

COMPAL CONFIDENTIAL

MODEL NAME : ZAR00

PCB NO : LA-B541P

BOM P/N : i5 - 4319TQ31101 (HSW)
i7 - 4319TQ31102 (HSW)

GPIO MAP: GPIO map rev 3.6C

Delray 17

Broadwell H-type (2 chip)

REV : 0.1 (X00)

2014.01.13

@ : Nopop Component

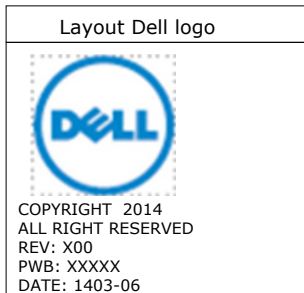
EMC@ : EMI/ESD/RF part

CONN@ : Connector Component

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

TB@ : Thunderbolt function

BDW@ : HSW_BDW compatibility circuit



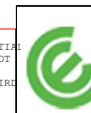
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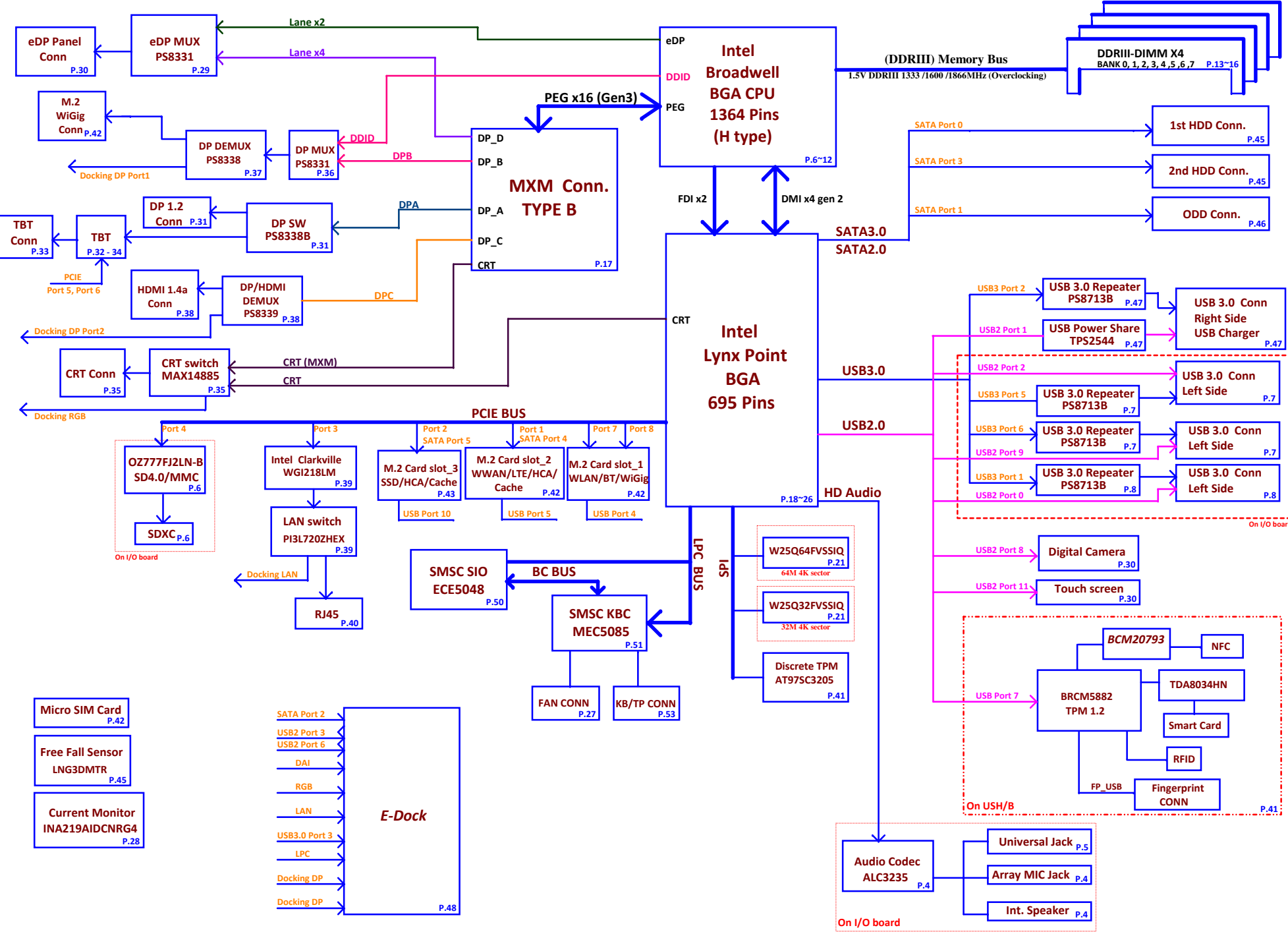
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Block Diagram		
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POWER STATES

State \ Signal	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

State \ power plane	+PWR_SRC +PWR_SRC_S +5V_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

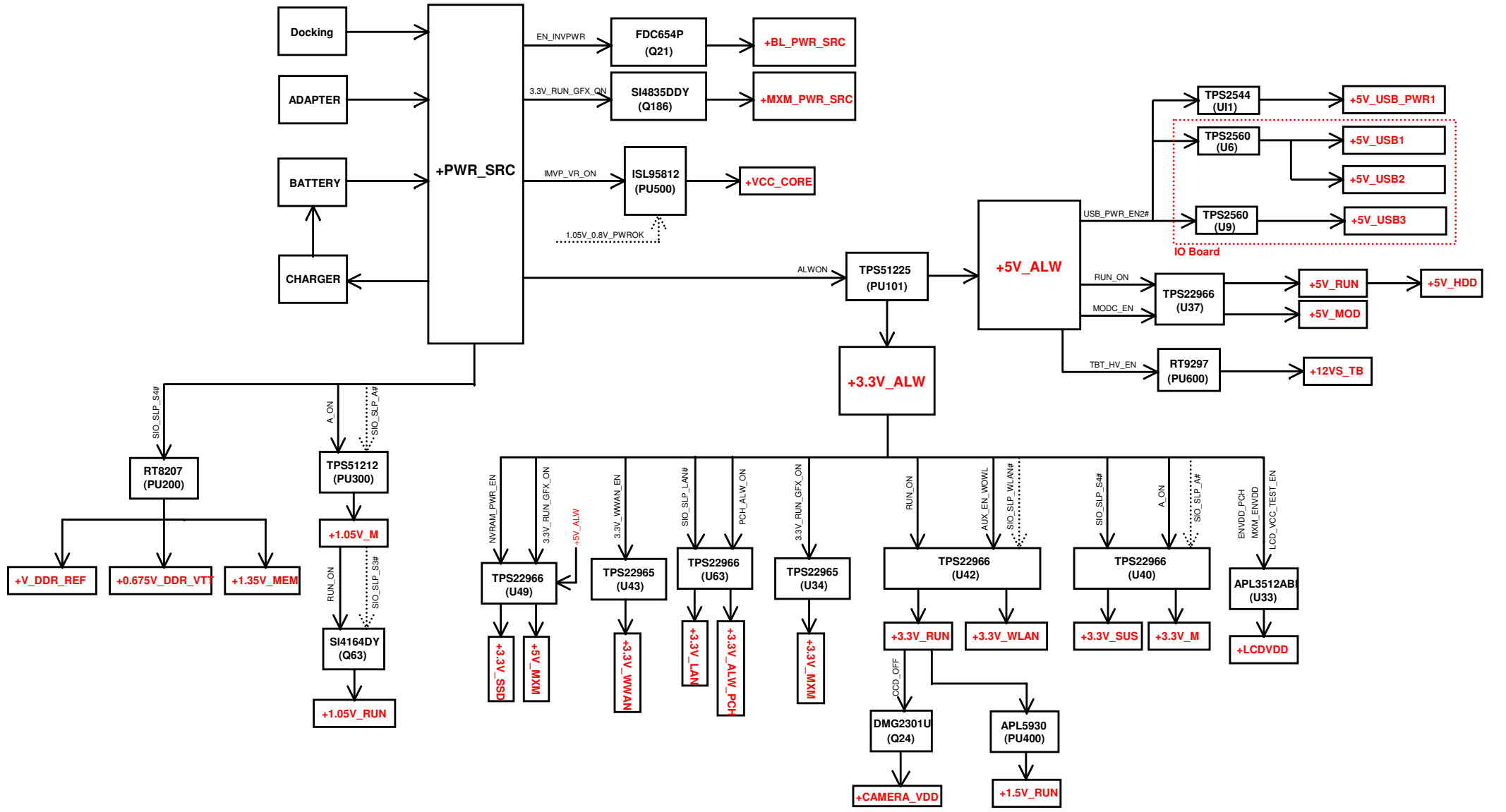
Layer No.	Name	Er	Material	Thickness (Material SPEC.) Unit : mil
			SolderMask	IT-158
			Add Plating	
1	Top		Copper foil	0.5oz
2	GND1	3.7	Prepreg	1080
			Copper foil	1oz
		3.7	Core	4mil
3	Sig 1		Copper foil	1oz
		3.9	Prepreg	1080H+2116H
4	GND/PWR		Copper foil	2oz
		3.7	Core	4mil
5	Sig 2		Copper foil	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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Power Rail

LA-B541P

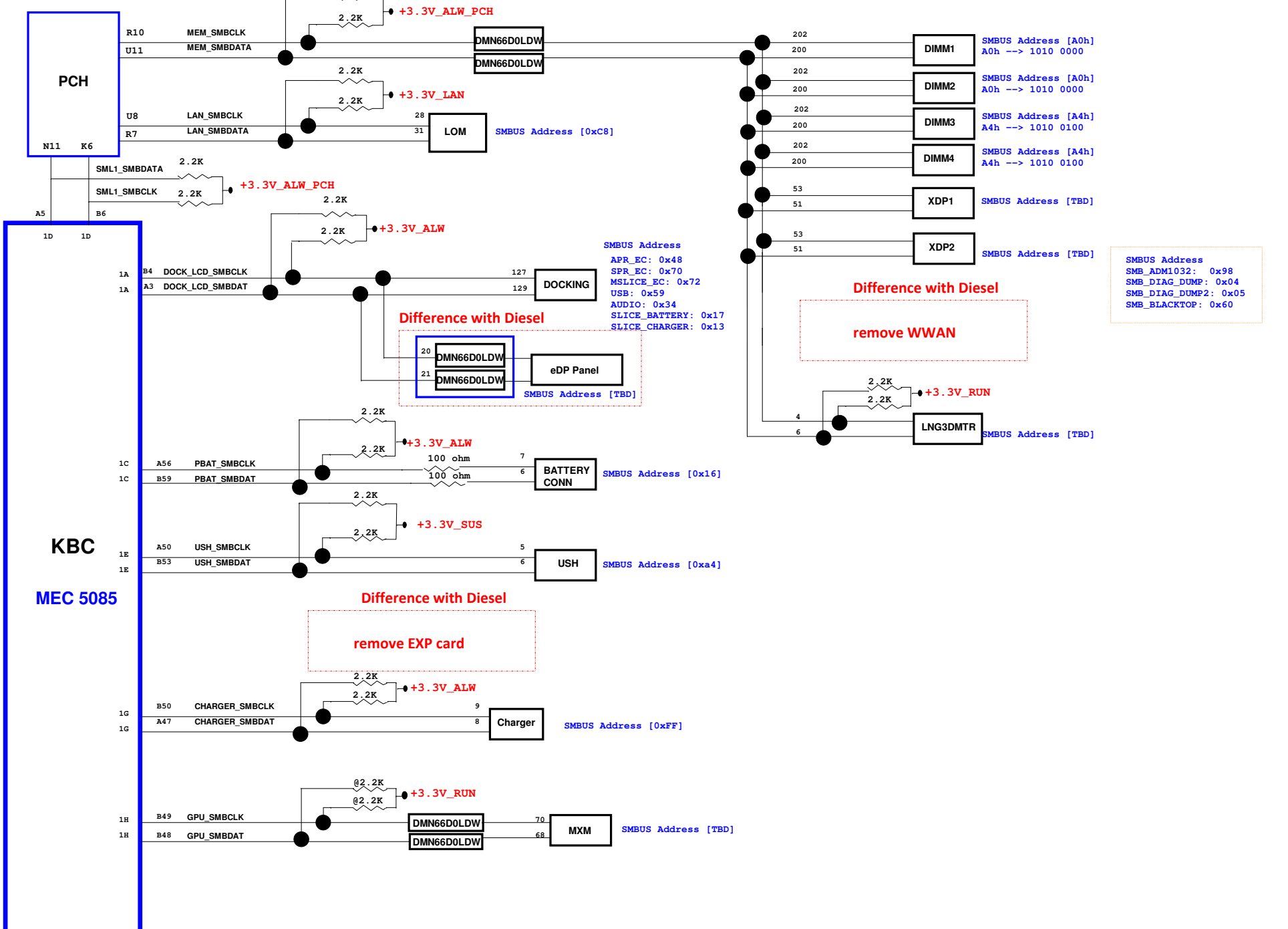
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Rev 0.1

SMBUS Address [0x9a]



MEC 5085

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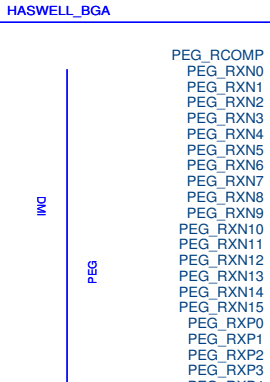
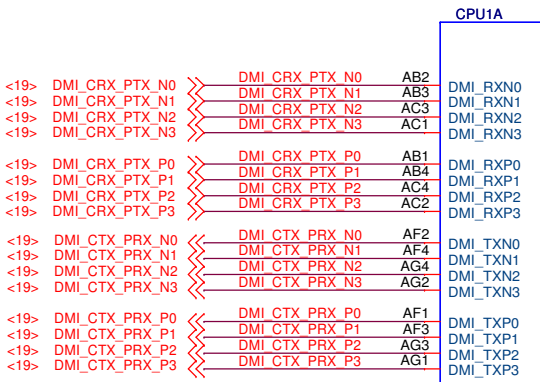
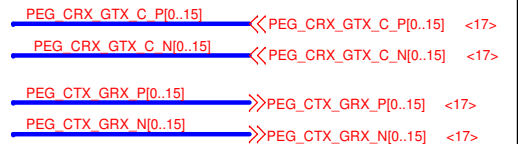
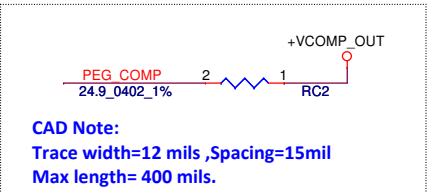
SMBUS Boick Diagram

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PEG_RXCOMP	AH6	PEG_COMP							
PEG_RXN0	E10	PEG CRX GTX N0	CC1	2	1	0.22U	0402	16V7K	PEG CRX GTX C N0
PEG_RXN1	C10	PEG CRX GTX N1	CC2	2	1	0.22U	0402	16V7K	PEG CRX GTX C N1
PEG_RXN2	B10	PEG CRX GTX N2	CC3	2	1	0.22U	0402	16V7K	PEG CRX GTX C N2
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PEG_RXN6	L5	PEG CRX GTX N6	CC7	2	1	0.22U	0402	16V7K	PEG CRX GTX C N6
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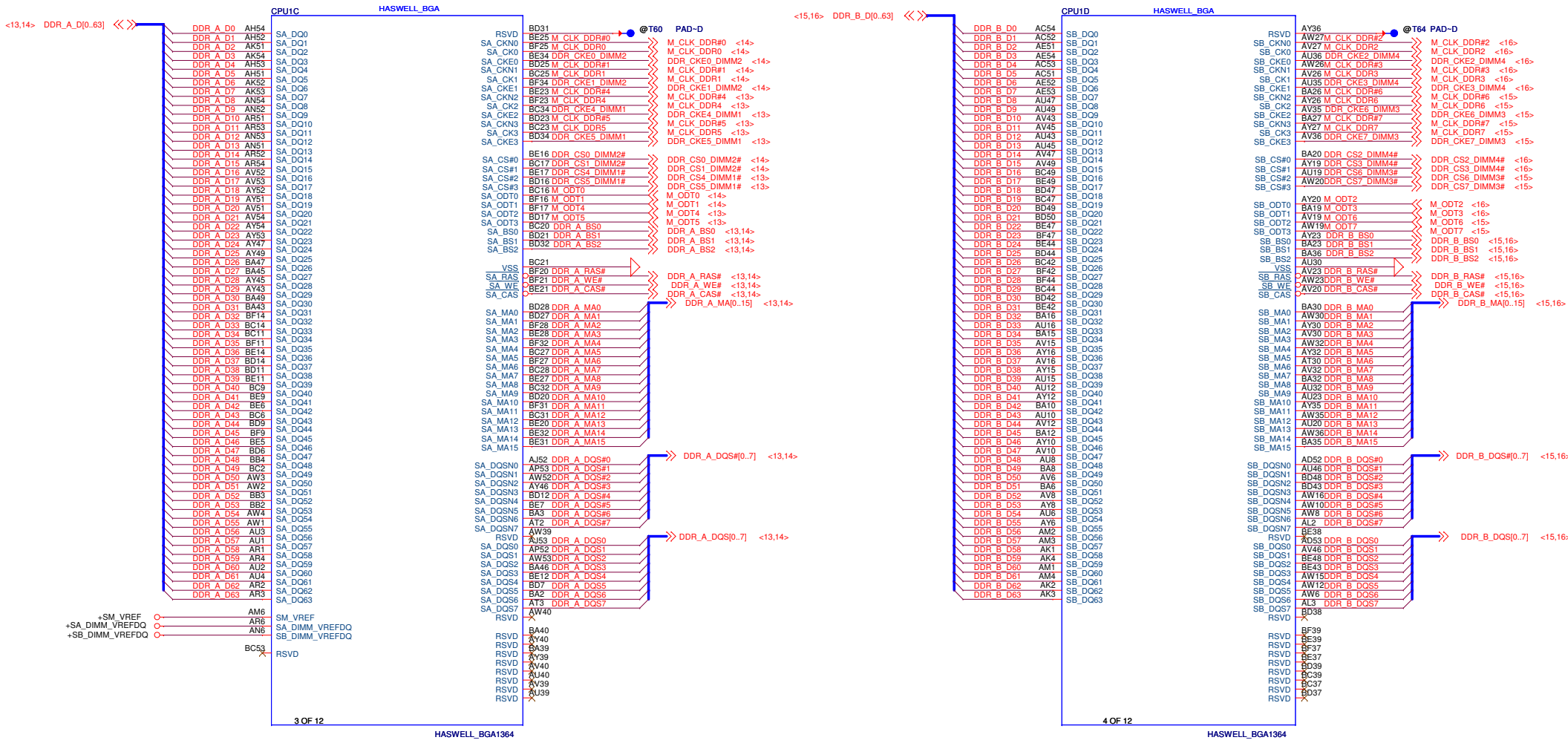
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Broadwell (1/7)

Title: _____

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 +SA_DIMM_VREFDQ
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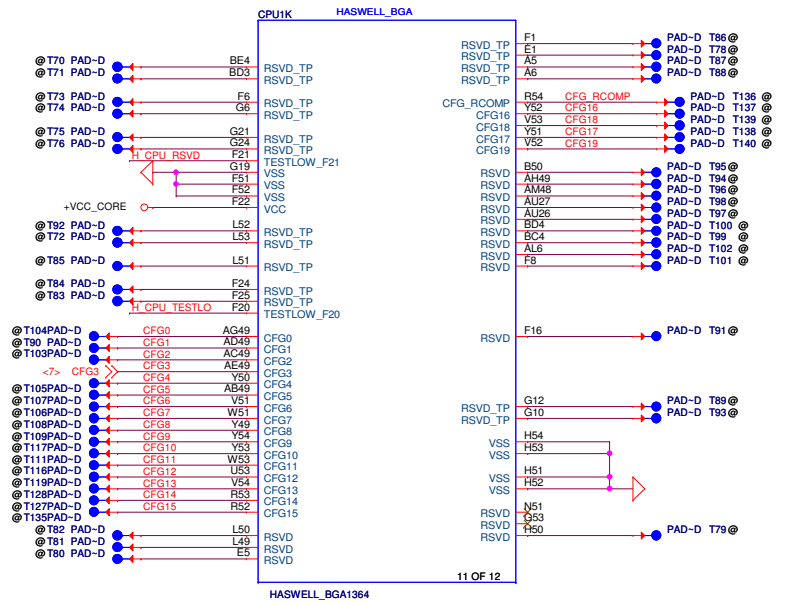
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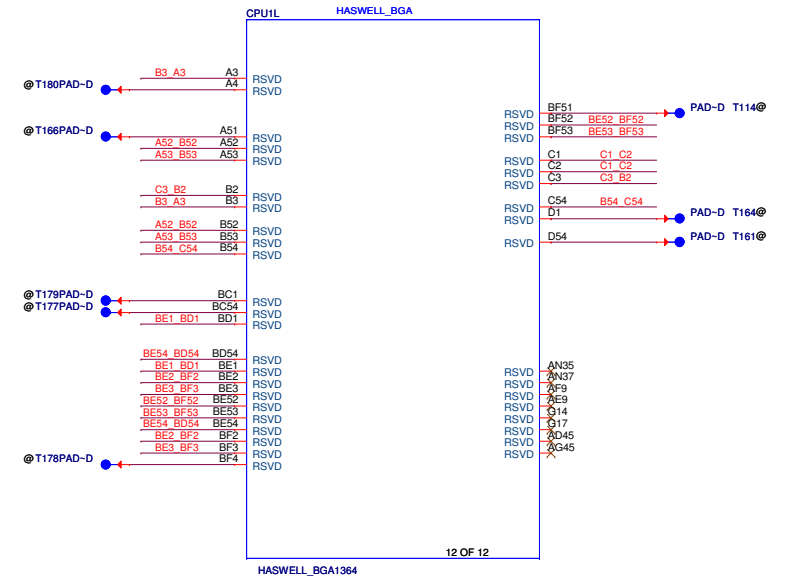
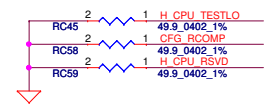
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Broadwell (3/7)
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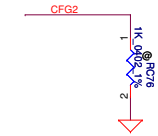


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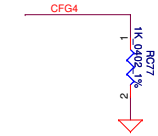


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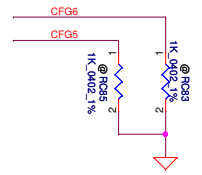
CFG STRAPS for CPU



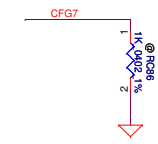
PEG Static Lane Reversal - CFG2 is for the 16x	
CFG2	1: (Default) Normal Operation; Lane # definition matches socket pin map definition 0: Lane Reversed



Display Port Presence Strap	
CFG4	1 : Disabled; No Physical Display Port attached to Embedded Display Port 0 : Enabled; An external Display Port device is connected to the Embedded Display Port



PCIe Port Bifurcation Straps	
CFG[6:5]	11: (Default) x16 - Device 1 functions 1 and 2 disabled 10: x8, x8 - Device 1 function 1 enabled ; function 2 disabled 01: Reserved - (Device 1 function 1 disabled ; function 2 enabled) 00: x8,x4,x4 - Device 1 functions 1 and 2 enabled

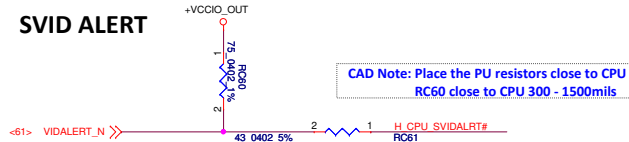


PEG DEFER TRAINING	
CFG7	1: (Default) PEG Train immediately following xxRESETB de assertion 0: PEG Wait for BIOS for training

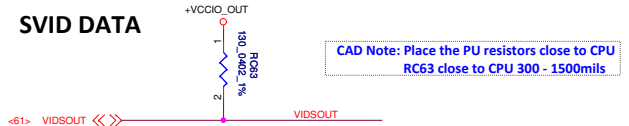


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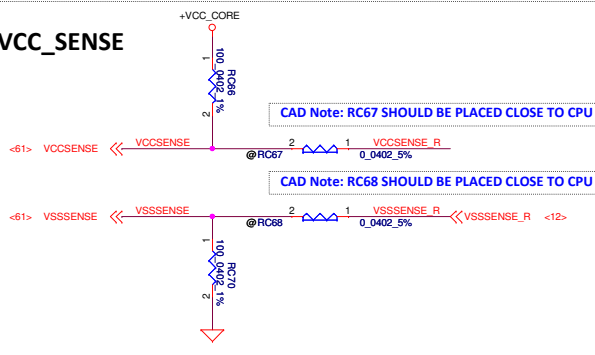
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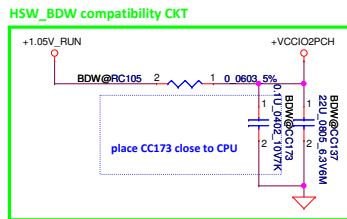
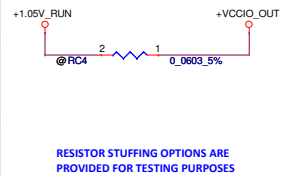
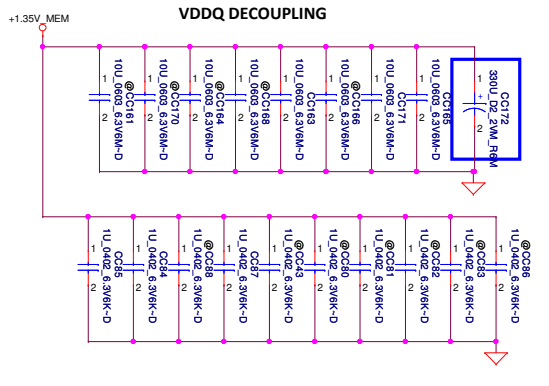
SVID DATA



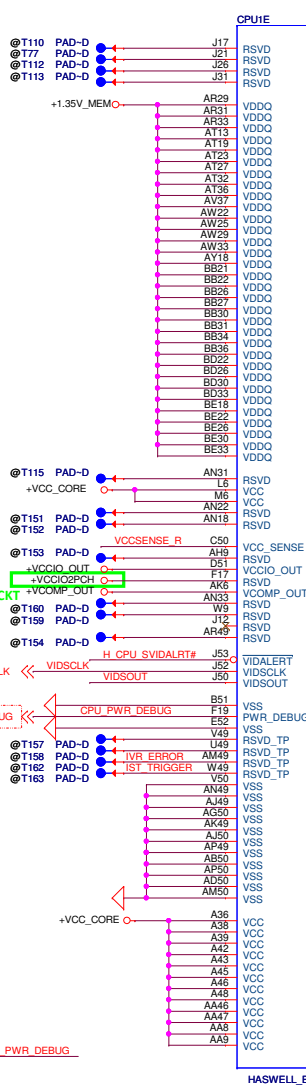
VCC_SENSE



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

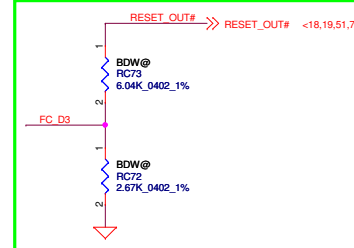


Difference with Diesel

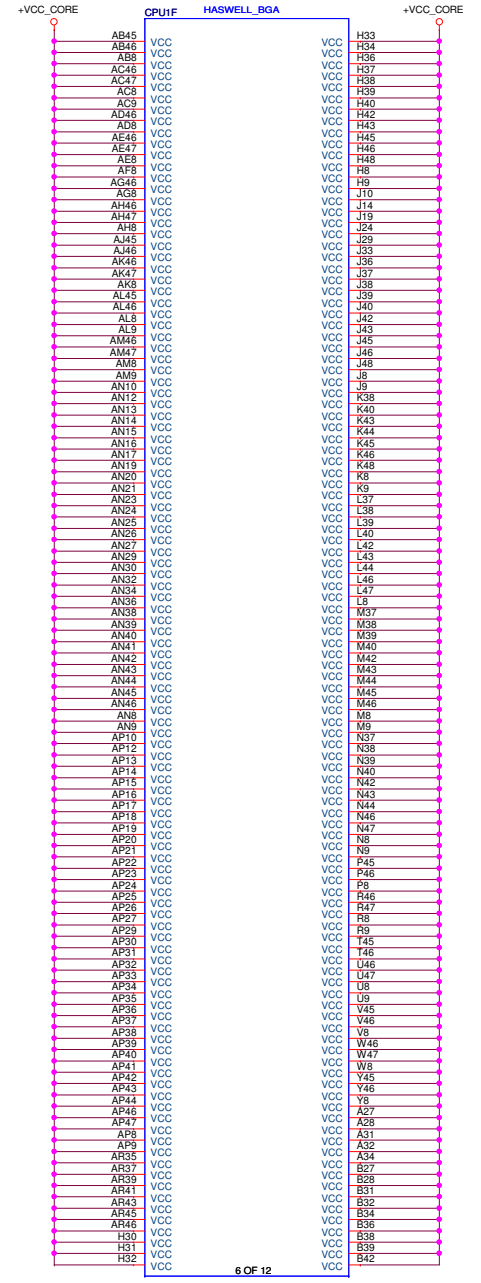


	HSW	BDW
RC105	X	V
CC137	X	V
RC72	X	V
RC73	X	V

HSW_BDW compatibility CKT



55A



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Title		Broadwell (6/7)	
Size	Document Number	LA-B541P	
Date:	Monday, January 13, 2014	Sheet	11 of 67

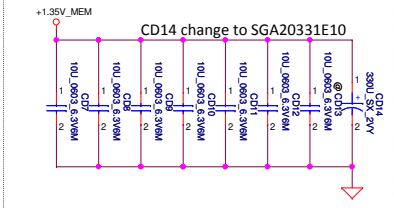
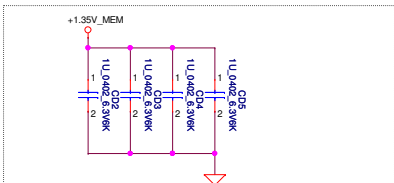
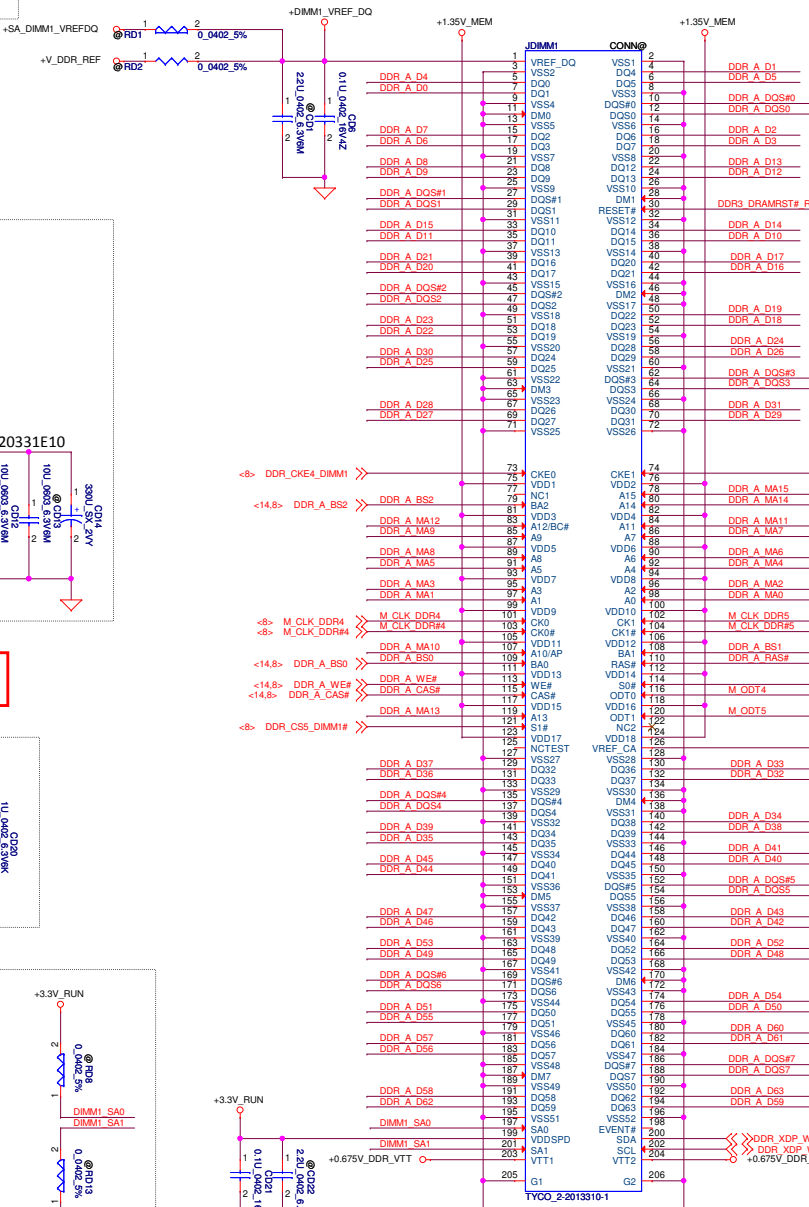
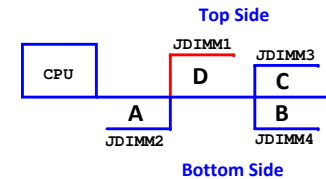
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All VREF traces should have 10 mil trace width

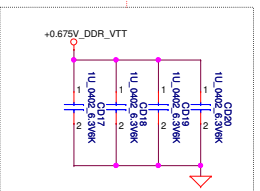
Populate RD1, De-Populate RD2 for Intel DDR3 VREFDQ multiple methods M1
 Populate RD2, De-Populate RD1 for Intel DDR3 VREFDQ multiple methods M3

JDIMM1 STD Type H=9.2

<14.8> DDR_A_DQS#0[7] <<>
 <14.8> DDR_A_DQS#0[7] <<>
 <14.8> DDR_A_D[0.63] <<>
 <14.8> DDR_A_MA[0.15] <<>

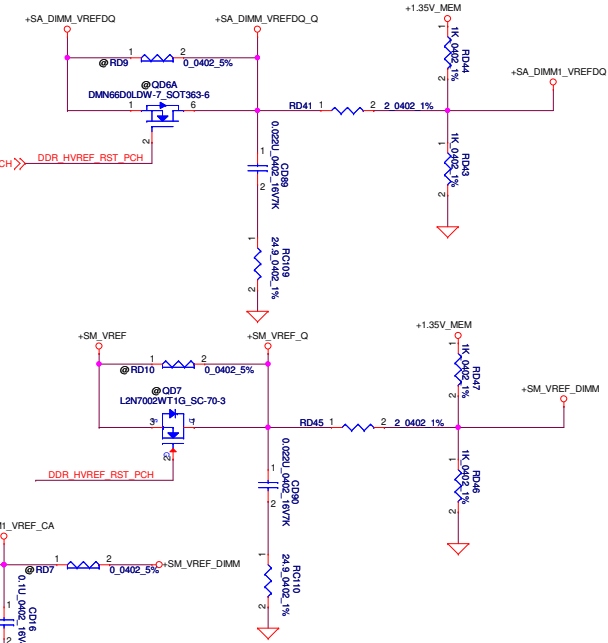
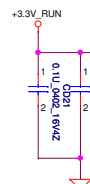


Layout Note:
Place near JDIMM1.203,204



DIMM Select

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



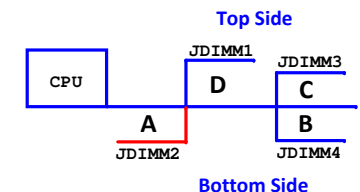
<7> DDR3_DRAMRST#_CPU <<>
 <14.15,16> DDR3_DRAMRST#_R <<>

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DDR3-SODIMM SLOT1
 LA-B541P
 Date: Monday, January 13, 2014

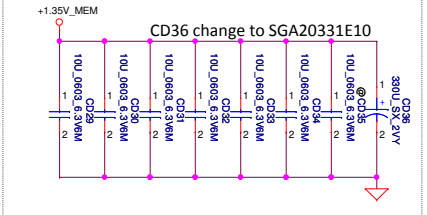
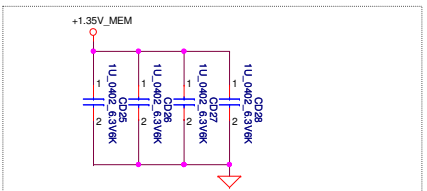
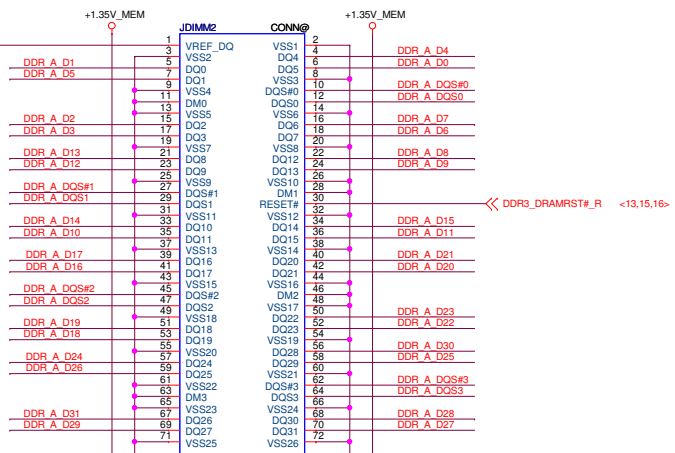
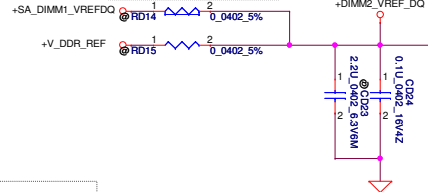
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JDIMM2 STD Type H=5.2

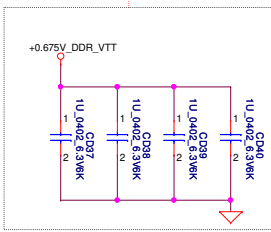


<13.8> DDR_A_DQS#[0..7] <<>
 <13.8> DDR_A_DQS#[0..7] <<>
 <13.8> DDR_A_DQ[0..63] <<>
 <13.8> DDR_A_MA[0..15] <<>

All VREF traces should have 10 mil trace width

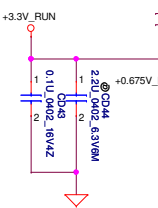
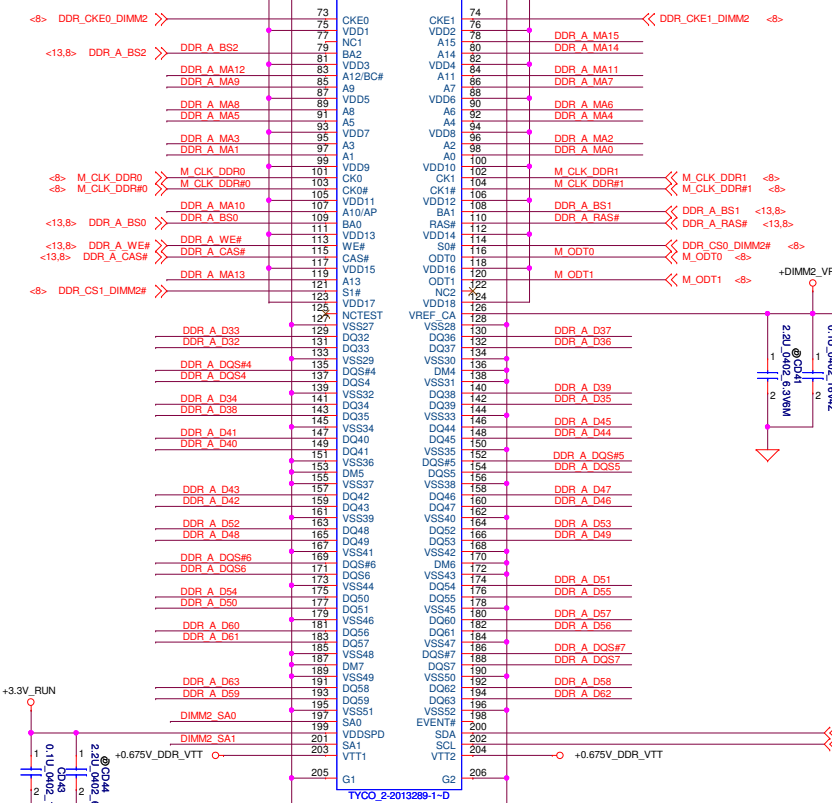
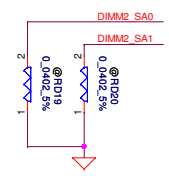


Layout Note:
 Place near JDIMM2. Pin 203,204



DIMM Select

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



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File: DDRIII-SODIMM SLOT2

Size: Document Number LA-B541P

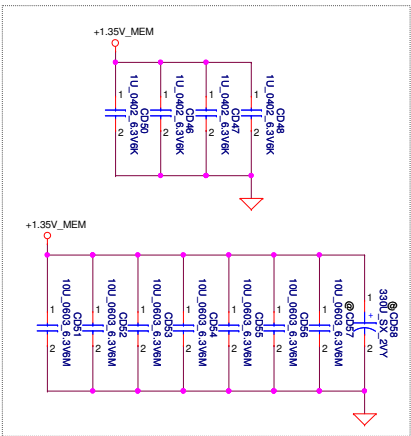
Date: Monday, January 13, 2014 Sheet 14 of 67

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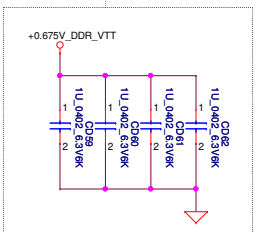
JDIMM3 STD Type H=5.2

All VREF traces should have 10 mil trace width

- <16.8> DDR_B_DQS[0..7] <<
- <16.8> DDR_B_DQS[0..7] <<
- <16.8> DDR_B_DQ[0..63] <<
- <16.8> DDR_B_MA[0..15] <<

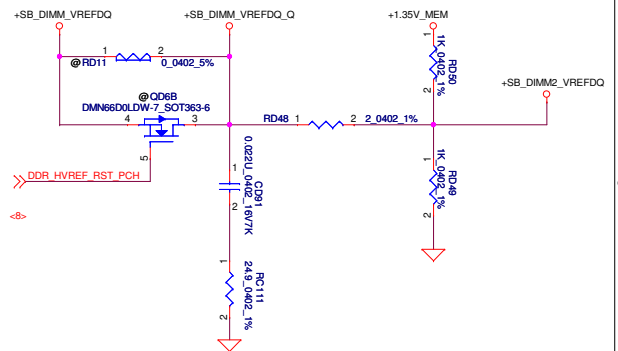
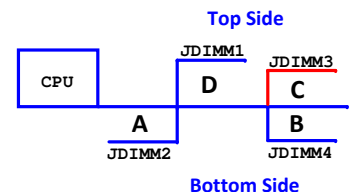
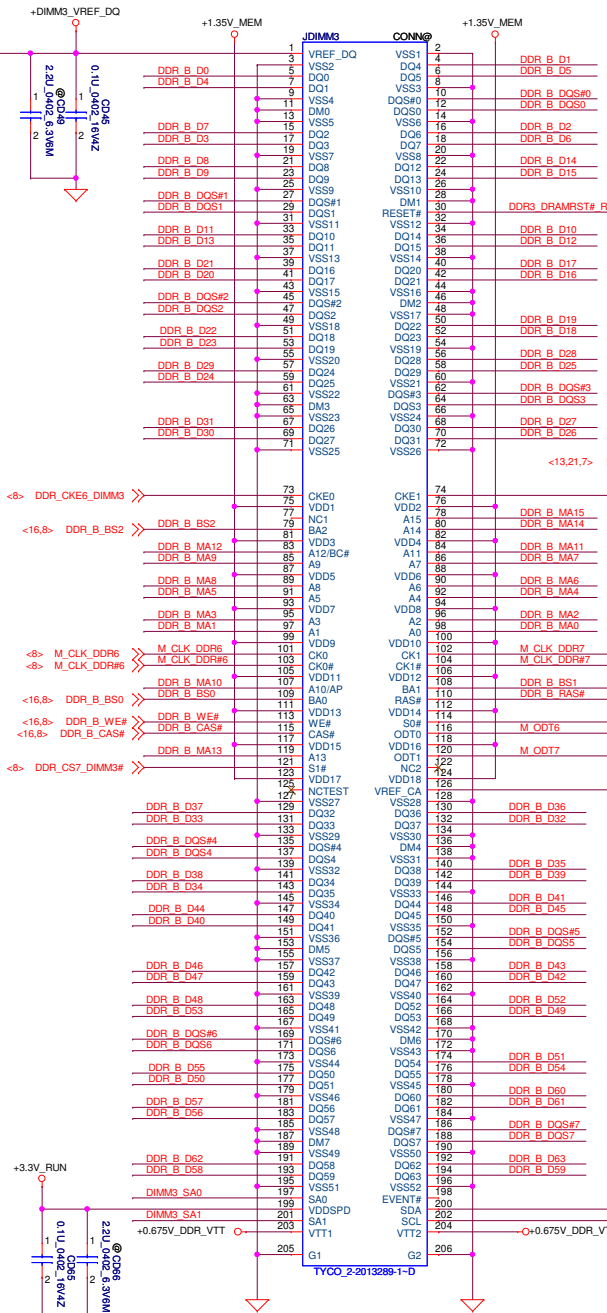
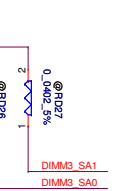


Layout Note:
Place near JDIMM3.Pin 203,204



DIMM Select

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



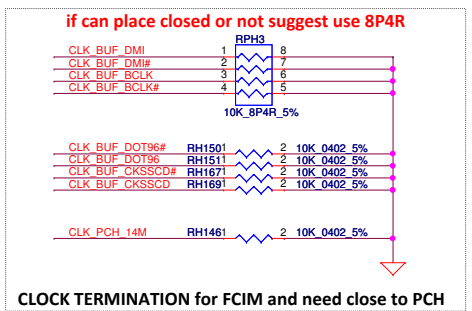
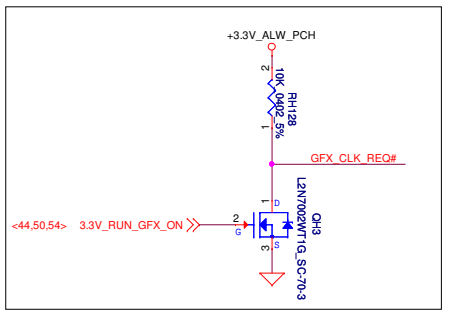
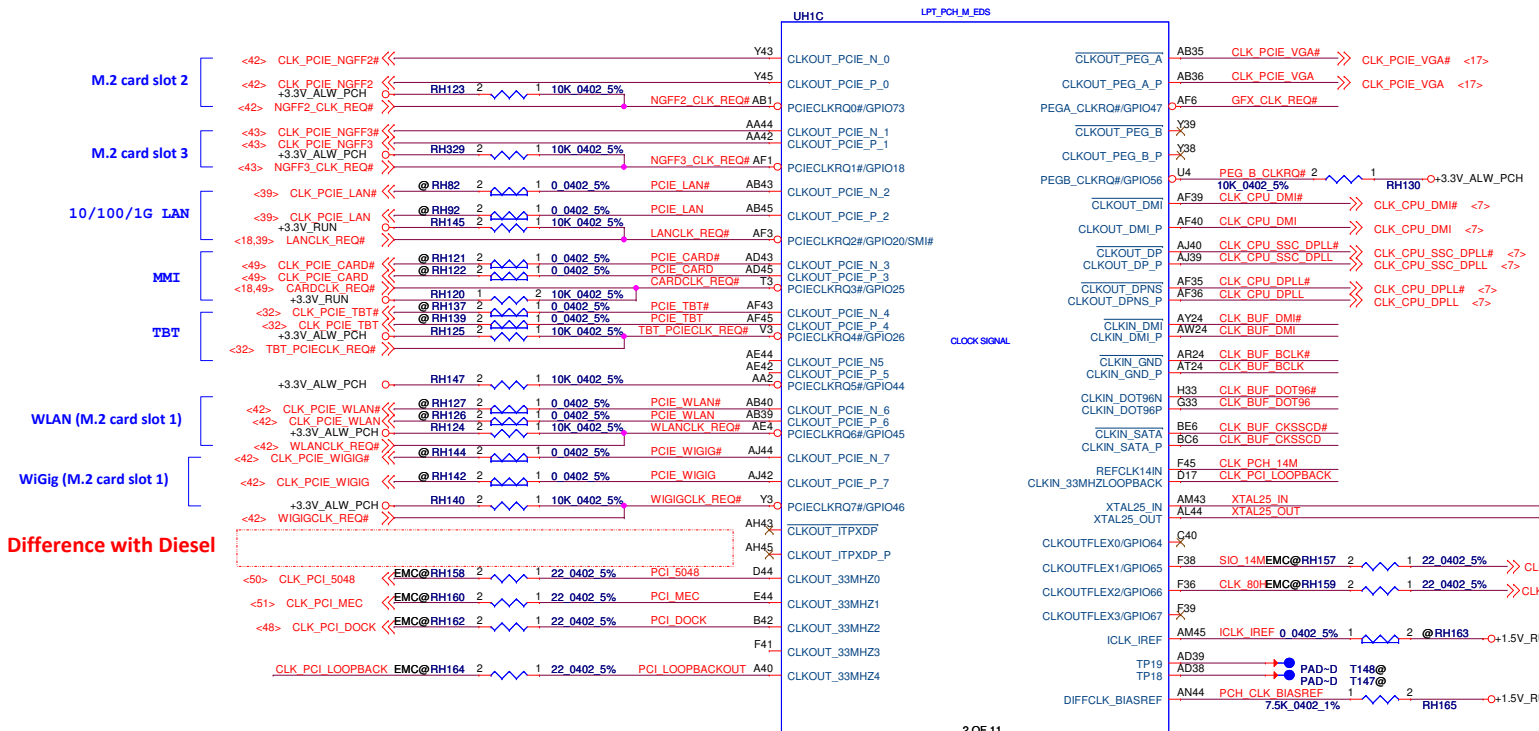
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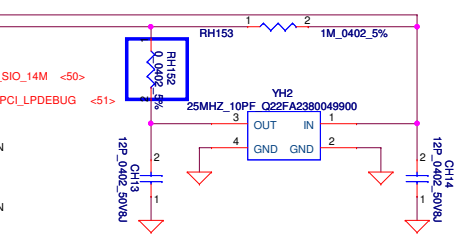
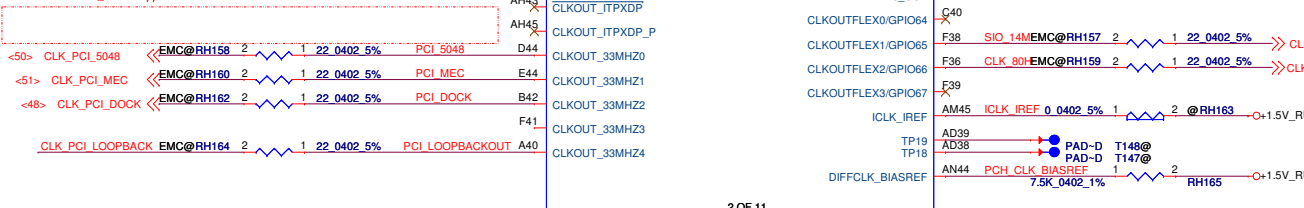
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Size	Document Number	LA-B541P	
Date	Monday, January 13, 2014	Sheet	15 of 67

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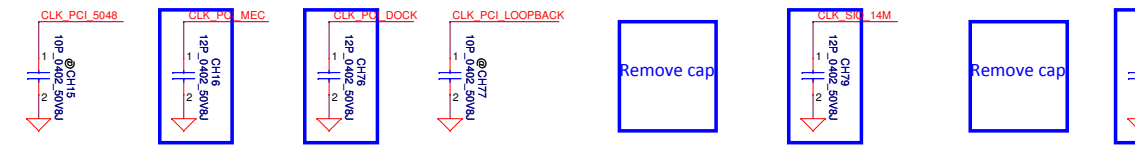


CLOCK TERMINATION for FCIM and need close to PCH

Difference with Diesel



PCIECLK REQ Pull UP Power Rail:
SUS Rail : 0 3 4 5 6 7
Core Rail: 1 2



Remove CLK_PCI_TPM (C40),
JETWAY_CLK14M (F39)

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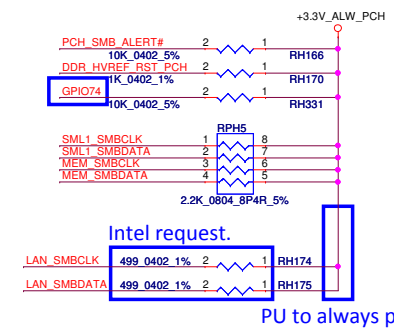
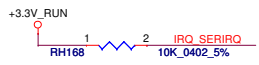
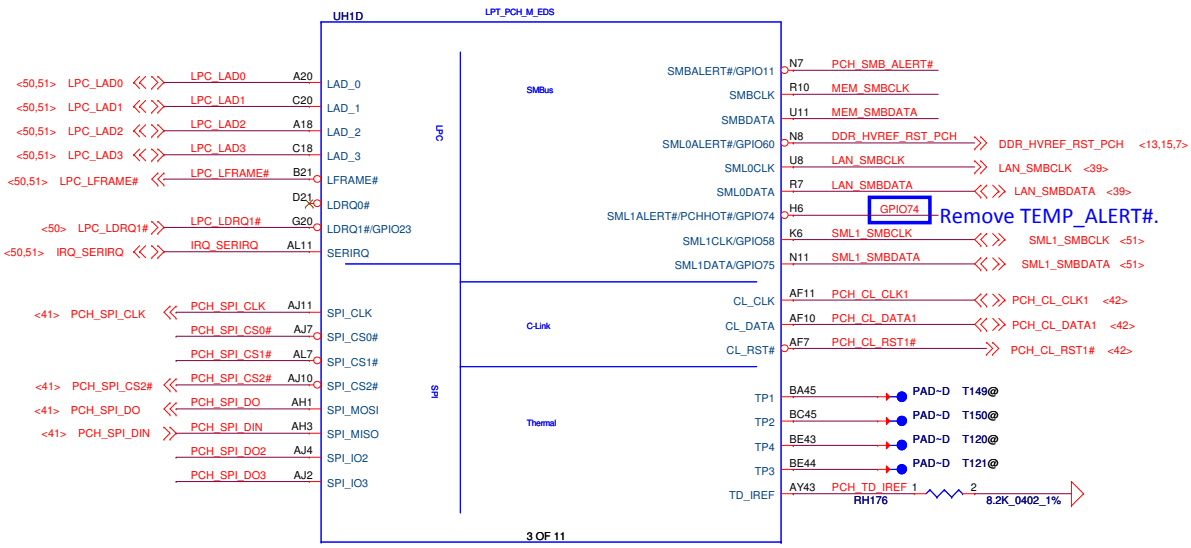
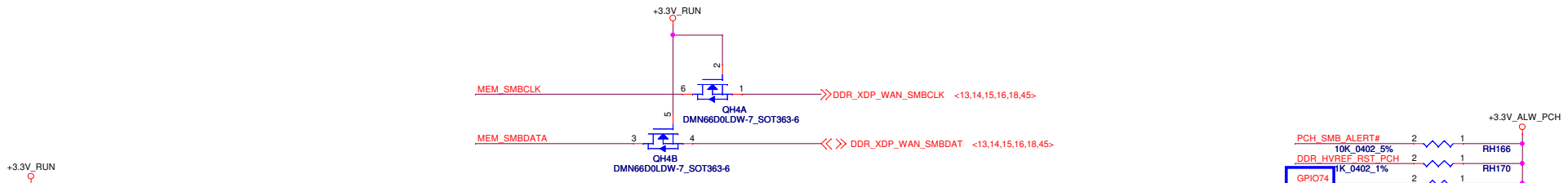
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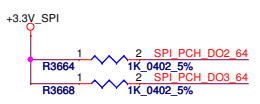
Title: PCH (3/9)

Size: Document Number: LA-B541P

Date: Monday, January 13, 2014 Sheet 20 of 67



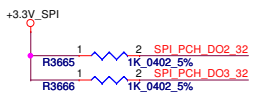
Intel request.
PU to always power



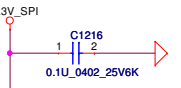
200 MIL SO8
64Mb Flash ROM



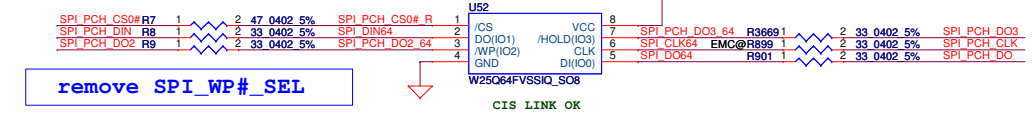
remove SPI_WP#_SEL



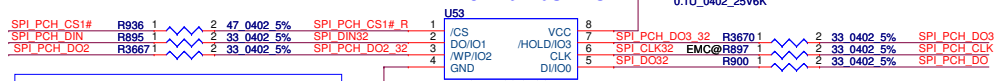
200 MIL SO8
32Mb Flash ROM



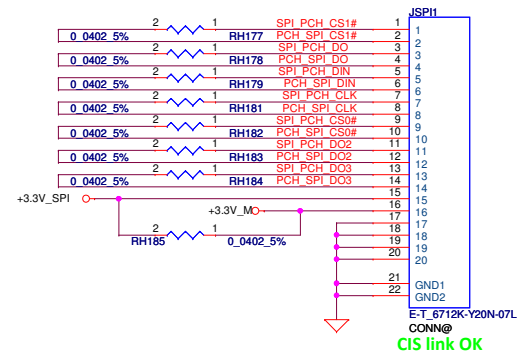
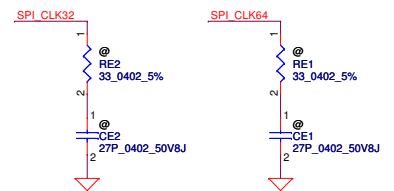
remove SPI_WP#_SEL



CIS LINK OK



CIS LINK OK



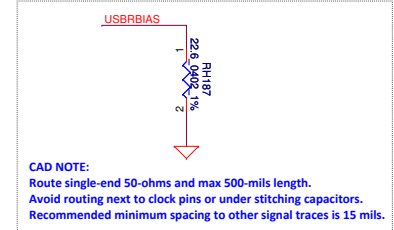
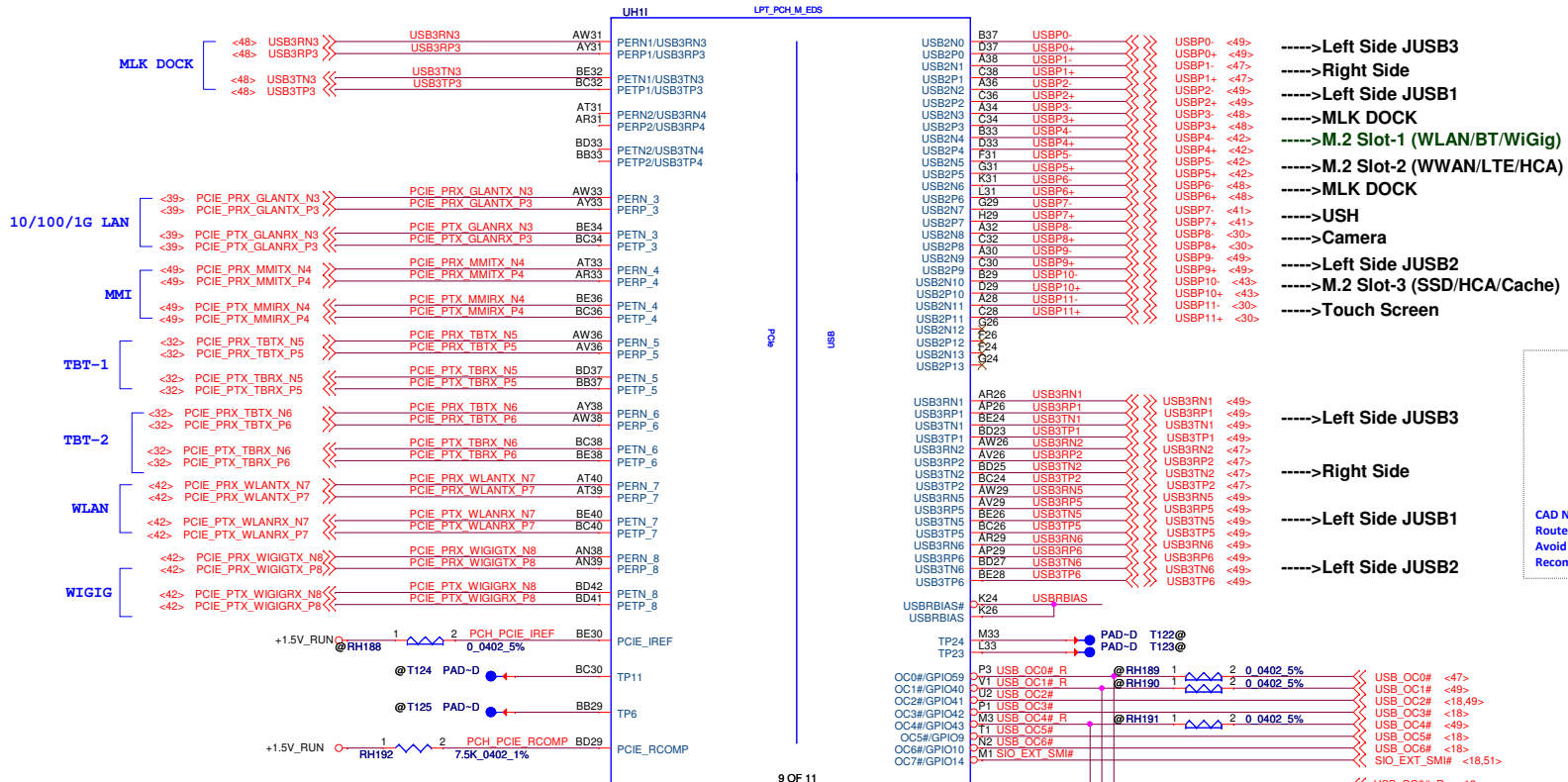
CIS link OK

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 Title: PCH (4/9)
 Size: LA-B541P
 Date: Monday, January 13, 2014
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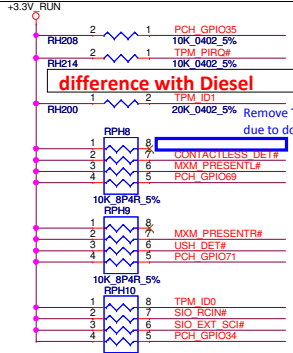
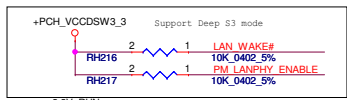
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Size: **LA-B541P**

Date: Monday, January 13, 2014 Sheet 22 of 67

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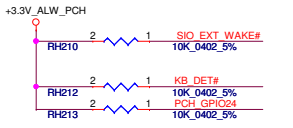
difference with Diesel

for TBT GPIO pin

for TBT GPIO pin

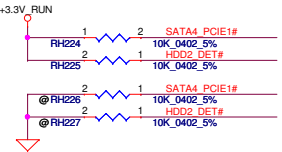
change from EC wake# to LAN_wake#

difference with Diesel



Remove SLP_ME_CSW_DEV#

PLL ON DIE VR ENABLE
ENABLED - HIGH(DEFAULT)
DISABLED - LOW

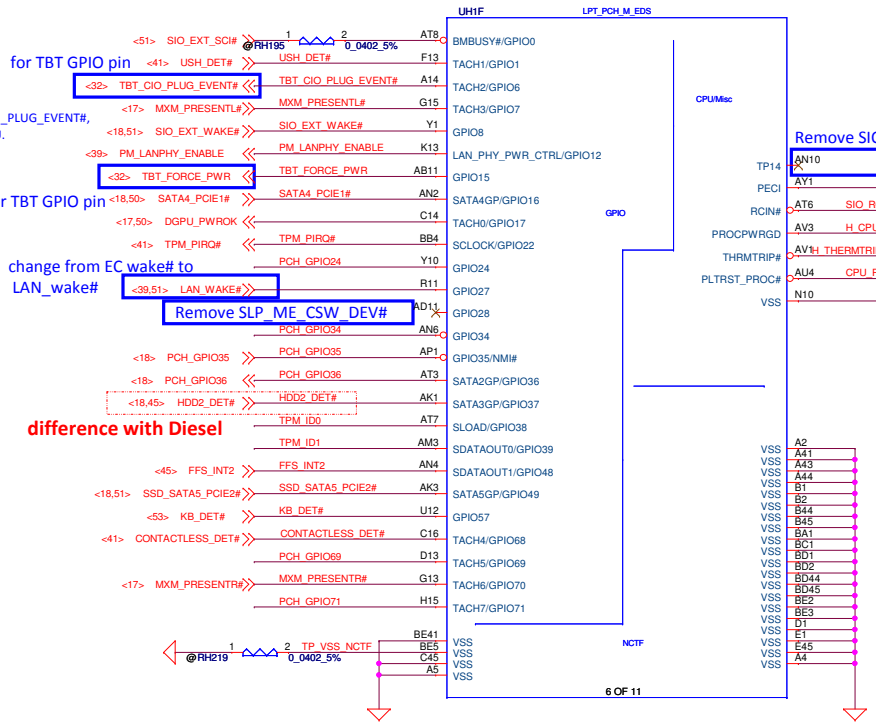


Note: GPIO strap option is only available for SATA/PCIE muxed signals to support mSATA/mini PCIE port switching

GPIO16	GPIO49
0: PCIE1	0: PCIE2
1: SATA4	1: SATA5

00b or 01b: Assign muxed signal to desired port
10b: Reserved
11b: Assign desired port based on GPIO

Fixed Signals				Muxed Signals				Fixed Signals				Muxed Signals				Fixed Signals			
USB3	USB3	USB3	USB3	PCIE	PCIE	PCIE	PCIE	PCIE	PCIE	PCIE	PCIE	SATA	SATA	SATA	SATA	SATA	SATA	SATA	SATA
1	2	5	6	(00)	(00)			3	4	5	6	7	8	(00)	(00)	0	1	2	3
				USB3	USB3									PCIE	PCIE				
				(01)	(01)									(01)	(01)				



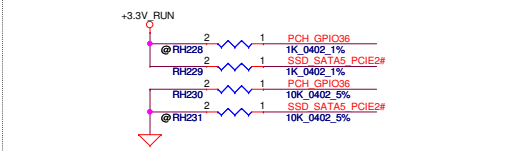
Remove 56 ohm from PCH_AV1

Remove SIO_A20GATE



Remove 0.1uF cap from PCH_AV1

	HSW	BDW
RH206	X	V



SATA2GP/GPIO36, SATA3GP/GPIO37 SAMPLED AT RISING EDGE OF PWROK. WEAK INTERNAL PULL-DOWN.(WEAK INTERNAL PULL-DOWN IS DISABLED AFTER PLRST_N DE-ASSERTS). NOTE: THIS SIGNAL SHOULD NOT BE PULLED HIGH WHEN STRAP IS SAMPLED.

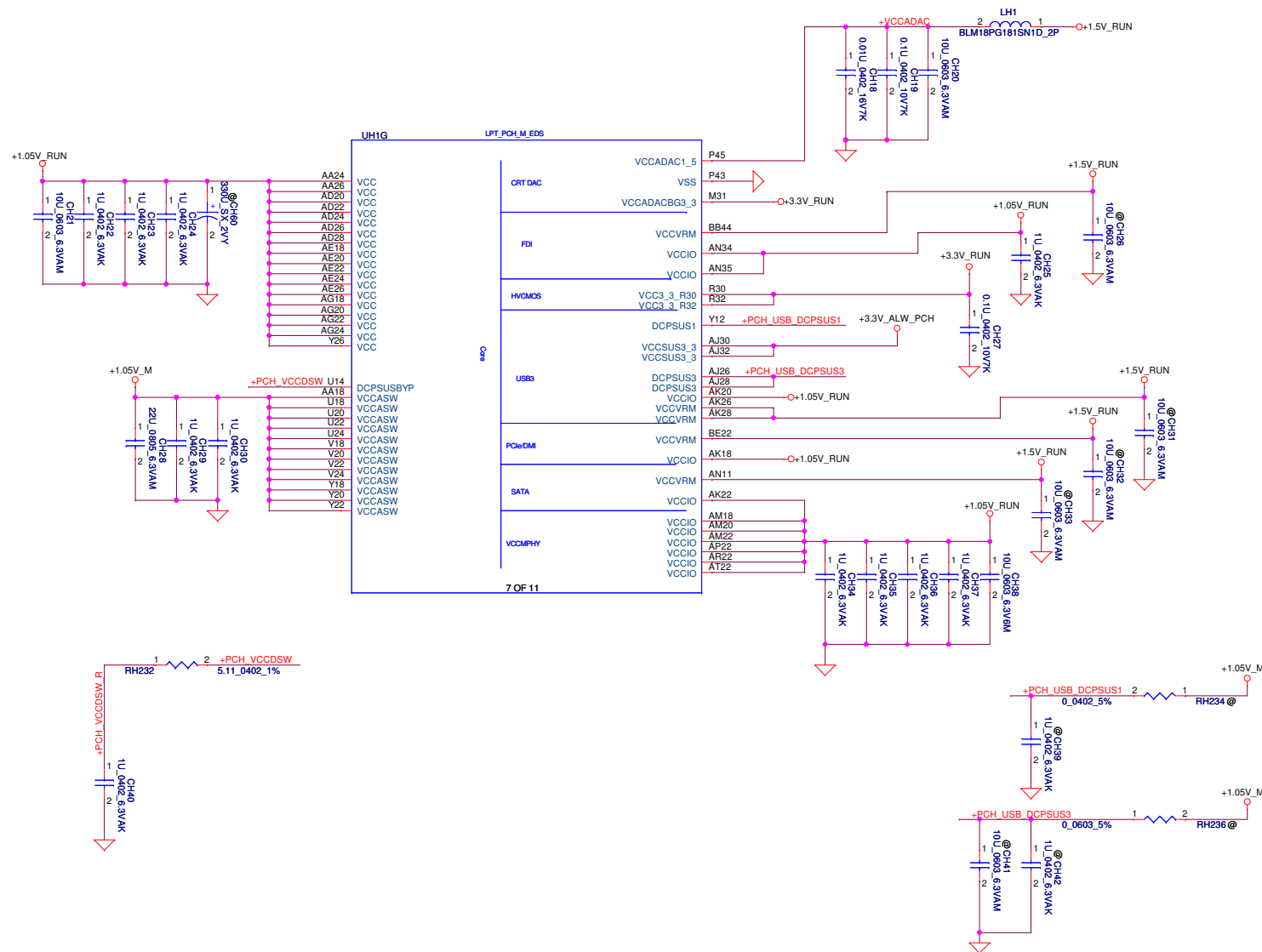
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PCH Power Rail Table		
Voltage Rail	Voltage	SO Iccmax Current (A)
VCC	1.05V	1.29 A
VCCIO	1.05V	3.629 A
VCCDAC1_5	1.5V	0.070 A
VCCDAC3_3	3.3V	0.0133 A
VCCCLK	1.05V	0.306 A
VCCCLK3_3	3.3V	0.055 A
VCCVRM	1.5V	0.179 A
VCC3_3	3.3V	0.133 A
VCCASW	1.05V	0.67 A
VCCSUSDA	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

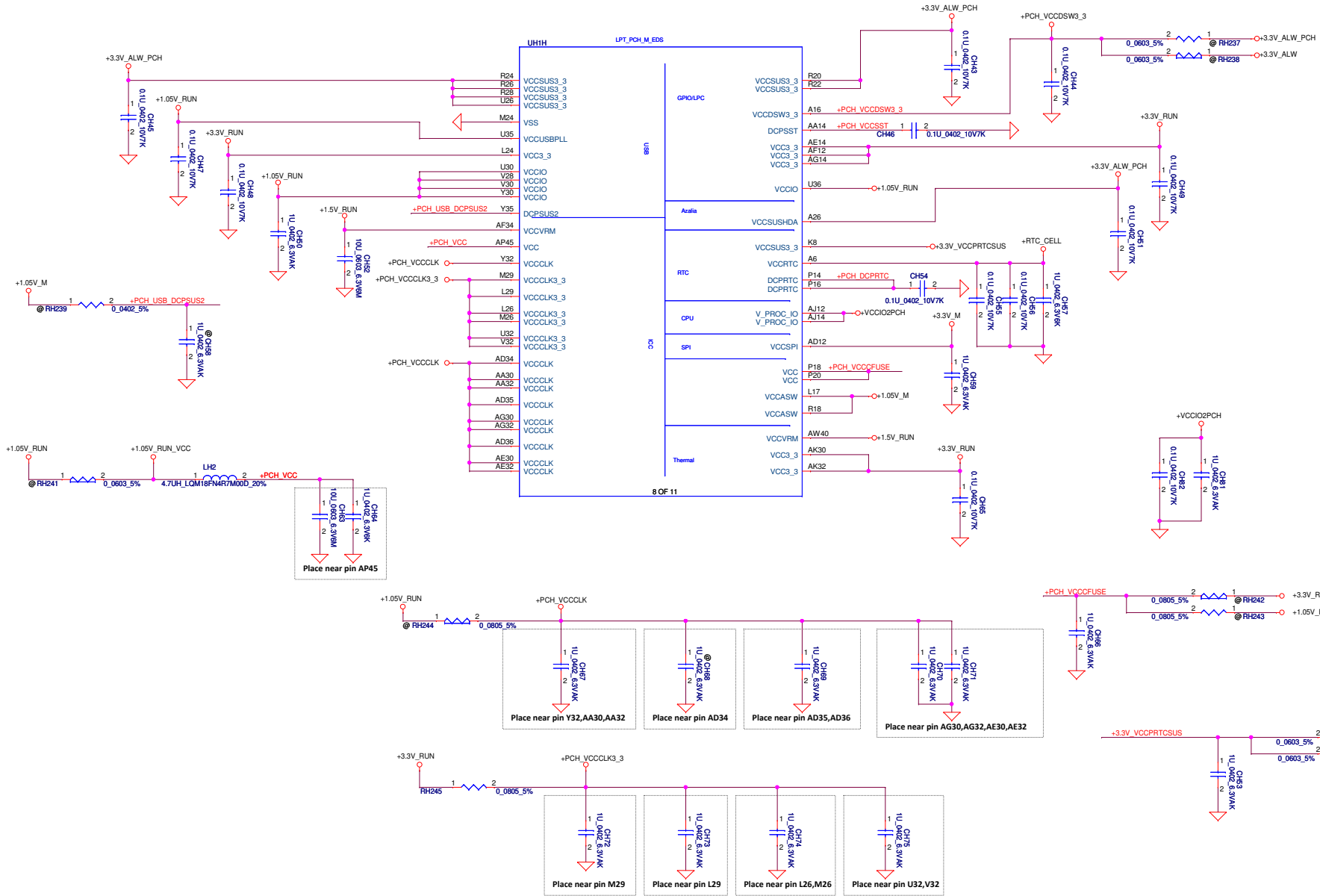
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Title		PCH (7/9)	
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Date	Monday, January 13, 2014	Sheet	24 of 67

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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
VCCADAC1_5	1.5V	0.070 A
VCCADAC3_3	3.3V	0.0133 A
VCCCLK	1.05V	0.306 A
VCCCLK3_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

Place near pin AP45

Place near pin Y32,AA30,AA32

Place near pin AD34

Place near pin AD35,AD36

Place near pin AG30,AG32,AE30,AE32

Place near pin M29

Place near pin L29

Place near pin L26,M26

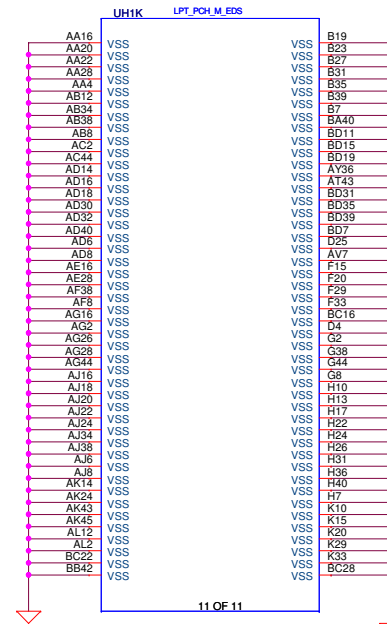
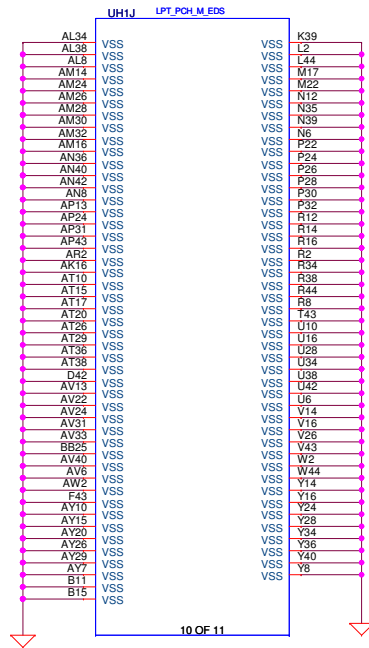
Place near pin U32,V32

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Compal Electronics, Inc.	
Title	PCH (8/9)
Size	Document Number
	LA-B541P
Date	Monday, January 13, 2014
Sheet	25 of 67
Rev	0.1



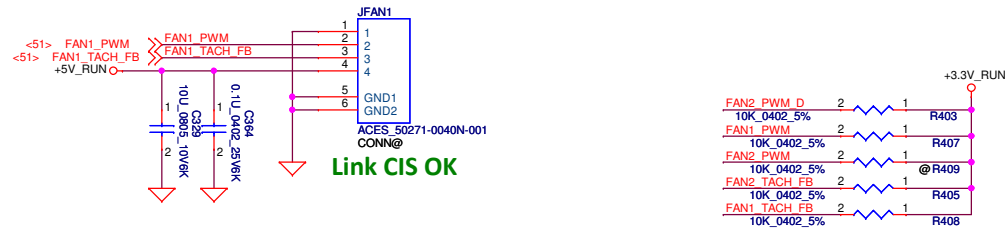
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Compal Electronics, Inc.			
PCH (9/9)			
Size	Document Number	Rev	0.1
LA-B541P		Date:	Monday, January 13, 2014
Sheet 26		of 67	

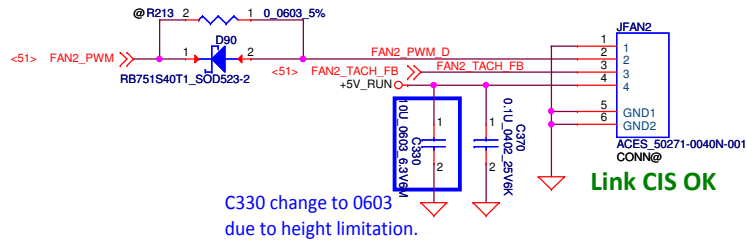
Difference with Diesel

CPU FAN



Link CIS OK

MXM FAN



C330 change to 0603
due to height limitation.

Link CIS OK

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

Remove current sensor Monitor (HW solution)

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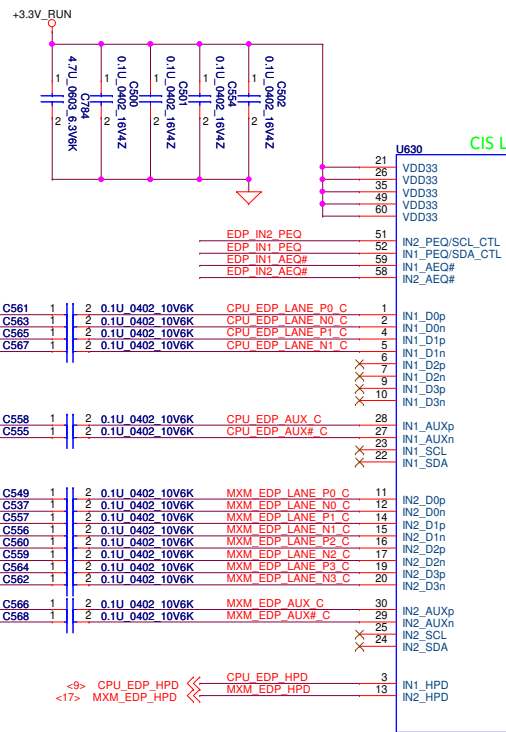
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Title	Current Sensor		
Size	Document Number	LA-B541P	Rev 0.1
Date:	Monday, January 13, 2014	Sheet 28	of 67

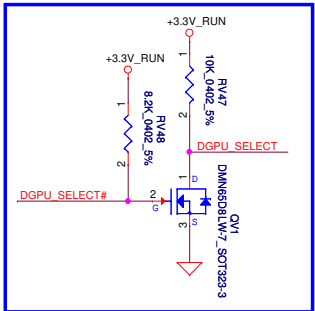
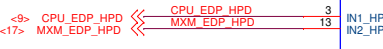
CPU

MXM



CIS LINK OK

eDP Conn



for DP Lane bus layout routing smoothly.

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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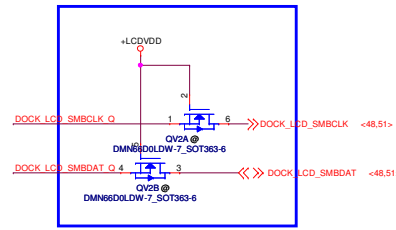
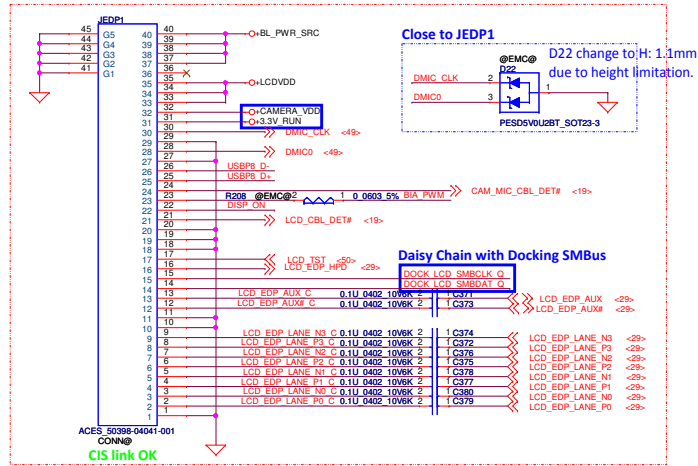


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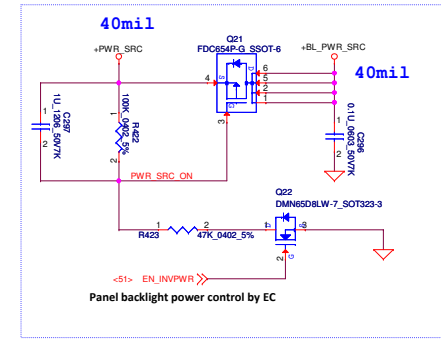
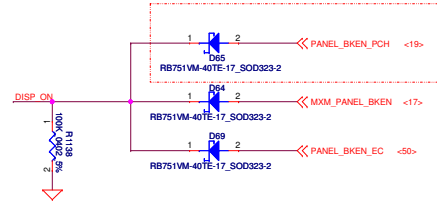
Compal Electronics, Inc.

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

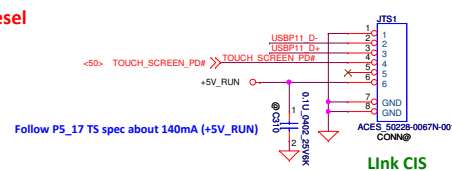
Difference with Diesel



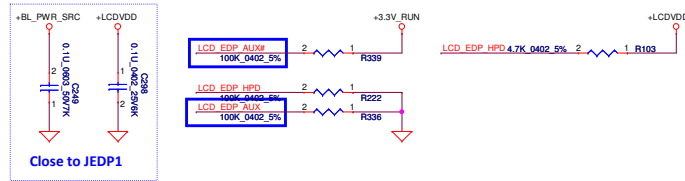
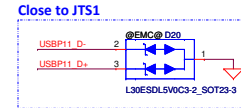
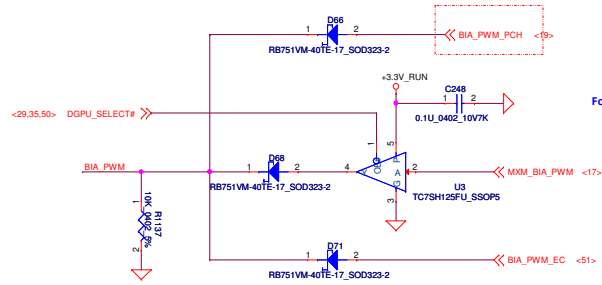
Difference with Diesel



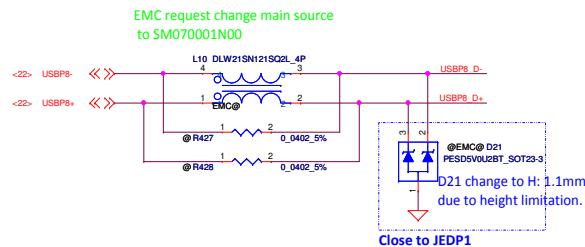
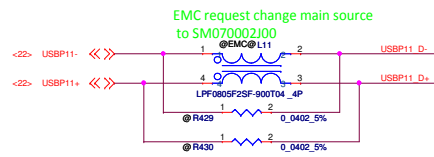
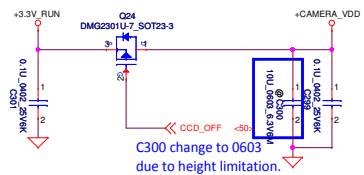
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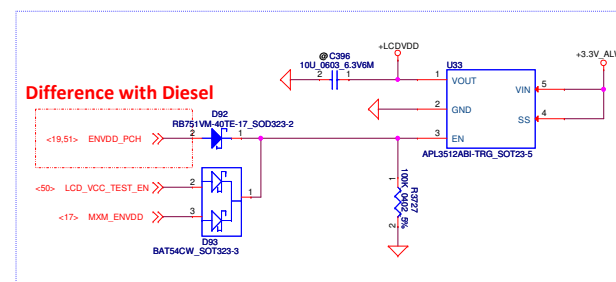
Difference with Diesel



Webcam PWR CTRL



LCD Power



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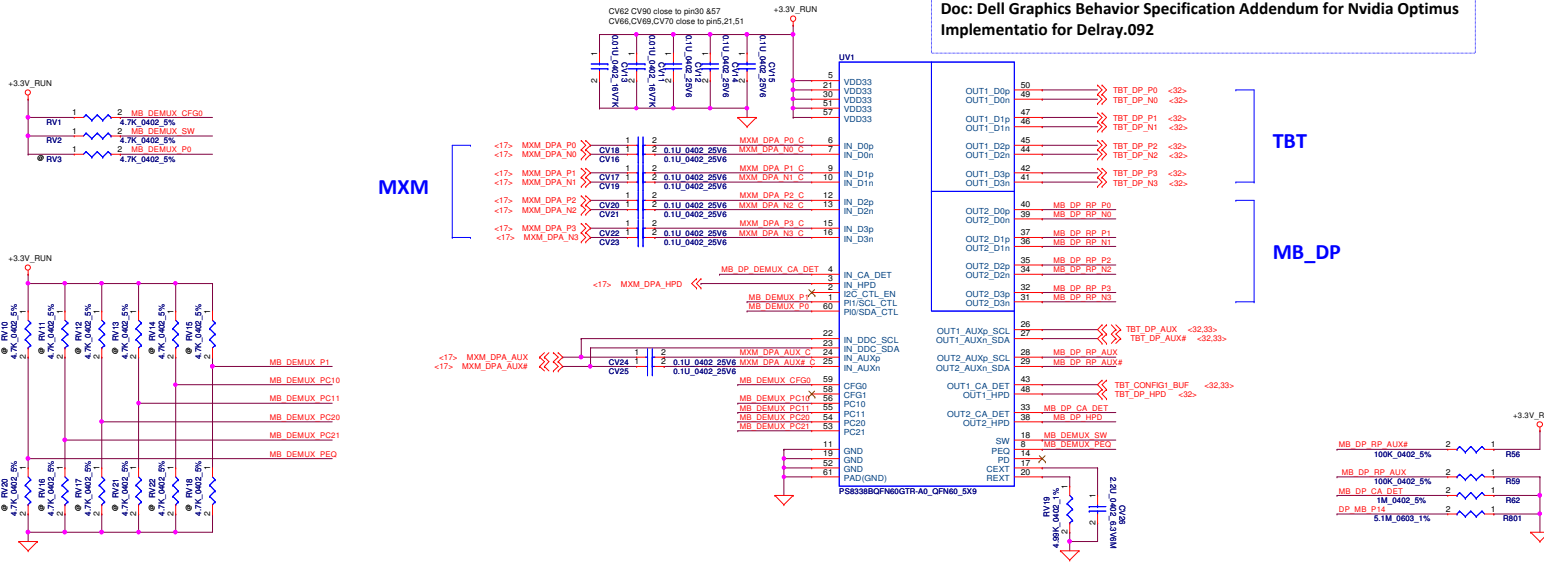
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File	eDP / CAM / TS
Size	Document Number
	LA-B541P
Date	Monday, January 13, 2014
	Sheet 30 of 67

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MB_DP will have higher priority over TBT.

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



MXM

TBT

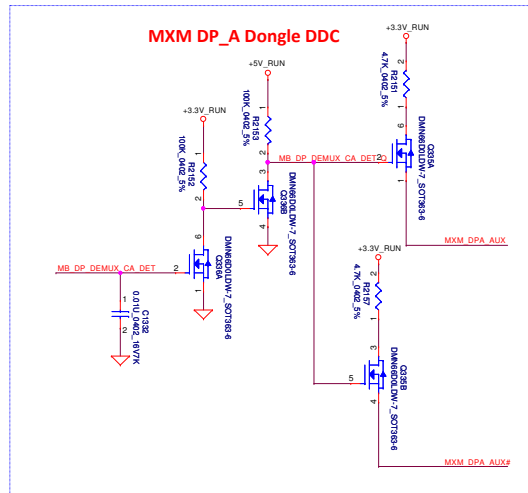
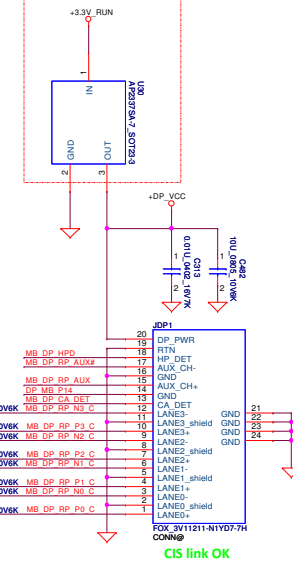
MB_DP



Port switching control or priority configuration. Internal pull down ~150KΩ, 3.3V IO
 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_HP D and OUT2_HP D)
 SW = L: Port1 has higher priority when both ports are plugged (default)
 SW = H: Port2 has higher priority when both ports are plugged

CFG0	H	L
SW	V	V

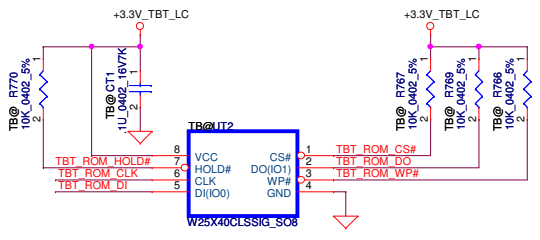
Difference with Diesel



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		Compal Electronics, Inc.	
		DP SW (PS8338) & DP Conn	
File	Document Number	LA-B541P	
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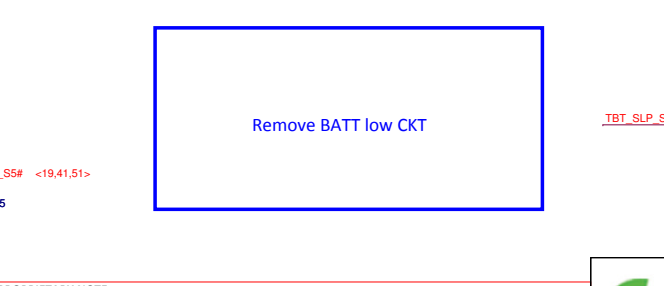
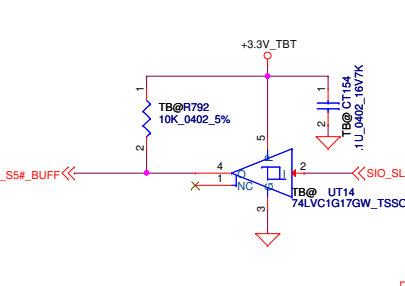
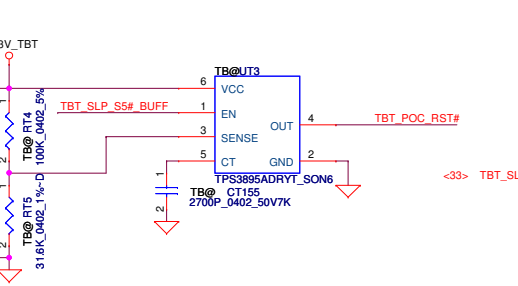
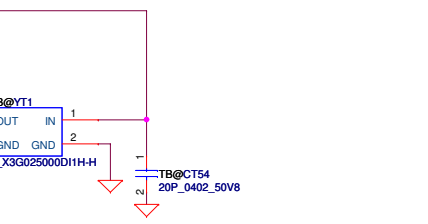
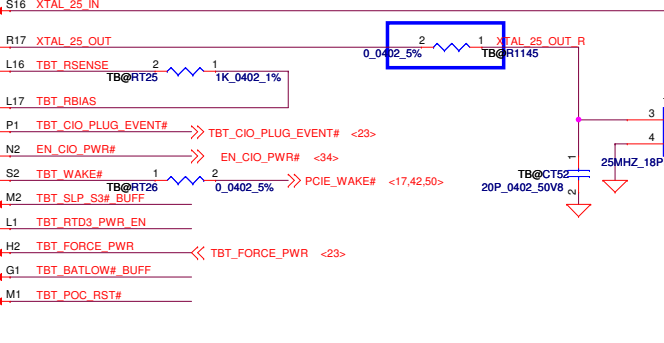
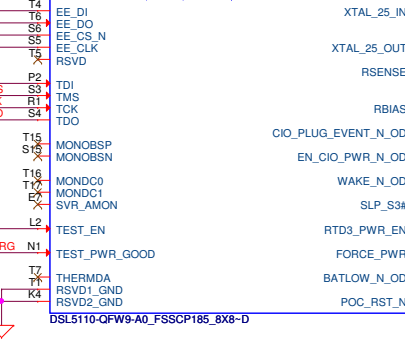
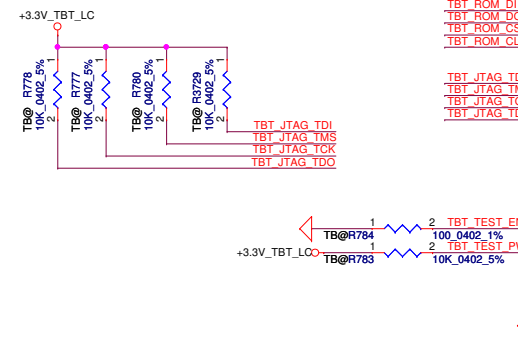
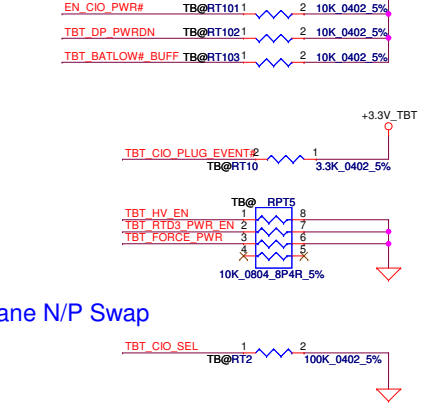
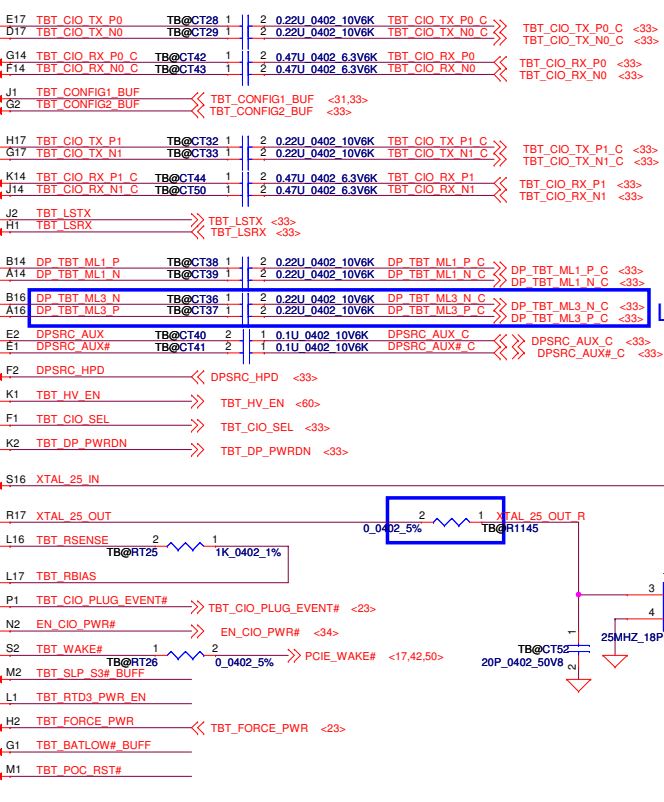
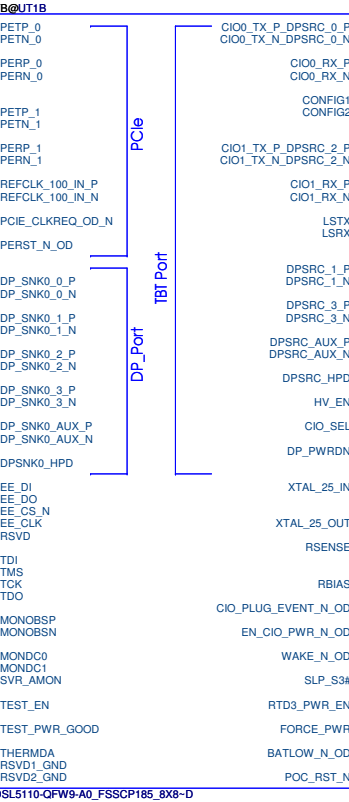
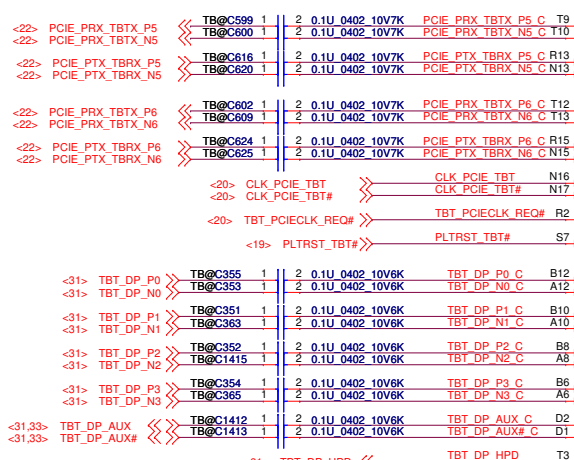


Lane N/P Swap configuration

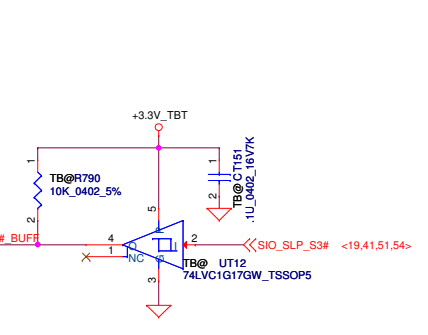
DPSRC_3_P
DPSRC_3_N

I/F	NVM	Pin Name	Lane #	Offset(EE)	All	No-Swap	Swap
CIO-Port0	4C/2C	PA_CIO0_TX_N/P_DPSRC_0_N/P	0 Tx	0x14f	0x20	0x22	
	4C/2C	PA_CIO0_RX_N/P	0 Rx	0x157	0x1	0x5	
CIO-Port1	4C/2C	PA_CIO1_TX_N/P_DPSRC_2_N/P	1 Tx	0x153	0x20	0x22	
	4C/2C	PA_CIO1_RX_N/P	1 Rx	0x15b	0x1	0x5	
Snr0(DP-in)	4C/2C	DPSNK0_0_N/P	0	0x1f1	0x3	0x47	
	4C/2C	DPSNK0_1_N/P	1	0x1f5	0x3	0x47	
	4C/2C	DPSNK0_2_N/P	2	0x1f9	0x3	0x47	
	4C/2C	DPSNK0_3_N/P	3	0x1fd	0x3	0x47	
PA (DP-out)	4C/2C	PA_CIO0_TX_N/P_DPSRC_0_N/P	0	0x11a5	Bit 7 = 0	Bit 7 = 1	
	4C/2C	PA_DPSRC_1_N/P	1	0x11a5	Bit 5 = 0	Bit 5 = 1	
	4C/2C	PA_CIO1_TX_N/P_DPSRC_2_N/P	2	0x11a5	Bit 3 = 0	Bit 3 = 1	
	4C/2C	PA_DPSRC_3_N/P	3	0x11a5	Bit 1 = 0	Bit 1 = 1	

Note: Bit 0 = 0, Bit 2 = 0, Bit 4 = 0, Bit 6 = 0.



Remove BATT low CKT



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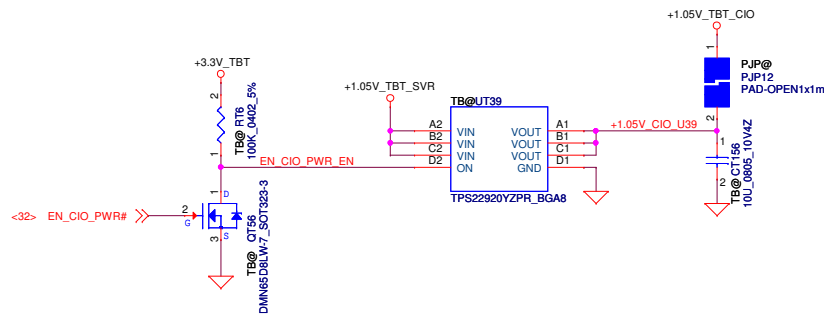
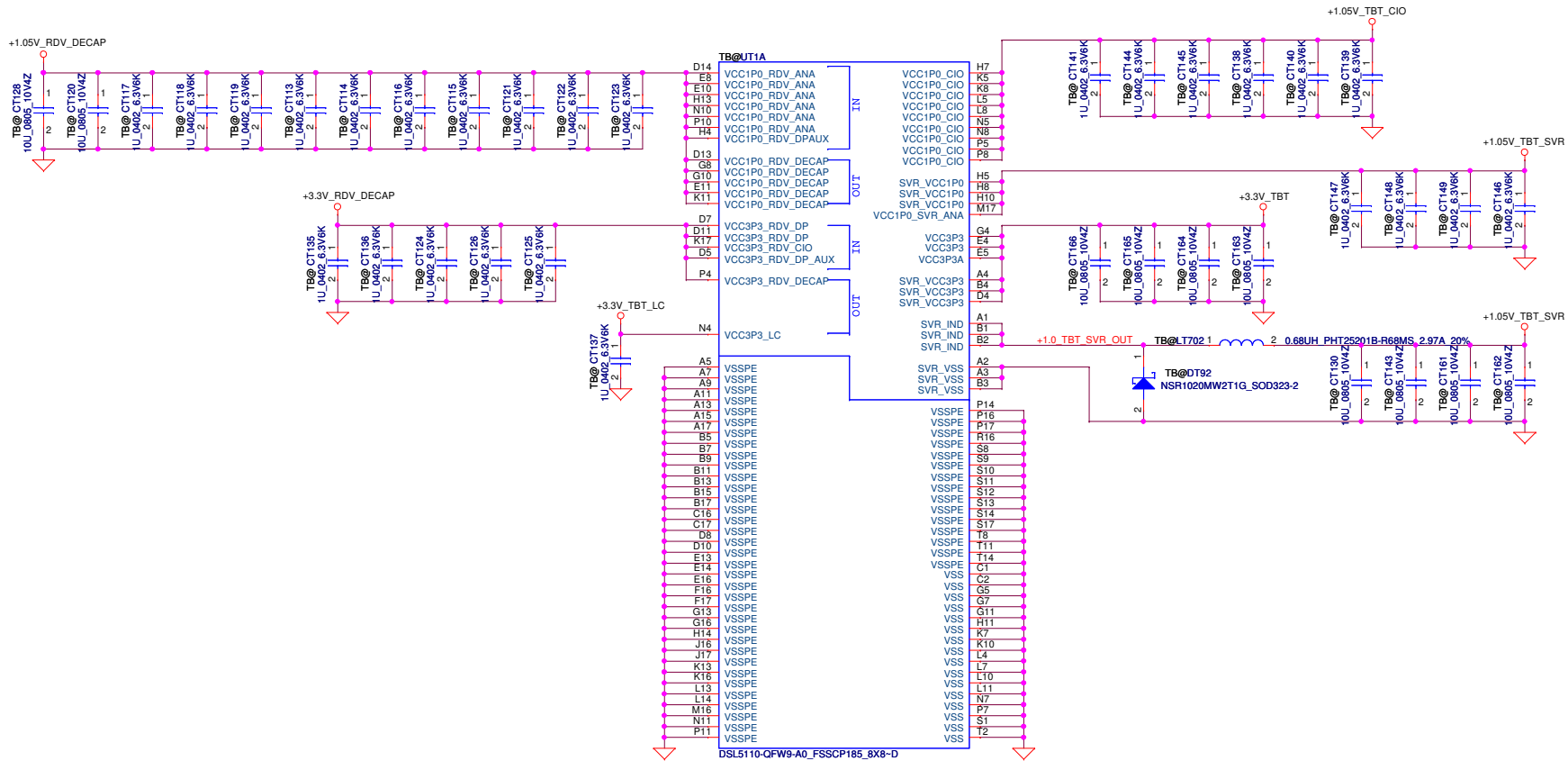
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Size: Document Number

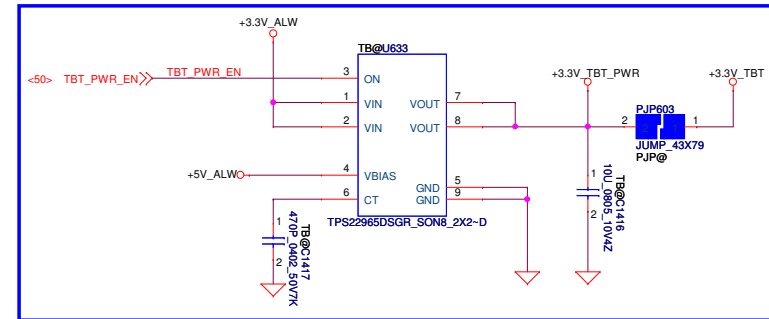
Rev: 0.1

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BTB Power circuit



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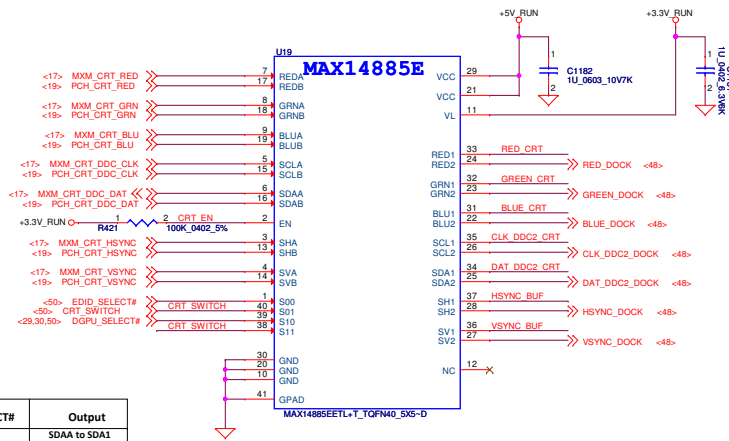


Title		BWD-TBT-LP(3/3) VCC/VSS	
Size	Document Number	Rev	
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Channel A (MXM)

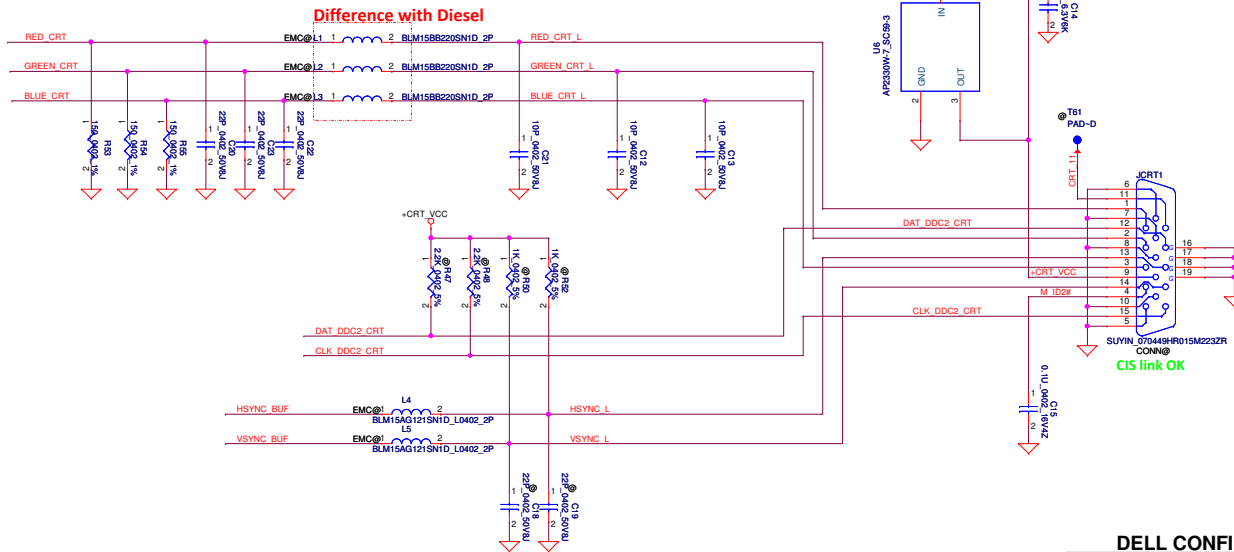
Channel B (PCH)



Port 1 (MB_CRT)

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



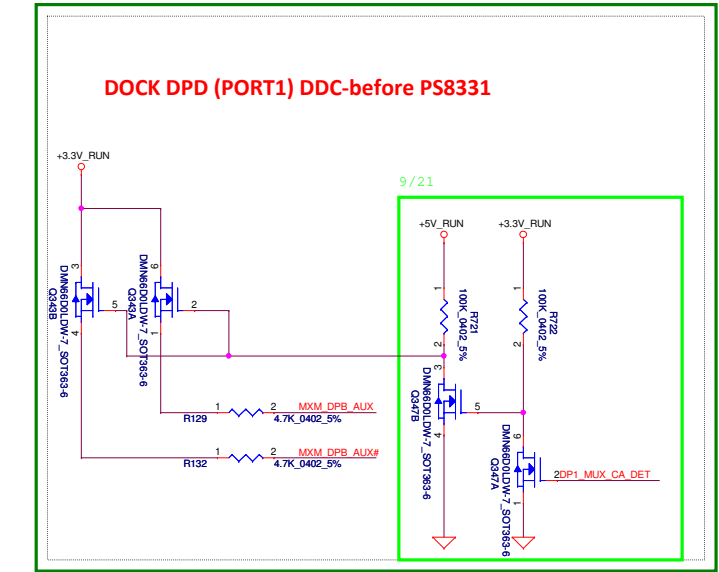
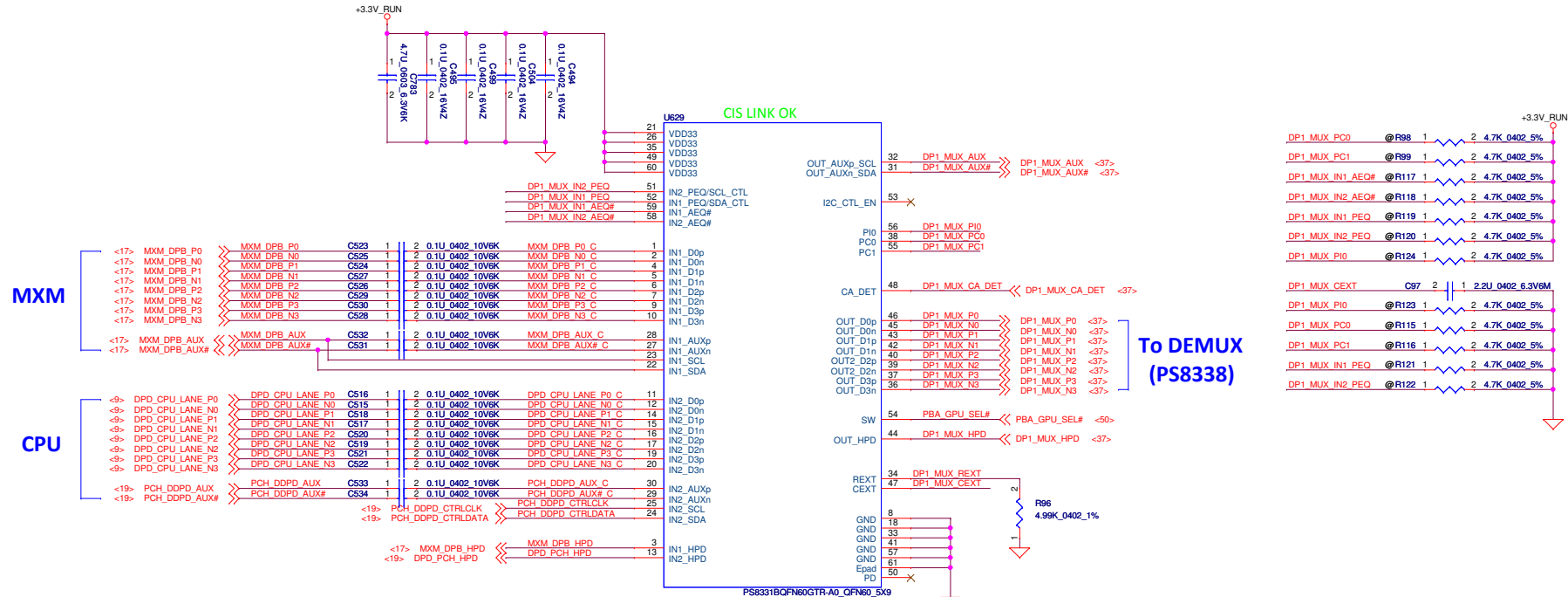
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Title	VGA CONN	
Size	Document Number	Rev
	LA-B541P	0.1
Date:	Mondy, January 13, 2014	Sheet 35 of 67

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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%

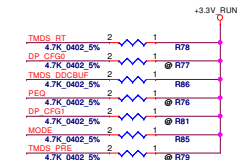
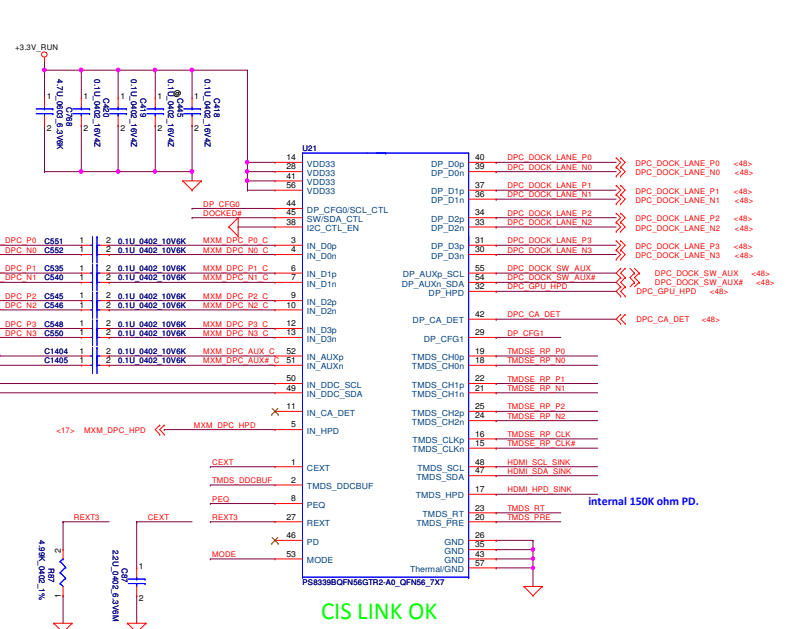
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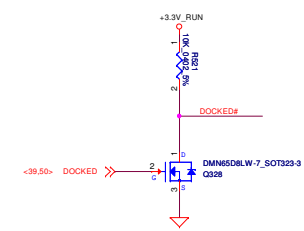
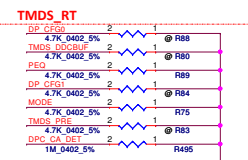
MXM/CPU MUX(PS8331)

File:
 Size: Document Number LA-B541P Rev 0.1
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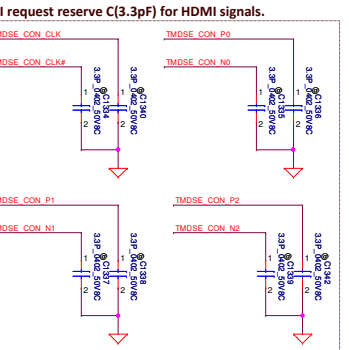
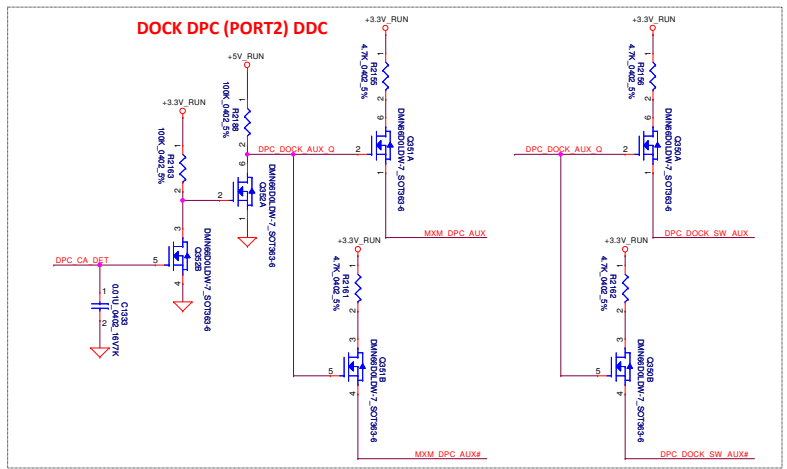
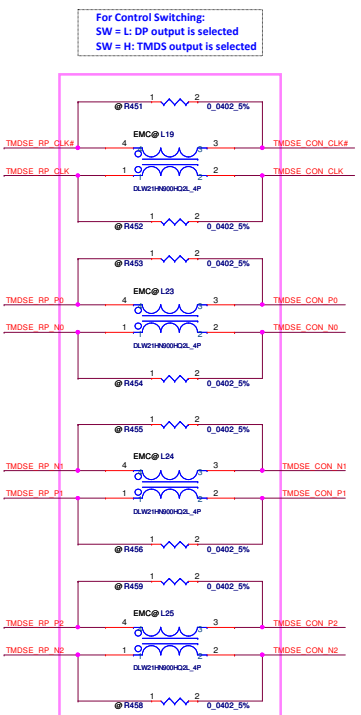
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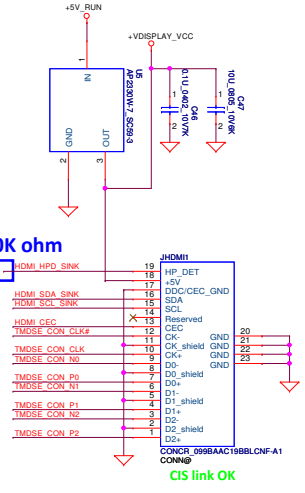
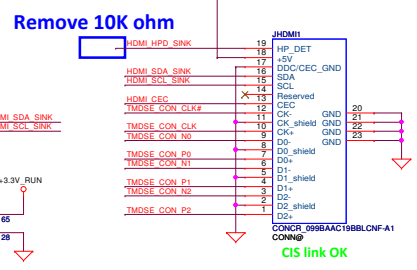
Difference with Diesel



- 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



Part Number	Description
R000000020M	HDMI W/Logs:R000000020M

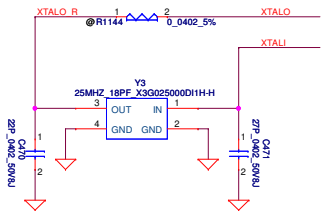
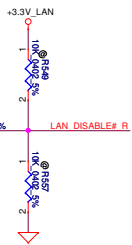
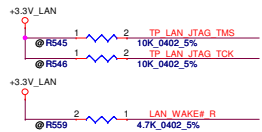


DELL CONFIDENTIAL/PROPRIETARY

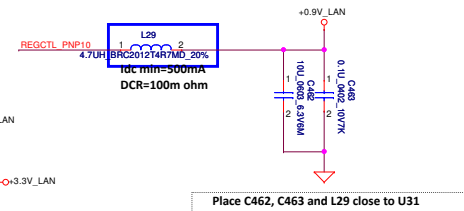
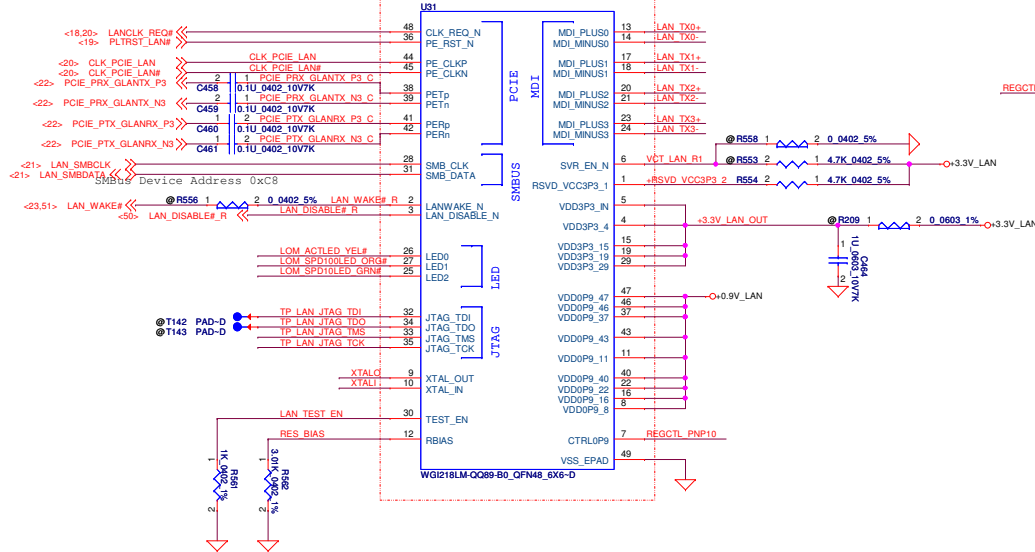
Compal Electronics, Inc.

File	HDMI CONN	
Size	Document Number	Rev
	LA-B541P	0.1
Date:	Monday, January 13, 2014	Sheet 38 of 47

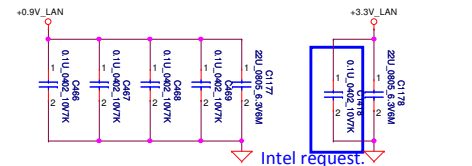
PROPRIETARY NOTE:
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Difference with Diesel



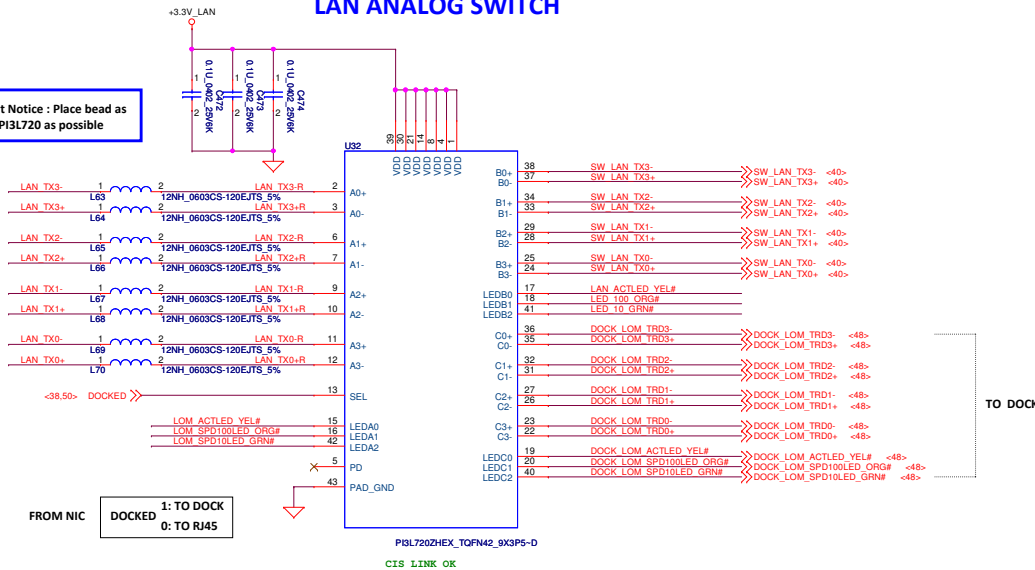
Place C462, C463 and L29 close to U31



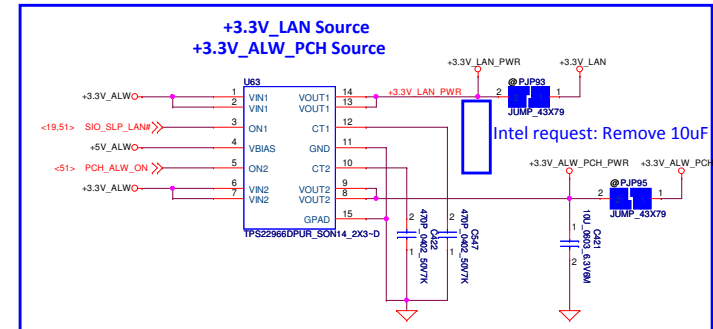
Note: +1.0V_LAN will work at 0.95V to 1.15V Place C1178 close to pin5

LAN ANALOG SWITCH

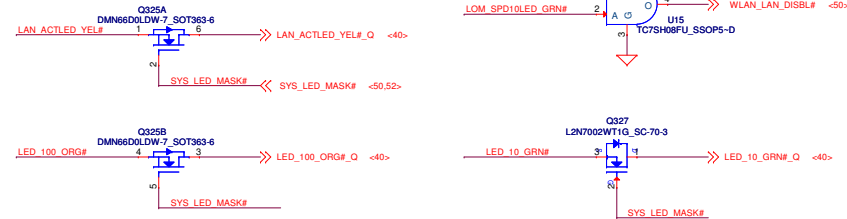
Layout Notice : Place bead as close P13L720 as possible



TO DOCK



JUMP request: Remove 10uF



DELL CONFIDENTIAL/PROPRIETARY

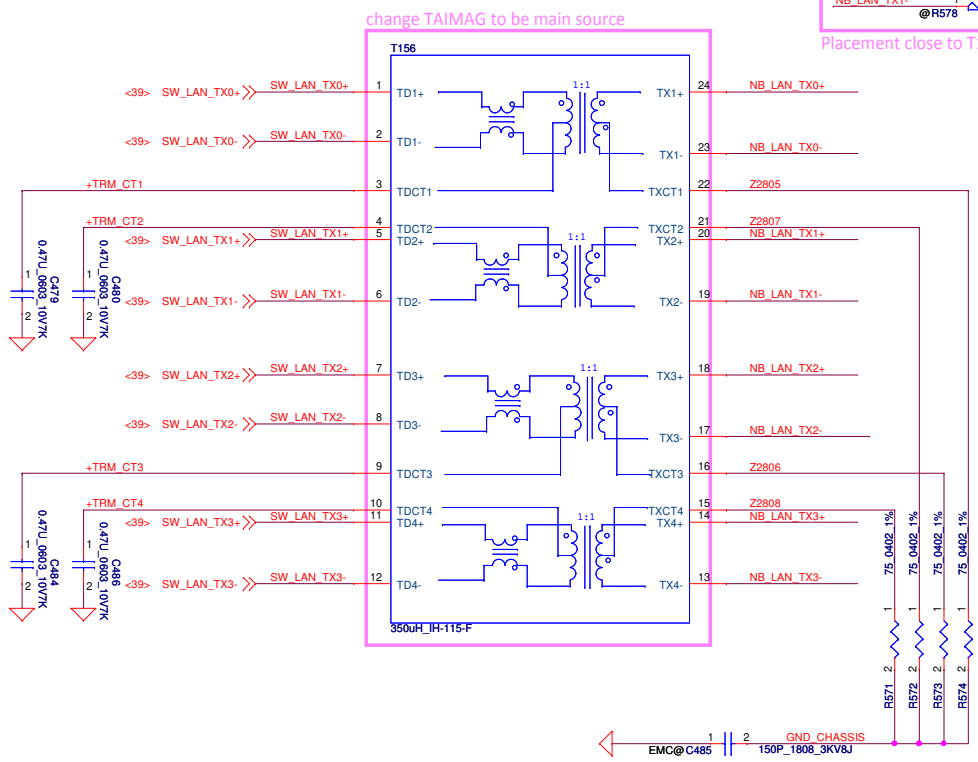
Compal Electronics, Inc.

LAN/LAN SW

LA-B541P

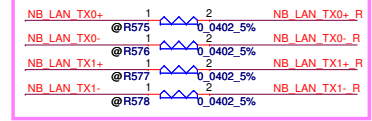
Date: Monday, January 13, 2014 Sheet 39 of 67

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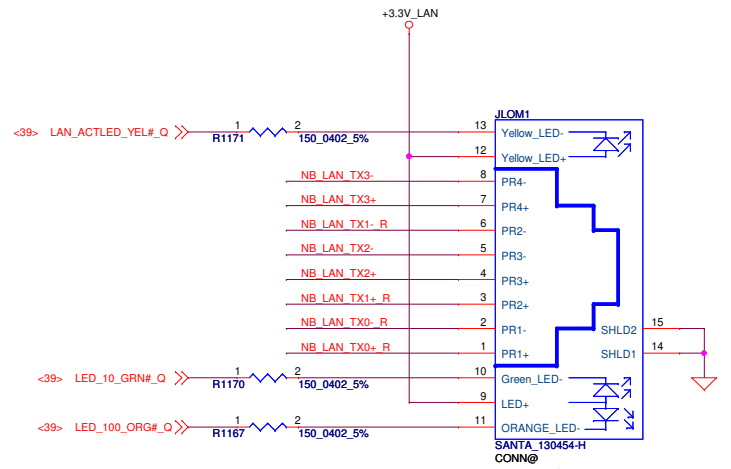
change TAIMAG to be main source

For IEEE EA request

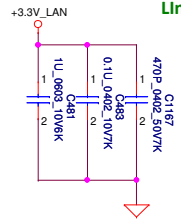


Placement close to T156

+3.3V_LAN/+3.3V_LAN_LOM:20mils



Link CIS



Close to JLOM1

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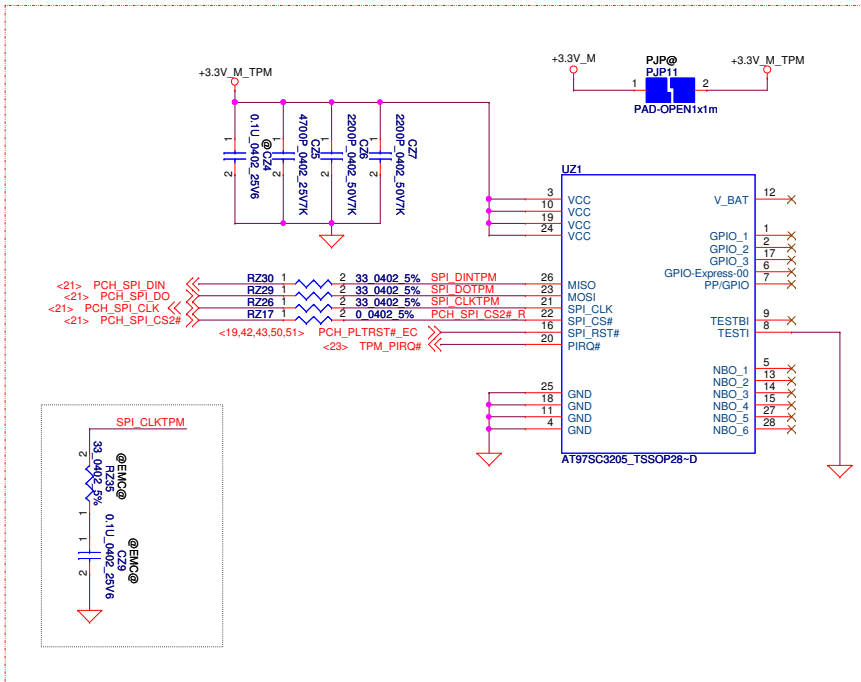
Compal Electronics, Inc.

RJ45

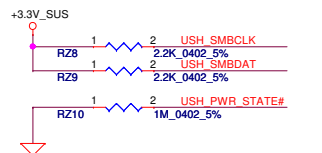
Title	RJ45		Rev	0.1
Size	Document Number	LA-B541P	Date	Monday, January 13, 2014
Sheet	40	of	67	

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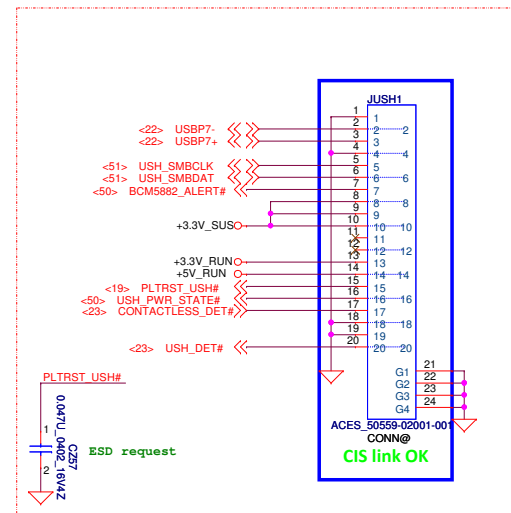
Difference with Diesel



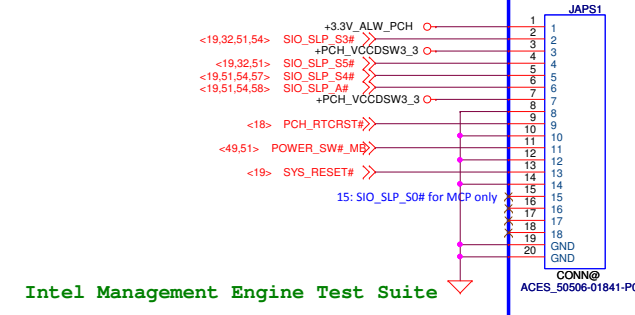
Difference with Diesel



Close to JUSH1



Check ME about wire to board PN



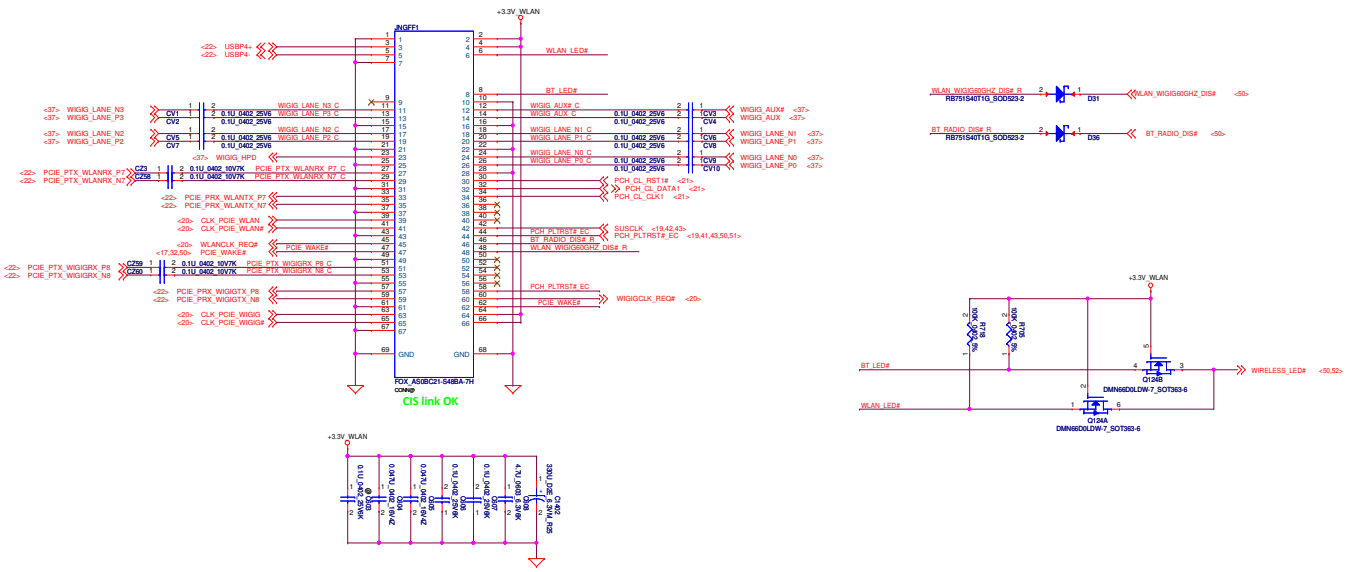
Intel Management Engine Test Suite

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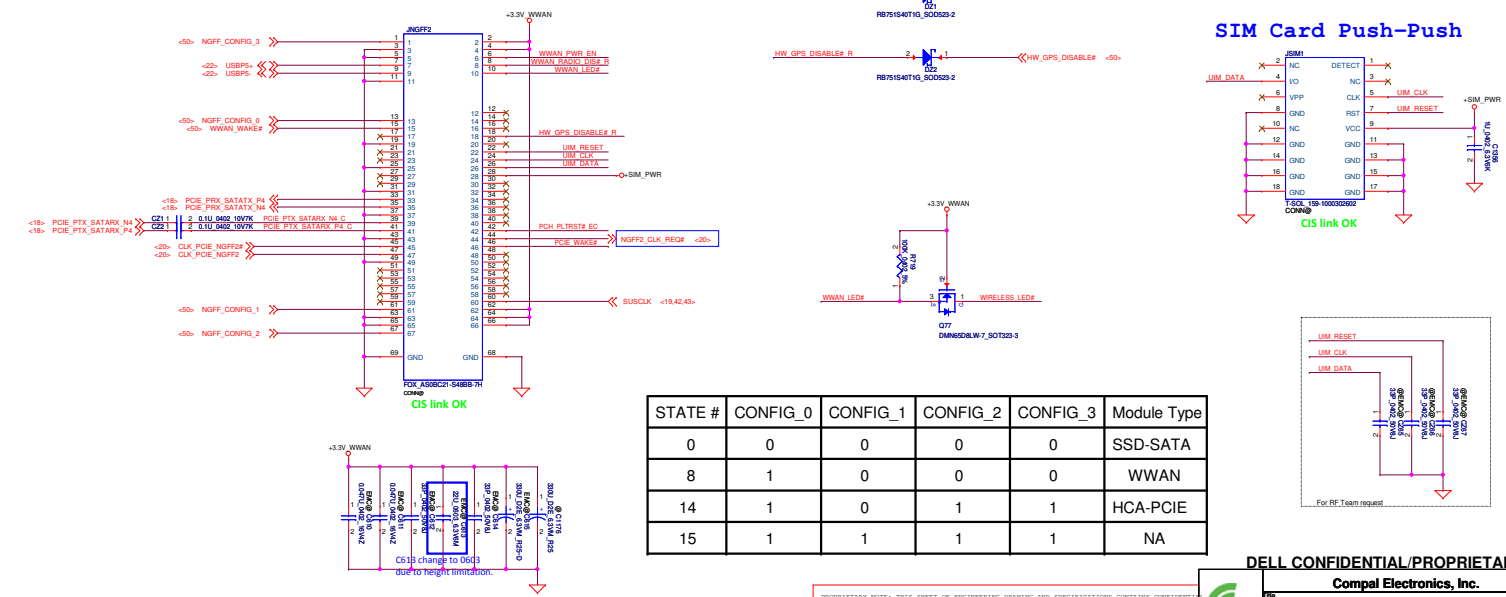
Compal Electronics, Inc.	
Title: TPM/USH	
Size: Document Number	Rev: 0.1
LA-B541P	
Date: Monday, January 13, 2014	Sheet: 41 of 67

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WLAN/BT/WiGig NGFF slot_1 Key A



WWAN/LTE/HCA/Cache NGFF slot_2 Key B

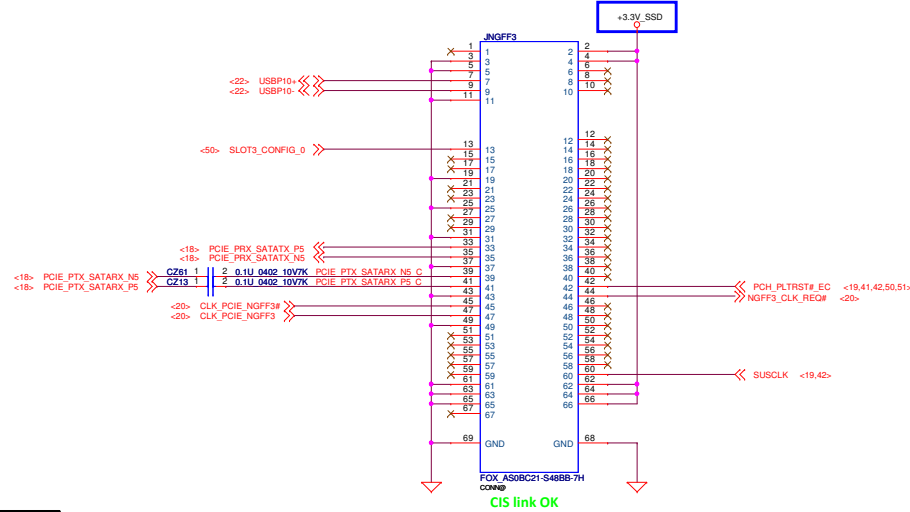


STATE #	CONFIG_0	CONFIG_1	CONFIG_2	CONFIG_3	Module Type
0	0	0	0	0	SSD-SATA
8	1	0	0	0	WWAN
14	1	0	1	1	HCA-PCIE
15	1	1	1	1	NA

C615 footprint change to C_APKX2R5A331MF451
due to height limitation.

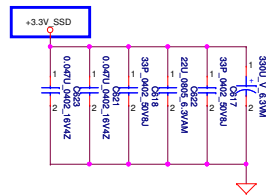
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SSD/HCA/Cache NGFF slot_3 Key B



CIS link OK

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



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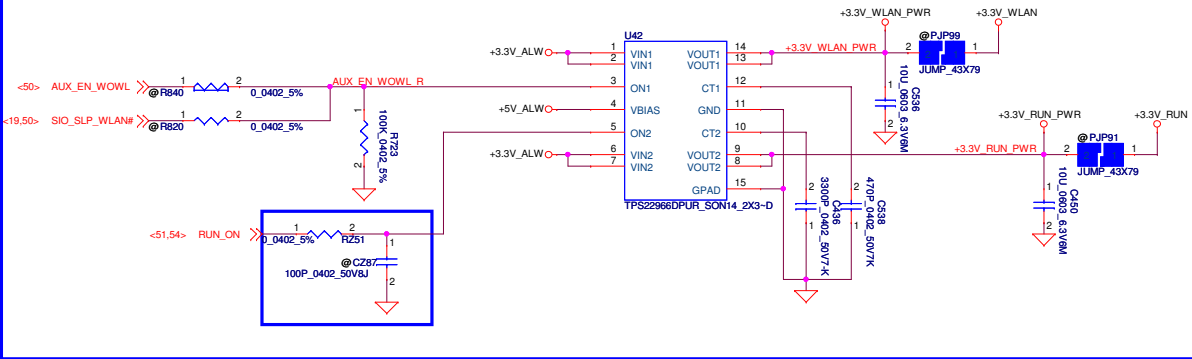
Compal Electronics, Inc.



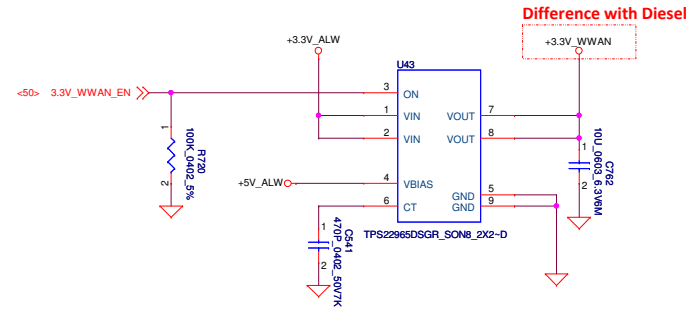
M.2 Card-2/2		
Size	Document Number	Rev
	LA-B541P	0.1
Date:	Monday, January 13, 2014	Sheet 43 of 67

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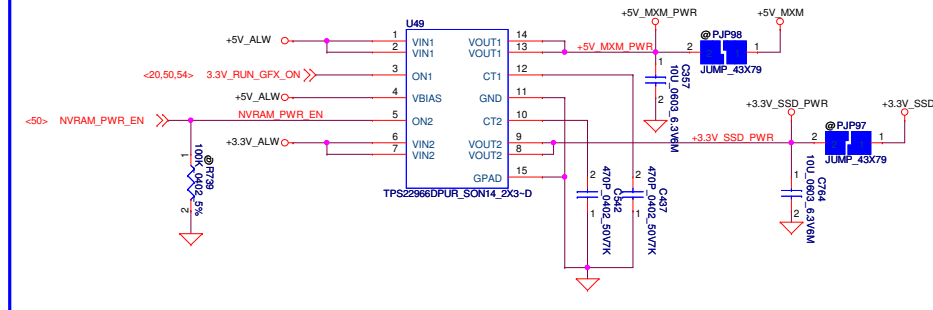
Power Control for M.2 slot 1. & +3.3V_RUN Source



Power Control for M.2 slot 2.



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



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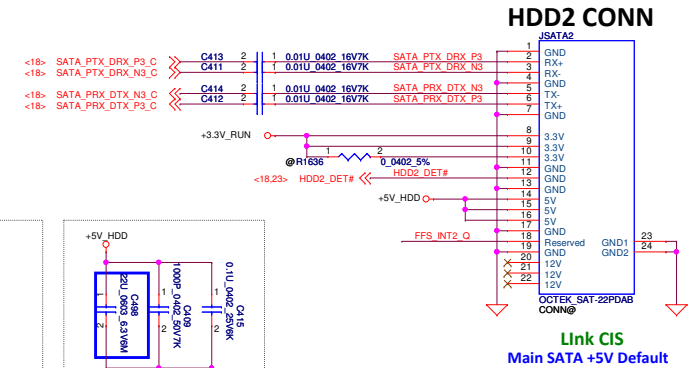
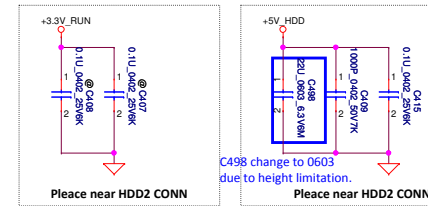
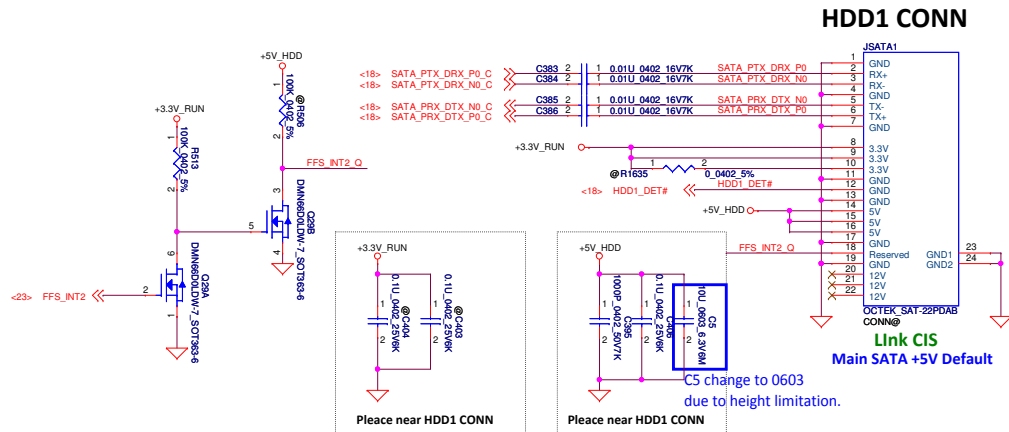
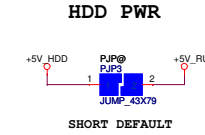
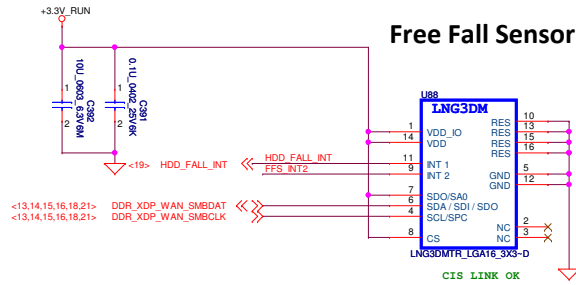
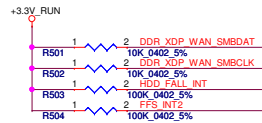
Compal Electronics, Inc.

M.2 Card PWR

File	LA-B541P		Rev	0.1
Size	Document Number	LA-B541P		
Date:	Monday, January 13, 2014	Sheet	44	of 67

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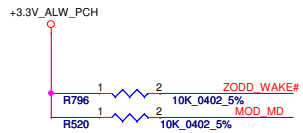
DELL CONFIDENTIAL/PROPRIETARY



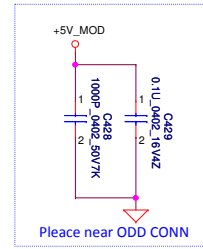
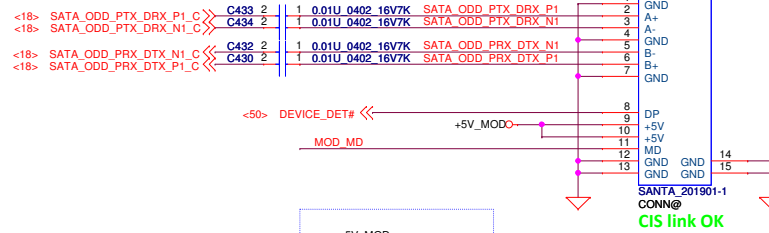
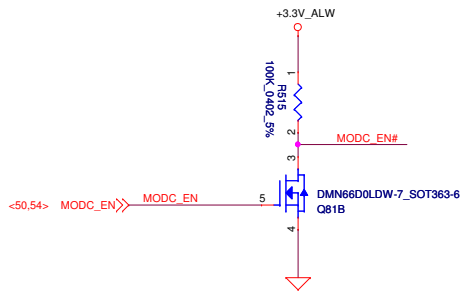
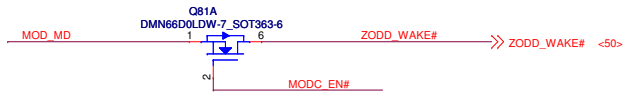
Compal Electronics, Inc.

Title			HDD CONN
Size			Document Number LA-B541P
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Rev			0.1

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Combine +5VMOD with +5V_RUN



ODD CONN

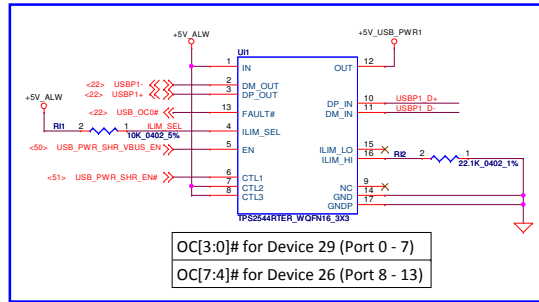
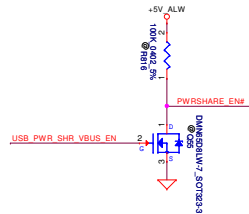
DELL CONFIDENTIAL/PROPRIETARY



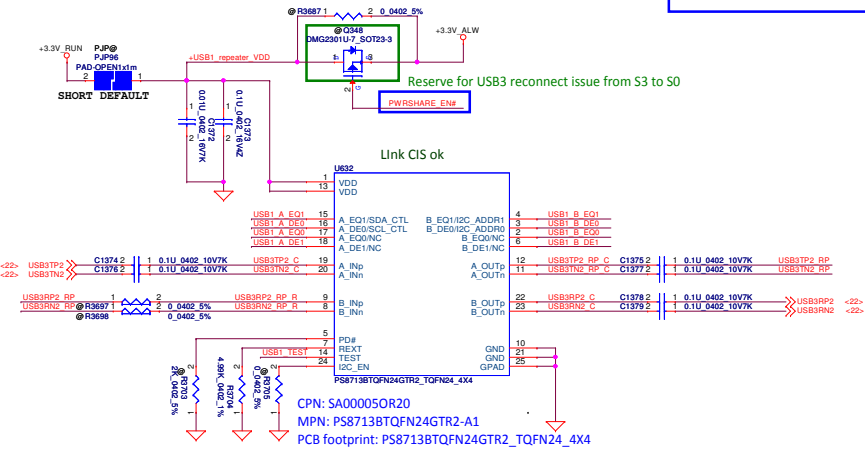
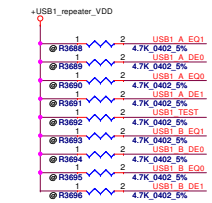
Compal Electronics, Inc.		
ODD CONN		
Size	Document Number	Rev
	LA-B541P	0.1
Date:	Monday, January 13, 2014	Sheet 46 of 67

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Remove TPS2560



Remove SLG55594



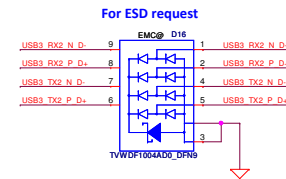
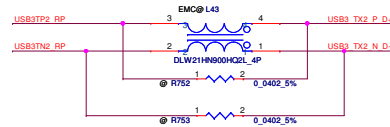
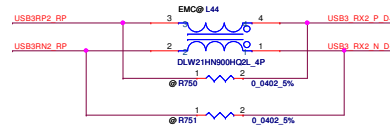
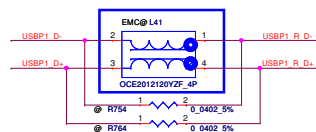
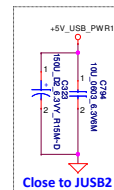
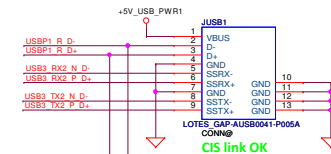
Difference with Diesel



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_EQ&B_EQ have internal pull-down 150k



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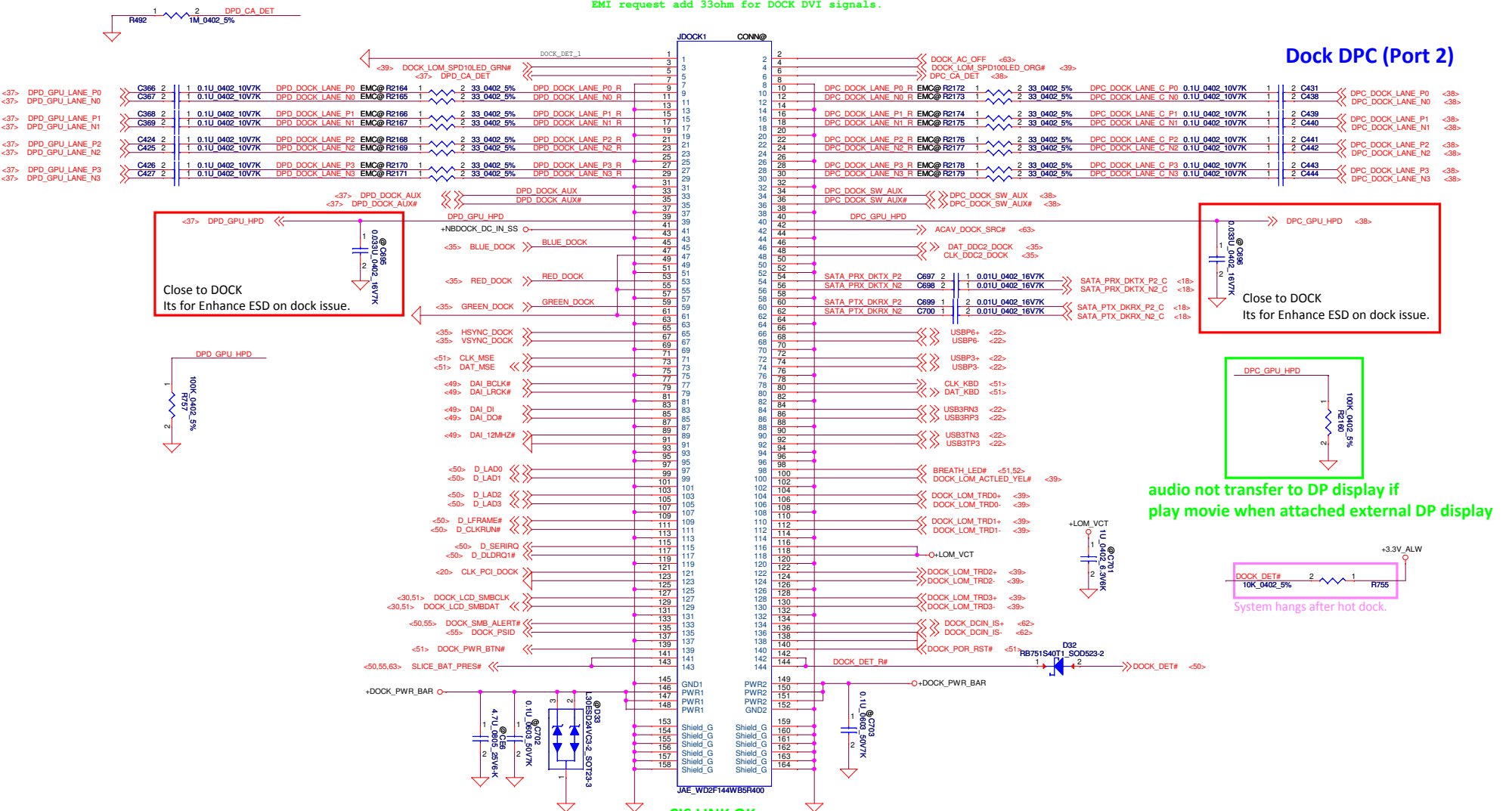
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Title		USB3.0	
Size	Document Number	LA-B541P	
Date	Monday, January 13, 2014	Sheet	47 of 87

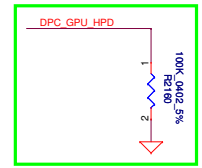
EMI request add 33ohm for DOCK DVI signals.

Dock DPC (Port 2)

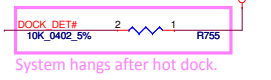


Close to DOCK
Its for Enhance ESD on dock issue.

Close to DOCK
Its for Enhance ESD on dock issue.

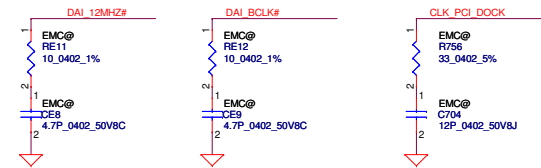


audio not transfer to DP display if play movie when attached external DP display



System hangs after hot dock.

CIS LINK OK



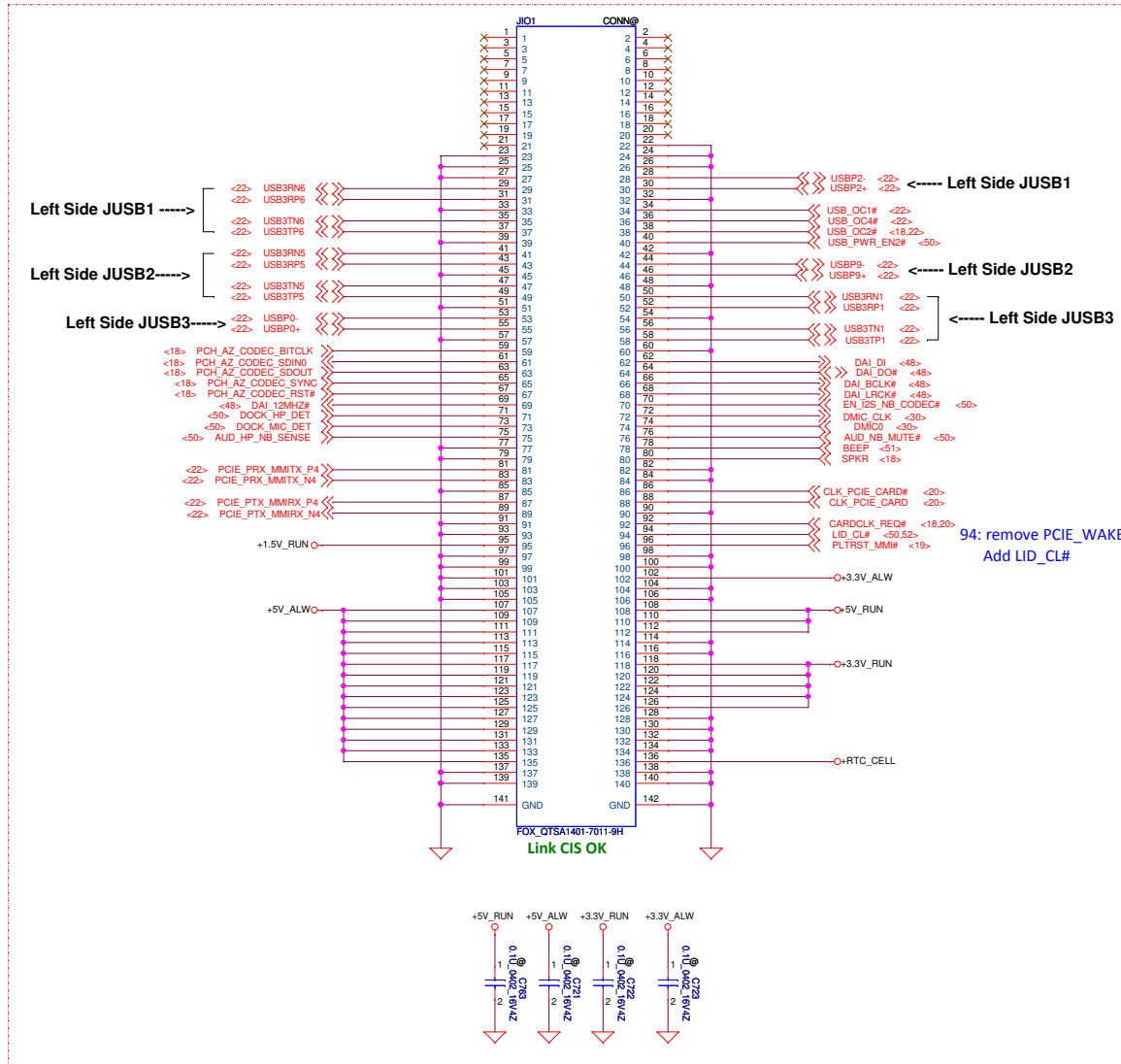
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Compal Electronics, Inc.

File			Docking		
Size			Document Number		
Date			Monday, January 13, 2014		
Page			Sheet 48 of 67		
Part Number			LA-B541P		
Revision			Rev 0.1		

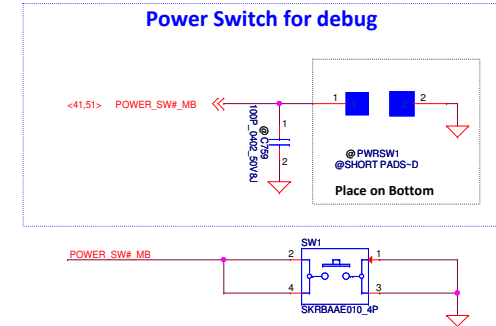
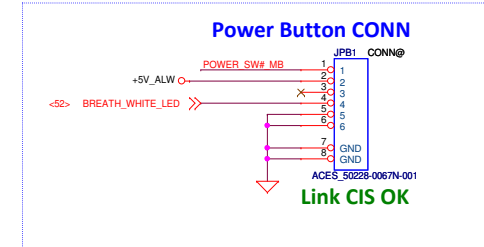
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Difference with Diesel



Difference with Diesel

WireLess ON/OFF CONN



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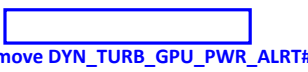
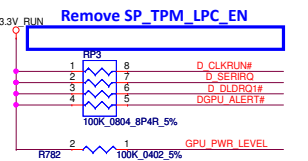
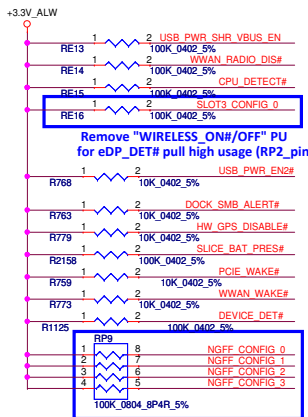
Compal Electronics, Inc.

Title: **IO / PWR Button**

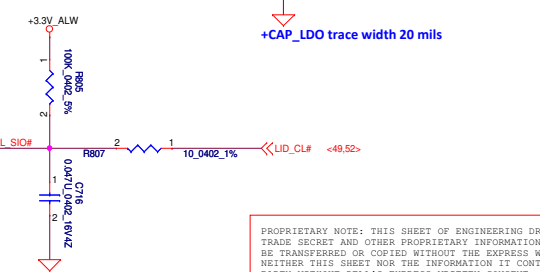
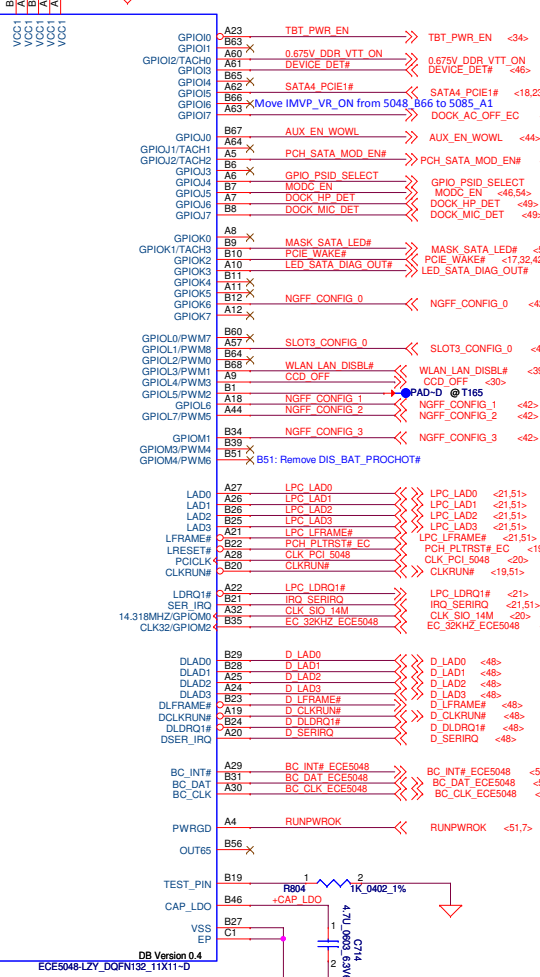
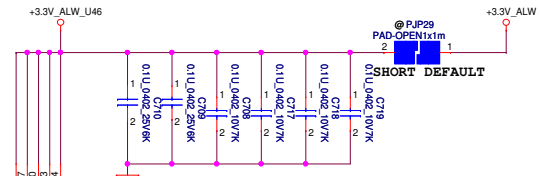
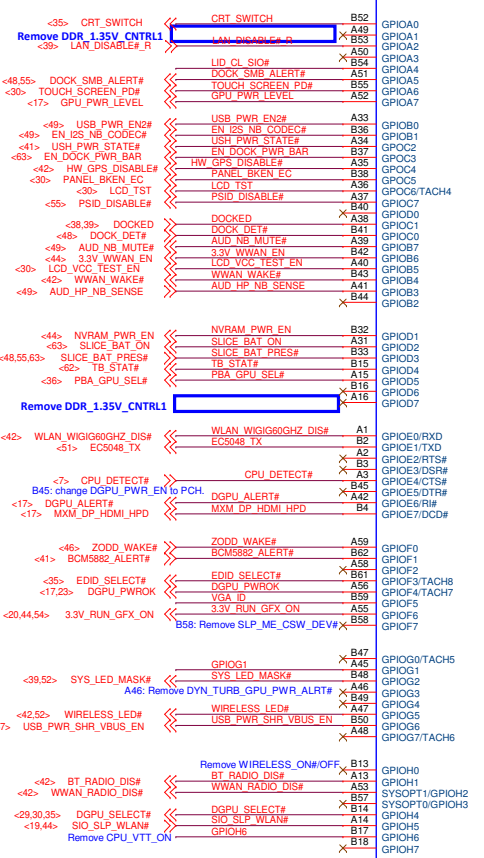
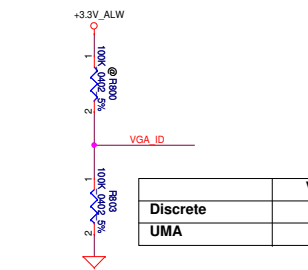
Size: Document Number **LA-B541P** Rev 0.1

Date: Monday, January 13, 2014 Sheet 49 of 67

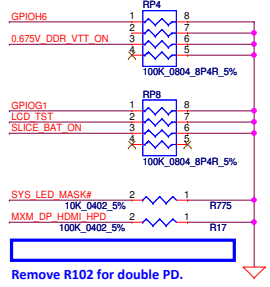
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Discrete	VGA_ID0
0	
UMA	1



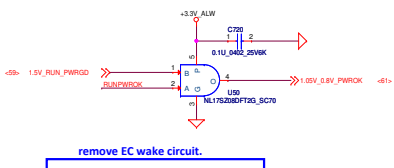
Remove SYS_PWROK,
 SLP_WP#_SEL
 WLAN_RADIO_DIS#
 PROCHOT_GATE
 MSATA_PCIE_PINS1
 IMVP_PWRGD
 SP_TPM_LPC_EN
 MCARD_MISC_PWREN
 TEMP_ALERT#
 MASK_SATA_LED#
 LPC_LDRQ0#
 SLICE_BST_CHG_EN
 DIS_BAT_PROCHOT#
 DDR_1.35V_CNTRL0
 DDR_1.35V_CNTRL1



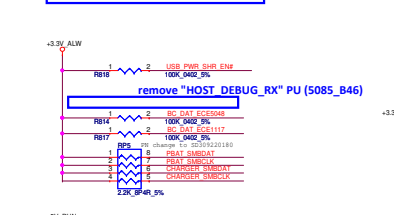
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Compal Electronics, Inc.	
Title	SIO (ECE5048)
Size	Document Number LA-B541P
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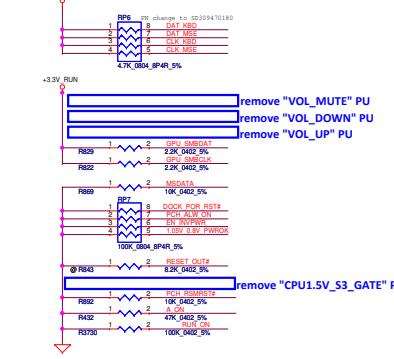
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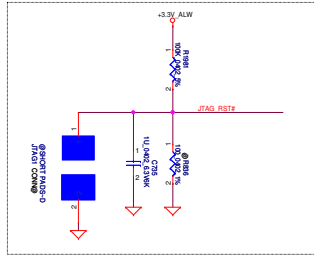
remove EC wake circuit.



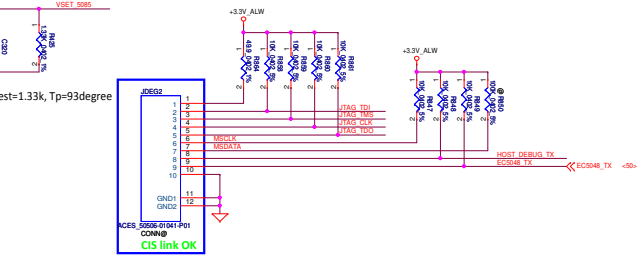
remove "HOST_DEBUG_RX#" PU (5085_B46)



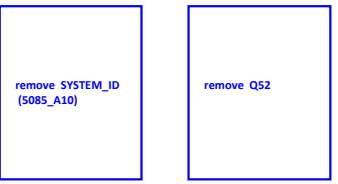
remove "CPU1.5V_S3_GATE#" PD (5085_A36)



remove "VOL_MUTE#" PU
remove "VOL_DOWN#" PU
remove "VOL_UP#" PU

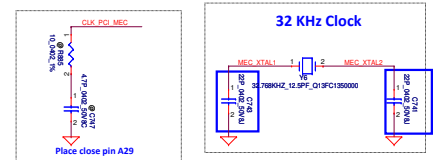


Difference with Diesel



remove SYSTEM_ID (5085_A10)

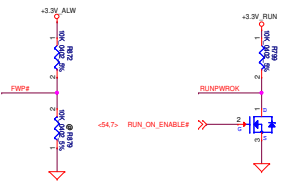
remove Q52



32 KHz Clock

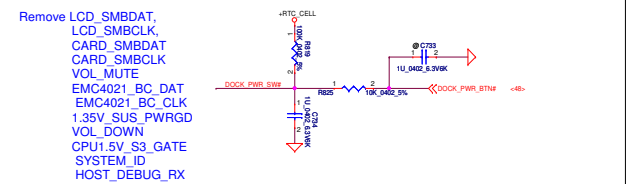
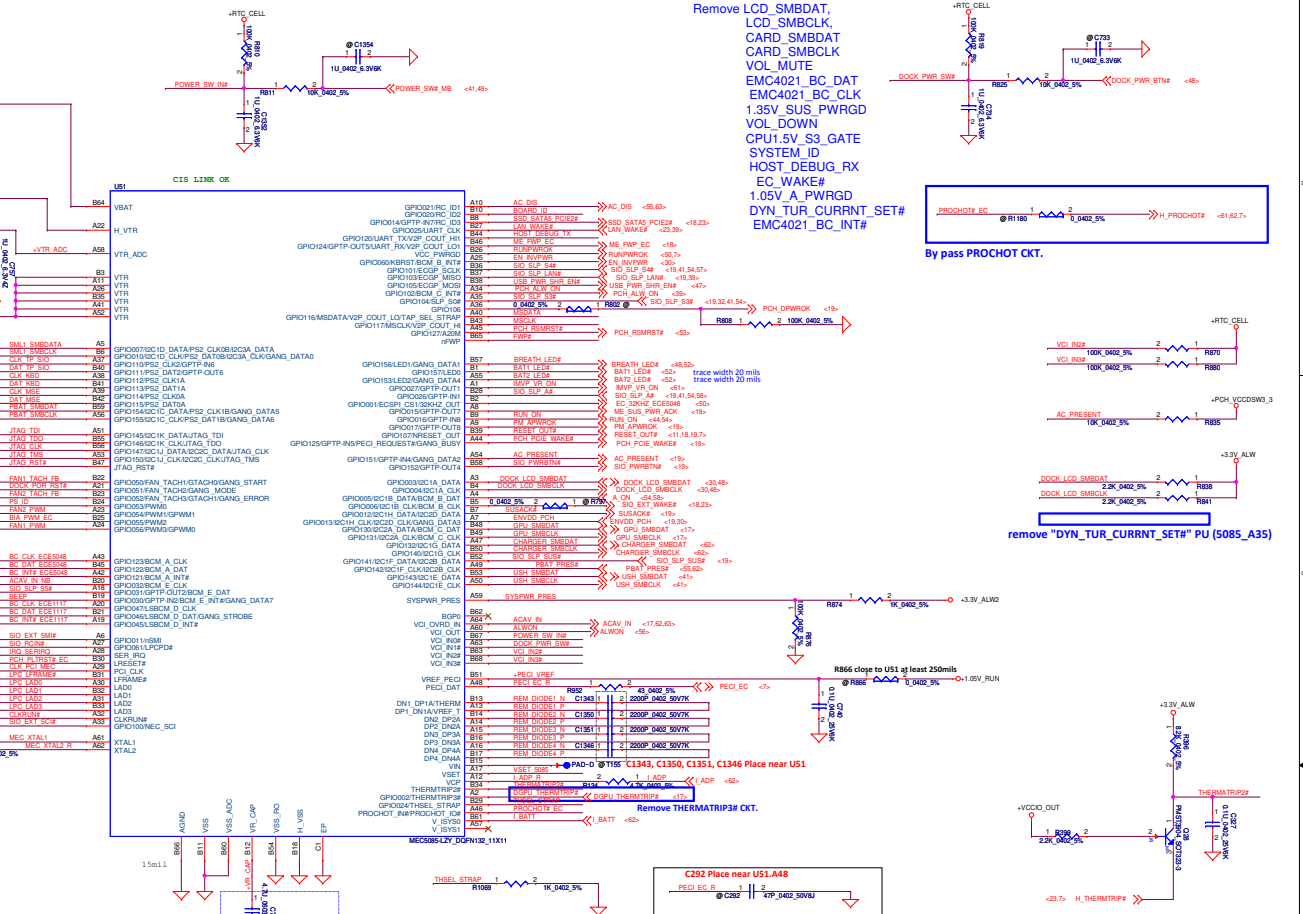
R875	C744	REV
240K	4700p	X00
130K	4700p	X01
33K	4700p	X02
4.3K	4700p	***
2K	4700p	***
1K	4700p	A00

BOARD_ID rise time is measured from 5%~68%.



remove SYSTEM_ID (5085_A10)

remove Q52

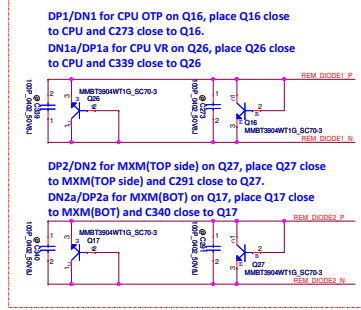


Remove LCD_SMBDAT
LCD_SMBCLK
CARD_SMBDAT
CARD_SMBCLK
VOL_MUTE
EMC4021_BC_DAT
EMC4021_BC_CLK
1.35V_SUS_PWRGD
VOL_DOWN
CPU1.5V_S3_GATE
SYSTEM_ID
HOST_DEBUG_RX#
EC_WAKE#
1.05V_A_PWRGD
DYN_TUR_CURRNT_SET#
EMC4021_BC_INT#

By pass PROCHOT# CKT.

remove "DYN_TUR_CURRNT_SET#" PU (5085_A35)

1: Channel 1 will provide Thermistor Readings
0: Channel 1 will provide Diode Readings



DP1/DN1 for CPU OTP, place Q16 close to CPU and C273 close to Q16.

DP1a/DN1a for CPU VR on Q26, place Q26 close to CPU and C339 close to Q26

DP3/DN3 for SODIMM(TOP) on Q14, place Q14 close to SODIMM(TOP) and C272 close to Q14

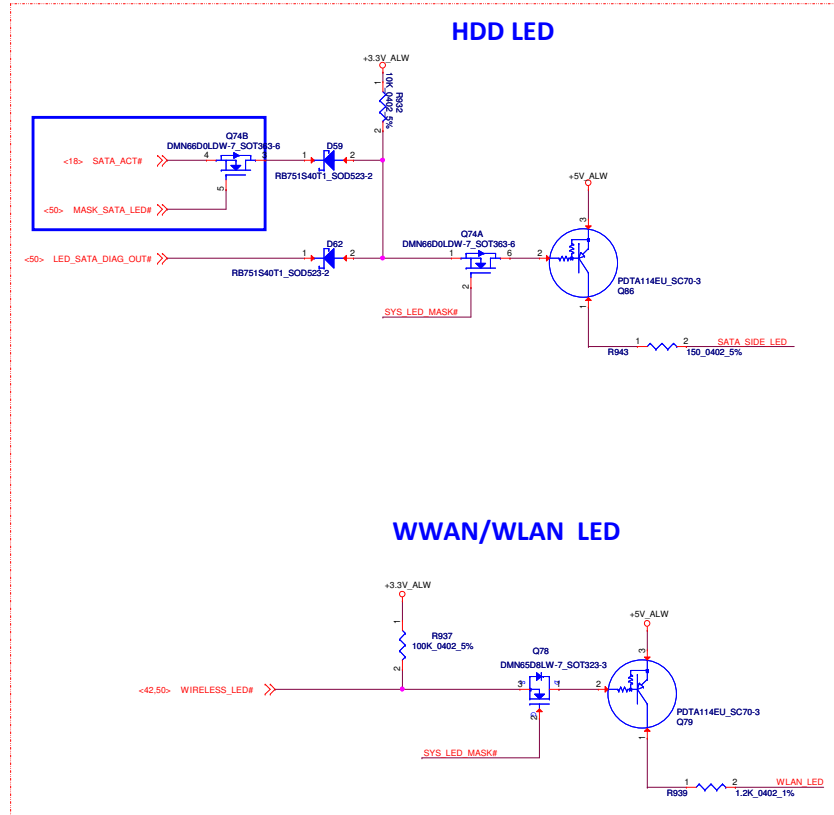
DP4/DN4 for WIGig on Q15, place Q15 close to WIGig and C288 close to Q15

Remove THERMATRIP3# CKT.

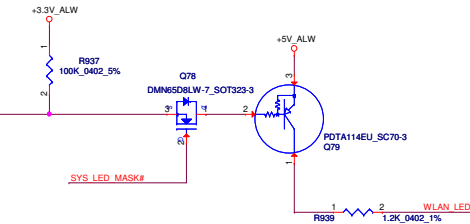
Channel	Location
DP1/DN1	CPU OTP
DP1a/DN1a	CPU VR
DP2/DN2	MXM(TOP)
DP2a/DN2a	MXM(BOT)
DP3/DN3	DIMM(TOP)
DP4/DN4	WIGig

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Difference with Diesel



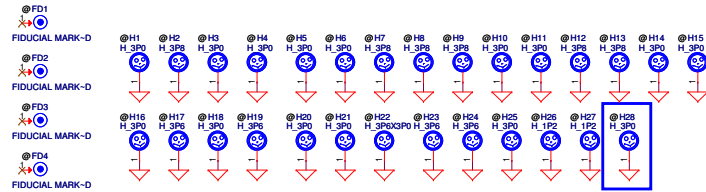
WWAN/WLAN LED



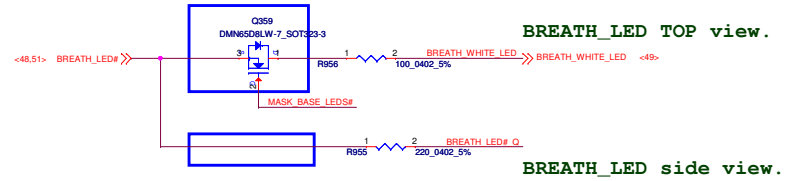
LED Circuit Control Table

	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

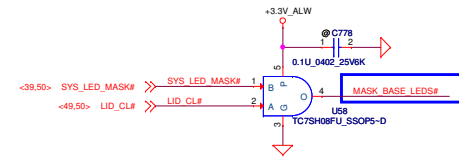
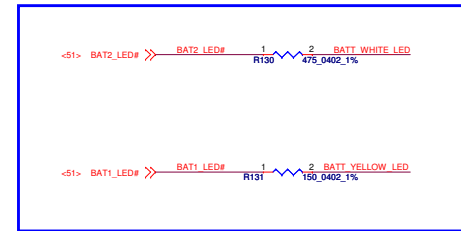
Fiducial Mark



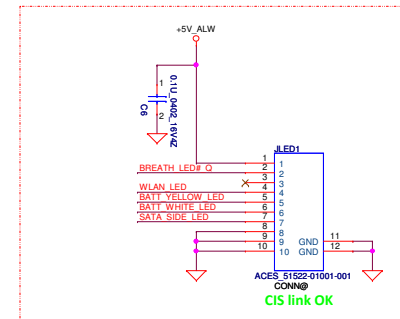
Breath LED



BATT LED



Difference with Diesel

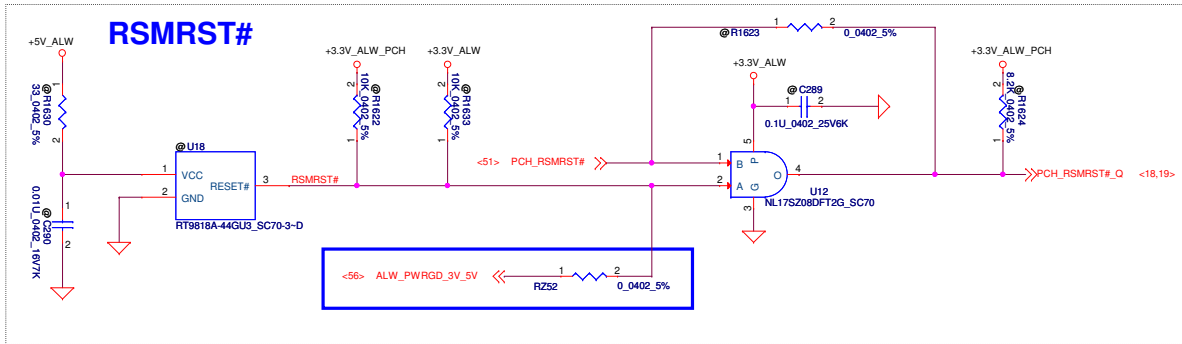


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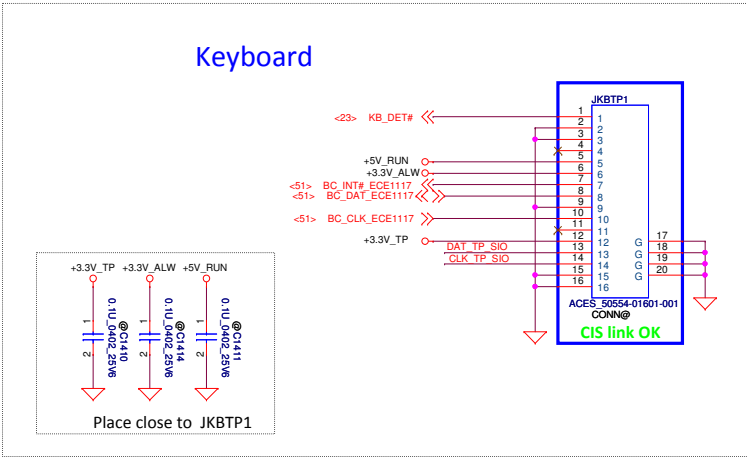
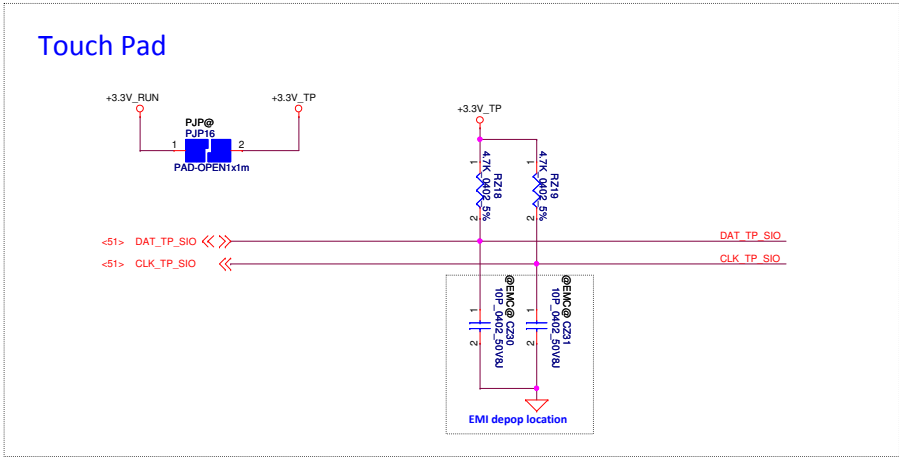
Compal Electronics, Inc.

File	LED / Screw hole	
Size	Document Number	Rev
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Remove RSMRST cost down circuit.



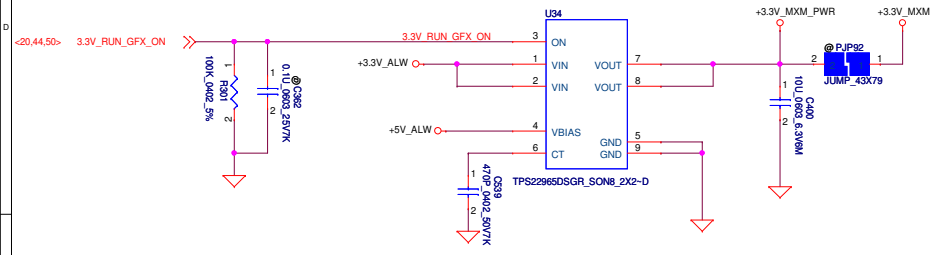
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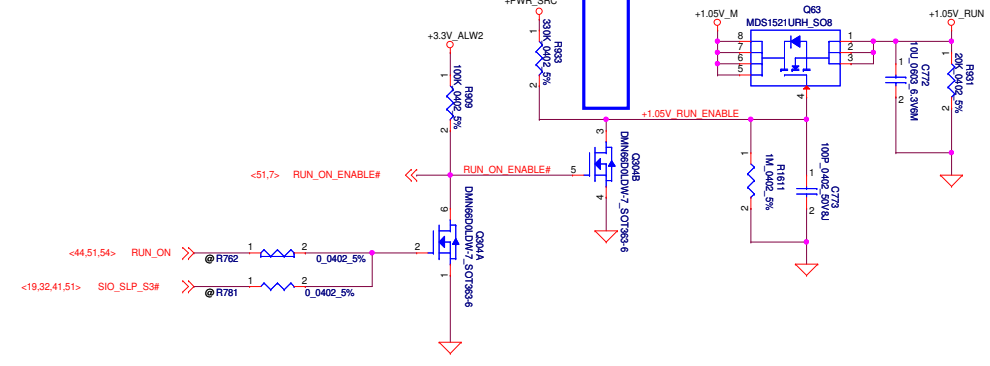
Compal Electronics, Inc.		
File	KB / TP / RSMRST#	
Size	Document Number	Rev
	LA-B541P	0.1
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+3.3V_ALW to +3.3V_MXM

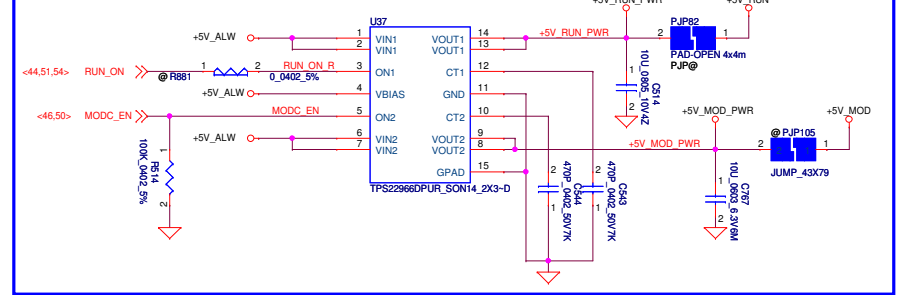


Combine +3.3V_SSD and +5V_MXM into M.2 card power control page

Remove +PWR_SRC_S PU +1.05V_RUN Source

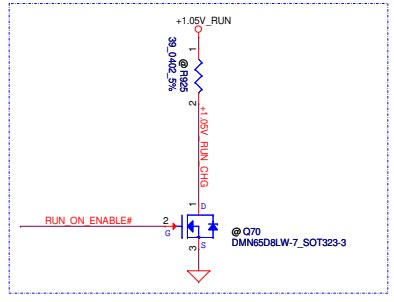
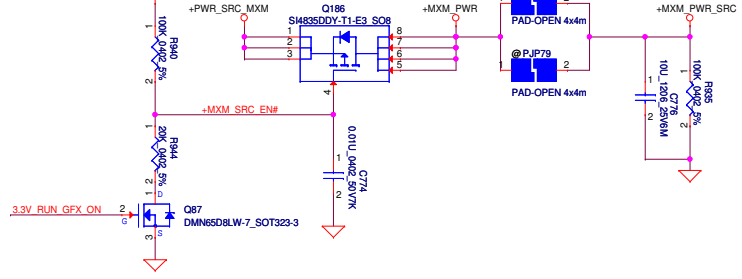


+5V_RUN Source +5VMOD Source

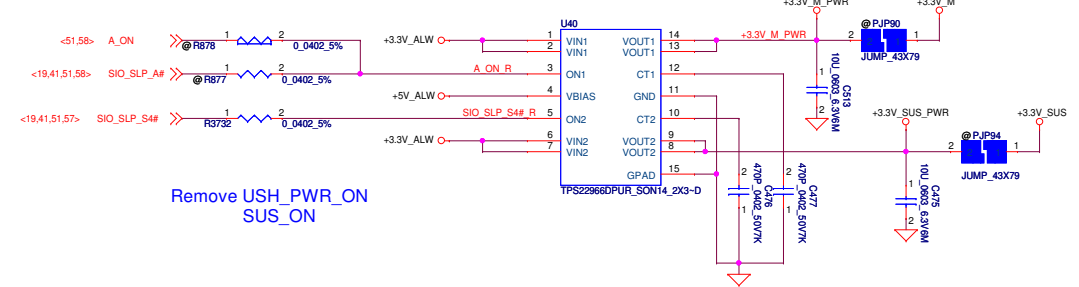


Combine +3.3V_WLAN and +3.3V_RUN into M.2 card power control page.
Combine +3.3V_LAN and +3.3V_ALW_PCH into LAN page

MXM_PWR_SRC Source



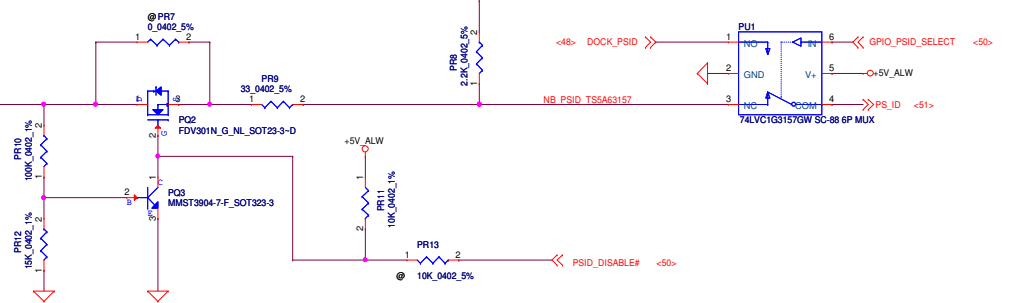
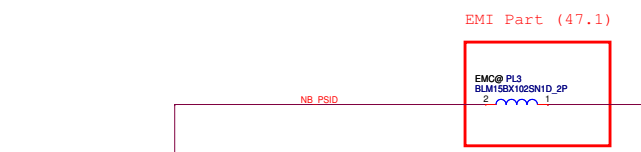
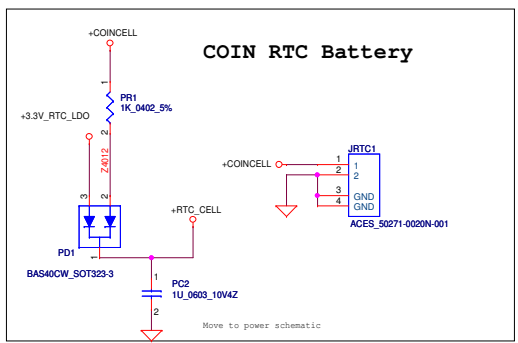
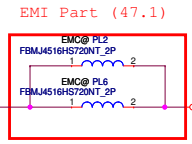
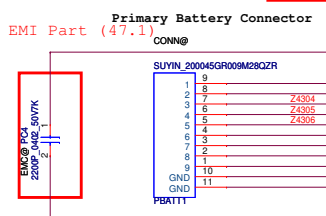
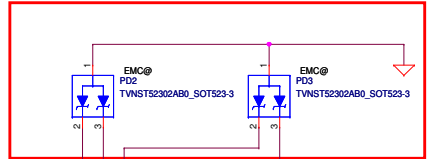
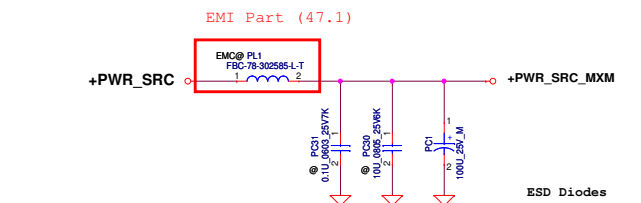
+3.3V_M Source +3.3V_SUS Source



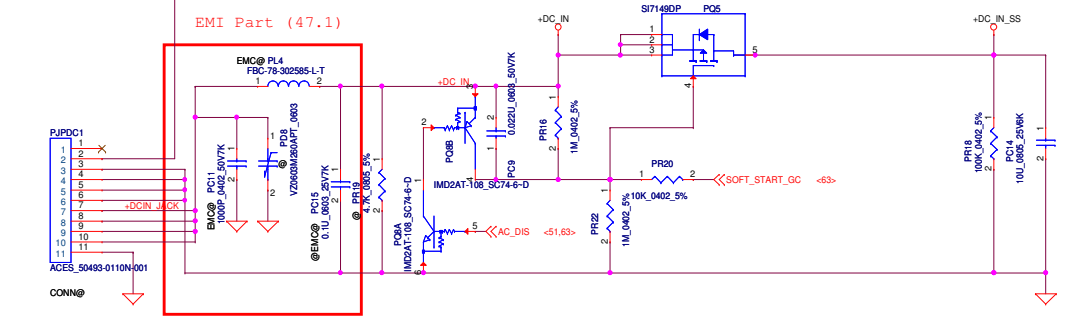
Remove USH_PWR_ON SUS_ON

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Compal Electronics, Inc.
Power Control
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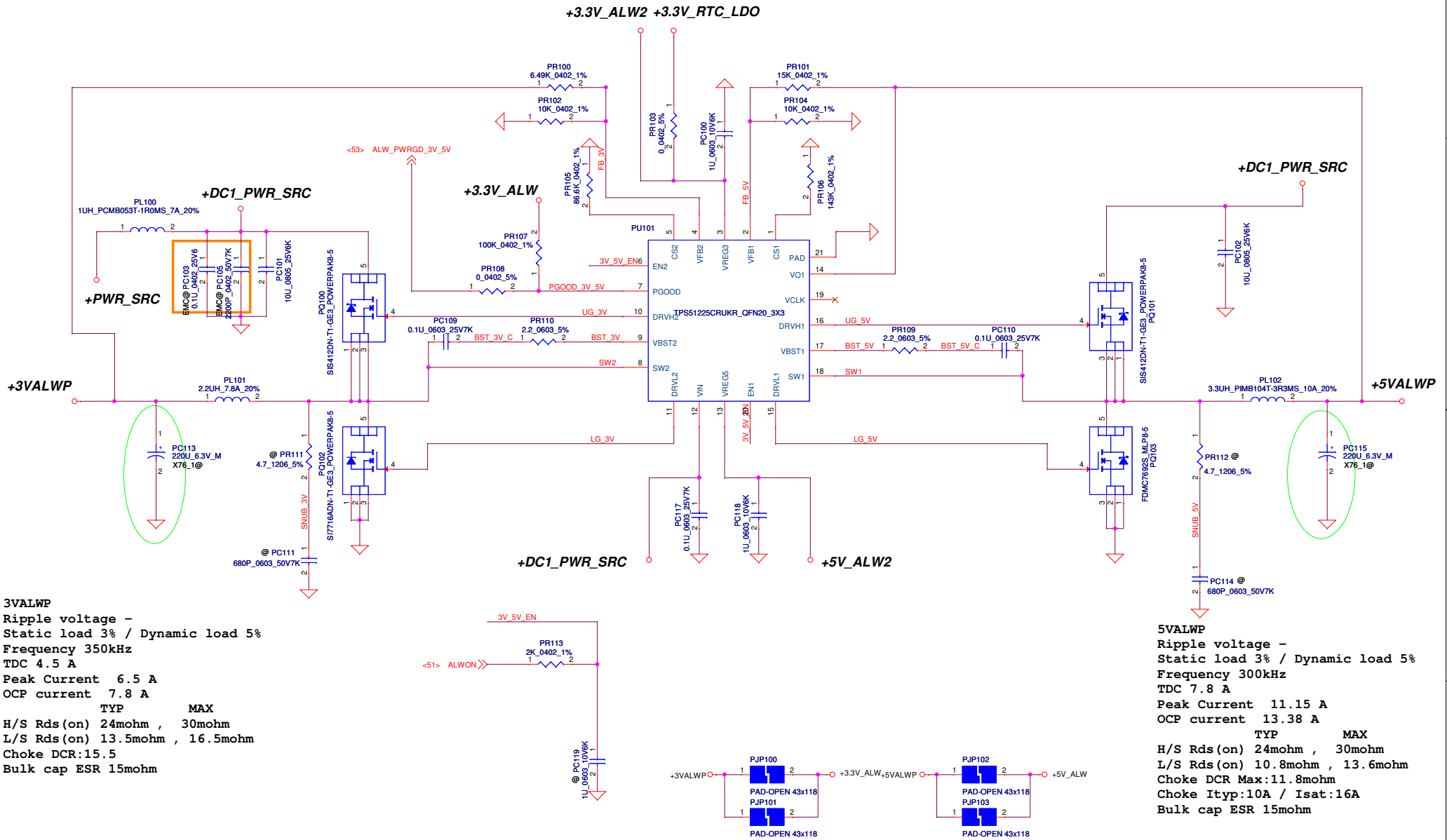
DC_IN+ Source



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		+DCIN	
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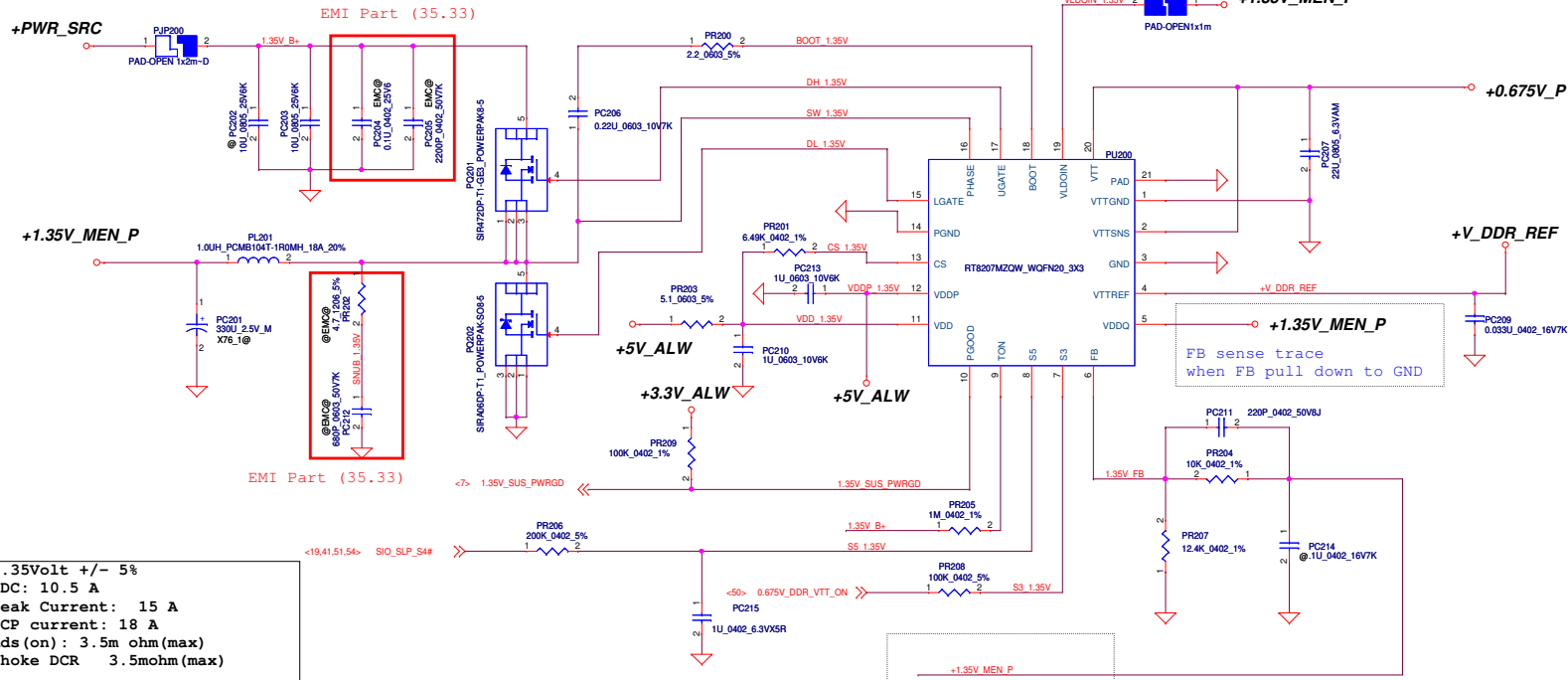
3VALWP
 Ripple voltage -
 Static load 3% / Dynamic load 5%
 Frequency 350kHz
 TDC 4.5 A
 Peak Current 6.5 A
 OCP current 7.8 A
 TYP MAX
 H/S Rds(on) 24mohm , 30mohm
 L/S Rds(on) 13.5mohm , 16.5mohm
 Choke DCR:15.5
 Bulk cap ESR 15mohm

5VALWP
 Ripple voltage -
 Static load 3% / Dynamic load 5%
 Frequency 300kHz
 TDC 7.8 A
 Peak Current 11.15 A
 OCP current 13.38 A
 TYP MAX
 H/S Rds(on) 24mohm , 30mohm
 L/S Rds(on) 10.8mohm , 13.6mohm
 Choke DCR Max:11.8mohm
 Choke Ityp:10A / Isat:16A
 Bulk cap ESR 15mohm

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+5V_ALW/3.3V_ALW		
Title		
Size	Document Number	Rev
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Date:	Monday, January 13, 2014	Sheet 56 of 87



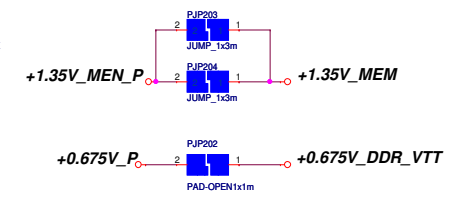
0.675Volt +/- 5%
 TDC 1.05A
 Peak Current 1.5A
 OCP Current 1.8A

1.35Volt +/- 5%
 TDC: 10.5 A
 Peak Current: 15 A
 OCP current: 18 A
 Rds(on): 3.5m ohm(max)
 Choke DCR 3.5mohm(max)

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

+1.35V MEN P
 FB sense trace

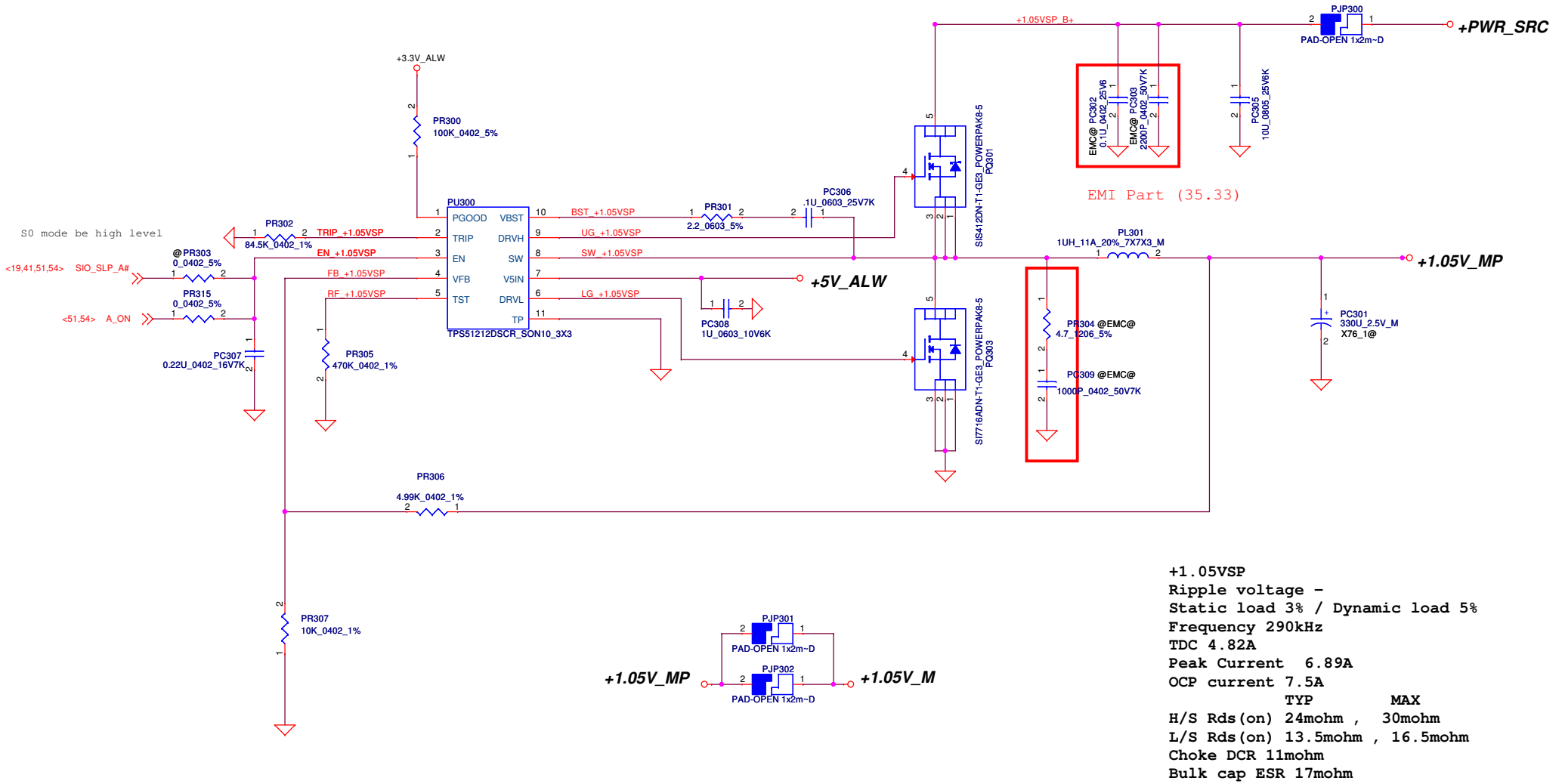
FB sense trace
 when FB pull down to GND



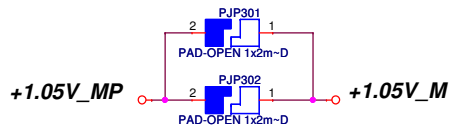
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		Compal Electronics, Inc.	
		Title 1.35VP/0.675VSP	
Size Document Number	LA-B541P		Rev 0.1
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+1.05VSP
 Ripple voltage -
 Static load 3% / Dynamic load 5%
 Frequency 290kHz
 TDC 4.82A
 Peak Current 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

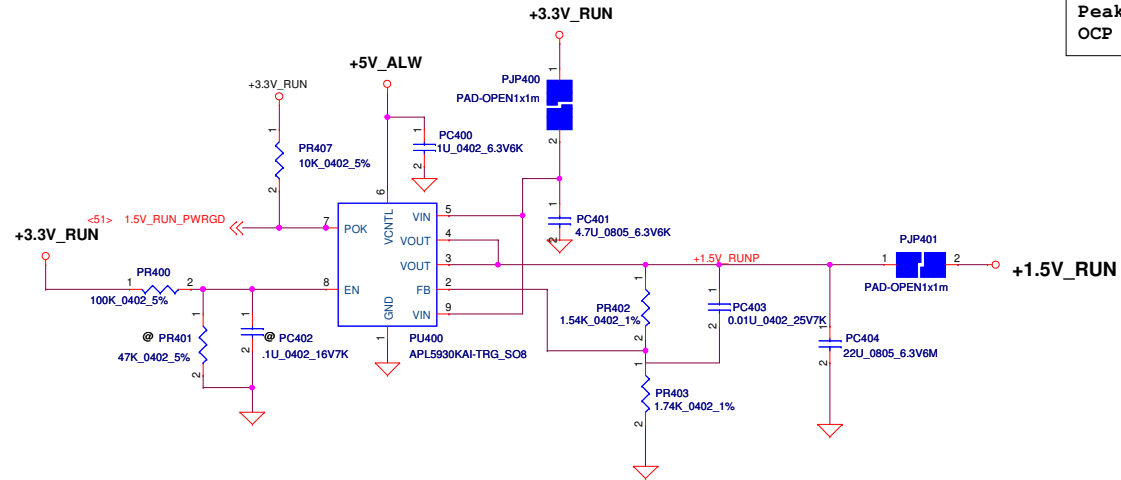


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Compal Electronics, Inc.		
Title	+1.05V_M	
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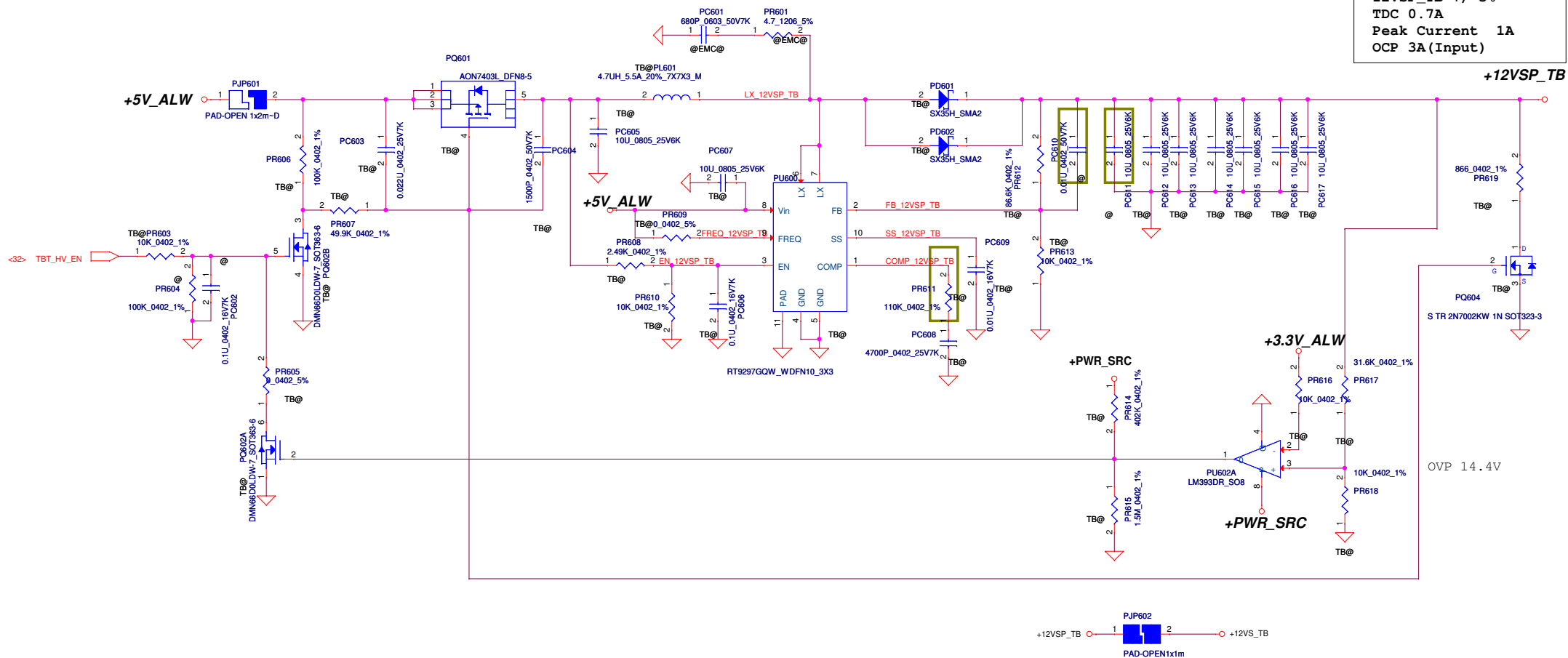
1.5Volt +/- 5%
TDC: 0.15A
Peak Current: 0.2 A
OCP current: 4 A

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		Compal Electronics, Inc.	
		+1.5V_RUN	
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12VSP_TB +/-5%
 TDC 0.7A
 Peak Current 1A
 OCP 3A (Input)



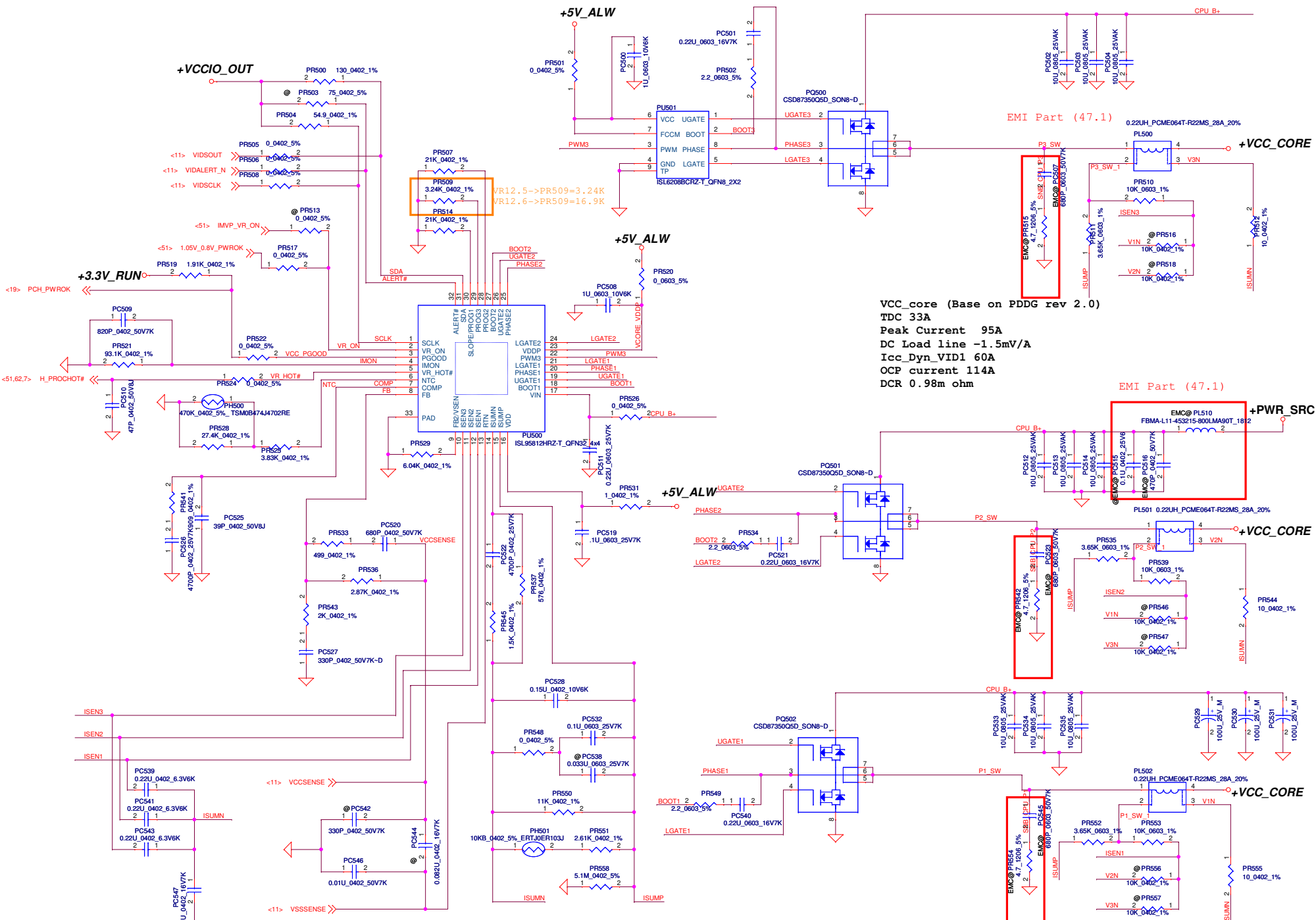
OVP 14.4V

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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

Local sense put on HW site

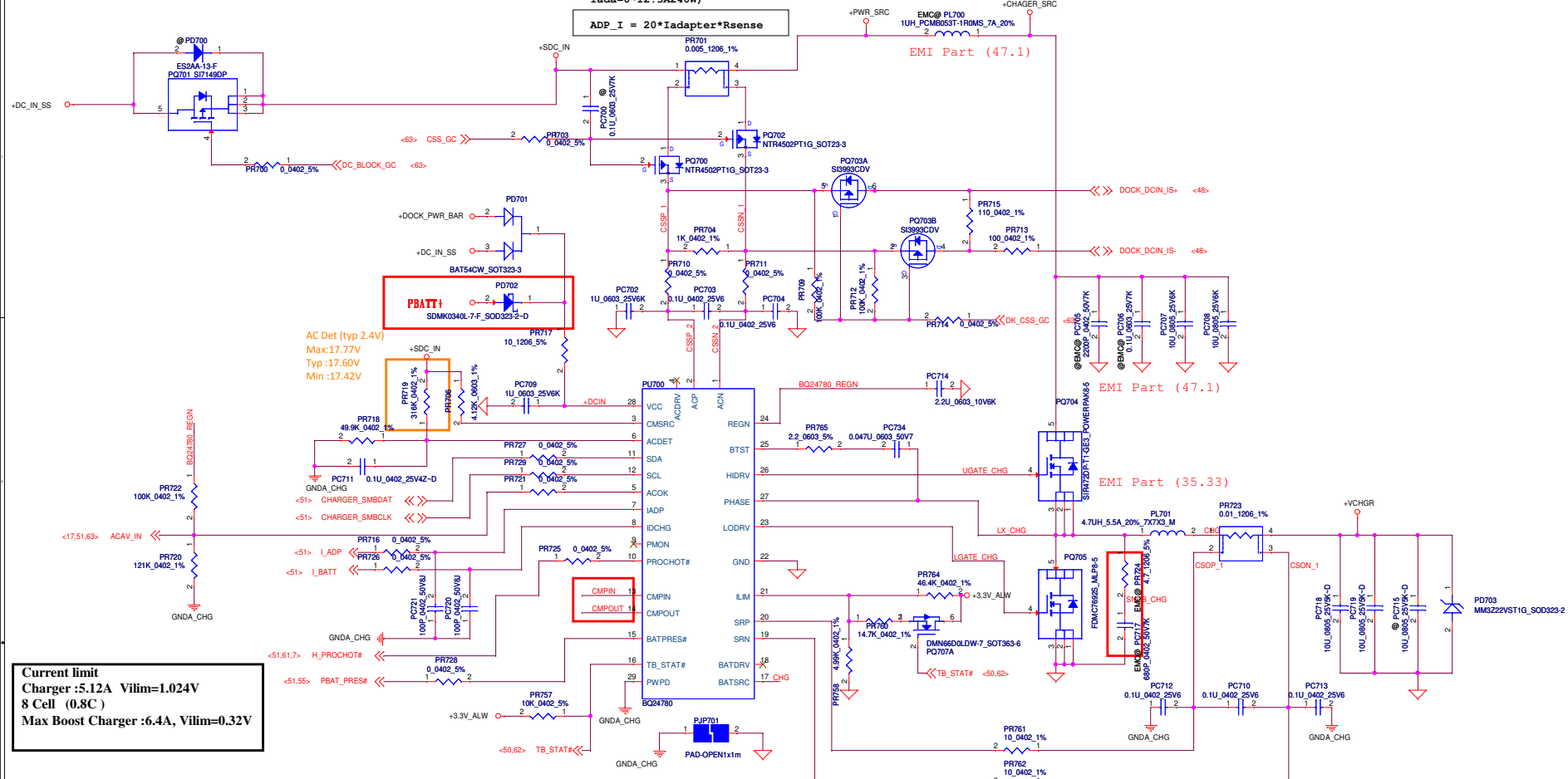
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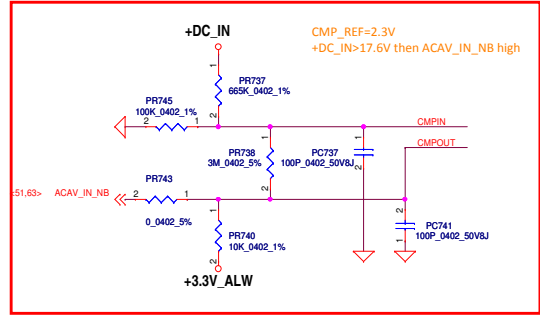
+VCC_CORE

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Current limit
 Charger :5.12A Vilim=1.024V
 8 Cell (0.8C)
 Max Boost Charger :6.4A, Vilim=0.32V

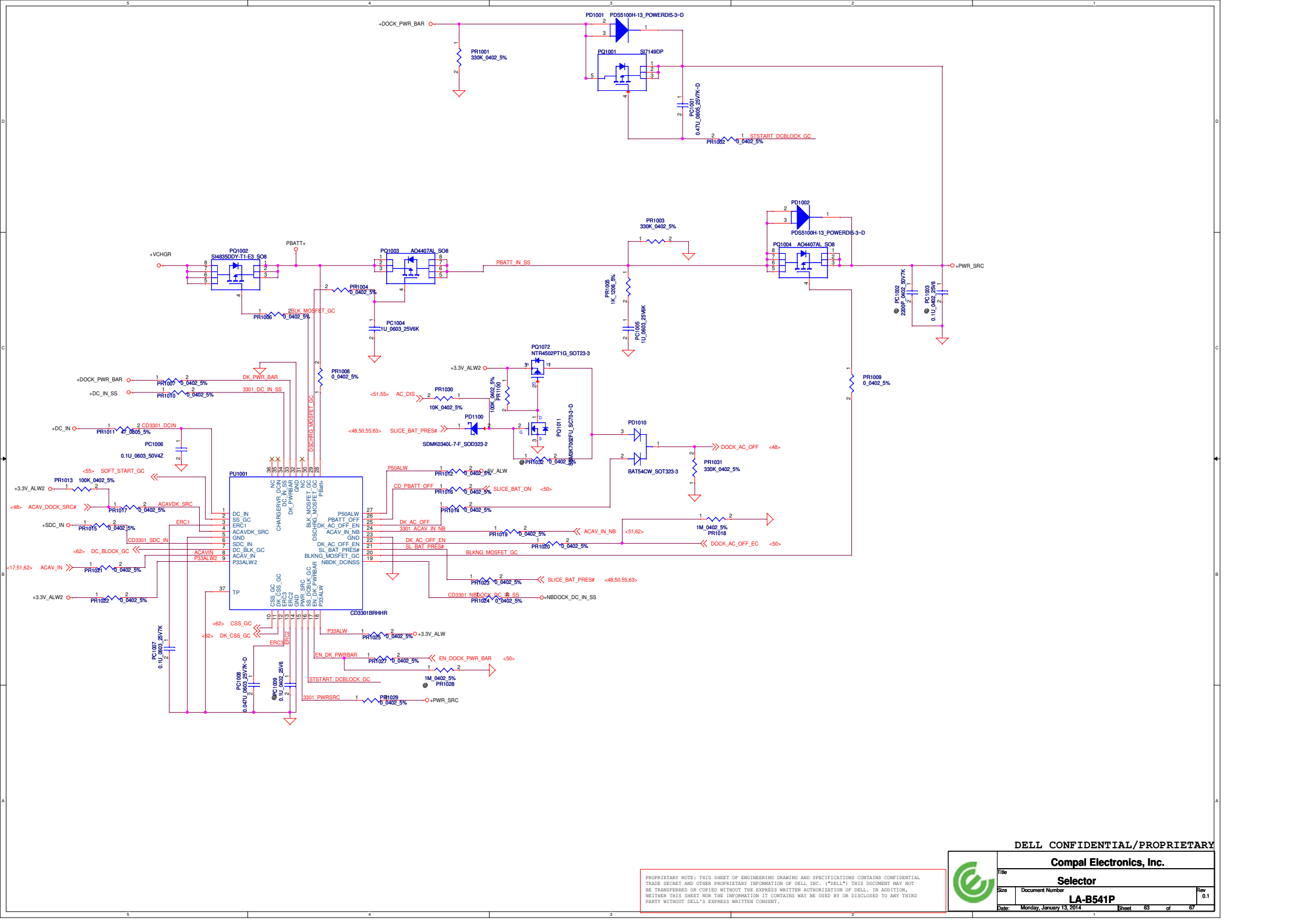


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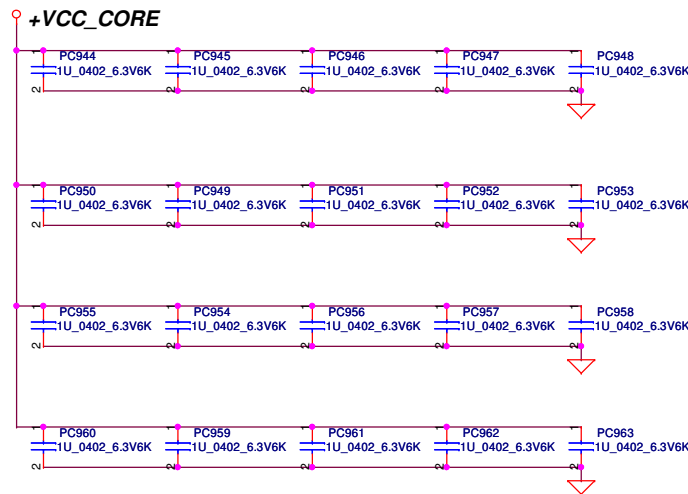
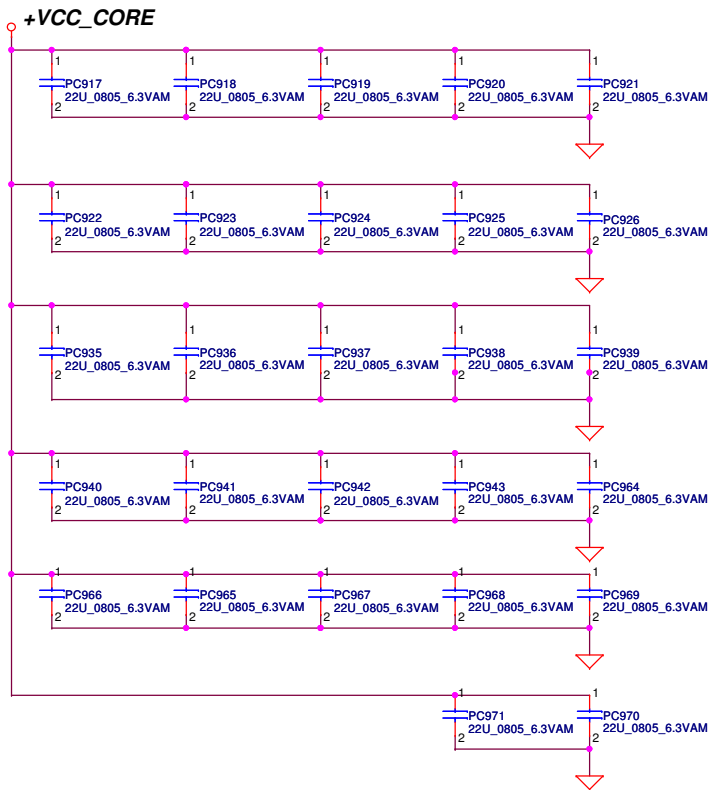
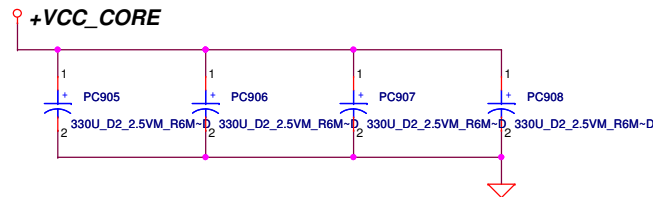
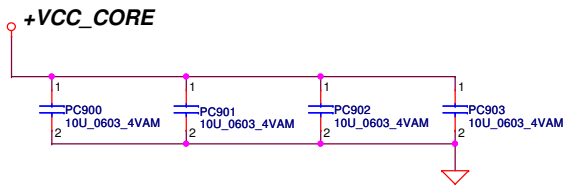
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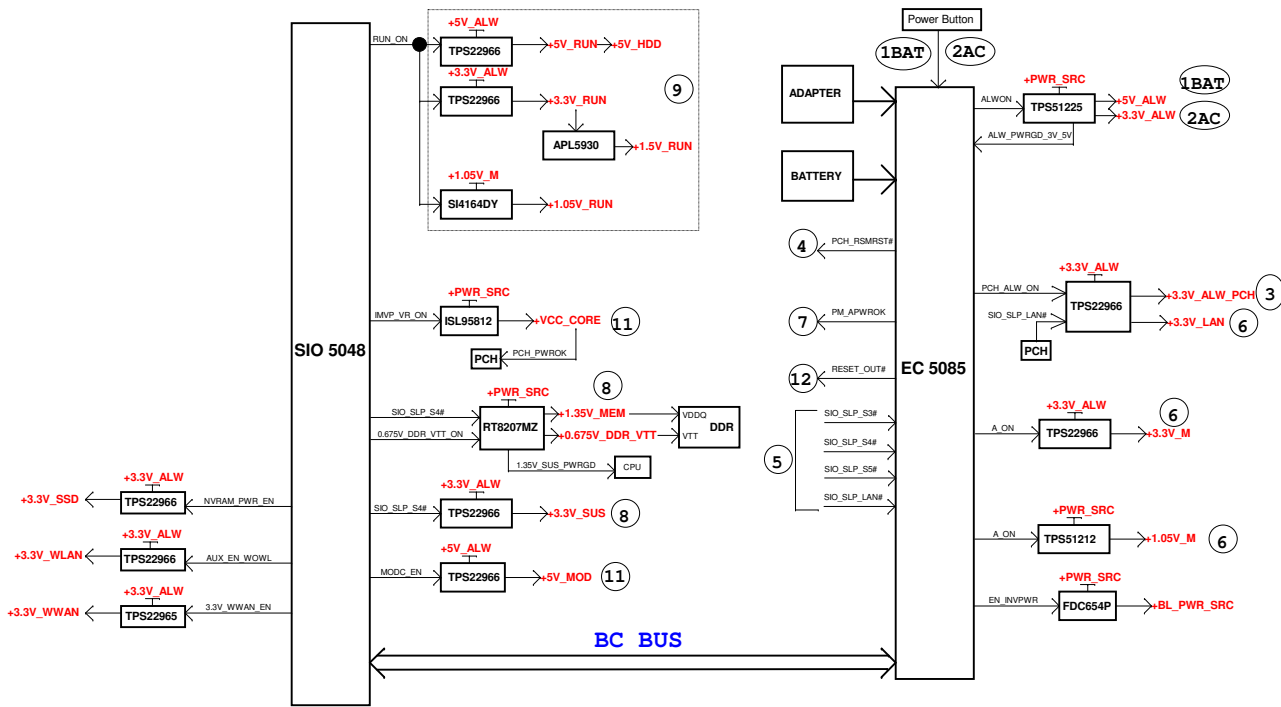
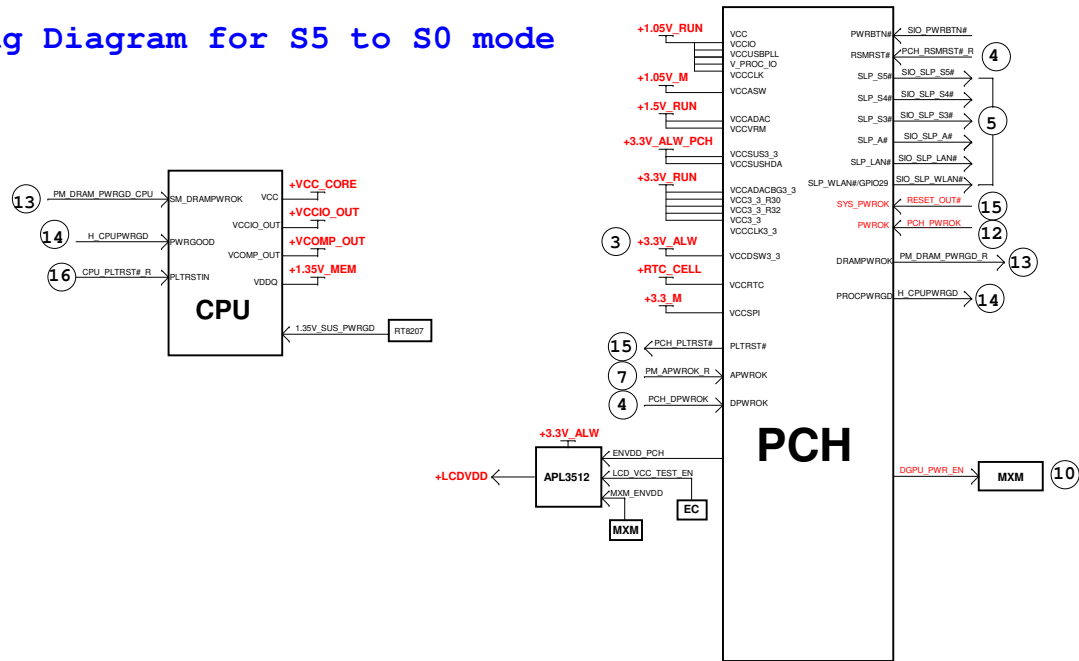
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Timing Diagram for S5 to S0 mode



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Power Sequence

LA-BS41P

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