

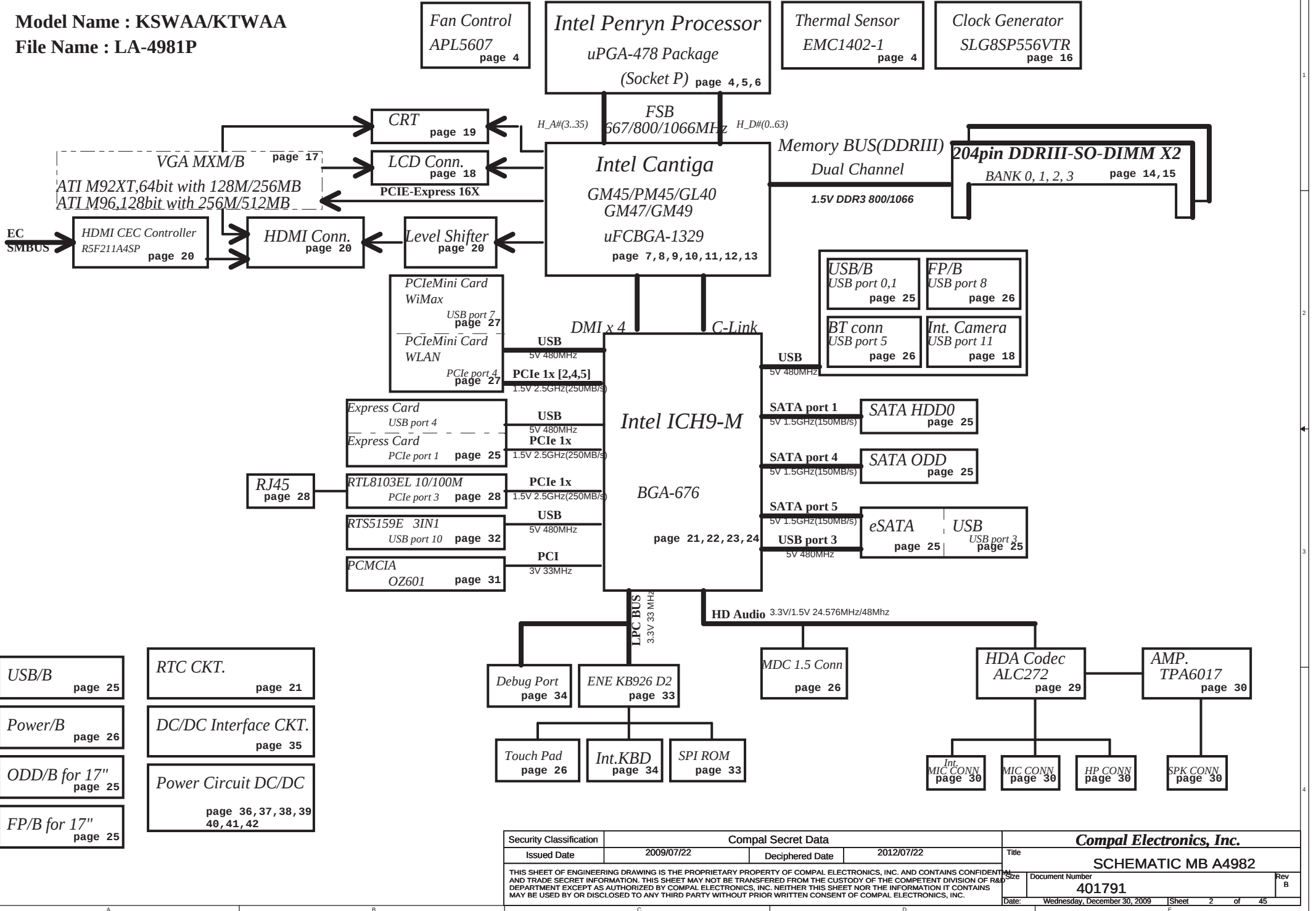
KSWAA/KTWAA
Liverpool 10M/10MG
Sunderland 10M/10MG
LA-4982P REV 1.0 Schematic

Intel Penryn/ Cantiga/ ICH9M
2009-07-27 Rev. 1.0

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Compal Confidential

Model Name : KSWAA/KTWAA
File Name : LA-4981P



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Voltage Rails

Power Plane	Description	S1	S3	S5	G3
VIN	Adapter power supply (19V)	ON	ON	ON	OFF
B+	AC or battery power rail for power circuit.	ON	ON	ON	ON
+CPU_CORE	Core voltage for CPU	ON	OFF	OFF	OFF
+0.75VS	0.75V switched power rail for DDR terminator	ON	OFF	OFF	OFF
+1.05VS	1.05V switched power rail	ON	OFF	OFF	OFF
+1.5VS	1.5V switched power rail	ON	OFF	OFF	OFF
+1.8V	1.8V power rail for DDR	ON	ON	OFF	OFF
+1.8VS	1.8V power rail for VRAM	ON	ON	OFF	OFF
+3VALW	3.3V always on power rail	ON	ON	ON	OFF
+3VL	3.3V always on power rail	ON	ON	ON	ON
+3V_SB	3.3V power rail for LAN	ON	ON	OFF	OFF
+3V_LAN	3.3V power rail for LAN	ON	ON	OFF	OFF
+3VS	3.3V switched power rail	ON	OFF	OFF	OFF
+3VS_HDP	3.3V power rail for G-sensor	ON	OFF	OFF	OFF
+5VALW	5V always on power rail	ON	ON	ON	OFF
+5VL	5V always on power rail	ON	ON	ON	ON
+5V_SB	5V power rail for SB	ON	ON	OFF	OFF
+5VS	5V switched power rail	ON	OFF	OFF	OFF
+VSB	VSB always on power rail	ON	ON	ON	OFF
+RTCVCC	RTC power	ON	ON	ON	ON

STATE \ SIGNAL	SLP_S1#	SLP_S3#	SLP_S4#	SLP_S5#		
Full ON	HIGH	HIGH	HIGH	HIGH		
S1(Power On Suspend)	LOW	HIGH	HIGH	HIGH		
S3(Suspend to RAM)	LOW	LOW	HIGH	HIGH		
S4(Suspend to Disk)	LOW	LOW	LOW	HIGH		
S5(Soft OFF)	LOW	LOW	LOW	LOW		
G3	LOW	LOW	LOW	LOW		

BTO Option Table

Function	Express Card/ PCMCIA		Bluetooth	RJ11	Camera	3D Sensor
description	(E)	(A)	(B)	(R)	(X)	(S)
explain	Express Card	PCMCIA	Bluetooth	MDC	Camera	3D Sensor
BTO	NEW@	PCM@	BT@	MDC@	CAM@	GSENSOR@

Function	HDMI				
description	(Y)				
explain	Intel(UMA)	ATI VGA/B		COMMON	
BTO	IHDMI@	NIHDMI@	HDMI@	H@	

External PCI Devices

DEVICE	PCI DEVICE ID	IDSEL#	REQ/GNT#	PIRQ
CARD BUS	D4	AD20	1	A/B

EC SM Bus1 address

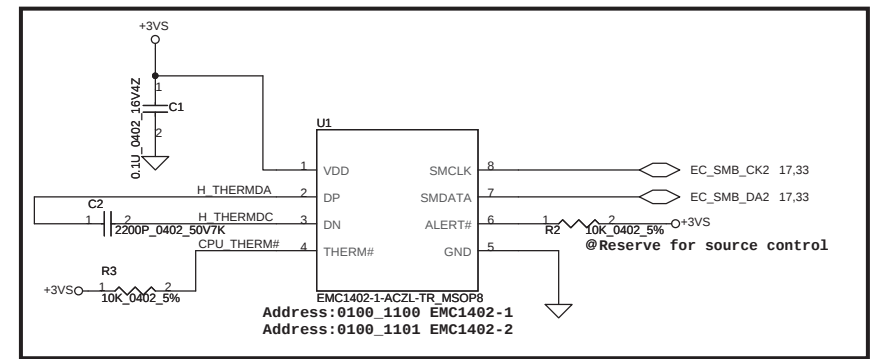
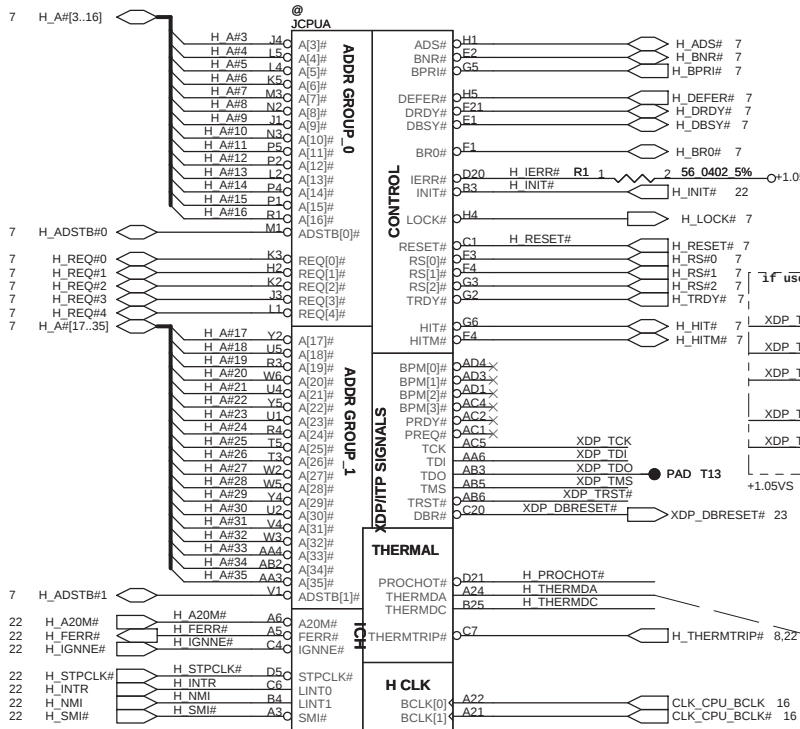
EC SM Bus2 address

Power	Device	Address	Power	Device	Address
+5VL	EC KB926 D2		+3VS	EC KB926 D2	
+5VL	Smart Battery	0001 011X b	+3VS	CPU THM Sen	1001 101Xb
+5VL	HDMI-CEC	0011 010x b	+3VS	SMSC SMC1402	1001 100Xb
			+3VS	VGA THM Sen	
				ADM1032ARMZ	
				VGA on die	1001 111Xb
				thermal sensor	(No used)

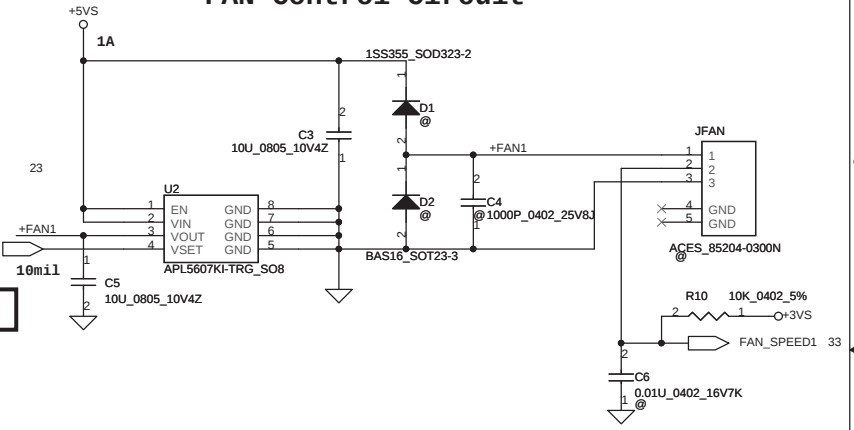
ICH9M SM Bus address

Power	Device	Address
+3V_SB	ICH9M	
+3VS	Clock Generator (SLG8SP556V)	1101 001Xb
+3VS	DDR DIMM0	1001 000Xb
+3VS	DDR DIMM1	1001 010Xb
+3VS	Express Card	

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FAN Control Circuit



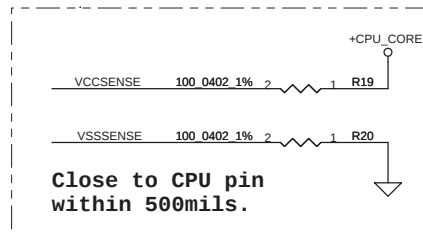
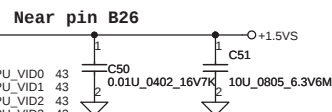
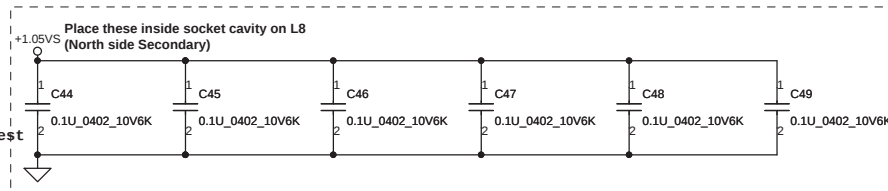
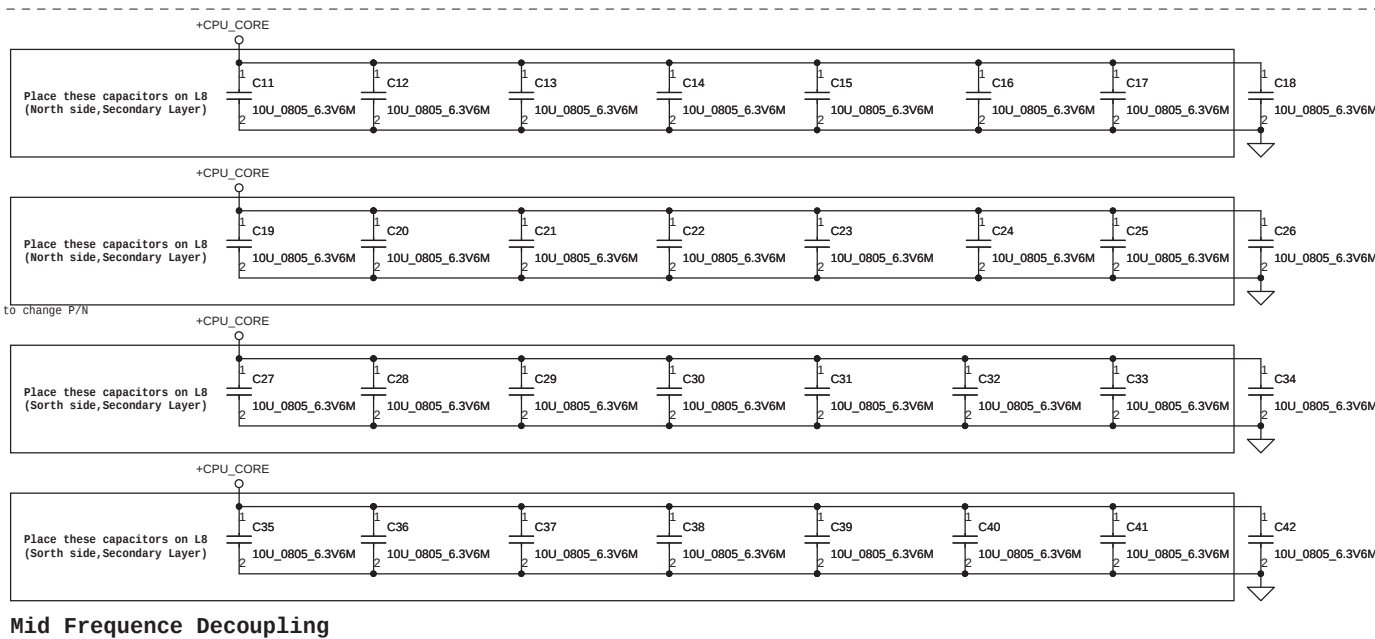
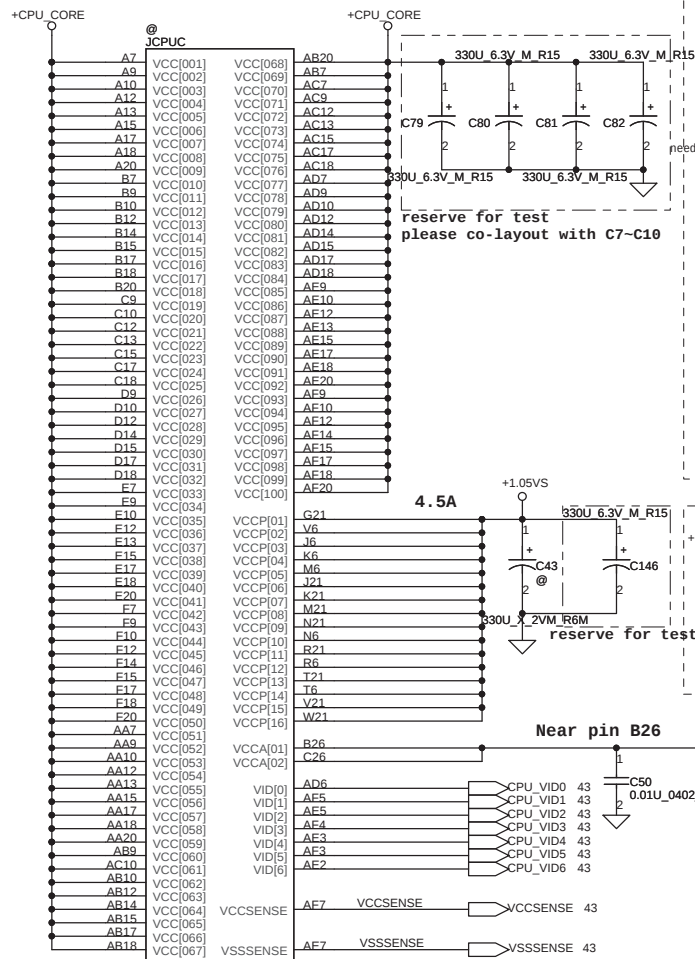
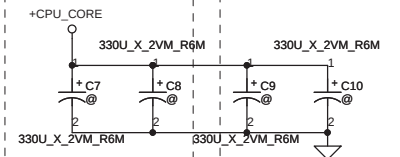
**H_THERMDA, H_THERMDC routing together,
Trace width / Spacing = 10 / 10 mil**

Reserve for debug
close to South
Bridge

Reserve for debug
close to CPU

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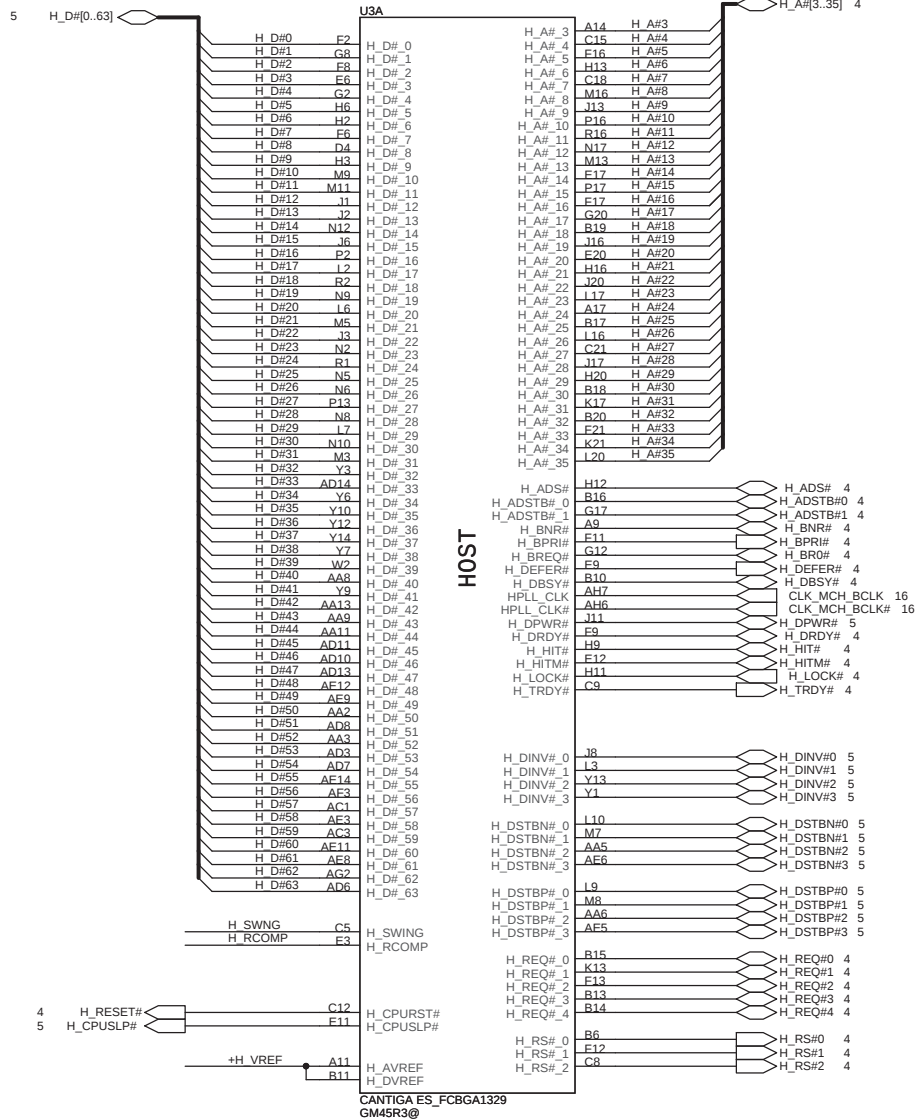
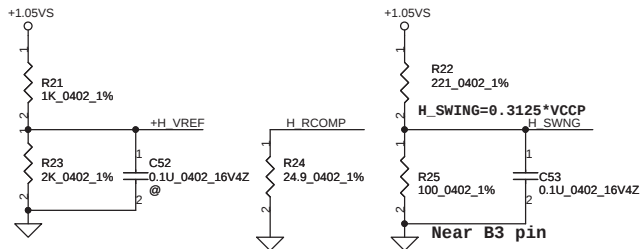
ESR <= 1.5m ohm
Capacitor > 1980uF



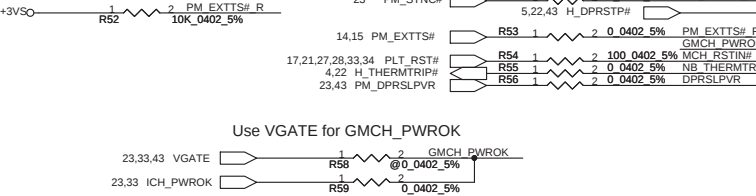
Length match within 25 mils.
The trace width/space/other is
14/7/25.

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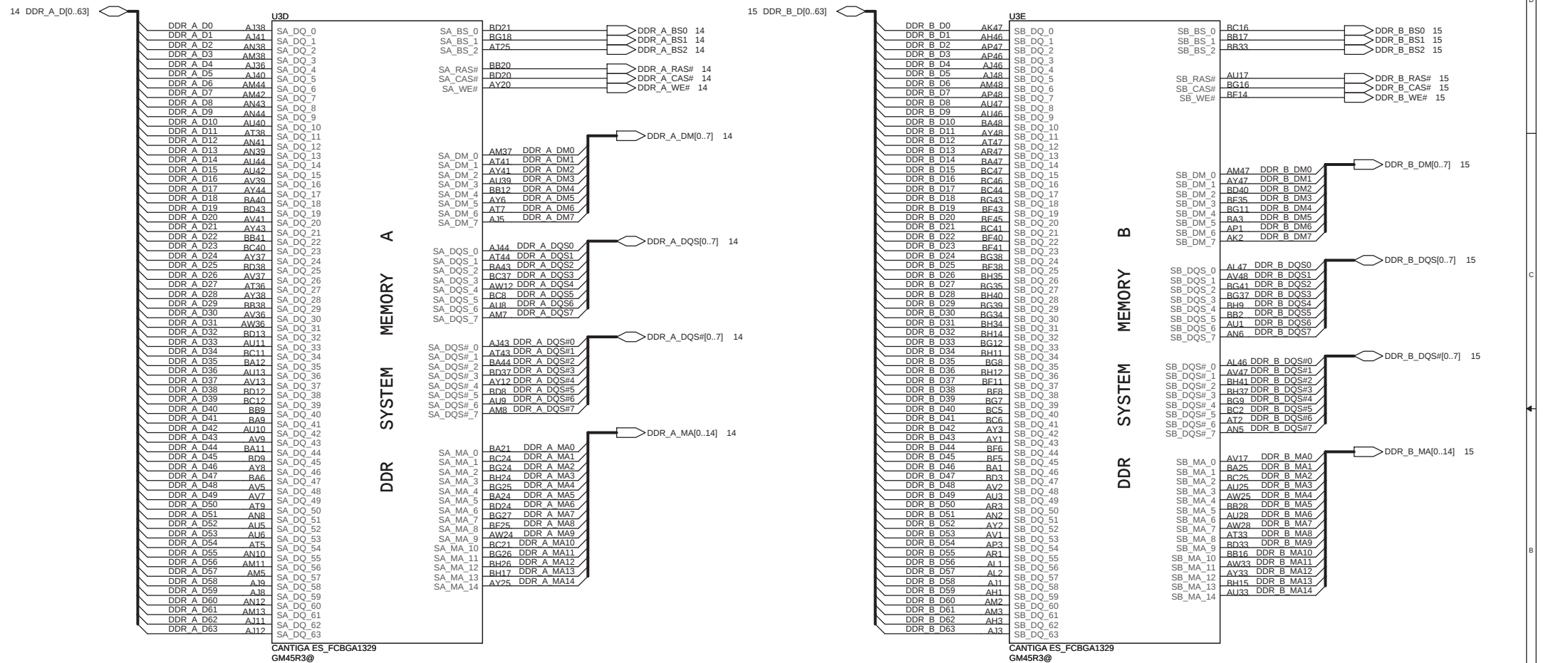
Layout Note:
H_RCOMP / +H_VREF / H_SWNG
trace width and spacing is 10/20
within 100 mils from NB



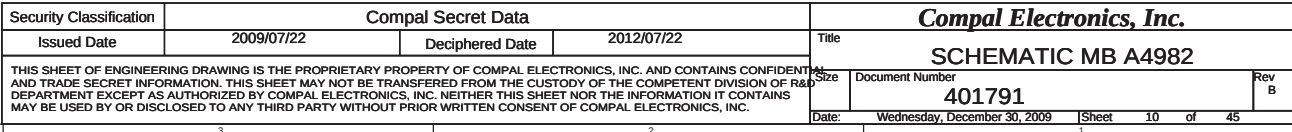
CFG[2:0]		011 = FSB667 010 = FSB800 000 = FSB1067
CFG5	Internal pull-up	0 = DMI x 2 1 = DMI x 4 *(Default)
CFG6	Internal pull-up	0 = ITPM Host Interface is Enabled can support disble by SW. 1 = ITPM Host Interface is Disabled *(Default)
CFG7	Internal pull-up	0 = Intel Management Engine Crypto Transport Layer Security (TLS) cipher suite with no confidentiality 1 = Intel Management Engine Crypto TLS cipher suite with confidentiality *(Default)
CFG9	Internal pull-up	0 = Lane Reversal Enable 1 = Normal Operation *(Default)
CFG10	Internal pull-up	0 = PCIe Loopback Enable 1 = Disable*(Default)
CFG[13:12]	Internal pull-up	01 = All Z Mode Enabled 00 = Reserved 10 = XOR Mode Enabled 11 = Normal Operation*(Default)
CFG16	Internal pull-up	0 = Dynamic ODT Disabled 1 = Dynamic ODT Enabled *(Default)
CFG19	Internal pull-down	0 = Normal Operation 1 = DMI Lane Reversal Enable *(Default)
CFG20	Internal pull-down (PCIE/SDVO select)	0 = Only PCIE or [SDVO/DP/HDMI] is operational. * (Default) 1 = PCIE/[SDVO/DP/HDMI] are operating simu.

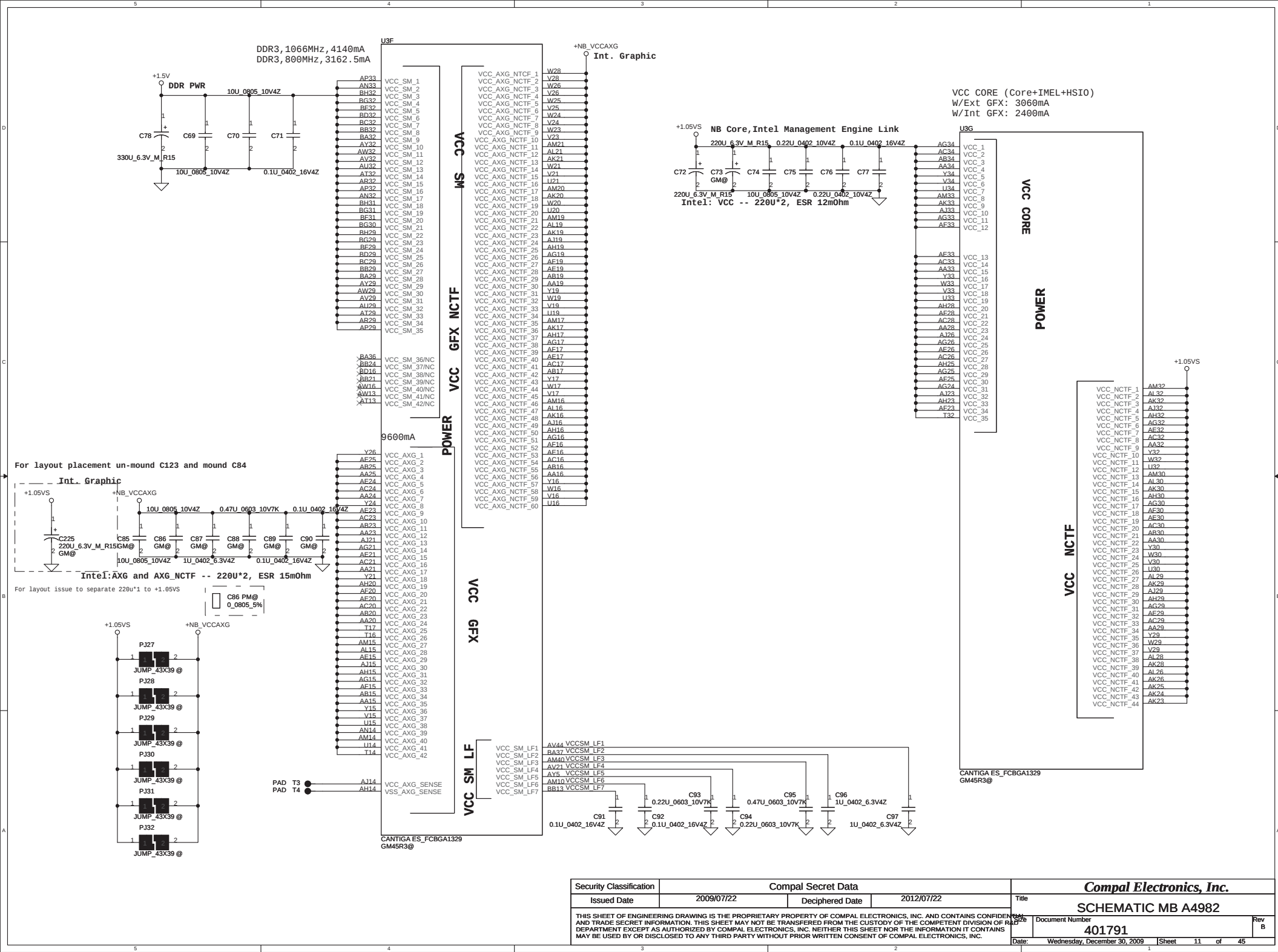


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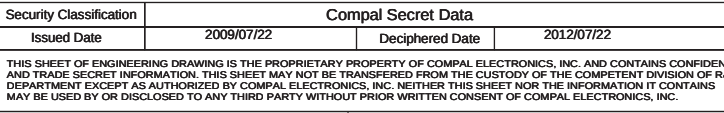


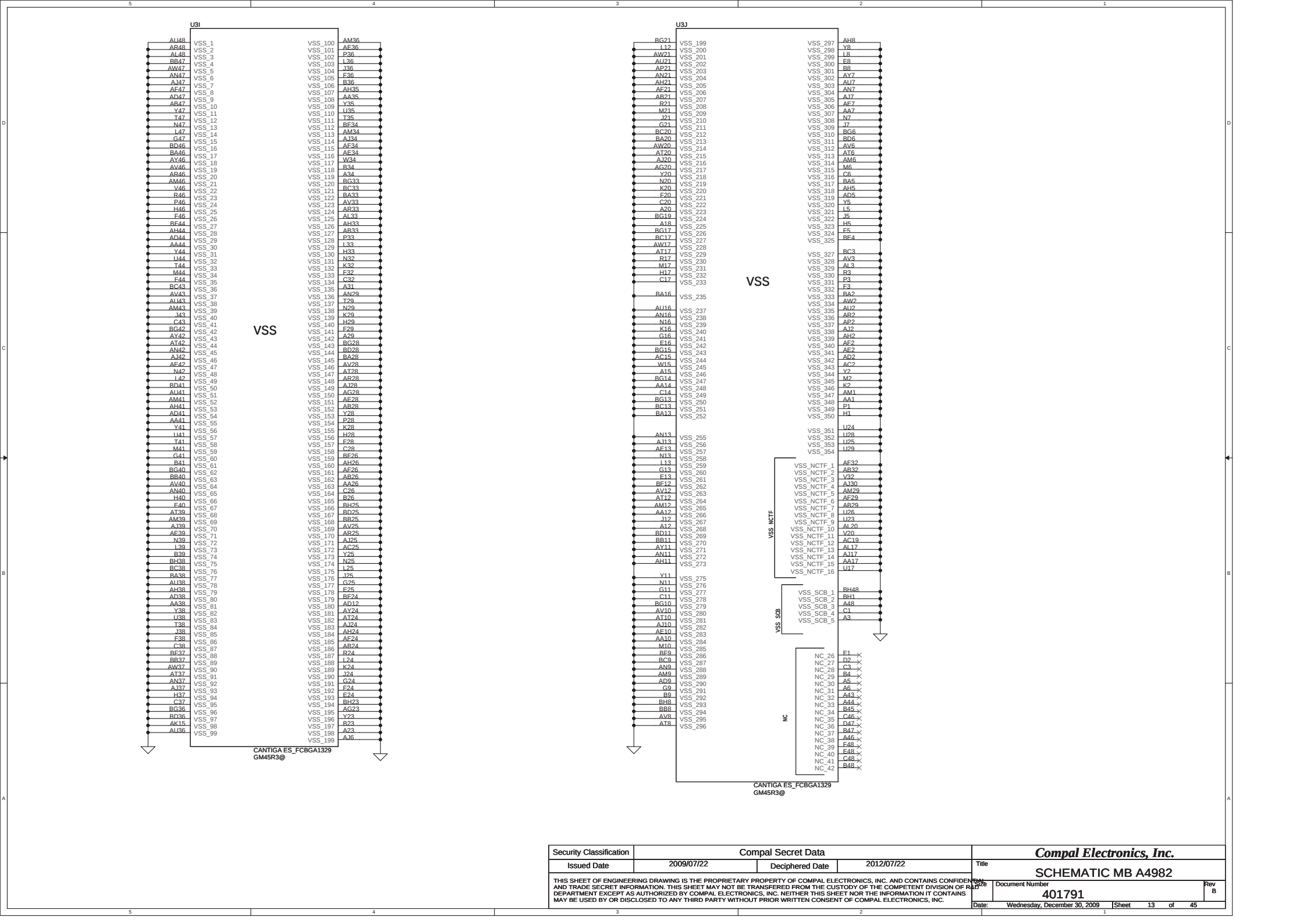
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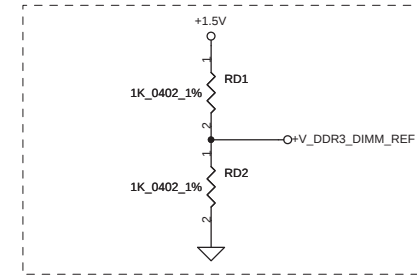
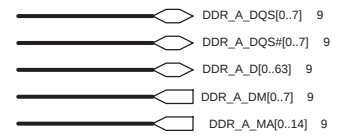
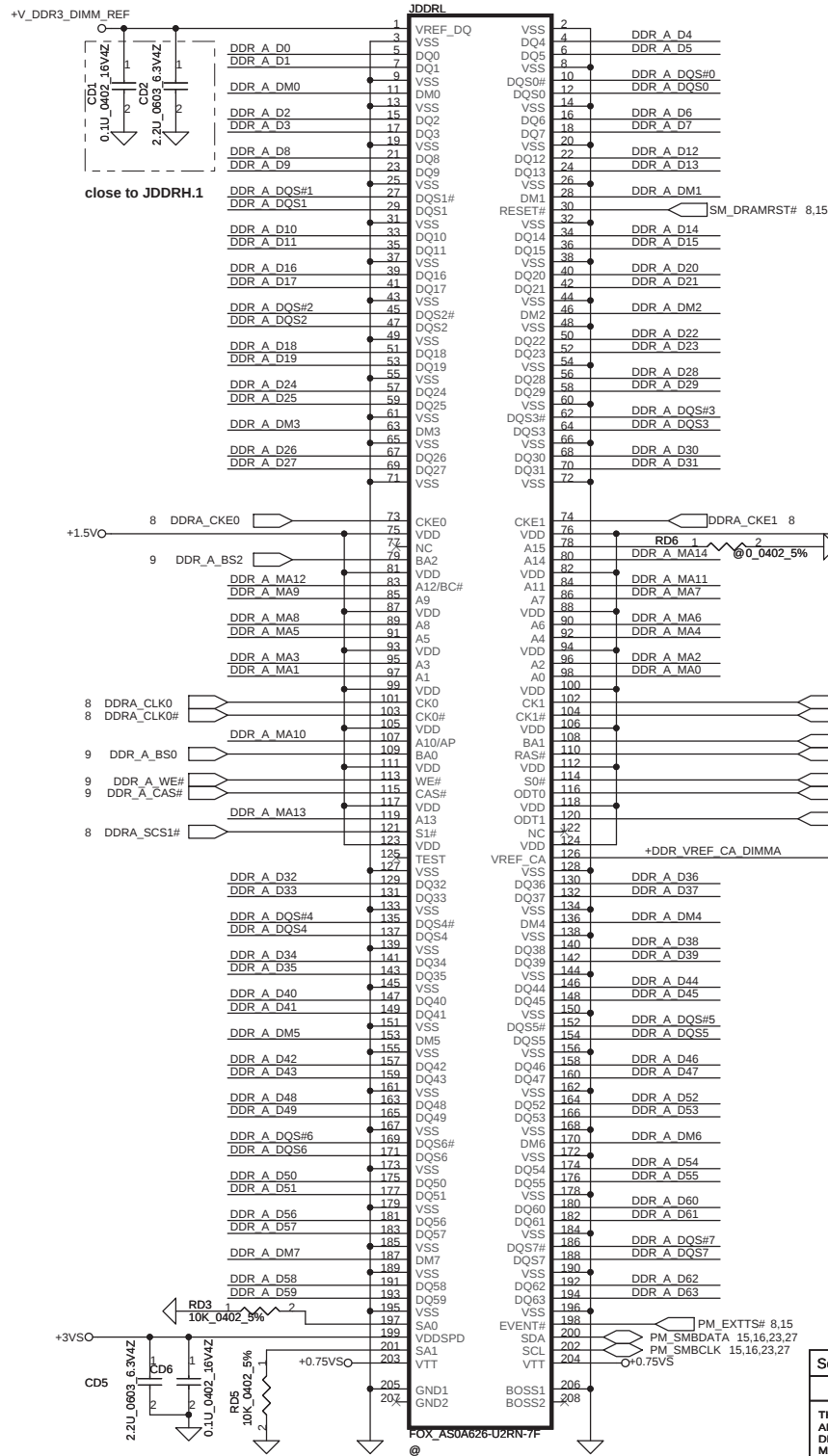


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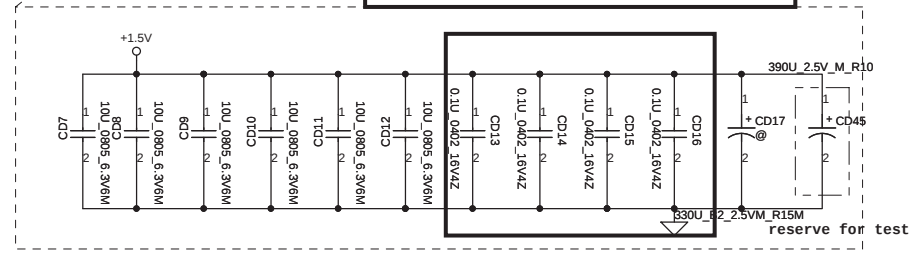


DDR3 SO-DIMM A REVERSE TYPE

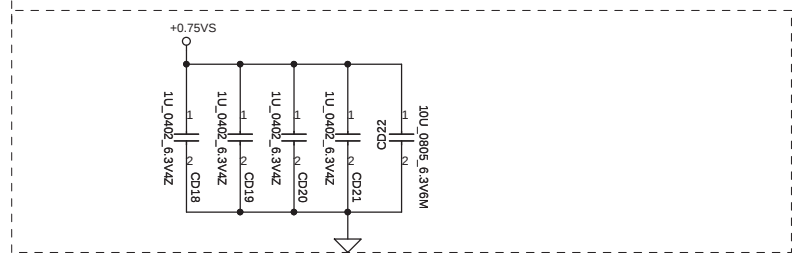


Layout Note:
Place near JDDRRL

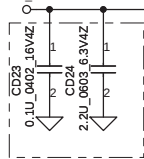
Layout Note: Place these 4 Caps near Command
and Control signals of DIMMA



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

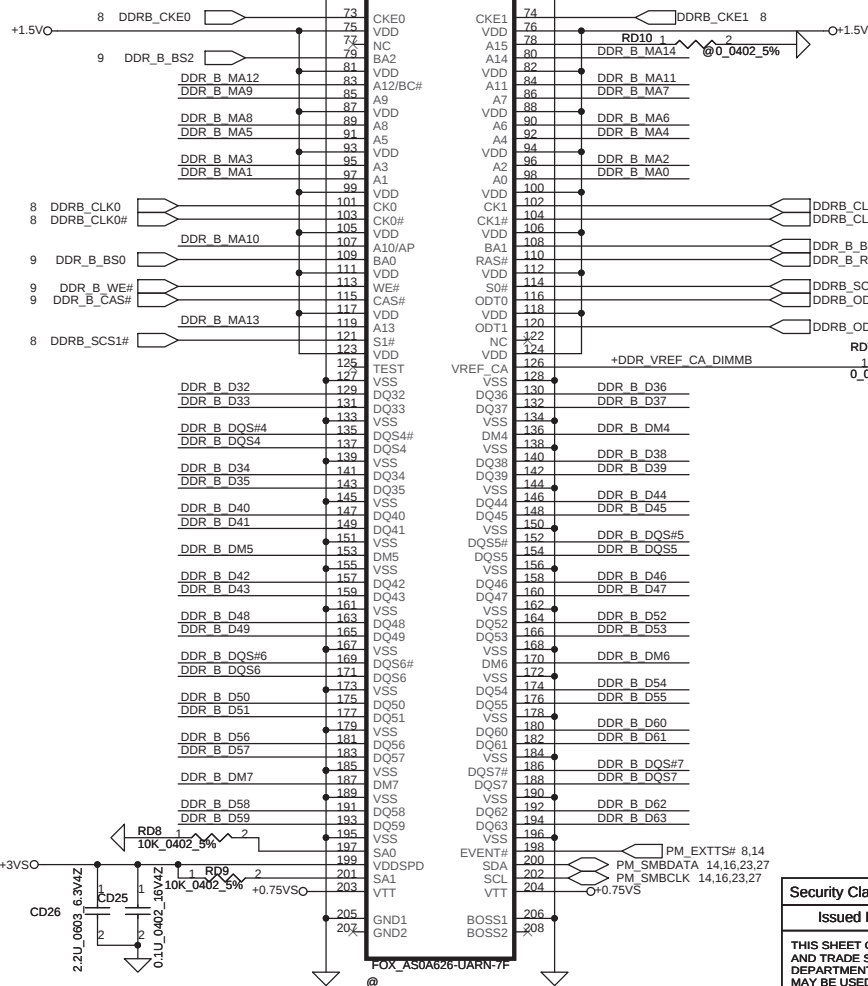


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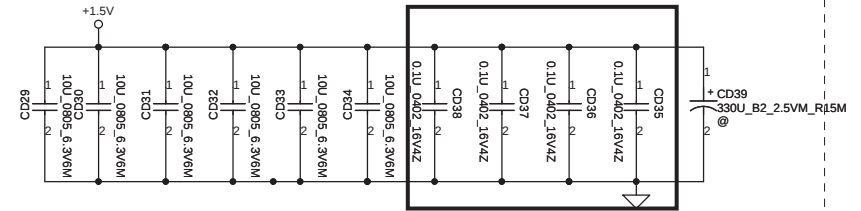
close to JDDRL.1

DDR3 SO-DIMM B REVERSE TYPE

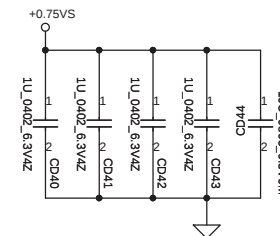


Layout Note:
Place near JDDRH

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

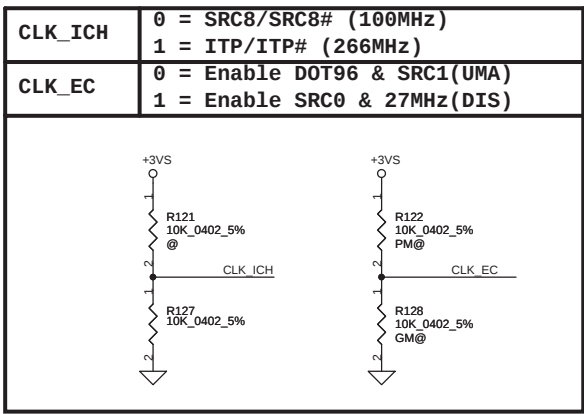
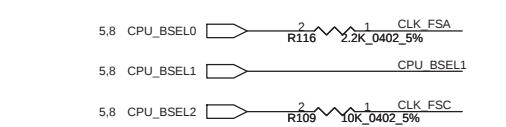
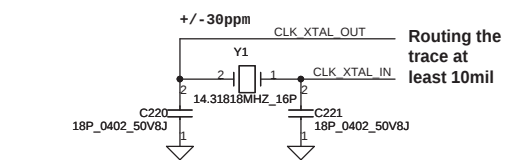
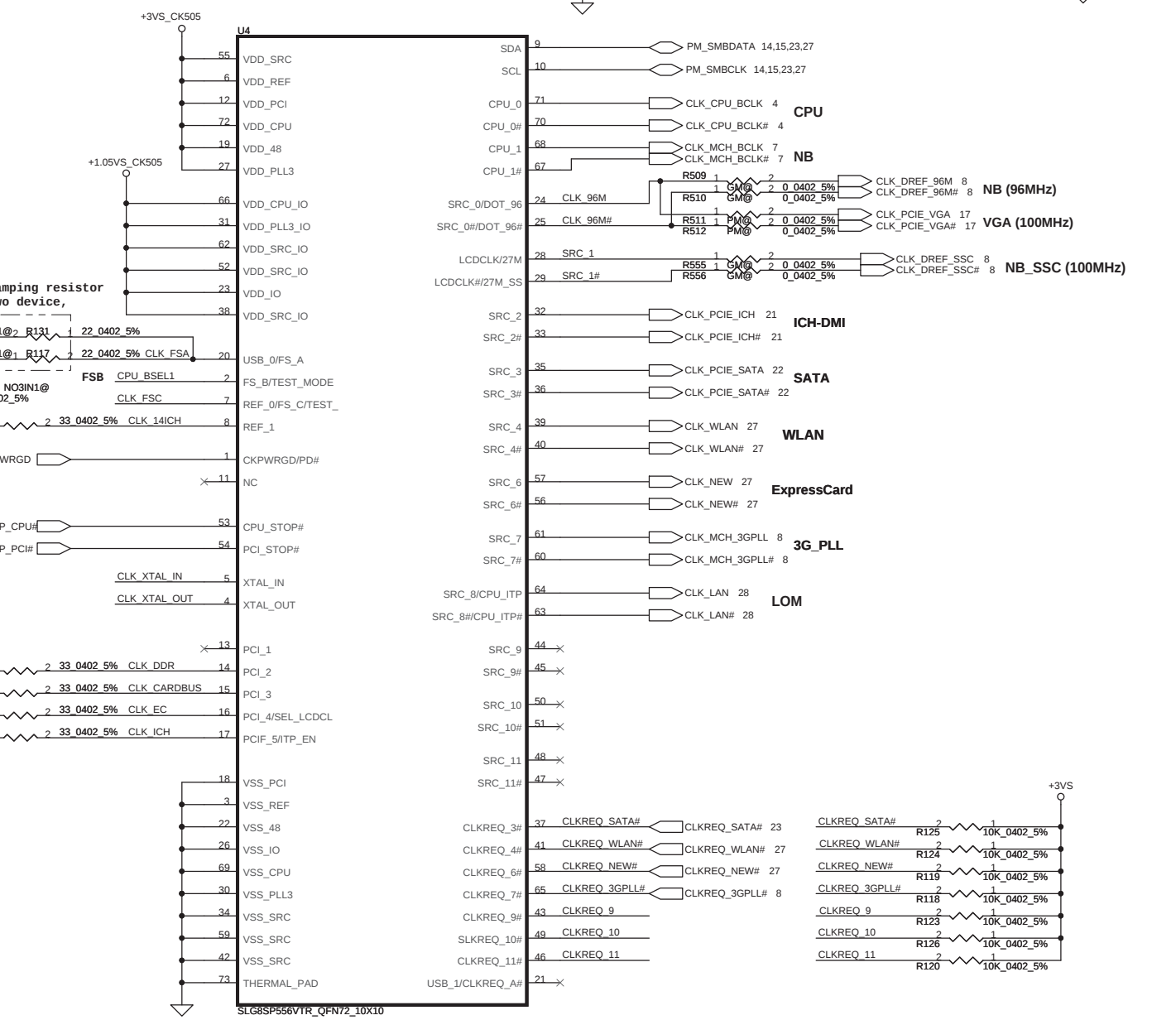
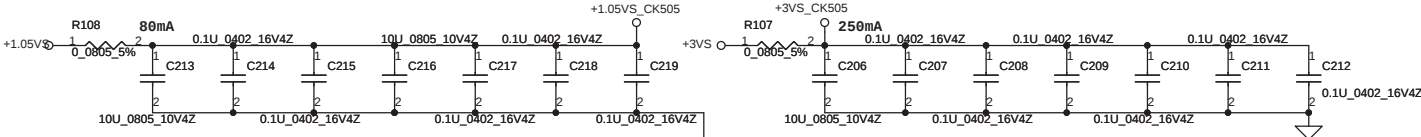


Layout Note:
Place near JDDRH.203 & JDDRH.204

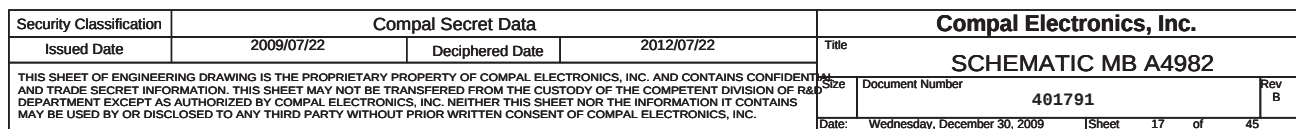
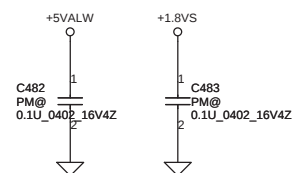


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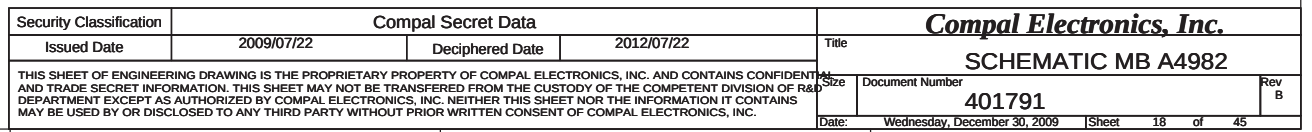
FSC	FSB	FSA	CPU	SRC	PCI	REF	DOT_96	USB
CLKSEL2	CLKSEL1	CLKSEL0	MHZ	MHZ	MHZ	MHZ	MHZ	MHZ
0	0	0	266	100	33.3	14.318	96.0	48.0
0	0	1	133	100	33.3	14.318	96.0	48.0
0	1	0	200	100	33.3	14.318	96.0	48.0
0	1	1	166	100	33.3	14.318	96.0	48.0
1	0	0	333	100	33.3	14.318	96.0	48.0
1	0	1	100	100	33.3	14.318	96.0	48.0
1	1	0	400	100	33.3	14.318	96.0	48.0
1	1	1	Reserved					



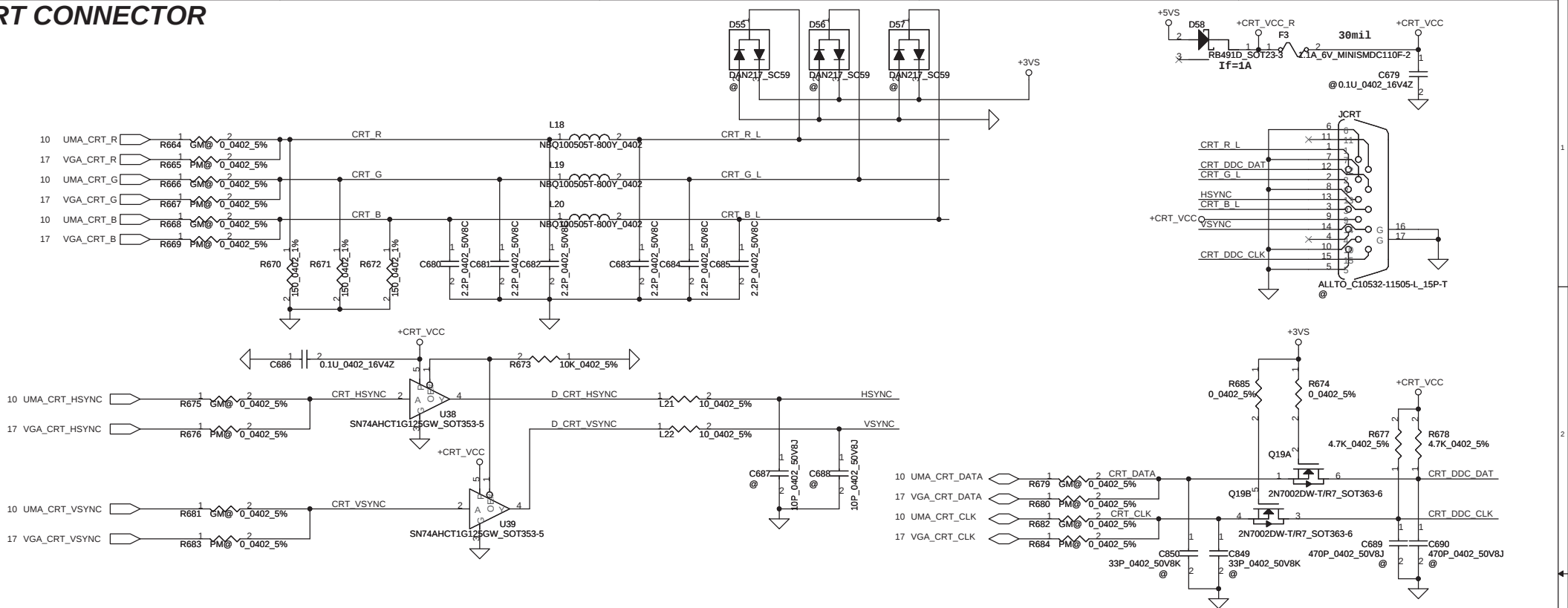
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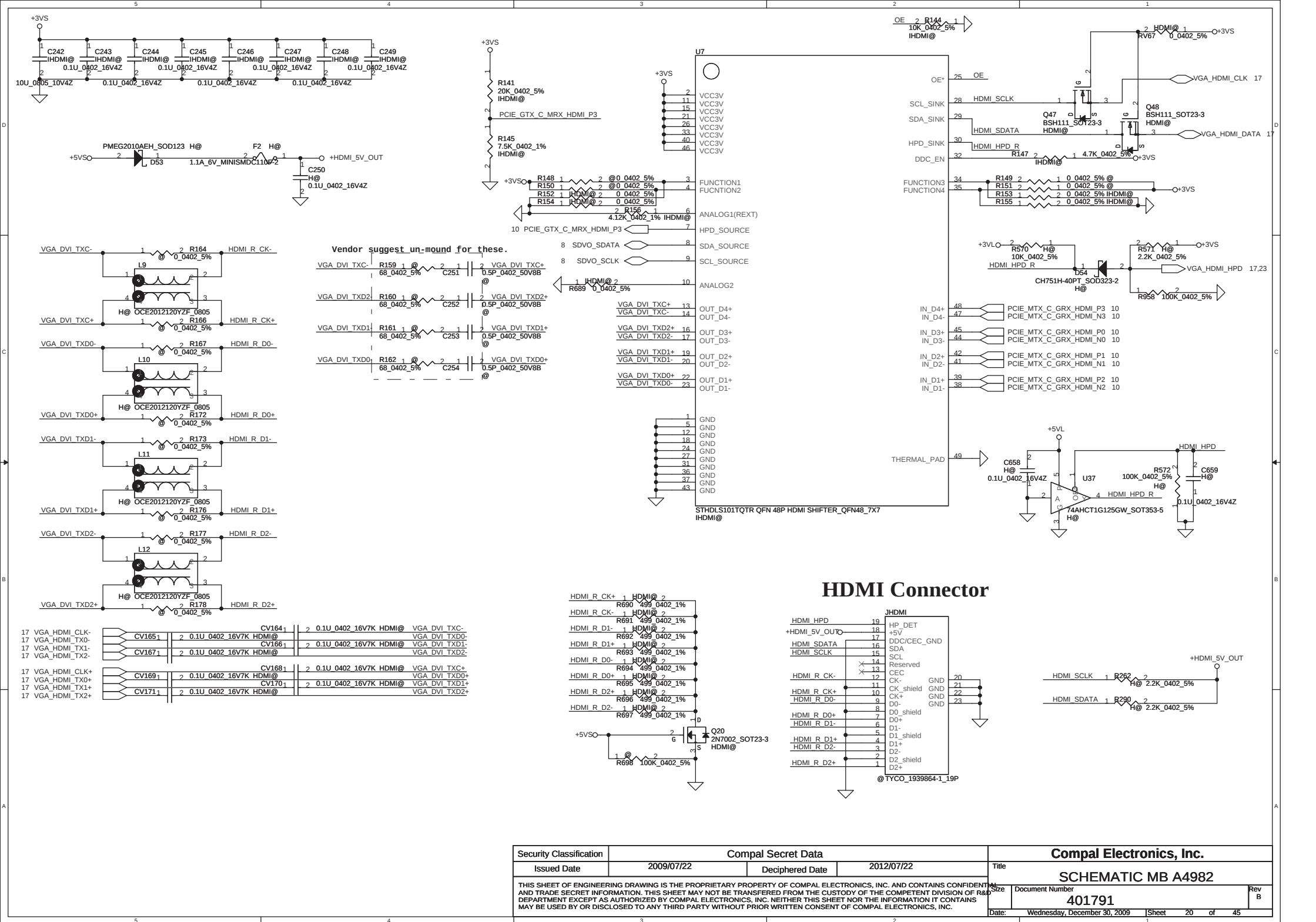
please link to VGA Conn. then link to LVDS Conn.

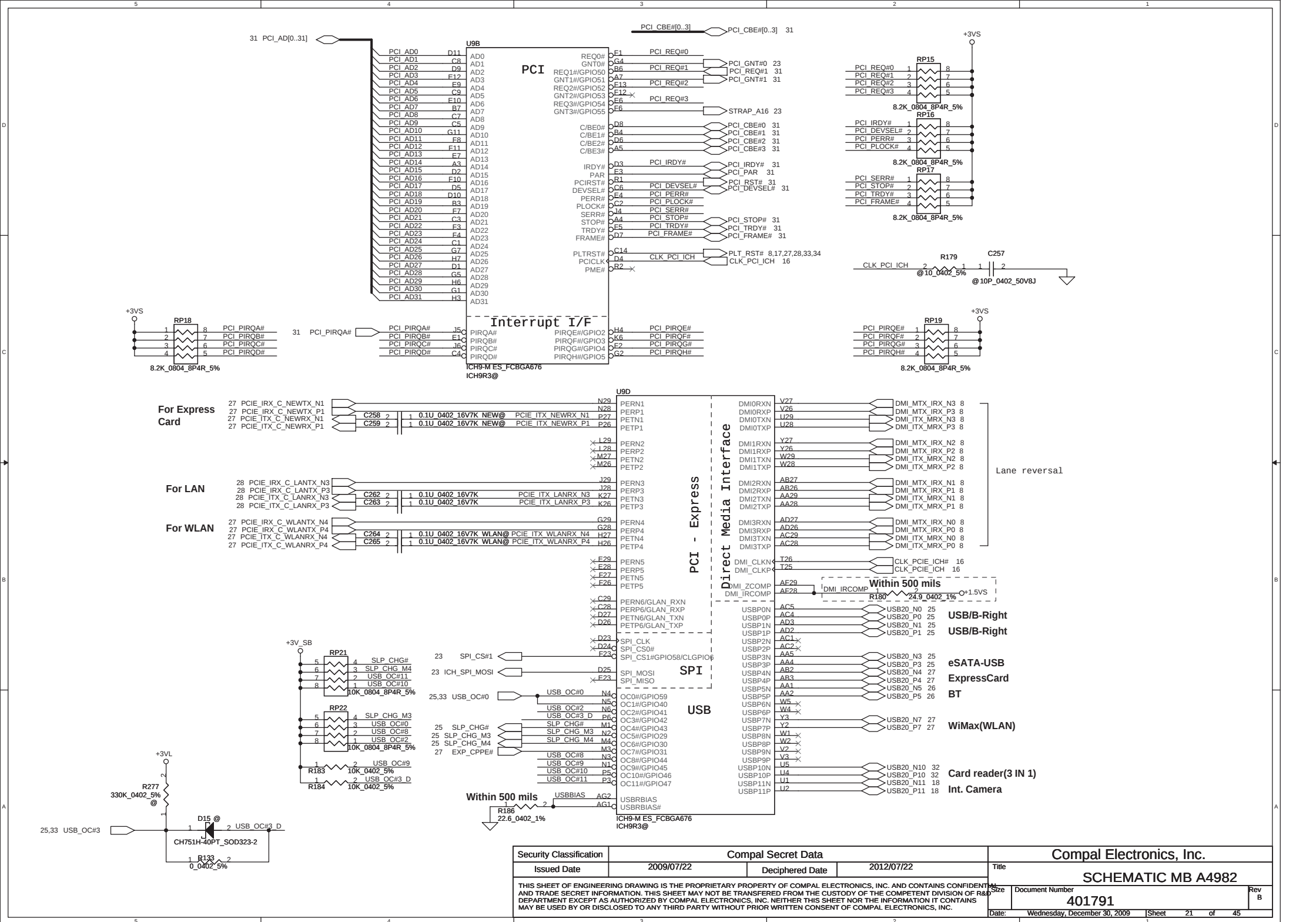


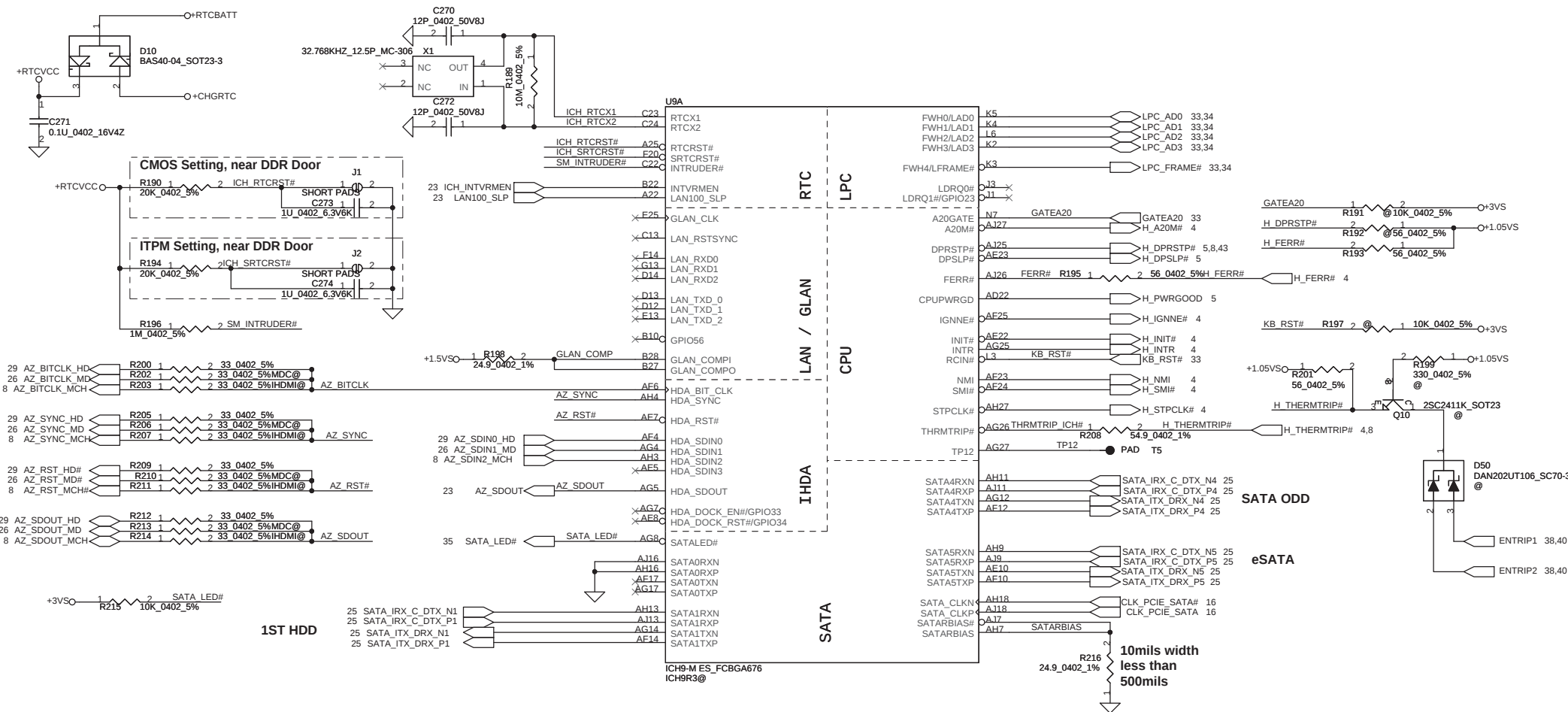
CRT CONNECTOR



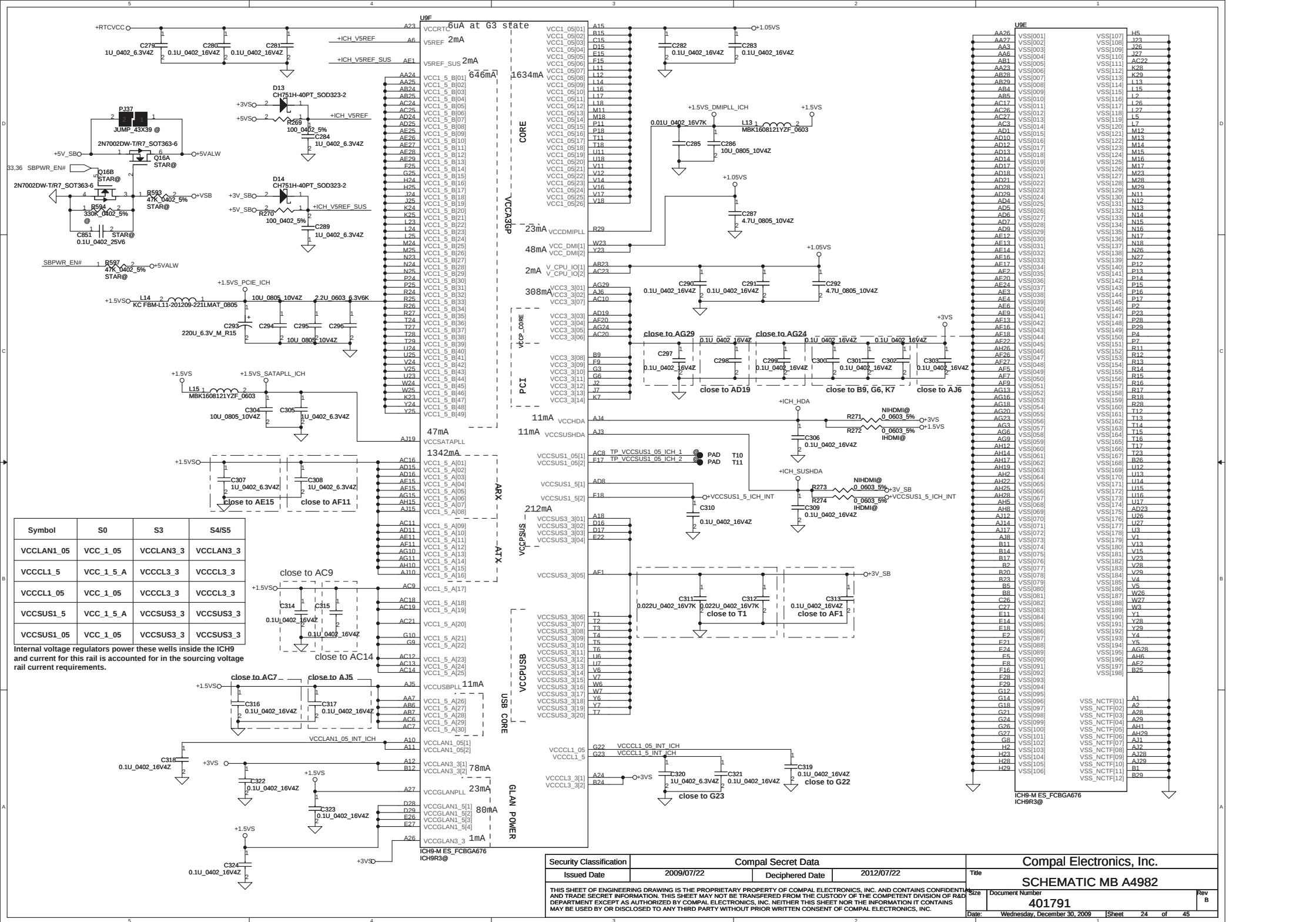
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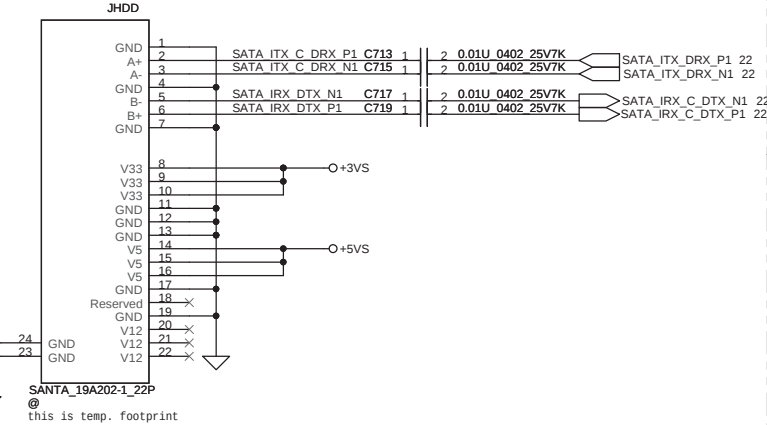
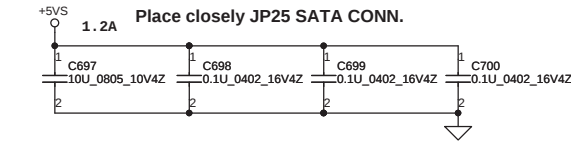




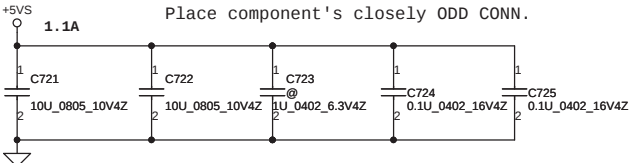
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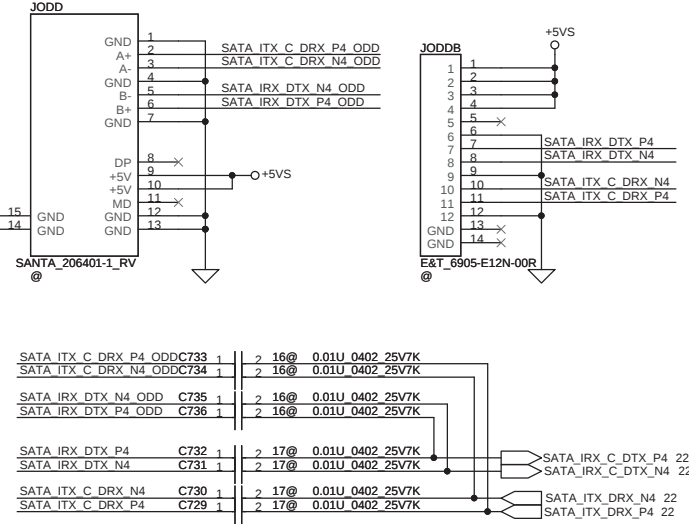
SATA HDD Conn.



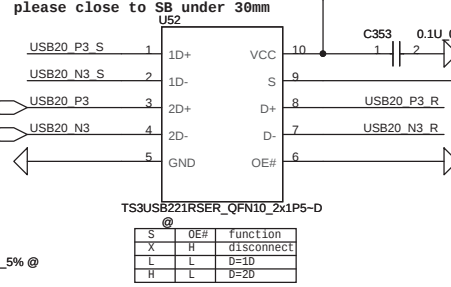
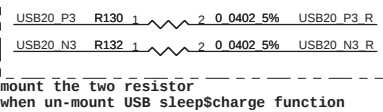
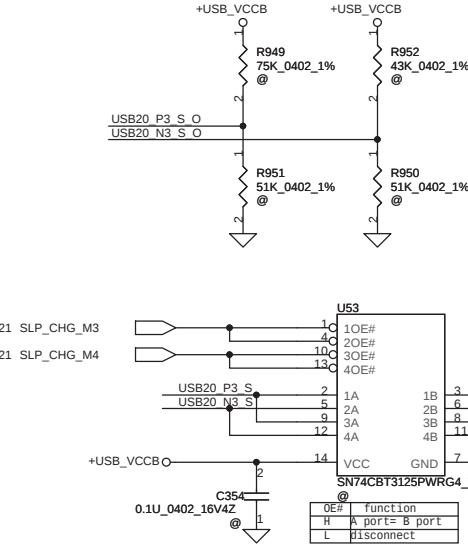
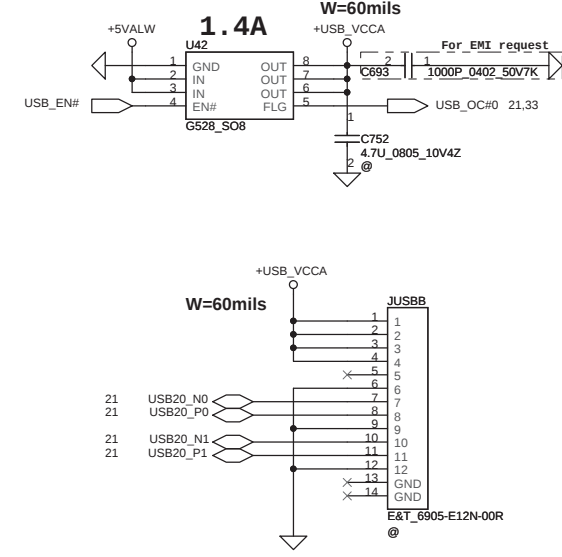
SATA ODD Conn



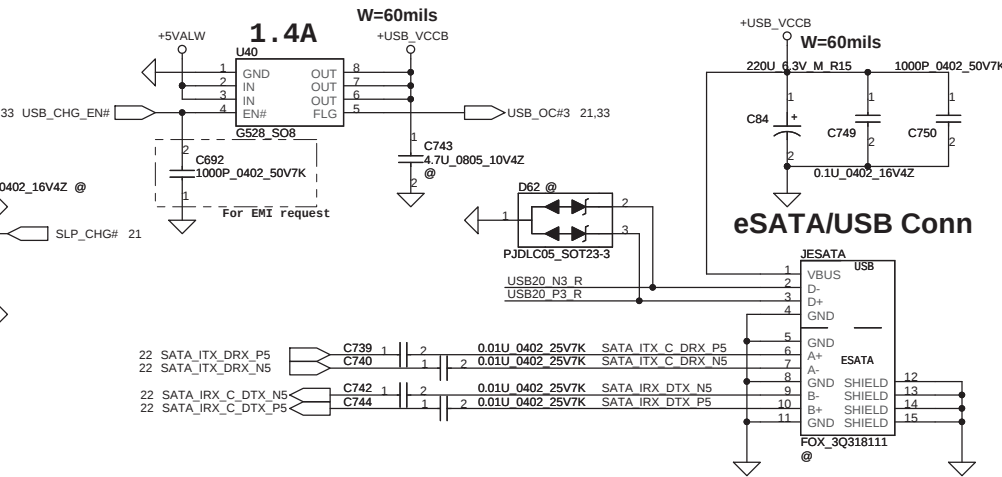
for 16" use for 17" expansion using



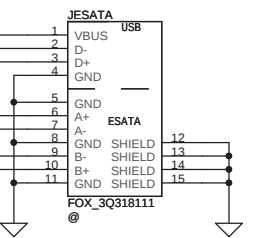
USB Board



eSATA/USB

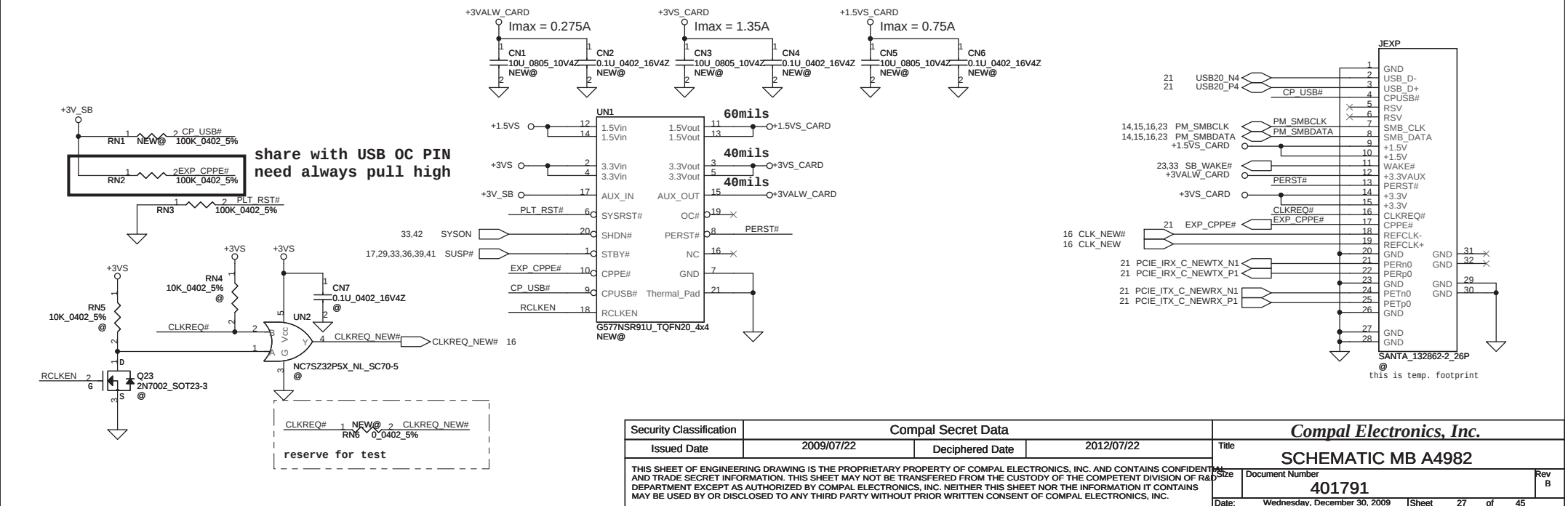
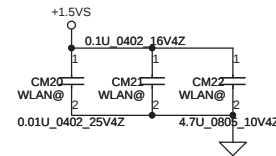
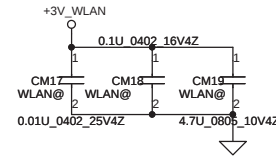
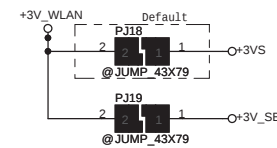
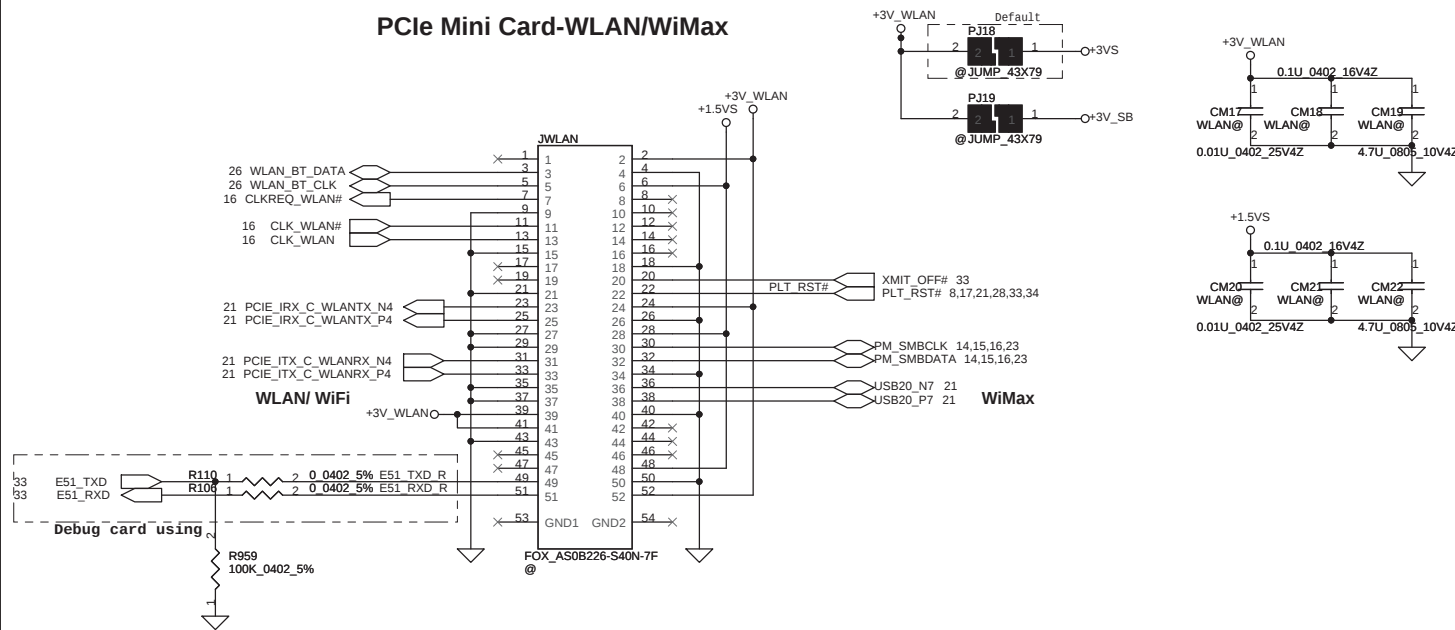


eSATA/USB Conn

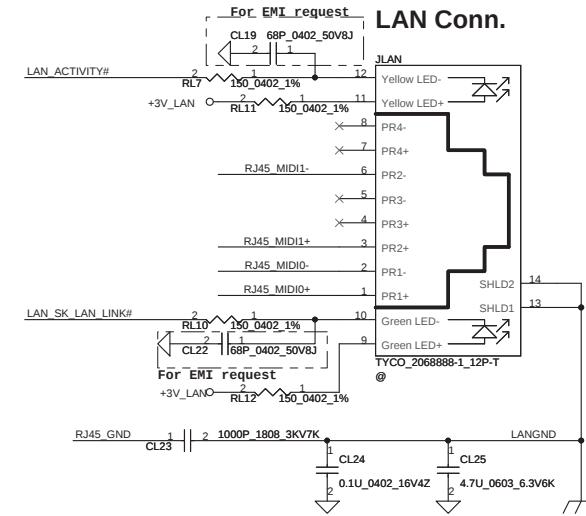
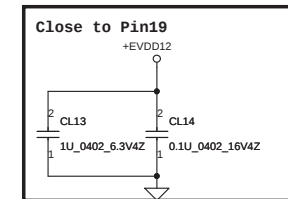
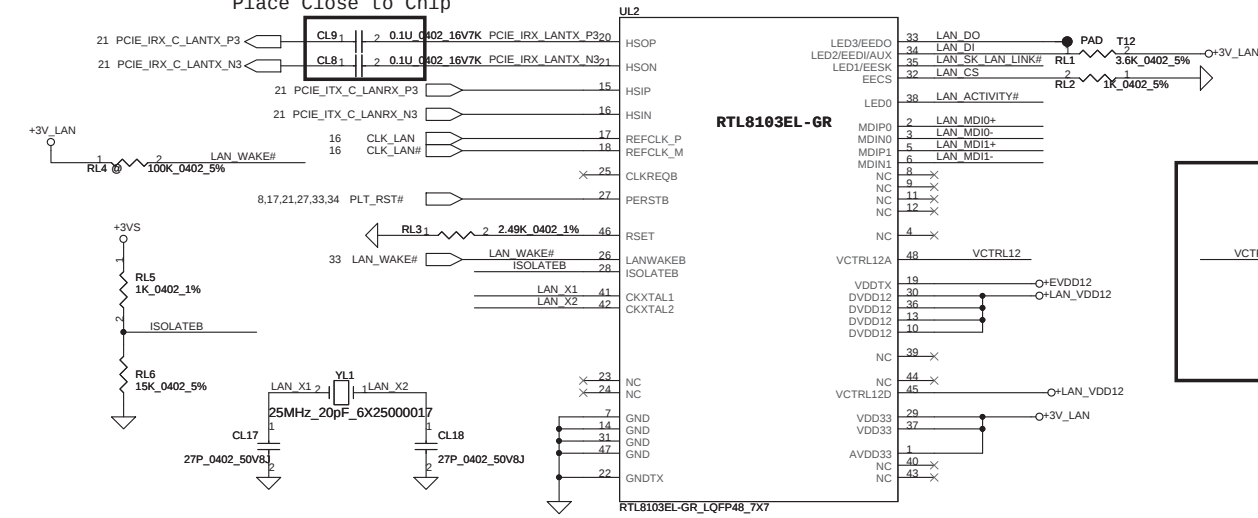


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PCIe Mini Card-WLAN/WiMax

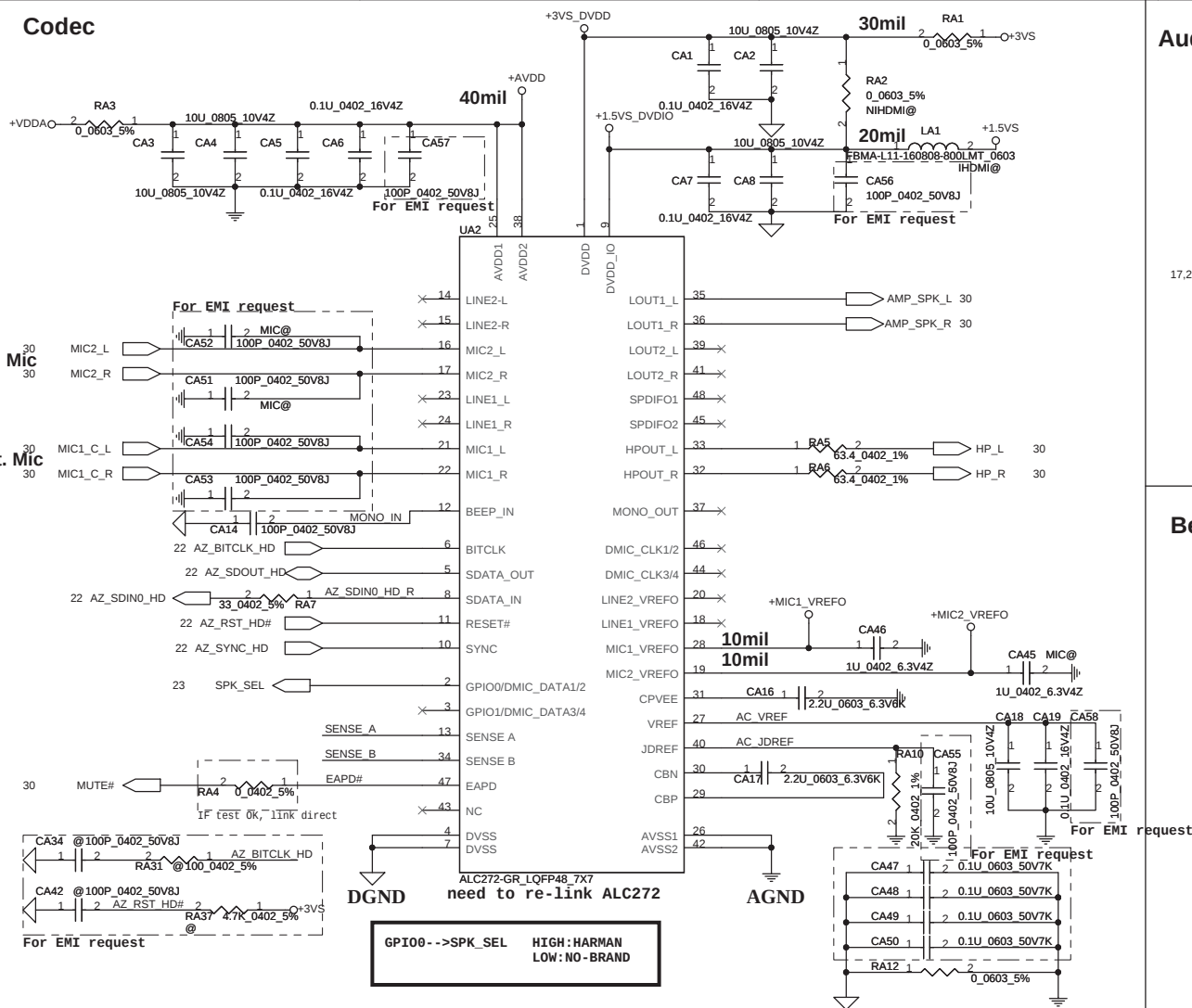


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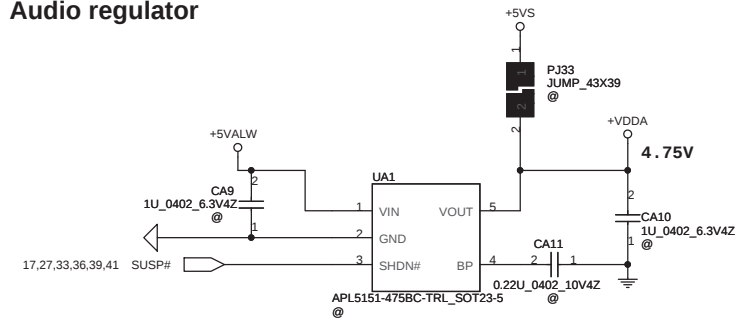


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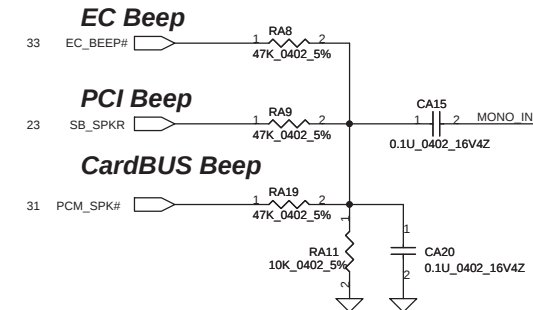
Codec



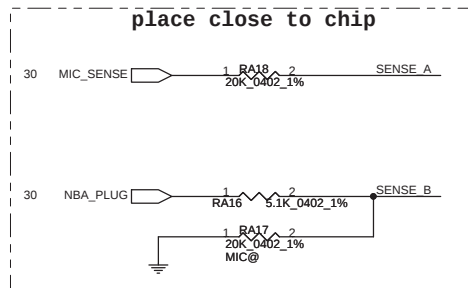
Audio regulator



Beep sound

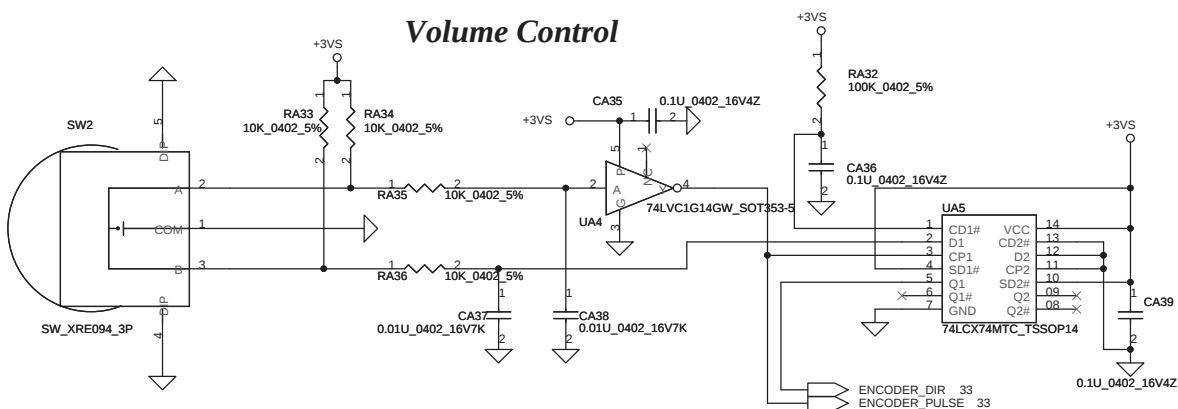
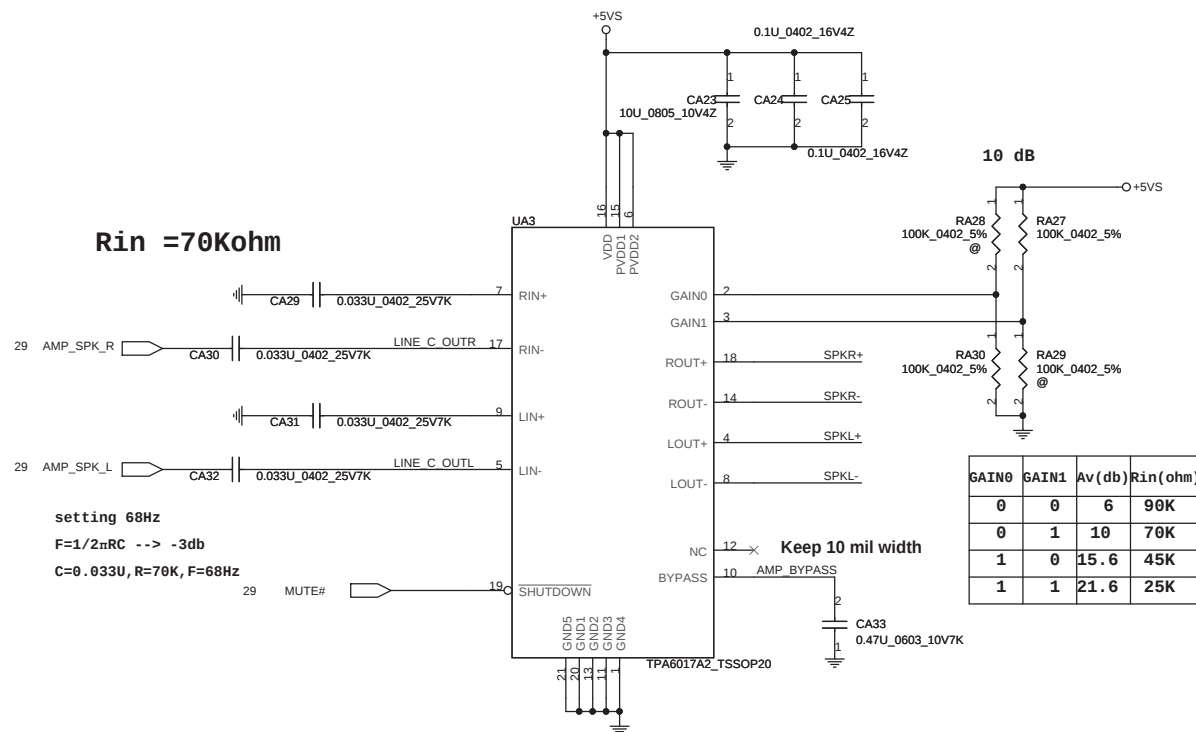


Sense Pin	Impedance	Codec Signals	Function
SENSE A	39.2K	PORT-A (PIN 39, 41)	
	20K	PORT-B (PIN 21, 22)	Ext. MIC
	10K	PORT-C (PIN 23, 24)	
SENSE B	5.1K	PORT-D (PIN 35, 36)	SPK out
	39.2K	PORT-E (PIN 14, 15)	
	20K	PORT-F (PIN 16, 17)	Int. MIC
	10K	PORT-H (PIN 37)	
	5.1K	PORT-I (PIN 32, 33)	Headphone out

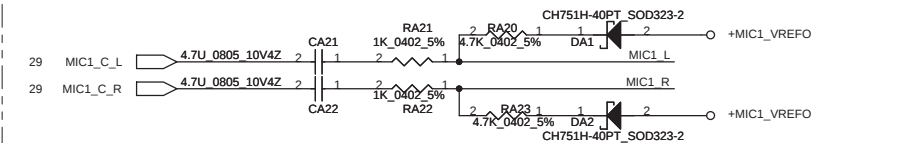


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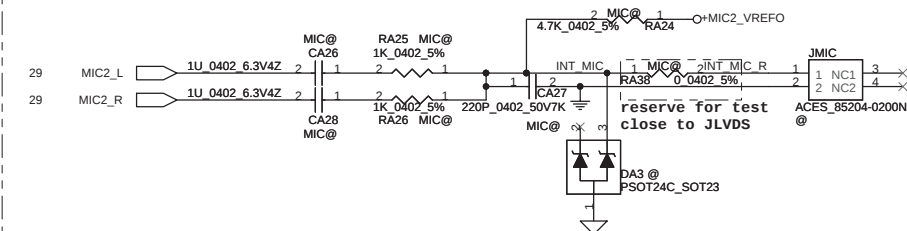
TPA6017 Medium Range Amplifier



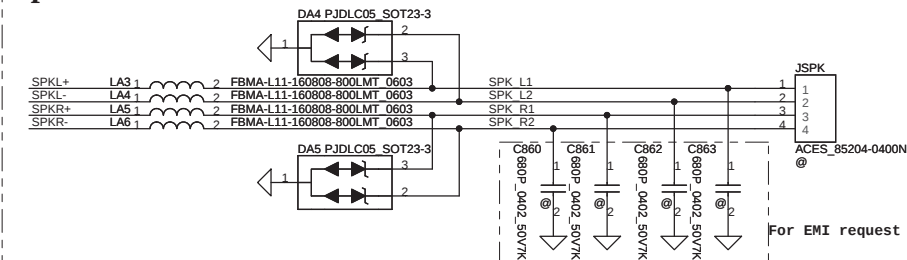
Ext. Mic



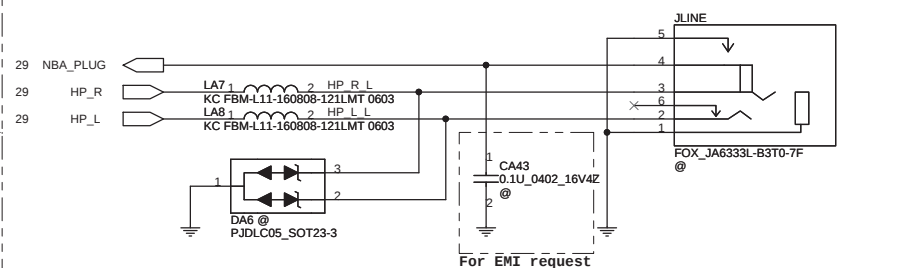
Int. Mic



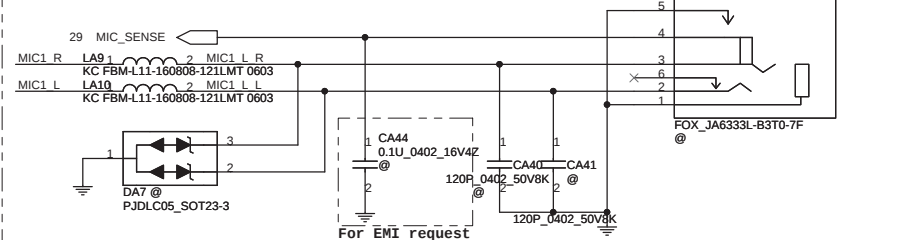
Speaker Connector



HeadPhone/LINE Out JACK



Ext.MIC/LINE IN JACK

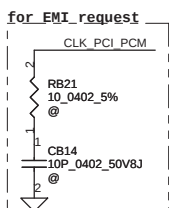
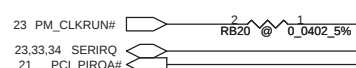
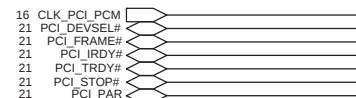
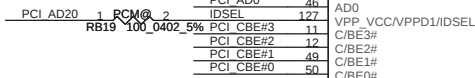
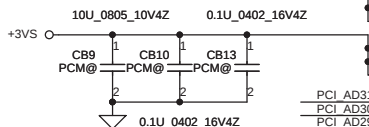
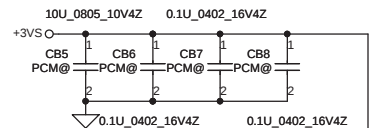


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21 PCI_AD[0..31] PCI_AD[0..31]

21 PCI_CBE#[0..3] PCI_CBE#[0..3]

IDSEL SELECT POWER-ON-STRAPPING
(SEE NOTE & TABLE FOR OPTIONS)



22K TO 47K PULL-UPS MUST BE PLACED
ON INTA#, PME#, SERIRQ# & CLKRUN#.

UB1
CORE_VCC
CORE_VCC
CORE_VCC
CORE_VCC

VCC5#/VCCD0#/SDATA
VCC3#/VCCD1#/SCLK
VPP_PGM/VPPD0/SLATCH

D10/CAD31
D9/CAD30
D1/CAD29
D8/CAD28
D0/CAD27
A0/CAD26
A2/CAD25
A1/CAD24
A3/CAD23
A4/CAD22
A5/CAD21
A6/CAD20
A25/CAD19
A2/CAD18
A7/CAD17
A24/CAD16
A17/CAD15
A19/CAD14
A9/CAD13
IORD#/CAD12
A11/CAD11
OE#/CAD10
CE2#/CAD9
A10/CAD8
D15/CAD7
D7/CAD6
D13/CAD5
D6/CAD4
D12/CAD3
D5/CAD2
D11/CAD1
D4/CAD0
D3/CAD0

A16/CLK
A23/CFRAME#
A15/CIRDY#
A22/CIRDY#
A21/CDEVEL#
A20/CSTOP#
A13/CPAR
A14/CPERR#
WAIT#/CSERR#
INPACK#/CREQ#
WEH/CGNT#
RDY/IREQ#/CINT#
A19/CBLOCK#
WP/CCLKRUN#
RESET/CRST#
D2/RFU
D14/RFU
A18/RFU
VS1/CVS1
VS2/CVS2
CD1#/CCD1#
CD2#/CCD2#
BVD2/LEDCAUDIO
BVD1/STSCG#/RHH/CSTSCG#
REG#/CCBE3#
A12/CCBE2#
A8/CCBE1#
CE1/CCBE0#

OZ6011TQFP128-D
PCM@

RB18 33_0402_5%
PCM@ 2 S1 A16

RB19 100_0402_5%
PCM@ 2 S1 A16

RB20 10_0402_5%
PCM@ 2 S1 A16

RB21 10_0402_5%
PCM@ 2 S1 A16

RB22 33K_0402_5%
PCM@

RB23 33K_0402_5%
PCM@

RB24 33K_0402_5%
PCM@

RB25 33K_0402_5%
PCM@

RB26 33K_0402_5%
PCM@

RB27 33K_0402_5%
PCM@

RB28 33K_0402_5%
PCM@

RB29 33K_0402_5%
PCM@

RB30 33K_0402_5%
PCM@

RB31 33K_0402_5%
PCM@

RB32 33K_0402_5%
PCM@

RB33 33K_0402_5%
PCM@

RB34 33K_0402_5%
PCM@

RB35 33K_0402_5%
PCM@

RB36 33K_0402_5%
PCM@

RB37 33K_0402_5%
PCM@

RB38 33K_0402_5%
PCM@

RB39 33K_0402_5%
PCM@

RB40 33K_0402_5%
PCM@

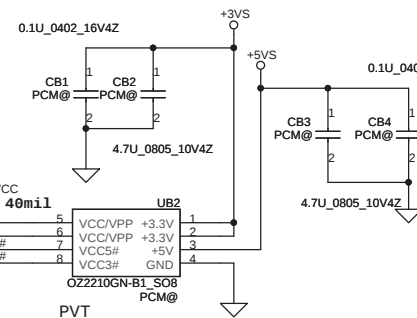
VCC5# (124)	VPP_PGM (125)	IDSEL SELECT
0	0	AD18
0	1	*AD20
1	0	AD25
1	1	PIN F4

NOTE: IDSEL SELECTION!

THIS DEVICE UTILIZES A "SELECTABLE IDSEL" SCHEME.
IDSEL CAN BE CONNECTED INTERNALLY TO ONE OF THREE
PCI AD LINES OR EXTERNAL IDSEL SIGNAL.

22K TO 47K PULL-UP & PULL-DOWN RESISTORS ARE
REQUIRED TO BE CONNECTED TO PINS 123 & 124 TO
SELECT ONE OF THE 4 POSSIBLE IDSEL CONNECTIONS.
THE TABLE BELOW SHOWS THE 4 POSSIBLE COMBINATIONS.

CONFIGURING IDSEL TO BE INTERNALLY CONNECTED ALLOWS
FOR A FULL PARALLEL POWER MODE. IF AN EXTERNALLY
CONNECTED IDSEL IS REQUIRED THEN AN INVERTER MUST
BE CONNECTED TO VPP_PGM TO CREATE VPP_VCC.



SA000026P10 (S IC OZ2210GN-B1 SO 8P)

PVT
IDSEL SELECT

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
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VCC5# VPP_PGM IDSEL SELECT
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VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
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VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

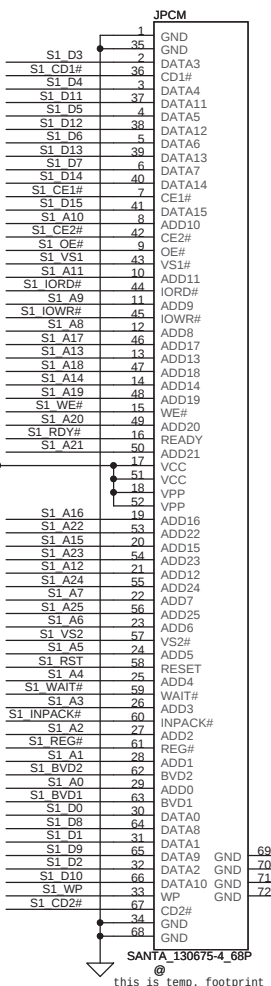
VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

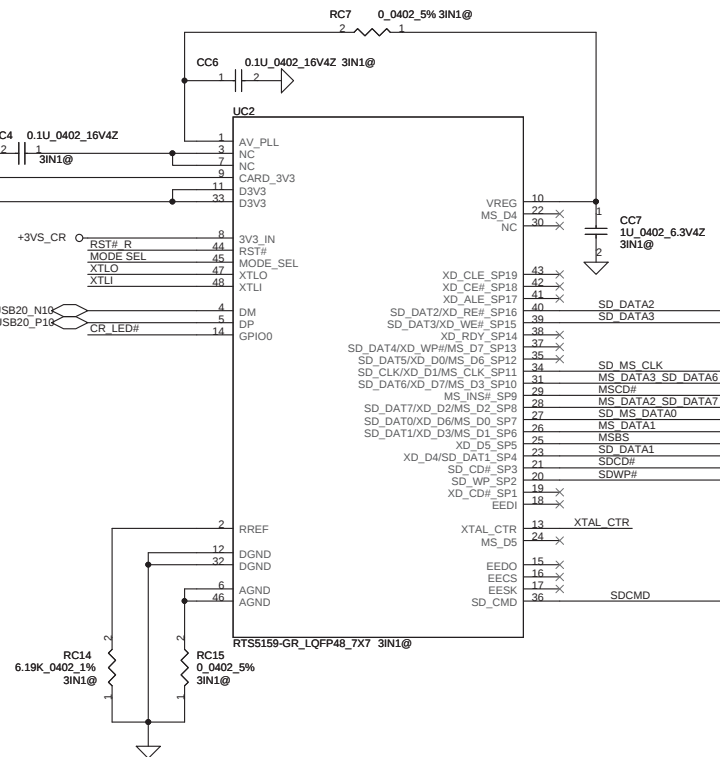
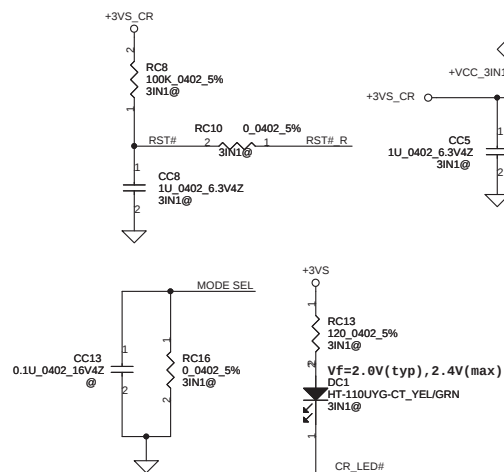
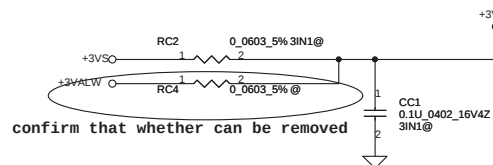
VCC5# VPP_PGM IDSEL SELECT
(124) (123)

VCC5# VPP_PGM IDSEL SELECT
(124) (123)

PCMCIA Socket

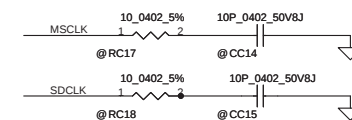
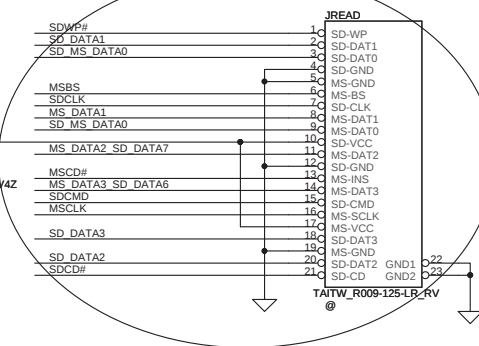


this is temp. footprint

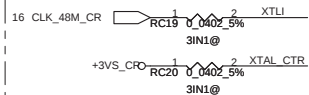


3 in 1 Card Reader

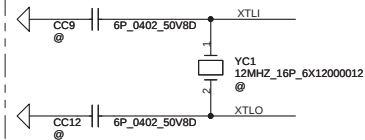
confirm all pin define with connector spec.



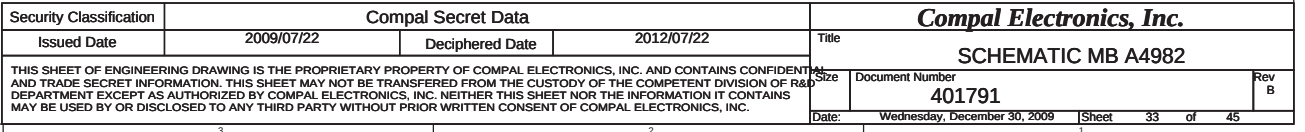
48Mhz



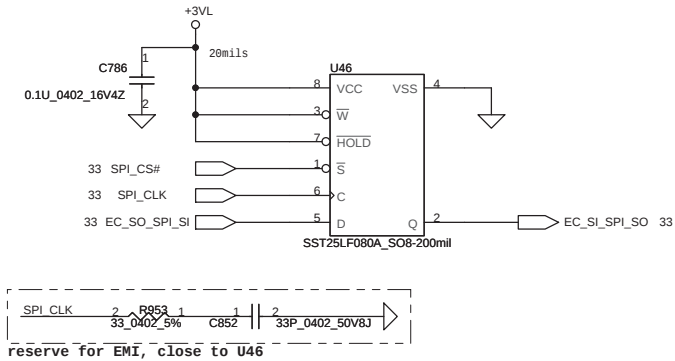
12Mhz



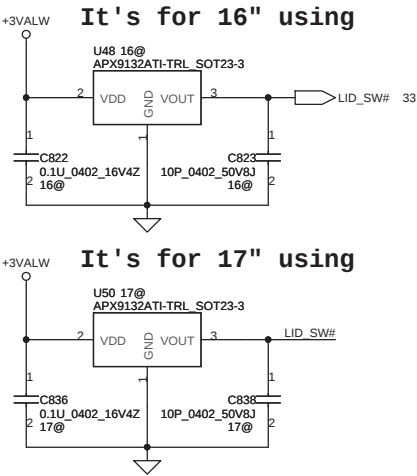
R	C	USB AUTO DE-LINK	MS FORMATTER	Description
0	NC	YES		Recommended
NC	47P	YES	YES	
NC	NC			Compatible with RTS5158E
NC	680P	YES		LED ON
10K	180P			LED ON
10K	680P		YES	



SPI Flash (16Mb*1)

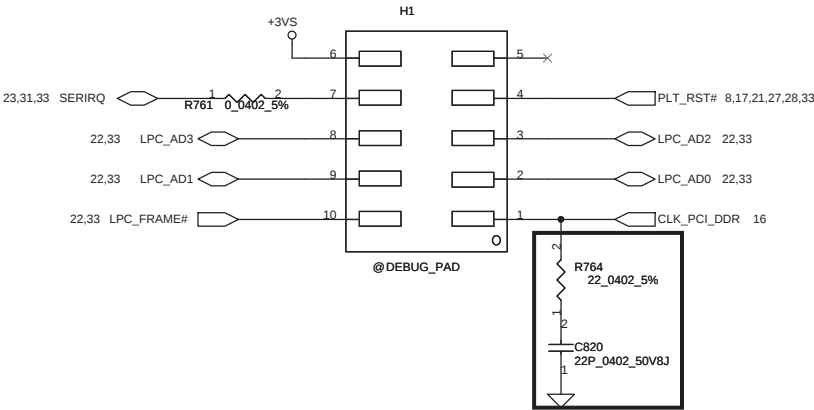


Lid SW



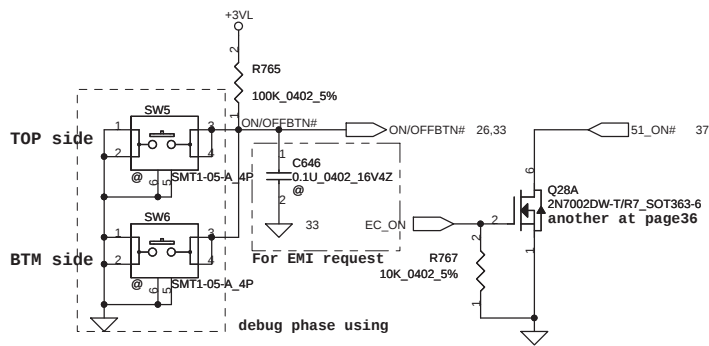
LPC Debug Port

Please place the PAD under DDR DIMM.

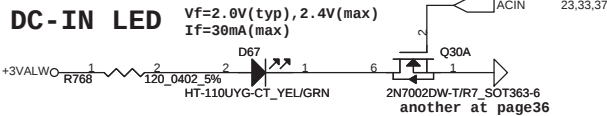
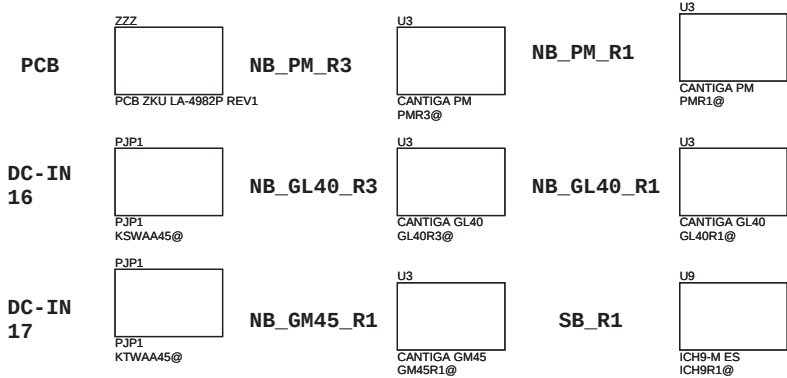


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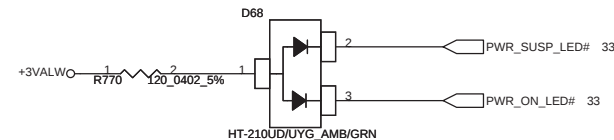
Power Button



ISPD

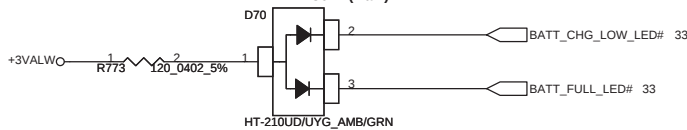


POWER/SUSPEND LED



BATT CHARGE/FULL LED

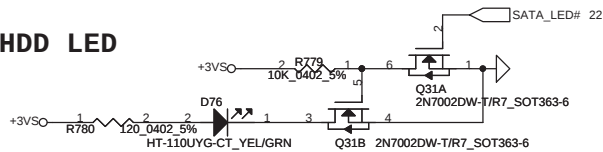
Vf=1.9V(typ), 2.4V(max) for amber
Vf=2.0V(typ), 2.4V(max) for green
If=30mA(max)



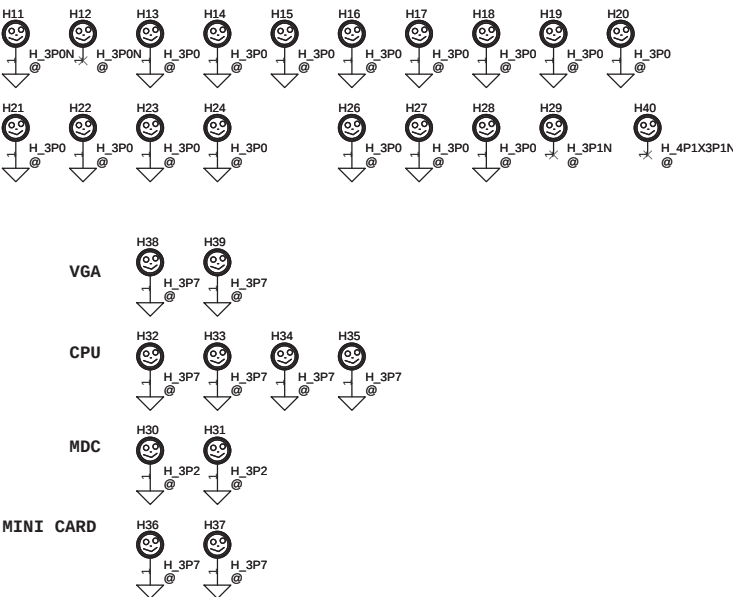
WL&BT LED



HDD LED



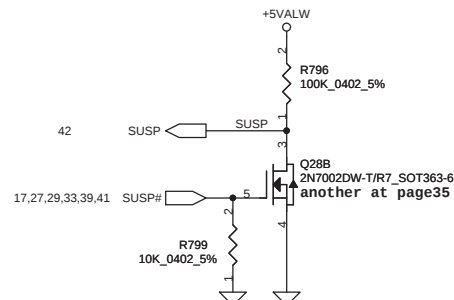
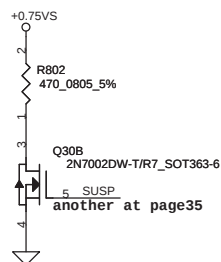
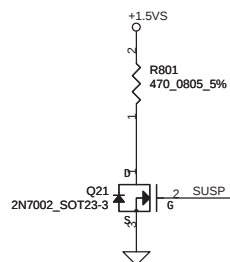
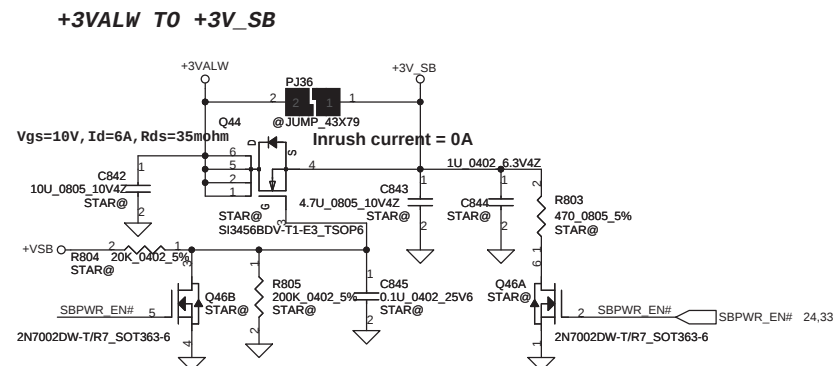
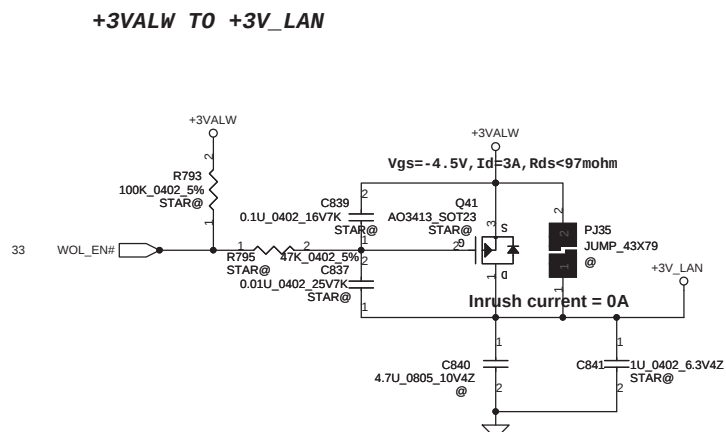
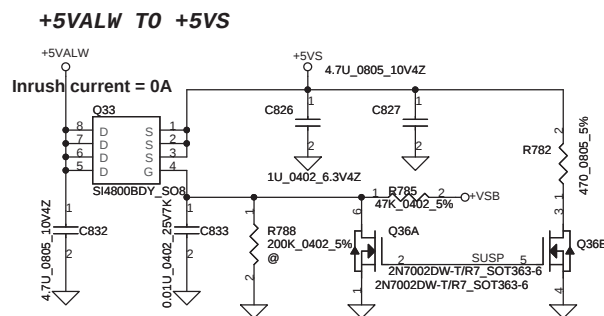
Screw Hole



PCB Federal Mark PAD

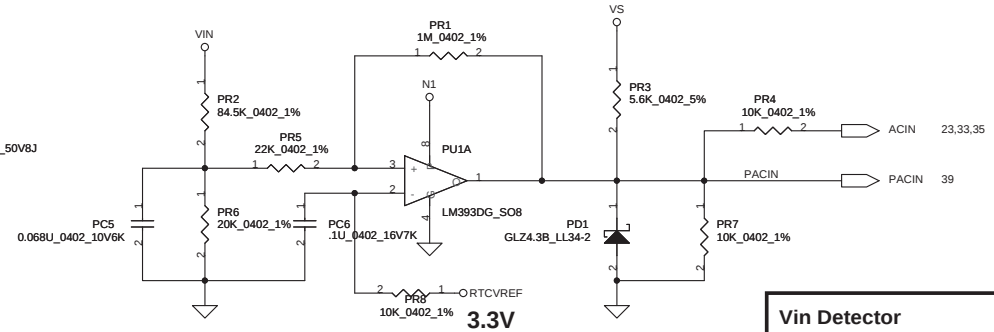
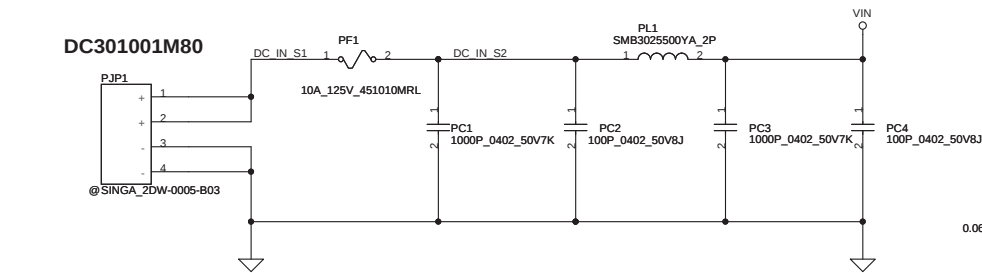


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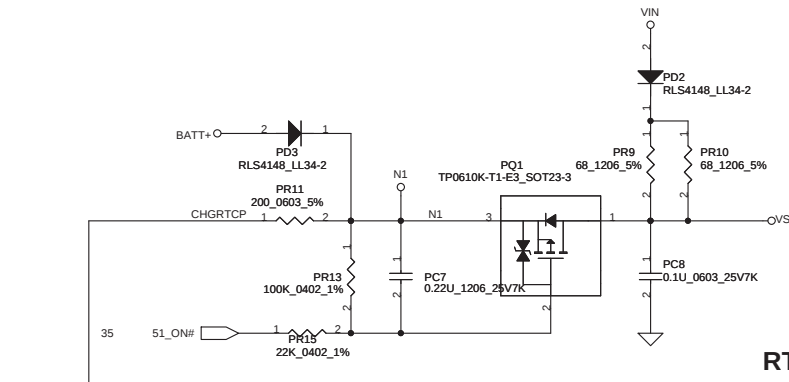
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DC301001M80

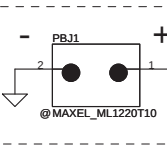


Vin Detector

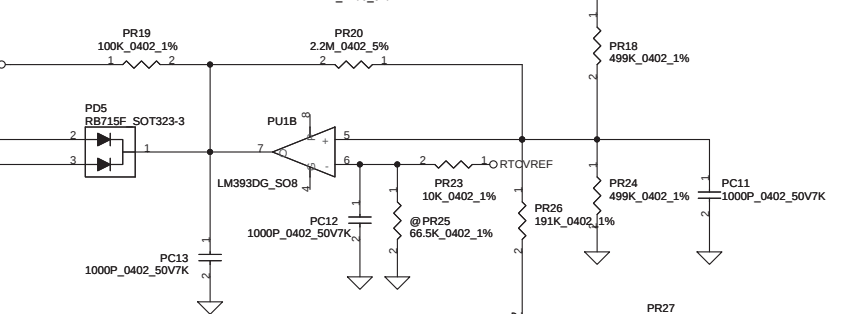
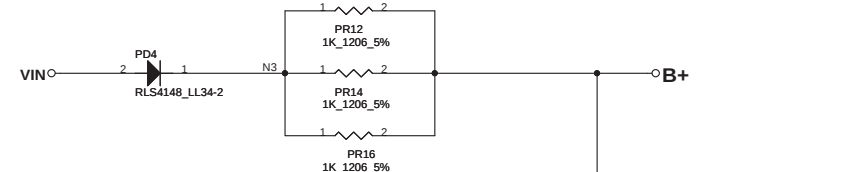
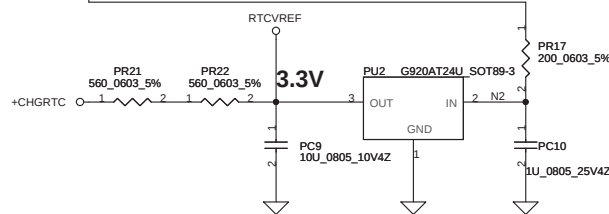
High 18.384 17.901 17.430
Low 17.728 17.257 16.976



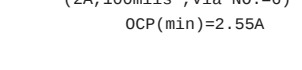
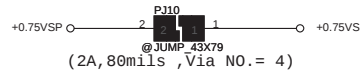
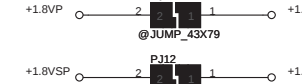
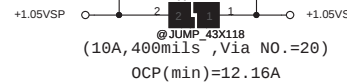
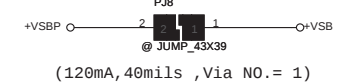
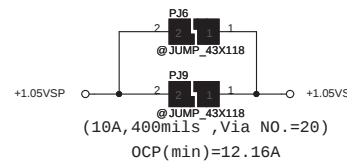
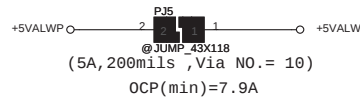
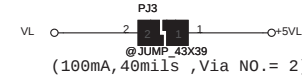
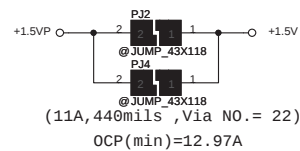
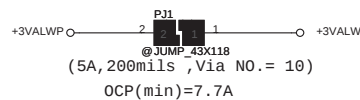
RTC Battery



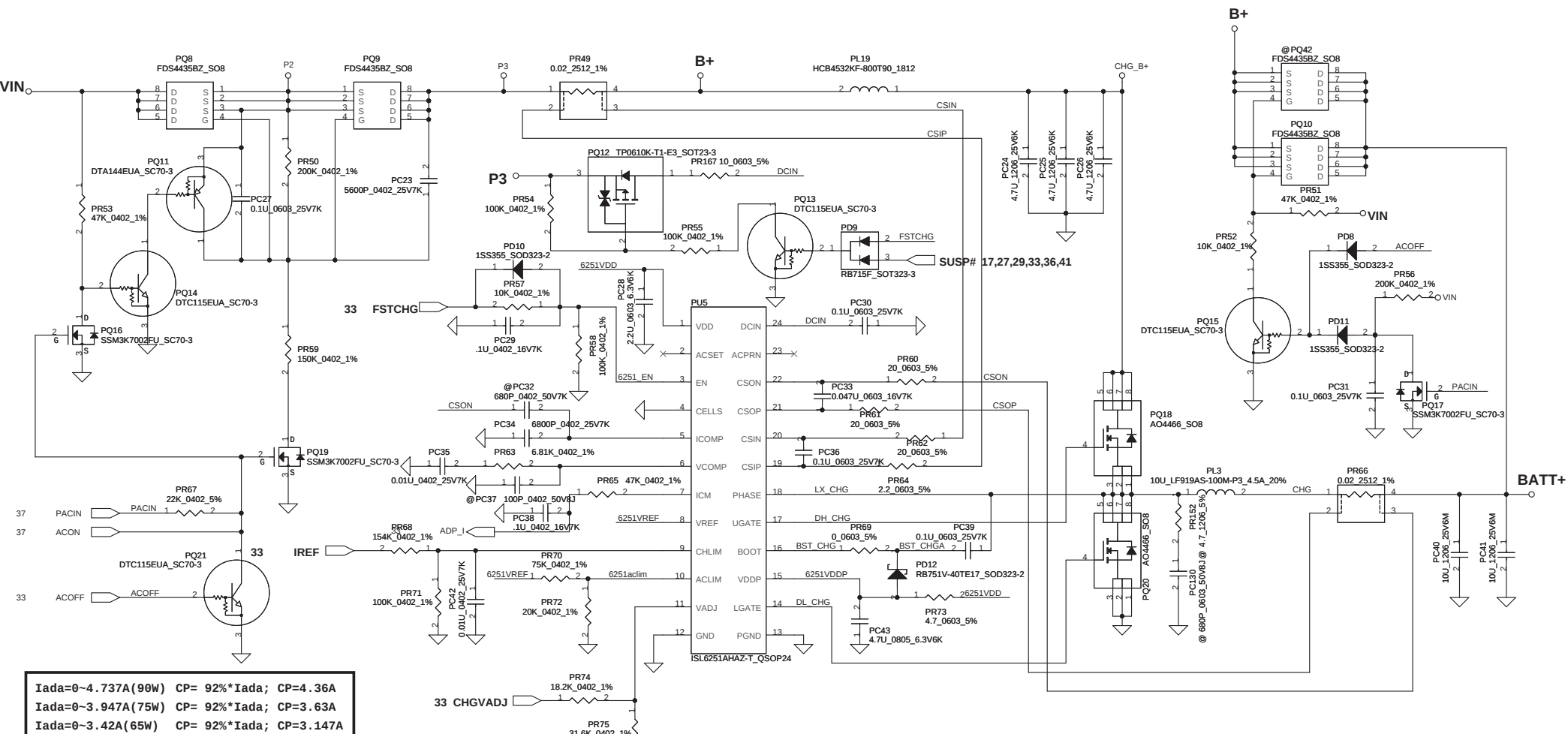
SP093MX0000



Precharge detector 15.97V/14.84V FOR ADAPTOR



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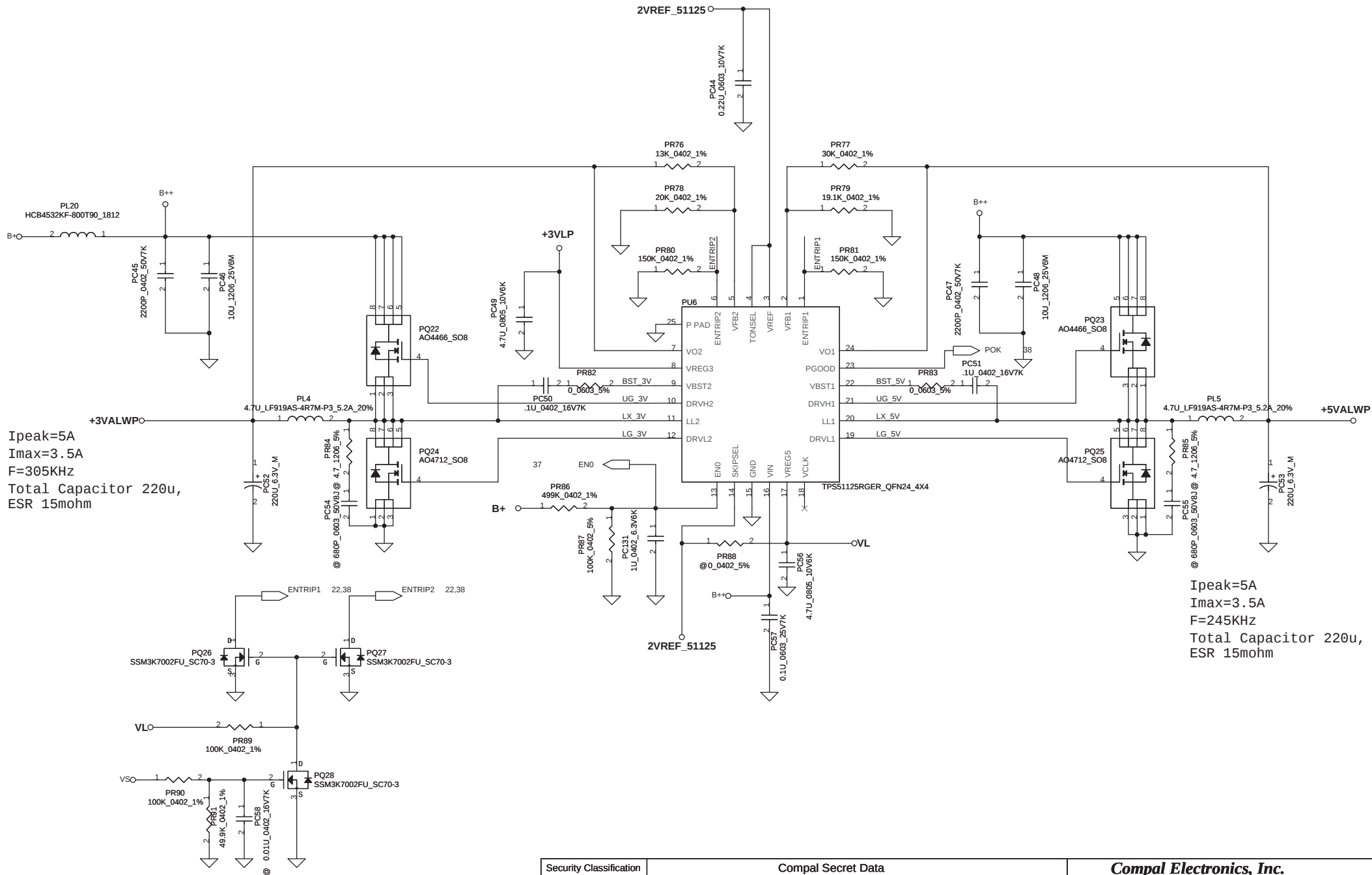
Iada=0~4.737A(90W) CP= 92%*Iada; CP=4.36A
Iada=0~3.947A(75W) CP= 92%*Iada; CP=3.63A
Iada=0~3.42A(65W) CP= 92%*Iada; CP=3.147A

CP mode
Vaclim=0.736V(90W) PR70=53.6k PR49=0.015
Vaclim=1.08V(75W) PR70=24.9k PR49=0.02
Vaclim=1.08V65W PR70=75k PR49=0.02

CC=0.25A~3A
IREF=1.016*Icharge
IREF=0.254V~3.048V
VCHLIM need over 95mV

CHGVADJ=(Vcell-4)/0.10627	
Vcell	CHGVADJ
4V	0V
4.2V	1.882V
4.35V	3.2935V

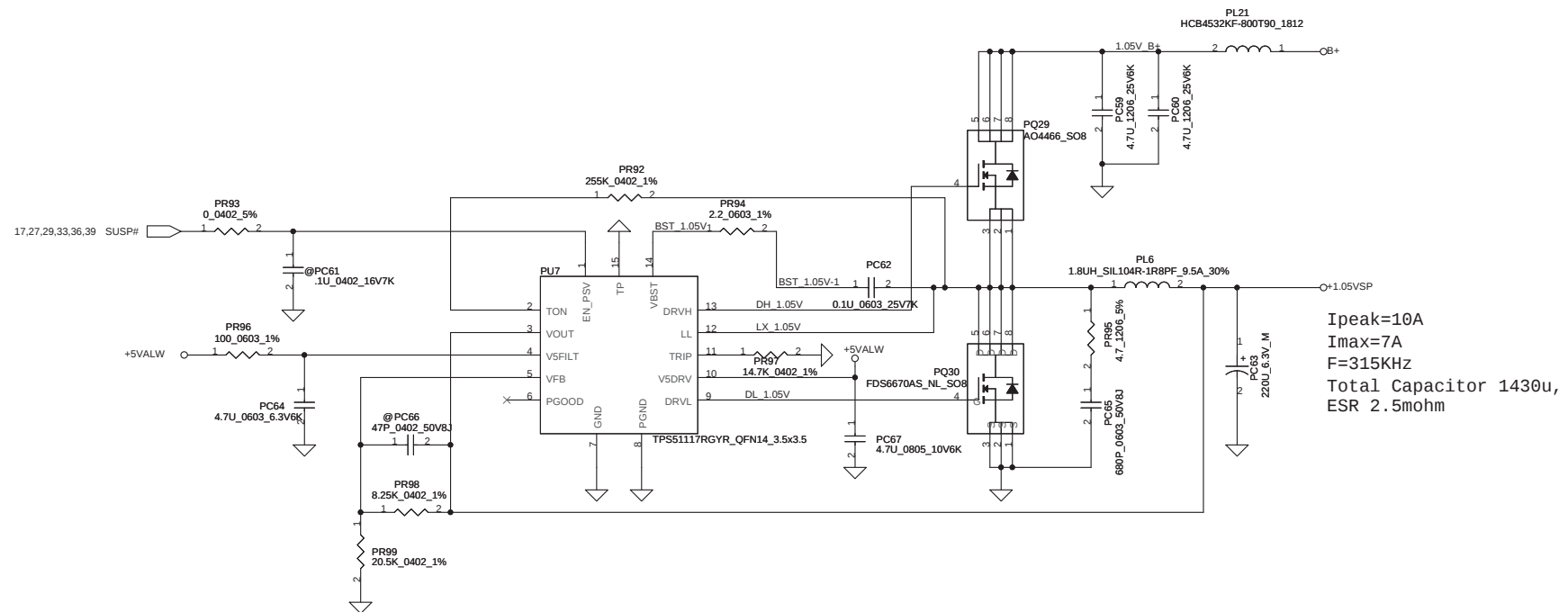
CELLS	VDD	GND	Float
CELL number	4	3	2



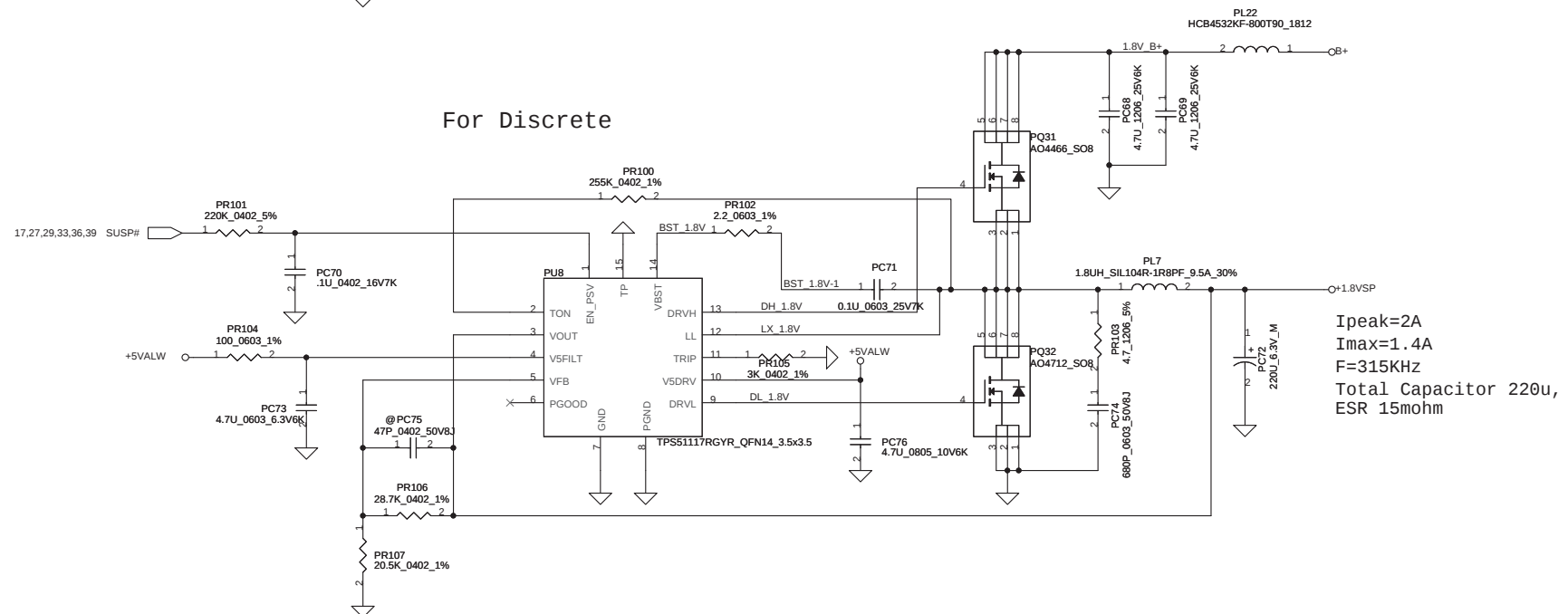
Ipeak=5A
Imax=3.5A
F=305KHz
Total Capacitor 220u,
ESR 15mohm

Ipeak=5A
Imax=3.5A
F=245KHz
Total Capacitor 220u,
ESR 15mohm

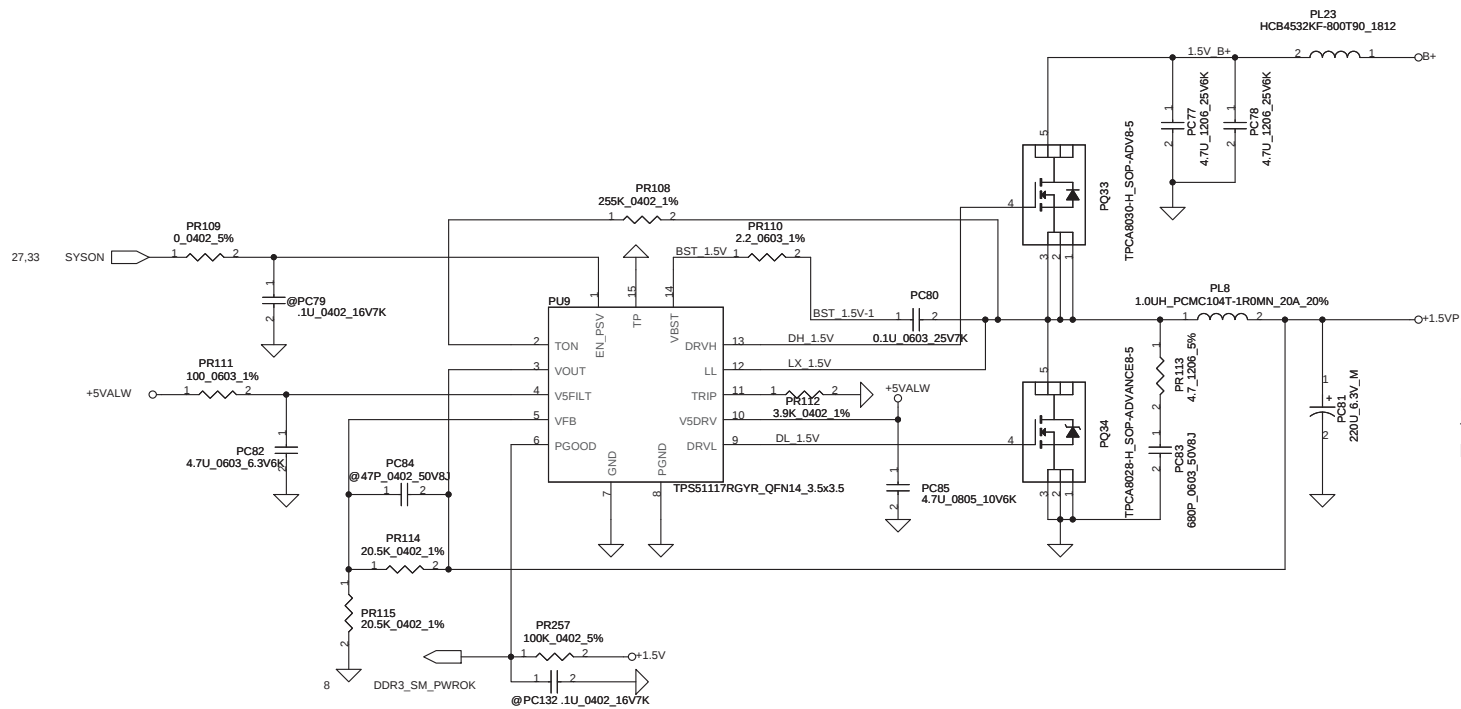
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For Discrete

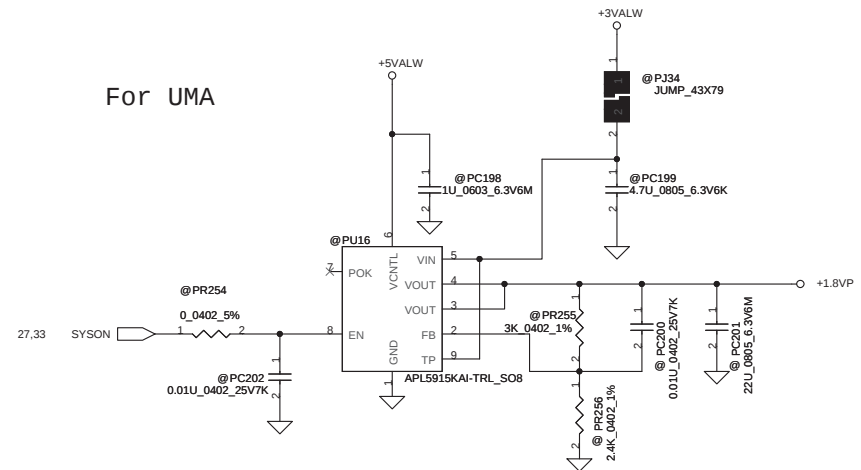
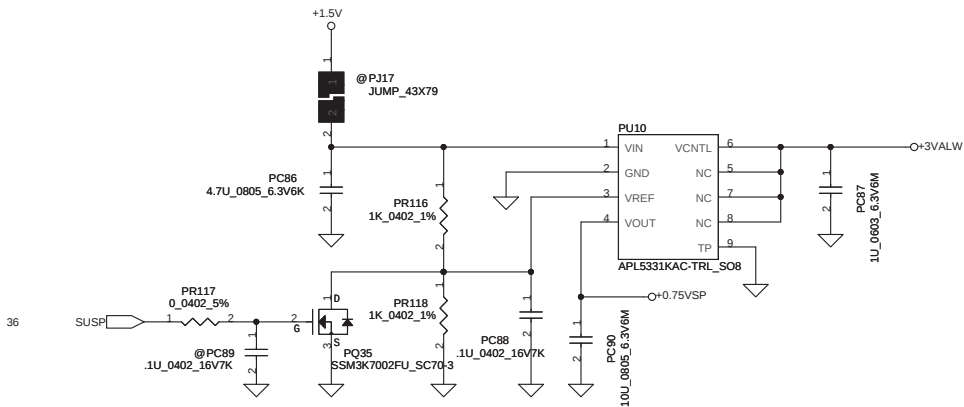


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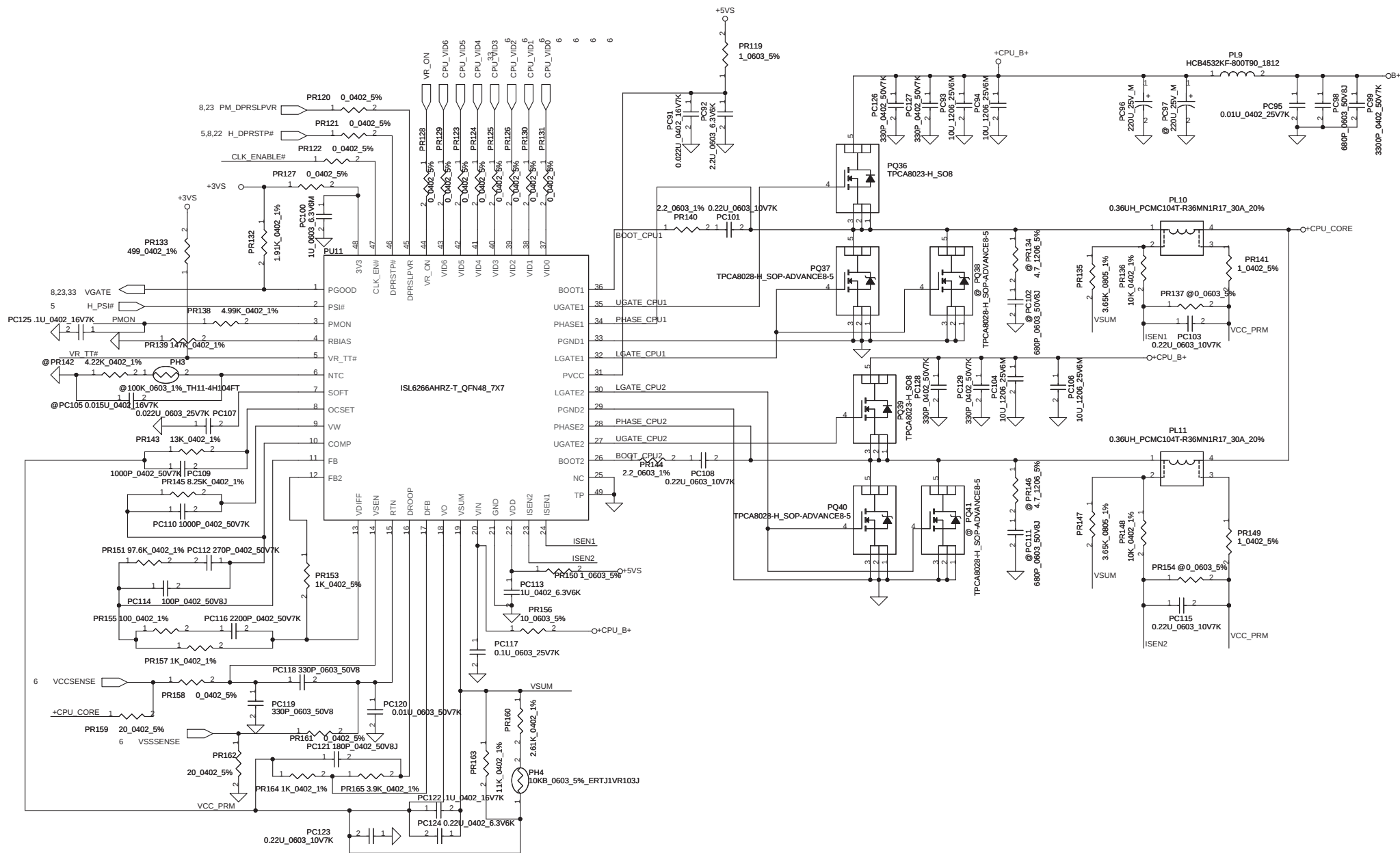


Ipeak=11A
Imax=7.7A
F=315KHz
Total Capacitor 940u,
ESR 4.286mohm

For UMA



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PIR (Product Improve Record)

KSWAA LA-4982P SCHEMATIC CHANGE LIST
REVISION CHANGE: 0.1 TO 1.0

NO	DATE	PAGE	MODIFICATION LIST	PURPOSE
1	7/22	15	delete C604~C610,C643~C645	Change reference plane of control from VCC to GND
2	7/24	35	change PCB P/N to DAZ07300200	For load BOM
3	7/27	14	add CD45 and un-mount CD17,CD39 on DDR 1.5V	design change

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