

Compal Confidential

NIWE2

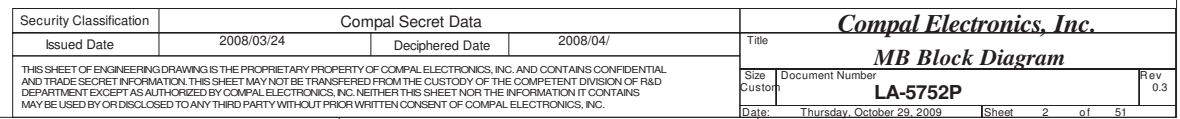
Schematics Document

Arrandale

with Intel IBEX PEAK-M core logic

REV : 0 . 3

Security Classification		Compal Secret Data		Compal Electronics, Ltd.	
Issued Date	2008/03/25	Deciphered Date	2008/04/	Title Cover Sheet	
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DDR3 Voltage Rails

power plane	State	+B	+5VALW +3VALW	+1.5V	+5VS +3VS +1.5VS +VCCP +CPU_CORE +VGA_CORE +1.8VS +0.75VS +1.05VS
S0					
S3					X
S5 S4/AC				X	X
S5 S4/ Battery only			X	X	X
S5 S4/AC & Battery don't exist		X	X	X	X

SMBUS Control Table

	SOURCE	RAM M2	BATT	KE926	SODIMM	CLK CHIP	WLAN WWAN	N10x Thermal Sensor	N10x	Cap sensor board	NEW CARD	PCH
SMB_EC_CK1 SMB_EC_DA1	KB926 +3VALW	X	+3VALW	X	X	X	X	X	X	X	X	X
SMB_EC_CK2 SMB_EC_DA2	KB926 +3VALW	X	X	X	X	X	X	X	X	X	X	+3VALW
SMBCLK SMBDATA	PCH +3VALW	+3VALW	X	X	+3VS	+3VS	X	X	X	X	+3VS	X
SML0CLK SML0DATA	PCH +3VALW	X	X	X	X	X	X	X	X	X	X	X
SML1CLK SML1DATA	PCH +3VALW	X	X	+3VALW	X	X	X	+3VS	X	+3VS	X	X

I2C / SMBUS ADDRESSING

DEVICE	HEX	ADDRESS
DDR SO-DIMM 0	A0	1 0 1 0 0 0 0 0
DDR SO-DIMM 1	A4	1 0 1 0 0 1 0 0
CLOCK GENERATOR (EXT.)	D2	1 1 0 1 0 0 1 0

@ FUNCTION

	EVT	NON-USE
45@	(45 BOM)	
100@	10/100 LAN	
GIGA@	GIGA LAN	
UMA HDMI@	FOR UMA HDMI components	
HDMI@	FOR HDMI components	
3G@	3G(WWAN) function	
X76@	(X76 BOM)	
ESATA@	ESATA function	
CMOS@	Camera function	
BT@	Blue Tooth	
10M@	FOR 10M CHIP	
11M@	FOR 11M CHIP	
UMA@	UMA only (Arranddale)	
DIS@	DIS only (Arranddale)	
VGA@	FOR NVIDIA PART	
HYBRID@	FOR SWITCHABLE	
HU@	SWITCHABLE or UMA only	
HD@	SWITCHABLE or DIS only	

SKU

Arrandale (dGPU) DIS only	DIS@ / 100@ for EVT
Arrandale (iGPU) UMA only	UMA@ / 100@ for EVT
Arrandale (iGPU+dGPU) SWITCHABLE	VGA@+HD@+HU@+HYBRID@

PCIE PORT LIST	
PORT	DEVICE
1	
2	WLAN
3	LAN
4	3G
5	NEW CARD
6	
7	
8	

USB PORT LIST	
PORT	DEVICE
0	RIGHT SIDE
1	LEFT SIDE
2	CMOS
3	LEFT SIDE
4	RIGHT SIDE
5	CARD READER
6	
7	
8	WIRELESS
9	
10	NEW CARD
11	BT
12	
13	3G

VGA and DDR3 Voltage Rails (N10x GPIO)

GPIO	I/O	ACTIVE	Function Description
GPIO0	N/A	N/A	
GPIO1	IN	-	Hot plug detect for IFP link C
GPIO2	OUT	H	Panel Back-Light brightness(PWM capable)
GPIO3	OUT	H	Panel Power Enable
GPIO4	OUT	H	Panel Back-Light On/Off (PWM)
GPIO5	OUT	-	GPU VID0
GPIO6	OUT	-	GPU VID1
GPIO7	OUT	-	GPU VID2
GPIO8	I/O	L	Thermal Catastrophic Overtemp
GPIO9	OUT	L	Thermal Alert
GPIO10	OUT		Memory VREF switch
GPIO11	I/O	L	SLI raster sync
GPIO12	IN	-	AC power detect pin
GPIO13	OUT	-	MEM_VID orPower supply control
GPIO14	OUT	-	Power supply control
GPIO15	IN	-	Hot plug detect for IFP Link E
GPIO16	OUT	-	Programmable Fan Control
GPIO17	IN	-	
GPIO18	IN	-	
GPIO19	IN	-	Hot plug detect for IFP Link D
GPIO20	IN	-	
GPIO21	IN	-	Hot plug detect for IFP link F
GPIO22	IN	-	SLI swap ready signal
GPIO23	I/O		

GPIO6 GPIO5 N10M-GS N10P-GS

GPU_VID1	GPU_VID0	VGA_CORE	P-State
0	0	0.8V	12
0	1	0.85V	12
1	0	0.9V	0, 10
1	1	1.0V (N10M-GS) 0.925V (N10P-GS)	

Performance Mode P0 TDP at Tj = 102 C* (DDR3)

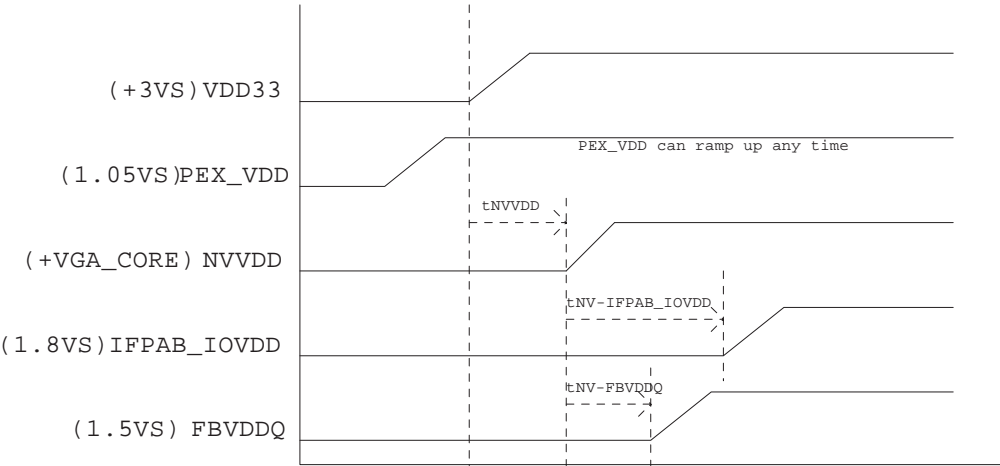
Products	GPU (4) (W)	Mem (1,5) (W)	NVCLK /MCLK (MHz)	NVVDD (V) (A) (W)			FBVDD (1.5V) (A) (W)		FBVDDQ (GPU+Mem) (1.5V) (A) (W)		PCI Express (1.05V) (6) (mA) (W)		I/O and PLLVDD (1.8V) (mA) (W)		I/O and PLLVDD (1.05V) (mA) (W)		Other (3.3V) (mA) (W)	
N10P-GS 128bit 1024MB DDR3	21.07	6.67	TBD	TBD	18.25	17.34	2.06	3.09	4.09	6.14	850	0.89	75	0.14	63	0.07	55	0.18
N10P-GE 128bit 1024MB DDR3	20.97	6.73	TBD	TBD	19.17	17.25	2.03	3.05	4.09	6.14	840	0.88	75	0.14	63	0.07	55	0.18
N10P-LP 128bit 1024MB DDR3	15.48	6.44	TBD	TBD	13.95	11.86	1.90	2.85	3.99	5.99	810	0.85	75	0.14	63	0.07	55	0.18

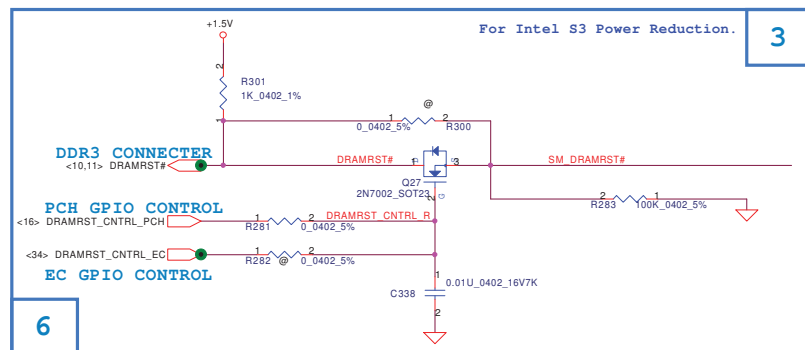
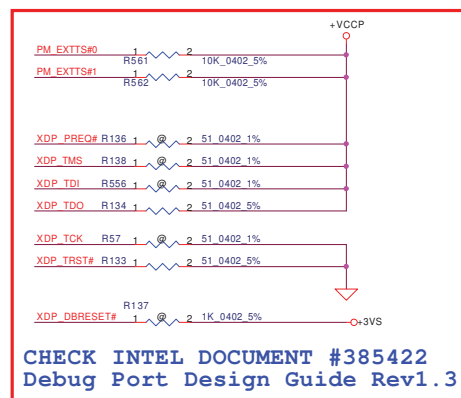
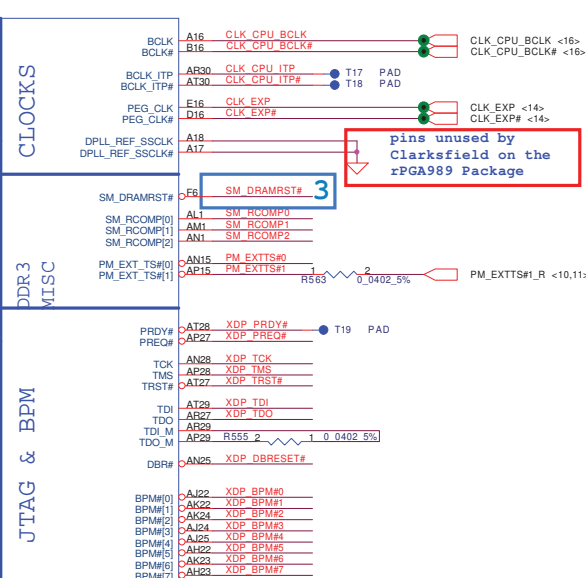
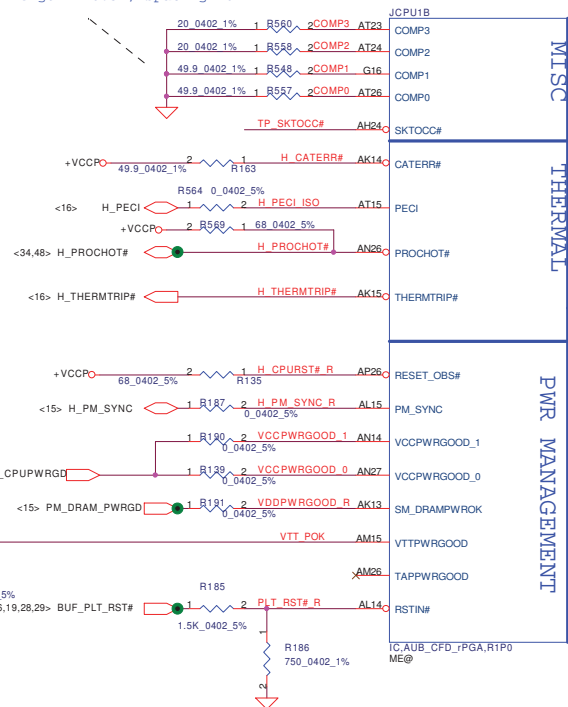
Performance Mode P0 TDP at Tj = 102 C* (DDR3)

Products	GPU (4) (W)	Mem (1,5) (W)	NVCLK /MCLK (MHz)	NVVDD (V) (A) (W)			FBVDD (1.5V) (A) (W)		FBVDDQ (GPU+Mem) (1.5V) (A) (W)		PCI Express (1.05V) (6) (mA) (W)		I/O and PLLVDD (1.8V) (mA) (W)		I/O and PLLVDD (1.05V) (mA) (W)		Other (3.3V) (mA) (W)	
N10M-GE 64bit 512MB DDR3	13.36	2.93	TBD	TBD	11.89	10.70	0.66	0.99	2.16	3.24	792	0.83	75	0.14	63	0.07	100	0.33
N10M-GS 64bit 512MB DDR3	14.29	3.10	TBD	TBD	11.53	11.53	0.70	1.05	2.28	3.42	817	0.86	75	0.14	63	0.07	100	0.33
N10M-LP 64bit 512MB DDR3	8.28	2.91	TBD	TBD	6.60	5.61	0.62	0.93	2.20	3.3	782	0.82	75	0.14	63	0.07	100	0.33

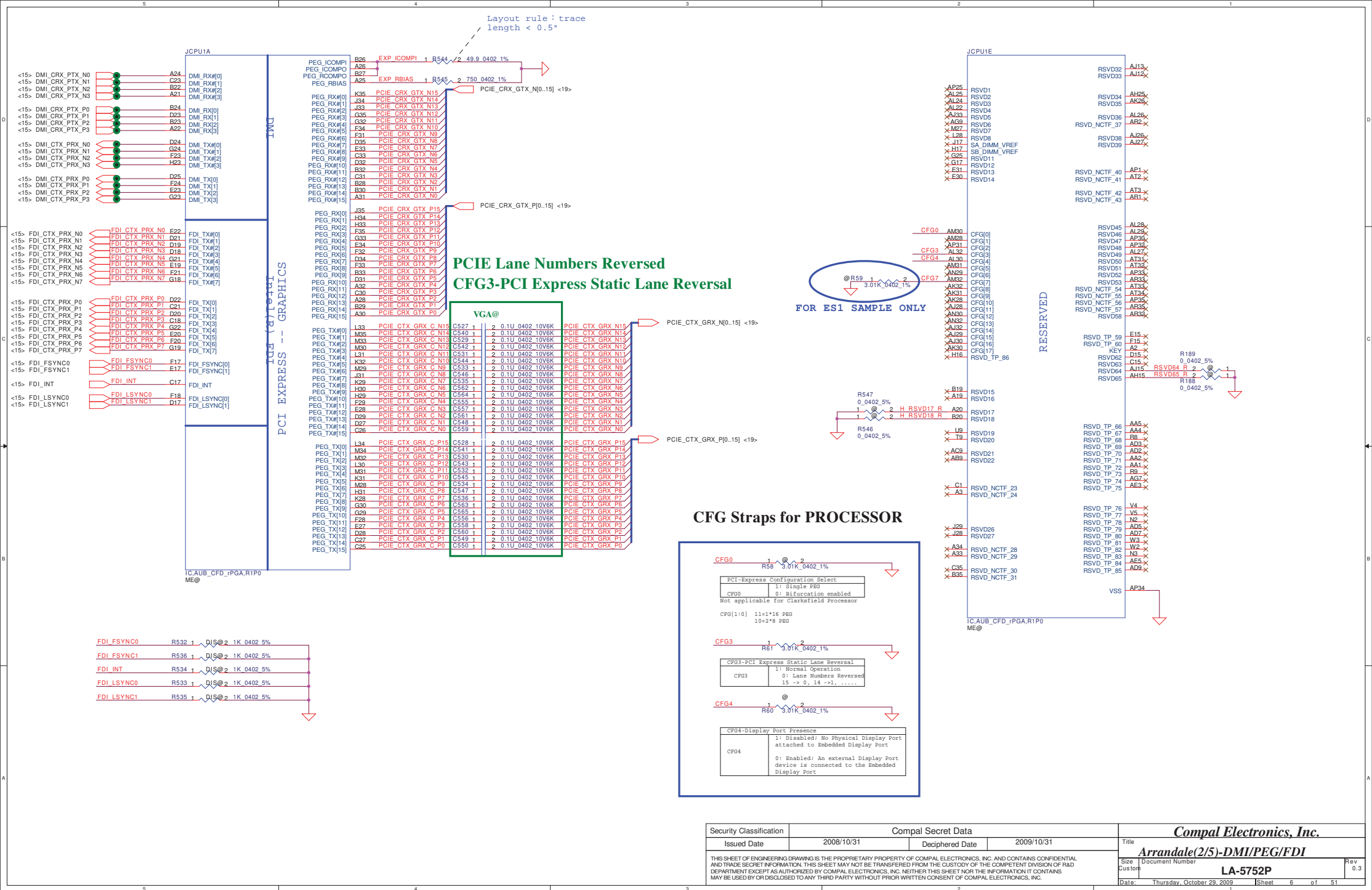
Power Sequence

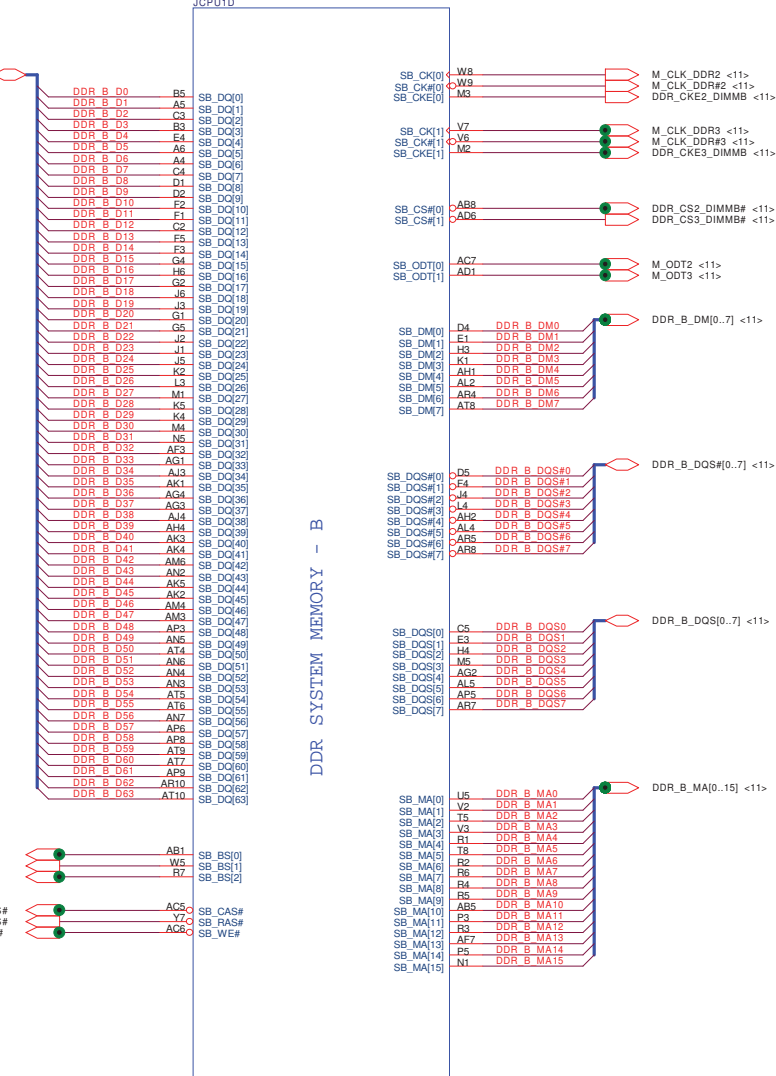
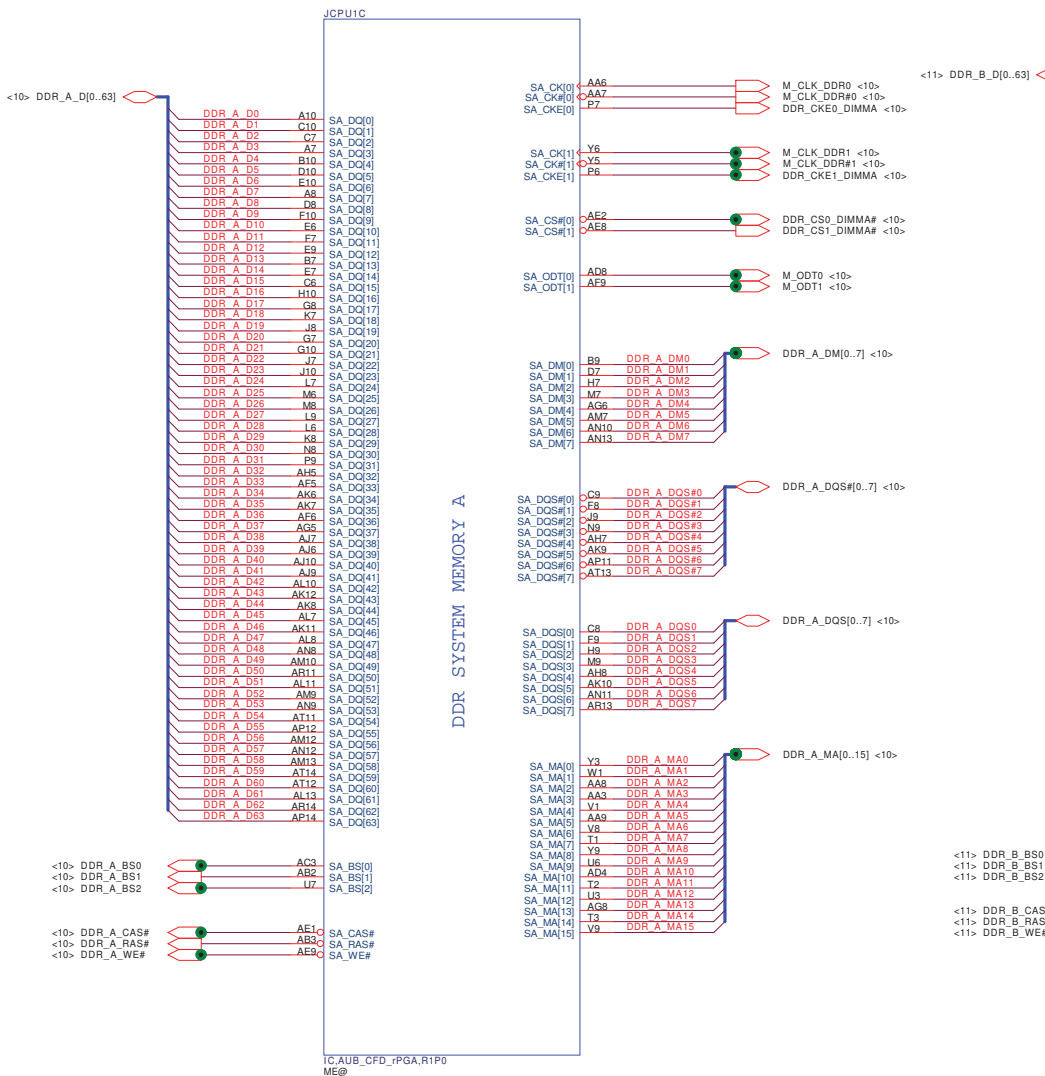
The ramp time for any rail must be more than 40us





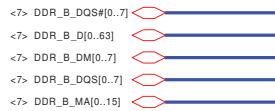
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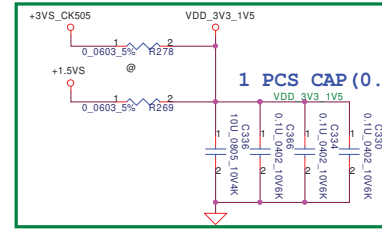
07/17/2009

The schematic diagram shows a 10-bit DAC circuit. It starts with a 1.5V reference voltage connected to a 100k potentiometer (C584). The wiper of this potentiometer is connected to a series of resistors (C574-C583) and capacitors (C585-C594). The output of the DAC is taken from the wiper of the 100k potentiometer (C584) and connected to a 100k potentiometer (C584).

1*0402 0.1uf 1*0402 2.2uf

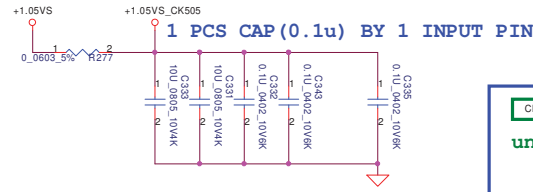
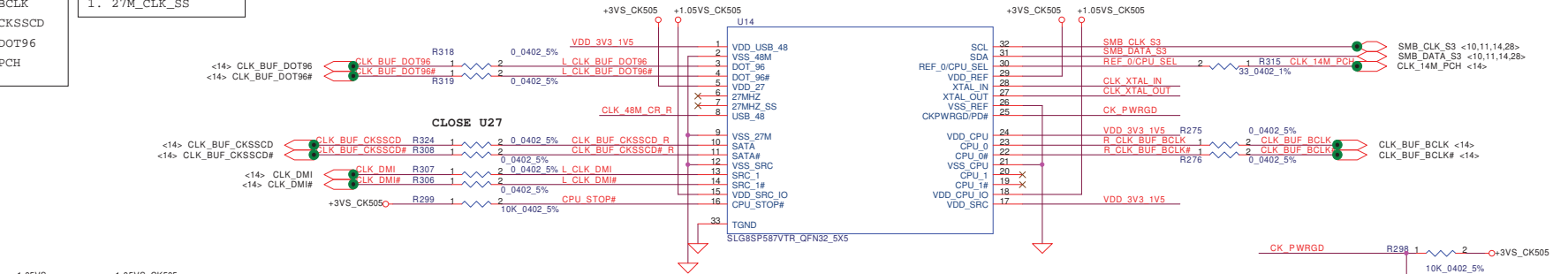
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Reserve for Low Power CLK GEN.
RTM890N-632
SLG8LV597VTR



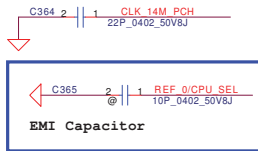
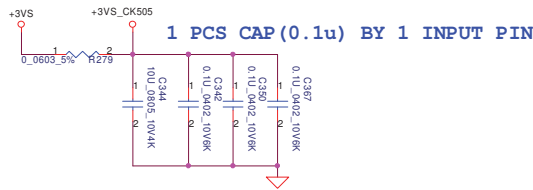
CLK GEN TO PCH
1. CLK_DMI
2. CLK_BUF_BCLK
3. CLK_BUF_CKSSCD
4. CLK_BUF_DOT96
5. CLK_14M_PCH

CLK GEN TO VGA
1. 27M_CLK
1. 27M_CLK_SS

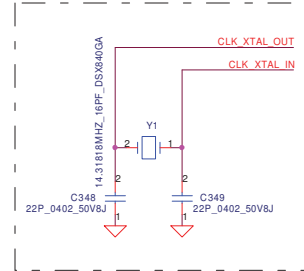
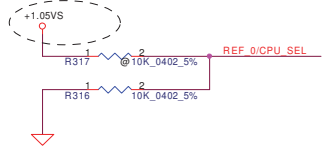


RTM890N-631-GRT QFN 32P CLK GEN (SA00003HQ00)
ICS9LV3199AKLFT MLF 32P CLK GEN (SA00003HR00)

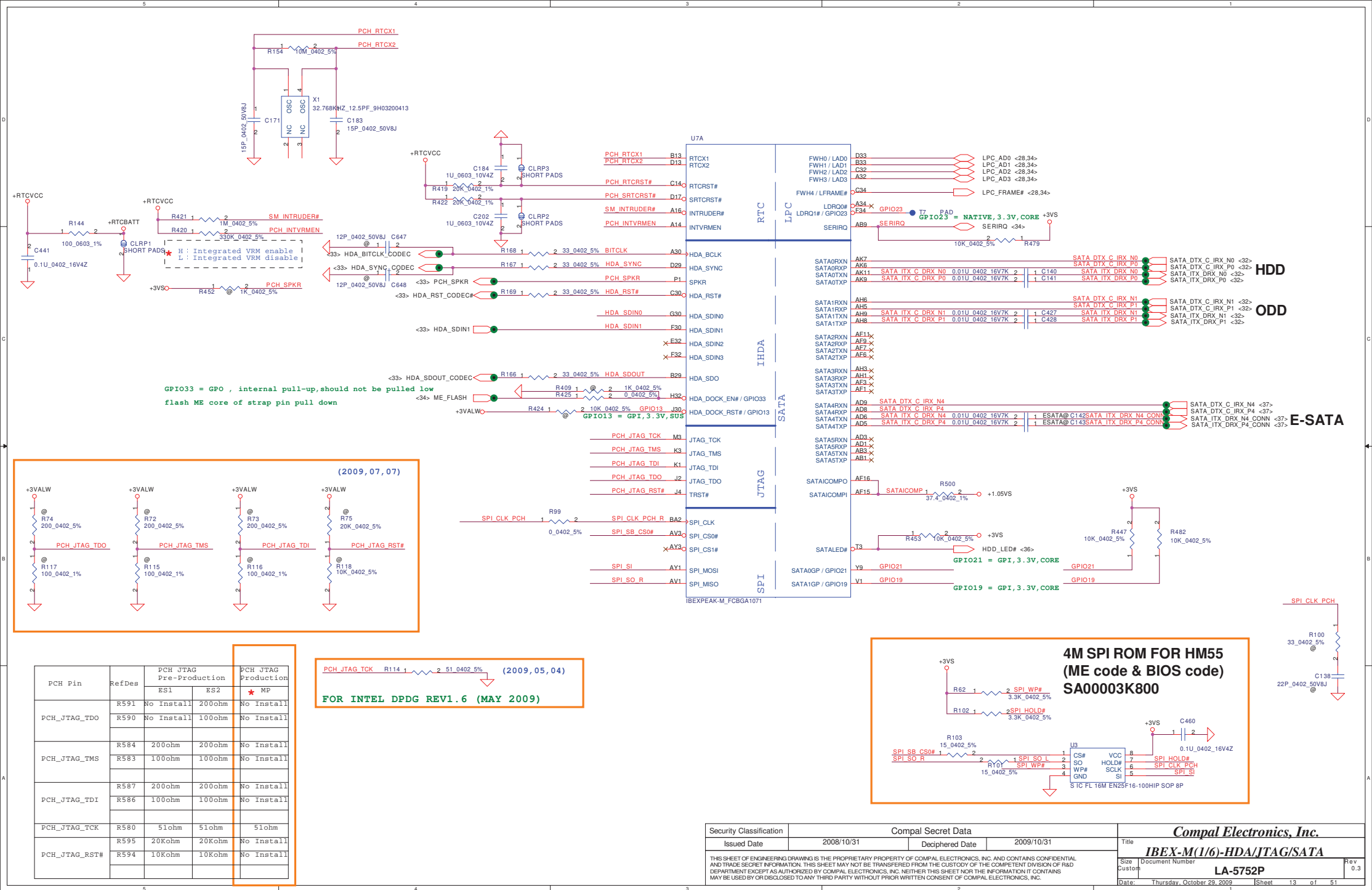
CLK_48M_CR
unstuff 09.09.08
PIN8 IS GND FOR ICS3197
PIN8 IS 48MHz FOR ICS3199



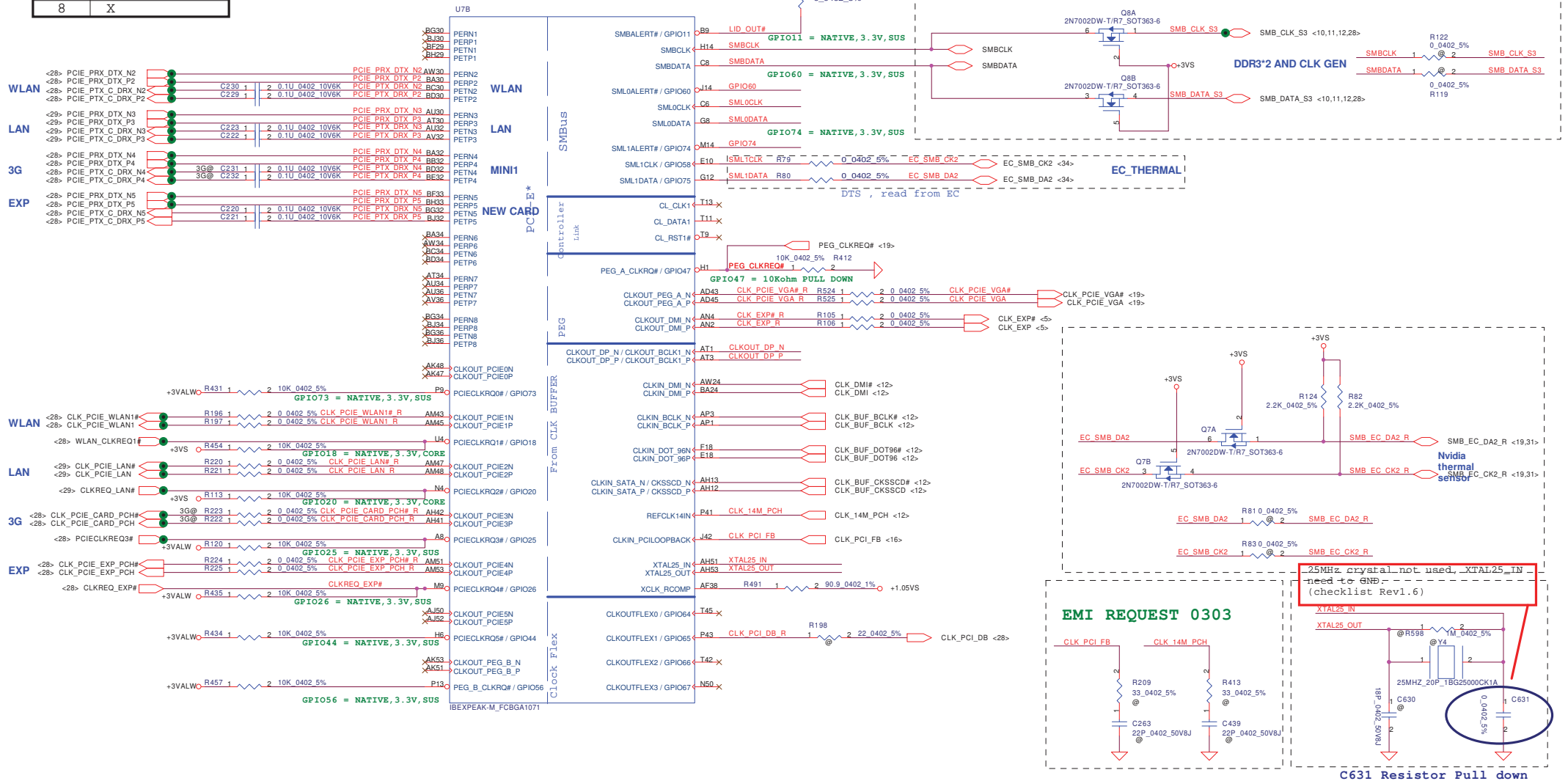
PIN 30	CPU_0	CPU_1
0 (Default)	133MHz	133MHz
1	100MHz	100MHz



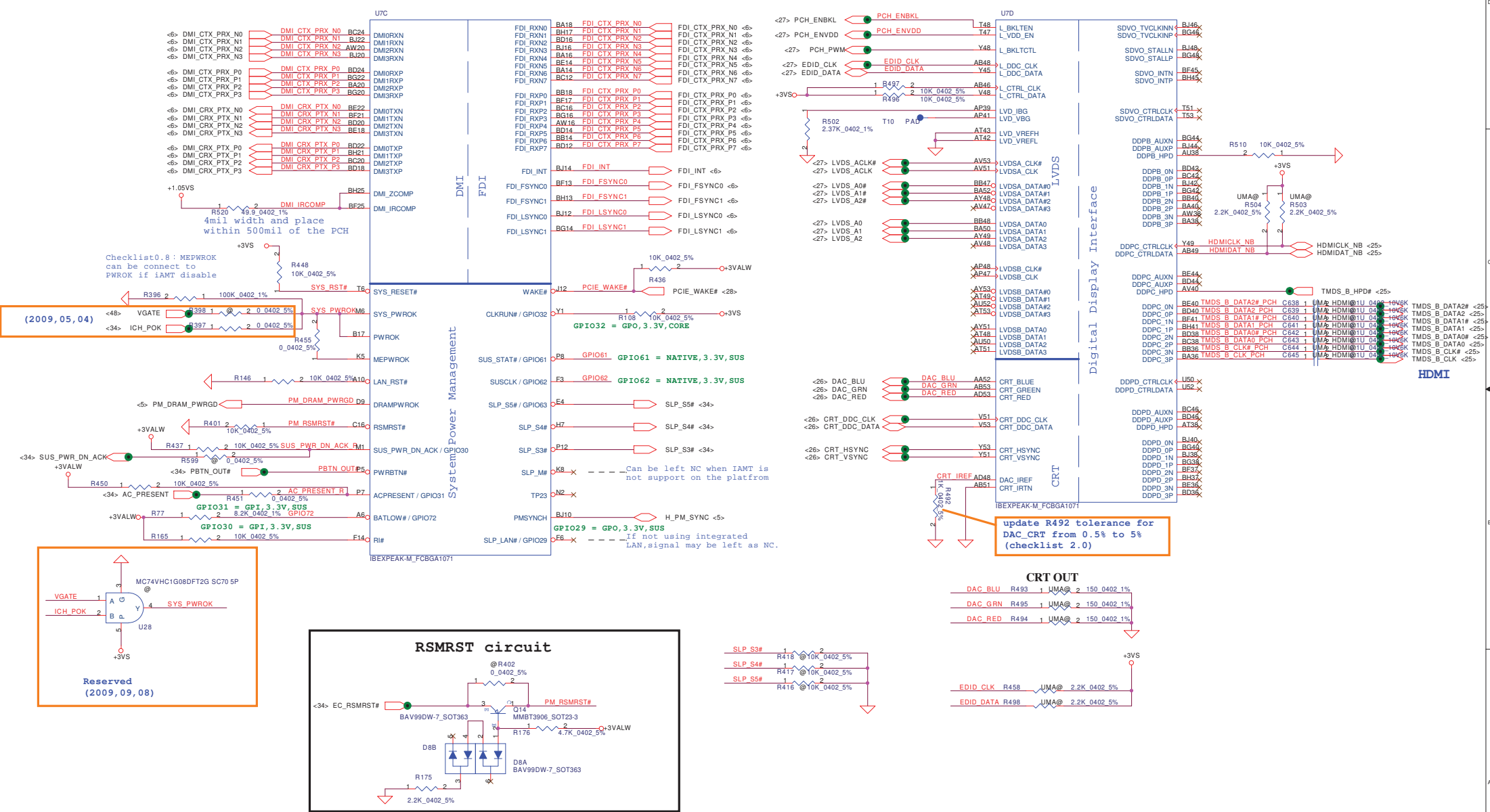
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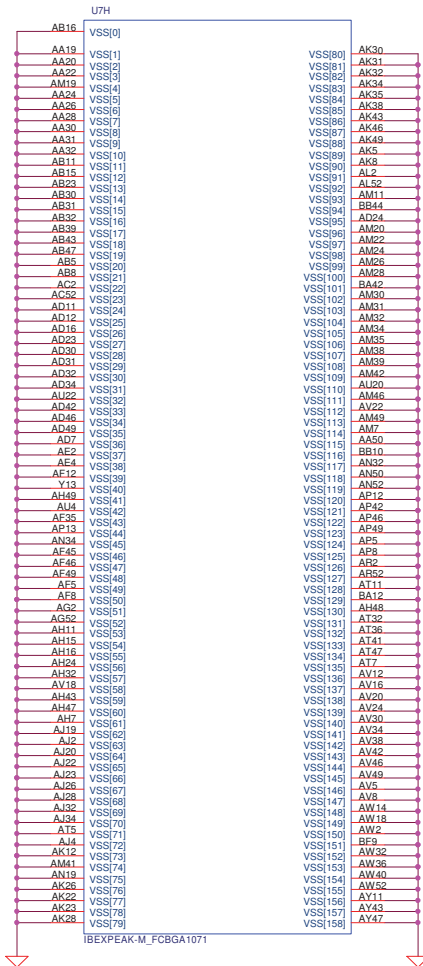
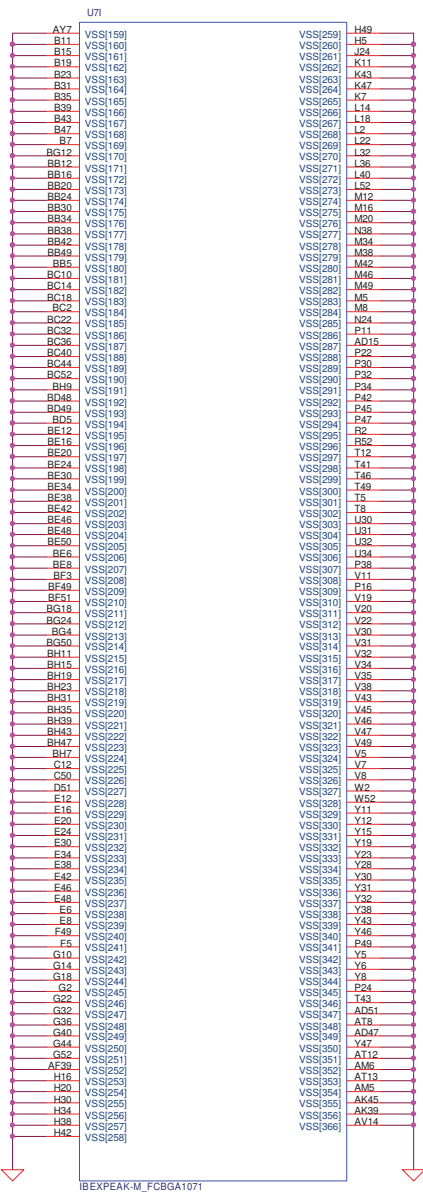
PCIE PORT LIST	
PORT	DEVICE
1	X
2	WLAN
3	LAN
4	3G
5	NEW CARD
6	X
7	X
8	X



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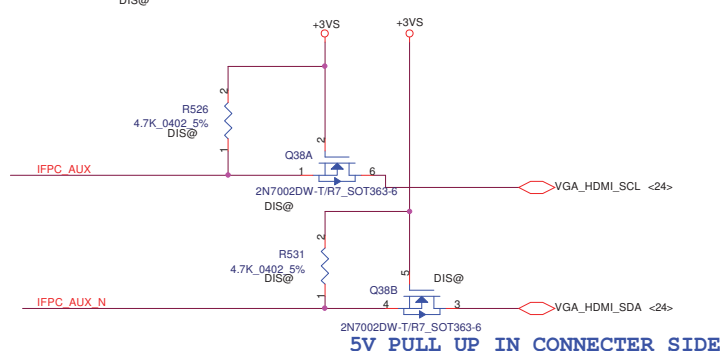
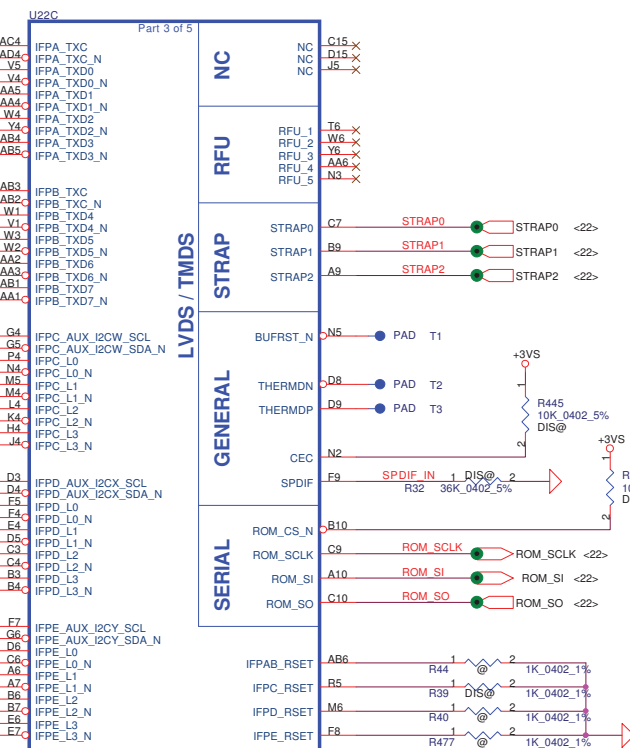
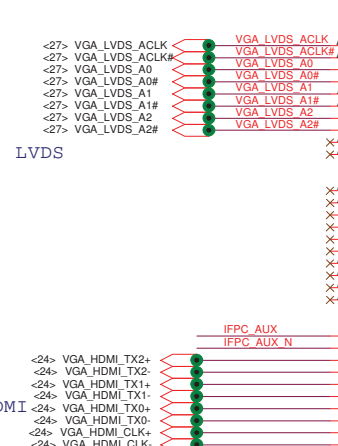
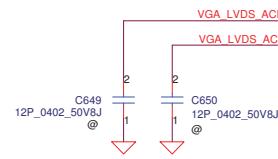


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IBEX-M(3/6)-DMI/GPIO/LVDS		Rev	
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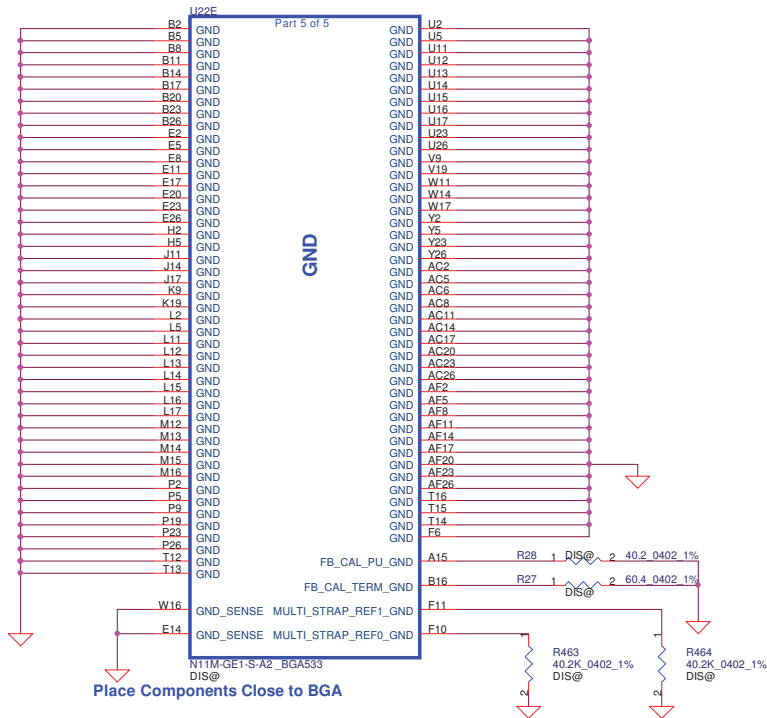


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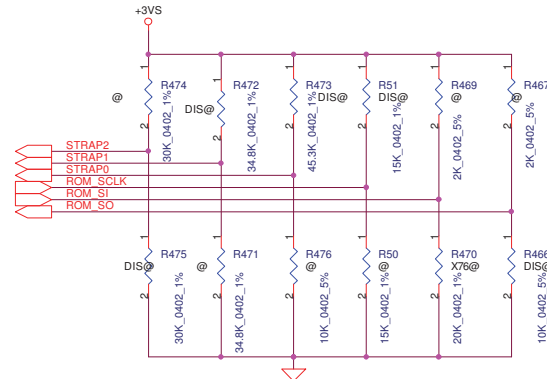






A total of 8 signals are required for GB1 strapping this includes
 2 reference signals
 6 physical strapping pins
 4 logical strapping bits
 A total of 24 logical strapping bits are available

<20> STRAP2
 <20> STRAP1
 <20> STRAP0
 <20> ROM_SCLK
 <20> ROM_SI
 <20> ROM_SO



STRAP1 use for 3GIO_PADCFG to set 35K pull up.
 (PUN-04335-001_V10 HW9 update)

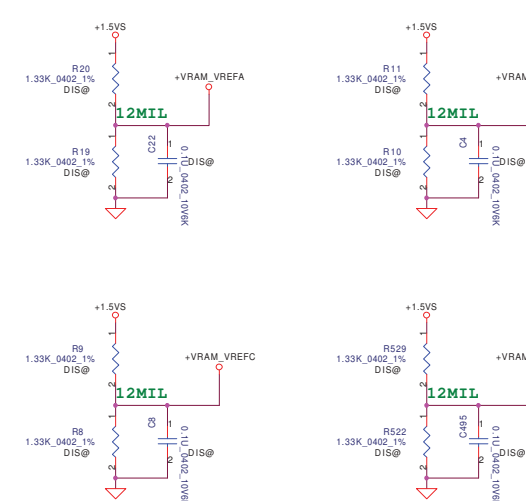
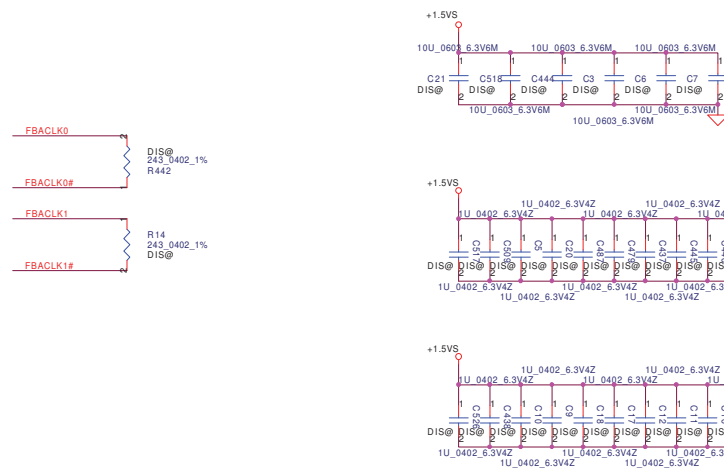
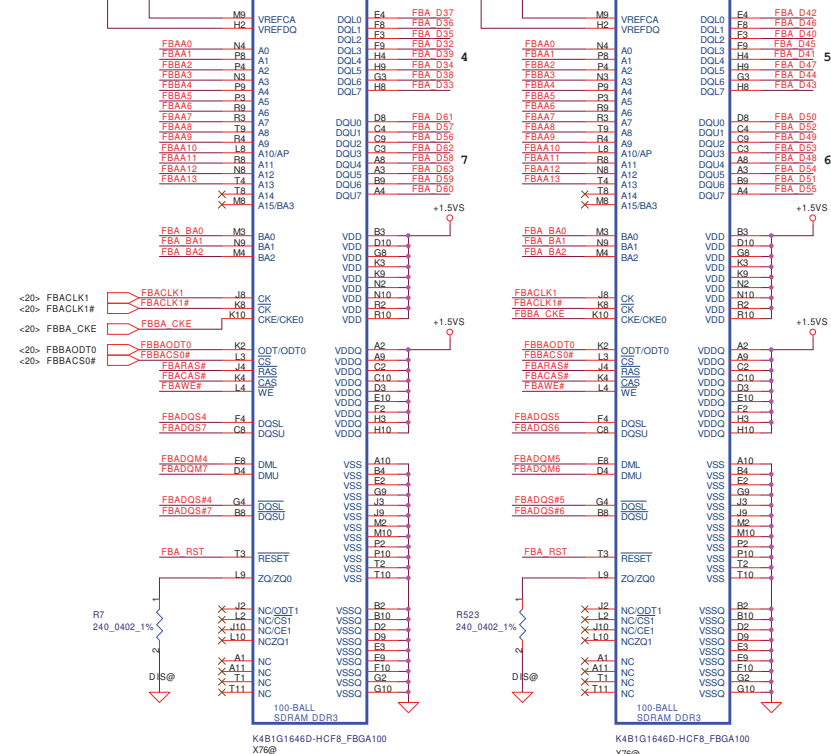
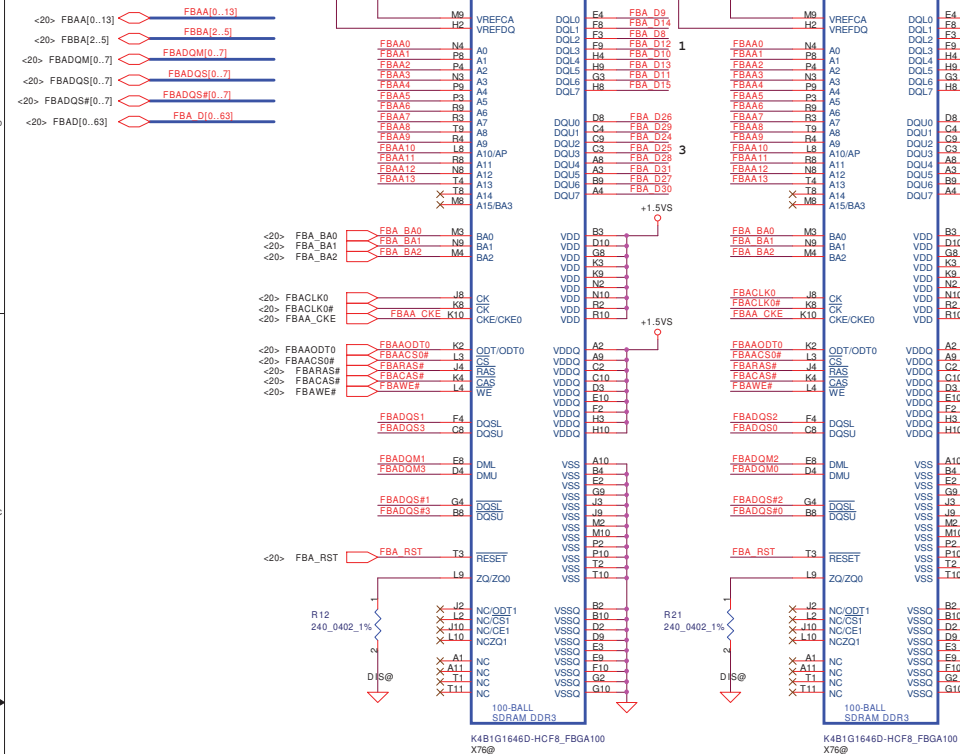
GPU	FB Memory (DDR3)		ROM_SO	ROM_SCLK	ROM_SI	STRAP2	STRAP1	STRAP0
N11M-GE1 LP1 (0x0A7D) 40nm	Samsung 800MHz (default)	K4W1G1646E-HC12						
		64Mx16	PD 10K	PD 15K	PD 20K	PU 30K	PU 35K	PU 45K
	Hynix 800MHz	H5TQ1G63BFR-12C						
		64Mx16	PD 10K	PD 15K	PD 15K	PU 30K	PU 35K	PU 45K
					X76			

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

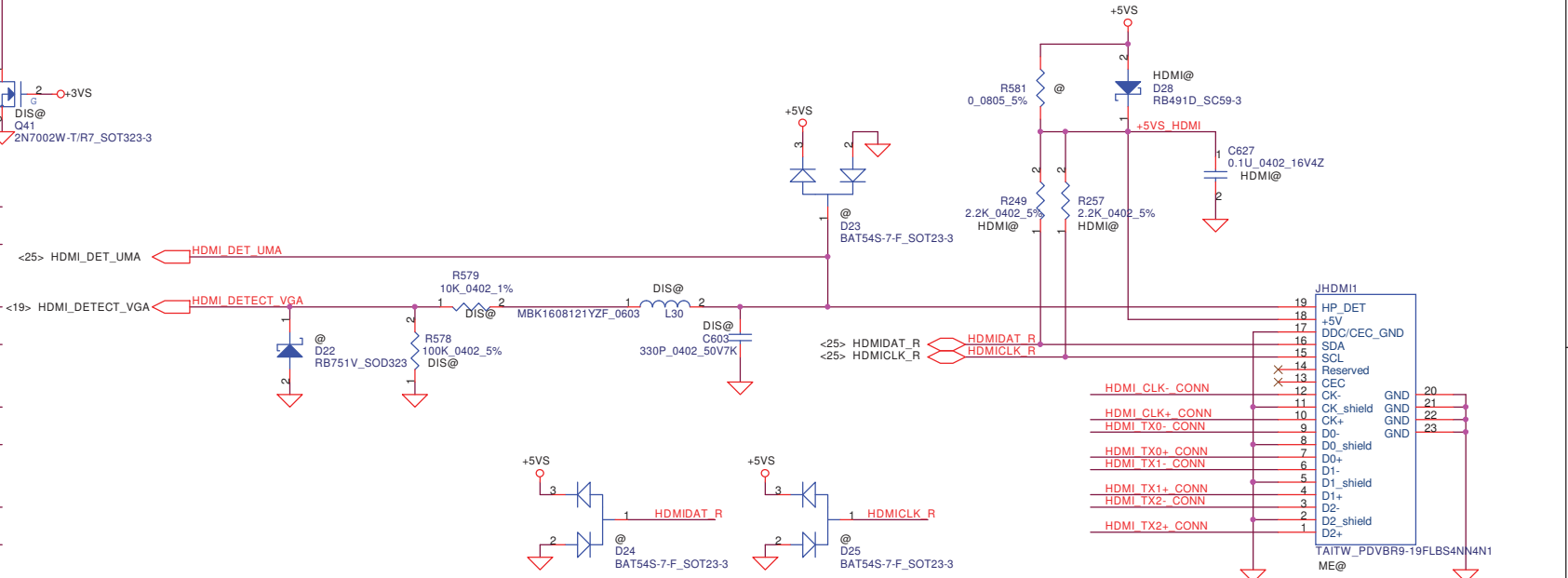
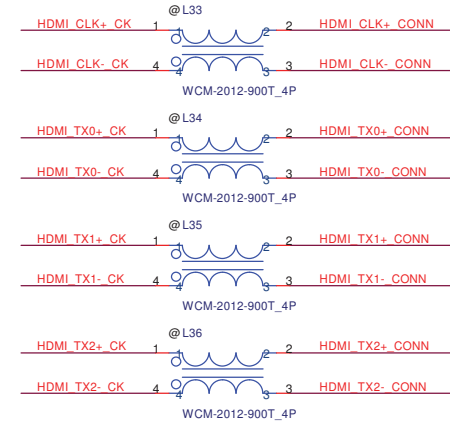
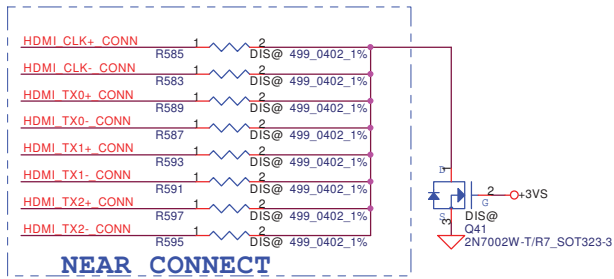
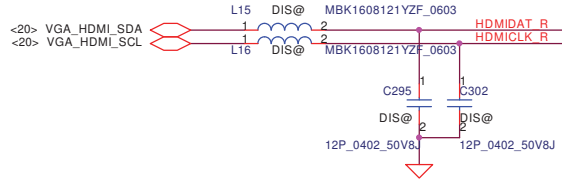
Must be used 1% resistor for driver calibration DG-04642-001-V01(May 22, 2009)

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



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				LA-5752P	
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Issued Date		Deciphered Date		Title	
2008/03/25		2008/04/		HDMI CONN	
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P/N:SA00003GT00 (ASM1442)

FOR asmedia R428 STUFF

RESERVE THE R668 PULL UP TO 3VS

RESERVE THE R670 PULL DOWN TO GND

CHANGE R483 FROM 499 TO 3.4K OHM

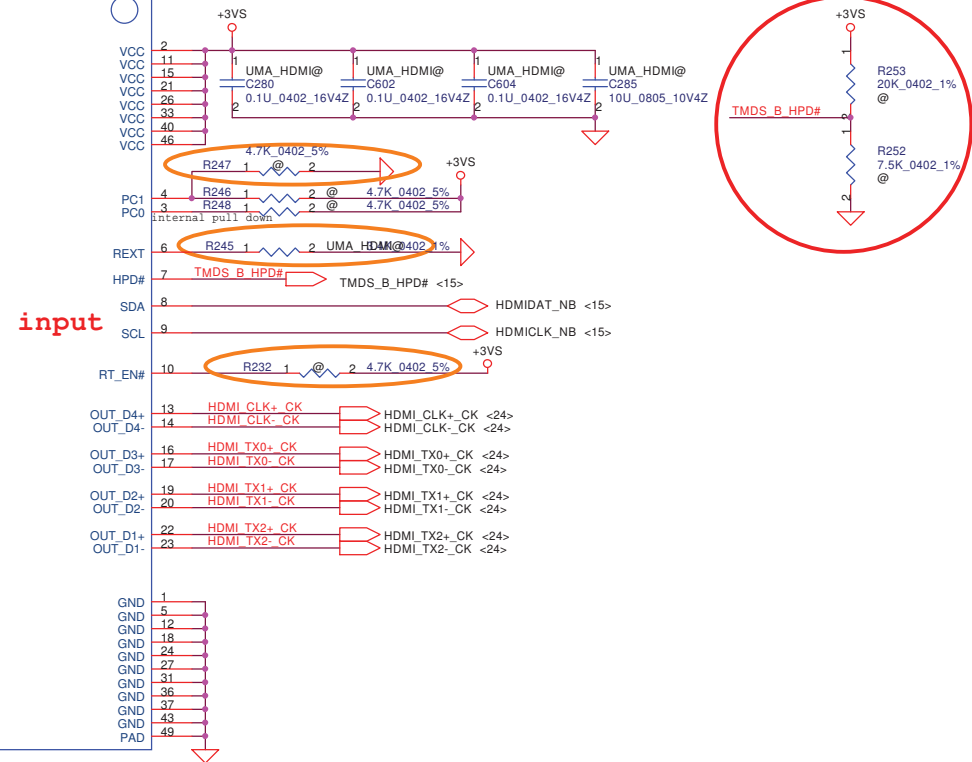
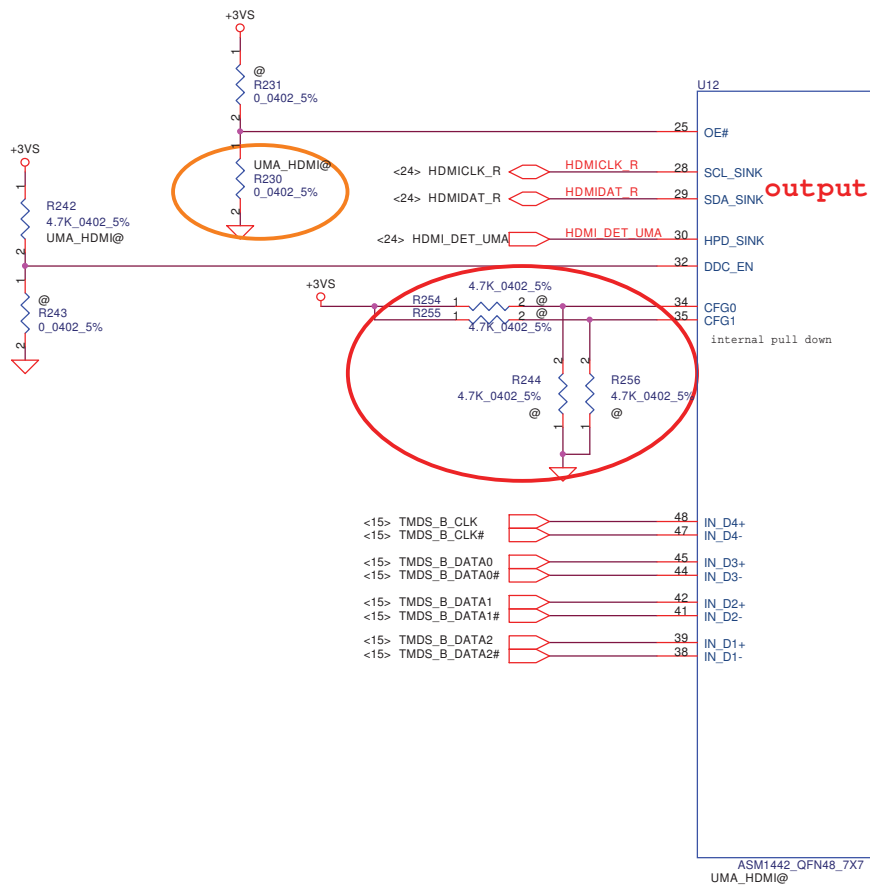
P/N:SA00002D700 (8101T)
P/N:SA00001U900 (CH7318A)

FOR 7318C

PIN6 PULL DOWN 1.2Kohm

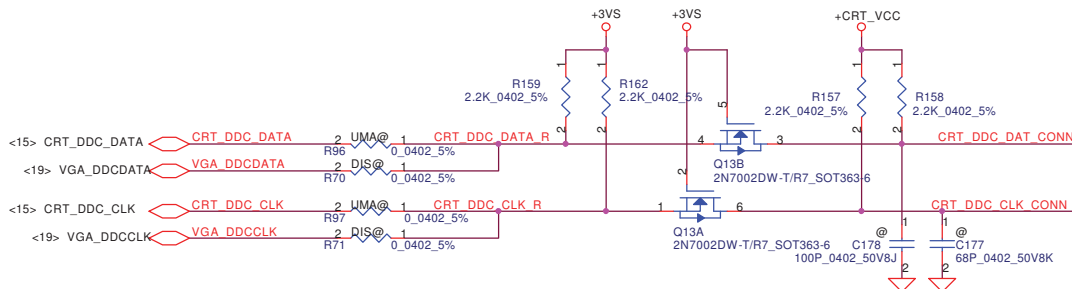
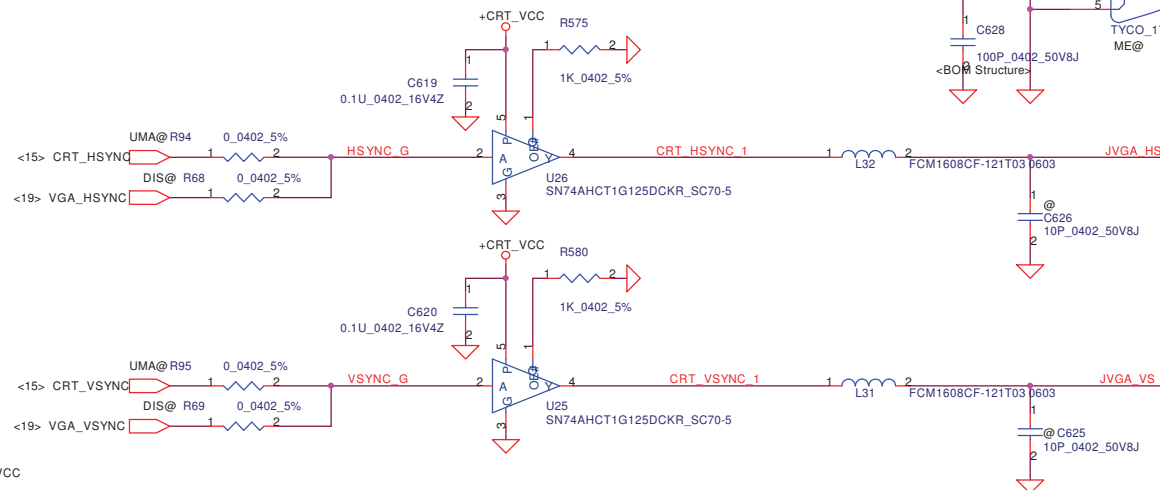
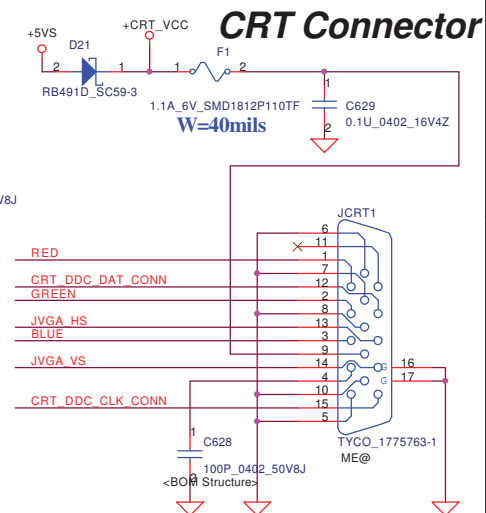
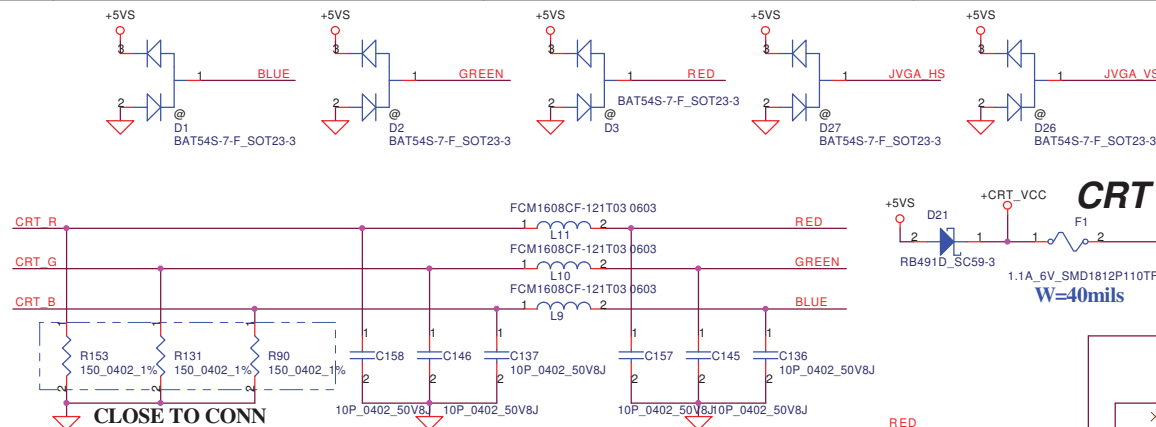
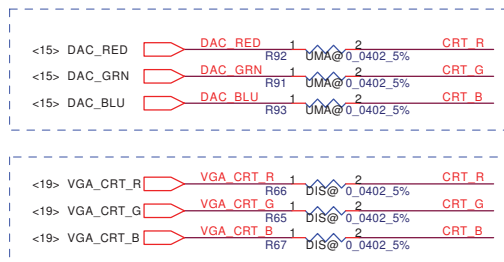
PIN7 PULL DOWN 7.5Kohm

PIN7 PULL UP 20Kohm



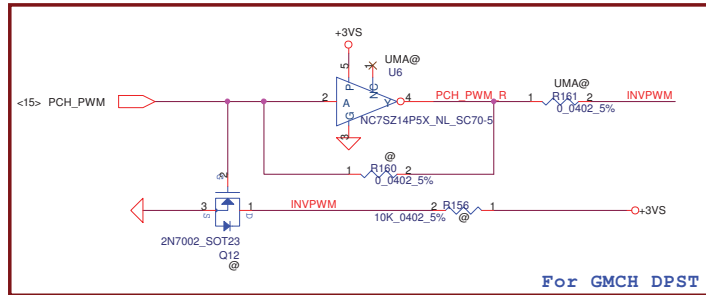
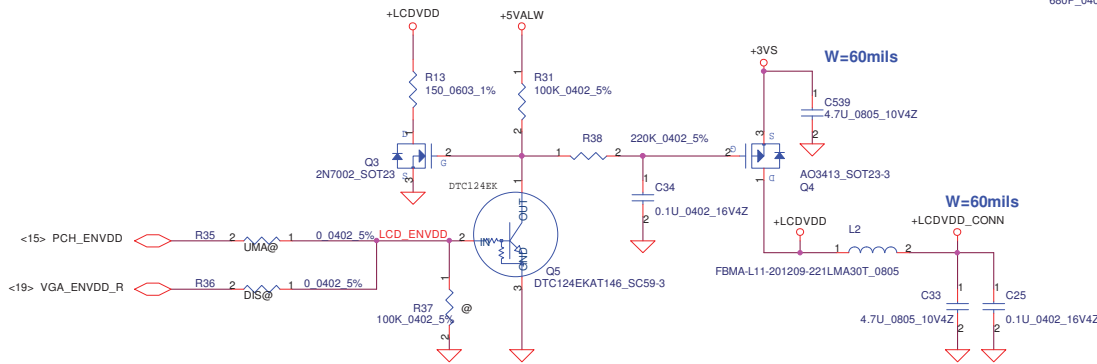
ASM1442_QFN48_7X7
UMA_HDMI@

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Issued Date	2008/03/25	Deciphered Date	2008/04/	Title	Level Shifter_ASM1442
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				Custom	LA-5752P
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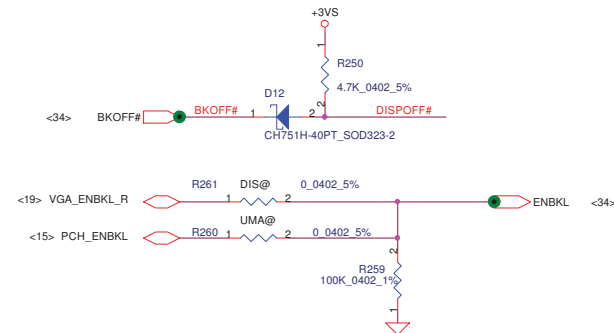
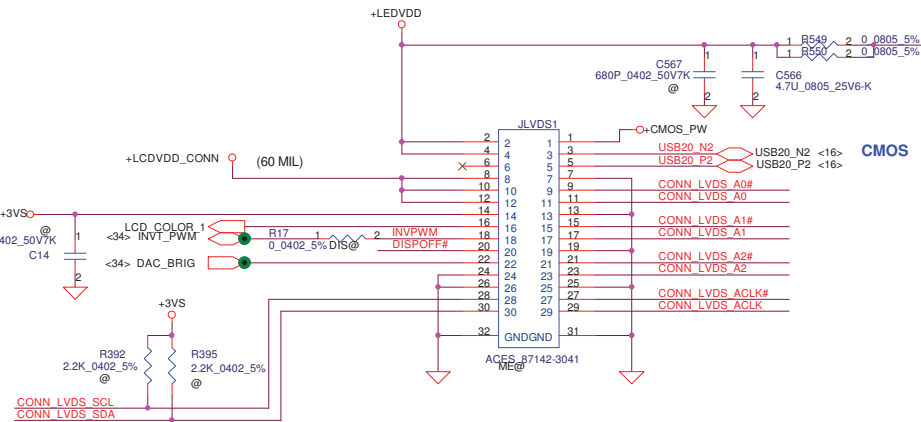
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Issued Date	2007/10/15	Deciphered Date	2008/10/15	Title	
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Size	Document Number	LA-5752P		Rev	0.3
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LCD POWER CIRCUIT

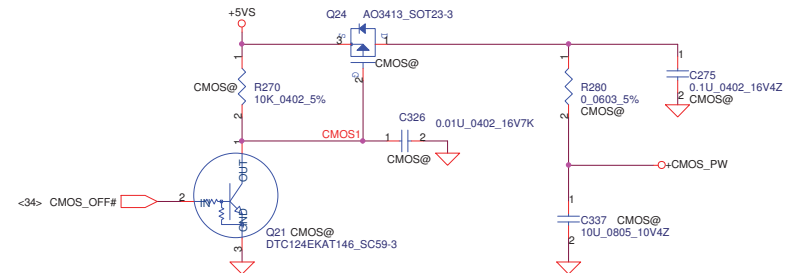


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<20> VGA_LVDS_A0
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<20> VGA_LVDS_ACLK#

<15> EDID_CLK
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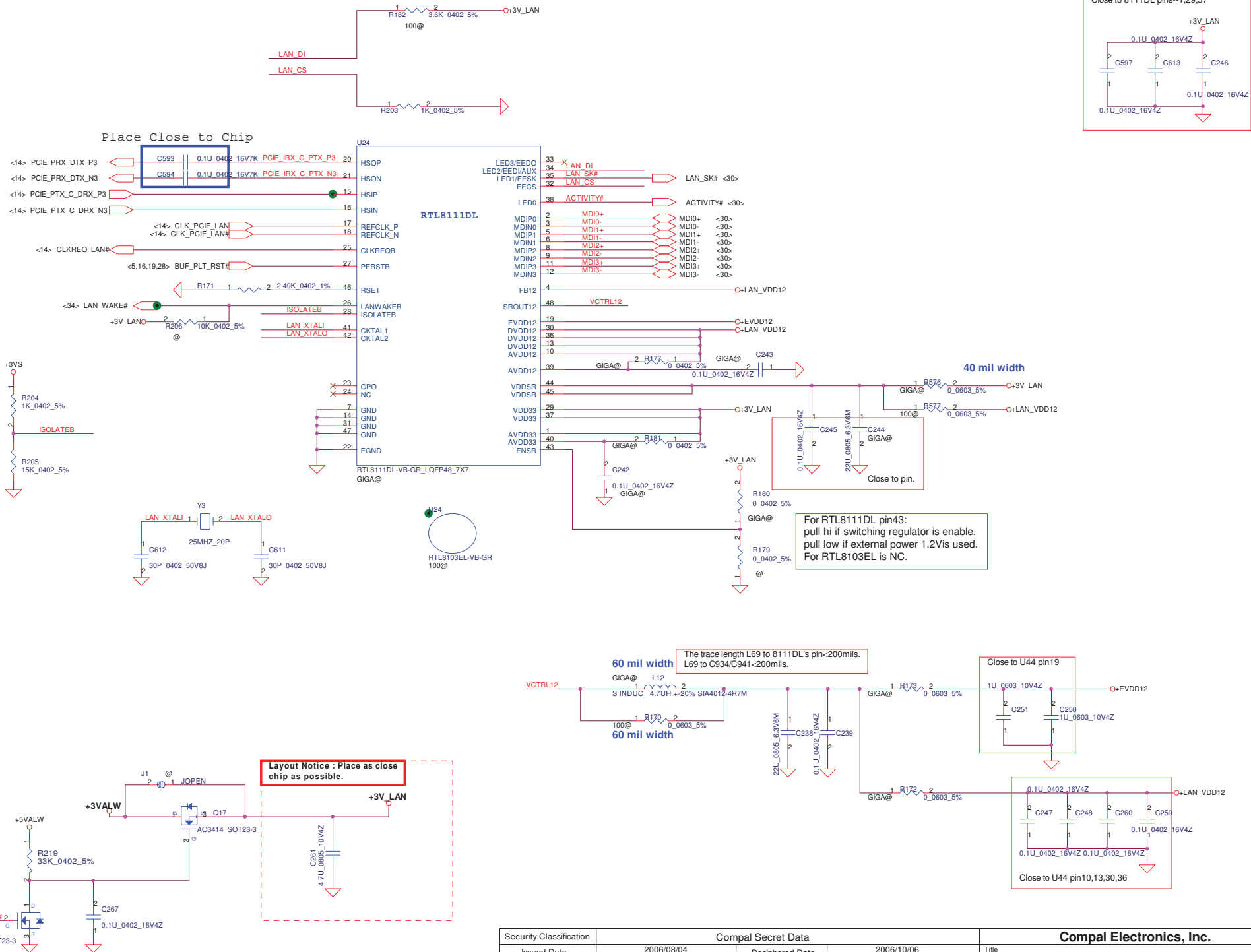


CMOS Camera

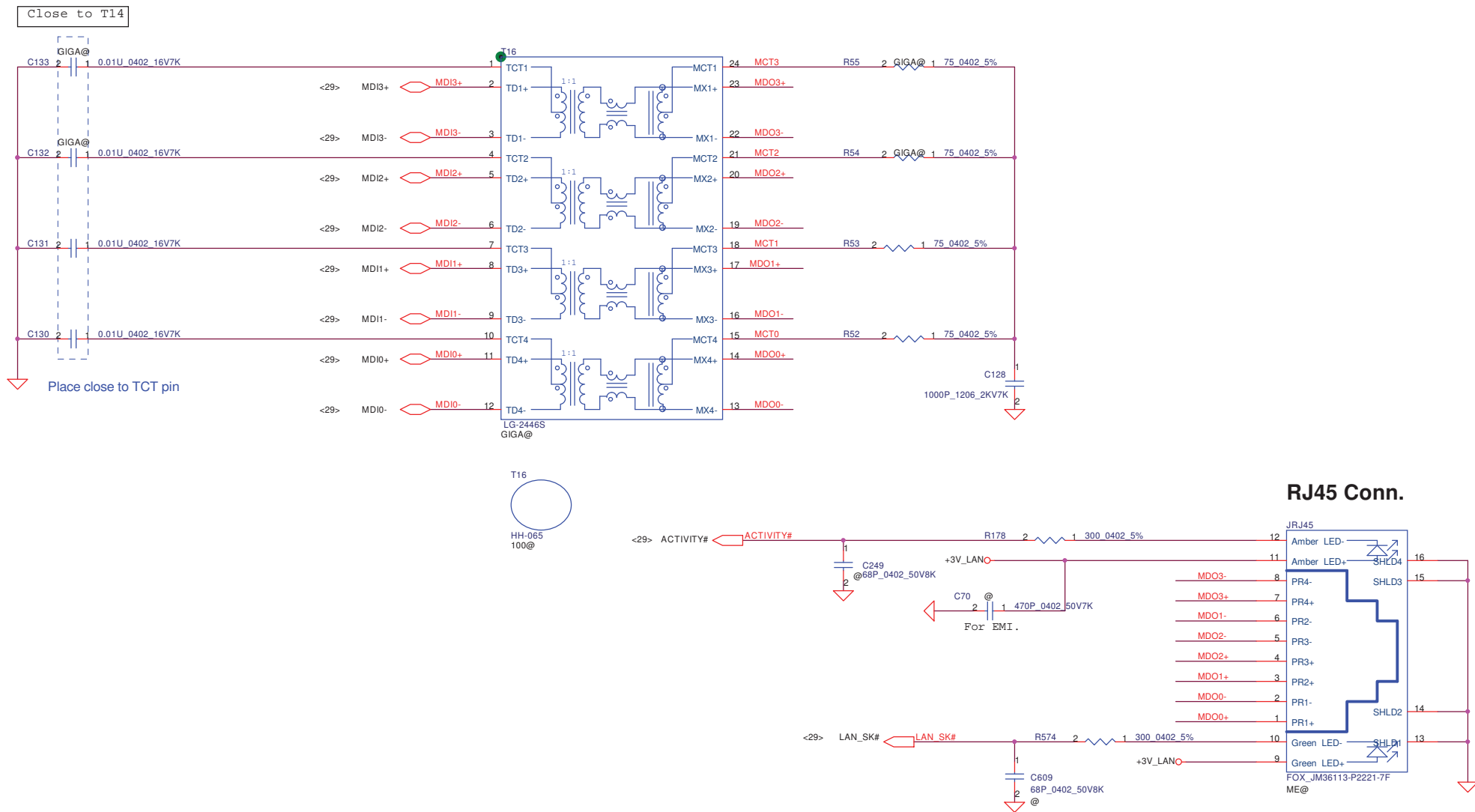


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Issued Date	2007/10/15	Deciphered Date	2008/10/15	Compal Electronics, Inc.	
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Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2009/03/20	Deciphered Date	2010/03/20	Title	
				LAN_Transformer	
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				LA-5752P	
				Date:	Thursday, October 29, 2009
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R430 1403@
0_0402_5%

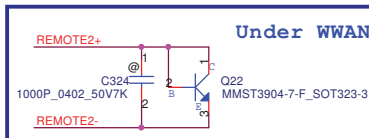
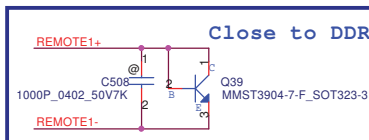
1403:
@C508/@C324=100p

SMSC thermal sensor placed near by VRAM

FAN_PWM & TACH
for PWM FAN

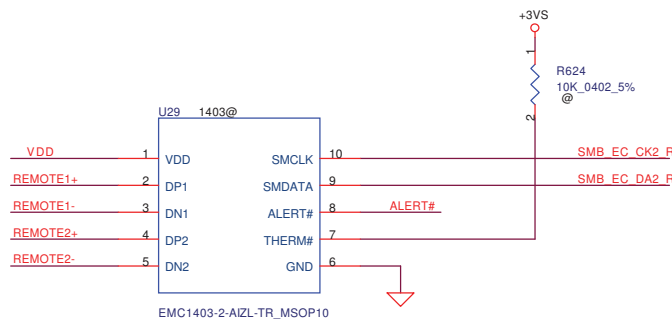
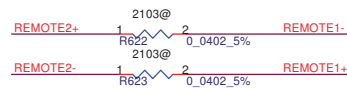
Address 0101_110xb

internal pull up 1.2K to 1.5V
R for initial thermal
shutdown temp

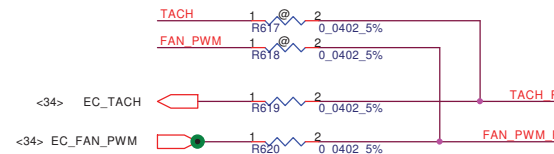


REMOTE1,2+/-:
Trace width/space:10/10 mil
Trace length:<8"

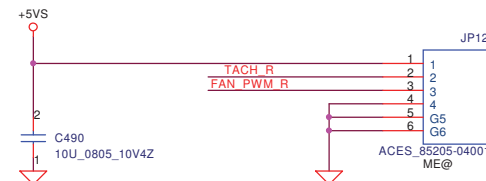
Close U20



Address 1001_101xb



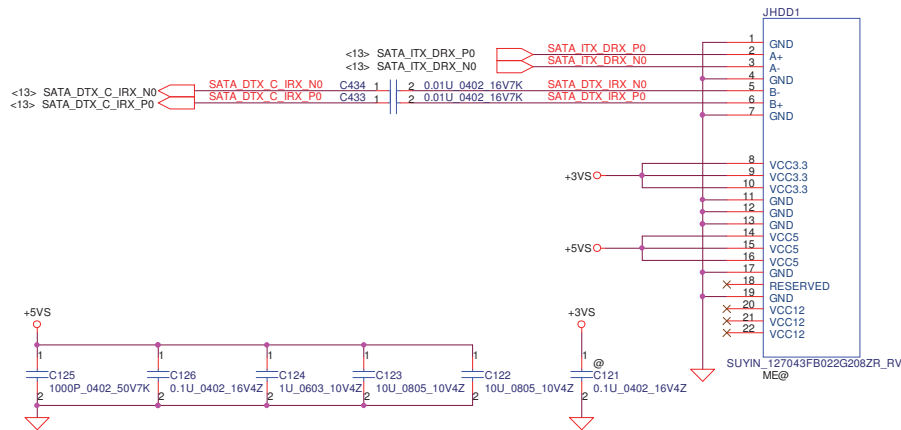
FAN1 Conn



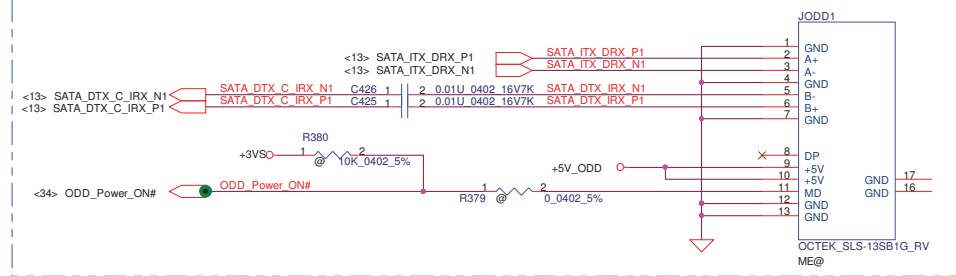
Shutdown Temp	TRIP_SET R439 (1%)
93	953ohm
94	1020ohm
95	1100ohm
96	1150ohm
97	1240ohm
98	1330ohm
99	1400ohm
100	1500ohm
101	1580ohm
102	1690ohm
103	1820ohm
104	1960ohm

Security Classification		Compal Secret Data		Compal Electronics, Ltd.	
Issued Date	2008/03/25	Deciphered Date	2008/04/	Title	EMC2103/1403 Thermal sensor/FAN
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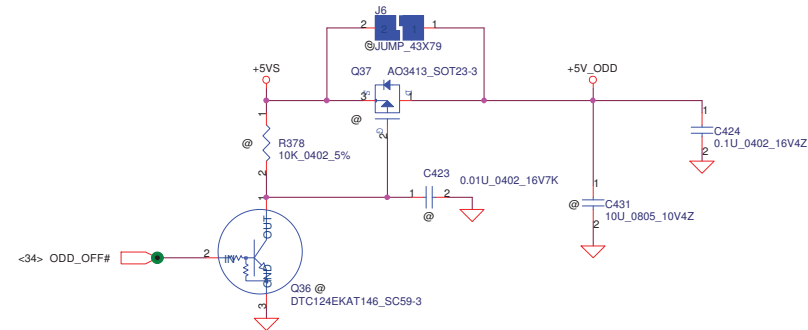
SATA HDD Conn.



SATA ODD Conn.



ODD Power Control



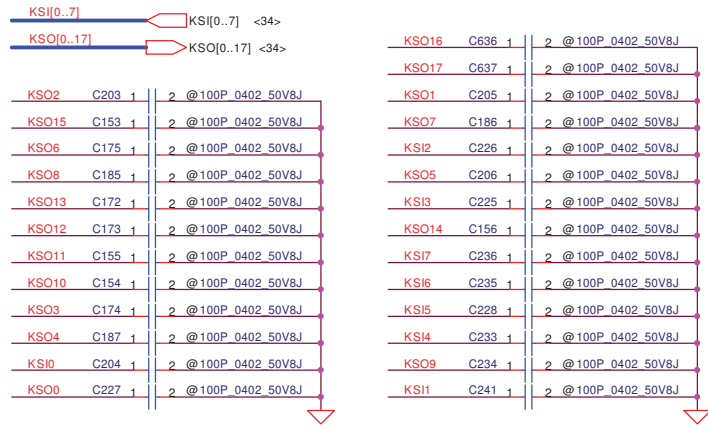
Security Classification	Compal Secret Data			Title	
Issued Date	2007/10/15	Deciphered Date	2008/10/15	HDD/ODD Connector	
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An integrated 3.3 V to 1.8V Low-dropout voltage regulator (LDO).

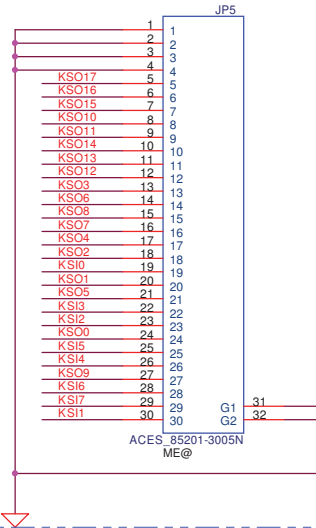
Security Classification	Compal Secret Data			Compal Electronics, Ltd.		
Issued Date	2008/03/25	Deciphered Date	2008/04/	Title	CX20671 Codec	
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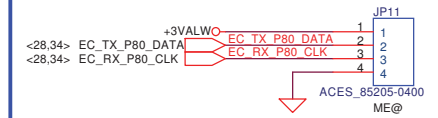
INT_KBD Conn.



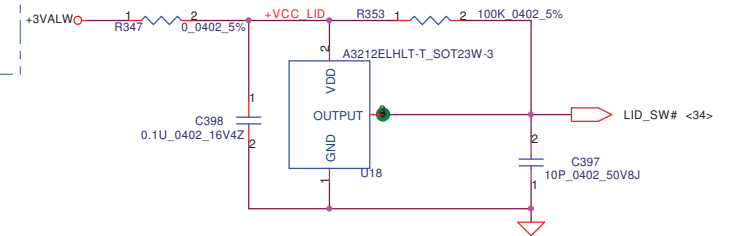
reversal of NIWE1



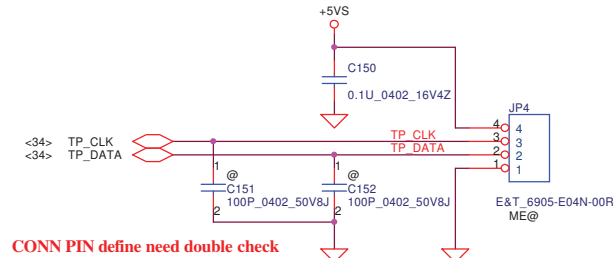
EC DEBUG PORT



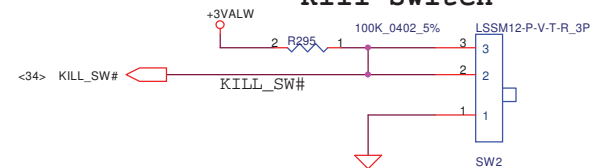
Lid Switch



To TP/B Conn.



Kill Switch

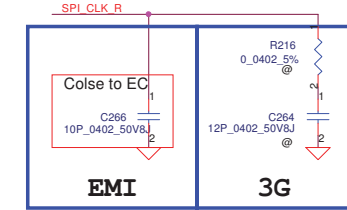
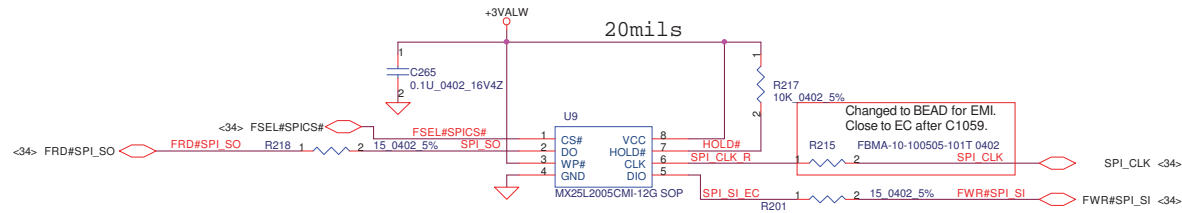


Kill

STATUS	
1, 2 (LOW)	OFF
2, 3 (HI)	ON

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FOR EC 256KB SPI ROM
(150mil PACKAGE)
P/N : SA00003GK00

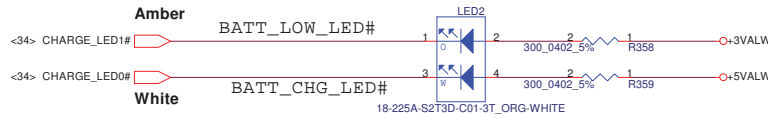


LED

SC500005B00



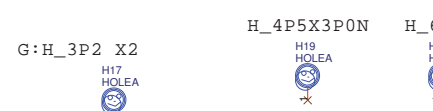
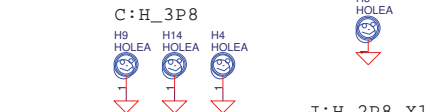
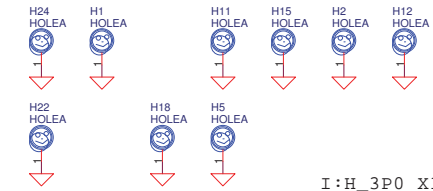
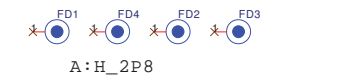
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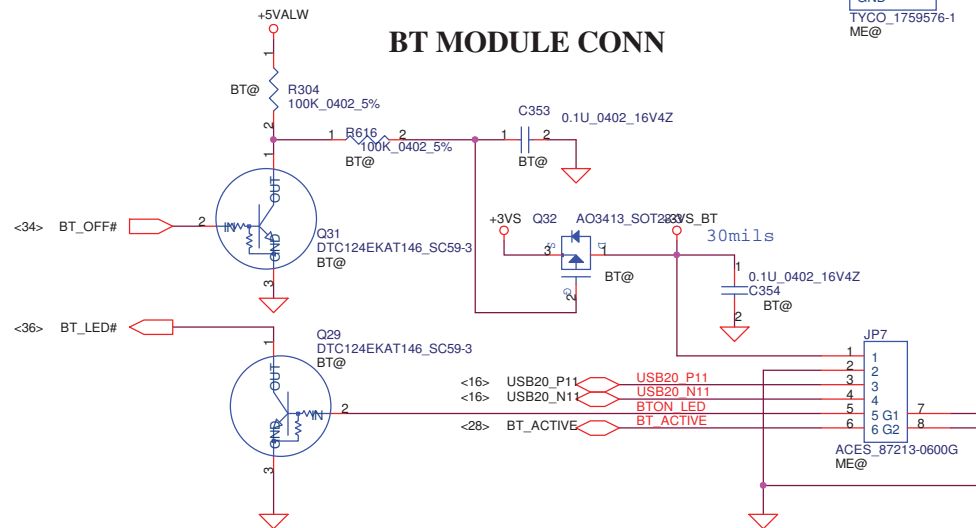
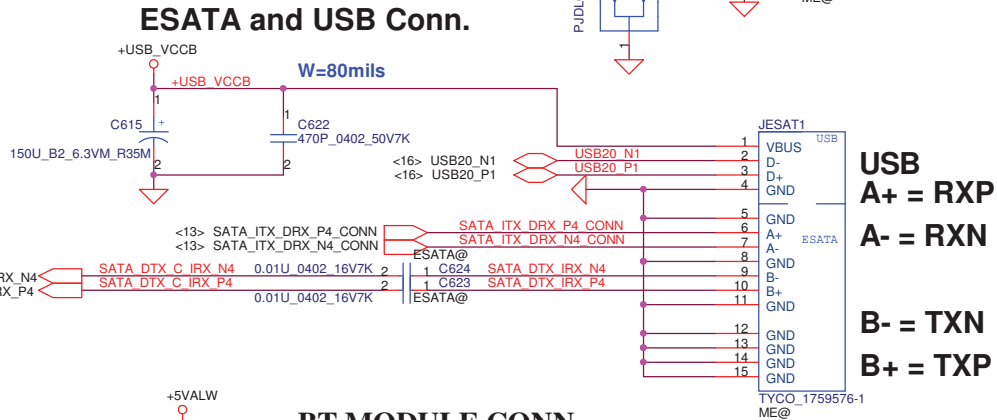
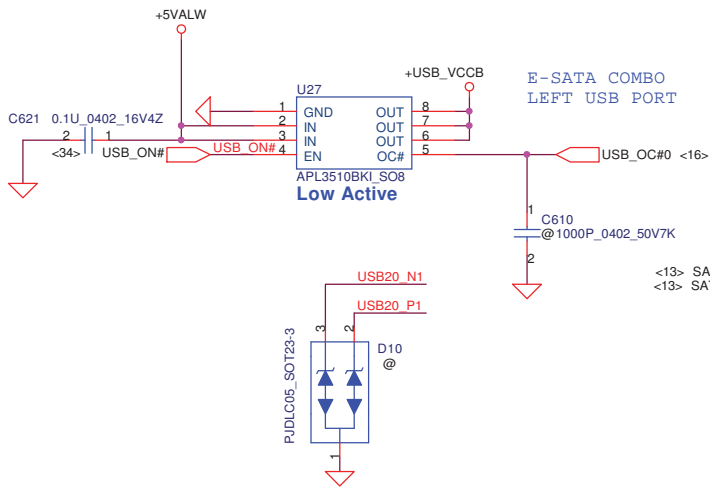
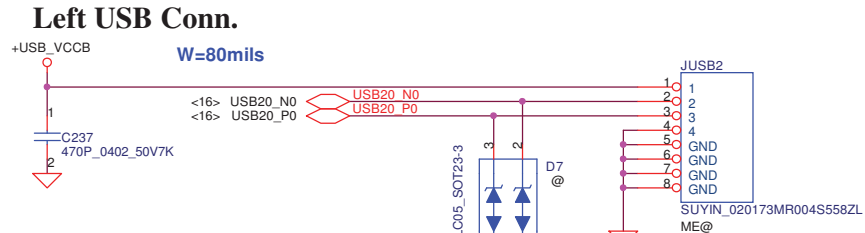
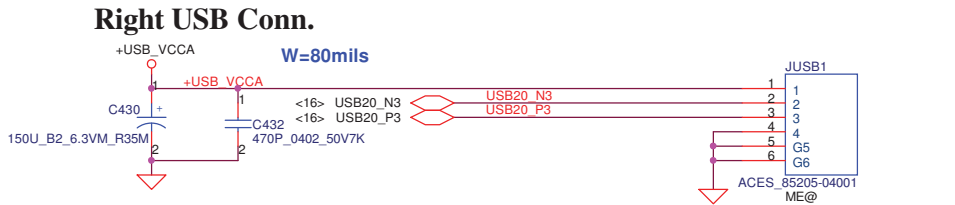
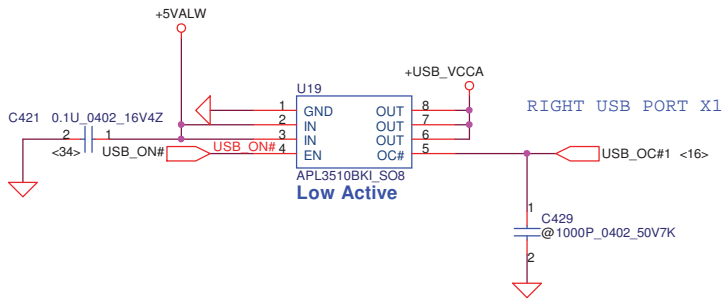
SC500005B00



SC500005B00



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USB
A+ = RXP
A- = RXN
B- = TXN
B+ = TXP

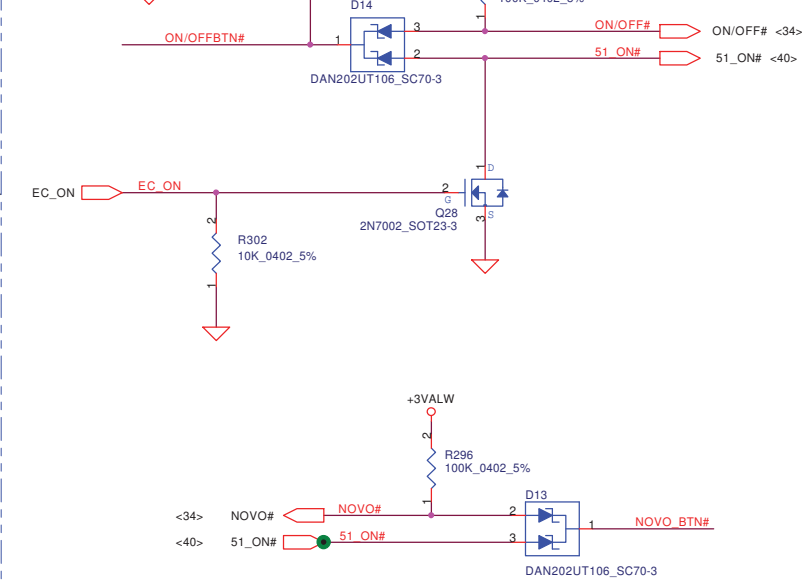
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Issued Date	2006/08/18	Deciphered Date	2007/8/18	Title	
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ON/OFF switch

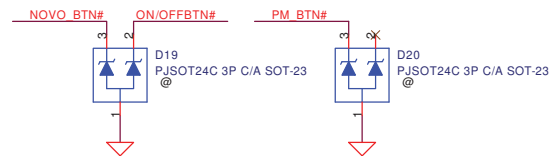
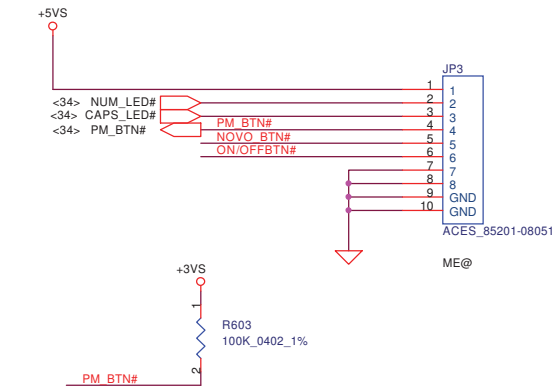
Power Button

TOP Side

Bottom Side

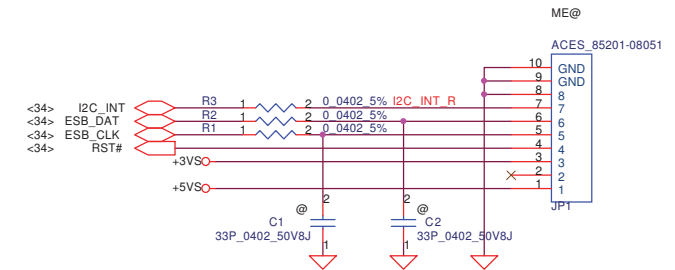


Power Bottom Board Conn. 8pin

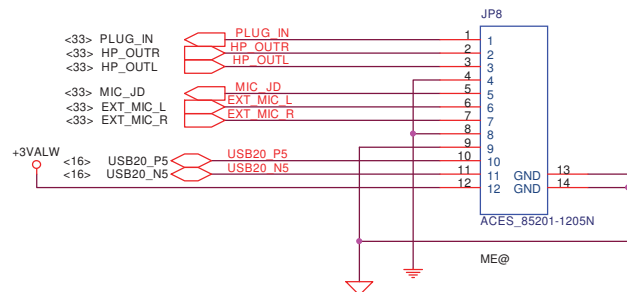


EMI REQUEST 1ST = SCA00000E00
2ST = SCA00000R00

Cap Sensor Board Conn. 6pin ENE SB3534

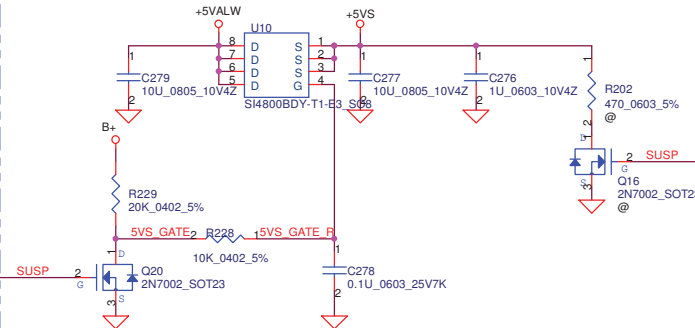


Card Reader/Audio Jack SB CONN

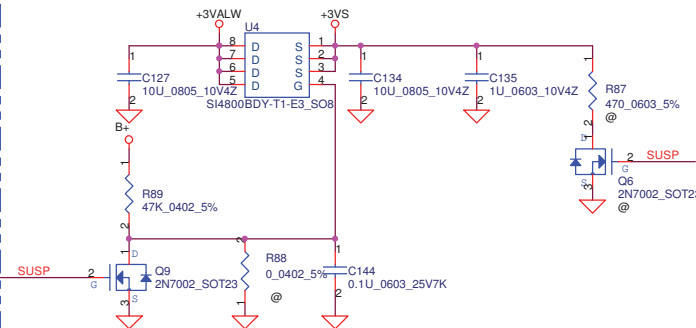


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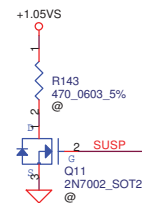
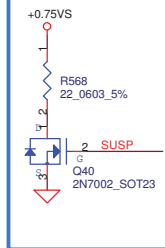
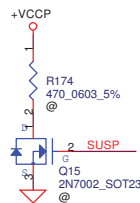
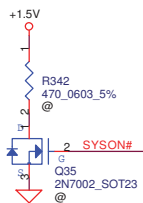
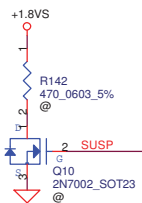
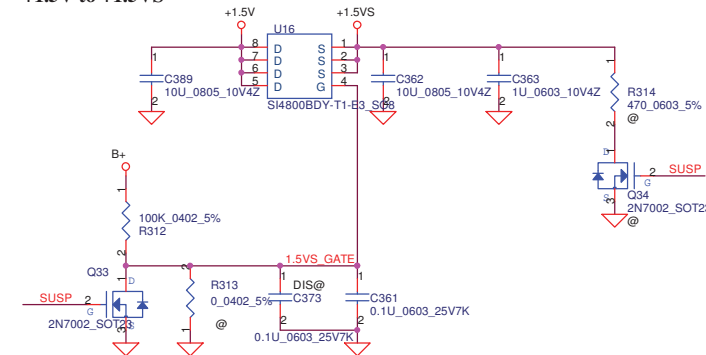
+5VALW TO +5VS



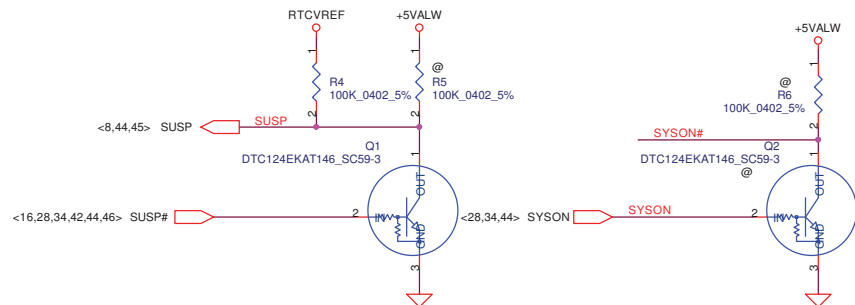
+3VALW TO +3VS



+1.5V to +1.5VS

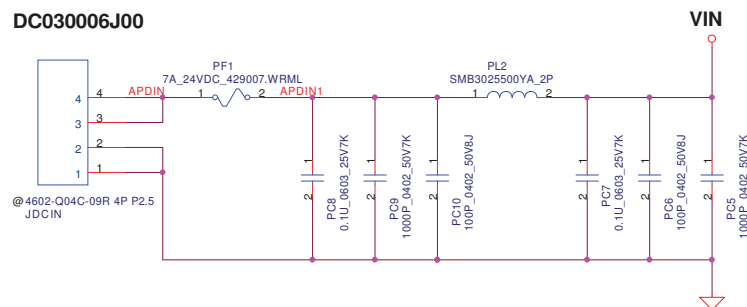


For Intel S3 Power Reduction.



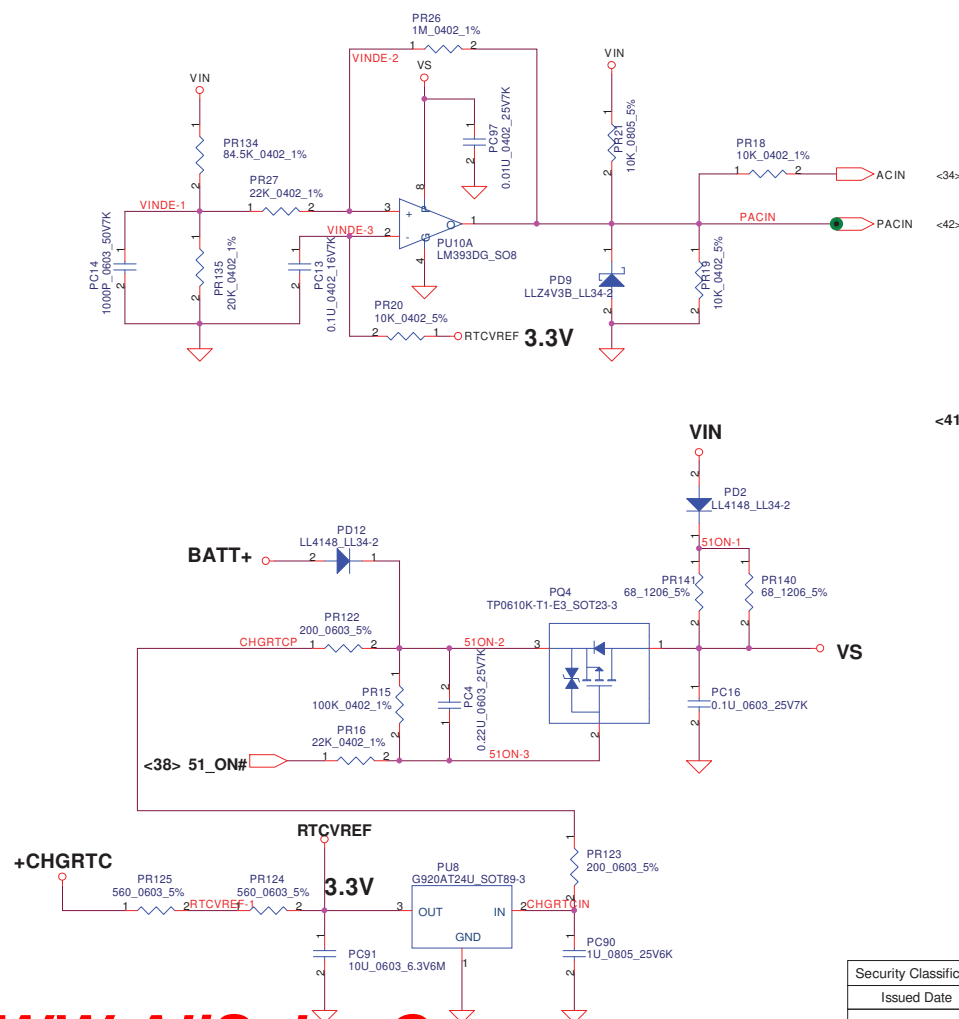
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DC030006J00



Vin Detector

	Min.	typ.	Max.
L-->H	17.430V	17.901V	18.384V
H-->L	16.976V	17.262V	17.728V



ACIN

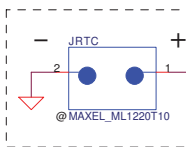
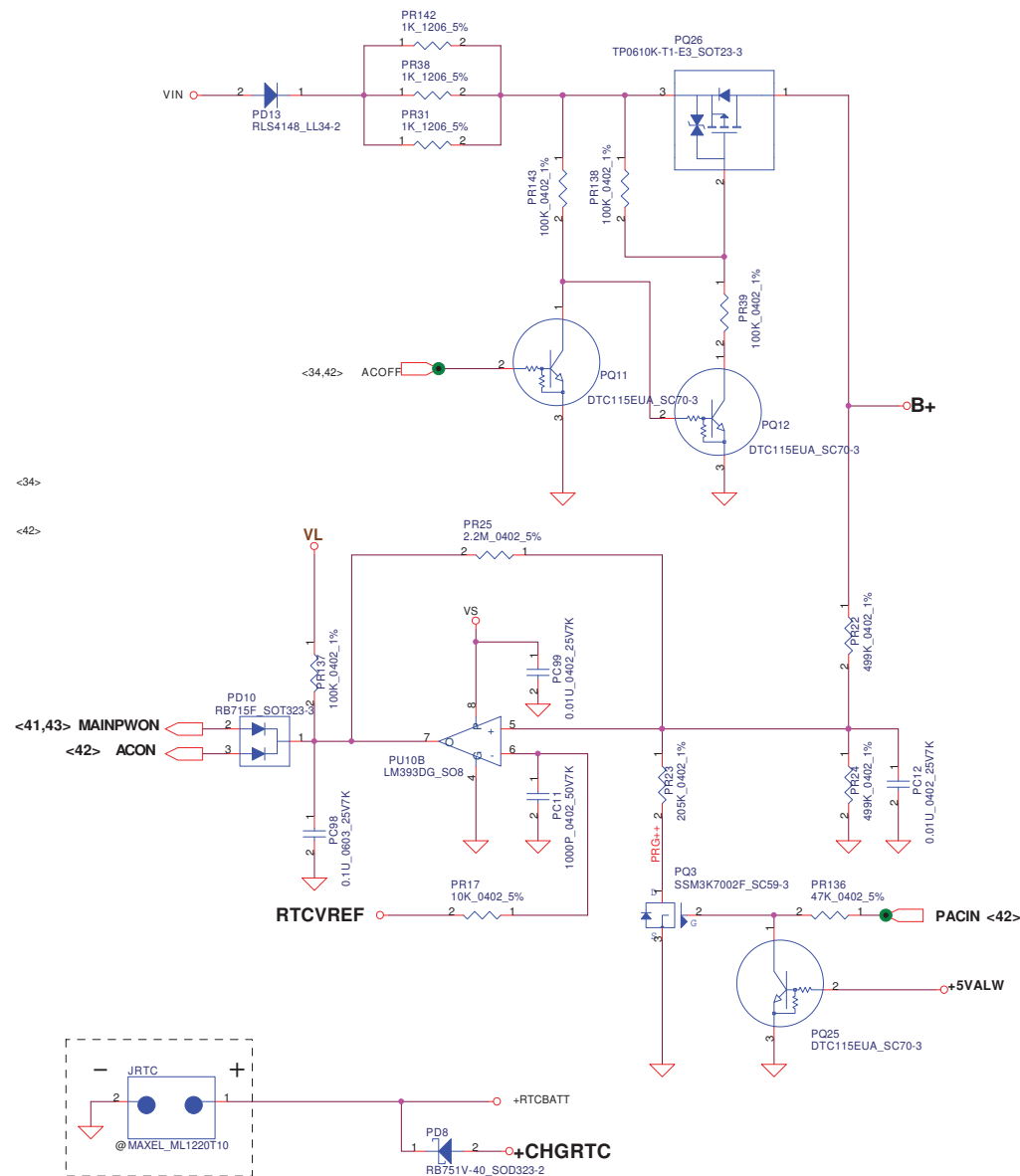
Precharge detector

	Min.	typ.	Max.
L-->H	14.991V	15.381V	15.782V
H-->L	13.860V	14.247V	14.621V

BATT ONLY

Precharge detector

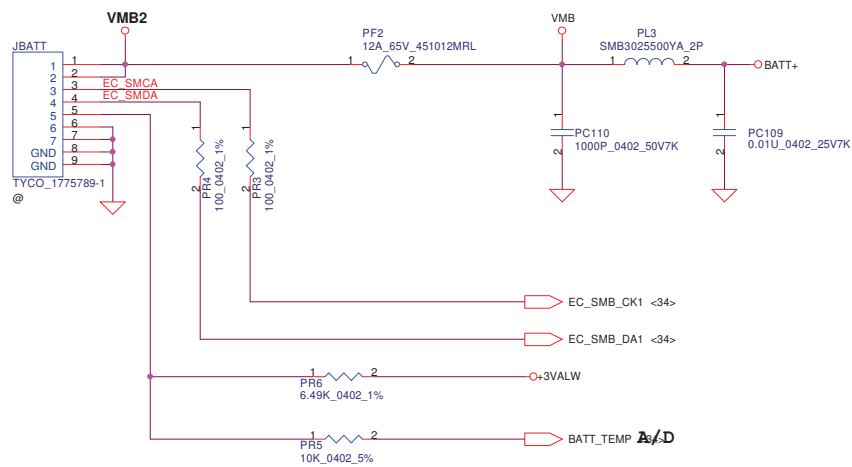
	Min.	typ.	Max.
L-->H	7.196V	7.349V	7.505V
H-->L	6.138V	6.214V	6.056V



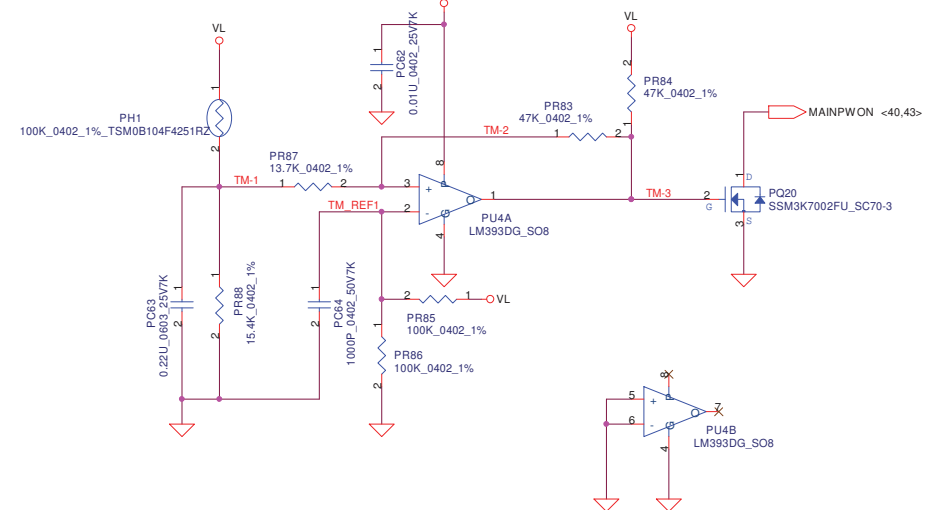
RTC Battery

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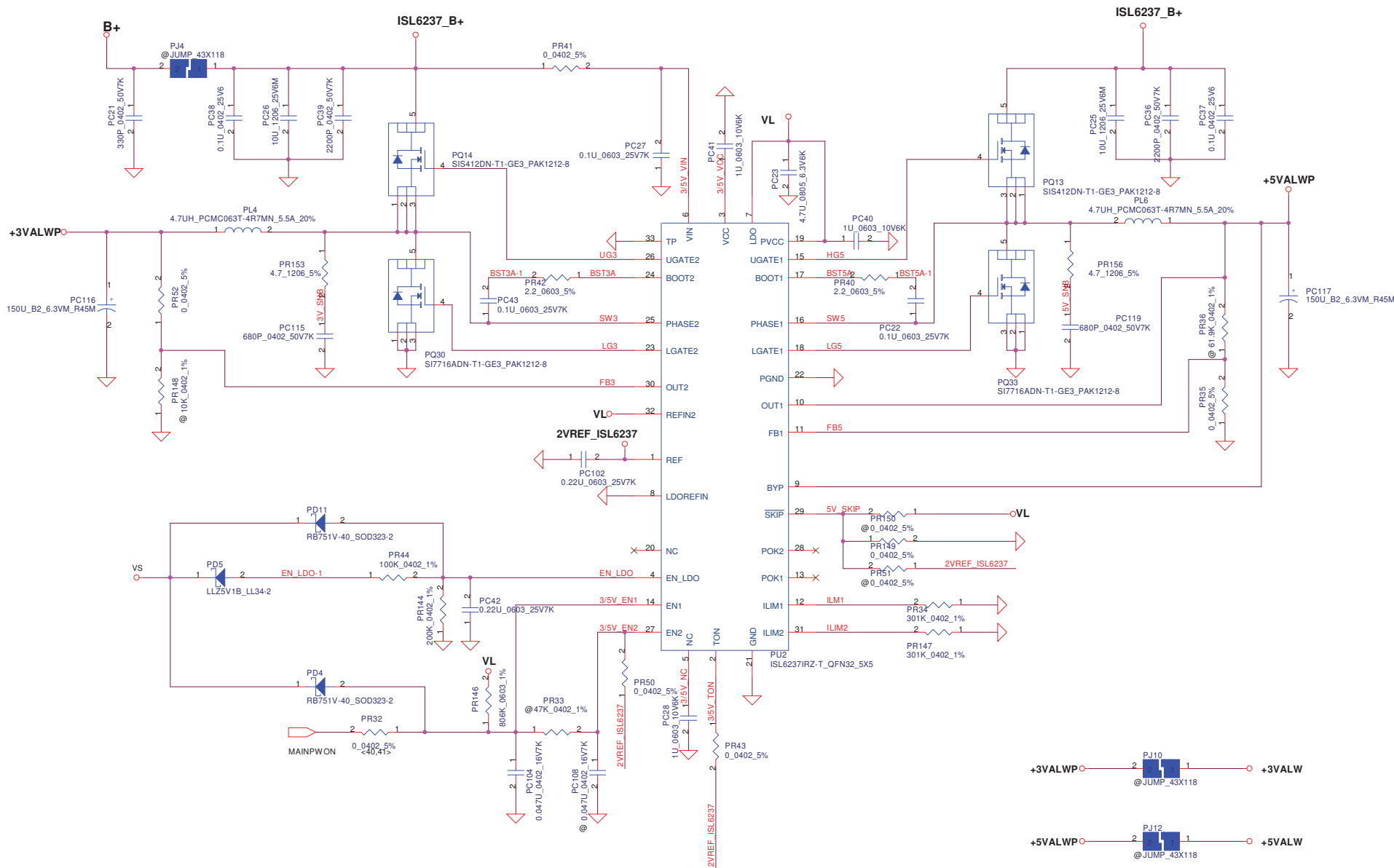
PH1 under CPU botten side :
CPU thermal protection at 92 degree C
Recovery at 56 degree C



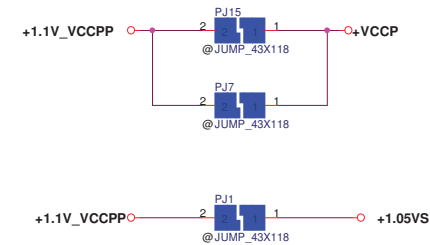
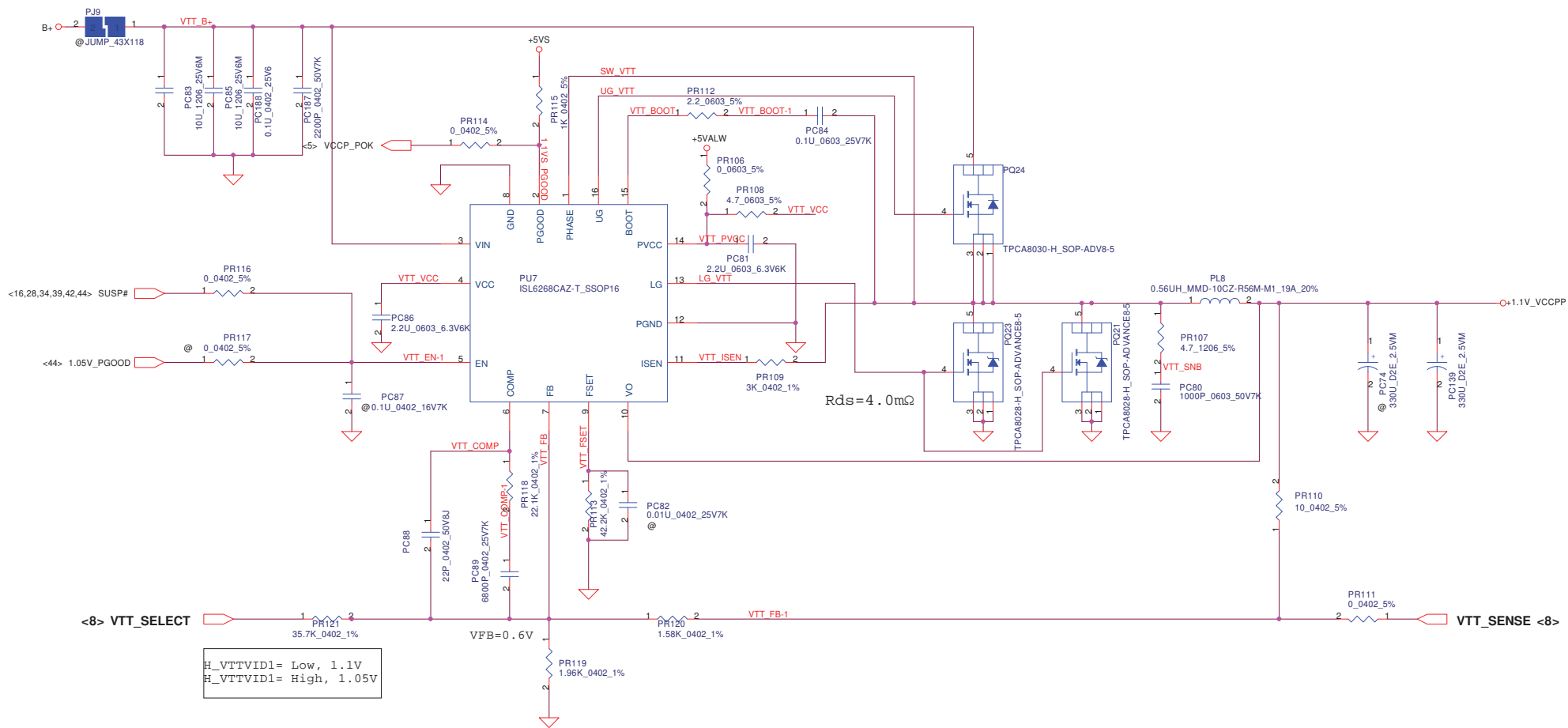
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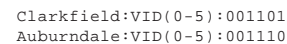
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