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P. Leader	Check by	Design by

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Title: **Index Page**

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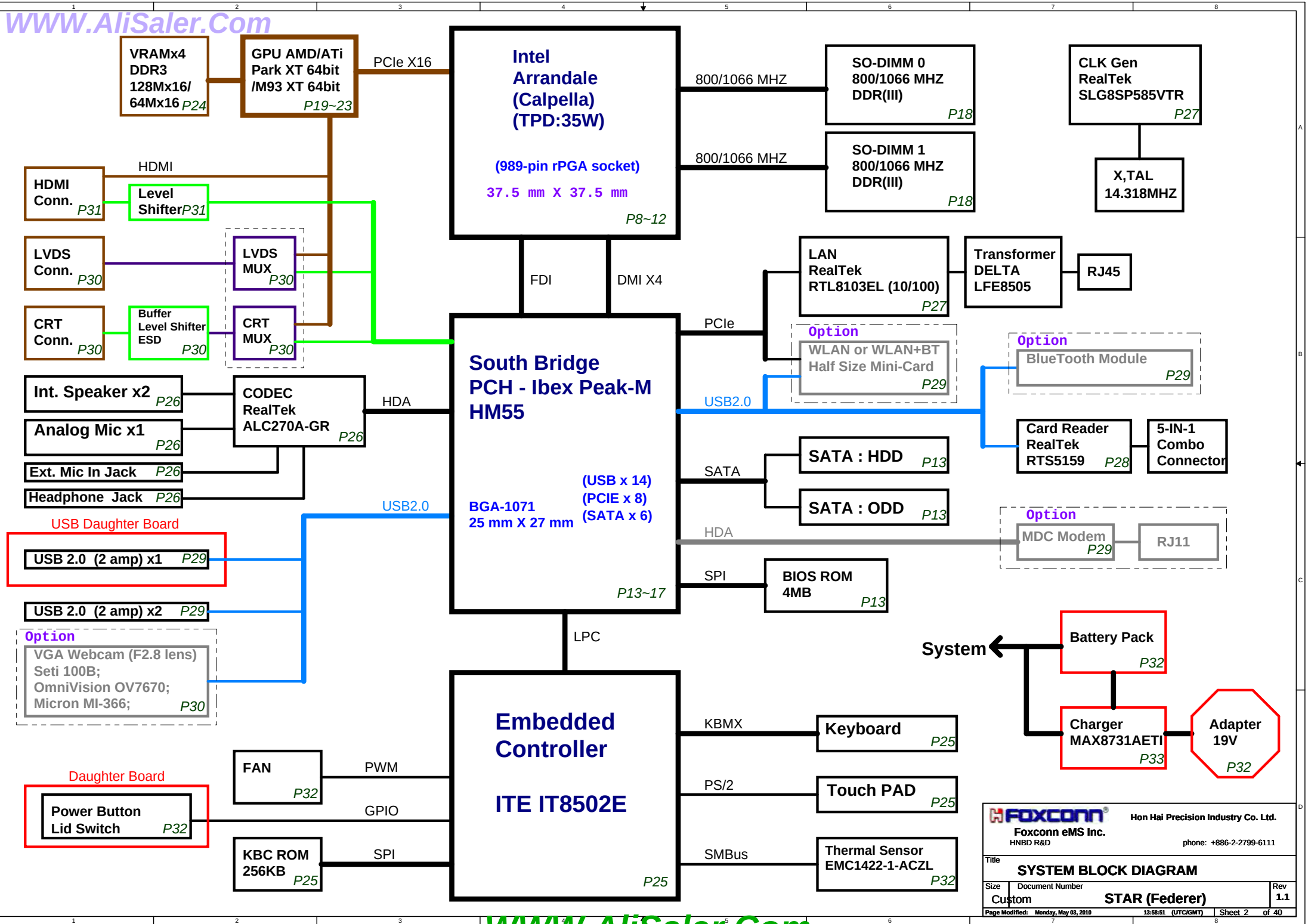

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Title: SYSTEM BLOCK DIAGRAM

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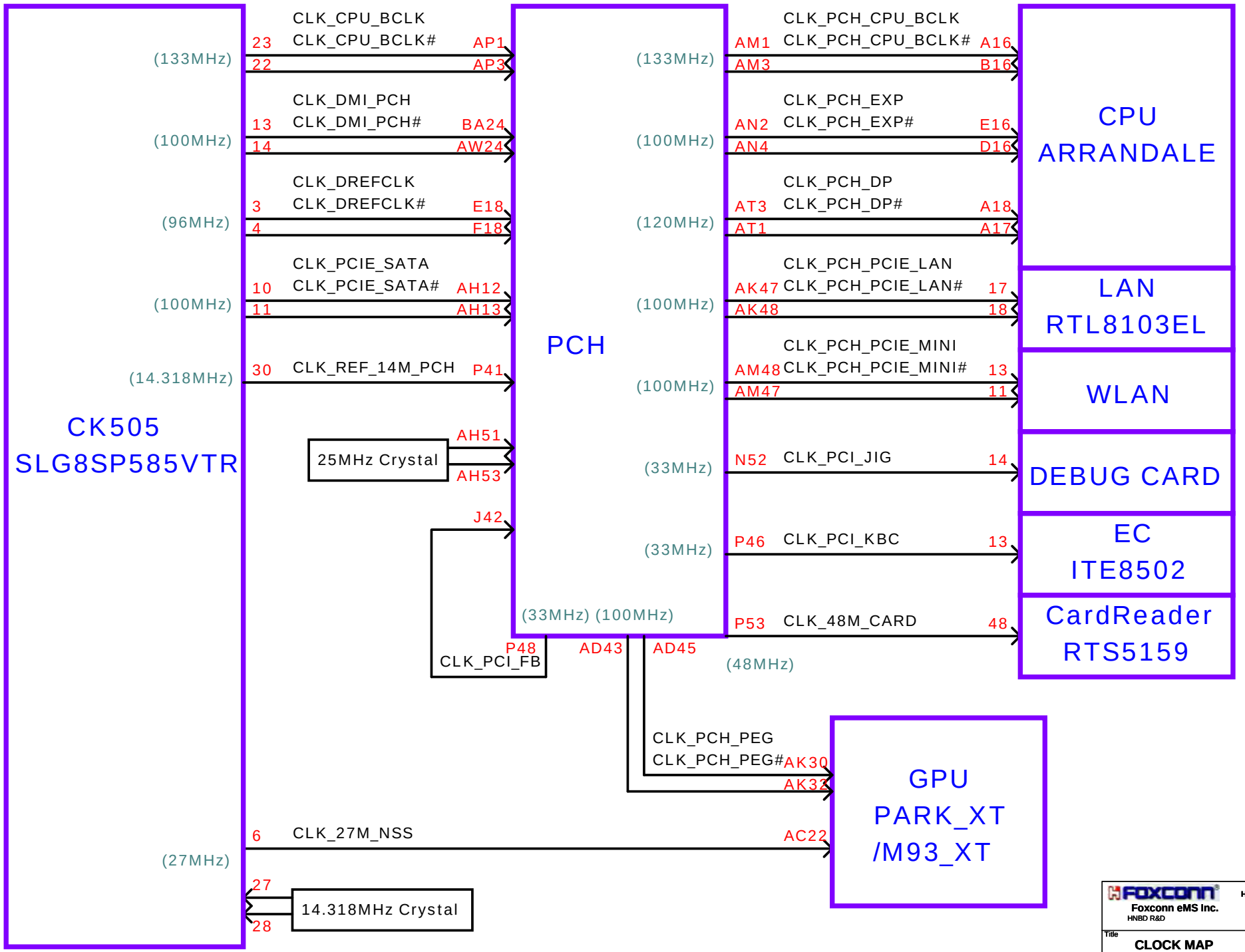

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SCH Page	Change Request Description from MV to MP phase	Notes
40	Modify PR912 to 80.6K	GPU power issue
37	Modify PR504 to 71.5K	1.5V power tolerance issue
40	Add PC885 for M93 SKU	GPU power issue
38	Del PC333	System shutdown issue

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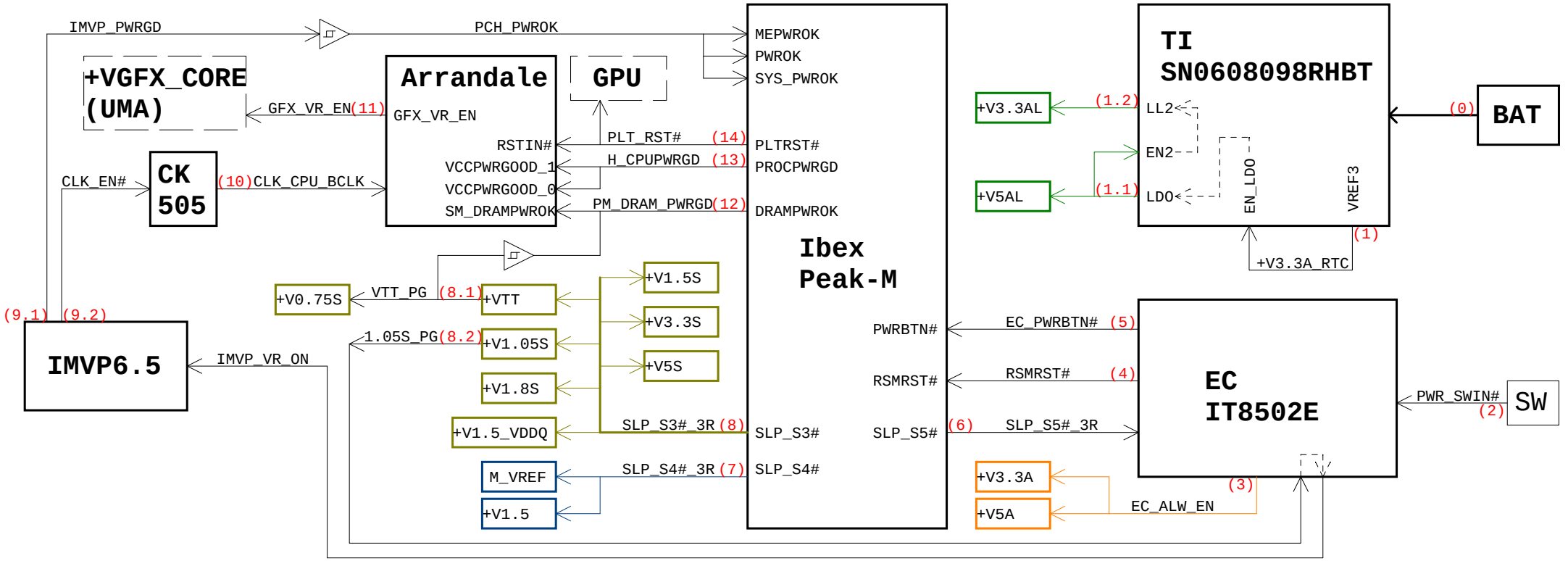

	Source Rail	EN	PG	Power Status				Remark
				S0	S3	AC S4/S5	DC S4/S5	
+VBAT				V	V	V	V	
+V5AL	+VBAT	+V3.3A_RTC		V	V	V	V	
+V3.3AL	+VBAT	+V5AL		V	V	V	V	
+V5A	+VBAT	EC_ALW_EN		V	V	V		
+V3.3A	+V3.3AL	EC_ALW_EN		V	V	V		
+V1.5	+VBAT	SLP_S4#_3R		V	V			
+V0.75S	+V1.5	VTT_PG		V				
+V1.5S	+V1.5	RUN_ON_LOAD		V				
+V1.5_VDDQ	+V1.5	RUN_ON_LOAD		V				
+VCC_CORE	+VBAT	IMVP_VR_ON	IMVP_PWRGD	V				
+VTT	+VBAT	SLP_S3#_3R	VTT_PG	V				
+VGFX_CORE	+VBAT	GFX_VR_EN		V				
+V1.8S	+VBAT	SLP_S3#_3R		V				
+V1.05S	+VBAT	SLP_S3#_3R	1.05S_PG	V				
+V5S	+V5A	RUN_ON_LOAD		V				
+V3.3S	+V3.3A	RUN_ON_LOAD		V				
+VDD_CORE	+VBAT	SLP_S3#_3R		V				
+V3.3S_Delay	+V3.3S	+V1.8S		V				
+VPCIE	+V1.5S	SLP_S3#_3R		V				

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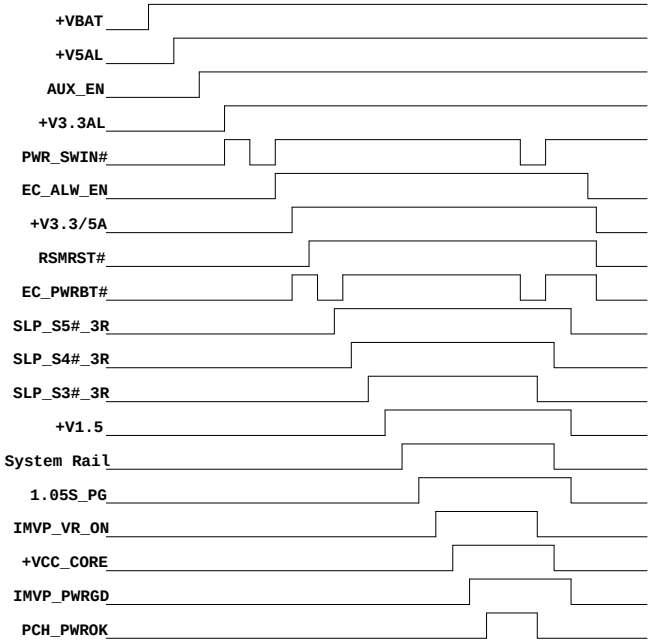
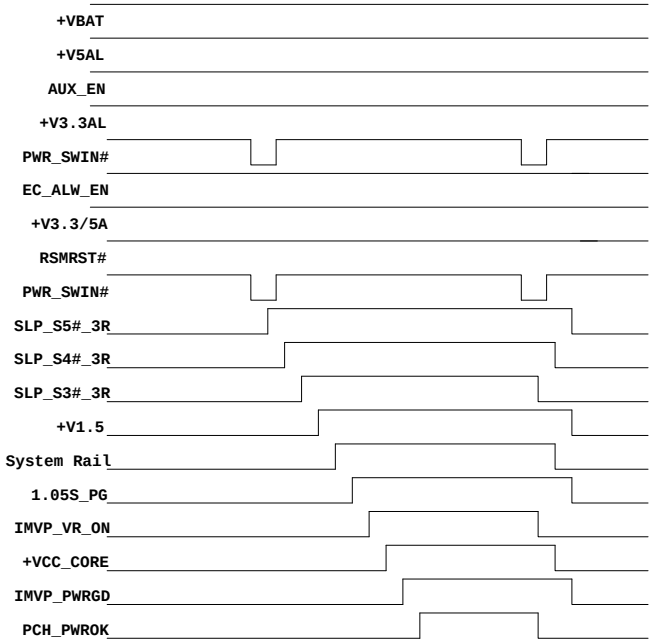
POWER SEQUENCE TIMING

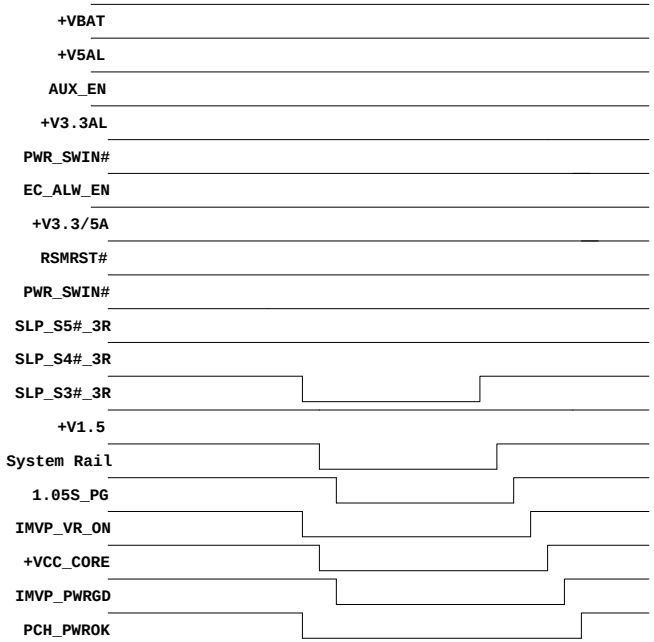
G3(OFF)->S0->S5



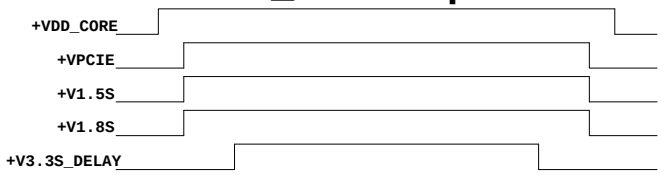
S5->S0->S5



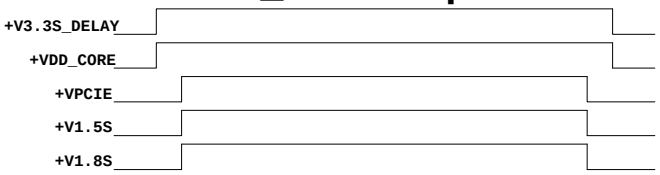
S0->S3->S0



GPU_M93 Sequence



GPU_Park Sequence



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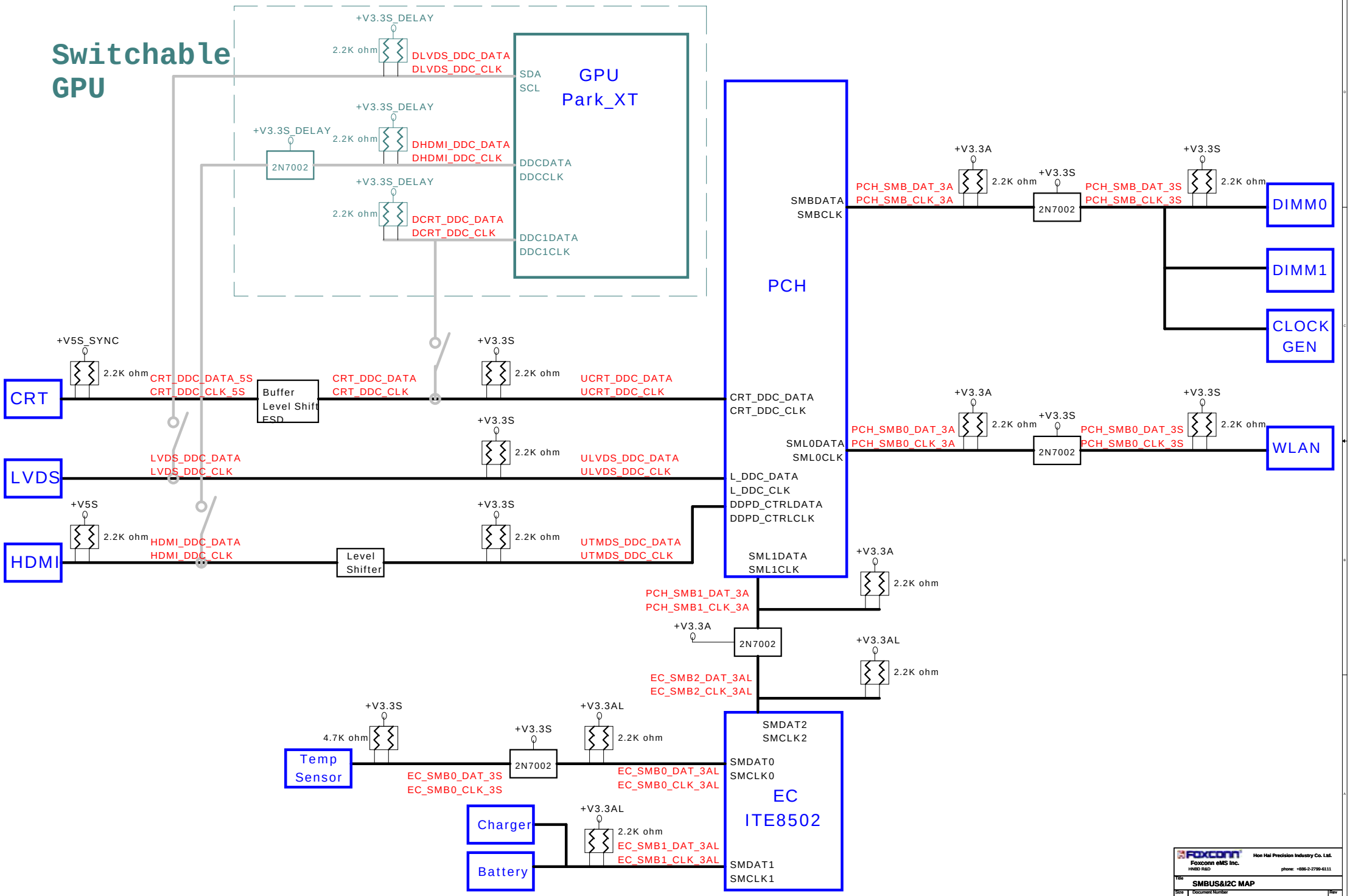

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SMBUS&I2C MAP

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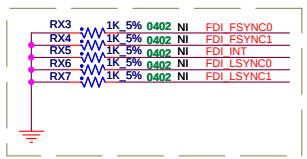
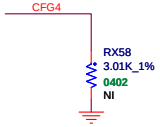
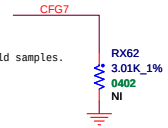
Discrete GPU: Install
UMA: Not Install
SG: Not Install



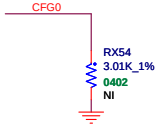
CFG4 Display Port Presence
CFG4 1 : Disabled ; No Physical Display Port attached to Embedded Display Port
0 : Enable ; An external Display Poert device is connected to the Embedded Display Port



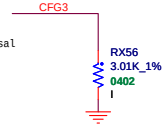
CFG7 Reserved - Temporarily used for early Clarksfield samples.
CFG7 Clarksfield (only for early samples pre-ES1) - Connect to GND with 3.01K Ohm/5% resistor



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



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



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Layout Note:
Comp0,2 connect with Zo=27.4 ohm,
make trace length shorter then
0.5".
Width=20mil(MS)
Comp1,3 connect with Zo=55 ohm,
make trace length shorter then
0.5".
Width=5mil(MS)

Place close to chip

+V1.5_VDDQ [12,17,27,29,38]
+V3.3S [13,14,15,16,17,18,19,25,26,27,28,29,30,31,32,35,36,37,38,39,40]
+VTT [11,12,16,17,27,35,36,39]
+V1.5 [18,37,38]
+V3.3A [13,14,15,16,17,25,27,29,32,33,37,38]

UX1B
Socket_INTEL989_15u

MISC
CLOCKS
THERMAL
DDR3 MISC
JTAG & BPM
PWR MANAGEMENT

COMP3 AT23 RX8 20_1% 0402
COMP2 AT24 RX9 20_1% 0402
COMP1 G16 RX10 49.9_1% 0402
COMP0 AT26 RX11 49.9_1% 0402
SKTOCC# AH24
CATERR# AK14 H_CATERR# RX46 68_5% 0402 RX39 49.9_1% 0402 +VTT
PECI AT15 [16] H_PECI
PROCHOT# AN26 PROCHOT#
THERMTRIP# AK15 [16,32] PM_THRMTRIP#

BCLK A16 BCLK# B16 CLK_PCH_CPU_CLK [16] CLK_PCH_CPU_CLK# [16] (133MHz)
BCLK_ITP AR30 BCLK_ITP# AT30 BCLK_ITP_P BCLK_ITP_N
PEG_CLK E16 PEG_CLK# D16 CLK_PCH_EXP_R CLK_PCH_EXP#_R RX12 RX13 RX14 0_5% 0402 NI CLK_PCH_EXP [14] CLK_PCH_EXP# [14] (100MHz)
DPLL_REF_SSCLK A18 DPLL_REF_SSCLK# A17 CLK_PCH_DP_R CLK_PCH_DP#_R RX15 RX16 RX17 0_5% 0402 NI CLK_PCH_DP [14] CLK_PCH_DP# [14] (120MHz)

Discrete :RX14,RX17 Not Install and RX15,RX16 0 ohm
UMA: RX14,RX17 0 ohm and RX15,RX16 Not Install

SM_DRAMRST# F6 DDR3_DRAMRST# [18]
SM_RCOMP[0] AL1 SM_RCOMP0 RX18 100_1% 0402
SM_RCOMP[1] AM1 SM_RCOMP1 RX21 24.9_1% 0402
SM_RCOMP[2] AN1 SM_RCOMP2 RX22 130_1% 0402
PM_EXT_TS#[0] AN15
PM_EXT_TS#[1] AP15
PM_EXTTS#0 RX19 10K_5% 0402 RX20 10K_5% 0402 +VTT PM_EXTTS#1 [18]
RX24 12.4K_1% 0402 NI
RX72 0_5% 0402 NI RX73 1K_5% 0402 +V1.5
RX74 100K_5% 0402 QX3 2N7002 SOT23-3 PCH_DDR_RST# [16] CX43 47nF_X7R_16V 0402

PRDY# AT28 XDP_PRDY#
PREQ# AP27 XDP_PREQ#
TCK AN28 XDP_TCLK
TMS AP28 XDP_TMS
TRST# AT27 XDP_TRST#
TDI AT29 XDP_TDI
TDO AR27 XDP_TDO
TDI_M AR29 XDP_TDI_M
TDO_M AP29 XDP_TDO_M
DBR# AN25 SB_RST# [15,25] RX42 0_5% 0402
BPM#[0] AJ22 XDP_OBS0
BPM#[1] AK22 XDP_OBS1
BPM#[2] AK24 XDP_OBS2
BPM#[3] AJ24 XDP_OBS3
BPM#[4] AJ25 XDP_OBS4
BPM#[5] AH22 XDP_OBS5
BPM#[6] AK23 XDP_OBS6
BPM#[7] AH23 XDP_OBS7

DDR3 module w/o this function

RESET_OBS# AP26 H_CPURST# RX71 1K_5% 0402 XDP_RST#_R
PM_SYNC AL15 [15] H_PM_SYNC
VCCPWRGOOD_1 AN14 CPUPWRGD1 RX25 0_5% 0402 [16] H_CPUPWRGD
VCCPWRGOOD_0 AN27 CPUPWRGD0 RX26 0_5% 0402
SM_DRAMPWROK AK13 DRAM_PWRGD RX28 0_5% 0402 [15] PM_DRAM_PWRGD
VTTPWRGOOD AM15 VTTPWRGOOD
TAPPWRGOOD AM26 H_PWRGD_XDP
RSTIN# AL14

RX75 1.1K_1% 0402 NI +V1.5_VDDQ

+V3.3A CX80 100nF_X5R_6.3V 0402 RX79 1.5K_1% 0402 RX78 750_1% 0402
UX5 74LVC1G17GW Modify for reduce S3 power consumption on 0908
[32,36,37] VTT_PG RX77 0_5% 0402
[15,25,32,36,37,38,40] SLP_S3#_3R RX76 0_5% 0402 NI
[16,19] PLT_RST# RX30 1.5K_1% 0402 RX31 750_1% 0402

Clarksfield: 1.1V(RX30=1.5K 1%; RX31=750 1%)
Arrandale : 1.05V(RX30=1.5K 1% ; RX31=698 1%)

TCK 50 PD
TMS 2k~5k PU
TRST 2k~5k PU
TDI 50 PU
TDO unconnect
TDI_M 50 PU
TDO_M unconnect

+VTT
RX32 XDP_TDO
RX33 XDP_TMS
RX34 XDP_TDI
RX35 XDP_PREQ#
RX36 XDP_TCLK
RX37 XDP_TRST#
51_5% 0402 NI

CON18
BSH-030-01-L-D-A-TR NI
XDP_PREQ# XDP_PRDY# XDP_OBS0 XDP_OBS1 XDP_OBS2 XDP_OBS3 XDP_OBS4 XDP_OBS5 XDP_OBS6 XDP_OBS7 XDP_TCLK
BCLK_ITP_P BCLK_ITP_N +VTT XDP_RST#_R SB_RST# XDP_TDO XDP_TRST# XDP_TDI XDP_TMS

H_CPUPWRGD RX70 1K_5% 0402 H_CPUPWRGD_XDP
[15,25] EC_PWRBTN# +VTT
H_PWRGD_XDP

+V1.5 RX38 1.1K_1% 0402 NI DRAM_PWRGD RX43 3K_1% 0402 NI

+V3.3S RX45 0_5% 0402 NI CX33 100nF_X5R_6.3V 0402
[32,36,37] VTT_PG
[32,36] 1.05S_PG RX40 0_5% 0402
UX2 74LVC1G17GW RX41 2K_1% 0402 VTTPWRGOOD RX44 1K_1% 0402

[32,35] IMVP_PWRGD RX29 2M_5% 0402 PCH_PROCHOT# [16,32]
QX1 2N7002 SOT23-3 A0205
PROCHOT# QX2 PDTC144EU

Clarksfield: 1.1V(RX38=1.1K 1%; RX43=3.01K 1%)
Arrandale : 1.05V(RX38=1.1K 1% ; Rx43=2.61K 1%)

Clarksfield: 1.1V(RX41=2K 1%; RX44=1K 1%)
Arrandale : 1.05V(RX41=2K 1% ; R44=931ohm 1%)

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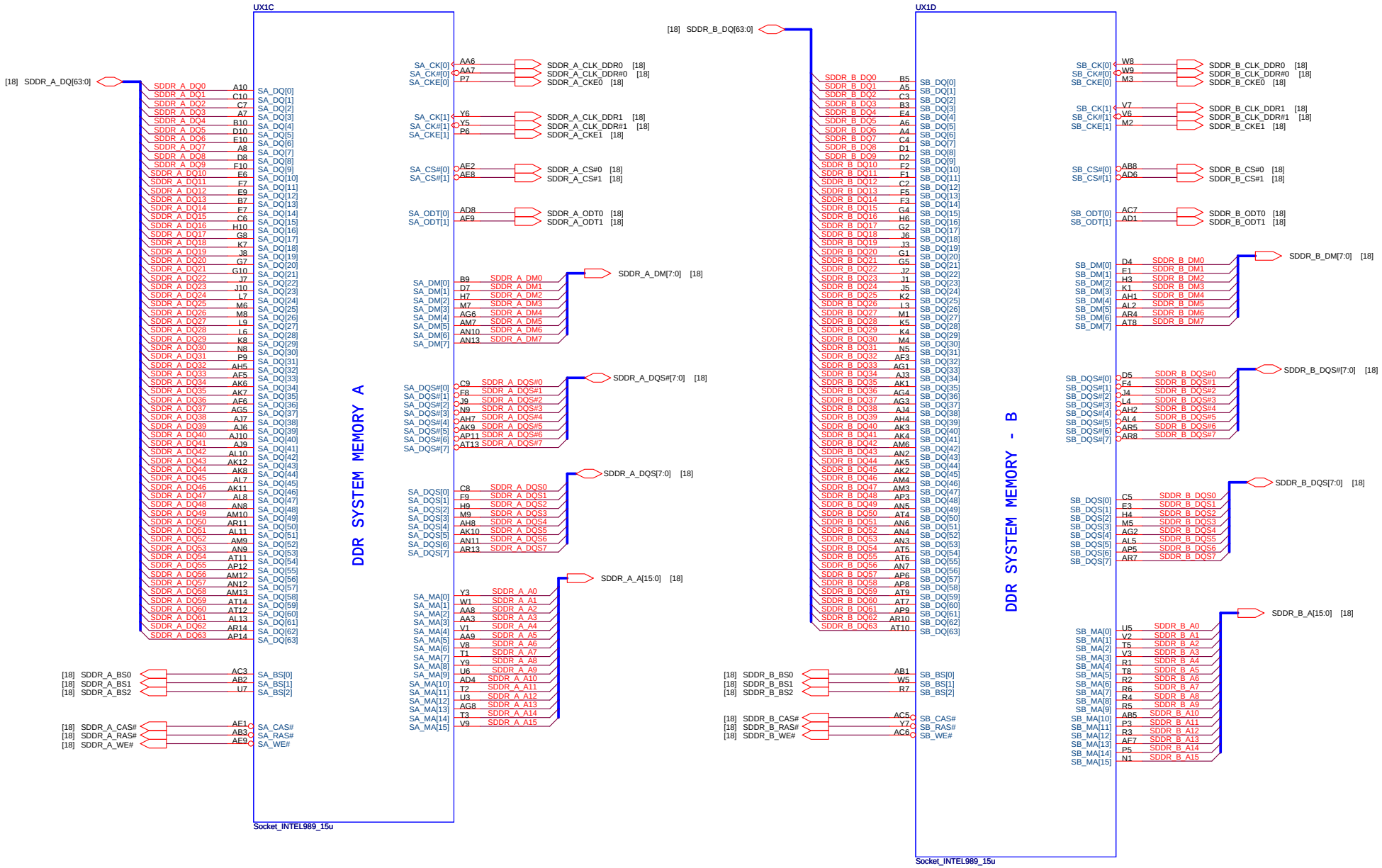

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FOR VCC:
12x 0805 22 µF inside cavity,
7x 0805 10 µF under cavity and 9 x 0805 10 µF
between inductor and socket on top layer

FOR VTT:
7x 0805 22 µF under cavity
8x 0805 10 µF edge caps

52A

+VCC_CORE
CX42 22uF_X5R_6.3V 0805
CX46 22uF_X5R_6.3V 0805
CX47 22uF_X5R_6.3V 0805
CX48 22uF_X5R_6.3V 0805
CX49 22uF_X5R_6.3V 0805
CX50 22uF_X5R_6.3V 0805
CX51 22uF_X5R_6.3V 0805
CX52 22uF_X5R_6.3V 0805
CX53 22uF_X5R_6.3V 0805
CX54 22uF_X5R_6.3V 0805
CX55 22uF_X5R_6.3V 0805
CX56 22uF_X5R_6.3V 0805
CX57 10uF_Y5V_10V 0805
CX58 10uF_Y5V_10V 0805
CX59 10uF_Y5V_10V 0805
CX60 10uF_Y5V_10V 0805
CX61 10uF_Y5V_10V 0805
CX62 10uF_Y5V_10V 0805
CX63 10uF_Y5V_10V 0805
CX64 10uF_Y5V_10V 0805
CX65 10uF_Y5V_10V 0805
CX66 10uF_Y5V_10V 0805
CX67 10uF_Y5V_10V 0805
CX68 10uF_Y5V_10V 0805
CX69 10uF_Y5V_10V 0805
CX70 10uF_Y5V_10V 0805
CX71 33pF_NPO_50V 0402
CX72 10uF_Y5V_10V 0805
CX73 10uF_Y5V_10V 0805
CX74 33pF_NPO_50V 0402

+VTT [9,12,16,17,27,35,36,39]
+VCC_CORE [35]

UX1F
Socket_INTEL989_15u

1.1V RAIL POWER
CPU CORE SUPPLY
POWER
CPU VIDS
SENSE LINES

VTT0_1 AH14
VTT0_2 AH12
VTT0_3 AH11
VTT0_4 AH10
VTT0_5 J14
VTT0_6 J13
VTT0_7 H14
VTT0_8 H12
VTT0_9 G14
VTT0_10 G13
VTT0_11 G12
VTT0_12 G11
VTT0_13 F14
VTT0_14 F13
VTT0_15 F12
VTT0_16 F11
VTT0_17 E14
VTT0_18 E12
VTT0_19 D14
VTT0_20 D13
VTT0_21 D12
VTT0_22 D11
VTT0_23 C14
VTT0_24 C13
VTT0_25 C12
VTT0_26 C11
VTT0_27 B14
VTT0_28 B12
VTT0_29 A14
VTT0_30 A13
VTT0_31 A12
VTT0_32 A11

CX34 10uF_Y5V_10V 0805
CX35 10uF_Y5V_10V 0805
CX36 10uF_Y5V_10V 0805
CX37 10uF_Y5V_10V 0805
CX38 10uF_Y5V_10V 0805
CX39 10uF_Y5V_10V 0805
CX40 10uF_Y5V_10V 0805
CX41 10uF_Y5V_10V 0805

VTT0_33 AE10
VTT0_34 AE10
VTT0_35 AC10
VTT0_36 AB10
VTT0_37 Y10
VTT0_38 W10
VTT0_39 U10
VTT0_40 T10
VTT0_41 J12
VTT0_42 J11
VTT0_43 J16
VTT0_44 J15

CX44 22uF_X5R_6.3V 0805
CX45 22uF_X5R_6.3V 0805

PSI# AN33 → PSI# [35]
VID[0] AK35 → VID0 [35]
VID[1] AK33 → VID1 [35]
VID[2] AK34 → VID2 [35]
VID[3] AL35 → VID3 [35]
VID[4] AL33 → VID4 [35]
VID[5] AM33 → VID5 [35]
VID[6] AM35 → VID6 [35]
PROC_DPRSLPVR AM34 → PM_DPRSLPVR [35]
VTT_SELECT G15 → TP1033 TP_P30

Arrandale drives this pin High
Clarksfield drives this pin Low.

ISENSE AN35 → IMVP_IMON [35]
VCC_SENSE AJ34 → VCCSENSE [35]
VSS_SENSE AJ35 → VSSSENSE [35]
VTT_SENSE B15 → VTT_SENSE [36]
VSS_SENSE_VTT A15

RX47 100_1% 0402
RX48 100_1% 0402

Place close to CPU

UX1H
Socket_INTEL989_15u

VSS

UX1I
Socket_INTEL989_15u

VSS

NCTF
VSS_NCTF1 AT35 TP_MCP_VSS_NCTF1 → TP_P30TP846
VSS_NCTF2 AT1 TP_MCP_VSS_NCTF2 → TP_P30TP2
VSS_NCTF3 AR34
VSS_NCTF4 B34
VSS_NCTF5 B2
VSS_NCTF6 B1 TP_MCP_VSS_NCTF6 → TP_P30TP3
VSS_NCTF7 A35 TP_MCP_VSS_NCTF7 → TP_P30TP4

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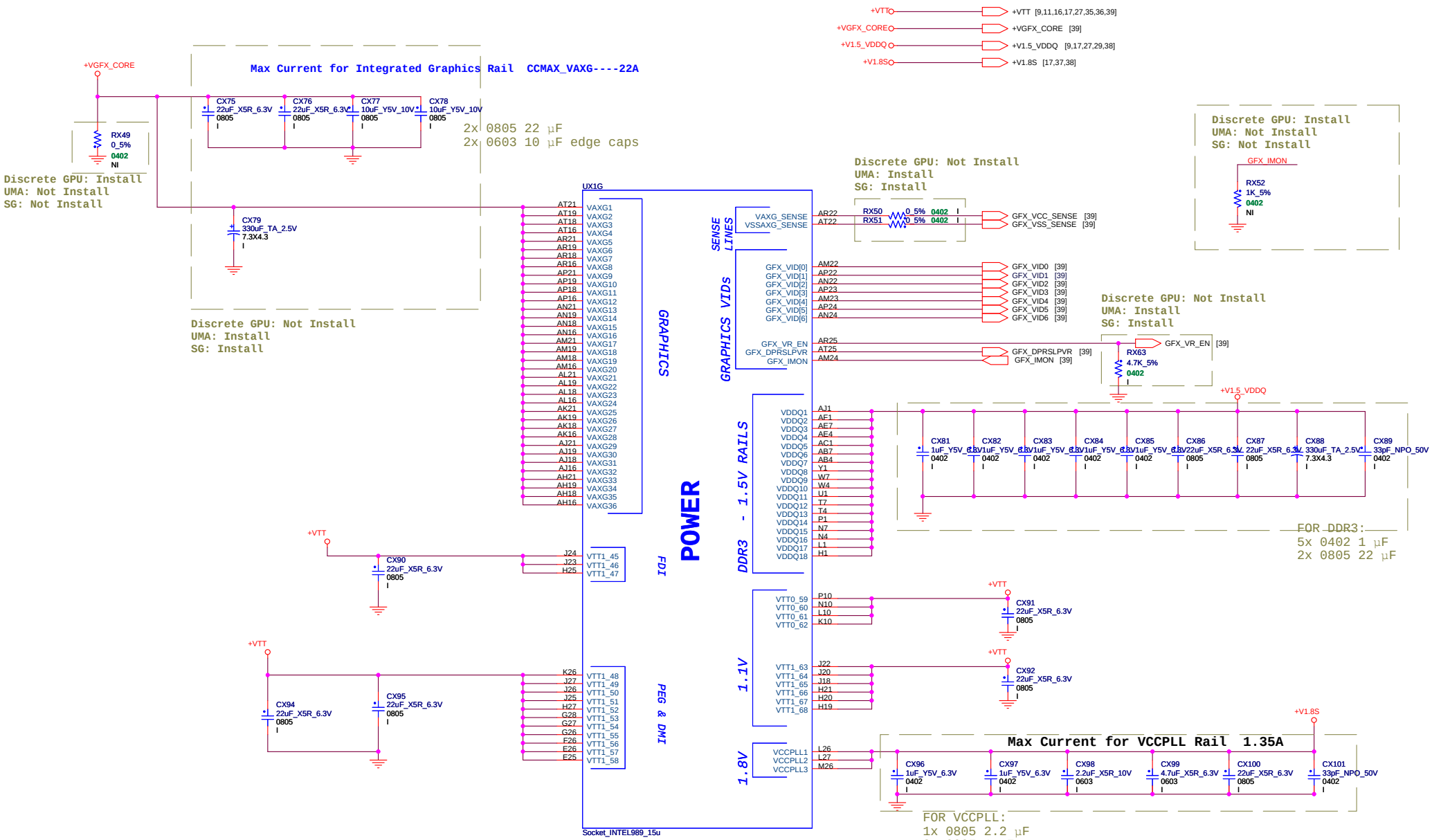

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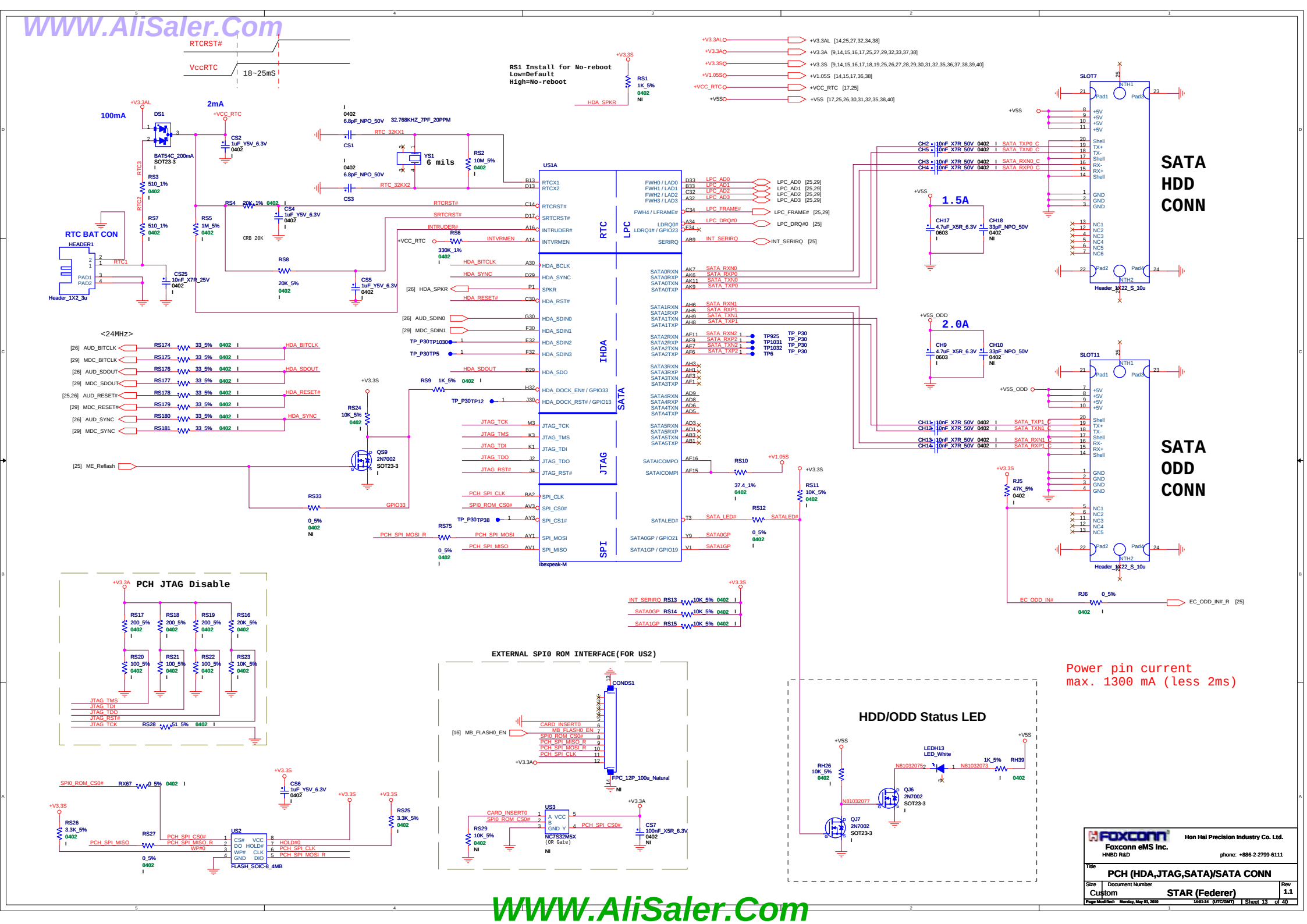

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+V3.3AL [13,25,27,32,34,38]
+V3.3A [9,13,15,16,17,25,27,29,32,33,37,38]
+V3.3S [9,13,15,16,17,18,19,25,26,27,28,29,30,31,32,35,36,37,38,39,40]
+V1.05S [13,15,17,36,38]

US1B

PCI-E* Controller Link
SMBus
PEG
CLK BUFFER
From
Clock Flex

ibexpeak-M

Port	Function
Port1	LAN
Port2	Un-used
Port3	WLAN
Port4	Un-used
Port5	Un-used
Port6	Un-used
Port7	Un-used
Port8	Un-used

PCI-E Port Table

TP544,TP545 ICT_TP
TP547,TP549 ICT_TP
TP552,TP554 ICT_TP

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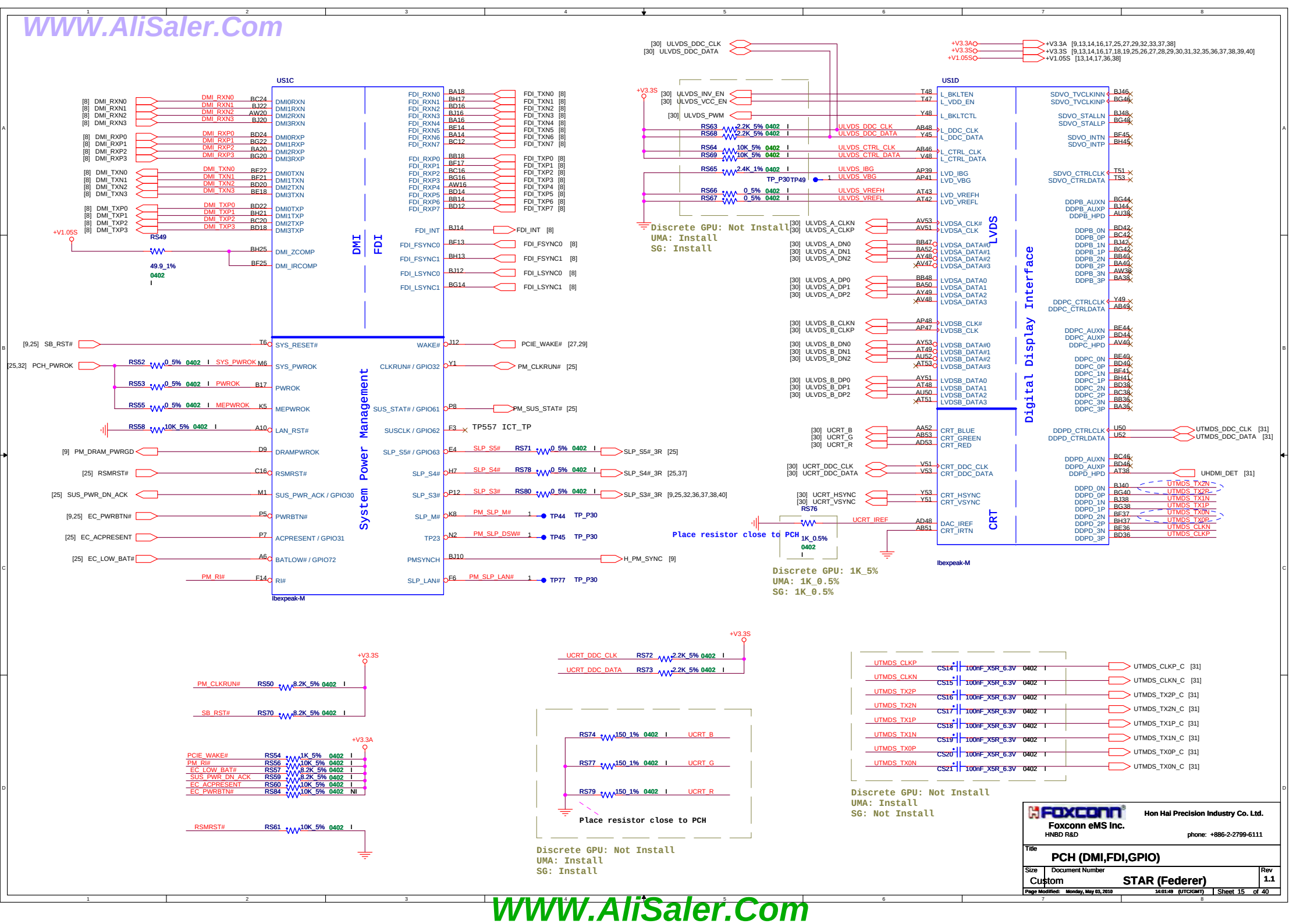

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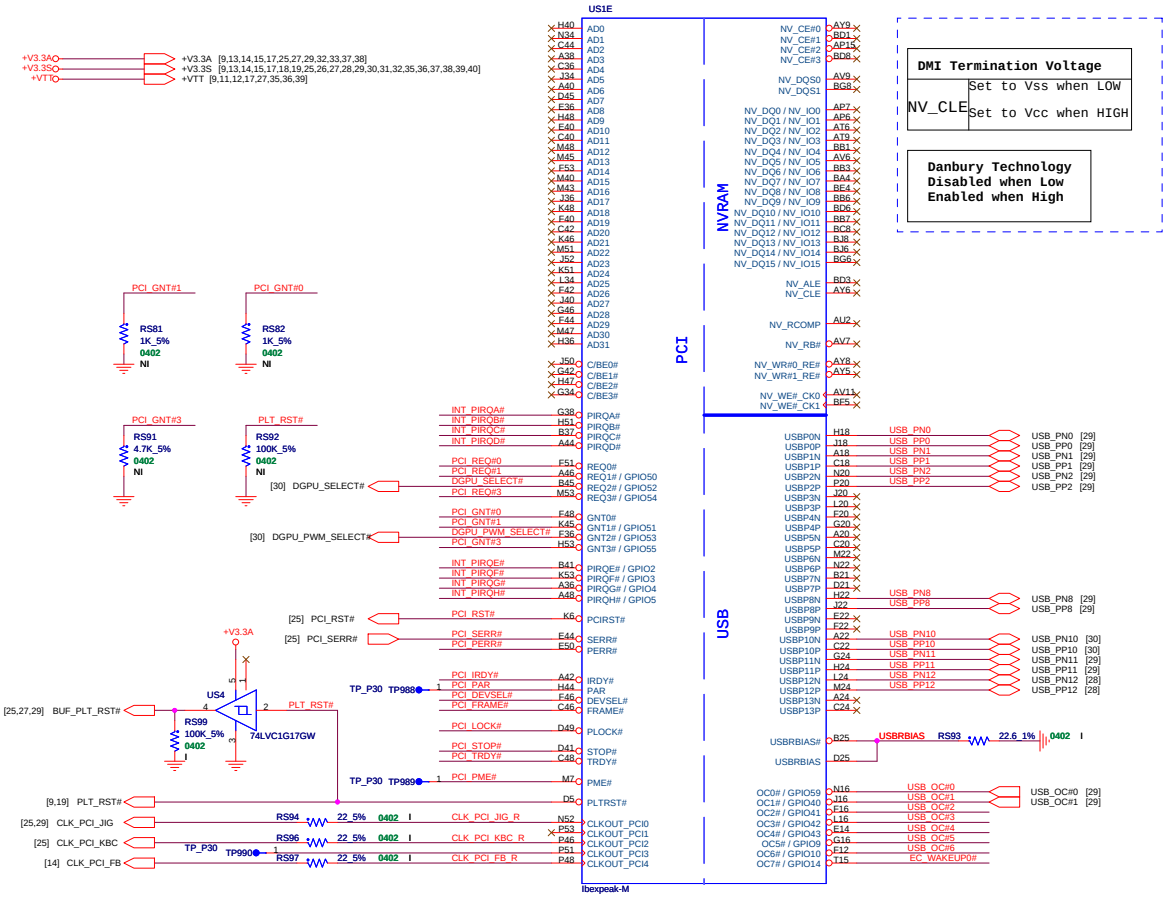

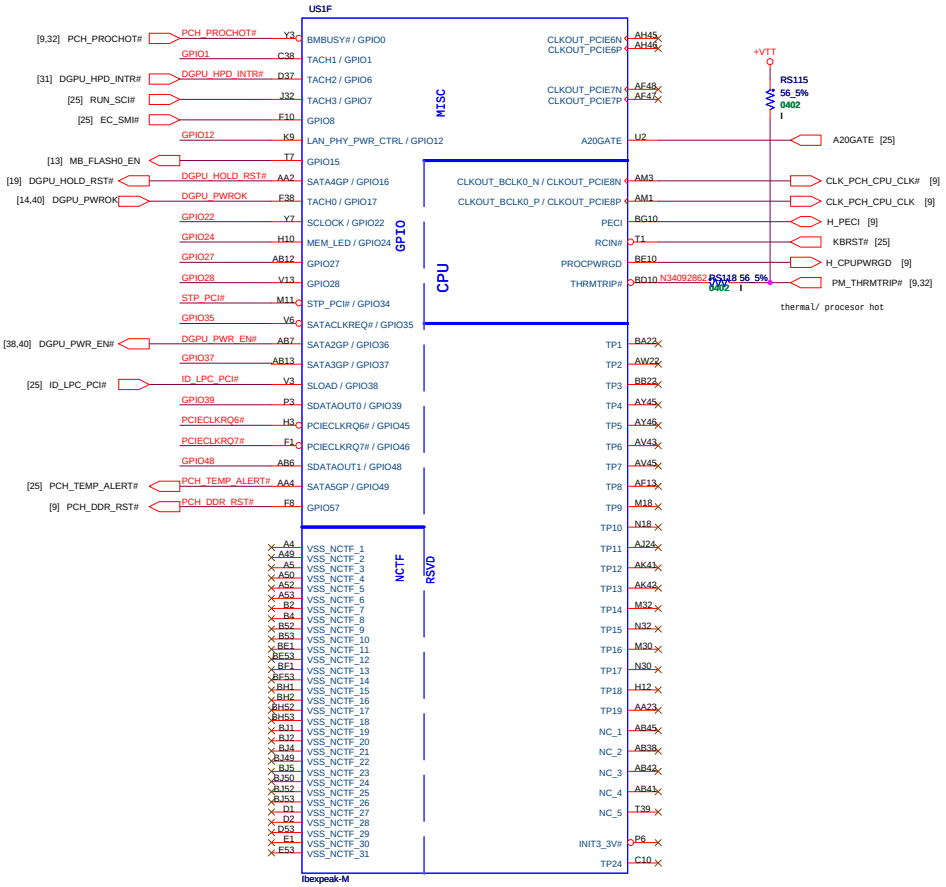

USB PORT	Function	OC pin
PORT-0	Ext. USB 0	
PORT-1	Ext. USB 1	
PORT-2	Ext. USB 2	
PORT-3		
PORT-4		
PORT-5		
PORT-6		
PORT-7		
PORT-8	Bluetooth	
PORT-9		
PORT-10	Camera	
PORT-11	WLAN/WiMAX	
PORT-12	Card reader	
PORT-13		

DVT Ask EC if we need to change GPIO pin.
GPIO8 can't be low.

DIS:100K
UMA:10K
SG:100K

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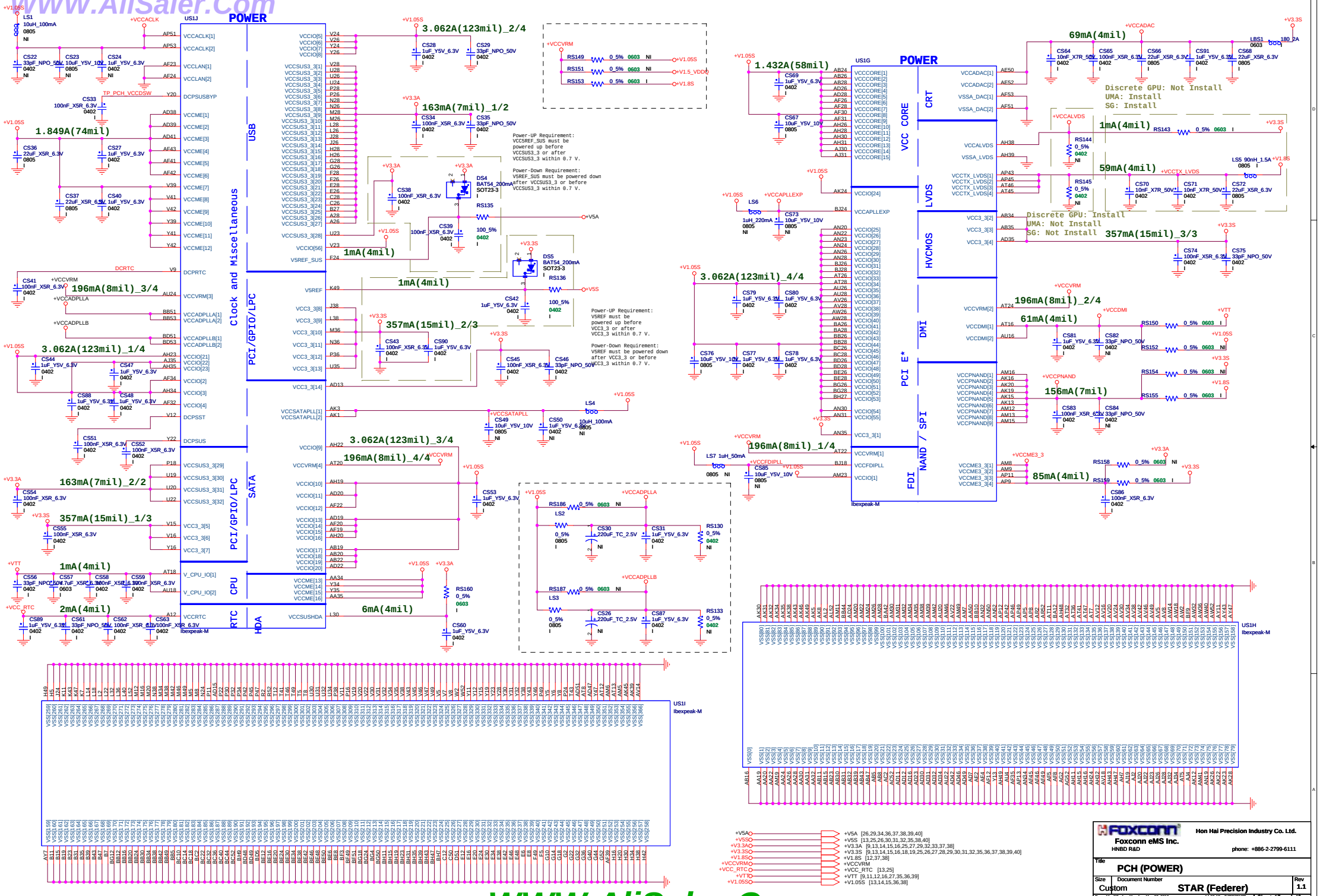

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+V0.75S [37,38]
+V1.5 [9,37,38]
+V3.3S [9,13,14,15,16,17,19,25,26,27,28,29,30,31,32,35,36,37,38,39,40]
M_VREF [37]

SMBus Address: A0H(W)/A1H(R)

SLOT2A

[10] SDDR_A_A[0..15]
[10] SDDR_A_BS0
[10] SDDR_A_BS1
[10] SDDR_A_BS2
[10] SDDR_A_CS#0
[10] SDDR_A_CS#1
[10] SDDR_A_CLK_DDR0
[10] SDDR_A_CLK_DDR#0
[10] SDDR_A_CLK_DDR1
[10] SDDR_A_CLK_DDR#1
[10] SDDR_A_CKE0
[10] SDDR_A_CKE1
[10] SDDR_A_CAS#
[10] SDDR_A_RAS#
[10] SDDR_A_WE#
RM4 10K_5% 0402 SA0_DIM0
RM5 10K_5% 0402 SA1_DIM0
[14,27,29] PCH_SMB_CLK_3S
[14,27,29] PCH_SMB_DAT_3S
[10] SDDR_A_ODT0
[10] SDDR_A_ODT1
[10] SDDR_A_DM[0..7]
[10] SDDR_A_DQS[0..7]
[10] SDDR_A_DQS#[0..7]
SDDR_A_DQ[0..63] [10]

DDR3_204P_3u

SLOT3A

[10] SDDR_B_A[0..15]
[10] SDDR_B_BS0
[10] SDDR_B_BS1
[10] SDDR_B_BS2
[10] SDDR_B_CS#0
[10] SDDR_B_CS#1
[10] SDDR_B_CLK_DDR0
[10] SDDR_B_CLK_DDR#0
[10] SDDR_B_CLK_DDR1
[10] SDDR_B_CLK_DDR#1
[10] SDDR_B_CKE0
[10] SDDR_B_CKE1
[10] SDDR_B_CAS#
[10] SDDR_B_RAS#
[10] SDDR_B_WE#
RM7 10K_5% 0402 SA0_DIM1
RM8 10K_5% 0402 SA1_DIM1
+V3.3S
[14,27,29] PCH_SMB_CLK_3S
[14,27,29] PCH_SMB_DAT_3S
[10] SDDR_B_ODT0
[10] SDDR_B_ODT1
[10] SDDR_B_DM[0..7]
[10] SDDR_B_DQS[0..7]
[10] SDDR_B_DQS#[0..7]
SDDR_B_DQ[0..63] [10]

DDR3_204P_3u

DIMM_0

SLOT2B

+V1.5
+V3.3S
CM15 330uF_TA_2.5V 7.3X4.3 NI
CM13 22uF_X5R_6.3V 0805 I
CM14 22uF_X5R_6.3V 0805 I
CM16 22uF_X5R_6.3V 0805 I
CM1 2.2uF_X5R_10V 0603 I
CM2 100nF_X5R_6.3V 0402 I
[9] PM_EXTTS#1
[9] DDR3_DRAMRST#
RM3 SDDR_A_DQ_VREF0 0_5% 0402
M_VREF
CM4 2.2uF_X5R_10V 0603 I
CM5 100nF_X5R_6.3V 0402 I
CM6 2.2uF_X5R_10V 0603 I
CM7 100nF_X5R_6.3V 0402 I
+V0.75S
CM18 33pF_NPO_50V 0402 NI
CM19 100nF_X5R_6.3V 0402 I
CM20 100nF_X5R_6.3V 0402 I
CM21 100nF_X5R_6.3V 0402 I
CM22 100nF_X5R_6.3V 0402 I
CM8 33pF_NPO_50V 0402 NI
CM9 1uF_Y5V_6.3V 0402 I
CM10 1uF_Y5V_6.3V 0402 I
CM11 1uF_Y5V_6.3V 0402 I
CM12 1uF_Y5V_6.3V 0402 I
CM45 10uF_Y5V_10V 0805 I

Place between two SO-DIMM

DIMM_1

+V1.5
CM36 22uF_X5R_6.3V 0805 I
CM37 22uF_X5R_6.3V 0805 I
CM38 22uF_X5R_6.3V 0805 I
CM35 330uF_TA_2.5V 7.3X4.3 NI
CM40 33pF_NPO_50V 0402 N
CM41 100nF_X5R_6.3V 0402 I
CM42 100nF_X5R_6.3V 0402 I
CM43 100nF_X5R_6.3V 0402 I
CM44 100nF_X5R_6.3V 0402 I
+V0.75S
CM30 1uF_Y5V_6.3V 0402 I
CM31 1uF_Y5V_6.3V 0402 I
CM32 1uF_Y5V_6.3V 0402 I
CM33 1uF_Y5V_6.3V 0402 I
CM34 33pF_NPO_50V 0402 NI
CM46 10uF_Y5V_10V 0805 I

Place these Caps near So-DIMM1

SLOT3B

+V1.5
+V3.3S
CM23 2.2uF_X5R_10V 0603 I
CM24 100nF_X5R_6.3V 0402 I
[9] PM_EXTTS#1
[9] DDR3_DRAMRST#
RM9 SDDR_B_DQ_VREF1 0_5% 0402
M_VREF
CM25 2.2uF_X5R_10V 0603 I
CM26 100nF_X5R_6.3V 0402 I
CM27 2.2uF_X5R_10V 0603 I
CM28 100nF_X5R_6.3V 0402 I
+V0.75S

DDR3_204P_3u

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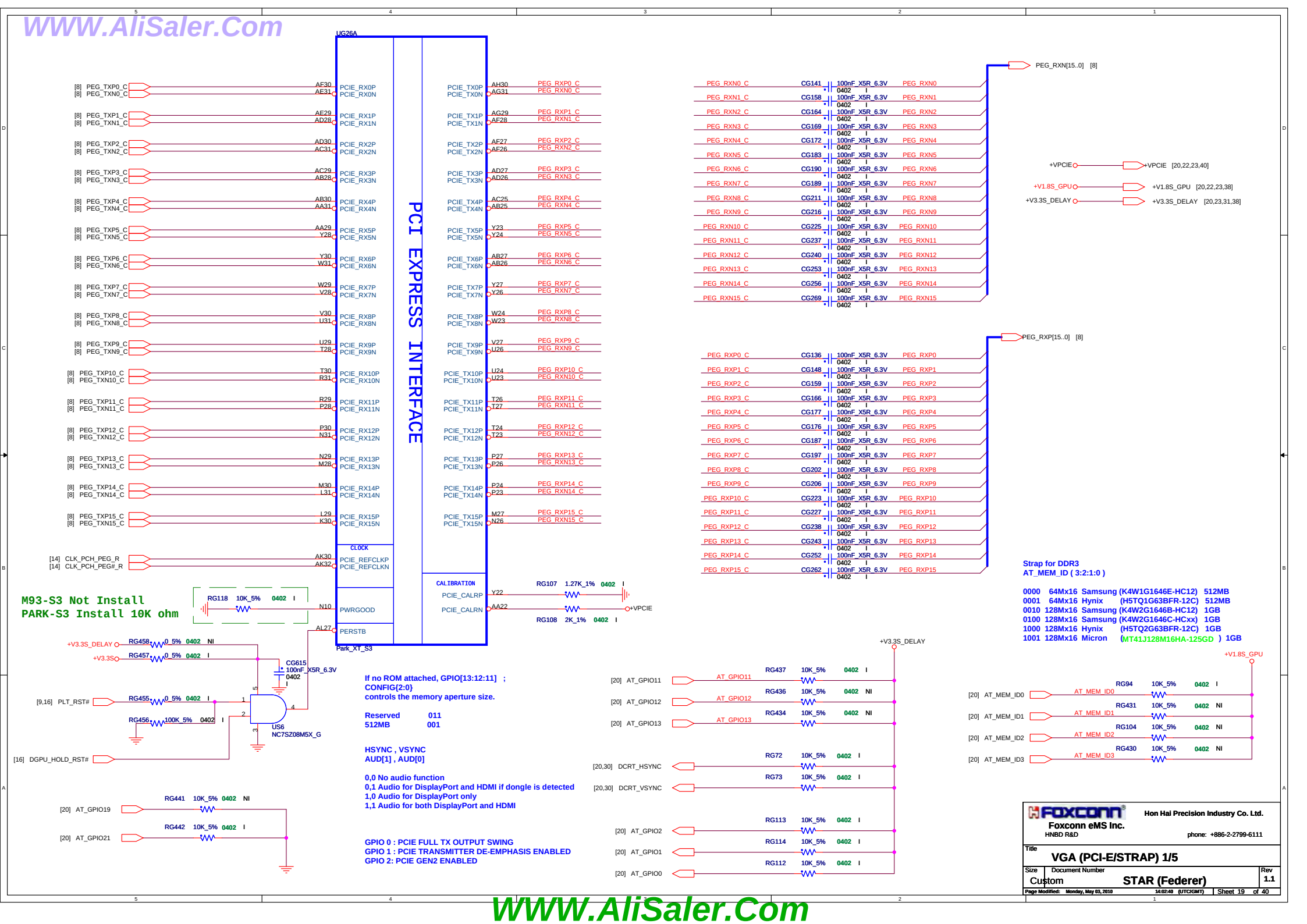

[8] PEG_TXP0_C / [8] PEG_TXN0_C
[8] PEG_TXP1_C / [8] PEG_TXN1_C
[8] PEG_TXP2_C / [8] PEG_TXN2_C
[8] PEG_TXP3_C / [8] PEG_TXN3_C
[8] PEG_TXP4_C / [8] PEG_TXN4_C
[8] PEG_TXP5_C / [8] PEG_TXN5_C
[8] PEG_TXP6_C / [8] PEG_TXN6_C
[8] PEG_TXP7_C / [8] PEG_TXN7_C
[8] PEG_TXP8_C / [8] PEG_TXN8_C
[8] PEG_TXP9_C / [8] PEG_TXN9_C
[8] PEG_TXP10_C / [8] PEG_TXN10_C
[8] PEG_TXP11_C / [8] PEG_TXN11_C
[8] PEG_TXP12_C / [8] PEG_TXN12_C
[8] PEG_TXP13_C / [8] PEG_TXN13_C
[8] PEG_TXP14_C / [8] PEG_TXN14_C
[8] PEG_TXP15_C / [8] PEG_TXN15_C

PEG_RXP0_C … PEG_RXP15_C
PEG_RXN0_C … PEG_RXN15_C

[14] CLK_PCH_PEG_R
[14] CLK_PCH_PEG#_R

M93-S3 Not Install
PARK-S3 Install 10K ohm

RG118 10K_5% 0402 I
RG107 1.27K_1% 0402 I
RG108 2K_1% 0402 I
+VPCIE

+V3.3S_DELAY
+V3.3S
RG458 0_5% 0402 NI
RG457 0_5% 0402 I
CG615 100nF_X5R_6.3V 0402 I
[9,16] PLT_RST#
RG455 0_5% 0402 I
RG456 100K_5% 0402 I
US6 NC7SZ08M5X_G
[16] DGPU_HOLD_RST#

RG441 10K_5% 0402 NI
[20] AT_GPIO19
RG442 10K_5% 0402 I
[20] AT_GPIO21

If no ROM attached, GPIO[13:12:11] ;
CONFIG{2:0}
controls the memory aperture size.

Reserved 011
512MB 001

HSYNC , VSYNC
AUD[1] , AUD[0]

0,0 No audio function
0,1 Audio for DisplayPort and HDMI if dongle is detected
1,0 Audio for DisplayPort only
1,1 Audio for both DisplayPort and HDMI

GPIO 0 : PCIE FULL TX OUTPUT SWING
GPIO 1 : PCIE TRANSMITTER DE-EMPHASIS ENABLED
GPIO 2: PCIE GEN2 ENABLED

+V3.3S_DELAY
[20] AT_GPIO11 — RG437 10K_5% 0402 I
[20] AT_GPIO12 — RG436 10K_5% 0402 NI
[20] AT_GPIO13 — RG434 10K_5% 0402 NI
[20,30] DCRT_HSYNC — RG72 10K_5% 0402 I
[20,30] DCRT_VSYNC — RG73 10K_5% 0402 I
[20] AT_GPIO2 — RG113 10K_5% 0402 I
[20] AT_GPIO1 — RG114 10K_5% 0402 I
[20] AT_GPIO0 — RG112 10K_5% 0402 I

+V1.8S_GPU
[20] AT_MEM_ID0 — RG94 10K_5% 0402 I
[20] AT_MEM_ID1 — RG431 10K_5% 0402 NI
[20] AT_MEM_ID2 — RG104 10K_5% 0402 NI
[20] AT_MEM_ID3 — RG430 10K_5% 0402 NI

Strap for DDR3
AT_MEM_ID (3:2:1:0)

0000 64Mx16 Samsung (K4W1G1646E-HC12) 512MB
0001 64Mx16 Hynix (H5TQ1G63BFR-12C) 512MB
0010 128Mx16 Samsung (K4W2G1646B-HC12) 1GB
0100 128Mx16 Samsung (K4W2G1646C-HCxx) 1GB
1000 128Mx16 Hynix (H5TQ2G63BFR-12C) 1GB
1001 128Mx16 Micron (MT41J128M16HA-125GD) 1GB

+VPCIE [20,22,23,40]
+V1.8S_GPU [20,22,23,38]
+V3.3S_DELAY [20,23,31,38]

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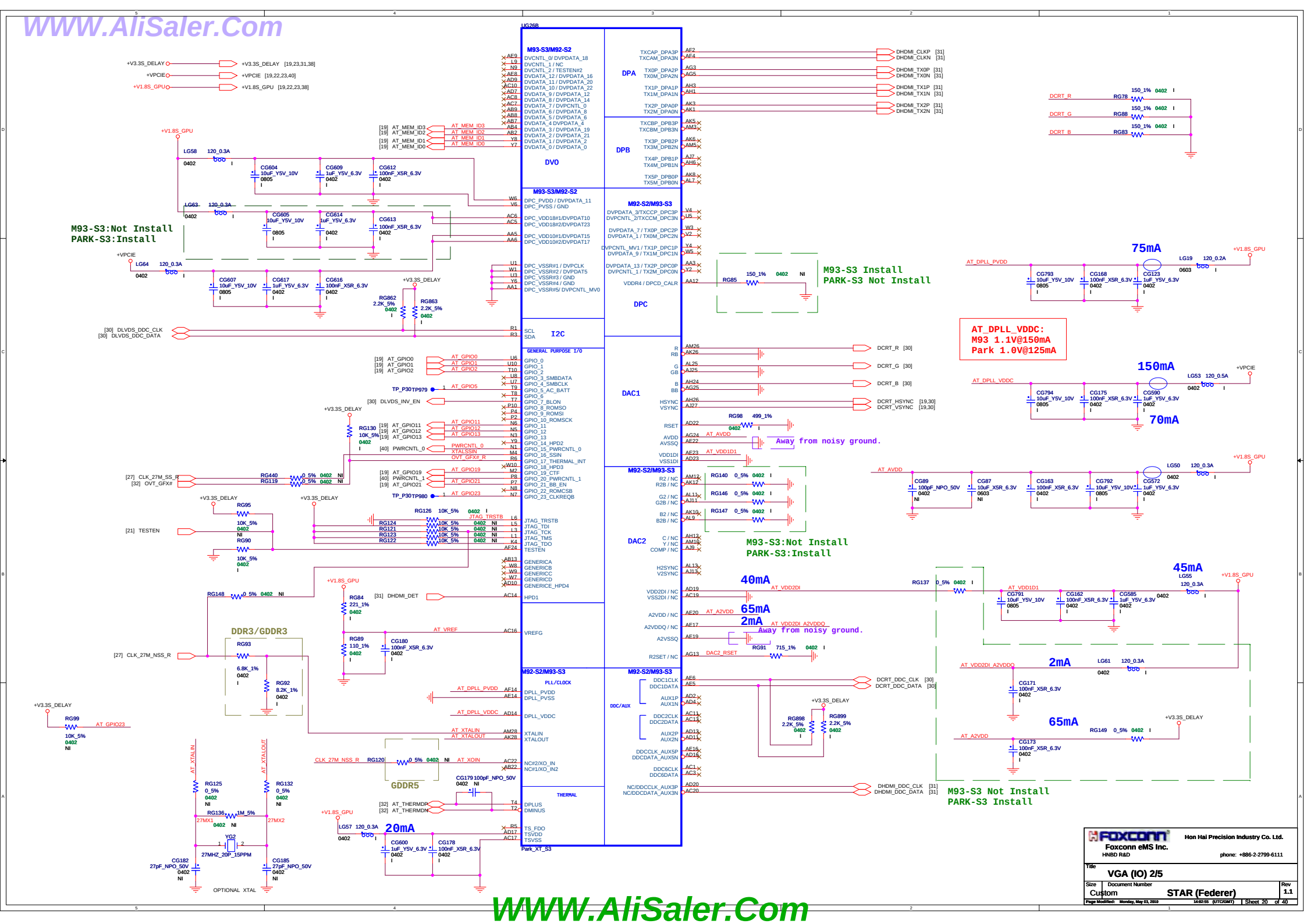

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	M93_XT_S3	Park_XT_S3
RG139	100_1%	40.2_1%
MVREFD	0.75V	1.07V
RG143	100_1%	40.2_1%
MVREFS	0.75V	1.07V

+V1.5S → +V1.5S [23,24,38,40]

UG26F — Park_XT_S3

LVDS CONTROL
- VARY_BL — AB11
- DIGON — AB12
- → DLVDS_PWM [30], DLVDS_VCC_EN [30]

- TXCLK_UP_DPF3P — AH20
- TXCLK_UN_DPF3N — AJ19
- → DLVDS_U_CLKP [30], DLVDS_U_CLKN [30]
- TXOUT_U0P_DPF2P — AL21
- TXOUT_U0N_DPF2N — AK20
- → DLVDS_U_DP0 [30], DLVDS_U_DN0 [30]
- TXOUT_U1P_DPF1P — AH22
- TXOUT_U1N_DPF1N — AJ21
- → DLVDS_U_DP1 [30], DLVDS_U_DN1 [30]
- TXOUT_U2P_DPF0P — AL23
- TXOUT_U2N_DPF0N — AK22
- → DLVDS_U_DP2 [30], DLVDS_U_DN2 [30]
- TXOUT_U3P — AK24
- TXOUT_U3N — AJ23

LVTMDP
- TXCLK_LP_DPE3P — AL15
- TXCLK_LN_DPE3N — AK14
- → DLVDS_L_CLKP [30], DLVDS_L_CLKN [30]
- TXOUT_L0P_DPE2P — AH16
- TXOUT_L0N_DPE2N — AJ15
- → DLVDS_L_DP0 [30], DLVDS_L_DN0 [30]
- TXOUT_L1P_DPE1P — AL17
- TXOUT_L1N_DPE1N — AK16
- → DLVDS_L_DP1 [30], DLVDS_L_DN1 [30]
- TXOUT_L2P_DPE0P — AH18
- TXOUT_L2N_DPE0N — AJ17
- → DLVDS_L_DP2 [30], DLVDS_L_DN2 [30]
- TXOUT_L3P — AL19
- TXOUT_L3N — AK18

PLACE MVREF DIVIDERS AND CAPS CLOSE TO ASIC

+V1.5S → RG139 40.2_1% 0402 I → MVREFD
- RG135 100_1% 0402 I
- CG274 100nF_X5R_6.3V 0402 I

+V1.5S → RG143 40.2_1% 0402 I → MVREFS
- RG133 100_1% 0402 I
- CG302 100nF_X5R_6.3V 0402 I

CLKTESTA / CLKTESTB
- CG273 100nF_X5R_6.3V 0402 NI
- CG280 100nF_X5R_6.3V 0402 NI
- RG127 51_5% 0402 NI
- RG134 51_5% 0402 NI

+V1.5S → RG145 2.2K_5% 0402 NI

[24] MEM_RST → RG142 680_5% 0402 I
- CG781 68pF_NPO_50V 0402 I
- RG141 10K_5% 0402 I

	M93-S3	PARK-S3
RG141	DNI	10K
RG142	0R	680R
RG145	2.2K	DNI
CG781	2.2nF	68pF

[24] GDDR_A_DQ[63:0]

UG26C — MEMORY INTERFACE — Park_XT_S3

DQA_0	K27	GDDR_A_DQ0
DQA_1	J29	GDDR_A_DQ1
DQA_2	H30	GDDR_A_DQ2
DQA_3	H32	GDDR_A_DQ3
DQA_4	G29	GDDR_A_DQ4
DQA_5	F28	GDDR_A_DQ5
DQA_6	F32	GDDR_A_DQ6
DQA_7	F30	GDDR_A_DQ7
DQA_8	C30	GDDR_A_DQ8
DQA_9	F27	GDDR_A_DQ9
DQA_10	A28	GDDR_A_DQ10
DQA_11	C28	GDDR_A_DQ11
DQA_12	E27	GDDR_A_DQ12
DQA_13	G26	GDDR_A_DQ13
DQA_14	D26	GDDR_A_DQ14
DQA_15	F25	GDDR_A_DQ15
DQA_16	A25	GDDR_A_DQ16
DQA_17	C25	GDDR_A_DQ17
DQA_18	E25	GDDR_A_DQ18
DQA_19	D24	GDDR_A_DQ19
DQA_20	F23	GDDR_A_DQ20
DQA_21	F23	GDDR_A_DQ21
DQA_22	D22	GDDR_A_DQ22
DQA_23	F21	GDDR_A_DQ23
DQA_24	E21	GDDR_A_DQ24
DQA_25	D20	GDDR_A_DQ25
DQA_26	F19	GDDR_A_DQ26
DQA_27	A19	GDDR_A_DQ27
DQA_28	D18	GDDR_A_DQ28
DQA_29	F17	GDDR_A_DQ29
DQA_30	A17	GDDR_A_DQ30
DQA_31	C17	GDDR_A_DQ31
DQA_32	E17	GDDR_A_DQ32
DQA_33	D16	GDDR_A_DQ33
DQA_34	F15	GDDR_A_DQ34
DQA_35	A15	GDDR_A_DQ35
DQA_36	D14	GDDR_A_DQ36
DQA_37	F13	GDDR_A_DQ37
DQA_38	A13	GDDR_A_DQ38
DQA_39	C13	GDDR_A_DQ39
DQA_40	E11	GDDR_A_DQ40
DQA_41	A11	GDDR_A_DQ41
DQA_42	C11	GDDR_A_DQ42
DQA_43	F11	GDDR_A_DQ43
DQA_44	A9	GDDR_A_DQ44
DQA_45	C9	GDDR_A_DQ45
DQA_46	F9	GDDR_A_DQ46
DQA_47	D8	GDDR_A_DQ47
DQA_48	E7	GDDR_A_DQ48
DQA_49	A7	GDDR_A_DQ49
DQA_50	C7	GDDR_A_DQ50
DQA_51	F7	GDDR_A_DQ51
DQA_52	A5	GDDR_A_DQ52
DQA_53	E5	GDDR_A_DQ53
DQA_54	C3	GDDR_A_DQ54
DQA_55	F1	GDDR_A_DQ55
DQA_56	G7	GDDR_A_DQ56
DQA_57	G6	GDDR_A_DQ57
DQA_58	G1	GDDR_A_DQ58
DQA_59	G3	GDDR_A_DQ59
DQA_60	J6	GDDR_A_DQ60
DQA_61	J1	GDDR_A_DQ61
DQA_62	J3	GDDR_A_DQ62
DQA_63	J5	GDDR_A_DQ63
MVREFDA	K26	MVREFD
MVREFSA	J26	MVREFS
MEM_CALRN0	J25	
NC/TESTEN#2	K7	[20] TESTEN
MEM_CALRP1/DPC_CALR	J8	
MEM_CALRP0	K25	
DRAM_RST	L10	
CLKTESTA	K8	CLKTESTA
CLKTESTB	L7	CLKTESTB

MAA_0	K17	GDDR_A_A0
MAA_1	J20	GDDR_A_A1
MAA_2	H23	GDDR_A_A2
MAA_3	G23	GDDR_A_A3
MAA_4	G24	GDDR_A_A4
MAA_5	H24	GDDR_A_A5
MAA_6	J19	GDDR_A_A6
MAA_7	K19	GDDR_A_A7
MAA_8	J14	GDDR_A_A8
MAA_9	K14	GDDR_A_A9
MAA_10	J11	GDDR_A_A10
MAA_11	J13	GDDR_A_A11
MAA_12	H11	GDDR_A_A12
MAA_13/BA2	G11	GDDR_A_BA2 [24]
MAA_14/BA0	J16	GDDR_A_BA0 [24]
MAA_15/BA1	L15	GDDR_A_BA1 [24]
		GDDR_A_DM[7:0] [24]
DQMA_0	E32	GDDR_A_DM0
DQMA_1	E30	GDDR_A_DM1
DQMA_2	A21	GDDR_A_DM2
DQMA_3	C21	GDDR_A_DM3
DQMA_4	E13	GDDR_A_DM4
DQMA_5	D12	GDDR_A_DM5
DQMA_6	E3	GDDR_A_DM6
DQMA_7	F4	GDDR_A_DM7
RDQSA_0	H28	GDDR_A_DQS0
RDQSA_1	C27	GDDR_A_DQS1
RDQSA_2	A23	GDDR_A_DQS2
RDQSA_3	E19	GDDR_A_DQS3
RDQSA_4	E15	GDDR_A_DQS4
RDQSA_5	D10	GDDR_A_DQS5
RDQSA_6	D6	GDDR_A_DQS6
RDQSA_7	G5	GDDR_A_DQS7
WDQSA_0	H27	GDDR_A_DQS#0
WDQSA_1	A27	GDDR_A_DQS#1
WDQSA_2	C23	GDDR_A_DQS#2
WDQSA_3	C19	GDDR_A_DQS#3
WDQSA_4	C15	GDDR_A_DQS#4
WDQSA_5	E9	GDDR_A_DQS#5
WDQSA_6	C5	GDDR_A_DQS#6
WDQSA_7	H4	GDDR_A_DQS#7
ODTA0	L18	GDDR_A_ODT0
ODTA1	K16	GDDR_A_ODT1
CLKA0	H26	GDDR_A_CLK0
CLKA0B	H25	GDDR_A_CLK#0
CLKA1	G9	GDDR_A_CLK1
CLKA1B	H9	GDDR_A_CLK#1
RASA0B	G22	GDDR_A_RAS#0
RASA1B	G17	GDDR_A_RAS#1
CASA0B	G19	GDDR_A_CAS#0
CASA1B	G16	GDDR_A_CAS#1
CSA0B_0	H22	GDDR_A_CS0_0#
CSA0B_1	J22	
CSA1B_0	G13	GDDR_A_CS1_0#
CSA1B_1	K13	
CKEA0	K20	GDDR_A_CKE0
CKEA1	J17	GDDR_A_CKE1
WEA0B	G25	GDDR_A_WE#0
WEA1B	H10	GDDR_A_WE#1
PX_EN	AB16	
RSVD#2	G14	
RSVD#3	G20	GDDR_A_A13_R

GDDR_A_A[12:0] [24]

GDDR_A_DQS0 [24] … GDDR_A_DQS7 [24]

GDDR_A_DQS#0 [24] … GDDR_A_DQS#7 [24]

GDDR_A_ODT0 [24], GDDR_A_ODT1 [24]

GDDR_A_CLK0 [24], GDDR_A_CLK#0 [24]

GDDR_A_CLK1 [24], GDDR_A_CLK#1 [24]

GDDR_A_RAS#0 [24], GDDR_A_RAS#1 [24]

GDDR_A_CAS#0 [24], GDDR_A_CAS#1 [24]

GDDR_A_CS0_0# [24]

GDDR_A_CS1_0# [24]

GDDR_A_CKE0 [24], GDDR_A_CKE1 [24]

GDDR_A_WE#0 [24], GDDR_A_WE#1 [24]

RG187 0_5% 0402 I → GDDR_A_A13 [24]

M93-S3 No Install
PARK-S3 Install

M93-S3 No Install
PARK-S3 Install

+V1.5S → RG128 240_1% 0402 I

[20] TESTEN → RG188 0_5% 0402 I

CLKTESTA / CLKTESTB
- RG131 4.7K_5% 0402 NI
- RG129 4.7K_5% 0402 NI
- RG144 240_1% 0402 I
- RG138 150_1% 0402 I

M93-S3 Install
PARK-S3 Not Install

M93-S3 Not Install
PARK-S3 Install

M93-S3 Install 240 ohm
PARK-S3 Install 150 ohm

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+VPCIE → +VPCIE [19,20,23,40]

+V1.8S_GPU → +V1.8S_GPU [19,20,23,38]

UG26G

DP E/F POWER

AG15	DPE_VDD18#1	130mA
AG16	DPE_VDD18#2	
AG20	DPE_VDD10#1	110mA
AG21	DPE_VDD10#2	
AG14	DPE_VSSR#1	
AH14	DPE_VSSR#2	
AM14	DPE_VSSR#3	
AM16	DPE_VSSR#4	
AM18	DPE_VSSR#5	
AF16	DPF_VDD18#1	130mA
AG17	DPF_VDD18#2	
AF22	DPF_VDD10#1	110mA
AG22	DPF_VDD10#2	
AF23	DPF_VSSR#1	
AG23	DPF_VSSR#2	
AM20	DPF_VSSR#3	
AM22	DPF_VSSR#4	
AM24	DPF_VSSR#5	
AF17	DPEF_CALR	
AG18	DPE_PVDD	20 mA
AF19	DPE_PVSS	
AG19	DPF_PVDD	20 mA
AF20	DPF_PVSS	

DP A/B POWER

AE11	DPA_VDD18#1	130mA
AF11	DPA_VDD18#2	
AF6	DPA_VDD10#1	
AF7	DPA_VDD10#2	
AE1	DPA_VSSR#1	
AE3	DPA_VSSR#2	
AG1	DPA_VSSR#3	
AG6	DPA_VSSR#4	
AH5	DPA_VSSR#5	
AE13	DPB_VDD18#1	130mA
AF13	DPB_VDD18#2	
AF8	DPB_VDD10#1	
AF9	DPB_VDD10#2	
AE10	DPB_VSSR#1	
AG9	DPB_VSSR#2	
AH8	DPB_VSSR#3	
AM6	DPB_VSSR#4	
AM8	DPB_VSSR#5	
AE10	DPAB_CALR	
AG8	DPA_PVDD	+DPA_PVDD 20 mA
AG7	DPA_PVSS	
AG10	DPB_PVDD	+DPA_PVDD 20 mA
AG11	DPB_PVSS	

DP PLL POWER

Park_XT_S3

+V1.8S_GPU

LG17 120_0.3A 0402

CG133 10uF_Y5V_10V 0805

CG134 1uF_Y5V_6.3V 0402

CG160 100nF_X5R_6.3V 0402

+VPCIE

LG54 120_0.3A 0402

CG583 10uF_Y5V_10V 0805

CG587 1uF_Y5V_6.3V 0402

CG161 100nF_X5R_6.3V 0402

+V1.8S_GPU

LG18 120_0.3A 0402

CG152 100nF_X5R_6.3V 0402

CG127 1uF_Y5V_6.3V 0402

CG126 10uF_Y5V_10V 0805

RG97 150_1% 0402

RG87 0_5% 0402

M93-S3 Not Install
PARK-S3 Install

M93-S3:Not Install / PARK-S3:Install

+V1.8S_GPU

LG21 120_0.3A 0402

CG154 10uF_Y5V_10V 0805

CG155 1uF_Y5V_6.3V 0402

CG156 100nF_X5R_6.3V 0402

LG23 120_0.3A 0402 +VPCIE

CG157 10uF_Y5V_10V 0805

CG150 1uF_Y5V_6.3V 0402

CG165 100nF_X5R_6.3V 0402

+VPCIE:
M93-S3:1.1V@110mA
PARK-S3:1.0V@200mA

M93-S3:Not Install / PARK-S3:Install

+V1.8S_GPU

RG96 0_5% 0603

CG151 1uF_Y5V_6.3V 0402

RG101 150_1% 0402

+V1.8S_GPU

+DPA_PVDD

LG56 120_0.3A 0402

CG591 10uF_Y5V_10V 0805

CG594 1uF_Y5V_6.3V 0402

CG596 100nF_X5R_6.3V 0402

UG26E

AA27	PCIE_VSS#1	GND#1	A3
AB24	PCIE_VSS#2	GND#2	A30
AB32	PCIE_VSS#3	GND#3 / EVDDQ#2	AA13
AC24	PCIE_VSS#4	GND#4	AA16
AC26	PCIE_VSS#5	GND#5	AB10
AC27	PCIE_VSS#6	GND#6 / EVDDQ#3	AB15
AD25	PCIE_VSS#7	GND#7	AB6
AD32	PCIE_VSS#8	GND#8	AC9
AE27	PCIE_VSS#9	GND#9	AD6
AF32	PCIE_VSS#10	GND#10	AD8
AG27	PCIE_VSS#11	GND#11	AE7
AH32	PCIE_VSS#12	GND#12	AG12
K28	PCIE_VSS#13	GND#13	AH10
K32	PCIE_VSS#14	GND#14	AH28
L27	PCIE_VSS#15	GND#15	B10
M32	PCIE_VSS#16	GND#16	B12
N25	PCIE_VSS#17	GND#17	B14
N27	PCIE_VSS#18	GND#18	B16
P25	PCIE_VSS#19	GND#19	B18
P32	PCIE_VSS#20	GND#20	B20
R27	PCIE_VSS#21	GND#21	B22
T25	PCIE_VSS#22	GND#22	B24
T32	PCIE_VSS#23	GND#23	B26
U25	PCIE_VSS#24	GND#24	B6
U27	PCIE_VSS#25	GND#25	B8
V32	PCIE_VSS#26	GND#26	C1
W25	PCIE_VSS#27	GND#27	C32
W26	PCIE_VSS#28	GND#28	E28
W27	PCIE_VSS#29	GND#29	F10
Y25	PCIE_VSS#30	GND#30	F12
Y32	PCIE_VSS#31	GND#31	F14
		GND#32	F16
		GND#33	F18
		GND#34	F2
		GND#35	F20
M6	GND#56	GND#36	F22
N11	GND#57	GND#37	F24
N12	GND#58	GND#38	F26
N13	GND#59	GND#39	F6
N16	GND#60	GND#40	F8
N18	GND#61	GND#41	G10
N21	GND#62	GND#42	G27
P6	GND#63	GND#43	G31
P9	GND#64	GND#44	G8
R12	GND#65	GND#45	H14
R15	GND#66	GND#46	H17
R17	GND#67	GND#47	H2
R20	GND#68	GND#48	H20
T13	GND#69	GND#49	H6
T16	GND#70	GND#50	J27
T18	GND#71	GND#51	J31
T21	GND#72	GND#52	K11
T6	GND#73	GND#53	K2
U15	GND#74	GND#54	K22
U17	GND#75	GND#55	K6
U20	GND#76	GND#85	T11
U9	GND#77	GND#86	R11
V13	GND#78		
V16	GND#79		
V18	GND#80		
Y10	GND#81		
Y15	GND#82		
Y17	GND#83	VSS_MECH#1	A32
Y20	GND#84	VSS_MECH#2	AM1
		VSS_MECH#3	AM32

GND

Park_XT_S3

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+V3.3S_DELAY → +V3.3S_DELAY [19,20,31,38]
+V1.8S_GPU → +V1.8S_GPU [19,20,22,38]
+VDD_CORE → +VDD_CORE [40]
+V1.5S → +V1.5S [21,24,38,40]
+VPCIE → +VPCIE [19,20,22,40]

+V1.5S
2A(80mil)
CG329 10uF_Y5V_10V 0805
CG400 10uF_Y5V_10V 0805
CG328 10uF_Y5V_10V 0805
CG399 10uF_Y5V_10V 0805
CG326 1uF_Y5V_6.3V 0402
CG396 1uF_Y5V_6.3V 0402
CG324 1uF_Y5V_6.3V 0402
CG259 1uF_Y5V_6.3V 0402
CG325 1uF_Y5V_6.3V 0402
CG282 1uF_Y5V_6.3V 0402
CG397 1uF_Y5V_6.3V 0402
CG301 1uF_Y5V_6.3V 0402

UG26D
MEM I/O
VDDR1#1 H13
VDDR1#2 H16
VDDR1#3 H19
VDDR1#4 J10
VDDR1#5 J23
VDDR1#6 J24
VDDR1#7 J9
VDDR1#8 K10
VDDR1#9 K23
VDDR1#10 K24
VDDR1#11 K9
VDDR1#12 L11
VDDR1#13 L12
VDDR1#14 L13
VDDR1#15 L20
VDDR1#16 L21
VDDR1#17 L22

LEVEL TRANSLATION
VDD_CT#1 AA20
VDD_CT#2 AA21
VDD_CT#3 AB20
VDD_CT#4 AB21

M93-S3/M92-S2 I/O
VDDR3#1 AA17
VDDR3#2 AA18
VDDR3#3 AB17
VDDR3#4 AB18
VDDR4#1 / VDDR5 V12
VDDR4#2 Y12
VDDR4#3 / VDDR5 U12
NC#1 / VDDR4 DVCLK / VDDR4 AA11 Y11
NC#3 / VDDR5 TESTEN#2 / VDDR5 V11 U11

MEM CLK
VDDRHA L17
VSSRHA L16

PLL
PCIE_PVDD AM30
MPV18 L8
SPV18 H7
SPV10 H8
SPVSS J7

BACK BIAS
BBP#1 M11
BBP#2 M12

Park_XT_S3

POWER

PCIE
PCIE_VDDR#1 AB23
PCIE_VDDR#2 AC23
PCIE_VDDR#3 AD24
PCIE_VDDR#4 AE24
PCIE_VDDR#5 AE25
PCIE_VDDR#6 AE26
PCIE_VDDR#7 AE25
PCIE_VDDR#8 AG26
PCIE_VDDC#1 L23
PCIE_VDDC#2 L24
PCIE_VDDC#3 L25
PCIE_VDDC#4 L26
PCIE_VDDC#5 M22
PCIE_VDDC#6 N22
PCIE_VDDC#7 N23
PCIE_VDDC#8 N24
PCIE_VDDC#9 R22
PCIE_VDDC#10 T22
PCIE_VDDC#11 U22
PCIE_VDDC#12 V22

CORE
VDDC#1 AA15
VDDC#2 N15
VDDC#3 N17
VDDC#4 R13
VDDC#5 R16
VDDC#6 R18
VDDC#7 Y21
VDDC#8 T12
VDDC#9 T15
VDDC#10 T17
VDDC#11 T20
VDDC#12 U13
VDDC#13 U16
VDDC#14 U18
VDDC#15 V21
VDDC#16 V15
VDDC#17 V17
VDDC#18 V20
VDDC#20 Y13
VDDC#21 Y16
VDDC#22 Y18
VDDC#23 /BIF_VDDC R21
VDDC#19/BIF_VDDC U21

ISOLATED CORE I/O
VDDCI#1 M13
VDDCI#2 M15
VDDCI#3 M16
VDDCI#4 M17
VDDCI#5 M18
VDDCI#6 M20
VDDCI#7 M21
VDDCI#8 N20

+V1.8S_GPU
LG14 120_0.3A 0402
110mA(5mil)
CG106 10uF_Y5V_10V 0805
CG103 1uF_Y5V_6.3V 0402
CG188 100nF_X5R_6.3V 0402

+V3.3S_DELAY
50mA(4mil)
CG628 10uF_Y5V_10V 0805
CG207 1uF_Y5V_6.3V 0402
CG191 10nF_X7R_50V 0402

VDDR4
VDDR5

M93-S3:Install
PARK-S3:Not Install
+V1.5S
LG29 120_0.3A 0402 NI
CG293 1uF_Y5V_6.3V 0402 NI
CG284 1uF_Y5V_6.3V 0402 NI

+V1.8S_GPU
LG16 120_0.3A 0402
40mA(4mil)
AT_PCIE_PVDD
CG125 10uF_Y5V_10V 0805
CG140 100nF_X5R_6.3V 0402
CG132 1uF_Y5V_6.3V 0402
+MPV18
+SPV18

M93-S3:Not Install
PARK-S3:Install
+VPCIE
LG28 120_0.3A 0402
120mA(5mil)
CG300 10uF_Y5V_10V 0805
CG277 100nF_X5R_6.3V 0402
CG299 1uF_Y5V_6.3V 0402
+VDD_CORE
LG27 120_0.3A 0402 NI

M93-S3:Install
PARK-S3:Not Install
120mA(5mil)
CG292 100nF_X5R_6.3V 0402
CG288 1uF_Y5V_6.3V 0402

+V1.8S_GPU
500mA(20mil)
LG52 220_2A 0805
CG313 10uF_Y5V_10V 0805
CG298 1uF_Y5V_6.3V 0402
CG174 100nF_X5R_6.3V 0402

+VPCIE
2A(80mil)
CG311 10uF_Y5V_10V 0805
CG224 1uF_Y5V_6.3V 0402
CG297 1uF_Y5V_6.3V 0402
CG239 1uF_Y5V_6.3V 0402
CG295 1uF_Y5V_6.3V 0402
CG170 100nF_X5R_6.3V 0402

+VDD_CORE
VDDC+VDDCI=11A(440mil)
CG84 10uF_X5R_6.3V 0603
CG90 1uF_Y5V_6.3V 0402
CG221 1uF_Y5V_6.3V 0402
CG231 1uF_Y5V_6.3V 0402
CG92 1uF_Y5V_6.3V 0402
CG230 1uF_Y5V_6.3V 0402
CG219 1uF_Y5V_6.3V 0402
CG534 10uF_X5R_6.3V 0603
CG88 1uF_Y5V_6.3V 0402
CG86 1uF_Y5V_6.3V 0402
CG199 1uF_Y5V_6.3V 0402
CG94 1uF_Y5V_6.3V 0402
CG215 1uF_Y5V_6.3V 0402
CG250 1uF_Y5V_6.3V 0402
CG85 10uF_X5R_6.3V 0603
CG535 10uF_X5R_6.3V 0603
CG233 1uF_Y5V_6.3V 0402
CG232 1uF_Y5V_6.3V 0402
CG203 1uF_Y5V_6.3V 0402
CG236 1uF_Y5V_6.3V 0402

+VDD_CORE
2A(80mil)
LG65 120_3A 0603
CG279 10uF_Y5V_10V 0805
CG251 100nF_X5R_6.3V 0402
CG249 1uF_Y5V_6.3V 0402
CG248 1uF_Y5V_6.3V 0402

M93-S3 Not Install
PARK-S3 Install
+V1.8S_GPU
LG59 120_0.3A 0402
90mA(4mil)
+SPV18
CG634 100nF_X5R_6.3V 0402
CG635 1uF_Y5V_6.3V 0402

+V1.8S_GPU
LG60 120_0.3A 0402
75mA(4mil)
+MPV18
CG639 100nF_X5R_6.3V 0402
CG641 1uF_Y5V_6.3V 0402

+V1.8S_GPU
LG24 120_0.3A 0402
170mA(7mil)
VDDR5
CG184 1uF_Y5V_6.3V 0402

+V1.8S_GPU
LG25 120_0.3A 0402
170mA(7mil)
VDDR4
CG205 10uF_Y5V_10V 0805
CG209 1uF_Y5V_6.3V 0402
CG222 100nF_X5R_6.3V 0402

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+V1.5S [21,23,38,40]

GDDR_A_A[12:0] [21]

UG16

420mA

[21] GDDR_A_RAS#0
[21] GDDR_A_CAS#0
[21] GDDR_A_WE#0
[21] GDDR_A_CS0_0#
GDDR_A_A0
GDDR_A_A1
GDDR_A_A2
GDDR_A_A3
GDDR_A_A4
GDDR_A_A5
GDDR_A_A6
GDDR_A_A7
GDDR_A_A8
GDDR_A_A9
GDDR_A_A10
GDDR_A_A11
GDDR_A_A12
[21] GDDR_A_A13

RAS# CAS# WE# CS# A0 A1 A2 A3 A4 A5 A6 A7 A8 A9 A10/AP A11 A12/BC# A13 A14 A15

VDD_9 VDD_8 VDD_7 VDD_6 VDD_5 VDD_4 VDD_3 VDD_2 VDD_1
VDDQ_9 VDDQ_8 VDDQ_7 VDDQ_6 VDDQ_5 VDDQ_4 VDDQ_3 VDDQ_2 VDDQ_1

[21] GDDR_A_BA0
[21] GDDR_A_BA1
[21] GDDR_A_BA2
BA0 BA1 BA2

[21] GDDR_A_CKE0
[21] GDDR_A_CLK0
[21] GDDR_A_CLK#0
CKE CK CK#

VSSQ_9 VSSQ_8 VSSQ_7 VSSQ_6 VSSQ_5 VSSQ_4 VSSQ_3 VSSQ_2 VSSQ_1

NC_4 NC_5 NC_6 NC_7

MEM_RST
[21] GDDR_A_ODT0
RESET# ODT ZQ

VSS_12 VSS_11 VSS_10 VSS_9 VSS_8 VSS_7 VSS_6 VSS_5 VSS_4 VSS_3 VSS_2 VSS_1

RG208 240_1% 0402

[21] GDDR_A_DM2
[21] GDDR_A_DQS2
[21] GDDR_A_DQS#2
DML DQSL DQSL#

VREFDQ VREFCA

GDDR_A_DQ19 GDDR_A_DQ22 GDDR_A_DQ17 GDDR_A_DQ23 GDDR_A_DQ16 GDDR_A_DQ21 GDDR_A_DQ18 GDDR_A_DQ20
GDDR_A_DQ13 GDDR_A_DQ10 GDDR_A_DQ15 GDDR_A_DQ8 GDDR_A_DQ12 GDDR_A_DQ9 GDDR_A_DQ14 GDDR_A_DQ11
DQL0 DQL1 DQL2 DQL3 DQL4 DQL5 DQL6 DQL7
DQU0 DQU1 DQU2 DQU3 DQU4 DQU5 DQU6 DQU7

[21] GDDR_A_DM1
[21] GDDR_A_DQS1
[21] GDDR_A_DQS#1
DMU DQSU DQSU#

SDRAM_FBGA-96P_1Gb

RG164 4.99K_1% 0402
RG449 4.99K_1% 0402
CG353 100nF_X5R_6.3V 0402
RG207 4.99K_1% 0402
CG385 100nF_X5R_6.3V 0402
RG476 4.99K_1% 0402
VRAM_VREF_DQ1
VRAM_VREF_CA1

UG30

[21] GDDR_A_RAS#0
[21] GDDR_A_CAS#0
[21] GDDR_A_WE#0
[21] GDDR_A_CS0_0#
GDDR_A_A0 GDDR_A_A1 GDDR_A_A2 GDDR_A_A3 GDDR_A_A4 GDDR_A_A5 GDDR_A_A6 GDDR_A_A7 GDDR_A_A8 GDDR_A_A9 GDDR_A_A10 GDDR_A_A11 GDDR_A_A12
[21] GDDR_A_A13

RG450 240_1% 0402
RG163 4.99K_1% 0402
CG672 100nF_X5R_6.3V 0402
RG474 4.99K_1% 0402
RG475 4.99K_1% 0402
CG656 100nF_X5R_6.3V 0402
RG451 4.99K_1% 0402
VRAM_VREF_DQ2
VRAM_VREF_CA2

UG31

[21] GDDR_A_RAS#1
[21] GDDR_A_CAS#1
[21] GDDR_A_WE#1
[21] GDDR_A_CS1_0#
GDDR_A_A0 GDDR_A_A1 GDDR_A_A2 GDDR_A_A3 GDDR_A_A4 GDDR_A_A5 GDDR_A_A6 GDDR_A_A7 GDDR_A_A8 GDDR_A_A9 GDDR_A_A10 GDDR_A_A11 GDDR_A_A12
[21] GDDR_A_A13

[21] GDDR_A_CKE1
[21] GDDR_A_CLK1
[21] GDDR_A_CLK#1

MEM_RST
[21] GDDR_A_ODT1
N20201552
RG477 240_1% 0402

[21] GDDR_A_DM4
[21] GDDR_A_DQS4
[21] GDDR_A_DQS#4
GDDR_A_DQ37 GDDR_A_DQ39 GDDR_A_DQ36 GDDR_A_DQ34 GDDR_A_DQ33 GDDR_A_DQ32 GDDR_A_DQ38 GDDR_A_DQ35
GDDR_A_DQ62 GDDR_A_DQ58 GDDR_A_DQ61 GDDR_A_DQ56 GDDR_A_DQ63 GDDR_A_DQ57 GDDR_A_DQ60 GDDR_A_DQ59
[21] GDDR_A_DM7
[21] GDDR_A_DQS7
[21] GDDR_A_DQS#7

RG205 4.99K_1% 0402
RG206 4.99K_1% 0402
CG678 100nF_X5R_6.3V 0402
CG346 100nF_X5R_6.3V 0402
RG160 4.99K_1% 0402
RG453 4.99K_1% 0402
VRAM_VREF_DQ3
VRAM_VREF_CA3

UG15

[21] GDDR_A_RAS#1
[21] GDDR_A_CAS#1
[21] GDDR_A_WE#1
[21] GDDR_A_CS1_0#
GDDR_A_A0 GDDR_A_A1 GDDR_A_A2 GDDR_A_A3 GDDR_A_A4 GDDR_A_A5 GDDR_A_A6 GDDR_A_A7 GDDR_A_A8 GDDR_A_A9 GDDR_A_A10 GDDR_A_A11 GDDR_A_A12
[21] GDDR_A_A13

[21] GDDR_A_CKE1
[21] GDDR_A_CLK1
[21] GDDR_A_CLK#1

MEM_RST
GDDR_A_ODT1
N20357603
RG161 240_1% 0402

[21] GDDR_A_DM5
[21] GDDR_A_DQS5
[21] GDDR_A_DQS#5
GDDR_A_DQ45 GDDR_A_DQ43 GDDR_A_DQ44 GDDR_A_DQ41 GDDR_A_DQ47 GDDR_A_DQ40 GDDR_A_DQ46 GDDR_A_DQ42
GDDR_A_DQ48 GDDR_A_DQ54 GDDR_A_DQ51 GDDR_A_DQ53 GDDR_A_DQ49 GDDR_A_DQ55 GDDR_A_DQ50 GDDR_A_DQ52
[21] GDDR_A_DM6
[21] GDDR_A_DQS6
[21] GDDR_A_DQS#6

RG452 4.99K_1% 0402
RG162 4.99K_1% 0402
CG347 100nF_X5R_6.3V 0402
CG378 100nF_X5R_6.3V 0402
RG479 4.99K_1% 0402
RG478 4.99K_1% 0402
VRAM_VREF_DQ4
VRAM_VREF_CA4

GDDR_A_DQ[0:31] [21]

RG210 56_5%
GDDR_A_CLK0
CG386 10nF_X7R_50V
N19355392
RG209 56_5%
GDDR_A_CLK#0

GDDR_A_DQ[32:63] [21]

RG203 56_5%
GDDR_A_CLK1
CG379
N20474291
10nF_X7R_50V
RG204 56_5%
GDDR_A_CLK#1

Place around the VRAM UG16 0.5A

CG1247 100nF_X5R_6.3V 0402
CG304 100nF_X5R_6.3V 0402
CG389 10uF_Y5V_10V 0805
CG234 100nF_X5R_6.3V 0402
CG344 1uF_Y5V_6.3V 0402
CG244 100nF_X5R_6.3V 0402
CG337 100nF_X5R_6.3V 0402
CG390 10uF_Y5V_10V 0805

Place around the VRAM UG30 0.5A

CG201 100nF_X5R_6.3V 0402
CG296 100nF_X5R_6.3V 0402
CG686 10uF_Y5V_10V 0805
CG220 100nF_X5R_6.3V 0402
CG675 1uF_Y5V_6.3V 0402
CG242 100nF_X5R_6.3V 0402
CG336 100nF_X5R_6.3V 0402
CG664 10uF_Y5V_10V 0805

Place around the VRAM UG15 0.5A

CG198 100nF_X5R_6.3V 0402
CG289 100nF_X5R_6.3V 0402
CG343 10uF_Y5V_10V 0805
CG210 100nF_X5R_6.3V 0402
CG351 1uF_Y5V_6.3V 0402
CG217 100nF_X5R_6.3V 0402
CG312 100nF_X5R_6.3V 0402
CG392 10uF_Y5V_10V 0805

Place around the VRAM U31 0.5A

CG200 100nF_X5R_6.3V 0402
CG291 100nF_X5R_6.3V 0402
CG683 10uF_Y5V_10V 0805
CG218 100nF_X5R_6.3V 0402
CG682 1uF_Y5V_6.3V 0402
CG235 100nF_X5R_6.3V 0402
CG320 100nF_X5R_6.3V 0402
CG655 10uF_Y5V_10V 0805

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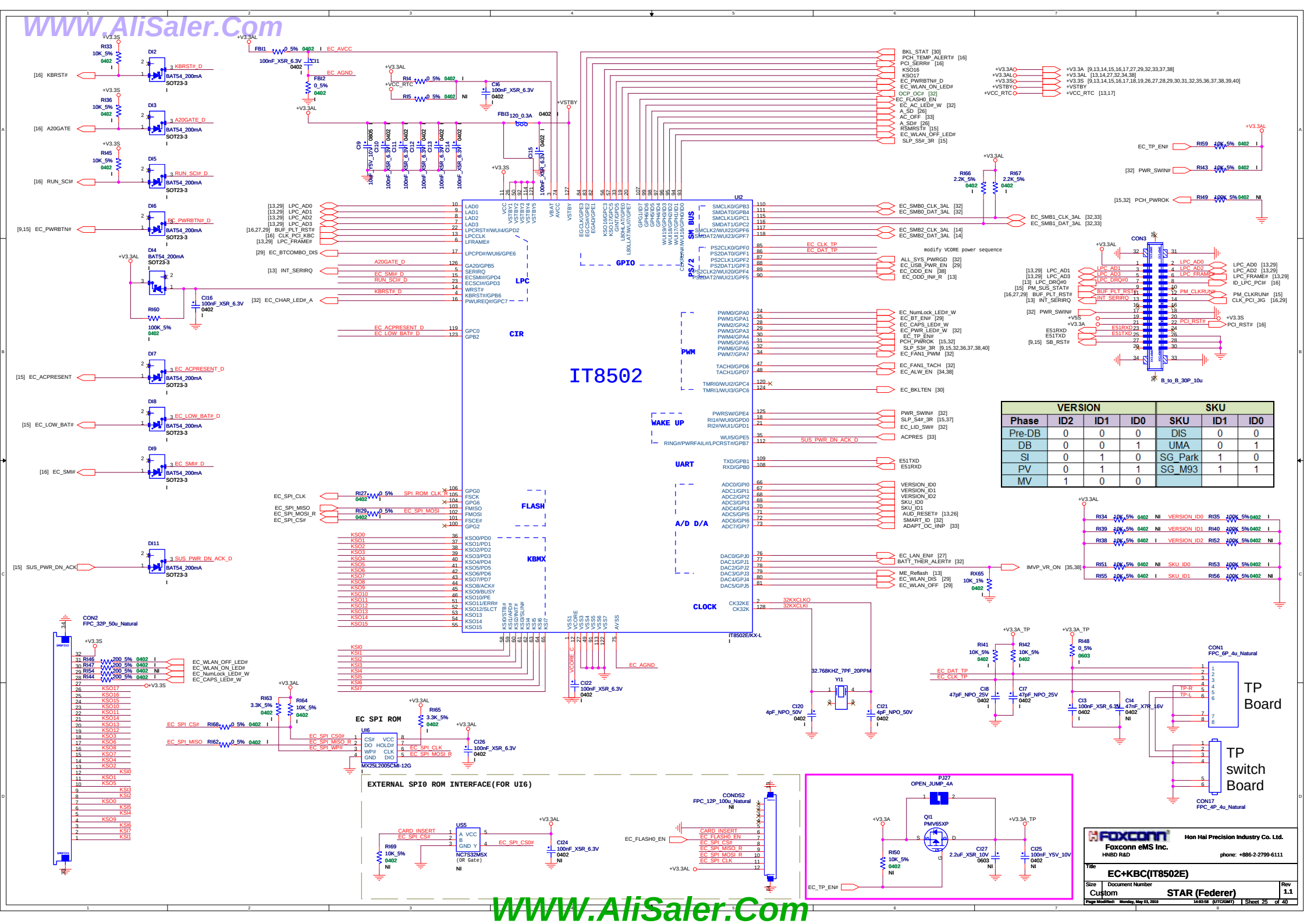

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Reserved LDO circuitry for +VDDA power source

+V5A
UA3
MIC5235YM5
IN OUT GND EN NC/ADJ
CA19 10uF_Y5V_10V 0805 NI
RA9 TBD 0402 NI
RA11 TBD 0402 NI
CA8 2.2uF_X5R_10V 0603 NI
RA57 10K_5% 0402 NI
FBA4 330_1.5A 0805 NI

+V5S
FBA1 330_1.5A 0805
+VDDA
CA10 10uF_Y5V_10V 0805
CA11 100nF_X5R_6.3V 0402
Place next to pin 38

+V5S
FBA2 330_1.5A 0805
CA14 100nF_X5R_6.3V 0402
CA15 10uF_Y5V_10V 0805
CA16 10uF_Y5V_10V 0805
CA17 100nF_X5R_6.3V 0402
Splited by DGND

+V5S
FBA3 330_1.5A 0805
CA39 100nF_X5R_6.3V 0402
CA25 10uF_Y5V_10V 0805
CA38 10uF_Y5V_10V 0805
CA40 100nF_X5R_6.3V 0402
Splited by DGND
Splited by DGND

ALC270A-GR
(Vista Premium Version)
Thermal Pad
6 x 6 mm
9 Via Array

AVSS2 AVDD2 PVDD1 SPK-L+ SPK-L- PVSS1 PVSS2 SPK-R- SPK-R+ PVDD2 SPDIFO2/EAPD SPDIFO Thermal
CBP CBN CPVEE HP-OUT-R HP-OUT-L MIC1-VREFO-L MIC1-VREFO-R MIC2-VREFO LDO-CAP VREF AVSS1 AVDD1
LINE1-R LINE1-L MIC1-R MIC1-L MONO-OUT IDREF Sense-B MIC2-R MIC2-L LINE2-R LINE2-L Sense A
DVDD1 GPIO0 GPIO1 PD# SDATA-OUT BIT-CLK DVSS2 SDATA-IN DVDD-IO SYNC RESET# PCBEEP

HPOUT-R
HPOUT-L
MIC1-VREFO-L
MIC1-VREFO-R
MIC2-VREFO
LDO_Mic
CA1 10uF_Y5V_10V 0805
CA3 100nF_X5R_6.3V 0402
CA4 10uF_X5R_6.3V 0805
CA6 2.2uF_X5R_10V 0603
CA7 2.2uF_X5R_10V 0603
+VDDA
UA1
CA12 100nF_X5R_6.3V 0402
CA13 10uF_Y5V_10V 0805
MIC1-R
MIC1-L
RA3 20K_1% 0402
MIC2-R
MIC2-L
CA2 2.2uF_X5R_10V 0603
CA5 2.2uF_X5R_10V 0603
RA5 39.2K_1% 0402 HPOUT-JD
RA4 20K_1% 0402 MIC1-JD

ANALOG
DIGITAL
(Include Thermal pad)

TP_P30 TP926 AUD_EAPD
TP_P30 TP927 AUD_GPIO0
CA24 1uF_Y5V_6.3V 0402
CA26 100pF_NPO_50V 0402
RA6 47K_5% 0402 HDA_SPKR [13]
RA13 4.7K_5% 0402
PC BEEP
AUD_RESET# [13,25]
AUD_SYNC [13]
AUD_SDIN0 [13]
AUD_SDOUT [13]
AUD_BITCLK [13]
RA10 33_5% 0402
CA22 10uF_Y5V_10V 0805
CA23 100nF_X5R_6.3V 0402
CA29 22pF_NPO_50V 0402
+V3.3S
+V5S
RB9 1K_5% 0402
A_SD# Q

<<Attention>>
Surges of PVDD >7V duration 0.1ms when class D amplifier is working may damage the amplifier, 10uF tantalum capacitors are required at PVDD1 and PVDD2 to suppress the surge.

A_SD#=0V:
Power down Class D SPK amplifer

A_SD#=3.3V:
Power up Class D SPK amplifer

+V5A
RA14 4.7K_5% 0402
QA6 2N7002 SOT23-3
QA7 2N7002 SOT23-3
[25] A_SD#
QA8 2N7002 SOT23-3
[13,25] AUD_RESET#
RA16 0_5% 0402 NI

RA55 0_5% 0603
RA54 0_5% 0603
RA48 0_5% 0603
Analog_ground
Digital_ground
Tied at one point only under the ALC270 or near the ALC270

CB7 100nF_X5R_6.3V 0402
CB71 100nF_X5R_6.3V 0402
CB72 100nF_X5R_6.3V 0402

+V3.3S [9,13,14,15,16,17,18,19,25,27,28,29,30,31,32,35,36,37,38,39,40]
+V5S [13,17,25,30,31,32,35,38,40]
+VDDA
INT_MIC_REF

INTERNAL MICROPHONE

LDO_Mic
INT_MIC_REF
RA7 47K_5% 0402 NI
RA8 47K_5% 0402 NI
RA50 100_5% 0402 NI
CA48 4.7uF_X5R_6.3V 0603 NI
UA2A TLV2462CDGKR
CA47 4.7uF_X5R_6.3V 0603 NI
CA43 100pF_NPO_50V 0402 NI
INT_MIC_IN
UA2B TLV2462CDGKR
RA51 10K_5% 0402 NI
LA1 0_5% 0603 NI
220nF_X7R_16V CA49 0603 NI
CA45 68pF_NPO_50V 0402 NI
100K_5% NI RA49 0402
150pF_NPO_50V CA44 0402 NI
With Microphone Pre-AMP

HEADER2 Header_1X2_S_3u
CA46 1nF_X7R_25V 0402
RA53 3K_5% 0402 NI LDO_Mic
RA52 3K_5% 0402
CA50 4.7uF_X5R_6.3V 0603
LA2 0_5% 0603
RA1 2.2K_5% 0402 MIC2-VREFO
Reserved for without Microphone Pre-AMP

INTERNAL SPEAKER

SPK-L+ SPK-L- SPK-R- SPK-R+
RA19 0_5% 0603
RA20 0_5% 0603
RA21 0_5% 0603
RA22 0_5% 0603
CA30 1nF_X7R_16V 0402 NI
CA31 1nF_X7R_16V 0402 NI
CA36 1nF_X7R_16V 0402 NI
CA37 1nF_X7R_16V 0402 NI
CA32 220pF_X7R_50V 0402
CA33 220pF_X7R_50V 0402
CA34 220pF_X7R_50V 0402
CA35 220pF_X7R_50V 0402
HEADER3 Header_1X2_S_3u

EXTERNAL MIC Jack

MIC1-JD
MIC1-R
MIC1-L
CB3 10uF_Y5V_10V 0805
CB4 10uF_Y5V_10V 0805
N29364356 RB7 1K_5% 0402
N29364765 RB8 1K_5% 0402
N41658068
N41658069
FBB3 120_0.3A 0402
FBB4 120_0.3A 0402
N29383472
N29383466
RB5 2.2K_5% 0402
RB6 2.2K_5% 0402
CB5 100pF_NPO_50V 0402
CB6 100pF_NPO_50V 0402
MIC1-VREFO-L
MIC1-VREFO-R
CON6 AC97_X1_999u_Black

HEADPHONE Jack

HPOUT-JD
HPOUT-R
HPOUT-L
RA35 0_5% 0603 NI N88515874
RA36 0_5% 0603 NI N88516077
RB1 56_5% 0402 HPOUT_R_R
RB2 56_5% 0402 HPOUT_L_R
FBB1 120_0.3A 0402 A_HP1_OUTR
FBB2 120_0.3A 0402 A_HP1_OUTL
RA23 10K_5% 0402
RA27 10K_5% 0402
RA30 1K_5% 0402
RA31 1K_5% 0402
CB1 100pF_NPO_50V 0402
CB2 100pF_NPO_50V 0402
CON5 AC97_X1_999u_Black
QA1 2N7002 SOT23-3
QA2 2N7002 SOT23-3
QA3 2N7002 SOT23-3
QA4 2N7002 SOT23-3
N88597138
N88609546
N88603588
+V12S
RA12 200K_5% 0402
QA5 2N7002 SOT23-3
CA18 4.7uF_X5R_16V 0805 NI
RA15 1K_5% 0402 N88688894
[25] A_SD

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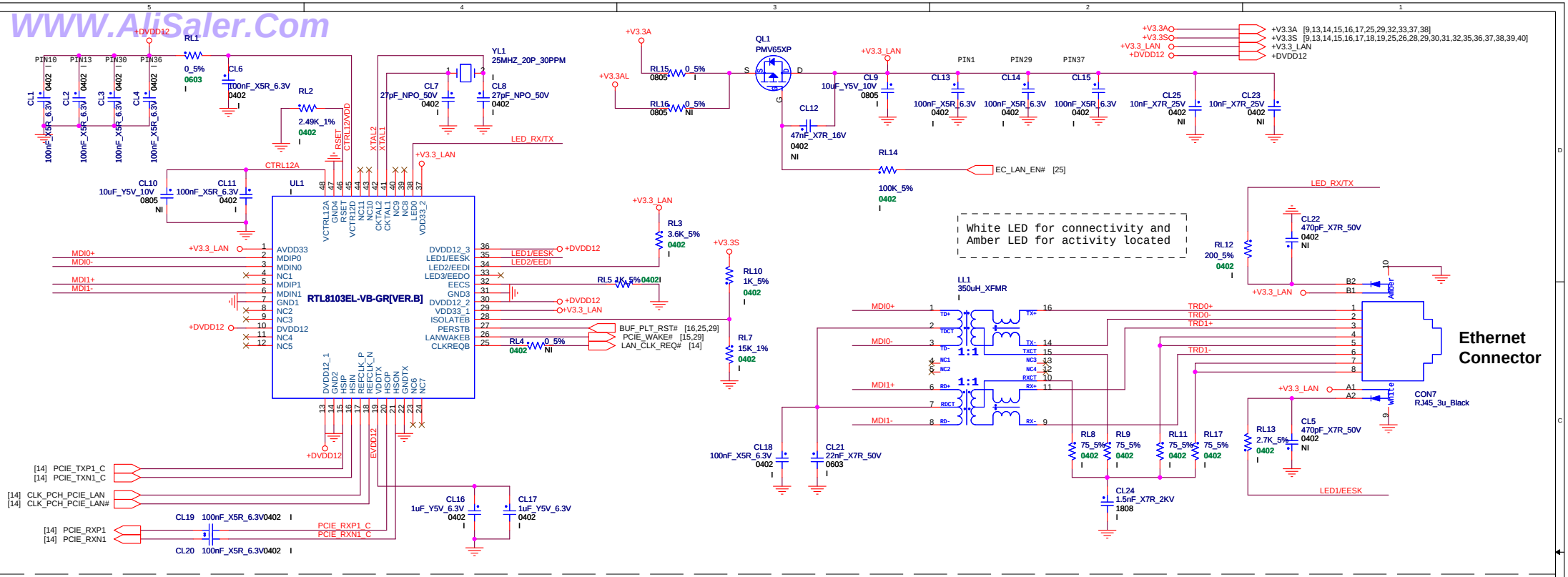

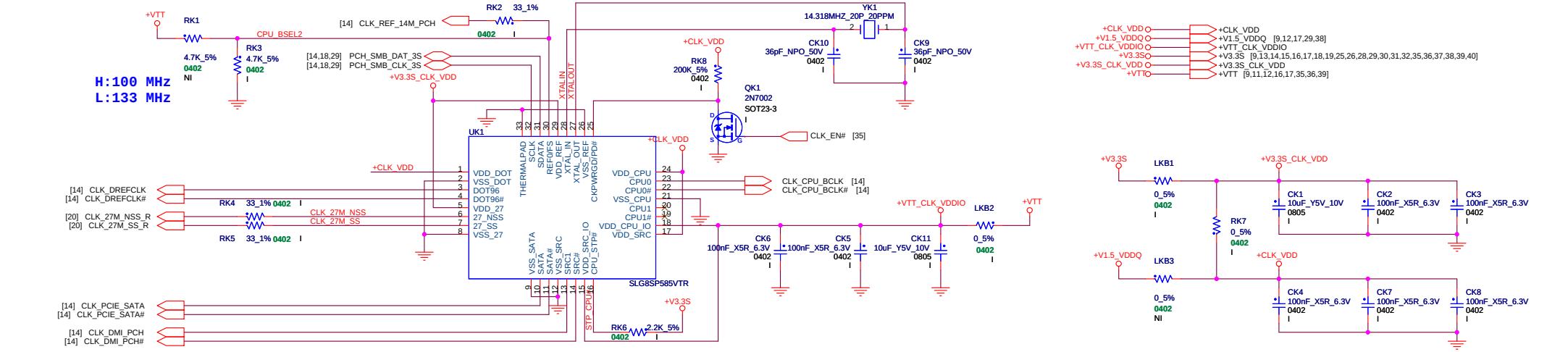

FSP Table

FS	CPU (PCH-->CPU)	Power On	SRC(DMI) (PCH-->CPU)	SATA (PCH)	DOT96 (PCH)	27MHz (GPU)	REF
0	133MHz	Default	100MHz	100MHz	96MHz	27MHz	14.318MHz
1	100MHz						

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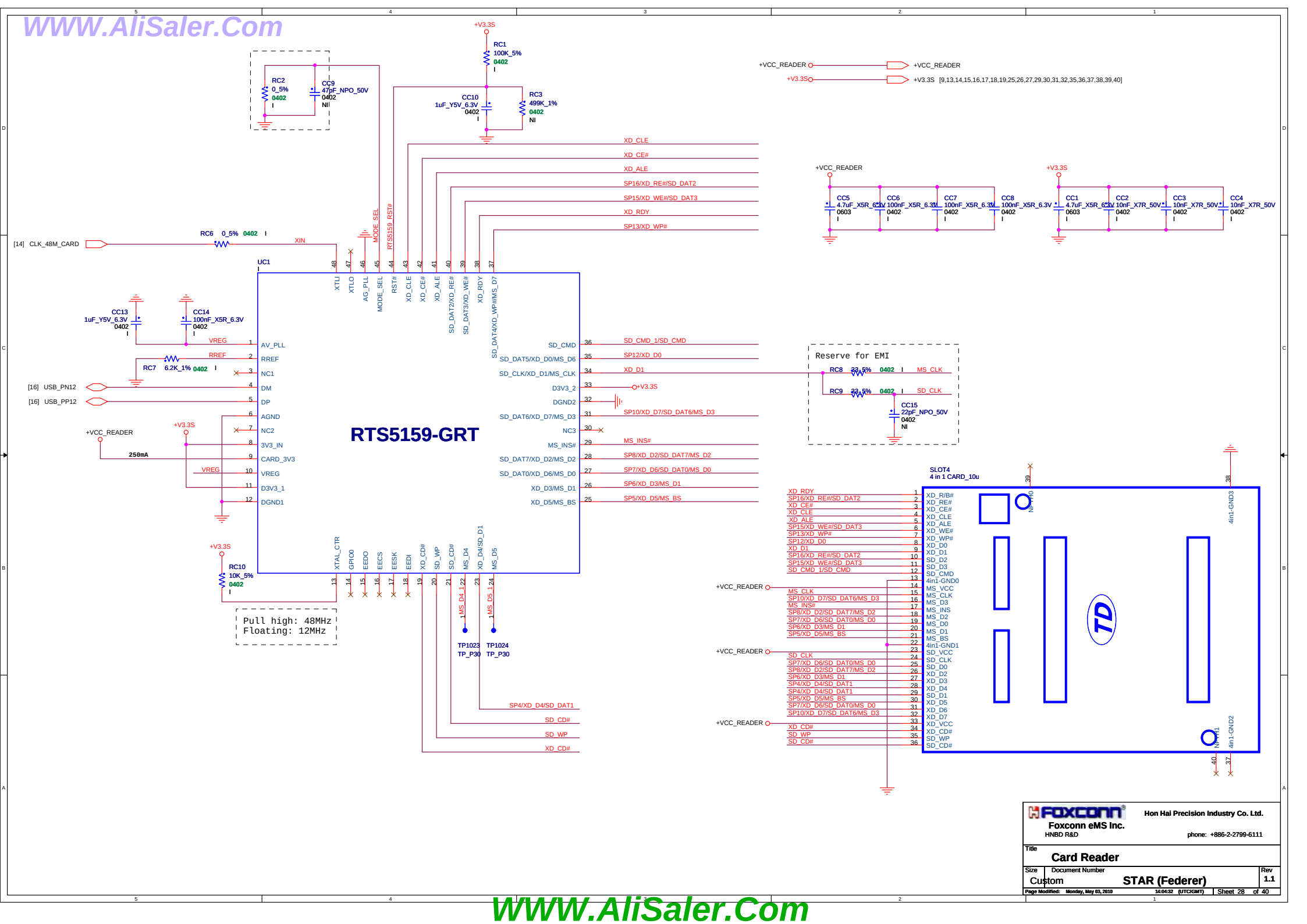

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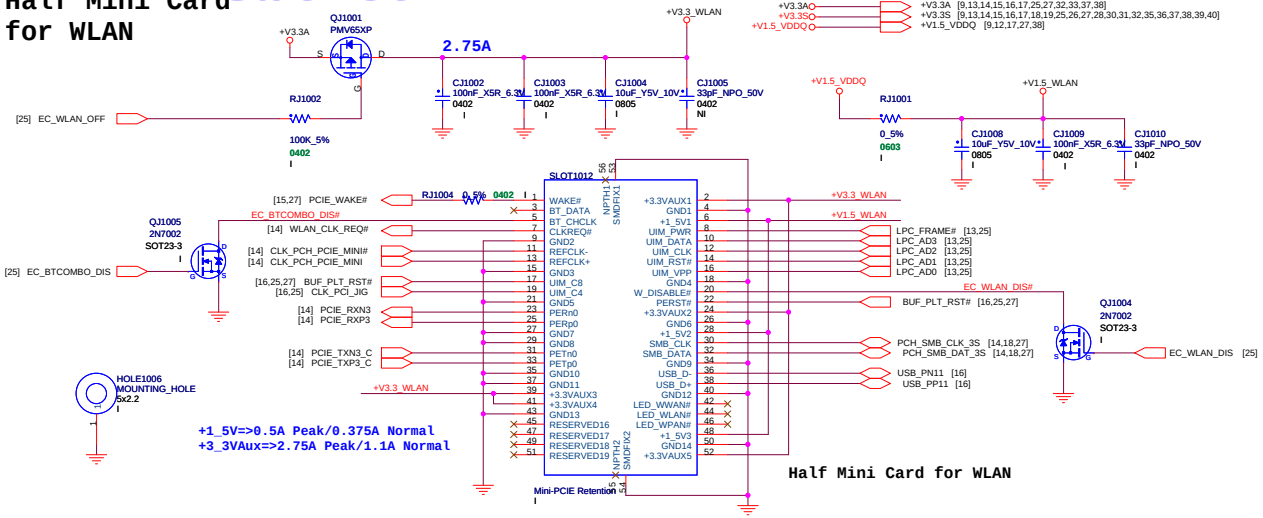
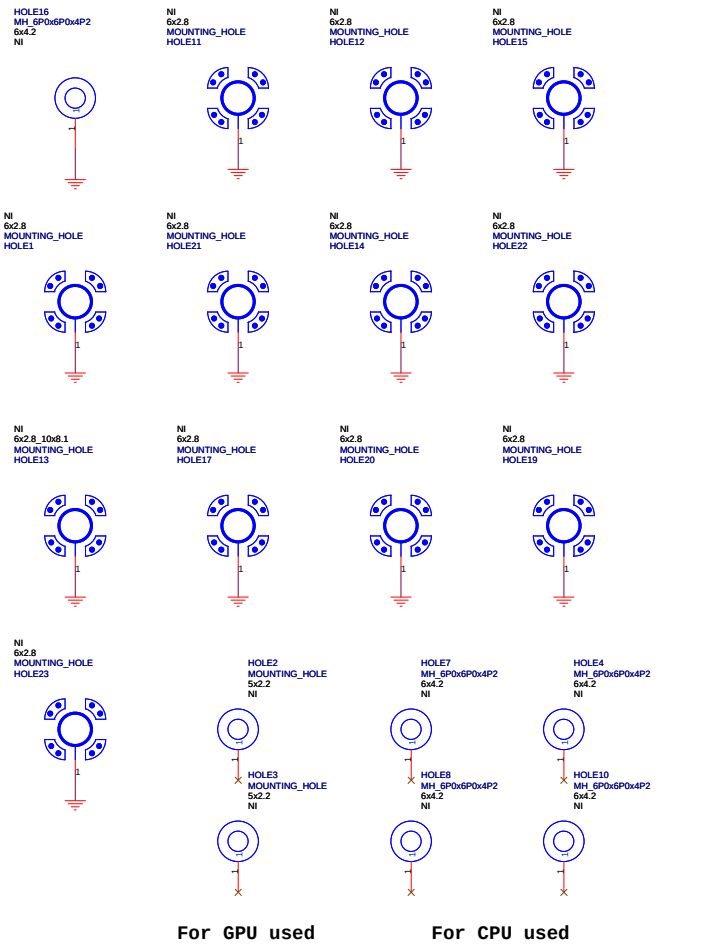
Half Mini Card for WLAN



Half Mini Card for WLAN

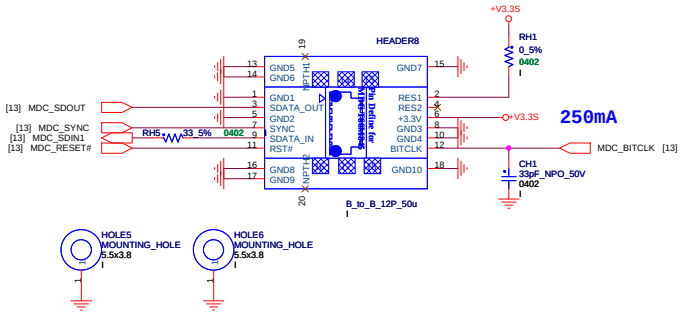
MOUNTING HOLE



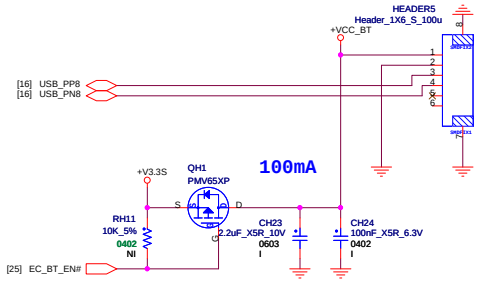
For GPU used

For CPU used

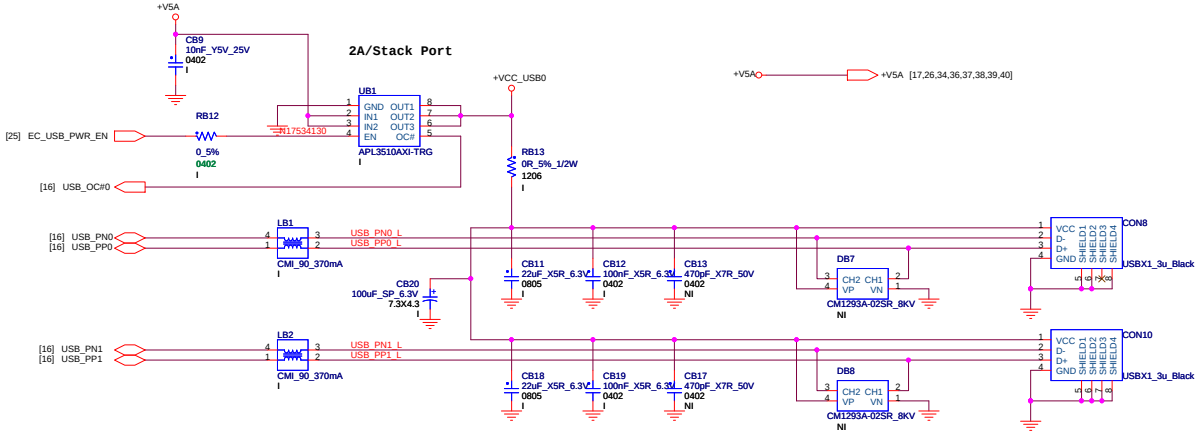
MDC CONN.



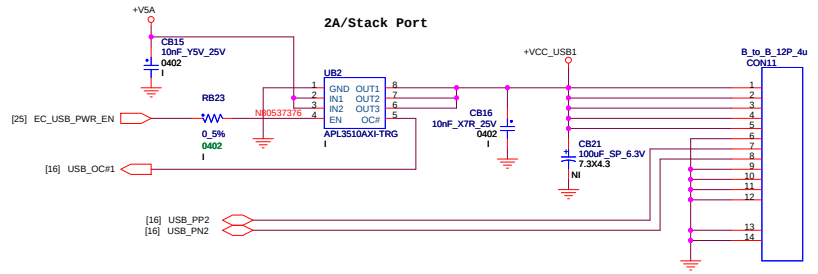
Bluetooth CONN.



USBX2 CONN.



USBX1 CONN.



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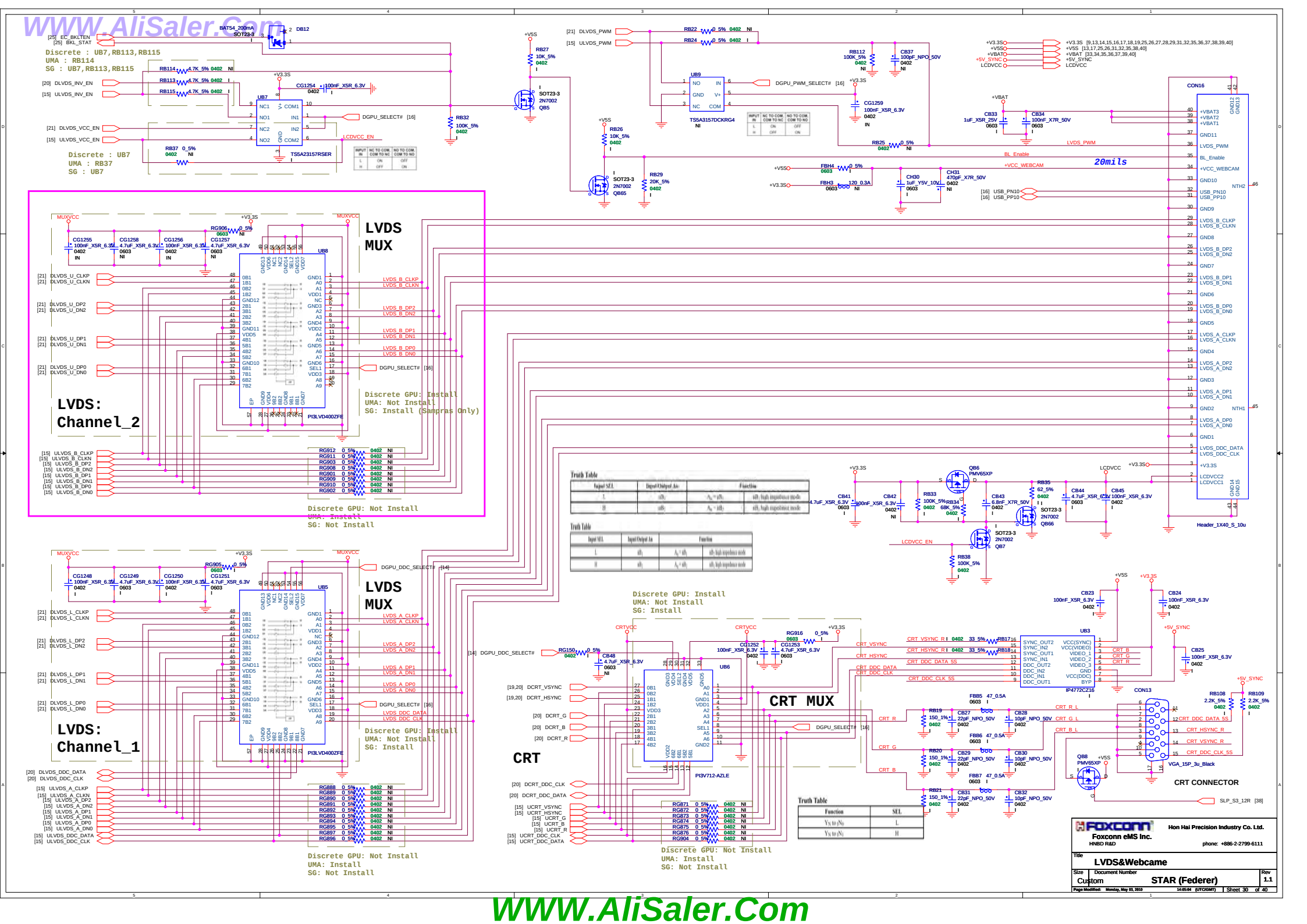

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Discrete GPU: Install
UMA: Not Install
SG: Install

+V5S
DB13 BAT54_200mA SOT23-3
CB75 10nF_X7R_25V 0402 NI
CB76 10nF_X7R_25V 0402 NI

+V3.3S_DELAY
RB41 2.2K_5% 0402
RB42 2.2K_5% 0402
RB43 2.2K_5% 0402
RB44 2.2K_5% 0402
QB67 2N7002 SOT23-3
QB9 2N7002 SOT23-3

[20] DHDMI_DDC_DATA
[20] DHDMI_DDC_CLK
HDMI_DDC_DATA
HDMI_DDC_CLK

[16] DGPU_HPD_INTR#
QB10 2N7002 SOT23-3

QB2 MMBT3904_G SOT23-3
RB45 200K_1% 0402
HDMI_DET_5_R
HDMI_DET_5
[20] DHDMI_DET
RB83 0_5% 0402
RB39 10K_5% 0402

+V5S [13,17,25,26,30,32,35,38,40]
+V3.3S [9,13,14,15,16,17,18,19,25,26,27,28,29,30,32,35,36,37,38,39,40]
+V3.3S_DELAY [19,20,23,38]
+V5S_HDMI
+V3.3S_HDMI

RB51 0_5% 0603 NI
LB6 90Ohm@100MHz
RB55 0_5% 0603 NI
RB52 0_5% 0603 NI
LB5 90Ohm@100MHz
RB54 0_5% 0603 NI
RB47 0_5% 0603 NI
LB3 90Ohm@100MHz
RB48 0_5% 0603 NI
RB49 0_5% 0603 NI
LB4 90Ohm@100MHz
RB50 0_5% 0603 NI

HDMI_CLKN
HDMI_CLKP
HDMI_TX1N
HDMI_TX1P
HDMI_TX2P
HDMI_TX2N
HDMI_TX0P
HDMI_TX0N

HDMI_TX2P_L
HDMI_TX2N_L
HDMI_TX0P_L
HDMI_TX0N_L
HDMI_CEC
HDMI_DDC_CLK
HDMI_DET_5

CON15 HDMI_R_19P_999u_Black
Data2+ Data2- TMDS Data1 Shield Data0+ Data0- TMDS Clock Shield CEC SCL DDC/CEC Ground Hot Plug Detect PTH1
TMDS Data2 Shield Data1+ Data1- TMDS Data0 Shield TMDS Clock+ TMDS Clock- Reserved SDA +5V Power PTH2

HDMI_TX1P_L
HDMI_TX1N_L
HDMI_CLKP_L
HDMI_CLKN_L
HDMI_DDC_DATA

TP1025 TP_P30
DB22 PESD24VS1UL SOD882-2
CB74 180pF_NPO_50V 0402 NI
CB58 180pF_NPO_50V 0402 NI
CB57 100nF_X5R_6.3V 0402
DB15 B340A-13-F_3A SOD123-2

HDMI spec:
+5V:4.7V min ,
55mA max.

[20] DHDMI_TX2P
[20] DHDMI_TX2N
CB63 0402 100nF_X5R_6.3V
CB64 0402 100nF_X5R_6.3V
HDMI_TX2P
HDMI_TX2N

[20] DHDMI_TX1P
[20] DHDMI_TX1N
CB65 0402 100nF_X5R_6.3V
CB66 0402 100nF_X5R_6.3V
HDMI_TX1P
HDMI_TX1N

[20] DHDMI_TX0P
[20] DHDMI_TX0N
CB67 0402 100nF_X5R_6.3V
CB68 0402 100nF_X5R_6.3V
HDMI_TX0P
HDMI_TX0N

[20] DHDMI_CLKP
[20] DHDMI_CLKN
CB69 0402 100nF_X5R_6.3V
CB70 0402 100nF_X5R_6.3V
HDMI_CLKP
HDMI_CLKN

RB84 499_1% 0402 HDMI_TX2P
RB85 499_1% 0402 HDMI_TX2N
RB88 499_1% 0402 HDMI_TX1P
RB89 499_1% 0402 HDMI_TX1N
RB92 499_1% 0402 HDMI_TX0P
RB93 499_1% 0402 HDMI_TX0N
RB97 499_1% 0402 HDMI_CLKP
RB98 499_1% 0402 HDMI_CLKN

CB35 22pF_NPO_50V 0402
QB63 2N7002 SOT23-3
RB100 100K_5% 0402

Discrete GPU: Not Install
UMA: Install
SG: Not Install

+V3.3S
+V3.3S_HDMI
FBB9 0_5% 0603 NI

CB52 10nF_X7R_25V 0402 NI
CB53 10nF_X7R_25V 0402 NI
CB54 100nF_X5R_6.3V 0402 NI
CB55 100nF_X5R_6.3V 0402 NI
CB51 10uF_Y5V_10V 0805 NI
CB46 100nF_X5R_6.3V 0402 NI
CB47 100nF_X5R_6.3V 0402 NI
CB50 10nF_X7R_25V 0402 NI
CB56 100nF_X5R_6.3V 0402 NI

RB53 2.2K_5% 0402 NI
HDMI_DET_5
HDMI_DDC_DATA
HDMI_DDC_CLK
OE#

UB4 PTN3360BBS
GND_8 NC_4 NC_3 VDD_6 DDC_EN GND_7 HPD_SINK DDC_SINK SCL_SINK GND_6 VDD_5 OE#
GND_9 IN_D1- IN_D1+ VDD_7 IN_D2- IN_D2+ GND_10 IN_D3- IN_D3+ VDD_8 IN_D4- IN_D4+ GND_11
GND_5 OUT_D1- OUT_D1+ VDD_4 OUT_D2- OUT_D2+ GND_4 OUT_D3- OUT_D3+ VDD_3 OUT_D4- OUT_D4+
GND_1 VDD_1 NC_0 NC_1 GND_2 REXT HPD_SOURCE DDC_SOURCE SCL_SOURCE NC_2 VDD_2 GND_3

[15] UTMDS_TX2P_C
[15] UTMDS_TX2N_C
[15] UTMDS_TX1P_C
[15] UTMDS_TX1N_C
[15] UTMDS_TX0P_C
[15] UTMDS_TX0N_C
[15] UTMDS_CLKP_C
[15] UTMDS_CLKN_C

UHDMI_TX2P RB56 0_5% 0402 NI HDMI_TX2P
UHDMI_TX2N RB57 0_5% 0402 NI HDMI_TX2N
UHDMI_TX1P RB58 0_5% 0402 NI HDMI_TX1P
UHDMI_TX1N RB59 0_5% 0402 NI HDMI_TX1N
UHDMI_TX0P RB60 0_5% 0402 NI HDMI_TX0P
UHDMI_TX0N RB61 0_5% 0402 NI HDMI_TX0N
UHDMI_CLKP RB62 0_5% 0402 NI HDMI_CLKP
UHDMI_CLKN RB63 0_5% 0402 NI HDMI_CLKN

+V3.3S
RB46 10K_5% 0402 NI
QB64 2N7002 SOT23-3 NI
HDMI_DET_5_R

[15] UHDMI_DET
RB106 100K_5% 0402 NI
RB77 10K_1% 0402 NI
RB73 2.2K_5% 0402 NI
RB71 2.2K_5% 0402 NI

[15] UTMDS_DDC_DATA
[15] UTMDS_DDC_CLK

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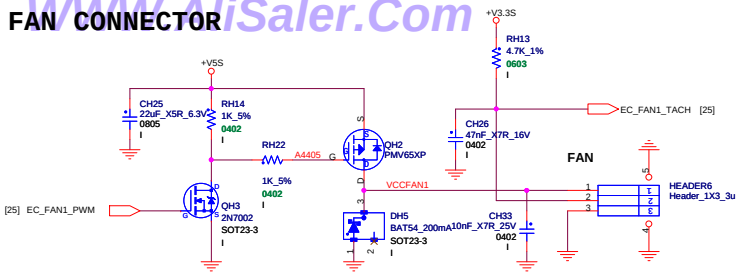
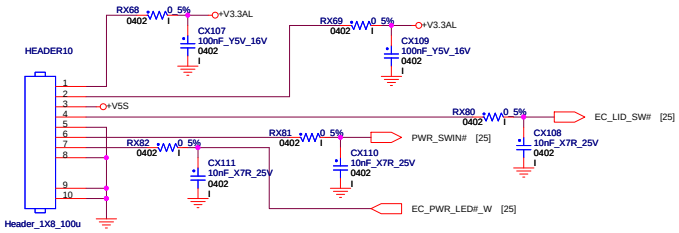
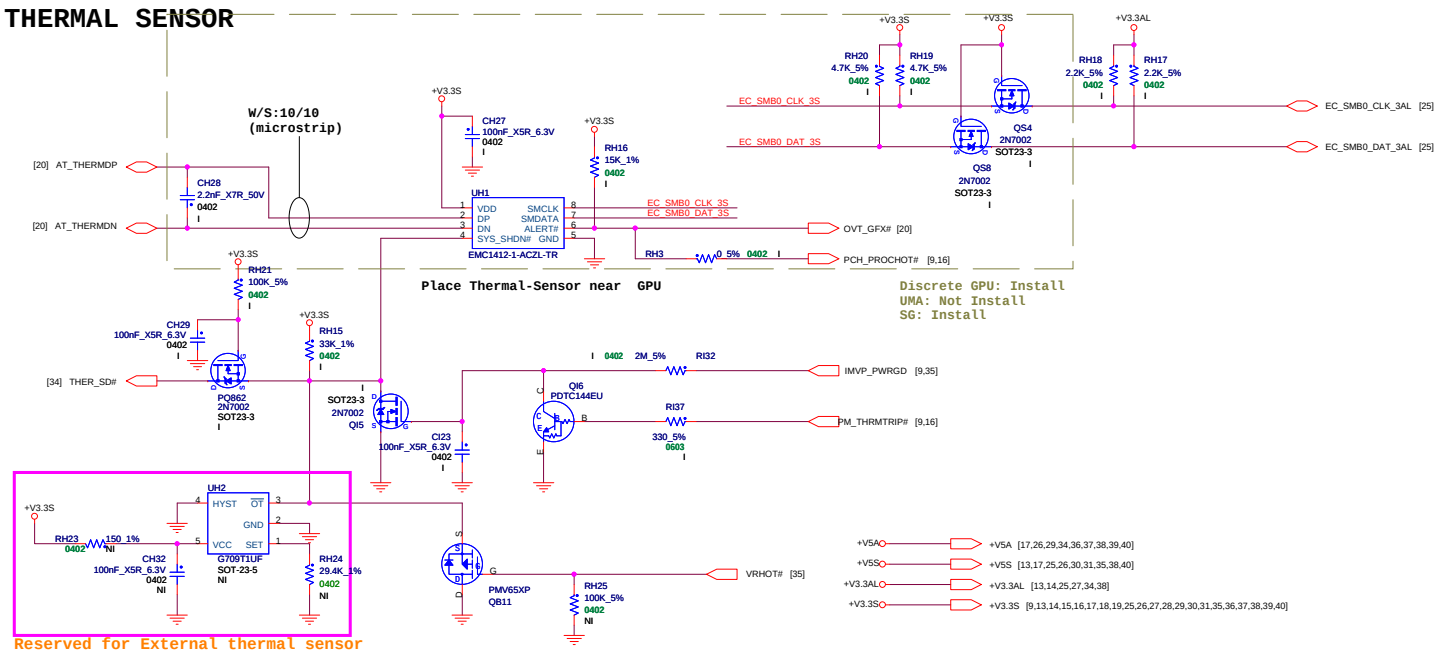
FAN CONNECTOR



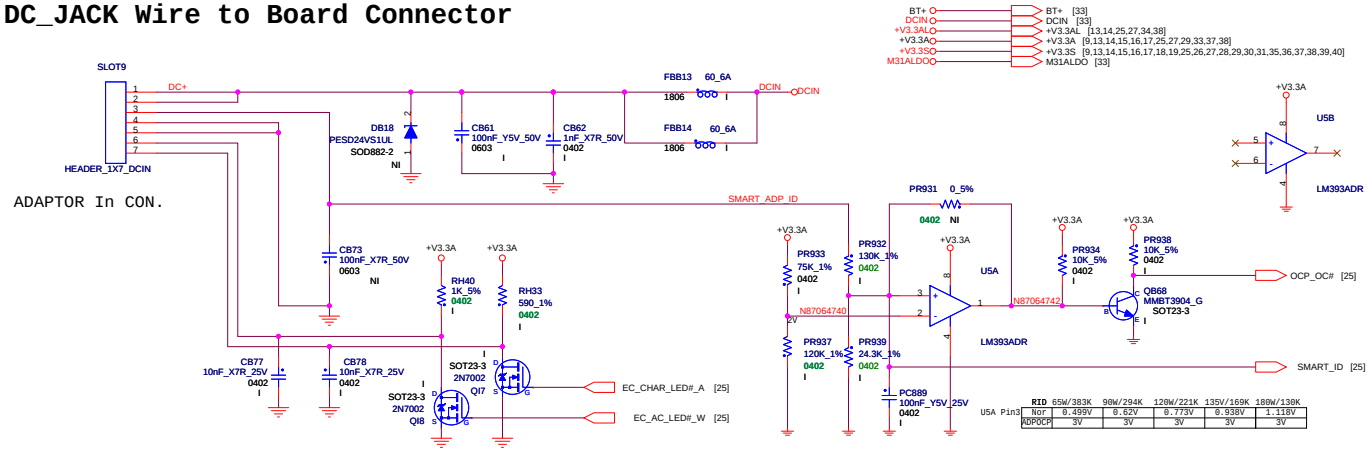
POWER BUTTON BOARD CONNECTOR



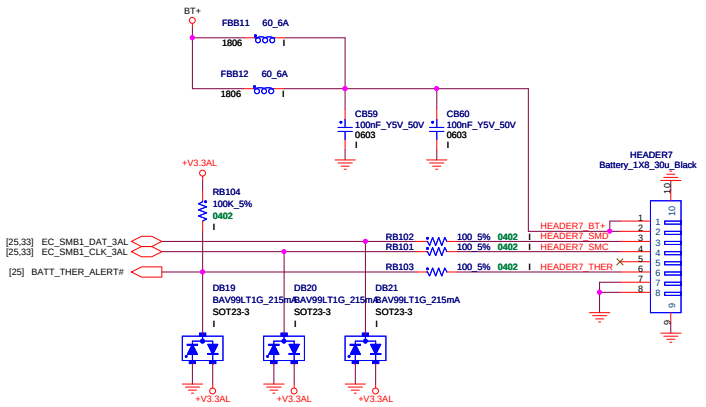
THERMAL SENSOR

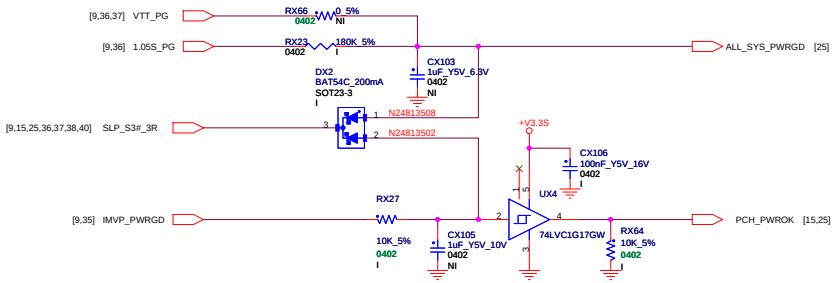


DC_JACK Wire to Board Connector



BATTERY CONNECTOR





Pin No.	Symbol	Comments
1	BATT+	Batt+, Battery Positive Terminal
2	BATT+	Batt+, Battery Positive Terminal
3	SMD	SMBus data interface I/O pin.
4	SMC	SMBus clock interface I/O pin
5	ID	Open
6	B/I	Connect to thermistor (103AT2 equivalent)
7	GND	Batt-, Battery Negative Terminal
8	GND	Batt-, Battery Negative Terminal

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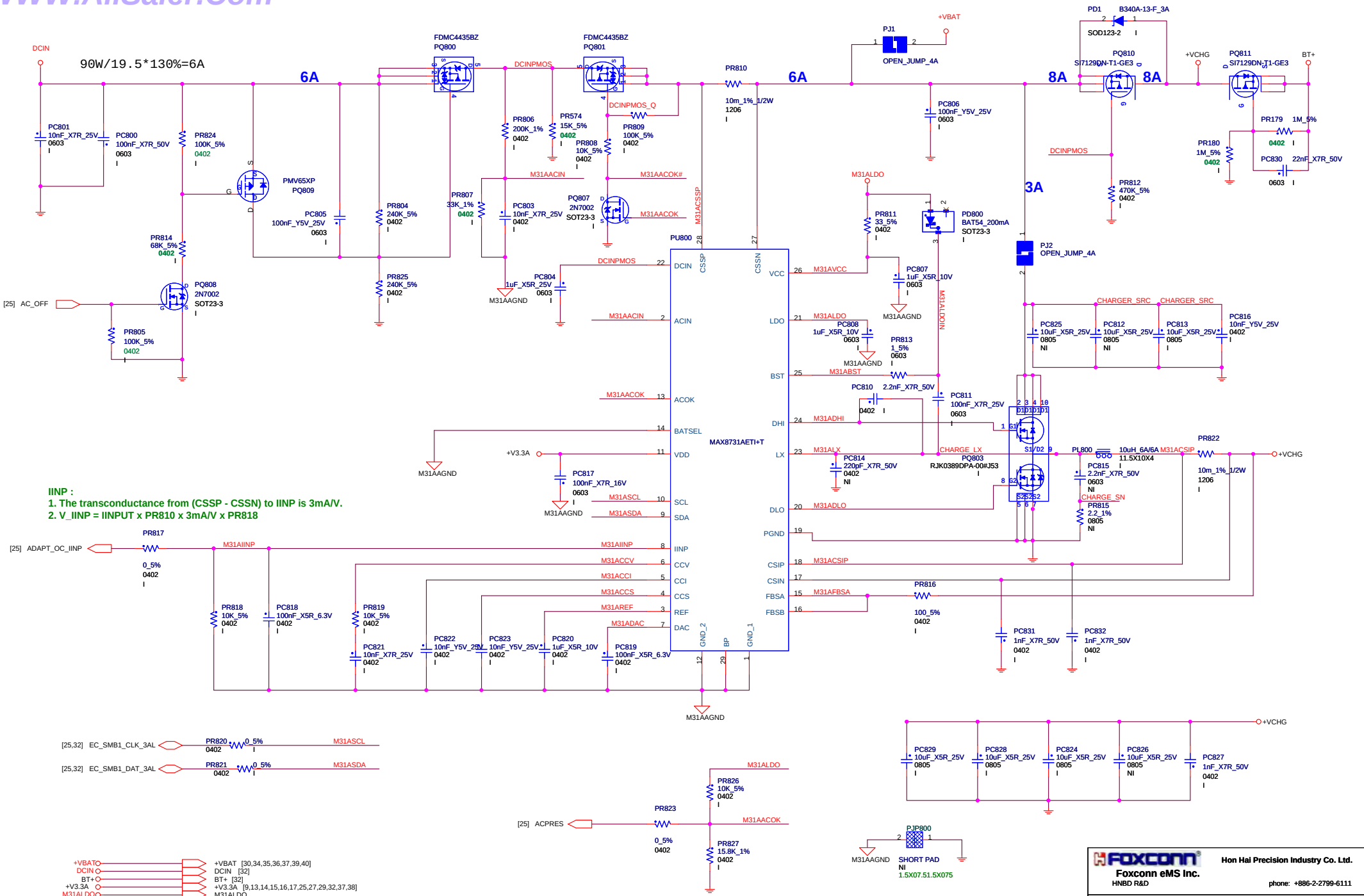

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Title	PWR_Charger
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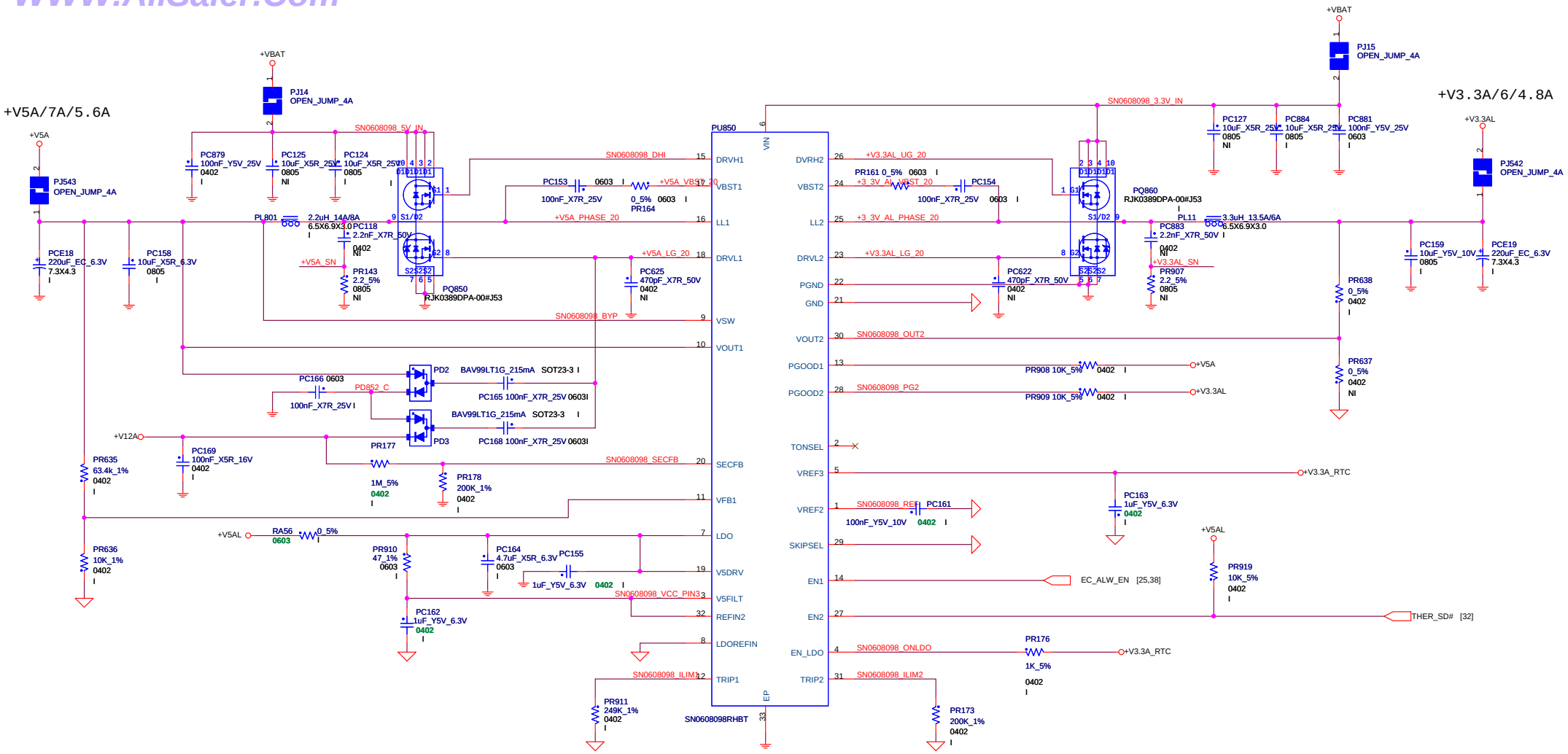

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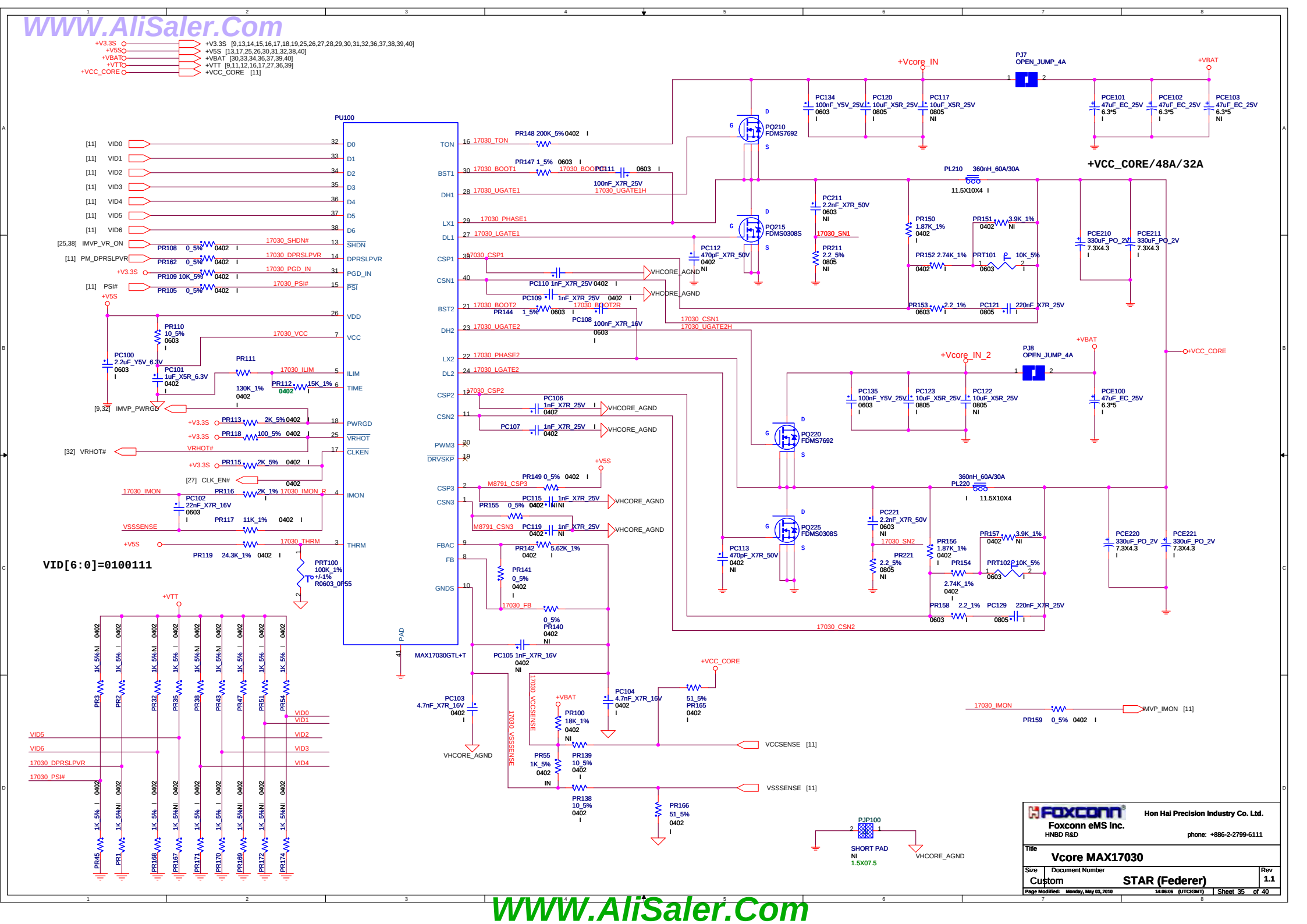

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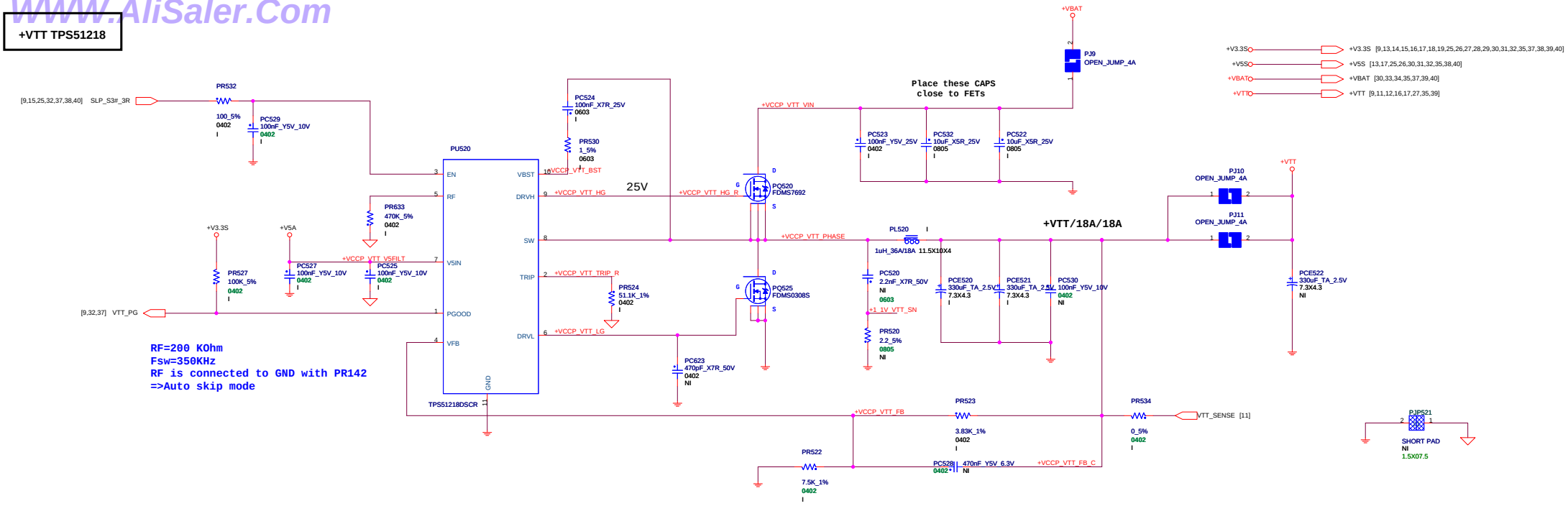
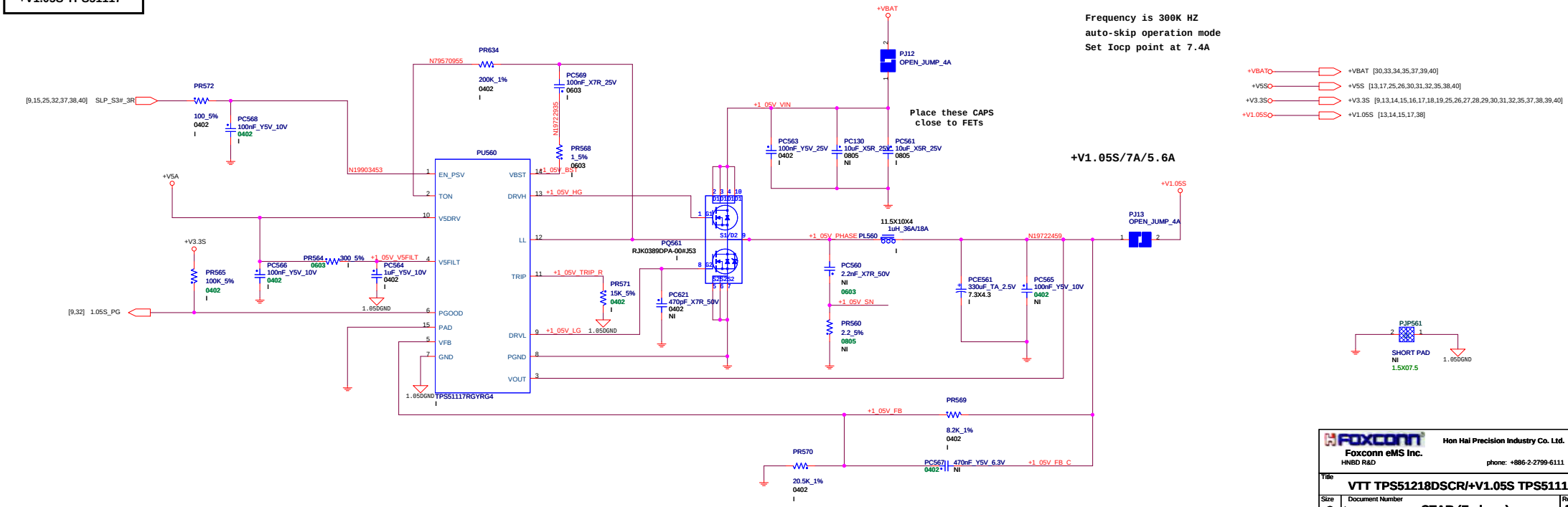
+VTT TPS51218



+V1.05S TPS51117



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Title	VTT TPS51218DSCR/+V1.05S TPS51117
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Frequency is 400K HZ
D-CAP Mode
Set Iocp point at 12A

PR505 Fsw=400kHz
PU500 249K_1% 0402
TPS51117RGYRG4
EN_PSV TON V5DRV V5FILT PGOOD PAD VFB GND VBST DRVH LL TRIP DRVL PGND VOUT
[15,25] SLP_S4#_3R
+V5A
PR503 4.7_5% 0402
PC507 100nF_Y5V_10V 0402
PC505 1uF_Y5V_10V 0603
+V3.3A
PR801 47K_5% 0402
PR501 1_5% 0603
+1_5V_DUAL_BST
+1_5V_DUAL_UG_20
+1_5V_DUAL_PHASE_20
PC510 100nF_X7R_25V 0603
PQ500 RJK0389DPA-00#J53
+1_5V_DUAL_VIN
PC501 2.2uF_X7R_25V 0805
PC131 10uF_X5R_25V 0805 NI
PC502 10uF_X5R_25V 0805
PJ16 OPEN_JUMP_4A
+VBAT
PC509 100nF_Y5V_25V 0402
+1.5
PJ18 OPEN_JUMP_4A
+V1.5/10A/8A
PL500 L=1.0uH 1uH_36A/18A 11.5X10X4
PC500 2.2nF_X7R_50V NI 0603
PC513 100nF_Y5V_10V 0402 NI
PCE501 330uF_TA_2.5V 7.3X4.3
OCP
PR573 13K_1% 0402
PC624 470pF_X7R_50V 0402 NI
+1_5V_DUAL_DRVL_20
+1_5V_DUAL_SN
PR500 2.2_5% 0805 NI
PJP501 SHORT PAD NI 1.5X07.51.5X075 DDRPGND
+VBAT [30,33,34,35,36,39,40]
+V5A [17,26,29,34,36,38,39,40]
+V3.3A [9,13,14,15,16,17,25,27,29,32,33,38]
+V1.5 [9,18,38]
+1_5V_DUAL_SENSE
PR502 75K_1% 0402
PR504 71.5K_1% 0402
PC503 100pF_NPO_50V 0402 NI
Vout=(1+Rtop/Rbot)*0.75V

Design Current Should be 3A

PJ550 OPEN_JUMP_4A
+VBAT
+V1.8S_VIN
PC547 10uF_X5R_25V 0805
PC554 10uF_X5R_25V 0805
PU541
VIN VCC BST SW SW SW SW EN/SYNC PG AAM FB GND GND GND THM
NB634EL-C285-LF-Z
+V5_BAK3
PC552 100nF_X7R_25V 0603
+V1.8S_BST_20
PR506 15_1% 0603
PC549 100nF_X7R_25V 0603
+V1.8S_SW_20
PL541 2.2uH_14A/8A 6.5X6.9X3.0
+V1.8S
PC548 100nF_Y5V_10V 0402 NI
PC550 22uF_X5R_6.3V 0805
PC546 22uF_X5R_6.3V 0805
PR546 10K_5% 0402
+V3.3S
+V1.8S_PG
PR540 130K_1% 0402
+V1.8S_AAM
PR541 10K_1% 0402
[9,15,25,32,36,38,40] SLP_S3#_3R
PR547 0_5% 0603
+V1.8S_EN_R
+V1.8S_FB
PR543 36K_1% 0402
PR555 8.06K_1% 0402
+V1.8S_SENSE_R
PR548 10K_1% 0402
+V1.8S_SENSE
PR544 0_5% 0402
PC551 100pF_NPO_50V 0402
PJP20 SHORT PAD NI 1.5X07.51.5X075
1.8=0.8*(1+R1/R2)

+V0.75S/1A/0.8A

PU501
VDDQSNS VLDOIN VTT PGND VTTSNS VIN S5 GND S3 VTTREF PAD
G2997F6U
+V1.5
+V0.75S
PJ17 OPEN_JUMP_4A
PC504 10uF_X5R_25V 0805
PC506 10uF_X5R_6.3V 0805
PC515 10uF_X5R_6.3V 0805
+V5A
PC511 1uF_Y5V_10V 0603
PR511 0_5% 0402
SLP_S4#_3R [15,25]
PC508 100nF_X7R_25V 0603
PR566 100K_5% 0402
VTT_PG [9,32,36]
PR512 0_5% 0402 NI
SLP_S3#_3R [9,15,25,32,36,38,40]
M_VREF
PC512 100nF_X7R_25V 0603 NI
PC514 1uF_Y5V_10V 0603
M_VREF [18]
+V0.75S [18,38]

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+V3.3S_GPU +V1.8S_GPU +V1.5S_GPU

M93-S3:Install
PARK-S3:Not Install

+V3.3S PC770 100nF_Y5V_16V 0402 I PQ766 FDN340P_G SOT23-3 I +V3.3S_DELAY PC765 10uF_Y5V_10V 0805 I +V1.8S PQ774 FDC655BN_G I PC769 10uF_Y5V_10V 0805 I +V1.8S_GPU +V1.5 PQ764 FDC655BN_G I PC762 10uF_Y5V_10V 0805 I +V1.5S

PC775 2.2uF_X5R_10V 0603 NI PR768 10K_5% 0402 I +V12S PR767 10K_5% 0402 I PR902 0_5% 0402 I PC516 1uF_X5R_25V 0603 I

[16,40] DGPU_PWR_EN# PQ780 2N7002 SOT23-3 I

+V3.3S_DELAY PR783 330_5% 0603 I PQ776 2N7002 SOT23-3 I +V1.8S_GPU PR782 330_5% 0603 I PQ777 2N7002 SOT23-3 I +V1.5S PR777 330_5% 0603 I PQ772 2N7002 SOT23-3 I

+V3.3AL +V3.3A +V12A PR344 10K_5% 0402 I PQ2 FDC655BN_G I 4A

+V5AL PR339 10K_5% 0402 I PR345 430K_1% 0402 NI PQ529 2N7002 SOT23-3 I PR779

[25,34] EC_ALW_EN PQ530 2N7002 SOT23-3 I PQ531 2N7002 SOT23-3 I 330_5% 0603 I PC766 10uF_Y5V_10V 0805 I

+V5S PR772 390_5% 0603 I PQ767 2N7002 SOT23-3 I +V3.3S PR778 330_5% 0603 I PQ768 2N7002 SOT23-3 I +V1.5_VDDQ PR780 200_5% 0402 I PQ769 2N7002 SOT23-3 I +V0.75S PR781 22_5% 0402 I PQ771 2N7002 SOT23-3 I

+V5AL PR340 10K_5% 0402 I

[9,15,25,32,36,37,40] SLP_S3#_3R PQ775 2N7002 SOT23-3 I DIS_CHG

+V1.05S PR776 330_5% 0603 I PQ770 2N7002 SOT23-3 I +V1.8S PR775 330_5% 0603 I PQ773 2N7002 SOT23-3 I

+V5A +V5S 4A PQ762 FDC655BN_G I PC764 10uF_Y5V_10V 0805 I PC771 100nF_Y5V_16V 0402 I PC773 10nF_X7R_25V 0402 I

+V12S +V12A PR765 10K_5% 0402 I RUN_ON_LOAD

PQ779 FDN340P_G SOT23-3 PC333 2.2uF_X7R_25V 0805 NI PC761 100nF_Y5V_16V 0402 I

PR764 100K_5% 0402 I PC767 100nF_Y5V_16V 0402 I PR766 100K_5% 0402 I

+V3.3A +V3.3S 4A PQ763 FDC655BN_G I PC763 10uF_Y5V_10V 0805 I PC774 10nF_X7R_25V 0402 I PC776 22uF_X5R_6.3V 0805 NI

SLP_S3_12R SLP_S3_12R [30]

[9,15,25,32,36,37,40] SLP_S3#_3R PR901 0_5% PQ778 2N7002 SOT23-3 PC327 100nF_Y5V_10V 0402 I

PR761 100K_5% 0402 I

+V1.5 +V1.5_VDDQ PQ765 FDC655BN_G I PC768 10uF_Y5V_10V 0805 NI PC772 10nF_X7R_25V 0402 I

PC809 10nF_X7R_25V 0402 NI

+V5A PR769 10K_5% 0402 I PQ781 2N7002 SOT23-3 I PQ782 2N7002 SOT23-3 I IMVP_VR_ON [25,35]

PJ26 OPEN_JUMP_4A

+V5S +V5S_ODD PC188 100nF_Y5V_16V 0603 NI PR213 47K_5% 0402 NI PQ46 FDMC4435BZ NI

PR214 10K_5% 0402 NI PQ47 2N7002-7-F SOT23-3 NI

[25] EC_ODD_EN PR215 4.7K_5% 0402 NI PR84 47K_5% 0402 NI

+V12A [34]
+V5A [17,26,29,34,36,37,39,40]
+V5S [13,17,25,26,30,31,32,35,40]
+V3.3A [9,13,14,15,16,17,25,27,29,32,33,37]
+V3.3S [9,13,14,15,16,17,18,19,25,26,27,28,29,30,31,32,35,36,37,39,40]
+V3.3S_DELAY [19,20,23,31]
+V1.8S [12,17,37]

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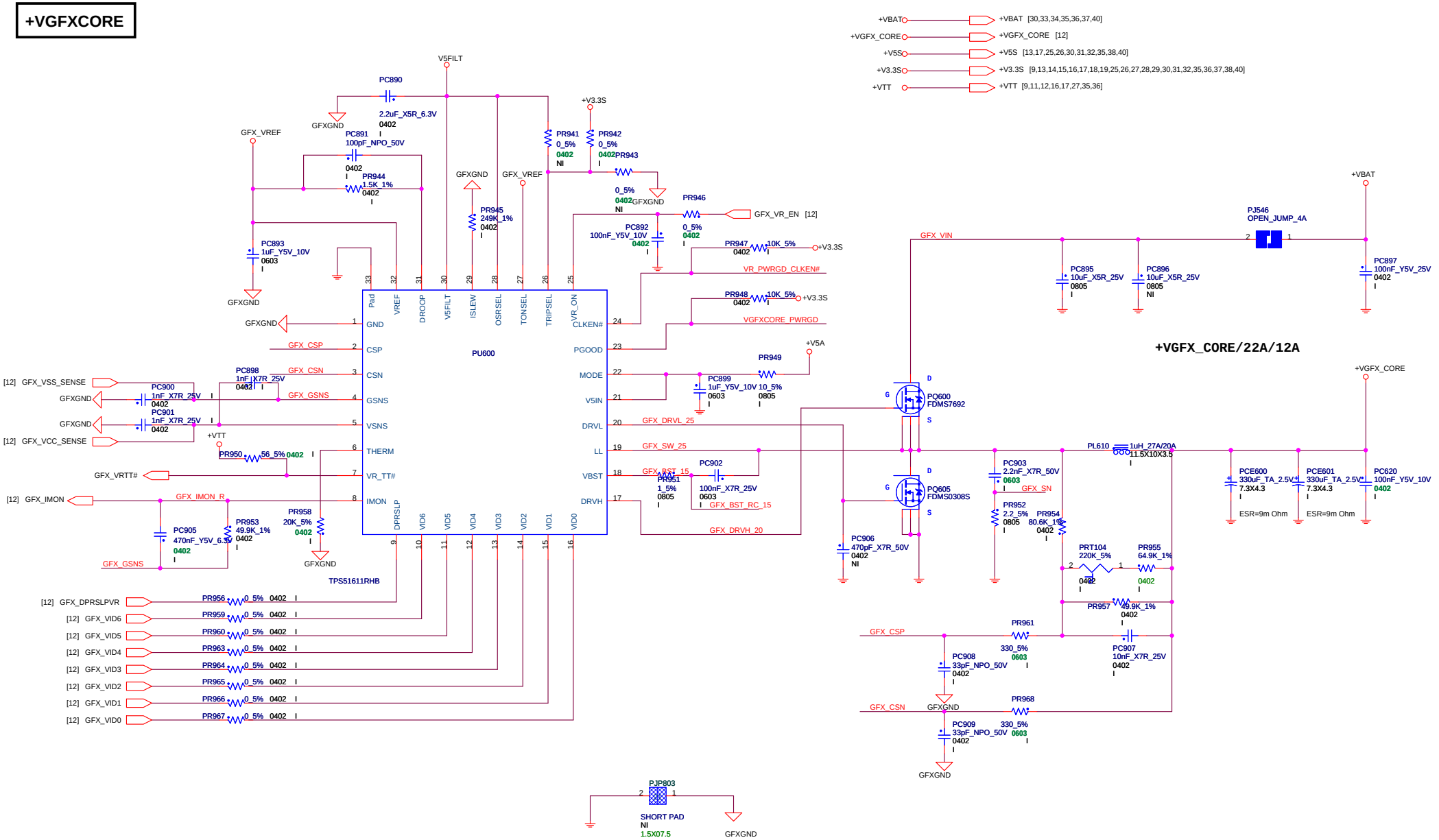
+VGFXCORE



Discrete GPU: Not Install
UMA: Install
SG: Install

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Discrete GPU: Install
UMA: Install
SG: Install

+VDD_CORE/10A/8A

Discrete GPU: Install
UMA: Not Install
SG: Install

Discrete GPU: Install
UMA: Not Install
SG: Install

M93-S3:
Install PR323 and Not Install PR326

Park-S3 :
Not Install PR323 and Install PR326

+VPCIE:
M93:1.1V@150mA
Park:1.0V@125mA

PWRCNTL_1	PWRCNTL_0	M93_XT_S3
0	0	1.2V
0	1	1.15V
1	0	0.95V
1	1	0.9V

PWRCNTL_1	PWRCNTL_0	Park_XT_S3
0	*	1.122V
1	*	0.9V

VID Table	M93_XT_S3	Park_XT_S3
PR102	120K_1%	N/A
PR914	24K_1%	27K_1%
PQ24	2N7002	N/A
PQ21	2N7002	N/A
PR922	1K_5%	N/A
PC885	47pF	N/A

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