Z87H3-LM Rev:1.0..

Shark Bay

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Job	Signature	Date
Schematics Designer	Smark Lin	20121126
Layout		
Approval		

PCB STACK:
L1:TOP
L2:PWR
L3:GND
L4:BOTTOM

Title: Cover Page		
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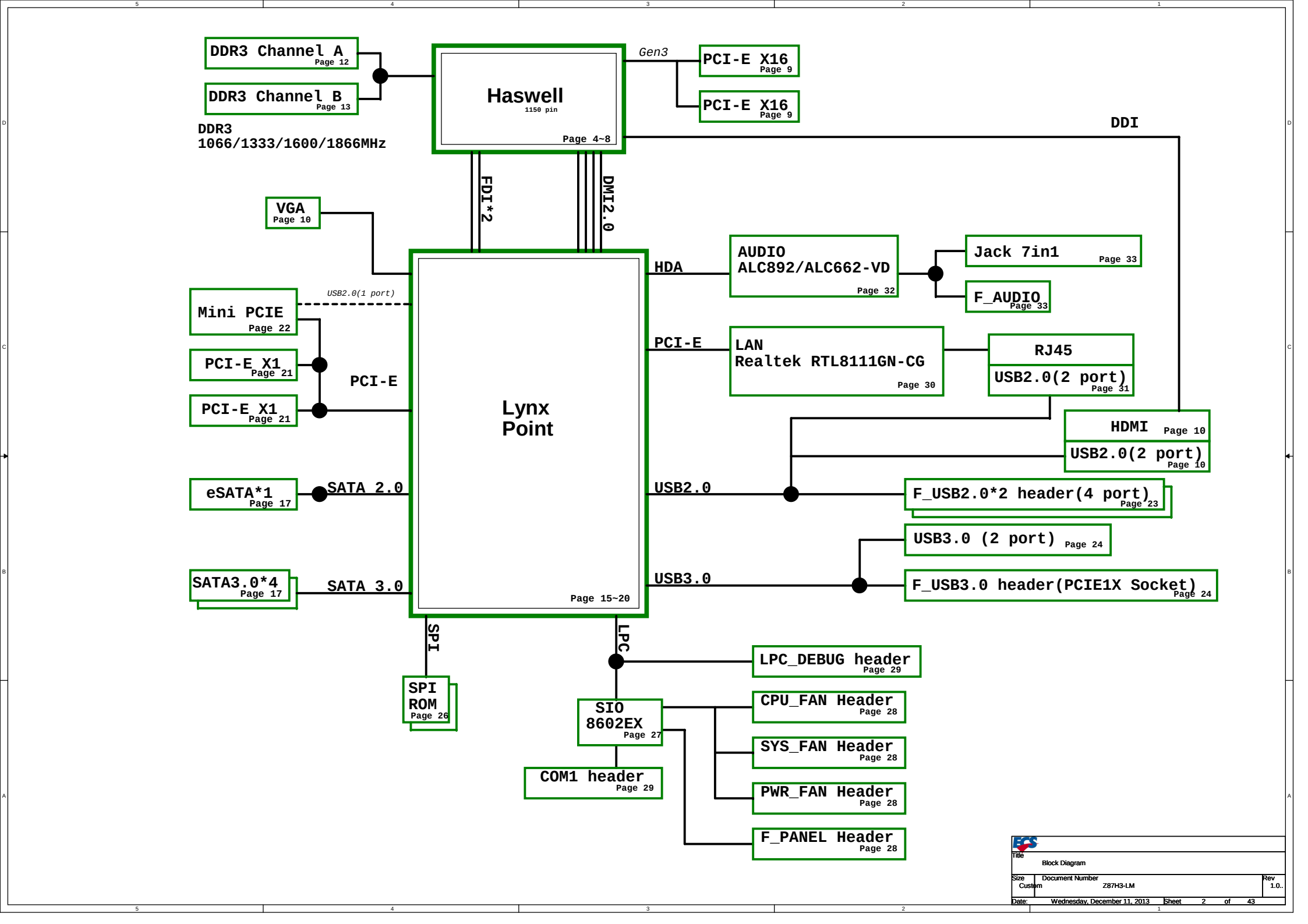
DDR3 Channel A
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DDR3 Channel B
Page 13
DDR3
1066/1333/1600/1866MHz
Haswell
1150 pin
Page 4~8
Gen3
PCI-E X16
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PCI-E X16
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DMI2.0
VGA
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Lynx
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Jack 7in1
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HDMI
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USB2.0(2 port)
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eSATA*1
Page 17
SATA 2.0
USB2.0
F_USB2.0*2 header(4 port)
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USB3.0 (2 port)
Page 24
SATA3.0*4
Page 17
SATA 3.0
USB3.0
F_USB3.0 header(PCIE1X Socket)
Page 24
SPI
LPC
SPI
ROM
Page 26
SIO
8602EX
Page 27
LPC_DEBUG header
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CPU_FAN Header
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SYS_FAN Header
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COM1 header
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F_PANEL Header
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PCH-GPIO function

Pin Name	Power Well	Usage	Default Status	Boot Set
GPIO2	VCC3	(OC LED-WHITE)	GPI	GPO
GPIO4	VCC3	(OC LED-BLUE)	GPI	GPO
GPIO5	VCC3	(OC LED-PURPLE)	GPI	GPO
GPIO16	VCC3	(OC LED-RED)	GPI	GPO
GPIO13	3VSB	PCH_GPIO13 (USB Charger CTL1)	GPI	GPO
GPIO14	3VSB	PCH_LED1	OC7#	GPO
GPIO15	3VSB	PCIE16X_RST_L	GPO	GPI
GPIO22	VCC3	SW_CLR_CMOS	GPI	GPI
GPIO24	3VSB	ME disable	GPO	GPO
GPIO25	3VSB	PCH_GPIO25 (USB Charger CTL3)	PCIECLKRQ3#	GPO
GPIO26	3VSB	PCH_GPIO26 (USB Charger CTL4)	PCIECLKRQ4#	GPO
GPIO27	+ATX_3VSB	MS_GP0(Mode_Switch)	GPO	GPI
GPIO28	+ATX_3VSB	MS_GP1(Mode_Switch)	GPO	GPI
GPIO29	3VSB	PCH_GPIO29(BOM detect)	GPI	GPI
GPIO31	3VSB	PCH_GPIO31(+VDIMM select)	GPI	GPO
GPIO39	VCC3	CAS0(SEN_HEADER)	GPI	GPI
GPIO45	3VSB	LAN_DIS_L(MINI_PCIE)	PCIECLKRQ6#	GPO
GPIO48	VCC3	CAS1(SEN_HEADER)	GPI	GPI
GPIO49	VCC3	PCH_GPIO49 USB/PCIE(mSATA) DET	GPI	GPO
GPIO50	VCC3	PS2_DET	GPI	GPI
GPIO52	VCC3	PCH_GPIO52 (FP_AUD_DETECT)	GPI	GPO
GPIO54	VCC3	COM_DET	GPI	GPI
GPIO57	3VSB	MODE_CTRL(Mode_Switch)	GPI	GPI
GPIO60	3VSB	PCH_GPIO60(BOM detect)	SML0ALERT#.	GPI
GPIO64	VCC3	PCH_GPIO64(BOM detect)	CLKOUTFLEX0	GPI
GPIO65	VCC3	PCH_GPIO65(BOM detect)	CLKOUTFLEX1	GPI
GPIO66	VCC3	PCH_GPIO66(BOM detect)	CLKOUTFLEX2	GPI
GPIO73	3VSB	PCH_GPIO73	PCIECLKRQ0#	GPI
GPIO74	3VSB	PCH_GPIO74(BOM detect)	SML1ALERT#	GPI

SIO-GPIO function

Pin Name	Power Well	Usage	Default SET
GP22	3VSB	SIO_LED0	GPIO
GP12	VCC3	PCIRST1_L	GPO

Interrupt mapping

Function	INT# port	PCIe*1 port	Device
LAN	INTC#	port 3	RTL8111GN
PCIE1X_1	INTB#	port 2	LPT integrate
PCIE1X_2	INTD#	port 4	LPT integrate
mini-PCIE	INTB#	port 6	LPT integrate
SATA	INTB#	N/A	LPT integrate

Title	GPIO Function & INT# Mapping		
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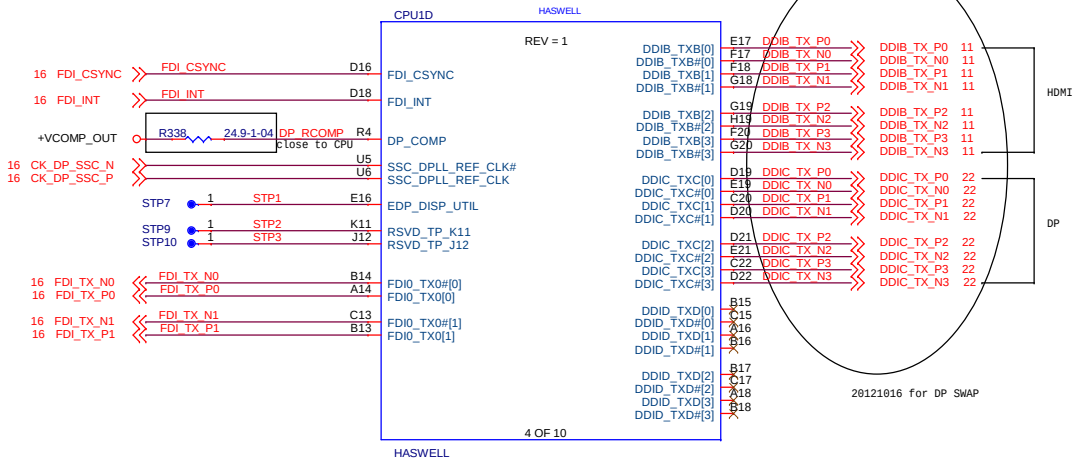

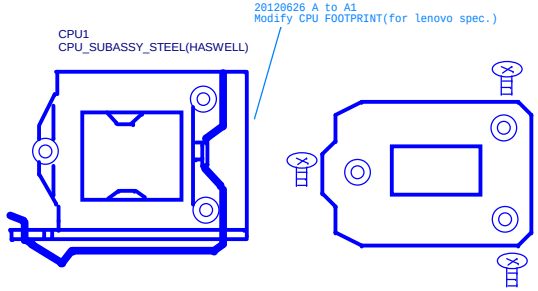

CPU steel (T/U pahse)
PN:20-800-005711 CPU SOCKET STEEL SUBASSY.STEEL....LGA 1155/1156P.W/BACK PLATE,CAP.LOTES

CPU socket (SMD phase)
PN:11-018-115128 SOCKET.CPU..LGA 1150P SMD..15u...BLACK.ACA-ZIF-138-P01...HF.LEAD-FREE.LOTES

Title	CPU-PEG/DMI/FDI/DDI		
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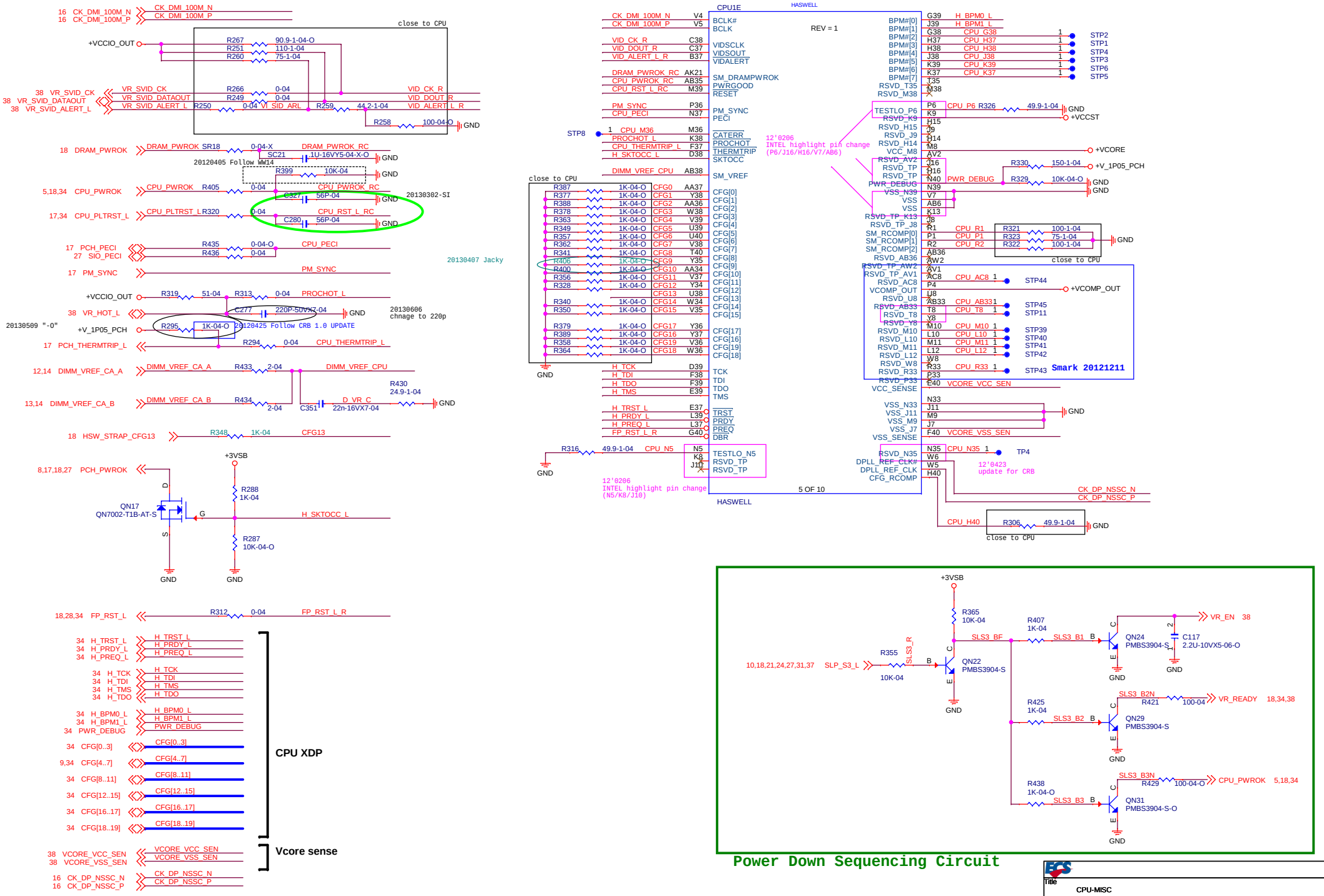
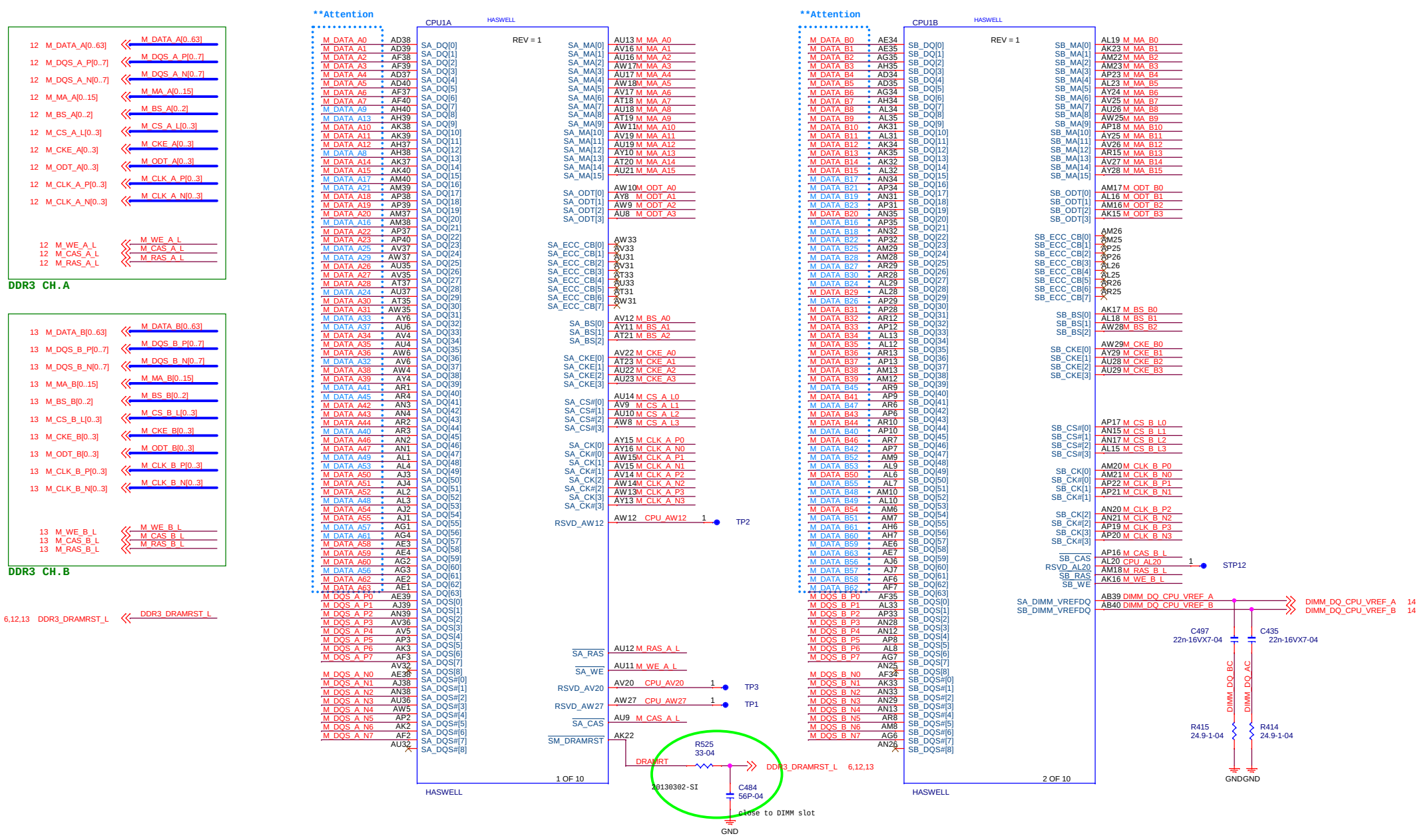

CPU1E
HASWELL
REV = 1
5 OF 10
close to CPU
20130407 Jacky
20130606 chnage to 220p
20130302-SI
Smark 20121211
12'0206 INTEL highlight pin change (P6/J16/H16/V7/AB6)
12'0206 INTEL highlight pin change (N5/K8/J10)
12'0423 update for CRB
CPU XDP
Vcore sense
Power Down Sequencing Circuit
CPU-MISC
Z87H3-LM
Wednesday, December 11, 2013



Title	CPU-DDR3		
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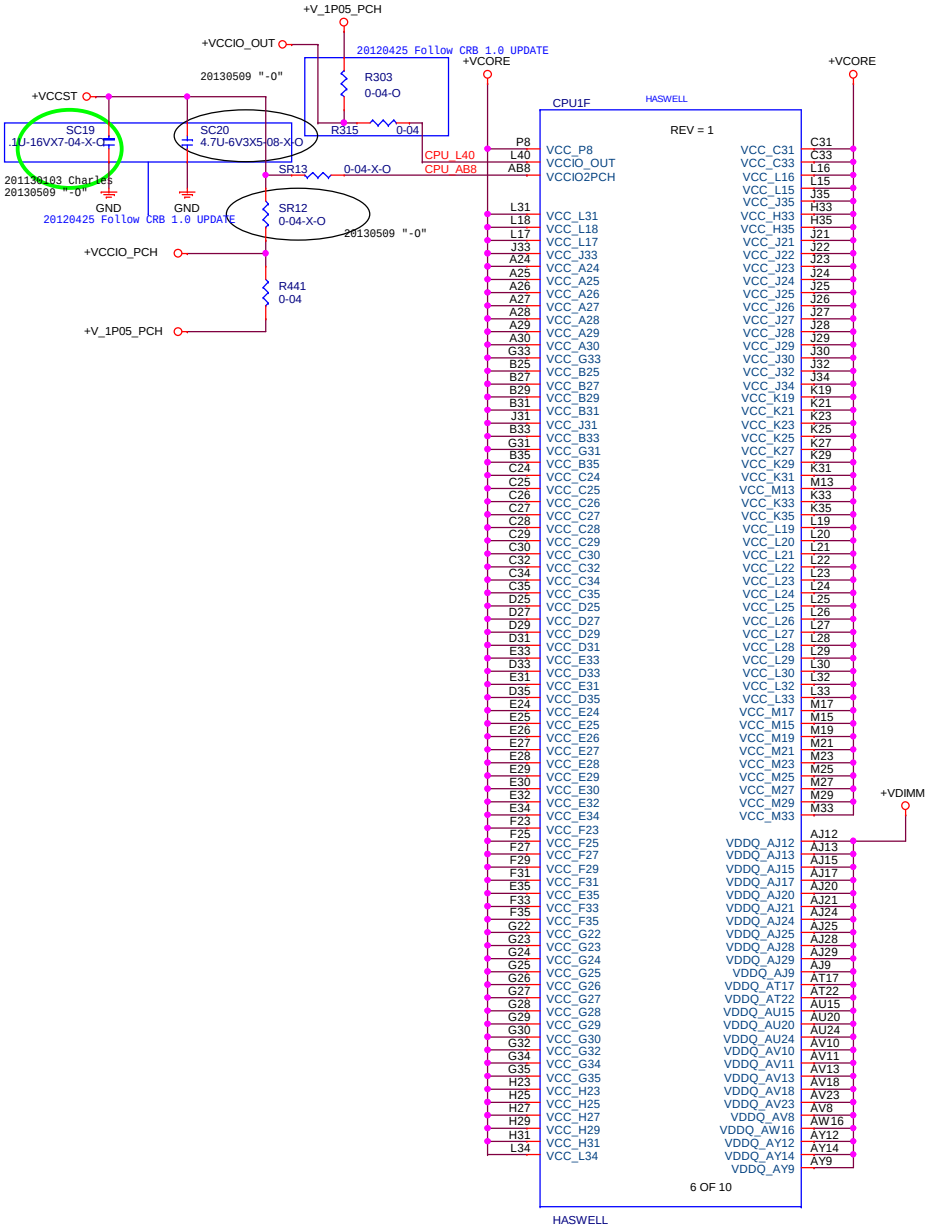
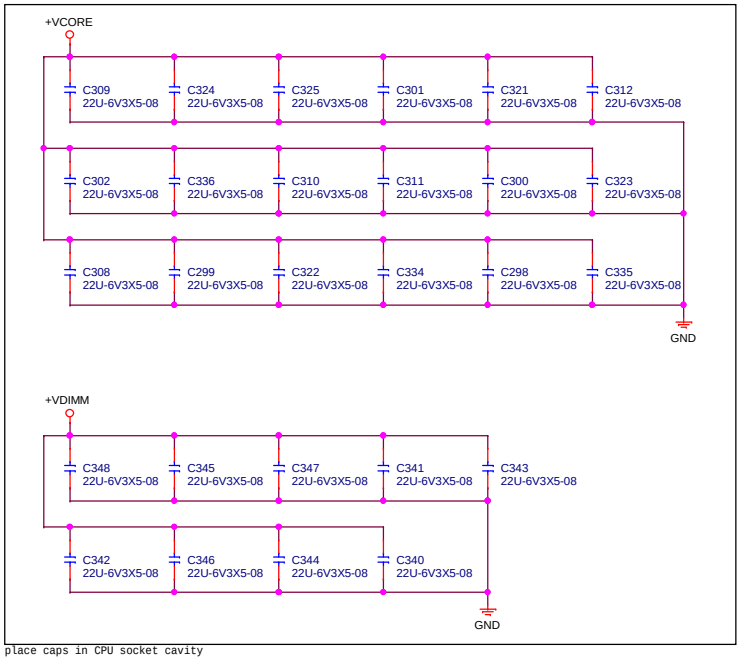
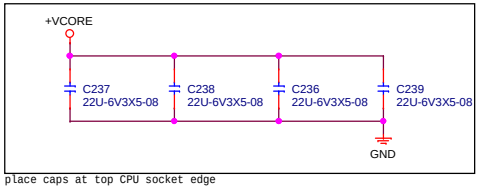
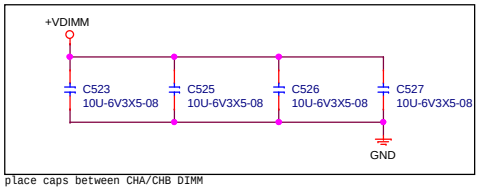




place caps in CPU socket cavity



place caps at top CPU socket edge



place caps between CHA/CHB DIMM

Title	CPU-POWER		
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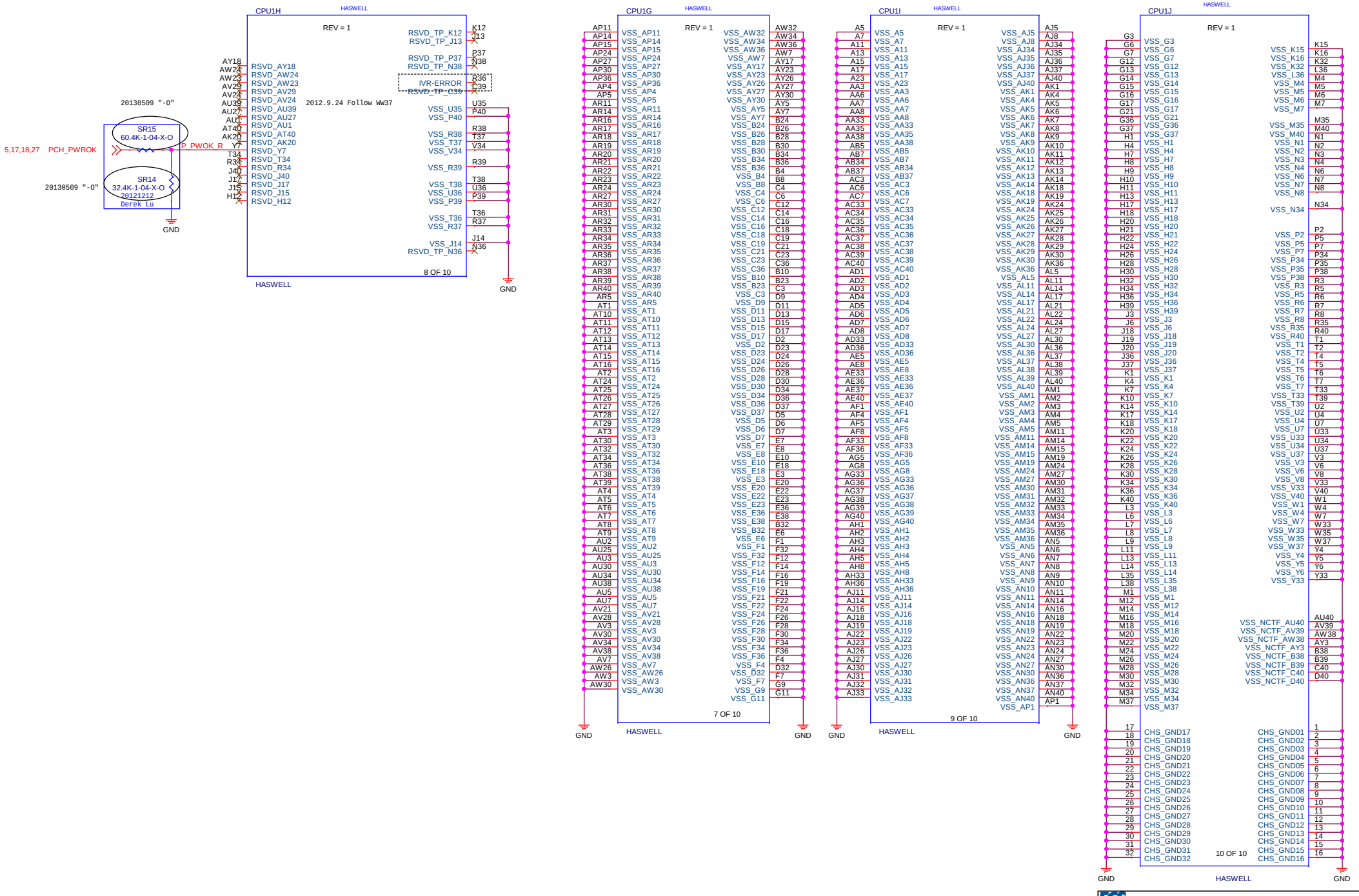

Title	CPU-GND		
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PCIE SPEC
VCC3:3A
12V:5.5A
3VSB:0.375A

PCIEx16_1

PCIE16X_1

PCIE16X16-BK-LL15

20130226 Smark

KEY

Close PCIEx16_1

PCIEx16_1 Decoupling Cap.

PCI-E 8X Slot SPEC.:
+VCC3/S0/3A
+V12/S0/5.5A
+3VSB/0.375A

PCIEx16_2

PCIE16X_2

PCIE16X16-BK-LL15

20130226 Smark

KEY

Close PCIEx16_2

PCIEx16_2 Decoupling Cap.

20130621
modify location

20130618
change to 1K

Smark 20121220
PCIE slot reset

BAT54A-S

20130620
For monotonic issue

ASM1480 ,Support GEN3
02-342-480070

X8_EN define
Low:channel outA (x8)
High:channel outB (x16)

switch enable/disable setting

Title	PCIE*16		
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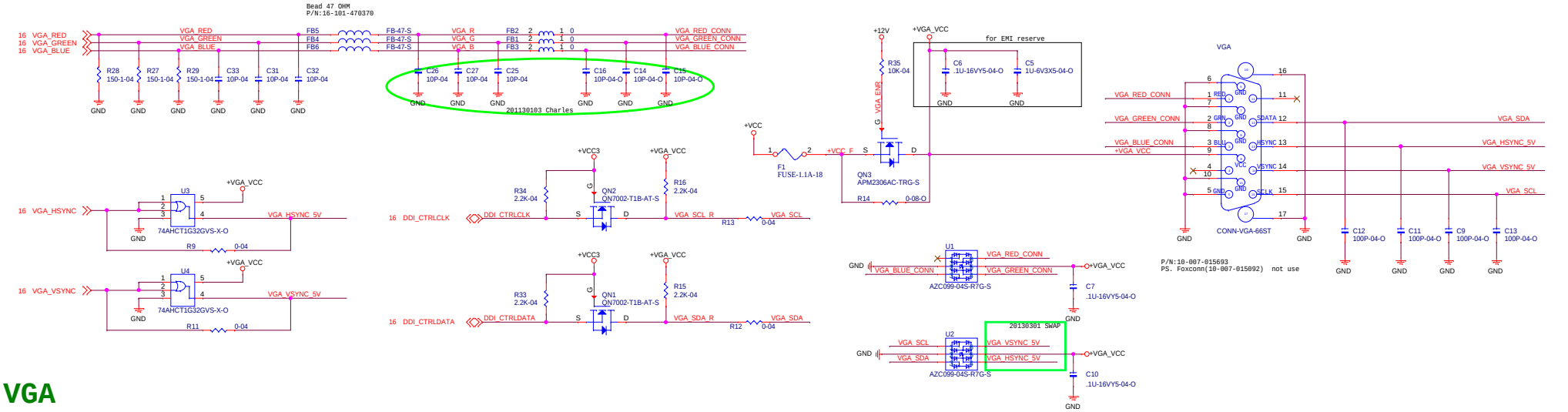
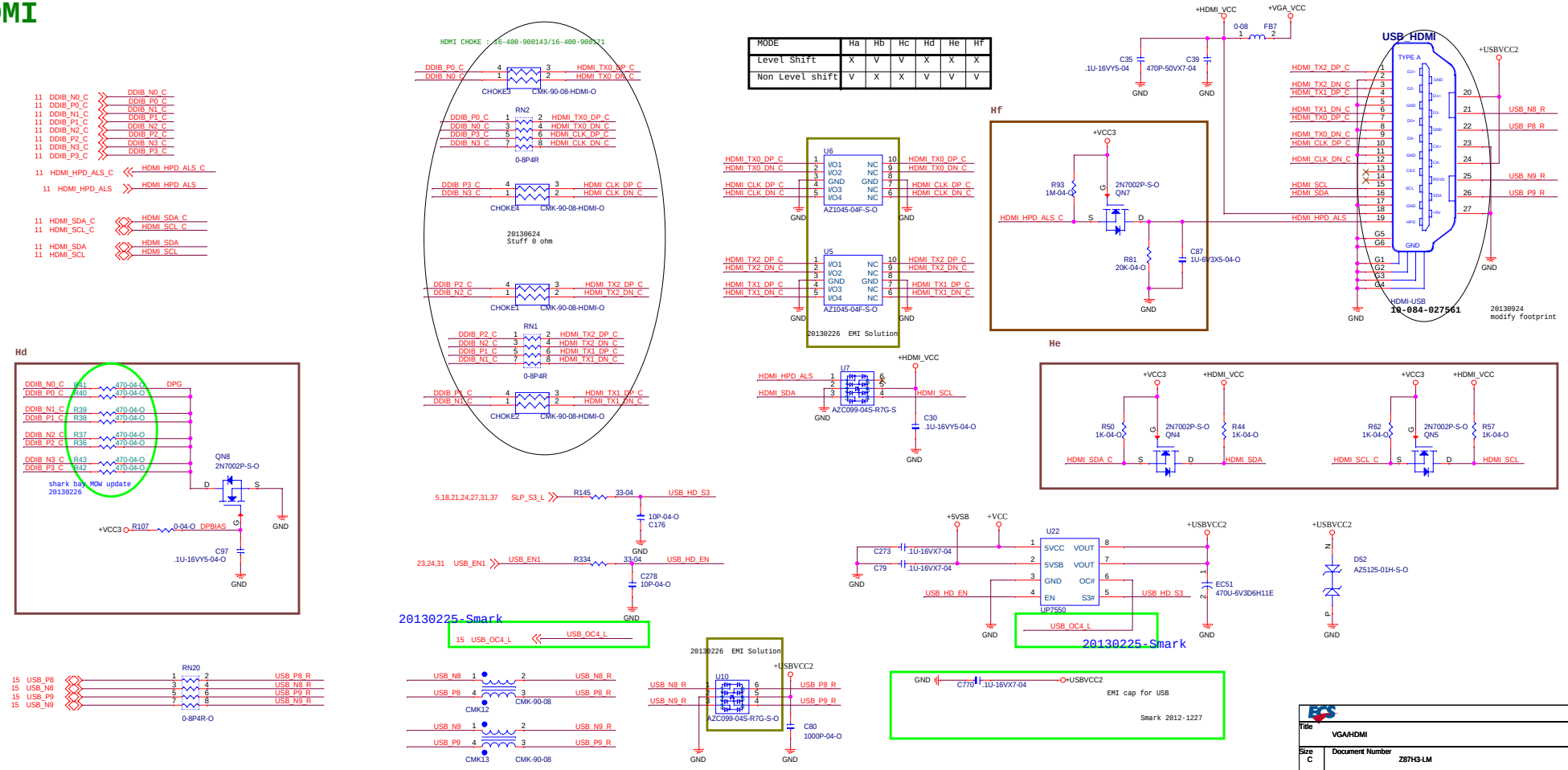


VGA

HDMI



Title	VGA/HDMI		
Size C	Document Number Z87H3-LM		Rev 1.0..
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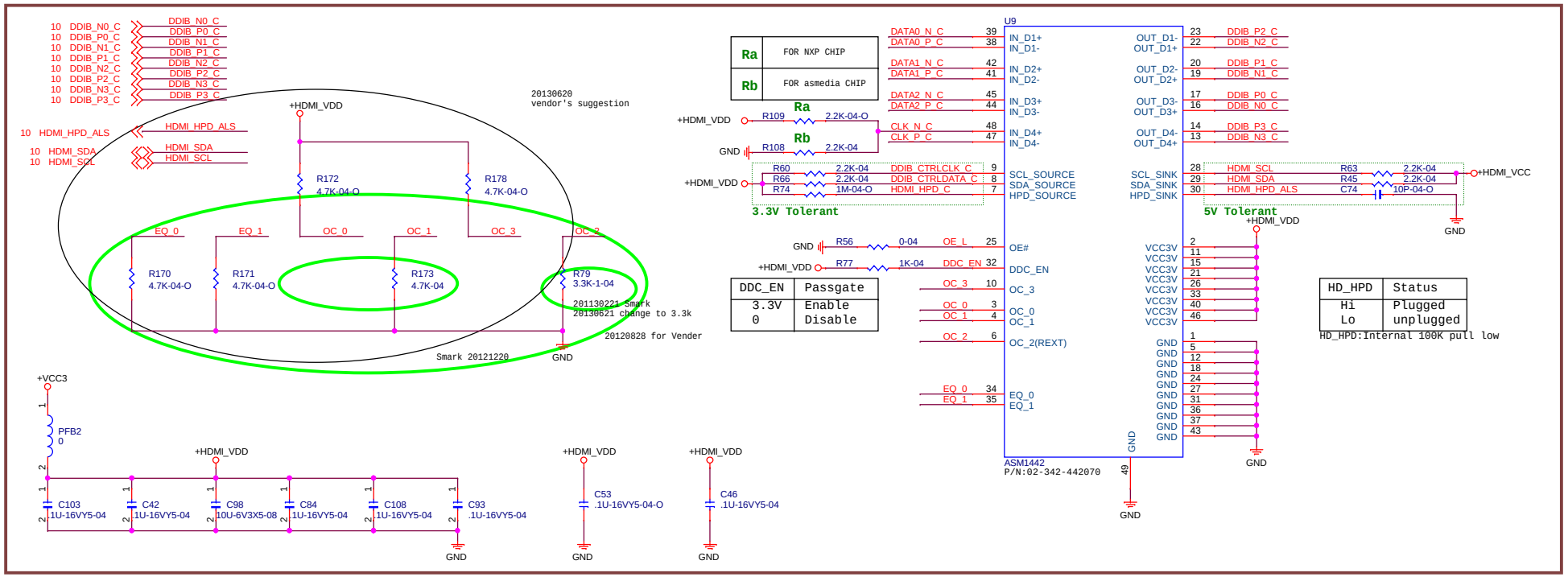
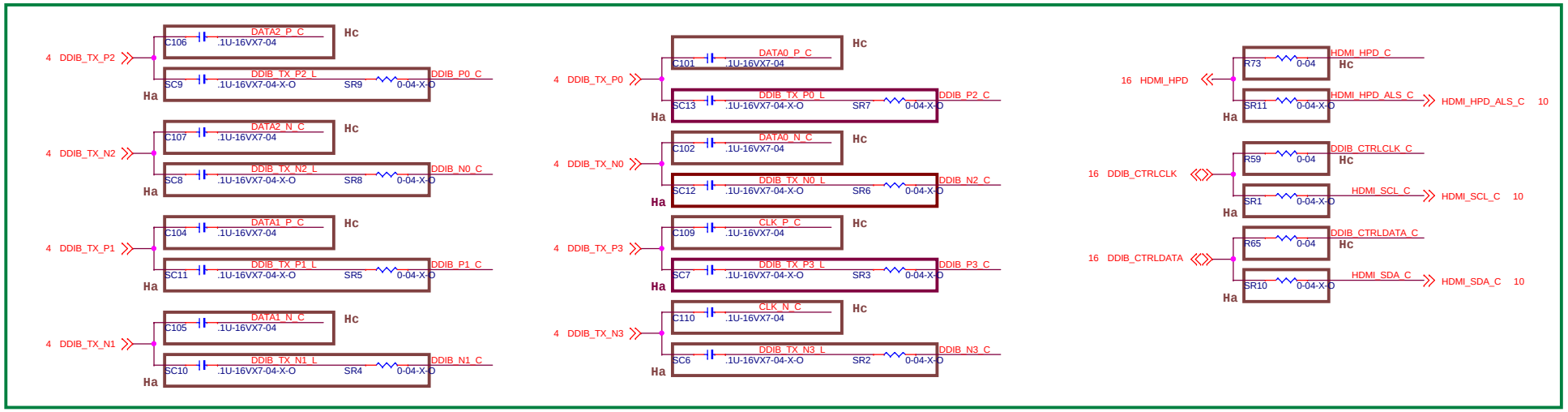
Hb



HDMI Signal Option Close (Level shfit)ASM1442



Title	HDMI
Size	Custom
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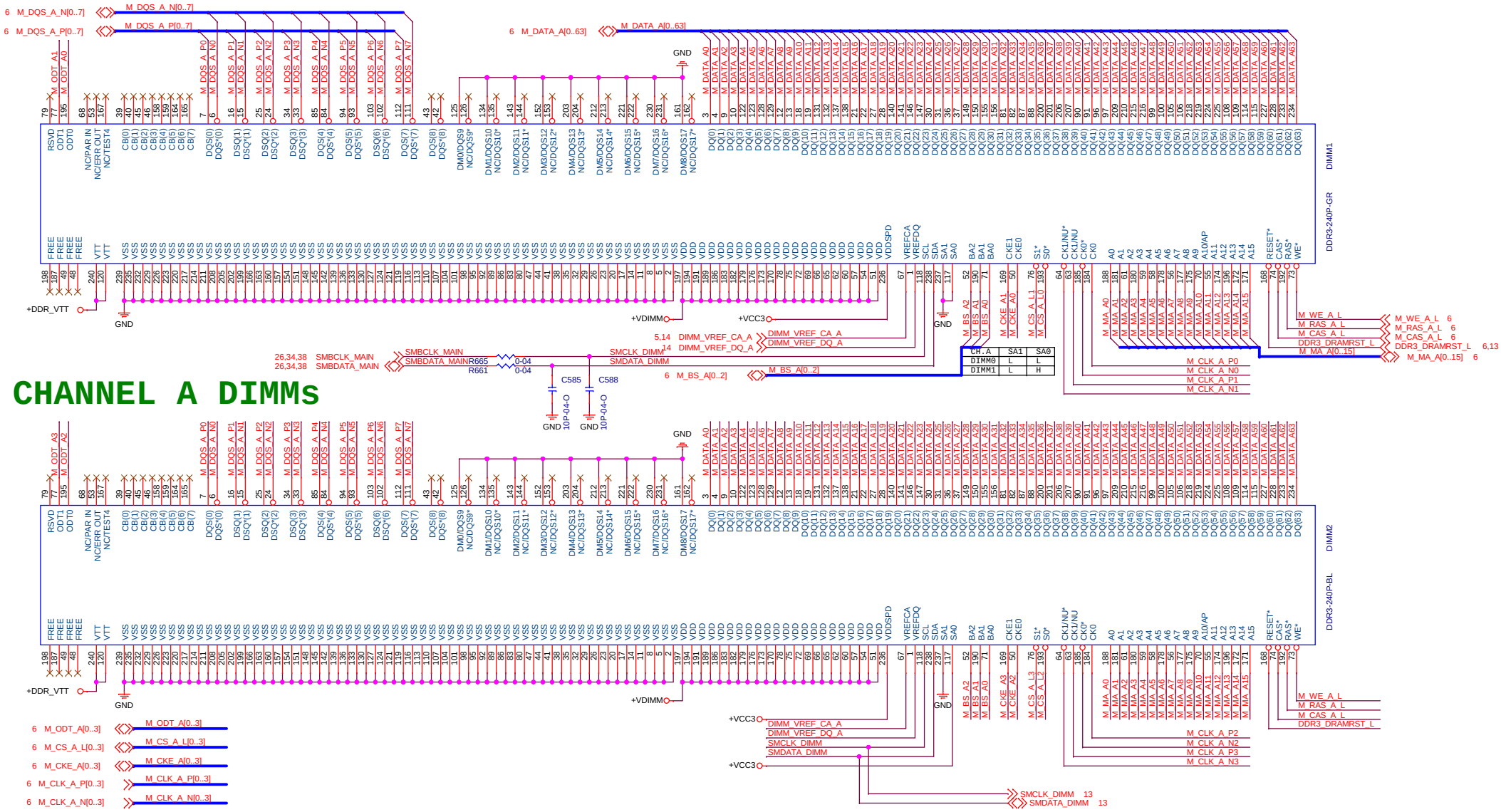
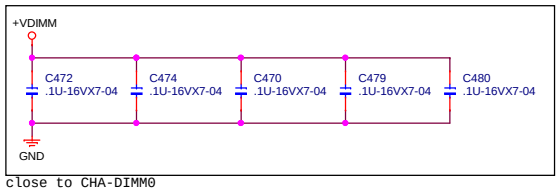
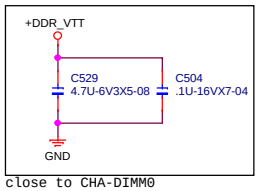
CHANNEL A DIMMs

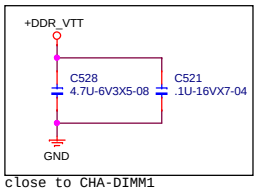




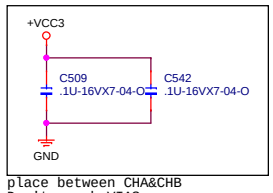
close to CHA-DIMM0



close to CHA-DIMM0



close to CHA-DIMM1



place between CHA&CHB
Don't punch VIAS

Title	DDR3-CHA		
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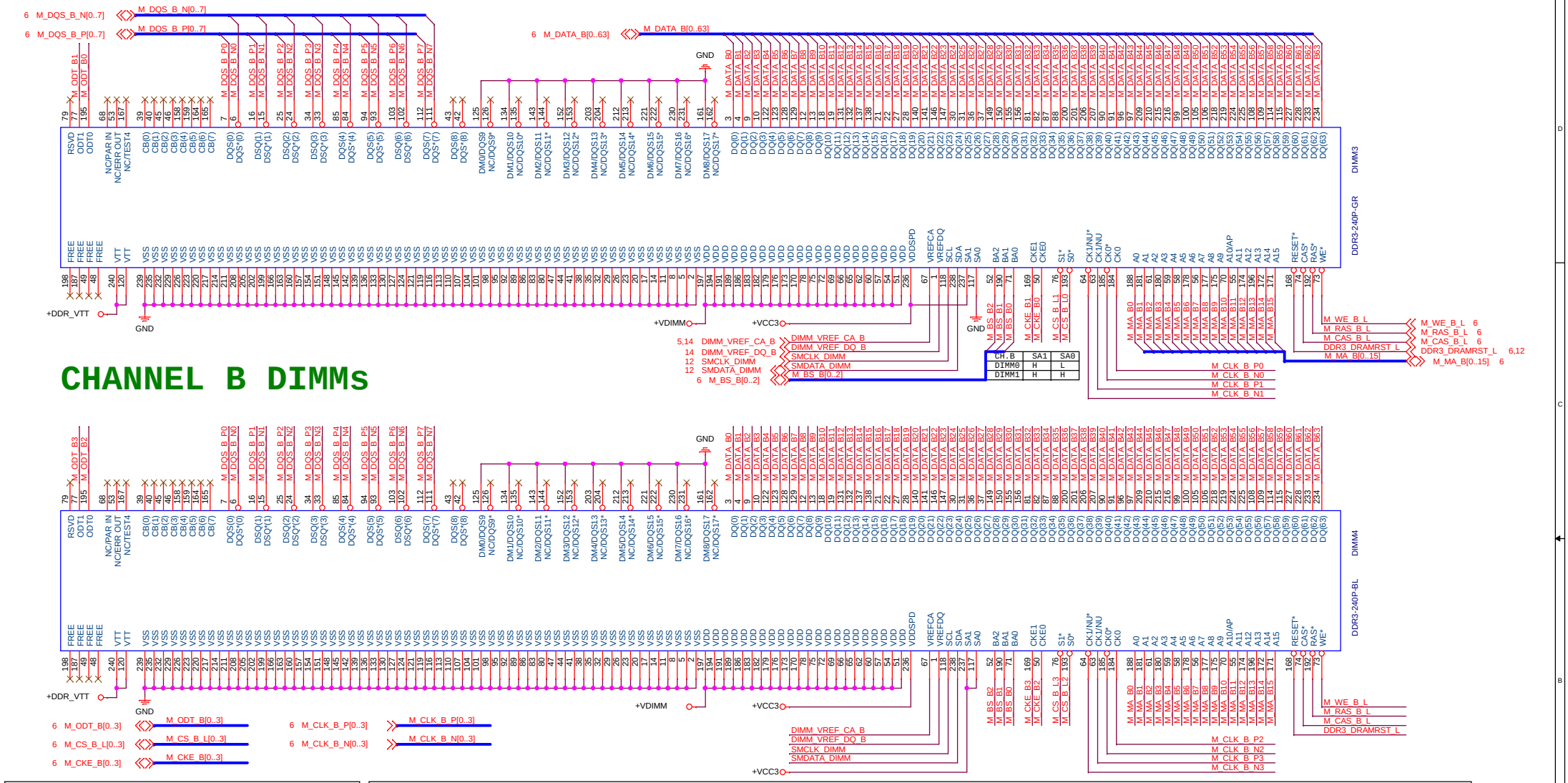
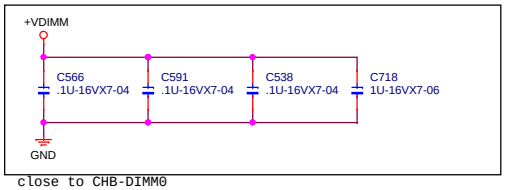
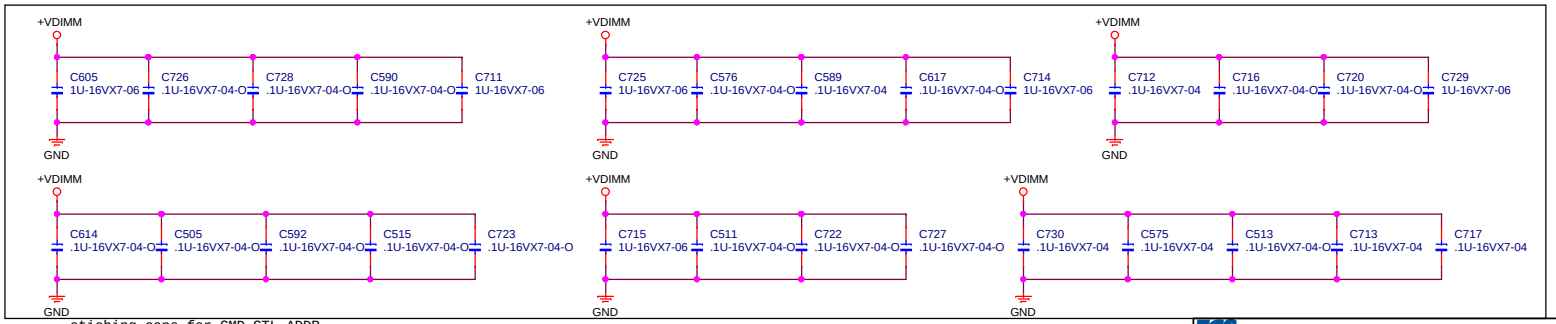
CHANNEL B DIMMs

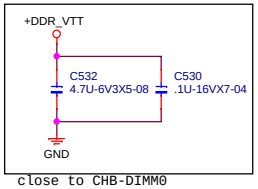




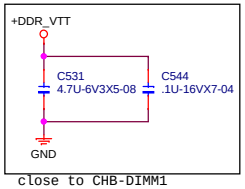
close to CHB-DIMM0



stiching caps for CMD,CTL,ADDR



close to CHB-DIMM0



close to CHB-DIMM1

Title	DDR3-CHB	
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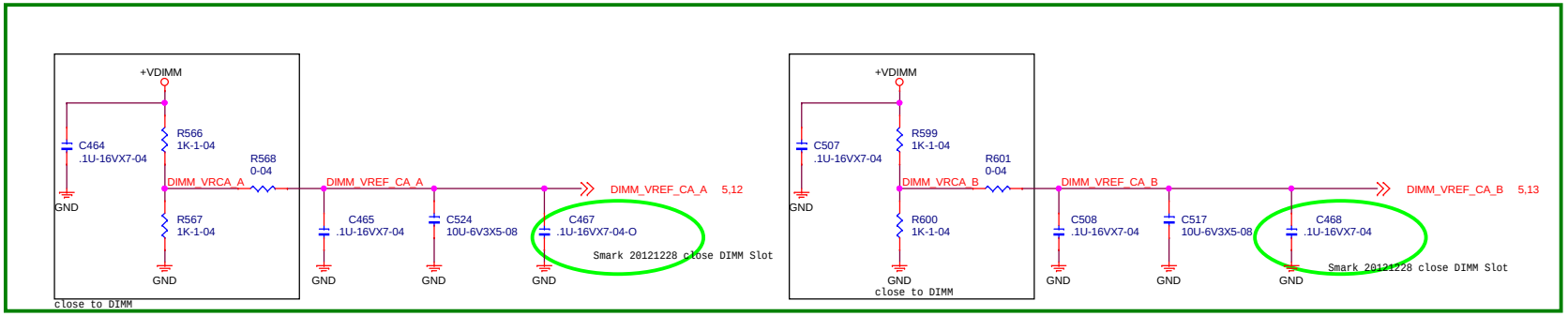
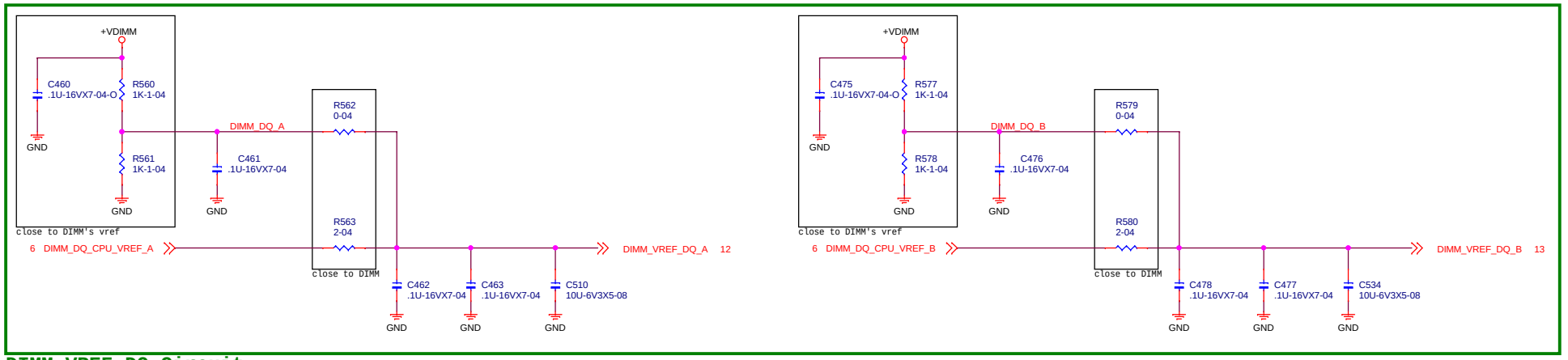
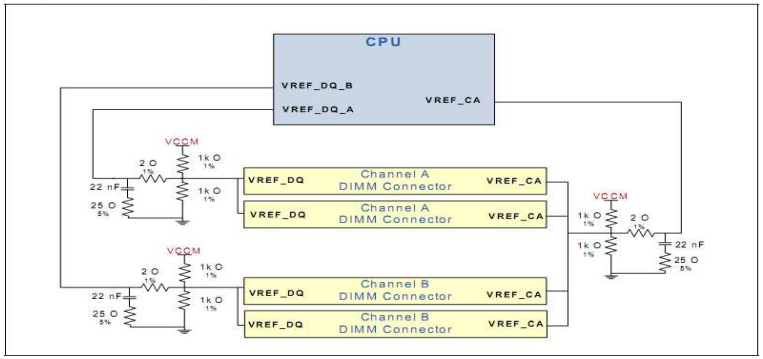


DIMM_VREF_CA Circuit



DIMM_VREF_DQ Circuit

Figure 4-8. DDR3 VREF Topologies



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07272012 For ww29

PCH1B LPT_PCH_DT REV 1

PCH1A LPT_PCH_DT REV 1

INT A#
INT B#
INT C#
INT D#
INT A#
INT B#
INT A#
INT B#

9 OF 11
11 OF 11
1 OF 11

USB_LAN
USB3_CONN
USB3_HEADER(PCIE1X TYPE)
MINI_PCIE
USB_HDMI
USB_HEADER

close to PCH
20121218-Smark
20130225Smark
20120604 A to A1 Modify usb OC# Pull-HI circuit
20121020 Pre-A3 to A3 For USB OC funation Debug

Stitching cap for PCI_CLK2_FB 20121218-Smark
stitching caps for USB 2.0 20121218-Smark

ESI strap for server only
EDS_V0.7: DT shouldn't be pulled-down
TOP-BLOCK swap override when LOW

PCH heatsink (T/U phase)
P/N:20-120-013670
20-120-013671 20-120-013672

Title	PCH-DMI/PE/USB2.0		
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Reserve for BIOS

+VCC3 — RJ13(1-2) 10K-04 — GPIO64 — GND
+VCC3 — 20130509 Change to (1-2) — RJ12(1-2) 10K-04 — GPIO65 — GND
+VCC3 — RJ14(2-3) 10K-04 — GPIO66 — GND

Audio slelction for BIOS

CODEC	GPIO64
ALC892	1-2
ALC662	2-3

*

PCH1E — LPT_PCH_DT — REV 1

11 HDMI_HPD, 22 DP_HPD → HDMI_HPD / DP_HPD → DDPB_HPD, DDPC_HPD, DDPD_HPD
22 DDIC_AUXN, 22 DDIC_AUXP → DDIC_AUXN / DDIC_AUXP → DDPB_AUXN, DDPB_AUXP, DDPC_AUXN, DDPC_AUXP, DDPD_AUXN, DDPD_AUXP

20121016 for DP SWAP

VGA_HSYNC, VGA_VSYNC → VGA_HSYNC_R → R448 33-04 VGA_HSYNC, R449 33-04 VGA_VSYNC
20120703 A to A1 Modify VGA HSYNC/VSYNC circuit
C370 10P-04-O, C371 10P-04-O
VGA_RED, VGA_GREEN, VGA_BLUE
20130218 A4 to A5 for VGA SDA debug
VGA_IRTN, VGA_DDC_DATA, VGA_DDC_CLK, DAC_IREF
DDI_SDA — SR61 75-04-X — DDI_CTRLDATA 10
DDI_CTRLCLK 10
DAC_IREF — R455 649-1-04 close to PCH
R457 150-1-04, R456 150-1-04, R458 150-1-04

DDPC_CTRLCLK, DDPC_CTRLDATA, DDPB_CTRLCLK, DDPB_CTRLDATA, DDPD_CTRLCLK, DDPD_CTRLDATA
DDIC_CTRLCLK 22, DDIC_CTRLDATA 22, DDIB_CTRLCLK 11, DDIB_CTRLDATA 11
20121016 for DP SWAP

Layout note:
DDC_DATA要長於DDC_CLK約1inch.
越接近越好但不要超過.

5 OF 11

VGA_RED C377 5P-04-O, VGA_GREEN C376 5P-04-O, VGA_BLUE C378 5P-04-O → GND
For EMI, close to chipset.

PCH1G — LPT_PCH_DT — REV 1

CLKIN_GND0 G16, CLKIN_GND0_P F16 — CLKIN_GN SR21 10K-04-X, CLKIN_GP SR20 10K-04-X → GND
CLKOUT_DMI R2/T2 — CK_DMI_100M_N/P → CK_DMI_100M_N/P 5
CLKOUT_DP T3/T5 — CK_DP_SSC_N/P → CK_DP_SSC_N/P 4
CLKOUT_DPNS W2/U2 — CK_DP_NSSC_N/P → CK_DP_NSSC_N/P 5
CLKOUT_ITPXDP U6/U7 — CK_H_XDP_N/P → CK_H_XDP_N/P 34
CLKOUT_PEG_A AA3/AA2 — PEX16_100M_N/P → PEX16_100M_N/P 9
CLKOUT_PEG_B AE6/AE7 — PEX8_100M_N/P → PEX8_100M_N/P 9 0C-20121108
CLKOUT_PCIE_N0 AE10 — WLAN_100M_N → WLAN_100M_N 22
CLKOUT_PCIE_P0 AE11 — WLAN_100M_P → WLAN_100M_P 22
20120823 for Lenovo require
CLKOUT_PCIE_N1 AC6, CLKOUT_PCIE_P1 AC7
CLKOUT_PCIE_N2 AC11, CLKOUT_PCIE_P2 AC10
CLKOUT_PCIE_N3 W11 — RLAN_CLKN → RLAN_CLKN 30
CLKOUT_PCIE_P3 W10 — RLAN_CLKP → RLAN_CLKP 30
CLKOUT_PCIE_N4 Y4, CLKOUT_PCIE_P4 Y2
CLKOUT_PCIE_N5 W7, CLKOUT_PCIE_P5 W6
CLKOUT_PCIE_N6 AA7 — PEX2_100M_N → PEX2_100M_N 21
CLKOUT_PCIE_P6 AA6 — PEX2_100M_P → PEX2_100M_P 21
CLKOUT_PCIE_N7 R6 — PEX1_100M_N → PEX1_100M_N 21
CLKOUT_PCIE_P7 R7 — PEX1_100M_P → PEX1_100M_P 21

20130523 For EMI
CKO33_0 AV5 → CLKOUT_33MHZ0 — R463 22-04, C389 100P-04
CKO33_1 AV7 → CLKOUT_33MHZ1 — R468 51-04, C398 10P-04-O
CKO33_2 AU2 → CLKOUT_33MHZ2 — R447 22-04, C380 10P-04-O
AN9 → CLKOUT_33MHZ3
AU5 → CLKOUT_33MHZ4
22 LPCCLK, 20130226 EMI Solution, 201130103 Charles
27 SIO_33M, 15 PCI_CLK2_FB

201130103 Charles
GPIO64 AV8, GPIO65 AT9, GPIO66 AV9 → CLKOUTFLEX0 / GPIO64, CLKOUTFLEX1 / GPIO65, CLKOUTFLEX2 / GPIO66, CLKOUTFLEX3 / GPIO67
27 SIO_48M — R471 44.2-1-04 CKO48 — C402 15P-04 — AU8
+V_1P5_PCH — SR30 7.5K-1-04-X close to PCH — DIFCK_REF R11 → DIFFCLK_BIASREF
R469 10K-04 — REF14IN AR7 → REFCLK14IN

12'0203 (WW05) N6/N7 pin swap
XTAL_25M_PCH_IN N7 → XTAL25_IN
XTAL_25M_PCH_OUT N6 ← XTAL25_OUT
R440 1M-1, X1 X-25M, C358 30P-04, C357 30P-04 — 201130103 Charles

7 OF 11

GND — SC61 1U-16VX7-04-X — +VCC3
Stitching cap for SIO_48M,SIO_33M,LPCCLK
20121106 Pre-A2 to A3
Stitching cap for Intel Recommen
20130523 For EMI (stuff)
20130611 Add -X

PCH1F — LPT_PCH_DT — REV 1

USB3RN0 F20, USB3RP0 G20, USB3TN0 B18, USB3TP0 C18
USB3RN1 G18, USB3RP1 H18, USB3TN1 B15, USB3TP1 B16
USB3RN4 K20, USB3RP4 L20, USB3TN4 D15, USB3TP4 C15
USB3RN5 L18, USB3RP5 K18, USB3TN5 B14, USB3TP5 A14
TACH6 / GPIO70, TACH7 / GPIO71
USB3 / FDILINK

24 USB3_RX_N0, USB3_RX_P0, USB3_TX_N0, USB3_TX_P0
24 USB3_RX_N1, USB3_RX_P1, USB3_TX_N1, USB3_TX_P1
24 USB3_RX_N4, USB3_RX_P4, USB3_TX_N4, USB3_TX_P4
24 USB3_RX_N5, USB3_RX_P5, USB3_TX_N5, USB3_TX_P5

+VCC3 — R519 10K-04, R524 10K-04 — TACH6 / GPIO70 AK28
R520 10K-04, R523 10K-04 — TACH7 / GPIO71 AT34
PCH_GP70, PCH_GP71
GND

Soft strap
GPIO70->USB3_port4
GPIO71->USB3_port5
To determine native function

FDI_RXN0 N1, FDI_RXP0 N2, FDI_RXN1 P3, FDI_RXP1 P2 → FDI_TX_N0/P0/N1/P1 4
FDI_CSYNC L2 → FDI_CSYNC 4
FDI_INT L3 → FDI_INT 4
FDI_RCOMP K2 — FDI_COMP — SR19 7.5K-1-04-X close to PCH → +V_1P5_PCH

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Title	PCH-FDI/DDI/USB3.0/CLK/VGA	
Size: Custom	Document Number: Z87H3-LM	Rev: 1.0..
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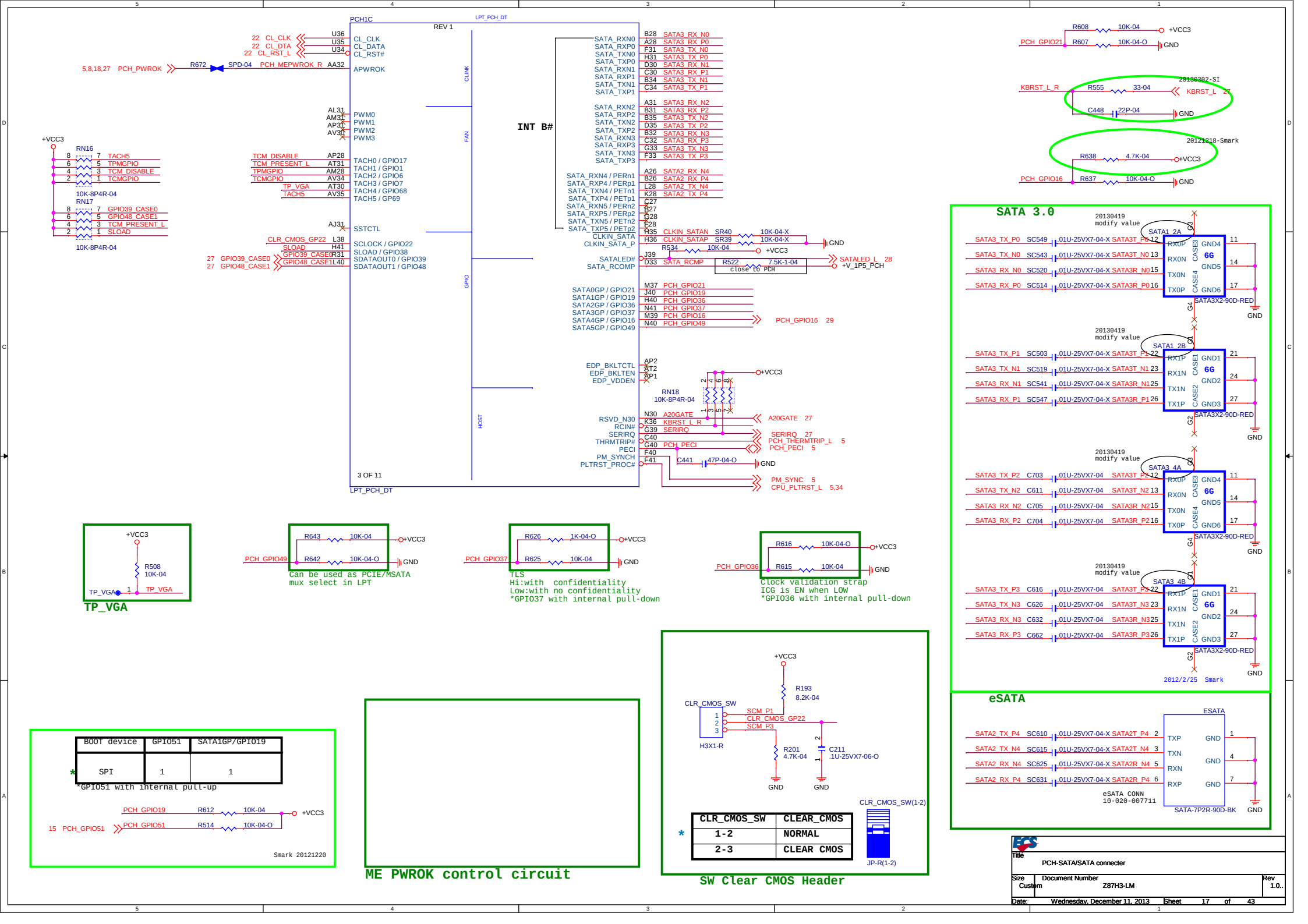
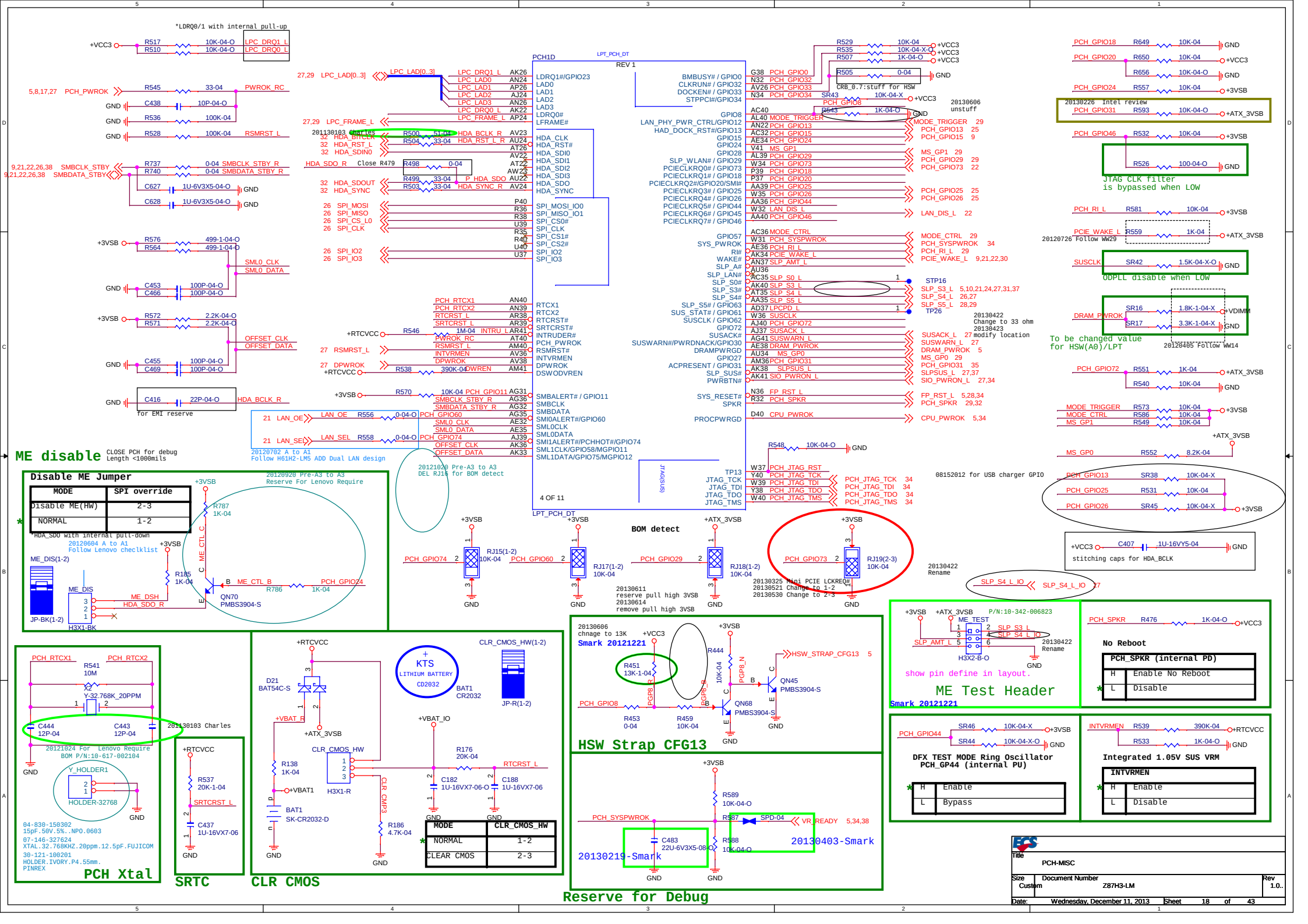

PCH1C
REV 1
LPT_PCH_DT
INT B#
3 OF 11
CLINK
FAN
GPIO
HOST
SATA 3.0
eSATA
TP_VGA
ME PWROK control circuit
SW Clear CMOS Header
TLS
Hi:with confidentiality
Low:with no confidentiality
*GPIO37 with internal pull-down
Clock validation strap
ICG is EN when LOW
*GPIO36 with internal pull-down
Can be used as PCIE/MSATA
mux select in LPT
*GPIO51 with internal pull-up
BOOT device
GPIO51
SATA1GP/GPIO19
SPI
Smark 20121220
CLR_CMOS_SW
CLEAR_CMOS
NORMAL
CLEAR CMOS
JP-R(1-2)
PCH-SATA/SATA connecter
Z87H3-LM
Wednesday, December 11, 2013


*LDRQ0/1 with internal pull-up
PCH1D
LPT_PCH_DT
REV 1
4 OF 11
ME disable
CLOSE PCH for debug
Length <1000mils
Disable ME Jumper
MODE
SPI override
Disable ME(HW)
2-3
NORMAL
1-2
*HDA_SDO with internal pull-down
20120604 A to A1
Follow Lenovo checlklist
20120920 Pre-A3 to A3
Reserve For Lenovo Require
20120702 A to A1
Follow H61H2-LM5 ADD Dual LAN design
20121020 Pre-A3 to A3
DEL RJ16 for BOM detect
BOM detect
20130611
reserve pull high 3VSB
20130614
remove pull high 3VSB
20130325 Mini PCIE LCKREQ#
20130521 Change to 1-2
20130530 Change to 2-3
20130422
Rename
08152012 for USB charger GPIO
20130422 Change to 33 ohm
20130423 modify location
20130606 unstuff
20120726 Follow WW29
20120405 Follow WW14
20130226 Intel review
JTAG CLK filter
is bypassed when LOW
ODPLL disable when LOW
To be changed value
for HSW(A0)/LPT
stitching caps for HDA_BCLK
for EMI reserve
PCH Xtal
SRTC
CLR CMOS
HSW Strap CFG13
Reserve for Debug
ME Test Header
show pin define in layout.
Smark 20121221
20130606
chnage to 13K
20130219-Smark
20130403-Smark
No Reboot
PCH_SPKR (internal PD)
DFX TEST MODE Ring Oscillator
PCH_GP44 (internal PU)
Integrated 1.05V SUS VRM
INTVRMEN
20130103 Charles
Close R479
20121024 For Lenovo Require
BOM P/N:10-617-002104
Title
PCH-MISC
Size
Custom
Document Number
Z87H3-LM
Rev
1.0..
Date:
Wednesday, December 11, 2013
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18
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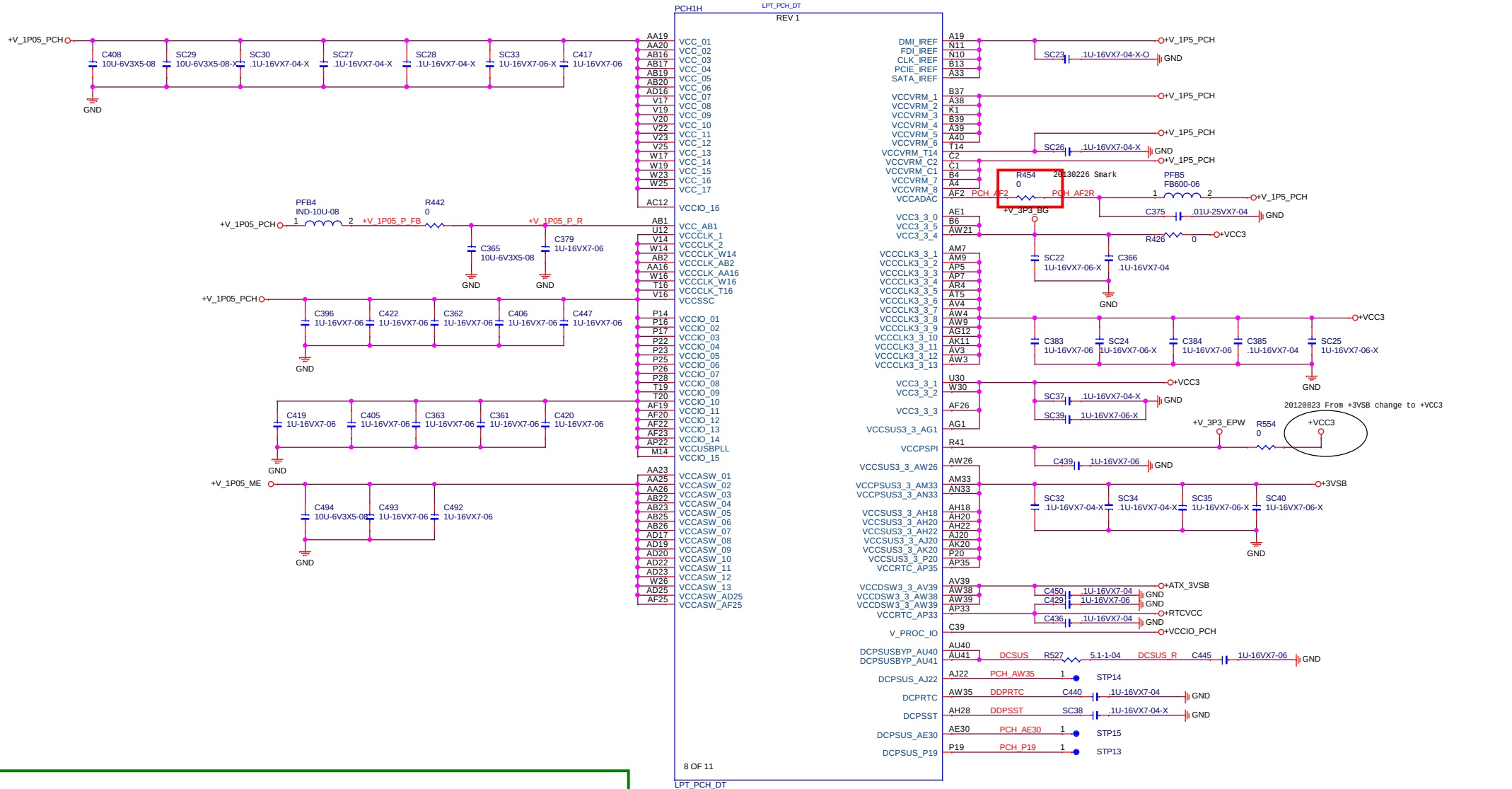
43


PCH1H
LPT_PCH_DT
REV 1
8 OF 11
LPT_PCH_DT
+V_1P05_PCH
C408 10U-6V3X5-08
SC29 10U-6V3X5-08-X
SC30 .1U-16VX7-04-X
SC27 .1U-16VX7-04-X
SC28 .1U-16VX7-04-X
SC33 10U-16VX7-06-X
C417 1U-16VX7-06
GND
PFB4 IND-10U-08
R442 0
+V_1P05_P_FB
+V_1P05_P_R
C365 10U-6V3X5-08
C379 1U-16VX7-06
C396 1U-16VX7-06
C422 1U-16VX7-06
C362 1U-16VX7-06
C406 1U-16VX7-06
C447 1U-16VX7-06
C419 1U-16VX7-06
C405 1U-16VX7-06
C363 1U-16VX7-06
C361 1U-16VX7-06
C420 1U-16VX7-06
+V_1P05_ME
C494 10U-6V3X5-08
C493 1U-16VX7-06
C492 1U-16VX7-06
VCC_01 VCC_02 VCC_03 VCC_04 VCC_05 VCC_06 VCC_07 VCC_08 VCC_09 VCC_10 VCC_11 VCC_12 VCC_13 VCC_14 VCC_15 VCC_16 VCC_17
VCCIO_16
VCC_AB1
VCCCLK_1 VCCCLK_2 VCCCLK_W14 VCCCLK_AB2 VCCCLK_AA16 VCCCLK_W16 VCCCLK_T16
VCCSSC
VCCIO_01 VCCIO_02 VCCIO_03 VCCIO_04 VCCIO_05 VCCIO_06 VCCIO_07 VCCIO_08 VCCIO_09 VCCIO_10 VCCIO_11 VCCIO_12 VCCIO_13 VCCIO_14
VCCUSBPLL
VCCIO_15
VCCASW_01 VCCASW_02 VCCASW_03 VCCASW_04 VCCASW_05 VCCASW_06 VCCASW_07 VCCASW_08 VCCASW_09 VCCASW_10 VCCASW_11 VCCASW_12 VCCASW_13
VCCASW_AD25
VCCASW_AF25
DMI_IREF FDI_IREF CLK_IREF PCIE_IREF SATA_IREF
SC23 .1U-16VX7-04-X-O
VCCVRM_1 VCCVRM_2 VCCVRM_3 VCCVRM_4 VCCVRM_5 VCCVRM_6 VCCVRM_T14 VCCVRM_C2 VCCVRM_C1 VCCVRM_7 VCCVRM_8 VCCADAC
SC26 .1U-16VX7-04-X
R454 0 20130226 Smark
PCH_AF2 PCH_AF2R
PFB5 FB600-06
C375 .01U-25VX7-04
+V_3P3_BG
VCC3_3_0 VCC3_3_5 VCC3_3_4
R426 0
SC22 1U-16VX7-06-X
C366 .1U-16VX7-04
VCCCLK3_3_1 VCCCLK3_3_2 VCCCLK3_3_3 VCCCLK3_3_4 VCCCLK3_3_5 VCCCLK3_3_6 VCCCLK3_3_7 VCCCLK3_3_8 VCCCLK3_3_9 VCCCLK3_3_10 VCCCLK3_3_11 VCCCLK3_3_12 VCCCLK3_3_13
C383 1U-16VX7-06
SC24 1U-16VX7-06-X
C384 1U-16VX7-06
C385 .1U-16VX7-04
SC25 1U-16VX7-06-X
VCC3_3_1 VCC3_3_2
SC37 .1U-16VX7-04-X
SC39 1U-16VX7-06-X
VCC3_3_3
VCCSUS3_3_AG1
20120823 From +3VSB change to +VCC3
+V_3P3_EPW
R554 0
VCCPSPI
C439 1U-16VX7-06
VCCSUS3_3_AW26
VCCPSUS3_3_AM33 VCCPSUS3_3_AN33
SC32 .1U-16VX7-04-X
SC34 .1U-16VX7-04-X
SC35 1U-16VX7-06-X
SC40 1U-16VX7-06-X
VCCSUS3_3_AH18 VCCSUS3_3_AH20 VCCSUS3_3_AH22 VCCSUS3_3_AJ20 VCCSUS3_3_AK20 VCCSUS3_3_P20
VCCRTC_AP35
VCCDSW3_3_AV39 VCCDSW3_3_AW38 VCCDSW3_3_AW39
C450 .1U-16VX7-04
C429 1U-16VX7-06
VCCRTC_AP33
C436 1U-16VX7-04
V_PROC_IO
DCPSUSBYP_AU40 DCPSUSBYP_AU41
DCSUS R527 5.1-1-04 DCSUS_R C445 1U-16VX7-06
DCPSUS_AJ22
PCH_AW35 STP14
DCPRTC
DDPRTC C440 .1U-16VX7-04
DCPSST
DDPSST SC38 .1U-16VX7-04-X
DCPSUS_AE30
PCH_AE30 STP15
DCPSUS_P19
PCH_P19 STP13
+V_1P05_PCH
+V_3P3_BG
+VCC3
+3VSB
+ATX_3VSB
+RTCVCC
+VCCIO_PCH
GND
C427 .1U-16VX7-04
C428 .1U-16VX7-04
C426 1U-16VX7-06
place PCH's east/south corner
GND C452 .1U-16VX7-04 +V_1P05_PCH
GND C451 .1U-16VX7-04 +V_1P05_PCH
+V_1P05_PCH C424 .1U-16VX7-04 GND
caps for CLK/USB3.0/PCIE/DMI/FDI around PCH
LPT EV ENG EXP
Title
PCH-POWER
Size Custom
Document Number Z87H3-LM
Rev 1.0..
Date: Wednesday, December 11, 2013
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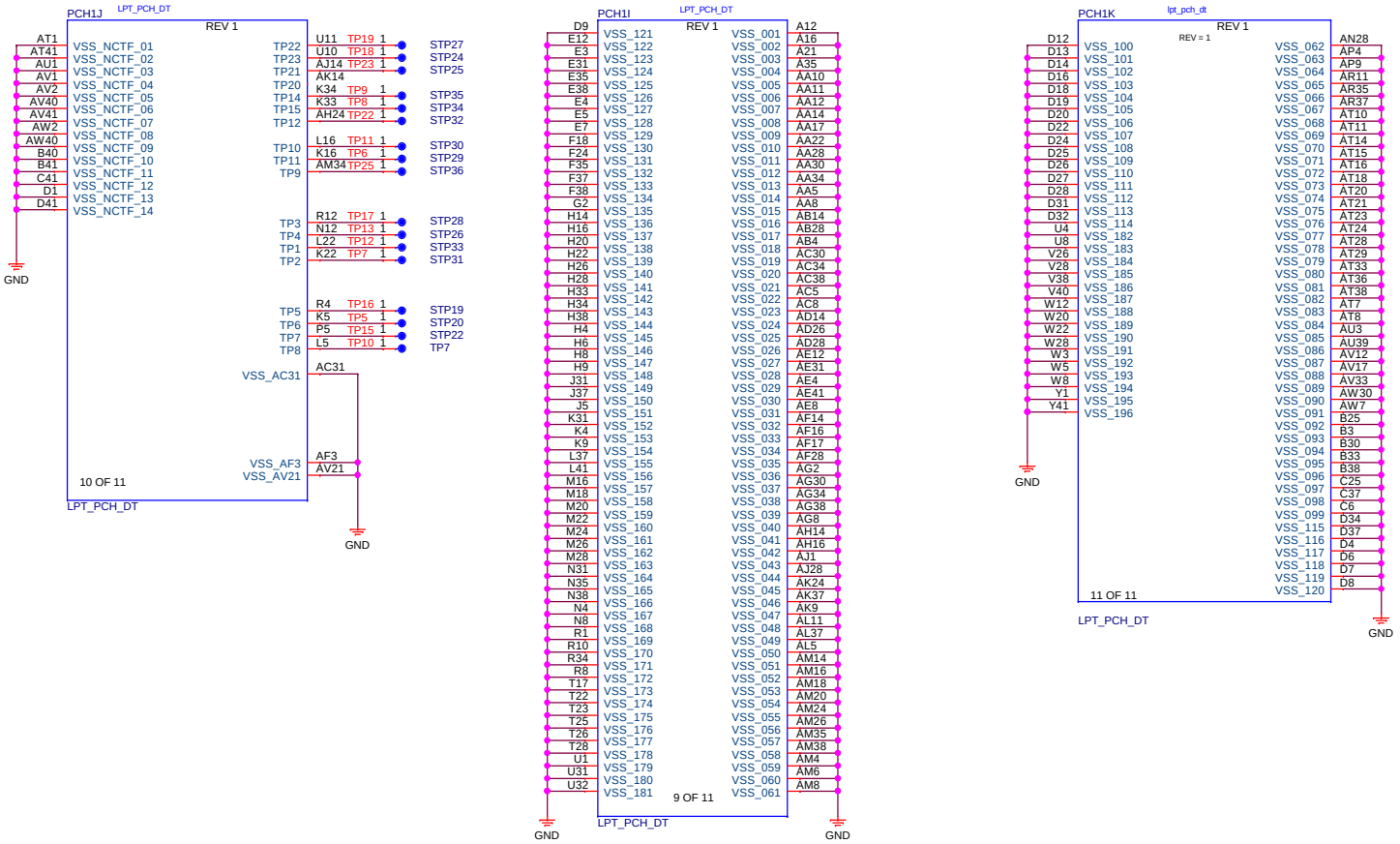


Title	PCH-GND		
Size: Custom	Document Number: Z87H3-LM		Rev: 1.0..
Date: Wednesday, December 11, 2013	Sheet 20 of 43		

9,18,22,26,38 SMBCLK_STBY
9,18,22,26,38 SMBDATA_STBY
9,18,22,30 PCIE_WAKE_L

SMBCLK_STBY
SMBDATA_STBY
PCIE_WAKE_L

16 PEX1_100M_P
16 PEX1_100M_N
PEX1_100M_P
PEX1_100M_N

16 PEX2_100M_P
16 PEX2_100M_N
PEX2_100M_P
PEX2_100M_N

15 PEX1_TX_P2
15 PEX1_TX_N2
PEX1_TX_P2
PEX1_TX_N2

15 PEX1_RX_P2
15 PEX1_RX_N2
PEX1_RX_P2
PEX1_RX_N2

15 PEX1_TX_P4
15 PEX1_TX_N4
PEX1_TX_P4
PEX1_TX_N4

15 PEX1_RX_P4
15 PEX1_RX_N4
PEX1_RX_P4
PEX1_RX_N4

27,28,34 FP_PWRBTN_L
18 LAN_OE
18 LAN_SEL
5,10,18,24,27,31,37 SLP_S3_L
FP_PWRBTN_L
LAN_OE
LAN_SEL
SLP_S3_L

+3VSB +VCC3 +12V

PCIE1X_1

B1	12V_A	PRSNT1*	A1
B2	12V_B	12V_C	A2
B3	12V_D	12V_E	A3
B4	GND1	GND2	A4
B5	SMCLK	JTAG2	A5
B6	SMDAT	JTAG3	A6
B7	GND3	JTAG4	A7
B8	3.3V_A	JTAG5	A8
B9	JTAG1	3.3V_B	A9
B10	3.3VAUX	3.3V_C	A10
B11	WAKE#	PWRGD	A11
2	NC2	KEY	1
B12	RSVD_A	NC1	A12
B13	GND5	GND4	A13
B14	HSOP0_H	REFCLK_+_H	A14
B15	HSON0_L	REFCLK_-_L	A15
B16	GND7	GND6	A16
B17	PRSNT2#	HSIP0_H	A17
B18	GND8	HSIN0_L	A18
		GND9	

PCIEX1-BK

SMBCLK_STBY
SMBDATA_STBY
PCIE_WAKE_L
PEX1_TX_P2 C186 .1U-16VX7-04 HSODP2
PEX1_TX_N2 C185 .1U-16VX7-04 HSODN2
PEX1_RST_L
PEX1_100M_P
PEX1_100M_N
PEX1_RX_P2
PEX1_RX_N2

+12V +VCC3

20120702 A to A1
Follow H61H2-LM5 ADD Dual LAN design

PCIE_PB1 R146 0-04-O FP_PWRBTN_L
PCIE_OE1 R149 0-04-O LAN_OE
LAN_SEL
PCIE_S3_1 R155 0-04-O SLP_S3_L

GND

close to PCIE*1

22,27 PCIRST1_X1_L
R177 33-04 PEX1_RST_L
C181 10P-04-O
R174 33-04 PEX2_RST_L
C179 10P-04-O
GND

+3VSB +VCC3 +12V

PCIE1X_2

B1	12V_A	PRSNT1*	A1
B2	12V_B	12V_C	A2
B3	12V_D	12V_E	A3
B4	GND1	GND2	A4
B5	SMCLK	JTAG2	A5
B6	SMDAT	JTAG3	A6
B7	GND3	JTAG4	A7
B8	3.3V_A	JTAG5	A8
B9	JTAG1	3.3V_B	A9
B10	3.3VAUX	3.3V_C	A10
B11	WAKE#	PWRGD	A11
2	NC2	KEY	1
B12	RSVD_A	NC1	A12
B13	GND5	GND4	A13
B14	HSOP0_H	REFCLK_+_H	A14
B15	HSON0_L	REFCLK_-_L	A15
B16	GND7	GND6	A16
B17	PRSNT2#	HSIP0_H	A17
B18	GND8	HSIN0_L	A18
		GND9	

PCIEX1-BK

SMBCLK_STBY
SMBDATA_STBY
PCIE_WAKE_L
PEX1_TX_P4 C189 .1U-16VX7-04 HSODP4
PEX1_TX_N4 C192 .1U-16VX7-04 HSODN4
PEX2_RST_L
PEX2_100M_P
PEX2_100M_N
PEX1_RX_P4
PEX1_RX_N4

+12V +VCC3

20120702 A to A1
Follow H61H2-LM5 ADD Dual LAN design

PCIE_PB2 R142 0-04-O FP_PWRBTN_L
PCIE_OE2 R147 0-04-O LAN_OE
LAN_SEL
PCIE_S3_2 R154 0-04-O SLP_S3_L

GND

+VCC3 +3VSB +12V

C163 .1U-16VY5-04
C161 .1U-16VY5-04
C170 .1U-16VY5-04-O
C143 .1U-25VX5-04
C134 .1U-25VX5-04

Close PCIE1X_1 Slot

PCIE1X_1 Decoupling Cap

20121107 Pre-A3 to A3
form Reserve to Add
For Lenovo Require

+VCC3 +3VSB +12V

C164 .1U-16VY5-04
C159 .1U-16VY5-04
C169 .1U-16VY5-04-O
C133 .1U-25VX5-04
C148 .1U-25VX5-04

Close PCIE1X_2 Slot

PCIE1X_2 Decoupling Cap

20121107 Pre-A3 to A3
form Reserve to Add
For Lenovo Require

GND SC51 .1U-16VX7-04-X-O +VCC3
GND SC52 .1U-16VX7-04-X-O +VCC3
GND SC54 .1U-16VX7-04-X-O +VCC3
GND SC48 .1U-16VX7-04-X-O +VCC3
GND SC53 .1U-16VX7-04-X-O +VCC3
GND C731 .1U-16VX7-04 +VCC3

Stitching cap for PCIe and Clock

Smark 2012-1227

+12V
EC18 470U-16DE
+VCC3
EC24 1000U-6V3LD8H11E
GND

Between PCIE1X_1 Slot & PCIE1X_2 Slot

Title	PCIE1X*2		
Size	Custom	Document Number Z87H3-LM	Rev 1.0..
Date:	Wednesday, December 11, 2013	Sheet 21 of 43	

MINI_PCIE

16 WLAN_100M_N → WLAN_100M_N
16 WLAN_100M_P → WLAN_100M_P
18 LAN_DIS_L → LAN_DIS_L
15 M_PEX1_RX_N6 → M_PEX1_RX_N6
15 M_PEX1_RX_P6 → M_PEX1_RX_P6
15 M_PEX1_TX_N6 → M_PEX1_TX_N6
15 M_PEX1_TX_P6 → M_PEX1_TX_P6
9,18,21,26,38 SMBCLK_STBY → SMBCLK_STBY
9,18,21,26,38 SMBDATA_STBY → SMBDATA_STBY
9,18,21,30 PCIE_WAKE_L → PCIE_WAKE_L
18 PCH_GPIO73 → PCH_GPIO73

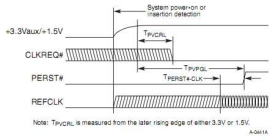


Figure 3-1: Power-Up CLKREQ# Timing

Table 3-2: Power-Up CLKREQ# Timings

Symbol	Parameter	Min	Max	Units
T_{PVCRL}	Power Valid to CLKREQ# Output active		100	µs
T_{PVPGL}	Power Valid to PERST# Input inactive	1		ms
$T_{PERST\#-CLK}$	REFCLK stable before PERST# inactive	100		µs

+3VSB **A4 Smark-20130111**
20121023 Pre-A3 to A3 For USB stitching cap
15 USB_OC3_L → USB_OC3_L → R225 10K-04
20121023 Pre-A3 to A3 DEL USB OC debug

GND C316 .1U-16VY5-04 +VCC3
Stitching cap for MINI_PCIE Smark 20121228

15 USB_P6 → USB_P6
15 USB_N6 → USB_N6
RN22 0-8P4R
USB_P6_R
USB_N6_R
Smark 20121224 SWAP

U18 AZC099-04S-R7G-S-O
+V_3P3_MINI
USB_P6_R
USB_N6_R
C225 .1U-16VY5-04-O
GND

close to Mini-PCIE
21,27 PCIRST1_X1_L → R230 33-04 WLAN_RST_L
C234 10P-04-O
GND

BOSS1 BS-M2.5XD4.5XH4.2
BOSS2 BS-M2.5XD4.5XH4.2
20130226 Smark

23-765-250445
BOSS.WI-P-G51108A.M2*D4.5*H4.5mm..
CU..SN..HF.LEAD-FREE.GREAT GOLD

20120823 for Lenovo require
20130521 Unstuff
PCH_GPIO73 R200 0-04-O

MINI_PCIE
PCIE_WAKE_L
MINI_CLKREQ
WLAN_100M_N
WLAN_100M_P
M_PEX1_RX_N6
M_PEX1_RX_P6
M_PEX1_TX_N6 M_PEX1_TX_N6_R
M_PEX1_TX_P6 C209 .1U-16VX7-04 M_PEX1_TX_P6_R
C208 .1U-16VX7-04
17 CL_CLK → R199 0-04-O MCL_CLK
17 CL_DTA → R198 0-04-O MCL_DTA
17 CL_RST_L → R197 0-04-O MCL_RSTL
20120425 Follow CRB 1.0 UPDATE

Mechanical Key

MINI-PCI-52P-I
mini PCIE slot
P/N:10-456-052067

GND C130 .1U-25VX7-04-O +12V
Stitching cap for CL_CLK Smark 20121230

+V_3P3_MINI
C231 .1U-16VY5-04 C227 .1U-16VY5-04 C233 .1U-16VY5-04-O C207 10U-6V3X5-08
R495 100K
GND
20130426 Add resistor 20130622 Stuff

20121103 Pre-A3 to A3 For Lenovo require
Lenovo 2012-1227
+3VSB R544 10K-04-O
+3VSB R595 10K-04
20130530 Add R595
20130530 Unstuff
R231 0-04-O
WLAN_DIS_L
WLAN_RST_L
LAN_DIS_L
SMBCLK_STBY
SMBDATA_STBY
USB_N6_R
USB_P6_R

+V_1P5_MINI Imax:1A
C390 10U-6V3X5-08-O
C232 .1U-16VY5-04-O
C228 .1U-16VY5-04-O
20121030 Pre-A3 to A3 For Layout change
GND

DP

20120911 Pre-A3 to A3 ADD DP function for Lenovo spec

16 DP_HPD → DP_HPD
16 DDIC_AUXP → C659 .1U-16VX7-04-O → DDIC_AUXP_C
16 DDIC_AUXN → C658 .1U-16VX7-04-O → DDIC_AUXN_C
16 DDIC_CTRLCLK → DDIC_CTRLCLK
16 DDIC_CTRLDATA → DDIC_CTRLDATA

20121017 Pre-A3 to A3 Debug for Dongle Detect
+12V R776 4.7K-04-O
20130521 Change to 4.7K
+12V R777 4.7K-04-O
20130521 Change to 4.7K
Dongle_DP
Dongle_HDMI
12'0113 (WW02) swap DP/HDMI detect
QN66 QN7002-T1B-AT-S-O
QN67 QN7002-T1B-AT-S-O
HDMI_DET
R778 1M-04-O
GND

Dongle_HDMI
QN65 QN7002-T1B-AT-S-O
DDIC_CTRLCLK R773 2.2K-04-O +DP_VCC3
DDIC_AUX_P
DDIC_AUX_N
QN64 QN7002-T1B-AT-S-O
R771 2.2K-04-O +DP_VCC3
DDIC_CTRLDATA

Dongle_DP
DDIC_AUX_P R774 100K-04-O GND
QN63 QN7002-T1B-AT-S-O
12'0203 (WW05) change pull-down location
DDIC_AUXP_C
DDIC_AUX_N
R772 100K-04-O +DP_VCC3
QN62 QN7002-T1B-AT-S-O
12'0203 (WW05) change pull-up location
DDIC_AUXN_C

20130611 Remove DP components

R780 100K-04-O +VCC GND
QN69 APM2306AC-TRG-S-O
DP_HPD
R781 100K-04-O
C660 6800P-04-O
DP_HPD_BF
GND

+12V R784 10K-04-O
DP_ENR
+VCC3
+DP_VCC3
+DPVCC_F
F2 FUSE-1.1A-18-O
QSW9 APM2306AC-TRG-S-O
R783 0-08-O

DDIC_P0_R
DDIC_N0_R
DDIC_P1_R
DDIC_N1_R
DDIC_P2_R
DDIC_N2_R
DDIC_P3_R
DDIC_N3_R
HDMI_DET
DDIC_AUX_P
DDIC_AUX_N
R785 0-04-O DP_HPD_CNN
R782 0-08-O +DP_PWR
C661 .1U-04-O
GND
DP
LANE0P LANE0N LANE1P LANE1N LANE2P LANE2N LANE3P LANE3N GND1 GND2 GND3 GND4 GND5 GND6 GND7 AUXN AUXP HPD RTN_PWR PWR GND8 GND9 GND10 GND11
DISPLAY-20P-O

P/N :10-188-020080
CONN.DISPLAY..20P SMD.....15u...../BLACK
.3VD51207-H7JJ...HF.LEAD-FREE.FOXCONN

Smark 20130220

RN27 0-8P4R-O
4 DDIC_TX_P2 → C655 .1U-16VX7-04-O → DDIC_P2_C
4 DDIC_TX_N2 → C654 .1U-16VX7-04-O → DDIC_N2_C
4 DDIC_TX_P3 → C656 .1U-16VX7-04-O → DDIC_P3_C
4 DDIC_TX_N3 → C391 .1U-16VX7-04-O → DDIC_N3_C
DDIC_P2_R
DDIC_N2_R
DDIC_P3_R
DDIC_N3_R

CMK18 CMK-90-08-HDMI-O
DDIC_P2_C DDIC_N2_C → DDIC_P2_R DDIC_N2_R
CMK19 CMK-90-08-HDMI-O
DDIC_P3_C DDIC_N3_C → DDIC_P3_R DDIC_N3_R

U36 AZ1045-04F-S-O
DDIC_P2_R DDIC_N2_R DDIC_P3_R DDIC_N3_R
GND

U35 AZC099-04S-R7G-S-O
DDIC_AUX_N DDIC_AUX_P DP_HPD_CNN
+DP_PWR
GND

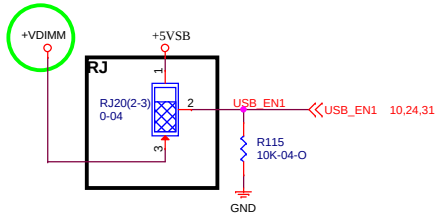
RN26 0-8P4R-O
4 DDIC_TX_N1 → C392 .1U-16VX7-04-O → DDIC_N1_C
4 DDIC_TX_P1 → C338 .1U-16VX7-04-O → DDIC_P1_C
4 DDIC_TX_N0 → C657 .1U-16VX7-04-O → DDIC_N0_C
4 DDIC_TX_P0 → C653 .1U-16VX7-04-O → DDIC_P0_C
DDIC_N1_R
DDIC_P1_R
DDIC_N0_R
DDIC_P0_R

CMK20 CMK-90-08-HDMI-O
DDIC_N1_C DDIC_P1_C → DDIC_N1_R DDIC_P1_R
CMK21 CMK-90-08-HDMI-O
DDIC_N0_C DDIC_P0_C → DDIC_N0_R DDIC_P0_R

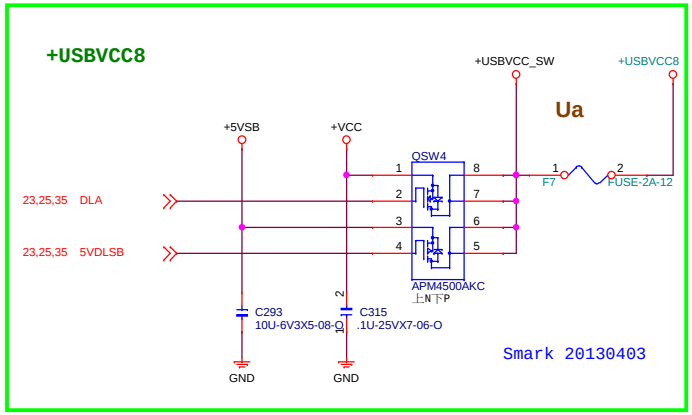
U37 AZ1045-04F-S-O
DDIC_N1_R DDIC_P1_R DDIC_N0_R DDIC_P0_R
GND

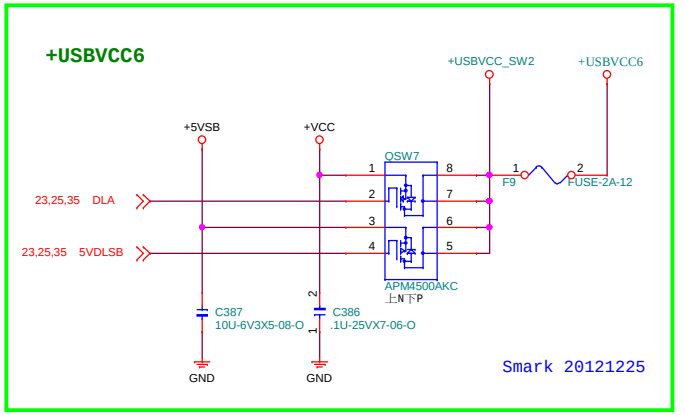
Title	MINI PCIE/DP		
Size: Custom	Document Number: Z87H3-LM		Rev: 1.0
Date: Wednesday, December 11, 2013	Sheet 22 of 43		

	uP7550 Enable use	RJ	S4/S5 USB_5V_DUAL	
*	+VDIMM	0ohm (2-3)	0 Volt	Lenovo S4/S5 w/o USB_5V_DUAL
	5VSB	0ohm (1-2)	5 Volt	

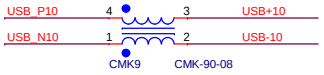


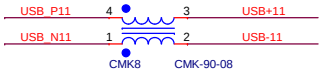
2012/12/11 Smark

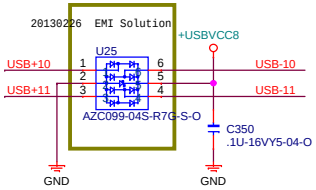


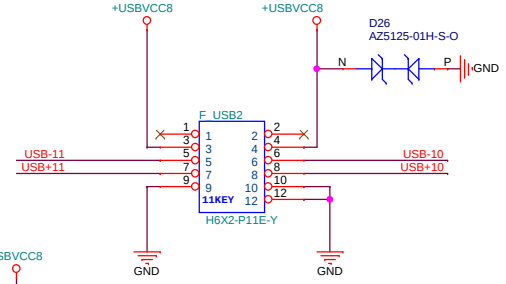


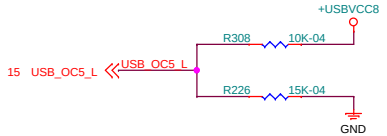
USB2.0 header

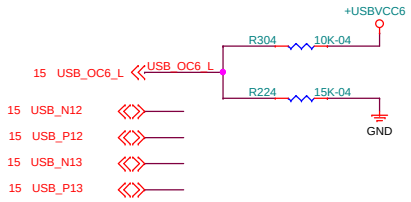




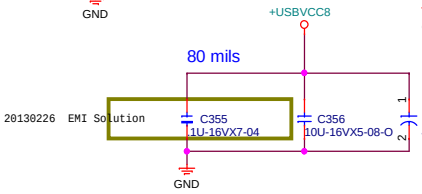


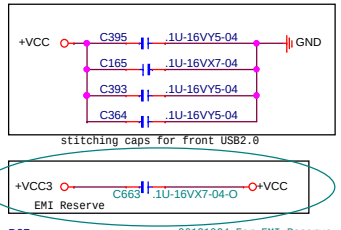




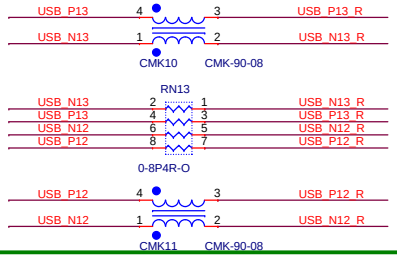


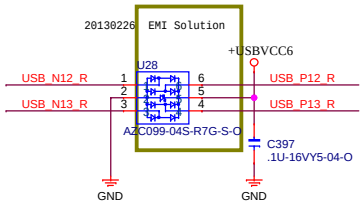
20121029 Pre-A3 to A3
For Lenovo Require

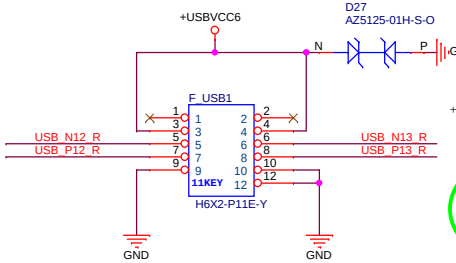


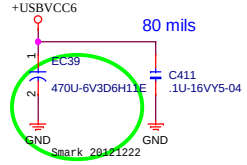


20121024 For EMI Reserve









Title	USB2.0 Header		
Size: Custom	Document Number: Z87H3-LM		Rev: 1.0..
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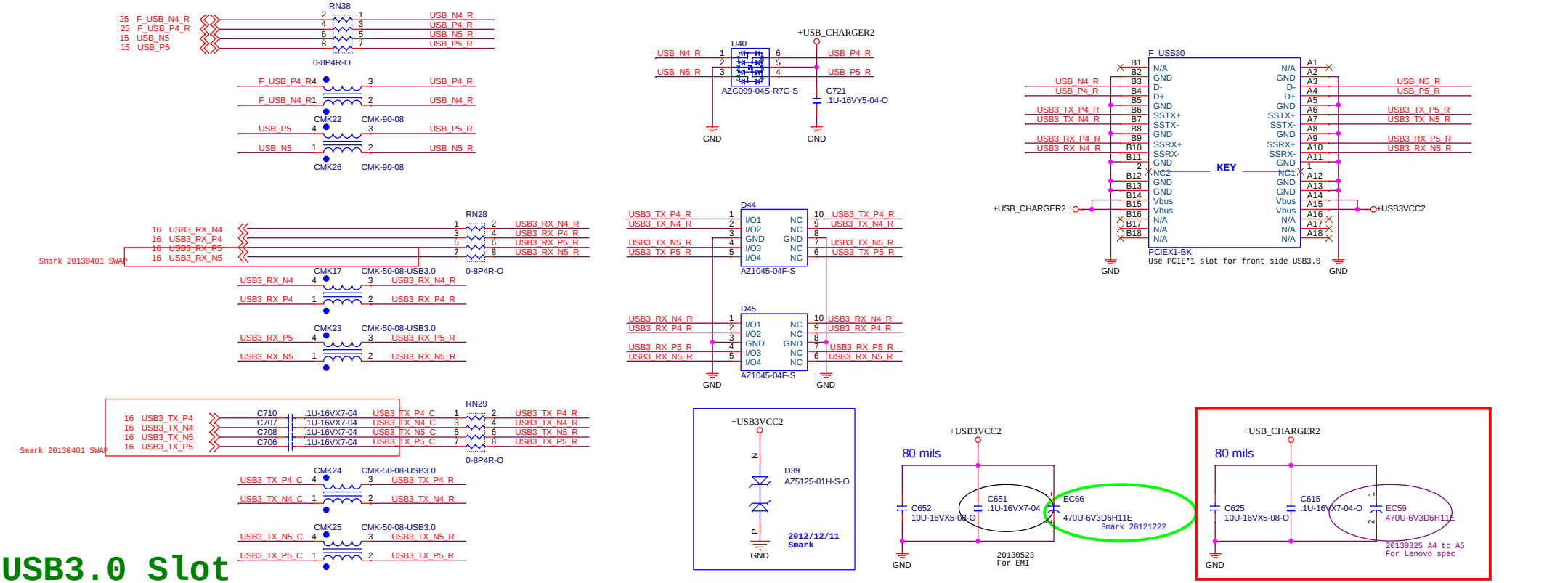
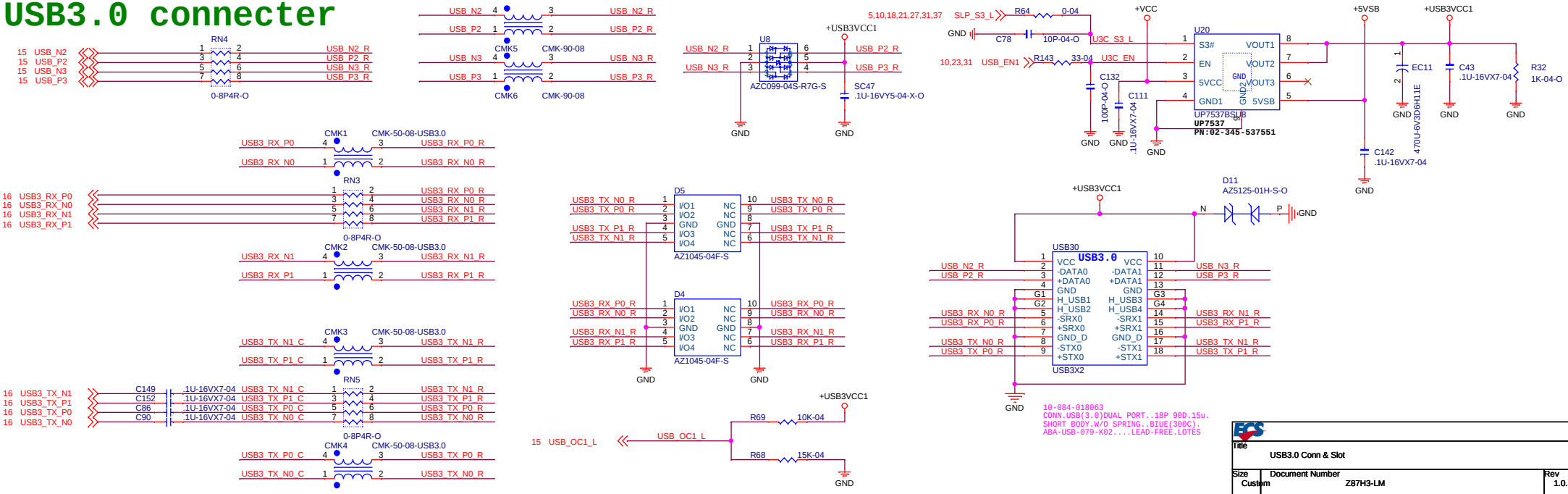
USB3.0 Slot

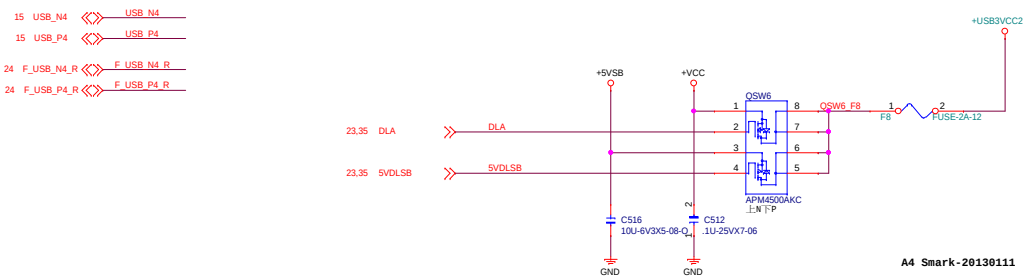


USB3.0 connecter



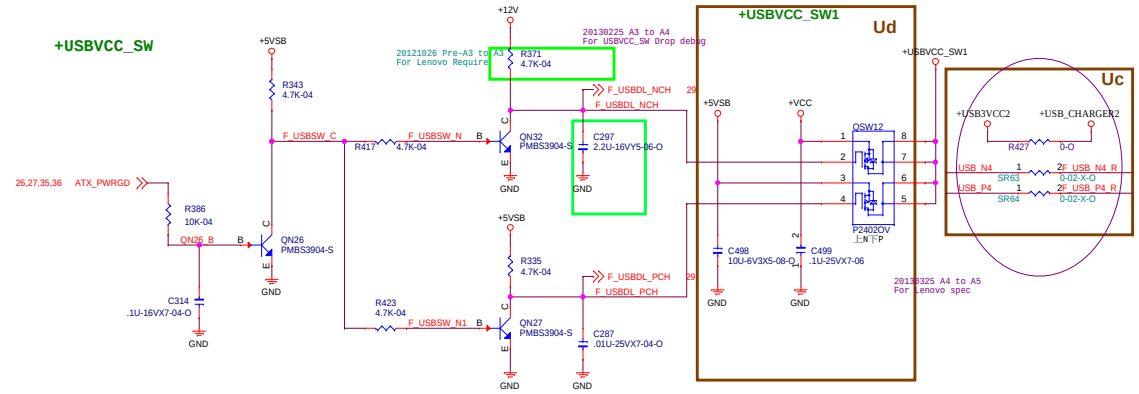
Title	USB3.0 Conn & Slot	
Size: Custom	Document Number: Z87H3-LM	Rev: 1.0..
Date: Wednesday, December 11, 2013	Sheet 24 of 43	

+USB3VCC2



A4 Smark-20130111

+USBVCC_SW



+USBVCC_SW1 Ud

Uc

USB3.0 Slot of USB2.0 Power Option

Status	Target: USB Charger	Target: Non-USB Charger
S0,S1	+VCC(Imax:0.9A)	+VCC
S3	+5VSB(Imax:0.9A)	+5VSB
S4,S5	+5VSB(Imax:1.6A)	0
Uc	X	V
Ud	V	X

20130606
modify current

USB Charger GPIO

18 PCH_GPIO13 — PCH_GPIO13
18 PCH_GPIO25 — PCH_GPIO25
18 PCH_GPIO26 — PCH_GPIO26

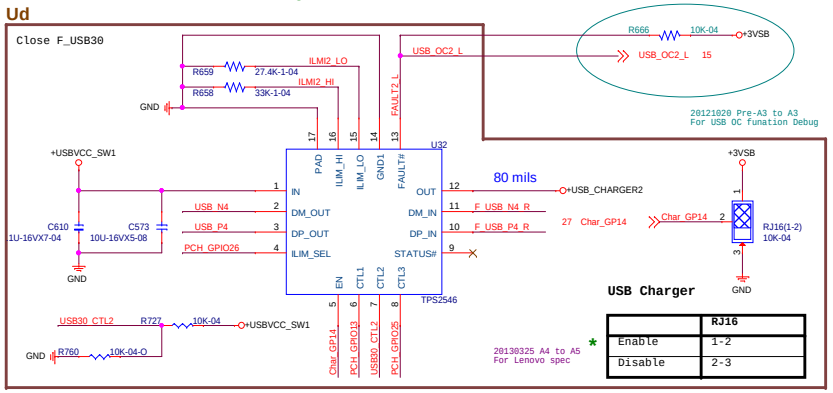
TPS2543 Control Mode

Input Logic Level				Control Mode	
GPIO13	CTL2	GPIO25	GPIO26	System Status	Charging Mode
0	1	1	0	S4/S5	DCP
1	1	1	0	S0/S3	SDP

20130606 modify to 1
20121031Pre-A3 to A3
Change S0 to SDP Mode for Lenovo spec

USB3.0 Slot of USB2.0 Charger Circuit

Ud



USB Charger

	RJ16
Enable	1-2
Disable	2-3

Title	USB Charger	
Size C	Document Number Z87H3-LM	Rev 1.0..
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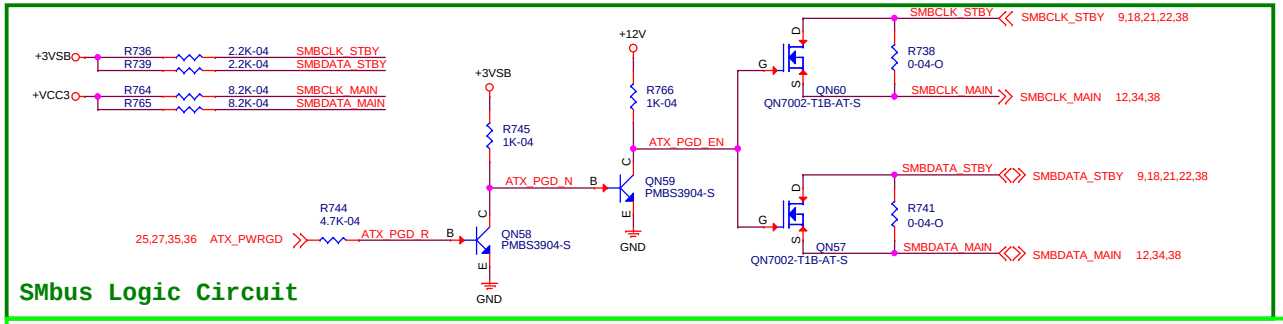
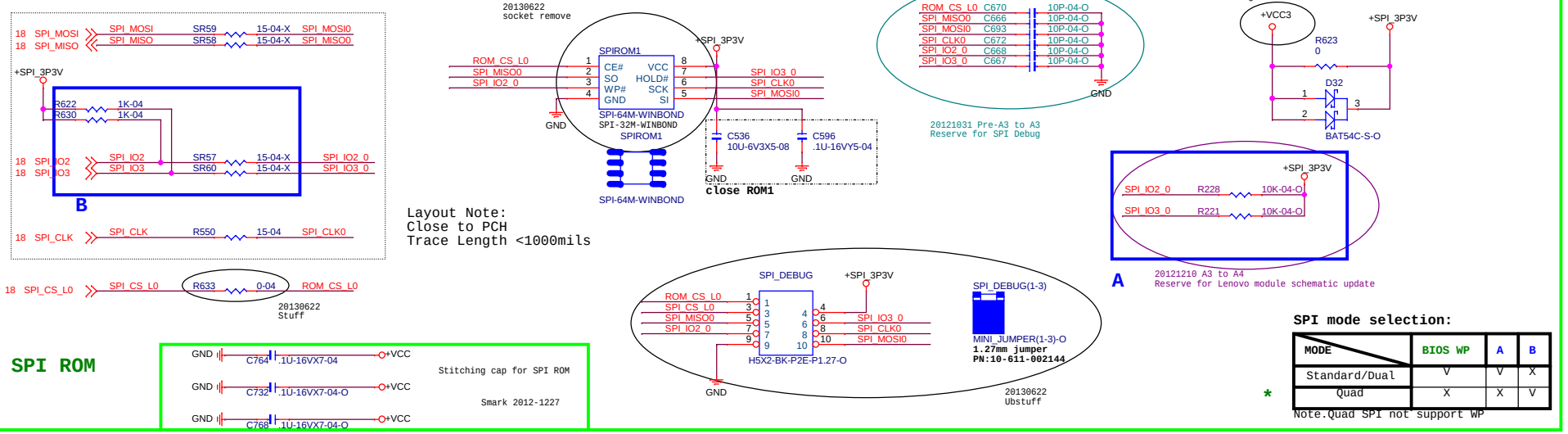
SMbus Logic Circuit



SPI ROM

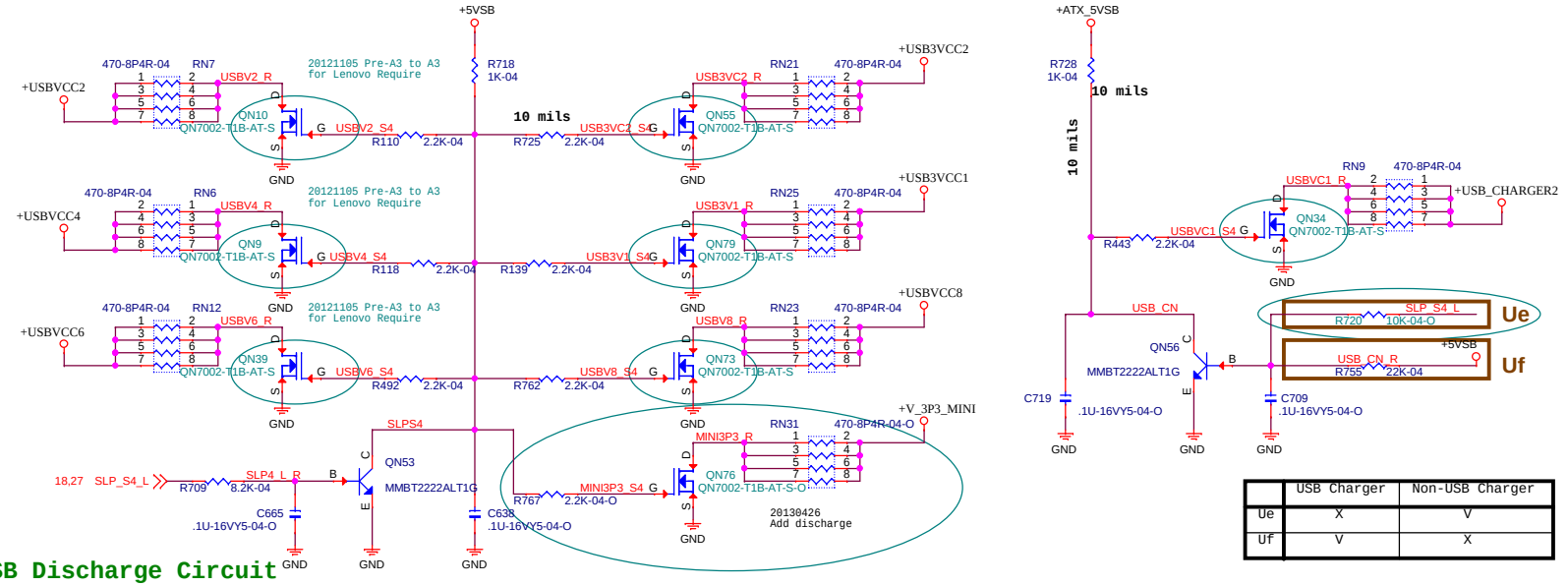


SPI mode selection:

MODE	BIOS WP	A	B
Standard/Dual	V	V	X
Quad	X	X	V

* Note.Quad SPI not support WP

USB Discharge Circuit



	USB Charger	Non-USB Charger
Ue	X	V
Uf	V	X

Title	SPI/SMbus	
Size: Custom	Document Number: Z87H3-LM	Rev: 1.0..
Date: Wednesday, December 11, 2013	Sheet 26 of 43	

* default

	IT8612E/CX IT8602E/DX	IT8602E/EX
RJ21	1-2	2-3
RJ22	2-3	1-2
RJ23	1-2	2-3
RJ24	1-2	2-3
RJ27	1-2	2-3
RJ28	1-2	2-3
Zb	V	X

COM1 / FAN / LPC / IF / FCH / IF / Intel DSW

SIO 64-LQFP IT8602E/DX P/N :01-278-612090

Smark 20121221

DPWROK Timimg

Case open circuit

Thermal Sense

Power-On Strapping

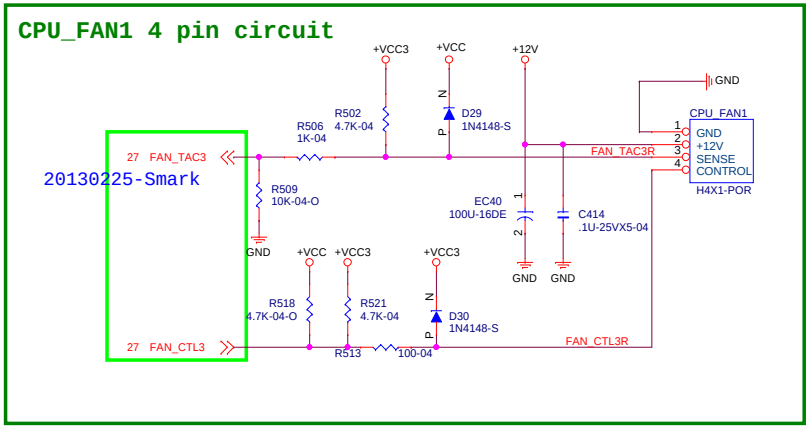
	Symbol	Value	Description
JP1 Pin-24	DSW_EUP_SEL	1	EUP
		0 *	DSW
JP2 Pin-56	WDT_EN	1 *	Disable WDT to reset PWROK
		0	Enable WDT to reset PWROK
JP3 Pin-58	FAN_CTL_SEL	1 *	EC Index 63h/6Bh/73h is 80h
		0	EC Index 63h/6Bh/73h is 00h
JP4 Pin-60	K8PWR_EN	1 *	Disable K8 Power Sequence
		0	Enable K8 Power Sequence

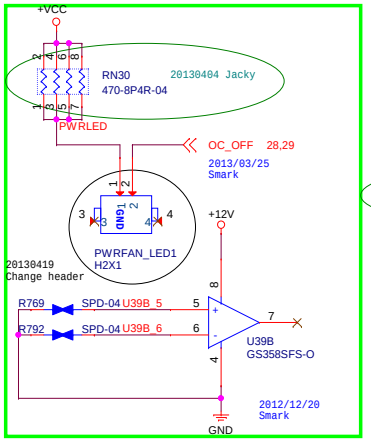
Note:
If 75232 is connected, please use 680 ohm to be the pull down resistor value. Since powered by 12V, 75232 has a very strong internal pull-up. It is hard to be pulled low. (Please see specification for detail of power on strapping setting)

NOTE:
If without use these pins, Please pull-up.
Don't let it floating.
Pin/6/24/28/30/33/35/38~41/50/56/58/60

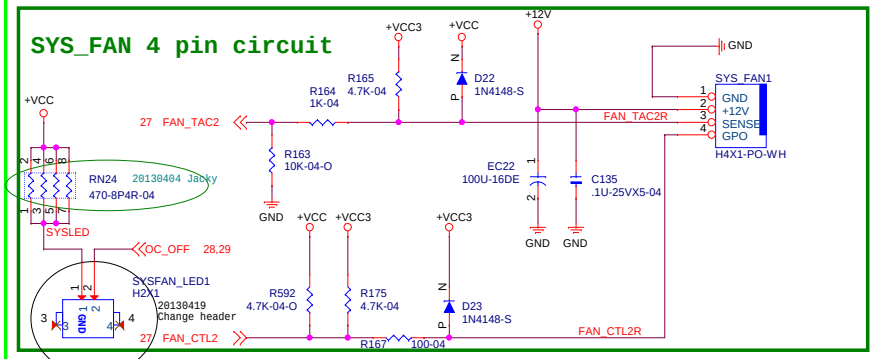
Title	IT8602E/DX
Size	C
Document Number	Z87H3-LM
Rev	1.0..
Date:	Wednesday, December 11, 2013
Sheet	27 of 43

CPU_FAN1 4 pin circuit

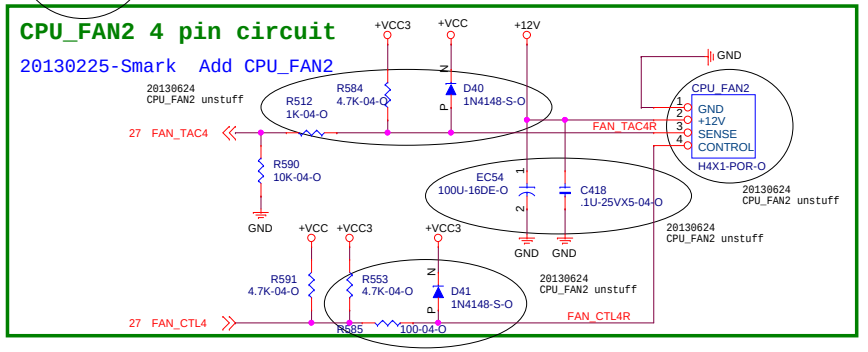




SYS_FAN 4 pin circuit

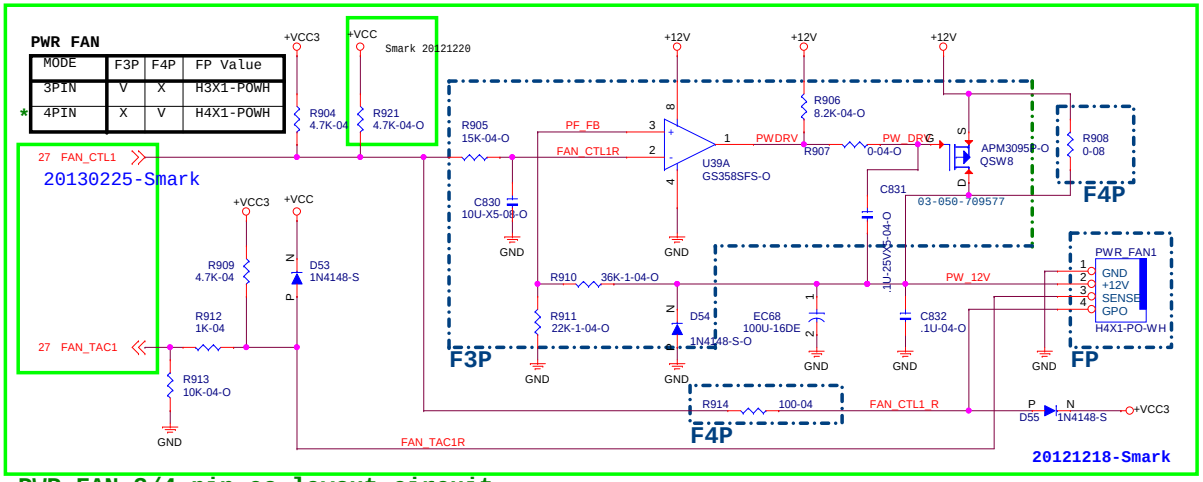


CPU_FAN2 4 pin circuit

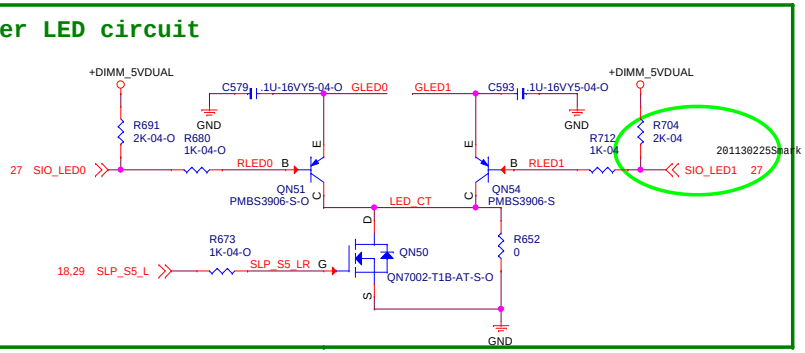


PWR_FAN 3/4 pin co-layout circuit

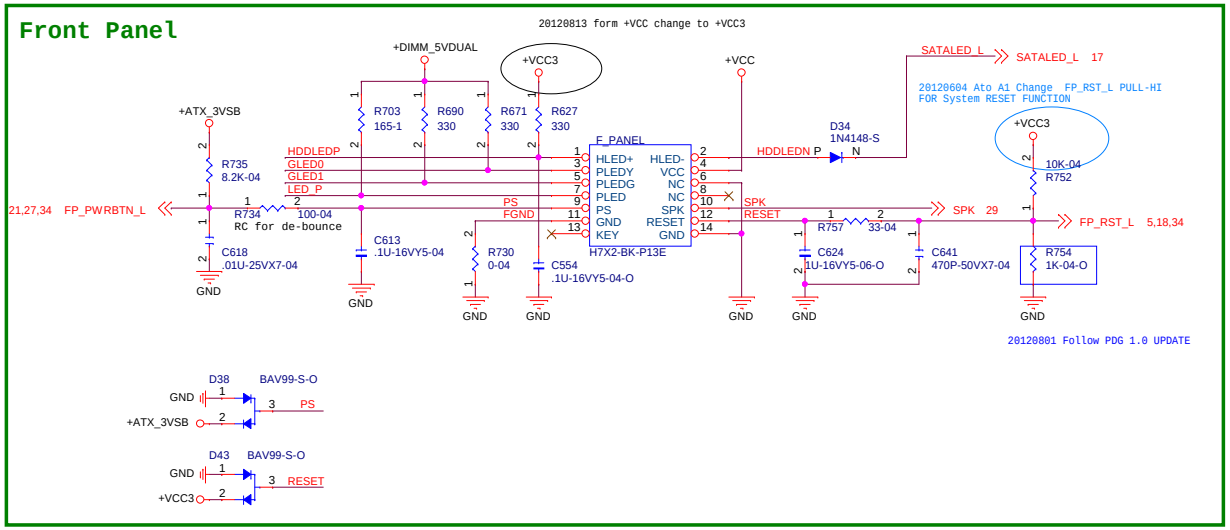
PWR FAN			
MODE	F3P	F4P	FP Value
3PIN	V	X	H3X1-POWH
* 4PIN	X	V	H4X1-POWH



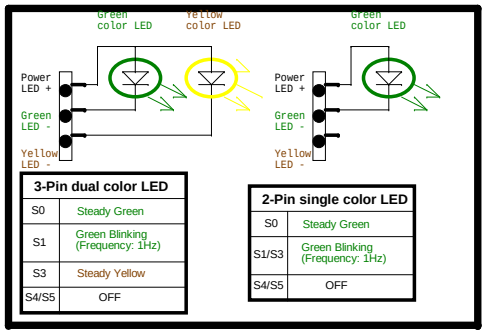
Power LED circuit



Front Panel



Lenovo LED線路阻值330-06	
Source Voltage (V)	5
LED Forward Voltage (V)	1.8
BJT Vce(s) (V)	0
Pull Up Resistor (ohm)	330
LED Forward Current (A)	0.009697
Pull Up Resistor Power (R<1/10 W)	0.03103
LED Power (W)	0.017455



3-Pin dual color LED	
S0	Steady Green
S1	Green Blinking (Frequency: 1Hz)
S3	Steady Yellow
S4/S5	OFF

2-Pin single color LED	
S0	Steady Green
S1/S3	Green Blinking (Frequency: 1Hz)
S4/S5	OFF

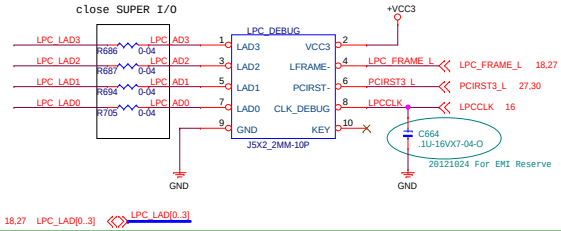
ECS

Title: FAN/PS2/Buzzer/F_Panel

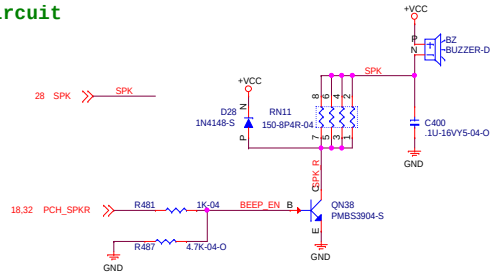
Size: Custom | Document Number: Z87H3-LM | Rev: 1.0..

Date: Wednesday, December 11, 2013 | Sheet 28 of 43

LPC_DEBUG Header Circuit



Buzzer circuit

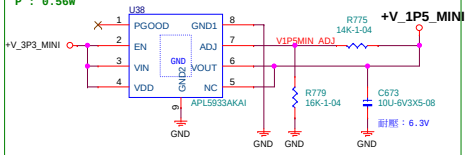


+V_1P5_MINI

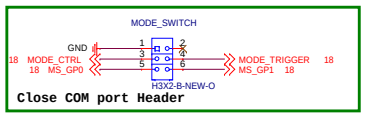
Vout : 1.5V
Imax : 1A
P : 0.56W

20121107 Pre-A3 to A3
to LDO for Lenovo Require

02-344-933700

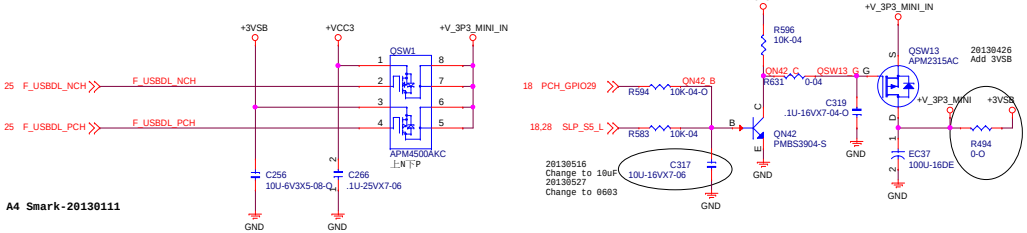


MODE_SWITCH Header



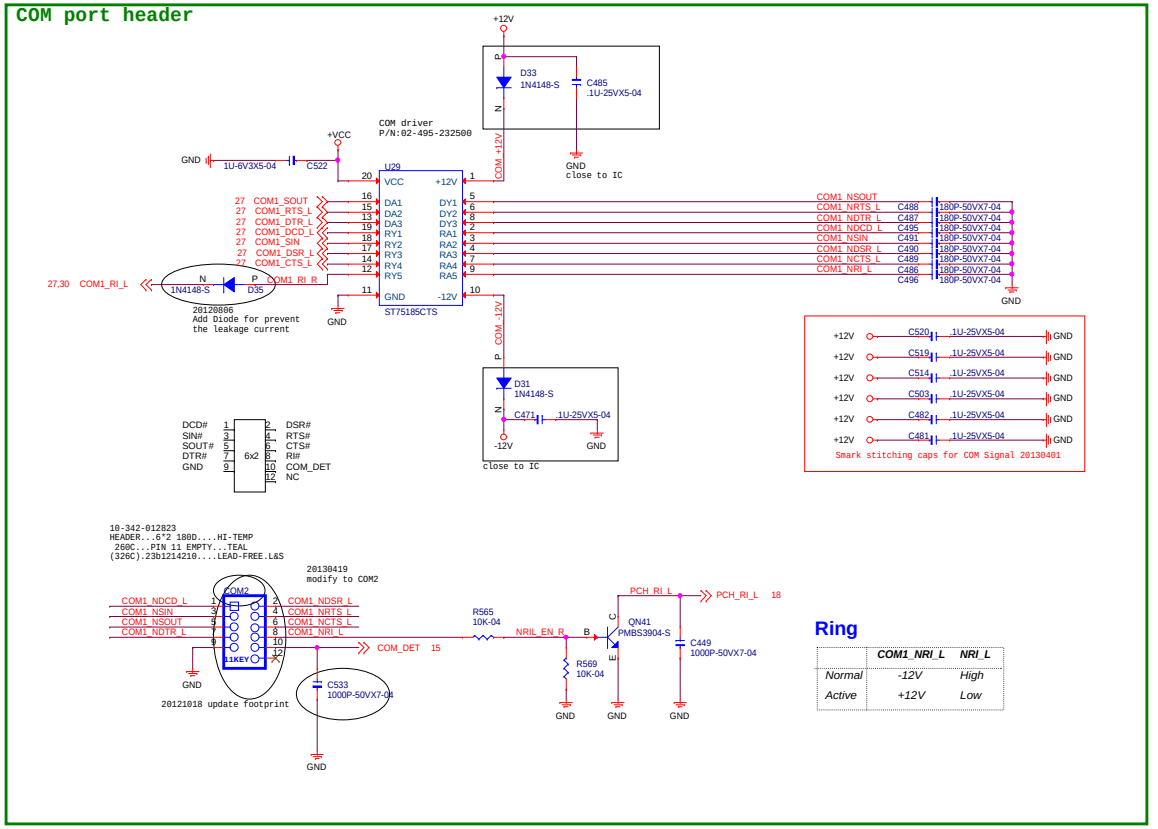
Close COM port Header

+V_3P3_MINI



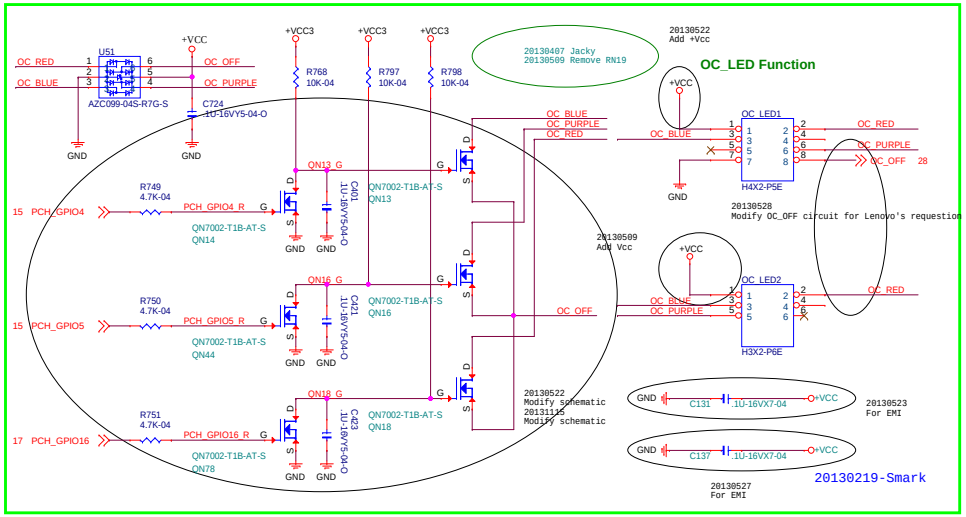
A4 Smark-20130111

COM port header



Ring

	COM1_NRI_L	NRI_L
Normal	-12V	High
Active	+12V	Low



Title	LPT/COM/TPM/ASSID
Size	C
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Date:	Wednesday, December 11, 2013
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Crystal Spec:+/-30ppm,CL=20pF
Ce=2*CL-(Cs+Ci)

P/N:07-135-250024
INCLUDE FILE DATE: 100719

LAN_XTAL1 — 2 — Y1 — 1 — LAN_XTAL2
C48 30P-04 — X-25M — C49 30P-04
GND
201130103 Charles

15 GLAN_RX_N3 — GLAN_RX_N3
15 GLAN_RX_P3 — GLAN_RX_P3
15 GLAN_TX_P3 — GLAN_TX_P3
15 GLAN_TX_N3 — GLAN_TX_N3
16 RLAN_CLKN — RLAN_CLKN
16 RLAN_CLKP — RLAN_CLKP
31 MDI0_P — MDI0_P
31 MDI0_N — MDI0_N
31 MDI1_P — MDI1_P
31 MDI1_N — MDI1_N
31 MDI2_P — MDI2_P
31 MDI2_N — MDI2_N
31 MDI3_P — MDI3_P
31 MDI3_N — MDI3_N
31 LAN_LED0 — LAN_LED0
31 LAN_LED1_EESK — LAN_LED1_EESK
31 LAN_LED3_EEDO — LAN_LED3_EEDO

LAN_XTAL1
LAN_XTAL2
+DVDD
RSET
+VDD33
+VDD33
+VDD33
+DVDD
+VDD33
LAN_LED0
LAN_GPO
LAN_LED1_EESK

LAN
GND1 (49)
AVDD33_2 (48) AVDD33_1 (47) RSET (46) AVDD10 (45) CKXTAL2 (44) CKXTAL1 (43) AVDD33 (42) DVDD10(NC) (41) LED0 (40) DVDD3 (39) GPO/SMBALERT (38) LED1/EESK (37)

MDI0_P 1 MDIP0
MDI0_N 2 MDIN0
+DVDD 3 AVDD10_1
MDI1_P 4 MDIP1
MDI1_N 5 MDIN1
+DVDD 6 AVDD10_2
MDI2_P 7 MDIP2
MDI2_N 8 MDIN2
+DVDD 9 AVDD10_3
MDI3_P 10 MDIP3
MDI3_N 11 MDIN3
+VDD33 12 AVDD33_3

REGOUT 36 CTRL
VDDREG_2 35 +AVDD33
VDDREG_1 34 +AVDD33
ENSWREG 33 ENSWREG
EEDI/SDA 32 EEDI_SDA
LED3/EEDO 31 LAN_LED3_EEDO
EECS/SCL 30 EECS
DVDD10_2 29 +DVDD
LANWAKEB 28 LAN_WAKE_L
DVDD33 27 +VDD33
ISOLATEB 26 ISOLATEB
PERSTB 25 GLAN_RST_L

RTL8111GN-CG
Ce

DVDD10_1 (13) NC (14) SMBDATA (15) CLKREQB (16) HSIP (17) HSIN (18) REFCLK_P (19) REFCLK_N (20) EVDD10 (21) HSOP (22) HSON (23) GND (24)

+DVDD
SMBDATA
CLKREQ_L
GLAN_TX_P3 — C28 .1U-16VX7-04 — GLAN_TX_C_P3
GLAN_TX_N3 — C34 .1U-16VX7-04 — GLAN_TX_C_N3
Layout Note:
Close to LAN chip

GND
GLAN_RX_C_N3 — C54 .1U-16VX7-04 — GLAN_RX_N3
GLAN_RX_C_P3 — C50 .1U-16VX7-04 — GLAN_RX_P3
+EVDD
RLAN_CLKN
RLAN_CLKP
Layout Note:
Close to LAN chip

R94 33-04 — PCIRST3_L 27,29
C75 10P-04-O — GND

+VDD33
CLKREQ_L — R21 10K-04
EECS — R104 10K-04
EEDI_SDA — R106 10K-04
RSET — R22 2.49K-1-04
GND
Layout Note:
Close to LAN chip

+VDD33
LAN_GPO — R51 1K-04
ENSWREG — RJ2(2-3) 0-04
Cd
GND

+VCC3
ISOLATEB — R70 1K-04
ISOLATEB — R71 15K-1-04
SMBDATA — R10 10K-04
GND

20120604 A to A1
WOL change to Normal

	MODE	Lb	Lc	Ld
*	WOL Normal	X	V	X
	WOL G3->S5	V	X	V
	WO_PCIEs G3->S5	V	V	X

+VDD33
20121029 Pre-A3 to A3
change to WOL G3->S5 Mode
R95 10K-04-O — Ld
20130605
unstuff
LAN_WAKE_L — R72 0-04-O — PCIE_WAKE_L — PCIE_WAKE_L 9,18,21,22
Lc
R96 0-04 — COM1_RI_L — COM1_RI_L 27,29
Lb

Internal Switching Regulator

8111F/8111GN:1V+-5% MAX 300mA

08-412-475171 INDUCTOR.4.7uH.20%.800mA.....
SMD.2.9*2.5*2.1mm.SWF2520CF-4R7M
-M-M80...HF.LEAD-FREE(RoHS).TAI-TECH

(替)08-412-475270 INDUCTOR.4.7uH.20%.800mA.....
SMD.2.92*2.5*2.2mm.NLC252018T-4R7M-N
...HF.LEAD-FREE(RoHS).CHILISIN

Ca — R75 0-08
Cb — L1 IND-4.7U-O
CTRL — CTRL1V_R — R105 0-08-short — R46 0-08-short — +EVDD
Layout Note:
Close to Pin 21
C59 1U-16VX7-04 — Cf
Layout Note:
IND close to Pin36 within 0.5cm.
C95 4.7U-6V3X5-08-O — C94 4.7U-6V3X5-08-O — C92 .1U-16VX7-04-O — Cc
C40 .1U-16VX7-04 — C44 1U-16VX7-06
Layout Note:
Close to IND within 0.5cm

+DVDD
C41 1U-16VY5-04 — C19 1U-16VY5-04 — C23 1U-16VY5-04 — C20 1U-16VY5-04 — C18 1U-16VY5-04 — C29 1U-16VY5-04 — C56 .1U-16VY5-04
Layout Note:
Close to VDD10 Pins: 3,6,9,13,29,41,45

8111GN/8111F
3.3V
+VDD33/+AVDD33 MAX 70mA,
Internal 1V REG need Additional MAX 91mA
from 3.3Vin (300mA*1V/3.3V = 91mA),
Total 3.3Vin MAX 161mA (S0)

+3VSB
2012/12/25 Smark
R120 0-08
QSW10
APM2301CAC-LK-O
QSW_S — S — D — QSW_G
C124 .1U-16VX7-04-O — R124 77K-04-O — R123 100K-04-O
C118 1U-16VX7-04-O
C100 10U-08-O
2013/03/25 Smark

+VDD33
C17 1U-16VY5-04 — C24 1U-16VY5-04 — C22 1U-16VY5-04 — C37 1U-16VY5-04 — C55 1U-16VY5-04 — C45 1U-16VY5-04
Layout Note:
Close to VDD33 Pins: 12,27,39,42,47,48

R98 0-08-short
+AVDD33
C76 4.7U-6V3X5-08-O — C52 .1U-16VX7-04-O — C58 1U-6V3X5-04-O
Cg
Layout Note:
Close to Pin34,35 within 0.5cm.

Chip/version	1.8V/1.05 Source	Ca	Cb	Cc	Cd	Ce	Cf	Cg
* RTL8111GN-CG 01-267-111366	LDO	V	X	X	RJ21(2-3)	RTL8111GN-CG	V	X
RTL8111GN-CG	SWR	X	V	V	RJ21(1-2)	RTL8111GN-CG	X	V

Note: Power Sequence 2012 0815 update

9.1. Power Sequence

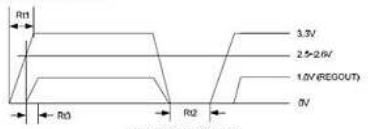

Figure 36. Power Sequence

Table 2. Power Sequence Parameters

Symbol	Description	Min	Typical	Max	Units
Rt1	3.3V Rise Time	0.5	-	100	ms
Rt2	3.3V Off Time	50	-	-	ms
Rt3	1.0V (REGOUT) Settle Time	-	-	15	ms

Note: See the following section for power sequence requirements.

RLT8111GN-CG

9. Power Sequence

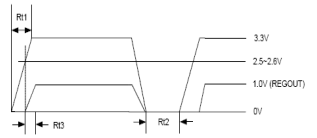

Figure 3. Power Sequence

Table 19. Power Sequence Parameter

Symbol	Description	Min	Typical	Max	Units
Rt1	3.3V Rise Time	0.5	-	100	ms
Rt2	3.3V Off Time	50	-	-	ms
Rt3	1.0V (REGOUT) Settle Time	-	-	15	ms

Note: See the following section for power sequence requirements.

RLT8111F-VB-CG

Title	RTL8111GN-CG		
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15 USB_OC0_L → USB_OC0_L

5,10,18,21,24,27,37 SLP_S3_L → SLP_S3_L

30 MDI0_P → MDI0_P
30 MDI0_N → MDI0_N

30 MDI1_P → MDI1_P
30 MDI1_N → MDI1_N

30 MDI2_P → MDI2_P
30 MDI2_N → MDI2_N

30 MDI3_P → MDI3_P
30 MDI3_N → MDI3_N

30 LAN_LED0 → LAN_LED0
30 LAN_LED1_EESK → LAN_LED1_EESK
30 LAN_LED3_EEDO → LAN_LED3_EEDO

15 USB_P0 / 15 USB_N0 → CHOKE5 CMK-90-08: USB_P0 1, USB_N0 4 → USB_H0 2, USB_L0 3

RN8 0-8P4R-O:
USB_P0 1 — USB_H0 2
USB_N0 3 — USB_L0 4
USB_P1 5 — USB_H1 6
USB_N1 7 — USB_L1 8

15 USB_P1 / 15 USB_N1 → CHOKE6 CMK-90-08: USB_P1 1, USB_N1 4 → USB_H1 2, USB_L1 3

20130226 EMI Solution
U11 AZC099-04S-R7G-S-O: USB_H0 → USB_L0, USB_H1 → USB_L1
C73 .1U-16VY5-04-O
GND

D12 AZ5125-01H-S-O
+USBVCC4
USB_LANA: GND, +DATA1, -DATA1, VCC, GND, +DATA0, -DATA0, VCC; HOLE, HOLE, HOLE, HOLE; G4, G3, G2, G1
USB_H0, USB_L0, USB_H1, USB_L1
USBX2-LAN-1000-SURGE
GND

+5VSB, +VCC
U13 UP7550: 5VCC, 5VSB, GND, EN; VOUT, VOUT, OC#, S3#
C91 .1U-16VY5-04-O
C116 .1U-16VY5-04-O
10,23,24 USB_EN1 → USB_EN1_R R324 0-04
C671 .1U-16VY5-04-O
20121107 Pre-A3 to A3
For Lenovo Require Reserve
1A
USB_OC0_L
UL_SLP3L
EC15 470U-6V3D6H11E
C70 .1U-16VY5-04
+USBVCC4
R117 33-04 SLP_S3_L
C113 100P-04-O
P/N:02-348-550550
GND

WOL	status	Yellow	Grn/Org
don't care	No Link	off	off
off(ME WOL and Host WOL should be disable both)	S3/S4/S5	off	off
on	10M,inactive		off
on	10M,active		off
on	100M,inactive		
on	100M,active		
on	1G,inactive		
on	1G,active		

always on
always on
always on
blinking

3.1 Schematic
INPUT: VCC R1, TD1+ R2, TD1- R3, TD2+ R4, TD2- R5, TD3+ R6, TD3- R7, TD4+ R8, TD4- R9, GND R10
RJ45 OUTPUT: C1 TX1+, C2 TX1-, C3 TX2+, C6 TX2-, C4 TX3+, C5 TX3-, C7 TX4+, C8 TX4-
Surge Component, TVS, 0.1uF, RC termination, GDT, Shield

SU1 AZC099-04S-R7G-S-O: MDI0_N, MDI1_N → MDI0_P, MDI1_P
C99 .1U-16VY5-04-O
SU2 AZC099-04S-R7G-S-O: MDI2_N, MDI3_N → MDI2_P, MDI3_P
C96 .1U-16VY5-04-O
+VDD33
GND

+VDD33
C81 .1U-16VY5-04-O
R102 330-O
R92 330-O
C89 1000P-50VX7-04-O
USB_LANB: TCT, MDI0_P, MDI0_N, MDI1_P, MDI1_N, MDI2_P, MDI2_N, MDI3_P, MDI3_N; POWER, TX1+, TX1-, TX2+, TX2-, TX3+, TX4+, TX4-; YLED, POWER, GLED, OLED, H_KAN, H_LAN, H_LAN, H_LAN, DGND
-ACTIVE_P, -LINK_100, -LINK_1G
DGND R90 0-08
USBX2-LAN-1000-SURGE
20121023 Pre-A3 to A3
For Lenovo IPG
10-084-022303
CONN.USB DUAL PORT+LAN..22P 90D..
W/LED(LG/O-RY).1000 TRANS..30u..ESD(6KV)
....RU9-16MA5CH3....LEAD-FREE.UDE
R97 330 LAN_LED3_EEDO
R103 0 LAN_LED0
R91 330 LAN_LED1_EESK
C88 470P-50VX7-04-O
C82 470P-50VX7-04-O
C85 470P-50VX7-04-O
Layout Note:
Close to LAN chip
GND

L3 Orange
L4
L1 Yellow
L2

Place Caps in Bottom Side.
MDI0_P SC4 — 2.7P-04-X-O
MDI0_N SC1 — 2.7P-04-X-O
MDI1_P SC5 — 2.7P-04-X-O
MDI1_N SC3 — 2.7P-04-X-O
MDI2_P SC16 — 2.7P-04-X-O
MDI2_N SC14 — 2.7P-04-X-O
MDI3_P SC18 — 2.7P-04-X-O
MDI3_N SC17 — 2.7P-04-X-O
EMI value must be tuned.
GND

-LINK_100 N D16 P AZ5125-01H-S-O
-ACTIVE_P N D13 P AZ5125-01H-S-O
-LINK_1G N D15 P AZ5125-01H-S-O
+VDD33 N D14 P AZ5125-01H-S-O
GND

Title	LANUSB CONN		
Size: Custom	Document Number: Z87H3-LM		Rev: 1.0..
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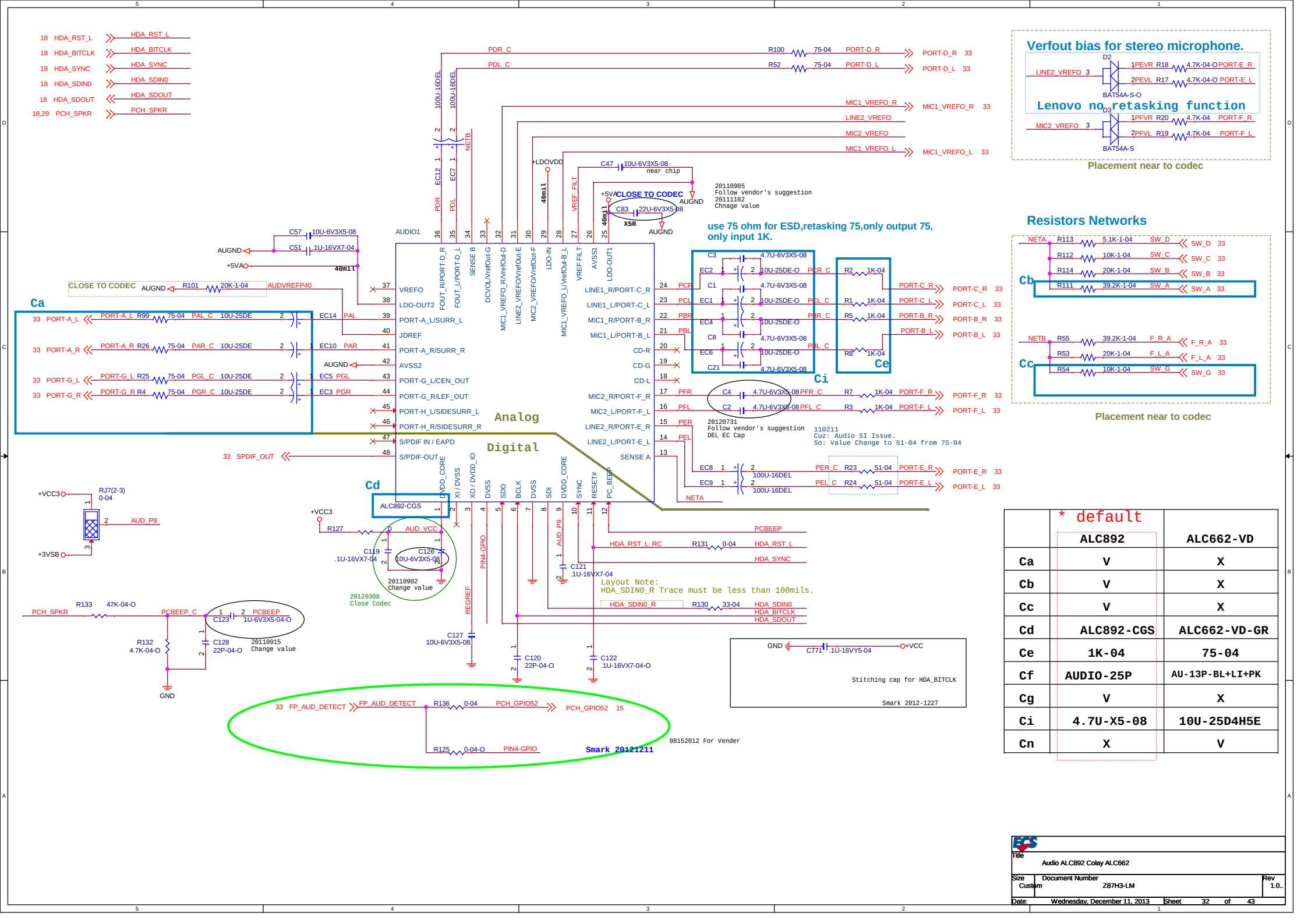
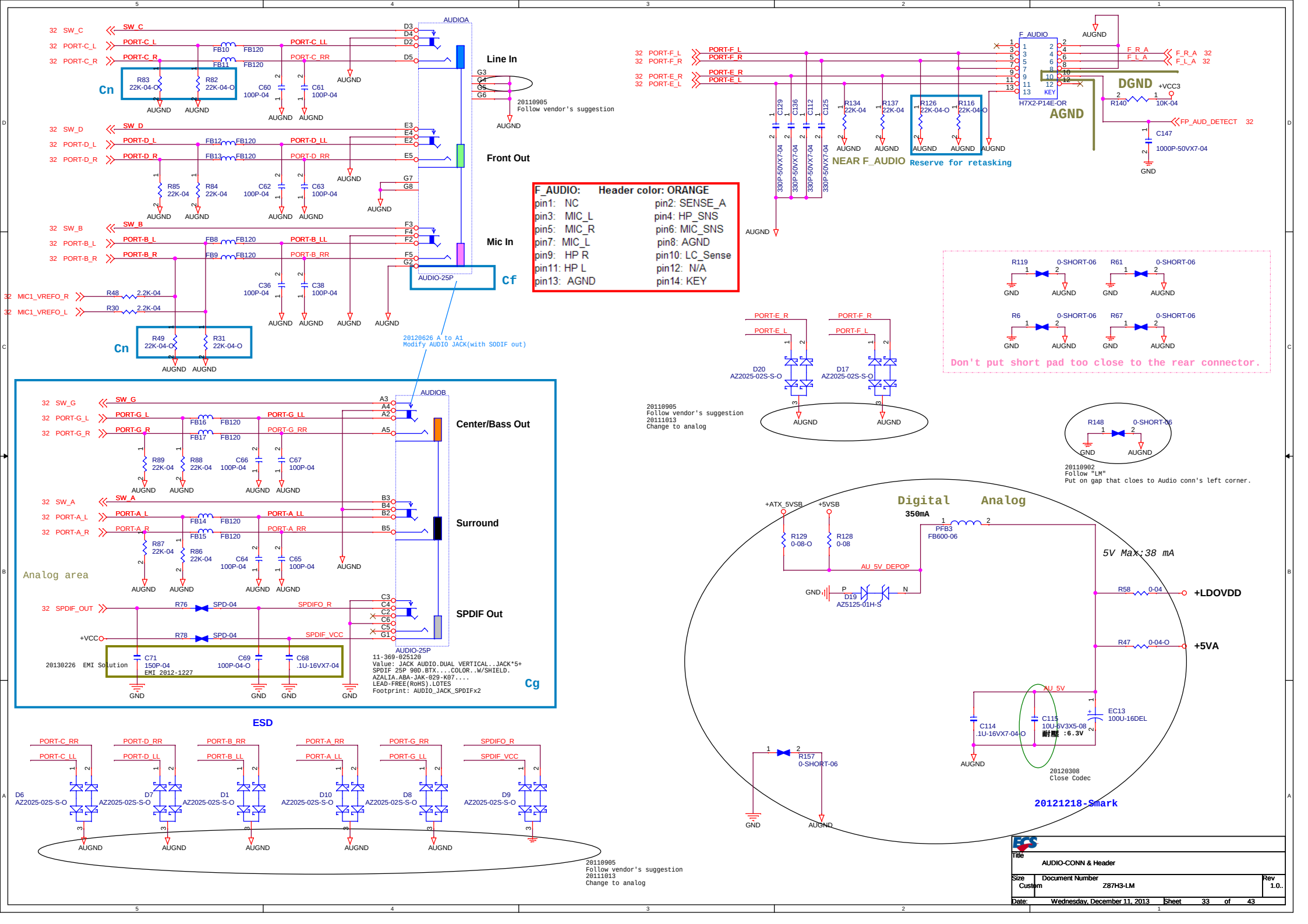
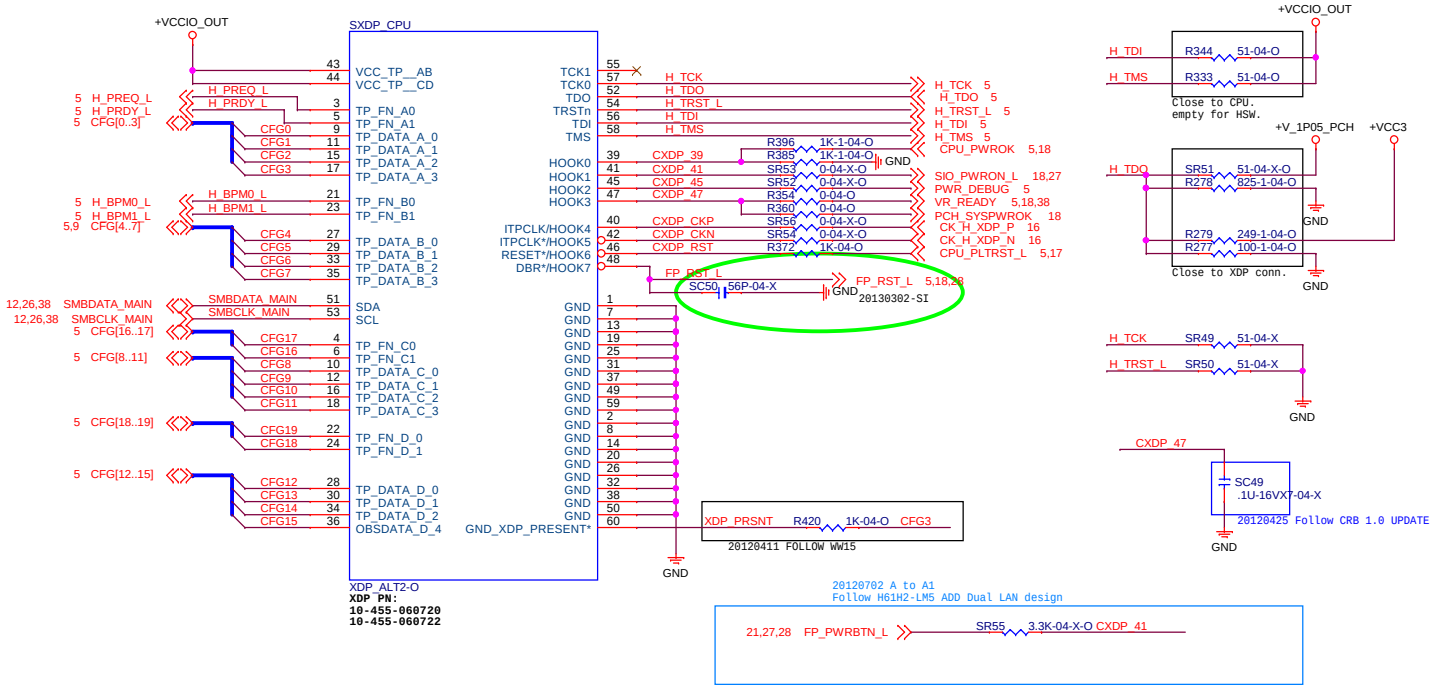


	* default	
	ALC892	ALC662-VD
Ca	V	X
Cb	V	X
Cc	V	X
Cd	ALC892-CGS	ALC662-VD-GR
Ce	1K-04	75-04
Cf	AUDIO-25P	AU-13P-BL+LI+PK
Cg	V	X
Ci	4.7U-X5-08	10U-25D4H5E
Cn	X	V

Title	Audio ALC892 Colay ALC662		
Size: Custom	Document Number: Z87H3-LM		Rev: 1.0..
Date: Wednesday, December 11, 2013	Sheet 32	of 43	



Title	AUDIO-CONN & Header		
Size	Document Number		Rev
Custom	Z87H3-LM		1.0..
Date:	Wednesday, December 11, 2013	Sheet	33 of 43



Title	XDP-CPU/PCH		
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DDR VTT

0.75V
TDC:1A
Pmax. 0.75W

U30
APL5337KAI-TRG
P/N:02-344-337700

+VCC, +VDIMM, +DDR_VTT, +DDR_VTT_REF, GND
C551 1U-16VX7-06
C540 10U-08-O
C539 10U-6V3X5-08
C537 .1U-16VX7-04
C502 10U-6V3X5-08
EC45 470U-6V3D6H11E-O
R598 10K-1-04
R597 10K-1-04
C506 1U-16VX7-06

	XMP Function	NON XMP Function
Za	1.1K-1-04	2.8K-1-04
Zb	1K-1-04	2.49K-1-04
Zc	330-1-04	820-1-04

GPIO31	VDIMM
L	1.5V
H	1.35V

*GPIO31 with internal pull-down

18 PCH_GPIO31, R660 4.7K-04 PCH_GPIO31_G, QN75 QN7002-T1B-AT-S, PCH_GPIO31_D
+3VSB, R667 4.7K-04, QN74 QN7002-T1B-AT-S, DIMM_FB_D
R657 820-1-04 **Zc**

DDR3 POWER

PWM IC
NCP1589L 02-439-589892
SUB
APW8727

+VCC, +DIMM_5VDUAL
D37 BAT54C-S-O, D36 BAT54C-S
+VCC_D, R693 0-08-O, R692 2.2-08, DIMM_VCC
C586 1U-16VX7-06
R706 0-08-O
18ST_RC5V, BST_RC, DIMM_BST
R675 2.2, C574 .1U-25VX7-06
U31 NCP1589L: PGOOD, COMP, VCC, BST, TG, PHASE, FB, VOS, GND, GND_EP, BG
C598 .01U-25VX7-04, DIMM_COMP, C595 100P-04, 2DIMM_RC11, VDIMM_FB_SEN
R710 5.49K-1-04, R715 100K-04-O
Za R721 2.8K-1-04
2.8K-1-04-O R702, R711 0-04, DIMM_VOS
Zb R722 2.49K-1-04, R719 68.1-1-04, DIMM_RC21, C602 .01U-25VX7-04
R726 0-04
VDIMM_FB_SEN 38, 201213-Smark
DIMM_TG, DIMM_PHASE, DIMM_BG
R662 16.2K-1-04, Power Kevin / A4
R647 0-08, QML_BG, C555 1500P-04-O
R646 0-08, 2QMH1_TG, R613 10K-04
QMH1 RJK0397DPA-S, QMH2 RJK0397DPA-S
QML1 RJK03J5DPA, QML2 RJK03J5DPA

6.487A, L13 RCK-0.5UD
C567 .1U-16V7-04 16V, Close to choke L13
Close to QMH1
EC50 560U-6V3LD6H8E 6.3V
EC44 560U-6V3LD6H8E 6.3V
C558 10U-6V3X5-08 6.3V, C557 10U-6V3X5-08 6.3V, C568 10U-6V3X5-08 6.3V, C559 10U-16VX7-06 16V, C500 .1U-16VX7-04 16V

MAX 28A, DCR=2m ohm
L12 PIND-1.0U-D
08-413-105021
08-413-105617
08-413-105065
1.5V Imax. 24A,OCP:38A
Pmax. 36W
R614 1-12
DIMM_RC3 X7R Vr:50V
C473 .1U-16VX7-04
C556 4700P-25VX7-04
10U-6V3X5-08, C545 25V, C552 10U-6V3X5-08 6.3V
EC48 820U-2V5D6.3H8E, EC41 820U-2V5D6.3H8E 2.5V, EC49 820U-2V5LD6H8E-O 2.5V

OCP SETLowside MOS :
Vgs=4.5V,Rds(on)=6.1m ohm--7m ohm

$$I_{OCth} = \frac{I_{OCSET} \cdot R_{OCSET}}{R_{DS(on)}}$$

PWM IC NCP1589L
MOSFET:
RJK0397DPA+RJK03J5DPA
NTMFS4927+NTMFS4925
SM4365NAKPC+SM4364NAKPC

5VDUAL

Imax. 6.487A

+5VSB, +3VSB, +12V, +VCC
25,26,27,36 ATX_PWRGD, R654 10K-04-O
27 3VSBSW_L, R653 4.7K-04, DU_5VSW
R648 4.7K-04-O
R641 4.7K-04, R629 4.7K-04-O
R640 4.7K-04 23,25 5VDLSB
QN49_C R651 0-04, 5VDLSB
QN49 PMBS3904-S, DUSW_P, R644 4.7K-04, C565 .01U-25VX7-04-O
C72 4.7U-6V3X5-08-O, 20121217 Smark
QSW5 APM2315AC, EC55 100U-16DE-O
20121105 Pre-A3 to A3 for Lenovo Require
QN48 PMBS3904-S, DUSW_C, R624 4.7K-04
C569 1U-16VX7-06-O
R602 4.7K-04 23,25 DLA
QN46_C R655 0-04, DLA
QN46 PMBS3904-S, DUSW_N, C550 .01U-25VX7-04-O
C77 4.7U-6V3X5-08-O, 20121217 Smark
QSW11 2SK4212A
C501 .1U-16VX7-04-O, EC43 100U-16DE
C394 10U-16VX5-08-O
20121105 Pre-A3 to A3 for Lenovo Require
+DIMM_5VDUAL

Title	DC/DC VDIMM/DDR_VTT/5VDUAL		
Size	Custom	Document Number Z87H3-LM	Rev 1.0..
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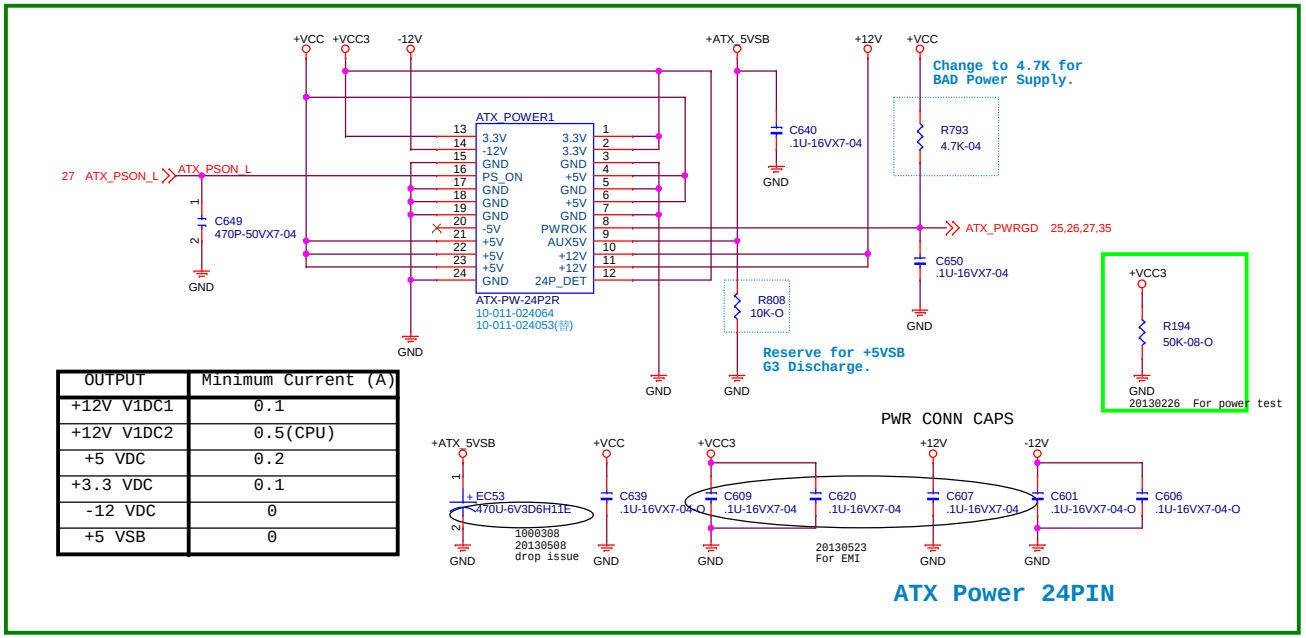
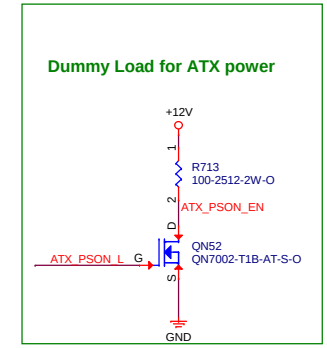
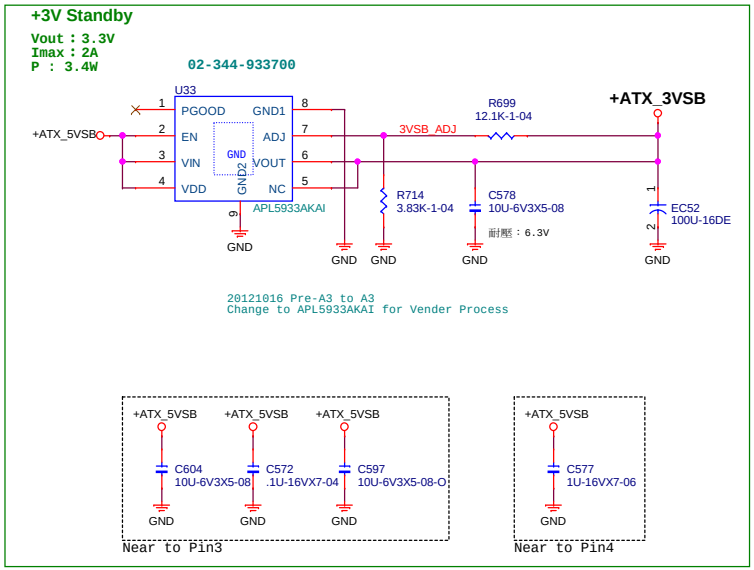


OUTPUT	Minimum Current (A)
+12V V1DC1	0.1
+12V V1DC2	0.5(CPU)
+5 VDC	0.2
+3.3 VDC	0.1
-12 VDC	0
+5 VSB	0





Title	ATX_PWR/+ATX_3VSB		
Size	Document Number		Rev
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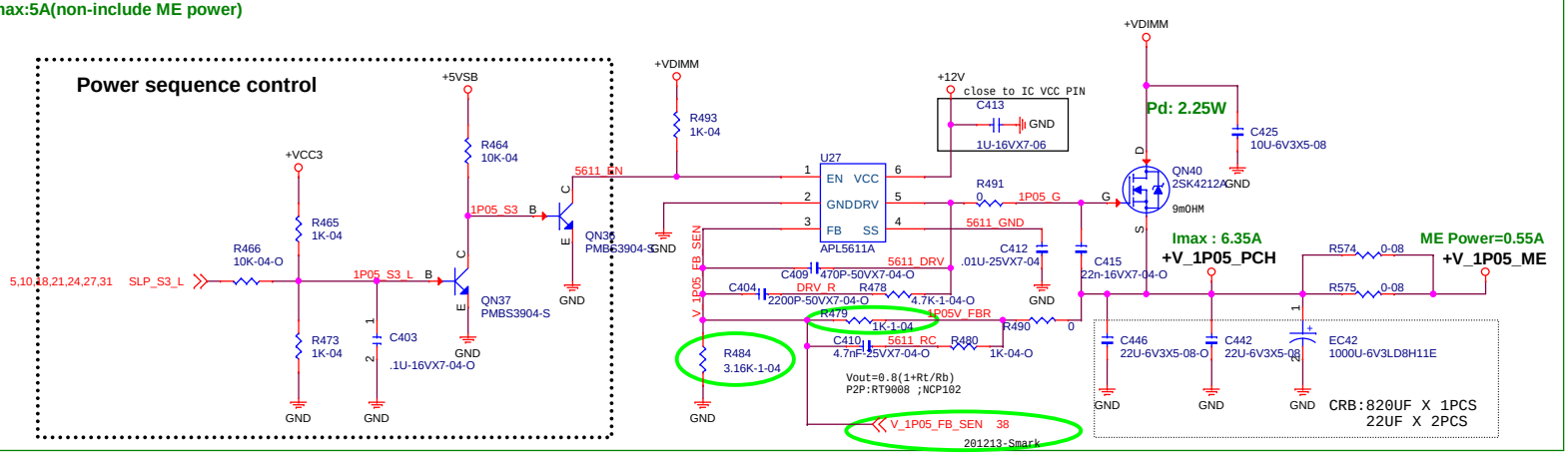
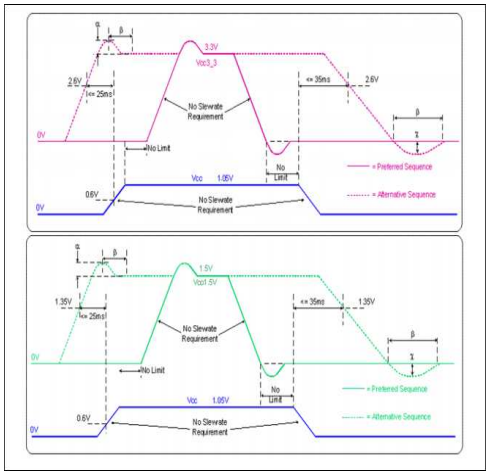
PCH core power

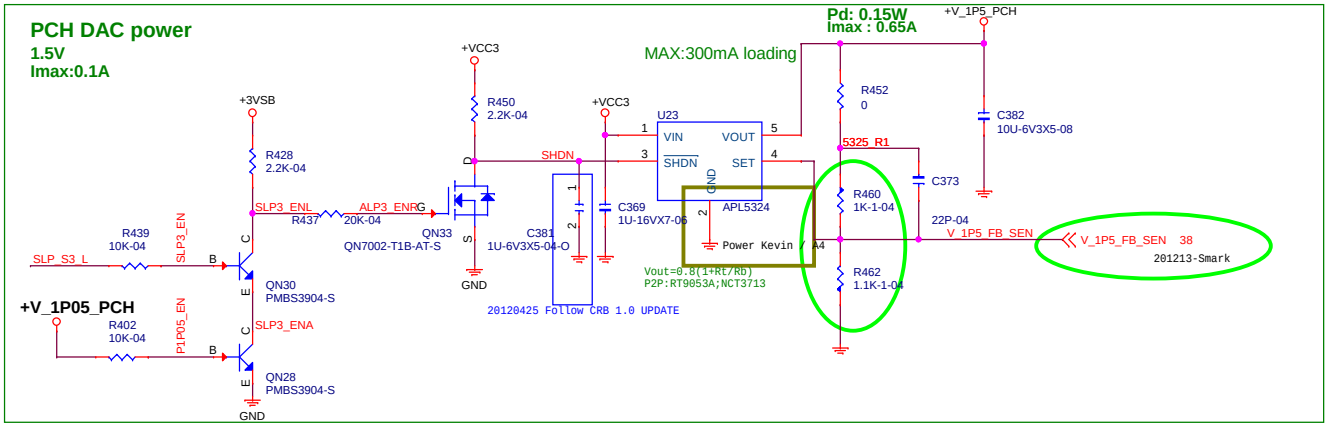
1.05V
Imax:5A(non-include ME power)



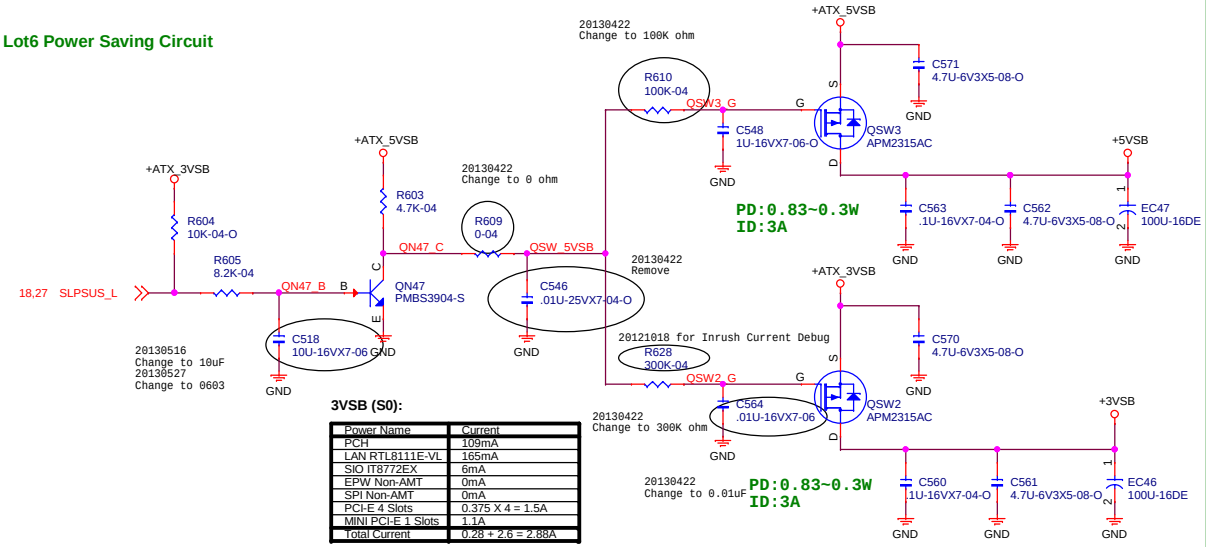


PCH DAC power

1.5V
Imax:0.1A



EuP Lot6 Power Saving Circuit



3VSB (S0):

Power Name	Current
PCH	109mA
LAN RTL8111E-VL	165mA
SIO IT8772EX	6mA
EPW Non-AMT	0mA
SPI Non-AMT	0mA
PCI-E 4 Slots	0.375 X 4 = 1.5A
MINI PCI-E 1 Slots	1.1A
Total Current	0.28 + 2.6 = 2.88A

Title	DC/DC PCH_1.5V/PCH_1.05V		
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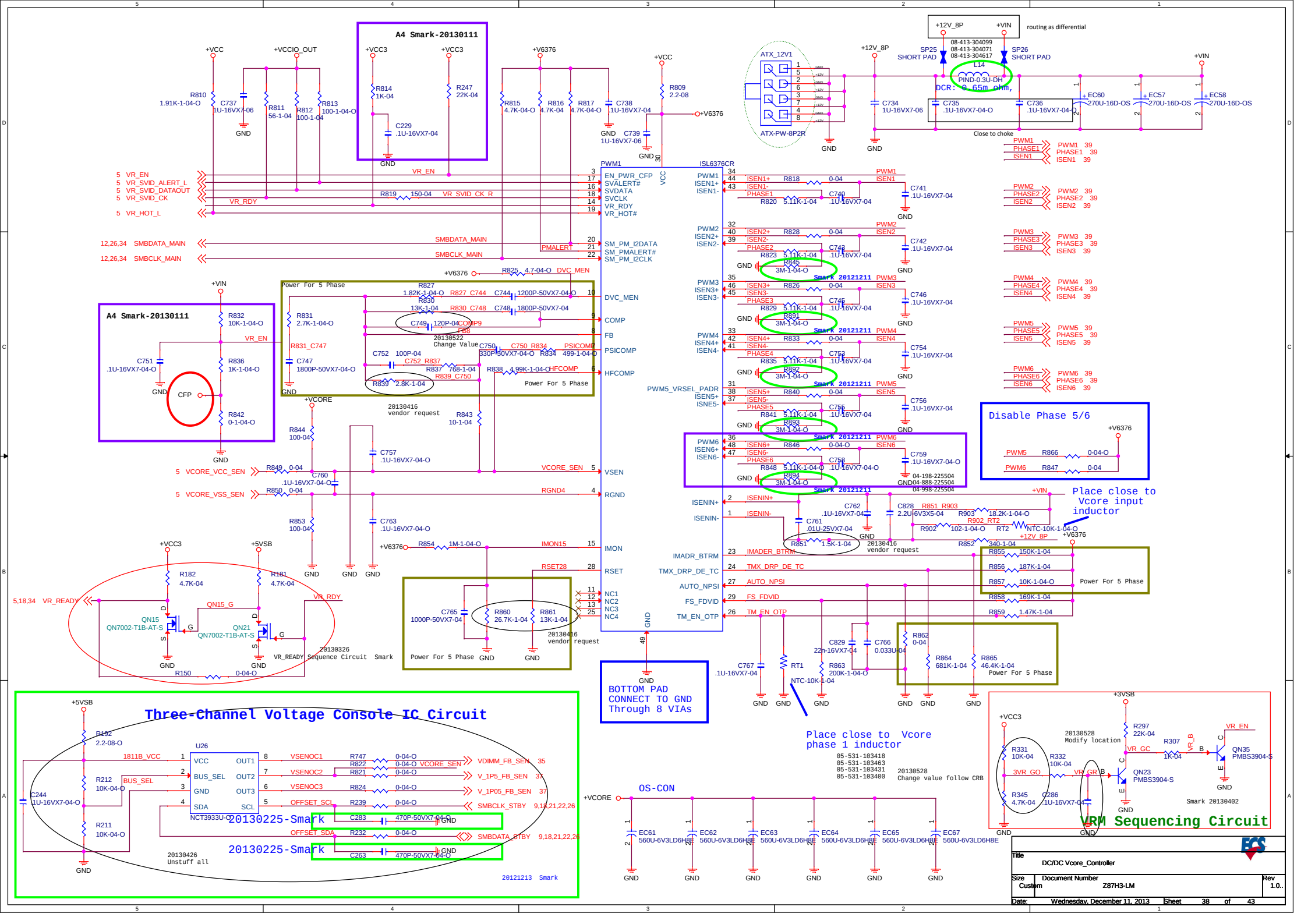
A4 Smark-20130111
ISL6376CR
PWM1
PWM2
PWM3
PWM4
PWM5
PWM6
VSEN
RGND
IMON
RSET
NC1
NC2
NC3
NC4
COMP
FB
DVC_MEN
PSICOMP
HFCOMP
EN_PWR_CFP
SVALERT#
SVDATA
SVCLK
VR_RDY
VR_HOT#
SM_PM_I2CDATA
SM_PMALERT#
SM_PM_I2CCLK
ISENIN+
ISENIN-
IMADR_BTRM
TMX_DRP_DE_TC
AUTO_NPSI
FS_FDVID
TM_EN_OTP
PWM5_VRSEL_PADR
Power For 5 Phase
Disable Phase 5/6
Place close to Vcore input inductor
Place close to Vcore phase 1 inductor
BOTTOM PAD CONNECT TO GND Through 8 VIAs
OS-CON
Three-Channel Voltage Console IC Circuit
NCT3933U-C
20130225-Smark
VR_READY Sequence Circuit Smark
VRM Sequencing Circuit
ATX_12V1
ATX-PW-8P2R
routing as differential
Close to choke
Title
DC/DC Vcore_Controller
Size
Custom
Document Number
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1.0..
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Wednesday, December 11, 2013
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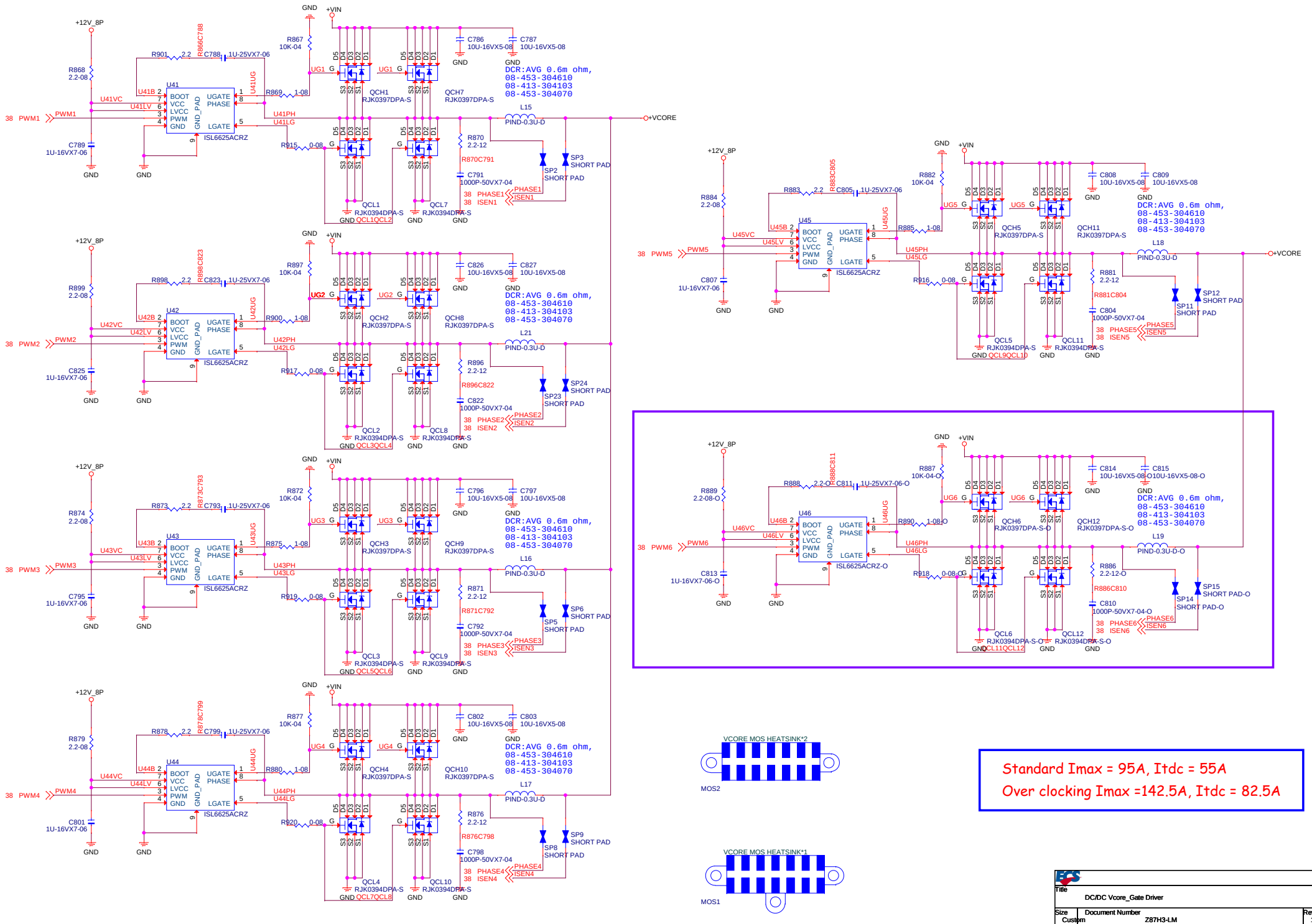
43


+12V_8P
GND
+VIN
+VCORE
PWM1
PWM2
PWM3
PWM4
PWM5
PWM6
U41
U42
U43
U44
U45
U46
ISL6625ACRZ
ISL6625ACRZ-O
DCR:AVG 0.6m ohm,
08-453-304610
08-413-304103
08-453-304070
Standard Imax = 95A, Itdc = 55A
Over clocking Imax =142.5A, Itdc = 82.5A
VCORE MOS HEATSINK*2
MOS2
VCORE MOS HEATSINK*1
MOS1
DC/DC Vcore_Gate Driver
Custom
Z87H3-LM
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Wednesday, December 11, 2013
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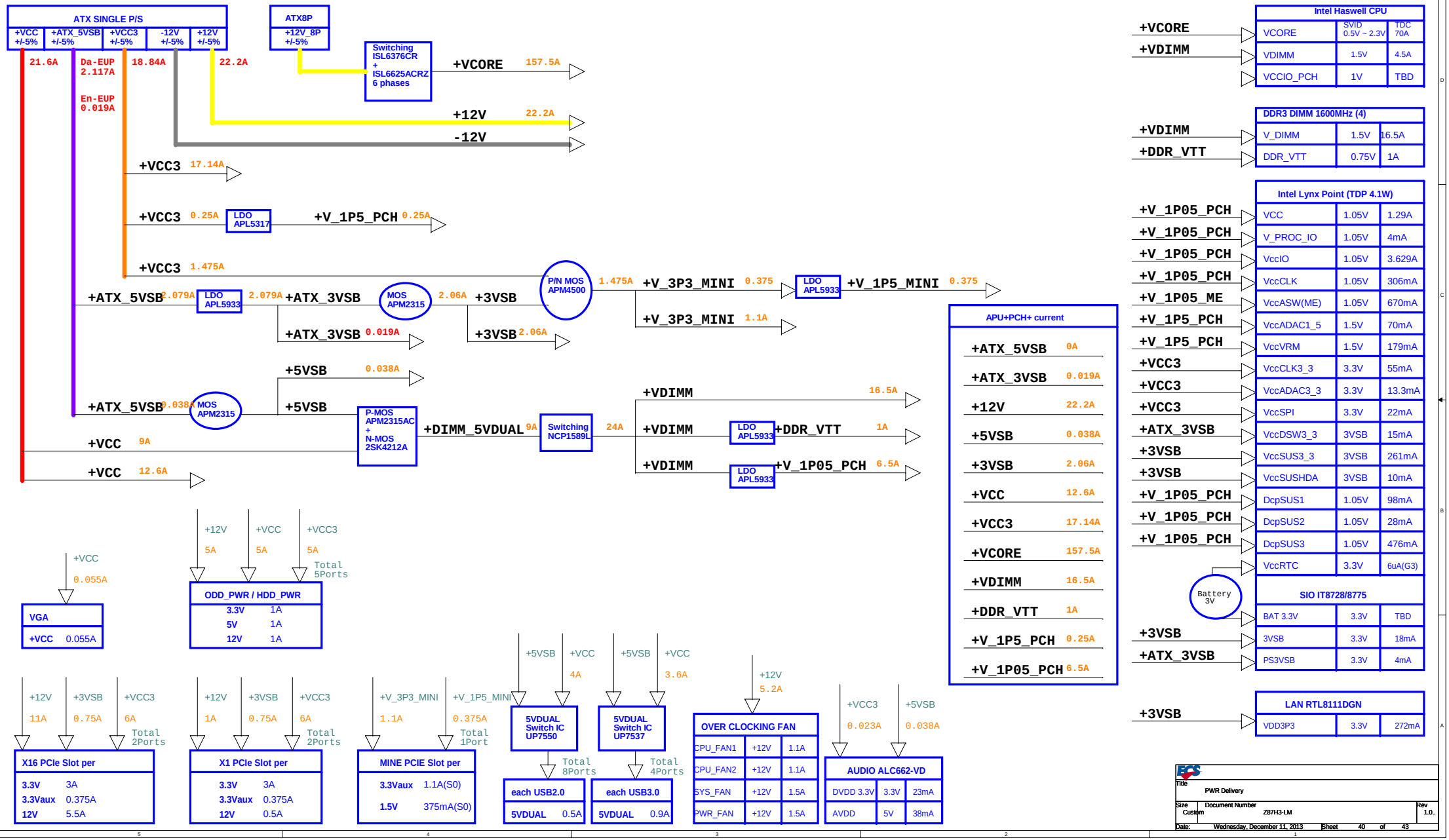
ATX SINGLE P/S
+VCC +/-5%
+ATX_5VSB +/-5%
+VCC3 +/-5%
-12V +/-5%
+12V +/-5%
21.6A
Da-EUP 2.117A
En-EUP 0.019A
18.84A
22.2A
ATX8P
+12V_8P +/-5%
Switching ISL6376CR + ISL6625ACRZ 6 phases
+VCORE 157.5A
+12V 22.2A
-12V
+VCC3 17.14A
+VCC3 0.25A
LDO APL5317
+V_1P5_PCH 0.25A
+VCC3 1.475A
+ATX_5VSB 2.079A
LDO APL5933
2.079A +ATX_3VSB
MOS APM2315
2.06A +3VSB
P/N MOS APM4500
1.475A +V_3P3_MINI 0.375
LDO APL5933
+V_1P5_MINI 0.375
+V_3P3_MINI 1.1A
+ATX_3VSB 0.019A
+3VSB 2.06A
+5VSB 0.038A
+ATX_5VSB 0.038A
MOS APM2315
+5VSB
P-MOS APM2315AC + N-MOS 2SK4212A
+DIMM_5VDUAL 9A
Switching NCP1589L
24A
+VDIMM 16.5A
+VDIMM
LDO APL5933
+DDR_VTT 1A
+VDIMM
LDO APL5933
+V_1P05_PCH 6.5A
+VCC 9A
+VCC 12.6A
+VCC 0.055A
VGA
+VCC 0.055A
+12V 5A
+VCC 5A
+VCC3 5A
Total 5Ports
ODD_PWR / HDD_PWR
3.3V 1A
5V 1A
12V 1A
+12V 11A
+3VSB 0.75A
+VCC3 6A
Total 2Ports
X16 PCIe Slot per
3.3V 3A
3.3Vaux 0.375A
12V 5.5A
+12V 1A
+3VSB 0.75A
+VCC3 6A
Total 2Ports
X1 PCIe Slot per
3.3V 3A
3.3Vaux 0.375A
12V 0.5A
+V_3P3_MINI 1.1A
+V_1P5_MINI 0.375A
Total 1Port
MINE PCIE Slot per
3.3Vaux 1.1A(S0)
1.5V 375mA(S0)
+5VSB 4A
+VCC
+5VSB 3.6A
+VCC
5VDUAL Switch IC UP7550
5VDUAL Switch IC UP7537
Total 8Ports
Total 4Ports
each USB2.0
5VDUAL 0.5A
each USB3.0
5VDUAL 0.9A
+12V 5.2A
OVER CLOCKING FAN
CPU_FAN1 +12V 1.1A
CPU_FAN2 +12V 1.1A
SYS_FAN +12V 1.5A
PWR_FAN +12V 1.5A
+VCC3 0.023A
+5VSB 0.038A
AUDIO ALC662-VD
DVDD 3.3V 3.3V 23mA
AVDD 5V 38mA
APU+PCH+ current
+ATX_5VSB 0A
+ATX_3VSB 0.019A
+12V 22.2A
+5VSB 0.038A
+3VSB 2.06A
+VCC 12.6A
+VCC3 17.14A
+VCORE 157.5A
+VDIMM 16.5A
+DDR_VTT 1A
+V_1P5_PCH 0.25A
+V_1P05_PCH 6.5A
+VCORE
+VDIMM
Intel Haswell CPU
VCORE SVID 0.5V ~ 2.3V TDC 70A
VDIMM 1.5V 4.5A
VCCIO_PCH 1V TBD
+VDIMM
+DDR_VTT
DDR3 DIMM 1600MHz (4)
V_DIMM 1.5V 16.5A
DDR_VTT 0.75V 1A
+V_1P05_PCH
+V_1P05_PCH
+V_1P05_PCH
+V_1P05_PCH
+V_1P05_ME
+V_1P5_PCH
+V_1P5_PCH
+VCC3
+VCC3
+VCC3
+ATX_3VSB
+3VSB
+3VSB
+V_1P05_PCH
+V_1P05_PCH
+V_1P05_PCH
Intel Lynx Point (TDP 4.1W)
VCC 1.05V 1.29A
V_PROC_IO 1.05V 4mA
VccIO 1.05V 3.629A
VccCLK 1.05V 306mA
VccASW(ME) 1.05V 670mA
VccADAC1_5 1.5V 70mA
VccVRM 1.5V 179mA
VccCLK3_3 3.3V 55mA
VccADAC3_3 3.3V 13.3mA
VccSPI 3.3V 22mA
VccDSW3_3 3VSB 15mA
VccSUS3_3 3VSB 261mA
VccSUSHDA 3VSB 10mA
DcpSUS1 1.05V 98mA
DcpSUS2 1.05V 28mA
DcpSUS3 1.05V 476mA
VccRTC 3.3V 6uA(G3)
Battery 3V
+3VSB
+ATX_3VSB
SIO IT8728/8775
BAT 3.3V 3.3V TBD
3VSB 3.3V 18mA
PS3VSB 3.3V 4mA
+3VSB
LAN RTL8111DGN
VDD3P3 3.3V 272mA
ECS
Title
PWR Delivery
Size Custom
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Realtek LAN

Mine PCIE Wireless

PCI-E X16

LPC

PCI-E X1

+VCC 9.2

VR_RDY(7)
VCORE

10 VR_READY

Haswell

RESET#(M39) PWRGD(AB35)

14

84 SIO_PCIRST3_L

34 SIO_PCIRST1_L

12 CPU_PWROK

42 SIO IT8775 10

PLTRST_PROC#(F41)
SYS_PWROK(W31) PROCPWRGD(D40)

3 FP_PWRBTN_L

POWER BUTTON

PANSHW# 75 33

(43) RSMRST#(85)

2 RSMRST_L

RSMRST#(AM40)

30 SUSB# 71

5 SLP3_L

SLP_S3#(AK40)

1 +ATX_3VSB

3VSB (35) (11)

35 SUSC# 77

6 SLP4_L

SLP_S4#(AT35)

31 PWRON# 72

4 SIO_PWRBTN_L

PWRBTN#(AK41)

6 34 13 36

PWROK3 78

11 PCH_PWROK

PCH_PWROK(AT40)

Lynx Point

9 ATX_PWRGD

ATXPG 19

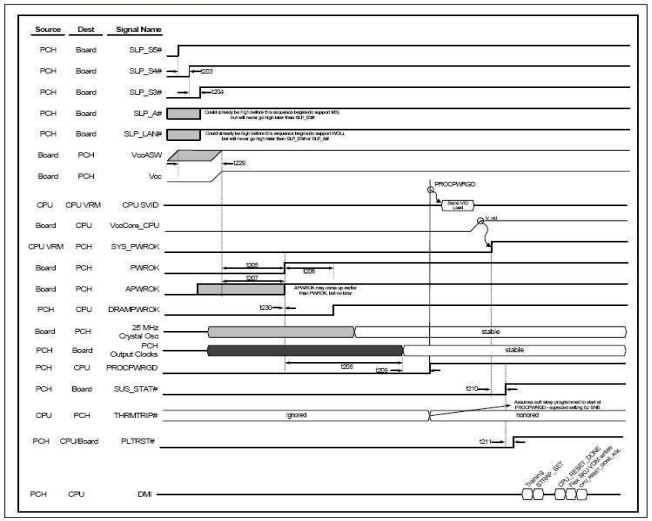
LRESET37

13 PCH_PLTRST_L

PLTRST#(AA37)

PSON# 76

S5 to S0 Timing Diagram



7 ATX_5VSB

ATX_POWER

9 PWROK PS_ON 11

PS_ON 2,4,6

7 ATX_PSON_L

8 +12V

DC-DC

+VCC3 9.1

+VCC 9.2

ECS			
Title	PWR Sequence/RST Diagram		
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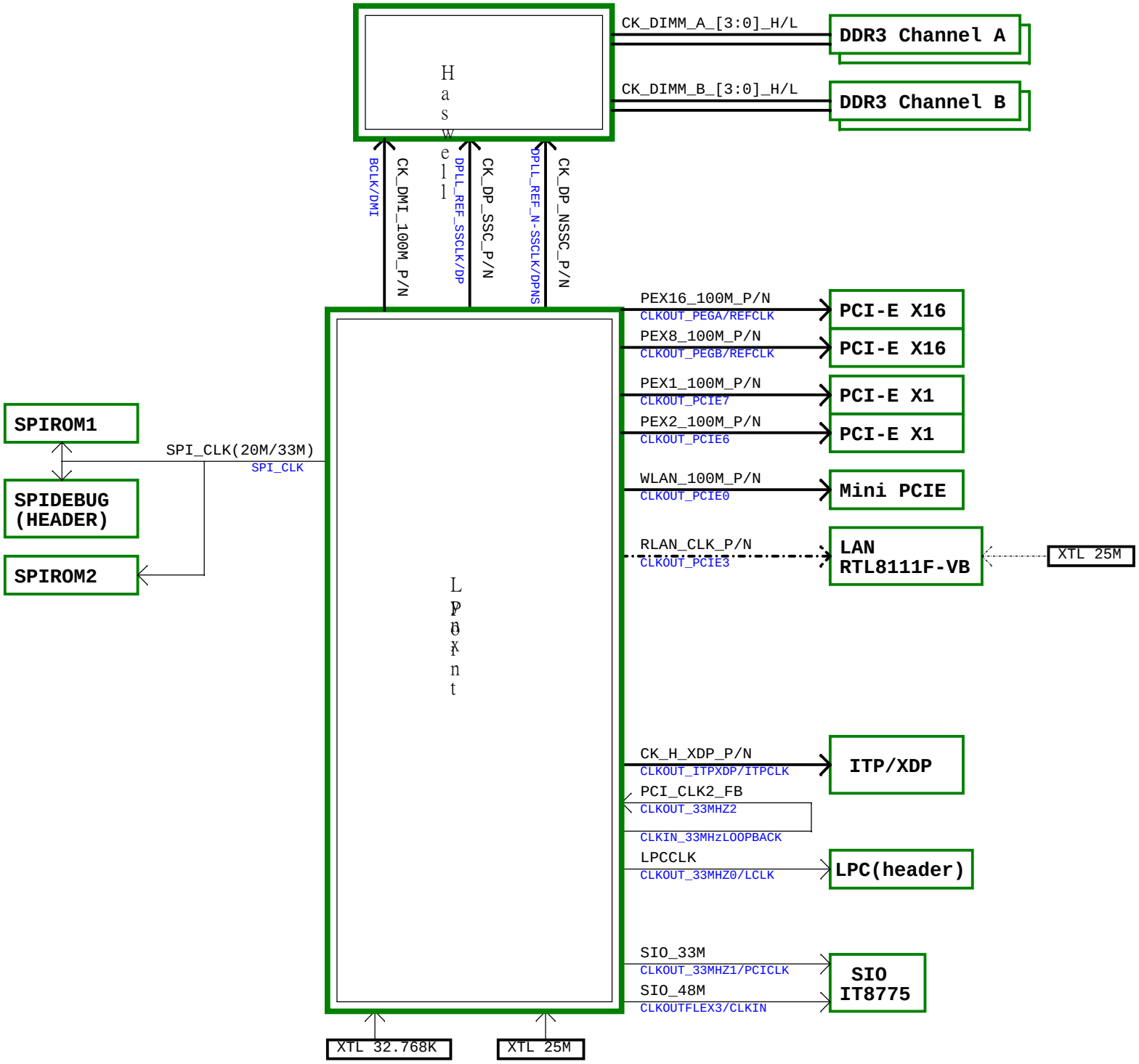

Title	CLK Distribution	
Size: Custom	Document Number: Z87H3-LM	Rev: 1.0..
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REVISION HISTORY:

Rev	Date	Notes
0.2	2012/11/26	From H81H3-LM V:A2
0.3	2013/04/10	Version 0.3 (SDV II) complete
0.4	2013/04/19	Version 0.4 (SIT) start to modify. SYSFAN_LED1 & PWEFAN_LED1 headers are changed.
0.4	2013/05/09	Modify OC_LED schematic
0.4	2013/05/13	Modify components for IT8602EX
0.5	2013/05/23	Modify OC_LED schematic
0.5	2013/05/28	Modify Block Diagram
0.5	2013/05/28	P.38: Modify R331. R345 value (follow CRB), and modify C286 location
0.5	2013/05/28	P.29: Modify OC_OFF circuit for Lenovo's requestion
0.5	2013/05/30	P.22: Add R595 for GPIO pull high
0.5	2013/05/30	P.18: RJ19 change to (2-3) for Lenovo Request MINI_PCIE CLKREQ
0.5	2013/05/30	P.27: C608 change to 22nF for RSMRST SI issue
0.5	2013/06/05	P.30: Delete R95 (COM1_RI_L pull-high at SIO side)
0.5	2013/06/10	P.25: Mofify charge IC status table
0.5	2013/06/10	P.18: R543 unstuff for over clocking
0.5	2013/06/10	P.18: R451 change from 10K ohm to 13K ohm for power leakage
0.5	2013/06/10	P.05: C277 change from 47pF to 220pF for SI issue
1.0	2013/06/11	P.18: Reserve R461 pull high 3VSB
1.0	2013/06/11	P.22: Remove DP components
1.0	2013/06/14	P.18: Remove R461 pull high 3VSB for Intel FAE's suggestion
1.0	2013/06/18	P.09: R204 change to 1k ohm to improve PCIE_RST signal rise time
1.0	2013/06/20	P.09: Add circuits for PCIE_RST monotonic issue
1.0	2013/06/20	P.11: Modify pull high/low resistors for ASM1442
1.0	2013/06/22	P.22: R495 stuff
1.0	2013/06/22	P.26: SPI_DEBUG header unstuff, ROM socket remove
1.0	2013/06/24	P.28: CPU_FAN2 unstuff
1.0	2013/07/02	P.27: Add two pull high resistors for CPU_FAN2 unstuff
1.0..	2013/12/05	P.29: Modify OC LED circuit for ESD issue