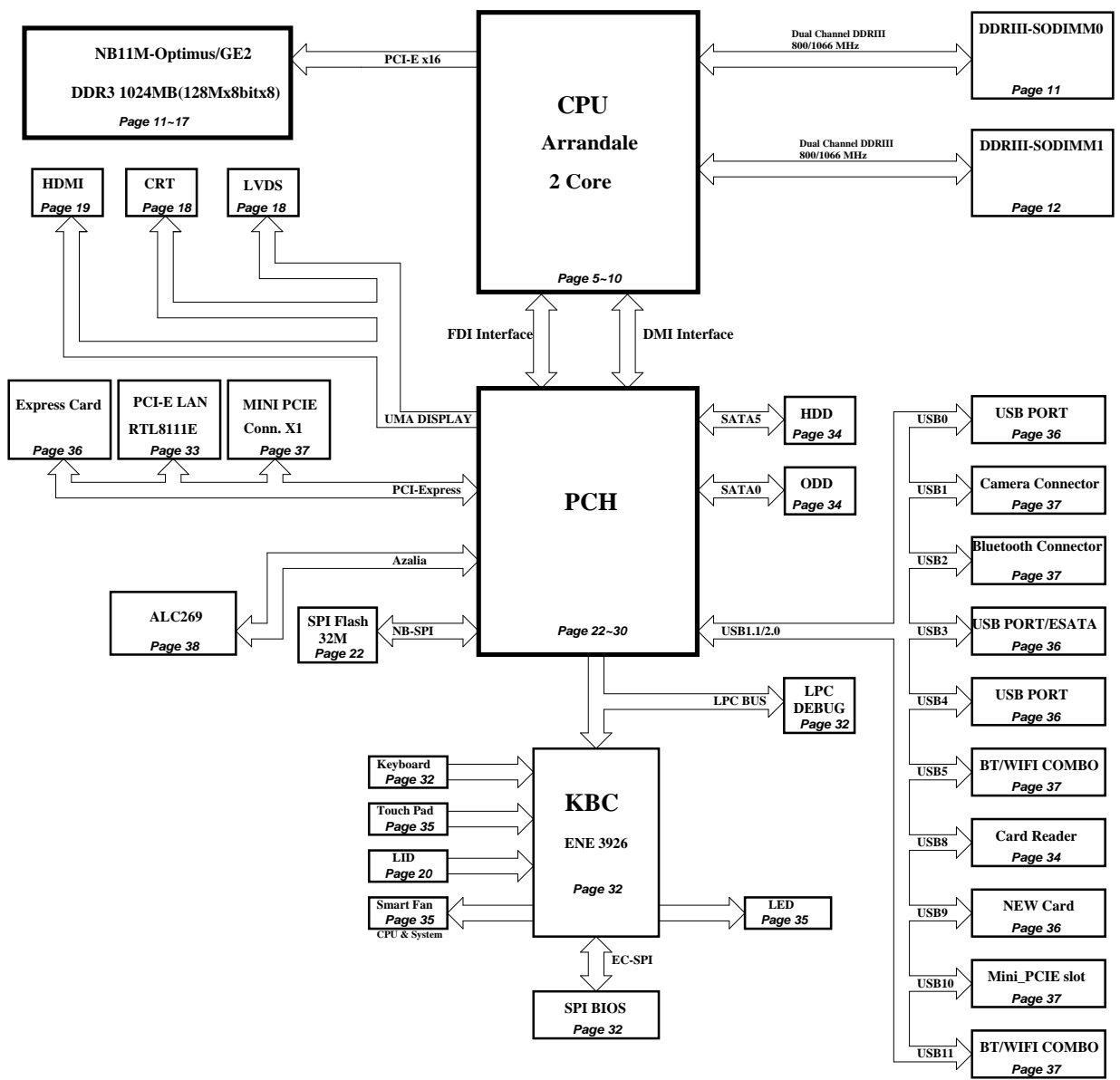
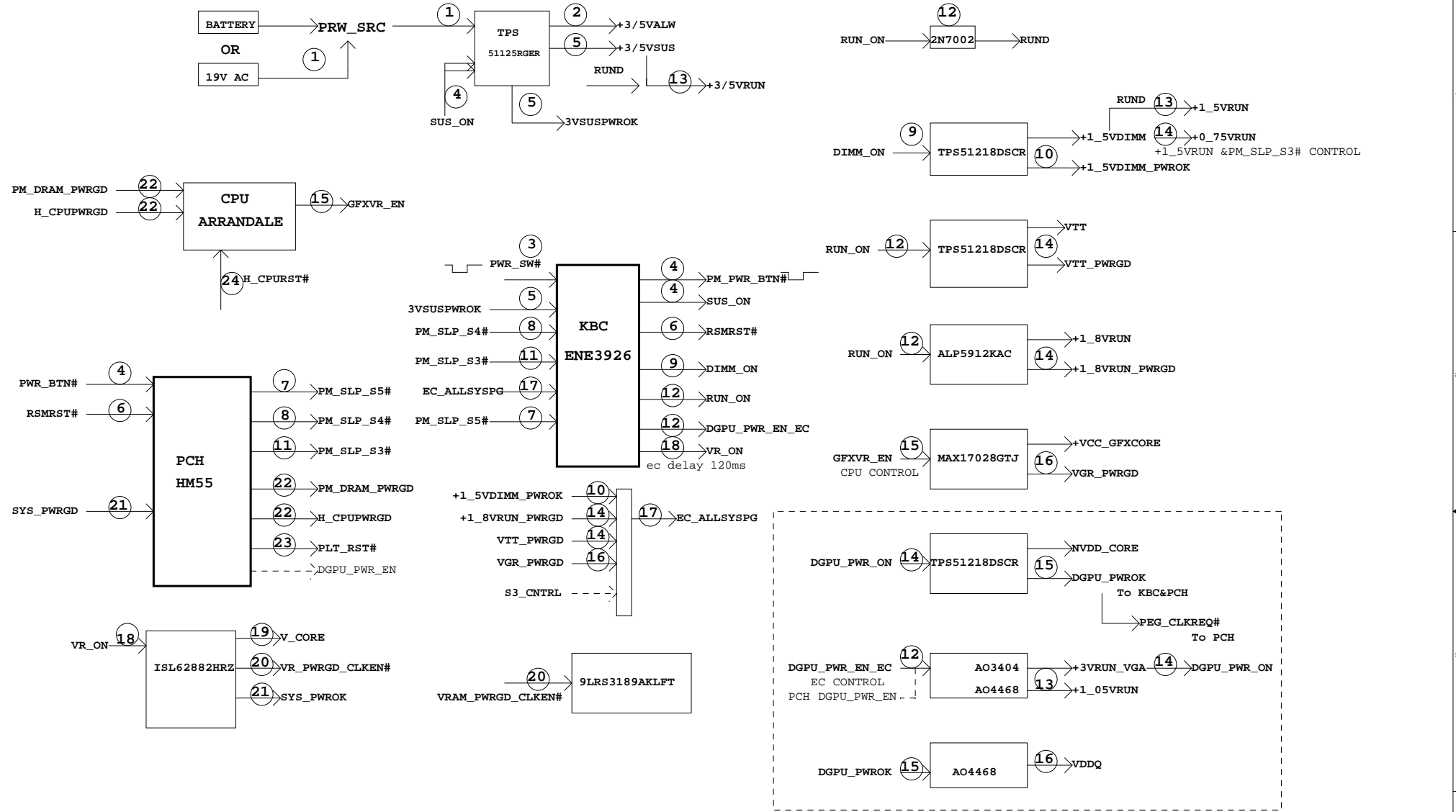
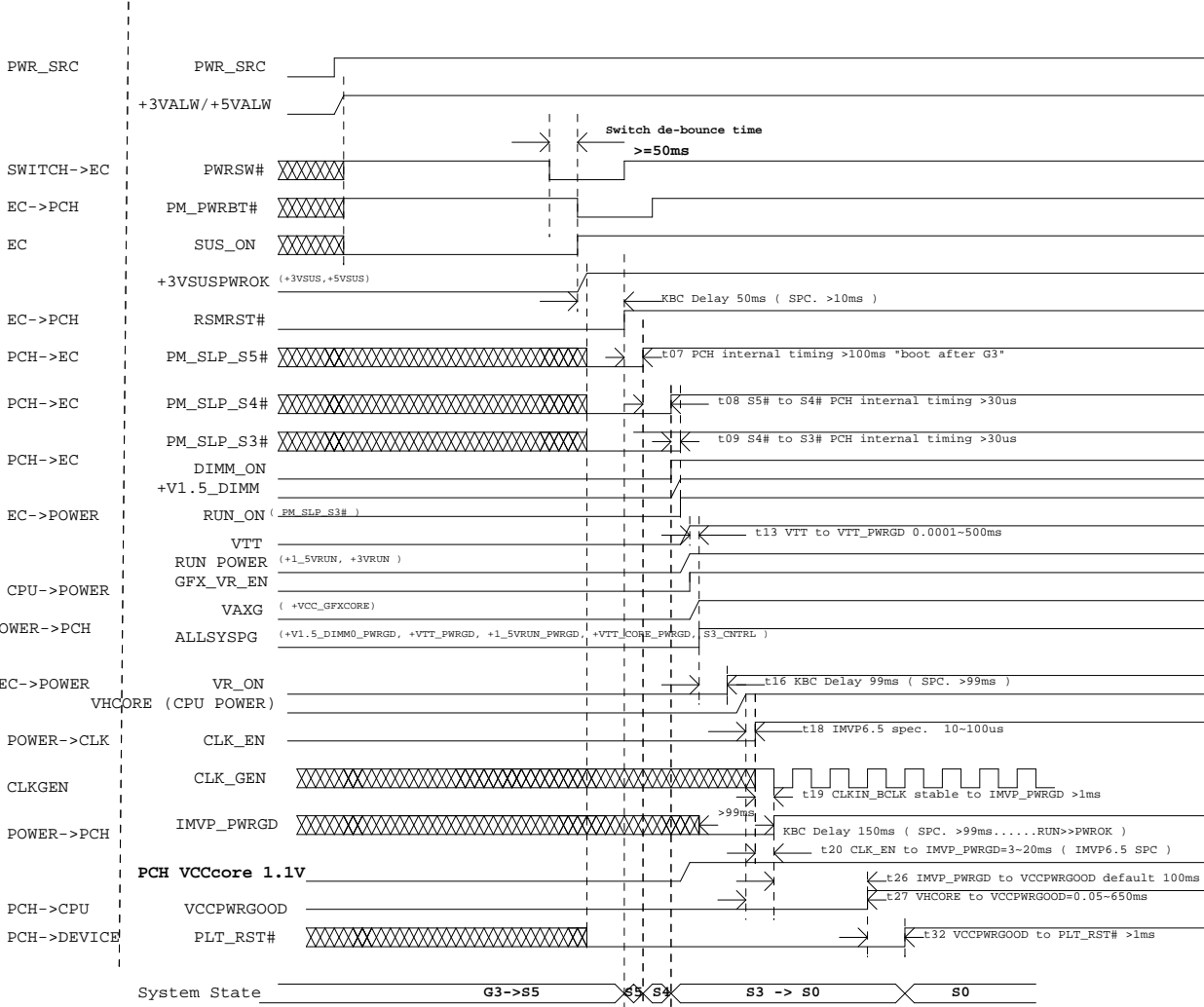


Table of Contents

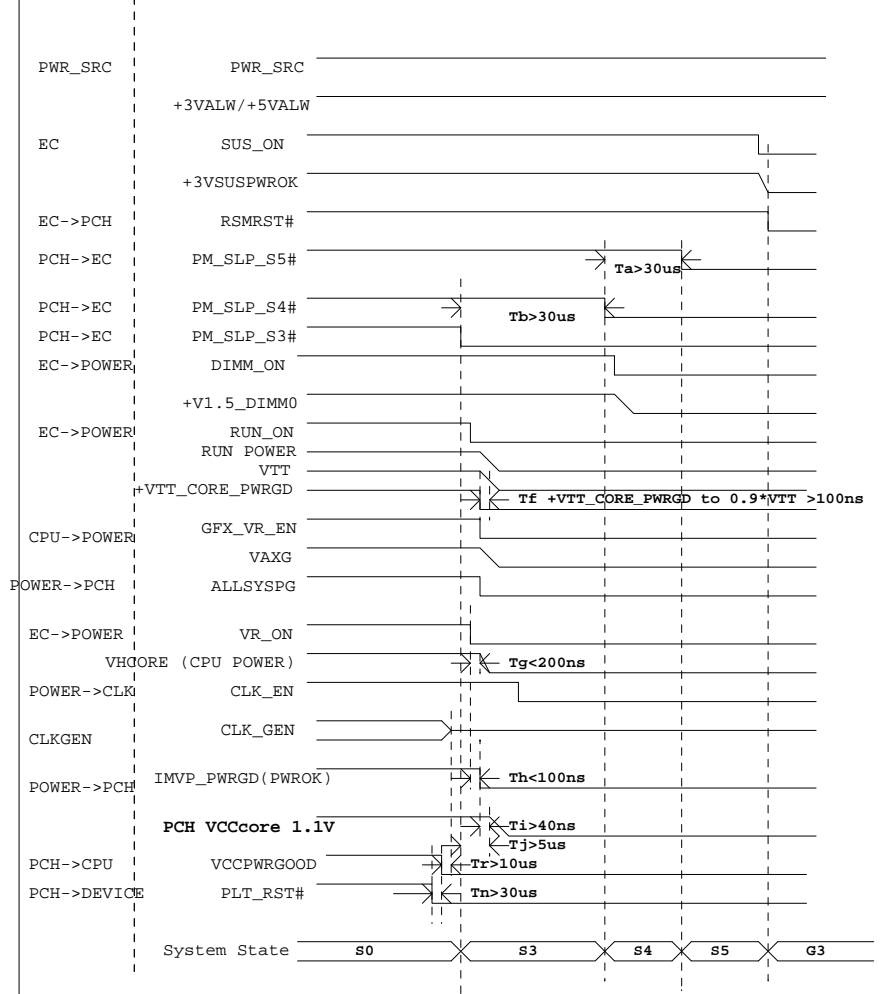
| Page | Description |
|------|---------------------------------|
| 01 | : BLOCK DIAGRAM |
| 02 | : Power Delivery |
| 03 | : Power Sequency |
| 04 | : Clock/SMBus Distribution |
| 05 | : PROCESSOR-1 (HOST BUS) |
| 06 | : PROCESSOR-2 (DDR3) |
| 07 | : PROCESSOR-3 (POWER) |
| 08 | : PROCESSOR-4 (GRAPHICS POWER) |
| 09 | : PROCESSOR-5 (GND) |
| 10 | : PROCESSOR-6 (RESERVE) |
| 11 | : DDR3 SODIMM 0 |
| 12 | : DDR3 SODIMM 1 |
| 13 | : NB11M_GE2(PCIE Interface) |
| 14 | : NB11M_GE2(FB interface) |
| 15 | : NB11M_GE2(VRAMA) |
| 16 | : NB11M_GE2(VRAMB) |
| 17 | : NB11M_GE2(CRT/LVDS) |
| 18 | : NB11M_GE2(GPIO) |
| 19 | : NB11M_GE2(STRAPS) |
| 20 | : CRT,LVDS connector & LID |
| 21 | :LEVEL SHIFT&HDMI |
| 22 | : PCH-1 (HDA,JTAG,SATA) |
| 23 | : PCH-2 (PCI-E,SMBUS,CLK) |
| 24 | : PCH-3 (DMI,FDI,GPIO) |
| 25 | : PCH-4 (LVDS,DDI) |
| 26 | : PCH-5 (PCI,USB,NVRAM) |
| 27 | : PCH-6 (GPIO,VSS_NCTF,RSVD) |
| 28 | : PCH-7 (POWER) |
| 29 | : PCH-8 (POWER) |
| 30 | : PCH-9 (GND) |
| 31 | : Clock Generator (9LRS3199AKL) |
| 32 | : KBC/EC/uP (KB3926) |
| 33 | : PCI-E Lan (RTL8111E) |
| 34 | : Cardreader (UB6250) |
| 35 | : FAN,Lauch board |
| 36 | : HDD,CDROM,USB,NEWCARD,ESATA |
| 37 | : MINIPCIE,CAMERA,BLUETOOTH,SW |
| 38 | : CODEC(ALC269) |
| 39 | : M_Battery select |
| 40 | : M_Battery Charger |
| 41 | : M_System Power |
| 42 | : SMDDR_VTERM/1_5VRUN |
| 43 | : VTT POWER,+1.8VRUN |
| 44 | : M_CPU power |
| 45 | : M_Graphic Core |
| 46 | : NVVDD,+1.03VRUN |
| 47 | : Screw/ ME |
| 48 | : 168AA_USB BOARD |
| 49 | : 168AB_Lauch board |
| 50 | : EMI |
| 51 | : Change List |

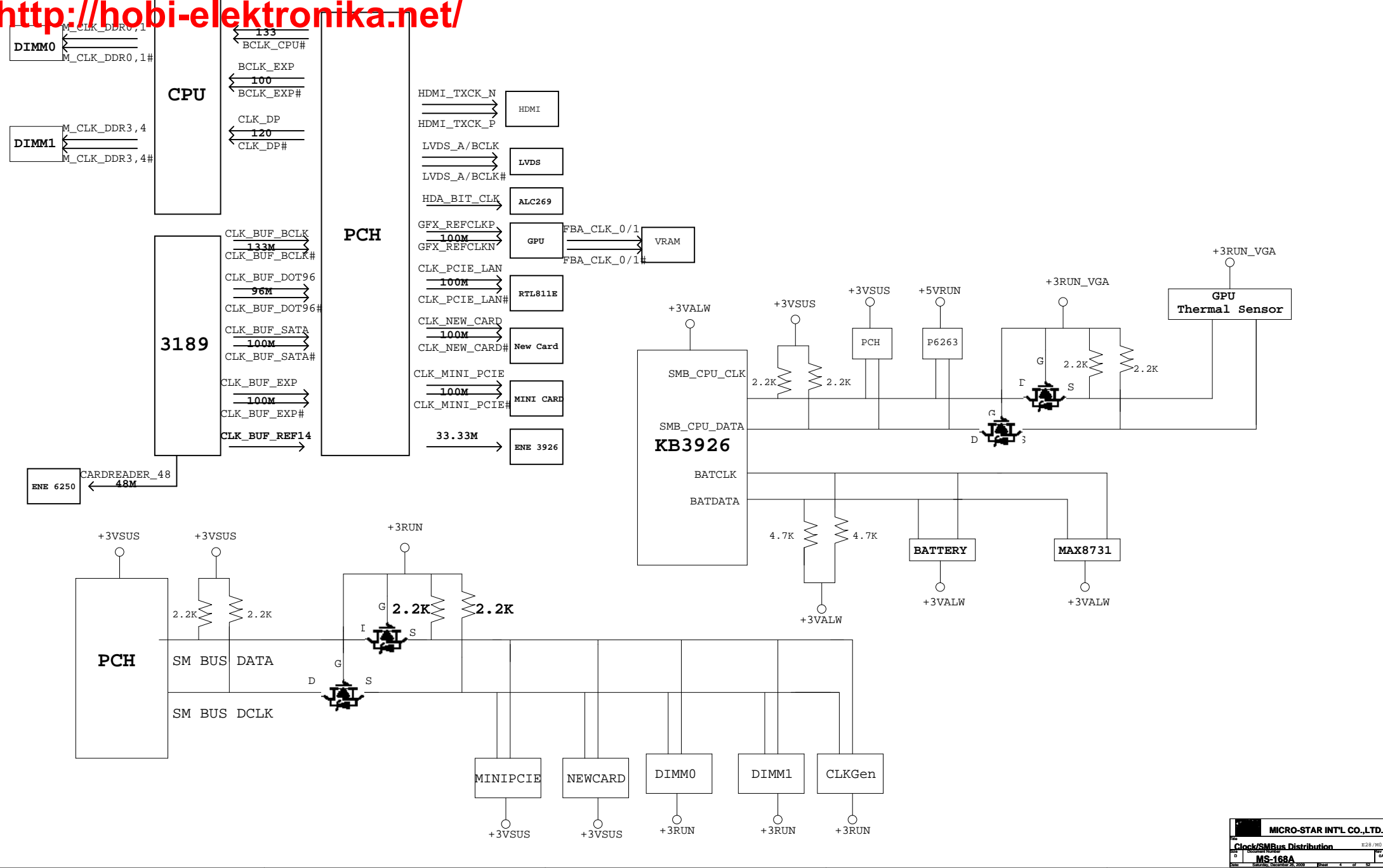


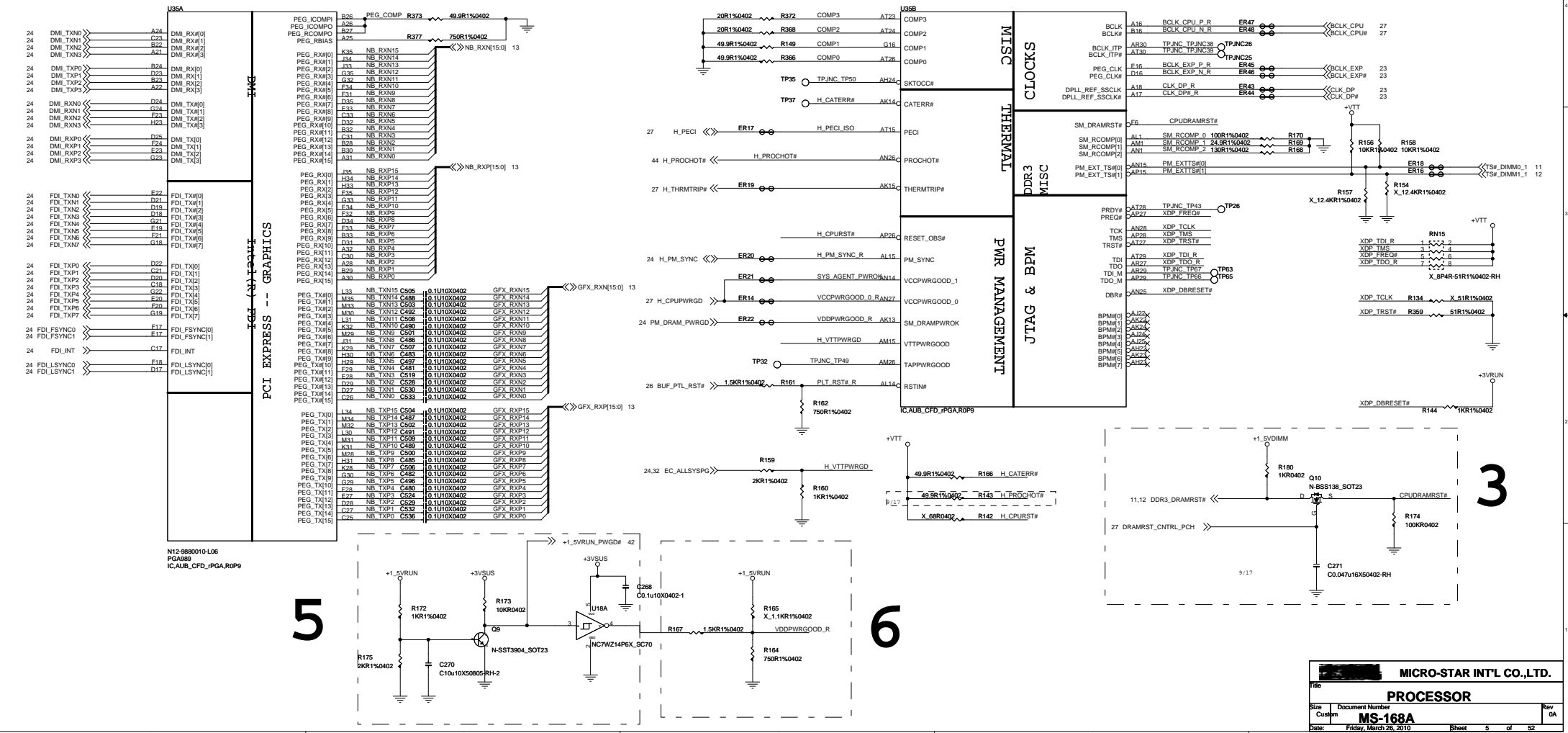




Power down Sequence DC mode S0 to G3



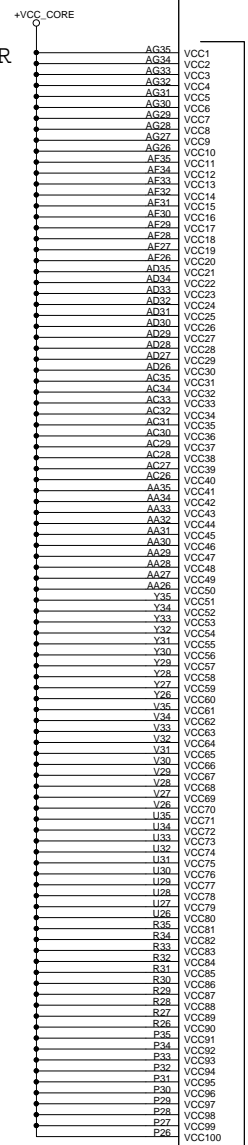




ARRANDALE PROCESSOR (POWER)

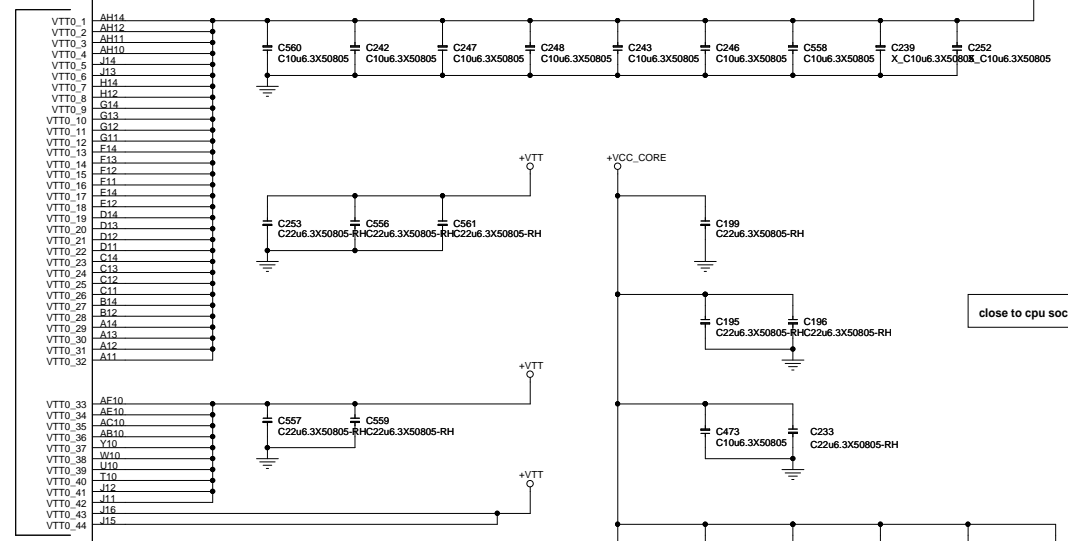
ARRANDALE:
SV=48A
LV=35A
ULV=27A

PROCESSOR CORE POWER



ARRANDALE:
SV=18A
LV=TBD
ULV=TBD

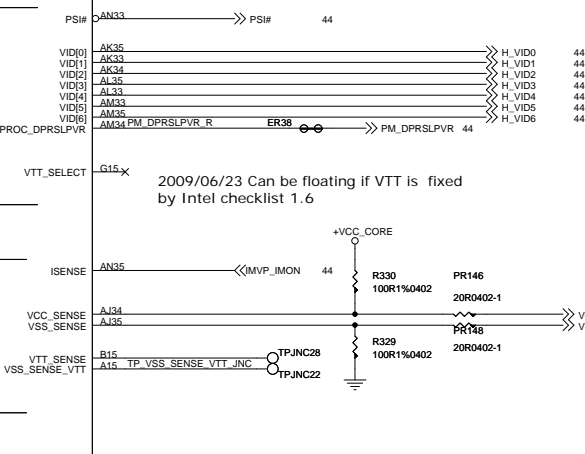
PROCESSOR CORE POWER



CPU CORE SUPPLY

POWER
CPU VIDS

SENSE LINES

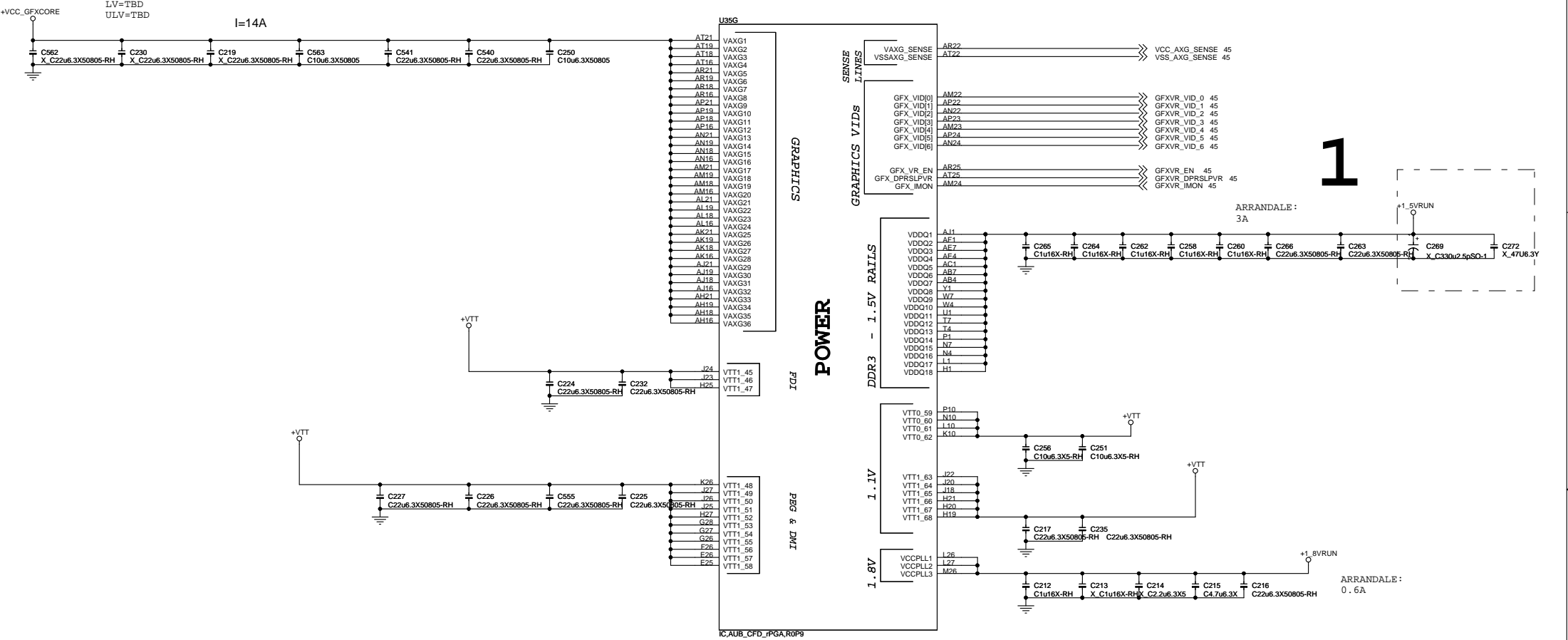


2009/06/23 Can be floating if VTT is fixed by Intel checklist 1.6

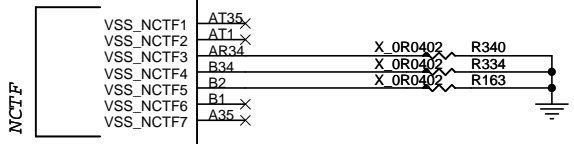
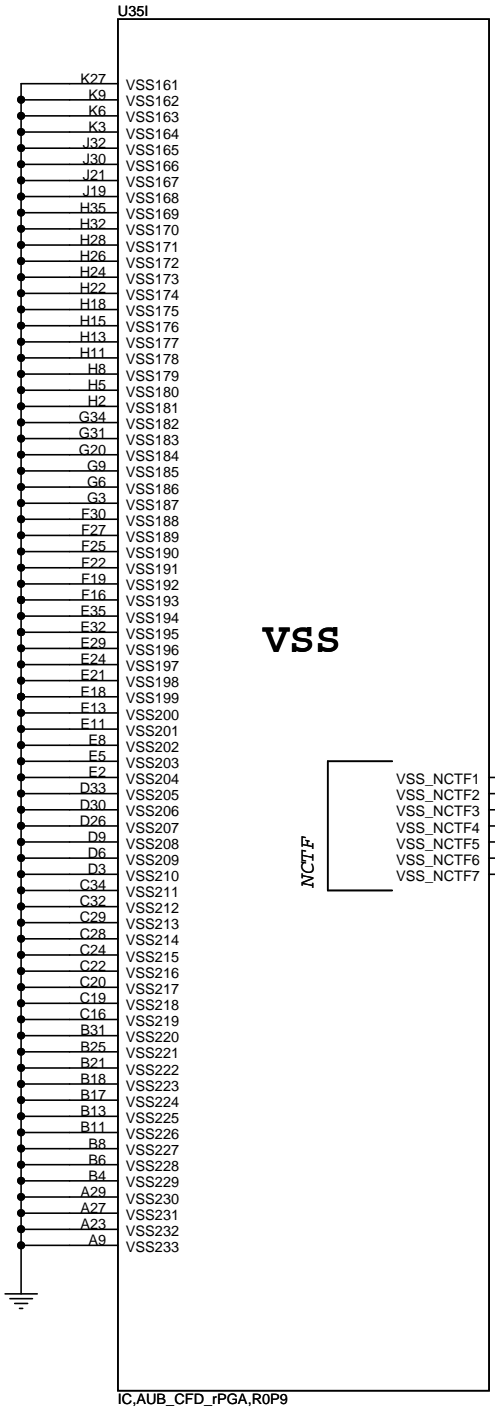
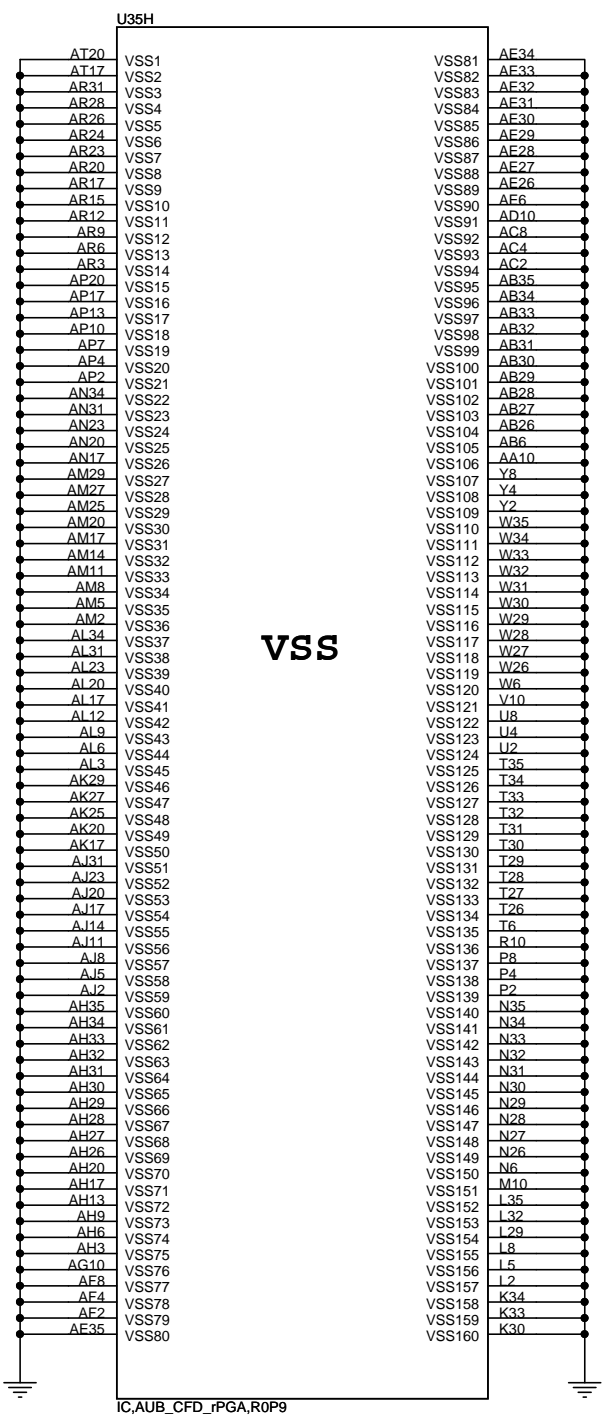
Note: When voltage selection is not required and the platform is going to support either 1.1 V or 1.05 V and not both, then this pin can be left floating

ARRANDALE PROCESSOR (GRAPHICS POWER)

ARRANDALE :
SV=15A
LV=TBD
ULV=TBD

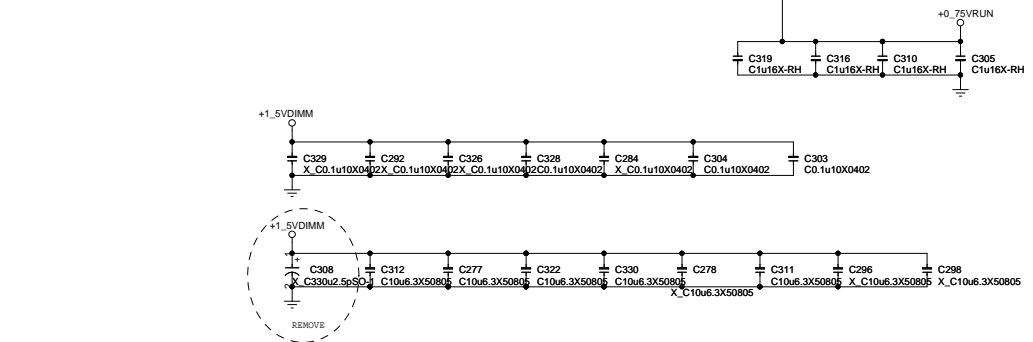
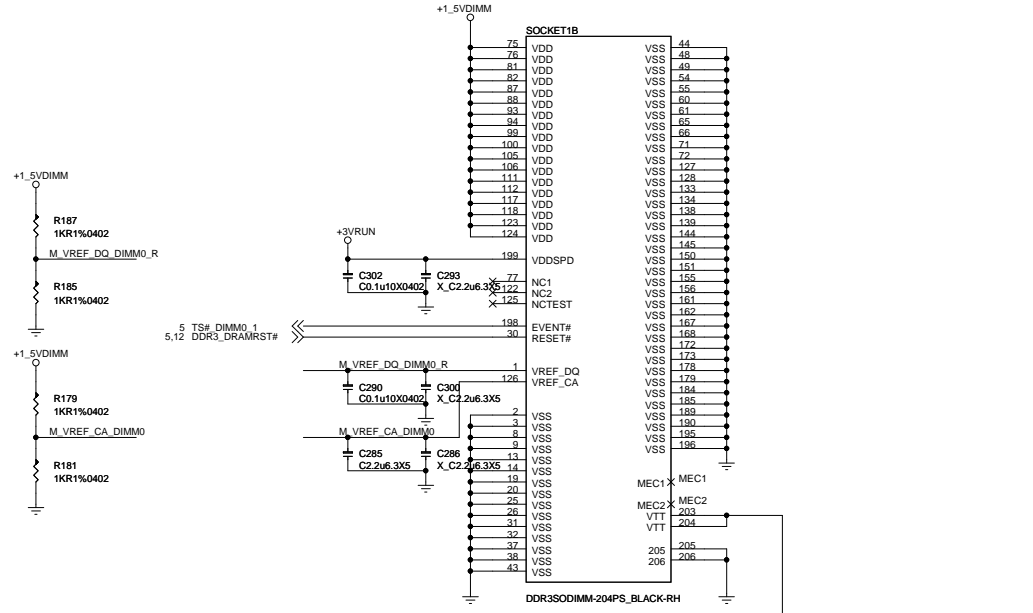
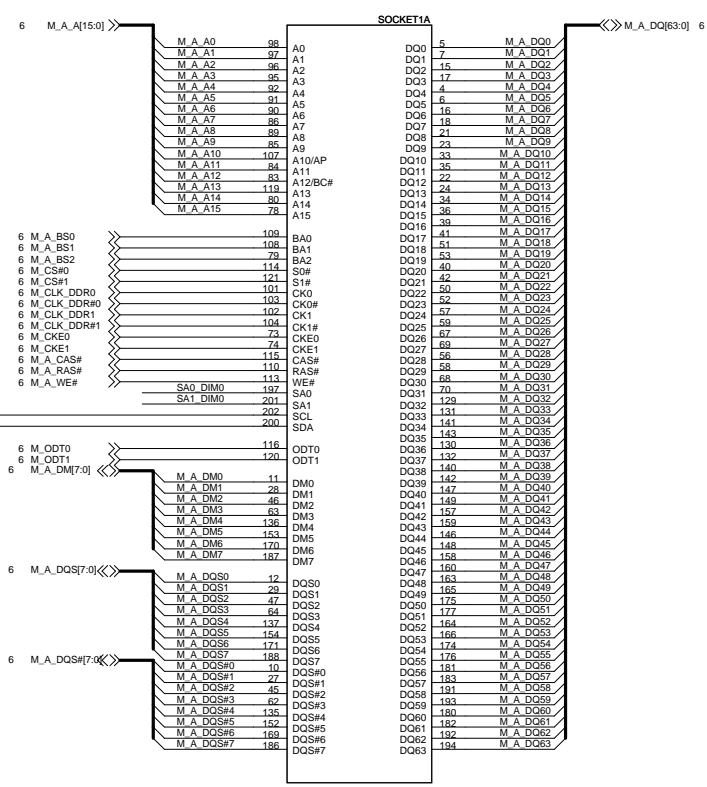


1

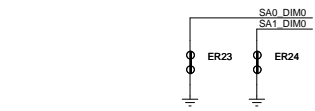


| | | |
|----------------------------------|-----------------|-----|
| MICRO-STAR INT'L CO.,LTD. | | |
| PROCESSOR GND | | |
| Title | Document Number | Rev |
| Custom | MS-168A | 0A |
| Date: Friday, March 26, 2010 | Sheet 9 of 52 | |

SODIMM#A

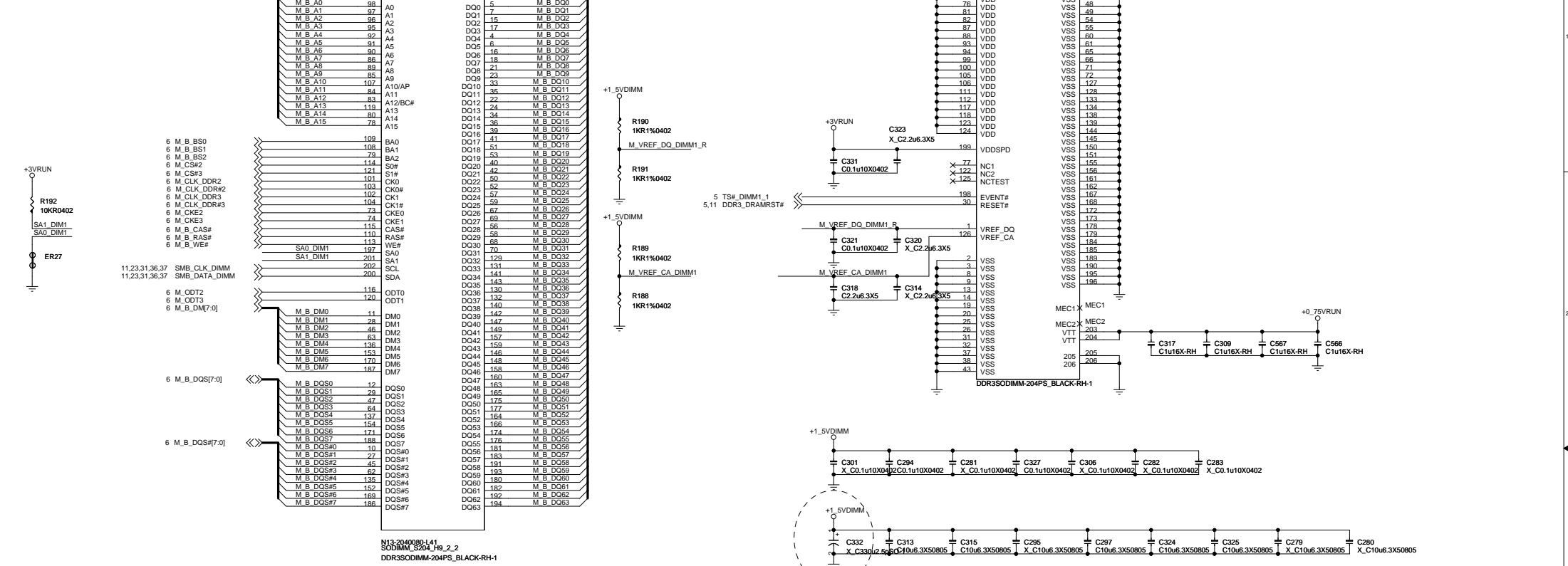


12.23.31.36.37 SMB_CLK_DIMM
12.23.31.36.37 SMB_DATA_DIMM

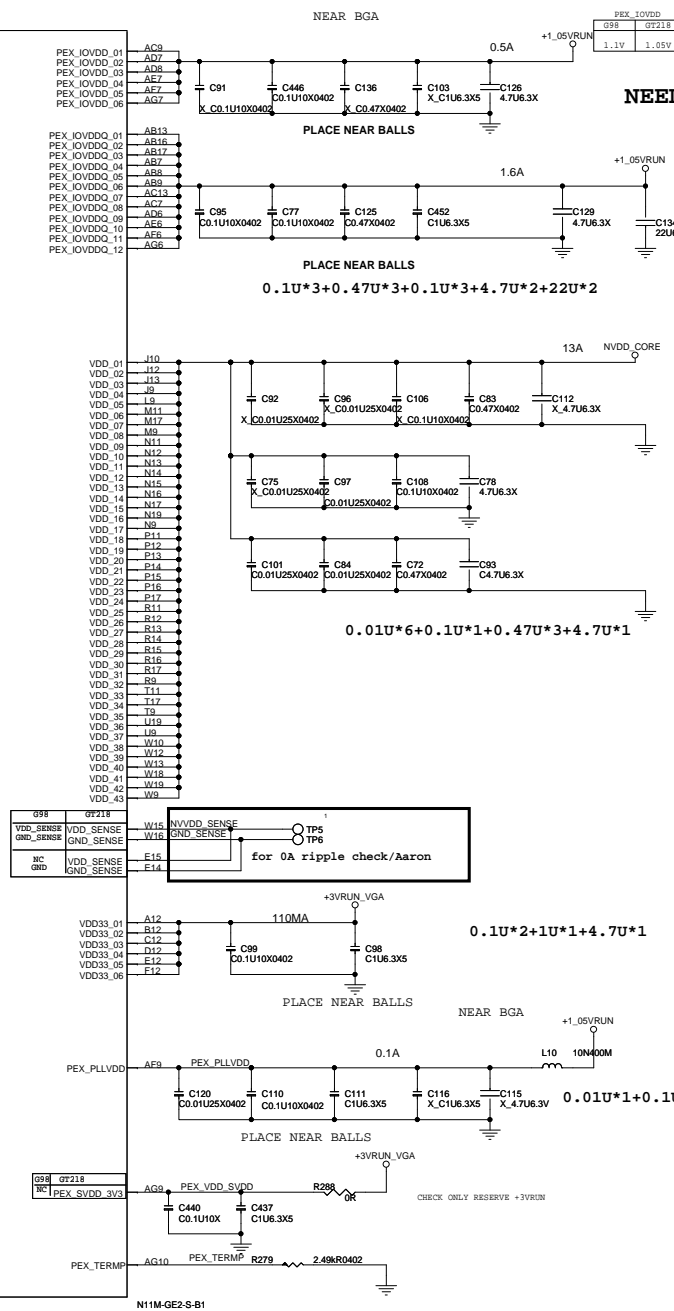
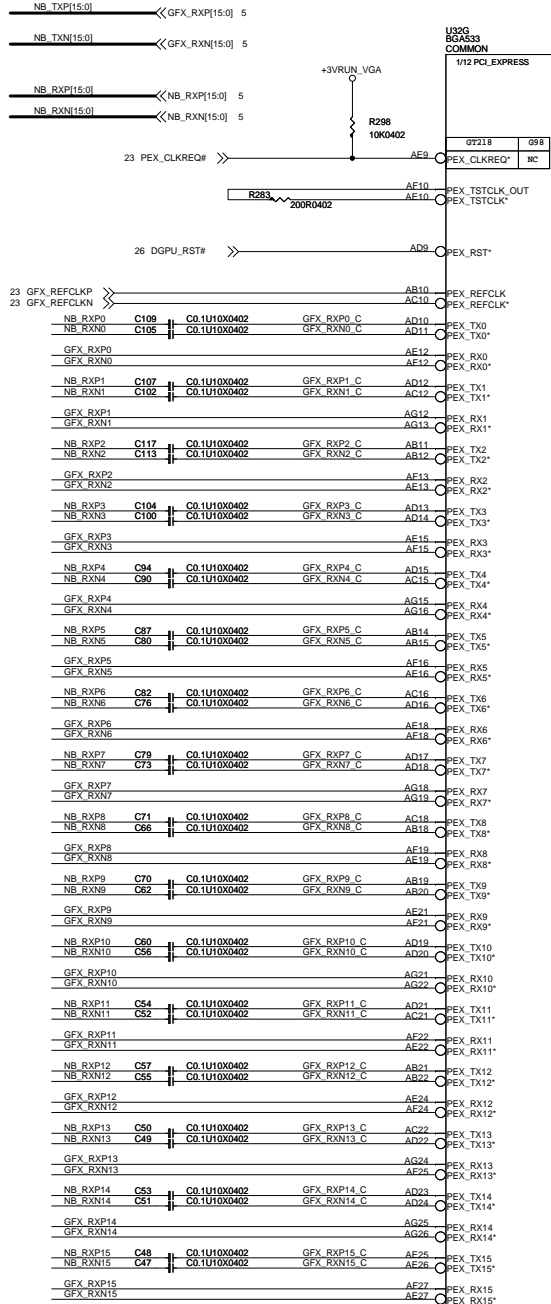


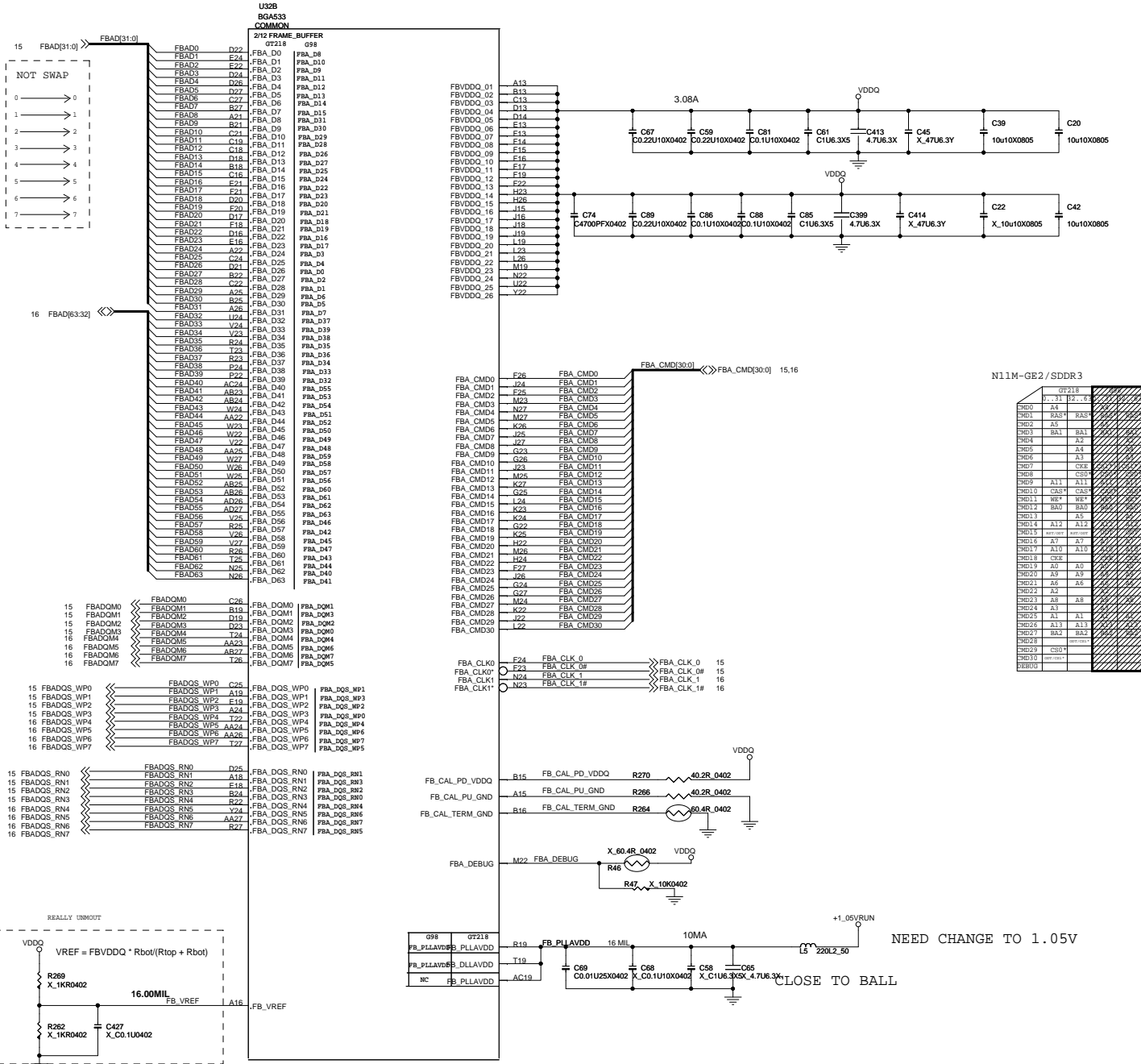
N13-2040060-L41
SODIMM_S204_H5_2
DDR3SODIMM-204PS_BLACK-RH

SODIMM#B



N13-2040080-L41
 SODIMM_S204_H9_2_2
 DDR3SODIMM-204PS_BLACK-RH-1





N11M-GE2 / SDDR3

| | GT218 | |
|-------|-------|------|
| | 1 | 2 |
| MD0 | A4 | B4 |
| MD1 | B4 | A4 |
| MD2 | A5 | B5 |
| MD3 | B5 | A5 |
| MD4 | A6 | B6 |
| MD5 | B6 | A6 |
| MD6 | A7 | B7 |
| MD7 | B7 | A7 |
| MD8 | A8 | B8 |
| MD9 | B8 | A8 |
| MD10 | A9 | B9 |
| MD11 | B9 | A9 |
| MD12 | A10 | B10 |
| MD13 | B10 | A10 |
| MD14 | A11 | B11 |
| MD15 | B11 | A11 |
| MD16 | A12 | B12 |
| MD17 | B12 | A12 |
| MD18 | A13 | B13 |
| MD19 | B13 | A13 |
| MD20 | A14 | B14 |
| MD21 | B14 | A14 |
| MD22 | A15 | B15 |
| MD23 | B15 | A15 |
| MD24 | A16 | B16 |
| MD25 | B16 | A16 |
| MD26 | A17 | B17 |
| MD27 | B17 | A17 |
| MD28 | A18 | B18 |
| MD29 | B18 | A18 |
| MD30 | A19 | B19 |
| MD31 | B19 | A19 |
| MD32 | A20 | B20 |
| MD33 | B20 | A20 |
| MD34 | A21 | B21 |
| MD35 | B21 | A21 |
| MD36 | A22 | B22 |
| MD37 | B22 | A22 |
| MD38 | A23 | B23 |
| MD39 | B23 | A23 |
| MD40 | A24 | B24 |
| MD41 | B24 | A24 |
| MD42 | A25 | B25 |
| MD43 | B25 | A25 |
| MD44 | A26 | B26 |
| MD45 | B26 | A26 |
| MD46 | A27 | B27 |
| MD47 | B27 | A27 |
| MD48 | A28 | B28 |
| MD49 | B28 | A28 |
| MD50 | A29 | B29 |
| MD51 | B29 | A29 |
| MD52 | A30 | B30 |
| MD53 | B30 | A30 |
| MD54 | A31 | B31 |
| MD55 | B31 | A31 |
| MD56 | A32 | B32 |
| MD57 | B32 | A32 |
| MD58 | A33 | B33 |
| MD59 | B33 | A33 |
| MD60 | A34 | B34 |
| MD61 | B34 | A34 |
| MD62 | A35 | B35 |
| MD63 | B35 | A35 |
| MD64 | A36 | B36 |
| MD65 | B36 | A36 |
| MD66 | A37 | B37 |
| MD67 | B37 | A37 |
| MD68 | A38 | B38 |
| MD69 | B38 | A38 |
| MD70 | A39 | B39 |
| MD71 | B39 | A39 |
| MD72 | A40 | B40 |
| MD73 | B40 | A40 |
| MD74 | A41 | B41 |
| MD75 | B41 | A41 |
| MD76 | A42 | B42 |
| MD77 | B42 | A42 |
| MD78 | A43 | B43 |
| MD79 | B43 | A43 |
| MD80 | A44 | B44 |
| MD81 | B44 | A44 |
| MD82 | A45 | B45 |
| MD83 | B45 | A45 |
| MD84 | A46 | B46 |
| MD85 | B46 | A46 |
| MD86 | A47 | B47 |
| MD87 | B47 | A47 |
| MD88 | A48 | B48 |
| MD89 | B48 | A48 |
| MD90 | A49 | B49 |
| MD91 | B49 | A49 |
| MD92 | A50 | B50 |
| MD93 | B50 | A50 |
| MD94 | A51 | B51 |
| MD95 | B51 | A51 |
| MD96 | A52 | B52 |
| MD97 | B52 | A52 |
| MD98 | A53 | B53 |
| MD99 | B53 | A53 |
| MD100 | A54 | B54 |
| MD101 | B54 | A54 |
| MD102 | A55 | B55 |
| MD103 | B55 | A55 |
| MD104 | A56 | B56 |
| MD105 | B56 | A56 |
| MD106 | A57 | B57 |
| MD107 | B57 | A57 |
| MD108 | A58 | B58 |
| MD109 | B58 | A58 |
| MD110 | A59 | B59 |
| MD111 | B59 | A59 |
| MD112 | A60 | B60 |
| MD113 | B60 | A60 |
| MD114 | A61 | B61 |
| MD115 | B61 | A61 |
| MD116 | A62 | B62 |
| MD117 | B62 | A62 |
| MD118 | A63 | B63 |
| MD119 | B63 | A63 |
| MD120 | A64 | B64 |
| MD121 | B64 | A64 |
| MD122 | A65 | B65 |
| MD123 | B65 | A65 |
| MD124 | A66 | B66 |
| MD125 | B66 | A66 |
| MD126 | A67 | B67 |
| MD127 | B67 | A67 |
| MD128 | A68 | B68 |
| MD129 | B68 | A68 |
| MD130 | A69 | B69 |
| MD131 | B69 | A69 |
| MD132 | A70 | B70 |
| MD133 | B70 | A70 |
| MD134 | A71 | B71 |
| MD135 | B71 | A71 |
| MD136 | A72 | B72 |
| MD137 | B72 | A72 |
| MD138 | A73 | B73 |
| MD139 | B73 | A73 |
| MD140 | A74 | B74 |
| MD141 | B74 | A74 |
| MD142 | A75 | B75 |
| MD143 | B75 | A75 |
| MD144 | A76 | B76 |
| MD145 | B76 | A76 |
| MD146 | A77 | B77 |
| MD147 | B77 | A77 |
| MD148 | A78 | B78 |
| MD149 | B78 | A78 |
| MD150 | A79 | B79 |
| MD151 | B79 | A79 |
| MD152 | A80 | B80 |
| MD153 | B80 | A80 |
| MD154 | A81 | B81 |
| MD155 | B81 | A81 |
| MD156 | A82 | B82 |
| MD157 | B82 | A82 |
| MD158 | A83 | B83 |
| MD159 | B83 | A83 |
| MD160 | A84 | B84 |
| MD161 | B84 | A84 |
| MD162 | A85 | B85 |
| MD163 | B85 | A85 |
| MD164 | A86 | B86 |
| MD165 | B86 | A86 |
| MD166 | A87 | B87 |
| MD167 | B87 | A87 |
| MD168 | A88 | B88 |
| MD169 | B88 | A88 |
| MD170 | A89 | B89 |
| MD171 | B89 | A89 |
| MD172 | A90 | B90 |
| MD173 | B90 | A90 |
| MD174 | A91 | B91 |
| MD175 | B91 | A91 |
| MD176 | A92 | B92 |
| MD177 | B92 | A92 |
| MD178 | A93 | B93 |
| MD179 | B93 | A93 |
| MD180 | A94 | B94 |
| MD181 | B94 | A94 |
| MD182 | A95 | B95 |
| MD183 | B95 | A95 |
| MD184 | A96 | B96 |
| MD185 | B96 | A96 |
| MD186 | A97 | B97 |
| MD187 | B97 | A97 |
| MD188 | A98 | B98 |
| MD189 | B98 | A98 |
| MD190 | A99 | B99 |
| MD191 | B99 | A99 |
| MD192 | A100 | B100 |
| MD193 | B100 | A100 |

NEED CHANGE TO 1.05V

CLOSE TO BALL

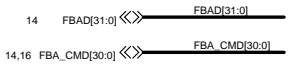
MSI CORPORATION

File: **PARK-IO**

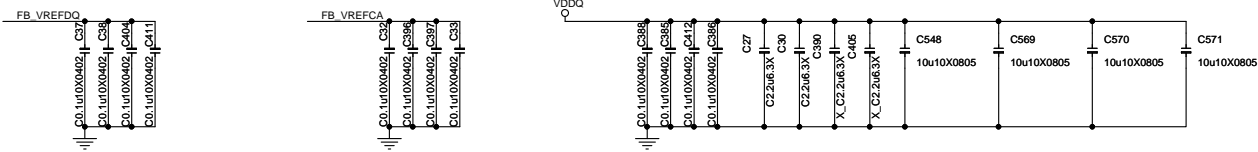
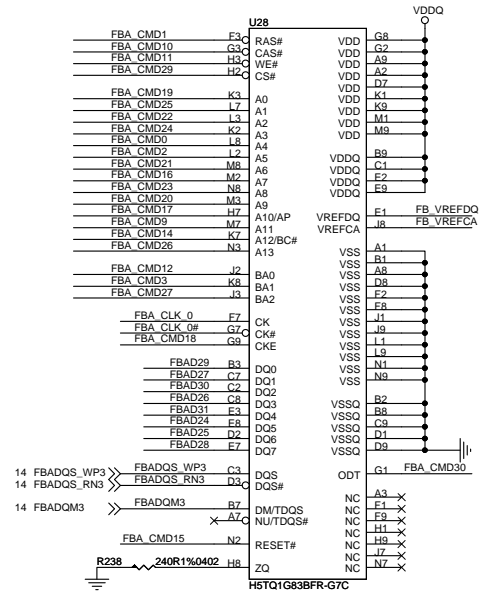
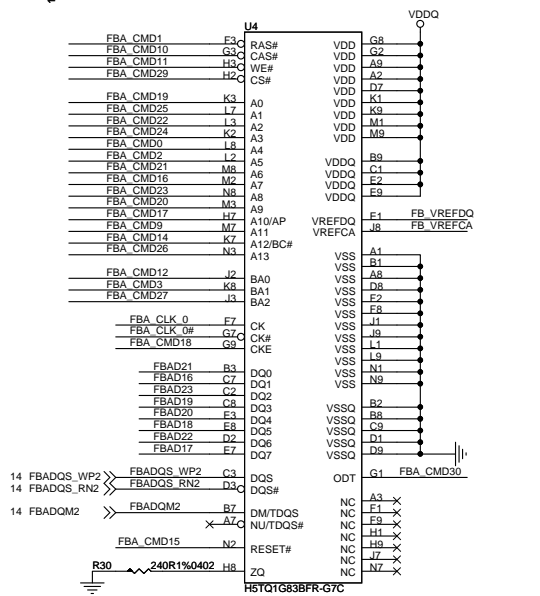
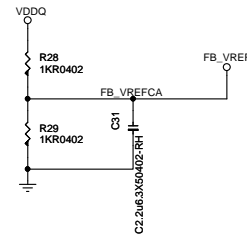
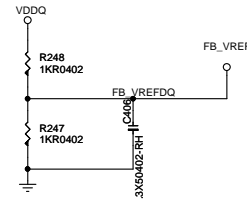
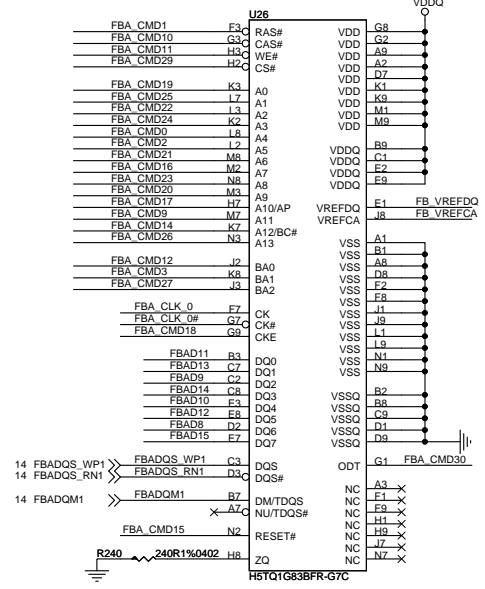
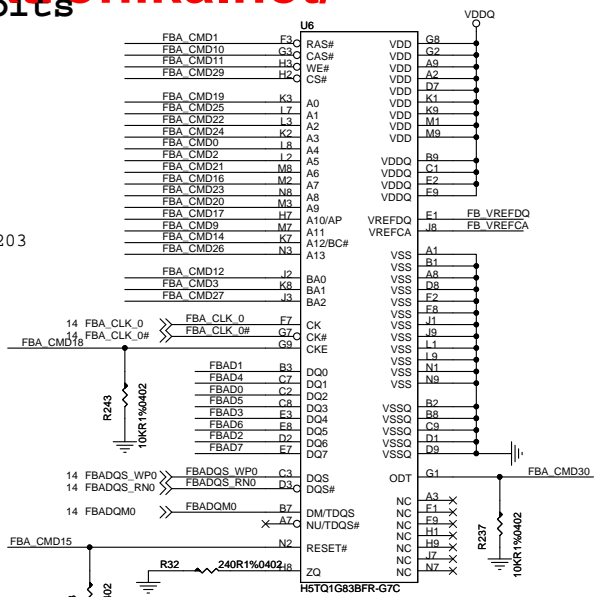
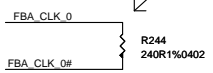
Size: **C** Document Number: **MS-168A** Rev: **0A**

Date: **Friday, March 26, 2010** Sheet: **14** of **52**

DDR3 128Mx8bits

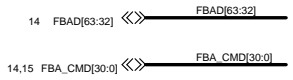


R252 need change to 242 ohm.1203

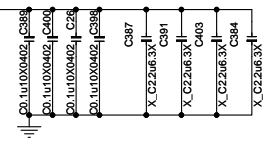
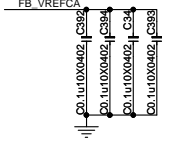
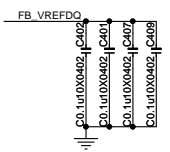
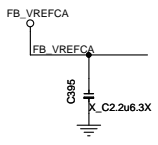
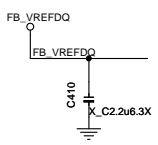
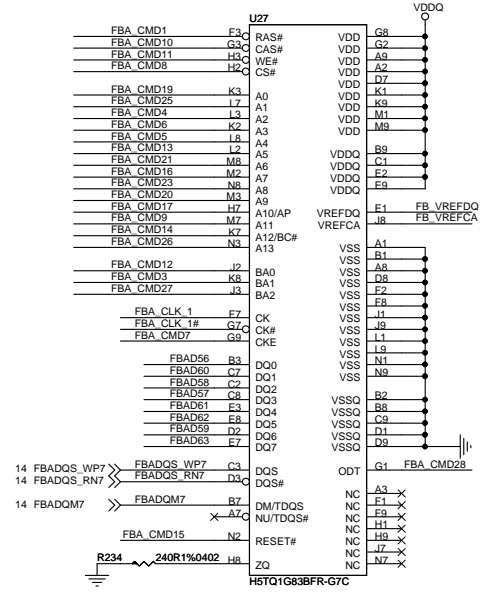
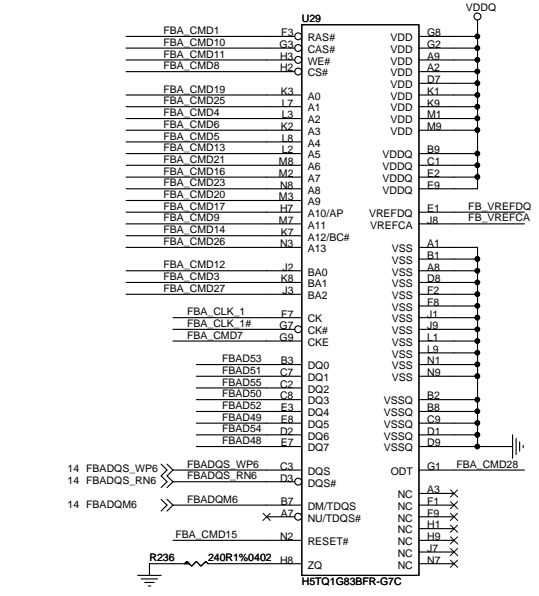
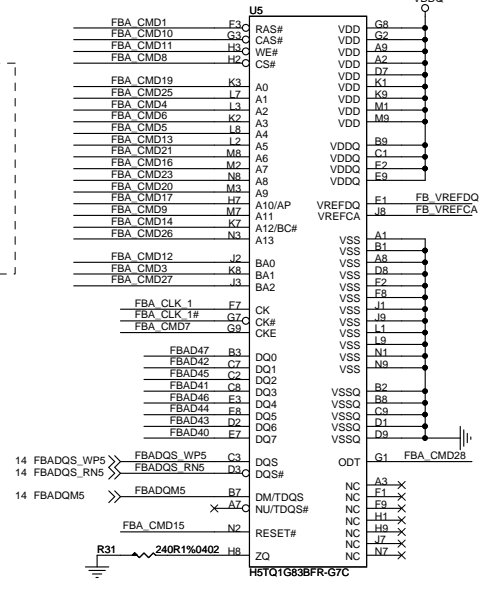
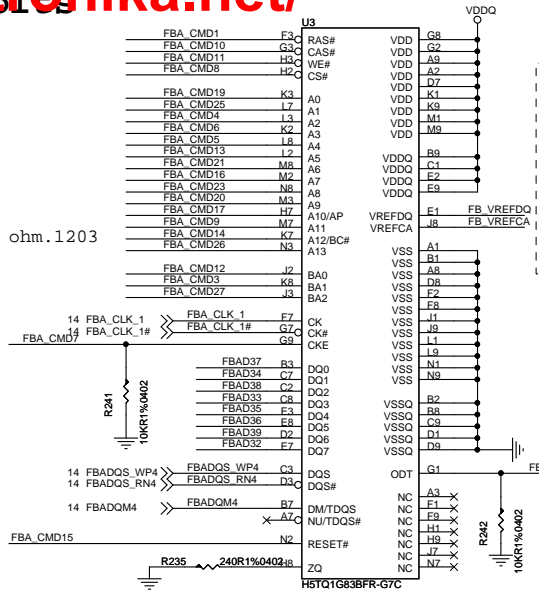
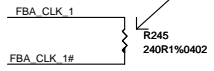


Each group(top & bottom) put a 0.1uF

MSI CORPORATION
Title: PARK-POWER
Size: Custom MS-168A
Date: Friday, March 26, 2010
Sheet: 15 of 52
Rev: 0A



R264 need change to 242 ohm.1203



MSI CORPORATION

PARK-power straps

Title: **PARK-power straps**

Size: **Custom MS-168A**

Document Number: **MS-168A**

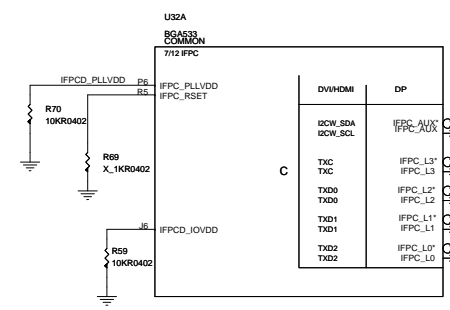
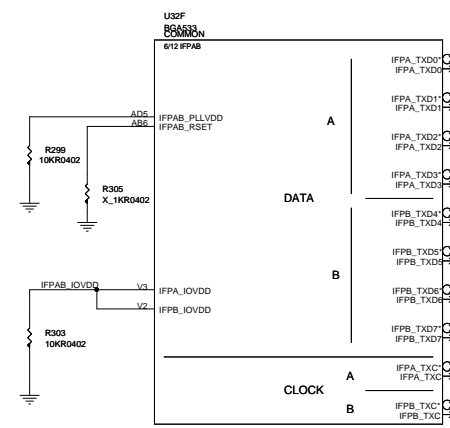
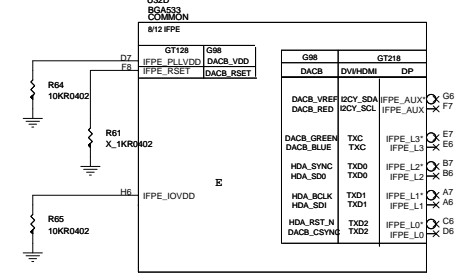
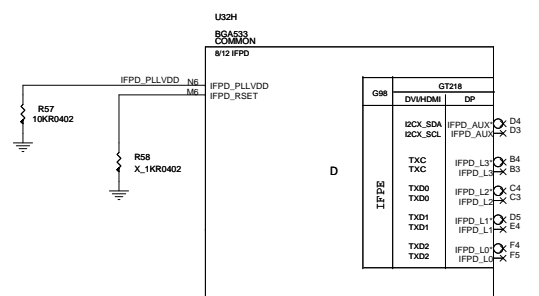
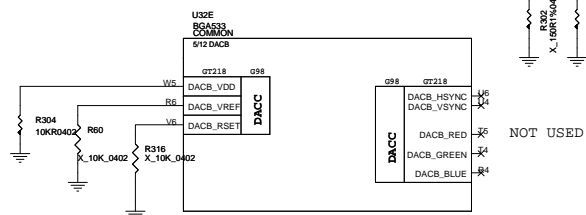
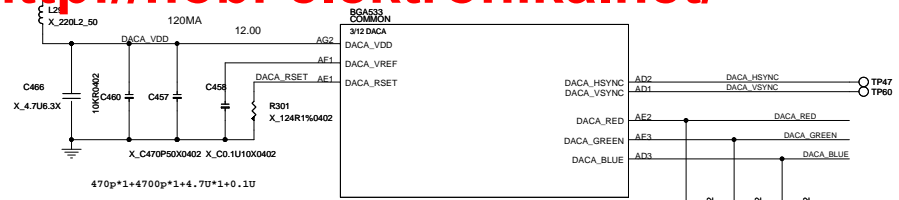
Date: **Friday, March 26, 2010**

Rev: **0A**

Sheet: **16 of 52**

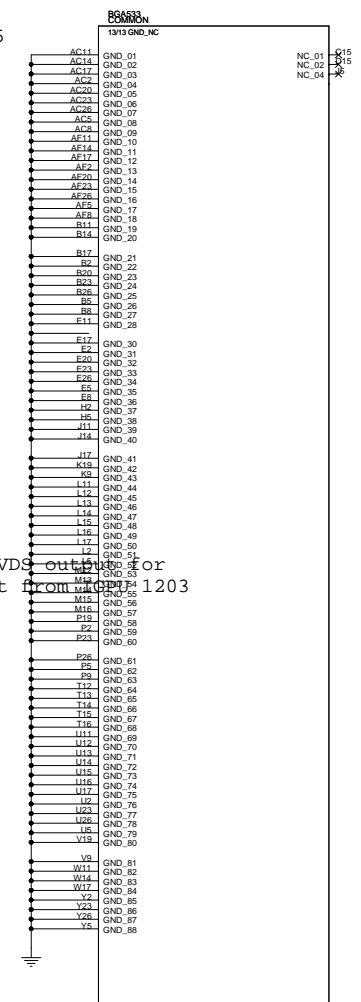
Each group(top & bottom) put a 0.1uF

need delete DGPU output 1125



delete DGPU LVDS output for Optimus output from 1203

OPTIMUS not use GPU HDMI, delete 1203

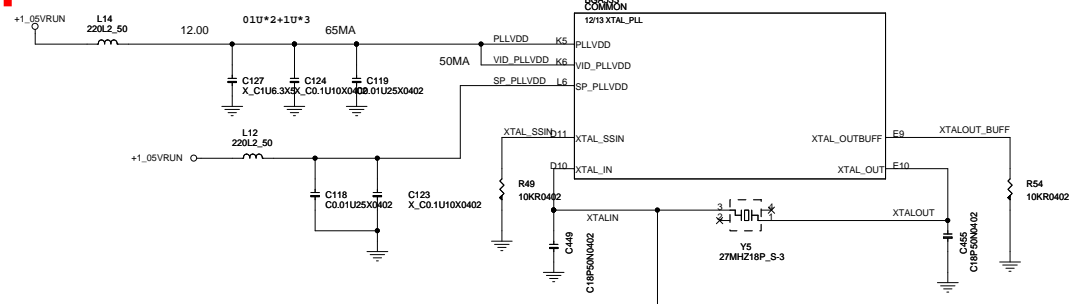


N11M-GE2
GT218
N11M-GE2-S-B1

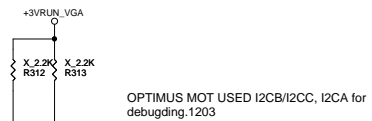
MICRO-STAR INT'L CO.,LTD.

PARK MEM I/F

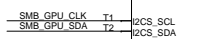
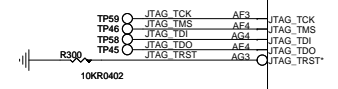
Size: Custom
Document Number: MS-168A
Date: Friday, March 26, 2010
Sheet: 17 of 52



X_OR0402 R297
Place this resistor as close as possible to crystal and add a testpin in XTALOUT to balance trace capacitance/Aaron

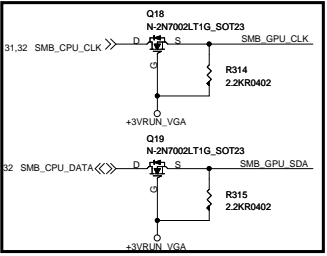


I2C assignment DG 133



| TP# | Pin | Function |
|------|------|-------------------|
| TP8 | TP8 | DBG_DATA0 I2C_SDA |
| TP9 | TP9 | DBG_DATA1 I2C_SDA |
| TP6 | TP6 | DBG_DATA2 I2C_SCL |
| TP1 | TP1 | DBG_DATA3 NC |
| TP90 | TP90 | DBG_DATA4 I2C_SDA |

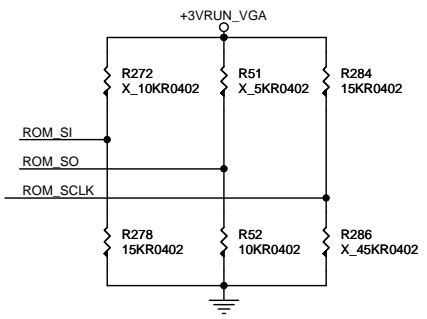
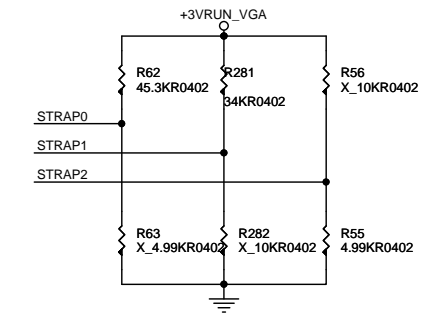
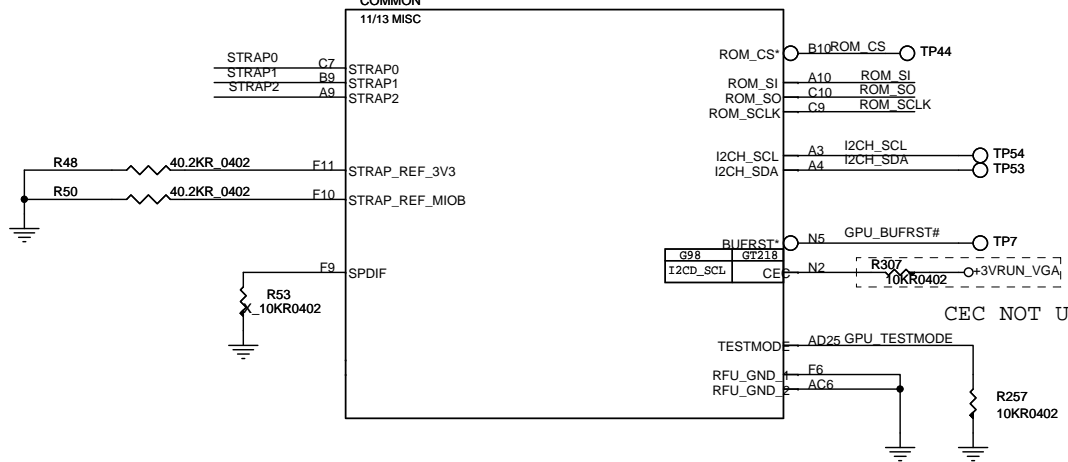
When use GPIO. Need Pull high or pull LOW.



For Optimus system VGA no power @IGP mode 1203/zong

| GPIO USAGE | | | |
|------------|-----|--------|---|
| GPIO | I/O | ACTIVE | USAGE |
| 0 | IN | N/A | HDMI_HOTPLUG_DETECT |
| 1 | IN | N/A | DVI/HDMI_LINK_HOTPLUG_DETECT |
| 2 | OUT | HIGH | PANEL_BACKLIGHT_PWM |
| 3 | OUT | HIGH | PANEL_POWER_ENABLE |
| 4 | OUT | HIGH | PANEL_BACKLIGHT_ENABLE |
| 5 | OUT | HIGH | NVDD_ALTV0 |
| 6 | OUT | HIGH | NVDD_ALTV1 |
| 7 | OUT | HIGH | FBVDD_VID0 |
| 8 | IN | LOW | OVERTEMP_ALERT |
| 9 | OUT | LOW | THERMAL_ALERT |
| 10 | OUT | HIGH | DYNAMIC_FB_VREF_GDDR3 (not used for DDR2) |
| 11 | OUT | HIGH | SLI_SYNC0 (not used for GB1-64) |
| 12 | IN | N/A | AC_DETECT |
| 13 | OUT | LOW | POWER_SUPPLY_CONTROL0 |
| 14 | OUT | HIGH | POWER_SUPPLY_CONTROL1 |
| 15 | IN | N/A | HPD_E |
| 16 | IN | N/A | DVI_E |
| 17 | IN | N/A | HDMI_E |
| 18 | IN | N/A | DVI_F (not used) |
| 19 | IN | N/A | HDMI_F (not used) |

| GPIO6 | GPIO5 | NVDD(N10M-SEL1) |
|-------|-------|-----------------|
| 1 | 1 | 1.03V |
| 1 | 0 | 0.85 |
| 0 | 1 | TDB |
| 0 | 0 | 0.85 |



| N10M SE1 | | |
|---|---------------|---|
| STRAP0 | USER 3 | 1 |
| | USER 2 | 1 |
| | USER 1 | 1 |
| | USER 0 | 1 |
| SM BUS define resolution 1111 | | |
| STRAP1 | 3GIO_PADCFG 3 | 0 |
| | 3GIO_PADCFG 2 | 0 |
| | 3GIO_PADCFG 1 | 0 |
| | 3GIO_PADCFG 0 | 1 |
| PUN-04992-001-V01 NOTEBOOK 0001 | | |
| STRAP2 | PCI_DEVID3 | 0 |
| | PCI_DEVID2 | 0 |
| | PCI_DEVID1 | 0 |
| | PCI_DEVID0 | 0 |
| 0X0A70 0000 NB11M-GE2 | | |
| ROM_SCLK | PCI DEVID 4 | 1 |
| | SUBVENDOR | 0 |
| | SLOT_CLK | 1 |
| | PEX_PLL_EN | 0 |
| VBIOS is in system bios GPU and MCH do not share a common clock disable pci express PLL termination | | |
| ROM_SI | RAMCFG 3 | 0 |
| | RAMCFG 2 | 0 |
| | RAMCFG 1 | 0 |
| | RAMCFG 0 | 0 |
| SEE PUN update 1130 | | |
| ROM_SO | XCLK_417 | 1 |
| | FB_0_BAR_SIZE | 0 |
| | SMB_ALT_ADDR | 0 |
| | VGA_DEVICE | 0 |
| Have 27M hz CRYSTAL SPEC have no TV function | | |

| Rvalue | PU | PD |
|--------|------|------|
| 5K | 1000 | 0000 |
| 10K | 1001 | 0001 |
| 15K | 1010 | 0010 |
| 20K | 1011 | 0011 |
| 25K | 1100 | 0100 |
| 30K | 1101 | 0101 |
| 35K | 1110 | 0110 |
| 45K | 1111 | 0111 |

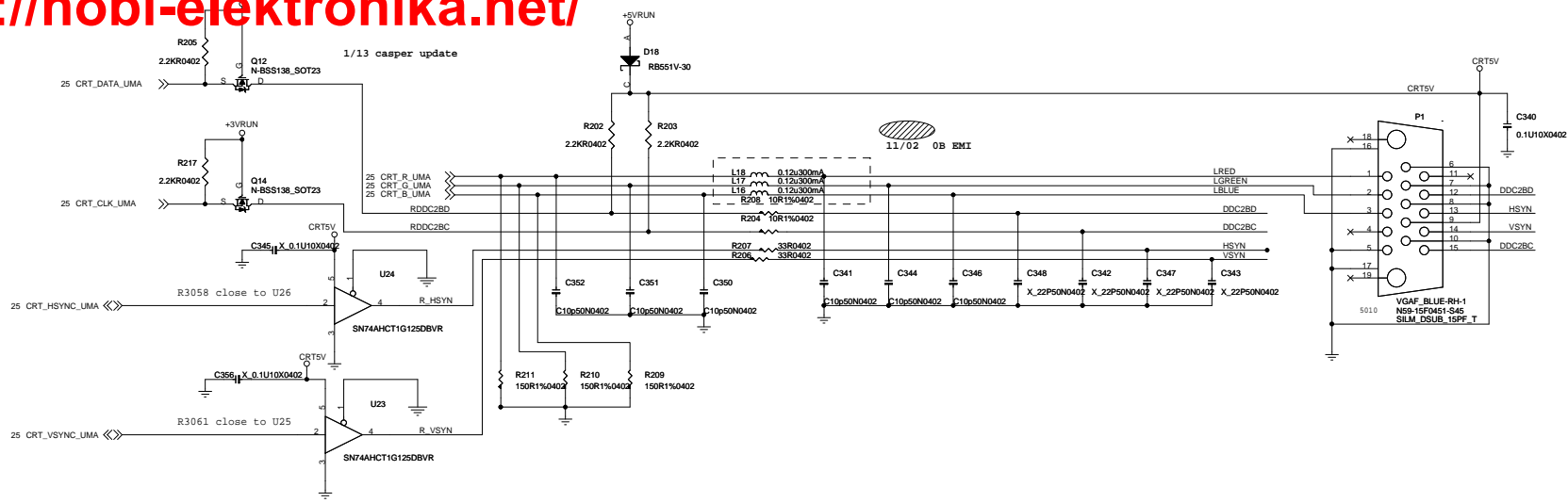
MICRO-STAR INT'L CO.,LTD.

PARK MEM DDR3 A1

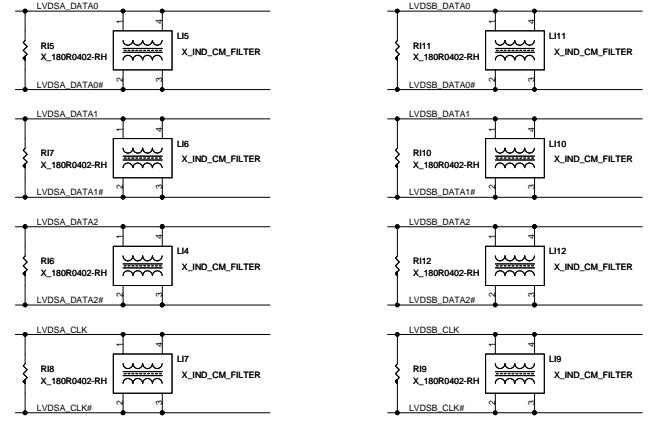
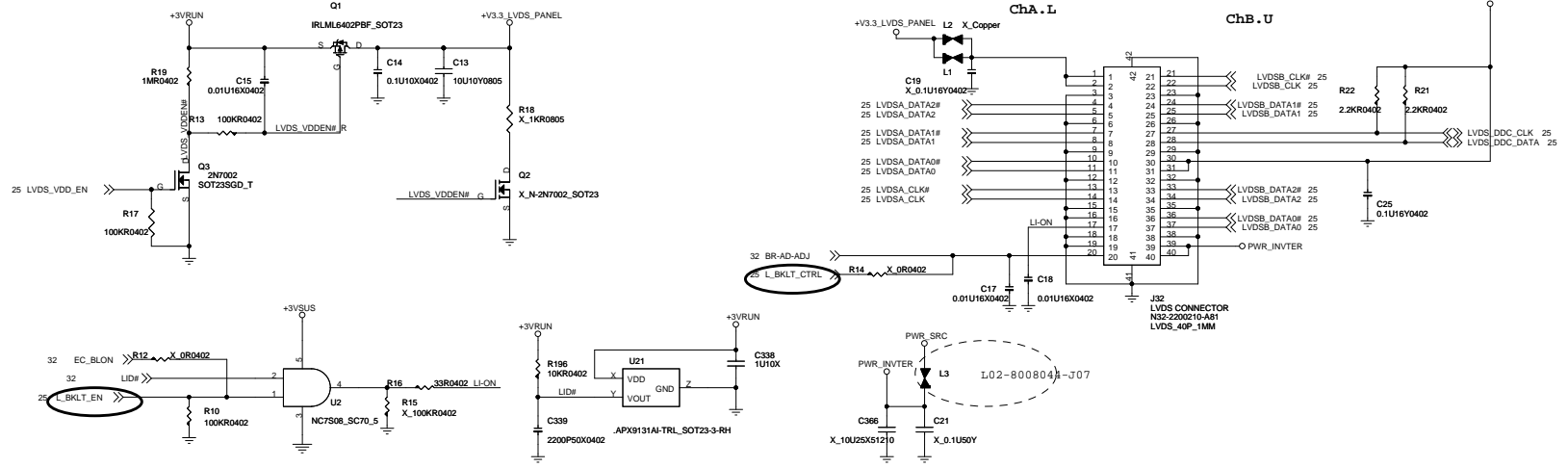
Document Number: **MS-168A**

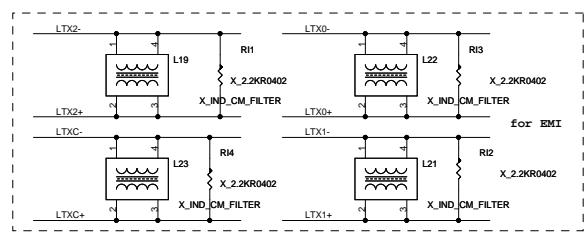
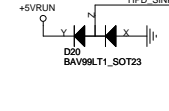
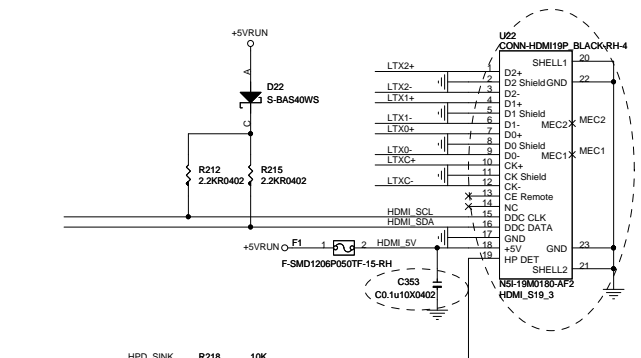
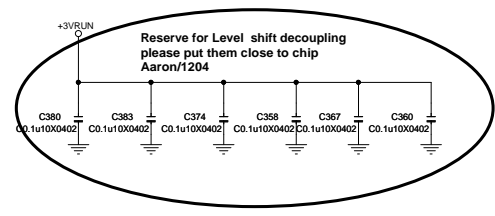
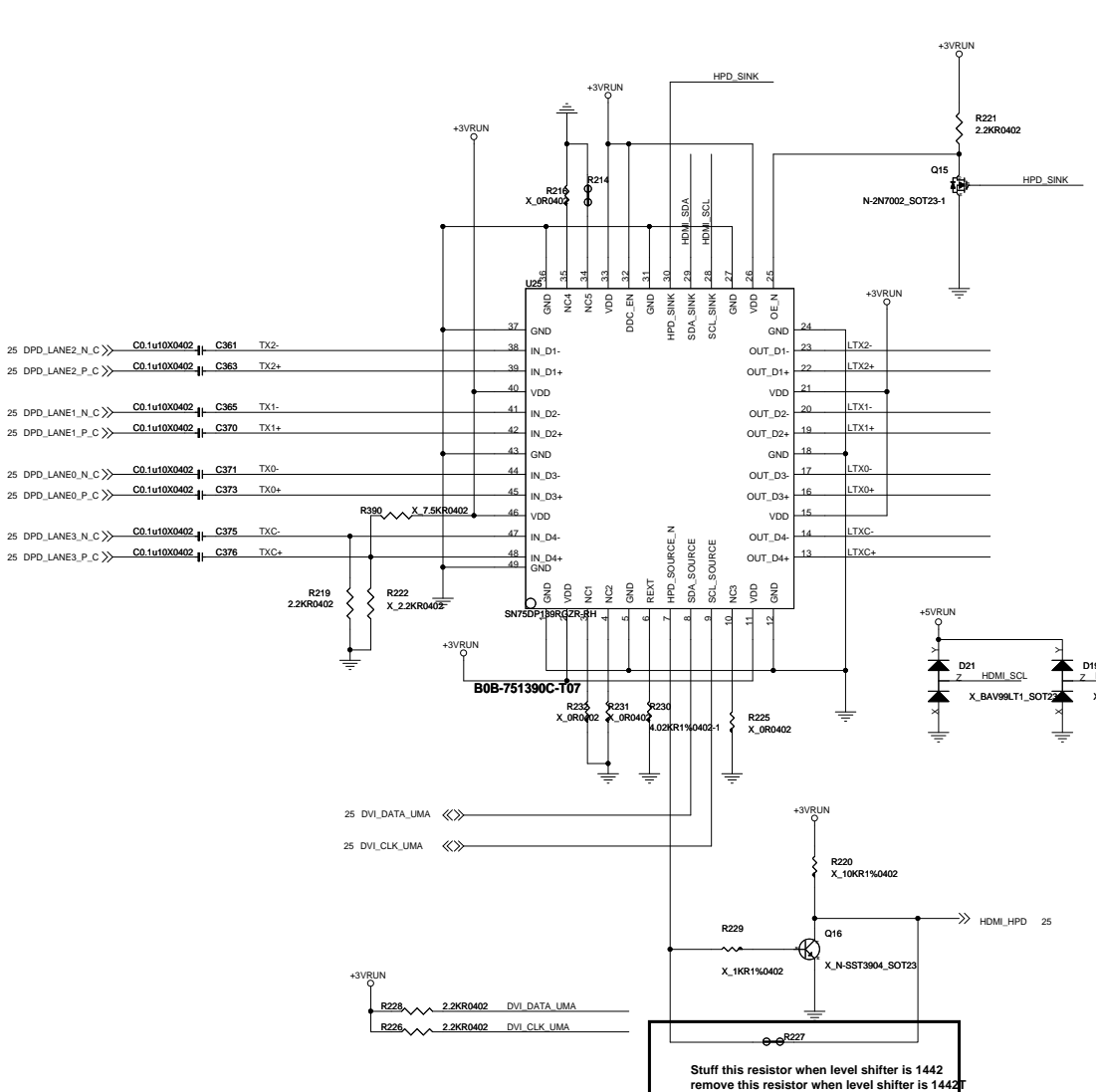
Rev: 0A

Date: Friday, March 26, 2010 Sheet 19 of 52

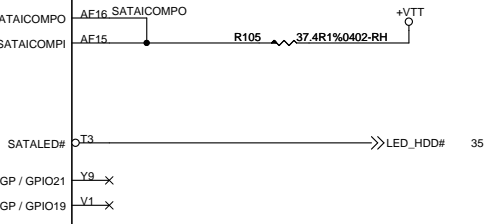
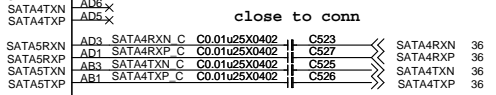
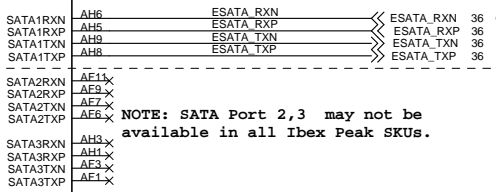
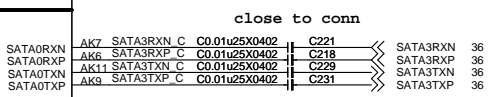
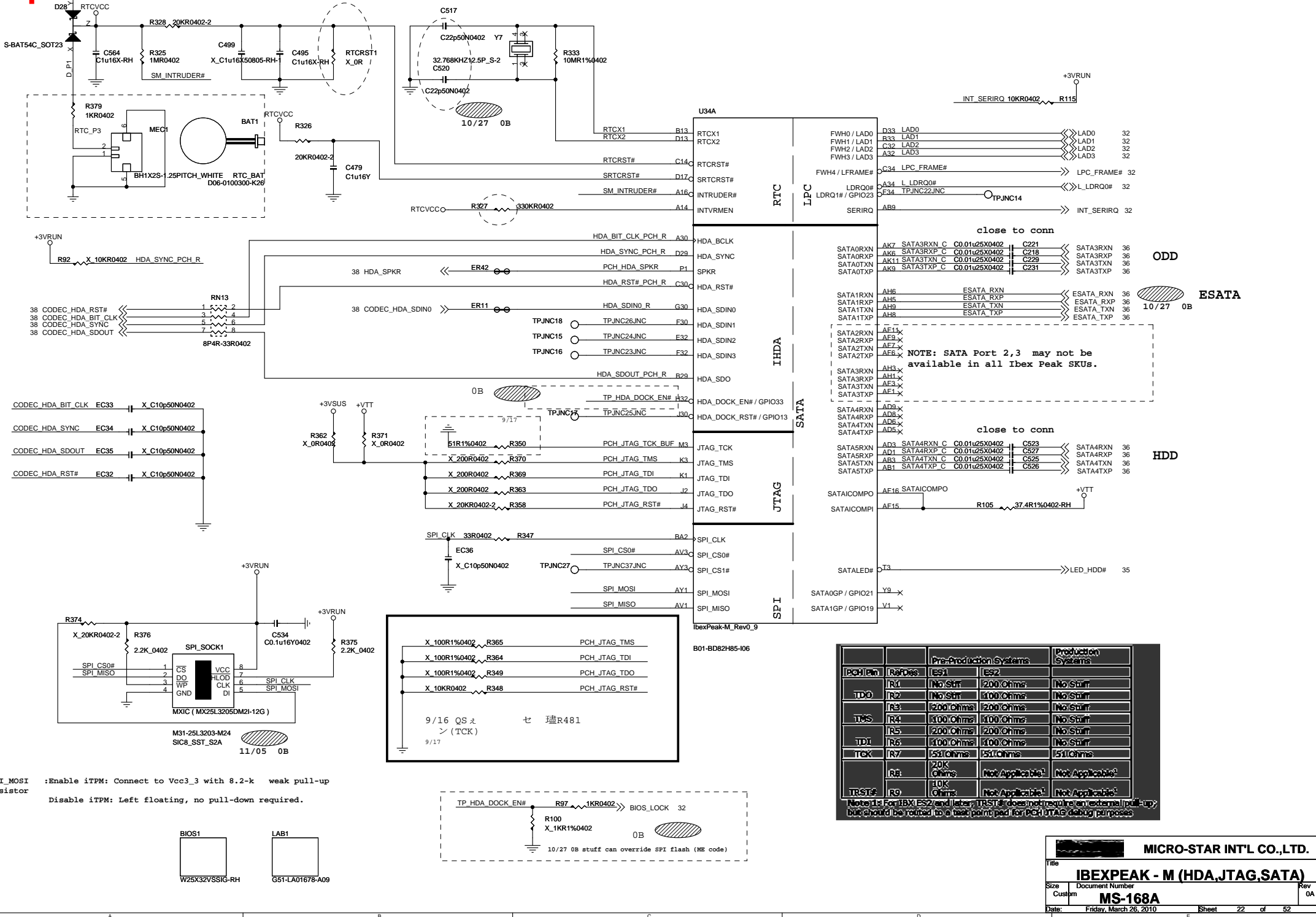


LVDS connector





Stuff this resistor when level shifter is 1442
remove this resistor when level shifter is 1442

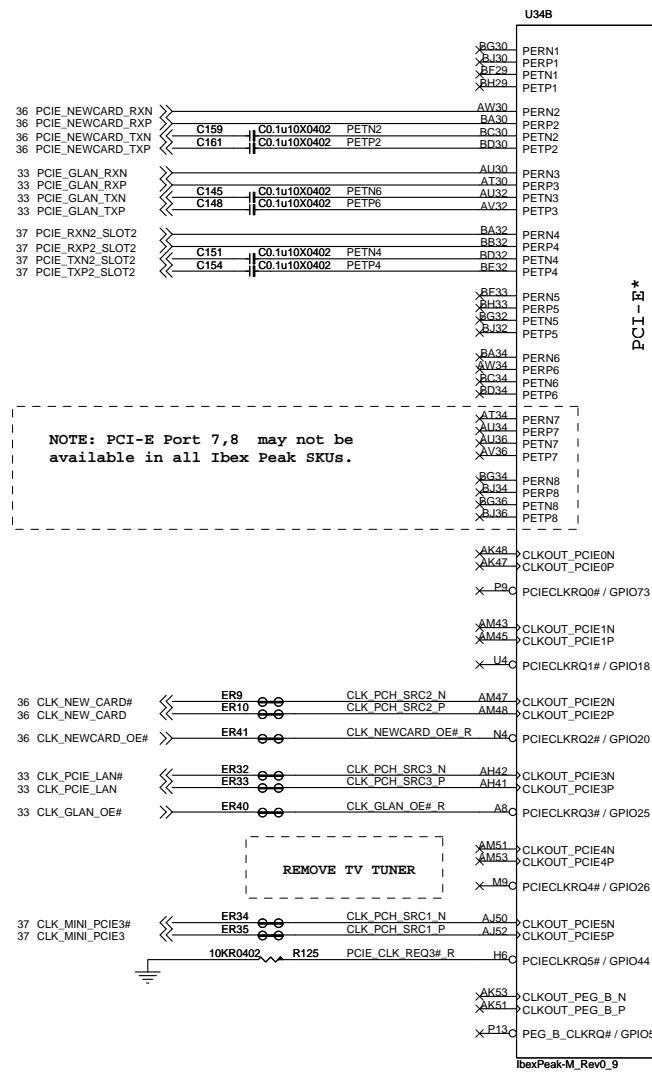


| Position | Ref/Des | Pre-Production Systems | | Production Systems |
|----------|---------|------------------------|-----------------|--------------------|
| | | ES1 | ES2 | |
| TDO | R1 | No Stiff | 200 Ohms | No Stiff |
| | R2 | No Stiff | 100 Ohms | No Stiff |
| | R3 | 200 Ohms | 200 Ohms | No Stiff |
| TMS | R4 | 100 Ohms | 100 Ohms | No Stiff |
| | R5 | 200 Ohms | 200 Ohms | No Stiff |
| TDI | R6 | 100 Ohms | 100 Ohms | No Stiff |
| TCK | R7 | 150 Ohms | 150 Ohms | 150 Ohms |
| TRST# | R8 | 20K Ohms | Not Applicable! | Not Applicable! |
| | R9 | 10K Ohms | Not Applicable! | Not Applicable! |

Note 1: For IBX ES2 and later, TRST# does not need an external pull-up, but should be routed to a test point for PCB JTAG debug purposes.

SPI_MOSI : Enable iTPM: Connect to Vcc3_3 with 8.2-k weak pull-up resistor
 Disable iTPM: Left floating, no pull-down required.

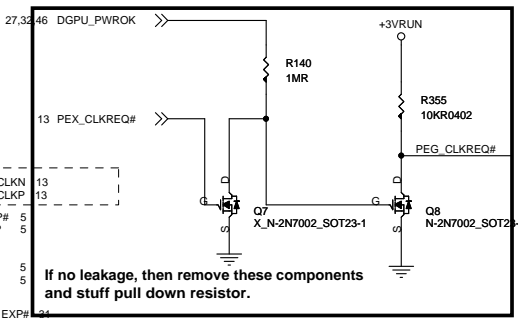
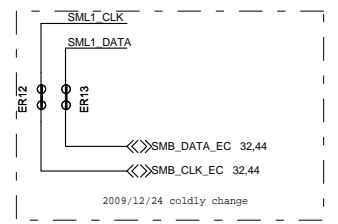
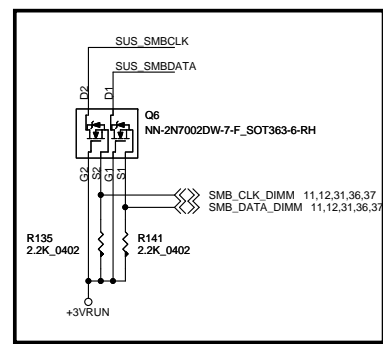
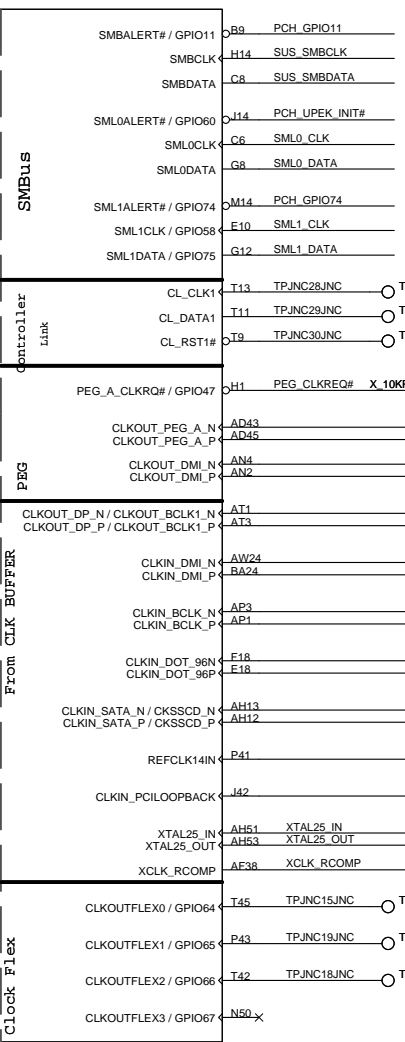
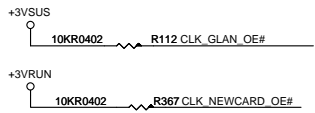
IBEXPEAK - M (PCI-E, SMBUS, CLK)



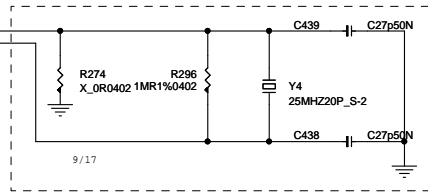
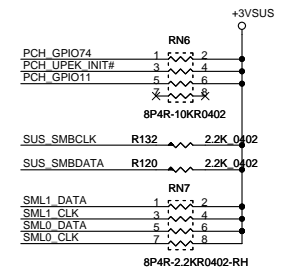
NOTE: PCI-E Port 7,8 may not be available in all Ixex Peak SKUs.

REMOVE TV TUNER

| | |
|--|----------|
| PCIECLKRQ1# / GPIO18 PCIECLKRQ1# / GPIO20 | RUN Well |
| PCIECLKRQ0# and PCIECLKRQ3# ~ PCIECLKRQ7# PEG_A_CLKRQ# PEG_B_CLKRQ# | SUS Well |



If no leakage, then remove these components and stuff pull down resistor.



MICRO-STAR INT'L CO.,LTD.

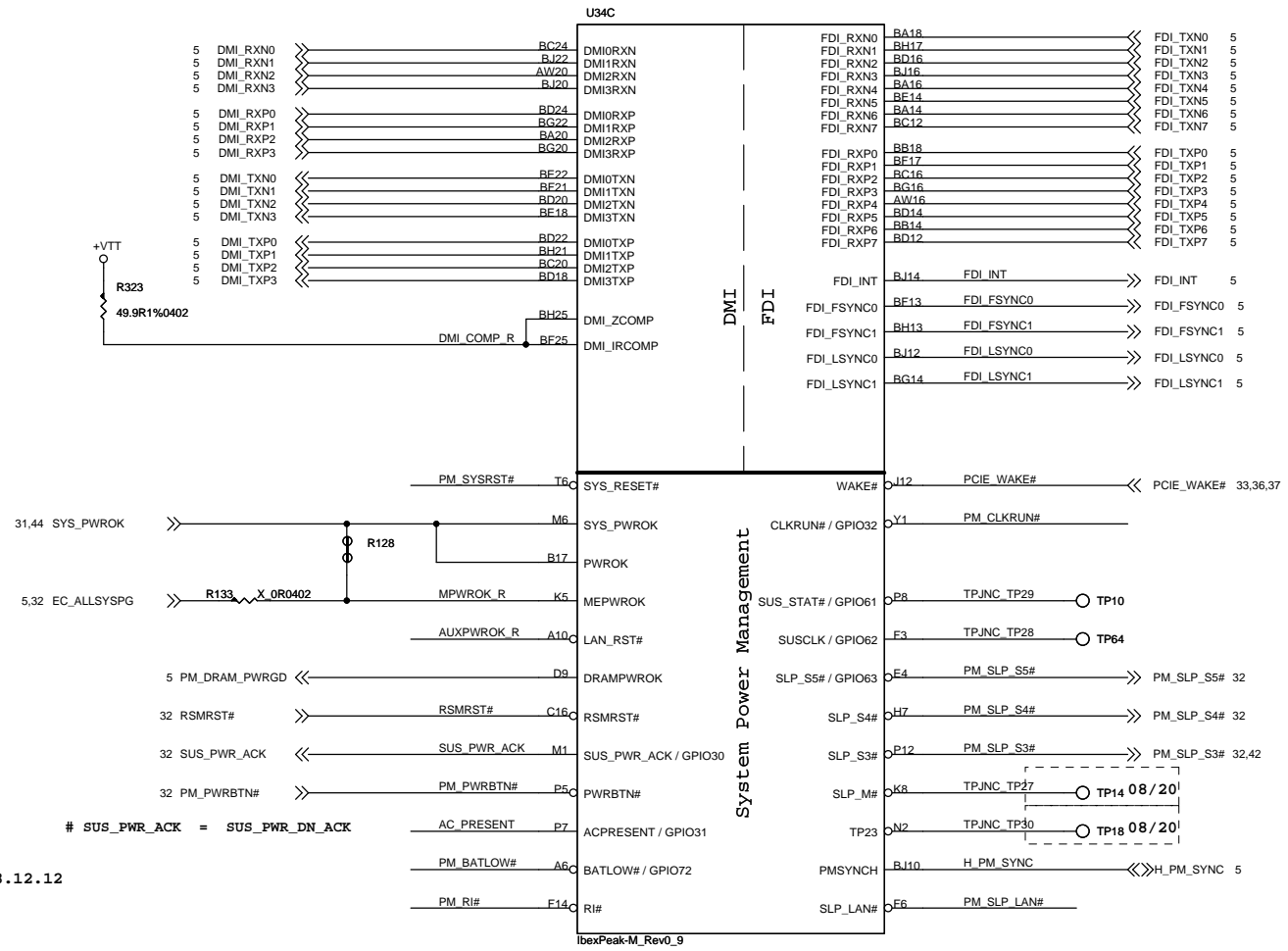
IBEXPEAK - M (PCI-E,SMBUS,CLK)

MS-168A

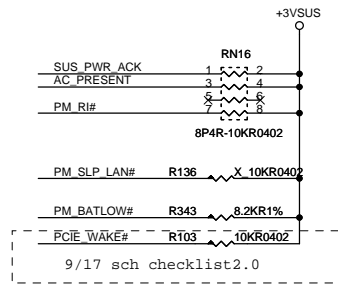
Friday, March 26, 2010

Sheet 23 of 52

IBEXPEAK - M (DMI, FDI, GPIO)



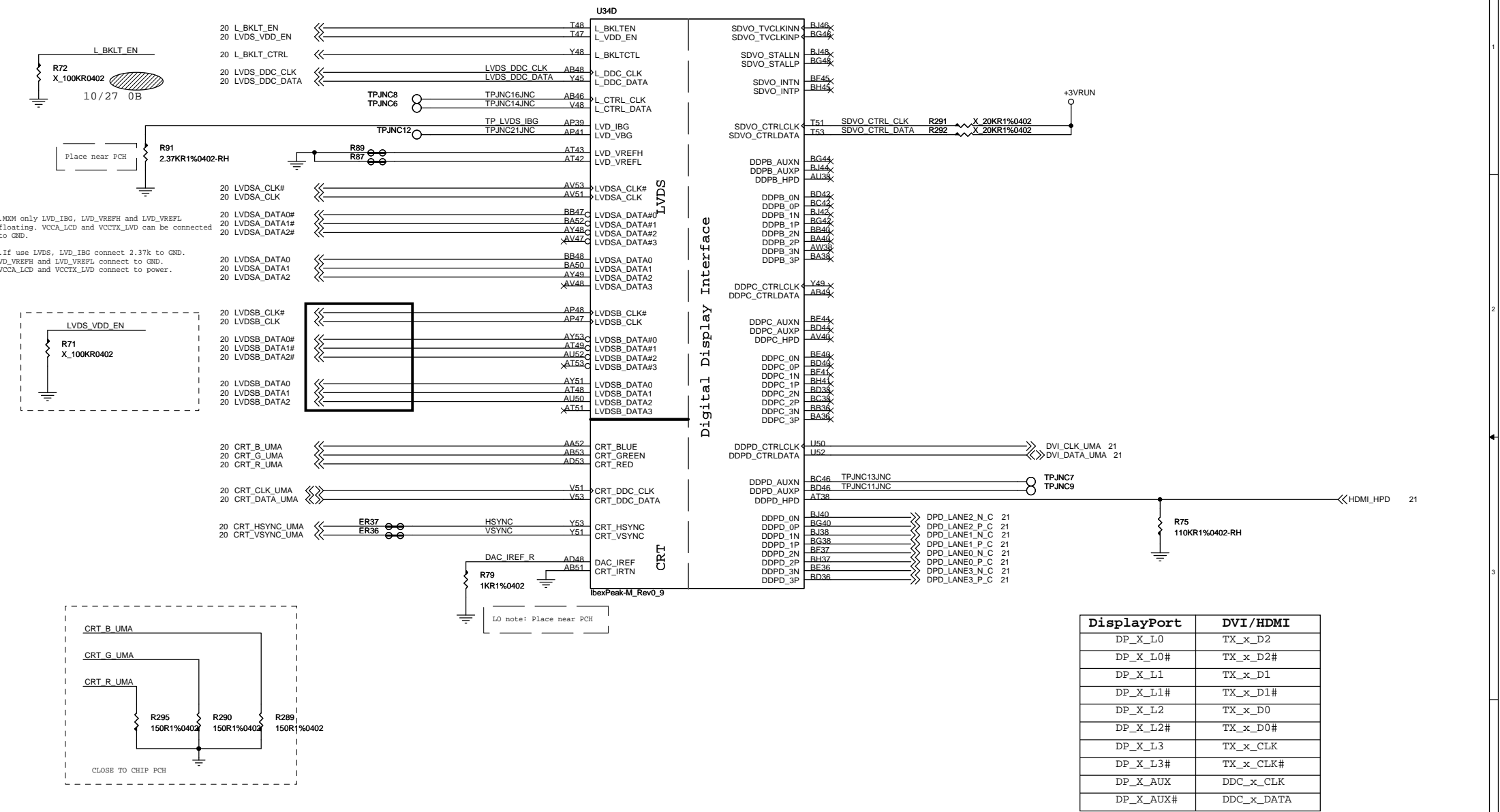
PULL LOW FOR NOT INTEL LAN 2008.12.12



| | | |
|------------------------------------|------------------------|----------------|
| MICRO-STAR INT'L CO.,LTD. | | |
| IBEXPEAK - M (DMI,FDI,GPIO) | | |
| Size | Document Number | Rev |
| Custom | MS-168A | 0A |
| Date: | Friday, March 26, 2010 | Sheet 24 of 52 |

9/17 sch checklist2.0

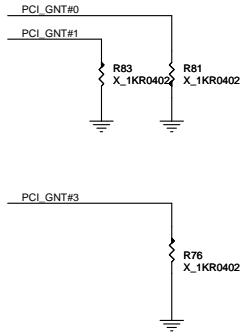
IBEXPEAK - M (LVDS,DDI)



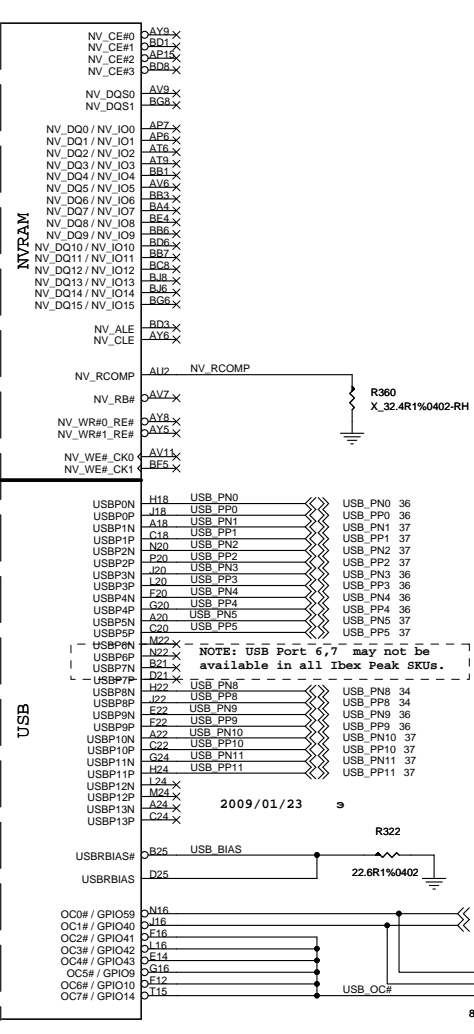
| DisplayPort | DVI/HDMI |
|-------------|------------|
| DP_X_L0 | TX_x_D2 |
| DP_X_L0# | TX_x_D2# |
| DP_X_L1 | TX_x_D1 |
| DP_X_L1# | TX_x_D1# |
| DP_X_L2 | TX_x_D0 |
| DP_X_L2# | TX_x_D0# |
| DP_X_L3 | TX_x_CLK |
| DP_X_L3# | TX_x_CLK# |
| DP_X_AUX | DDC_x_CLK |
| DP_X_AUX# | DDC_x_DATA |

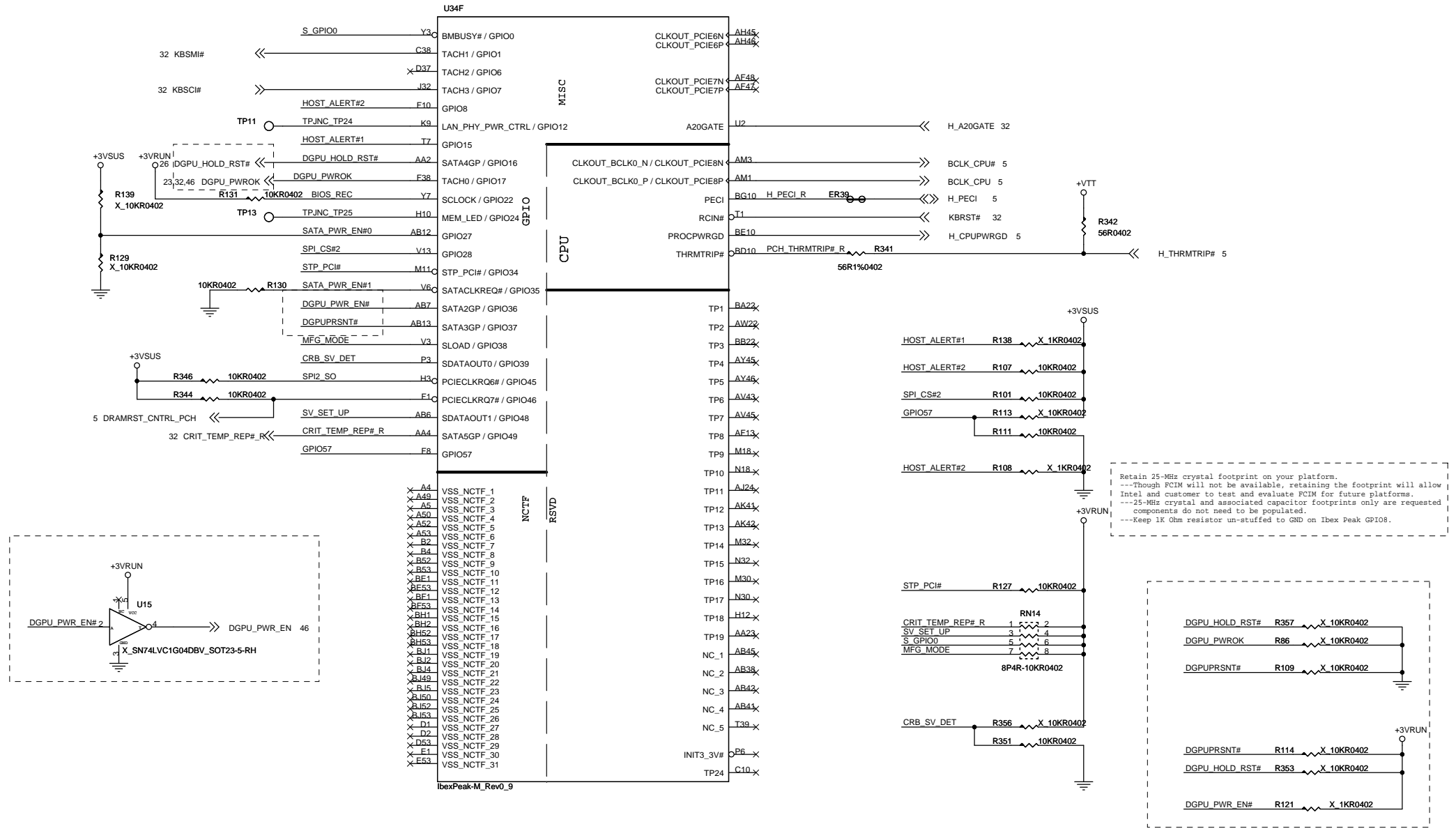
| PCI_GNT#0 | PCI_GNT#1 | Boot BIOS Location |
|-----------|-----------|--------------------|
| 0 | 0 | LPC |
| 0 | 1 | Reserved |
| 1 | 0 | PCI |
| 1 | 1 | SP1 |

| PCI_GNT#3 | Low = A16 swap override/Top-Block Swap Override enabled | High = Default |
|-----------|---|----------------|
| Low | Low = A16 swap override/Top-Block Swap Override enabled | High = Default |

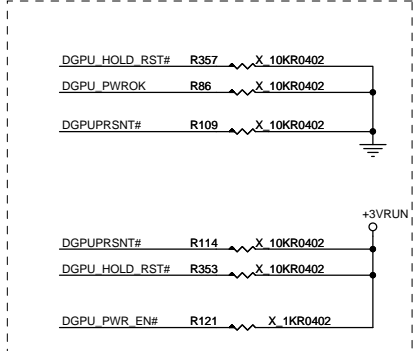


- U34E**
- X_H40 AD0
 - X_N34 AD1
 - X_C44 AD2
 - X_A38 AD3
 - X_C36 AD4
 - X_J34 AD5
 - X_D40 AD6
 - X_D45 AD7
 - X_E36 AD8
 - X_H48 AD9
 - X_E40 AD10
 - X_C40 AD11
 - X_M48 AD12
 - X_M45 AD13
 - X_F33 AD14
 - X_M40 AD15
 - X_M43 AD16
 - X_J36 AD17
 - X_K48 AD18
 - X_F40 AD19
 - X_C42 AD20
 - X_K46 AD21
 - X_M51 AD22
 - X_J52 AD23
 - X_K61 AD24
 - X_L34 AD25
 - X_F42 AD26
 - X_J40 AD27
 - X_G46 AD28
 - X_F44 AD29
 - X_M47 AD30
 - X_H36 AD31
 - X_G40 C/BE#
 - X_G42 C/BE#1
 - X_H47 C/BE#2
 - X_G34 C/BE#3
 - INT_PIRQA# G38 PIRQA#
 - INT_PIRQB# H51 PIRQB#
 - INT_PIRQC# B37 PIRQC#
 - INT_PIRQD# A44 PIRQD#
 - PCI_REQ#0 F51 REQ#0 / GPIO50
 - PCI_REQ#1 A46 REQ#1 / GPIO52
 - PCI_REQ#2 B40 REQ#2 / GPIO52
 - PCI_REQ#3 M50 REQ#3 / GPIO54
 - PCI_GNT#0 F48 GNT#0
 - PCI_GNT#1 K46 GNT#1 / GPIO51
 - PCI_GNT#3 E36 GNT#3 / GPIO53
 - INT_PIRQE# B41 PIRQE# / GPIO2
 - INT_PIRQF# K53 PIRQF# / GPIO3
 - INT_PIRQG# A36 PIRQG# / GPIO4
 - INT_PIRQH# A48 PIRQH# / GPIO5
 - PCI_SERR# E44 SERR#
 - PCI_PERR# E50 PERR#
 - PCI_IRDY# A42 IRDY#
 - PCI_DEVSEL# X_H44 PAR
 - PCI_FRAME# C48 FRAME#
 - PCI_LOCK# D49 PLOCK#
 - PCI_STOP# D41 STOP#
 - PCI_TRDY# C49 TRDY#
 - TP12 TP_INJC TP26 M7
 - PLT_RST# D5 PLTRST#
 - X_N52 CLKOUT_PC1
 - X_E43 CLKOUT_PC2
 - X_P46 CLKOUT_PC3
 - X_P51 CLKOUT_PC3
 - X_P48 CLKOUT_PC4

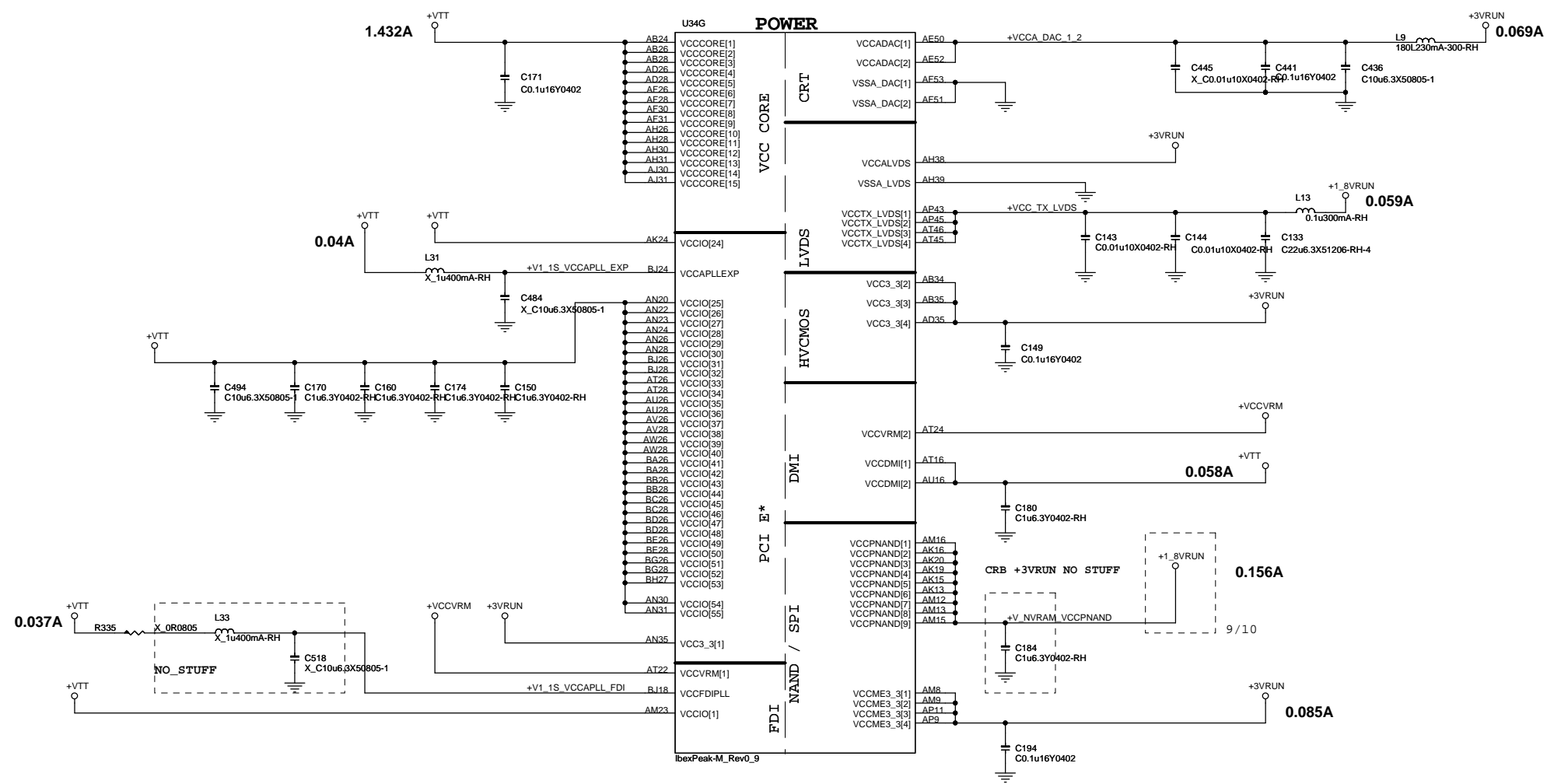




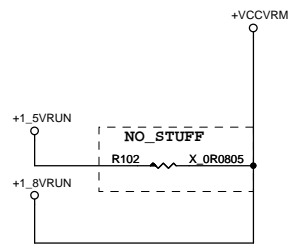
Retain 25-MHz crystal footprint on your platform.
 ---Though FCIM will not be available, retaining the footprint will allow Intel and customer to test and evaluate FCIM for future platforms.
 ---25-MHz crystal and associated capacitor footprints only are requested components do not need to be populated.
 ---Keep 1K Ohm resistor un-stuffed to GND on Ixex Peak GPIO8.

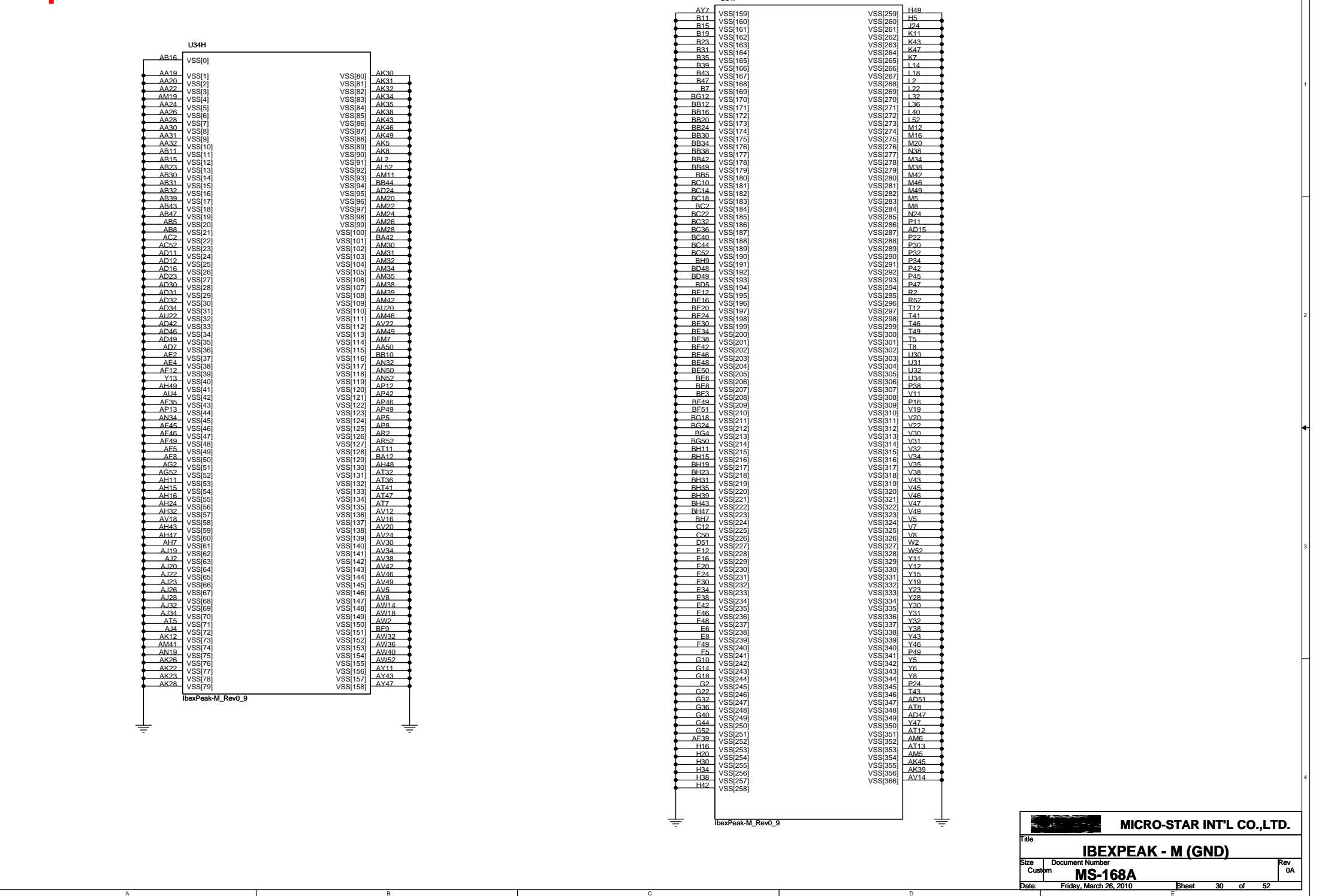


IBEXPEAK - M (POWER)



The VCCVPM rail (1.8 V/1.5 V) powers an internal voltage regulator module (VRM) that regulates clean 1.05-V voltage supply for analog rails (VCCAClk, Vccap11EXP, VCCFDIPLL, and VCCSATAPLL). This solution will allow us to remove the LC filter requirements for those rails, thereby reducing platform BOM cost. VCCVPM is enabled by default via internal pull up to GPIO27, therefore GPIO27 should be left as No Connect. The following diagram shows implementation details on how to enable and disable VccVPM.



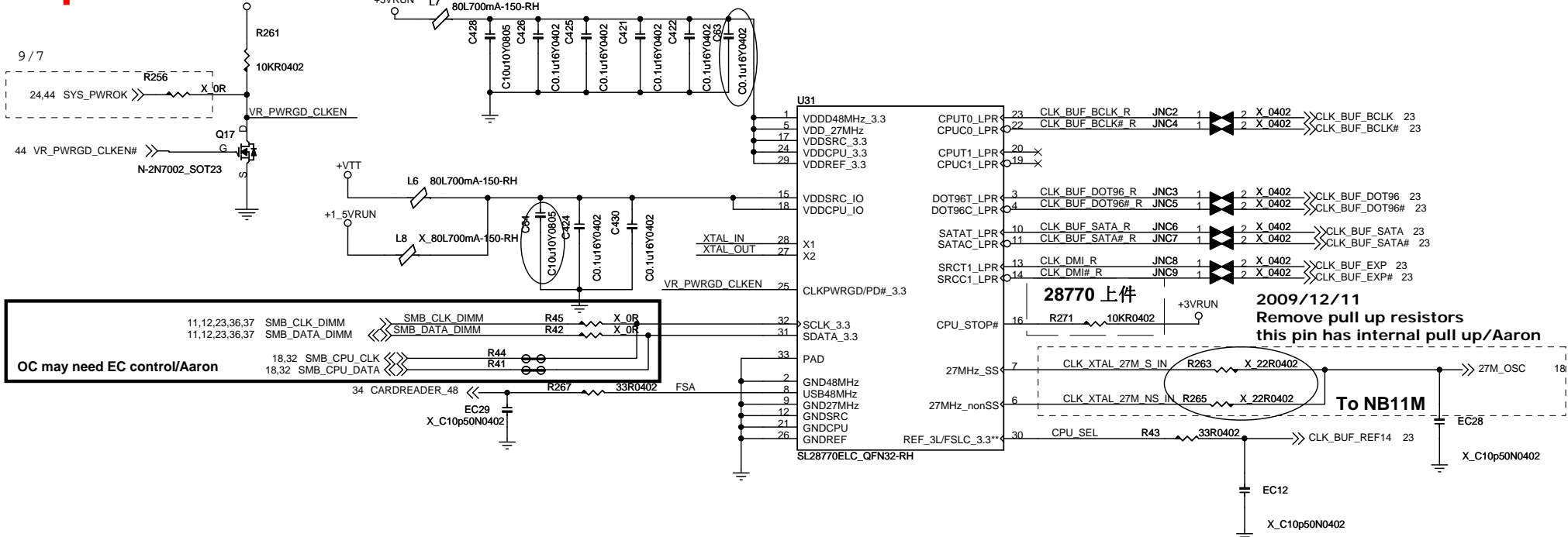


MICRO-STAR INT'L CO.,LTD.

Title: **IBEXPEAK - M (GND)**

Size: Custom Document Number: **MS-168A** Rev: 0A

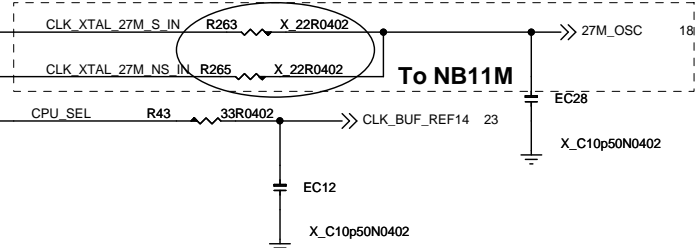
Date: Friday, March 26, 2010 Sheet: 30 of 52



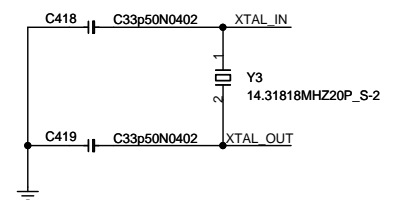
11,12,23,36,37 SMB_CLK_DIMM
 11,12,23,36,37 SMB_DATA_DIMM
 18,32 SMB_CPU_CLK
 18,32 SMB_CPU_DATA

OC may need EC control/Aaron

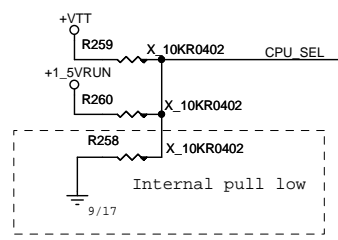
28770 上件
 +3VRUN
2009/12/11
 Remove pull up resistors
 this pin has internal pull up/Aaron



Capacity select
 If LC=20pf C708/C709=33pf
 If LC=32pf C708/C709=56pf



For CPU frequency select (133MHz)



| CPU_SEL | CPU0 | CPU1 |
|--------------|--------|--------|
| 0(Default) | 133MHz | 133MHz |
| 1(1.05-1.5V) | 100MHz | 100MHz |

2009/09/07 Reserved for OA test
 R346 is for Spread clock(Default use)
 R347 is for non-Spread clock

Co-Lay Note:

For IDT IC9IRS3199
 R84,R73,R71=10Kohm

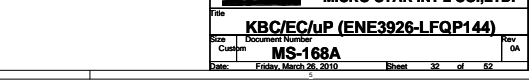
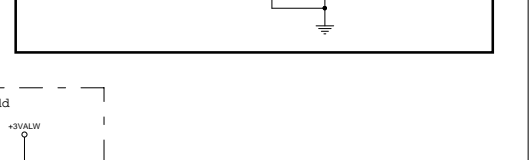
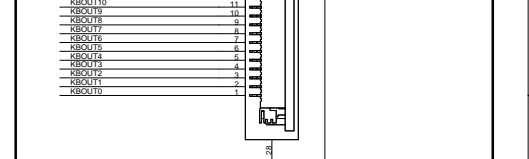
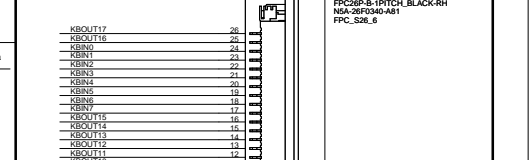
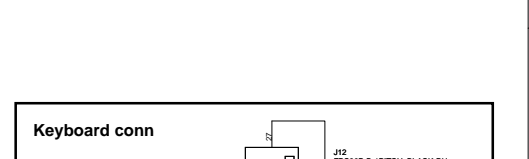
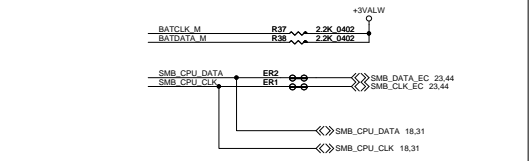
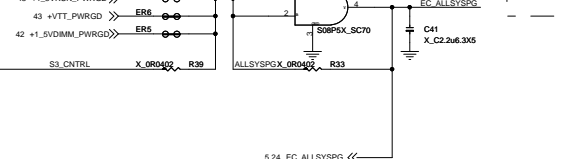
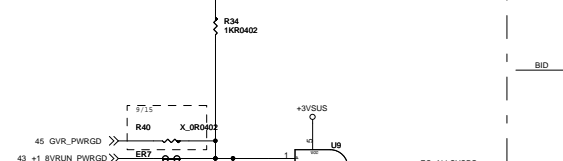
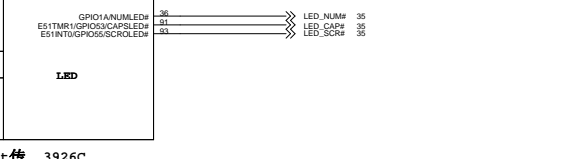
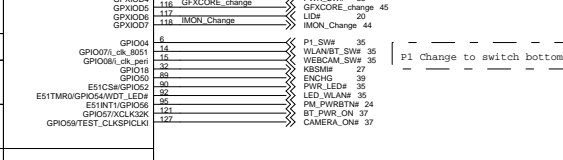
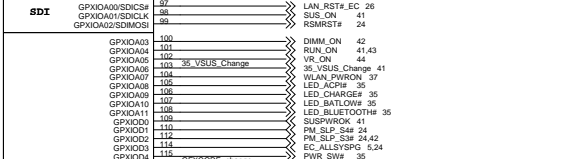
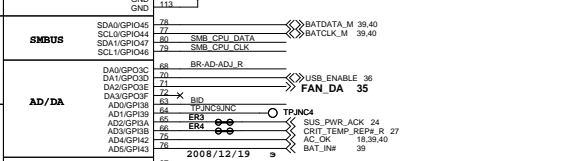
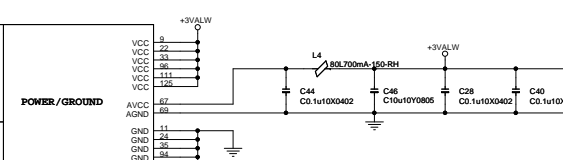
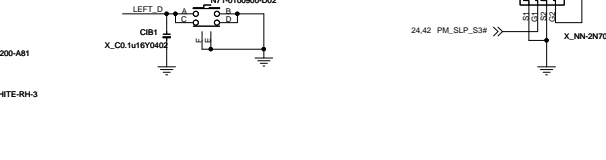
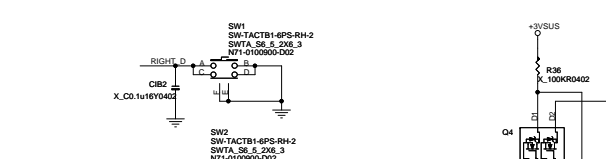
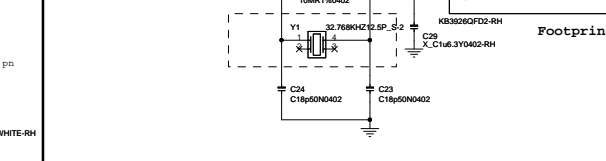
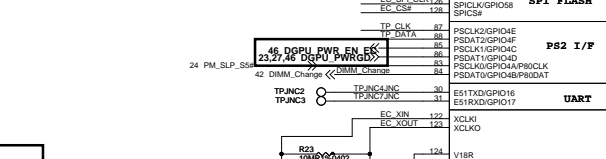
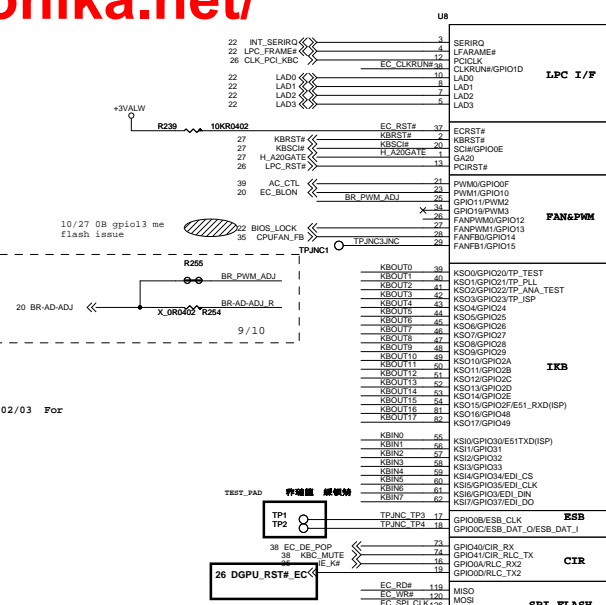
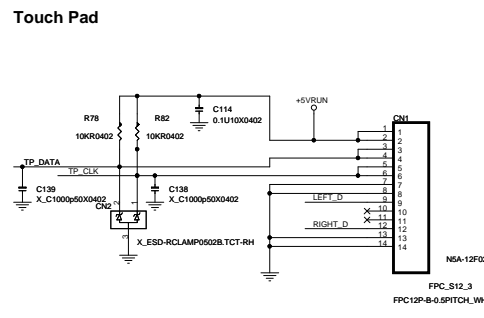
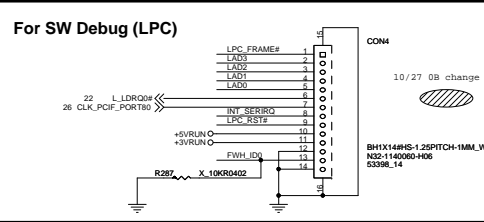
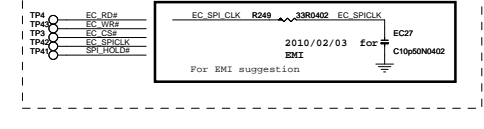
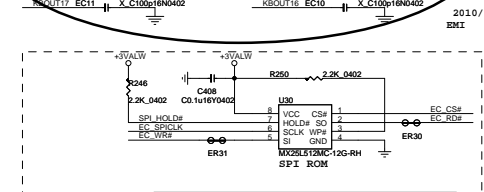
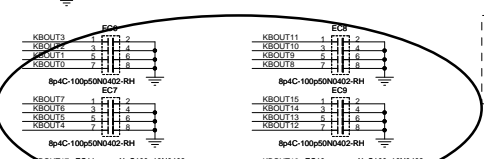
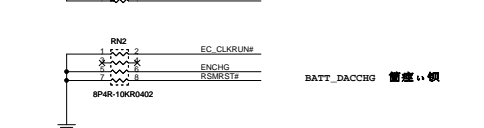
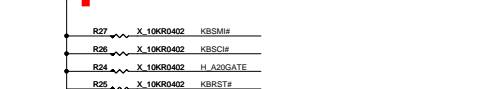
For Silago SLG8SP587
 R84,R73,R600=4.7Kohm

MICRO-STAR INT'L CO.,LTD.

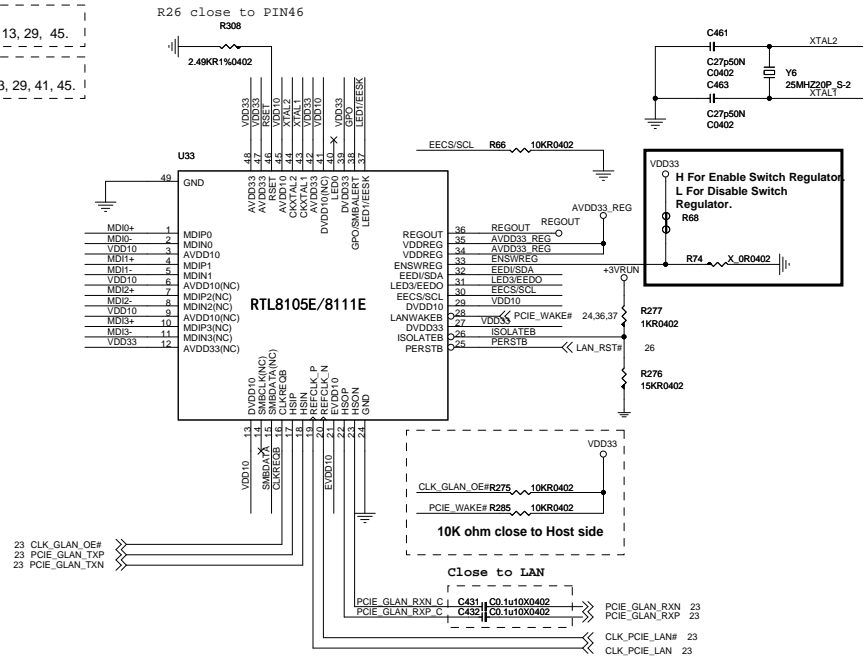
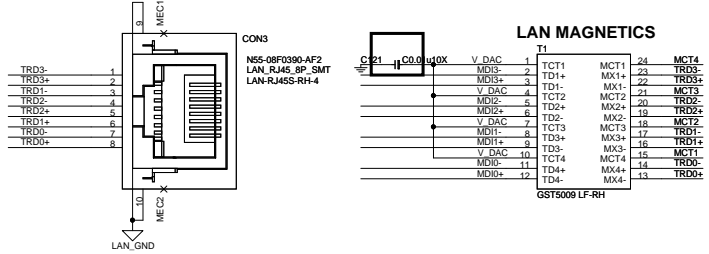
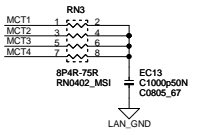
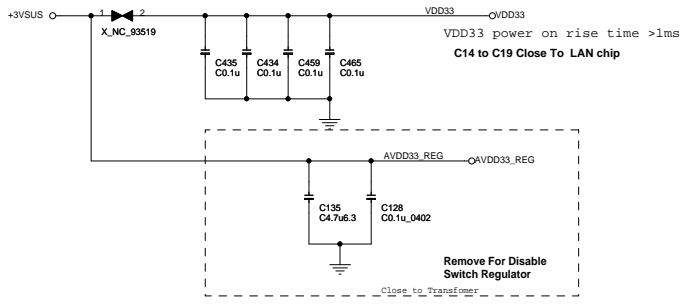
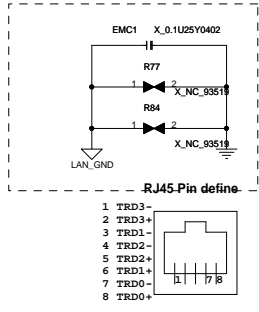
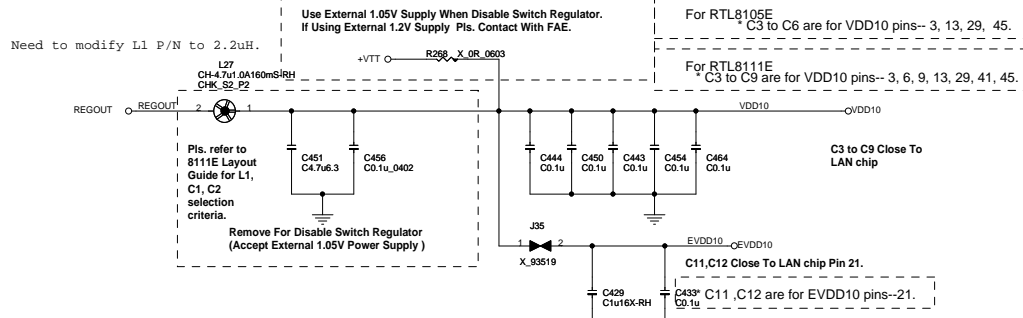
Title: **Clock Generator (SL28770ELC)**

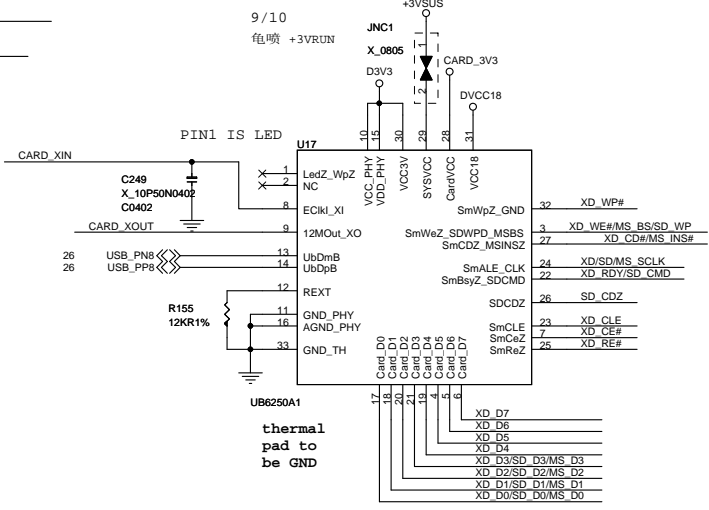
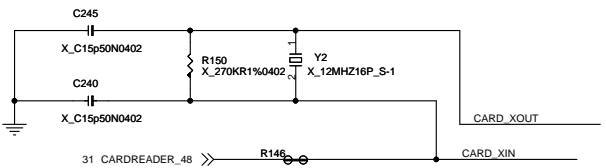
Size: Custom Document Number: **MS-168A** Rev: 0A

Date: Friday, March 26, 2010 Sheet: 31 of 52



Note: add 0.1u cap at each power pin of LAN, please don't save.

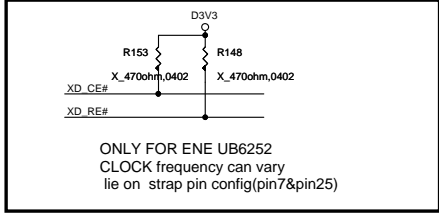




ENE UB6250 USB20 Flash Card Reader Controller

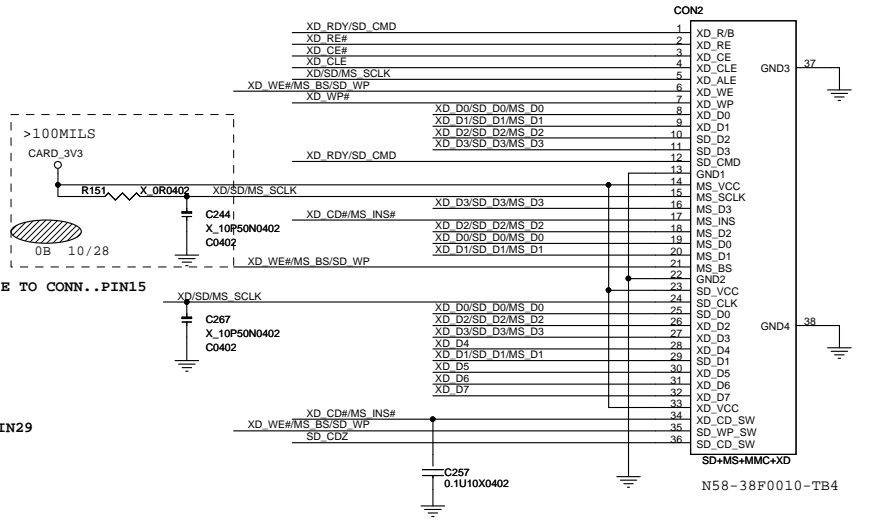
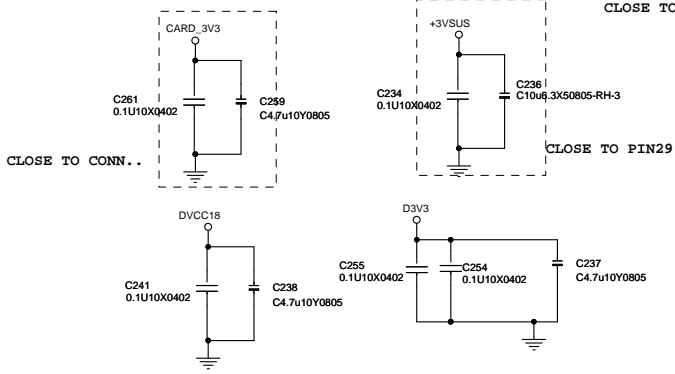
Pins for SD, MMC, MS, and xD memory cards

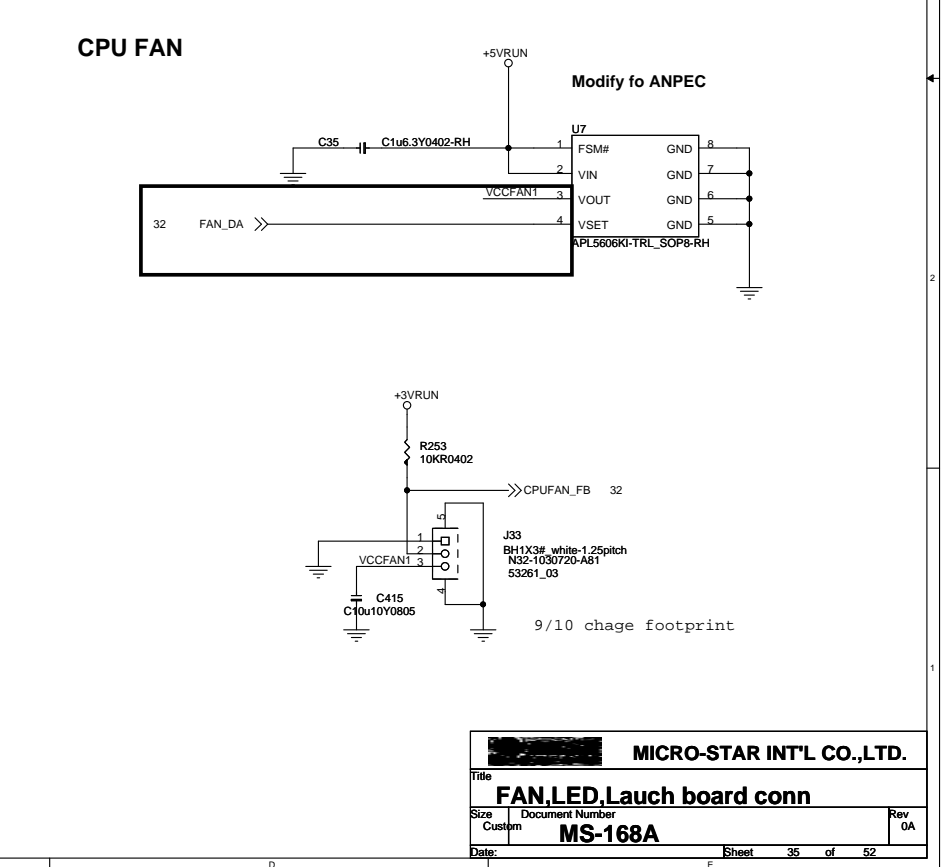
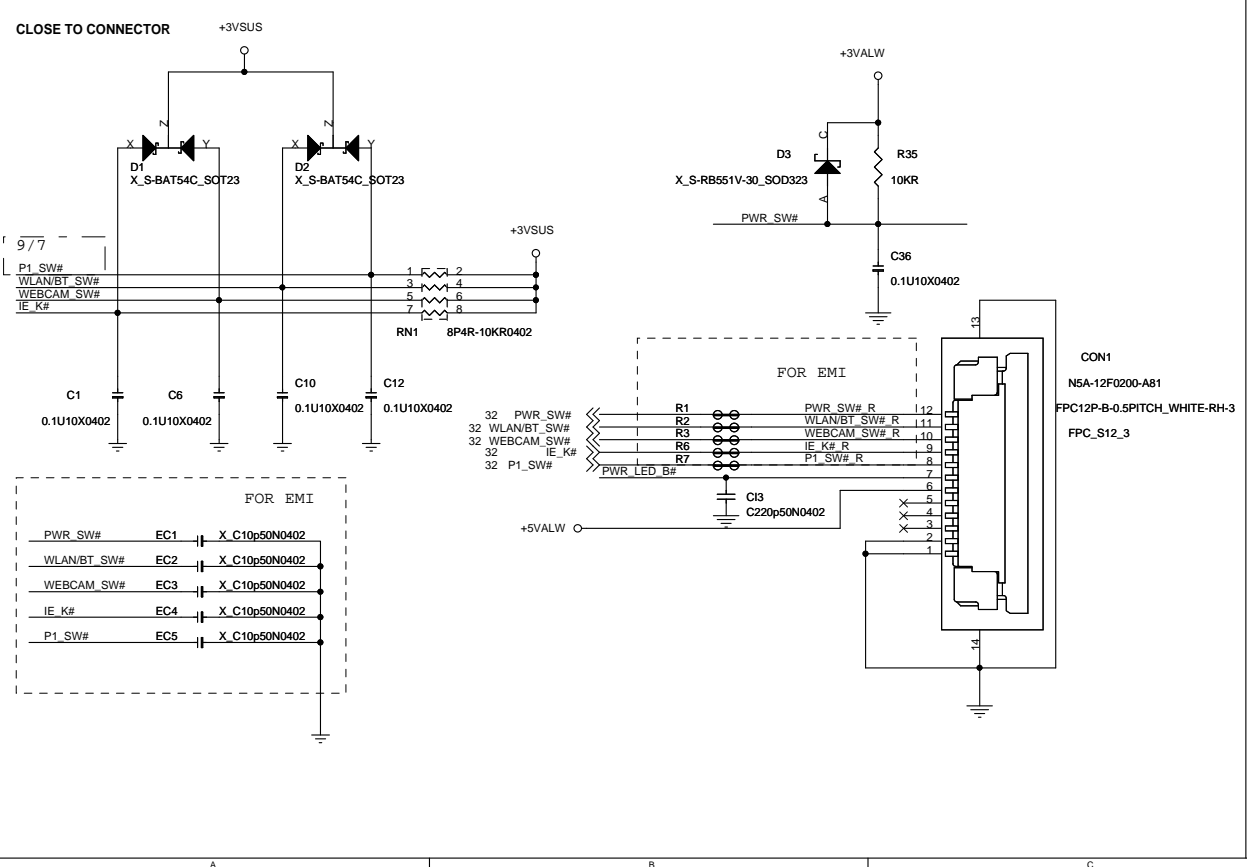
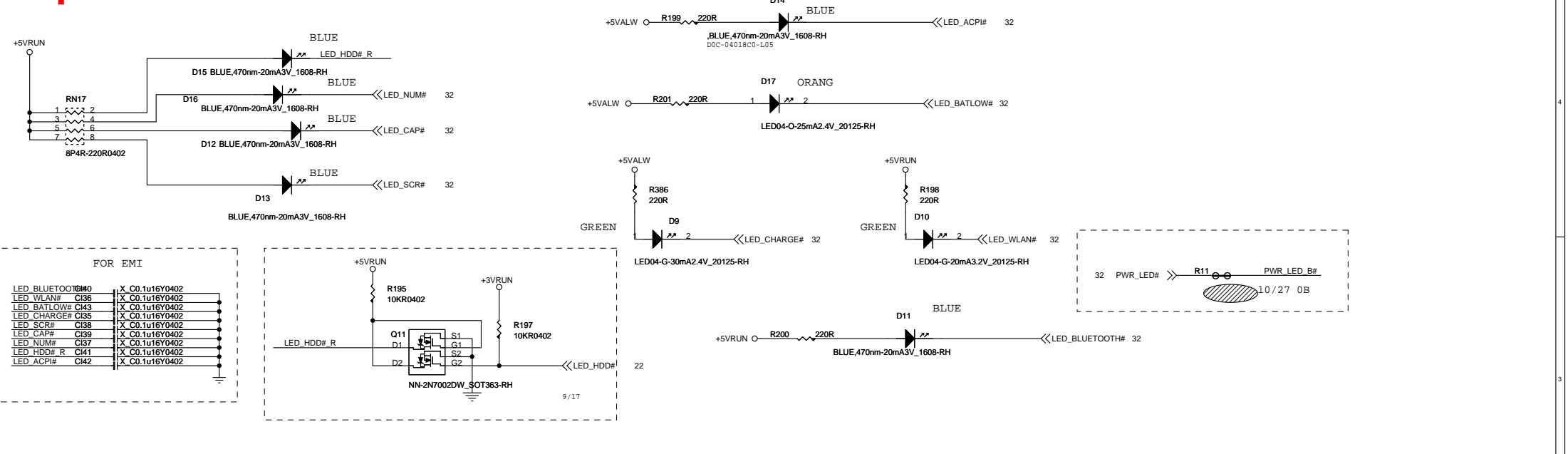
| Name | No | I/O | XD | SD | MMC | MS |
|---------|----|-----|------------------|-----------------|------------------|-----------------|
| xDCeZ | 7 | o | xD card EN | | | |
| xDCle | 23 | o | xD CMD latch EN | | | |
| xDAle | 24 | o | xD ADDR latch EN | SD clock | MMC clock | MS serial clock |
| xDByzZ | 22 | b | xD Ready/busy | SD CMD/response | MMC CMD/response | |
| xDData0 | 17 | b | xD D0 | SD D0 | MMC D0 | MS D0 |
| xDData1 | 18 | b | xD D1 | SD D1 | MMC D1 | MS D1 |
| xDData2 | 20 | b | xD D2 | SD D2 | MMC D2 | MS D2 |
| xDData3 | 21 | b | xD D3 | SD D3 | MMC D3 | MS D3 |
| xDData4 | 19 | b | xD D4 | | MMC D4 | MS D4 |
| xDData5 | 4 | b | xD D5 | | MMC D5 | MS D5 |
| xDData6 | 6 | b | xD D6 | | MMC D6 | MS D6 |
| xDData7 | 6 | b | xD D7 | | MMC D7 | MS D7 |
| xDWeZ | 3 | b | xD W EN | SD WP | | MS Busy |
| xDReZ | 25 | o | xD R EN | | | |
| xDWpZ | 32 | o | xD WP | | | |
| SDcZ | 26 | i | | SD CD | MMC CD | |
| xDCdZ | 27 | i | xD CD | | | MS CD |

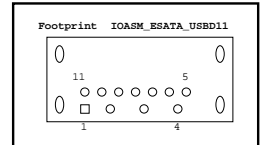
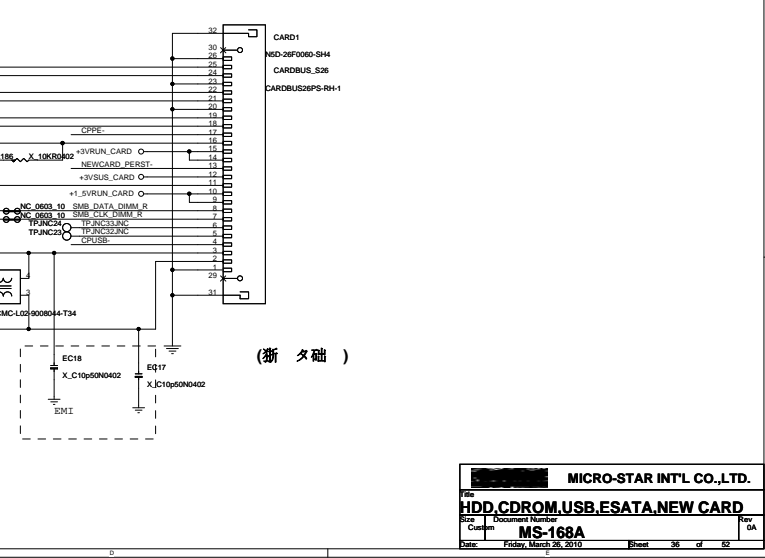
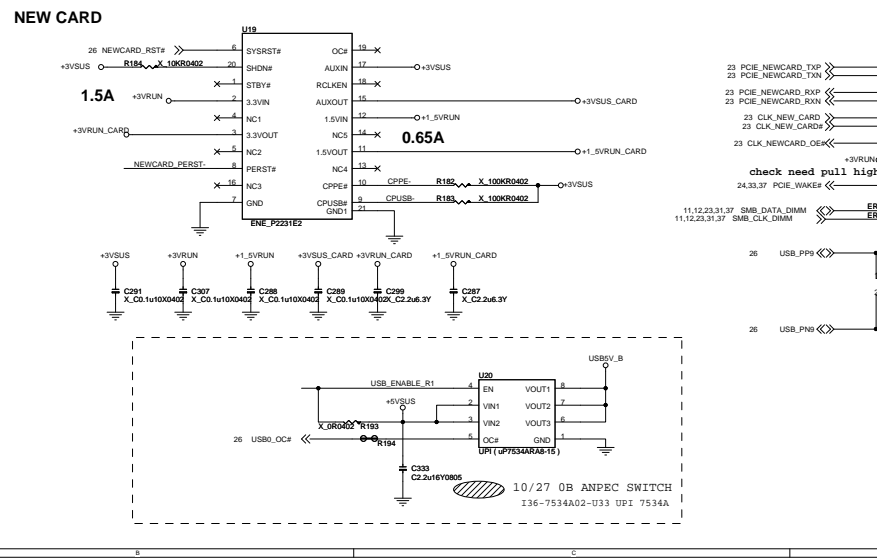
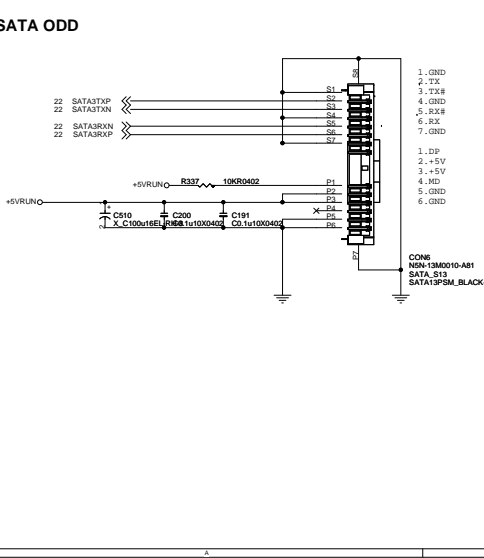
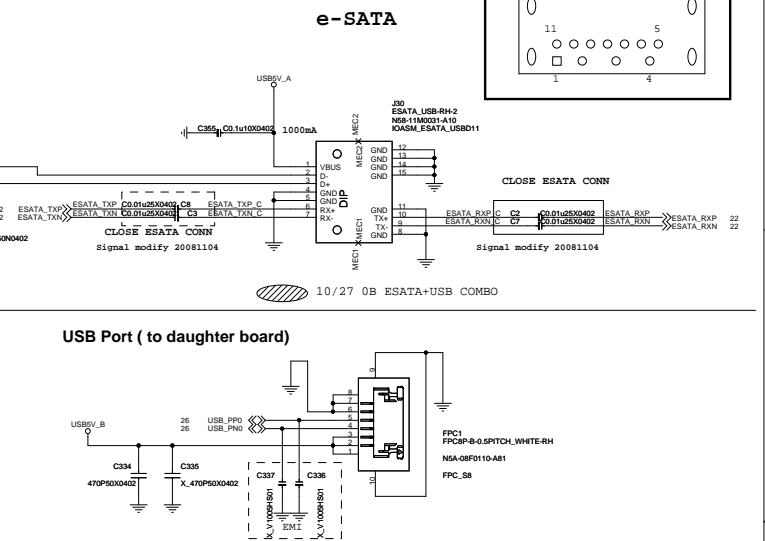
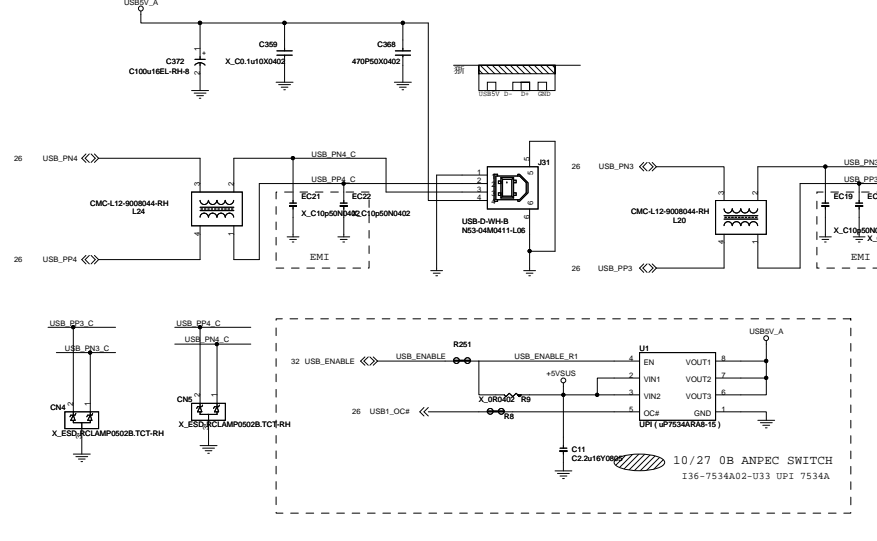
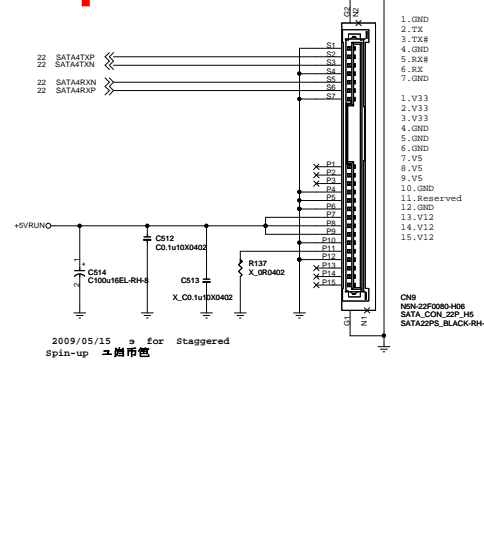


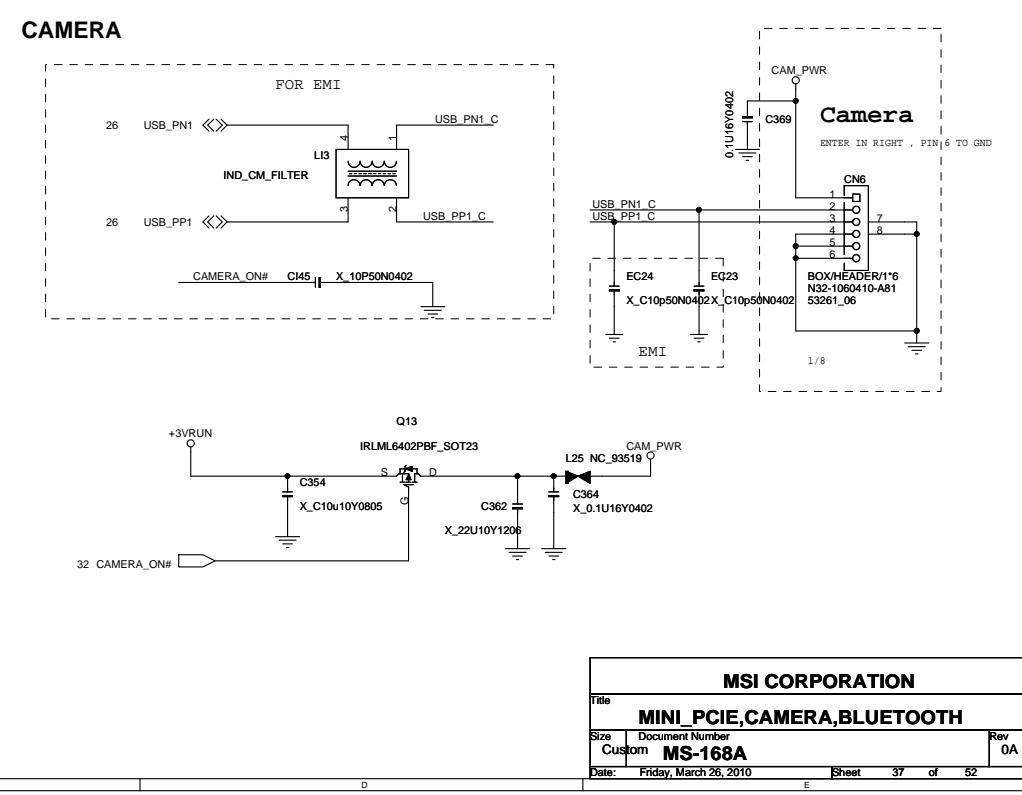
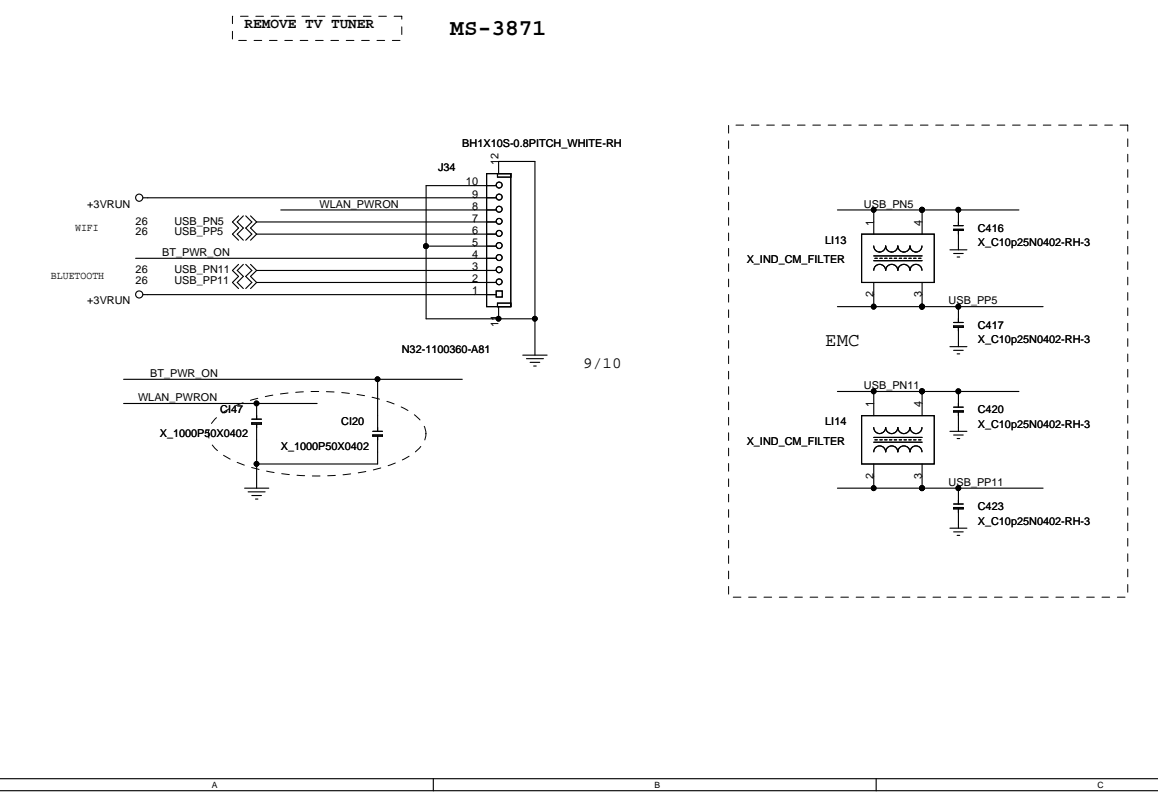
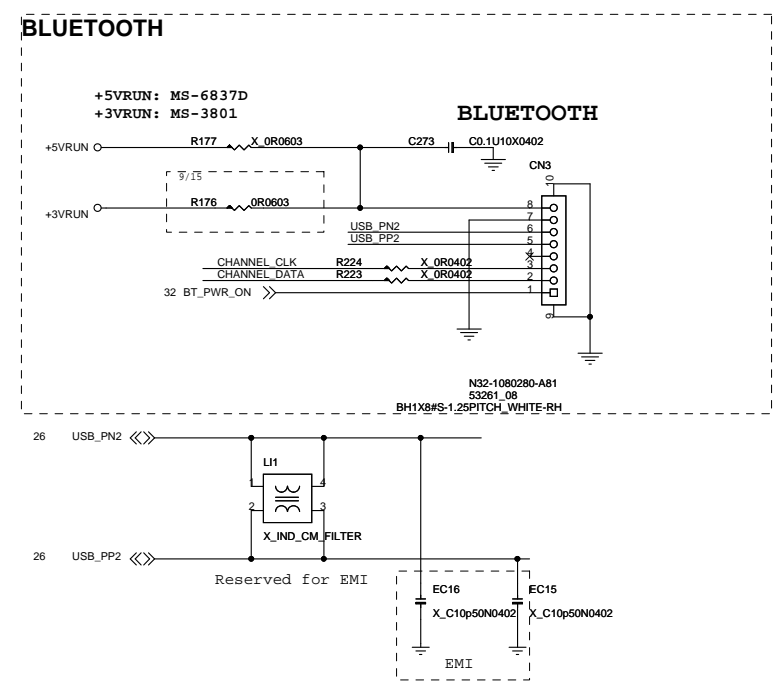
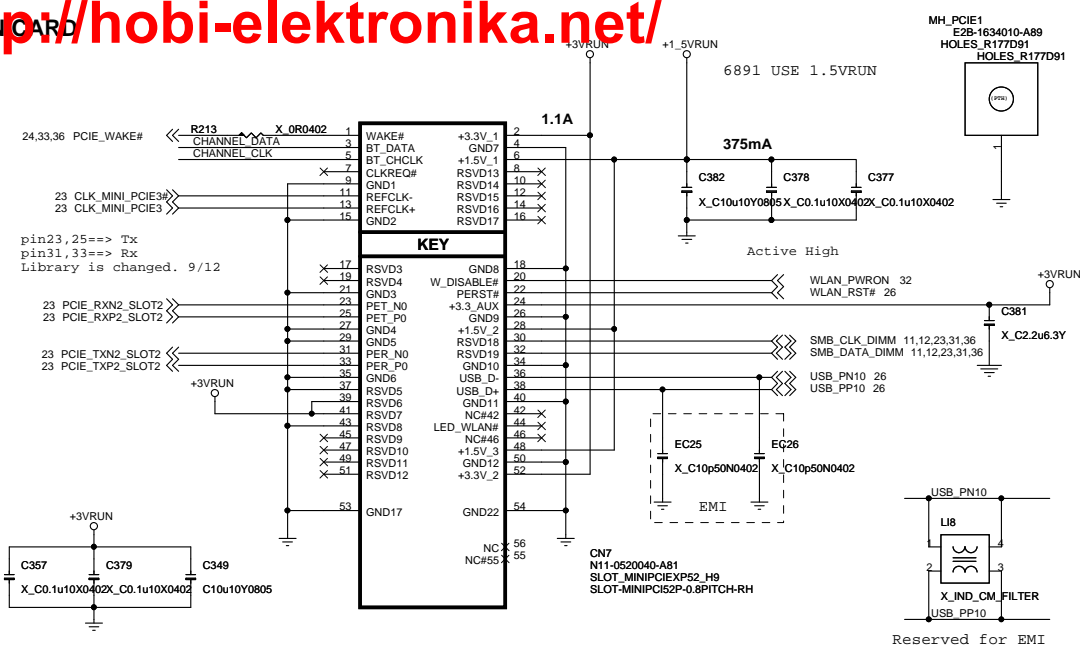
Configurations for Clock Source Selection:

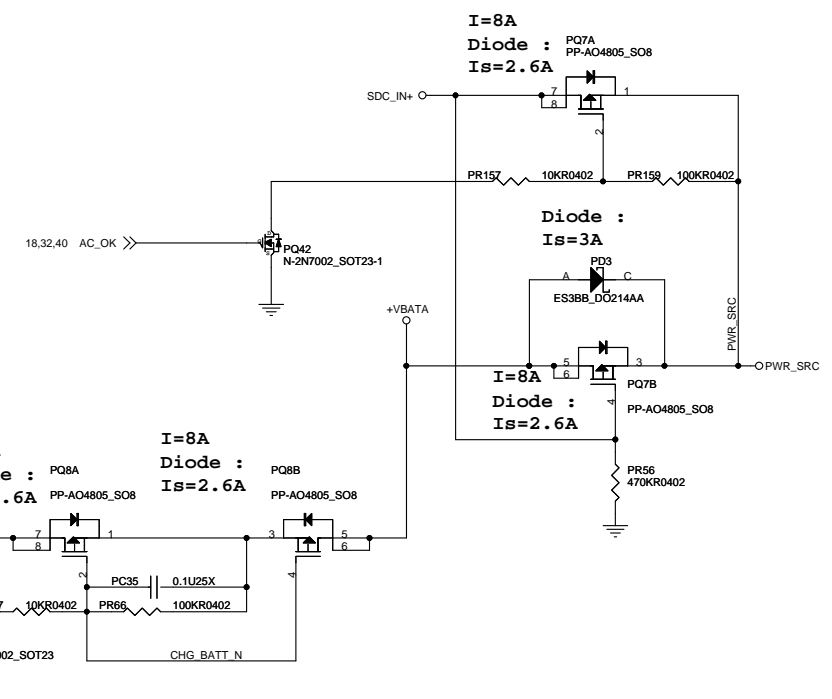
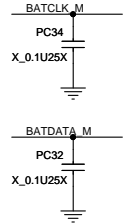
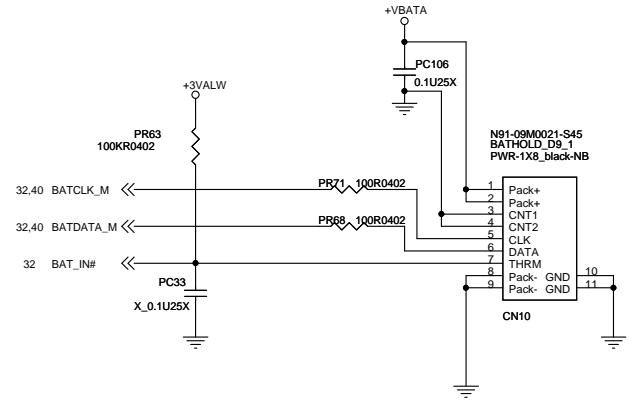
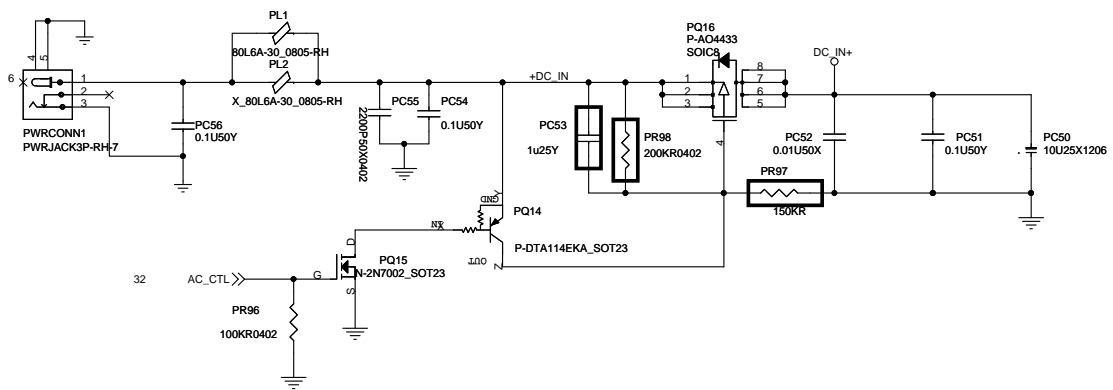
| 4.7K Pull-high Resistor on | | Frequency of external clock source to ECIkin pin |
|----------------------------|-------|--|
| xDCeZ | xDCeZ | |
| NC | NC | 48MHz |
| NC | 0 | 24MHz |
| 0 | NC | 12MHz |

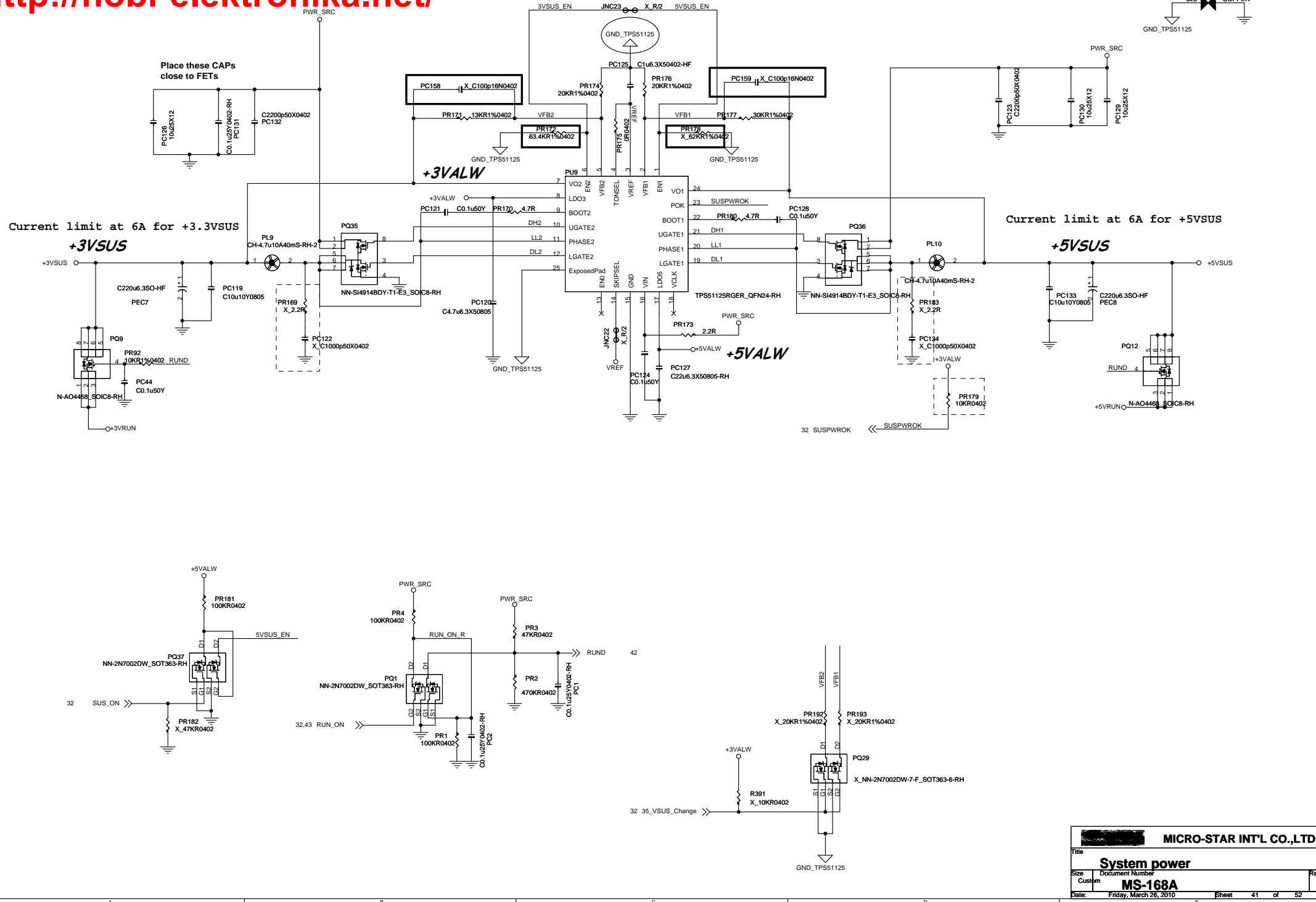






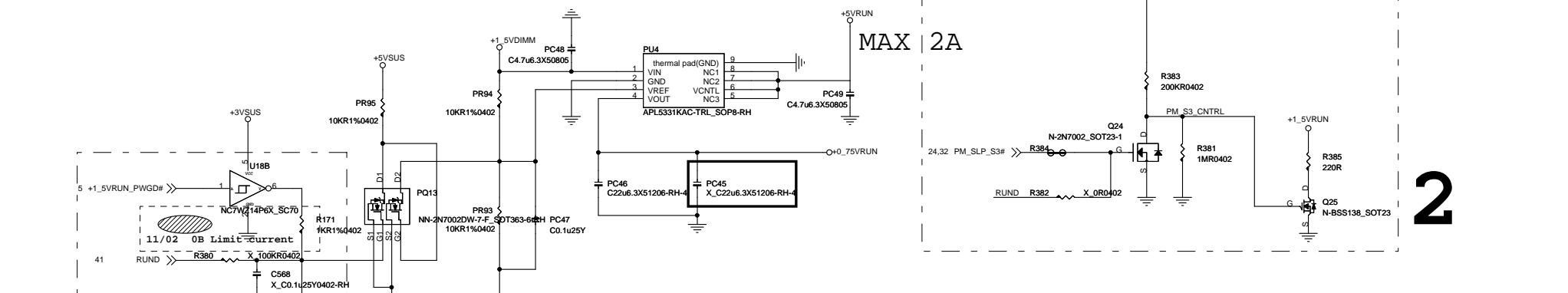
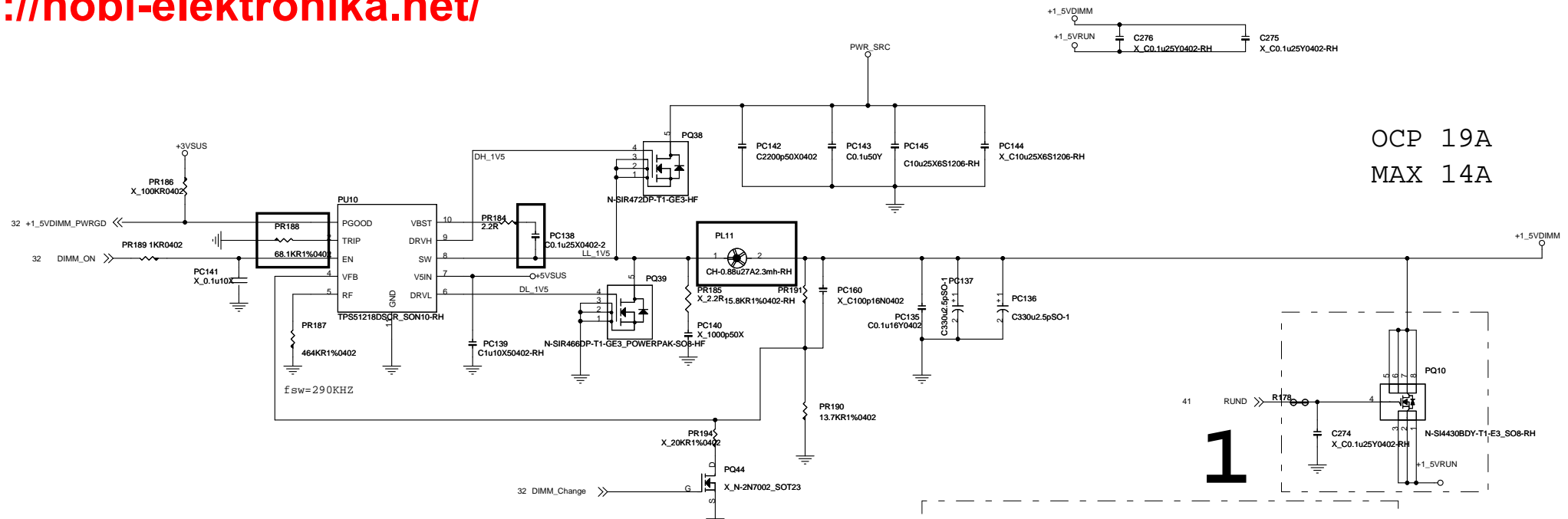






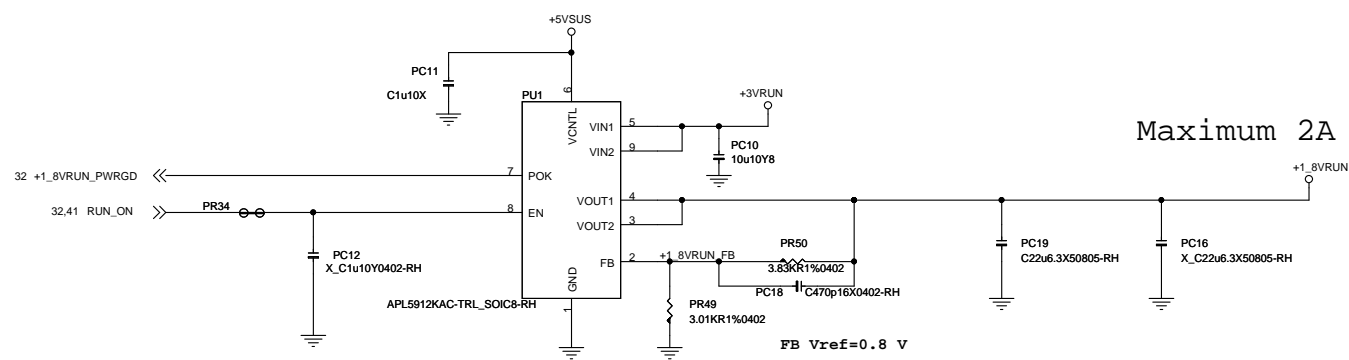
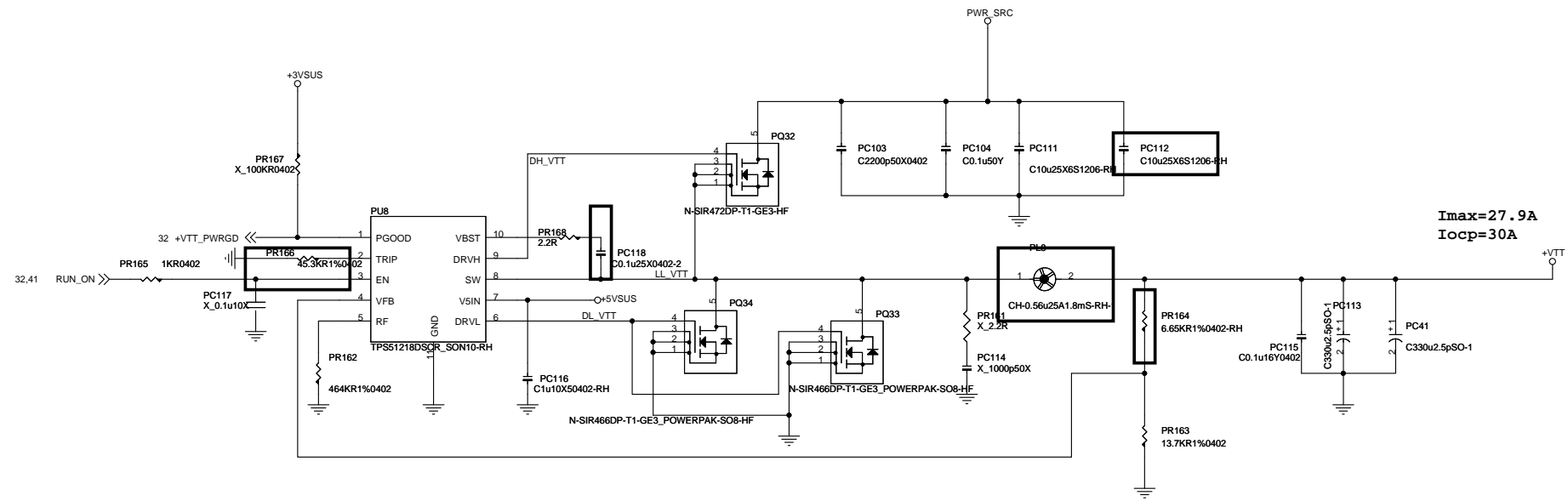
Current limit at 6A for +3.3VSUS
+3VSUS

Current limit at 6A for +5VSUS
+5VSUS



8

| | | | |
|----------------------------------|------------------------|-------|----------|
| MICRO-STAR INT'L CO.,LTD. | | | |
| Title | | | |
| SMDDR VTERM /1 5VRUN | | | |
| Size | Document Number | Rev | |
| Custom | MS-168A | 0A | |
| Date: | Friday, March 26, 2010 | Sheet | 42 of 52 |

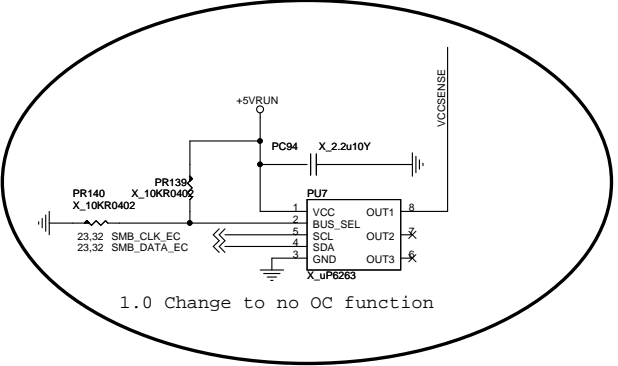
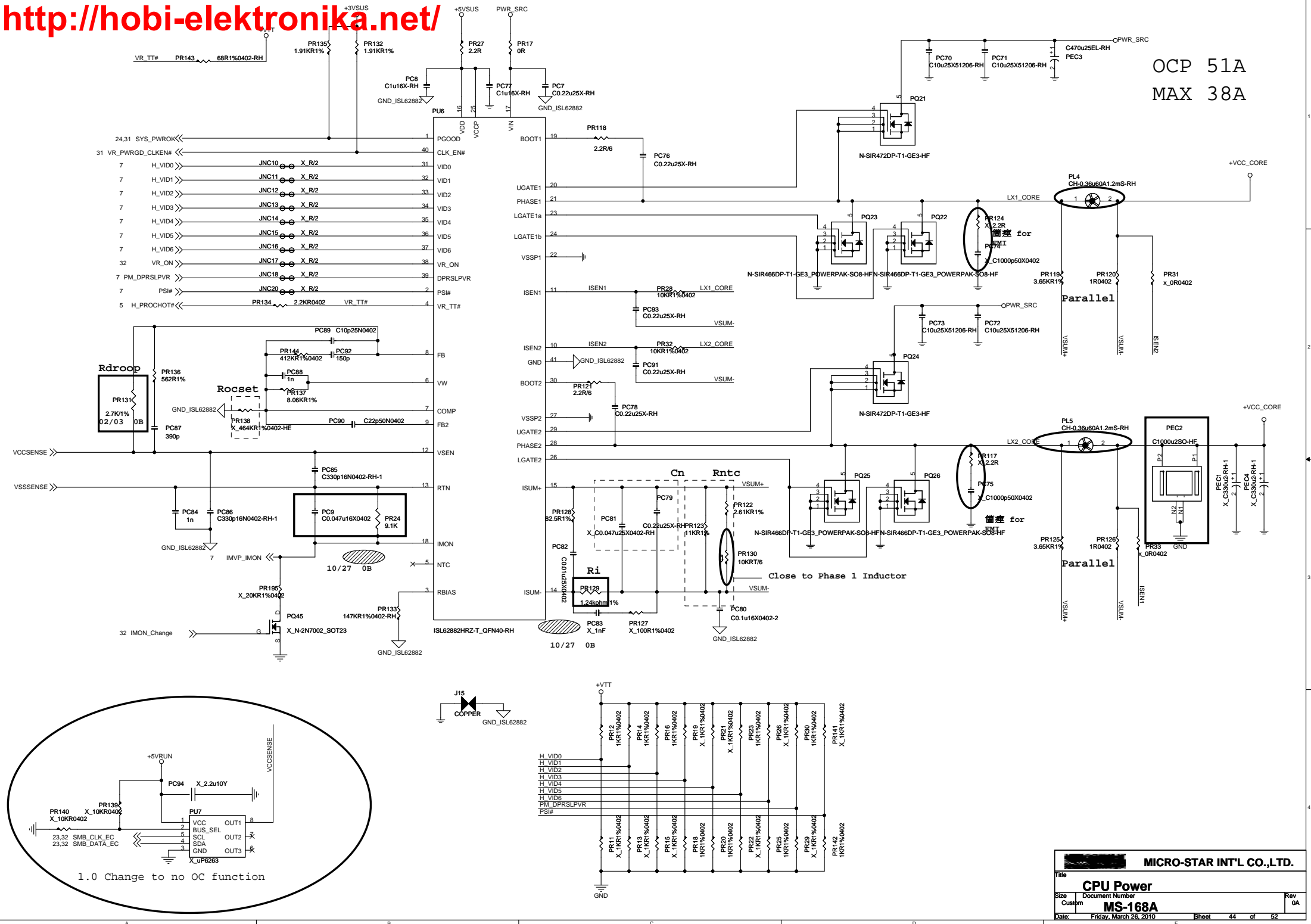


Maximum 2A

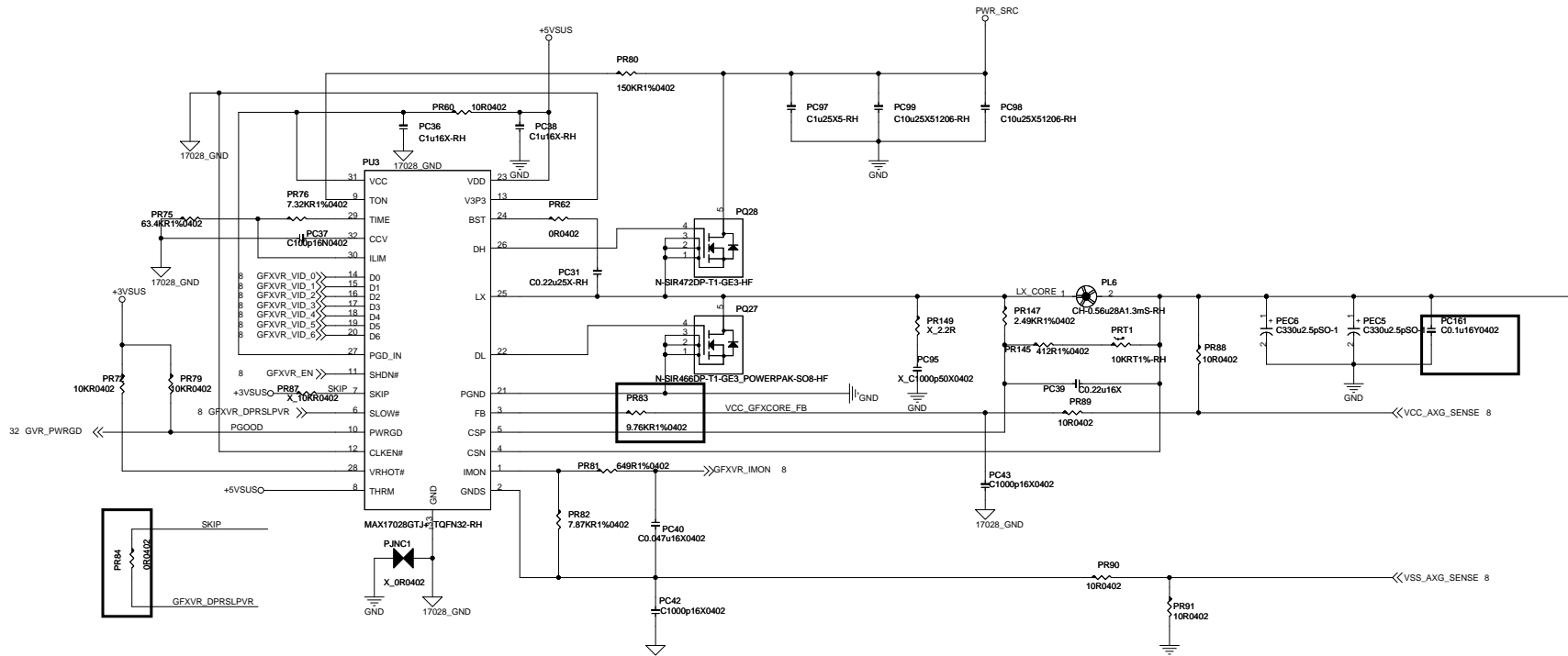
FB Vref=0.8 V

| | | | |
|----------------------------------|------------------------|-------|----------|
| MICRO-STAR INT'L CO.,LTD. | | | |
| Title | | | |
| VTT Power,+1.8VRUN | | | |
| Size | Document Number | Rev | 0A |
| Custom | MS-168A | | |
| Date: | Friday, March 26, 2010 | Sheet | 43 of 52 |

OCP 51A
MAX 38A

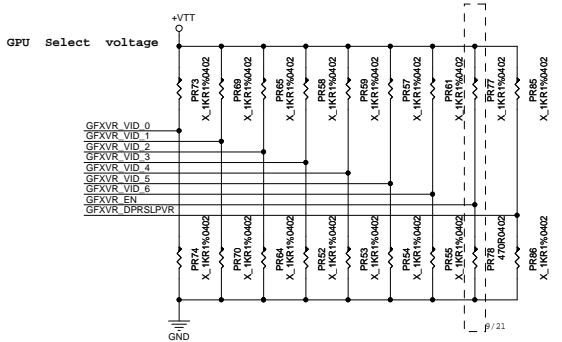
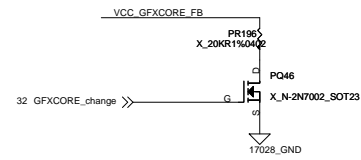


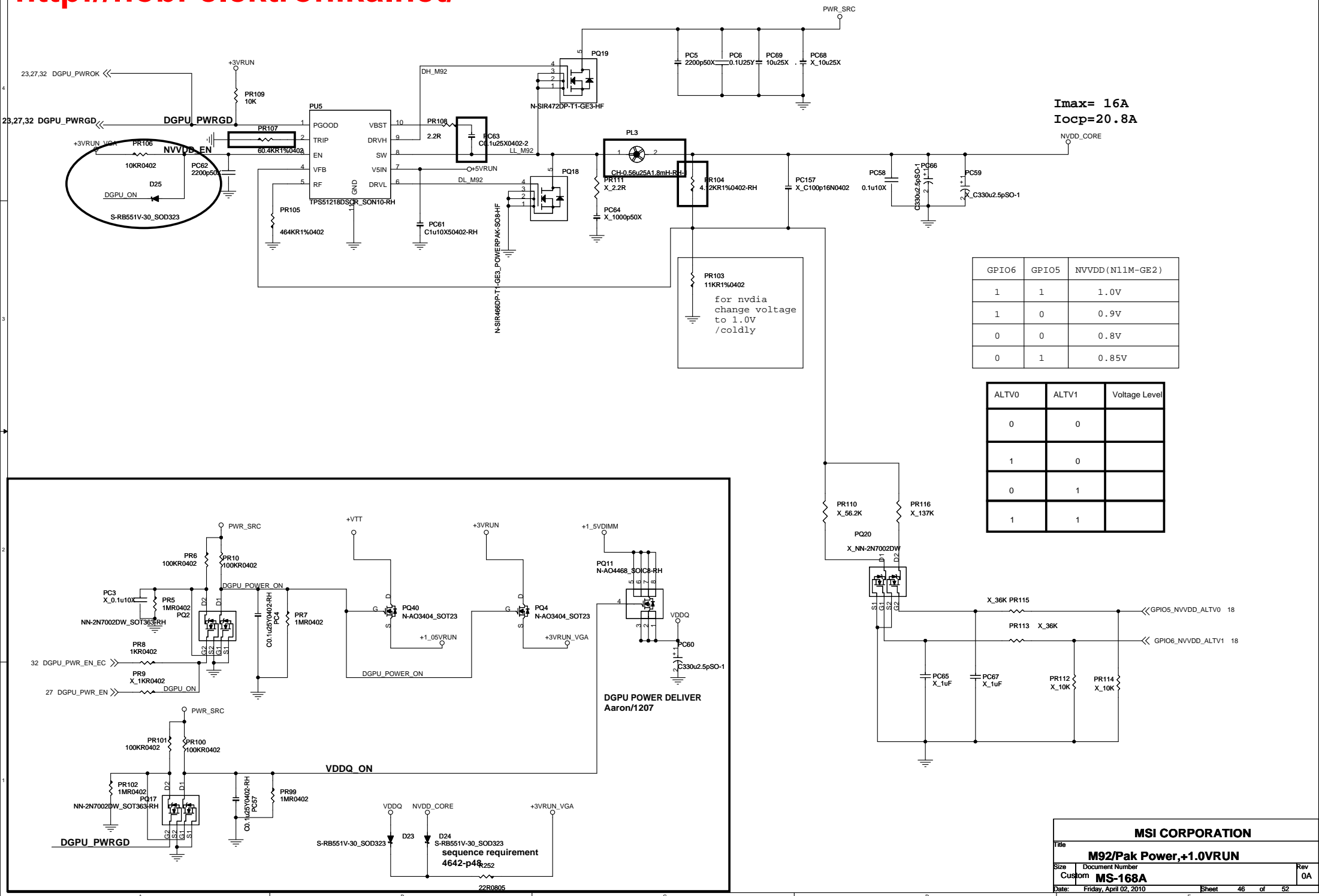
1.0 Change to no OC function

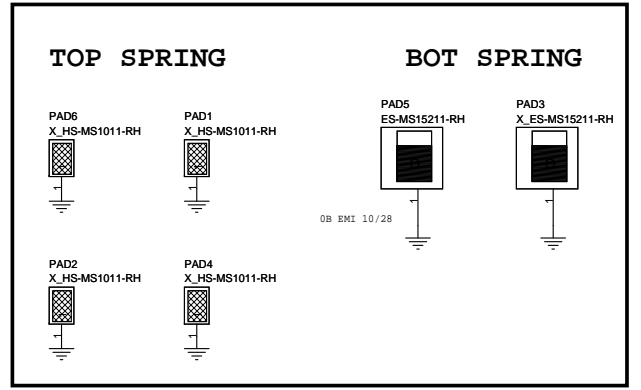
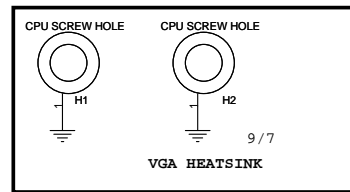
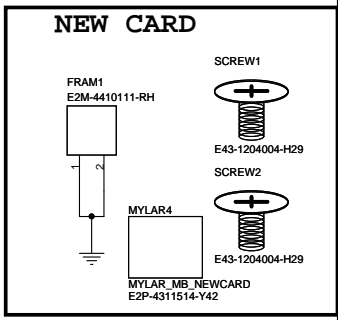
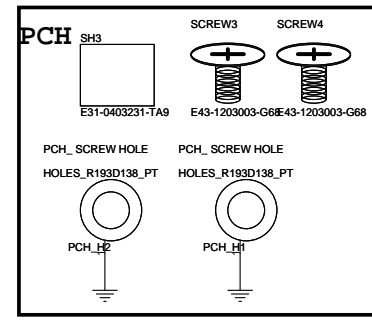
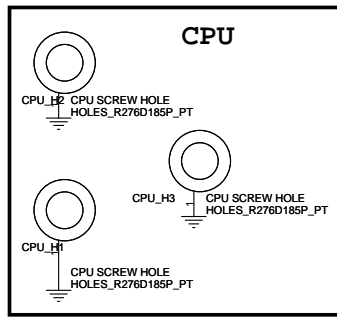
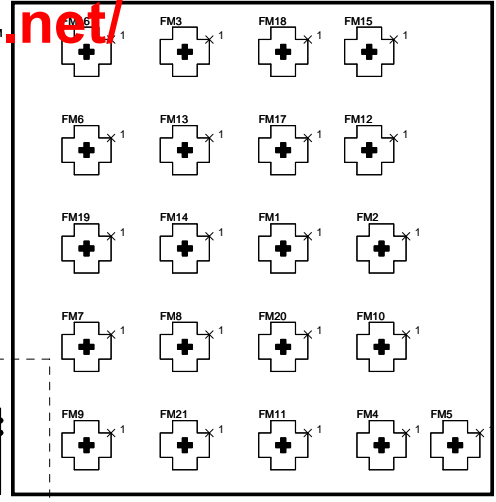
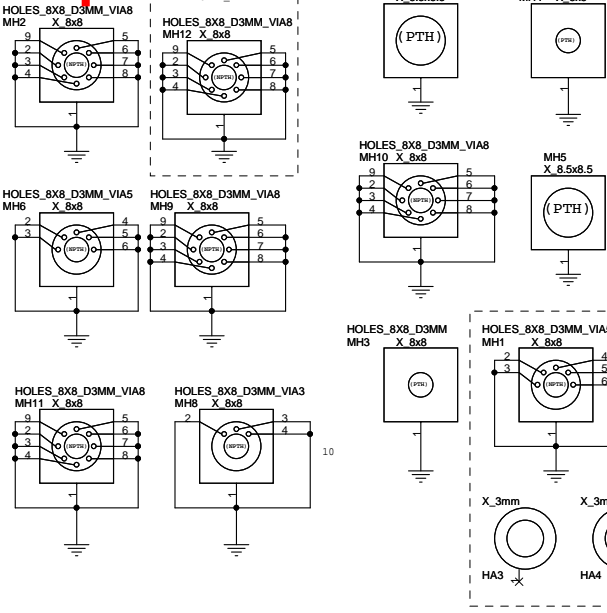


I_{max} = 22A
I_{ocp} = 25A
○ +VCC_GFXCORE

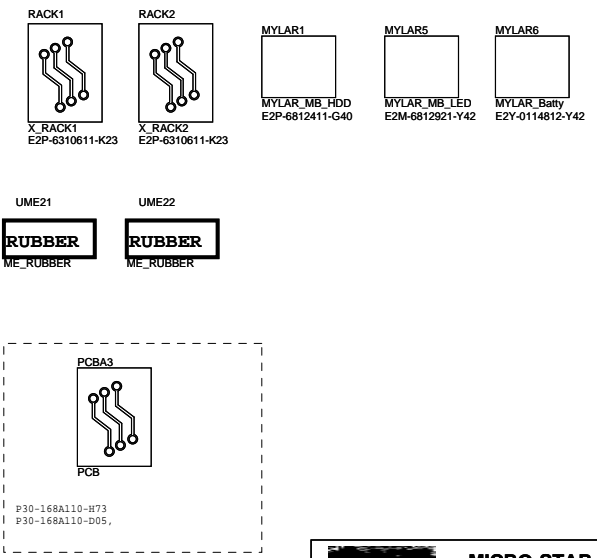
MOS :
high side : main : D03-L142600-A68
 : seond : D03-1200300-I14
low side : main : D03-L141200-A68
 : seond : D03-42N0330-I14







| TOP | LAYER3 | LAYER4 | BOTTOM | Impedance |
|---|---|--|--|---------------------|
| J7 L1 5mil 50 Ohm X_H1X2_black-RH | J10 L3 4.5mil 50 Ohm X_H1X2_black-RH | J21 L4 4.5mil 50 Ohm X_H1X2_black-RH | J24 L6 5mil 50 Ohm X_H1X2_black-RH | 50ohm_single |
| J9 L1 8mil 37.5 Ohm X_H1X2_black-RH | J6 L3 8mil 39 Ohm X_H1X2_black-RH | J25 L4 8mil 39 Ohm X_H1X2_black-RH | J22 L6 8mil 37.5 Ohm X_H1X2_black-RH | 37.5ohm_single |
| J1 L1 DIFF 4.5/9/20 90 Ohm+ L1 DIFF 4.5/9/20 90 Ohm- X_H1X4_black-RH | J6 L3 DIFF 4.5/9/20 90 Ohm+ L3 DIFF 4.5/9/20 90 Ohm- X_H1X4_black-RH | J26 L4 DIFF 4/10/20 100 Ohm+ L4 DIFF 4/10/20 100 Ohm- X_H1X4_black-RH | J20 L6 DIFF 4/10/20 100 Ohm+ L6 DIFF 4/10/20 100 Ohm- X_H1X4_black-RH | 100ohm_differential |
| J3 L1 DIFF 4/6/20 90 Ohm+ L1 DIFF 4/6/20 90 Ohm- X_H1X4_black-RH | J4 L3 DIFF 4/5/20 90 Ohm+ L3 DIFF 4/5/20 90 Ohm- X_H1X4_black-RH | J18 L6 DIFF 4.5/9/20 90 Ohm+ L6 DIFF 4.5/9/20 90 Ohm- X_H1X4_black-RH | J17 L6 DIFF 4/6/20 90 Ohm+ L6 DIFF 4/6/20 90 Ohm- X_H1X4_black-RH | 90ohm_differential |
| J5 L1 DIFF 4/4/20 85 Ohm+ L1 DIFF 4/4/20 85 Ohm- X_H1X4_black-RH | J2 L3 DIFF 4/4/20 85 Ohm+ L3 DIFF 4/4/20 85 Ohm- X_H1X4_black-RH | J27 L4 DIFF 4/4/20 85 Ohm+ L4 DIFF 4/4/20 85 Ohm- X_H1X4_black-RH | J19 L6 DIFF 4/4/20 85 Ohm+ L6 DIFF 4/4/20 85 Ohm- X_H1X4_black-RH | 85ohm_differential |
| J11 L1 DIFF 7/4/20 68 Ohm+ L1 DIFF 7/4/20 68 Ohm- X_H1X4_black-RH | J13 L3 DIFF 7/4/20 68 Ohm+ L3 DIFF 7/4/20 68 Ohm- X_H1X4_black-RH | J28 L4 DIFF 7/4/20 68 Ohm+ L4 DIFF 7/4/20 68 Ohm- X_H1X4_black-RH | J29 L6 DIFF 7/4/20 68 Ohm+ L6 DIFF 7/4/20 68 Ohm- X_H1X4_black-RH | 68ohm_differential |



MICRO-STAR INT'L CO.,LTD.

Title: **Screw/ME**

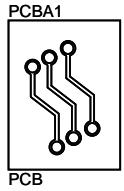
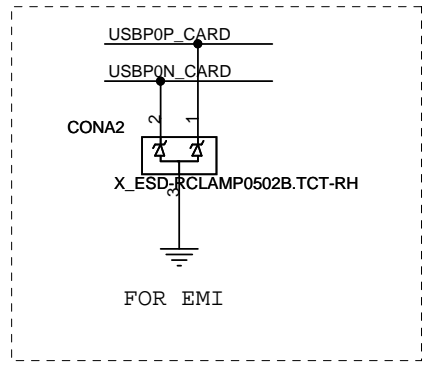
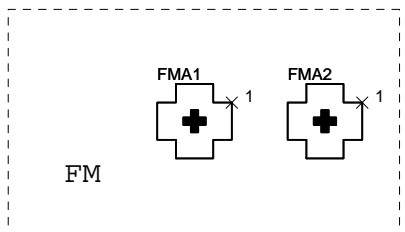
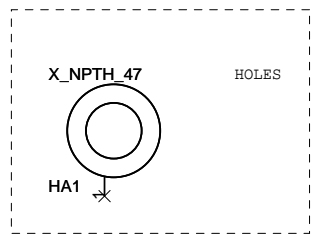
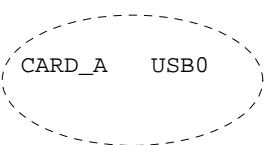
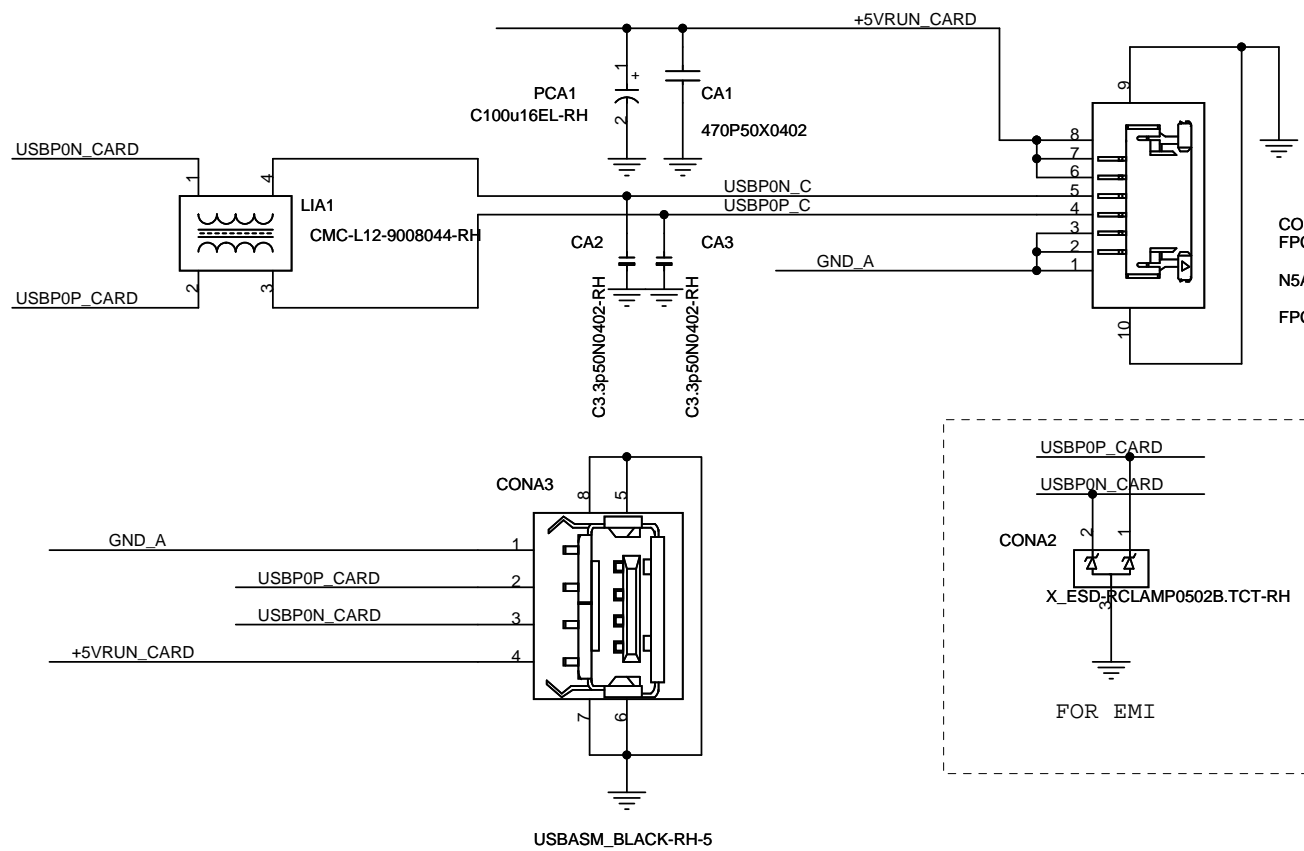
Size: Custom

Document Number: **MS-168A**

Date: Thursday, April 22, 2010

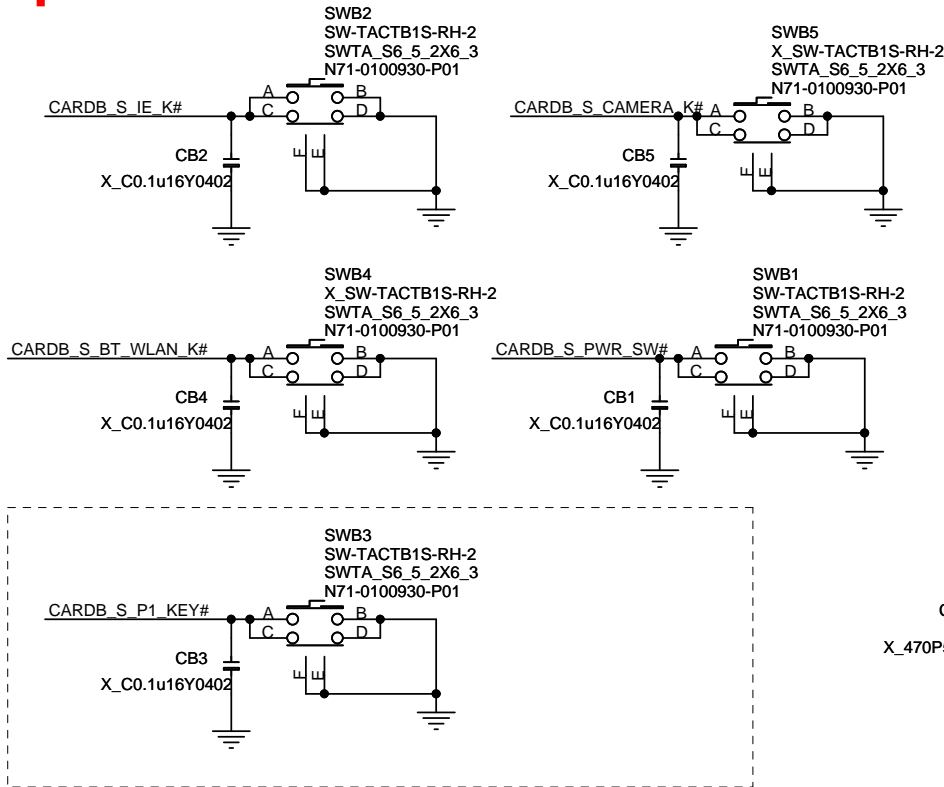
Rev: 0A

Sheet: 47 of 52



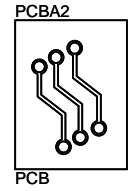
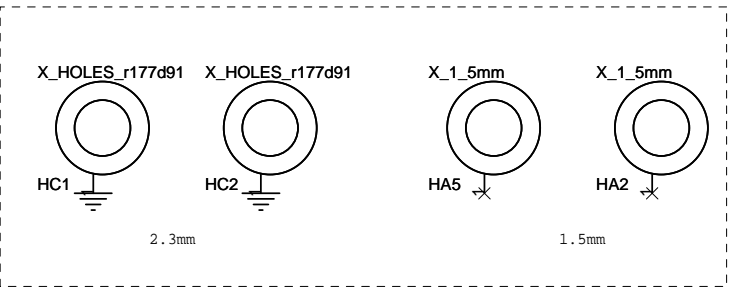
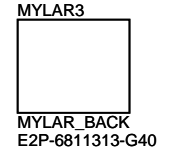
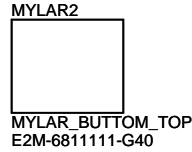
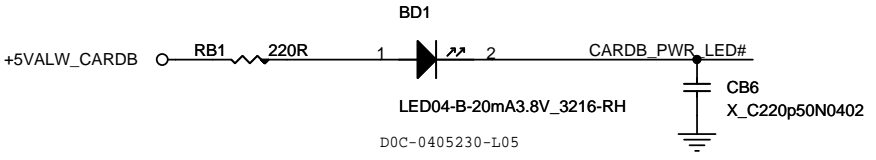
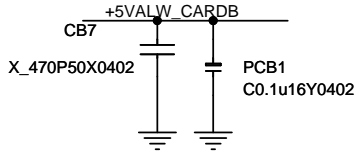
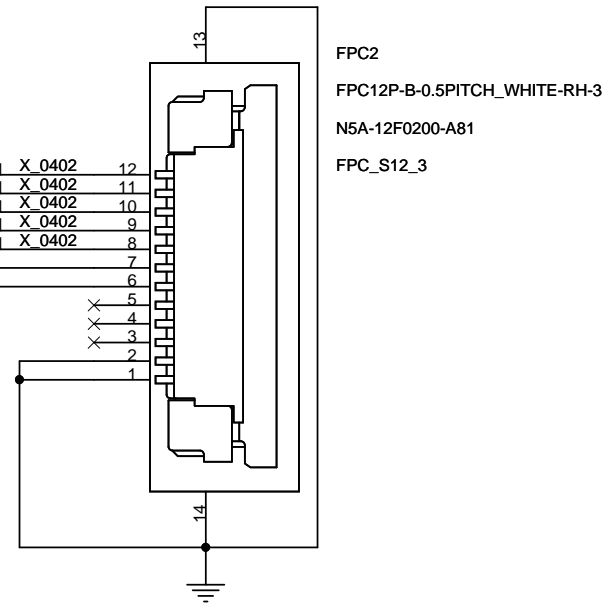
P30-168AA10-H73
P30-168AA10-D05

| | | |
|----------------------------------|------------------------|----------------|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title | | |
| USB BOARD_A | | |
| Size | Document Number | Rev |
| Custom | MS-168A | 0A |
| Date: | Friday, March 26, 2010 | Sheet 48 of 52 |



CARD_B_ BUTTOM

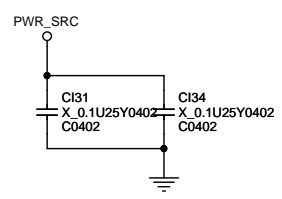
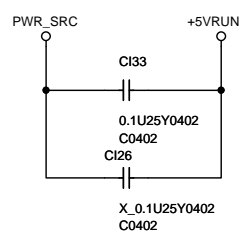
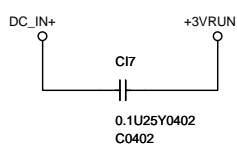
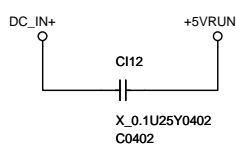
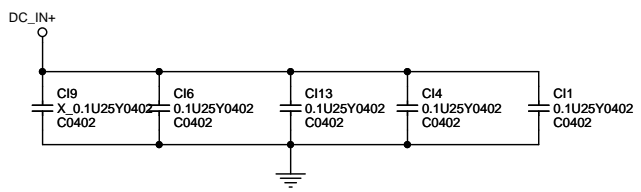
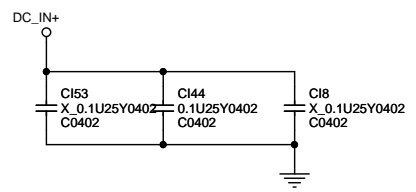
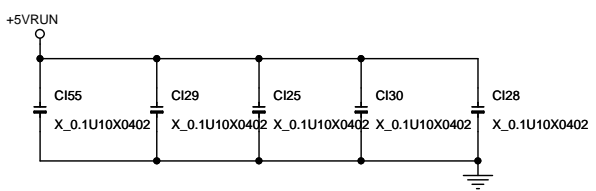
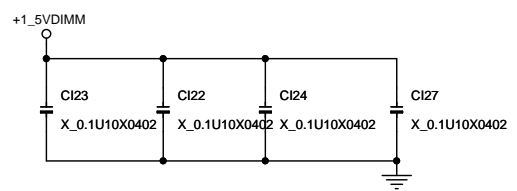
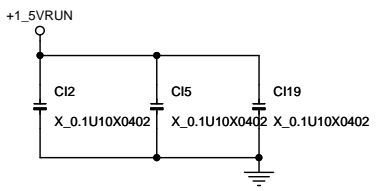
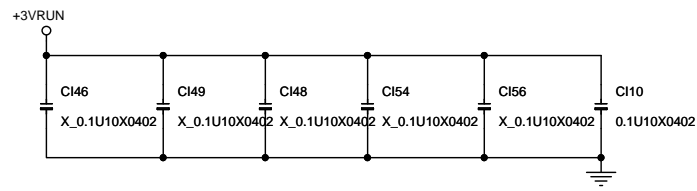
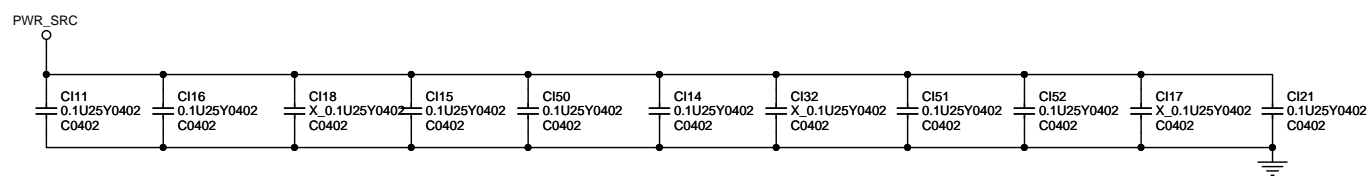
| | | | | | |
|--------------------|-------|---|---|--------|----|
| CARDB_S_PWR_SW# | JNCB1 | 2 | 1 | X_0402 | 12 |
| CARDB_S_BT_WLAN_K# | JNCB4 | 2 | 1 | X_0402 | 11 |
| CARDB_S_CAMERA_K# | JNCB5 | 2 | 1 | X_0402 | 10 |
| CARDB_S_IE_K# | JNCB2 | 2 | 1 | X_0402 | 9 |
| CARDB_S_P1_KEY# | JNCB3 | 2 | 1 | X_0402 | 8 |
| CARDB_PWR_LED# | | | | | 7 |
| +5VALW_CARDB | | | | | 6 |
| | | | X | | 5 |
| | | | X | | 4 |
| | | | X | | 3 |
| | | | X | | 2 |
| | | | X | | 1 |



P30-168AB10-D05
P30-168AB10-H73

MICRO-STAR INT'L CO.,LTD.

| | | |
|----------------------|------------------------|----------------|
| Title | | |
| Lauch Board B | | |
| Size | Document Number | Rev |
| Custom | MS-168A | 0A |
| Date: | Friday, March 26, 2010 | Sheet 49 of 52 |



| | | |
|----------------------------------|------------------------|----------------|
| MICRO-STAR INT'L CO.,LTD. | | |
| Title | | |
| EMI | | |
| Size | Document Number | Rev |
| B | MS-168A | 0A |
| Date: | Friday, March 26, 2010 | Sheet 50 of 52 |

1.

| | | |
|------------------------------------|-----------------------------------|-----------|
| MSI CORPORATION | | |
| Title Change Histoy | | |
| Size Custom | Document Number MS-168A | Rev 0A |
| Date: Tuesday, January 05, 2010 | Sheet 52 | of 52 |