# Model Name: GA-B85M-D3H

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| 02 | BOM & PCB MODIFY HISTORY | |
| 03 | BLOCK DIAGRAM | |
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| 05 | CPU_LGA1150-B | |
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| 11 | PCH_HOST,SATA,PCI | |
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| 13 | PCH_PWR,GND | |
| 14 | PCI EXPRESS*16 SLOT | |
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| 16 | PCI SLOT1,2 | |
| 17 | ITE 8728  LPC IO | |
| 18 | COM,KB_MS_USB,USB30_20 | |
| 19 | HWM,FAN CTRL,OV,-PROCHOT | |
| 20 | DUAL BIOS | |
| 21 | FP,FUSB,SPK,SATALED | |
| 22 | Realtek ALC892-GR | |
| 23 | REAR AUDIO JACK | |
| 24 | REALTEK RTL8111F | |
| 25 | DISCRETE POWER | |
| 26 | ATX , CLOCK GEN, TPM | |
| 27 | VCORE ISL95820_1 | |

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|---|---|
| 28 | VCORE ISL95820_2 |
| 29 | RT8120_DDR POWER |
| 30 | LPT, M3 POWER |
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| 32 | IT8892E |



Gigabyte Technology

Title: Cover Sheet

Size: Custom | Document Number: GA-B85M-D3H | Rev: 1.11

Date: Friday, September 13, 2013 | Sheet 1 of 32

# Model Name: GA-B85M-D3H

## Component value change history

*Revision 1.11*
*P-Code U12090-0*

| Date | BOM and PCB version | | Modify Items |
|---|---|---|---|
| 2012.11.05 | New E-BOM release. | PCB:0.1 | |
| 2013.01.25 | New E-BOM release. | PCB:0.2 | pciex4超頻時掉device issue(CLK USE p.10) / for disable ME(p.17 )/ H/W monitor / PWM change to 1up2down (8 series 線路注意事項) |
| 2013.03.26 | 10A D-BOM release. | PCB:1.0 | (8 series 線路注意事項64/62/60/59/58/53/48) |
| 2013.04.08 | 10B P-BOM release. | PCB:1.0 | 轉P-BOM(修改DVI level shift NXP change to ASMEDIA & ASMEDIA搭配用阻值) |
| 2013.04.17 | 10C F-BOM release. | PCB:1.0 | 修改INTEL PCI LAN CARD(PCI1),並輸出為HDMI&D-SUB ,PCI LAN CARD會斷線&D-SUB畫面抖動ISSUE(add NQ17 , remove NR13),remove CS |
| 2013.05.13 | 10D P-BOM release. | PCB:1.0 | 修改MOS Heatsink用料<br>MOS HS/[12SP2-S08824-41R_12SP2-S08824-42R_12SP2-S08824-43R] |
| 2013.05.30 | 10E P-BOM release. | PCB:1.0 | 修改PCIEx4 cap (0.22u --> 0.1u)<br>同步此10E版本,會是產C2 chipset,同步驗證 |
| 2013.07.01 | 11A P-BOM release. | PCB:1.1 | CHANGE TO C2 CHIPSET / add 5vdual short protect sch(上件) |
| 2013.07.09 | 11B F-BOM release. | PCB:1.1 | 5vdual short protect sch(5VDUAL 上件 / R705 change to 825/4/1) & remove Audio "CD1" |
| 2013.07.15 | 11B ECN release. | PCB:1.1 | MOS_HS 增加墊片, 防止板彎(新增替料12SP2-S08824-71R/72R/73R) |
| 2013.09.12 | 11C ECN release. | PCB:1.11 | 修改CRYSTAL ISSUE(LAYOUT CHECK) |
| | | | 修改MOS FOOTPRINT TO "Q_TDSON8-GDS-T"<br>修改FUSE 1206 FOOTPRINT TO "Polyswitch-1206-1"<br>修改CPU FAN R60 0/4 -->0/6 |

## Circuit or PCB layout change

| Date | PCB Version | Modify Items |
|---|---|---|
| 2012.11.05 | 0.1 Gerber out. | |
| 2013.01.25 | 0.2 Gerber out. | Change F_panel footprint / H/W monitor / DS_ME / ACZ_SDOUT / PCIEx4 CLK MODIFY Z87M-D3H |
| 2013.03.21 | 1.0 Gerber out. | Change F_Panel footprint / H/W monitor / DS_ME / ACZ_SDOUT / PCIEx4 CLK MODIFY Z87M-D3H |
| 2013.06.27 | 1.1 Gerber out. | 僅修改版本(Rev1.0-->Rev1.1) & HDMI FOOTPRINT (HDMI-3) |
| 2013.09.13 | 1.11 Gerber out. | 修改CRYSTAL ISSUE |



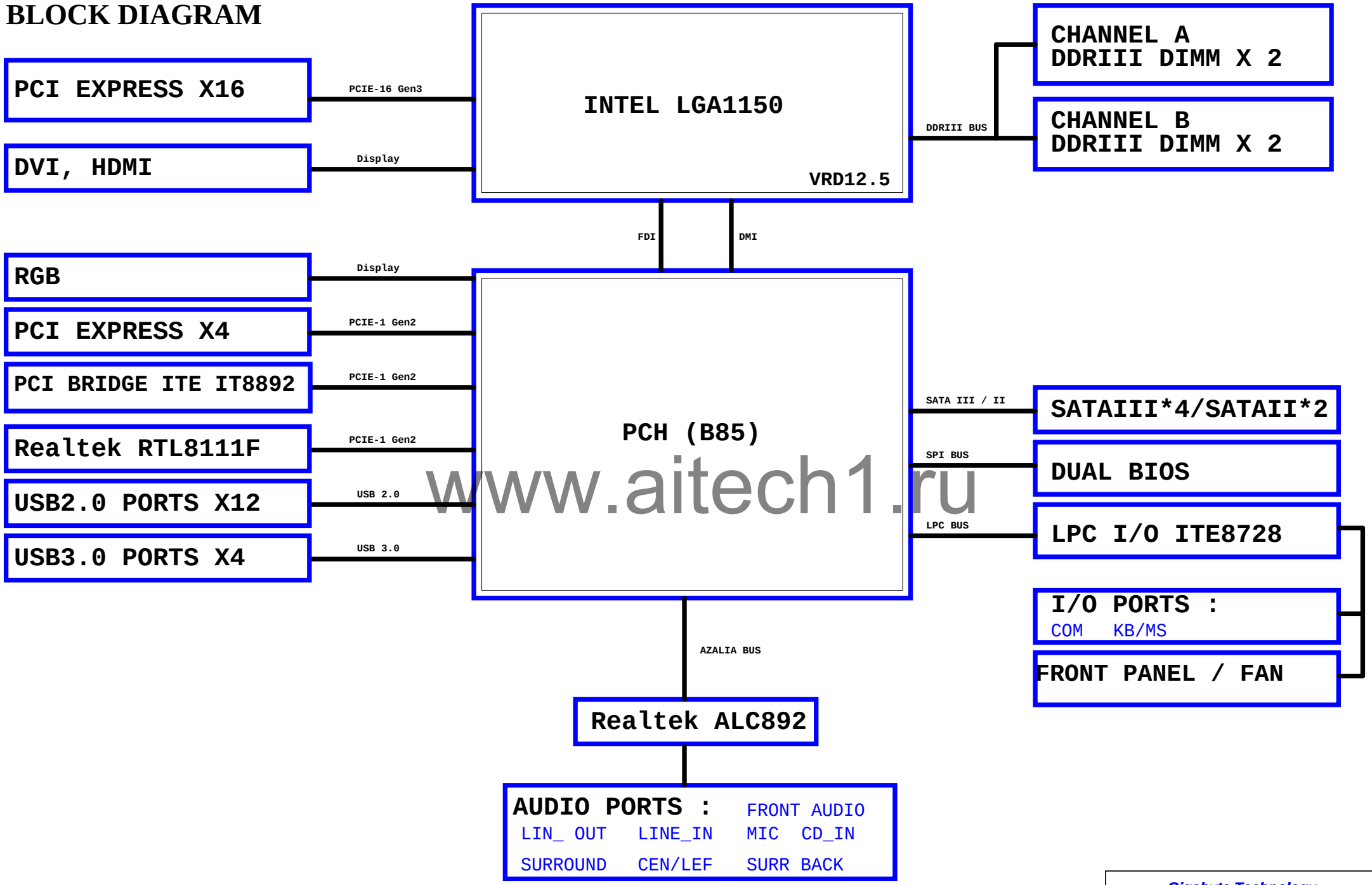
Gigabyte Technology

Title: BOM & PCB MODIFY HISTORY

Size: Custom | Document Number: GA-B85M-D3H | Rev: 1.11

Date: Friday, September 13, 2013 | Sheet 2 of 32

# BLOCK DIAGRAM






| | | | |
|---|---|---|---|
| Gigabyte Technology | | | |
| Title: BLOCK DIAGRAM | | | |
| Size: Custom | Document Number: GA-B85M-D3H | | Rev: 1.11 |
| Date: Friday, September 13, 2013 | Sheet 3 of 32 | | |

## LGA1150 (E)

LGA1150E

Disable SVID

CFG 0-17 all internal PULL-UP

| CFG | H | L | NOTE |
|---|---|---|---|
| 0 | RSVD | RSVD | RSVD |
| 1 | RSVD | RSVD | RSVD |
| 2 | **NORM** | **Reverse** | LANE REVERSAL[0],x16 |
| 3 | RSVD | RSVD | RSVD |
| 4 | **Disable** | **Enable** | eDP Enable |
| 7 | RSVD | RSVD | RSVD |
| 8 | RSVD | RSVD | RSVD |
| 9 | RSVD | RSVD | RSVD |
| 10 | RSVD | RSVD | RSVD |
| 11 | RSVD | RSVD | RSVD |
| 12 | RSVD | RSVD | RSVD |
| 13 | RSVD | RSVD | RSVD |
| 14 | RSVD | RSVD | RSVD |
| 15 | RSVD | RSVD | RSVD |
| 16 | RSVD | RSVD | RSVD |
| 17 | RSVD | RSVD | RSVD |

| CFG6 | CFG5 | PCIE CONFIG |
|---|---|---|
| 1 | 1 | 1X16 , Default |
| 1 | 0 | 2X8 |
| 0 | 1 | RSVD |
| 0 | 0 | X8,X4,X4 |

HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R]

## LGA1150 (D)

LGA1150D

FDI:12/4/5/4/12(breakout min 6/4/4/4/6)
Impedance=85 +- 17.5%

HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R]

## LGA1150 (C)

PCIEX16:16/5/5/5/16(breakout min 10/4/4/4/10)
Impedance=80 +- 17.5%

LGA1150C

W=12mil S=15mil, Max<=400 mil

DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%. TX:3 VIAs, RX:1VIA

HASWELL/[10SC1-F01150-11R_10SC1-F01150-12R]

## -CPURST

1.1V分壓

## CPU SVID

## CPU PU/PD

## SM REF

## THRMTRIP DISABLE

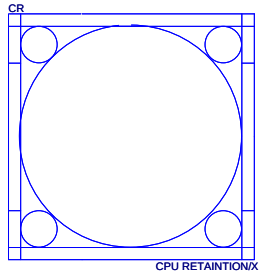


| | |
|---|---|
| Company | Gigabyte Technology |
| Title | CPU LGA1150-A |
| Size | Custom |
| Document Number | GA-B85M-D3H |
| Rev | 1.11 |
| Date | Friday, September 13, 2013 |
| Sheet | 4 of 32 |

## LGA1150 (A)


## LGA1150 (B)

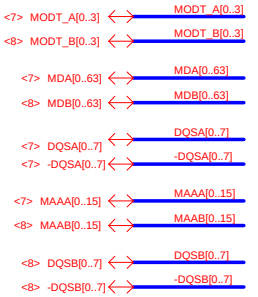

## LGA1150 (CR)




LGA1150_P

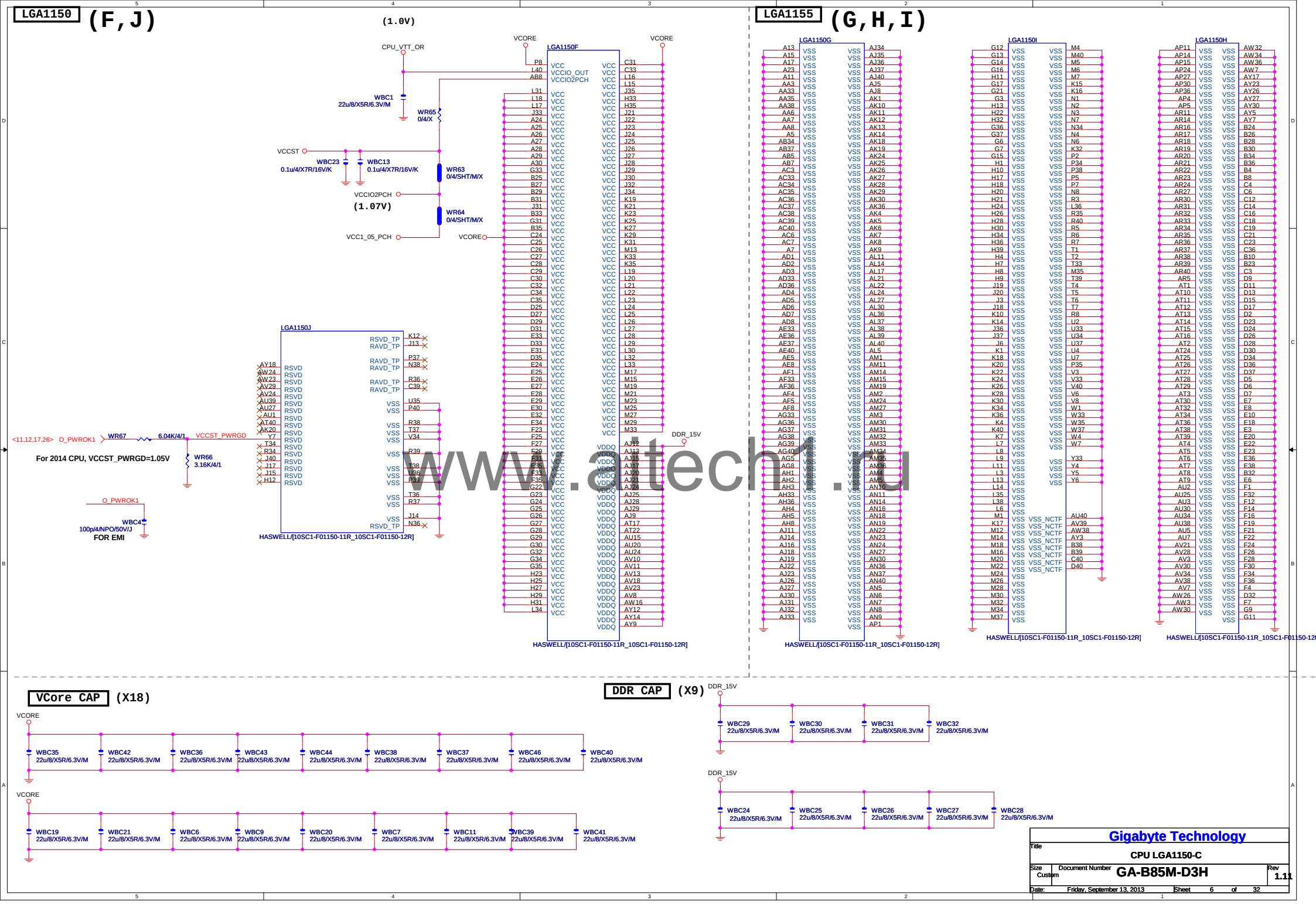
ILM_BP/1156/CSP/ILM_BP/1156/CSP/[12KRC-0F0001-52R_12KRC-0F0001-51R]

## DDR BUS



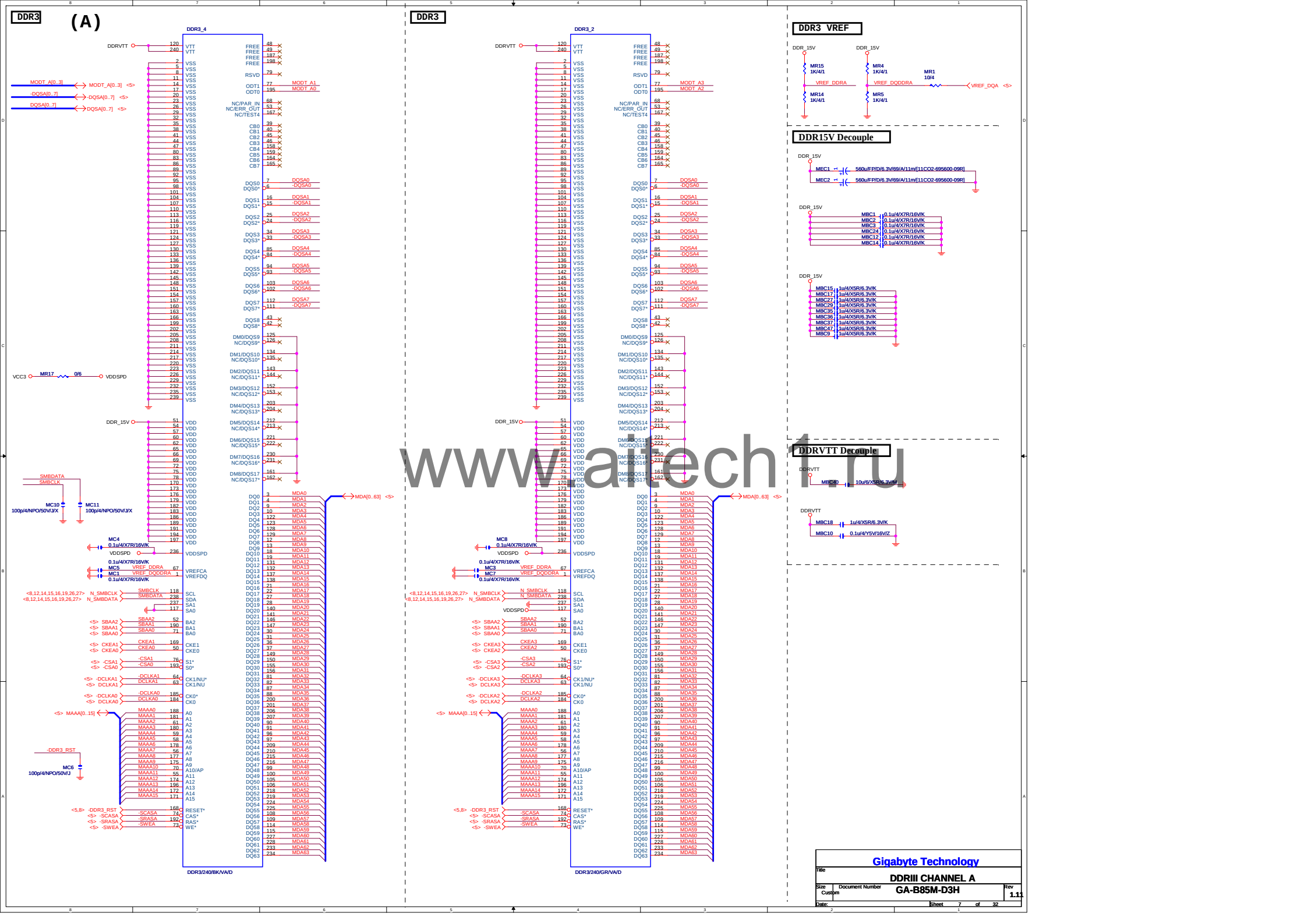



| | | |
|---|---|---|
| Gigabyte Technology | | |
| Title: CPU LGA1150-B | | |
| Size: Custom | Document Number: GA-B85M-D3H | Rev: 1.11 |
| Date: Friday, September 13, 2013 | Sheet 5 of 32 | |



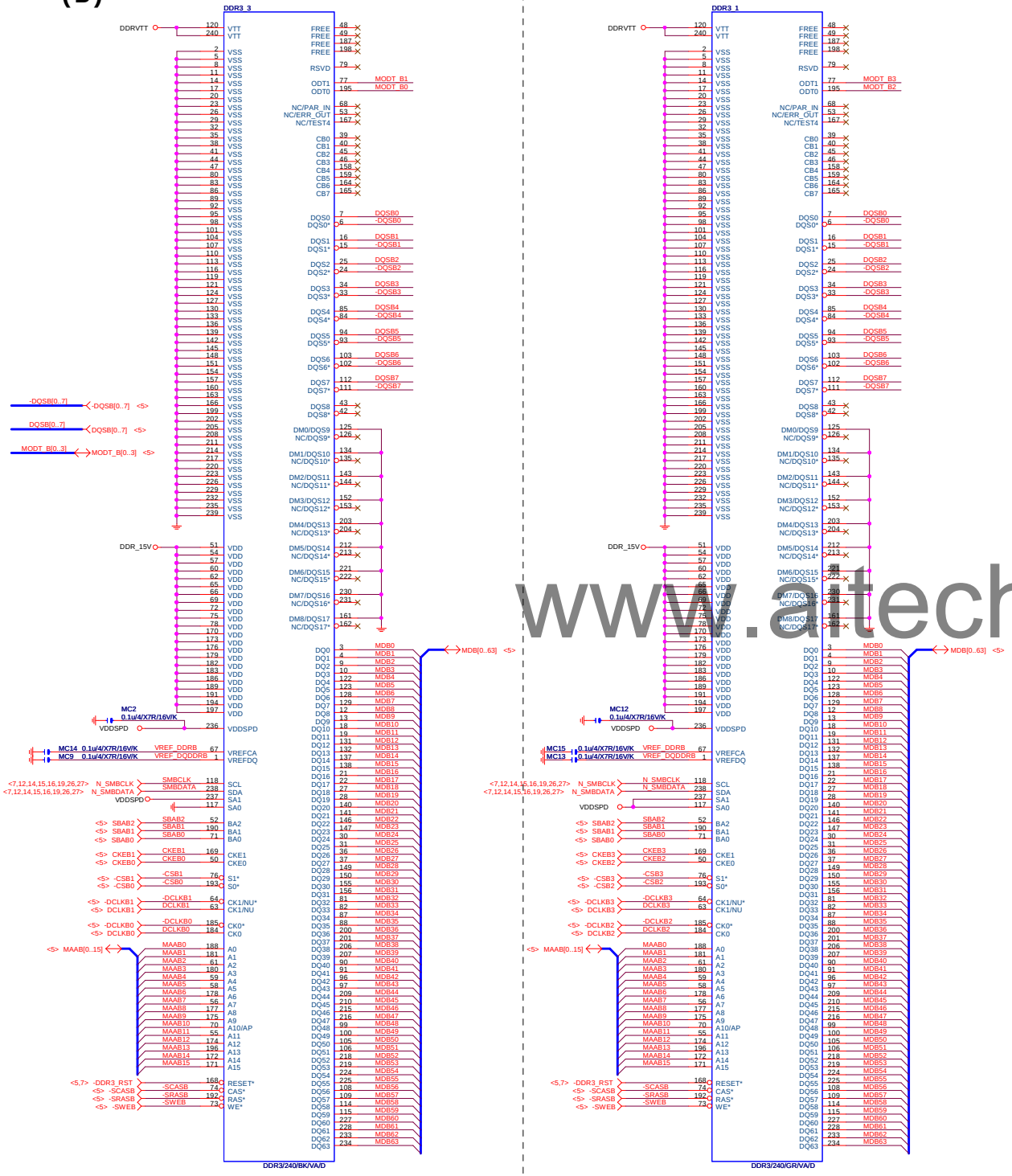



| | |
|---|---|
| Gigabyte Technology | |
| Title | CPU LGA1150-C |
| Size: Custom | Document Number: GA-B85M-D3H |
| Rev | 1.11 |
| Date: Friday, September 13, 2013 | Sheet 6 of 32 |

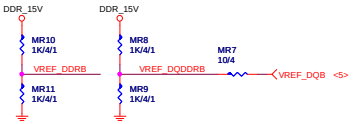


DDR3

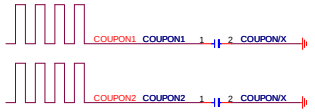
(B)

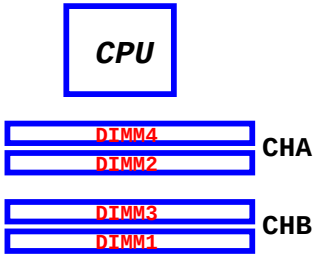



DDR3 VREF




COUPON






| | | |
|---|---|---|
| Gigabyte Technology | | |
| Title: DDRIII CHANNEL B | | |
| Size: Custom | Document Number: GA-B85M-D3H | Rev: 1.11 |
| Date: | Sheet 8 of 32 | |

PCH (B)

DMI:12/4/4/4/12(breakout min 8/4/4/4/8)
Impedance=85 +- 17.5%

USB2.0 : 12/4.5/7.5/4.5/12 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%

B85: Port 6/7 N/A
H81: Port 6/7/12/13 N/A

PCHB

DMI

A_DMI_0TXN A_DMI_0TXP A_DMI_0RXN A_DMI_0RXP A_DMI_1TXN A_DMI_1TXP A_DMI_1RXN A_DMI_1RXP A_DMI_2TXN A_DMI_2TXP A_DMI_2RXN A_DMI_2RXP A_DMI_3TXN A_DMI_3TXP A_DMI_3RXN A_DMI_3RXP

DMI_RXN_0 DMI_RXP_0 DMI_TXN_0 DMI_TXP_0 DMI_RXN_1 DMI_RXP_1 DMI_TXN_1 DMI_TXP_1 DMI_RXN_2 DMI_RXP_2 DMI_TXN_2 DMI_TXP_2 DMI_RXN_3 DMI_RXP_3 DMI_TXN_3 DMI_TXP_3

W=4 mil out of PCH
S=15 mil out of PCH

VCC1_5_PCH — NR50 7.5K/4/1 DMI_COMP — NR40 7.5K/4/1 PCIE_COMP

DMI_RCOMP PCIE_RCOMP

CK_-SRCCLK_PCH CK_SRCCLK_PCH

CLKIN_DMI_N CLKIN_DMI_P

USB

USBN_0 USBP_0 USBN_1 USBP_1 USBN_2 USBP_2 USBN_3 USBP_3 USBN_4 USBP_4 USBN_5 USBP_5 USBN_6 USBP_6 USBN_7 USBP_7 USBN_8 USBP_8 USBN_9 USBP_9 USBN_10 USBP_10 USBN_11 USBP_11 USBN_12 USBP_12 USBN_13 USBP_13

AV10 N_-USBP0 — N_-USBP0 <21>
AU10 N_+USBP0 — N_+USBP0 <21>
AV11 N_-USBP1 — N_-USBP1 <21>
AW11 N_+USBP1 — N_+USBP1 <21>
AN14 N_-USBP2 — N_-USBP2 <24>
AP14 N_+USBP2 — N_+USBP2 <24>
AJ16 N_-USBP3 — N_-USBP3 <24>
AK16 N_+USBP3 — N_+USBP3 <24>
AU15 N_-USBP4 — N_-USBP4 <18>
AV15 N_+USBP4 — N_+USBP4 <18>
AU12 N_-USBP5 — N_-USBP5 <18>
AT12 N_+USBP5 — N_+USBP5 <18>
AV14 AW14 AU17 AT17

AW16 N_-USBP8 — N_-USBP8 <21>
AV16 N_+USBP8 — N_+USBP8 <21>
AN16 N_-USBP9 — N_-USBP9 <21>
AP16 N_+USBP9 — N_+USBP9 <21>
AJ18 N_-USBP10 — N_-USBP10 <18>
AK18 N_+USBP10 — N_+USBP10 <18>
AP18 N_-USBP11 — N_-USBP11 <18>
AN18 N_+USBP11 — N_+USBP11 <18>
AW18 N_-USBP12 — N_-USBP12 <21>
AV18 N_+USBP12 — N_+USBP12 <21>
AP20 N_-USBP13 — N_-USBP13 <21>
AN20 N_+USBP13 — N_+USBP13 <21>

PCIE

L14 K14 B12 B11 F14 G14 D11 C11 F11 H11 B9 A9 J11 L11 B8 C8 G9 F9 B7 A7 F7 H7 E1 D2 K8 K8 G3 G5 J2 J3 H2 H1

PCIE_PERN_1_USB3_RXN_2 PCIE_PERP_1_USB3_RXP_2 PCIE_PETN_1_USB3_TXN_2 PCIE_PETP_1_USB3_TXP_2 PCIE_PERN_2_USB3_RXN_3 PCIE_PERP_2_USB3_RXP_3 PCIE_PETN_2_USB3_TXN_3 PCIE_PETP_2_USB3_TXP_3 PCIE_PERN_3 PCIE_PERP_3 PCIE_PETN_3 PCIE_PETP_3 PCIE_PERN_4 PCIE_PERP_4 PCIE_PETN_4 PCIE_PETP_4 PCIE_PERN_5 PCIE_PERP_5 PCIE_PETN_5 PCIE_PETP_5 PCIE_PERN_6 PCIE_PERP_6 PCIE_PETN_6 PCIE_PETP_6 PCIE_PERN_7 PCIE_PERP_7 PCIE_PETN_7 PCIE_PETP_7 PCIE_PERN_8 PCIE_PERP_8 PCIE_PETN_8 PCIE_PETP_8

8111G: <24> LA_ML_IN, <24> LA_ML_IP, <24> LA_ML_ON, <24> LA_ML_OP

8892: <32> G_PCIEBIN, <32> G_PCIEBIP, <32> G_PCIEBON, <32> G_PCIEBOP

PCIEx4: <15> PP_EXP_RXN0, PP_EXP_RXP0, PP_EXP_TXN0, PP_EXP_TXP0, PP_EXP_RXN1, PP_EXP_RXP1, PP_EXP_TXN1, PP_EXP_TXP1, PP_EXP_RXN2, PP_EXP_RXP2, PP_EXP_TXN2, PP_EXP_TXP2, PP_EXP_RXN3, PP_EXP_RXP3, PP_EXP_TXN3, PP_EXP_TXP3

放靠近 Device & PCI-E Slot
Impedance=80 +- 17.5%
PCIEX1:16/5/5/5/16 (breakout min 8/4/4/4/8)

OC0B_GP59 OC1B_GP40 OC2B_GP41 OC3B_GP42 OC4B_GP43 OC5B_GP9 OC6B_GP10 OC7B_GP14

AE40 AE37 AD39 AD40 AF39 AC41 AF40 AG40 N_GPIO14 — NR130 8.2K/4 — 3VDUAL

N_-USBOC_F <18,21>
N_-USBOC_R <18>

USBRBIASB USBRBIAS

AV20 N_USBRBIAS — NR47 22.6/4/1
AU20
W=4 mil out of PCH
S=15 mil out of PCH

CLKIN_DOT96N CLKIN_DOT96P

AP11 CK_-DOTCLK — CK_-DOTCLK <26>
AM11 CK_DOTCLK — CK_DOTCLK <26>

N_-USBOC_F — NBC82 0.1u/4/X7R/16V/K
N_-USBOC_R — NBC83 0.1u/4/X7R/16V/K

DH82B85/S/[10HB1-030B85-20R]

PCH (F)

PCHF

USB3: USB3_RXN_0 USB3_RXP_0 USB3_TXN_0 USB3_TXP_0 USB3_RXN_1 USB3_RXP_1 USB3_TXN_1 USB3_TXP_1 USB3_RXN_4 USB3_RXP_4 USB3_TXN_4 USB3_TXP_4 USB3_RXN_5 USB3_RXP_5 USB3_TXN_5 USB3_TXP_5

<21> PCH_USB3_RXN0 — F20
<21> PCH_USB3_RXP0 — G20
<21> PCH_USB3_TXN0 — B18
<21> PCH_USB3_TXP0 — C18
<21> PCH_USB3_RXN1 — G18
<21> PCH_USB3_RXP1 — H18
<21> PCH_USB3_TXN1 — B15
<21> PCH_USB3_TXP1 — B16
<18> PCH_USB3_RXN4 — K20
<18> PCH_USB3_RXP4 — L20
<18> PCH_USB3_TXN4 — D15
<18> PCH_USB3_TXP4 — C15
<18> PCH_USB3_RXN5 — L18
<18> PCH_USB3_RXP5 — K18
<18> PCH_USB3_TXN5 — B14
<18> PCH_USB3_TXP5 — A14

VCC3 — NR62 8.2K/4 — NR63 8.2K/4

TACH6_GP70 — AK28
TACH7_GP71 — AT34

FDILINK: FDI_RXN_0 FDI_RXP_0 FDI_TXN_0 FDI_TXP_0 FDI_RXN_1 FDI_RXP_1 FDI_TXN_1 FDI_TXP_1 FDI_CSYNC FDI_INT FDI_RCOMP

N1 FDI_TXN0
N2 FDI_TXP0
P2 FDI_TXN1
P3 FDI_TXP1
L2 FDI_CSYNC — FDI_CSYNC <4>
L3 FDI_INT — FDI_INT <4>
K2 NR29 7.5K/4/1 — VCC1_5_PCH

DH82B85/S/[10HB1-030B85-20R]

FDI_TXP[0..1] — FDI_TXP[0..1] <4>
FDI_TXN[0..1] — FDI_TXN[0..1] <4>

USB3.0:20/5/7/5/20 (breakout min 8/4/4/4/8) ; ONLY 3 VIAS
Impedance=85 +- 17.5%
Back Panel < 10000 MILS
Front Panel < 6000 MILS

PCH CLK PD

CK_SRCCLK_PCH NR89 8.2K/4
CK_-SRCCLK_PCH NR88 8.2K/4
Mount for integrated clock Generation Mode

CK_DOTCLK NR92 8.2K/4
CK_-DOTCLK NR91 8.2K/4
NR225 short to GND in non graphic SKU

PCH (J)

PCHJ

AT1 AT41 AU1 AV1 AV2 AV40 AV41 AW2 AW40 B40 B41 C41 D1 D41 — VSS_NCTF

TP22 TP23 TP21 TP20 TP14 TP15 TP12 TP10 TP11 TP9 TP3 TP4 TP1 TP2 TP5 TP6 TP7 TP8 VSS VSS VSS

U11 U10 AJ14 AK14 K34 K33 AH24 L16 K16 AM34 R12 N12 L22 K22 R4 K5 P5 L5 AC31 AF3 AV21

DH82B85/S/[10HB1-030B85-20R]

PCH H/S

SB_HEATSIN

PCH_HS
PCH_HS[12SP2-S04209-01R_12SP2-S04209-02R_12SP2-S04209-03R]

USB TABLE

OC[3:0]# for Device 29 (ports 0-7)
OC[7:4]# for Device 26 (ports 8-13)

| USB OC# | Configure |
|---|---|
| OC0# | F_USB30 |
| OC1# | F_USB1 |
| OC2# | F_USB2 |
| OC3# | F_USB3 |
| OC4# | USB_LAN |
| OC5# | R_USB30 |
| OC6# | KB_MS_USB |
| OC7# | Not Use |



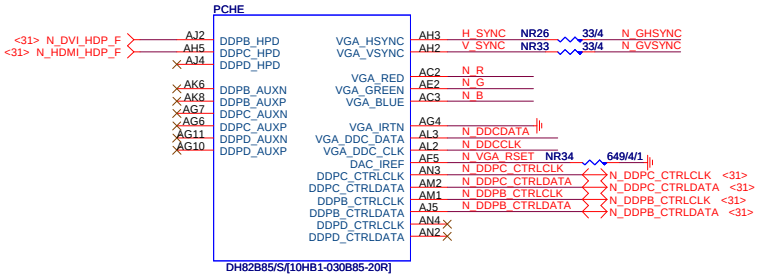
Gigabyte Technology

Title: PCH FDI,DMI,USB ,PCIE,NVRAM

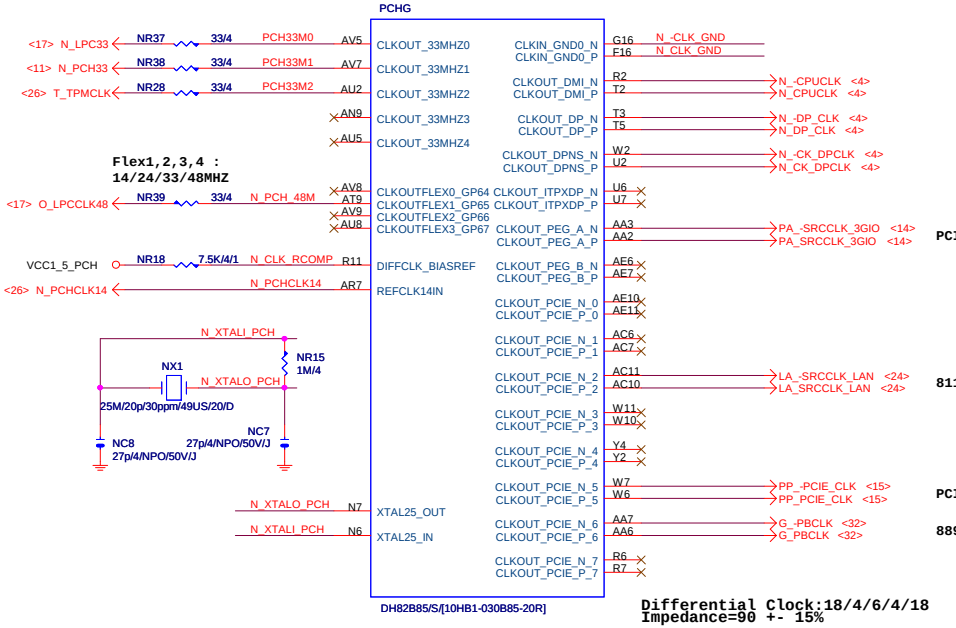
Size: Custom | Document Number: GA-B85M-D3H | Rev: 1.11

Date: Friday, September 13, 2013 | Sheet 9 of 32

## PCH (E)

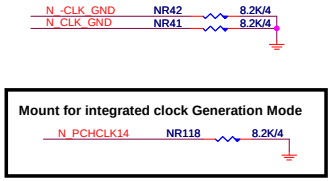



## PCH (G)

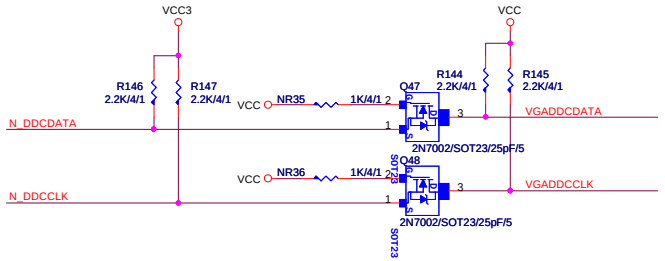



Differential Clock:18/4/6/4/18
Impedance=90 +- 15%

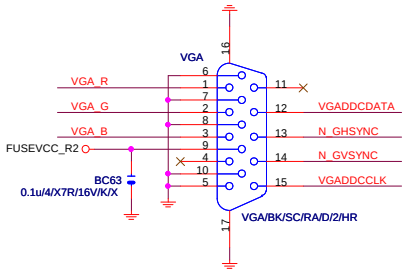
## PCH CLK PD



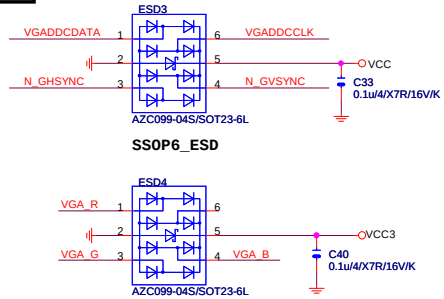

## VGA DDC



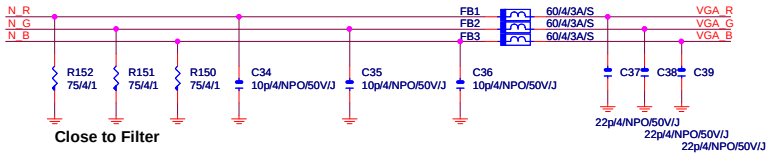

## VGA CONNECTOR

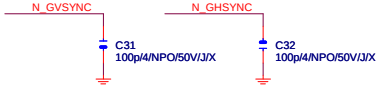



## VGA ESD




## VGA DDC



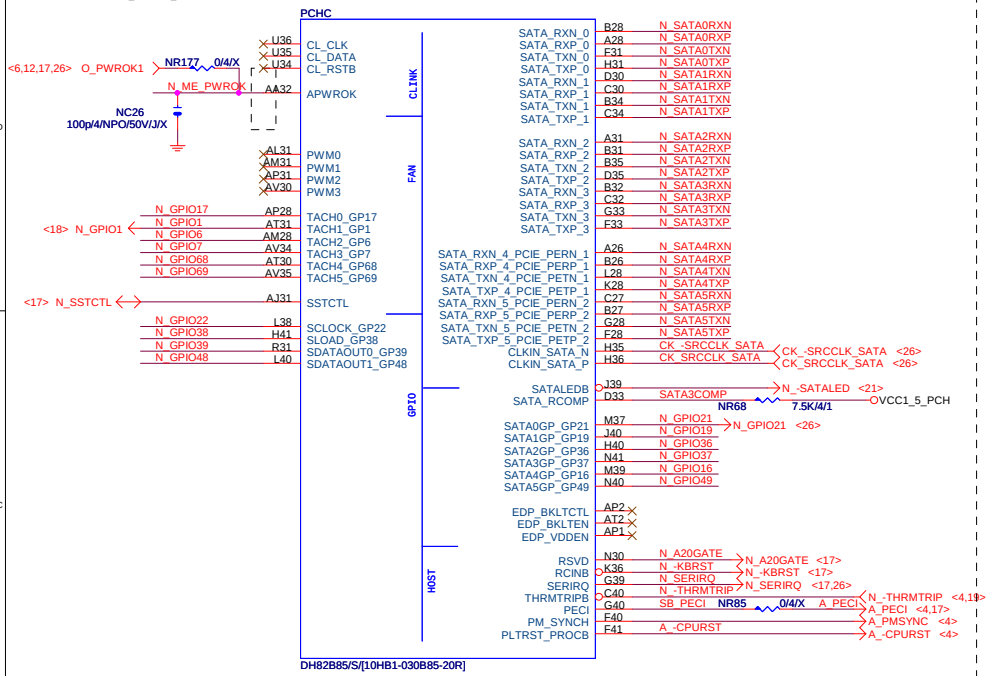




**Gigabyte Technology**

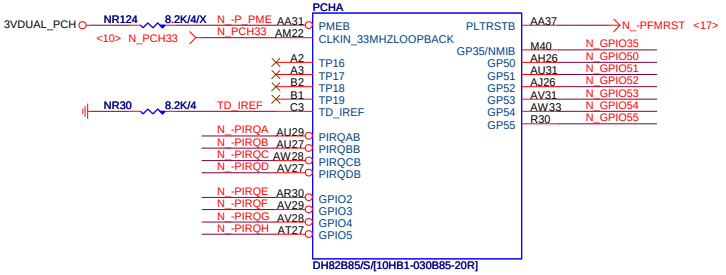
| | | | |
|---|---|---|---|
| Title | PCH DISPLAY ,CLK BUFFER | | |
| Size: Custom | Document Number: GA-B85M-D3H | | Rev: 1.11 |
| Date: Friday, September 13, 2013 | Sheet 10 of 32 | | |

PCH (C)

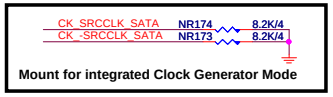
SATA3 : 20/7.5/4.5/7.5/20 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%
SATA2 : 15/7.5/4.5/7.5/15 (breakout min 8/4/4/4/8)
Impedance=90 +- 17.5%



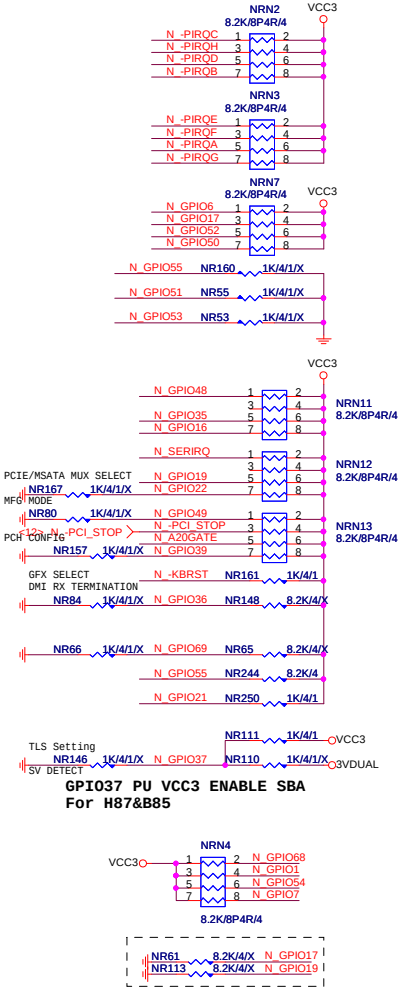

PCH (A)




PCH CLK PD

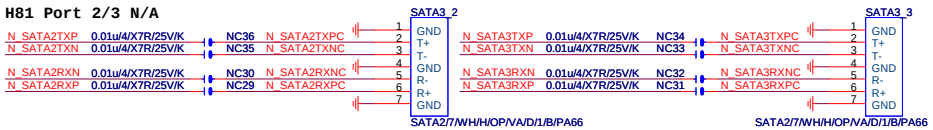



PCH PU/PD

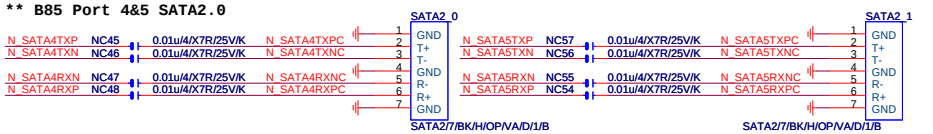



SATA CONNECTOR

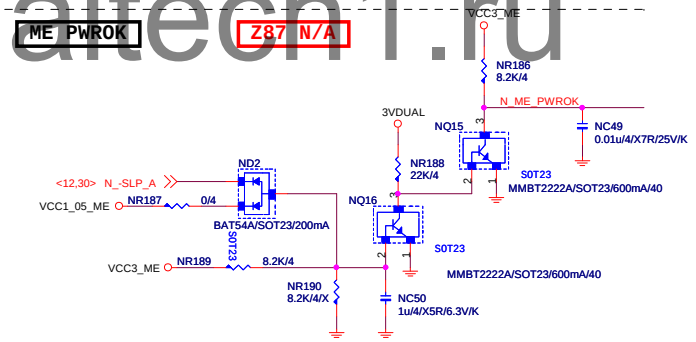

H81 Port 2/3 N/A



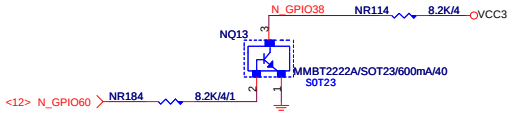

** Z87/H87 Port 4&5 SATA3.0
** B85 Port 4&5 SATA2.0




ME PWROK Z87 N/A

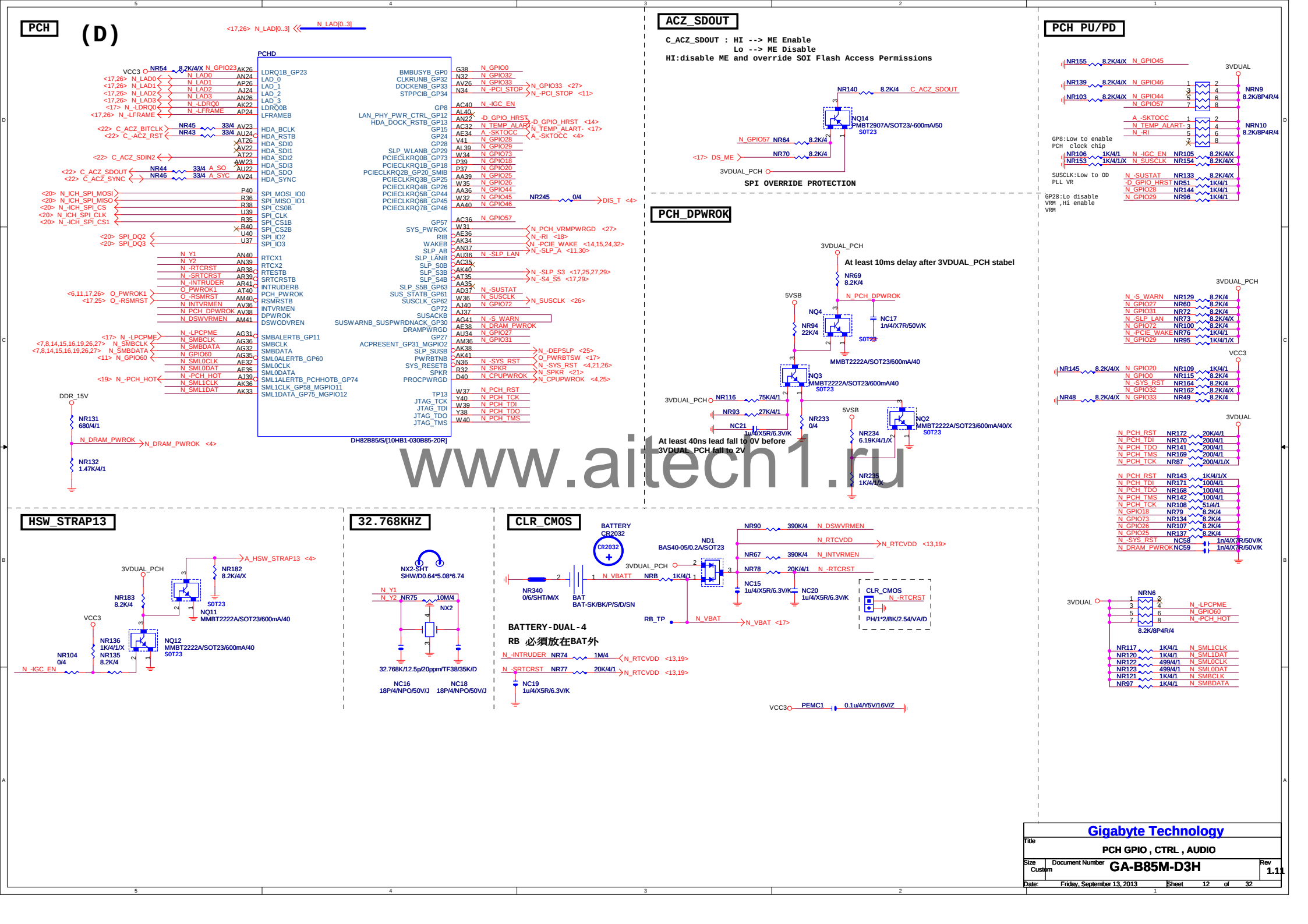


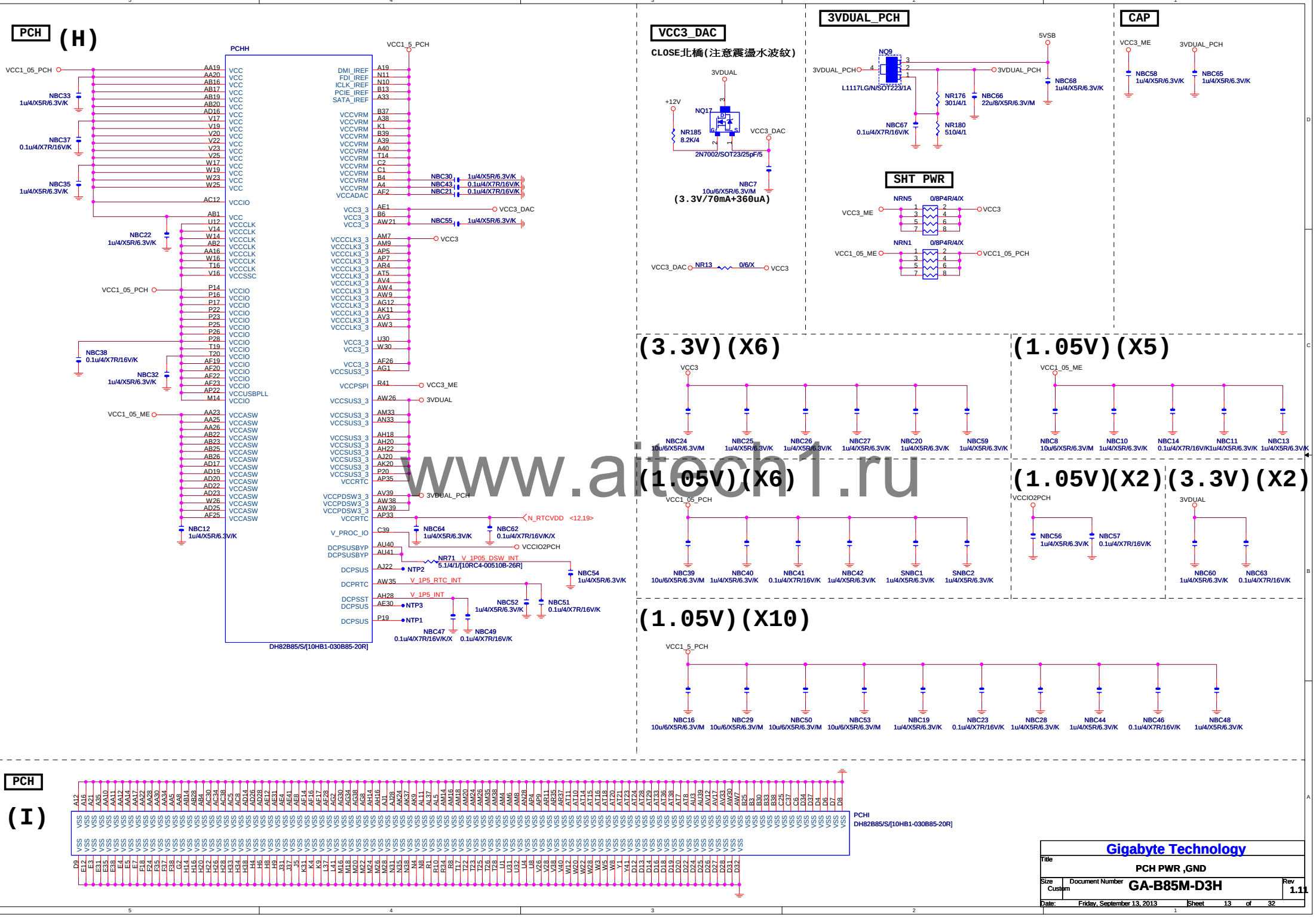

GPIO38 Ctrl






| | | | |
|---|---|---|---|
| Gigabyte Technology | | | |
| Title: PCH HOST , SATA, PCI | | | |
| Size: Custom | Document Number: GA-B85M-D3H | | Rev: 1.11 |
| Date: Friday, September 13, 2013 | | Sheet 11 of 32 | |

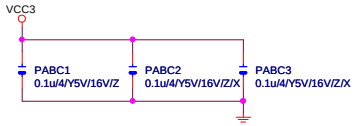

PCH
(D)
PCHD
DH82B85/S/[10HB1-030B85-20R]
ACZ_SDOUT
C_ACZ_SDOUT : HI --> ME Enable
Lo --> ME Disable
HI:disable ME and override SOI Flash Access Permissions
SPI OVERRIDE PROTECTION
PCH_DPWROK
At least 10ms delay after 3VDUAL_PCH stabel
At least 40ns lead fall to 0V before
3VDUAL_PCH fall to 2V
PCH PU/PD
HSW_STRAP13
32.768KHZ
CLR_CMOS
BATTERY-DUAL-4
RB 必須放在BAT外
www.aitech1.ru
Gigabyte Technology
PCH GPIO , CTRL , AUDIO
GA-B85M-D3H
1.11
Friday, September 13, 2013



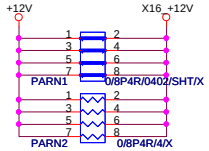



| | |
|---|---|
| Gigabyte Technology | |
| Title | PCH PWR ,GND |
| Size: Custom | Document Number: GA-B85M-D3H |
| Rev | 1.11 |
| Date: Friday, September 13, 2013 | Sheet 13 of 32 |

## PCIEX16 CAP




## PCIEX16 PROTECT SHT

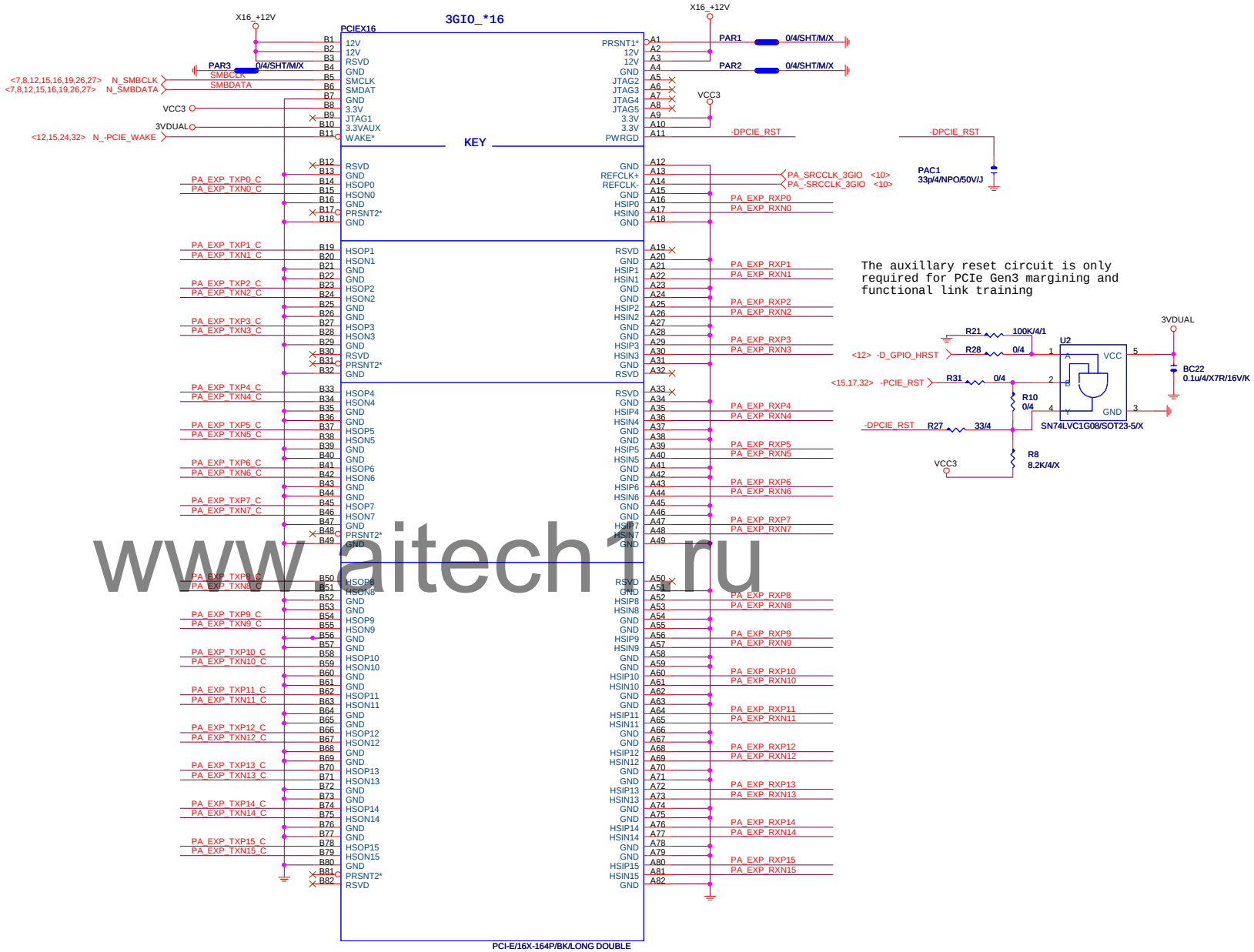



## PCIEX16 AC CAP

| | | | |
|---|---|---|---|
| PA_EXP_TXP0 | PAC5 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXP0_C |
| PA_EXP_TXN0 | PAC4 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXN0_C |
| PA_EXP_TXP1 | PAC6 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXP1_C |
| PA_EXP_TXN1 | PAC7 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXN1_C |
| PA_EXP_TXP2 | PAC8 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXP2_C |
| PA_EXP_TXN2 | PAC9 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXN2_C |
| PA_EXP_TXP3 | PAC10 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXP3_C |
| PA_EXP_TXN3 | PAC11 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXN3_C |
| PA_EXP_TXP4 | PAC12 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXP4_C |
| PA_EXP_TXN4 | PAC13 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXN4_C |
| PA_EXP_TXP5 | PAC14 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXP5_C |
| PA_EXP_TXN5 | PAC15 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXN5_C |
| PA_EXP_TXP6 | PAC16 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXP6_C |
| PA_EXP_TXN6 | PAC17 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXN6_C |
| PA_EXP_TXP7 | PAC19 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXP7_C |
| PA_EXP_TXN7 | PAC18 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXN7_C |
| PA_EXP_TXP8 | PAC20 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXP8_C |
| PA_EXP_TXN8 | PAC21 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXN8_C |
| PA_EXP_TXP9 | PAC22 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXP9_C |
| PA_EXP_TXN9 | PAC23 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXN9_C |
| PA_EXP_TXP10 | PAC24 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXP10_C |
| PA_EXP_TXN10 | PAC25 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXN10_C |
| PA_EXP_TXP11 | PAC26 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXP11_C |
| PA_EXP_TXN11 | PAC27 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXN11_C |
| PA_EXP_TXP12 | PAC28 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXP12_C |
| PA_EXP_TXN12 | PAC29 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXN12_C |
| PA_EXP_TXP13 | PAC30 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXP13_C |
| PA_EXP_TXN13 | PAC31 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXN13_C |
| PA_EXP_TXP14 | PAC32 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXP14_C |
| PA_EXP_TXN14 | PAC33 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXN14_C |
| PA_EXP_TXP15 | PAC34 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXP15_C |
| PA_EXP_TXN15 | PAC35 | 0.22u/4/X5R/6.3V/K | PA_EXP_TXN15_C |

PA_EXP_RXP[0..15] >>> PA_EXP_RXP[0..15] <4>
PA_EXP_RXN[0..15] >>> PA_EXP_RXN[0..15] <4>
PA_EXP_TXP[0..15] >>> PA_EXP_TXP[0..15] <4>
PA_EXP_TXN[0..15] >>> PA_EXP_TXN[0..15] <4>

## PCIEX16 SLOT



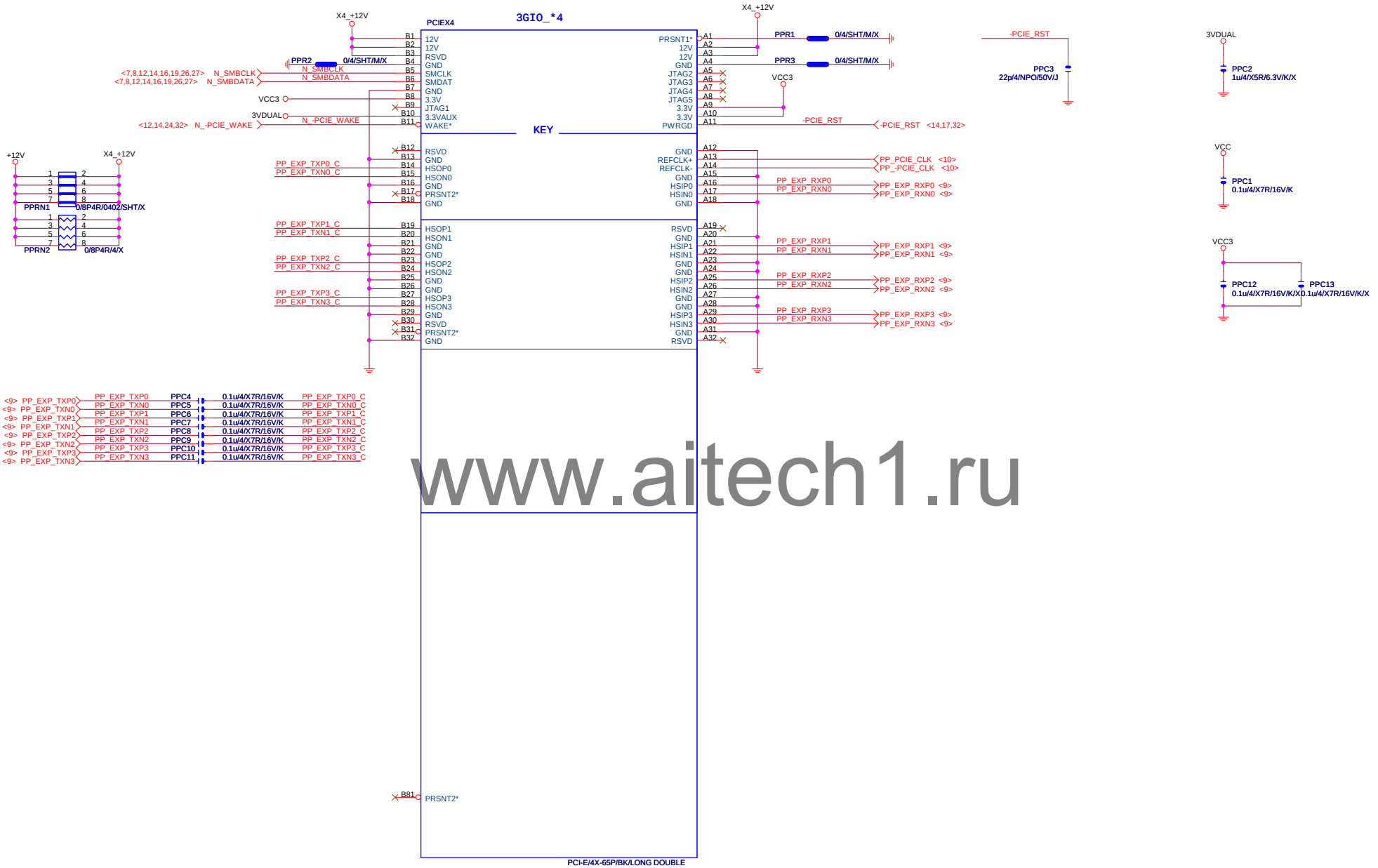

The auxillary reset circuit is only required for PCIe Gen3 margining and functional link training





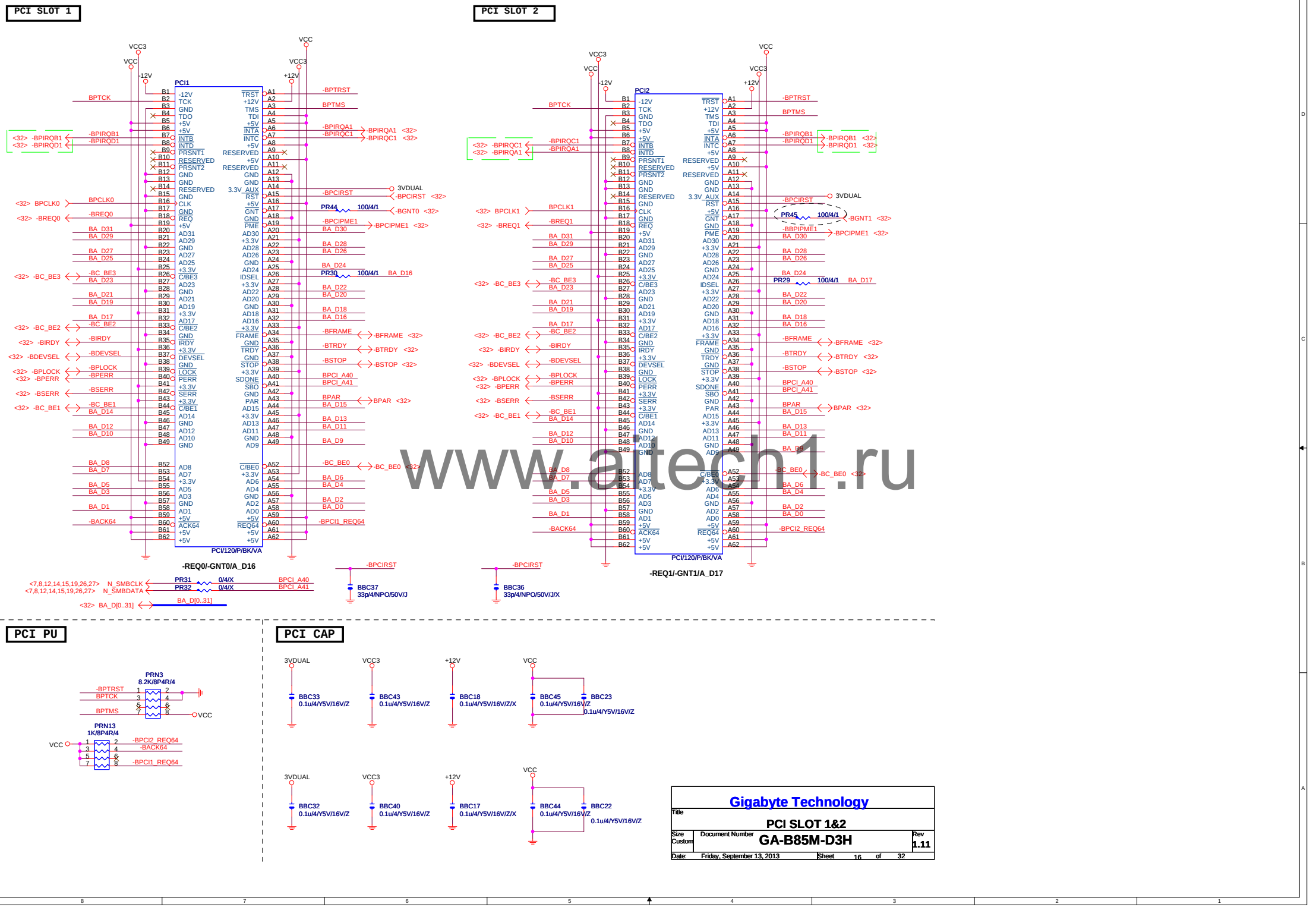

| | | | |
|---|---|---|---|
| Gigabyte Technology | | | |
| Title: PCI EXPRESS * 16 | | | |
| Size: Custom | Document Number: GA-B85M-D3H | | Rev: 1.11 |
| Date: Friday, September 13, 2013 | | Sheet 14 of 32 | |

# PCIEX4 SLOT

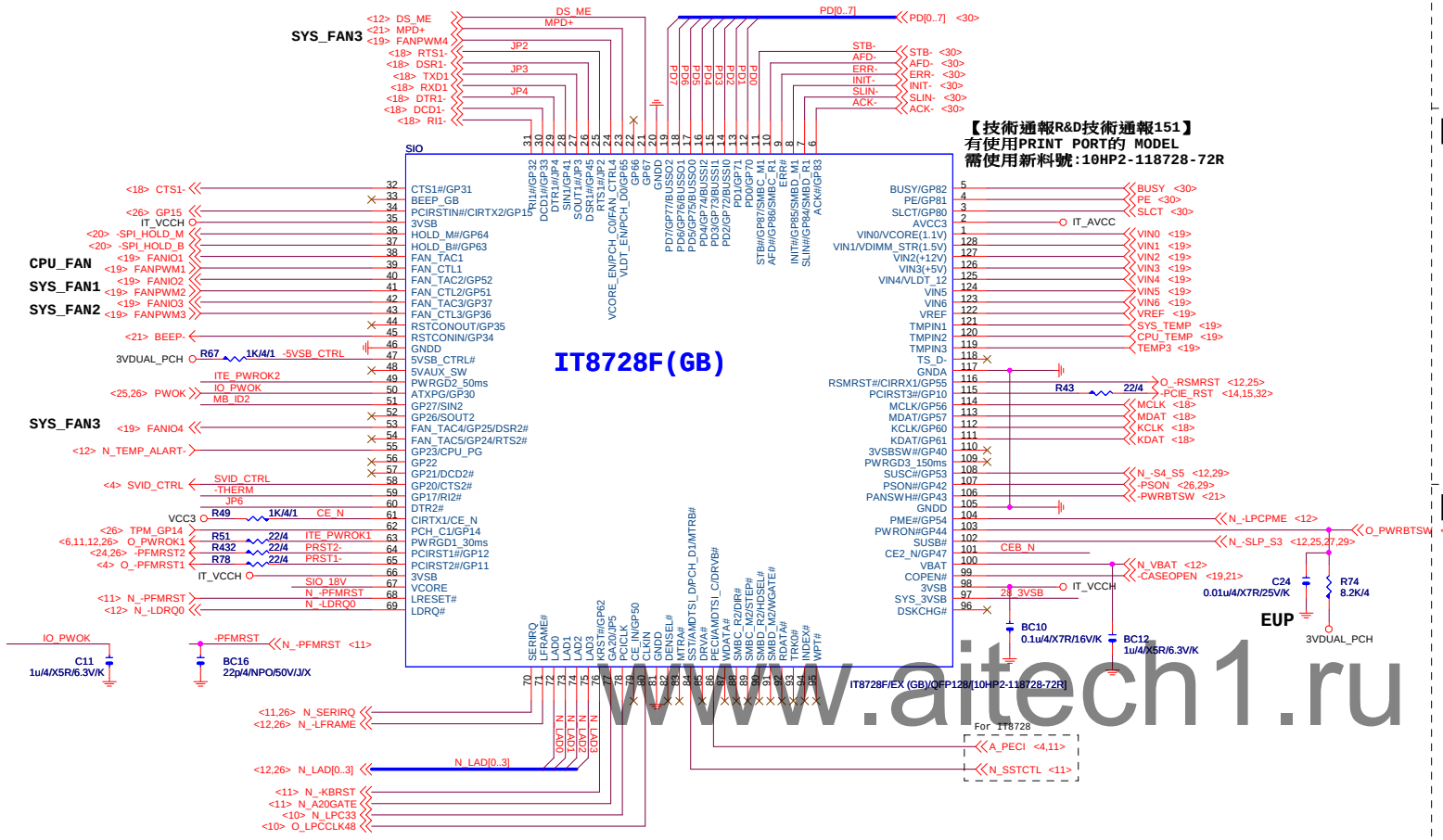




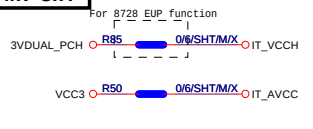

| | | |
|---|---|---|
| Gigabyte Technology | | |
| Title: PCI EXPRESS X 1 PORT | | |
| Size: Custom | Document Number: GA-B85M-D3H | Rev: 1.11 |
| Date: Friday, September 13, 2013 | Sheet 15 of 32 | |



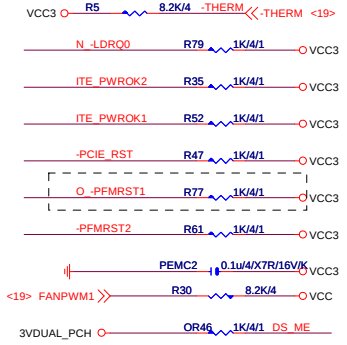
## SIO IT8728F



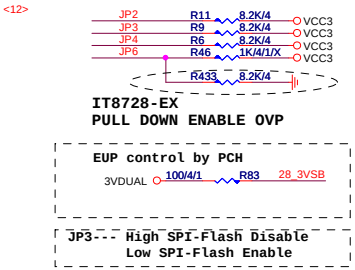

## PWR SHT




## SIO PU




## SIO STRAP




## MB ID

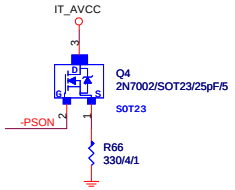

## IT8728F NOTE

| | IT8728 |
|---|---|
| PIN121 | VCORE_EN/PCH_C0 |
| PIN120 | VLDT_EN/PCH_D0 |
| PIN19 | ATXPG |
| PIN31 | PCH_C1 |
| PIN53 | SST/AMDTSI_D/MTRB#/PCH_D1 |
| PIN55 | PECI/AMDTSI_C/DRVB# |
| PIN66 | SYS_3VSB |
| PIN70 | GP47 |
| PIN95 | VIN2(VCC5) |
| PIN96 | VIN1(VCC12) |
| PIN97 | VIN1/VDIMM_STR(1.5V) |
| PIN98 | VIN0/VCORE(1.1V)/NC |

## DUAL BIOS OPT STRAP

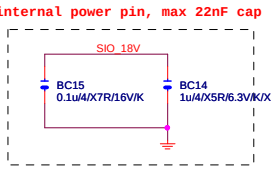



## Power leakage



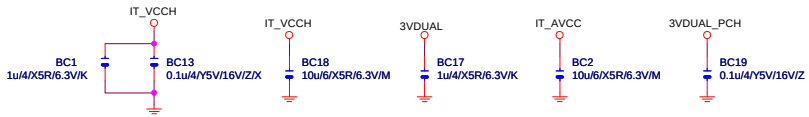

For IT8721 Power leakage

## SIO_18V




FOR LOW TEMP POWER ON INTO TEST MODE ISSUE

## SIO CAP

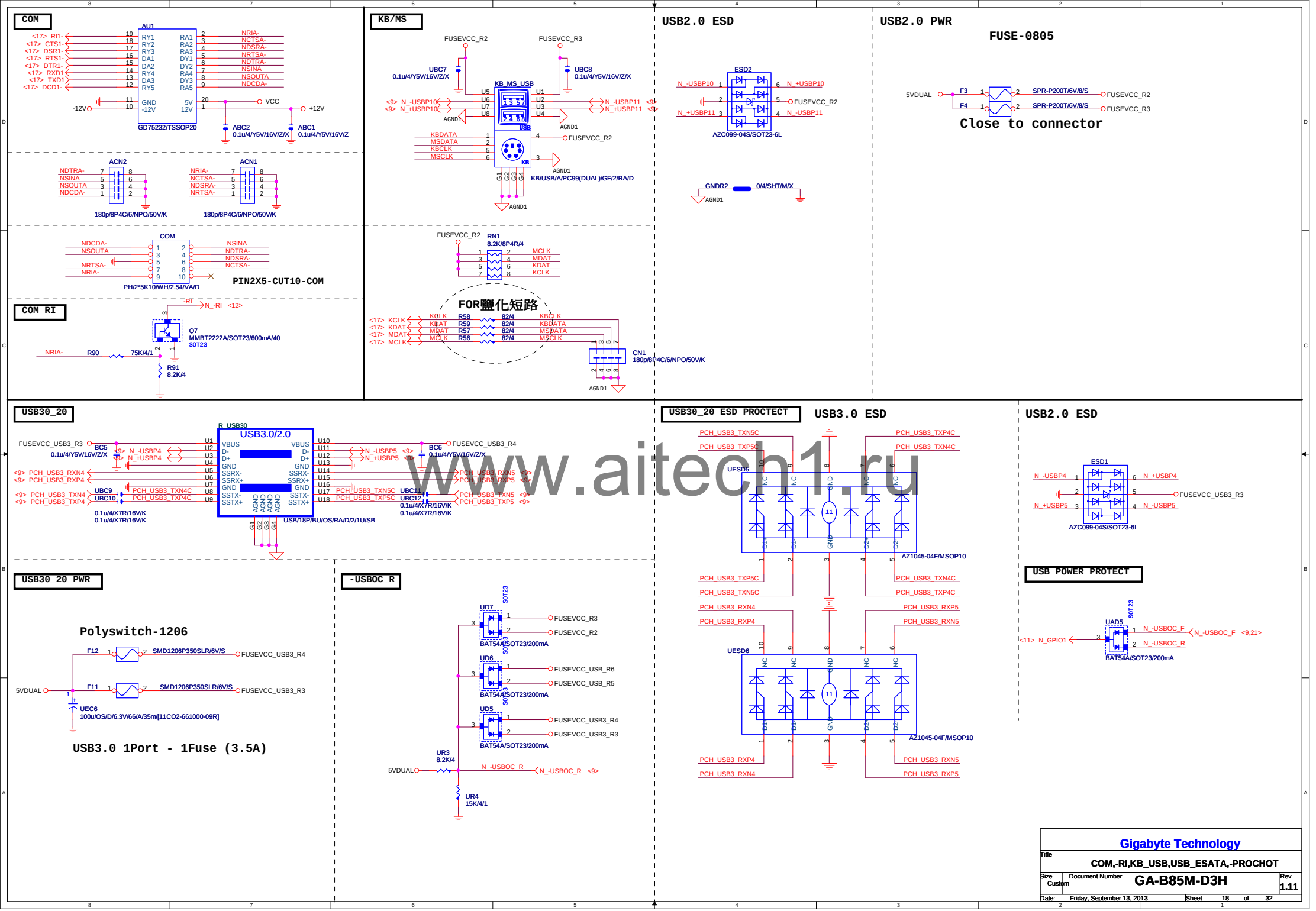



Gigabyte Technology

Title: ITE 8728 LPC IO

Size: Custom | Document Number: GA-B85M-D3H | Rev: 1.11

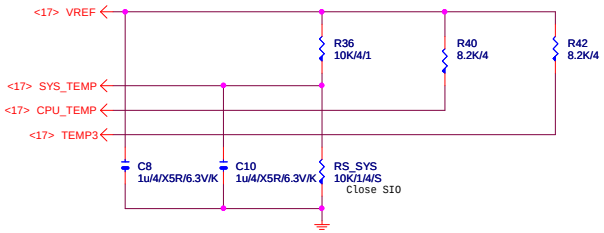
Date: Friday, September 13, 2013 | Sheet 17 of 32



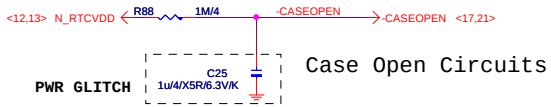



| | |
|---|---|
| Gigabyte Technology | |
| Title | COM,-RI,KB_USB,USB_ESATA,-PROCHOT |
| Size: Custom | Document Number: GA-B85M-D3H |
| Rev: 1.11 | |
| Date: Friday, September 13, 2013 | Sheet 18 of 32 |

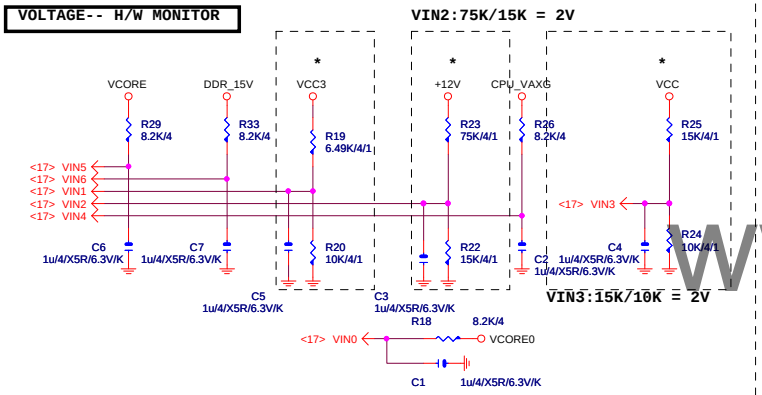
## TEMP H/W MONITOR



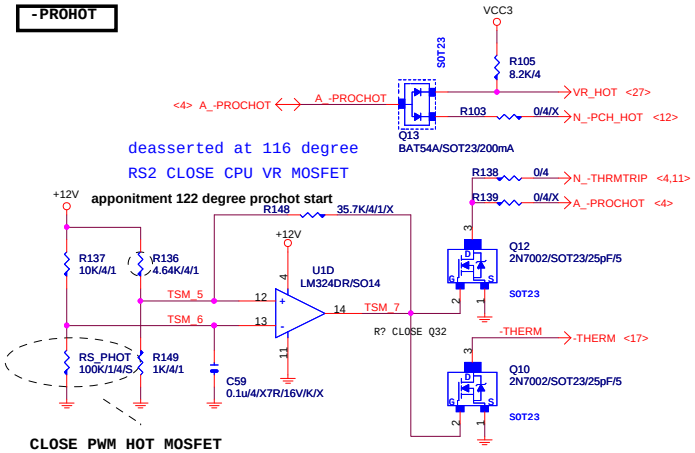

## CASE OPEN



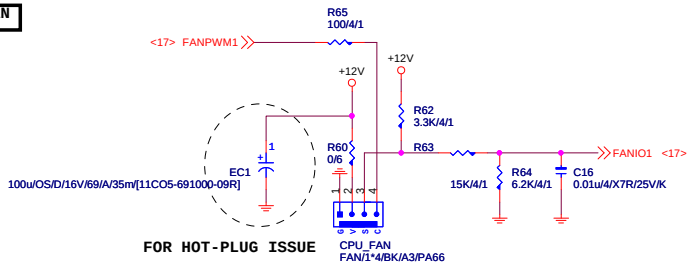

## VOLTAGE-- H/W MONITOR



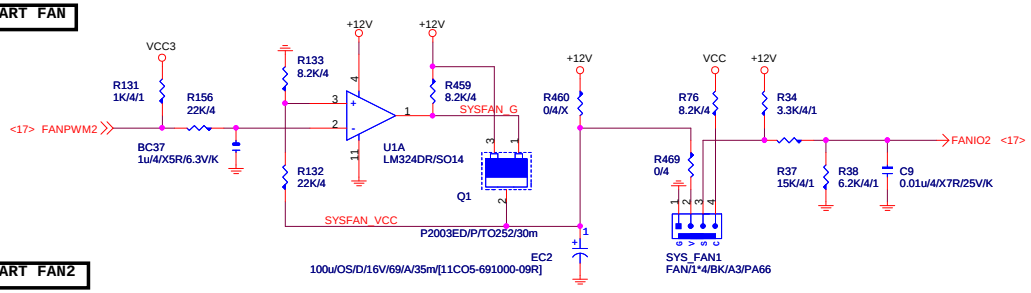

## -PROHOT



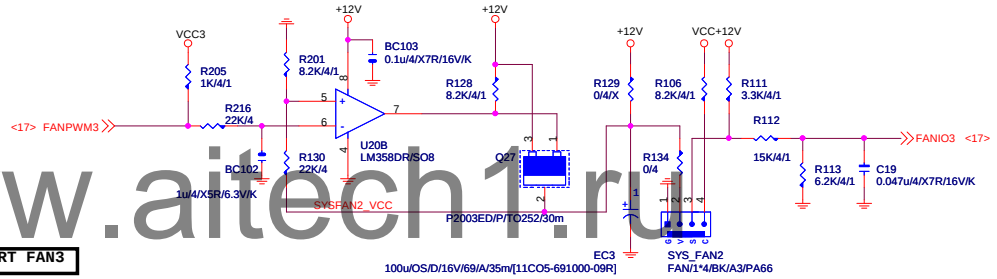

## CPU SMART FAN



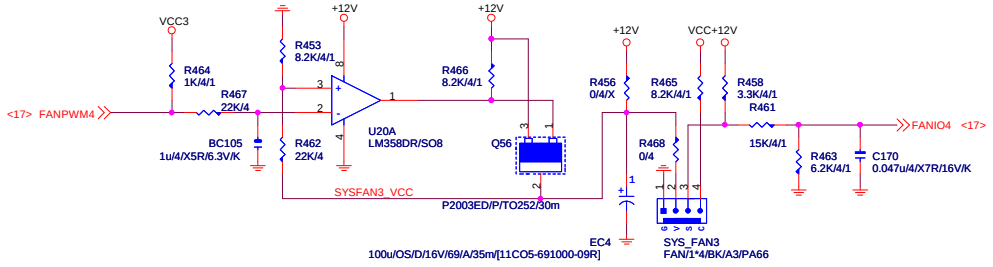

## SYS SMART FAN



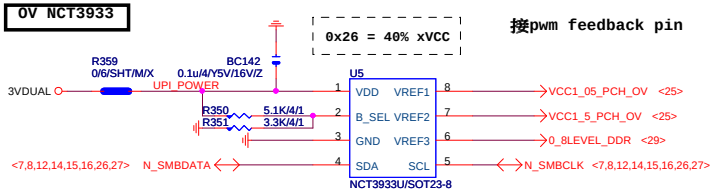

## SYS SMART FAN2




## SYS SMART FAN3

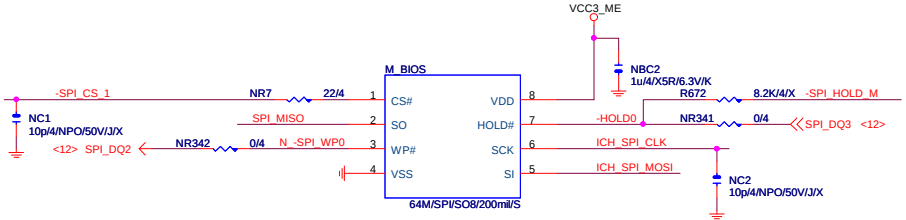


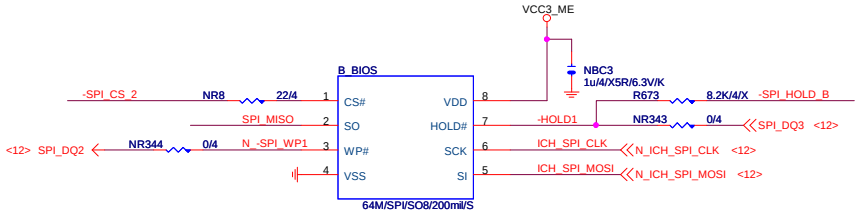

## OV NCT3933





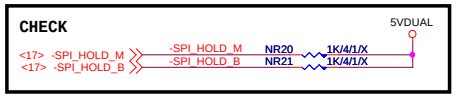

| | | |
|---|---|---|
| Gigabyte Technology | | |
| Title: HWM,FAN CTRL,OV | | |
| Size: Custom | Document Number: GA-B85M-D3H | Rev: 1.11 |
| Date: Friday, September 13, 2013 | Sheet 19 of 32 | |

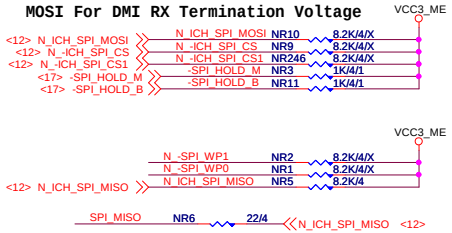


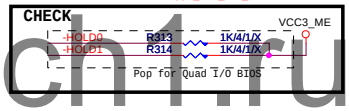



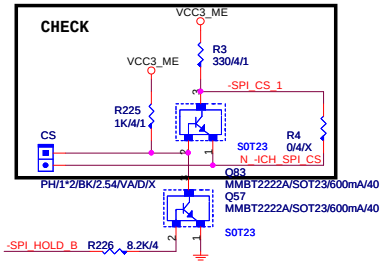

| BOOT DEVICE | GNT0 | GNT1 |
|---|---|---|
| LPC | 0 | 0 |
| PCI | 0 | 1 |
| NAND | 1 | 0 |
| SPI | 1 | 1 |

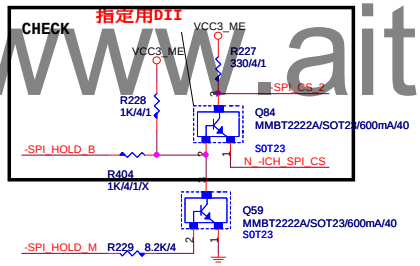
1 means floating
0 means PD 1K



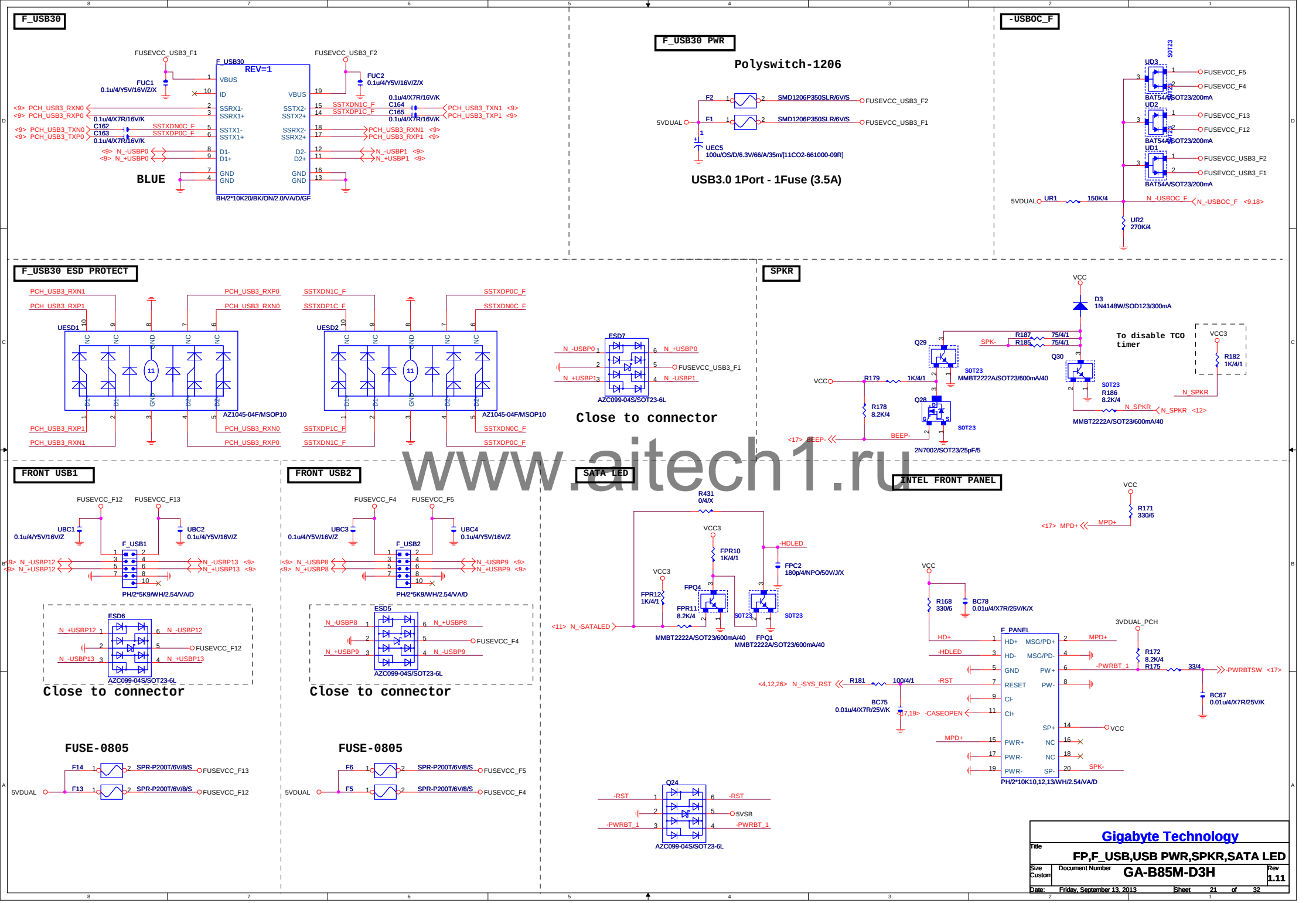




Dual BIOS CS connect circuit update

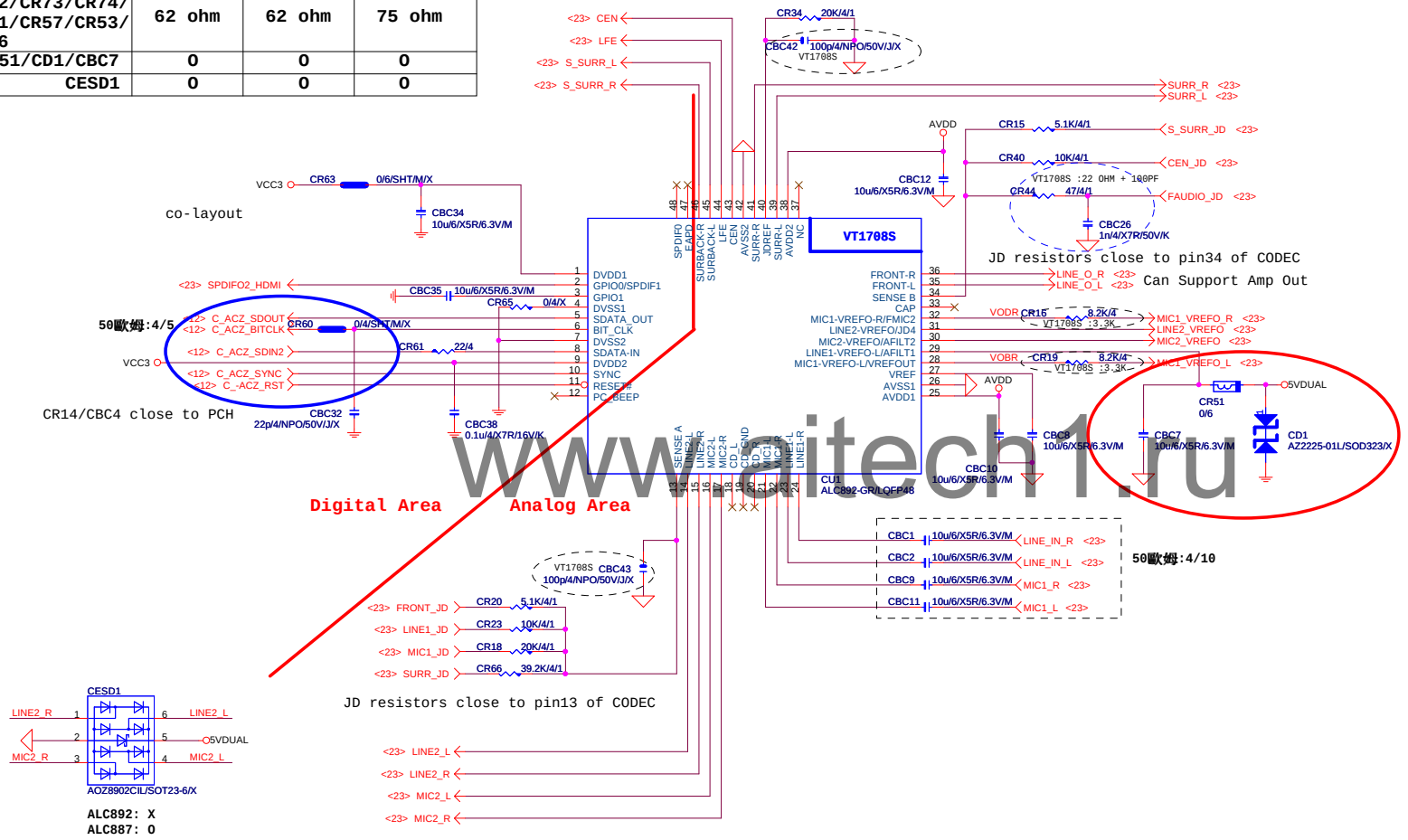


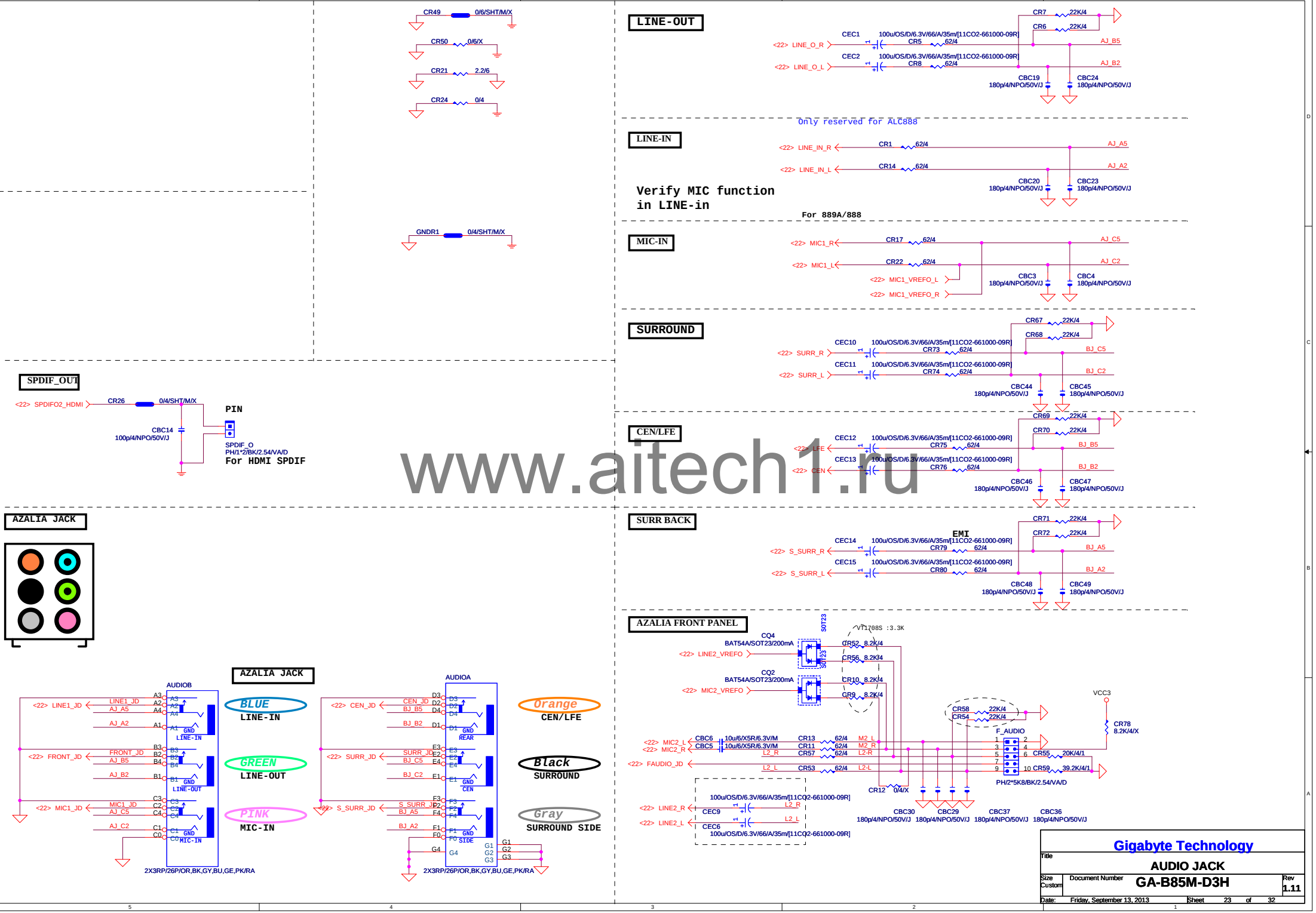
| | | | |
|---|---|---|---|
| Gigabyte Technology | | | |
| Title: DUAL BIOS | | | |
| Size: Custom | Document Number: GA-B85M-D3H | | Rev: 1.11 |
| Date: Friday, September 13, 2013 | Sheet 20 of 32 | | |

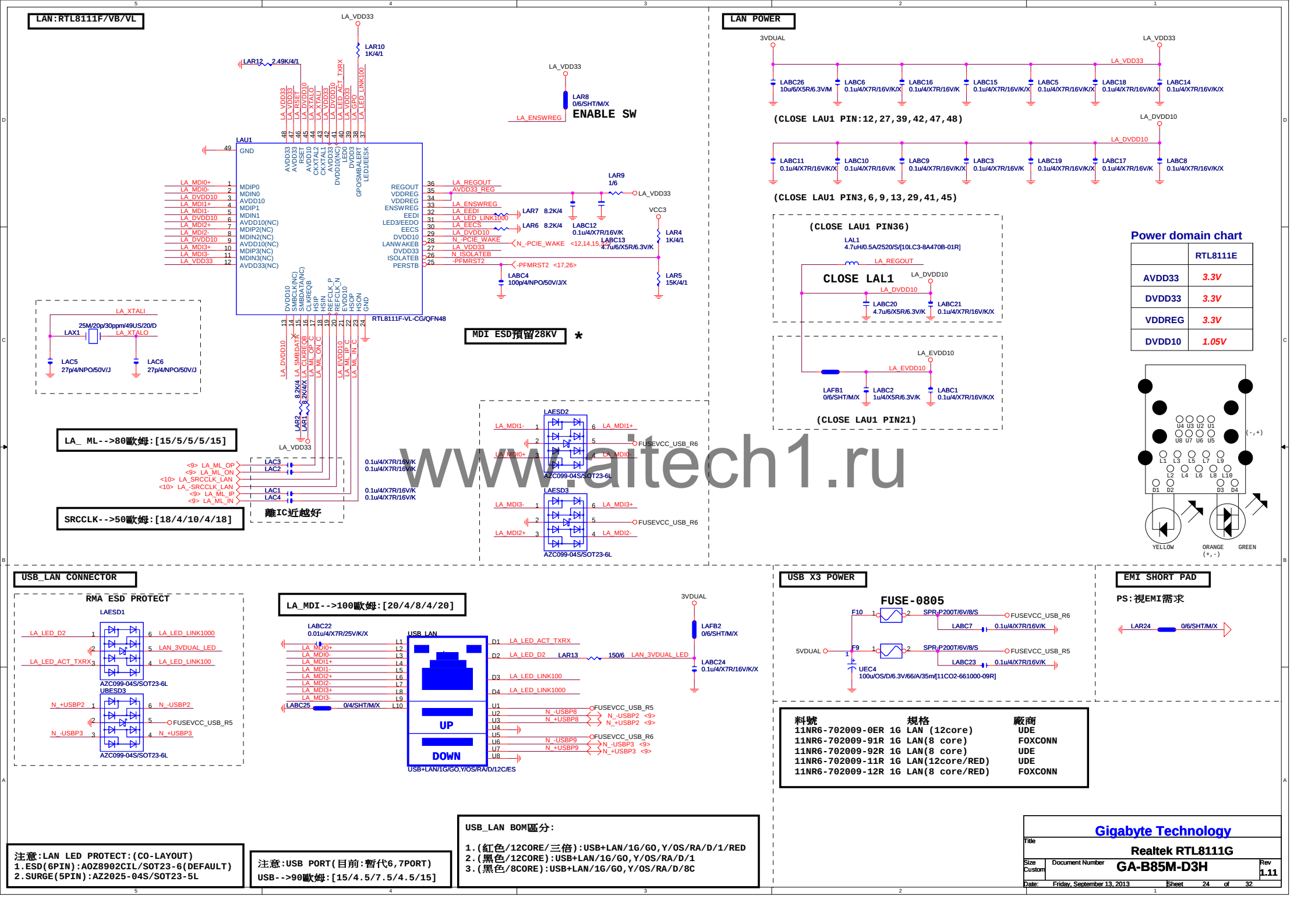


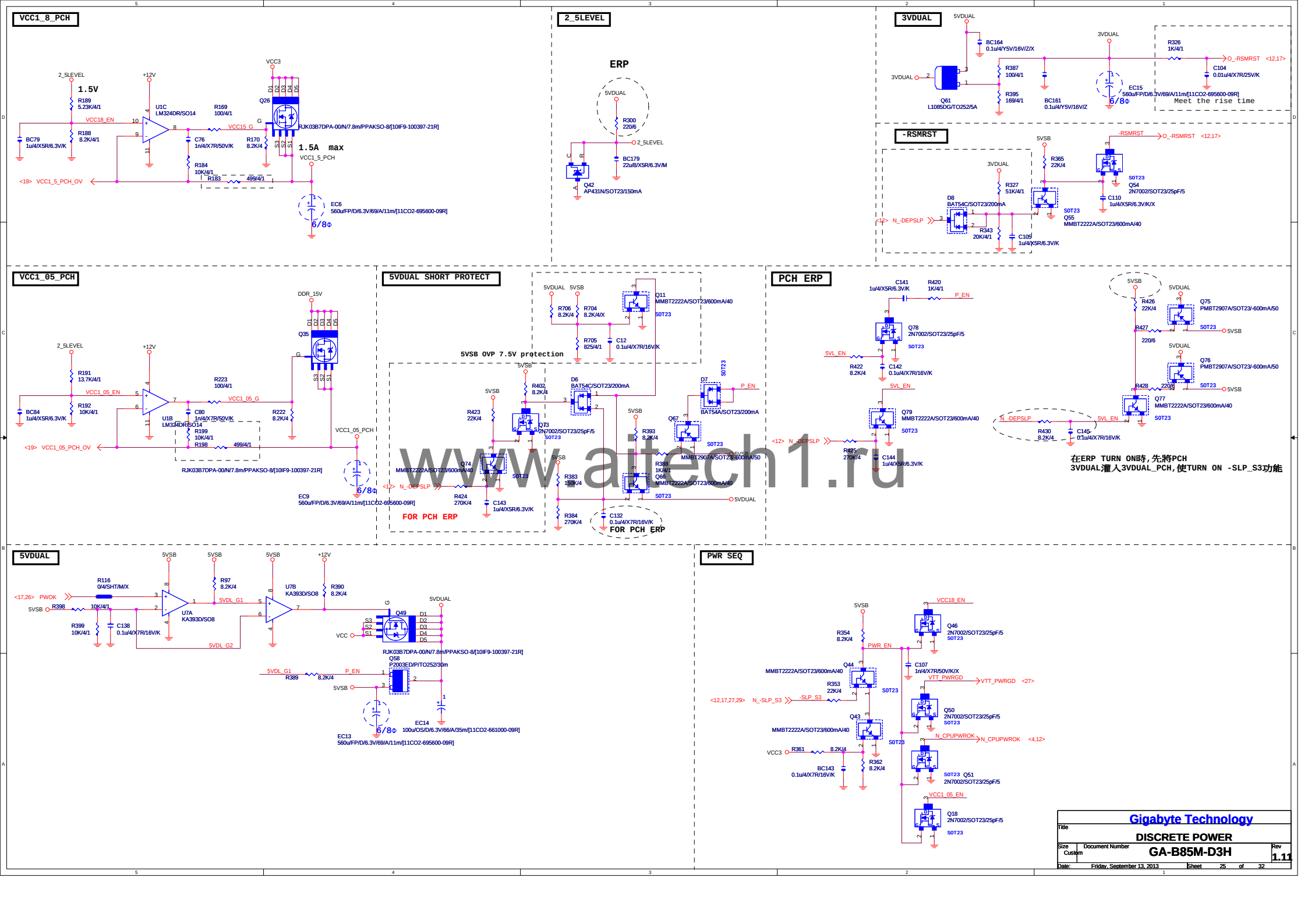
**AZALIA CODEC** *ALC892/ALC887-VD2/VT1708-CE Colay*

| | ALC892 | ALC887-VD2 | VT1708S-CE |
|---|---|---|---|
| CR44/CBC26 | 47ohm+1nF | 47ohm+1nF | 22ohm+100P |
| CBC42/CBC43 | X | X | 100P/4 |
| CR6/CR7/CR58/CR54/ CR67/CR68/CR69/CR70 | 22K/4 | 22K/4 | 10K/4/1 |
| CR5/CR8/CR1/CR14/ CR17/CR22/CR73/CR74/ CR13/CR11/CR57/CR53/ CR75/CR76 | 62 ohm | 62 ohm | 75 ohm |
| CR51/CD1/CBC7 | 0 | 0 | 0 |
| CESD1 | 0 | 0 | 0 |



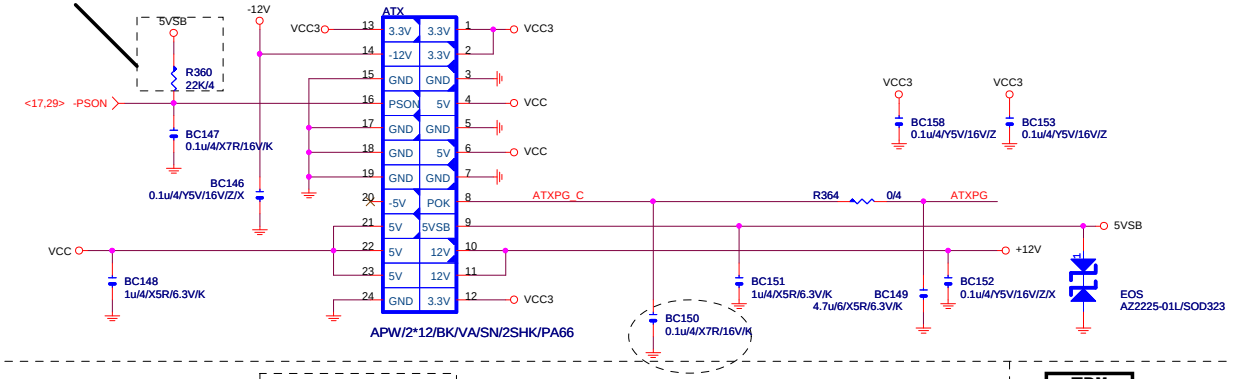






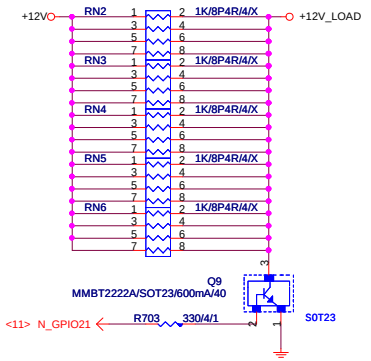
## ATXX24 POWER CONNECTOR

【技術通報R&D技術通報155】

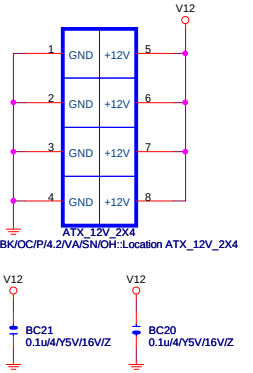


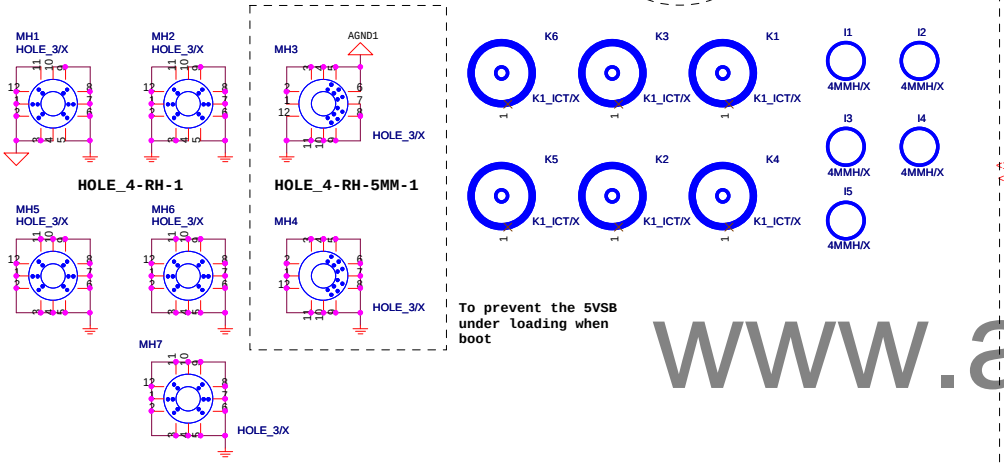

【技術通報R&D技術通報153】

To fix 12V light load abnromal issue



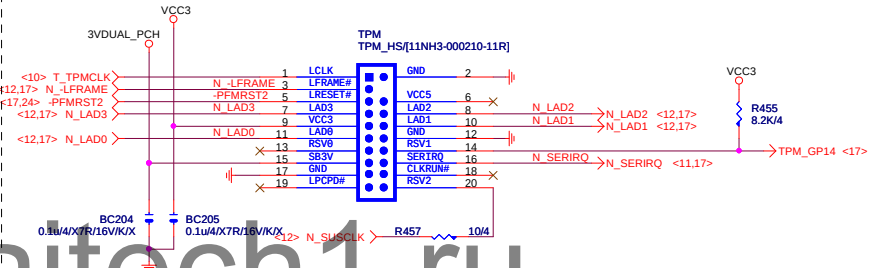

## ATXX4 POWER CONNECTOR




To prevent the 5VSB under loading when boot

## TPM

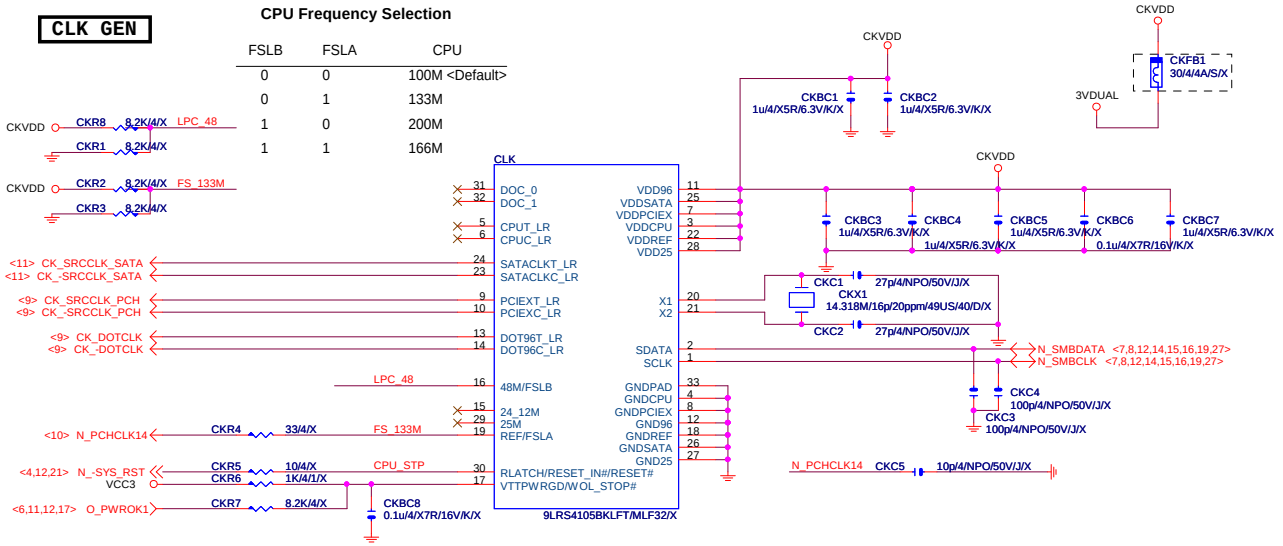





## CLK GEN

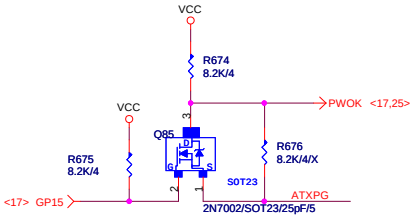
CPU Frequency Selection

| FSLB | FSLA | CPU |
|---|---|---|
| 0 | 0 | 100M <Default> |
| 0 | 1 | 133M |
| 1 | 0 | 200M |
| 1 | 1 | 166M |

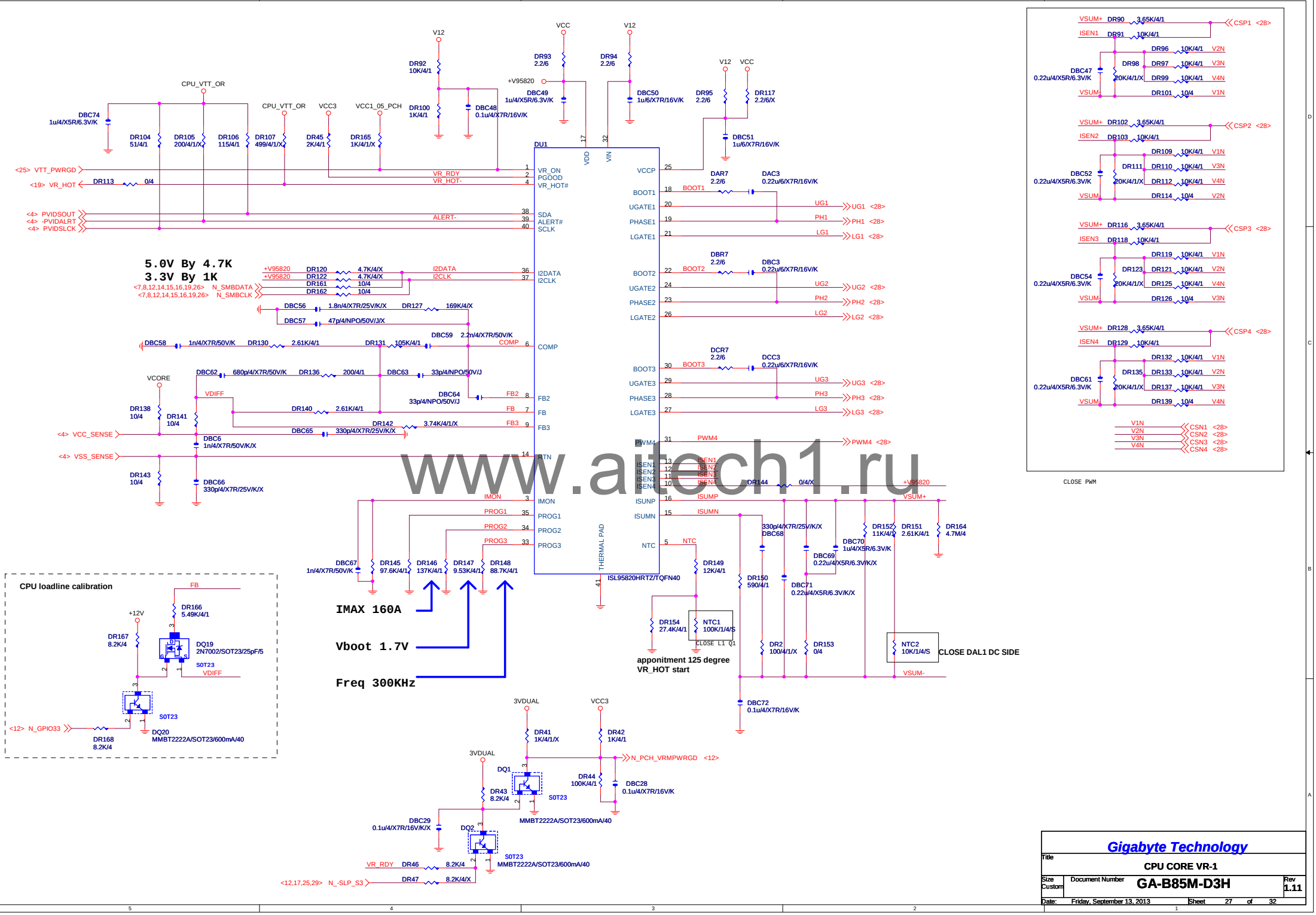



## PWOK PATCH

【技術通報R&D技術通報154】

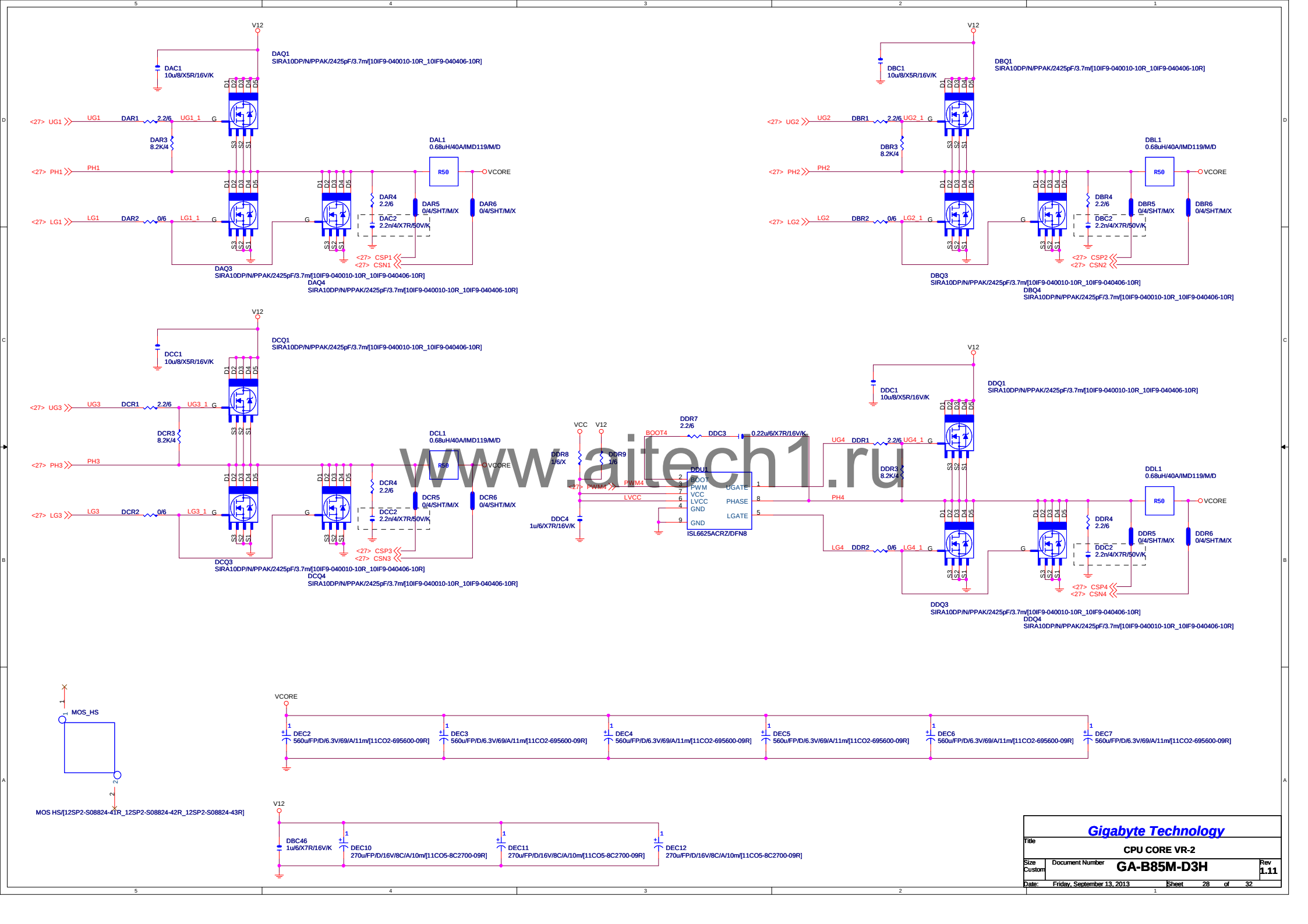


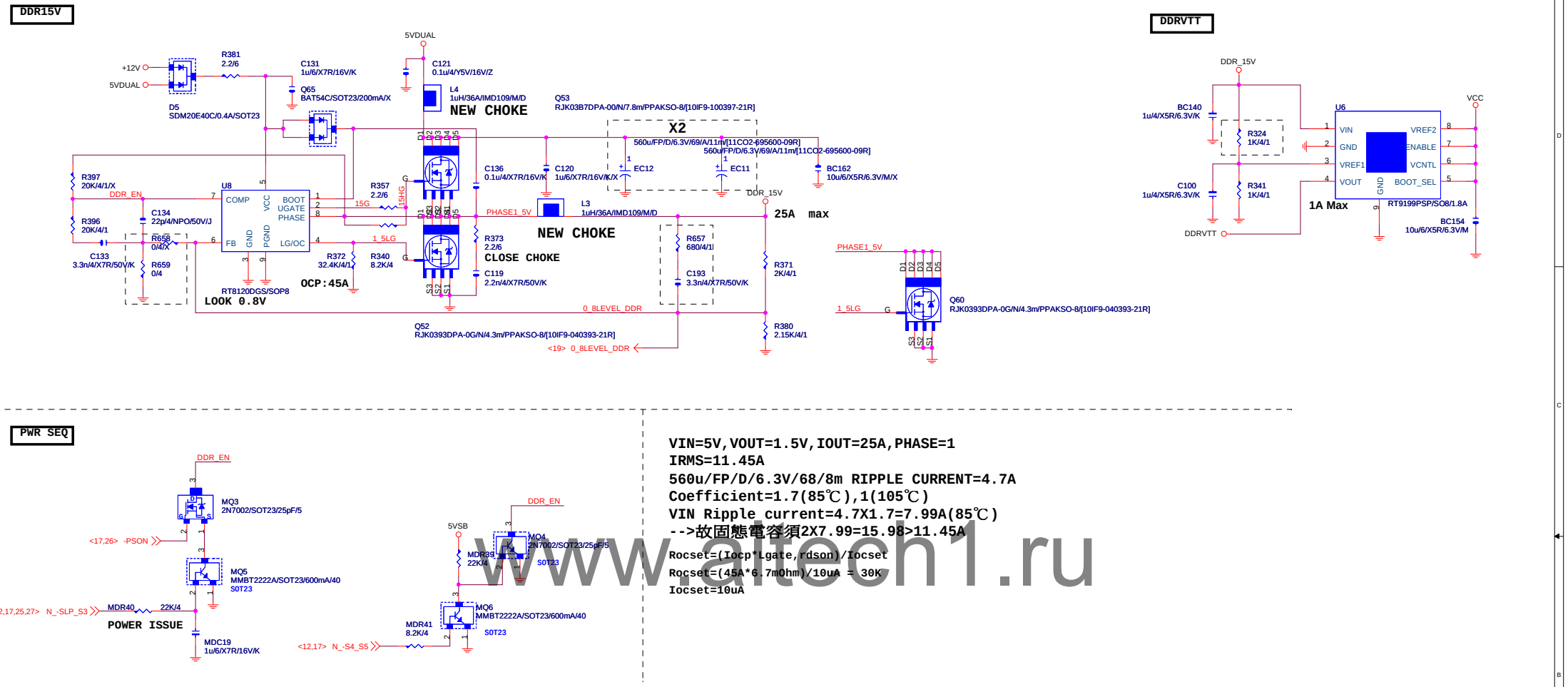

| | | |
|---|---|---|
| Gigabyte Technology | | |
| Title: ATX CONNECTOR | | |
| Size: Custom | Document Number: GA-B85M-D3H | Rev: 1.11 |
| Date: Friday, September 13, 2013 | Sheet 26 of 32 | |






| | | | |
|---|---|---|---|
| Gigabyte Technology | | | |
| Title | CPU CORE VR-1 | | |
| Size: Custom | Document Number: GA-B85M-D3H | | Rev: 1.11 |
| Date: Friday, September 13, 2013 | Sheet 27 of 32 | | |

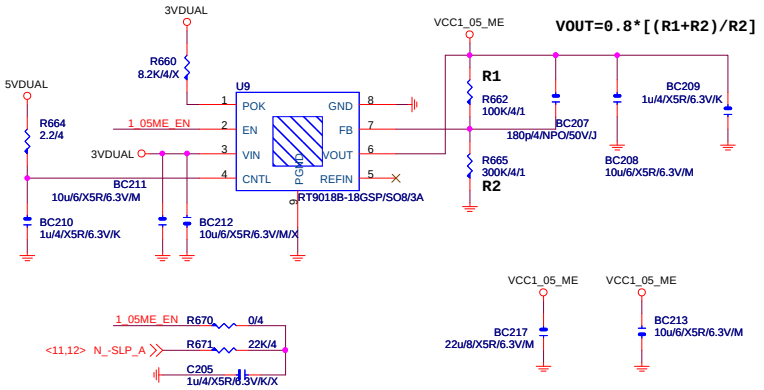




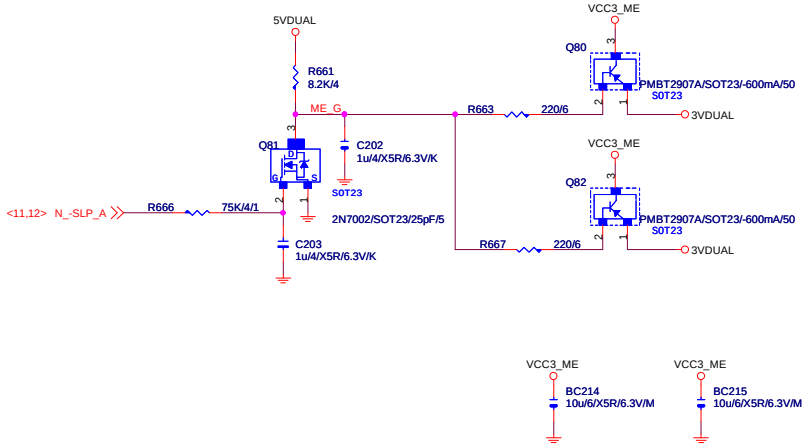



| | | |
|---|---|---|
| Gigabyte Technology | | |
| Title: DDR POWER | | |
| Size: Custom | Document Number: GA-B85M-D3H | Rev: 1.11 |
| Date: Friday, September 13, 2013 | Sheet 29 of 32 | |

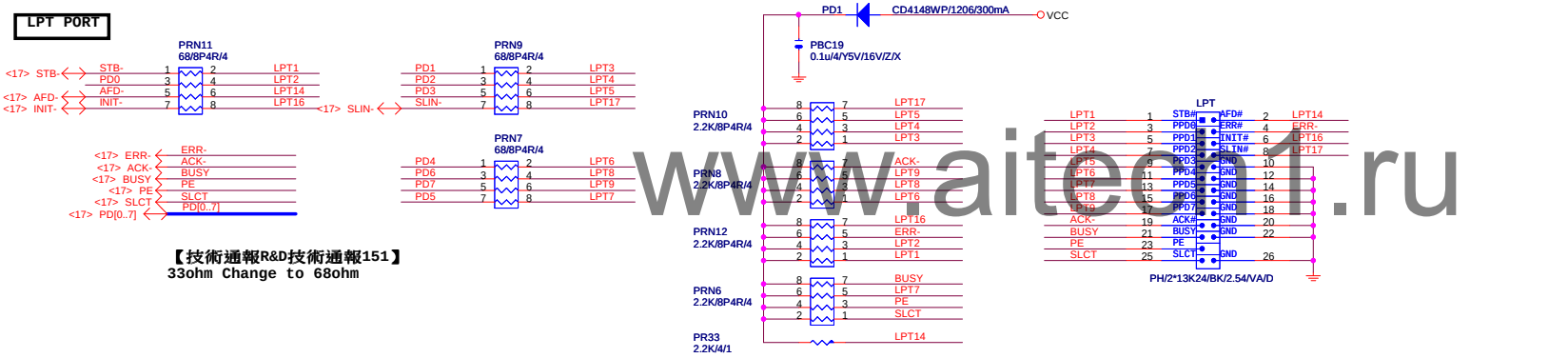
## VCC1_05_ME




## VCC3_ME




## LPT PORT

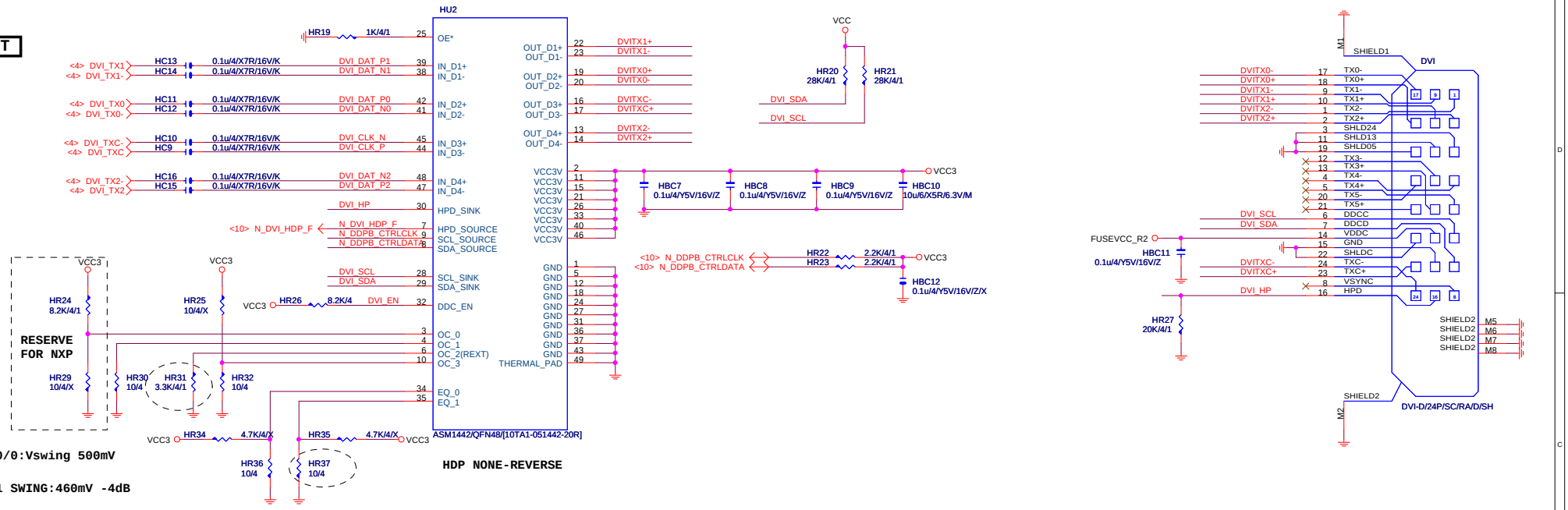



【技術通報R&D技術通報151】
33ohm Change to 68ohm

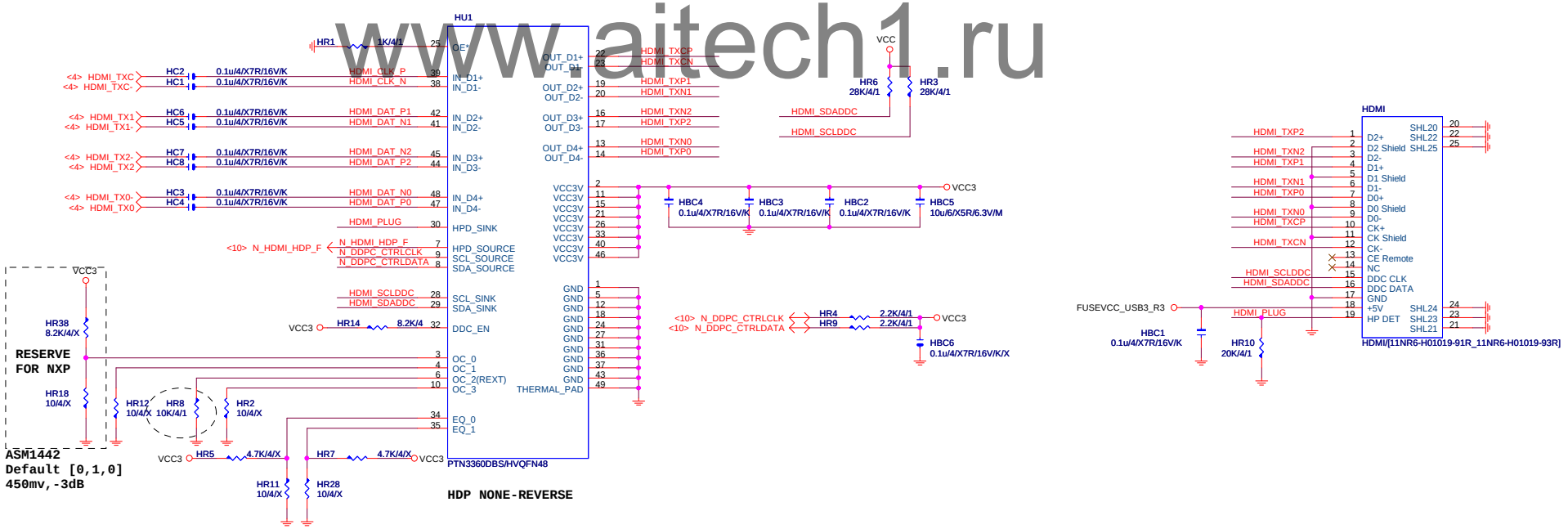


| | | |
|---|---|---|
| Gigabyte Technology | | |
| Title: LPT | | |
| Size: Custom | Document Number: GA-B85M-D3H | Rev: 1.11 |
| Date: Friday, September 13, 2013 | Sheet 30 of 32 | |

## DVI LEVEL SHIFT




## HDMI LEVEL SHIFT




【技術通報R&D技術通報150】
HDMI eye diagram1.4版(deep color)會fail
原因: 因目前的HDMI訊號過長,造成RISING TIME過慢,而會壓到eye diagram
改善: ASMEDIA ASM1442 : 3.16K(PIN6 PULL DOWN電阻) 10ohm(PIN4 PULL DOWN電阻)

| | | | |
|---|---|---|---|
| Gigabyte Technology | | | |
| Title: DVI | | | |
| Size: Custom | Document Number: GA-B85M-D3H | | Rev: 1.11 |
| Date: Friday, September 13, 2013 | Sheet 31 of 32 | | |

PCIE TO PCI

PCI:5/4/5 Impedance=50 +- 15%

Co-Lay IT8893 (IT8893 CLKOUT1 N/A)

IT8892: PR24 -> 47ohm
IT8893: PR24 -> 22ohm

IT8892: PR46 -> X
IT8893: PR46 -> 0

IT8892: PR19 -> 0
IT8893: PR19 -> X

High: Enable PCI CLK 66MHz
Low: Disable PCI CLK 66MHz

High: PCICLK INTPUT form CLK Gen
Low: PCICLK OUTPUT form IT8893 chip

IT8892E/BX LQFP128

IT8892E/FX/S

IT8892

PCI slot

PCI slot

chipset side

PCB layout note:
Close to chip

PCB layout note:
Close to chip

Close to chip



| | |
|---|---|
| Title | Gigabyte Technology |
| | ITE IT8892E |
| Size: Custom | Document Number: GA-B85M-D3H |
| Rev | 1.11 |
| Date: Friday, September 13, 2013 | Sheet 32 of 32 |