



Compal Confidential

NAVD0 Schematics Document

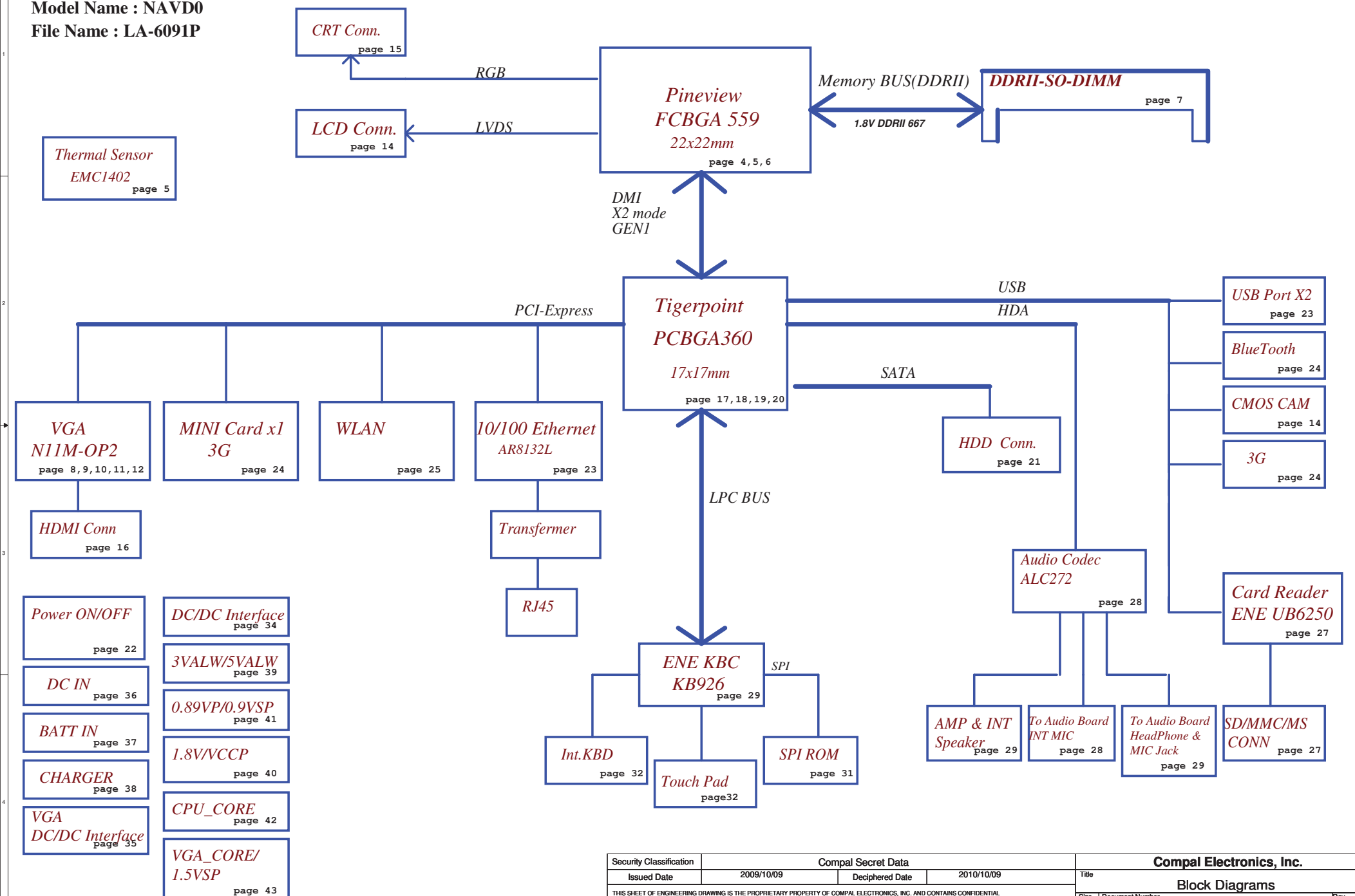
Intel Pineview Processor with Tigerpoint + DDRII + NV OPTIMUS

2010-02-09

REV: 1.0

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Clock Generator
CK505 page 13



Voltage Rails

Power Plane	Description	S1	S3	S5
VIN	Adapter power supply (19V)	N/A	N/A	N/A
B+	AC or battery power rail for power circuit.	N/A	N/A	N/A
+CPU_CORE	Core voltage for CPU	ON	OFF	OFF
+0.9VS	0.9V switched power rail for DDR terminator	ON	OFF	OFF
+VCCP	VCCP switched power rail	ON	OFF	OFF
+1.5VS	1.5V switched power rail	ON	OFF	OFF
+1.8V	1.8V power rail for DDR	ON	ON	OFF
+0.89VS	Graphic core power rail	ON	OFF	OFF
+3VALW	3.3V always on power rail	ON	ON	ON*
+3VS	3.3V switched power rail	ON	OFF	OFF
+5VALW	5V always on power rail	ON	ON	ON*
+5VS	5V switched power rail	ON	OFF	OFF
+VSB	VSB always on power rail	ON	ON	ON*
+RTCVCC	RTC power	ON	ON	ON

Note : ON* means that this power plane is ON only with AC power available, otherwise it is OFF.

STATE \ SIGNAL	SLP_S3#	SLP_S4#	SLP_S5#	+VALW	+V	+VS	Clock
Full ON	HIGH	HIGH	HIGH	ON	ON	ON	ON
S1 (Power On Suspend)	HIGH	HIGH	HIGH	ON	ON	ON	LOW
S3 (Suspend to RAM)	LOW	HIGH	HIGH	ON	ON	OFF	OFF
S4 (Suspend to Disk)	LOW	LOW	HIGH	ON	OFF	OFF	OFF
S5 (Soft OFF)	LOW	LOW	LOW	ON	OFF	OFF	OFF

BOARD ID Table(Page 31)

	VCC	3.3V					
	Ra	100K					
	ID	BRD ID	Rb	Vab-Min	Vab-Typ	Vab-Max	
NAVD0	0	R01 (EVT)	0	0V	0V	0V	
	1	R02 (DVT)	8.2K	0.216V	0.250V	0.289V	
	2	R03 (PVT)	18K	0.436V	0.503V	0.538V	
	3	R10A (MP)	33K	0.712V	0.819V	0.875V	
NAVE0	4	R01 (EVT)	56K	1.036V	1.185V	1.264V	
	5	R02 (DVT)	100K	1.453V	1.650V	1.759V	
	6	R03 (PVT)	200K	1.935V	2.200V	2.341V	
	7	R10A (MP)	NC	2.500V	3.3V	3.3V	

External PCI Devices

DEVICE	IDSEL #	REQ/GNT #	PIRQ
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No PCI Device

EC SM Bus1 address

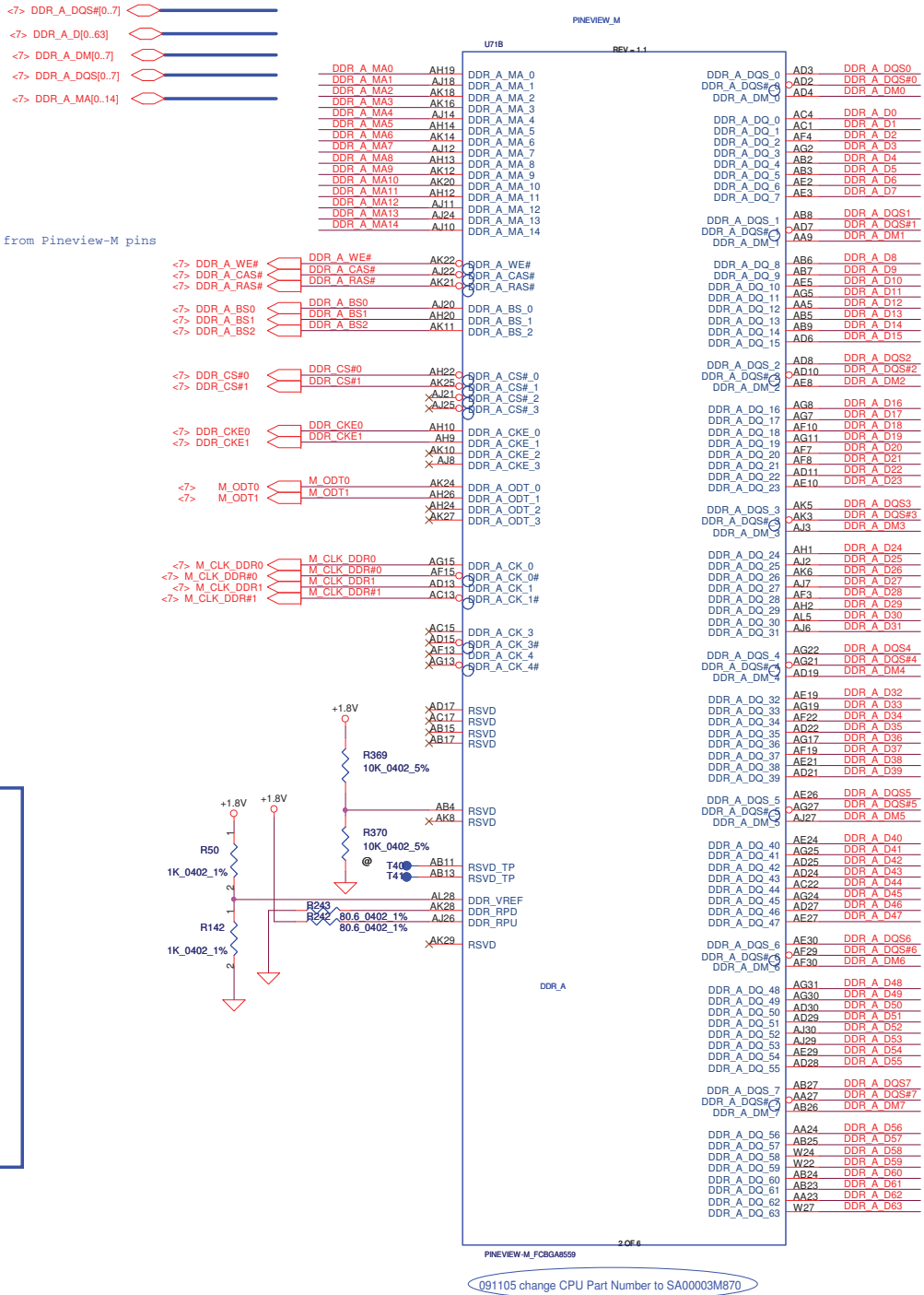
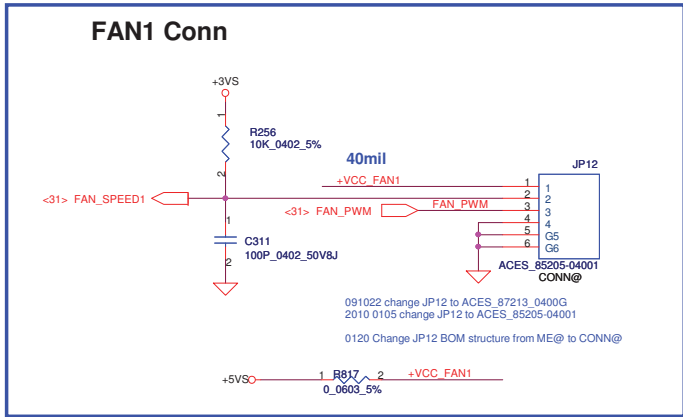
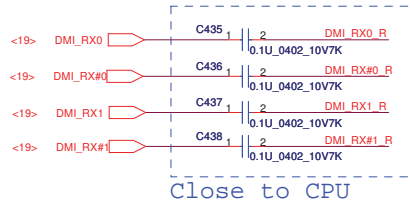
Device	Address	Device	Address
Smart Battery	0001 011X b	EMC1402	100_100

EC SM Bus2 address

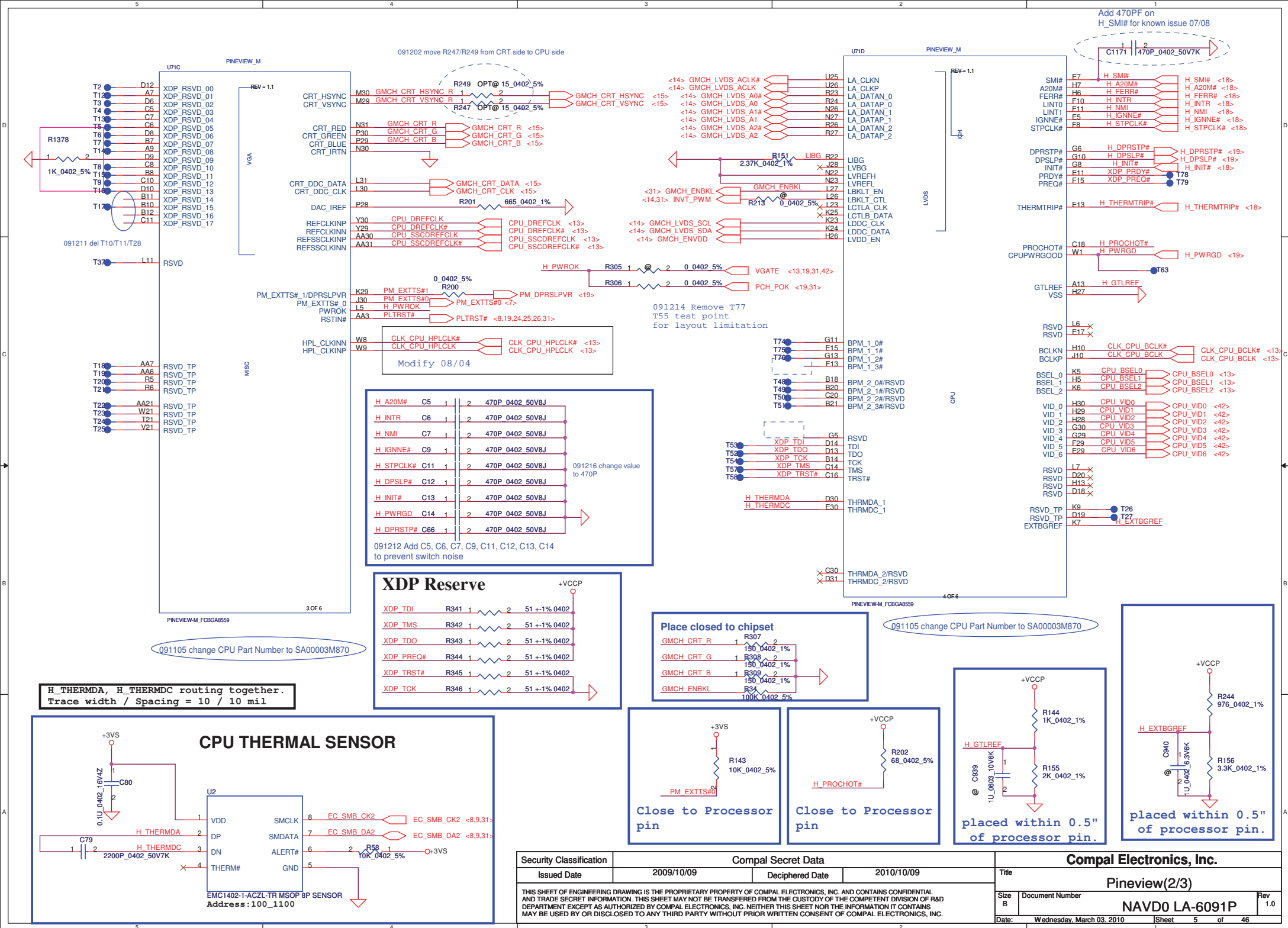
ICH7M SM Bus address

Device	Address
Clock Generator (SLG8SP556VTR)	1101 001Xb
DDR DIMMA	1010 000Xb

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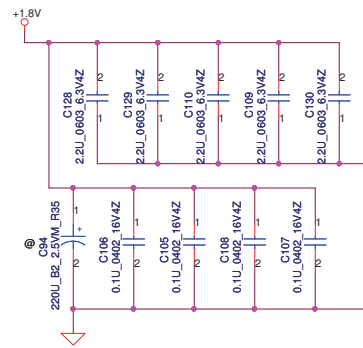
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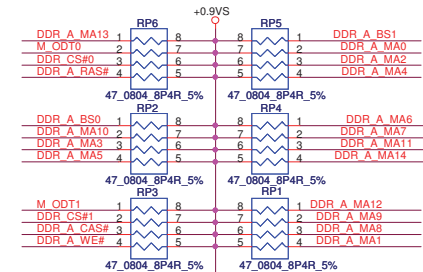
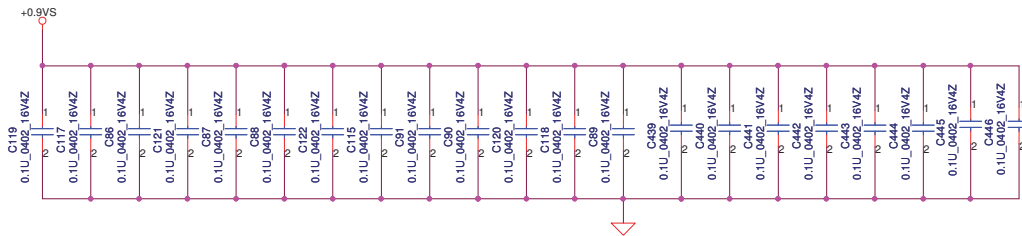
WWW.AliSaler.Com

<4> DDR_A_DQS#[0..7]
<4> DDR_A_D[0..63]
<4> DDR_A_DM[0..7]
<4> DDR_A_DQS[0..7]
<4> DDR_A_MA[0..14]

Layout Note:
Place near JDIM1



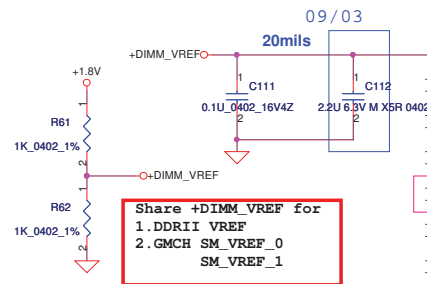
Layout Note:
Place one cap close to every 2 pullup
resistors terminated to +0.9VS



Layout Note:
Place these resistor
closely DIMMA, all
trace length<750 mll

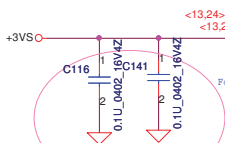
091204 swap nets for layout

Layout Note:
Place these resistor
closely DIMMA, all
trace length
Max=1.3"

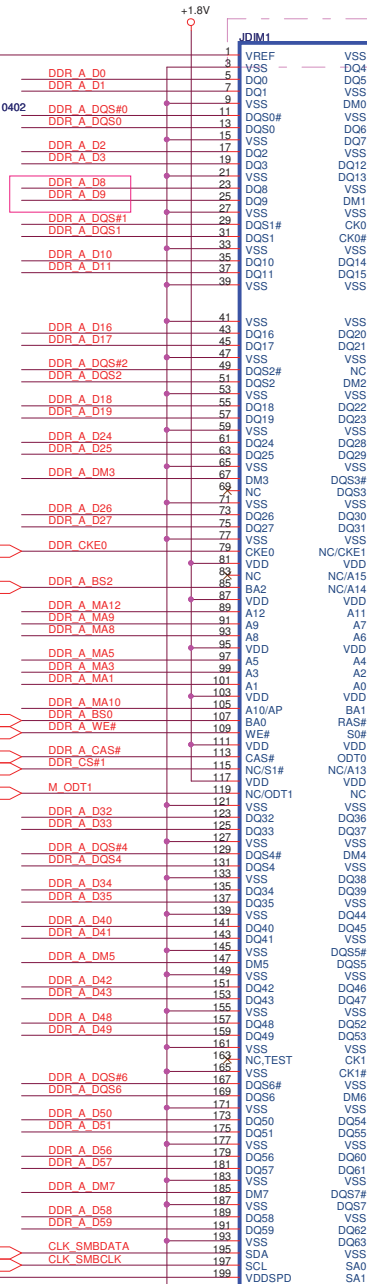


Share +DIMM_VREF for
1.DDR11 VREF
2.GMCH SM_VREF_0
SM_VREF_1

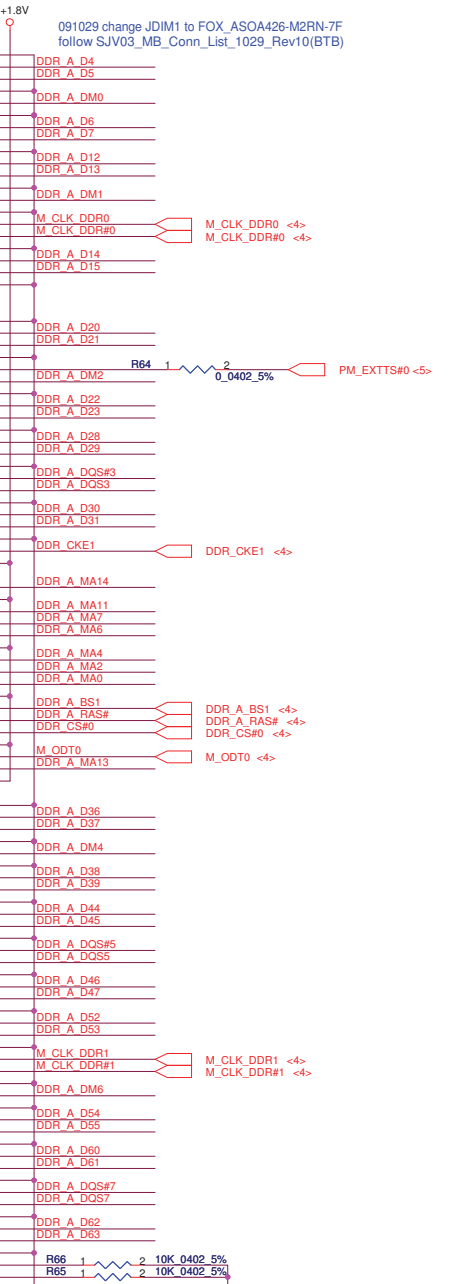
<4> DDR_CKE0
<4> DDR_A_BS2
<4> DDR_BS0
<4> DDR_A_WE#
<4> DDR_A_CAS#
<4> DDR_CS#1
<4> M_ODT1



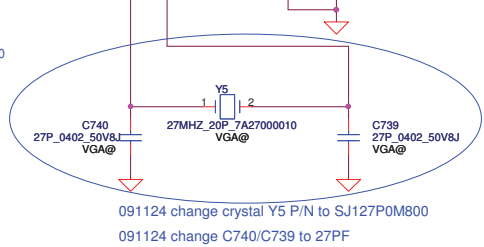
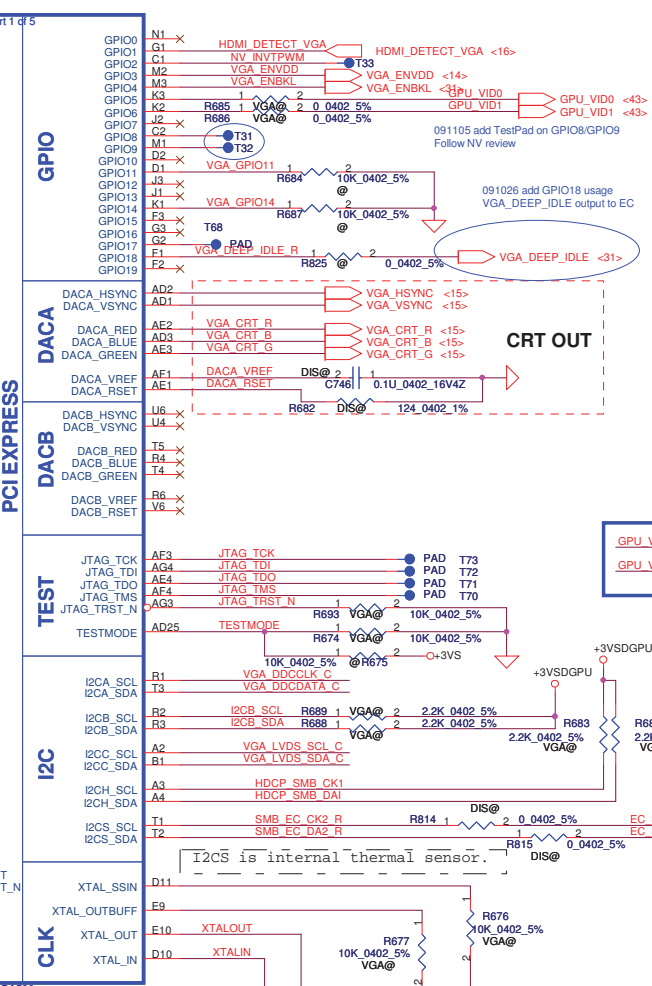
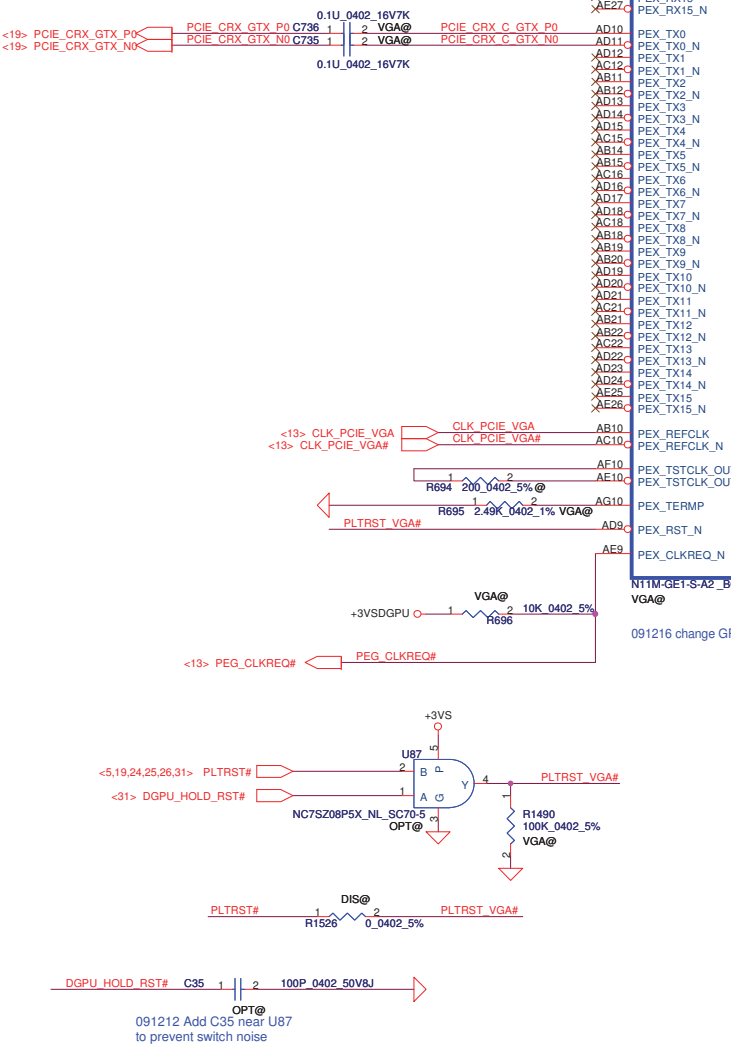
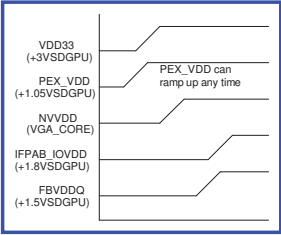
Follow Intel Layout checklist, add C141 05/12



DIMMA

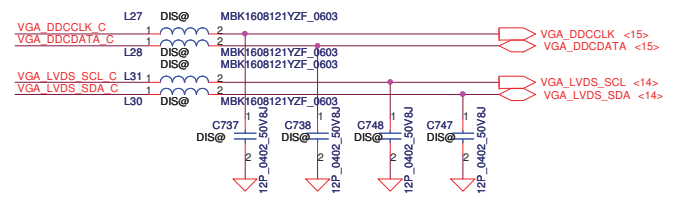
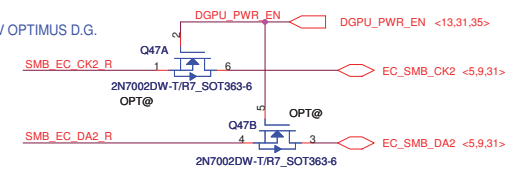
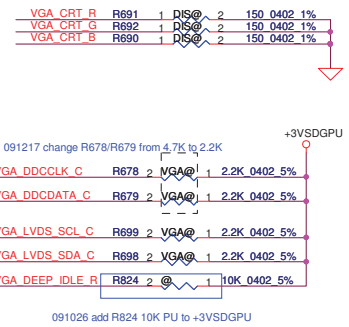


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Ball Name	GB1-N11x Normal Function	Function Description
GPIO0	General Purpose	
GPIO1	HPD-C	Hot Plug detect for I/F link C
GPIO2	LCD0_BL_PWM	Panel Backlight Brightness (PWM capable)
GPIO3	LCD0_VDD	Panel power enable
GPIO4	LCD0_BL_EN	Panel Backlight on/off (PWM Capable)
GPIO5	GPU_VID0	GPU_VID0
GPIO6	GPU_VID1	GPU_VID1
GPIO7	GPU_VID2	GPU_VID2
GPIO8	OVERT	Thermal Catastrophic Overtemp
GPIO9	ALERT	Thermal Alert

Ball Name	GB1-N11x Normal Function	Function Description
GPIO10	MEM_VREF	Memory VREF switch
GPIO11	SLI_SYNC	SLI raster sync
GPIO12	PWR_LEVEL	
GPIO13	MEM_VID	AC power detect input MEM_VID or Power supply Control
GPIO14	PWR_CTRL1	
GPIO15	HPD-E	Power supply control
GPIO16	FAN_PWM	Hot plug detect for I/F link E
GPIO17	Reserved	Programmable Fan control
GPIO18	Reserved	
GPIO19	HPD-D	Hot plug detect for I/F link D



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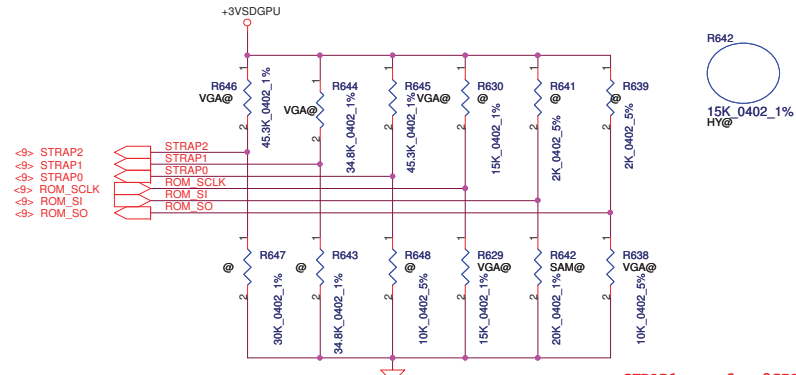
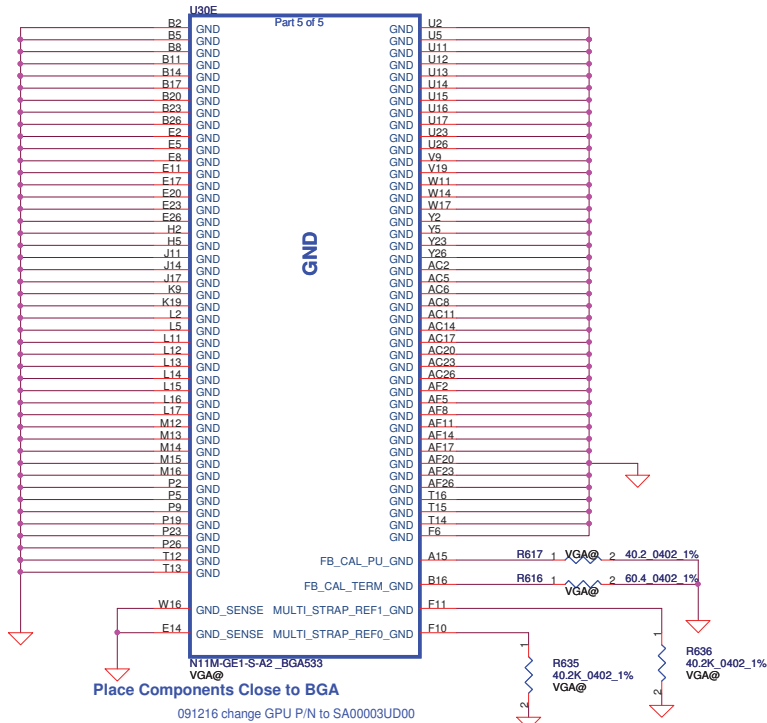
A total of 8 signals are required for GBI strapping this includes

2 reference signals

6 physical strapping pins

4 logical strapping bits

A total of 24 logical strapping bits are available



GPU	FB Memory (DDR3)		ROM_SO	ROM_SCLK	ROM_SI	STRAP2	STRAP1	STRAP0
N11M-GE1 LP1 (0x0A7D) 40nm	Samsung 800MHz (default)	K4W1G1646E-HC12						
		64Mx16	PD 10K	PD 15K	PD 20K	PU 45K	PU 35K	PU 45K
	Hynix 800MHz	H5TQ1G63BFR-12C						
		64Mx16	PD 10K	PD 15K	PD 15K	PU 45K	PU 35K	PU 45K
					X76			

Resistor Values	Pull-up to VDD	Pull-down to GND
5Kohm	1000	0000
10Kohm	1001	0001
15Kohm	1010	0010
20Kohm	1011	0011
25Kohm	1100	0100
30Kohm	1101	0101
35Kohm	1110	0110
45Kohm	1111	0111

SUB_VENDOR	
0 *	No VBIOS ROM (Default)
1	BIOS ROM is present

XCLK_417	
0 *	277MHz (Default)
1	Reserved

Panel USER Straps	
User[3:0]	
EDID used *	Customer defined

SMBUS_ALT_ADDR	
0 *	0x9E (Default)
1	0x9C (Multi-GPU usage)

FB_0_BAR_SIZE	
0 *	256MB (Default)
1	Reserved

VGA_DEVICE	
0	3D Device
1 *	VGA Device (Default)

PEX_PLL_EN_TERM	
0 *	Disable (Default)
1	Enable

3GIO_PADCFG	
3GIO_PADCFG[3:0]	
0110 *	Notebook Default

SLOT_CLOCK_CFG	
0 *	GPU and MCH don't share a common reference clock
1	GPU and MCH share a common reference clock (Default)

Physical Strapping Pin	Power Rail	Logical Strapping Bit 3	Logical Strapping Bit 2	Logical Strapping Bit 1	Logical Strapping Bit 0
ROM_SO	VDD33	XCLK_417	FB_0_BAR_SIZE	SMB_ALT_ADDR	VGA_DEVICE
ROM_SCLK	VDD33	PCI_DEVID[4]	SUB_VENDOR	SLOT_CLK_CFG	PEX_PLL_EN_TERM
ROM_SI	VDD33	RAMCFG[3]	RAMCFG[2]	RAMCFG[1]	RAMCFG[0]
STRAP2	VDD33	PCI_DEVID[3]	PCI_DEVID[2]	PCI_DEVID[1]	PCI_DEVID[0]
STRAP1	VDD33	3GIO_PADCFG[3]	3GIO_PADCFG[2]	3GIO_PADCFG[1]	3GIO_PADCFG[0]
STRAP0	VDD33	USER[3]	USER[2]	USER[1]	USER[0]

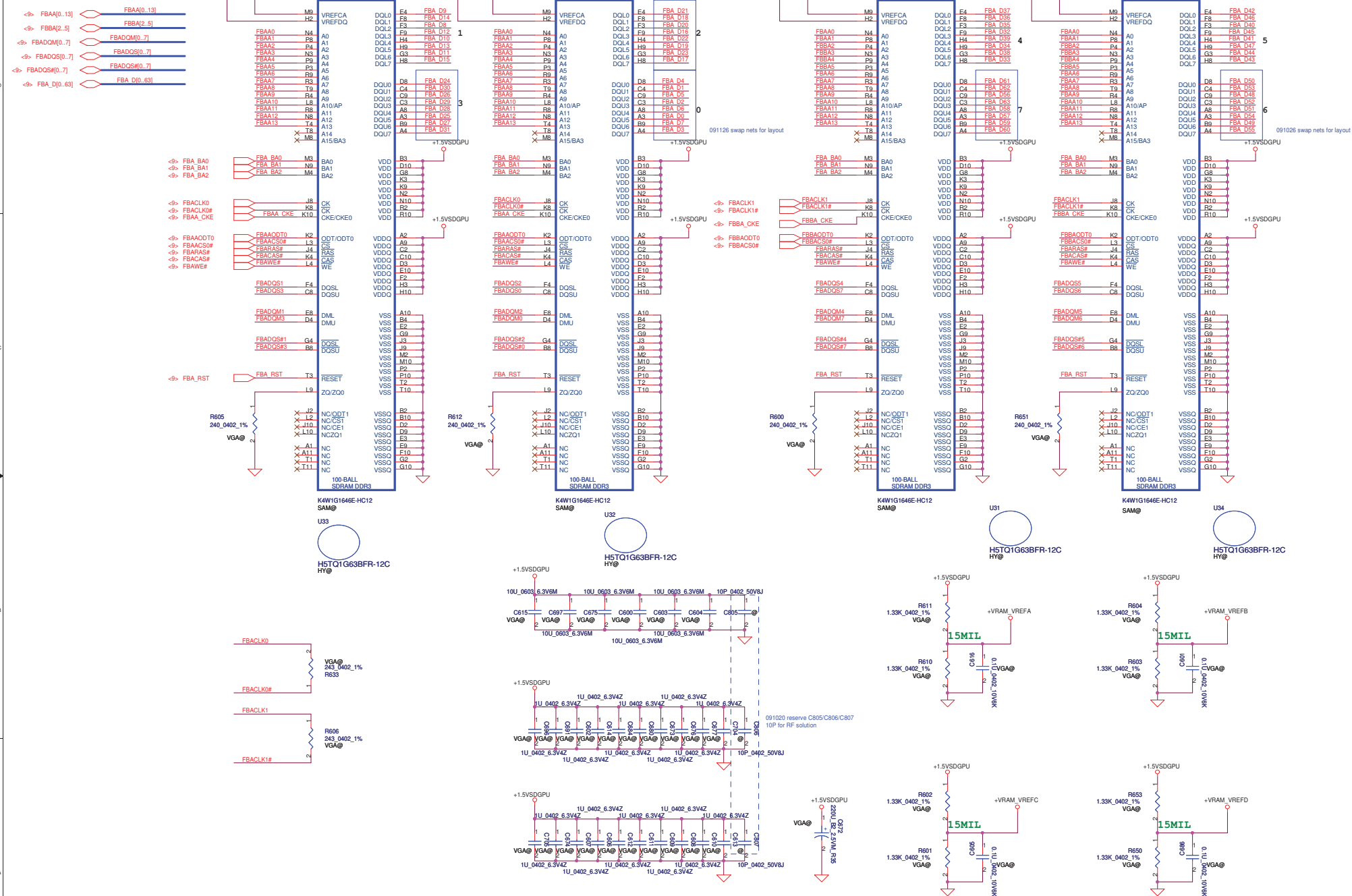
N11M-GE1 LP1	Memory/PKG	FBVDDQ	FB_CAL_PU_GND	FBCAL_PD_VDDQ	FBCAL_TERM_GND
	DDR3	+1.5VS	40.2 ohm	40.2 ohm	40.2/60.4 ohm

Must be used 1% resistor for driver calibration

DG-04642-001-V01(May 22, 2009)

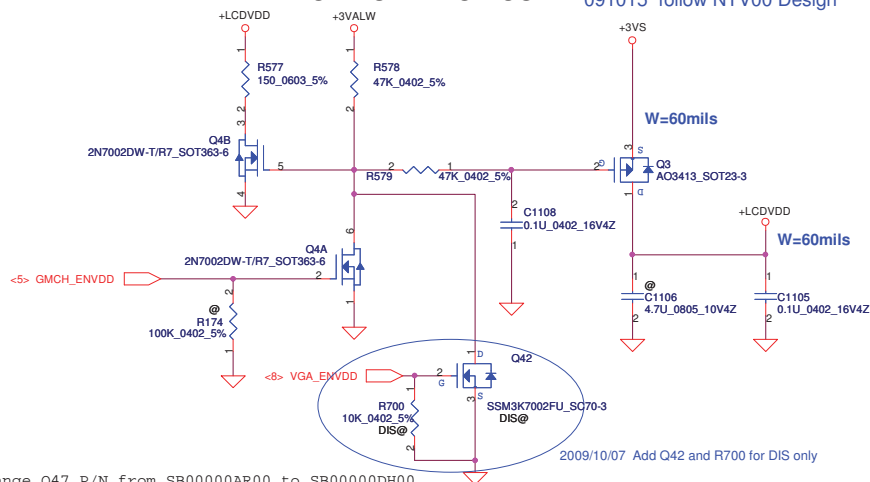
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N10x 40nm DDR3 MAPPING
NVIDIA DOCUMENT FOR DA-3978-001

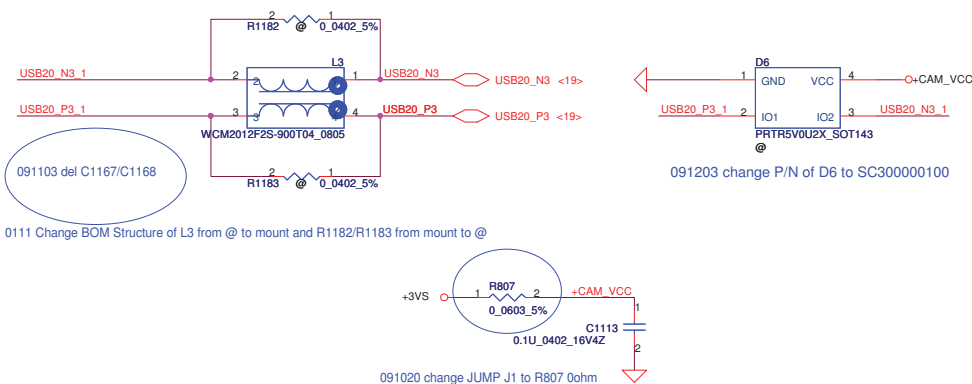


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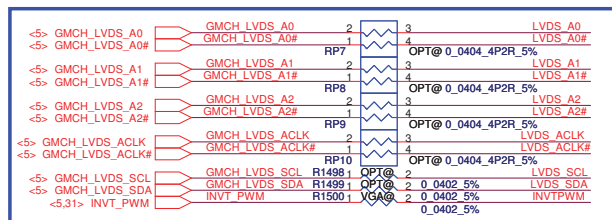
091015 follow NTV00 Design



100112 change Q47 P/N from SB00000AR00 to SB00000DH00



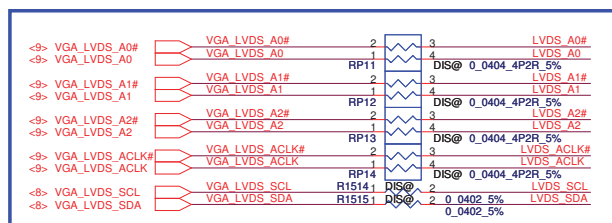
OPTIMUS



```
091202 swap A0/A0#,A1/A1#,A2/A2#,ACLK/ACLK#
nets on RP7/RP8/RP9/RP10
```

091209 change BOM Structure of R1500 from OPT@ to VGA@

DIS ONLY

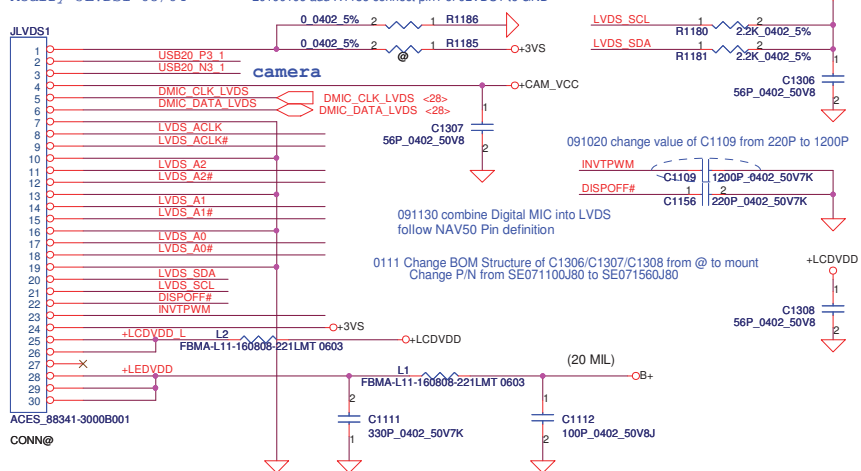


091202 swap A0/A0#,A1/A1#,A2/A2#,ACLK/ACLK#
nets on RP11/RP12/RP13/RP14

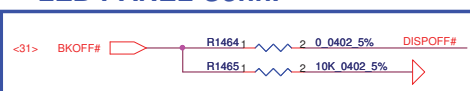
CMOS & LCD/PANEL BD. Conn.

Modify JLVDS1 08/04

20100106 add R1186 connect pin1 of JLVDS1 to GND



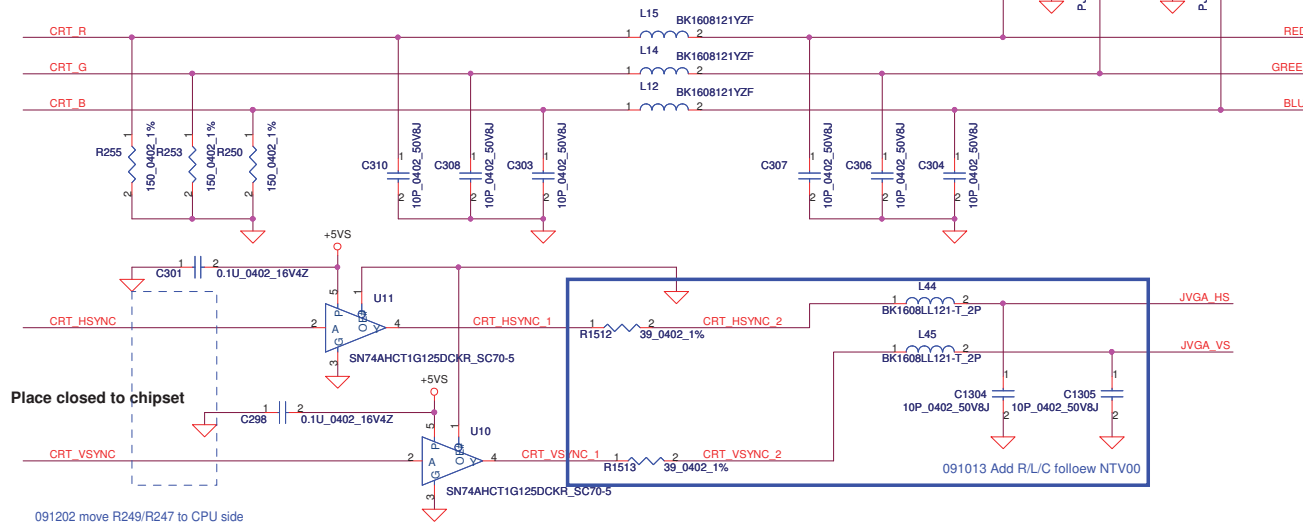
LED PANEL Conn.



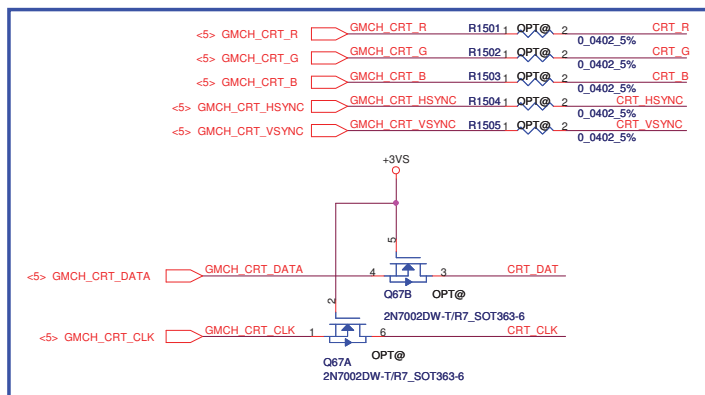
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CRT PORT

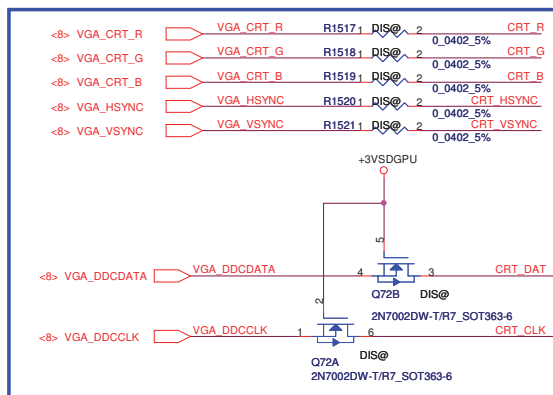
Modify C31- C308 C303 C307 C306 C304 BOM Structure 0615
0120 Change L12,L14,L15 P/N from SM01000AL00 to SM010032020



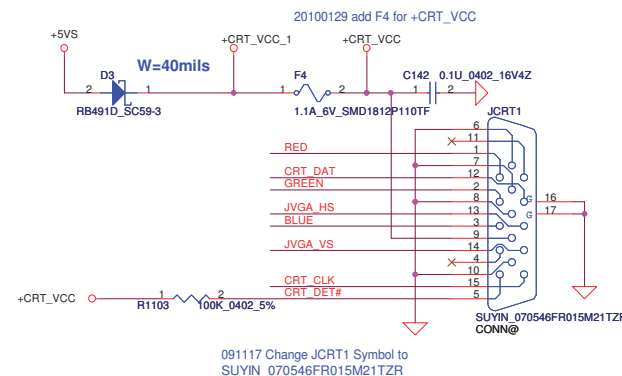
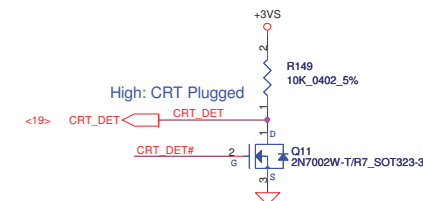
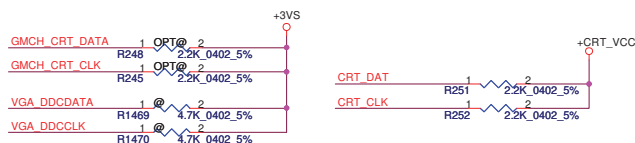
OPTIMUS



DIS ONLY



100112 change Q72 P/N from SB00000AR00 to SB00000DH00

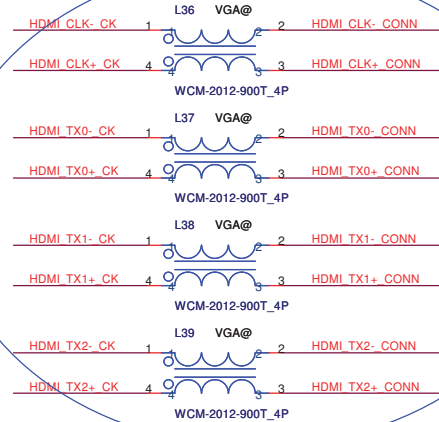


091117 Change JCRT1 Symbol to SUYIN_070546FR015M21TZR

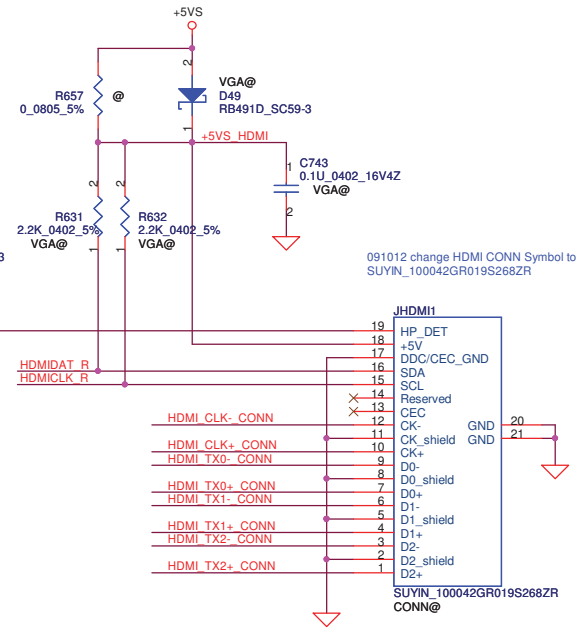
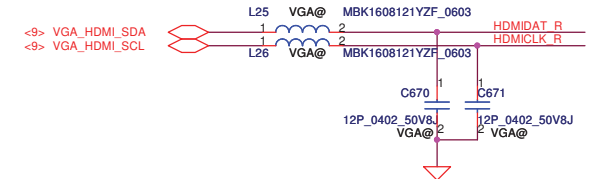
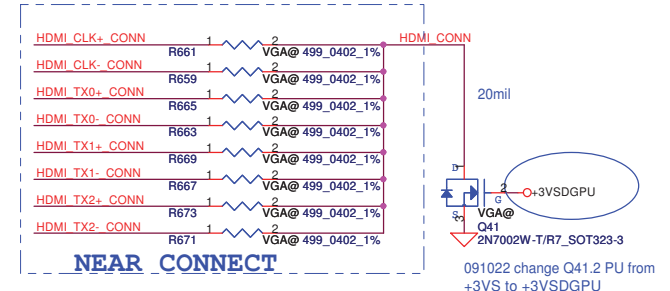
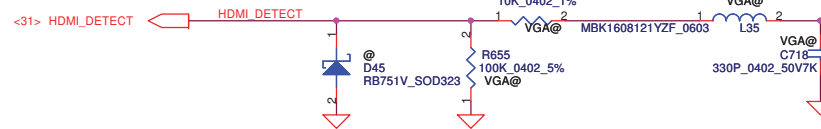
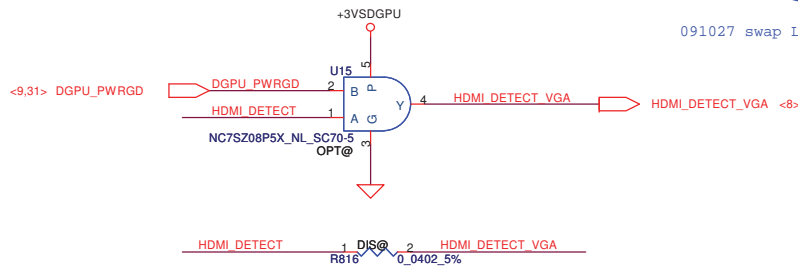
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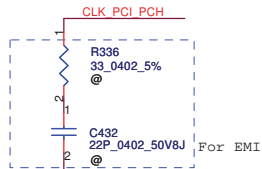
<9> VGA_HDMI_CLK+	C669	1	2	VGA@ 0.1U_0402_16V7K	HDMI_CLK+ CK	R660	1	2	0.0402_5%	HDMI_CLK+ CONN
<9> VGA_HDMI_CLK-	C668	1	2	VGA@ 0.1U_0402_16V7K	HDMI_CLK- CK	R658	1	2	0.0402_5%	HDMI_CLK- CONN
<9> VGA_HDMI_TX0+	C667	1	2	VGA@ 0.1U_0402_16V7K	HDMI_TX0+ CK	R664	1	2	0.0402_5%	HDMI_TX0+ CONN
<9> VGA_HDMI_TX0-	C666	1	2	VGA@ 0.1U_0402_16V7K	HDMI_TX0- CK	R662	1	2	0.0402_5%	HDMI_TX0- CONN
<9> VGA_HDMI_TX1+	C715	1	2	VGA@ 0.1U_0402_16V7K	HDMI_TX1+ CK	R668	1	2	0.0402_5%	HDMI_TX1+ CONN
<9> VGA_HDMI_TX1-	C713	1	2	VGA@ 0.1U_0402_16V7K	HDMI_TX1- CK	R666	1	2	0.0402_5%	HDMI_TX1- CONN
<9> VGA_HDMI_TX2+	C730	1	2	VGA@ 0.1U_0402_16V7K	HDMI_TX2+ CK	R672	1	2	0.0402_5%	HDMI_TX2+ CONN
<9> VGA_HDMI_TX2-	C711	1	2	VGA@ 0.1U_0402_16V7K	HDMI_TX2- CK	R670	1	2	0.0402_5%	HDMI_TX2- CONN



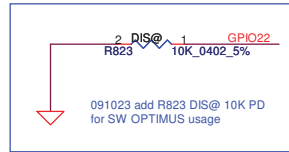
091027 swap L36/L37/L38/L39 nets for layout



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Size	Custom	Document Number	NAVD0 LA-6091P	Rev	1.0
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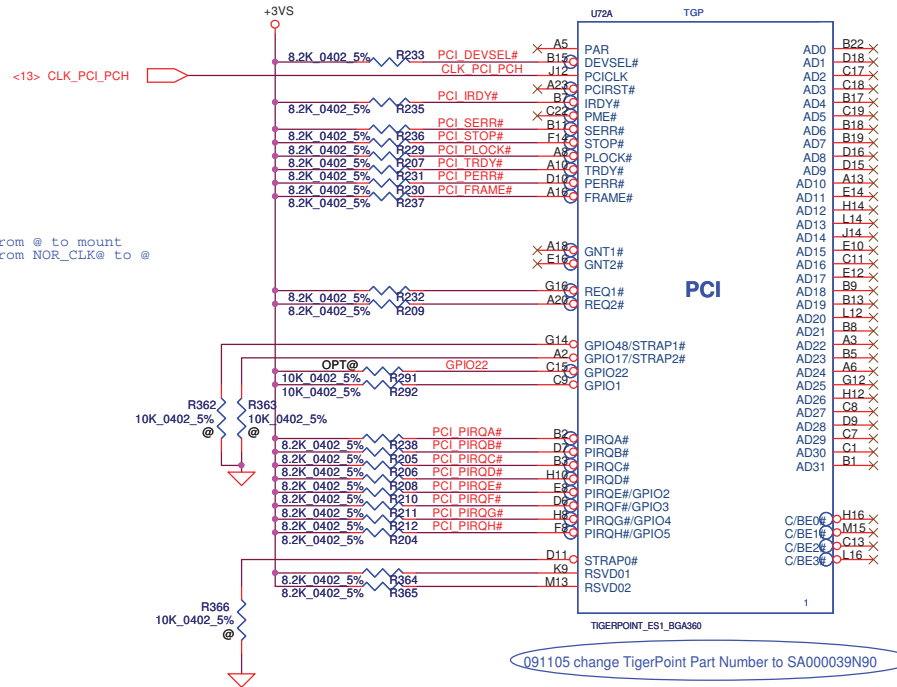


0111 Change BOM Structure of R336 and C432 from @ to mount
0301 Change BOM Structure of R336 and C432 from NOR_CLK@ to @



091023 add R823 DIS@ 10K PD
for SW OPTIMUS usage

STRAP2# GPIO17	STRAP1# GPIO48	Boot BIOS
0	1	SPI
1	0	PCI
1	1	LPC



091105 change TigerPoint Part Number to SA000039N90

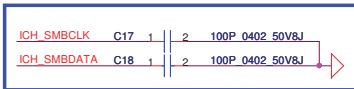
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Size		Document Number		Rev	
		NAVD0 LA-6091P		1.0	
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PCIE Port List	
1	LAN
2	WLAN
3	WWAN
4	

USB Port List	
0	USB Left1
1	
2	USB Right2
3	CMOS
4	CardReader
5	WWAN
6	BT
7	WIMAX

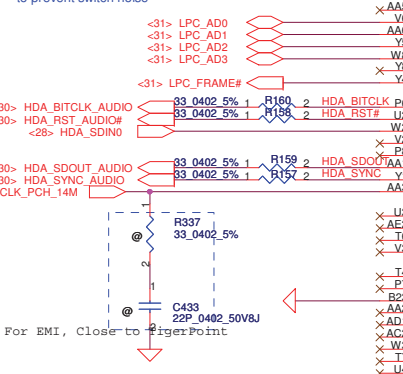
091212 Add C30 near PCH to prevent switch noise

HDA_SDIN0_C30 1 2 @100P_0402_50V8J



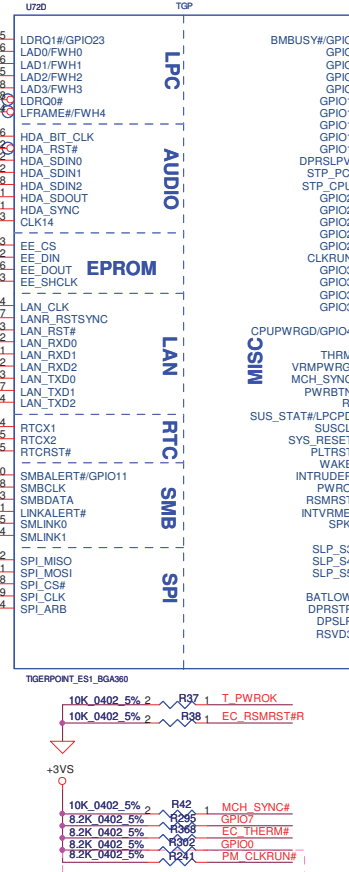
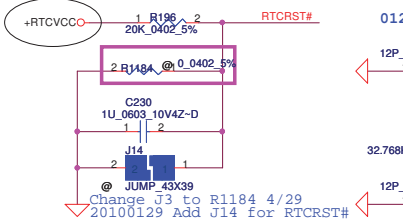
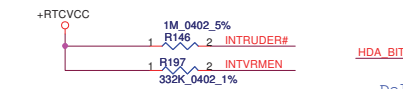
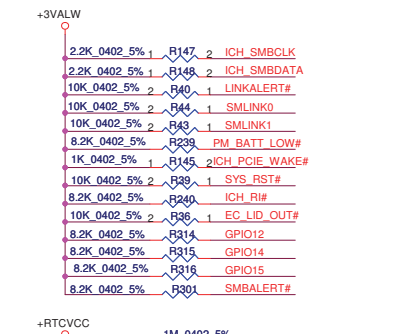
091105 change TigerPoint Part Number to SA000039N90

091212 Add C17 C18 near U72 to prevent switch noise



For EMI, Close to TigerPoint

Change EC_LID_OUT# From GPIO13 to GPIO11 06/08

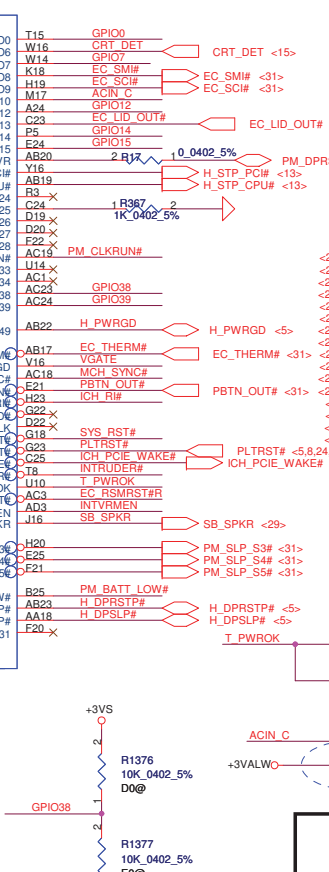
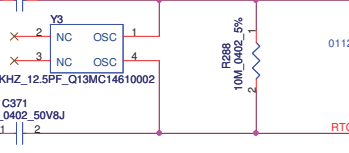


091020 add R806 22ohm for 3G noise solution
0111 Change BOM Structure of R806 and C1214 from @ to mount
0111 Change R806 value from 22_0402_5% ohm to 0_0402_5%
2003 delete R806 for RF

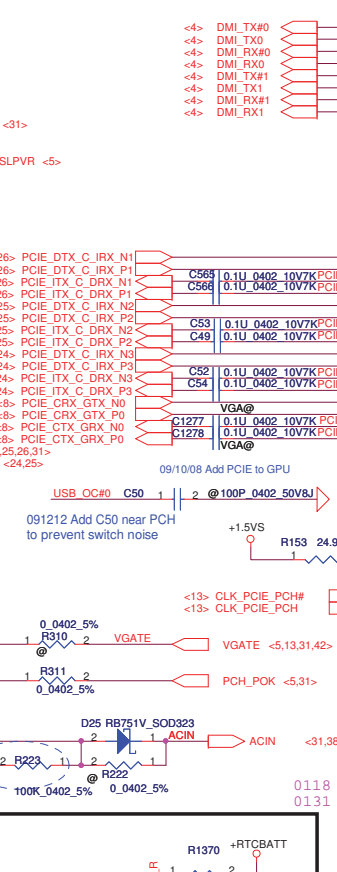
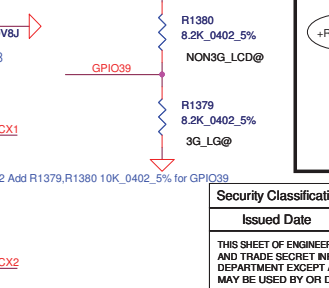
Del R203 (pull-up GPIO6 Resistor) 06/08

0120 Change C368, C371 from 15p to 12p

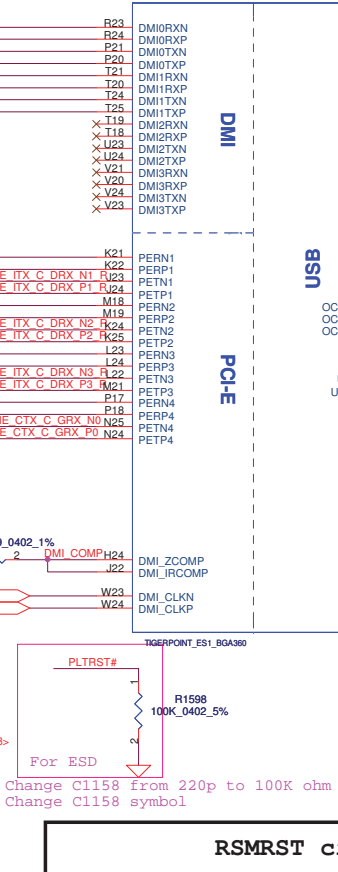
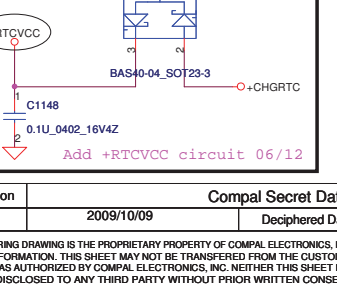
Routing the trace at least 10mil



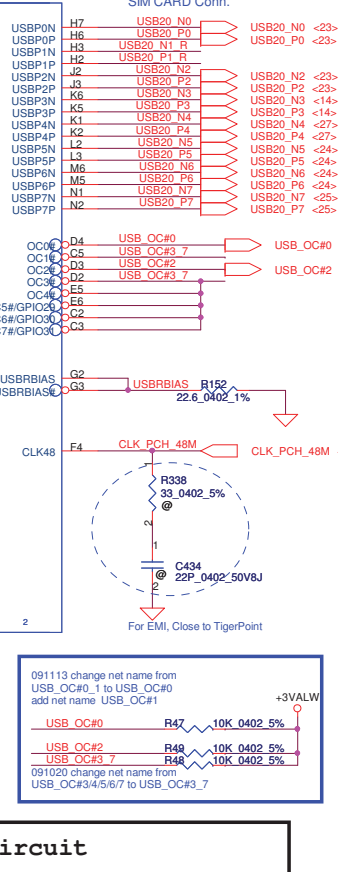
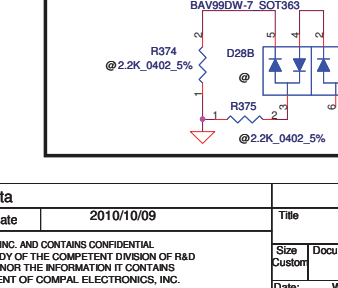
091212 Add C50 near PCH to prevent switch noise



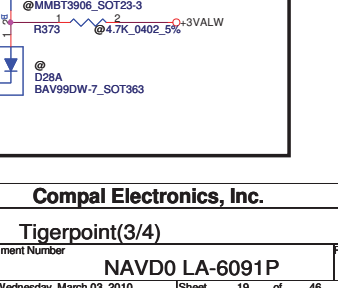
091108 Add PCIE to GPU



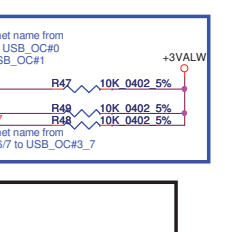
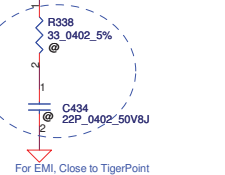
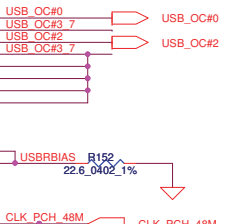
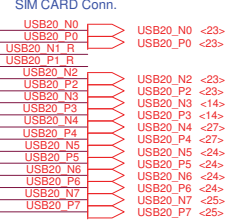
0118 Change C1158 from 220p to 100K ohm
0131 Change C1158 symbol



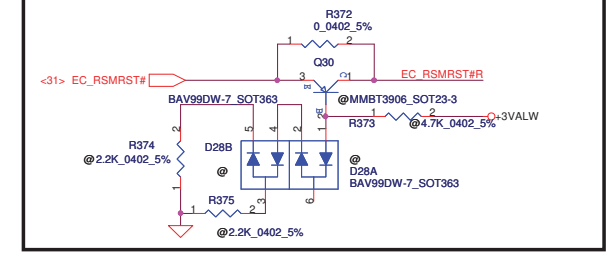
091113 change net name from USB_OC#0_1 to USB_OC#0 add net name USB_OC#1



091204 add USB20_N1/P1 for SIM CARD Conn.

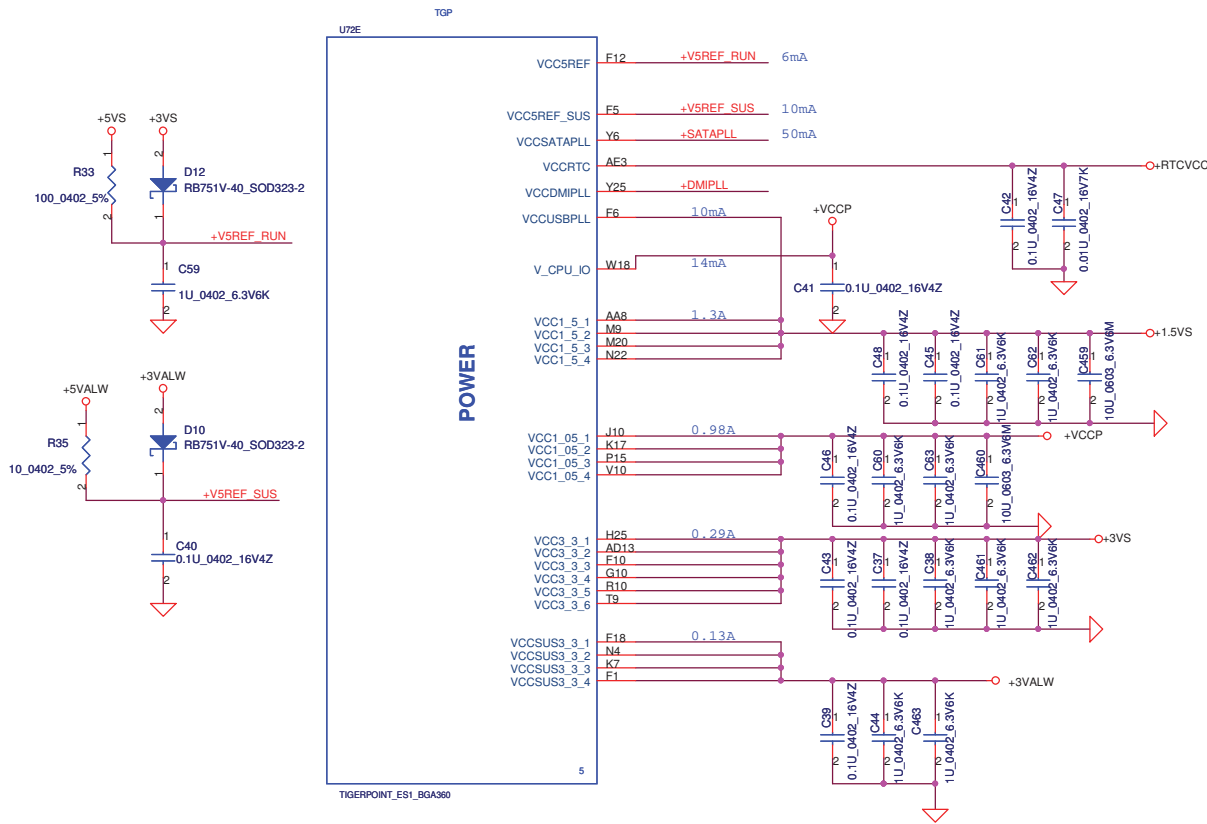


RSMRST circuit

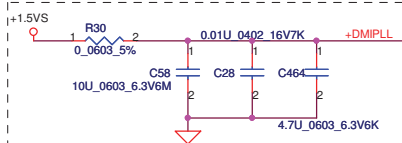


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				Document Number	NAVD0 LA-6091P
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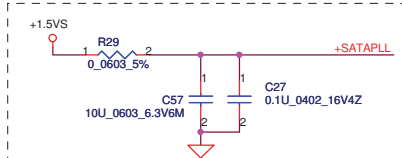
091105 change TigerPoint Part Number to SA000039N90



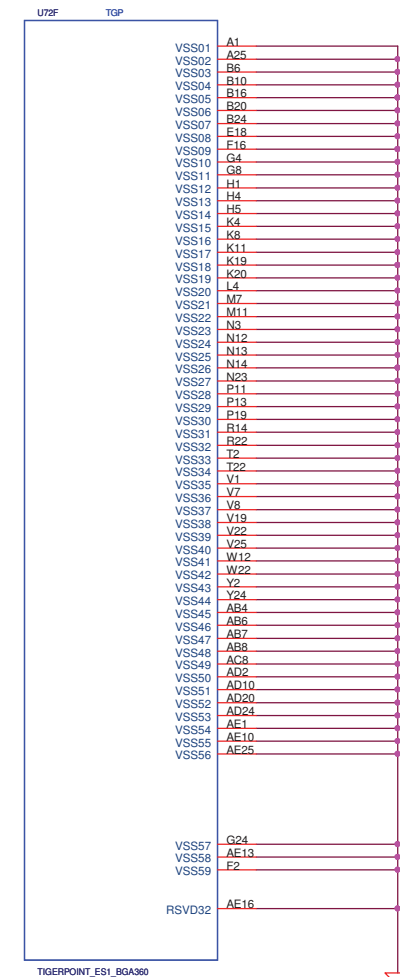
Place closely pin Y25 within 100milis.



Place closely pin Y6 within 100milis.

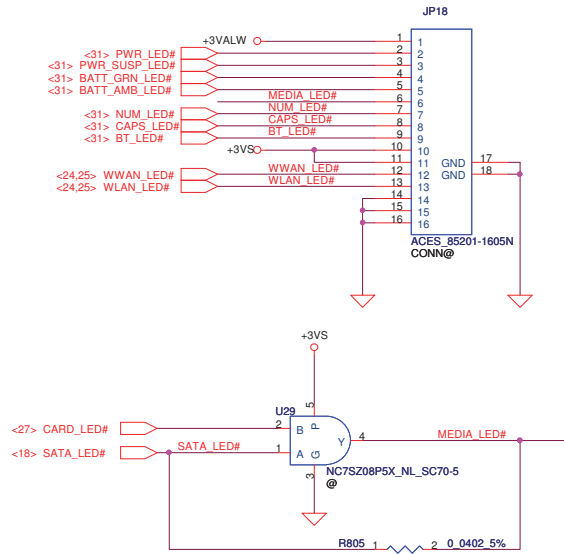


091105 change TigerPoint Part Number to SA000039N90

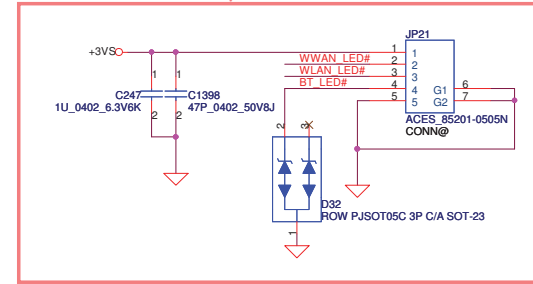


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Size	Custom	Document Number	NAVDO LA-6091P	Rev	1.0
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LED PCB CONN

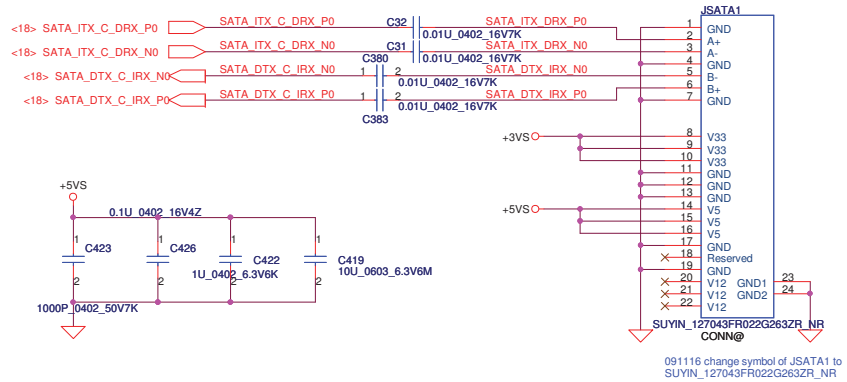


09/30 add ESD



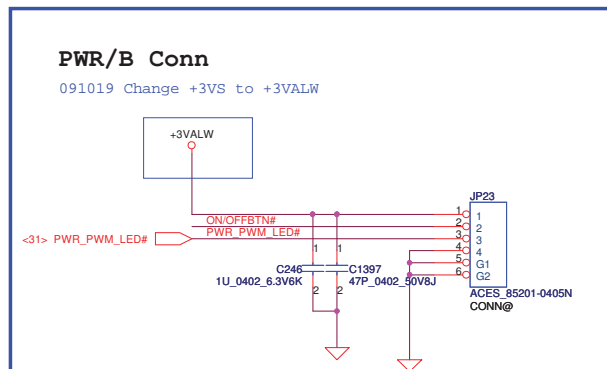
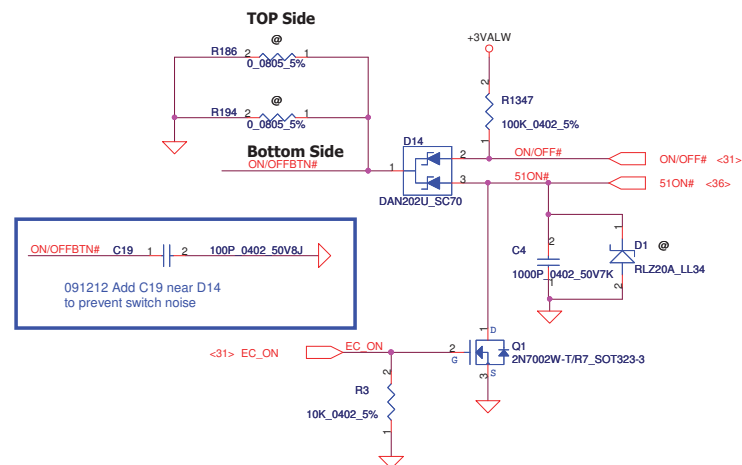
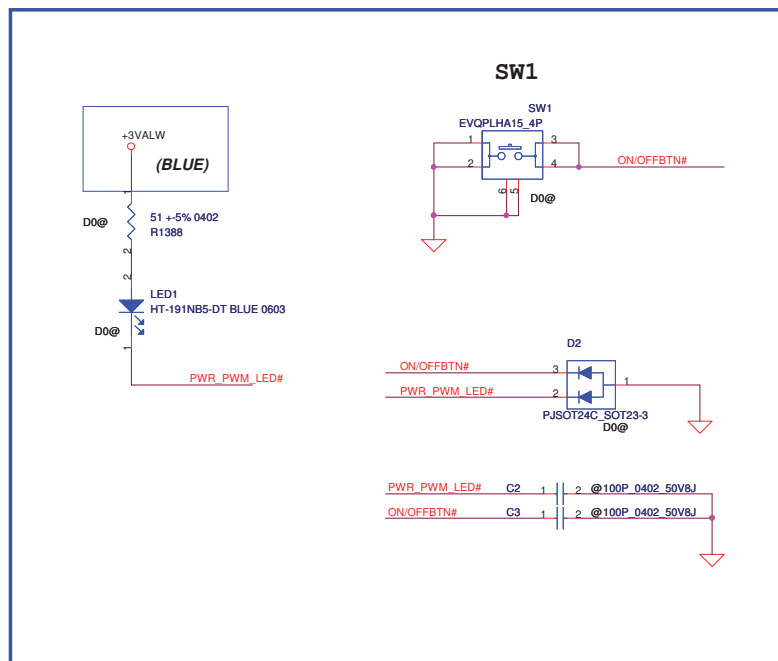
0108 Add C247,C1398 on pin1 of JP21 (RF)

SATA HDD Conn.

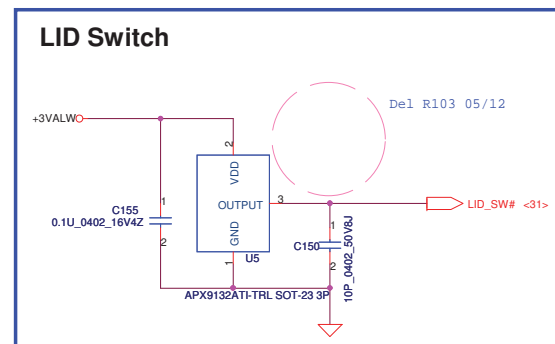


091116 change symbol of JSATA1 to SUYIN_127043FR022G263ZR_NR

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				Size	Document Number	Rev
				B	NAVD0 LA-6091P	1.0
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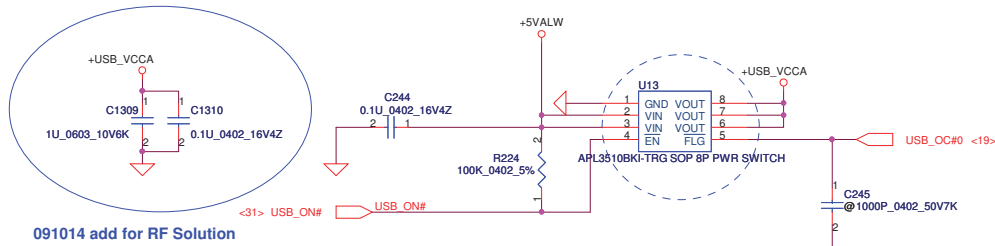


0108 Add C246,C1397 on pin1 of JP23



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								ON/OFF / PWR/B CONN./ LID SW			
Size		Document Number						Rev			
B								1.0			
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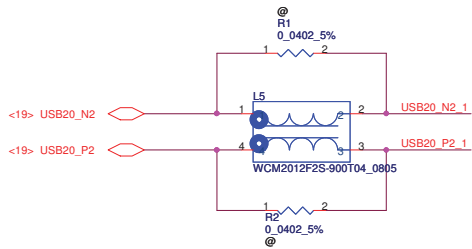
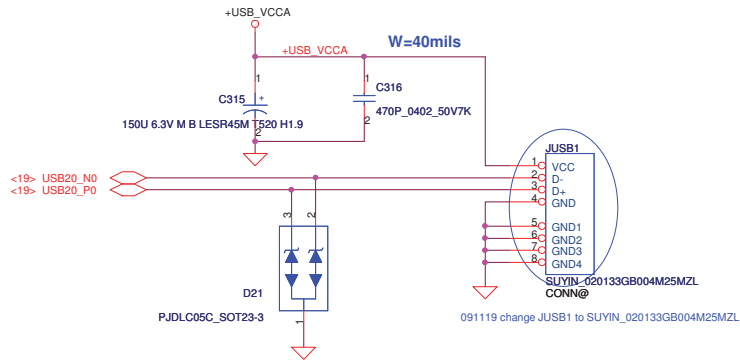
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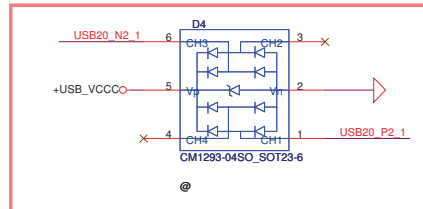
USB_ON# C51 1 2 100P 0402 50V8J

091212 Add C51 near U13 to prevent switch noise

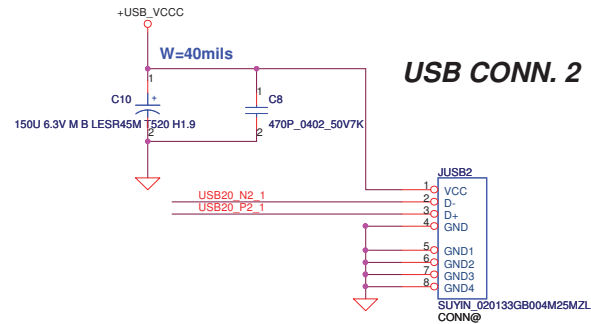
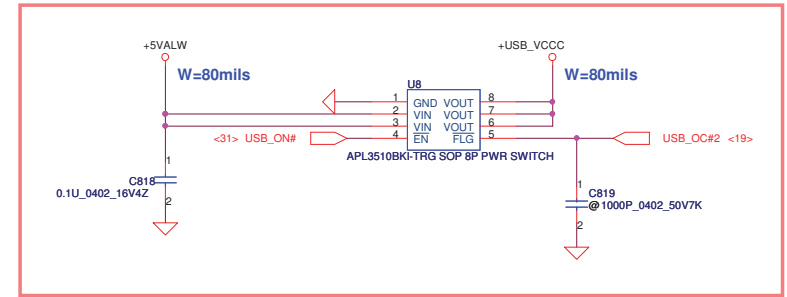
USB CONN.1



5/12 Revised net name



5/5 Add U2 circuit

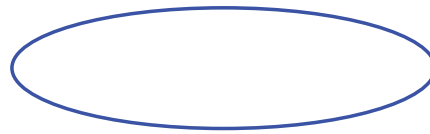


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								USB PORT	
								NAVD0 LA-6091P	
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								Sheet 23 of 46	

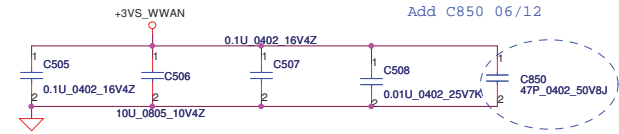
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Mini-Express Card for WWAN

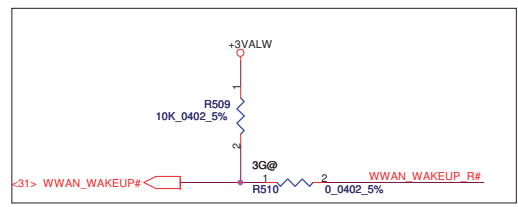
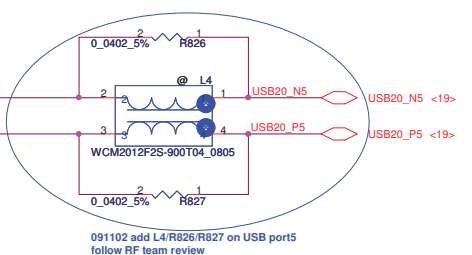
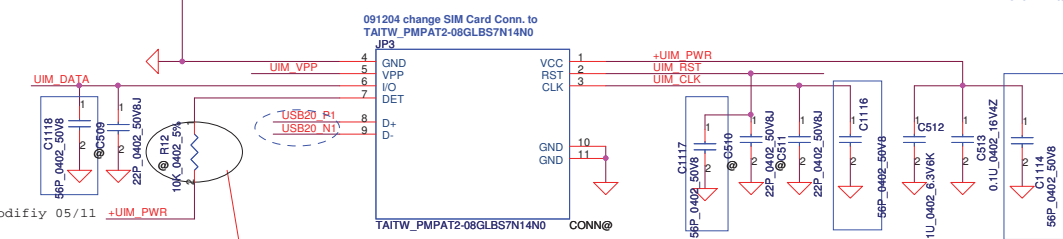
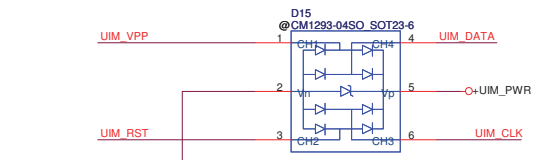
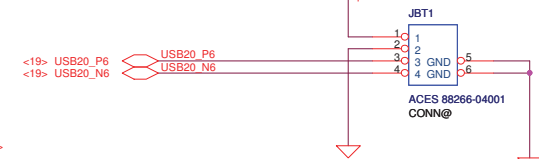
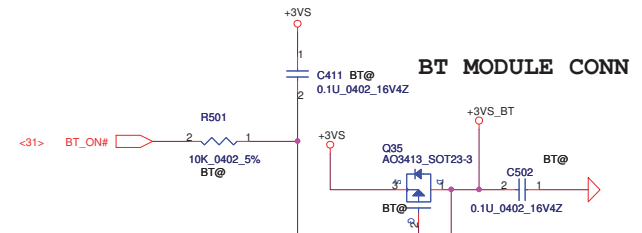
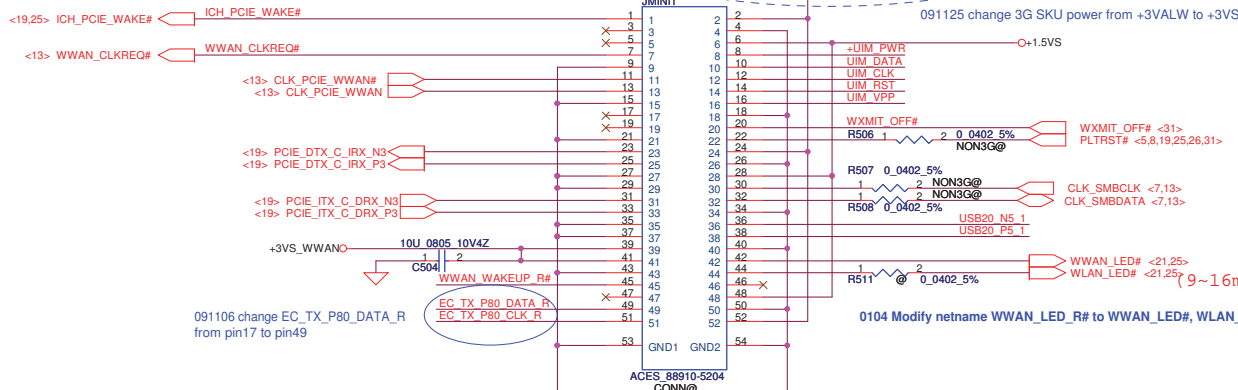
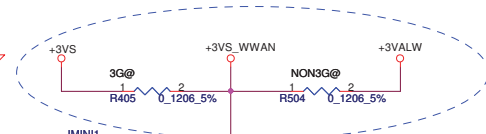
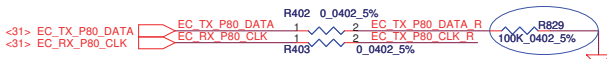
091019 Remove C1163/C1164/C1165/C1166



Add C850 06/12

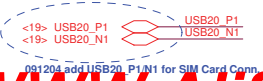


091106 add R829 100K PD to GND



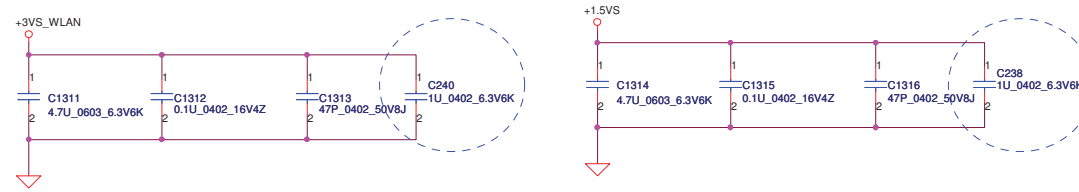
Reserve for SIM card does not meet rise time and pull-up is needed.

Add C1114 C1116 C1117 C1118 05/11
Change C512 to 1U_0402 05/14

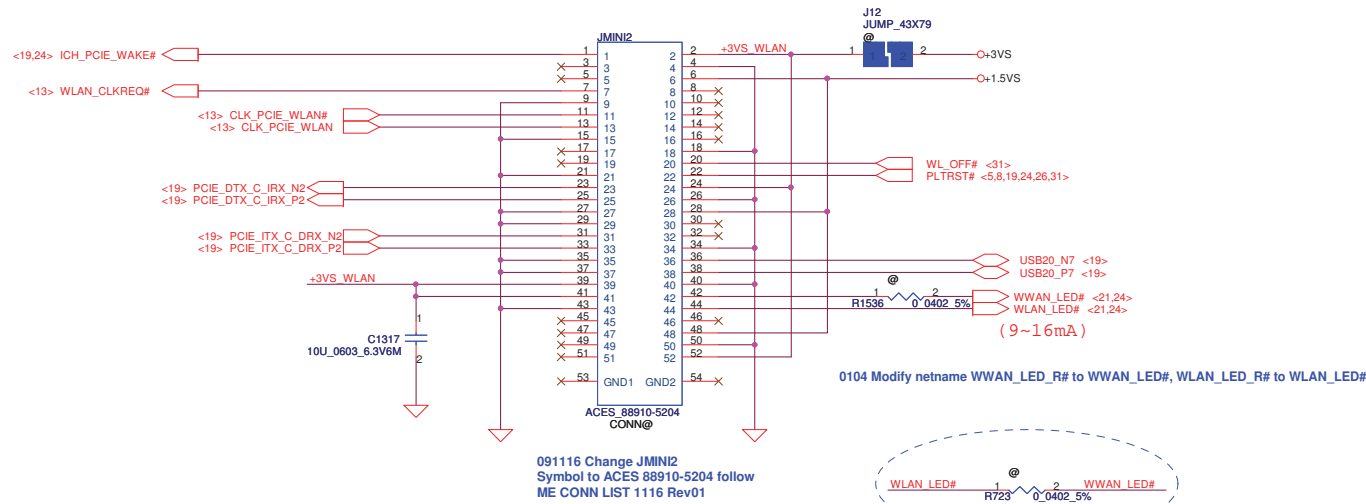


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Mini-Express Card for WLAN



091127 reserve C240/C238 for RF team
0111 Change BOM Structure of C238/C240 from @@ to mount



091116 Change JMINI2
Symbol to ACES 88910-5204 follow
ME CONN LIST 1116 Rev01

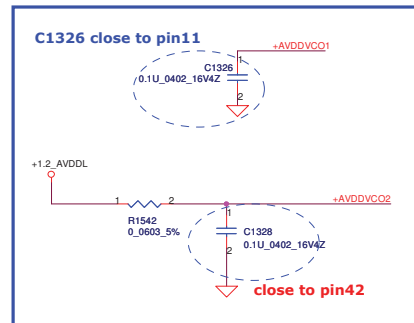
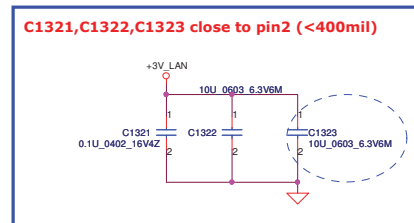
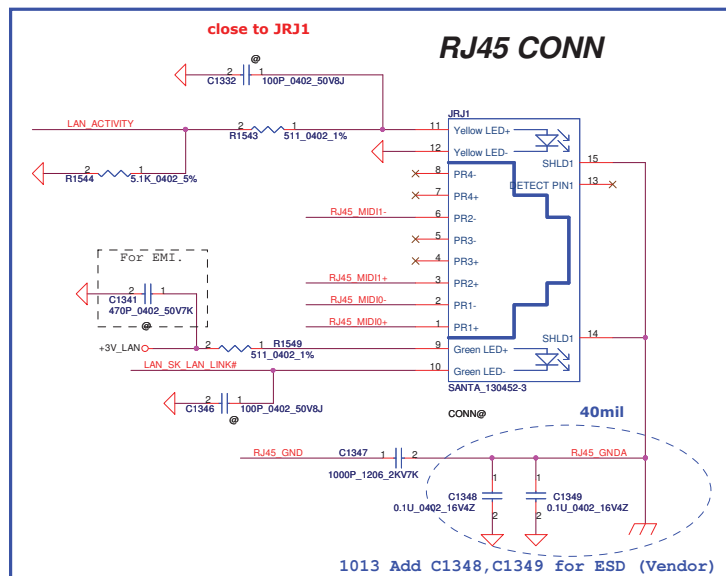
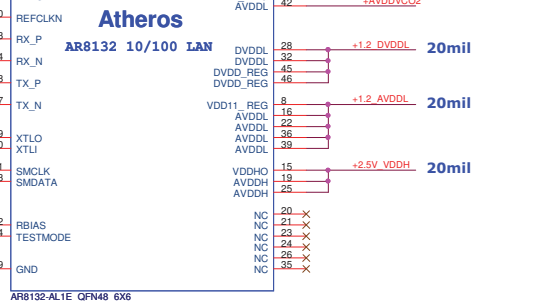
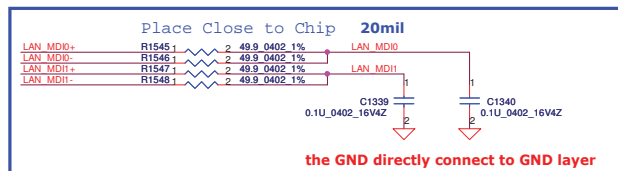
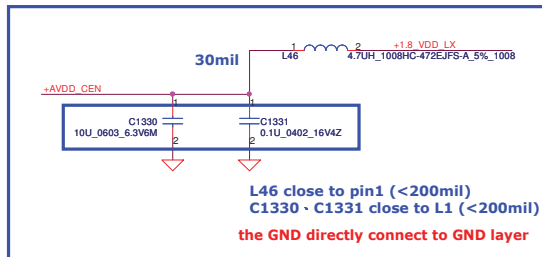
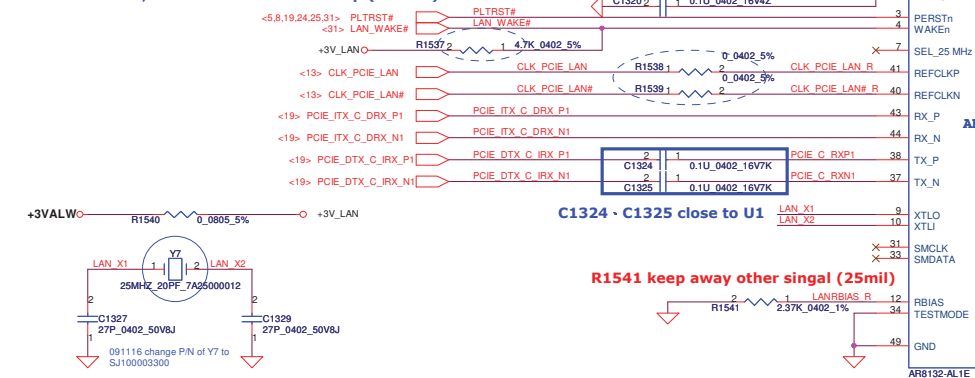
0104 Modify netname WWAN_LED_R# to WWAN_LED#, WLAN_LED_R# to WLAN_LED#

091125 reserve 0ohm for WIMAX

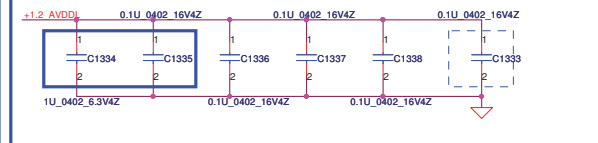
5/12 Update WLAN connector(the same as KAV60)
6/1 Revised 37、39、41、42、43 to NC
6/12 Update connector to DC040006S00
6/26 Update JMINI1 footprint
7/01 update pin 23,25,31,33

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				NAVD0 LA-6091P	
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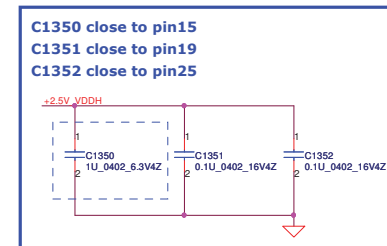
1013 Add R1538,R1539 for reserve 0.1u cap (Vendor)



C1334,C1335 close to pin8 1013 Add C22 close to pin39 (Vendor)
C1336 close to pin16
C1337,C1338 close to pin22 .36

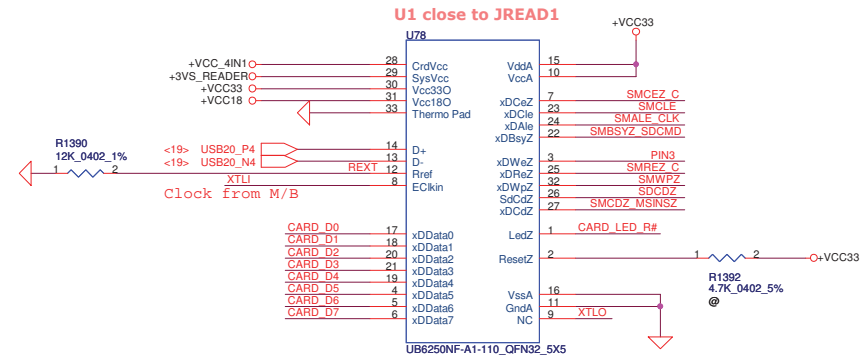


C1343 close to pin28
C1344 close to pin32
C1345 close to pin45
C1342 close to pin46

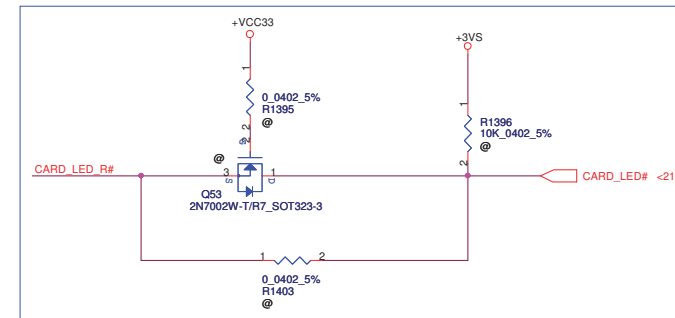


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				Custom	NAVD0 LA-6091P		
				Date:	Wednesday, March 03, 2010	Sheet 26 of 46	

091020 change JUMP J2/J3 to R808/R809 0ohm

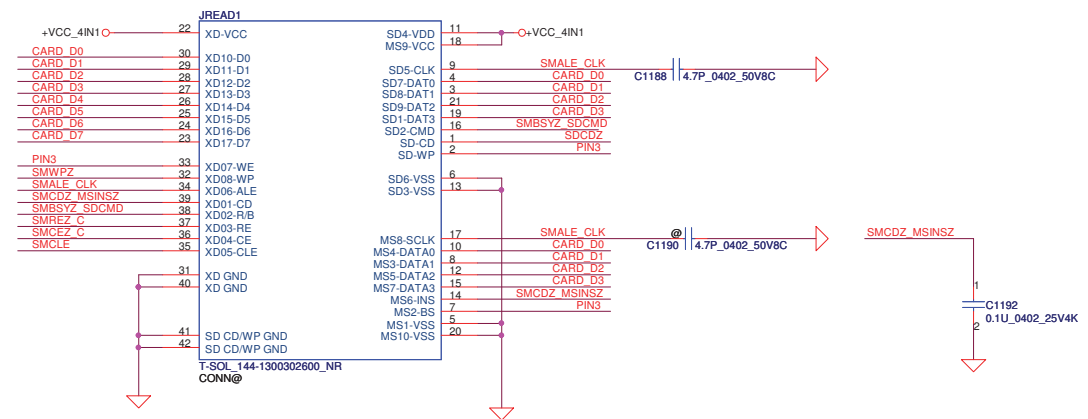


If use external crystal(Y6),
U78 will change UB6252

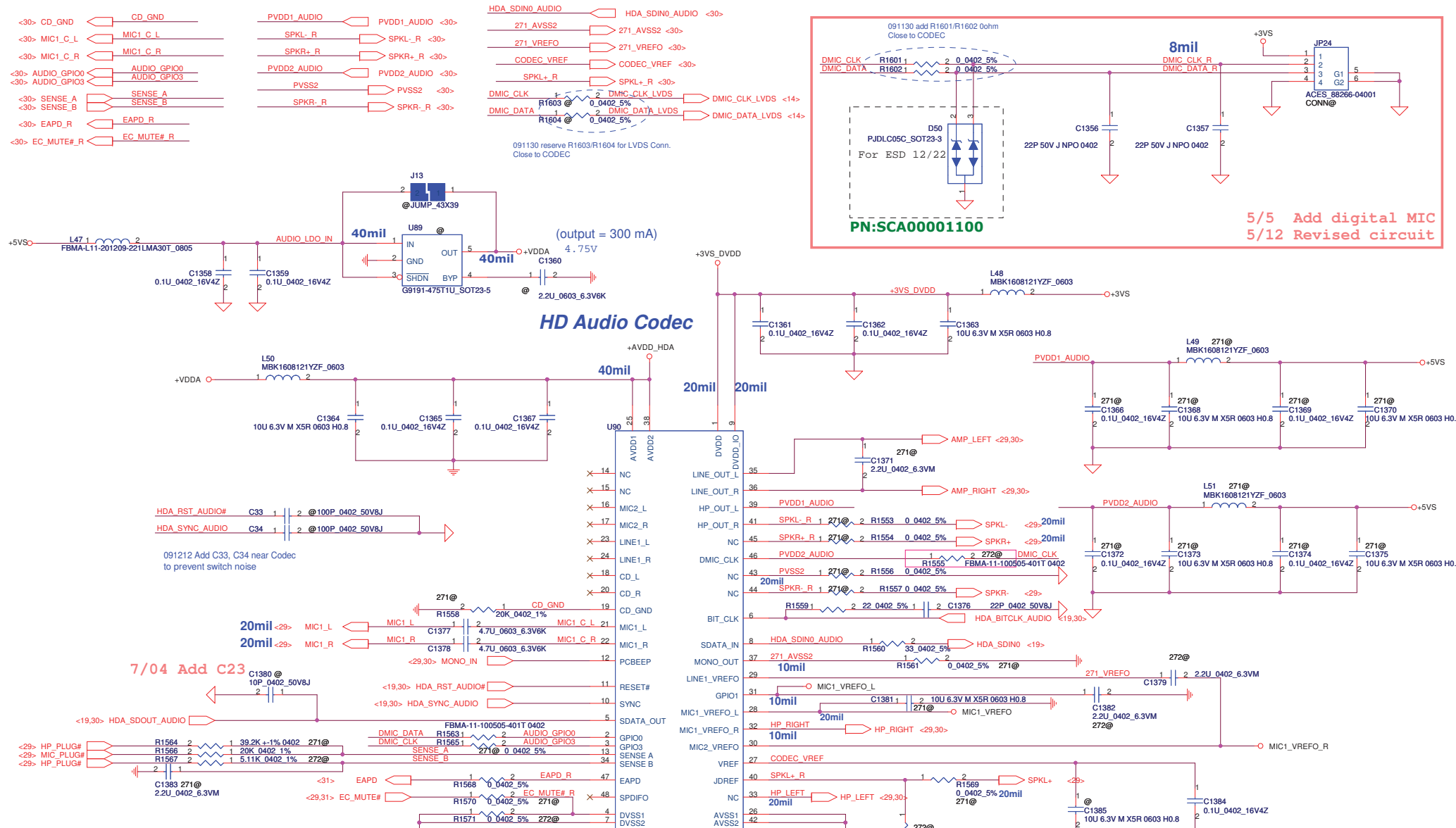


091203 change BOM structure of
Q53/R1395/R1396 from mount to @

Card Reader Connector



Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2009/10/09	Deciphered Date	2010/10/09	CARD READER	
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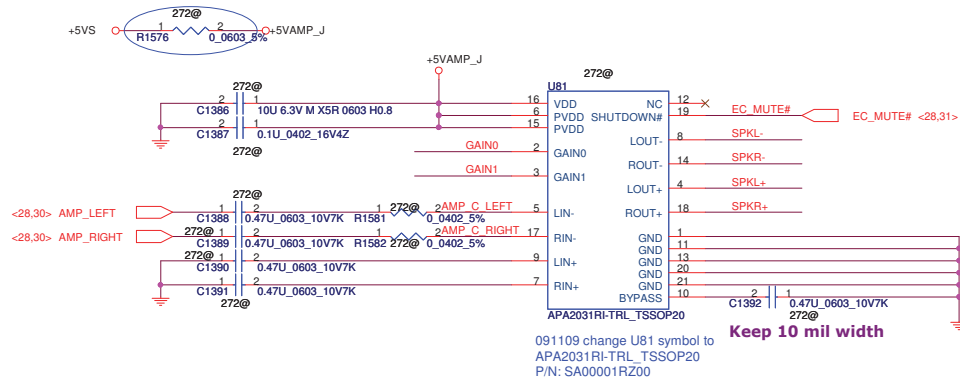
Sense Pin	Impedance	Codec Signals
SENSE A	39.2K	PORT-A (PIN 39, 41)
	20K	PORT-B (PIN 21, 22)
	10K	PORT-C (PIN 23, 24)
	5.1K	PORT-D (PIN 35, 36)
SENSE B	39.2K	PORT-E (PIN 14, 15)
	20K	PORT-F (PIN 16, 17)
	10K	PORT-G (PIN 43, 44)

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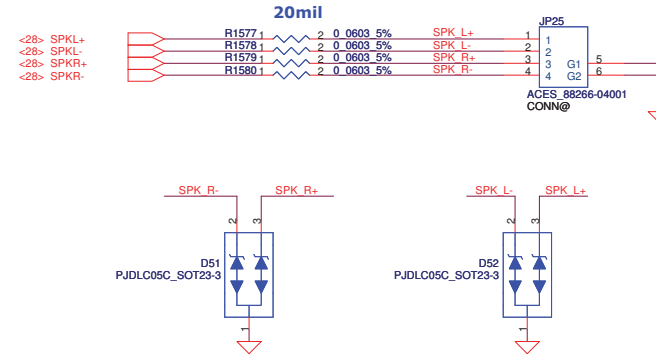
Change to SA00002CI20 ALC272-VA2-GR

Security Classification				Compal Secret Data				Compal Electronics, Inc.			
Issued Date				2009/10/09				Deciphered Date			
								2010/10/09			
Title				AUDIO CODEC ALC272				NAV00 LA-6091P			
Size				Custom				Rev 1.0			
Date				Wednesday, March 03, 2010				1 Sheet 28 of 46			

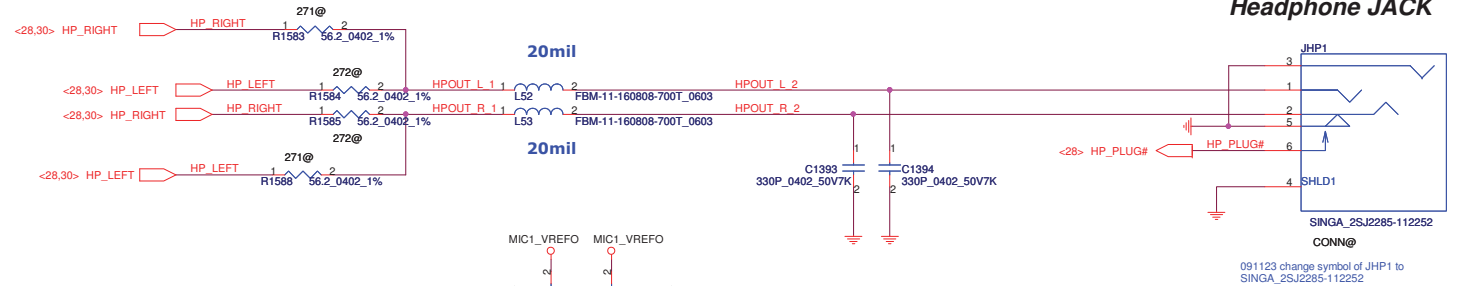
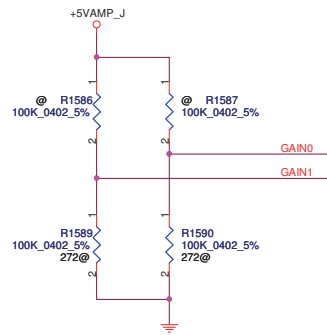
091020 change JUMP J5 to R1576 0ohm



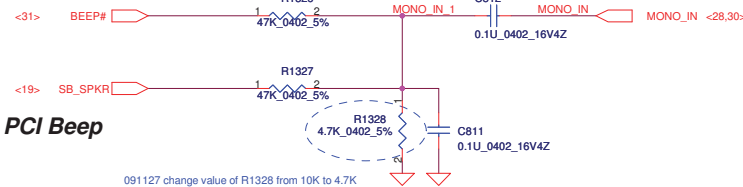
Int. Speaker Conn.



20081029 Update to 6dB

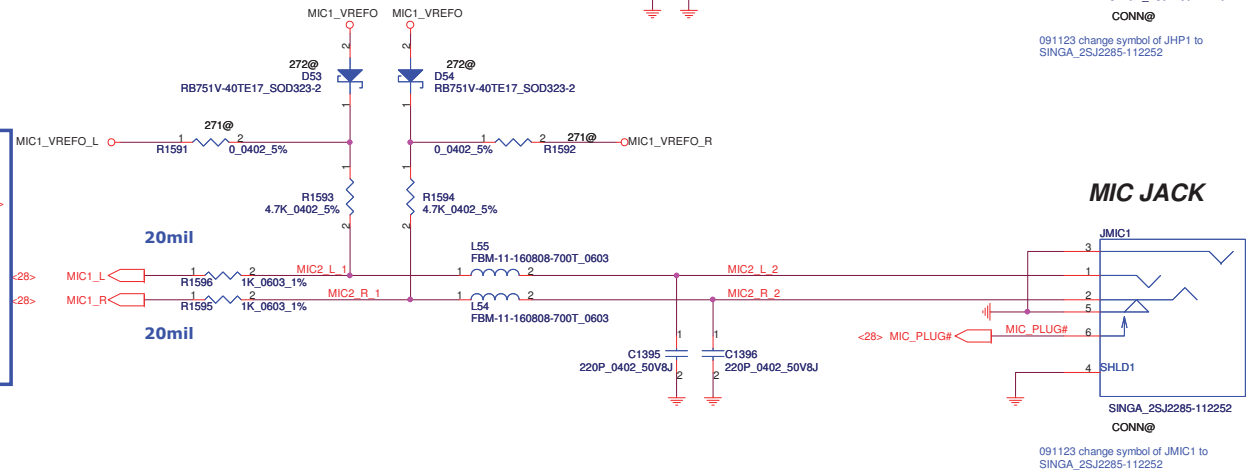


EC Beep



PCI Beep

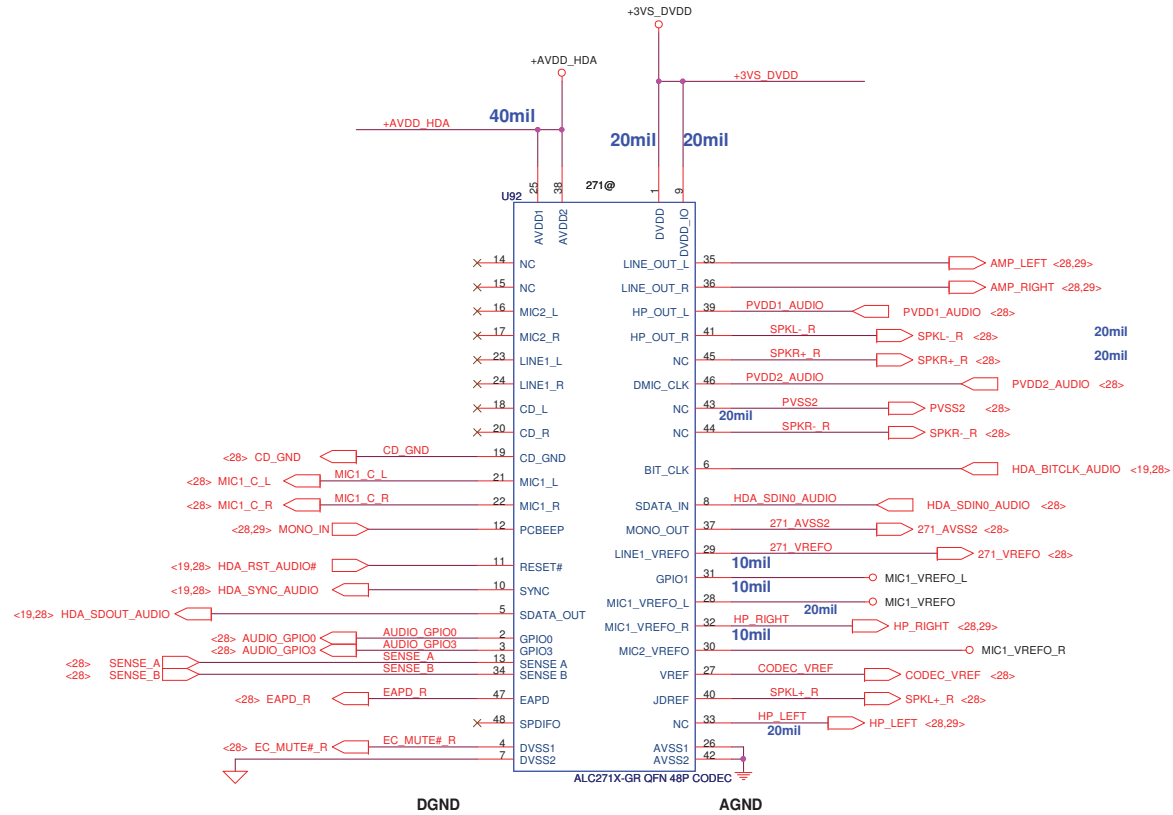
091020 follow NTV00 Design



MIC JACK

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						Size	Document Number			NAVD0 LA-6091P		Rev
						Custom						1.0
						Date	Wednesday, March 03, 2010		Sheet	29	of	46

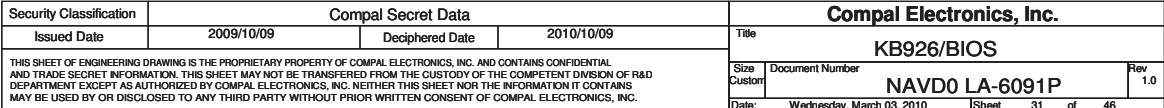
HD Audio Codec

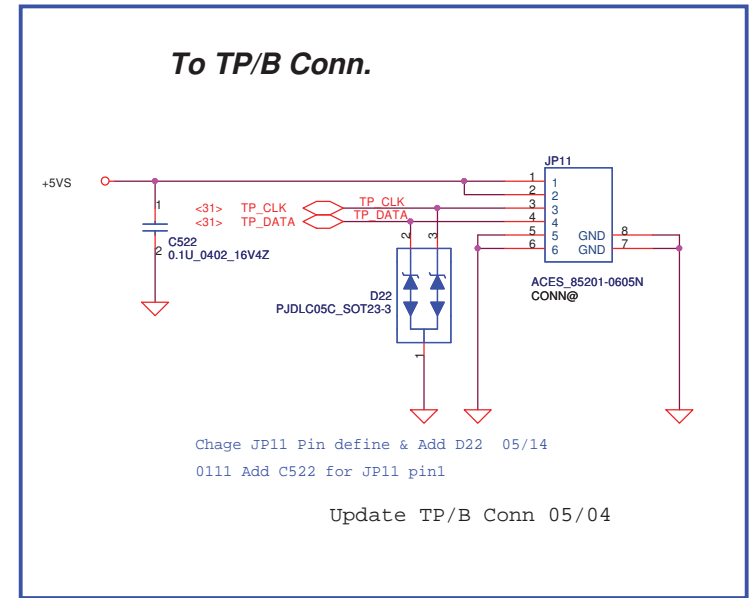
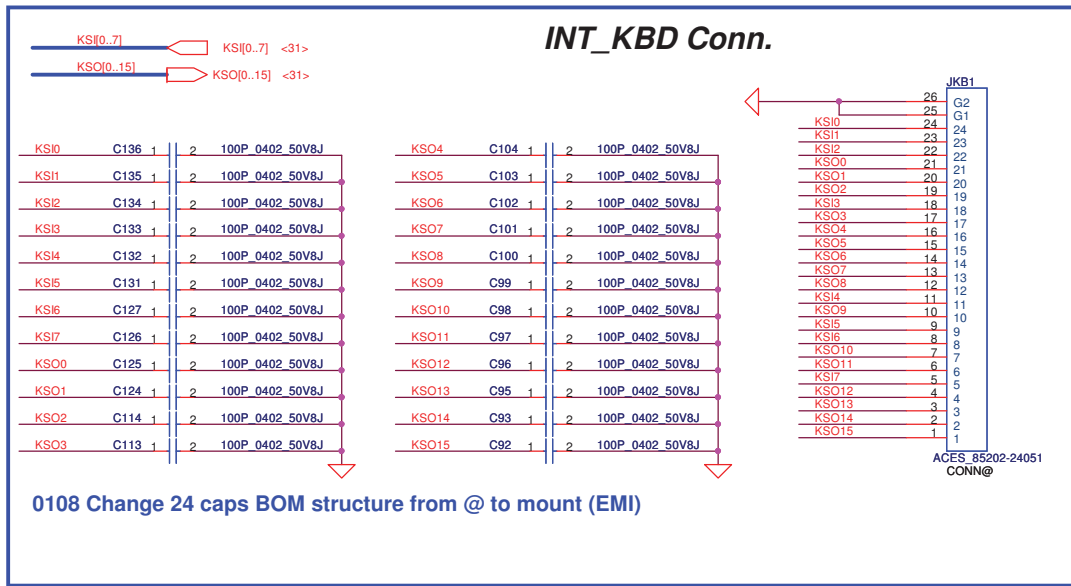


Sense Pin	Impedance	Codec Signals
SENSE A	39.2K	PORT-A (PIN 39, 41)
	20K	PORT-B (PIN 21, 22)
	10K	PORT-C (PIN 23, 24)
	5.1K	PORT-D (PIN 35, 36)
SENSE B	39.2K	PORT-E (PIN 14, 15)
	20K	PORT-F (PIN 16, 17)
	10K	PORT-G (PIN 43, 44)
	5.1K	PORT-H (PIN 5, 6)

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						Size		Document Number		NAVD0 LA-6091P		Rev 1.0	
						Date:		Wednesday, March 03, 2010		Sheet 30 of 46			

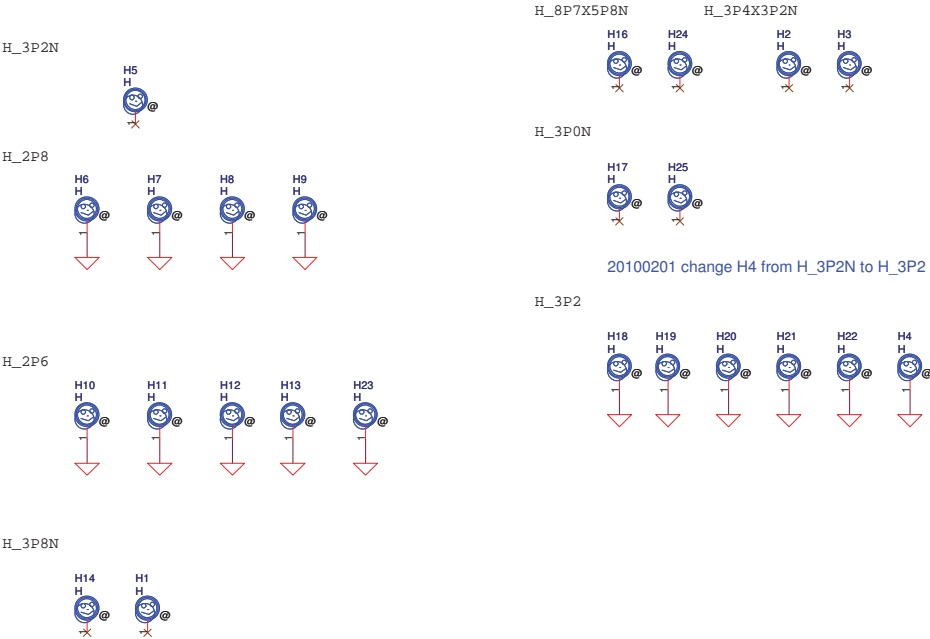
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				NAVD0 LA-6091P	

091028 Modify Hole location by 1127_NAVD0_NEW_MB_ASSY_FOR_2865_v11



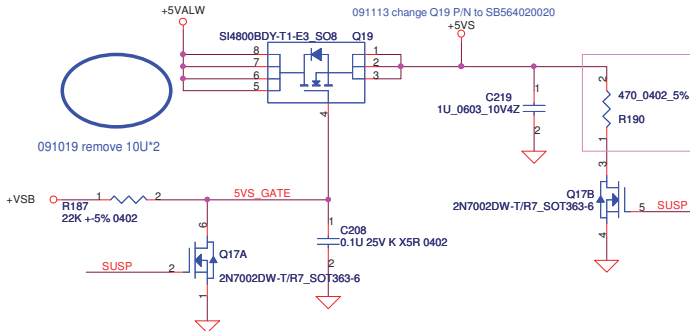
20100201 change H4 from H_3P2N to H_3P2



FIDUCIAL_C40M80

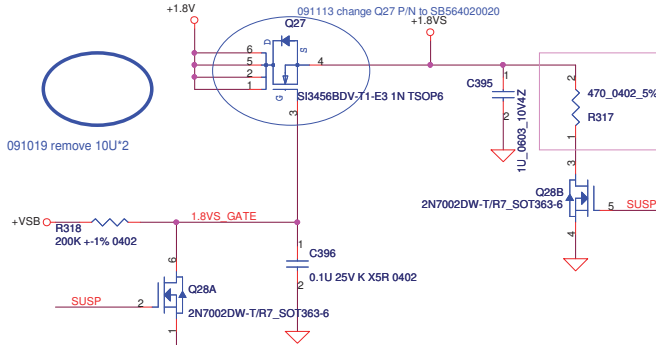
Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2009/10/09	Deciphered Date	2010/10/09	Title	
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Size	B	Document Number	NAVD0 LA-6091P	Rev	1.0
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+5VALW TO +5VS



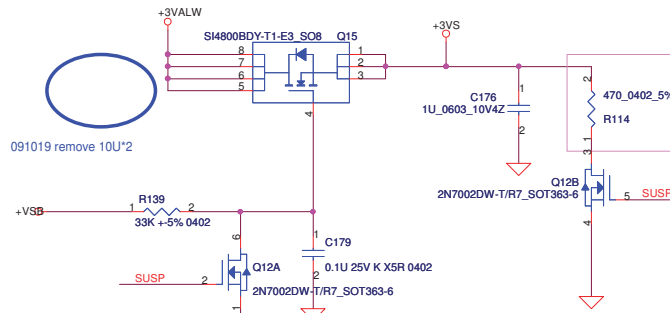
100112 change Q47 P/N from SB000000AR00 to SB000000DH00

+1.8V to +1.8VS



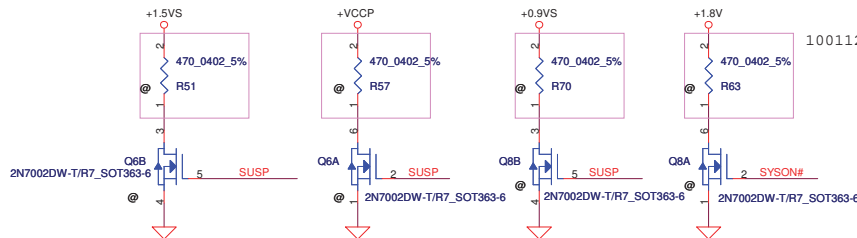
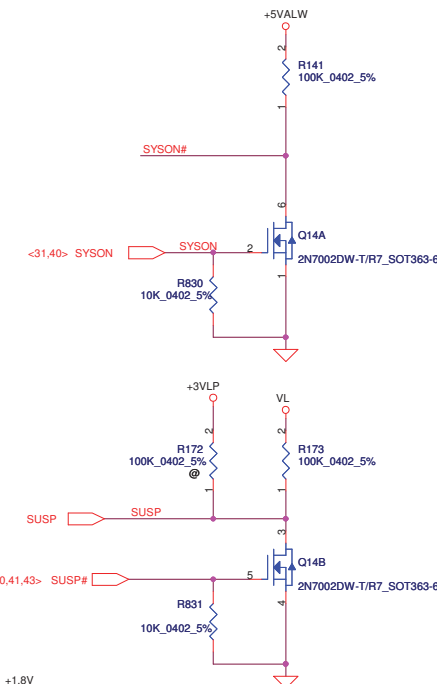
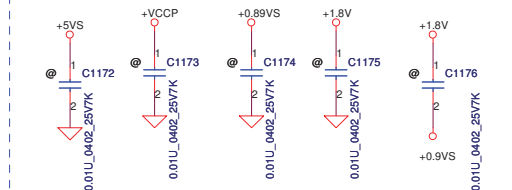
100112 change Q47 P/N from SB000000AR00 to SB000000DH00

+3VALW TO +3VS



100112 change Q47 P/N from SB000000AR00 to SB000000DH00

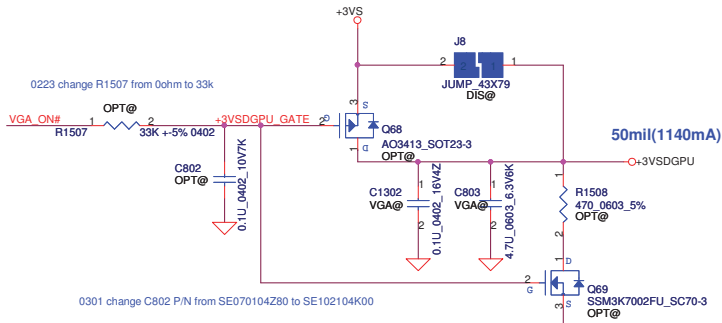
ADD +5VS +VCCP +0.89VS Cap for EMI



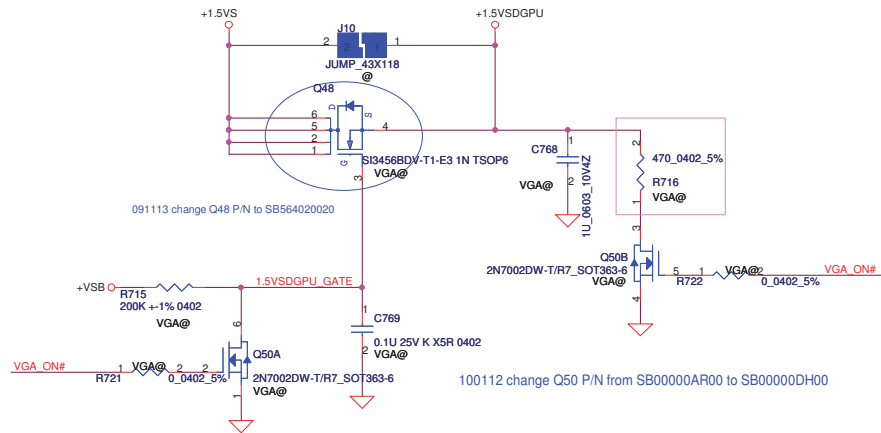
Security Classification				Compal Secret Data			Compal Electronics, Inc.		
Issued Date				2009/10/09		Deciphered Date	2010/10/09		
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				Size B	Document Number				Rev 1.0
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+3VS to +3VSDGPU Transfer

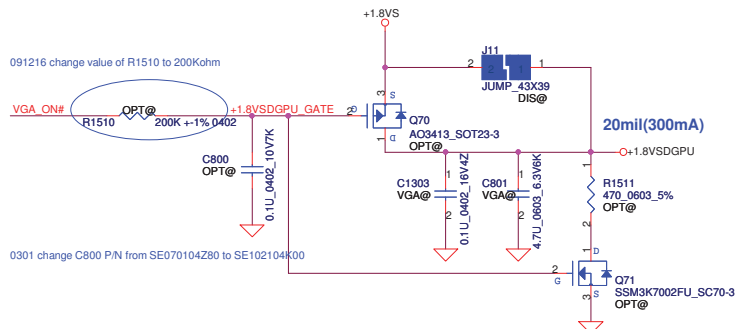
0111 Change BOM Structure of C1302/C803/C1303/C801/C1294 from OPT@ to VGA@



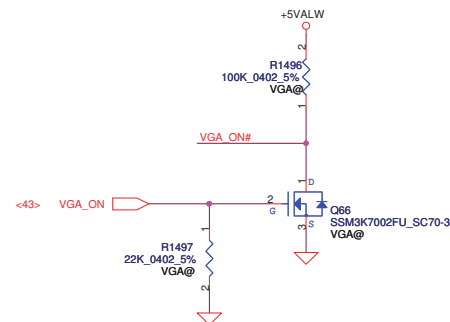
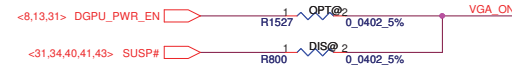
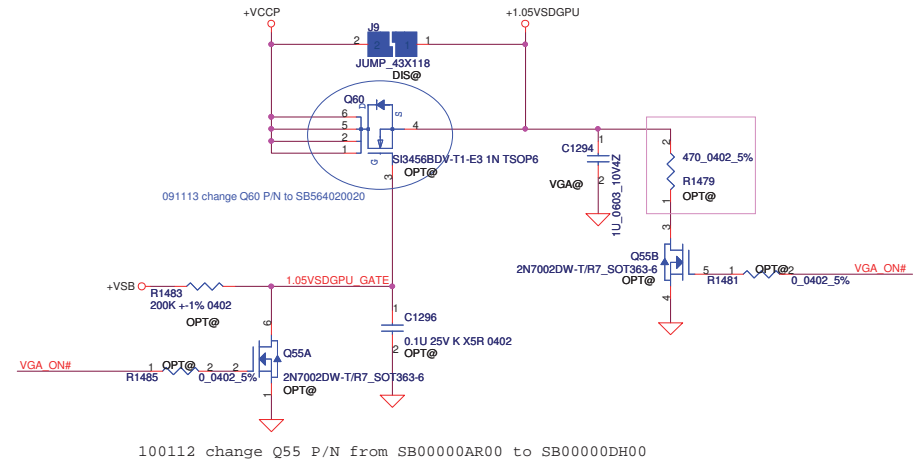
+1.5VS to +1.5VSDGPU Transfer



+1.8VS to +1.8VSDGPU Transfer

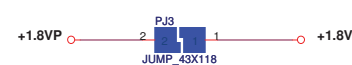
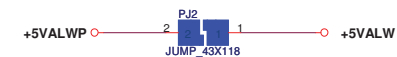
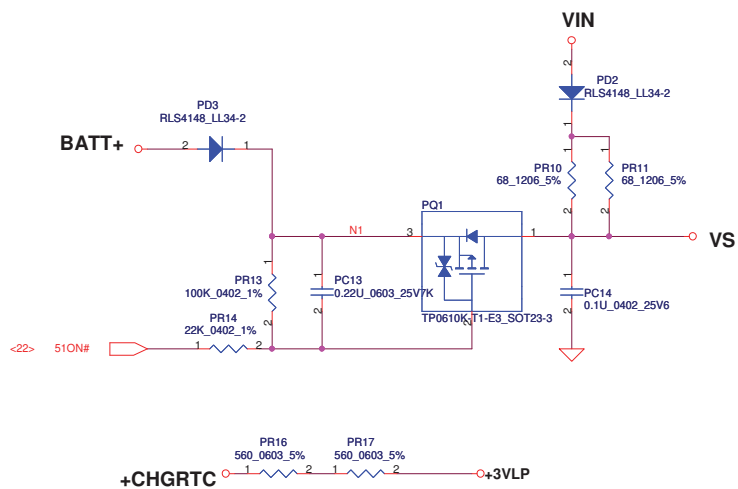
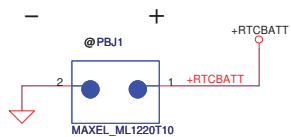
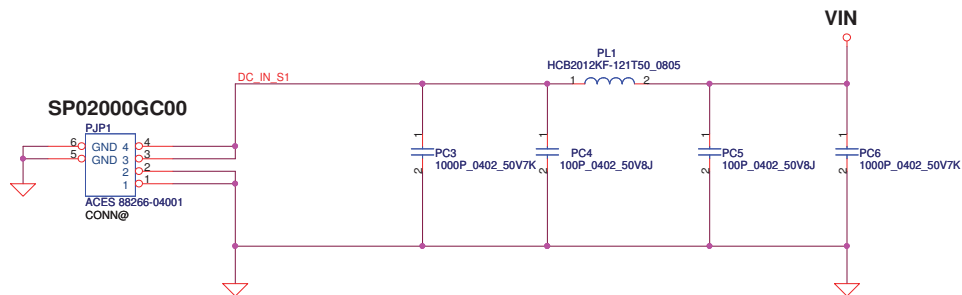


+VCCP to +1.05VSDGPU Transfer

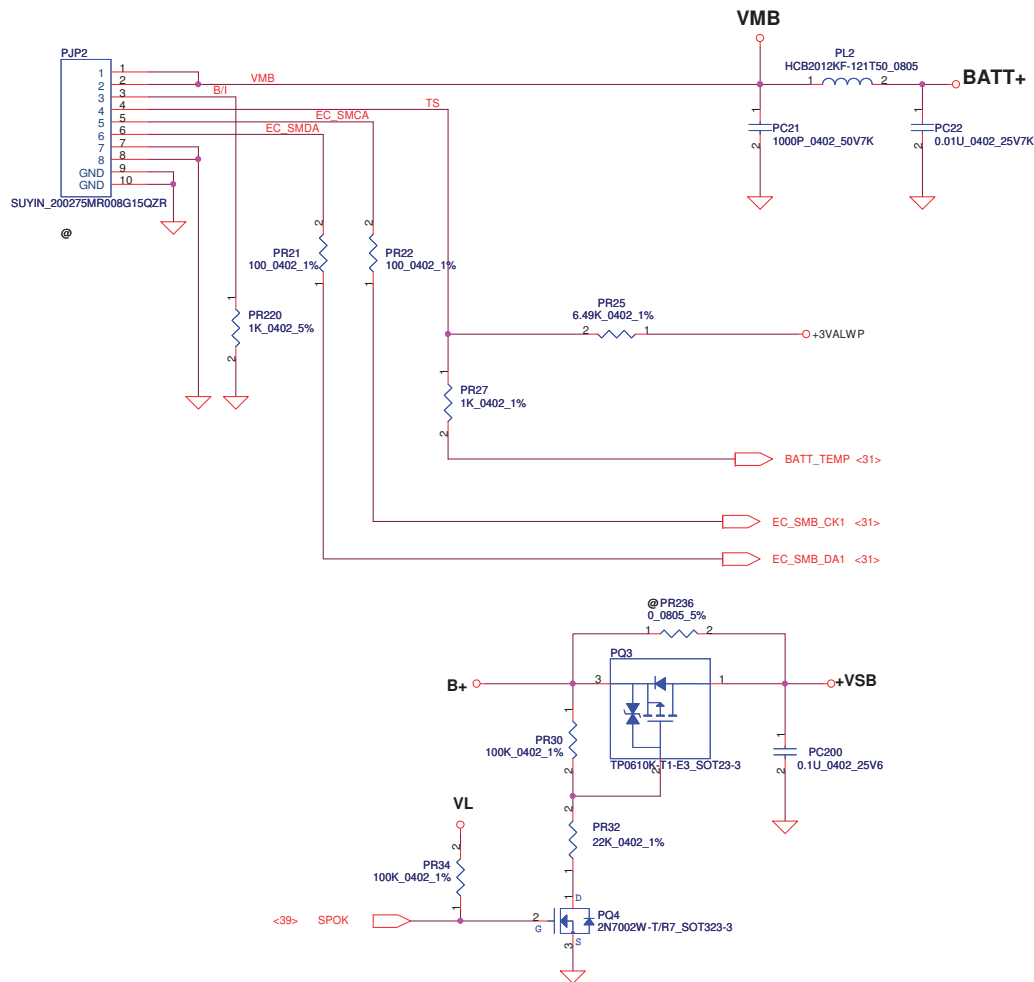


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				Deciphered Date				VGA DC INTERFACE			
				2010/10/09				Size			
								Custom			
								NAVD0 LA-6091P			
								Date			
								Wednesday, March 03, 2010			
								Sheet			
								35 of 46			
								Rev			
								1.0			

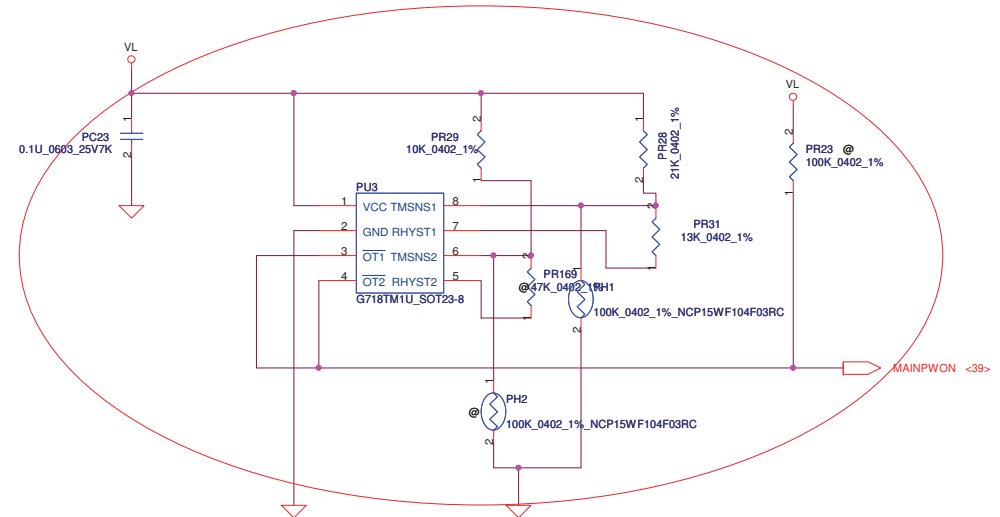
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Size	Document Number	Customer	NAVD0 LA-6091P	Rev	1.0
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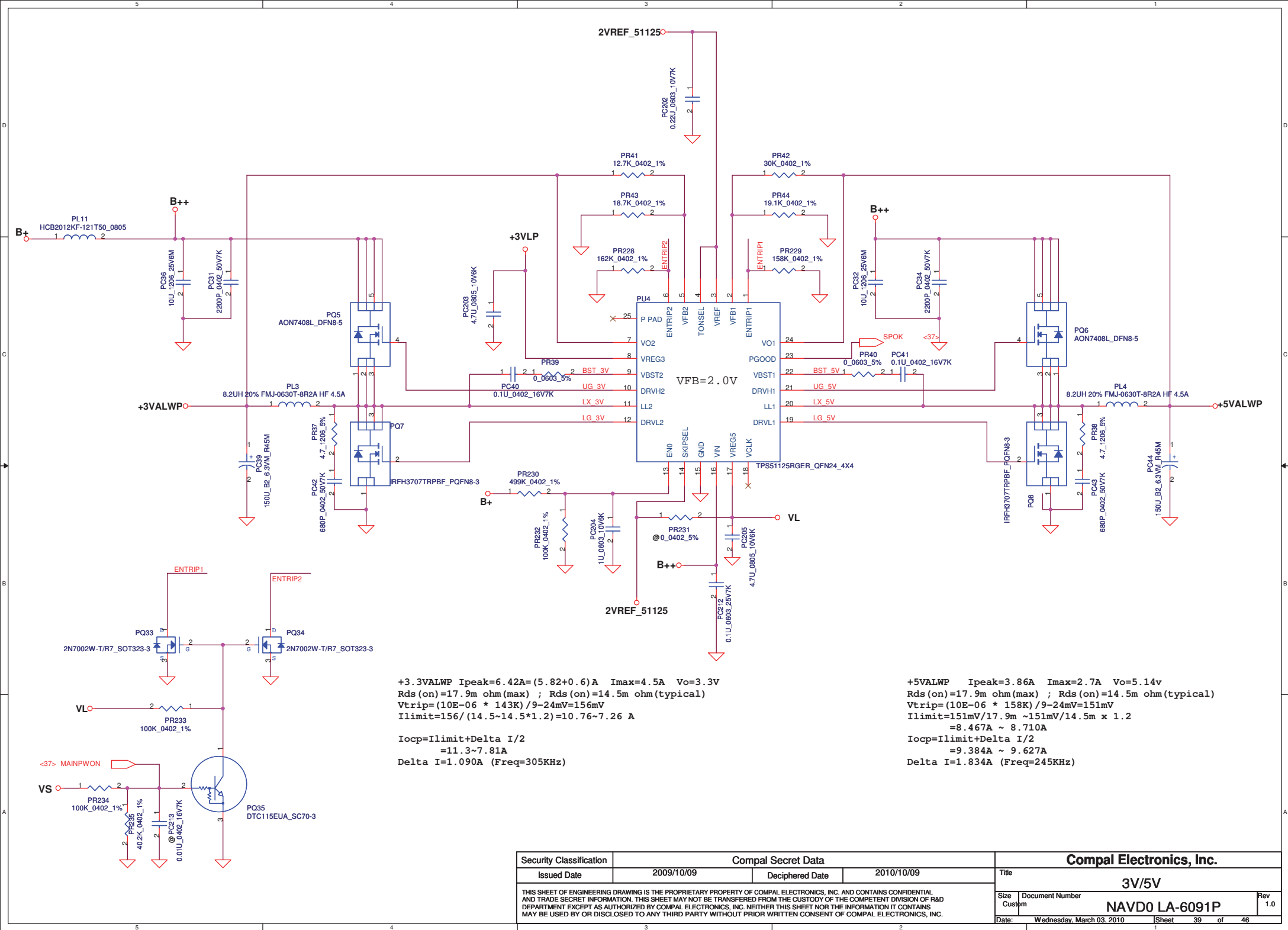
PH1 under CPU bottom side :
 CPU thermal protection at 92 degree C
 Recovery at 70 degree C

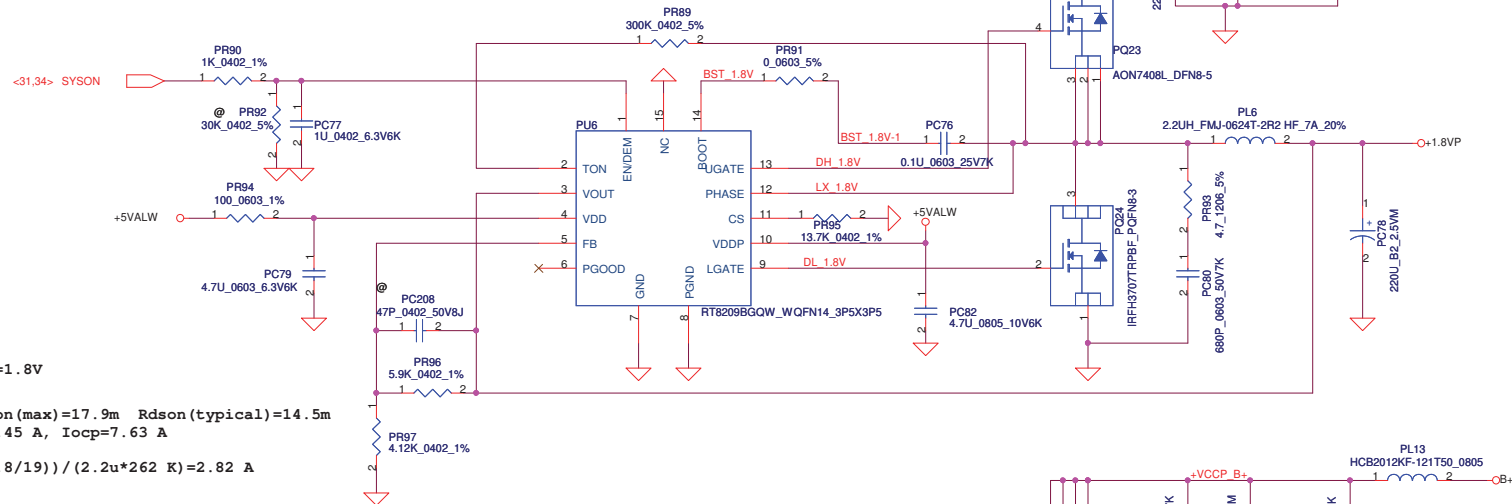


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				Custom	NAVD0 LA-6091P
				Date:	Wednesday, March 03, 2010
				Sheet	37 of 46
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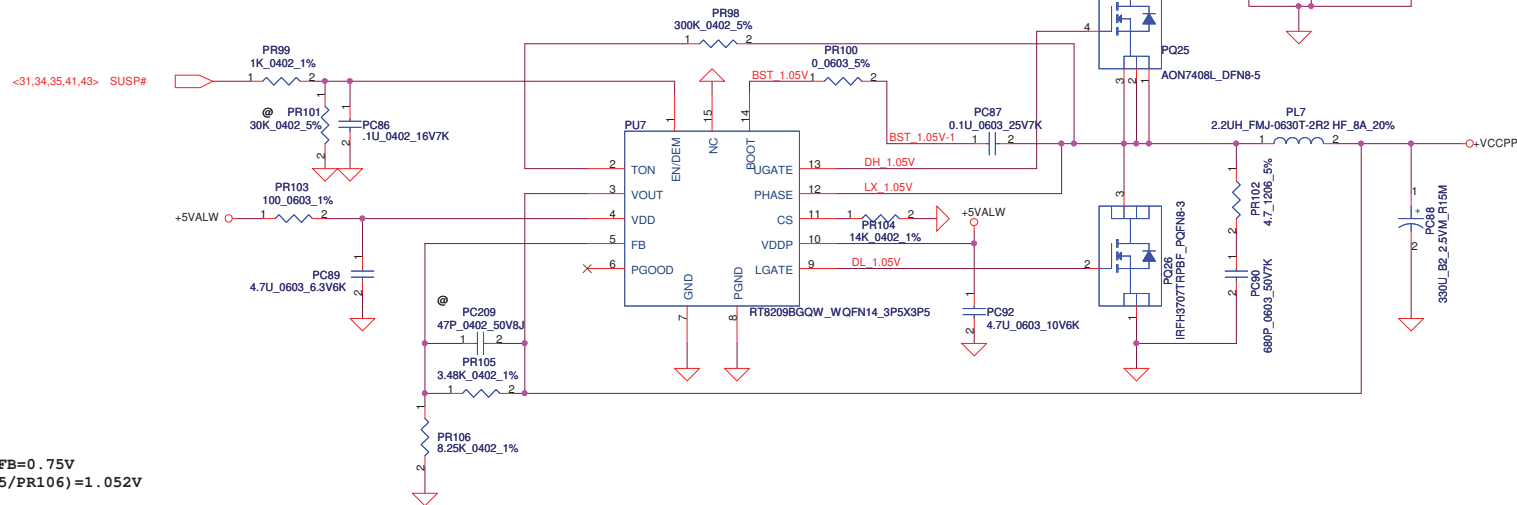


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<Vo=1.8V> VFB=0.75V
 $V_o = V_{FB} * (1 + PR96/PR97) = 1.8V$
 $F_{sw} = 262 \text{ KHz}$
 $C_{out} ESR = 15m \text{ ohm}$ $R_{dson(max)} = 17.9m$ $R_{dson(typical)} = 14.5m$
 $I_{peak} = 6.36 \text{ A}$, $I_{max} = 4.45 \text{ A}$, $I_{ocp} = 7.63 \text{ A}$
 $\Delta I = ((19 - 1.8) * (1.8/19)) / (2.2u * 262 \text{ K}) = 2.82 \text{ A}$
 $\Rightarrow 1/2 \Delta I = 1.41 \text{ A}$
 $V_{trip} = 137mV$
 $I_{ocp} = V_{trip} / (R_{dson}) + 1.41$
 $= 95.3 / (17.9 \sim 21.48) + 1.41 = 9.07 \sim 7.79$



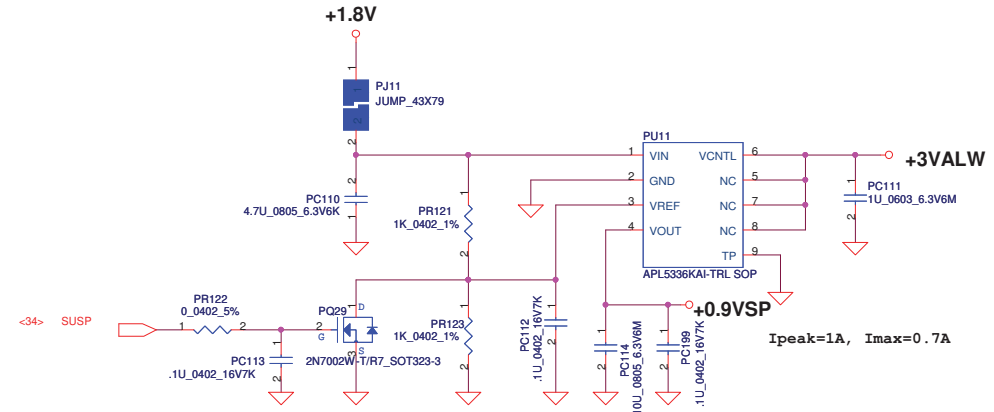
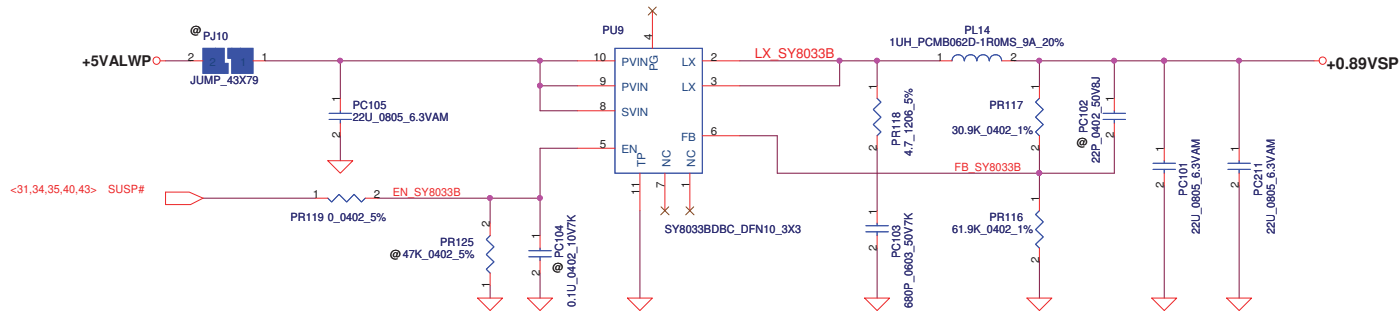
<Vo=1.052V> VFB=0.75V
 $V_o = V_{FB} * (1 + PR105/PR106) = 1.052V$
 $F_{sw} = 262 \text{ KHz}$
 $C_{out} ESR = 15m \text{ ohm}$ $R_{dson(max)} = 17.9m$ $R_{dson(typical)} = 14.5m$
 $I_{peak} = 6.1A$, $I_{max} = 4.27 \text{ A}$, $I_{ocp} = 7.32 \text{ A}$
 $\Delta I = ((19 - 1.05) * (1.05/19)) / (2.2u * 262 \text{ K}) = 1.72A$
 $\Rightarrow 1/2 \Delta I = 0.86A$
 $V_{trip} = 14K * 10uA = 0.140 \text{ V}$
 $I_{ocp} = V_{trip} / (R_{dson}) + 0.86$
 $= 113 / (17.9 \sim 21.48) + 0.86 = 8.68 \sim 7.37 \text{ A}$

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$\langle V_o = 0.89V \rangle \quad V_{FB} = 0.6V$
 $V_o = V_{FB} * (1 + PR117 / PR116) = 0.6 * (1 + 30.1K / 61.9K) = 0.8917V$

I_{peak} = 2.64A



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Ipeak=11.6 A
Imax=8.15 A

delta I=3.27A 1/2 delta I=1.636 A
Iocp=RTEIP*ITRIP/RDS(ON)+1/2 I=14~11.98 A
Rds(on)=11~14m

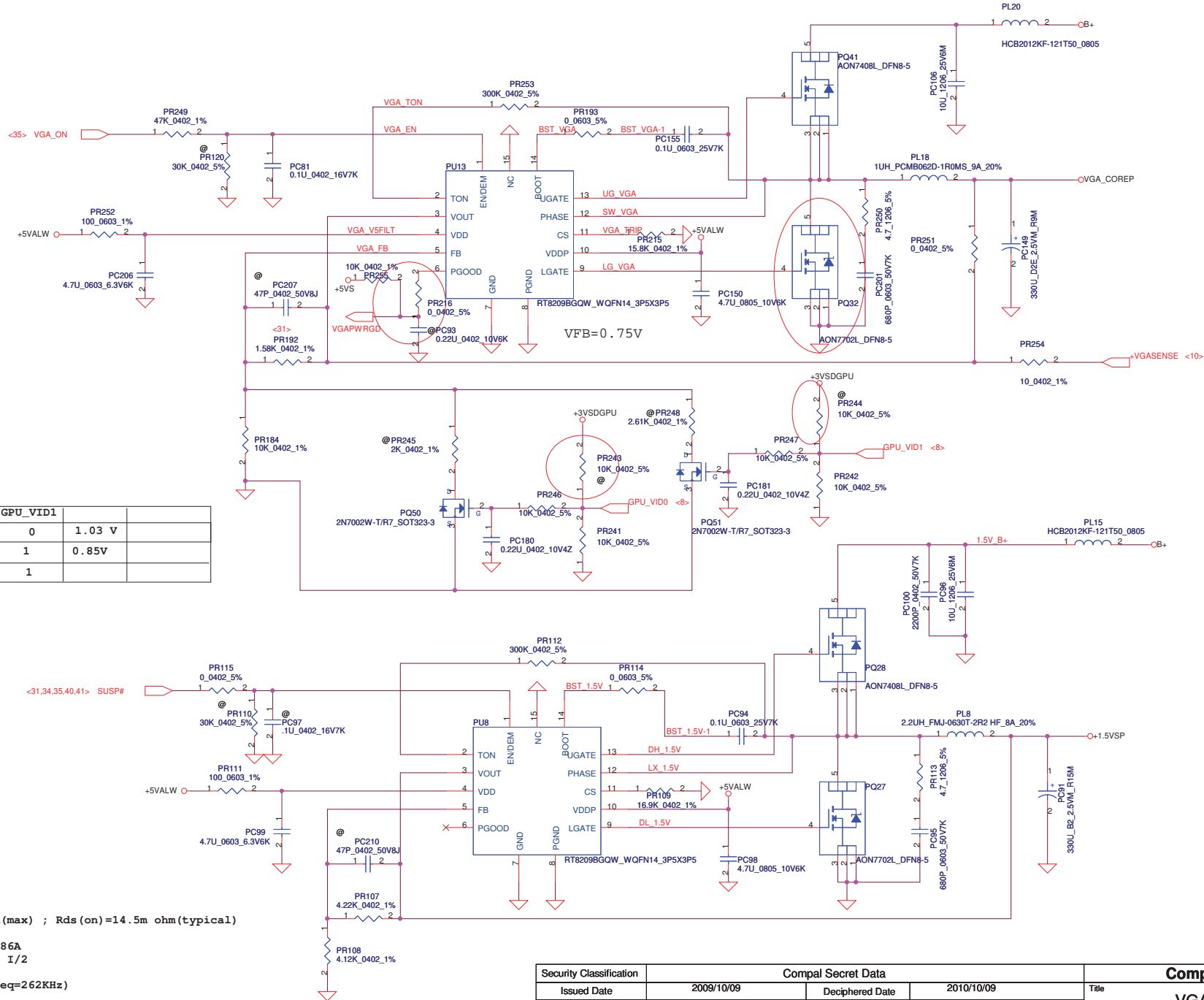
GPU_VID0	GPU_VID1		
0	0	1.03 V	
0	1	0.85V	
1	1		

Vo=1.518V
Fsw=262 KHz

Ipeak=8.62 A
Imax=6.034 A
Iocp=10.35 A

Rds(on)=17.9m ohm(max) ; Rds(on)=14.5m ohm(typical)

Ilimit=9.44A ~ 7.86A
Iocp=Ilimit+Delta I/2
=12~10.5A
Delta I=5.27A (Freq=262KHz)



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Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
1		For save layout space and shortage	A		change PC50 PC53 to 0805 4.7u		
2		For VGA_core 51117 power good delay	A		Reserve PR216 PC93		
3		Save layout space	A		Delet PC35 PC36, change PC29 PC32 to 1206 10uF		
4		For cost down	A		change 0.89V from MP2121 to SY8033		
5		For cost down	A		delet Vin detector,battery OVP circuit		
6		For cost down	A		change 3V/5v from ISL6237 to TPS51125		
7		For Design change	A		change PR116 to 61.9K PR117 to 30.1K PL14 to 1uH		
8		For cost down	A		change 1.5V PL8 to 3mm height		
9		For cost down	A		change VCCP PL7 to 3mm height		
10		For Design change	A		change PQ31 to IRFH3707		
11		For Design change	A		change PQ23 PQ25 PQ28 PQ30 TO AON7408		
12		change 1.5V enable RC ,for HW request	A		change PR115 to 0 ohm ,unpop PR101		
13		change VCCP enable RC ,for HW request	A		change PR99 to 1k ohm ,pc86 to 0.1u,unpop PR110		
14		change VGACORE enable RC ,for HW request	A		change PR249 to 47k ohm ,pc81 to 0.1u,unpop PR120		
15		For charger ripple			Add PC71 4.7u 0805 25V		
16		For charger ripple			change PL5 to 10uF		
17		Buyer suggest			change PQ36 from 2N7002 TO SSM3K7002FU		
18		Fix VGA_VID at 0.85V			delete PR248 PR245 ,change PR192 to 1.58K		
19		OTP INPUT PULL HIGH resister			Add PR29		
20		change OTP set			change PR31 to 13K		
21		1.8V enable cap			Add PC77 1u 6.3v X5R		
22		51125 VL cap size up to 1206			change PC205 to 1206 size		
23		Buyer suggest			change PC96 PC106 PC107 from X6S to X5R		

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				NAVDO LA-6091P	
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Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
1						2009.6.30	EVT
2						2009.6.30	EVT
3						2009.7.2	EVT
4						2009.8.4	EVT
5						2009.8.12	EVT
6						2009.8.12	EVT
7						2009.8.12	EVT
8						2009.8.12	EVT
9						2009.8.24	EVT
10						2009.8.24	EVT
11						2009.8.24	EVT
12						2009.8.24	EVT
13						2009.8.24	EVT
14						2009.8.24	EVT
15						2009.8.27	EVT
16						2009.9.4	DVT
17						2009.9.10	DVT
18						2009.9.30	PVT
19							
20							
21							
22							
23							

<2009/4/28>
Update new power schematic,
release first version NAV50 schematic

<2009/04/29>
. Add R1182 R1183 L3 on page 9
. Change J3 to R1184 on page 13

<2009/04/30>
. Change JDIM1 to SP07F001720 on page 7
. Del SATA1 Port on page 12
. Change R51 R57 R70 R63 R317 R314 R190 to 0402 Size on page 21

<2009/05/04>
. Add WWAN_CLKREQ# and R107 pull-high to +3VS on page 8
. Add CRT_DET# on page 10
. Add CRT_DET# circuit on page 13
. Add 3 LEDS on page 16
. Add BT/BTN Board CONN. on page 16
. Update TP/B CONN. to SP01000LB00 on page 19

<2009/05/11>
. Add INVT_PWM on Page 5
. Del R323 on page 5
. C74 change to 2.2U_0603 on page 6
. C267 change to 22U on page 6
. C391 change to 0.1U on page 6
. Del C67 C35 C33 C36 on page 6
. Del +LGI_VID and U71.A21 direct connect to +VCCP on page 6
. Follow Intel checklist, add R52 on FSB on page 8
. Add D5 D7 D8 on page 4
. Add R174 on page 9
. Add PCI_RST# on page 11
. Add C1115 C1114 C1116 C1117 C1118 on page 15

<2009/05/12>
. Follow Intel Layout Checklist, Add C141 on VDDSPD on page 7
. Modify SRC CLK PORT LIST on page 8
. Del CLKREQ_LAN# on page 8
. Change PCIE Port list on page 13
. Change USB Port list on page 13
. Add W/L 3G SW on page 16
. Del R103 on page 18

<2009/05/13>
. Change JMINI1 to PCIE Port 3 on page 15

<2009/05/14>
. Page8 Change C174 C175 to 10U_0603

<2009/05/14>
. Update New Power schematic
. Del R376 R377 on page 8
. Del D5 D7 D8 on page 4
. Change JLVDS1 to SP010006810 on page 9
. Add D6 for EMI on page 9
. Change C1106 to C_0603 type on page 9
. Change USB_OC# on page 13
. Add USB Port2 on page 20
. Change JP11 Pin define & Add D22 on page 19
. Change C512 to 1u_0402 on page 15
. Add U29 (MEDIA_LED#)) on page 16

<2009/05/19>
.Update new clock GEN co-lay schematic on page 8

<2009/06/05>
.Update new clock GEN co-lay schematic on page 8
.Follow Intel check list change C161 C165 to 27P on page 8
.Follow Intel check list change C56 to 22uF on page 6

<2009/06/08>
.Update New Power schematic 06/06 version
Page 13- a.Del R203 (pull-up GPIO6 Resister)
b.Change R1184 NU
Page 17- a. Add VGATE
b. Del R1294
c. Change D30 NU
d. Change R1295 to 0 ohm
e. Add R1309 0 ohm on EC_RSMRST#
f. Pull-up LAN_WAKE# +3VALW
g. ICH_POK change to PCH_POK
h. Pull-up KB_RST# to +3VS
Page 10- a. Add R1283 R1284 ,Change R247 R249 to 10 ohm
b. Add @ on U10 U11 C301 C298
c. Del C302 C300 R1281 R1287

<2009/06/10>
. Page 7- Add C116 @
. Page 22- Modify USB_OC#1_2 to USB_OC#2
. Page 17- Modify PLTRST# to PCI_RST#
. Page 17- Add @ on R1311

<2009/06/12>
. Page4 Add C314 C313 C1150 D19 on +VCC_FAN1
. Page8 Add C1145 C1146 C1147
. Page10 Move CRT_DET# from Page13 to Page10
. Page13 Add +RTCVCC circuit

<2009/06/15>
. Update New Power schematic (change PBJ1 to PJP3)
. Page 10 modify C310 C308 C303 C307 C306 C304 Bom Structure
. Page 22 Modify Hole location by (ME drawing 06/12)

<2009/06/16>
. Page7 Modify DDR Command Control Pin pull-high Resister location
. Page9 Change R577 to 0402 type

<2009/06/17>
. Update New Power schematic 06/17
. Page9 modify LVDS Conn. Pin define
. Page9 Del C1110
. Page4 Add EMI solution D38 D39 D40

<2009/06/18>
. Update New Power schematic 06/18
. Page8 modify U4 Pin define and Q31
. Page13 Add R1376, R1377
. Page15 Modify C403
. Page23 Modify H11

<2009/06/19>
. Page4 Add new signal CPU_ITP , CPU_ITP#
. Page5 ADD R1378
. Page6 ADD C1152,C1153,C1154 C1160,C1161,C1162
. Page7 DDR_A_D8與DDR_A_D9互換
. Page8 ADD R1379,R1380,U77,R1381,C1157,R1382,R1383,R1384,C1157
. Page8 DEL C390
. Page9 ADD C1156
. Page11 DEL R1322, R1154
. Page13 DEL U77, ADD C1158
. Page17 ADD C1159

<2009/06/22>
. Page22 change IO Conn. pin34 from 48M to USB_ON#
. Page10 change JCRT1 P/N to SP010906182

<2009/06/23>
. Page15 Add C1163 C1164 C1165 C1166
. Page18 change PWR/B Conn. P/N to SP01000H300
. Page22 change JUSB1 JUSB2 P/N

<2009/06/24>
. Page8 Change C1350 C1351 to 0402 type
. Page10 Add R1385 R1386 on JVGA_HS JVGA_VS

<2009/06/25>
. Page22 move some parts to I/O Board , Add the MONO_IN_R on M/B

<2009/06/29>
. Page16 Change JP24 to ACES_88266_05001
. Page15 Change JMINI1 to FOX_AS0B246-S50U-7F_52P-T

<2009/06/30>
. Page18 Change PWR_LED# to PWR_PWM_LED#
. Page17 Add PWR_LED DETECT PIN on Pin97

<2009/07/02>
. Update New Power schematic 07/02
. Page9 Add C1167 C1168 for RF request.
. Page13 Change R223 to 100K
. Page16 change JP24 to ACES_85201-0505N
. Page17 Del R1387 R1388 on EC Pin97
. Page17 Add New Board ID to separate NAV50 NAV60
. Page17 Change 展頻IC to SA00003J400 (New)
. Page18 Add D41 for ESD

<2009/07/03>
. Page18 Add D41.2 to PWR_PWM_LED#
. Page8 Change co-lay net name to +1.5VM_CK505
. Page20 Change JP2 Pin42 to +5VS

<2009/07/06>
. Page18 Add pwr switch for NAV50

<2009/07/08>
. Page5 Add 470pf on H_SMI# for known issue.

<DVT START>

<2009/08/04>
. Page5 CLK_CPU_HPLCLK CLK_CPU_HPLCLK# exchange
. Page9 Change JLVDS1 to P/N ACES 88341-3001 30P
. Page17 del PM_1.8V(U6.82) ,Del R1310 R1311
. Page18 Del D41

<2009/09/03>
. Page7 Change C112 to 0402 type
. Page8 Add T6 on CLK_48M_CR
. Page16 Modify JP18 Pin define change +5VALW +5VS to +3VALW +3VS
. Page20 Change Pin 18, 23 to +1.5VS change Pin7 , 9 to USB20_P7 N7
. Page21 Del H12

<2009/09/08>
Update Power schematic 0904
. Page18 Change R1388 to 100 ohm 0402
. Page18 Change LED1 to SC591NB5A00

<2009/09/10>
Update Power schematic 0910
. Page22 unmount Q6 Q8

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