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10	PCH (HDA,JTAG,SAT)	1.0		52	DDR3 Power(+1_5V/+0_75V)	1.0
11	PCH (PCI-E,SMBUS,CLK)	1.0		53	VRAM Power(+1_8V)	1.0
12	PCH (DMI,FDI,GPIO)	1.0		54	CPU Power_VHCORE	1.0
13	PCH (LVDS,DDI)	1.0		55	CPU Power_VID	1.0
14	PCH (PCI,USB,NVRAM)	1.0		56	VGFX Power_GFXCORE	1.0
15	PCH (GPIO,VSS_NCTF,RSVD)	1.0		57	VGA Power(NV VDD)	1.0
16	PCH (POWER) 1/2	1.0		58	Others power plane	1.0
17	PCH (POWER) 2/2	1.0		59	OVP protection	1.0
18	PCH (VSS)	1.0		60	INV CONNECTOR	1.0
19	CLOCK GEN	1.0		61	LVDS	1.0
20	DDRIII(SO-DIMM_0) 1/3	1.0		62	HDMI	1.0
21	DDRIII(SO-DIMM_1) 2/3	1.0		63	CRT	1.0
22	SO-DIMM_VREF 3/3	1.0		64	Audio (CODEC)	1.0
23	EC+KBC (NPCE783L)	1.0		65	Audio (MUTE)	1.0
24	SPI Flash ROM	1.0		66	Audio (Power)	1.0
25	Debug Port	1.0		67	Audio (Speaker AMP)	1.0
26	Express Card	1.0		68	Audio (Speaker Connector)	1.0
27	Mini-PCIE Card (WLAN)	1.0		69	Mini-PCIE Card (Mach)	1.0
28	TV-Tuner Connector	1.0		70	VGA (PCI-E) 1/9	1.0
29	LAN (88E8057) 1/2	1.0		71	VGA (STRAP) 2/9	1.0
30	LAN (Transformer) 2/2	1.0		72	VGA (DDR) 3/9	1.0
31	SATA HDD	1.0		73	VGA (DDR) 4/9	1.0
32	SATA CD-ROM	1.0		74	VGA (CRT/eDP) 5/9	1.0
33	Braidwood Connector	1.0		75	VGA (LVDS/HDMI) 6/9	1.0
34	PCIE (MS&iLINK) 1/2	1.0		76	VGA (GPIO) 7/9	1.0
35	PCIE (SD) 2/2	1.0		77	VGA (XTAL) 8/9	1.0
36	Camera Connector	1.0		78	VGA (POWER/GND) 9/9	1.0
37	Felica Connector	1.0		79	VRAM (DDR3) 1/4	1.0
38	eDP&LVDS Connector	1.0		80	VRAM (DDR3) 2/4	1.0
39	Bluetooth Connector	1.0		81	VRAM (DDR3) 3/4	1.0
40	Modem Connector	1.0		82	VRAM (DDR3) 4/4	1.0
41	KB Connector	1.0		83	VRAM (BYPASS) 1/2	1.0
42	Status LED	1.0		84	VRAM (BYPASS) 2/2	1.0

M931 BOM Control Table

VALUE Head	CFD+PM55 N11P 1GVRAM-H	CFD+PM55 N11P 1GVRAM-S	CFD+PM55 N11M 512MVRAM-H	CFD+PM55 N11M 512MVRAM-S	ARD+PM55 N11P 1GVRAM-H	ARD+PM55 N11P 1GVRAM-S	ARD+PM55 N11M 512MVRAM-H	ARD+PM55 N11M 512MVRAM-S
NV_	Stuff	Stuff	Stuff	Stuff	Stuff	Stuff	Stuff	Stuff
NP_	Stuff	Stuff	Dummy	Dummy	Stuff	Stuff	Dummy	Dummy
NM_	Dummy	Dummy	Stuff	Stuff	Dummy	Dummy	Stuff	Stuff
NVH_	Stuff	Dummy	Stuff	Dummy	Stuff	Dummy	Stuff	Dummy
NVS_	Dummy	Stuff	Dummy	Stuff	Dummy	Stuff	Dummy	Stuff
NC_	Dummy	Dummy	Dummy	Dummy	Dummy	Dummy	Dummy	Dummy

TJ_ for T-JET SKU (CTO)

85	LID Switch/eSATA COMBO	1.0
86	Identify IC	1.0
87	HOLE & AMI LABEL	1.0
88	USB & AUDIO Conn.	1.0
89	USB Port	1.0
90	HP Jack (S/PDIF)	1.0
91	Ext MIC Jack	1.0
92	Function SW & ALS	1.0

P. Leader	Check by	Design by

Project Code & Schematics Subject: M931 Main Board

PCB P/N: (IRIS)
(Hannstar)

FOXCONN HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title: Index Page
Size: Custom | Document Number: M931 (MBX-215) | Rev: SA
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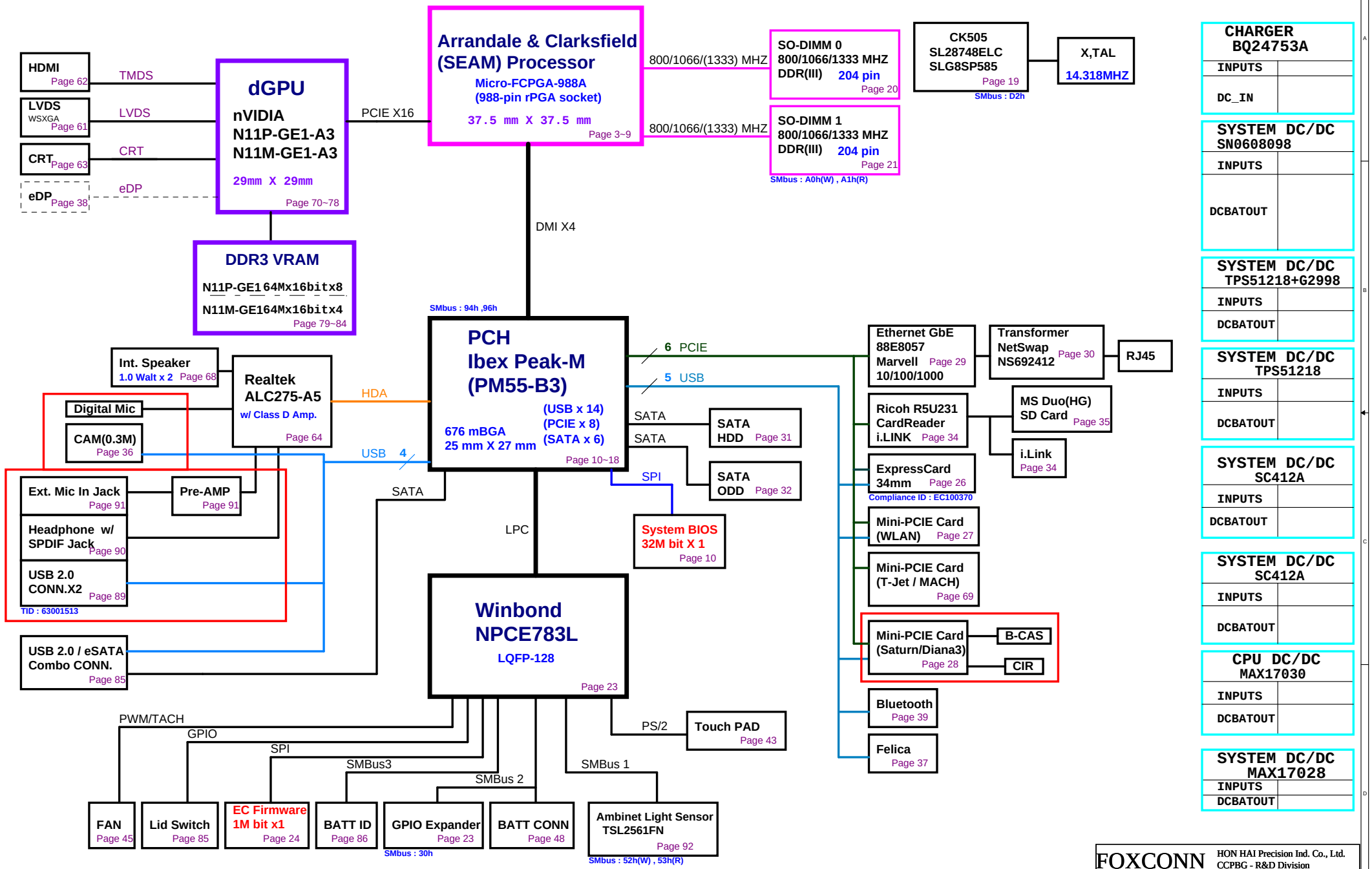
M931 (IRX-5300) Calpella Platform+ nVIDIA N11P/M Discrete Graphic



CHARGER BQ24753A	
INPUTS	
DC_IN	

SYSTEM DC/DC SN0608098	
INPUTS	
DCBATOUT	

SYSTEM DC/DC TPS51218+G2998	
INPUTS	
DCBATOUT	

SYSTEM DC/DC TPS51218	
INPUTS	
DCBATOUT	

SYSTEM DC/DC SC412A	
INPUTS	
DCBATOUT	

SYSTEM DC/DC SC412A	
INPUTS	
DCBATOUT	

CPU DC/DC MAX17030	
INPUTS	
DCBATOUT	

SYSTEM DC/DC MAX17028	
INPUTS	
DCBATOUT	

FOXCONN HON HAI Precision Ind. Co., Ltd.
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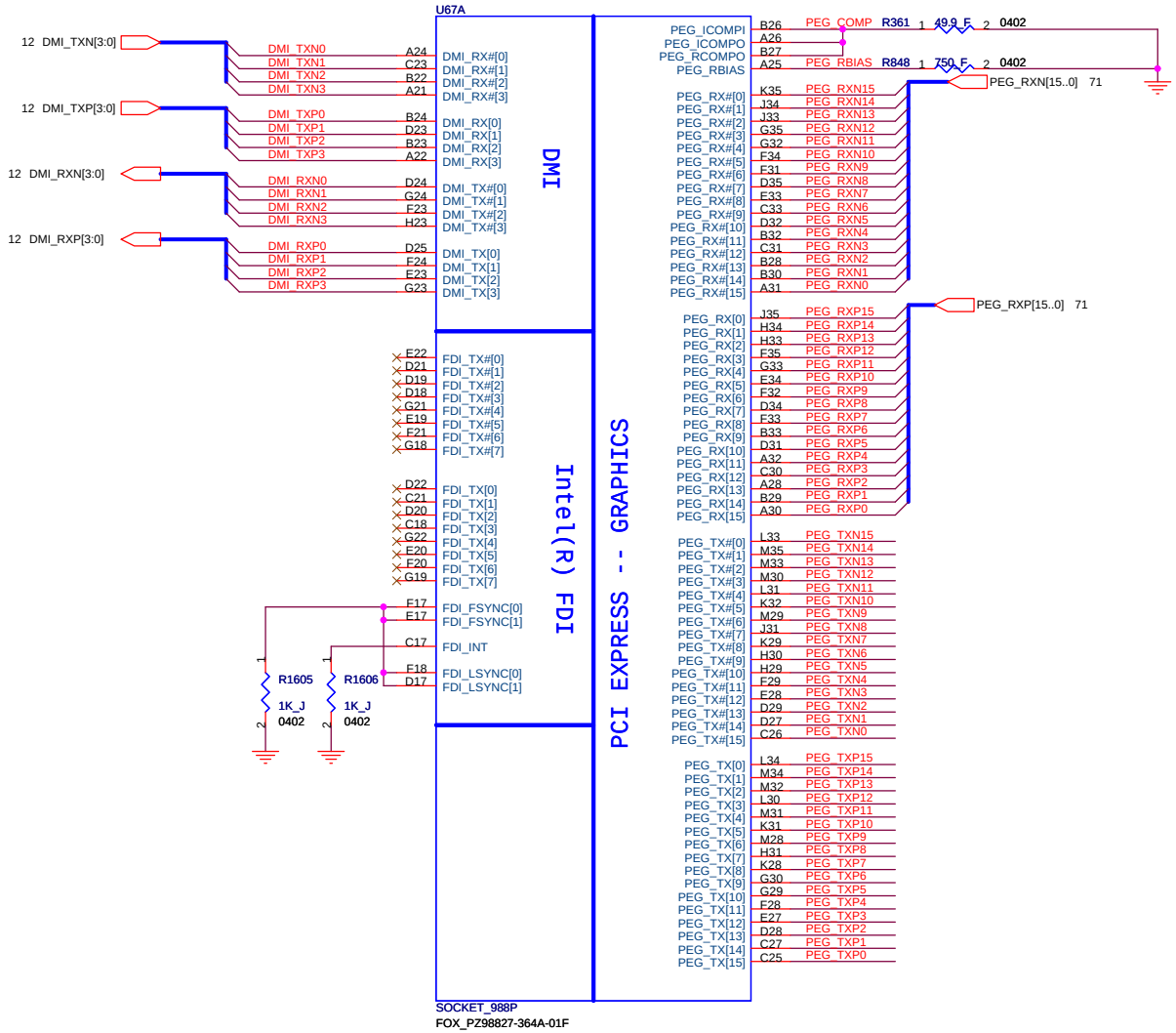
Title: Block Diagram

Size: Custom | Document Number: M931 (MBX-215) | Rev: SA

Date: Wednesday, January 06, 2010 | Sheet 2 of 93



FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	ARD&CFD (DMI,PEG,FDI)	
Size A3	Document Number M931 (MBX-215)	Rev SA
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Layout Note:
In order to minimize resistance, use thick traces to route all COMP signals, use 10-mils (0.254-mm) wide trace for routing less than 500 mils (12.7 mm), or 20-mils (0.508-mm) wide trace for routing between 500 mils (12.7 mm) and 1000 mils(25.4 mm). Keep 20-mils (0.508-mm) spacing to any other signals in order to minimize crosstalk.

For Disable Auburndale Graphic
DPLL_REF_SSCLK and DPLL_REF_SSCLK# can be connected to GND on Arrandale directly if motherboard only supports discrete graphics.

U67B
SOCKET_988P
FOX_PZ98827-364A-01F

MISC THERMAL DDR3 MISC CLOCKS JTAG & BPM PWR MANAGEMENT

R849 20_F 0402 COMP3 AT23
R850 20_F 0402 COMP2 AT24
R851 49.9_F 0402 COMP1 G16
R852 49.9_F 0402 COMP0 AT26
20MIL TP60 SKTOCC# AH24
H_CATERR# AK14
15 H_PECI H_PECI AT15
54 PROCHOT# PROCHOT# AN26
15,23 PM_THRMTRIP# AK15
H_CPURST#_R AP26
12 H_PM_SYNC H_PM_SYNC AL15
AN14
15 H_CPUPWRGD AN27
12 PM_DRAM_PWRGD PM_DRAM_PWRGD AK13
VTTPWRGOOD AM15
20MIL TP94 TAPPWRGOOD AM26
14,23,25,26 BUF_PLT_RST# R925 1.5K_F 0402 BUF_PLT_RST#_R AL14
R926 750_F 0402

COMP3 COMP2 COMP1 COMP0 SKTOCC# CATERR# PECI PROCHOT# THERMTRIP# RESET_OBS# PM_SYNC VCCPWRGOOD_1 VCCPWRGOOD_0 SM_DRAMPWROK VTTPWRGOOD TAPPWRGOOD RSTIN#

BCLK BCLK# A16 A16 AUB_BCLK AUB_BCLK#
BCLK_ITP BCLK_ITP# AR30 AT30 BCLK_ITP BCLK_ITP# TP61 20MIL TP63 20MIL
PEG_CLK PEG_CLK# E16 D16 CLK_EXP_P 11 CLK_EXP_N 11
DPLL_REF_SSCLK DPLL_REF_SSCLK# A18 A17
RP81 0 0404_4P2R
CLK_PCH_CPU_CLK# 15 CLK_PCH_CPU_CLK 15
CLK_CPU_BCLK 19 CLK_CPU_BCLK# 19
NC_0 RP82 0404_4P2R

SM_DRAMRST# F6 DDR3_DRAMRST#_Q
SM_RCOMP[0] SM_RCOMP[1] SM_RCOMP[2] AL1 AM1 AN1 SM_RCOMP0 R854 100_F 0402 SM_RCOMP1 R853 24.9_F 0402 SM_RCOMP2 R855 130_F 0402
PM_EXT_TS#[0] PM_EXT_TS#[1] AN15 AP15 PM_EXTTS#0 PM_EXTTS#1
PM_EXTTS#0 20 PM_EXTTS#1 20,21
+1_1V_VTT R932 10K_J 0402 R933 10K_J 0402 R1231 NC_12.4K_F 0402

PRDY# PREQ# AT28 AP27 XDP_PRDY# XDP_PREQ# TP75 20MIL
TCK TMS TRST# AN28 AP28 AT27 XDP_TCLK XDP_TMS XDP_TRST#
TDI TDO TDI_M TDO_M AT29 AR27 AR29 AP29 XDP_TDI_R XDP_TDO_R XDP_TDI_M XDP_TDO_M
DBR# AN25 XDP_DBRESET#
+3VRUN R1292 NC_51_J 0402
BPM#[0] BPM#[1] BPM#[2] BPM#[3] BPM#[4] BPM#[5] BPM#[6] BPM#[7] AJ22 AK22 AK24 AJ24 AJ25 AH22 AK23 AH23 BPM#0 BPM#1 BPM#2 BPM#3 BPM#4 BPM#5 BPM#6 BPM#7 TP64 TP65 TP66 TP67 TP68 TP69 TP70 TP71 20MIL

+1_5VSUS
R1456 NC_0_J 0402
Q73 2N7002EPT
DDR3_DRAMRST# Q DDR3_DRAMRST# DDR3_DRAMRST# 20,21
R5925 1K_J 0402
R5926 100K_J 0402
DRAMRST_CNTRL R1454 0_J 0402 DRAMRST_CNTRL_PCH 15
C6079 0.047U_16V_K 0402_X7R
9 DRAMRST_CNTRL
(Default : PCH GPIO Control)

+1_1V_VTT
+3VRUN
R262 4.7K_J 0402
R258 68_J 0402
PROCHOT#
Q14A
A0205
Q14B
2N7002DW
null
23 OVT_EC#

XDP_TDO_R XDP_TMS XDP_TDI_R XDP_PREQ# XDP_TCLK XDP_TRST#
R1290 R1258 R1259 R1260 R1261 R1262 NC_51_J 0402
XDP_TDO_M R969 0_J 0402 XDP_TDI_M
JTAG Mapping -Scan Chain (Default)

+1_1V_VTT
R861 49.9_F 0402 R936 NC_68_J 0402
H_CATERR#
H_CPURST#_R

+3VSUS
R21 10K_J 0402
C68 0.1U_6.3V_K 0402_X5R
U7 74AHC1G08GW
RUN_PWRGD
PM_DRAM_PWRGD_R R928 1.5K_F 0402 PM_DRAM_PWRGD
+1_5VSUS_CPU
R5931 NC_1.1K_F 0402
R928 750_F 0402

+3VRUN
R14 10K_J 0402
C13 0.1U_6.3V_K 0402_X5R
U2 74AHC1G08GW
12,23,51,52,57 RUN_PWRGD
VTTPW_R R1572 2K_F 0402 VTTPWRGOOD
R1573 1K_F 0402
VTT_1.1 VR power good signal to processor.
Signal voltage level is 1.1 V.

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	ARD&CFD (CLK,MISC,JTAG)	
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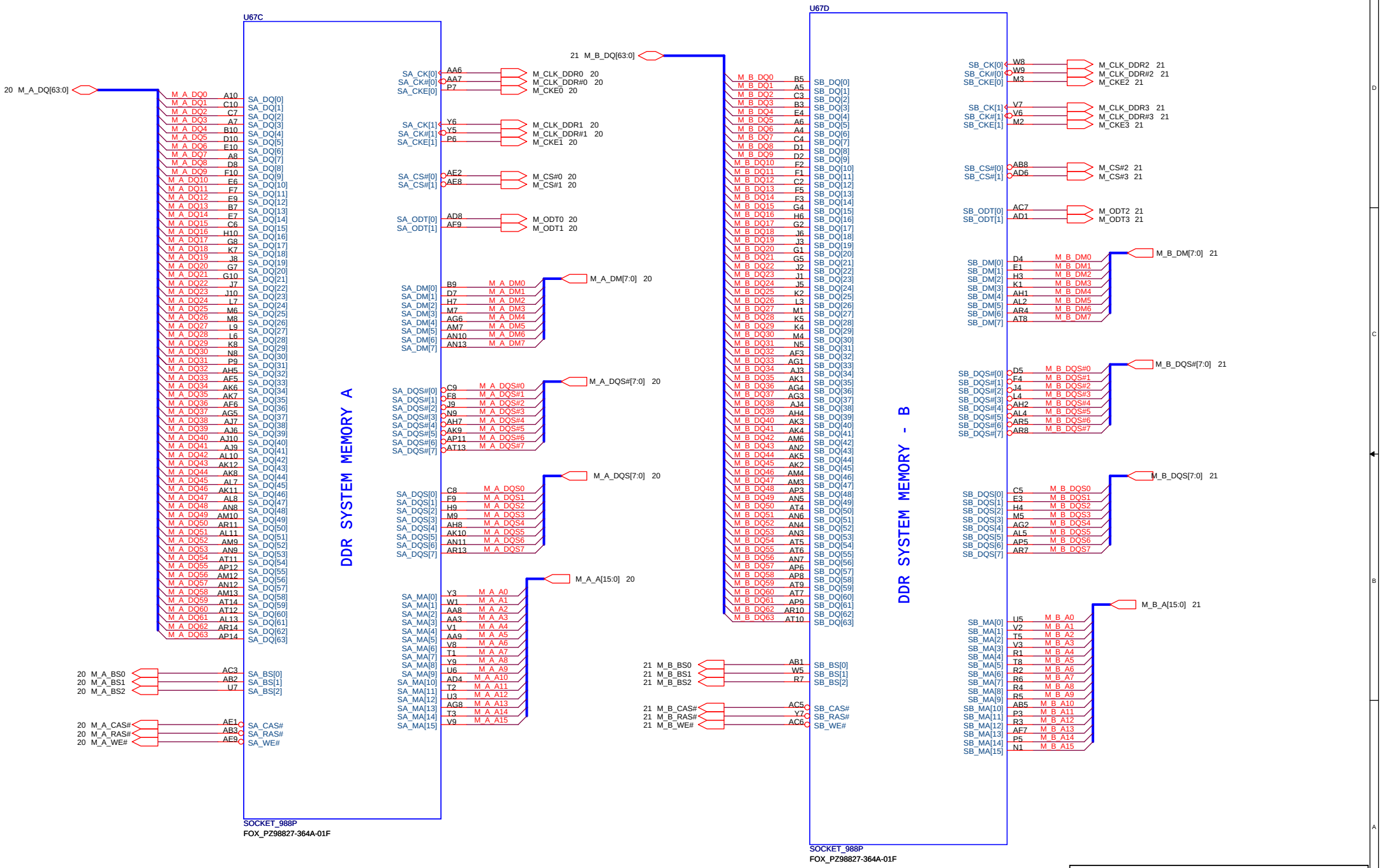
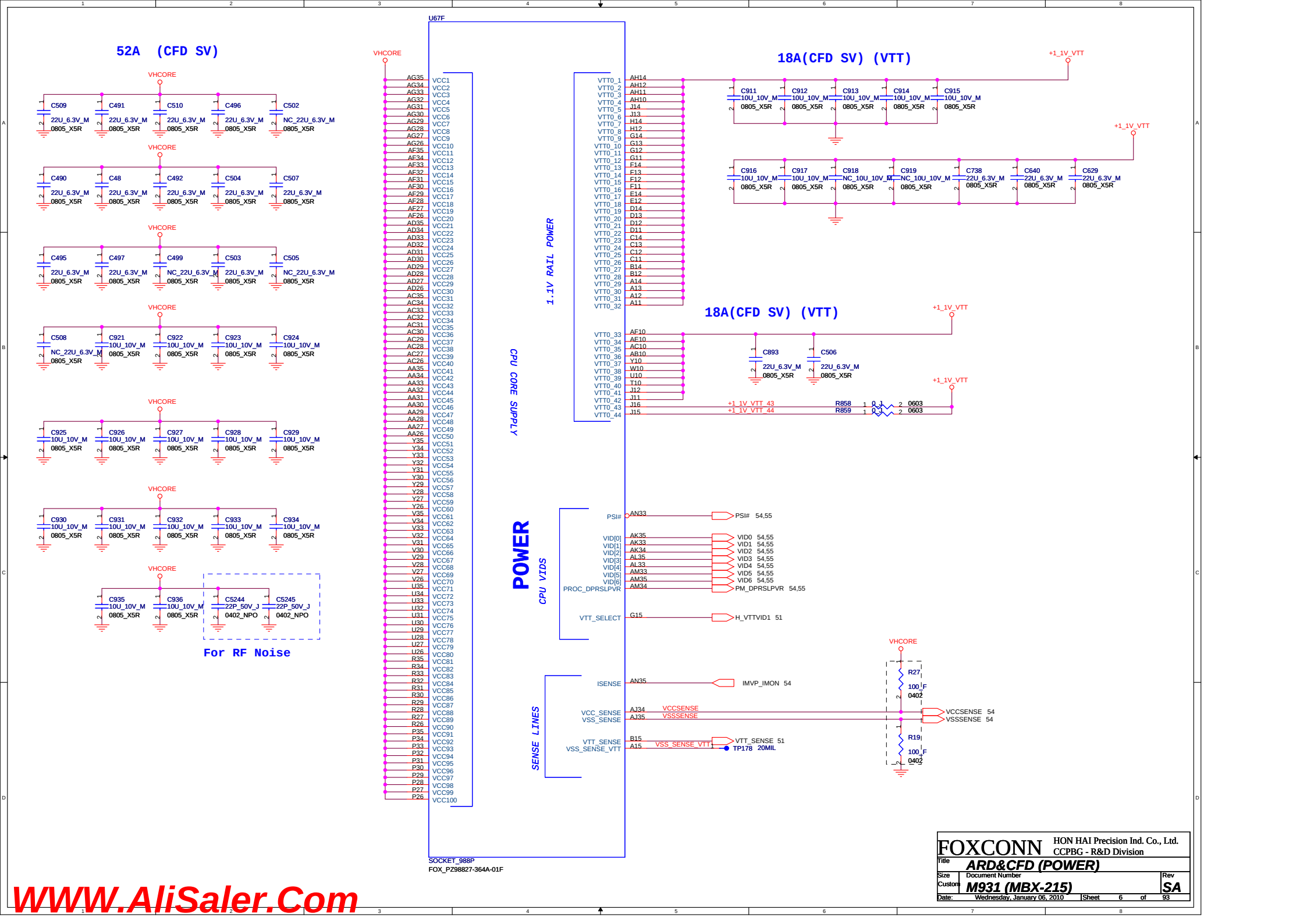
Date: Wednesday, January 06, 2010	Sheet 4 of 93	



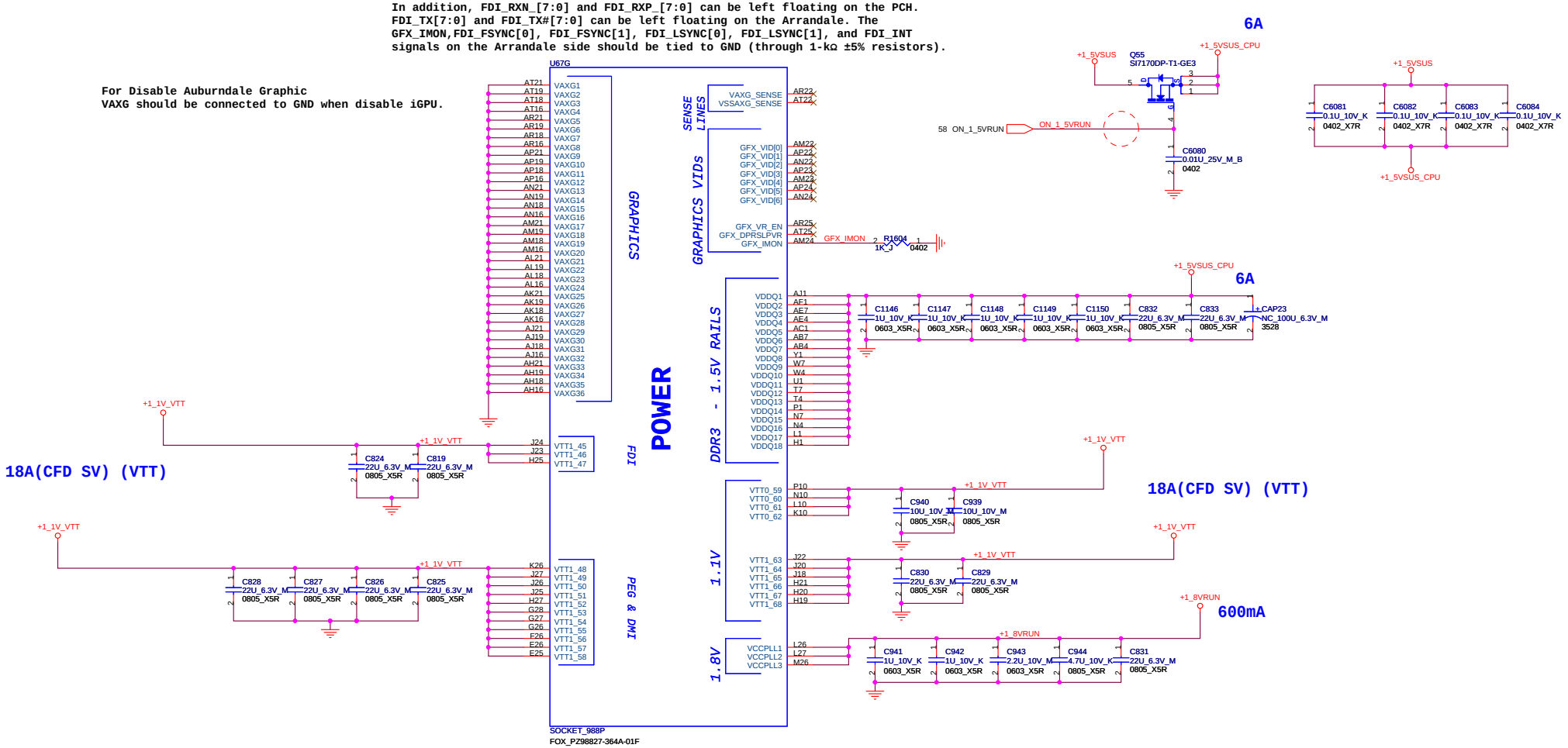
FOXCONN HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title	ARD&CFD (DDR3)	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 5 of 93	

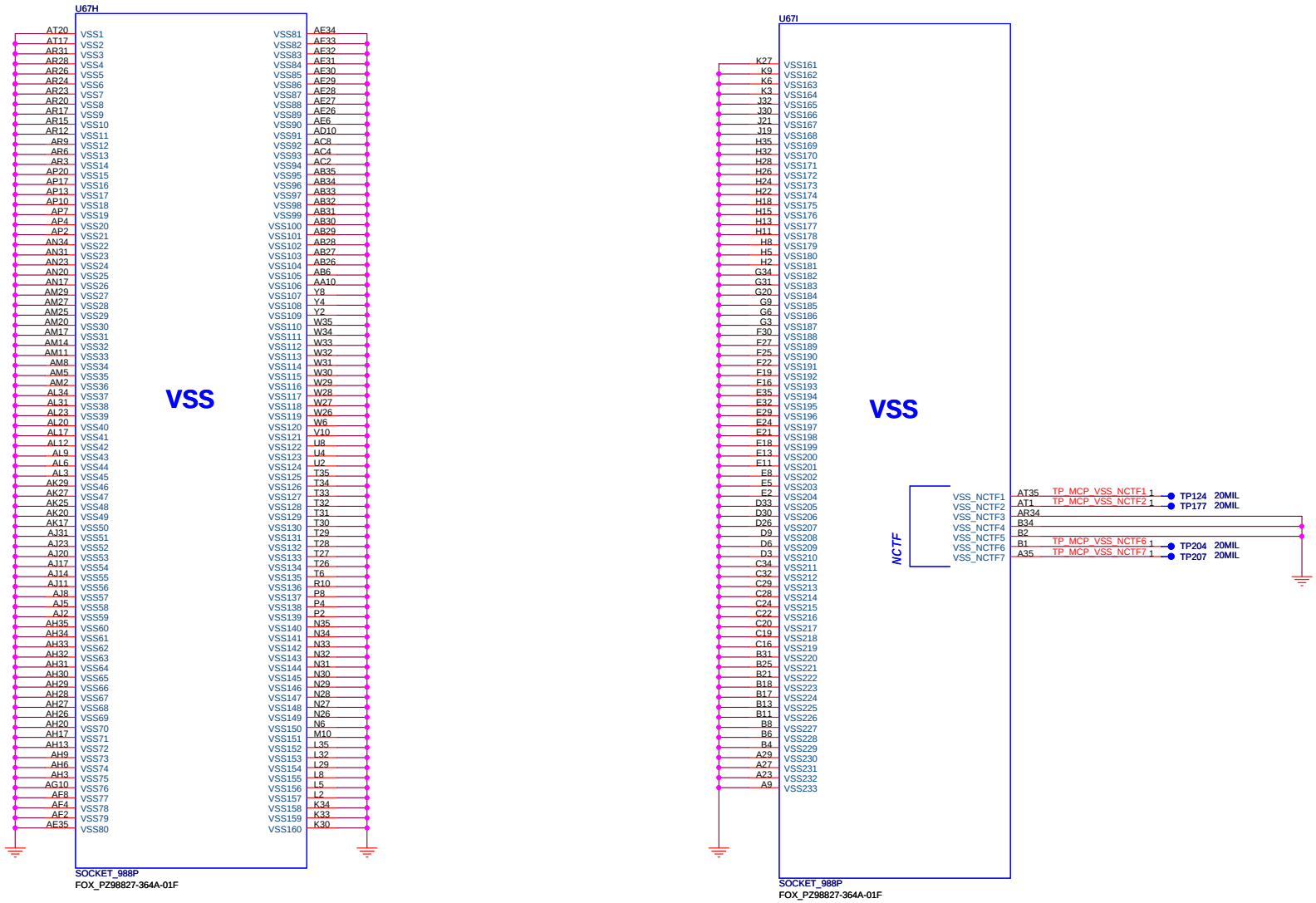


For Disable Auburndale Graphic
VAXG_SENSE and VSSAXG_SENSE on Arrandale can be left as no connect.
For Disable Auburndale Graphic
In addition, FDI_RXN_[7:0] and FDI_RXP_[7:0] can be left floating on the PCH.
FDI_TX[7:0] and FDI_TX#[7:0] can be left floating on the Arrandale. The
GFX_IMON,FDI_FSYNC[0], FDI_FSYNC[1], FDI_LSYNC[0], FDI_LSYNC[1], and FDI_INT
signals on the Arrandale side should be tied to GND (through 1-kΩ ±5% resistors).

For Disable Auburndale Graphic
VAXG should be connected to GND when disable iGPU.



FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division		
Title	ARD&CFD (GRAPHICS POWER)		
Size: Custom	Document Number: M931 (MBX-215)	Rev: SA	
Date: Wednesday, January 06, 2010	Sheet 7 of 93		



FOXCONN HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title: ARD&CFD (GND)

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PCI Express Configuration Select
CFG0 1 : Single PEG
0 : Bifurcation enable

CFG0
R1272
NC_3.01K_F
0402

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

CFG3
R1273
3.01K_F
0402

Q92
SI2302DS
DQ_VREF0
DQ_VREF0_J17
R5928
100K_J
0402
DRAMRST_CNTRL

Q93
SI2302DS
DQ_VREF1
DQ_VREF1_H17
R5929
100K_J
0402
DRAMRST_CNTRL

20 DQ_VREF0
21 DQ_VREF1
DQ_VREF0
DQ_VREF1
NC_0
RP83
0404_4P2R
DQ_VREF0_J17
DQ_VREF1_H17

U67E

20MIL TP305 AP25 RSVD1
20MIL TP307 AL25 RSVD2
20MIL TP306 AL24 RSVD3
20MIL TP308 AL22 RSVD4
20MIL TP310 AJ33 RSVD5
20MIL TP309 AG9 RSVD6
20MIL TP311 M27 RSVD7
20MIL TP312 L28 RSVD8
J17 RSVD9
H17 RSVD10
20MIL TP300 G25 RSVD11
20MIL TP302 G17 RSVD12
20MIL TP303 E31 RSVD13
20MIL TP304 E30 RSVD14

CFG0
20MIL TP321 AM30 CFG[0]
20MIL TP320 AM28 CFG[1]
AP31 CFG[2]
CFG3 AL32 CFG[3]
CFG4 AL30 CFG[4]
20MIL TP323 AM31 CFG[5]
20MIL TP325 AN29 CFG[6]
CFG7 AM32 CFG[7]
20MIL TP313 AK32 CFG[8]
20MIL TP315 AK31 CFG[9]
20MIL TP314 AK28 CFG[10]
20MIL TP316 AJ28 CFG[11]
20MIL TP317 AN30 CFG[12]
20MIL TP318 AN32 CFG[13]
20MIL TP353 AJ32 CFG[14]
20MIL TP354 AJ29 CFG[15]
20MIL TP355 AJ30 CFG[16]
20MIL TP356 AK30 CFG[17]
20MIL TP357 H16 RSVD_TP_86

20MIL TP284 B19 RSVD15
20MIL TP425 A19 RSVD16
20MIL TP453 A20 RSVD17
20MIL TP454 B20 RSVD18
20MIL TP288 U9 RSVD19
20MIL TP287 T9 RSVD20
20MIL TP290 AC9 RSVD21
20MIL TP289 AB9 RSVD22
20MIL TP292 C1 RSVD_NCTF_23
20MIL TP291 A3 RSVD_NCTF_24
20MIL TP294 J29 RSVD26
20MIL TP293 J28 RSVD27
20MIL TP296 A34 RSVD_NCTF_28
20MIL TP295 A33 RSVD_NCTF_29
20MIL TP298 C35 RSVD_NCTF_30
20MIL TP297 B35 RSVD_NCTF_31

RESERVED

SOCKET_988P
FOX_PZ98827-364A-01F

RSVD32 AJ13 TP238 20MIL
RSVD33 AJ12 TP240 20MIL
RSVD34 AH25 TP256 20MIL
RSVD35 AK26 TP241 20MIL
RSVD36 AL26 TP258 20MIL
RSVD_NCTF_37 AR2 TP257 20MIL
RSVD38 AJ26 TP260 20MIL
RSVD39 AJ27 TP259 20MIL
RSVD_NCTF_40 AP1 TP262 20MIL
RSVD_NCTF_41 AT2 TP261 20MIL
RSVD_NCTF_42 AT3 TP264 20MIL
RSVD_NCTF_43 AR1 TP263 20MIL

RSVD45 AL28 TP109 20MIL
RSVD46 AL29 TP193 20MIL
RSVD47 AP30 TP181 20MIL
RSVD48 AP32 TP208 20MIL
RSVD49 AL27 TP209 20MIL
RSVD50 AT31 TP211 20MIL
RSVD51 AT32 TP210 20MIL
RSVD52 AP33 TP212 20MIL
RSVD53 AR33 TP213 20MIL
RSVD_NCTF_54 AT33 TP235 20MIL
RSVD_NCTF_55 AT34 TP214 20MIL
RSVD_NCTF_56 AP35 TP236 20MIL
RSVD_NCTF_57 AR35 TP266 20MIL
RSVD58 AR32 TP265 20MIL
RSVD_TP_59 F15 TP237 20MIL
RSVD_TP_60 F15 TP239 20MIL
RSVD62 D15 TP328 20MIL
RSVD63 C15 TP329 20MIL
RSVD64 AJ15 TP386 20MIL
RSVD65 AH15 TP390 20MIL

RSVD_TP_66 AA5 TP331 20MIL
RSVD_TP_67 AA4 TP332 20MIL
RSVD_TP_68 R8 TP333 20MIL
RSVD_TP_69 AD3 TP334 20MIL
RSVD_TP_70 AD2 TP335 20MIL
RSVD_TP_71 AA2 TP336 20MIL
RSVD_TP_72 AA1 TP337 20MIL
RSVD_TP_73 R9 TP338 20MIL
RSVD_TP_74 AG7 TP339 20MIL
RSVD_TP_75 AE3 TP340 20MIL
RSVD_TP_76 V4 TP341 20MIL
RSVD_TP_77 V5 TP342 20MIL
RSVD_TP_78 N2 TP343 20MIL
RSVD_TP_79 AD5 TP344 20MIL
RSVD_TP_80 AD7 TP347 20MIL
RSVD_TP_81 W3 TP348 20MIL
RSVD_TP_82 W2 TP349 20MIL
RSVD_TP_83 N3 TP350 20MIL
RSVD_TP_84 AE5 TP345 20MIL
RSVD_TP_85 AD9 TP346 20MIL

VSS AP34
R1582
0_J
0402

CFG4 Display Port Presence
CFG4 1 : Disabled ; No Physical Display Port
attached to Embedded Display Port
0 : Enable ; An external Display Port device
is connected to the Embedded Display Port

CFG4
R1274
NC_3.01K_F
0402

2611030 PCI Express Interface May Not Meet PCI Express 2.0 Jitter Specifications

Intel has determined that the workaround (3.01K pull down to Vss on signal CFG[7]) is not robust. Intel recommends not implementing this workaround at this time (CFG[7] should not be pulled down).
Intel recommends not to test for PCI-E Express 2.0 Jitter specification compliance for the affected steppings.

CFG7
R1289
NC_3.01K_F
0402

FOXCONN
HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title: ARD&CFD (RESERVED)
Size: A3
Document Number: M931 (MBX-215)
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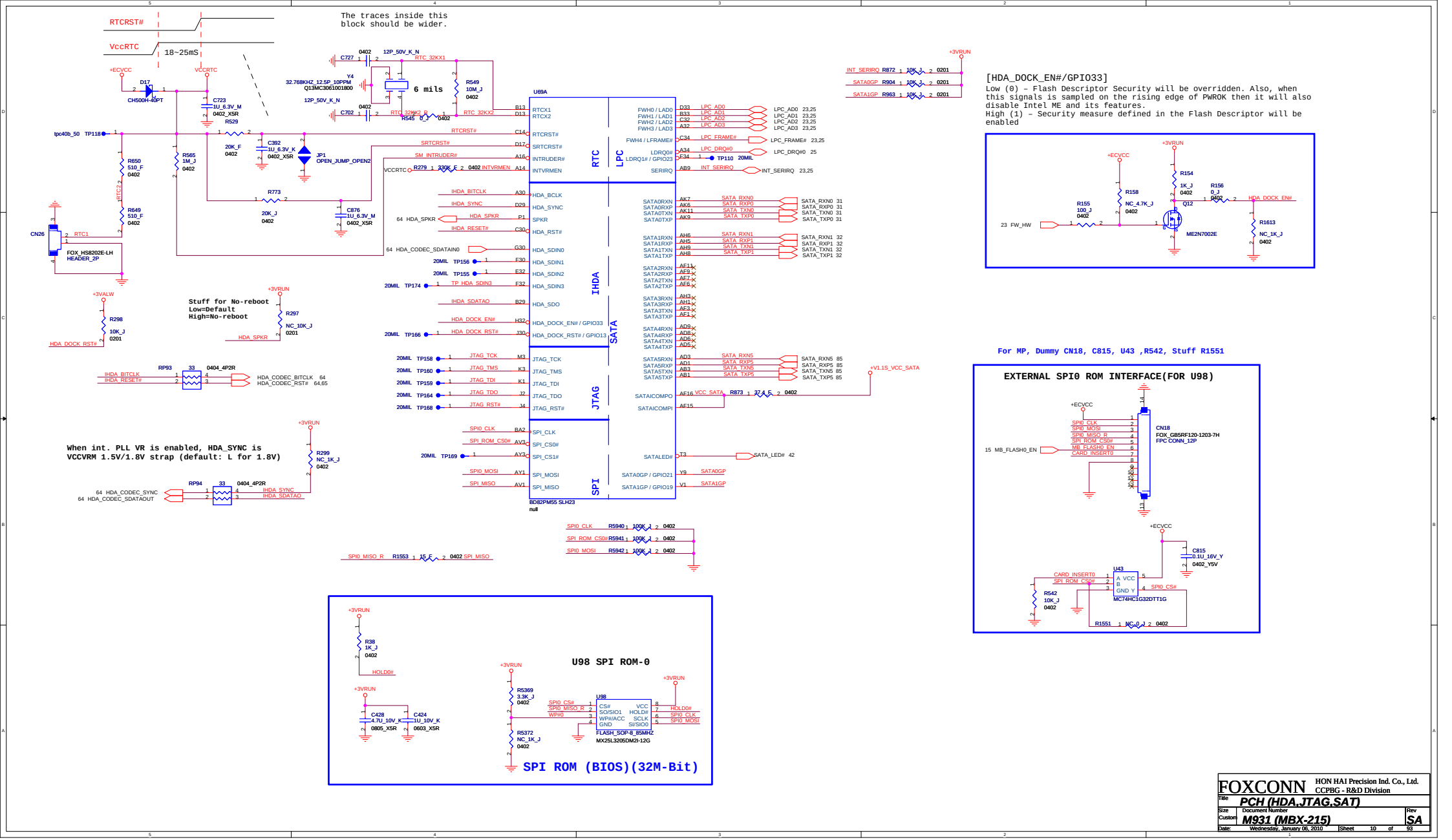
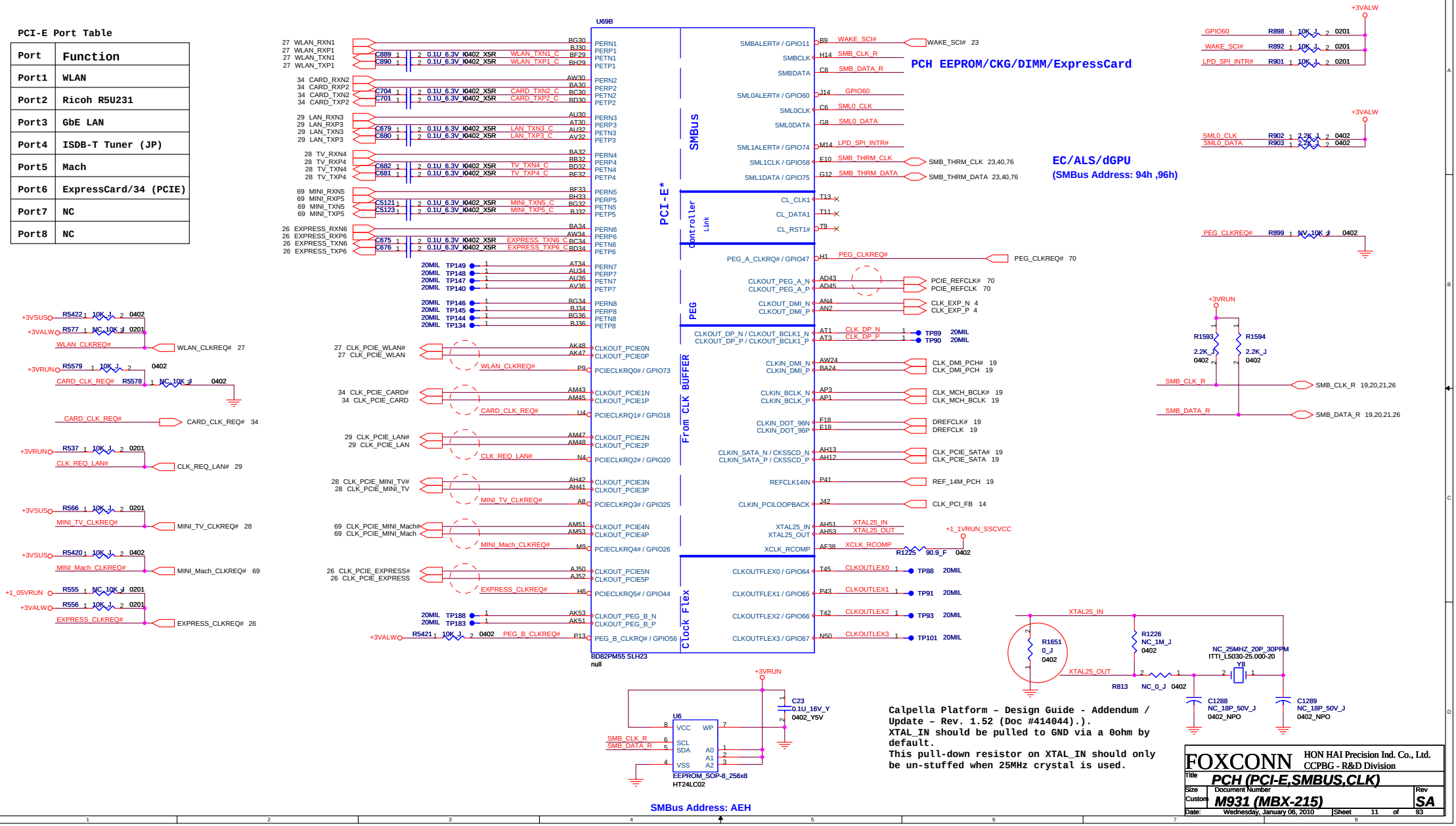
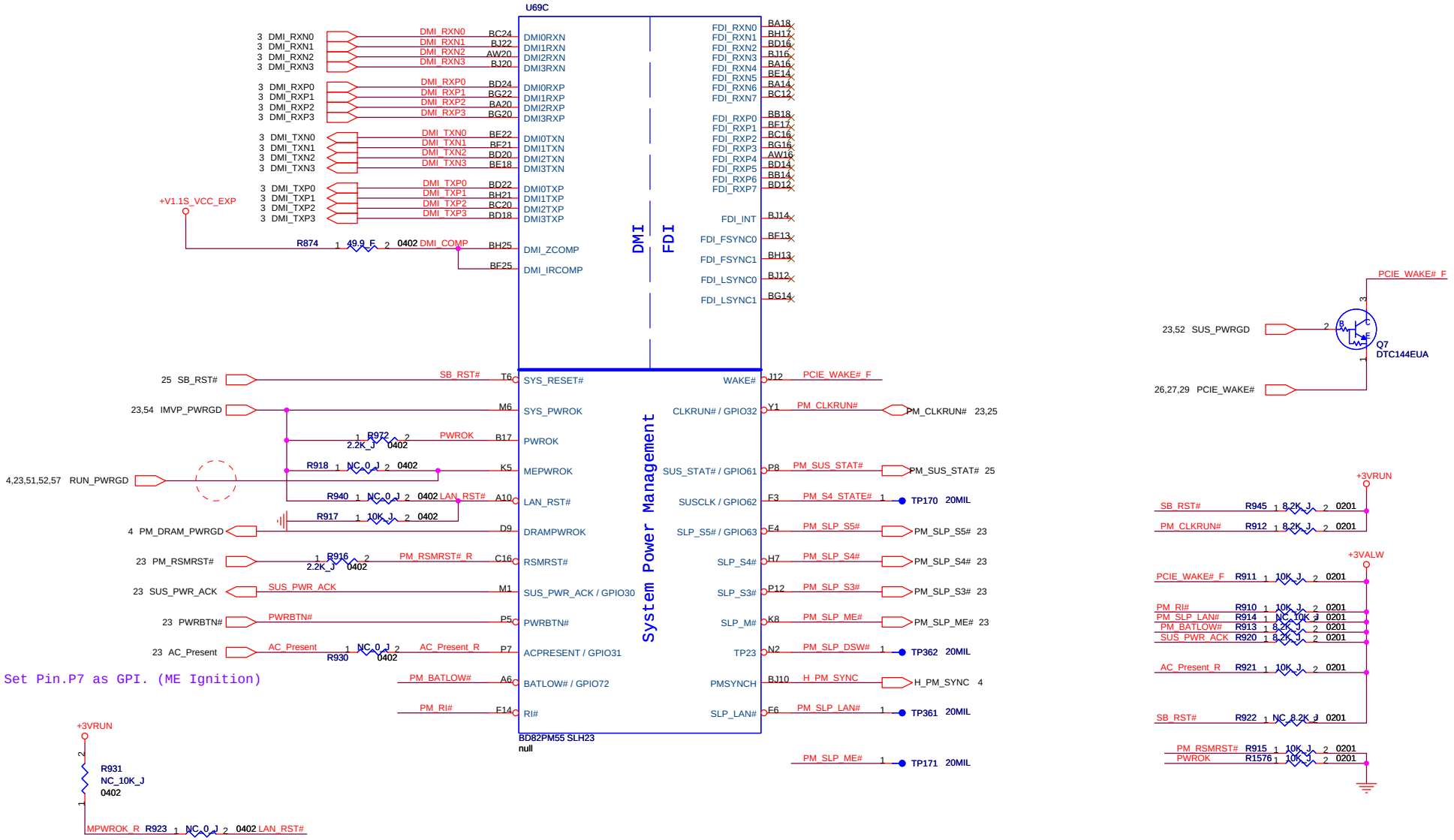


PCI-E Port Table

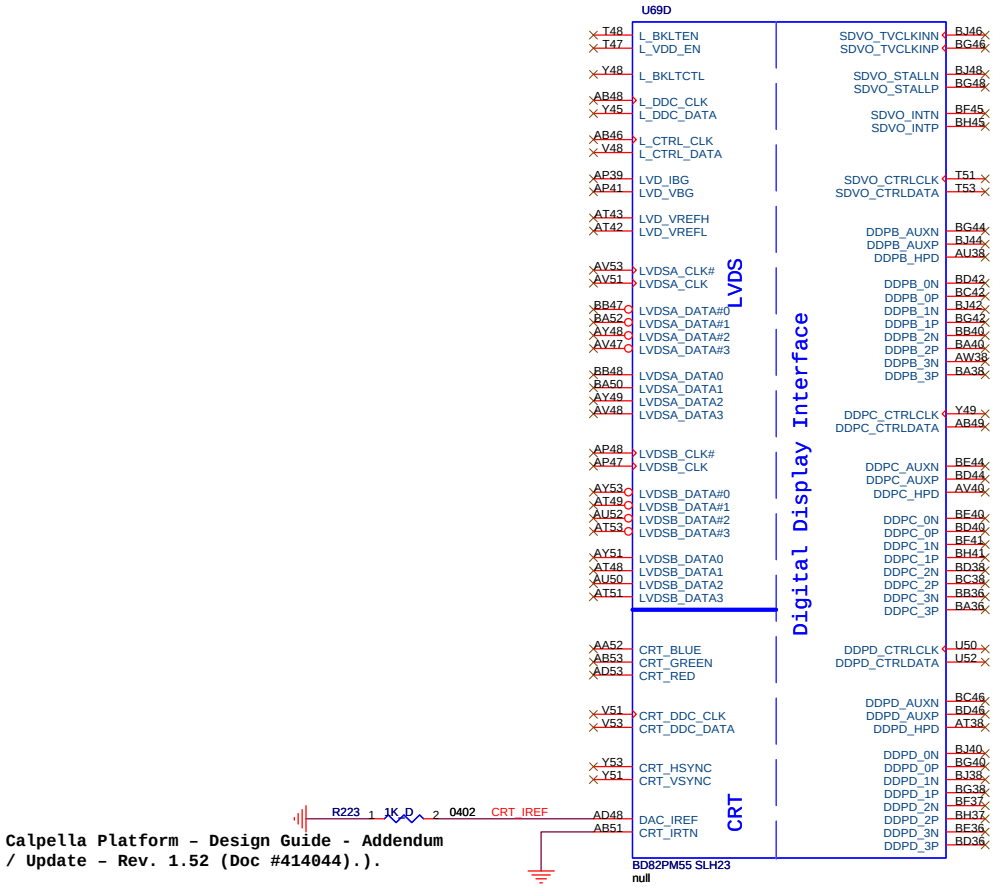
Port	Function
Port1	WLAN
Port2	Ricoh R5U231
Port3	GbE LAN
Port4	ISDB-T Tuner (JP)
Port5	Mach
Port6	ExpressCard/34 (PCIE)
Port7	NC
Port8	NC



For Disable Auburndale Graphic
In addition, FDI_RXN_[7:0] and FDI_RXP_[7:0] can be left floating on the PCH. FDI_TX[7:0] and FDI_TX#[7:0] can be left floating on the Arrandale. The GFX_IMON,FDI_FSYNC[0], FDI_FSYNC[1], FDI_LSYNC[0], FDI_LSYNC[1], and FDI_INT signals on the Arrandale side should be tied to GND (through 1-kΩ ±5% resistors).

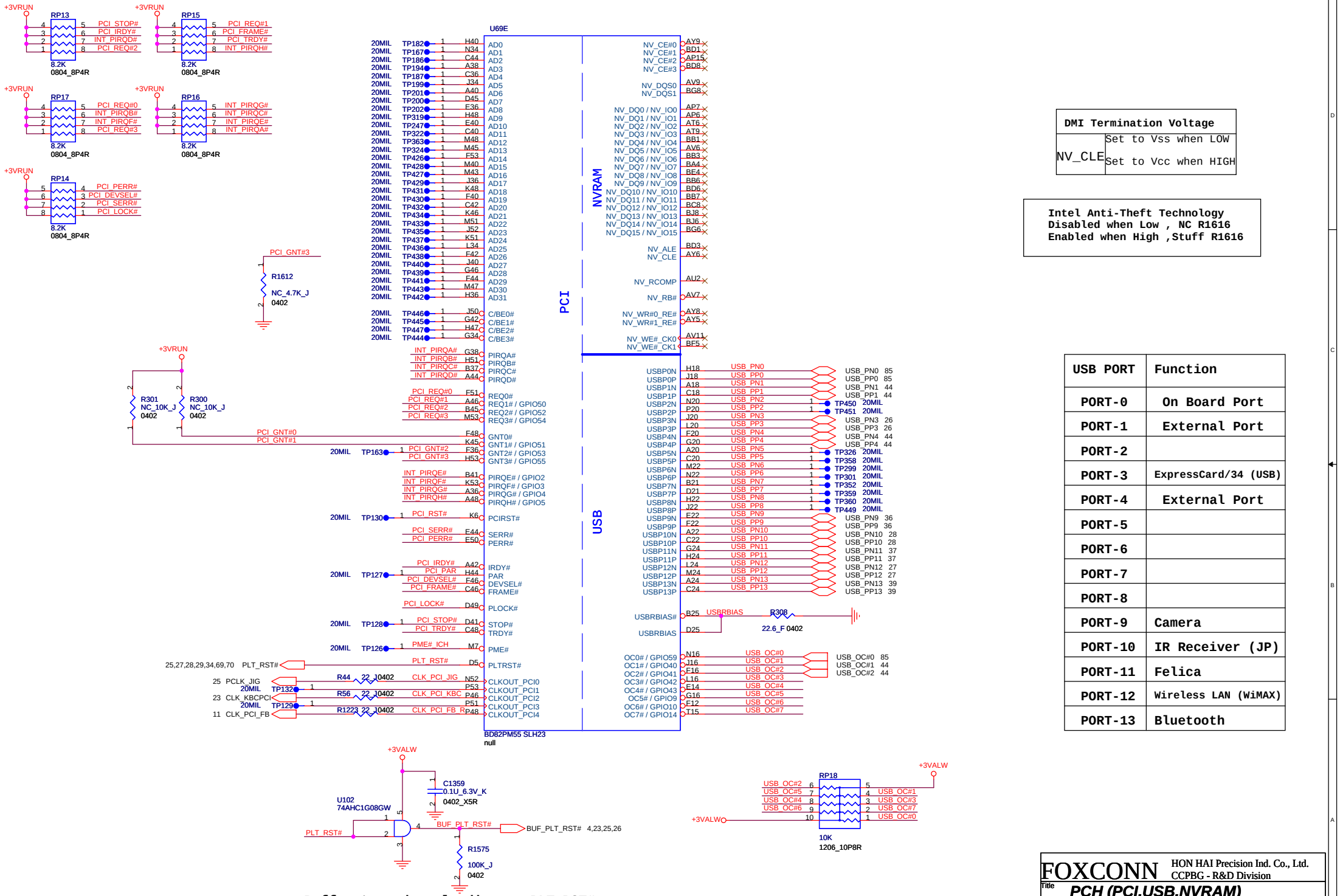


FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	PCH (DMI,FDI,GPIO)	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 12 of 93	



Calpella Platform – Design Guide - Addendum / Update – Rev. 1.52 (Doc #414044).).

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	PCH (LVDS,DDI)	
Size: Custom	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 13 of 93	



DMI Termination Voltage	
NV_CLE	Set to Vss when LOW Set to Vcc when HIGH

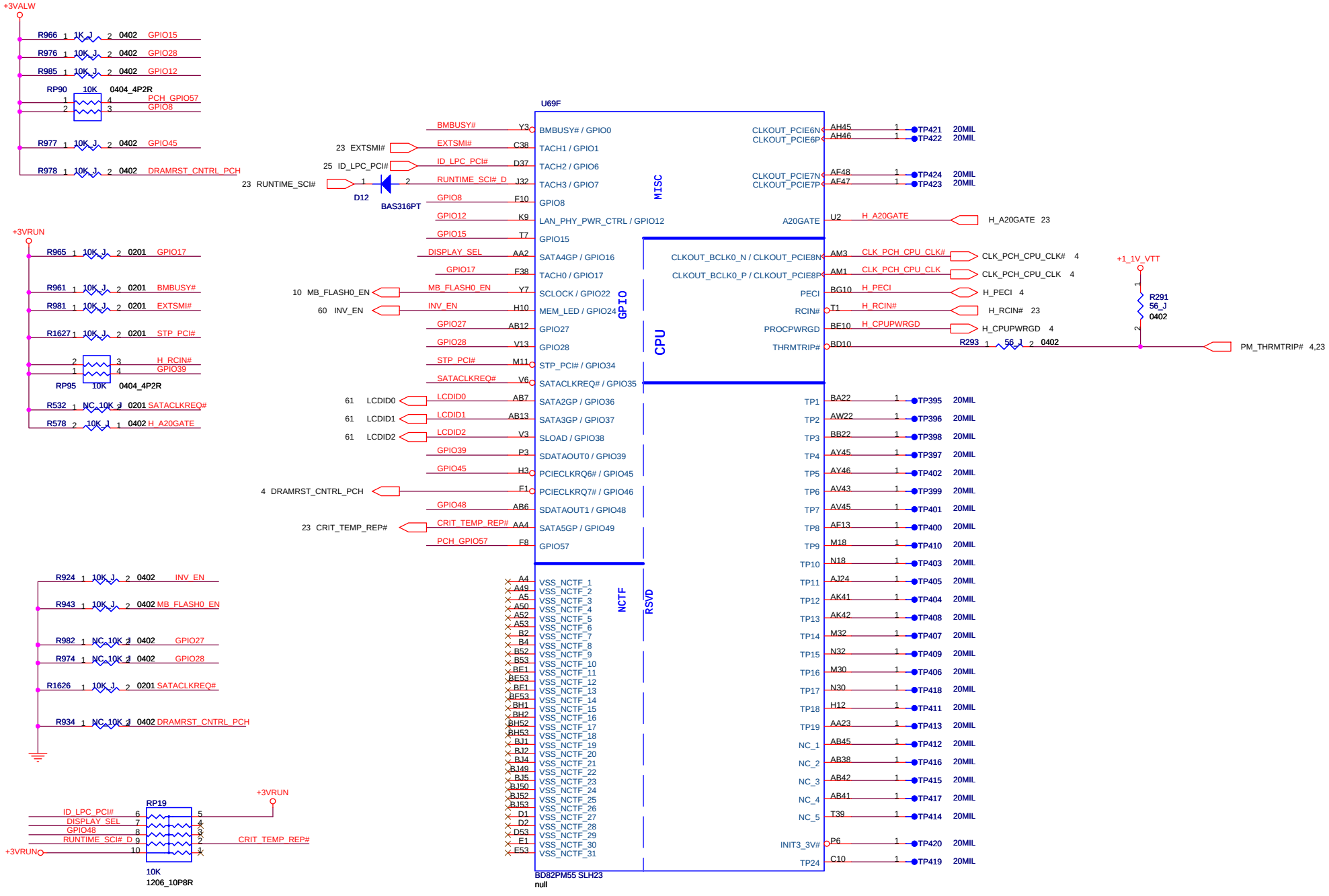
Intel Anti-Theft Technology
Disabled when Low , NC R1616
Enabled when High ,Stuff R1616

USB PORT	Function
PORT-0	On Board Port
PORT-1	External Port
PORT-2	
PORT-3	ExpressCard/34 (USB)
PORT-4	External Port
PORT-5	
PORT-6	
PORT-7	
PORT-8	
PORT-9	Camera
PORT-10	IR Receiver (JP)
PORT-11	Felica
PORT-12	Wireless LAN (WiMAX)
PORT-13	Bluetooth

Buffer to reduce loading on PLT_RST#.

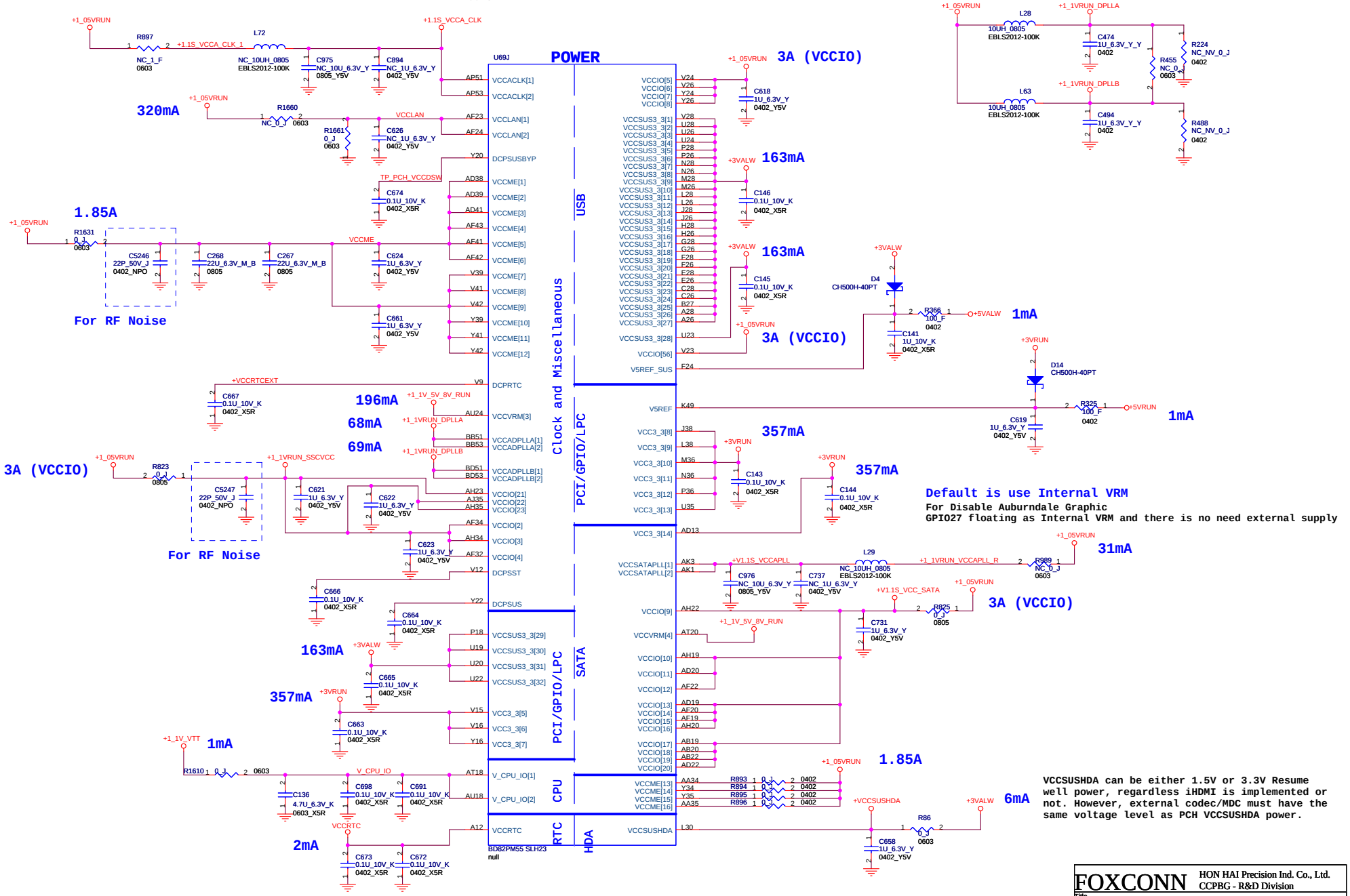
FOXCONN HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title: PCH (PCI,USB,NVRAM)
Size: A3 | Document Number: M931 (MBX-215) | Rev: SA
Date: Wednesday, January 06, 2010 | Sheet 14 of 93



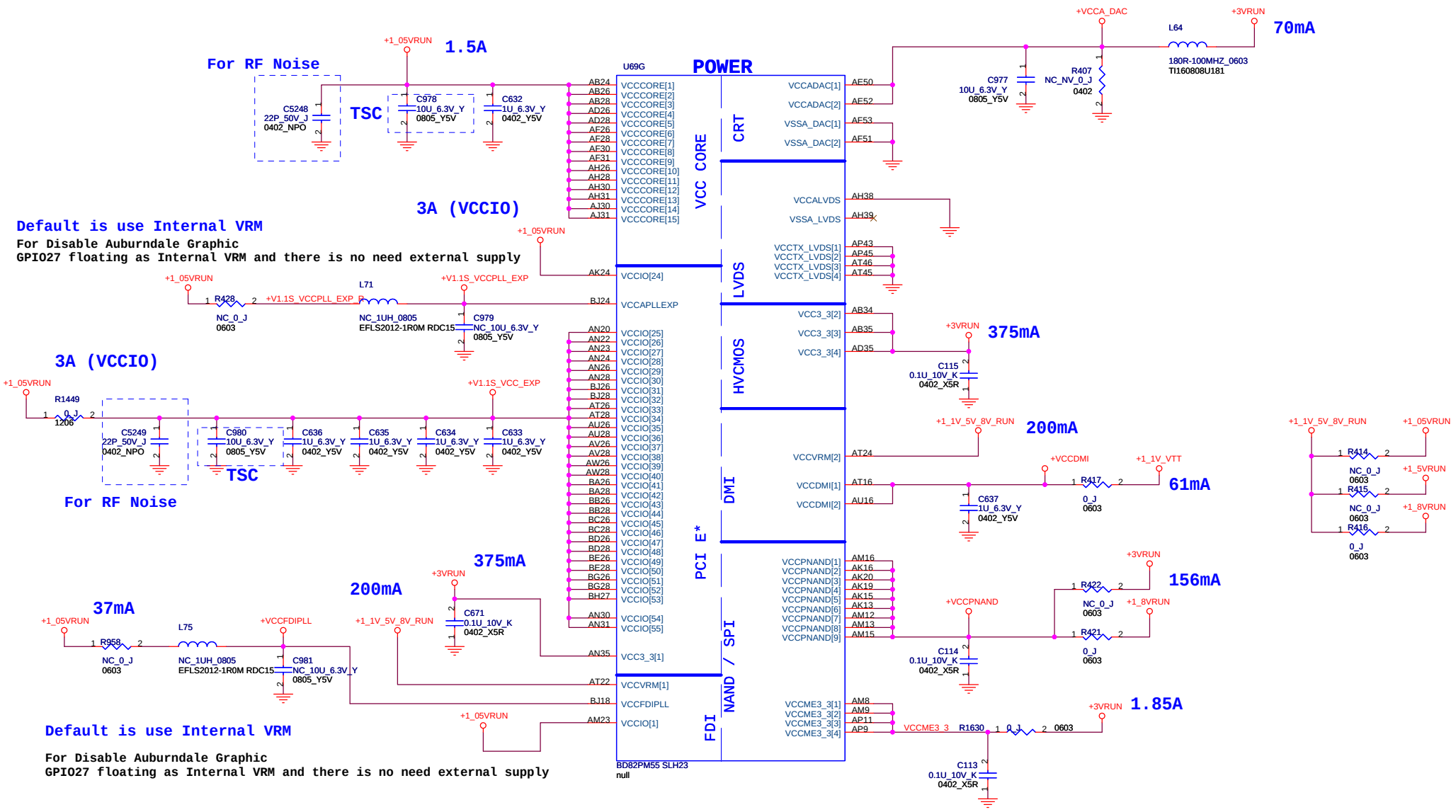
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division
Title	PCH (GPIO,VSS_NCTF,RSVD)
Size A3	Document Number M931 (MBX-215) Rev SA
Date: Wednesday, January 06, 2010	Sheet 15 of 93

Default is use Internal VRM
For Disable Auburndale Graphic
GPIO27 floating as Internal VRM and there is no need external supply

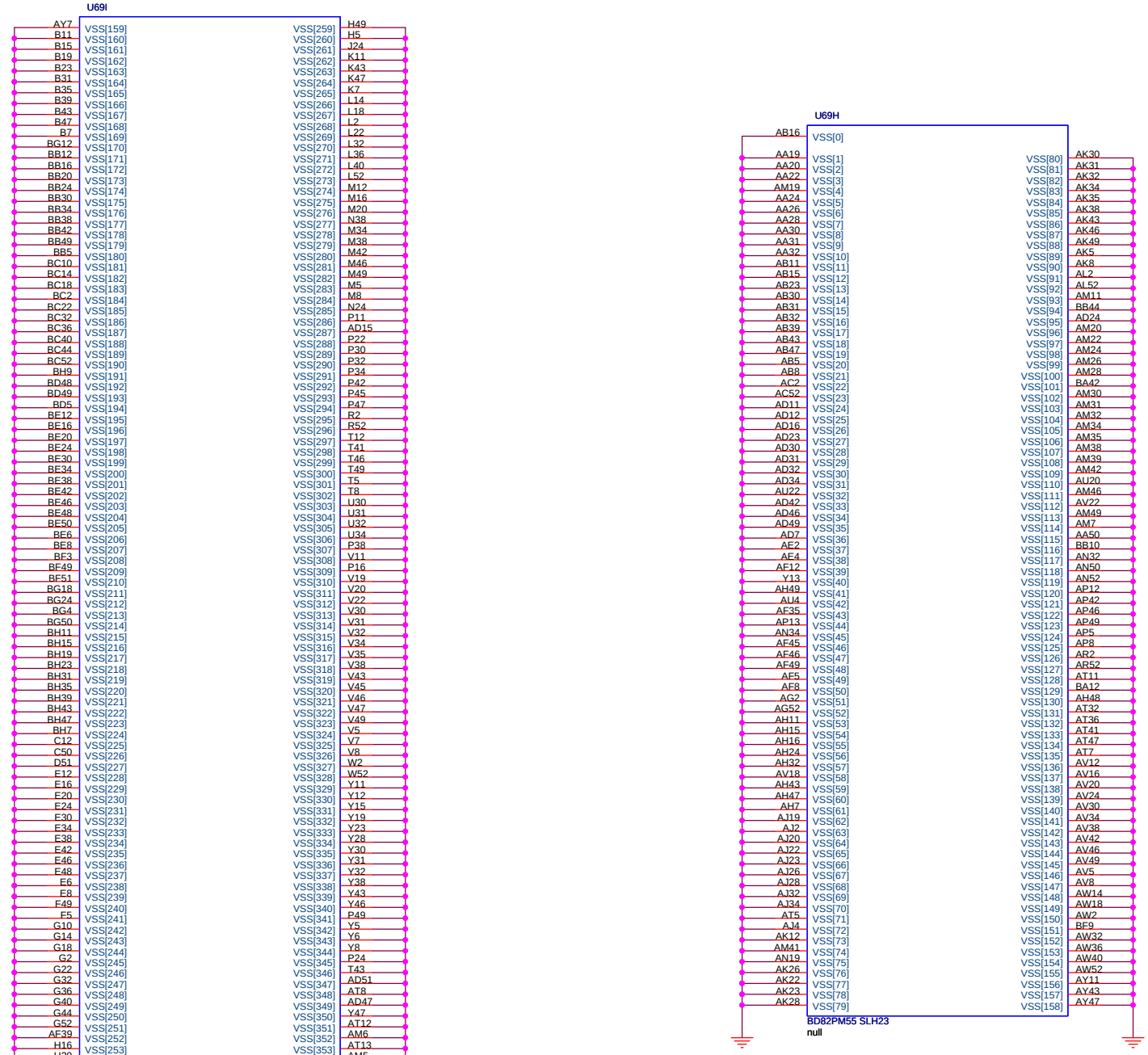


FOXCONN HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title	PCH (POWER) 1/2	
Size: Custom	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 16 of 93	

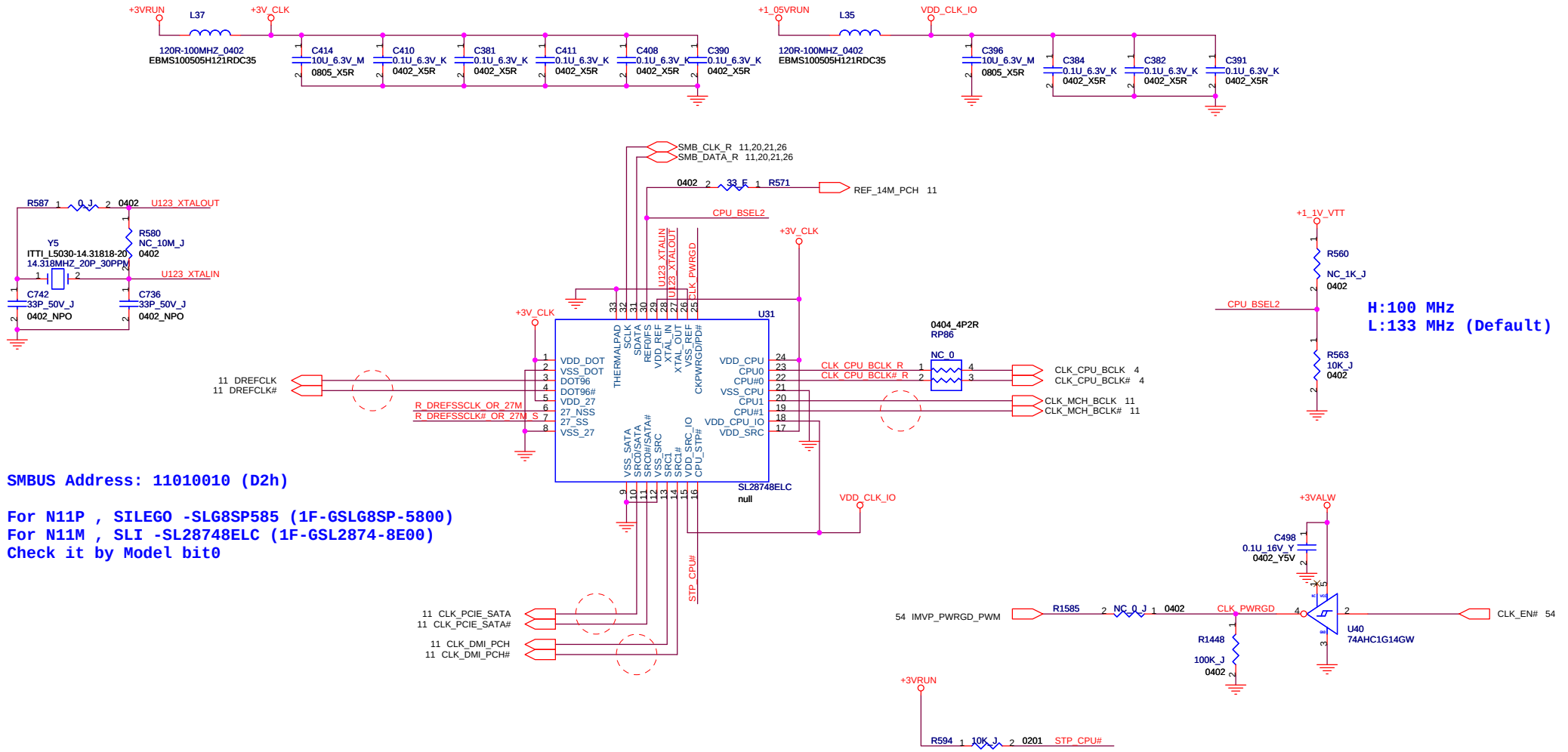


FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division		
Title	PCH (POWER) 2/2		
Size A3	Document Number M931 (MBX-215)		Rev SA
Date: Wednesday, January 06, 2010	Sheet 17 of 93		



FOXCONN
HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title	PCH (VSS)	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 18 of 93	



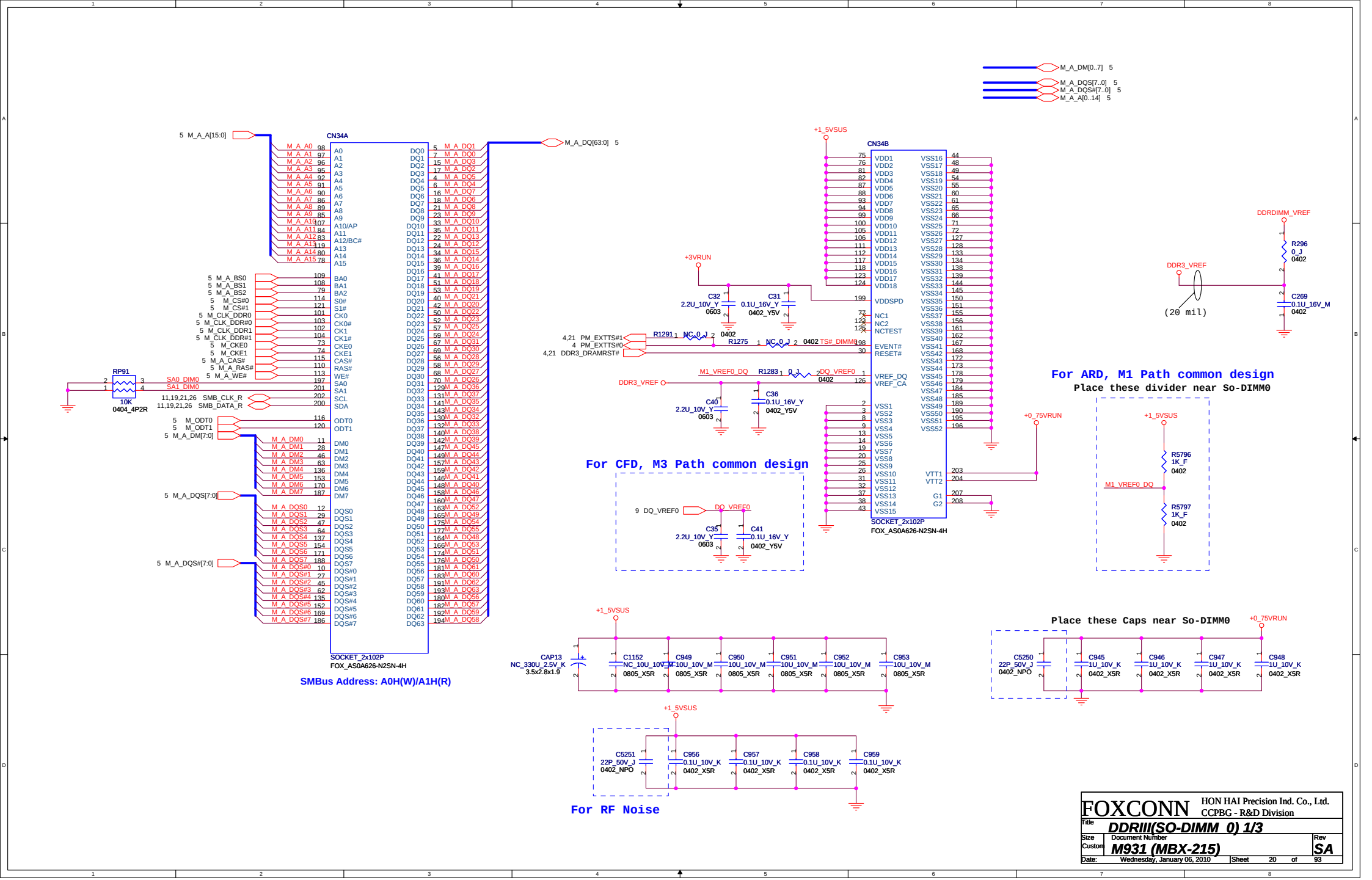
SMBUS Address: 11010010 (D2h)

For N11P , SILEGO -SLG8SP585 (1F-GSLG8SP-5800)
For N11M , SLI -SL28748ELC (1F-GSL2874-8E00)
Check it by Model bit0

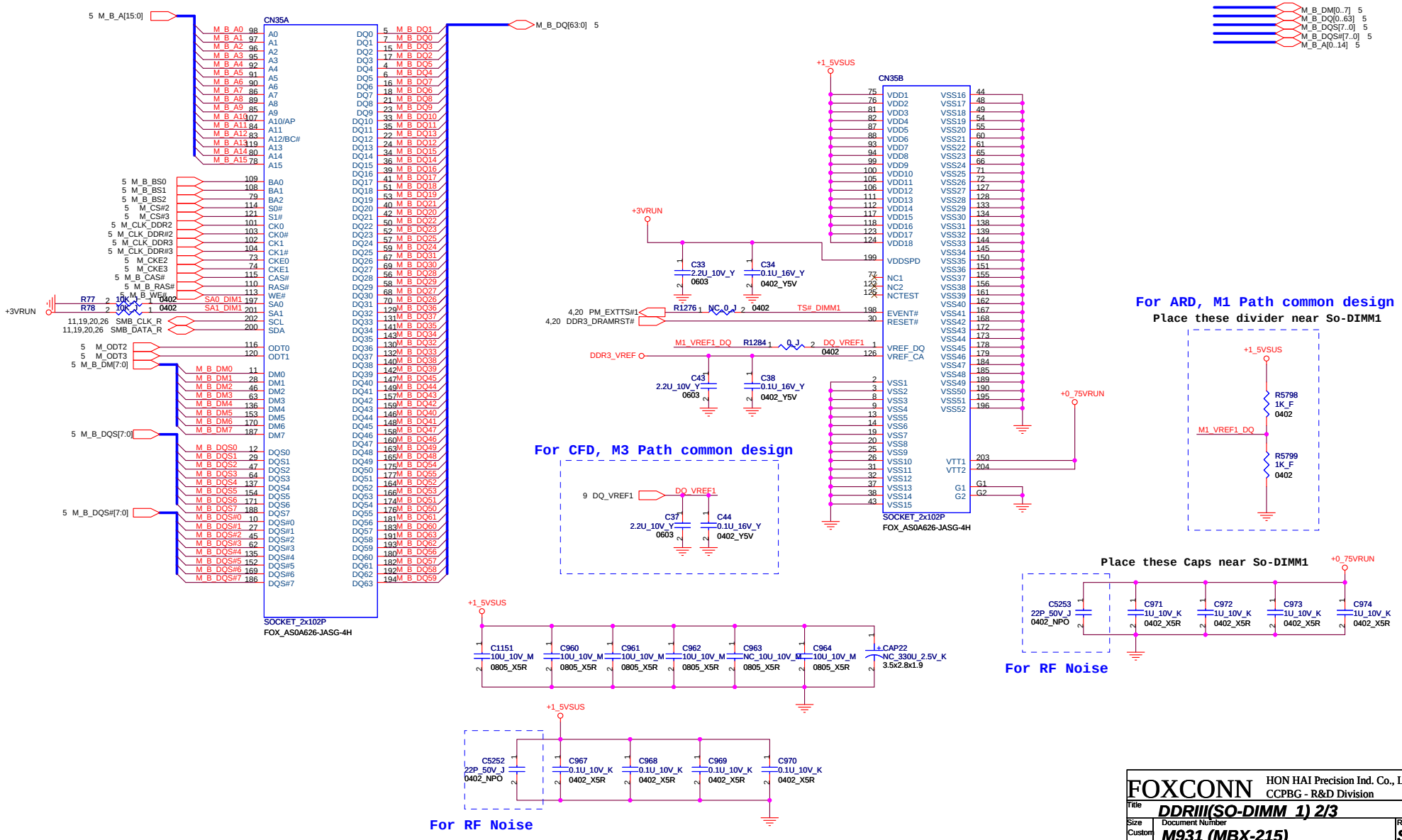
Frequency Select Pin (FS)

FS	CPU	Power On	SRC	SATA	DOT96	27MHz	REF
0	133MHz	Default	100MHz	100MHz	96MHz	27MHz	14.318MHz
1	100MHz						

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division
Title	CLOCK GEN
Size A3	Document Number M931 (MBX-215)
Rev	SA
Date: Wednesday, January 06, 2010	Sheet 19 of 93



FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division
Title	DDRIII(SO-DIMM_0) 1/3
Size: Custom	Document Number: M931 (MBX-215)
Rev	SA
Date: Wednesday, January 06, 2010	Sheet 20 of 93


CN35A
SOCKET_2x102P
FOX_AS0A626-JASG-4H
CN35B
SOCKET_2x102P
FOX_AS0A626-JASG-4H
For CFD, M3 Path common design
For RF Noise
For ARD, M1 Path common design
Place these divider near So-DIMM1
Place these Caps near So-DIMM1
For RF Noise
FOXCONN
HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division
DDRIII(SO-DIMM_1) 2/3
M931 (MBX-215)
SA
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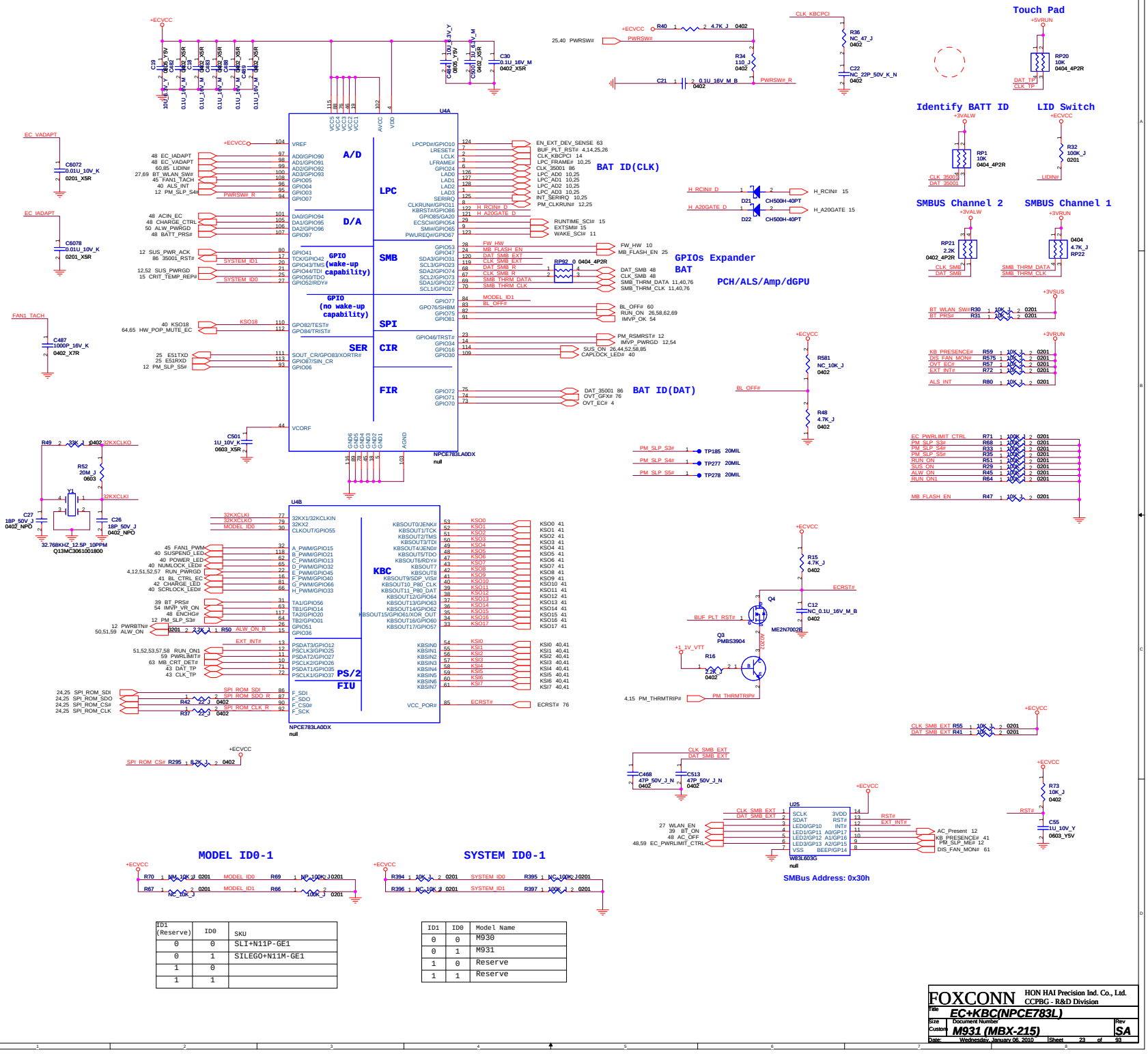
Delete M2 Path (Intel Revised)

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	SO-DIMM VREF 3/3	
Size: A3	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 22 of 93	



ID1 (Reserve)	ID0	SKU
0	0	SLI+N11P-GE1
0	1	SILEGO+N11M-GE1
1	0	
1	1	

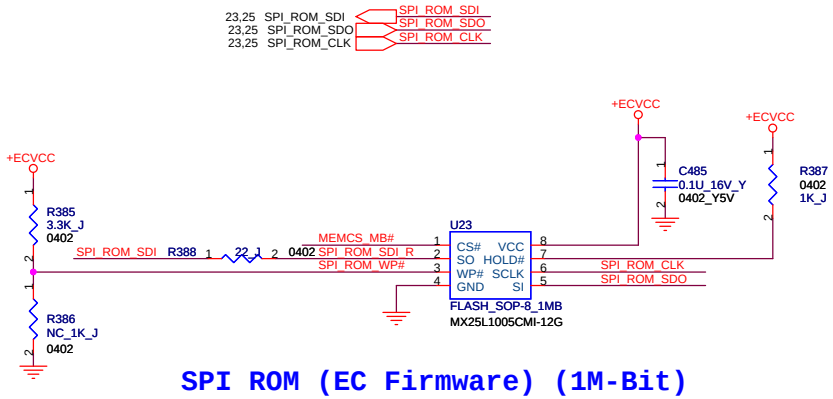
ID1	ID0	Model Name
0	0	M930
0	1	M931
1	0	Reserve
1	1	Reserve

FOXCONN — HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division

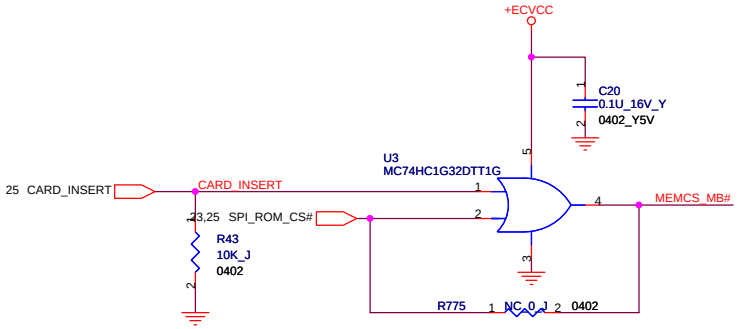
Title: EC+KBC(NPCE783L)

Size: Custom | Document Number: M931 (MBX-215) | Rev: SA

Date: Wednesday, January 06, 2010 | Sheet 23 of 53

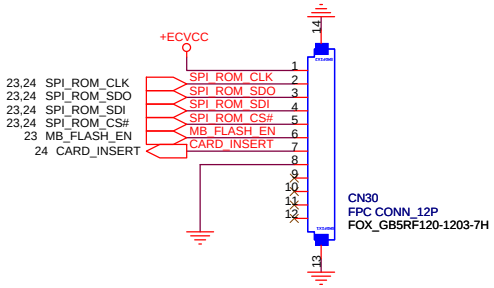


SPI ROM (EC Firmware) (1M-Bit)



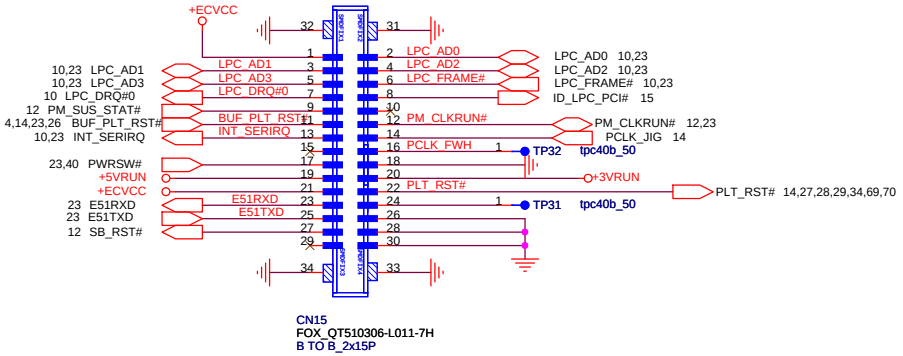
For MP, Dummy R43, C20 ,U3 ,CN30 and Stuff R775

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	SPI Flash ROM	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 24 of 93	



EXTERNAL SPI ROM INTERFACE (EC)

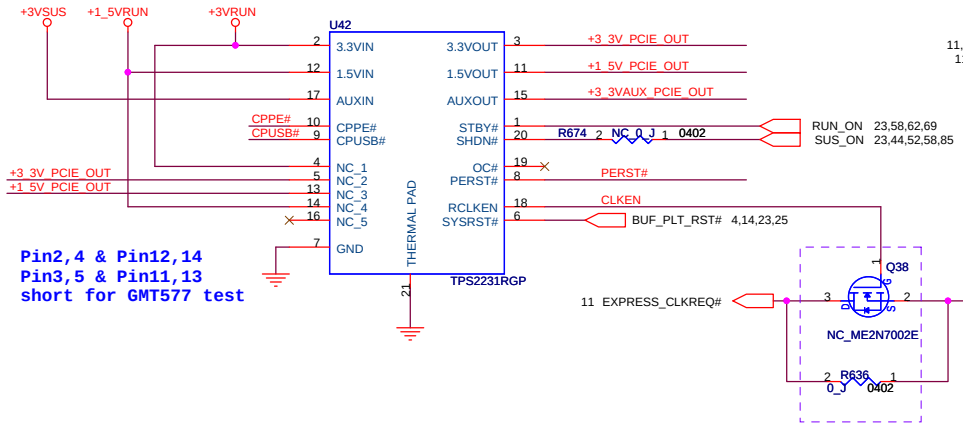
For MP, Dummy R43, C20 ,U3 ,CN30 and Stuff R775



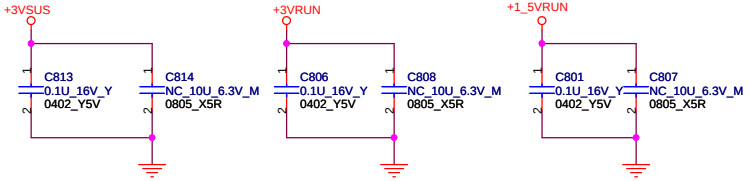
JIG-120

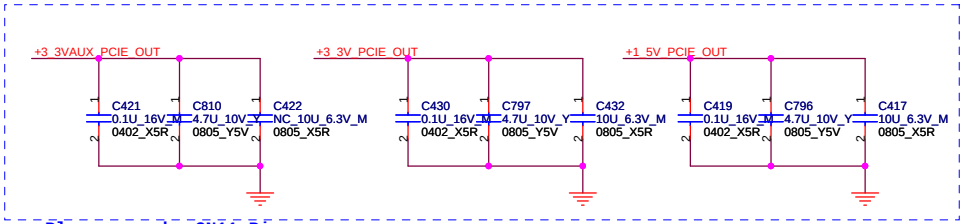
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title: *Debug Port*		
Size: A3	Document Number: *M931 (MBX-215)*	Rev: *SA*
Date: Wednesday, January 06, 2010	Sheet 25 of 93	

+1_5V=>0.65A
+3_3VAux=>0.275A
+3_3V=>1.3A

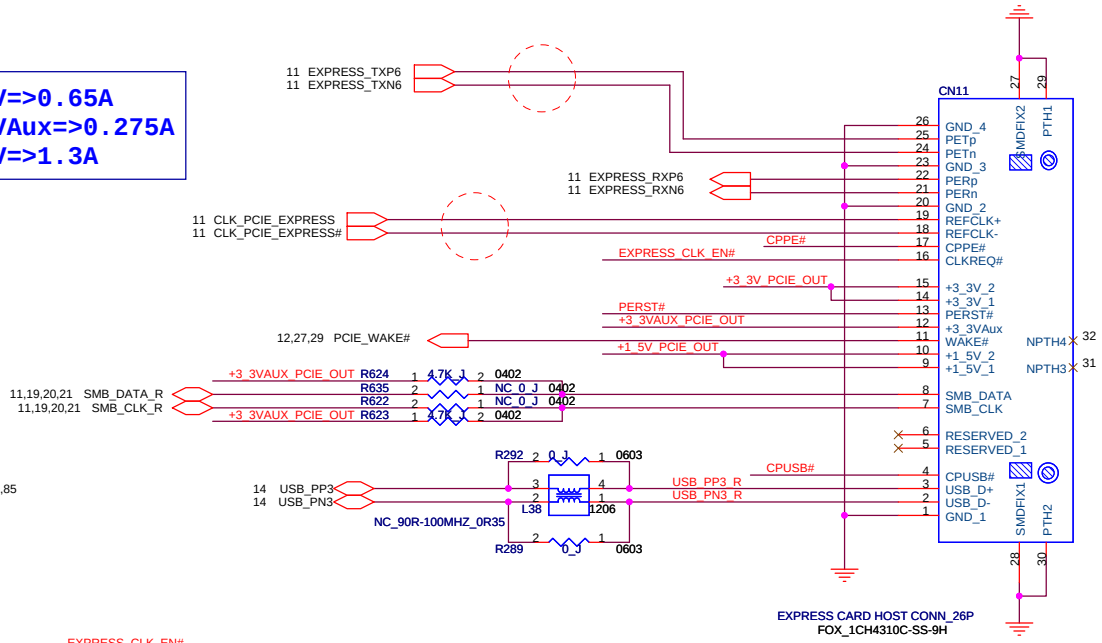


Pin2,4 & Pin12,14
Pin3,5 & Pin11,13
short for GMT577 test

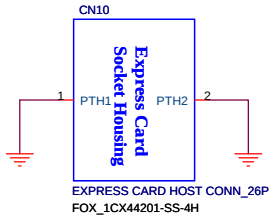




Place near by CN11 Pin.

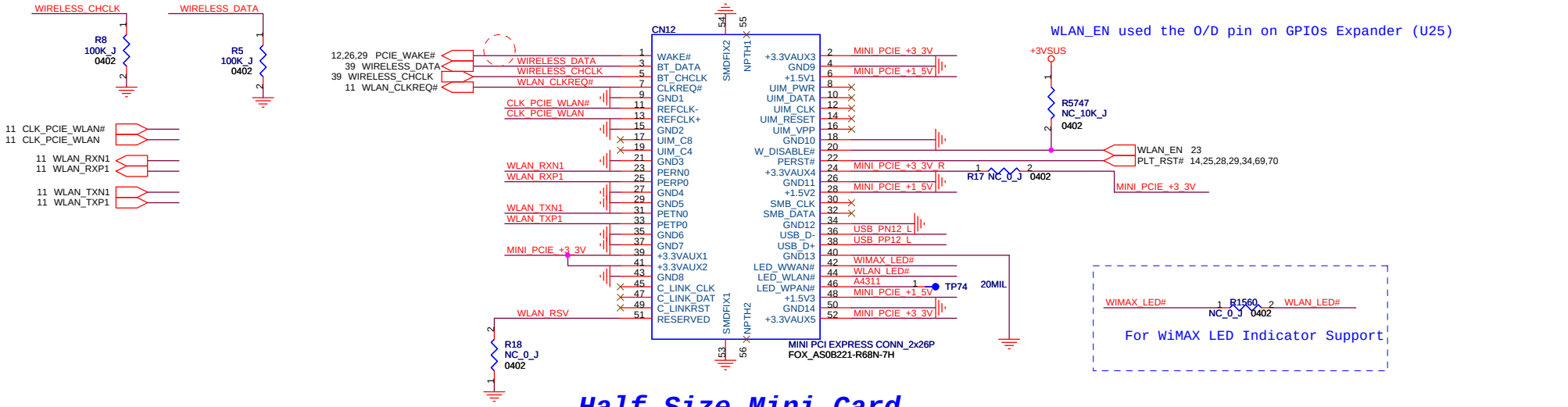


Express Card Slot.



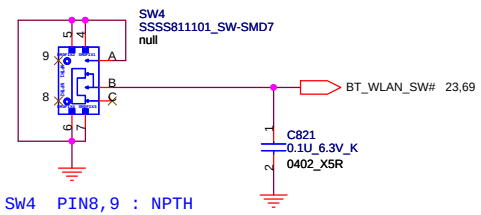
Express Card Housing.

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	EXPRESS CARD	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 26 of 93	

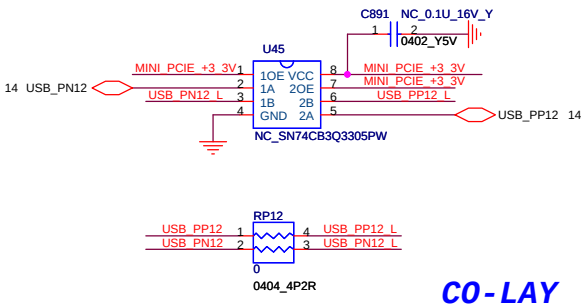


Half Size Mini Card

WLAN Switch

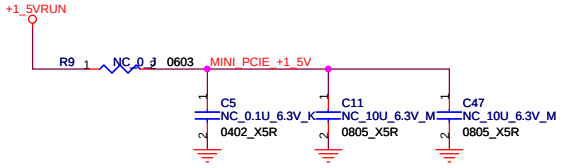


USB I/F for Wi-MAX(Kilmer Peak)

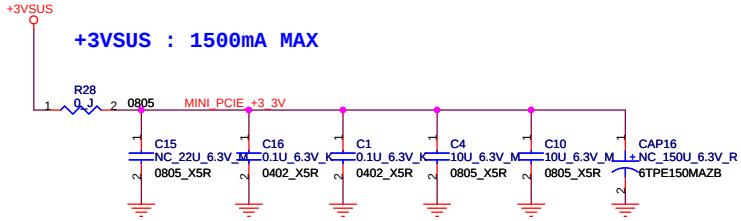


+1_5VRUN : 330mA MAX

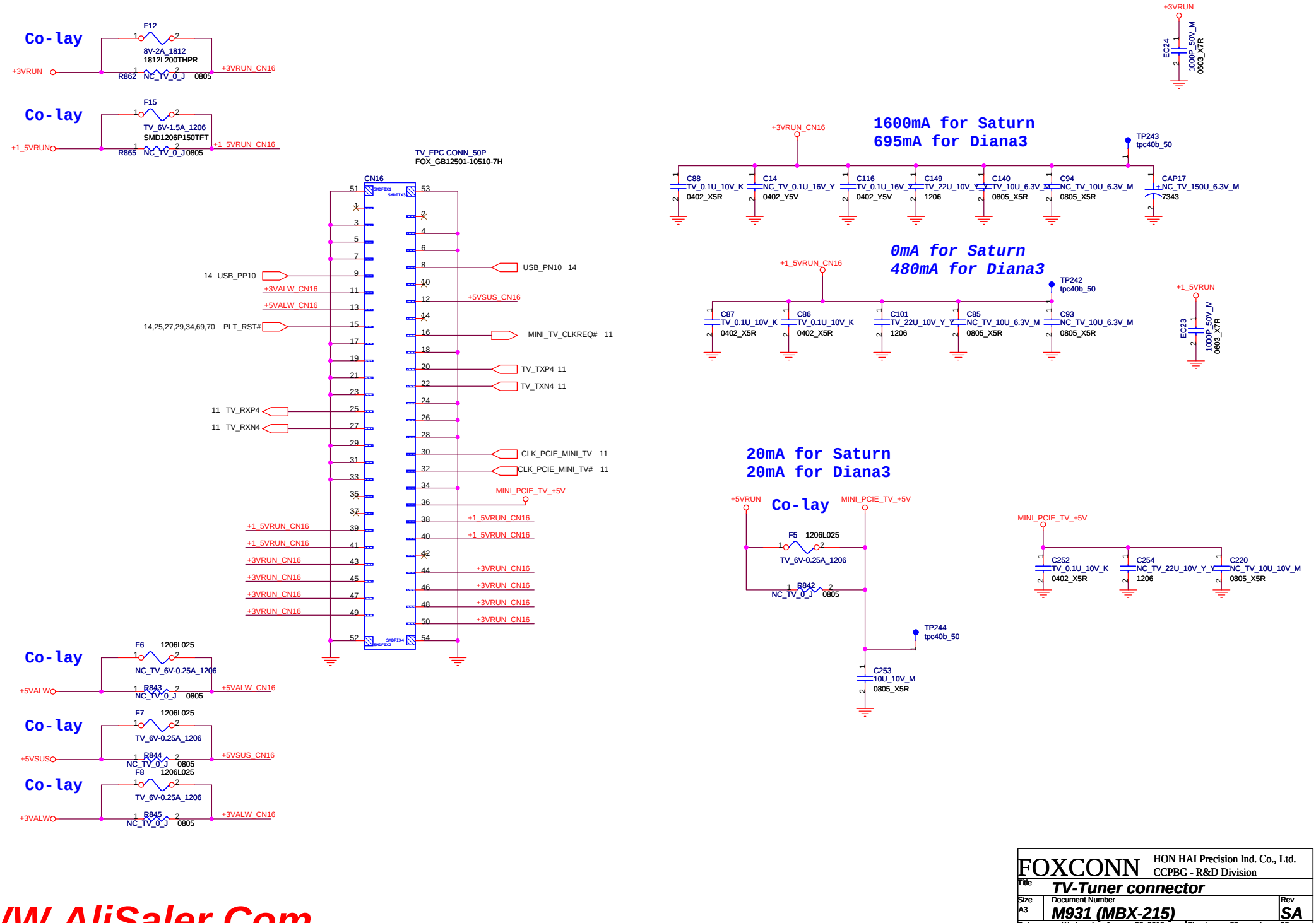
Intel Puma Peak & Kilmer Peak nonsupport +1_5VRUN



+3VSUS : 1500mA MAX

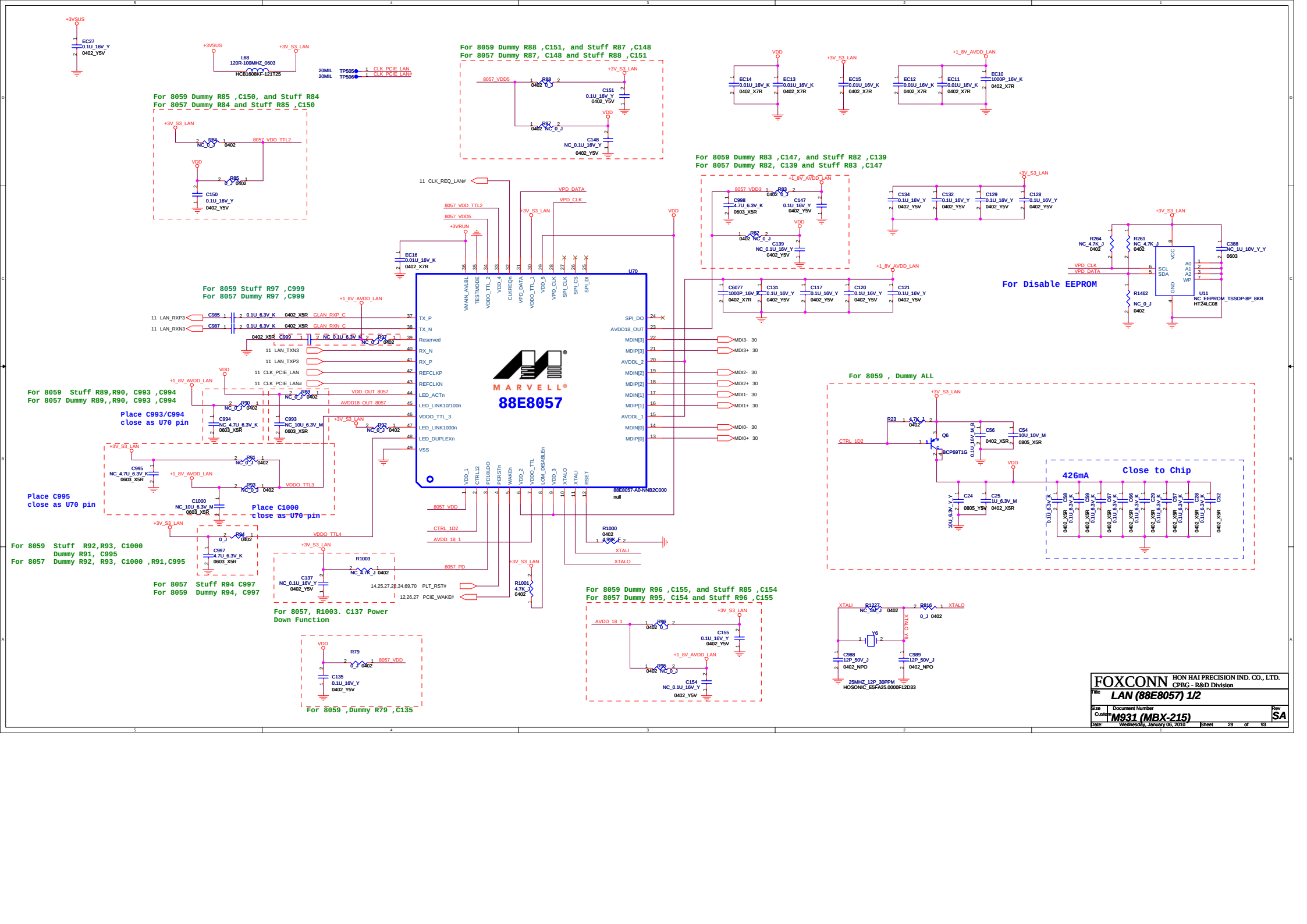


FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	Mini-PCIE Card (WLAN)	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 27 of 93	



FOXCONN HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title	TV-Tuner connector	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 28 of 93	


For 8059 Dummy R88 ,C151, and Stuff R87 ,C148
For 8057 Dummy R87, C148 and Stuff R88 ,C151
For 8059 Dummy R85 ,C150, and Stuff R84
For 8057 Dummy R84 and Stuff R85 ,C150
For 8059 Dummy R83 ,C147, and Stuff R82 ,C139
For 8057 Dummy R82, C139 and Stuff R83 ,C147
For 8059 Stuff R97 ,C999
For 8057 Dummy R97 ,C999
For 8059 Stuff R89,R90, C993 ,C994
For 8057 Dummy R89,,R90, C993 ,C994
Place C993/C994
close as U70 pin
Place C995
close as U70 pin
Place C1000
close as U70 pin
For 8059 Stuff R92,R93, C1000
Dummy R91, C995
For 8057 Dummy R92, R93, C1000 ,R91,C995
For 8057 Stuff R94 C997
For 8059 Dummy R94, C997
For 8057, R1003. C137 Power
Down Function
For 8059 ,Dummy R79 ,C135
For 8059 Dummy R96 ,C155, and Stuff R85 ,C154
For 8057 Dummy R95, C154 and Stuff R96 ,C155
For 8059 , Dummy ALL
For Disable EEPROM
88E8057
MARVELL
U70
88E8057-A0-NNB2C000
null
426mA
Close to Chip
FOXCONN
HON HAI PRECISION IND. CO., LTD.
CPBG - R&D Division
Title
LAN (88E8057) 1/2
Size
Custom
Document Number
M931 (MBX-215)
Rev
SA
Date: Wednesday, January 06, 2010
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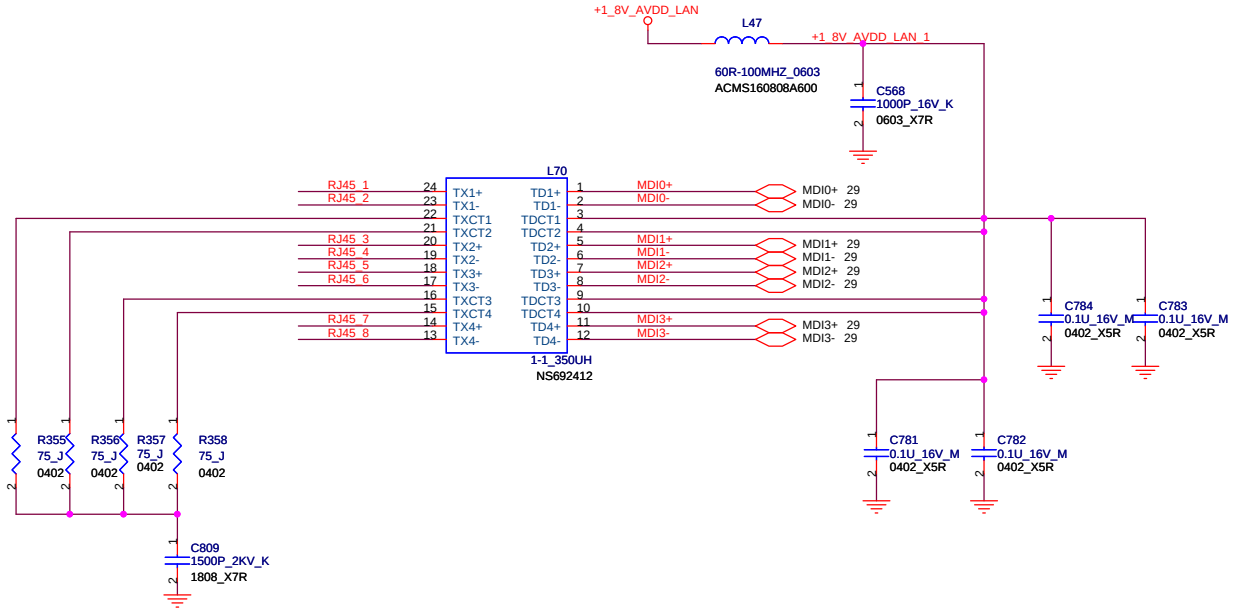
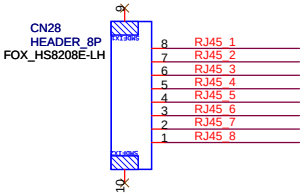
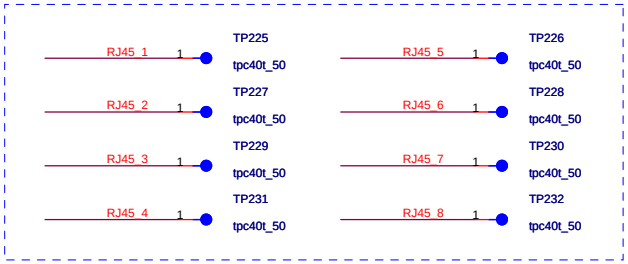
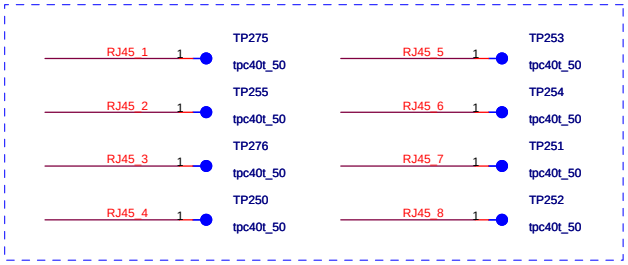


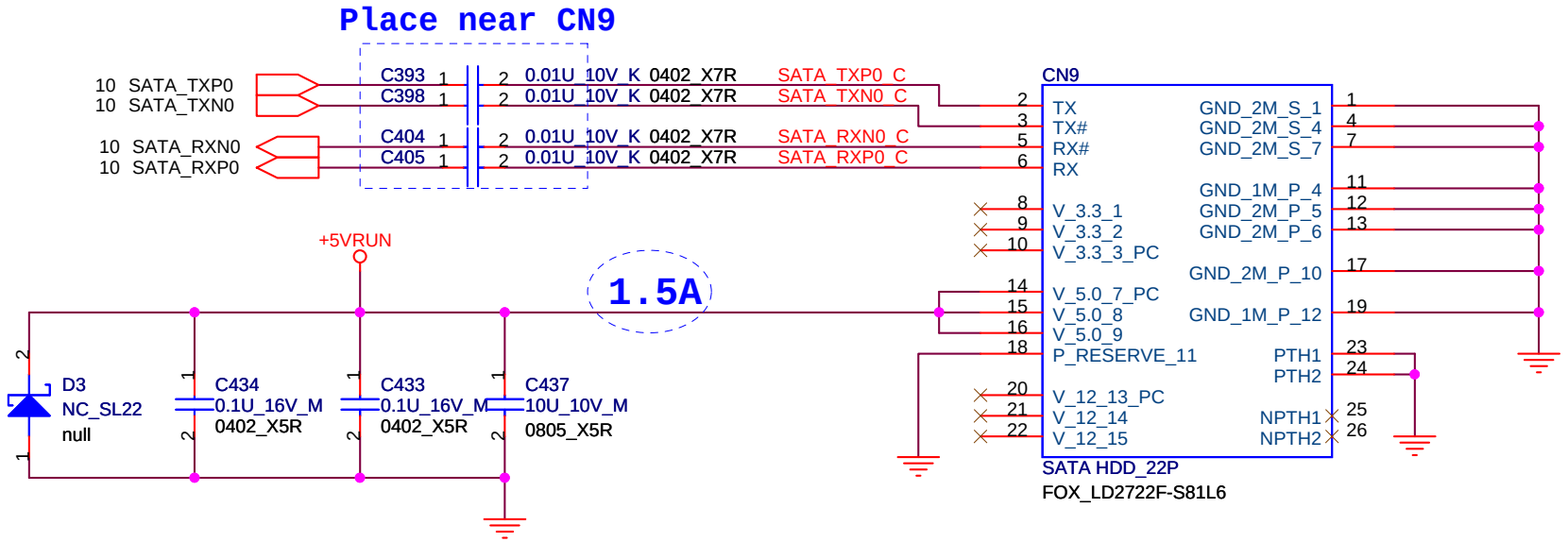


RJ45



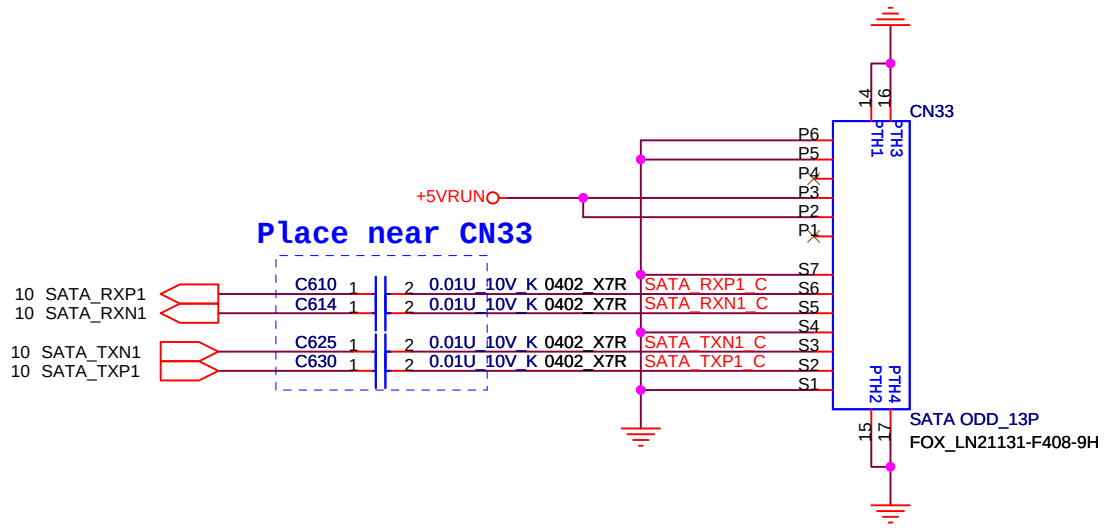


FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title: *LAN (Transfomer)(2/2)*		
Size: A3	Document Number: *M931 (MBX-215)*	Rev: *SA*
Date: Wednesday, January 06, 2010	Sheet 30 of 93	

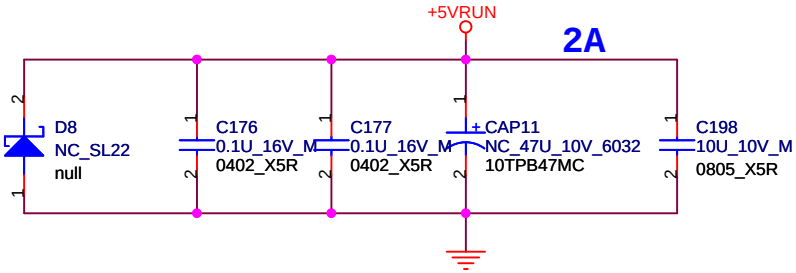


SATA HDD CONN

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title: SATA HDD		
Size: A	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 31 of 93	



SATA ODD CONN

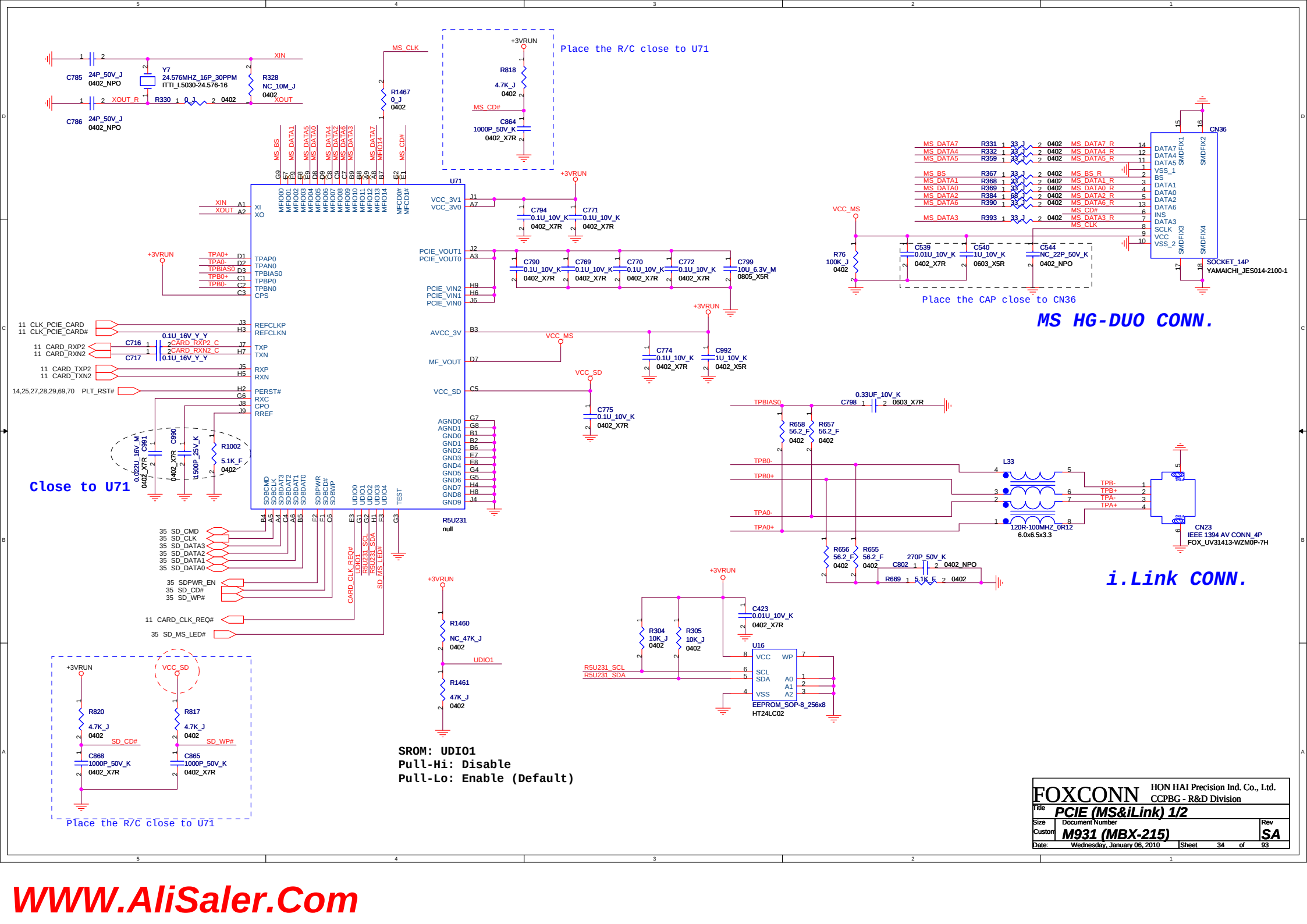


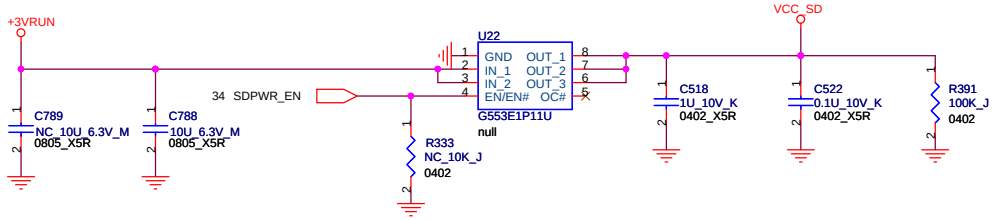
FOXCONN HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title: SATA ODD		
Size: A4	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 32 of 93	

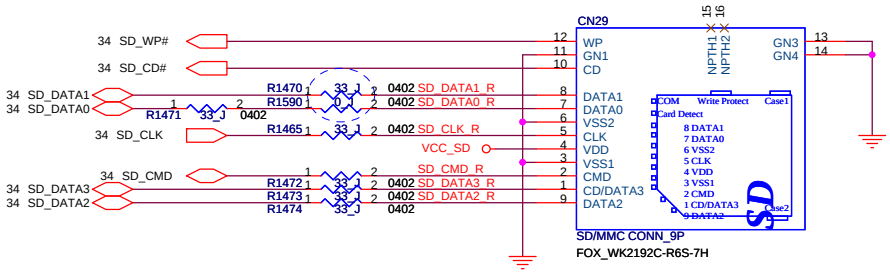
Remove Braidwood (Intel Updated and MOR confirmed)

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division		
Title: *Braidwood Connector*			
Size: Custom	Document Number: *M931 (MBX-215)*		Rev: *SA*
Date: Wednesday, January 06, 2010	Sheet 33 of 93		



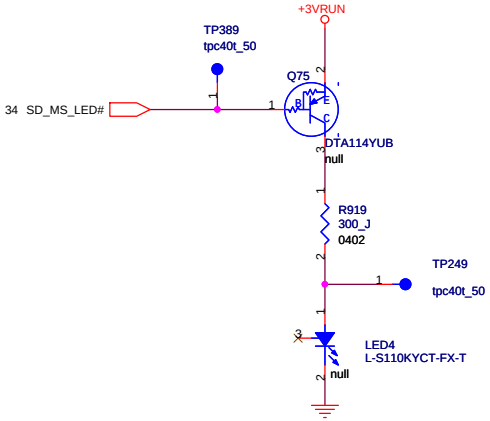


SD POWER

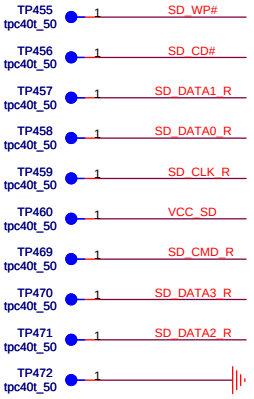


SD CONN.

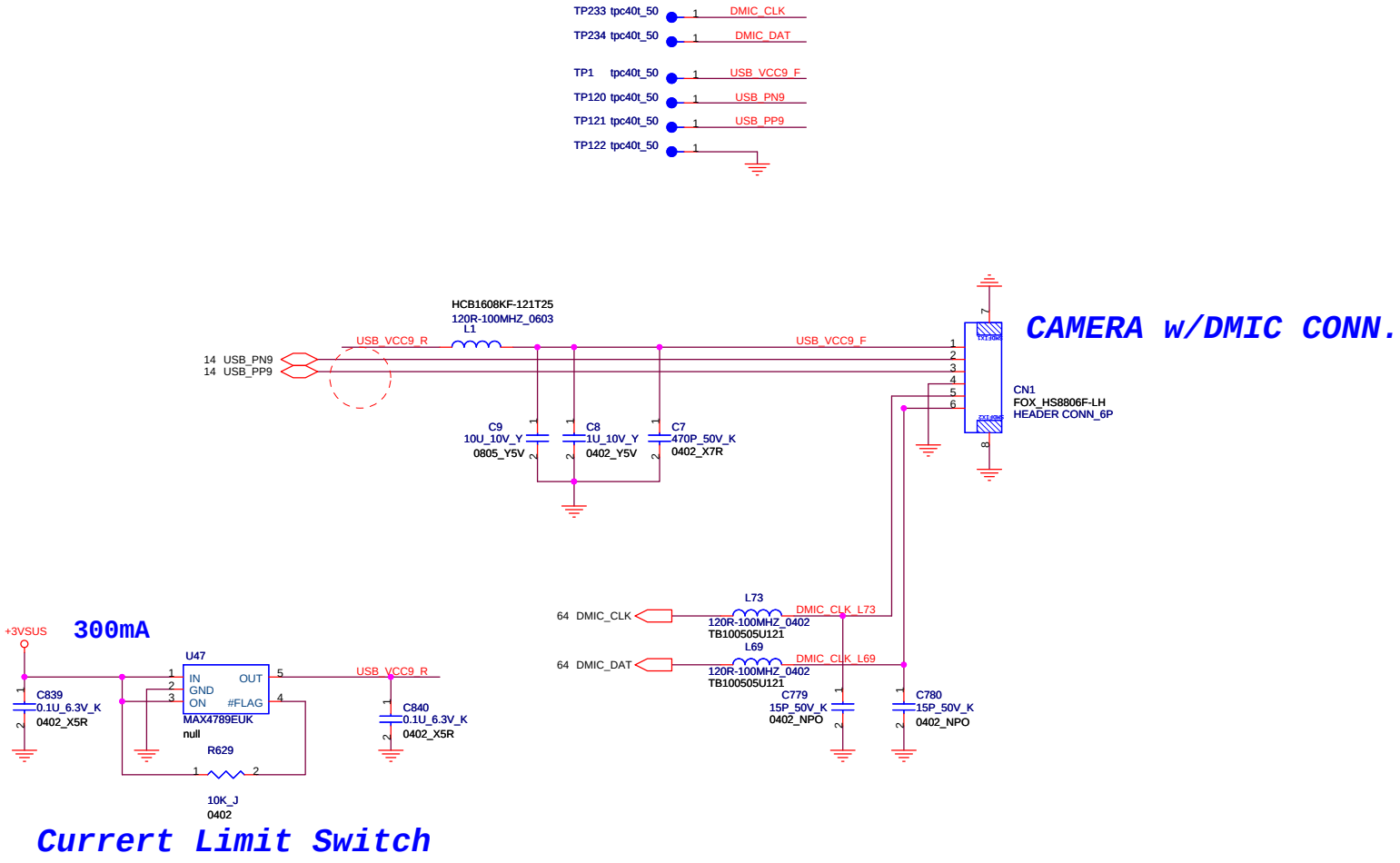
SD/MS LED



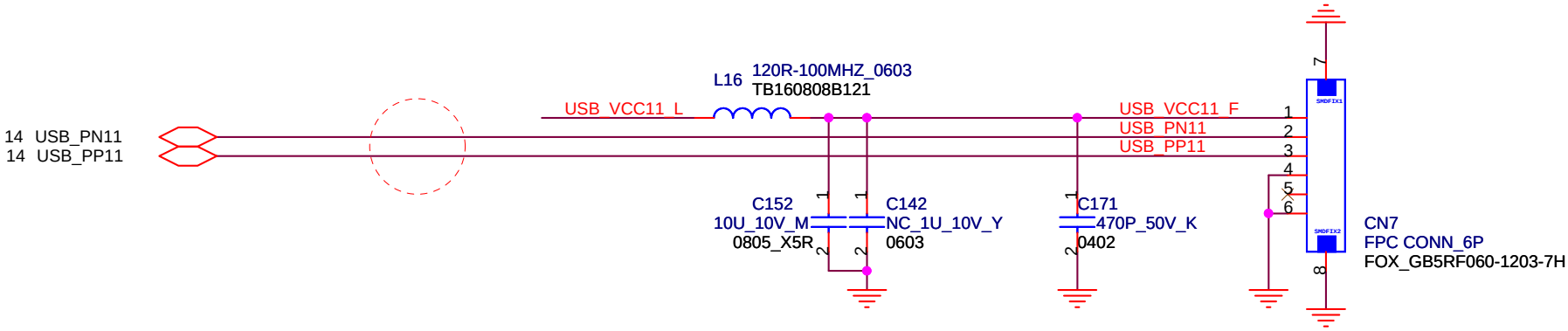
For EMI



FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	PCIE (SD) 2/2	
Size: Custom	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 35 of 93	



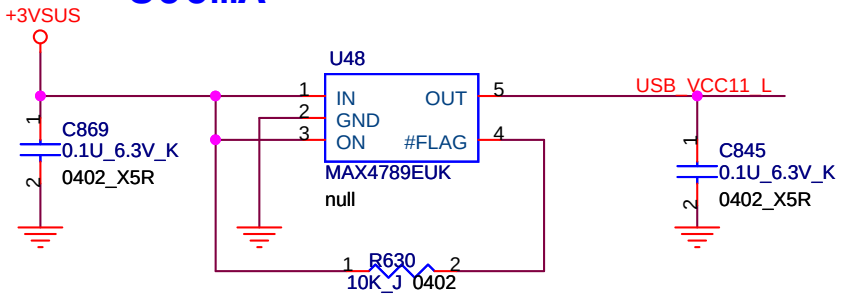
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	Camera w/DMIC Connector	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 36 of 93	



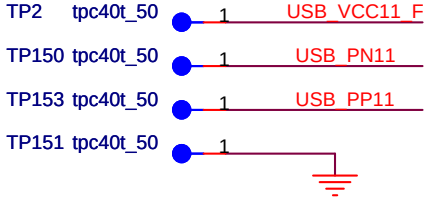
Felica Conn.

Felica Vdd Spec. (3.15V to 3.45V)

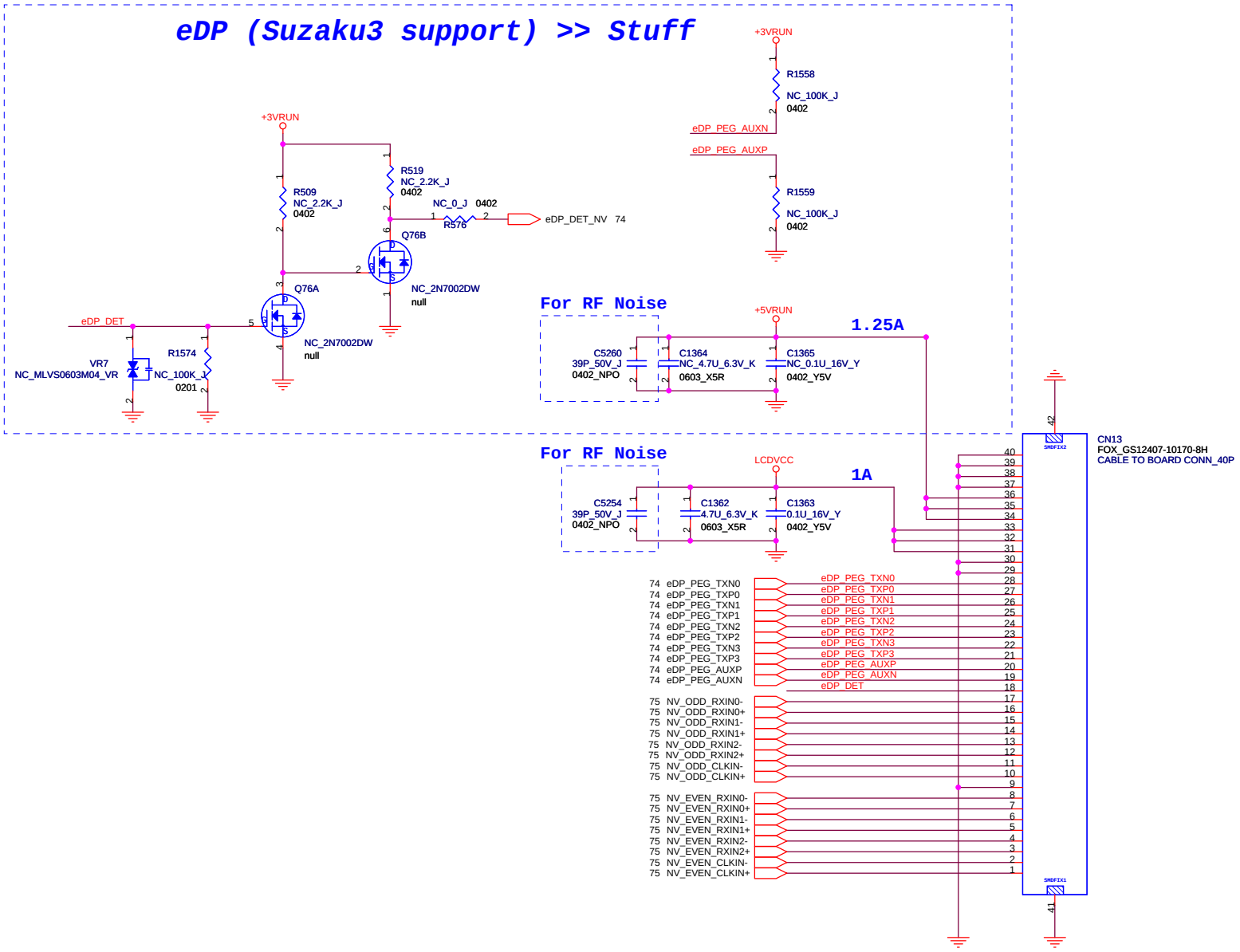
300mA



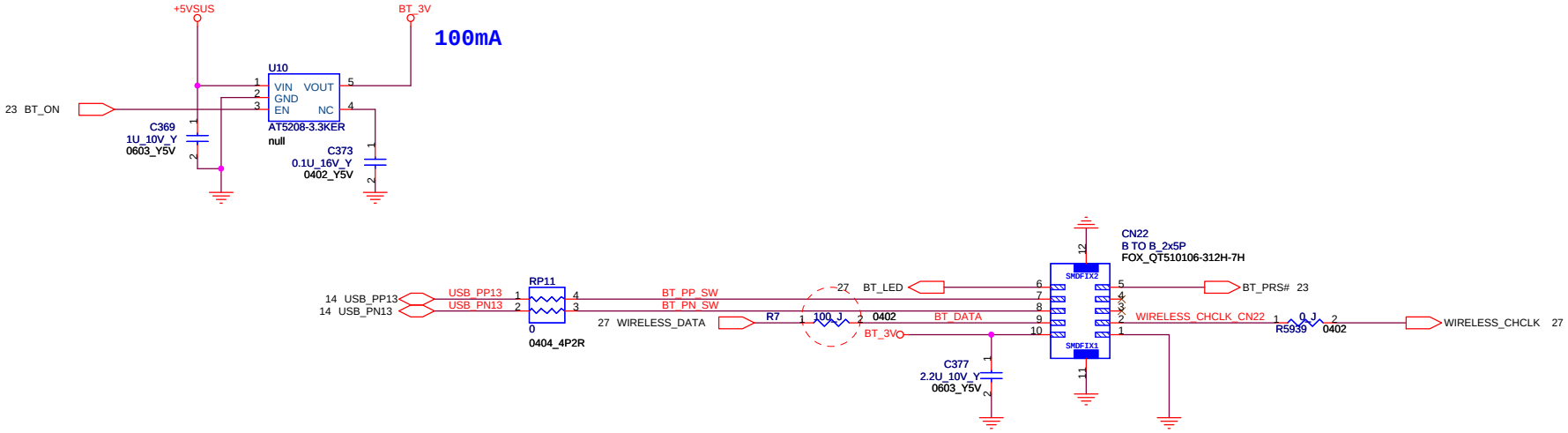
Currert Limit Switch



FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title: *Felica Connector*		
Size: A	Document Number: *M931 (MBX-215)*	Rev: *SA*
Date: Wednesday, January 06, 2010	Sheet 37 of 93	



FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	eDP&LVDS Connector	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 38 of 93	



Place C377 close to CN22, Pin10

Bluetooth CONN.

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	***Bluetooth Connector***	
Size: Custom	Document Number: ***M931 (MBX-215)***	Rev: ***SA***
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Co-lay

R863 NC_0_J 0805
F14 1206L025
+3VRUN
+3VRUN_CN2
6V-0.25A_1206

Light Sensor (EC)

Switch Keyboard Matrix

Keyboard LED

Power Button

11,23,76 SMB_THRM_DATA
11,23,76 SMB_THRM_CLK
23 ALS_INT
+3VRUN_CN2
23 KSO18
23,41 KSI0
23,41 KSI1
23,41 KSI2
23,41 KSI3
23,41 KSI4
23,41 KSI5
23,41 KSI6
23,41 KSI7
NUMLOCK_LED#_DB
SCRLOCK_LED#_DB
CAPLOCK_LED#_DB
POWER_LED_DB
SUSPEND_LED_DB
23,25 PWRSW#

CN2
FPC CONN_24P
FOX_GB5RF240-1203-7H

Switch DB Conn.

TP385 tpc40b_50 PWRSW#
TP376 tpc40b_50

Top side ,Closer together

TP462 tpc40b_50 PWRSW#
TP384 tpc40b_50

Bot side ,Closer together

+3VALW
Q77 DTA114YUB null
23 CAPLOCK_LED#
R5740 100_J 0402
CAPLOCK_LED#_DB

Q78 DTA114YUB null
23 SCRLOCK_LED#
R5741 100_J 0402
SCRLOCK_LED#_DB

Q79 DTA114YUB null
23 NUMLOCK_LED#
R5742 100_J 0402
NUMLOCK_LED#_DB

+3VALW
EC29 1000P_50V_M 0603_X7R
EC30 0.1U_10V_K 0402_X5R

+3VALW
Q80 CHT2301PT
R5745 1K_J 0402
R5743 10K_J 0402
Q82 DTC144EUB null
POWER_LED
POWER_LED 23
POWER_LED_DB

+3VSUS
Q81 CHT2301PT
R5746 1K_J 0402
R5744 10K_J 0402
Q83 DTC144EUB null
SUSPEND_LED
SUSPEND_LED 23
SUSPEND_LED_DB

+3VSUS
EC25 1000P_50V_M 0603_X7R
EC26 0.1U_10V_K 0402_X5R

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	Switch DB Connector	
Size: Custom	Document Number: M931 (MBX-215)	Rev: SA
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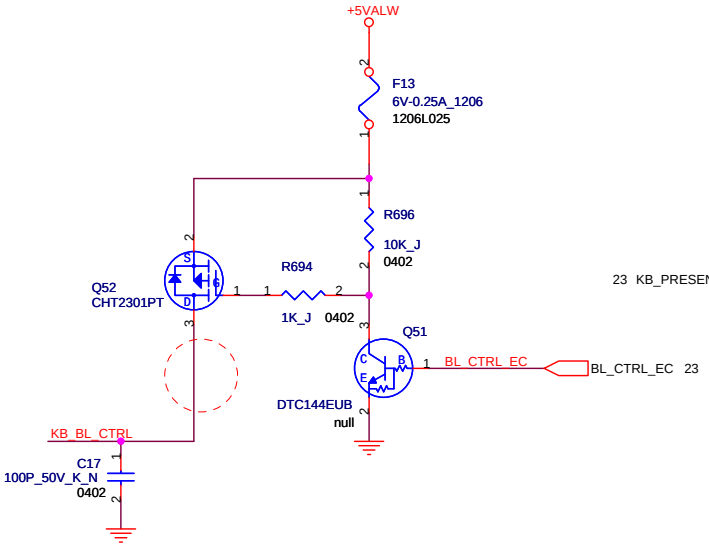
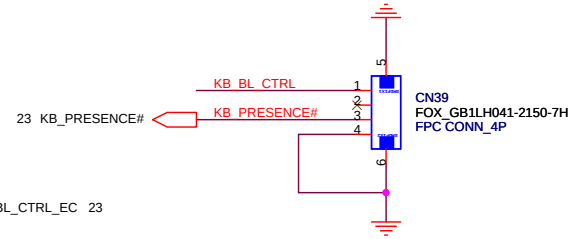
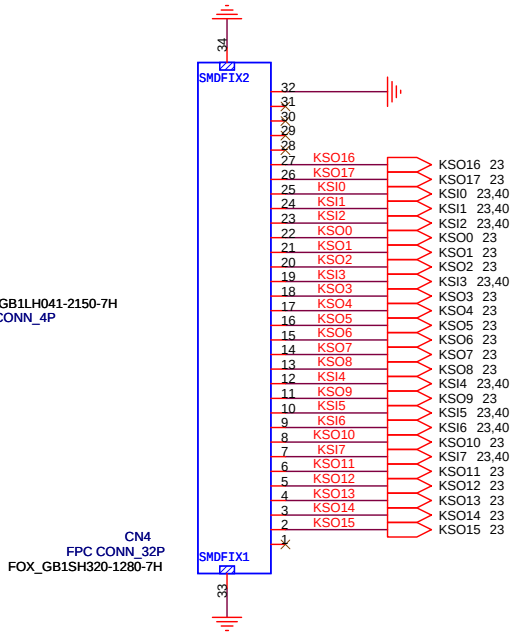
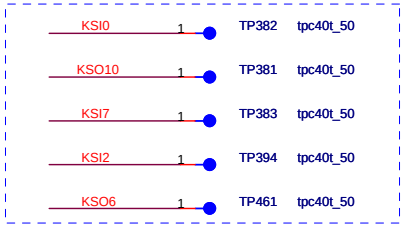


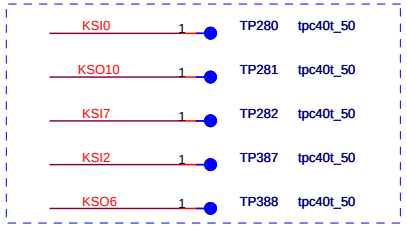




Backlit Power Conn

KBC Conn



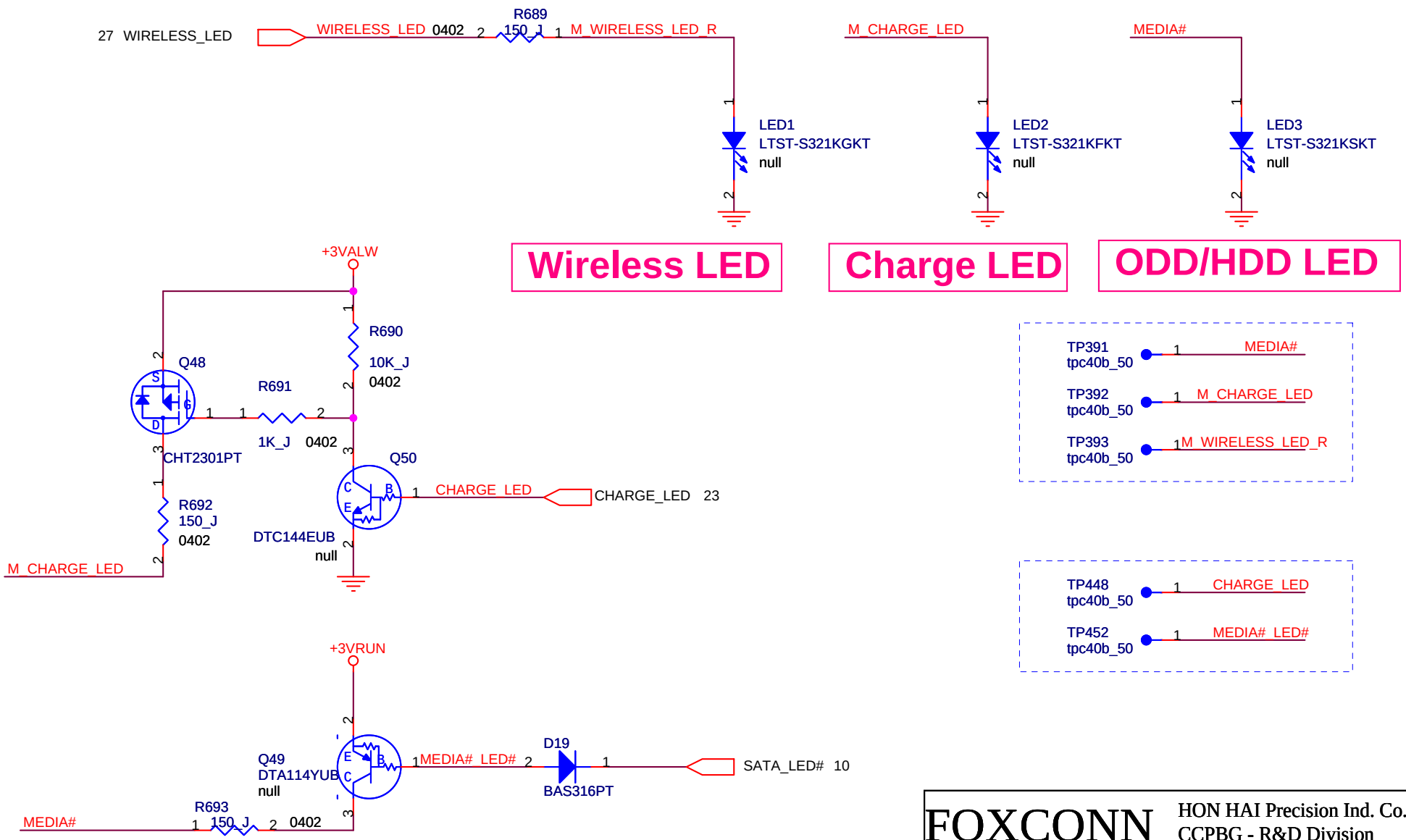


FOXCONN HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title: **KB & Backlit Connector**

Size: B | Document Number: **M931 (MBX-215)** | Rev: **SA**

Date: Wednesday, January 06, 2010 | Sheet 41 of 93



FOXCONN
HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title: **Status LED**		
Size: A	Document Number: **M931 (MBX-215)**	Rev: **SA**
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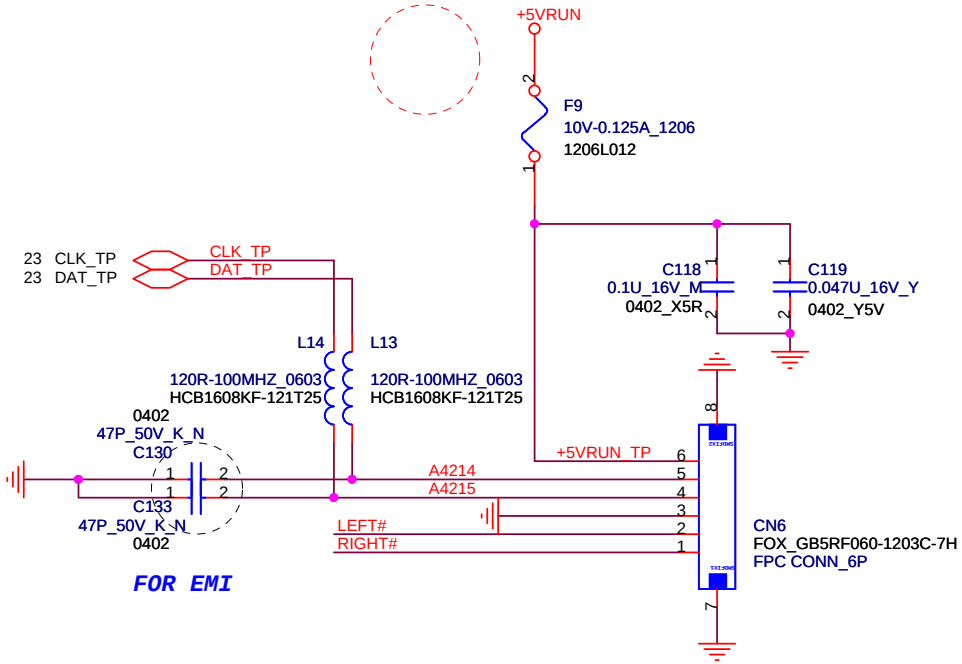
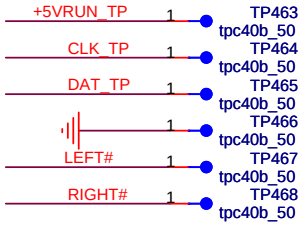
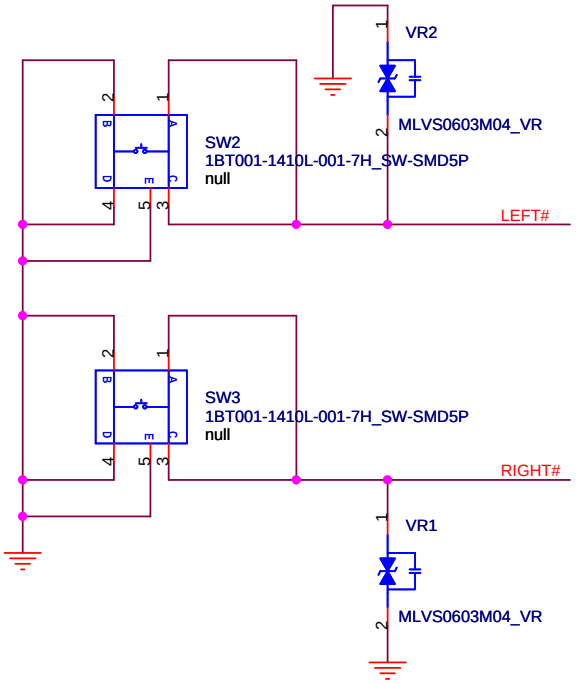


FOR ALPS TOUCH PAD



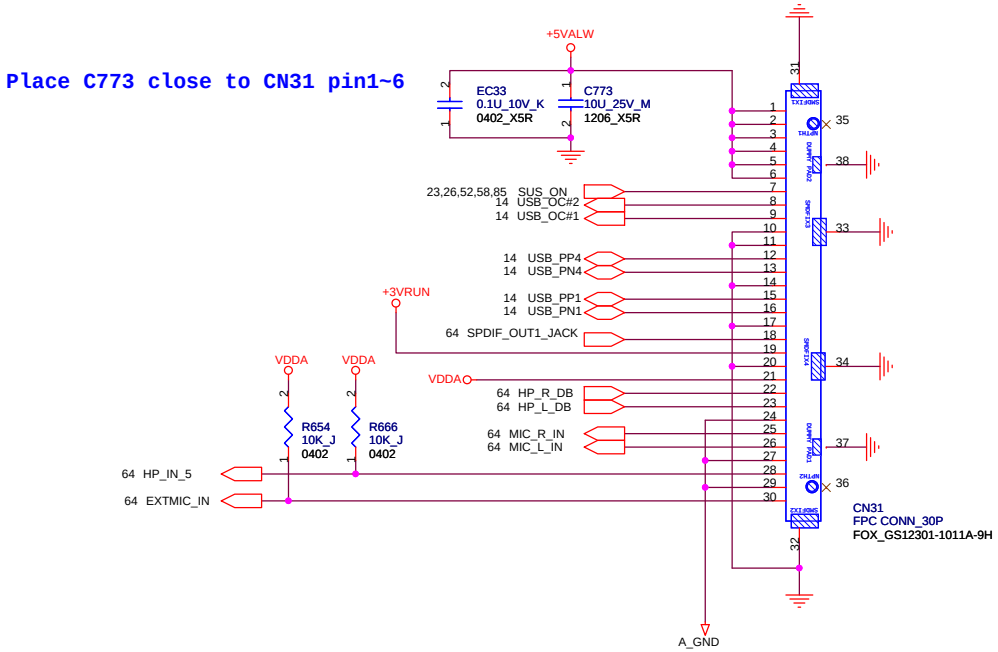
Touch Pad Conn (Support Multi Touch)

TP_LEFT Button



TP_Right Button

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division		
Title: Touch Pad			
Size: Custom	Document Number: M931 (MBX-215)		Rev: SA
Date: Wednesday, January 06, 2010		Sheet 43 of 93	



FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	*Audio/USB DB Conn.*	
Size A3	Document Number *M931 (MBX-215)*	Rev *SA*
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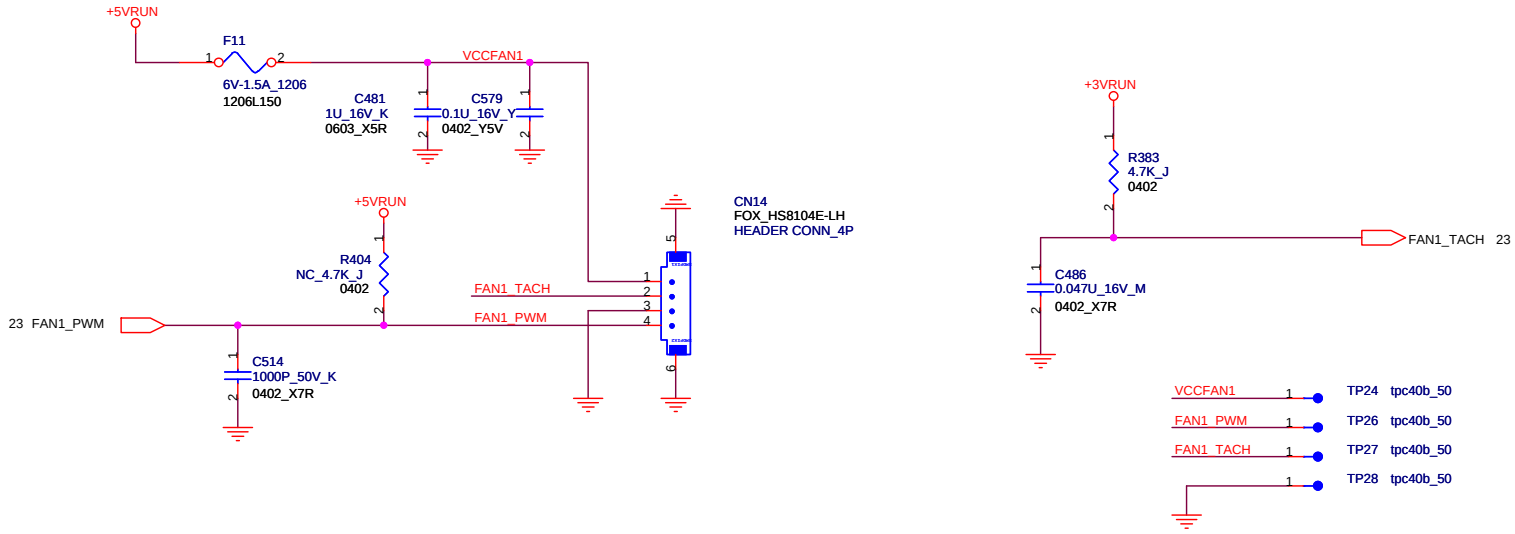
Direct PWM FAN



FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title: FAN		
Size: B	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 45 of 93	

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division
Title	***Thermal Sensor & Protection***
Size: A3	Document Number: ***M931 (MBX-215)***
Rev	***SA***
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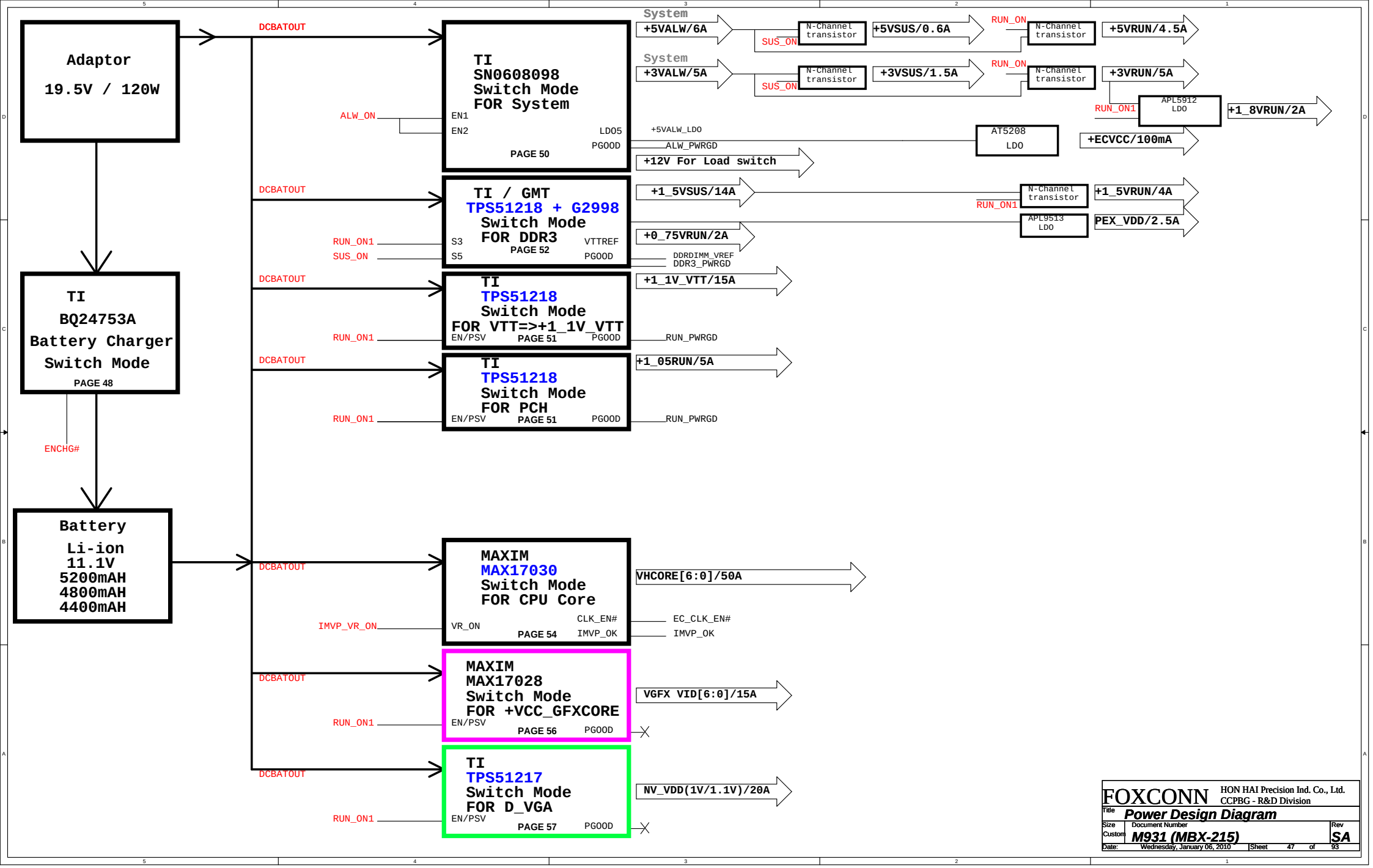
Adaptor
19.5V / 120W
DCBATOUT
TI
BQ24753A
Battery Charger
Switch Mode
PAGE 48
ENCHG#
Battery
Li-ion
11.1V
5200mAH
4800mAH
4400mAH
TI
SN0608098
Switch Mode
FOR System
ALW_ON
EN1
EN2
LDO5
PGOOD
PAGE 50
System
+5VALW/6A
SUS_ON
N-Channel transistor
+5VSUS/0.6A
RUN_ON
N-Channel transistor
+5VRUN/4.5A
System
+3VALW/5A
SUS_ON
N-Channel transistor
+3VSUS/1.5A
RUN_ON
N-Channel transistor
+3VRUN/5A
RUN_ON1
APL5912 LDO
+1_8VRUN/2A
+5VALW_LDO
AT5208 LDO
+ECVCC/100mA
ALW_PWRGD
+12V For Load switch
TI / GMT
TPS51218 + G2998
Switch Mode
FOR DDR3
RUN_ON1
SUS_ON
S3
S5
VTTREF
PGOOD
PAGE 52
+1_5VSUS/14A
N-Channel transistor
RUN_ON1
+1_5VRUN/4A
APL9513 LDO
PEX_VDD/2.5A
+0_75VRUN/2A
DDRDIMM_VREF
DDR3_PWRGD
TI
TPS51218
Switch Mode
FOR VTT=>+1_1V_VTT
RUN_ON1
EN/PSV
PGOOD
PAGE 51
+1_1V_VTT/15A
RUN_PWRGD
TI
TPS51218
Switch Mode
FOR PCH
RUN_ON1
EN/PSV
PGOOD
PAGE 51
+1_05RUN/5A
RUN_PWRGD
MAXIM
MAX17030
Switch Mode
FOR CPU Core
IMVP_VR_ON
VR_ON
CLK_EN#
IMVP_OK
PAGE 54
VHCORE[6:0]/50A
EC_CLK_EN#
IMVP_OK
MAXIM
MAX17028
Switch Mode
FOR +VCC_GFXCORE
RUN_ON1
EN/PSV
PGOOD
PAGE 56
VGFX VID[6:0]/15A
TI
TPS51217
Switch Mode
FOR D_VGA
RUN_ON1
EN/PSV
PGOOD
PAGE 57
NV_VDD(1V/1.1V)/20A
FOXCONN
HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division
Title
Power Design Diagram
Size
Custom
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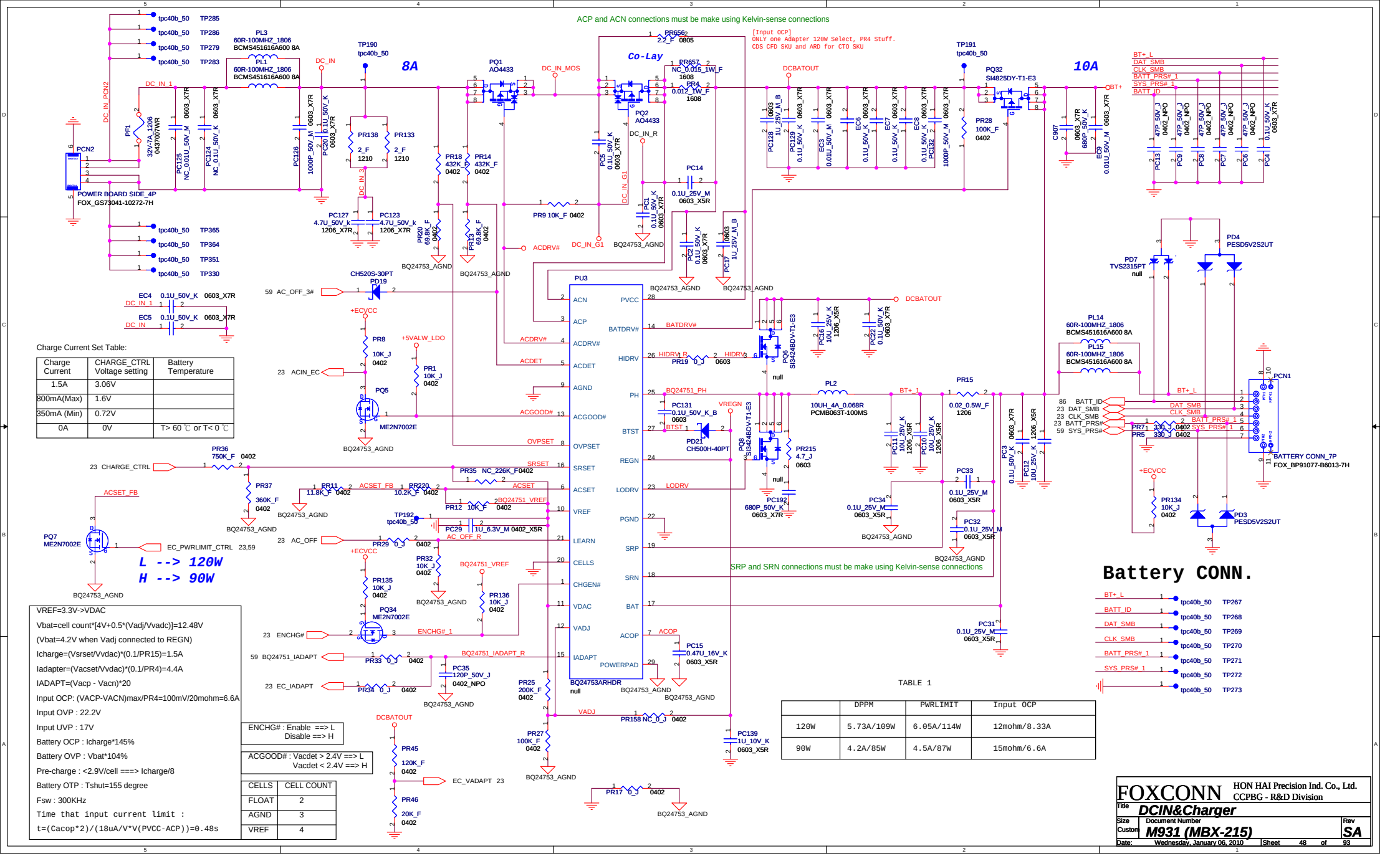
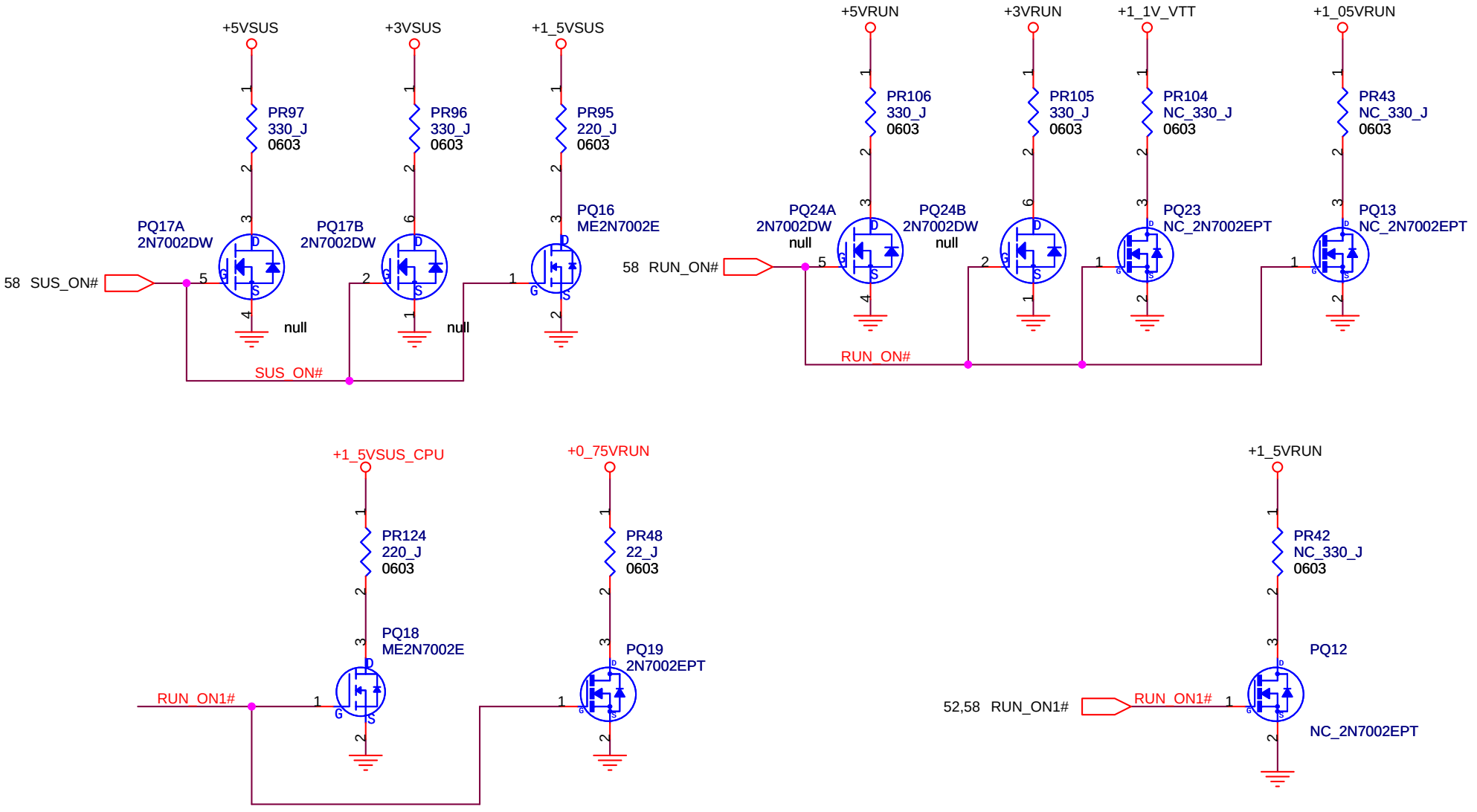
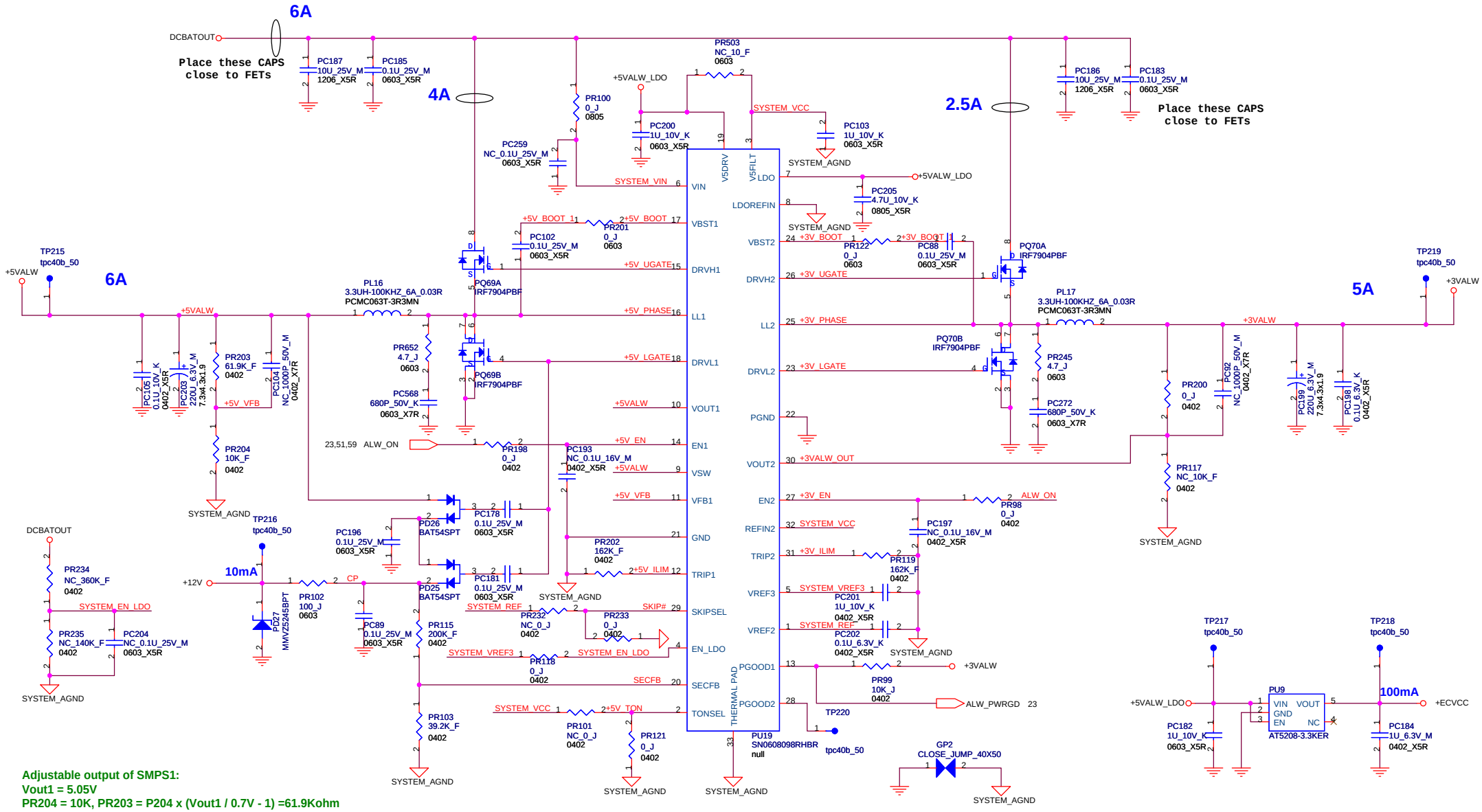




FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	**DISCHARGE CIRCUIT**	
Size A	Document Number **M931 (MBX-215)**	Rev **SA**
Date: Wednesday, January 06, 2010	Sheet 49 of 93	



Adjustable output of SMPS1:
Vout1 = 5.05V
PR204 = 10K, PR203 = P204 x (Vout1 / 0.7V - 1) =61.9Kohm

Second Feedback :
Vout_sec = 12V, PR103 = 20Kohm
PR115 = PR103 x (Vout_sec / 2V - 1) =100Kohm

TON	Operating Frequence (+5VALW/+3VALW)
VCC	200KHz/300KHz
REF(OPEN)	400KHz/300KHz
GND	400KHz/500KHz

SKIP#	Operating Mode
GND	Pulse-Skipping
REF	Ultrasonic-Skip
VCC	PWM

L=VOUT(VIN-VOUT)/(VIN*f*LIR*ILOAD(MAX))
Rocp=(Iocp-Iripple/2)*(10*Rds(on))/5u
+5VALW=((PR186/PR188)+1)*VFB1

Current limit resistor for SMPS1 :
Ivalley_5 = 5.775A, Rcs_5 = Rds1 = 10.8mohm
PR202 = (10 x Ivalley_5 x Rcs_5) / 5uA = 162K

Current limit resistor for SMPS2 :
Ivalley_3 = 5.525A, Rcs_3 = Rds2 = 10.8mohm
PR119 = (10 x Ivalley_3 x Rcs_3) / 5uA = 162K

FOXCONN HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title	SYS Power (+3_3V/+5V)
Size	A3
Document Number	M931 (MBX-215)
Rev	SA
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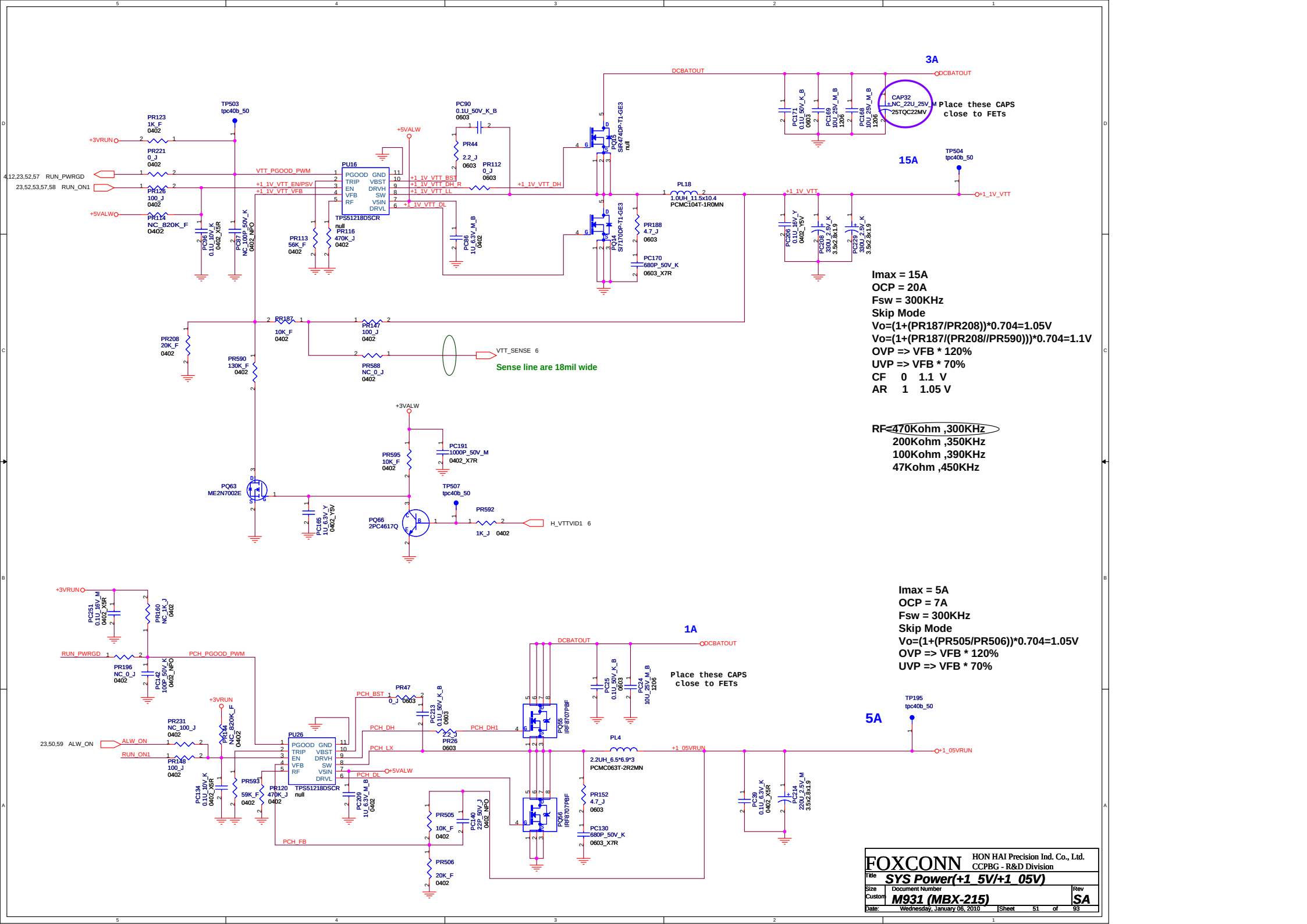

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division
Title	SYS Power(+1_5V/+1_05V)
Size: Custom	Document Number: M931 (MBX-215)
Rev	SA
Date:	Wednesday, January 06, 2010
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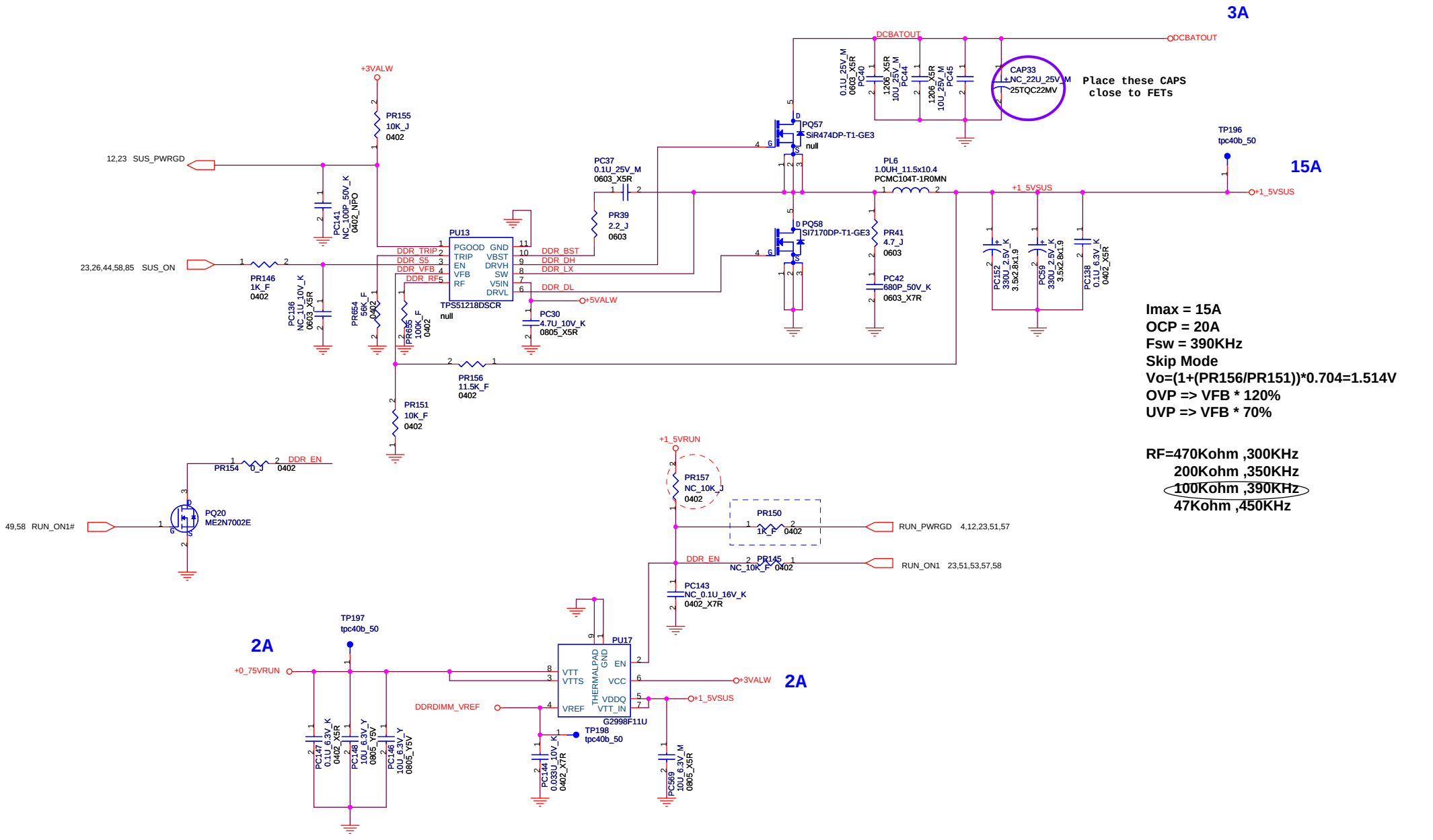
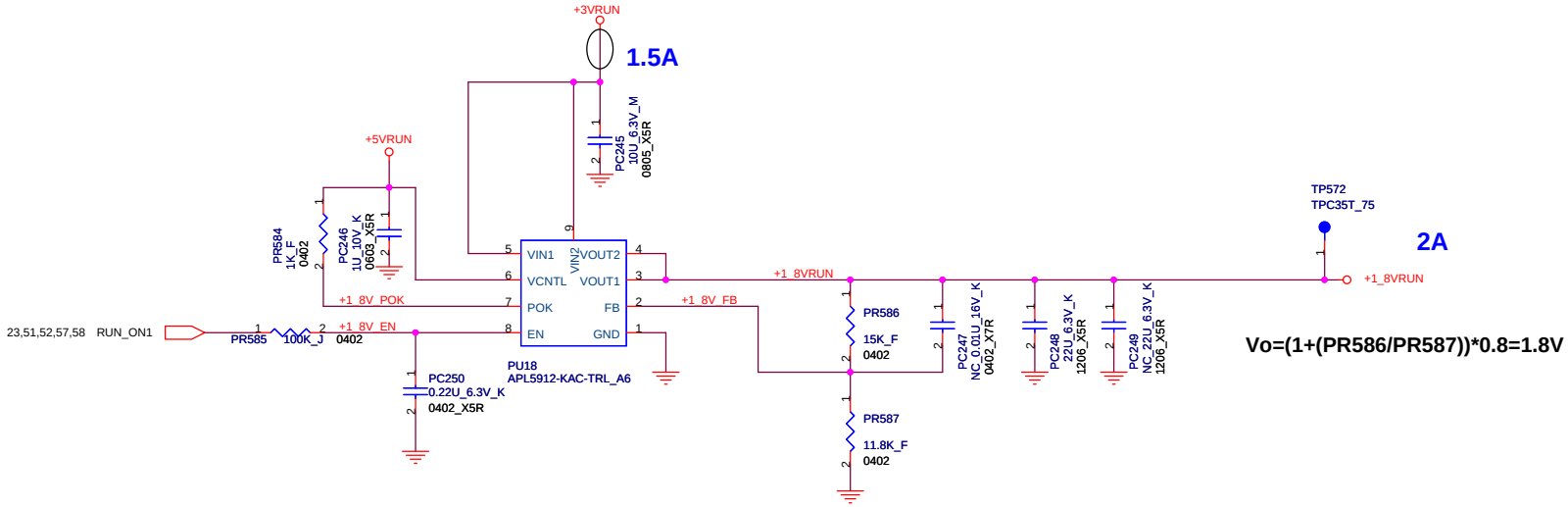
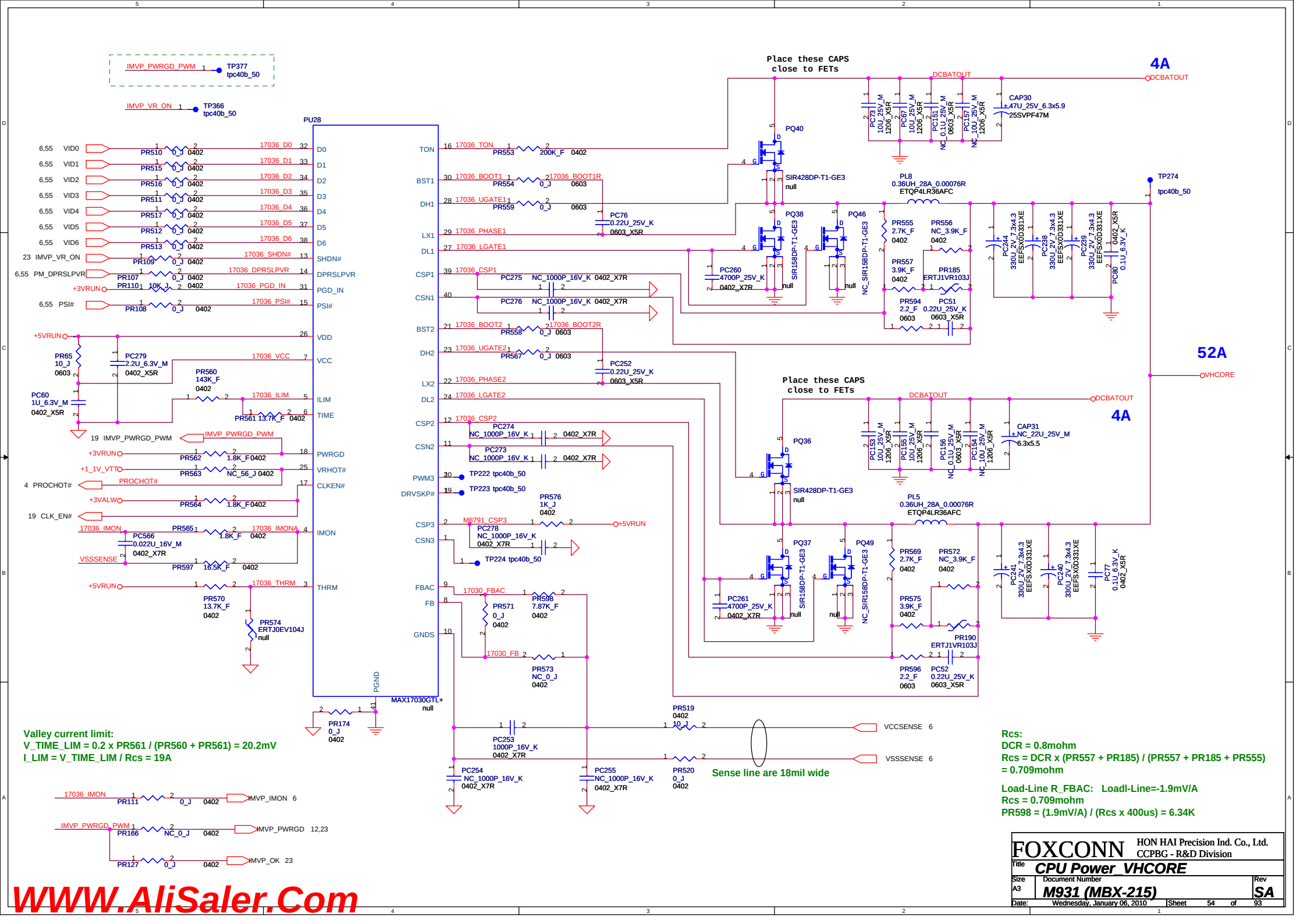


FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	DDR3 Power(+1_5V/+0_75V)	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 52 of 93	

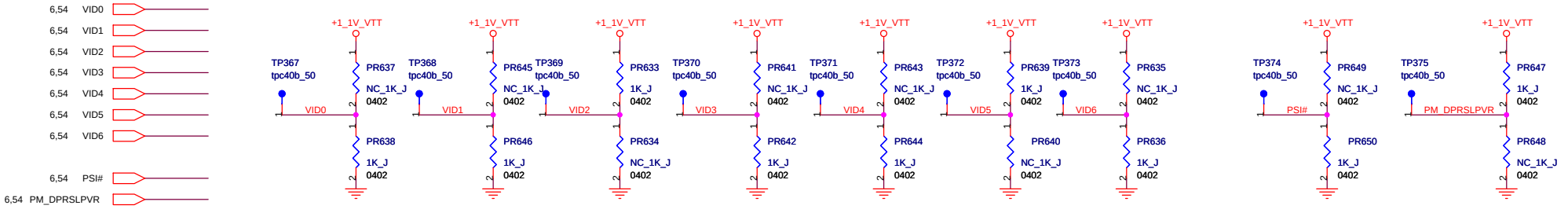


FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	SYS Power(+1_8V)	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 53 of 93	



Default value of VID [6:0] = [0100100] , PSI# = 0 , PROC_DPRSLPVR = 1

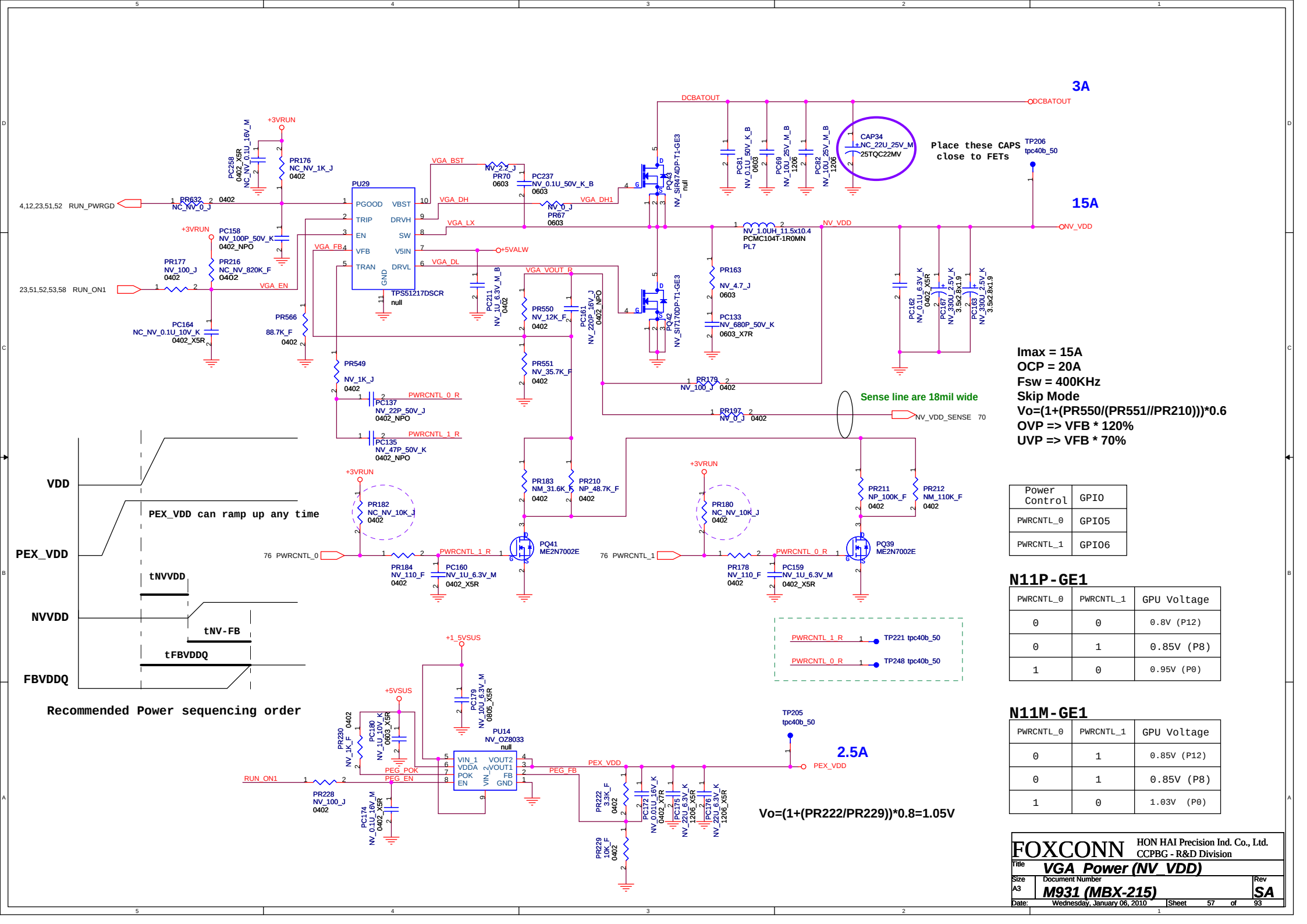
Market Segment Selection MSID[2:0] = [100] (SV)
- **416056_416056_Ard_EDS_Rev.1.1**
- **403779_Clarksfield_MPG_Rev1.5**



FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	CPU Power_VID	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 55 of 93	

Delete iGPU Path on DVT for Cost Down

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	VGFX Power_GFXCORE	
Size: A3	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 56 of 93	



Power Control	GPIO
PWRCNTL_0	GPIO5
PWRCNTL_1	GPIO6

N11P-GE1

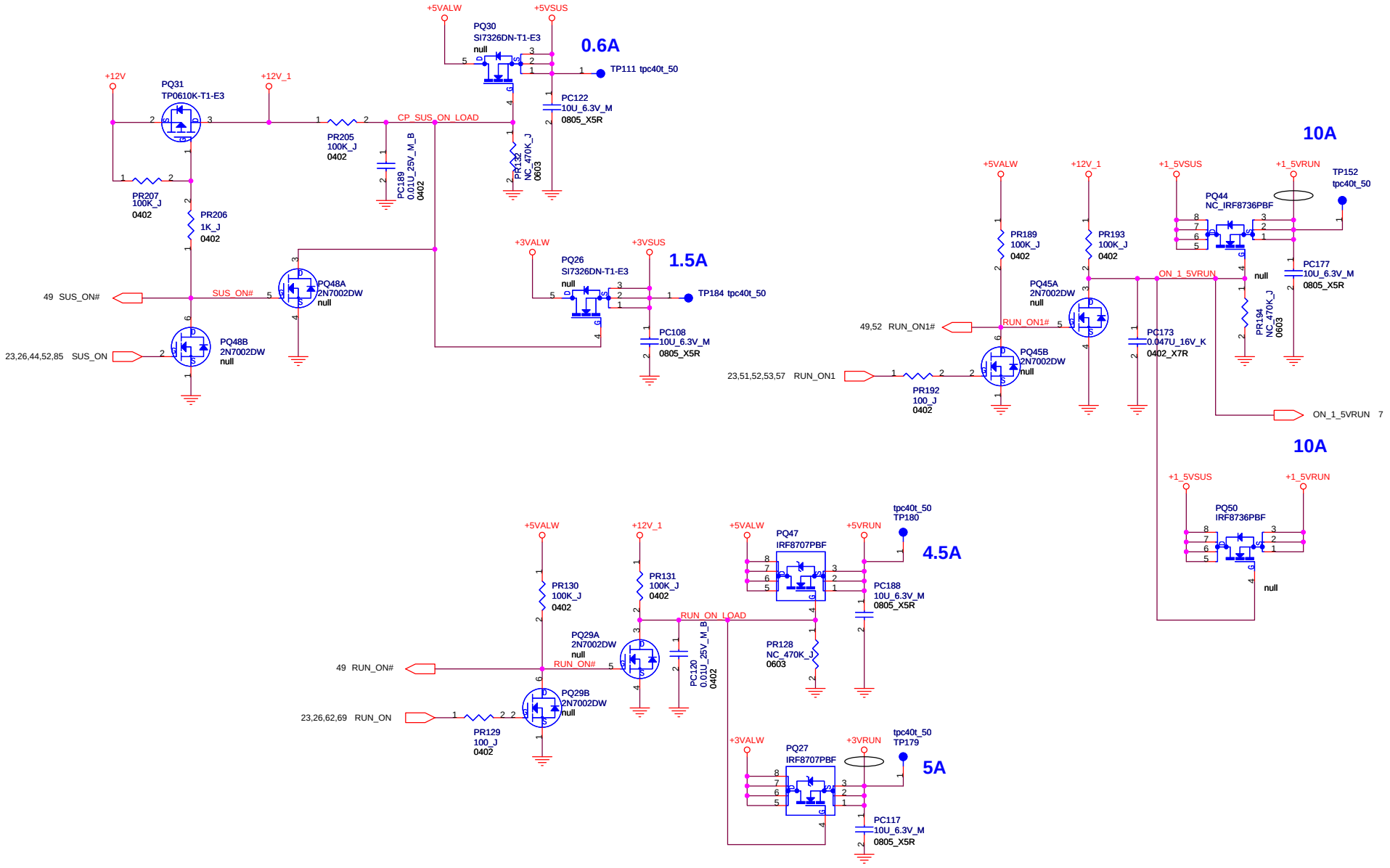
PWRCNTL_0	PWRCNTL_1	GPU Voltage
0	0	0.8V (P12)
0	1	0.85V (P8)
1	0	0.95V (P0)

N11M-GE1

PWRCNTL_0	PWRCNTL_1	GPU Voltage
0	1	0.85V (P12)
0	1	0.85V (P8)
1	0	1.03V (P0)

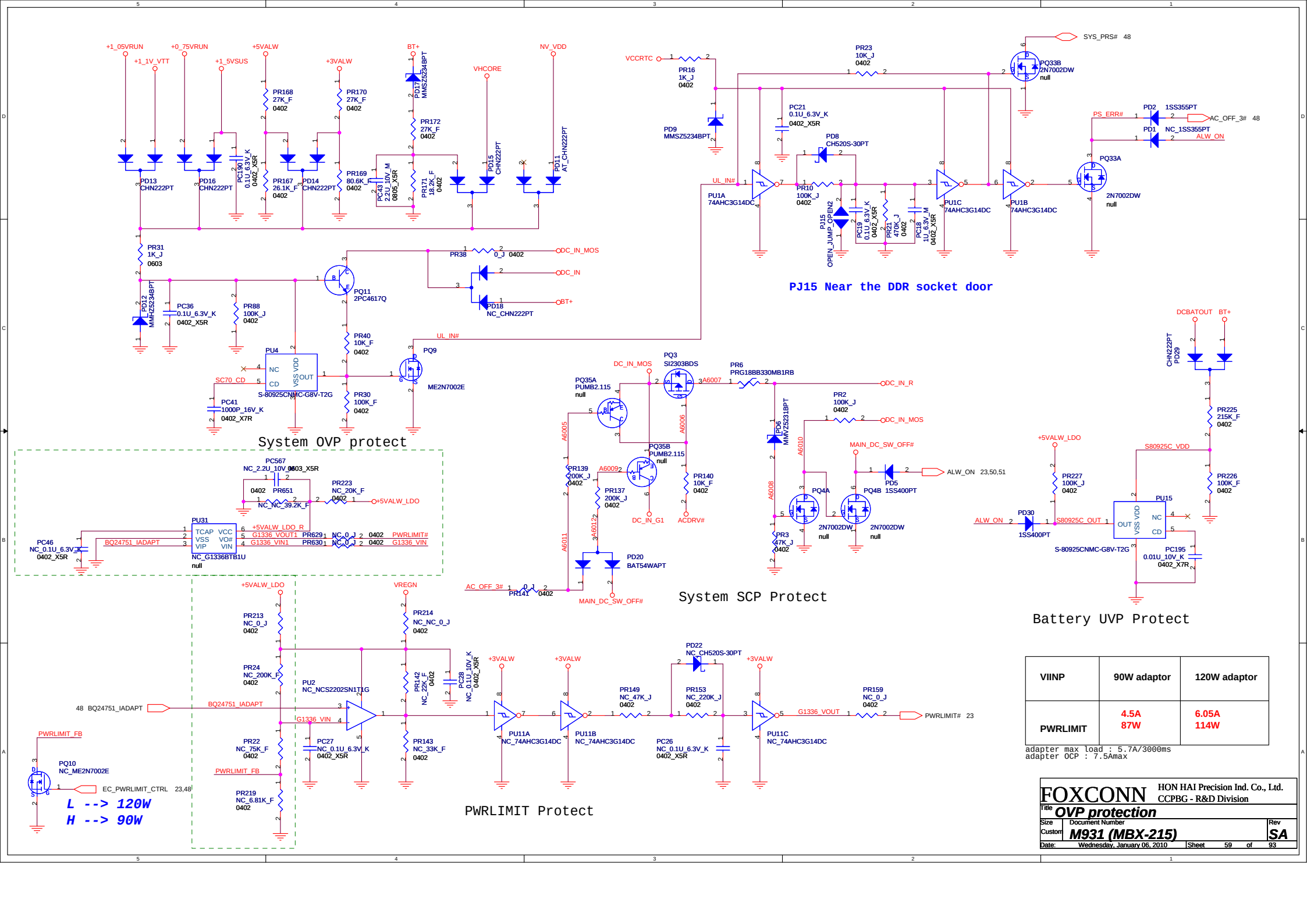
FOXCONN — HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title	VGA_Power (NV_VDD)	
Size: A3	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 57 of 93	



FOXCONN HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title	Others power plan	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 58 of 93	



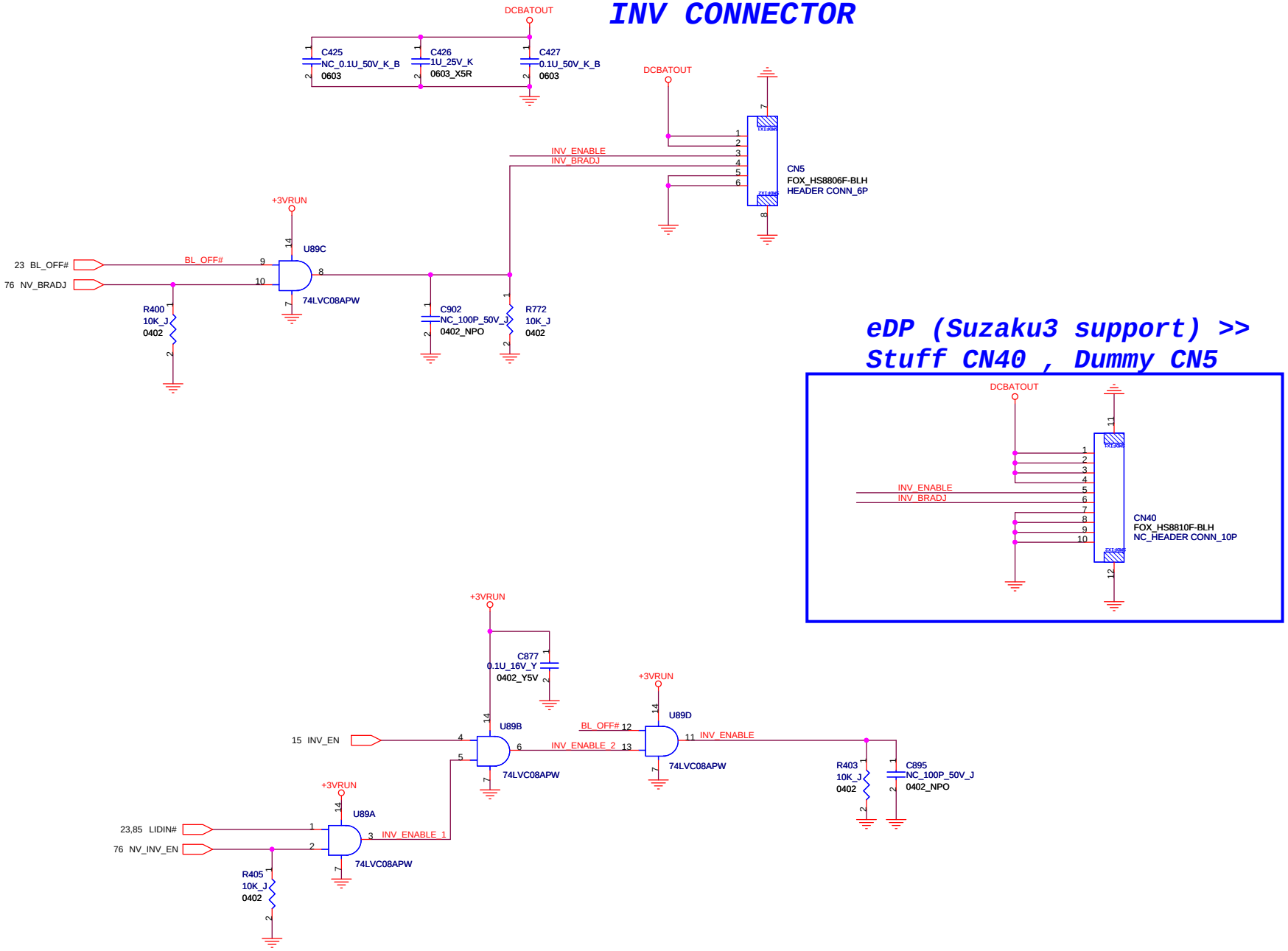
VIINP	90W adaptor	120W adaptor
PWRLIMIT	4.5A 87W	6.05A 114W

adapter max load : 5.7A/3000ms
adapter OCP : 7.5Amax

FOXCONN HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

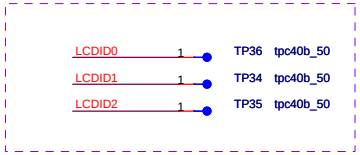
Title: OVP protection
Size: Custom | Document Number: M931 (MBX-215) | Rev: SA
Date: Wednesday, January 06, 2010 | Sheet 59 of 93

INV CONNECTOR

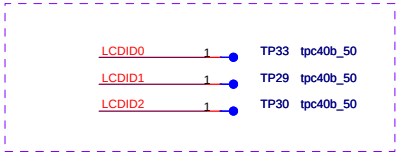


FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	INV CONNECTOR	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 60 of 93	

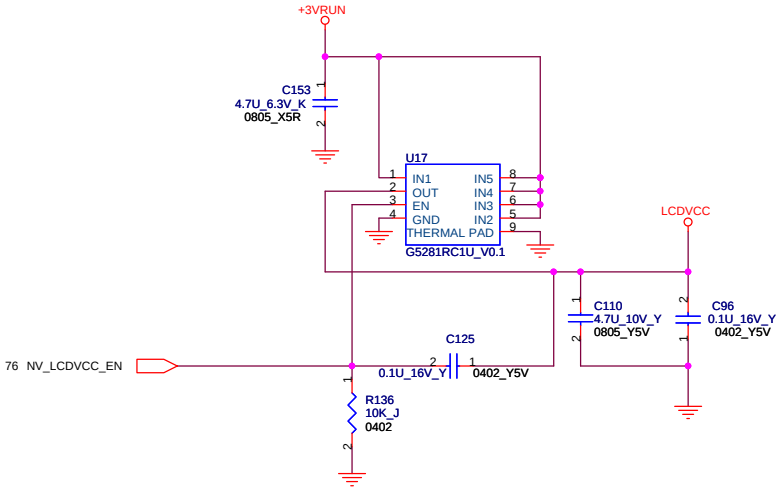
Bot-Side



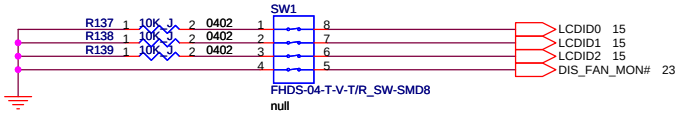
Top-Side



LCDVCC Power

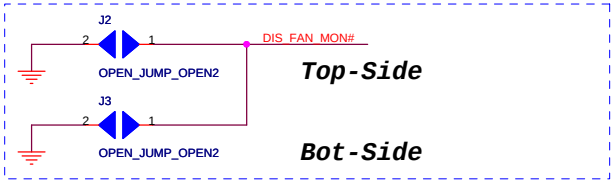


PANEL ID



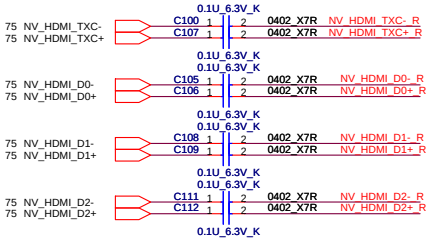
SW1 (Panel ID)	LCDID2	LCDID1	LCDID0	FAN Lock
CRT (No LCD)	0	0	0	ON: Disable OFF: Enable
EW1 (Sharp)	0	0	1	
RESERVED	0	1	0	
EW1 (LGD)	0	1	1	
EW3 (Sharp)	1	0	0	
EWX (Sharp)	1	0	1	
RESERVED	1	1	0	
RESERVED	1	1	1	

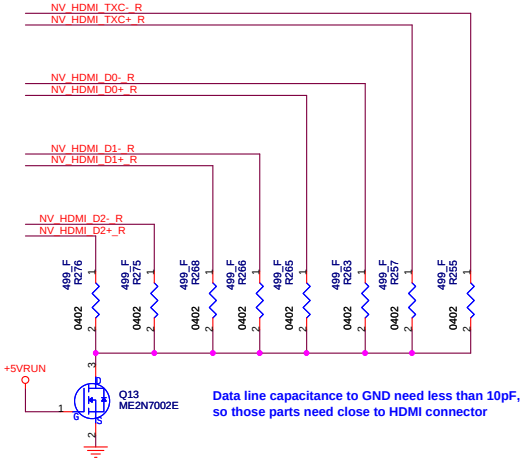
ON:0 , OFF:1

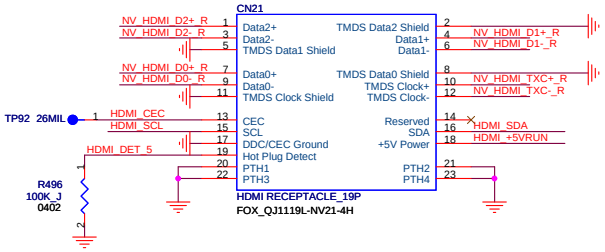


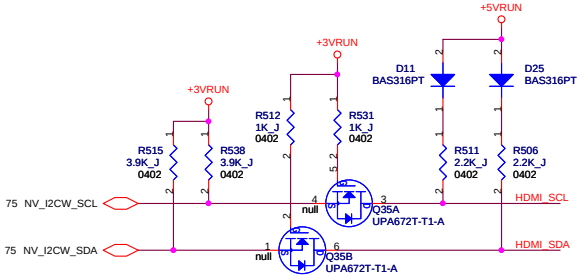
DIS_FAN_MON# for L6 BFT Test

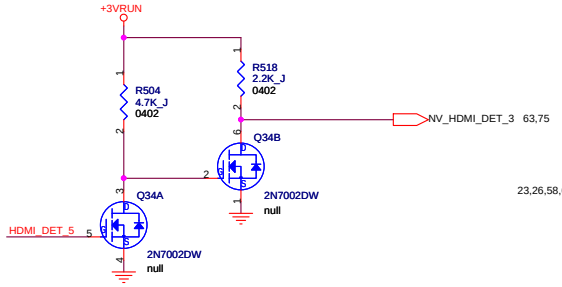
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division		
Title	LVDS(Panel ID/PWR)		
Size A3	Document Number M931 (MBX-215)		Rev SA
Date: Wednesday, January 06, 2010	Sheet 61 of 93		

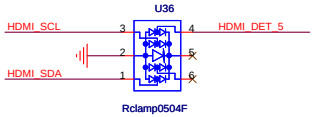


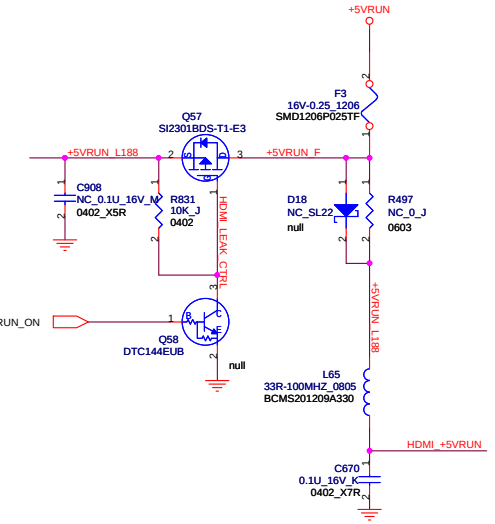






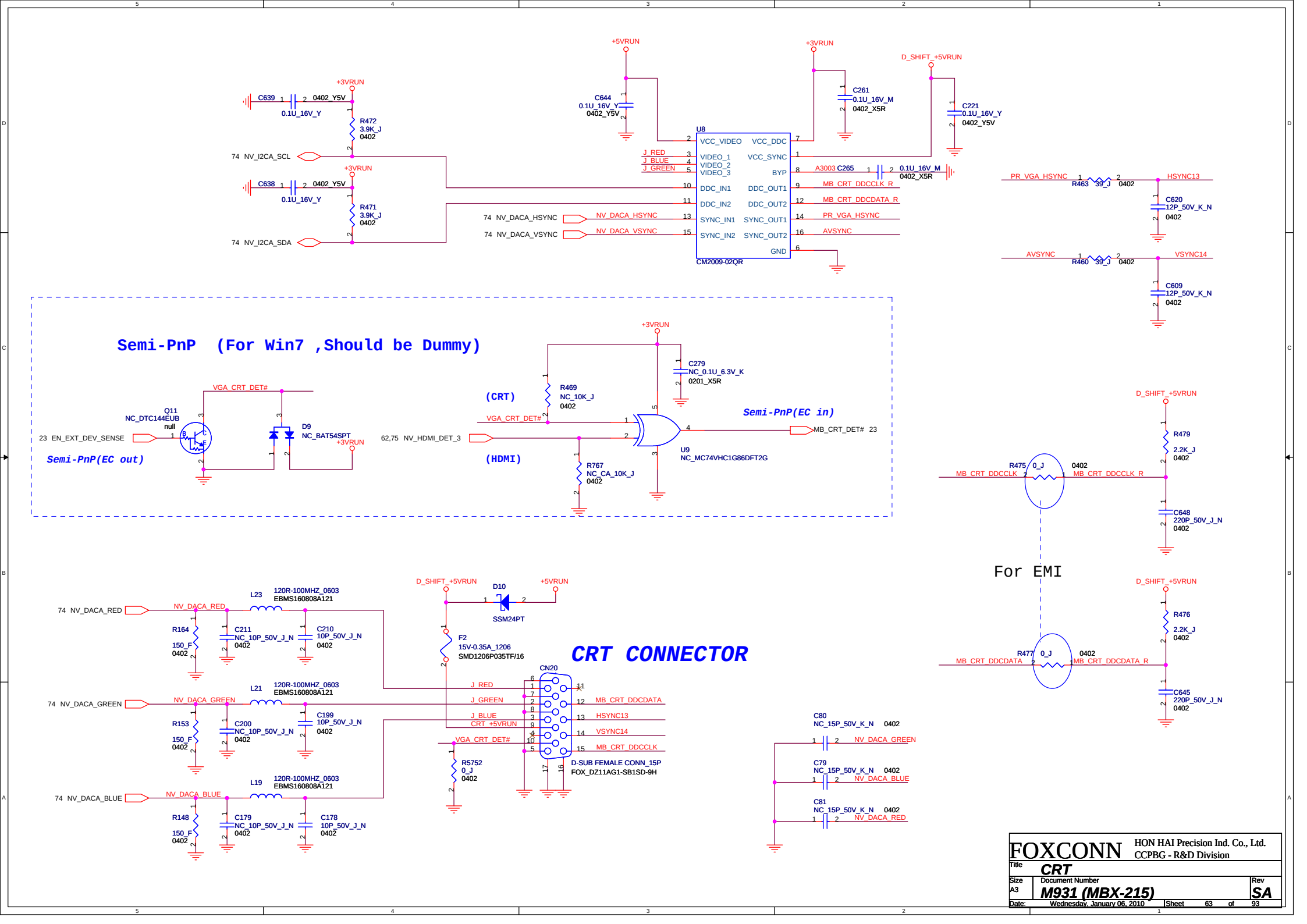






FOXCONN
HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title	VGA (STRAP) 2 OF 6	
Size: Custom	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 62 of 93	


+5VRUN
+3VRUN
D_SHIFT_+5VRUN
C639 0.1U_16V_Y 0402_Y5V
C638 0.1U_16V_Y 0402_Y5V
C644 0.1U_16V_Y 0402_Y5V
C261 0.1U_16V_M 0402_X5R
C221 0.1U_16V_Y 0402_Y5V
R472 3.9K_J 0402
R471 3.9K_J 0402
74 NV_I2CA_SCL
74 NV_I2CA_SDA
U8
CM2009-02QR
VCC_VIDEO
VCC_DDC
J_RED
J_BLUE
J_GREEN
VIDEO_1
VIDEO_2
VIDEO_3
VCC_SYNC
BYP
DDC_IN1
DDC_IN2
SYNC_IN1
SYNC_IN2
DDC_OUT1
DDC_OUT2
SYNC_OUT1
SYNC_OUT2
GND
A3003 C265 0.1U_16V_M 0402_X5R
MB_CRT_DDCCLK_R
MB_CRT_DDCDATA_R
PR_VGA_HSYNC
AVSYNC
74 NV_DACA_HSYNC
74 NV_DACA_VSYNC
NV_DACA_HSYNC
NV_DACA_VSYNC
R463 39_J 0402
R460 39_J 0402
HSYNC13
VSYNC14
C620 12P_50V_K_N 0402
C609 12P_50V_K_N 0402
Semi-PnP (For Win7 ,Should be Dummy)
Q11 NC_DTC144EUB null
D9 NC_BAT54SPT
VGA_CRT_DET#
23 EN_EXT_DEV_SENSE
Semi-PnP(EC out)
(CRT)
(HDMI)
R469 NC_10K_J 0402
C279 NC_0.1U_6.3V_K 0201_X5R
R767 NC_CA_10K_J 0402
62,75 NV_HDMI_DET_3
U9 NC_MC74VHC1G86DFT2G
Semi-PnP(EC in)
MB_CRT_DET# 23
R475 0_J 0402
R479 2.2K_J 0402
C648 220P_50V_J_N 0402
For EMI
R476 2.2K_J 0402
R477 0_J 0402
C645 220P_50V_J_N 0402
CRT CONNECTOR
74 NV_DACA_RED
74 NV_DACA_GREEN
74 NV_DACA_BLUE
L23 120R-100MHZ_0603 EBMS160808A121
L21 120R-100MHZ_0603 EBMS160808A121
L19 120R-100MHZ_0603 EBMS160808A121
R164 150_F 0402
R153 150_F 0402
R148 150_F 0402
C211 NC_10P_50V_J_N 0402
C200 NC_10P_50V_J_N 0402
C179 NC_10P_50V_J_N 0402
C210 10P_50V_J_N 0402
C199 10P_50V_J_N 0402
C178 10P_50V_J_N 0402
D10 SSM24PT
F2 15V-0.35A_1206 SMD1206P035TF/16
R5752 0_J 0402
CN20
D-SUB FEMALE CONN_15P FOX_DZ11AG1-SB1SD-9H
J_RED
J_GREEN
J_BLUE
CRT_+5VRUN
VGA_CRT_DET#
MB_CRT_DDCDATA
HSYNC13
VSYNC14
MB_CRT_DDCCLK
C80 NC_15P_50V_K_N 0402
C79 NC_15P_50V_K_N 0402
C81 NC_15P_50V_K_N 0402
NV_DACA_GREEN
NV_DACA_BLUE
NV_DACA_RED
FOXCONN
HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division
Title CRT
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DVDD_IO can be either 1.5V or 3.3V Resume well power, regardless iHDMI is implemented or not. However, external codec/MDC must have the same voltage level as PCH VCCSUSHDA power.

BOM Option for ALC275 and ALC269 (Default is ALC275.)

CLOSE TO PIN1

Place near pin 27

Place near pin 25

Place near pin 38

Place near U215

Place near JSPK1. (EMI Suggestion)

Place near JSPK1. (EMI Suggestion)

<<Attention>>
For power_on/off de-pop circuit and system booting warning signal: Please System BIOS Engineer Note :
1. If you want the system make warning signal after power on , please let EC_MUTE# High first.
2.When you want to exit your Bios Programming Code, please let the EC_MUTE# Low.(The programming is different from before .)

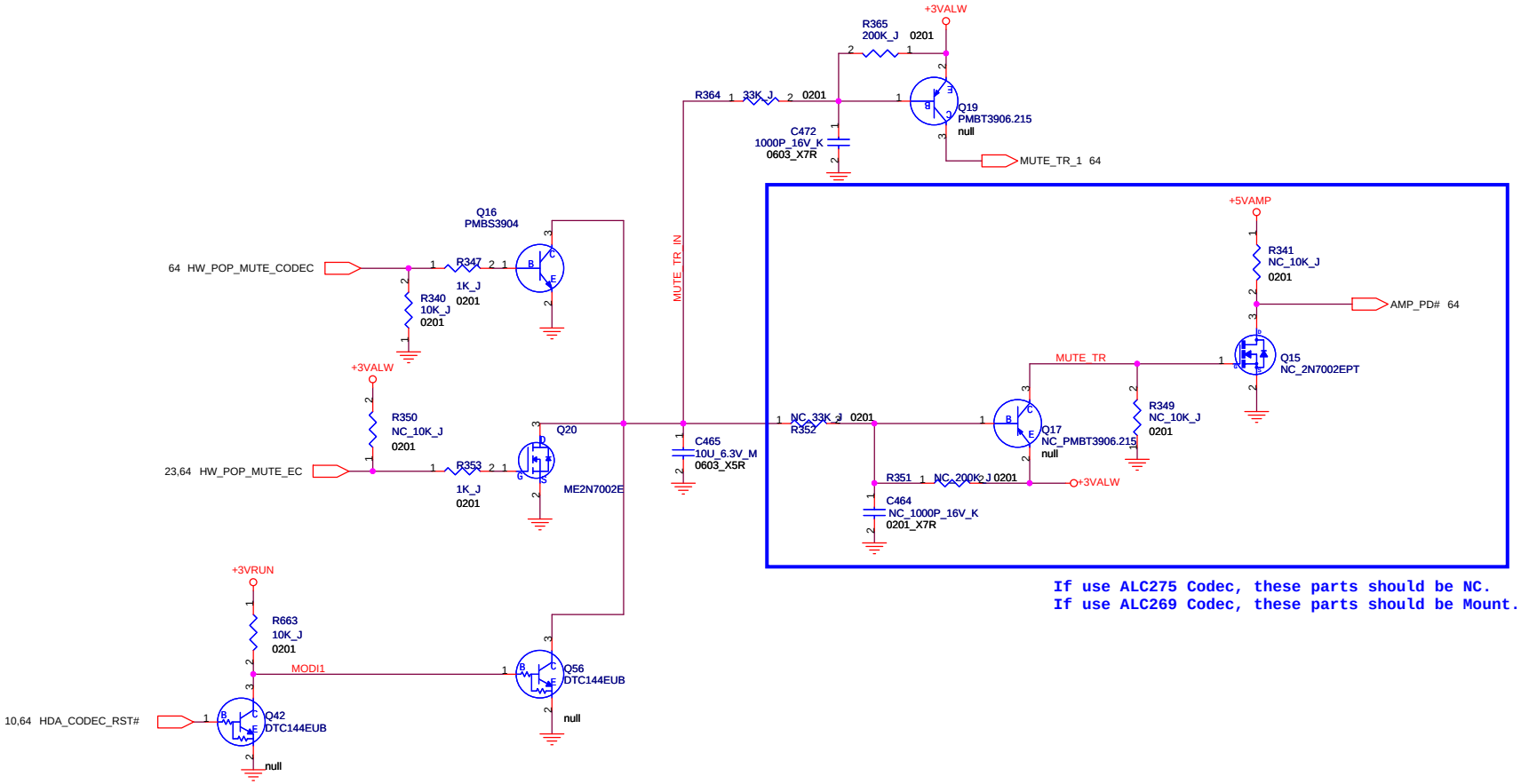
BOM Option for ALC275 and ALC269 (Default is ALC275.)

BOM Option for ALC275 and ALC269 (Default is ALC275.)

PC BEEP

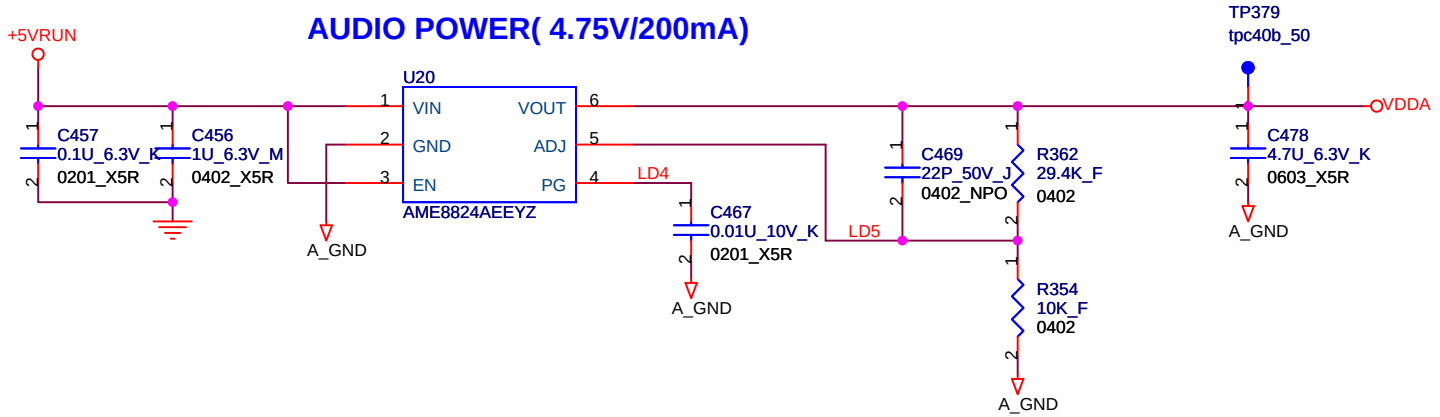
Tied at one point only under the ALC275 or near the ALC275

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title: AUDIO(CODEC)		
Size: Custom	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 64 of 93	



If use ALC275 Codec, these parts should be NC.
If use ALC269 Codec, these parts should be Mount.

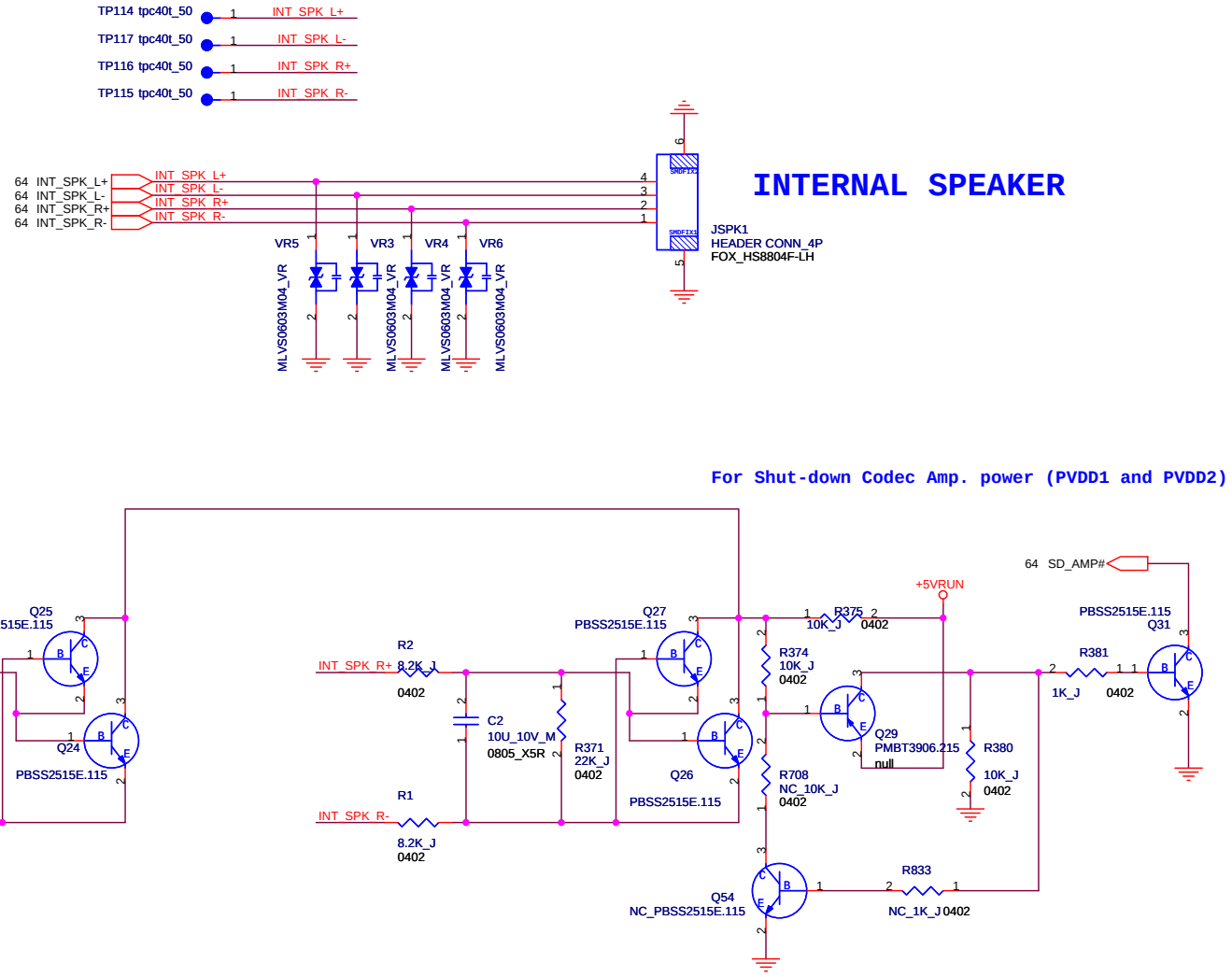
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	AUDIO (MUTE)	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 65 of 93	



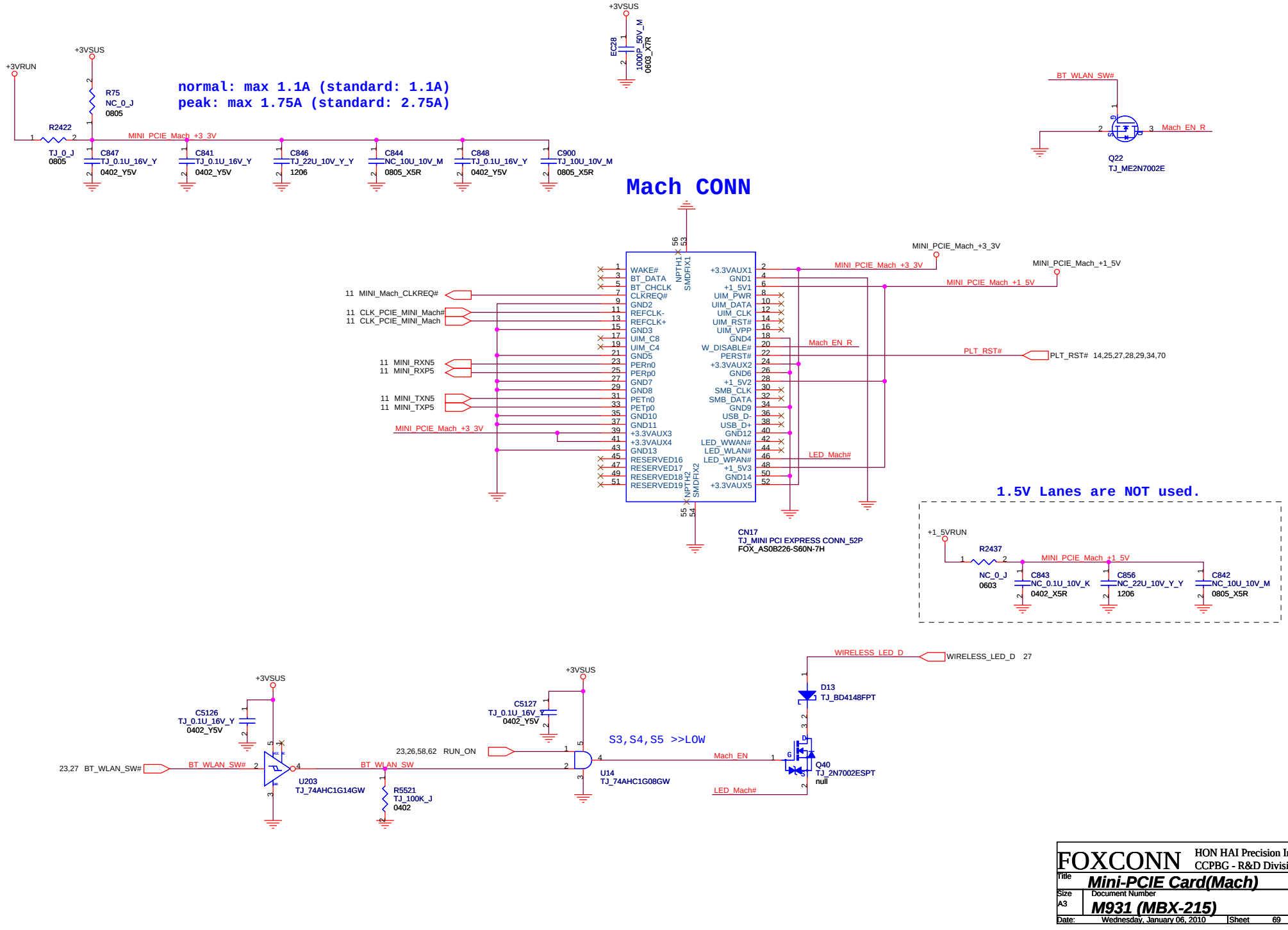
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title: AUDIO POWER		
Size: A4	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 66 of 93	

Delete Class D Amp. when implemented ALC275.

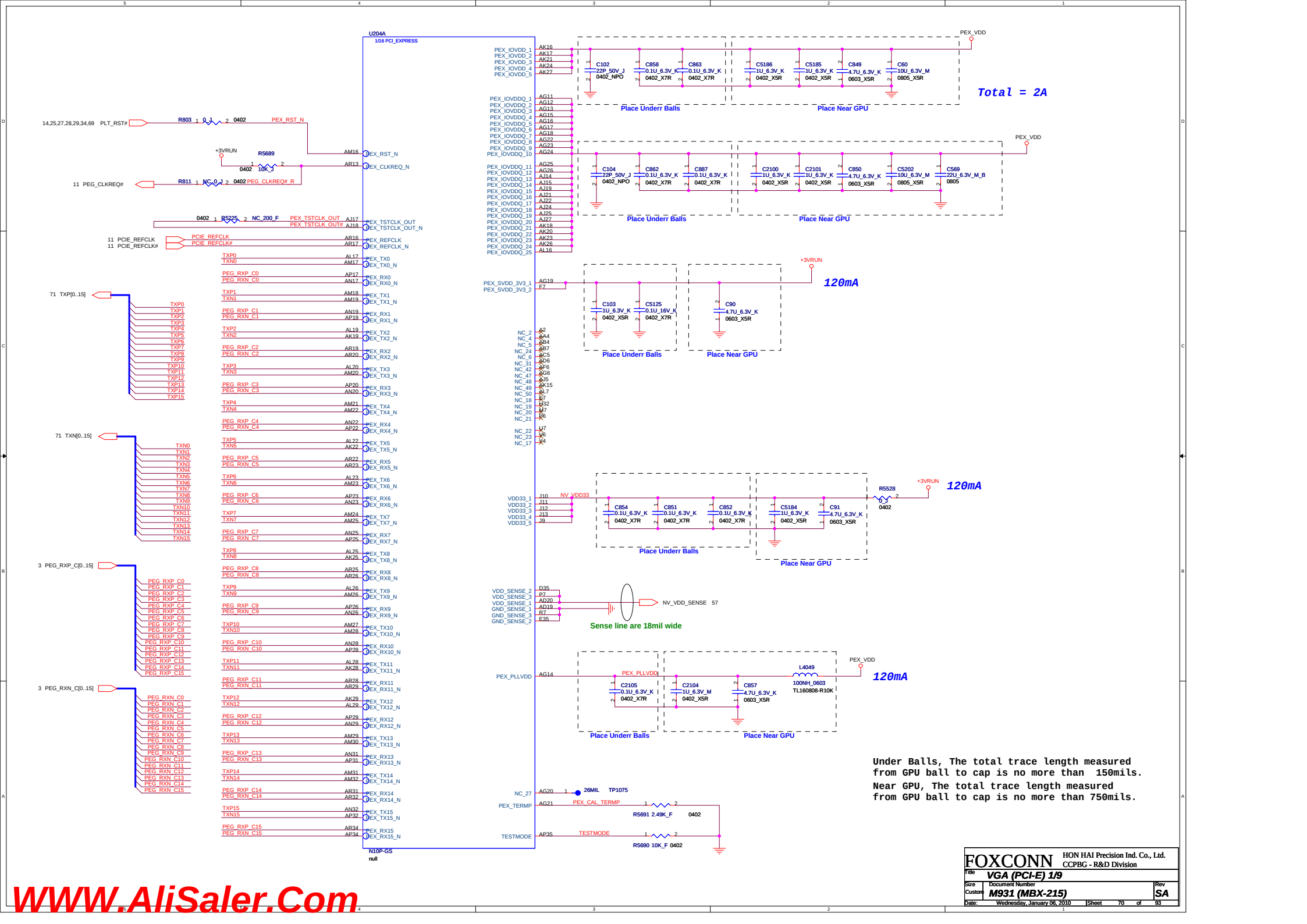
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	***AUDIO SPEAKER AMP***	
Size A3	Document Number ***M931 (MBX-215)***	Rev ***SA***
Date: Wednesday, January 06, 2010	Sheet 67 of 93	

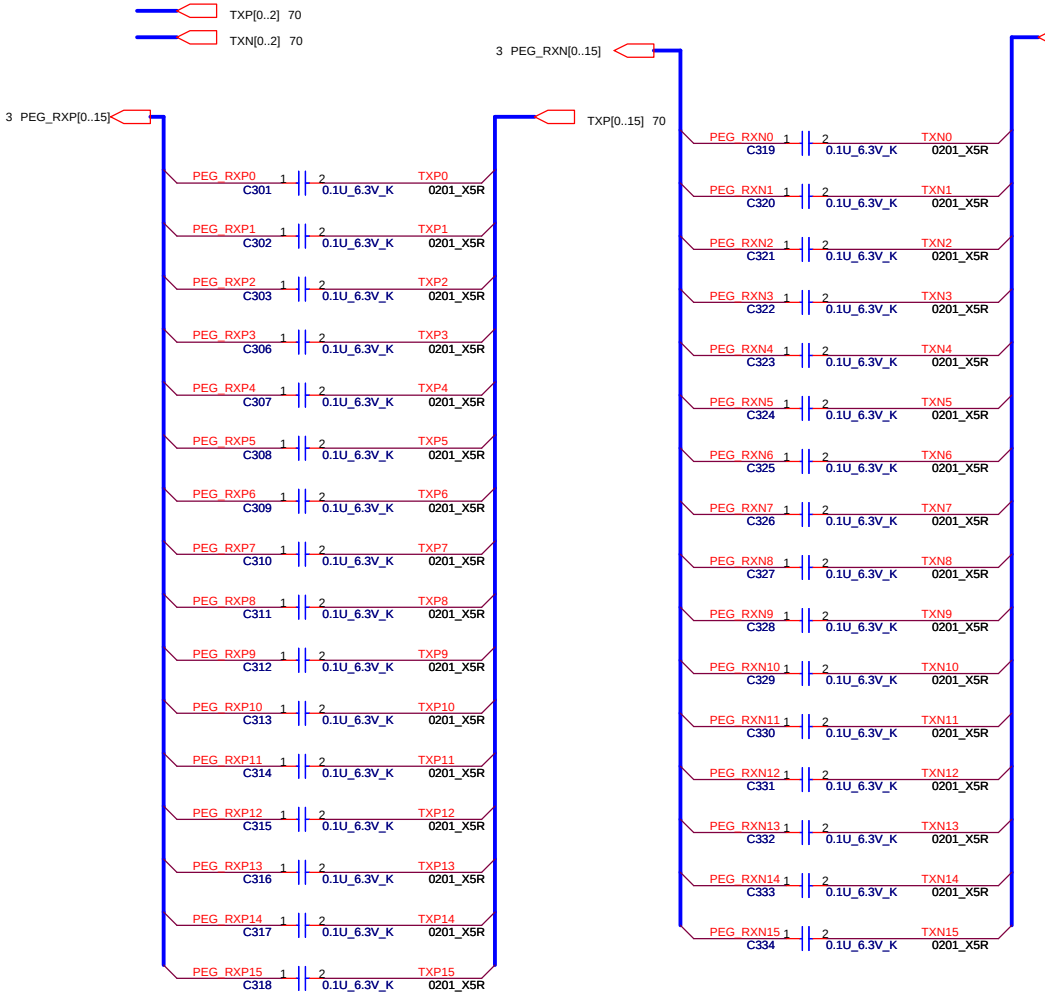


FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	AUDIO SPEAKER CONNECTOR	
Size B	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 68 of 93	

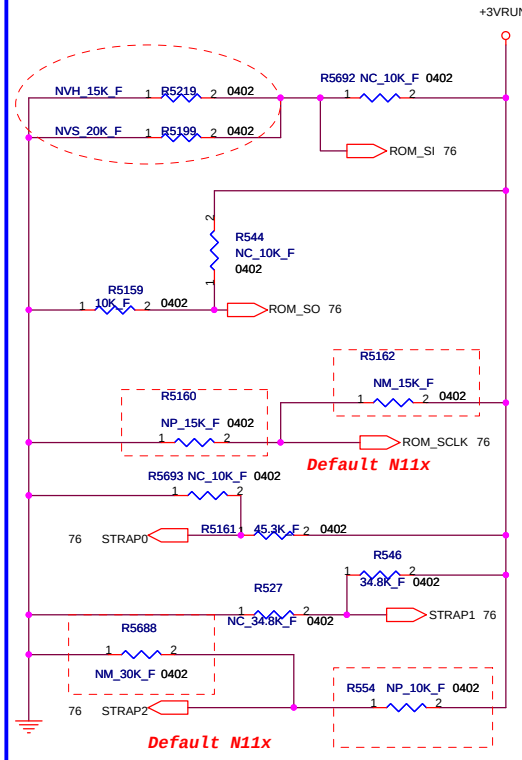


FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	Mini-PCIE Card(Mach)	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 69 of 93	





XCLK_417 0 (27M Hz) 1 (Reserved) FB_0_BAR_SIZE 0 256MB 1 (Reserved) SMB_ALT_ADDR 0 0x9E 1 0x9C(multi-GPU usage) VGA_DEVICE 0 3D device(class code 302h) 1 VGA device(class code 300h)	ROM_SO 0001
SUB_VENDOR 0 (No vedio BIOS ROM) 1 (BIOS ROM is present) SLOT_CLK_CFG 0 (GPU and MCH not share a common reference clk) 1 (GPU and MCH share a common reference clk) PEX_PLL_EN_TERM 0 (Disable) 1 (Enable)	ROM_SCLK N11P-GE1 0010 N11M-GE1 1010
USER[3:0] 1000	STRAP0 (1111)
N10x/N11x 3GIO_PADCFG[3:0] 0110	STRAP1 (1110)
N11X PCI_DEVID[3:0] N11P-GE1 1001b N11M-GE1 0101b PCI DEVICE IDs N11P-GE1 (0x0A29) N11M-GE1 (0x0A75)	Strap2 N11P-GE1 1001 N11M-GE1 0101



ROM_SI 0000 64-bit Reserved 0010 64Mx16 DDR3 - 96 ball 128-bit Hynix(13-H5T01G6-3000) 15K Pull Low. 0011 64Mx16 DDR3 - 96 ball 128-bit Samsung(13-K4W1G16-3000) 20K pull Low

Logical Strap bit Mapping

Resister values	Pull-up to VDD	Pull-down to GND
5KΩ	1000	0000
10KΩ	1001	0001
15KΩ	1010	0010
20KΩ	1011	0011
25KΩ	1100	0100
30KΩ	1101	0101
35KΩ	1110	0110
45KΩ	1111	0111

Strap Options

Physical Strapping pin	Power Rail	Logical Strapping pin3	Logical Strapping pin2	Logical Strapping pin1	Logical Strapping pin0
ROM_SI	+3VRUN	RAMCFG[3]	RAMCFG[2]	RAMCFG[1]	RAMCFG[0]
ROM_SO	+3VRUN	XCLK_417	FB_0_BAR_SIZE	SMB_ALT_ADDR	BGA_DEVICE
ROM_SCLK	+3VRUN	PCI_DEVID[4]	SUB_VENDOR	SLOT_CLK_CFG	PEX_PLL_EN_TERM
STRAP0	+3VRUN	USER[3]	USER[2]	USER[1]	USER[0]
STRAP1	+3VRUN	3GIO_PADCFG[3]	3GIO_PADCFG[2]	3GIO_PADCFG[1]	3GIO_PADCFG[0]
STRAP2	+3VRUN	PCI_DEVID[3]	PCI_DEVID[2]	PCI_DEVID[1]	PCI_DEVID[0]

Refer to <GB1 Family Design Guide DG-04202-001_v02_secured>

FOXCONN HON HAI PRECISION IND. CO., LTD.
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Title: VGA (PCI-E BUS)Strap 2/9

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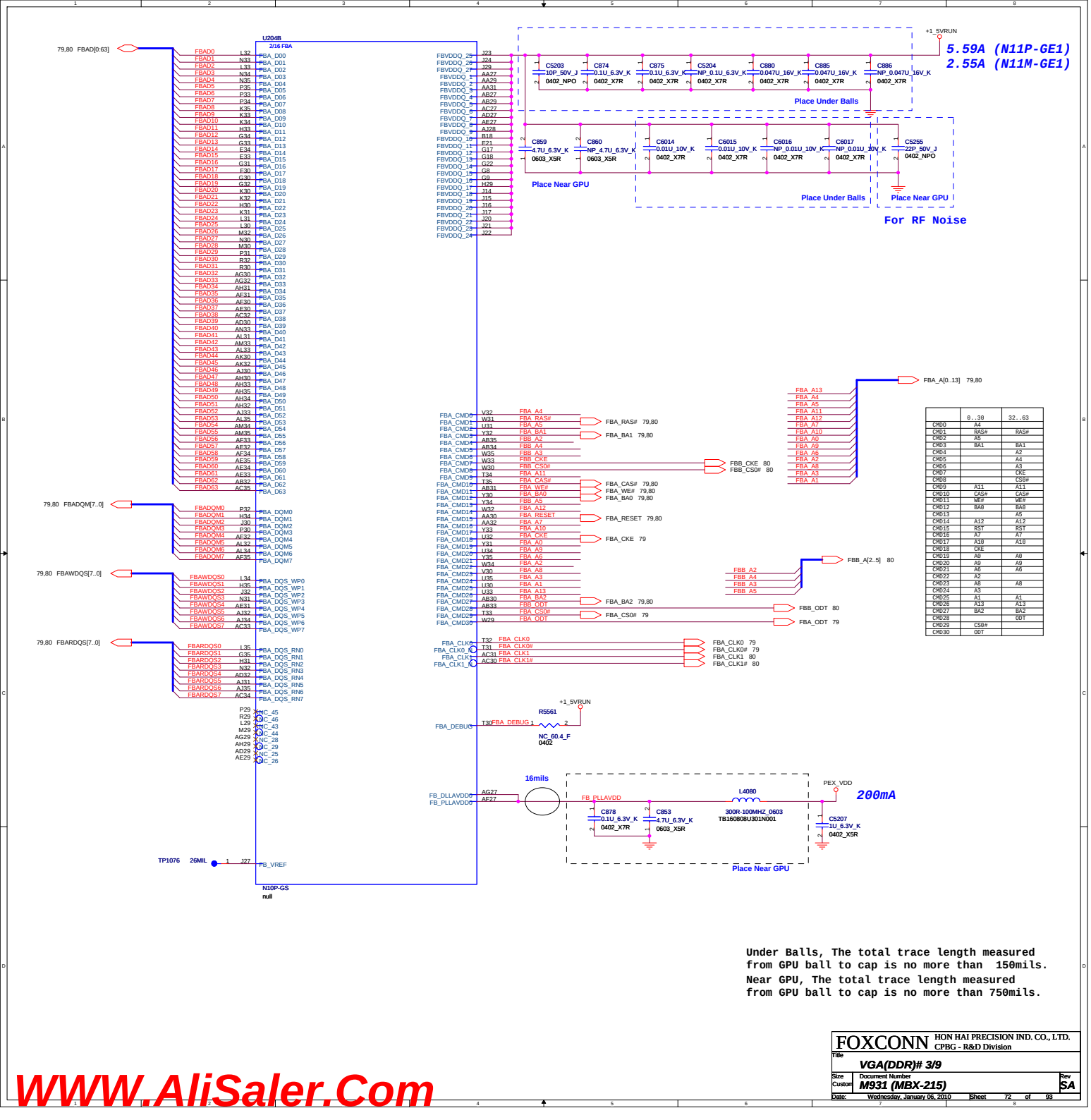

	0..30	32..63
CMD0	A4	
CMD1	RAS#	RAS#
CMD2	A5	
CMD3	BA1	BA1
CMD4		A2
CMD5		A4
CMD6		A3
CMD7		CKE
CMD8		CS0#
CMD9	A11	A11
CMD10	CAS#	CAS#
CMD11	WE#	WE#
CMD12	BA0	BA0
CMD13		A5
CMD14	A12	A12
CMD15	RST	RST
CMD16	A7	A7
CMD17	A10	A10
CMD18	CKE	
CMD19	A9	A9
CMD20	A9	A9
CMD21	A6	A6
CMD22	A2	
CMD23	A8	A8
CMD24	A3	
CMD25	A1	A1
CMD26	A13	A13
CMD27	BA2	BA2
CMD28		ODT
CMD29	CS0#	
CMD30	ODT	

Under Balls, The total trace length measured from GPU ball to cap is no more than 150mils.
Near GPU, The total trace length measured from GPU ball to cap is no more than 750mils.

FOXCONN	HON HAI PRECISION IND. CO., LTD. CPBG - R&D Division
Title	VGA(DDR)# 3/9
Size: Custom	Document Number: M931 (MBX-215)
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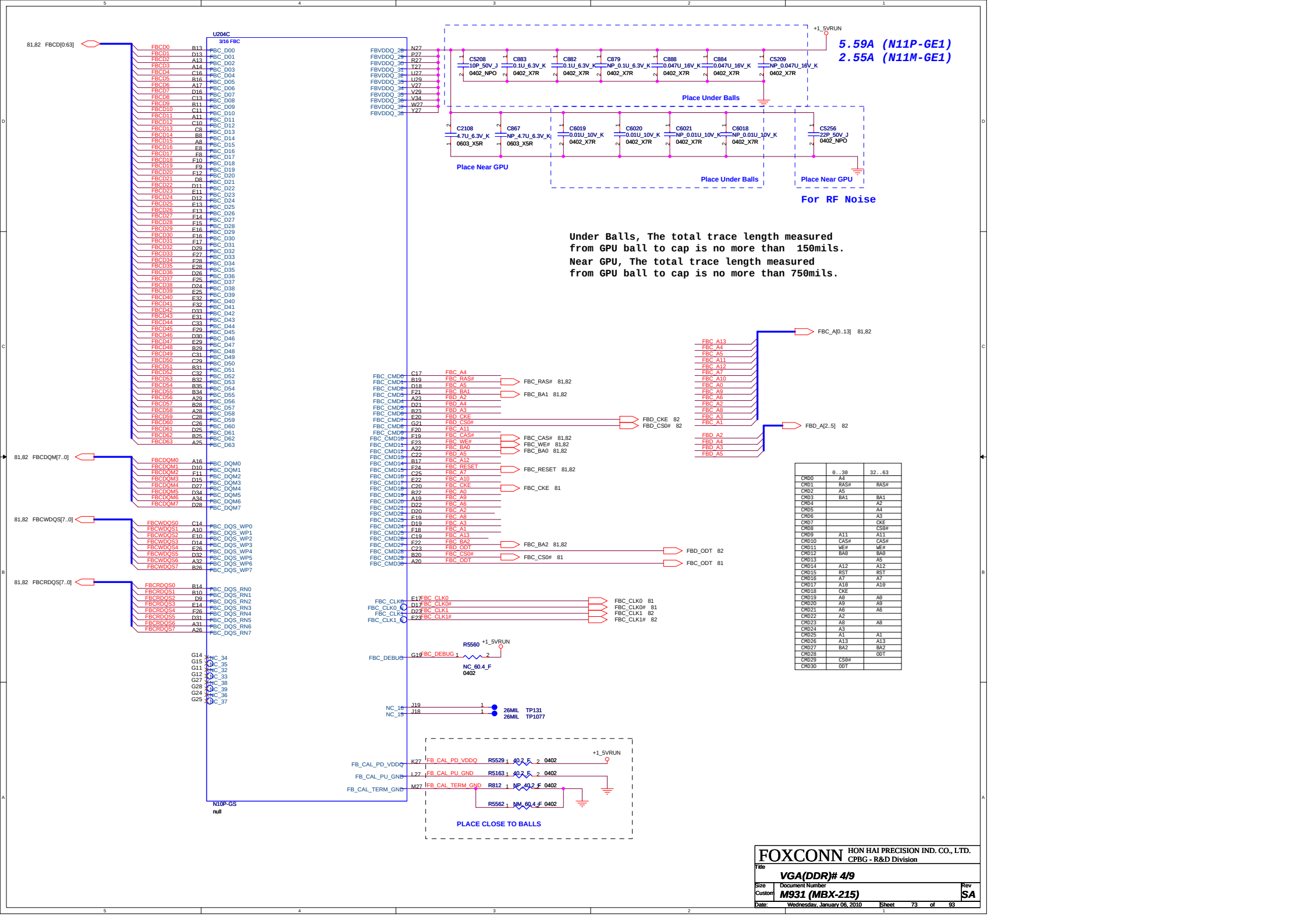
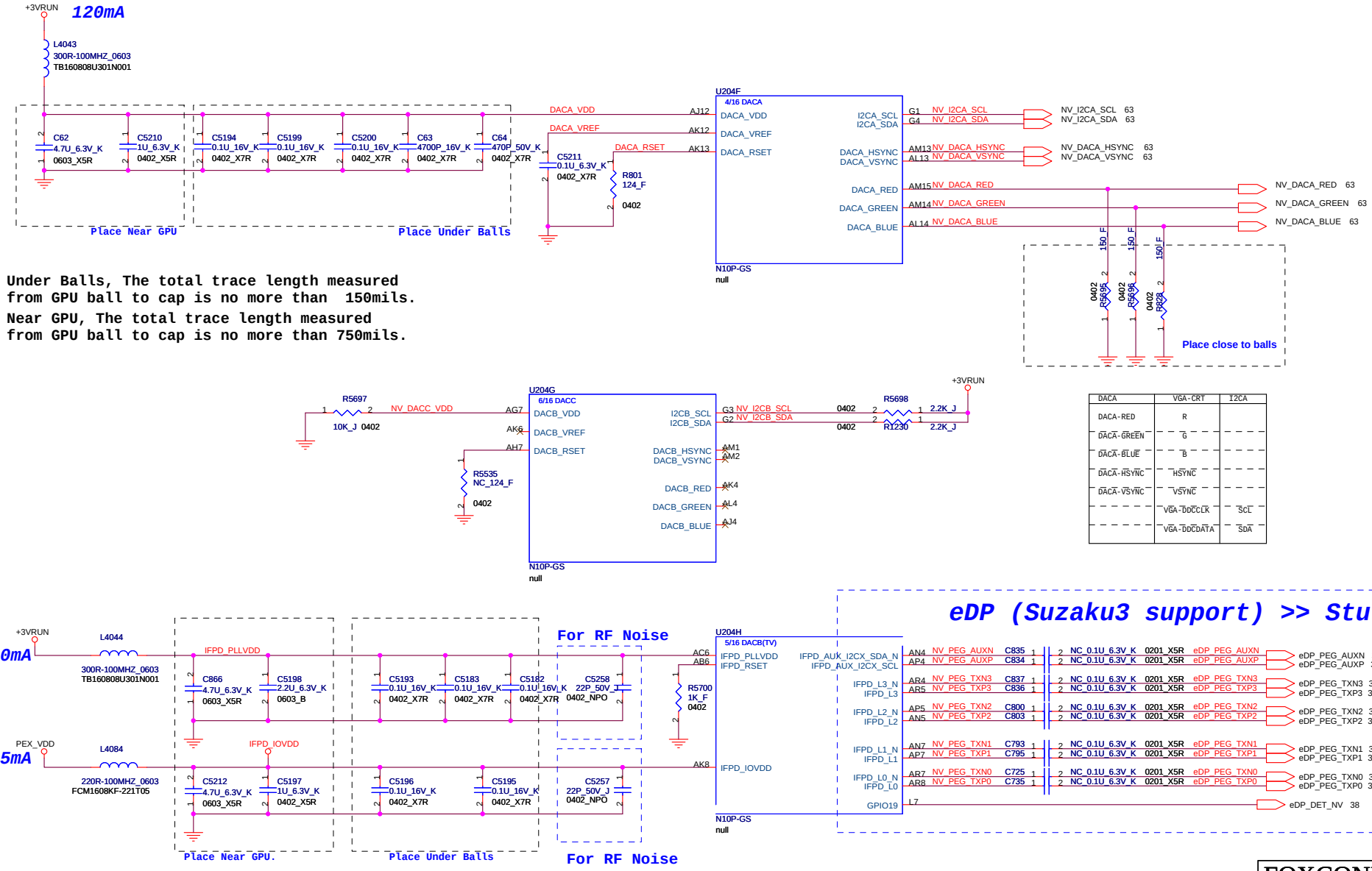


	0..30	32..63
CMD0	A4	
CMD1	RAS#	RAS#
CMD2	A5	
CMD3	BA1	BA1
CMD4		A2
CMD5		A4
CMD6		A3
CMD7		CKE
CMD8		CS0#
CMD9	A11	A11
CMD10	CAS#	CAS#
CMD11	WE#	WE#
CMD12	BA0	BA0
CMD13		A5
CMD14	A12	A12
CMD15	RST	RST
CMD16	A7	A7
CMD17	A10	A10
CMD18	CKE	
CMD19	A0	A0
CMD20	A9	A9
CMD21	A6	A6
CMD22	A2	
CMD23	A8	A8
CMD24	A3	
CMD25	A1	A1
CMD26	A13	A13
CMD27	BA2	BA2
CMD28		ODT
CMD29	CS0#	
CMD30	ODT	

FOXCONN	HON HAI PRECISION IND. CO., LTD. CPBG - R&D Division		
Title	VGA(DDR)# 4/9		
Size: Custom	Document Number: M931 (MBX-215)		Rev: SA
Date: Wednesday, January 06, 2010	Sheet 73 of 93		

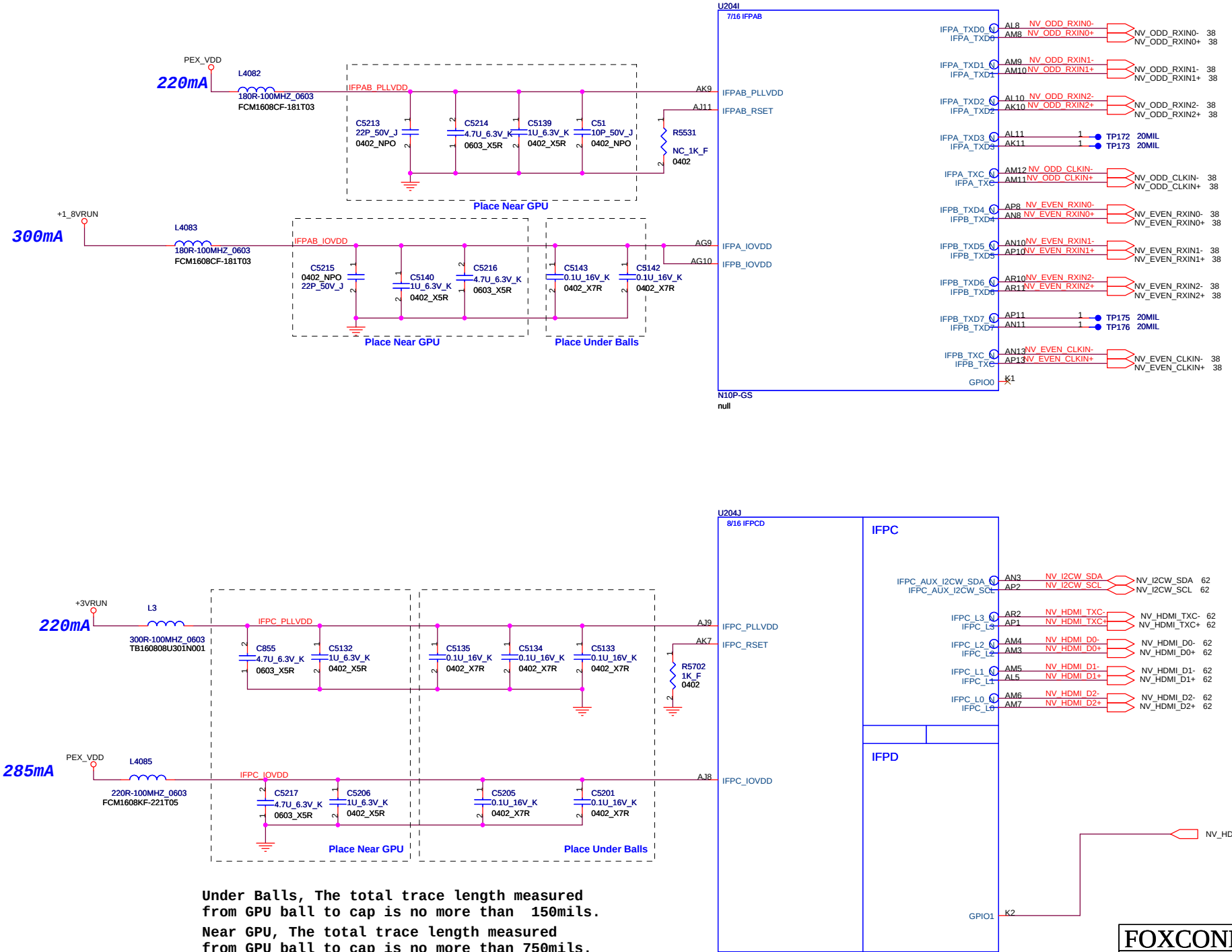


FOXCONN HON HAI PRECISION IND. CO., LTD.
CPBG - R&D Division

Title: VGA(CRT/eDP) 5/9

Size: Custom | Document Number: M931 (MBX-215) | Rev: SA

Date: Wednesday, January 06, 2010 | Sheet 74 of 93

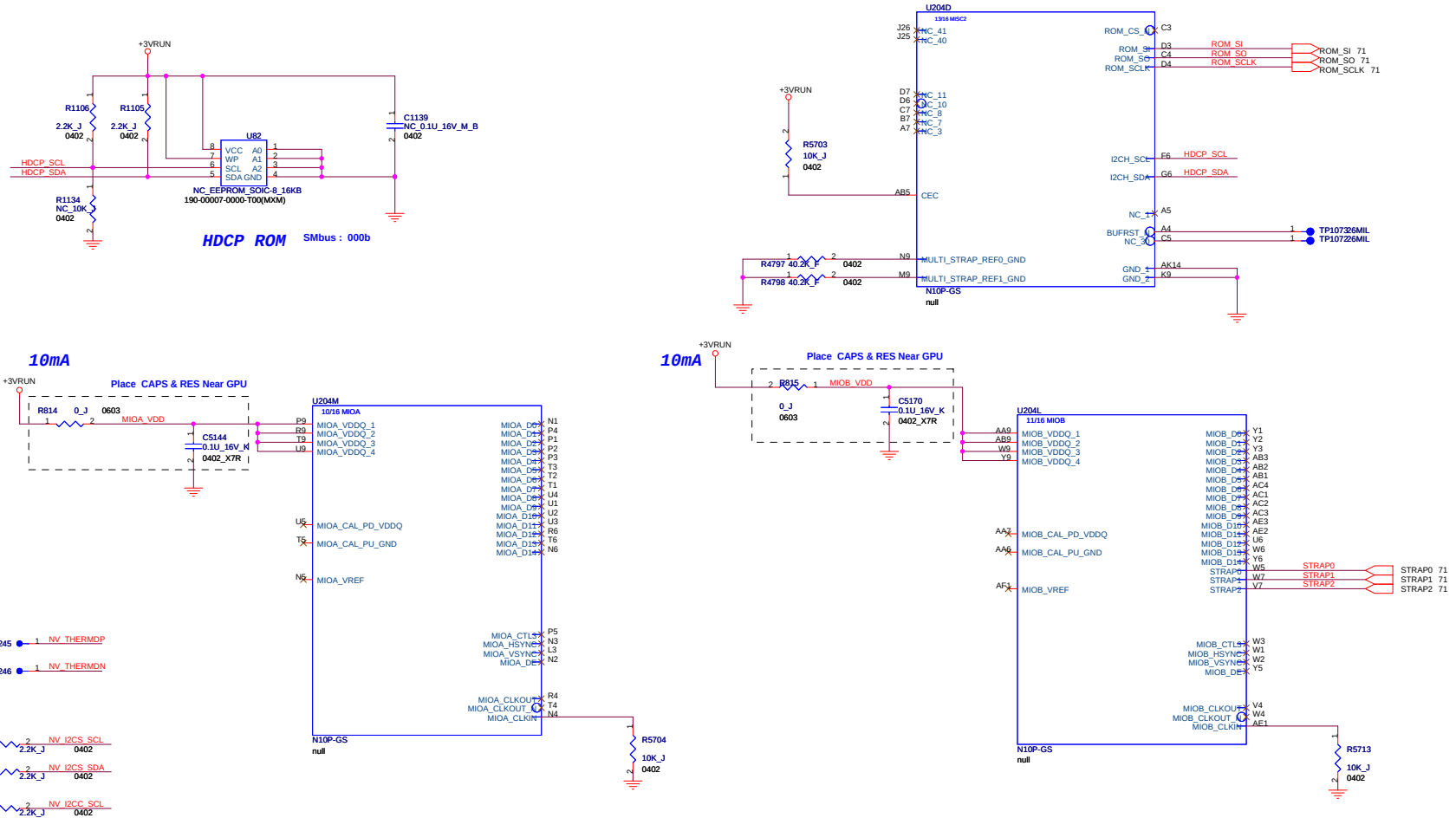


FOXCONN HON HAI PRECISION IND. CO., LTD.
CPBG - R&D Division

Title: VGA (LVDS/HDMI) 6/9

Size: A3 | Document Number: M931 (MBX-215) | Rev: SA

Date: Wednesday, January 06, 2010 | Sheet 75 of 93



GPIO	I/O	Internal pull low	GPIO TABLE	
GPIO0	I	YES		
GPIO1	I	Yes	HDMI Hot Plug Detect 0(HPD0)	**Active High**
GPIO2	O	Yes	LCD BL Brightness(LCD0_BL_PWM)	**Active High**
GPIO3	O	No	Panel Power(LCD0_VDD)	**Active High**
GPIO4	O	Yes	LCD Backlight enable(LCD0_BL_EN)	**Active High**
GPIO5	O	Yes	FOR Power Control NVDD	**Active High or Low**
GPIO6	O	No	FOR Power Control NVDD	**Active High or Low**
GPIO8	O	No	reserve for reset EC	
GPIO9	I	No	System Power Limit Alert Input	**Active Low**

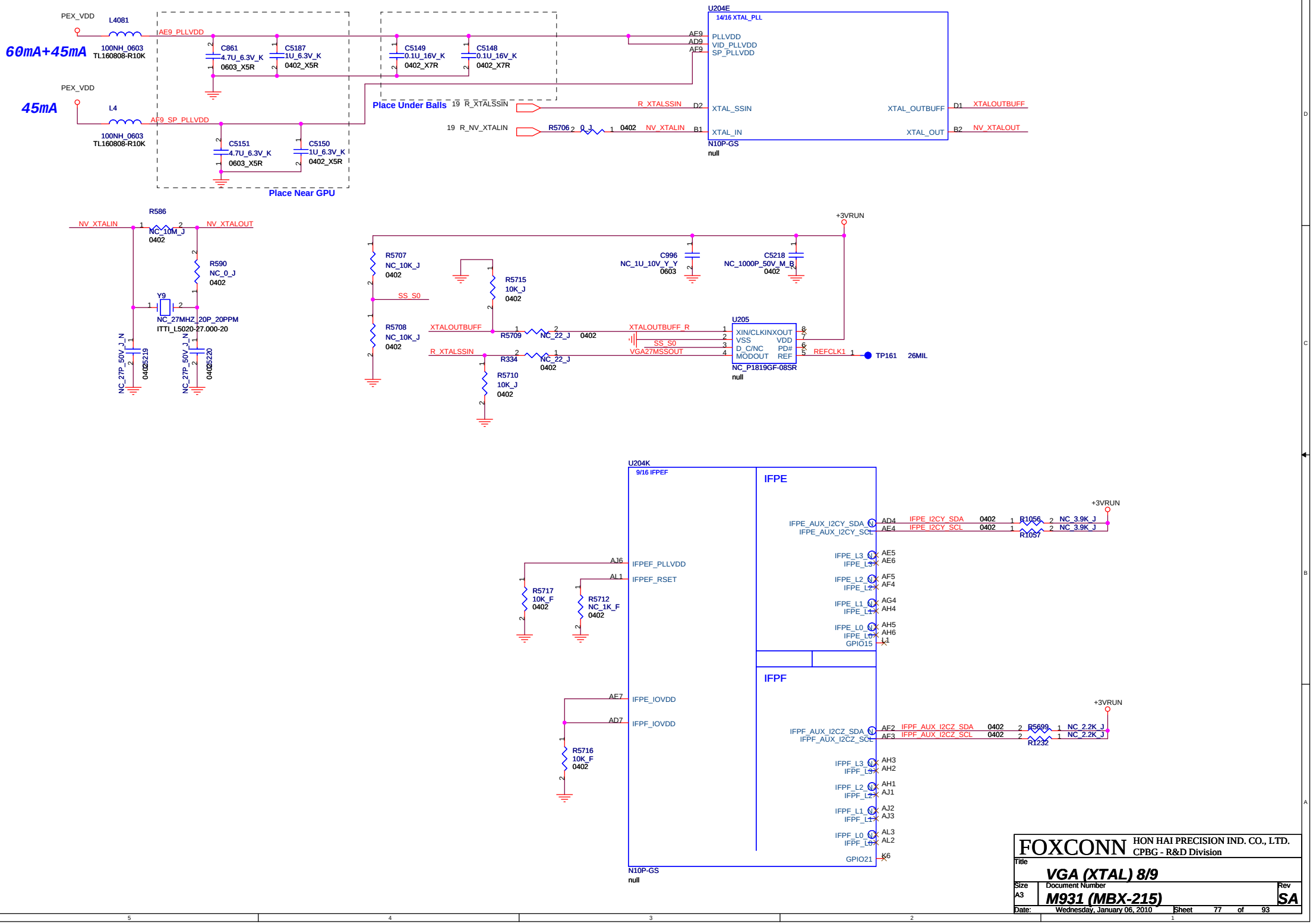
SIGNAL	I/O	Description
I2CA_SCL I2CA_SDA	I/O	For CRT VGA I2C_Compatibal Bus Signals
I2CB_SCL I2CB_SDA	I/O	NC(for DVI I2C_Compatibal Bus Signals)
I2CC_SCL I2CC_SDA	I/O	NC(Notebook DVI I2C_Compatibal Bus Signals)
I2CS_SCL I2CS_SDA	I/O	For VGA thermial I2C_Compatibal Bus Signals. Support a direct interface to the internal temperature sensor

FOXCONN HON HAI PRECISION IND. CO., LTD.
CPBG - R&D Division

Title: VGA (XTAL/GPIO) 7/9

Size: Custom | Document Number: M931 (MBX-215) | Rev: SA

Date: Wednesday, January 06, 2010 | Sheet 76 of 93


PEX_VDD
L4081
60mA+45mA
100NH_0603
TL160808-R10K
AE9_PLLVDD
C861
4.7U_6.3V_K
0603_X5R
C5187
1U_6.3V_K
0402_X5R
C5149
0.1U_16V_K
0402_X7R
C5148
0.1U_16V_K
0402_X7R
Place Under Balls
PEX_VDD
45mA
L4
100NH_0603
TL160808-R10K
AE9_SP_PLLVDD
C5151
4.7U_6.3V_K
0603_X5R
C5150
1U_6.3V_K
0402_X5R
Place Near GPU
U204E
14/16 XTAL_PLL
AF9
AD9
AF9
PLLVDD
VID_PLLVDD
SP_PLLVDD
19 R_XTALSSIN
R_XTALSSIN
D2
XTAL_SSIN
XTAL_OUTBUFF
D1
XTALOUTBUFF
19 R_NV_XTALIN
R5706
0_J
0402
NV_XTALIN
B1
XTAL_IN
XTAL_OUT
B2
NV_XTALOUT
N10P-GS
null
R586
NV_XTALIN
NC_10M_J
0402
NV_XTALOUT
R590
NC_0_J
0402
Y9
NC_27MHZ_20P_20PPM
ITTI_L5020-27.000-20
NC_27P_50V_J_N
0402
C5219
NC_27P_50V_J_N
0402
C5220
R5707
NC_10K_J
0402
SS_S0
R5708
NC_10K_J
0402
R5715
10K_J
0402
XTALOUTBUFF
R5709
NC_22_J
0402
XTALOUTBUFF_R
SS_S0
VGA27MSSOUT
R_XTALSSIN
R334
NC_22_J
0402
R5710
10K_J
0402
C996
NC_1U_10V_Y_Y
0603
C5218
NC_1000P_50V_M_B
0402
+3VRUN
U205
XIN/CLKIN
XOUT
VSS
VDD
D_C/NC
PD#
MODOUT
REF
REFCLK1
TP161
26MIL
NC_P1819GF-08SR
null
U204K
9/16 IFPEF
IFPE
IFPE_AUX_I2CY_SDA
IFPE_AUX_I2CY_SCL
AD4
AE4
IFPE_I2CY_SDA
IFPE_I2CY_SCL
0402
R1056
R1057
NC_3.9K_J
IFPE_L3
IFPE_L2
IFPE_L1
IFPE_L0
GPIO15
AE5
AE6
AF5
AF4
AG4
AH4
AH5
AH6
L1
AJ6
IFPEF_PLLVDD
AL1
IFPEF_RSET
R5717
10K_F
0402
R5712
NC_1K_F
0402
IFPF
AE7
IFPE_IOVDD
AD7
IFPF_IOVDD
R5716
10K_F
0402
IFPF_AUX_I2CZ_SDA
IFPF_AUX_I2CZ_SCL
AE2
AE3
IFPF_AUX_I2CZ_SDA
IFPF_AUX_I2CZ_SCL
R5699
R1232
NC_2.2K_J
IFPF_L3
IFPF_L2
IFPF_L1
IFPF_L0
AH3
AH2
AH1
AJ1
AJ2
AJ3
AL3
AL2
GPIO21
K6
N10P-GS
null
FOXCONN
HON HAI PRECISION IND. CO., LTD.
CPBG - R&D Division
Title
VGA (XTAL) 8/9
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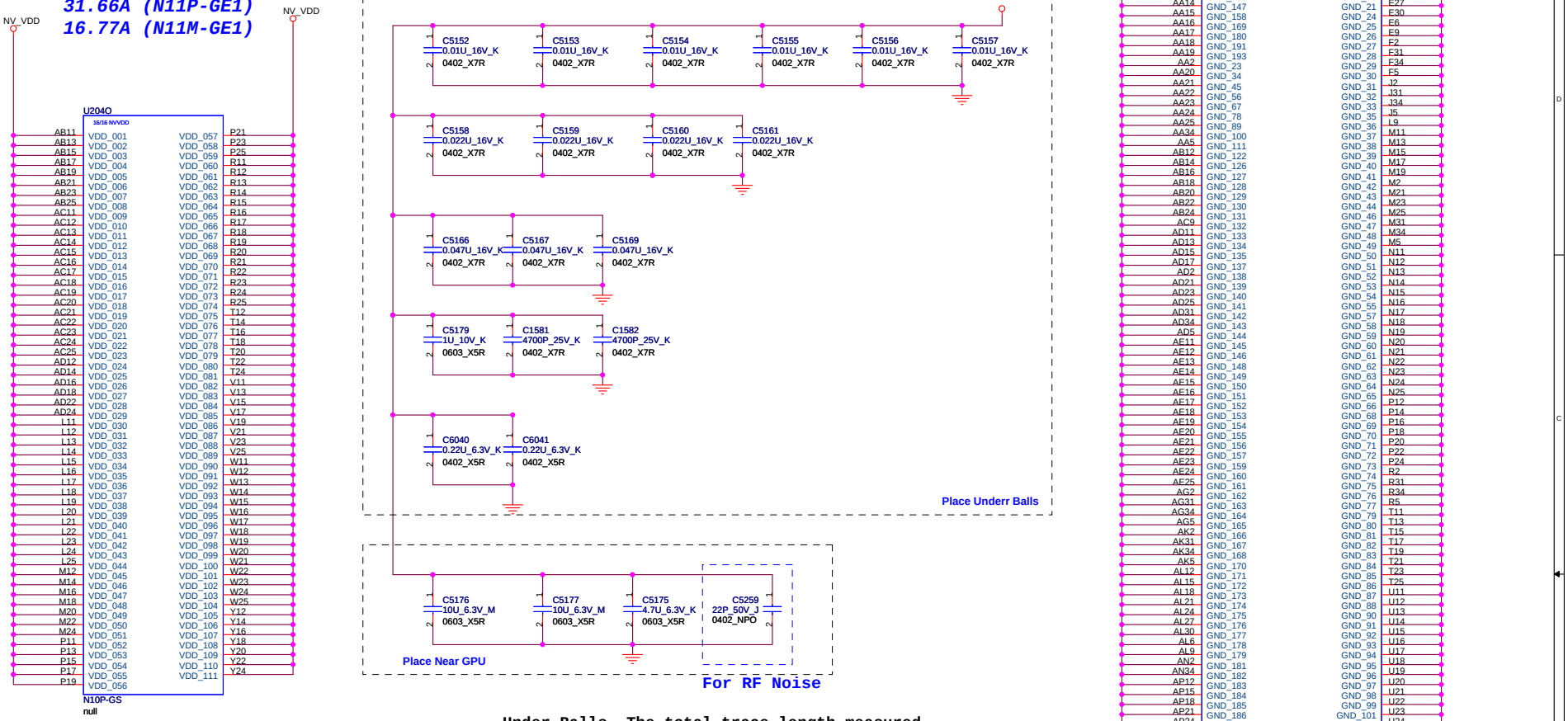
31.66A (N11P-GE1)
16.77A (N11M-GE1)



Under Balls, The total trace length measured from GPU ball to cap is no more than 150mils.

Near GPU, The total trace length measured from GPU ball to cap is no more than 750mils.

FOXCONN	HON HAI PRECISION IND. CO., LTD. CPBG - R&D Division	
Title	VGA(POWER/GROUND) 9/9	
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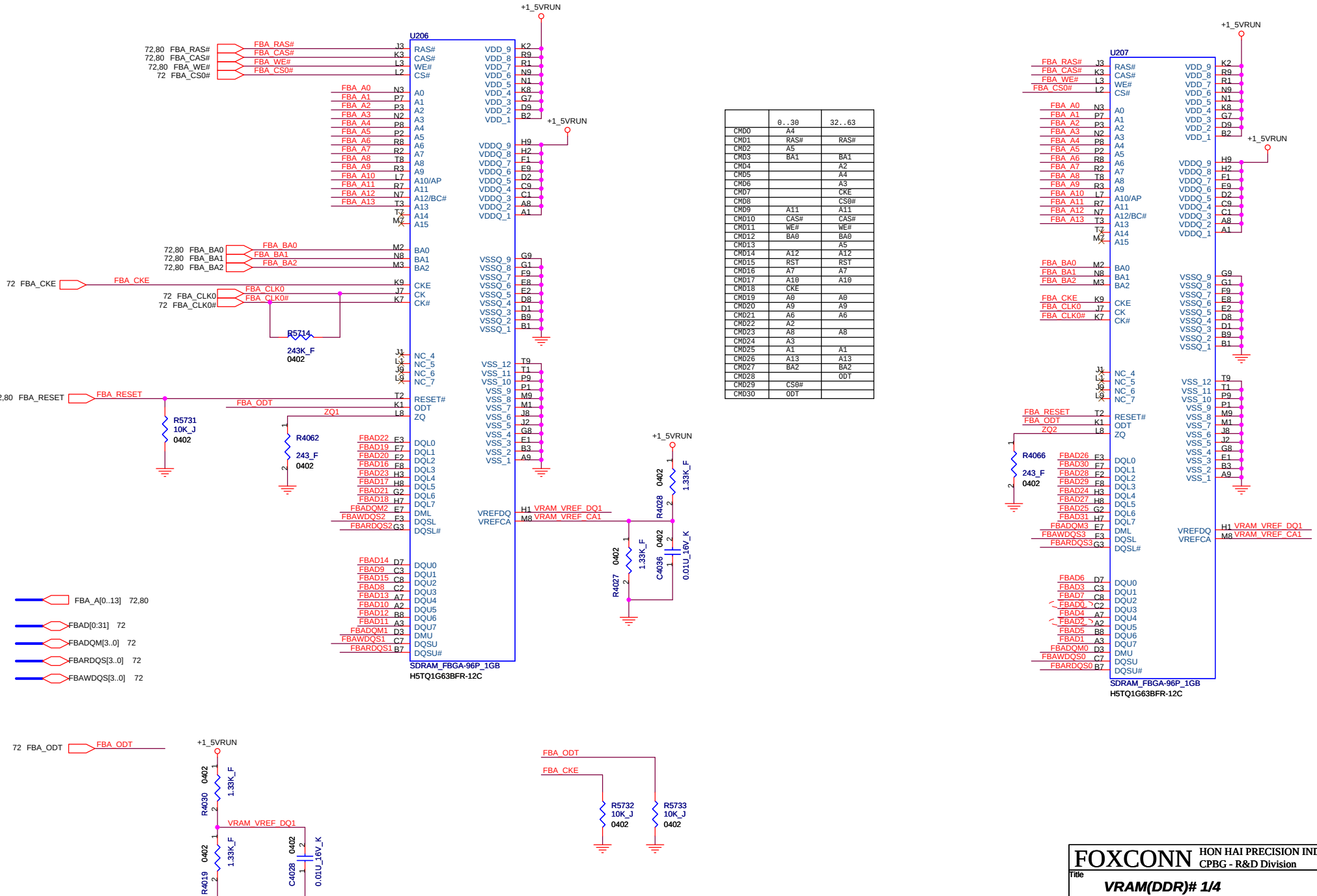

	0..30	32..63
CMD0	A4	
CMD1	RAS#	RAS#
CMD2	A5	
CMD3	BA1	BA1
CMD4		A2
CMD5		A4
CMD6		A3
CMD7		CKE
CMD8		CS0#
CMD9	A11	A11
CMD10	CAS#	CAS#
CMD11	WE#	WE#
CMD12	BA0	BA0
CMD13		A5
CMD14	A12	A12
CMD15	RST	RST
CMD16	A7	A7
CMD17	A10	A10
CMD18	CKE	
CMD19	A0	A0
CMD20	A9	A9
CMD21	A6	A6
CMD22	A2	
CMD23	A8	A8
CMD24	A3	
CMD25	A1	A1
CMD26	A13	A13
CMD27	BA2	BA2
CMD28		ODT
CMD29	CS0#	
CMD30	ODT	

FOXCONN	HON HAI PRECISION IND. CO., LTD. CPBG - R&D Division
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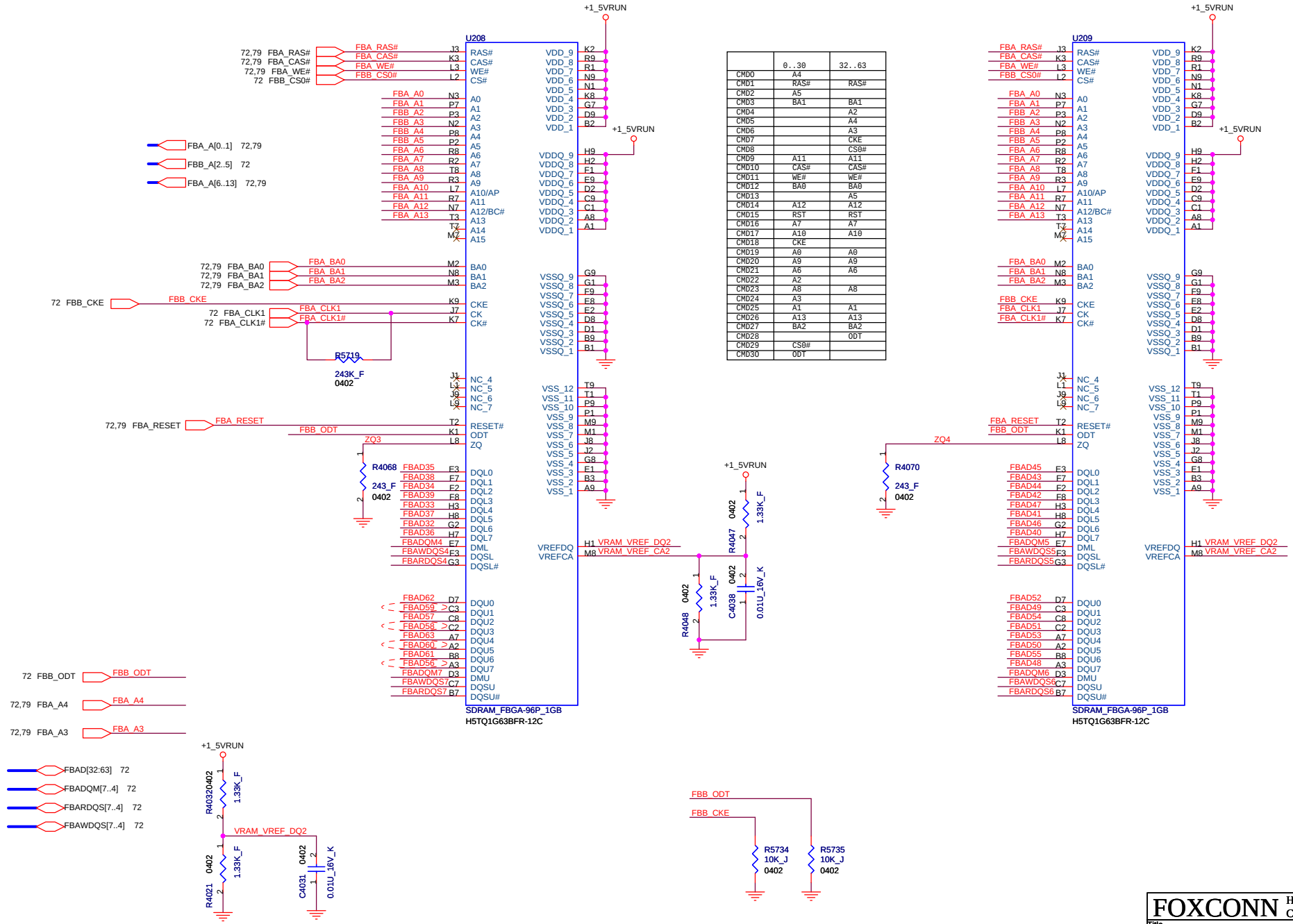

	0..30	32..63
CMD0	A4	
CMD1	RAS#	RAS#
CMD2	A5	
CMD3	BA1	BA1
CMD4		A2
CMD5		A4
CMD6		A3
CMD7		CKE
CMD8		CS0#
CMD9	A11	A11
CMD10	CAS#	CAS#
CMD11	WE#	WE#
CMD12	BA0	BA0
CMD13		A5
CMD14	A12	A12
CMD15	RST	RST
CMD16	A7	A7
CMD17	A10	A10
CMD18	CKE	
CMD19	A0	A0
CMD20	A9	A9
CMD21	A6	A6
CMD22	A2	
CMD23	A8	A8
CMD24	A3	
CMD25	A1	A1
CMD26	A13	A13
CMD27	BA2	BA2
CMD28		ODT
CMD29	CS0#	
CMD30	ODT	

FOXCONN	HON HAI PRECISION IND. CO., LTD. CPBG - R&D Division	
Title	VRAM(DDR)# 2/4	
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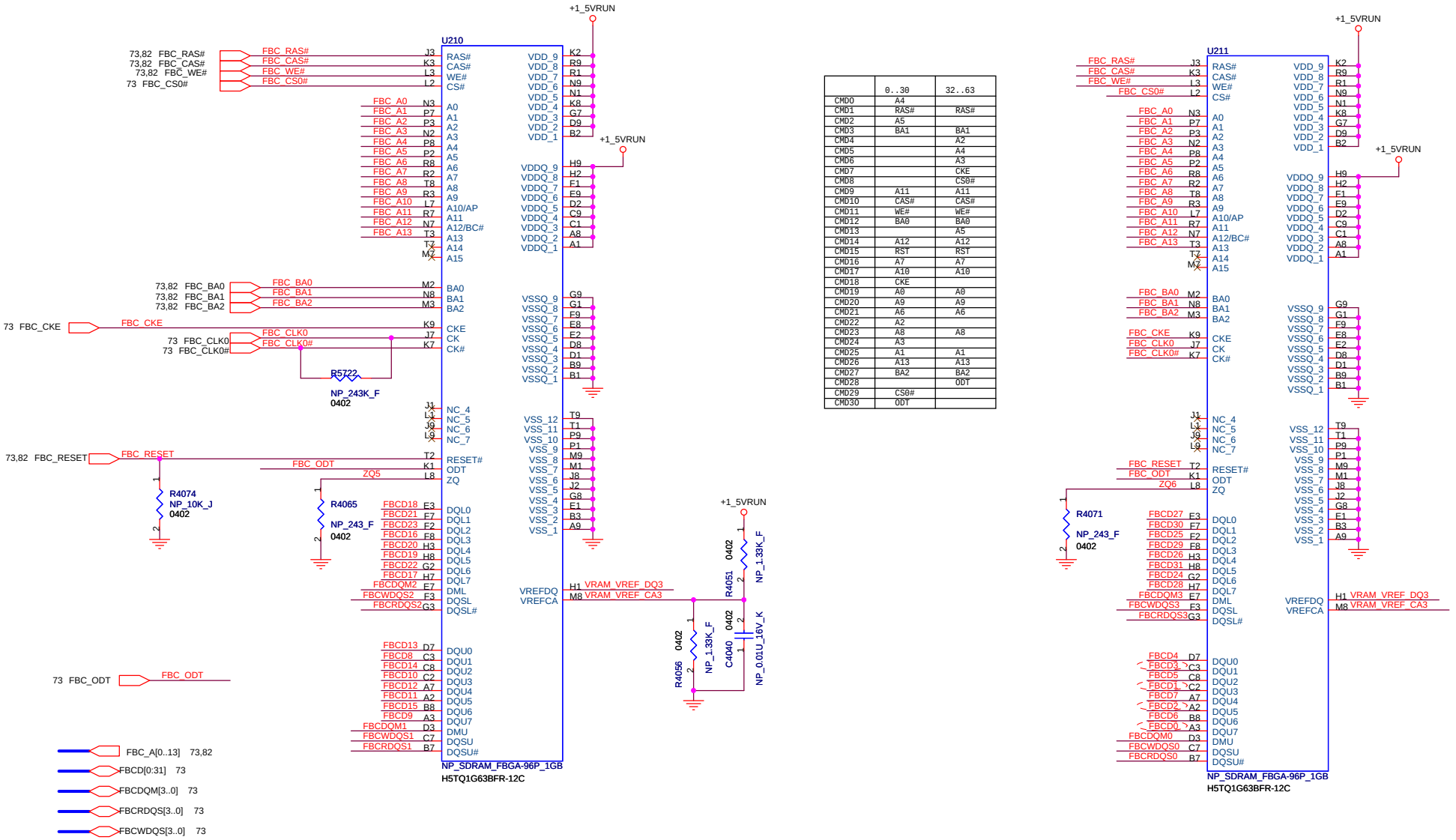

	0..30	32..63
CMD0	A4	
CMD1	RAS#	RAS#
CMD2	A5	
CMD3	BA1	BA1
CMD4		A2
CMD5		A4
CMD6		A3
CMD7		CKE
CMD8		CS0#
CMD9	A11	A11
CMD10	CAS#	CAS#
CMD11	WE#	WE#
CMD12	BA0	BA0
CMD13		A5
CMD14	A12	A12
CMD15	RST	RST
CMD16	A7	A7
CMD17	A10	A10
CMD18	CKE	
CMD19	A0	A0
CMD20	A9	A9
CMD21	A6	A6
CMD22	A2	
CMD23	A8	A8
CMD24	A3	
CMD25	A1	A1
CMD26	A13	A13
CMD27	BA2	BA2
CMD28		ODT
CMD29	CS0#	
CMD30	ODT	

Title	VRAM(DDR)# 3/4
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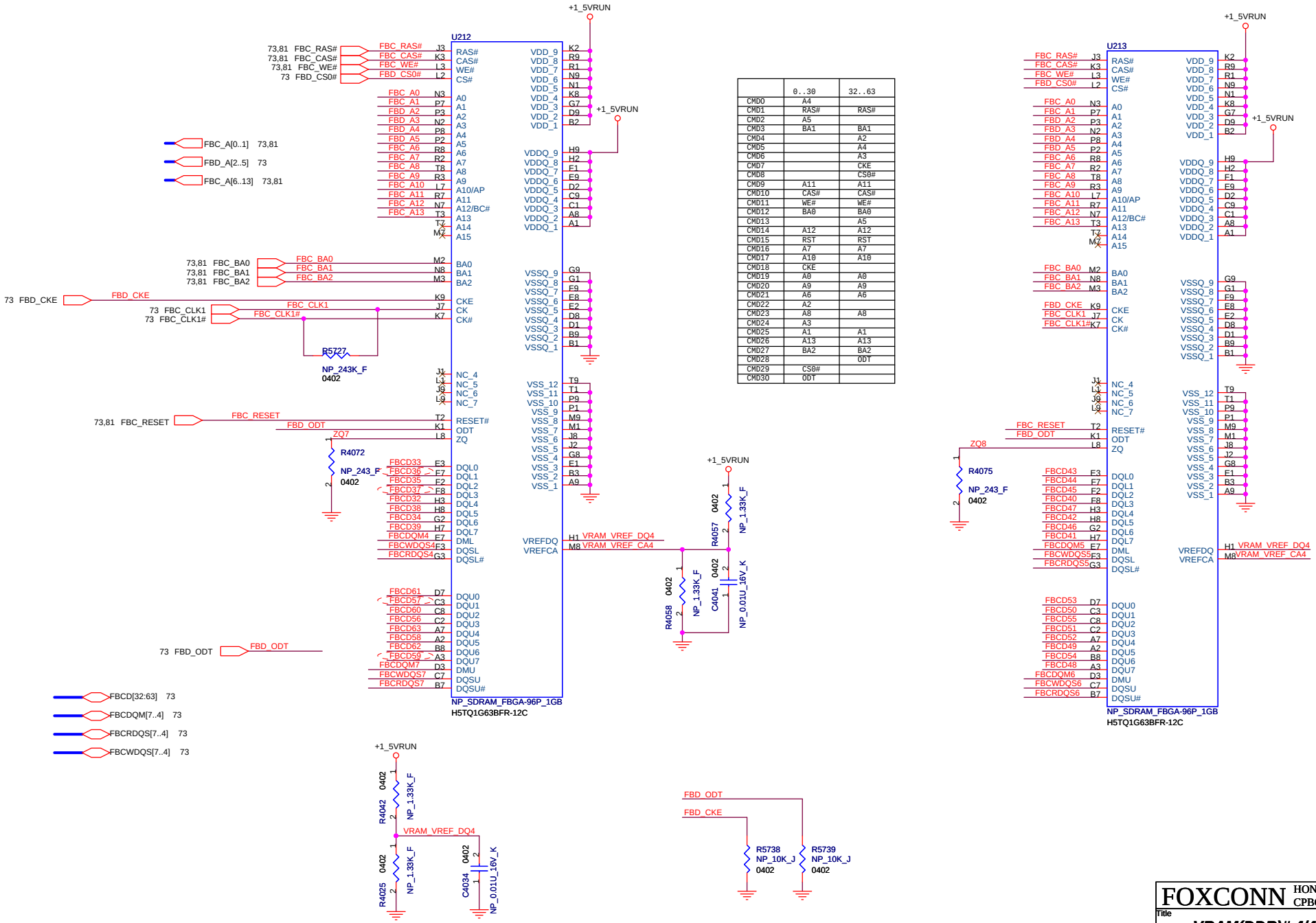
FOXCONN HON HAI PRECISION IND. CO., LTD.
CPBG - R&D Division



	0..30	32..63
CMD0	A4	
CMD1	RAS#	RAS#
CMD2	A5	
CMD3	BA1	BA1
CMD4		A2
CMD5		A4
CMD6		A3
CMD7		CKE
CMD8		CS0#
CMD9	A11	A11
CMD10	CAS#	CAS#
CMD11	WE#	WE#
CMD12	BA0	BA0
CMD13		A5
CMD14	A12	A12
CMD15	RST	RST
CMD16	A7	A7
CMD17	A10	A10
CMD18	CKE	
CMD19	A0	A0
CMD20	A9	A9
CMD21	A6	A6
CMD22	A2	
CMD23	A8	A8
CMD24	A3	
CMD25	A1	A1
CMD26	A13	A13
CMD27	BA2	BA2
CMD28		ODT
CMD29	CS0#	
CMD30	ODT	

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Title: VRAM(DDR)# 4/4

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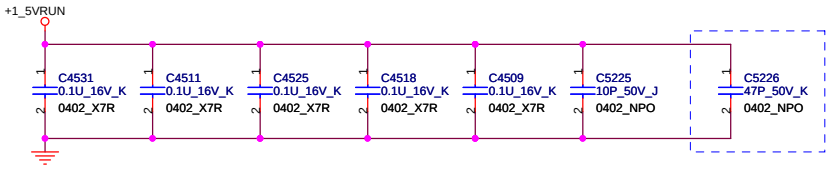
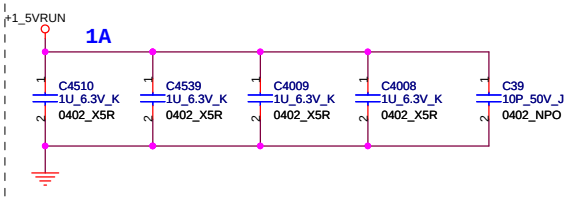
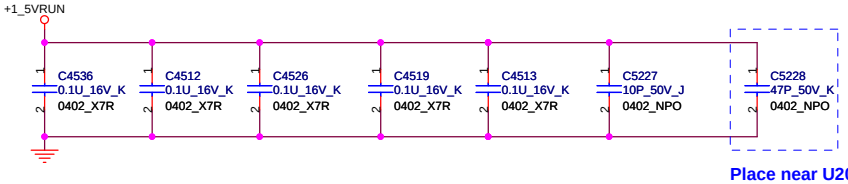
Place around the VRAM U206



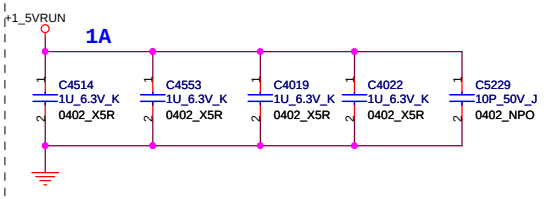
Place near U206



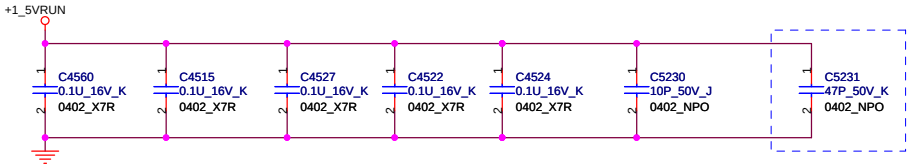
Place around the VRAM U207



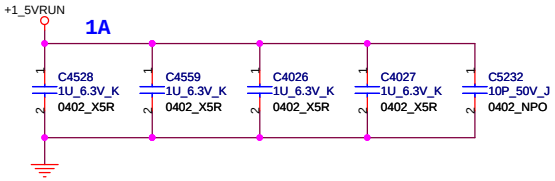
Place near U207



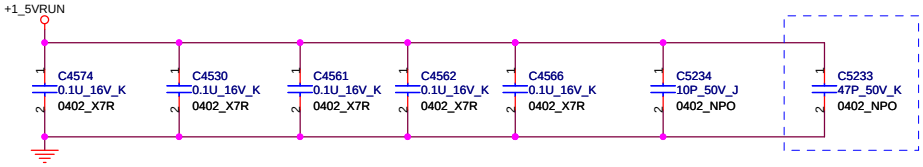
Place around the VRAM U208



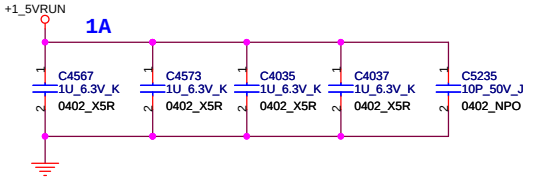
Place near U208



Place around the VRAM U209



Place near U209



PLACE 0.1UF CAPSUNDER THE MEMORY DEVICE.

PLACE 1UF CAPACITORS CLOSE TO THE MEMORY DEVICE.

FOXCONN	HON HAI PRECISION IND. CO., LTD. CPBG - R&D Division	
Title	***VRAM(N11M BYPASS) 1/2***	
Size A3	Document Number ***M931 (MBX-215)***	Rev ***SA***
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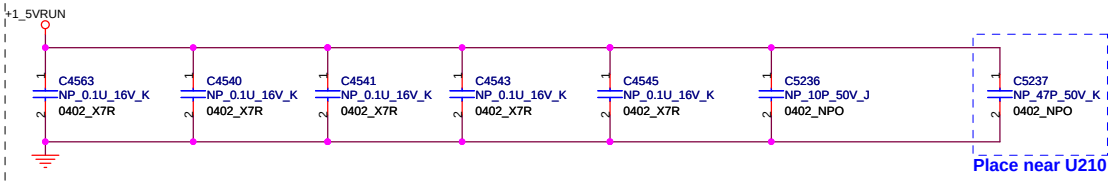
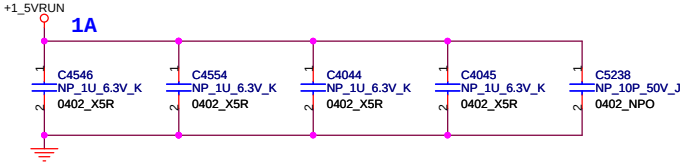
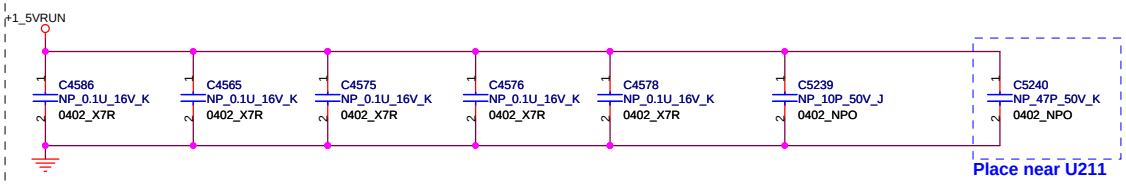
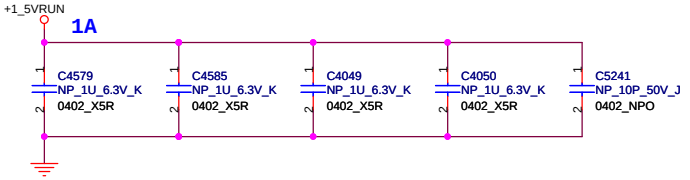
Place around the VRAM U210



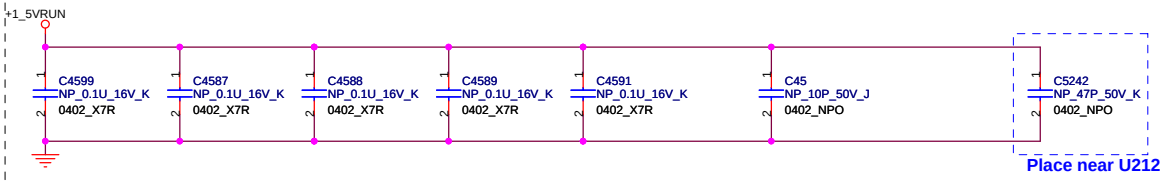


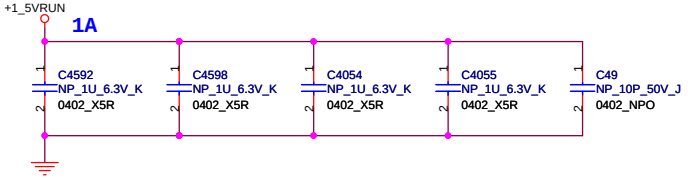
Place around the VRAM U211



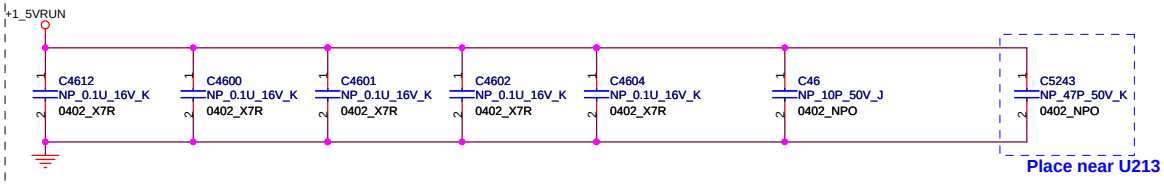


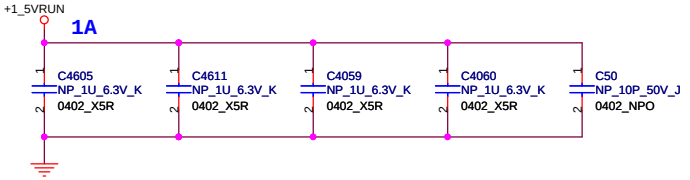
Place around the VRAM U212





Place around the VRAM U213





PLACE 0.1UF CAPSUNDER THE MEMORY DEVICE.

PLACE 1UF CAPACITORS CLOSE TO THE MEMORY DEVICE.

FOXCONN	HON HAI PRECISION IND. CO., LTD. CPBG - R&D Division	
Title	VRAM(N11P BYPASS) 2/2	
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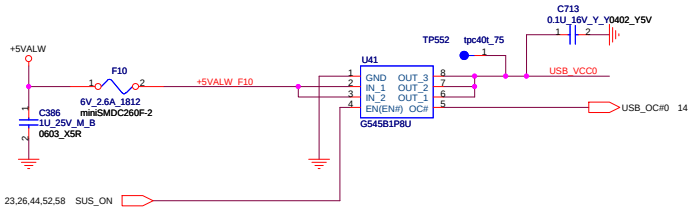
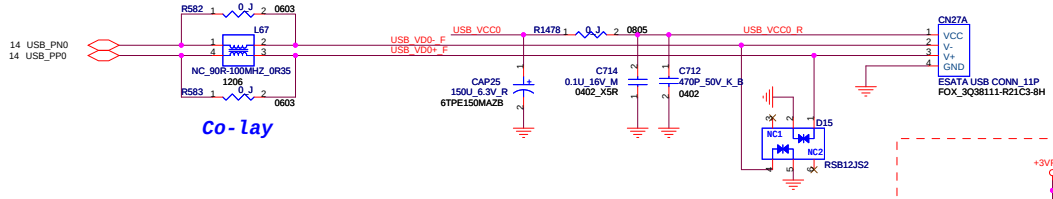
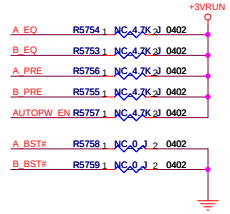
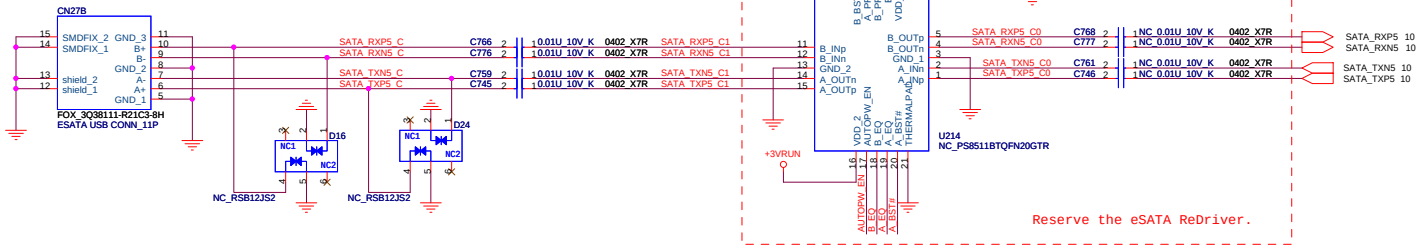
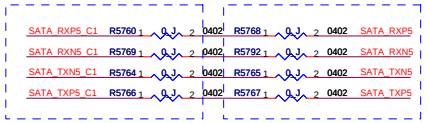






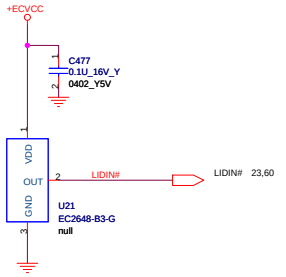
USB/eSATA Combo





Close to U124 ,Pin11 ,12 ,14 ,15

Close to U124 and C768 ,C777 ,C761 ,C746 Pin2



LID Switch

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title: LID SWITCH & USB/eSATA Combo		
Size: C	Document Number: M931 (MBX-215)	Rev: SA
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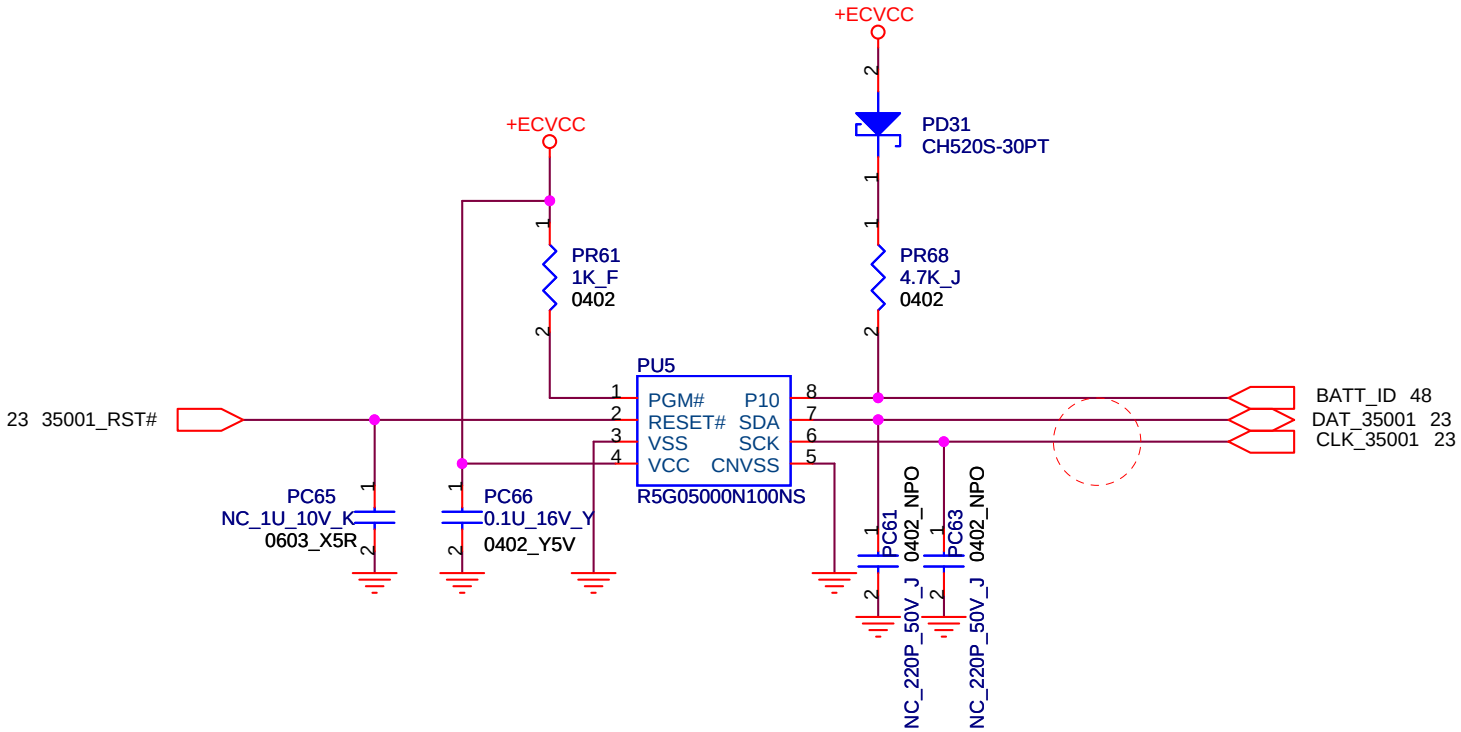

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	***Identify IC***	
Size A	Document Number ***M931 (MBX-215)***	Rev ***SA***
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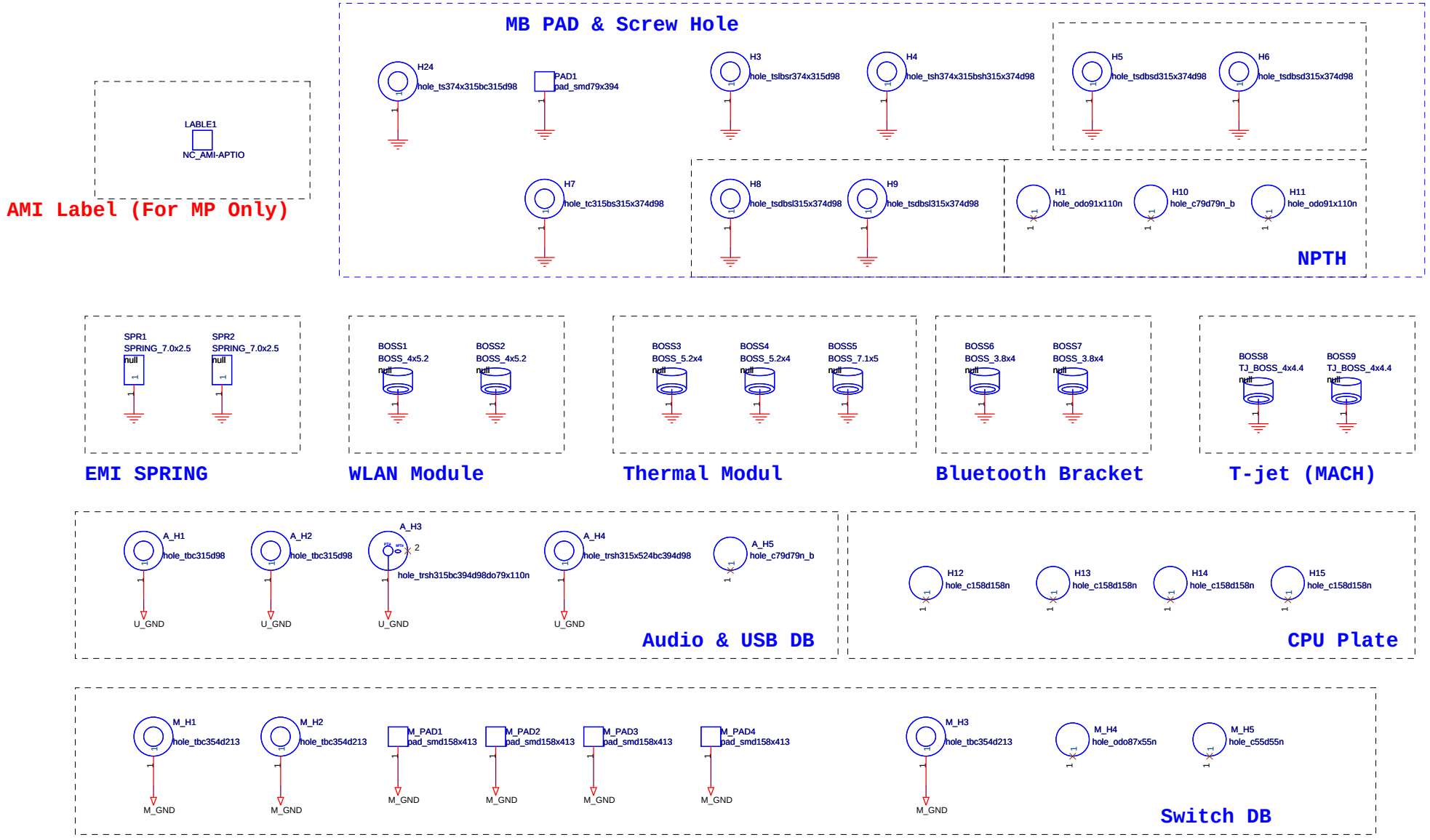

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	HOLE&AMI Label&BOSS	
Size A3	Document Number M931 (MBX-215)	Rev SA
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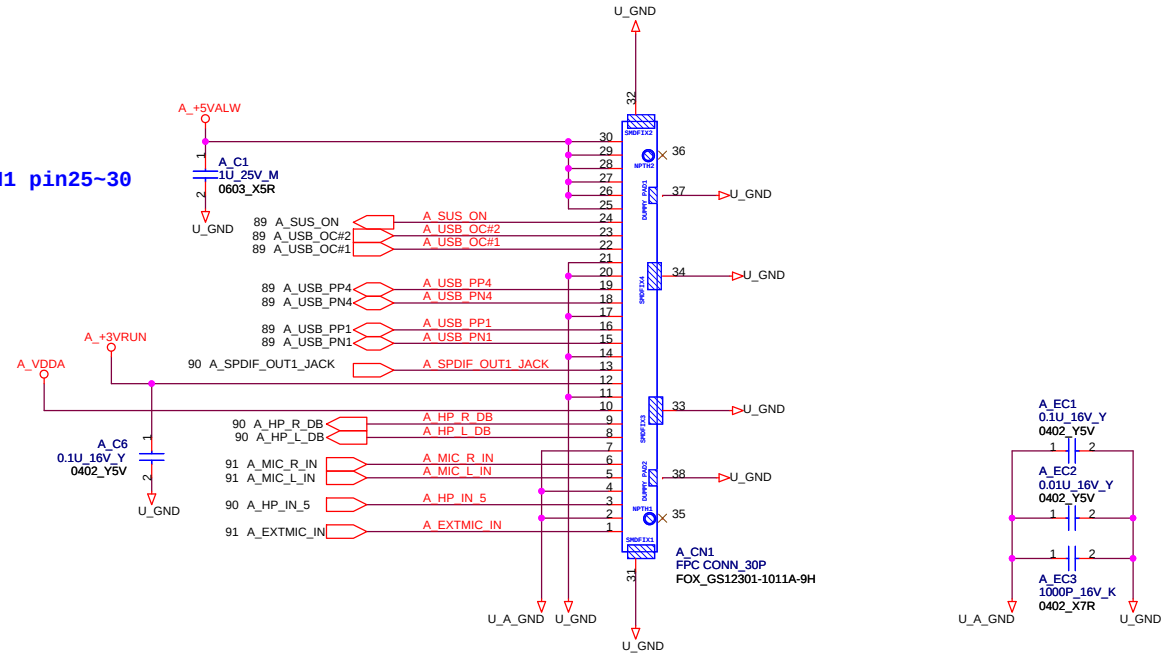
Place A_C1 close to A_CN1 pin25~30



FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	USB & AUDIO Conn.	
Size A3	Document Number M931 (MBX-215)	Rev SA
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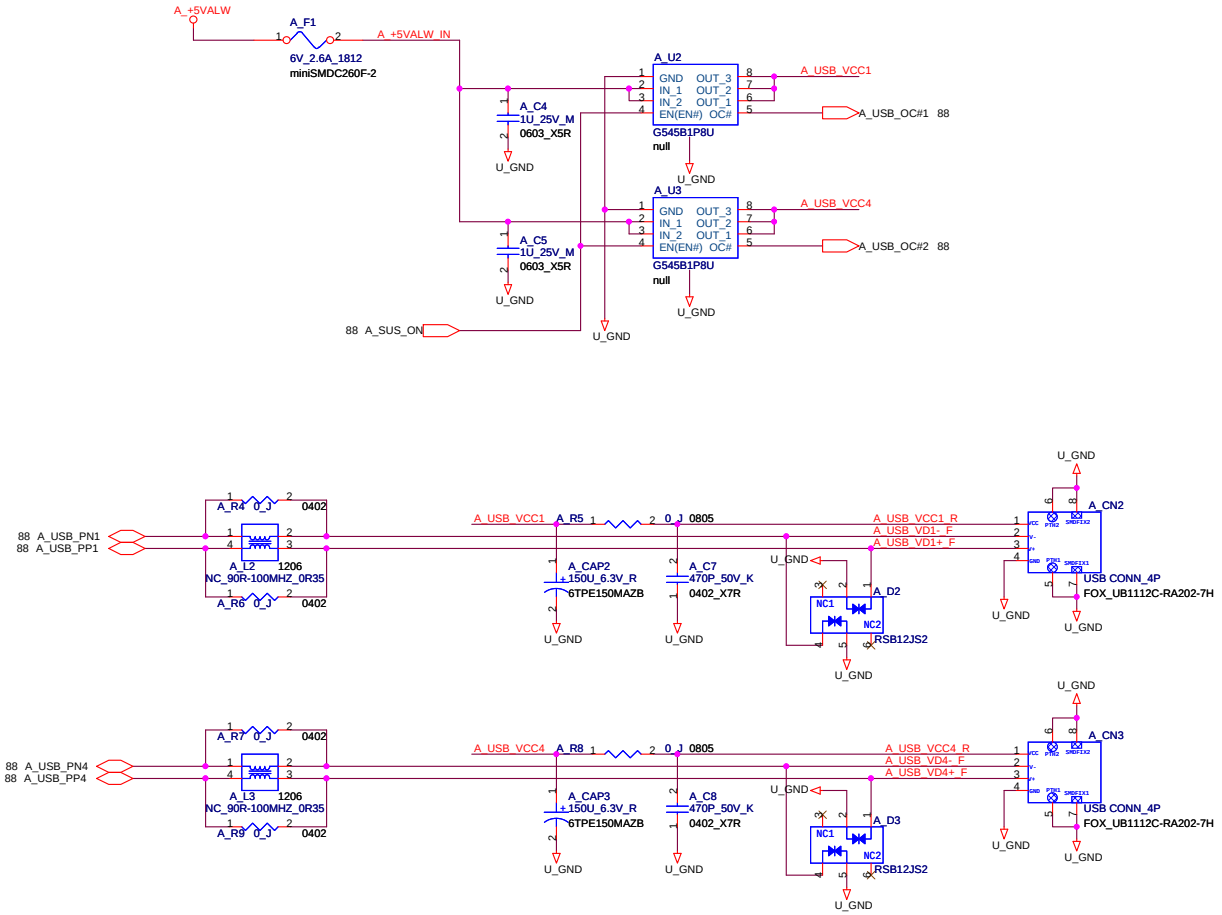
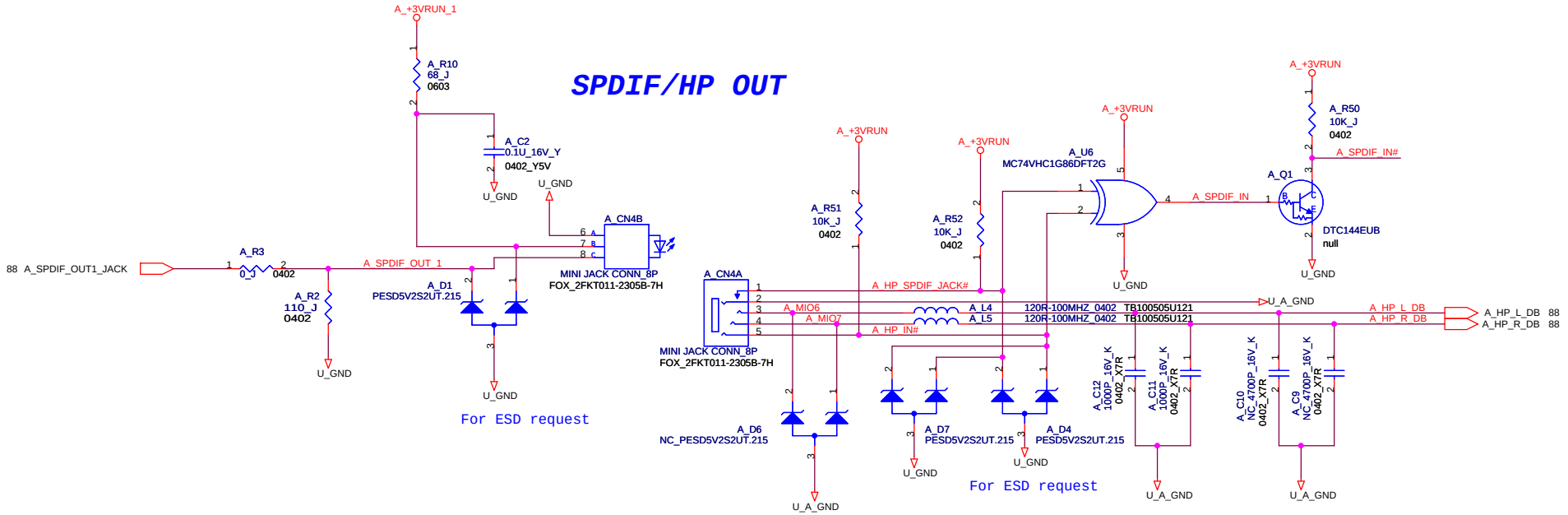
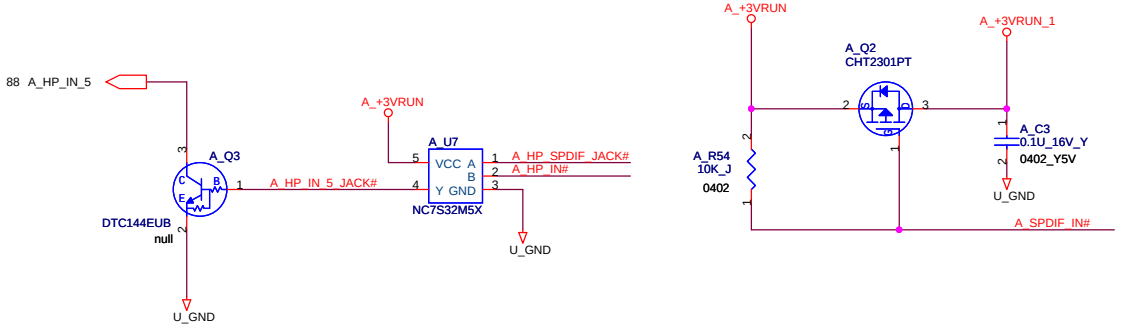


FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	USB Port	
Size: Custom	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 89 of 93	





LED status

	Pin 1	Pin 5	LED A_SPDIF_IN#	A_HP_IN_5
HP	0	0	1 off	1
SPDIF	0	1	0 on	0
No plug	1	1	1 off	0

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Title: HP Jack (SPDIF)

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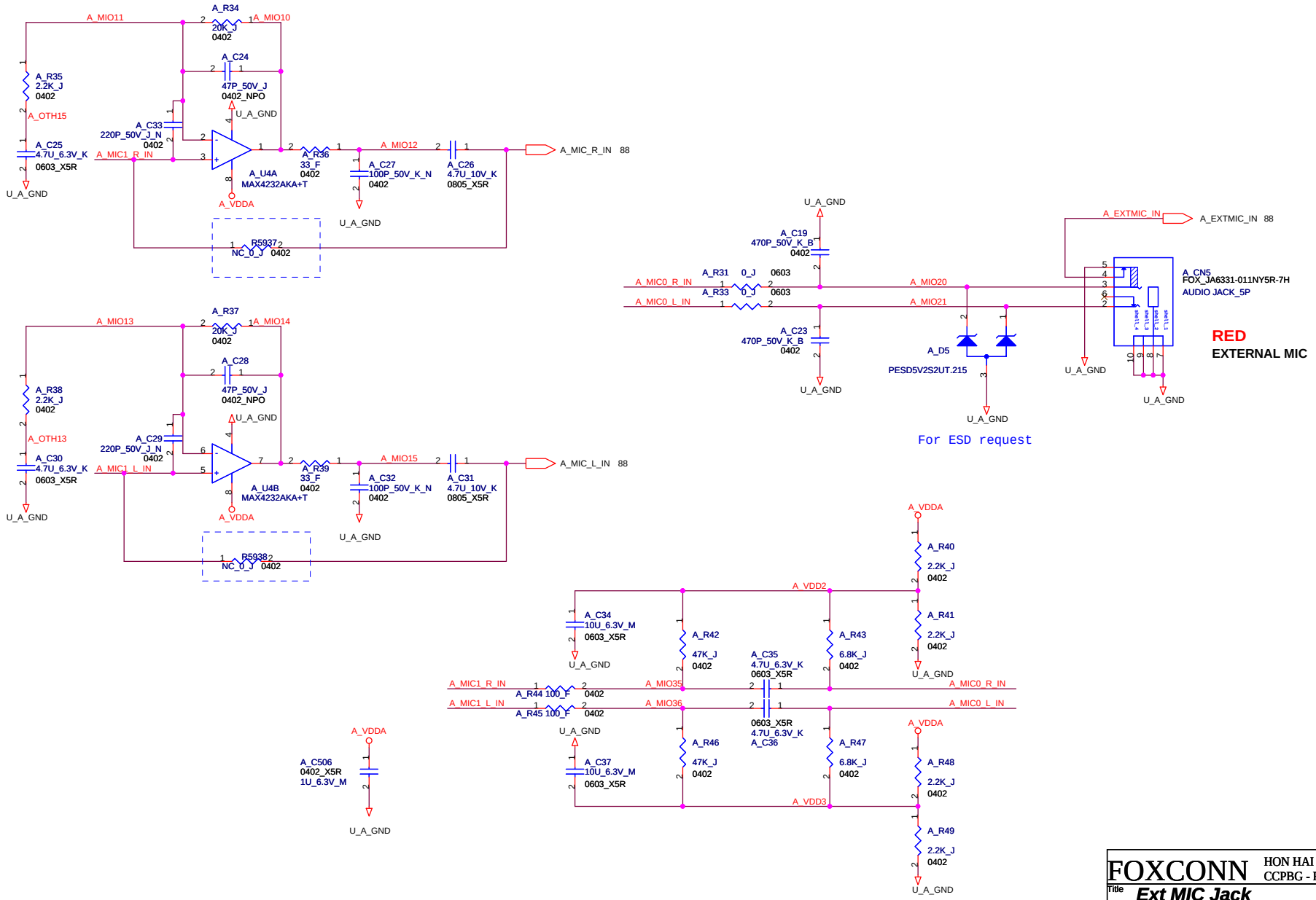

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CCPBG - R&D Division

Title	Ext MIC Jack	
Size A3	Document Number M931 (MBX-215)	Rev SA
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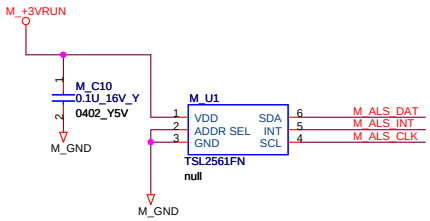

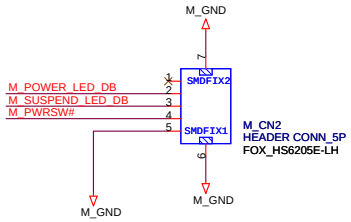

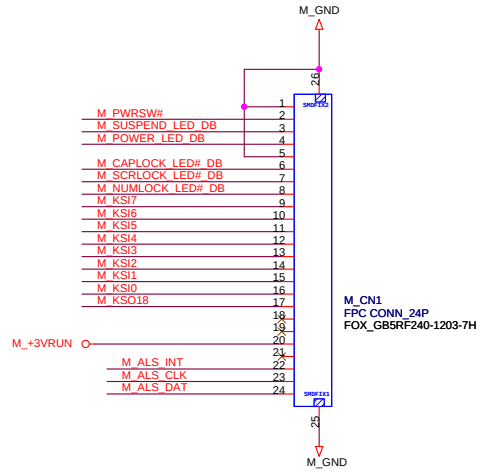

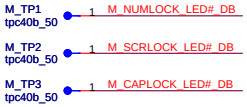

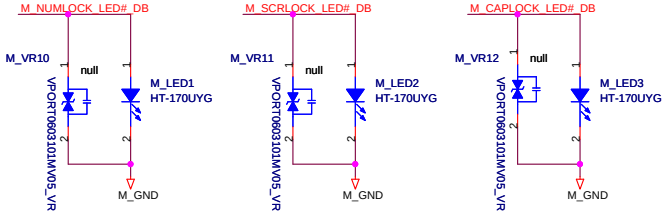

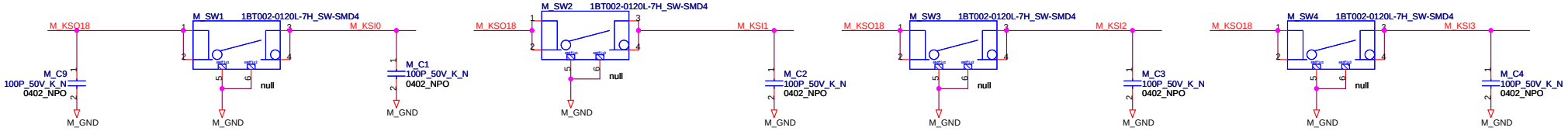

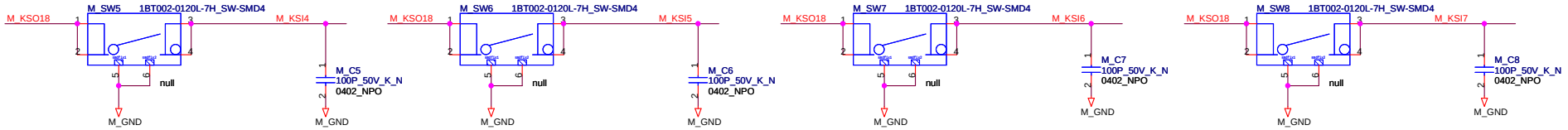

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CCPBG - R&D Division

Title: **Function SW & Light Sensor**

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(2009/11/27) M930-MP ECN Changed

P.48 {DCIN} PR11 Change to SMD,RES,11.8K,1/16W,1%,0402
P.48 {DCIN} PR12 Change to SMD,RES,10K,1/16W,1%,0402
P.48 {DCIN} PR220 Change to SMD,RES,10.2K,1/16W,1%,0402
P.57 {VGA Power} PR566 Change to SMD,RES,88.7K,1/16W,1%,0402
P.51 {VTT Power} PR26 Change to SMD,RES,2.2ohm,1/10W,5%,0603
P.51 {VTT Power} PR152 Change to SMD,RES,4.7ohm,1/10W,5%,0603
P.51 {VTT Power} PC130 Change to SMD,MLCC,X7R,680pF,50V,10%,0603(0.8mm)
P.12 {PCH} Delete D28, D29
P.92 {DB} Delete M_VR1,M_VR2,M_VR3,M_VR4,M_VR5,M_VR6,M_VR7,M_VR8,M_VR9
P.92 {DB} Add M_VR10,M_VR11, M_VR12
P.23 {EC} Add C487 ,SMD,MLCC,X7R,1000pF,16V,10%,0402
P.27 {WLAN} SW4 Change to ALPS,SSSS811101,Switch,SMD-7,Slide SW
P.64 {CODEC} Change U215 vendor number from ALC275SQ-GR-A5 to ALC275SQ-GR

(2009/12/02)

P.2 {Block Digram} Revised Model Name and Feature
P.4 {CPU} Short RP80
P.7 {CPU} Short R1561
P.9 {CPU} Short R1586, R1587
P.11 {PCH} Short RP69 ,RP71 ,RP67 ,RP70 ,RP78 ,RP68 ,RP89
P.12 {PCH} Short R927
P.19 {CLK} Short RP9 ,RP84 ,RP85 ,RP79
P.23 {EC} Delete RP23
P.26 {ExpressCard} Short R343, R337 ,Delete L40
P.27 {WLAN} Short R22
P.36 {Camera} Short R376 ,R377 ,Delete L46
P.37 {Felica} Short R192 ,R193 ,Delete L25
P.39 {BT} Change R7 to 100ohm as RF team Request.
P.39 {BT} Delete U1 ,R6 ,C6 ,U12
P.41 {KB} Short R695
P.43 {TP} Short R533 ,Delete R530
P.46 {Thermal} Delete D20 ,C547 ,C534 ,U26 ,R946 ,R61
P.46 {Thermal} Delete U5 ,R65 ,C42 ,R54 ,R53 ,R60
P.62 {HDMI} Delete L57 ,L60 ,L74 ,L76 ,Short R495 ,R483 ,R487 ,R492 ,R489 ,R498 ,R499 ,R494
P.64 {Audio} Short R5767.
P.85 {eSATA} Reserved C768 ,C777 ,C761 ,C746 ,U214
P.85 {eSATA} Delete L62 ,L66 ,Short R589 ,R588 ,R592 ,R591
P.86 {BAT ID} Short PR125

(2009/12/18)

P.57 {VGA Power} Change PR182 to PWRCNTL_0 Net.
P.57 {VGA Power} Change PR180 to PWRCNTL_1 Net.
P.11 {PCH} U69 P/N :12-1BEXPEA-0004 (INTEL,BD82PM55 SLH23,BGA-1071,Intel Platform Controller Hub)
P.35 {SD} Reserve the R1590 for SD Slot (CN29) Dampping.
P.52 {0.75VPower} Change PC143 to 1C-2B20104-K300 (0.1uF/X7R/10%)

(2009/12/23)

P.76 {VGA} Reserve the TP245 and TP246
P.52 {DDR3 Power} Reserve the PR150 /PR157 Path

(2009/12/29)

P.51 {VTTV Power} Reserve the CAP32 for Power Noise Reduce
P.52 {1.5V Power} Reserve the CAP33 for Power Noise Reduce
P.57 {VGA Power} Reserve the CAP34 for Power Noise Reduce

(2010/01/06)

P.34 {SD} Revise R817 pull-up connection from +3VRUN to VCC_SD

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