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NEC:LunarEagle

MSI:MS-7420N1

Version:10



CPU: Conroe family processors /WolfDale/Yorkfield in LGA775 Package.

System Chipset:

Intel EagleLake-Q+Intel ICH10-DO

On Board Device:

BIOS -- SPI Flash 32M

LAN --INTEL 82567LM Boazman

Super I/O -- SMSC5617C

AUDIO -- Realtek HD ALC262VD

Clock GEN-IDTCV184-2

TPM-SLB 9635 TT1.2

Main Memory:

Due-channel DDR-III * 2 (1066MHZ)

Intersil PWM:


Controller: Intersil ISL6334 (3 Phases)

Expansion Slots:

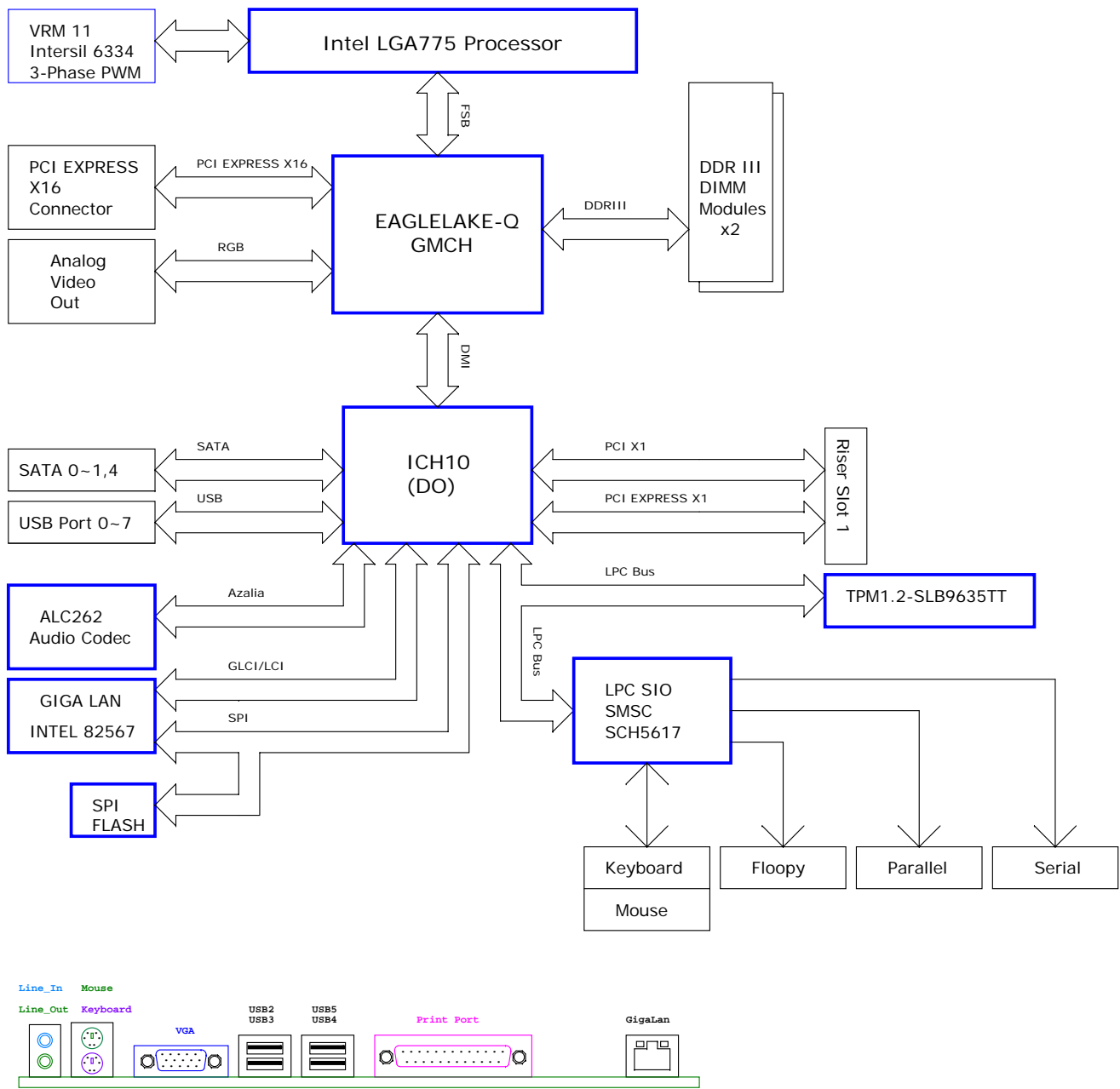
PCI-E(X16) Slot *1

Riser Slot :(PCIx1/PCI-E(x1)x1)

| MS-6497N1 | ERP Number | Function |
|------------|--------------|------------------------|
| MS-7420-10 | 601-7420-01S | Mainboard |
| MS-4046-2A | 604-4046-020 | Power Button/LED board |
| MS-4085-10 | 604-4085-030 | Front Audio Board |
| MS-4048-41 | 604-4048-050 | Front USB Board |
| MS-4121-10 | 604-4121-010 | Riser Card |

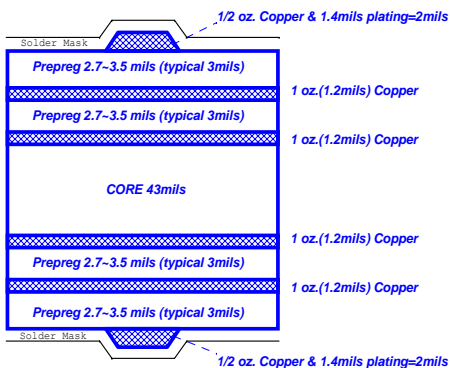
| | | |
|---|------------------|-----------|
|  MICRO-START INT'L CO.,LTD. | | |
| Title COVER SHEET | | |
| Size | Document Number | Rev |
| | MS-7420N1 | 10 |
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Block Diagram



Board Stack-up (6 layers)

(1080 Prepreg Considerations)



Single End 50ohm Top/Bottom : 4mils
USB2.0 - 90ohm : 15/4.5/7.5/4.5/15
SATA - 95ohm : 15/4/8/4/15
LAN - 100ohm : 15/4/8/4/15
PCIE - 95ohm : 15/4/8/4/15
IEEE1394 - 110ohm : 15/4/9/4/15
Differential Clock : 18/4/10/4/18

Example Fab Drawing Note (1080 Prepreg PCB)


| Trace Width (mils) | Differential Spacing (mils) | Target Impedance | Tolerance |
|--------------------|-----------------------------|----------------------|---------------------|
| 4.0 | NA | 50-ohm, single-ended | 15% |
| 6.5 | NA | 40-ohm, single-ended | 15% |
| 7.5 | NA | 30-ohm, single-ended | 15% |
| 9.5 | NA | 32-ohm, single-ended | 15% |
| 3.9 | 8.1 | 95-ohm, differential | 20%, reference only |
| 4.5 | 7.5 | 90-ohm, differential | 20%, reference only |

Eaglelake(GMCH) Impedance Requirements by Interface

| Interface | Impedance Required |
|-------------------------------|--|
| FSB (All) | 4x signals 42-ohm, others 50-ohm, single-ended |
| Controller Link | 50-ohm, single-ended |
| DDR2 (DQ, DQS, DM, CLK, CLK#) | 40-ohm, single-ended |
| DDR2 (Control) | 43-ohm, single-ended |
| DDR2 (Command) | 33-ohm, single-ended |
| DDR3 (CLK, CLK#) | 36-ohm, single-ended |
| DDR3 (DQ, DQS, DM) | 20/37-ohm, single-ended |
| DDR3 (Control) | 36-ohm, single-ended |
| DDR3 (Command) | 32-ohm, single-ended |
| PCI Express, DMI | 95-ohm, differential |
| VGA | 97-ohm, single-ended at MCH breakout, then 50-ohm, single-ended to VGA connector |

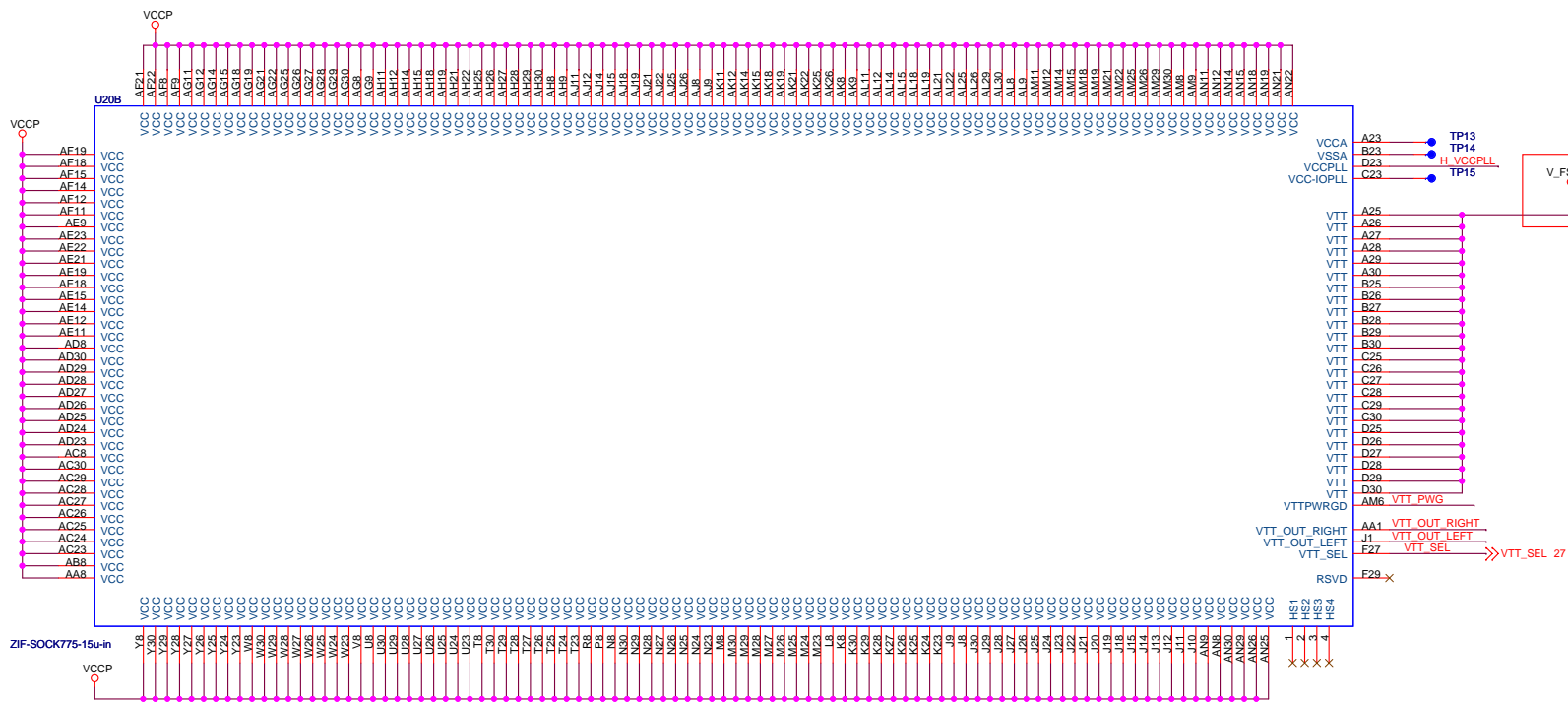
ICH10 Impedance Requirements by Interface

| Interface | Impedance Required |
|------------------|----------------------|
| PCI | 50-ohm, single-ended |
| Controller Link | 50-ohm, single-ended |
| Miscellaneous | 50-ohm, single-ended |
| PCI Express, DMI | 95-ohm, differential |
| SATA | 95-ohm, differential |
| USB | 90-ohm, differential |

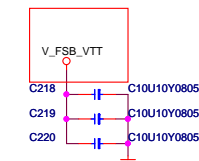
| | | |
|---|----------------------------------|---------------|
|  MICRO-START INTL CO., LTD. | | |
| Title BLOCK DIAGRAM | | |
| Size | Document Number MS-7420N1 | Rev 10 |
| Date: Thursday, July 03, 2008 | Sheet 2 | of 35 |

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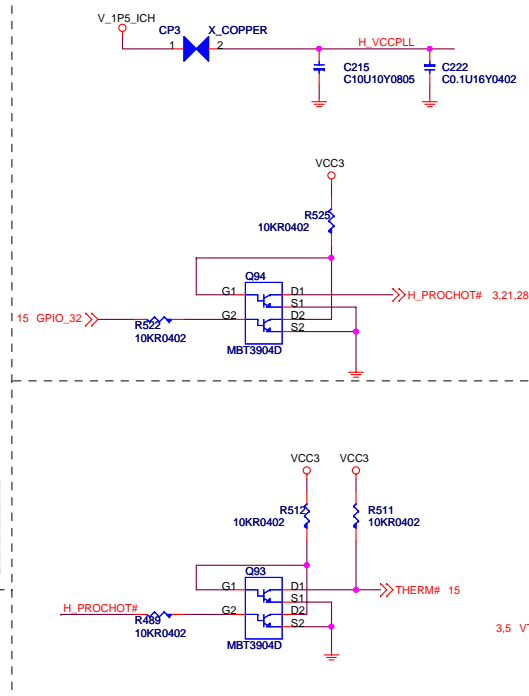
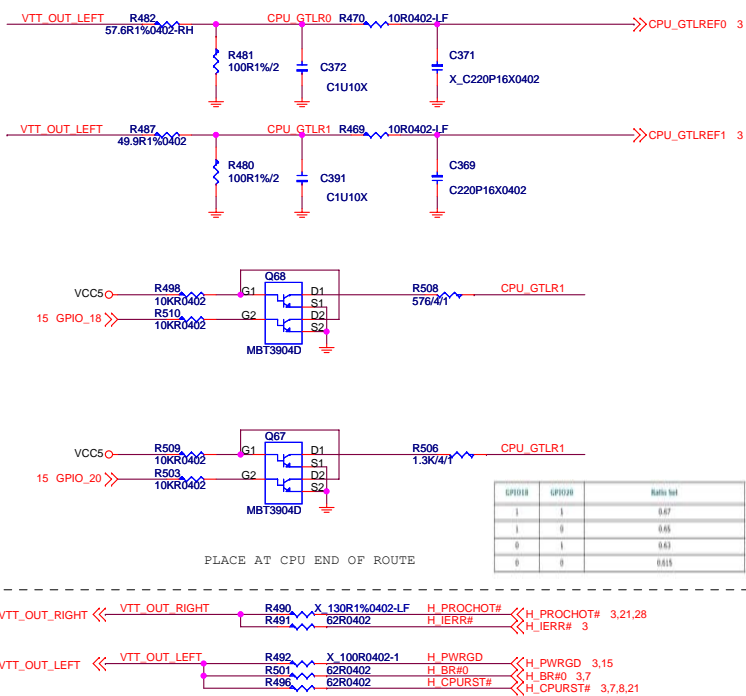
| BSEL | | | TABLE |
|------|---|---|----------------|
| 2 | 1 | 0 | FSB FREQUENCY |
| 0 | 0 | 0 | 267 MHZ (1067) |
| 0 | 1 | 0 | 200 MHZ (800) |
| 0 | 0 | 1 | 133 MHZ (533) |
| 1 | 0 | 0 | 333 MHZ (1333) |



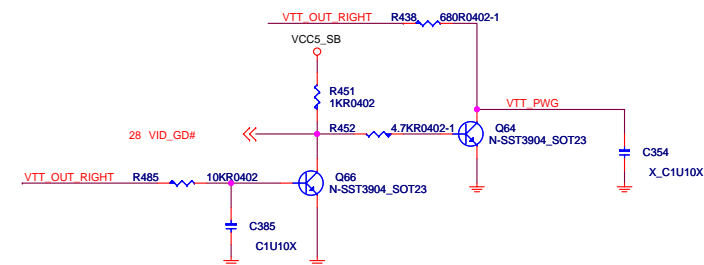
BIOS writers Guide
PDG:page109



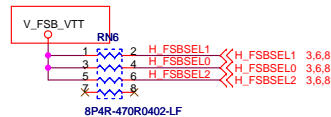
CAPS FOR FSB GENERIC



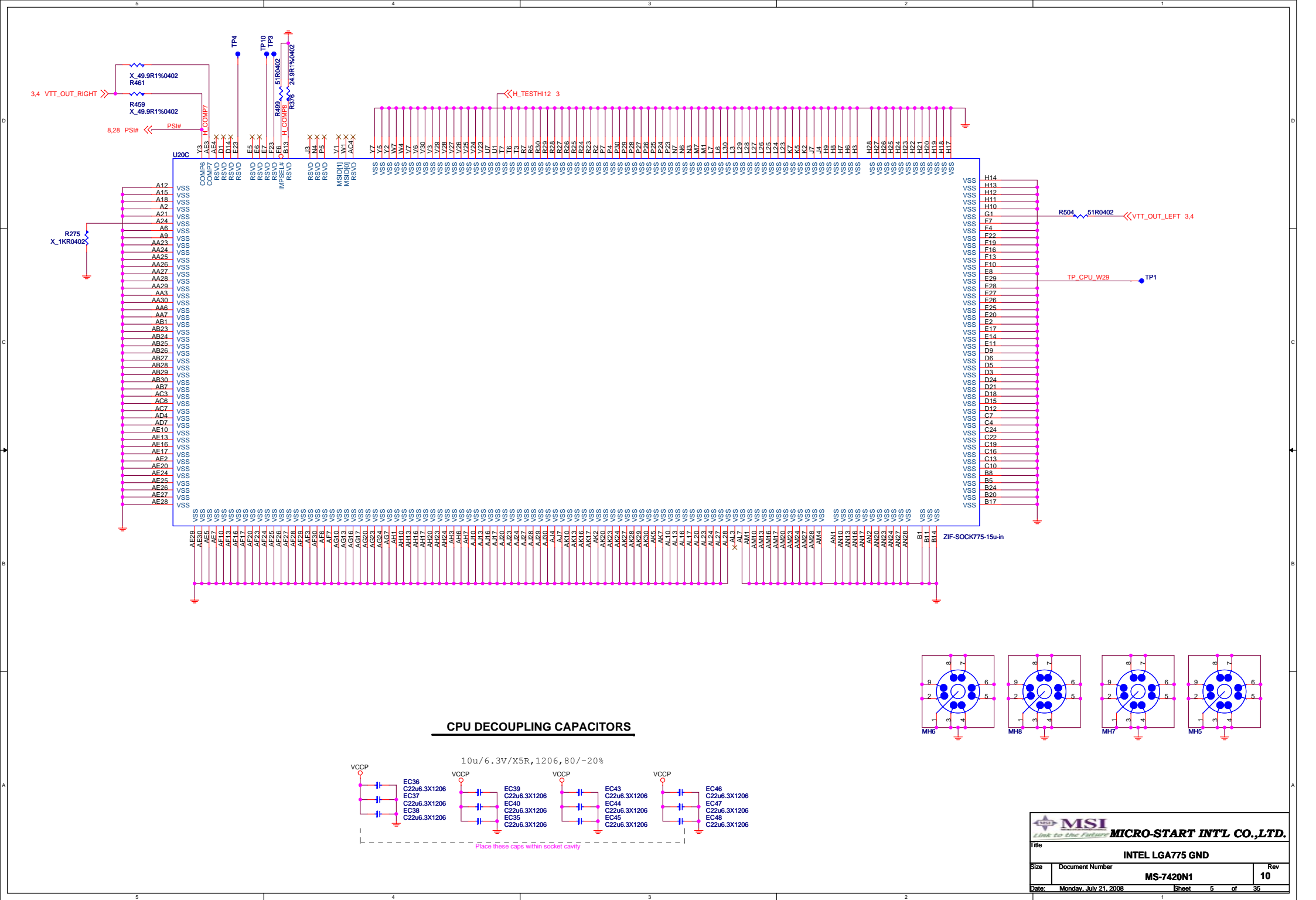
VTT_PWG SPEC :
High > 0.9V
Low < 0.3V
Trise < 150ns



FSBSEL RESISTOR CAN BE REMOVED IF ONLY TEJAS
AND CEDAR MILL ARE SUPPORTED



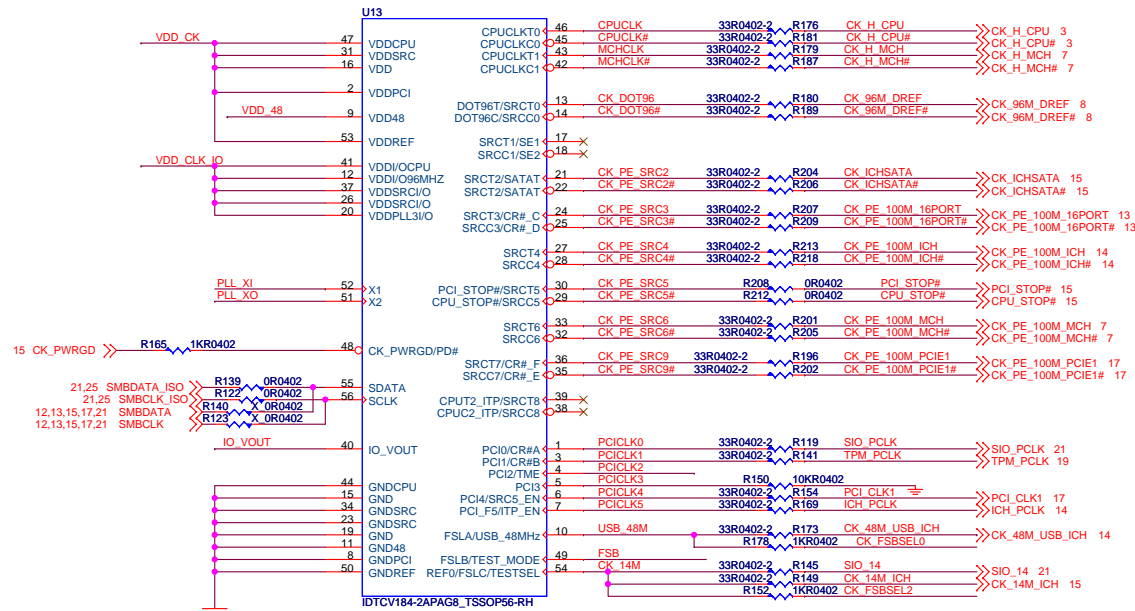
PLACE AT ICH END OF ROUTE



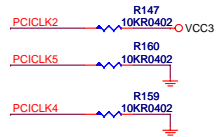
CLOCK Generator - IDTCV184-2

VDD_CK Decoupling

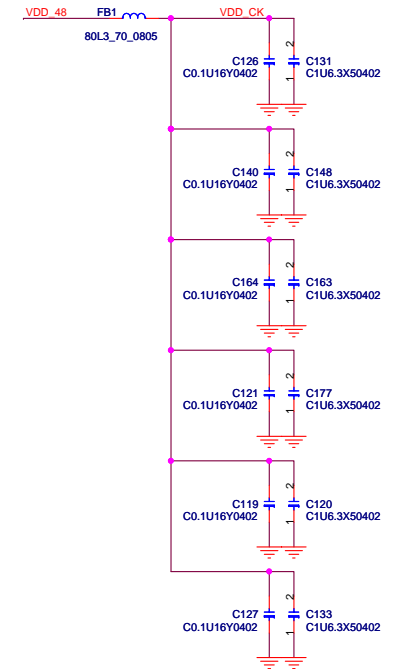
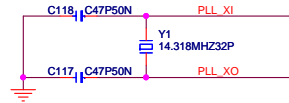
Place near each VDD_CK Pins



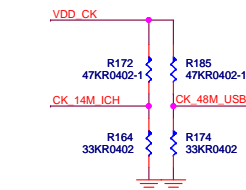
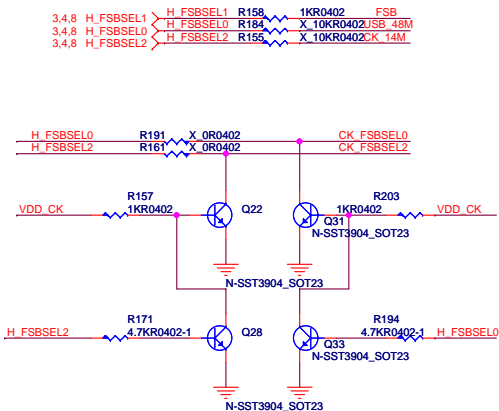
Strapping resistor



| CK55 HW Strap | Signal | IN | L | DBL |
|---------------|--------|----|-------------------|-----|
| PC2 | EN | EN | OVERCLOCK | |
| PC4 | EN | EN | CPU_FREQ/MCH_FREQ | |
| PC5 | EN | EN | PRCCUR | |

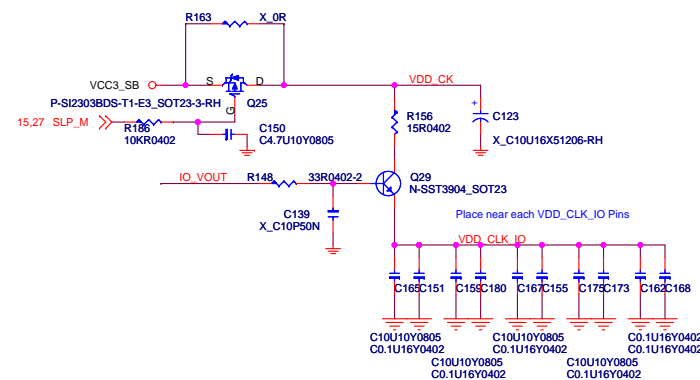


CPU Frequency select

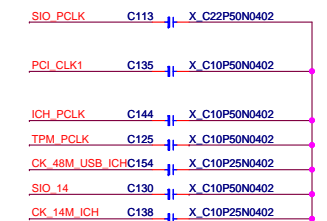


| FS ₀ C ¹ B0b7 | FS ₀ B ¹ B0b6 | FS ₀ A ² B0b5 | CPU MHz |
|--|--|--|------------|
| 0 | 0 | 0 | 265.66 |
| 0 | 0 | 1 | 133.33 |
| 0 | 1 | 0 | 200.00 |
| 0 | 1 | 1 | 166.66 |
| 1 | 0 | 0 | 323.33 |
| 1 | 0 | 1 | 100.00 |
| 1 | 1 | 0 | 400.00 |
| 1 | 1 | 1 | Reserved |

VDD_CK & VDD_CLK_IO Power



For EMI reserver

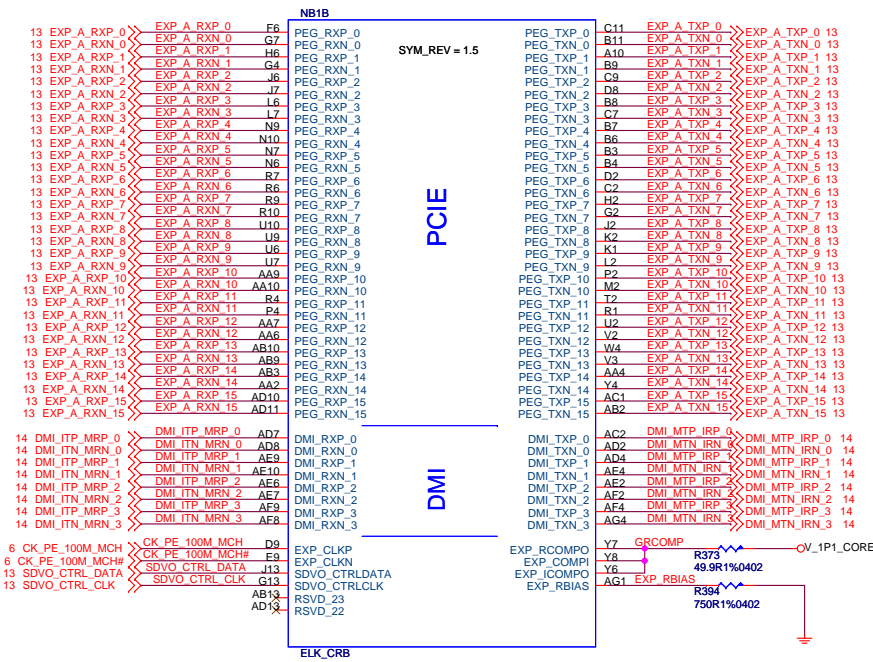


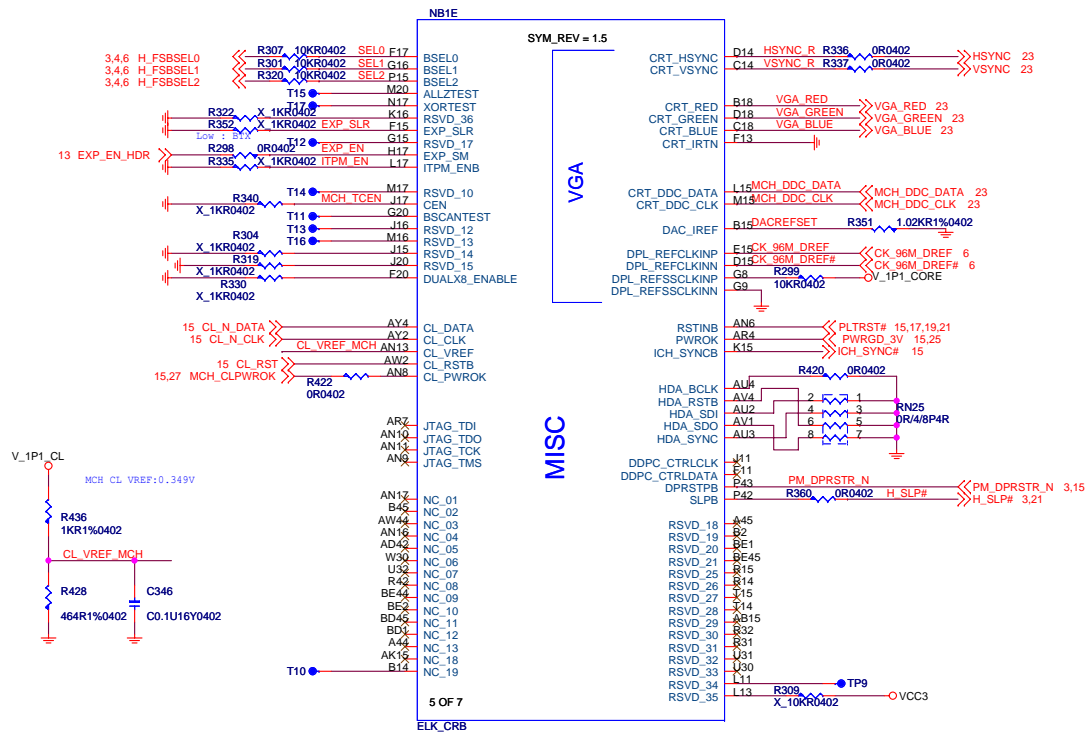
MSI
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MICRO-START INT'L CO.,LTD.

CLOCK Generator-IDTCV184-2APAG8

Size: Document Number: MS-7420N1 Rev: 10

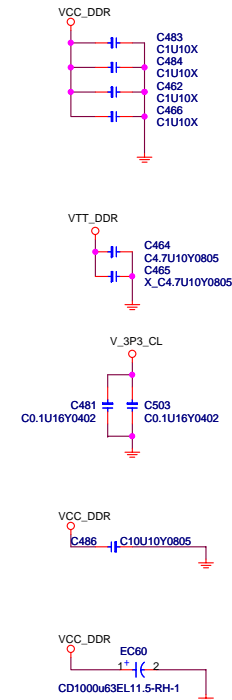
Date: Thursday, July 17, 2008 Sheet: 6 of 35



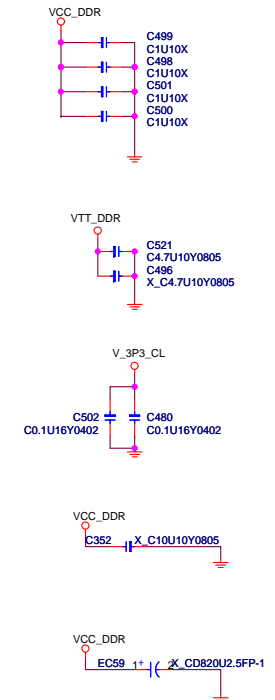


| MCH H/W Strap | | | |
|---------------|------------|----------------|-------------------------|
| SIGNAL | H | L | DES. |
| ITPM_EN | DIS | EN | internal TPM |
| DUALX8 | (16X) | (8X) | PCIEX8 or X16 |
| EXP_SLR | ATX | BTX | EXP_SLR platform select |
| CEN | EN | DIS | TLS confidentiality |
| EXP_SM | Concurrent | Non-concurrent | PCI_E/SDVO co-existence |

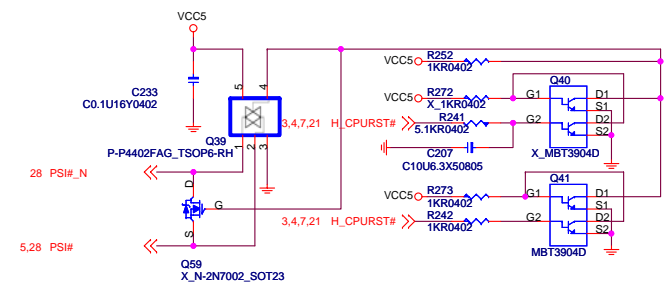
DIMM1 decoupling cap



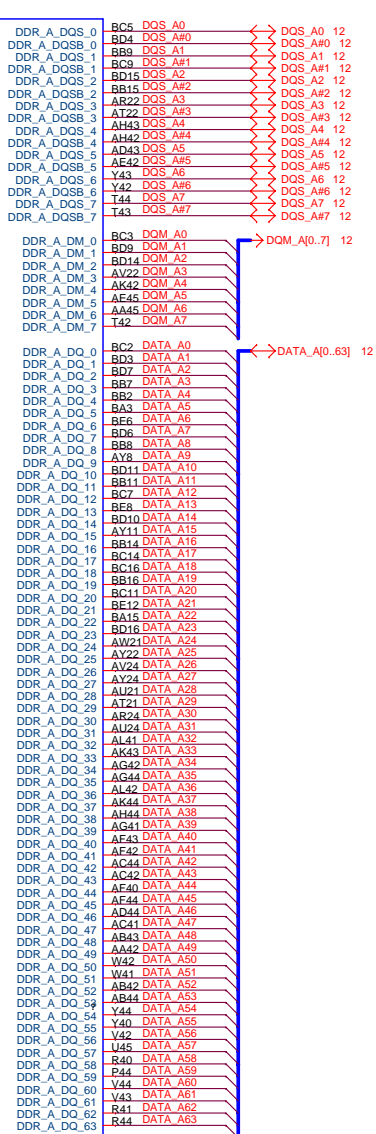
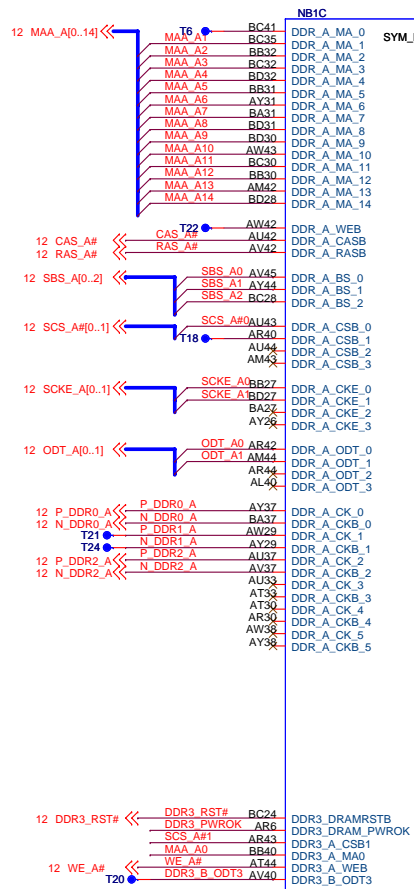
DIMM1 decoupling cap



PSI(POWER STATE INDICATOR)

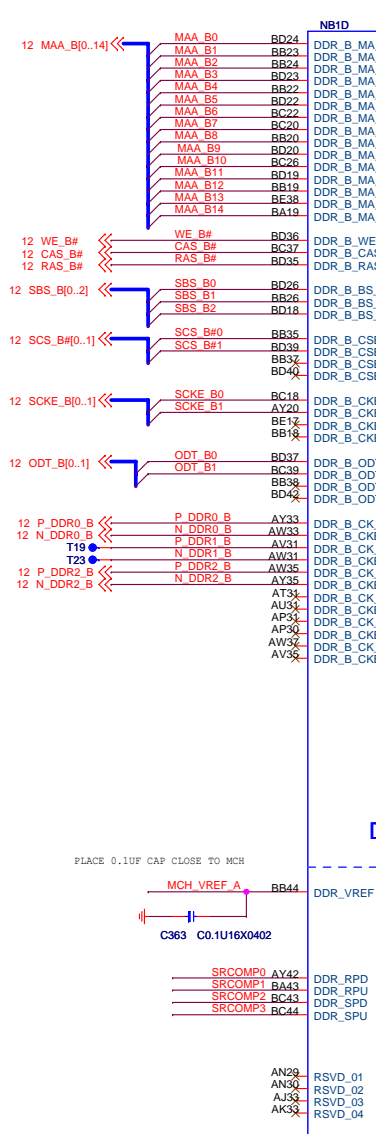


PDG:page 438 ,Please put near PWM



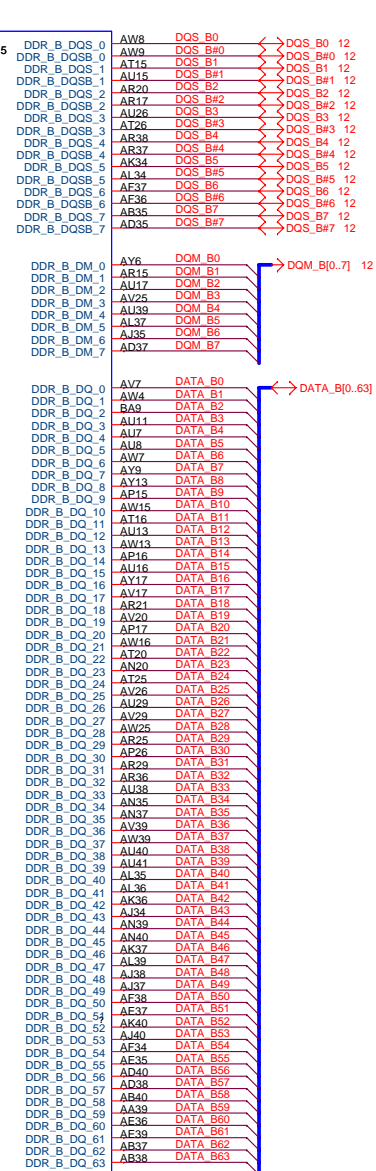
DDR_A

3 OF 7
ELK_CRB

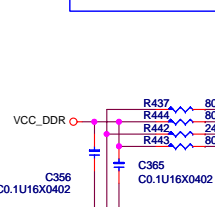
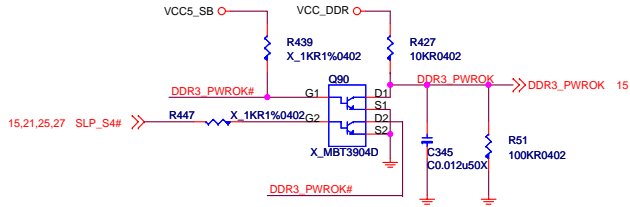
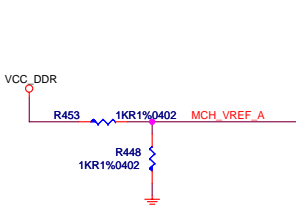
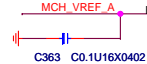


DDR_B

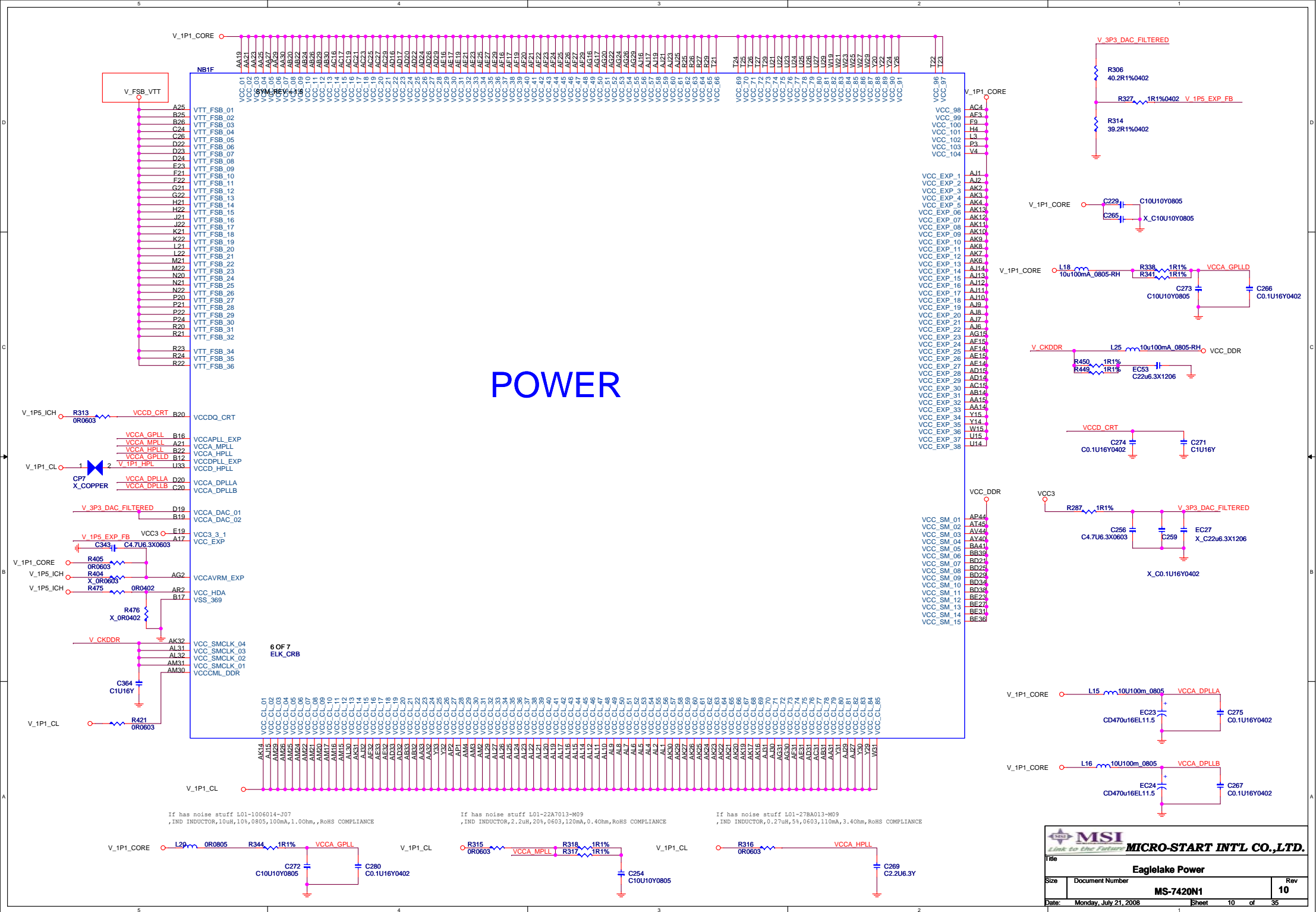
4 OF 7
ELK_CRB

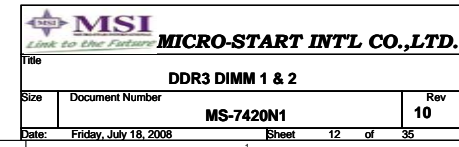


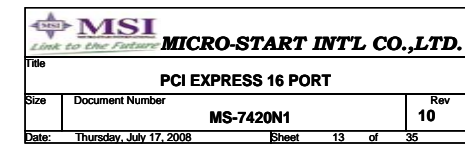
PLACE 0.1UF CAP CLOSE TO MCH

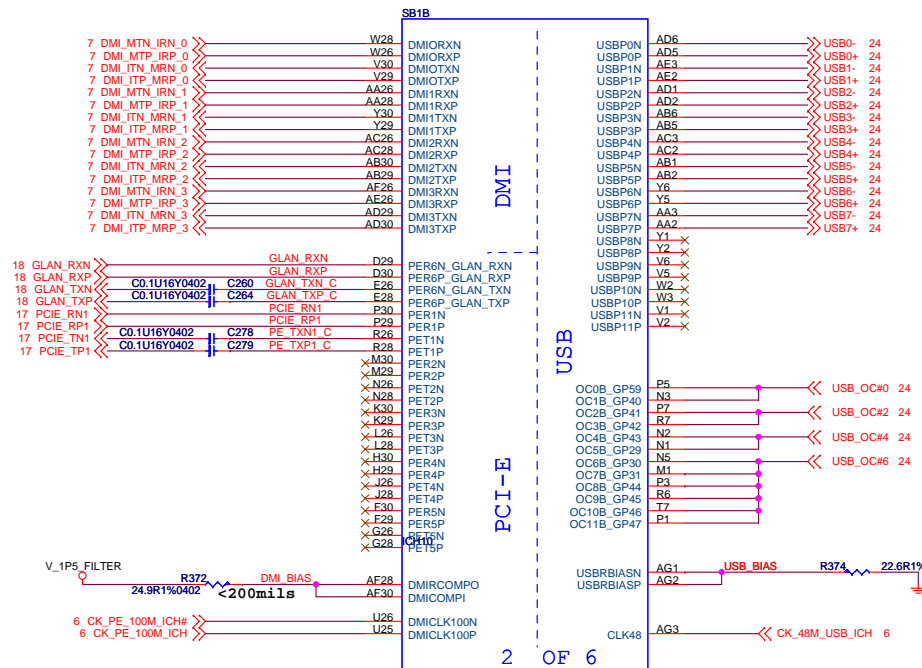
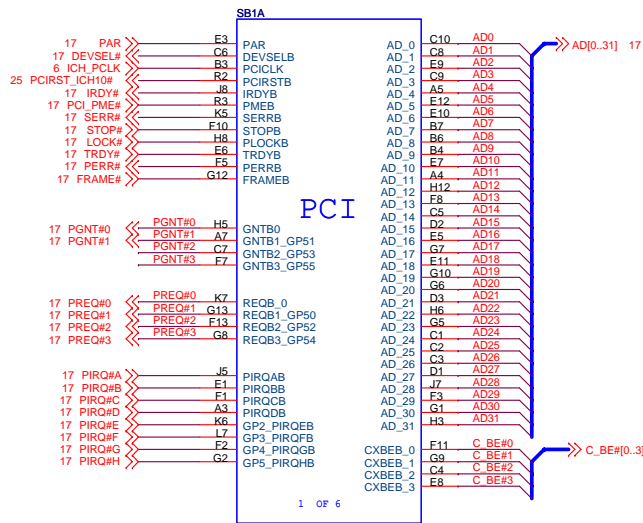


MSI
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 MICRO-START INTL CO.,LTD.
 Eaglelake Memory
 Size Document Number MS-7420N1 Rev 10
 Date: Friday, July 18, 2008 Sheet 9 of 35

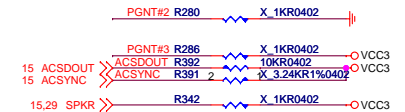




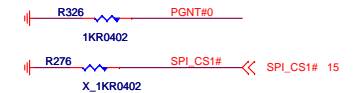




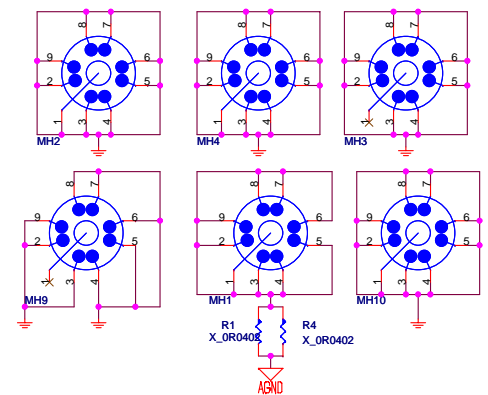
| ICH10 H/W STRAPS | | | |
|------------------|---------|---------|--------------------------------|
| SIGNAL | H | L | DES. |
| SPKR | DIS | EN | REBOOT |
| GNT3 | DIS | EN | A16 OVERRIDE |
| INTVRMEN | EN | DIS | INT VRM |
| SATALED | NORM | REVERSE | PCIE 0-3 ORDER |
| HDA_SDOUT | EN | DIS | Danbury Tec. |
| HDA_SYNC | SET BIT | N/A | PCIE PORT CONFIG BIT 0 (1-4) |
| GNT2 | N/A | SET BIT | PCIE PORT CONFIG 2 BIT 0 (5-6) |



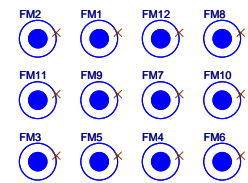
| BOOT SELECT STRAPS | | | |
|--------------------|-------|----------|-----------|
| BOOT DEVICE | GNT#0 | SPI_CS1# | |
| FWH | 1 | 1 | |
| SPI | 0 | X | (Default) |
| PCI | 1 | 0 | |



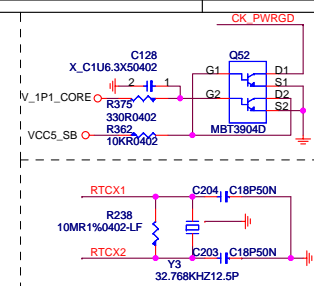
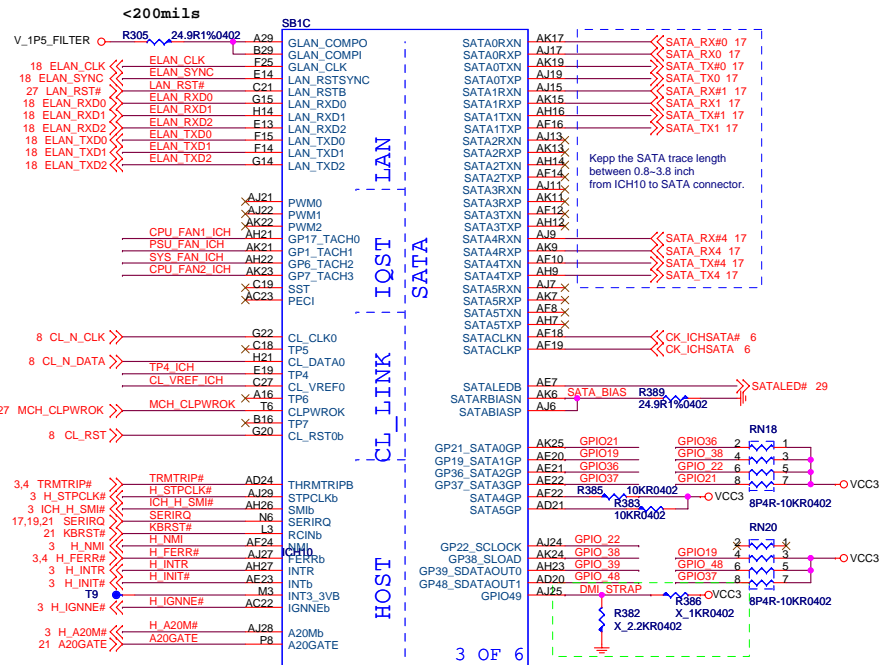
Mounting Holes



Optics Orientation Holes

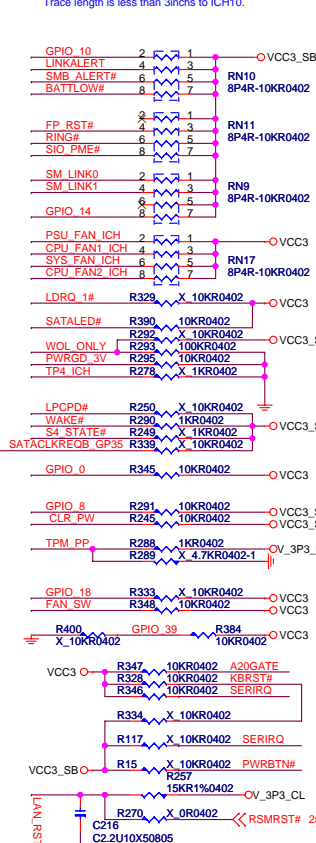


| | | | |
|----------------------------------|----------------------------------|--|---------------|
| MICRO-START INTL CO.,LTD. | | | |
| Title INTEL ICH10 PART1 | | | |
| Size | Document Number MS-7420N1 | | Rev 10 |
| Date: Monday, July 21, 2008 | Sheet 14 of 35 | | |

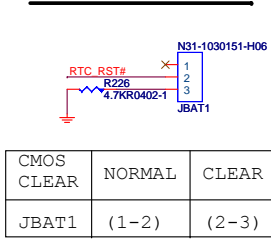


ICH10 PULL-UP RESISTORS

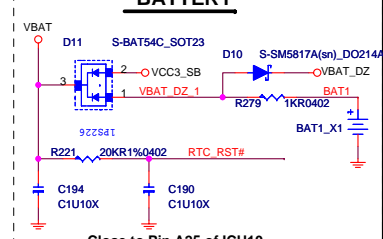
ALL COMPONENTS CLOSE TO ICH10
Trace length is less than 3inches to ICH10.



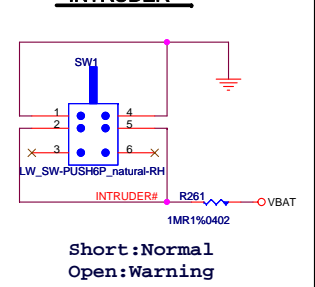
CLEAR CMOS JUMPER



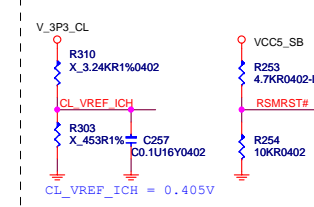
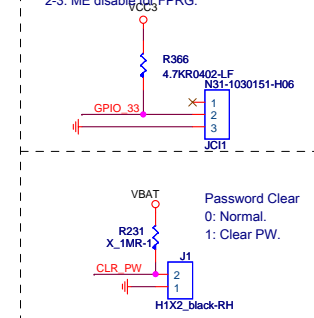
BATTERY



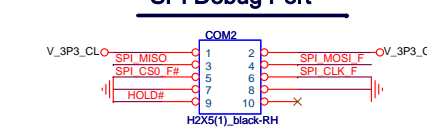
INTRUDER



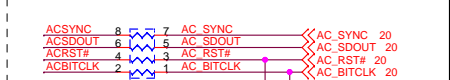
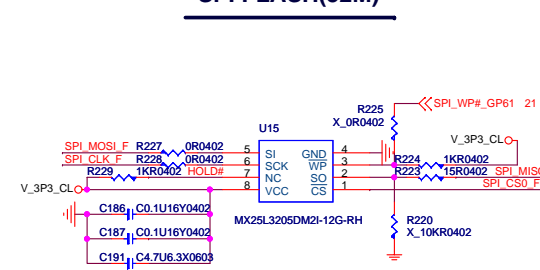
ICH10-GPIO_33
1-2: Default.
2-3: ME disable for FPRG.

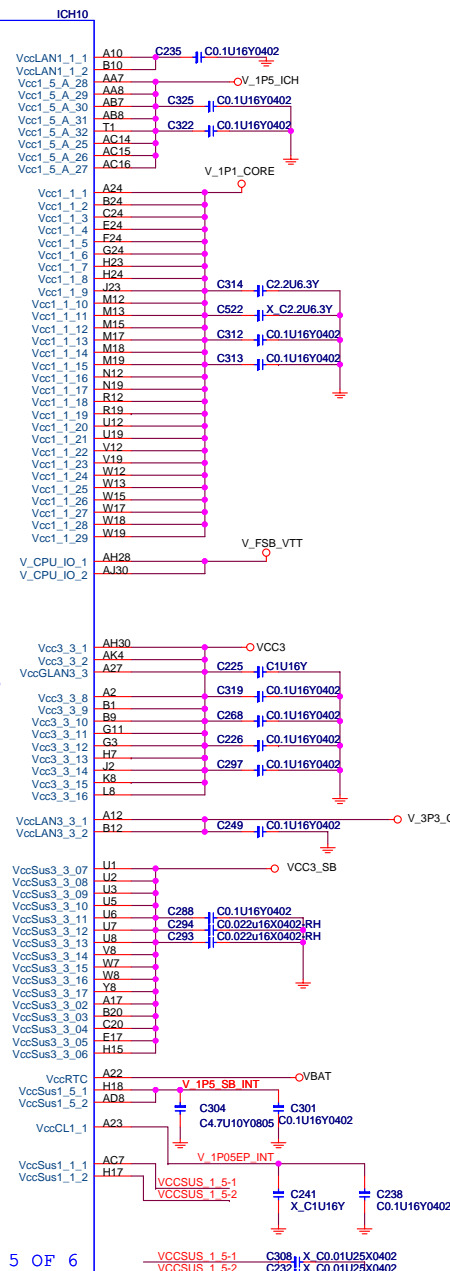
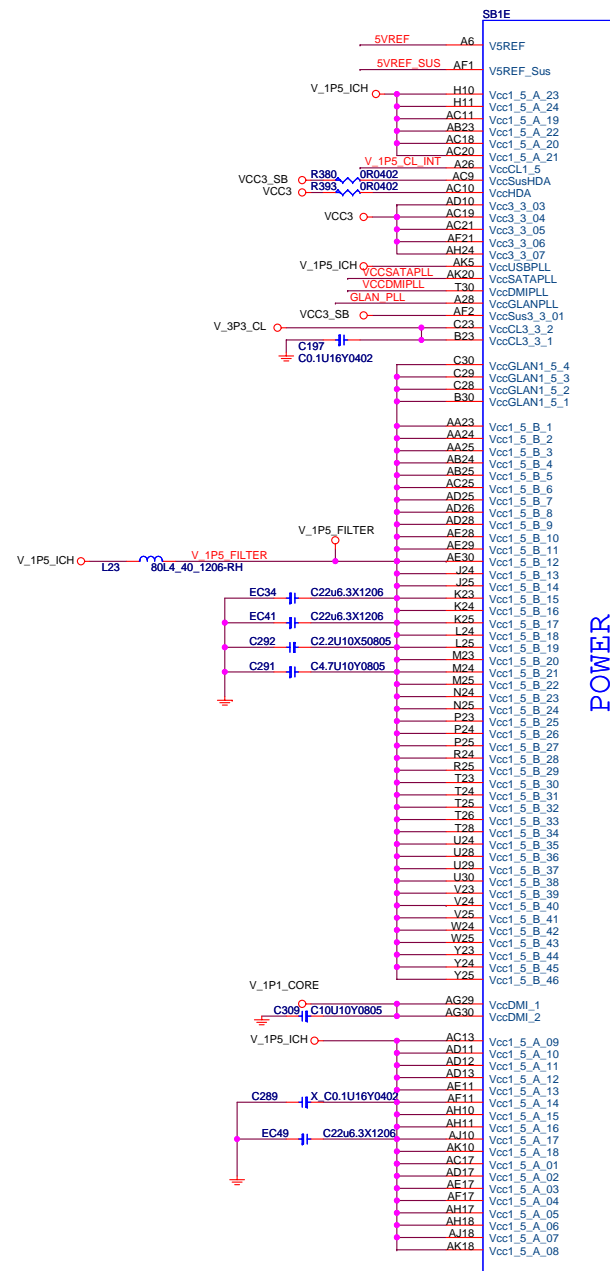
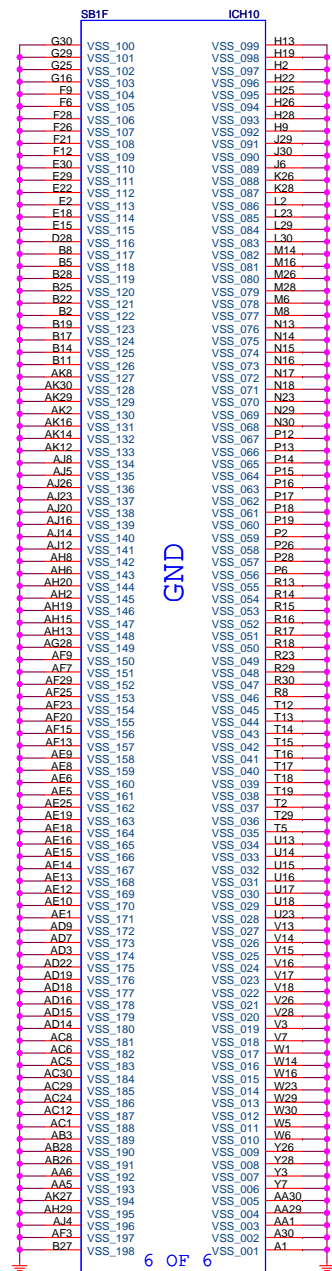


SPI Debug Port

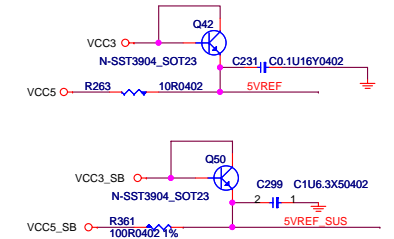


SPI FLASH(32M)

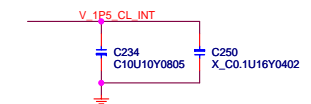




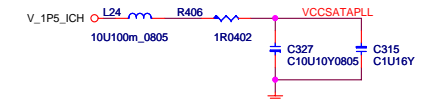
5VREF & 5VREF_SUS Sequencing Circuit



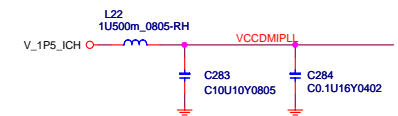
V_1P5_CL decoupling



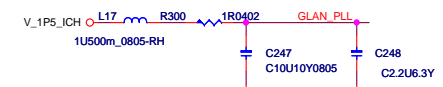
VCCSATAPLL



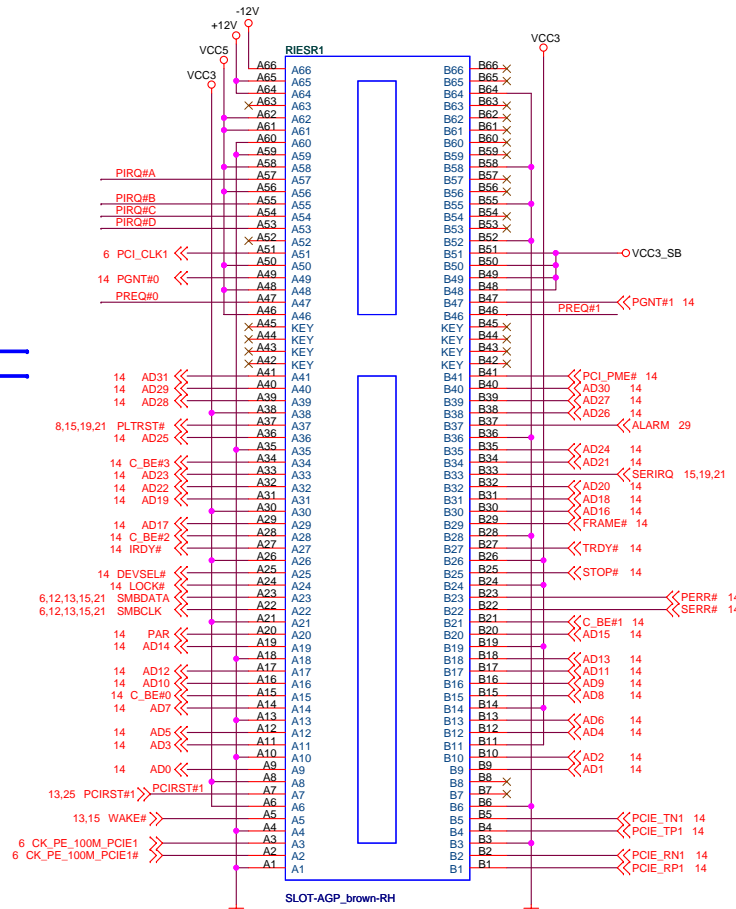
VCCDMIPLL



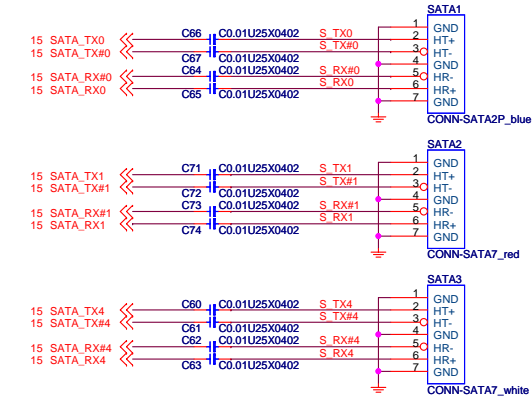
GLAN_PLL



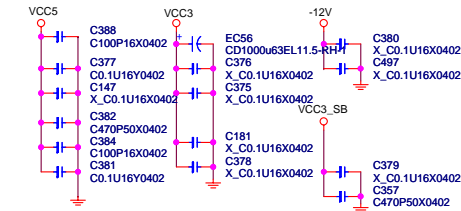
LE riser card interface



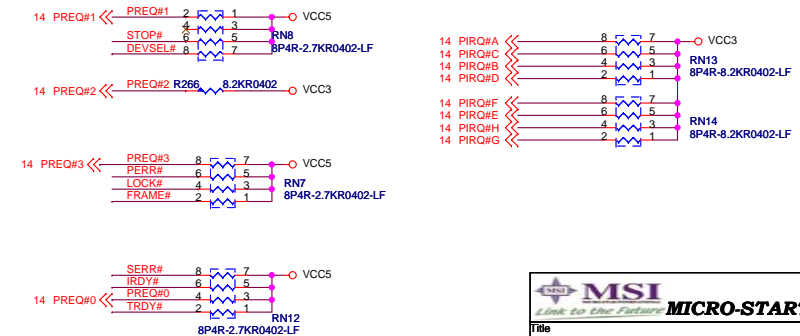
SERIAL ATA CONNECTOR BLOCK



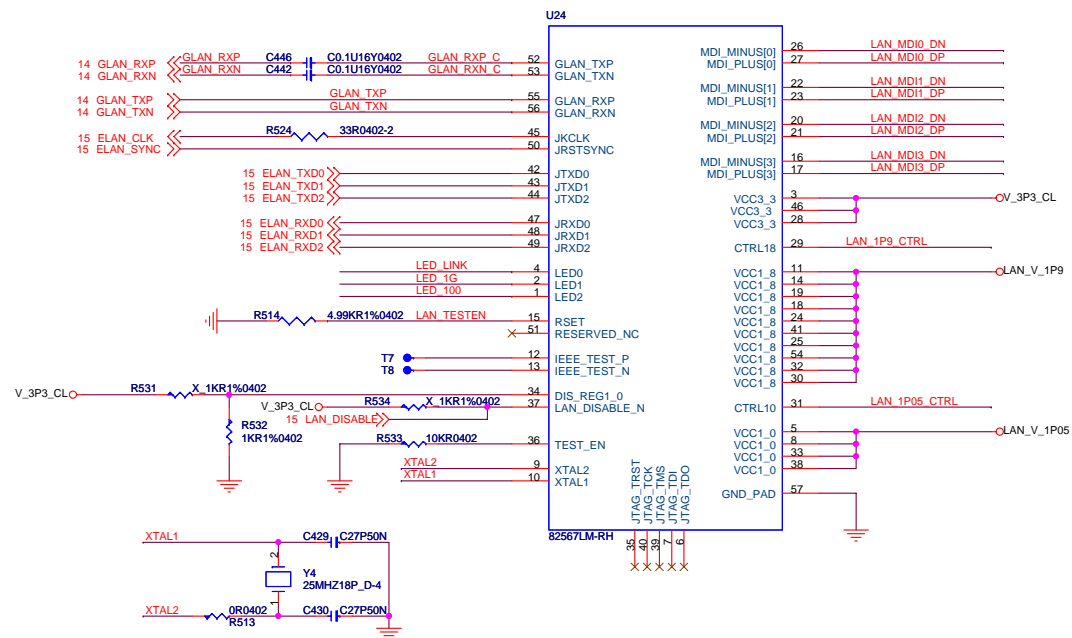
PCI SLOT DECOUPLING CAPACITORS



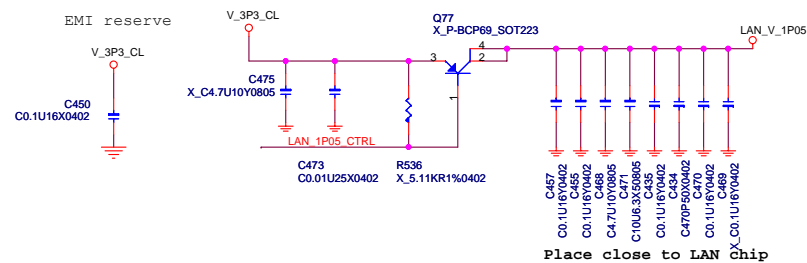
PCI PULL-UP / DOWN RESISTORS



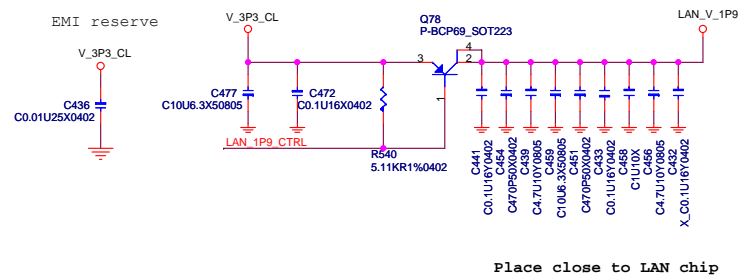
INTEL 82567(Boanman)



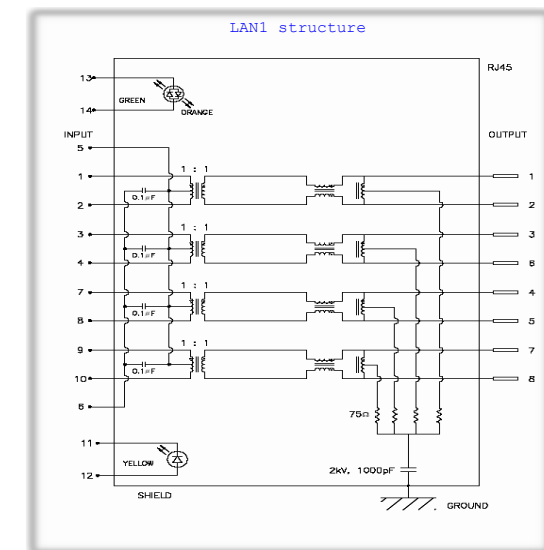
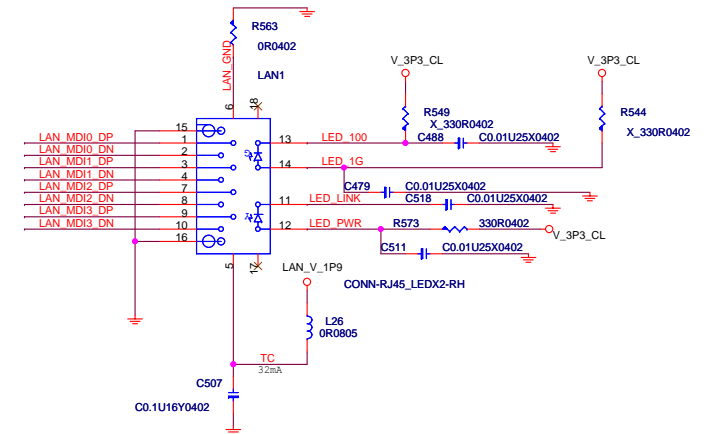
LAN 1P0 POWER
(277.2mA)



LAN 1P8 POWER
(418.2mA)

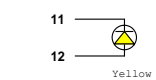
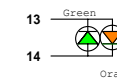


LAN CONNECTOR

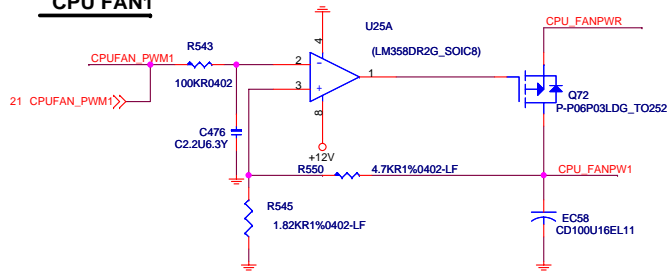


```
Speed LED Type
1000Mbps : Orange
100Mbps  : Green
10Mbps   : LED off
```

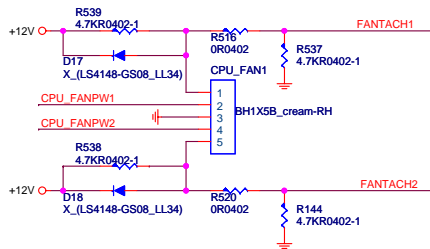
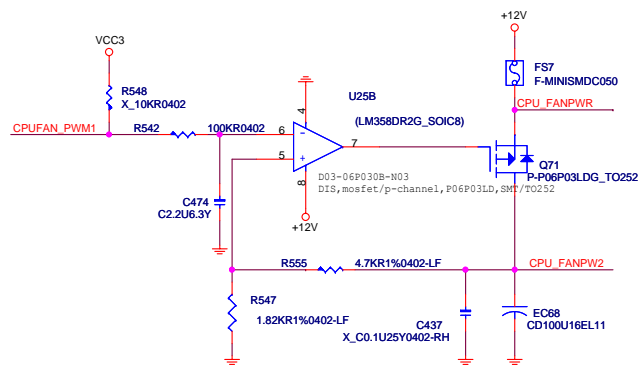
For Active/Link:
Yellow



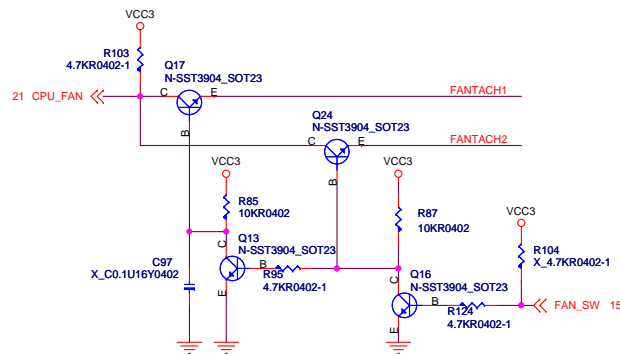
CPU FAN1



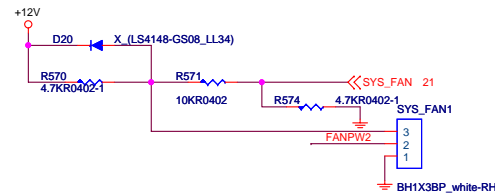
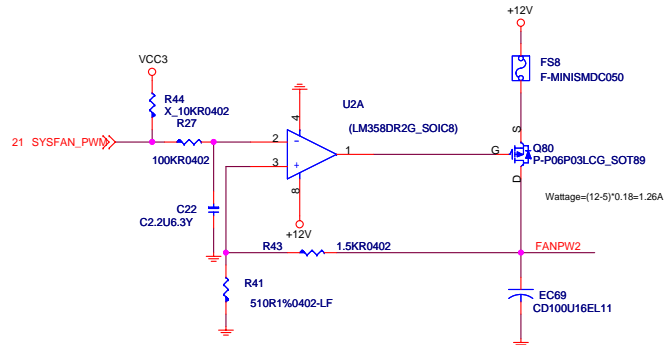
CPU FAN2



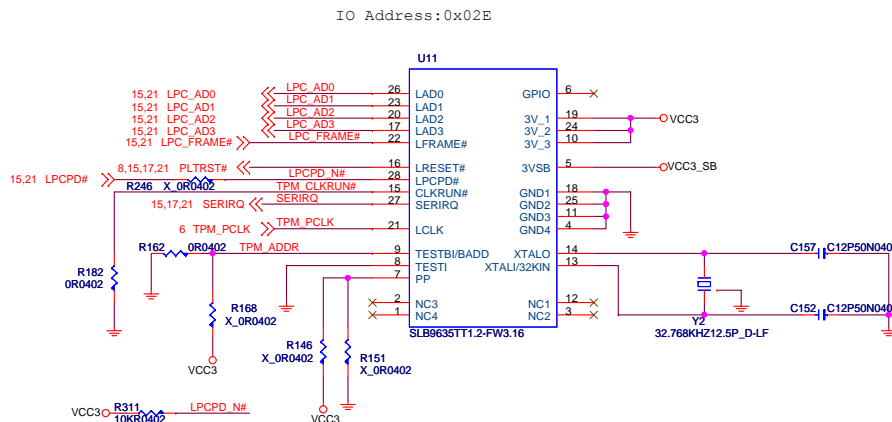
Switch circuit for CPU FAN1&FAN2 detection



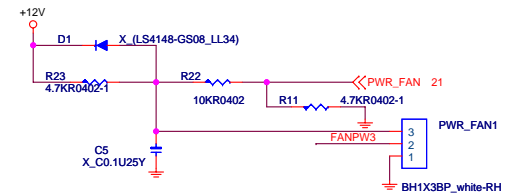
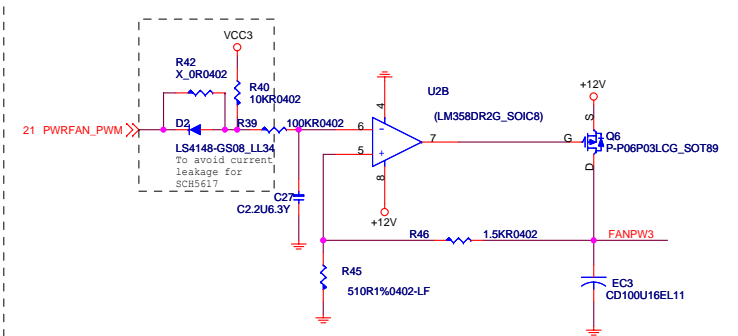
SYS FAN



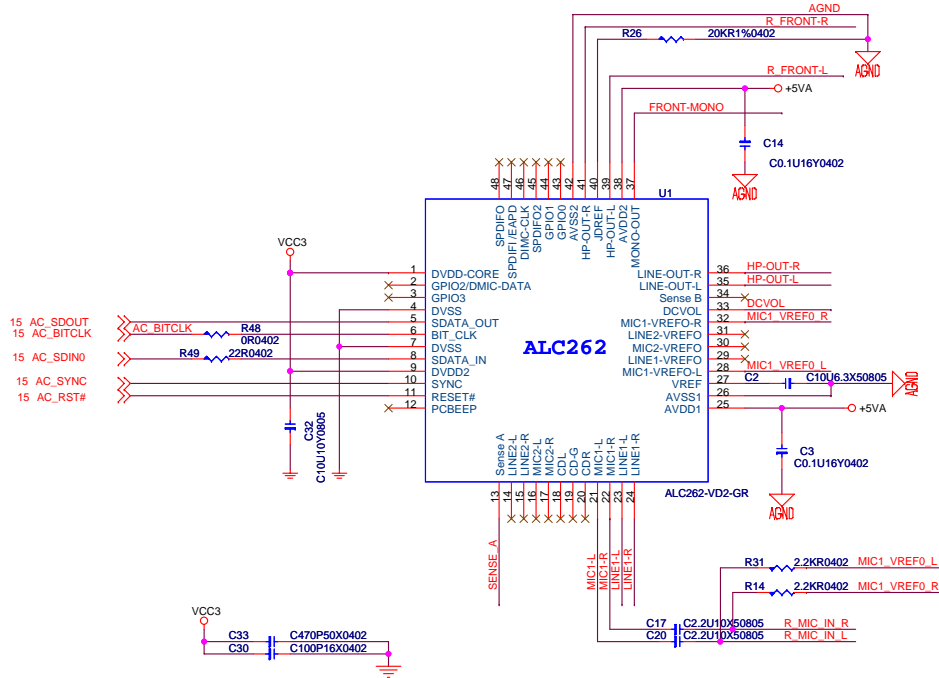
TPM 1.2



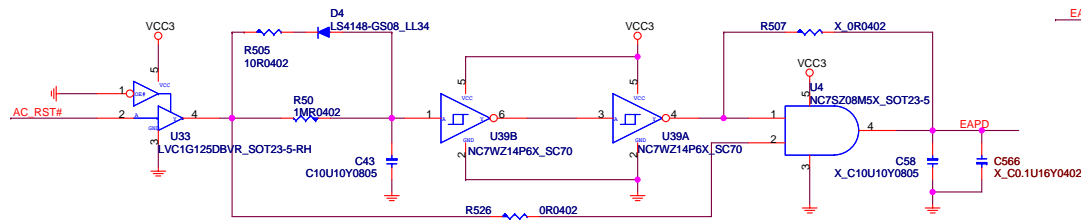
PWR FAN



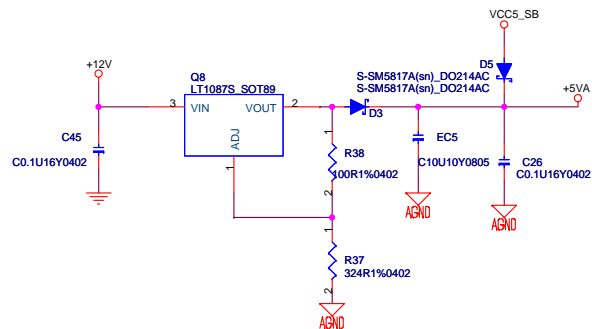
RELTEK HD ALC262VD2



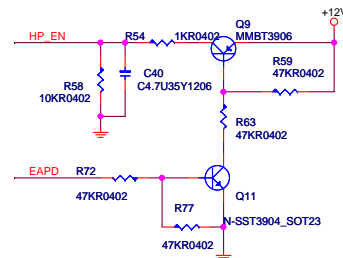
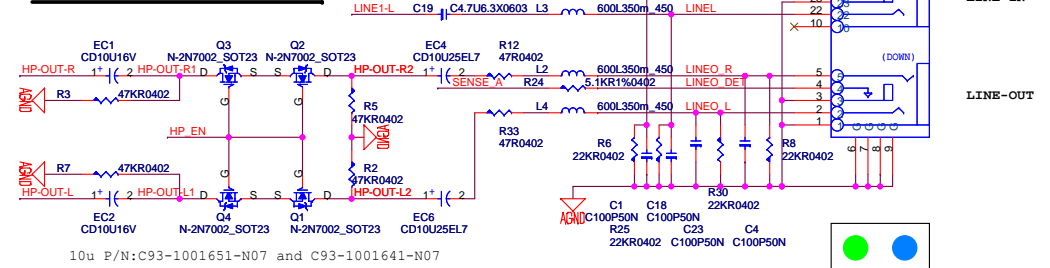
POP noise circuit



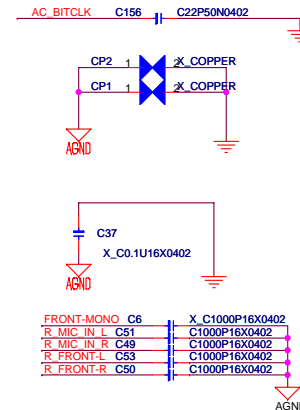
Audio CODEC REGULATOR



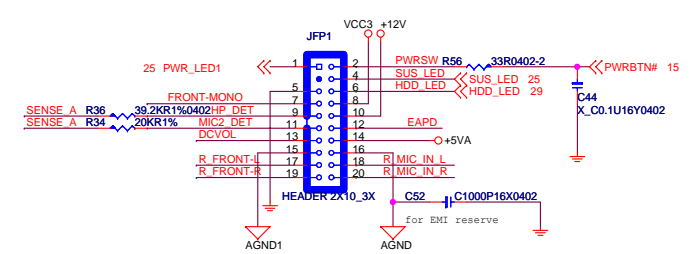
Smooth POP noise circuit



For EMI reserve



For Front Panel

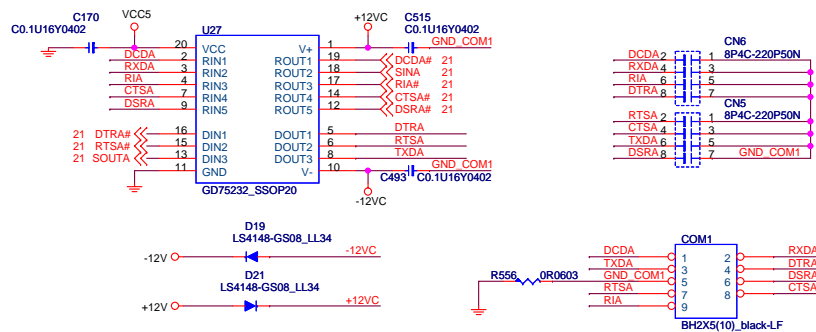


JFP1

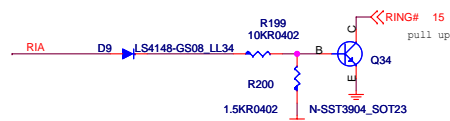
| | | | |
|----|---------|---------|----|
| 1 | PWR_LED | POW_SW | 2 |
| 3 | NC | SLP_LED | 4 |
| 5 | GND | HDD_LED | 6 |
| 7 | Mono | VCC3 | 8 |
| 9 | HP_DET | +12V | 10 |
| 11 | MIC_DET | EAPD | 12 |
| 13 | DCVOL | +5VA | 14 |
| 15 | AGND1 | AGND | 16 |
| 17 | FRONT_L | MIC_L | 18 |
| 19 | FRONT_R | MIC_R | 20 |



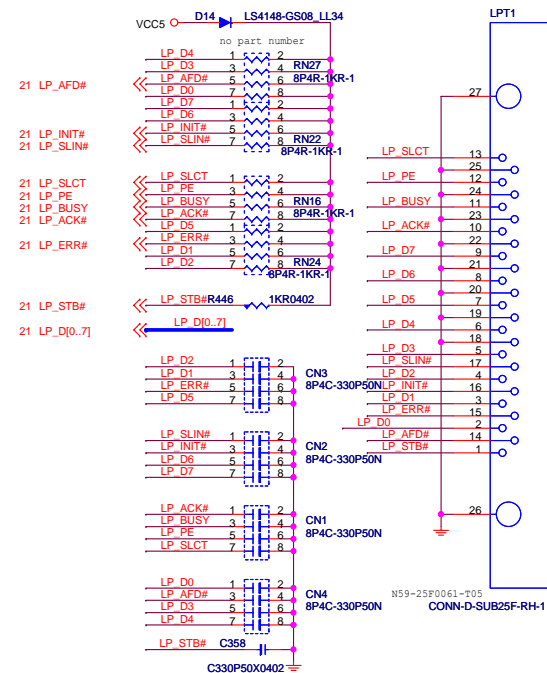
SERIAL PORT 1



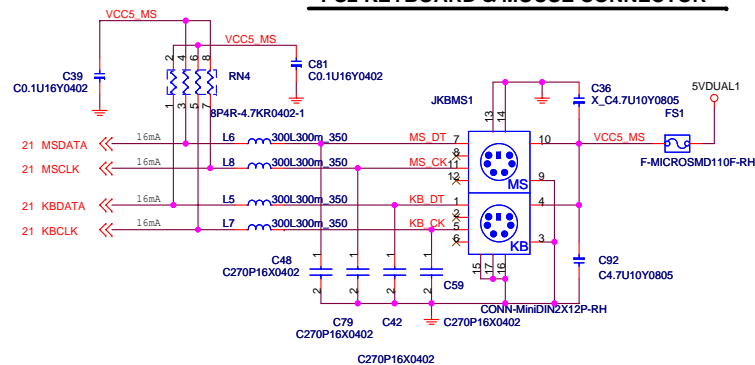
Wake On Modem Header



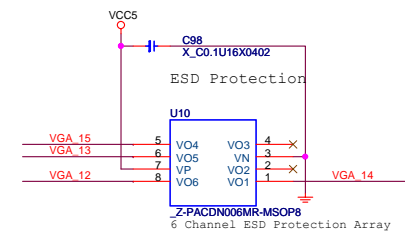
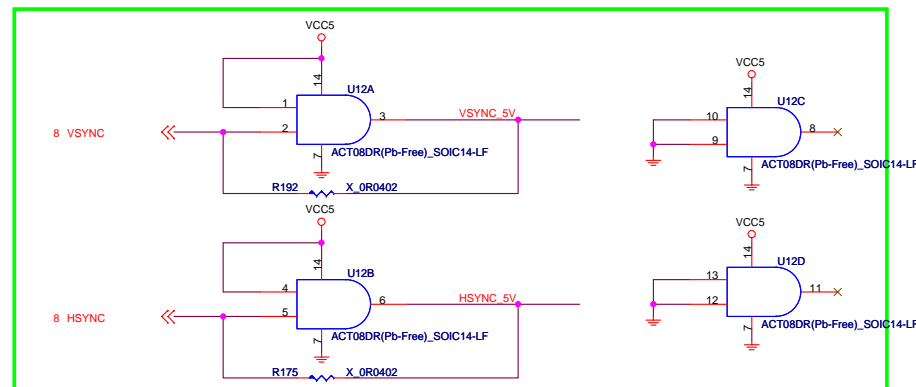
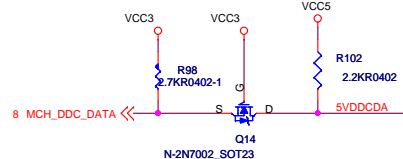
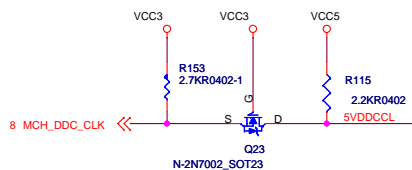
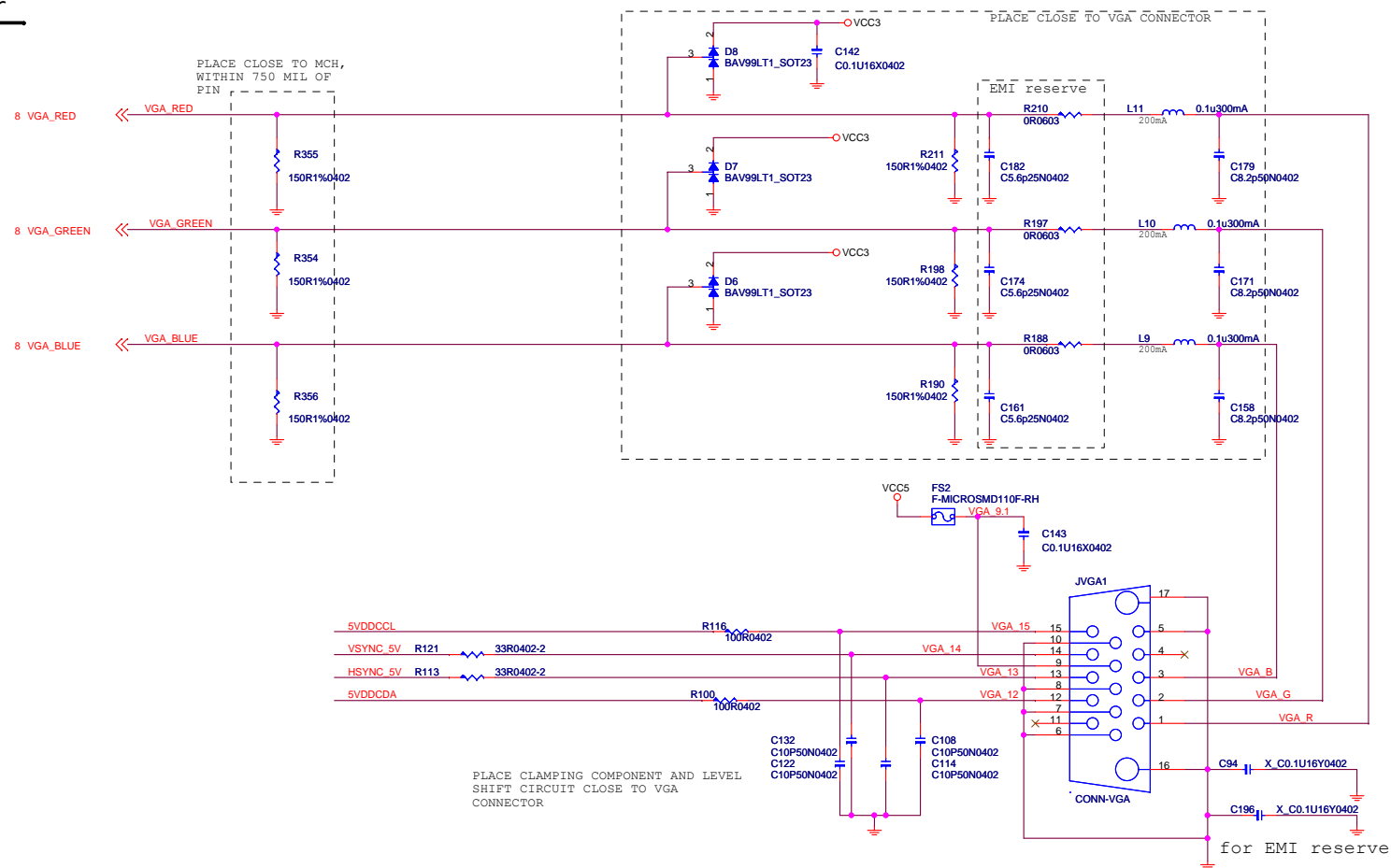
PARALLAL PORT



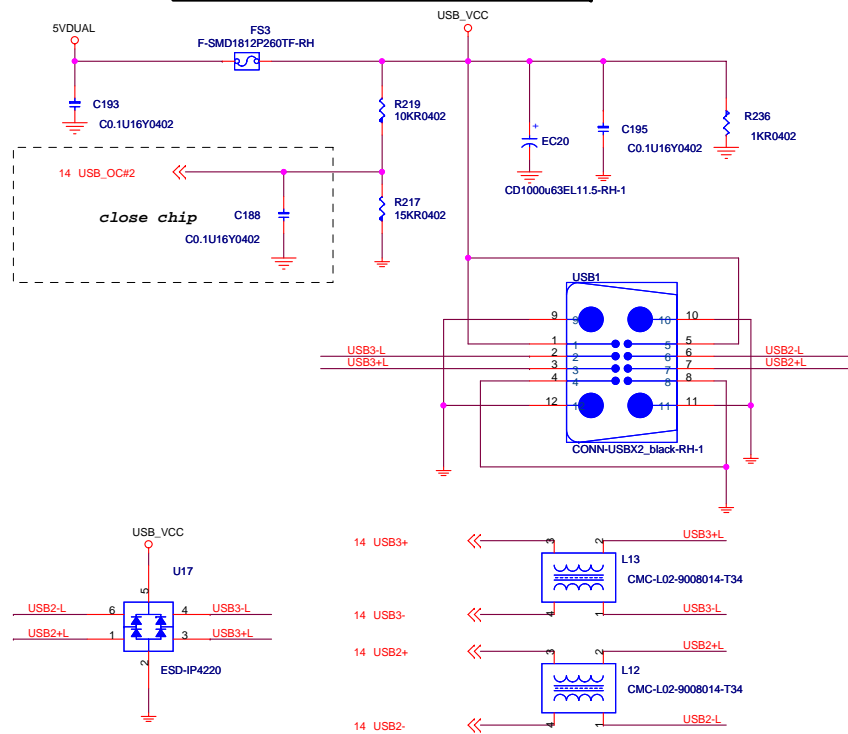
PS2 KEYBOARD & MOUSE CONNECTOR



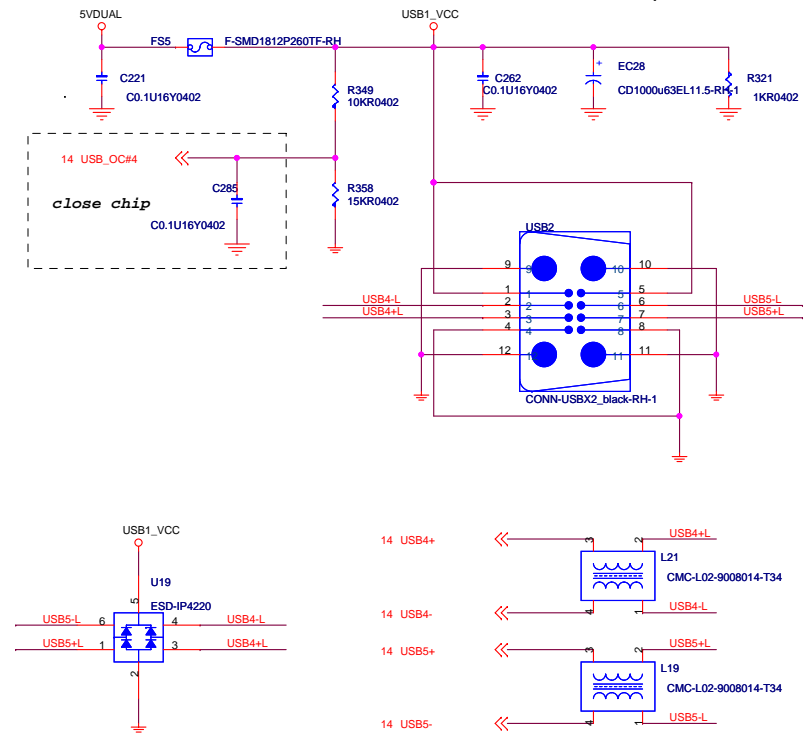
Video Connector



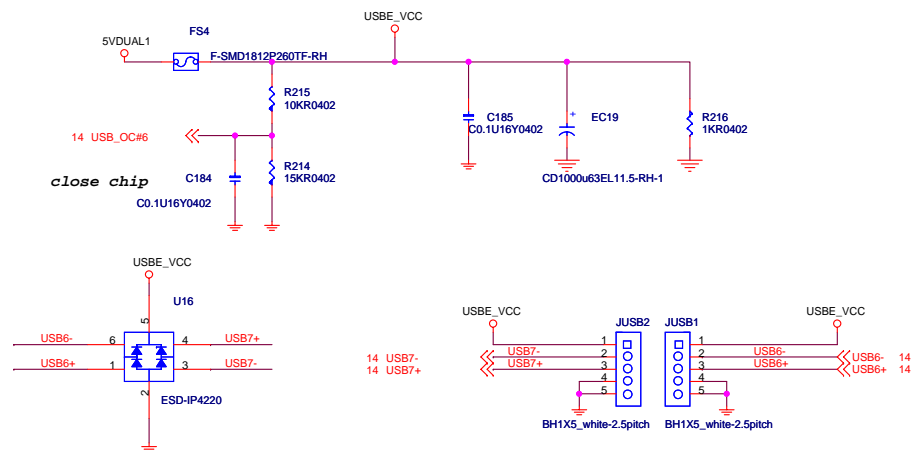
REAR PANEL USB PORT 2,3 CONNECTOR



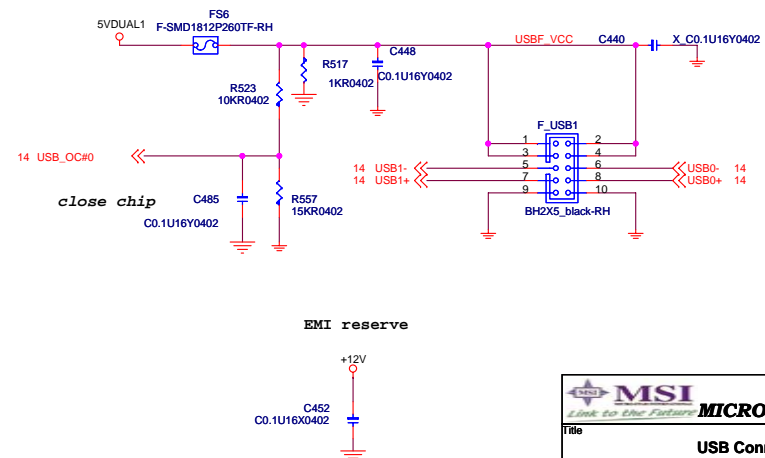
REAR PANEL USB PORT 4,5 CONNECTOR



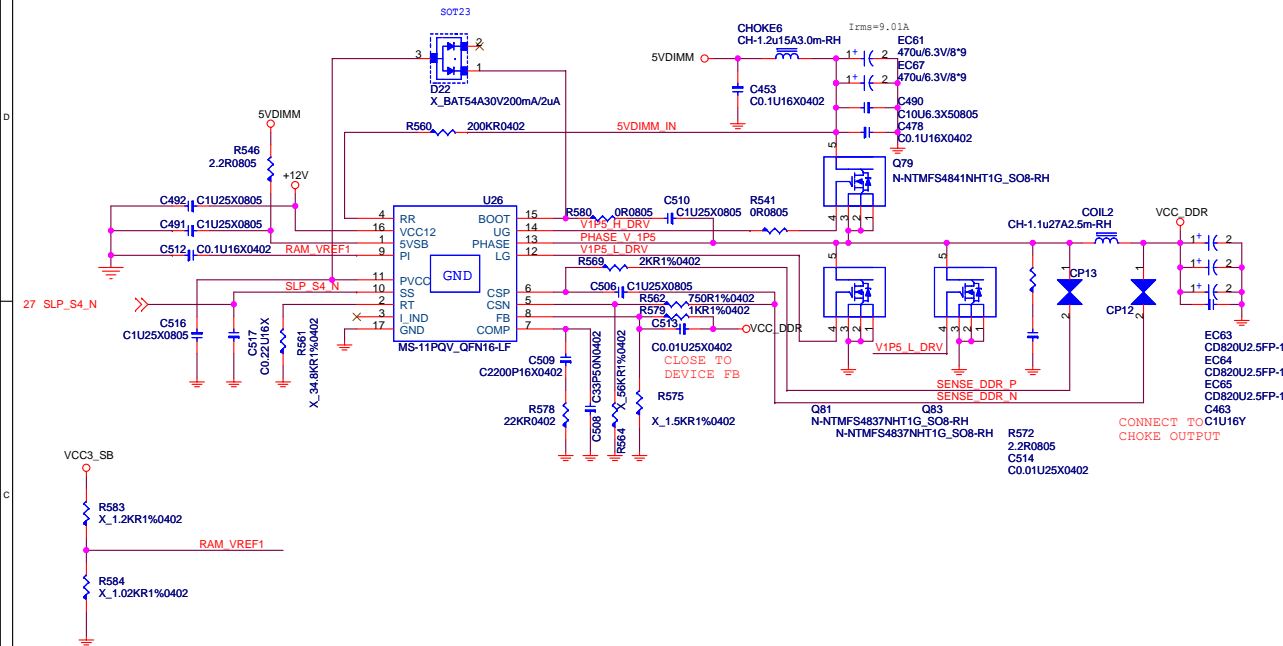
RESERVE EXTERNAL USB PORT 6,7



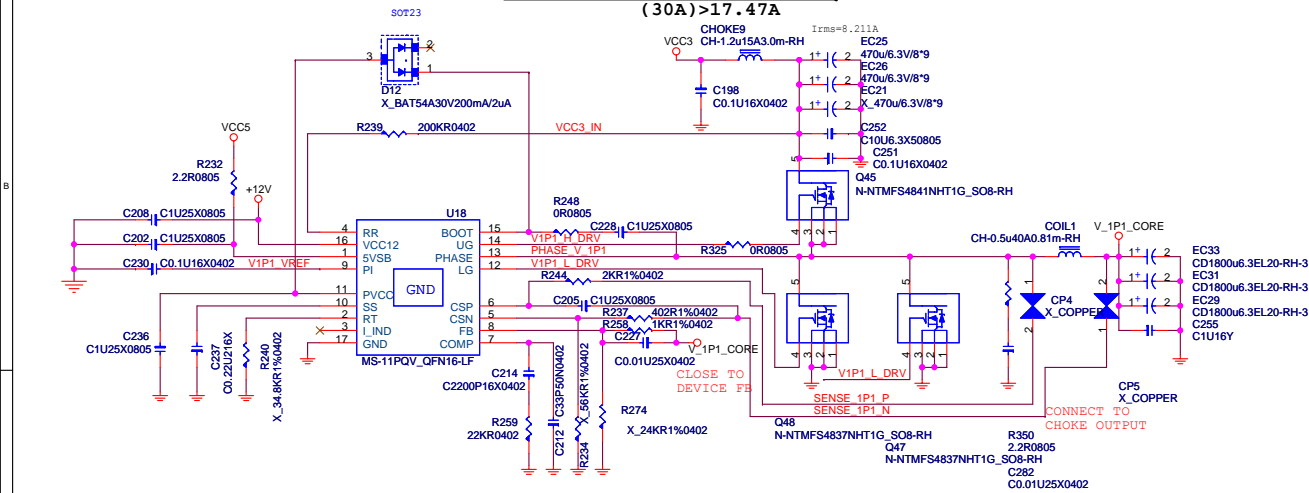
FRONT PANEL USB PORT 0,1 CONNECTOR



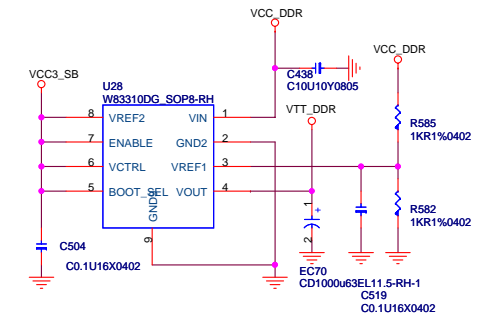
DDRIII 1.5V POWER
(24.89A) > 17.275A



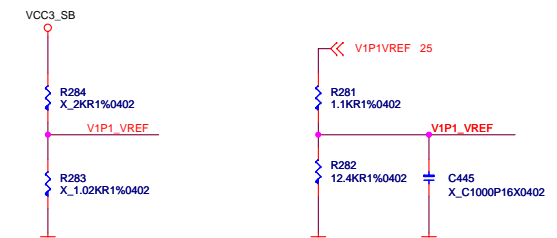
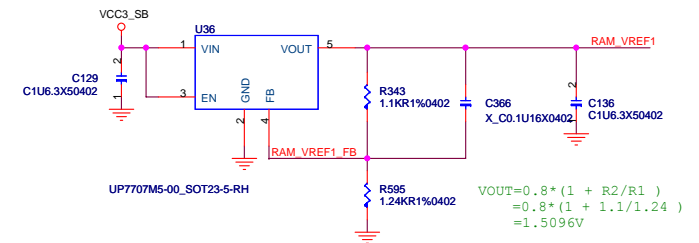
GMCH/ICH10 1.1V POWER
(30A)>17.47A

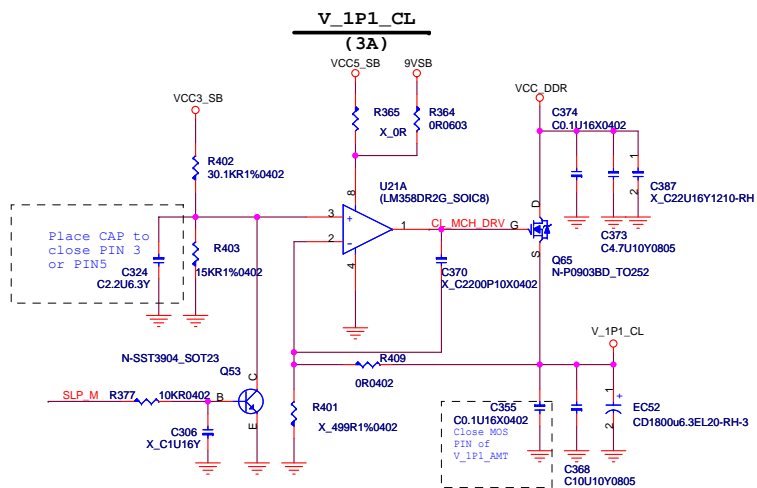


DDR VTT Power
(0.83A)

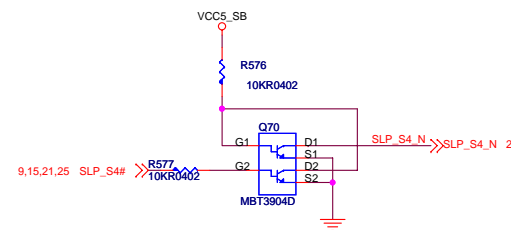


VCC_DDR reference Power

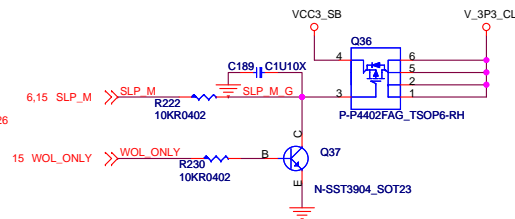




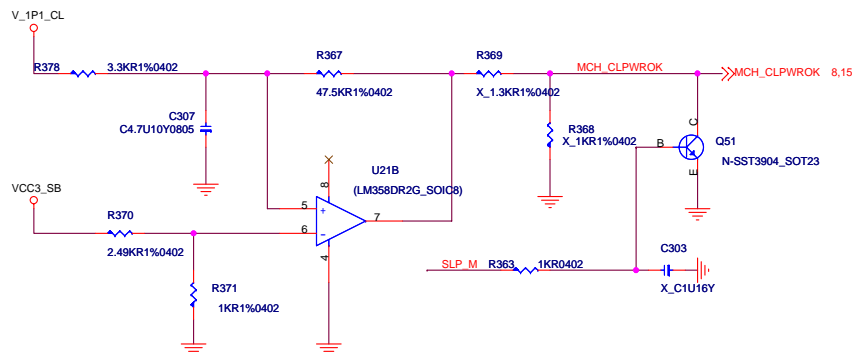
DIMM Softsart for iAMT



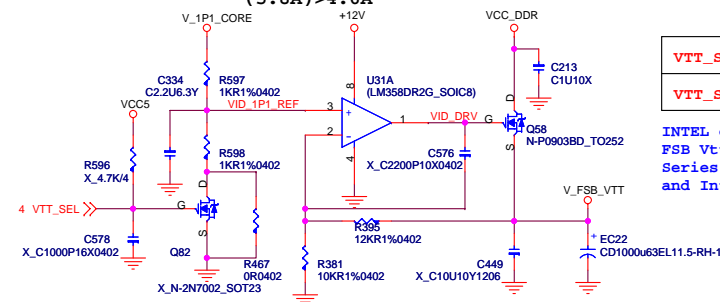
V_3P3_CL (711mA)



Reserve CL_PWROK circuit



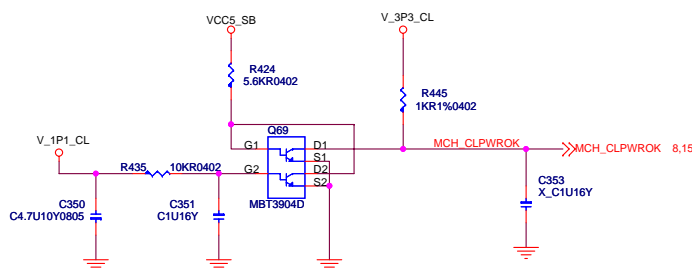
V_FSB_VTT POWER (5.8A) > 4.6A



| | |
|-------------|----------------|
| VTT_SEL = H | V_FSB_VTT=1.1V |
| VTT_SEL = L | V_FSB_VTT=1.2V |

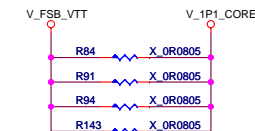
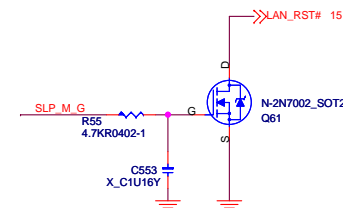
INTEL change updated
FSB Vtt will change from 1.1V to 1.2V for All Intel® Series Express Chipsets and the 45nm Intel® Core2 Quad and Intel® Core2 Duo processors.

CL_PWROK

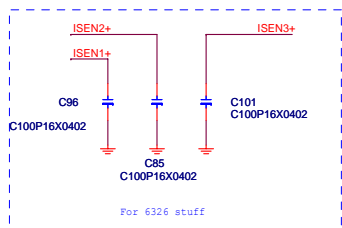
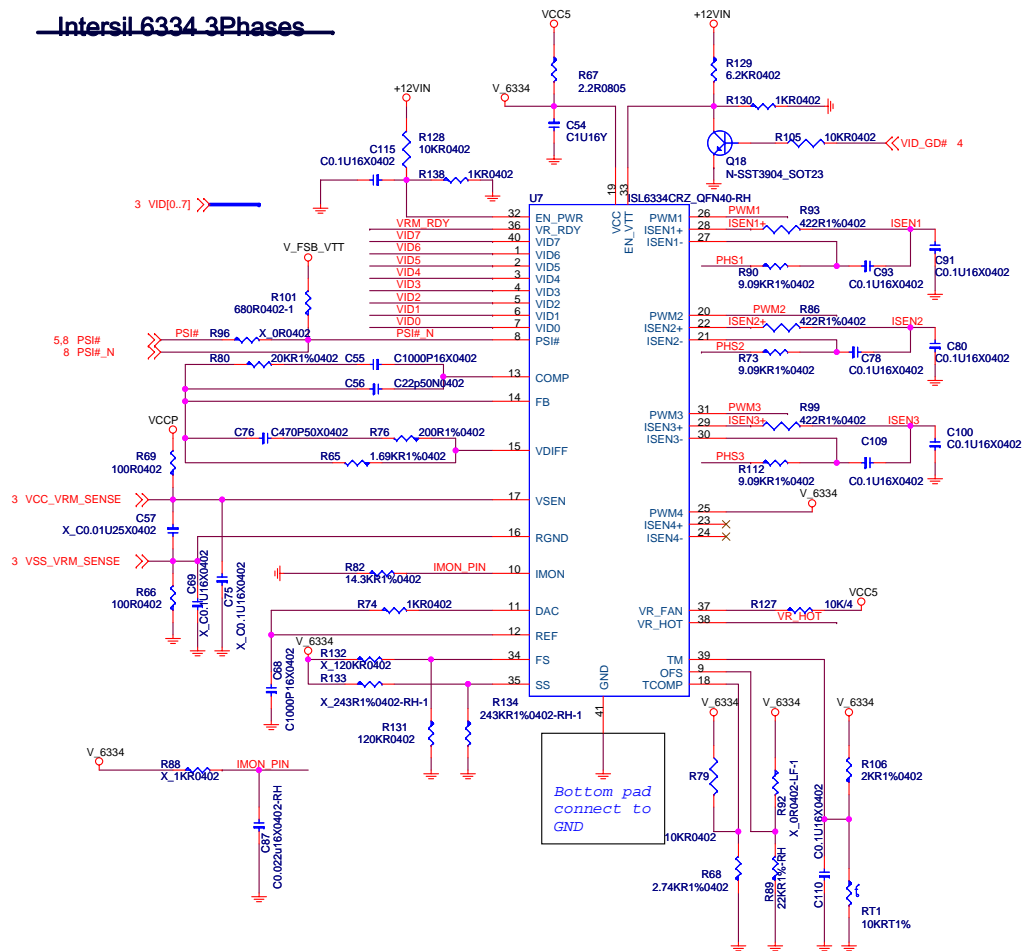


LAN_RST# PATCH

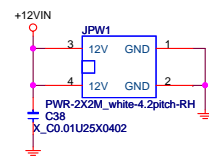
Accord to INTEL MOW23



Intersil 6334 3Phases



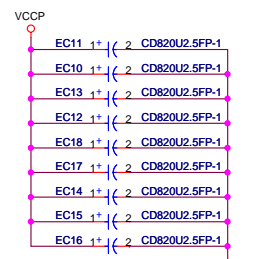
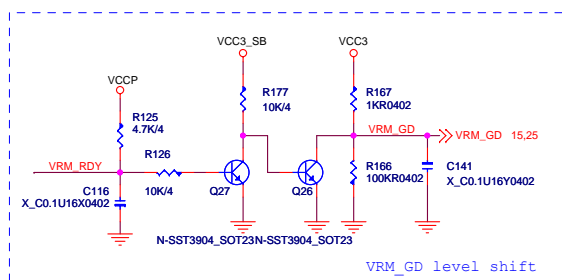
ATX12V Power Connector



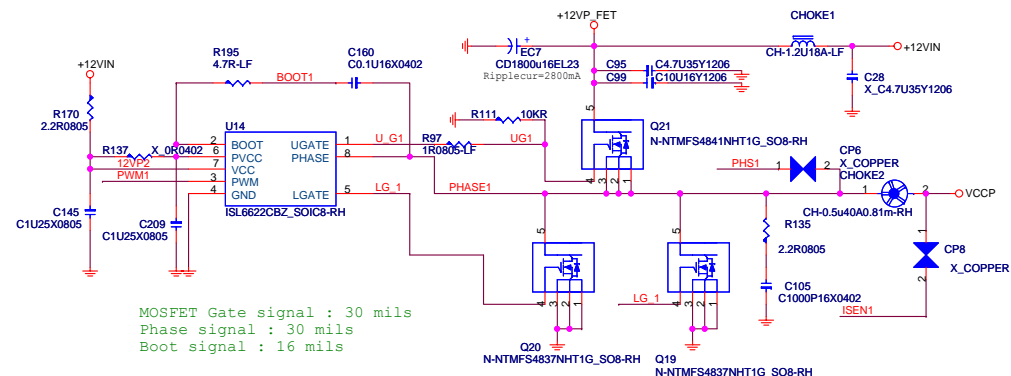
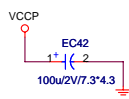
TDK
NTCG104KF104ET

```
VR FAN TRIP:1.69V ~ 80 degC
VR HOT TRIP:1.44V ~ 90 degC
```

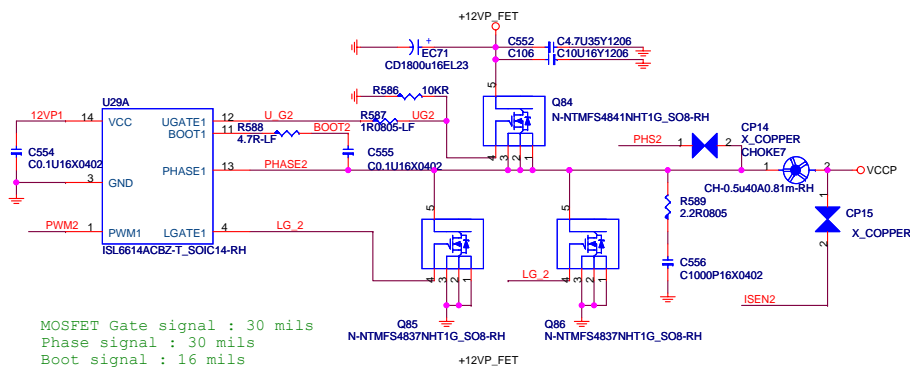
OS-CON Capacitors



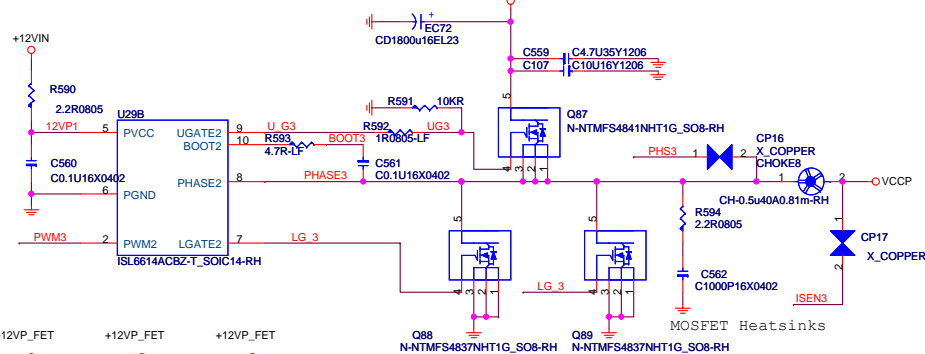
SP Capacitors



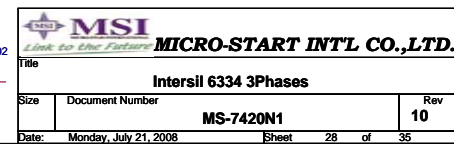
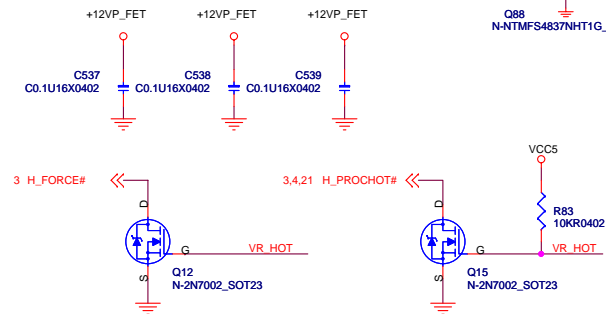
```
MOSFET Gate signal : 30 mils
Phase signal : 30 mils
Boot signal : 16 mils
```



```
MOSFET Gate signal : 30 mils
Phase signal : 30 mils
Boot signal : 16 mils
```



MOSFET Heatsinks



15 SATALED#

VCC5

Ic=200mA
Vbeo=5V
Vceo=40V

R57 1KR0402

Q10

R53 4.7KR0402-1
P-MMBT3906LT1G_SOT23-RH

120R R142

LED_HDD 20

Remove after MP

J2 X_H1X2_black-RH

R235

100R0402

FP_RST# 15

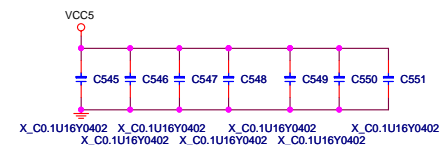
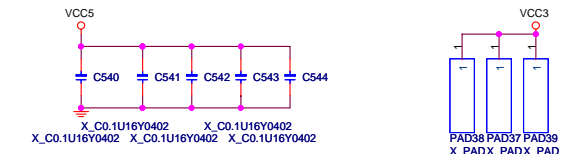
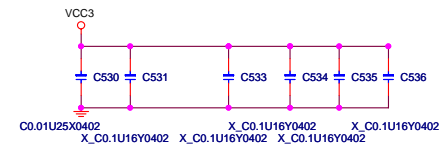
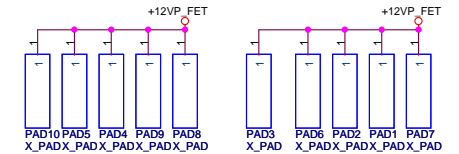
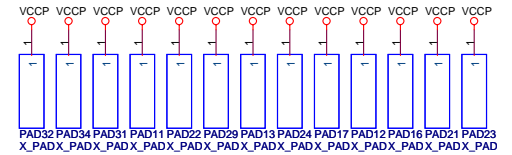
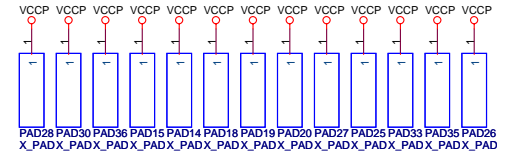
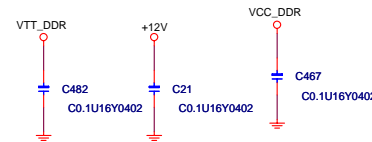
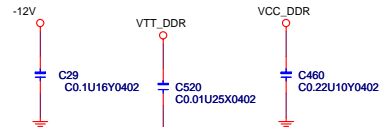
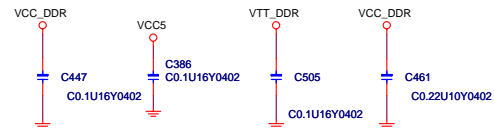
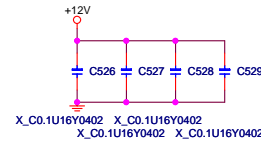
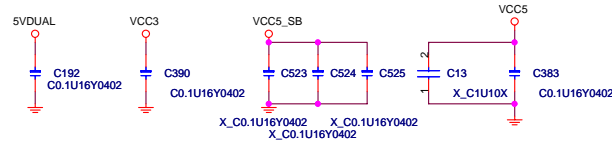
C206 C0.1U16Y0402

C201 X_C470P50X0402

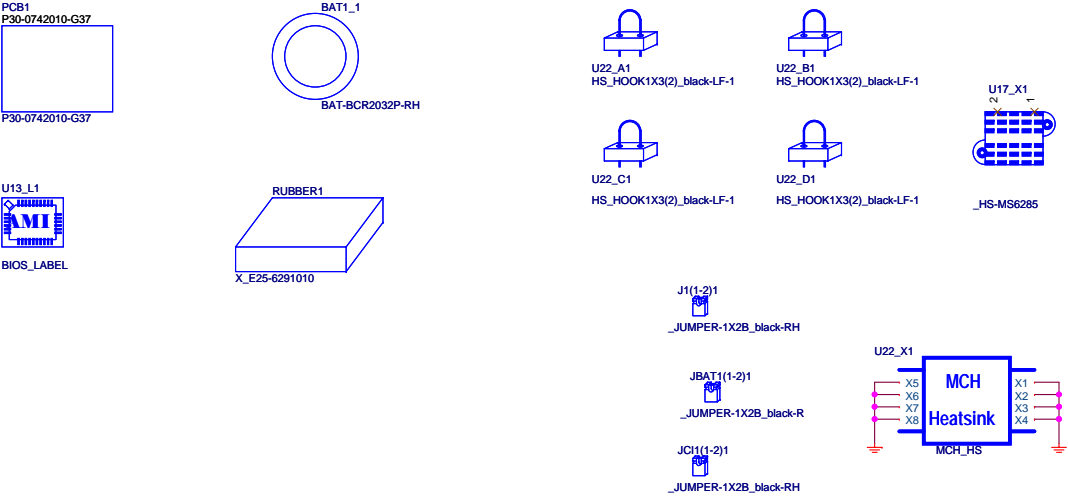
C199 C0.1U16Y0402
Place near CK_48M_USB_I_{CH} for EMI.

V_1P1_CORE
C305 C0.1U16Y04
Place near R643 for EMI.

A circuit diagram showing a capacitor labeled C0.01U25X0402 connected to a terminal labeled C86. The capacitor is represented by two parallel lines. The terminal C86 is a small circle on the left, and the capacitor is connected to a ground symbol on the right.



Auto-BOM Manual Parts



ICH10

| GPIO Pin | Type | Default | Function | Power | MUXED / UNMUXED | Pin-out |
|------------|------|-----------|--|---------|-----------------|---------|
| GPIO 0 | I/O | GPI | BMBUSY# function, Pull-up to VCC3 with 10K | VCC3 | MUXED | N7 |
| GPIO 1 | I/O | GPI | Pull-up to VCC3 with 10K | VCC3 | MUXED | AK21 |
| GPIO 2 | I/O | GPI | PIRQ#E pull-up to VCC3 with 8.2K | VCC3 | | K6 |
| GPIO 3 | I/O | GPI | PIRQ#F pull-up to VCC3 with 8.2K | VCC3 | | L7 |
| GPIO 4 | I/O | GPI | PIRQ#G pull-up to VCC3 with 8.2K | VCC3 | | F2 |
| GPIO 5 | I/O | GPI | PIRQ#H pull-up to VCC3 with 8.2K | VCC3 | | G2 |
| GPIO 6 | I/O | GPI | Pull-up to VCC3 with 10K | VCC3 | MUXED | AH22 |
| GPIO 7 | I/O | GPI | Pull-up to VCC3 with 10K | VCC3 | MUXED | AK23 |
| GPIO 8 | I/O | GPI | Reserve for DDR_PEROK, Pull-up to VCC_DDR with 10K | VCC3_SB | UNMUXED | A20 |
| GPIO 9 | I/O | GPO/WOL | WOL_ENABLE/GPIO9, pull-down with 100K | VCC3_SB | MUXED | A18 |
| GPIO 10 | I/O | GPI | Detect AUDIO Devices, Pull-up to VCC3_SB with 10K | VCC3_SB | MUXED | C17 |
| GPIO 11 | I/O | SMBALERT# | SMB_ALERT# pull-up to VCC3_SB with 10K | VCC3_SB | | C16 |
| GPIO 12 | I/O | GPO | LAN_DISABLE | VCC3_SB | UNMUXED | A8 |
| GPIO 13 | I/O | GPI | SIO_PME# connect to SIO, pull-up VCC3_SB with 10K | VCC3_SB | UNMUXED | A19 |
| GPIO 14 | I/O | GPI | Pull-up to VCC3_SB with 10K directly | VCC3_SB | MUXED | A9 |
| GPIO 15 | I/O | GPO | PCI_STOP# for CK505 IAMT | VCC3_SB | MUXED | C15 |
| GPIO 16 | I/O | GPO | FAN switch, pull-up VCC3 with 10K. | VCC3 | UNMUXED | M2 |
| GPIO 17 | I/O | GPI | Pull-up to VCC3 with 10K directly | VCC3 | MUXED | AH21 |
| GPIO 18 | I/O | GPO | GTLREF GPO | VCC3 | UNMUXED | K1 |
| GPIO 19 | I/O | GPI | Pull-up to VCC3 with 10K | VCC3 | | AE20 |
| GPIO 20 | I/O | GPO | GTLREF GPO | VCC3 | UNMUXED | AF5 |
| GPIO 21 | I/O | GPI | Pull-up to VCC3 with 10K | VCC3 | | AK25 |
| GPIO 22 | I/O | GPI | Pull-up to VCC3 with 10K | VCC3 | MUXED | AJ24 |
| GPIO 23 | I/O | LDRQ1# | LDRQ_1# pull-up VCC3 with 10K(Not Use) | VCC3 | MUXED | J3 |
| GPIO 24 | I/O | GPO | NC | 3.3V_SB | MUXED | A14 |
| GPIO 25 | I/O | GPO | CPU_STOP# for CK505 IAMT | 3.3V_SB | UNMUXED | B18 |
| GPIO 26 | I/O | GPO | S4 STATE# | 3.3V_SB | | C11 |
| GPIO 27 | I/O | GPO | NC | 3.3V_SB | | A11 |
| GPIO 28 | I/O | GPO | NC | 3.3V_SB | | G18 |
| GPIO 29 | I/O | OC5# | OC#4 connect to USB connector | 3.3V_SB | | N1 |
| GPIO 30 | I/O | OC6# | OC#6 connect to USB connector | 3.3V_SB | | N5 |
| GPIO 31 | I/O | OC7# | OC#6 connect to USB connector | 3.3V_SB | | M1 |
| GPIO 32 | I/O | GPO | PROHOT# for NEC Economy mode | VCC3 | UNMUXED | K2 |
| GPIO 33 | I/O | GPO | Pull-up to VCC3 with 4.7K through JC11 Jumper. (Default) | VCC3 | UNMUXED | AF6 |
| GPIO 34 | I/O | GPO | NC | VCC3 | UNMUXED | AH5 |
| GPIO 35 | I/O | GPO | Clear password | VCC3 | | L1 |
| GPIO 36 | I/O | GPI | Pull-up to VCC3 with 10K directly | VCC3 | | AE21 |
| GPIO 37 | I/O | GPI | Pull-up to VCC3 with 10K directly | VCC3 | | AE22 |
| GPIO 38 | I/O | GPI | Pull-up to VCC3 with 10K directly | VCC3 | | AK24 |
| GPIO 39 | I/O | GPI | Pull-up to VCC3 with 10K directly | VCC3 | | AH23 |
| GPIO 40 | I/O | OC1# | OC#0 connect to USB connector | 3.3V_SB | | N3 |
| GPIO 41 | I/O | OC2# | OC#2 connect to USB connector | 3.3V_SB | | P7 |
| GPIO 42 | I/O | OC3# | OC#2 connect to USB connector | 3.3V_SB | | R7 |
| GPIO 43 | I/O | OC4# | OC#4 connect to USB connector | 3.3V_SB | | N2 |
| GPIO 44/45 | I/O | OC8/9# | OC#6 connect to USB connector | 3.3V_SB | | P3/R6 |
| GPIO 46/47 | I/O | OC10/11# | OC#6 connect to USB connector | 3.3V_SB | | T7/P1 |
| GPIO 48 | I/O | GPI | Pull-up to VCC3 with 10K directly | VCC3 | | AD20 |
| GPIO 49 | I/O | GPO | DMI strapping, pull-down 2.2K to GND | VCC3 | | AJ25 |
| GPIO 50 | I/O | REQ1# | REQ1 pull-up to VCC5 with 2.7K | VCC5 | MUXED | G13 |
| GPIO 51 | I/O | GNT1# | GNT1# | VCC5 | MUXED | A7 |
| GPIO 52 | I/O | REQ2# | REQ2 pull-up to VCC5 with 8.2K | VCC5 | MUXED | F13 |
| GPIO 53 | I/O | GNT2# | GNT2# | VCC3 | MUXED | C7 |
| GPIO 54 | I/O | REQ3# | REQ3 pull-up to VCC5 with 2.7K | VCC5 | MUXED | G8 |
| GPIO 55 | I/O | GNT3# | GNT3#(Not Use) | VCC3 | MUXED | F7 |
| GPIO 56 | I/O | GPI | Clear password, pull-up to VCC3_SB with 10K. | 3.3V_SB | MUXED | F16 |
| GPIO 57 | I/O | GPI | Pull-up to VCC3_SB with 10K directly for TPM_PP | 3.3V_SB | MUXED | C12 |
| GPIO 58 | I/O | SPI_CS1 | SPI_CS#(Not Use), SPI_CS1_F#(Not Use) | 3.3V_SB | MUXED | F23 |
| GPIO 59 | I/O | OC0# | OC#0 connect to USB connector | 3.3V_SB | | P5 |
| GPIO 60 | I/O | LINKALERT | LINKALERT# pull-up to VCC3_SB with 10K | 3.3V_SB | | F18 |

PCI Configuration

| DEVICE | MCP1 INT Pin | REQ#/GNT# | IDSEL | CLOCK |
|-------------------|--------------------------------------|------------------|-------|----------|
| Riser slot (PCI1) | PIRQ#B PIRQ#C PIRQ#D PIRQ#A | PREQ#1 PGNT#1 | AD17 | PCI_CLK1 |

DDR2 DIMM Configuration

| DEVICE | ADDRESS | CLOCK |
|--------|---------|--------------------------------------|
| DIMM 1 | 0A0H | SCLK_A0/SCLK_A0# SCLK_A2/SCLK_A2# |
| DIMM 2 | 0A4H | SCLK_B0/SCLK_B0# SCLK_B2/SCLK_B2# |

SIO - SMSC-5617C Configuration

| PIN NAME | PIN# | USAGE | Input/Output |
|----------|------|-------------|--------------|
| GP41 | 77 | SIO_PME# | OUTPUT |
| GP25 | 30 | SMBCLK | INPUT |
| GP26 | 29 | SMBCLK_ISO | INPUT |
| GP35 | 28 | SMBDATA | OUTPUT |
| GP42 | 27 | SMBDATA_ISO | OUTPUT |
| | | | |

SMBus Distribution

| | | |
|------------|---------|----------------------------------|
| SMBus | Power | Load |
| SMBCLK | VCC3_SB | SIO, ICH10, PCI EXPRESS[X16][X1] |
| SMBCLK_ISO | VCC3 | DIMM, CLK GEN, MS7 |

Jumper Setting

| | | |
|-------|--------------------|---------------------------|
| JBAT1 | (1-2)Normal | (2-3)Clear CMOS |
| JC11 | (1-2)Normal | (2-3)ME Disable for FPROG |
| J1 | (1-2)short: Normal | (1-2)Open: Clear PW |

| LGA775-CPU | | |
|------------------------|---|------|
| 0.8375V - 1.6000V Core | - | 84A |
| 1.1V FSB Vtt | - | 4.6A |

| Eaglelake (GMCH) | | |
|------------------------|---|--------|
| 1.1V FSB_VTT | - | 1.2 A |
| 1.1V Core TBD (USE LB) | - | 13.8A |
| 1.1V DMI/PCI Exp. | - | 2.47 A |
| 1.5V VCC_DDR | - | 3.33A |
| 1.5V VCC_SMCLK | - | 350mA |
| 3.3V VCCA_DAC | - | 66 mA |
| 3.3V VCC33 | - | 15.8mA |
| 1.1V Vcc CL | - | 4.3A |

| ICH10 | | |
|---------------------|---|--------|
| 1.1V DMI | - | 41 mA |
| 1.1V Core | - | 1.16A |
| 1.5V_A USB/SATA/PLL | - | 1.652A |
| 1.5V_B PCI Exp. | - | 0.646A |
| VCCRTC | - | 6 uA |
| 3.3V CL | - | 19 mA |
| 1.5V GbE LAN | - | 87 mA |
| 3.3V VccSus3_3 | - | 200mA |
| 3.3V Vcc3_3 | - | 308mA |
| 3.3V 10/100 LAN | - | 19 mA |
| 3.3V GbE LAN | - | 1 mA |
| 3.3V HDA | - | 32 mA |
| 3.3V SusHDA | - | 33 mA |

| HD Audio ALC262VD | | |
|-------------------|---|-------|
| 3.3V AUDIO | - | 40mA |
| 5V AUDIO | - | 200mA |

| IDTCV184-2 | | |
|-------------------------|---|-------|
| 3.3V VDD_48/PCI/REF | - | 250mA |
| 0.3V-1V CPU/SRC/DOT/PLL | - | 80mA |

| Boazman GbE | | |
|-------------------|---|---------|
| 3.3V_SB I/O & LED | - | 15.5mA |
| 1.8V AVDD | - | 418.2mA |
| 1.0V Core | - | 277.2mA |

| ISL6334 | | |
|----------------|---|-----------------|
| VCCP VRD11.1 | - | 0.8375V-1.6000V |
| 3-Phase Switch | - | |

| W83310DS | | |
|----------|---|--------------------|
| VTT_DDR | - | 0.75V Linear 0.83A |

| MS11+ SW-Power | | |
|----------------|---|-----------------|
| VCC_DDR | - | 1.5V PWM 19.66A |

| MS11+ SW-Power | | |
|----------------|---|-----------------|
| V_1P1_CORE | - | 1.1V PWM 17.47A |

| MS7 Controller | | |
|----------------|---|----------------|
| V_1P1_CL | - | 1.1V Linear 3A |

| V_1P5_ICH | | |
|-------------|---|--------|
| 1.5V Linear | - | 2.385A |

| VCC3_SB | | |
|-------------|---|-------|
| 3.3V Linear | - | 3.96A |

| 5VDUAL1 | | |
|-----------|---|--------|
| 5V Switch | - | 4.367A |

| 5VDIMM | | |
|-----------|---|-------|
| 5V Switch | - | 8.29A |

| DDRIII x2 & TERMINATOR | | |
|------------------------|---|-------|
| 0.75V VTT_DDR | - | 1.2A |
| 1.5V VCC_DDR (S0,S1) | - | 3.6A |
| 1.5V VCC_DDR (S3) | - | TBDmA |

| PCI Express x16 slot | | |
|----------------------|---|-------|
| +12V | - | 5.5 A |
| +3.3Vaux (wake) | - | 375mA |
| +3.3Vaux (no wake) | - | 20mA |
| +3.3V | - | 3.0A |

| AGP Extender riser slot | | |
|-------------------------|-------------|-------|
| | Luner Eagle | |
| +12V | - | 1A |
| +5V | - | 5.0A |
| +3.3Vaux | - | 750mA |
| +3.3V | - | 10.6A |

| PCI_E x1 slot | | |
|---------------|---|-------|
| +12V | - | 0.5A |
| +3.3Vaux | - | 375mA |
| +3.3V | - | 3.0A |

| PCI slot | | |
|----------|---|-------|
| +12V | - | 0.5A |
| +3.3Vaux | - | 375mA |
| +3.3V | - | 7.6A |
| +5V | - | 5.0A |

| USB x 8 | | |
|-------------|---|------|
| +5V (S0,S1) | - | 4A |
| +5V (S3) | - | 20mA |

| PS2 | | |
|-------------|---|-------|
| +5V (S0,S1) | - | 345mA |
| +5V (S3) | - | 2.0mA |

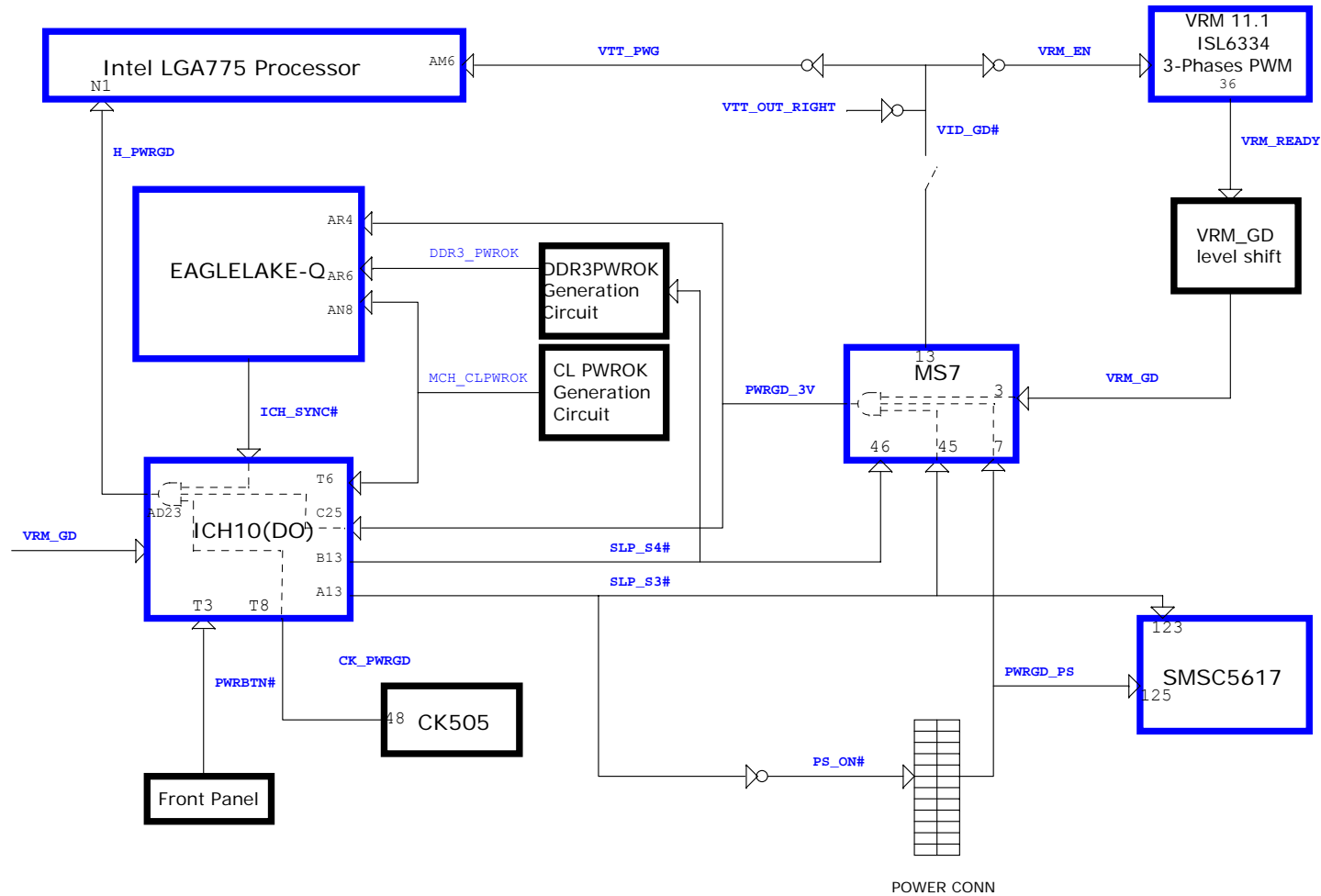
5VAudio
+5VR
500mA

+12V
ATX
2x2

+5V +3.3V +5VSB +12V
ATX POWER

3V
Battery

PWROK MAP



[illegible]

■MS-7420N1-970609.DSN
76Add V_FSB_VTT circuit and change capacitor of related eith V_FSB_VTT to 1.2V.....Intel design change update..
77Add Q83.....Due to V_FSB_VTT become to 1.2V ,VTT_DDR POWER increase to 19.66 A, so add a low size MOS for DDR POWER.
78Remove EC72Due to V_FSB_VTT become to 1.2V,V_1P1_CORE reduce from 23.27 A to 17.47 A,I rip become to 8.211A,so remove EC27.
79..Reserve R84,R91,R94,R413 between V_FSB_VTT and V_1P1_CORE.....
80Use copper instead R311Due to V_FSB_VTT become to 1.2V for layout space concern.
81Delete R399.....Have not use.
82Stuff R55,R246 un-mount.....For INFINEON require, change LPCPD# of TPM 1.2 to VCC3

■MS-7420N1-970718.DSN
83change R361 to 100ohm,C231 to 1u X7R.....Follow INTEL MOW
84change C68 to 1nF.....Follow INTEL MOW and Intersil recommendation.
85Change R85,R84 to 10K.....fine turn CPU FAN (TACH) voltage to 3.3V
86R237 change to 402ohm,R562 change to 750 ohm.....update OCP setup dut to FSB_VTT change .
87R261 change to 1M ohm.....Follow INTEL desig guide.
88Add Q61,R55,reserve C553.....Follow INTEL MOW23
89change PECl VREF (U3.31),R78 power source to V_FSB_VTT.....Just same the CPU FSB 1.2V level
90change R101 to V_FSB_VTT source.....Just same the CPU FSB 1.2V level
91Change SB1.AH28/SB1/AJ30 to V_FSB_VTT.....Just same the CPU FSB 1.2V level
92change TPM1.2(U11) to 3.16 H/W
93Remove JLPc1
94Remove R439,R447.....Have not use.
95Delete R581,R413,C343,C334,R581.....Have not use.
96change POP noise circuit as below.....Follow NECP request.
97udpate V_FSB_VTT circuit.....For V_FSB_VTT and V_1P1_Core power sequencing error issue.
98Deal with OP not used.....
99Add C486..... For DIMM power quality
100Chang VCCAVRM_EXP to V_1P1_CORE ,add C343 4.7uF..... intel design guide update,slove V_1P1_CORE glitch issue.
101chane GOIO33 To same as CLEAR CMOS connect way.....Per NEC request.
102Delete C532..... Due to layout space not enough