Schematics Page Index (Title / Revision / Change Date)

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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
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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
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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

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

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)

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

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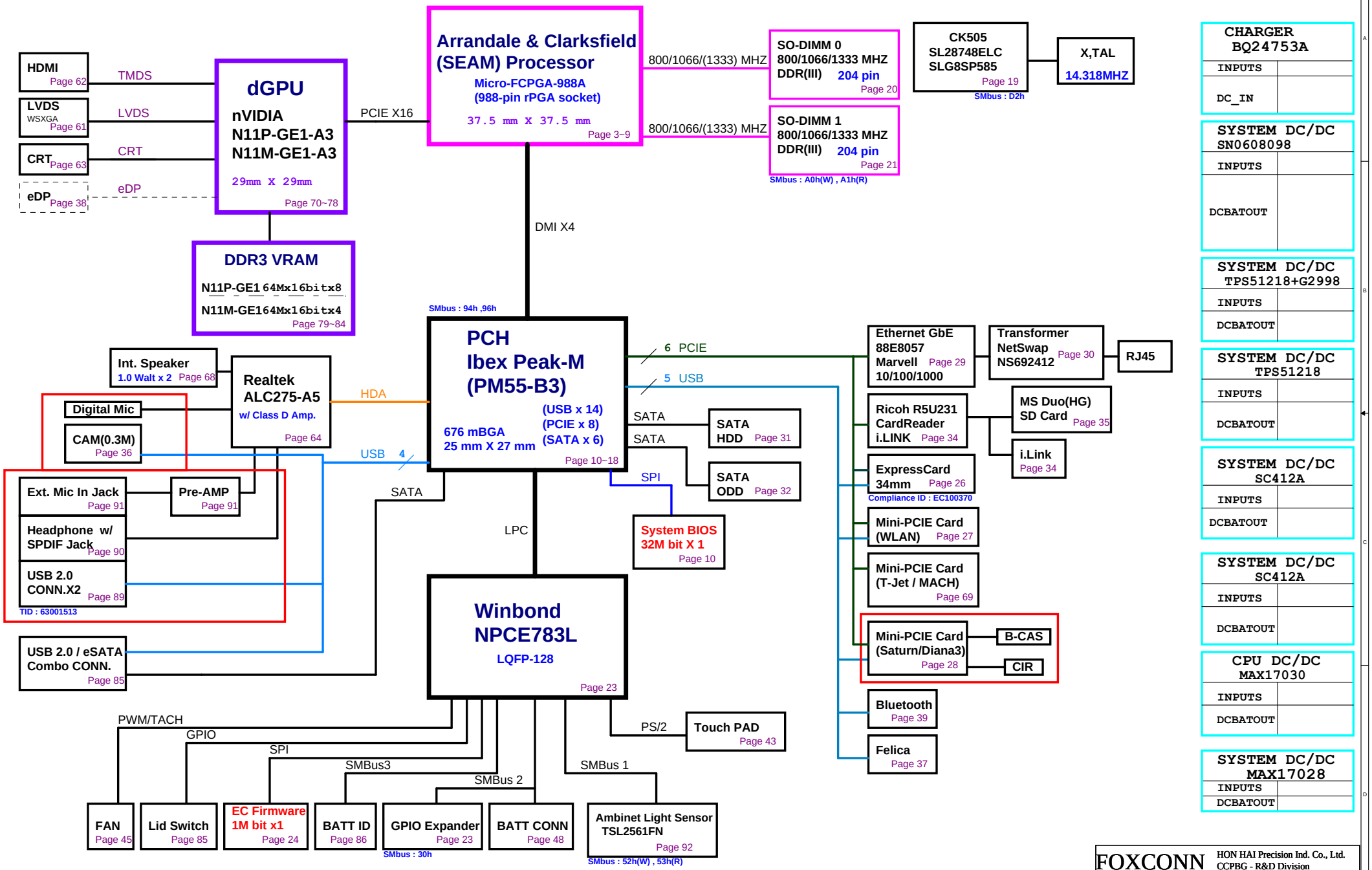
M931 (IRX-5300) Calpella Platform+ nVIDIA N11P/M Discrete Graphic



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	

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Title: Block Diagram

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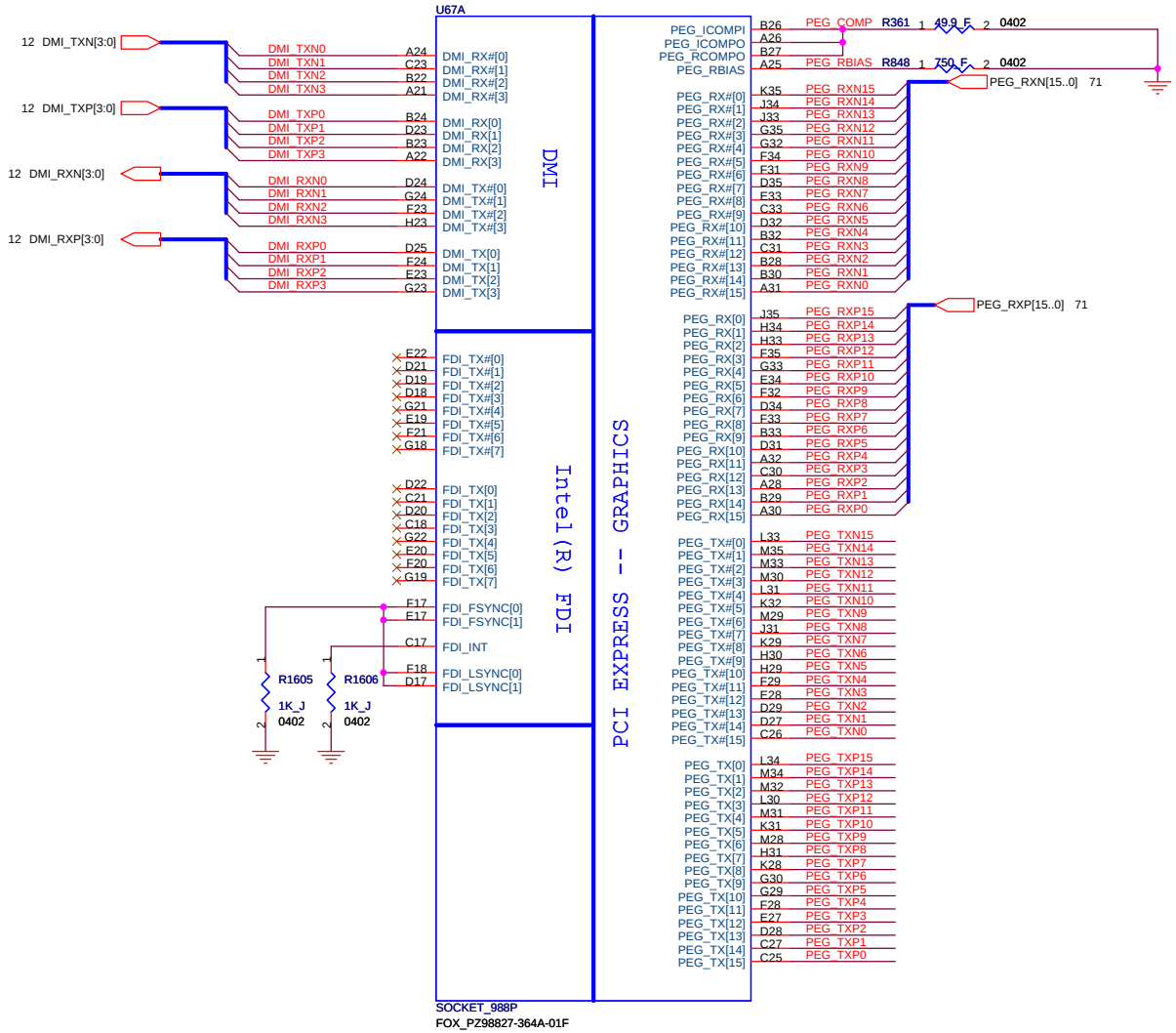

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division		
Title	ARD&CFD (DMI,PEG,FDI)		
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Layout Note:
In order to minimize resistance, use thick traces to route all COMP signals, use 10-mils (0.254-mm) wide trace for routing less than 500 mils (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
CLOCKS
DDR3 MISC
JTAG & BPM
PWR MANAGEMENT

COMP3 AT23 · COMP2 AT24 · COMP1 G16 · COMP0 AT26 · SKTOCC# AH24 · CATERR# AK14 · PECI AT15 · PROCHOT# AN26 · THERMTRIP# AK15 · RESET_OBS# AP26 · PM_SYNC AL15 · VCCPWRGOOD_1 AN14 · VCCPWRGOOD_0 AN27 · SM_DRAMPWROK AK13 · VTTPWRGOOD AM15 · TAPPWRGOOD AM26 · RSTIN# AL14

R849 20_F 0402 COMP3
R850 20_F 0402 COMP2
R851 49.9_F 0402 COMP1
R852 49.9_F 0402 COMP0
20MIL TP60 SKTOCC#
H_CATERR# → CATERR#
15 H_PECI → PECI
54 PROCHOT# → PROCHOT#
15,23 PM_THRMTRIP# → THERMTRIP#
H_CPURST#_R → RESET_OBS#
12 H_PM_SYNC → PM_SYNC
15 H_CPUPWRGD → VCCPWRGOOD_0
12 PM_DRAM_PWRGD → SM_DRAMPWROK
VTTPWRGOOD → VTTPWRGOOD
20MIL TP94 TAPPWRGOOD → TAPPWRGOOD
14,23,25,26 BUF_PLT_RST# → R925 1.5K_F 0402 → BUF_PLT_RST#_R → RSTIN#
R926 750_F 0402

+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

BCLK BCLK# ← A16 AUB_BCLK, B16 AUB_BCLK#
RP81 0 0404_4P2R
CLK_PCH_CPU_CLK# 15
CLK_PCH_CPU_CLK 15
CLK_CPU_BCLK 19
CLK_CPU_BCLK# 19
RP82 NC_0 0404_4P2R
BCLK_ITP BCLK_ITP# ← AR30 BCLK_ITP, AT30 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

SM_DRAMRST# ← F6 DDR3_DRAMRST#_Q
SM_RCOMP[0] SM_RCOMP[1] SM_RCOMP[2] ← AL1, AM1, AN1
R854 100_F 0402
R853 24.9_F 0402
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 XDP_PRDY#, AP27 XDP_PREQ# → TP75 20MIL
TCK TMS TRST# ← AN28 XDP_TCLK, AP28 XDP_TMS, AT27 XDP_TRST#
TDI TDO TDI_M TDO_M ← AT29 XDP_TDI_R, AR27 XDP_TDO_R, AR29 XDP_TDI_M, AP29 XDP_TDO_M
+3VRUN
R1292 NC_51_J 0402
DBR# ← AN25 XDP_DBRESET#
BPM#[0] … BPM#[7] ← AJ22 … AH23
TP64 … TP71 20MIL

R1456 NC_0_J 0402
Q73 2N7002EPT
+1_5VSUS
R5925 1K_J 0402
DDR3_DRAMRST# Q → DDR3_DRAMRST# → DDR3_DRAMRST# 20,21
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
R258 68_J 0402
+3VRUN
R262 4.7K_J 0402
PROCHOT#
Q14A
A0205
Q14B
2N7002DW null
23 OVT_EC#

+1_1V_VTT
XDP_TDO_R R1290 51_J 0402
XDP_TMS R1258 51_J 0402
XDP_TDI_R R1259 51_J 0402
XDP_PREQ# R1260 51_J 0402
XDP_TCLK R1261 51_J 0402
XDP_TRST# R1262 51_J 0402
XDP_TDO_M
R969 0_J 0402
XDP_TDI_M
JTAG Mapping -Scan Chain (Default)

+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.

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Title: ARD&CFD (CLK,MISC,JTAG)
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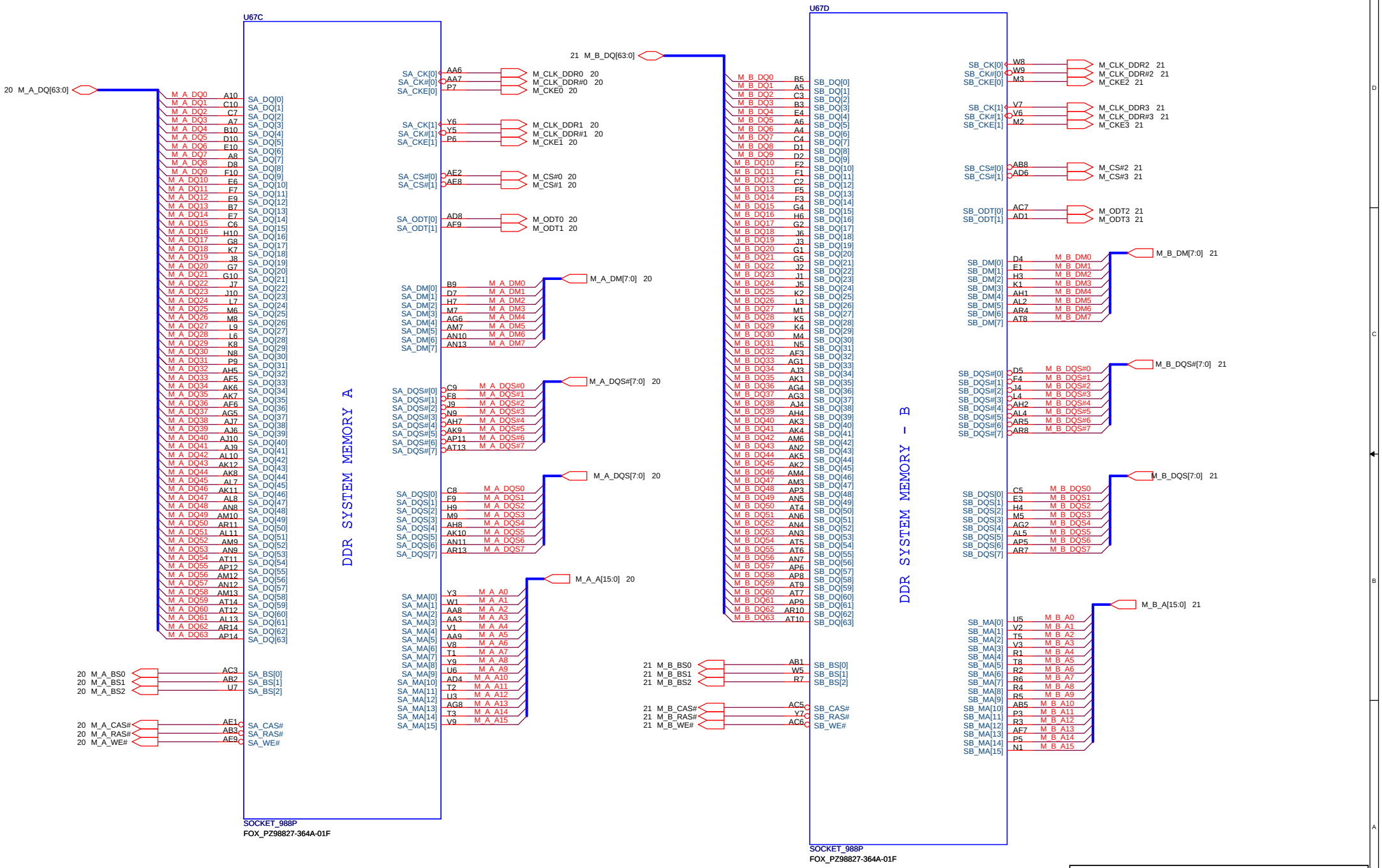

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division		
Title	ARD&CFD (DDR3)		
Size A3	Document Number M931 (MBX-215)		Rev SA
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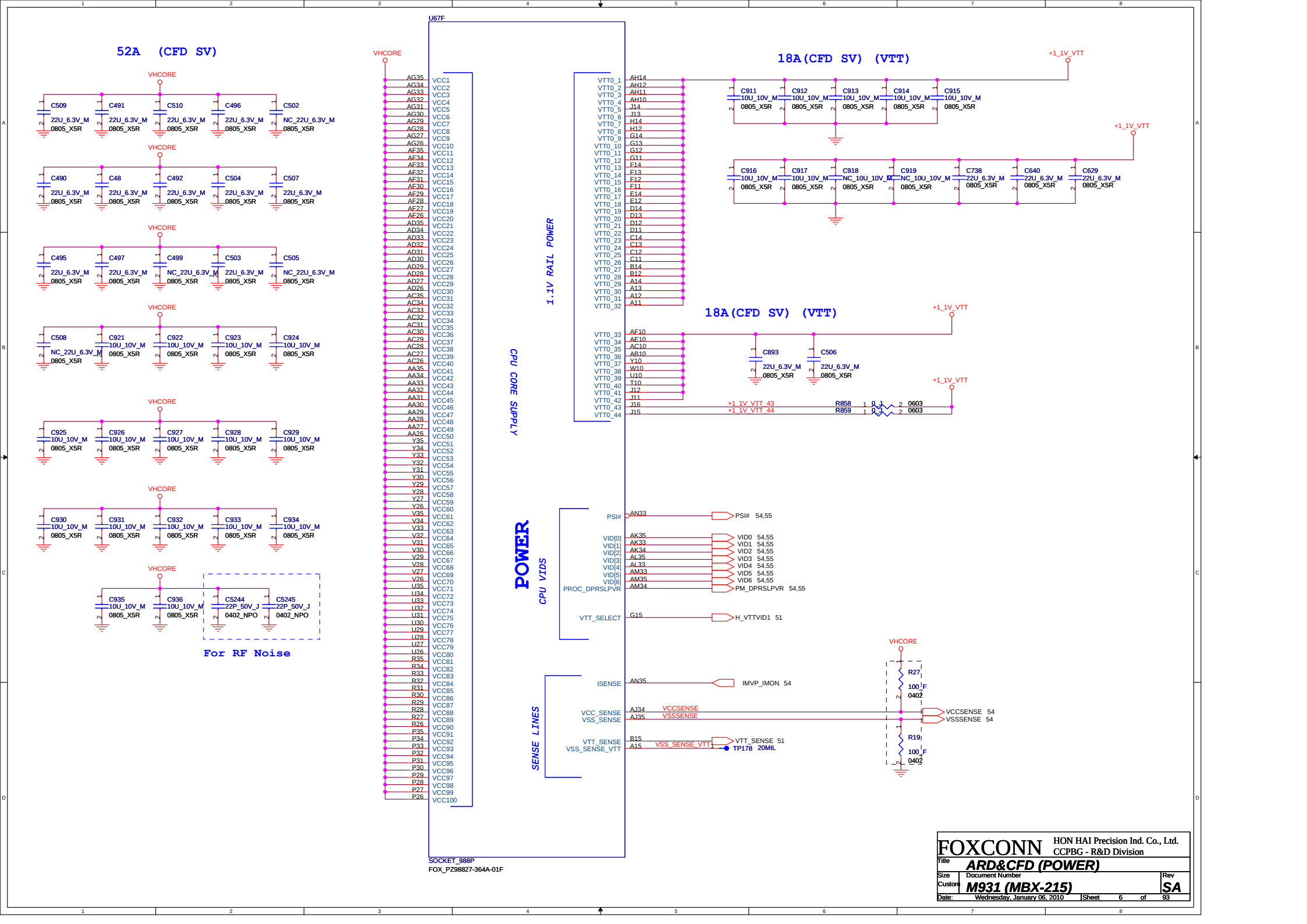
52A (CFD SV)
VHCORE
C509 C491 C510 C496 C502
22U_6.3V_M 0805_X5R
NC_22U_6.3V_M 0805_X5R
C490 C48 C492 C504 C507
22U_6.3V_M 0805_X5R
C495 C497 C499 C503 C505
NC_22U_6.3V_M 0805_X5R
C508 C921 C922 C923 C924
10U_10V_M 0805_X5R
C925 C926 C927 C928 C929
C930 C931 C932 C933 C934
C935 C936 C5244 C5245
22P_50V_J 0402_NPO
For RF Noise
U67F
SOCKET_988P
FOX_PZ98827-364A-01F
VCC1 VCC2 VCC3 VCC4 VCC5 VCC6 VCC7 VCC8 VCC9 VCC10 VCC11 VCC12 VCC13 VCC14 VCC15 VCC16 VCC17 VCC18 VCC19 VCC20 VCC21 VCC22 VCC23 VCC24 VCC25 VCC26 VCC27 VCC28 VCC29 VCC30 VCC31 VCC32 VCC33 VCC34 VCC35 VCC36 VCC37 VCC38 VCC39 VCC40 VCC41 VCC42 VCC43 VCC44 VCC45 VCC46 VCC47 VCC48 VCC49 VCC50 VCC51 VCC52 VCC53 VCC54 VCC55 VCC56 VCC57 VCC58 VCC59 VCC60 VCC61 VCC62 VCC63 VCC64 VCC65 VCC66 VCC67 VCC68 VCC69 VCC70 VCC71 VCC72 VCC73 VCC74 VCC75 VCC76 VCC77 VCC78 VCC79 VCC80 VCC81 VCC82 VCC83 VCC84 VCC85 VCC86 VCC87 VCC88 VCC89 VCC90 VCC91 VCC92 VCC93 VCC94 VCC95 VCC96 VCC97 VCC98 VCC99 VCC100
CPU CORE SUPPLY
1.1V RAIL POWER
VTT0_1 VTT0_2 VTT0_3 VTT0_4 VTT0_5 VTT0_6 VTT0_7 VTT0_8 VTT0_9 VTT0_10 VTT0_11 VTT0_12 VTT0_13 VTT0_14 VTT0_15 VTT0_16 VTT0_17 VTT0_18 VTT0_19 VTT0_20 VTT0_21 VTT0_22 VTT0_23 VTT0_24 VTT0_25 VTT0_26 VTT0_27 VTT0_28 VTT0_29 VTT0_30 VTT0_31 VTT0_32
18A(CFD SV) (VTT)
+1_1V_VTT
C911 C912 C913 C914 C915
C916 C917 C918 C919 C738 C640 C629
NC_10U_10V_M
VTT0_33 VTT0_34 VTT0_35 VTT0_36 VTT0_37 VTT0_38 VTT0_39 VTT0_40 VTT0_41 VTT0_42 VTT0_43 VTT0_44
C893 C506
+1_1V_VTT_43
+1_1V_VTT_44
R858 R859 0603
POWER
CPU VIDS
PSI# VID[0] VID[1] VID[2] VID[3] VID[4] VID[5] VID[6] PROC_DPRSLPVR VTT_SELECT
PSI# 54,55
VID0 54,55
VID1 54,55
VID2 54,55
VID3 54,55
VID4 54,55
VID5 54,55
VID6 54,55
PM_DPRSLPVR 54,55
H_VTTVID1 51
SENSE LINES
ISENSE VCC_SENSE VSS_SENSE VTT_SENSE VSS_SENSE_VTT
IMVP_IMON 54
VCCSENSE
VSSSENSE
VCCSENSE 54
VSSSENSE 54
VTT_SENSE 51
VSS_SENSE_VTT
TP178 20MIL
R27 R19 100_F 0402
FOXCONN
HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division
Title ARD&CFD (POWER)
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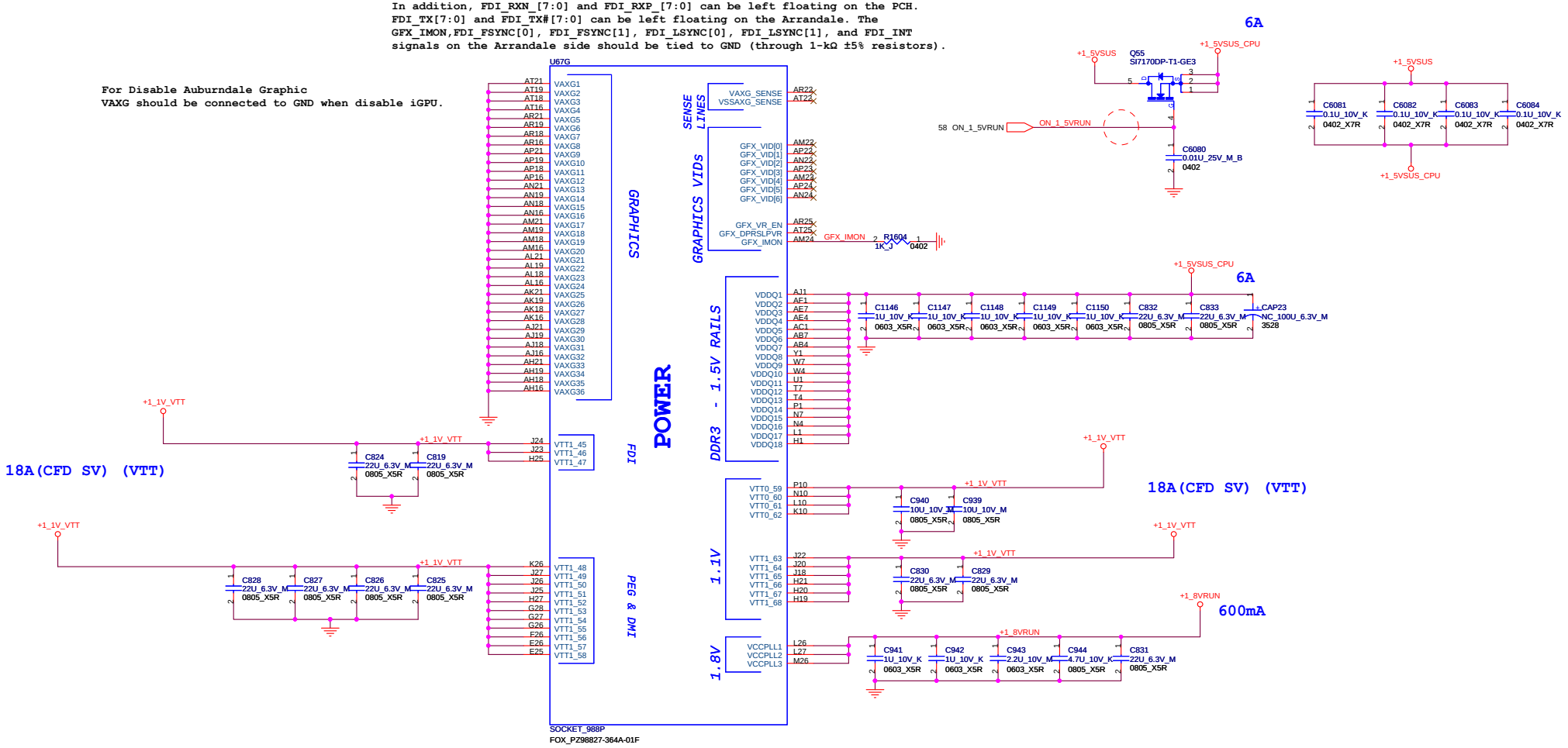
For Disable Auburndale Graphic
VAXG_SENSE and VSSAXG_SENSE on Arrandale can be left as no connect.
For Disable Auburndale Graphic
In addition, FDI_RXN_[7:0] and FDI_RXP_[7:0] can be left floating on the PCH.
FDI_TX[7:0] and FDI_TX#[7:0] can be left floating on the Arrandale. The
GFX_IMON,FDI_FSYNC[0], 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)	
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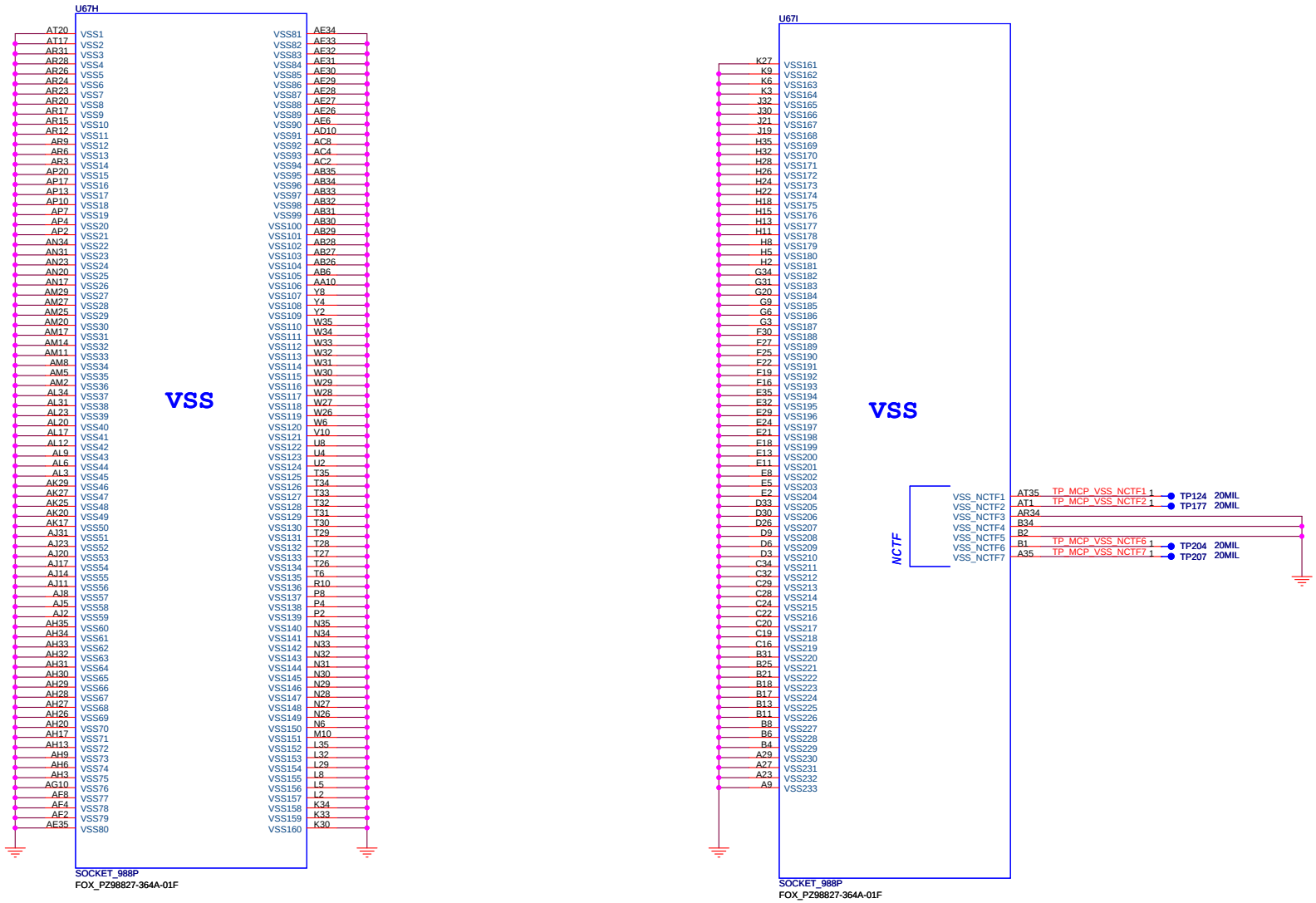

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	ARD&CFD (GND)	
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PCI Express Configuration Select
CFG0 1 : Single PEG
0 : Bifurcation enable

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
J17
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
RSVD9
RSVD10
20MIL TP300 G25 RSVD11
20MIL TP302 G17 RSVD12
20MIL TP303 E31 RSVD13
20MIL TP304 E30 RSVD14

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

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

RESERVED

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

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

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

SOCKET_988P
FOX_PZ98827-364A-01F

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)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 9 of 93	

The traces inside this block should be wider.

RTCRST#
VccRTC
18~25mS

[HDA_DOCK_EN#/GPIO33]
Low (0) - Flash Descriptor Security will be overridden. Also, when this signals is sampled on the rising edge of PWROK then it will also disable Intel ME and its features.
High (1) - Security measure defined in the Flash Descriptor will be enabled

Stuff for No-reboot
Low=Default
High=No-reboot

When int. PLL VR is enabled, HDA_SYNC is VCCVRM 1.5V/1.8V strap (default: L for 1.8V)

For MP, Dummy CN18, C815, U43 ,R542, Stuff R1551

EXTERNAL SPI0 ROM INTERFACE(FOR U98)

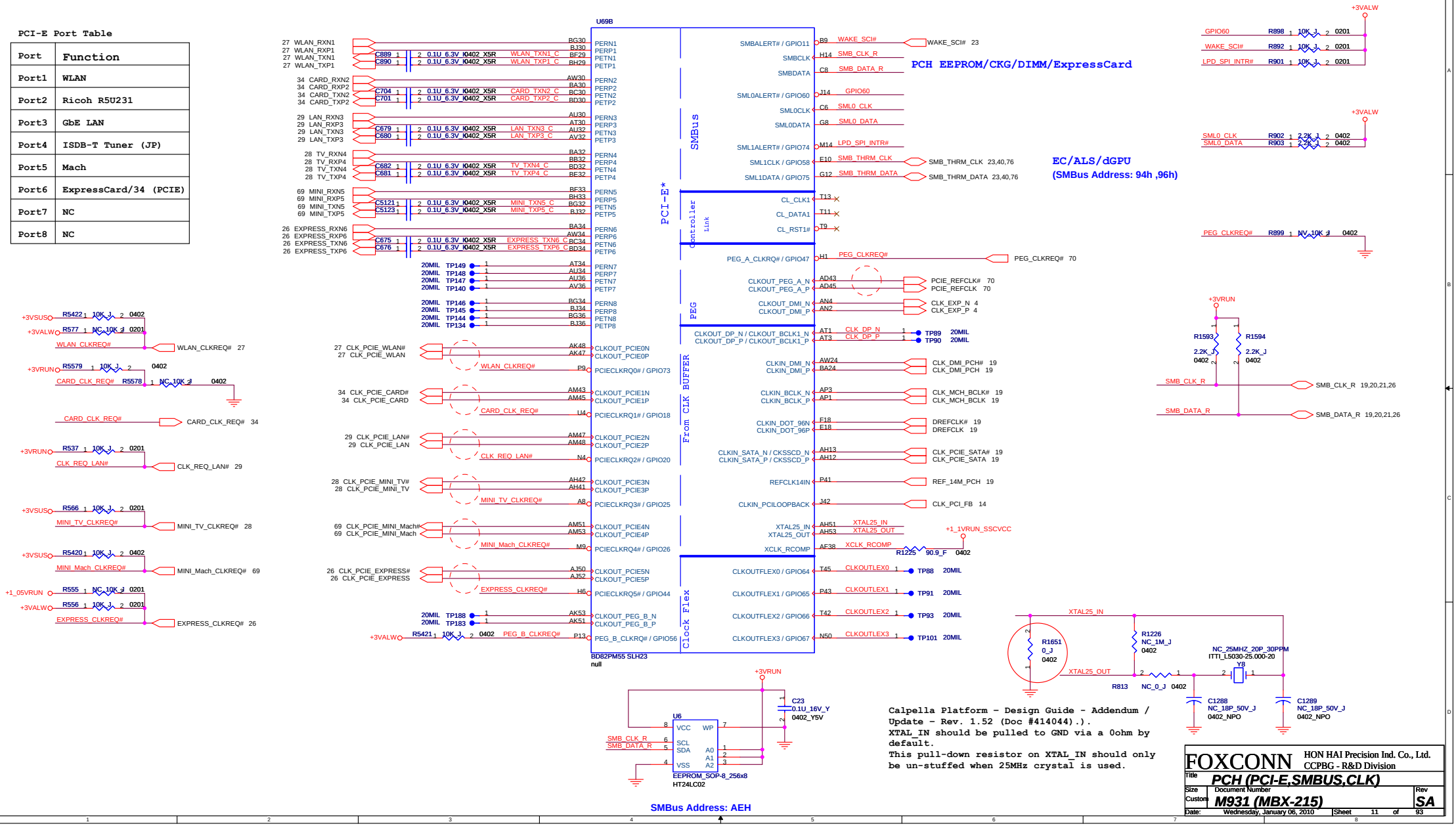
U98 SPI ROM-0

SPI ROM (BIOS)(32M-Bit)

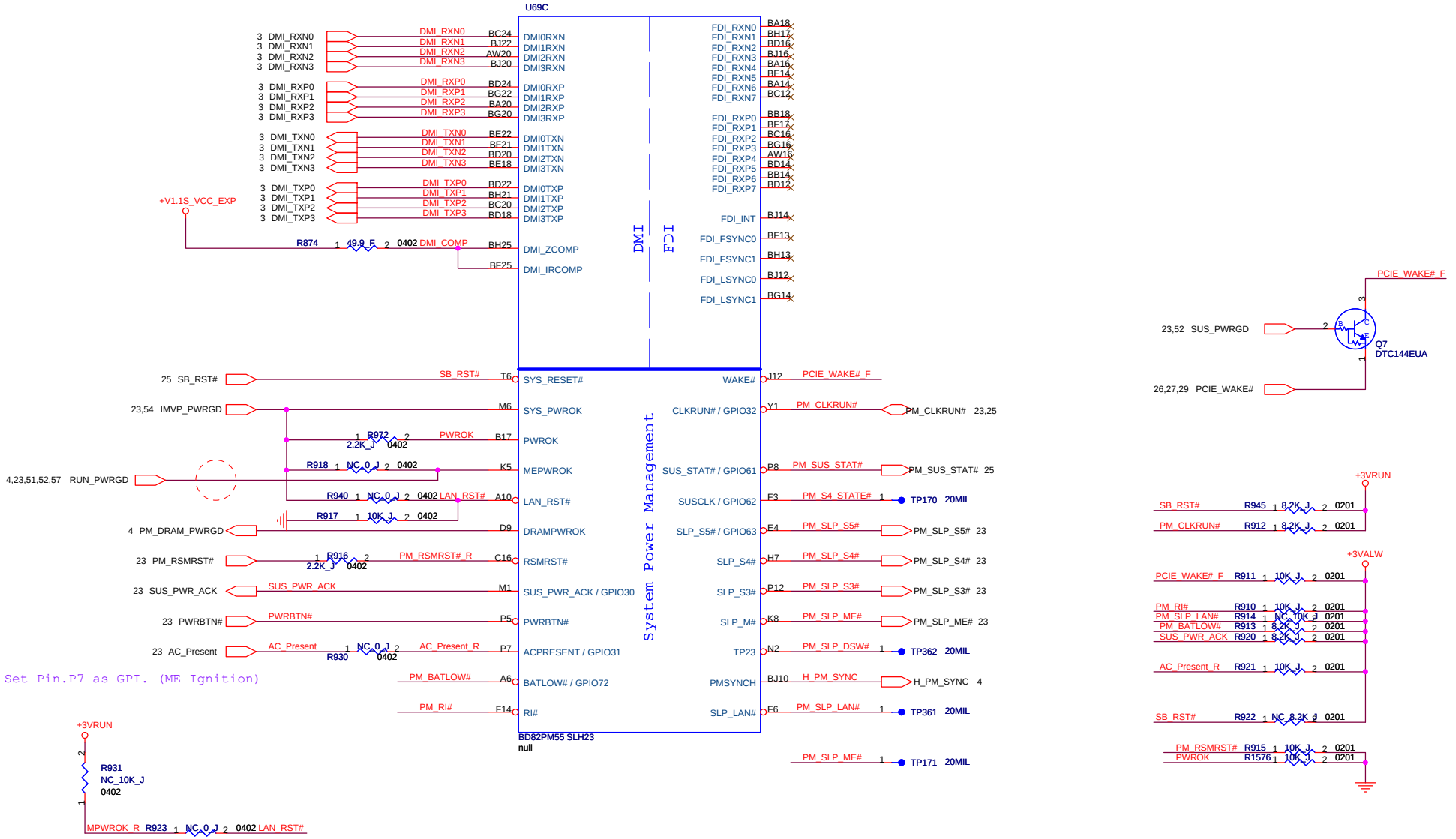
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division		
Title	PCH (HDA,JTAG,SAT)		
Size: Custom	Document Number: M931 (MBX-215)		Rev: SA
Date: Wednesday, January 06, 2010	Sheet 10 of 93		

PCI-E Port Table

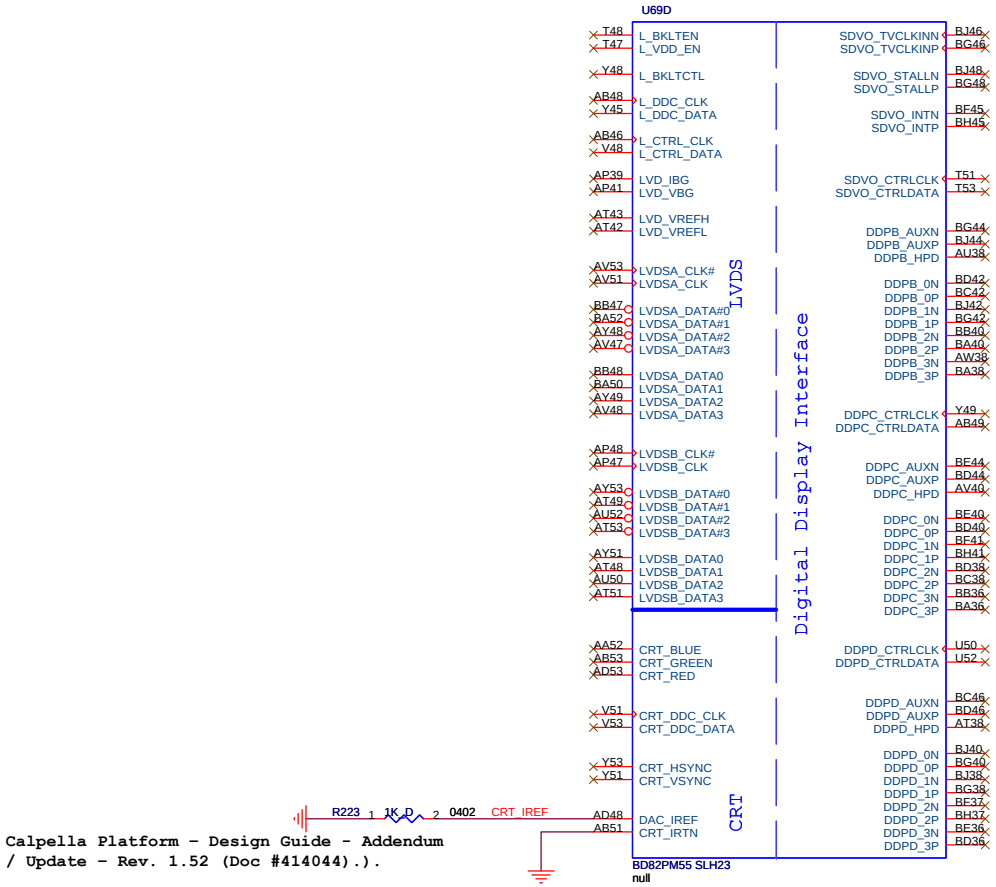
Port	Function
Port1	WLAN
Port2	Ricoh R5U231
Port3	GbE LAN
Port4	ISDB-T Tuner (JP)
Port5	Mach
Port6	ExpressCard/34 (PCIE)
Port7	NC
Port8	NC



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).

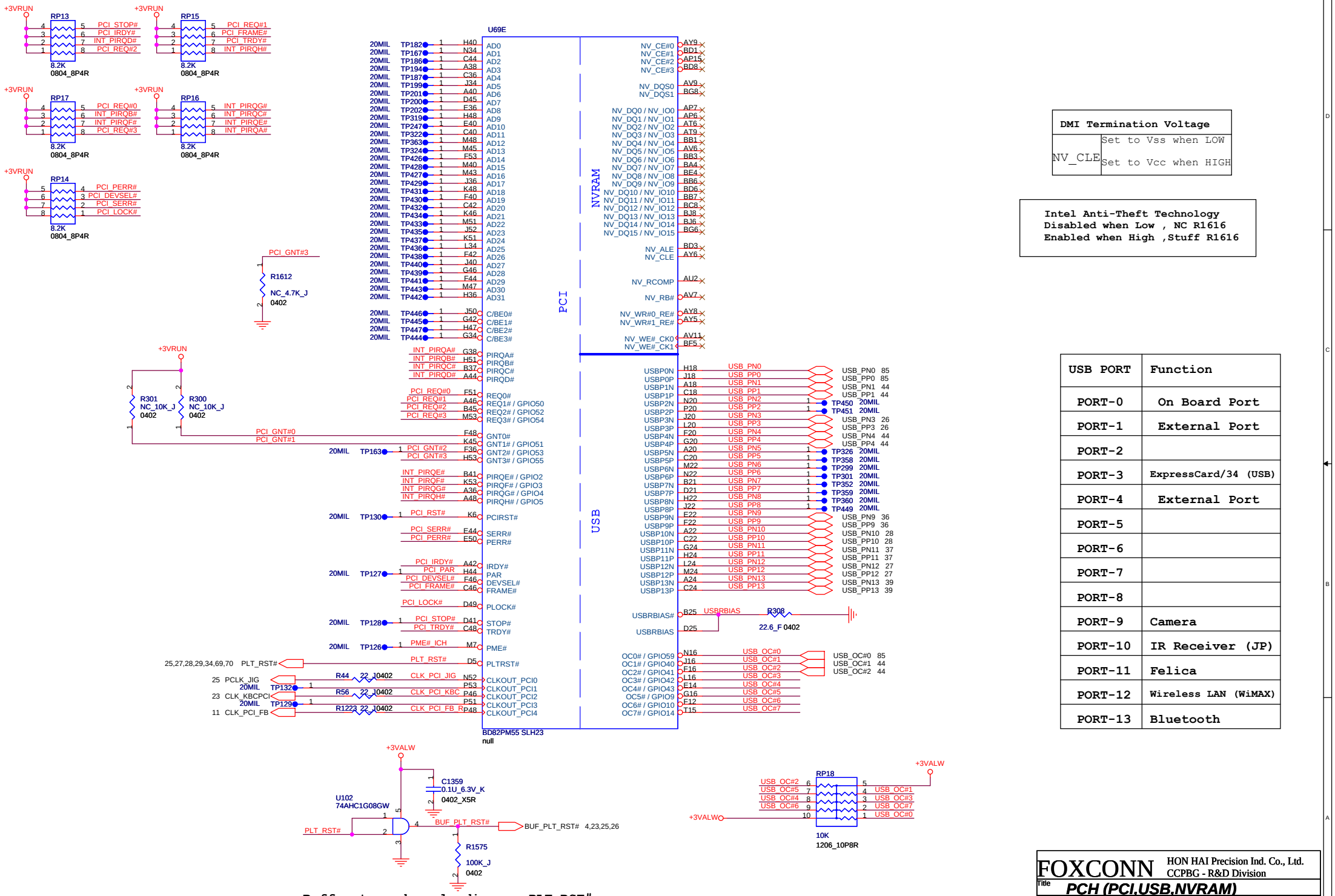


FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	PCH (DMI,FDI,GPIO)	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 12 of 93	



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

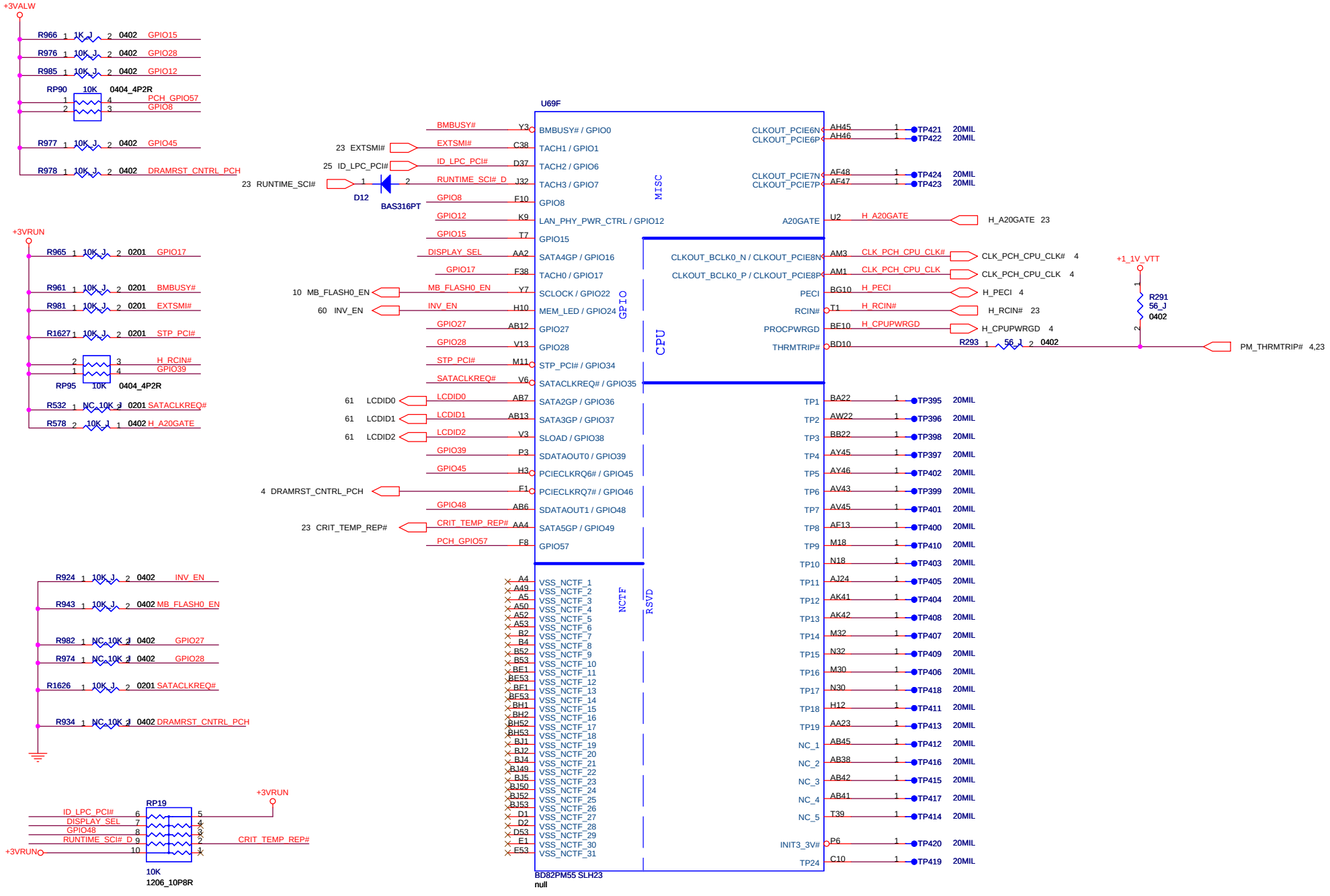
Buffer to reduce loading on PLT_RST#.

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

Title: PCH (PCI,USB,NVRAM)

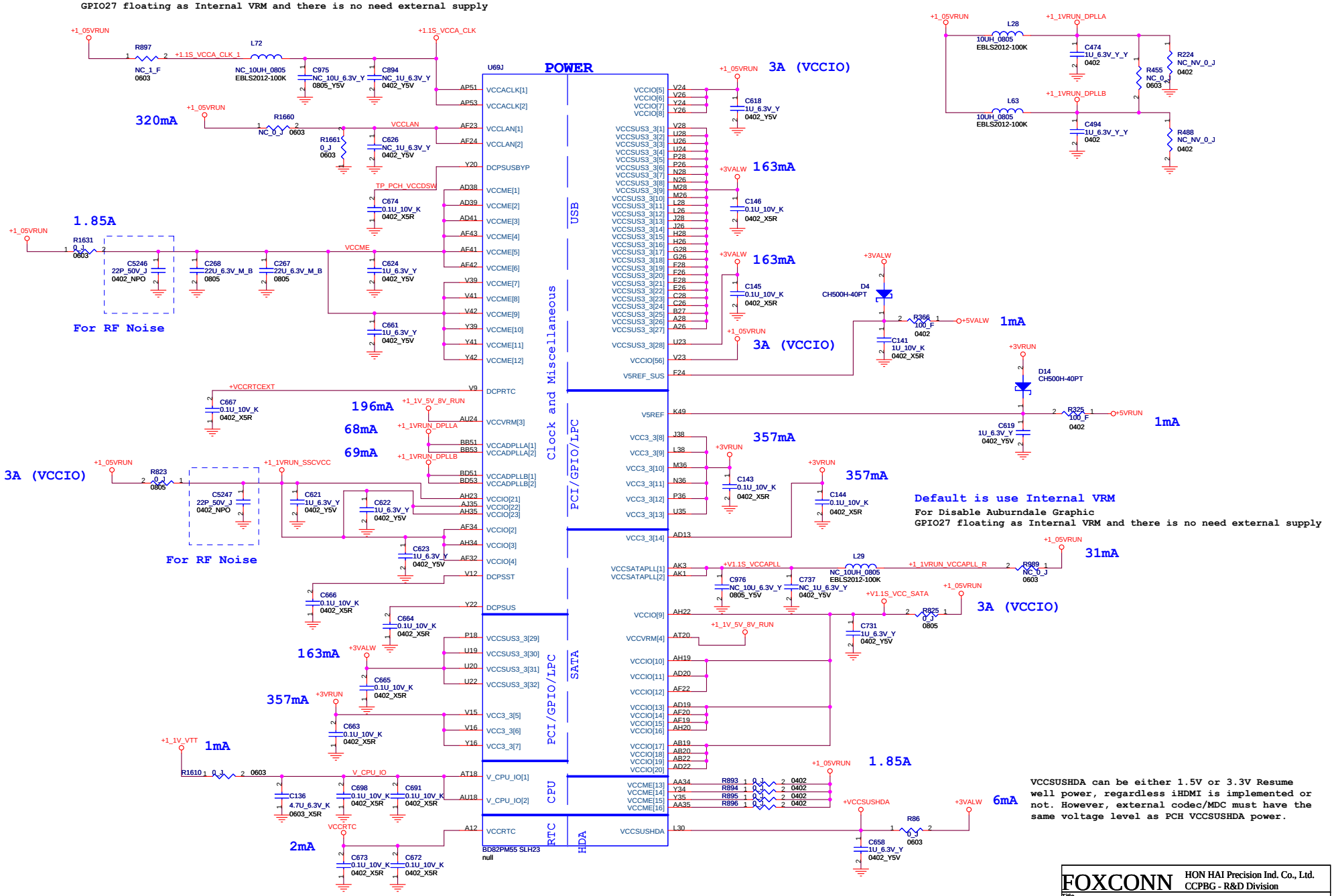
Size: A3 | Document Number: M931 (MBX-215) | Rev: SA

Date: Wednesday, January 06, 2010 | Sheet 14 of 93

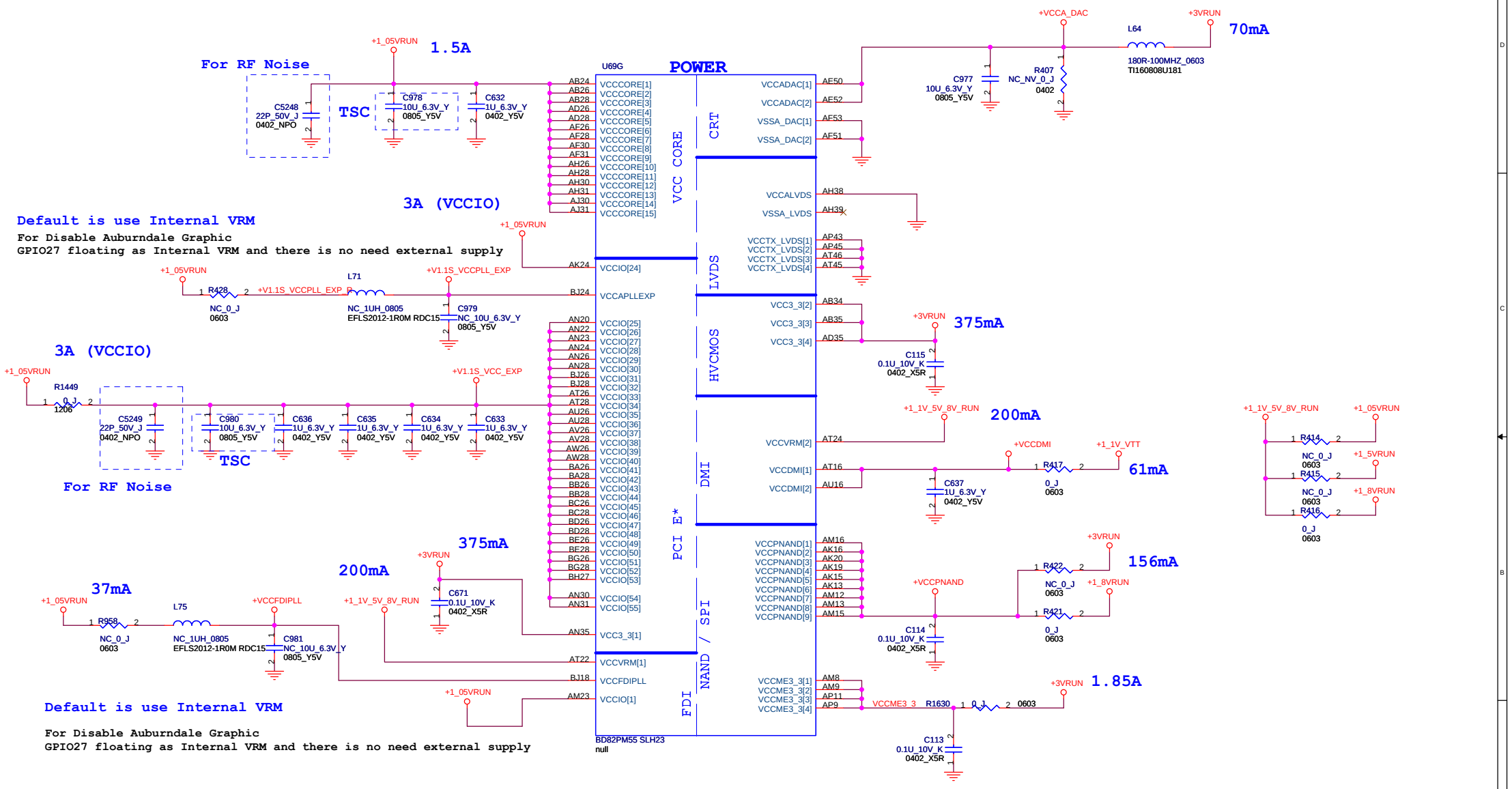


FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	PCH (GPIO,VSS_NCTF,RSVD)	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 15 of 93	

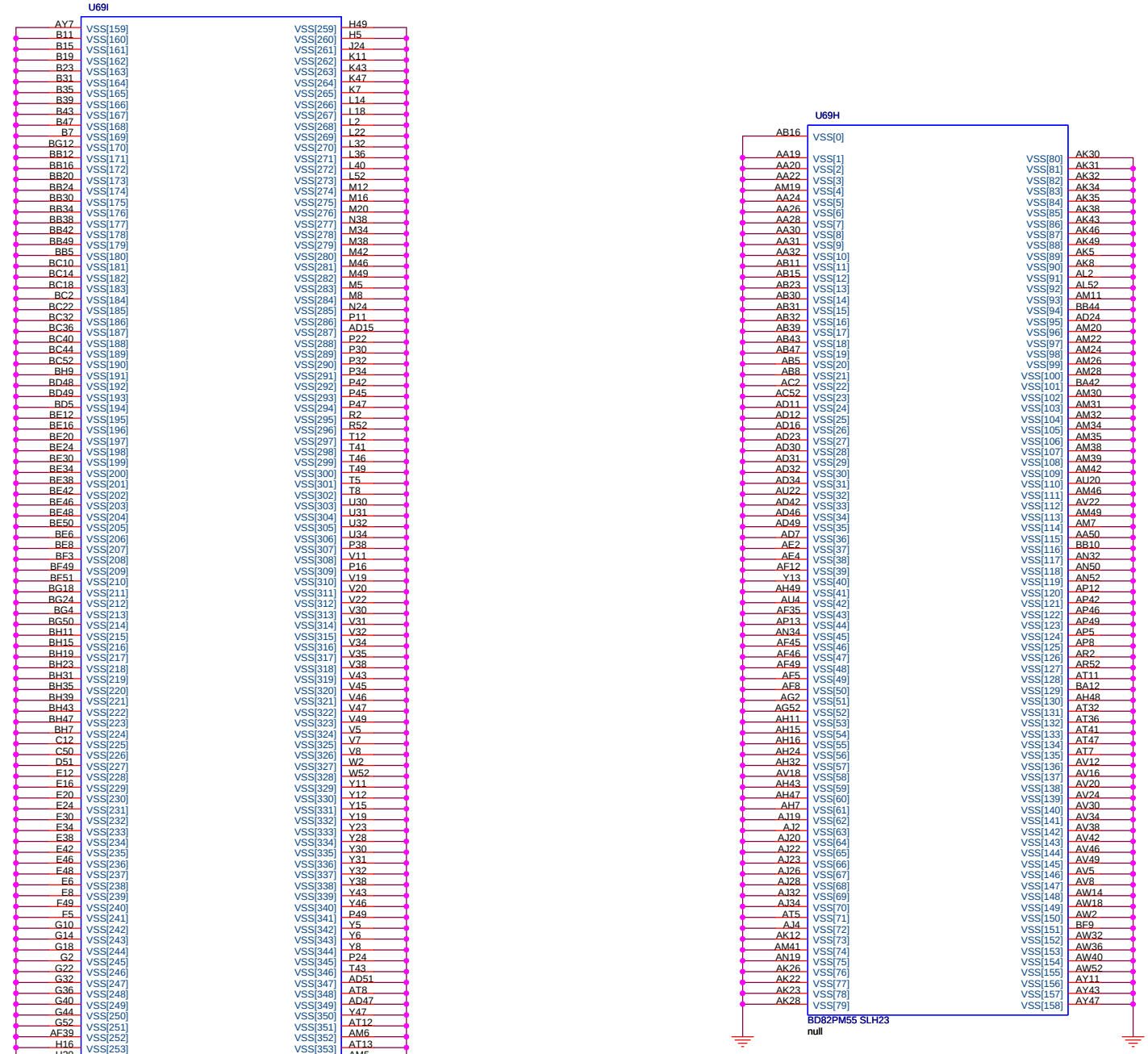
Default is use Internal VRM
For Disable Auburndale Graphic
GPIO27 floating as Internal VRM and there is no need external supply



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		

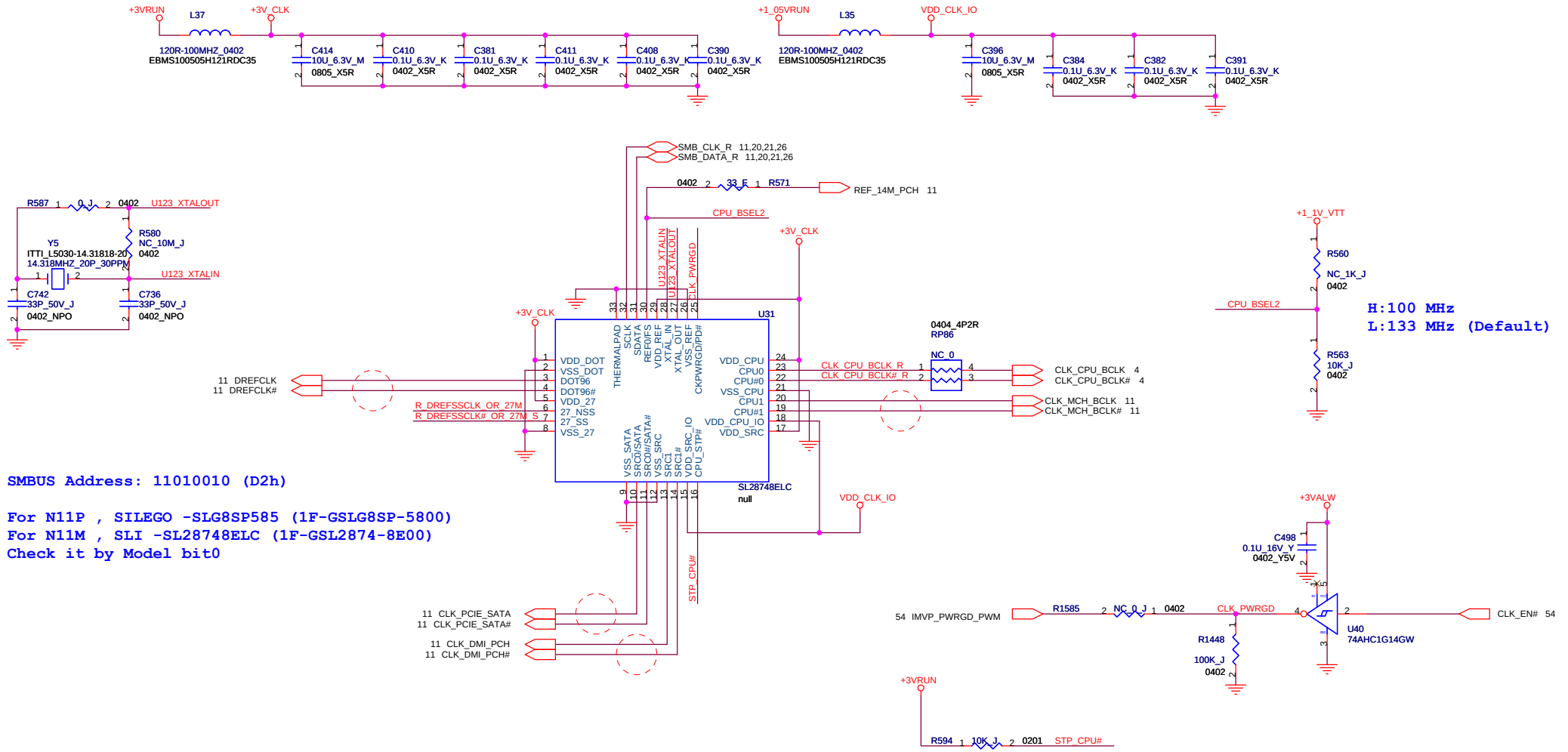


FOXCONN	HON HAI Precision Ind. Co., Ltd.
	CCPBG - R&D Division
Title	PCH (POWER) 2/2
Size: A3	Document Number: M931 (MBX-215)
Rev	SA
Date: Wednesday, January 06, 2010	Sheet 17 of 93



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	



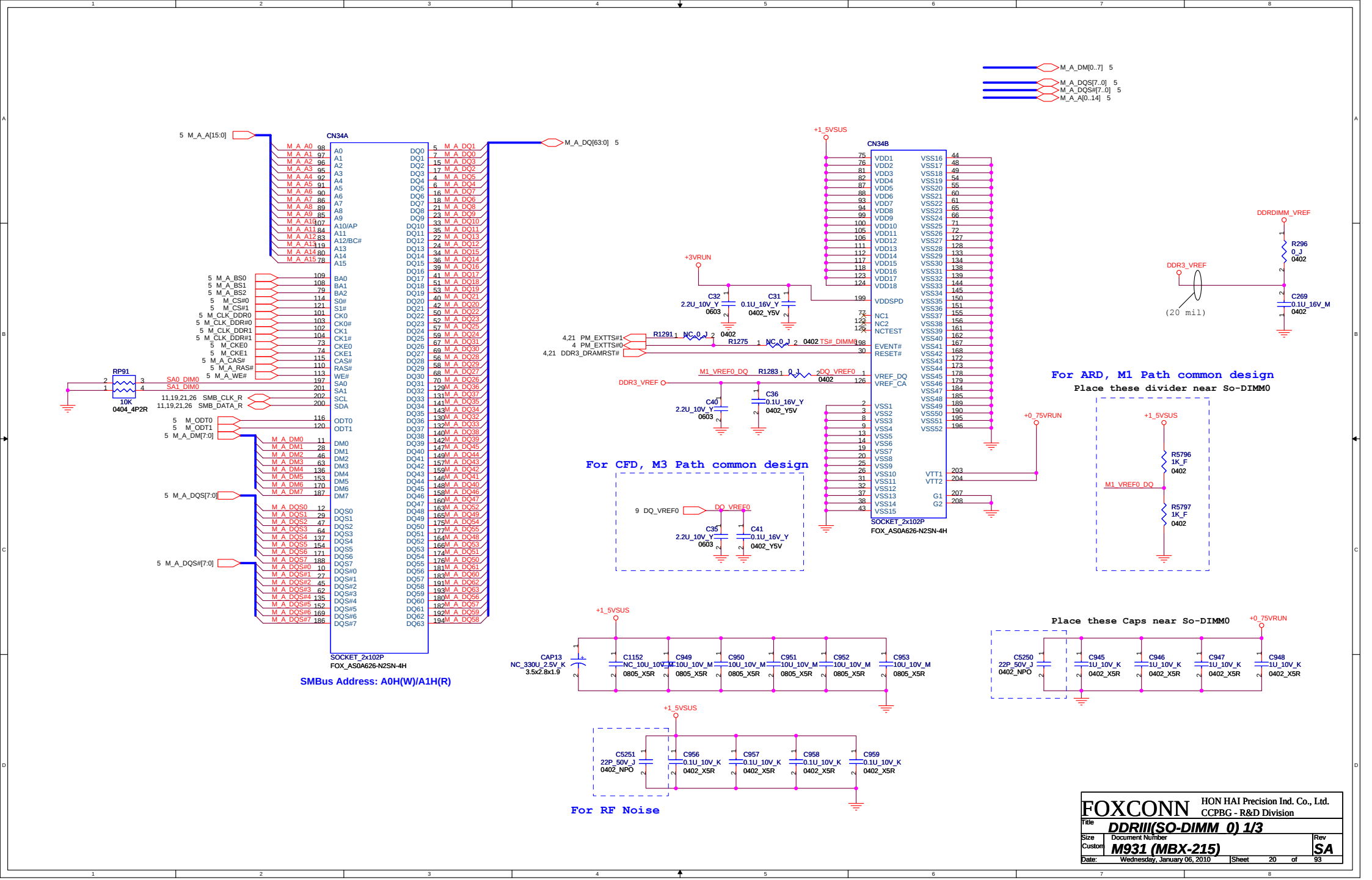
SMBUS Address: 11010010 (D2h)

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

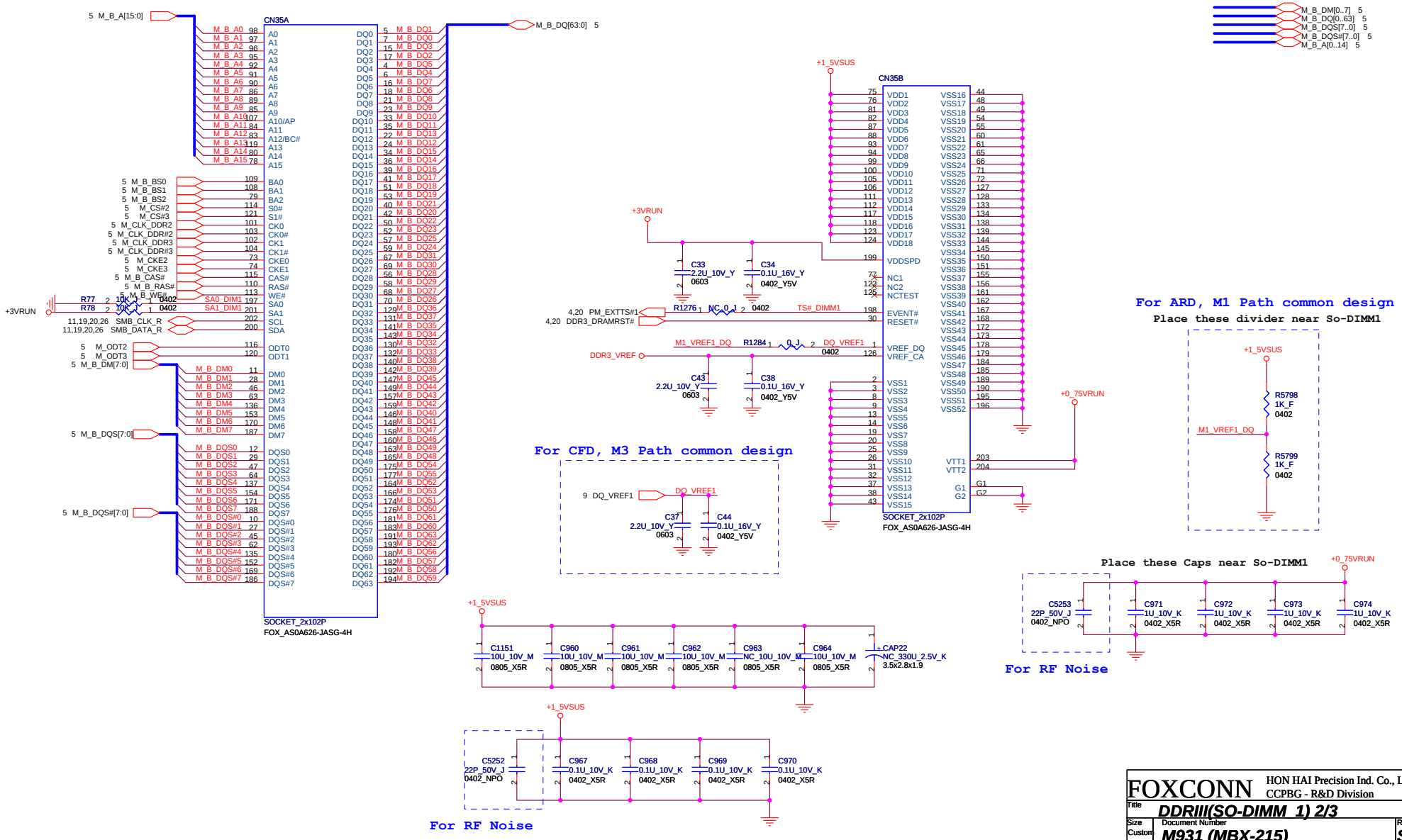
Frequency Select Pin (FS)

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 ARD, M1 Path common design
Place these divider near So-DIMM1
Place these Caps near So-DIMM1
For RF Noise
For RF Noise
FOXCONN
HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division
DDRIII(SO-DIMM_1) 2/3
M931 (MBX-215)
SA
Wednesday, January 06, 2010
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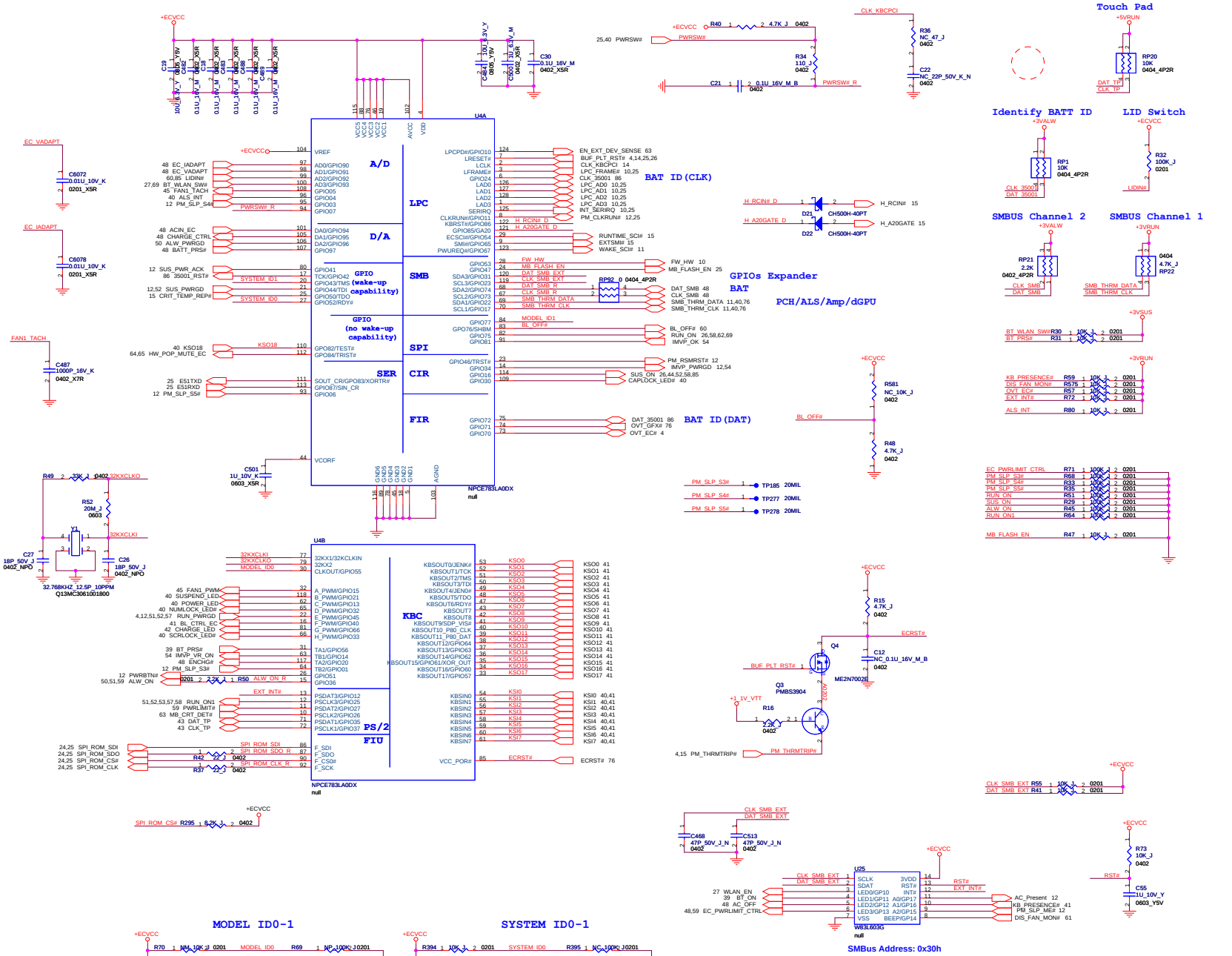
Delete M2 Path (Intel Revised)

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	

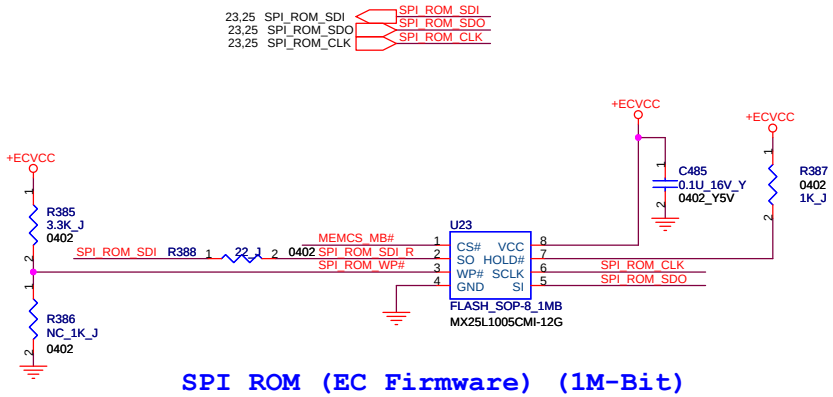


ID1 (Reserve)	ID0	SKU
0	0	SLI+N11P-GE1
0	1	SILEGO+N11M-GE1
1	0	
1	1	

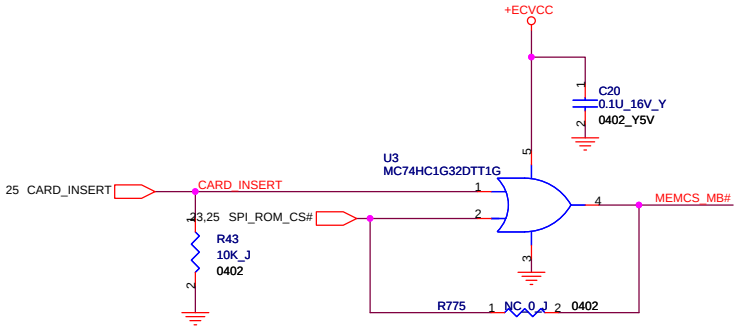
ID1	ID0	Model Name
0	0	M930
0	1	M931
1	0	Reserve
1	1	Reserve

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	

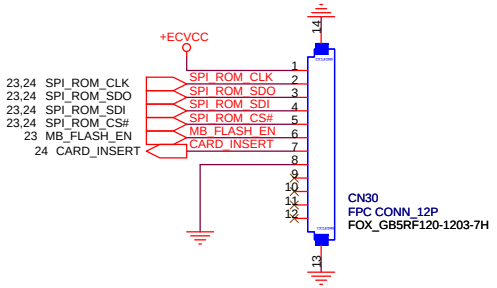


SPI ROM (EC Firmware) (1M-Bit)



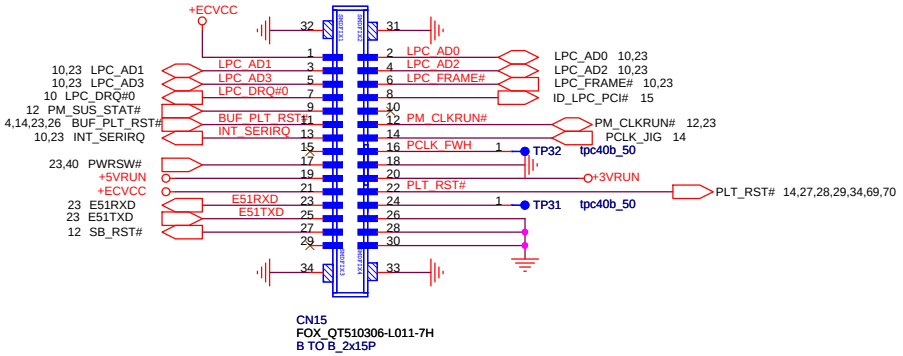
For MP, Dummy R43, C20 ,U3 ,CN30 and Stuff R775

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)

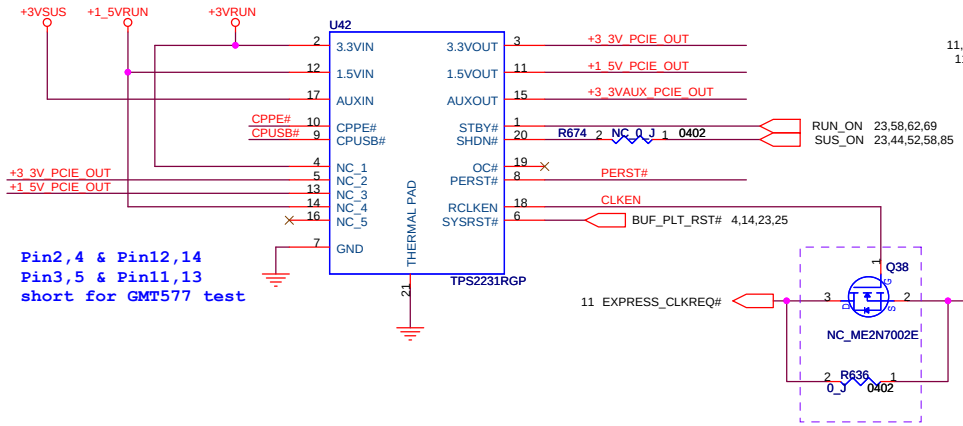
For MP, Dummy R43, C20 ,U3 ,CN30 and Stuff R775

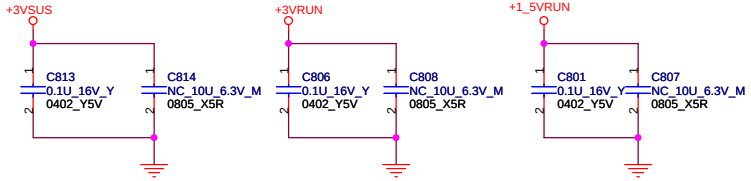


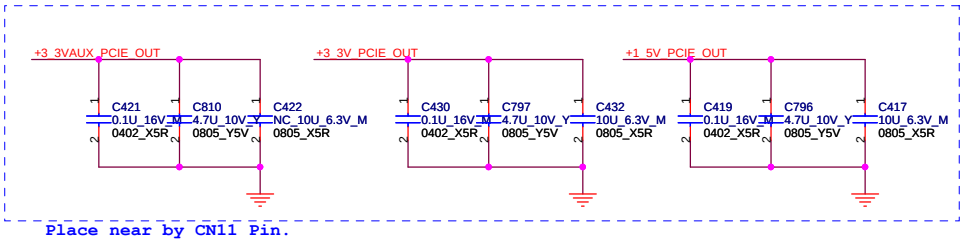
JIG-120

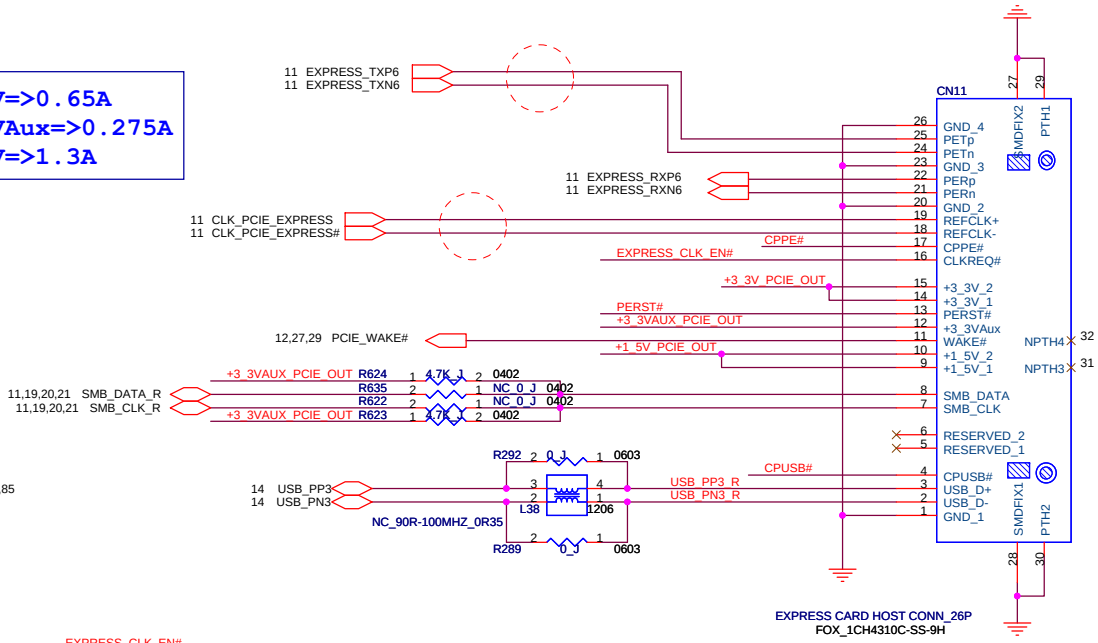
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title: *Debug Port*		
Size: A3	Document Number: *M931 (MBX-215)*	Rev: *SA*
Date: Wednesday, January 06, 2010	Sheet 25 of 93	

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

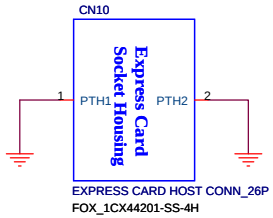






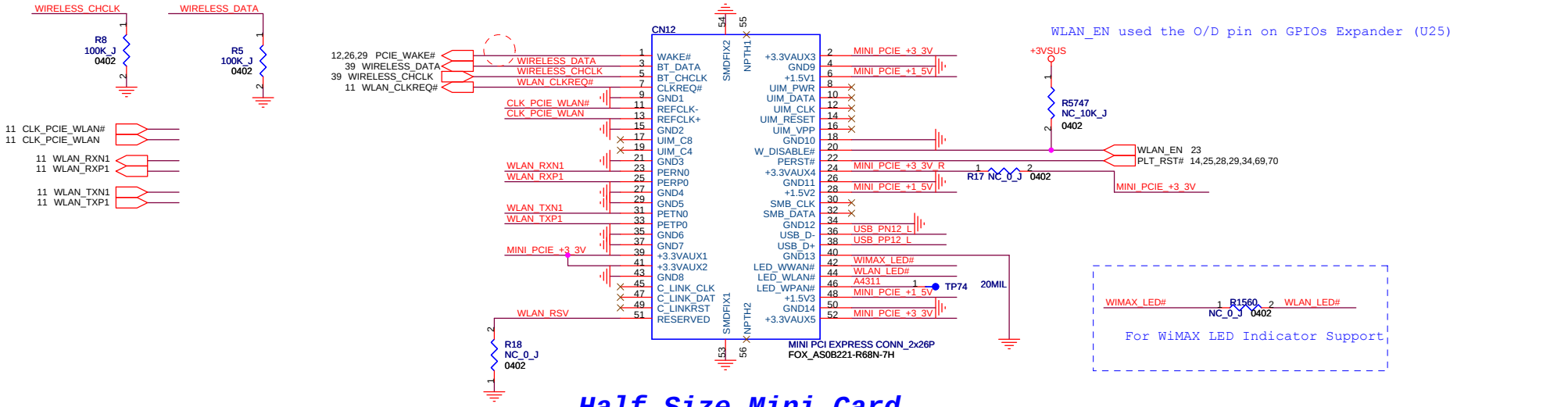


Express Card Slot.



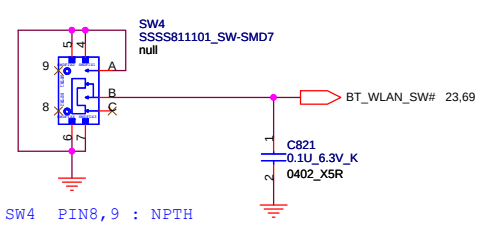
Express Card Housing.

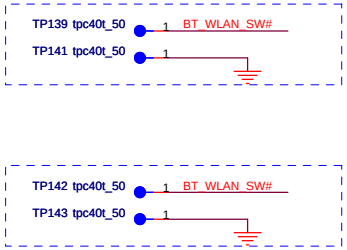
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	EXPRESS CARD	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 26 of 93	

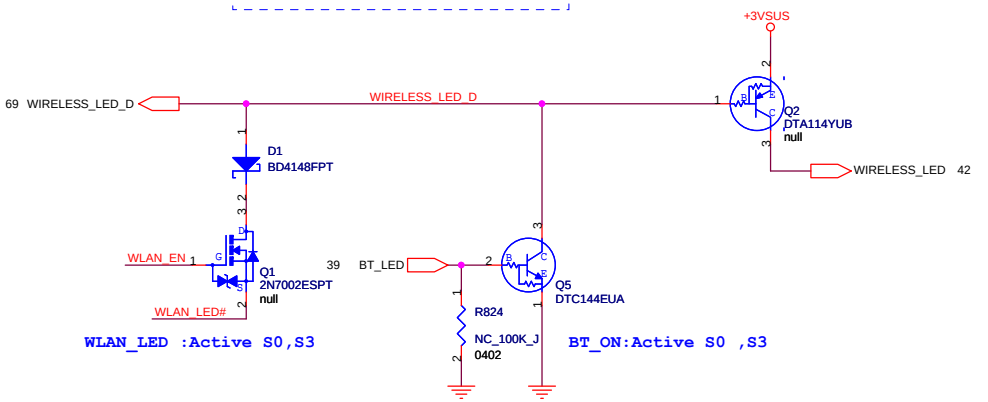


Half Size Mini Card

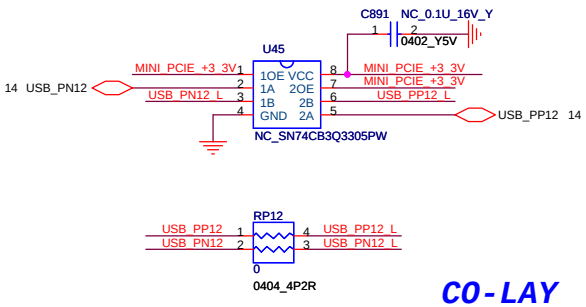
WLAN Switch







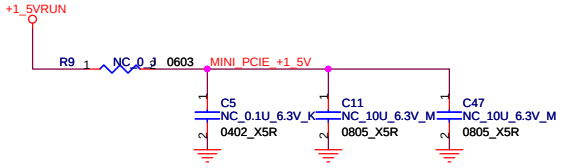
USB I/F for Wi-MAX(Kilmer Peak)



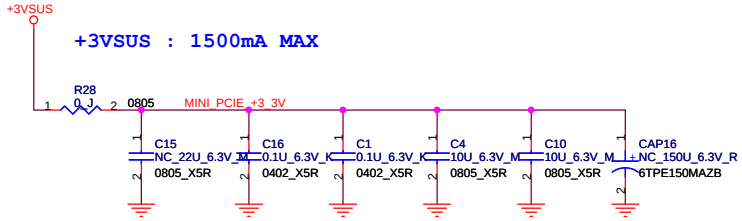
CO-LAY

+1_5VRUN : 330mA MAX

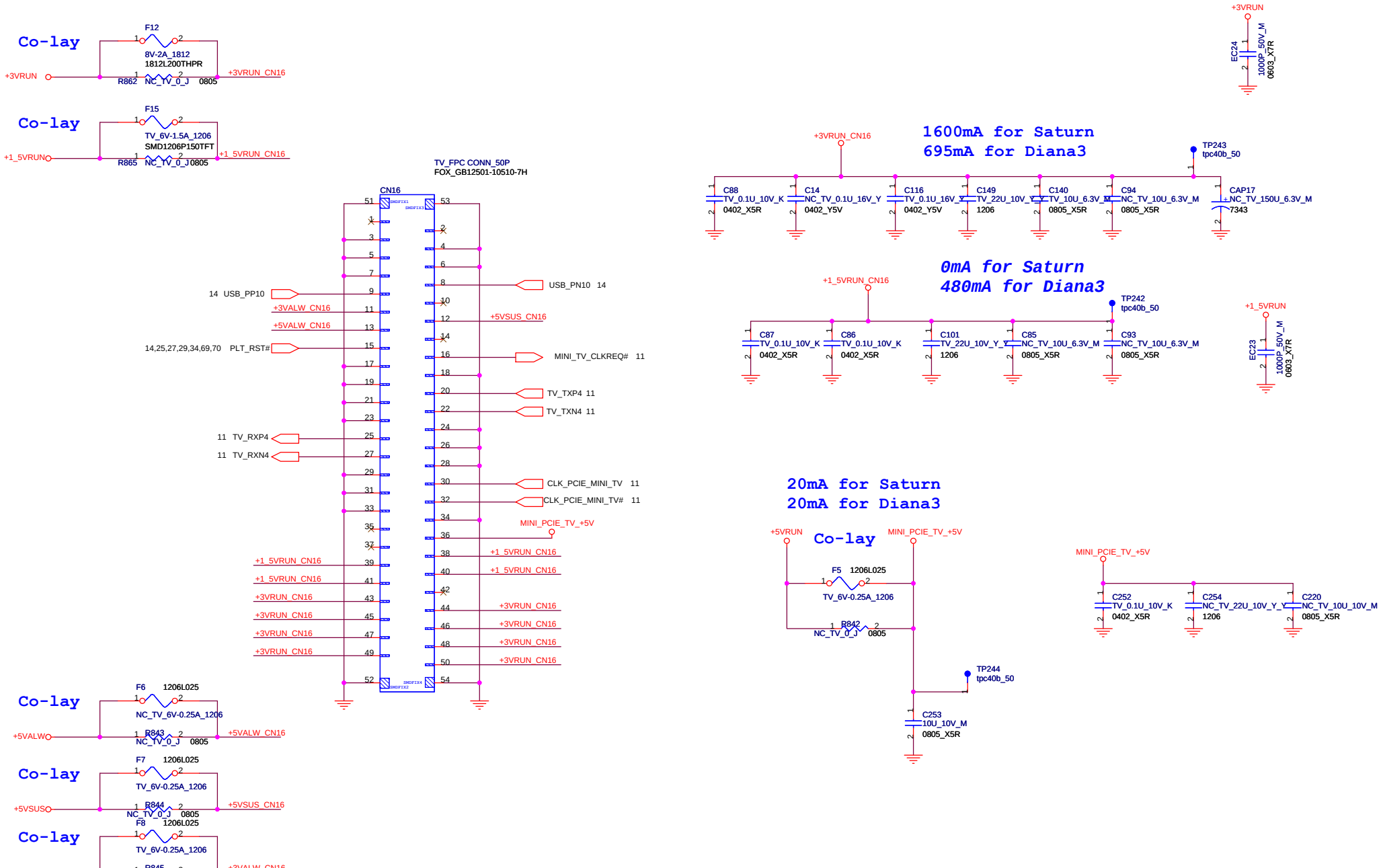
Intel Puma Peak & Kilmer Peak nonsupport +1_5VRUN



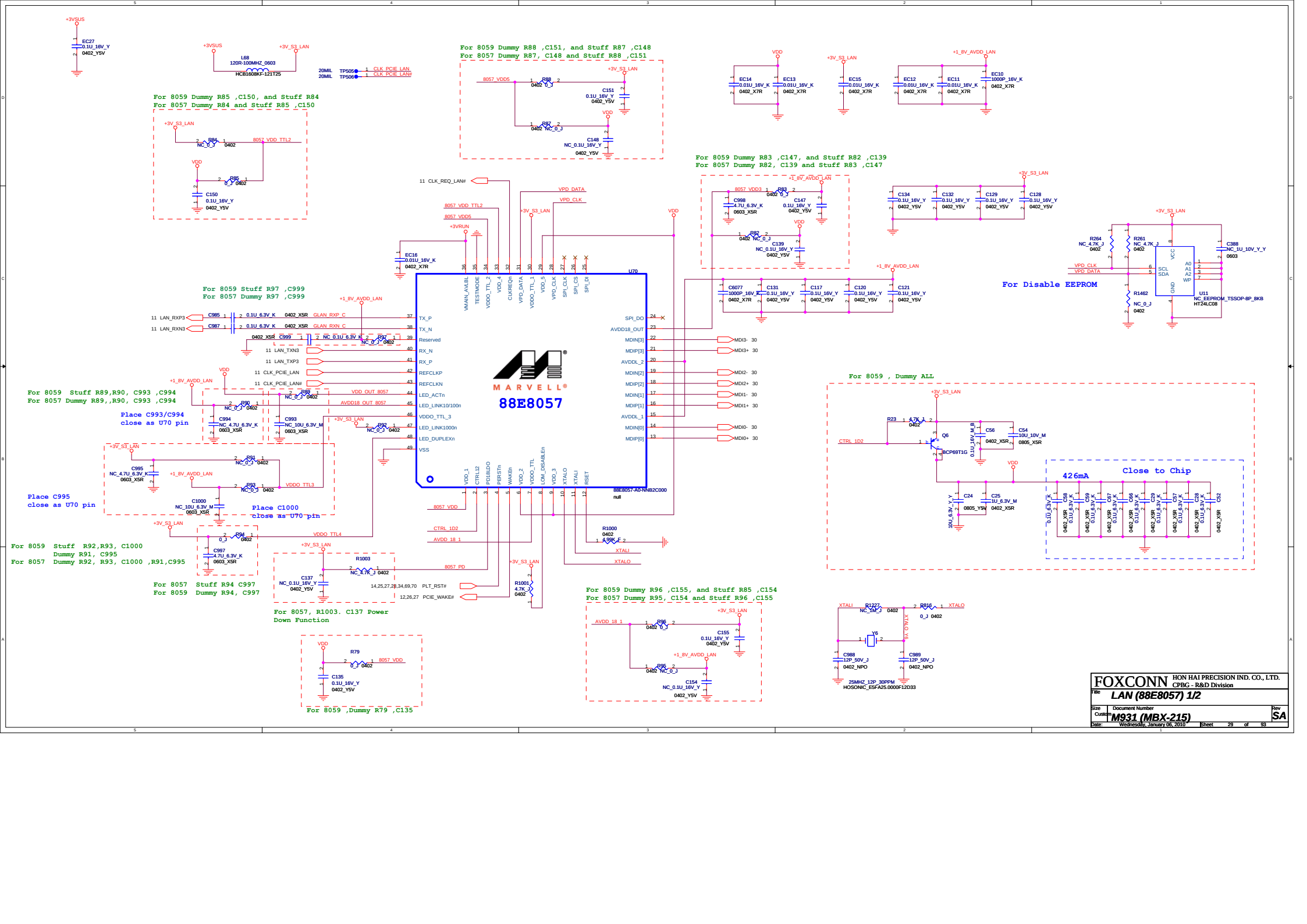
+3VSUS : 1500mA MAX



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
426mA
Close to Chip
88E8057
MARVELL
U70
88E8057-A0-NNB2C000
U11
NC_EEPROM_TSSOP-8P_8KB
HT24LC08
25MHZ_12P_30PPM
HOSONIC_E5FA25.0000F12D33
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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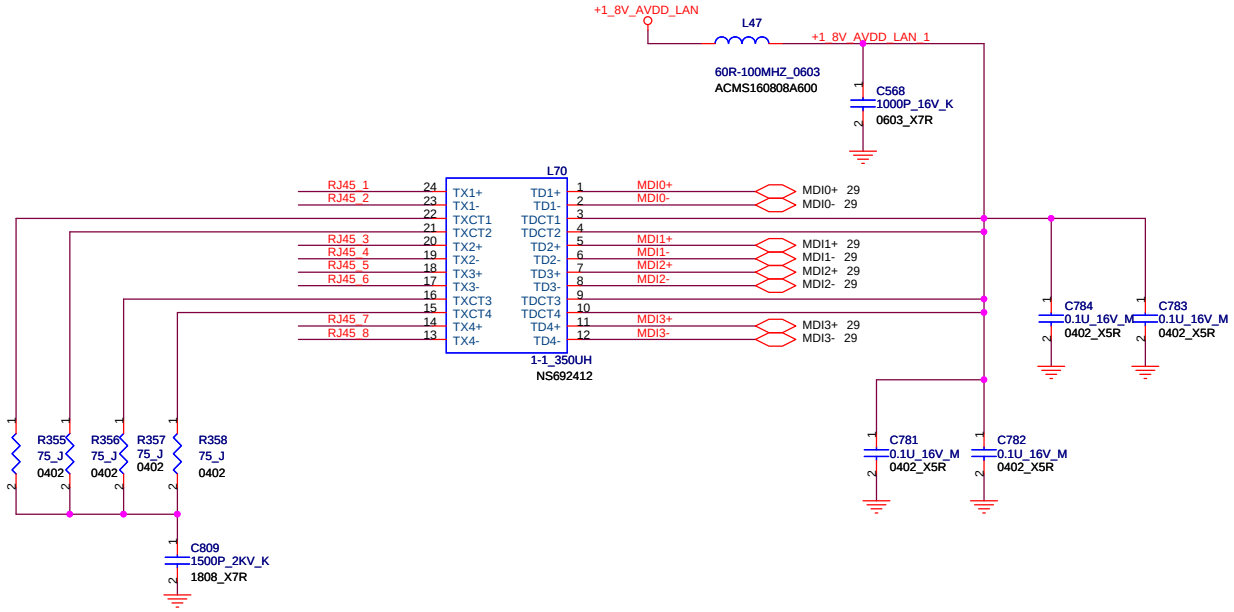
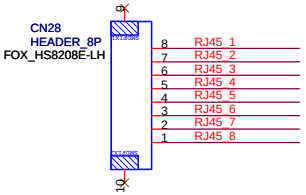
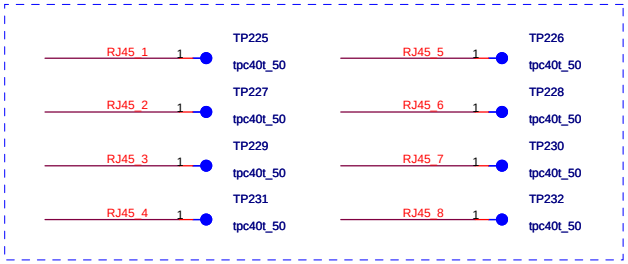
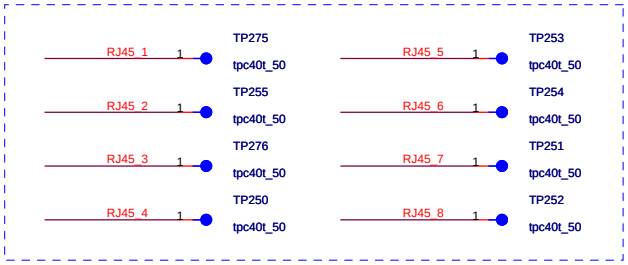


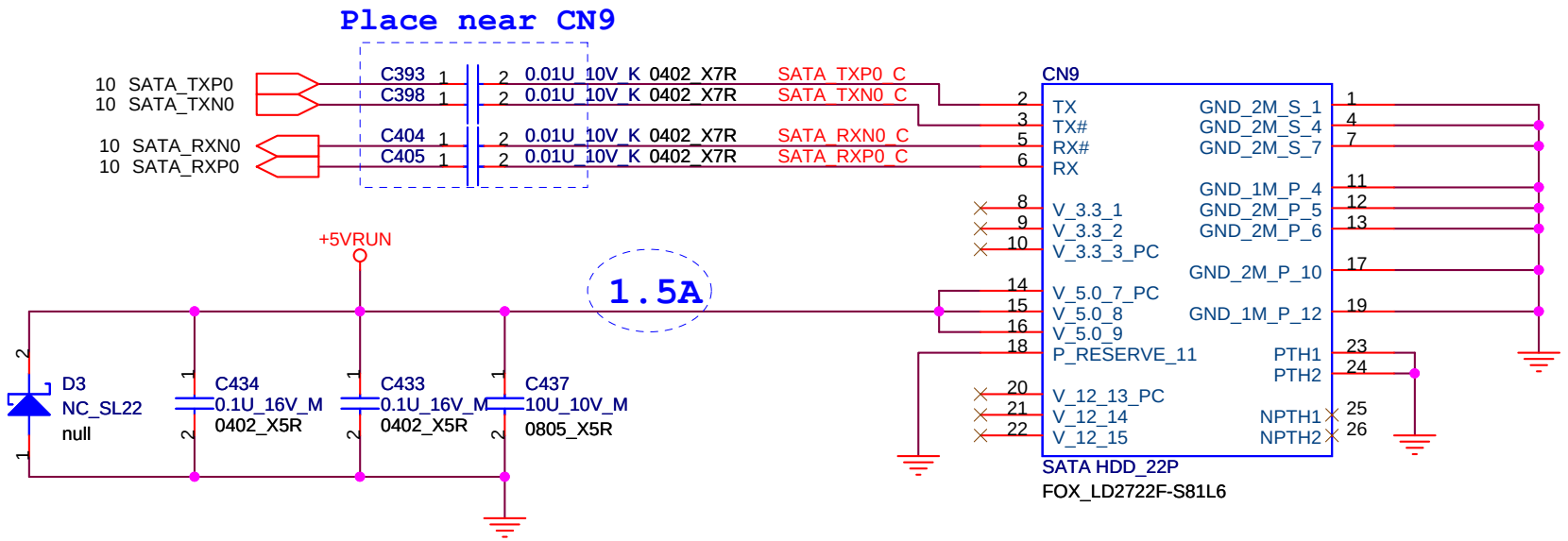


RJ45



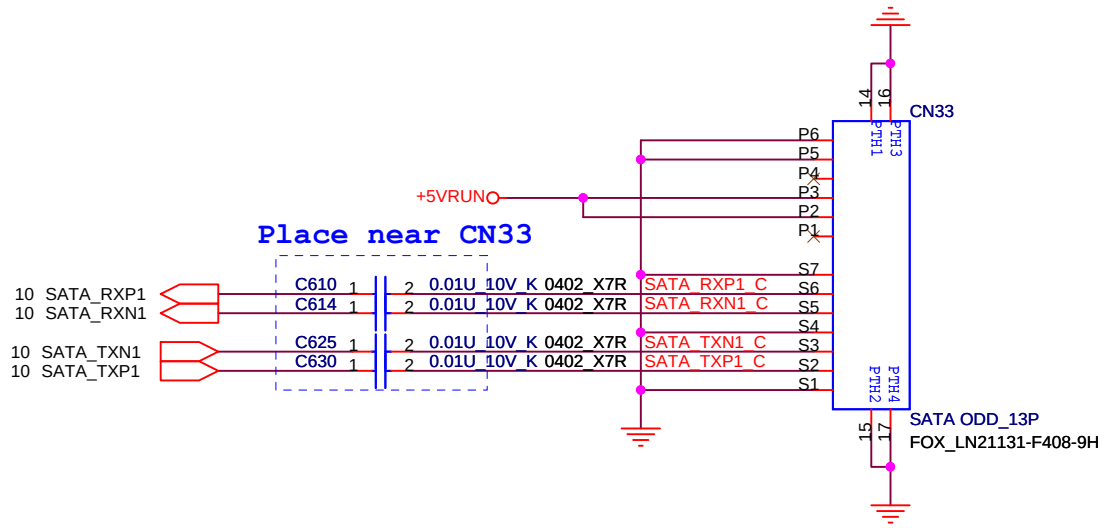


FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	*LAN (Transfomer)(2/2)*	
Size A3	Document Number *M931 (MBX-215)*	Rev *SA*
Date: Wednesday, January 06, 2010	Sheet 30 of 93	

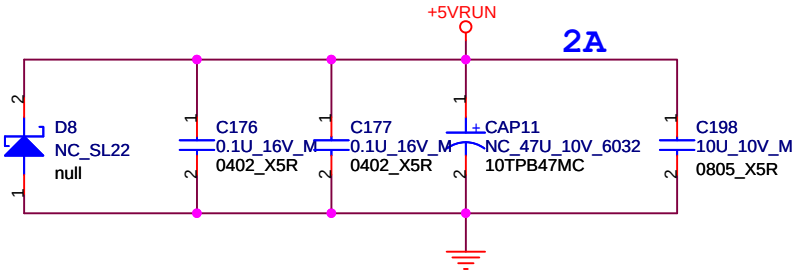


SATA HDD CONN

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
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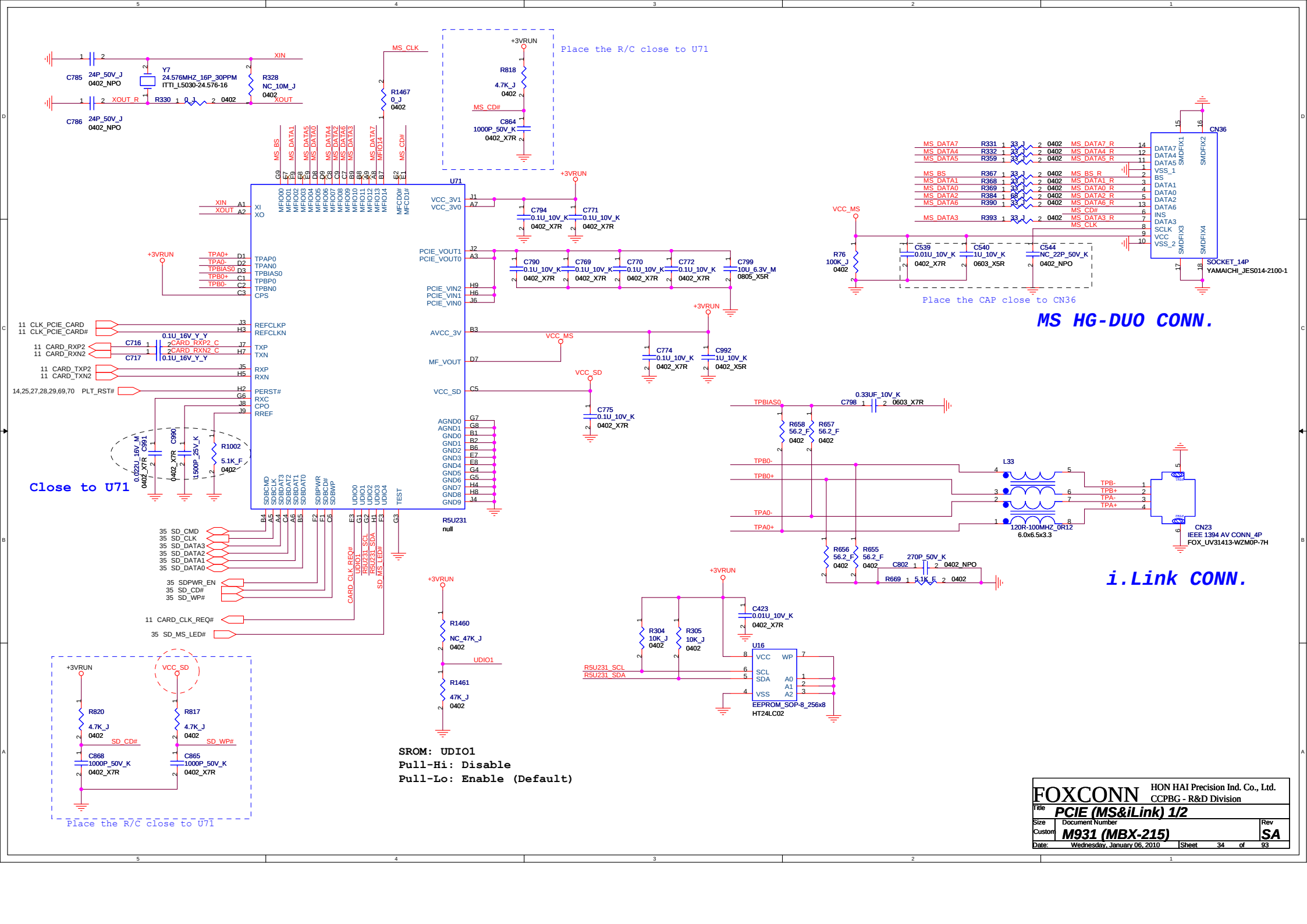
Remove Braidwood (Intel Updated and MOR confirmed)

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	


Place the R/C close to U71
MS HG-DUO CONN.
Place the CAP close to CN36
i.Link CONN.
Close to U71
SROM: UDIO1
Pull-Hi: Disable
Pull-Lo: Enable (Default)
Place the R/C close to U71
FOXCONN
HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division
PCIE (MS&iLink) 1/2
M931 (MBX-215)
SA
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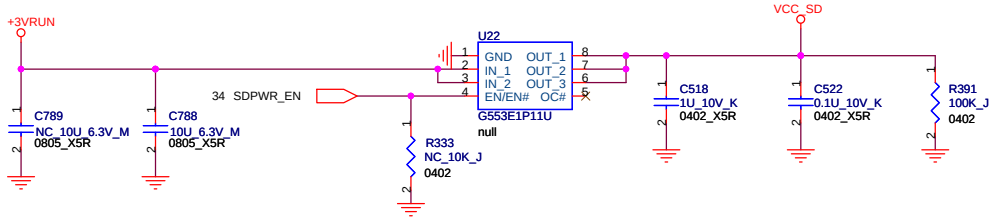
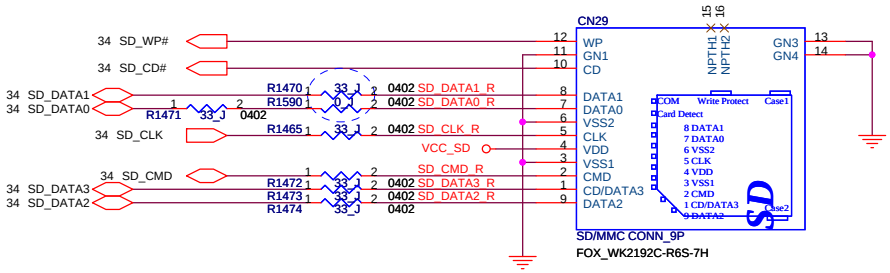
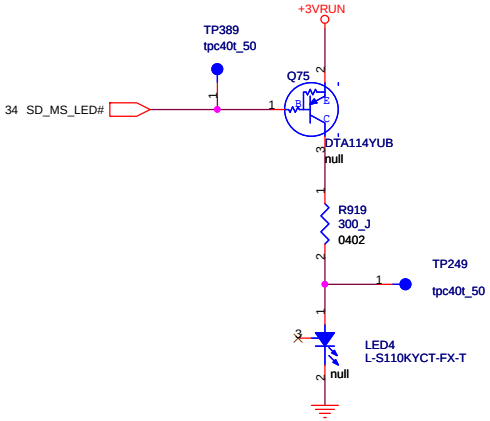


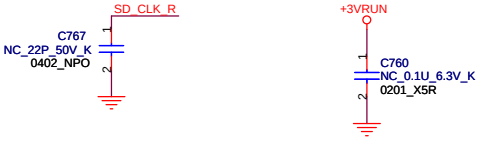
SD POWER



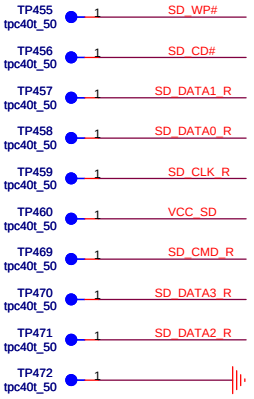
SD CONN.

SD/MS LED

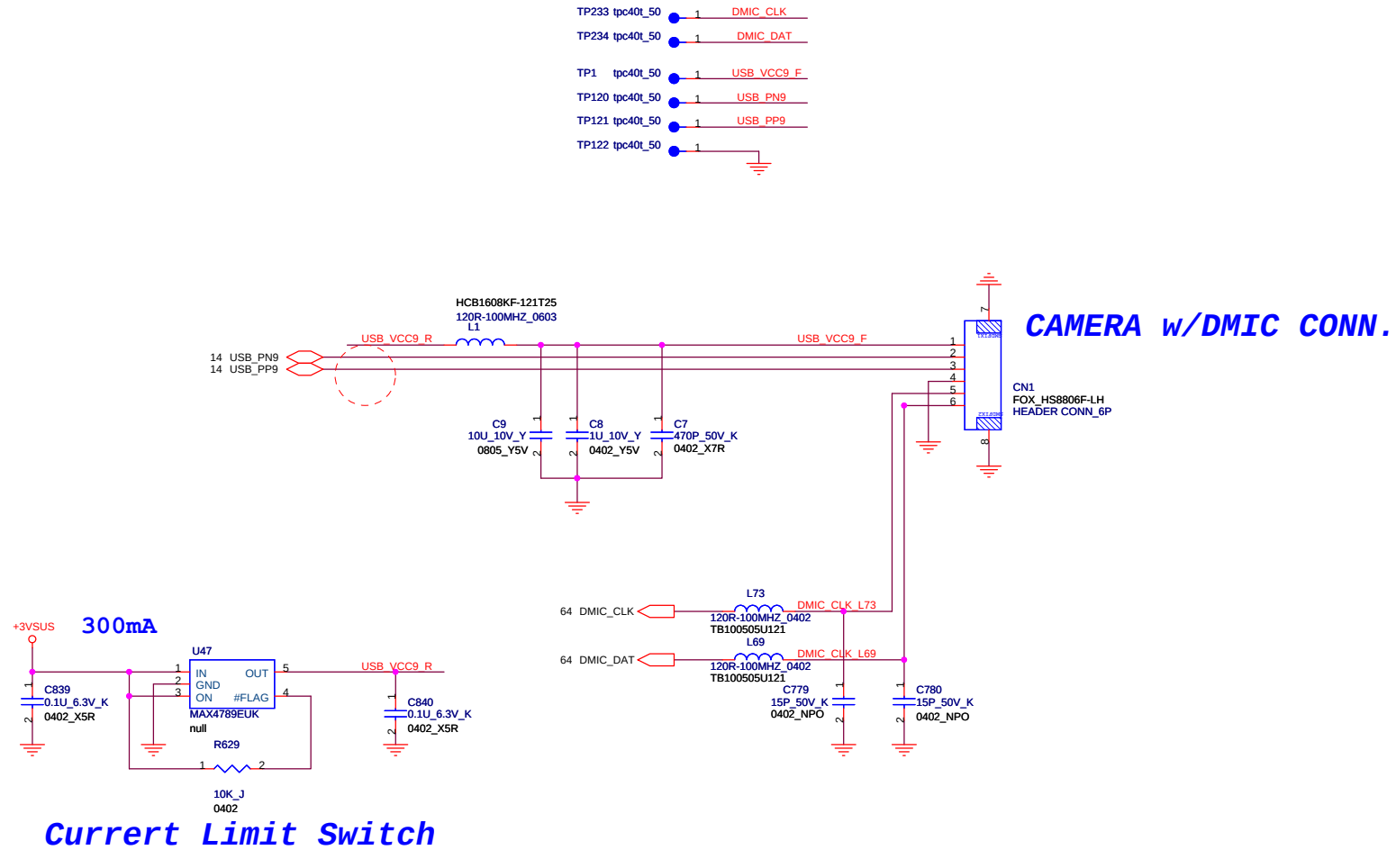




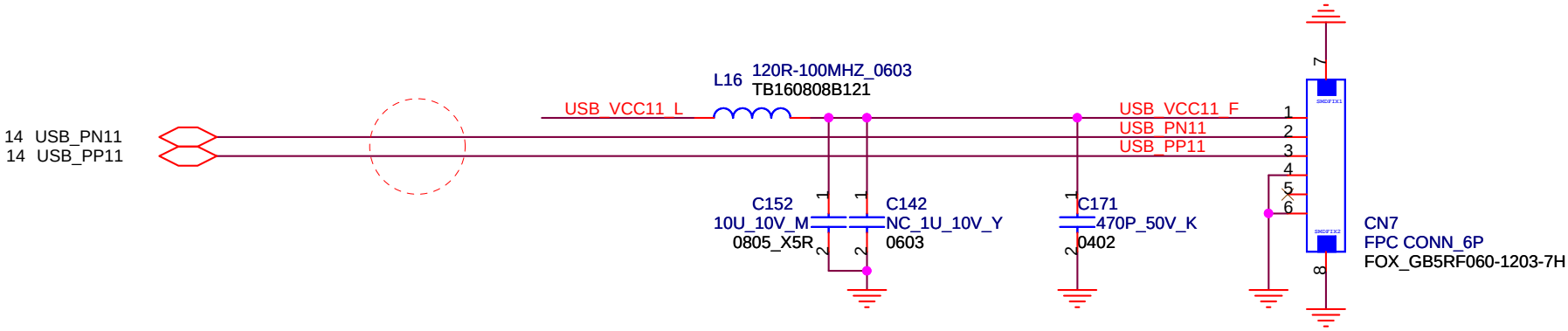
For EMI



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	



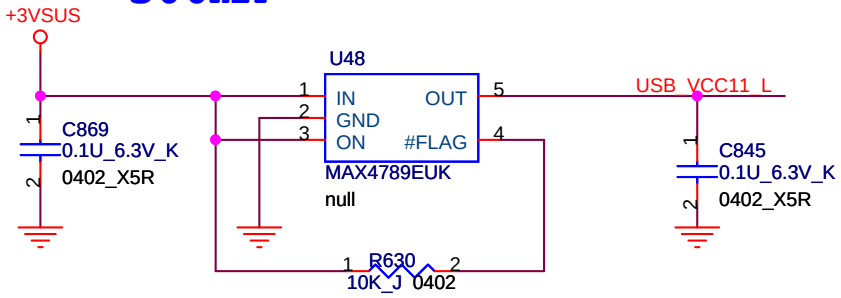
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division		
Title	Camera w/DMIC Connector		
Size A3	Document Number M931 (MBX-215)		Rev SA
Date: Wednesday, January 06, 2010	Sheet 36 of 93		



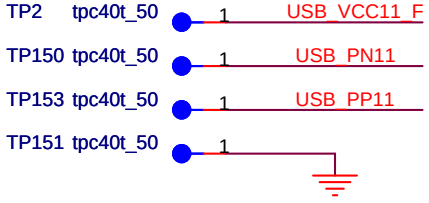
Felica Conn.

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
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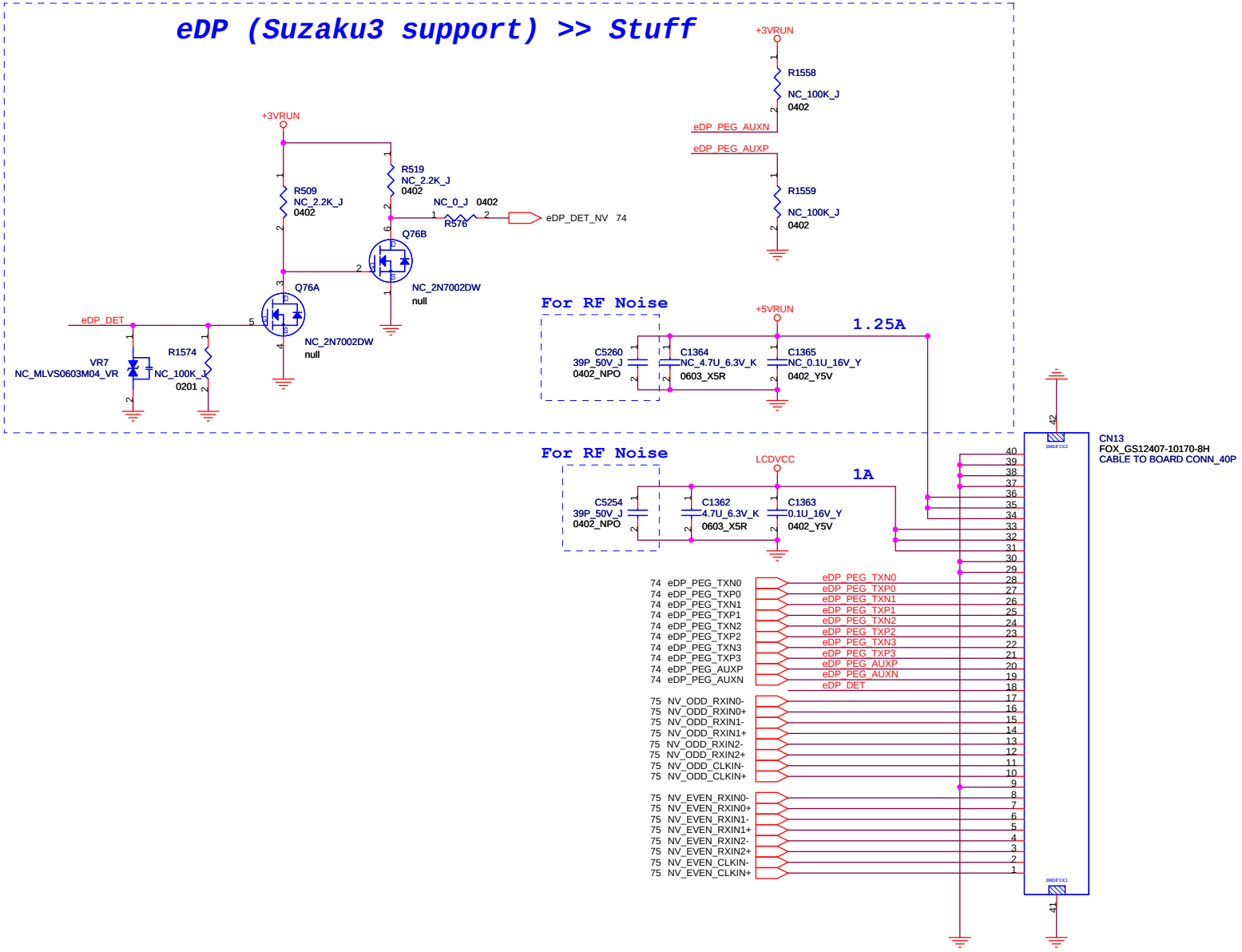

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	eDP&LVDS Connector	
Size A3	Document Number M931 (MBX-215)	Rev SA
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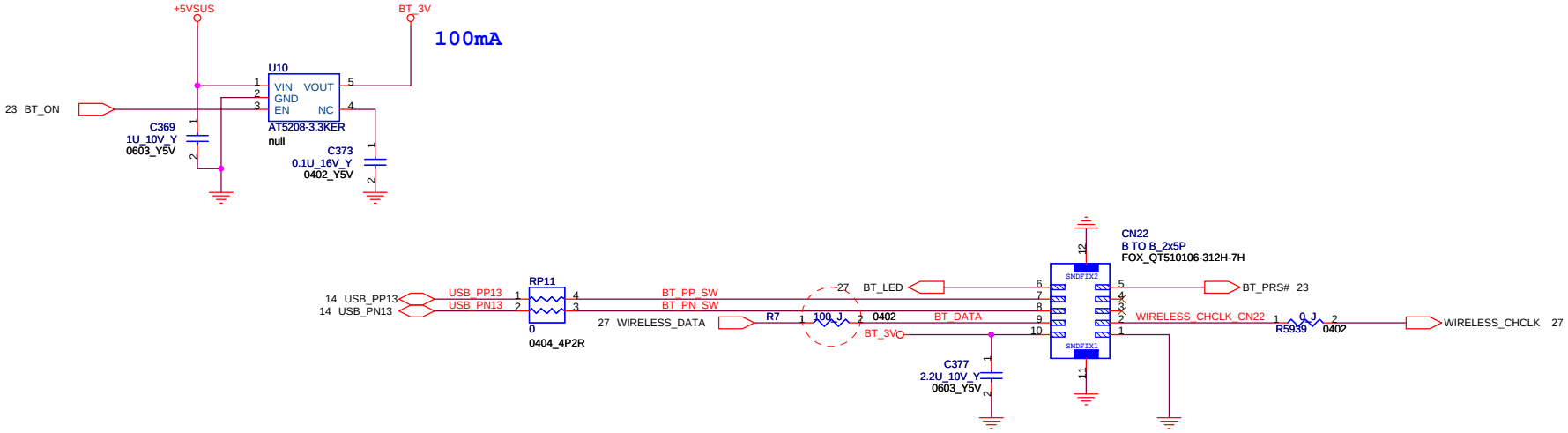

Place C377 close to CN22, Pin10

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# — CAPLOCK_LED#_DB
R5740 100_J 0402

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

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

EC29 1000P_50V_M 0603_X7R
EC30 0.1U_10V_K 0402_X5R

Q80 CHT2301PT
R5743 10K_J 0402
R5745 1K_J 0402
Q82 DTC144EUB null — POWER_LED — POWER_LED 23
POWER_LED_DB

+3VSUS

Q81 CHT2301PT
R5744 10K_J 0402
R5746 1K_J 0402
Q83 DTC144EUB null — SUSPEND_LED — SUSPEND_LED 23
SUSPEND_LED_DB

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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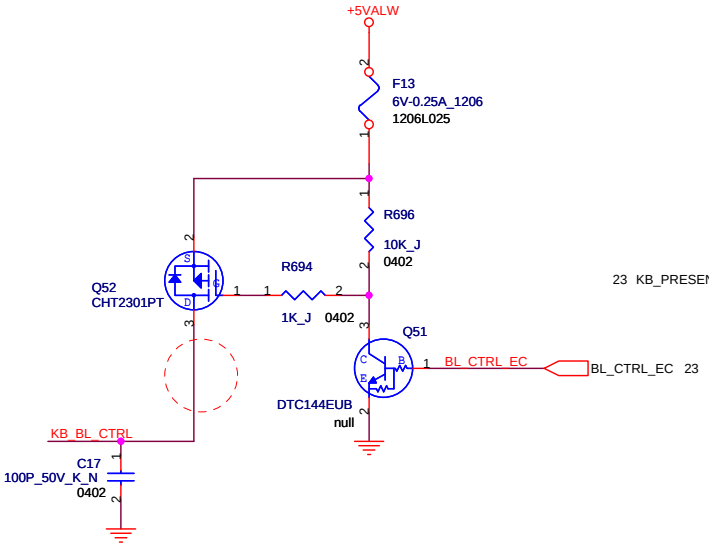
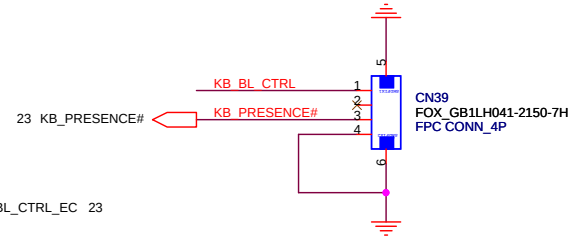
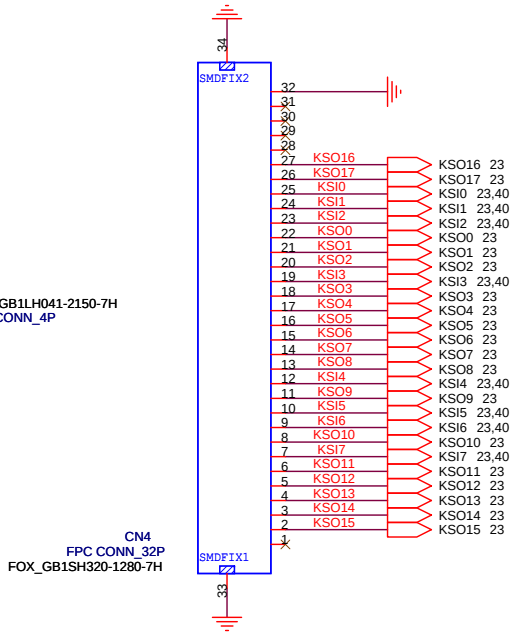
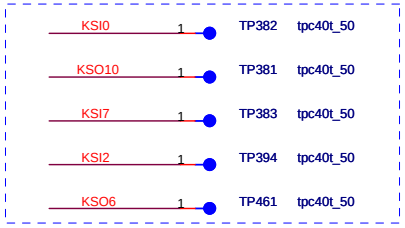


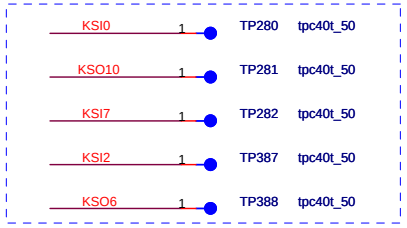




Backlit Power Conn

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**

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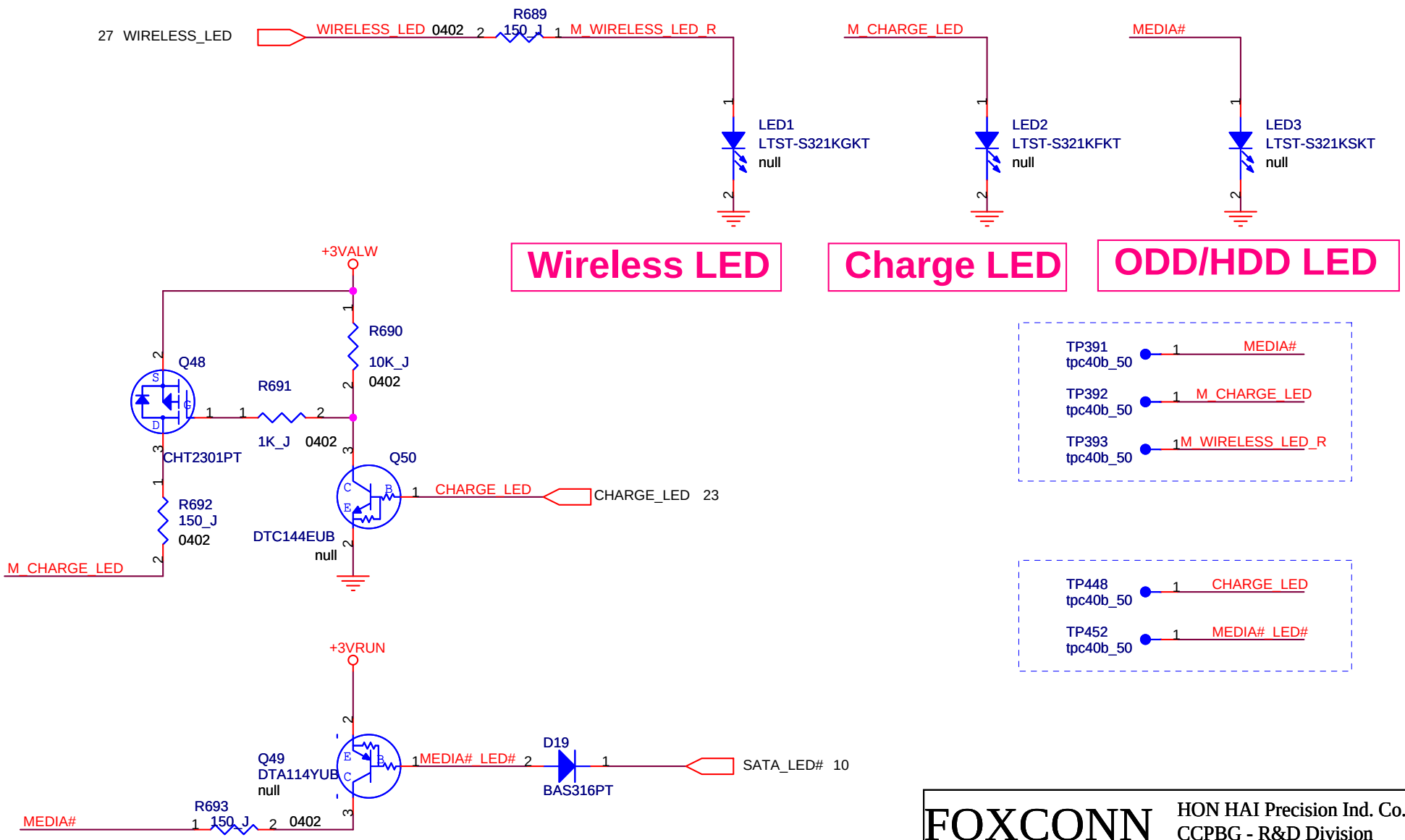
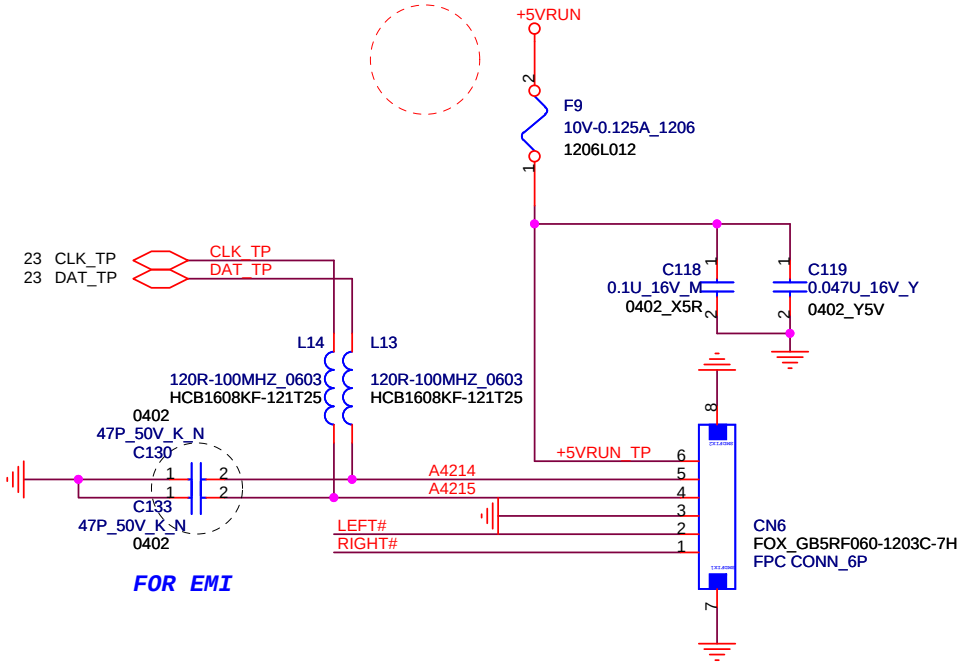
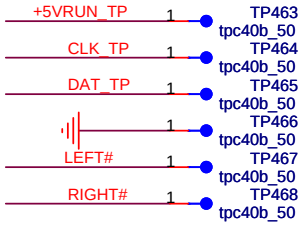


FOXCONN
HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title: **Status LED**		
Size: A	Document Number: **M931 (MBX-215)**	Rev: **SA**
Date: Wednesday, January 06, 2010	Sheet 42 of 93	

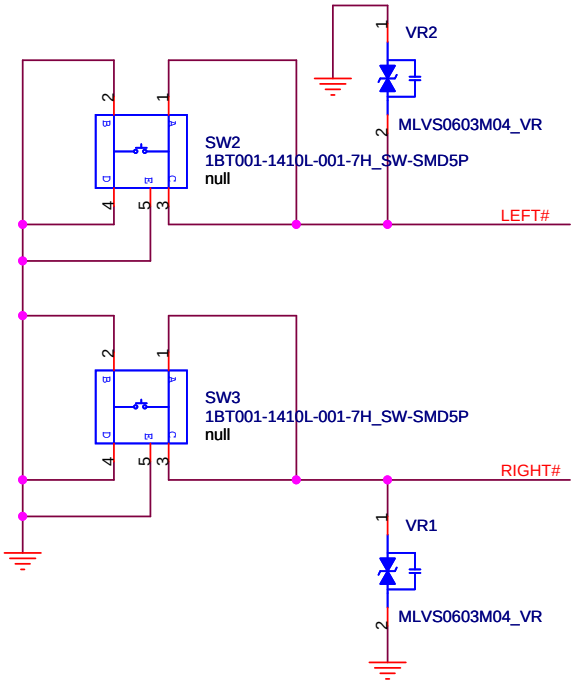


FOR ALPS TOUCH PAD



Touch Pad Conn (Support Multi Touch)

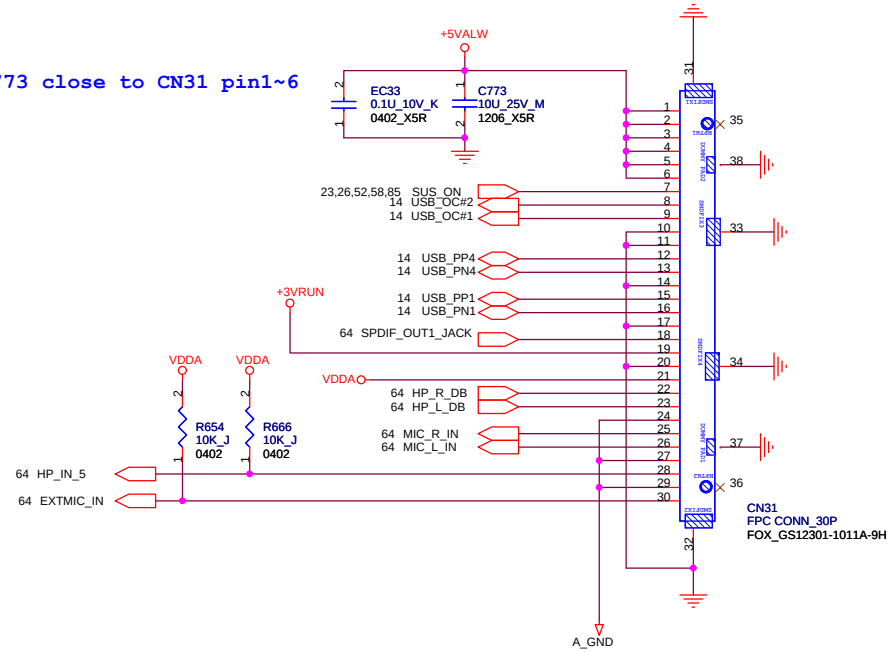
TP_LEFT Button



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	

Place C773 close to CN31 pin1~6



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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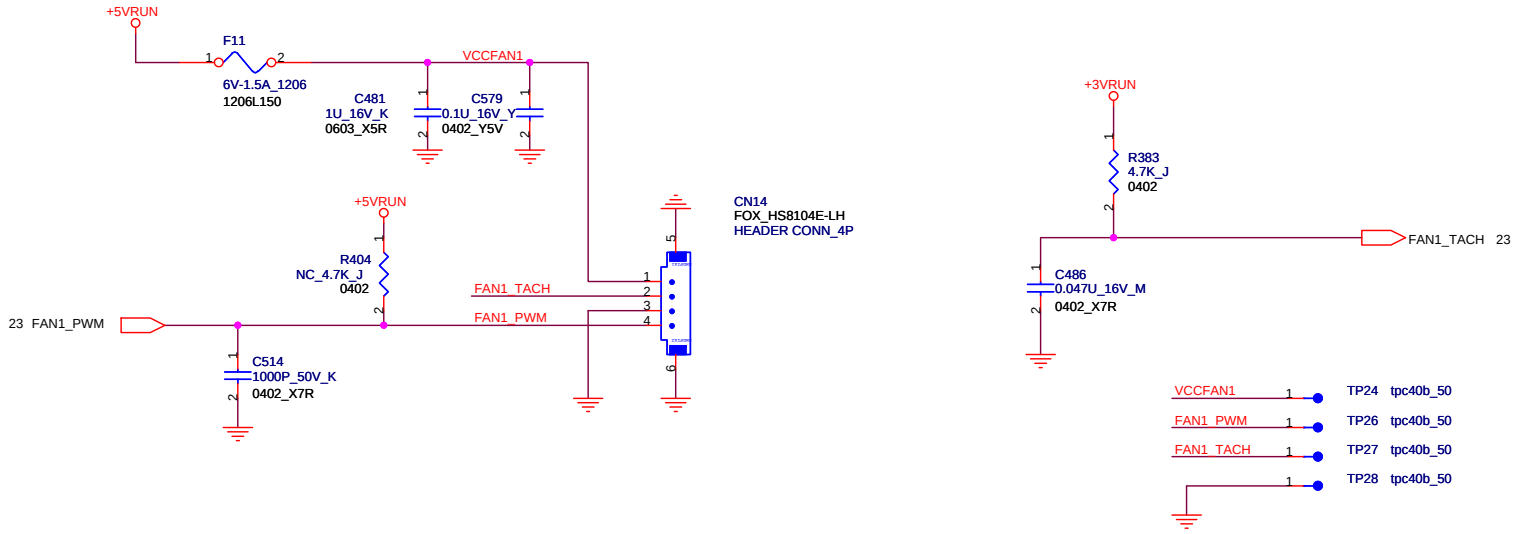
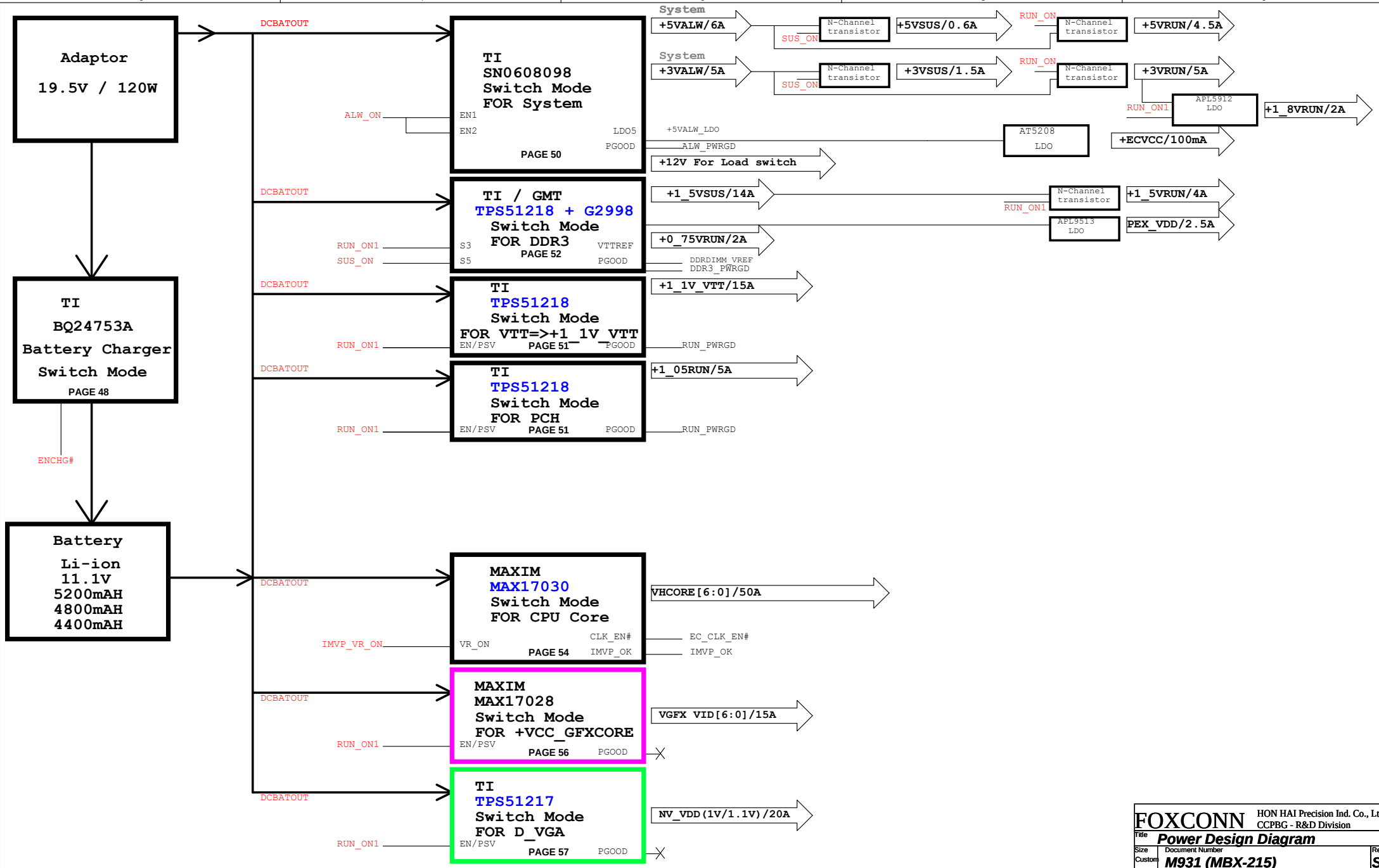
Direct PWM FAN



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***	
Date: Wednesday, January 06, 2010	Sheet 46 of 93



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

Title: **Power Design Diagram**

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

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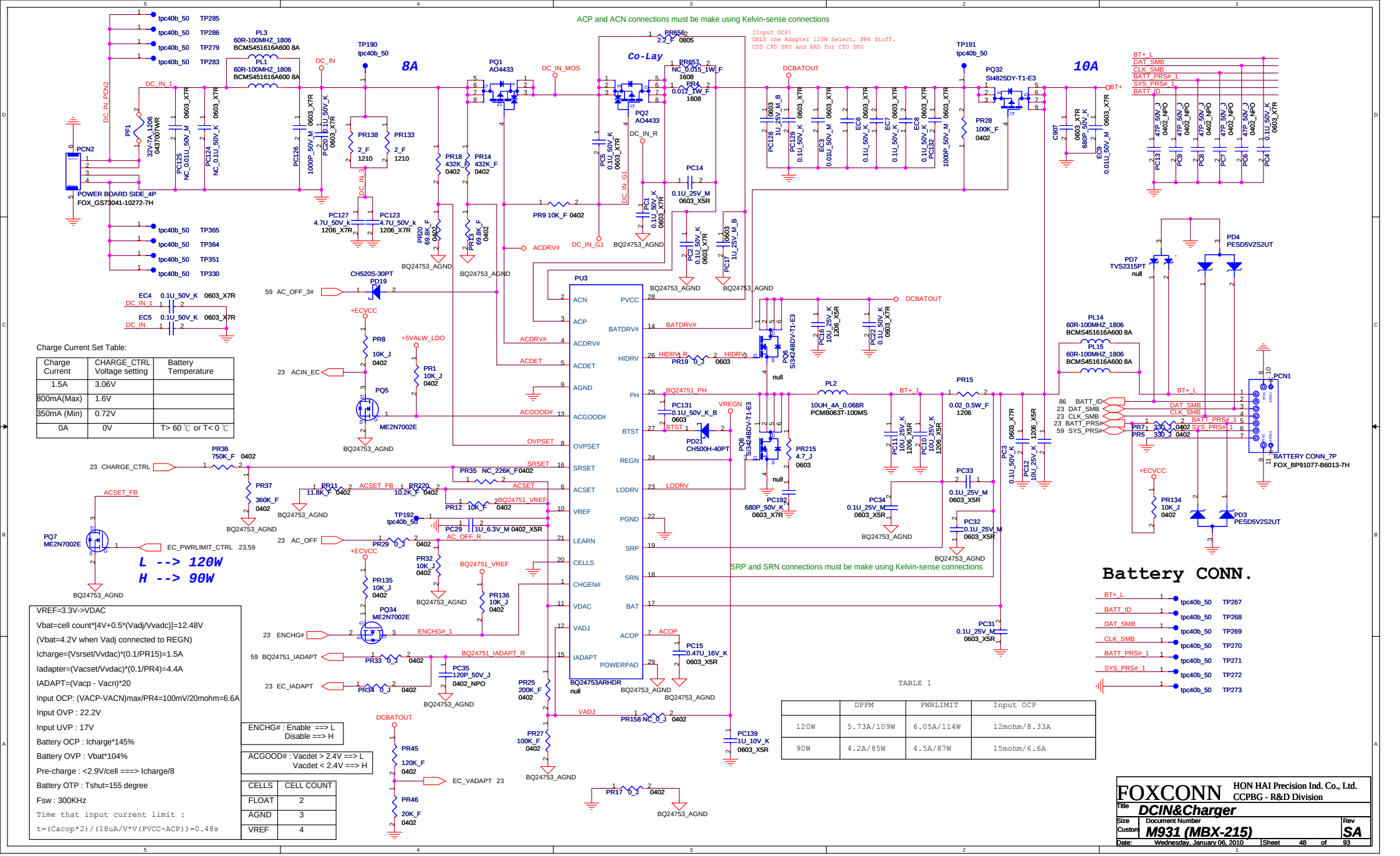


Charge Current Set Table:

Charge Current	CHARGE_CTRL Voltage setting	Battery Temperature
1.5A	3.06V	
800mA(Max)	1.6V	
350mA (Min)	0.72V	
0A	0V	T> 60 ℃ or T< 0 ℃

VREF=3.3V->VDAC

Vbat=cell count*[4V+0.5*(Vadj/Vvadc)]=12.48V

(Vbat=4.2V when Vadj connected to REGN)

Icharge=(Vsrset/Vvdac)*(0.1/PR15)=1.5A

Iadapter=(Vacset/Vvdac)*(0.1/PR4)=4.4A

IADAPT=(Vacp - Vacn)*20

Input OCP: (VACP-VACN)max/PR4=100mV/20mohm=6.6A

Input OVP : 22.2V

Input UVP : 17V

Battery OCP : Icharge*145%

Battery OVP : Vbat*104%

Pre-charge : <2.9V/cell ===> Icharge/8

Battery OTP : Tshut=155 degree

Fsw : 300KHz

Time that input current limit :

t=(Cacop*2)/(18uA/V*V(PVCC-ACP))=0.48s

CELLS	CELL COUNT
FLOAT	2
AGND	3
VREF	4

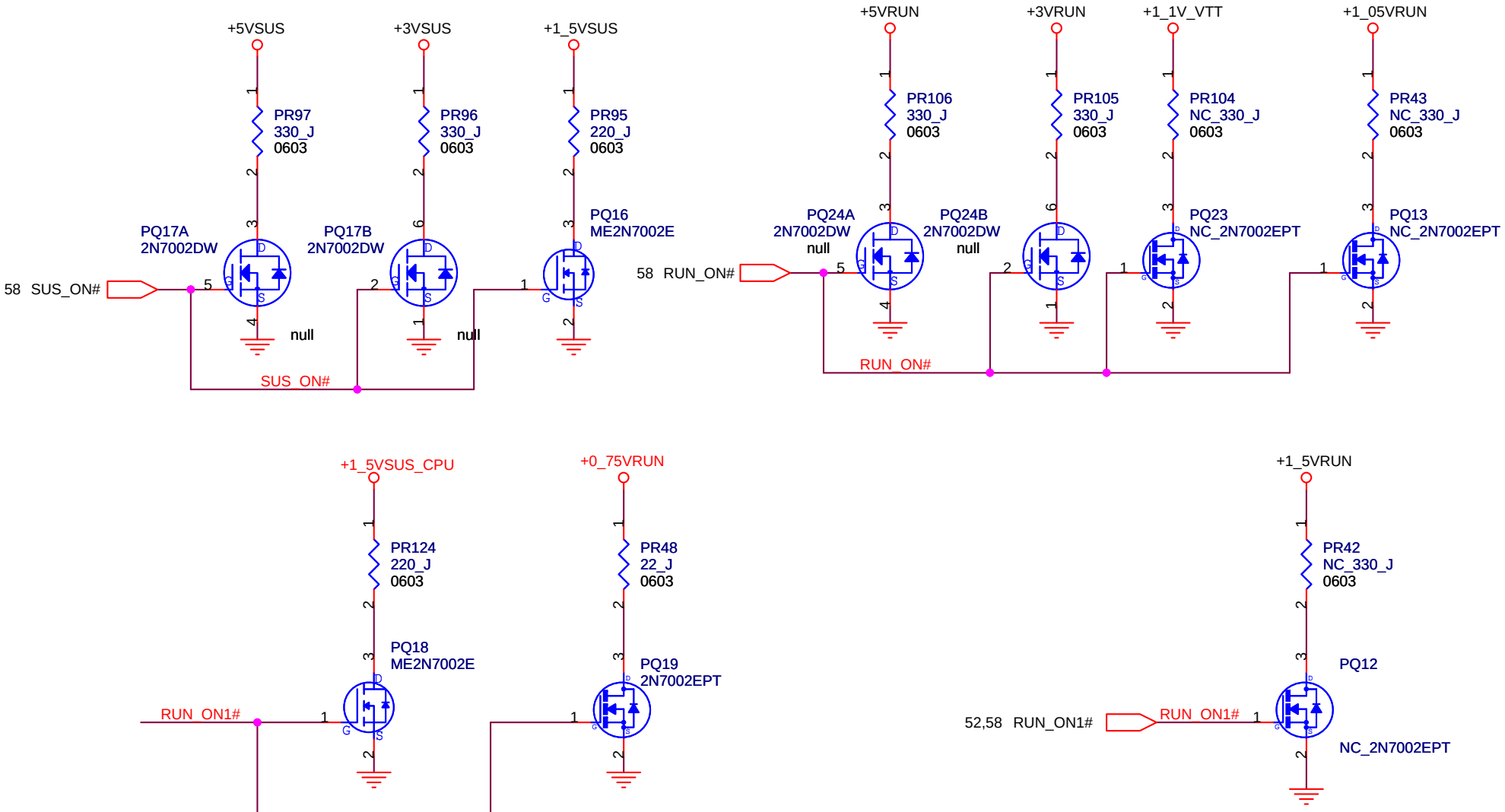
ENCHG# : Enable ==> L
Disable ==> H

ACGOOD# : Vacdet > 2.4V ==> L
Vacdet < 2.4V ==> H

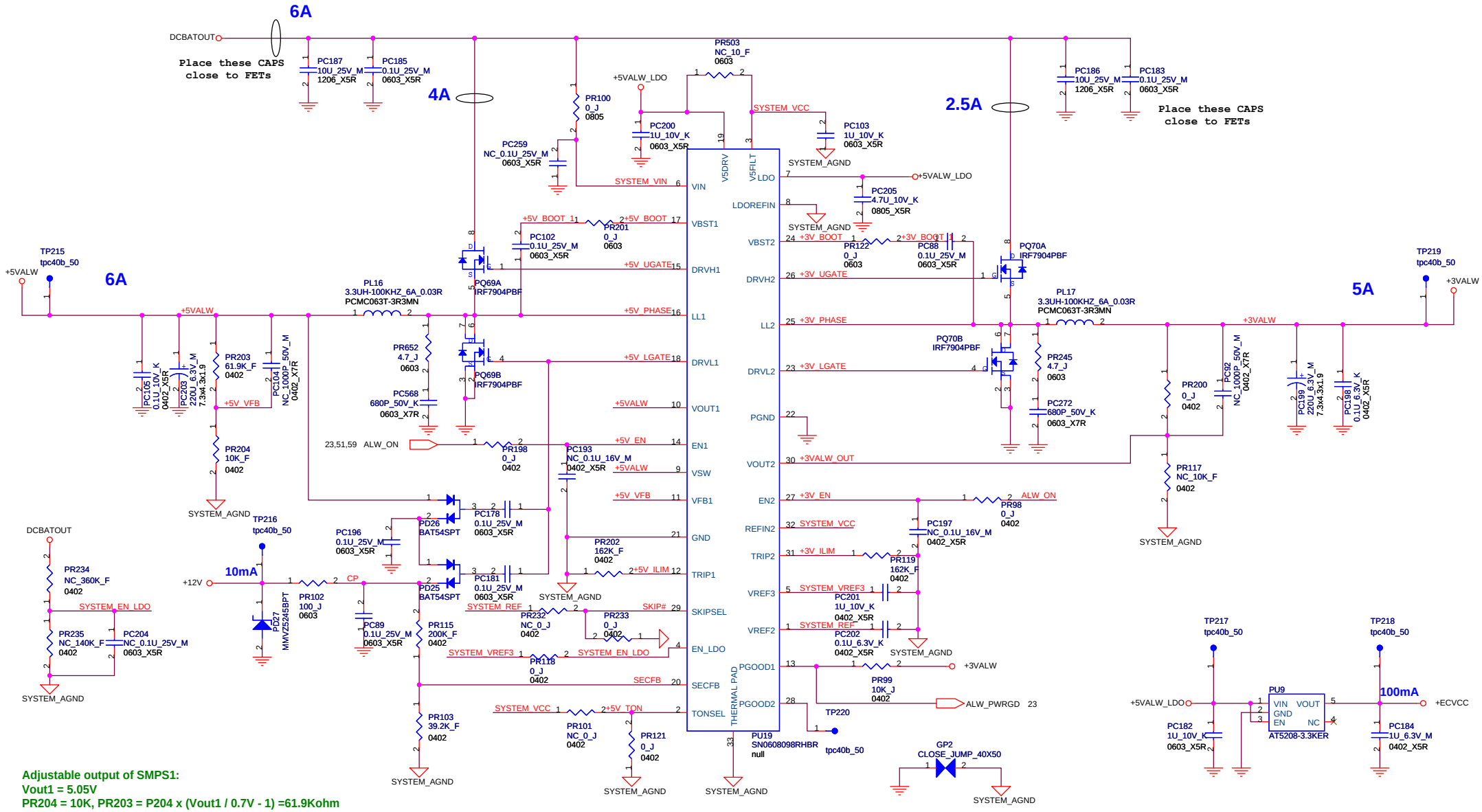
TABLE 1

	DPPM	PWRLIMIT	Input OCP
120W	5.73A/109W	6.05A/114W	12mohm/8.33A
90W	4.2A/85W	4.5A/87W	15mohm/6.6A

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division
Title	DCIN&Charger
Size: Custom	Document Number: M931 (MBX-215)
Rev	SA
Date: Wednesday, January 06, 2010	Sheet 48 of 93



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

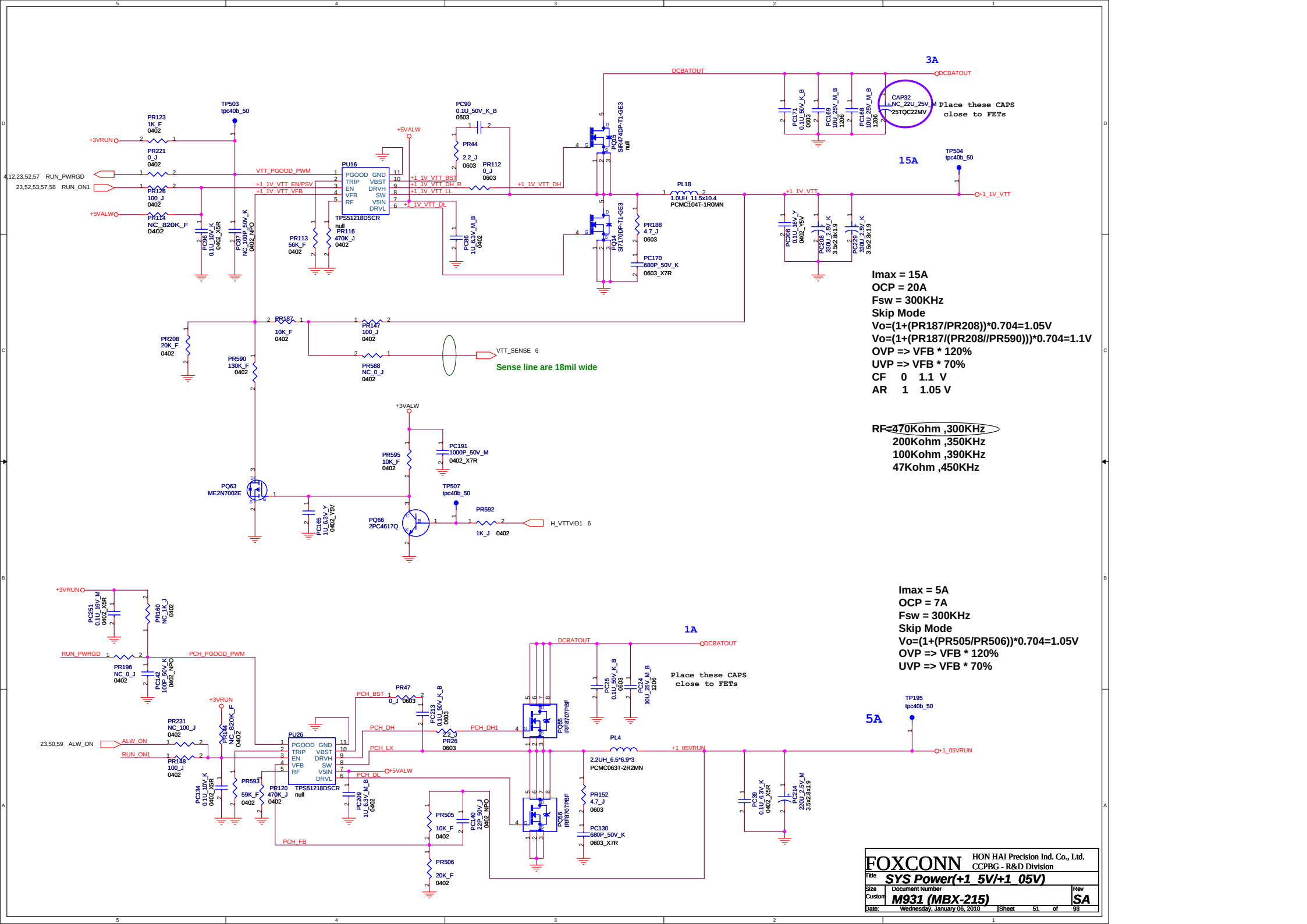
L=VOUT(VIN-VOUT)/(VIN*f*LIR*ILOAD(MAX))
Rocp=(Iocp-Iripple/2)*(10*Rds(on))/5u
+5VALW=((PR186/PR188)+1)*VFB1

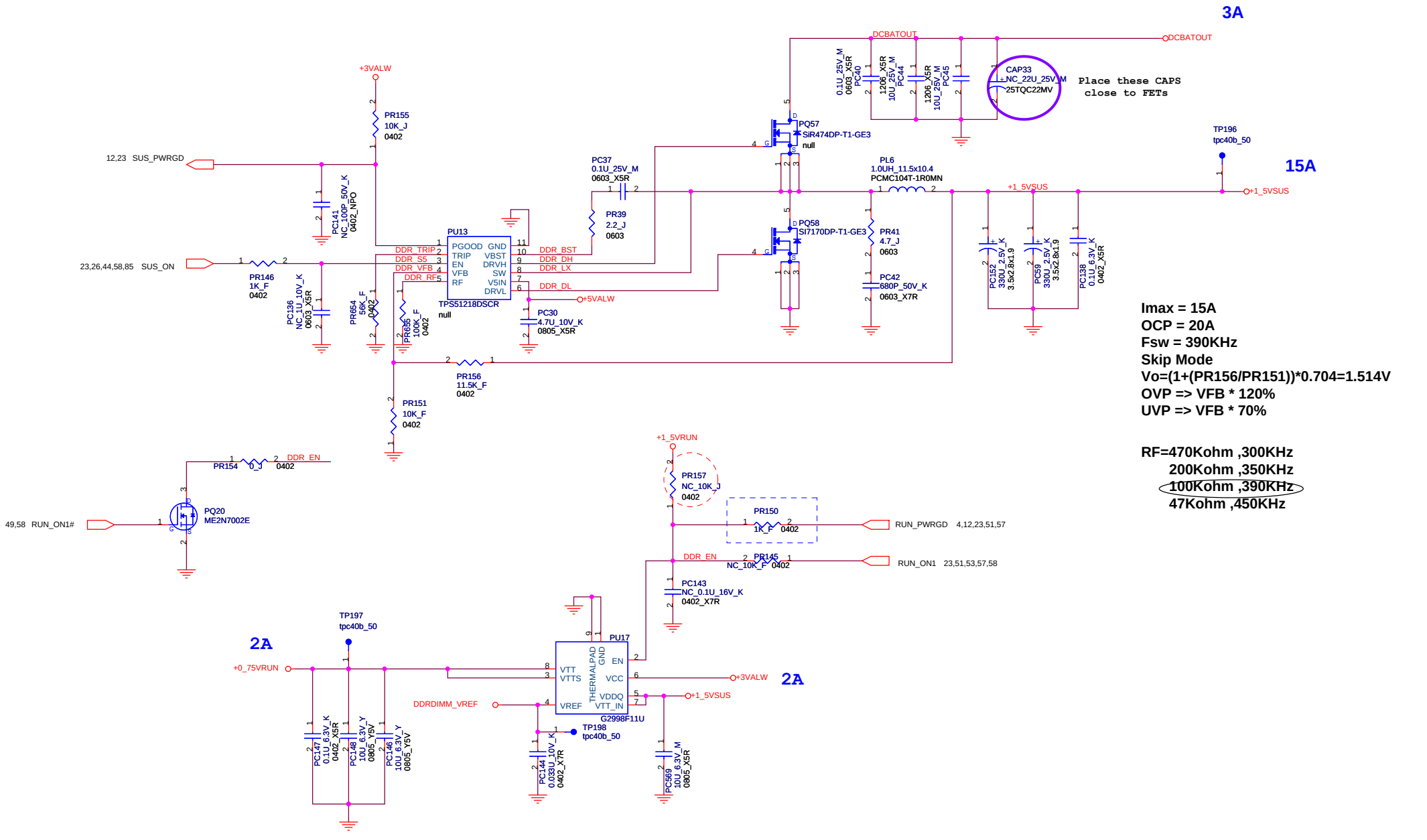
Current limit resistor for SMPS1 :
Ivalley_5 = 5.775A, Rcs_5 = Rds1 = 10.8mohm
PR202 = (10 x Ivalley_5 x Rcs_5) / 5uA = 162K

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

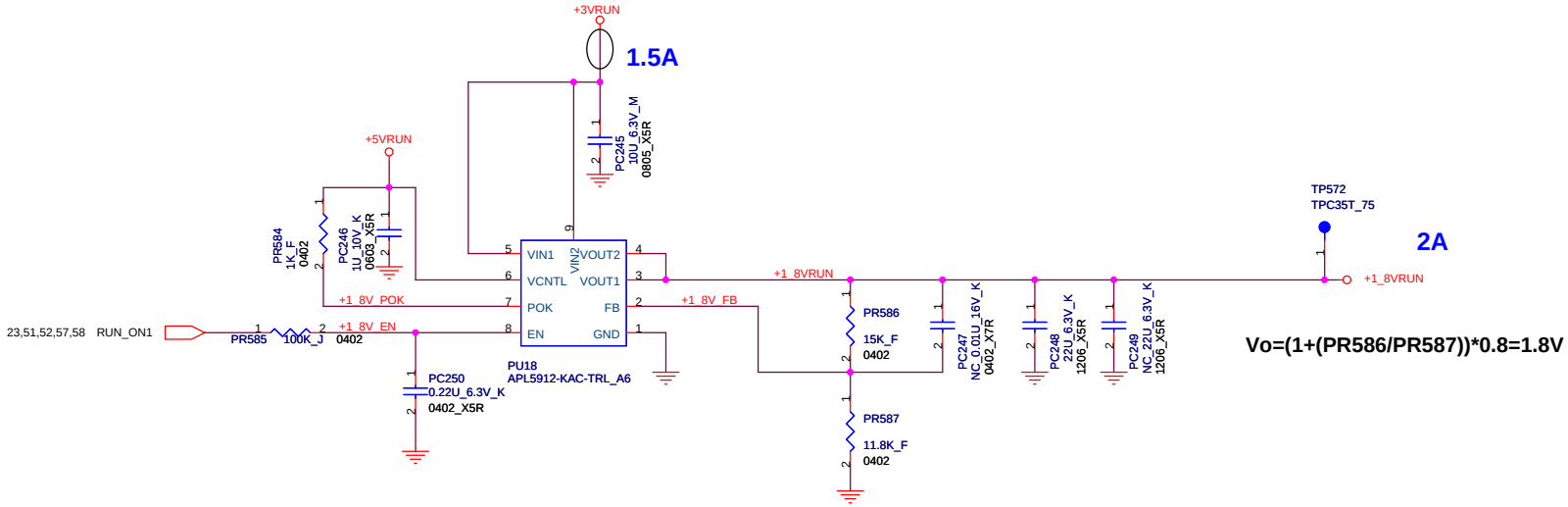
FOXCONN
HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title	SYS Power (+3_3V/+5V)	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 50 of 93	

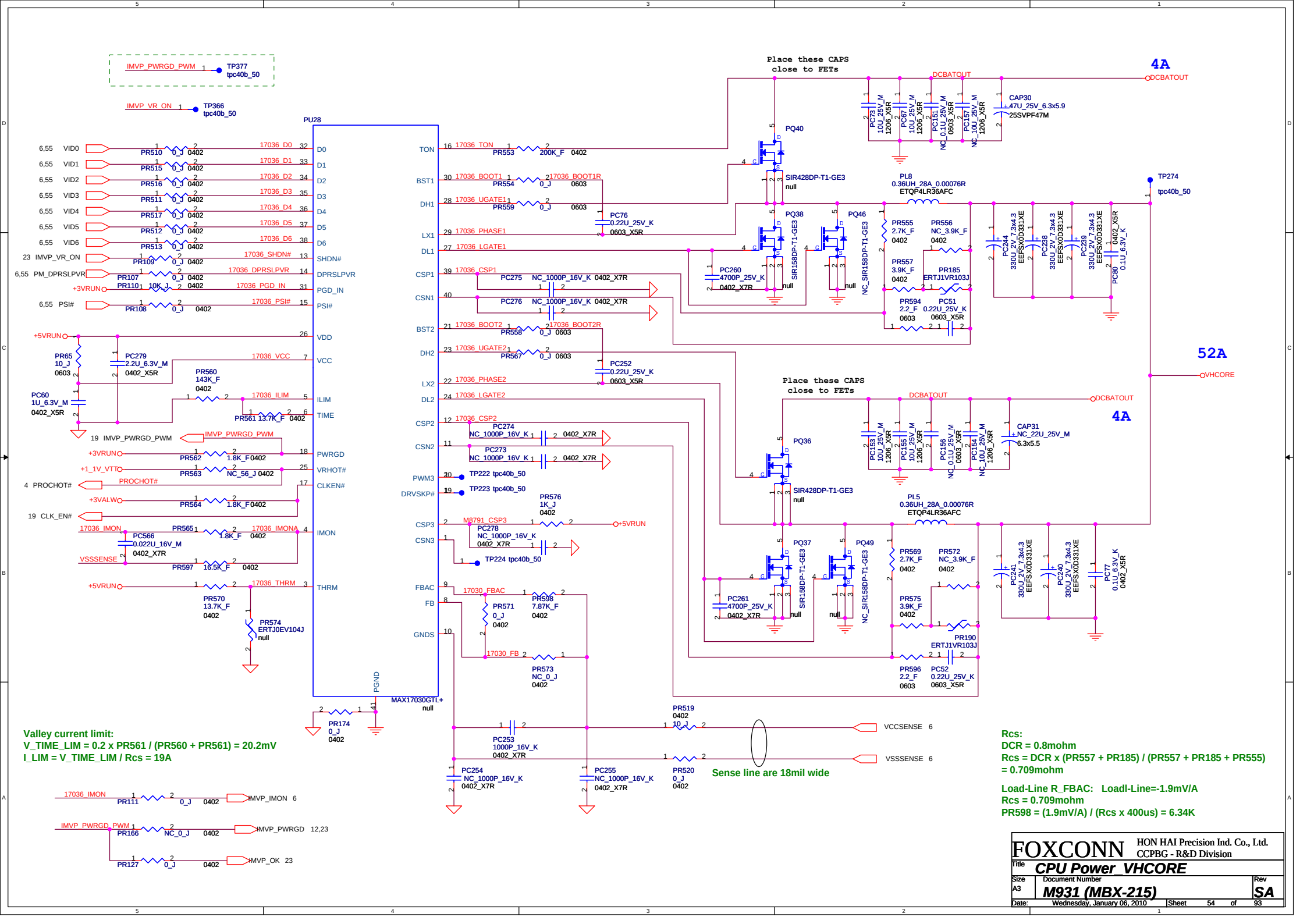

3A
DCBATOUT
TP503
tpc40b_50
PR123
1K_F
0402
+3VRUN
PR221
0_J
0402
4,12,23,52,57 RUN_PWRGD
23,52,53,57,58 RUN_ON1
PR126
100_J
0402
+5VALW
PR114
NC_820K_F
0402
PC90
0.1U_50V_K_B
0603
PR44
2.2_J
0603
PR112
0_J
0603
PU16
PGOOD GND
TRIP VBST
EN DRVH
VFB SW
RF VSIN
DRVL
TPS51218DSCR
null
VTT_PGOOD_PWM
+1_1V_VTT_EN/PSV
+1_1V_VTT_VFB
+1_1V_VTT_BST
+1_1V_VTT_DH_R
+1_1V_VTT_LL
+1_1V_VTT_DL
+1_1V_VTT_DH
PR113
56K_F
0402
PR116
470K_J
0402
PC36
0.1U_16V_K
0402_X5R
PC37
NC_100_50V_K
0402_NPO
PC86
1U_6.3V_M_B
0402
PQ25
SIR474DP-T1-GE3
null
PQ14
SI7170DP-T1-GE3
PR188
4.7_J
0603
PC170
680P_50V_K
0603_X7R
PL18
1.0UH_11.5x10.4
PCMC104T-1R0MN
+1_1V_VTT
PC171
0.1U_50V_K_B
0603
PC169
10U_25V_M_B
1206
PC168
10U_25V_M_B
1206
CAP32
NC_22U_25V_M
25TQC22MV
Place these CAPS
close to FETs
15A
TP504
tpc40b_50
+1_1V_VTT
PC206
0.1U_16V_Y
0402_Y5V
PC208
330U_2.5V_K
3.5x2.8x19
PC207
330U_2.5V_K
3.5x2.8x19
Imax = 15A
OCP = 20A
Fsw = 300KHz
Skip Mode
Vo=(1+(PR187/PR208))*0.704=1.05V
Vo=(1+(PR187/(PR208//PR590)))*0.704=1.1V
OVP => VFB * 120%
UVP => VFB * 70%
CF 0 1.1 V
AR 1 1.05 V
PR187
10K_F
0402
PR117
100_J
0402
PR208
20K_F
0402
PR590
130K_F
0402
PR588
NC_0_J
0402
VTT_SENSE 6
Sense line are 18mil wide
RF<470Kohm ,300KHz
200Kohm ,350KHz
100Kohm ,390KHz
47Kohm ,450KHz
+3VALW
PR595
10K_F
0402
PC191
1000P_50V_M
0402_X7R
PQ63
ME2N7002E
PC163
1U_16V_Y
0402_Y5V
TP507
tpc40b_50
PQ66
2PC4617Q
PR592
1K_J
0402
H_VTTVID1 6
+3VRUN
PC251
0.1U_16V_M
0402_X5R
PR160
NC_1K_J
0402
RUN_PWRGD
PCH_PGOOD_PWM
PR196
NC_0_J
0402
PC142
100P_50V_K
0402_NPO
1A
DCBATOUT
PC25
0.1U_50V_K_B
0603
PC24
10U_25V_M_B
1206
Place these CAPS
close to FETs
PCH_BST
PR47
0_J
0603
PC213
0.1U_50V_K_B
0603
PCH_DH
PCH_DH1
PR26
2.2_J
0603
PQ55
IRF8707PBF
PCH_LX
PL4
2.2UH_6.5*6.9*3
PCMC063T-2R2MN
+1_05VRUN
PR231
NC_100_J
0402
PR214
NC_820K_F
0402
23,50,59 ALW_ON
ALW_ON
RUN_ON1
PR148
100_J
0402
PU26
PGOOD GND
TRIP VBST
EN DRVH
VFB SW
RF VSIN
DRVL
TPS51218DSCR
null
PCH_DL
+5VALW
PR593
59K_F
0402
PR120
470K_J
0402
PC134
0.1U_10V_K
0402_X5R
PC209
1U_6.3V_M_B
0402
PR505
10K_F
0402
PC140
220P_50V_J
0402_NPO
PR506
20K_F
0402
PCH_FB
PQ56
IRF8707PBF
PR152
4.7_J
0603
PC130
680P_50V_K
0603_X7R
PC39
0.1U_6.3V_K
0402_X5R
PC214
220U_2.5V_M
3.5x2.8x1.9
5A
TP195
tpc40b_50
+1_05VRUN
Imax = 5A
OCP = 7A
Fsw = 300KHz
Skip Mode
Vo=(1+(PR505/PR506))*0.704=1.05V
OVP => VFB * 120%
UVP => VFB * 70%
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
Sheet
51
of
93



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	



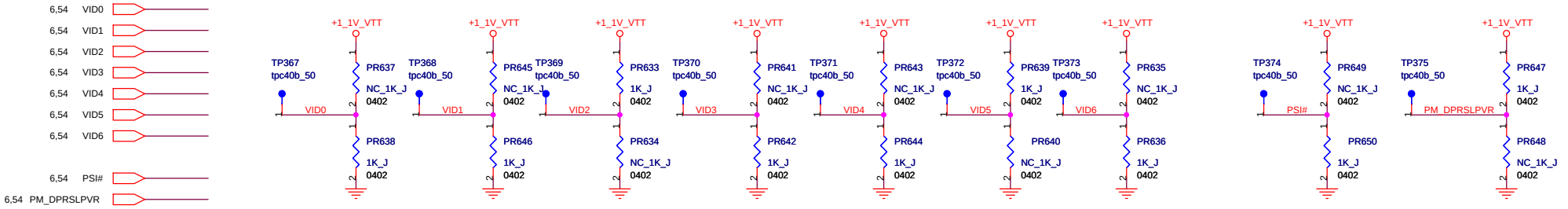
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	SYS Power(+1_8V)	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 53 of 93	



FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division
Title	CPU Power_VHCORE
Size A3	Document Number M931 (MBX-215) Rev SA
Date: Wednesday, January 06, 2010	Sheet 54 of 93

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

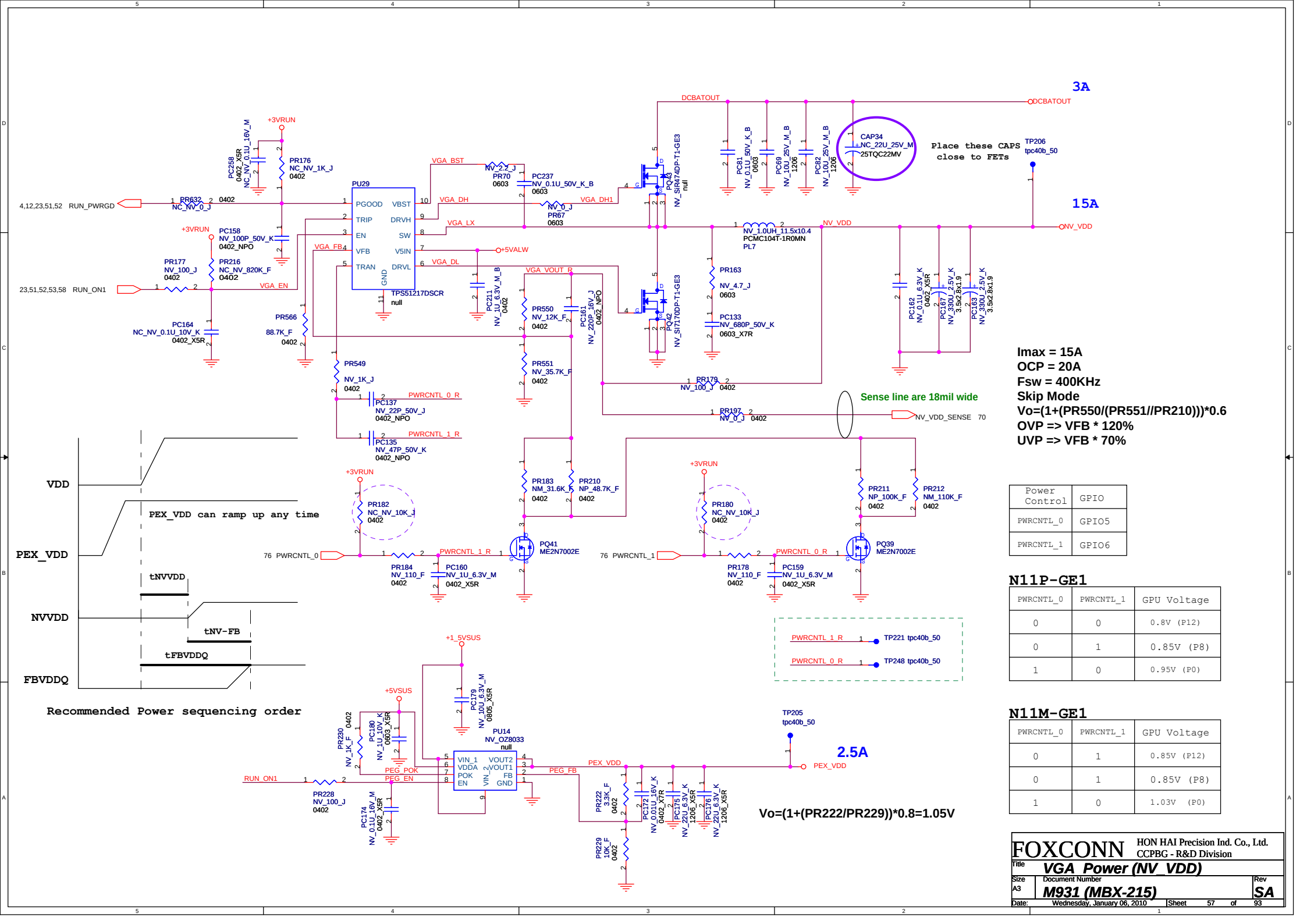
Market Segment Selection MSID[2:0] = [100] (SV)
- 416056_416056_Ard_EDS_Rev.1.1
- 403779_Clarksfield_MPG_Rev1.5



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	


3A
DCBATOUT
+3VRUN
PU29
PGOOD
TRIP
EN
VFB
TRAN
VBST
DRVH
SW
V5IN
DRVL
GND
TPS51217DSCR
null
VGA_BST
VGA_DH
VGA_LX
VGA_DL
VGA_FB
VGA_EN
VGA_VOUT_R
+5VALW
PR632 NC_NV_0_J 0402
4,12,23,51,52 RUN_PWRGD
23,51,52,53,58 RUN_ON1
PR177 NV_100_J 0402
PR216 NC_NV_820K_F 0402
PC158 NV_100P_50V_K 0402_NPO
PC164 NC_NV_0.1U_10V_K 0402_X5R
PR566 88.7K_F 0402
PR549 NV_1K_J 0402
PC137 NV_22P_50V_J 0402_NPO
PC135 NV_47P_50V_K 0402_NPO
PR550 NV_12K_F 0402
PR551 NV_35.7K_F 0402
PC161 NV_220P_16V_J 0402_NPO
PC211 NV_1U_6.3V_M 0402
PR70 NV_2.2_J 0603
PC237 NV_0.1U_50V_K_B 0603
PR67 NV_0_J 0603
PQ43 NV_SIR474DP-T1-GE3 null
PQ42 NV_SIR170DP-T1-GE3
PC258 0402_X5R NC_NV_0.1U_16V_M
PR176 NC_NV_1K_J 0402
PC81 NV_0.1U_50V_K_B 0603
PC69 NV_10U_25V_M_B 1206
PC82 NV_10U_25V_M_B 1206
CAP34 NC_22U_25V_M 25TQC22MV
Place these CAPS close to FETs
TP206 tpc40b_50
15A
NV_VDD
NV_1.0UH_11.5x10.4 PCMC104T-1R0MN PL7
PR163 NV_4.7_J 0603
PC133 NV_680P_50V_K 0603_X7R
PC162 NV_0.1U_6.3V_K 0402_X5R
PC167 NV_330U_2.5V_K 3.5x2.8x1.9
PC163 NV_330U_2.5V_K 3.5x2.8x1.9
PR179 NV_100_J 0402
PR197 NV_0_J 0402
NV_VDD_SENSE 70
Sense line are 18mil wide
Imax = 15A
OCP = 20A
Fsw = 400KHz
Skip Mode
Vo=(1+(PR550/(PR551//PR210)))*0.6
OVP => VFB * 120%
UVP => VFB * 70%
PR183 NM_31.6K_F 0402
PR210 NP_48.7K_F 0402
PR182 NC_NV_10K_J 0402
PR184 NV_110_F 0402
PC160 NV_1U_6.3V_M 0402_X5R
PQ41 ME2N7002E
76 PWRCNTL_0
PWRCNTL_1_R
PR180 NC_NV_10K_J 0402
PR178 NV_110_F 0402
PC159 NV_1U_6.3V_M 0402_X5R
PQ39 ME2N7002E
76 PWRCNTL_1
PWRCNTL_0_R
PR211 NP_100K_F 0402
PR212 NM_110K_F 0402
VDD
PEX_VDD
PEX_VDD can ramp up any time
tNVVDD
NVVDD
tNV-FB
tFBVDDQ
FBVDDQ
Recommended Power sequencing order
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)
PWRCNTL_1_R
PWRCNTL_0_R
TP221 tpc40b_50
TP248 tpc40b_50
+1_5VSUS
+5VSUS
PU14
NV_OZ8033
null
VIN_1
VDDA
POK
EN
VOUT2
VOUT1
FB
GND
PEG_POK
PEG_EN
PEG_FB
PEX_VDD
RUN_ON1
PR230 NV_1K_F 0402
PC180 NV_1U_10V_K 0603_X5R
PC179 NV_10U_6.3V_M 0805_X5R
PR228 NV_100_J 0402
PC174 NV_0.1U_16V_M 0402_X5R
PR222 3.3K_F 0402
PR229 10K_F 0402
PC172 NV_0.01U_16V_K 0402_X7R
PC175 NV_22U_6.3V_K 1206_X5R
PC176 NV_22U_6.3V_K 1206_X5R
TP205 tpc40b_50
2.5A
PEX_VDD
Vo=(1+(PR222/PR229))*0.8=1.05V
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
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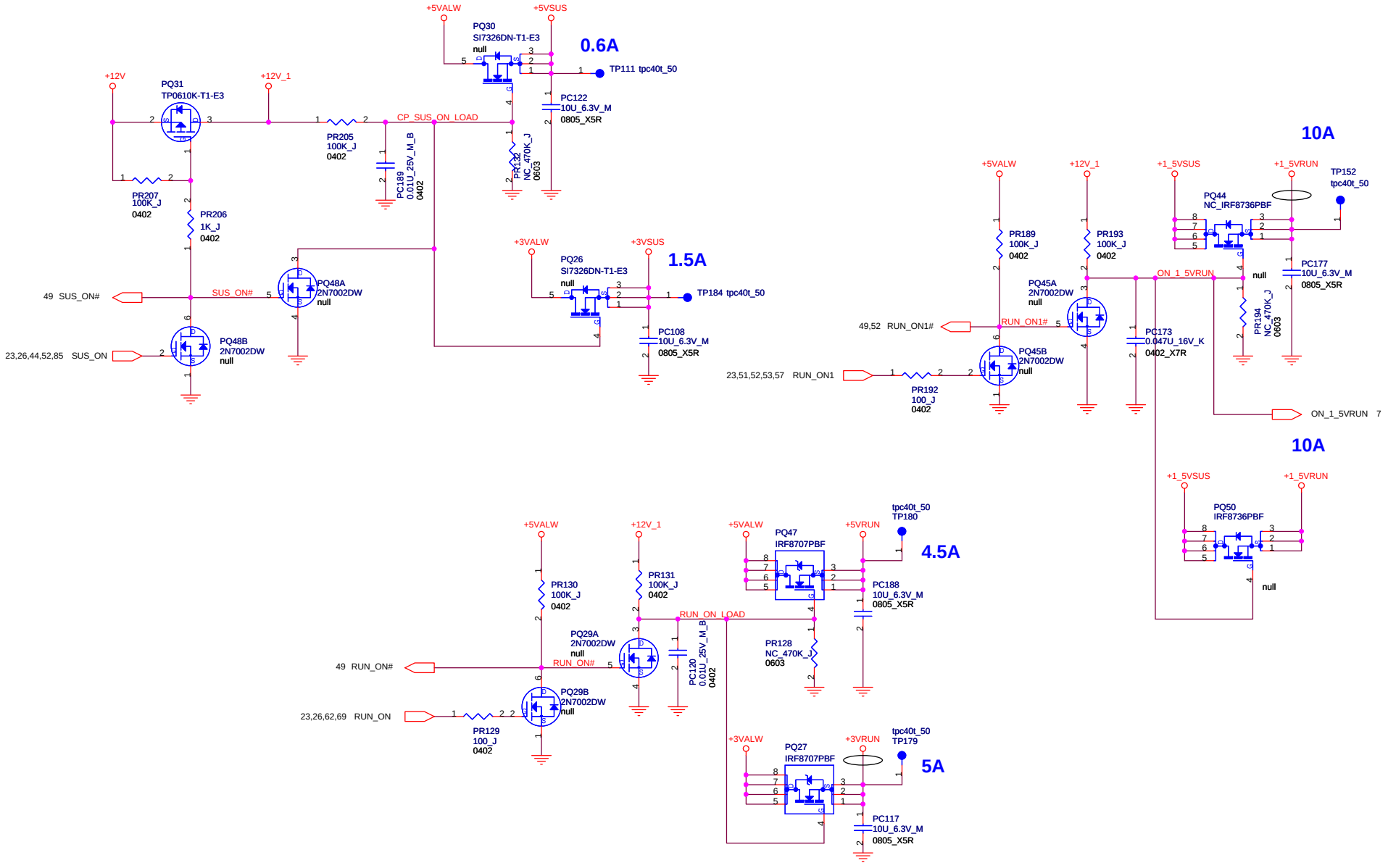
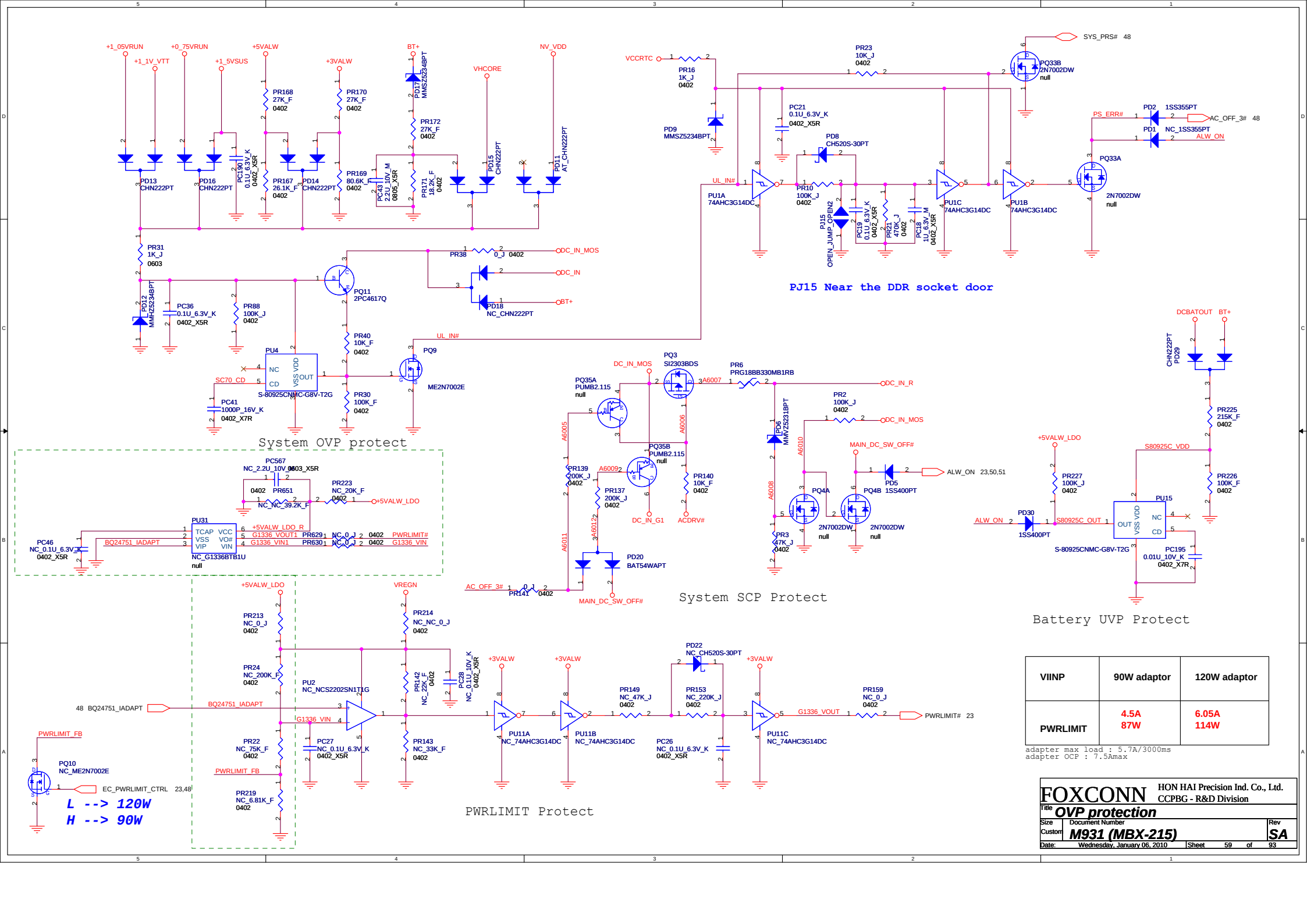


FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	*Others power plan*	
Size A3	Document Number *M931 (MBX-215)*	Rev *SA*
Date: Wednesday, January 06, 2010	Sheet 58 of 93	



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	Document Number	Rev
Custom	M931 (MBX-215)	SA

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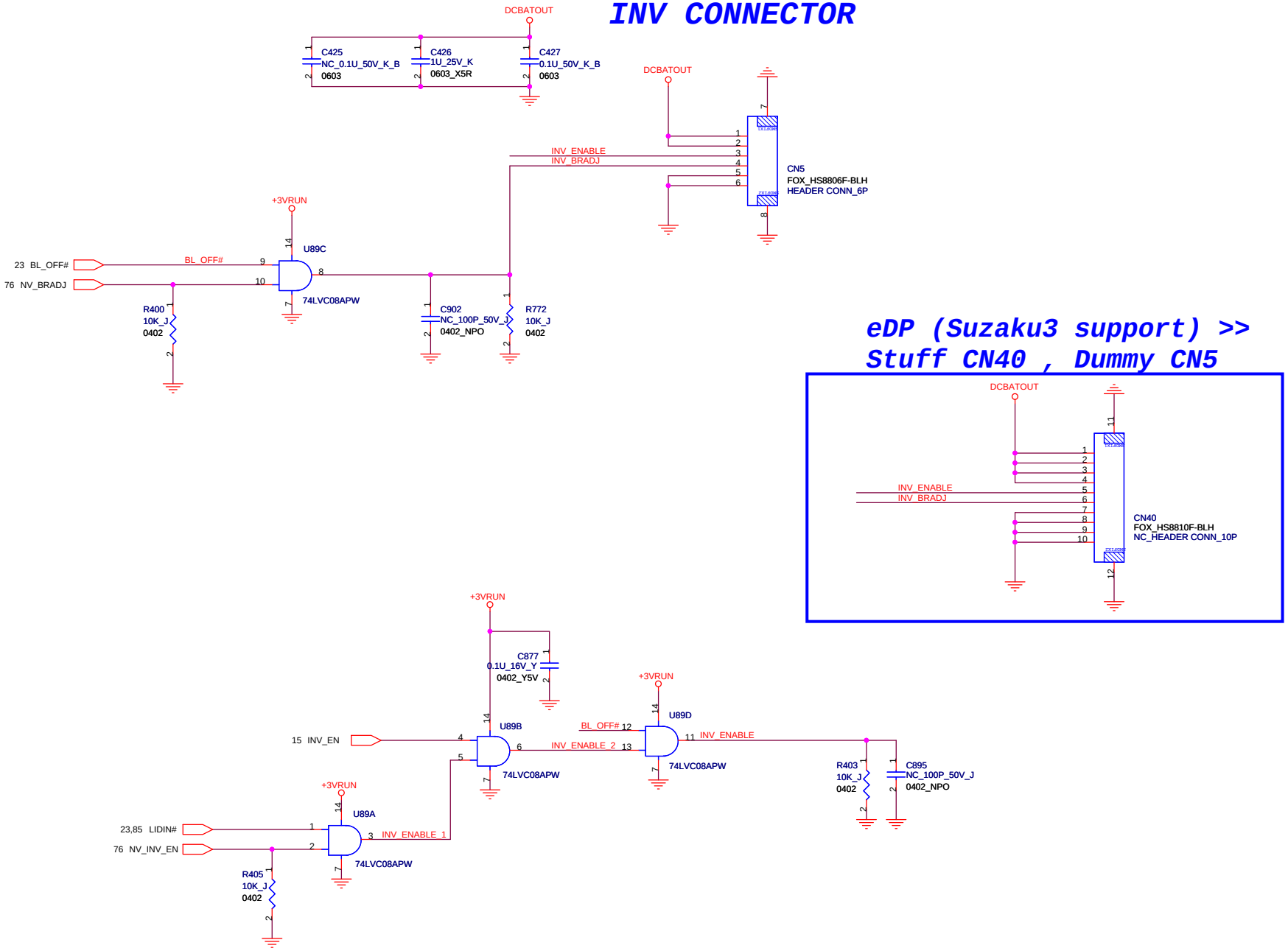
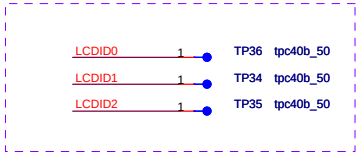
INV CONNECTOR

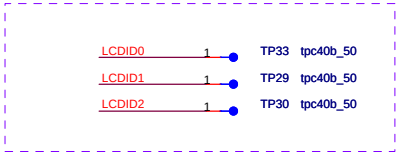


FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	INV CONNECTOR	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 60 of 93	

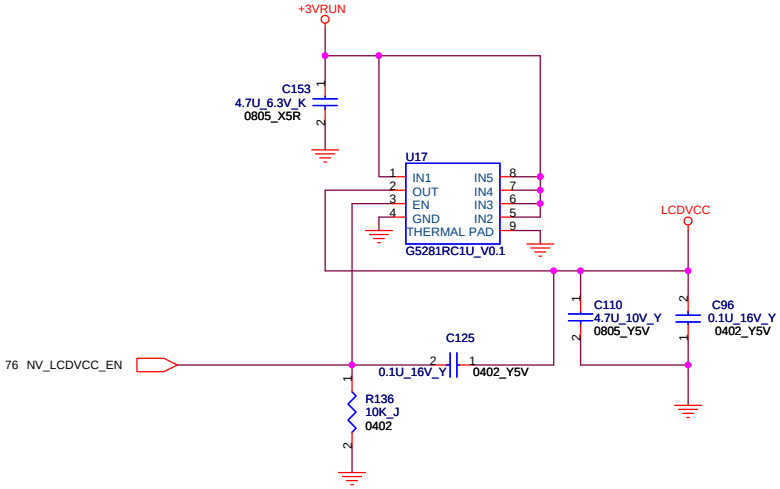
Bot-Side



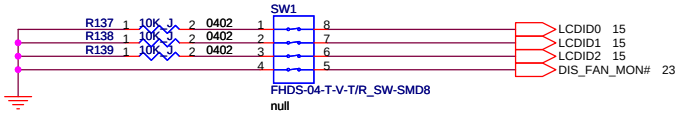
Top-Side



LCDVCC Power

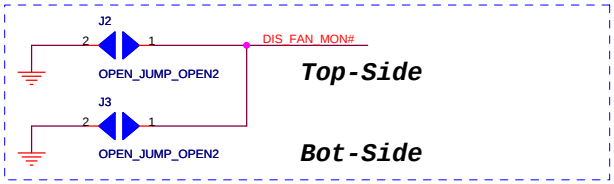


PANEL ID



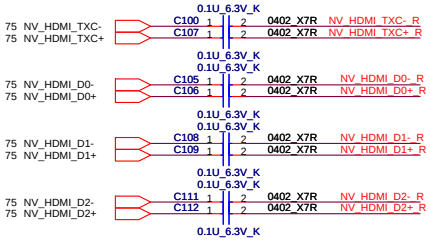
SW1 (Panel ID)	LCDID2	LCDID1	LCDID0	FAN Lock
CRT (No LCD)	0	0	0	ON: Disable OFF: Enable
EW1 (Sharp)	0	0	1	
RESERVED	0	1	0	
EW1 (LGD)	0	1	1	
EW3 (Sharp)	1	0	0	
EWX (Sharp)	1	0	1	
RESERVED	1	1	0	
RESERVED	1	1	1	

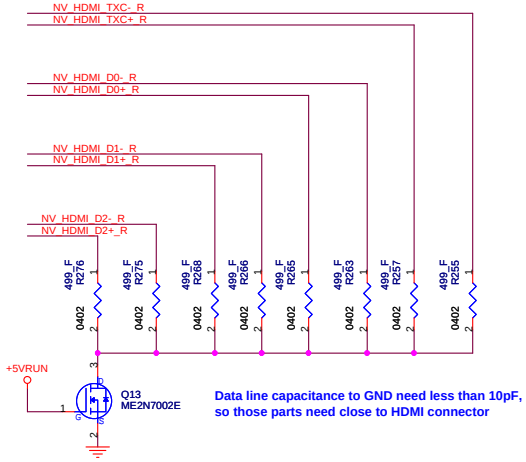
ON:0 , OFF:1

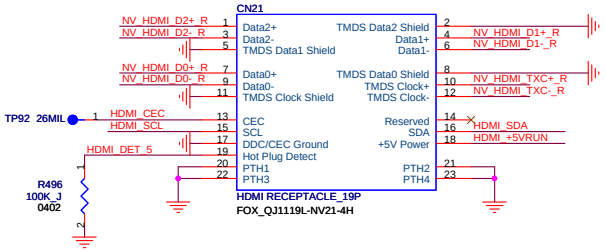


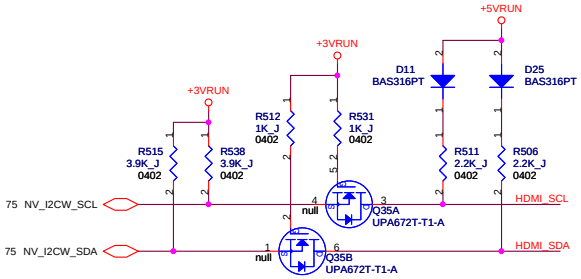
DIS_FAN_MON# for L6 BFT Test

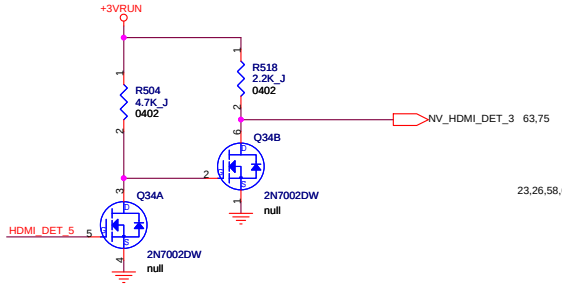
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division		
Title	LVDS(Panel ID/PWR)		
Size A3	Document Number M931 (MBX-215)		Rev SA
Date: Wednesday, January 06, 2010	Sheet 61 of 93		

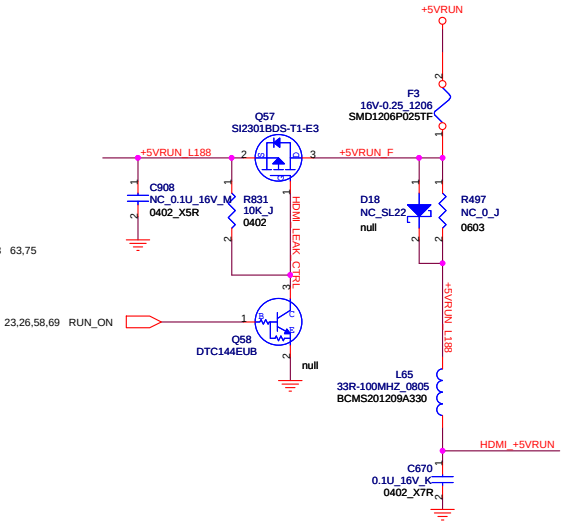




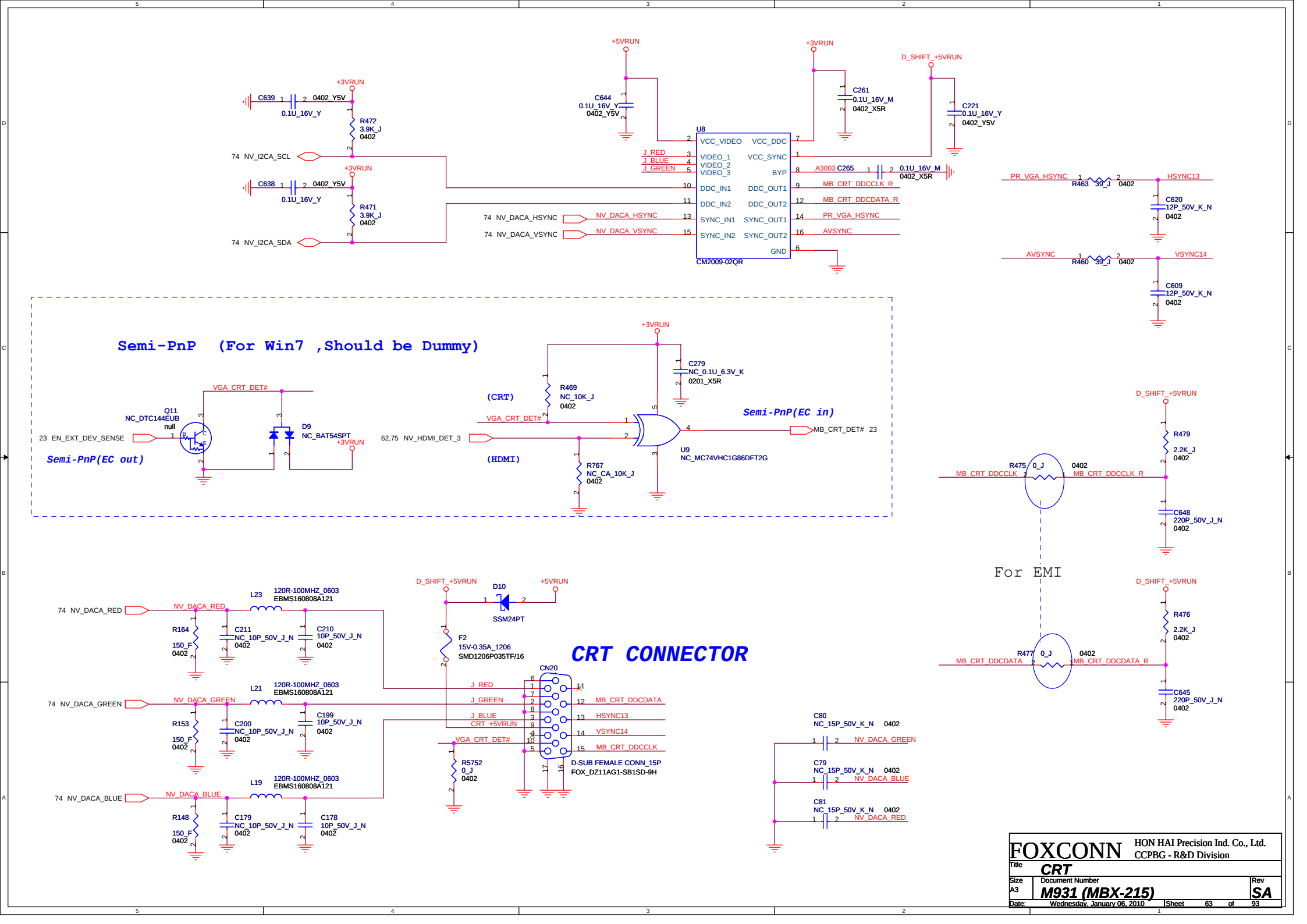








FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	VGA (STRAP) 2 OF 6	
Size: Custom	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 62 of 93	


+5VRUN
+3VRUN
D_SHIFT_+5VRUN
C639 0402_Y5V 0.1U_16V_Y
C638 0402_Y5V 0.1U_16V_Y
R472 3.9K_J 0402
R471 3.9K_J 0402
74 NV_I2CA_SCL
74 NV_I2CA_SDA
C644 0.1U_16V_Y 0402_Y5V
C261 0.1U_16V_M 0402_X5R
C221 0.1U_16V_Y 0402_Y5V
U8
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
CM2009-02QR
A3003 C265 0.1U_16V_M 0402_X5R
74 NV_DACA_HSYNC
74 NV_DACA_VSYNC
NV_DACA_HSYNC
NV_DACA_VSYNC
MB_CRT_DDCCLK_R
MB_CRT_DDCDATA_R
PR_VGA_HSYNC
AVSYNC
PR_VGA_HSYNC 1 R463 39_J 0402 2 HSYNC13
C620 12P_50V_K_N 0402
AVSYNC 1 R460 39_J 0402 2 VSYNC14
C609 12P_50V_K_N 0402
Semi-PnP (For Win7 ,Should be Dummy)
VGA_CRT_DET#
Q11 NC_DTC144EUB null
23 EN_EXT_DEV_SENSE
Semi-PnP(EC out)
D9 NC_BAT54SPT
(CRT)
(HDMI)
R469 NC_10K_J 0402
C279 NC_0.1U_6.3V_K 0201_X5R
62,75 NV_HDMI_DET_3
R767 NC_CA_10K_J 0402
U9 NC_MC74VHC1G86DFT2G
Semi-PnP(EC in)
MB_CRT_DET# 23
D_SHIFT_+5VRUN
R475 0_J 0402
MB_CRT_DDCCLK
MB_CRT_DDCCLK_R
R479 2.2K_J 0402
C648 220P_50V_J_N 0402
For EMI
R477 0_J 0402
MB_CRT_DDCDATA
MB_CRT_DDCDATA_R
R476 2.2K_J 0402
C645 220P_50V_J_N 0402
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
CRT CONNECTOR
CN20
J_RED
J_GREEN
J_BLUE
CRT_+5VRUN
VGA_CRT_DET#
MB_CRT_DDCDATA
HSYNC13
VSYNC14
MB_CRT_DDCCLK
D-SUB FEMALE CONN_15P
FOX_DZ11AG1-SB1SD-9H
R5752 0_J 0402
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
Size A3
Document Number M931 (MBX-215)
Rev SA
Date: Wednesday, January 06, 2010
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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)

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

<<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 .)

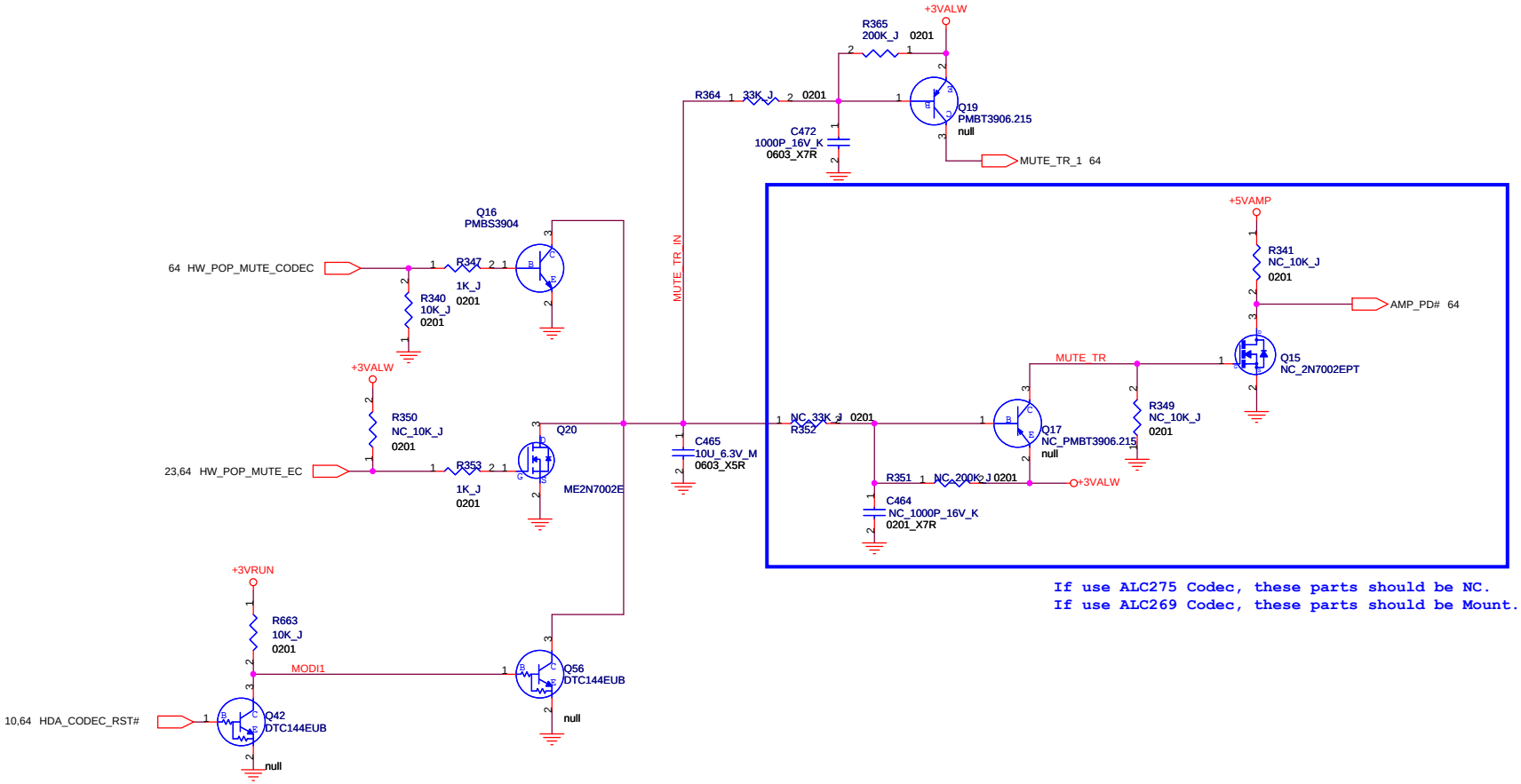
BOM Option for ALC275 and ALC269
(Default is ALC275.)

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

PC BEEP

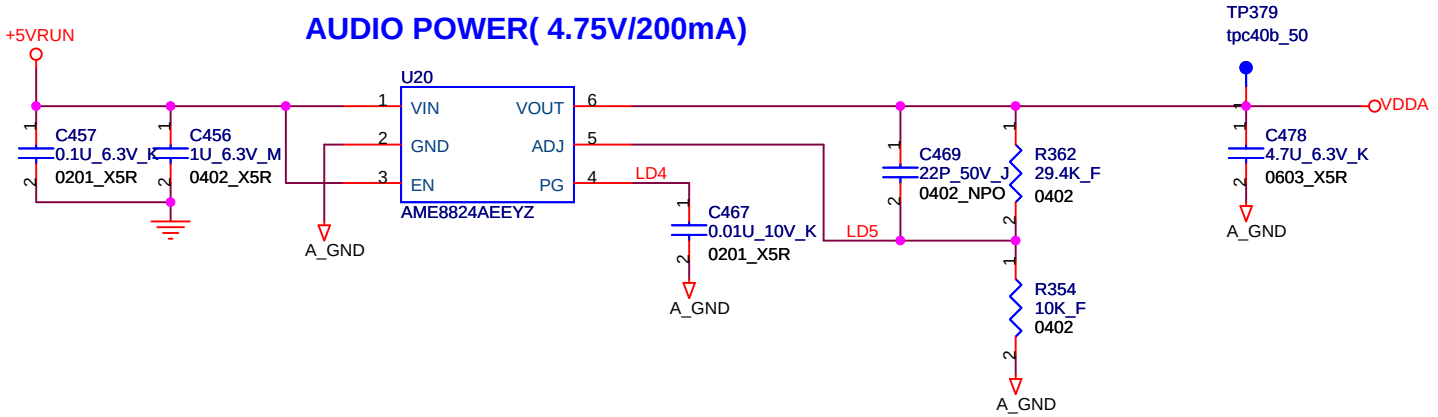
From PCH

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.

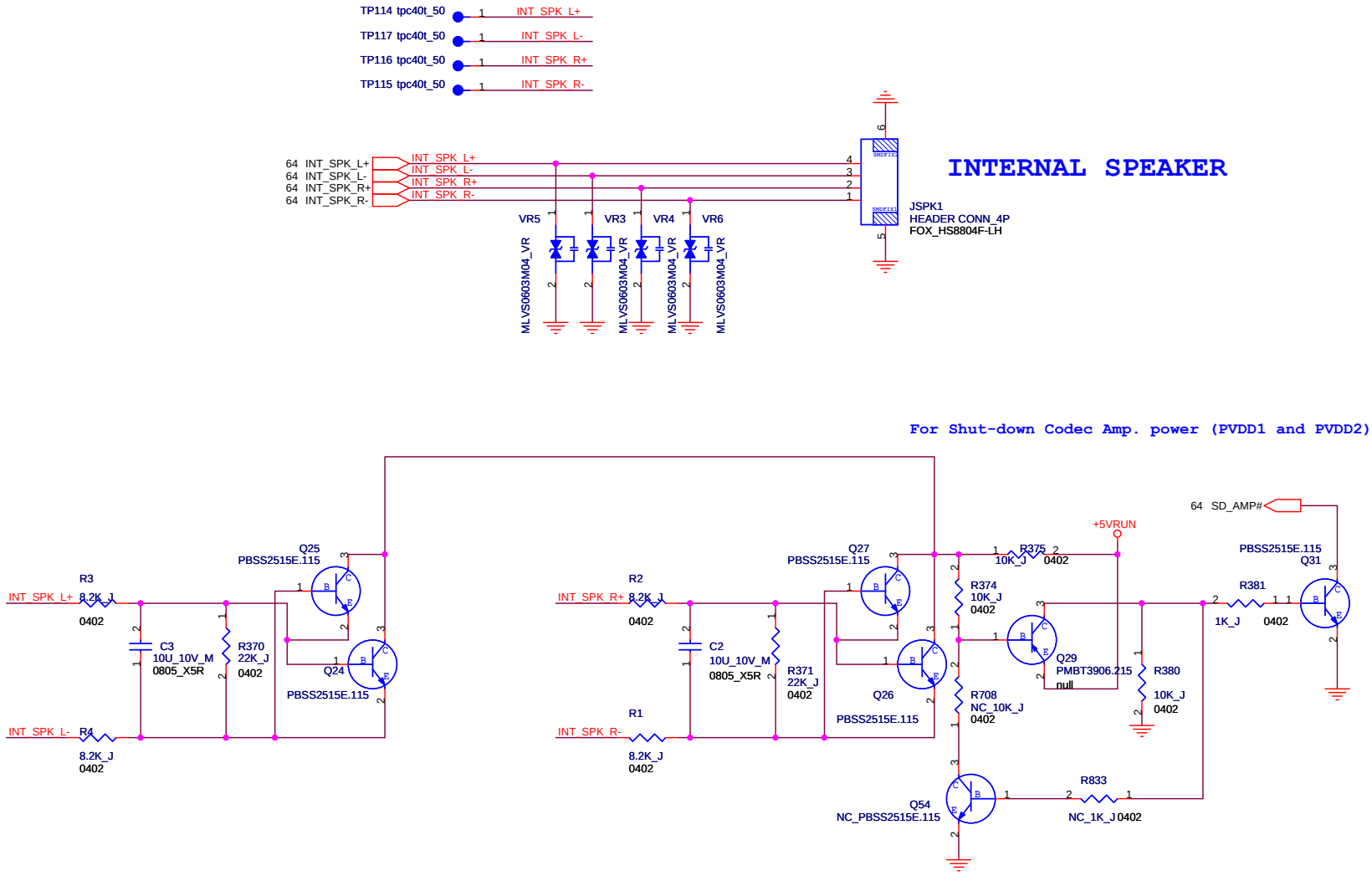
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	AUDIO (MUTE)	
Size A3	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 65 of 93	



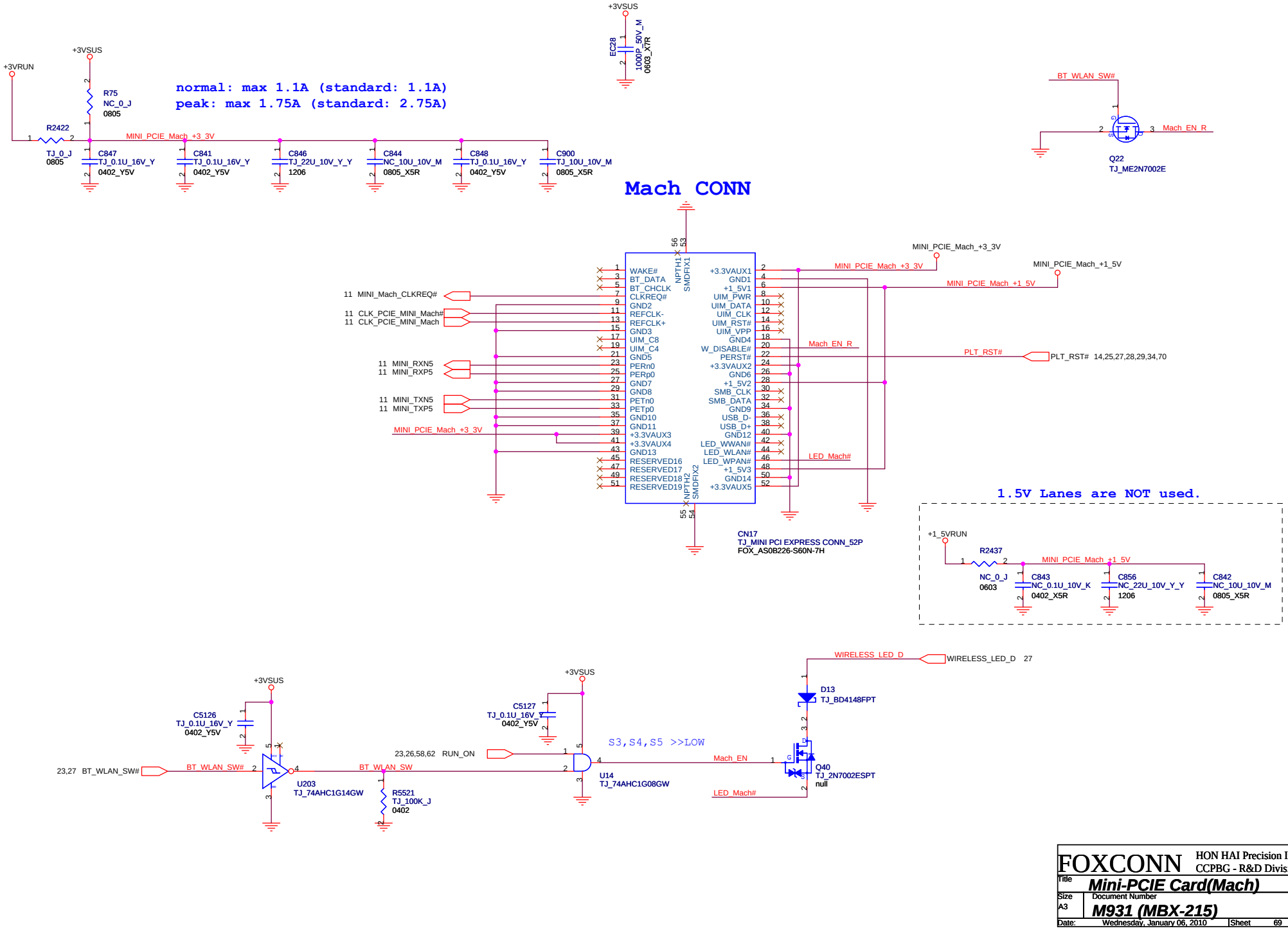
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title: AUDIO POWER		
Size: A4	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 66 of 93	

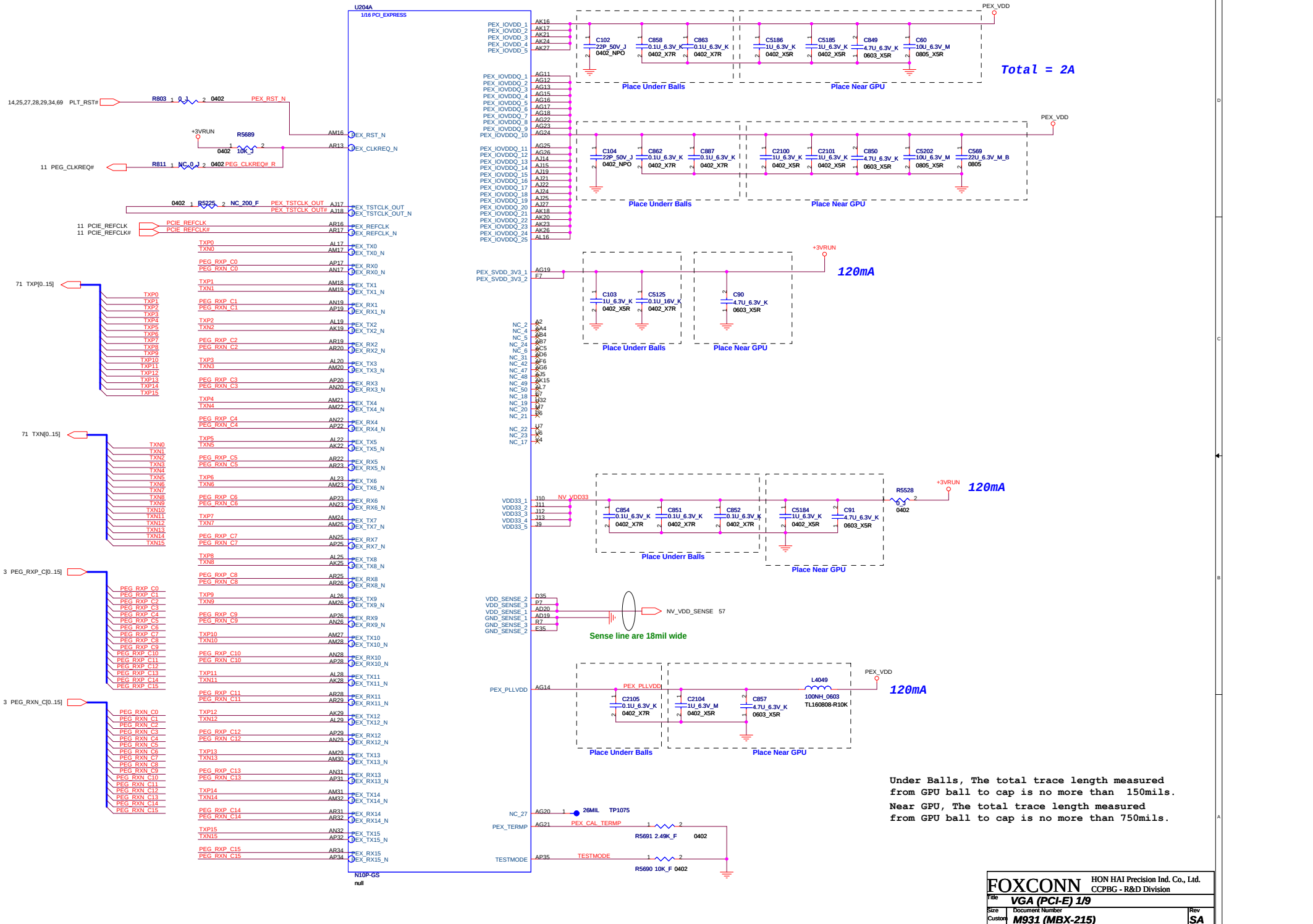
Delete Class D Amp. when implemented ALC275.

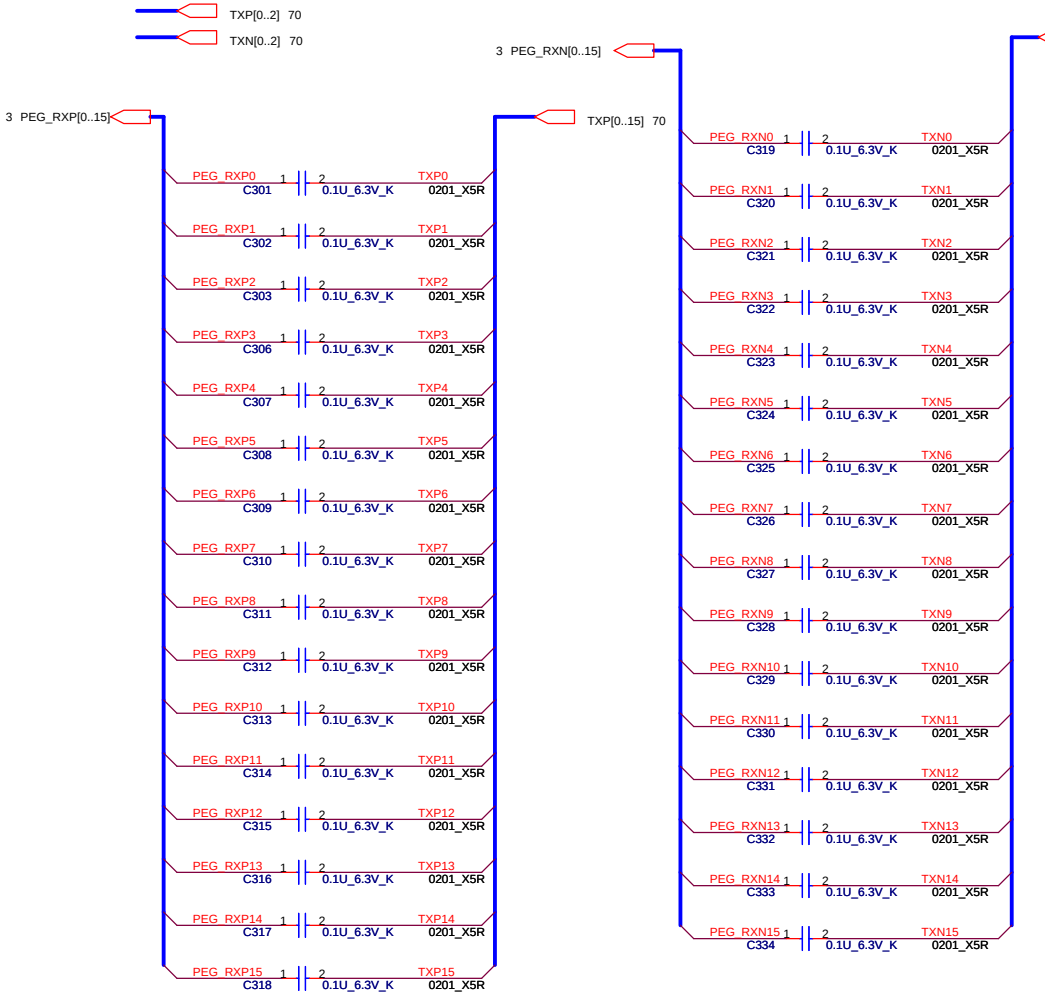
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	AUDIO SPEAKER AMP	
Size: A3	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 67 of 93	



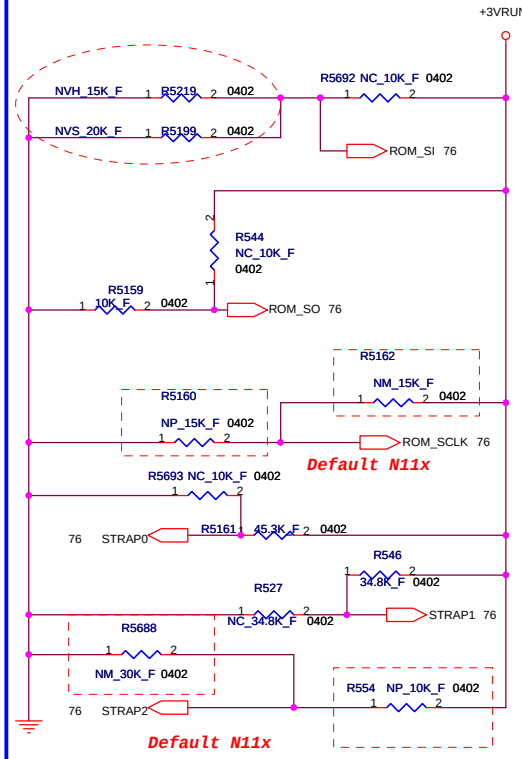
FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	AUDIO SPEAKER CONNECTOR	
Size B	Document Number M931 (MBX-215)	Rev SA
Date: Wednesday, January 06, 2010	Sheet 68 of 93	


normal: max 1.1A (standard: 1.1A)
peak: max 1.75A (standard: 2.75A)
Mach CONN
1.5V Lanes are NOT used.
S3,S4,S5 >>LOW
CN17
TJ_MINI PCI EXPRESS CONN_52P
FOX_AS0B226-S60N-7H
Q22
TJ_ME2N7002E
Q40
TJ_2N7002ESPT
U203
TJ_74AHC1G14GW
U14
TJ_74AHC1G08GW
D13
TJ_BD4148FPT
FOXCONN
HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division
Mini-PCIE Card(Mach)
M931 (MBX-215)
Wednesday, January 06, 2010


U204A
1/16 PCI_EXPRESS
N10P-GS
null
PEX_VDD
Total = 2A
Place Underr Balls
Place Near GPU
120mA
+3VRUN
NV_VDD33
NV_VDD_SENSE 57
Sense line are 18mil wide
PEX_PLLVDD
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.
CCPBG - R&D Division
VGA (PCI-E) 1/9
M931 (MBX-215)
SA
Wednesday, January 06, 2010
70
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]

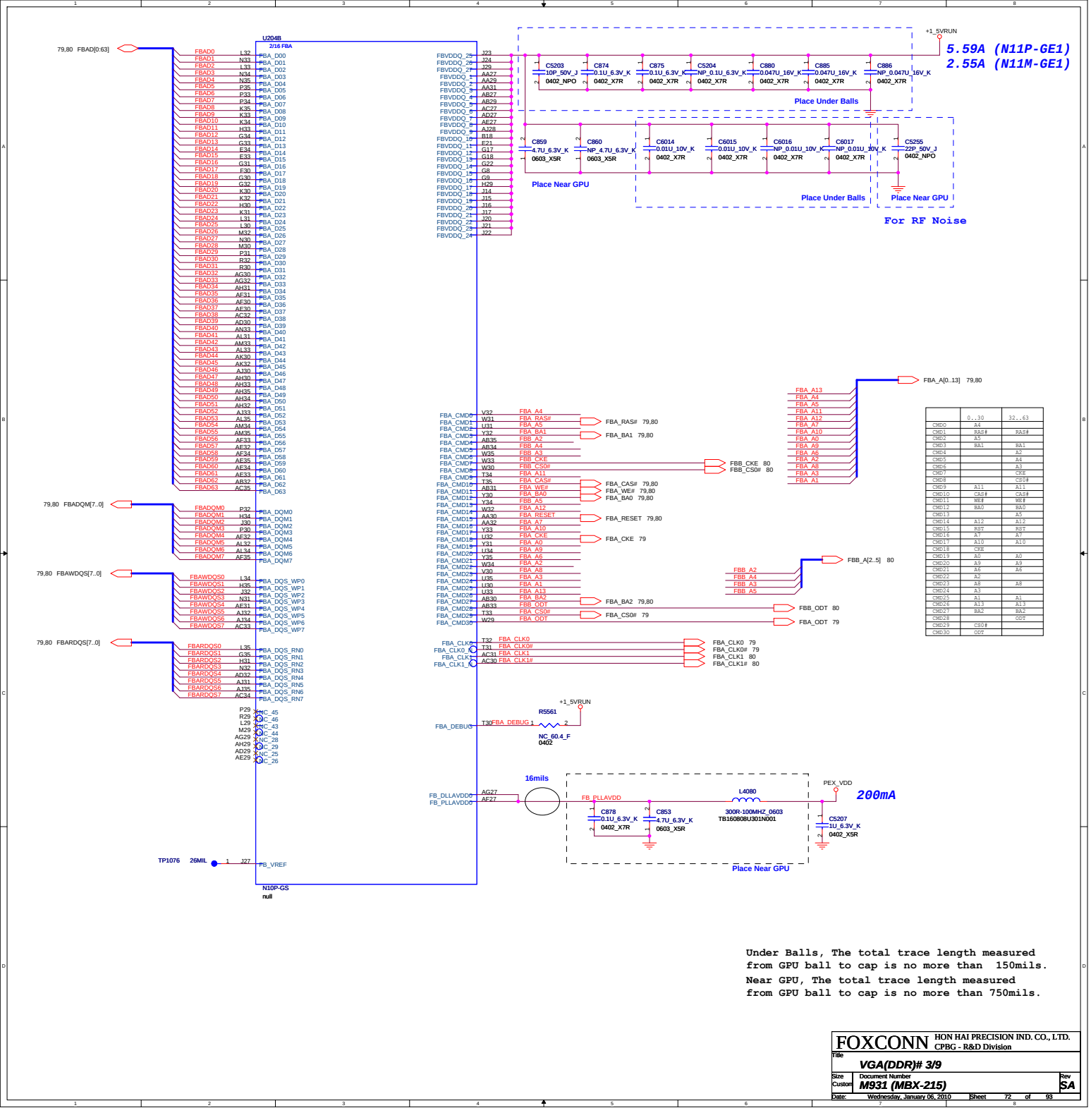
Refer to <GB1 Family Design Guide DG-04202-001_v02_secured>

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

Title: VGA (PCI-E BUS)Strap 2/9

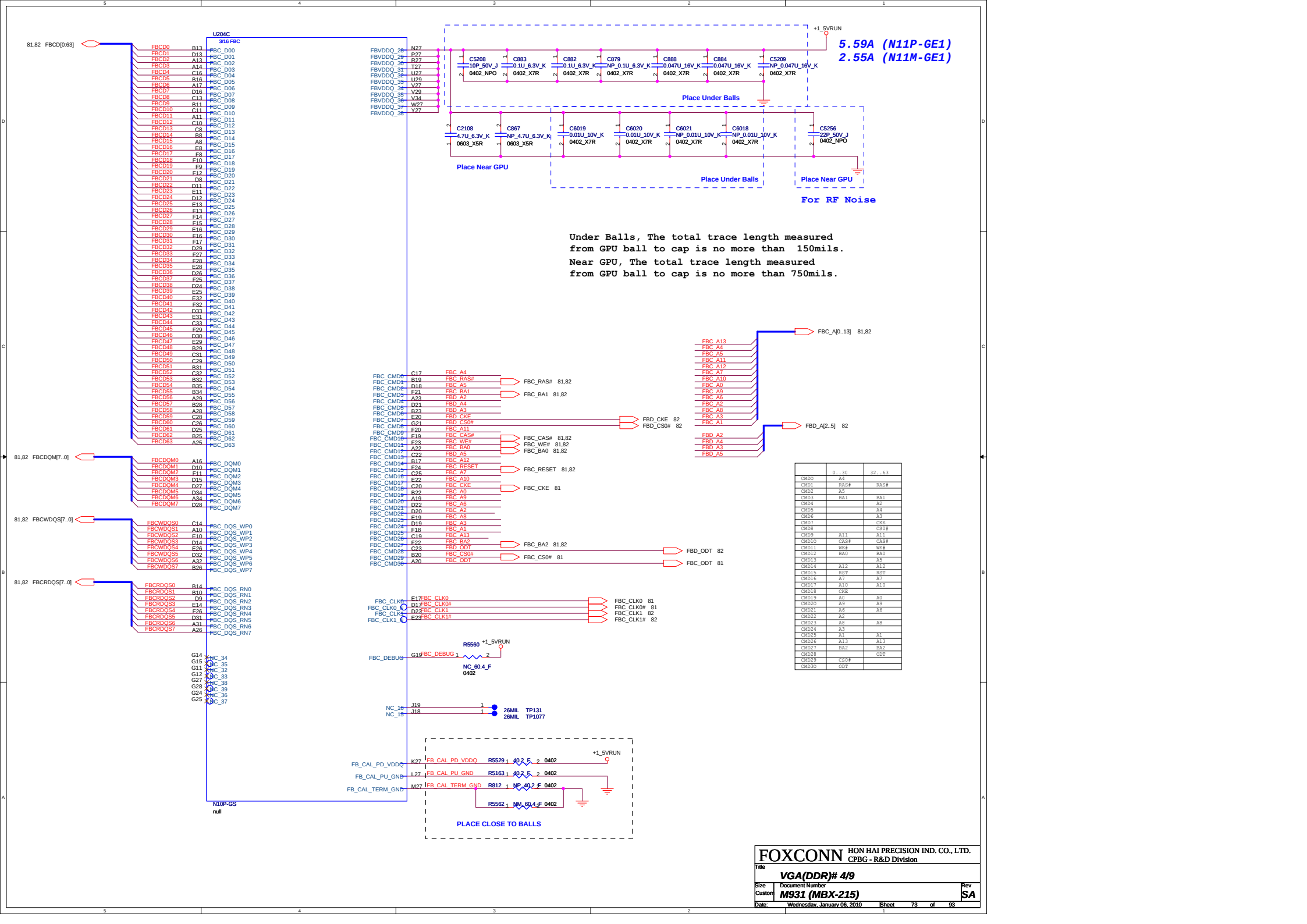
Size: Custom | Document Number: M931 (MBX-215) | Rev: SA

Date: Wednesday, January 06, 2010 | Sheet 71 of 93



	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)# 3/9	
Size: Custom	Document Number: M931 (MBX-215)	Rev: SA
Date: Wednesday, January 06, 2010	Sheet 72 of 93	



	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	

+3VRUN **120mA**

L4043
300R-100MHZ_0603
TB160808U301N001

C62 4.7U_6.3V_K 0603_X5R
C5210 1U_6.3V_K 0402_X5R
C5194 0.1U_16V_K 0402_X7R
C5199 0.1U_16V_K 0402_X7R
C5200 0.1U_16V_K 0402_X7R
C63 4700P_16V_K 0402_X7R
C64 470P_50V_K 0402_X7R
C5211 0.1U_6.3V_K 0402_X7R
R801 124_F 0402

Place Near GPU
Place Under Balls

DACA_VDD
DACA_VREF
DACA_RSET

U204F
4/16 DACA
N10P-GS
null

DACA_VDD	AJ12	I2CA_SCL	G1 NV_I2CA_SCL → NV_I2CA_SCL 63
DACA_VREF	AK12	I2CA_SDA	G4 NV_I2CA_SDA → NV_I2CA_SDA 63
DACA_RSET	AK13	DACA_HSYNC	AM13 NV_DACA_HSYNC → NV_DACA_HSYNC 63
		DACA_VSYNC	AL13 NV_DACA_VSYNC → NV_DACA_VSYNC 63
		DACA_RED	AM15 NV_DACA_RED → NV_DACA_RED 63
		DACA_GREEN	AM14 NV_DACA_GREEN → NV_DACA_GREEN 63
		DACA_BLUE	AL14 NV_DACA_BLUE → NV_DACA_BLUE 63

150 F 0402 R5695
150 F 0402 R5696
150 F 0402 R5697
Place close to balls

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.

+3VRUN

R5697 10K_J 0402 NV_DACC_VDD

U204G
6/16 DACC
N10P-GS
null

DACB_VDD	AG7	I2CB_SCL	G3 NV_I2CB_SCL
DACB_VREF	AK6	I2CB_SDA	G2 NV_I2CB_SDA
DACB_RSET	AH7	DACB_HSYNC	AM1
		DACB_VSYNC	AM2
		DACB_RED	AK4
		DACB_GREEN	AL4
		DACB_BLUE	AJ4

R5535 NC_124_F 0402

0402 R5698 2.2K_J
0402 R1230 2.2K_J

DACA	VGA-CRT	I2CA
DACA-RED	R	
DACA-GREEN	G	
DACA-BLUE	B	
DACA-HSYNC	HSYNC	
DACA-VSYNC	VSYNC	
	VGA-DDCCLK	SCL
	VGA-DDCDATA	SDA

eDP (Suzaku3 support) >> Stuff

+3VRUN **220mA**

L4044
300R-100MHZ_0603
TB160808U301N001

C866 4.7U_6.3V_K 0603_X5R
C5198 2.2U_6.3V_K 0603_B
C5193 0.1U_16V_K 0402_X7R
C5183 0.1U_16V_K 0402_X7R
C5182 0.1U_16V_K 0402_X7R
C5258 22P_50V_J 0402_NPO
R5700 1K_F 0402

IFPD_PLLVDD

PEX_VDD **285mA**

L4084
220R-100MHZ_0603
FCM1608KF-221T05

C5212 4.7U_6.3V_K 0603_X5R
C5197 1U_6.3V_K 0402_X5R
C5196 0.1U_16V_K 0402_X7R
C5195 0.1U_16V_K 0402_X7R
C5257 22P_50V_J 0402_NPO

IFPD_IOVDD

Place Near GPU.
Place Under Balls
For RF Noise
For RF Noise

U204H
5/16 DACB(TV)
N10P-GS
null

IFPD_PLLVDD	AC6	IFPD_AUX_I2CX_SDA_N	
IFPD_RSET	AB6	IFPD_AUX_I2CX_SCL	
IFPD_IOVDD	AK8	IFPD_L3_N	AN4 NV_PEG_AUXN C835 → NC_0.1U_6.3V_K 0201_X5R eDP_PEG_AUXN → eDP_PEG_AUXN 38
		IFPD_L3	AP4 NV_PEG_AUXP C834 → NC_0.1U_6.3V_K 0201_X5R eDP_PEG_AUXP → eDP_PEG_AUXP 38
		IFPD_L2_N	AR4 NV_PEG_TXN3 C837 → NC_0.1U_6.3V_K 0201_X5R eDP_PEG_TXN3 → eDP_PEG_TXN3 38
		IFPD_L2	AR5 NV_PEG_TXP3 C836 → NC_0.1U_6.3V_K 0201_X5R eDP_PEG_TXP3 → eDP_PEG_TXP3 38
		IFPD_L1_N	AP5 NV_PEG_TXN2 C800 → NC_0.1U_6.3V_K 0201_X5R eDP_PEG_TXN2 → eDP_PEG_TXN2 38
		IFPD_L1	AN5 NV_PEG_TXP2 C803 → NC_0.1U_6.3V_K 0201_X5R eDP_PEG_TXP2 → eDP_PEG_TXP2 38
		IFPD_L0_N	AN7 NV_PEG_TXN1 C793 → NC_0.1U_6.3V_K 0201_X5R eDP_PEG_TXN1 → eDP_PEG_TXN1 38
		IFPD_L0	AP7 NV_PEG_TXP1 C795 → NC_0.1U_6.3V_K 0201_X5R eDP_PEG_TXP1 → eDP_PEG_TXP1 38
		GPIO19	AR7 NV_PEG_TXN0 C725 → NC_0.1U_6.3V_K 0201_X5R eDP_PEG_TXN0 → eDP_PEG_TXN0 38
			AR8 NV_PEG_TXP0 C735 → NC_0.1U_6.3V_K 0201_X5R eDP_PEG_TXP0 → eDP_PEG_TXP0 38
			L7 → eDP_DET_NV 38

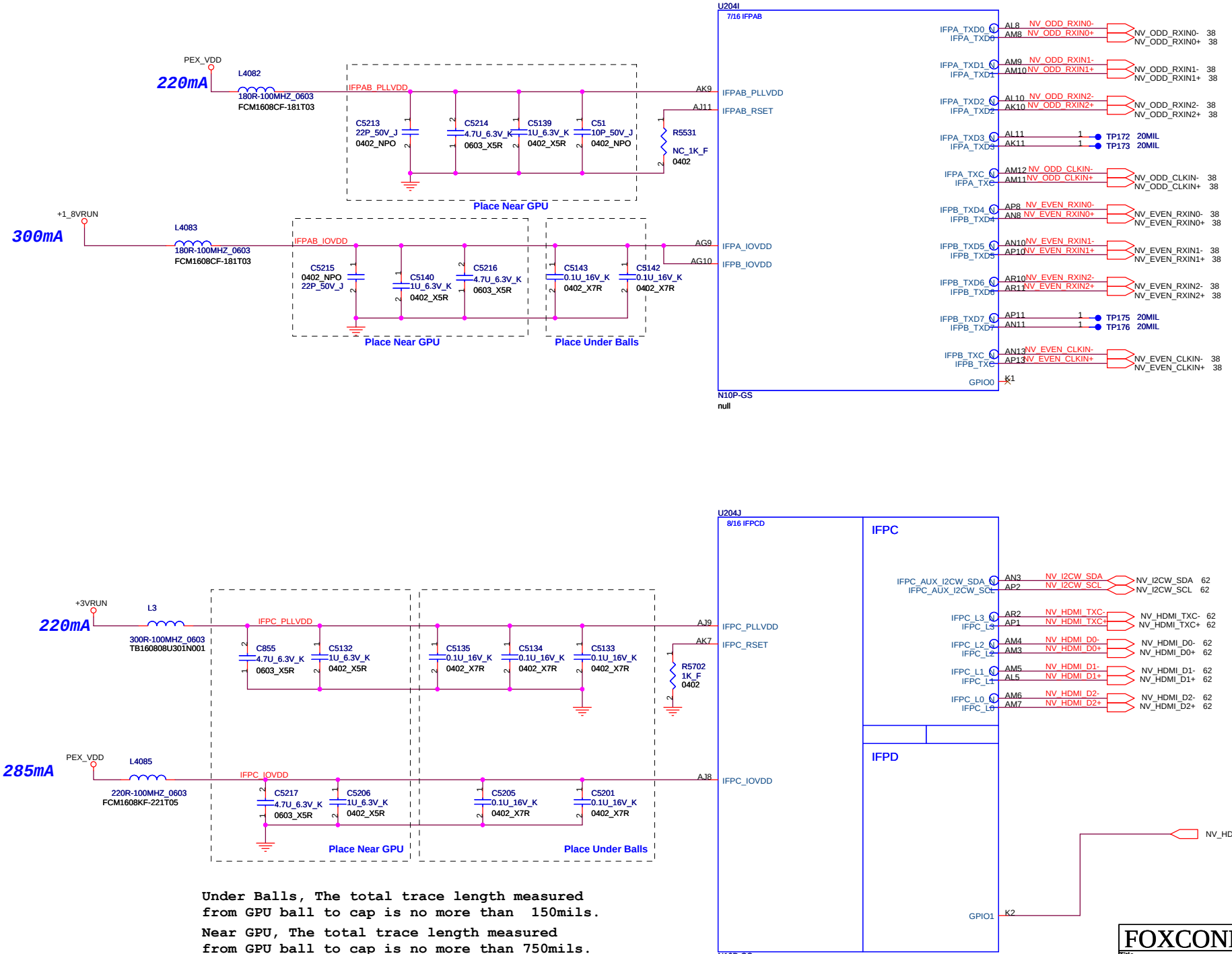
To eDP CONN.

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

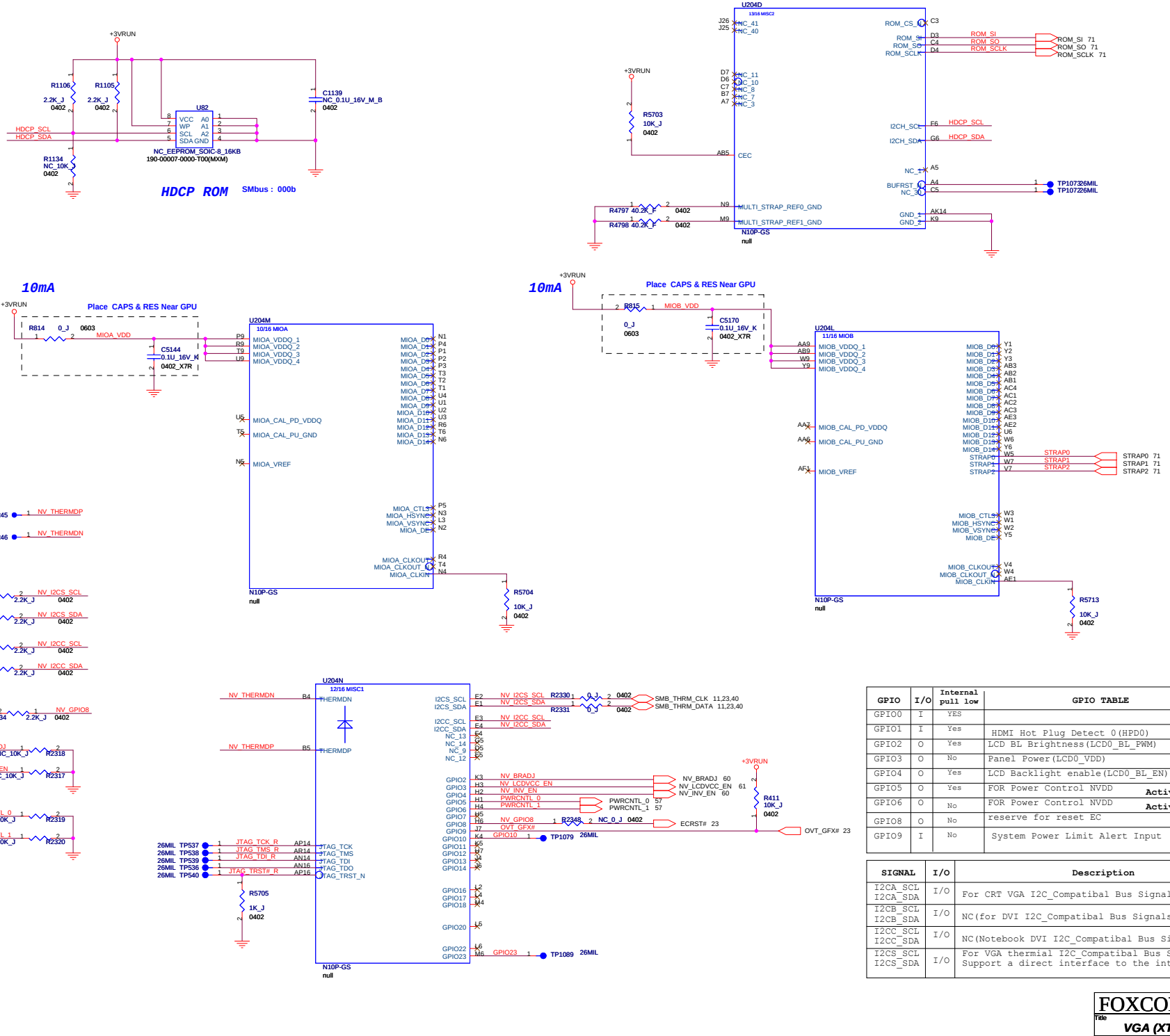
Title: **VGA(CRT/eDP) 5/9**

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**

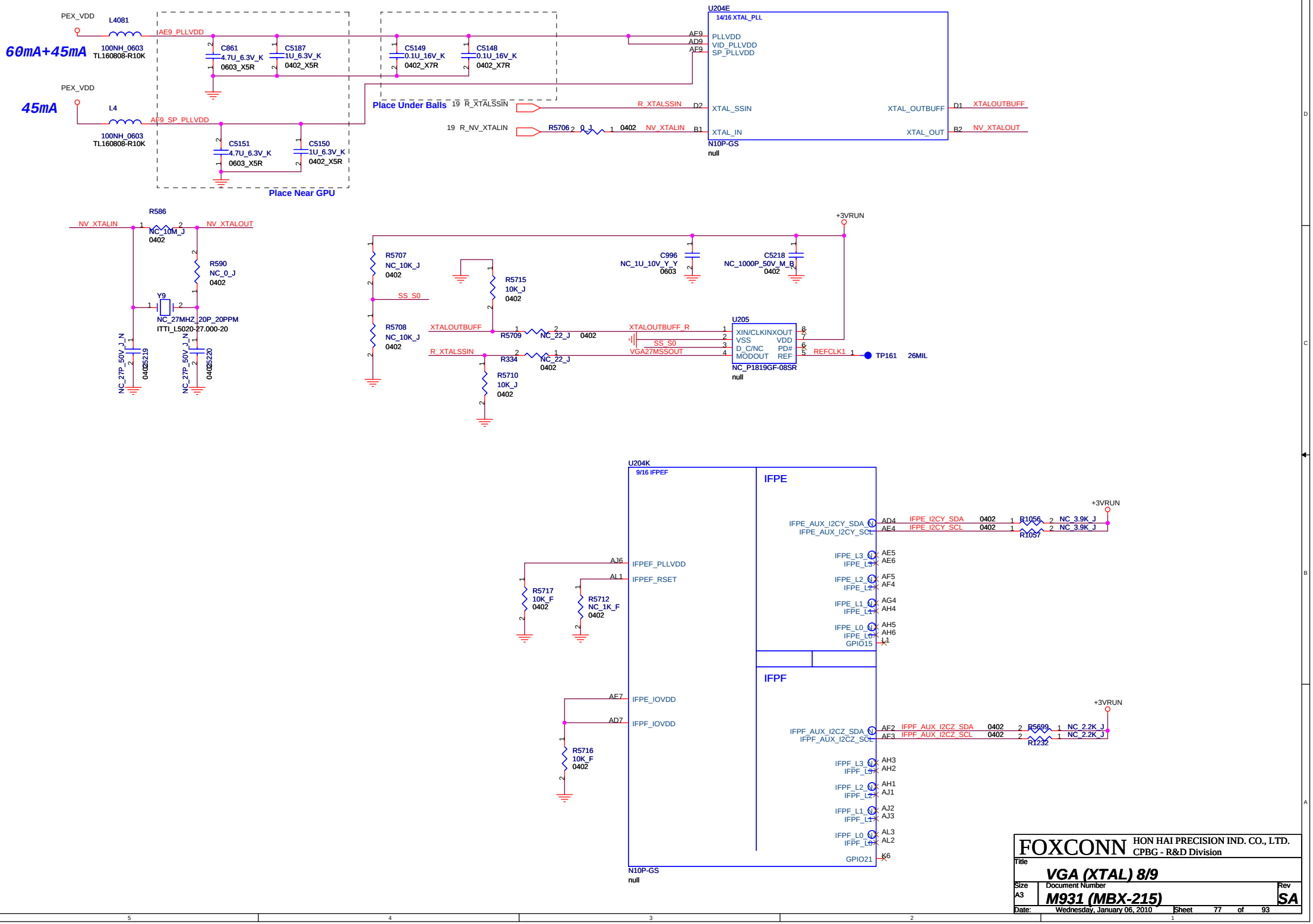
SIGNAL	I/O	Description
I2CA_SCL I2CA_SDA	I/O	For CRT VGA I2C_Compatibal Bus Signals
I2CB_SCL I2CB_SDA	I/O	NC(for DVI I2C_Compatibal Bus Signals)
I2CC_SCL I2CC_SDA	I/O	NC(Notebook DVI I2C_Compatibal Bus Signals)
I2CS_SCL I2CS_SDA	I/O	For VGA thermial I2C_Compatibal Bus Signals. Support a direct interface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



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

Title: VGA (XTAL) 8/9

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

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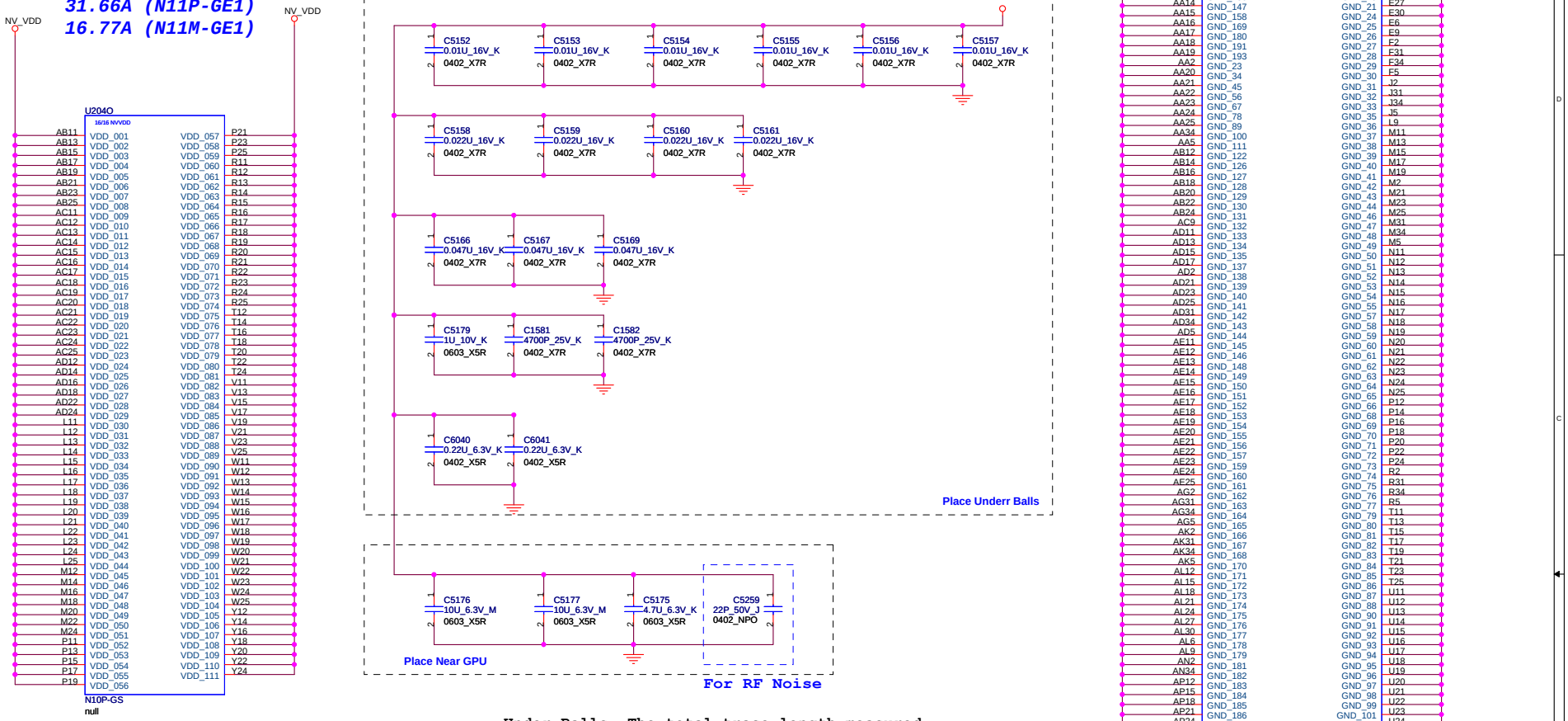
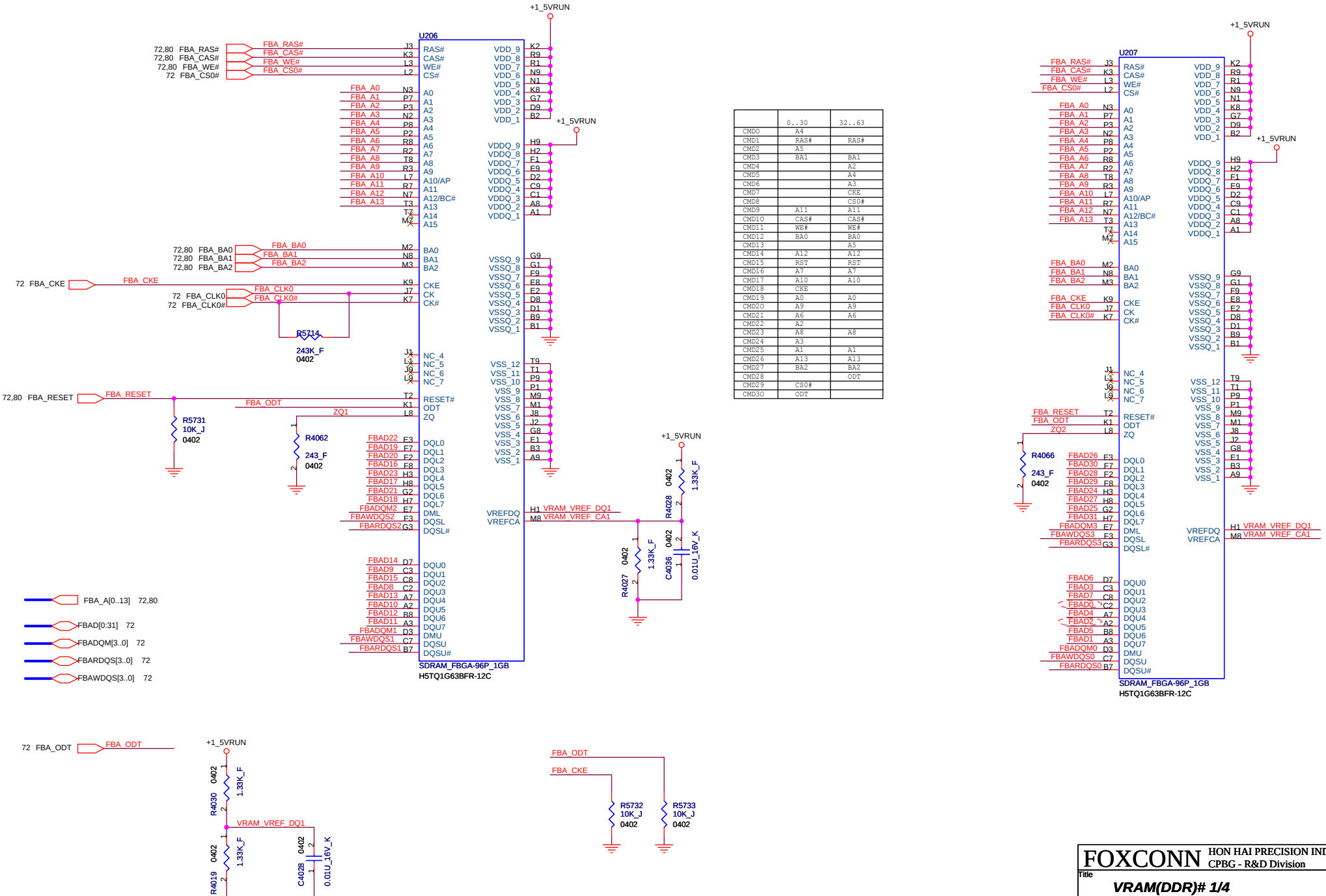
31.66A (N11P-GE1)
16.77A (N11M-GE1)



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		
Size: Custom	Document Number: M931 (MBX-215)		Rev: SA
Date: Wednesday, January 06, 2010	Sheet 78 of 93		



	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)# 1/4
Size	A3
Document Number	M931 (MBX-215)
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Date:	Wednesday, January 06, 2010
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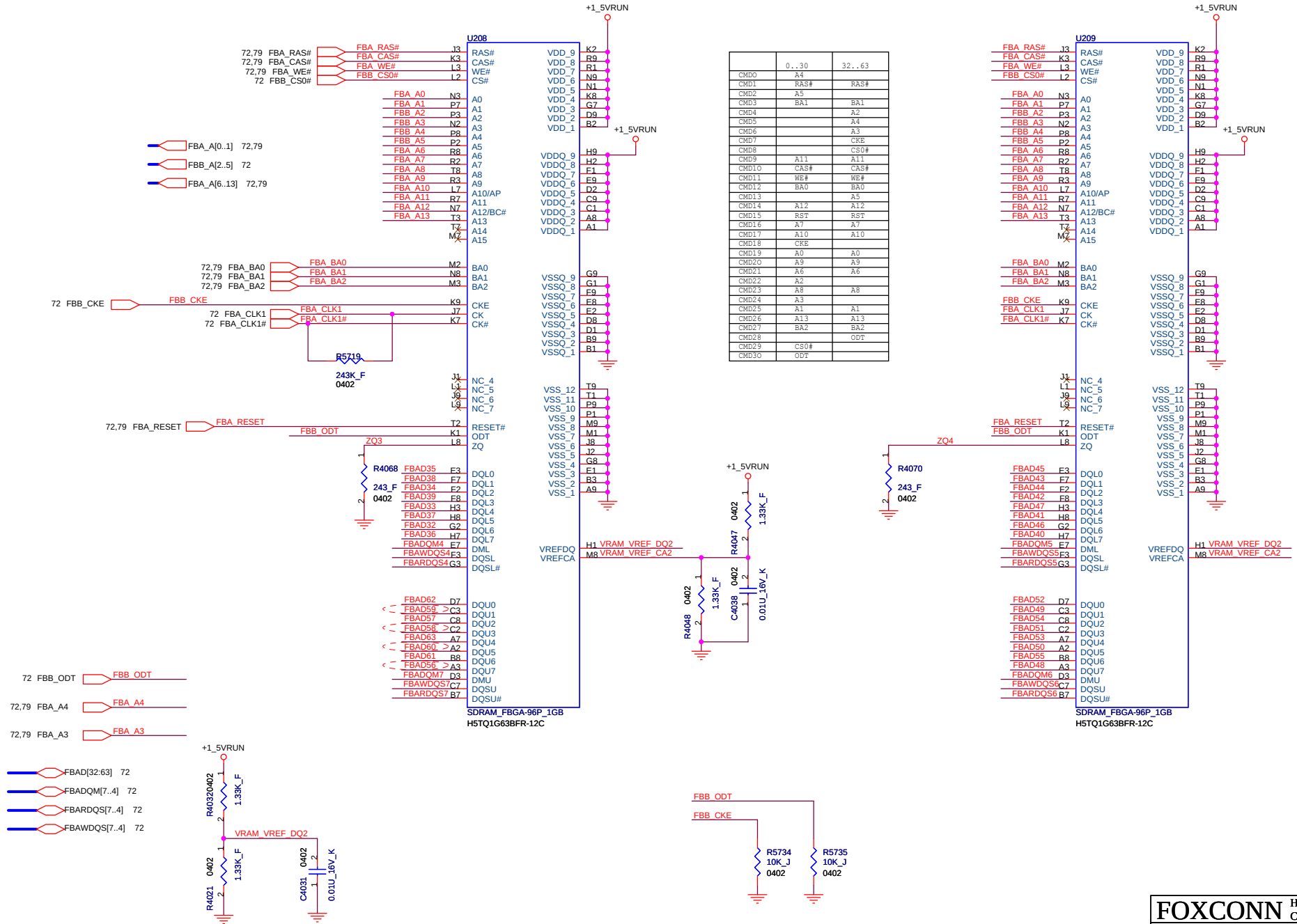
FOXCONN HON HAI PRECISION IND. CO., LTD.
CPBG - R&D Division



	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
CMD1O	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
CMD2O	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#	
CMD3O	ODT	

FOXCONN	HON HAI PRECISION IND. CO., LTD. CPBG - R&D Division	
Title	VRAM(DDR)# 2/4	
Size A3	Document Number M931 (MBX-215)	Rev SA
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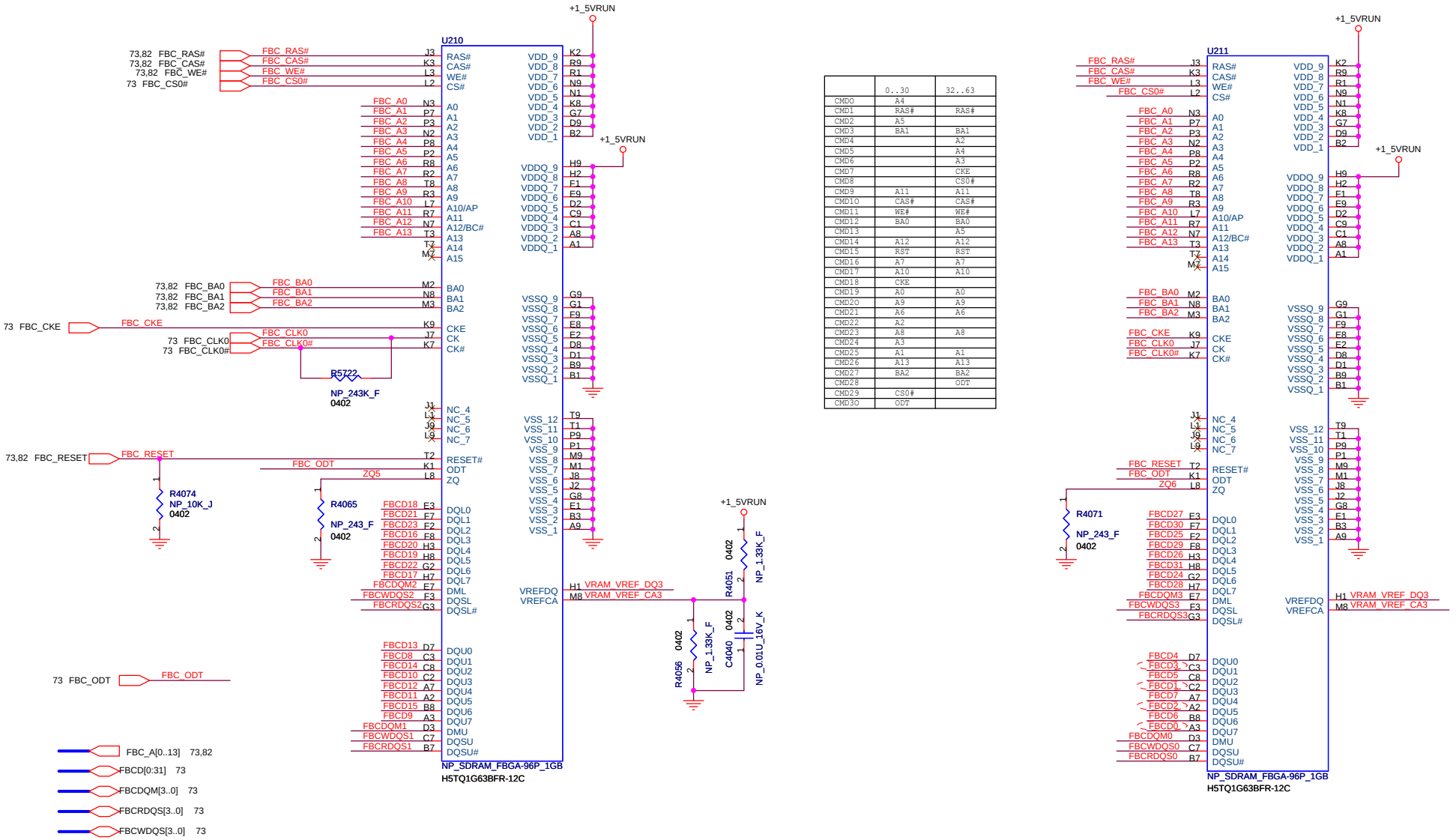

	0..30	32..63
CMD0	A4	
CMD1	RAS#	RAS#
CMD2	A5	
CMD3	BA1	BA1
CMD4		A2
CMD5		A4
CMD6		A3
CMD7		CKE
CMD8		CS0#
CMD9	A11	A11
CMD10	CAS#	CAS#
CMD11	WE#	WE#
CMD12	BA0	BA0
CMD13		A5
CMD14	A12	A12
CMD15	RST	RST
CMD16	A7	A7
CMD17	A10	A10
CMD18	CKE	
CMD19	A0	A0
CMD20	A9	A9
CMD21	A6	A6
CMD22	A2	
CMD23	A8	A8
CMD24	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)# 3/4	
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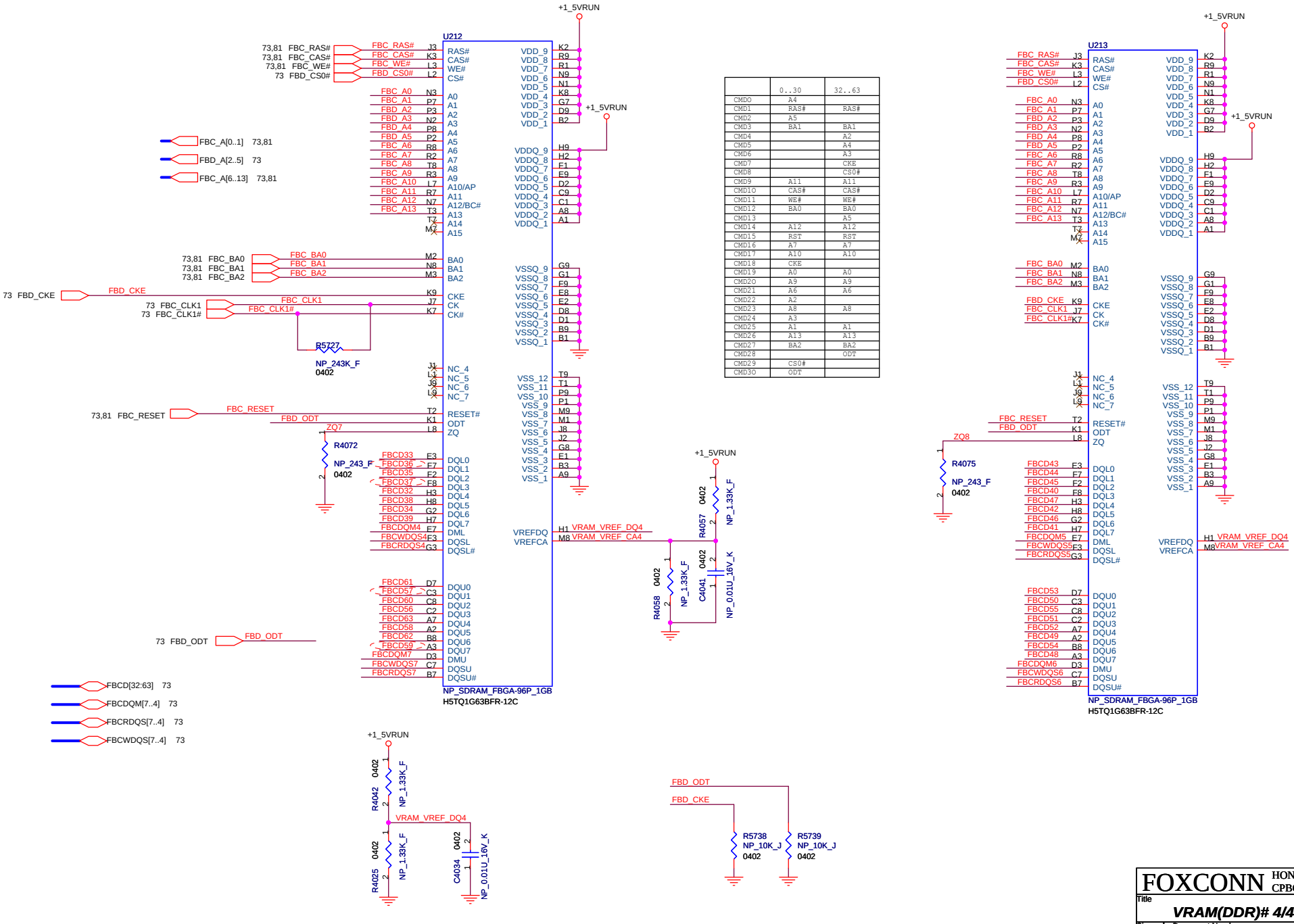

	0..30	32..63
CMD0	A4	
CMD1	RAS#	RAS#
CMD2	A5	
CMD3	BA1	BA1
CMD4		A2
CMD5		A4
CMD6		A3
CMD7		CKE
CMD8		CS0#
CMD9	A11	A11
CMD10	CAS#	CAS#
CMD11	WE#	WE#
CMD12	BA0	BA0
CMD13		A5
CMD14	A12	A12
CMD15	RST	RST
CMD16	A7	A7
CMD17	A10	A10
CMD18	CKE	
CMD19	A0	A0
CMD20	A9	A9
CMD21	A6	A6
CMD22	A2	
CMD23	A8	A8
CMD24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

FOXCONN	HON HAI PRECISION IND. CO., LTD. CPBG - R&D Division	
Title	VRAM(DDR)# 4/4	
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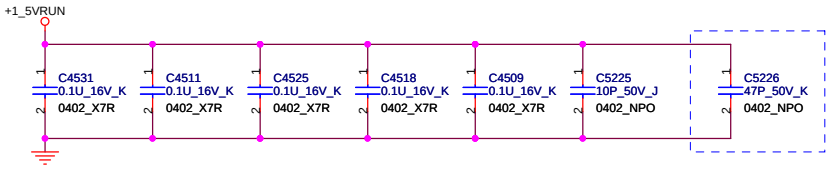
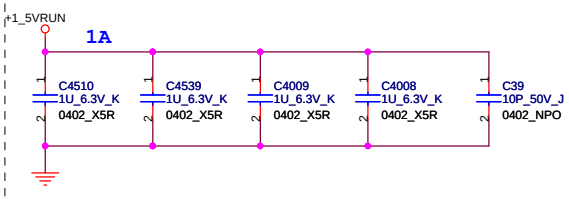
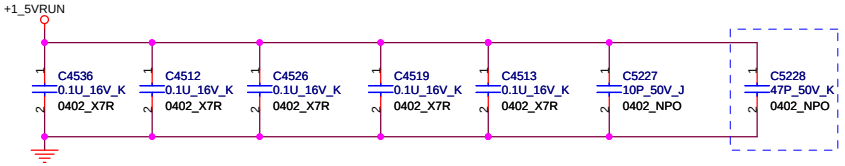
Place around the VRAM U206



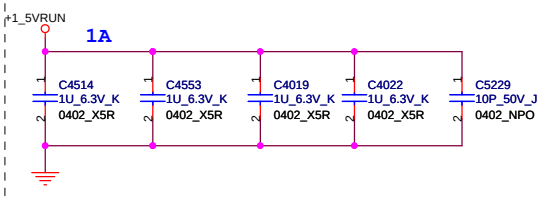
Place near U206



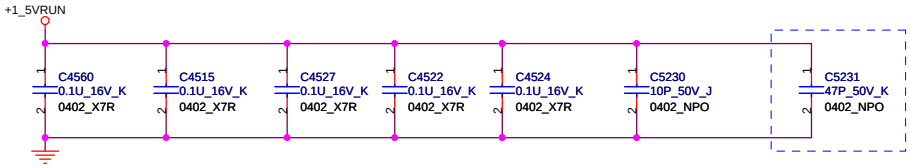
Place around the VRAM U207



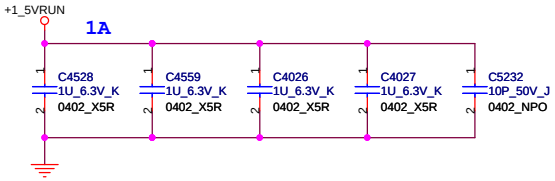
Place near U207



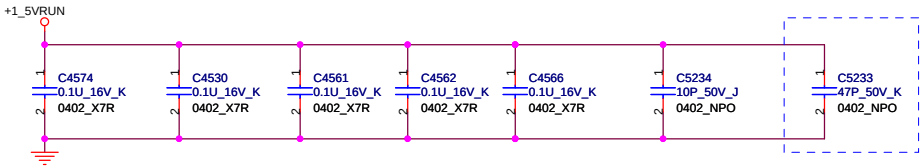
Place around the VRAM U208



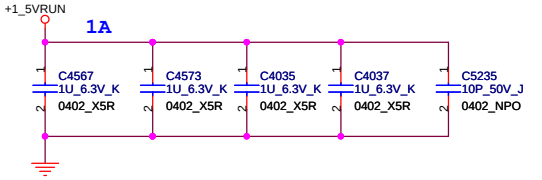
Place near U208



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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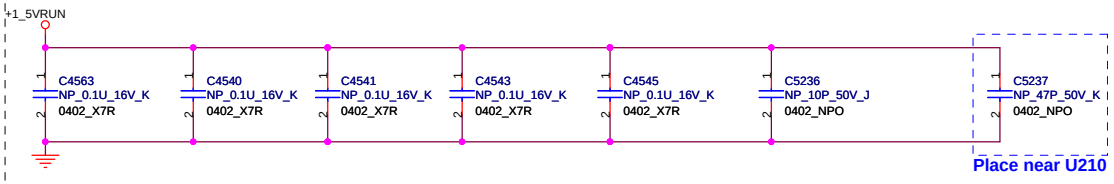
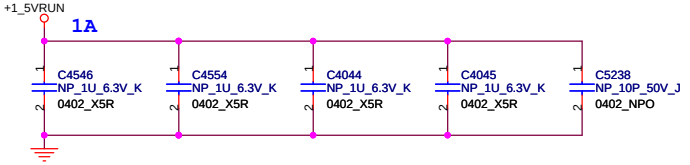
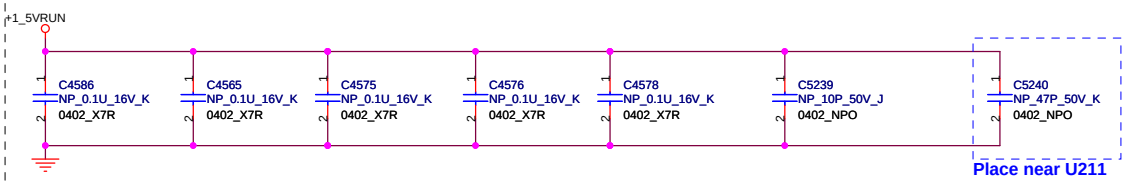
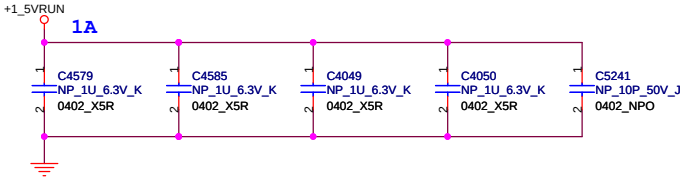
Place around the VRAM U210



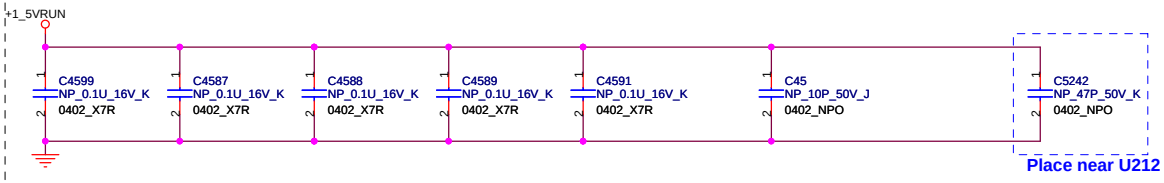


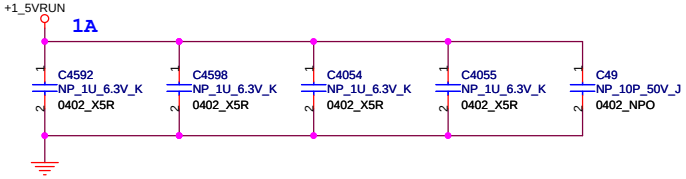
Place around the VRAM U211



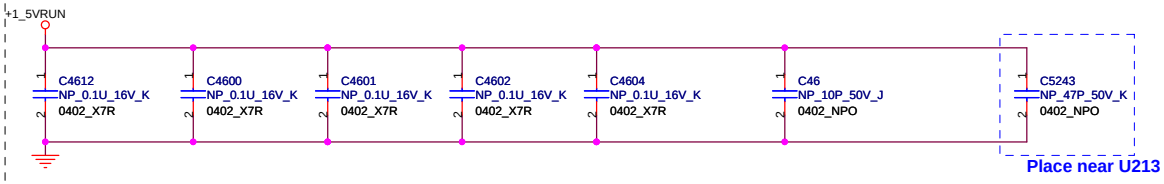


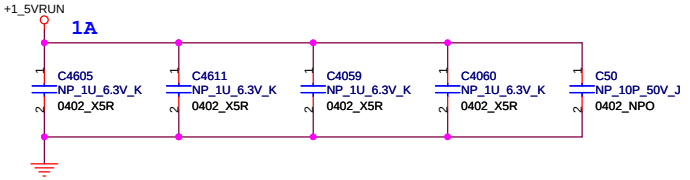
Place around the VRAM U212





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***

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

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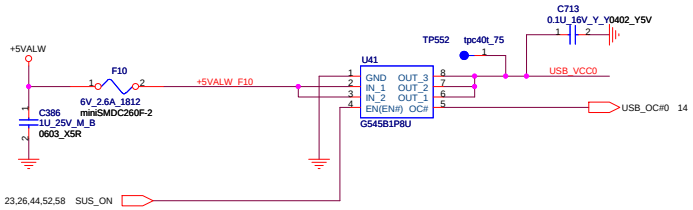
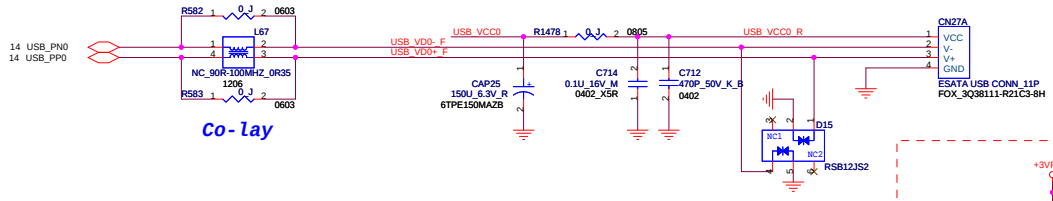
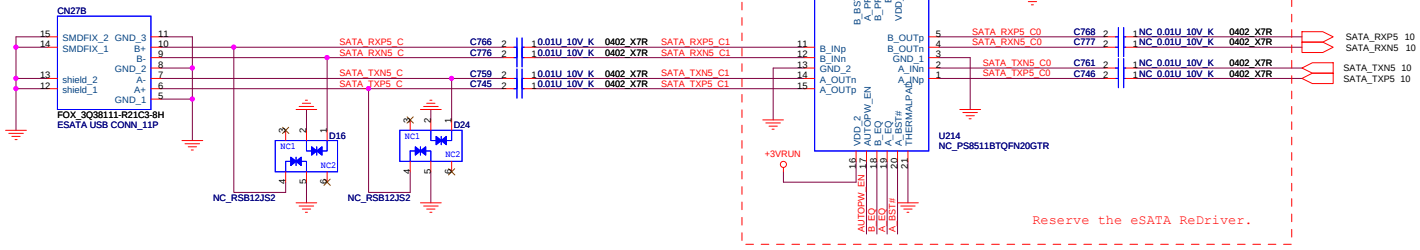
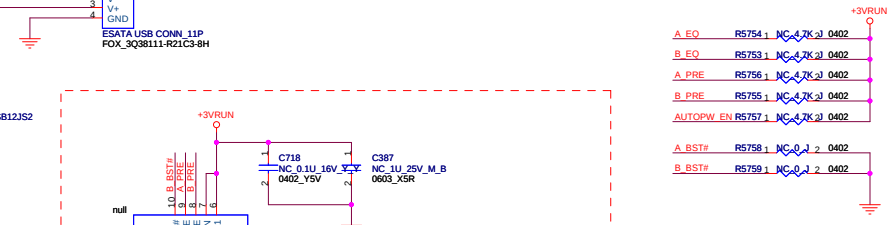


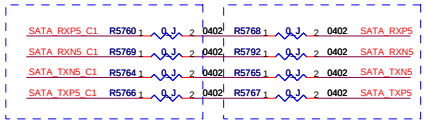


Co-lay

USB/eSATA Combo

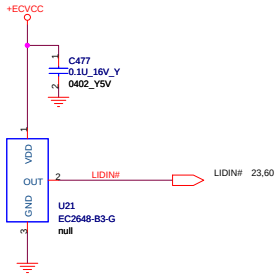






Close to U124 ,Pin11 ,12 ,14 ,15

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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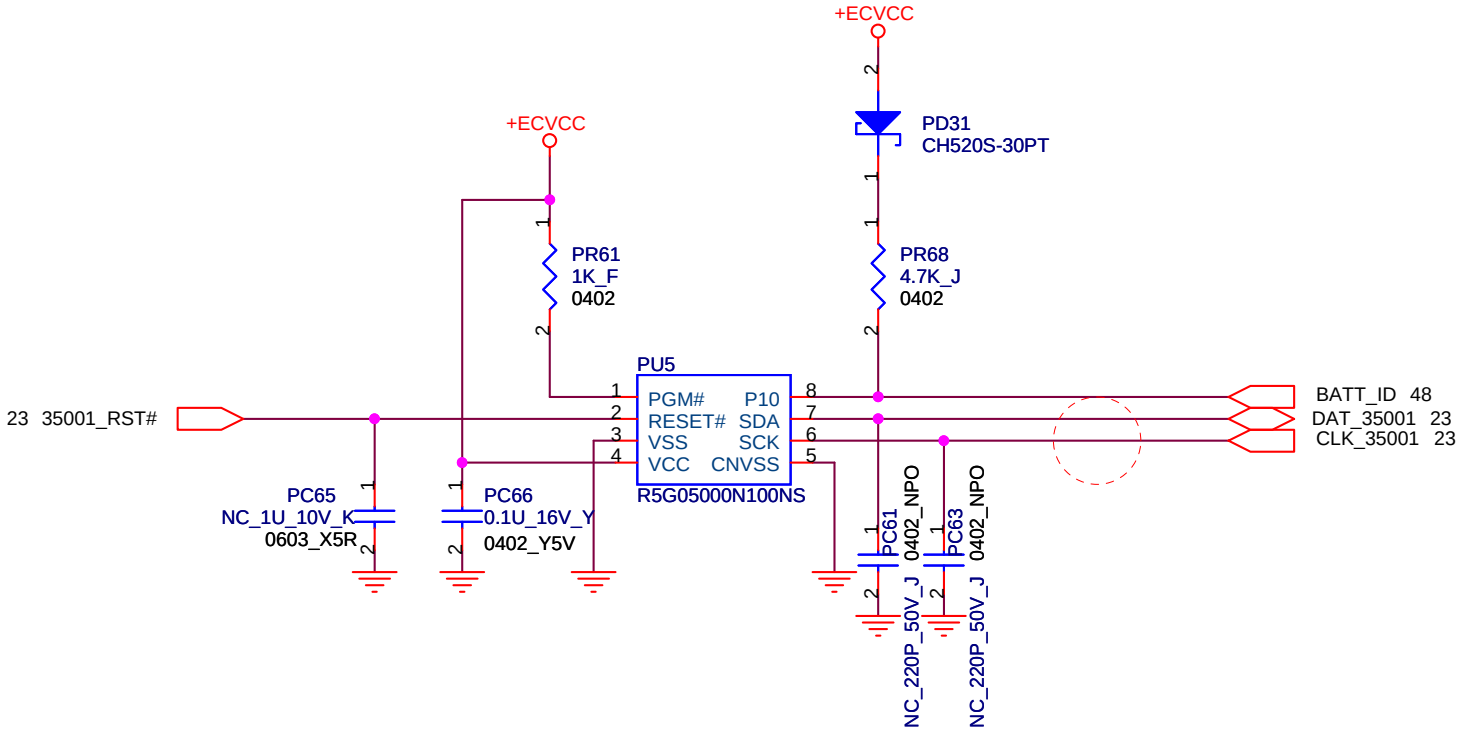

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	***Identify IC***	
Size A	Document Number ***M931 (MBX-215)***	Rev ***SA***
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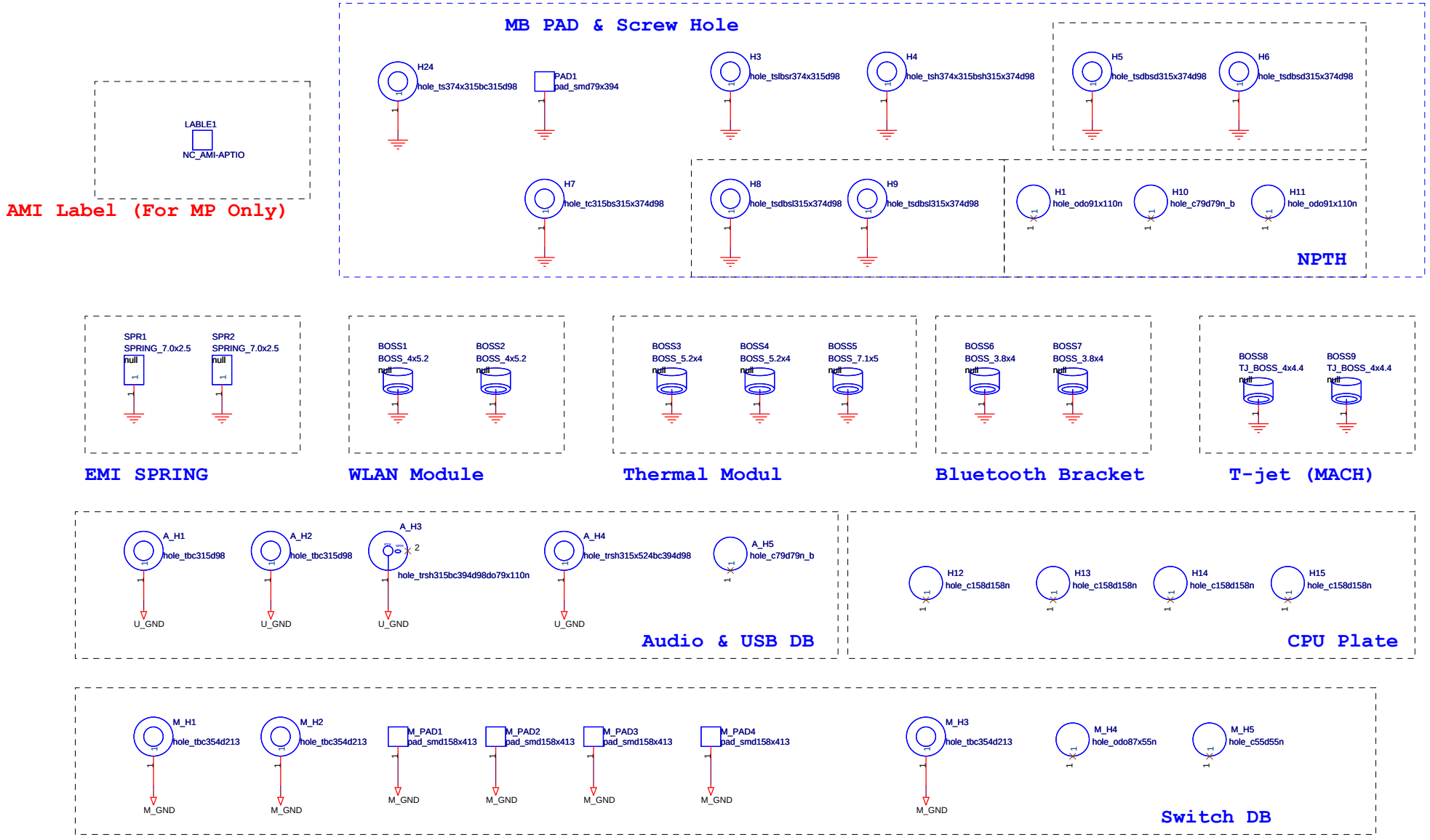

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	HOLE&AMI Label&BOSS	
Size A3	Document Number M931 (MBX-215)	Rev SA
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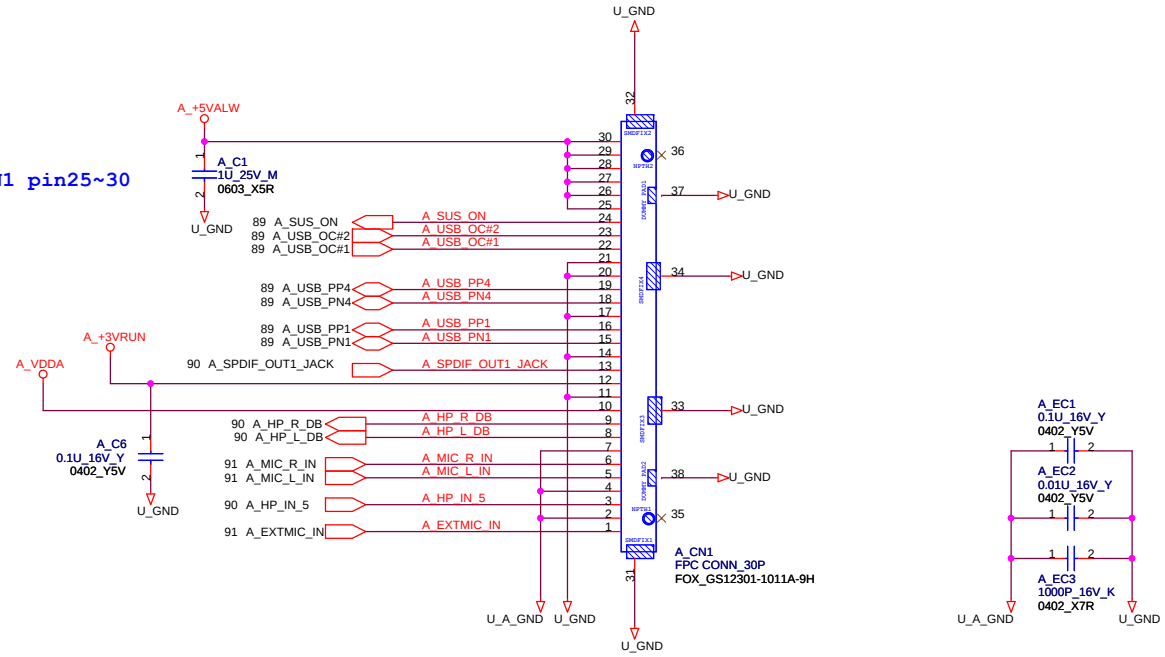
Place A_C1 close to A_CN1 pin25~30



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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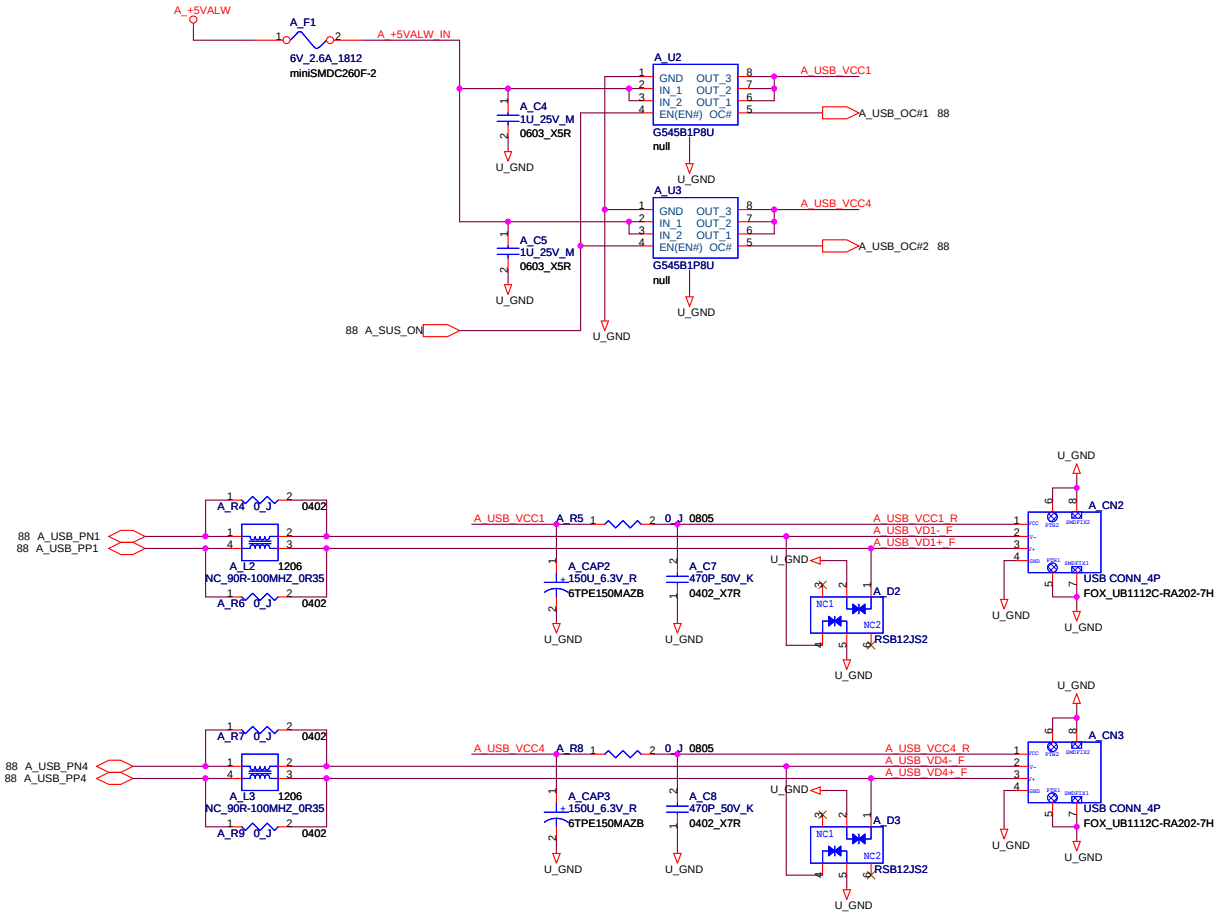

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title	USB Port	
Size: Custom	Document Number: M931 (MBX-215)	Rev: SA
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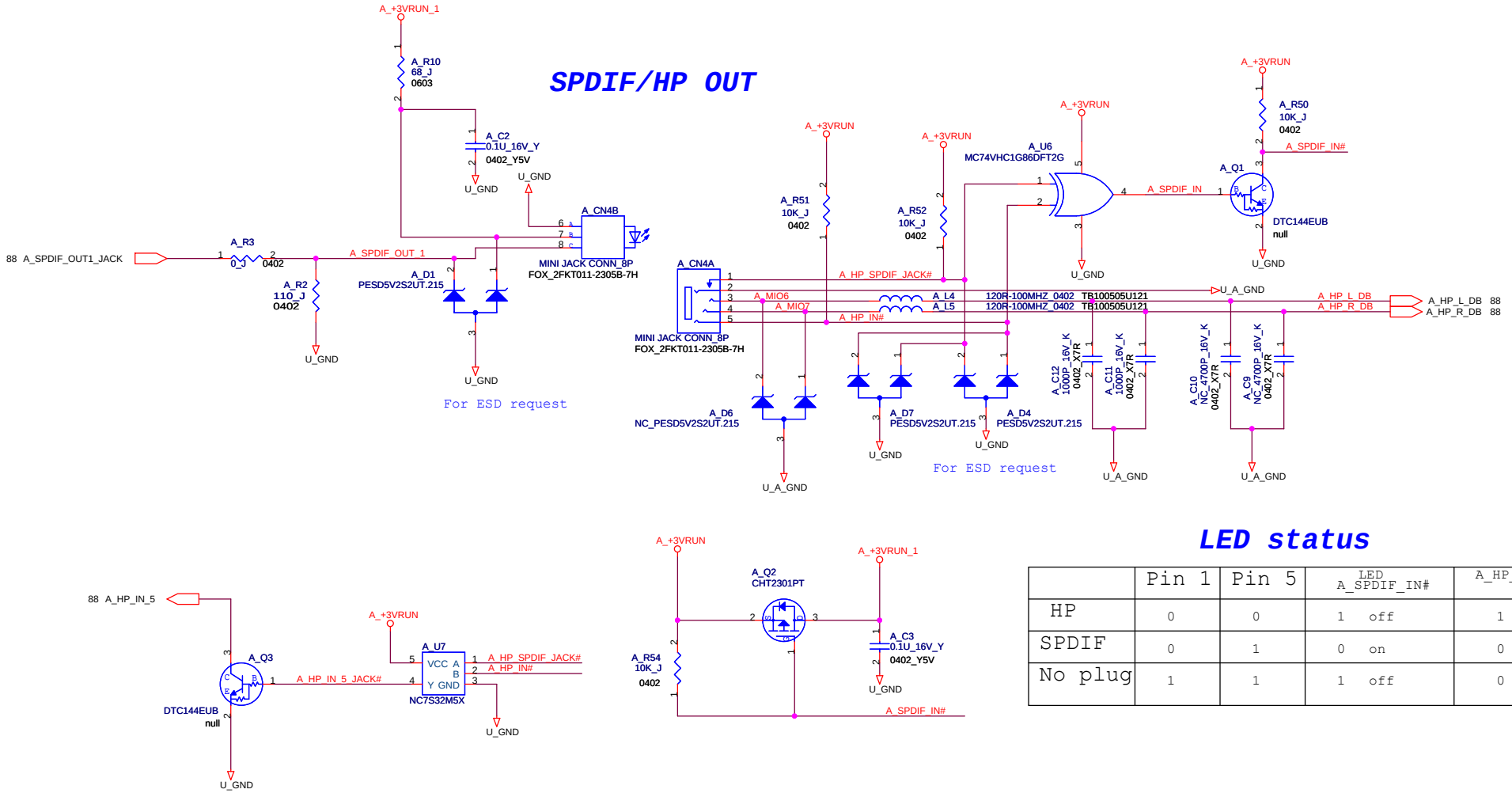

LED status

	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

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

Title: HP Jack (SPDIF)

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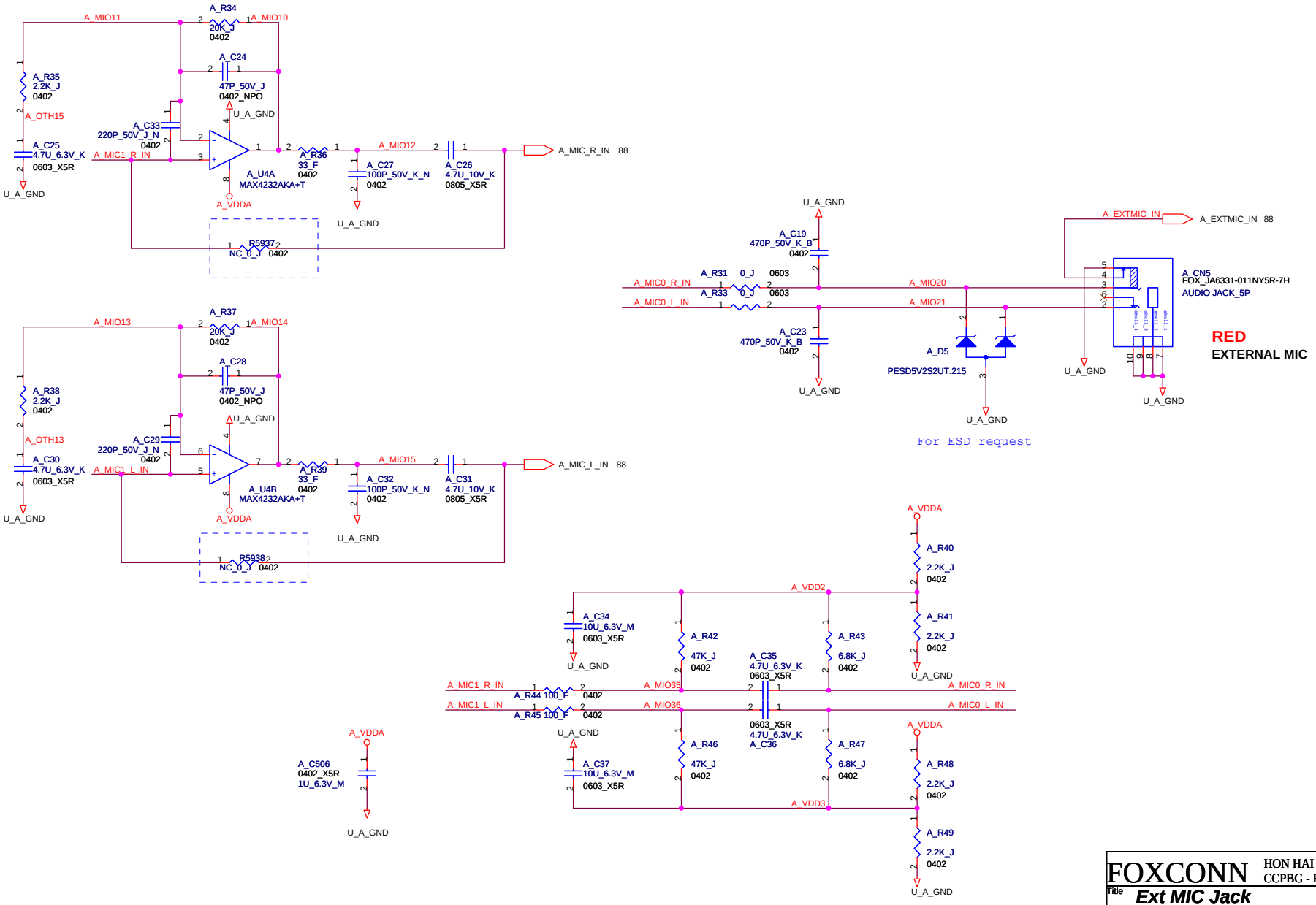

FOXCONN
HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

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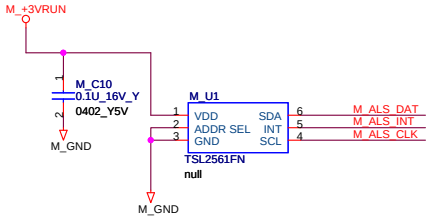

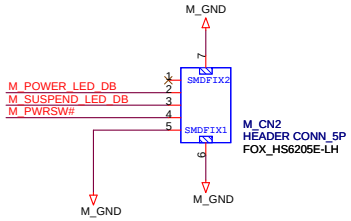

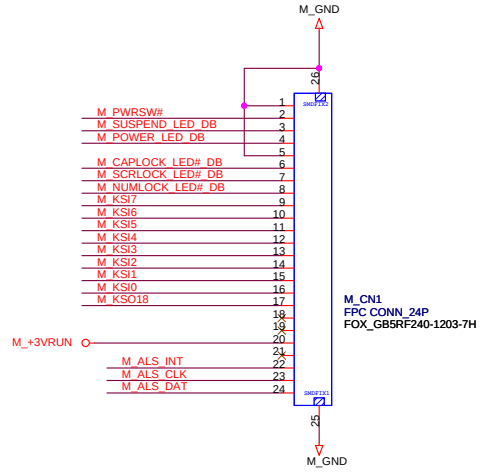

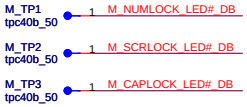

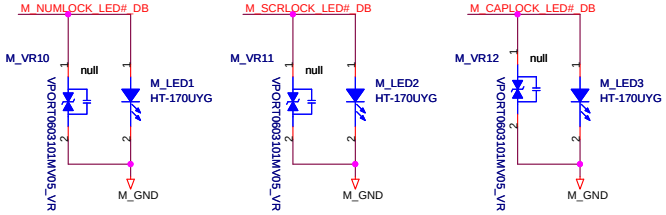

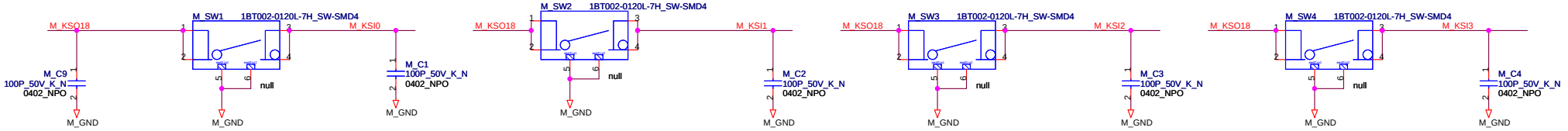

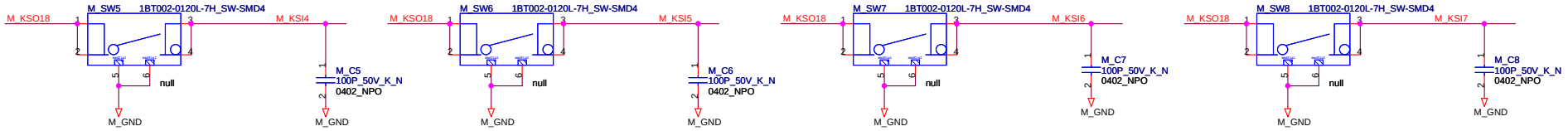

FOXCONN
HON HAI Precision Ind. Co., Ltd.
CCPBG - R&D Division

Title: **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

FOXCONN	HON HAI Precision Ind. Co., Ltd. CCPBG - R&D Division	
Title: DVT History		
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