

Compal Confidential

NAWF2 M/B Schematics Document

Intel Penryn Processor with Cantiga + DDRIII + ICH9M+M92-S2 XT

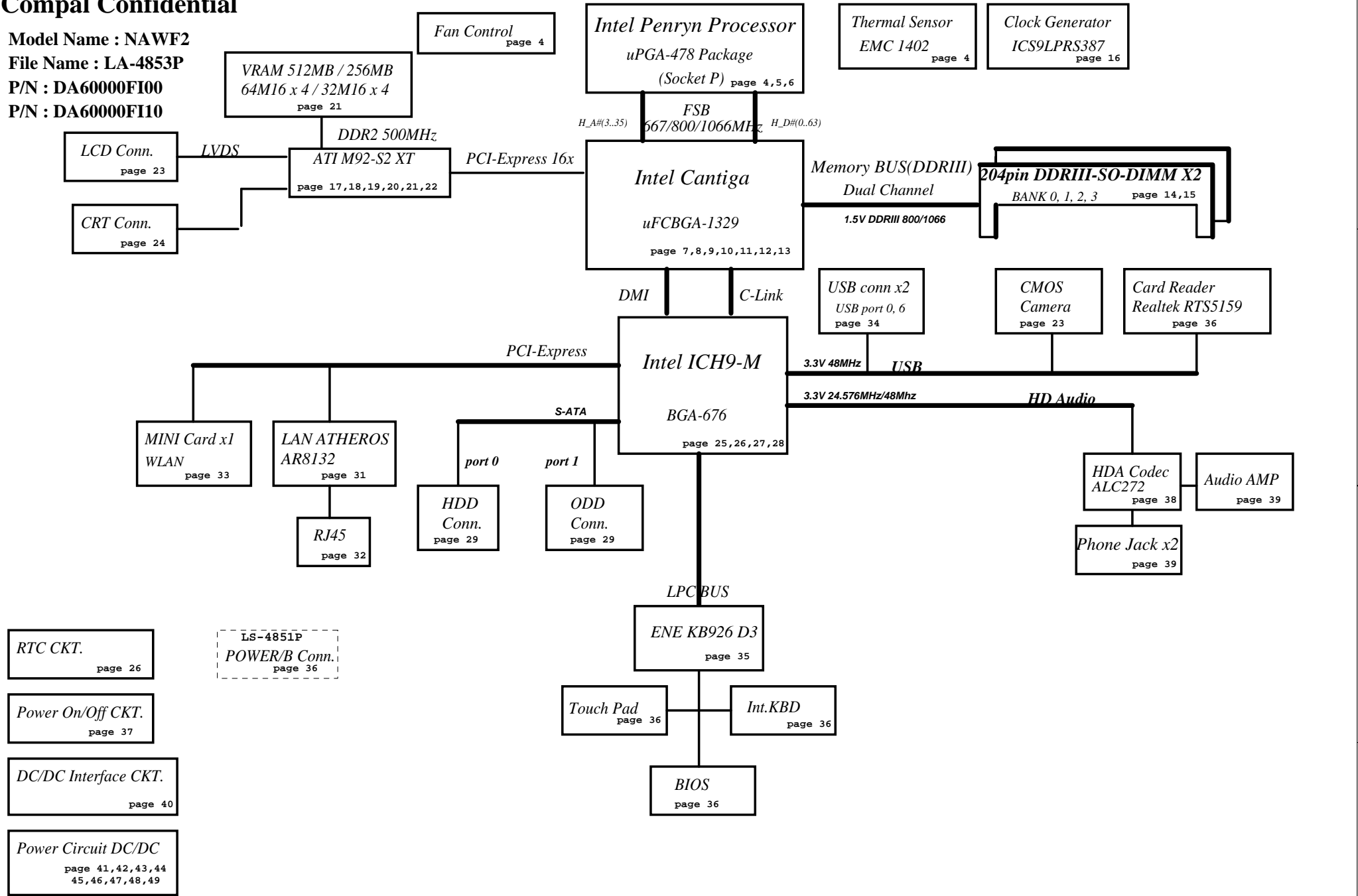
2009-09-17

REV:1.0

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Model Name : NAWF2
File Name : LA-4853P
P/N : DA60000FI00
P/N : DA60000FI10



RTC CKT. page 26

Power On/Off CKT. page 37

DC/DC Interface CKT. page 40

Power Circuit DC/DC page 41, 42, 43, 44, 45, 46, 47, 48, 49

LS-4851P
POWER/B Conn. page 36

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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
+0.75VS	0.75V switched power rail for DDR terminator	ON	OFF	OFF
+1.05VS	1.05V switched power rail	ON	OFF	OFF
+1.1VS	1.1V switched power rail	ON	OFF	OFF
+1.5V	1.5V power rail for DDR	ON	ON	OFF
+1.5VS	1.5V switched power rail	ON	OFF	OFF
+1.8V	1.8V power rail for GMCH LVDS	ON	ON	OFF
+1.8VS	1.8V switched power rail	ON	OFF	OFF
+2.5VS	2.5V switched power rail	ON	OFF	OFF
+3VALW	3.3V always on power rail	ON	ON	ON*
+3V	3.3V power rail for SB	ON	ON	OFF
+3V_LAN	3.3V power rail for LAN	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
+VGA_CORE	Core voltage for GPU	ON	OFF	OFF

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

External PCI Devices

Device	IDSEL#	REQ#/GNT#	Interrupts

EC SM Bus1 address

Device	Address	Device	Address
Smart Battery	0001 011X b	EMC 1402-1	1001 100X b
EEPROM(24C16/02)	1010 000X b	GMT G781-1	1001 101X b

EC SM Bus2 address

ICH9M SM Bus address

Device	Address
Clock Generator (ICS9LPRS367, SLG8SP556V)	1101 001Xb
DDR DIMM0	1001 000Xb
DDR DIMM2	1001 010Xb

STATE	SIGNAL	SLP_S1#	SLP_S3#	SLP_S4#	SLP_S5#	+VALW	+V	+VS	Clock
Full ON		HIGH	HIGH	HIGH	HIGH	ON	ON	ON	ON
S1(Power On Suspend)		LOW	HIGH	HIGH	HIGH	ON	ON	ON	LOW
S3 (Suspend to RAM)		LOW	LOW	HIGH	HIGH	ON	ON	OFF	OFF
S4 (Suspend to Disk)		LOW	LOW	LOW	HIGH	ON	OFF	OFF	OFF
S5 (Soft OFF)		LOW	LOW	LOW	LOW	ON	OFF	OFF	OFF

Board ID / SKU ID Table for AD channel

Vcc	3.3V +/- 5%			
Ra/Rc/Re	100K +/- 5%			
Board ID	Rb / Rd / Rf	VAD_BID min	VAD_BID typ	VAD_BID max
0	0	0 V	0 V	0 V
1	8.2K +/- 5%	0.216 V	0.250 V	0.289 V
2	18K +/- 5%	0.436 V	0.503 V	0.538 V
3	33K +/- 5%	0.712 V	0.819 V	0.875 V
4				
5				
6				
7				

BOARD ID Table

Board ID	PCB Revision
0	
1	0.1(PVT2)
2	1.0(Pre-MP)
3	
4	
5	
6	
7	

BTO Option Table

BTO Item	BOM Structure
GM45	GM@
8132	8132@

PCIE table

PCIE port1	
PCIE port2	Wireless Card
PCIE port3	PCIE LAN
PCIE port4	
PCIE port5	
PCIE port6	

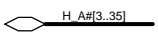

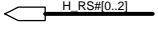
USB table

		Port0	MB USB Conn.
EHCI1	UHCI1	Port1	
	UHCI2	Port2	
		Port3	CMOS Camera
UHCI3	Port4	Card Reader	
	Port5		
EHCI2	UHCI4	Port6	MB USB Conn.
	UHCI5	Port7	
		Port8	
	UHCI6	Port9	
		Port10	Wireless Card
		Port11	

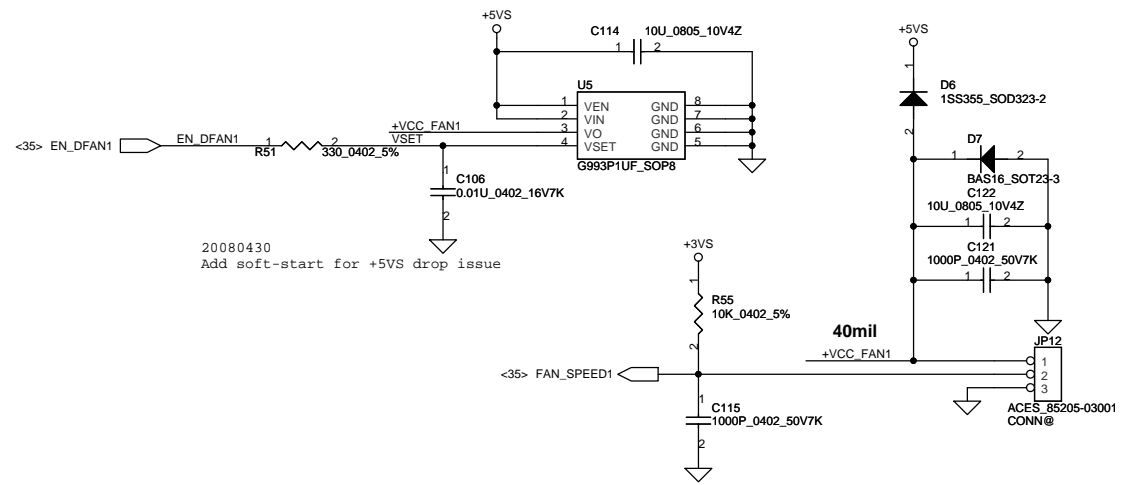
SATA table

SATA port0	HDD
SATA port1	ODD
SATA port2	
SATA port3	
SATA port4	
SATA port5	

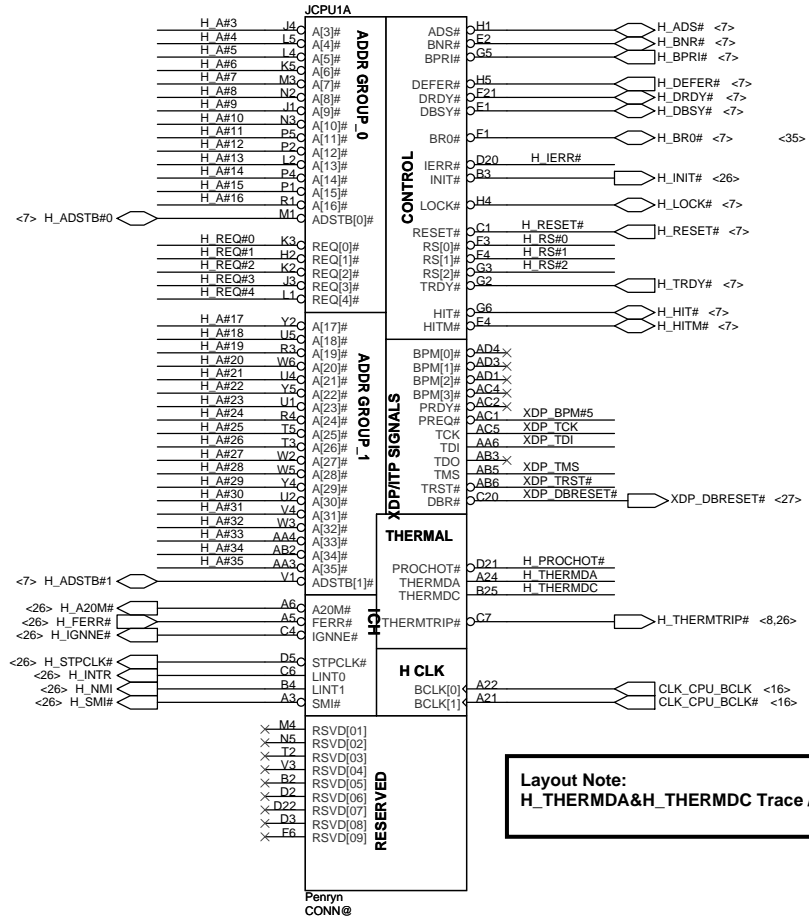
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<7> H_A#[3..35]  H_A#[3..35]
 <7> H_REQ#[0..4]  H_REQ#[0..4]
 <7> H_RS#[0..2]  H_RS#[0..2]

FAN1 Conn

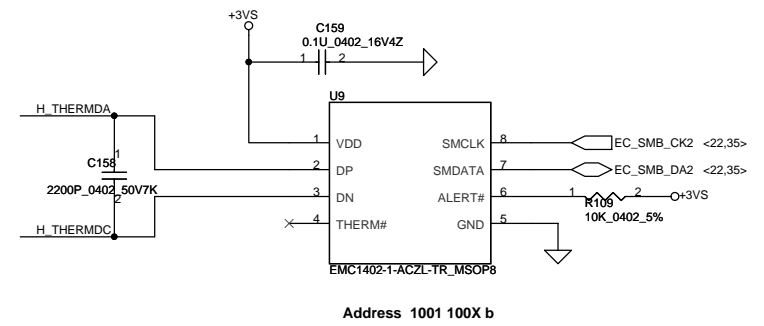
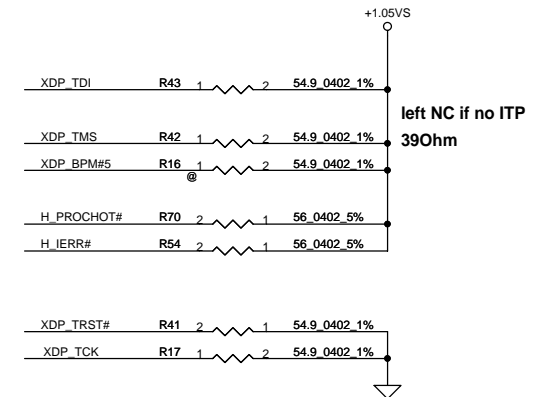
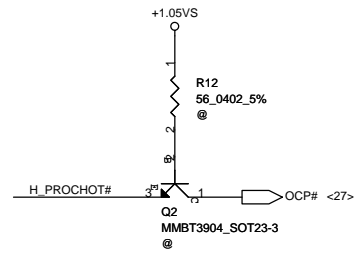


20080430
 Add soft-start for +5VS drop issue



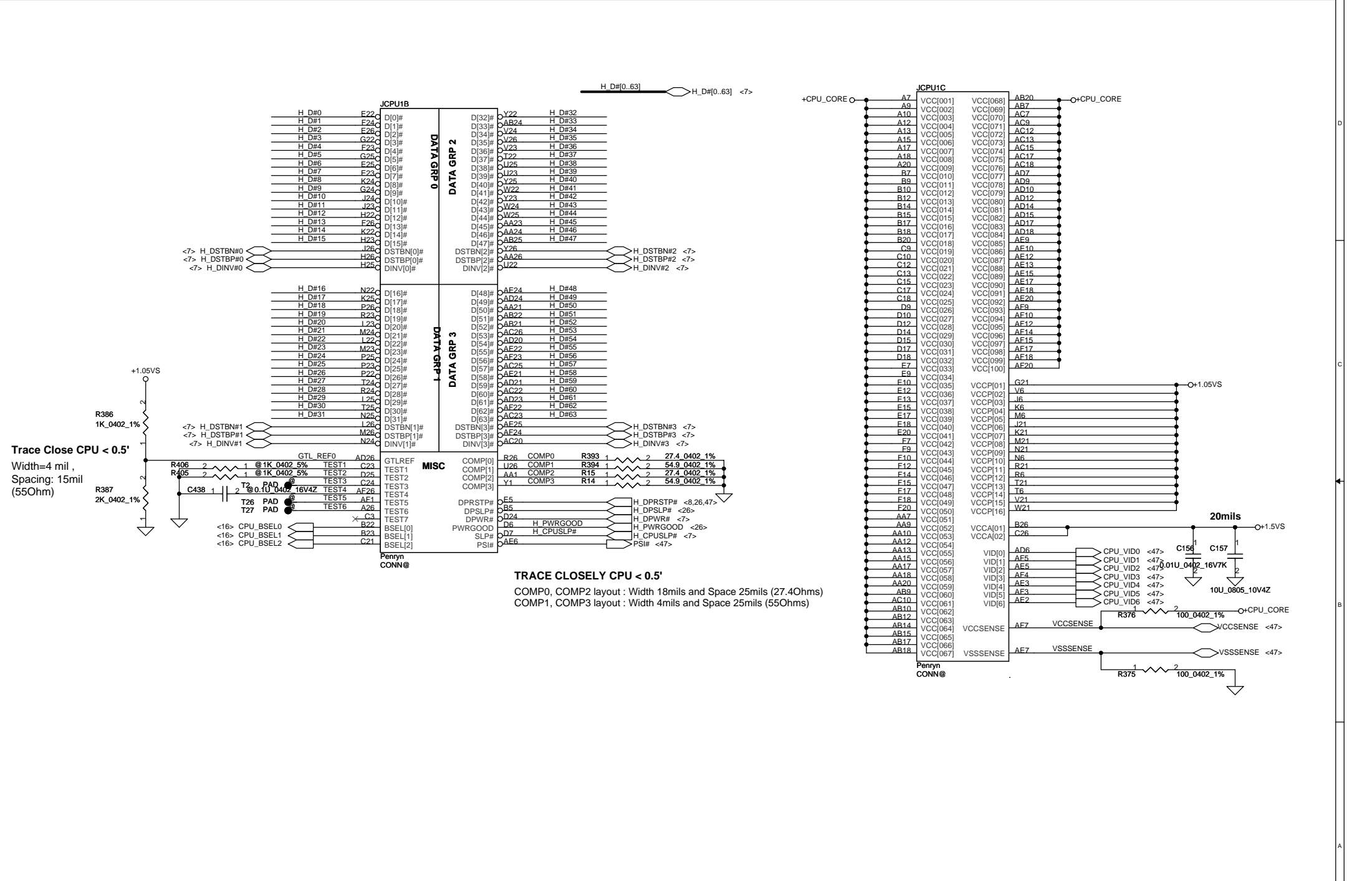
Layout Note:
 H_THERMDA&H_THERMDC Trace / Space = 10 / 10 mil

BSEL2	BSEL1	BSEL0	BCLK
0	0	0	266
0	1	0	200
0	1	1	166

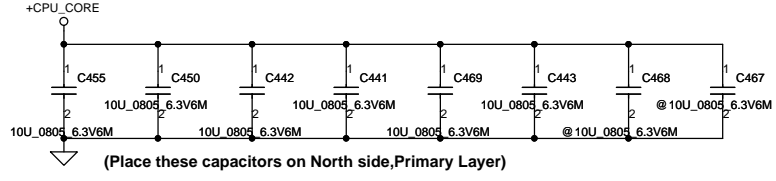
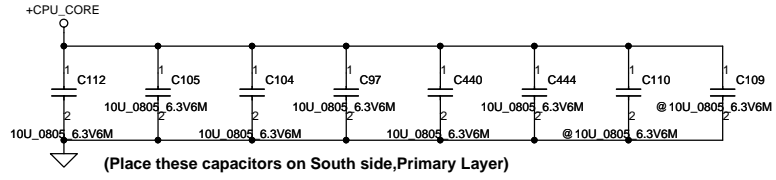
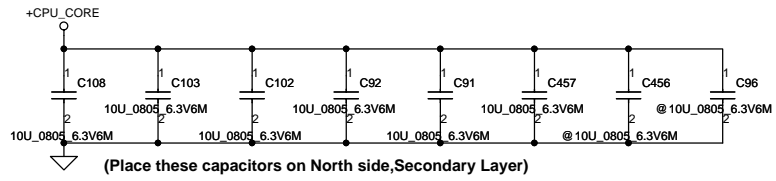
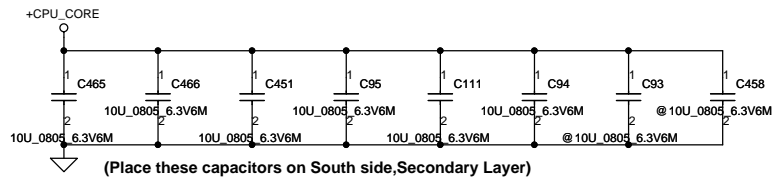
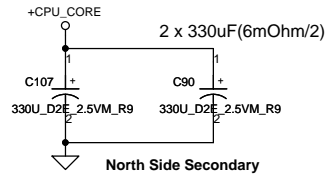
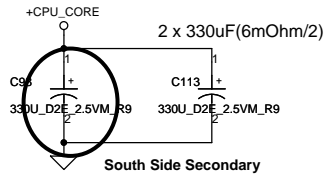
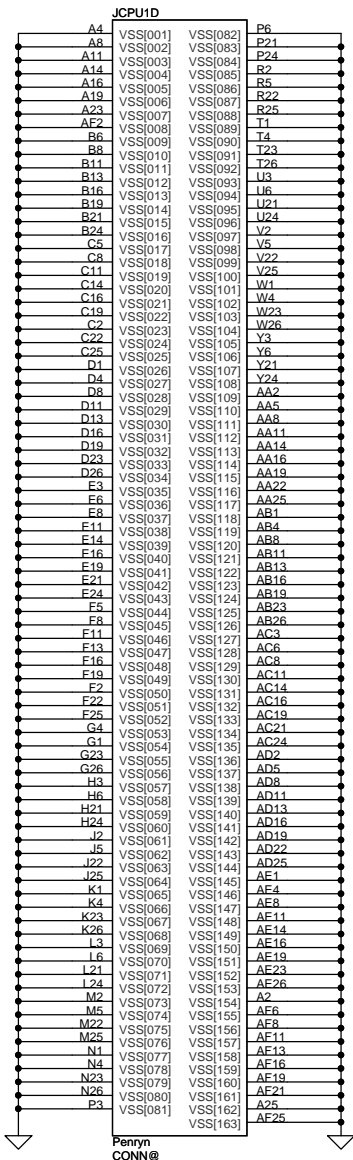


Address 1001 100X b

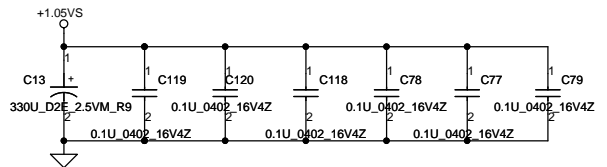
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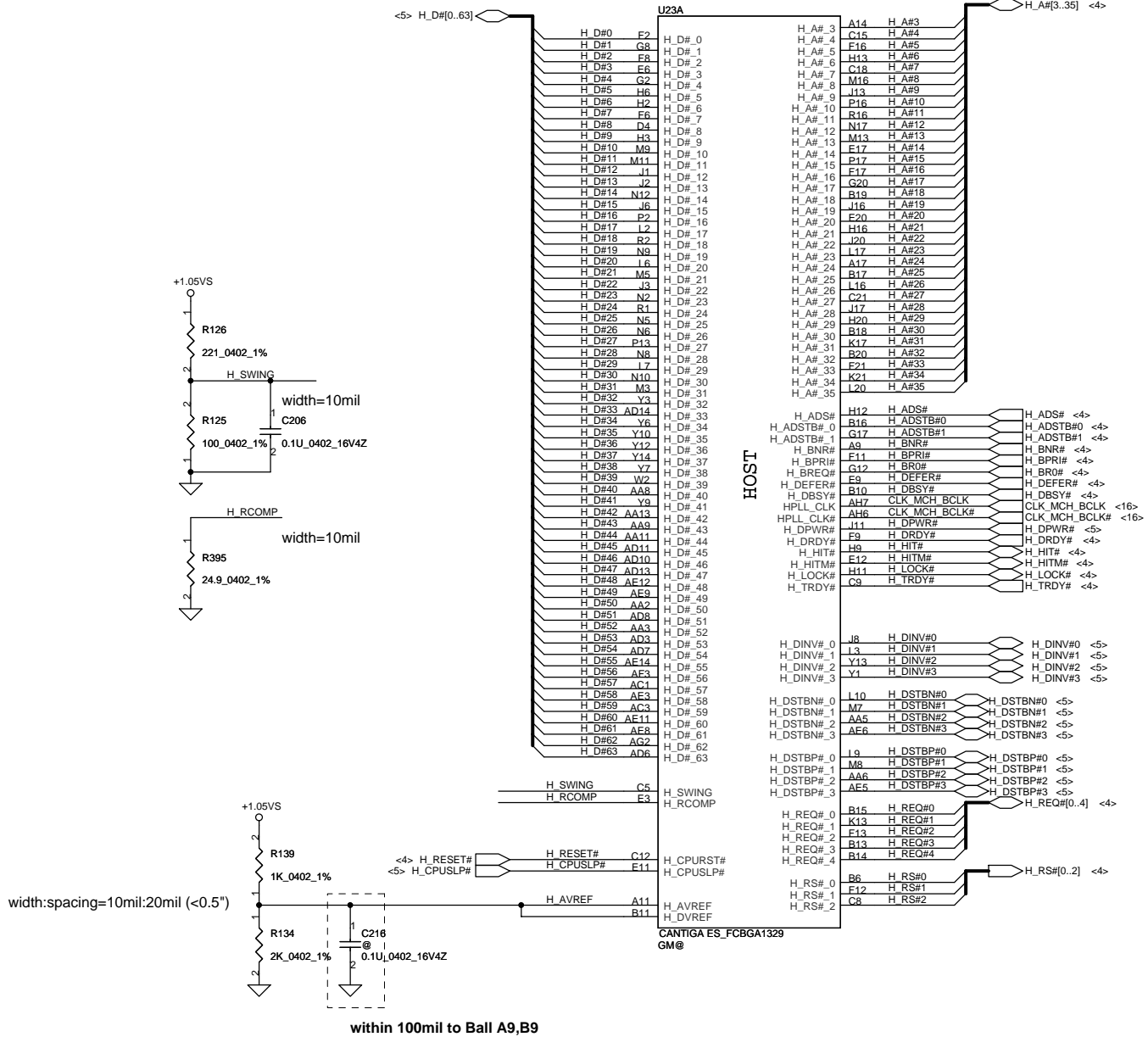


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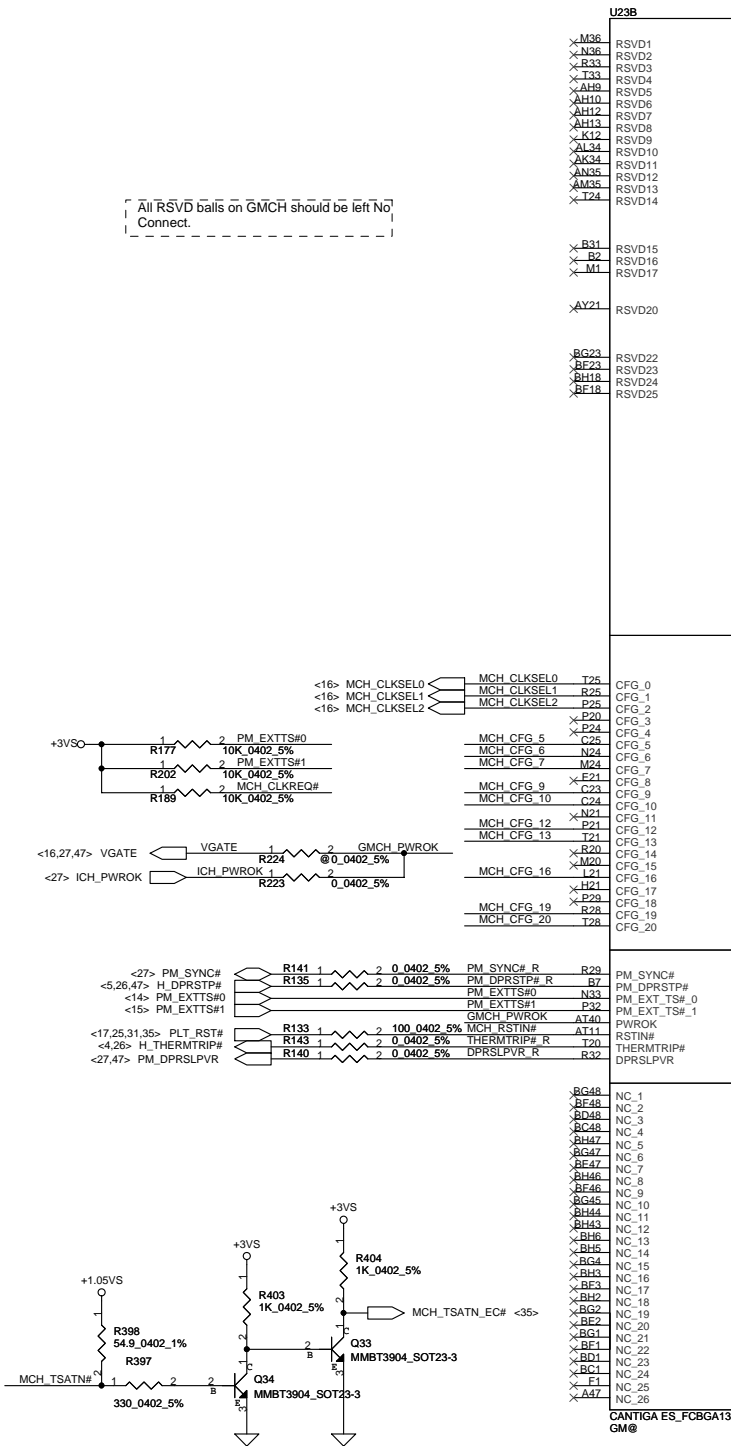
+CPU-CORE Decoupling	C, uF	ESR, mohm	ESL, nH
SPCAP, Polymer	4X330uF	6m ohm/4	1.8nH/6
MLCC 0805 X5R	32X22uF	3m ohm/32	0.6nH/32
	32X10uF	3m ohm/32	0.6nH/32



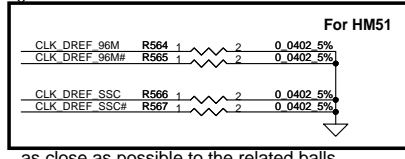
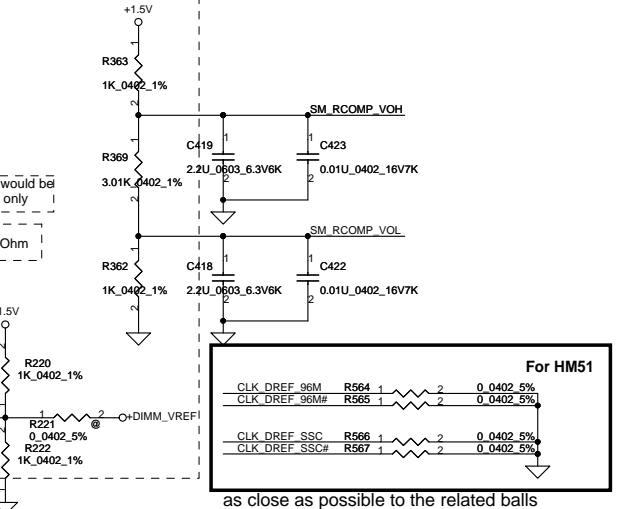
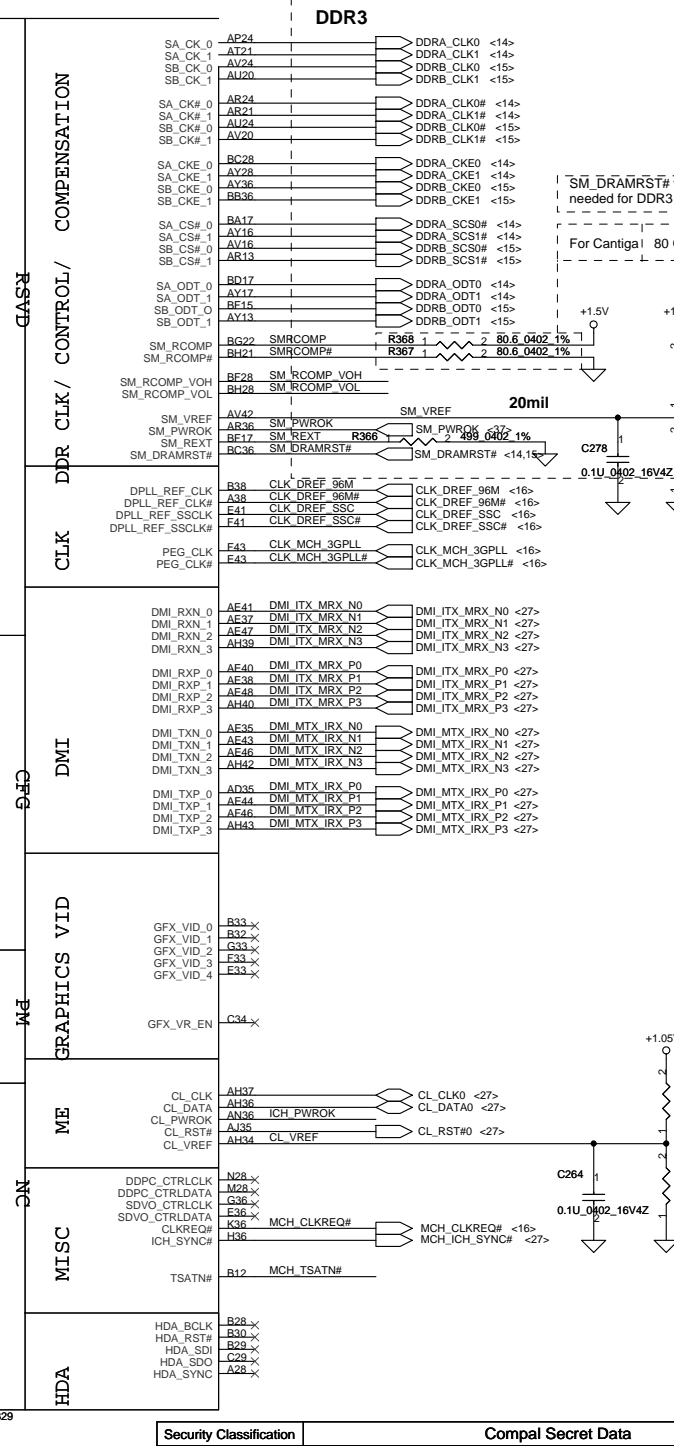


within 100mil to Ball A9,B9

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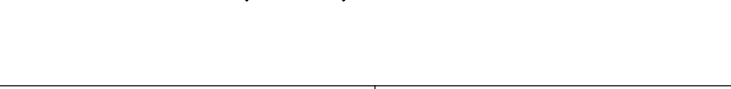
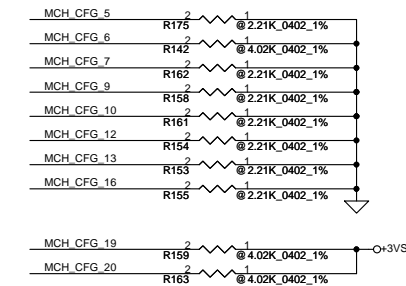
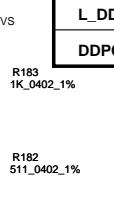
All RSVD balls on GMCH should be left No Connect.



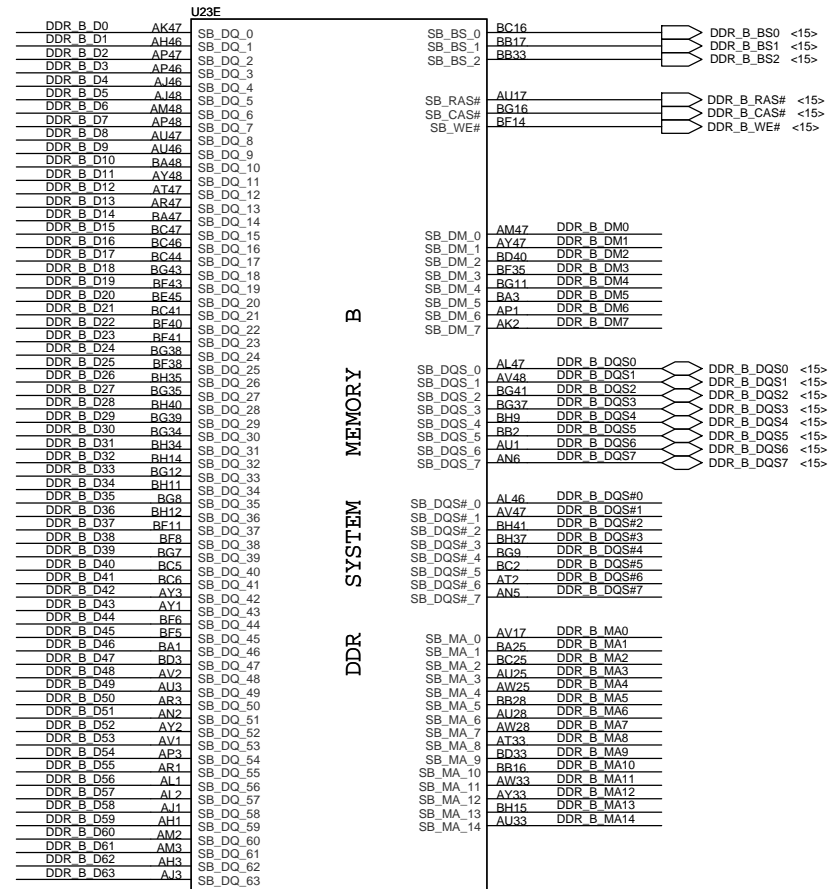
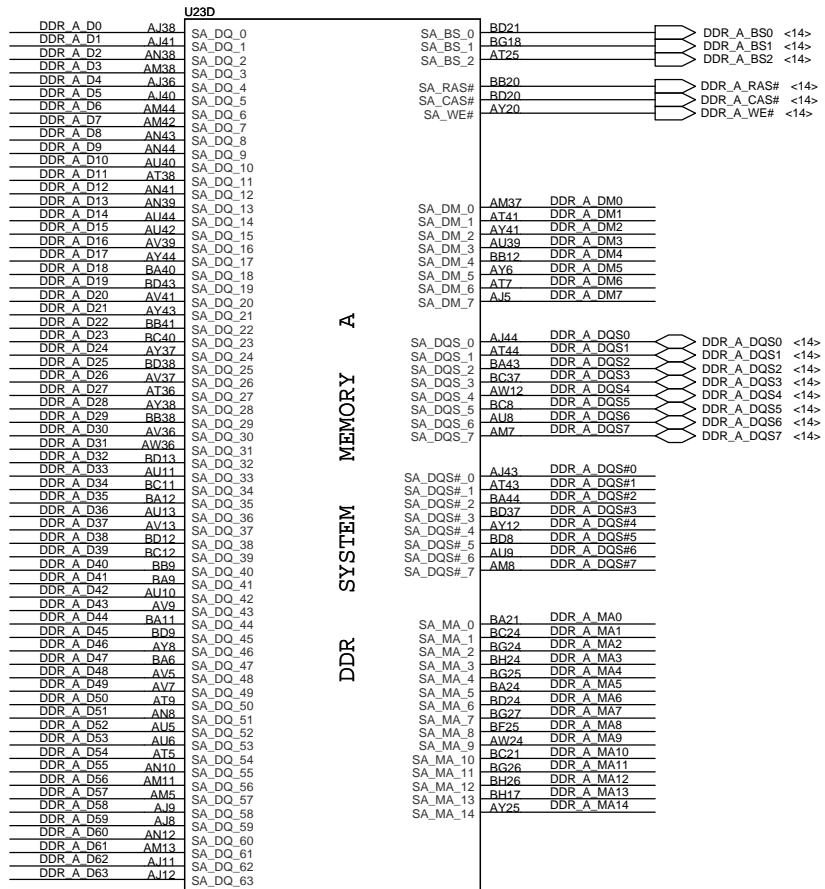
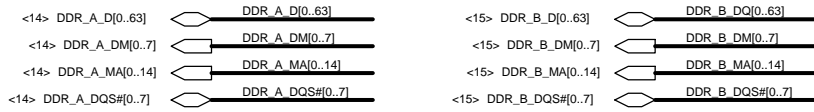
as close as possible to the related balls

Strap Pin Table

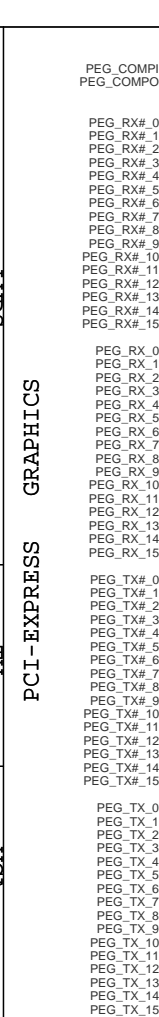
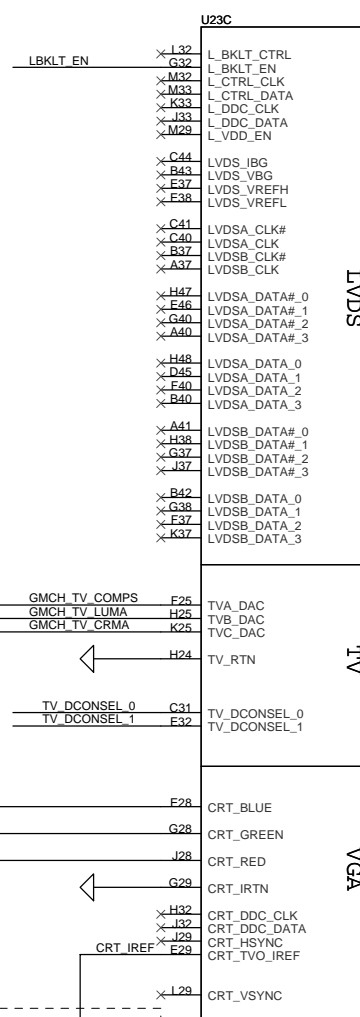
CFG[2:0]	011 = FSB667 010 = FSB800 000 = DMI x 4 * (Default)
CFG5	0 = DMI x 2 1 = DMI x 4 * (Default)
CFG6	0 = iTPM Host Interface is enabled 1 = iTPM Host Interface is Disabled * (Default)
CFG9	0 = Lane Reversal Enable 1 = Normal Operation * (Default)
CFG10	0 = PCIe Loopback Enable 1 = Disable * (Default)
CFG[13:12]	00 = Reserved 01 = XOR Mode Enabled 10 = All Z Mode Enabled 11 = Normal Operation * (Default)
CFG16	0 = Dynamic ODT Disabled 1 = Dynamic ODT Enabled * (Default)
CFG19	0 = Normal Operation * (Default) 1 = DMI Lane Reversal Enable
CFG20 (PCIe/SDVO select)	0 = Only PCIe or SDVO is operational. (Default) 1 = PCIe/SDVO are operating simu.
SDVO_CTRLDATA	0 = No SDVO Card Present * (Default) 1 = SDVO Card Present
L_DDC_DATA	0 = LFP Disable 1 = LFP Card Present; PCIe disable * (Default)
DDPC_CTRLDATA	0 = Digital DisplayPort Disable * (Default) 1 = Digital DisplayPort Device Present



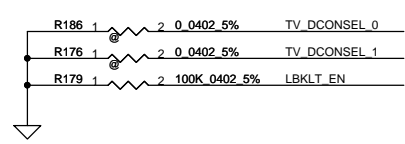
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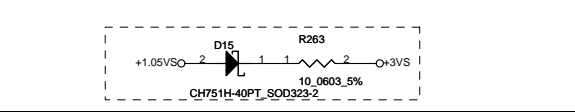
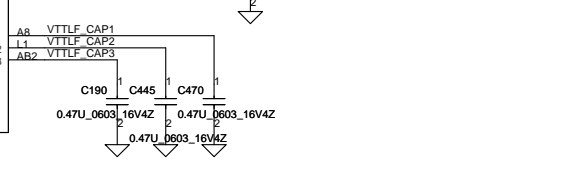
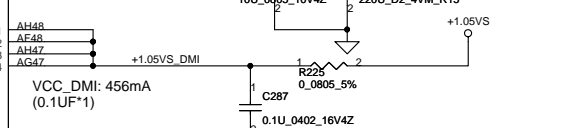
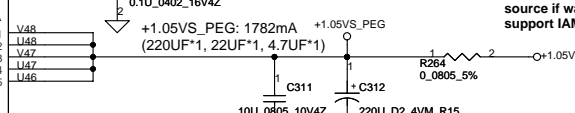
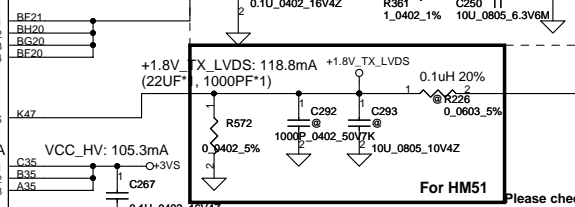
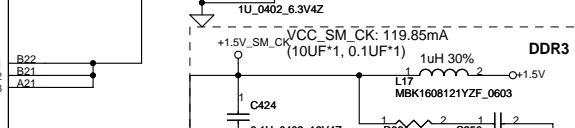
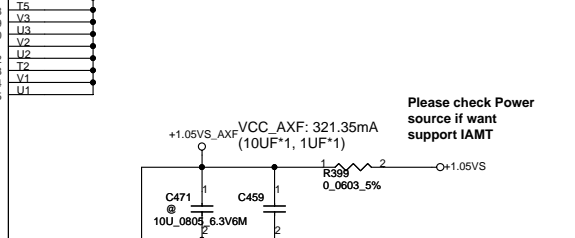
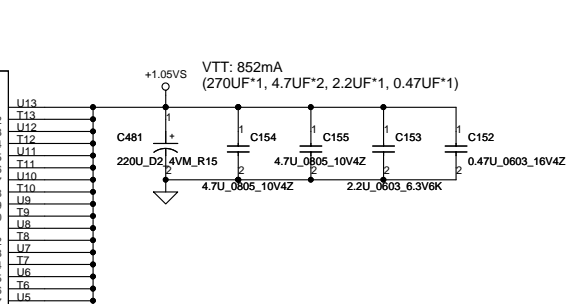
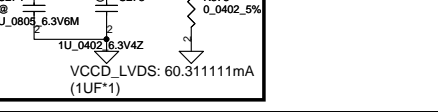
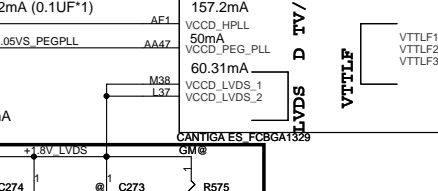
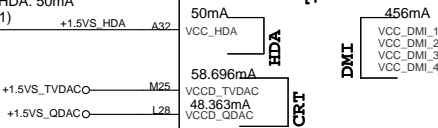
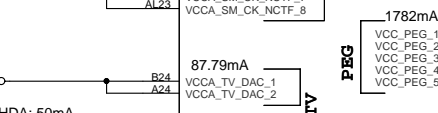
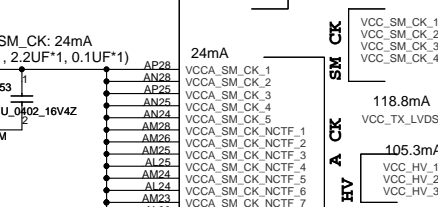
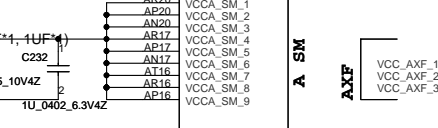
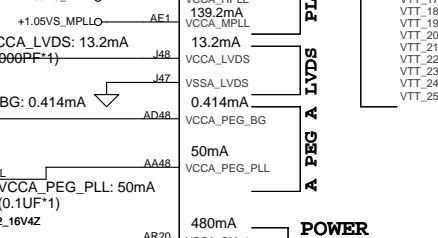
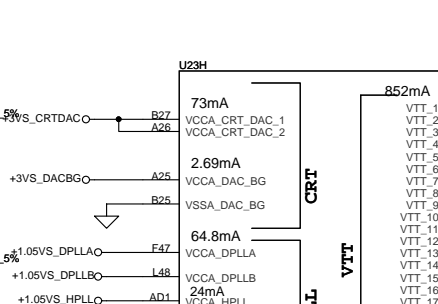
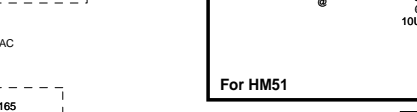
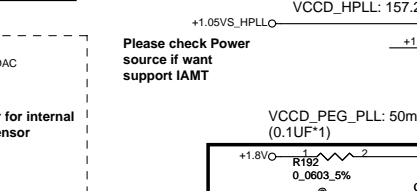
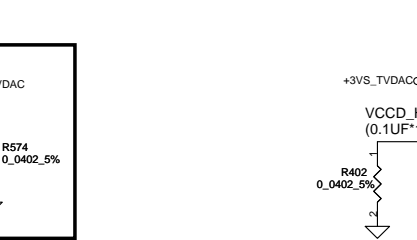
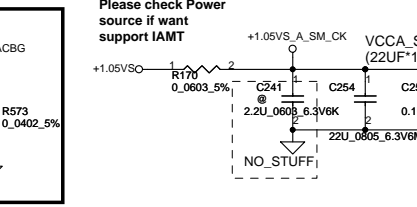
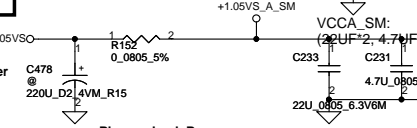
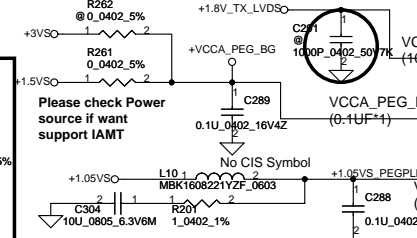
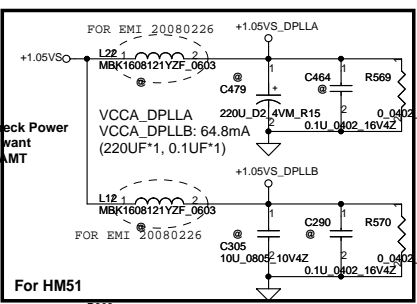
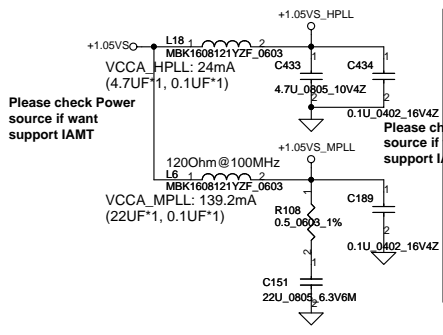
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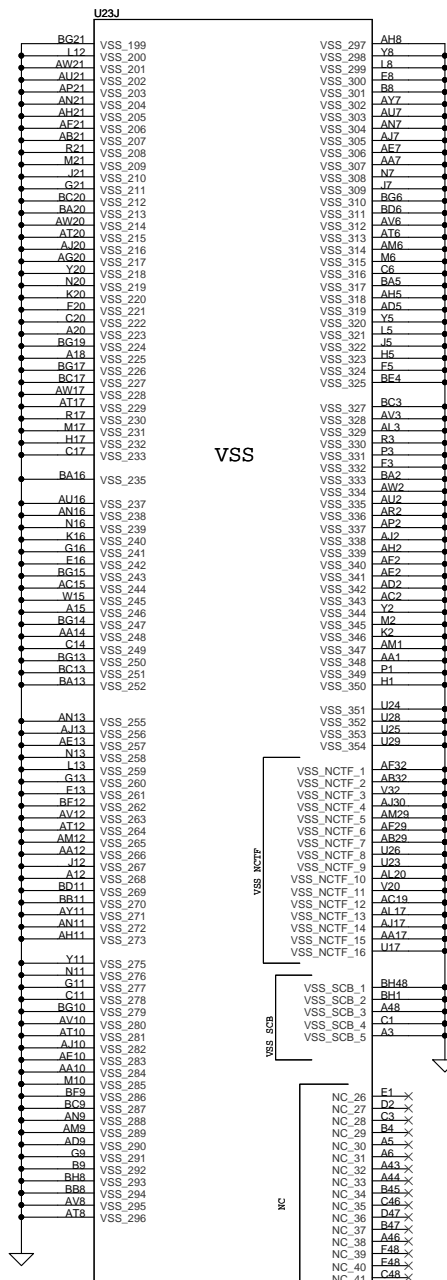
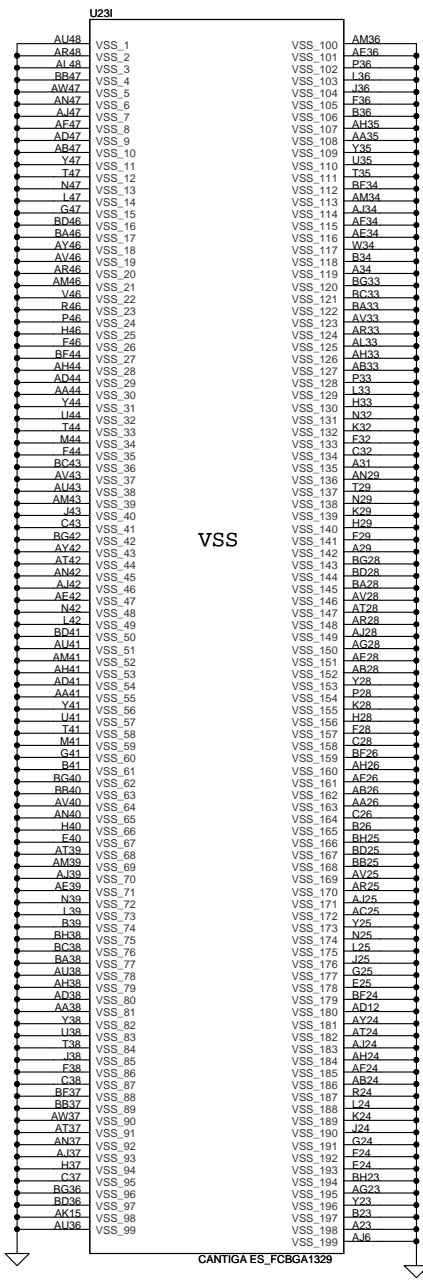
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T36	PEG_COMPO	49.9_0402_1%	<1>0.05VS
H44	PCIE GTX C MRX N0		
L46	PCIE GTX C MRX N1		
L44	PCIE GTX C MRX N2		
L40	PCIE GTX C MRX N3		
N41	PCIE GTX C MRX N4		
P48	PCIE GTX C MRX N5		
N44	PCIE GTX C MRX N6		
T43	PCIE GTX C MRX N7		
L43	PCIE GTX C MRX N8		
Y43	PCIE GTX C MRX N9		
Y48	PCIE GTX C MRX N10		
Y36	PCIE GTX C MRX N11		
AA43	PCIE GTX C MRX N12		
AD37	PCIE GTX C MRX N13		
AC47	PCIE GTX C MRX N14		
AD39	PCIE GTX C MRX N15		
H43	PCIE GTX C MRX P0		
L44	PCIE GTX C MRX P1		
L43	PCIE GTX C MRX P2		
L41	PCIE GTX C MRX P3		
N40	PCIE GTX C MRX P4		
P47	PCIE GTX C MRX P5		
N43	PCIE GTX C MRX P6		
T42	PCIE GTX C MRX P7		
L42	PCIE GTX C MRX P8		
Y42	PCIE GTX C MRX P9		
W47	PCIE GTX C MRX P10		
Y37	PCIE GTX C MRX P11		
AA42	PCIE GTX C MRX P12		
AD36	PCIE GTX C MRX P13		
AC48	PCIE GTX C MRX P14		
AD40	PCIE GTX C MRX P15		
J41	PCIE MTX GRX N0	C809	1 2 0.1U 0402 16V7K PCIE MTX C GRX N0
M46	PCIE MTX GRX N1	C810	1 2 0.1U 0402 16V7K PCIE MTX C GRX N1
M47	PCIE MTX GRX N2	C811	1 2 0.1U 0402 16V7K PCIE MTX C GRX N2
M40	PCIE MTX GRX N3	C812	1 2 0.1U 0402 16V7K PCIE MTX C GRX N3
M42	PCIE MTX GRX N4	C813	1 2 0.1U 0402 16V7K PCIE MTX C GRX N4
R48	PCIE MTX GRX N5	C814	1 2 0.1U 0402 16V7K PCIE MTX C GRX N5
T40	PCIE MTX GRX N6	C815	1 2 0.1U 0402 16V7K PCIE MTX C GRX N6
T40	PCIE MTX GRX N7	C816	1 2 0.1U 0402 16V7K PCIE MTX C GRX N7
LJ37	PCIE MTX GRX N8	C817	1 2 0.1U 0402 16V7K PCIE MTX C GRX N8
LJ40	PCIE MTX GRX N9	C818	1 2 0.1U 0402 16V7K PCIE MTX C GRX N9
Y40	PCIE MTX GRX N10	C819	1 2 0.1U 0402 16V7K PCIE MTX C GRX N10
AA46	PCIE MTX GRX N11	C820	1 2 0.1U 0402 16V7K PCIE MTX C GRX N11
AA37	PCIE MTX GRX N12	C821	1 2 0.1U 0402 16V7K PCIE MTX C GRX N12
AA40	PCIE MTX GRX N13	C822	1 2 0.1U 0402 16V7K PCIE MTX C GRX N13
AD43	PCIE MTX GRX N14	C823	1 2 0.1U 0402 16V7K PCIE MTX C GRX N14
AC46	PCIE MTX GRX N15	C824	1 2 0.1U 0402 16V7K PCIE MTX C GRX N15
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M43	PCIE MTX GRX P4	C829	1 2 0.1U 0402 16V7K PCIE MTX C GRX P4
R47	PCIE MTX GRX P5	C830	1 2 0.1U 0402 16V7K PCIE MTX C GRX P5
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LJ36	PCIE MTX GRX P8	C833	1 2 0.1U 0402 16V7K PCIE MTX C GRX P8
LJ39	PCIE MTX GRX P9	C834	1 2 0.1U 0402 16V7K PCIE MTX C GRX P9
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Y46	PCIE MTX GRX P11	C836	1 2 0.1U 0402 16V7K PCIE MTX C GRX P11
AA36	PCIE MTX GRX P12	C837	1 2 0.1U 0402 16V7K PCIE MTX C GRX P12
AA39	PCIE MTX GRX P13	C838	1 2 0.1U 0402 16V7K PCIE MTX C GRX P13
AD42	PCIE MTX GRX P14	C839	1 2 0.1U 0402 16V7K PCIE MTX C GRX P14
AD46	PCIE MTX GRX P15	C840	1 2 0.1U 0402 16V7K PCIE MTX C GRX P15



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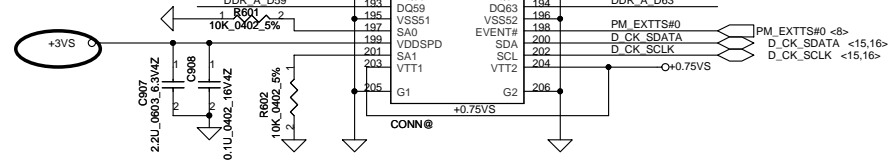
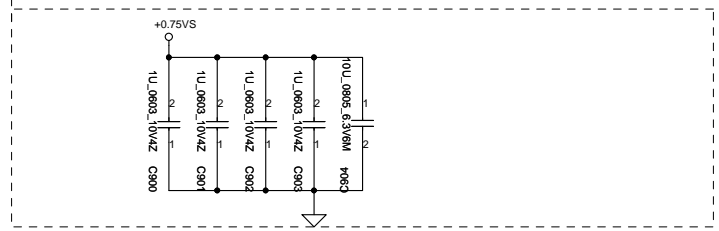
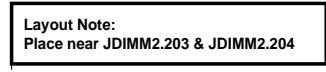
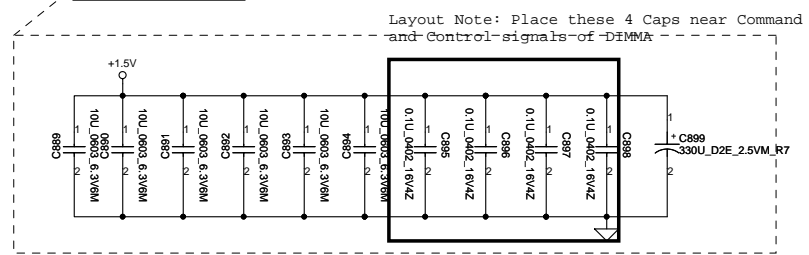
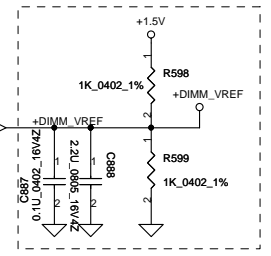
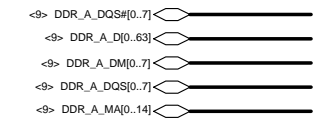
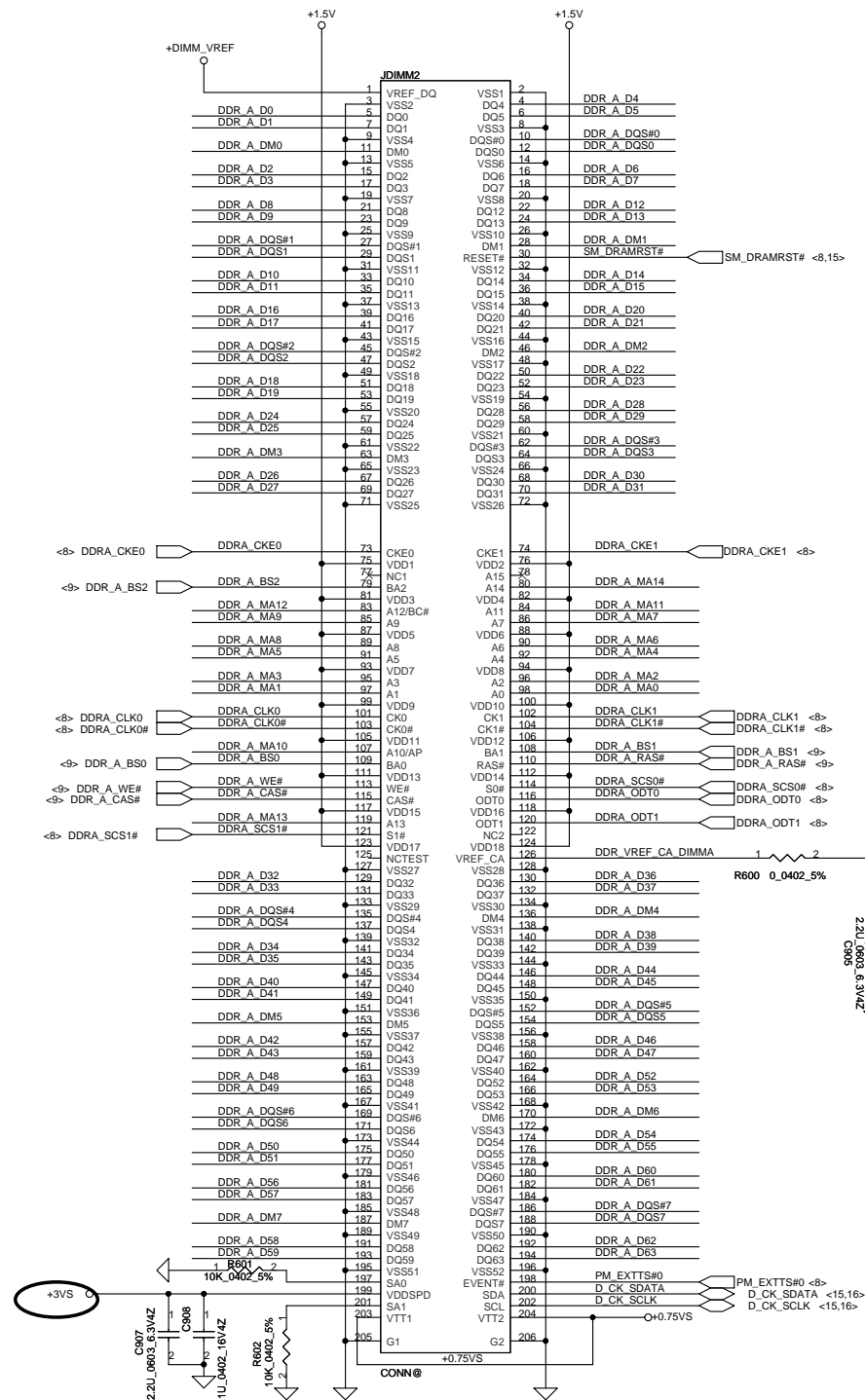
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VSS

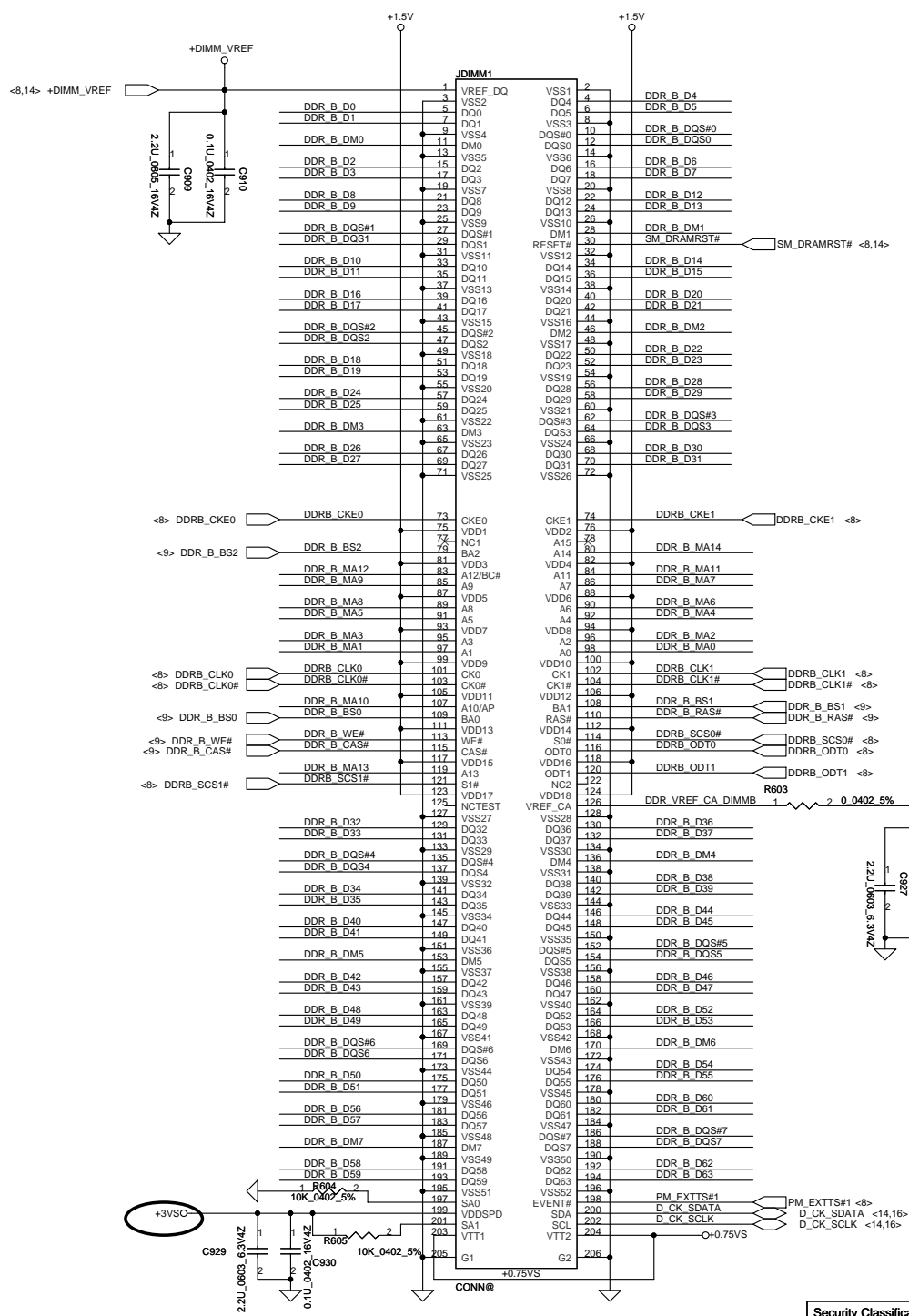
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DIMM0 REV H:5.2mm (BOT)

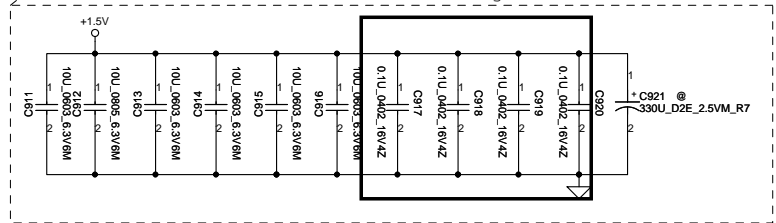
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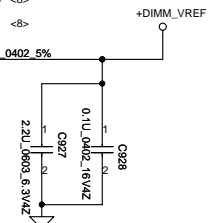
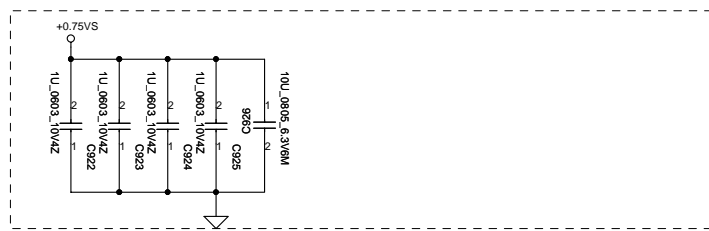
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- <9> DDR_B_D[0..63]
- <9> DDR_B_DM[0..7]
- <8> DDR_B_DQS[0..7]
- <9> DDR_B_MA[0..14]

Layout Note:
Place near JDIMM1

Layout Note: Place these 4 Caps near Command and Control signals of DIMMA



Layout Note:
Place near JDIMM1.203 & JDIMM1.204



DIMM1 REV H:9.2mm (BOT)

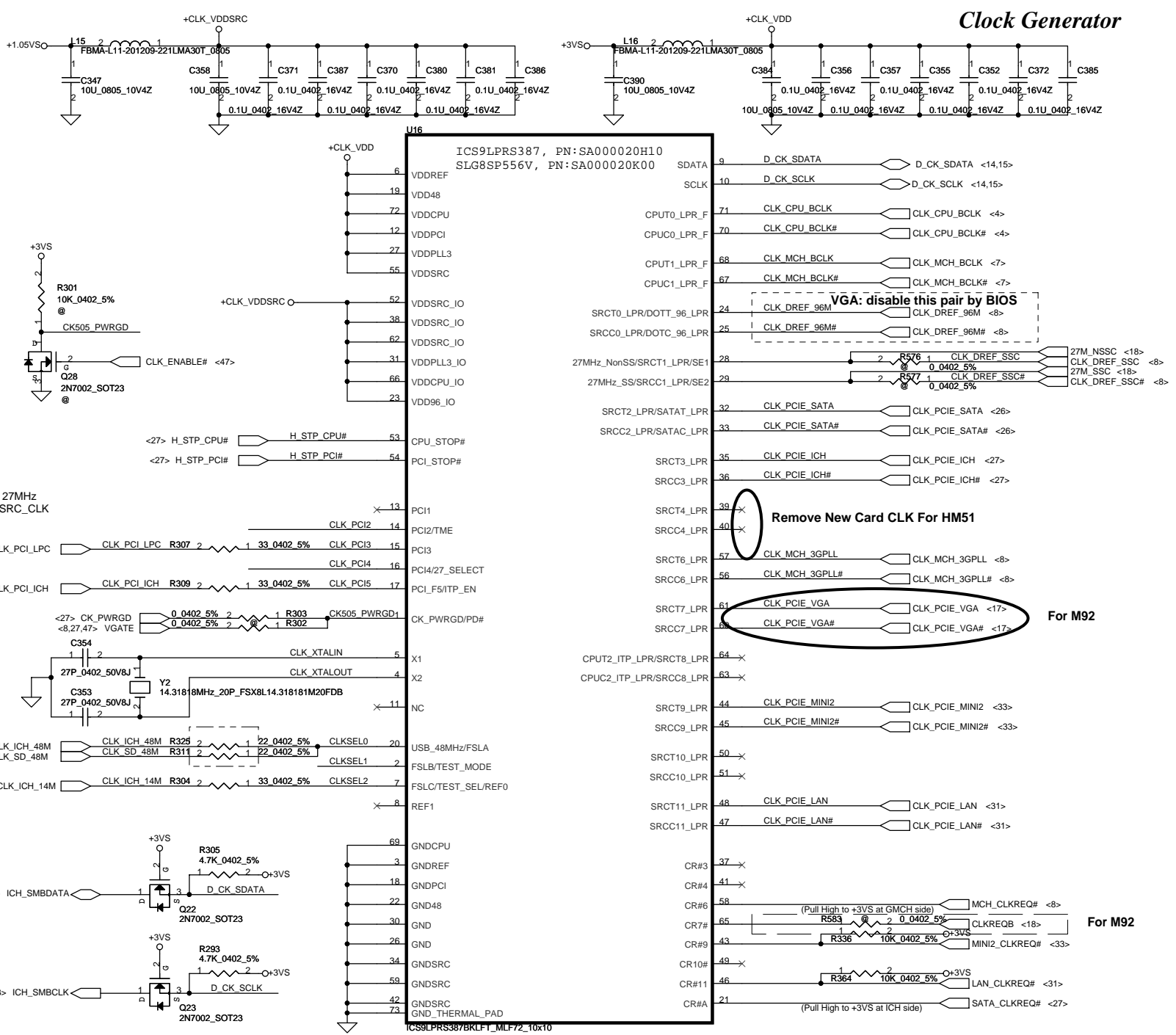
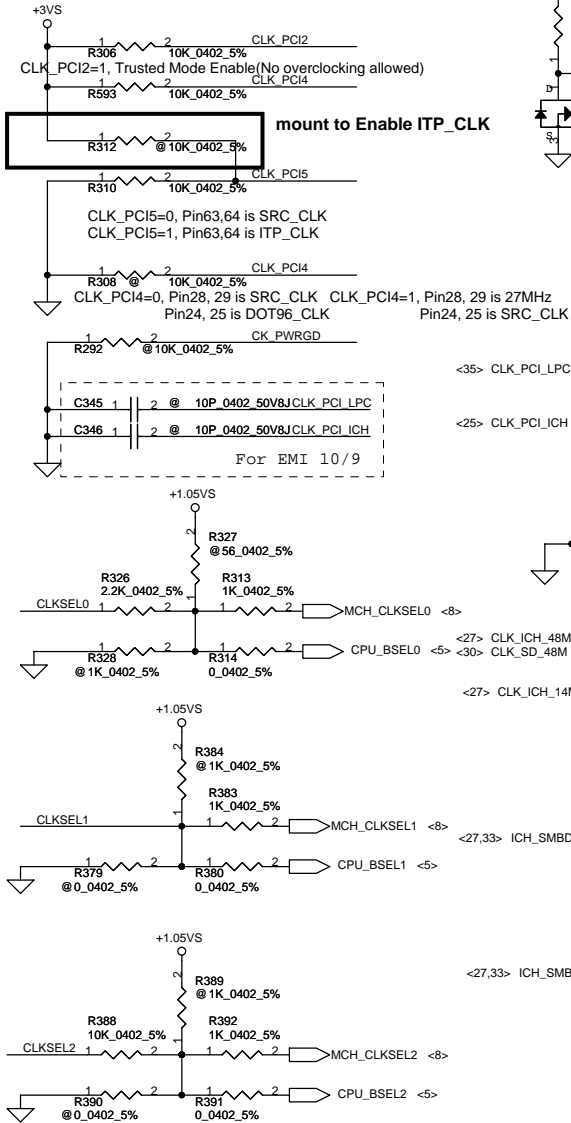
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FSLC	FSLB	FSLA	CPU	SRC	PCI
CLKSEL2	CLKSEL1	CLKSEL0	MHz	MHz	MHz
0	0	0	266	100	33.3
0	1	0	200	100	33.3
0	1	1	166	100	33.3

Table : ICS9LPRS387

CLK_REQ#	Control	Free-Run
CR#_10(WLAN)	PCIEX10	PCIEX0
CR#_6(MCH)	PCIEX6	PCIEX1
CR#_4(NEW CARD)	PCIEX4	
CR#_9(MINI CARDII)	PCIEX9	

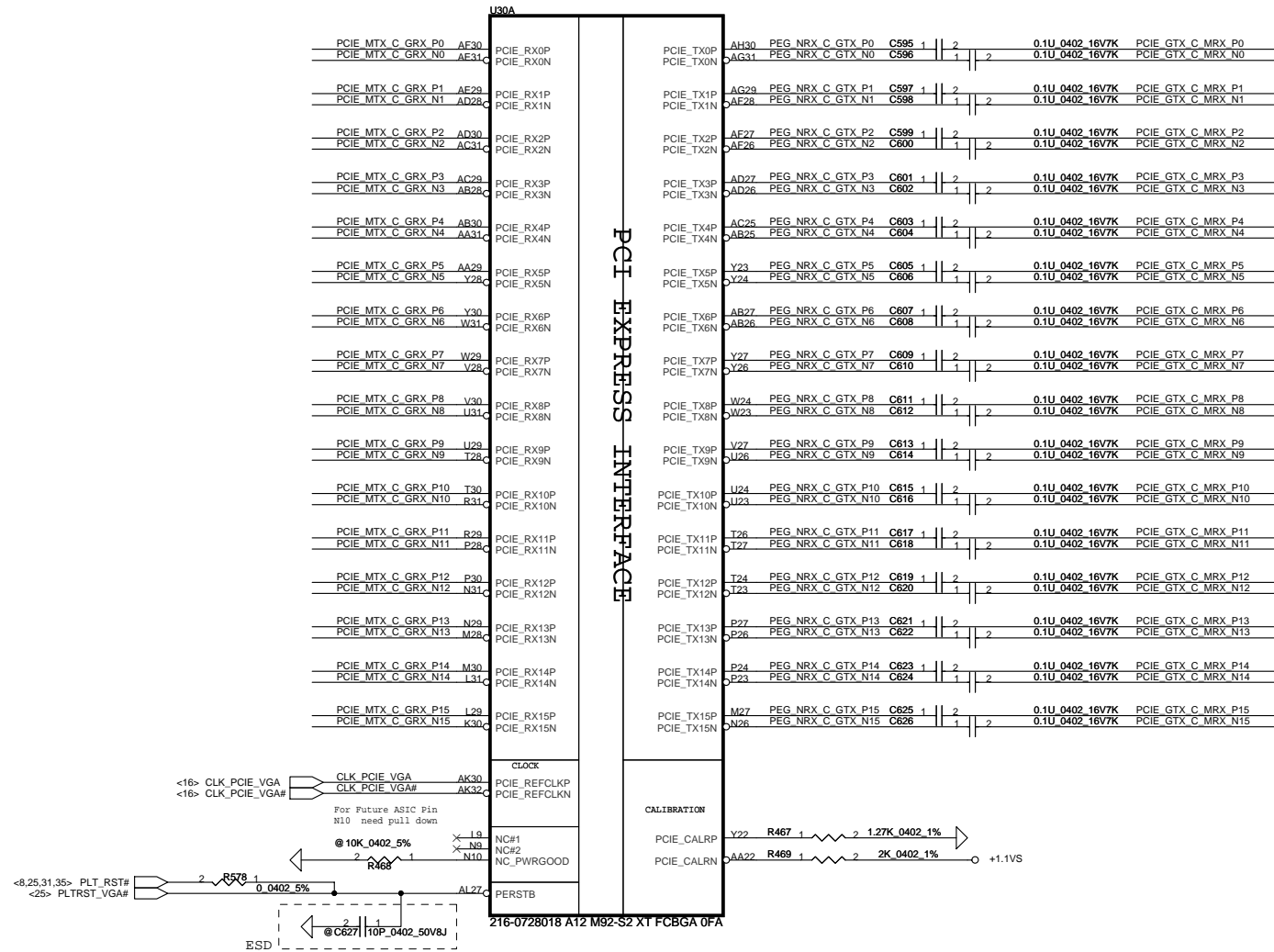
SRC7(VGA_CLK): Discrete VGA[Enable]



Clock Generator

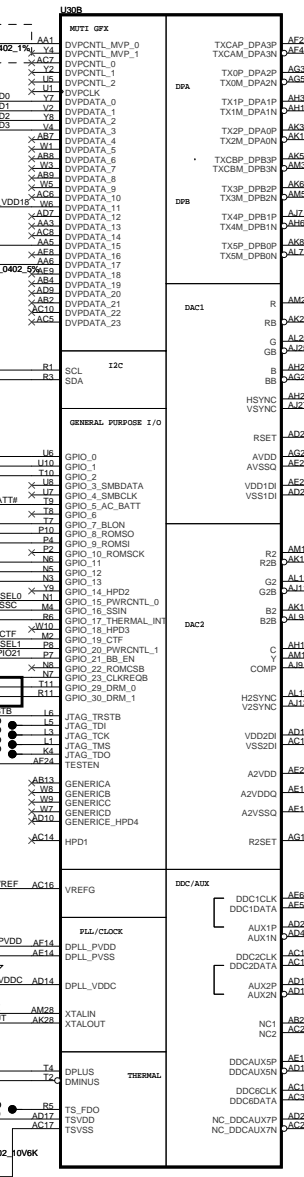
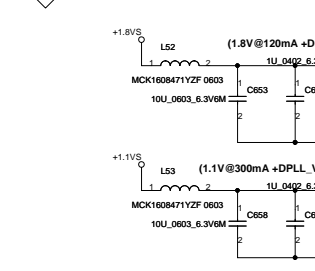
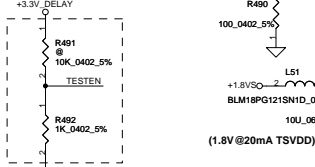
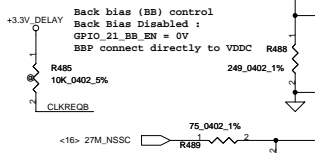
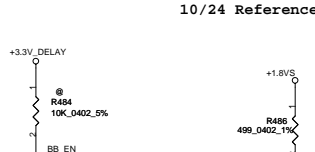
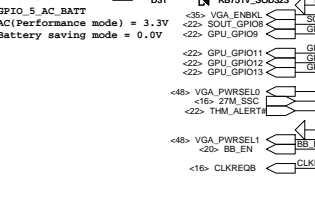
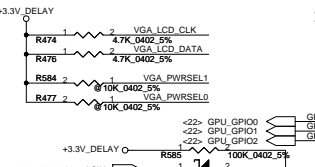
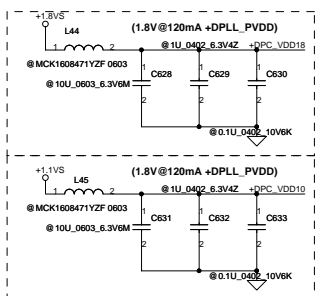
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 <10> PCIE GTX_C_MRX_N[0..15] ← PCIE GTX_C_MRX_N[0..15]
 <10> PCIE_MTX_C_GRX_P[0..15] ← PCIE_MTX_C_GRX_P[0..15]
 <10> PCIE_MTX_C_GRX_N[0..15] ← PCIE_MTX_C_GRX_N[0..15]

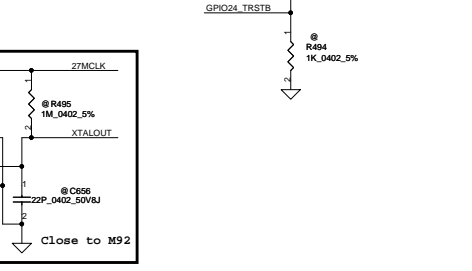
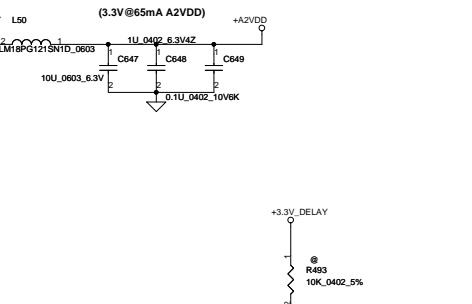
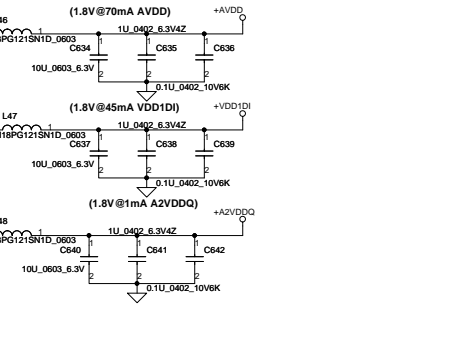
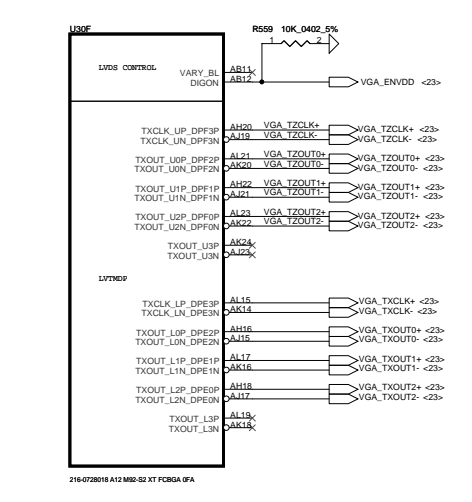
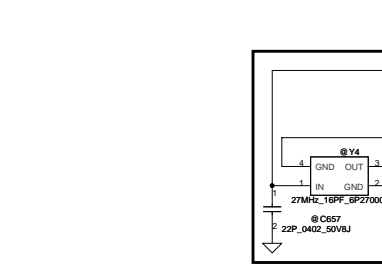
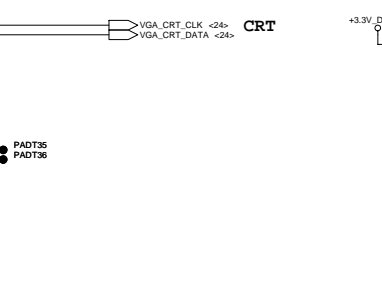
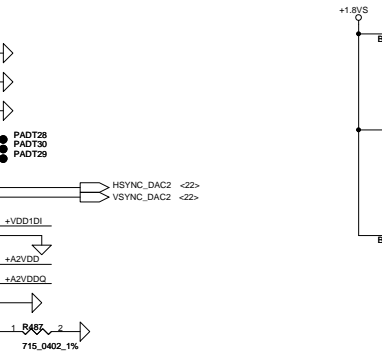
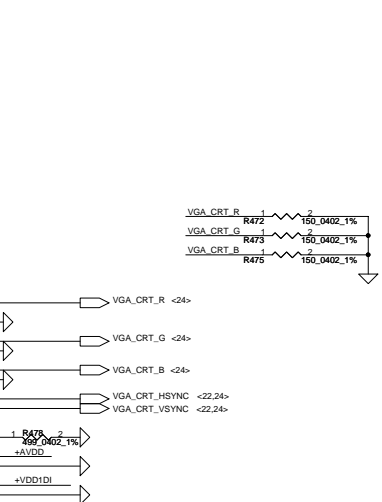


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For M92-S2: DO NOT Install any Component in this Box.



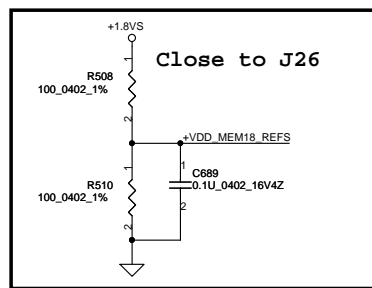
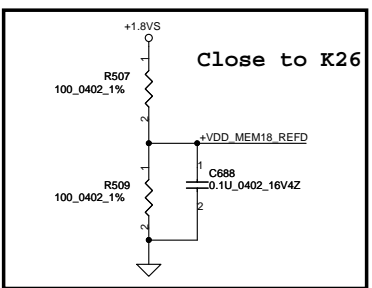
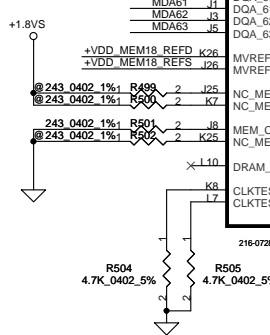
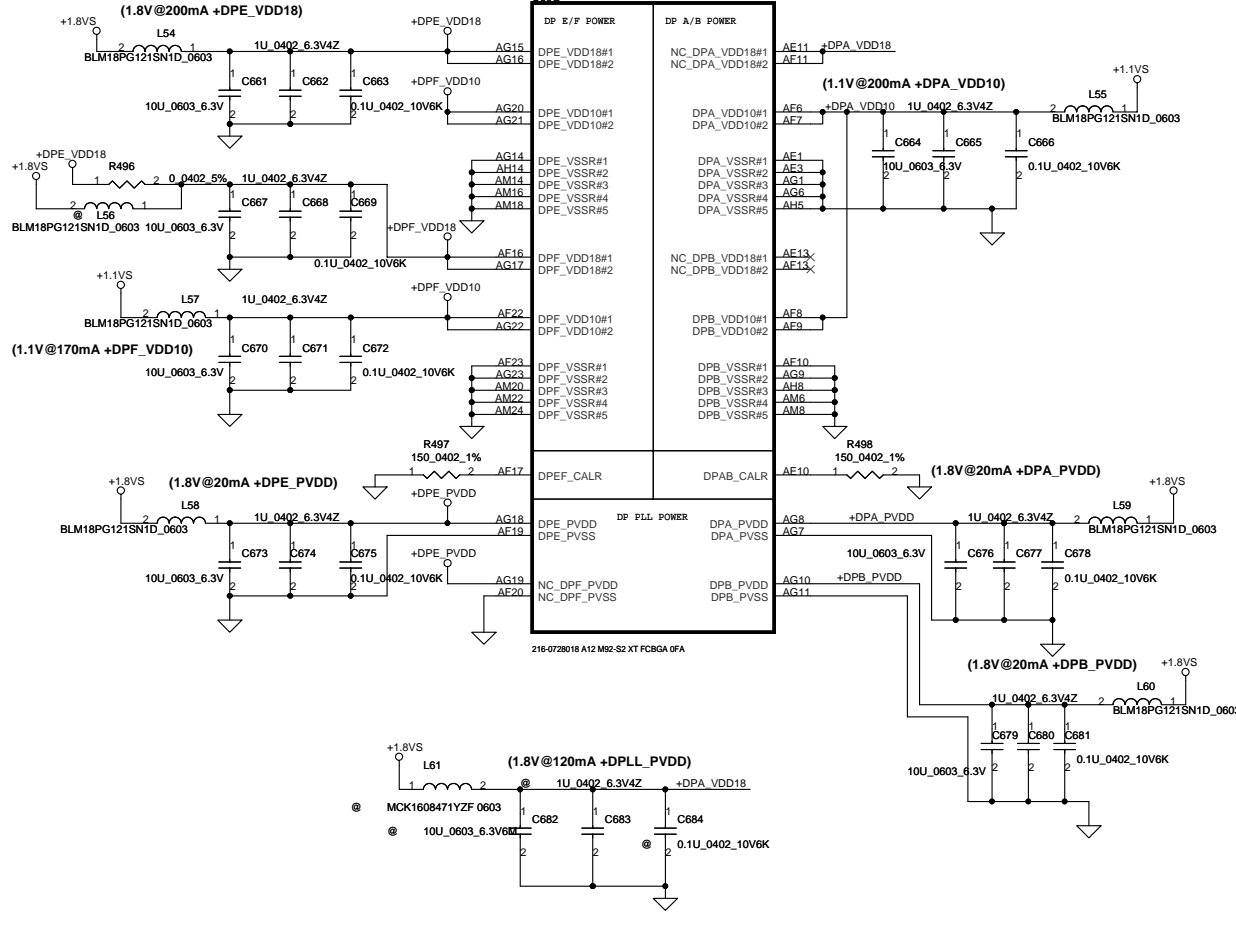
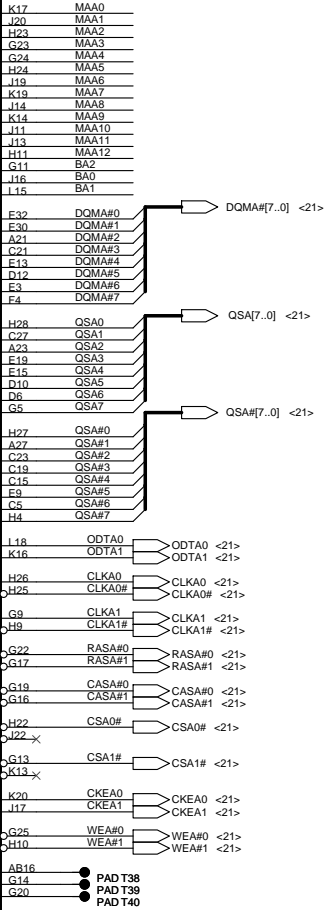
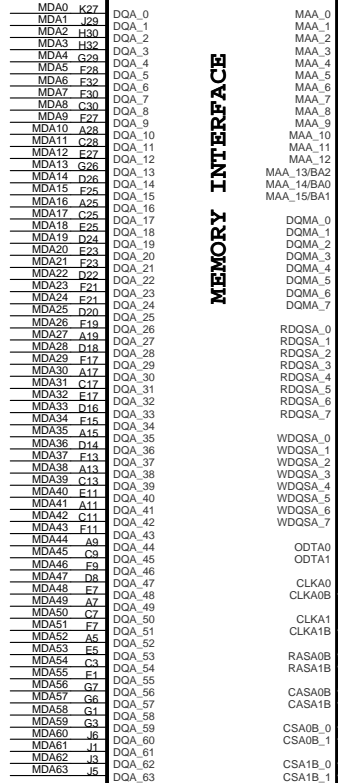
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0	0	1.2V
0	1	1.1V
1	0	0.95V
1	1	0.9V



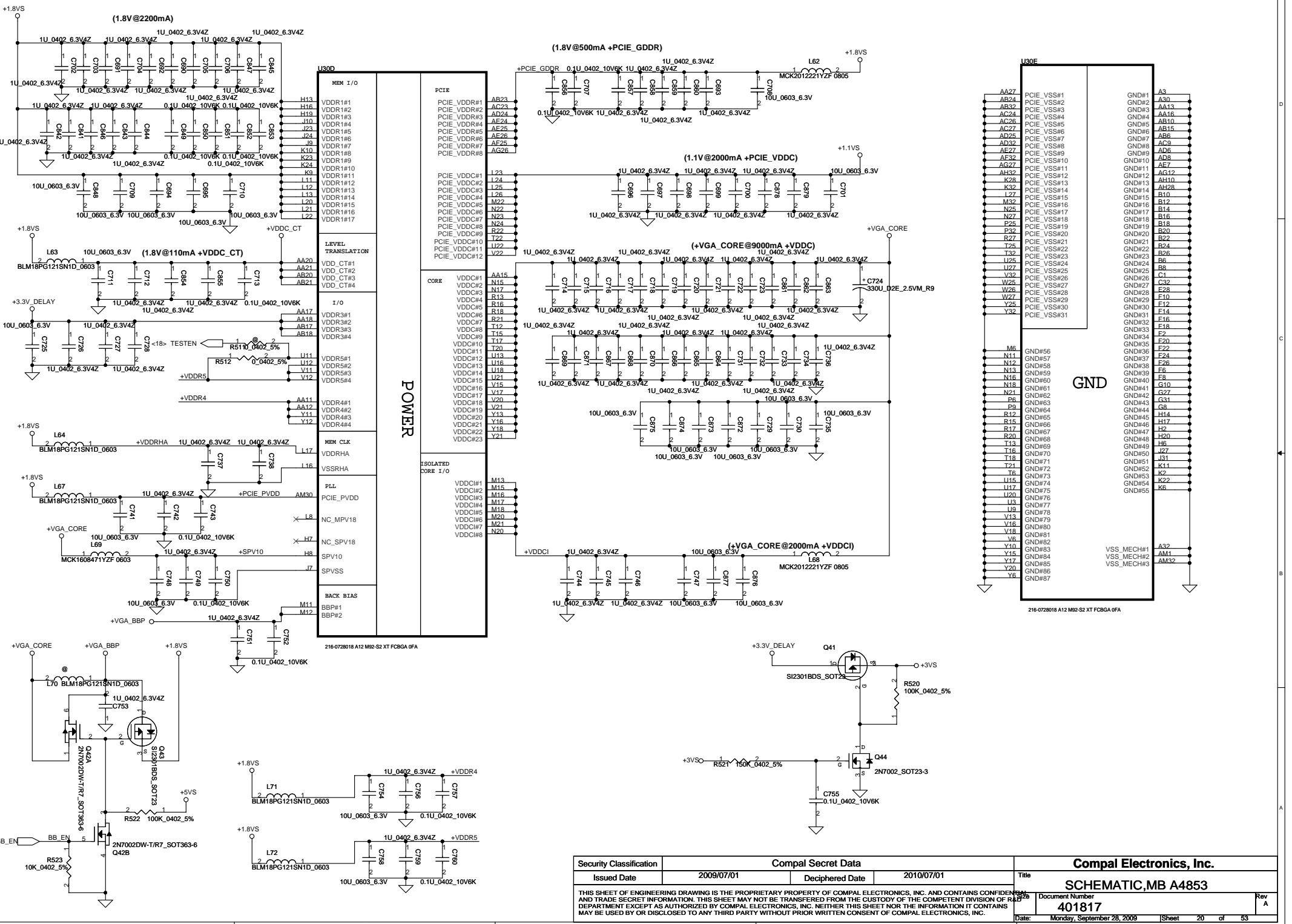


U30C

MEMORY INTERFACE



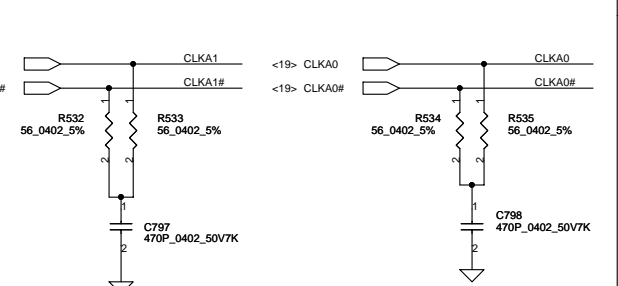
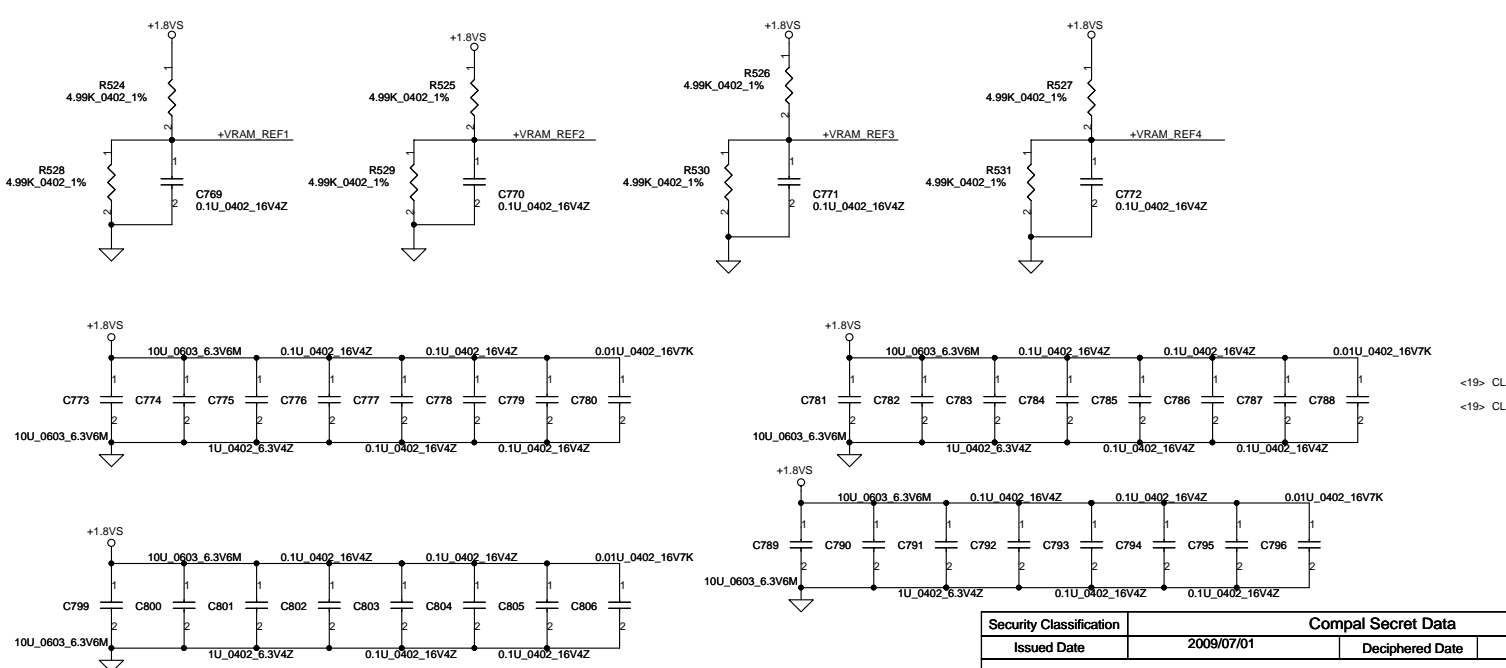
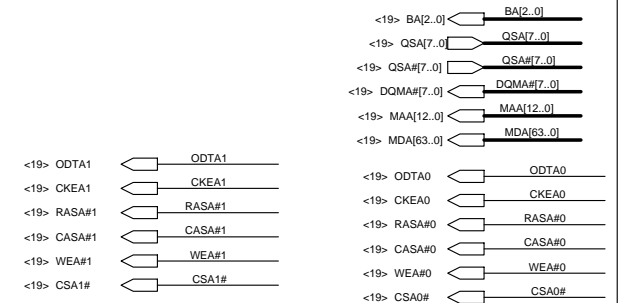
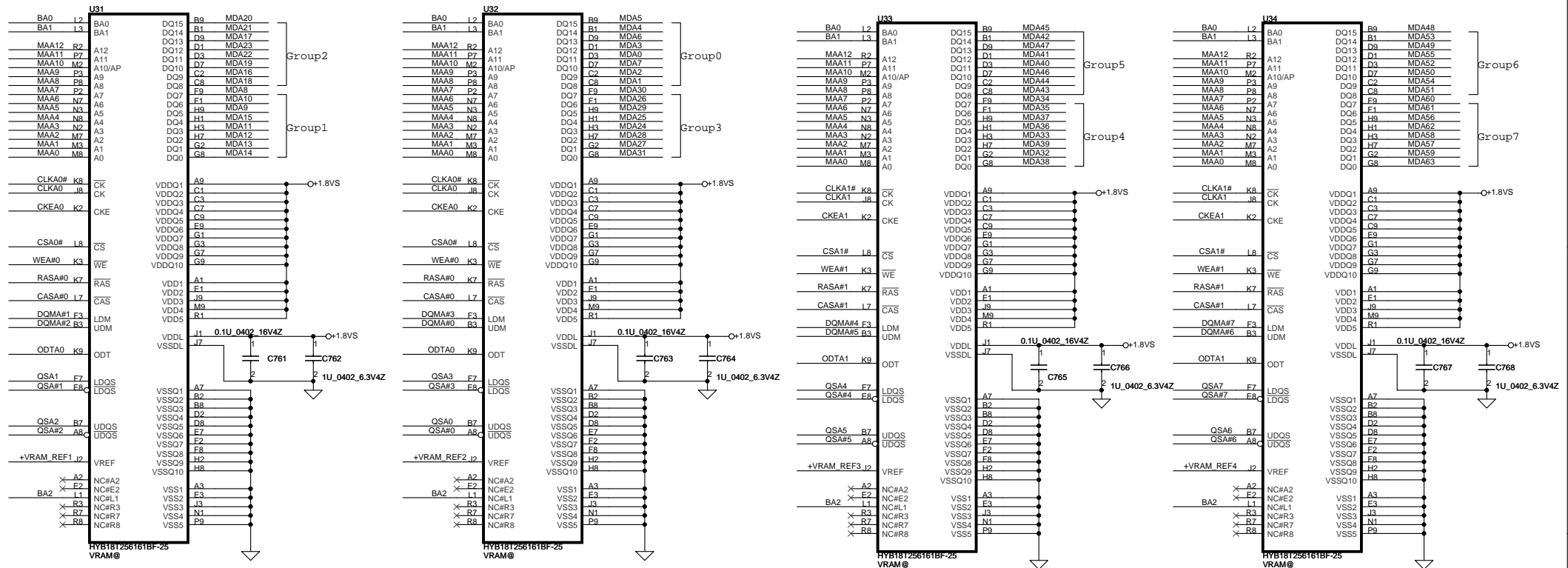
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216-0728018 A12 M82-S2 XT FCBGA 0FA

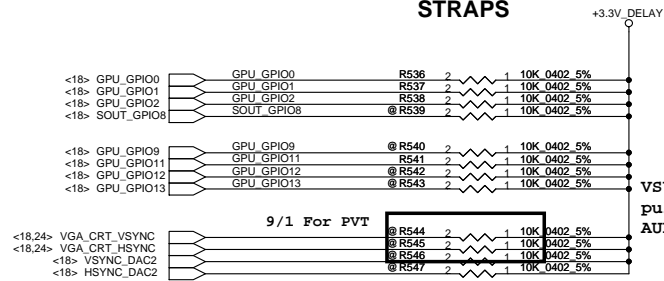
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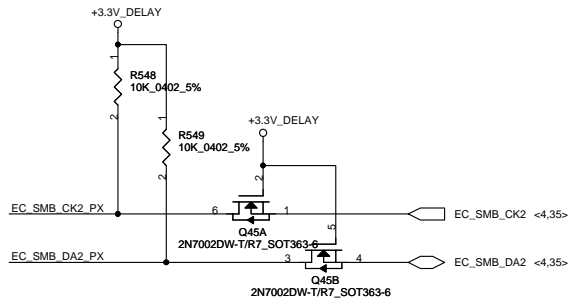
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STRAPS

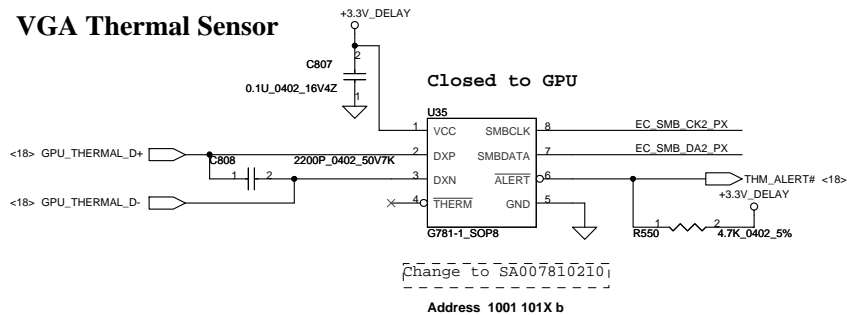


VSYNC_DAC1 and HSYNC_DAC1
pull up to HDMI & DISPLAYPORT
AUDIO function

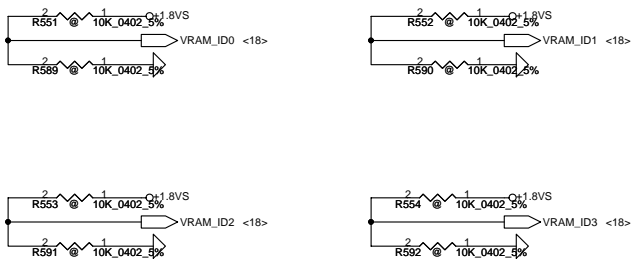
GPI05_AC_BATT TEST



VGA Thermal Sensor



Address 1001 101X b



VRAM_ID0=VRAM_ID0_0
VRAM_ID1=VRAM_ID1_1
VRAM_ID2=VRAM_ID2_2
VRAM_ID3=VRAM_ID3_3

STRAPS	PIN	GPU	Project	VRAM size	Vendor Part Number#	Compal Part Number#	VRAM_ID 3,2,1,0
VRAM_ID[3:0]	DVPDATA (3,2,1,0)	M92 S2-XT		256MB(x4)	Hynix 32Mx16 1.8V	SA00002DL10	1 0 0 0
				512MB(x4)	Hynix 64Mx16 1.8V	SA00002UH20	0 0 0 1
				512MB(x4)	ATI 64Mx16 1.8V	SA00003LT10	0 0 1 0
				512MB(x4)	Samsung 64Mx16 1.8V (E-die)	SA000031O10	0 1 0 0

CONFIGURATION STRAPS

ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOs ARE USED, THEY MUST NOT CONFLICT DURING RESET

STRAPS	PIN	DESCRIPTION OF DEFAULT SETTINGS	RECOMMENDED SETTINGS
TX_PWRS_ENB	GPIO0	PCIE FULL TX OUTPUT SWING	1
TX_DEEMPH_EN	GPIO1	PCIE TRANSMITTER DE-EMPHASIS ENABLED	1
BIF_GEN2_EN_A	GPIO2	PCIE GNE2 ENABLED	1
BIF_CLK_PM_EN	GPIO8	BIF_CLK_PM_EN	0
BIF_VGA_DIS	GPIO9	VGA ENABLED	0
BIF_RX_PLL_CALIB_BP	GPIO21		0
BIOS_ROM_EN	GPIO_22_ROMCSB		1
ROMIDCFG(2:0)	GPIO[13:11]	BIF_RX_PLL_CALIB_BP	0 0 1
VIP_DEVICE_STRAP_ENA	V2SYNC	ENABLE EXTERNAL BIOS ROM	0
SMS_EN_HARD	H2SYNC	SERIAL ROM TYPE OR MEMORY APERTURE SIZE SELECT	0
CCBYPASS	GENERICC	IGNORE VIP DEVICE STRAPS	0
AUD[1]	HSYNC	AUD[1] AUD[0] 0 0 No audio function 0 1 Audio for DisplayPort and HDMI if dongle is detected 1 0 Audio for DisplayPort only 1 1 Audio for both DisplayPort and HDMI	X X
AUD[0]	VSYNC		

AMD RESERVED CONFIGURATION STRAPS

ALLOW FOR PULLUP PADS FOR THESE STRAPS AND IF THESE GPIOs ARE USED, THEY MUST NOT CONFLICT DURING RESET

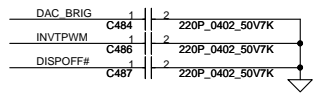
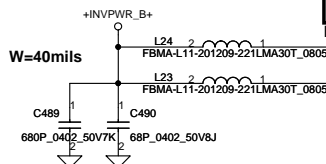
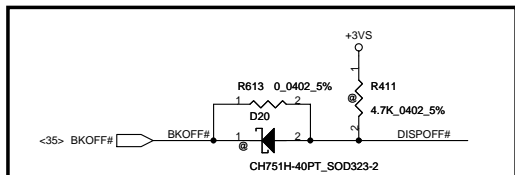
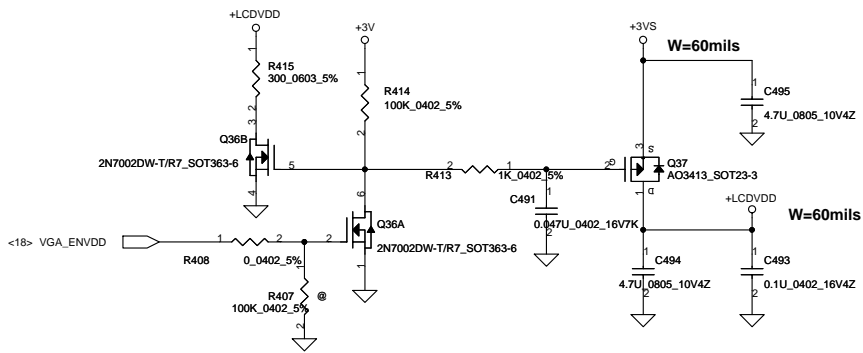
H2SYNC GENERICC

PULLUP PADS ARE NOT REQUIRED FOR THESE STRAPS BUT IF THESE GPIOs ARE USED, THEY MUST NOT CONFLICT DURING RESET

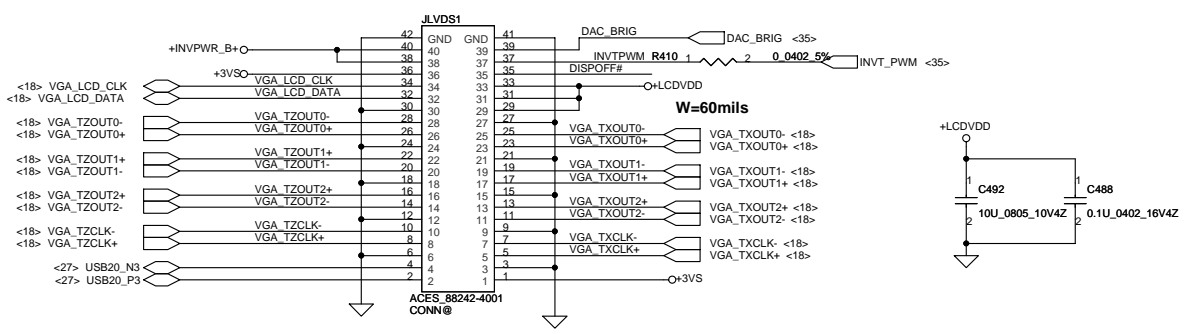
GPIO_28_TDO GPIO21_BB_EN

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LCD POWER CIRCUIT

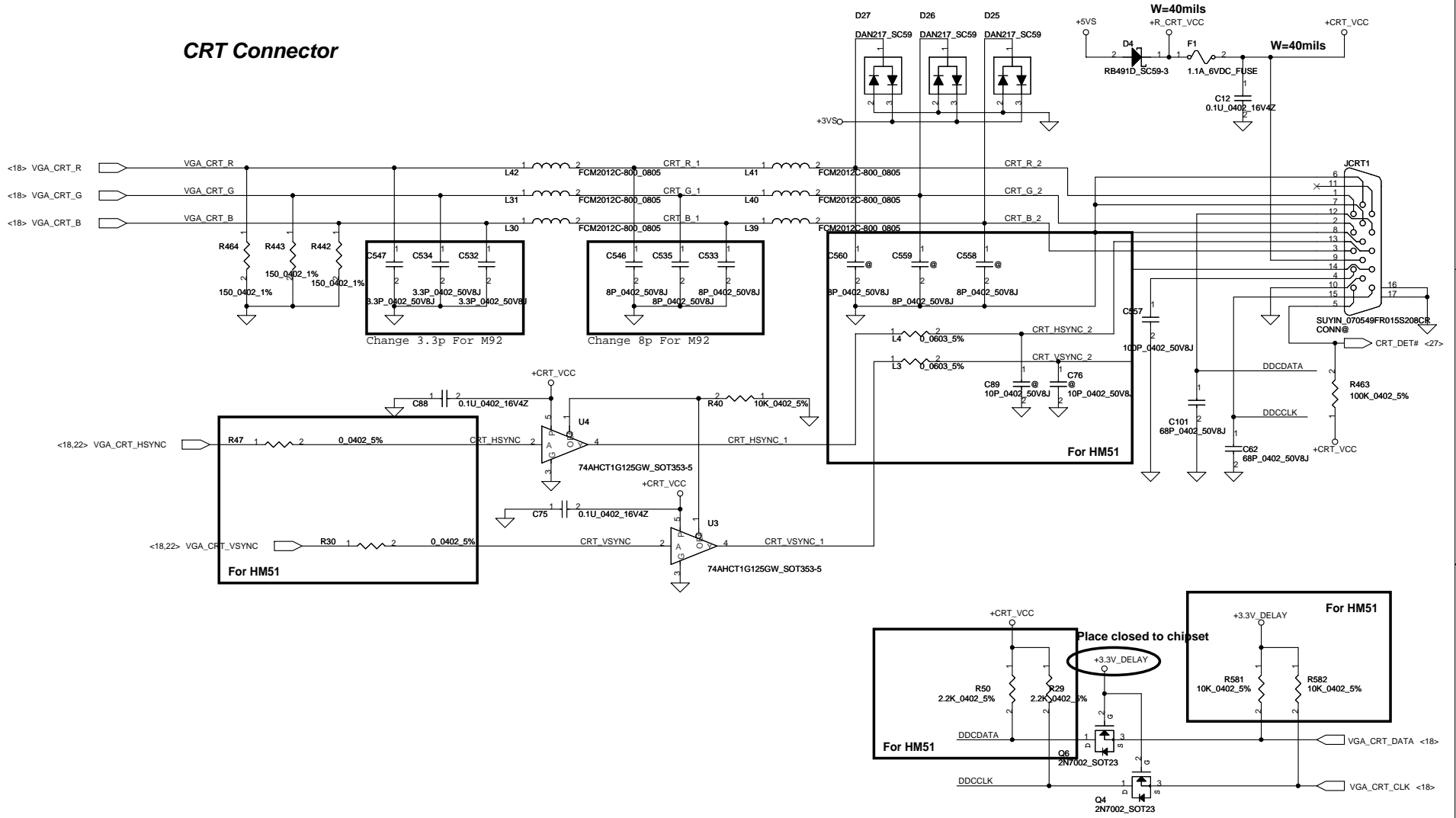


LCD/PANEL BD. Conn.

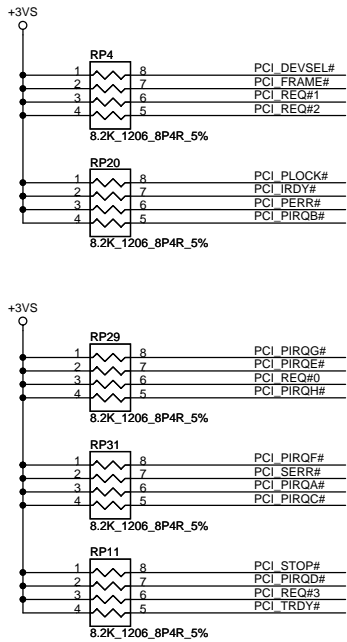


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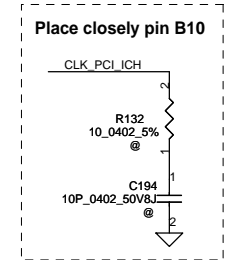
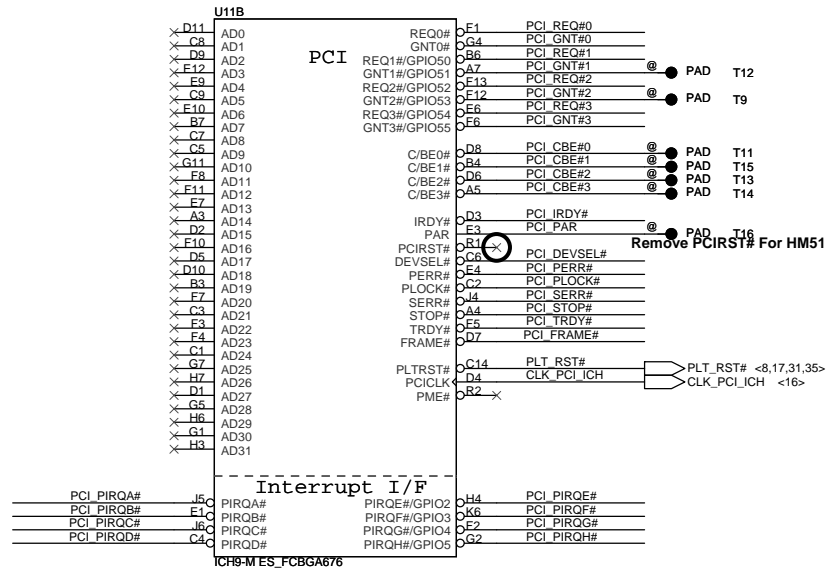
CRT Connector



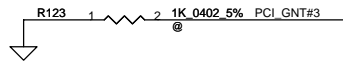
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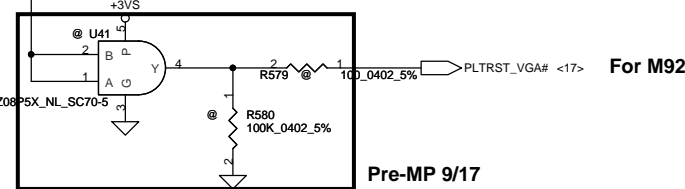
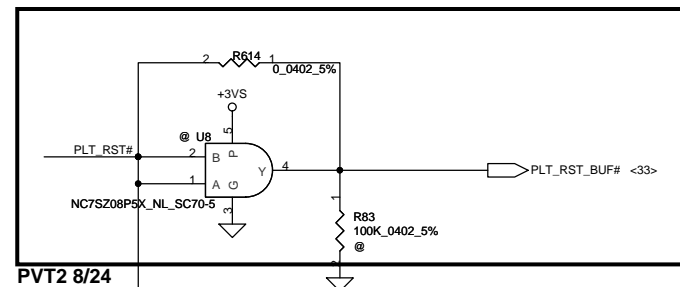
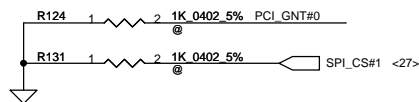
DMI for ESI-compatible operation
PCI_GNT#1 Low= DMI for ESI-compatible operation
 High= Default* (Internal pull-up)

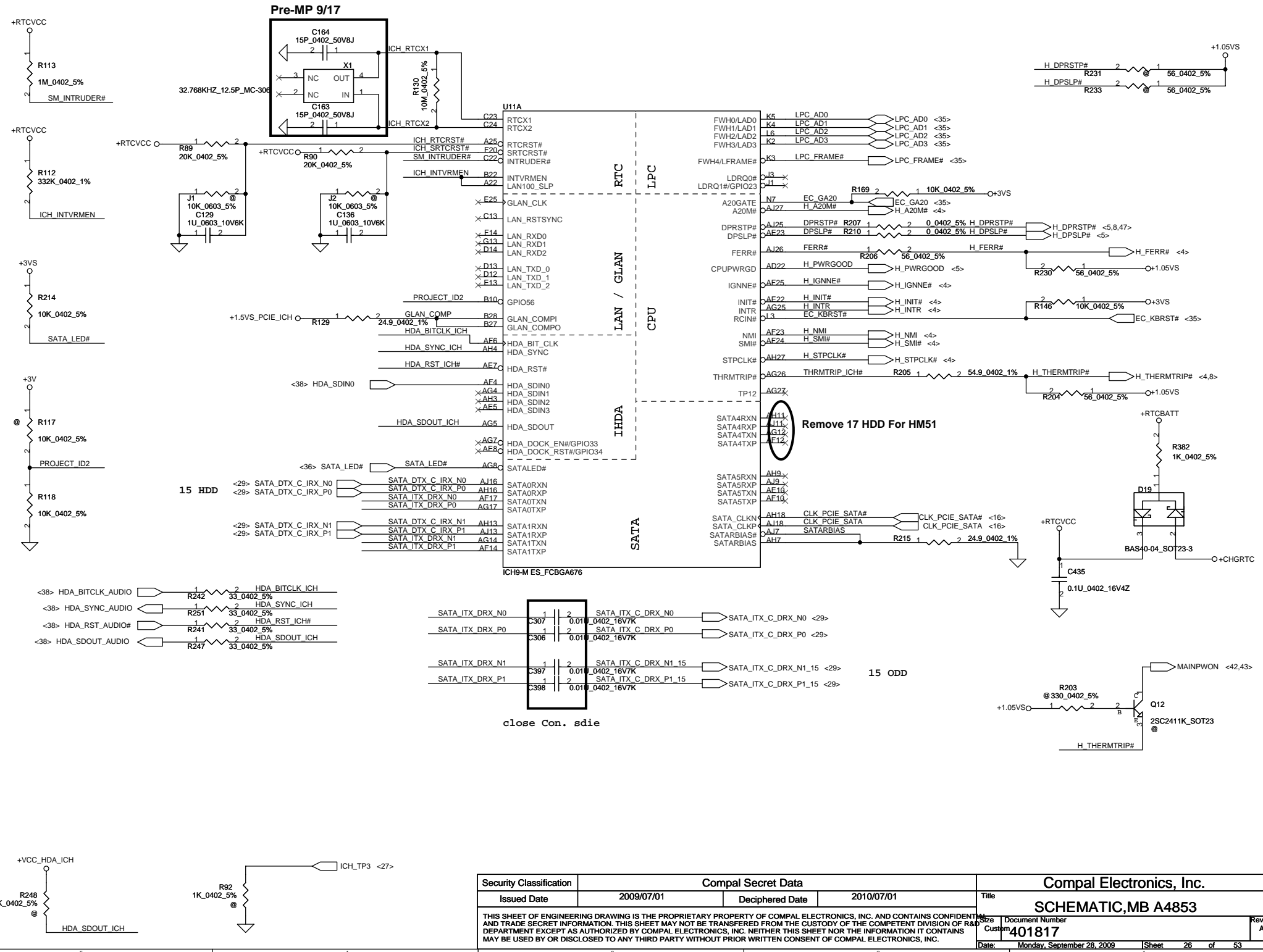


A16 Swap Override Strap
PCI_GNT#3 Low= A16 swap override Enable
 High= Default*



Boot BIOS Strap		
PCI_GNT#0	SPI_CS#1	Boot BIOS Location
0	1	SPI
1	0	PCI
1	1	LPC*



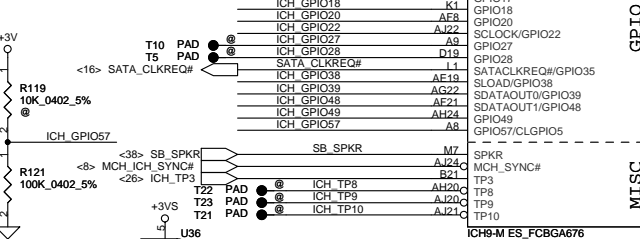
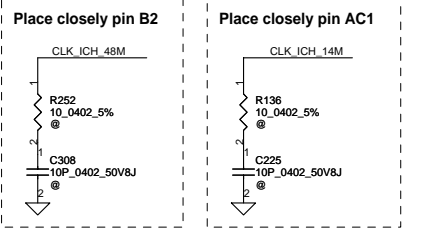
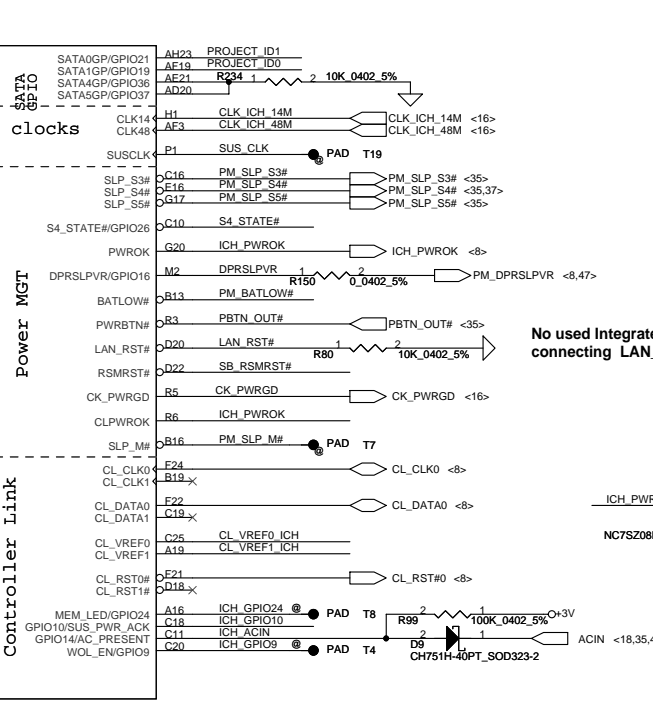
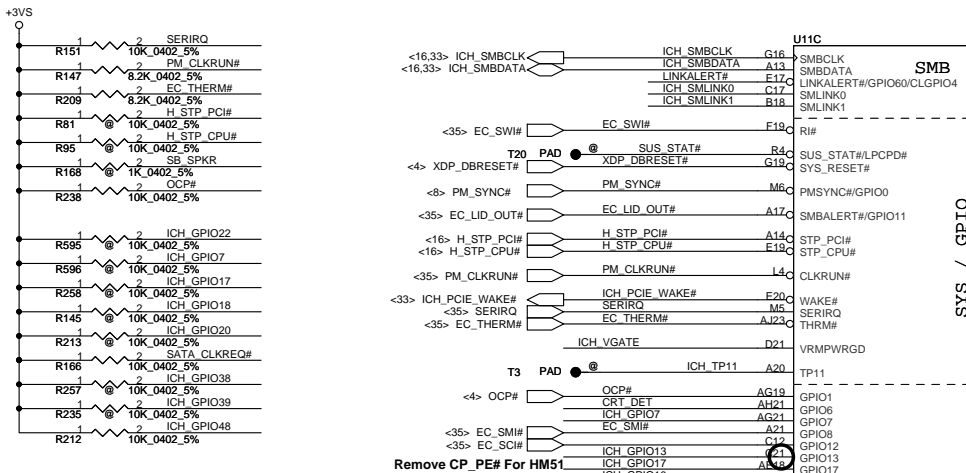


Pre-MP 9/17

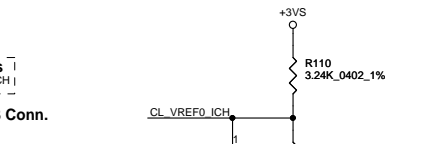
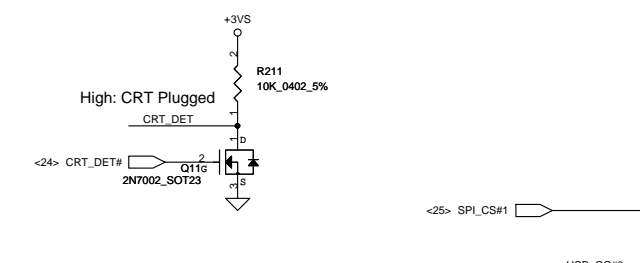
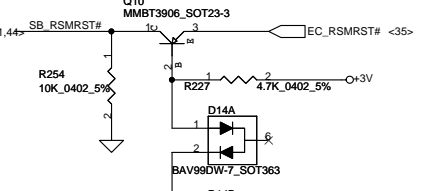
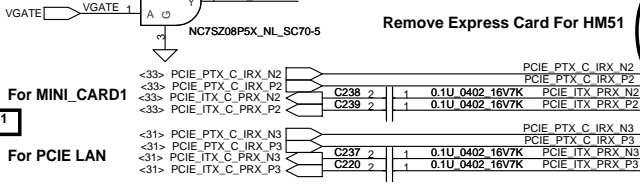
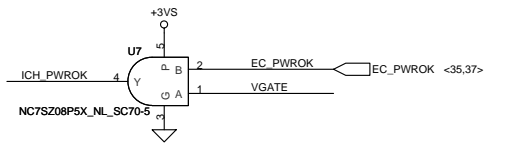
Remove 17 HDD For HM51

close Con. sdie

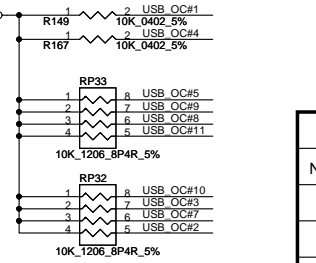
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No used Integrated LAN, connecting LAN_RST# to GND



Project_ID0	Project_ID1	Project_ID2
NAWF2	0	1
	0	0



Remove New Card For HM51

Remove Bluetooth For HM51

No Reboot Strap
 Low= Default*
 High= "No Reboot!"

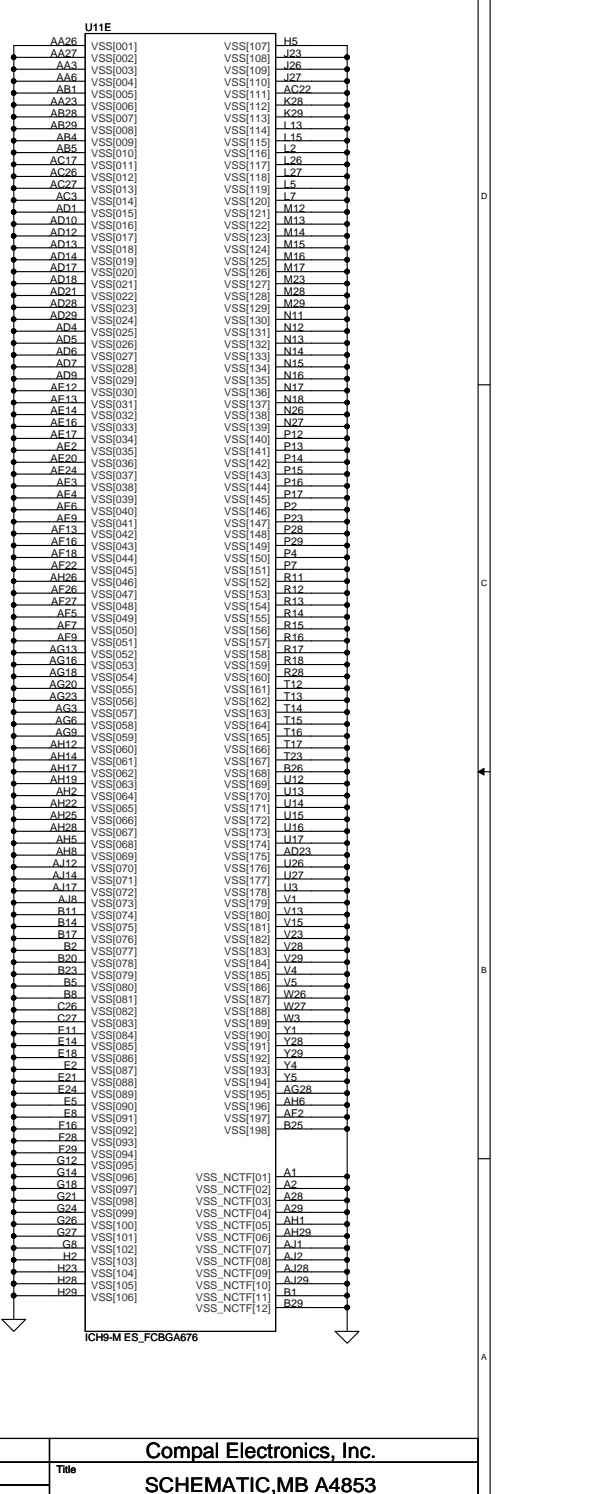
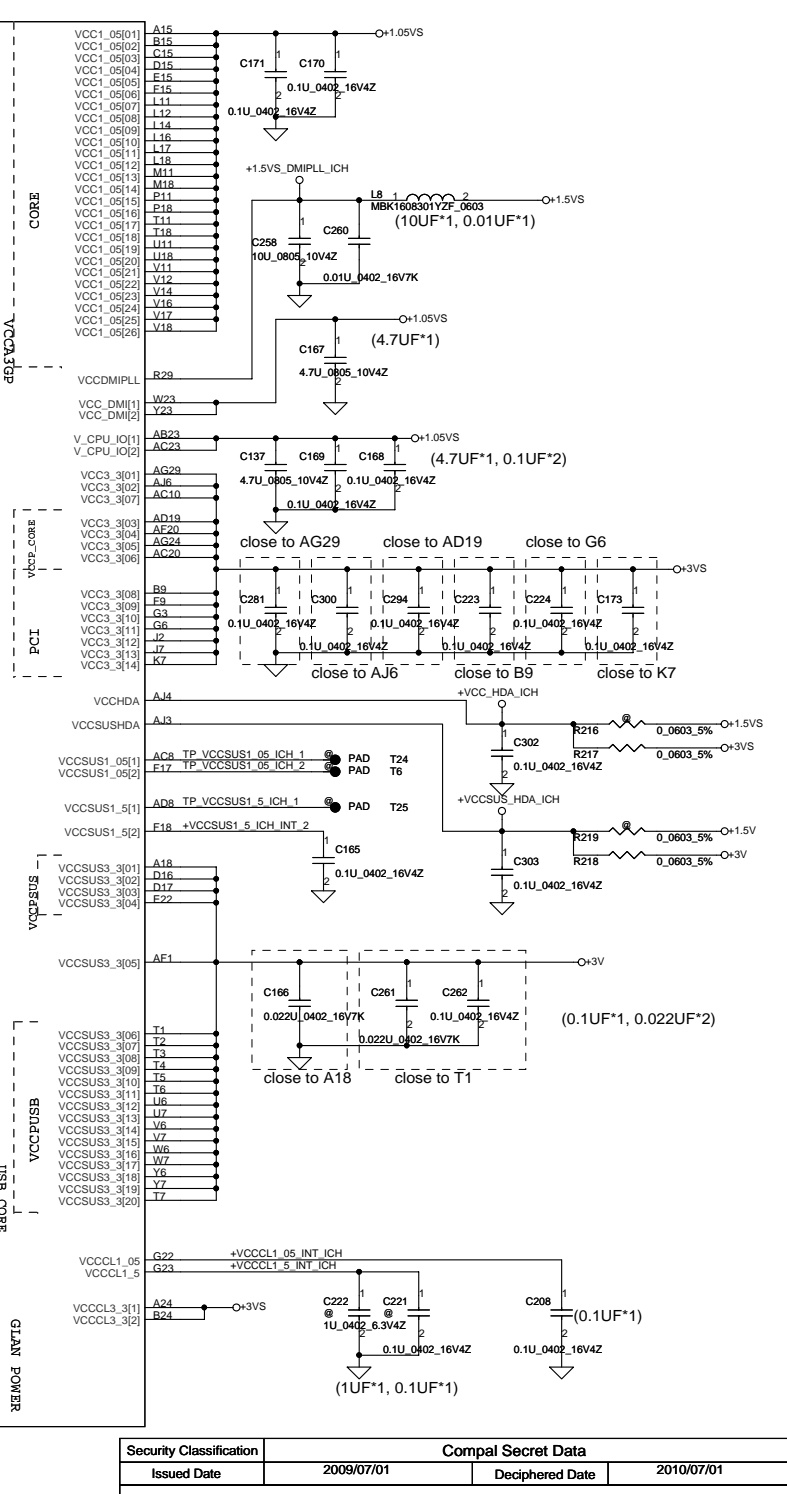
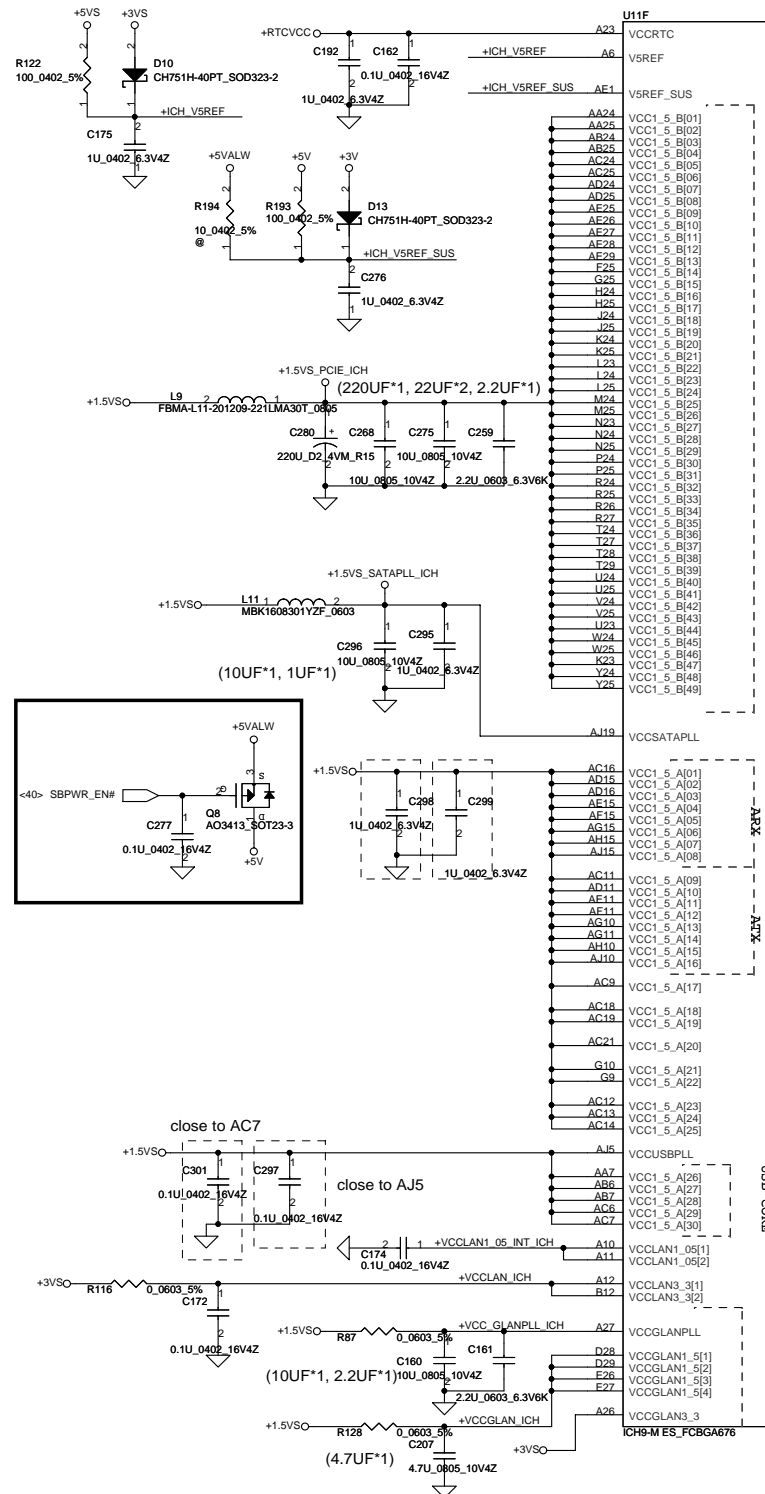
Internal TPM Strap
 Low= Disable*
 High= iTPM enable by MCH strap

DMI Termination Voltage
 Low= Desktop used
 High= Mobile* (Internal pull-up)

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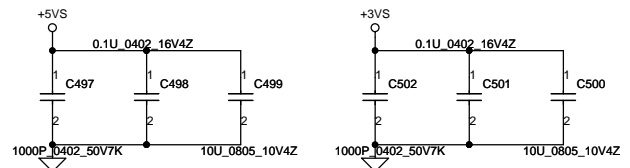
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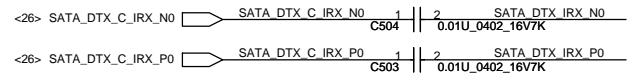
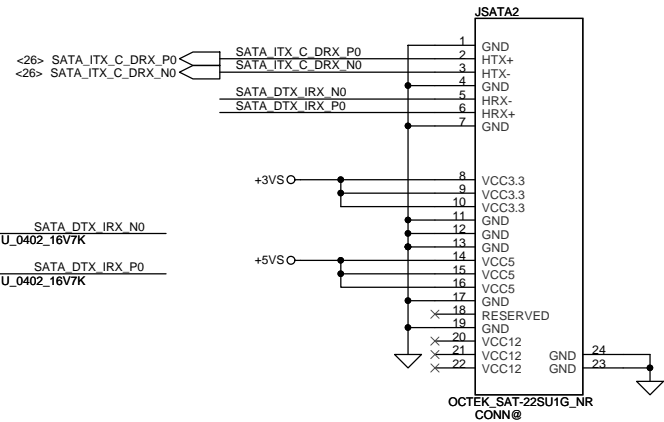


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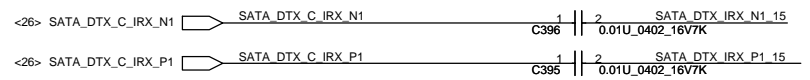
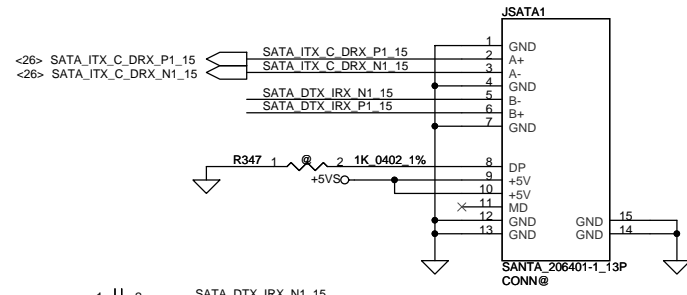
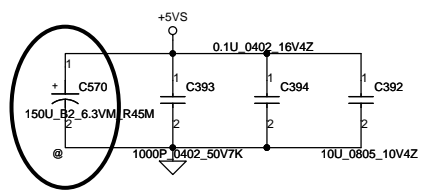
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SATA HDD Conn.

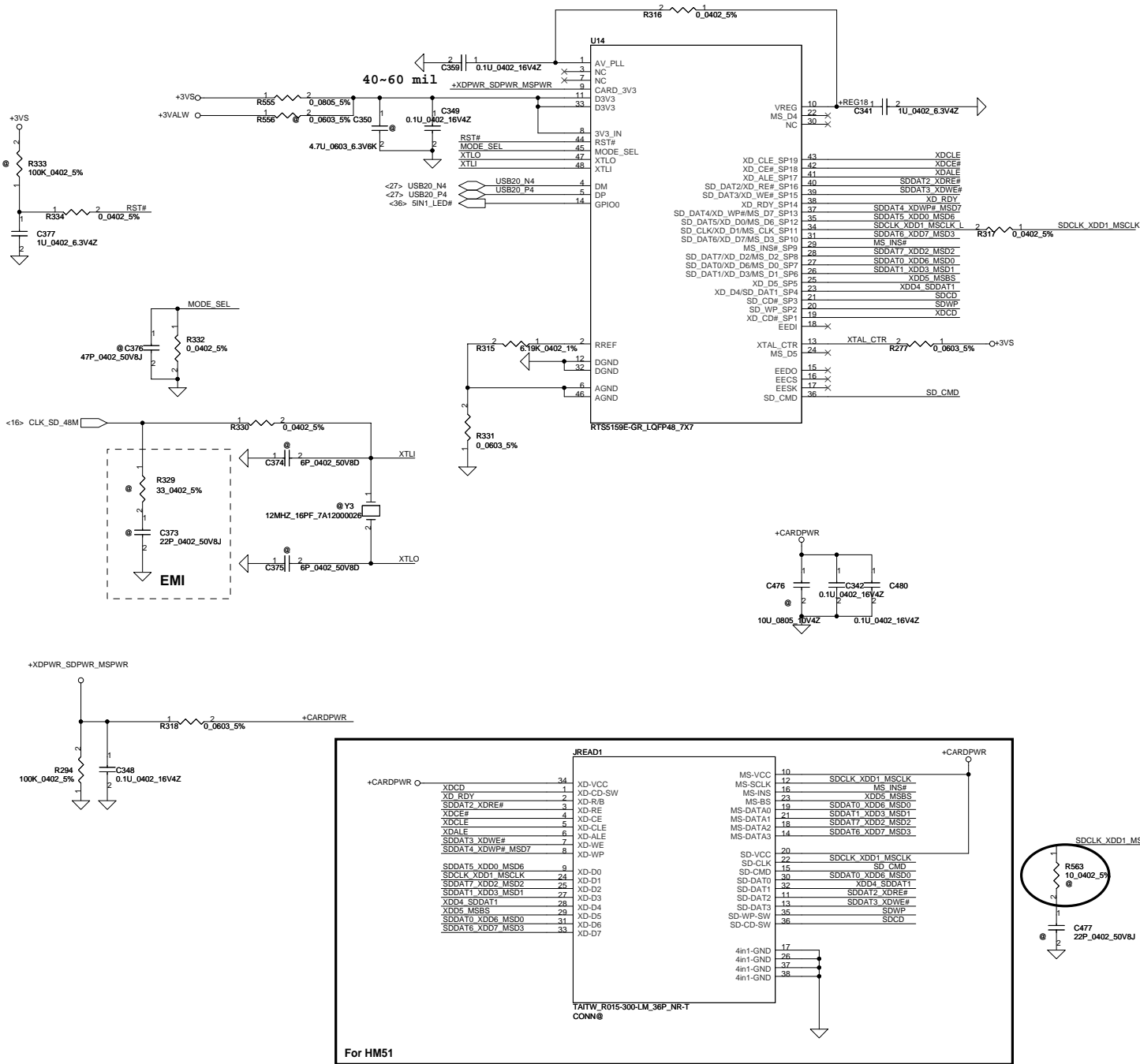


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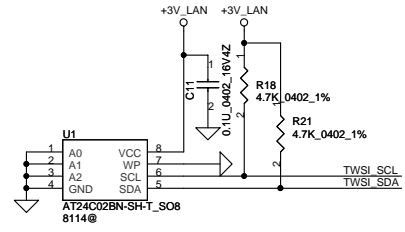
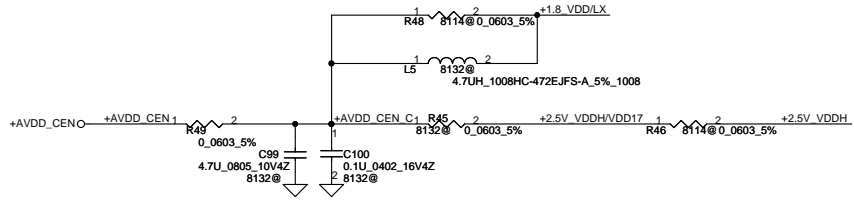


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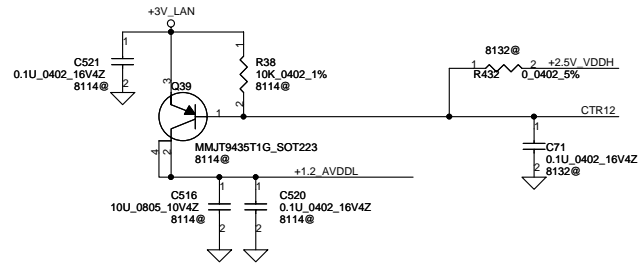
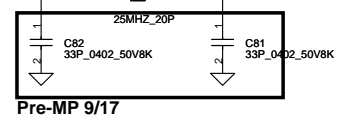
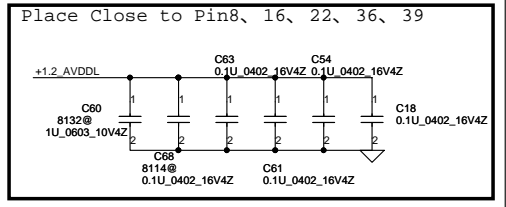
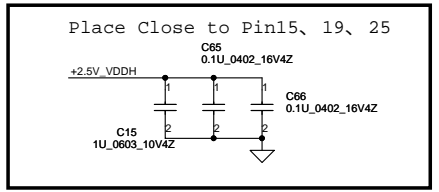
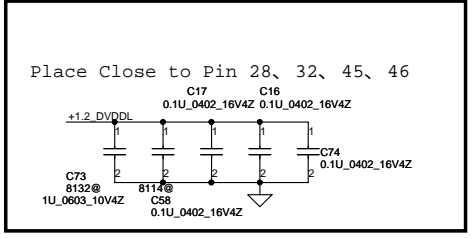
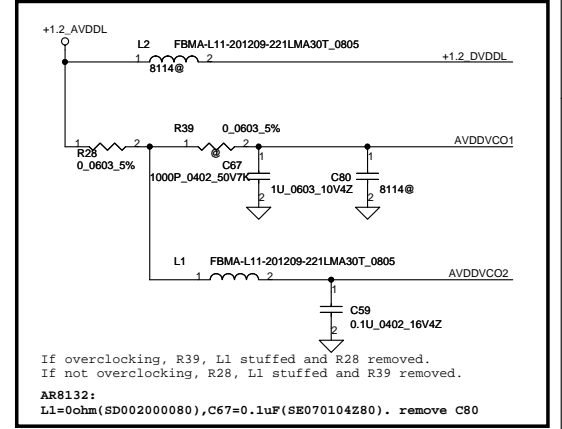
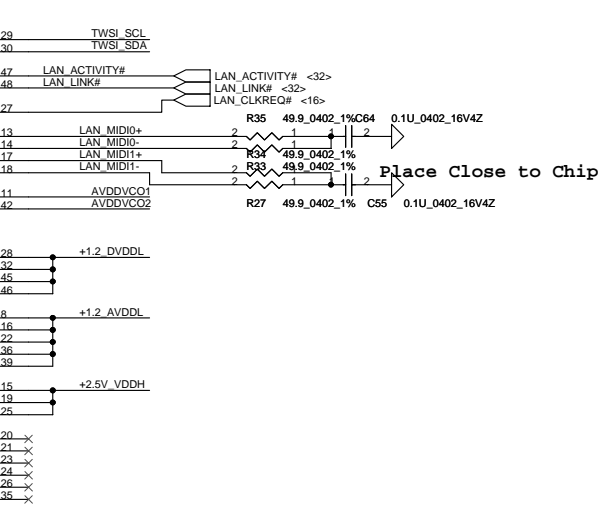
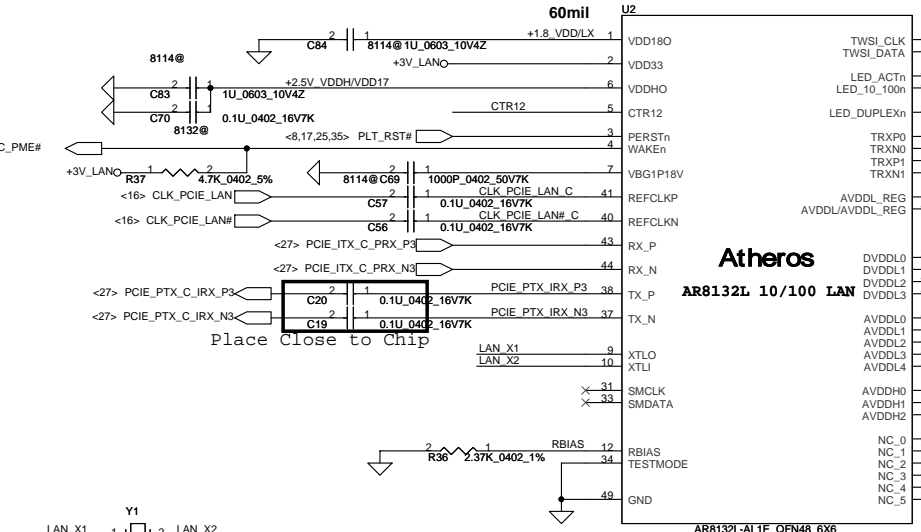
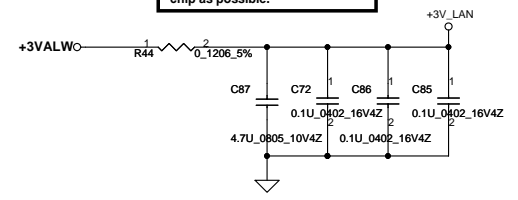
Vender suggestion



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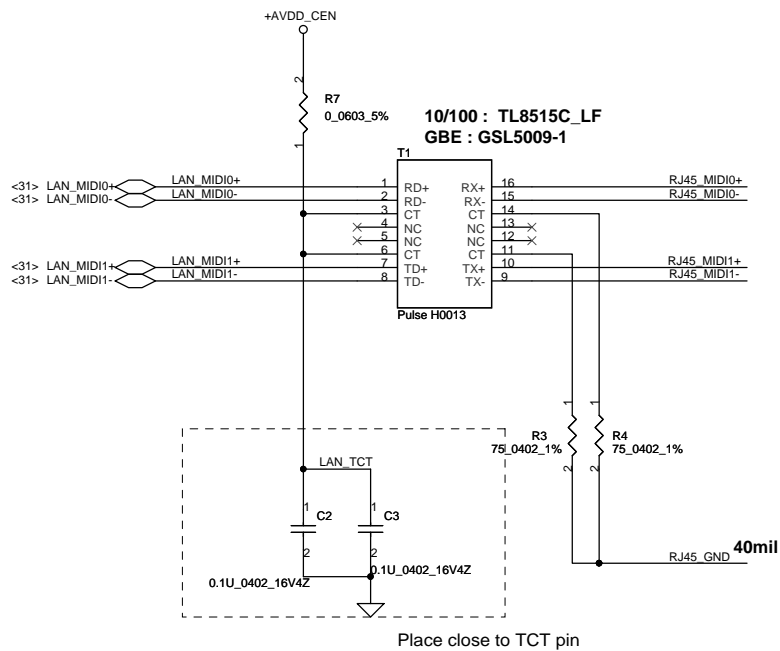


Layout Notice : Place as close chip as possible.

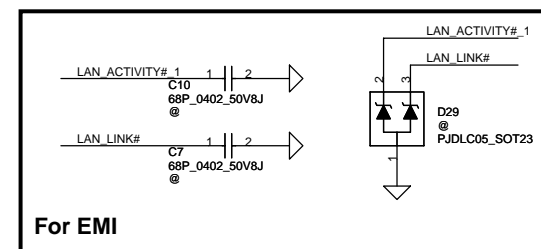
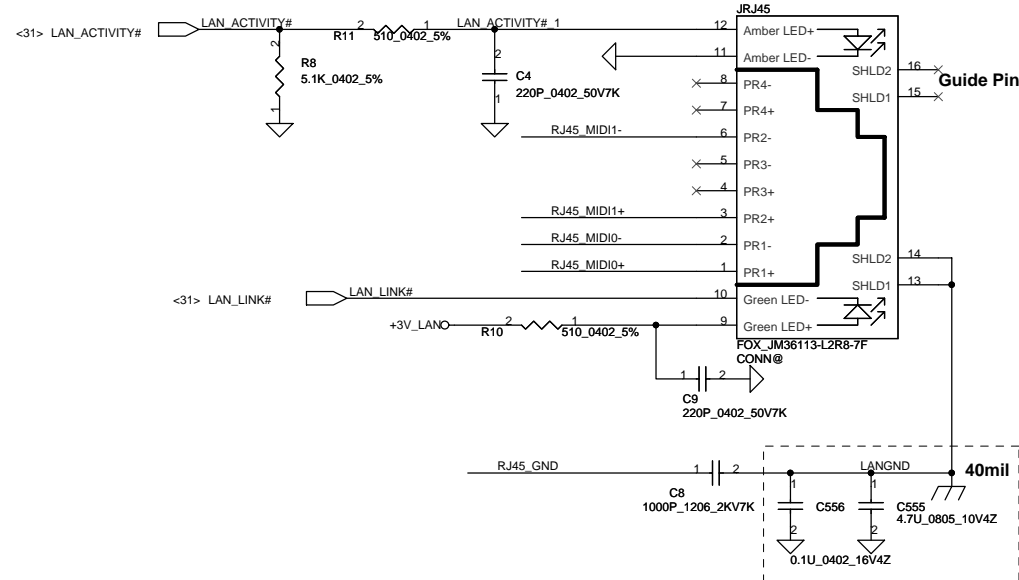


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Compal Electronics, Inc.	
SCHEMATIC, MB A4853	
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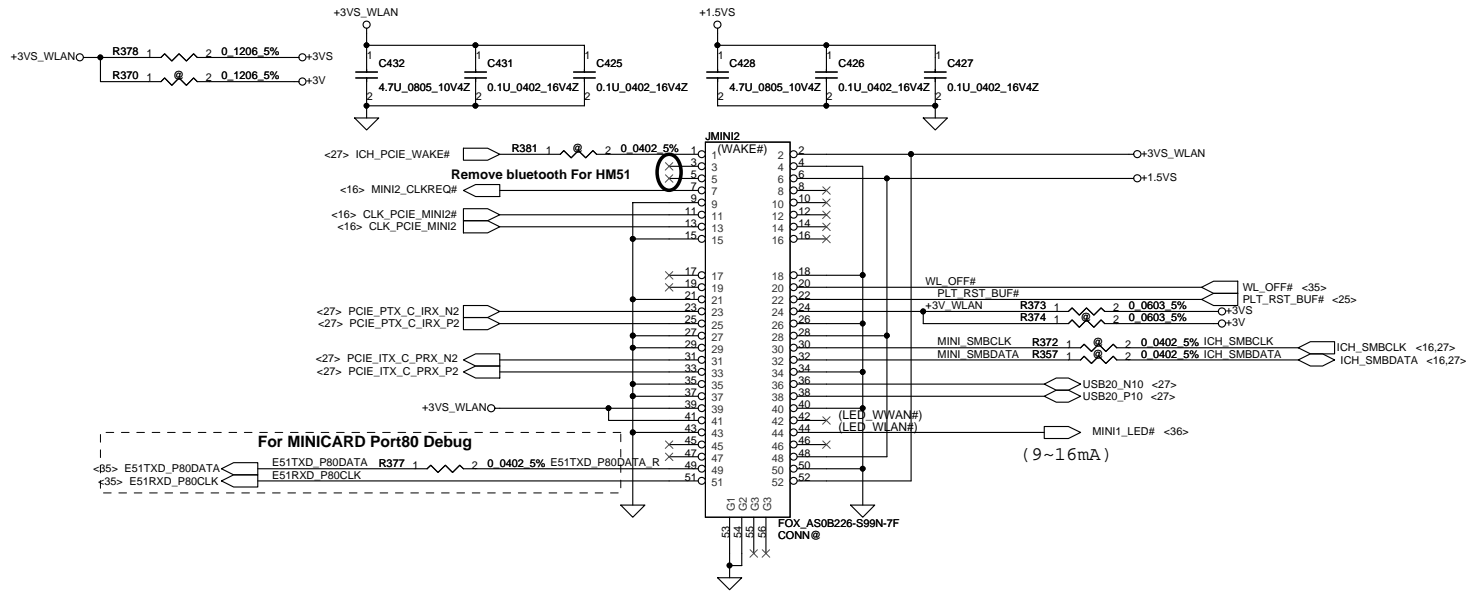
Place close to TCT pin



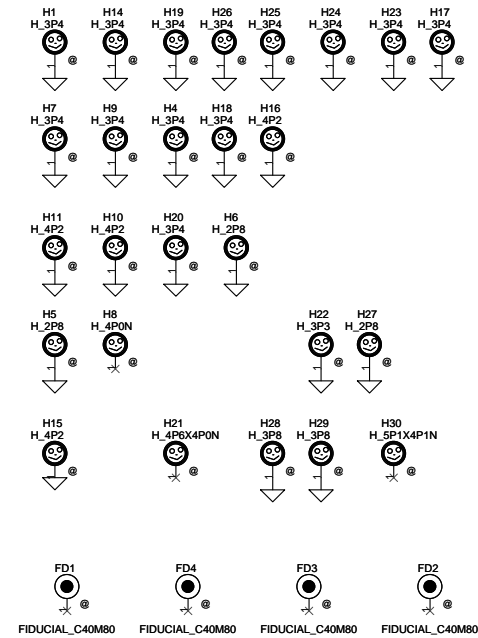
For EMI

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For Wireless LAN

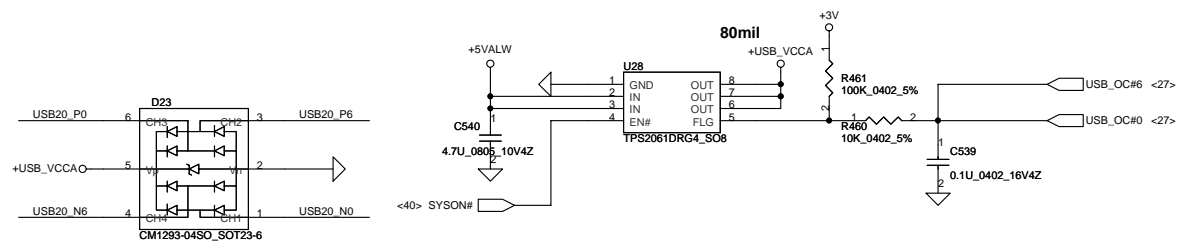
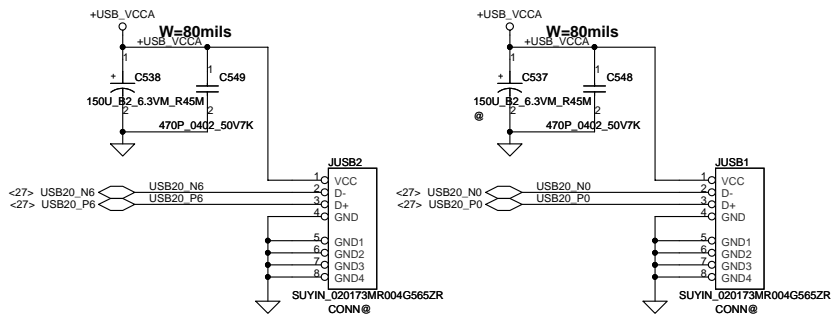


Mini Card Power Rating			
Power	Primary Power (mA)		Auxiliary Power (mA)
	Peak	Normal	Normal
+3VS	1000	750	
+3V	330	250	250 (wake enable)
+1.5VS	500	375	5 (Not wake enable)

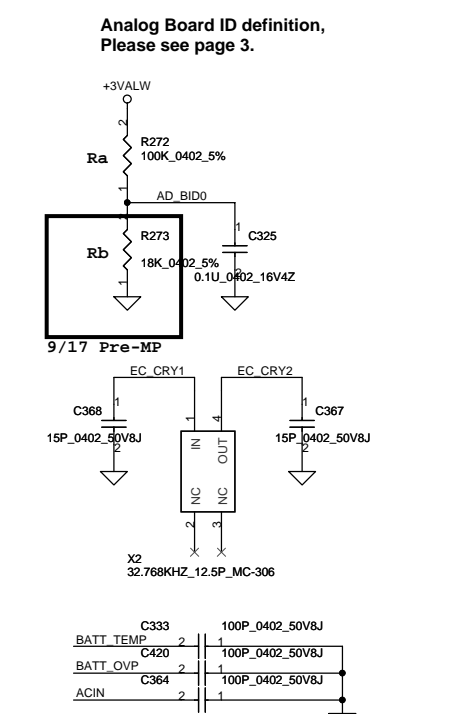
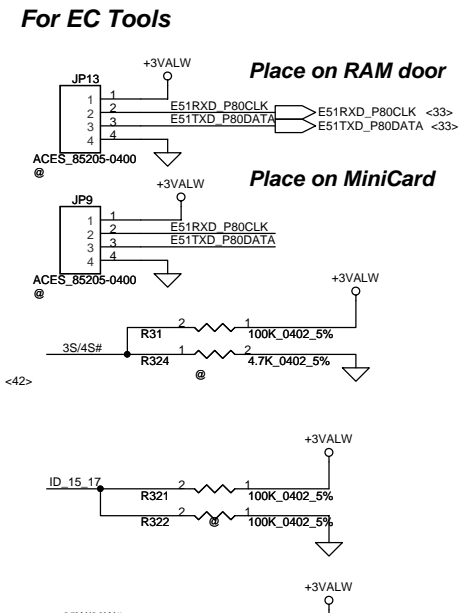
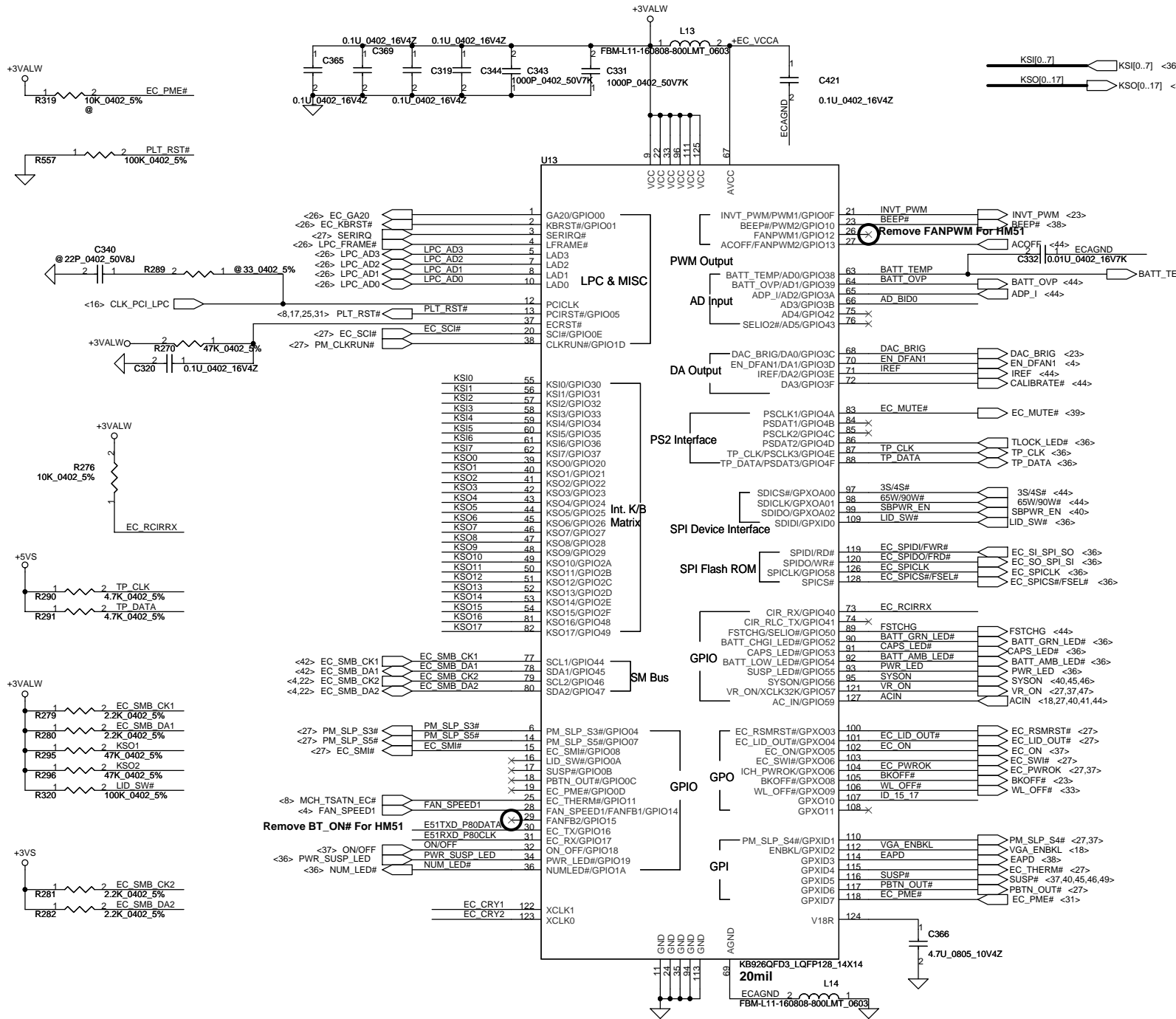


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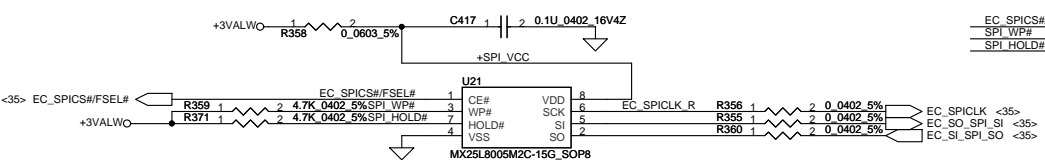
USB CONN.



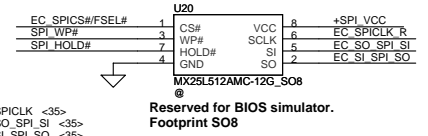
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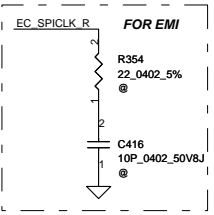
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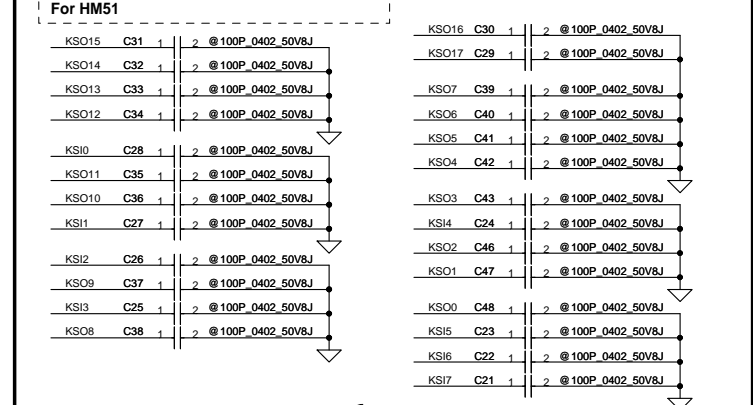
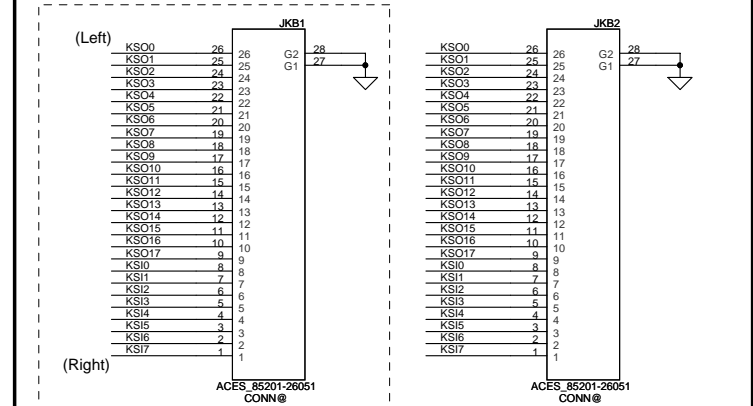
ENE suggestion SPI Frequency over 66MHz
 SST: 50MHz
 MXIC: 70MHz
 ST: 40MHz



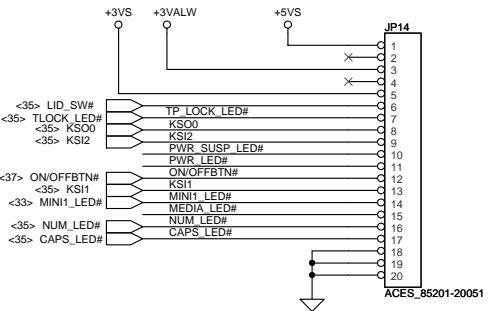
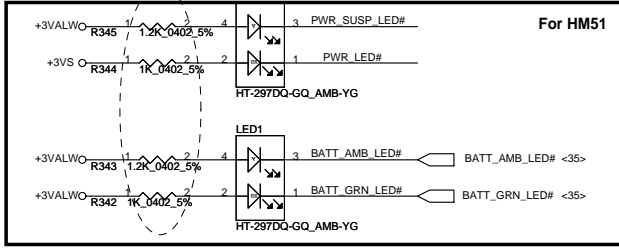
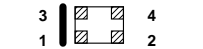
Reserved for BIOS simulator.
 Footprint SOB



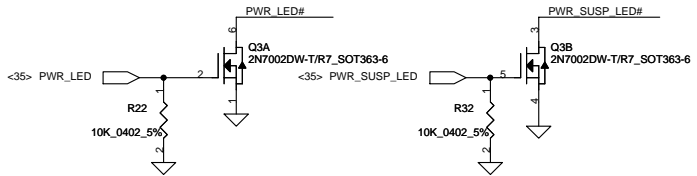
To POWER/B



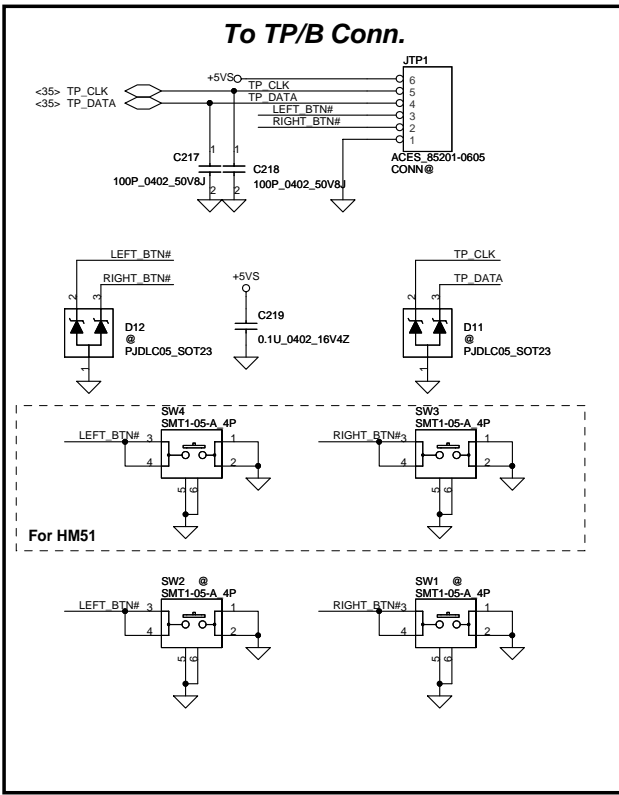
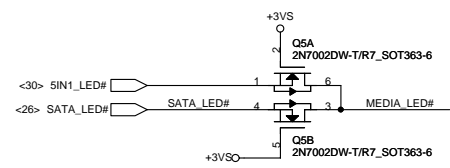
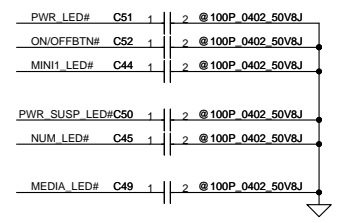
Compal Footprint



	KSO0
KSI1	WL_BTN#
KSI2	TLOCK_BTN#
KSI3	
KSI4	
KSI5	

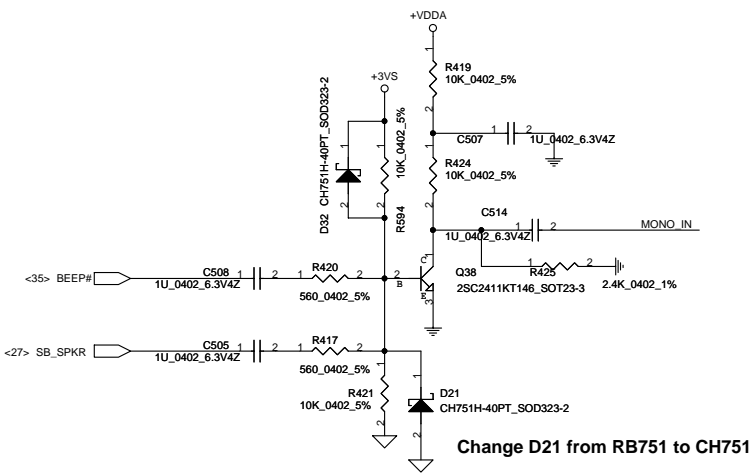


FOR EMI



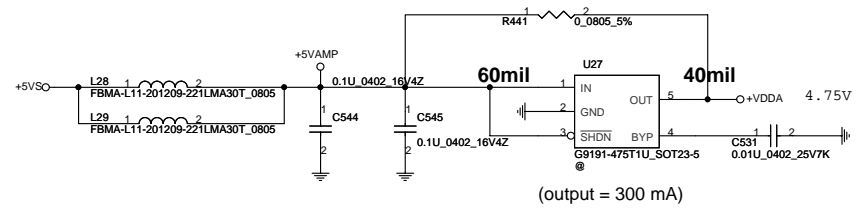
For HM51

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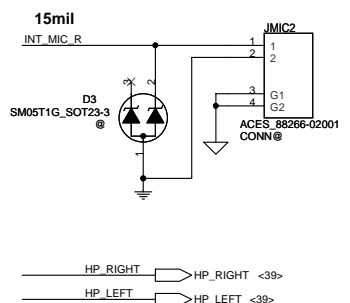
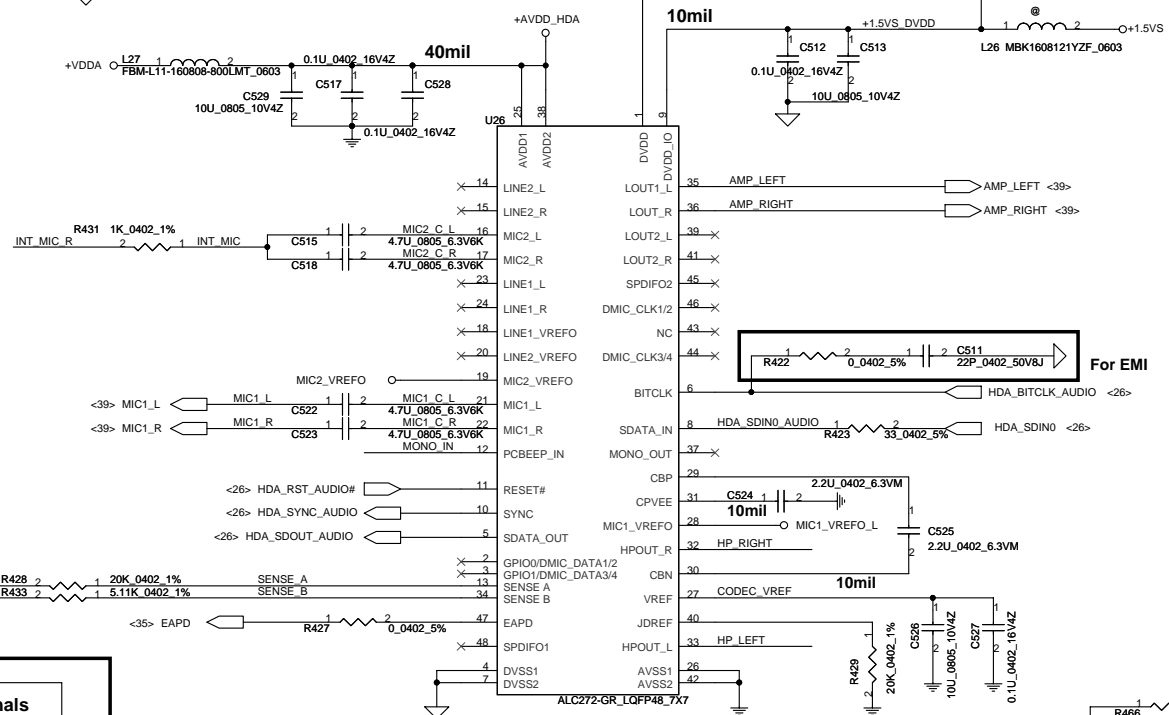


HD Audio Codec

Change D21 from RB751 to CH751

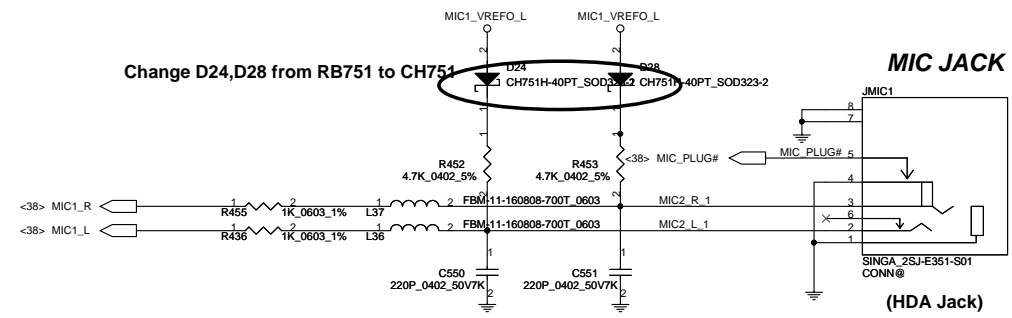
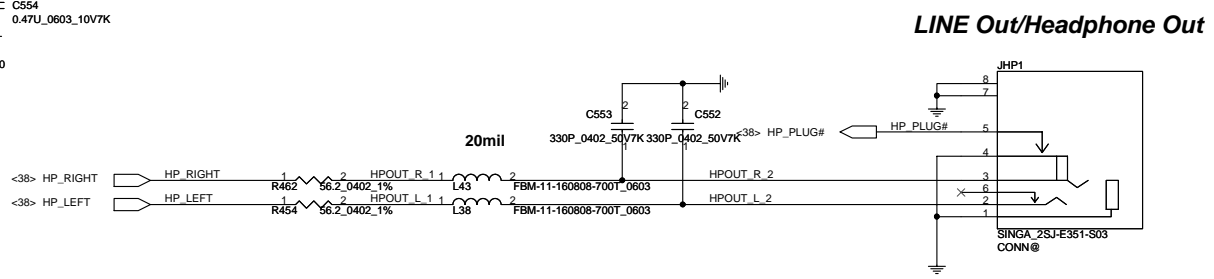
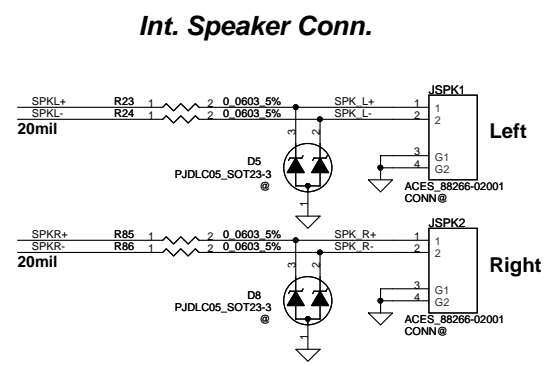
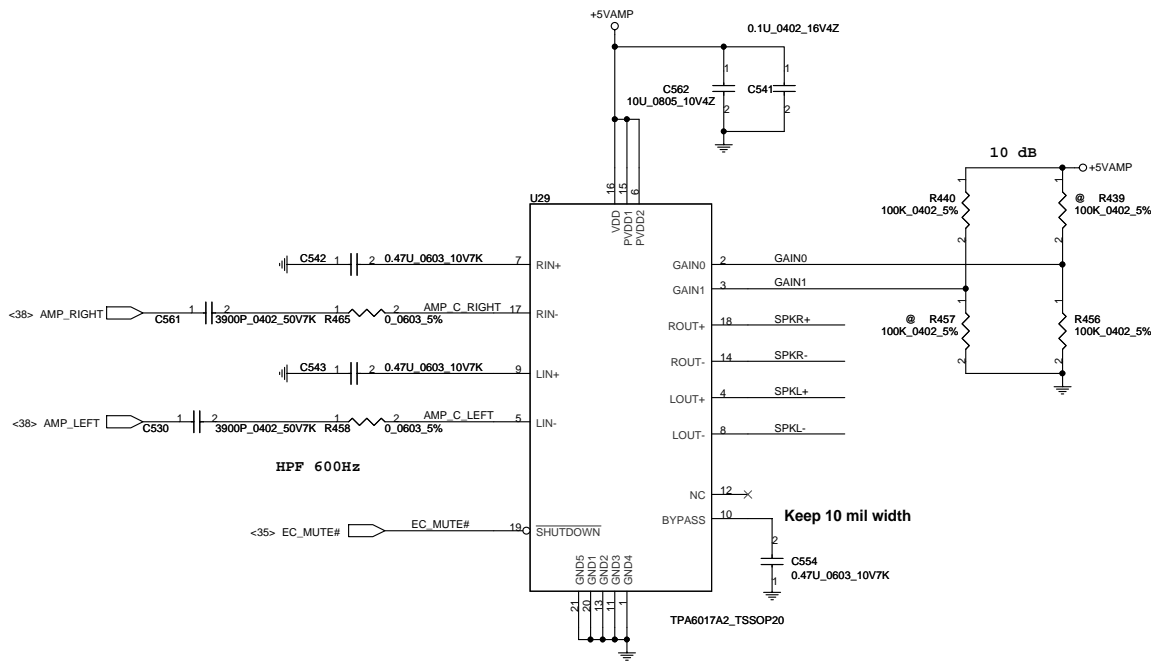


(output = 300 mA)



Sense Pin	Impedance	Codec Signals
SENSE A	39.2K	PORT-B (PIN 21, 22)
	20K	
	10K	
	5.1K	
SENSE B	39.2K	PORT-H (PIN 32,33)
	20K	
	10K	
	5.1K	

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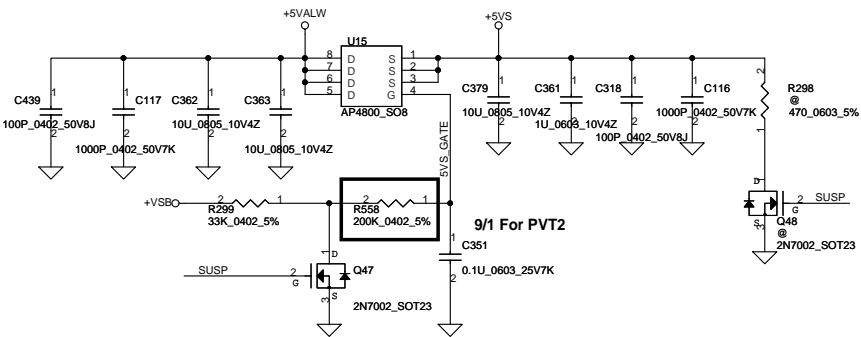
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LINE Out/Headphone Out

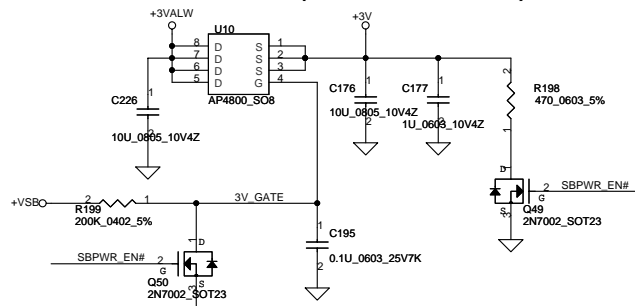
Int. Speaker Conn.

Change D24,D28 from RB751 to CH751

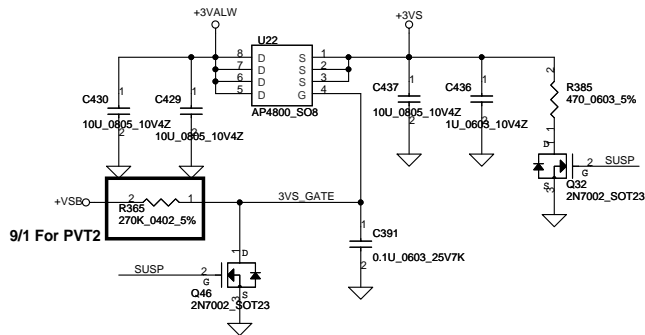
+5VALW TO +5VS



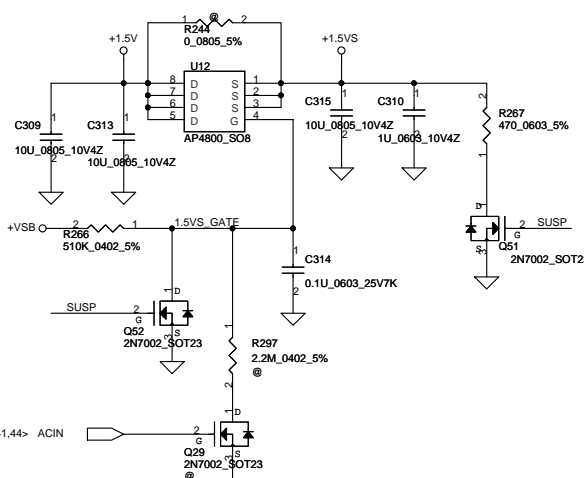
+3VALW TO +3V_SB(ICH8M AUX Power)



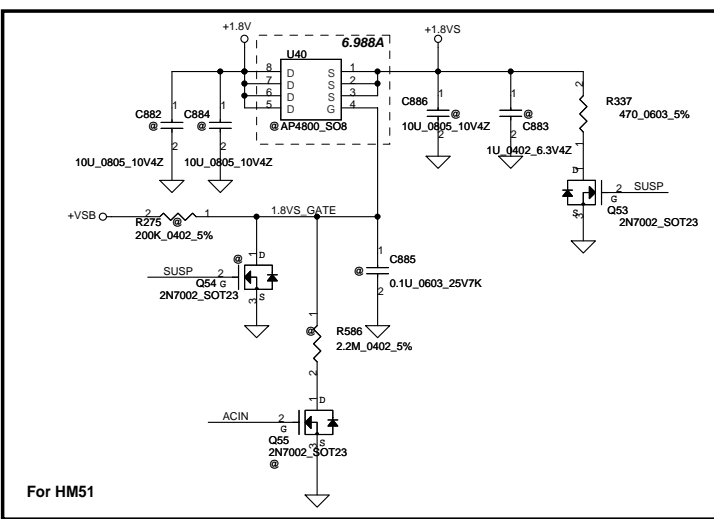
+3VALW TO +3VS



+1.5V to +1.5VS

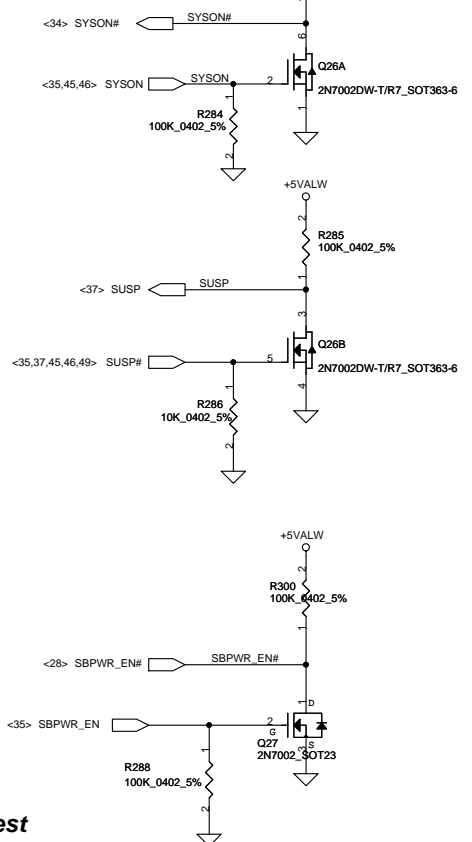


+1.8V to +1.8VS

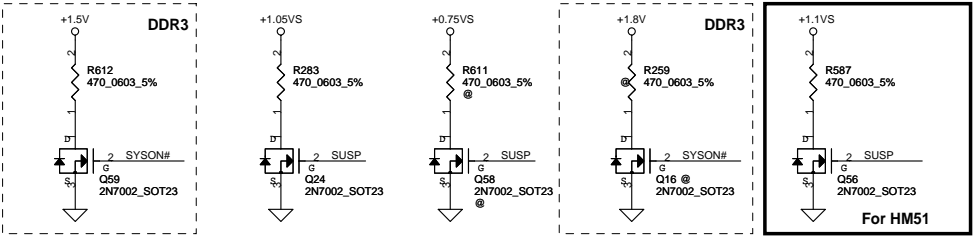
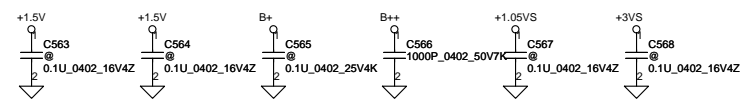


For HM51

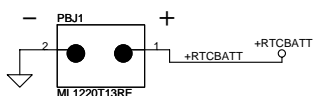
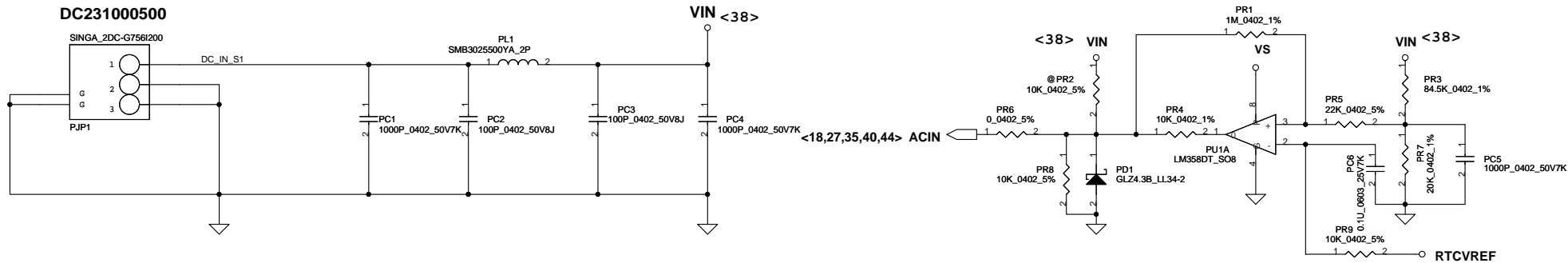
Pre-MP 9/17



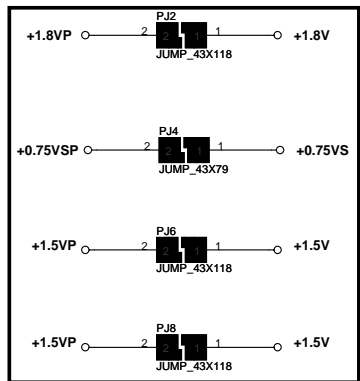
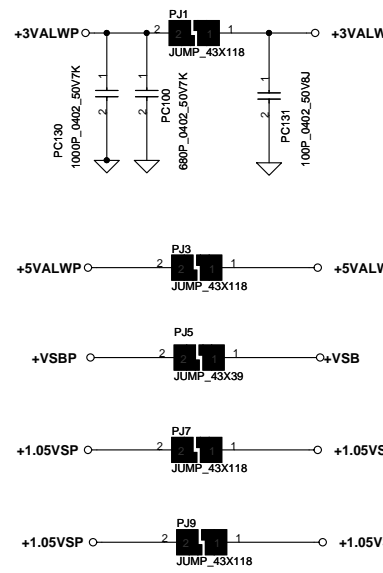
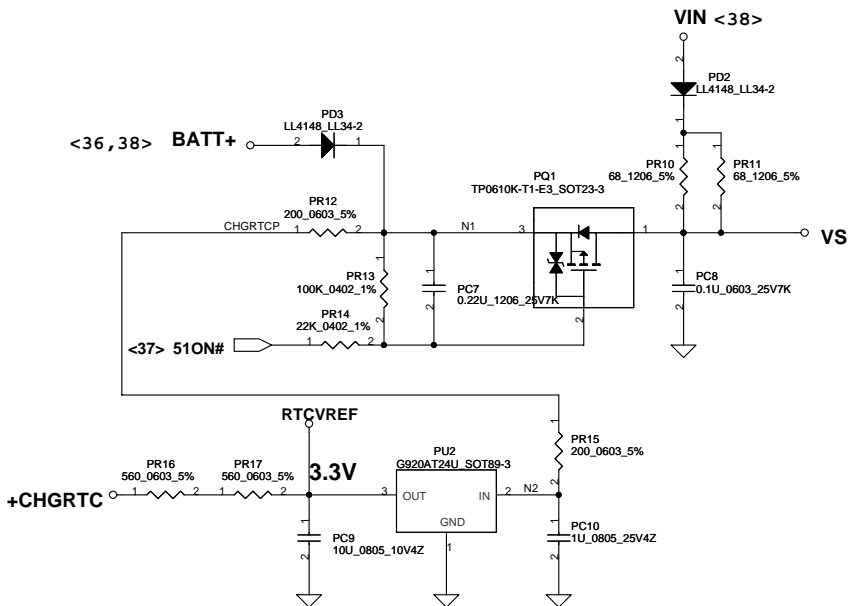
Reserve for EMI request



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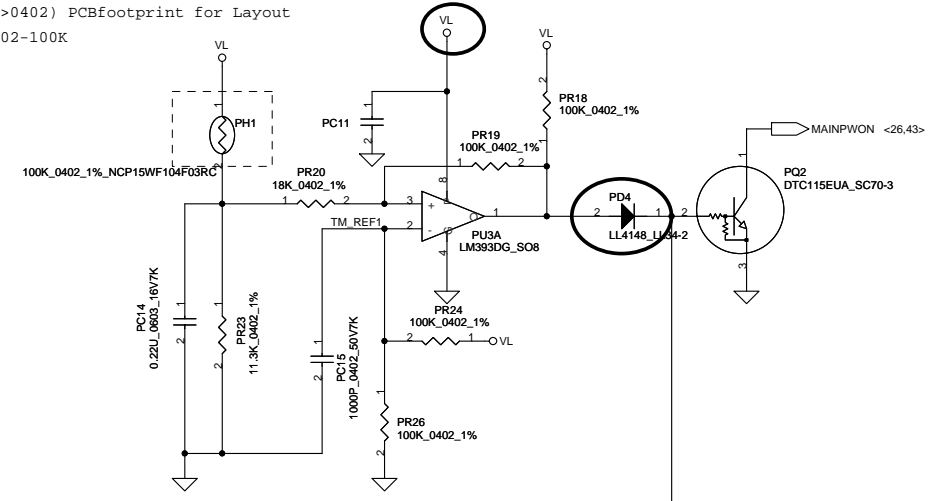
Vin Dectector			
	Min.	Typ	Max.
H-->L	16.976V	17.525V	17.728V
L-->H	17.430V	17.901V	18.384V



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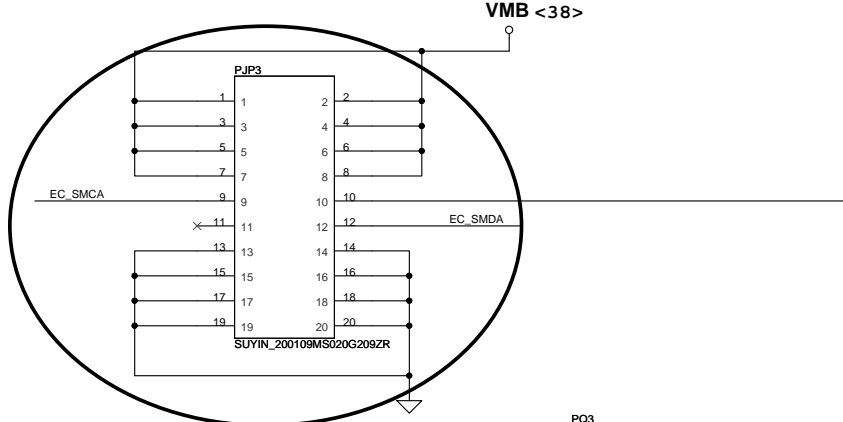
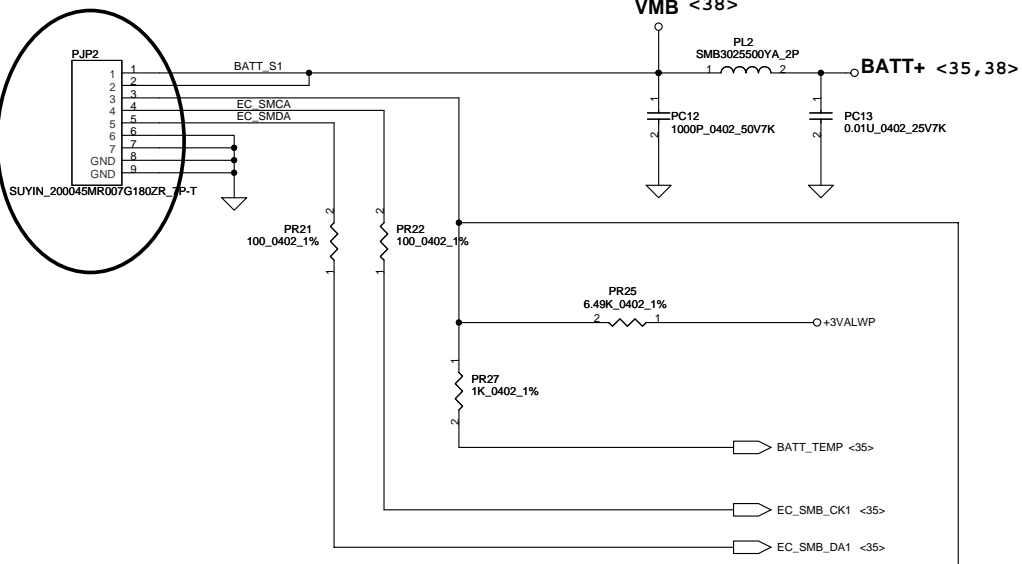
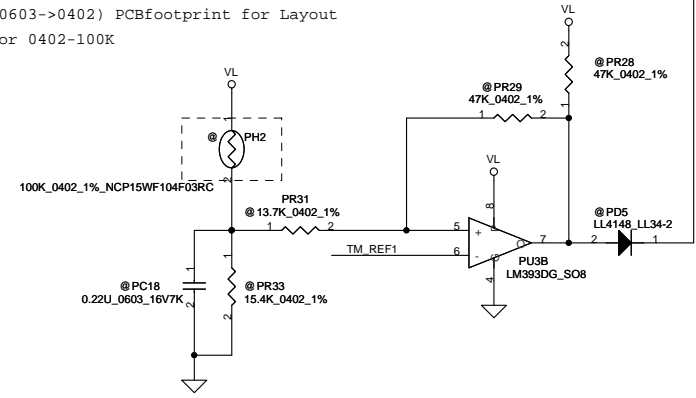
PH1 under CPU botten side :
 CPU thermal protection at 90 degree C
 Recovery at 70 degree C

2009_08_06 (0603->0402) PCBfootprint for Layout
 Change P/N for 0402-100K

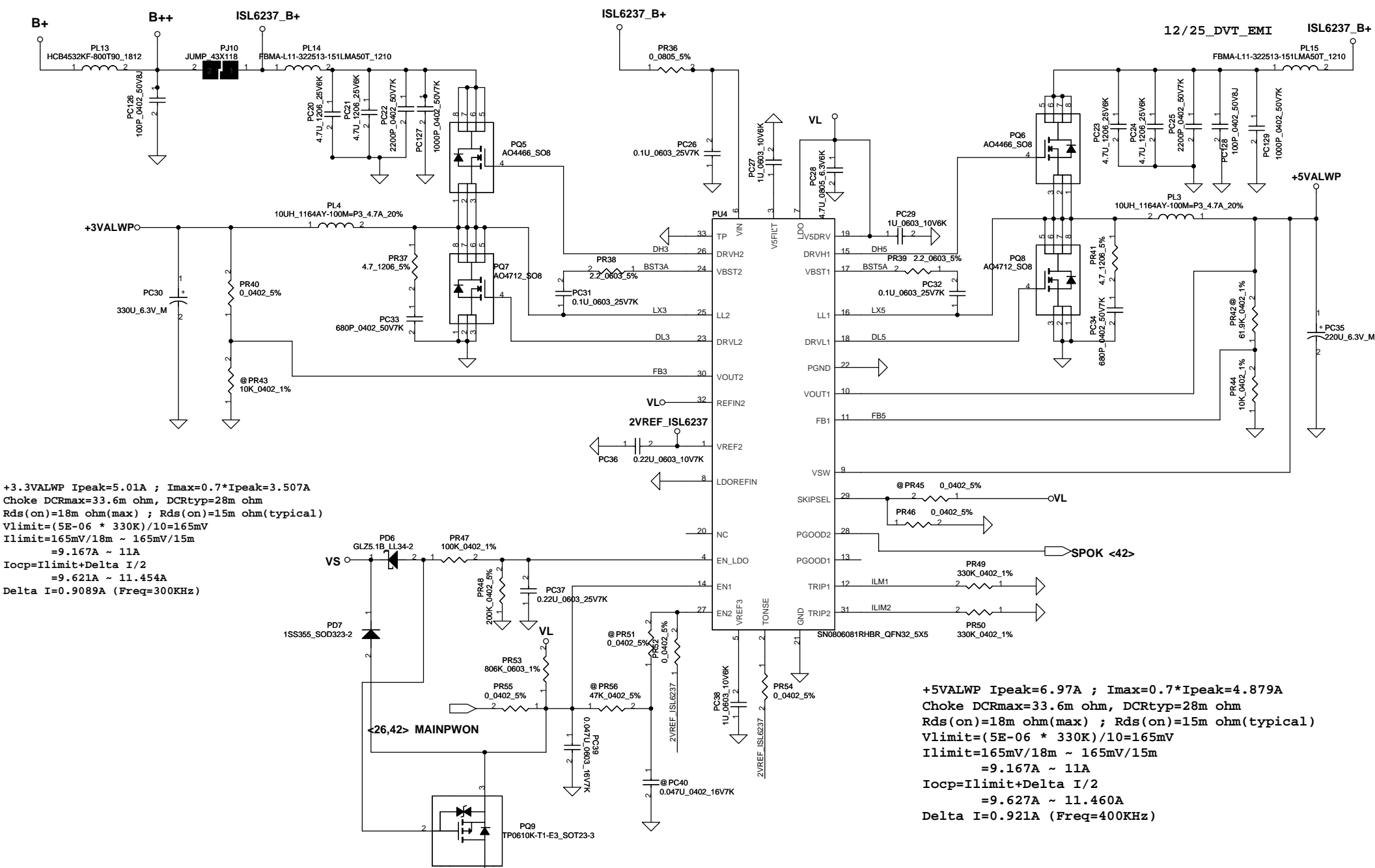


PH2 near main Battery CONN :
 BAT. thermal protection at 90 degree C
 Recovery at 70 degree C

2009_08_06 (0603->0402) PCBfootprint for Layout
 Change P/N for 0402-100K



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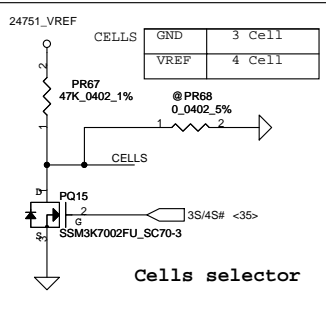
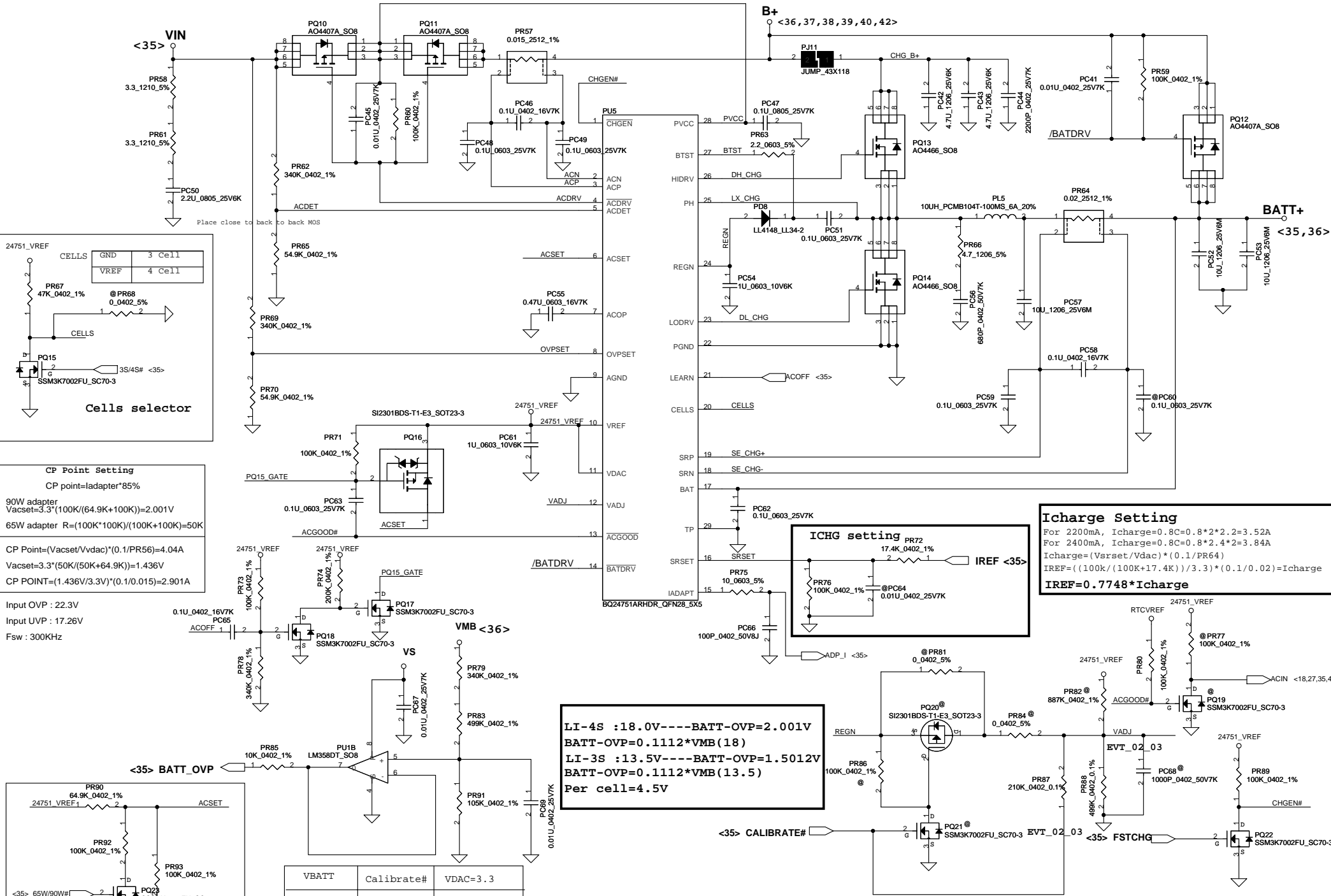


+3.3VALWP Ipeak=5.01A ; Imax=0.7*Ipeak=3.507A
 Choke DCRmax=33.6m ohm, DCRtyp=28m ohm
 Rds(on)=18m ohm(max) ; Rds(on)=15m ohm(typical)
 Vlimit=(5E-06 * 330K)/10=165mV
 Ilimit=165mV/18m ~ 165mV/15m
 =9.167A ~ 11A
 Iocp=Ilimit+Delta I/2
 =9.621A ~ 11.454A
 Delta I=0.9089A (Freq=300KHz)

+5VALWP Ipeak=6.97A ; Imax=0.7*Ipeak=4.879A
 Choke DCRmax=33.6m ohm, DCRtyp=28m ohm
 Rds(on)=18m ohm(max) ; Rds(on)=15m ohm(typical)
 Vlimit=(5E-06 * 330K)/10=165mV
 Ilimit=165mV/18m ~ 165mV/15m
 =9.167A ~ 11A
 Iocp=Ilimit+Delta I/2
 =9.627A ~ 11.460A
 Delta I=0.921A (Freq=400KHz)

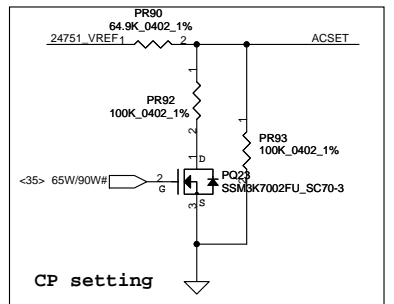
<26,42> MAINPWON

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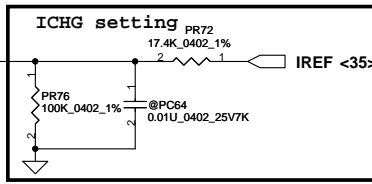
CP Point Setting
 CP point=ladapter*85%
 90W adapter
 $V_{acset}=3.3 \cdot (100K/(64.9K+100K))=2.001V$
 65W adapter $R=(100K \cdot 100K)/(100K+100K)=50K$
 $CP\ Point=(V_{acset}/V_{dca}) \cdot (0.1/PR56)=4.04A$
 $V_{acset}=3.3 \cdot (50K/(50K+64.9K))=1.436V$
 $CP\ POINT=(1.436V/3.3V) \cdot (0.1/0.015)=2.901A$

Input OVP : 22.3V
 Input UVP : 17.26V
 Fsw : 300KHz



VBATT	Calibrate#	VDAC=3.3
4.0V	L=0	
4.2V	1.8755V	
4.3V	2.8132V	
4.35V	H=3.3	

LI-4S : 18.0V---BATT-OVP=2.001V
BATT-OVP=0.1112*VMB(18)
LI-3S : 13.5V---BATT-OVP=1.5012V
BATT-OVP=0.1112*VMB(13.5)
Per cell=4.5V



Icharge Setting
 For 2200mA, $I_{charge}=0.8C=0.8 \cdot 2 \cdot 2=3.52A$
 For 2400mA, $I_{charge}=0.8C=0.8 \cdot 2 \cdot 4=3.84A$
 $I_{charge}=(V_{srset}/V_{dca}) \cdot (0.1/PR64)$
 $IREF=((100k/(100k+17.4k))/3.3) \cdot (0.1/0.02)=I_{charge}$
IREF=0.7748*Icharge

<35> CALIBRATE#

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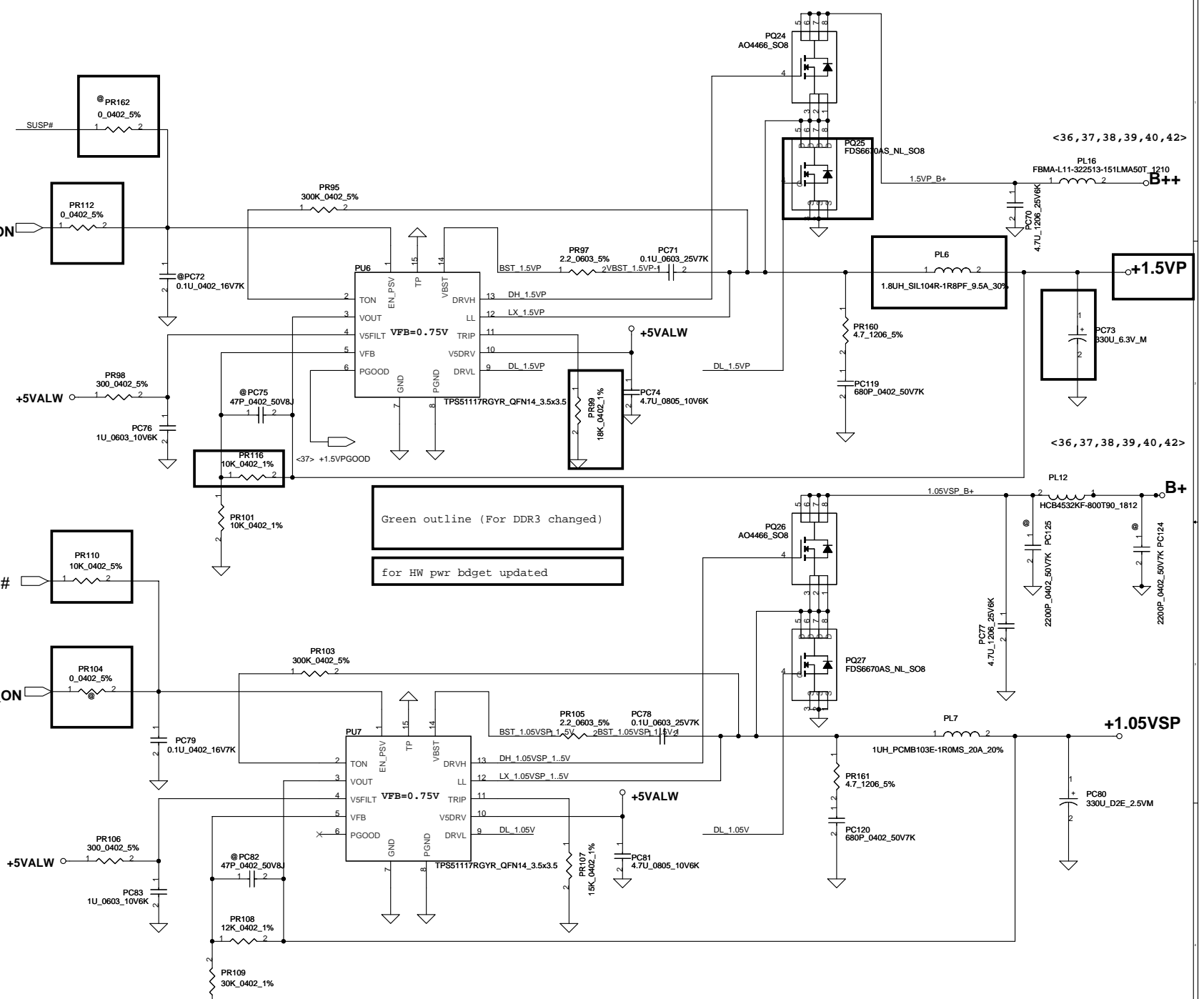
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$V_{FB}=0.75V$
 $V_o=V_{FB}*(1+PR116/PR117)=0.75*(1+10K/10K)=1.5V$
 $Ton=19*e^{-12*143000}(((2/3)*V_o+100mV)/19)+50ns$
 $=2.645e-7 us$
 $=>V_o/V_{in}=D=Ton/Ts =>Ts=3.35us$
 $Fsw=262KHz$

$<V_o=1.5V> V_{FB}=0.75V$
 $V_o=V_{FB}*(1+PR116/PR117)=0.75*(1+10K/10K)=1.5V$
 $Fsw=262KHz$ Cout ESR=15m ohm R_{dson}(max)=9m
 $R_{dson}(min)=11.5m$
 $I_{peak}=11.3A, 1.2I_{peak}=13.56A, I_{max}=7.91A$
 $\Delta I=((19-1.5)*(1.5/19))/(L*Fsw)=2.3969A$
 $=>1/2\Delta I=1.198A$
 $V_{trip}=R_{trip}*10uA=18K*10uA=0.18V$
 $I_{ocpmin}=V_{trip}/R_{dsonmax}*1.2+1.198$
 $=0.075/(0.018*1.3)+1.198=13.98A$
 $I_{ocpmax}=(0.075/(0.015*1.1))+1.198A=22.64A$
 $I_{ocp}=13.98\sim 22.64A$

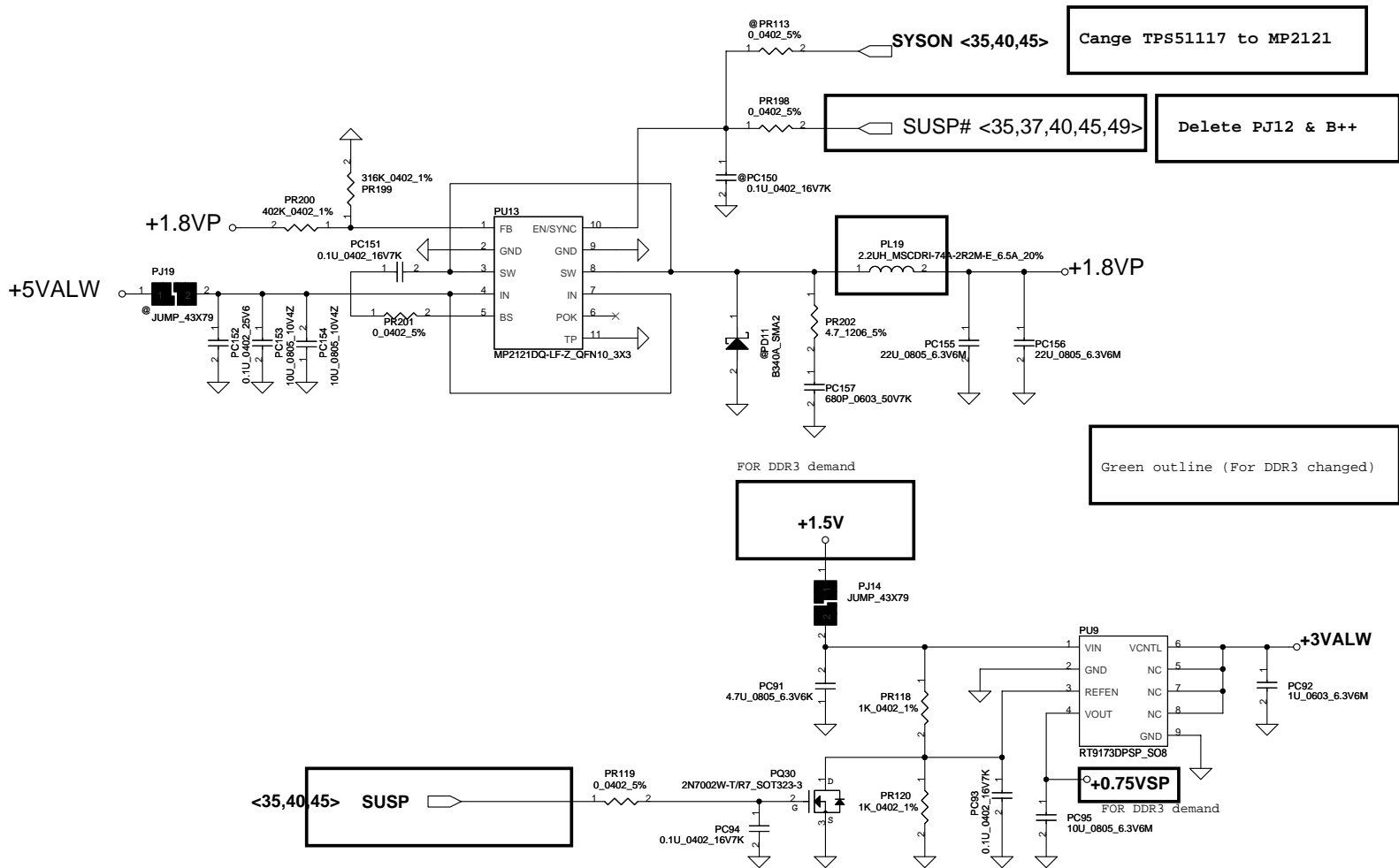
$V_{FB}=0.75V$
 $V_o=V_{FB}*(1+PR108/PR109)=0.75*(1+12K/30K)=1.05V$
 $Ton=19*e^{-12*143000}(((2/3)*V_o+100mV)/19)+50ns$
 $=2.645e-7 us$
 $=>V_o/V_{in}=D=Ton/Ts =>Ts=3.35us$
 $Fsw=261KHz$ (by calculation tool)

$<V_o=1.05V> V_{FB}=0.75V$
 $V_o=V_{FB}*(1+PR108/PR109)=0.75*(1+12K/30K)=1.05V$
 $Fsw=261KHz$ Cout ESR=15m ohm
 $R_{dson}(max)=11.5m R_{dson}(min)=9m$
 $I_{peak}=9A, I_{max}=I_{peak}*0.7=6.3A$
 $\Delta I=((19-1.05)*(1.05/19))/(L*Fsw)=2.11A$
 $=>1/2\Delta I=1.055A$
 $V_{trip}=R_{trip}*10uA=15K*10uA=0.15V$
 $I_{ocpmin}=V_{trip}/R_{dsonmax}*1.3+1.055$
 $=0.15/(0.011*1.3)+1.055=11.0892A$
 $I_{ocpmax}=(0.15/(0.009*1.1))+1.055A=16.2073A$
 $I_{ocp}=11.0892A\sim 16.2073A$

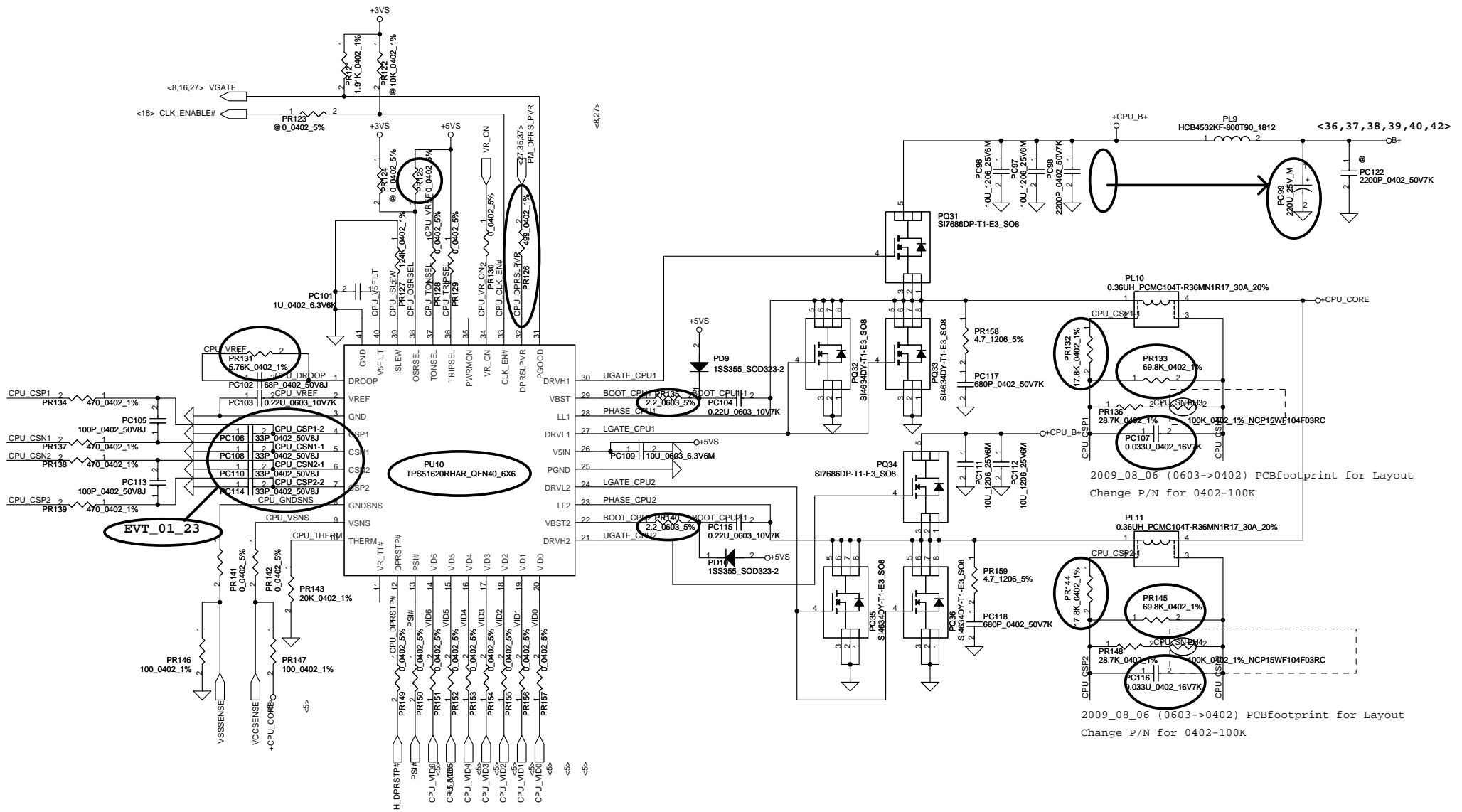


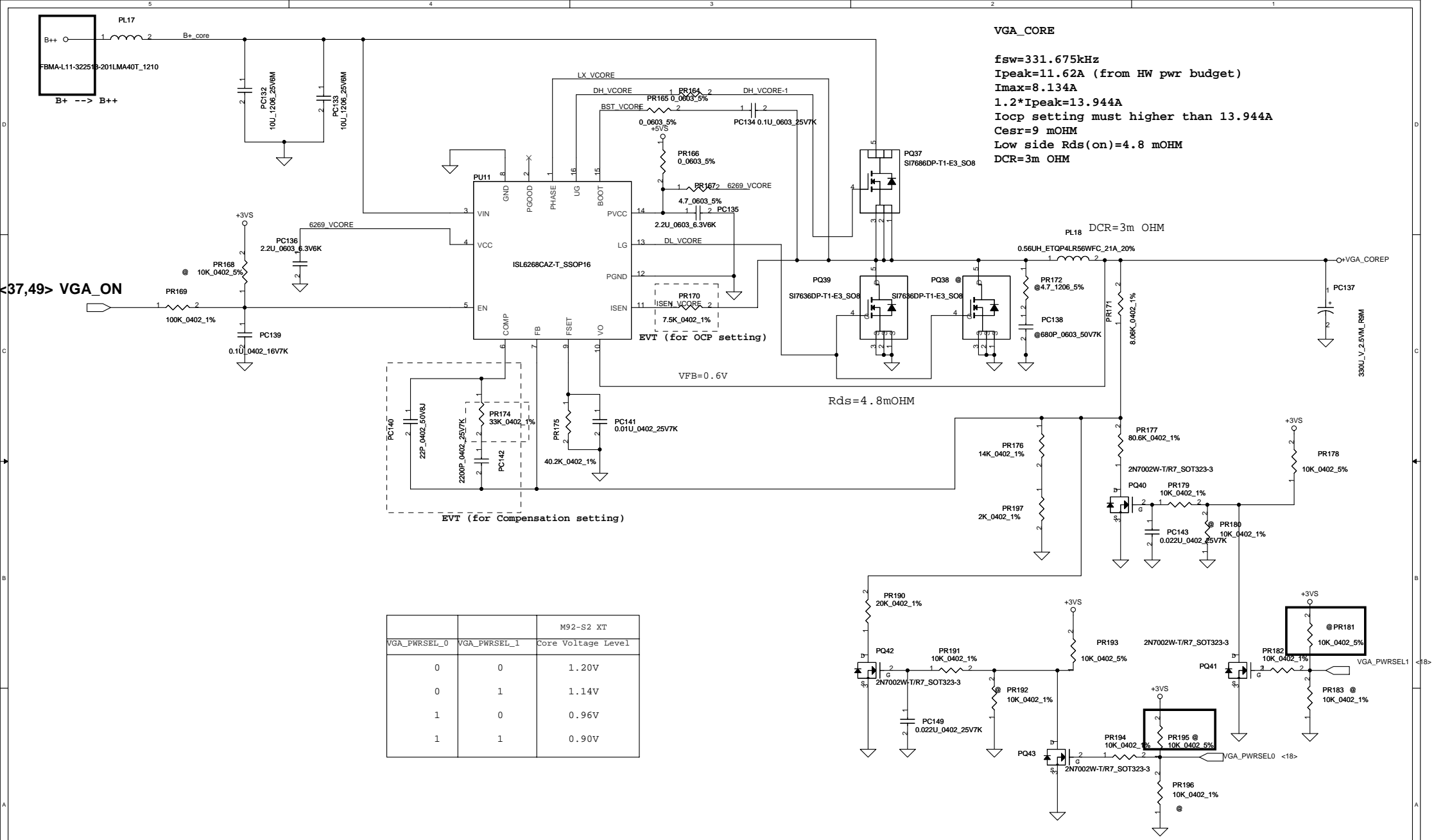
Green outline (For DDR3 changed)
 for HW pwr bdget updated

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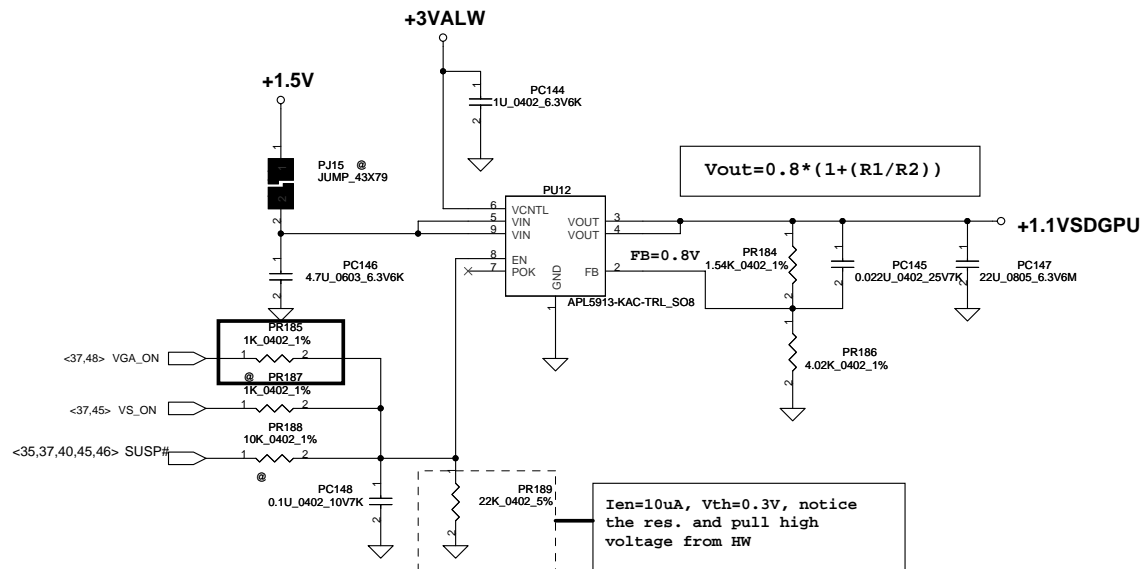


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Version change list (P.I.R. List)

Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
1		Add PC57 :10U_1206_25V_6M	0.1	38	Add PC57 :10U_1206_25V_6M	20080902	EVT
2		Add snubber for EMI	0.1	42	Add snubber for EMI	20080915	EVT
3		Shift PC99 from +cpu_B+ to B+	0.1	42	Shift PC99 from +cpu_B+ to B+	20080915	EVT
4		Add PJ15 to B+	0.1	39	Add PJ15 to B+	20080915	EVT
5		PR135 and PR140 change to 0_0603_5%	0.1	42	PR135 and PR140 change to 0_0603_5%	20080915	EVT
6	Charger feedback trace too long	ADD PC49	0.2	38	ADD PC49	20081124	DVT
7	Power sequence error	+1.5VP: enable pin change from SUSP# to SYSON +0.9VSP: enable pin change from SUSP# to SUSP	0.2	40	+1.5VP: enable pin change from SUSP# to SYSON +0.9VSP: enable pin change from SUSP# to SUSP	20081124	DVT
8	Load line over spec	PR131: change to 5.76K_0402_1%	0.2	42	PR131: change to 5.76K_0402_1%	20081124	DVT
9	3D hang	Charger PR63:change to 2.2_0603_5% PR66:Add 4.7_1206_5% PC56:Add 680P_0402_50V7K	0.2	38	Charger PR63:change to 2.2_0603_5% PR66:Add 4.7_1206_5% PC56:Add 680P_0402_50V7K	20081124	DVT
10	3D hang	+1.8VP PR97:change to 2.2_0603_5% PR160:Add 4.7_1206_5% PC119:Add 680P_0402_50V7K	0.2	39	+1.8VP PR97:change to 2.2_0603_5% PR160:Add 4.7_1206_5% PC119:Add 680P_0402_50V7K	20081124	DVT
11	3D hang	+1.05VSP PR105:change to 2.2_0603_5% PR161:Add 4.7_1206_5% PC120:Add 680P_0402_50V7K Add bead between B+ and 1.05VSP_B+	0.2	39	+1.05VSP PR105:change to 2.2_0603_5% PR161:Add 4.7_1206_5% PC120:Add 680P_0402_50V7K Add bead between B+ and 1.05VSP_B+	20081124	DVT
12	EMI solution	+5VALW/+3VALW PR37: Add 4.7_1206_5% PR41: Add 4.7_1206_5% PC33: Add 680P_0402_50V7K PC34: Add 680P_0402_50V7K PR38: change to 2.2_0603_5% PR39: change to 2.2_0603_5%	0.2	37	+5VALW/+3VALW PR37: Add 4.7_1206_5% PR41: Add 4.7_1206_5% PC33: Add 680P_0402_50V7K PC34: Add 680P_0402_50V7K PR38: change to 2.2_0603_5% PR39: change to 2.2_0603_5%	20081124	DVT
13	EMI solution	+CPU CORE PR158: Add 4.7_1206_5% PR159: Add 4.7_1206_5% PC117: Add 680P_0402_50V7K PC118: Add 680P_0402_50V7K PR135: change to 2.2_0603_5% PR140: change to 2.2_0603_5%	0.2	42	+CPU CORE PR158: Add 4.7_1206_5% PR159: Add 4.7_1206_5% PC117: Add 680P_0402_50V7K PC118: Add 680P_0402_50V7K PR135: change to 2.2_0603_5% PR140: change to 2.2_0603_5%	20081124	DVT
16	EMI solution	+CPU CORE PC122: Reserve 2200P_0402_50V7K on B+	0.2	42	+CPU CORE PC122: Reserve 2200P_0402_50V7K on B+	20081124	DVT
17	EMI solution	+1.05VSP PR105 : change to 2.2_0603_5% PL12 : Add HCB4532KF-800T90_1812 PC124: Reserve 2200P_0402_50V7K on B+ PC125: Reserve 2200P_0402_50V7K on B+	0.2	39	+1.05VSP PR105 : change to 2.2_0603_5% PL12 : Add HCB4532KF-800T90_1812 PC124: Reserve 2200P_0402_50V7K on B+ PC125: Reserve 2200P_0402_50V7K on B+	20081124	DVT

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Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
18	Battery & HW solution	Charger PQ20:Reserve(@)SI2301BDS-T1-E3_SOT23-3 PQ21:Reserve(@)SSM3K7002FU_SC70-3 PR82:Reserve(@)887K_0402_1% PR84:Reserve(@)0_0402_5% PC68:Reserve(@)1000P_0402_50V7K PR87:change to 210K_0402_1% PR88:change to 499K_0402_1% +1.05VSP PR104: Reserve(@)0_0402_5% PR110: change to 10K_0402_5% PR79 : Add 0.1U_0402_16V7K +1.5VP PR112: Reserve(@) 0_0402_5%	0.2	38 39 40	Charger PQ20:Reserve(@)SI2301BDS-T1-E3_SOT23-3 PQ21:Reserve(@)SSM3K7002FU_SC70-3 PR82:Reserve(@)887K_0402_1% PR84:Reserve(@)0_0402_5% PC68:Reserve(@)1000P_0402_50V7K PR87:change to 210K_0402_1% PR88:change to 499K_0402_1% +1.05VSP PR104: Reserve(@)0_0402_5% PR110: change to 10K_0402_5% PR79 : Add 0.1U_0402_16V7K +1.5VP PR112: Reserve(@) 0_0402_5%	20081124	DVT
19	EMI soultion	+3VALWP/+3VALW PC100: 680P_0402_50V7K PC130: 1000P_0402_50V_7K PC131: 1000P_0402_50V_8J +1.5VP ADD PR113: 2.2_0603_5% ADD PR163: 4.7_1206_5% ADD PC121: 680P_0402_50V7K ADD PL16 :FBMA-L11-322513-151LMA50T_1210	0.3	35 40	+3VALWP/+3VALW PC100: 680P_0402_50V7K PC130: 1000P_0402_50V_7K PC131: 1000P_0402_50V_8J +1.5VP ADD PR113: 2.2_0603_5% ADD PR163: 4.7_1206_5% ADD PC121: 680P_0402_50V7K ADD PL16 :FBMA-L11-322513-151LMA50T_1210	20081224	PVT
20	POWER Solution	+3VALWP/+5VALWP RT8206- Fix output 5V for HW no HDMI	0.3	37	+3VALWP/+5VALWP PR42: Reserve 61.9K_0402_1%	20090111	PVT

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Item	Fixed Issue	Reason for change	Rev.	PG#	Modify List	Date	Phase
21	EMI solution	Reduce the Noise	0.3	37	Add PL 13 (HCB4532KF-800T90_1812) Add PL 14 (FBMA-L11-322513-151LMA50T_1210) Add PL 15 (FBMA-L11-322513-151LMA50T_1210) Add PC126 (100P_0402_50V8J) Add PC128 (100P_0402_50V8J) Add PC129 (1000P_0402_50V7K)	20090112	PVT
22	Battery solution	Adjust battery voltage	0.3	38	Reserve PR86 (100K_0402_1%)	20090112	PVT
23	Saturation current	1.8u choke saturation current too small	0.3	39	change PL7 to 1UH_PCMB103E-1R0MS_20A_20%	20090113	PVT
24	GP BOM	Tolerance: K:+-10% ; J:+-5%	0.4	42	Change PC106 to 33P_0402_50V8J Change PC108 to 33P_0402_50V8J Change PC110 to 33P_0402_50V8J Change PC114 to 33P_0402_50V8J	20090123	PVT

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8/21 For Change DDR3

1. P.40 Add R612, Q59 ; Unstuff R244 ; Remove R260, R253, Q13, Q14 ; stuff C309, C313, C315, C310, C314, R266, Q52, Q51, R267, U12 for +1.5V
2. P.40 Unstuff R611, Q58 for +0.75VS ; Add J3 for +1.8V ;
3. P.37 Unstuff R609, R610 ; Add R608, R606, R607, D33, U42, Q57 for DDR3
4. P.23 Unstuff R411, D20 ; Add R613 for BKOFF#
5. P.25 Unstuff U8, R83 ; Add R614 for PCI_RST#

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1. P.22 Unstuff R544, R545 for No HDMI Audio Function
2. P.40 Change R558 120K ohm as 200K ohm ; Change R200K ohm as 270K ohm

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1. P.40 Unstuff C882, C883, C884, C885, C886, R275, Q54, U40 for 1.8VS
2. P.31 Change C81, C82 27pF as 33pF for Xtal 25MHz(TXC suggest value)
3. P.26 Change C163, C164 18pF as 15pF for Xtal 32.768kHz (TXC suggest value)
4. P.37 Unstuff C407, C880, C881, R560, D30
5. P.41 Unstuff R580, U41
6. P.35 Change R273 8.2k ohm as 18k ohm for Board ID

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