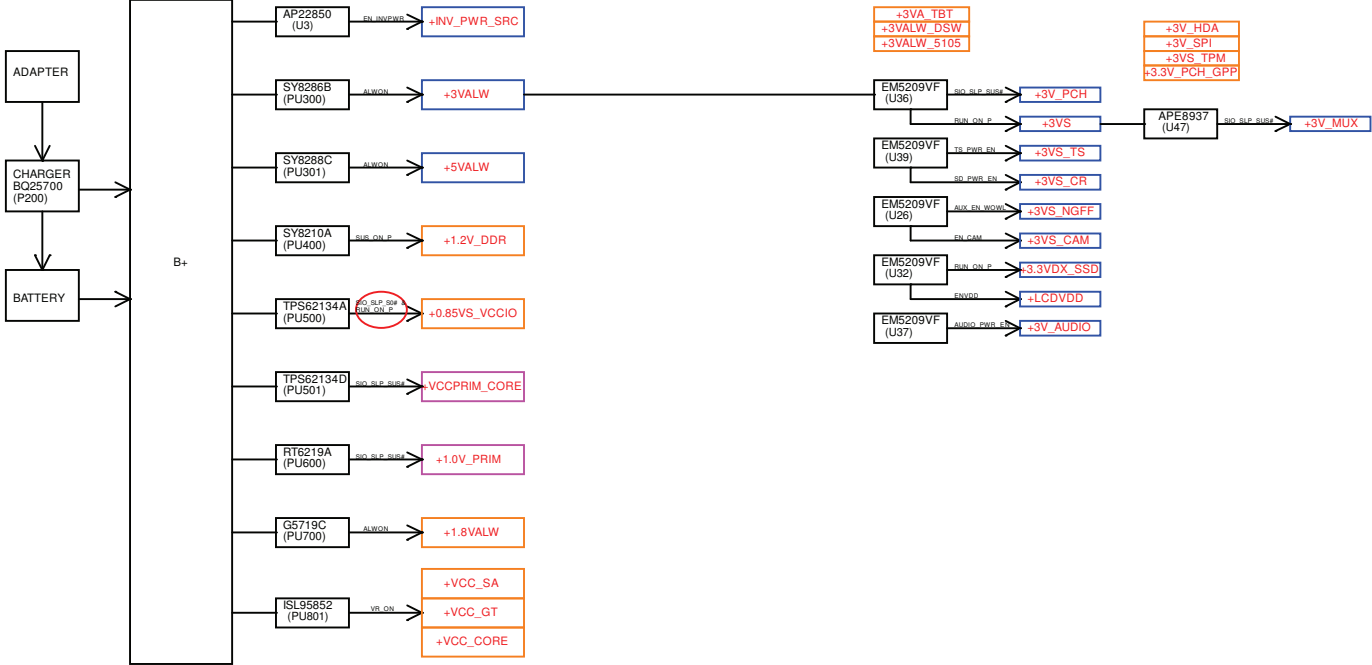
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VCC\_SA output cap (36.6)

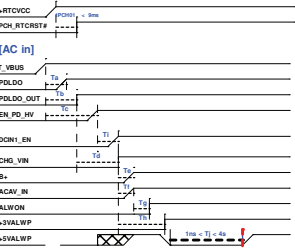
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P&E, Decompile cap. for CPU power				1A-1771P	51



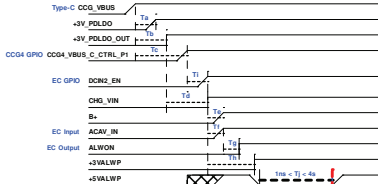


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Issued Date	2011/06/02	Deciphered Date	2013/10/28	Title	
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				Rev	0.4
				Date	Released: November 18, 2014

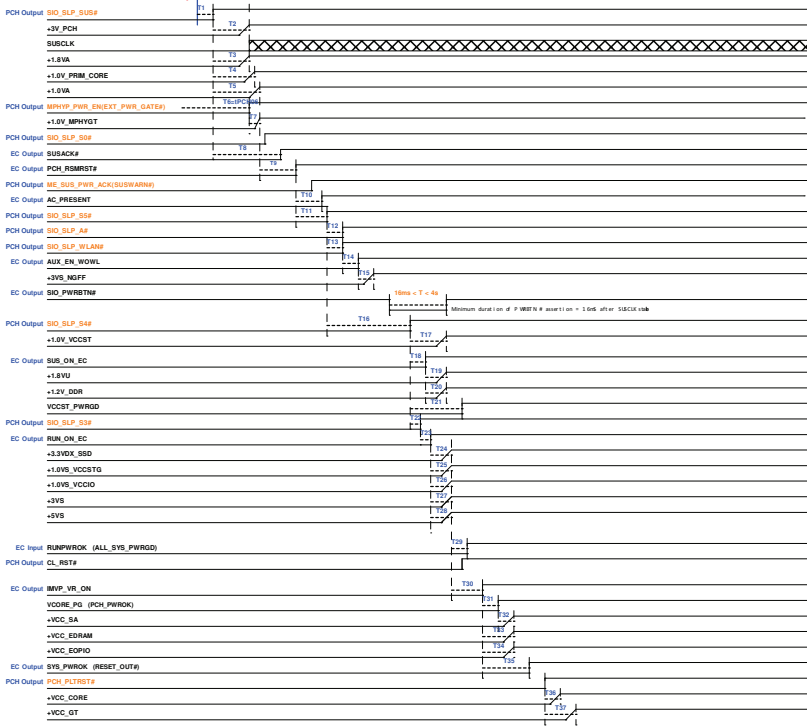
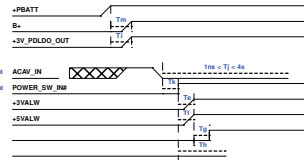
[RTC in]



[AC in]



[Battery only, AC absent]



Security Classification	Document ID	Document Date	Document Version
SECRET	00000000	00000000	00000000
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P02-Power Up Sequence			

+VCC\_CORE  
VGATE  
SYS\_PRRGD  
PCH\_PLTRST#