

Sapporo 300P Rev 0.3 Schematics Document

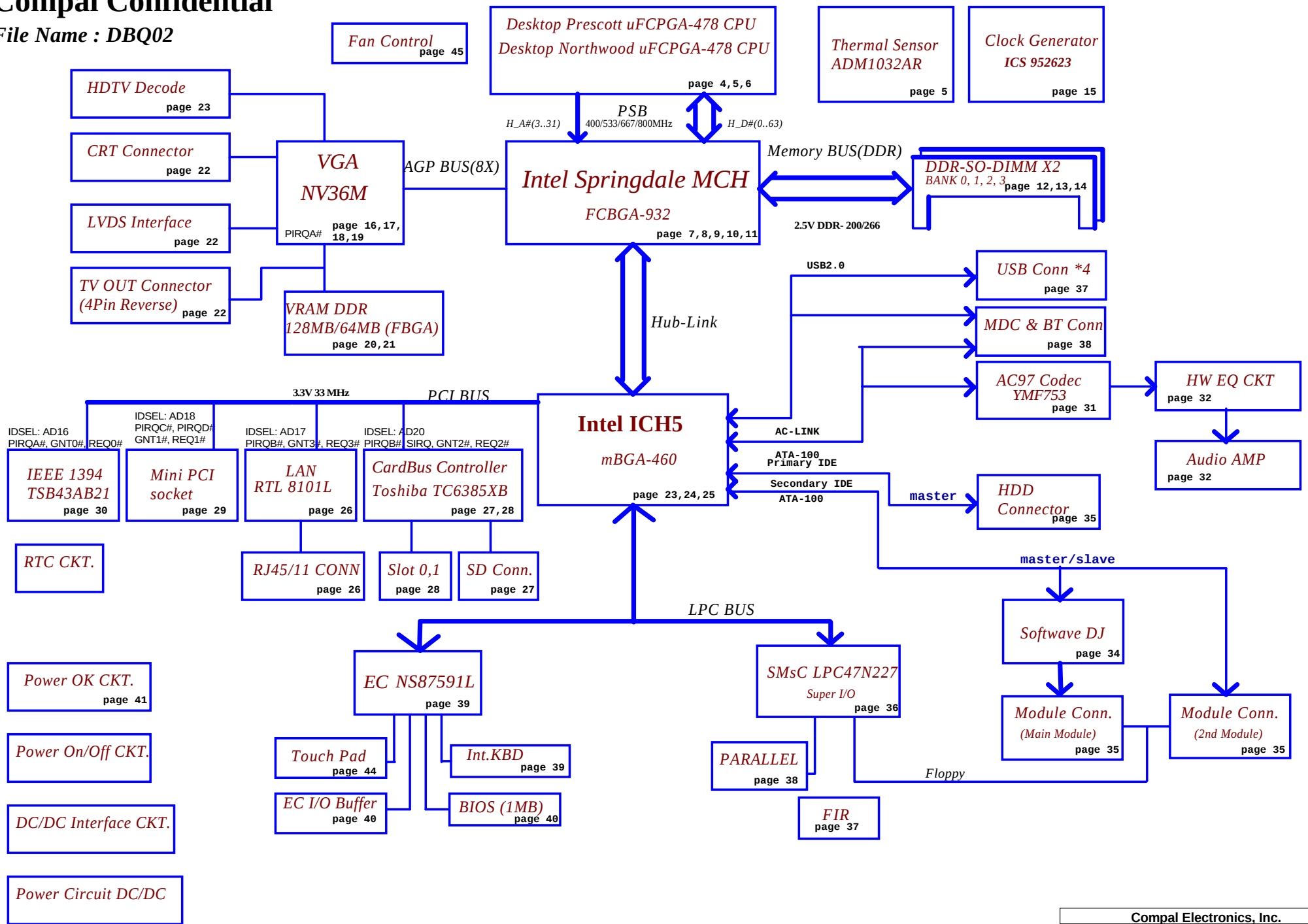
**Intel Prescott uFCPGA-478 / P4 Northwood
with Springdale / ICH5 / nVIDIA NV36M / HDTV chipset**

2003 / 11 / 25

Compal Electronics, Inc.		
Title		
Cover Sheet		
Size B	Document Number Sapporo 300P	Rev 0.3
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File Name : DBQ02



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Block Diagram			
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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
+CPU_VID	1.2V switched power rail for CPU AGTL Bus	ON	OFF	OFF
+VTT_GMCH	+1.225V (Prescott) / +1.45V (Northwood)	ON	OFF	OFF
+VGA_CORE	1.3V switched power rail for VGA chip	ON	OFF	OFF
+1.25VS	1.25V switched power rail	ON	OFF	OFF
+1.5VS	AGP 4X/8X	ON	OFF	OFF
+2.5V	2.5V power rail	ON	ON	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	ON	ON	OFF
+3VS	3.3V switched power rail	ON	OFF	OFF
+5VALW	5V always on power rail	ON	ON	ON*
+5V	5V power rail	ON	ON	OFF
+5VS	5V switched power rail	ON	OFF	OFF
+12VALW	12V always on power rail	ON	ON	ON*
+RTCVCC	RTC power	ON	ON	ON

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

External PCI Devices

Device	IDSEL#	REQ#/GNT#	Interrupts
VGA			PIRQA
CardBus	AD20	2	PIRQA/PIRQB
LAN	AD17	3	PIRQB
Mini-PCI	AD18	1/4	PIRQC/PIRQD
1394	AD16	0	PIRQA
SD	AD22		

EC SM Bus1 address

Device	Address	Device	Address
Smart Battery	0001 011X b	ADM1032	1001 110X b
EEPROM(24C16/02)	1010 000X b	OZ168	0011 0100 b
(24C04)	1011 000Xb		

EC SM Bus2 address

ICH5 SM Bus address

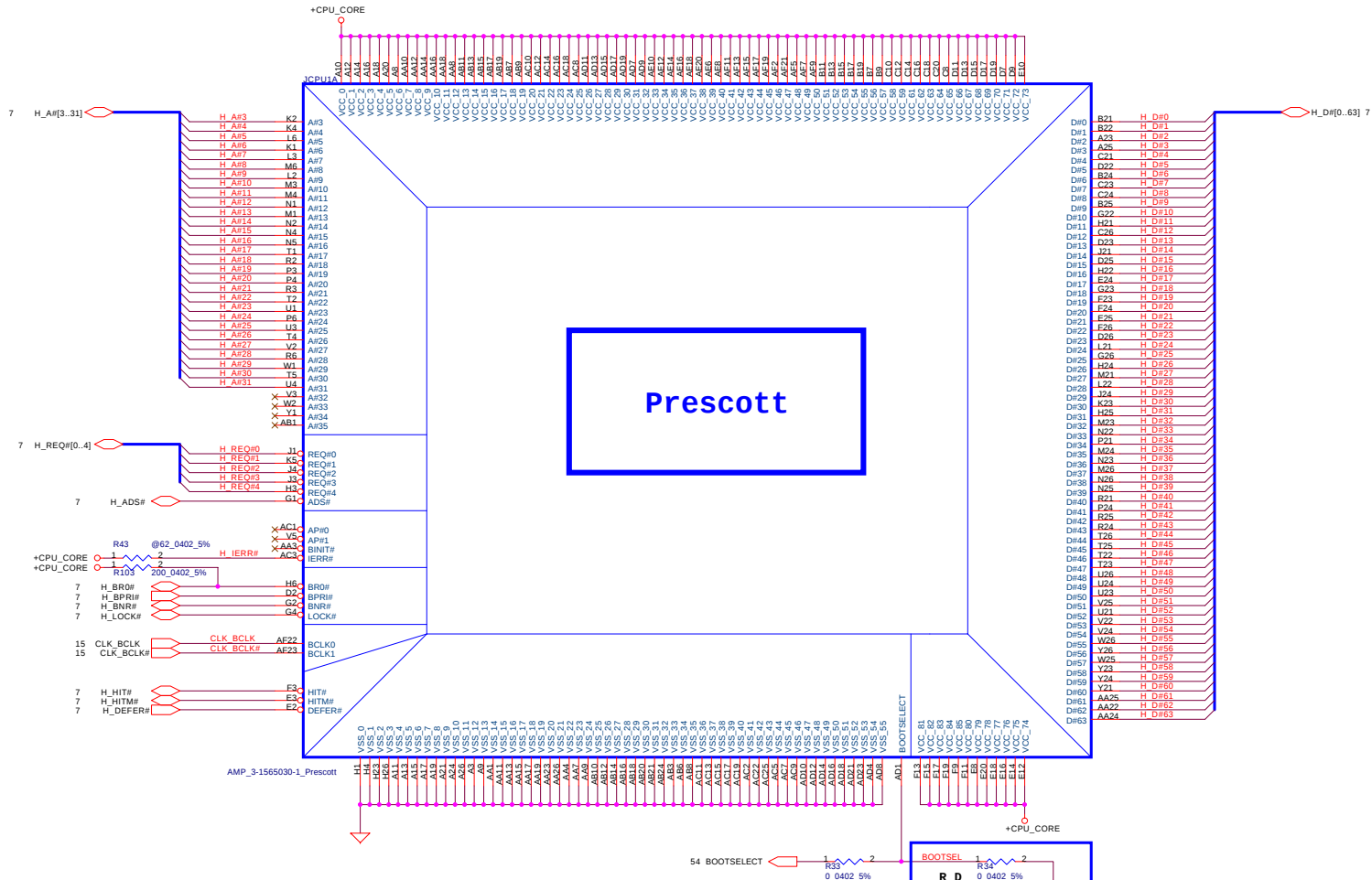
Device	Address
Clock Generator (ICS 952623)	1101 001Xb
DDR DIMM0	1001 000Xb
DDR DIMM2	1001 001Xb

STATE	SIGNAL	SLP_S1#	SLP_S3#	SLP_S4#	SLP_S5#	+VALW	+V	+VS	Clock
		HIGH	HIGH	HIGH	HIGH	ON	ON	ON	ON
Full 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 Table for AD channel

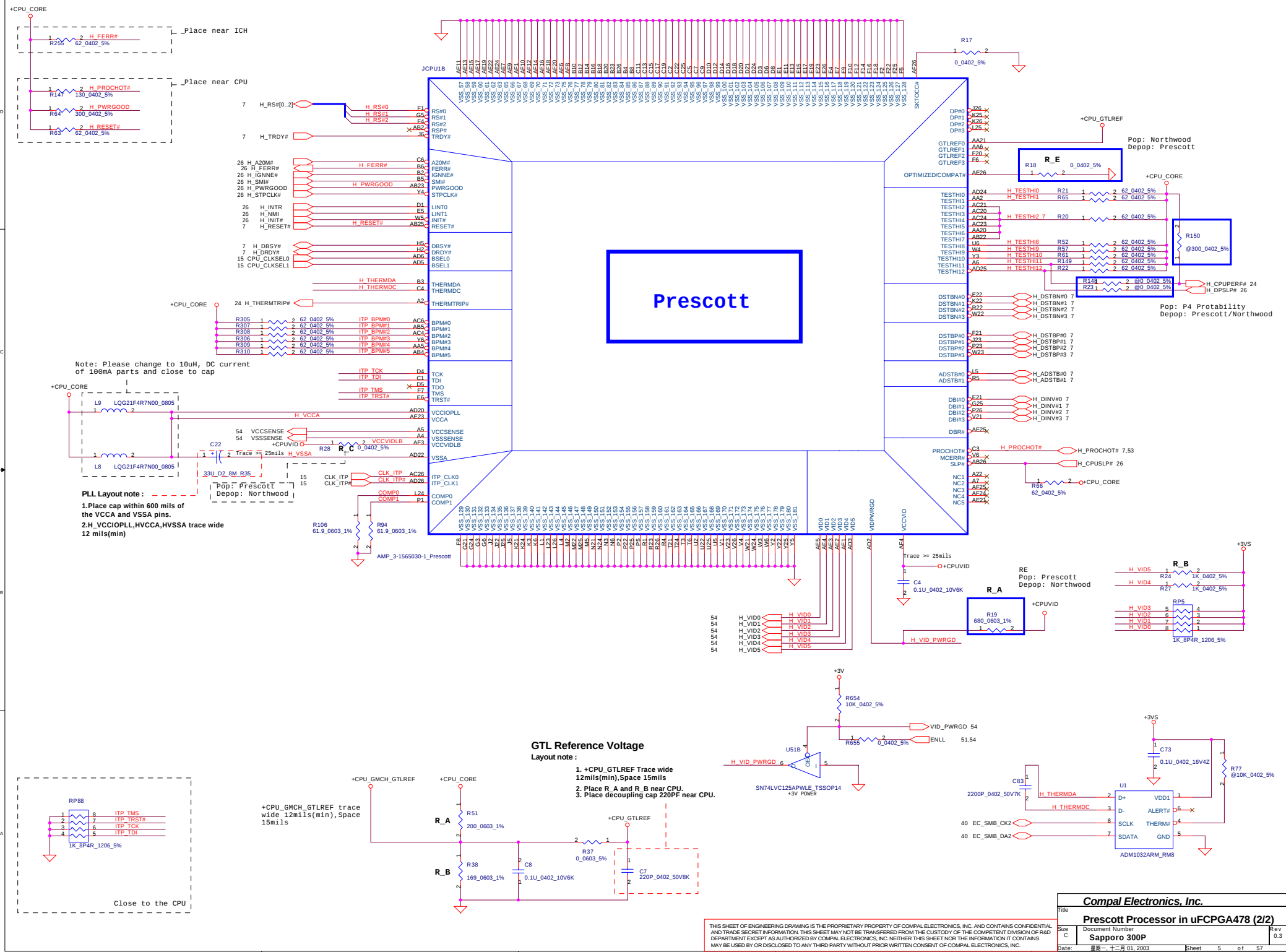
Vcc	3.3V +/- 5%			
Ra	100K +/- 5%			
Board ID	Rb	VAD_BID min	VAD_BID typ	VAD_BID max
0	0	0 V	0 V	0 V
1	8.2K +/- 5%	0.216 V	0.250 V	0.289 V
2	18K +/- 5%	0.436 V	0.503 V	0.538 V
3	33K +/- 5%	0.712 V	0.819 V	0.875 V
4	56K +/- 5%	1.036 V	1.185 V	1.264 V
5	100K +/- 5%	1.453 V	1.650 V	1.759 V
6	200K +/- 5%	1.935 V	2.200 V	2.341 V
7	NC	2.500 V	3.300 V	3.300 V

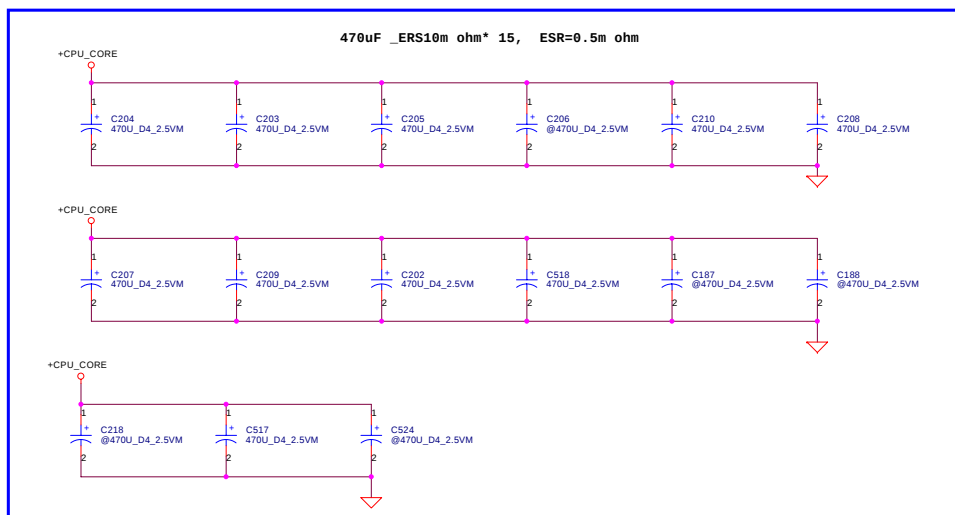
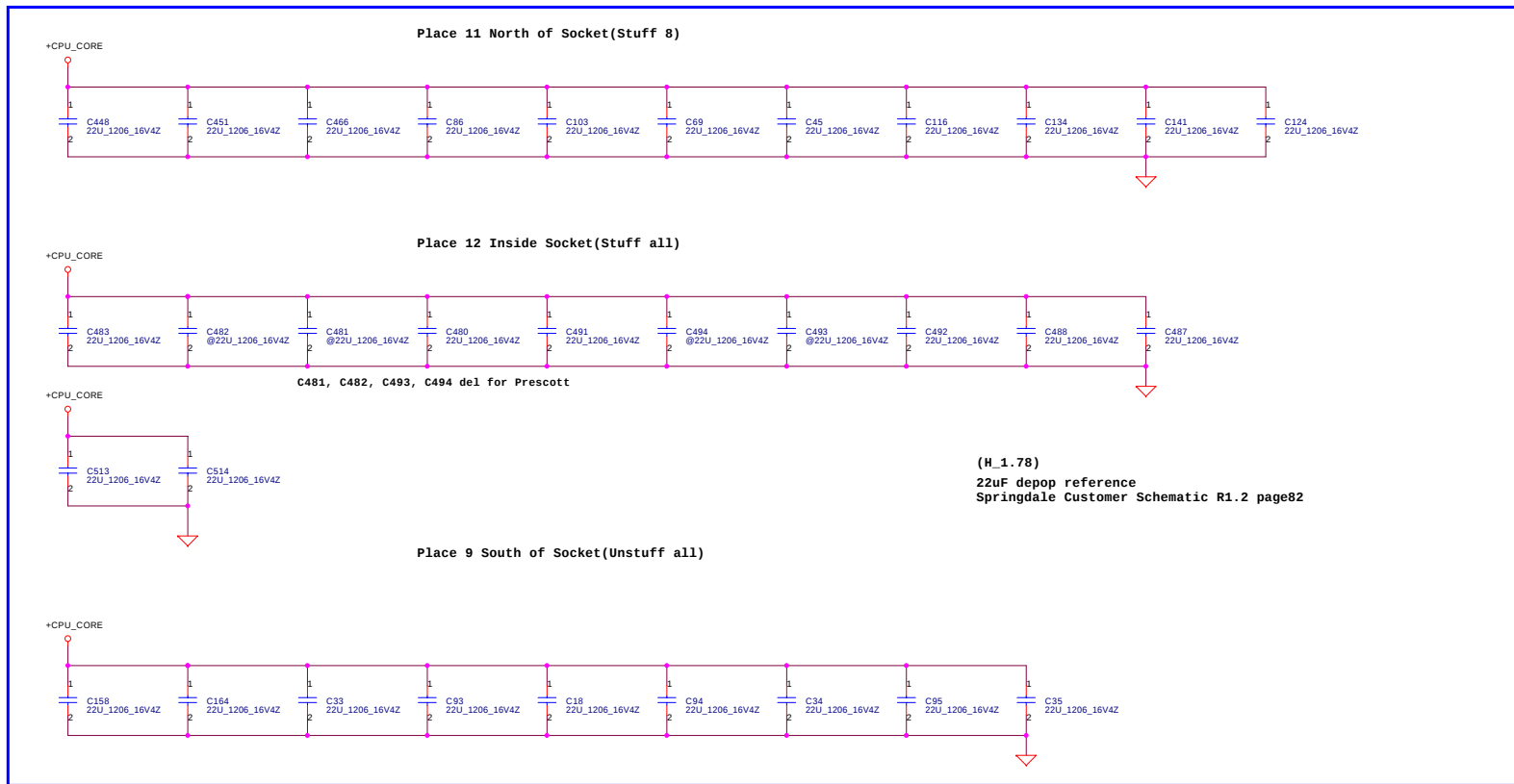
Board ID	PCB Revision
0	0.1
1	0.2
2	0.3
3	
4	
5	
6	
7	



Reference Intel document Desktop P4 Spec.: 10988 P4 0.13u 512KB L2 EMTS Rev.2.0 Desktop Prescott Spec.: 11910 Prescott EMTS Rev.0.5						
Pin number	Northwood Pin name	Comment	Prescott Pin name	Comment	Northwood	Prescott
B6	FERR#	Pull-up 62ohm to +VCC_CORE	FERR#/PBES#	Pull-up 62ohm to +VCC_CORE	Pop	Pop
AA20	ITPCLKOUT0	Pull-up 62ohm to +VCC_CORE	TESTHI6	Pull-up 62ohm to +VCC_CORE	Pop	Pop
AB22	ITPCLKOUT1	Pull-up 62ohm to +VCC_CORE	TESTHI7	Pull-up 62ohm to +VCC_CORE	Pop	Pop
AD2	NC	float	VIDPWRG0	Pull-up 8.2Kohm to +VCCVID	Depop	Pop
AD3	NC	float	VID5	Pull-up 1Kohm to +3VRUN & connect to PWRIC	Depop	Pop
AF3	NC	float	VCCVIDLB	Connect to +VCCVID	Depop	Pop
AD20	VCCA	Connect to CPU Filter	VCCIOPLL	Connect to CPU Filter		
AF23	VCCIOPLL	Connect to CPU Filter	VCCA	Connect to CPU Filter		
AD1	VSS	Connect to GND	BOOTSELECT1	CPU determine	Pop	Depop
AE26	VSS	Connect to GND	OPTIMIZED/COMPAT#	float	Pop	Depop

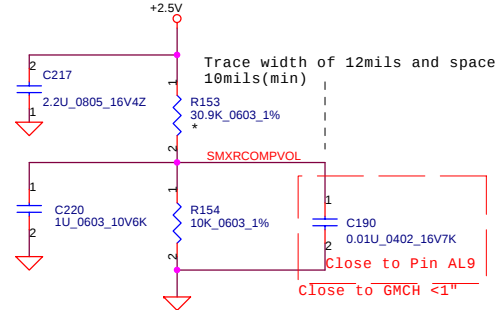
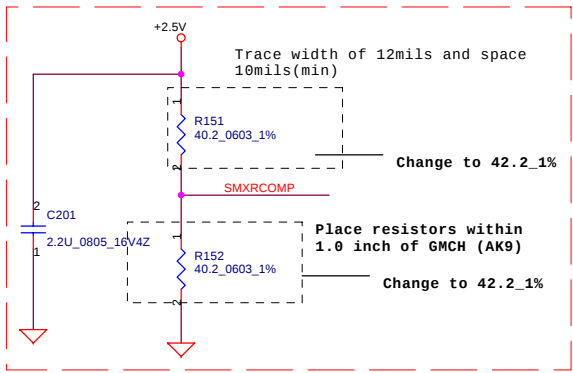
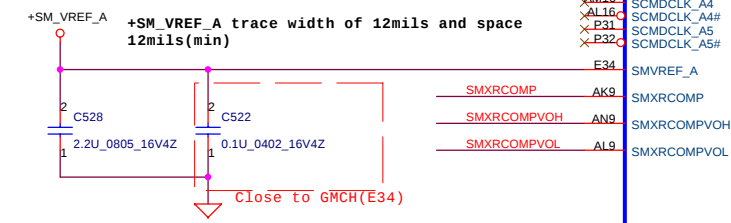
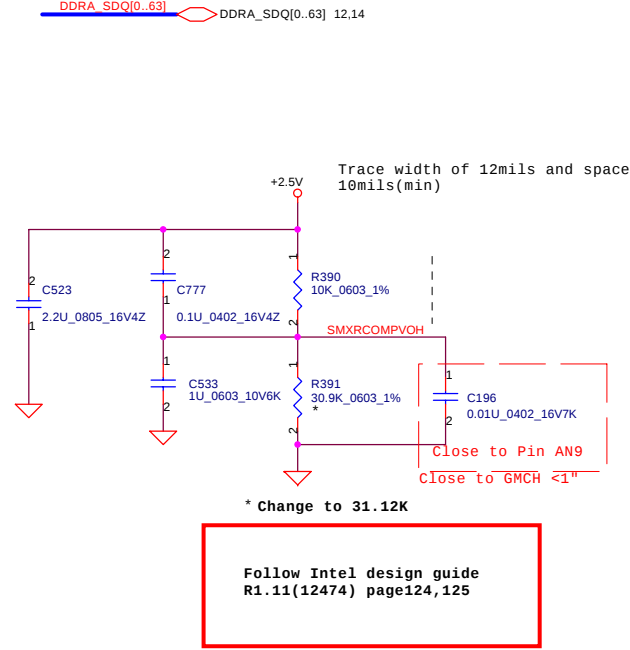
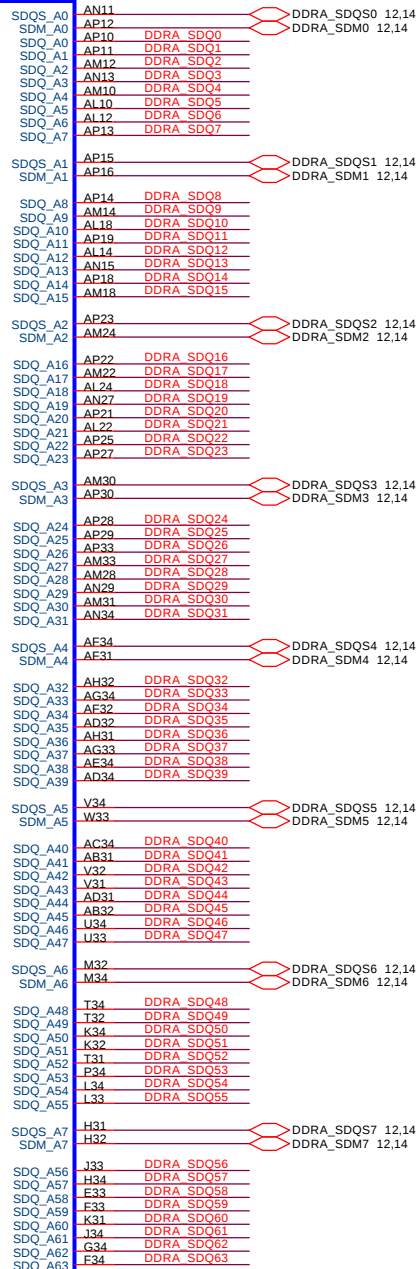
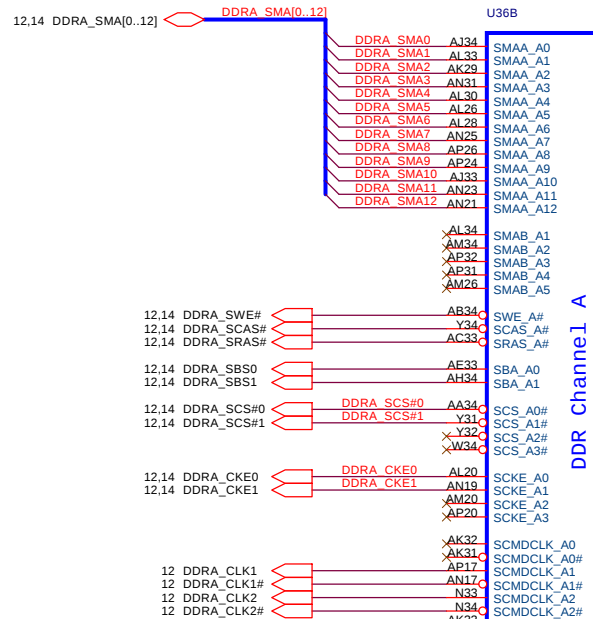
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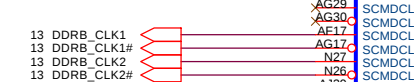
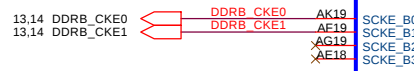
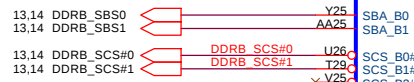
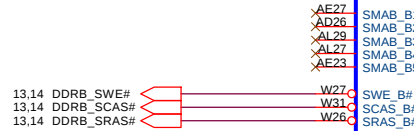
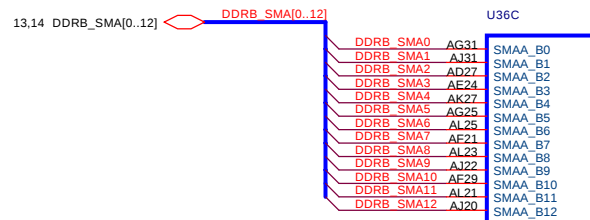


Decoupling Reference Document:
Springdale Chipset Platform Design guide Rev1.11
(12474)page239

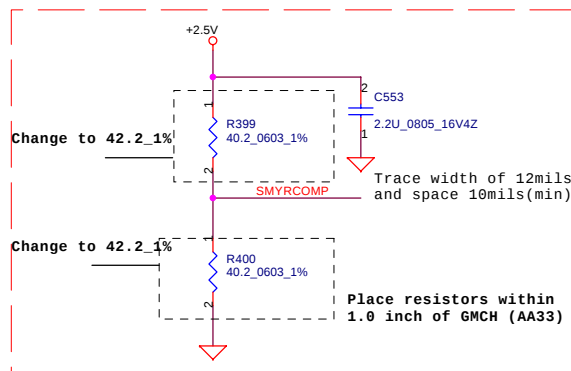
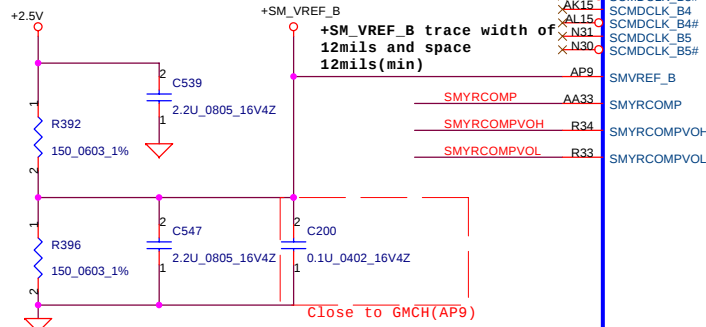
Decoupling Reference Requirement:
560uF Polymer, ESR:5m ohm(each) * 10
22uF X5R * 32



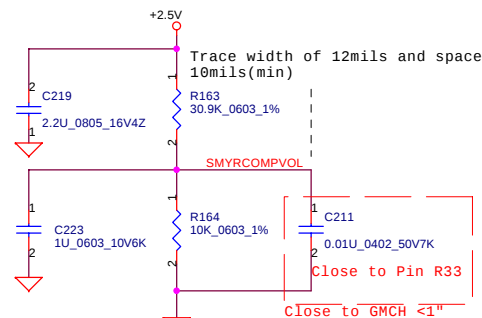
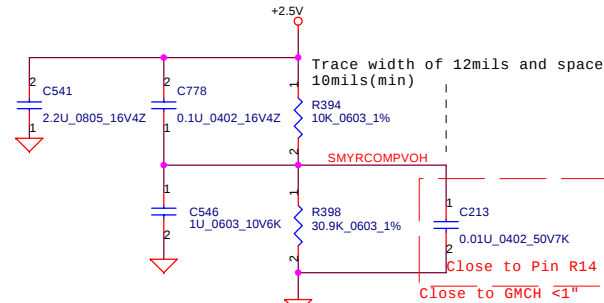
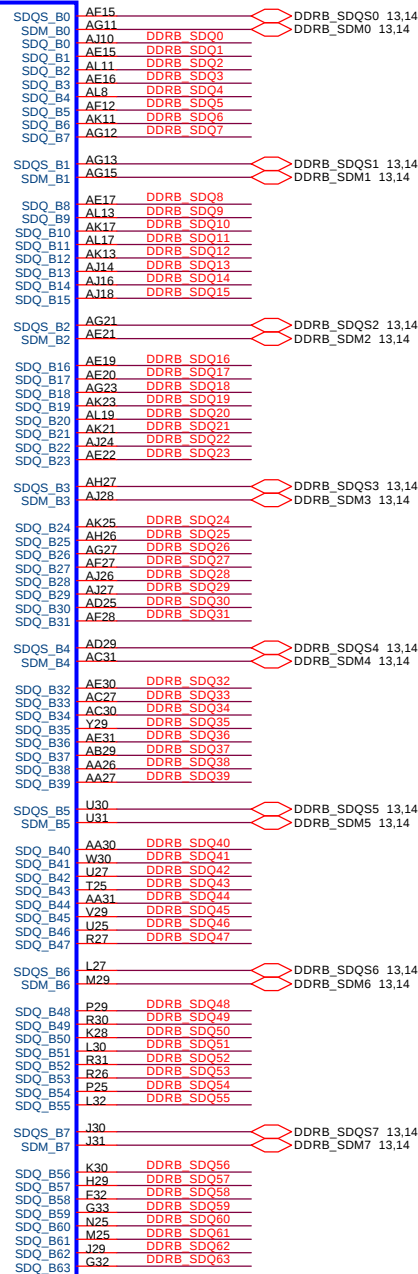
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SM_VREF_B and SM_VREF_A
are connected inside GMCH.



DDR Channel B



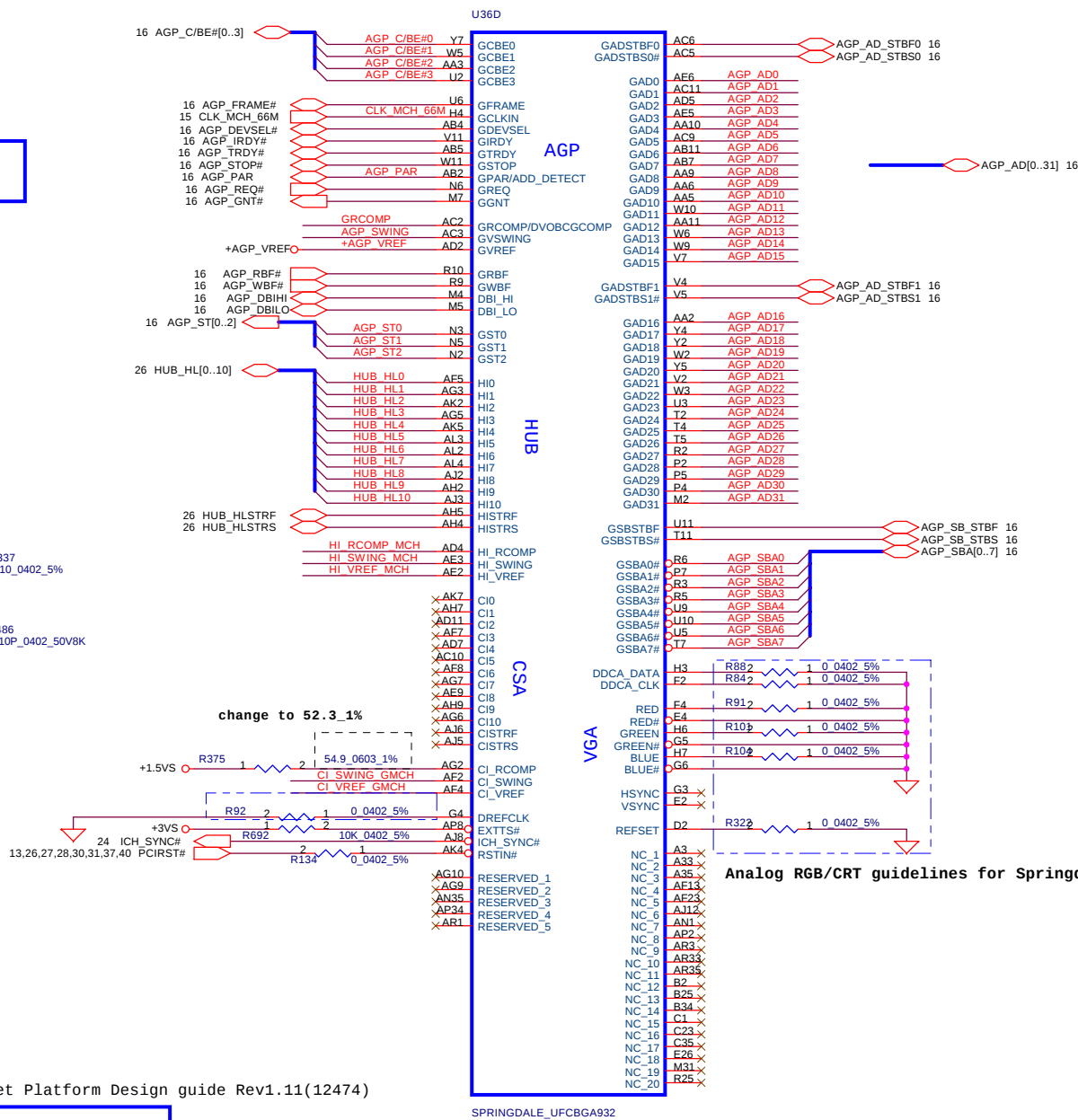
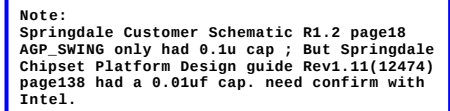
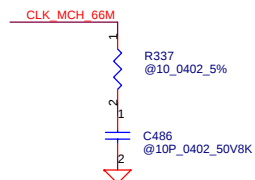
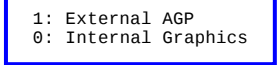
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Springdale-DDR Interface-B(3/5)

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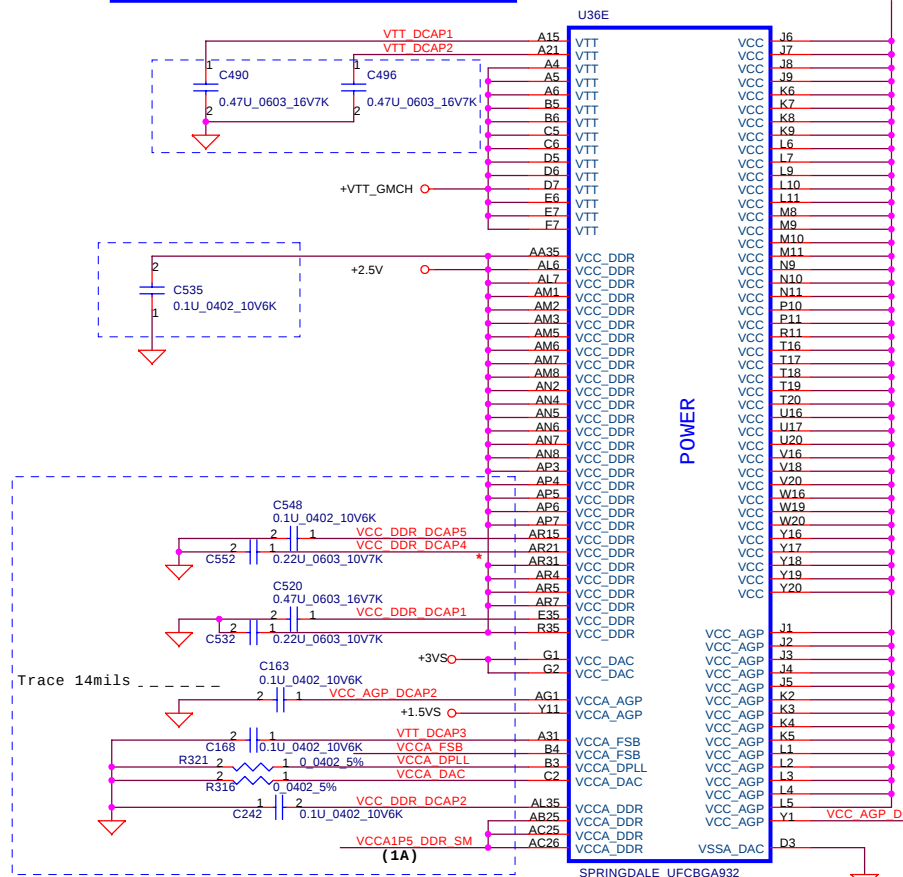
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Analog RGB/CRT guidelines for Springdale-P

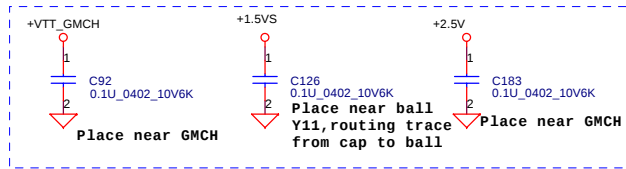
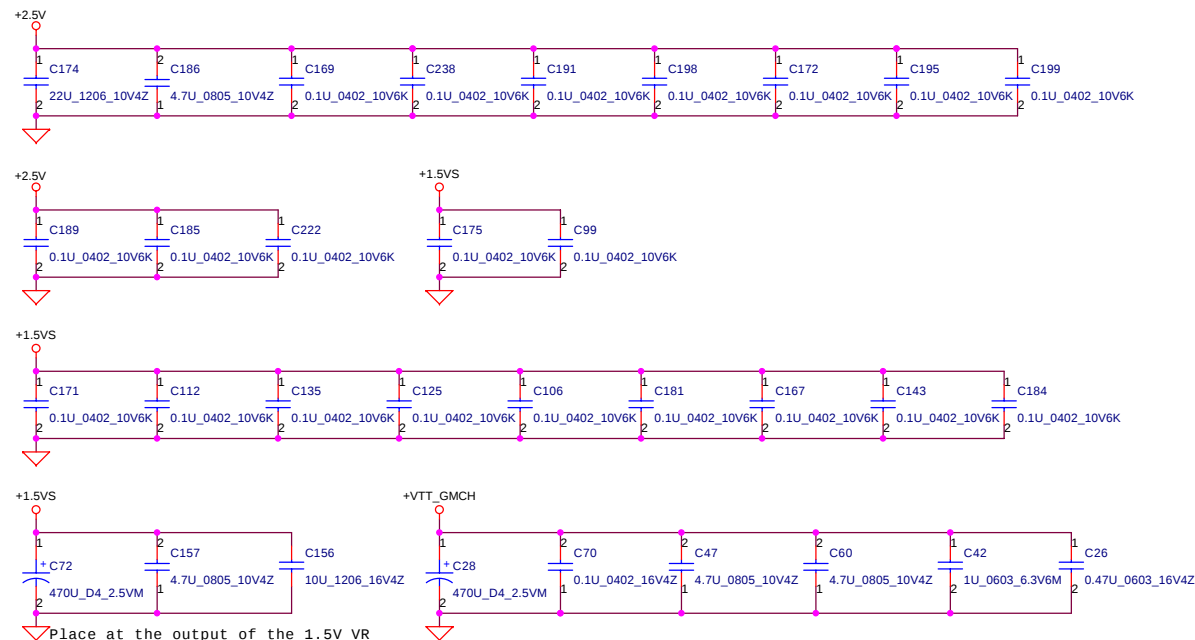
Note:
Placed less than 100 mils from ball
Route to GMCH ball without via



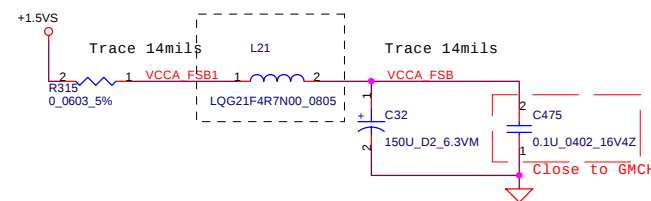
Note:
Placed less than 100 mils from ball
Route to GMCH ball without via

Decoupling Reference Document:
Springdale Chipset Platform Design guide Rev1.11
(12474)page246,248

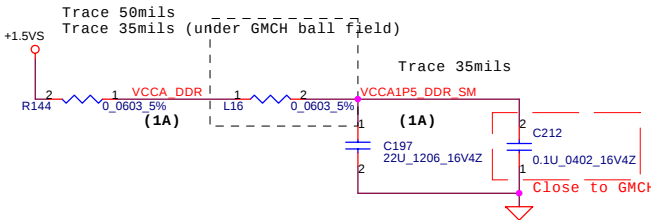
Decoupling Reference Document:
Springdale Customer Schematic R1.2 page84



Note: Please change to 0.82uH, DC current
of 30mA parts and close to cap

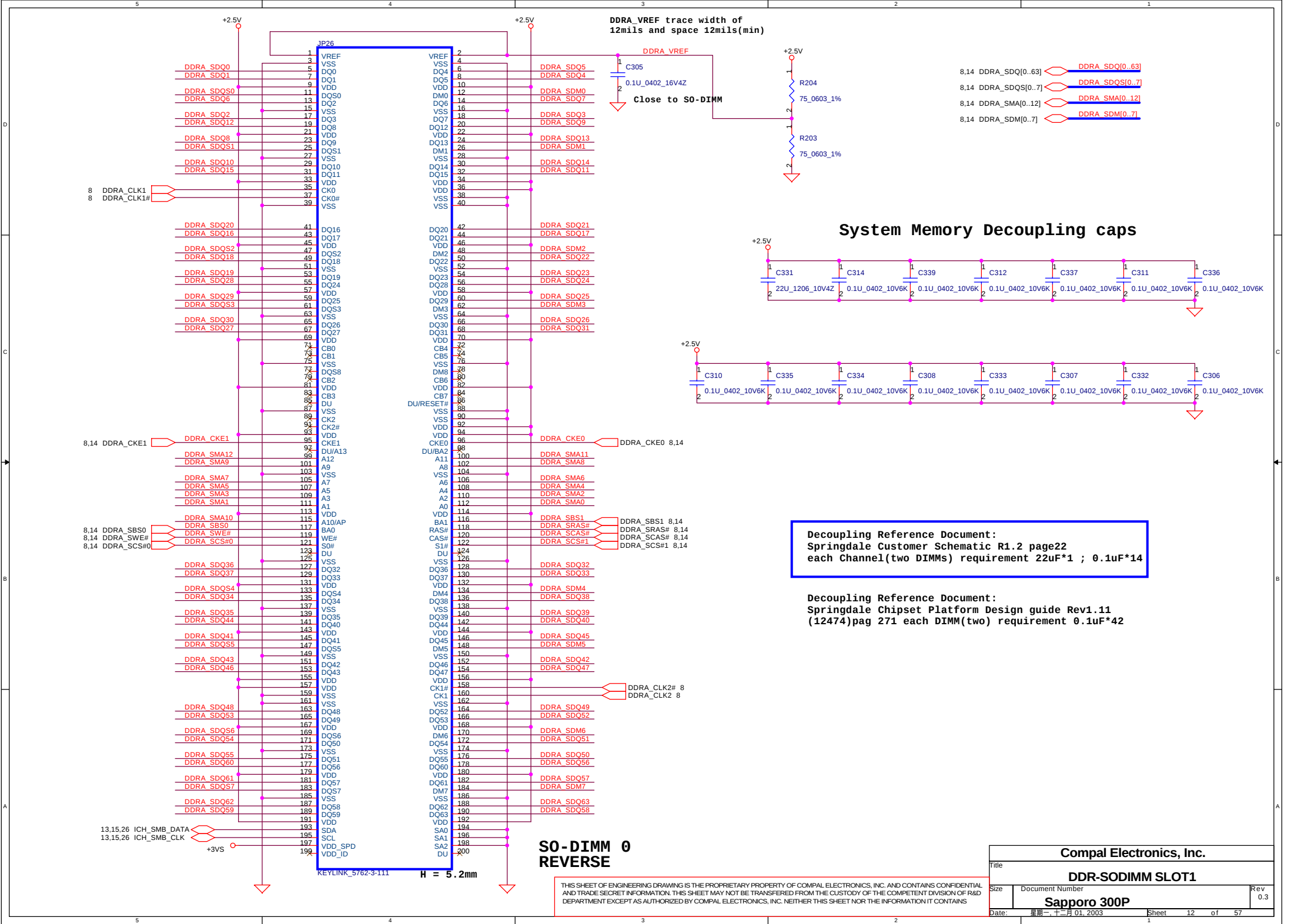


Note: Please change to 1uH(0.54uH-D-IN), DC current
of 1000mA parts and close to cap



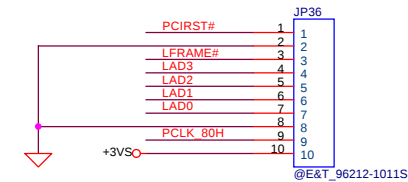
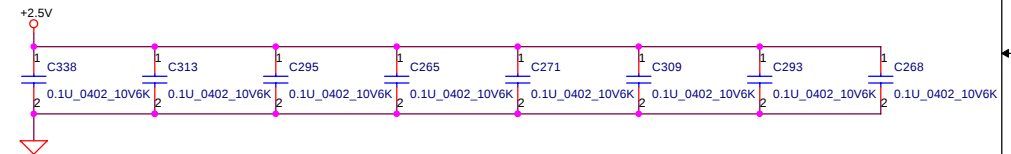
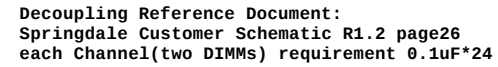
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Springdale-Decoupling (5/5)		
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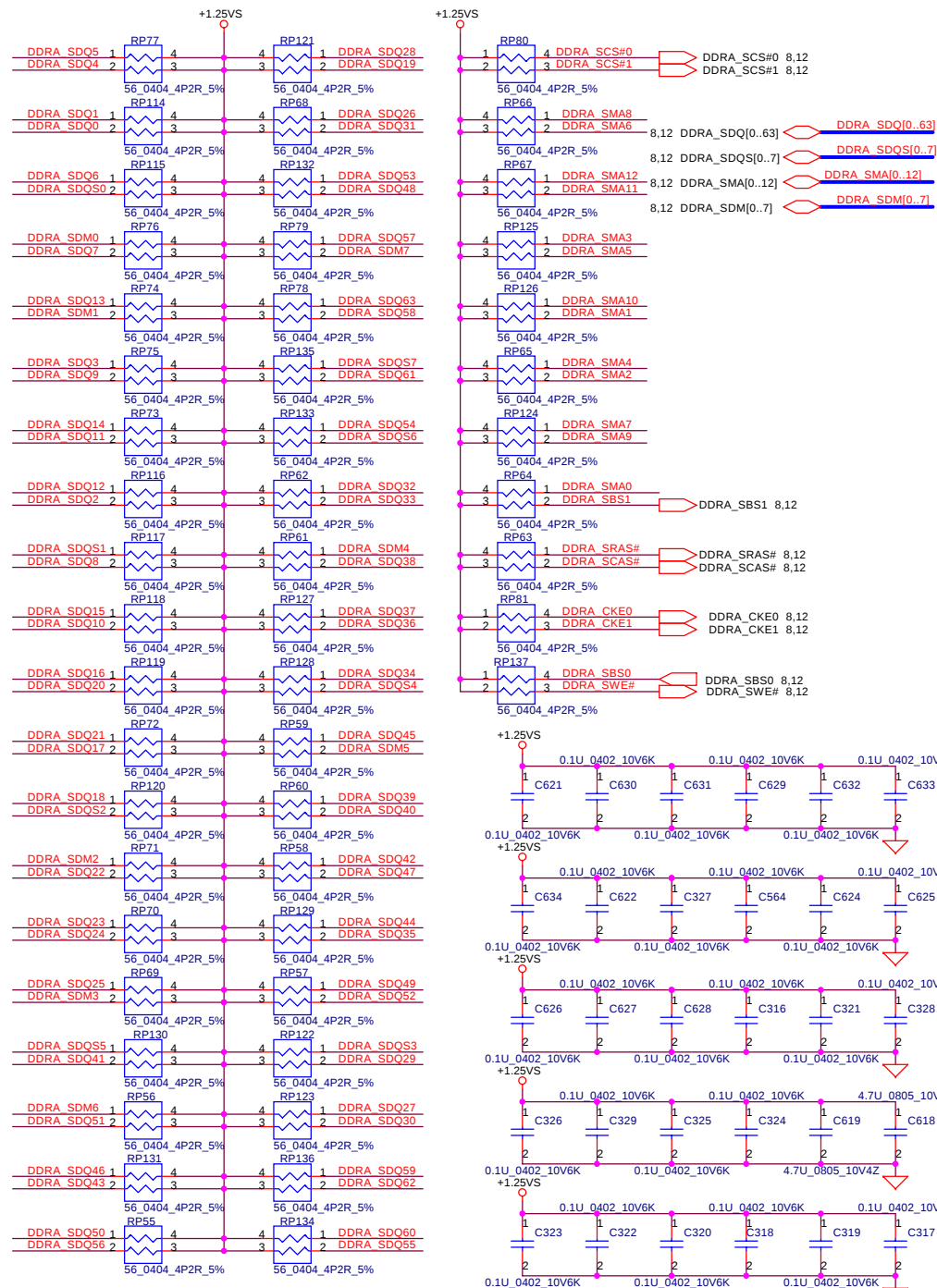


System Memory Decoupling caps



Compal Electronics, Inc.			
Title			
DDR-SODIMM SLOT2			
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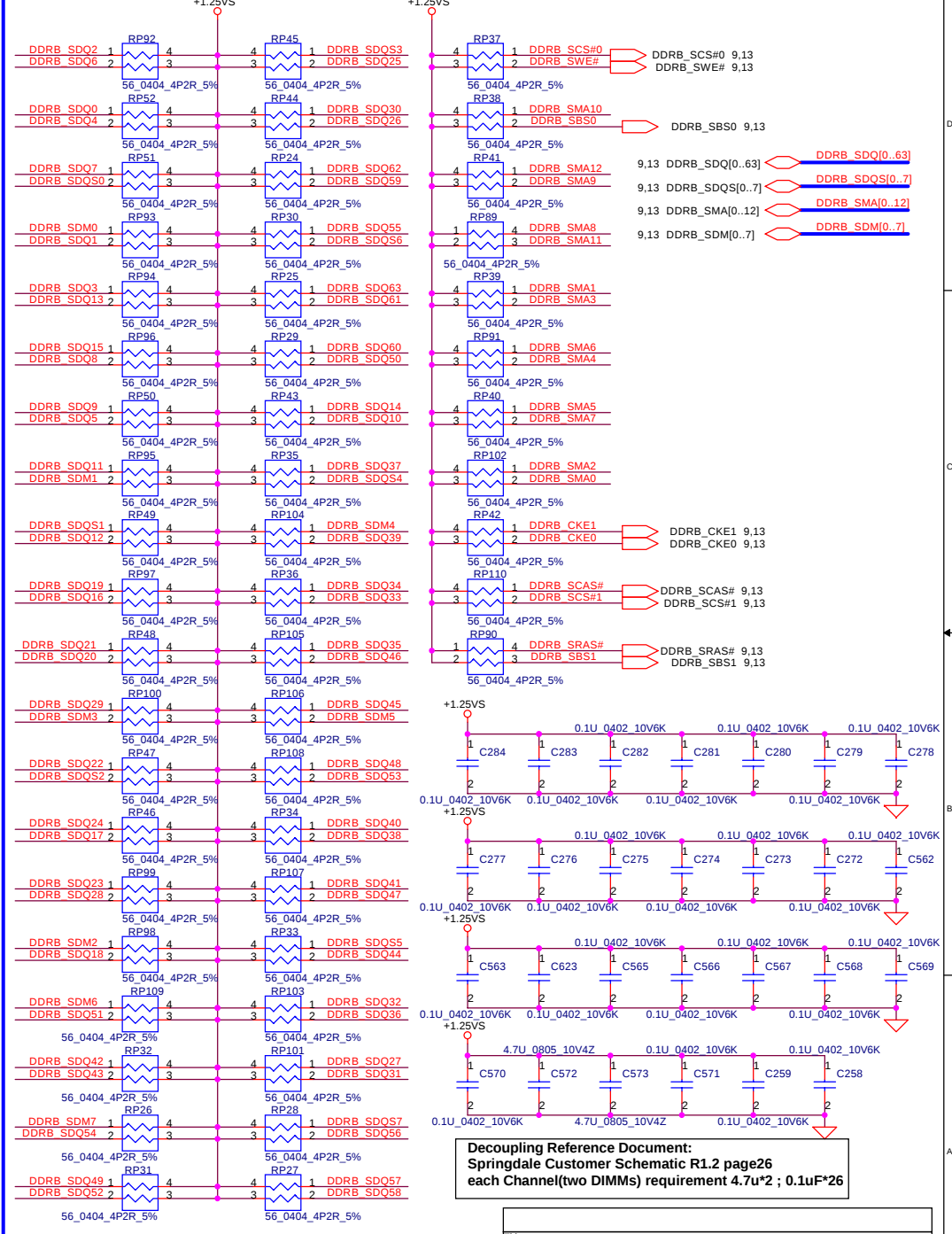
Channel A(DIMM0) Termination resistors & Decoupling caps



Decoupling Reference Document:
Springdale Customer Schematic R1.2 page22
each Channel(two DIMMs) requirement 4.7u*2 ; 0.1uF*28

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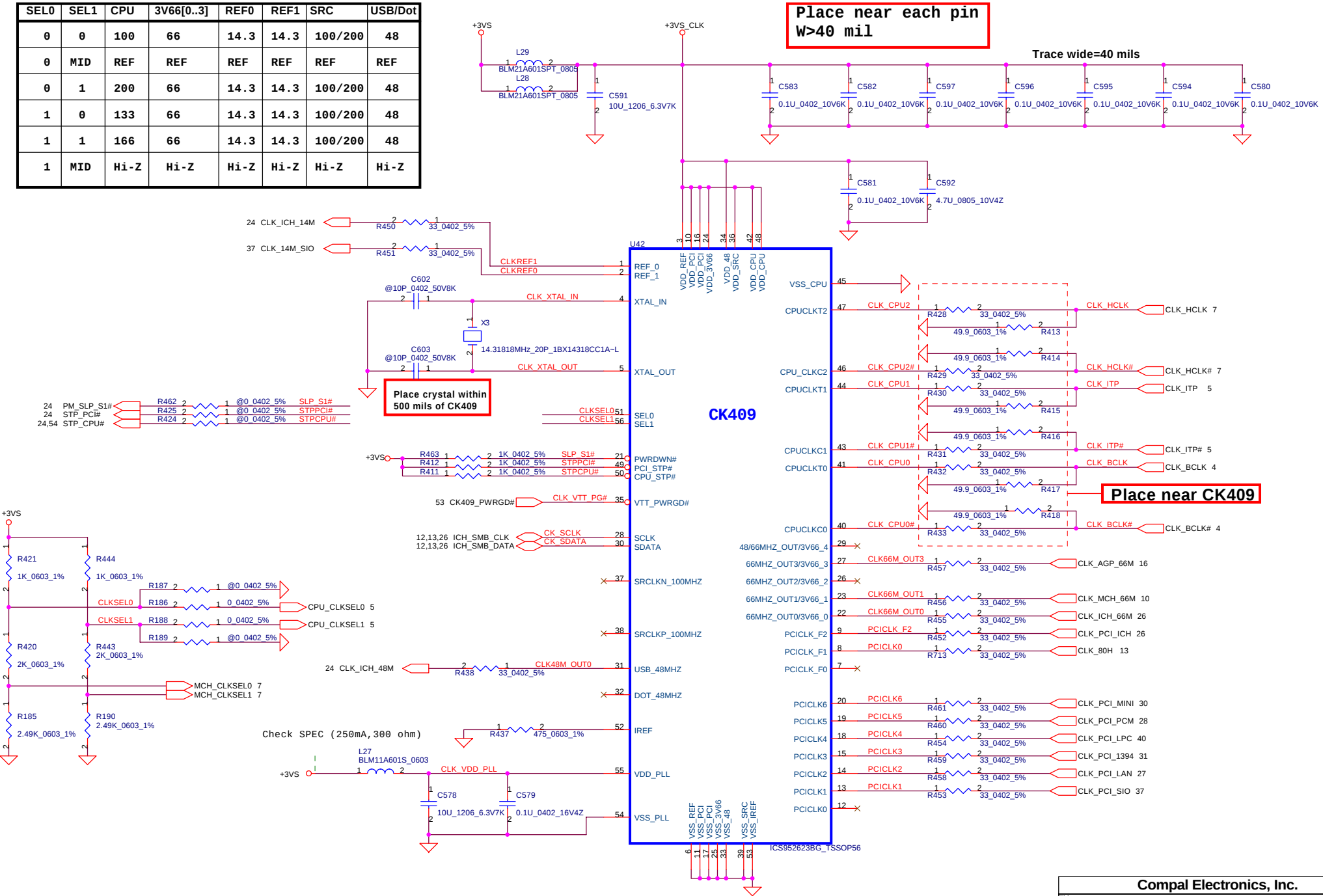
Channel B(DIMM1) Termination resistors & Decoupling caps



Decoupling Reference Document:
Springdale Customer Schematic R1.2 page26
each Channel(two DIMMs) requirement 4.7u*2 ; 0.1uF*26

Title		
DDR Termination Resistors		
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SEL0	SEL1	CPU	3V66[0..3]	REF0	REF1	SRC	USB/Dot
0	0	100	66	14.3	14.3	100/200	48
0	MID	REF	REF	REF	REF	REF	REF
0	1	200	66	14.3	14.3	100/200	48
1	0	133	66	14.3	14.3	100/200	48
1	1	166	66	14.3	14.3	100/200	48
1	MID	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z	Hi-Z



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Clock Generator		
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20 NDQMA[0..7] NDQMA[0..7]

20 NDQSA[0..7] NDQSA[0..7]

20 NMAA[0..11] NMAA[0..11]

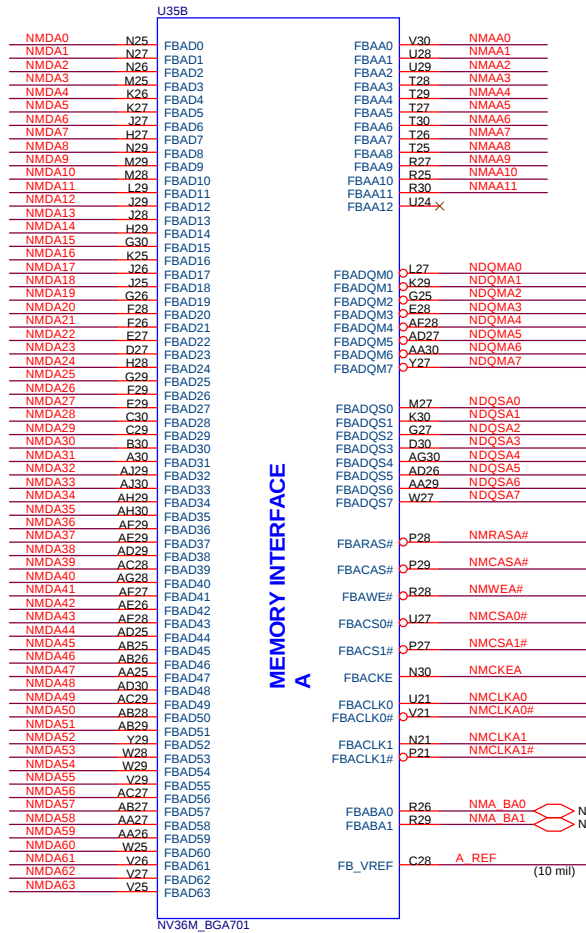
20 NMDBA[0..63] NMDBA[0..63]

21 NDQMB[0..7] NDQMB[0..7]

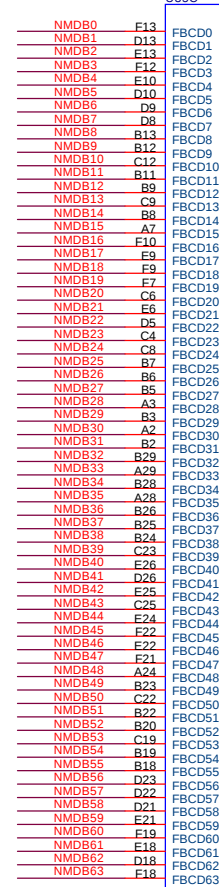
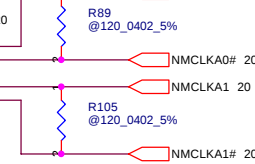
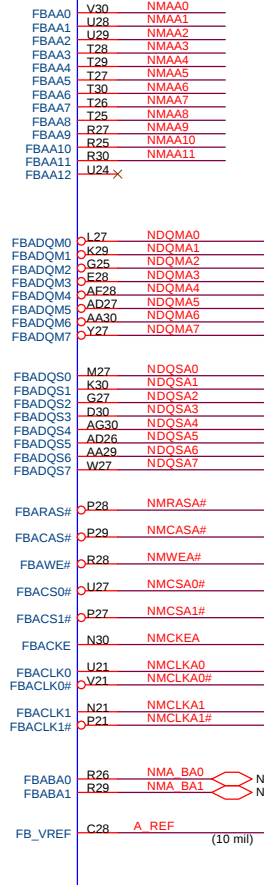
21 NDQSB[0..7] NDQSB[0..7]

21 NMAB[0..11] NMAB[0..11]

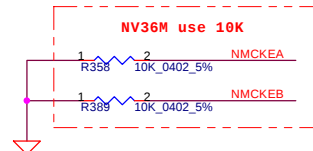
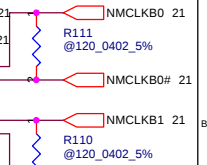
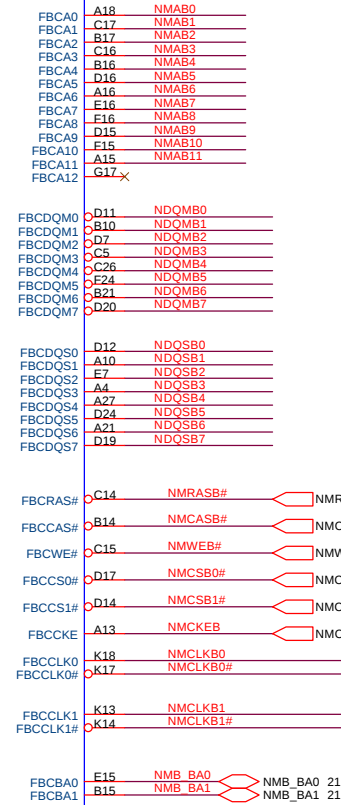
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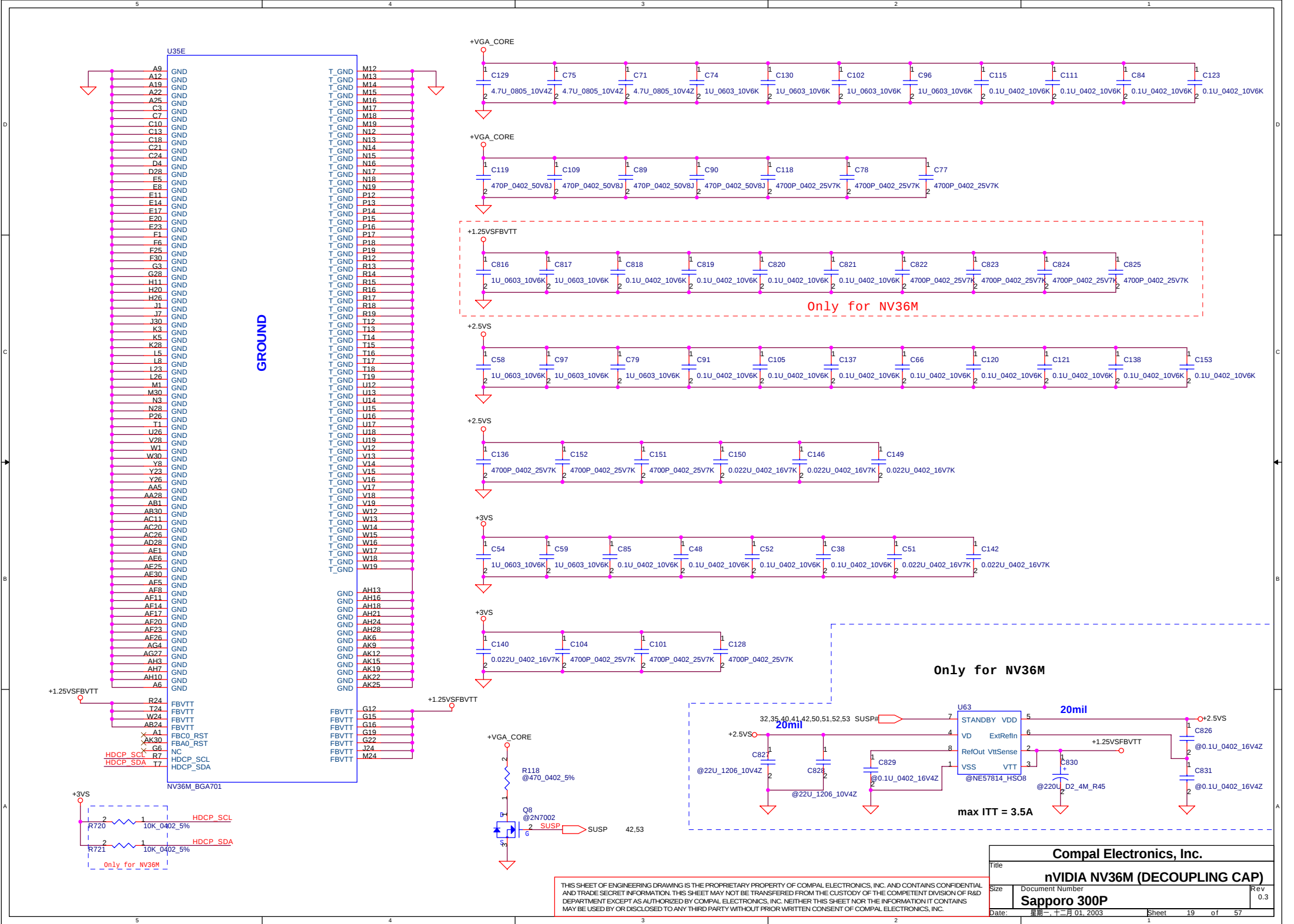


MEMORY INTERFACE A



MEMORY INTERFACE B



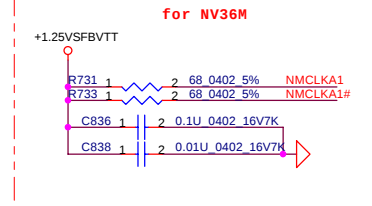
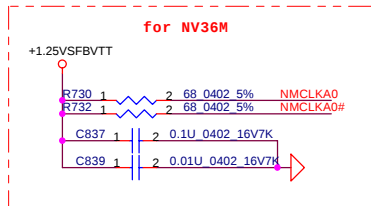
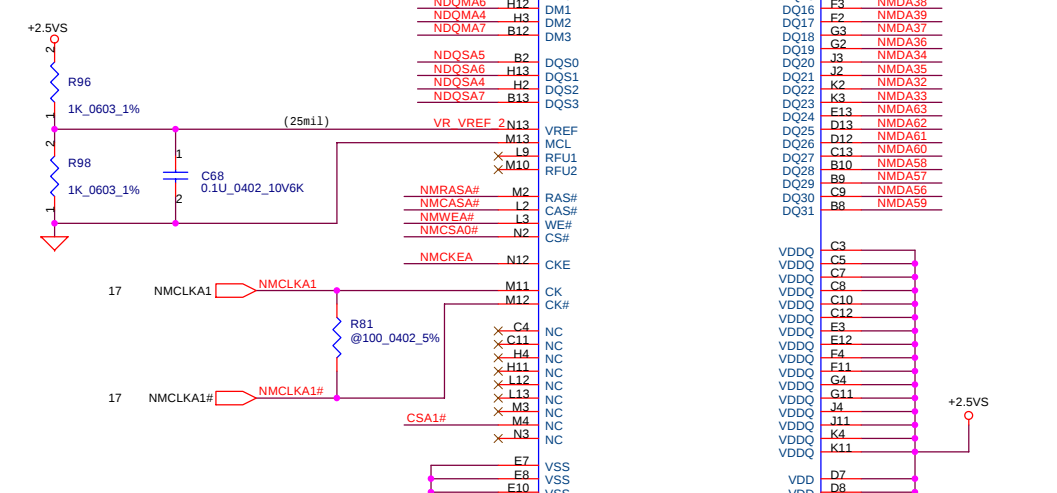
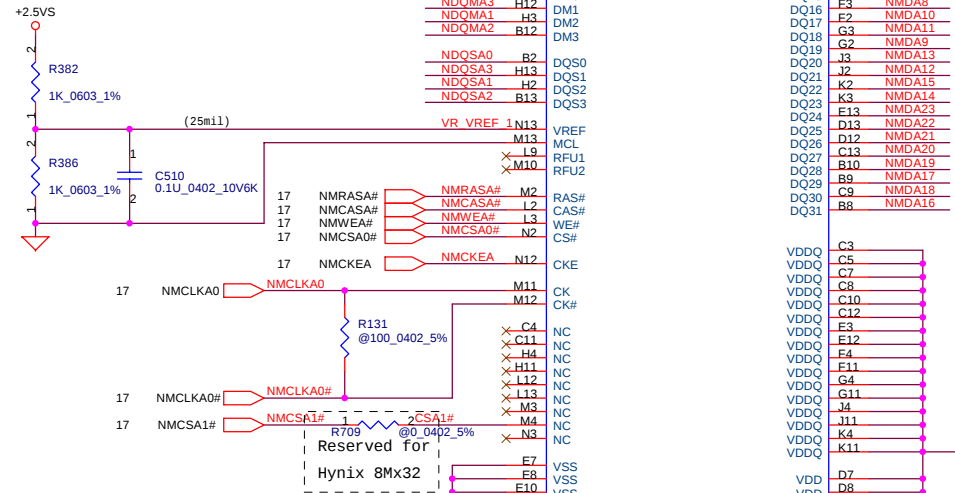
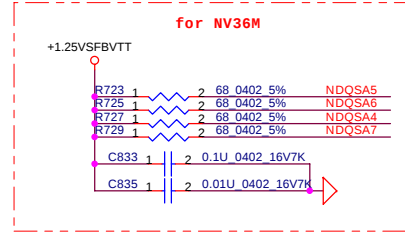
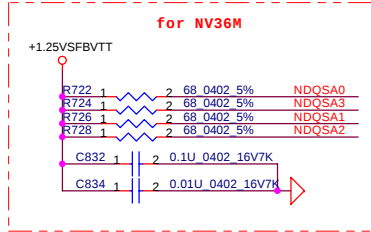
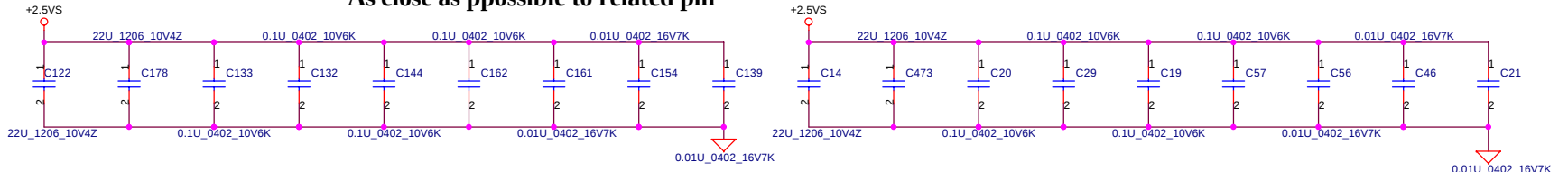


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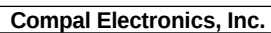
Compal Electronics, Inc.		
Title		
nVIDIA NV36M (DECOUPLING CAP)		
Size	Document Number	Rev
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As close as possible to related pin

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17 NDQSA[0..7] NDQSA[0..7]
17 NMAA[0..11] NMAA[0..11]
17 NMDA[0..63] NMDA[0..63]

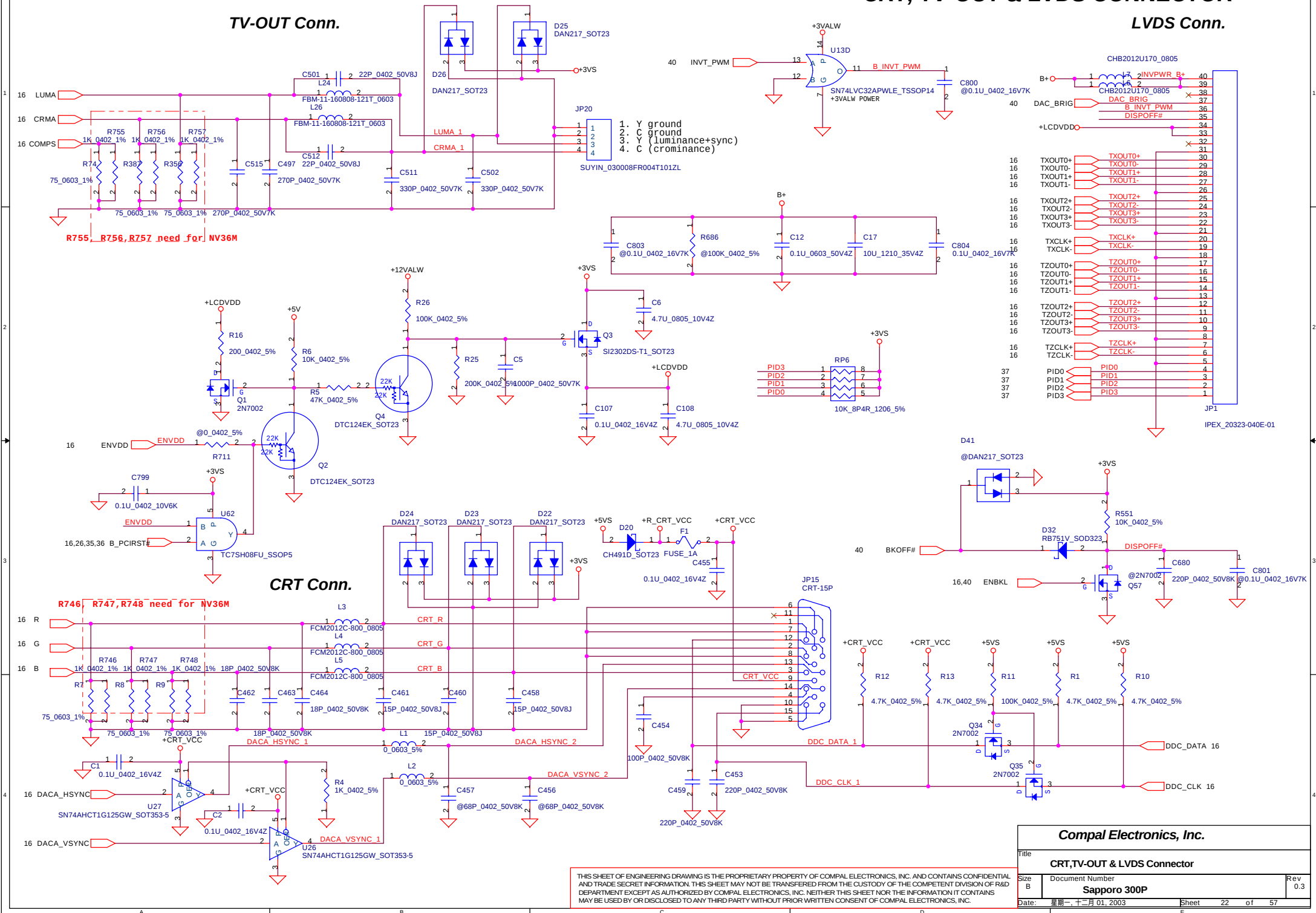


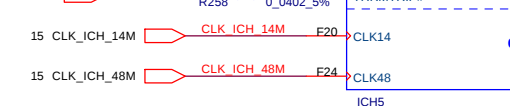
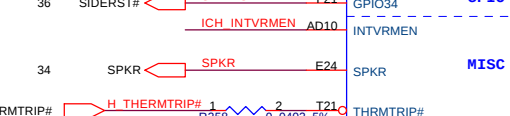
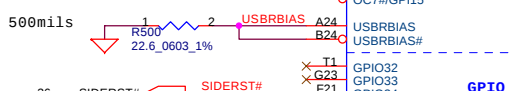
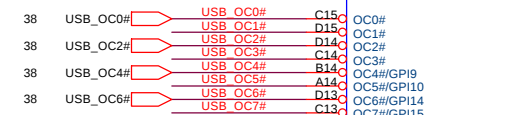
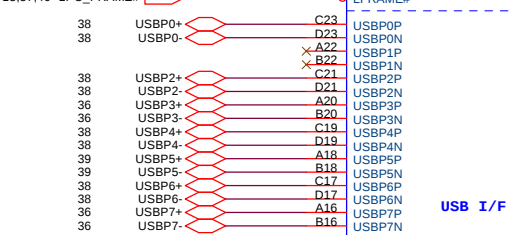
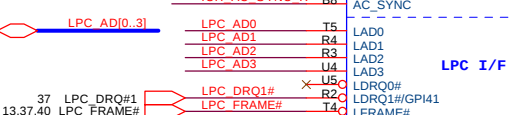
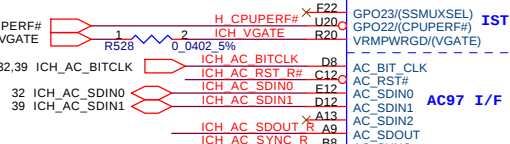
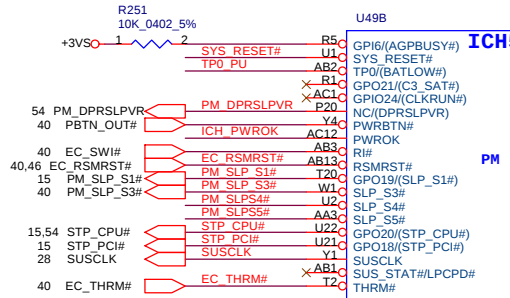
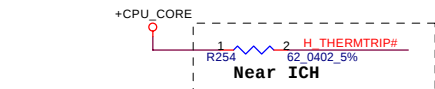
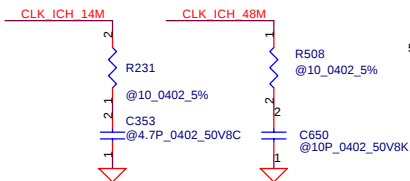
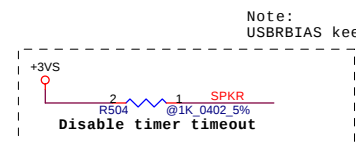
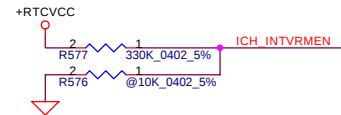
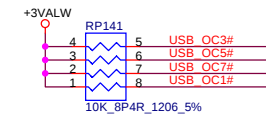
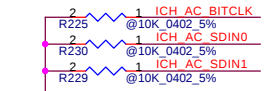
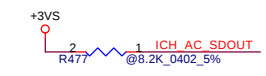
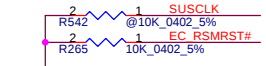
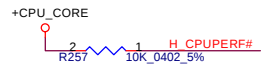
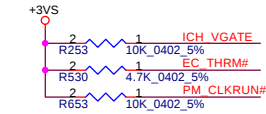
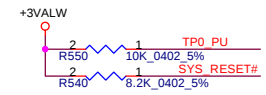
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1

CRT, TV-OUT & LVDS CONNECTOR

TV-OUT Conn.**LVDS Conn.**



ICH5/(ICH5-M)

GPI

PM

IST

AC97 I/F

IDE I/F

LPC I/F

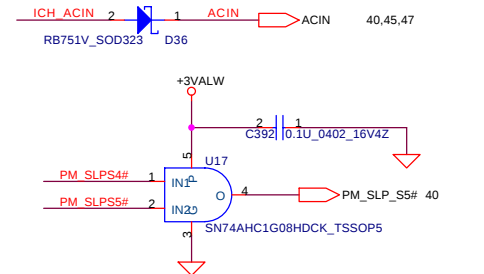
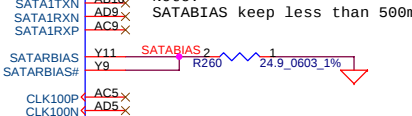
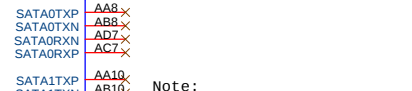
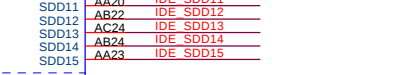
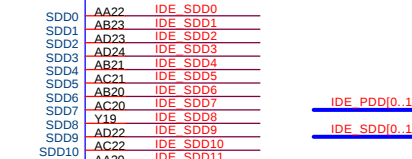
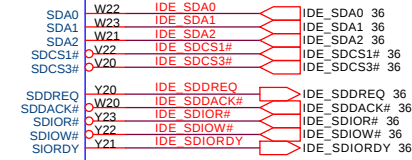
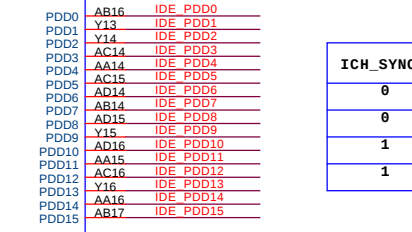
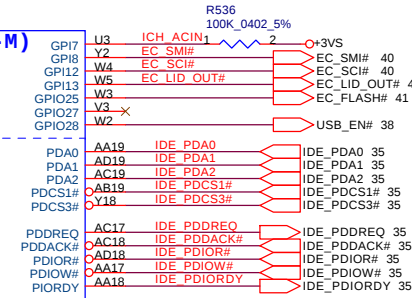
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GPIO

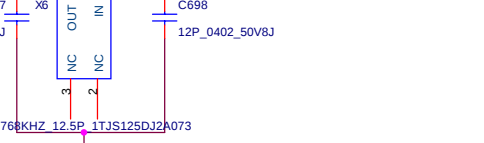
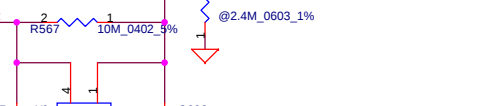
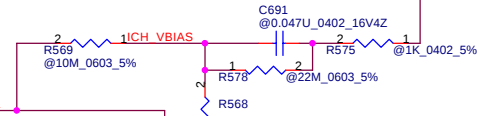
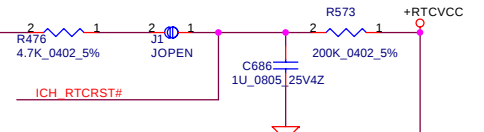
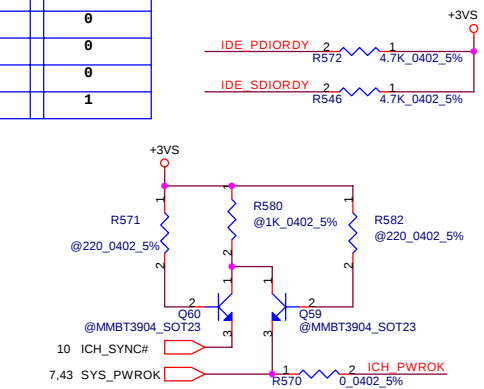
MISC

CLOCK

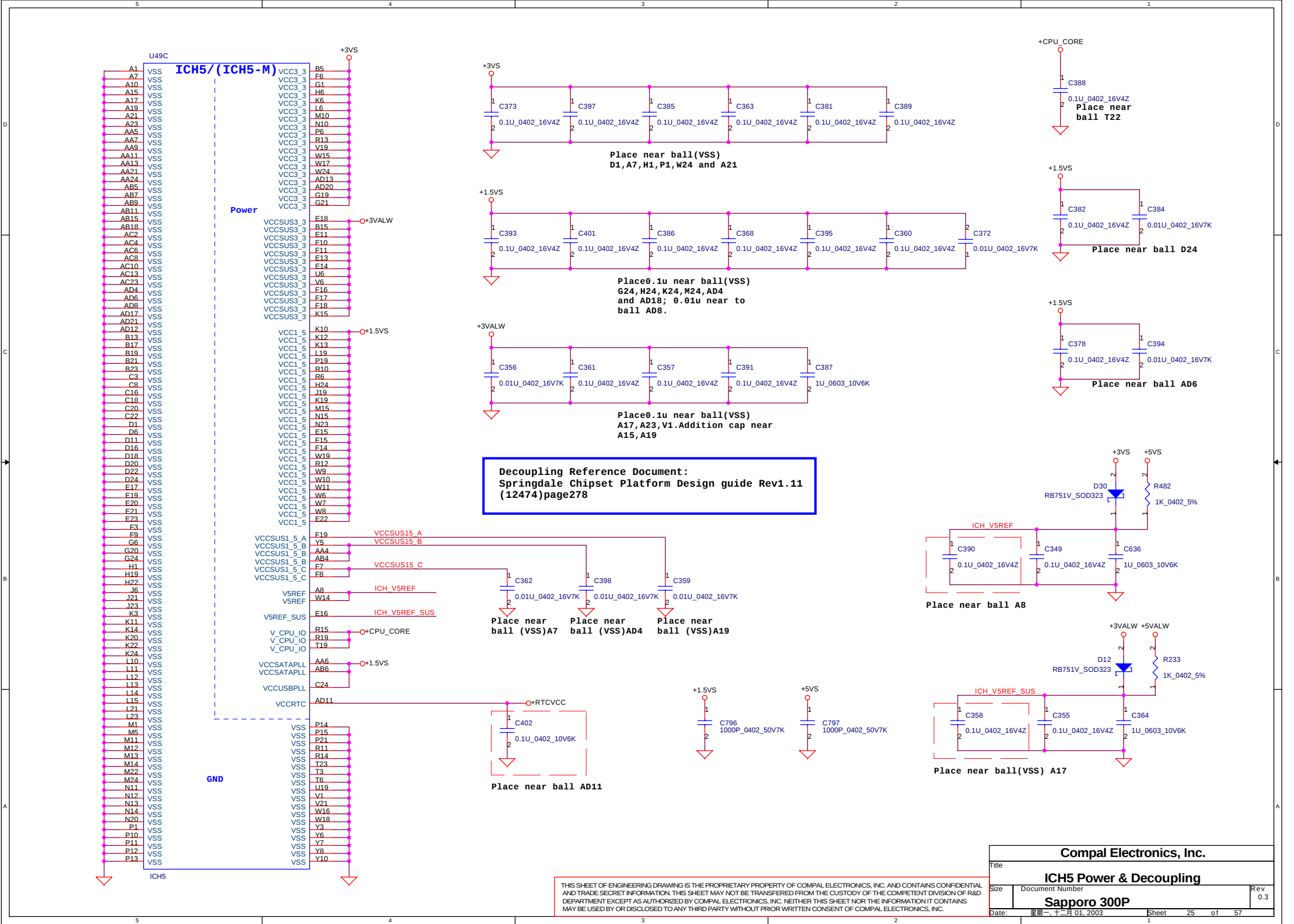
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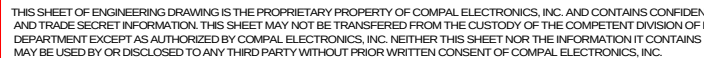
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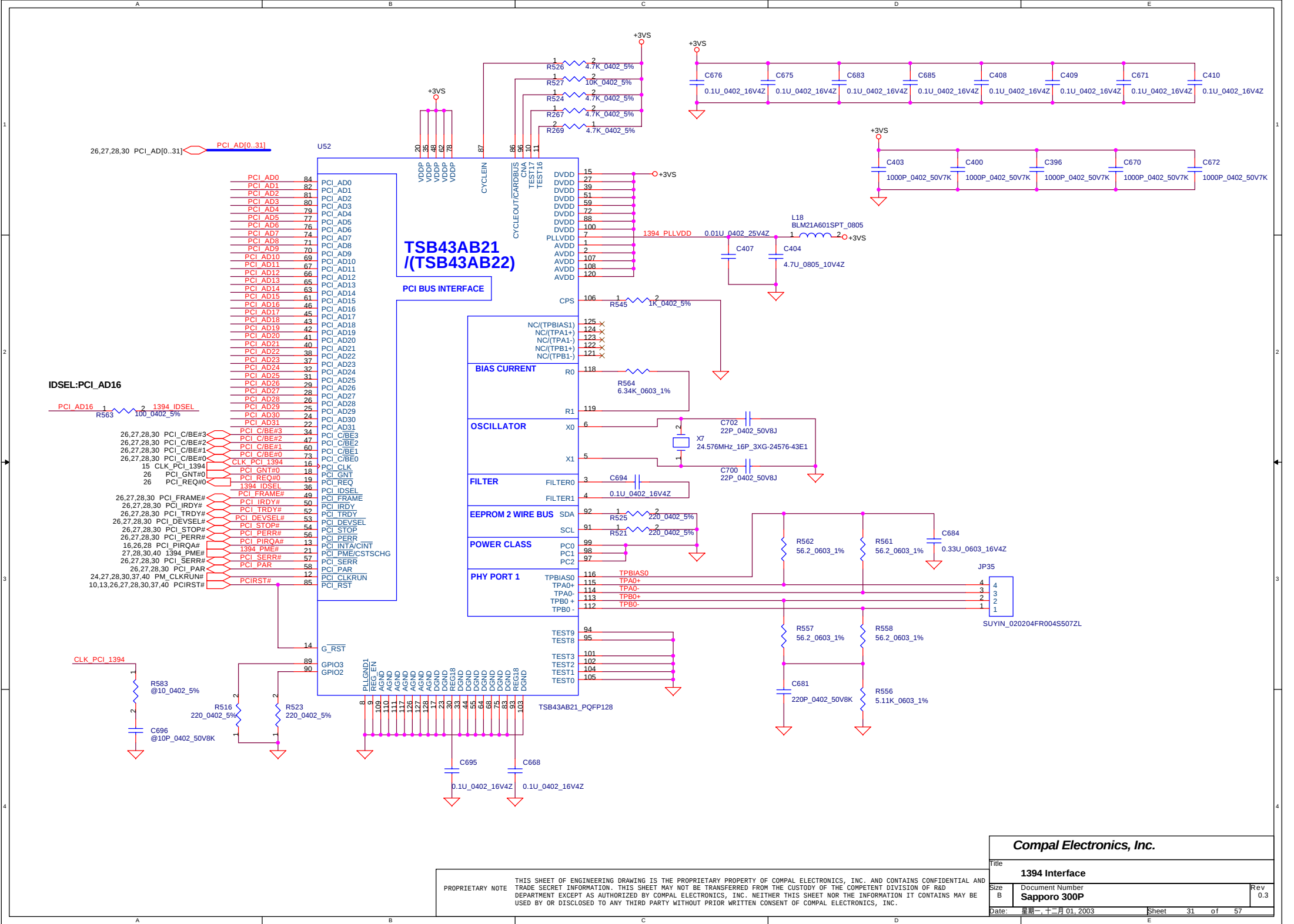


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Title ICH5-IDE/LPC/PM/GPIO/USB		
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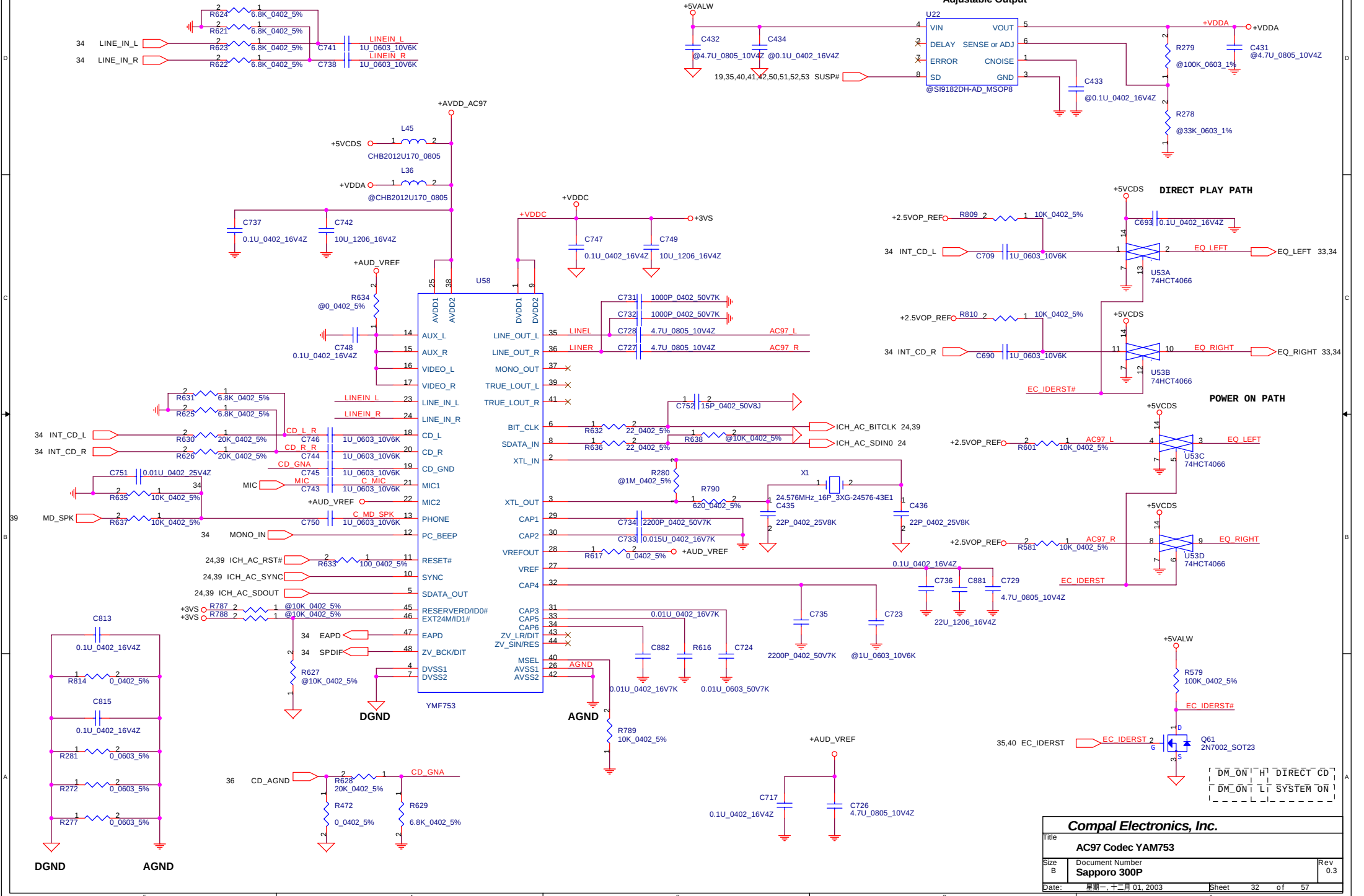
Compal Electronics, Inc.



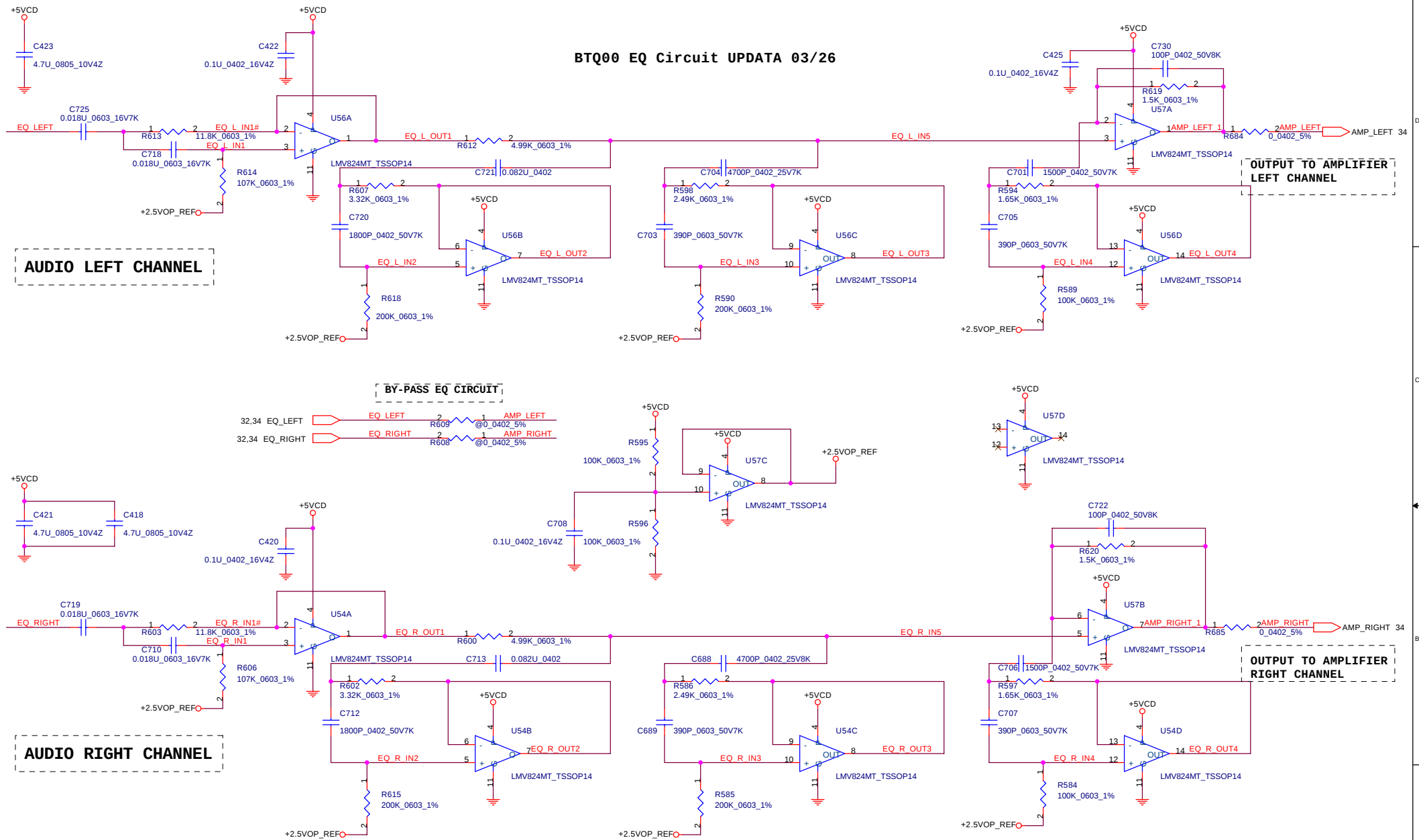


AC97 Codec

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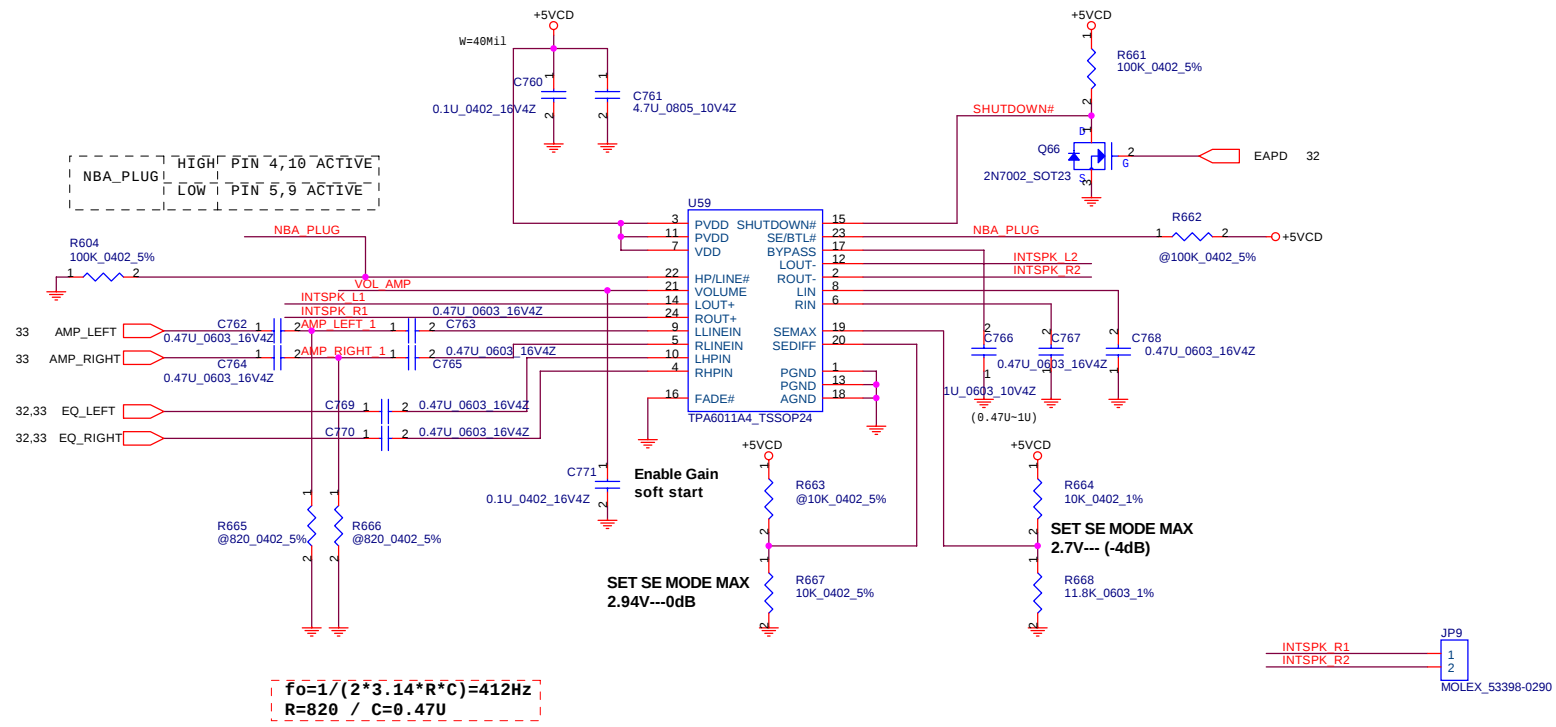


BTQ00 EQ Circuit UPDATA 03/26



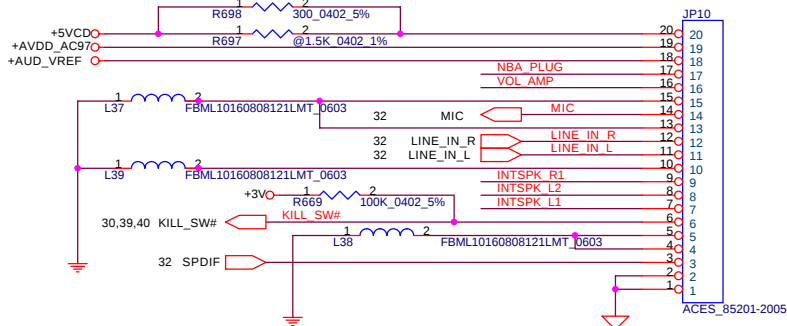
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Compal Electronics, Inc.			
Title	HAREWARE EQ		
Size B	Document Number	Rev 0.3	
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AUDIO Board Conn.

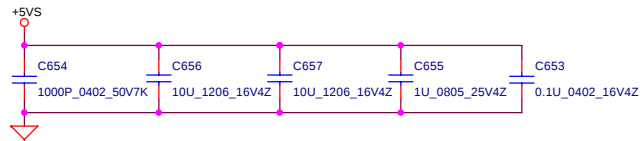
R697(1.5K)-----10dB
R698(300)-----14dB



Compal Electronics, Inc.			
Title			
AMP & Audio Jack			
Size B			
Document Number		Rev	
Sapporo 300P		0.3	
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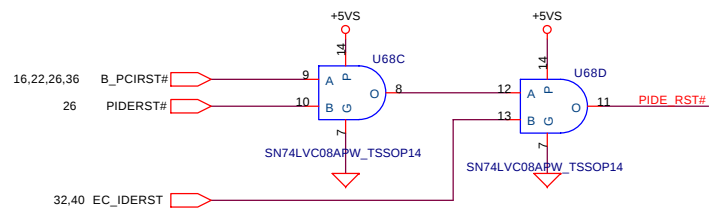
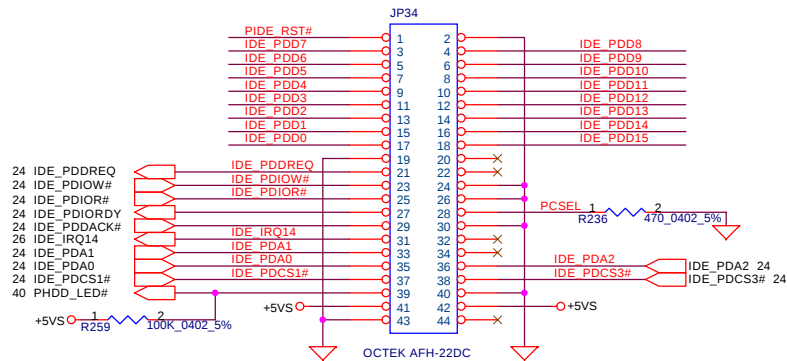
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Placea caps. near HDD
CONN.



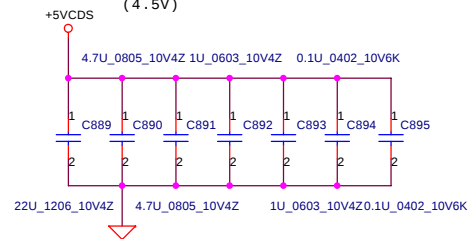
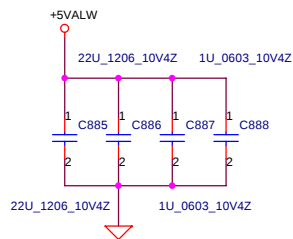
24 IDE_PDD[0..15] IDE_PDD[0..15]

HDD CONNECTOR

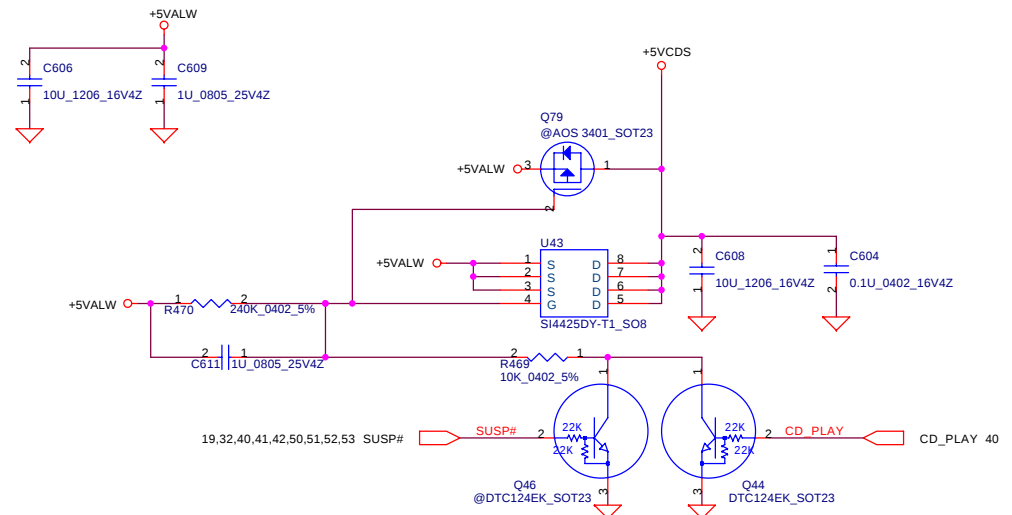


32,40 EC_IDERST

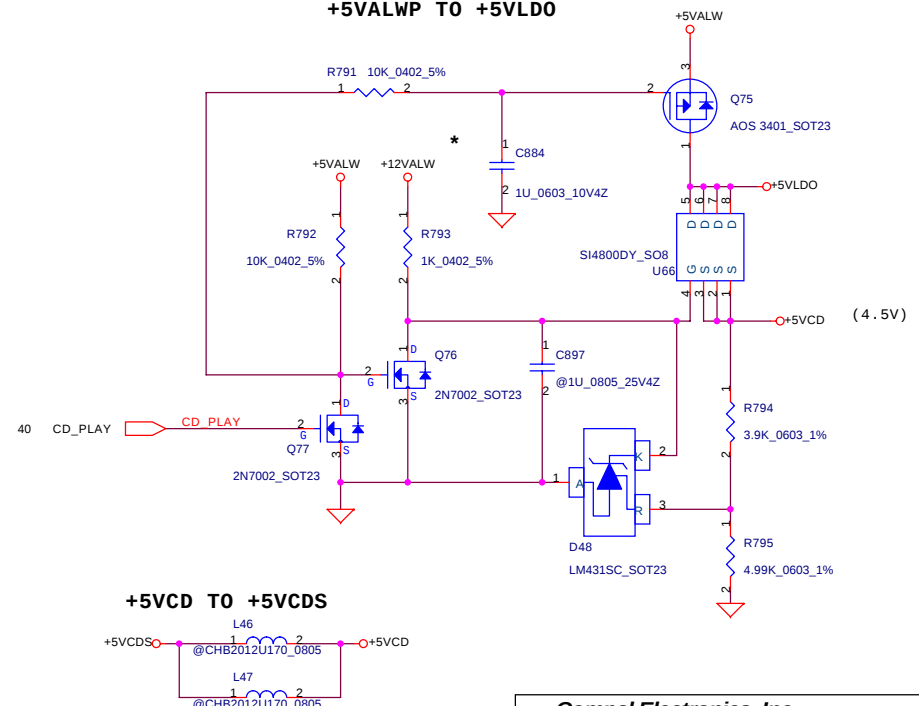
+5VCD DECOUPLING (4.5V)



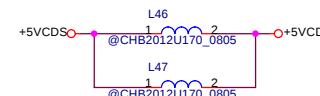
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+5VALWP TO +5VLD0



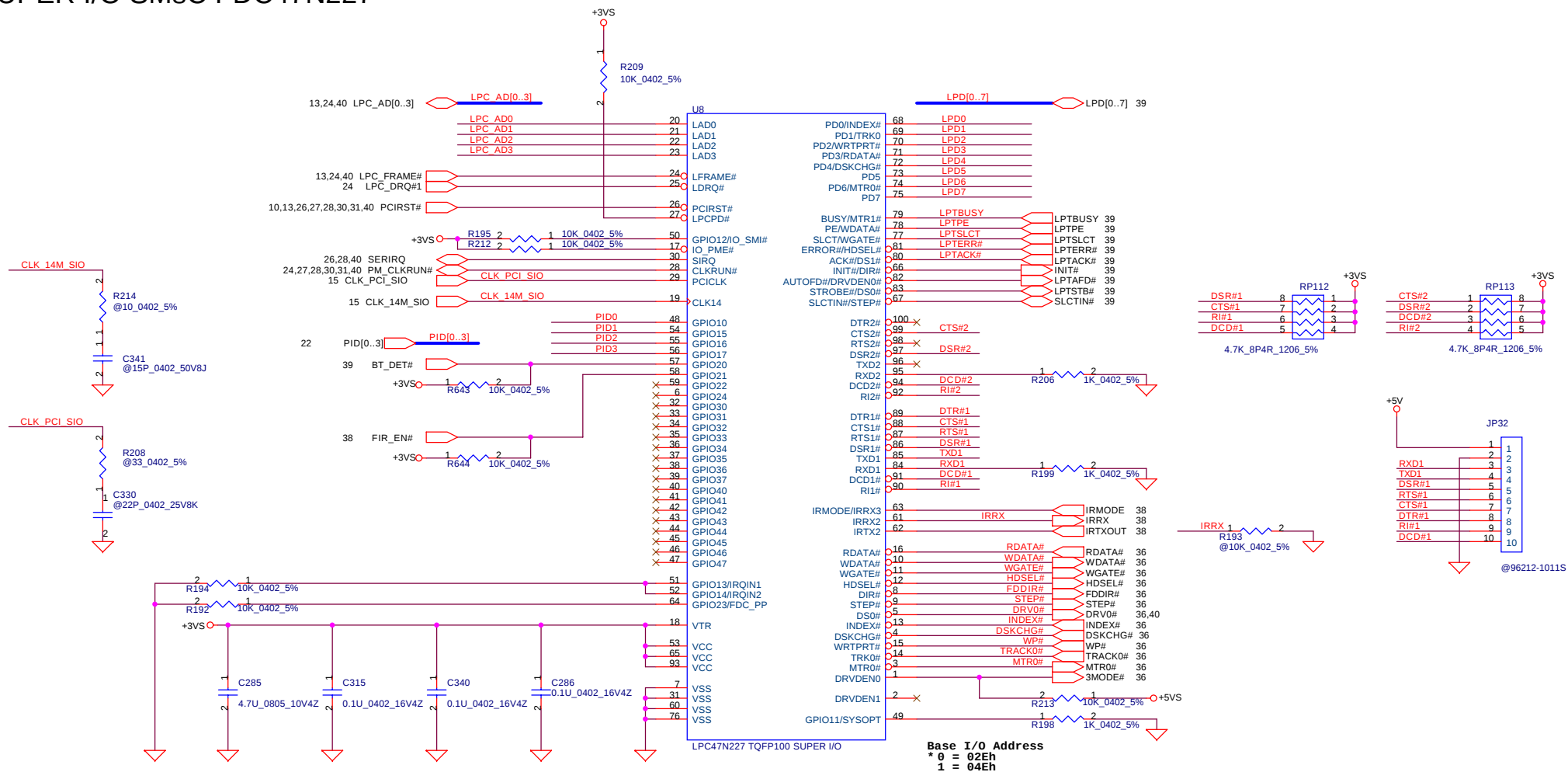
+5VCD TO +5VCD



Compal Electronics, Inc.

Title			
Softwave DJ			
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SUPER I/O SMsC FDC47N227



Compal Electronics, Inc.

Title

SUPER I/O

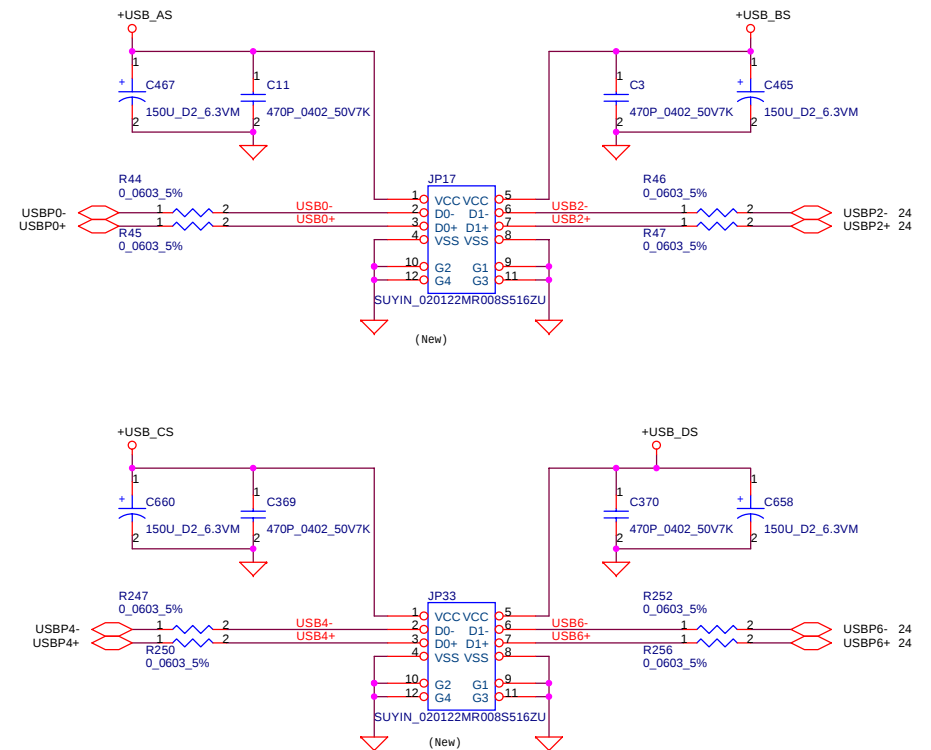
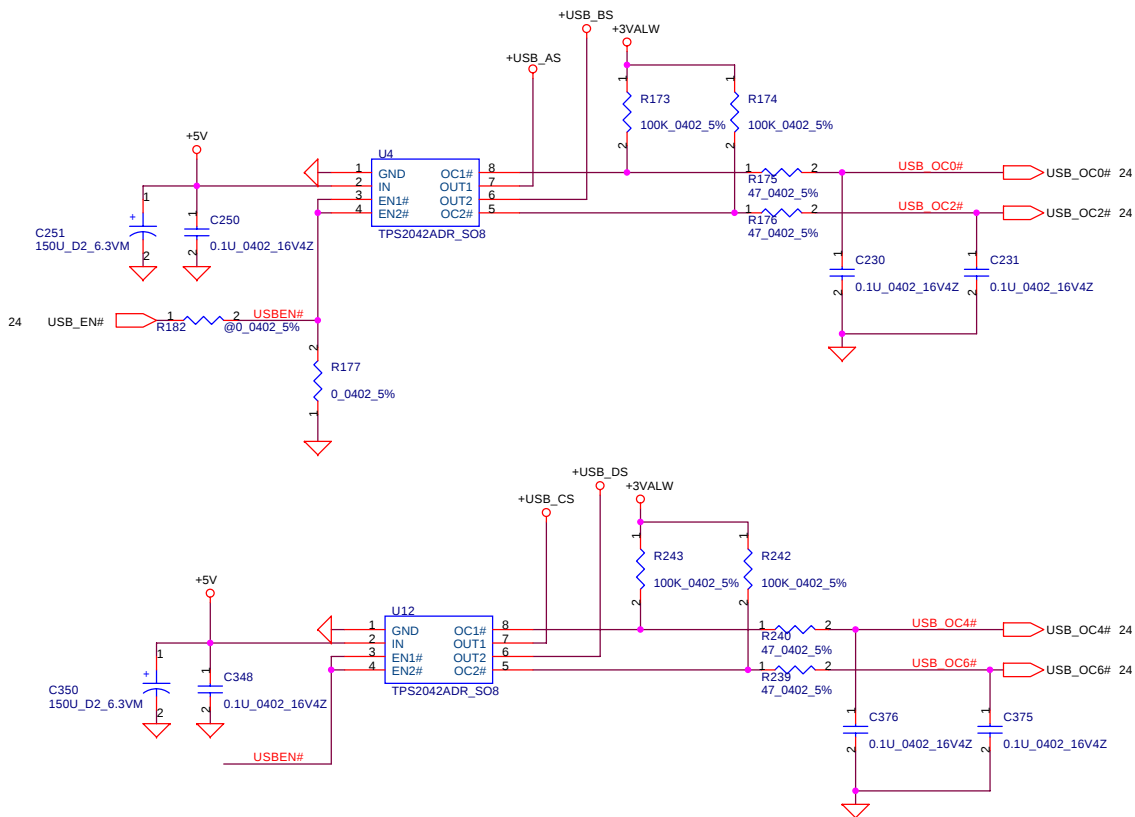
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Sapporo 300P

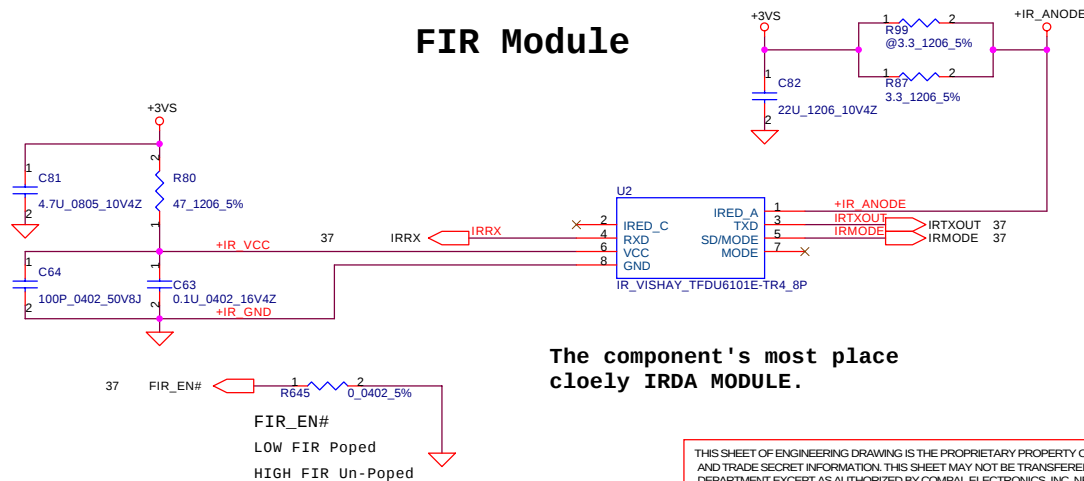
Rev	0.3
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FIR Module



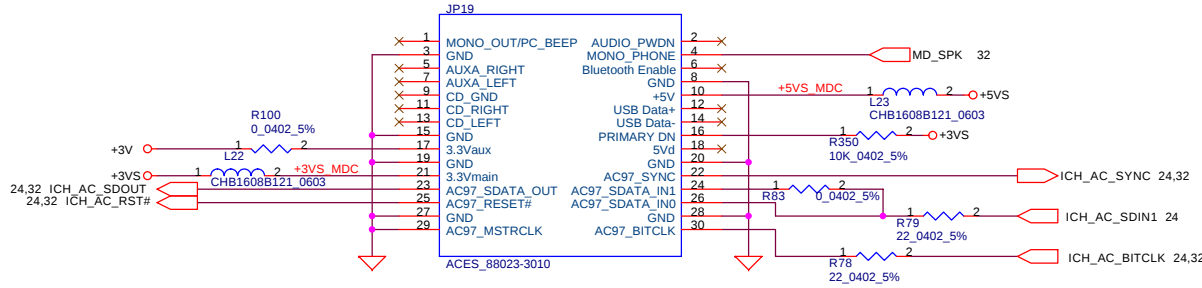
The component's most place
cloely IRDA MODULE.

Compal Electronics, Inc.

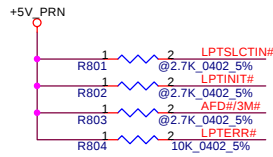
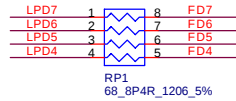
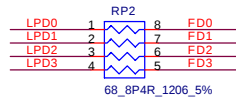
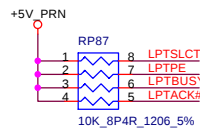
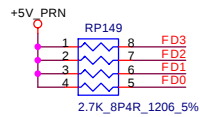
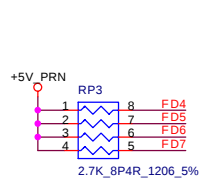
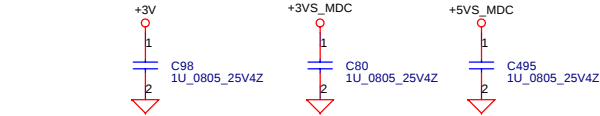
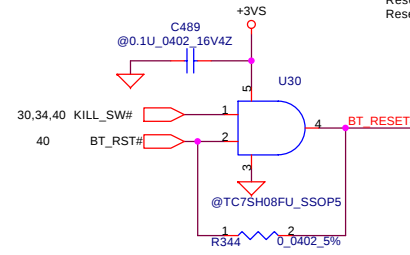
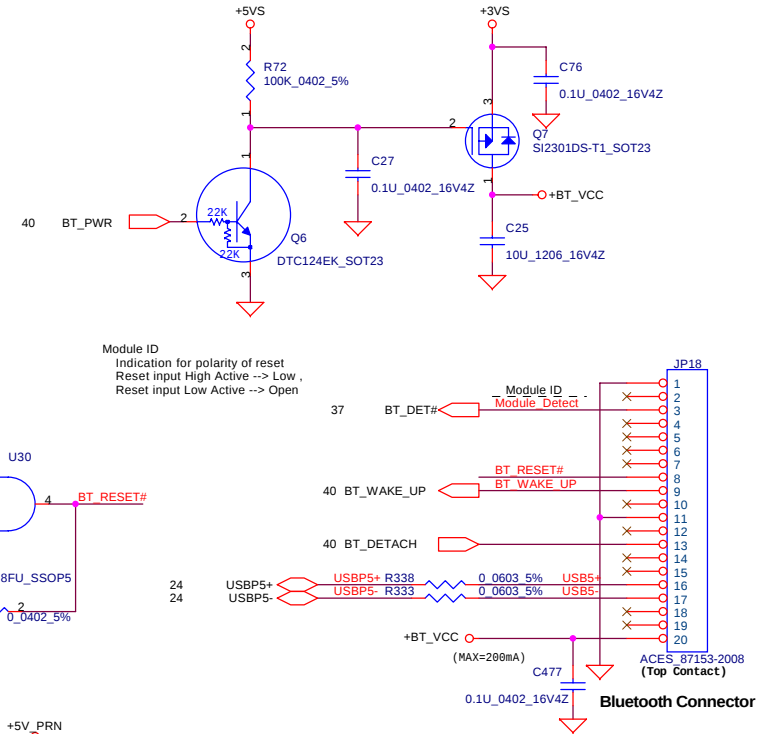
Title			
USB Conn.			
Size	Document Number	Rev	
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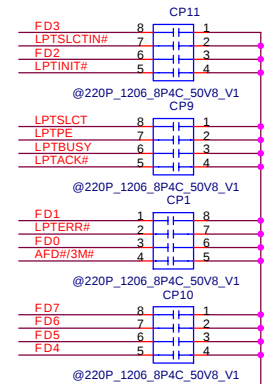
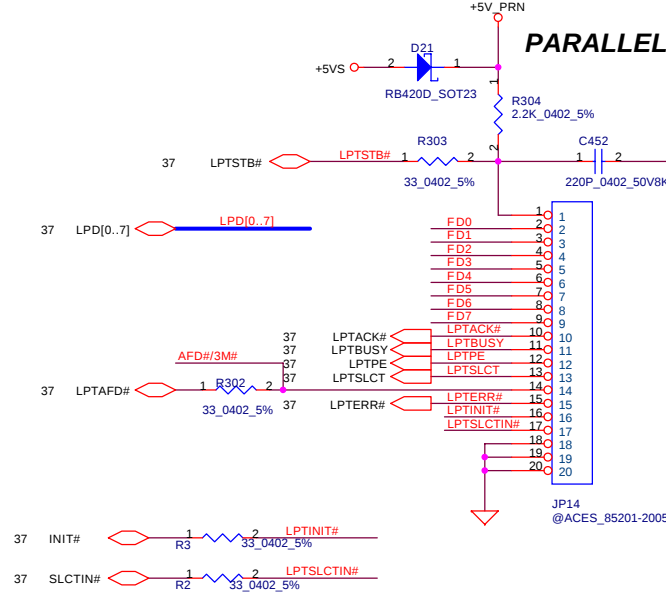
MDC CONN.



BlueTooth Interface



PARALLEL PORT



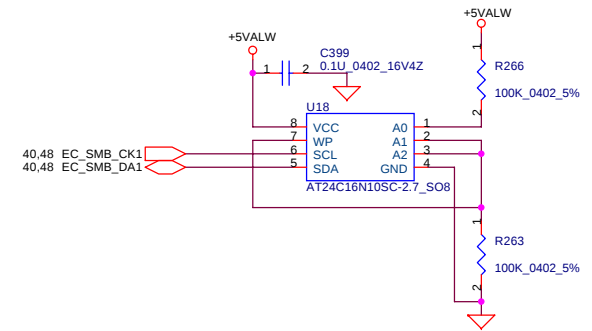
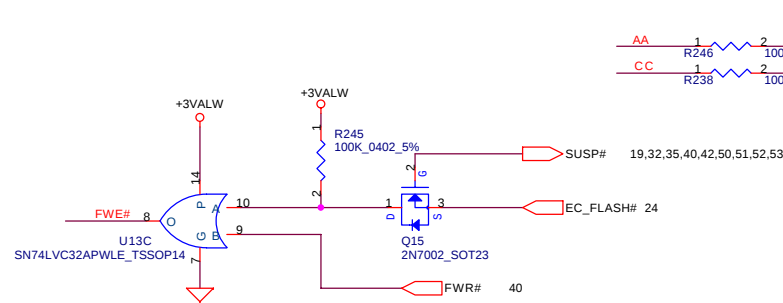
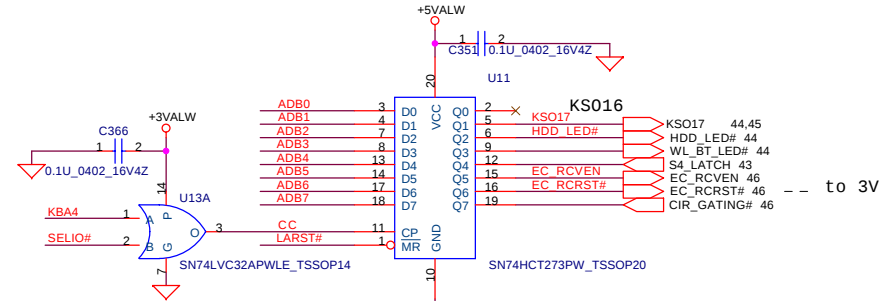
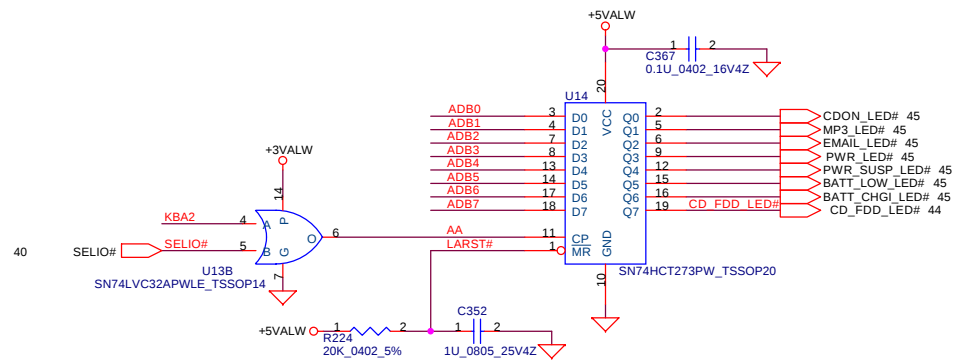
Compal Electronics, Inc.

PARALLEL/MDC PORT

Size	Document Number	Rev
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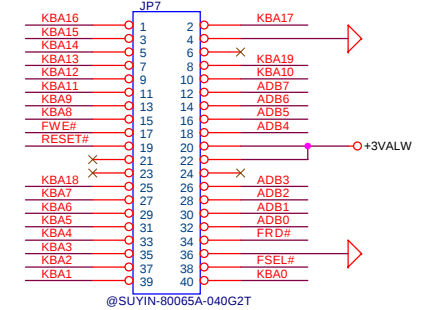
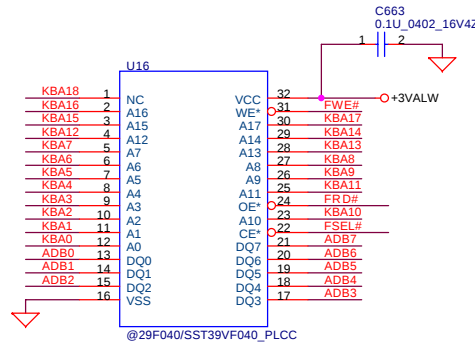
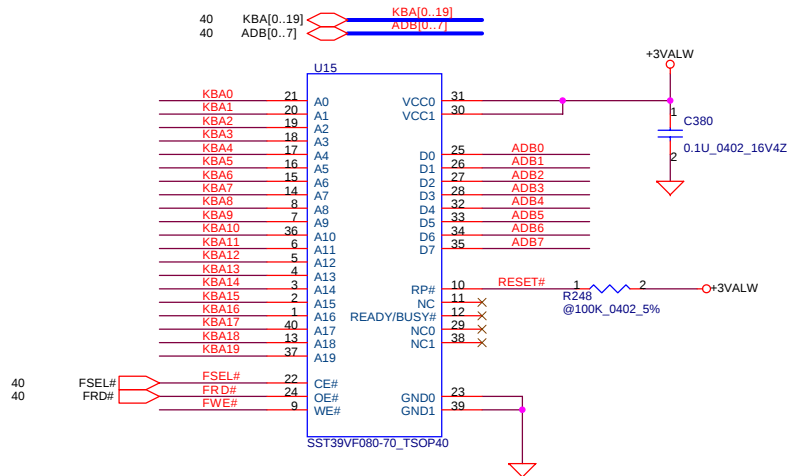
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1MB Flash ROM

512KB Flash ROM

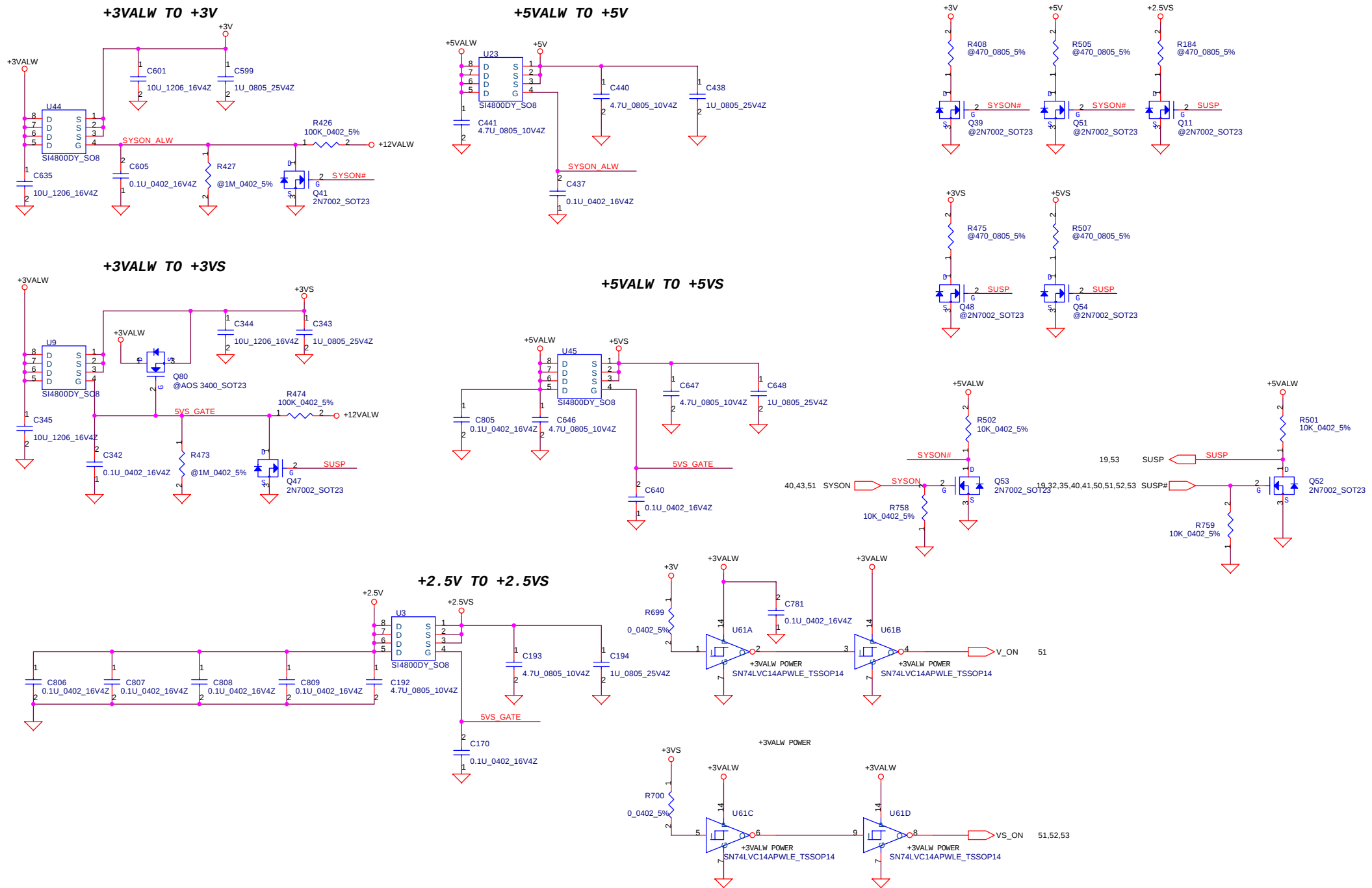
Flash ROM Socket Conn.



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Compal Electronics, Inc.

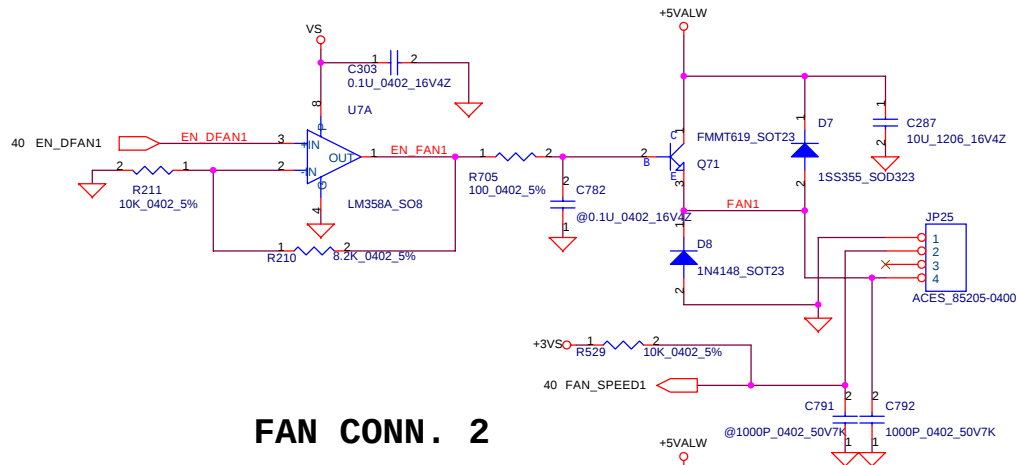
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Size	Document Number	Rev	
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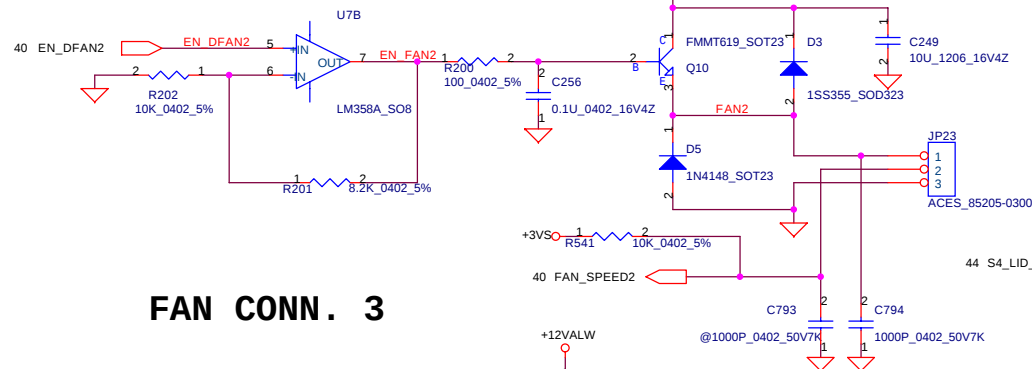
Compal Electronics, Inc.		
Title		
POWER CONTROL CKT		
Size B	Document Number	Rev
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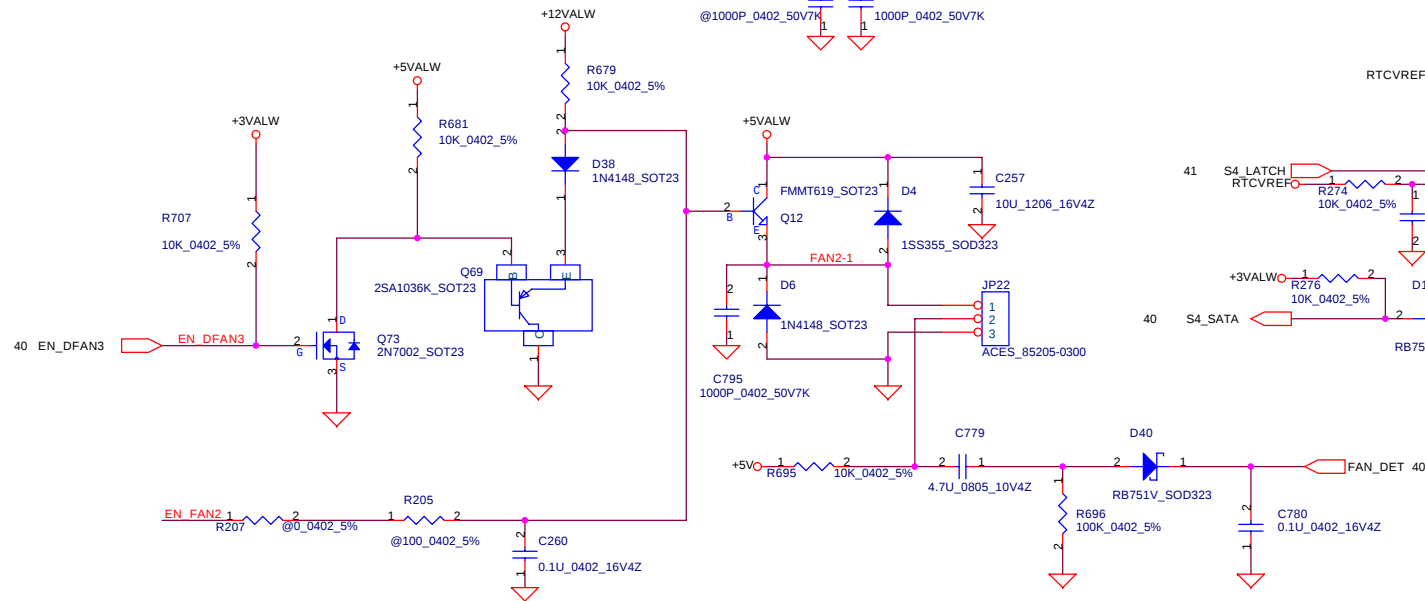
FAN CONN. 1



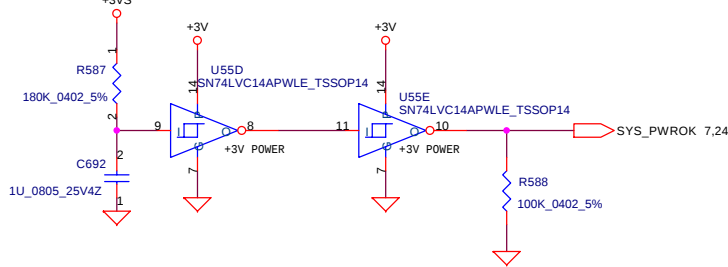
FAN CONN. 2



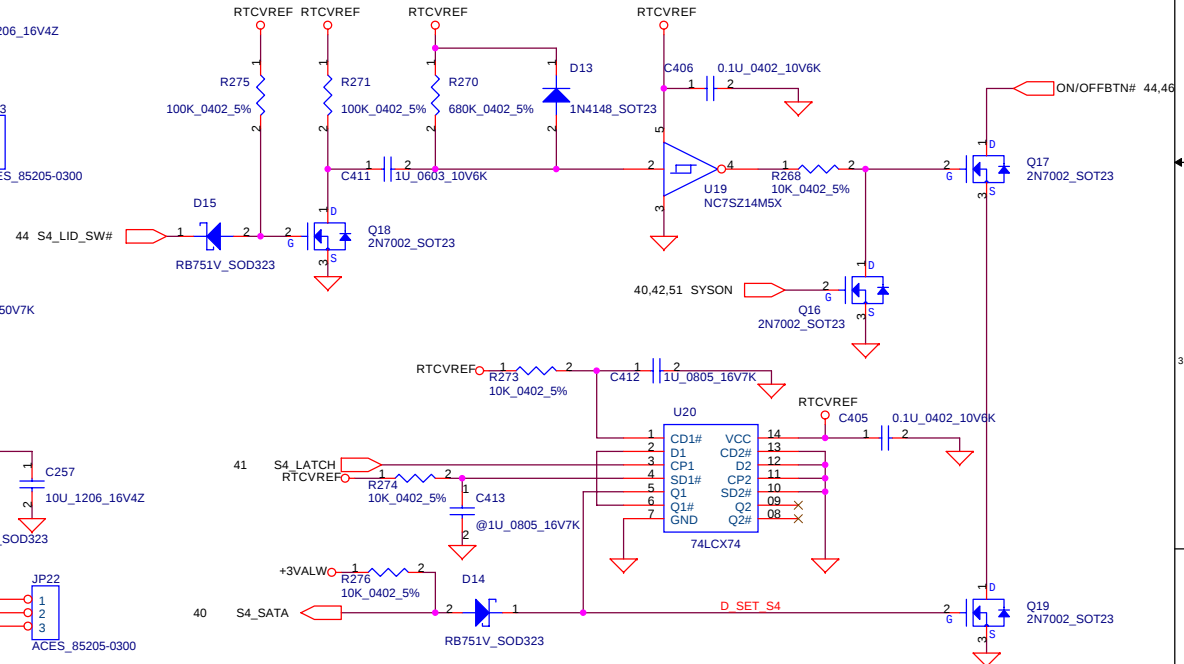
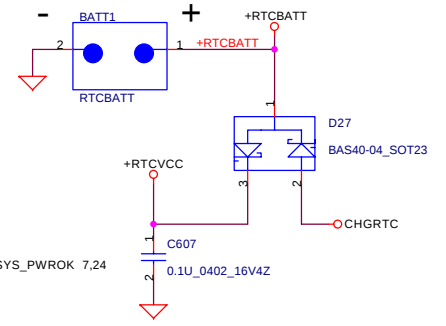
FAN CONN. 3



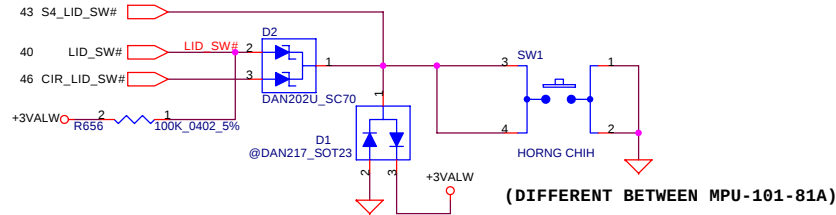
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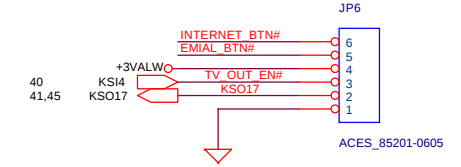
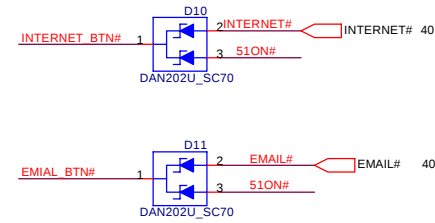
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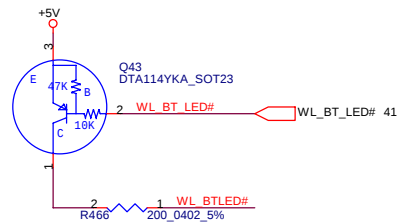
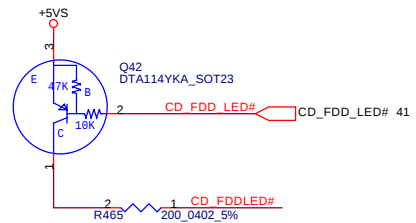
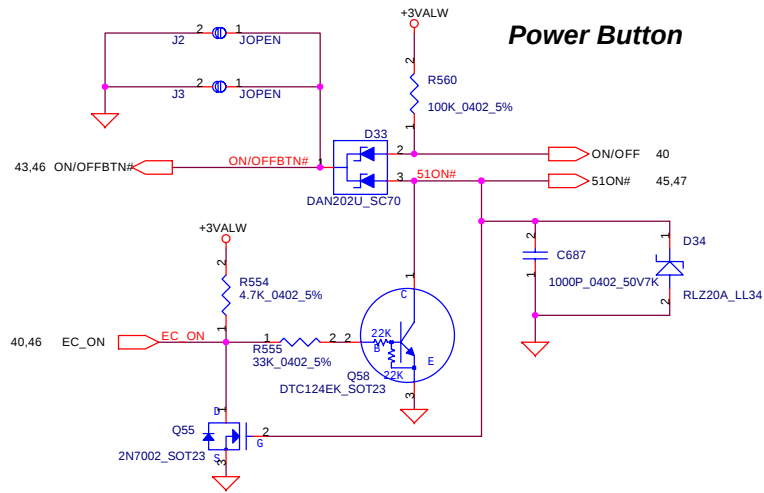
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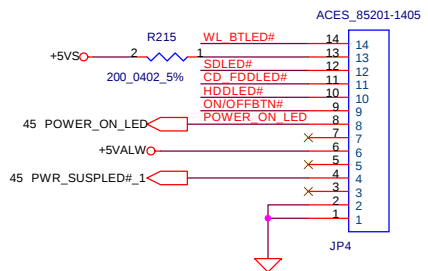
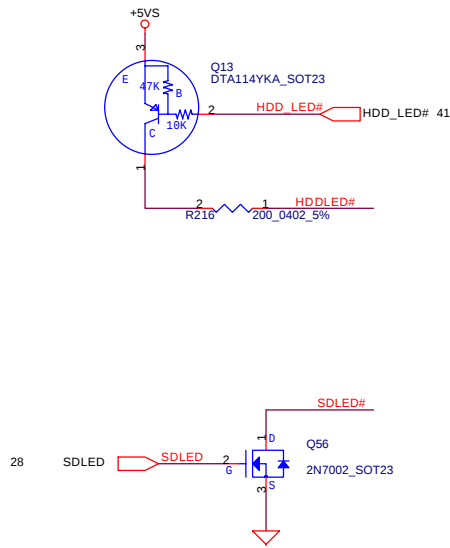
Button FPC Conn.



Power Button

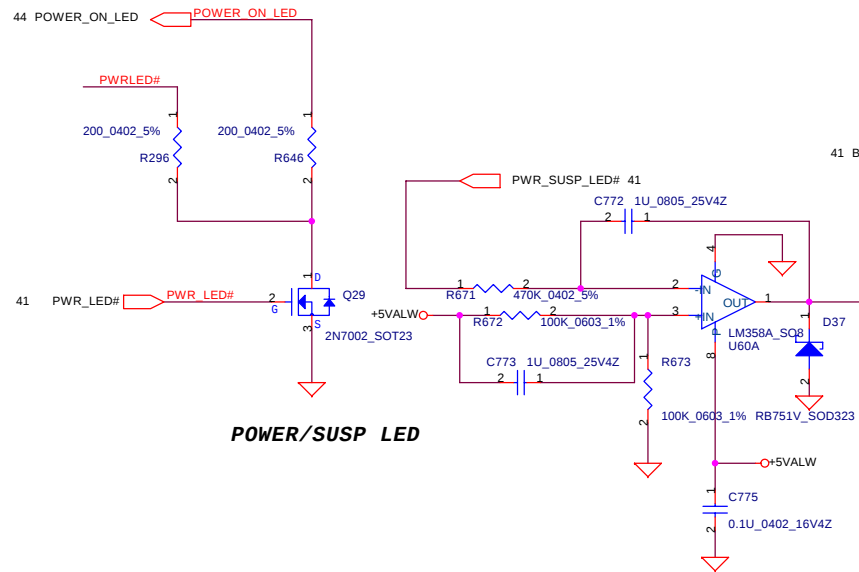


Power FPC Conn.



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POWER/SUSP LED

41 BATT_CHGI_LED#

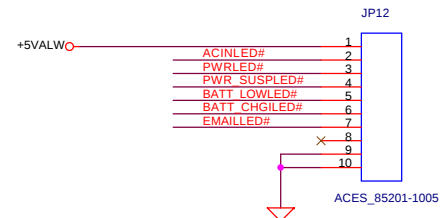
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BATT_LOW_LED# 2

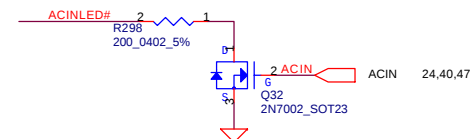
BATT_LOW_LED# 41

BATTERY CHGI/LOW LED

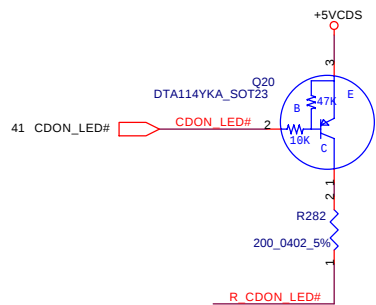
LED FPC Conn.



EMAIL LED

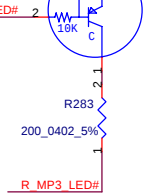


ACIN LED

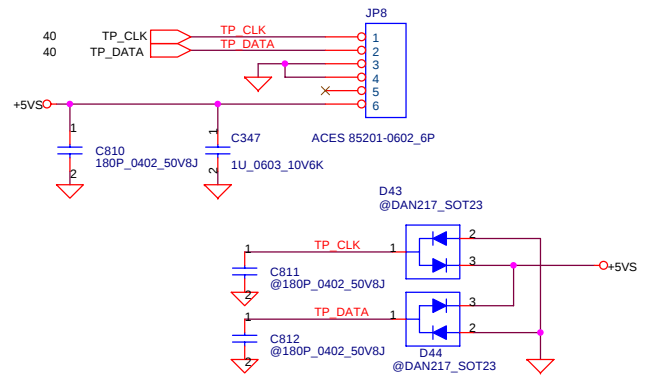


41 MP3_LED#

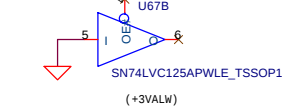
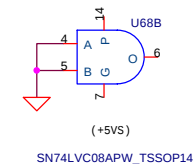
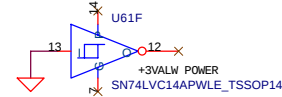
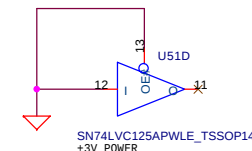
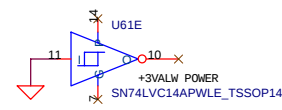
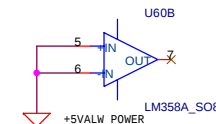
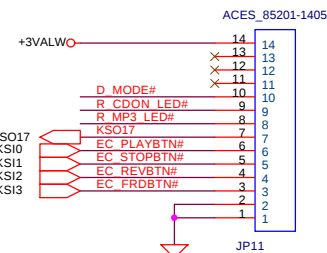
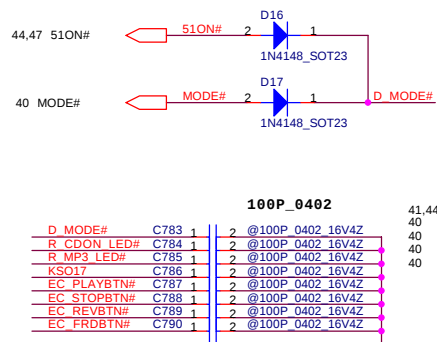
MP3_LED# 2



Touch Pad Connector

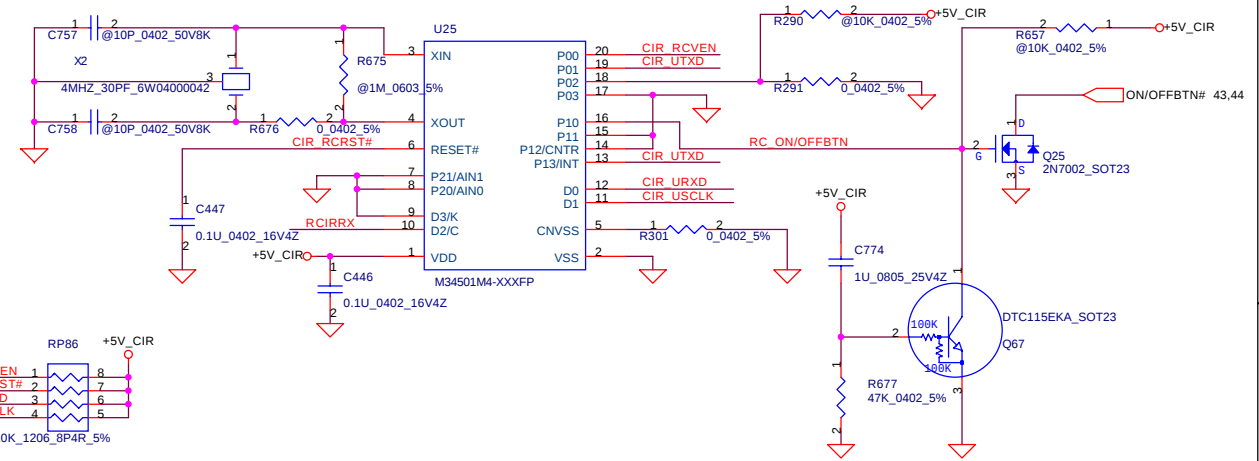
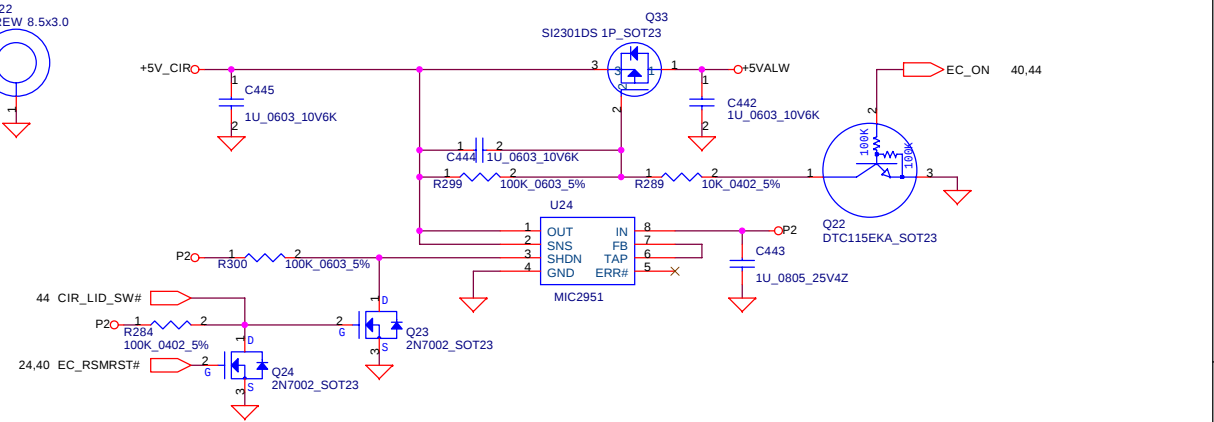
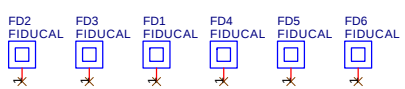
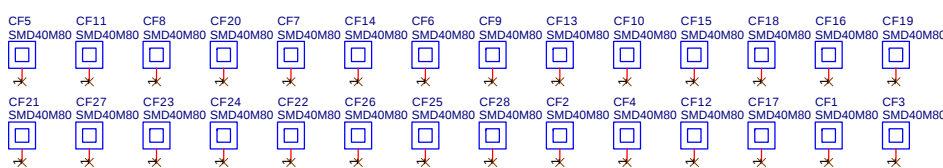
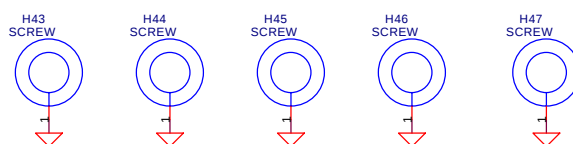
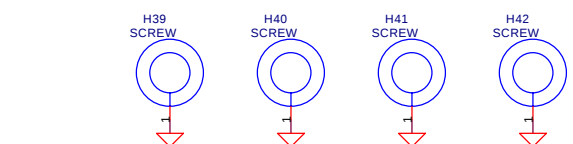
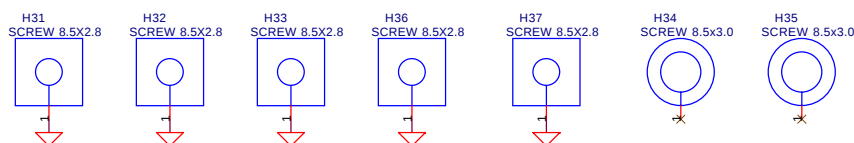
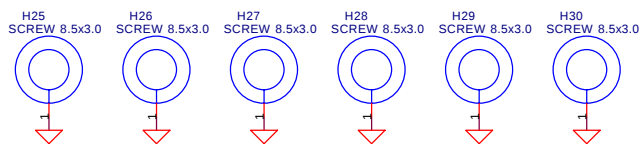
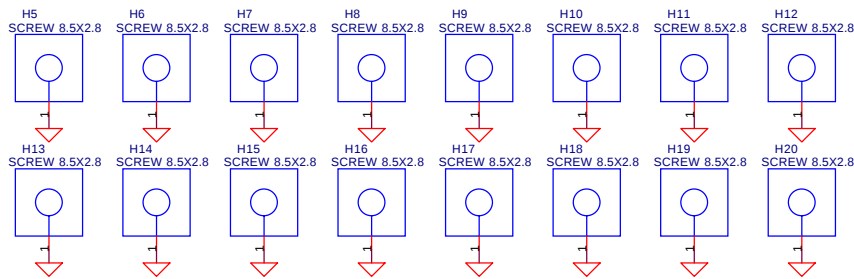
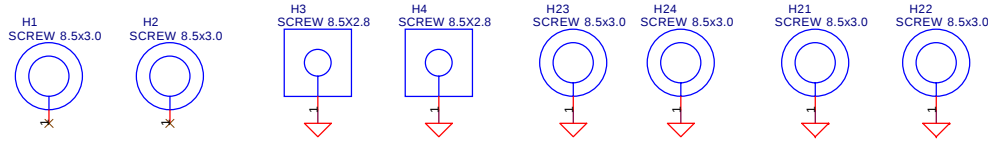


CDPLAY Board Conn.

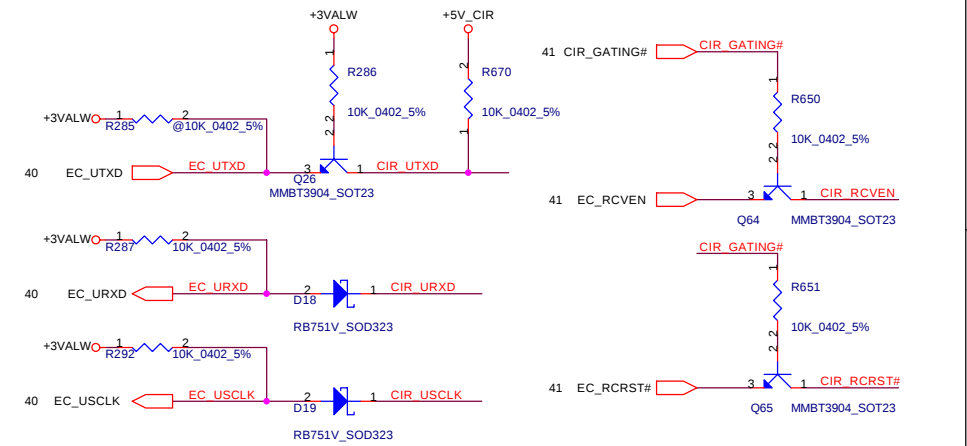
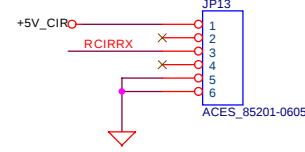


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Title		
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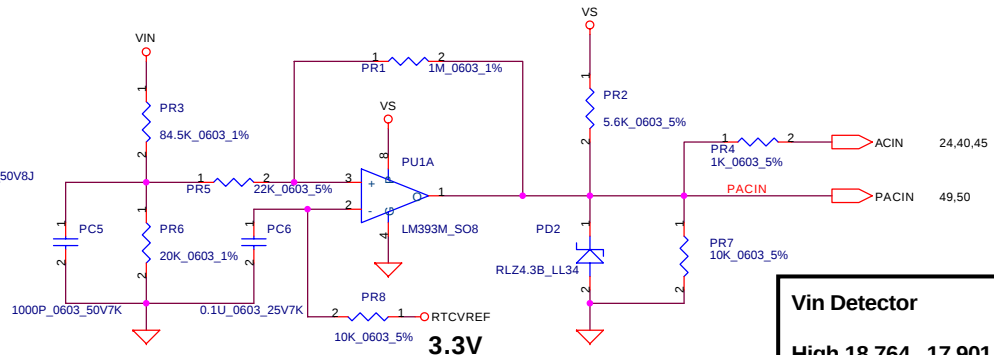
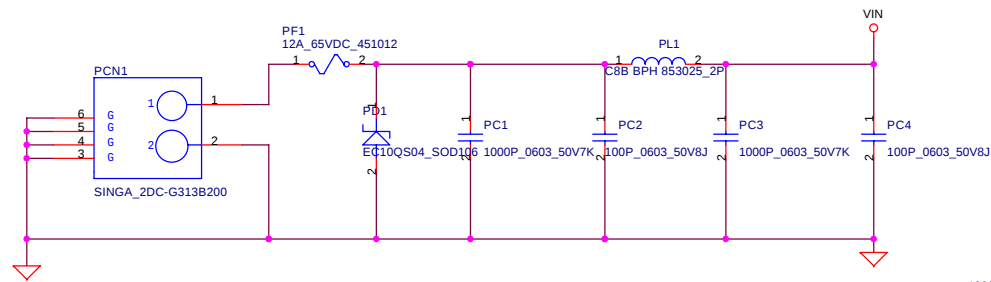


CIR Reciever Board Conn.

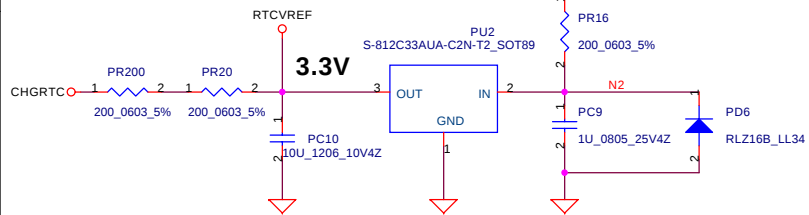
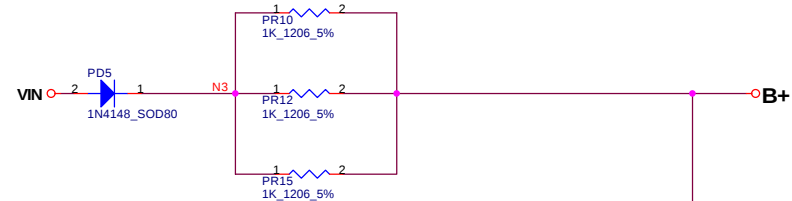
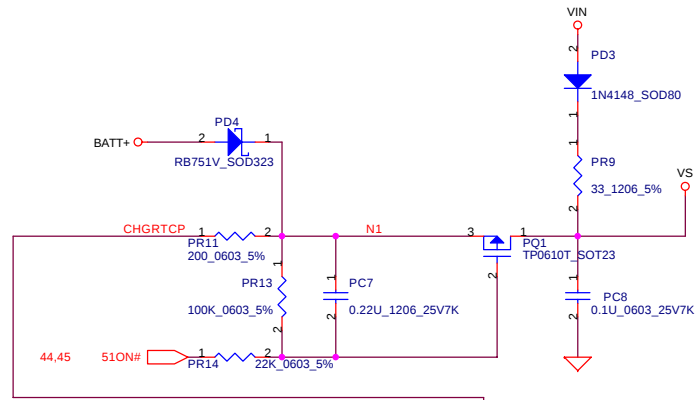


Compal Electronics, Inc.		
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Size B	Document Number Sapporo 300P	Rev 0.3
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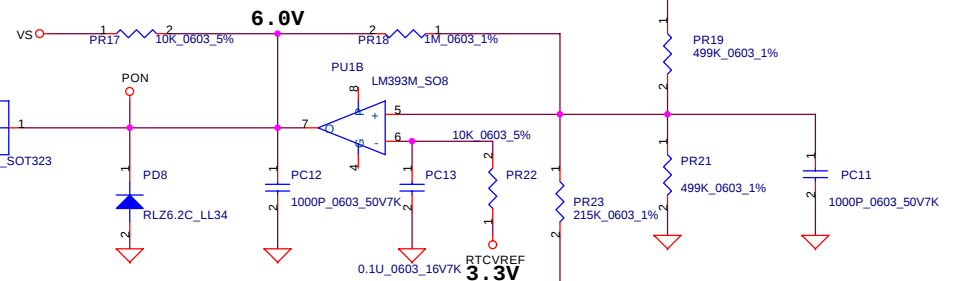
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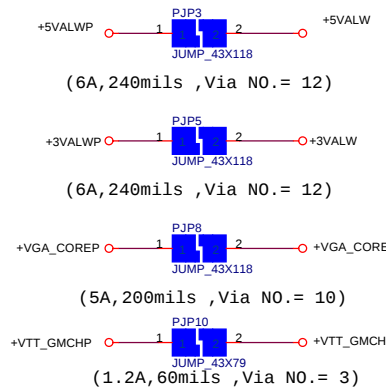
Vin Detector			
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Low	17.745	16.903	16.038



48.50 MAINPWON
49 ACON

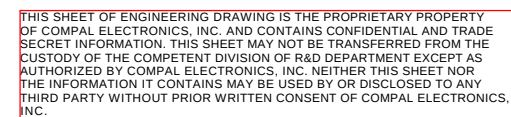
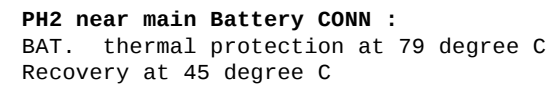
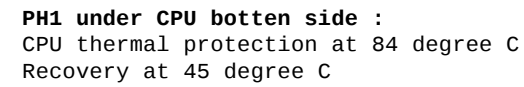


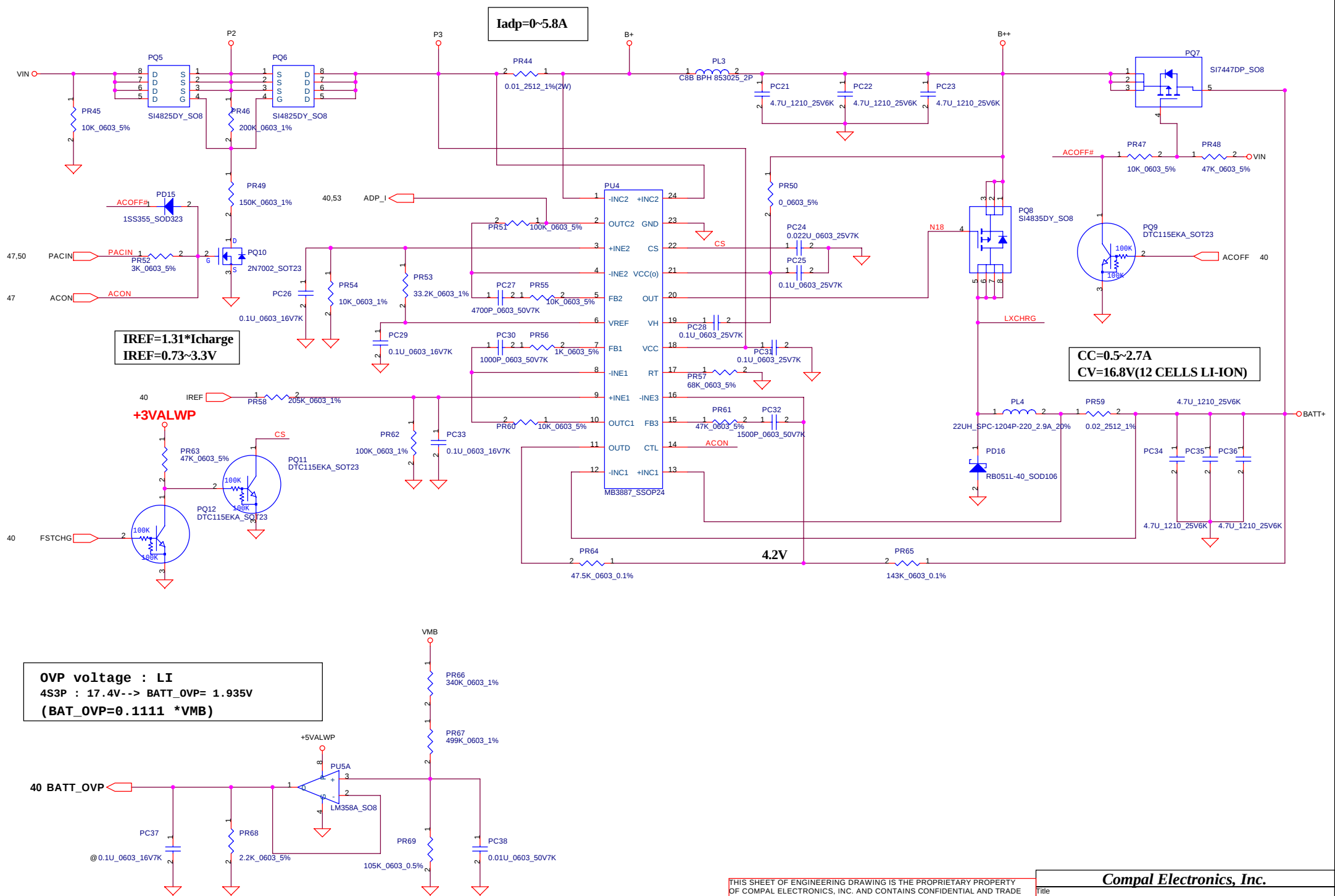
Precharge detector			
15.34	15.90	16.48	
13.13	13.71	14.20	



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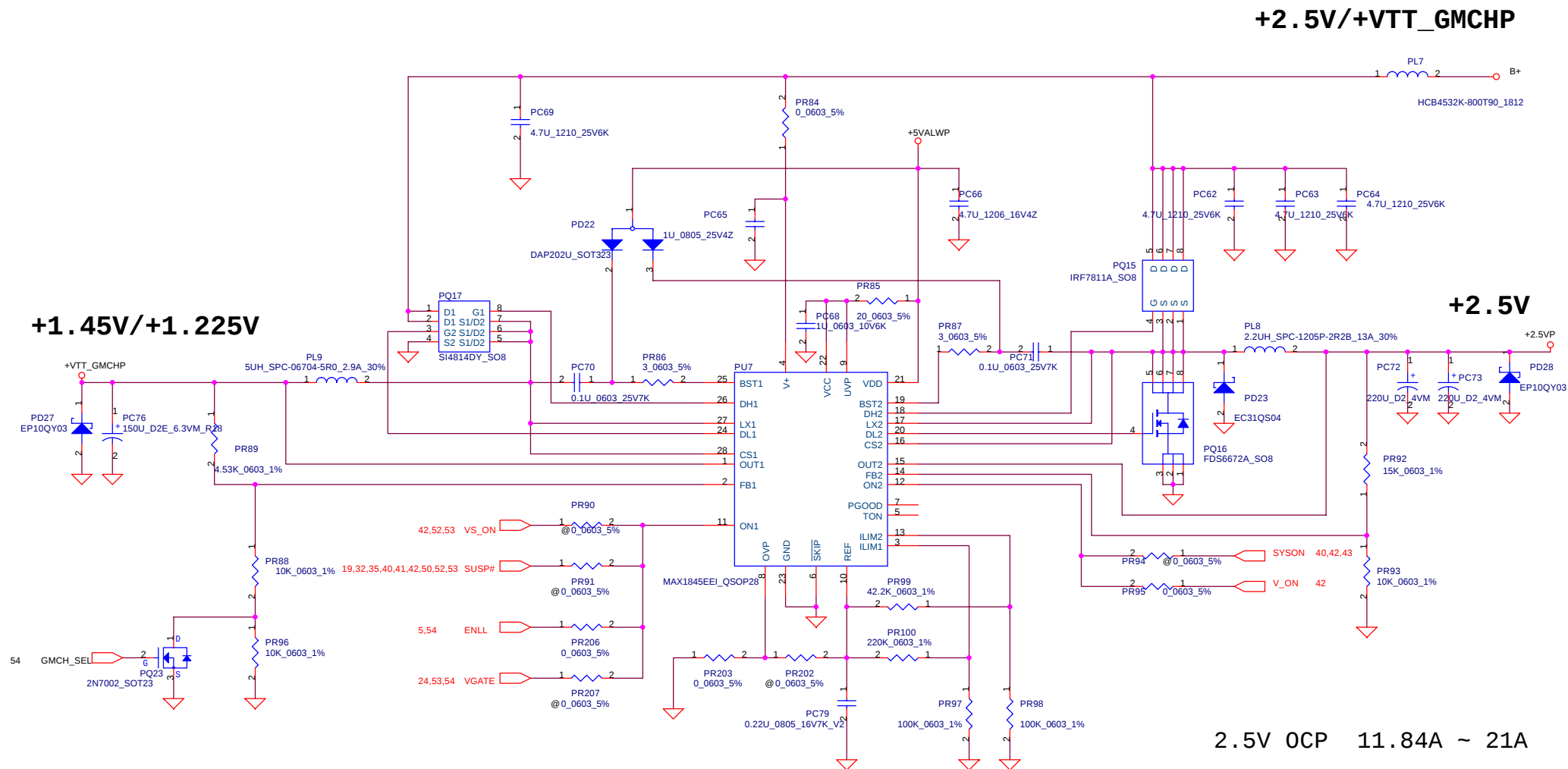
Compal Electronics, Inc.			
Title DCIN & DETECTOR			
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Compal Electronics, Inc.			
Title			
CHARGER			
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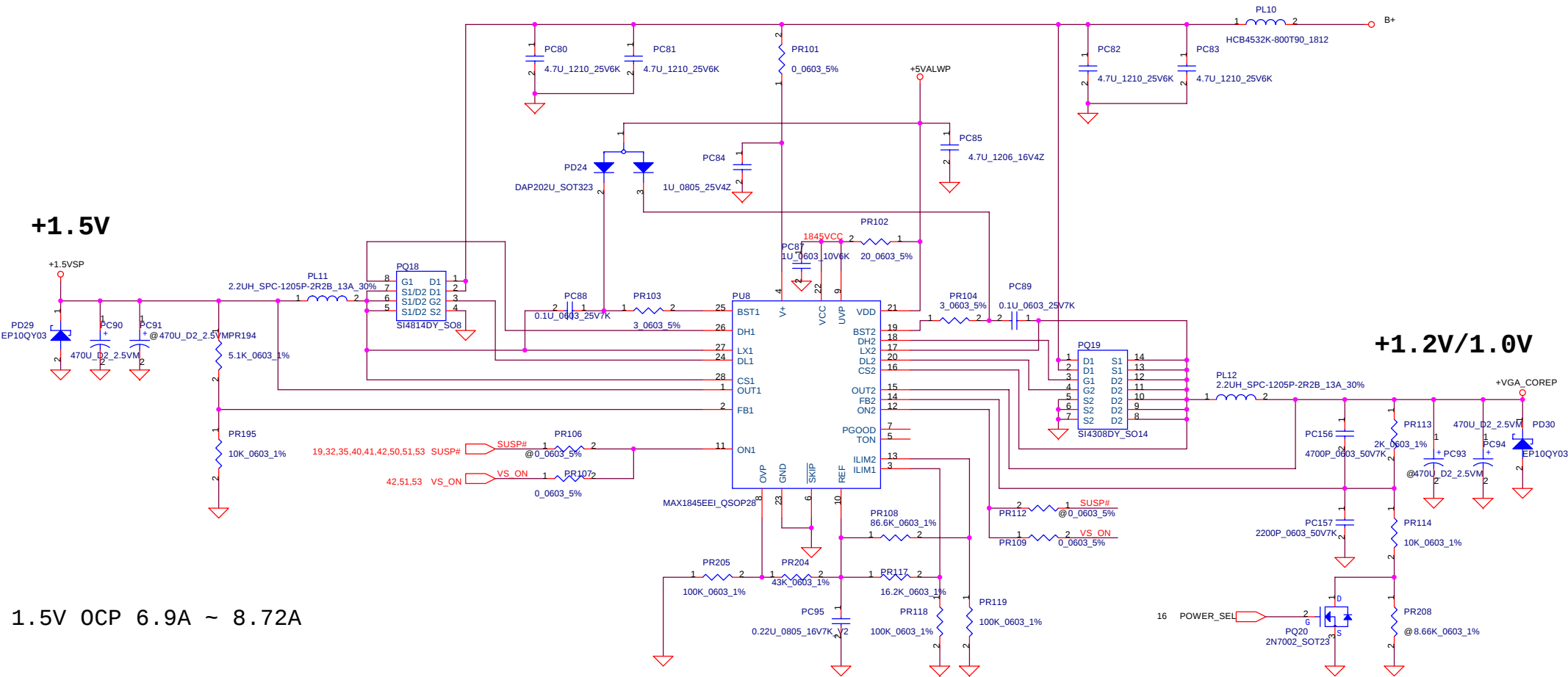
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Compal Electronics, Inc.			
Title			
DDR_2.5V/VTT_GMCH			
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+1.5V

1.5V OCP 6.9A ~ 8.72A

+1.2V/1.0V

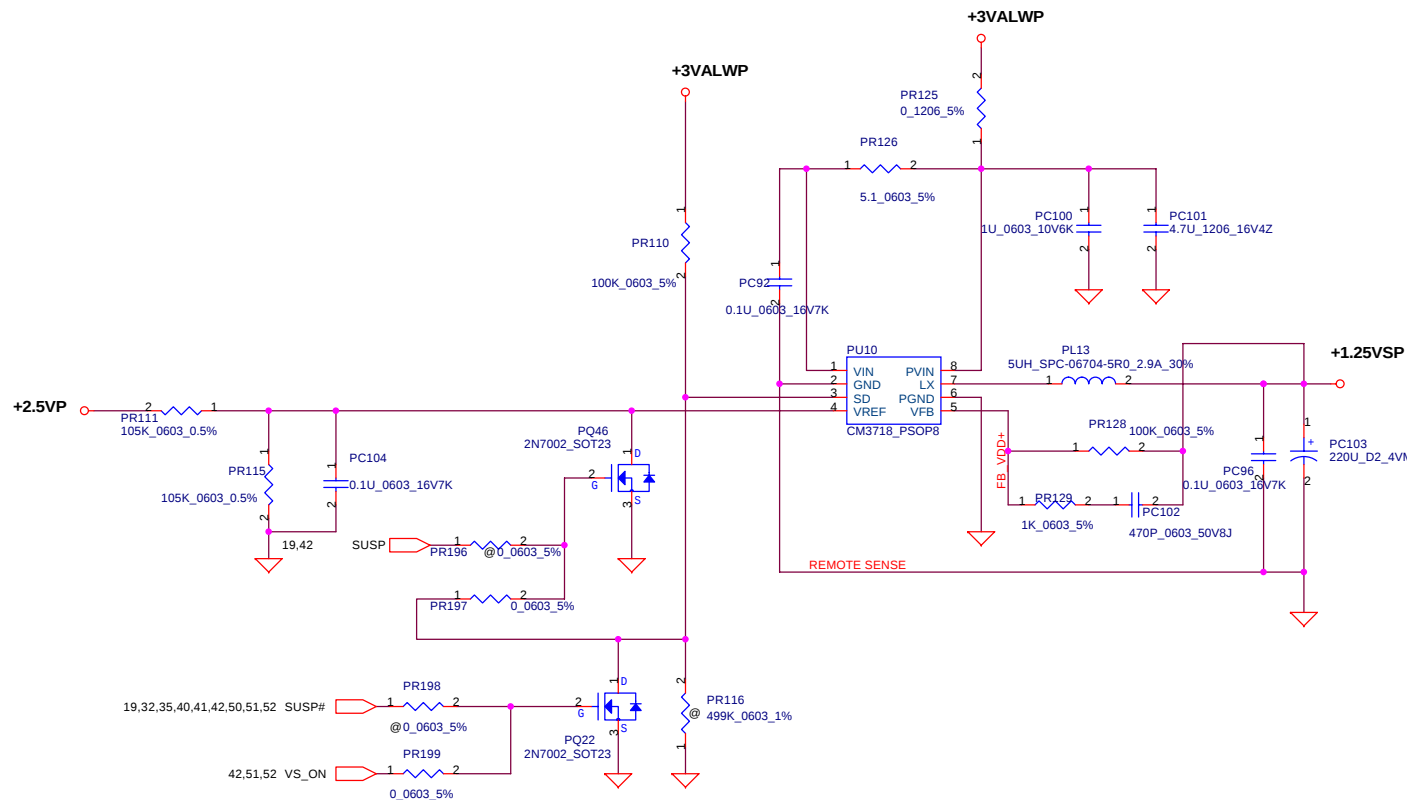
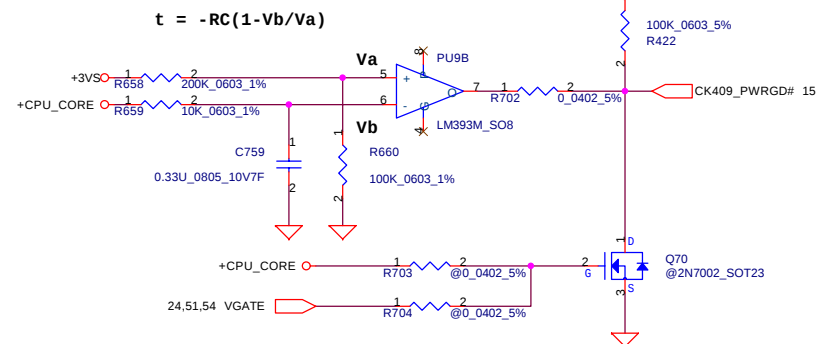
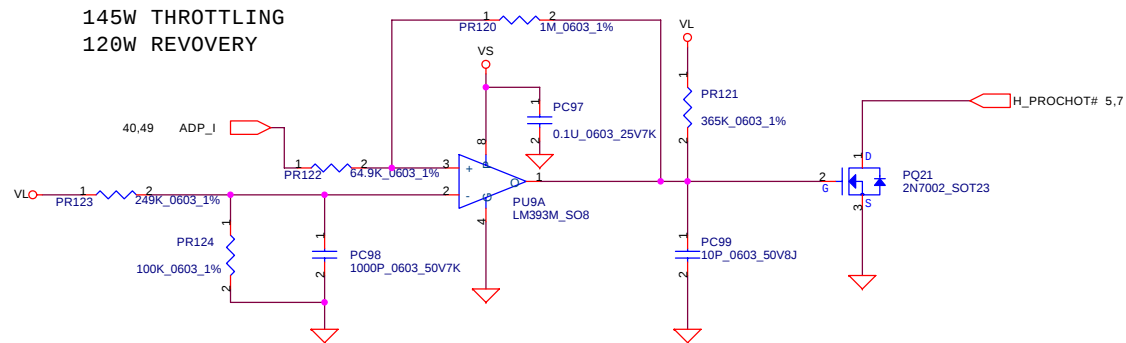


NV36		
POWER_SEL=1	VOUT=1.27V OCP 7.1A ~ 13.5A	PR113=2K_0603_1%
POWER_SEL=0	VOUT=1V OCP 7A ~ 13A	Unpop PR208

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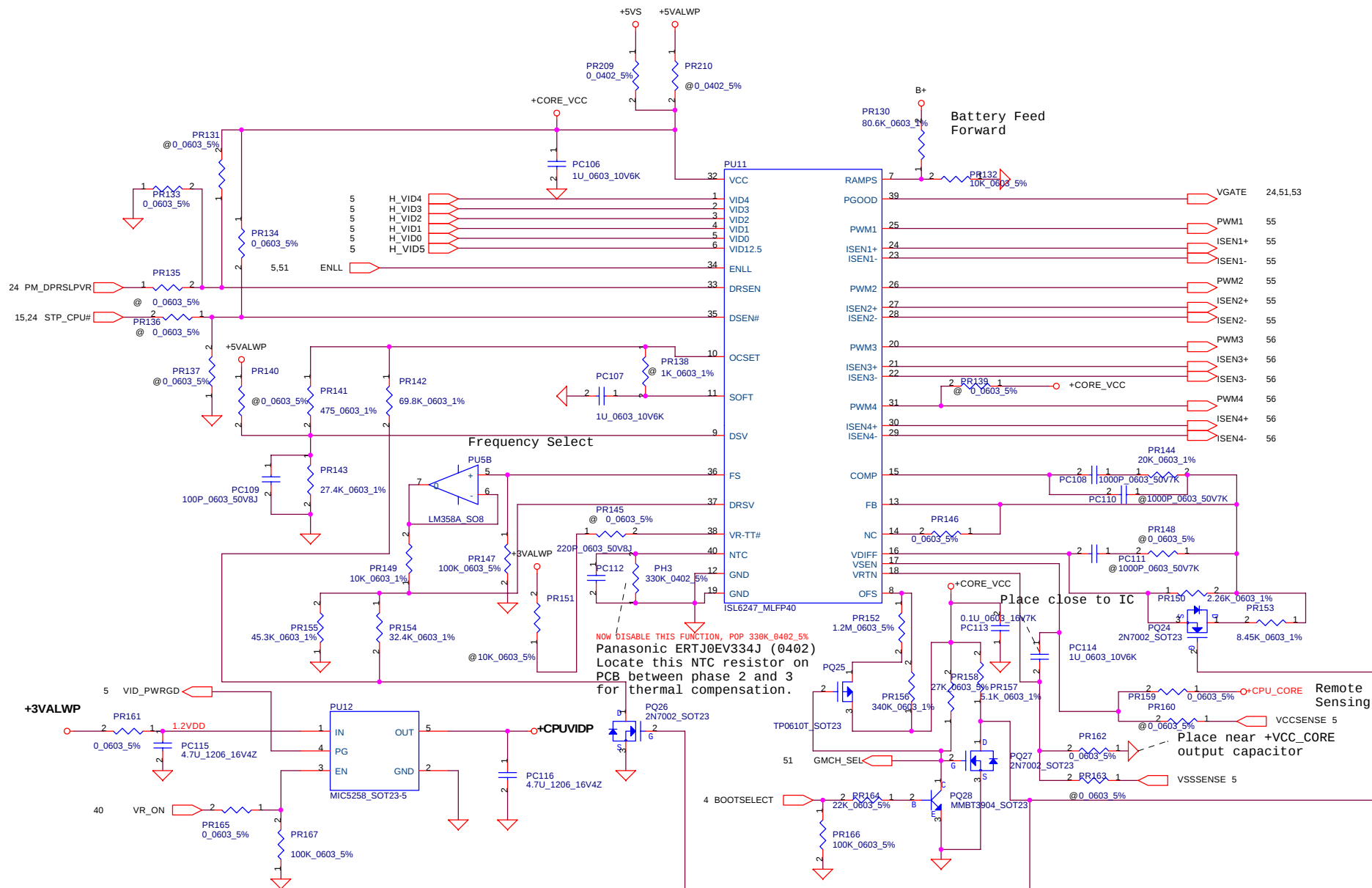
Compal Electronics, Inc.		
Title VGA_CORE/1.5V		
Size	Document Number Sapporo 300P	Rev 0.3
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145W THROTTLING 120W REVOVERY



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Title		
DDR_1.25V/CLOCK THROTTLING		
Size	Document Number	Rev
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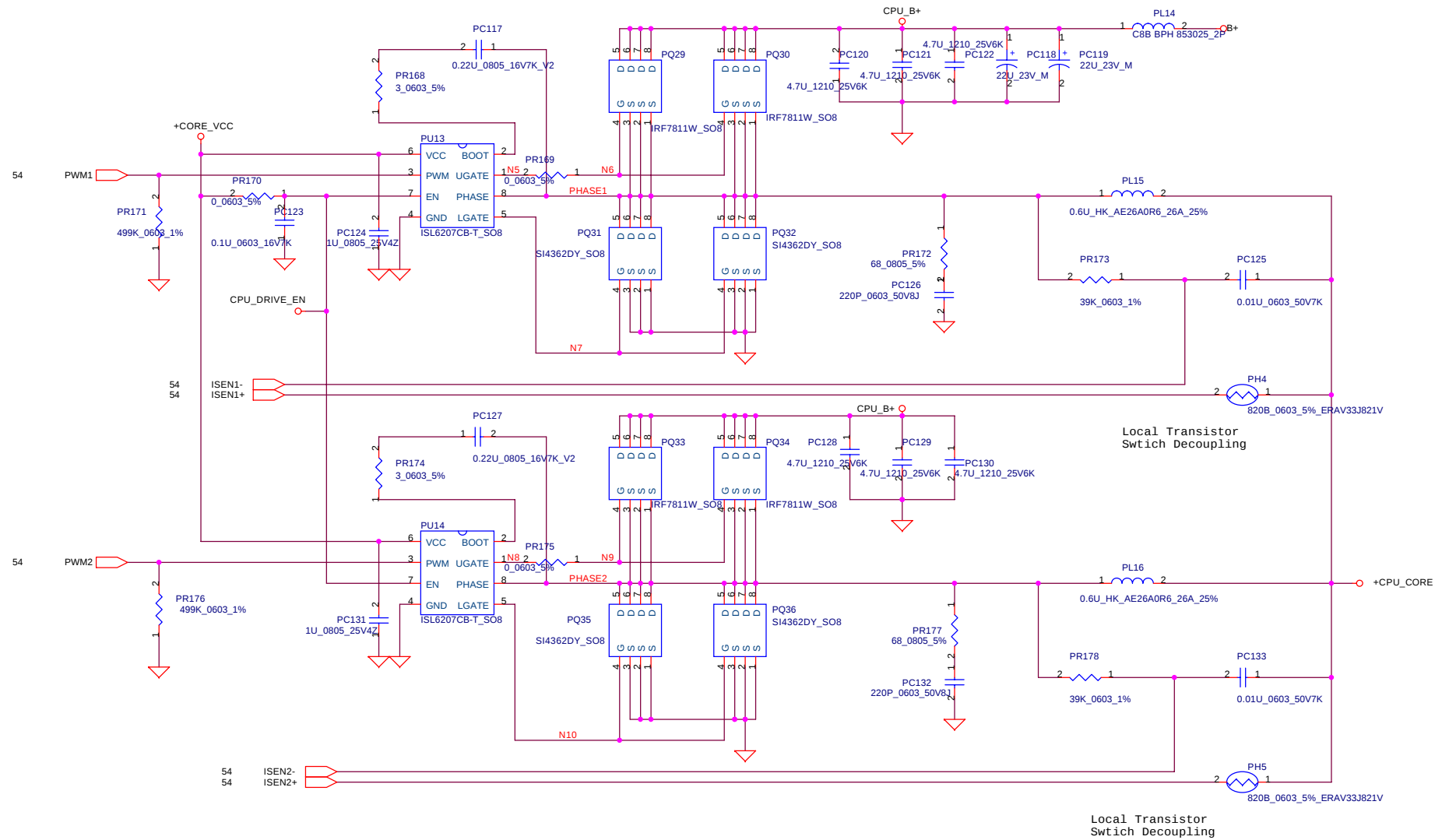


BOOTSELECT=1 PRESCOTT

BOOTSELECT=0 NORTHWOOD

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Compal Electronics, Inc.			
Title			
CPU_CORE Controller			
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Compal Electronics, Inc.			
Title			
CPU_CORE_Power stage 1			
Size	Document Number		Rev
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DBQ02 PIR LIST

***** Rev0.1 PIR List *****

10/28/2003 Writen by Jason Shih
Change from DBQ01 LA-2041

P16:New add R749, R750, R751, R752, R753, R754
Add @ to R41, R343, R701

P17:R358, R389 change from 1K to 10K

P18:Add @ to R71, R76, R112, R348, R349
Add @ to C23, C55
Change R385 from 0.0402 to 49.9.0603

P19:New add U63
Add @ to U63
New add C826, C827, C828, C829, C830, C831
Add @ to C826, C827, C828, C829, C830, C831

P20:New add R722 - R733 (12pcs)
New add C832 ~ R839 (8pcs)

P21:New add R734 - R745 (12pcs)
New add C840 - R847 (8pcs)

P22:New add R746, R747, R748

***** Rev0.2 PIR List *****

11/03/2003 Writen by Jason Shih

P5:R18 del @
P5:R19 del @, Change to 680.0603.1% ----- for Prescott CPU

P22:New add R755, R756, R757

P39:R487 change from 0.0402 to 8.2K.0402

P41:Add new R758, R759

***** Rev0.2A PIR List *****

11/13/2003 Writen by Jason Shih
Add HDTV, SW-DJ, Yamaha AC97 Codec Function

P23:HDTV Function (NewPage)

P32:New add R787, 789, R790, C881, C882, C883

P34:JP10 change from 16pin to 20pin
JP10.18 new add SPDIF signal

P35: -- Del 02-168 peripheral circuit --
Del U46, X4, D31, Q14, Q49, Q50, L34, L35, RP83, RP84
Del R228, R235, R237, R244, R495, R496, R497, R498, R506, R509, R510, R514, R518, R532, R533, R534, R538, R539
Del C365, C641, C642, C651, C659, C662, C673

Add new U66, U68, Q75, Q76, Q77, D48
Add new R791, R792, R793, R794, R795
Add new C884, C885, C886, C887, C888, C889, C890, C891, C892, C893, C894, C895, C897

P36:Del RP139, U47, U48, C645
Add new RP150, RP151, U67, U68, Q78
Add new R796, R797, R798, R799, R800
JP28.60 change from +SVCD to +5VCD5

P39:PR3, PR87 change from 10P8R to 8P4R
Add new PR149
Add new R801, R802, R803, R804

11/14/2003 Writen by Jason Shih

P22:R16 change from 100.0402 to 200.0402

11/18/2003 Writen by Jason Shih

P6:Add @ to C481, C482, C493, C494
P34:Add @ to R662
R604 del @

PWR PIR LIST

EVT

page	Reason for change	Modify list
47	Change DC-jack from 3D to 2.5D	Change PCN1 from 2DC-S113L200 to 2DC-G313B200