



Part Number = DA80000FB20

Compal confidential

Schematics Document

Mobile Penryn ULV singal/dual
core with Intel
Cantiga_GS45/GS40 +ICH9-M SFF
core logic

ULV core logic board

2009-07-23

Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2006/02/20	Deciphered Date	2009/02/20	Title	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				Cover Sheet	
				Size	Document Number
				LS-5581P	2.0
Date:				Thursday, July 23, 2009	Sheet 1 of 30

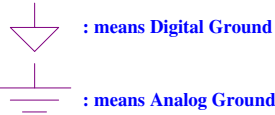
A	B	C	D	E
1				
2				
3				
4				

Security Classification		Compal Secret Data		Compal Electronics, Inc.					
Issued Date		2006/02/20	Deciphered Date		2009/02/20	Title			
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.						Block Diagram			
						Size	Document Number		Rev
						Custom	LS-558IP		2.0
Date: Tuesday, July 21, 2009				Sheet	2 of 30				

Voltage Rails (O MEANS ON X MEANS OFF)

power plane State	+B +3VL	+5VALW +3VALW	+1.5V	+5VS +3VS +1.5VS +0.75V +VCCP +CPU_CORE
S0	O	O	O	O
S1	O	O	O	O
S3	O	O	O	X
S5 S4/AC	O	O	X	X
S5 S4/ Battery only	O	X	X	X
S5 S4/AC & Battery don't exist	X	X	X	X

Symbol Note :



@ : means just reserve , no build
CONN@ : means ME part.
45@ : means install after SMT.

SMBUS Control Table

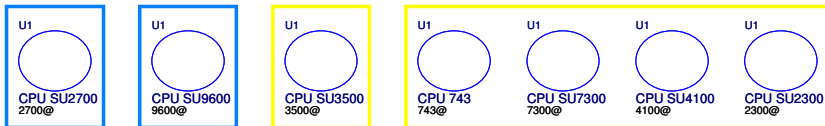
	SOURCE	INVERTER	BATT	SERIAL EEPROM	THERMAL SENSOR (CPU)	SODIMM	CLK CHIP	MINI CARD	LCD
SMB_EC_CK1 SMB_EC_DA1	KB926	X	V	V	X	X	X	X	X
SMB_EC_CK2 SMB_EC_DA2	KB926	X	X	X	V	X	X	X	X
SMB_CK_CLK1 SMB_CK_DAT1	ICH9	X	X	X	X	V	V	V	X
LCD_CLK LCD_DAT	Cantiga	X	X	X	X	X	X	X	V

	Descrebtion		Descrebtion		Descrebtion
USB port 0	USB connector	PCI-e port 0		SATA port 0	SATA HDD
USB port 1	BT Module	PCI-e port 1	WLAN Conn.	SATA port 1	
USB port 2	cardreader	PCI-e port 2		SATA port 2	WWAN/SSD
USB port 3	USB connector	PCI-e port 3			
USB port 4	WLAN Conn.	PCI-e port 4			
USB port 5	WWAN/SSD	PCI-e port 5	LAN		
USB port 6	USB connector				
USB port 7	CMOS				
USB port 8	Fingerprint				

I2C / SMBUS ADDRESSING

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

Security Classification	Compal Secret Data		Title	
Issued Date	2006/02/20	Deciphered Date	2009/02/20	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				Notes List
Size Custom	Document Number LS-5581P		Rev 2.0	
Date:	Tuesday, July 21, 2009		Sheet	3 of 30



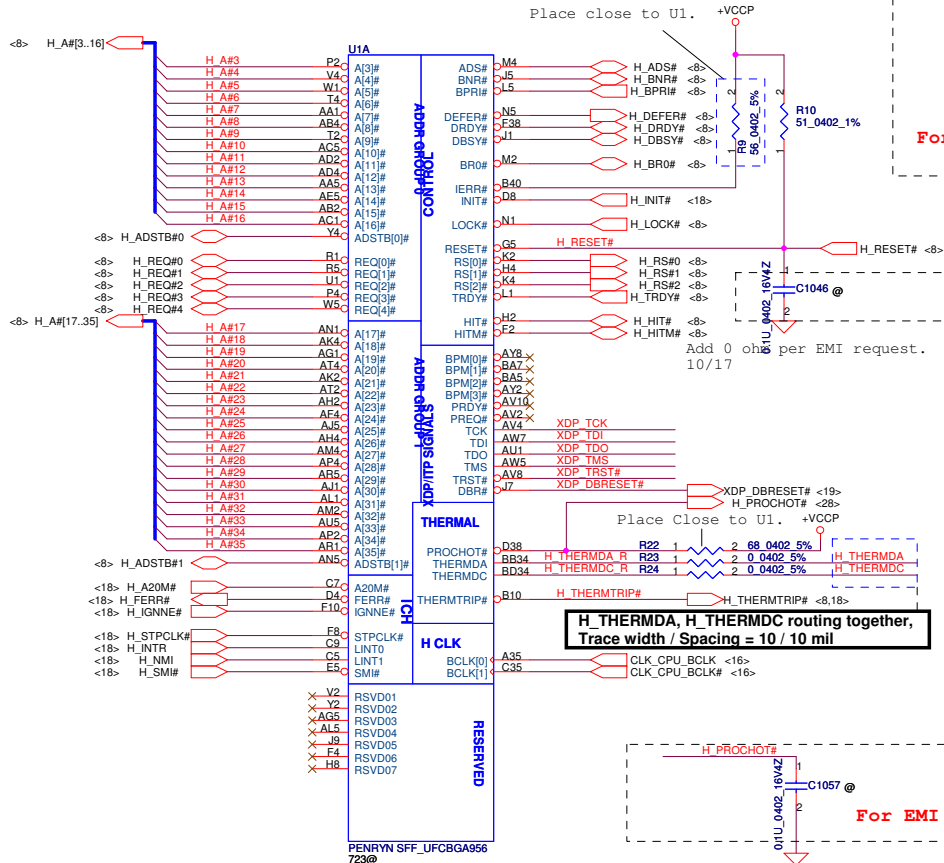
07/06 Add U1 SA00003BZ10 for 3500@

07/23 Add U1 SA00003IA50 for 7300@

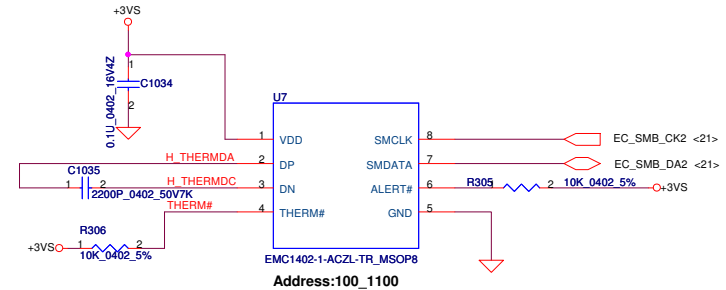
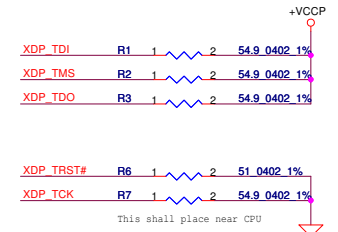
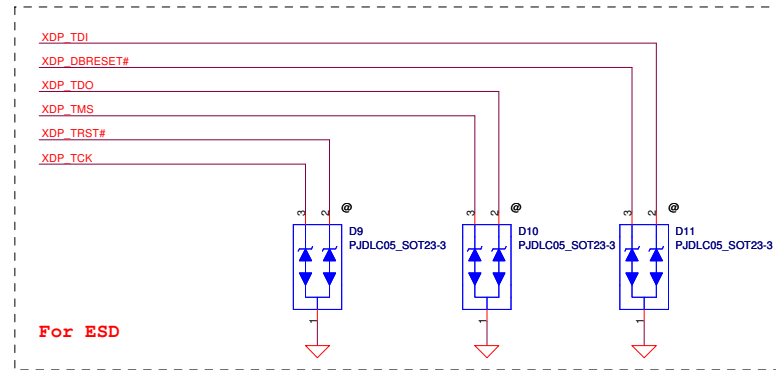
Add U1 SA00003I950 for 4100@

Add U1 SA00003H060 for 2300@

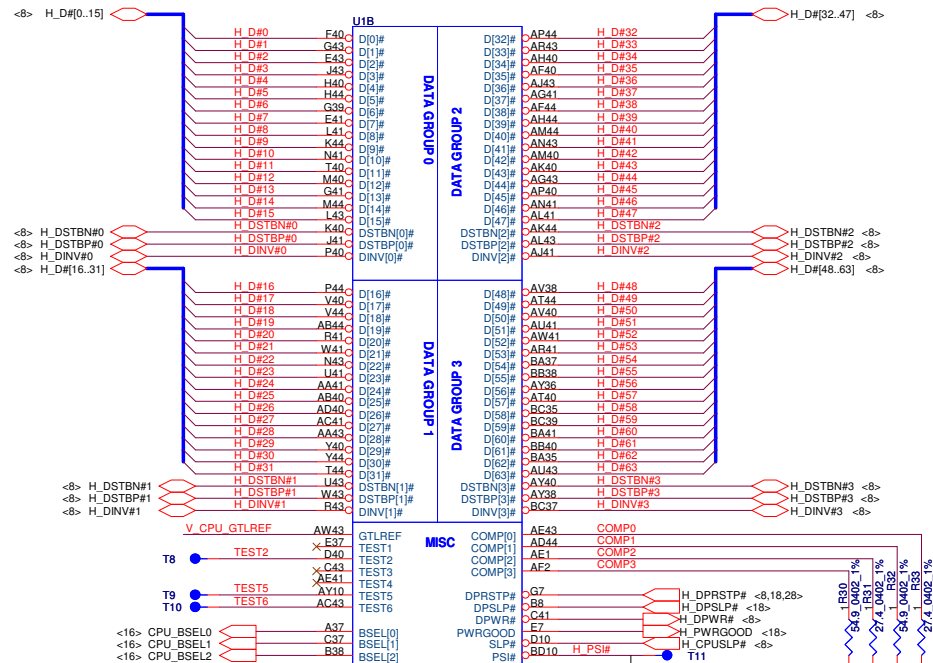
Add U1 SA00003JO60 for 743@



07/06 Change U1 from SA00003BJ40 to SA00003BJ60



Security Classification		Compal Secret Data				Compal Electronics, Inc.					
Issued Date		2006/02/20		Deciphered Date		2009/02/20		Title			
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.						Penryn(1/3)-AGTL+ITP-XDP					
						Size		Document Number		Rev	
								LS-558IP		2.0	
						Date:		Thursday, July 23, 2009		Sheet 4 of 30	

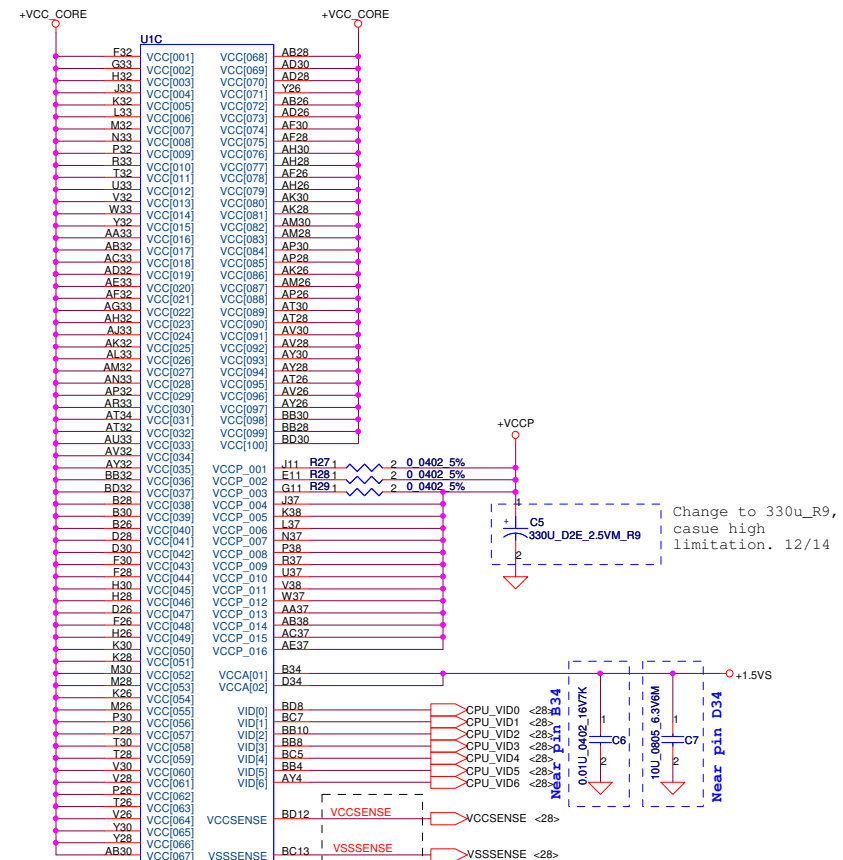
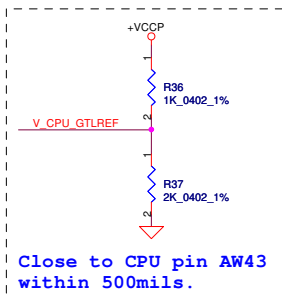


layout note: Route TEST3 & TEST5 traces on ground referenced layer to the TPs

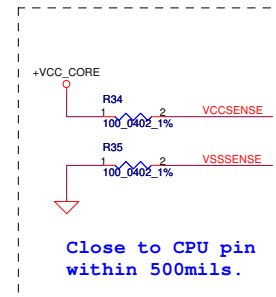
CPU_BSEL	CPU_BSEL2	CPU_BSEL1	CPU_BSEL0
166	0	1	1
200	0	1	0
266	0	0	0

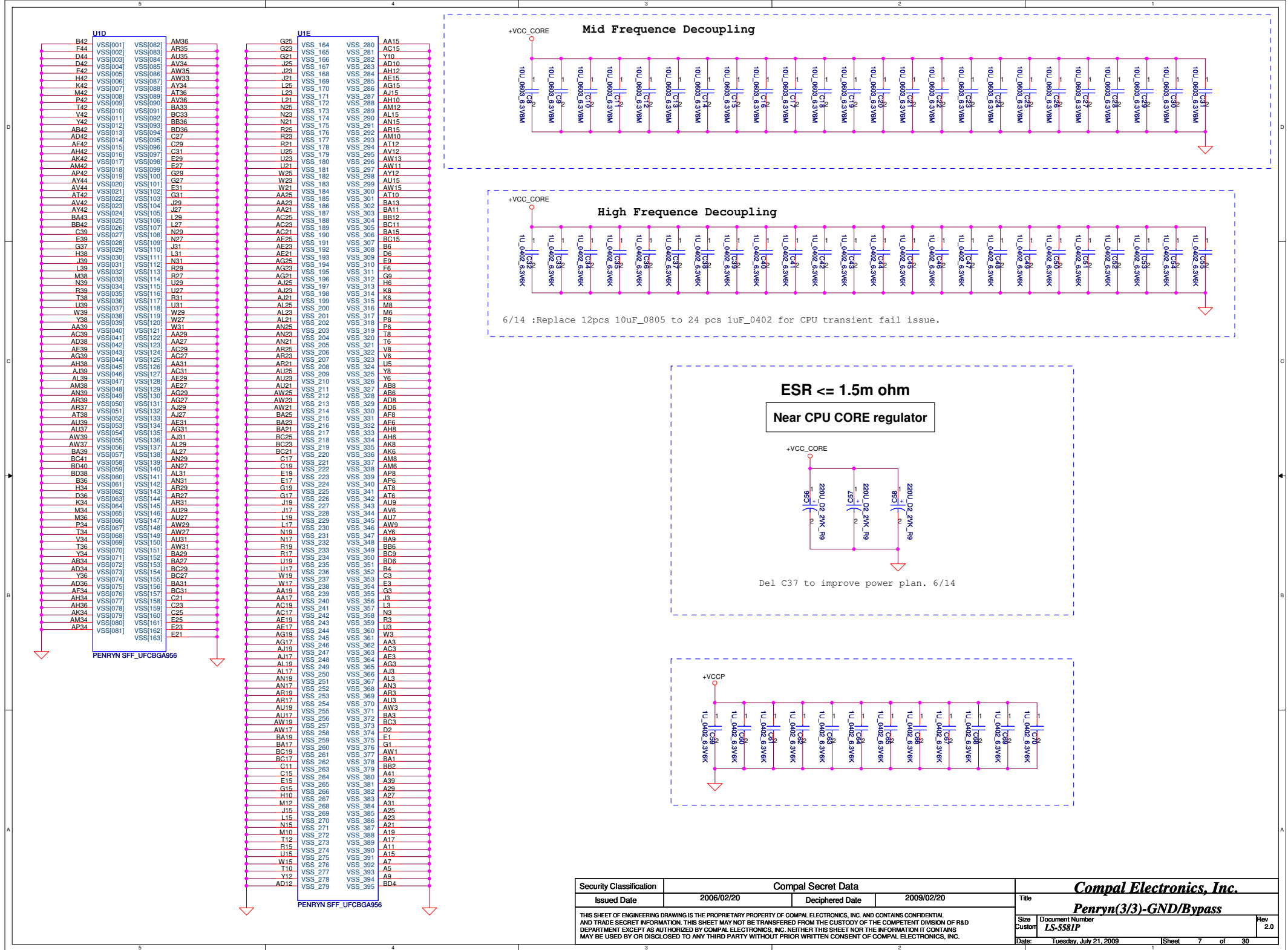
Cause CPU core power change to 1 phase, and not need support the pin, leave it as TP. 10/02

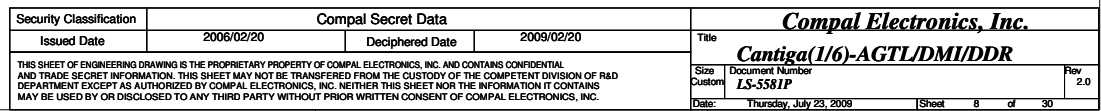
Resistor placed within 0.5" of CPU pin. Trace should be at least 25 mils away from any other toggling signal. COMP[0,2] trace width is 18 mils. COMP[1,3] trace width is 4 mils.

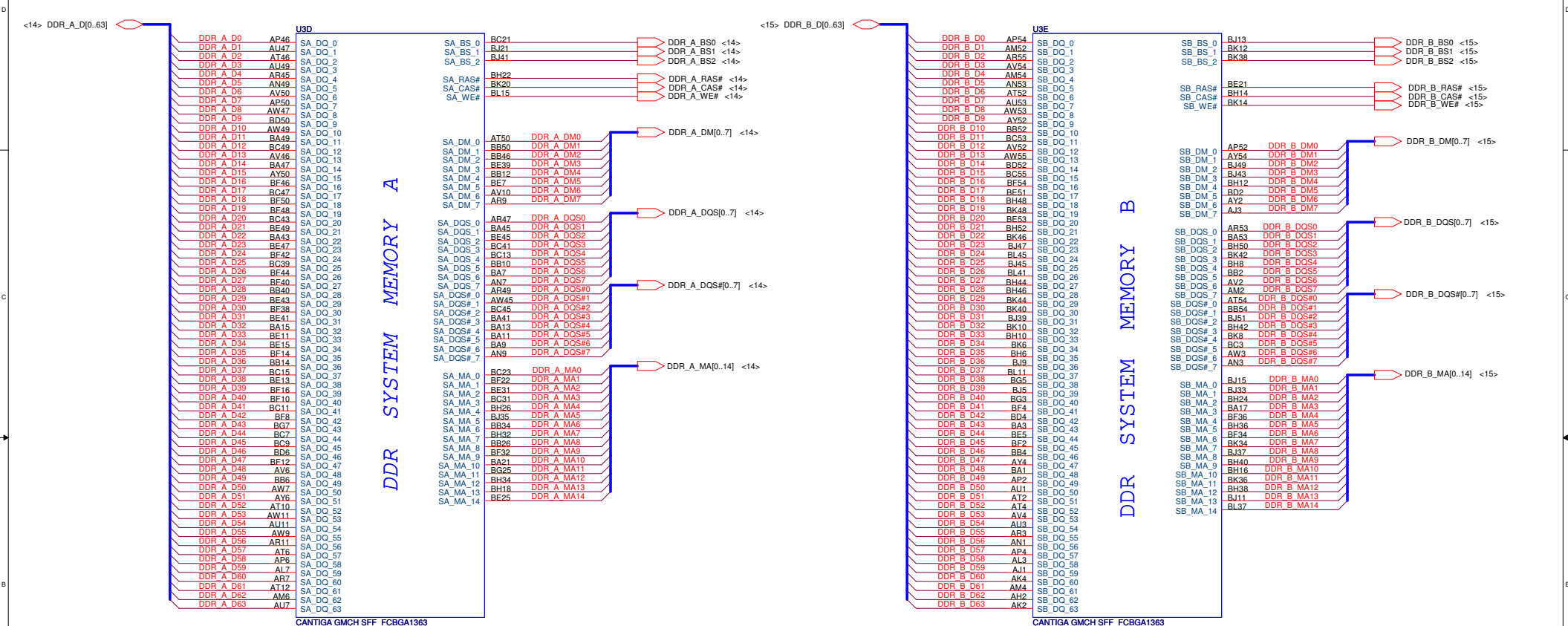


Length match within 25 mils. The trace width/space/other is 20/7/25.



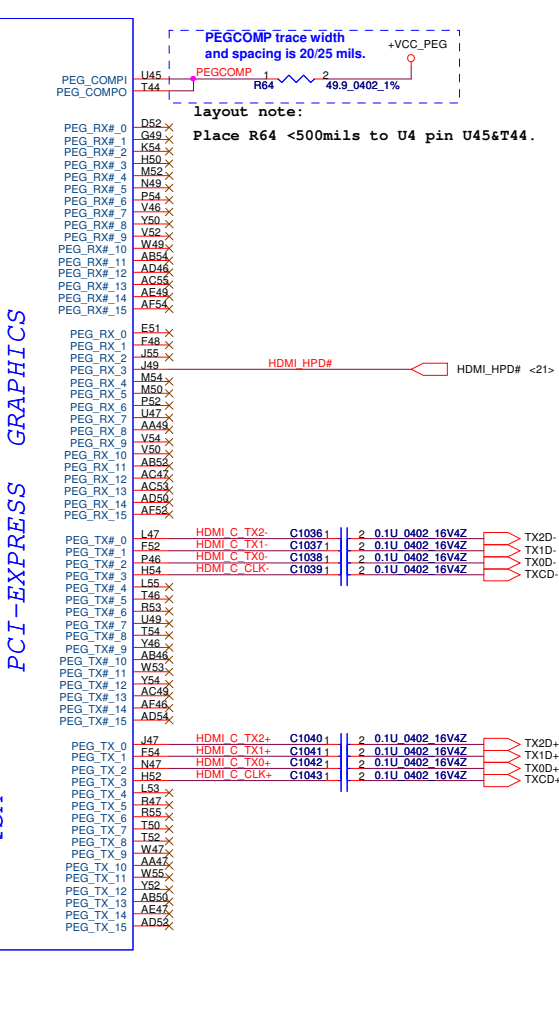
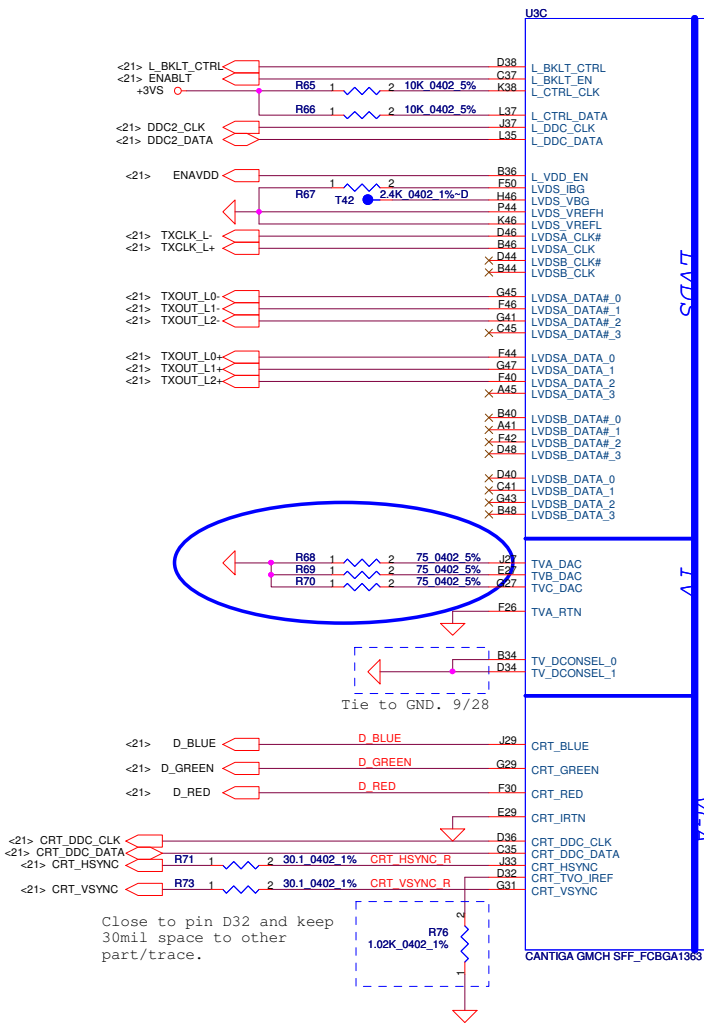


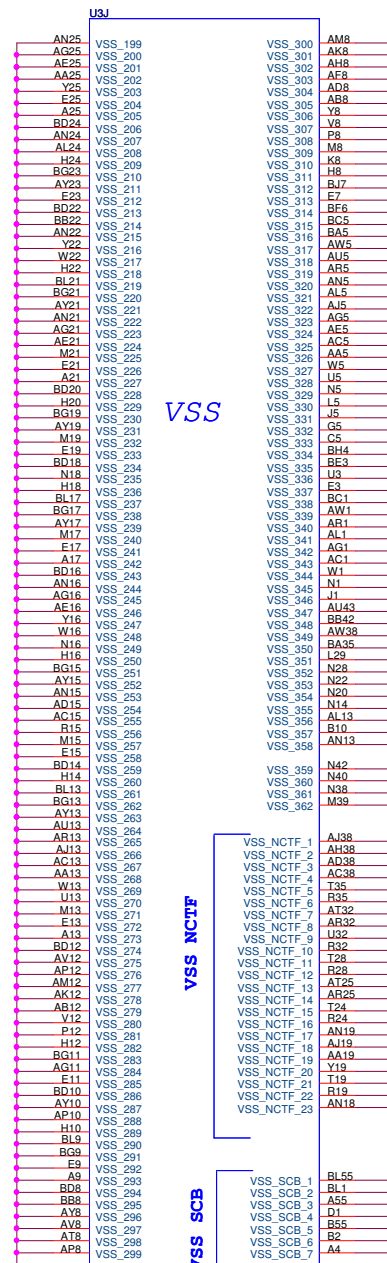
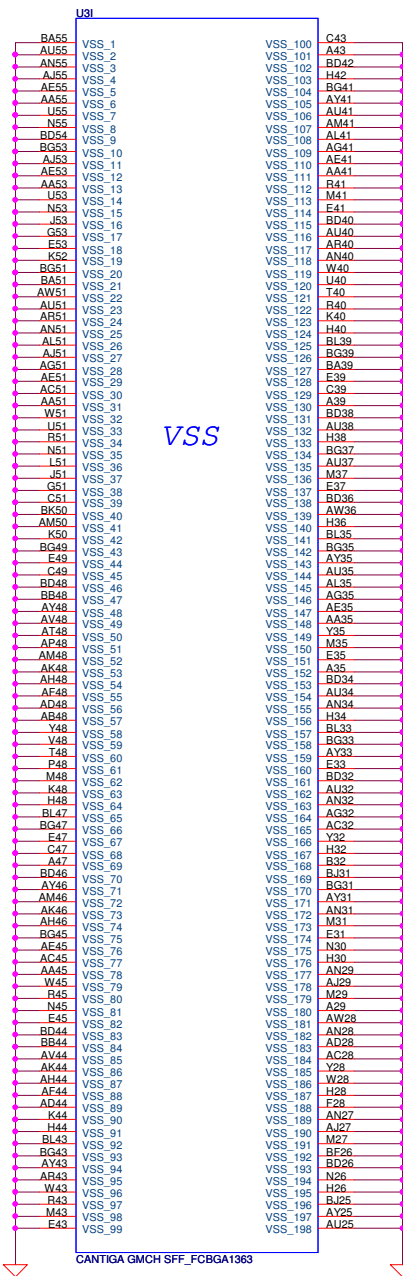




CANTIGA GMCH SFF_FCBGA1363

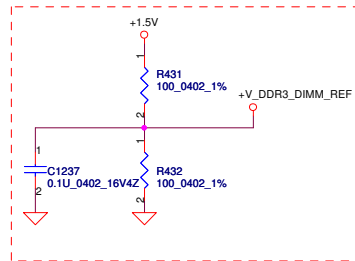
CANTIGA GMCH SFF_FCBGA1363





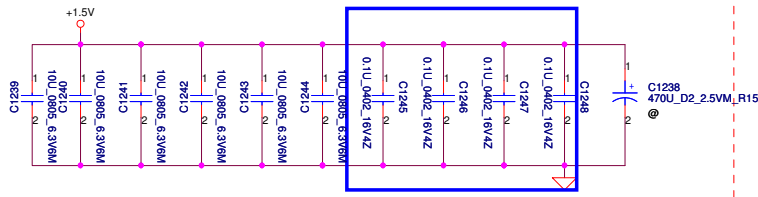
Security Classification		Compal Secret Data		Compal Electronics, Inc.					
Issued Date	2006/02/20	Deciphered Date	2009/02/20	Title	Cantiga(6/6)-PWR/GND				
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				Size	Document Number	Rev 2.0			
				Custom	LS-5581P				
				Date:	Tuesday, July 21, 2009	Sheet	13	of	30

<9> DDR_A_DQS#[0..7]
 <9> DDR_A_D[0..63]
 <9> DDR_A_DM[0..7]
 <9> DDR_A_DQS[0..7]
 <9> DDR_A_MA[0..14]
 <9> DDR_A_BS[0..2]

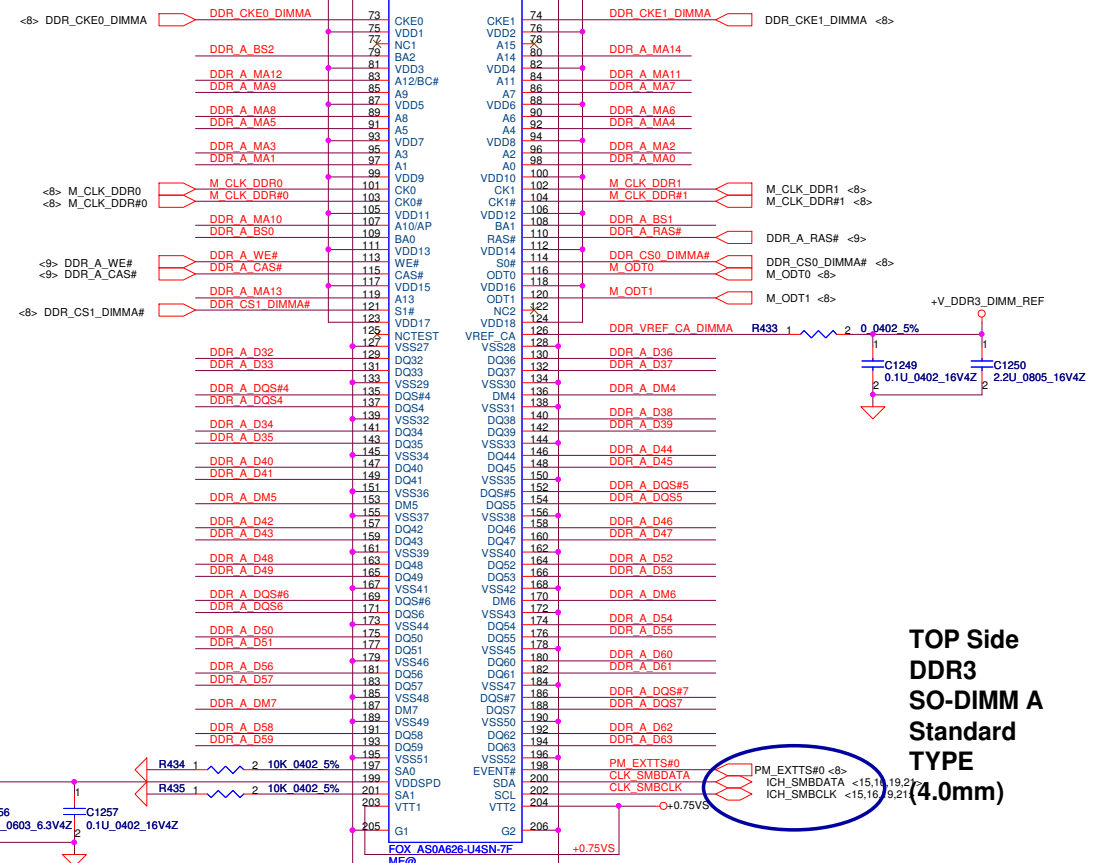
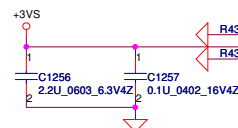
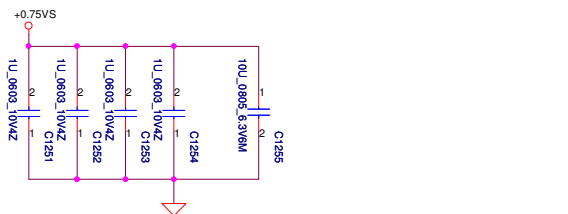


Layout Note:
Place near JP3

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

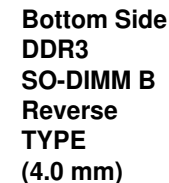
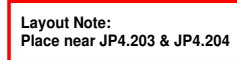


Layout Note:
Place near JP3.203 & JP3.204

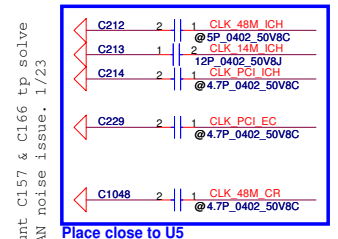
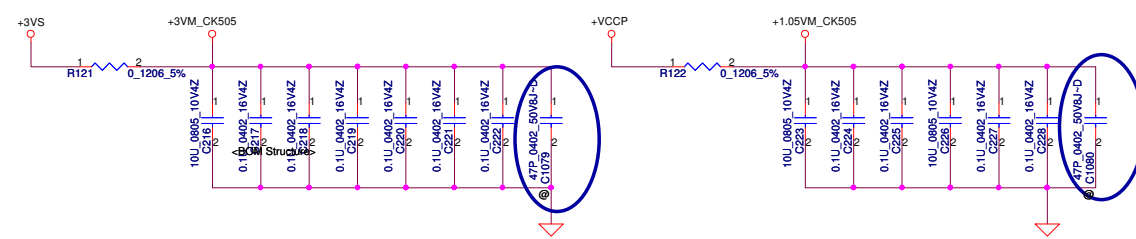


**TOP Side
DDR3
SO-DIMM A
Standard
TYPE
(4.0mm)**

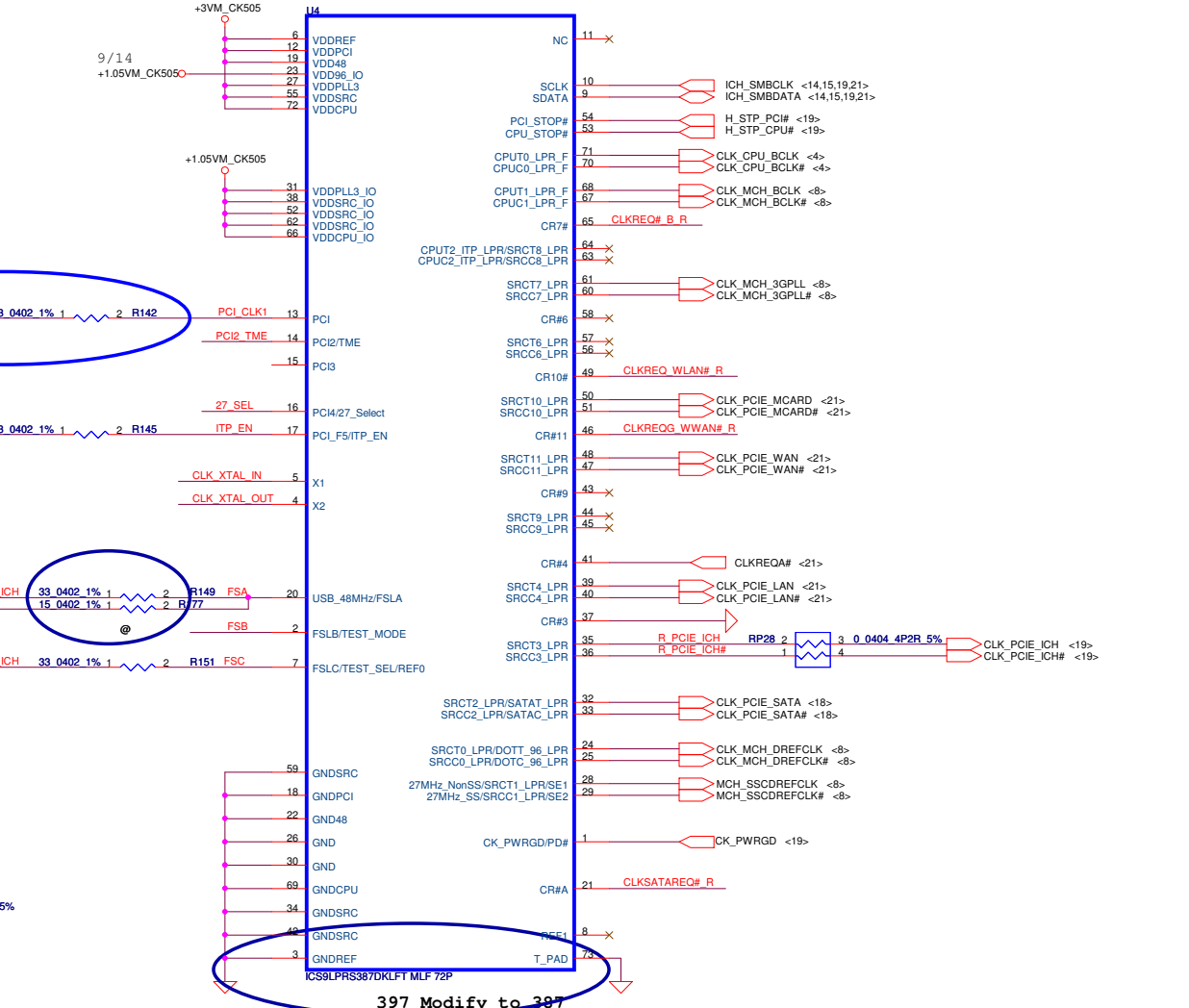
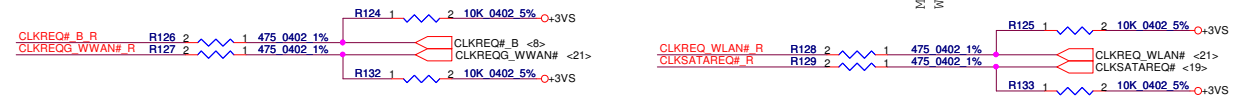
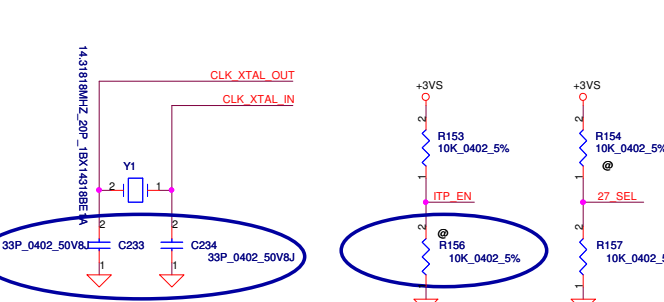
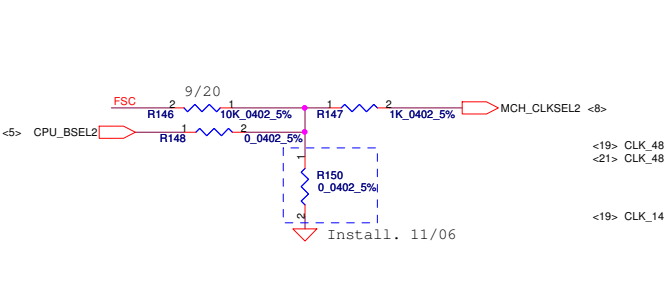
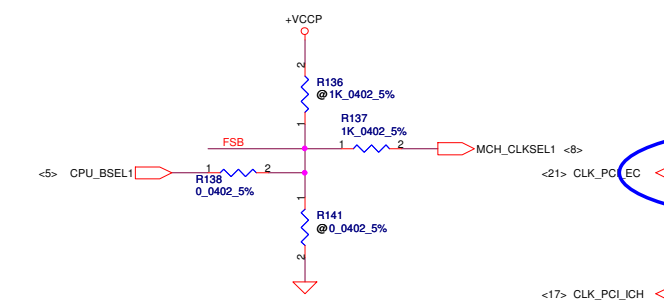
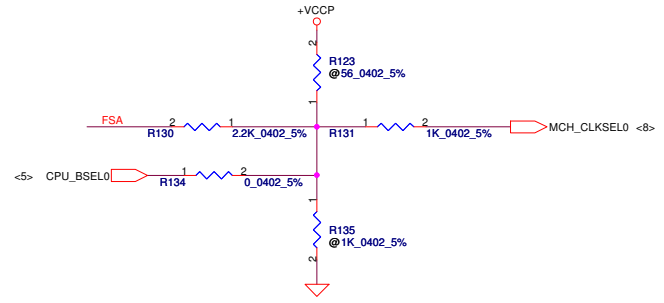
Security Classification				Compal Secret Data				Title			
Issued Date				2007/09/29				Deciphered Date			
2007/09/29				2007/09/29				2007/09/29			
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.			
Size				Document Number				Rev			
2.0				LS-558IP				2.0			
Date				Thursday, July 23, 2009				Sheet			
14				14				of			
30				30				30			



FSLC CLKSEL2	FSLB CLKSEL1	FSLA CLKSEL0	CPU MHz	FSB MHz	SRC MHz	PCI MHz
0	0	0	266	1066	100	33.3
0	1	0	200	800	100	33.3
0	1	1	166	667	100	33.3

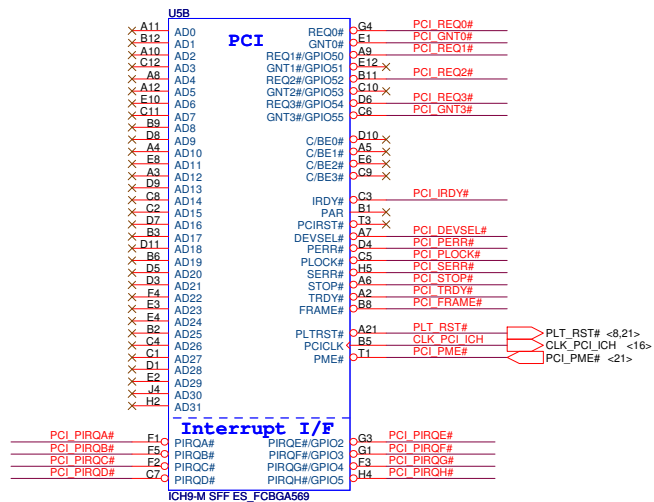
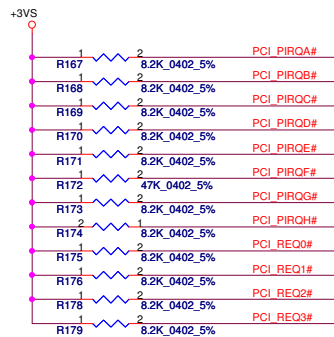
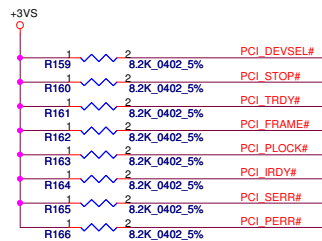


Mount C157 & C166 top solve
WWAN noise issue. 1/23

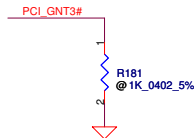


397 Modify to 387

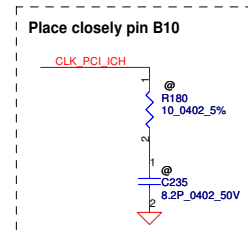
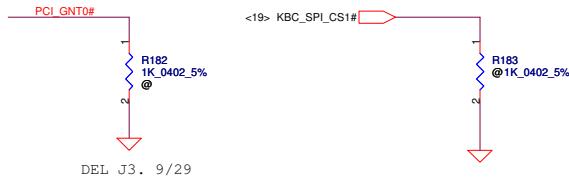
Security Classification	Compal Secret Data	Title	
Issued Date	2006/02/20	Deciphered Date	2009/02/20
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.		Compal Electronics, Inc. CLOCK GENERATOR Size Document Number LS-5581P Date: Thursday, July 23, 2009 Sheet 16 of 30	

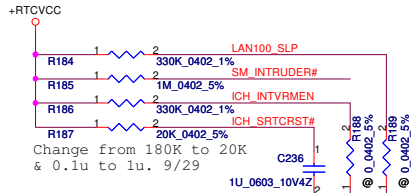


A16 swap override Strap	
PCI_GNT3#	Low= A16 swap override Enble High= Default*



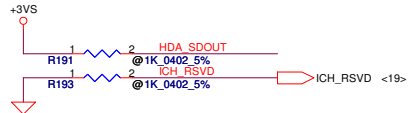
Boot BIOS Strap		
PCI_GNT0#	SPI_CS#1	Boot BIOS Location
0	1	SPI
1	0	PCI
1	1	LPC *





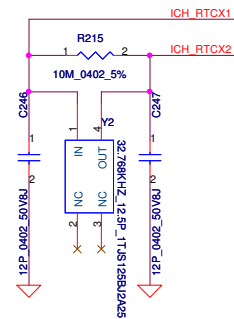
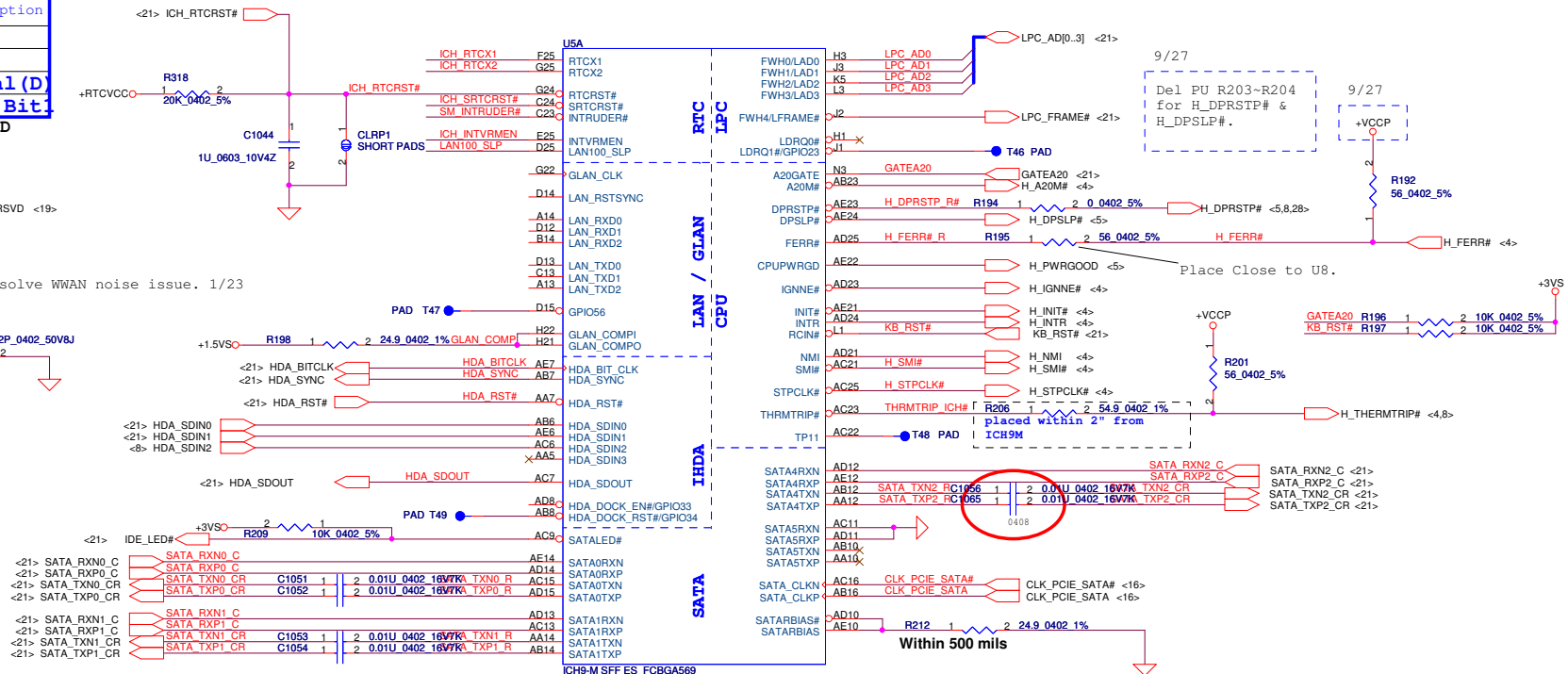
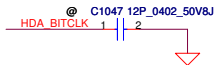
ICH_RSVD	HDA_SDOUT_CODEC	Description
0	0	RV
0	1	XOR
1	0	Normal (D
1	1	PCIE Bit

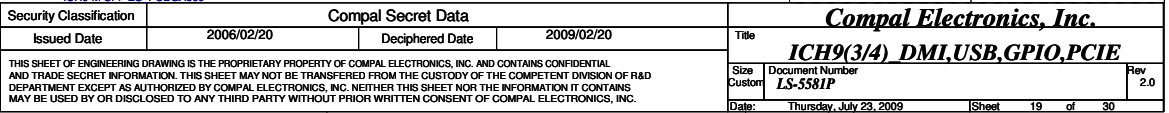
XOR CHAIN ENTRANCE STRAP:RSVD

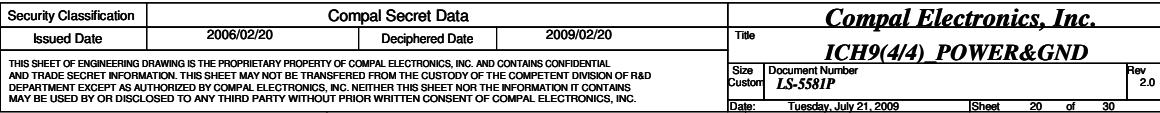


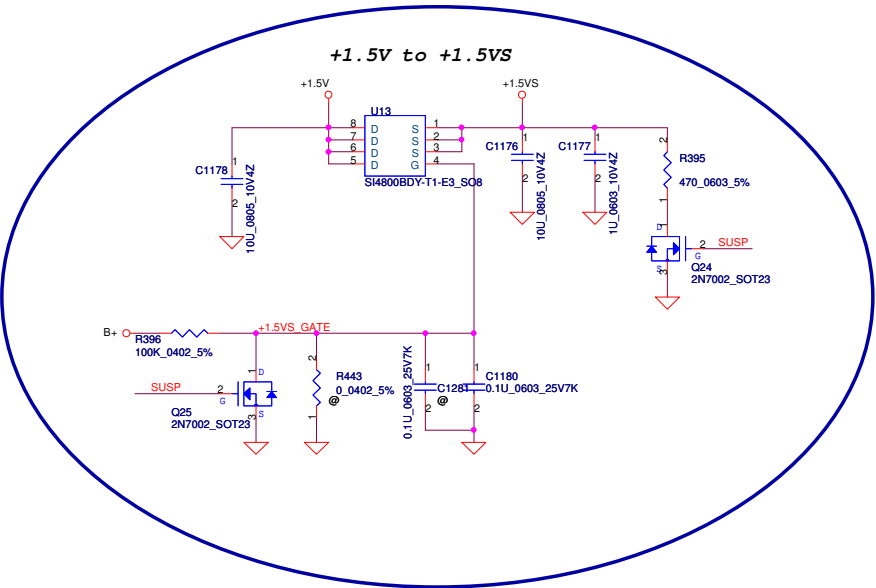
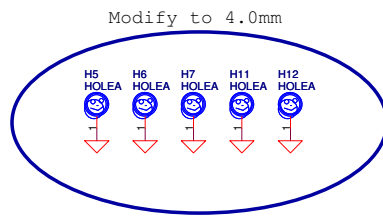
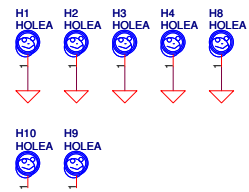
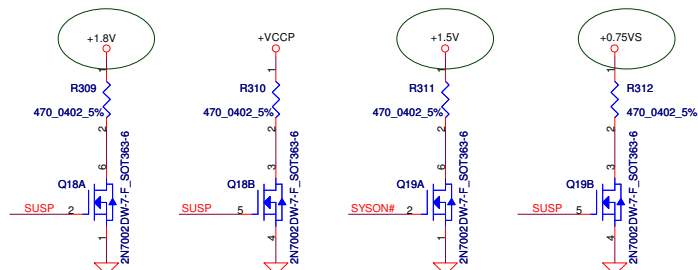
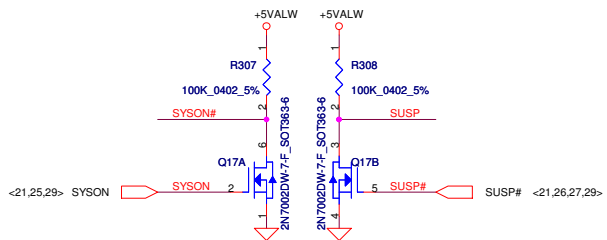
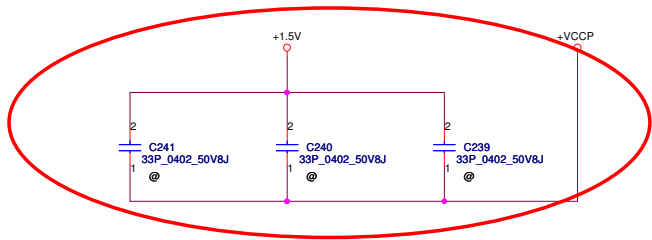
Add C599 ~ C602 to solve WWAN noise issue. 1/23

Remove R227 & C199



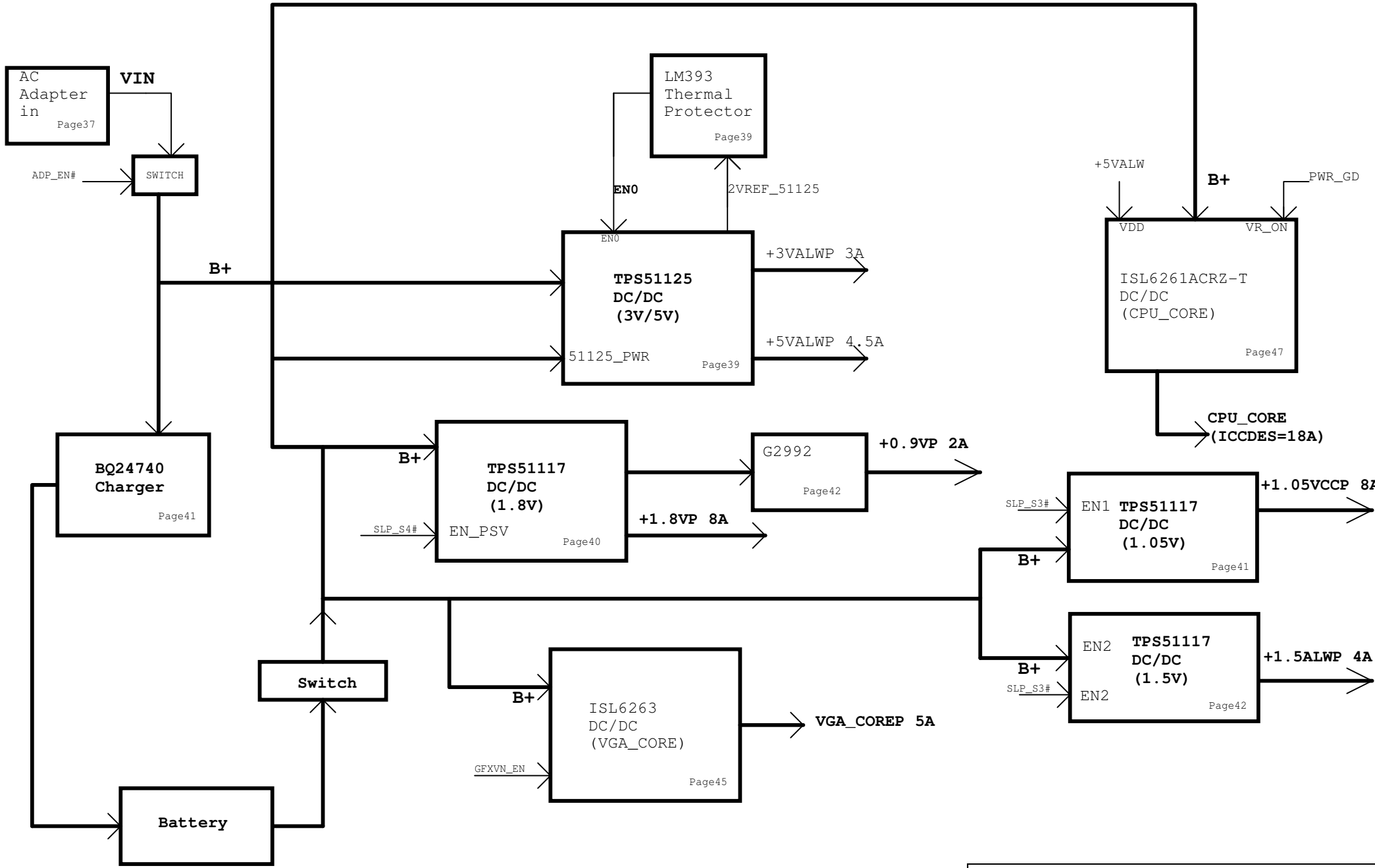




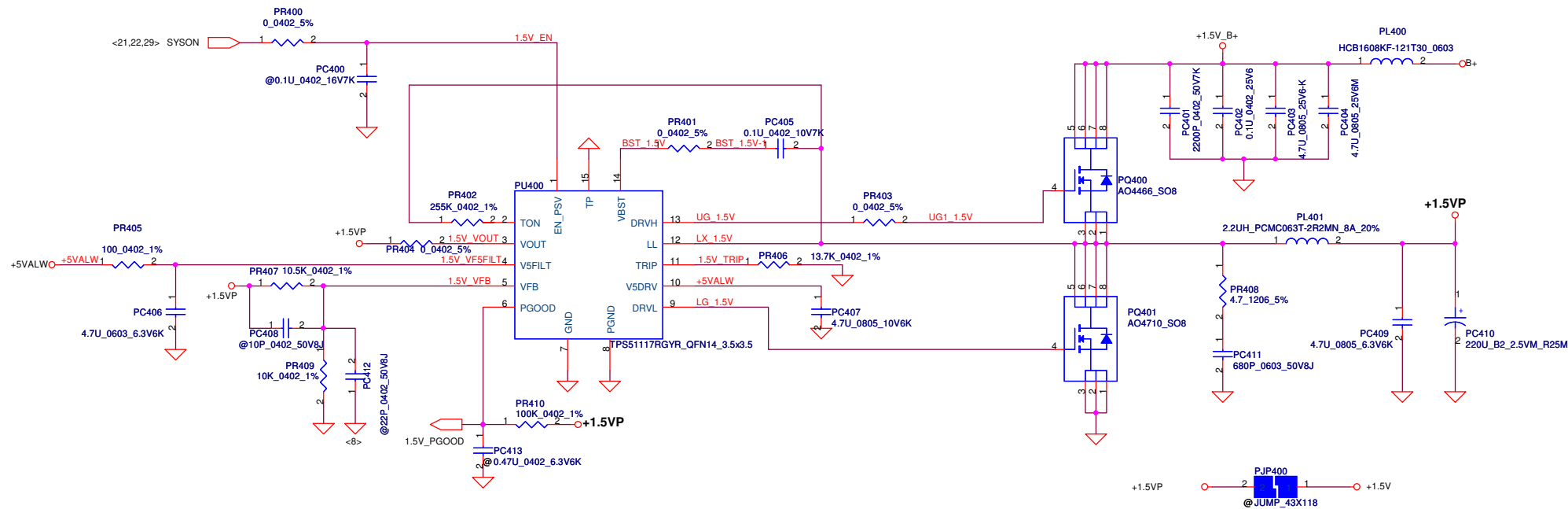


Security Classification	Compal Secret Data			Compal Electronics, Inc.	
Issued Date	2006/02/20	Deciphered Date	2009/02/20	Title	LEDs & LID
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				Size	Rev
				Custom	2.0
				Date	Tuesday, July 21, 2009
				Sheet	22 of 30

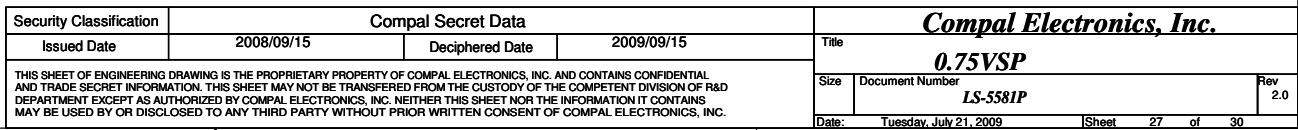
Date	Descreibung	Rev.
4/16	Relaese LS5581PR01 schematic.	01
5/8	R53 change to 499 Ohm R68,R69,R70 implement 75Ohm Add C1303 for DDR3 request Change R149,R177 from 33 to 150hm Change C233,C234 from 33P to 22P R153 implement 10K Ohm and R156 remove Add C1079,C1080 for EMI Delete R249,R255,R267,R268 for optionUSB and GPIO Delete C1066,C1067,C1068,C1069,C1070,C1071 for SATA AC cap Add VL voltage on JP6.6 for OCP use Modify SB VCCSUSHDA power level Modify SB GLAN fromPCIE4 to PCIE1 Delete R265,C264,C266 for CL_REF1 Delete R240 for H_STP_CPU# and Add R444 for H_STP_PCI# Change R221 connect from VGATE to PM_PWRON Change R240 from H_STP_CPU# to H_STP_PCI# Change EC_SCI# from GPIO7 to GPIO12 Delete T56,T57,T58,R263 for no use Add R281,R282 for USB OC# pull high Add R242,R285 for Project ID define Modify H5,H6,H7,H11,H12 footprint for ME recommand Delete R251 and Add Q26,D13,R453-R457 for RSMRST# function Delete USB9 pair on SB for not use Modify CLK_PCI_EC from U4.15 to U4.13 Modify power plane from +1.8VS to +1.8V for NB use Change Name from DDR3_DIMM_REF to DDR3_NB_REF for DDR3 recommand Change DDRPM_EXTIS# 1 from not use to JP3 Del R106 for Intel Recommand for HDMI setting	

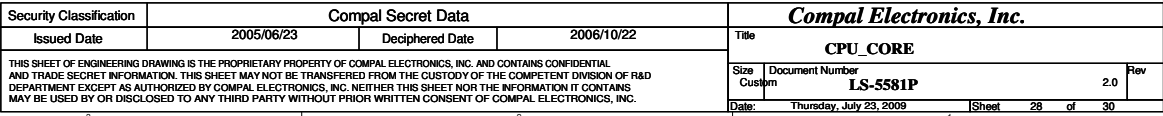


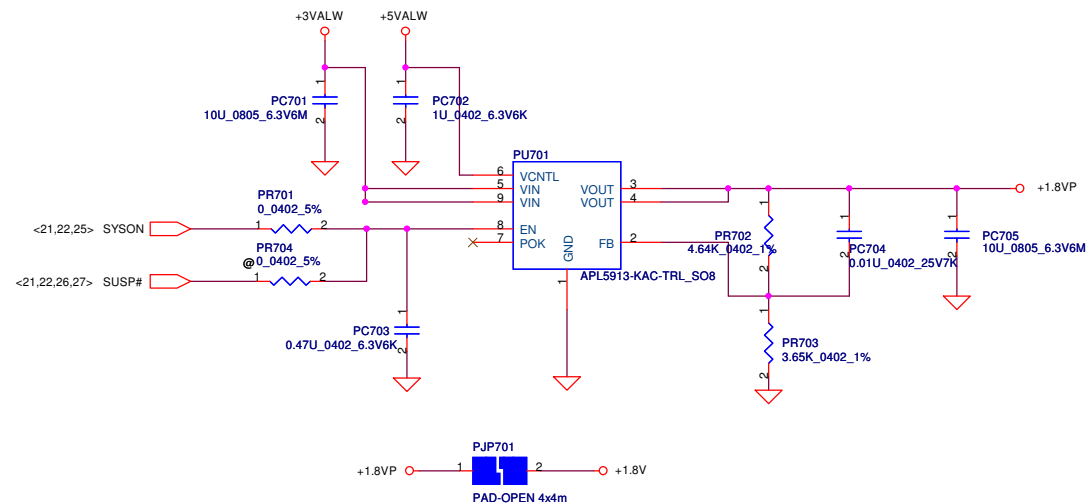
Title		
POWER BLOCK DIAGRAM		
Size	Document Number	Rev
Date:	Tuesday, July 21, 2009	Sheet 24 of 30



Security Classification		Compal Secret Data		Compal Electronics, Inc.	
Issued Date	2008/10/31	Deciphered Date	2009/10/31	Title	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				1.5VP	
Size	Document Number	Rev			2.0
Date: Tuesday, July 21, 2009		Sheet		25	of 30







Security Classification		Compal Secret Data		Title	
Issued Date	2008/10/31	Deciphered Date	2009/10/31	1.8VP	
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSFERRED FROM THE CUSTODY OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				Size	Document Number
					LS-5581P
				Date:	Thursday, July 23, 2009
				Sheet	29 of 30
				Rev	2.0

Item	Reason for change	PG#	Modify List	Date	Phase
1	change OTP 89 degree protect 70 degree recover	B	change PR33=11.8k PR30=18k PR29=100k PR28=100K		
2	Change 1.8vp sequence to SYSON	B	Del PR704		
3	Change 1.5vp Voltage set for hw request	B	change PR407 to 10.5K		
4	For solve RT8209 issue	B	change PR405 PR518 to 100 PC406 PC520 to 4.7U		
5	modify PQ600 PQ601 PN follow C38 bom	C	modify 2N7002 from Rohm to toshiba		
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

Security Classification	Compal Secret Data			Compal Electronics, Inc.	
Issued Date	2005/03/10	Deciphered Date	2006/03/10	Title	GM VGA CORE
THIS SHEET OF ENGINEERING DRAWING IS THE PROPRIETARY PROPERTY OF COMPAL ELECTRONICS, INC. AND CONTAINS CONFIDENTIAL AND TRADE SECRET INFORMATION. THIS SHEET MAY NOT BE TRANSMITTED OUTSIDE THE CUSTOMER OF THE COMPETENT DIVISION OF R&D DEPARTMENT EXCEPT AS AUTHORIZED BY COMPAL ELECTRONICS, INC. NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT PRIOR WRITTEN CONSENT OF COMPAL ELECTRONICS, INC.				Rev	15-5581P
				Date	Tuesday, 208/21/2008
				Sheet	35 of 35

www.s-manuals.com