Quicksilver _MLK Design

POWER

- AC/BATT CONNECTOR PG 57
- BATT CHARGER PG 50

CLK GEN
SLG8SP585 PG 5

SYSTEM POWER

SUS/ RUN POWER SW PG 58
+V5_SUS / +V5_RUN / +V1.5_RUN
+3.3V_ALW/ +V3.3A_PCH / +V3.3_SUS / +V3.3_RUN

- CPU VR +VCC_CORE PG 51
- VR +V1.1S PG 52
- VR +V1.1S_VTT PG 53
- REGULATOR For DDR3 +1.5V_DDR +0.75V_DDR_VTT PG 54
- REGULATOR +5V_ALW +3.3V_ALW_17020 PG 55
- LDO +V1.8S PG 56

Dual/Quad Core CPU
Intel
Arrandale / Clarksfield
(35W 2C/45W,55W 4C)
(989 rPGA)
37.5 x 37.5 mm
PG 6~12

DDR III → DDR3-SODIMM PG 14
DDR III → DDR3-SODIMM PG 15
PCIEx8 → MXM CONNECTOR 2 PG 27-28
PCIEx8 → MXM CONNECTOR 1 PG 25-26
HDMI → HDMI Connector PG 34
DP-A → CRT CONN PG 32 (VGA)
DP-D → eDP Connector PG 29
Panel Connector
LVDS → LVDS Connector PG 31
DP-C → Display Port PG 34

DMI X 4

Intel
Ibex Peak M
(1071 Pin PBGA)
27 x 25 mm
PG 16~24

Audio/ Express Board 1/3

- USB x 2 → USB2.0
- Audio Jack → Amplifier MAX9724A
- Audio Jack → Amplifier MAX9724A
- Audio Jack
- Audio Jack
- Internal Speaker 5Wx2 → Amplifier TPA6040A4

→ AUDIO IDT 92HD73C (56 LQFP) 9 x 9 mm → IHDA

- WebCam+DMIC PG 31 → USB2.0
- USBx2 PG 36 → USB2.0
- COMBO CONN USB/eSATA PG 36 → USB2.0
- SATA - ODD PG 37 → SATA2
- SATA - HDD1 PG 37 → SATA2
- SATA - HDD2 PG 37 → SATA2
- 1394 PG 46 → PCI-E → PC Card/1394 RICOH R5U230 (QFN 48) PG 46
- CardReader CONN

Audio/ Express Board 2/3

USB2.0 → WiMax Half MINI-CARD PG 38 (PCI-E, USB2.0)

Light FX PG 44, 45
Keyboard BL
T/P Module
Head Logo - A
Logo - B
Speaker LED
I2C

PCI-E, USB2.0 → UWB/BT MINI-CARD PG 39

Audio/ Express Board 3/3

PCI-E, USB2.0 → Express Card → Express Switch RICOH R5538D001 (20 QFN) 4 x 4 mm

RGMII → PHY HANKSVILLE 82577LC (48 BGA) 6 x 6 mm PG 47 → Magnetic PG 48 → RJ45 PG 48

SPI → FLASH Memory FOR SYSTEM (8 Pin SO8W) PG 16

LPC → SIO ITE ITE8512E (128 Pin LQFP) 16 x 16 mm PG 41

- SM Bus → MAX7313 X 3 PG 44
- SPI → FLASH Memory 2MB (8 Pin SO8W) PG 42
- Keyboard PG 43
- T/P Board: Touchpad PS/2 PG 43
- CIR Board: CIR PG 42

- THERMAL SMSC4002 PG 40
- USER INTERFACE PG 43

ONFI PG 35

Title	BLOCK DIAGRAM	
Size	Document Number: Dell/FLEX Confidential	Rev X02
Date: Thursday, October 22, 2009	Sheet 1 of 68	

INDEX		INDEX	
Page#	Description	Page#	Description
1	BLOCK DIAGRAM	43	Keyboard, Daughtor Board conn
2	Front Page	44,45	LED Light FX
3	CLOCK MAP	46	CardReader (R5U230)/Conn & 1394
4	POWER SEQUENCING	47,48	PHY(HANKSVILLE),RJ45&Transform
5	CLOCK GEN (SLG8SP585)	49	System Power ON Circuit
6-12	CPU (Auburndale / Clarksfield)	50	CHARGER (MAX8731)
13	XDP(PROCESSOR / PCH)	51	CPU Core (MAX17030)
14-15	DDRIII SO-DIMM(204P)	52	+V1.1S(MAX8792)
16-24	PCH	53	+V1.1S_VTT(MAX8792)
25-28	MXM CONN 1,2	54	DDR1.5/0.75 (MAX8632)
29	eDP	55	SYS 5V/3V(MAX17020)
30	HDMI SELECTION	56	+V1.8S (RT9025-25PSP)
31	LCD Conn	57	DCIN,Batt
32	CRT Conn	58	RUN POWER SW
33	PCH DDC/ AUX MUX	59	PAD/ SCREW/ Moat Cap
34	HDMI & DP CONN	60	Power Block Diagram
35	ONFI Connector	61	PCI Reset Map
36	USBx2 & eSATA	62	LED BOARD
37	HDDx2 & CD ROM	63	KBC Power Up Sequence
38	MINI-CARD (WiMAX)	64	SMBus Map_PCH
39	MINI-CARD (BT)	65	SMBus Map_ITE8512E
40	FAN & THERMAL EMC4002	66	HISTORY
41	SIO (ITE8512)		
42	FLASH/ RTC/ CIR/ TPM		

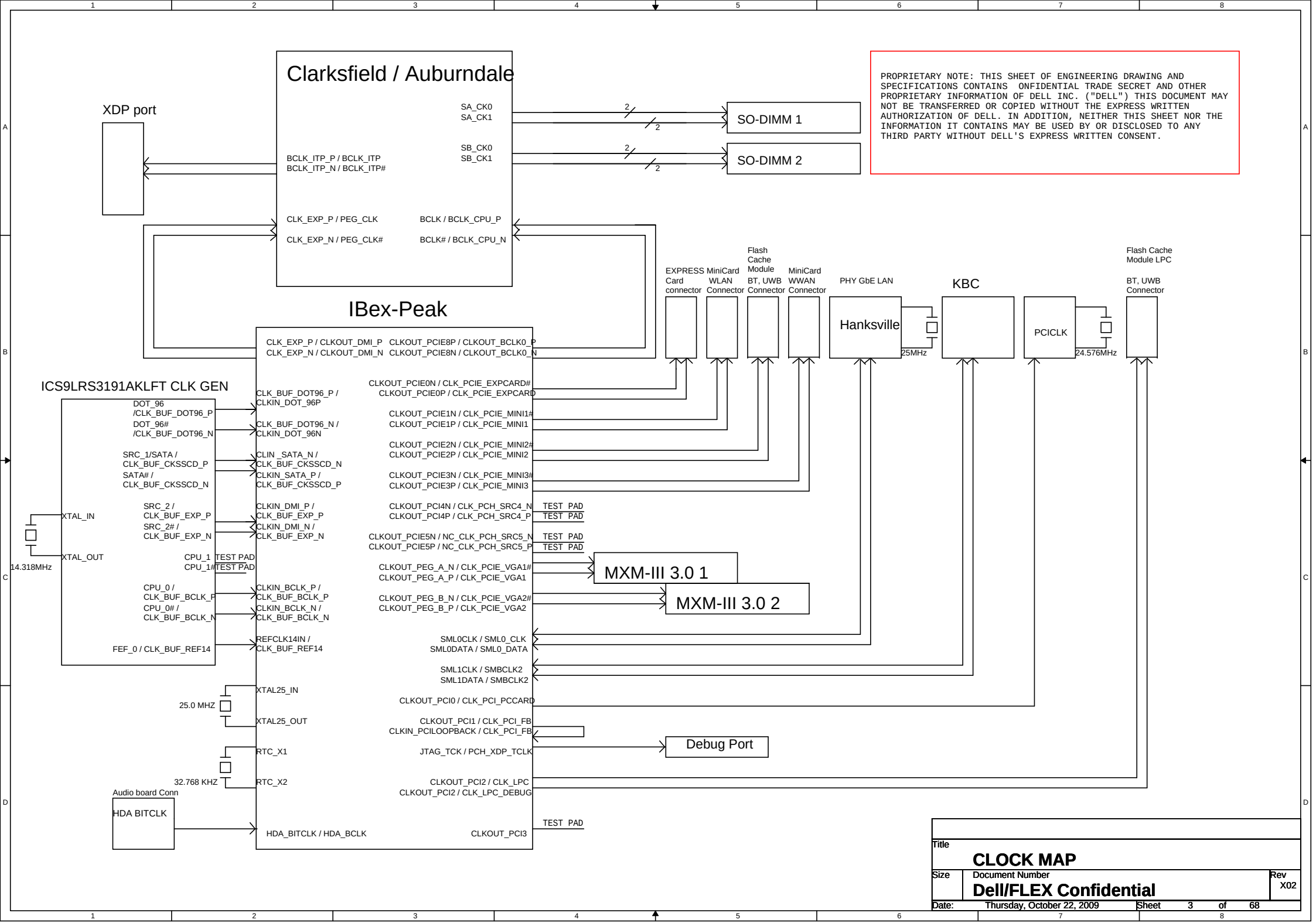
Power States

Power Rail	Control Signal	S0	S3	S4	S5	G3	S4/ M-off	S5/ M-off
+PWR_SRC	N/A	V	V	V	V			
+0.75V_DDR_VTT	RUN_ON/SUS_ON	V	V					
+V1.1S_VTT	+V1.1S_VTT_MXM1 _PWRON	V						
+V1.1S	RUN_ON	V						
+1.5V_RUN	RUN_ON#	V						
+1.5V_DDR	RUN_ON/SUS_ON	V	V					
+V1.8S	RUN_ON	V						
+3.3V_ALW	3VA_PCH_ON	V	V	V	V			
+3.3V_WLAN	AUX_EN_WOWL	V	define WOL	define WOL	define WOL			
+3.3V_RUN	RUN_ON#	V						
+V3.3	SUS_ON	V	V					
+5V_ALW	+5V_EN1/5V_ALW_ON	V	V	V	V			
+5V_ALW2	+PWR_SRC	V	V	V	V			
+5V_RUN	RUN_ON	V						
+5V_HDD	HDDC_EN	V						
+5V_MOD	MODC_EN	V						
+V5S	RUN_ON	V						
+LCDVCC	ENVDD	V						
+RTC_CELL	RTC	V	V	V	V	V		
+VCC_CORE	IMVP_VR_ON	V						
+USB_RIGHT_PWR	USB_SIDE_EN#	V	define	define				
+USB_LEFT_PWR	USB_BACK_EN#	V	define	define				
+15V_ALW	5V_ALW_ON	V	V	V	V			
+3.3V_ALW_17020	+3.3V_EN2/5V_ALW_ON	V	V	V	V			
+V3.3M_LAN	PM_SLP_LAN#	V	define WOL	define WOL	define WOL			

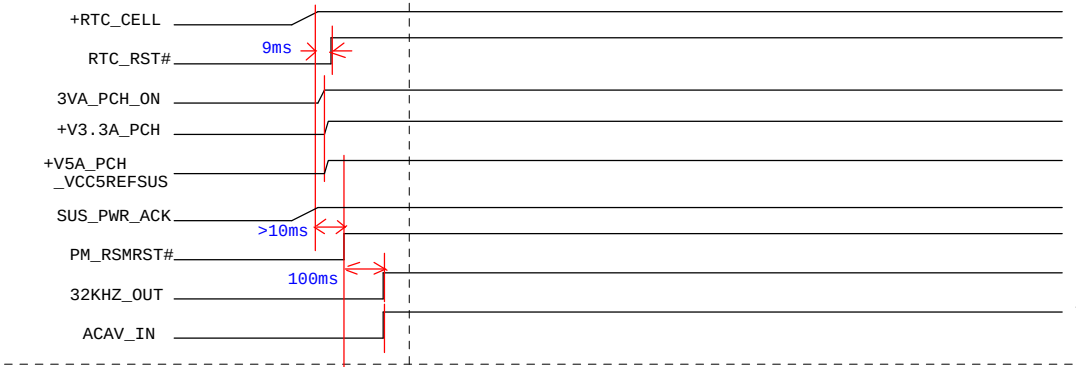
Title: **FRONTPAGE**

Size | Document Number: **Dell/FLEX Confidential** | Rev: X02

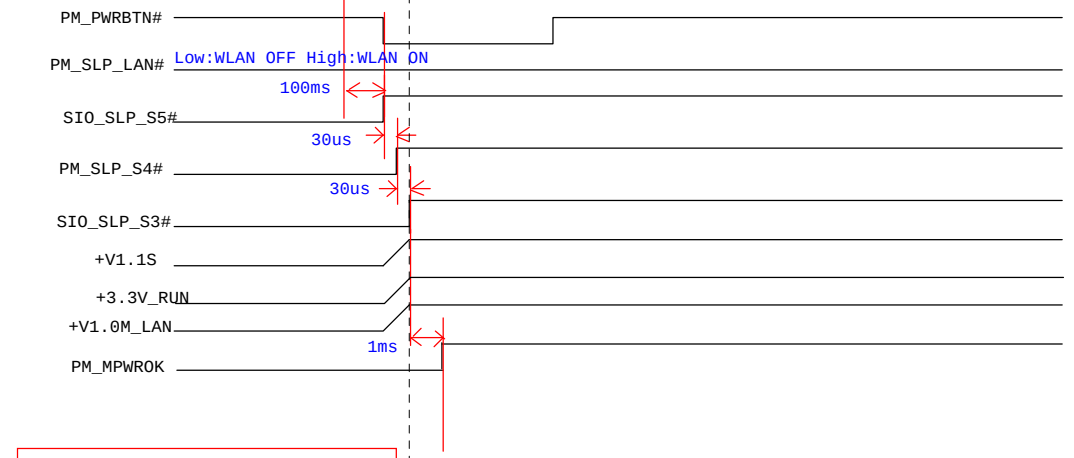
Date: Thursday, October 22, 2009 | Sheet 2 of 68

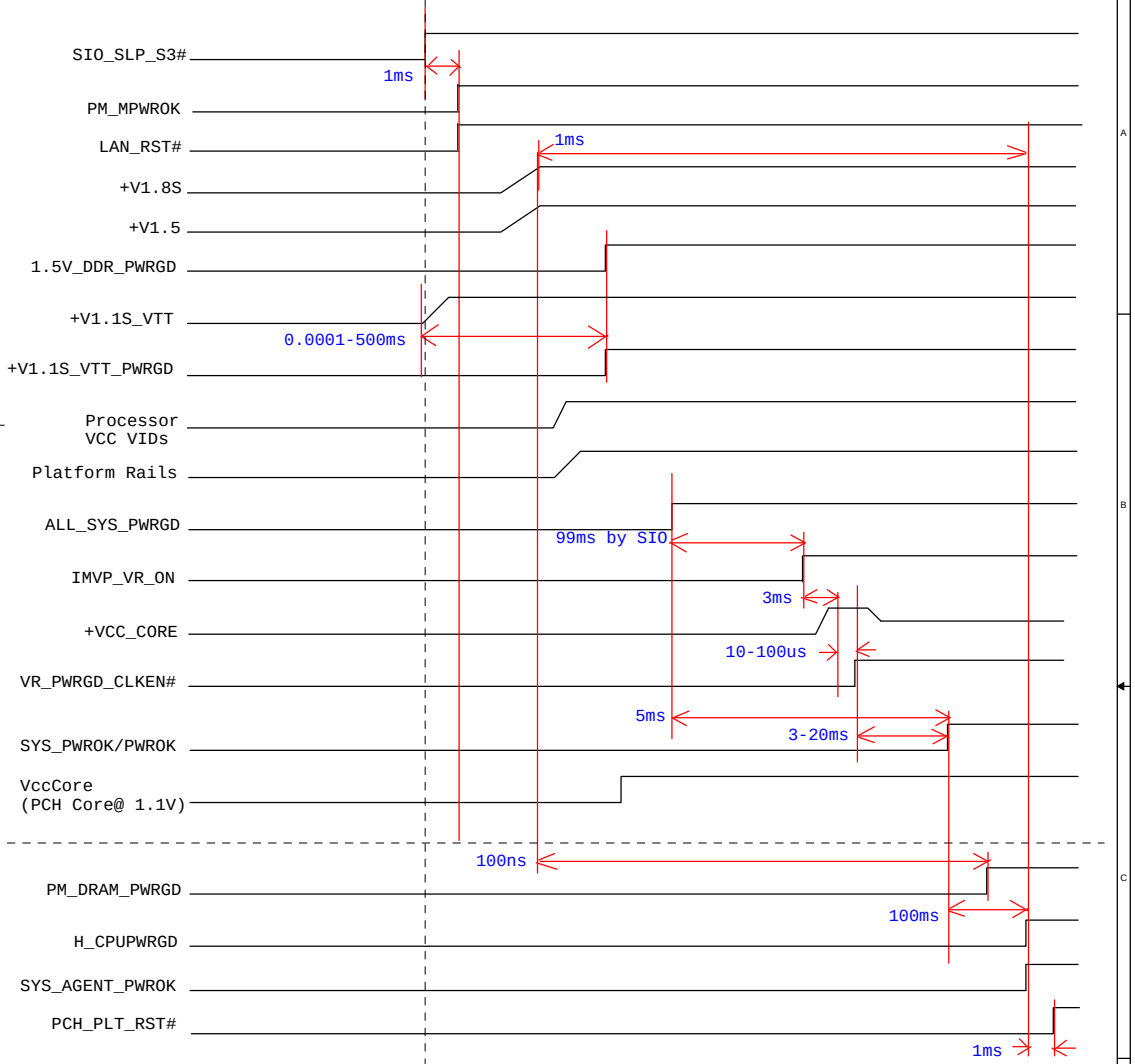

Clarksfield / Auburndale
XDP port
SA_CK0
SA_CK1
SB_CK0
SB_CK1
SO-DIMM 1
SO-DIMM 2
BCLK_ITP_P / BCLK_ITP
BCLK_ITP_N / BCLK_ITP#
CLK_EXP_P / PEG_CLK
CLK_EXP_N / PEG_CLK#
BCLK / BCLK_CPU_P
BCLK# / BCLK_CPU_N
PROPRIETARY NOTE: THIS SHEET OF ENGINEERING DRAWING AND SPECIFICATIONS CONTAINS ONFIDENTIAL TRADE SECRET AND OTHER PROPRIETARY INFORMATION OF DELL INC. ("DELL") THIS DOCUMENT MAY NOT BE TRANSFERRED OR COPIED WITHOUT THE EXPRESS WRITTEN AUTHORIZATION OF DELL. IN ADDITION, NEITHER THIS SHEET NOR THE INFORMATION IT CONTAINS MAY BE USED BY OR DISCLOSED TO ANY THIRD PARTY WITHOUT DELL'S EXPRESS WRITTEN CONSENT.
EXPRESS Card connector
MiniCard WLAN Connector
Flash Cache Module BT, UWB Connector
MiniCard WWAN Connector
PHY GbE LAN
Hanksville
25MHz
KBC
PCICLK
24.576MHz
Flash Cache Module LPC
BT, UWB Connector
IBex-Peak
CLK_EXP_P / CLKOUT_DMI_P
CLK_EXP_N / CLKOUT_DMI_N
CLKOUT_PCIE8P / CLKOUT_BCLK0_P
CLKOUT_PCIE8N / CLKOUT_BCLK0_N
ICS9LRS3191AKLFT CLK GEN
DOT_96
/CLK_BUF_DOT96_P
DOT_96#
/CLK_BUF_DOT96_N
SRC_1/SATA /
CLK_BUF_CKSSCD_P
SATA# /
CLK_BUF_CKSSCD_N
SRC_2 /
CLK_BUF_EXP_P
SRC_2# /
CLK_BUF_EXP_N
XTAL_IN
XTAL_OUT
14.318MHz
CPU_1
CPU_1#
TEST PAD
CPU_0 /
CLK_BUF_BCLK_P
CPU_0# /
CLK_BUF_BCLK_N
FEF_0 / CLK_BUF_REF14
CLK_BUF_DOT96_P /
CLKIN_DOT_96P
CLK_BUF_DOT96_N /
CLKIN_DOT_96N
CLIN _SATA_N /
CLK_BUF_CKSSCD_N
CLKIN_SATA_P /
CLK_BUF_CKSSCD_P
CLKIN_DMI_P /
CLK_BUF_EXP_P
CLKIN_DMI_N /
CLK_BUF_EXP_N
CLKIN_BCLK_P /
CLK_BUF_BCLK_P
CLKIN_BCLK_N /
CLK_BUF_BCLK_N
REFCLK14IN /
CLK_BUF_REF14
XTAL25_IN
25.0 MHZ
XTAL25_OUT
RTC_X1
32.768 KHZ
RTC_X2
Audio board Conn
HDA BITCLK
HDA_BITCLK / HDA_BCLK
CLKOUT_PCIE0N / CLK_PCIE_EXPCARD#
CLKOUT_PCIE0P / CLK_PCIE_EXPCARD
CLKOUT_PCIE1N / CLK_PCIE_MINI1#
CLKOUT_PCIE1P / CLK_PCIE_MINI1
CLKOUT_PCIE2N / CLK_PCIE_MINI2#
CLKOUT_PCIE2P / CLK_PCIE_MINI2
CLKOUT_PCIE3N / CLK_PCIE_MINI3#
CLKOUT_PCIE3P / CLK_PCIE_MINI3
CLKOUT_PCI4N / CLK_PCH_SRC4_N
CLKOUT_PCI4P / CLK_PCH_SRC4_P
TEST PAD
CLKOUT_PCIE5N / NC_CLK_PCH_SRC5_N
CLKOUT_PCIE5P / NC_CLK_PCH_SRC5_P
CLKOUT_PEG_A_N / CLK_PCIE_VGA1#
CLKOUT_PEG_A_P / CLK_PCIE_VGA1
CLKOUT_PEG_B_N / CLK_PCIE_VGA2#
CLKOUT_PEG_B_P / CLK_PCIE_VGA2
MXM-III 3.0 1
MXM-III 3.0 2
SML0CLK / SML0_CLK
SML0DATA / SML0_DATA
SML1CLK / SMBCLK2
SML1DATA / SMBCLK2
CLKOUT_PCI0 / CLK_PCI_PCCARD
CLKOUT_PCI1 / CLK_PCI_FB
CLKIN_PCILOOPBACK / CLK_PCI_FB
JTAG_TCK / PCH_XDP_TCLK
Debug Port
CLKOUT_PCI2 / CLK_LPC
CLKOUT_PCI2 / CLK_LPC_DEBUG
CLKOUT_PCI3
Title
CLOCK MAP
Size
Document Number
Dell/FLEX Confidential
Rev
X02
Date: Thursday, October 22, 2009
Sheet 3 of 68

G3 to Sx



Sx to S0





Title: POWER SEQUENCING		
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 4 of 68	

IDT Cleck gen	L16	R88	C139	R114
9LRS3191	NA	Add	NA	Add
9LRS3185	Add	NA	Add	NA

	Vender	Vender P/N	FLEX P/N
MAIN	IDT	ICS9LVS3185yKLFT	DELH-12D00J0000006G

VDD_I/O can be ranging from 1.05V to 3.3V.

+V1.1S

L18 BLM18AG121SN1D L0603

+3.3V_RUN

L19 *BLM18AG121SN1D_NC L0603

+1.5V_RUN

L16 L0603 BLM18PG181SN1D MAX 1.5A

CLK_VCC_R

C139 CAP0805

R88 *0_0603_NC

C141 0.1U/10V

C143 0.1U/10V

C198 0.1U/10V

10U/10V_0805

+3.3V_RUN

L12 L0603 BLM18PG181SN1D MAX 1.5A

CLK_VCC

10%

C131 10U/10V_0805 CAP0805

C173 0.1U/10V

C199 0.1U/10V

CLK_VCC: 40mil width
0.1uF near the every power pin.

IDD MAX 250mA

CLK_VCC_IO: 40mil width
0.1uF near the every power pin.

CLK_VCC_IO

C142 0.1U/10V

C160 0.1U/10V

C140 10U/10V_0805 CAP0805

U3

VDD_DOT
VDD_27
VDD_SRC
VDD_CPU
VDD_REF

VDD_SRC_IO
VDD_CPU_IO

DOT_96
DOT_96#

CLK_DOT96_P_R — R782 — CLK_BUF_DOT96_P (17)
CLK_DOT96_N_R — R781 — CLK_BUF_DOT96_N (17)

C164 33P/50V

Y1 14.318MHz 20pF_+-30ppm

C161 33P/50V

CK505_XTAL_IN
CK505_XTAL_OUT

XTAL_IN
XTAL_OUT

27MHz
27MHz_SS

PAD T686
PAD T687

CKSSCD is now being Routed to SATA

(17) CLK_BUF_REF14 — R147 33 — REF_0/CPU_SEL

REF_0/CPU_SEL

SRC_1/SATA
SRC_1/SATA#
SRC_2
SRC_2#

CLK_SRC1_P_R — R151 — CLK_BUF_CKSSCD_P (17)
CLK_SRC1_N_R — R144 — CLK_BUF_CKSSCD_N (17)
CLK_BUF_EXP_P_R — R140 — CLK_BUF_EXP_P (17)
CLK_BUF_EXP_N_R — R134 — CLK_BUF_EXP_N (17)

(14,15,17) SMB_DATA_S2
(14,15,17) SMB_CLK_S2

SDA
SCL

CPU_STOP# — SLG8SP585V Internal PU

CPU_STOP#

CPU_1
CPU_1#
CPU_0
CPU_0#

PAD T666
PAD T667

CLK_BUF_BCLK_P_R — R97 — CLK_BUF_BCLK_P (17)
CLK_BUF_BCLK_N_R — R98 — CLK_BUF_BCLK_N (17)

VSS_DOT
VSS_27
VSS_SATA
VSS_SRC
VSS_CPU
VSS_REF

CKPWRGD/PD#

CK_PWRGD_R

M1

IDT_ICS9LVS3185yKLFT

Place all these 0 ohm resistors close to the CLK GEN

Mount for ICS9LRS3191AKLFT

+3.3V_RUN — R114 *10K_NC — CPU_STOP#

Number of Clock Outputs

Output	Number Output
133MHz	2
SRC(100MHz_SS)	1
SRC/SATA (100MHz)	1
REF (14.3181MHz)	1
DOT_CLK (96MHz)	1
27MHz	1
27MHz SS	1

CLK_BUF_DOT96_P — C799 *10p/50V_NC
CLK_BUF_DOT96_N — C798 *10p/50V_NC
CLK_BUF_CKSSCD_P — C180 *10p/50V_NC
CLK_BUF_CKSSCD_N — C175 *10p/50V_NC
CLK_BUF_EXP_P — C171 *10p/50V_NC
CLK_BUF_EXP_N — C163 *10p/50V_NC
CLK_BUF_BCLK_P — C134 *10p/50V_NC
CLK_BUF_BCLK_N — C135 *10p/50V_NC
CLK_BUF_REF14 — C194 *10p/50V_NC

EMI

CPU_SEL During CK_PWRGD Latch Pin 30

Input (pin 30)	CPU_0/_1	SRC
0 -> NOW	133MHz	100MHz
1	100MHz	100MHz

R145 10K REF_0/CPU_SEL

+3.3V_RUN

R109 10K

VR_PWRGD_CLKEN — R115 — CK_PWRGD_R

(51) VR_PWRGD_CLKEN#

Q26 2N7002W-7-F

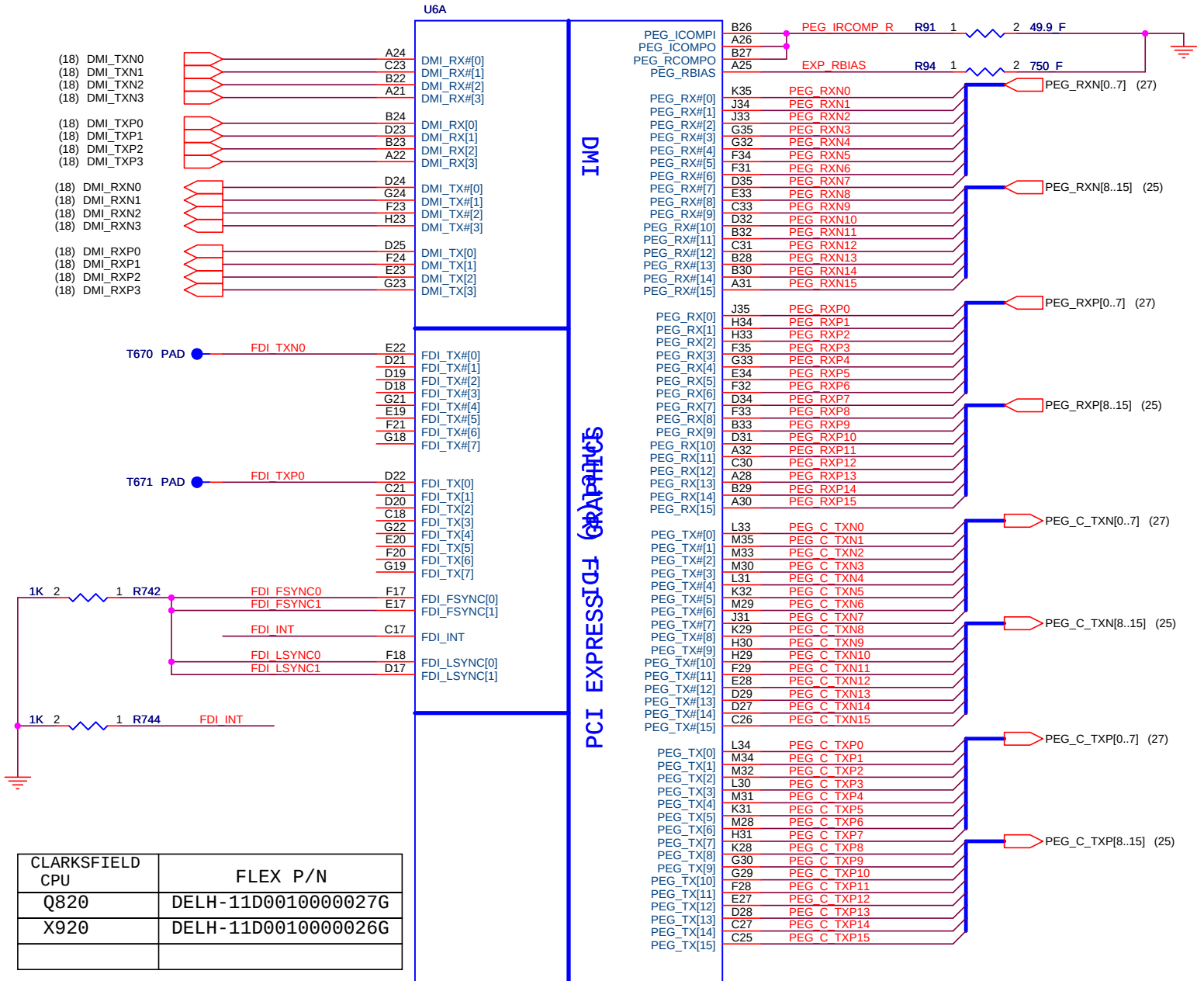
FROM VCORE PWM

Title: **CLOCK GEN (SLG8SP585)**

Size | Document Number: **Dell/FLEX Confidential** | Rev: X02

Date: Thursday, October 22, 2009 | Sheet 5 of 68

ARRANDALE /CLARKSFIELD PROCESSOR (DMI,PEG,FDI)



CLARKSFIELD CPU	FLEX P/N
Q820	DELH-11D00010000027G
X920	DELH-11D00010000026G

Arrandale CPU	FLEX P/N
520M	DELH-11D00010000037G

Title: CPU (DMI,PEG,FDI) 1/7

Size | Document Number: Dell/FLEX Confidential | Rev: X02

Date: Thursday, October 22, 2009 | Sheet 6 of 68

ARRANDALE /CLARKSFIELD PROCESSOR (CLK,MISC,JTAG)

U6B

CLOCKS
THERMAL
MISC
DDR3 MISC
JTAG & BPM
PWR MANAGEMENT

CPU_FOXCONN_PZ98927-3641-01F

JTAG MAPPING

Scan Chain (Default)	
CPU Only	
GMCH Only	

CAD Note:
TCLK: Provide a scope test point at the Processor socket breakout via to verify signal integrity of the first platforms.

FIND EC PIN

Processor Pullups

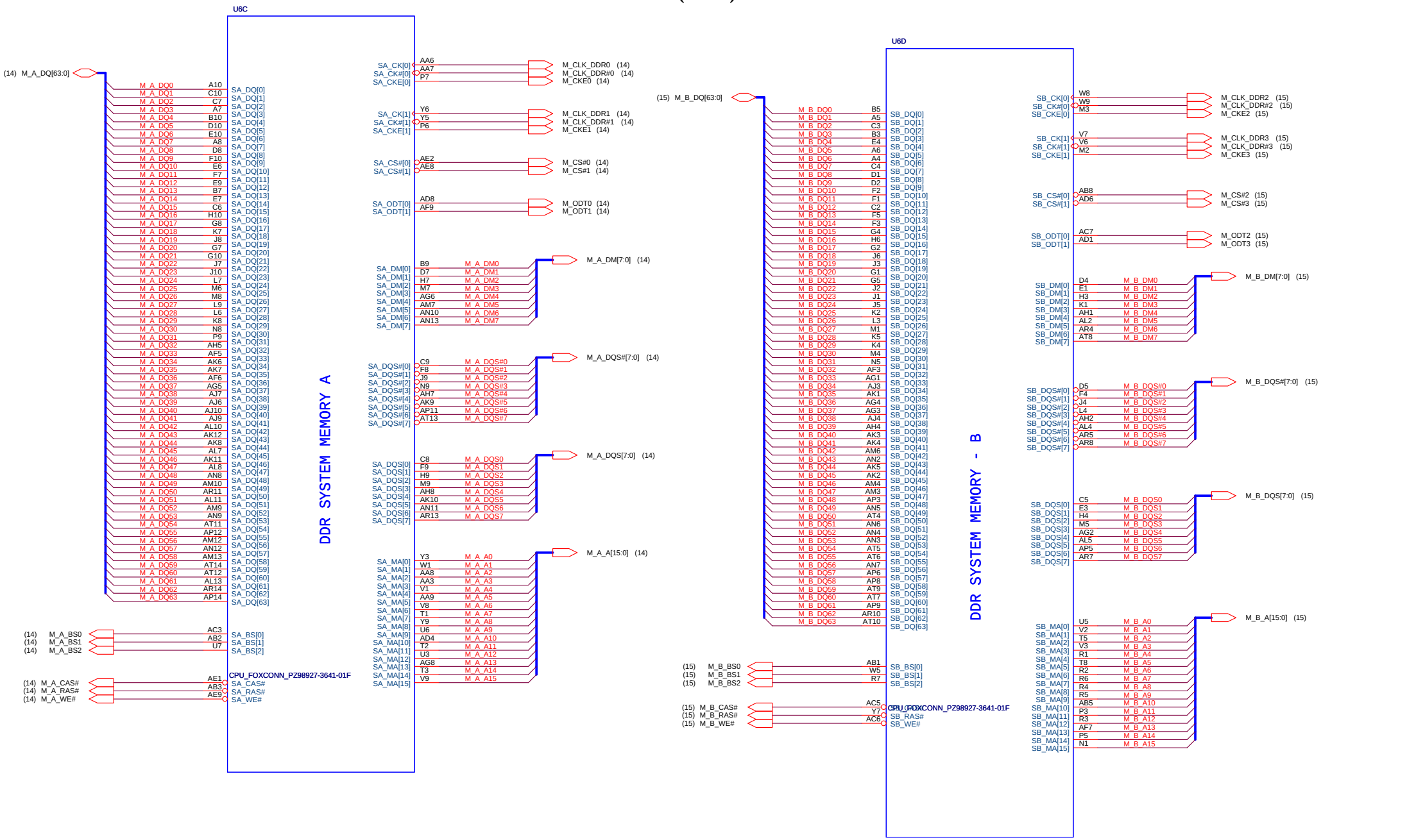
Processor Compensation Signals

DDR3 Compensation Signals

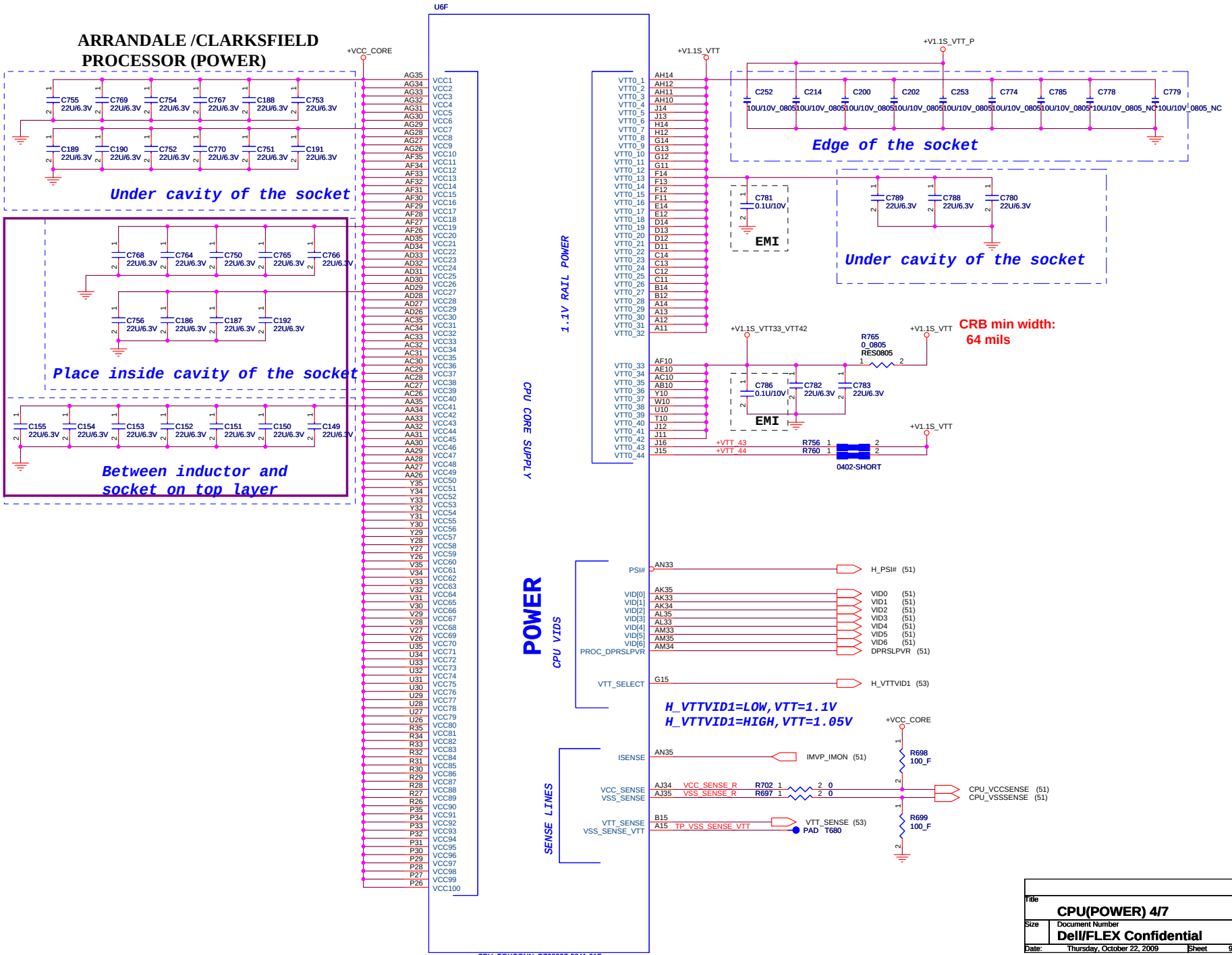
Layout Note:
Place these resistors near Processor

Title	CPU(CLK,MISC) 2/7
Size	Document Number: Dell/FLEX Confidential
Rev	X02
Date:	Thursday, October 22, 2009
Sheet	7 of 68

ARRANDALE /CLARKSFIELD PROCESSOR (DDR3)

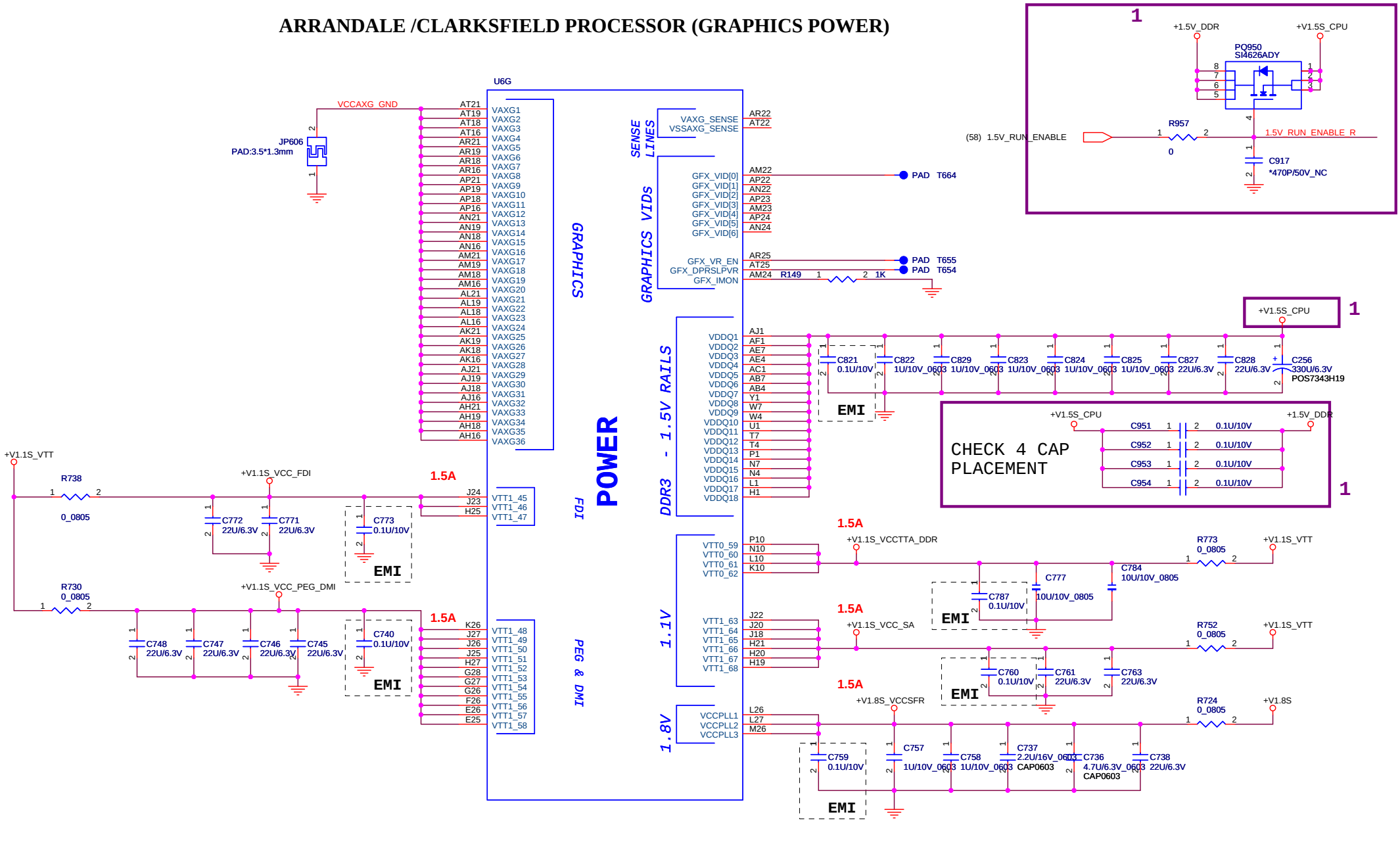


Title	CPU(DDR3) 3/7
Size	Document Number: Dell/FLEX Confidential
Rev	X02
Date:	Thursday, October 22, 2009
Sheet	8 of 68



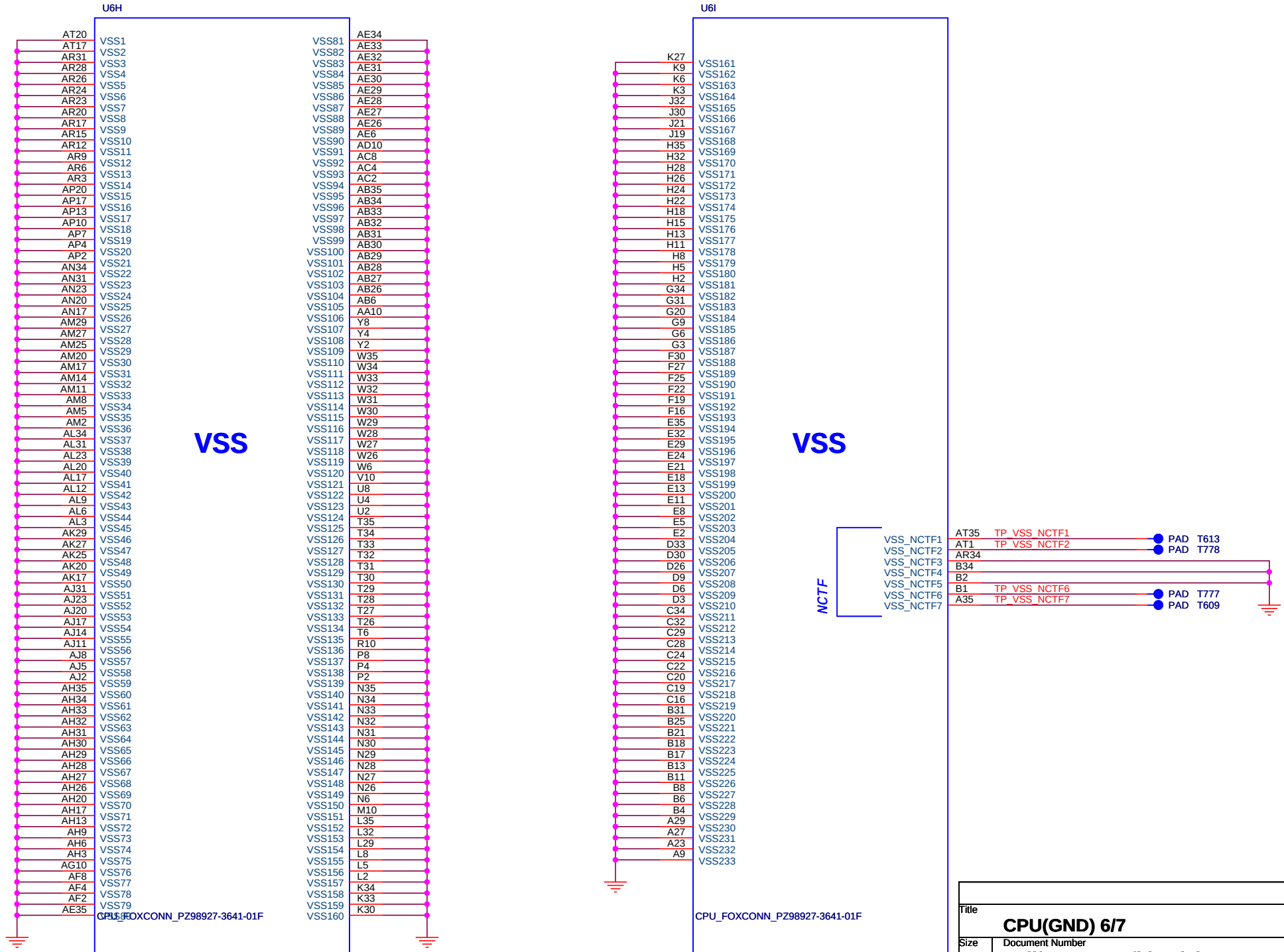
Title	CPU(POWER) 4/7	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 9 of 68	

ARRANDALE /CLARKSFIELD PROCESSOR (GRAPHICS POWER)



Title	CPU(GRAPHICS PWR) 5/7	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 10 of 68	

ARRANDALE /CLARKSFIELD PROCESSOR (GND)



Title	CPU(GND) 6/7	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 11 of 68	

ARRANDALE /CLARKSFIELD PROCESSOR(RESERVED, CFG)

U6E

RESERVED

Different from CRB

(14) SA_DIMM_VREF
(15) SB_DIMM_VREF

R958 1 2 *0_NC
R959 1 2 *0_NC

R101 *3.01K_F_NC

R116 1 2 0
R110 1 2 0

R963 100K
R964 100K

Q951 2N7002W-7-F
Q952 2N7002W-7-F

SA_DIMM_VREF
SB_DIMM_VREF
VREF_CH_A_DIMM
VREF_CH_B_DIMM
DRAMRST_CNTRL
(7,41) DRAMRST_CNTRL

CPU_FOXCONN_PZ98927-3641-01F

VSS (AP34) can be left NC is CRB implementation; EDS/DG recommendation to GND

CFG Straps for PROCESSOR

PCI-Express Configuration Select	
	1:Single PEG(Default) 0:Bifurcation enabled

2X8 PEG
CFG0 — R112 3.01K_F 0402

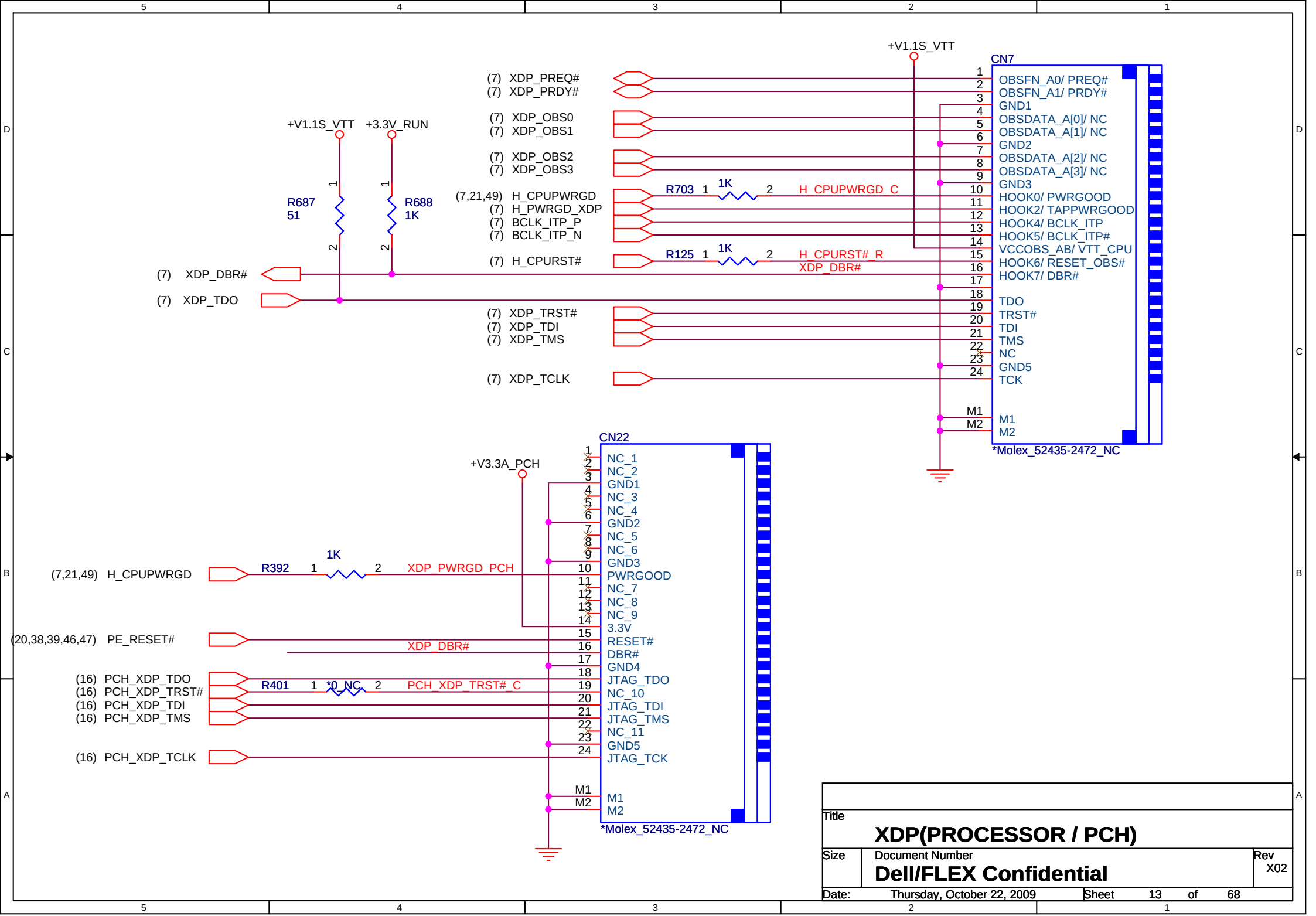
CFG3 - PCI-Express Static Lane Reversal	
CFG3	1 :Normal Operation(Default) 0 :Lane Numbers Reversed 15 -> 0, 14 -> 1, ...

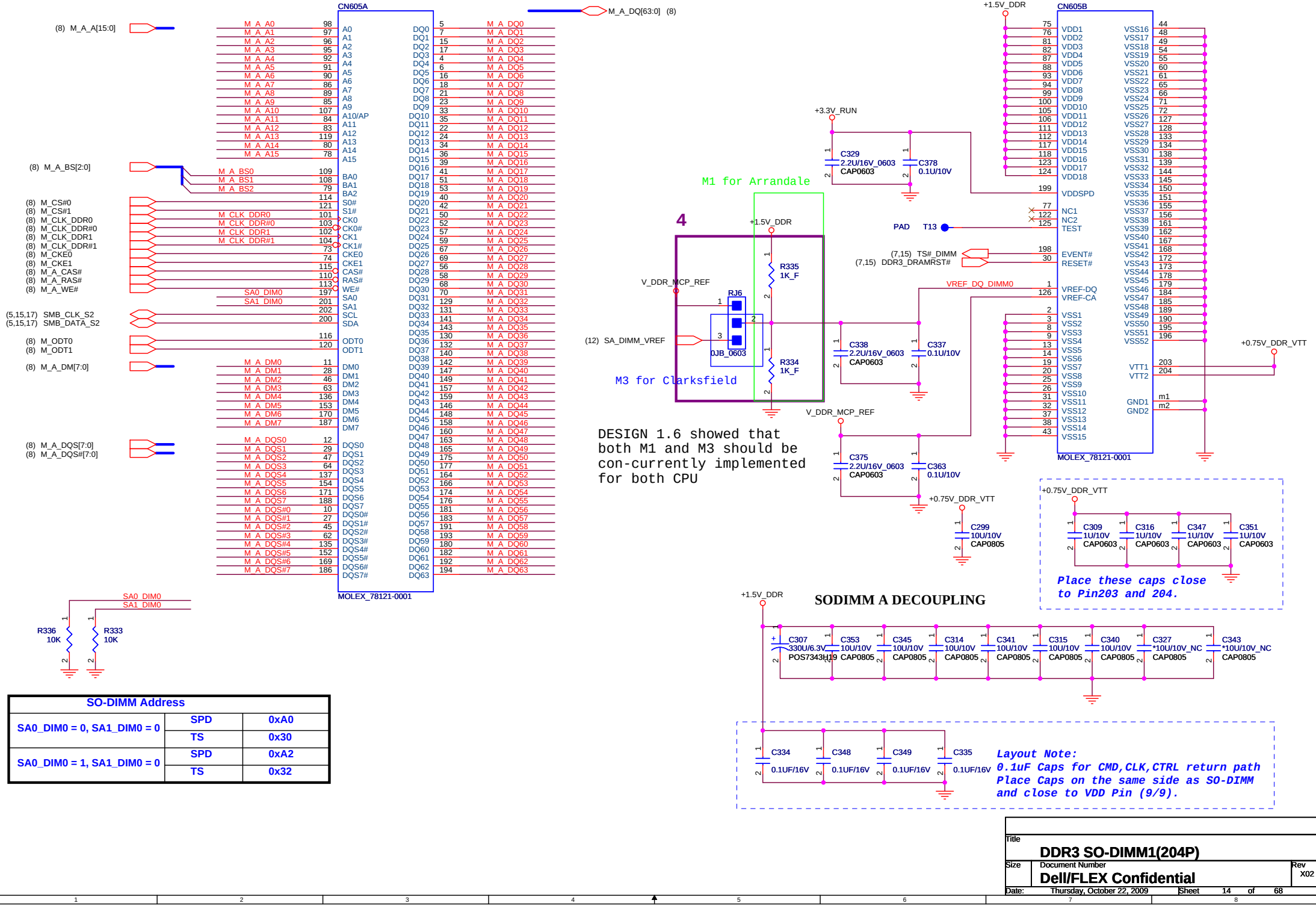
CFG3 — R96 3.01K_F 0402

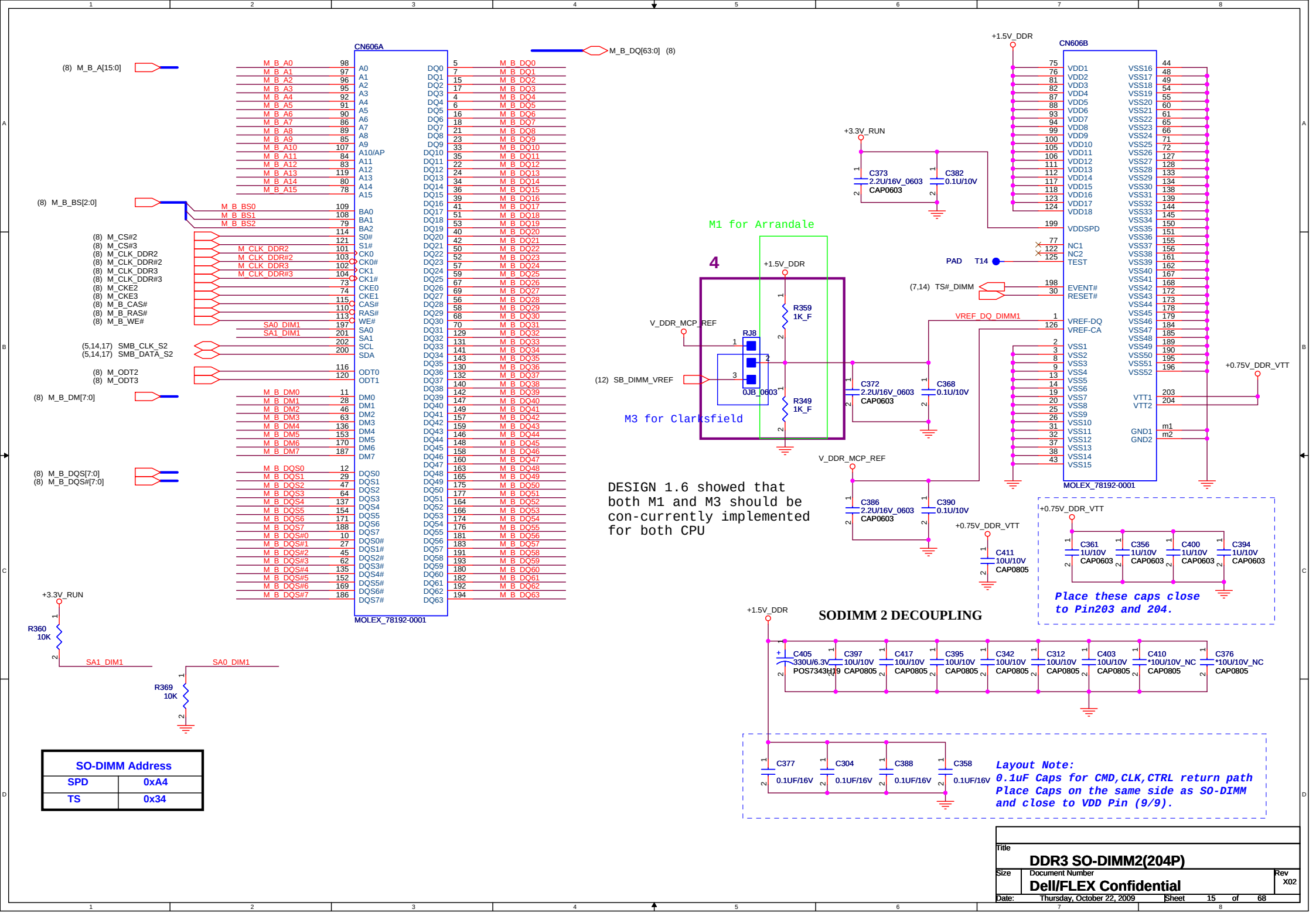
CFG4 - Display Port Presence	
CFG4	1:Disabled; No Physical Display Port attached to Embedded Display Port (Default) 0:Enabled; An external Display Port device is connected to the Embedded Display Port

CFG4 — PAD T645

Title	CPU(RSVD,CFG) 7/7	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 12 of 68	

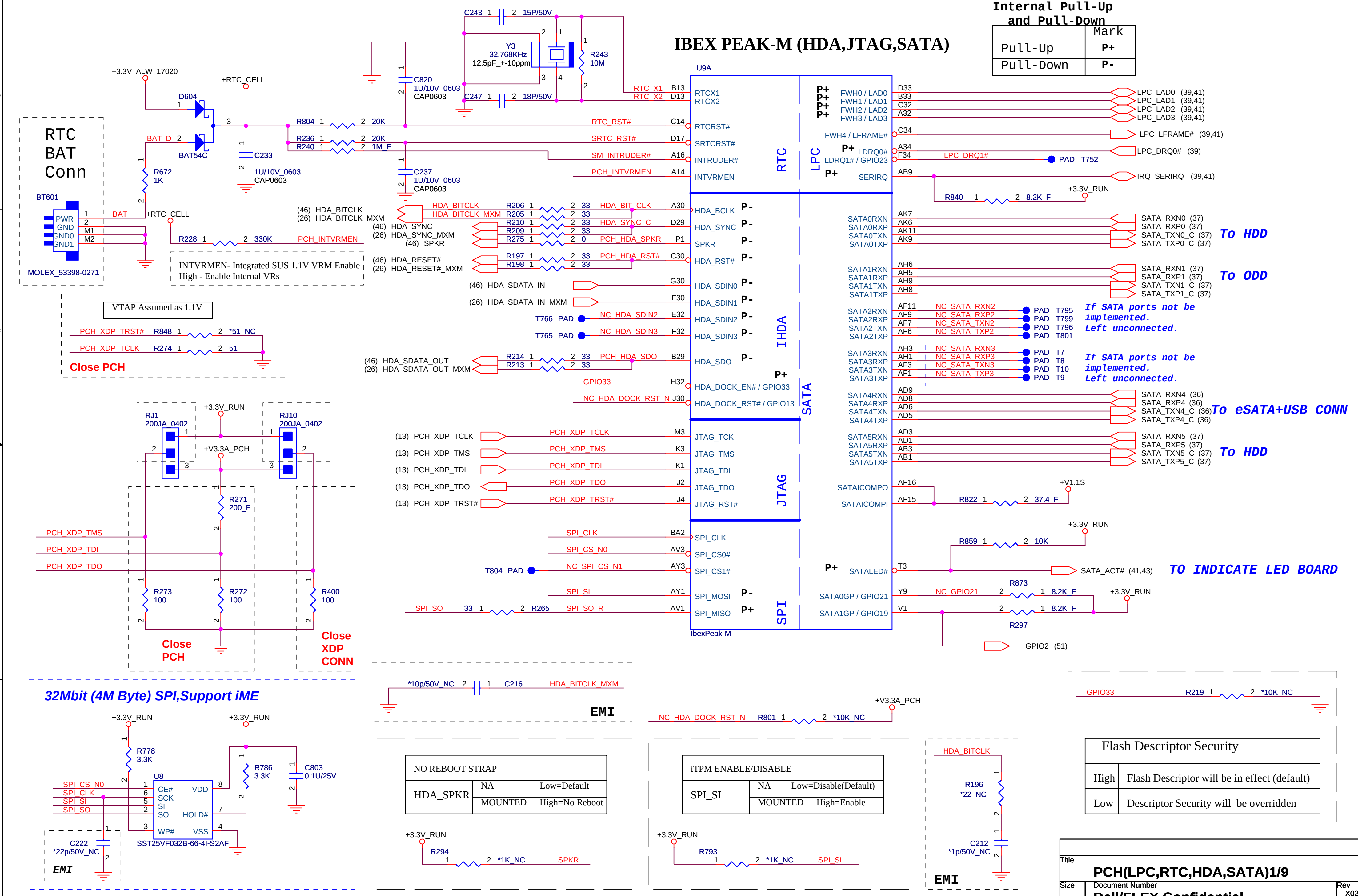

+V1.1S_VTT
CN7
(7) XDP_PREQ#
(7) XDP_PRDY#
(7) XDP_OBS0
(7) XDP_OBS1
(7) XDP_OBS2
(7) XDP_OBS3
(7,21,49) H_CPUPWRGD
(7) H_PWRGD_XDP
(7) BCLK_ITP_P
(7) BCLK_ITP_N
(7) H_CPURST#
+V1.1S_VTT
+3.3V_RUN
R687
51
R688
1K
R703 1K H_CPUPWRGD_C
R125 1K H_CPURST#_R
XDP_DBR#
(7) XDP_DBR#
(7) XDP_TDO
(7) XDP_TRST#
(7) XDP_TDI
(7) XDP_TMS
(7) XDP_TCLK
OBSFN_A0/ PREQ#
OBSFN_A1/ PRDY#
GND1
OBSDATA_A[0]/ NC
OBSDATA_A[1]/ NC
GND2
OBSDATA_A[2]/ NC
OBSDATA_A[3]/ NC
GND3
HOOK0/ PWRGOOD
HOOK2/ TAPPWRGOOD
HOOK4/ BCLK_ITP
HOOK5/ BCLK_ITP#
VCCOBS_AB/ VTT_CPU
HOOK6/ RESET_OBS#
HOOK7/ DBR#
TDO
TRST#
TDI
TMS
NC
GND5
TCK
M1
M2
*Molex_52435-2472_NC
CN22
+V3.3A_PCH
R392 1K XDP_PWRGD_PCH
(7,21,49) H_CPUPWRGD
(20,38,39,46,47) PE_RESET#
XDP_DBR#
R401 *0_NC PCH_XDP_TRST#_C
(16) PCH_XDP_TDO
(16) PCH_XDP_TRST#
(16) PCH_XDP_TDI
(16) PCH_XDP_TMS
(16) PCH_XDP_TCLK
NC_1
NC_2
GND1
NC_3
NC_4
GND2
NC_5
NC_6
GND3
PWRGOOD
NC_7
NC_8
NC_9
3.3V
RESET#
DBR#
GND4
JTAG_TDO
NC_10
JTAG_TDI
JTAG_TMS
NC_11
GND5
JTAG_TCK
M1
M2
*Molex_52435-2472_NC
Title
XDP(PROCESSOR / PCH)
Size
Document Number
Dell/FLEX Confidential
Rev
X02
Date: Thursday, October 22, 2009
Sheet 13 of 68


CN605A
MOLEX_78121-0001
(8) M_A_A[15:0]
M_A_A0 98
M_A_A1 97
M_A_A2 96
M_A_A3 95
M_A_A4 92
M_A_A5 91
M_A_A6 90
M_A_A7 86
M_A_A8 89
M_A_A9 85
M_A_A10 107
M_A_A11 84
M_A_A12 83
M_A_A13 119
M_A_A14 80
M_A_A15 78
(8) M_A_BS[2:0]
M_A_BS0 109
M_A_BS1 108
M_A_BS2 79
(8) M_CS#0 114
(8) M_CS#1 121
(8) M_CLK_DDR0 101
(8) M_CLK_DDR#0 103
(8) M_CLK_DDR1 102
(8) M_CLK_DDR#1 104
(8) M_CKE0 73
(8) M_CKE1 74
(8) M_A_CAS# 115
(8) M_A_RAS# 110
(8) M_A_WE# 113
SA0_DIM0 197
SA1_DIM0 201
(5,15,17) SMB_CLK_S2 202
(5,15,17) SMB_DATA_S2 200
(8) M_ODT0 116
(8) M_ODT1 120
(8) M_A_DM[7:0]
M_A_DM0 11
M_A_DM1 28
M_A_DM2 46
M_A_DM3 63
M_A_DM4 136
M_A_DM5 153
M_A_DM6 170
M_A_DM7 187
(8) M_A_DQS[7:0]
(8) M_A_DQS#[7:0]
M_A_DQS0 12
M_A_DQS1 29
M_A_DQS2 47
M_A_DQS3 64
M_A_DQS4 137
M_A_DQS5 154
M_A_DQS6 171
M_A_DQS7 188
M_A_DQS#0 10
M_A_DQS#1 27
M_A_DQS#2 45
M_A_DQS#3 62
M_A_DQS#4 135
M_A_DQS#5 152
M_A_DQS#6 169
M_A_DQS#7 186
M_A_DQ[63:0] (8)
M_A_DQ0 5
M_A_DQ1 7
M_A_DQ2 15
M_A_DQ3 17
M_A_DQ4 4
M_A_DQ5 6
M_A_DQ6 16
M_A_DQ7 18
M_A_DQ8 21
M_A_DQ9 23
M_A_DQ10 33
M_A_DQ11 35
M_A_DQ12 22
M_A_DQ13 24
M_A_DQ14 34
M_A_DQ15 36
M_A_DQ16 39
M_A_DQ17 41
M_A_DQ18 51
M_A_DQ19 53
M_A_DQ20 40
M_A_DQ21 42
M_A_DQ22 50
M_A_DQ23 52
M_A_DQ24 57
M_A_DQ25 59
M_A_DQ26 67
M_A_DQ27 69
M_A_DQ28 56
M_A_DQ29 58
M_A_DQ30 68
M_A_DQ31 70
M_A_DQ32 129
M_A_DQ33 131
M_A_DQ34 141
M_A_DQ35 143
M_A_DQ36 130
M_A_DQ37 132
M_A_DQ38 140
M_A_DQ39 142
M_A_DQ40 147
M_A_DQ41 149
M_A_DQ42 157
M_A_DQ43 159
M_A_DQ44 146
M_A_DQ45 148
M_A_DQ46 158
M_A_DQ47 160
M_A_DQ48 163
M_A_DQ49 165
M_A_DQ50 175
M_A_DQ51 177
M_A_DQ52 164
M_A_DQ53 166
M_A_DQ54 174
M_A_DQ55 176
M_A_DQ56 181
M_A_DQ57 183
M_A_DQ58 191
M_A_DQ59 193
M_A_DQ60 180
M_A_DQ61 182
M_A_DQ62 192
M_A_DQ63 194
SA0_DIM0
SA1_DIM0
R336 10K
R333 10K
SO-DIMM Address
SA0_DIM0 = 0, SA1_DIM0 = 0
SPD 0xA0
TS 0x30
SA0_DIM0 = 1, SA1_DIM0 = 0
SPD 0xA2
TS 0x32
M1 for Arrandale
4
M3 for Clarksfield
+1.5V_DDR
+3.3V_RUN
V_DDR_MCP_REF
RJ6
0JB_0603
R335 1K_F
R334 1K_F
(12) SA_DIMM_VREF
C329 2.2U/16V_0603 CAP0603
C378 0.1U/10V
C338 2.2U/16V_0603 CAP0603
C337 0.1U/10V
C375 2.2U/16V_0603 CAP0603
C363 0.1U/10V
C299 10U/10V CAP0805
+0.75V_DDR_VTT
DESIGN 1.6 showed that both M1 and M3 should be con-currently implemented for both CPU
CN605B
MOLEX_78121-0001
PAD T13
(7,15) TS#_DIMM
(7,15) DDR3_DRAMRST#
VREF_DQ_DIMM0
VDD1 VDD2 VDD3 VDD4 VDD5 VDD6 VDD7 VDD8 VDD9 VDD10 VDD11 VDD12 VDD13 VDD14 VDD15 VDD16 VDD17 VDD18
VDDSPD
NC1 NC2 TEST
EVENT# RESET#
VREF-DQ VREF-CA
VSS1 VSS2 VSS3 VSS4 VSS5 VSS6 VSS7 VSS8 VSS9 VSS10 VSS11 VSS12 VSS13 VSS14 VSS15
VSS16 VSS17 VSS18 VSS19 VSS20 VSS21 VSS22 VSS23 VSS24 VSS25 VSS26 VSS27 VSS28 VSS29 VSS30 VSS31 VSS32 VSS33 VSS34 VSS35 VSS36 VSS37 VSS38 VSS39 VSS40 VSS41 VSS42 VSS43 VSS44 VSS45 VSS46 VSS47 VSS48 VSS49 VSS50 VSS51 VSS52
VTT1 VTT2
GND1 GND2
Place these caps close to Pin203 and 204.
C309 1U/10V CAP0603
C316 1U/10V CAP0603
C347 1U/10V CAP0603
C351 1U/10V CAP0603
SODIMM A DECOUPLING
C307 330U/6.3V POS7343H19
C353 10U/10V CAP0805
C345 10U/10V CAP0805
C314 10U/10V CAP0805
C341 10U/10V CAP0805
C315 10U/10V CAP0805
C340 10U/10V CAP0805
C327 *10U/10V_NC CAP0805
C343 *10U/10V_NC CAP0805
C334 0.1UF/16V
C348 0.1UF/16V
C349 0.1UF/16V
C335 0.1UF/16V
Layout Note:
0.1uF Caps for CMD,CLK,CTRL return path
Place Caps on the same side as SO-DIMM
and close to VDD Pin (9/9).
Title
DDR3 SO-DIMM1(204P)
Size
Document Number
Dell/FLEX Confidential
Rev X02
Date: Thursday, October 22, 2009
Sheet 14 of 68



Title	DDR3 SO-DIMM2(204P)
Size	Document Number: Dell/FLEX Confidential
Rev	X02
Date:	Thursday, October 22, 2009
Sheet	15 of 68

IBEX PEAK-M (HDA,JTAG,SATA)



RTC BAT Conn
BT601
MOLEX_53398-0271
+3.3V_ALW_17020
+RTC_CELL
D604
BAT54C
BAT_D
R672 1K
C233 1U/10V_0603 CAP0603
C820 1U/10V_0603 CAP0603
C237 1U/10V_0603 CAP0603
C243 15P/50V
C247 18P/50V
Y3 32.768KHz 12.5pF_+-10ppm
R243 10M
R804 20K
R236 20K
R240 1M_F
R228 330K
RTC_X1
RTC_X2
RTC_RST#
SRTC_RST#
SM_INTRUDER#
PCH_INTVRMEN
INTVRMEN- Integrated SUS 1.1V VRM Enable
High - Enable Internal VRs
VTAP Assumed as 1.1V
PCH_XDP_TRST# R848 *51_NC
PCH_XDP_TCLK R274 51
Close PCH
U9A
RTCX1
RTCX2
RTCRST#
SRTCRST#
INTRUDER#
INTVRMEN
RTC
LPC
FWH0 / LAD0
FWH1 / LAD1
FWH2 / LAD2
FWH3 / LAD3
FWH4 / LFRAME#
LDRQ0#
LDRQ1# / GPIO23
SERIRQ
LPC_LAD0 (39,41)
LPC_LAD1 (39,41)
LPC_LAD2 (39,41)
LPC_LAD3 (39,41)
LPC_LFRAME# (39,41)
LPC_DRQ0# (39)
LPC_DRQ1# PAD T752
IRQ_SERIRQ (39,41)
R840 8.2K_F
+3.3V_RUN
(46) HDA_BITCLK
(26) HDA_BITCLK_MXM
(46) HDA_SYNC
(26) HDA_SYNC_MXM
(46) SPKR
(46) HDA_RESET#
(26) HDA_RESET#_MXM
(46) HDA_SDATA_IN
(26) HDA_SDATA_IN_MXM
(46) HDA_SDATA_OUT
(26) HDA_SDATA_OUT_MXM
R206 33
R205 33
R210 33
R209 33
R275 0
R197 33
R198 33
R214 33
R213 33
HDA_BIT_CLK
HDA_SYNC_C
PCH_HDA_SPKR
PCH_HDA_RST#
PCH_HDA_SDO
T766 PAD NC_HDA_SDIN2
T765 PAD NC_HDA_SDIN3
GPIO33
NC_HDA_DOCK_RST_N
HDA_BCLK
HDA_SYNC
SPKR
HDA_RST#
HDA_SDIN0
HDA_SDIN1
HDA_SDIN2
HDA_SDIN3
HDA_SDO
HDA_DOCK_EN# / GPIO33
HDA_DOCK_RST# / GPIO13
IHDA
SATA
SATA0RXN
SATA0RXP
SATA0TXN
SATA0TXP
SATA_RXN0 (37)
SATA_RXP0 (37)
SATA_TXN0_C (37)
SATA_TXP0_C (37)
To HDD
SATA1RXN
SATA1RXP
SATA1TXN
SATA1TXP
SATA_RXN1 (37)
SATA_RXP1 (37)
SATA_TXN1_C (37)
SATA_TXP1_C (37)
To ODD
SATA2RXN
SATA2RXP
SATA2TXN
SATA2TXP
NC_SATA_RXN2 PAD T795
NC_SATA_RXP2 PAD T799
NC_SATA_TXN2 PAD T796
NC_SATA_TXP2 PAD T801
If SATA ports not be implemented. Left unconnected.
SATA3RXN
SATA3RXP
SATA3TXN
SATA3TXP
NC_SATA_RXN3 PAD T7
NC_SATA_RXP3 PAD T8
NC_SATA_TXN3 PAD T10
NC_SATA_TXP3 PAD T9
If SATA ports not be implemented. Left unconnected.
SATA4RXN
SATA4RXP
SATA4TXN
SATA4TXP
SATA_RXN4 (36)
SATA_RXP4 (36)
SATA_TXN4_C (36)
SATA_TXP4_C (36)
To eSATA+USB CONN
SATA5RXN
SATA5RXP
SATA5TXN
SATA5TXP
SATA_RXN5 (37)
SATA_RXP5 (37)
SATA_TXN5_C (37)
SATA_TXP5_C (37)
To HDD
SATAICOMPO
SATAICOMPI
+V1.1S
R822 37.4_F
(13) PCH_XDP_TCLK
(13) PCH_XDP_TMS
(13) PCH_XDP_TDI
(13) PCH_XDP_TDO
(13) PCH_XDP_TRST#
JTAG_TCK
JTAG_TMS
JTAG_TDI
JTAG_TDO
JTAG_RST#
JTAG
SPI_CLK
SPI_CS_N0
NC_SPI_CS_N1
T804 PAD
SPI_SI
SPI_SO 33 R265 SPI_SO_R
SPI_CLK
SPI_CS0#
SPI_CS1#
SPI_MOSI
SPI_MISO
SPI
IbexPeak-M
R859 10K
SATALED#
SATA_ACT# (41,43)
TO INDICATE LED BOARD
SATA0GP / GPIO21
SATA1GP / GPIO19
NC_GPIO21
R873 8.2K_F
R297 8.2K_F
GPIO2 (51)
RJ1 200JA_0402
RJ10 200JA_0402
+V3.3A_PCH
R271 200_F
PCH_XDP_TMS
PCH_XDP_TDI
PCH_XDP_TDO
R273 100
R272 100
R400 100
Close PCH
Close XDP CONN
32Mbit (4M Byte) SPI,Support iME
R778 3.3K
R786 3.3K
C803 0.1U/25V
U8
SST25VF032B-66-4I-S2AF
CE#
SCK
SI
SO
VDD
HOLD#
WP#
VSS
C222 *22p/50V_NC
EMI
*10p/50V_NC C216 HDA_BITCLK_MXM
EMI
R294 *1K_NC SPKR
R793 *1K_NC SPI_SI
NC_HDA_DOCK_RST_N R801 *10K_NC
HDA_BITCLK
R196 *22_NC
C212 *1p/50V_NC
EMI
GPIO33 R219 *10K_NC

Internal Pull-Up and Pull-Down

	Mark
Pull-Up	P+
Pull-Down	P-

NO REBOOT STRAP		
HDA_SPKR	NA	Low=Default
	MOUNTED	High=No Reboot

iTPM ENABLE/DISABLE		
SPI_SI	NA	Low=Disable(Default)
	MOUNTED	High=Enable

Flash Descriptor Security	
High	Flash Descriptor will be in effect (default)
Low	Descriptor Security will be overridden

Title	PCH(LPC,RTC,HDA,SATA)1/9
Size	Document Number: Dell/FLEX Confidential
Rev	X02
Date:	Tuesday, October 27, 2009
Sheet	16 of 68

IBEX PEAK-M (PCI-E,SMBUS,CLK)

PCI-E* x1	Usage
Lane 1	Express Card
Lane2	WiMax
Lane 3	BT
Lane 4	Card reader/1394
Lane 5	NC
Lane 6	PHY
Lane 7	NC
Lane 8	NC

U9B

PCI-E* Controller Link

SMBus

PEG

From CLK BUFFER

Clock Flex

IbexPeak-M

TO SMBUS HUB

TO LAN

TO KBC

TO MXM1

not implemented

EMI

0 ohm

SMBUS HUB

U601 NXP_PCA9518PW

TO ExpressCard

TO CLK GEN,DDR3*2

TO G-Sensor

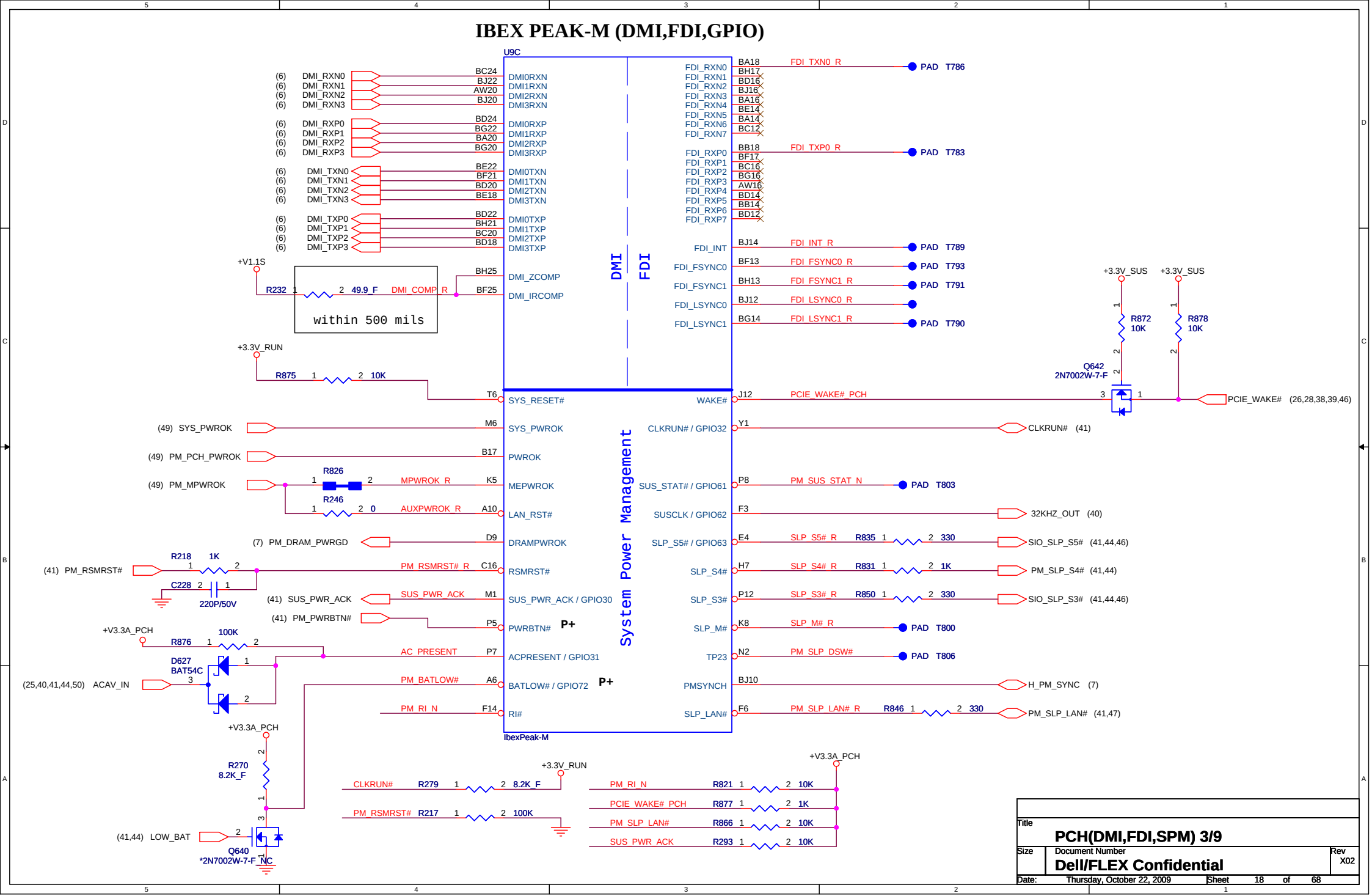
TO WLAN,UWB

Title: PCH(PCIE,SMBUS,CLK)2/9

Size: Document Number: Dell/FLEX Confidential Rev: X02

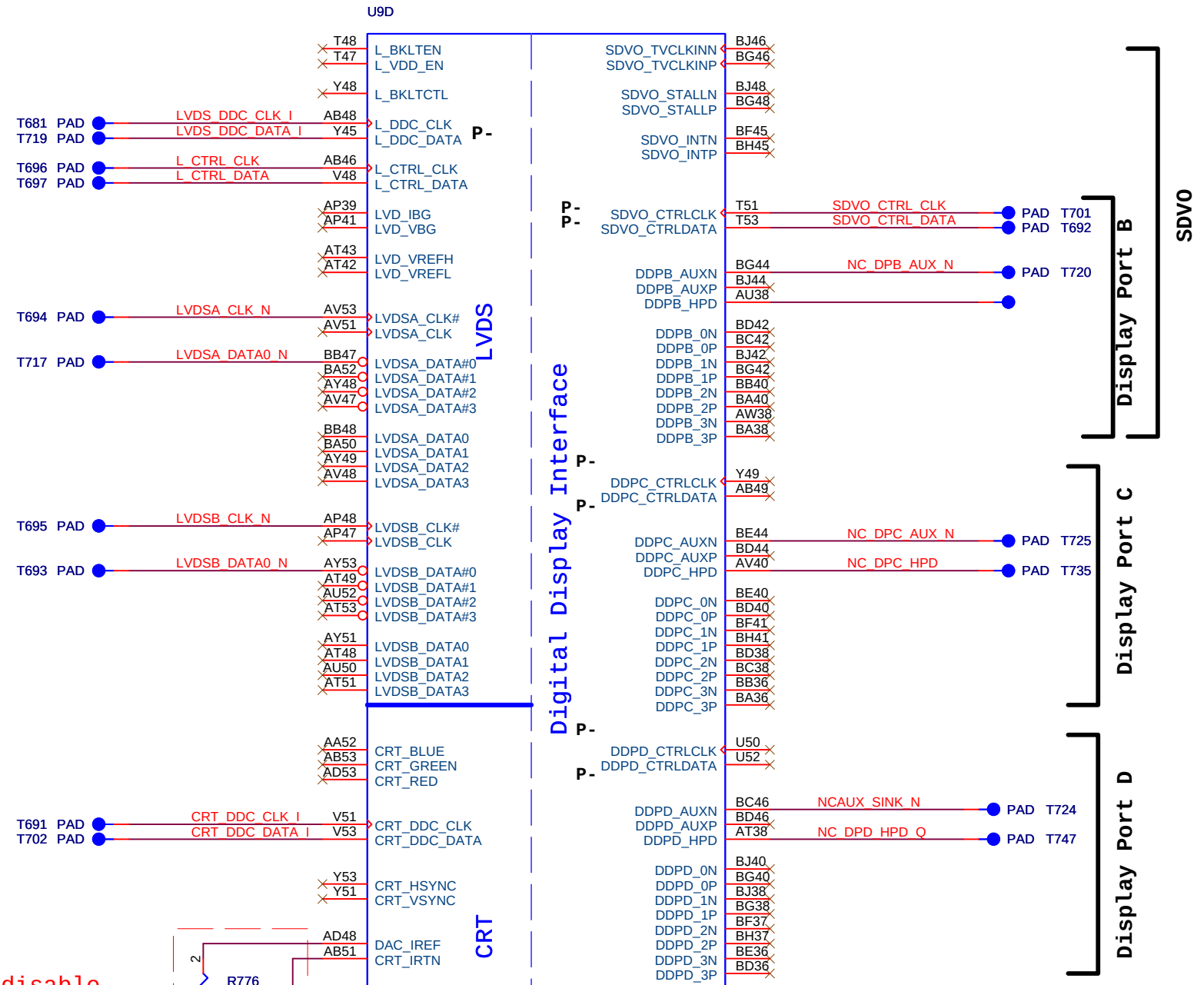
Date: Thursday, October 22, 2009 Sheet 17 of 68

IBEX PEAK-M (DMI,FDI,GPIO)



Title	PCH(DMI,FDI,SPM) 3/9	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 18 of 68	

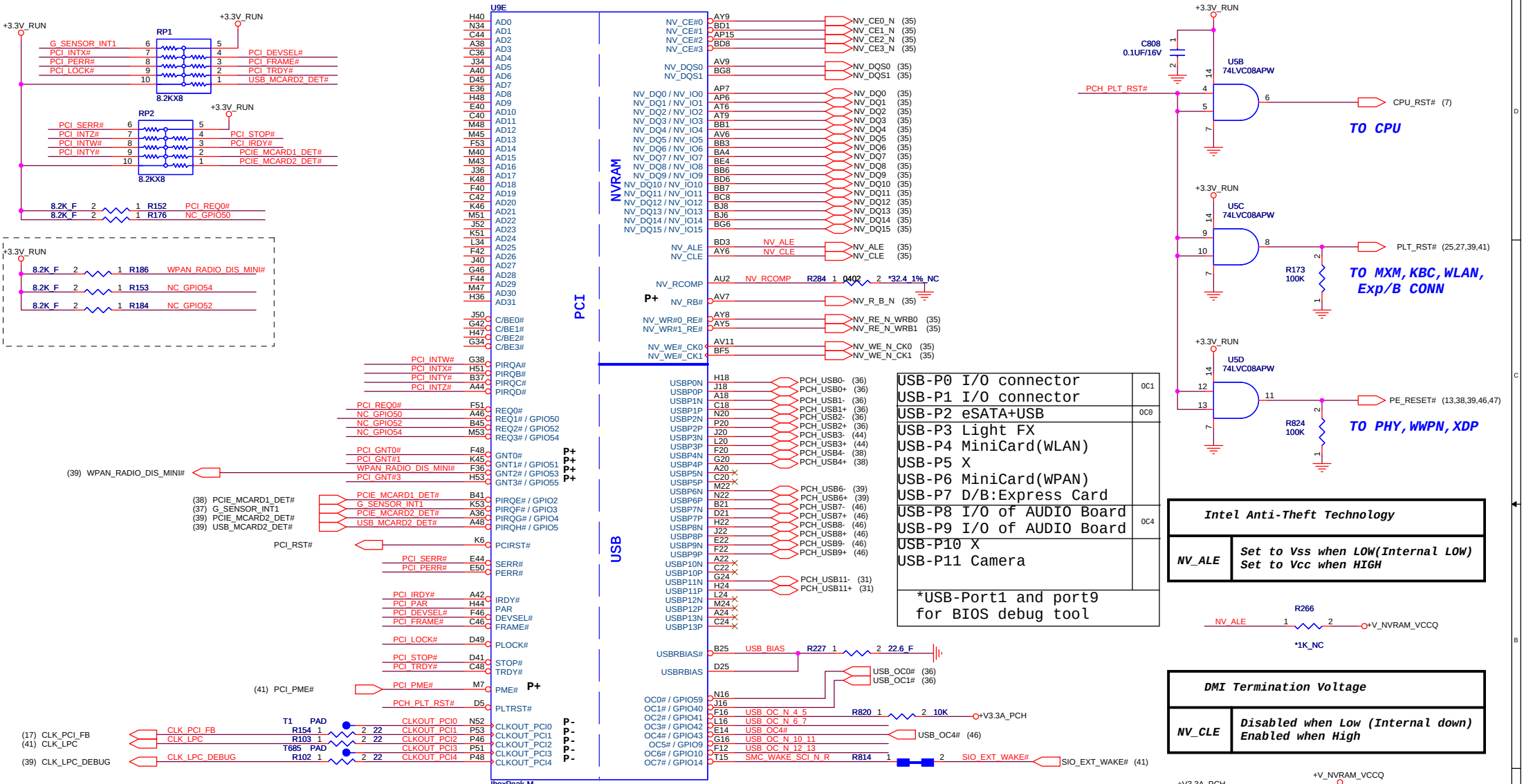
IBEX PEAK-M (LVDS,DDI)



Internal VGA disable
keep R218 to GND and
IRTN keep connect to GND

Title	PCH(CRT,LVDS,DDI) 4/9	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 19 of 68	

IBEX PEAK-M (PCI,USB,INTEL(R) TURBO MEMORY)



USB-P0 I/O connector	0C1
USB-P1 I/O connector	
USB-P2 eSATA+USB	0C0
USB-P3 Light FX	
USB-P4 MiniCard(WLAN)	
USB-P5 X	
USB-P6 MiniCard(WPAN)	
USB-P7 D/B:Express Card	
USB-P8 I/O of AUDIO Board	0C4
USB-P9 I/O of AUDIO Board	
USB-P10 X	
USB-P11 Camera	

*USB-Port1 and port9 for BIOS debug tool

Intel Anti-Theft Technology	
NV_ALE	Set to Vss when LOW(Internal LOW) Set to Vcc when HIGH

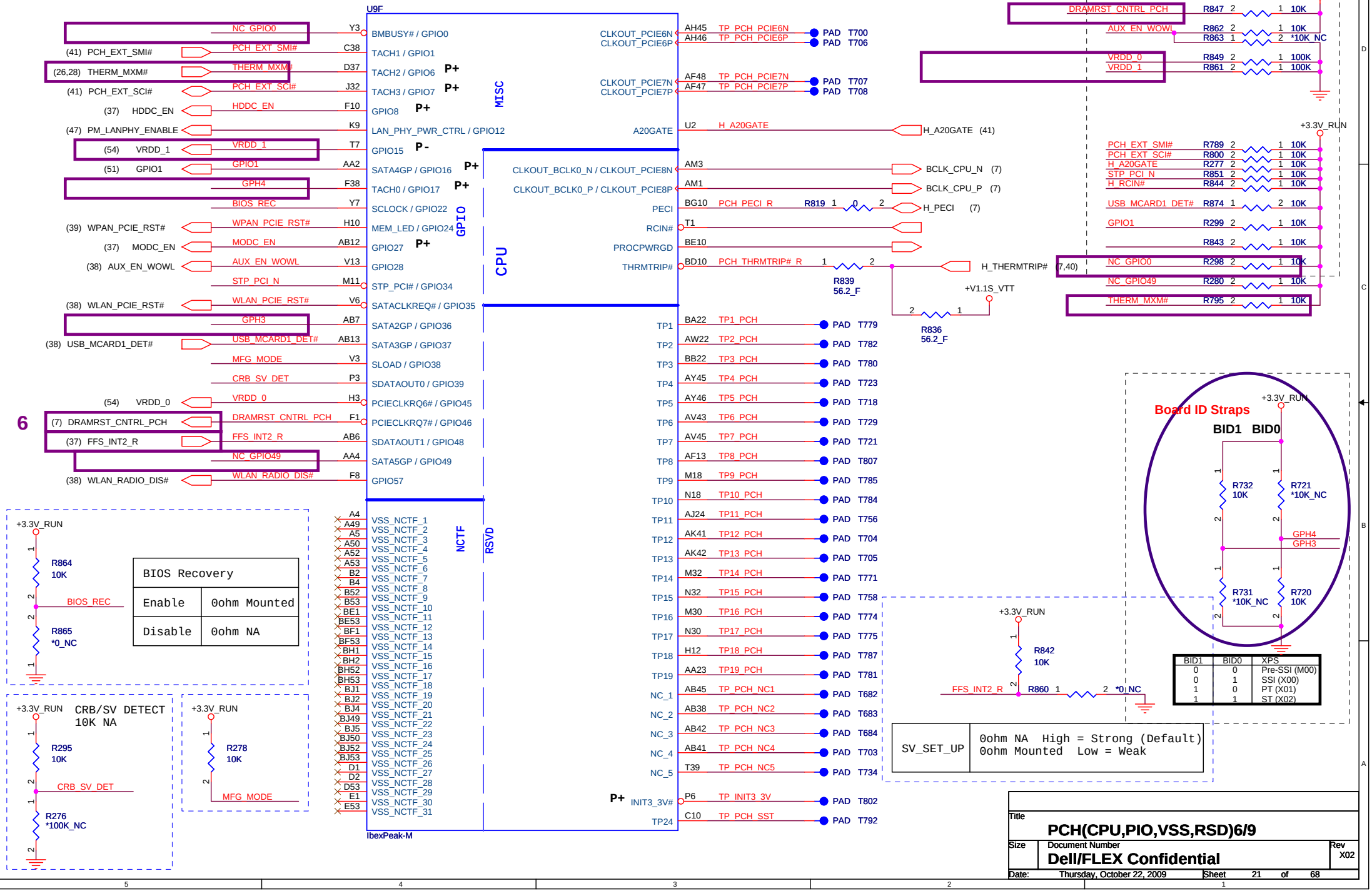
DMI Termination Voltage	
NV_CLE	Disabled when Low (Internal down) Enabled when High

A16 swap override Strap/Top-Block Swap Override jumper	
PCI_GNT_N3	Low = A16 swap override/Top-Block Swap Override enabled High = Default

Boot BIOS Strap(internal pull up 20k)		
PCI_GNT_N0	PCI_GNT_N1	Boot BIOS Location
0	0	LPC
0	1	Reserved (NAND)
1	0	PCI
1	1	SPI -> NOW

Title: PCH(PCI,USB,NVRAM) 5/9
Size: Document Number: Dell/FLEX Confidential
Rev: X02
Date: Thursday, October 22, 2009 Sheet 20 of 68

IBEX PEAK-M(GPIO,VSS_NCTF,RSVD)



Title	PCH(CPU,PIO,VSS,RSD)6/9	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 21 of 68	

IBEX PEAK-M(POWER)

Please note that all Ibex Peak-M rails with netnames +V1.1S and +V1.1M rails are actually +V1.05S and +V1.05M rails

1432mA

40mA

VCCIO Total 3062mA

196mA

37mA

69mA

61mA

58mA

156mA

85mA

VCC3_3 Total 357mA

If LVDS not use, VCCALVDS and VCCTXLVDS connect to GND.
If use LVDS, 3.3V and 1.8V power source need.

Internal VRM supply
Refer to P16 PCH_INTVRMEN

Internal VRM supply

If ONFI used, used 1.8V

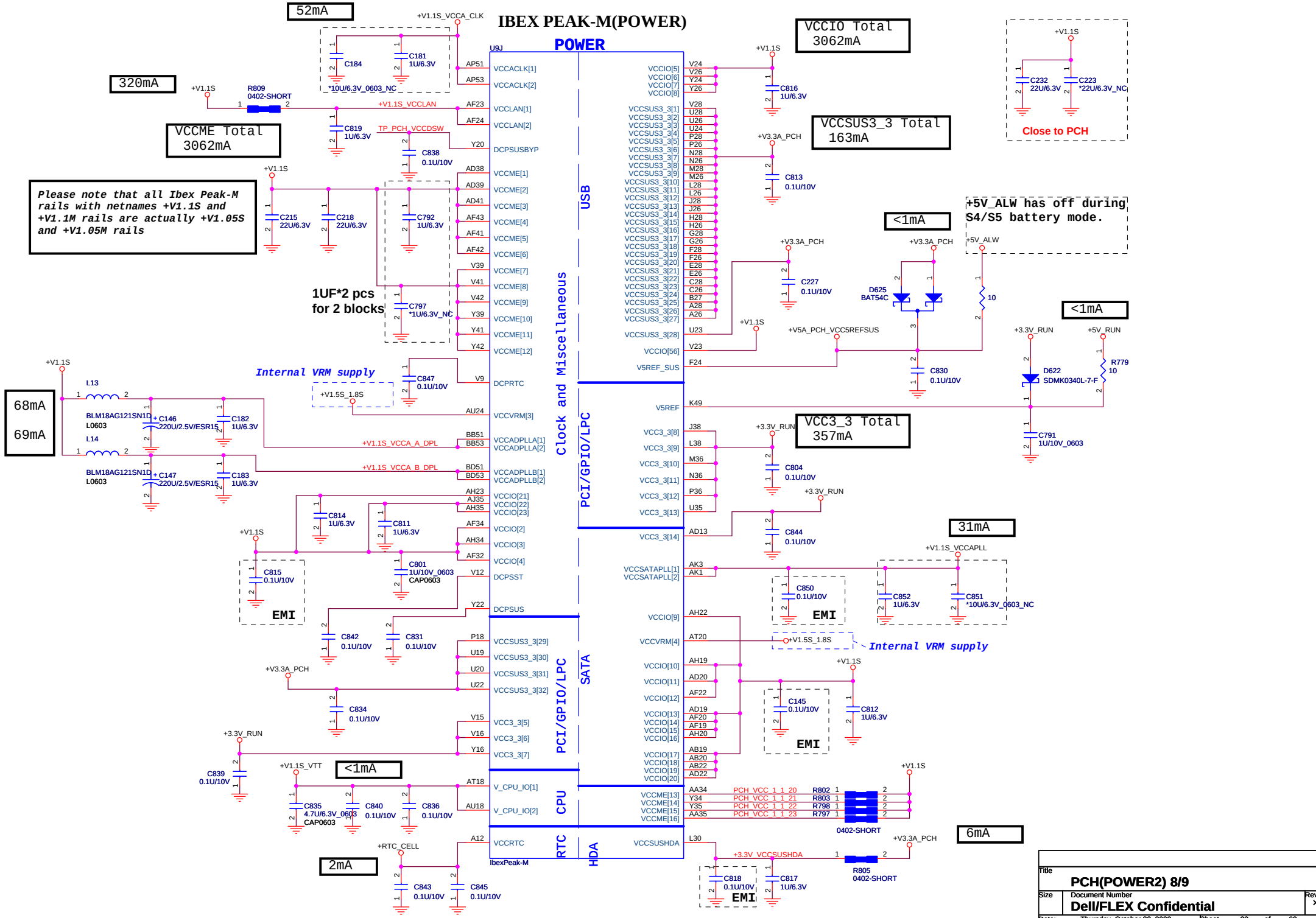
U9G

POWER

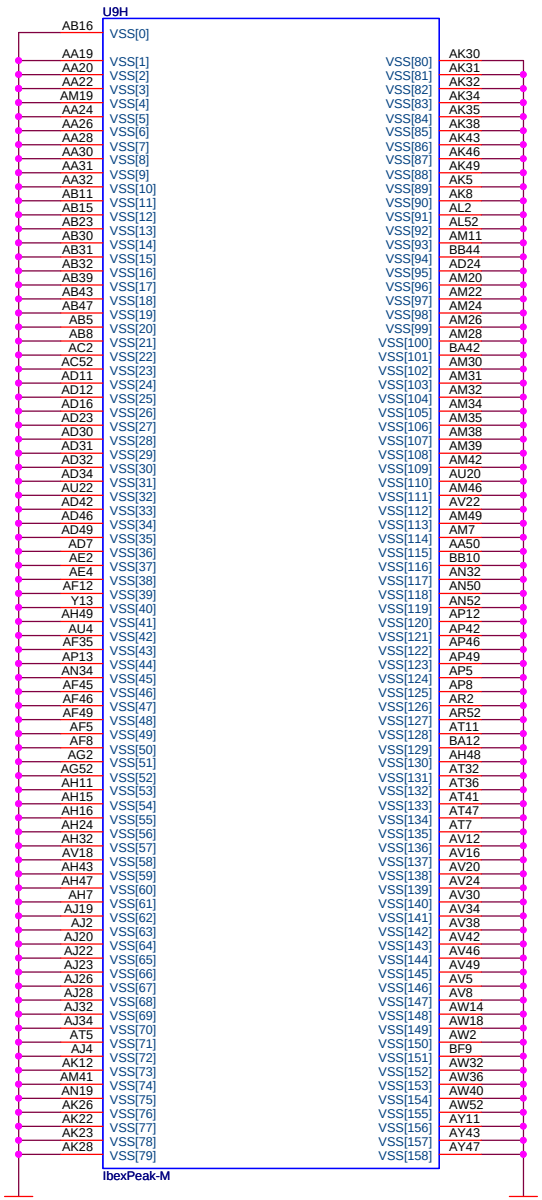
VCC CORE | CRT | LVDS | HVCMOS | DMI | PCI E* | NAND / SPI | FDI

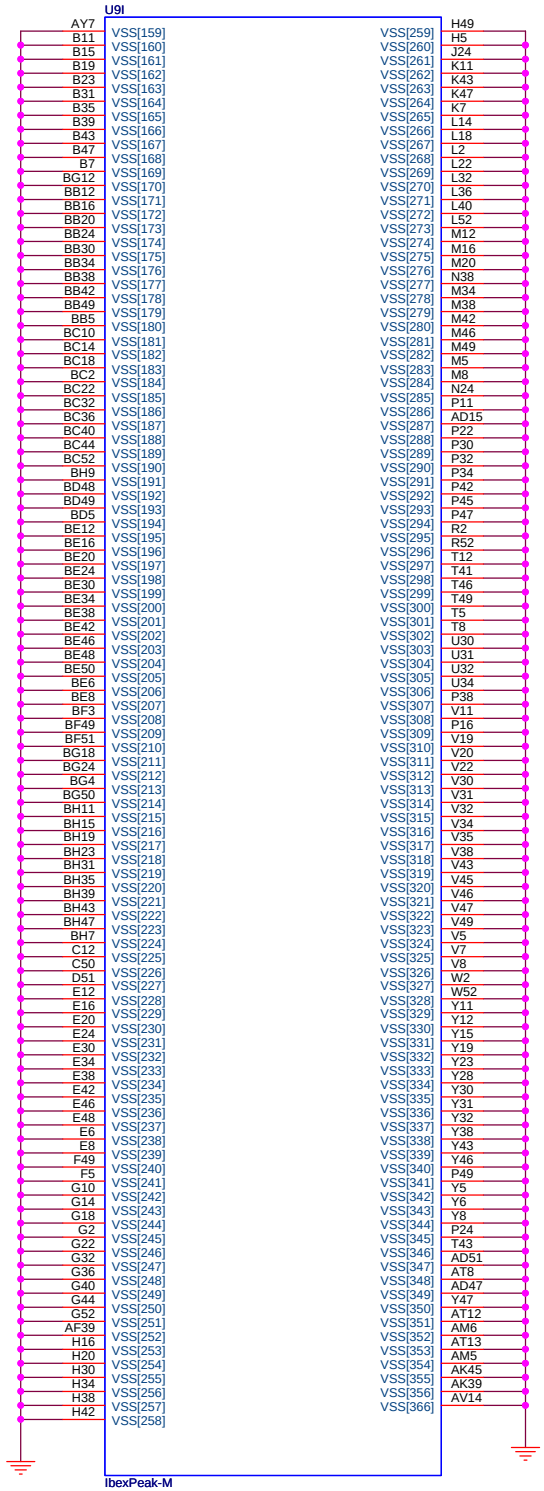
IbexPeak-M

Title	PCH(POWER1) 7/9	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 22 of 68	

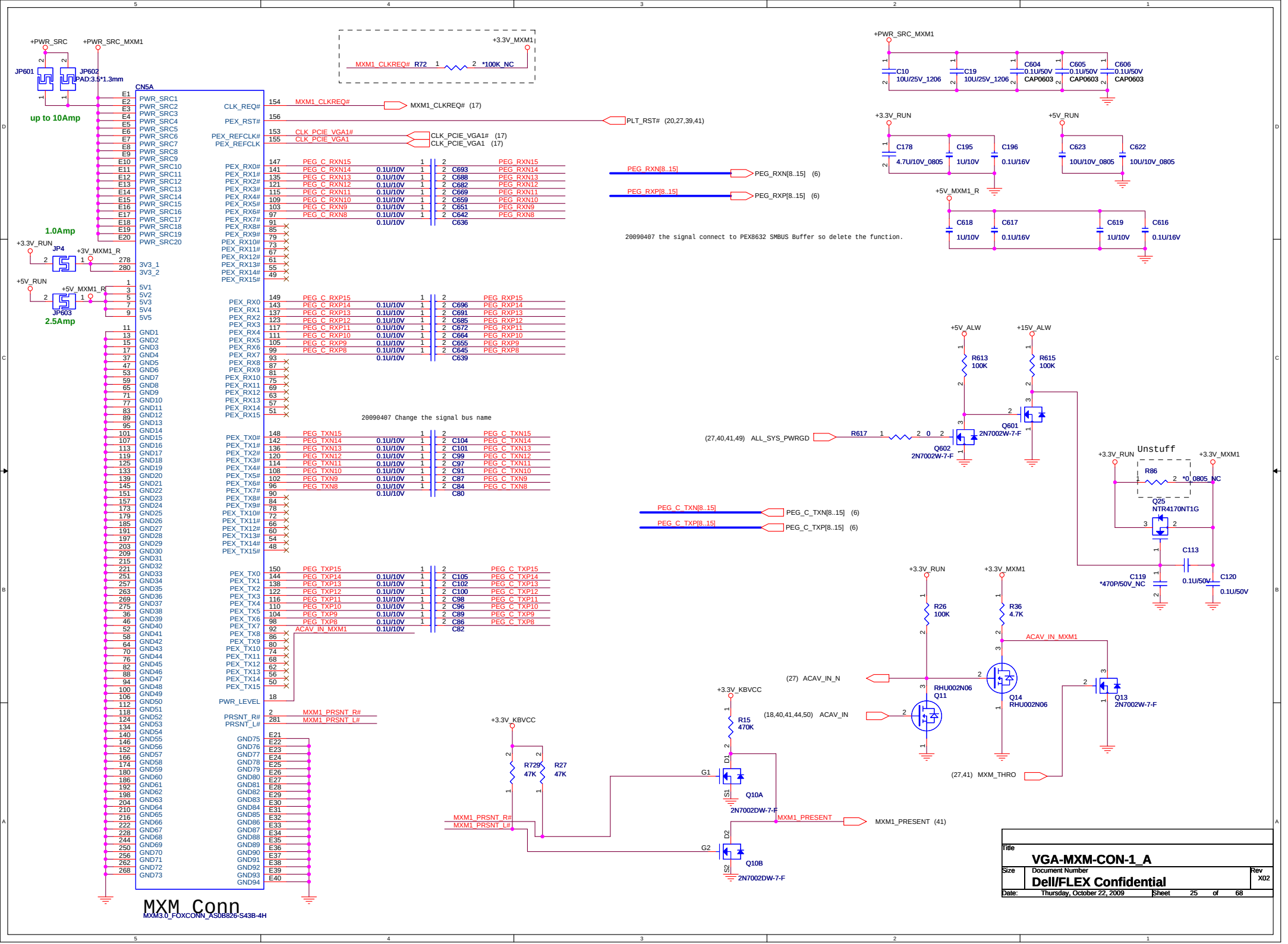

IBEX PEAK-M(POWER)
POWER
52mA
320mA
VCCME Total 3062mA
68mA
69mA
2mA
VCCIO Total 3062mA
VCCSUS3_3 Total 163mA
VCC3_3 Total 357mA
31mA
6mA
<1mA
Close to PCH
+5V_ALW has off during S4/S5 battery mode.
Please note that all Ibex Peak-M rails with netnames +V1.1S and +V1.1M rails are actually +V1.05S and +V1.05M rails
1UF*2 pcs for 2 blocks
Internal VRM supply
EMI
U9J
IbexPeak-M
USB
Clock and Miscellaneous
PCI/GPIO/LPC
SATA
CPU
RTC
HDA
Title
PCH(POWER2) 8/9
Size
Document Number
Dell/FLEX Confidential
Rev X02
Date: Thursday, October 22, 2009
Sheet 23 of 68

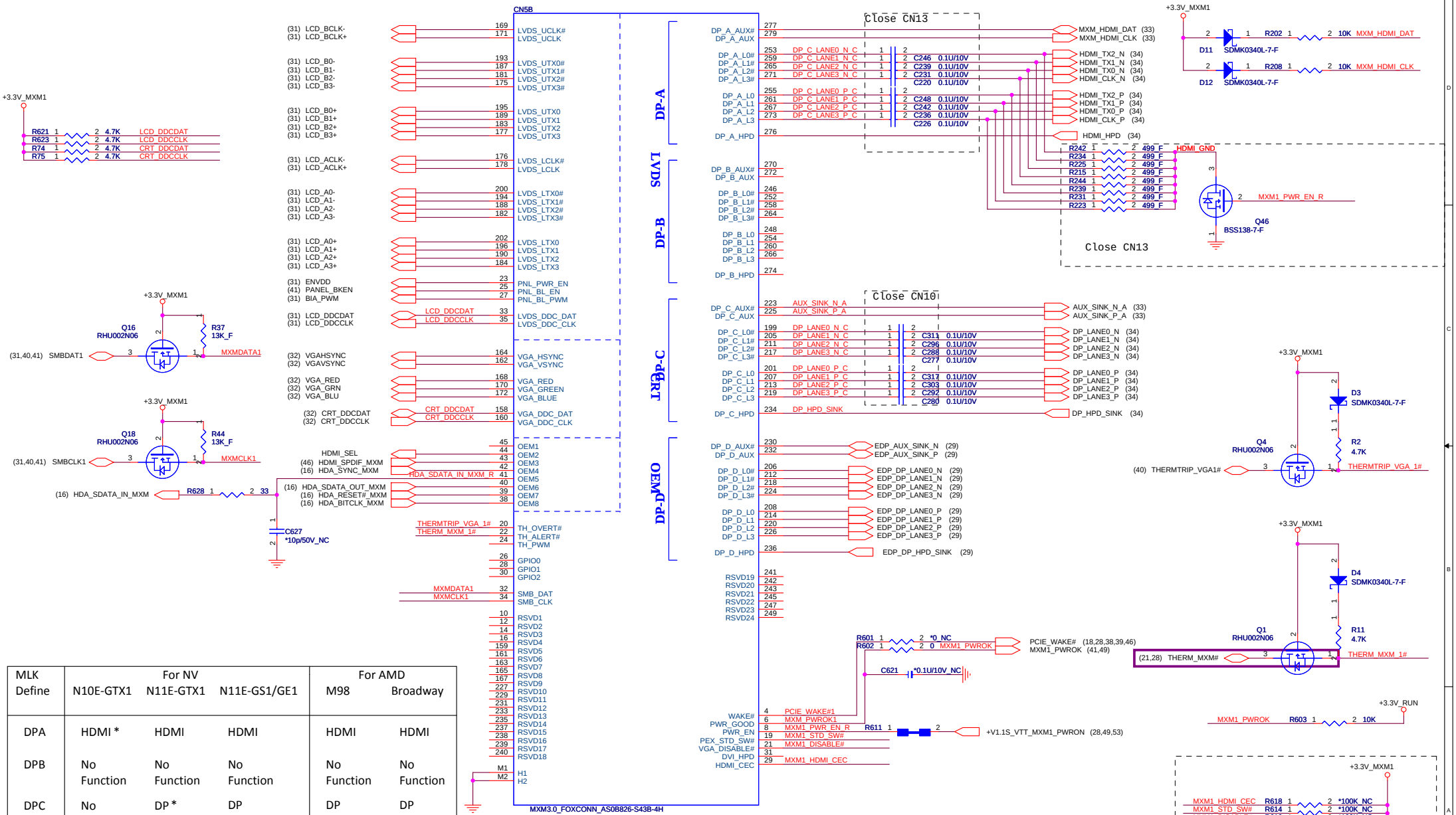
IBEX PEAK-M (GND)





Title	PCH(GND) 9/9	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 24 of 68	

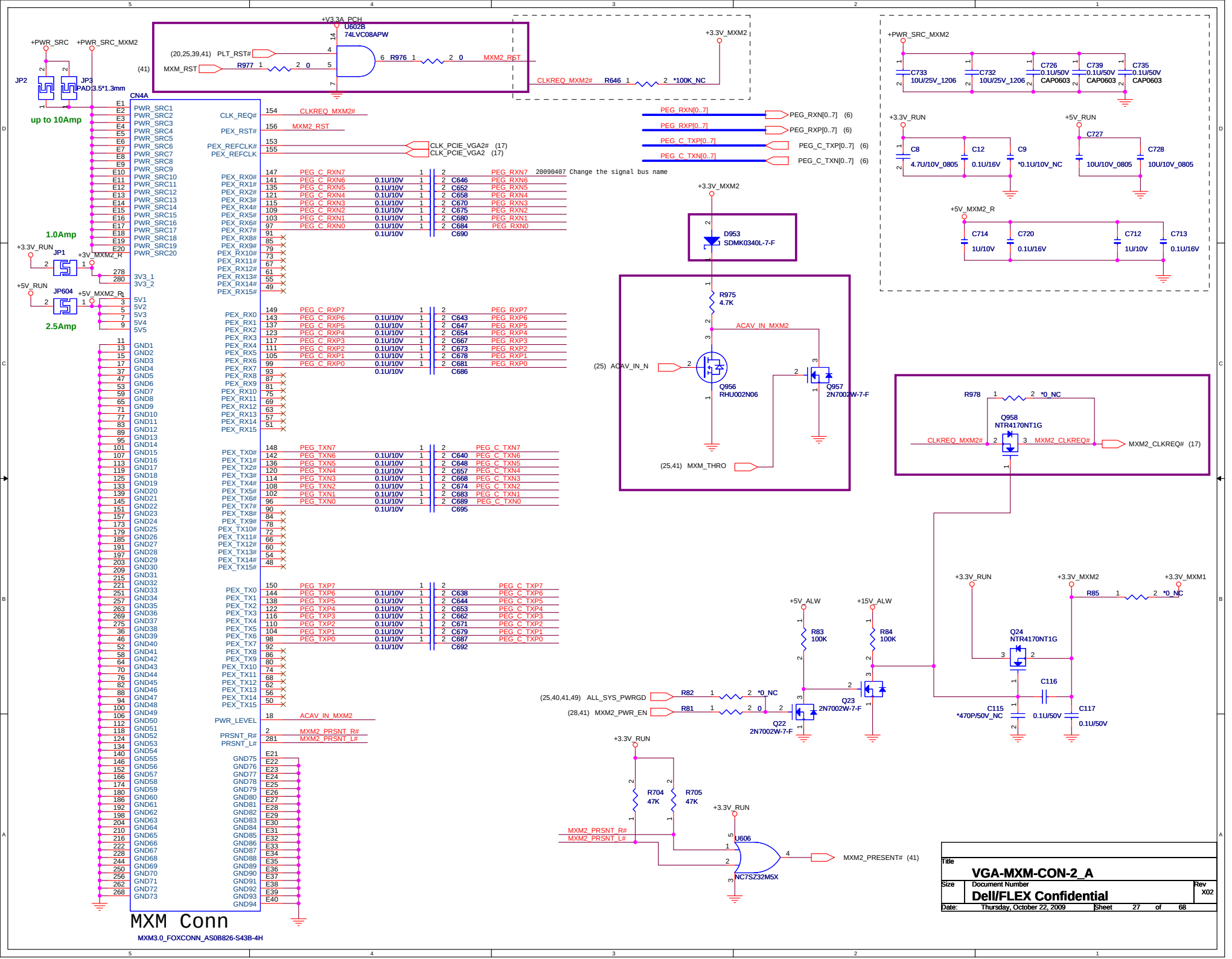

+PWR_SRC
+PWR_SRC_MXM1
JP601
JP602
PAD:3.5*1.3mm
up to 10Amp
CN5A
PWR_SRC1
PWR_SRC2
PWR_SRC3
PWR_SRC4
PWR_SRC5
PWR_SRC6
PWR_SRC7
PWR_SRC8
PWR_SRC9
PWR_SRC10
PWR_SRC11
PWR_SRC12
PWR_SRC13
PWR_SRC14
PWR_SRC15
PWR_SRC16
PWR_SRC17
PWR_SRC18
PWR_SRC19
PWR_SRC20
1.0Amp
+3.3V_RUN
JP4
+3V_MXM1_R
3V3_1
3V3_2
+5V_RUN
+5V_MXM1_R
JP603
2.5Amp
5V1
5V2
5V3
5V4
5V5
GND1
GND2
GND3
GND4
GND5
GND6
GND7
GND8
GND9
GND10
GND11
GND12
GND13
GND14
GND15
GND16
GND17
GND18
GND19
GND20
GND21
GND22
GND23
GND24
GND25
GND26
GND27
GND28
GND29
GND30
GND31
GND32
GND33
GND34
GND35
GND36
GND37
GND38
GND39
GND40
GND41
GND42
GND43
GND44
GND45
GND46
GND47
GND48
GND49
GND50
GND51
GND52
GND53
GND54
GND55
GND56
GND57
GND58
GND59
GND60
GND61
GND62
GND63
GND64
GND65
GND66
GND67
GND68
GND69
GND70
GND71
GND72
GND73
GND75
GND76
GND77
GND78
GND79
GND80
GND81
GND82
GND83
GND84
GND85
GND86
GND87
GND88
GND89
GND90
GND91
GND92
GND93
GND94
CLK_REQ#
PEX_RST#
PEX_REFCLK#
PEX_REFCLK
MXM1_CLKREQ#
CLK_PCIE_VGA1#
CLK_PCIE_VGA1
PEX_RX0#
PEX_RX1#
PEX_RX2#
PEX_RX3#
PEX_RX4#
PEX_RX5#
PEX_RX6#
PEX_RX7#
PEX_RX8#
PEX_RX9#
PEX_RX10#
PEX_RX11#
PEX_RX12#
PEX_RX13#
PEX_RX14#
PEX_RX15#
PEG_C_RXN15
PEG_C_RXN14
PEG_C_RXN13
PEG_C_RXN12
PEG_C_RXN11
PEG_C_RXN10
PEG_C_RXN9
PEG_C_RXN8
PEX_RX0
PEX_RX1
PEX_RX2
PEX_RX3
PEX_RX4
PEX_RX5
PEX_RX6
PEX_RX7
PEX_RX8
PEX_RX9
PEX_RX10
PEX_RX11
PEX_RX12
PEX_RX13
PEX_RX14
PEX_RX15
PEG_C_RXP15
PEG_C_RXP14
PEG_C_RXP13
PEG_C_RXP12
PEG_C_RXP11
PEG_C_RXP10
PEG_C_RXP9
PEG_C_RXP8
20090407 Change the signal bus name
PEX_TX0#
PEX_TX1#
PEX_TX2#
PEX_TX3#
PEX_TX4#
PEX_TX5#
PEX_TX6#
PEX_TX7#
PEX_TX8#
PEX_TX9#
PEX_TX10#
PEX_TX11#
PEX_TX12#
PEX_TX13#
PEX_TX14#
PEX_TX15#
PEG_TXN15
PEG_TXN14
PEG_TXN13
PEG_TXN12
PEG_TXN11
PEG_TXN10
PEG_TXN9
PEG_TXN8
PEX_TX0
PEX_TX1
PEX_TX2
PEX_TX3
PEX_TX4
PEX_TX5
PEX_TX6
PEX_TX7
PEX_TX8
PEX_TX9
PEX_TX10
PEX_TX11
PEX_TX12
PEX_TX13
PEX_TX14
PEX_TX15
PEG_TXP15
PEG_TXP14
PEG_TXP13
PEG_TXP12
PEG_TXP11
PEG_TXP10
PEG_TXP9
PEG_TXP8
ACAV_IN_MXM1
PWR_LEVEL
PRSNT_R#
PRSNT_L#
MXM1_PRSNT_R#
MXM1_PRSNT_L#
MXM Conn
MXM3.0_FOXCONN_AS0B826-S43B-4H
+3.3V_MXM1
MXM1_CLKREQ# R72 *100K_NC
MXM1_CLKREQ# (17)
PLT_RST# (20,27,39,41)
CLK_PCIE_VGA1# (17)
CLK_PCIE_VGA1 (17)
PEG_RXN[8..15]
PEG_RXN[8..15] (6)
PEG_RXP[8..15]
PEG_RXP[8..15] (6)
20090407 the signal connect to PEX8632 SMBUS Buffer so delete the function.
PEG_C_TXN[8..15]
PEG_C_TXN[8..15] (6)
PEG_C_TXP[8..15]
PEG_C_TXP[8..15] (6)
+PWR_SRC_MXM1
C10 10U/25V_1206
C19 10U/25V_1206
C604 0.1U/50V CAP0603
C605 0.1U/50V CAP0603
C606 0.1U/50V CAP0603
+3.3V_RUN
C178 4.7U/10V_0805
C195 1U/10V
C196 0.1U/16V
+5V_RUN
C623 10U/10V_0805
C622 10U/10V_0805
+5V_MXM1_R
C618 1U/10V
C617 0.1U/16V
C619 1U/10V
C616 0.1U/16V
+5V_ALW
+15V_ALW
R613 100K
R615 100K
Q601
Q602
2N7002W-7-F
(27,40,41,49) ALL_SYS_PWRGD
R617
Unstuff
+3.3V_RUN
+3.3V_MXM1
R86 *0_0805_NC
Q25 NTR4170NT1G
C113
C119 *470P/50V_NC
C120 0.1U/50V
+3.3V_RUN
+3.3V_MXM1
R26 100K
R36 4.7K
ACAV_IN_MXM1
(27) ACAV_IN_N
(18,40,41,44,50) ACAV_IN
RHU002N06
Q11
Q14
Q13
(27,41) MXM_THRO
+3.3V_KBVCC
R15 470K
R729 47K
R27 47K
D1
D2
G1
G2
S1
S2
Q10A
Q10B
MXM1_PRESENT
MXM1_PRESENT (41)
Title
VGA-MXM-CON-1_A
Size
Document Number
Dell/FLEX Confidential
Rev
X02
Date: Thursday, October 22, 2009
Sheet 25 of 68

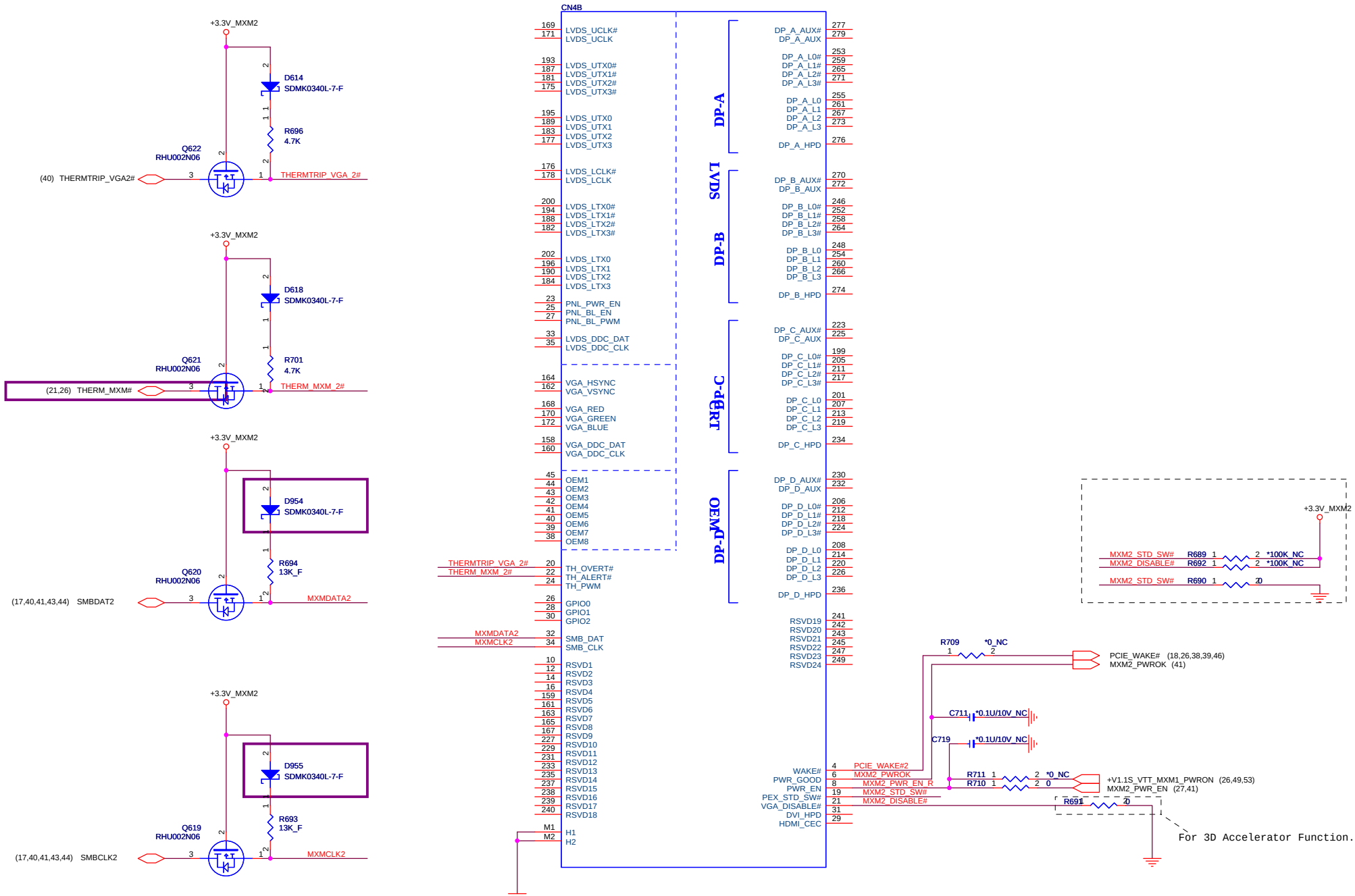


MLK Define	For NV			For AMD	
	N10E-GTX1	N11E-GTX1	N11E-GS1/GE1	M98	Broadway
DPA	HDMI *	HDMI	HDMI	HDMI	HDMI
DPB	No Function	No Function	No Function	No Function	No Function
DPC	No Function	DP *	DP	DP	DP
DPD	No Function	eDP *	eDP	No Function	eDP

Note: N10E-GTX1 HDMI output by S/W programming.
N11E-GTX1 DP/eDP can't support clone mode.

Title	VGA-MXM-CON-1_B	
Size	Document Number: Dell/FLEX Confidential	Rev X02
Date: Thursday, October 22, 2009	Sheet 26 of 68	


+PWR_SRC
+PWR_SRC_MXM2
JP2
JP3
PAD3.5*1.3mm
up to 10Amp
1.0Amp
2.5Amp
+3.3V_RUN
JP1
+3V_MXM2_R
+5V_RUN
JP604
+5V_MXM2_R
CN4A
MXM Conn
MXM3.0_FOXCONN_AS0B826-S43B-4H
+V3.3A_PCH
U602B
74LVC08APW
(20,25,39,41) PLT_RST#
(41) MXM_RST
R977
R976
MXM2_RST
+3.3V_MXM2
CLKREQ_MXM2#
R646
*100K_NC
PEG_RXN[0..7]
PEG_RXP[0..7]
PEG_C_TXP[0..7]
PEG_C_TXN[0..7]
PEG_RXN[0..7] (6)
PEG_RXP[0..7] (6)
PEG_C_TXP[0..7] (6)
PEG_C_TXN[0..7] (6)
20090407 Change the signal bus name
D953
SDMK0340L-7-F
R975
4.7K
ACAV_IN_MXM2
(25) ACAV_IN_N
Q956
RHU002N06
Q957
2N7002W-7-F
(25,41) MXM_THRO
+PWR_SRC_MXM2
C733
10U/25V_1206
C732
10U/25V_1206
C726
0.1U/50V
CAP0603
C739
0.1U/50V
CAP0603
C735
0.1U/50V
CAP0603
+3.3V_RUN
C8
4.7U/10V_0805
C12
0.1U/16V
C9
*0.1U/10V_NC
+5V_RUN
C727
10U/10V_0805
C728
10U/10V_0805
+5V_MXM2_R
C714
1U/10V
C720
0.1U/16V
C712
1U/10V
C713
0.1U/16V
R978
*0_NC
Q958
NTR4170NT1G
CLKREQ_MXM2#
MXM2_CLKREQ#
MXM2_CLKREQ# (17)
+5V_ALW
+15V_ALW
R83
100K
R84
100K
R82
R81
(25,40,41,49) ALL_SYS_PWRGD
(28,41) MXM2_PWR_EN
Q23
2N7002W-7-F
Q22
2N7002W-7-F
+3.3V_MXM1
R85
Q24
NTR4170NT1G
C116
C115
*470P/50V_NC
C117
0.1U/50V
+3.3V_RUN
R704
47K
R705
47K
MXM2_PRSNT_R#
MXM2_PRSNT_L#
U606
NC7SZ32M5X
MXM2_PRESENT# (41)
Title
VGA-MXM-CON-2_A
Size
Document Number
Dell/FLEX Confidential
Rev
X02
Date: Thursday, October 22, 2009
Sheet 27 of 68

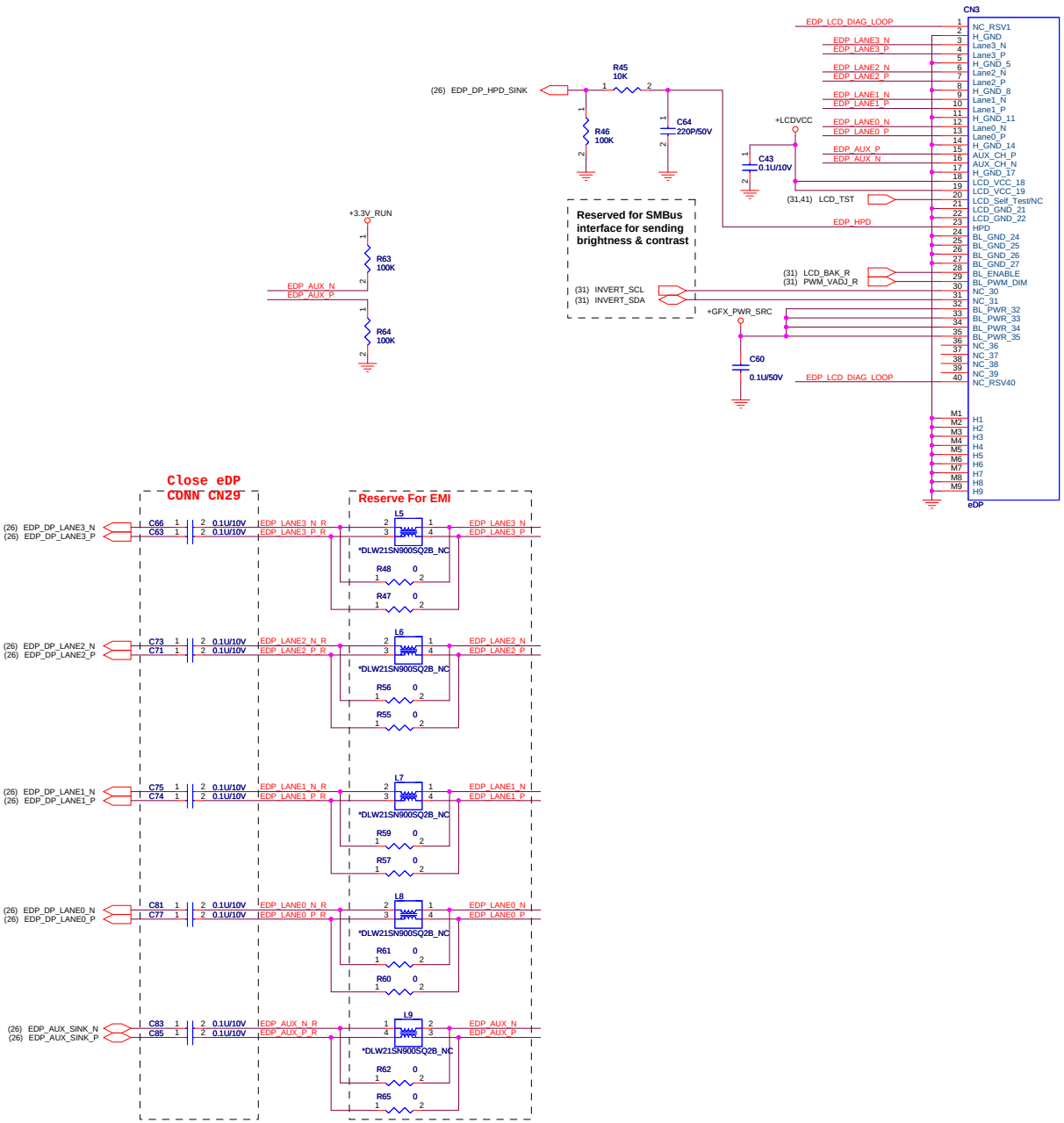


MXM Conn

MXM3.0_FOXCONN_AS0B826-S43B-4H

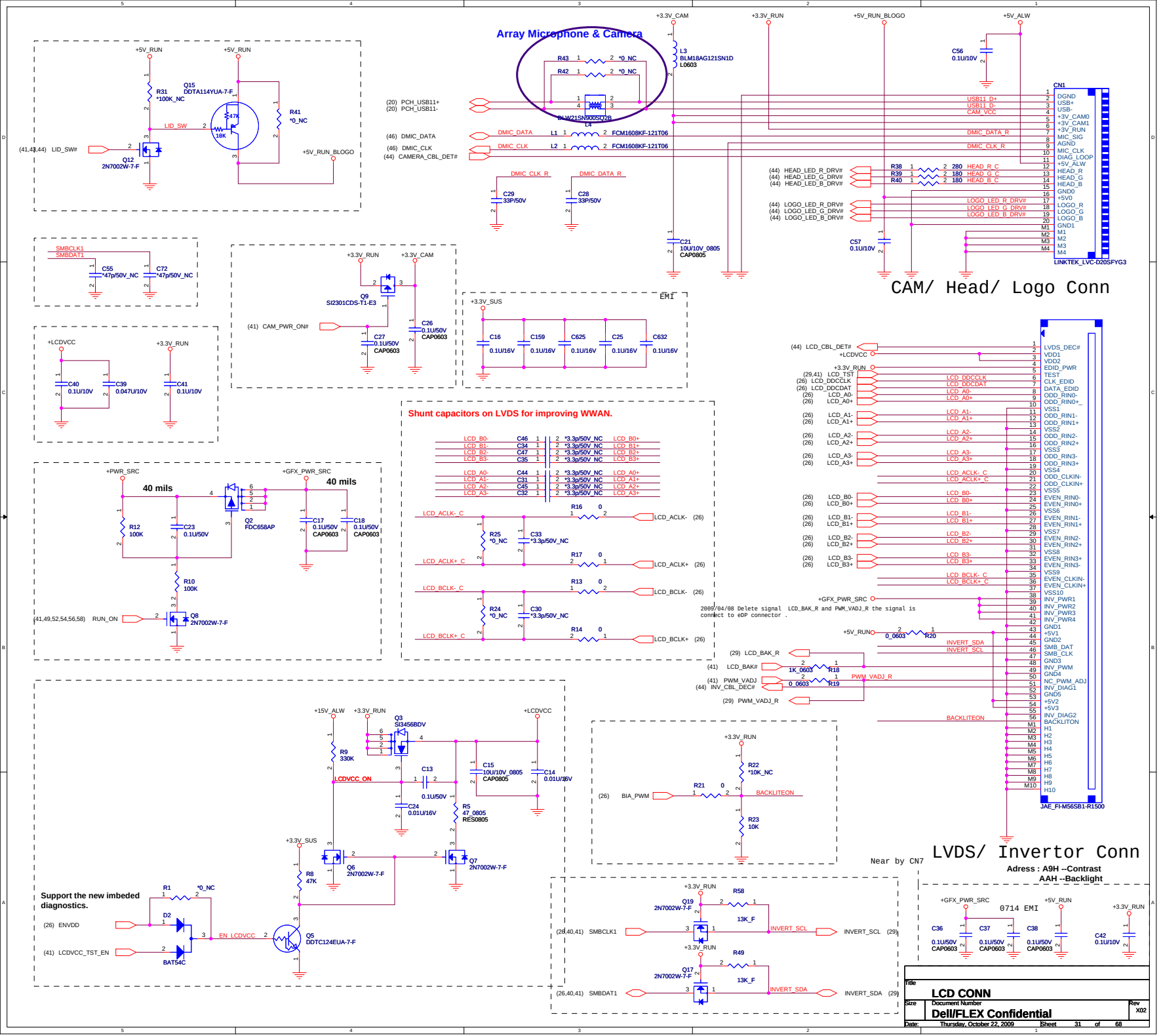
Title	VGA-MXM-CON-2_B	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 28 of 68	

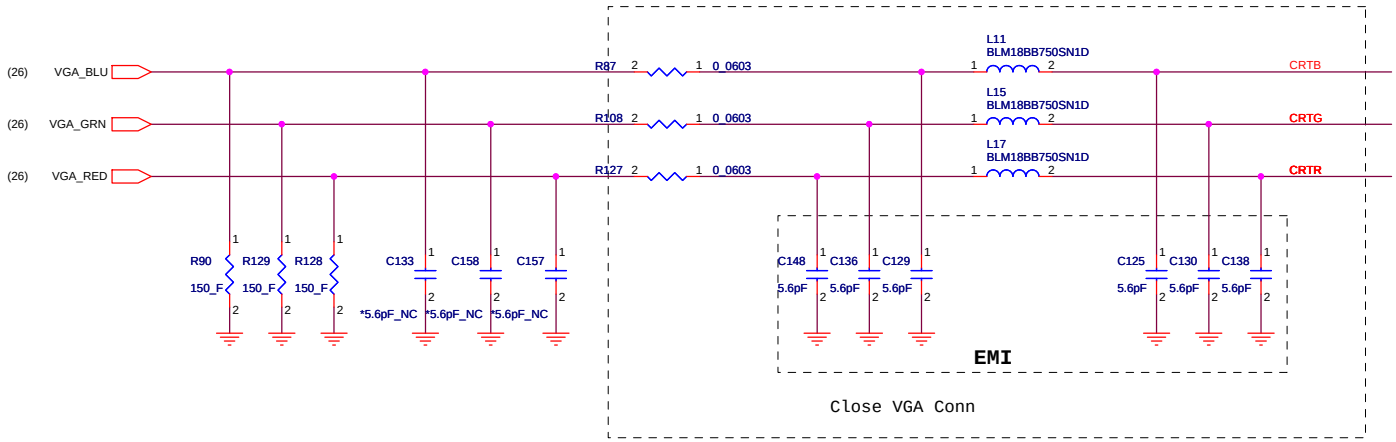
Embedded DISPLAY PORT CONNECTOR

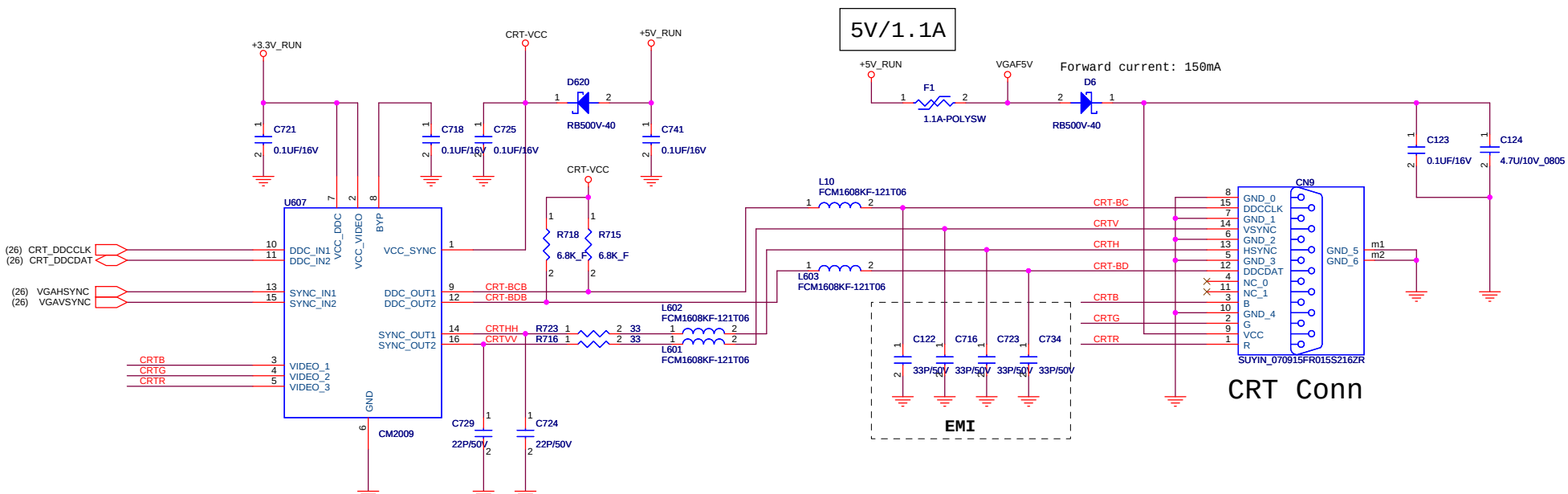


Title	eDP CONN	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 29 of 68	

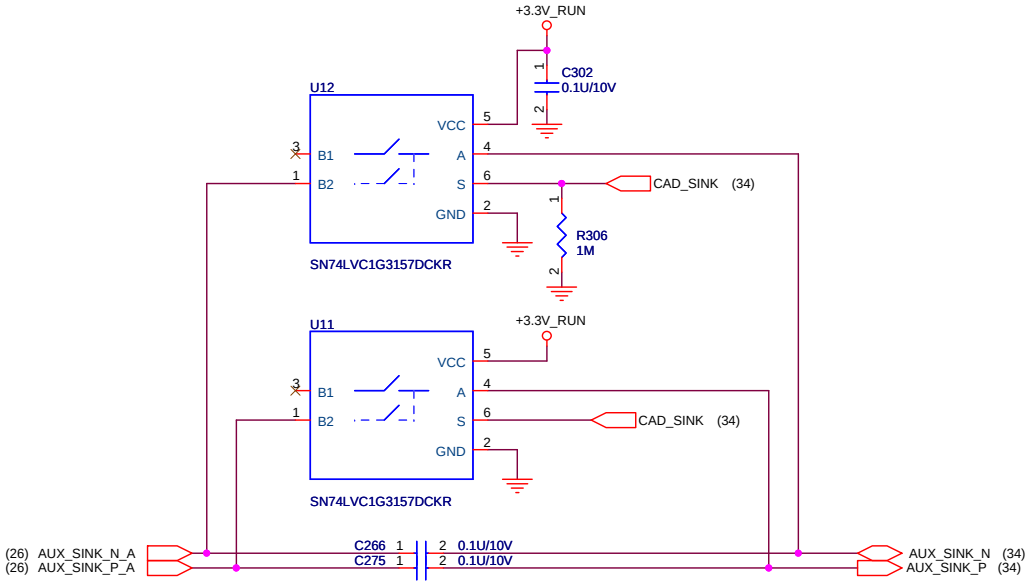
Title	HDMI SELECTION
Size	Document Number: Dell/FLEX Confidential
Rev	X02
Date:	Thursday, October 22, 2009
Sheet	30 of 68

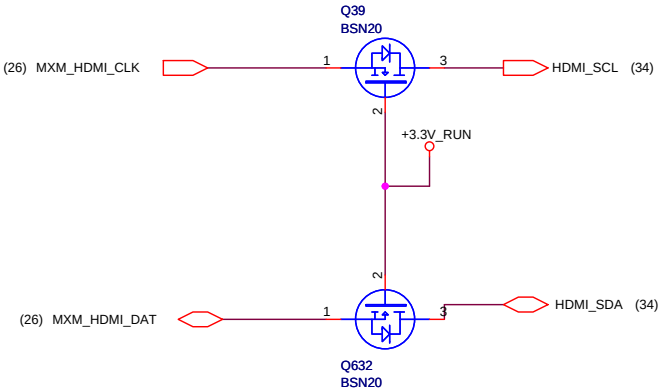

Array Microphone & Camera
CAM/ Head/ Logo Conn
LVDS/ Invertor Conn
Shunt capacitors on LVDS for improving WWAN.
Support the new imbeded diagnostics.
Near by CN7
Adress : A9H --Contrast
AAH --Backlight
2009/04/08 Delete signal LCD_BAK_R and PWM_VADJ_R the signal is connect to eDP connector .
LINKTEK_LVC-D20SFYG3
JAE_FI-M56SB1-R1500
LCD CONN
Dell/FLEX Confidential
Thursday, October 22, 2009
Sheet 31 of 68





Title	CRT CONN		
Size	Document Number		Rev
	Dell/FLEX Confidential		X02
Date:	Thursday, October 22, 2009	Sheet 32 of 68	





CAD_SINK	SOURCE
L	A=B1(AC couple)
H	A=B2 (DDC)

Title
PCH DDC/ AUX MUX

Size | Document Number **Dell/FLEX Confidential** | Rev X02

Date: Thursday, October 22, 2009 | Sheet 33 of 68

Reserve For EMI

(26) HDMI_CLK_P
(26) HDMI_CLK_N
HDMI_CLK_P
HDMI_CLK_N
L21
*DLW21SN900SQ2B_NC
HDMI_CLK_P_C
HDMI_CLK_N_C
R212 0
R207 0

(26) HDMI_TX0_P
(26) HDMI_TX0_N
HDMI_TX0_P
HDMI_TX0_N
L22
*DLW21SN900SQ2B_NC
HDMI_TX0_P_C
HDMI_TX0_N_C
R222 0
R216 0

(26) HDMI_TX1_P
(26) HDMI_TX1_N
HDMI_TX1_P
HDMI_TX1_N
L23
*DLW21SN900SQ2B_NC
HDMI_TX1_P_C
HDMI_TX1_N_C
R230 0
R226 0

(26) HDMI_TX2_P
(26) HDMI_TX2_N
HDMI_TX2_P
HDMI_TX2_N
L24
*DLW21SN900SQ2B_NC
HDMI_TX2_P_C
HDMI_TX2_N_C
R238 0
R235 0

Reserve For EMI

(26) DP_LANE3_N
(26) DP_LANE3_P
DP_LANE3_N
DP_LANE3_P
L27
*DLW21SN900SQ2B_NC
DP_LANE3_N_R
DP_LANE3_P_R
R267 0
R282 0

(26) DP_LANE2_N
(26) DP_LANE2_P
DP_LANE2_N
DP_LANE2_P
L29
*DLW21SN900SQ2B_NC
DP_LANE2_N_R
DP_LANE2_P_R
R286 0
R301 0

(26) DP_LANE1_N
(26) DP_LANE1_P
DP_LANE1_N
DP_LANE1_P
L31
*DLW21SN900SQ2B_NC
DP_LANE1_N_R
DP_LANE1_P_R
R307 0
R310 0

(26) DP_LANE0_N
(26) DP_LANE0_P
DP_LANE0_N
DP_LANE0_P
L32
*DLW21SN900SQ2B_NC
DP_LANE0_N_R
DP_LANE0_P_R
R313 0
R315 0

(33) AUX_SINK_N
(33) AUX_SINK_P
AUX_SINK_N
AUX_SINK_P
L26
*DLW21SN900SQ2B_NC
AUX_SINK_N_R
AUX_SINK_P_R
R257 0
R262 0

HDMI CONNECTOR

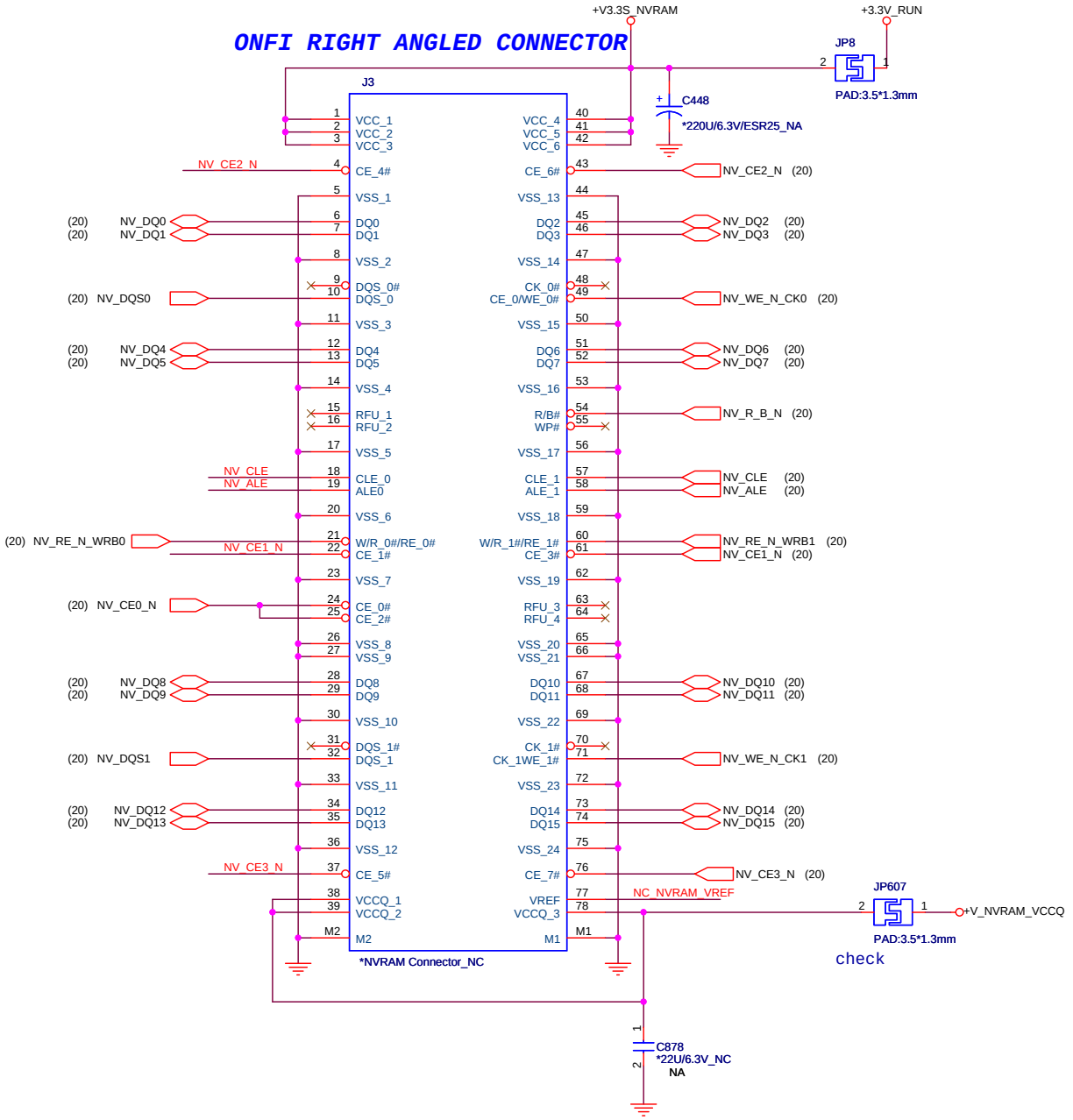
+5V_RUN
+5V_RUN
D623 RB500V-40
D624 RB500V-40
R193 2.2K
R200 2.2K
T763 PAD
T6 PAD
(33) HDMI_SCL
(33) HDMI_SDA
(26) HDMI_HPD
VGAF5V
R175 10K
L20 BLM18PG181SN1D
D9 RB500V-40
C197 100p/50V
C206 180p/50V
C210 0.1U/10V
CN13
HDMI_TX2_P_C
HDMI_TX2_N_C
HDMI_TX1_P_C
HDMI_TX1_N_C
HDMI_TX0_P_C
HDMI_TX0_N_C
HDMI_CLK_P_C
HDMI_CLK_N_C
HDMI_CEC
HDMI_SCL
HDMI_SDA
D2+
D2_Shield
D2-
D1+
D1_Shield
D1-
D0+
D0_Shield
D0-
CK+
CK_Shield
CK-
CE_Remote
NC
DDC_CLK
DDC_DATA
GND
+5V
HP_DET
M1
M2
M3
M4
TYCO_1-1775040-8

EMI601
YSD-48425A-025

DISPLAY PORT CONNECTOR

+3.3V_DP_PWR1
R837 100K
AUX_SINK_N_R
AUX_SINK_P_R
R838 100K
(26) DP_HPD_SINK
R827 10K
L25 BLM18PG181SN1D
D626 RB500V-40
R830 *100K_NC
C849 *100p/50V_NC
C263 220P/50V
+3.3V_RUN
+3.3V_DP_PWR1
F601 1.1A-POLYSW
R245 0_0603
D13 *RB500V-40_NC
C250 0.1U/10V
CN14
HPD
AUXN
AUXP
LANE3N
LANE3P
LANE2N
LANE2P
LANE1N
LANE1P
LANE0N
LANE0P
PWR
PWR_RET
GND1
GND2
MODE
GND3
GND4
GND5
GND6
+3.3V_DP_PWR
CAD_SINK (33)
MOLEX_47272-0001

Title	HDMI & DP CONN
Size	Document Number: Dell/FLEX Confidential
Rev	X02
Date:	Thursday, October 22, 2009
Sheet	34 of 68

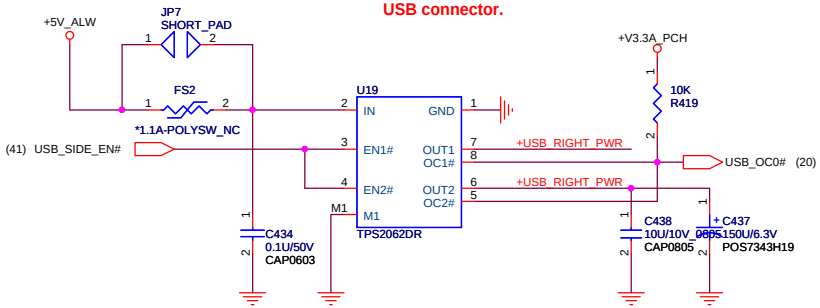


Title	ONFI Connector	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 35 of 68	

USB POWER SW

Place one 150uF cap by each USB connector.

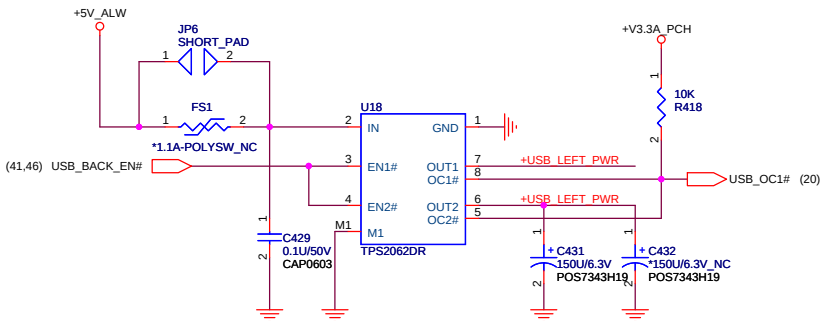
Each channel is 1A



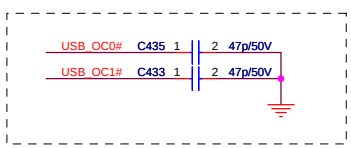
USB POWER SW

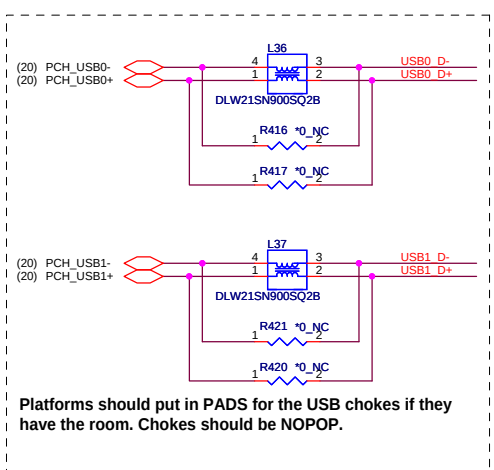
Place one 150uF cap by each USB connector.

Each channel is 1A



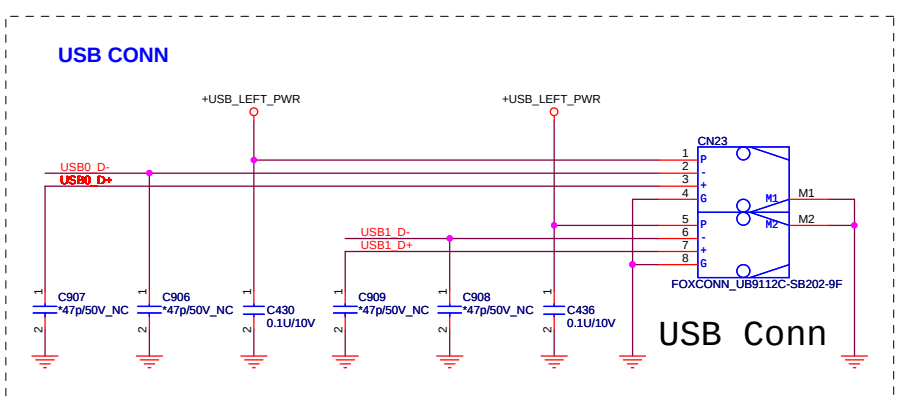
3/24 Neo: Update new symbol



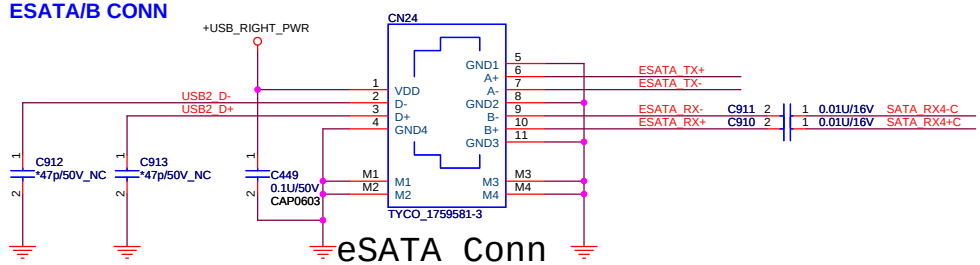


Platforms should put in PADS for the USB chokes if they have the room. Chokes should be NOPOP.

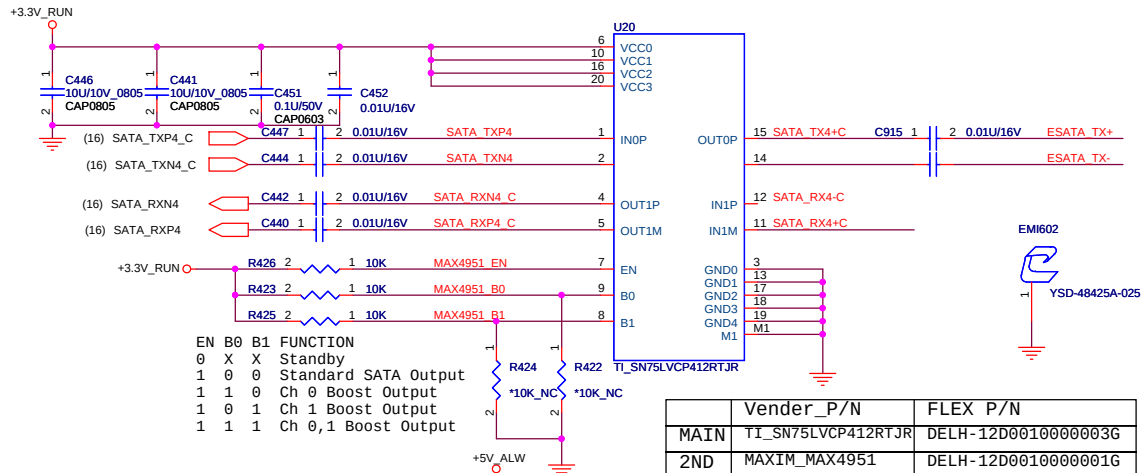
USB CONN



ESATA/B CONN

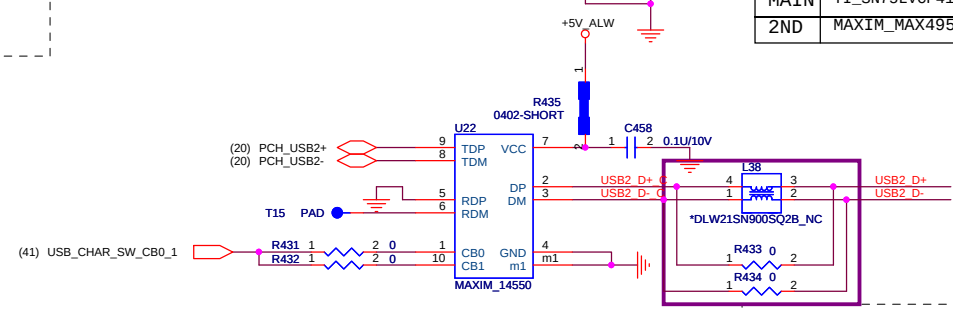


eSATA Conn

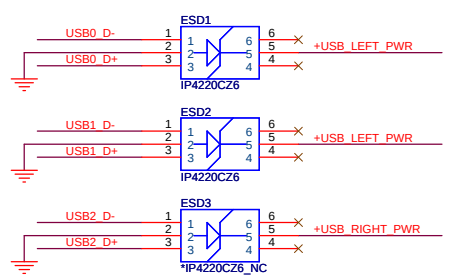


EN B0 B1 FUNCTION
0 X X Standby
1 0 0 Standard SATA Output
1 1 0 Ch 0 Boost Output
1 0 1 Ch 1 Boost Output
1 1 1 Ch 0,1 Boost Output

	Vender_P/N	FLEX P/N
MAIN	TI_SN75LVCP412RTJR	DELH-12D00010000003G
2ND	MAXIM_MAX4951	DELH-12D00010000001G



Place ESD diodes as close as USB connector.



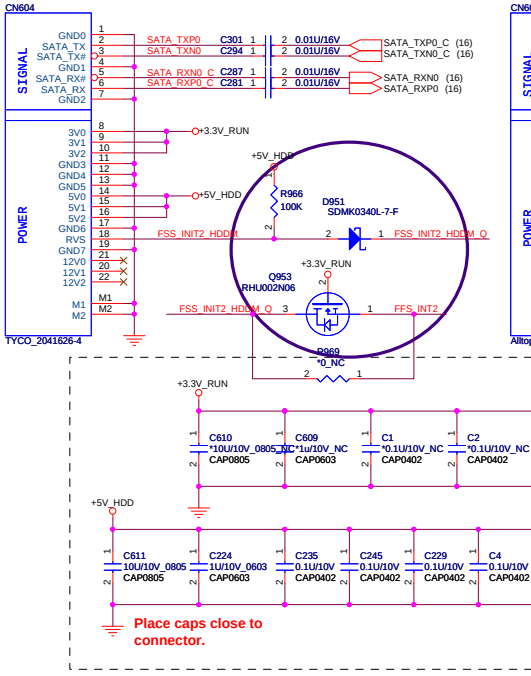
Title: **USBx2 & eSATA**

Size | Document Number: **Dell/FLEX Confidential** | Rev: X02

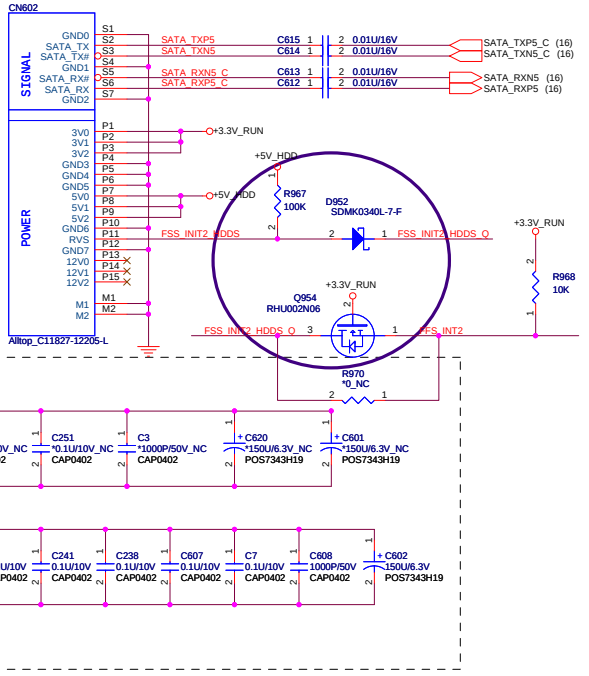
Date: Thursday, October 22, 2009 | Sheet 36 of 68

SATA Connector

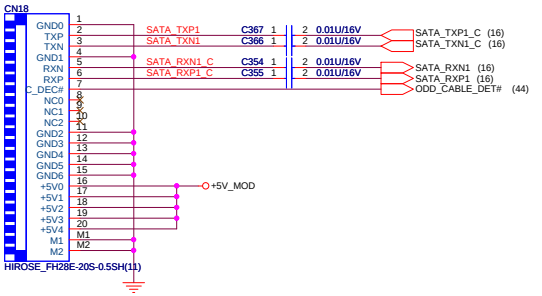
Master HDD Conn



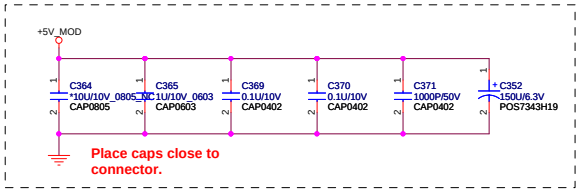
Slave HDD Conn

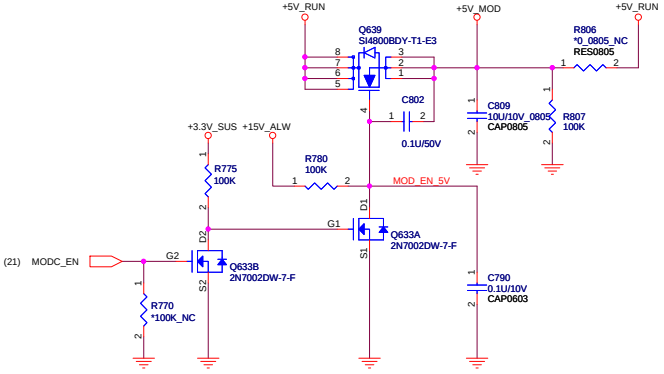


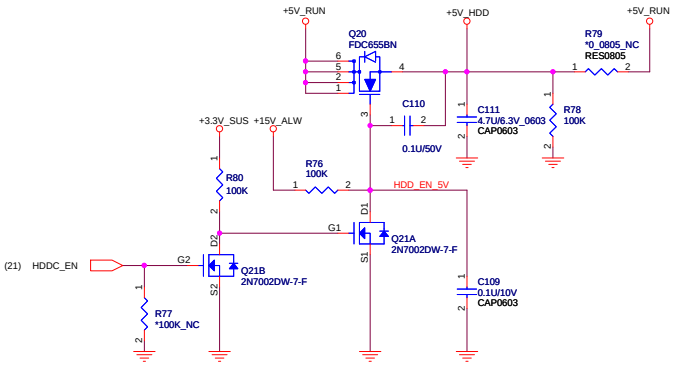
ODD Connector



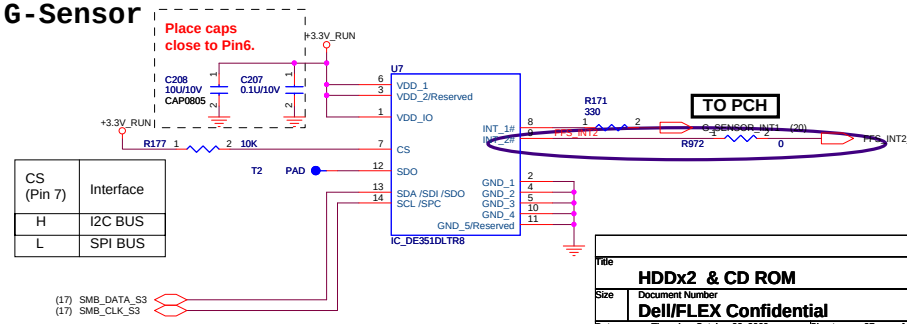
ODD Conn







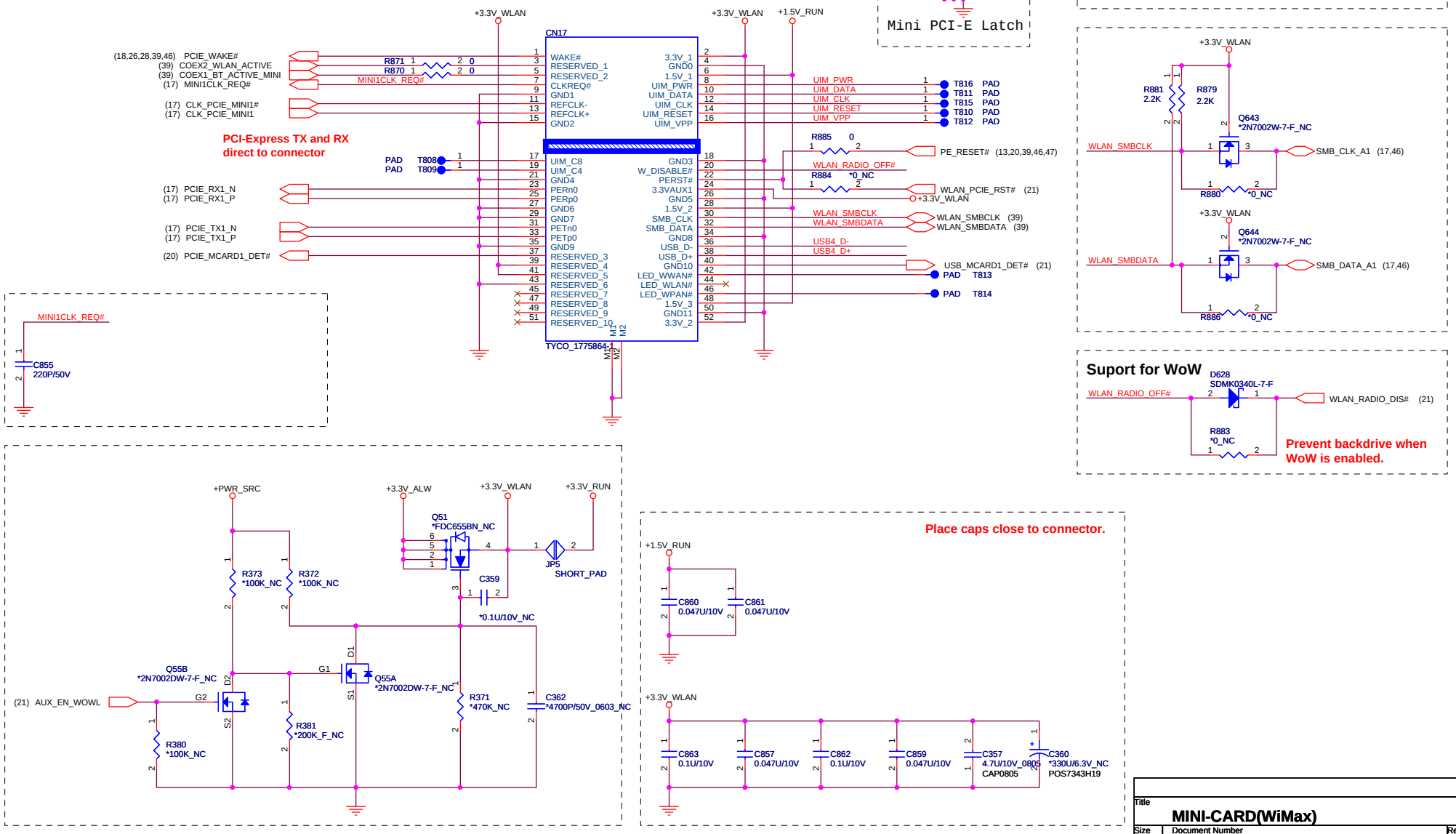
G-Sensor

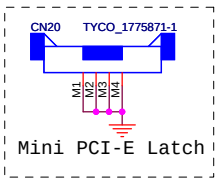


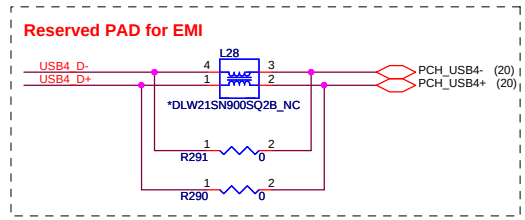
CS (Pin 7)	Interface
H	I2C BUS
L	SPI BUS

Title	HDDx2 & CD ROM
Size	Document Number: Dell/FLEX Confidential
Rev	X02
Date:	Thursday, October 22, 2009
Sheet	37 of 68

MiniCard WMAX Connector

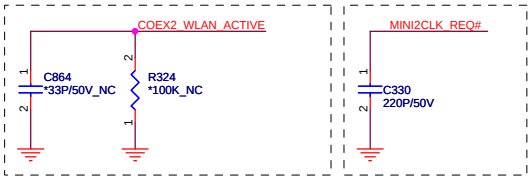


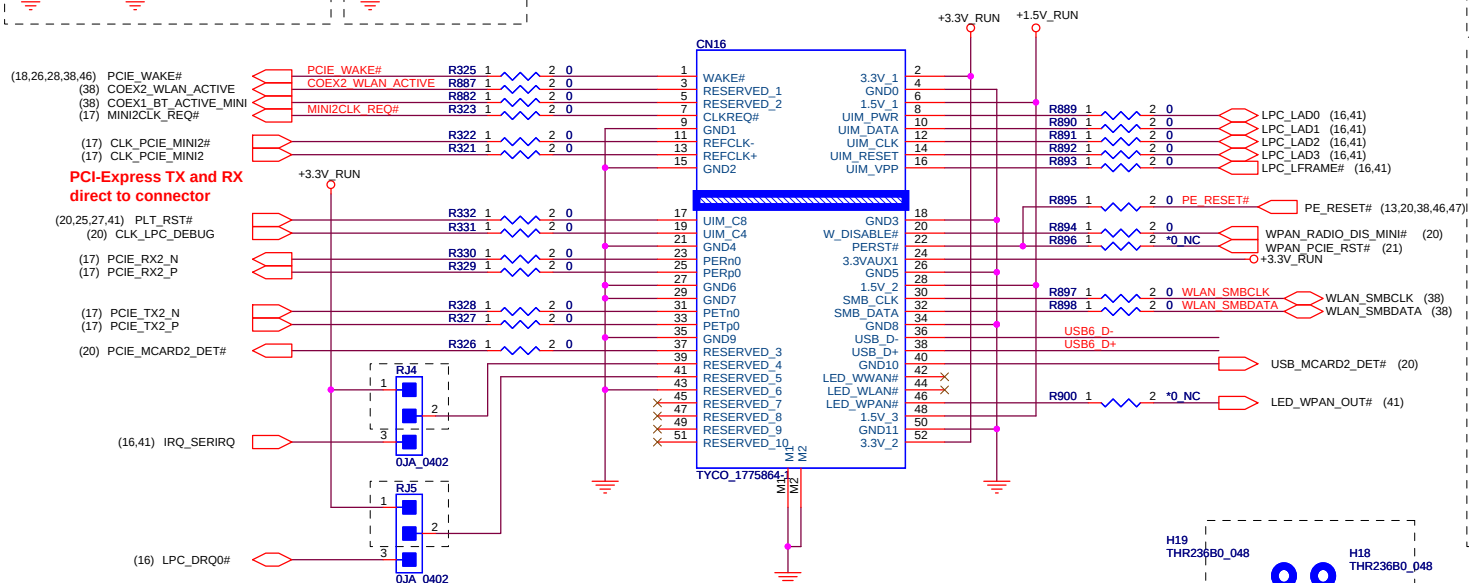




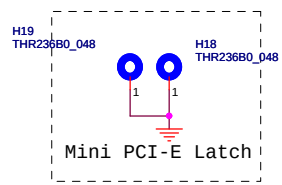
Title	MINI-CARD(WiMax)	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 38 of 68	

Flash Cache Module, BT, UWB Connector

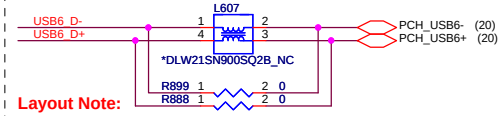




MiniCard WWAN Connector

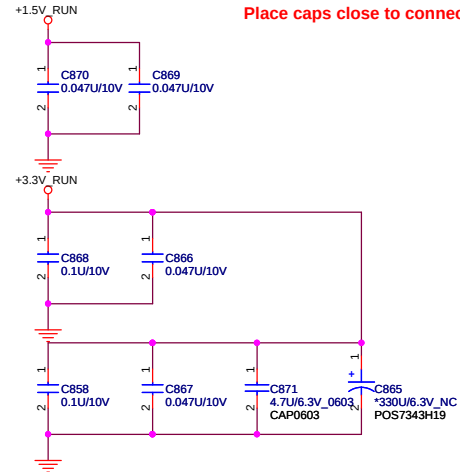


Reserve For EMI

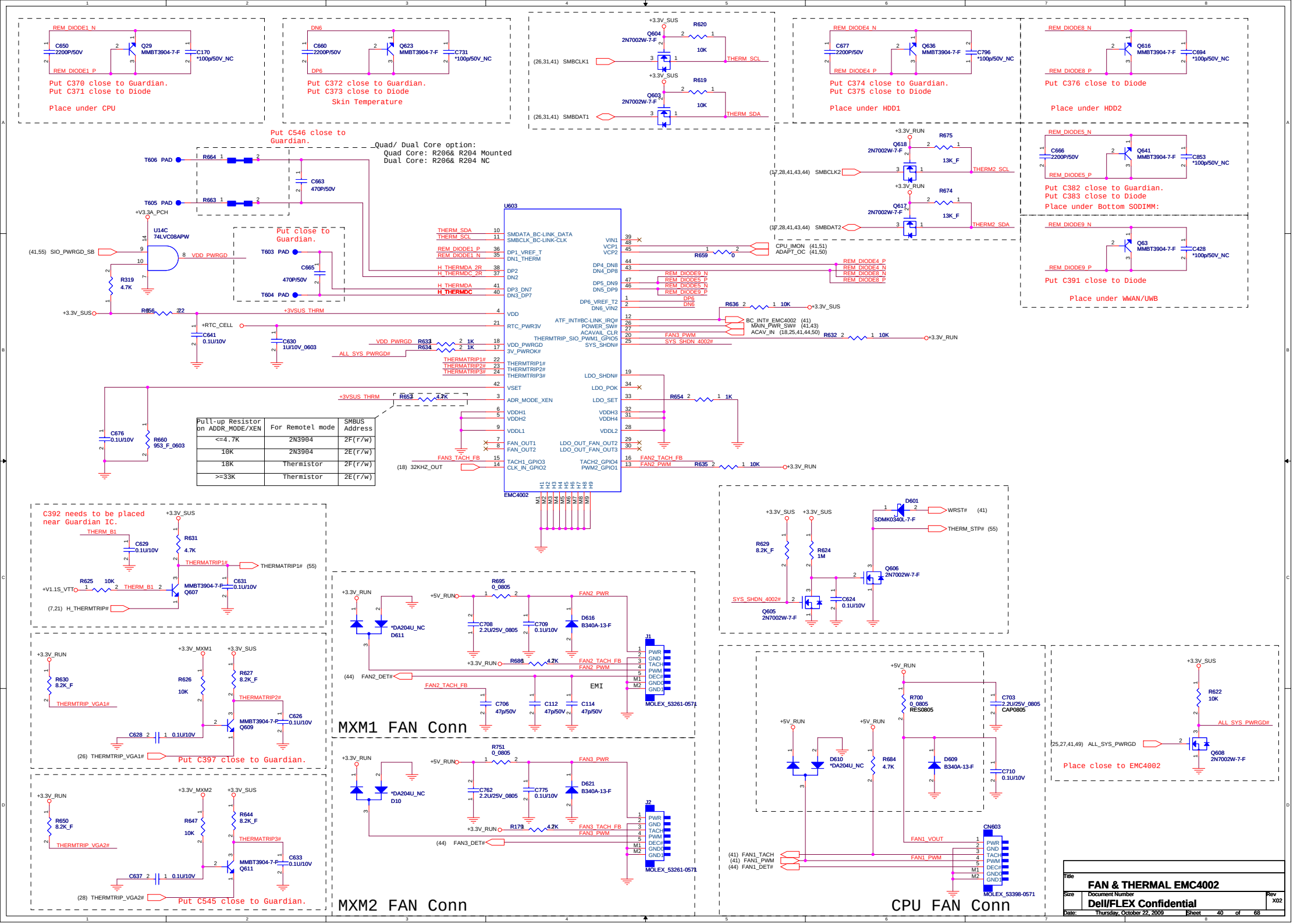


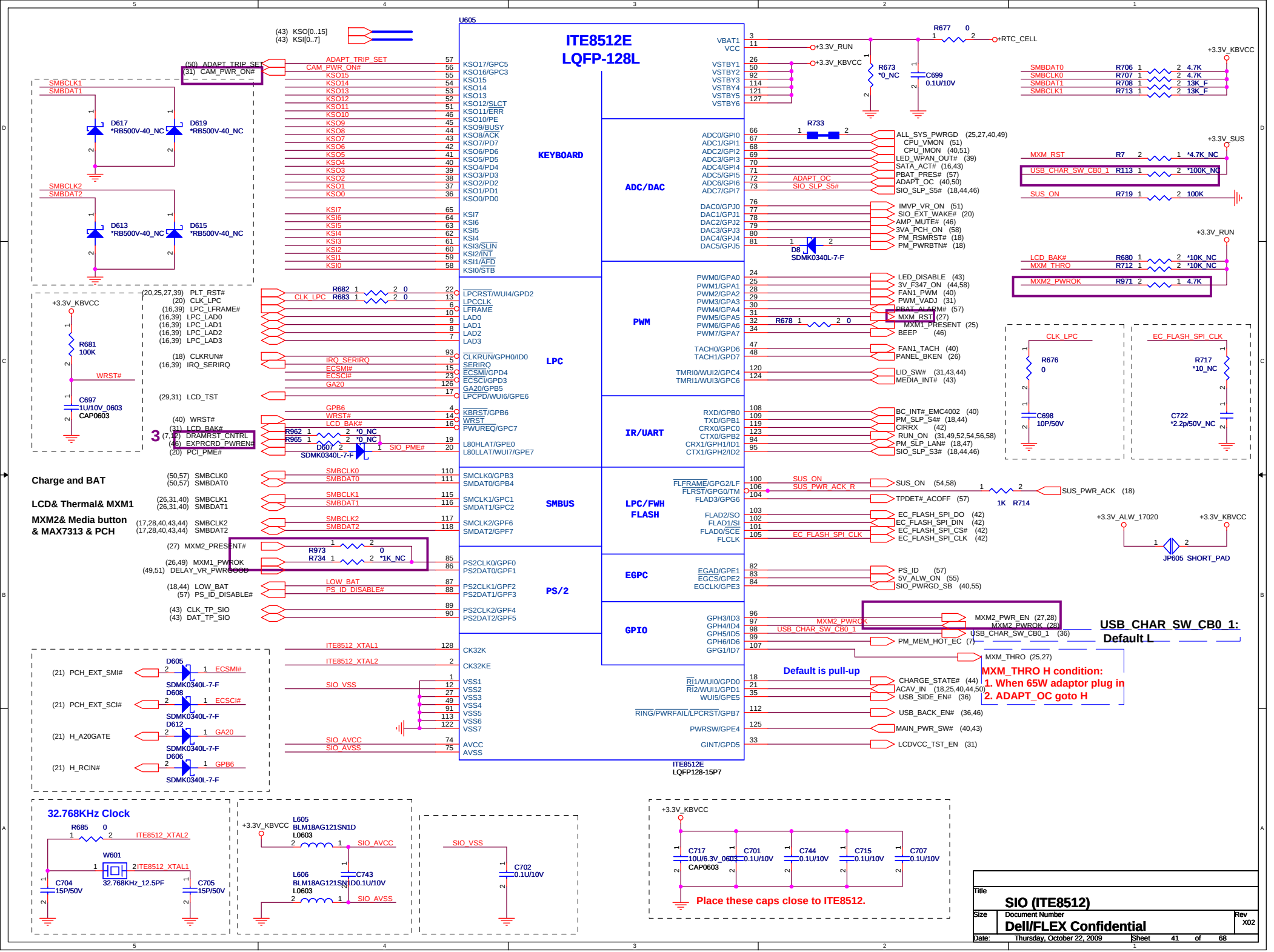
Layout Note:
R331 and R332 close to choke as possible to minimize stubs.

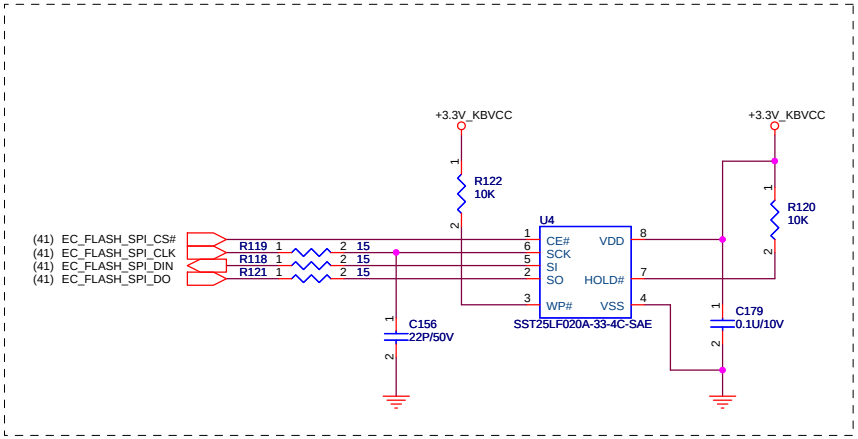
Place caps close to connector.

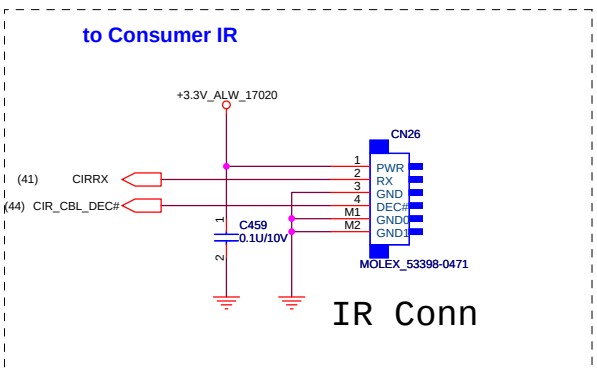


Title	MINI-CARD (BT)	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 39 of 68	

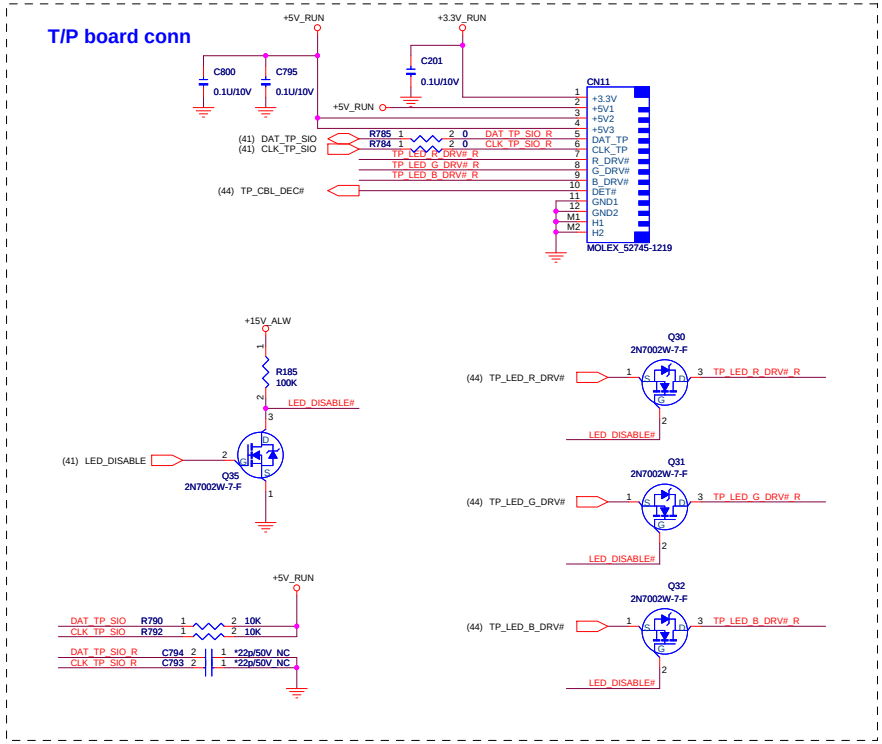

REM_DIODE1_N
C650 2200P/50V
Q29 MMBT3904-7-F
C170 *100p/50V_NC
REM_DIODE1_P
Put C370 close to Guardian.
Put C371 close to Diode
Place under CPU
DN6
C660 2200P/50V
Q623 MMBT3904-7-F
C731 *100p/50V_NC
DP6
Put C372 close to Guardian.
Put C373 close to Diode
Skin Temperature
+3.3V_SUS
R620
Q604 2N7002W-7-F
10K
(26,31,41) SMBCLK1
THERM_SCL
R619
Q603 2N7002W-7-F
(26,31,41) SMBDAT1
THERM_SDA
REM_DIODE4_N
C677 2200P/50V
Q636 MMBT3904-7-F
C796 *100p/50V_NC
REM_DIODE4_P
Put C374 close to Guardian.
Put C375 close to Diode
Place under HDD1
REM_DIODE8_N
Q616 MMBT3904-7-F
C694 *100p/50V_NC
REM_DIODE8_P
Put C376 close to Diode
Place under HDD2
Put C546 close to Guardian.
Quad/ Dual Core option:
Quad Core: R206& R204 Mounted
Dual Core: R206& R204 NC
T606 PAD
R664
C663 470P/50V
T605 PAD
R663
+V3.3A_PCH
U14C 74LVC08APW
(41,55) SIO_PWRGD_SB
VDD_PWRGD
R319 4.7K
Put close to Guardian.
T603 PAD
C665 470P/50V
T604 PAD
+3.3V_SUS
R656 22
+3VSUS_THRM
+RTC_CELL
C641 0.1U/10V
C630 1U/10V_0603
U603
THERM_SDA
THERM_SCL
SMDATA_BC-LINK_DATA
SMBCLK_BC-LINK-CLK
REM_DIODE1_P
REM_DIODE1_N
DP1_VREF_T
DN1_THERM
H_THERMDA_2R
H_THERMDC_2R
DP2
DN2
H_THERMDA
H_THERMDC
DP3_DN7
DN3_DP7
VDD
RTC_PWR3V
VDD_PWRGD
R633 1K
R634 1K
3V_PWROK#
ALL_SYS_PWRGD#
THERMTRIP1#
THERMTRIP2#
THERMTRIP3#
VSET
ADR_MODE_XEN
VDDH1
VDDH2
VDDL1
FAN_OUT1
FAN_OUT2
FAN3_TACH_FB
TACH1_GPIO3
CLK_IN_GPIO2
(18) 32KHZ_OUT
VIN1
VCP1
VCP2
DP4_DN8
DN4_DP8
DP5_DN9
DN5_DP9
DP6_VREF_T2
DN6_VIN2
ATF_INT#
POWER_SW#
ACAVAIL_CLR
THERMTRIP_SIO_PWM1_GPIO5
SYS_SHDN#
LDO_SHDN#
LDO_POK
LDO_SET
VDDH3
VDDH4
VDDL2
LDO_OUT_FAN_OUT2
LDO_OUT_FAN_OUT3
TACH2_GPIO4
PWM2_GPIO1
EMC4002
CPU_IMON (41,51)
ADAPT_OC (41,50)
R659 0
BC_INT# EMC4002 (41)
MAIN_PWR_SW# (41,43)
ACAV_IN (18,25,41,44,50)
FAN3_PWM
SYS_SHDN_4002#
R636 10K
R632 10K
R654 1K
FAN2_TACH_FB
FAN2_PWM
R635 10K
+3.3V_RUN
+3V3VSUS_THRM
R652 4.2K
C676 0.1U/10V
R660 953_F_0603
Pull-up Resistor on ADDR_MODE/XEN
For Remotel mode
SMBUS Address
<=4.7K
2N3904
2F(r/w)
10K
2N3904
2E(r/w)
18K
Thermistor
2F(r/w)
>=33K
Thermistor
2E(r/w)
+3.3V_RUN
Q618 2N7002W-7-F
R675
13K_F
(17,28,41,43,44) SMBCLK2
THERM2_SCL
Q617 2N7002W-7-F
R674
(17,28,41,43,44) SMBDAT2
THERM2_SDA
REM_DIODE5_N
C666 2200P/50V
Q641 MMBT3904-7-F
C853 *100p/50V_NC
REM_DIODE5_P
Put C382 close to Guardian.
Put C383 close to Diode
Place under Bottom SODIMM:
REM_DIODE9_N
Q63 MMBT3904-7-F
C428 *100p/50V_NC
REM_DIODE9_P
Put C391 close to Diode
Place under WWAN/UWB
C392 needs to be placed near Guardian IC.
THERM_B1
C629 0.1U/10V
R631 4.7K
THERMATRIP1#
THERMATRIP1# (55)
R625 10K
THERM_B1
+V1.1S_VTT
MMBT3904-7-F
Q607
C631 0.1U/10V
(7,21) H_THERMTRIP#
+3.3V_MXM1
+3.3V_SUS
R630 8.2K_F
R626 10K
R627 8.2K_F
THERMTRIP_VGA1#
THERMATRIP2#
MMBT3904-7-F
Q609
C626 0.1U/10V
C628 0.1U/10V
(26) THERMTRIP_VGA1#
Put C397 close to Guardian.
+3.3V_MXM2
R650 8.2K_F
R647 10K
R644 8.2K_F
THERMTRIP_VGA2#
THERMATRIP3#
MMBT3904-7-F
Q611
C633 0.1U/10V
C637 0.1U/10V
(28) THERMTRIP_VGA2#
Put C545 close to Guardian.
+5V_RUN
R695 0_0805
FAN2_PWR
*DA204U_NC
D611
C708 2.2U/25V_0805
C709 0.1U/10V
D616 B340A-13-F
R686 4.7K
FAN2_TACH_FB
FAN2_PWM
(44) FAN2_DET#
C706 47p/50V
C112 47p/50V
C114 47p/50V
J1
PWR
GND
TACH
PWM
DEC#
GND0
GND1
MOLEX_53261-0571
MXM1 FAN Conn
R751 0_0805
FAN3_PWR
*DA204U_NC
D10
C762 2.2U/25V_0805
C775 0.1U/10V
D621 B340A-13-F
R679 4.7K
FAN3_TACH_FB
FAN3_PWM
(44) FAN3_DET#
J2
MOLEX_53261-0571
MXM2 FAN Conn
D601
SDMK0340L-7-F
WRST# (41)
THERM_STP# (55)
R629 8.2K_F
R624 1M
Q606 2N7002W-7-F
SYS_SHDN_4002#
C624 0.1U/10V
Q605 2N7002W-7-F
R700 0_0805 RES0805
C703 2.2U/25V_0805 CAP0805
D610 *DA204U_NC
R684 4.7K
D609 B340A-13-F
C710 0.1U/10V
(41) FAN1_TACH
(41) FAN1_PWM
(44) FAN1_DET#
FAN1_VOUT
FAN1_PWM
CN603
MOLEX_53398-0571
CPU FAN Conn
R622 10K
ALL_SYS_PWRGD#
(25,27,41,49) ALL_SYS_PWRGD
Q608 2N7002W-7-F
Place close to EMC4002
Title
FAN & THERMAL EMC4002
Size
Document Number
Dell/FLEX Confidential
Rev X02
Date: Thursday, October 22, 2009
Sheet 40 of 68

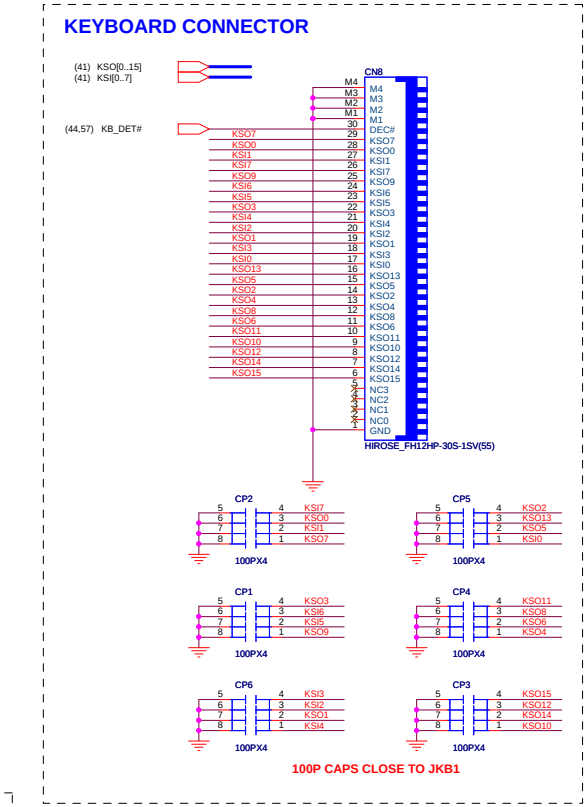

U605
ITE8512E
LQFP-128L
KEYBOARD
ADC/DAC
PWM
LPC
IR/UART
SMBUS
LPC/FWH FLASH
EGPC
PS/2
GPIO
ITE8512E
LQFP128-15P7
(43) KSO[0..15]
(43) KSI[0..7]
(50) ADAPT_TRIP_SET
(31) CAM_PWR_ON#
SMBCLK1
SMBDAT1
SMBCLK2
SMBDAT2
D617 *RB500V-40_NC
D619 *RB500V-40_NC
D613 *RB500V-40_NC
D615 *RB500V-40_NC
+3.3V_KBVCC
R681 100K
WRST#
C697 1U/10V_0603 CAP0603
(20,25,27,39) PLT_RST#
(20) CLK_LPC
(16,39) LPC_LFRAME#
(16,39) LPC_LAD0
(16,39) LPC_LAD1
(16,39) LPC_LAD2
(16,39) LPC_LAD3
(18) CLKRUN#
(16,39) IRQ_SERIRQ
(29,31) LCD_TST
(40) WRST#
(31) LCD_BAK#
(7,12) DRAMRST_CNTRL
(46) EXPRCRD_PWREN#
(20) PCI_PME#
3
R682 R683 CLK_LPC
IRQ_SERIRQ
ECSMI#
ECSCI#
GA20
GPB6
WRST#
LCD_BAK#
R962 *0_NC
R965 *0_NC
D607 SDMK0340L-7-F
SIO_PME#
Charge and BAT
LCD& Thermal& MXM1
MXM2& Media button & MAX7313 & PCH
(50,57) SMBCLK0
(50,57) SMBDAT0
(26,31,40) SMBCLK1
(26,31,40) SMBDAT1
(17,28,40,43,44) SMBCLK2
(17,28,40,43,44) SMBDAT2
(27) MXM2_PRESENT#
(26,49) MXM1_PWROK
(49,51) DELAY_VR_PWRGOOD
R973 0
R734 *1K_NC
(18,44) LOW_BAT
(57) PS_ID_DISABLE#
(43) CLK_TP_SIO
(43) DAT_TP_SIO
(21) PCH_EXT_SMI#
(21) PCH_EXT_SCI#
(21) H_A20GATE
(21) H_RCIN#
D605 SDMK0340L-7-F
D608 SDMK0340L-7-F
D612 SDMK0340L-7-F
D606 SDMK0340L-7-F
ECSMI#
ECSCI#
GA20
GPB6
ITE8512_XTAL1
ITE8512_XTAL2
SIO_VSS
SIO_AVCC
SIO_AVSS
32.768KHz Clock
R685 0
W601 32.768KHz_12.5PF
C704 15P/50V
C705 15P/50V
+3.3V_KBVCC
L605 BLM18AG121SN1D L0603
L606 BLM18AG121SN1D L0603
C743 0.1U/10V
C702 0.1U/10V
C717 10U/6.3V_0603 CAP0603
C701 0.1U/10V
C744 0.1U/10V
C715 0.1U/10V
C707 0.1U/10V
Place these caps close to ITE8512.
VBAT1
VCC
VSTBY1
VSTBY2
VSTBY3
VSTBY4
VSTBY5
VSTBY6
+3.3V_RUN
+3.3V_KBVCC
R677 0
+RTC_CELL
R673 *0_NC
C699 0.1U/10V
R733
ADC0/GPI0
ADC1/GPI1
ADC2/GPI2
ADC3/GPI3
ADC4/GPI4
ADC5/GPI5
ADC6/GPI6
ADC7/GPI7
ALL_SYS_PWRGD (25,27,40,49)
CPU_VMON (51)
CPU_IMON (40,51)
LED_WPAN_OUT# (39)
SATA_ACT# (16,43)
PBAT_PRES# (57)
ADAPT_OC (40,50)
SIO_SLP_S5# (18,44,46)
ADAPT_OC
SIO_SLP_S5#
DAC0/GPJ0
DAC1/GPJ1
DAC2/GPJ2
DAC3/GPJ3
DAC4/GPJ4
DAC5/GPJ5
IMVP_VR_ON (51)
SIO_EXT_WAKE# (20)
AMP_MUTE# (46)
3VA_PCH_ON (58)
PM_RSMRST# (18)
PM_PWRBTN# (18)
D8 SDMK0340L-7-F
PWM0/GPA0
PWM1/GPA1
PWM2/GPA2
PWM3/GPA3
PWM4/GPA4
PWM5/GPA5
PWM6/GPA6
PWM7/GPA7
LED_DISABLE (43)
3V_F347_ON (44,58)
FAN1_PWM (40)
PWM_VADJ (31)
BPAT_ALARM# (57)
MXM_RST# (27)
MXM1_PRESENT (25)
BEEP (46)
R678 *0_NC
TACH0/GPD6
TACH1/GPD7
FAN1_TACH (40)
PANEL_BKEN (26)
TMRI0/WUI2/GPC4
TMRI1/WUI3/GPC6
LID_SW# (31,43,44)
MEDIA_INT# (43)
RXD/GPB0
TXD/GPB1
CRX0/GPC0
CTX0/GPB2
CRX1/GPH1/ID1
CTX1/GPH2/ID2
BC_INT#_EMC4002 (40)
PM_SLP_S4# (18,44)
CIRRX (42)
RUN_ON (31,49,52,54,56,58)
PM_SLP_LAN# (18,47)
SIO_SLP_S3# (18,44,46)
SUS_ON
SUS_PWR_ACK_R
SUS_ON (54,58)
TPDET#_ACOFF (57)
SUS_PWR_ACK (18)
1K R714
FLAD2/SO
FLAD1/SI
FLAD0/SCE
FLCLK
EC_FLASH_SPI_DO (42)
EC_FLASH_SPI_DIN (42)
EC_FLASH_SPI_CS# (42)
EC_FLASH_SPI_CLK (42)
EC_FLASH_SPI_CLK
+3.3V_ALW_17020
JP605 SHORT_PAD
EGAD/GPE1
EGCS/GPE2
EGCLK/GPE3
PS_ID (57)
5V_ALW_ON (55)
SIO_PWRGD_SB (40,55)
GPH3/ID3
GPH4/ID4
GPH5/ID5
GPH6/ID6
GPG1/ID7
MXM2_PWROK
USB_CHAR_SW_CB0_1
MXM2_PWR_EN (27,28)
MXM2_PWROK (28)
USB_CHAR_SW_CB0_1 (36)
PM_MEM_HOT_EC (7)
MXM_THRO (25,27)
USB_CHAR_SW_CB0_1: Default L
Default is pull-up
MXM_THRO H condition:
1. When 65W adaptor plug in
2. ADAPT_OC goto H
RI1/WUI0/GPD0
RI2/WUI1/GPD1
WUI5/GPE5
CHARGE_STATE# (44)
ACAV_IN (18,25,40,44,50)
USB_SIDE_EN# (36)
RING/PWRFAIL/LPCRST/GPB7
USB_BACK_EN# (36,46)
PWRSW/GPE4
MAIN_PWR_SW# (40,43)
GINT/GPD5
LCDVCC_TST_EN (31)
SMBDAT0
SMBCLK0
SMBDAT1
SMBCLK1
R706 4.7K
R707 4.7K
R708 13K_F
R713 13K_F
+3.3V_SUS
MXM_RST
USB_CHAR_SW_CB0_1
SUS_ON
R7 *4.7K_NC
R113 *100K_NC
R719 100K
+3.3V_RUN
LCD_BAK#
MXM_THRO
MXM2_PWROK
R680 *10K_NC
R712 *10K_NC
R971 4.7K
CLK_LPC
R676 0
C698 10P/50V
EC_FLASH_SPI_CLK
R717 *10_NC
C722 *2.2p/50V_NC
SIO (ITE8512)
Dell/FLEX Confidential
Rev X02
Thursday, October 22, 2009
Sheet 41 of 68

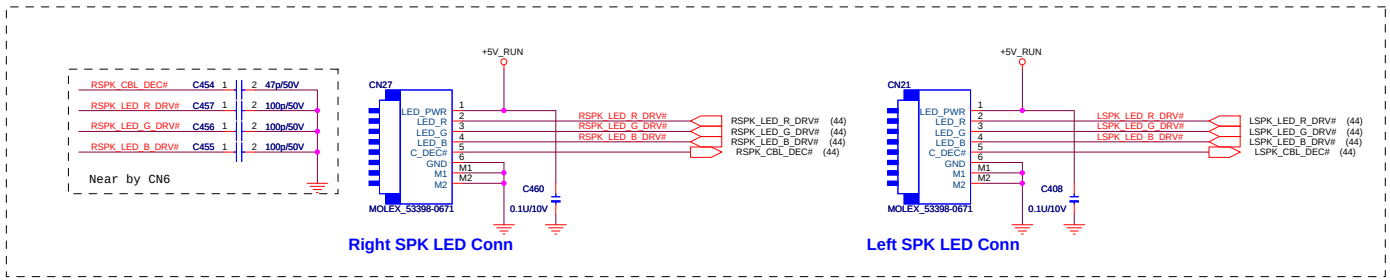


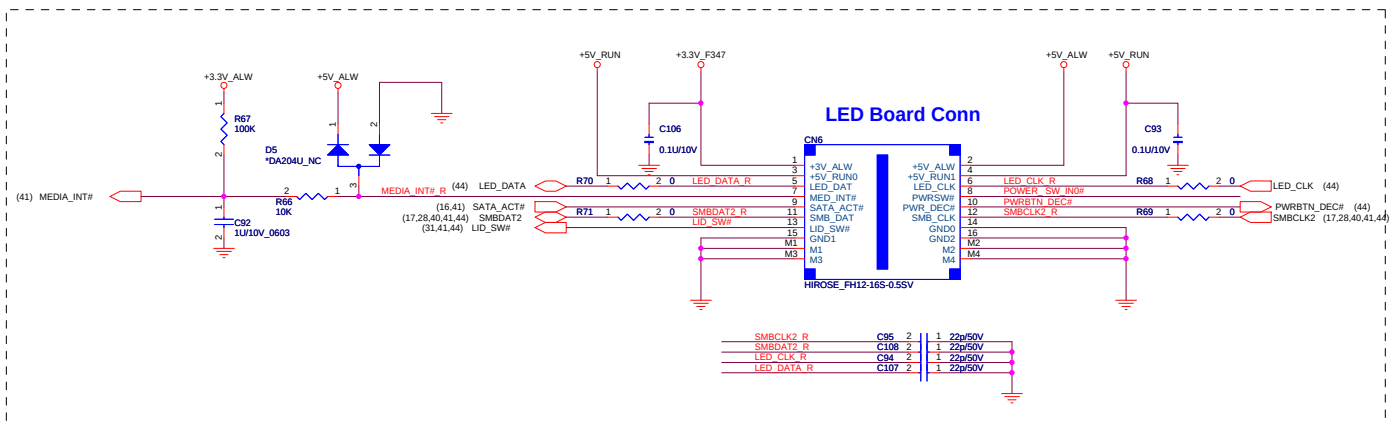


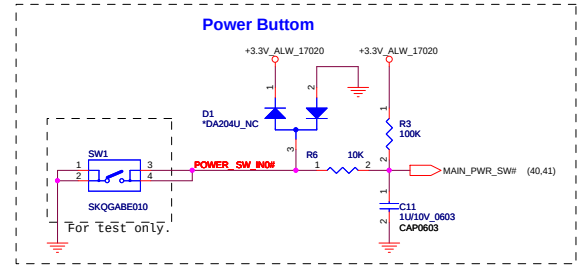
Title	FLASH/ RTC/ CIR	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 42 of 68	







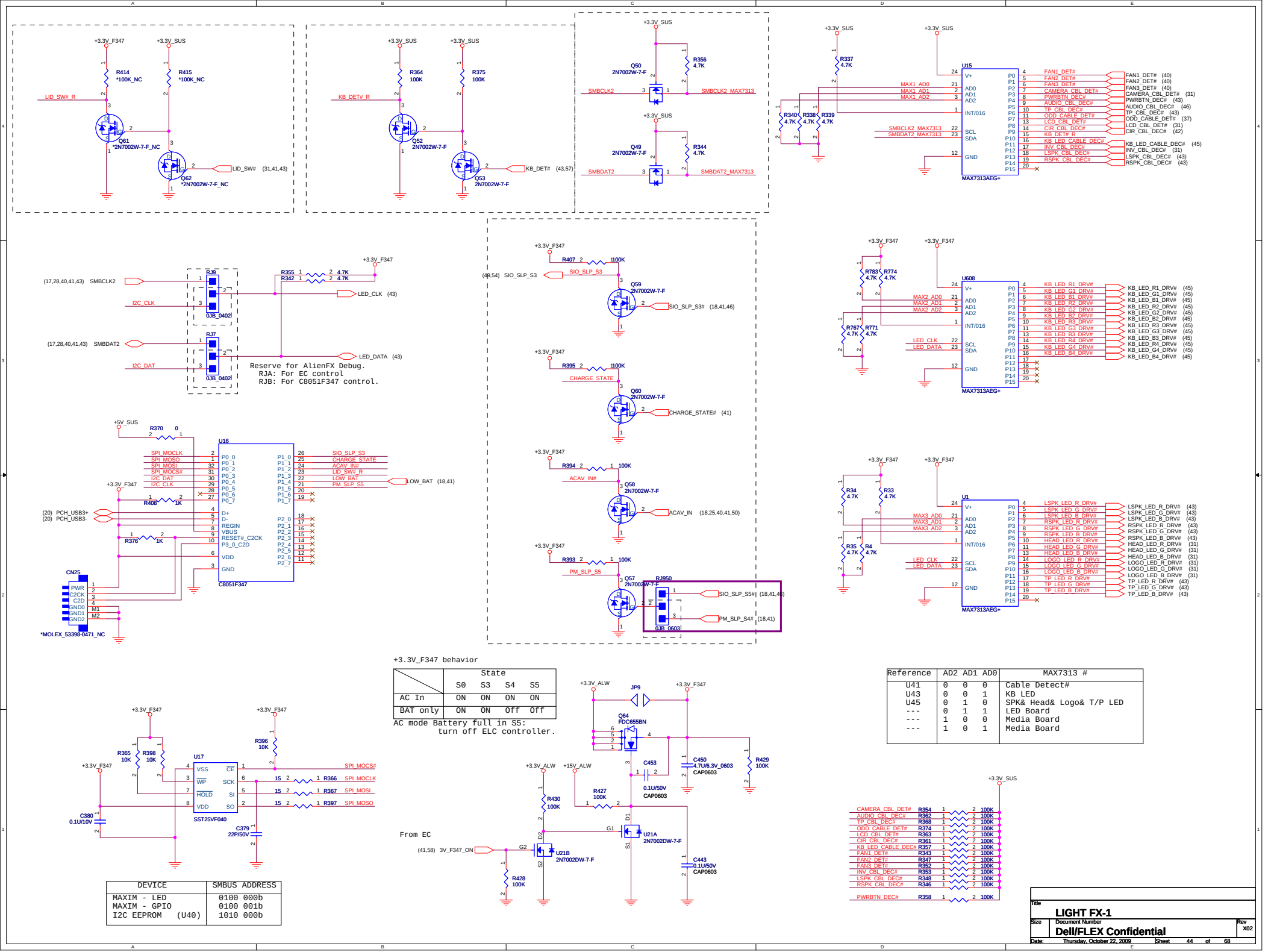




Title: KB/ DAUGHTER BOARD CONN

Size | Document Number: Dell/FLEX Confidential | Rev: X02

Date: Thursday, October 22, 2009 | Sheet 43 of 68



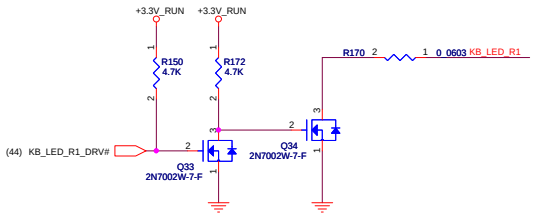
+3.3V_F347 behavior

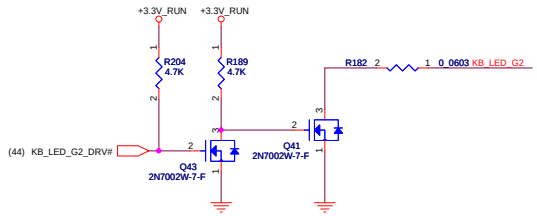
	State			
	S0	S3	S4	S5
AC In	ON	ON	ON	ON
BAT only	ON	ON	Off	Off

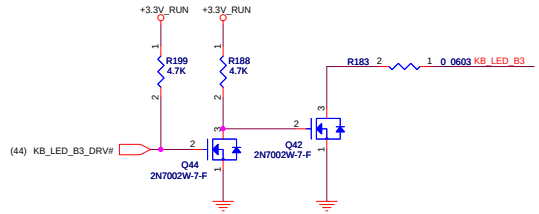
AC mode Battery full in S5:
turn off ELC controller.

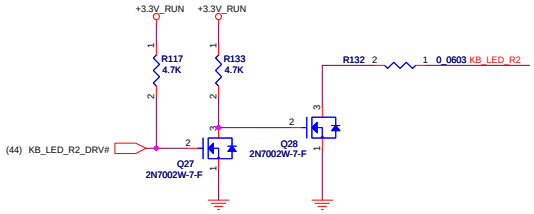
Reference	AD2	AD1	AD0	MAX7313 #
U41	0	0	0	Cable Detect#
U43	0	0	1	KB LED
U45	0	1	0	SPK& Head& Logo& T/P LED
---	0	1	1	LED Board
---	1	0	0	Media Board
---	1	0	1	Media Board

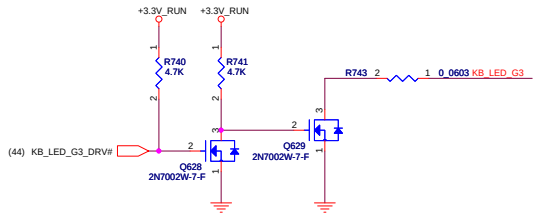
DEVICE	SMBUS ADDRESS
MAXIM - LED	0100 000b
MAXIM - GPIO	0100 001b
I2C EEPROM (U40)	1010 000b

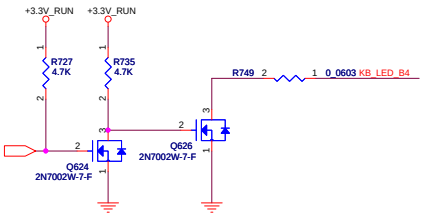


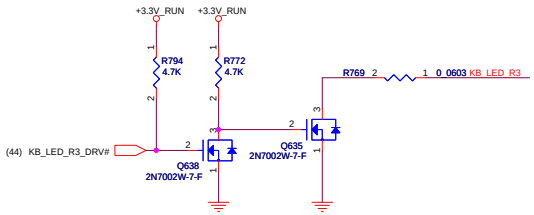


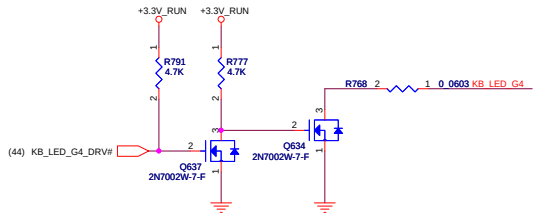


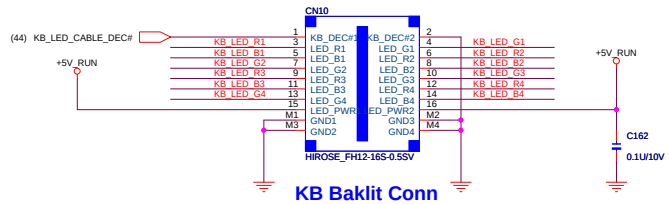




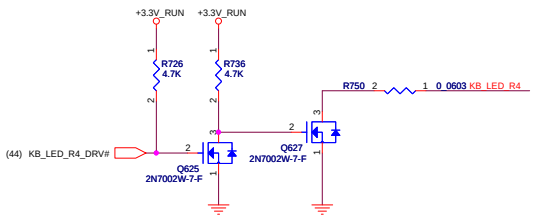


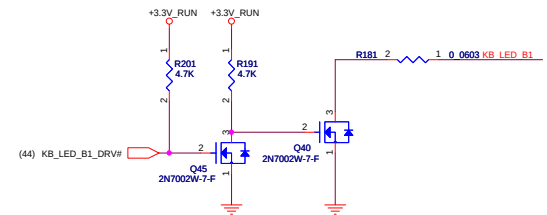


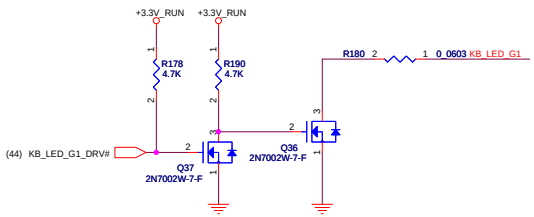


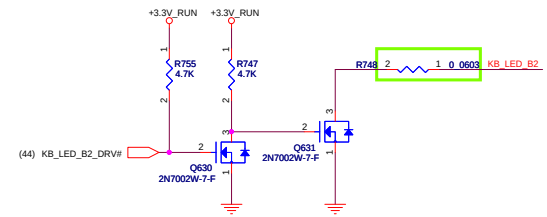


KB Baklit Conn









Title	LIGHT FX-2/ LID	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 45 of 68	

R465, R466, R467, R468
AS CLOSE AS POSSIBLE TO R5U230

MFIO Pin Assignment Table

MFIO	SD8	XD	MS8
00	WP	D7	BS
01	D1	D6	-
02	D0	D5	D1
03	D7	D4	-
04	D6	D3	D5
05	CLK	D2	D0
06	-	D1	-
07	D5	D0	D4
08	CMD	WP#	D2
09	D4	WE#	D6
10	D3	ALE	D3
11	D2	CLE	-
12	-	CE#	-
13	-	RE#	D7
14	-	R/B#	CLK
MFCD0#	CD#	CD0#	-
MFCD1#	-	CD1#	INS#

1. TPA0P/TPA0N,TPB0P/TPB0N pair trace : Same length electrically.
2. TPA0P/TPA0N,TPB0P/TPB0N pair trace : As close as possible.
3. Termination resistor for TPA+/- TPB+/- : As close as possible to its cable driver (device pin out).

Reserved EMI Solution

1394 Conn

SERIAL EEPROM

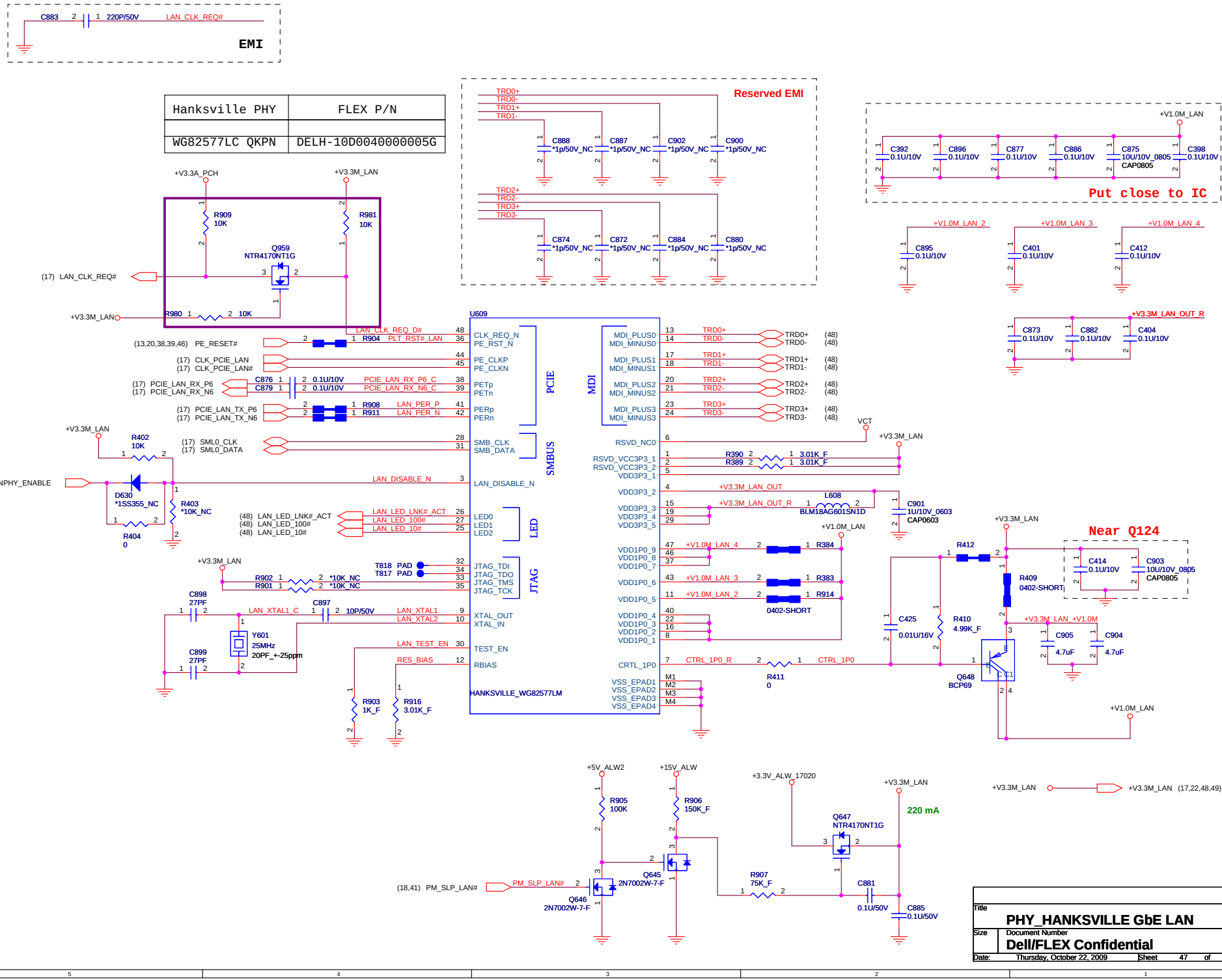
SROM: UDIO1
Pull-Hi: Disable
Pull-Lo: Enable (Default)

Express Card Conn

2.2uF cap is no more than 250mils away from the power pin and a have a min trace width of 40mils.

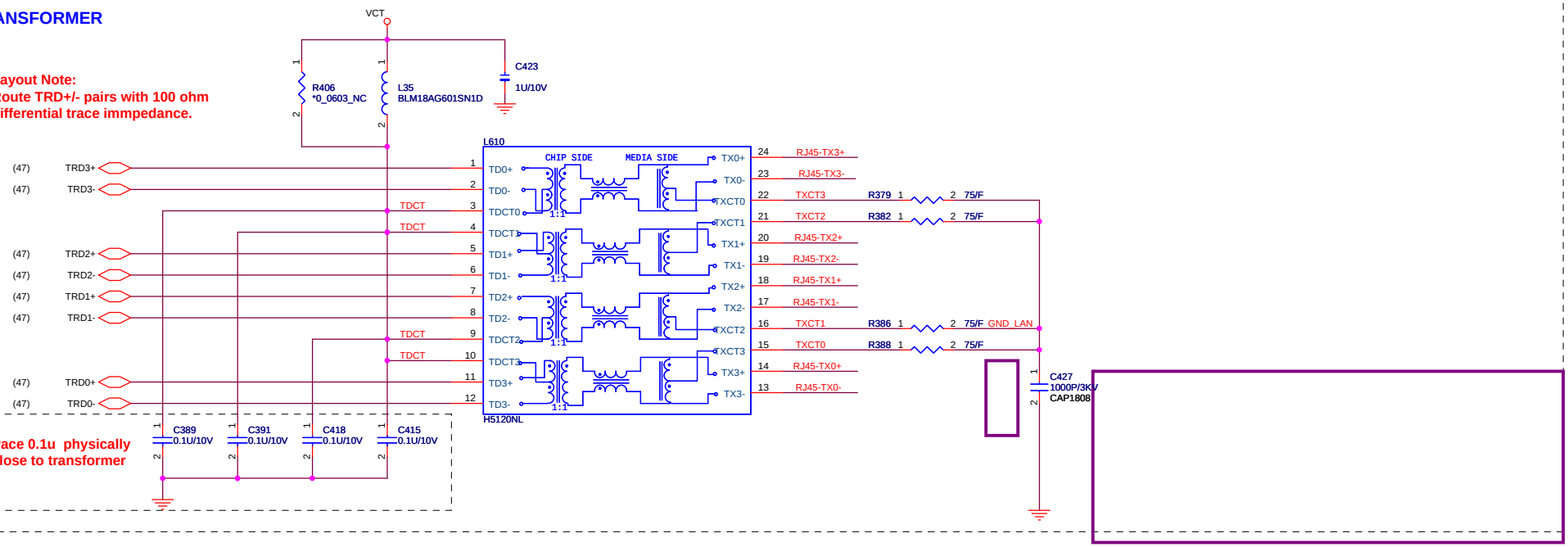
PCI-Express TX and RX direct to connector.

Title	8in1 &1394 & EXPRESS CONN
Size	Document Number: Dell/FLEX Confidential
Rev	X02
Date: Thursday, October 22, 2009	Sheet 46 of 68

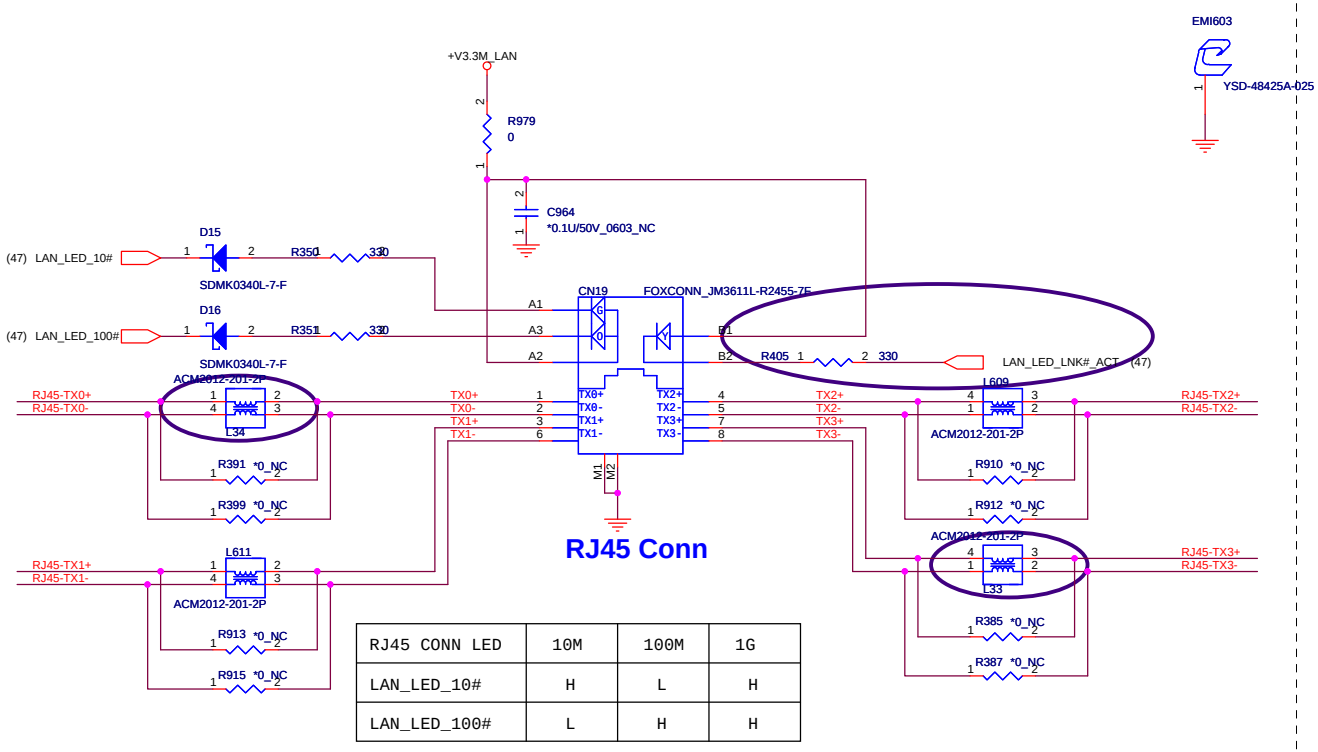

EMI
C883 2 1 220P/50V LAN_CLK_REQ#
Hanksville PHY
FLEX P/N
WG82577LC QKPN
DELH-10D00400000005G
Reserved EMI
TRD0+
TRD0-
TRD1+
TRD1-
TRD2+
TRD2-
TRD3+
TRD3-
C888 *1p/50V_NC
C887 *1p/50V_NC
C902 *1p/50V_NC
C900 *1p/50V_NC
C874 *1p/50V_NC
C872 *1p/50V_NC
C884 *1p/50V_NC
C880 *1p/50V_NC
+V1.0M_LAN
C392 0.1U/10V
C896 0.1U/10V
C877 0.1U/10V
C886 0.1U/10V
C875 10U/10V_0805 CAP0805
C398 0.1U/10V
Put close to IC
+V1.0M_LAN_2
+V1.0M_LAN_3
+V1.0M_LAN_4
C895 0.1U/10V
C401 0.1U/10V
C412 0.1U/10V
+V3.3M_LAN_OUT_R
C873 0.1U/10V
C882 0.1U/10V
C404 0.1U/10V
+V3.3A_PCH
+V3.3M_LAN
R909 10K
R981 10K
Q959 NTR4170NT1G
(17) LAN_CLK_REQ#
R980 10K
U609
HANKSVILLE_WG82577LM
PCIE
SMBUS
LED
JTAG
MDI
LAN_CLK_REQ_D#
R904 PLT_RST#_LAN
(13,20,38,39,46) PE_RESET#
(17) CLK_PCIE_LAN
(17) CLK_PCIE_LAN#
(17) PCIE_LAN_RX_P6
(17) PCIE_LAN_RX_N6
C876 0.1U/10V
C879 0.1U/10V
PCIE_LAN_RX_P6_C
PCIE_LAN_RX_N6_C
(17) PCIE_LAN_TX_P6
(17) PCIE_LAN_TX_N6
R908 LAN_PER_P
R911 LAN_PER_N
(17) SML0_CLK
(17) SML0_DATA
(21) PM_LANPHY_ENABLE
R402 10K
D630 *1SS355_NC
R403 *10K_NC
R404 0
LAN_DISABLE_N
(48) LAN_LED_LNK#_ACT
(48) LAN_LED_100#
(48) LAN_LED_10#
T818 PAD
T817 PAD
R902 *10K_NC
R901 *10K_NC
C898 27PF
C899 27PF
C897 10P/50V
Y601 25MHz 20PF_+-25ppm
LAN_XTAL1_C
LAN_XTAL1
LAN_XTAL2
LAN_TEST_EN
RES_BIAS
R903 1K_F
R916 3.01K_F
MDI_PLUS0
MDI_MINUS0
MDI_PLUS1
MDI_MINUS1
MDI_PLUS2
MDI_MINUS2
MDI_PLUS3
MDI_MINUS3
RSVD_NC0
RSVD_VCC3P3_1
RSVD_VCC3P3_2
VDD3P3_1
VDD3P3_2
VDD3P3_3
VDD3P3_4
VDD3P3_5
VDD1P0_9
VDD1P0_8
VDD1P0_7
VDD1P0_6
VDD1P0_5
VDD1P0_4
VDD1P0_3
VDD1P0_2
VDD1P0_1
CRTL_1P0
VSS_EPAD1
VSS_EPAD2
VSS_EPAD3
VSS_EPAD4
VCT
R390 3.01K_F
R389 3.01K_F
+V3.3M_LAN_OUT
+V3.3M_LAN_OUT_R
L608 BLM18AG601SN1D
C901 1U/10V_0603 CAP0603
+V1.0M_LAN_4
+V1.0M_LAN_3
+V1.0M_LAN_2
R384
R383
R914
0402-SHORT
CTRL_1P0_R
R411 0
Near Q124
R412
R409 0402-SHORT
C414 0.1U/10V
C903 10U/10V_0805 CAP0805
C425 0.01U/16V
R410 4.99K_F
Q648 BCP69
C905 4.7uF
C904 4.7uF
+V3.3M_LAN_+V1.0M
+5V_ALW2
+15V_ALW
R905 100K
R906 150K_F
Q645 2N7002W-7-F
Q646 2N7002W-7-F
(18,41) PM_SLP_LAN#
PM_SLP_LAN#
+3.3V_ALW_17020
Q647 NTR4170NT1G
220 mA
R907 75K_F
C881 0.1U/50V
C885 0.1U/50V
+V3.3M_LAN (17,22,48,49)
Title
PHY_HANKSVILLE GbE LAN
Size
Document Number
Dell/FLEX Confidential
Rev X02
Date: Thursday, October 22, 2009
Sheet 47 of 68

TRANSFORMER

Layout Note:
Route TRD+/- pairs with 100 ohm differential trace immpedance.



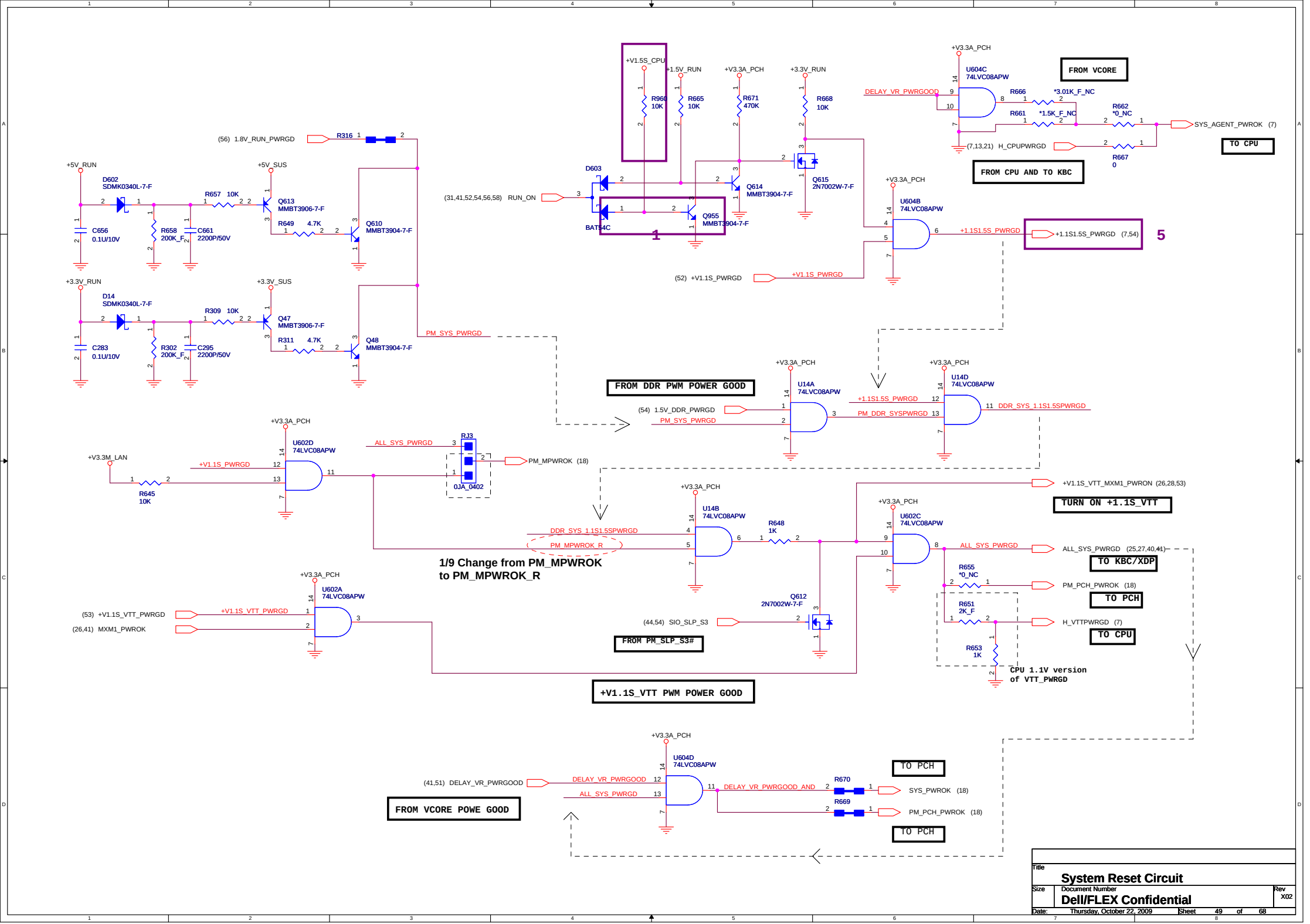
RJ-45 Connector



RJ45 Conn

RJ45 CONN LED	10M	100M	1G
LAN_LED_10#	H	L	H
LAN_LED_100#	L	H	H

Title	RJ-45/TRANSFORM	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Tuesday, November 24, 2009	Sheet 48 of 68	


+V1.5S_CPU
+1.5V_RUN
+V3.3A_PCH
+3.3V_RUN
R960 10K
R665 10K
R671 470K
R668 10K
D603
BAT54C
Q614 MMBT3904-F
Q615 2N7002W-7-F
Q955 MMBT3904-F
(31,41,52,54,56,58) RUN_ON
1
U604C 74LVC08APW
FROM VCORE
DELAY_VR_PWRGOOD
R666 *3.01K_F_NC
R661 *1.5K_F_NC
R662 *0_NC
SYS_AGENT_PWROK (7)
TO CPU
(7,13,21) H_CPUPWRGD
R667 0
FROM CPU AND TO KBC
U604B 74LVC08APW
+1.1S1.5S_PWRGD
+1.1S1.5S_PWRGD (7,54)
5
(52) +V1.1S_PWRGD
+V1.1S_PWRGD
(56) 1.8V_RUN_PWRGD
R316
+5V_RUN
+5V_SUS
D602 SDMK0340L-7-F
R657 10K
Q613 MMBT3906-F
R649 4.7K
Q610 MMBT3904-F
C656 0.1U/10V
R658 200K_F
C661 2200P/50V
+3.3V_RUN
+3.3V_SUS
D14 SDMK0340L-7-F
R309 10K
Q47 MMBT3906-F
R311 4.7K
Q48 MMBT3904-F
C283 0.1U/10V
R302 200K_F
C295 2200P/50V
PM_SYS_PWRGD
FROM DDR PWM POWER GOOD
U14A 74LVC08APW
U14D 74LVC08APW
(54) 1.5V_DDR_PWRGD
PM_SYS_PWRGD
+1.1S1.5S_PWRGD
PM_DDR_SYSPWRGD
DDR_SYS_1.1S1.5SPWRGD
+V3.3M_LAN
R645 10K
U602D 74LVC08APW
+V1.1S_PWRGD
ALL_SYS_PWRGD
RJ3
0JA_0402
PM_MPWROK (18)
U14B 74LVC08APW
DDR_SYS_1.1S1.5SPWRGD
PM_MPWROK_R
R648 1K
1/9 Change from PM_MPWROK to PM_MPWROK_R
U602C 74LVC08APW
+V1.1S_VTT_MXM1_PWRON (26,28,53)
TURN ON +1.1S_VTT
ALL_SYS_PWRGD (25,27,40,41)
TO KBC/XDP
R655 *0_NC
PM_PCH_PWROK (18)
TO PCH
R651 2K_F
H_VTTPWRGD (7)
TO CPU
R653 1K
CPU 1.1V version of VTT_PWRGD
U602A 74LVC08APW
(53) +V1.1S_VTT_PWRGD
(26,41) MXM1_PWROK
+V1.1S_VTT_PWRGD
Q612 2N7002W-7-F
(44,54) SIO_SLP_S3
FROM PM_SLP_S3#
+V1.1S_VTT PWM POWER GOOD
U604D 74LVC08APW
(41,51) DELAY_VR_PWRGOOD
DELAY_VR_PWRGOOD_AND
R670
R669
SYS_PWROK (18)
PM_PCH_PWROK (18)
TO PCH
FROM VCORE POWE GOOD
Title
System Reset Circuit
Size
Document Number
Dell/FLEX Confidential
Rev X02
Date: Thursday, October 22, 2009
Sheet 49 of 68

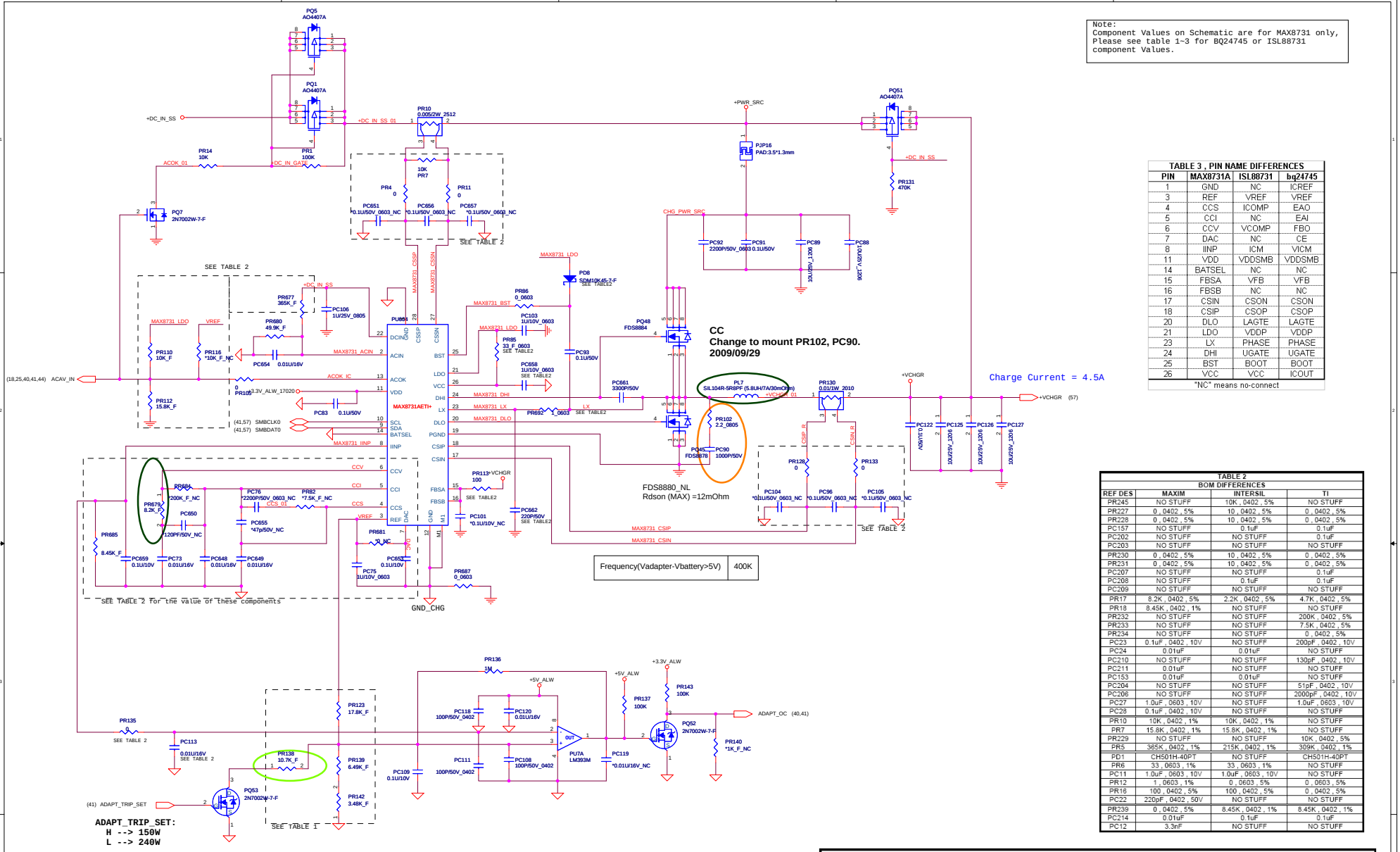


TABLE 3 , PIN NAME DIFFERENCES			
PIN	MAX8731A	ISL88731	bq24745
1	GND	NC	ICREF
3	REF	VREF	VREF
4	CCS	ICOMP	EAO
5	CCI	NC	EAI
6	CCV	VCOMP	FBO
7	DAC	NC	CE
8	IINP	ICM	VICM
11	VDD	VDDSMB	VDDSMB
14	BATSEL	NC	NC
15	FBSA	VFB	VFB
16	FBSB	NC	NC
17	CSIN	CSON	CSON
18	CSIP	CSOP	CSOP
20	DLO	LAGTE	LAGTE
21	LDO	VDDP	VDDP
23	LX	PHASE	PHASE
24	DHI	UGATE	UGATE
25	BST	BOOT	BOOT
26	VCC	VCC	ICOUT

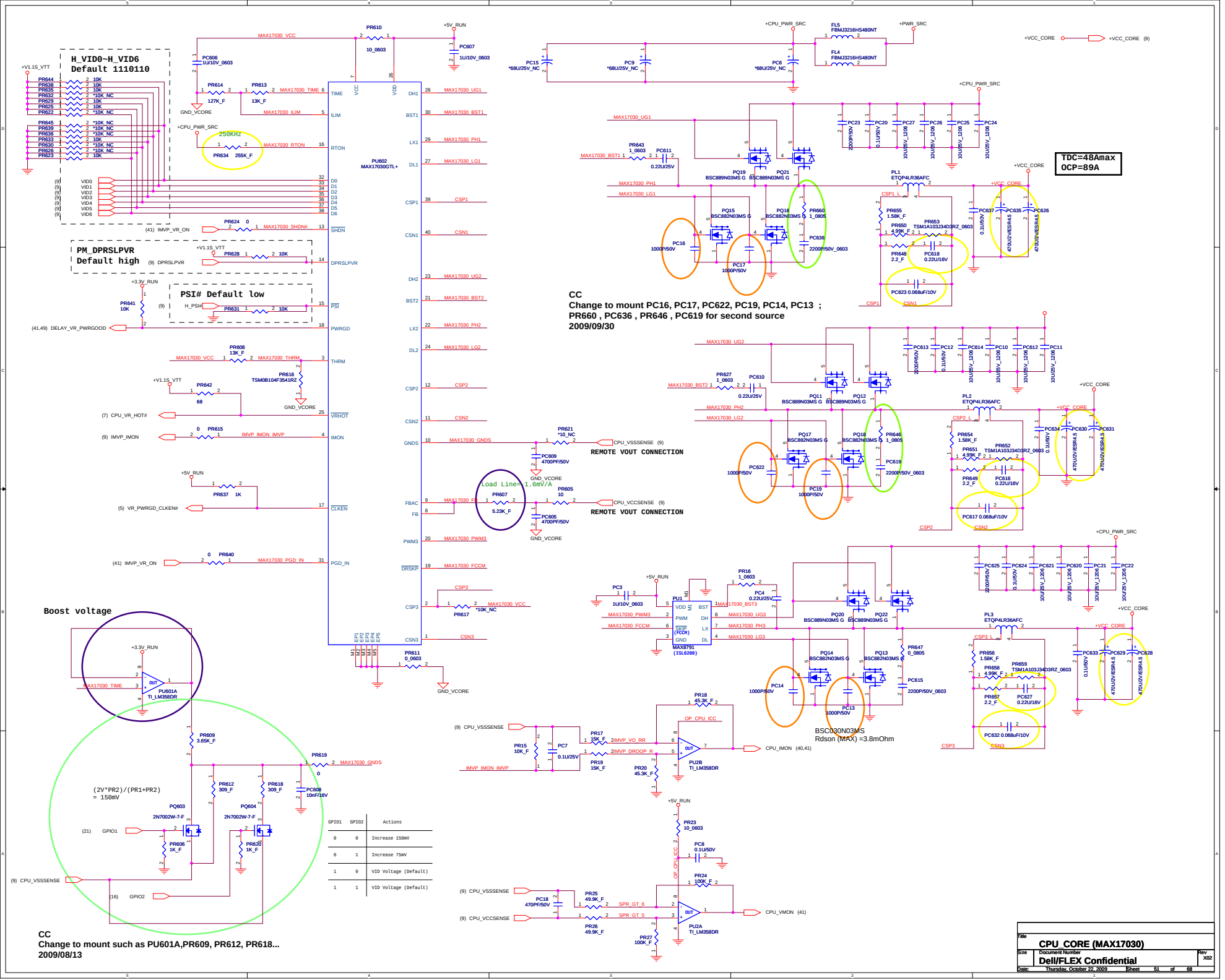
"NC" means no-connect

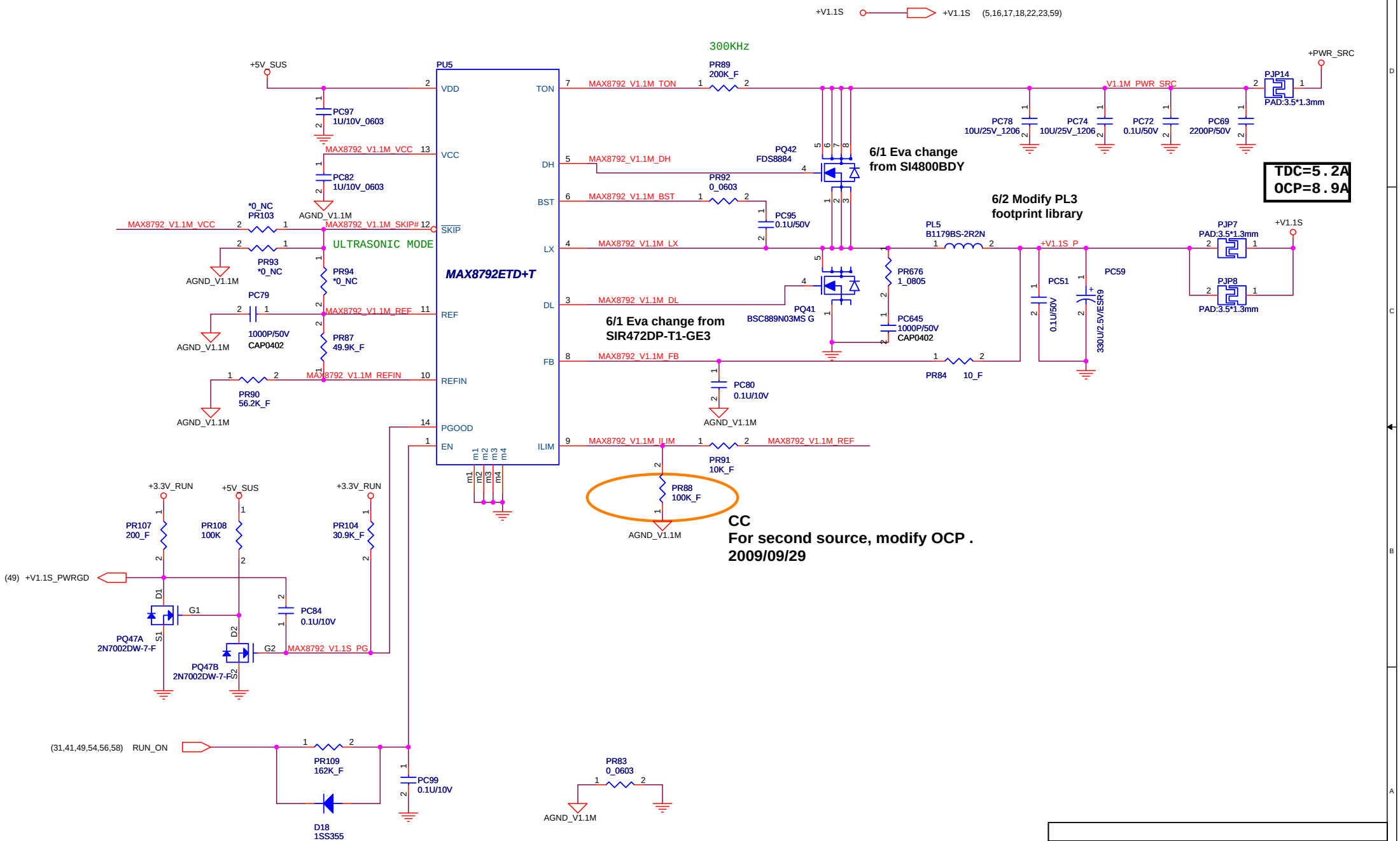
TABLE 2 BOM DIFFERENCES			
REF DES	MAXIM	INTERSIL	TI
PR245	NO STUFF	10K , 0402 , 5%	NO STUFF
PR227	0 , 0402 , 5%	10 , 0402 , 5%	0 , 0402 , 5%
PR228	0 , 0402 , 5%	10 , 0402 , 5%	0 , 0402 , 5%
PR157	NO STUFF	0.1uF	0.1uF
PC202	NO STUFF	NO STUFF	0.1uF
PC203	NO STUFF	NO STUFF	NO STUFF
PR230	0 , 0402 , 5%	10 , 0402 , 5%	0 , 0402 , 5%
PR231	0 , 0402 , 5%	10 , 0402 , 5%	0 , 0402 , 5%
PC207	NO STUFF	NO STUFF	0.1uF
PC208	NO STUFF	0.1uF	0.1uF
PC209	NO STUFF	NO STUFF	NO STUFF
PR17	8.2K , 0402 , 5%	2.2K , 0402 , 5%	4.7K , 0402 , 5%
PR18	8.45K , 0402 , 1%	NO STUFF	NO STUFF
PR232	NO STUFF	NO STUFF	200K , 0402 , 5%
PR233	NO STUFF	NO STUFF	7.5K , 0402 , 5%
PR234	NO STUFF	NO STUFF	0 , 0402 , 5%
PC23	0.1uF , 0402 , 10V	NO STUFF	200pF , 0402 , 10V
PC24	0.01uF	0.01uF	NO STUFF
PC210	NO STUFF	NO STUFF	130pF , 0402 , 10V
PC211	0.01uF	NO STUFF	NO STUFF
PC153	0.01uF	0.01uF	NO STUFF
PC204	NO STUFF	NO STUFF	51pF , 0402 , 10V
PC206	NO STUFF	NO STUFF	2000pF , 0402 , 10V
PC27	1.0uF , 0603 , 10V	NO STUFF	1.0uF , 0603 , 10V
PC28	0.1uF , 0402 , 10V	NO STUFF	NO STUFF
PR10	10K , 0402 , 1%	10K , 0402 , 1%	NO STUFF
PR7	15.8K , 0402 , 1%	15.8K , 0402 , 1%	NO STUFF
PR229	NO STUFF	NO STUFF	10K , 0402 , 5%
PR5	365K , 0402 , 1%	215K , 0402 , 1%	309K , 0402 , 1%
PD1	CH501H-40PT	NO STUFF	CH501H-40PT
PR6	33 , 0603 , 1%	NO STUFF	NO STUFF
PC11	1.0uF , 0603 , 10V	1.0uF , 0603 , 10V	NO STUFF
PR12	1 , 0603 , 1%	0 , 0603 , 5%	0 , 0603 , 5%
PR16	100 , 0402 , 5%	100 , 0402 , 5%	0 , 0402 , 5%
PC22	220pF , 0402 , 50V	NO STUFF	NO STUFF
PR239	0 , 0402 , 5%	8.45K , 0402 , 1%	8.45K , 0402 , 1%
PC214	0.01uF	0.1uF	0.1uF
PC12	3.3nF	NO STUFF	NO STUFF

TABLE 1								
			MAX8731A/ISL88731			bq24745		
ADAPTER(W)	TRIP CURRENT (A)	R237	R241	R243	R242 (see Note 1)	R241	R243	R242 (see Note 1)
65	3.17	57.6K	13K	105	24.9K	12.4K	205	24.3K
150	7.43	30.9K	24.9K	499	10.7K	23.7K	499	10.5K
240	11.69 (see Note 2)	17.8K	6.49K	3.48K	2.37K	8.45K	1.18K	23.2K

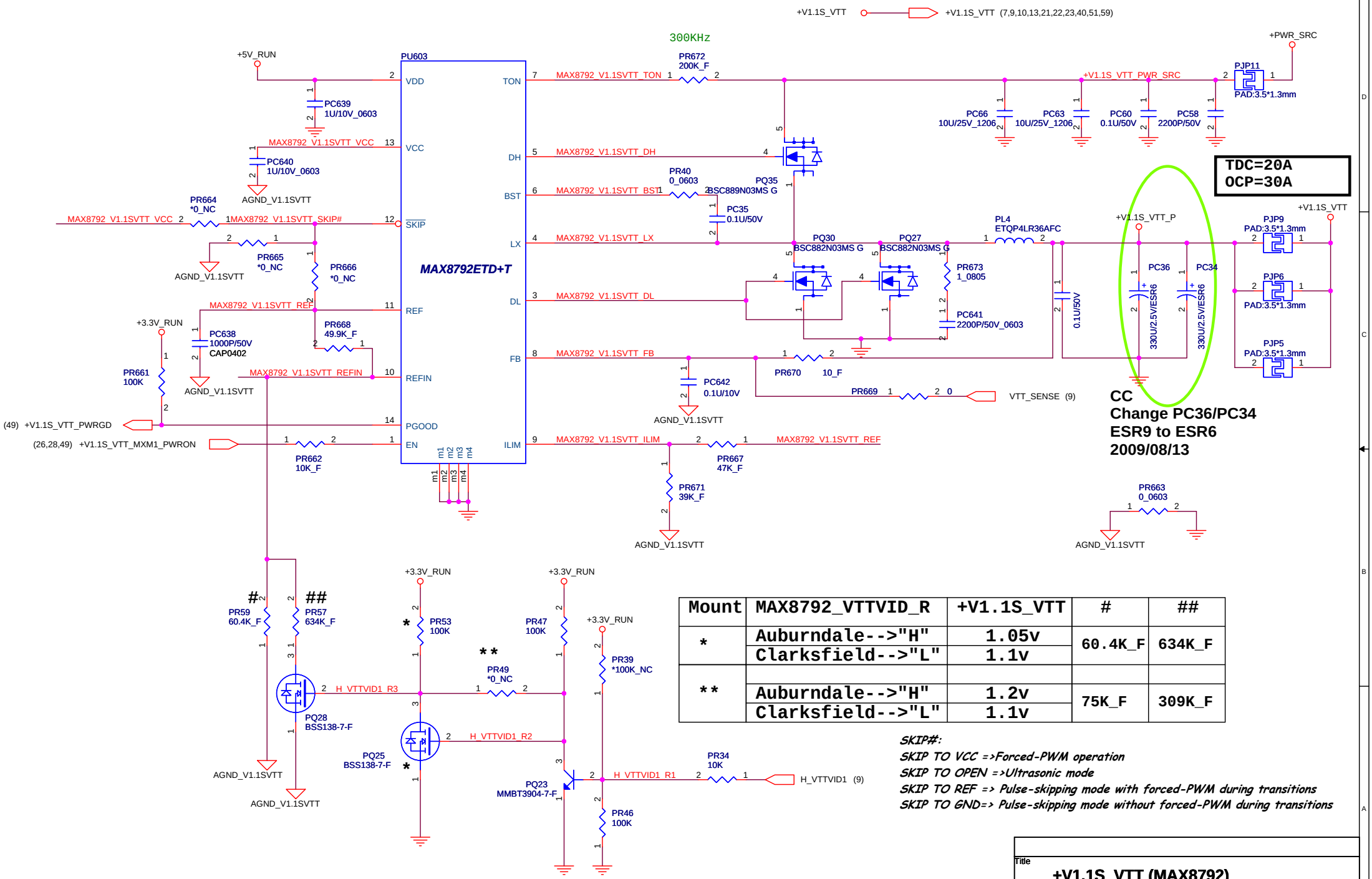
Note 1 : R242 is popu;ated if ADAPT_TRIP_SET is used to program for the next lower adapter
ADAPT_TRIP_SET is floating for the higher adapter , grounded for the lower adapter
Note 2 : RR1 must be 5mOhms instead of 10mOhms for the 240W adapter

Title: Charger (MAX8731)
Size: Document Number: Dell/FLEX Confidential
Rev: X02
Date: Thursday, October 22, 2009 Sheet 50 of 68


H_VID0~H_VID6
Default 1110110
PM_DPRSLPVR
Default high
PSI# Default low
MAX17030GTL+
TDC=48Amax
OCP=89A
CC
Change to mount PC16, PC17, PC622, PC19, PC14, PC13 ;
PR660 , PC636 , PR646 , PC619 for second source
2009/09/30
REMOTE VOUT CONNECTION
REMOTE VOUT CONNECTION
Load Line=-1.6mV/A
Boost voltage
(2V*PR2)/(PR1+PR2)
= 150mV
BSC030N03MS
Rdson (MAX) =3.8mOhm
CC
Change to mount such as PU601A,PR609, PR612, PR618...
2009/08/13
CPU_CORE (MAX17030)
Dell/FLEX Confidential
Thursday, October 22, 2009



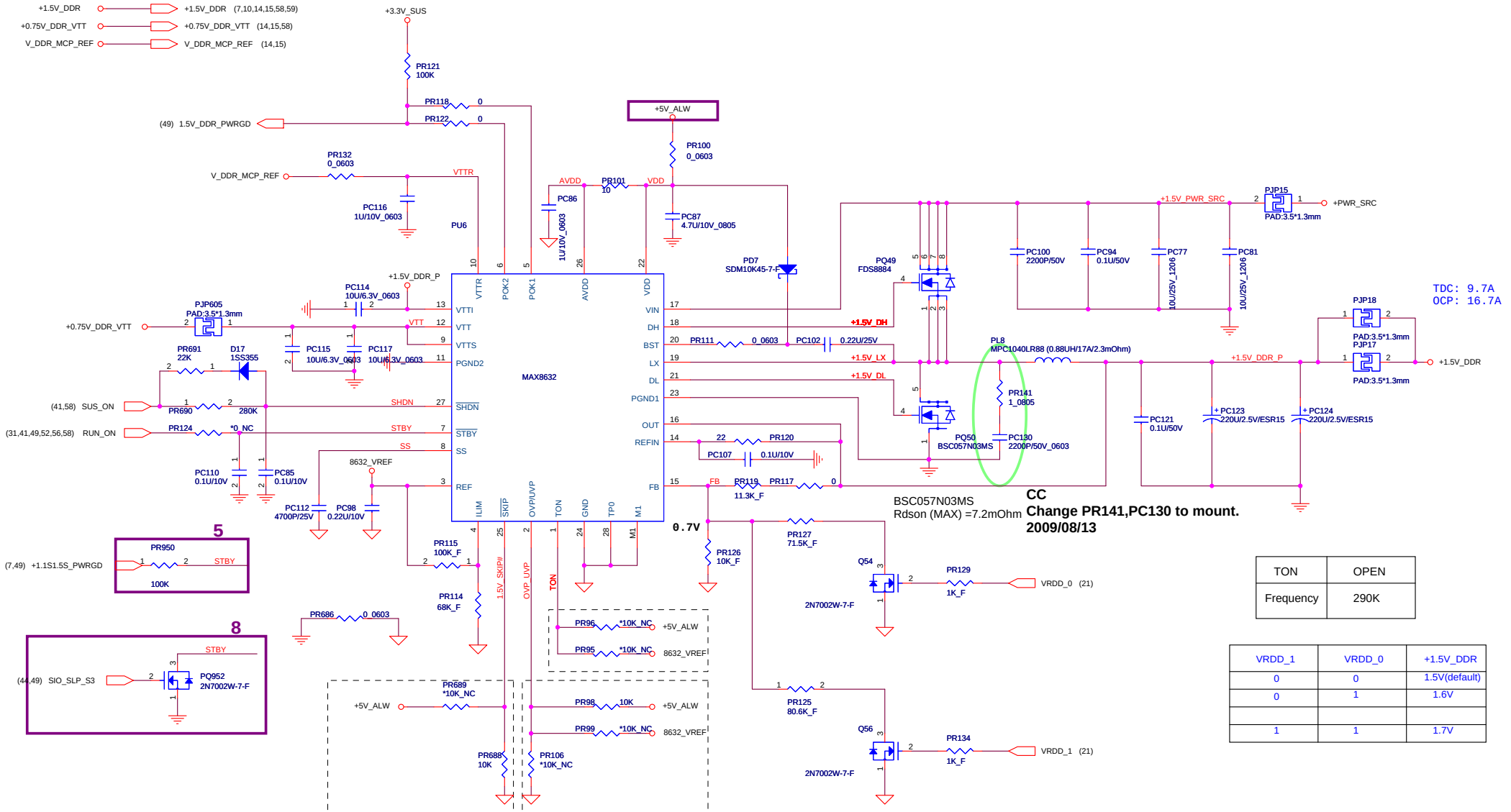
Title	+V1.1S (MAX8792)	
Size	Document Number: Dell/FLEX Confidential	Rev X02
Date: Thursday, October 22, 2009	Sheet 52 of 68	



Mount	MAX8792_VTTVID_R	+V1.1S_VTT	#	##
*	Auburndale-->"H"	1.05v	60.4K_F	634K_F
	Clarksfield-->"L"	1.1v		
**				
	Auburndale-->"H"	1.2v	75K_F	309K_F
	Clarksfield-->"L"	1.1v		

SKIP#:
SKIP TO VCC =>Forced-PWM operation
SKIP TO OPEN =>Ultrasonic mode
SKIP TO REF => Pulse-skipping mode with forced-PWM during transitions
SKIP TO GND=> Pulse-skipping mode without forced-PWM during transitions

Title	+V1.1S_VTT (MAX8792)	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 53 of 68	



TON	OPEN
Frequency	290K

VRDD_1	VRDD_0	+1.5V_DDR
0	0	1.5V(default)
0	1	1.6V
1	1	1.7V

Title: DDR1.5/0.75(MAX8632)

Size | Document Number: Dell/FLEX Confidential | Rev: X02

Date: Thursday, October 22, 2009 | Sheet 54 of 68

100mA (Max)

TDC: 7.1A
OCP: 12.2A

CC
Add snubber for second source
2009/09/29

FDS8880_NL
Rdson (MAX) =12mOhm

TDC: 6.8A
OCP: 11.7A

FDS8880_NL
Rdson (MAX) =12mOhm

CC
Add snubber for second source
2009/09/29

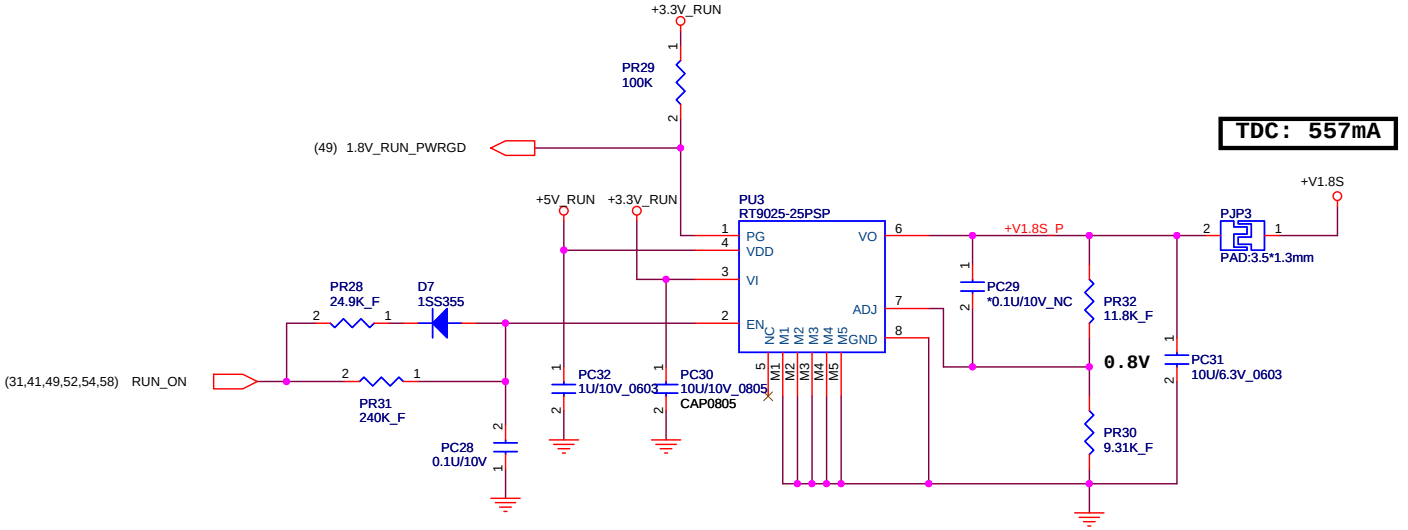
CC
Change Net to +5V_ALWP to disable SECFB
2009/08/13

(2mA)

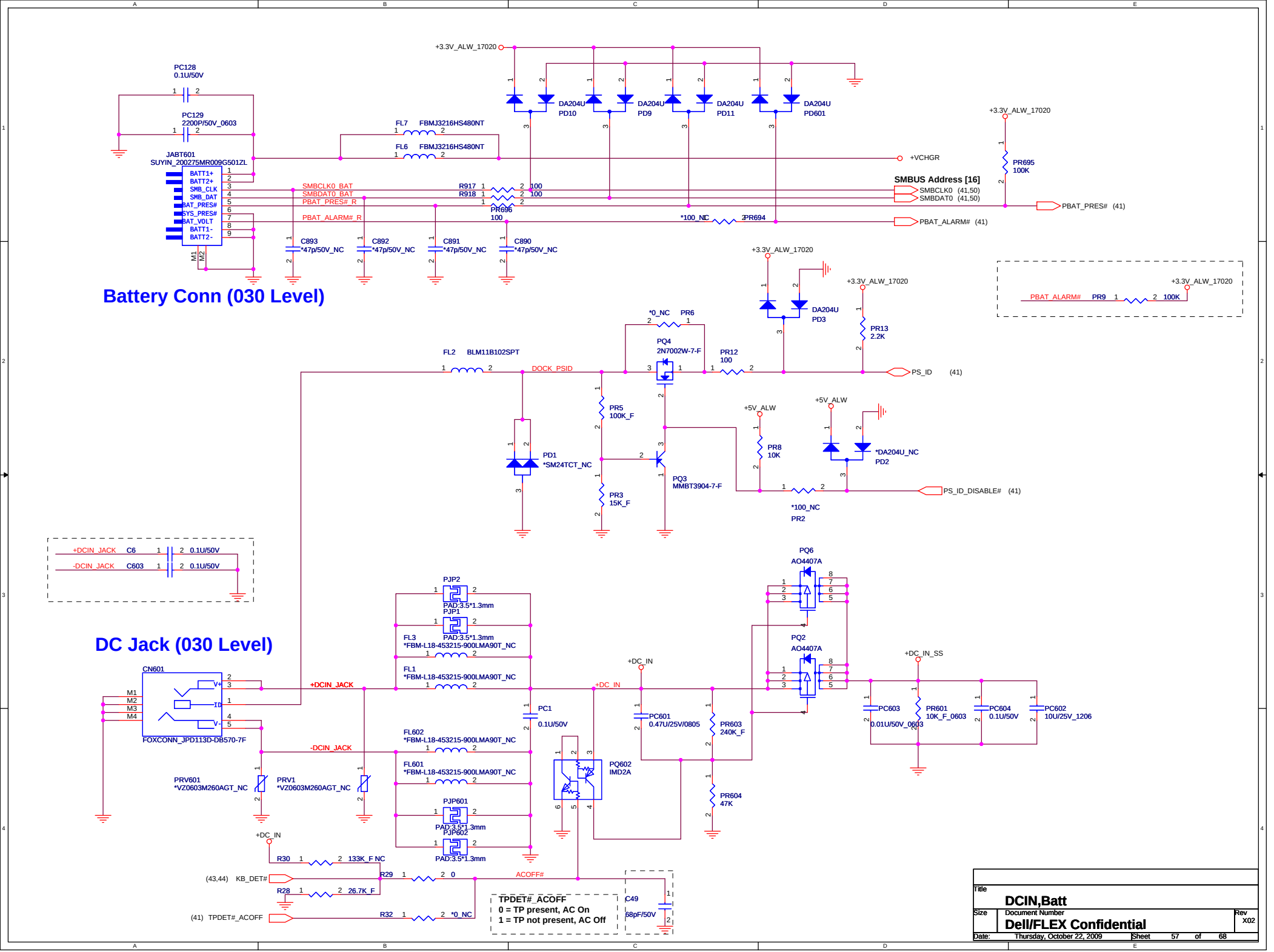
TON	Frequency
GND	OUT1@400K , OUT2@500K
VCC	OUT1@200K , OUT2@300K
OPEN	OUT1@400K , OUT2@300K

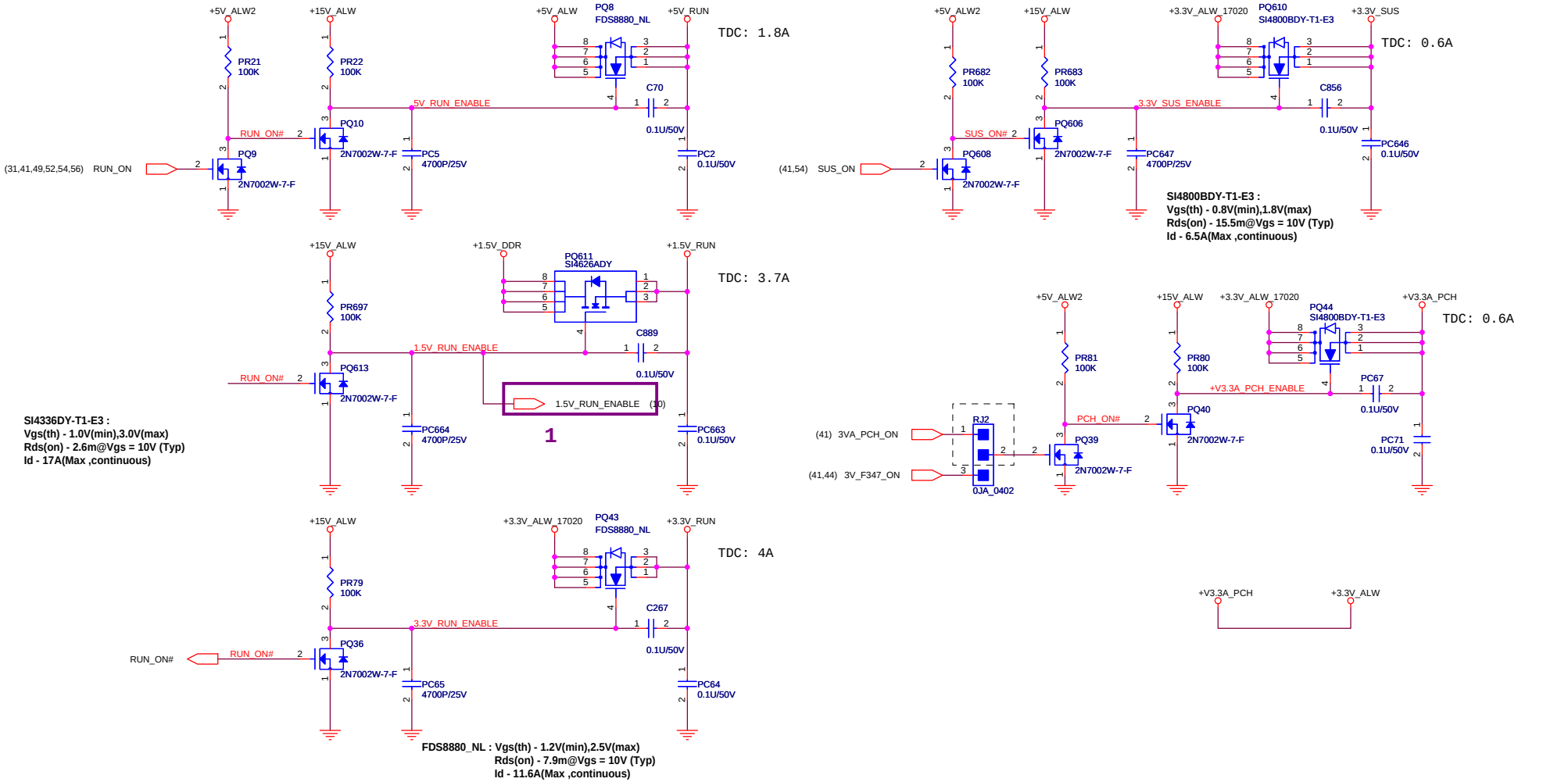
+5V_ALW (23,25,27,31,36,43,46,50,54,57,58,59)
+3.3V_ALW_17020 (16,41,42,43,47,50,57,58)

Title	SYS 5V/3V(MAX17020)
Size	Document Number: Dell/FLEX Confidential
Rev	X02
Date:	Thursday, October 22, 2009
Sheet	55 of 68



Title	+V1.8 (RT9025-25PSP)	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 56 of 68	


Battery Conn (030 Level)
DC Jack (030 Level)
+3.3V_ALW_17020
PC128
0.1U/50V
PC129
2200P/50V_0603
JABT601
SUYIN_200275MR009G501ZL
BATT1+
BATT2+
SMB_CLK
SMB_DAT
BAT_PRES#
SYS_PRES#
BAT_VOLT
BATT1-
BATT2-
FL7 FBMJ3216HS480NT
FL6 FBMJ3216HS480NT
DA204U PD10
DA204U PD9
DA204U PD11
DA204U PD601
+VCHGR
SMBUS Address [16]
SMBCLK0 (41,50)
SMBDAT0 (41,50)
PBAT_PRES# (41)
PBAT_ALARM# (41)
SMBCLK0_BAT
SMBDAT0_BAT
PBAT_PRES#_R
PBAT_ALARM#_R
R917 100
R918 100
PR695 100
*100_NC PR694
PR695 100K
C893 *47p/50V_NC
C892 *47p/50V_NC
C891 *47p/50V_NC
C890 *47p/50V_NC
DA204U PD3
PR13 2.2K
*0_NC PR6
PQ4 2N7002W-7-F
PR12 100
FL2 BLM11B102SPT
DOCK_PSID
PS_ID (41)
PR5 100K_F
PD1 *SM24TCT_NC
PR3 15K_F
PQ3 MMBT3904-7-F
+5V_ALW
PR8 10K
*DA204U_NC PD2
PS_ID_DISABLE# (41)
*100_NC PR2
PBAT_ALARM# PR9 100K
+DCIN_JACK C6 0.1U/50V
-DCIN_JACK C603 0.1U/50V
CN601
FOXCONN_JPD113D-DB570-7F
PJP2
PAD:3.5*1.3mm
PJP1
FL3 *FBM-L18-453215-900LMA90T_NC
FL1 *FBM-L18-453215-900LMA90T_NC
FL602 *FBM-L18-453215-900LMA90T_NC
FL601 *FBM-L18-453215-900LMA90T_NC
PJP601
PJP602
PRV601 *VZ0603M260AGT_NC
PRV1 *VZ0603M260AGT_NC
PC1 0.1U/50V
PQ602 IMD2A
PC601 0.47U/25V/0805
PR603 240K_F
PR604 47K
PQ6 AO4407A
PQ2 AO4407A
+DC_IN
+DC_IN_SS
PC603 0.01U/50V_0603
PR601 10K_F_0603
PC604 0.1U/50V
PC602 10U/25V_1206
R30 133K_F_NC
R29 0
R28 26.7K_F
R32 *0_NC
(43,44) KB_DET#
(41) TPDET#_ACOFF
ACOFF#
TPDET#_ACOFF
0 = TP present, AC On
1 = TP not present, AC Off
C49 68pF/50V
Title
DCIN,Batt
Size
Document Number
Dell/FLEX Confidential
Rev X02
Date: Thursday, October 22, 2009
Sheet 57 of 68



Title	RUN POWER SW	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 58 of 68	

Screw Hole

H5 NPTH7_2.8
H16 NPTH9B7_2.8
H21 NPTH7_2.8
H17 PTH9B7_2.8
H20 NPTH7_2.8
H4 NPTH9B7_2.8
H9 NPTH7_2.8
H10 NPTH9B7_2.8
H1
H11 PTH6B0_1.2
H2 NPTH7_2.8
H14 PTH6B0_1.2
H3 NPTH7_2.8
H7 PTH0B7_6
H8 NPTH9B7_2.8
H6 PTH0B7_6
H15 NPTH9B7_2.8
H13 PTH0B7_6
H12 PTH0B7_6

FID

FID4 NC, NO CONNECT TO ANY.
FID2 NC, NO CONNECT TO ANY.
FID3 NC, NO CONNECT TO ANY.
FID1 NC, NO CONNECT TO ANY.
FID604 NC, NO CONNECT TO ANY.
FID602 NC, NO CONNECT TO ANY.
FID603 NC, NO CONNECT TO ANY.
FID601 NC, NO CONNECT TO ANY.

Moat Cap

+5V_RUN / +3.3V_RUN
C264 C203 C76 C78 C635 0.1U/50V_0603

+5V_RUN / +3.3V_KBVCC
C730 0.1U/50V_0603

+5V_RUN / +PWR_SRC_MXM1
C5 C48 0.1U/50V_0603

+5V_RUN / +PWR_SRC
C65 C67 0.1U/50V_0603

+PWR_SRC / +PWR_SRC_MXM1
C20 0.1U/50V_0603

+3.3V_KBVCC / +3.3V_RUN
C700 0.1U/50V_0603

+PWR_SRC / +CPU_PWR_SRC
C128 0.1U/50V_0603

+5V_RUN
C333 C213 C168 C211 C649 C59 0.1U/50V_0603

+V1.1S
C254 0.1U/50V_0603

+V1.1S_VTT / +3.3V_RUN
C121 C806 0.1U/50V_0603

+V1.1S_VTT / +V1.1S
C255 C776 0.1U/50V_0603

+3.3V_RUN
C285 C339 C205 C79 C118 C88 0.1U/50V_0603

+V1.1S_VTT
C126 0.1U/50V_0603

+V1.1S / +1.5V_DDR
C249 0.1U/50V_0603

+PWR_SRC_MXM1
C22 0.1U/50V_0603

+V1.1S / +PWR_SRC
C319 0.1U/50V_0603

+5V_ALW
C439 C445 C409 0.1U/50V_0603

+PWR_SRC
C286 0.1U/50V_0603

+3.3V_RUN / +PWR_SRC
C332 0.1U/50V_0603

+1.5V_DDR
C209 C381 C387 C300 0.1U/50V_0603

+V1.1S / +3.3V_RUN
C257 C848 0.1U/50V_0603

+PWR_SRC / +5V_ALW
C383 C894 0.1U/50V_0603

+PWR_SRC
C308 C385 C420 C234 C50 C53 0.1U/50V_0603

+CPU_PWR_SRC / +3.3V_RUN
C103 C90 0.1U/50V_0603

+PWR_SRC / +1.5V_DDR
C204 C396 C374 0.1U/50V_0603

Unused Gate

+3.3V_RUN
U5A
74LVC08APW
14 1 2 3 7

+3.3V_RUN
C956 C957 C958 0.1U/50V_0603

+5V_ALW
C963 C960 C962 C961 0.1U/50V_0603

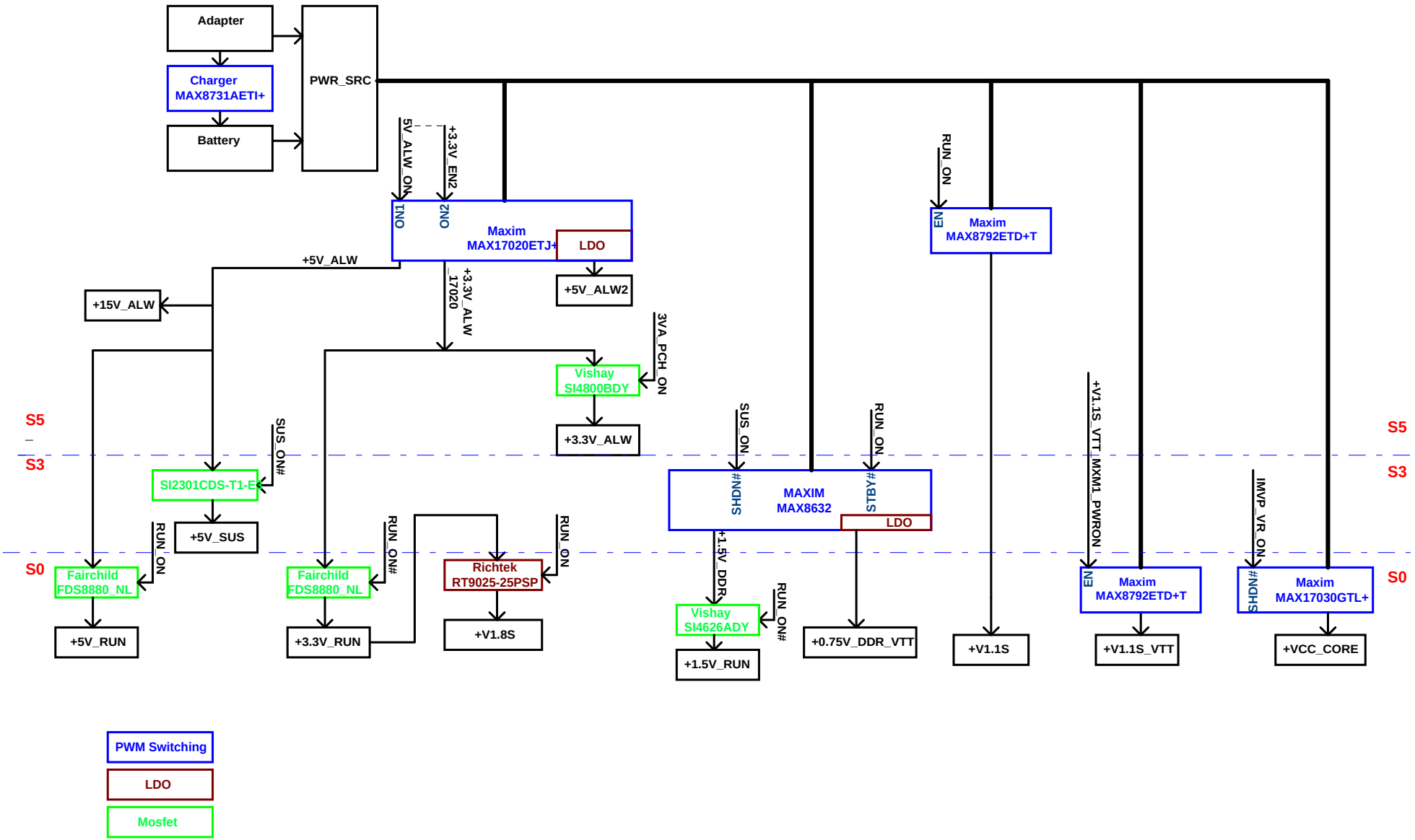
+CPU_PWR_SRC / +V1.1S_VTT
C127 0.1U/50V_0603

+PWR_SRC / +V1.1S_VTT
C144 0.1U/50V_0603

+1.5V_DDR / +V1.1S_VTT
C193 0.1U/50V_0603

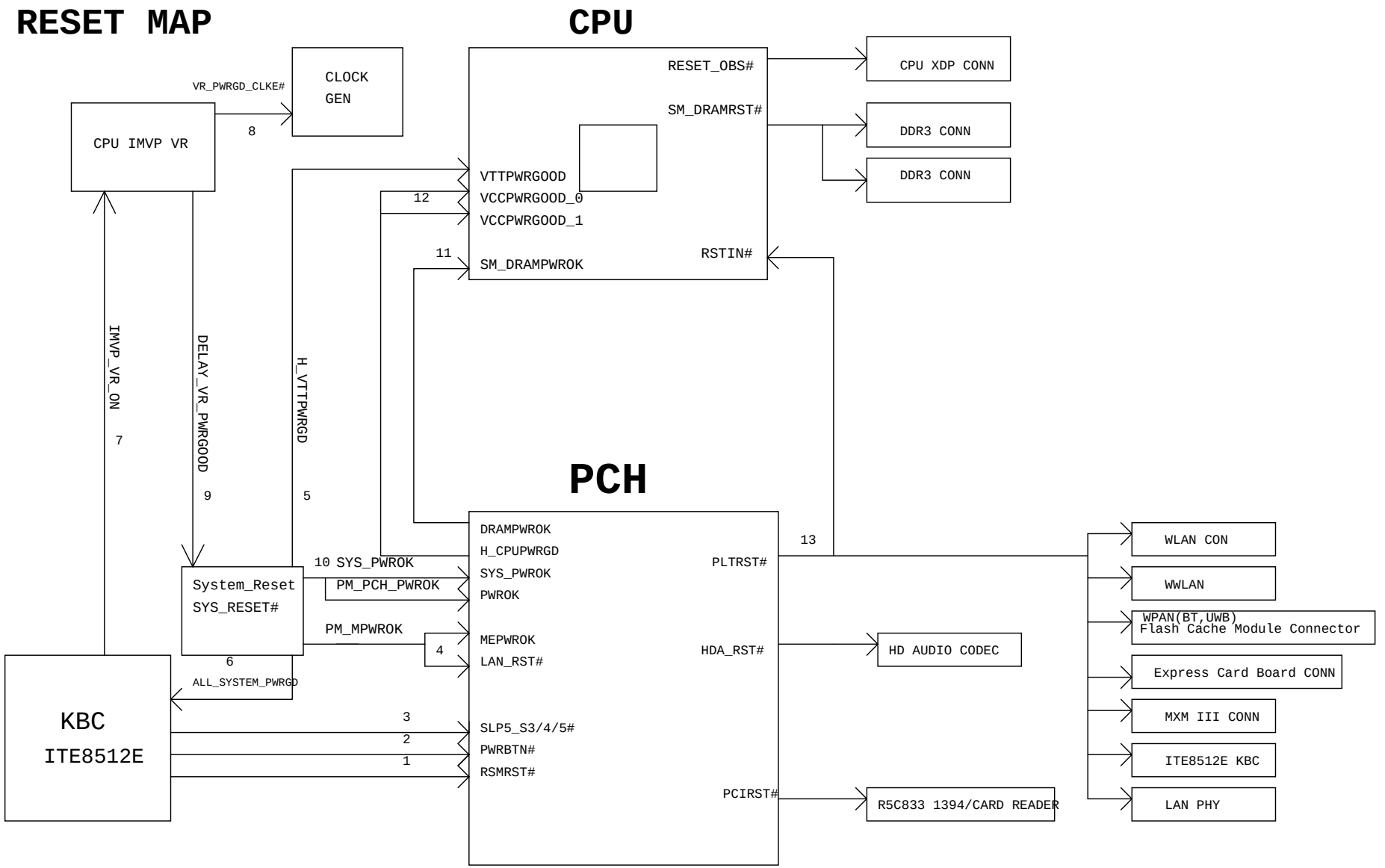
+3.3V_RUN / +5V_ALW
C384 0.1U/50V_0603

Title: PAD & SCREW
Size:
Document Number: Dell/FLEX Confidential
Rev: X02
Date: Thursday, October 22, 2009
Sheet 59 of 68

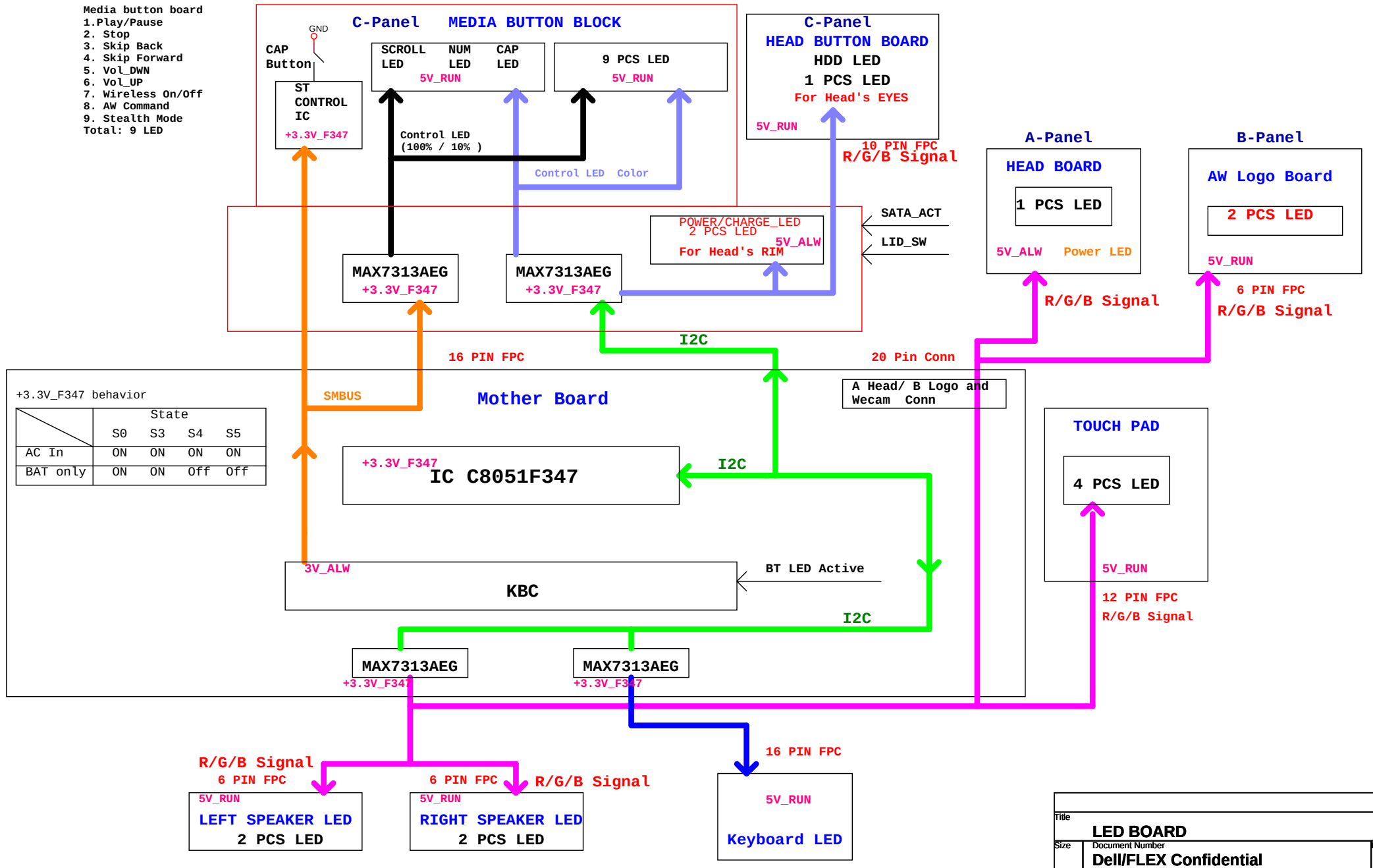


Title	Power Block Diagram	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 60 of 68	

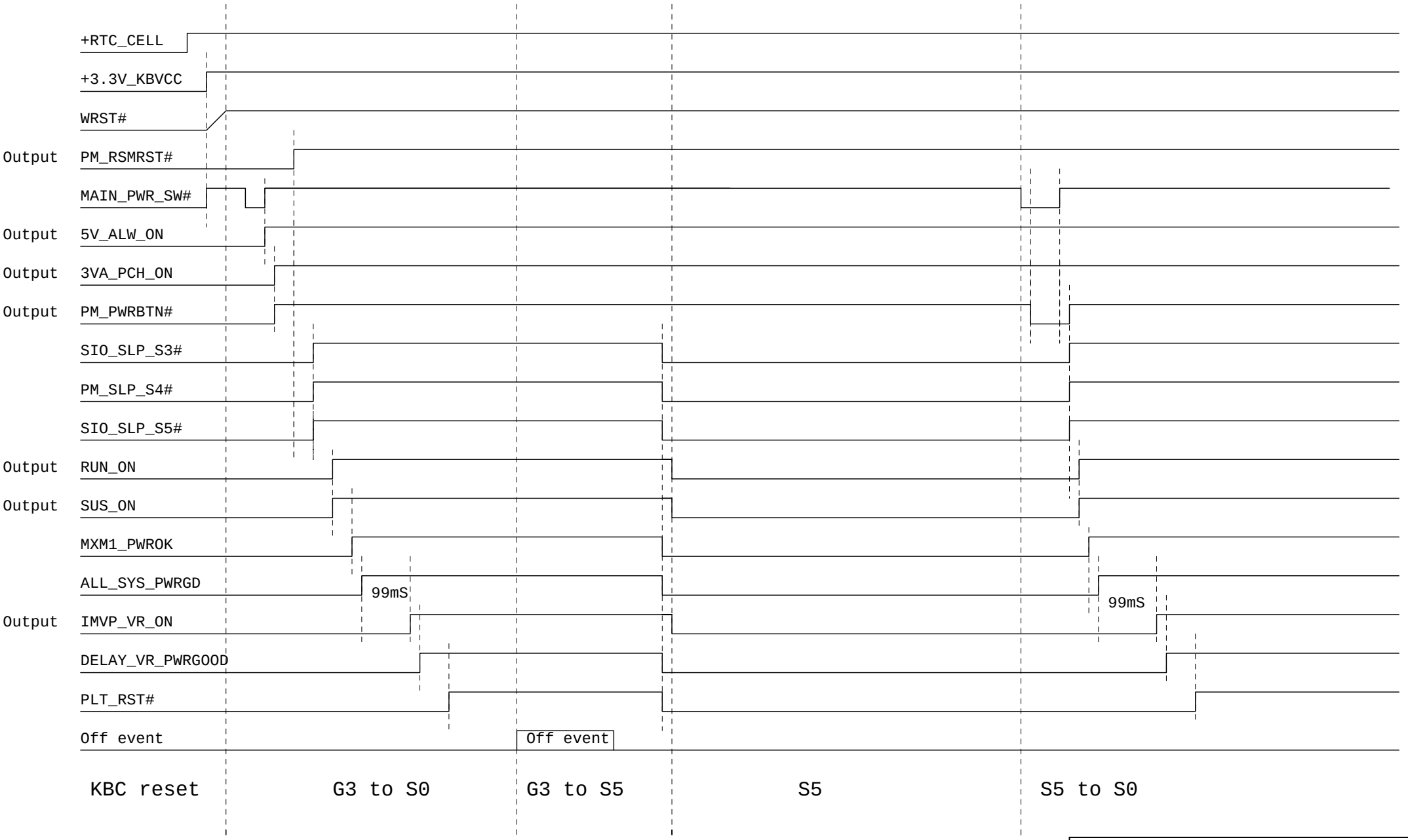
RESET MAP



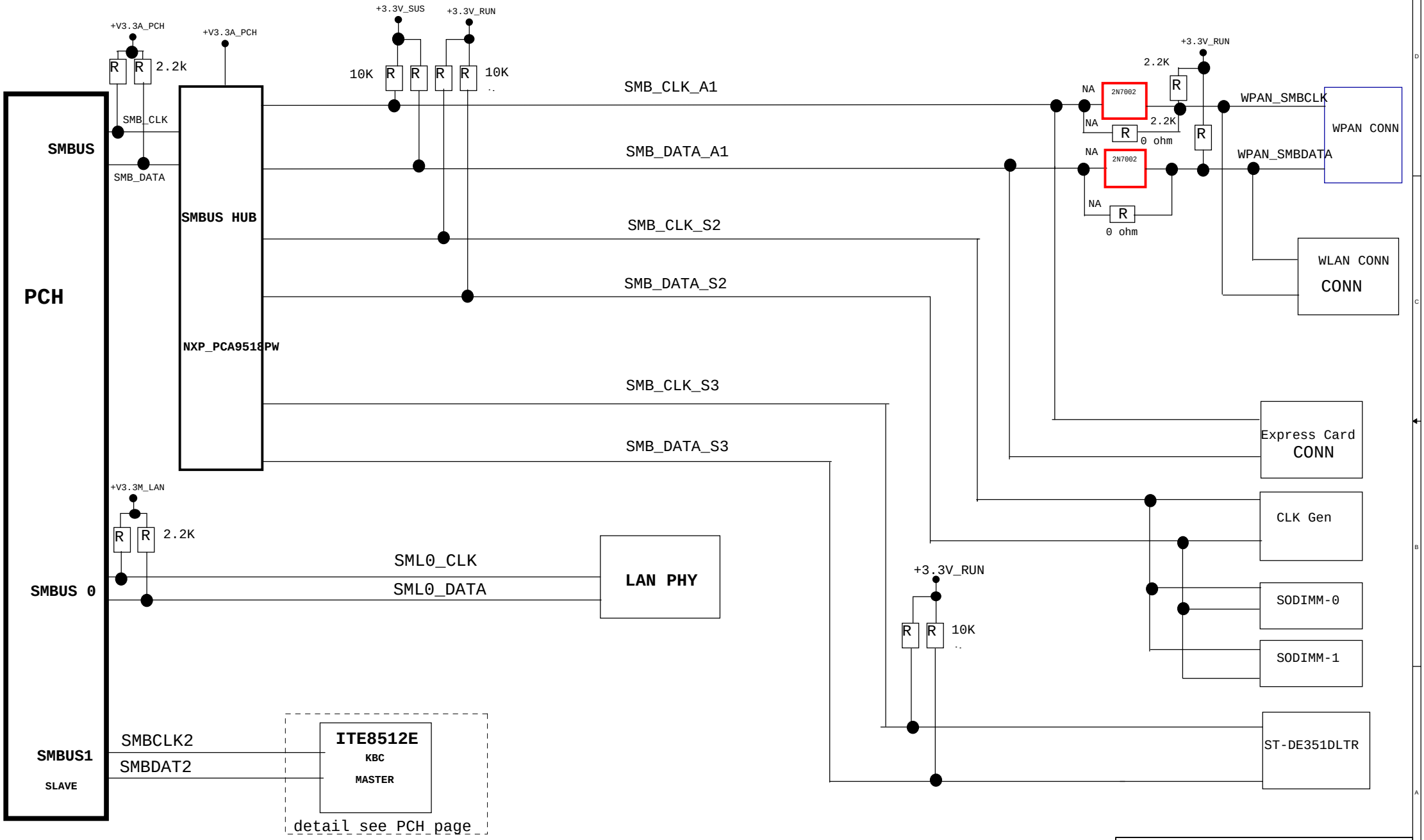
Title	PCI RESET MAP	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 61 of 68	


Media button board
1.Play/Pause
2. Stop
3. Skip Back
4. Skip Forward
5. Vol_DWN
6. Vol_UP
7. Wireless On/Off
8. AW Command
9. Stealth Mode
Total: 9 LED
C-Panel MEDIA BUTTON BLOCK
GND
CAP Button
ST CONTROL IC
+3.3V_F347
SCROLL LED
NUM LED
CAP LED
5V_RUN
9 PCS LED
5V_RUN
Control LED (100% / 10%)
Control LED Color
C-Panel
HEAD BUTTON BOARD
HDD LED
1 PCS LED
For Head's EYES
5V_RUN
10 PIN FPC
R/G/B Signal
A-Panel
HEAD BOARD
1 PCS LED
5V_ALW
Power LED
B-Panel
AW Logo Board
2 PCS LED
5V_RUN
6 PIN FPC
R/G/B Signal
POWER/CHARGE_LED
2 PCS LED
5V_ALW
For Head's RIM
SATA_ACT
LID_SW
MAX7313AEG
+3.3V_F347
MAX7313AEG
+3.3V_F347
I2C
16 PIN FPC
20 Pin Conn
R/G/B Signal
+3.3V_F347 behavior
State
S0 S3 S4 S5
AC In ON ON ON ON
BAT only ON ON Off Off
SMBUS
Mother Board
A Head/ B Logo and Wecam Conn
TOUCH PAD
4 PCS LED
+3.3V_F347
IC C8051F347
I2C
3V_ALW
KBC
BT LED Active
5V_RUN
12 PIN FPC
R/G/B Signal
I2C
MAX7313AEG
+3.3V_F347
MAX7313AEG
+3.3V_F347
R/G/B Signal
6 PIN FPC
5V_RUN
LEFT SPEAKER LED
2 PCS LED
6 PIN FPC
R/G/B Signal
5V_RUN
RIGHT SPEAKER LED
2 PCS LED
16 PIN FPC
5V_RUN
Keyboard LED
Title
LED BOARD
Size
Document Number
Dell/FLEX Confidential
Rev
X02
Date:
Thursday, October 22, 2009
Sheet
62
of
68

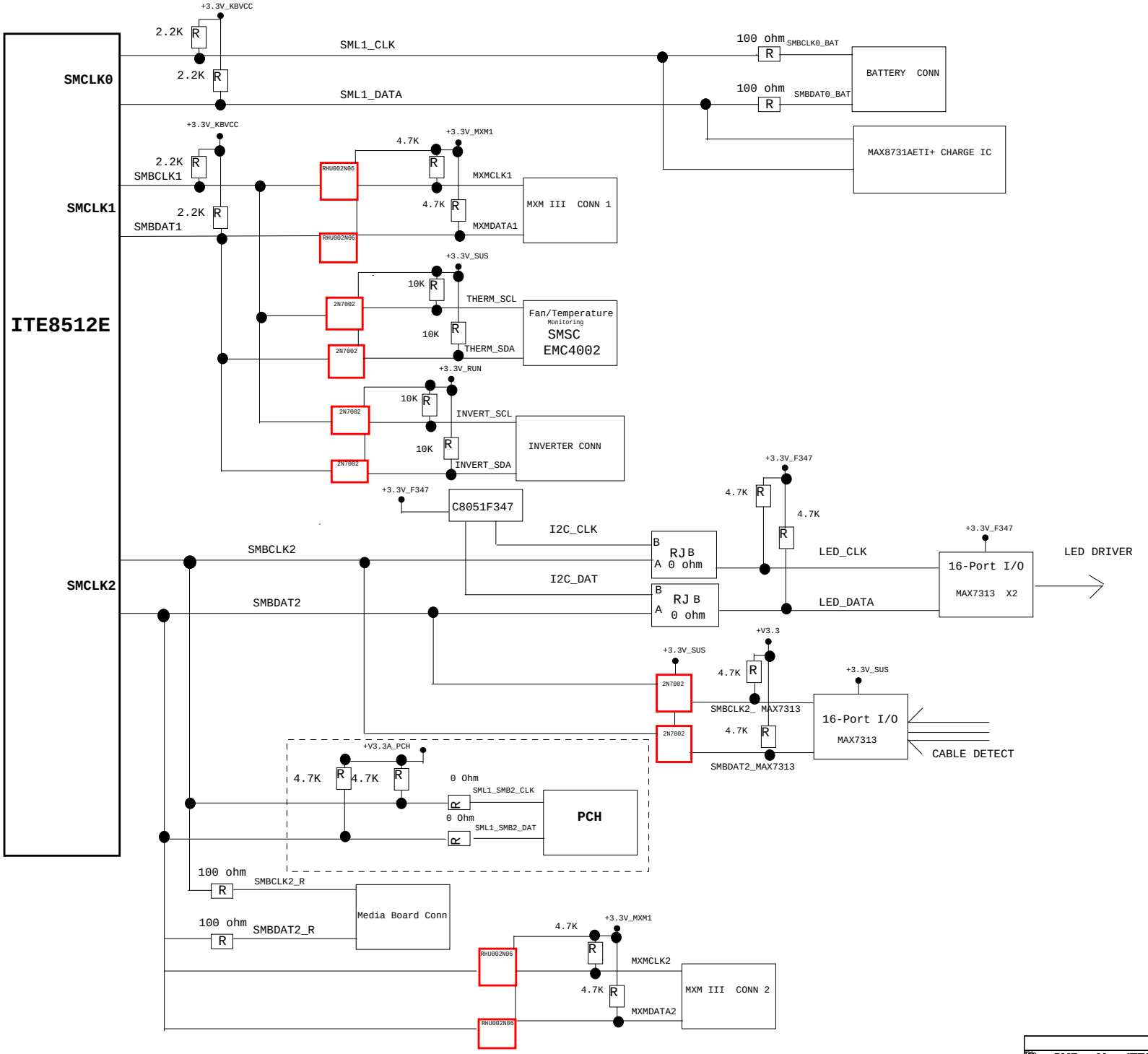
KBC Powre Up Sequence



Title	KBC Power Up Sequence	
Size	Document Number: Dell/FLEX Confidential	Rev X02
Date: Thursday, October 22, 2009	Sheet 63 of 68	



Title	SMBus Map_PCH	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 64 of 68	



Title	SMBus Map_ITE8512E	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 65 of 68	

2009/02/18
1. Add power solution, power link(modify power name +V5S =>+5V_RUN, +V1.5S=>+1.5V_RUN, +V3.3S=>+3.3V_RUN, +V3.3=>+3.3V_SUS, +V5=>+5V_SUS...etc form CPU and Ibex)
2. P.65 Add ONFI connector
3. P.48 Change LAN to HANKSVILLE(82577)
4. P.1 Modify function block
2009/02/23
1. change EC connect
2. Link USB line
3. Change PCI_GNT#0 to PCI_GNT0#
4. P.24 NVRAM power add a optional 1.8V sch, if ONFI used, using 1.8V
2009/02/24
1. change USB charger component
2. Add some GPIO of PCH for Hybrid
3. modify function block
2009/02/25
1. remove 2 DIMM
2. add EDP connector
3. remove P.50 original power sequence of QS and modify power sequence P.63 than copy to P.50
4. modify LAN chip link p.48
2009/02/26
1. modify the power link from LAN chip to transform and RJ45
2. modify some GPIO pin of P.68
2009/03/04
1. remove HYBRID switchable graphical card schematics
2. remove VGA power of processor and FDI bus for delete UMA support
2009/03/05
1. change SIM slot to WiMAX connector
2009/03/06
1. add PCI-E switch schematics
2009/03/10
1. modify MXM and system power sequence
2. add PM_SLP_S5 ELC to U42
3. p.3, p.4 description
2009/03/13
1. modify USB nets name from MCH to PCH
2. modify 3904 LIB of P.40
3. add MXM1_PWROK and MXM2_PWROK pull high
2009/03/16
1. modify power for placement
2009/03/17
1. modify p. 37, HDD, ODD power controller sch
2. modify MXM1_PRESENT to fit Defiant design
3. change to eDP connector to 4 channel
2009/03/19
1. modify p. 23 GPIO
2. modify HPD schematics of HDMI
3. modify p. 55 3/5V power schematics
4. modify p. 56 2.5V feedback resistor
5. add 1.8V dis-charged
2009/03/20
1. modify power p. 51 and p. 57
2. add a reserve pull high resistor at MXM_THRO
3. complete PCI-E switch schematics
2009/03/23
1. delete P39. R383,R452 and P.38, R380,R416 for dual pull high.
2009/03/24
1. LAN_CLK_REQ#_R with two power source pull high, remove one
2. p. 19 SMBus HUB schematic modify, change mini PCI-E card to channel 4 to seperate different power plan with the same channel, and add channel 3 pull high
3. move C1135, C1136, C1138 to p. 64
2009/03/26
1. add G-sensor at p. 37
2. combine +V1.1S and +V1.1S_VTT with a power controller
3. add CPU core boost voltage function at p. 52
4. SMBCLK2 and SMBDAT2 with dual pull high resistor, remove one.
2009/03/30
1. Add jumper between MXM and power
2. remove +3.3V_MXM2 power and modify +3.3V_MXM2 to +3.3V_MXM1
3. CLK_PCH_SRC1_N from AK47 of IBEX was wrong, change to CLK_PCH_SRC8_P
4. MXM master, DP_HPD_SINK signal remove AND-gate
5. modify MXM1_PRESENT# schematic from MXM connector, original with logical gate to 2N7002
2009/04/02
1. remove mini card 3 and SIM card
2. change PU7 power plan from run to sus
3. delete p. 60 all moat stich cap.
4. integrate TTL logical to reduce the quantity
5. modify +3.3V_ALW to connect to +V3.3A_PCH
2009/06/16
1. modify the schematics to MRD V.3
2009/06/19
1. change the power controller in +V1.1S and +V1.1S_VTT to MAX8792
2009/06/20
1. arrange the page number
2. modify the block diagram, frontpage and add smbus map and KBC power up sequence
3. modify the SMBus of Wimax and BT connector as Defiant
2009/06/22
1. modify express card connector definition to differentiate the QS. MLK express card daughter board need to modify. In order to avoid the QS DB enter MLK or MLK DB enter QS, change the pin definition to cut the card reader power.
2. seperate MXM2 power
3. change IR power plane to +3.3V_ALW_17020 because of +V3.3A_PCH will be cut when shut dowm in battery .mode
4. remove TPM and thermal IC un-used part
5. modify U6.18 pin VDD_PWRGD design
6. add second SATA HDD redriver IC
2009/06/30
1. P51 AGNDC net was not connect to system GND, change AGNDC to GND
2. P39 change PCI-E latch connector to SCREW part
3. change U21 pin UDI08 to PCI-E clock request
2009/07/02
1. change U17 part because Capella do not need combine the BIOS into EC flash
2. correct power PU605 schematics
2009/07/06
1. Add EMI stitching CAP
2009/07/08
1. Add CRT DUAL PI filter and by-pass CAP for EMI
2009/07/09
1. reserve ICS9LRS3185 co-layout schematics for over-clock function
2. change MXM output configuration to below

MLK Define	For NV			For AMD	
	N10E-GTX1	N11E-GTX1	N11E-GS1/GE1	M98	Broadway
DPA	HDMI *	HDMI	HDMI	HDMI	HDMI
DPB	No Function	No Function	No Function	No Function	No Function
DPC	No Function	DP *	DP	DP	DP
DPD	No Function	eDP *	eDP	No Function	eDP

2009/07/11
1. modify HDMI_TX*_N and HDMI_TX*_P
2009/07/13
1. rename

Title: HISTORY		
Size	Document Number: DellFLEX Confidential	Rev: PG2
Date: Thursday, October 29, 2009	Sheet 68 of 68	

Item	Fix Issue	Reason to change	Rev	Page	Modify list
1 2009/08/4	S3 power reduce	S3 power reduce	X01	7, 10, 12, 21, 49, 54, 58	Intel cut off the +V1.5S_CPU power of CPU during S3, therefor , PM_DRAM_PWRGD_R and CPUDRAMRST# need to modify to controller by EC. Follow CRB's suggestion, the controller also need to reserve one from GPIO46 of PCH, original VRDD_1 need to change to GPIO15
2	HDD pin11	add spin-up delay schematic	X01	37	Using FFS_INT2_R of U7 signal to delay HDD spin-up
3 2009/08/5	S3 power reduce	S3 power reduce	X01	12, 41	find GPE1 of EC was not used, take the pin for S3 power reduce item controller
4 2009/08/10	S3 power reduce	Intel's review	X01	58	PR965 change to 220 ohm
5	HDD pin11	reserve the INT2 to PCH	X01	21, 37	add U7 int2 line to PCH's GPIO0 on P37 and P21
6	S3 power reduce	Intel's review	X01	14,15	RJ6 and RJ8 change to mounted B
7	over voltage of VCore	wrong schematics	X01	51	modify PU601.2 connect to PU601.1 directly
8	HDD pin11	wrong schematics	X01	37	modify Q953 and Q954 with wrong direction
9 2009/08/12	ELC controller	LED light on S4	X01	44	add RJ950 for S4 to ELC controller.
10	ONFI funtion remove	ONFI was not support	X01	22, 35	un-mounted J3, C448, R857, mounted R858
11	web cam power controller	reserve 7313 20pin	X01	41, 44	CAM_PWR_ON# change to output from U605
12	remove un-used EMI cap	remove un-used EMI cap	X01	48	remove C407, R413, C422, C424, C350, C426, R378
13	VCore overvoltage	X00 stage was not mounted	X01	51	Mounted PU601, PQ603, PQ604, PR606, PR620, PR612, PR618, PC608
14	Intel design guide	change the Cap with low ESR	X01	53	Change the PN of PC34, PC36
15	Power	High side Vds fail	X01	54	Mounted PR141, PC130
16	Power	Change Net to +5V_ALWP to enable SECFB	X01	55	Change the +5V_ALWP connect to PR52.2
17 2009/08/18	Power	Power fine tune and over voltage schematic's bom change	X01	51, 50,	Change PR679 value to 8.2k, change PR612, PR618 value to 309, mounted PR619, un-mounted PR621
18 2009/08/19	HDD pin11	change INT_2 connect	X01	21	change to GPIO48 of PCH connect to INT_2 of G-sensor
19	MXM2 power control	change the control signal from PCH to EC	X01	21, 41	MXM2_PRESENT#, MXM2_PWR_EN, MXM2_PWROK move to EC, add R973, R971, remove R799, R841
20 2009/08/20	Power	XMP over-voltage solution	X01	54	mounted PR127, Q54, PR129, PR125, Q56, PR134
21	EMI	change the by-pass resistor to choke of USB11	X01	31	un-mounted R43, R42, mounted L4
22	Power	to follow Clarksfield XE load line spec	X01	51	change PR607 to 5.23K
23	BID change to current value	change BID to PT stage	X01	21	mounted R720, un-mounted R721
24	LAN EA fail issue	modify the layout for LAN routing	X01	48	swap the pin assign of L34, L33 for routing
25	EMI	change the by-pass resistor to choke of USB2	X01	36	un-mounted R433, R434, mounted L38
26 2009/08/22	EMI	Modify RC priority of Media card interface	X01	46	Media card interface from U13 to CN15, original a Cap decoupling then damping a serious resistor change to damping a serious first, then a Cap add.
27 2009/08/25	remove ONFI	remove ONFI	X01	20	un-mounted R284
28	remove EEPROM of media card/1394	change to BIOS confige the controller	X01	46	un-mounted U10, R241. mounted R229
29 2009/08/26	Power	150W power support	X01	50	change PR138 to 10.7k for 150W power support
30	Slave VGA leakage issue	add power split component	X01	27 21, 26, 28, 41	1. solve RST signal leakage: add a AND gate and R977, R976. 2. ACAV_IN signal leakage: seperate MXM1 and MXM2, add Q956, R975, Q957 3. CLKREQ signal leakage: add Q958 to cut clkreq if MXM2 power disable. 4. combine THERM_MXM1#, THERM_MXM2# to THERM_MXM#, change GPA5 of EC(original THERM_MXM1#) to MXM_RST.
31 2009/08/27	EMI	add decoupling CAP for EMI	X01	59	+3.3V_RUN add C956, C957, C958, C959, +5V_ALW add C963, C960, C962, C961
32	power leakage	+5V_SUS leakage, change power source of PU6	X01	54	modify PR100 connect to +5V_ALW
33	power leakage	+V3.3M_LAN leakage	X01	47	add R981, R980, Q959 to split two power plane
34	power leakage	+3.3V_SUS leakage	X01	41	un-mount R113

Title	HISTORY_X01	
Size	Document Number: Dell/FLEX Confidential	Rev: X02
Date: Thursday, October 22, 2009	Sheet 67 of 68	

Item	Fix Issue	Reason to change	Rev	Page	Modify list
1 2009/09/30	KB LED light uneven	different resistor value of the pin	X02	44	change R748 to 0ohm
2	VCore power	for second source used	X02	51	Change to mount PC16, PC17, PC622, PC19, PC14, PC13 , PR660, PR646, PC636, PC619 for second source
3	charger		X02	50	change PL7, and mounted PR102, PC90
4	modify OCP	modify +V1.1S OCP value	X02	52	change PR88 value
5	3V/5V power	for second source used	X02	55	mounted PR76, PC54, PR75, PC57, change PR41, PR65 value
6	SI measure	add EMI solution will cause SI fail	X02	36	un-mounted L38 and mounted R433, R434
7 2009/10/2	over clock	change over-clock clock GEN	X02	5	change U3 to ICS3185, mounted L16, C139, un-mounted R88, R114
8	remove HDD2 redriver IC	SI could pass without re-driver IC	X02	37	remove C52, C51, C69, C68, U2, C54, C58, C61, C62, R50, R51, R52, R53, R54
9 2009/10/19	tuning the RTC timing	RTC timing will fail in some system in setup menu	X02	16	change C243 to 15pF
10	FDIM test fix	FDIM test fix	X02	9	change C768, C764, C650, C765, C766, C756, C186, C187, C192, C149, C150, C151, C152, C153, C154, C155 to 22uF, change PR634 to 255k ohm, change PC618, PC627, PC616 to 0.22uF/16V, Change PC623, PC617, and PC632 to mount,Change PC635, PC626, PC630, PC631, PC629, PC628 to 470uF/ESR4.5mohm.
11 2009/10/21	MXM2 power leakage	+3.3V_MXM2 with power leakage	X02	27, 28	add D953, D954, D955
12 2009/11/24	LAN LED	LAN LED will light if un-plug LAN and disable LAN function	A00	48	CN19.B1 change to connect to power, and CN19.B2 change to connect to R405.1

Title	HISTORY_X01	
Size	Document Number: Dell/FLEX Confidential	Rev X02
Date: Tuesday, November 24, 2009	Sheet 68 of 68	