

COMPAL CONFIDENTIAL

MODEL NAME : **ZAR00**

PCB NO : **LA-B541P**

BOM P/N : **i5 - 4319TQ31L01 (HSW)**
i7 - 4319TQ31L02 (HSW)

GPIO MAP: **GPIO map rev 3.6C**

Delray 17

Broadwell H-type (2 chip)

REV : 0.1 (X00)

2014.01.13

@ : Nopop Component

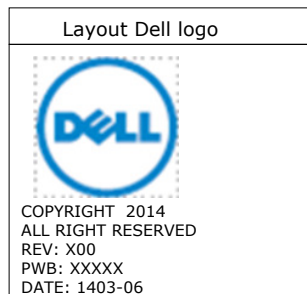
EMC@ : EMI/ESD/RF part

CONN@ : Connector Component

PXDP@,CXDP@ : Total debug Component (pop them until ST)

TB@ : Thunderbolt function

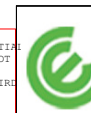
BDW@ : HSW_BDW compatibility circuit



PCB 178 LA-B541P REV0 M8	
Part Number	Description
DAA0008R000	PCB 178 LA-B541P REV0 M8

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POWER STATES

Signal State	SLP S3#	SLP S4#	SLP S5#	S4 STATE#	SLP M#	ALWAYS PLANE	M PLANE	SUS PLANE	RUN PLANE	CLOCKS
S0 (Full ON) / M0	HIGH	HIGH	HIGH	HIGH	HIGH	ON	ON	ON	ON	ON
S3 (Suspend to RAM) / M1	LOW	HIGH	HIGH	HIGH	HIGH	ON	ON	ON	OFF	OFF
S4 (Suspend to DISK) / M1	LOW	LOW	HIGH	LOW	HIGH	ON	ON	OFF	OFF	OFF
S5 (SOFT OFF) / M1	LOW	LOW	LOW	LOW	HIGH	ON	ON	OFF	OFF	OFF
S3 (Suspend to RAM) / M-OFF	LOW	HIGH	HIGH	HIGH	LOW	ON	OFF	ON	OFF	OFF
S4 (Suspend to DISK) / M-OFF	LOW	LOW	HIGH	LOW	LOW	ON	OFF	OFF	OFF	OFF
S5 (SOFT OFF) / M-OFF	LOW	LOW	LOW	LOW	LOW	ON	OFF	OFF	OFF	OFF

PM TABLE

power plane State	+PWR_SRC +PWR_SRC_S +5V_ALW +3.3V_ALW +3.3V_ALW_PCH +3.3V_RTC_LDO	+3.3V_SUS +1.35V_MEM	+5V_RUN +3.3V_RUN +1.5V_RUN +0.675V_DDR_VTT +VCC_CORE +1.05V_RUN +3.3V_MXM +5V_MXM +MXM_PWR_SRC	+3.3V_M +1.05V_M	+3.3V_M +1.05V_M (M-OFF)
S0	ON	ON	ON	ON	ON
S3	ON	ON	OFF	ON	OFF
S5 S4/AC	ON	OFF	OFF	ON	OFF
S5 S4/AC don't exist	OFF	OFF	OFF	OFF	OFF

SATA	DESTINATION
SATA 0	HDD 1
SATA 1	ODD
SATA 2	Dock
SATA 3	HDD 2
SATA 4	M.2 Slot-2
SATA 5	M.2 Slot-3

PCH	USB PORT#	DESTINATION
	0	IO Board- JUSB3 (Ext Left Side)
	1	JUSB1 (Ext Right Side)
	2	IO Board- JUSB1 (Ext Left Side)
	3	Docking USB3.0
	4	M.2 Slot-1 (WLAN/BT/WiGig)
	5	M.2 Slot-2 (WWAN/LTE/HCA)
	6	Docking USB 2.0
	7	USH
	8	Camera
	9	IO Board- JUSB2 (Ext Left Side)
	10	M.2 Slot-3 (SSD/HCA/Cache)
	11	Touch Screen
	12	NA
	13	NA

USH	0	BIO
	1	NA

PCI EXPRESS	DESTINATION
Lane 1	M.2 Slot-2 (WWAN/LTE/HCA)
Lane 2	M.2 Slot-3 (SSD/HCA/Cache)
Lane 3	10/100/1G LOM
Lane 4	MMI(Card reader)
Lane 5	TBT-1
Lane 6	TBT-2
Lane 7	M.2 Slot-1 (WLAN/BT/WiGig)
Lane 8	M.2 Slot-1 (WLAN/BT/WiGig)

Stack up

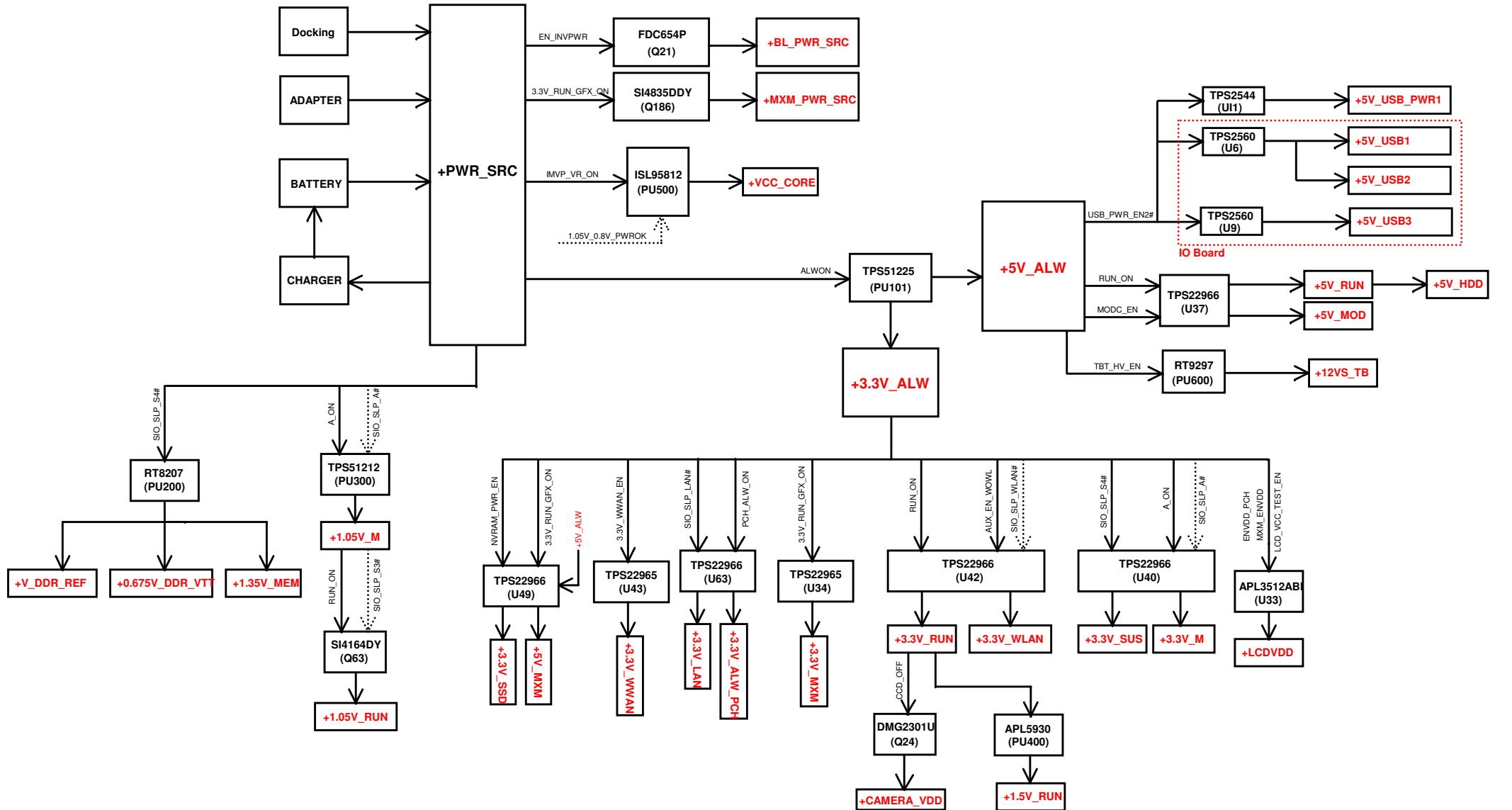
Layer No.	Name	Er	Material	Thickness (Material SPEC.) Unit : mil
			SolderMask	IT-158
			Add Plating	
1	Top		Copper foil	0.5oz
		3.7	Prepreg	1080
2	GND1		Copper foil	1oz
		3.7	Core	4mil
3	Sig 1		Copper foil	1oz
		3.9	Prepreg	1080H+2116H
4	GND/PWR		Copper foil	2oz
		3.7	Core	4mil
5	Sig 2		Copper foil	1oz
		3.8	Prepreg	1080Hb2
6	Sig 3		Copper foil	1oz
		3.7	Core	4mil
7	GND/PWR		Copper foil	2oz
		3.9	Prepreg	1080H+2116H
8	Sig 4		Copper foil	1oz
		3.7	Core	4mil
9	GND 3		Copper foil	1oz
		3.7	Prepreg	1080
10	Bottom		Copper foil	0.5oz
			Add Plating	
			SolderMask	57.09
Overall Thickness (1.45mm ± 10%)				

USB3.0	DESTINATION
Port 1	IO Board- JUSB3
Port 2	JUSB1 (Ext Right Side)
Port 3	Docking
Port 4	NA
Port 5	IO Board- JUSB1
Port 6	IO Board- JUSB2

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Index and Config.			
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Power Rail			Rev
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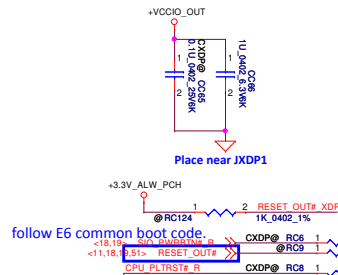
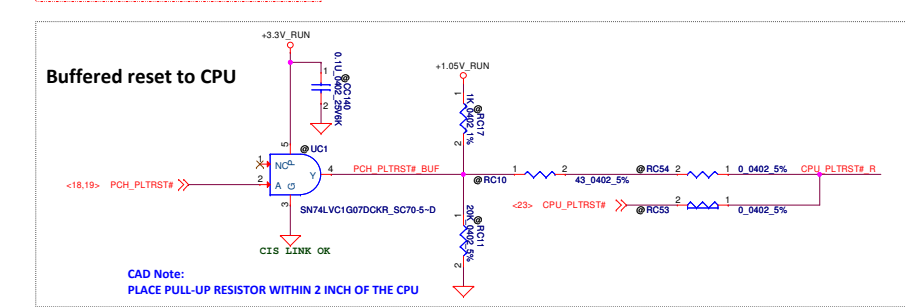
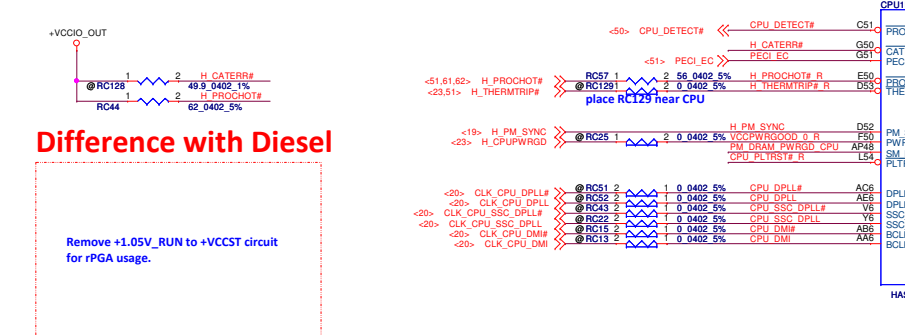
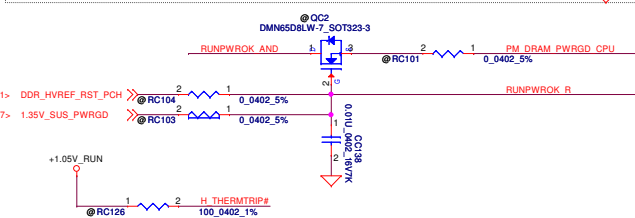
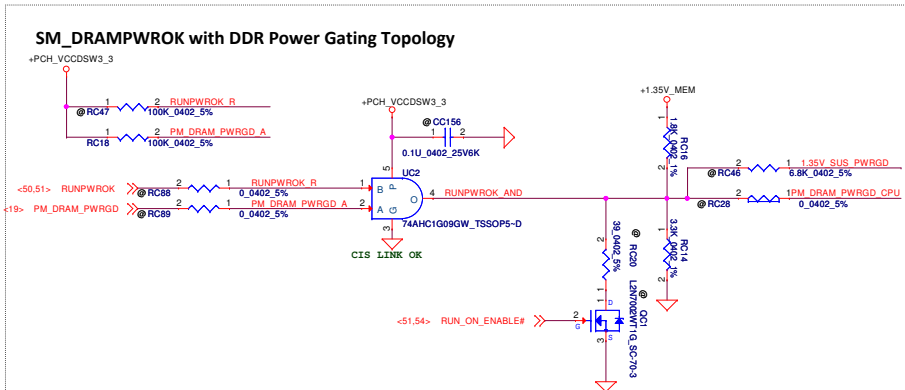
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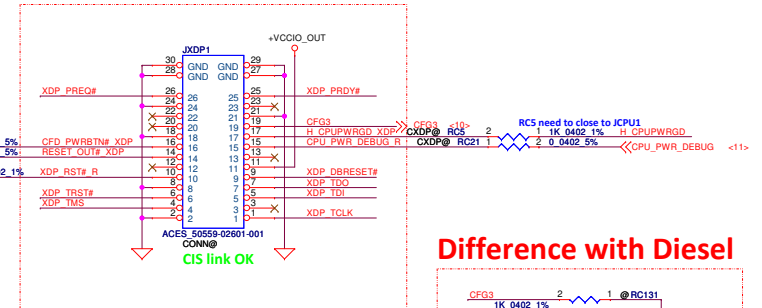
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Broadwell (1/7)

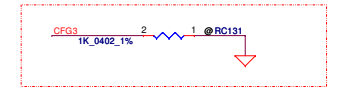
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Difference with Diesel



Difference with Diesel



2 chip XDP debug component list - CPU side(CXDP@)		
Item	Qty	Part reference
1	1	CC65
2	9	RC6,RC21,RC48,RC50,RC56,RC62,RC64,RC23,RC24
3	2	RC8,RC5
4	1	JXD1

Part description		
SE00000G880	(S CER CAP 0.1U 25V K X5R 0402)	
SD028000080	(S RES 1/16W 0 +.5% 0402)	
SD028100180	(S RES 1/16W 1K +.5% 0402)	
LTCX004MX00(ACES_50559-02601-001_26P-T)		

For ESD concern, please put near CPU		
SM_RCOMP0	RC42	1 2 100 0402 1%
SM_RCOMP1	RC55	1 2 75 0402 1%
SM_RCOMP2	RC49	1 2 100 0402 1%

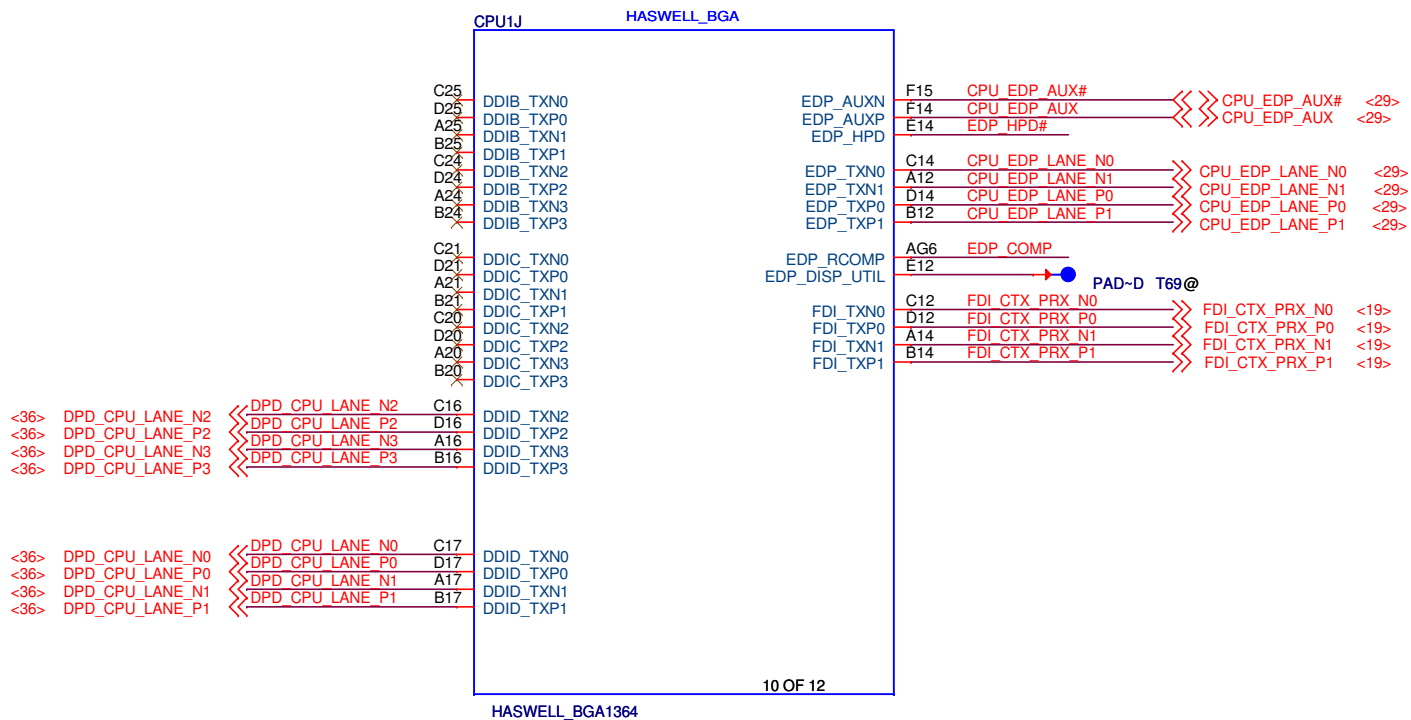
DDR3L COMPENSATION SIGNALS		
SM_RCOMP0	RC42	1 2 100 0402 1%
SM_RCOMP1	RC55	1 2 75 0402 1%
SM_RCOMP2	RC49	1 2 100 0402 1%

PU/PD for JTAG signals		
XDP_DBRESET#	RC19	2 1 1K 0402 1%
XDP_TMS	RC27	2 1 51 0402 1%
XDP_TDI	RC29	2 1 51 0402 1%
XDP_PREQ#	RC32	2 1 51 0402 1%
XDP_TDO	RC35	2 1 51 0402 1%
XDP_TCLK	RC40	2 1 51 0402 1%
XDP_TRST#	RC41	2 1 51 0402 1%

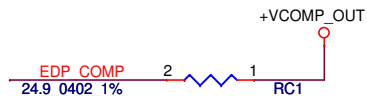
CAD Note:		
Trace width=12~15 mil, Spacing=20 mils		
Max trace length= 500 mil		

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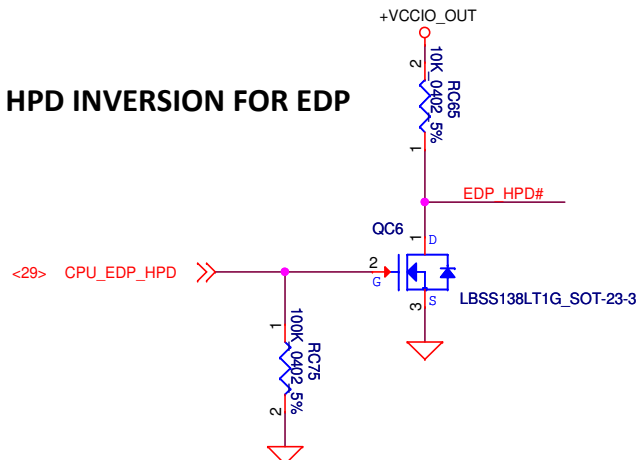


COMPENSATION PU FOR eDP



CAD Note: Trace width=20 mils ,Spacing=25mil,
Max length=100 mils.

HPDI INVERSION FOR EDP



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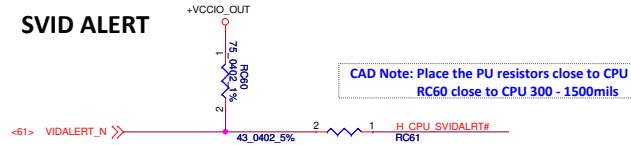
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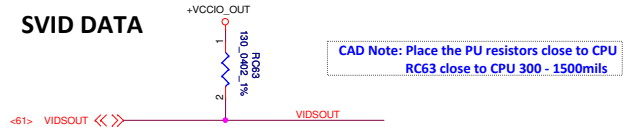
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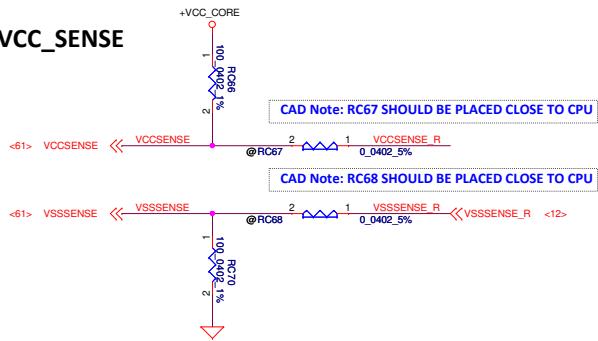
SVID ALERT



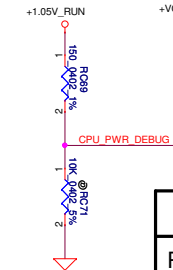
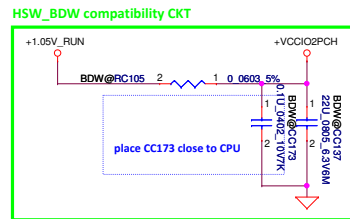
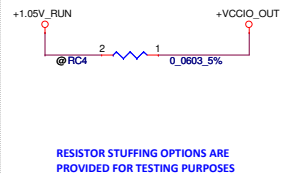
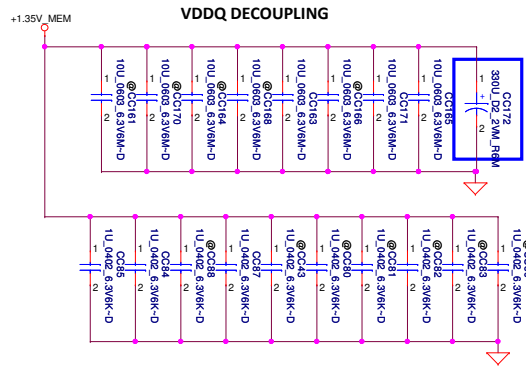
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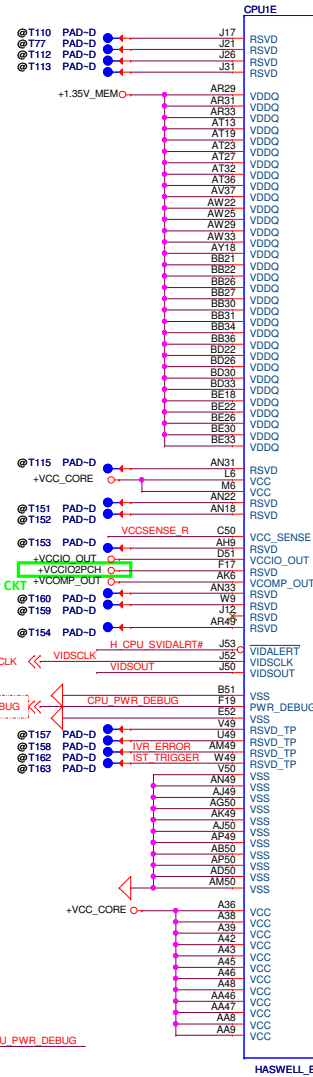
VCC_SENSE



Difference with Diesel (follow HSW-BGA CRB Rev 0.7)

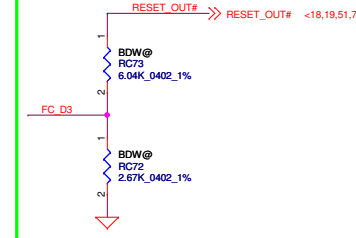


Difference with Diesel

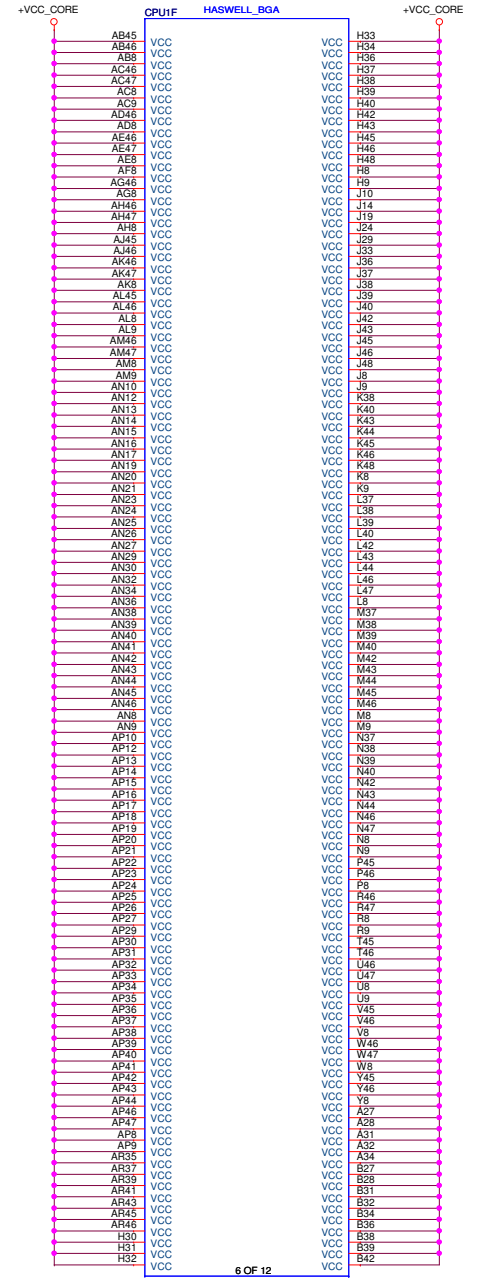


	HSW	BDW
RC105	X	V
CC137	X	V
CC173	X	V
RC72	X	V
RC73	X	V

HSW_BDW compatibility CKT



55A



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Broadwell (6/7)

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Populate RD1, De-Populate RD2 for Intel DDR3
VREFDQ multiple methods M1
Populate RD2, De-Populate RD1 for Intel DDR3
VREFDQ multiple methods M3

The top diagram shows a circuit with a 1.35V_MEM supply connected to a network of capacitors and components. The components are labeled CD5, CD4, CD2, and CD1. The capacitors are labeled 1U.0402 8.33V6K. The components are connected in a parallel configuration to ground.

The bottom diagram shows a similar circuit with a 1.35V_MEM supply connected to a network of capacitors and components. The components are labeled CD14, CD13, CD10, CD9, CD8, CD7, and CD6. The capacitors are labeled 10U.0803 3.3V6M. The components are connected in a parallel configuration to ground. A note above the diagram states "CD14 change to SGA20331E10".

	SA0	SA1
DIMM2	0	0
DIMM4	0	1
DIMM1	1	0
DIMM3	1	1

Top Side

JDIMM1

JDIMM3

CPU

D

C

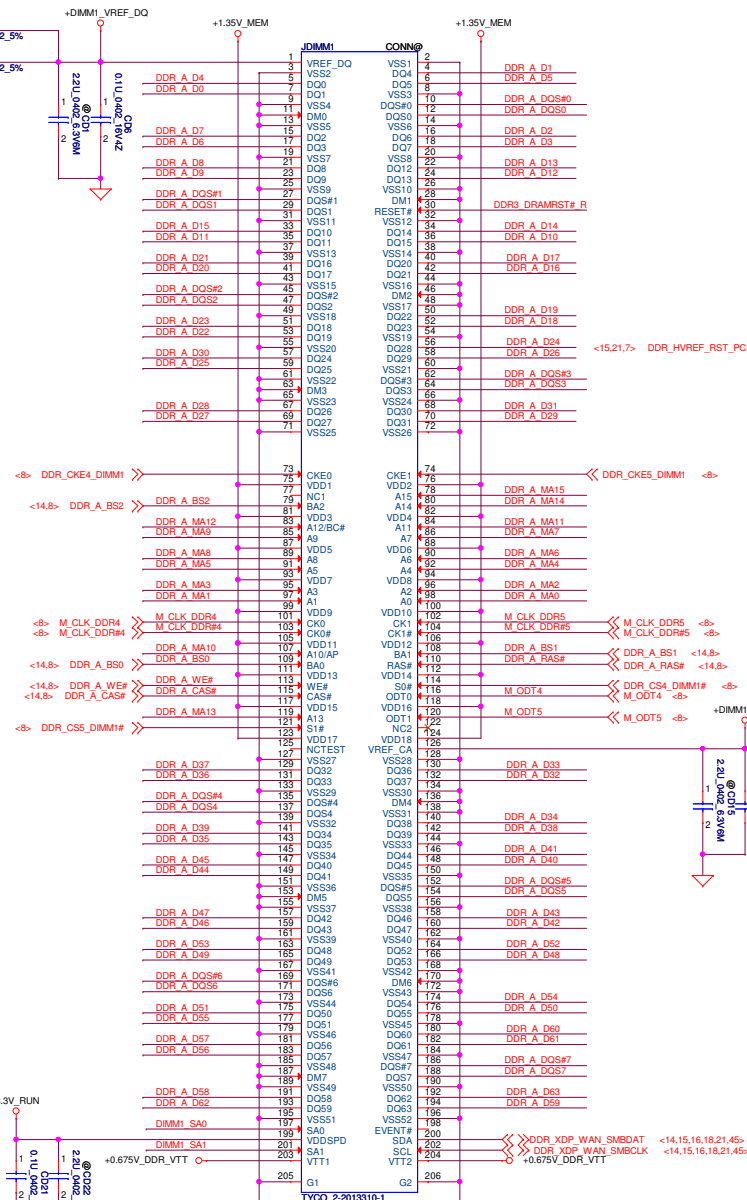
A

B

JDIMM2

JDIMM4

Bottom Side

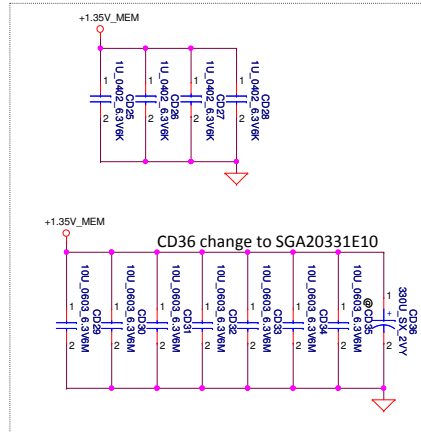
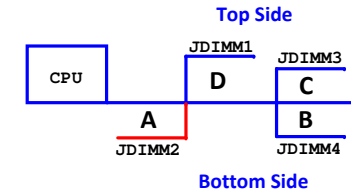


<7> DDR3_DRAMRST#_CPU >> 1 2 >> DDR3_DRAMRST#_R <14,15,16>
@RD6 0_0402_5%

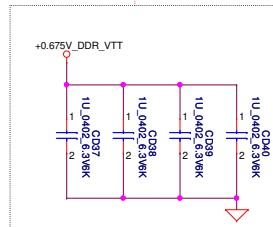
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JDIMM2 STD Type H=5.2

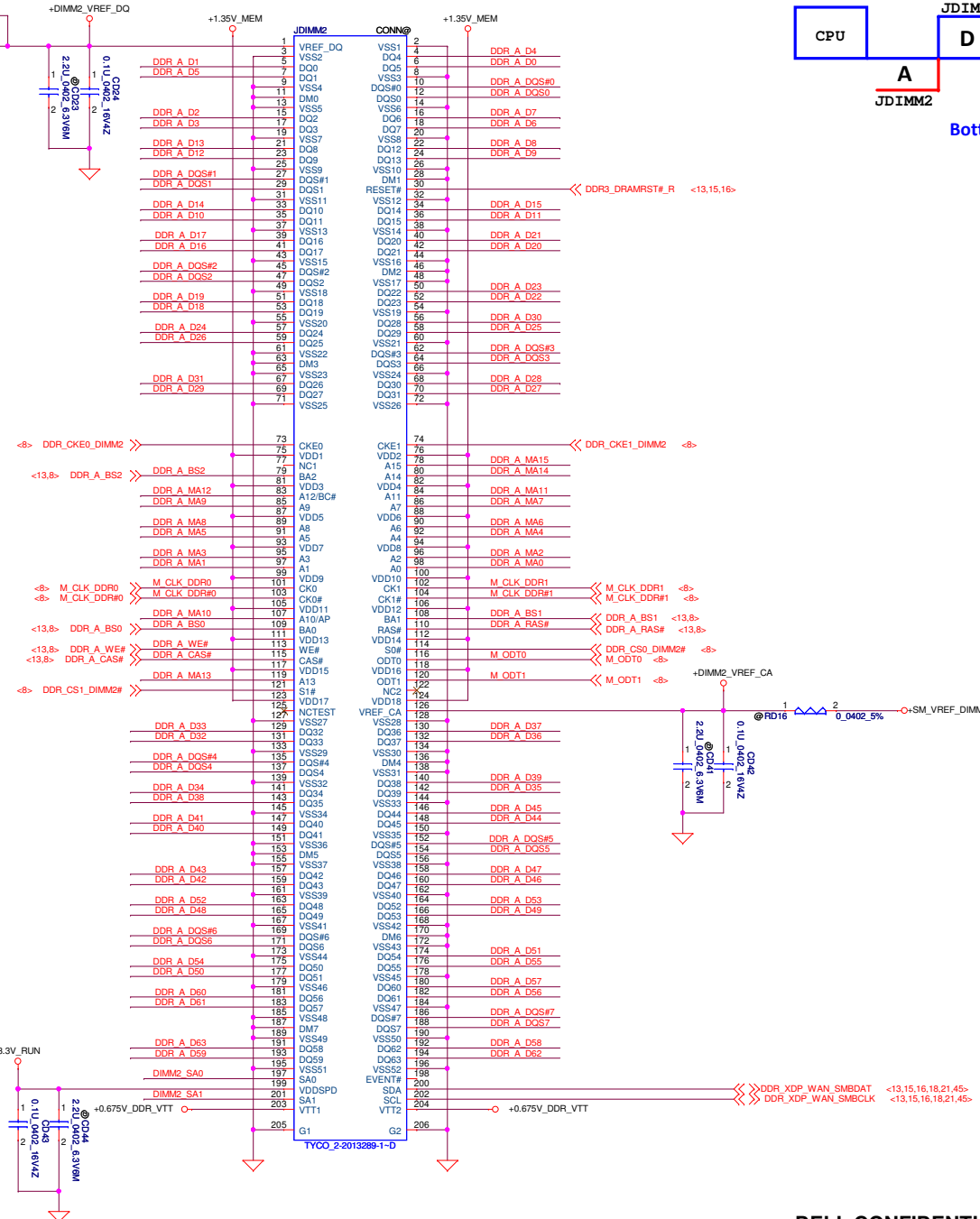
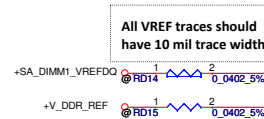
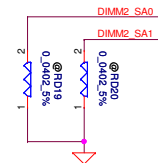


Layout Note:
Place near JDIMM2.Pin 203,204



DIMM Select

	SA0	SA1
DIMM2	0	0
DIMM4	0	1
DIMM1	1	0
DIMM3	1	1



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DDRIII-SODIMM SLOT2

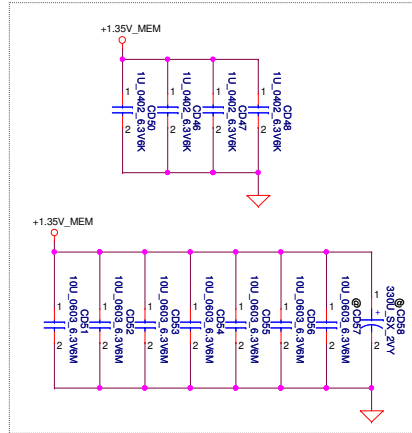
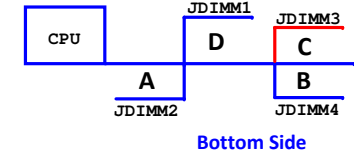
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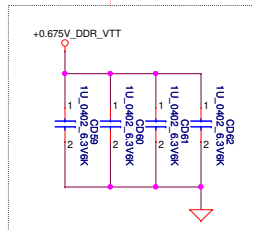
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Top Side

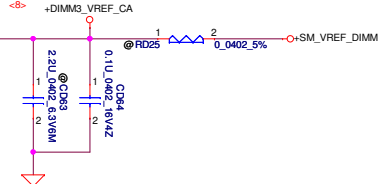
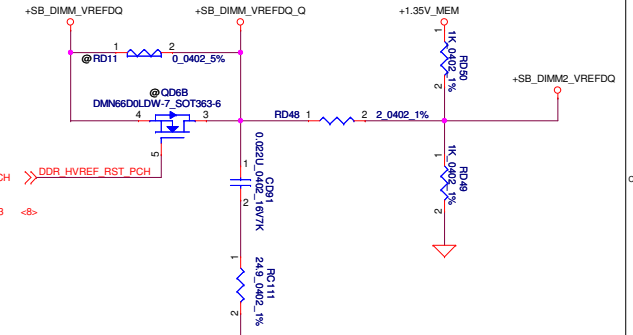
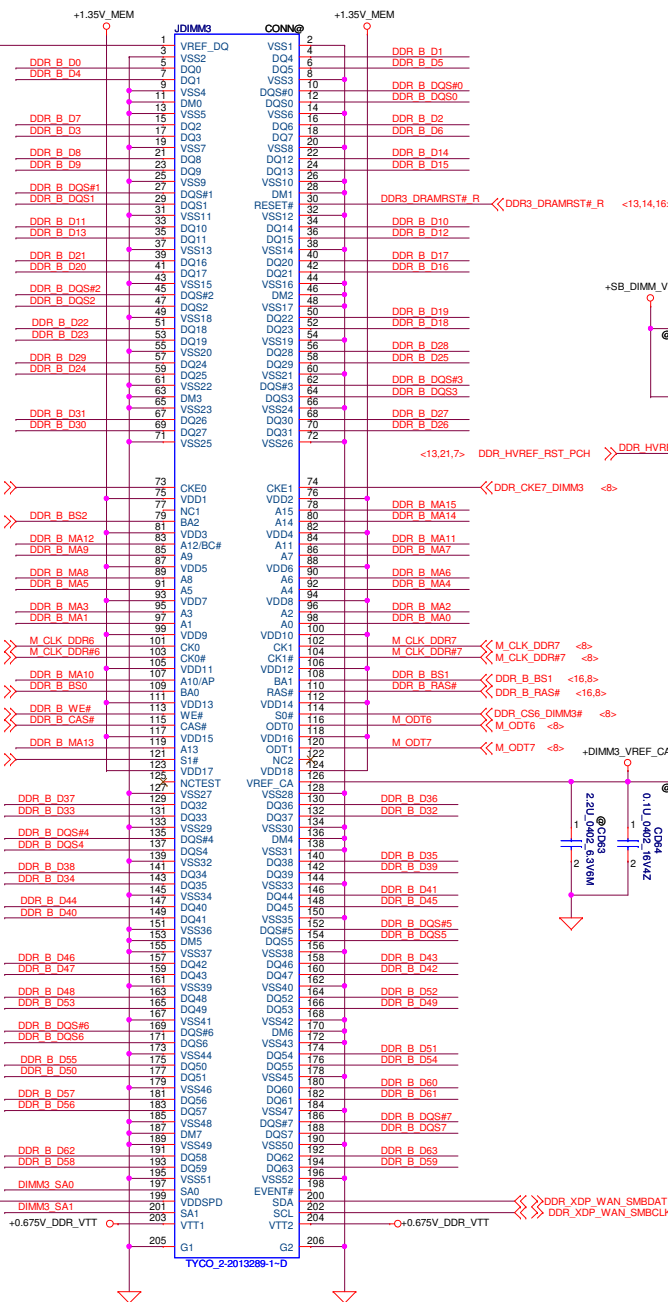
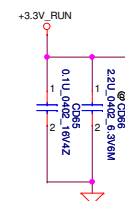
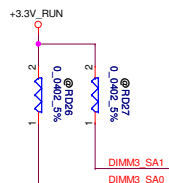


Layout Note:
Place near JDIMM3.Pin 203,204



DIMM Select

	SA0	SA1
DIMM2	0	0
DIMM4	0	1
DIMM1	1	0
DIMM3	1	1



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DDRIII-SODIMM SLOT3

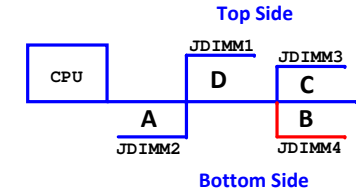
I A-R541P	Rev 0.1
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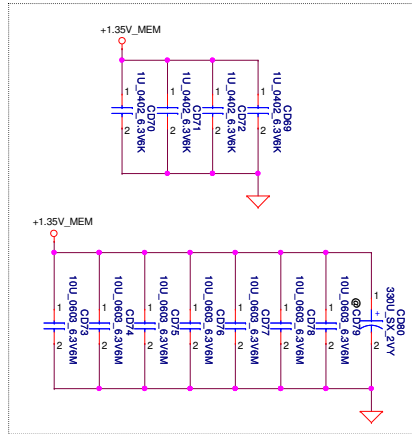
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All VREF traces should have 10 mil trace width

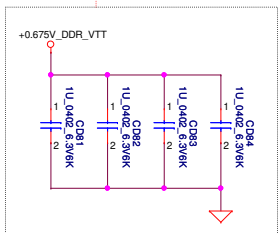
JDIMM4 REV Type H=5.2



<15.8> DDR_B_DQS#[0..7] <<>>
 <15.8> DDR_B_DQ#[0..7] <<>>
 <15.8> DDR_B_DQ[0..63] <<>>
 <15.8> DDR_B_MA[0..15] <<>>

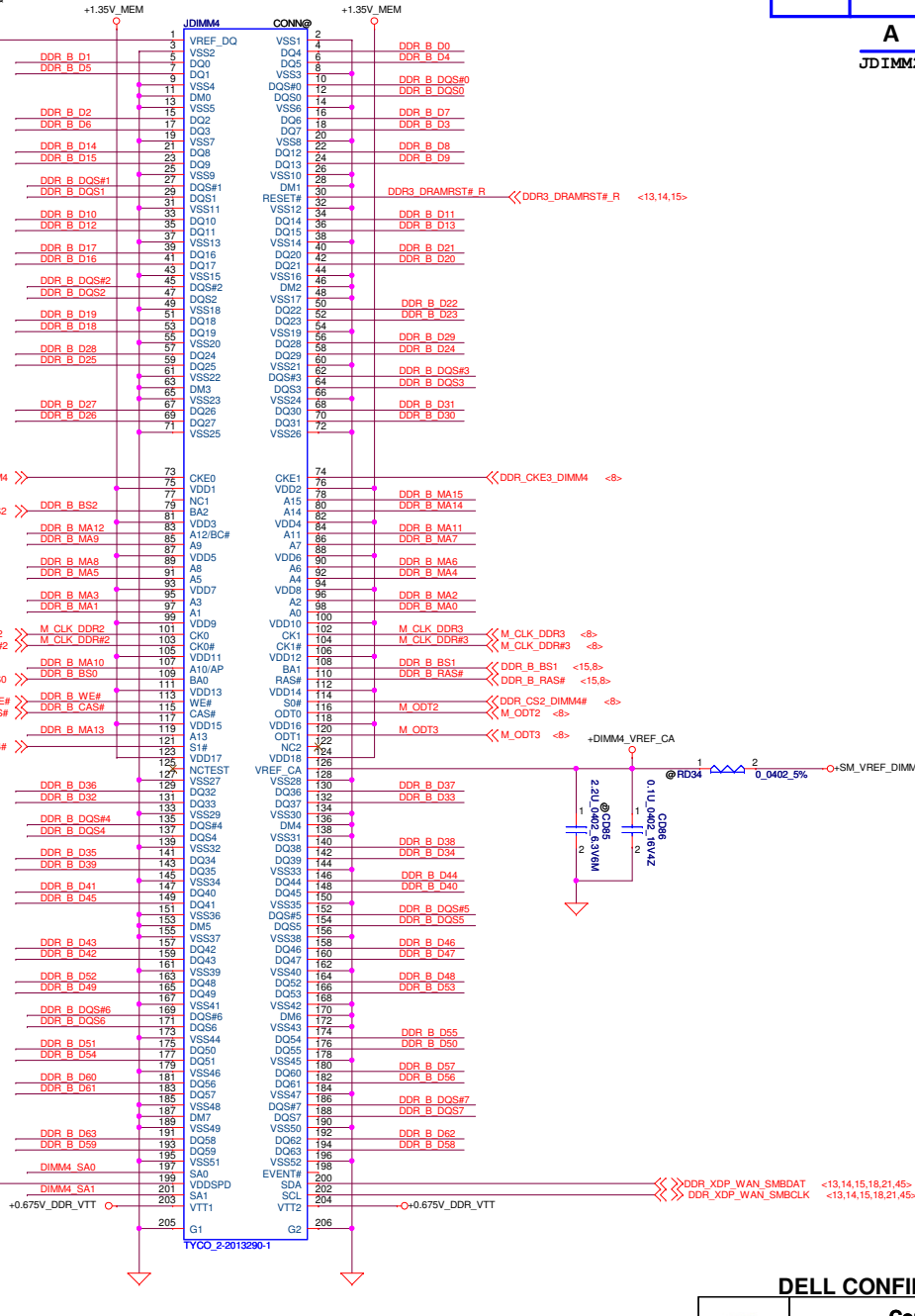
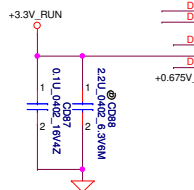
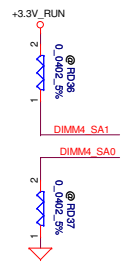


Layout Note:
Place near JDIMM4.Pin 203,204



DIMM Select

	SA0	SA1
DIMM2	0	0
DIMM4	0	1
DIMM1	1	0
DIMM3	1	1



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DDR3-SODIMM SLOT4

LA-B541P

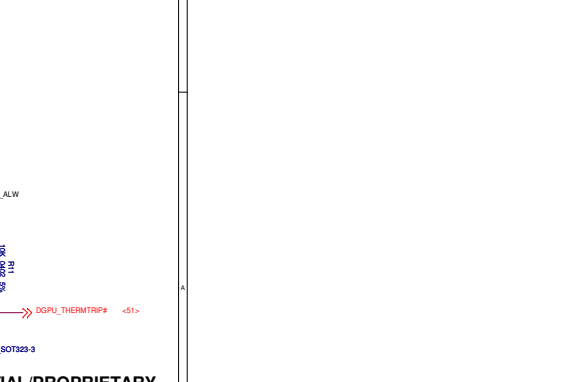
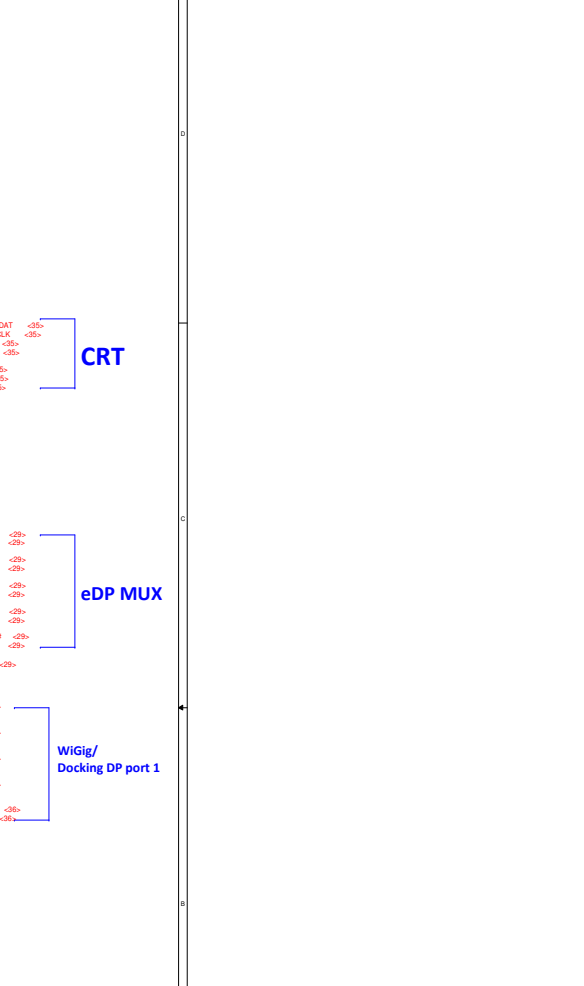
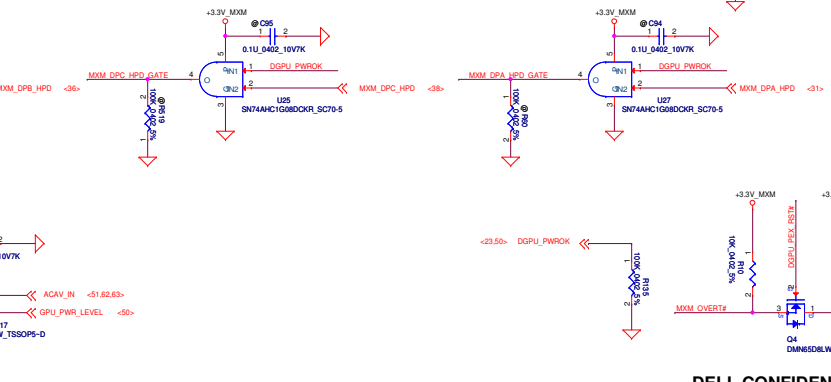
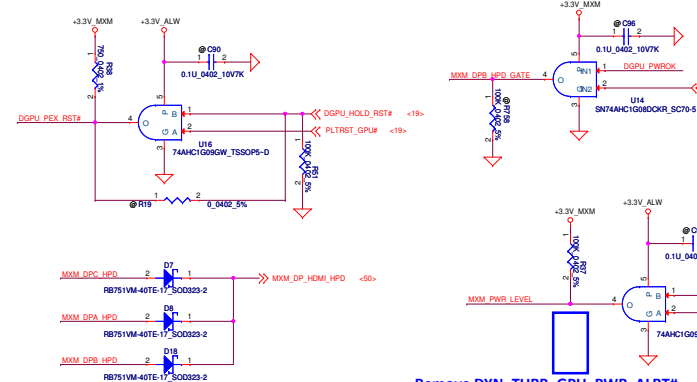
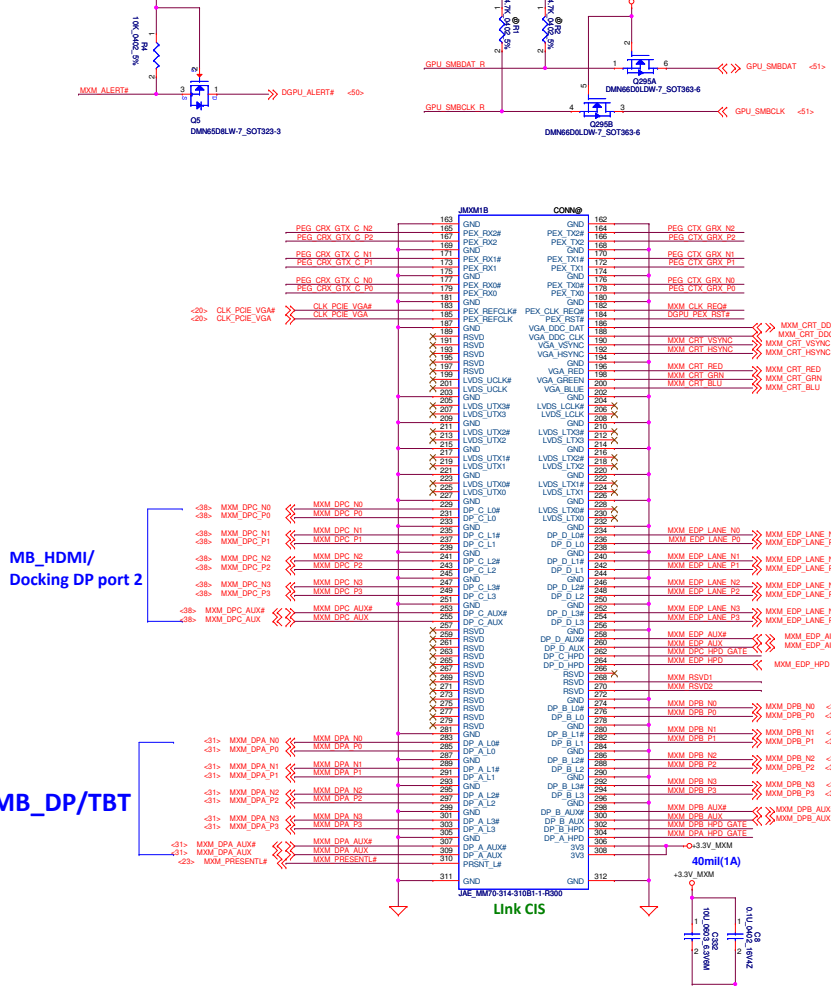
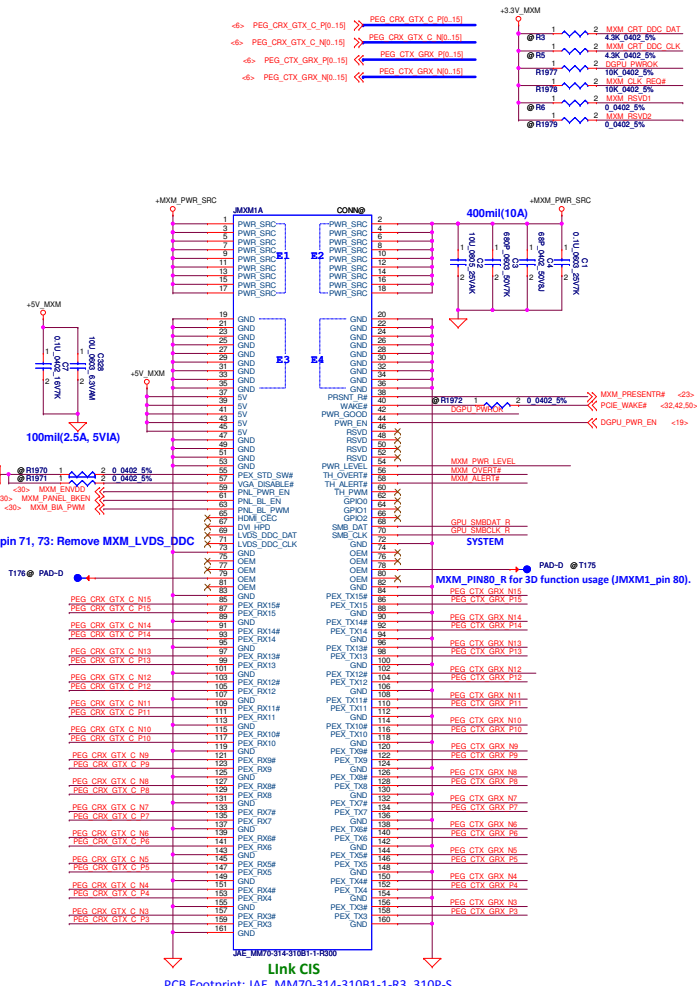
Document Number

Monday, January 13, 2014

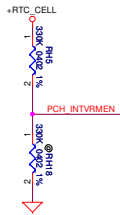
Sheet 16 of 67

Rev 0.1

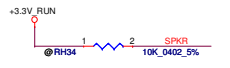
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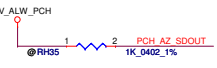
2 chip XDP debug component list - PCH side(PXDP@)			
Item	Qty	Part reference	Part description
1	1	CH2	SE00000G880 (5 CER CAP 0.1U 25V K X5R 0402)
2	21	RH13,RH14,RH16,RH7,RH8,RH9,RH10,RH11,RH12,RH13,RH14,RH16,RH17,RH19,RH20,RH22,RH24,RH25,RH28,RH30,RH31	SD028000080 (S RES 1/16W 0 +5% 0402)
3	2	RH26,RH27	SD028100180 (S RES 1/16W 1K +5% 0402)
4	1	JXDP2	SP02000L900 (S W-CONN SAMTECH BSH-030-01-L-D-TR 60P)



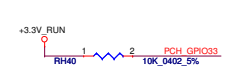
INTVTRMEN - INTEGRATED SUS 1.05V VRM ENABLE
 High - Enable Internal VRs
 Low - Enable External VRs



NO REBOOT STRAP
 DISABLED WHEN LOW (DEFAULT)
 ENABLED WHEN HIGH



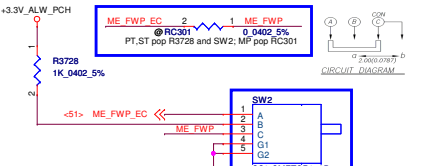
FLASH DESCRIPTOR SECURITY OVERRIDE
 LOW = DESABLED (DEFAULT)
 HIGH = ENABLED



CMOS_CLR1	CMOS setting
Shunt	Clear CMOS
Open	Keep CMOS

ME_CLR1	TPM setting
Shunt	Clear ME RTC Registers
Open	Keep ME RTC Registers

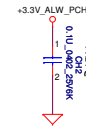
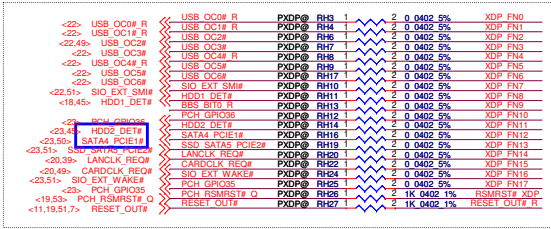
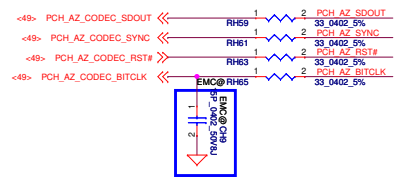
Service Mode Switch:
 Add a switch to ME_FWP signal to unlock the ME region and allow the entire region of the SPI flash to be updated using FPT.



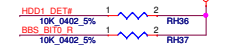
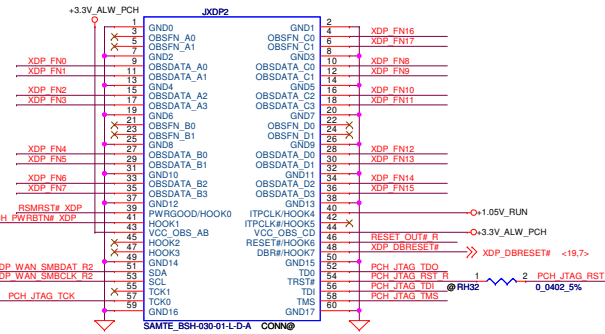
ME_FWP PCH has internal 20K PD.
 (suspend power rail)
FLASH DESCRIPTOR SECURITY OVERRIDE
 LOW = ENABLE (DEFAULT) --> Pin1 & Pin3 short
 HIGH = DISABLE (ME can update) --> Pin2 & Pin3 short

ME_FWP PCH has internal 20K PD.
 (suspend power rail)

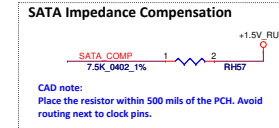
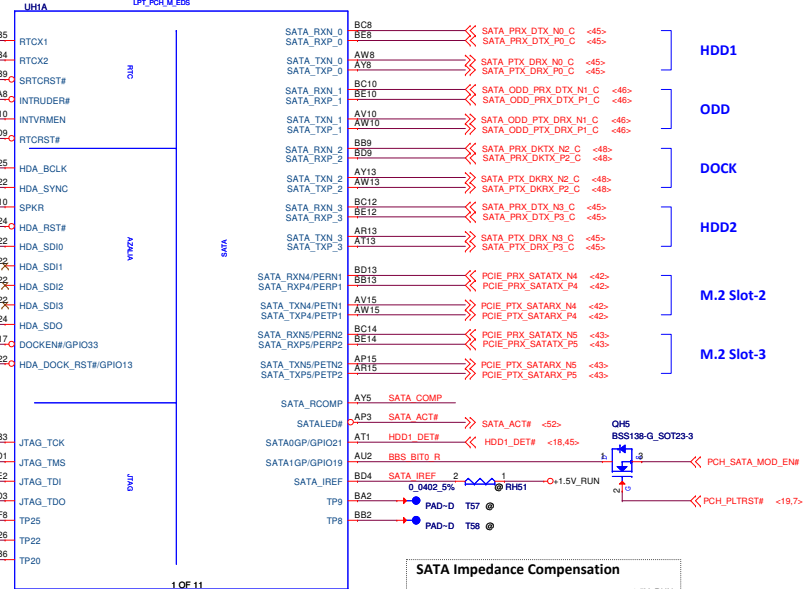
HDA for Codec



PCH XDP



Change PN from SA00005NE2L to SA00006P30L

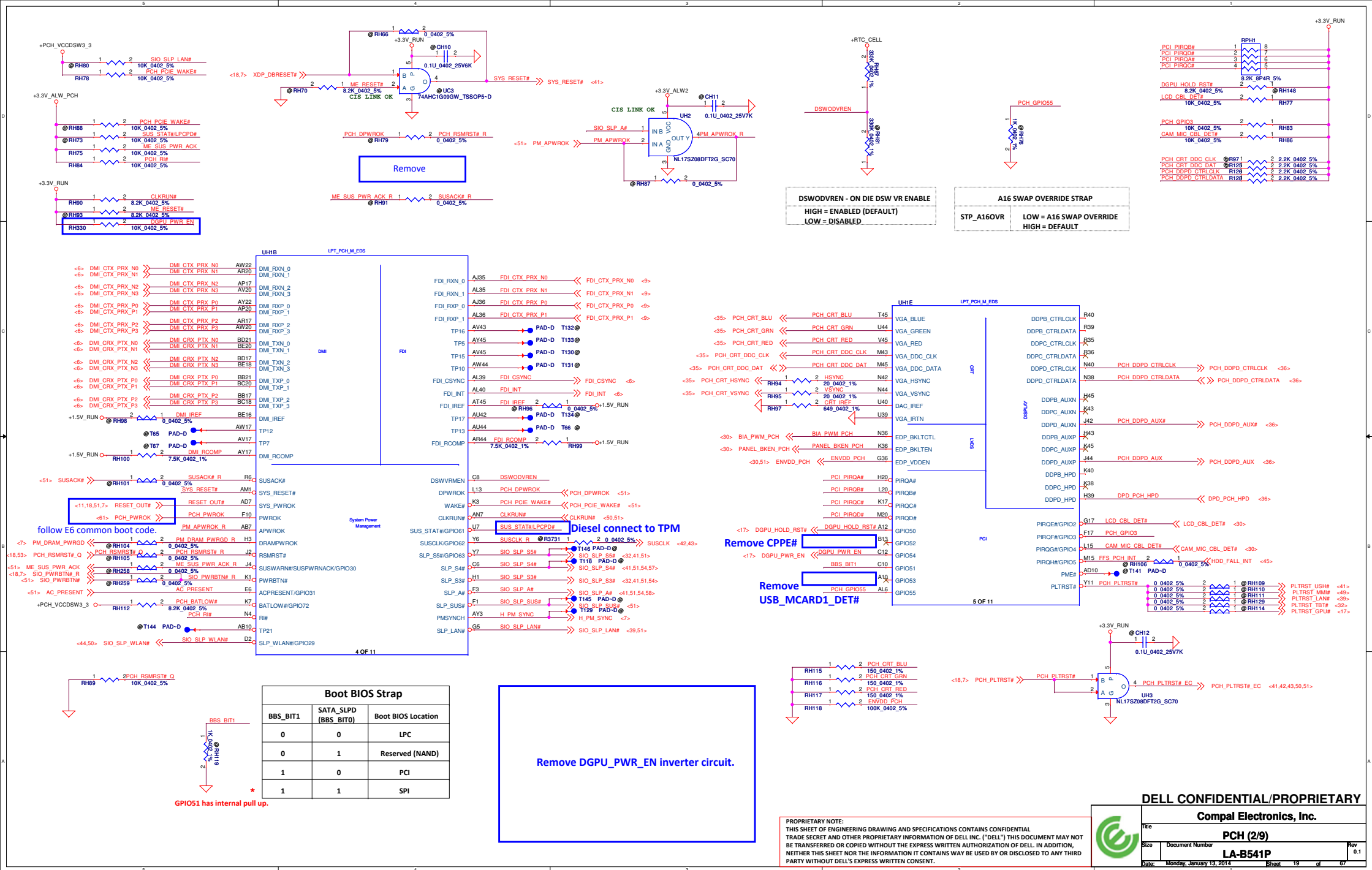


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File	Document Number	Rev
PCH (1/9)	LA-B541P	0.1
Date: Monday, January 13, 2014	Sheet 18	of 67

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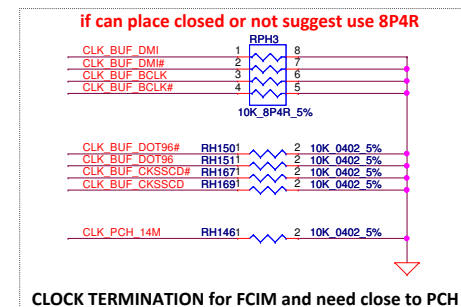
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Compal Electronics, Inc.

PCH (2/9)

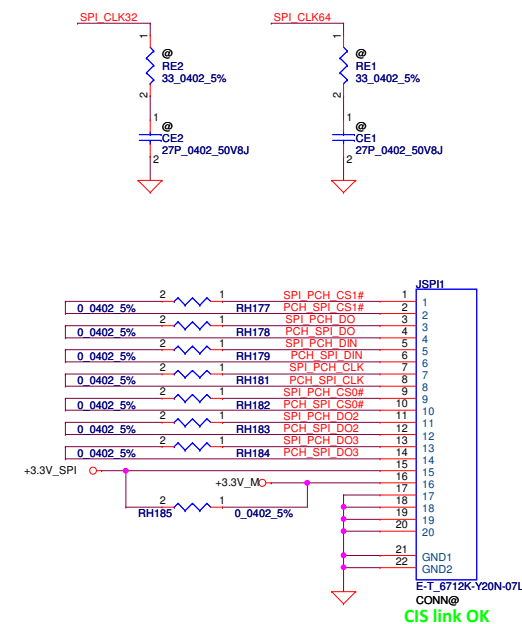
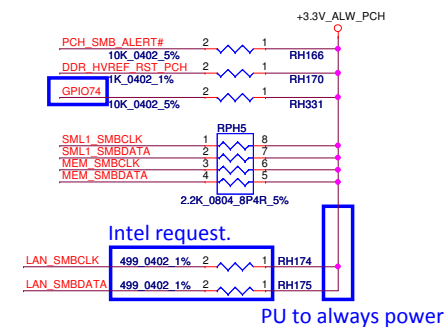
LA-B541B

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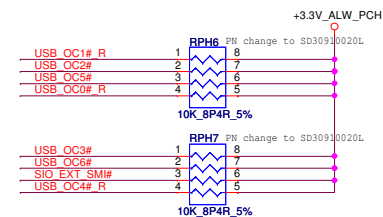
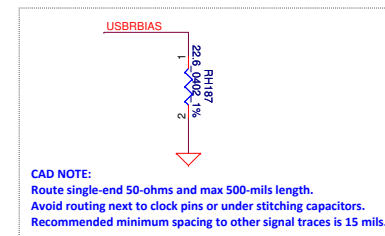
Size		Document Number		Rev
		LA-B541P		0.1
Date:	Monday, January 13, 2014	Sheet	20	of 67

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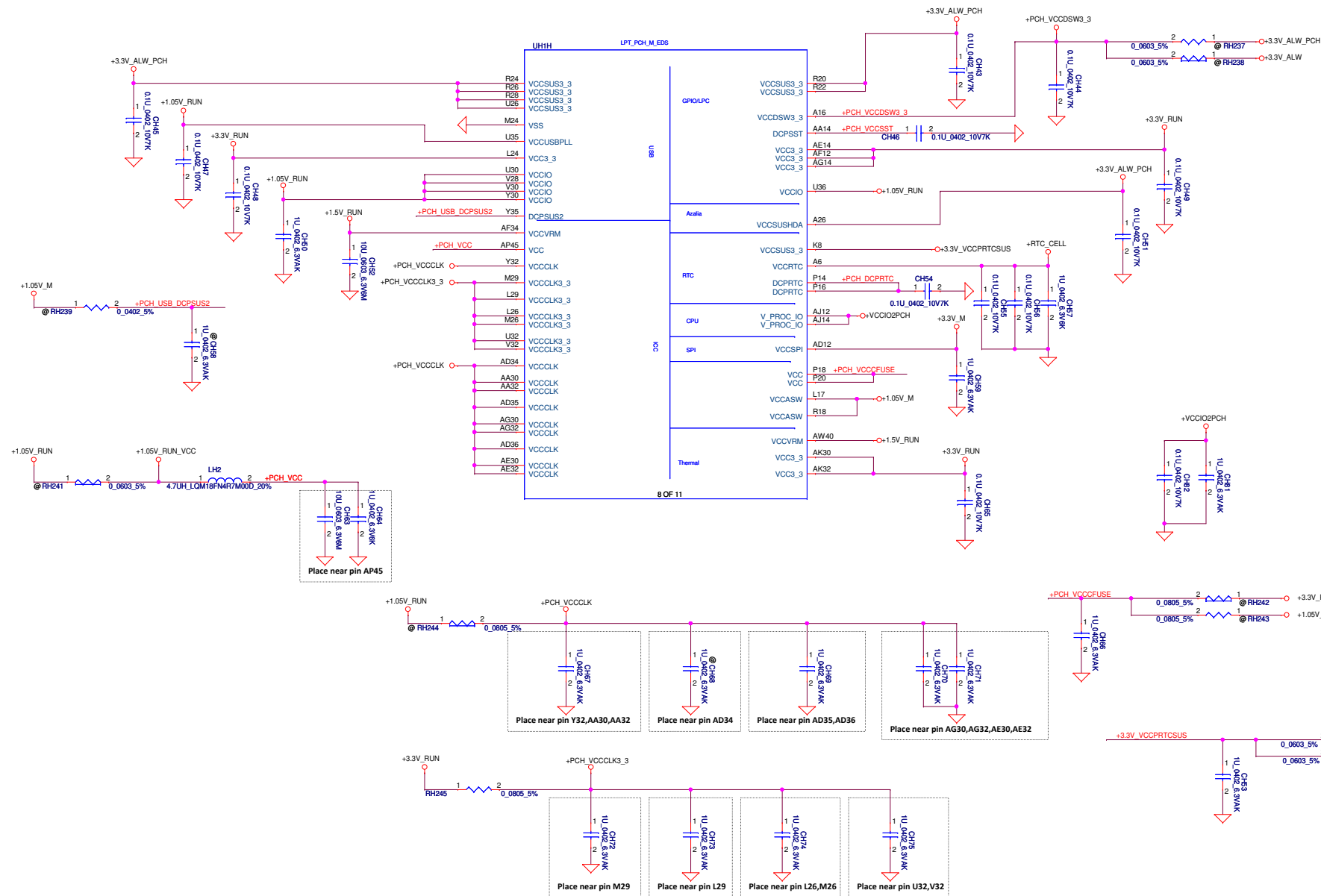
Date: Monday, January 13, 2014 Sheet 21 of 67

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Title			
PCH (5/9)			
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PCH Power Rail Table		
Voltage Rail	Voltage	50 Iccmax Current (A)
VCC	1.05V	1.29 A
VCCIO	1.05V	3.629 A
VCCADACL_5	1.5V	0.070 A
VCCADACL_3	3.3V	0.0133 A
VCCCLK	1.05V	0.306 A
VCCCLK_3	3.3V	0.055 A
VCCVRM	1.5V	0.179 A
VCC3_3	3.3V	0.133 A
VCCASW	1.05V	0.67 A
VCCSUSHDA	3.3V	0.01 A
VCCSPI	3.3V	0.022 A
VCCSUS3_3	3.3V	0.261 A
VCCDSW3_3	3.3V	0.015 A
V_PROC_IO	1.05V	0.004 A

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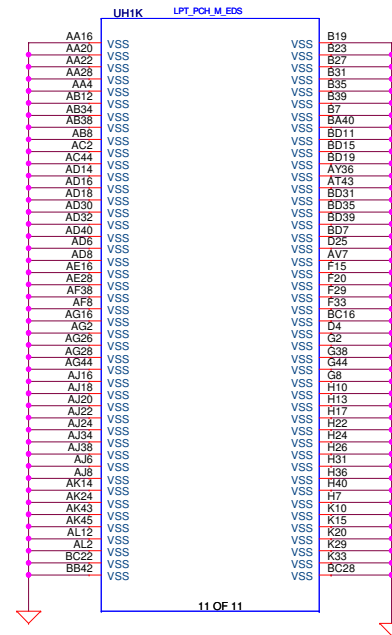
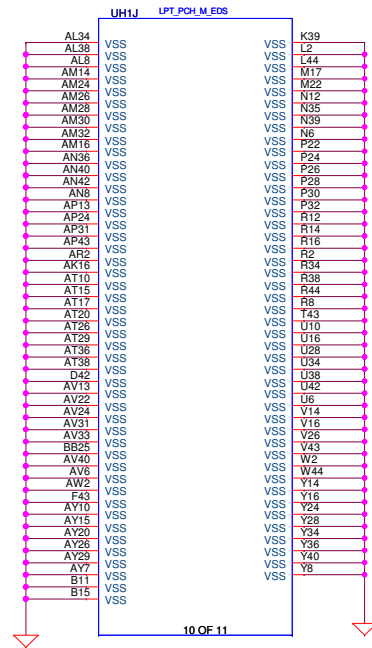
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Title **PCH (8/9)**

Size	Document Number	Rev
	LA-B541P	0.1

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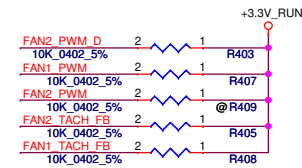
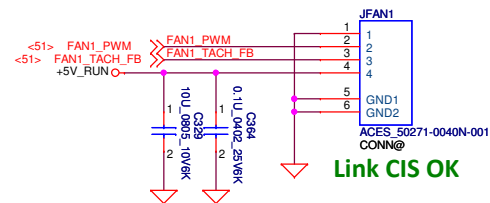


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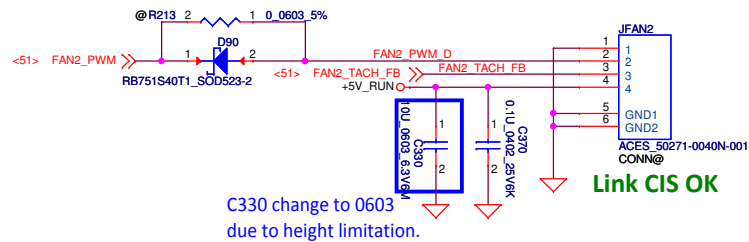


Difference with Diesel

CPU FAN



MXM FAN



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Title		FAN control	
Size	Document Number	LA-B541P	Rev 0.1
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Remove current sensor Monitor (SW solution)

Remove current sensor Monitor (HW solution)

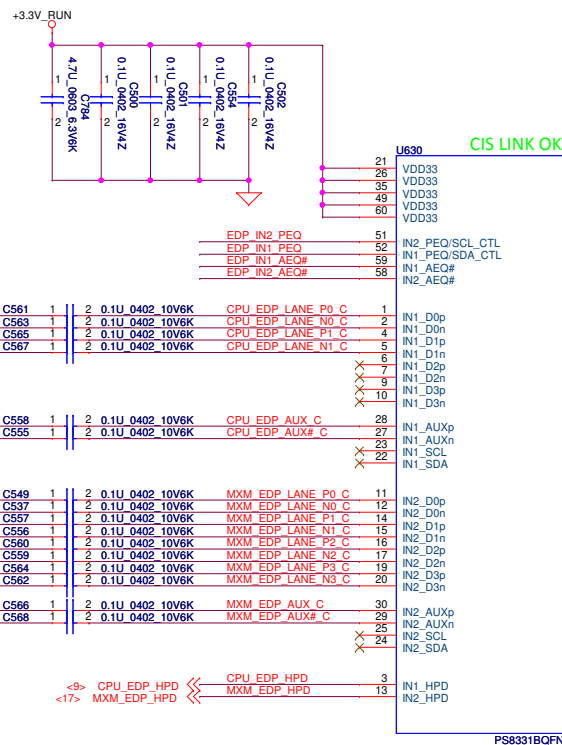
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Compal Electronics, Inc.			
Title			
Current Sensor			
Size		Document Number	
		LA-B541P	
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CPU

MXM



CIS LINK OK

eDP Conn

<9> CPU_EDP_HPD
<17> MXM_EDP_HPD

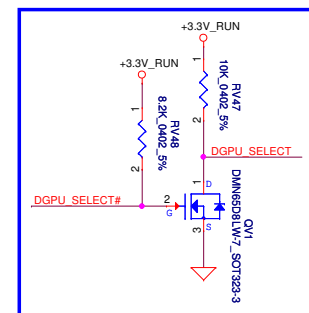
INy_PEQ = Programmable input equalization levels
L: default, LEQ, compensate channel loss up to 11.5dB @ HBR2
H: HEQ, compensate channel loss up to 14.5dB @ HBR2
M: LLEQ, compensate channel loss up to 8.5dB @ HBR2

INy_AEQ# = Automatic EQ disable
L: Automatic EQ enable (default)
H: Automatic EQ disable

PI0 = Auto test enable
L: Auto test disable & input offset cancellation enable (default)
H: Auto test enable & input offset cancellation enable
M: Auto test disable & input offset cancellation disable

PC0 = AUX interception disable
L: AUX interception enable, driver configuration is set by link training (default)
H: AUX interception disable, driver output with fixed 800mV and 0dB
M: AUX interception disable, driver output with fixed 400mV and 0dB

PC1 = Output swing adjustment
L: default
H: +20%
M: -16.7%



for DP Lane bus layout routing smoothly.

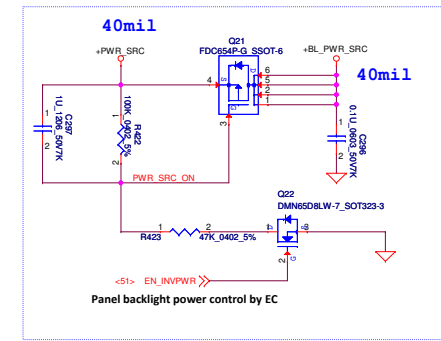
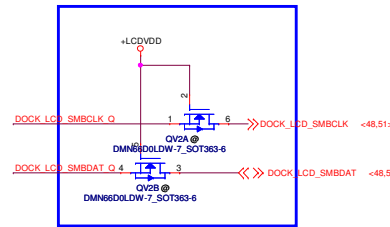
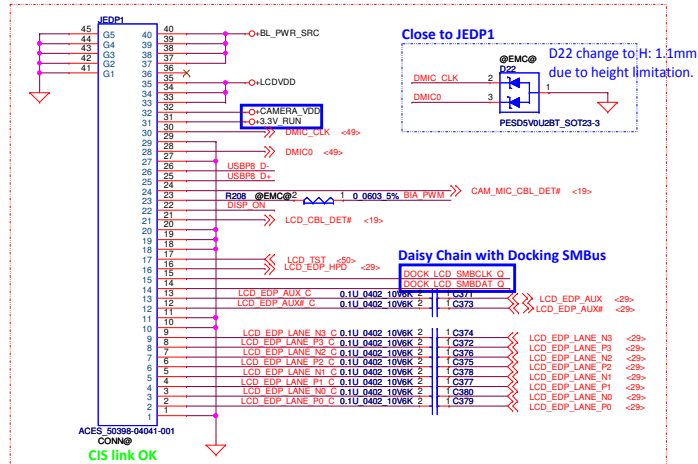
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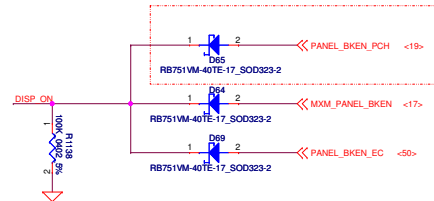
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eDP MUX (PS8331)		
Size	Document Number	Rev
	LA-B541P	0.1
Date	Monday, January 13, 2014	Sheet 29 of 67

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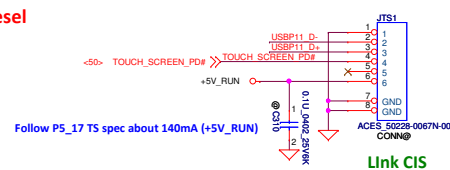
Difference with Diesel



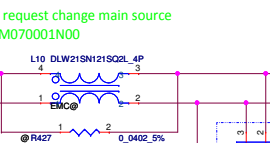
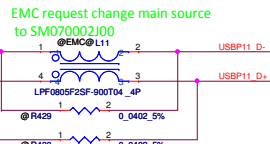
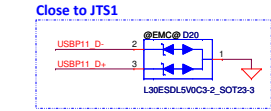
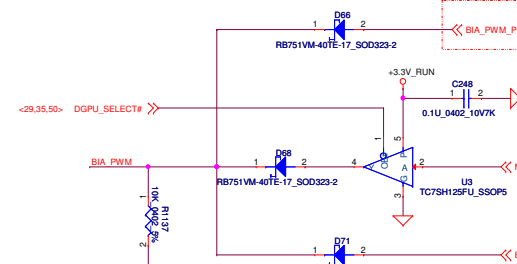
Difference with Diesel



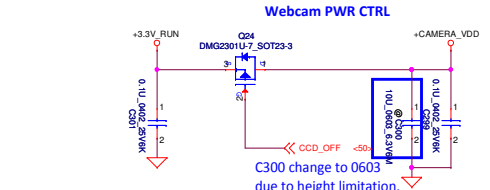
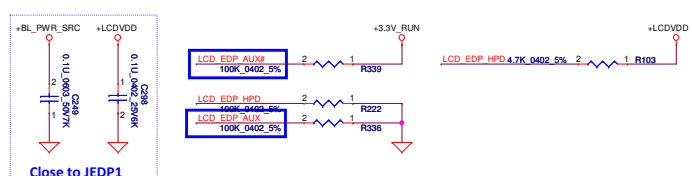
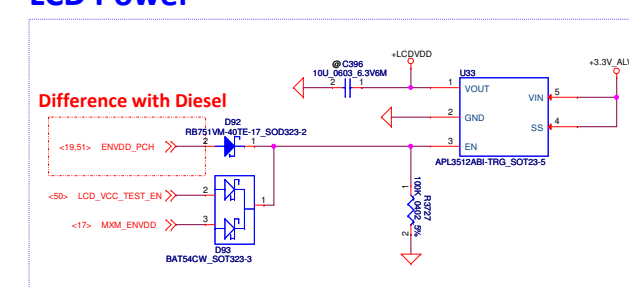
Touch Screen



Difference with Diesel



LCD Power



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eDP / CAM / TS

LA-B541P

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**Doc: Dell Graphics Behavior Specification Addendum for Nvidia Optimus
Implementatio for Delray.092**



Port switching control or priority configuration. Internal pull down ~150KΩ, 3.3V I/O

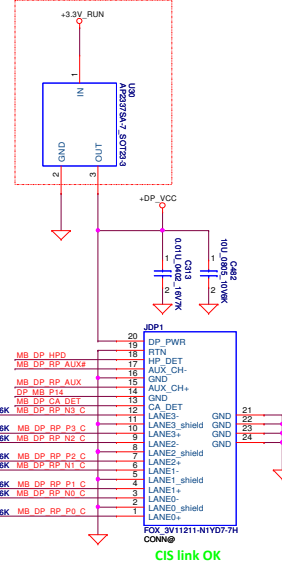
For Control Switching Mode (CFG0 = L):

- SW = L: Port1 is selected (default)
- SW = H: Port2 is selected

For Automatic Switching Mode (CFG0 = H): (By OUT1_HPD and OUT2_HPD)

- SW = L: Port1 has higher priority when both ports are plugged (default)
- SW = H: Port2 has higher priority when both ports are plugged

	H	L
CFG0	V	
SW	V	



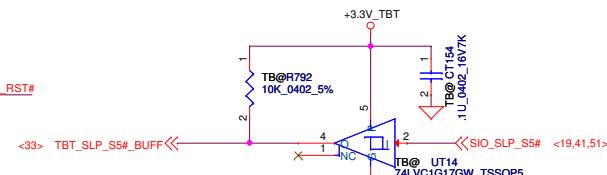
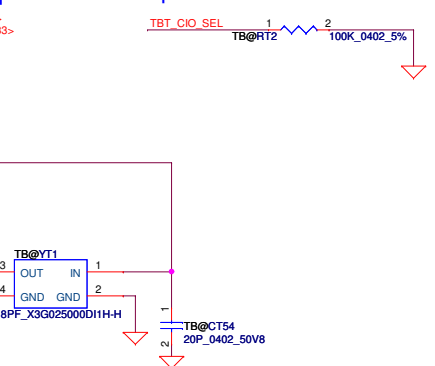
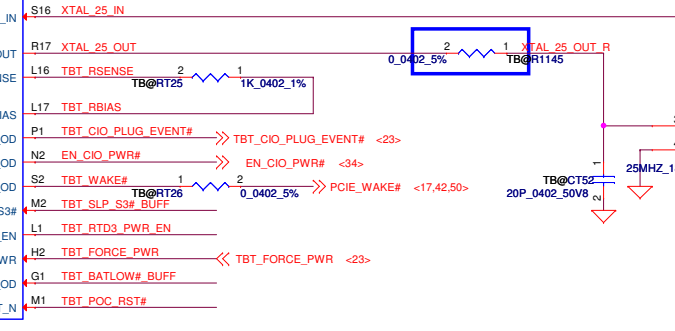
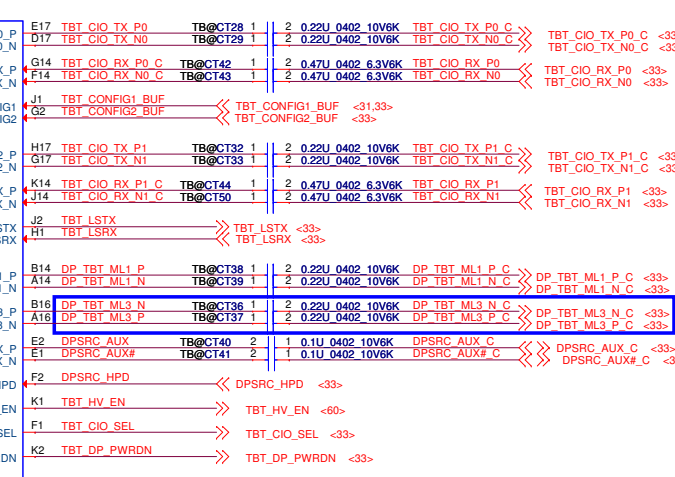
DP SW (PS8338) & DP Conn

Rev	0.1
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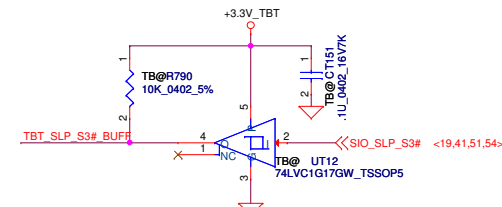
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EN_CIO_PWR#	TB@RT101	1	2	10K	0402	5%
TBT_DP_PWRDN	TB@RT102	1	2	10K	0402	5%
TBT_BATLOW#_BUFF	TB@RT103	1	2	10K	0402	5%



Remove BATT low CKT



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Compal Electronics, Inc.

BWD-TBT-LP(1/3) DP,PCIE

LA-B541P

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EN	HV_EN	OUT
0	0	OPEN
0	1	OPEN
1	0	V3P3
1	1	VHV

Current design (12V) = 1.06A
Current design (3V) = 1.18A

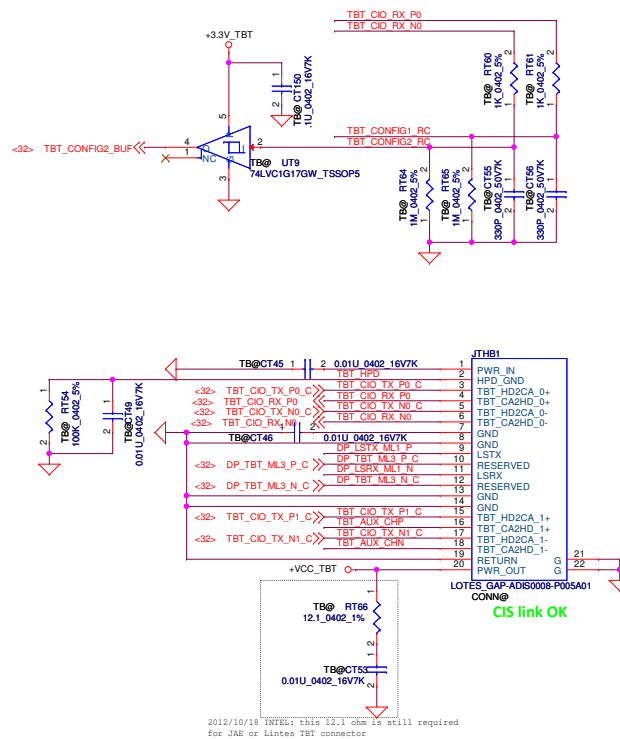
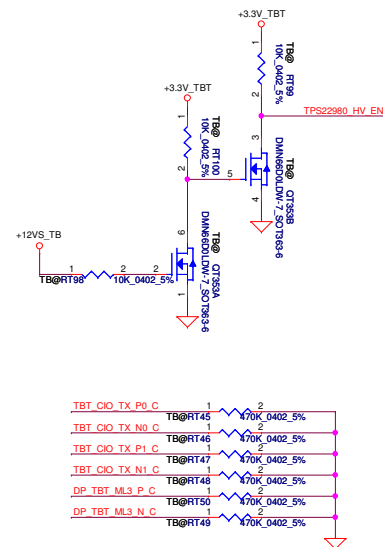
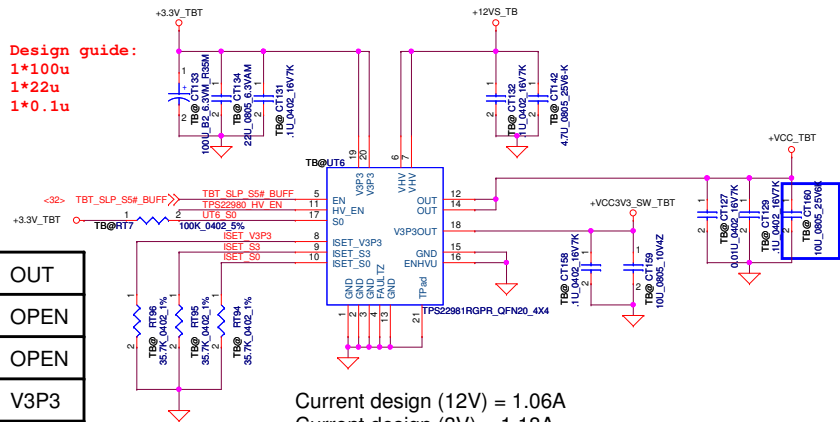


Table 3-1. Cable Type Indications

HPD	CONFIG1	CONFIG2	LSRX	Cable Type	Comments
0	X	0	X	None	Cable is disconnected
1	0	0	X	DisplayPort	
1	1	X	X	DVI/HDMI	Host/Source software determines DVI or HDMI
0	0	1	0	Thunderbolt	Thunderbolt Technology cable attached but no Thunderbolt Host/Device attached
0	0	1	1	Thunderbolt	Thunderbolt Technology operation

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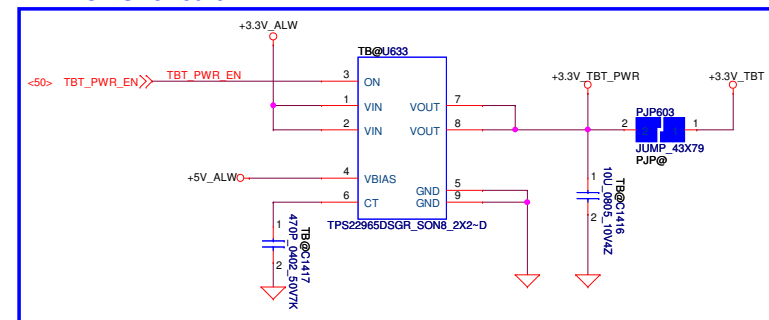
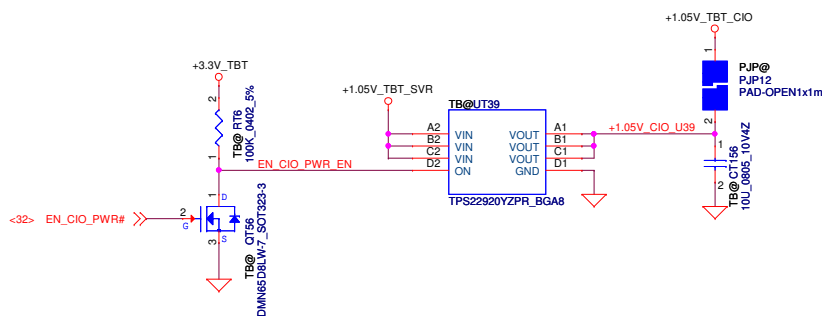
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BWD-TBT-LP(2/3) HOST,mDR

LA-B541P

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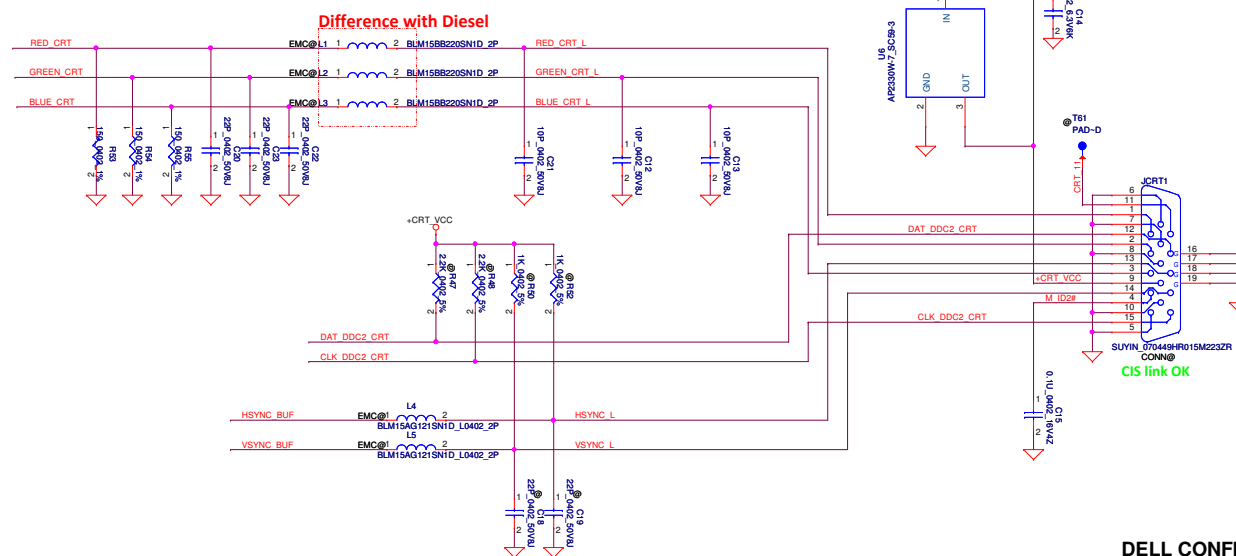
Sheet 34 of 67

Channel B (PCH)



Port 2 (Dock_CRT)

	CRT_SWITCH	DGPU_SELECT#	EDID_SELECT#	Output
DSC mode output to MB VGA	0	0	0	SDAA to SDA1 SCLA to SCL1 REDA to RED1 GRNA to GRN1 BLUA to BLU1 SHA to SH1 SVA to SV1
DSC mode output to docking VGA	1	0	0	SDAA to SDA2 SCLA to SCL2 REDA to RED2 GRNA to GRN2 BLUA to BLU2 SHA to SH2 SVA to SV2
UMA mode output to MB VGA	0	1	1	SDAB to SDA1 SCLB to SCL1 REDB to RED1 GRNB to GRN1 BLUB to BLU1 SHB to SH1 SVB to SV1
UMA mode output to docking VGA	1	1	1	SDAB to SDA2 SCLB to SCL2 REDB to RED2 GRNB to GRN2 BLUB to BLU2 SHB to SH2 SVB to SV2



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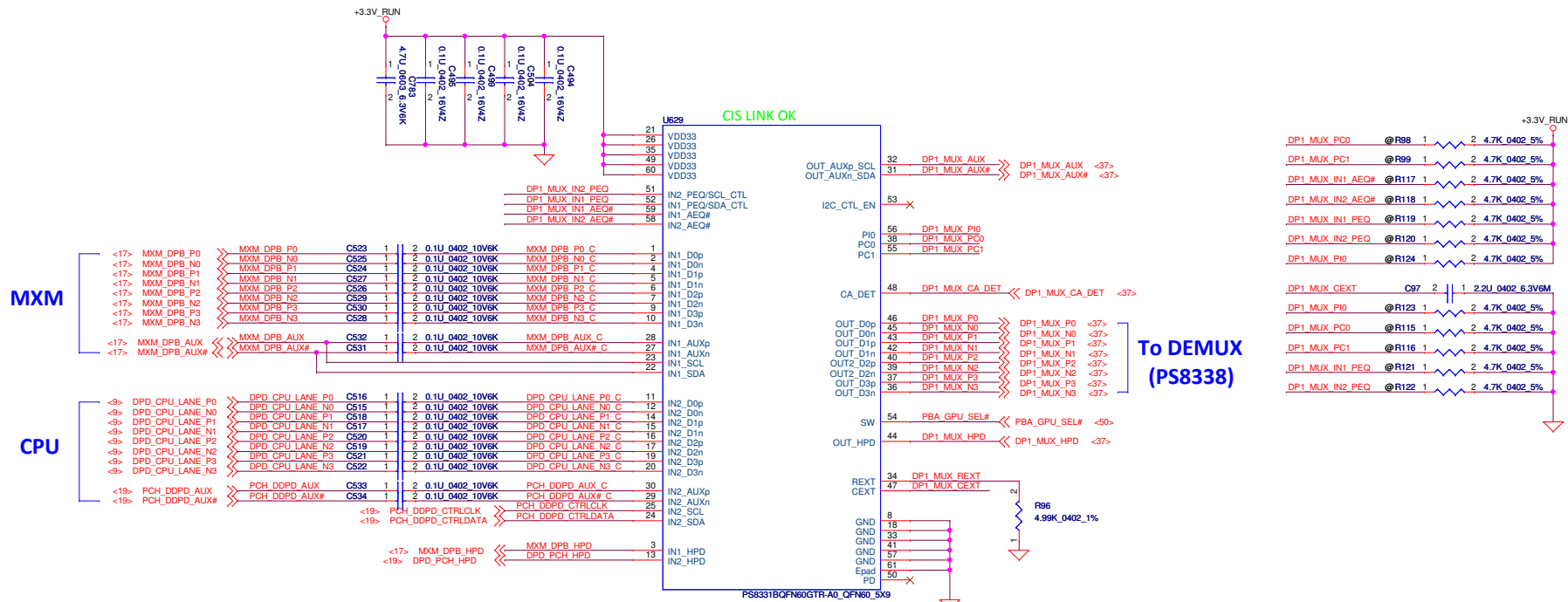
VGA CONN

Size	Document Number	LA-B541P
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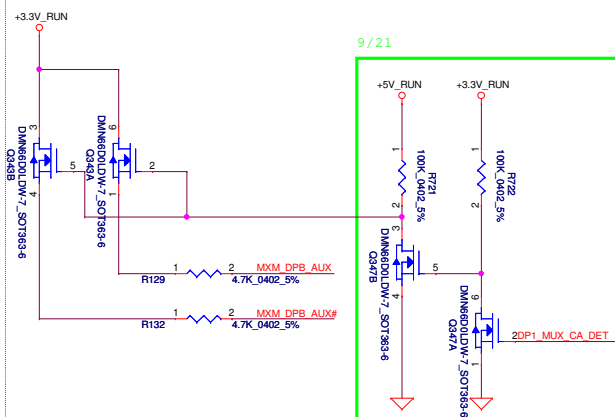
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DOCK DPD (PORT1) DDC-before PS8331



INy_PEQ = Programmable input equalization levels
 L: default, LEQ, compensate channel loss up to 11.5dB @ HBR2
 H: HEQ, compensate channel loss up to 14.5dB @ HBR2
 M: LLEQ, compensate channel loss up to 8.5dB @ HBR2

INy_AEQ# = Automatic EQ disable
 L: Automatic EQ enable (default)
 H: Automatic EQ disable

PI0 = Auto test enable
 L: Auto test disable & input offset cancellation enable (default)
 H: Auto test enable & input offset cancellation enable
 M: Auto test disable & input offset cancellation disable

PC0 = AUX interception disable
 L: AUX interception enable, driver configuration is set by link training (default)
 H: AUX interception disable, driver output with fixed 800mV and 0dB
 M: AUX interception disable, driver output with fixed 400mV and 0dB

PC1 = Output swing adjustment
 L: default
 H: +20%
 M: -16.7%

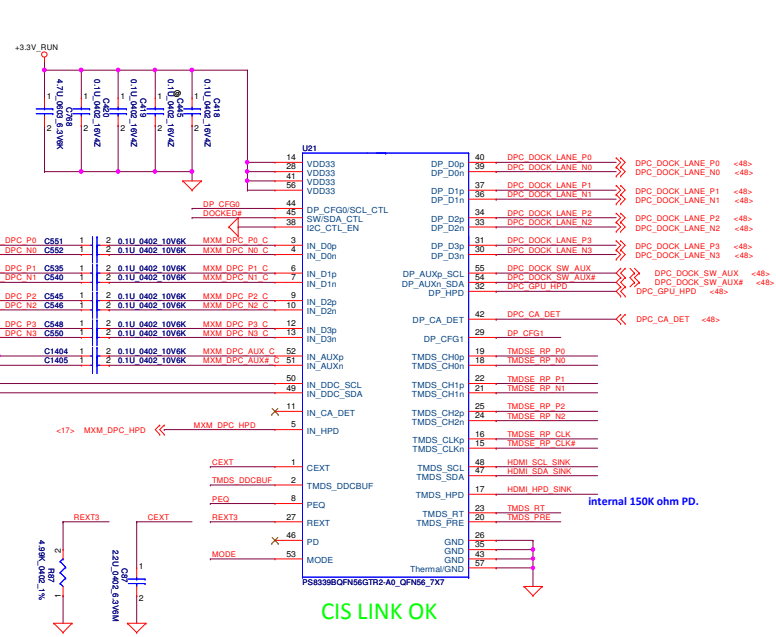
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Compal Electronics, Inc.

MXM/CPU MUX(PS8331)

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 Date: Monday, January 13, 2014 Sheet 36 of 87

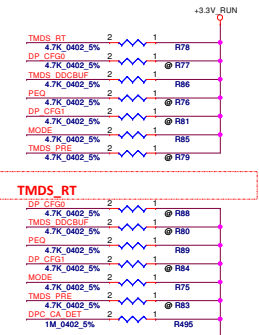
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Docking DP2

MB_HDMI

Difference with Diesel



MODE = L: Control Switching Mode, HDMI ID disable
= H: Automatic Switching Mode, HDMI ID disable
= M: Automatic Switching Mode, HDMI ID enable

TMSD_PRE = L: no pre-emphasis
= H: 1.5dB pre-emphasis
= M: 3.0dB pre-emphasis

TMSD_RT = L: Standard open drain driver
= H: Open drain driver with termination resistors

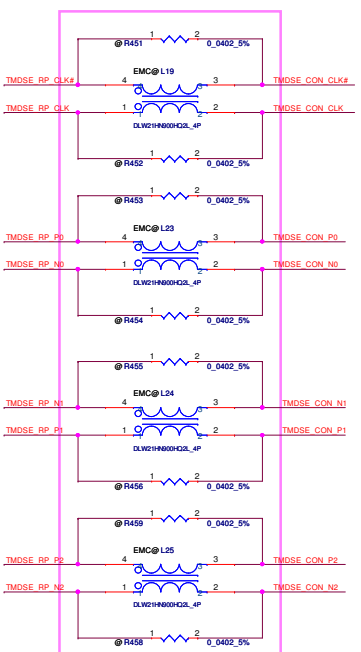
TMSD_DDCBUF = L: DDC pass through
= H: DDC active buffer
= M: DDC pass through with 40 kohm pull up resistor

PEQ = L: default, LEQ, compensate channel loss up to 12dB @ HBR2
= H: HEQ, compensate channel loss up to 15dB @ HBR2
= M: LLEQ, compensate channel loss up to 5dB @ HBR2

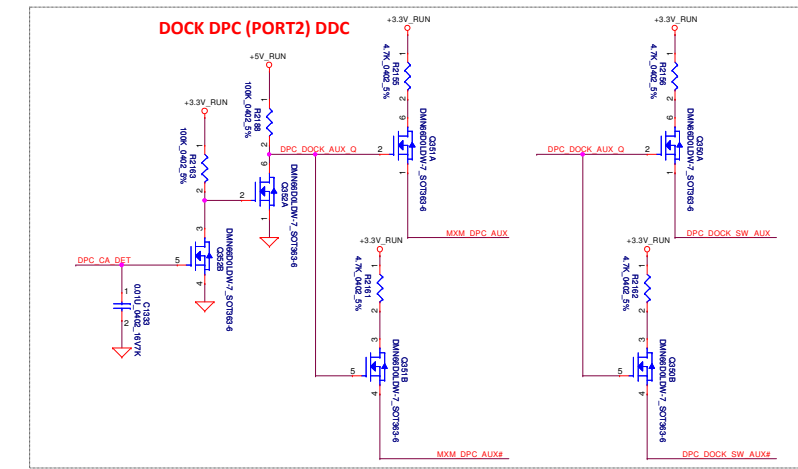
DP_CFG1 = L: default, auto test disable & input offset cancellation enable
= H: auto test enable & input offset cancellation enable
= M: auto test disable & input offset cancellation disable

DP_CFG0 = L: default, automatic EQ enable & AUX interception enable
= H: automatic EQ disable & AUX interception enable
= M: automatic EQ disable & AUX interception disable, no pre-emphasis, 800mVpp swing

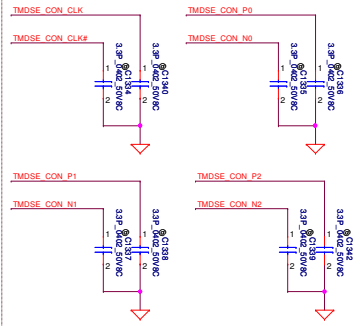
For Control Switching:
SW = L: DP output is selected
SW = H: TMSD output is selected



EMI request non-pop R451~R456, R458, R459 and pop L19, L23~25 and HDMI EA have verify it.

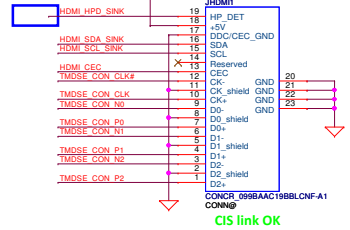


EMI request reserve C(3.3pF) for HDMI signals.



Part Number	Description
NO000000020M	HDMI W/Logs: NO000000020M

Remove 10K ohm

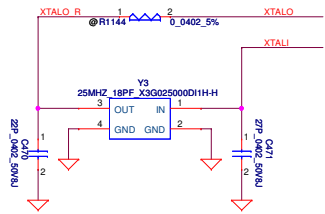
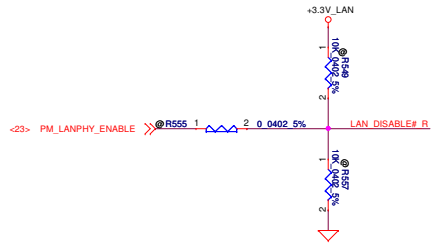
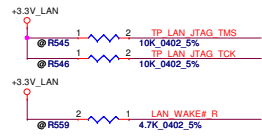


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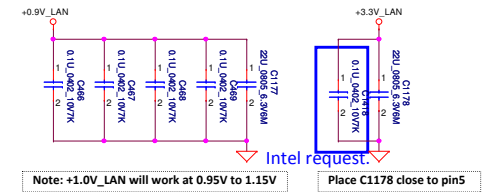
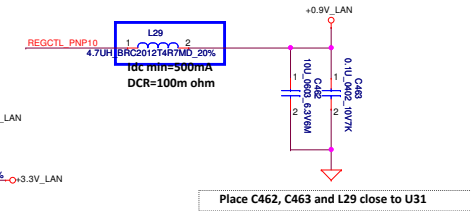
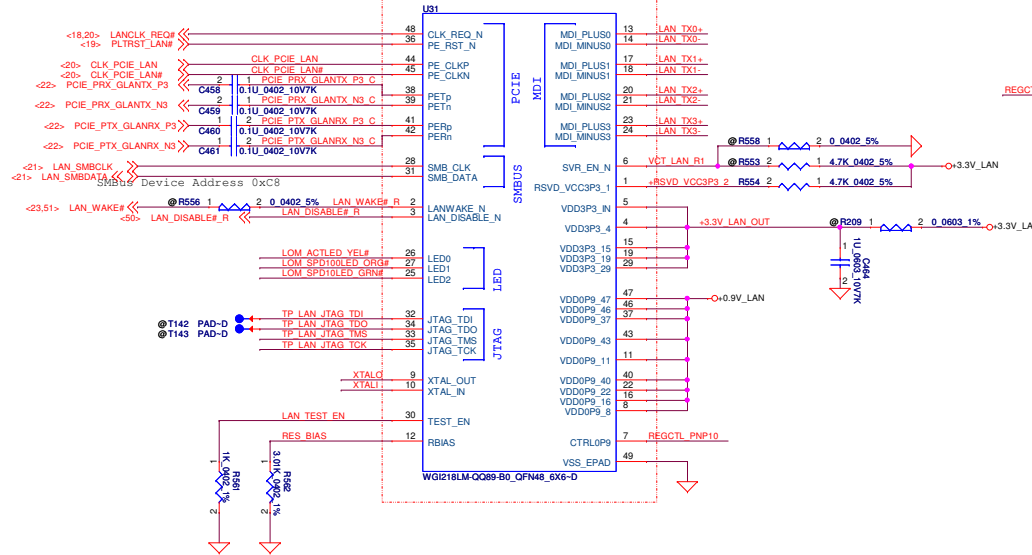


File	Document Number	Rev
HDMI CONN	LA-B541P	0.1
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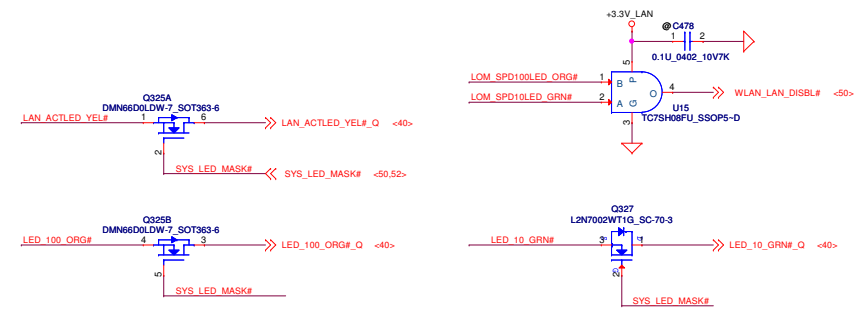
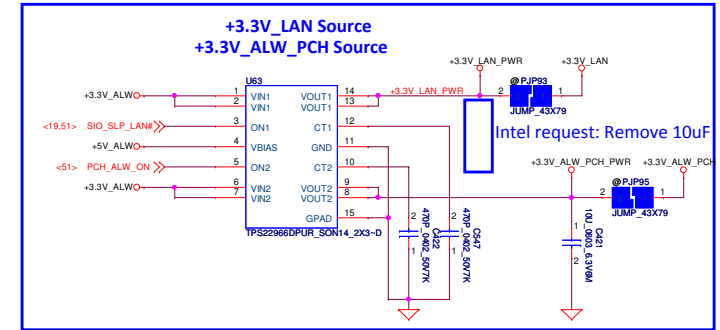
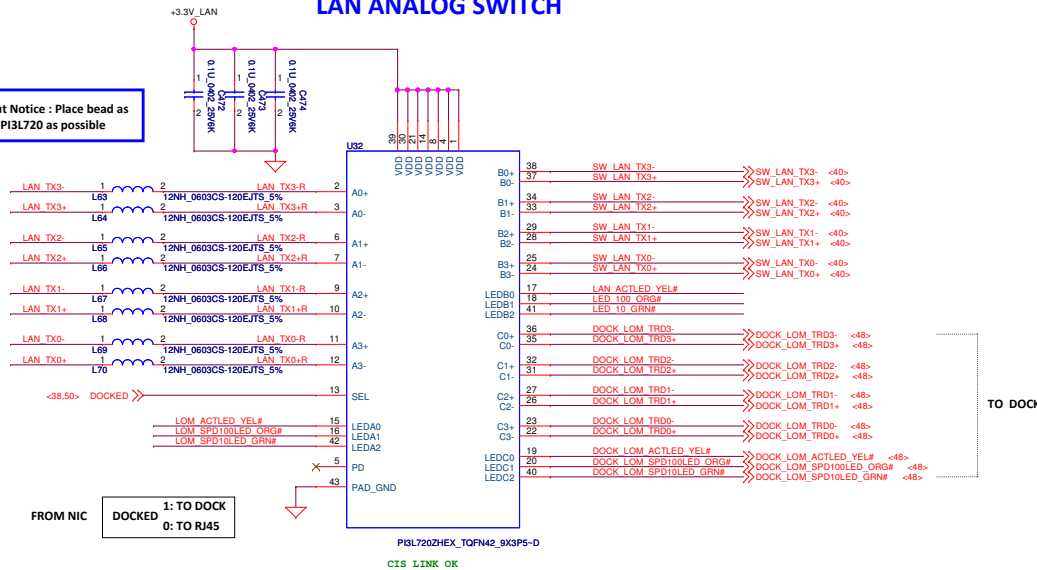


Difference with Diesel



LAN ANALOG SWITCH

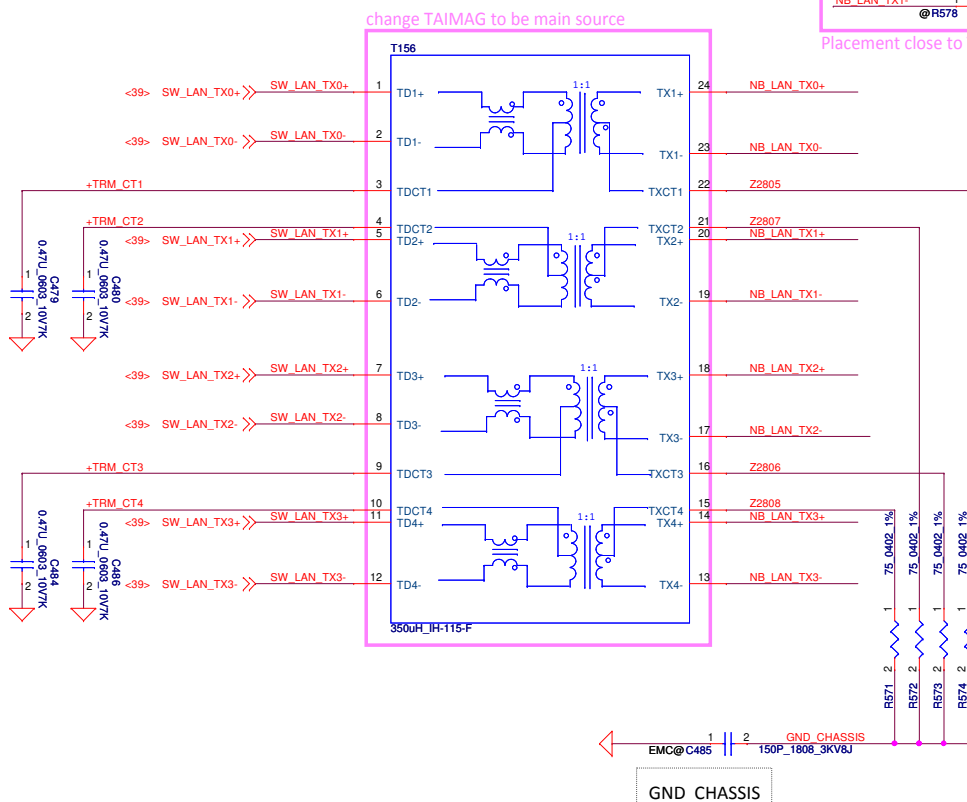
Layout Notice : Place bead as close P13L720 as possible



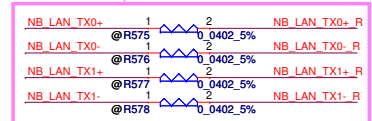
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LAN/LAN SW			
LA-B541P			
Date:	Monday, January 13, 2014	Sheet	39 of 67

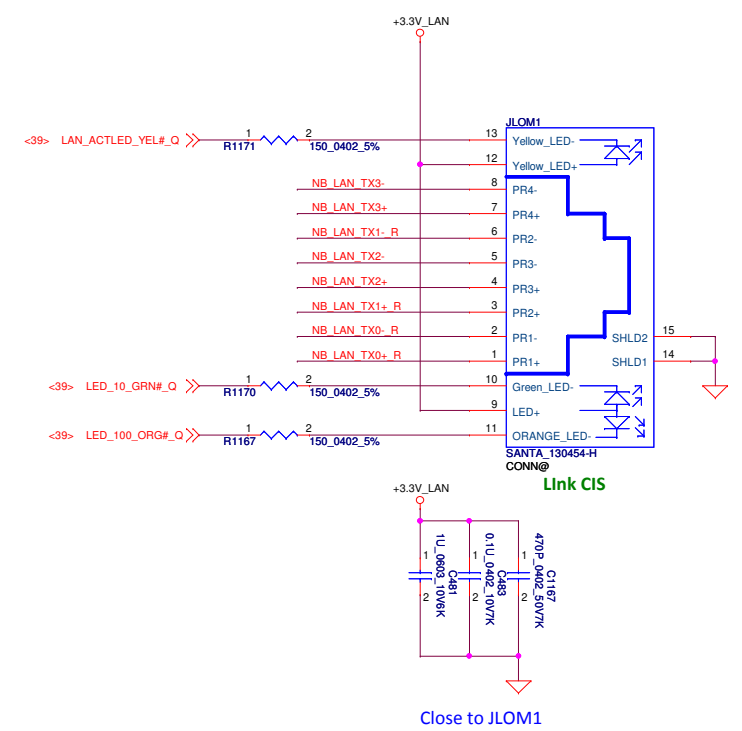
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For IEEE EA request



+3.3V_LAN/+3.3V_LAN_LOM:20mils

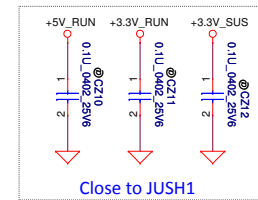
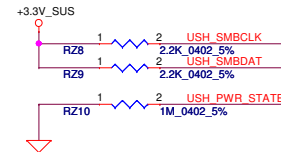
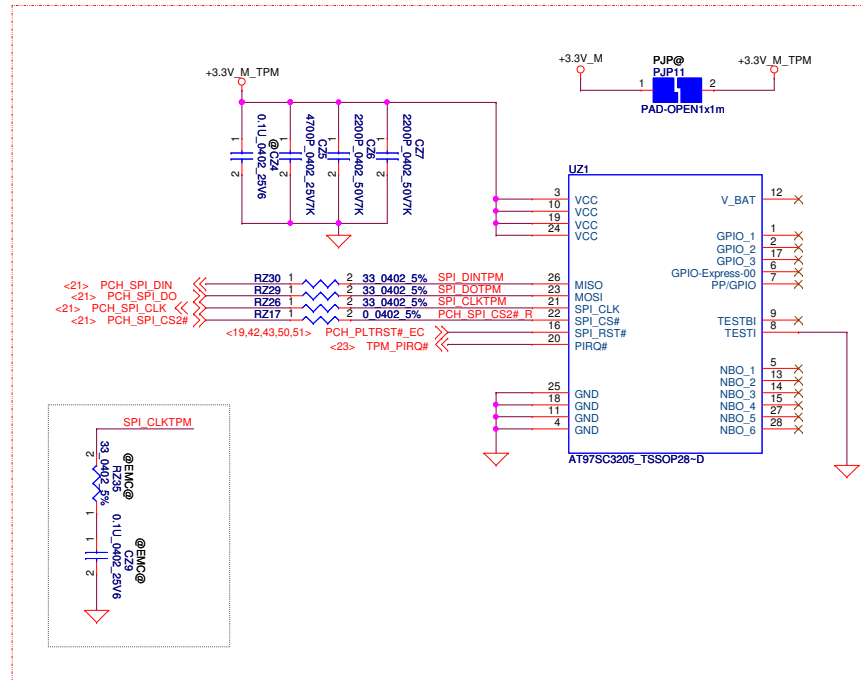


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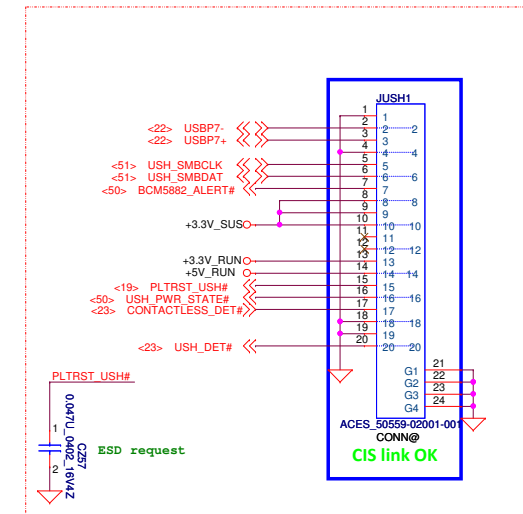
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Size	Document Number	Rev	
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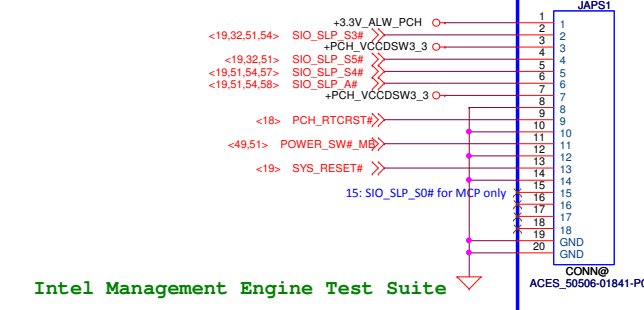
Difference with Diesel



Difference with Diesel



Check ME about wire to board PN



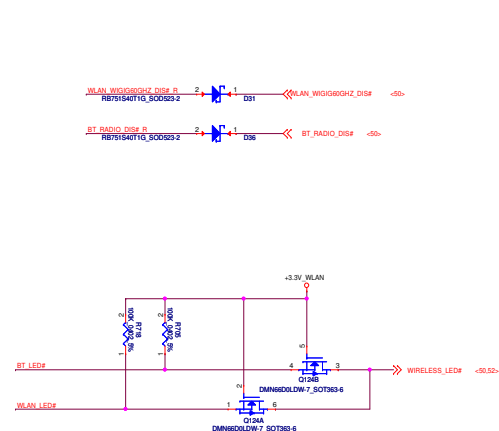
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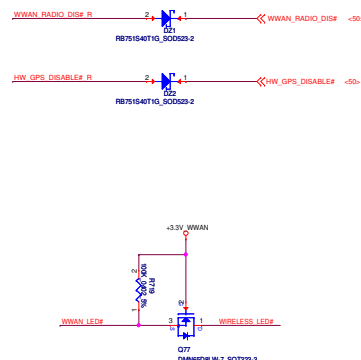


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Title			
TPM/USH			
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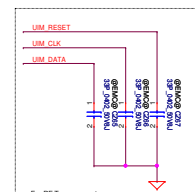
NGFF slot_1 Key A



NGFF slot_2 Key B



SIM Card Push-Push



STATE #	CONFIG_0	CONFIG_1	CONFIG_2	CONFIG_3	Module Type
0	0	0	0	0	SSD-SATA
8	1	0	0	0	WWAN
14	1	0	1	1	HCA-PCIE
15	1	1	1	1	NA

C615 footprint change to C_APXK2R5ARA331MF451

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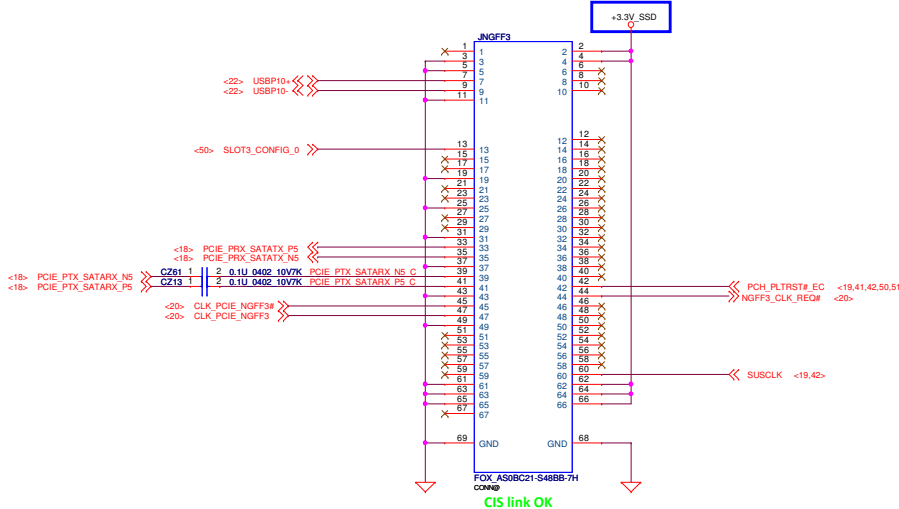
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M-2 Card-1/2

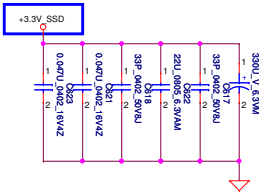
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R541P

SSD/HCA/Cache



STATE #	CONFIG_0	Module Type
0	0	SSD-SATA
14	1	HCA-PCIE



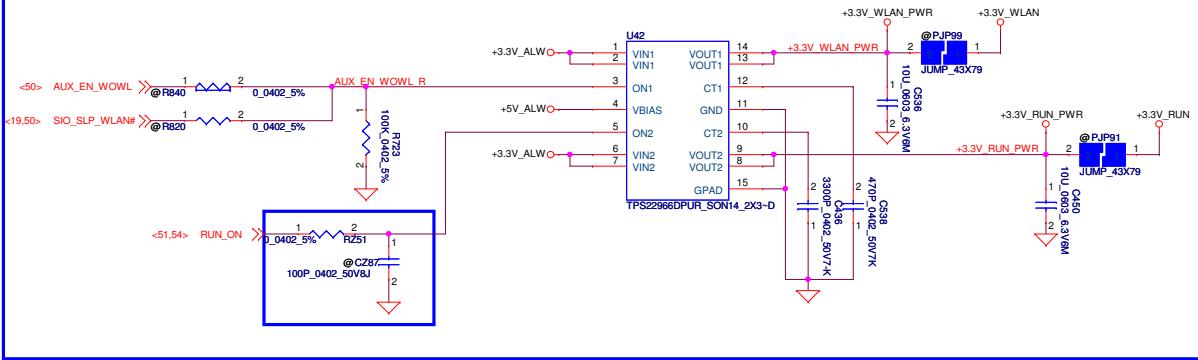
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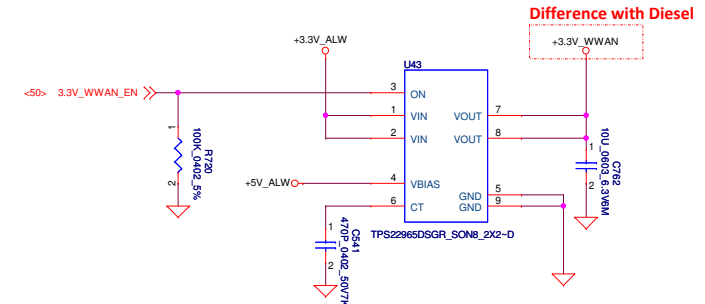
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Title			
M.2 Card-2/2			
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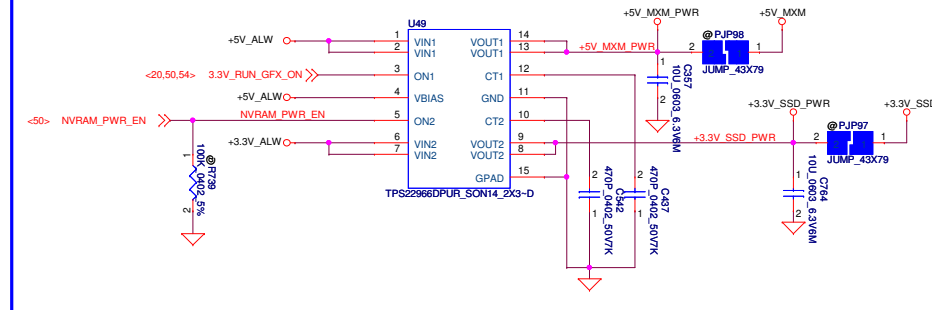
Power Control for M.2 slot 1. & +3.3V_RUN Source



Power Control for M.2 slot 2.



Power Control for M.2 slot 3. & +5V_MXM Source



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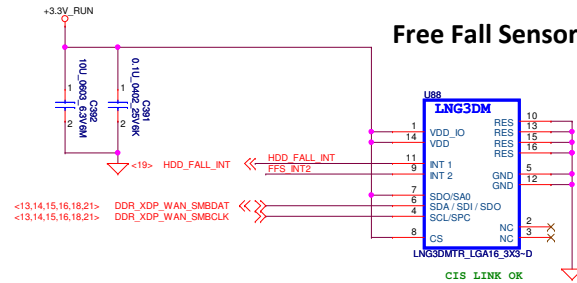
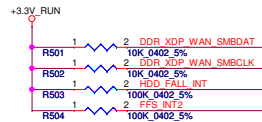
M.2 Card PWR

File
Size Document Number LA-B541P

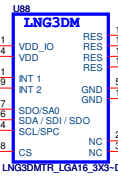
Rev
0.1

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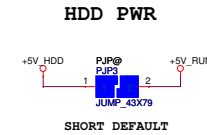
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Free Fall Sensor

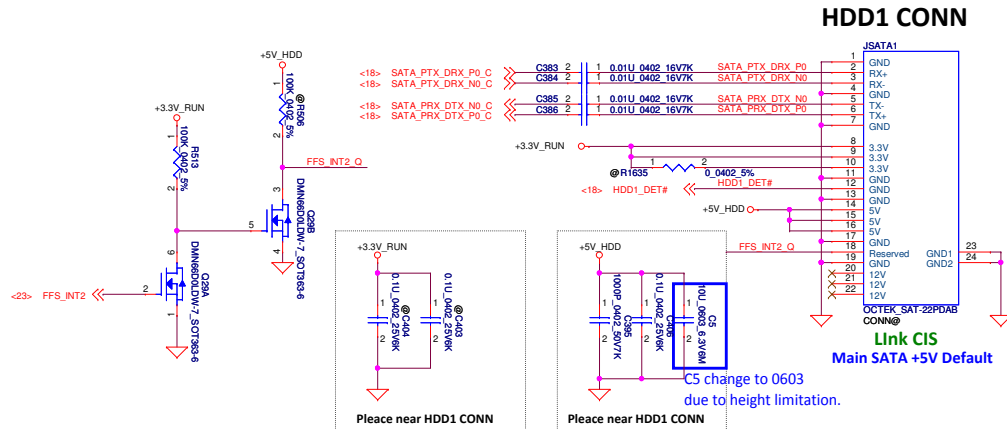


CIS LINK OK



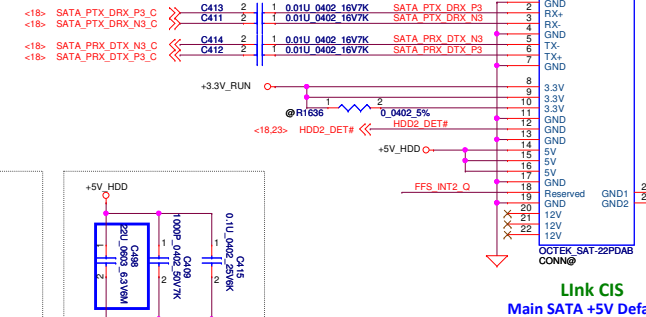
HDD PWR

SHORT DEFAULT



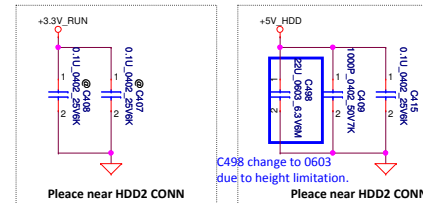
HDD1 CONN

Link CIS
Main SATA +5V Default



HDD2 CONN

Link CIS
Main SATA +5V Default



Place near HDD2 CONN

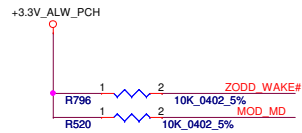
Place near HDD2 CONN

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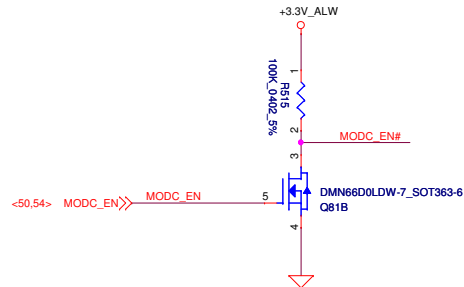
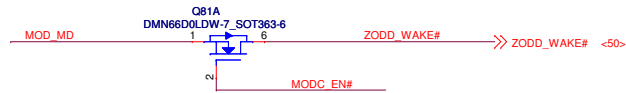
Compal Electronics, Inc.

HDD CONN		
File	Document Number	Rev
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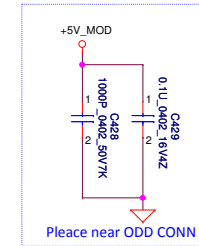


Combine +5VMOD with +5V_RUN

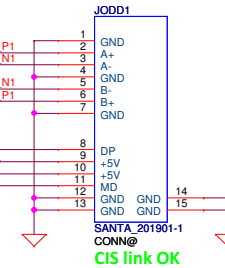


<18> SATA_ODD_PTX_DRX_P1_C C433 2 1 0.01U 0402 16V7K SATA_ODD_PTX_DRX_P1
<18> SATA_ODD_PTX_DRX_N1_C C434 2 1 0.01U 0402 16V7K SATA_ODD_PTX_DRX_N1
<18> SATA_ODD_PRX_DTX_N1_C C432 2 1 0.01U 0402 16V7K SATA_ODD_PRX_DTX_N1
<18> SATA_ODD_PRX_DTX_P1_C C430 2 1 0.01U 0402 16V7K SATA_ODD_PRX_DTX_P1

<50> DEVICE_DET# << +5V_MOD# MOD_MD



ODD CONN



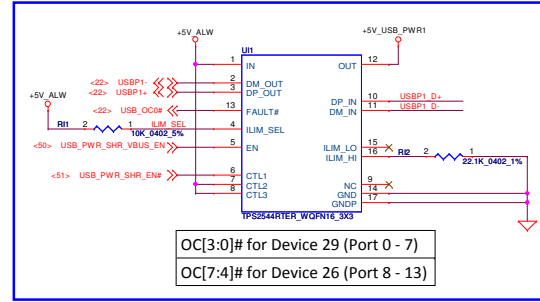
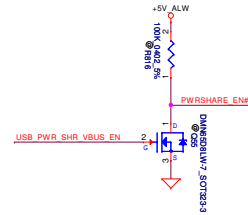
SANTA 201901-1
CONN@
CIS link OK

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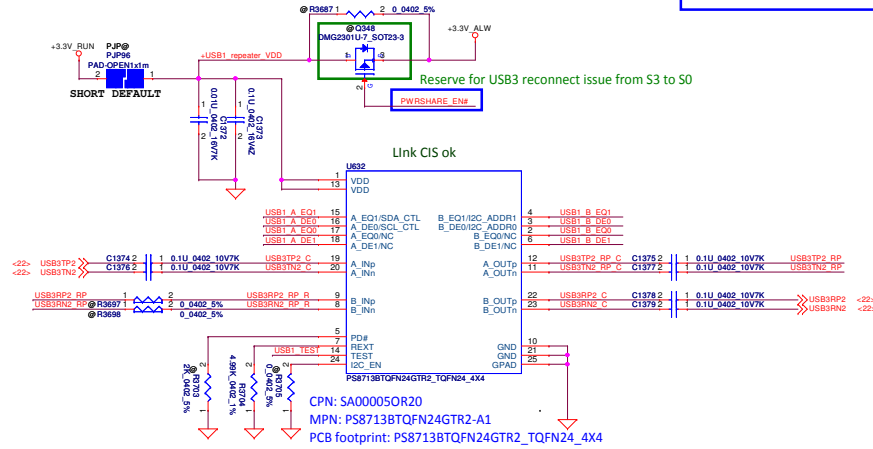
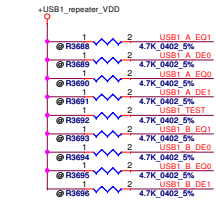
Compal Electronics, Inc.			
Title			
ODD CONN			
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Remove TPS2560



Remove SLG55594



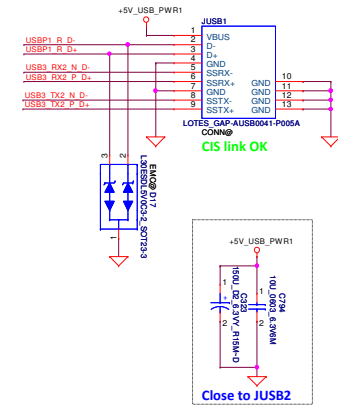
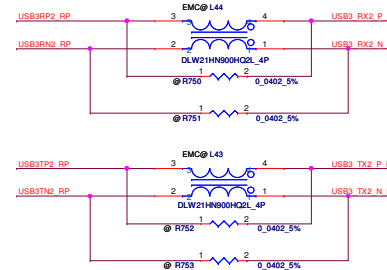
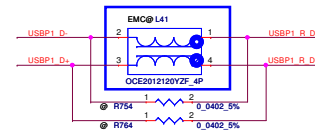
Difference with Diesel



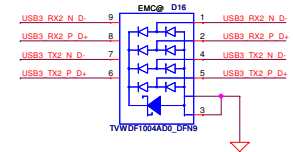
Parade_PS8713B

A_EQ0	A_EQ1	B_EQ0	B_EQ1	Recommended EQ
0	0	0	0	loss up to 9.5dB
0	1	0	1	loss up to 4.5dB
1	0	1	0	loss up to 13dB
1	1	1	1	loss up to 7.5dB

Both A_EQ0&B_EQ0 have internal pull-down 150k



For ESD request

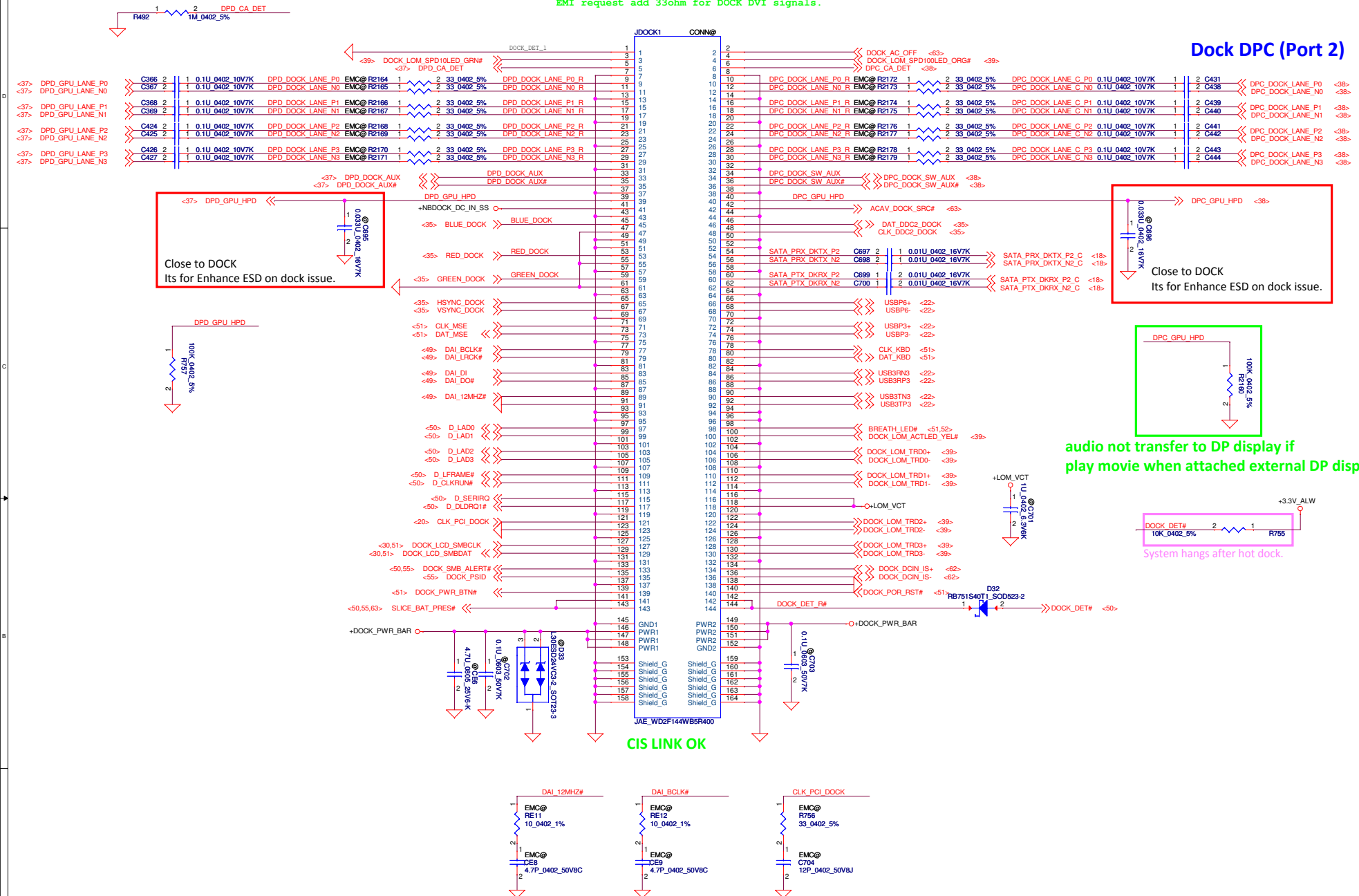


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Compal Electronics, Inc.			
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EMI request add 33ohm for DOCK DVI signals.

Dock DPC (Port 2)



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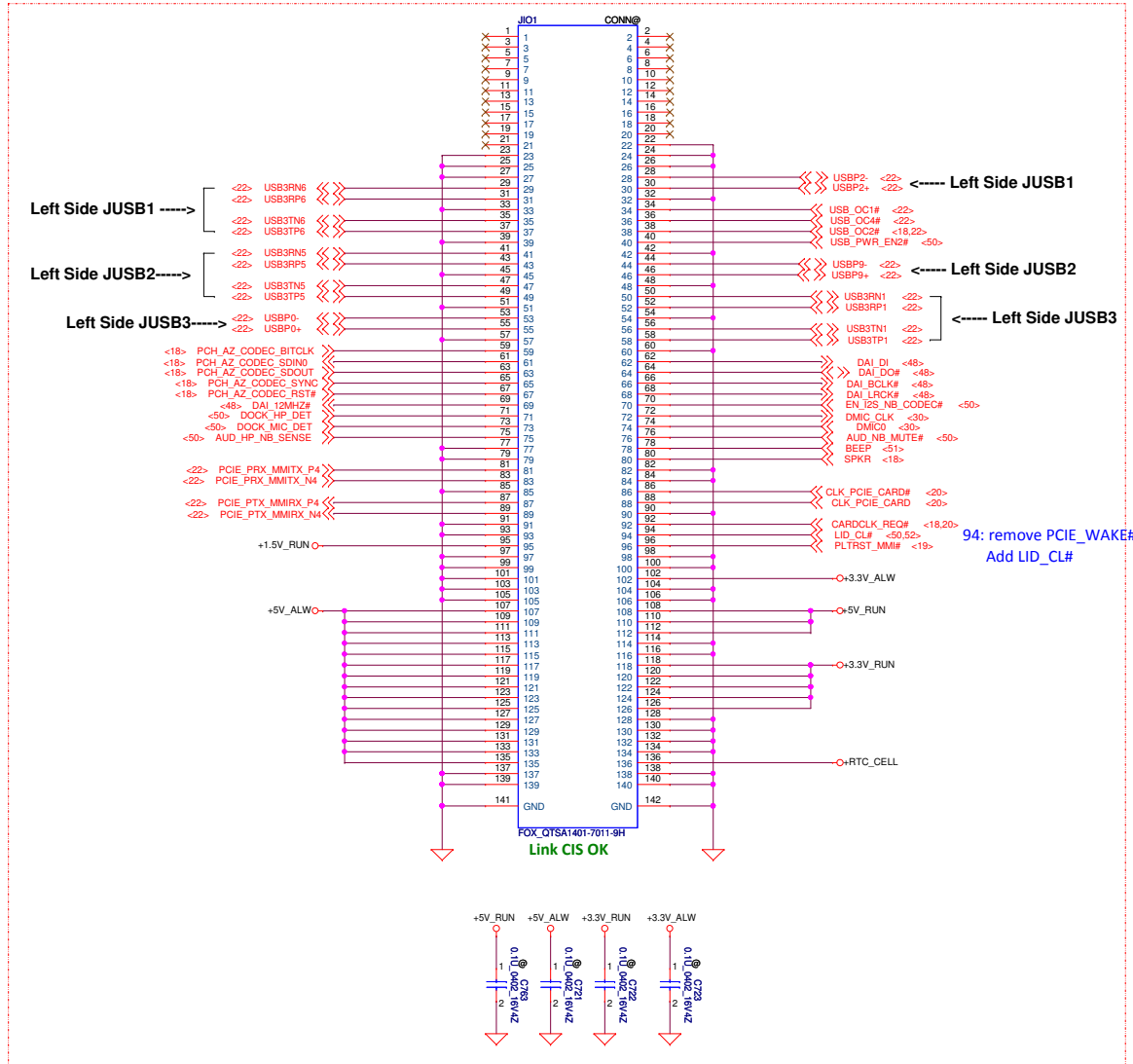
Docking

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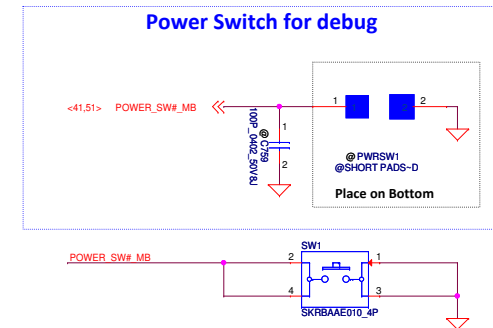
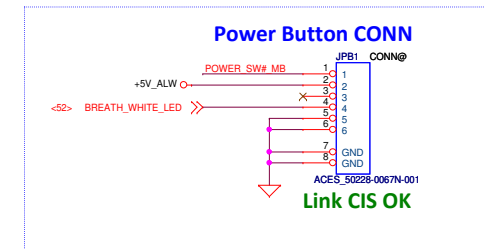
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Difference with Diesel



Difference with Diesel

WireLess ON/OFF CONN



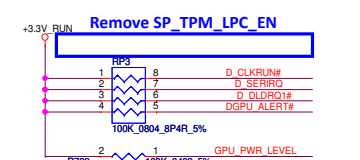
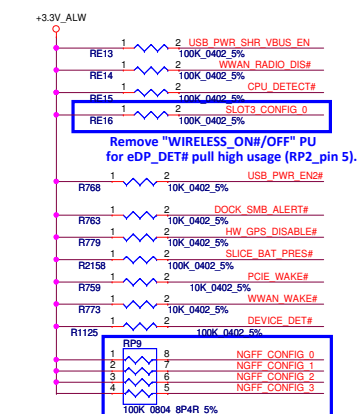
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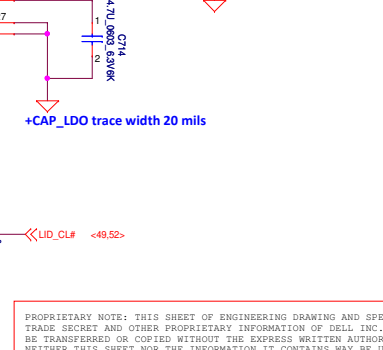
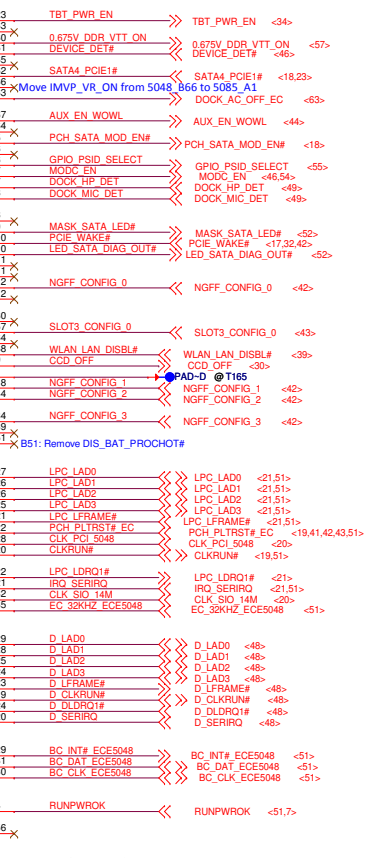
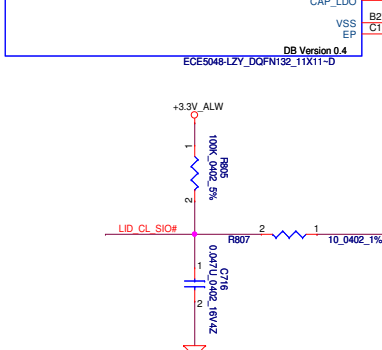
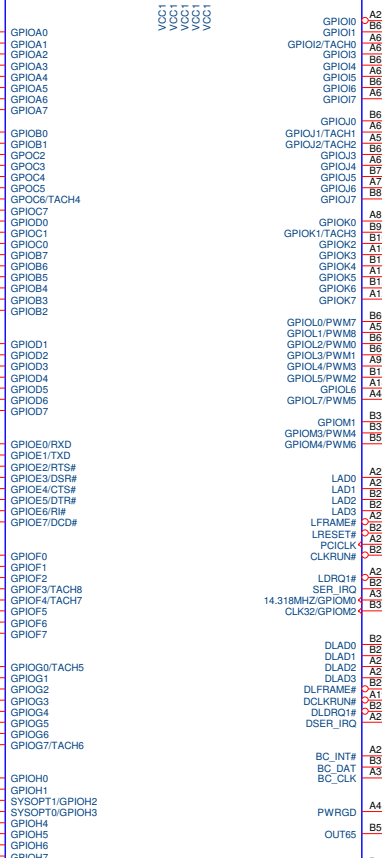
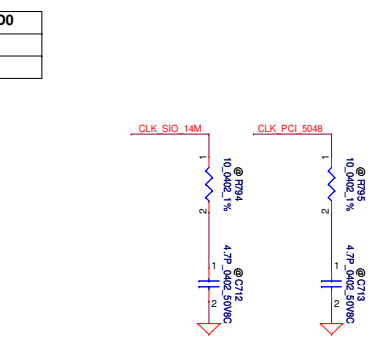
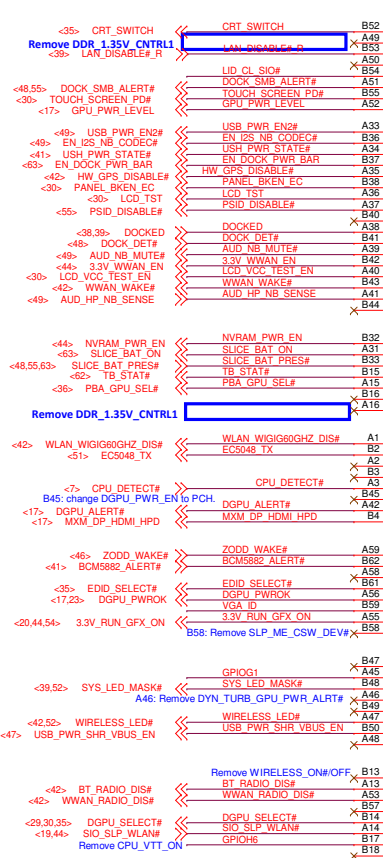


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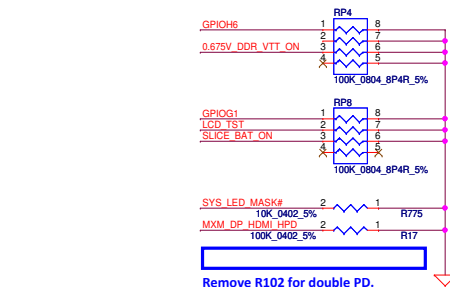
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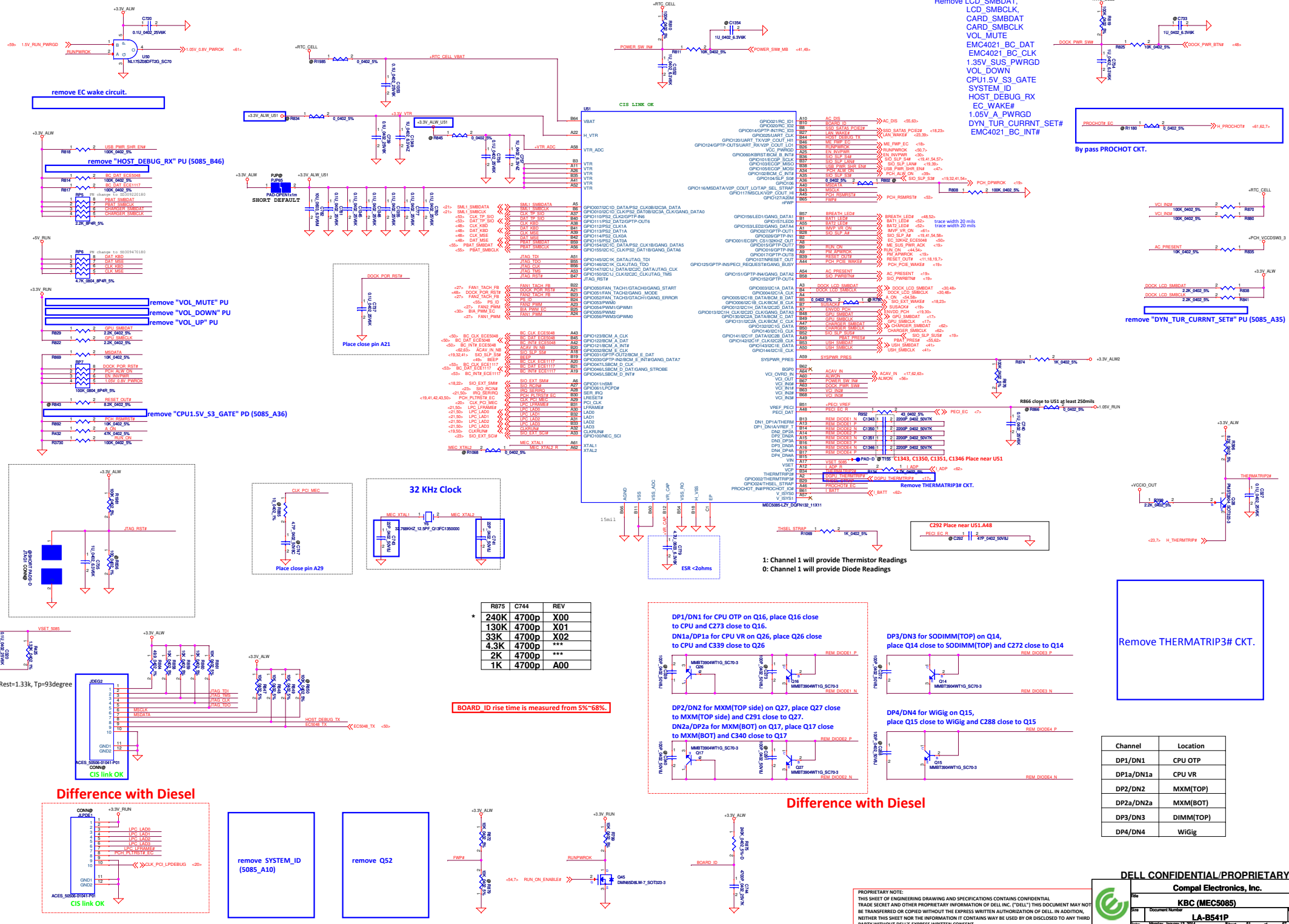


	VGA_ID0
Discrete	0
UMA	1



Remove SYS_PWROK,
SPI_WP#_SEL
WLAN_RADIO_DIS#
PROCHOT_GATE
MSATA_PCIE_PIN51
IMVP_PWRGD
SP_TPM_LPC_EN
MCARD_MISC_PWREN
TEMP_ALERT#
MASK_SATA_LED#
LPC_LDRQ0#
SLICE_BST_CHG_EN
DIS_BAT_PROCHOT#
DDR_1.35V_CNTRL0
DDR_1.35V_CNTRL1





HDD LED

Schematic diagram for the HDD LED circuit. The circuit includes a +3.3V_ALW supply connected to a 200K resistor (R902) and the base of a PNP transistor Q74B (DMN66D0LW-7, SOT23-6). The emitter of Q74B is connected to ground. The collector of Q74B is connected to the anode of a diode D59 (RB751S40T1, SOD523-2). The cathode of D59 is connected to the +5V_ALW supply. Another diode D52 (RB751S40T1, SOD523-2) has its anode connected to the +5V_ALW supply and its cathode connected to the base of a PNP transistor Q74A (DMN66D0LW-7, SOT23-6). The emitter of Q74A is connected to ground. The collector of Q74A is connected to the anode of a diode D58 (PDTA114EU, SC70-3, Q86). The cathode of D58 is connected to the +5V_ALW supply. A resistor R943 (150, 0402, 5%) is connected between the +5V_ALW supply and the cathode of D58. The signal <1B> SATA_ACT# is connected to the base of Q74B. The signal <50> MASK_SATA_LED# is connected to the emitter of Q74B. The signal <50> LED_SATA_DIAG_OUT# is connected to the base of Q74A. The signal SYS_LED_MASK# is connected to the emitter of Q74A.

WWAN/WLAN LED

Schematic diagram for the WWAN/WLAN LED circuit. The circuit includes a +3.3V_ALW supply connected to a 100K resistor (R937) and the base of a PNP transistor Q78 (DMN66D0LW-7, SOT23-3). The emitter of Q78 is connected to ground. The collector of Q78 is connected to the anode of a diode D57 (PDTA114EU, SC70-3, Q79). The cathode of D57 is connected to the +5V_ALW supply. A resistor R939 (1.2K, 0402, 1%) is connected between the +5V_ALW supply and the cathode of D57. The signal <42.50> WIRELESS_LED# is connected to the base of Q78. The signal SYS_LED_MASK# is connected to the emitter of Q78.

BREATH_LED TOP view.

<48,51> BREATH_LED#

Q359
DMM59CBLW 7. SOT23-3

1 2 3 4

R956 1 2 100,0402 5% BREATH_WHITE_LED BREATH_WHITE_LED <49>

MASK BASE LEDS#

1 2 BREATH_LED_O BREATH_LED_O

R955 1 2 220,0402 5%

BREATH_LED side view.

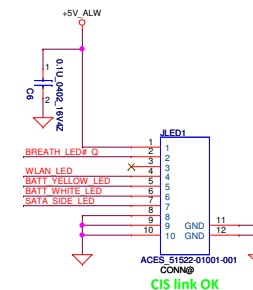
-51> BAT2_LED# >> BAT2_LED# 1 R130 2 BAT1 WHITE LED 47%_0402_1%

-51> BAT1_LED# >> BAT1_LED# 1 R131 2 BAT1 YELLOW LED 150_0402_1%

The schematic diagram shows the following components and connections:

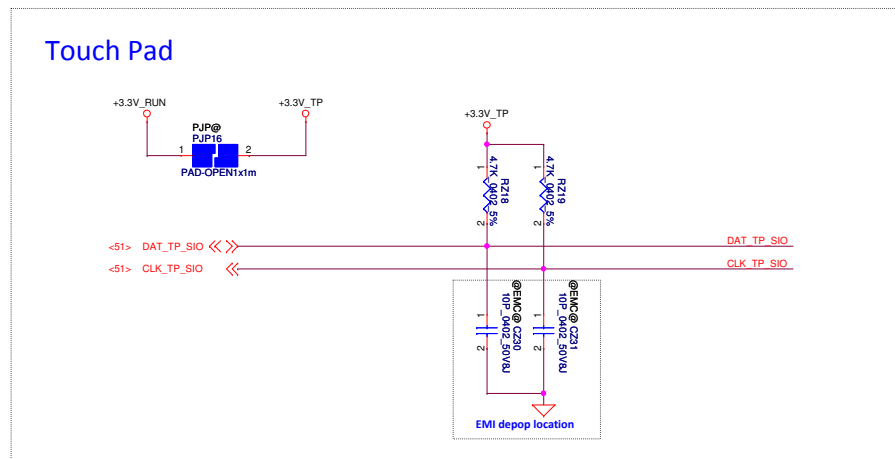
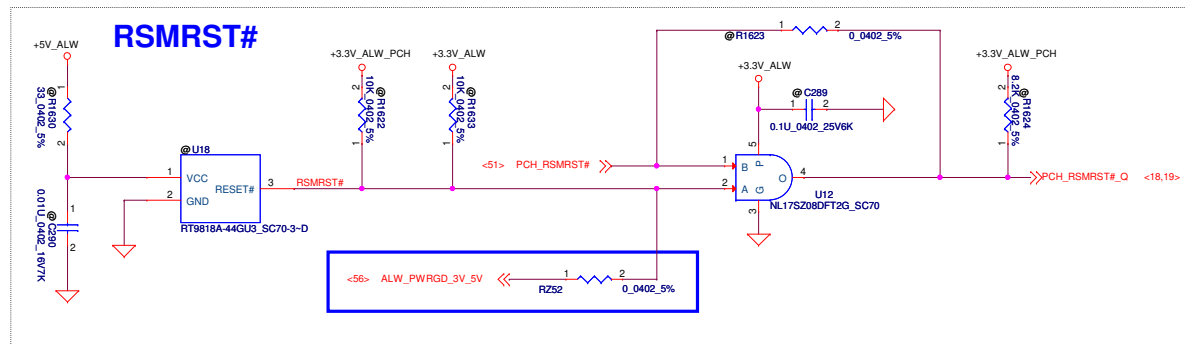
- Power Supply:** +3.3V ALW and +5V ALW.
- Resistors:**
 - R837: 100k 0402 5% (connected to +3.3V ALW).
 - R838: 1.7k 0402 F (connected to +5V ALW).
- Diodes:**
 - Q78: DMN56DLW-7, SOT23-3 (3V Zener diode).
 - Q79: PDA114EU_SC70-3 (LED).
- Control Signals:**
 - <25.50> WIRELESS_LED# (input signal).
 - SYS_LED_MASK# (input signal).

<i>LED Circuit Control Table</i>		
	SYS_LED_MASK#	LID_CL#
Mask All LEDs (Sniffer Function)	0	X
Mask Base MB LEDs (Lid Closed)	1	0
Do not Mask LEDs (Lid Opened)	1	1

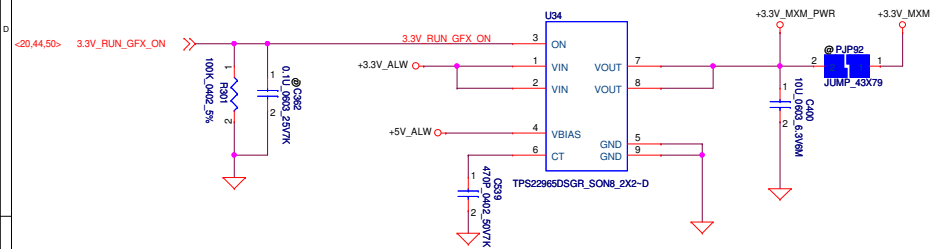


Title			
LED / Screw hole			
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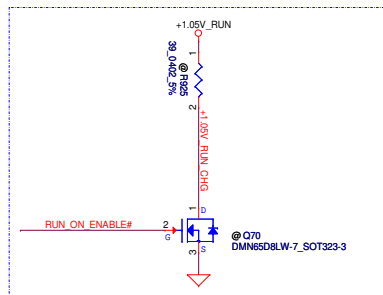
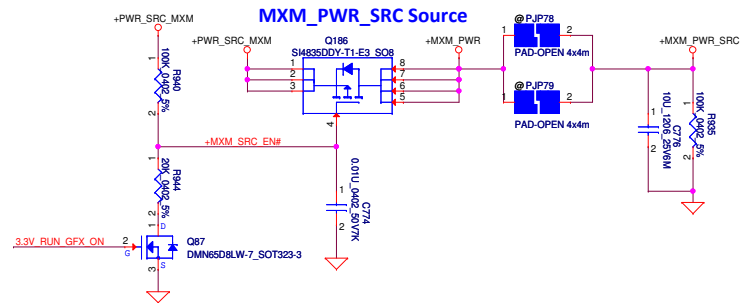
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+3.3V_ALW to +3.3V_MXM

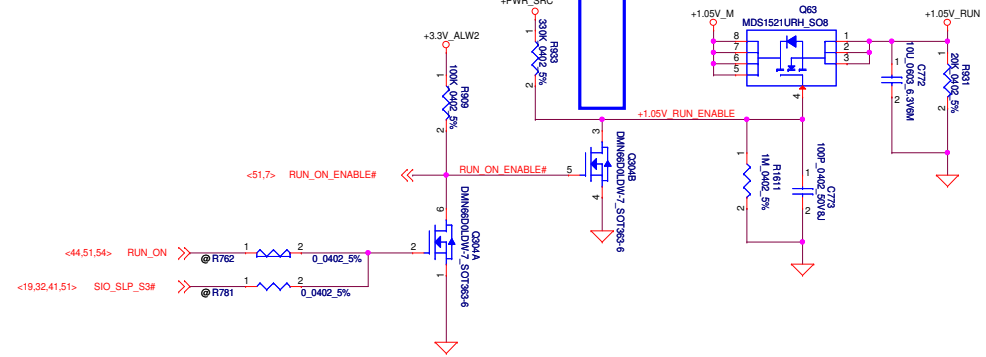


Combine +3.3V_SSD and +5V_MXM into M.2 card power control page

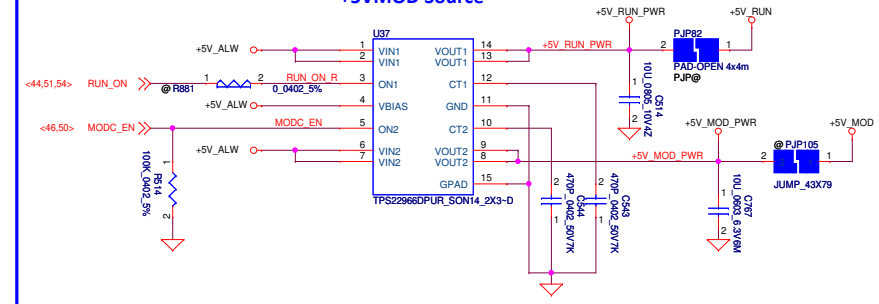


Remove +PWR_SRC_S PU

+1.05V_RUN Source



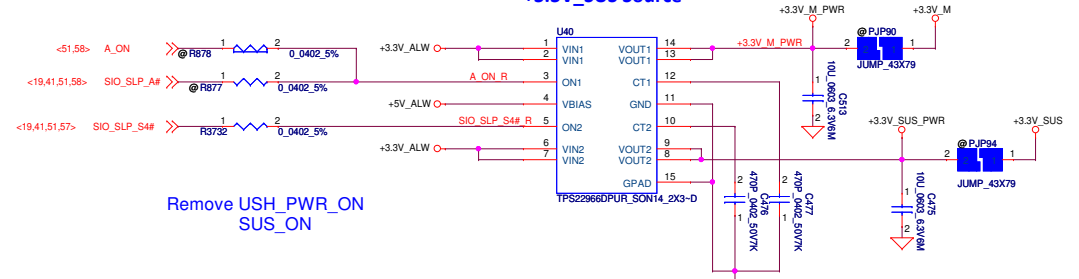
+5V_RUN Source +5VMOD Source



Combine +3.3V_WLAN and +3.3V_RUN into M.2 card power control page.

Combine +3.3V_LAN and +3.3V_ALW_PCH into LAN page

+3.3V_M Source +3.3V_SUS Source



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Power Control

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EMI Part (47.1)

+PWR_SRC

EMC@ PL1
FBC-78-302585-L-T

ESD Diodes

ESD (47.2)

EMI Part (47.1)

EMI Part (47.1)

Primary Battery Connector

CONN@

SUVIN_200045GR009M28Q2R

100_0804_8P4R_5%

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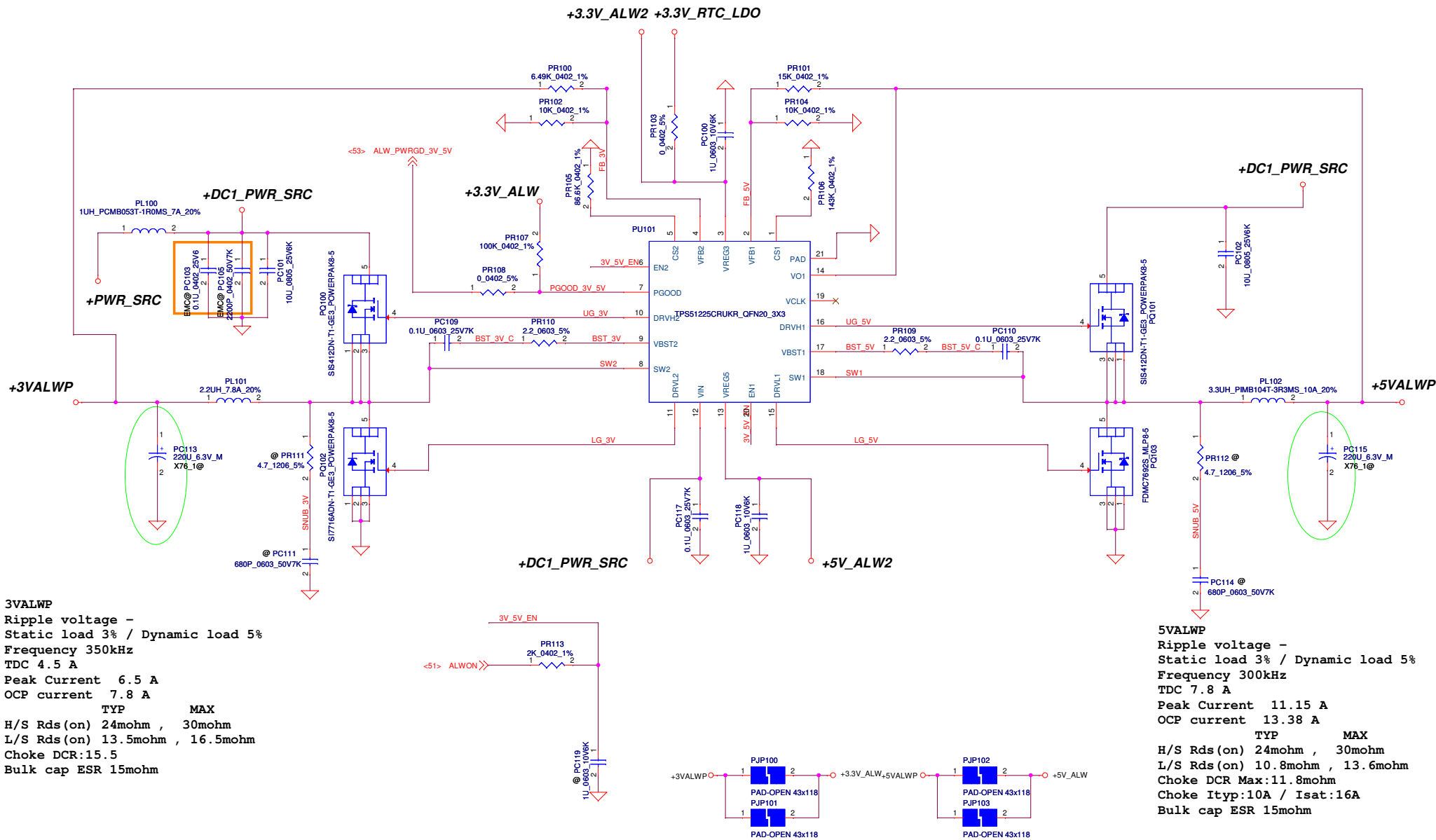
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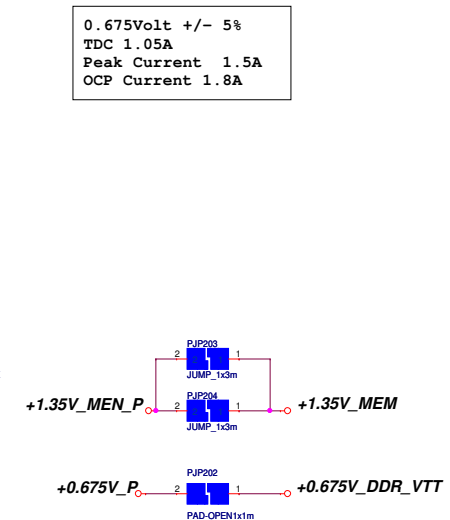
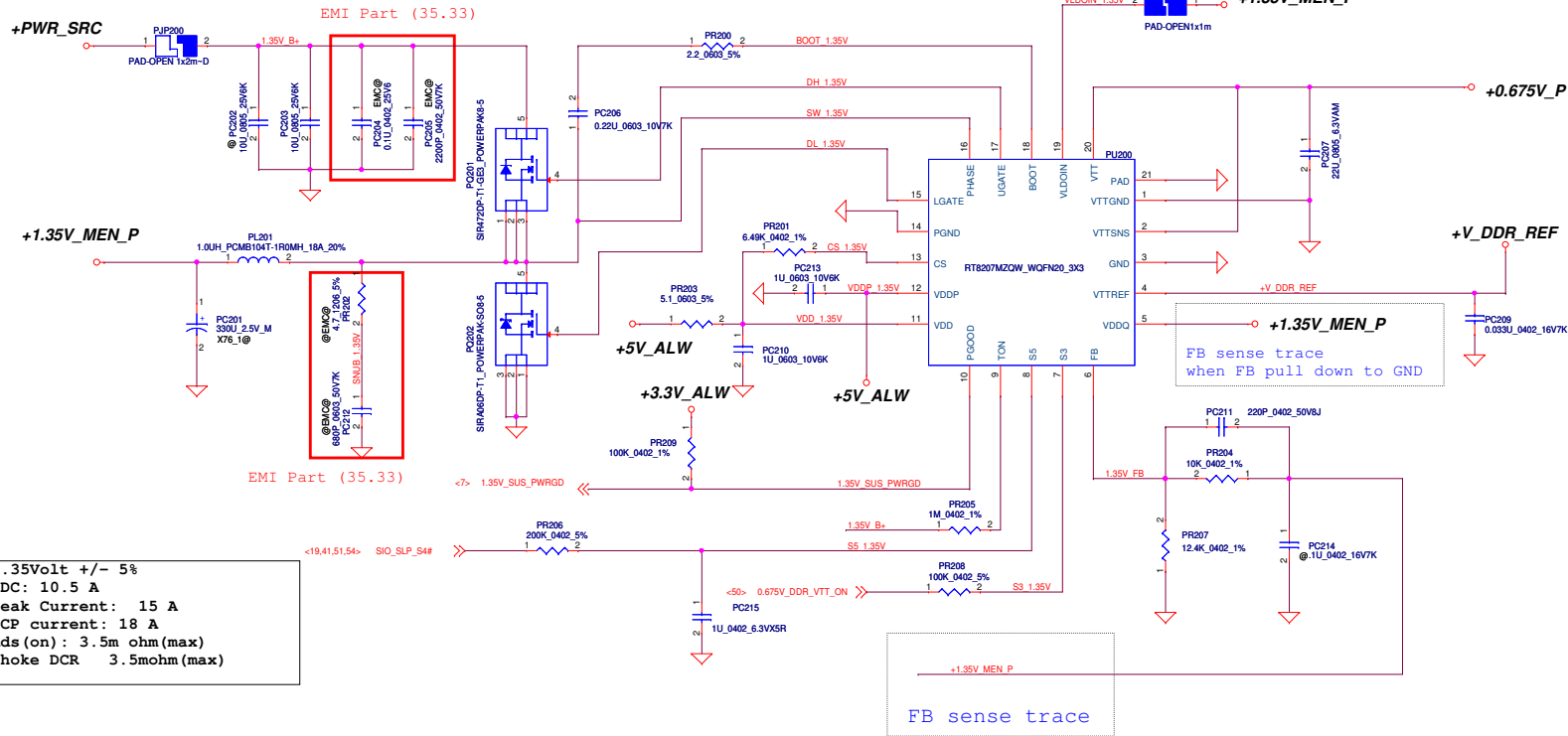
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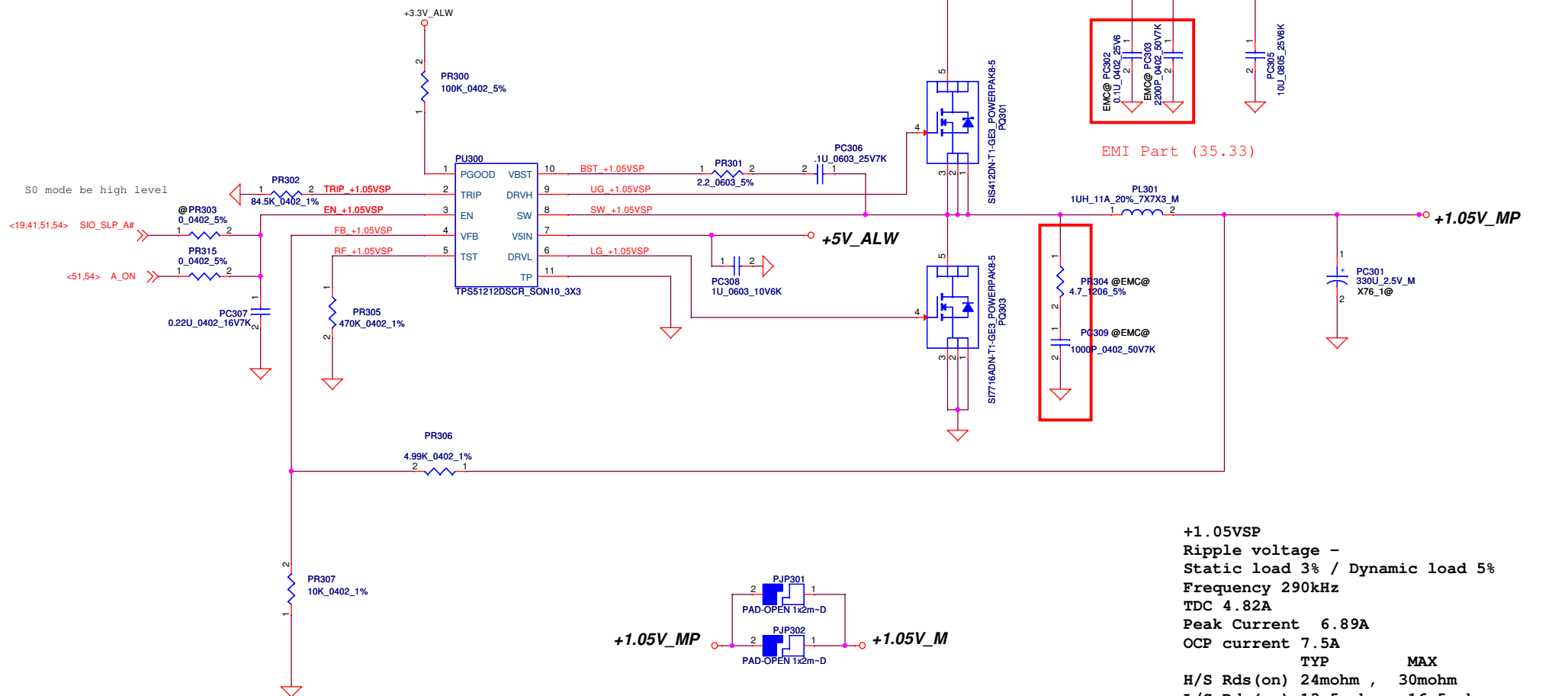


Mode	S3	S5	+1.35V_MEN	+V_DDR_REF	+0.675V_P
S5	L	L	off	off	off
S3	L	H	on	on	off (Hi-Z)
S0	H	H	on	on	on

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		Compal Electronics, Inc.	
		1.35VP/0.675VSP	
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+1.05VSP
 Ripple voltage -
 Static load 3% / Dynamic load 5%
 Frequency 290kHz
 TDC 4.82A
 Peak Current 6.89A
 OCP current 7.5A
 TYP MAX
 H/S Rds(on) 24mohm , 30mohm
 L/S Rds(on) 13.5mohm , 16.5mohm
 Choke DCR 11mohm
 Bulk cap ESR 17mohm

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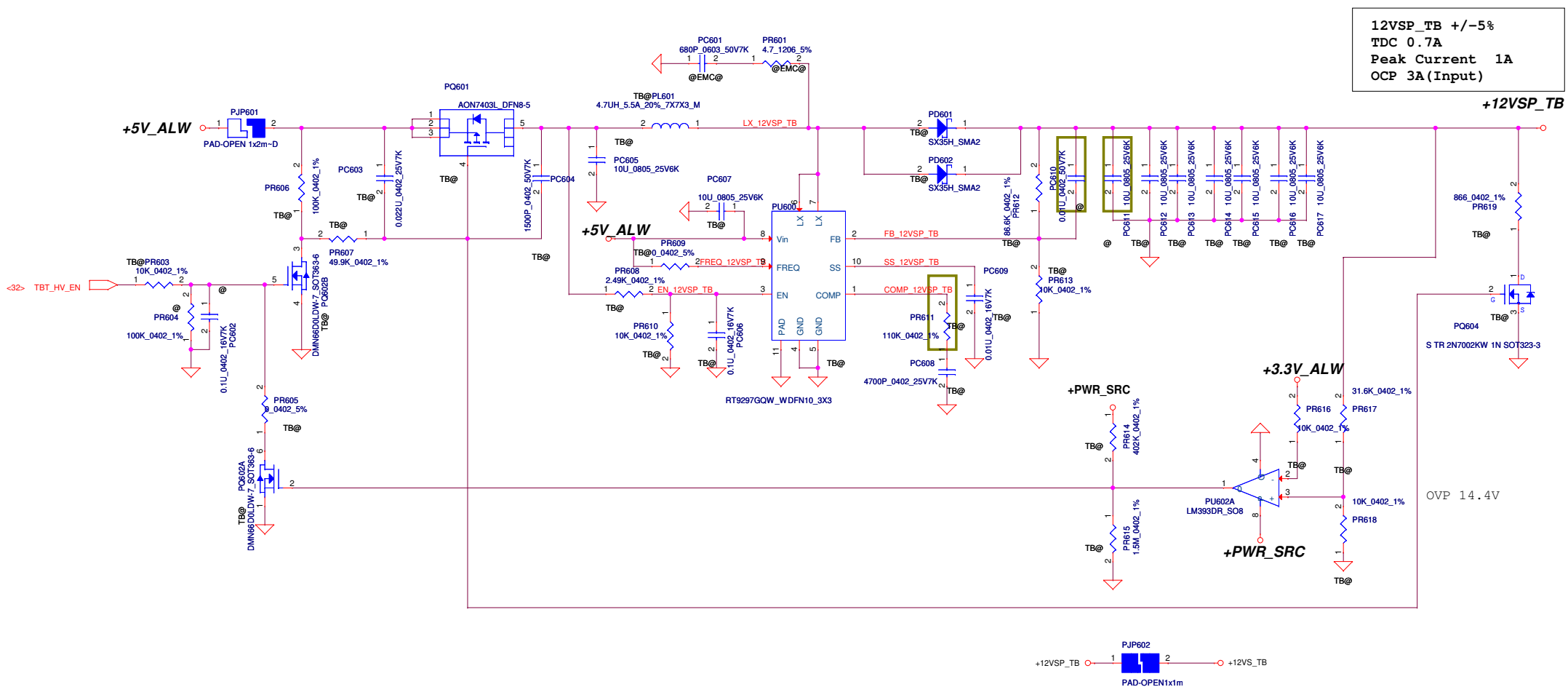


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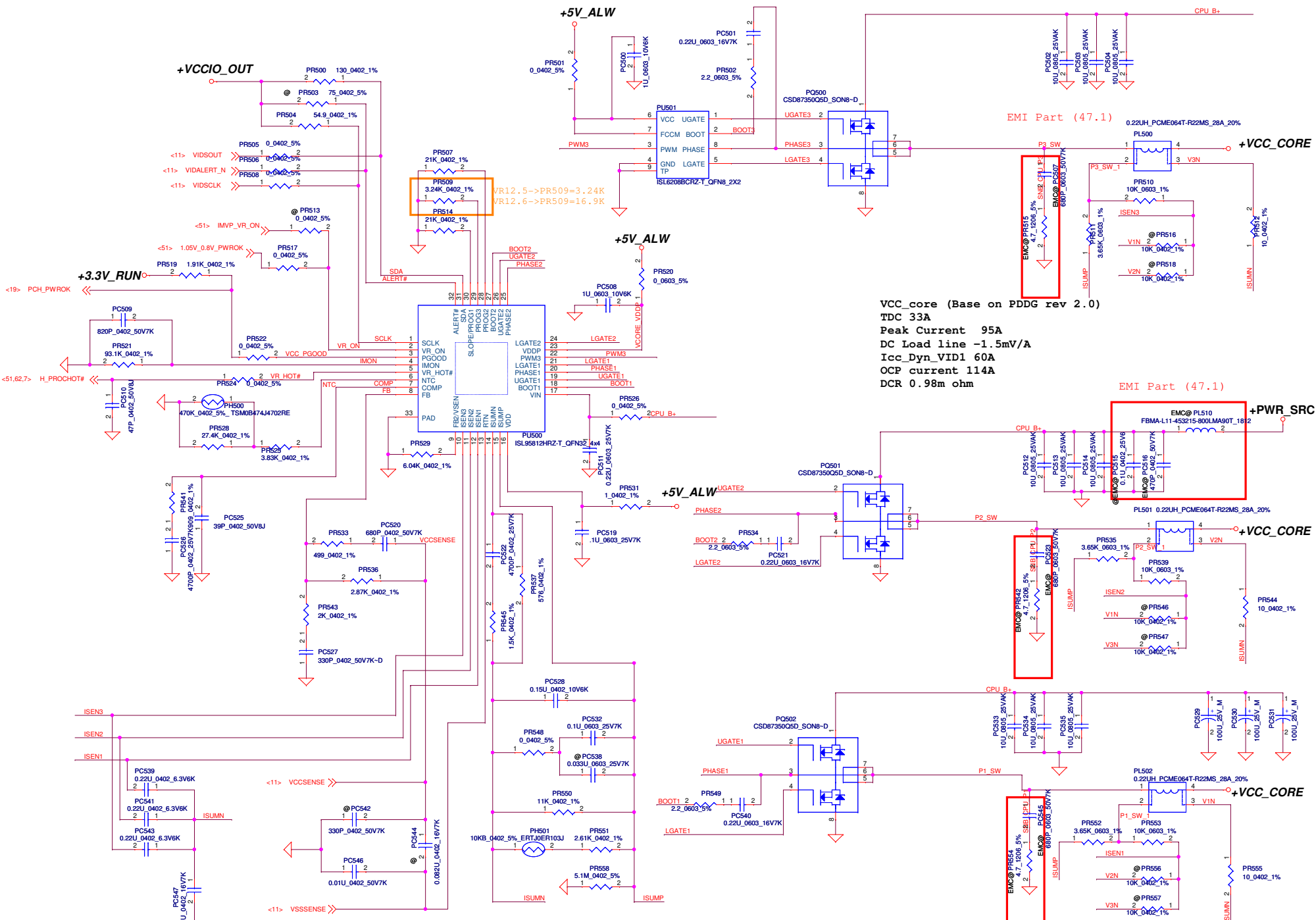


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VCC_core (Base on PDDG rev 2.0)
TDC 33A
Peak Current 95A
DC Load line -1.5mV/A
Icc_Dyn_VID1 60A
OCP current 114A
DCR 0.98m ohm

EMI Part (47.1)

EMI Part (47.1)

Local sense put on HW site

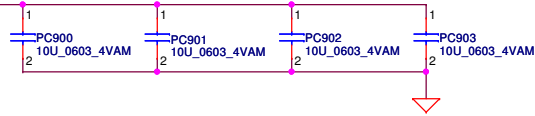
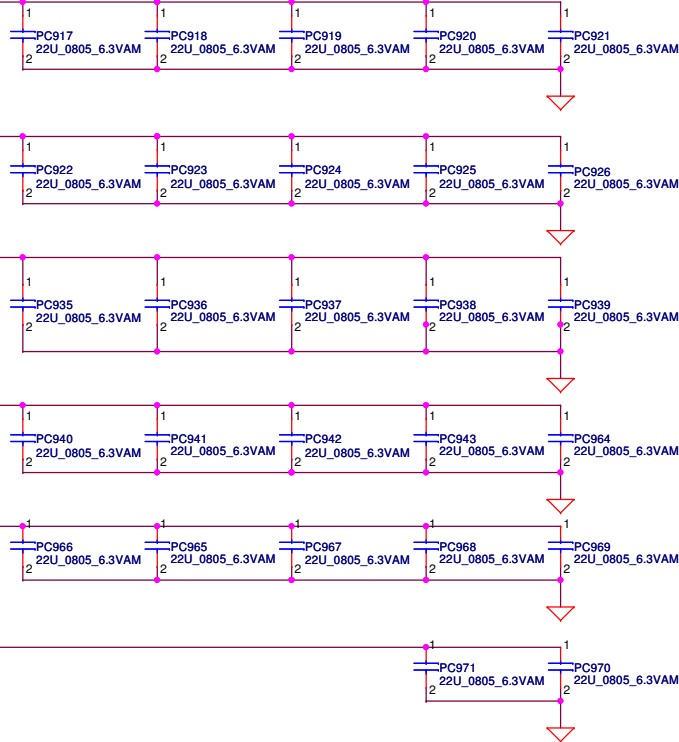
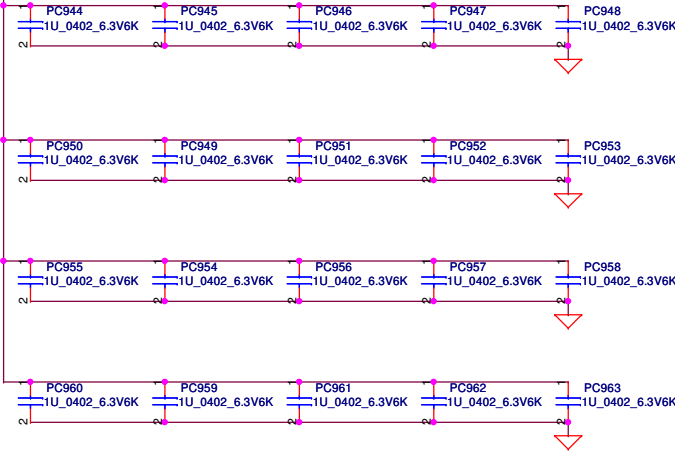
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+VCC_CORE

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+VCC_CORE**+VCC_CORE****+VCC_CORE****+VCC_CORE**

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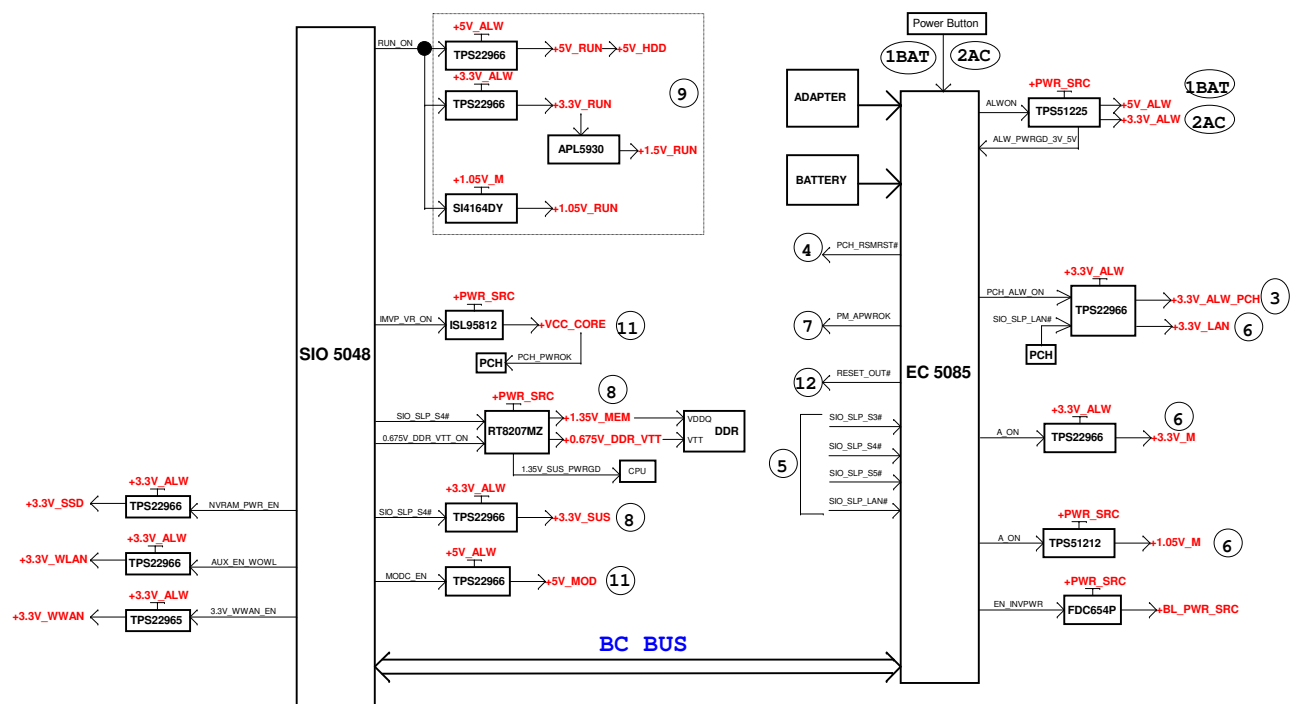
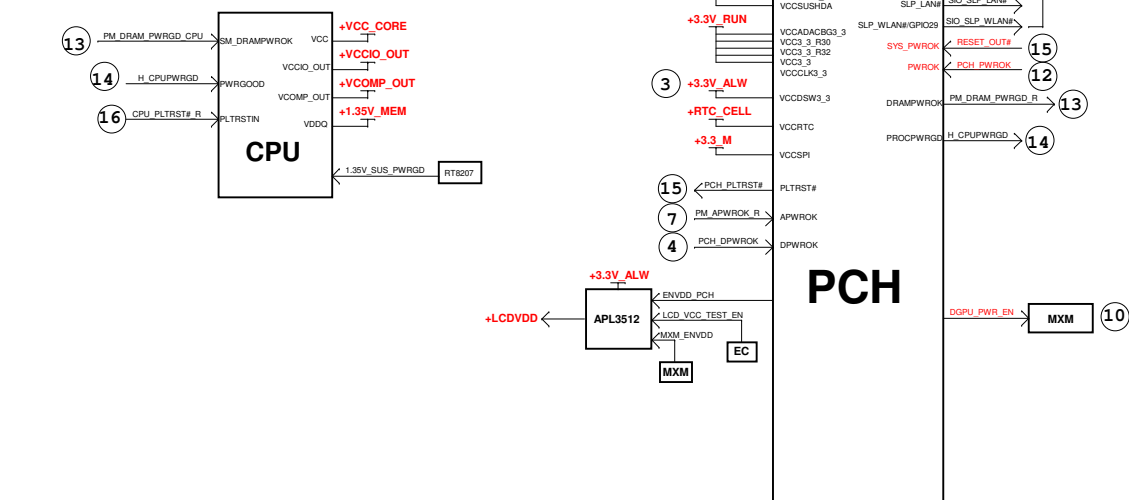
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Timing Diagram for S5 to S0 mode



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Power Sequence

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