CONTENT	SHEET
Cover Sheet, Block diagram	1-2
Intel LGA775 CPU - Signals	3-5
Intel Bearlake - FSB, PCIE, DMI, VGA, MSIC	6
Intel Bearlake - Memory DDR2	7
Intel Bearlake - Power / GND	8-9
ICH9 - PCI, USB, DMI, PCIE	10
ICH9 - Host, DMI, SATA, Audio, SPI, RTC, MSIC	11
ICH9 - Power, GND	12
DDR2 Channel-1 / Channel-2	13-14
SLG84516BT CLK Gen.	15
SCH5617, COM1,2, FDD	16
CPU/SYS/PWR FAN	17
PCI-Express x16 & x1	18
PCI Slot	19
USB CONNECTOR	20
ATX ,Front Panel & VGA Connector	21
KB/MS/TPM/PARALLEL	22
VRD11 Intersil 6312 3Phase	23
MS7 ACPI Controller	24
SATA&V_1P25_CORE	25
Broadcom-BCM5787M	26
LAN-NINEVEH 82566	27
HD Audio ALC262	28
GPIO & Jumper setting	29
MANUAL PARTS	30
POWER Distribution	31
PWROK MAP	32
RESET MAP	33
History	34

NEC:ROPROS

MS-7410 uATX

Version: 0A

CPU: Intel, Socket 775 (Intel Core 2 Duo Processors, Intel Pentium D Processors, Intel Pentium 4 Processors, Intel Celeron D Processors)--65-95 watts Intel Core 2 Duo, Pentium D, Celeron D

System Chipset:

Intel Bearlake - Q (North Bridge)
Intel ICH9 Series (South Bridge)
ROPROS-MA use ICH9 / ROPROS-VS use ICH9DH / ROPROS-NECCAP use ICH9R

On Board Device:

CLOCK Gen -- SLG84516BT CLK Gen.
LPC Super I/O -- SCH5617
LAN -- Broadcom-BCM5787M LAN -- INTEL 82566 (Support ViiV)
HD Audio Codec -- ALC262 VER:C2
TPM - SLB9635

Main Memory:

Dual-channel DDR-II * 4

Expansion Slots:

PCI EXPRESS X16 SLOT *1
PCI EXPRESS X1 SLOT * 1
PCI SLOT * 2

PWM: VRD11 Intersil 6312 3Phase

How to distinguish the different SKU

BLUE Color which mean ROPROS-MA
PINK Color which mean ROPROS-VS
GREEN Color which mean ROPROS-NECCAP
BROWN Color which mean the part reserve

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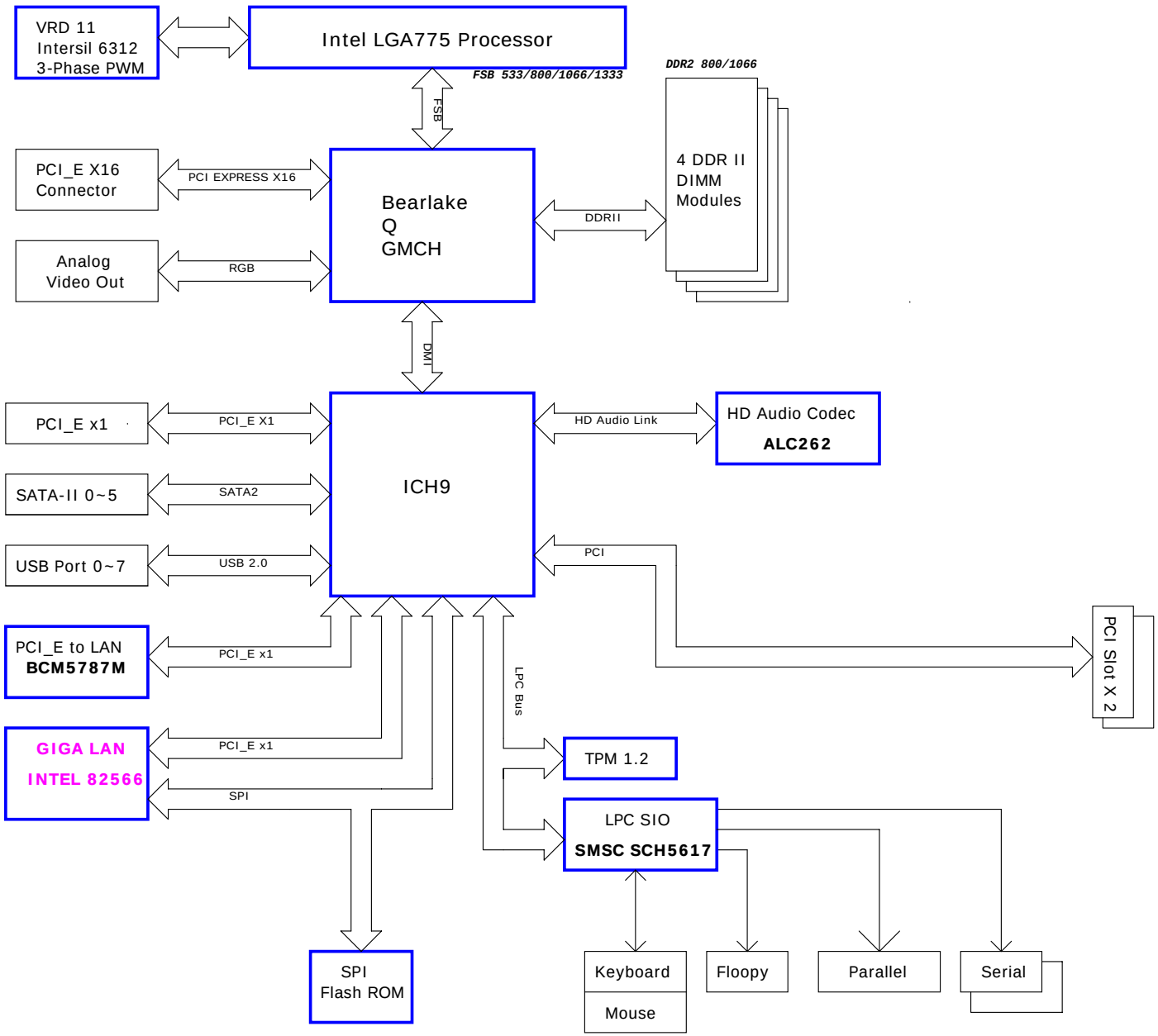
MS-7410

Size: Custom | Document Description: COVER SHEET | Rev: 0A

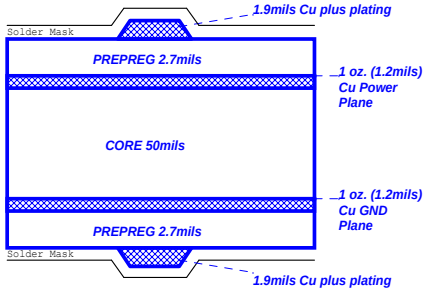
Date: Thursday, August 09, 2007 | Sheet 1 of 34

Block Diagram



Board Stack-up

(1080 Prepreg Considerations)



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

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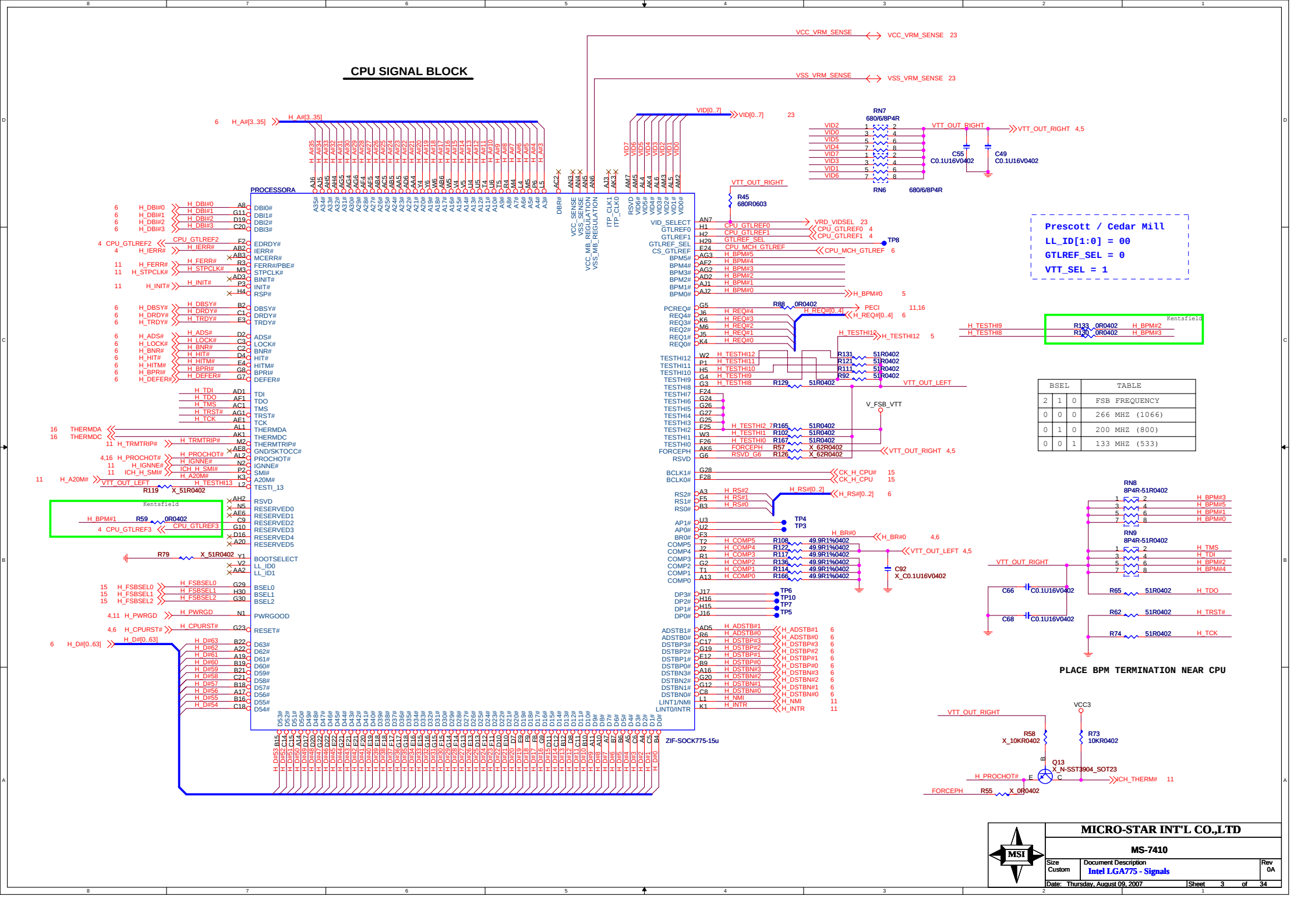
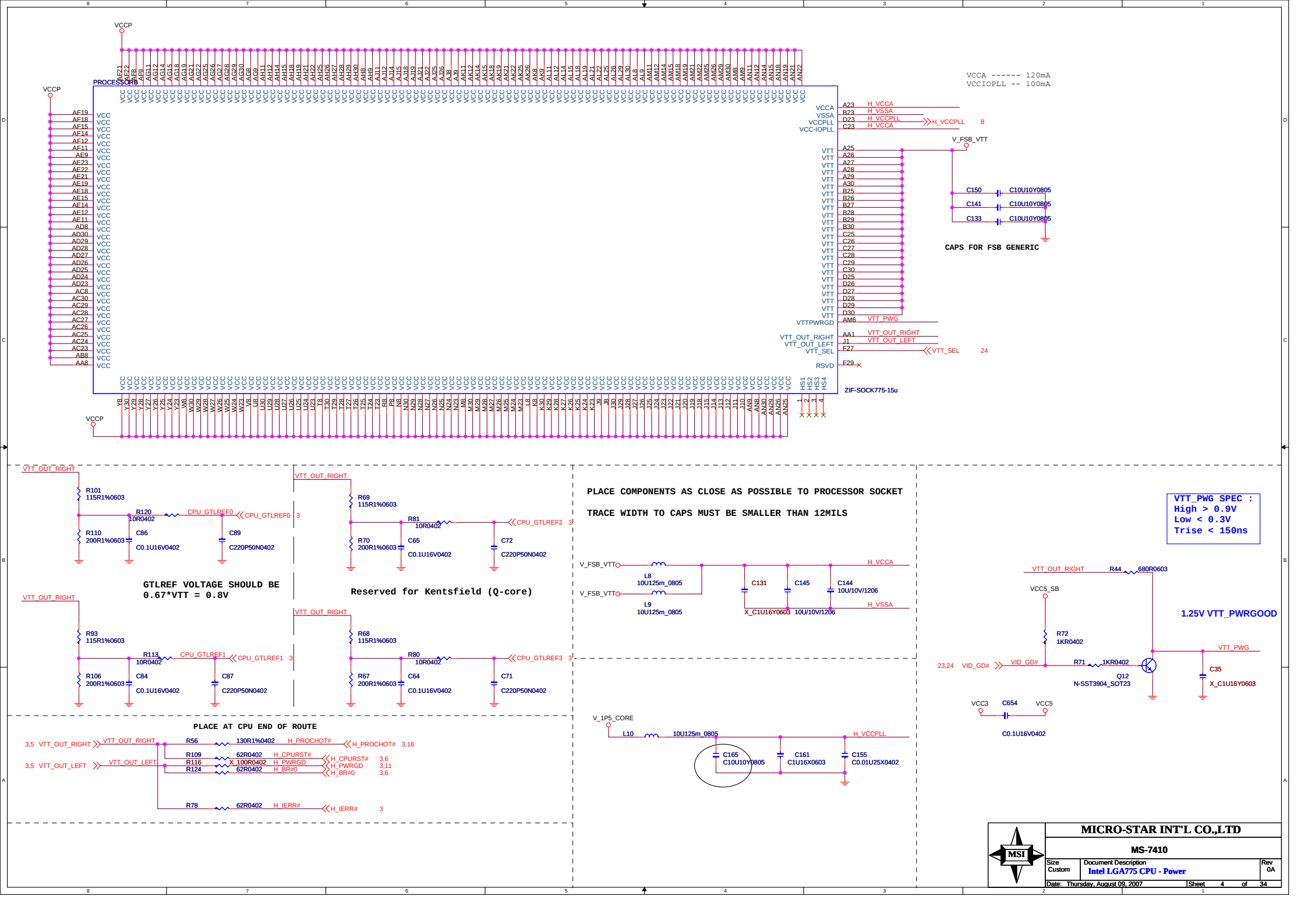
MS-7410		
Size: Custom	Document Description: BLOCK DIAGRAM	Rev: 0A
Date: Thursday, August 09, 2007	Sheet 2 of 34	

CPU SIGNAL BLOCK




PROCESSOR
ZIF-SOCK775-15u
VCCA ------ 120mA
VCCIOPLL -- 100mA
CAPS FOR FSB GENERIC
VTT_PWG SPEC :
High > 0.9V
Low < 0.3V
Trise < 150ns
GTLREF VOLTAGE SHOULD BE
0.67*VTT = 0.8V
Reserved for Kentsfield (Q-core)
PLACE COMPONENTS AS CLOSE AS POSSIBLE TO PROCESSOR SOCKET
TRACE WIDTH TO CAPS MUST BE SMALLER THAN 12MILS
PLACE AT CPU END OF ROUTE
1.25V VTT_PWRGOOD
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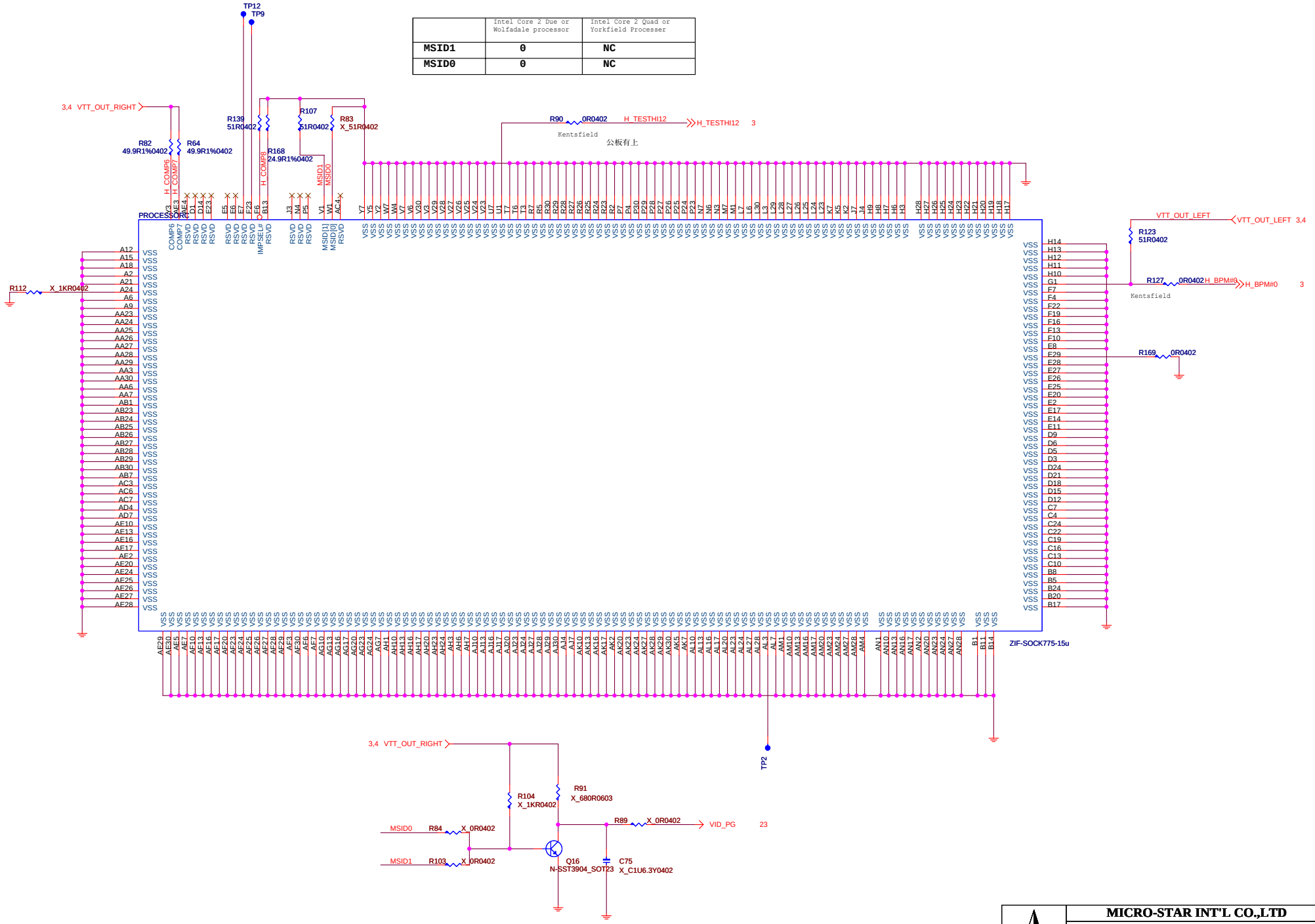
MS-7410
Intel LGA775 CPU - Power
Date: Thursday, August 09, 2007
Sheet 4 of 34

	Intel Core 2 Due or Wolfadale processor	Intel Core 2 Quad or Yorkfield Processer
MSID1	0	NC
MSID0	0	NC



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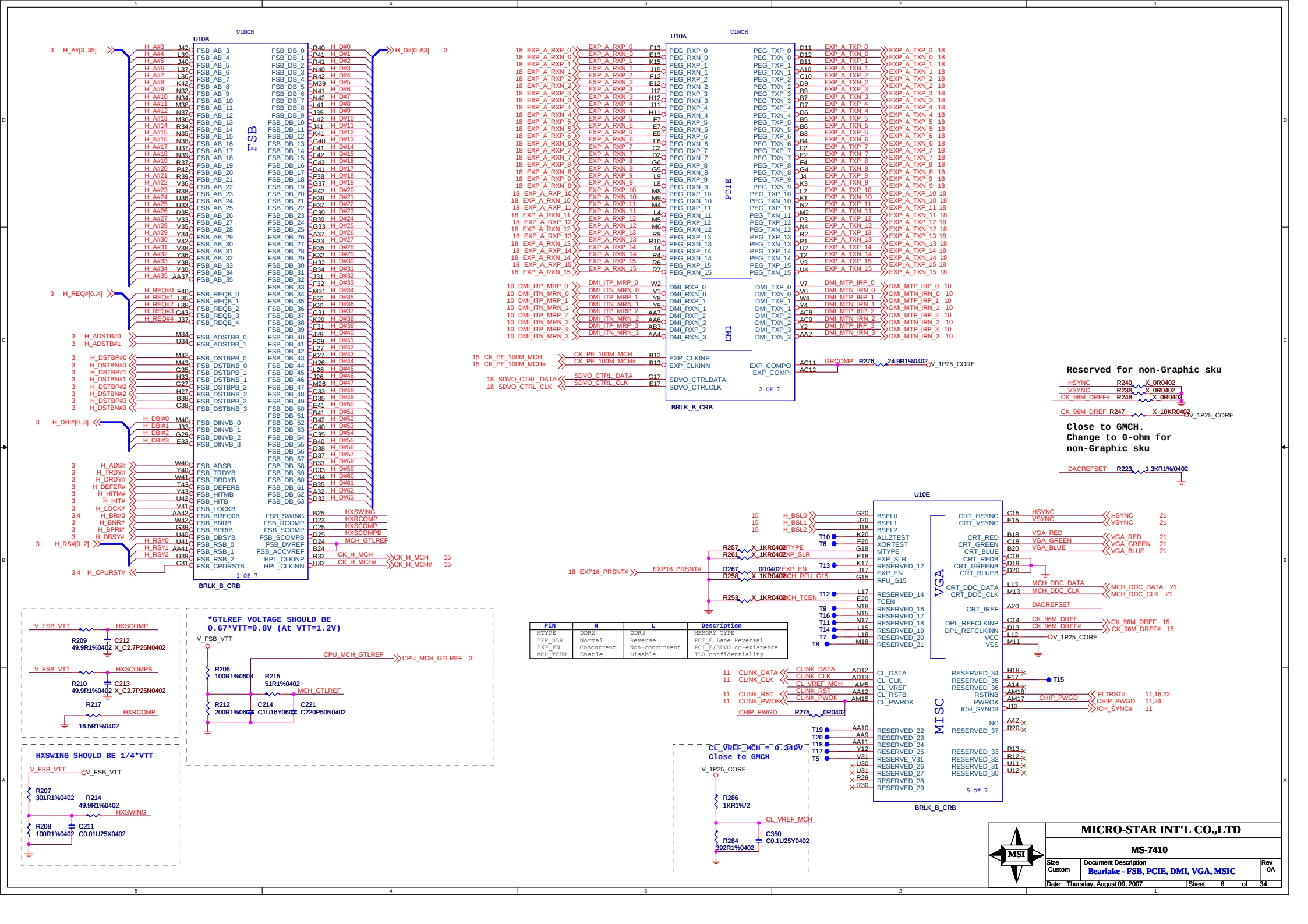
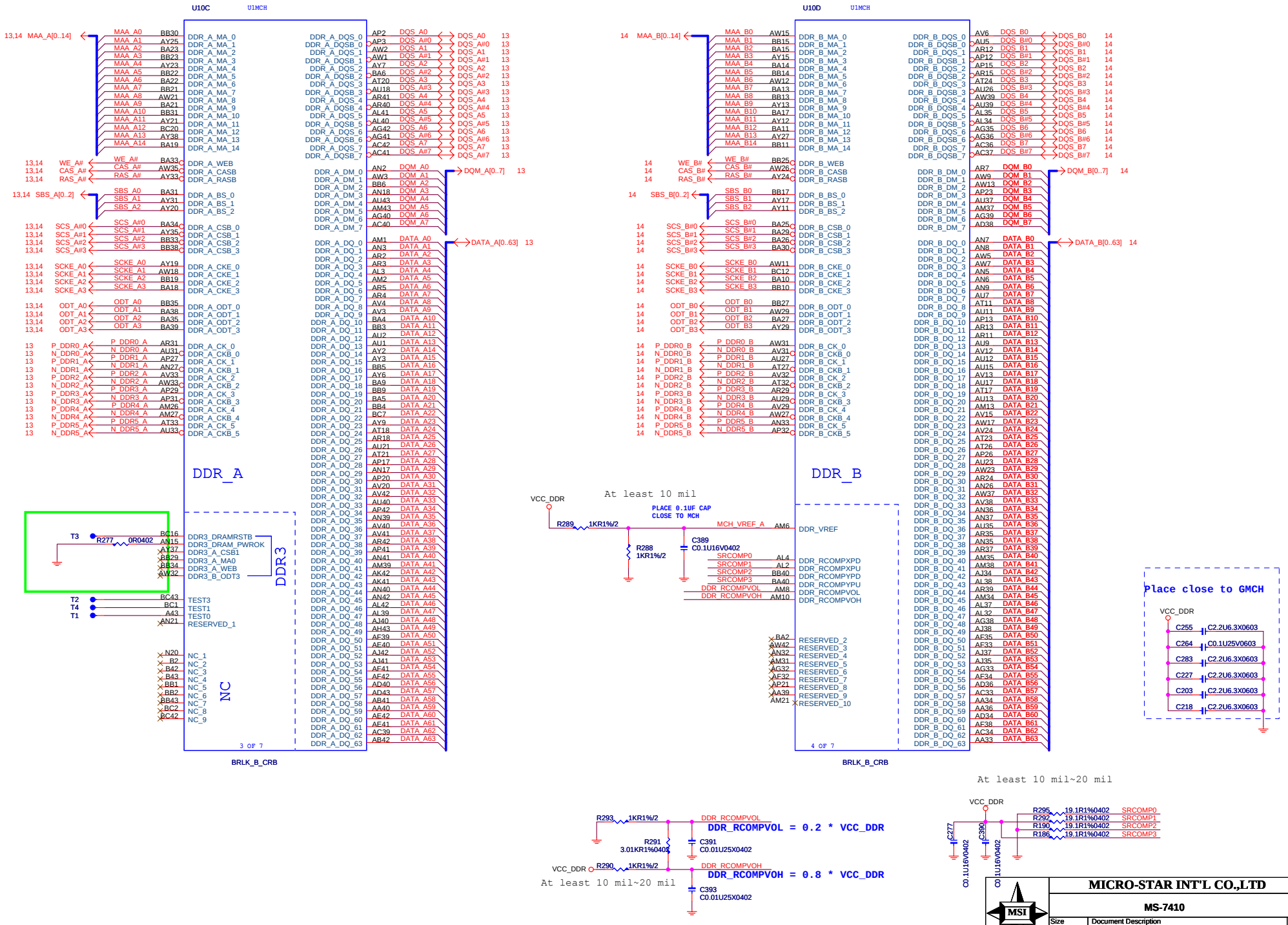
MS-7410

Size	Document Description	Rev
Custom	Intel LGA775 CPU - GND	0A

Date: Thursday, August 09, 2007 Sheet 5 of 34



PIN	H	L	Description
MTYPE	DDR2	DDR3	MEMORY TYPE
EXP_SLR	Normal	Reverse	PCI_E Lane Reversal
EXP_EN	Concurrent	Non-concurrent	PCI_E/SDVO co-existence
MCH_TCEN	Enable	Disable	TLS confidentiality


U10C
U1MCH
DDR_A
DDR3
NC
BRLK_B_CRB
3 OF 7
U10D
DDR_B
4 OF 7
At least 10 mil
PLACE 0.1UF CAP
CLOSE TO MCH
VCC_DDR
R289 1KR1%/2
R288 1KR1%/2
C389 C0.1U16V0402
MCH_VREF_A
SRCOMP0
SRCOMP1
SRCOMP2
SRCOMP3
DDR_RCOMPVOL
DDR_RCOMPVOH
Place close to GMCH
C255 C2.2U6.3X0603
C264 C0.1U25V0603
C283 C2.2U6.3X0603
C227 C2.2U6.3X0603
C203 C2.2U6.3X0603
C218 C2.2U6.3X0603
R293 1KR1%/2
R291 3.01KR1%0402
R290 1KR1%/2
C391 C0.01U25X0402
C393 C0.01U25X0402
DDR_RCOMPVOL = 0.2 * VCC_DDR
DDR_RCOMPVOH = 0.8 * VCC_DDR
At least 10 mil~20 mil
R295 19.1R1%0402
R292 19.1R1%0402
R190 19.1R1%0402
R186 19.1R1%0402
C277 C0.1U16V0402
C390 C0.1U16V0402
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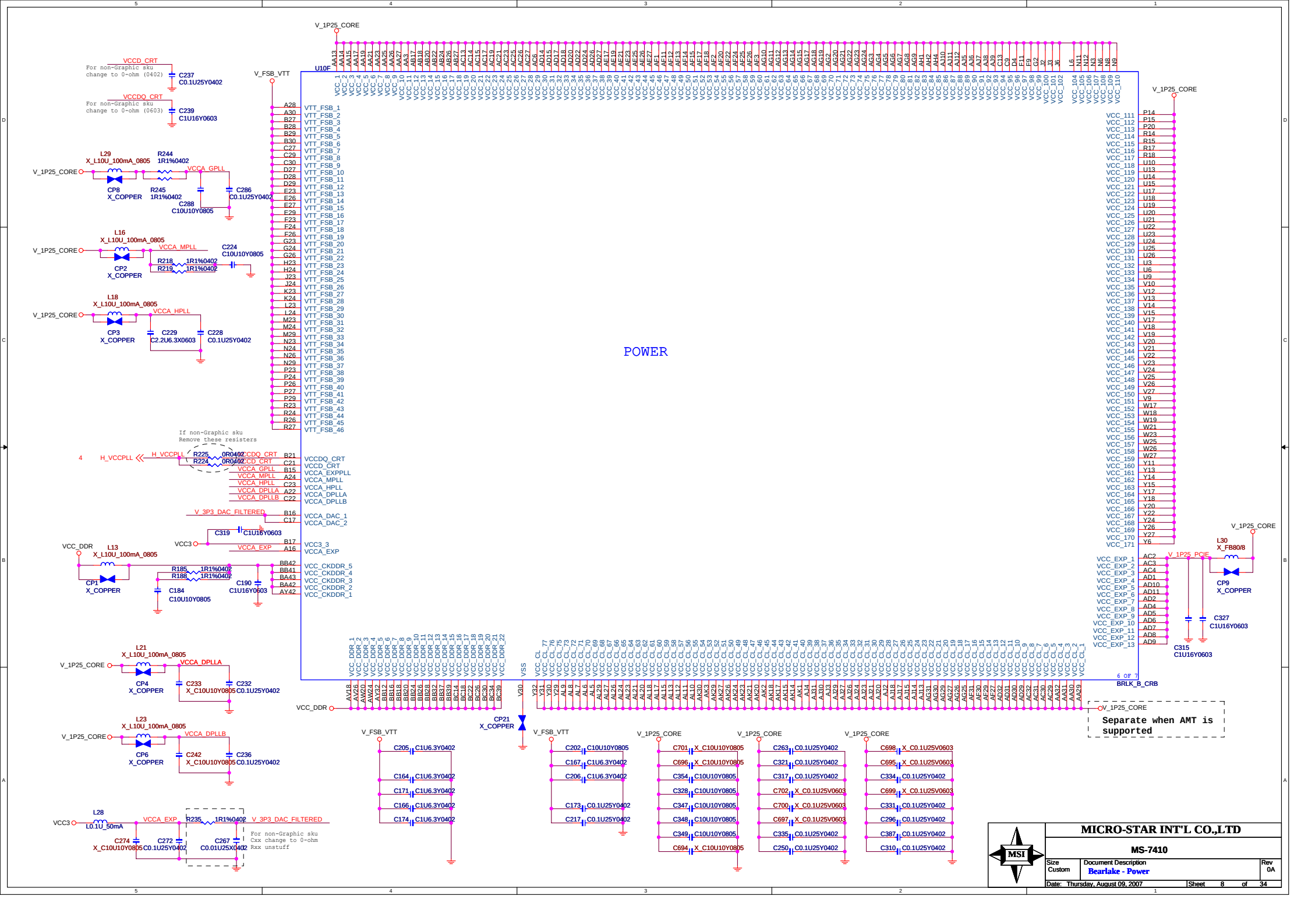
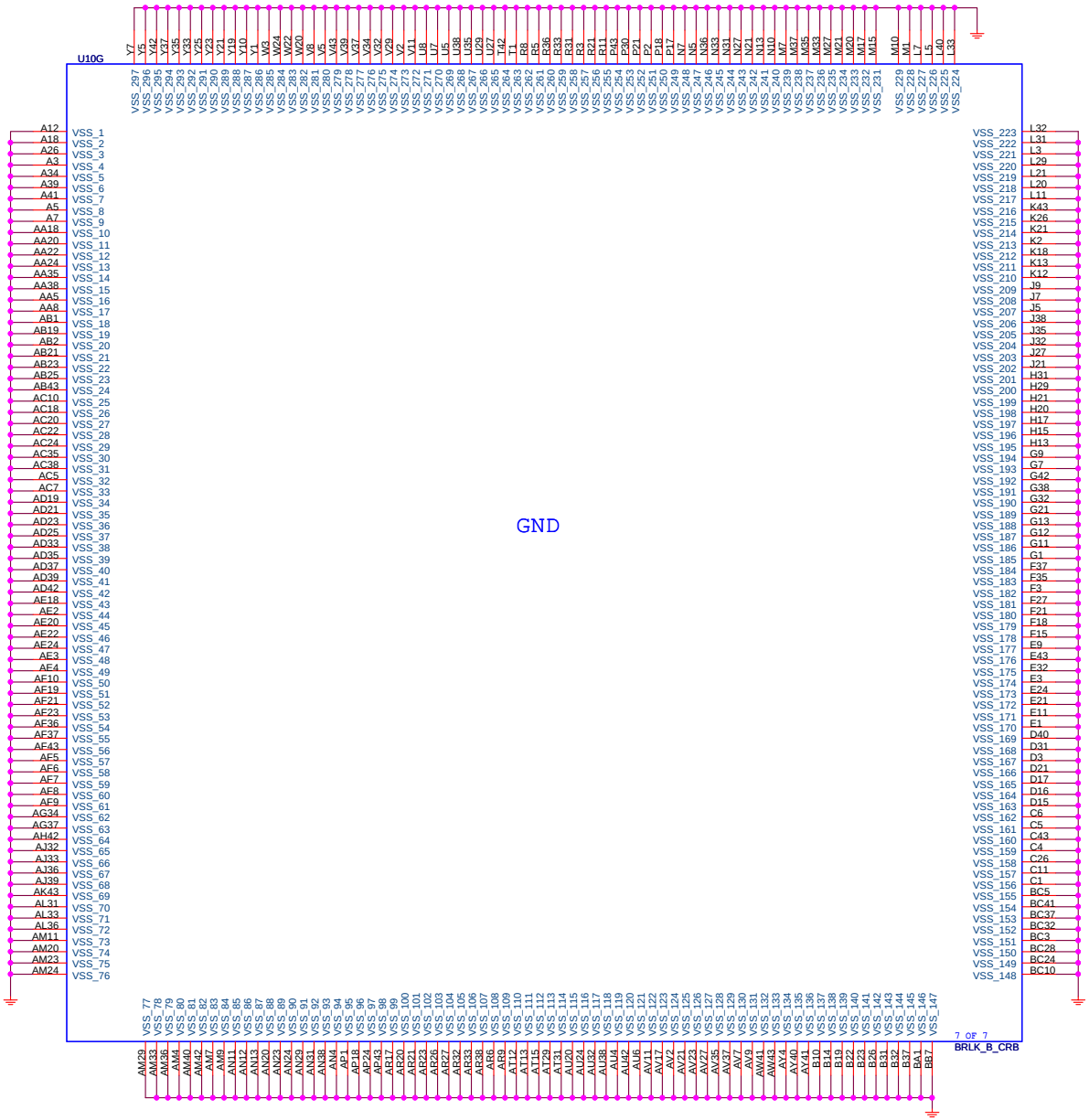
MS-7410
Size Custom
Document Description
Bearlake - Memory
Rev 0A
Date: Thursday, August 09, 2007
Sheet 7 of 34


POWER
U10F
V_1P25_CORE
V_FSB_VTT
VCCD_CRT
For non-Graphic sku change to 0-ohm (0402)
C237 C0.1U25Y0402
VCCDQ_CRT
For non-Graphic sku change to 0-ohm (0603)
C239 C1U16Y0603
L29 X_L10U_100mA_0805
R244 1R1%0402
VCCA_GPLL
CP8 X_COPPER
R245 1R1%0402
C286 C0.1U25Y0402
C288 C10U10Y0805
L16 X_L10U_100mA_0805
VCCA_MPLL
C224 C10U10Y0805
R218 1R1%0402
R219 1R1%0402
CP2 X_COPPER
L18 X_L10U_100mA_0805
VCCA_HPLL
CP3 X_COPPER
C229 C2.2U6.3X0603
C228 C0.1U25Y0402
If non-Graphic sku Remove these resisters
H_VCCPLL
R225 0R0402
R224 0R0402
V_3P3_DAC_FILTERED
C319 C1U16Y0603
VCC_DDR
L13 X_L10U_100mA_0805
VCC3
VCCA_EXP
R185 1R1%0402
R188 1R1%0402
CP1 X_COPPER
C184 C10U10Y0805
C190 C1U16Y0603
L21 X_L10U_100mA_0805
VCCA_DPLLA
CP4 X_COPPER
C233 X_C10U10Y0805
C232 C0.1U25Y0402
L23 X_L10U_100mA_0805
VCCA_DPLLB
CP6 X_COPPER
C242 X_C10U10Y0805
C236 C0.1U25Y0402
L28 L0.1U_50mA
R235 1R1%0402
C274 X_C10U10Y0805
C272 C0.1U25Y0402
C267 C0.01U25X0402
For non-Graphic sku Cxx change to 0-ohm Rxx unstuff
VTT_FSB_1 VTT_FSB_2 VTT_FSB_3 VTT_FSB_4 VTT_FSB_5 VTT_FSB_6 VTT_FSB_7 VTT_FSB_8 VTT_FSB_9 VTT_FSB_10 VTT_FSB_11 VTT_FSB_12 VTT_FSB_13 VTT_FSB_14 VTT_FSB_15 VTT_FSB_16 VTT_FSB_17 VTT_FSB_18 VTT_FSB_19 VTT_FSB_20 VTT_FSB_21 VTT_FSB_22 VTT_FSB_23 VTT_FSB_24 VTT_FSB_25 VTT_FSB_26 VTT_FSB_27 VTT_FSB_28 VTT_FSB_29 VTT_FSB_30 VTT_FSB_31 VTT_FSB_32 VTT_FSB_33 VTT_FSB_34 VTT_FSB_35 VTT_FSB_36 VTT_FSB_37 VTT_FSB_38 VTT_FSB_39 VTT_FSB_40 VTT_FSB_41 VTT_FSB_42 VTT_FSB_43 VTT_FSB_44 VTT_FSB_45 VTT_FSB_46
VCCDQ_CRT VCCD_CRT VCCA_EXPPLL VCCA_MPLL VCCA_HPLL VCCA_DPLLA VCCA_DPLLB
VCCA_DAC_1 VCCA_DAC_2
VCC3_3 VCCA_EXP
VCC_CKDDR_5 VCC_CKDDR_4 VCC_CKDDR_3 VCC_CKDDR_2 VCC_CKDDR_1
VCC_DDR_1 ... VCC_DDR_22
VCC_CL_77 ... VCC_CL_1
VSS
VCC_DDR
CP21 X_COPPER
V_FSB_VTT
C205 C1U6.3Y0402
C164 C1U6.3Y0402
C171 C1U6.3Y0402
C166 C1U6.3Y0402
C174 C1U6.3Y0402
C202 C10U10Y0805
C167 C1U6.3Y0402
C206 C1U6.3Y0402
C173 C0.1U25Y0402
C217 C0.1U25Y0402
V_1P25_CORE
C701 X_C10U10Y0805
C696 X_C10U10Y0805
C354 C10U10Y0805
C328 C10U10Y0805
C347 C10U10Y0805
C348 C10U10Y0805
C349 C10U10Y0805
C694 X_C10U10Y0805
C263 C0.1U25Y0402
C321 C0.1U25Y0402
C317 C0.1U25Y0402
C702 X_C0.1U25V0603
C700 X_C0.1U25V0603
C697 X_C0.1U25V0603
C335 C0.1U25Y0402
C250 C0.1U25Y0402
C698 X_C0.1U25V0603
C695 X_C0.1U25V0603
C334 C0.1U25Y0402
C699 X_C0.1U25V0603
C331 C0.1U25Y0402
C296 C0.1U25Y0402
C387 C0.1U25Y0402
C310 C0.1U25Y0402
VCC_111 ... VCC_171
V_1P25_PCIE
L30 X_FB80/8
CP9 X_COPPER
C327 C1U16Y0603
C315 C1U16Y0603
VCC_EXP_1 ... VCC_EXP_13
6 OF 7
BRLK_B_CRB
Separate when AMT is supported
MICRO-STAR INT'L CO.,LTD
MS-7410
Size Custom
Document Description
Bearlake - Power
Rev 0A
Date: Thursday, August 09, 2007
Sheet 8 of 34



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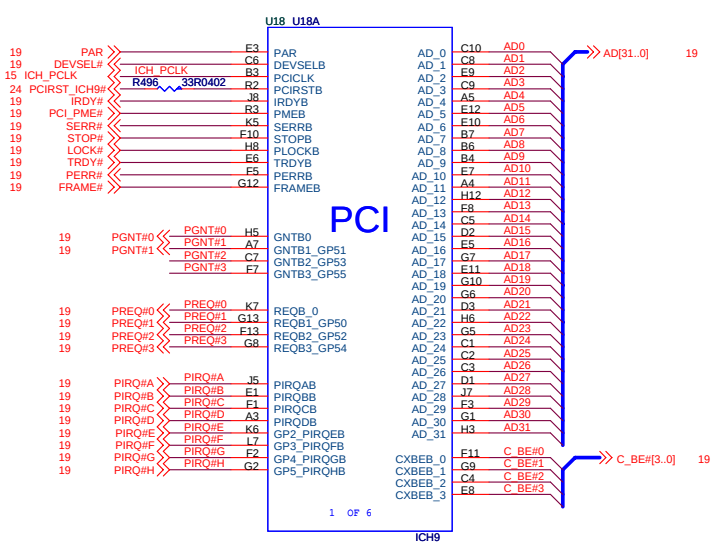
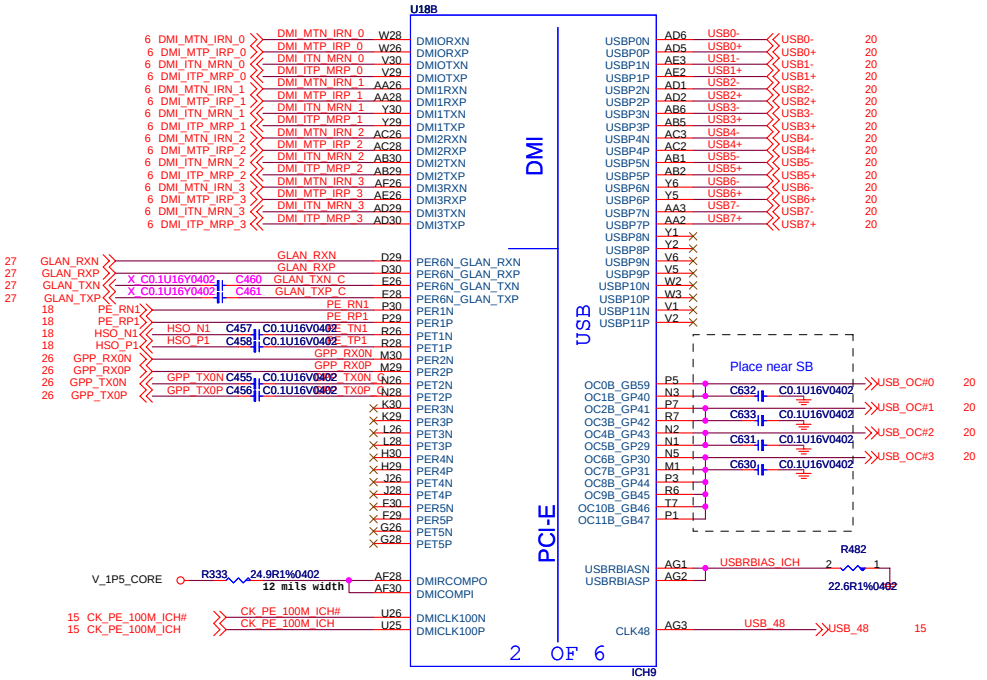
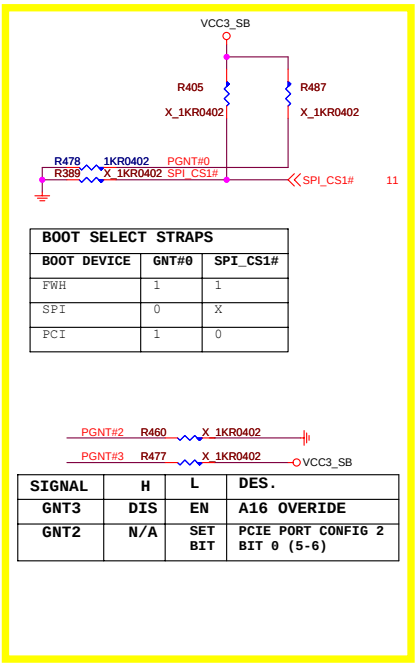
MS-7410	
Size: Custom	Document Description: Bearlake - GND
Rev: 0A	
Date: Thursday, August 09, 2007	Sheet 9 of 34







BOOT SELECT STRAPS		
BOOT DEVICE	GNT#0	SPI_CS1#
FWH	1	1
SPI	0	X
PCI	1	0

SIGNAL	H	L	DES.
GNT3	DIS	EN	A16 OVERIDE
GNT2	N/A	SET BIT	PCIE PORT CONFIG 2 BIT 0 (5-6)

ICH9 H/W STRAPS			
SIGNAL	H	L	DES.
SPKR	DIS	EN	REBOOT
GNT3	DIS	EN	A16 OVERIDE
INTVRMEN	EN	DIS	INT VRM
SATALED	NORM	REVERSE	PCIE 0-3 ORDER
HDA_SDOUT	DFX/ PCIE	N/A	XOR MODE/PCIE PORT CONFIG BIT 1
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)

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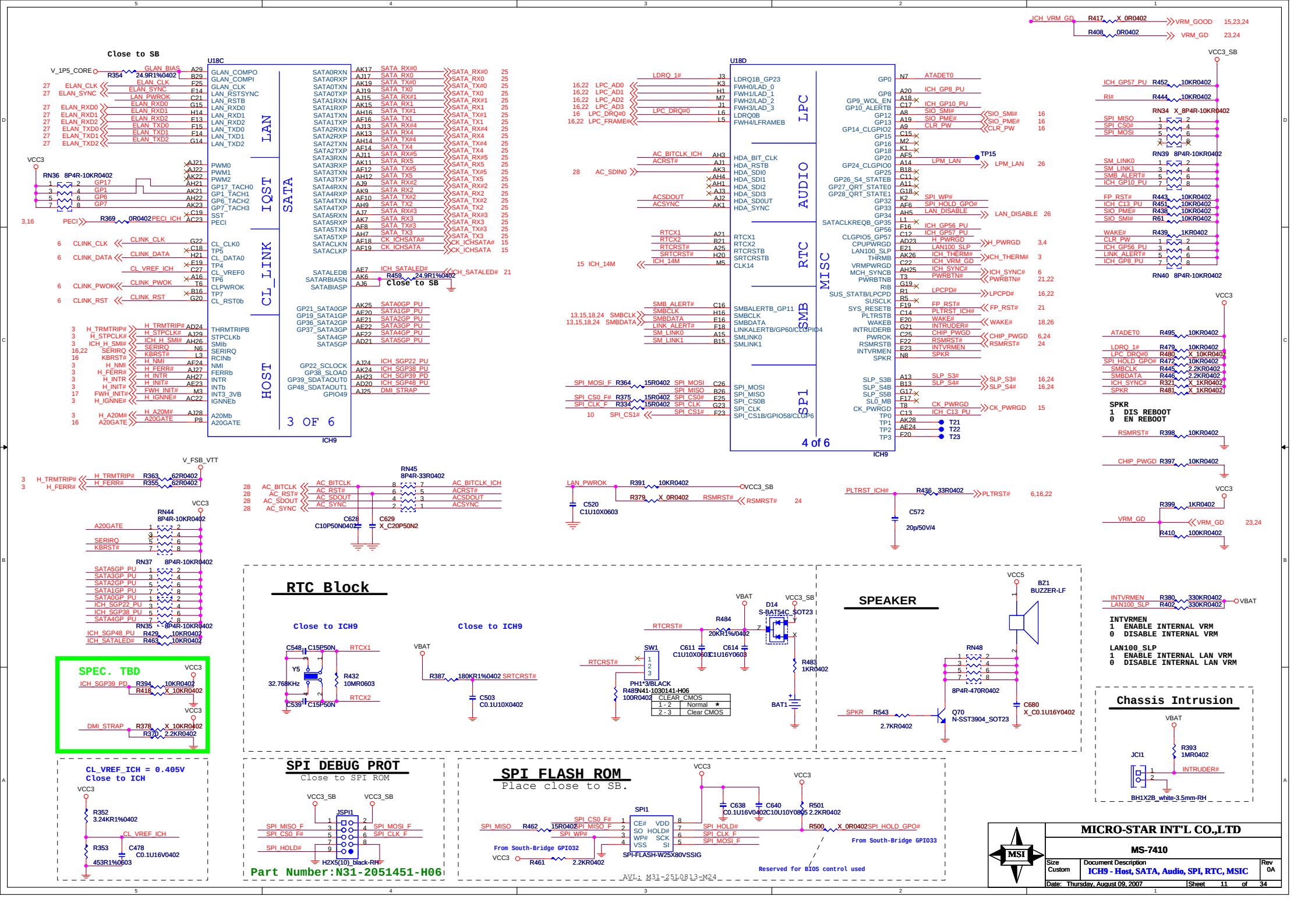
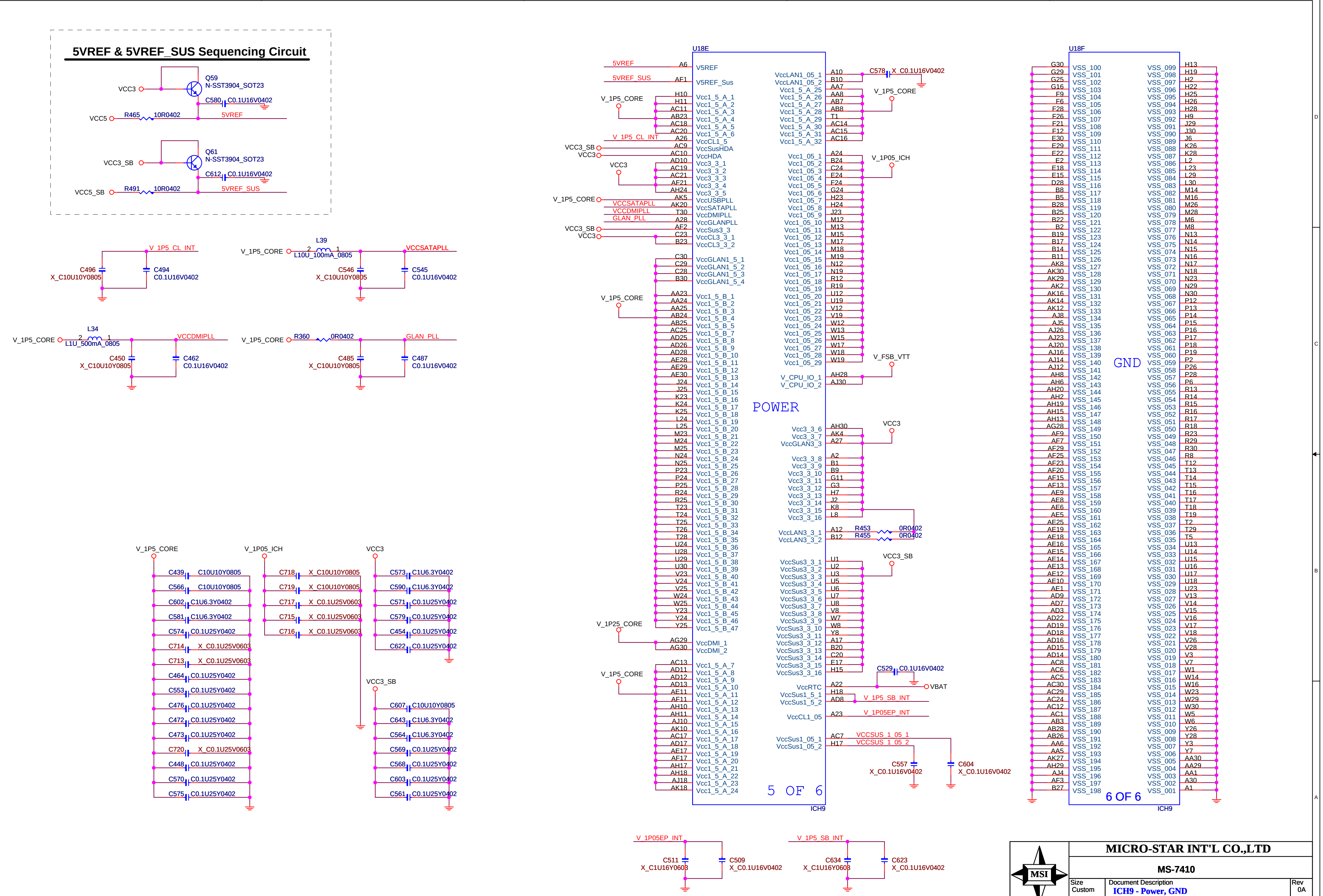
MS-7410

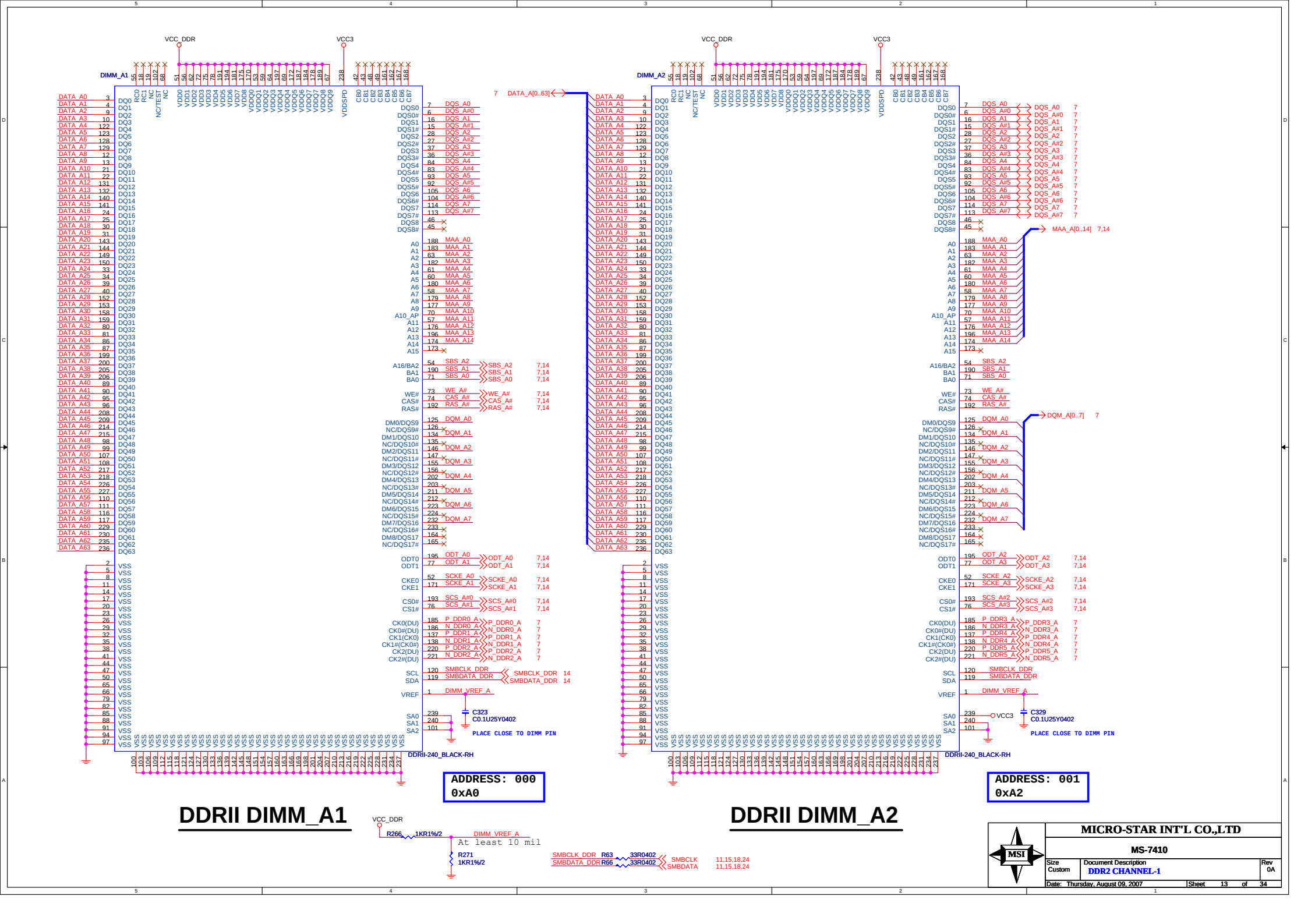
Size: Custom | Document Description: ICH9 - PCI, DMI, USB, PCIE & Slots | Rev: 0A

Date: Thursday, August 09, 2007 | Sheet 10 of 34


Close to SB
U18C
V_1P5_CORE
GLAN_BIAS
R354 24.9R1%0402
GLAN_COMPO
GLAN_COMPI
GLAN_CLK
LAN_RSTSYNC
LAN_RSTB
LAN_RXD0
LAN_RXD1
LAN_RXD2
LAN_TXD0
LAN_TXD1
LAN_TXD2
LAN
ELAN_CLK
ELAN_SYNC
LAN_PWROK
ELAN_RXD0
ELAN_RXD1
ELAN_RXD2
ELAN_TXD0
ELAN_TXD1
ELAN_TXD2
VCC3
RN36 8P4R-10KR0402
GP17
GP1
GP6
GP7
PWM0
PWM1
PWM2
GP17_TACH0
GP1_TACH1
GP6_TACH2
GP7_TACH3
SST
PECI
R369 0R0402 PECI_ICH
IQST
SATA
CL_LINK
CLINK_CLK
CLINK_DATA
CL_VREF_ICH
CLINK_PWOK
CLINK_RST
CL_CLK0
TP5
CL_DATA0
TP4
CL_VREF0
TP6
CLPWROK
TP7
CL_RST0b
H_TRMTRIP#
H_STPCLK#
ICH_H_SMI#
SERIRQ
KBRST#
H_NMI
H_FERR#
H_INTR
H_INIT#
FWH_INIT#
H_IGNNE#
H_A20M#
A20GATE
THRMTRIPB
STPCLKb
SMIb
SERIRQ
RCINb
NMI
FERRb
INTR
INTb
INT3_3VB
IGNNEb
A20Mb
A20GATE
HOST
3 OF 6
ICH9
SATA0RXN
SATA0RXP
SATA0TXN
SATA0TXP
SATA1RXN
SATA1RXP
SATA1TXN
SATA1TXP
SATA2RXN
SATA2RXP
SATA2TXN
SATA2TXP
SATA3RXN
SATA3RXP
SATA3TXN
SATA3TXP
SATA4RXN
SATA4RXP
SATA4TXN
SATA4TXP
SATA5RXN
SATA5RXP
SATA5TXN
SATA5TXP
SATACLKN
SATACLKP
SATA_RX#0
SATA_RX0
SATA_TX#0
SATA_TX0
SATA_RX#1
SATA_RX1
SATA_TX#1
SATA_TX1
SATA_RX#4
SATA_RX4
SATA_TX#4
SATA_TX4
SATA_RX#5
SATA_RX5
SATA_TX#5
SATA_TX5
SATA_RX#2
SATA_RX2
SATA_TX#2
SATA_TX2
SATA_RX#3
SATA_RX3
SATA_TX#3
SATA_TX3
CK_ICHSATA#
CK_ICHSATA
SATALEDB
SATARBIASN
SATABIASP
R459 24.9R1%0402
Close to SB
ICH_SATALED#
GP21_SATA0GP
GP19_SATA1GP
GP36_SATA2GP
GP37_SATA3GP
SATA4GP
SATA5GP
SATA0GP_PU
SATA1GP_PU
SATA2GP_PU
SATA3GP_PU
SATA4GP_PU
SATA5GP_PU
GP22_SCLOCK
GP38_SLOAD
GP39_SDATAOUT0
GP48_SDATAOUT1
GPIO49
ICH_SGP22_PU
ICH_SGP38_PU
ICH_SGP39_PD
ICH_SGP48_PU
DMI_STRAP
U18D
LDRQ_1#
LDRQ1B_GP23
FWH0/LAD_0
FWH1/LAD_1
FWH2/LAD_2
FWH3/LAD_3
LDRQ0B
FWH4/LFRAMEB
LPC_AD0
LPC_AD1
LPC_AD2
LPC_AD3
LPC_DRQ#0
LPC_FRAME#
LPC
AC_BITCLK_ICH
ACRST#
AC_SDIN0
HDA_BIT_CLK
HDA_RSTB
HDA_SDI0
HDA_SDI1
HDA_SDI2
HDA_SDI3
HDA_SD0UT
HDA_SYNC
ACSDOUT
ACSYNC
AUDIO
RTCX1
RTCX2
RTCRST#
SRTCRST#
ICH_14M
RTCRSTB
SRTCRSTB
CLK14
RTC
SMB_ALERT#
SMBCLK
SMBDATA
LINK_ALERT#
SM_LINK0
SM_LINK1
SMBALERTB_GP11
SMBCLK
SMBDATA
LINKALERTB/GP60/CLGPIO4
SMLINK0
SMLINK1
SMB
SPI_MOSI_F R364 15R0402
SPI_CS0_F# R375 15R0402
SPI_CLK_F R334 15R0402
SPI_CS1#
SPI_MOSI
SPI_MISO
SPI_CS0#
SPI_CLK
SPI_CS1#
SPI_CS1B/GPIO58/CLGP6
SPI
4 of 6
ICH9
GP0
GP8
GP9_WOL_EN
GP10_ALERTB
GP12
GP13
GP14_CLGPIO2
GP15
GP16
GP18
GP20
GP24_CLGPIO0
GP25
GP26_S4_STATEB
GP27_QRT_STATE0
GP28_QRT_STATE1
GP32
GP33
GP34
SATACLKREQB_GP35
GP56
CLGPIO5_GP57
CPUPWRGD
LAN100_SLP
THRMB
VRMPWRGD
MCH_SYNCB
PWRBTNB
RIB
SUS_STATB/LPCPD
SUSCLK
SYS_RESETB
PLTRSTB
WAKEB
INTRUDERB
PWROK
RSMRSTB
INTVRMEN
SPKR
SLP_S3B
SLP_S4B
SLP_S5B
SL0_MB
CK_PWRGD
TP0
TP1
TP2
TP3
ATADET0
ICH_GP8_PU
ICH_GP10_PU
SIO_SMI#
SIO_PME#
CLR_PW
TP15
LPM_LAN
SPI_WP#
SPI_HOLD_GPO#
LAN_DISABLE
H_PWRGD
ICH_VRM_GD
ICH_SYNC#
PWRBTN#
LPCPD#
FP_RST#
PLTRST_ICH#
WAKE#
CHIP_PWGD
RSMRST#
INTVRMEN
SPKR
SLP_S3#
SLP_S4#
CK_PWRGD
ICH_C13_PU
T21
T22
T23
MISC
ICH_VRM_GD R417 X_0R0402
R408 0R0402
VRM_GOOD 15,23,24
VRM_GD 23,24
VCC3_SB
ICH_GP57_PU R452 10KR0402
RI# R444 10KR0402
RN34 X_8P4R-10KR0402
SPI_MISO
SPI_CS0#
SPI_MOSI
RN39 8P4R-10KR0402
SM_LINK0
SM_LINK1
SMB_ALERT#
ICH_GP10_PU
FP_RST#
ICH_C13_PU
SIO_PME#
SIO_SMI#
WAKE#
CLR_PW
ICH_GP56_PU
ICH_GP8_PU
RN40 8P4R-10KR0402
V_FSB_VTT
R363 62R0402
R355 62R0402
RN45 8P4R-33R0402
AC_BITCLK
AC_RST#
AC_SDOUT
AC_SYNC
AC_BITCLK_ICH
ACRST#
ACSDOUT
ACSYNC
C628 C10P50N0402
C629 X_C20P50N2
RN44 8P4R-10KR0402
RN37 8P4R-10KR0402
RN35 8P4R-10KR0402
ICH_SGP48_PU R429 10KR0402
ICH_SATALED# R463 10KR0402
SPEC. TBD
R394 10KR0402
R418 X_10KR0402
R378 X_10KR0402
R370 2.2KR0402
CL_VREF_ICH = 0.405V
Close to ICH
R352 3.24KR1%0402
R353 453R1%0603
C478 C0.1U16V0402
LAN_PWROK
R391 10KR0402
R379 X_0R0402
RSMRST#
C520 C1U10X0603
PLTRST_ICH#
R436 33R0402
PLTRST#
C572 20p/50V/4
ATADET0 R495 10KR0402
LDRQ_1# R479 10KR0402
LPC_DRQ#0 R480 X_10KR0402
SPI_HOLD_GPO# R472 10KR0402
SMBCLK R445 2.2KR0402
SMBDATA R446 2.2KR0402
ICH_SYNC# R321 X_1KR0402
SPKR R481 X_1KR0402
SPKR
1 DIS REBOOT
0 EN REBOOT
RSMRST# R398 10KR0402
CHIP_PWGD R397 10KR0402
R399 1KR0402
R410 100KR0402
RTC Block
Close to ICH9
Close to ICH9
C548 C15P50N
Y5
32.768KHz
C539 C15P50N
RTCX1
R432 10MR0603
RTCX2
VBAT
R387 180KR1%0402
SRTCRST#
C503 C0.1U10X0402
RTCRST#
SW1
PH1*3/BLACK
R485N41-1030141-H06
100R0402
CLEAR_CMOS
1 - 2 Normal
2 - 3 Clear CMOS
R484 20KR1%0402
C611 C1U10X0603
C614 C1U16Y0603
D14 S-BAT54C_SOT23
R483 1KR0402
BAT1
SPEAKER
BZ1 BUZZER-LF
RN48 8P4R-470R0402
SPKR R543 2.7KR0402
Q70 N-SST3904_SOT23
C680 X_C0.1U16Y0402
INTVRMEN R380 330KR0402
LAN100_SLP R402 330KR0402
INTVRMEN
1 ENABLE INTERNAL VRM
0 DISABLE INTERNAL VRM
LAN100_SLP
1 ENABLE INTERNAL LAN VRM
0 DISABLE INTERNAL LAN VRM
Chassis Intrusion
JCI1
R393 1MR0402
INTRUDER#
BH1X2B_white-3.5mm-RH
SPI DEBUG PROT
Close to SPI ROM
JSPI1
SPI_MISO_F
SPI_CS0_F#
SPI_HOLD#
SPI_MOSI_F
SPI_CLK_F
H2X5(10)_black-RH
Part Number:N31-2051451-H06
SPI FLASH ROM
Place close to SB.
SPI1
SPI-FLASH-W25X80VSSIG
R462 15R0402
R461 2.2KR0402
From South-Bridge GPIO32
C638 C0.1U16V0402
C640 C10U10Y0805
R501 2.2KR0402
R500 X_0R0402
SPI_HOLD_GPO#
From South-Bridge GPIO33
Reserved for BIOS control used
AVL: M31-25L0813-M24
MSI
MICRO-STAR INT'L CO.,LTD
MS-7410
Size Custom
Document Description
ICH9 - Host, SATA, Audio, SPI, RTC, MSIC
Rev 0A
Date: Thursday, August 09, 2007
Sheet 11 of 34



MICRO-STAR INT'L CO.,LTD		
MS-7410		
Size: Custom	Document Description: ICH9 - Power, GND	Rev: 0A
Date: Thursday, August 09, 2007	Sheet 12 of 34	

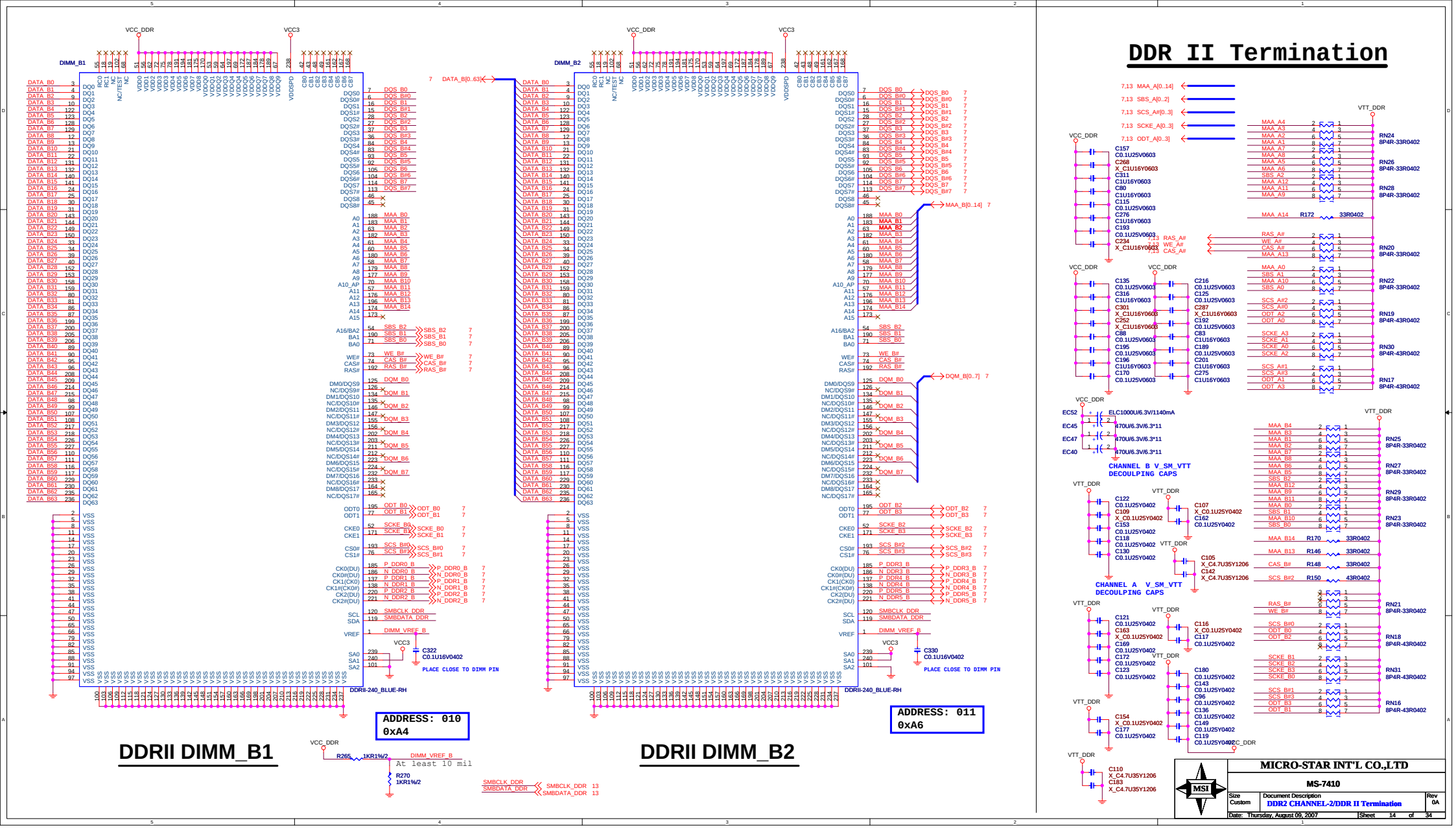


MICRO-STAR INT'L CO.,LTD

MS-7410

Size	Document Description	Rev
Custom	DDR2 CHANNEL-1	0A

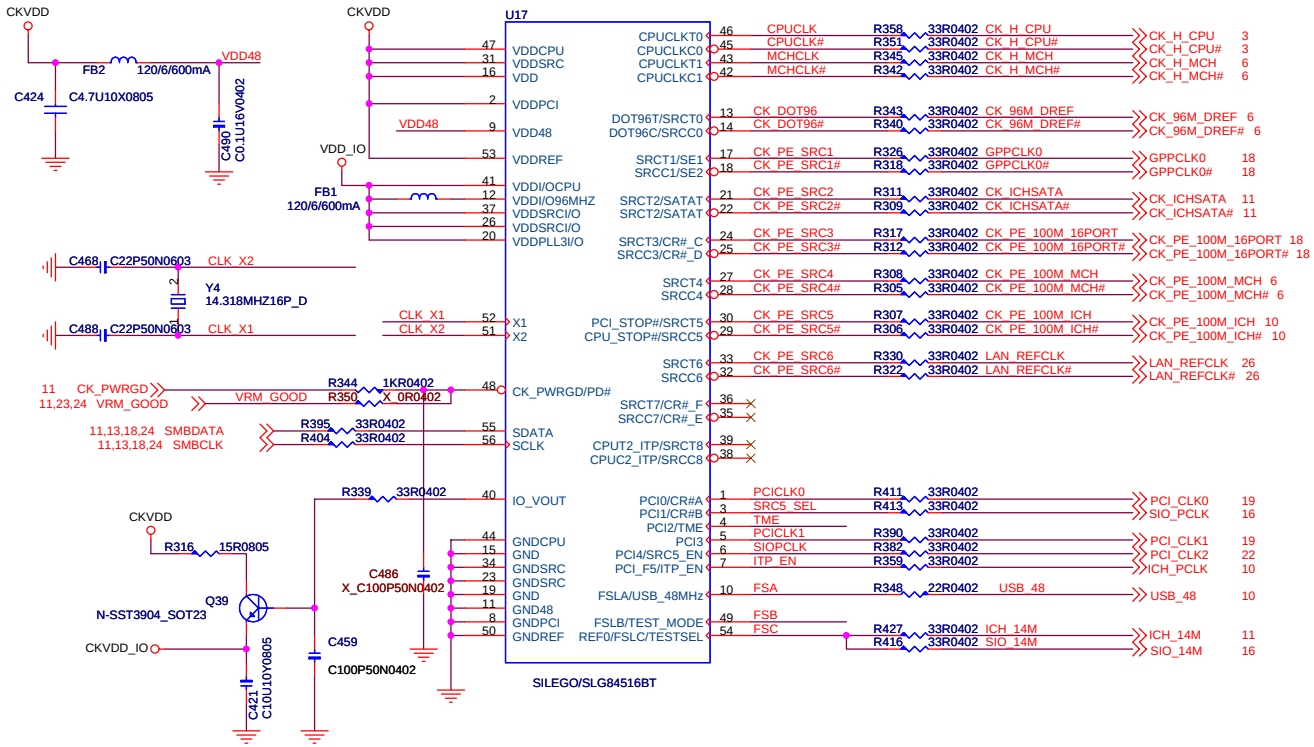
Date: Thursday, August 09, 2007 Sheet 13 of 34

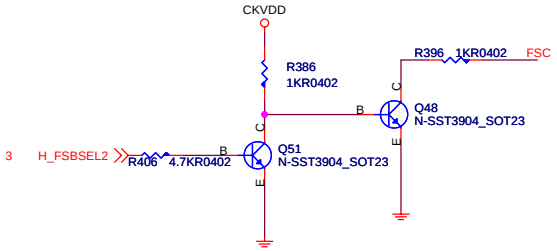


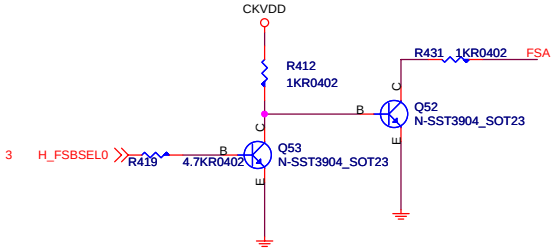
DDR II Termination

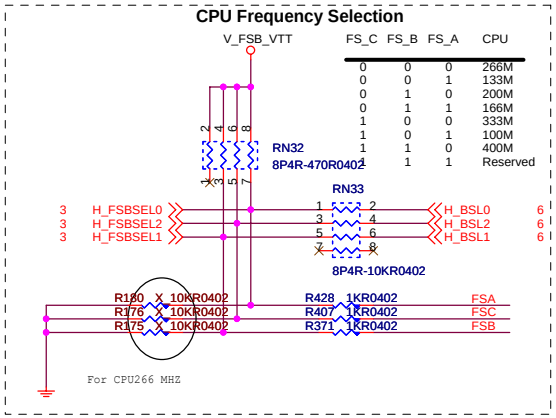
MICRO-STAR INT'L CO.,LTD	
MS-7410	
Size: Custom	Document Description: DDR2 CHANNEL-2/DDR II Termination
Rev: 0A	
Date: Thursday, August 09, 2007	Sheet 14 of 34

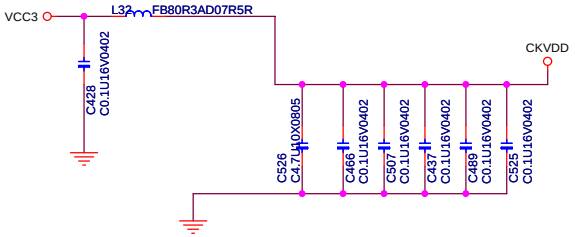
Clock Generator -SILEGO/SLG84516BT

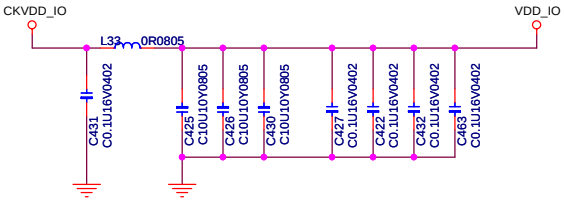




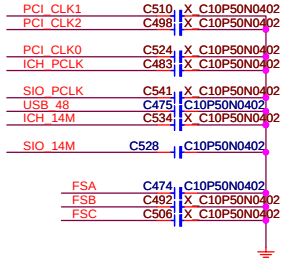


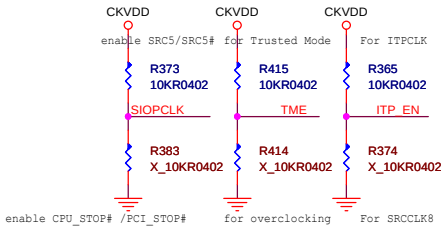




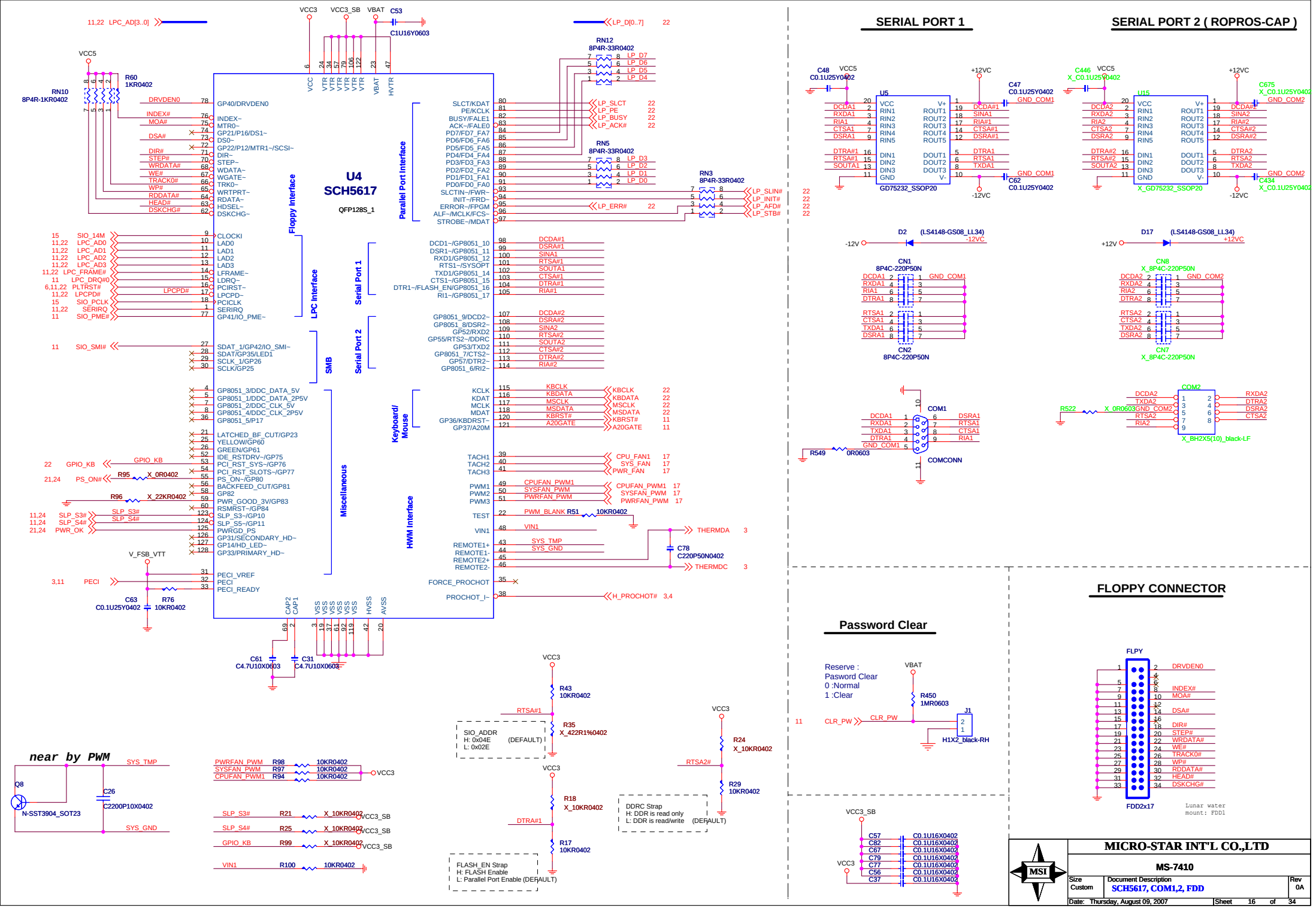


EMC HF filter capacitors, located close to PLL

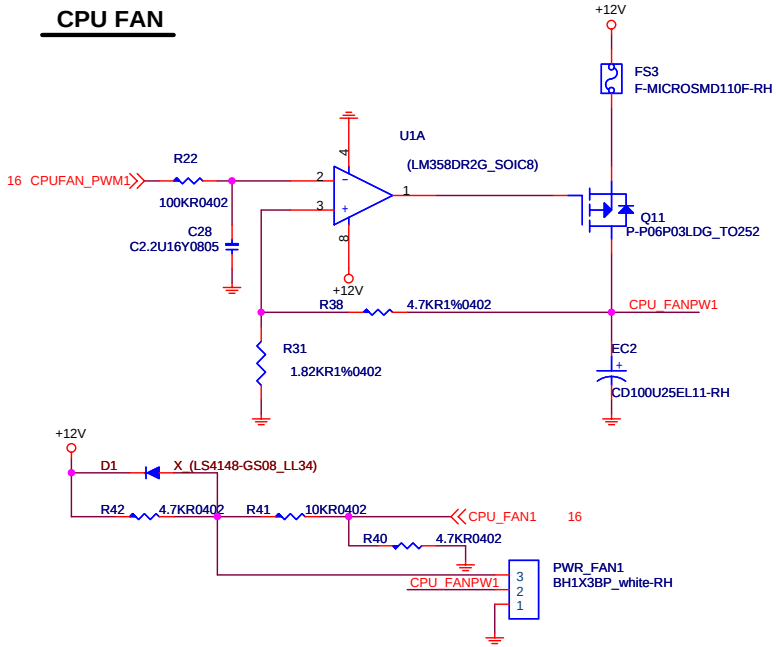




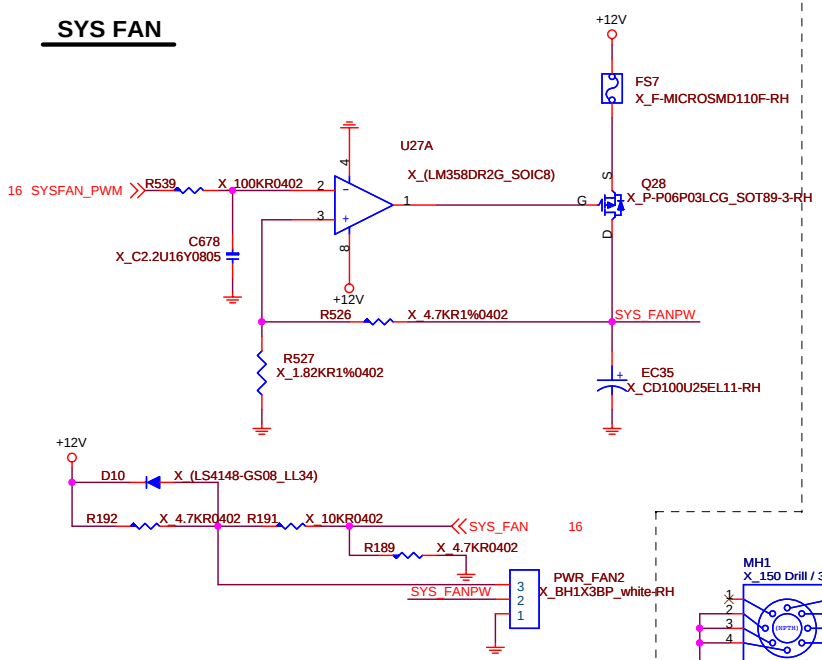
MICRO-STAR INT'L CO.,LTD		
MS-7410		
Size: Custom	Document Description: SLG84516BT CLK Gen.	Rev: 0A
Date: Thursday, August 09, 2007	Sheet 15 of 34	


SERIAL PORT 1
SERIAL PORT 2 (ROPROS-CAP)
U4
SCH5617
QFP128S_1
Floppy Interface
LPC Interface
SMB
Serial Port 1
Serial Port 2
Parallel Port Interface
Keyboard/ Mouse
Miscellaneous
HWM Interface
GD75232_SSOP20
X_GD75232_SSOP20
CN1
CN2
CN7
CN8
COM1
COM2
COMCONN
Password Clear
Reserve :
Pasword Clear
0 :Normal
1 :Clear
FLOPPY CONNECTOR
FLPY
FDD2x17
near by PWM
N-SST3904_SOT23
SIO_ADDR
H: 0x04E
L: 0x02E
(DEFAULT)
DDRC Strap
H: DDR is read only
L: DDR is read/write
(DEFAULT)
FLASH_EN Strap
H: FLASH Enable
L: Parallel Port Enable (DEFAULT)
MICRO-STAR INT'L CO.,LTD
MS-7410
SCH5617, COM1,2, FDD
Thursday, August 09, 2007
Sheet 16 of 34

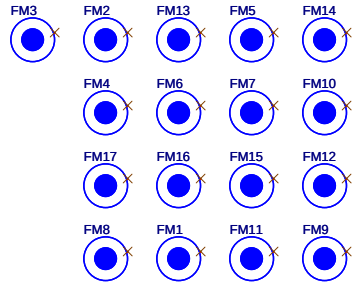
CPU FAN



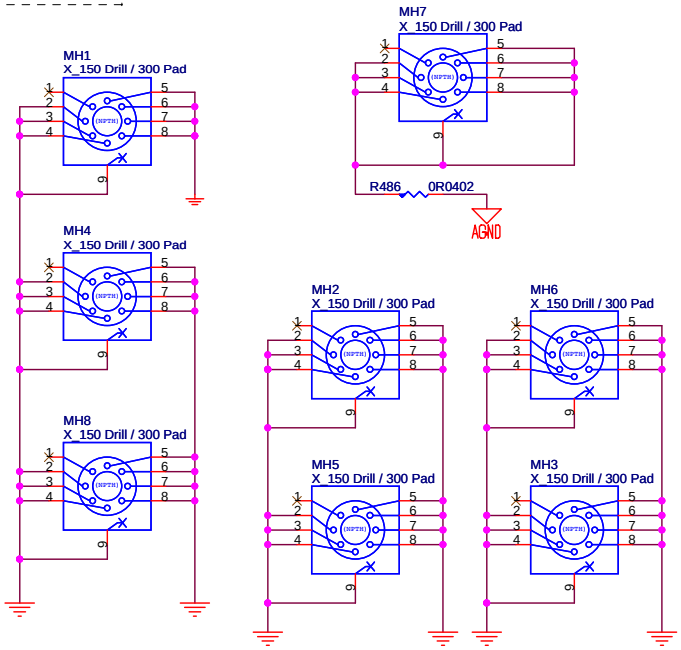
SYS FAN



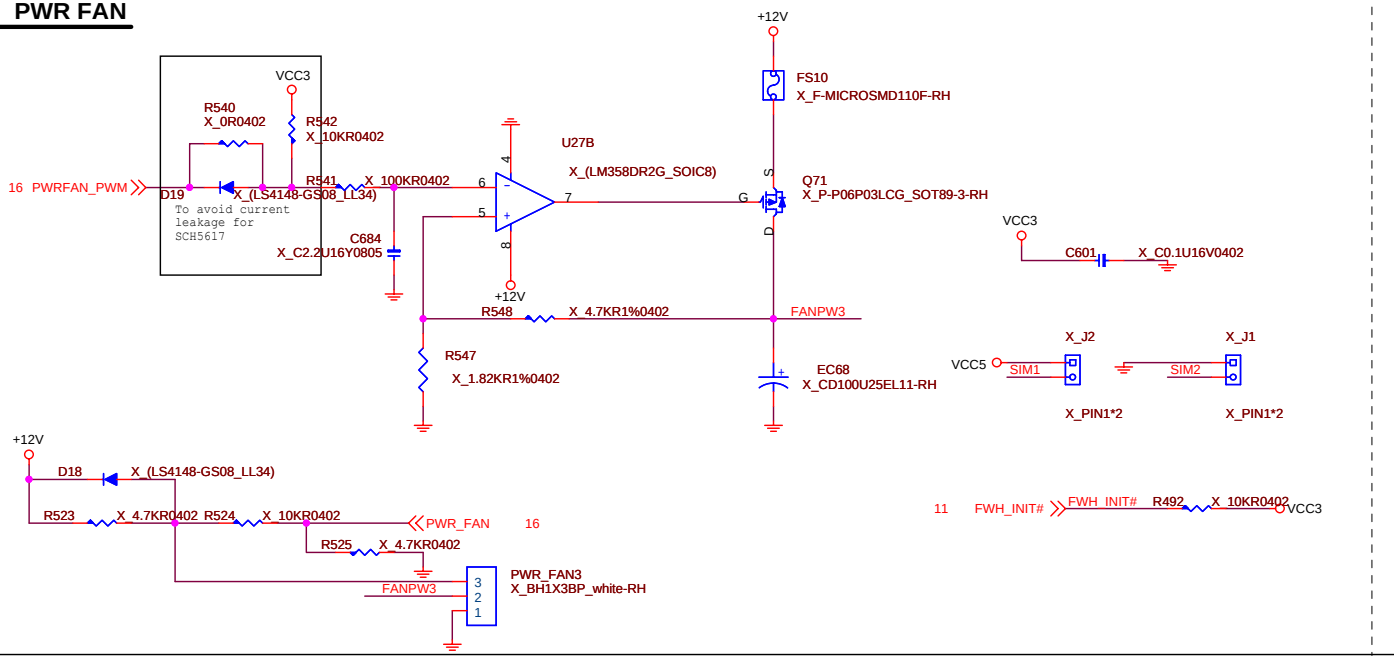
Optical Fiducial Marks



Mounting Holes

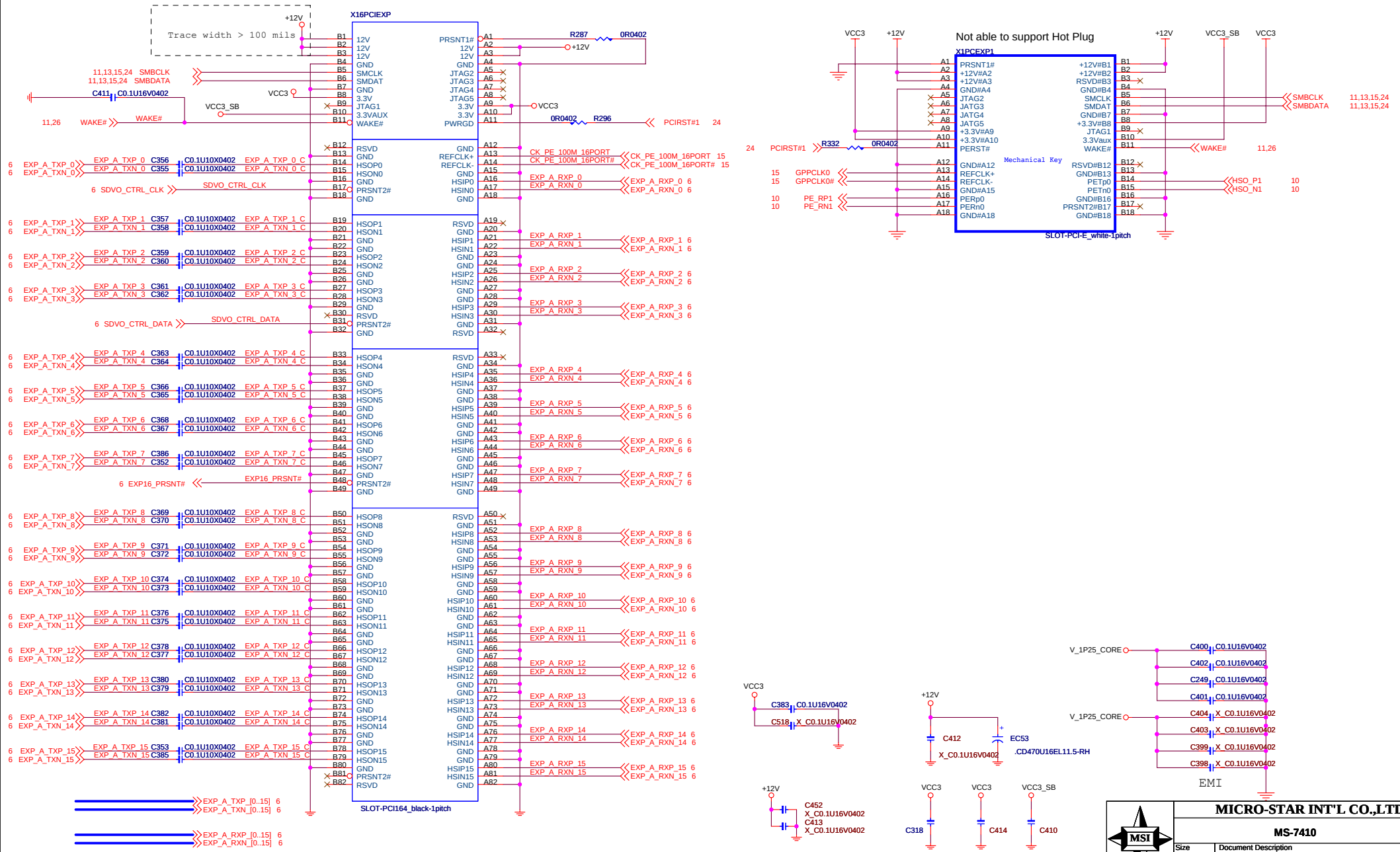


PWR FAN



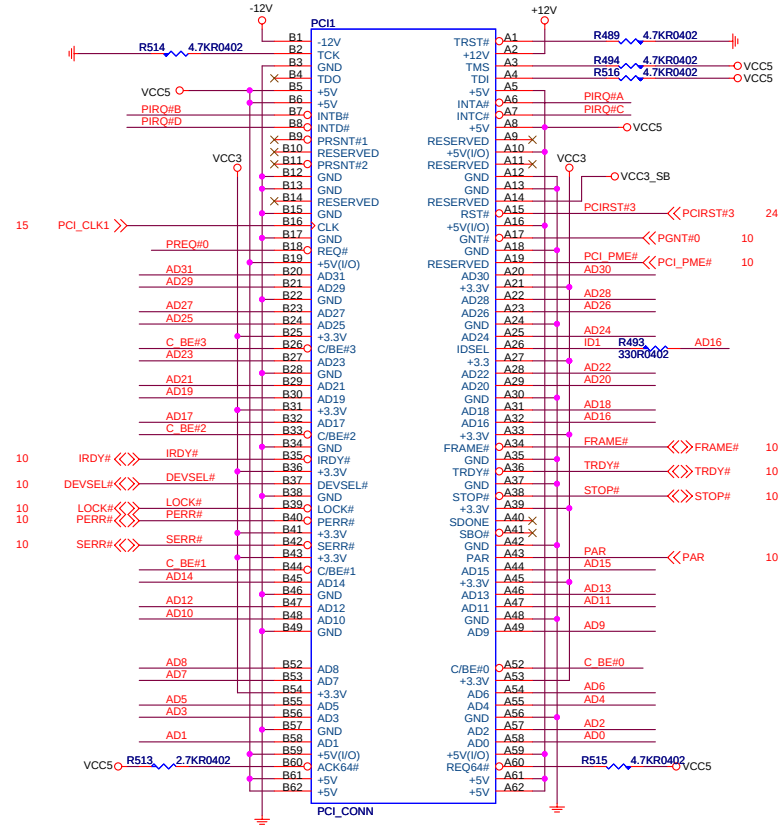
MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7410	
Size B	Document Description: CPU/SYS/PWR FAN	Rev 0A
Date: Thursday, August 09, 2007	Sheet 17 of 34	

PCI EXPRESS 16-PORT



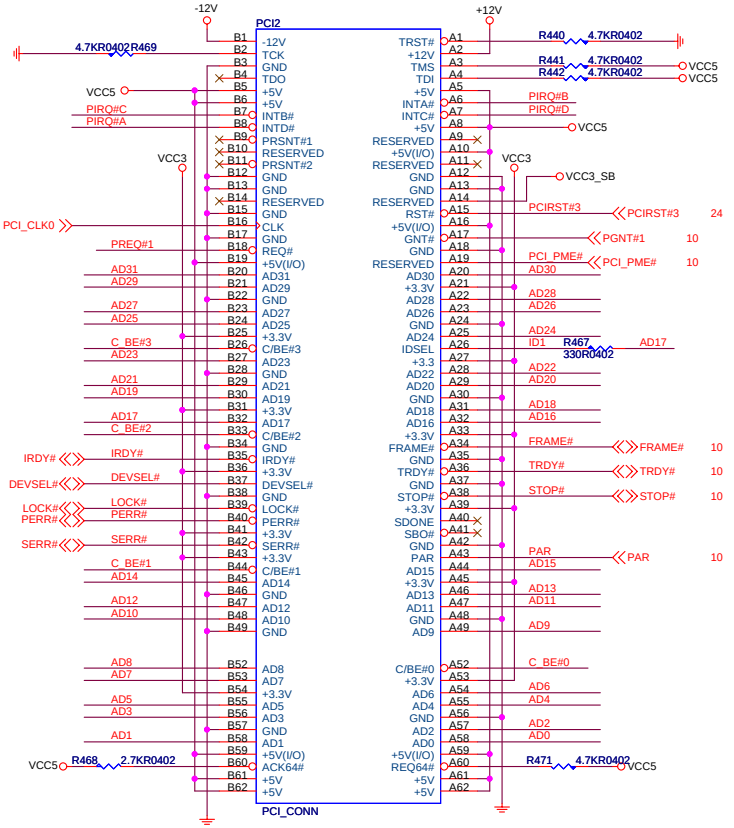
MICRO-STAR INT'L CO.,LTD	
MS-7410	
Size: Custom	Document Description: PCI-Express x16 & x1
Rev: 0A	
Date: Thursday, August 09, 2007	Sheet 18 of 34

PCI SLOT 1 (PCI VER: 2.2 COMPLY)

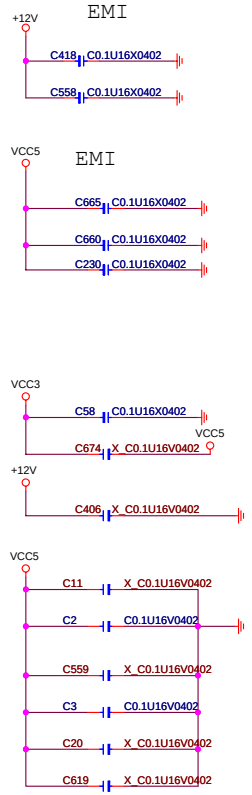


IDSEL = AD16
MASTER = PREQ#0
PIRQ#A

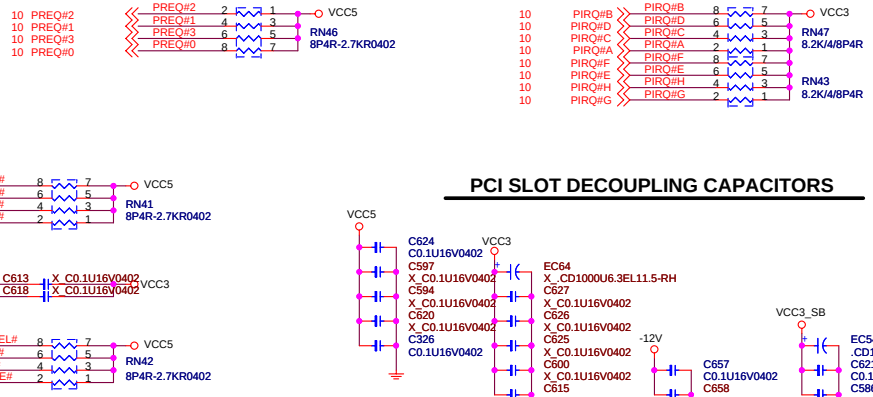
PCI SLOT 2 (PCI VER: 2.2 COMPLY)



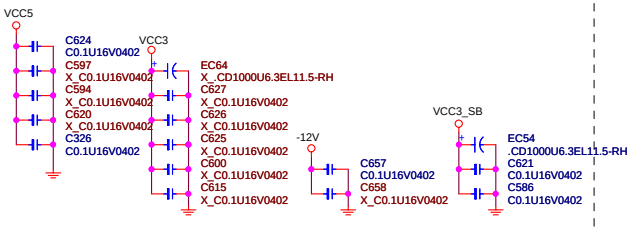
IDSEL = AD17
MASTER = PREQ#1
PIRQ#B

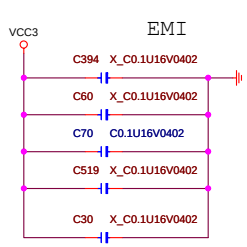


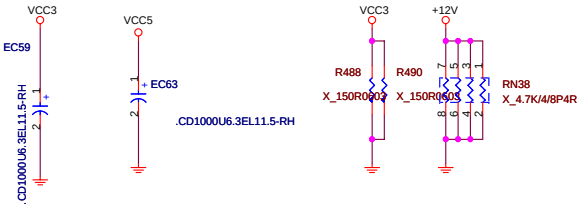
PCI PULL-UP / DOWN RESISTORS



PCI SLOT DECOUPLING CAPACITORS

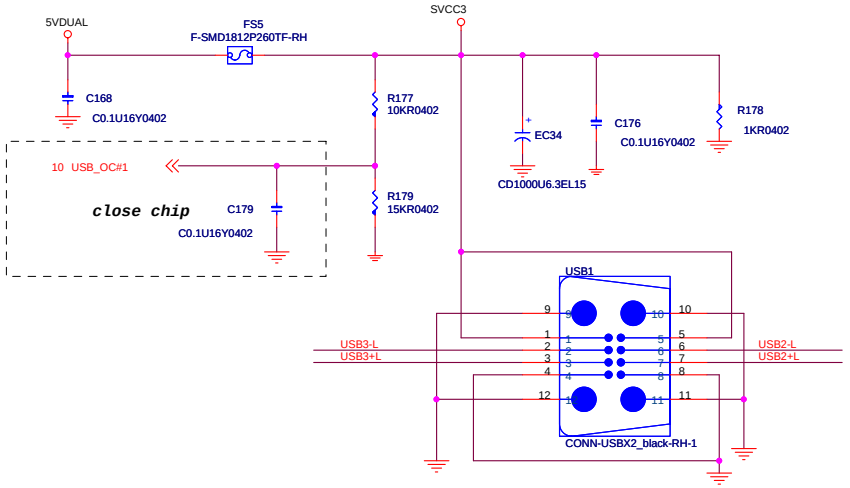




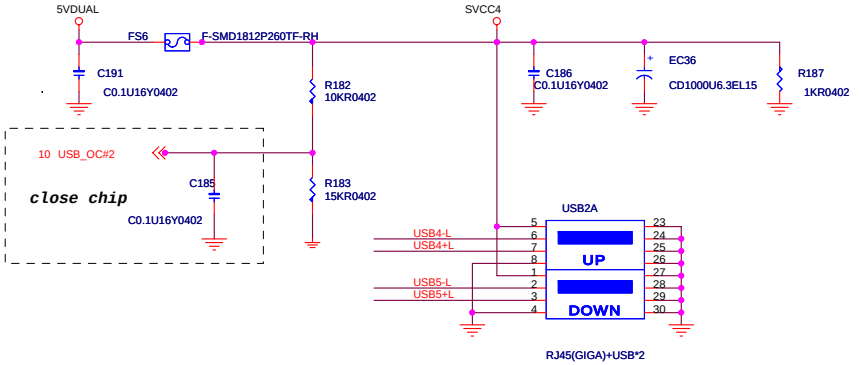


MICRO-STAR INT'L CO.,LTD	
MS-7410	
Size: Custom	Document Description: PCI Slot
Rev: 0A	
Date: Thursday, August 09, 2007	Sheet 19 of 34

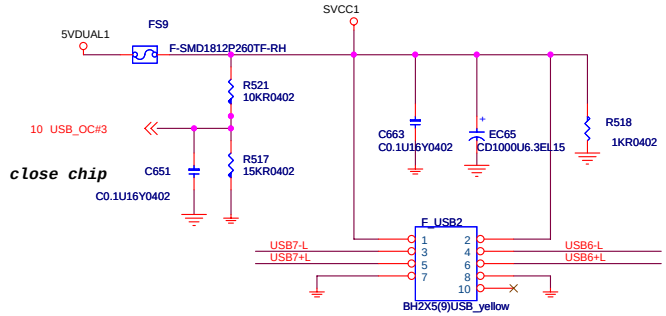
REAR PANEL USB CONNECTOR FOR USB PORT 2,3

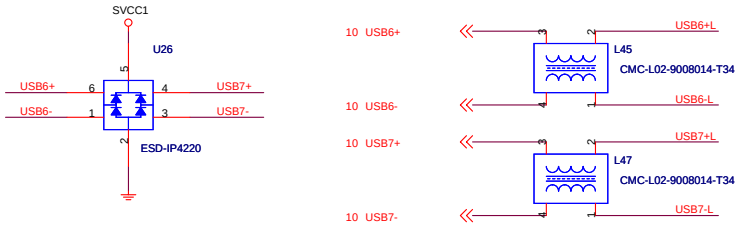


REAR PANEL USB CONNECTOR FOR USB PORT 4,5

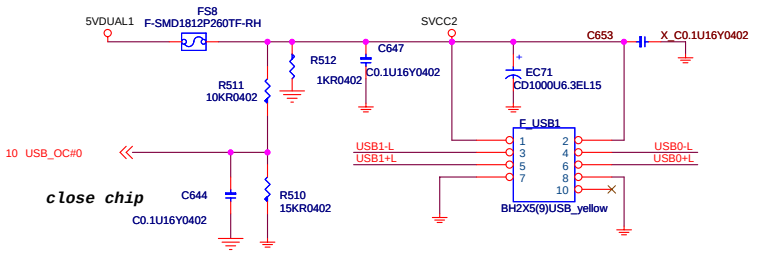


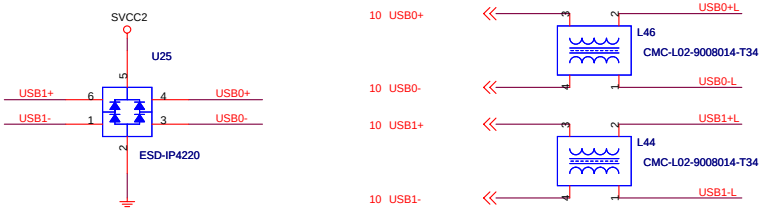
EXTERNAL USB PORT 6,7





Memory card reader USB CONNECTOR FOR USB PORT 0,1



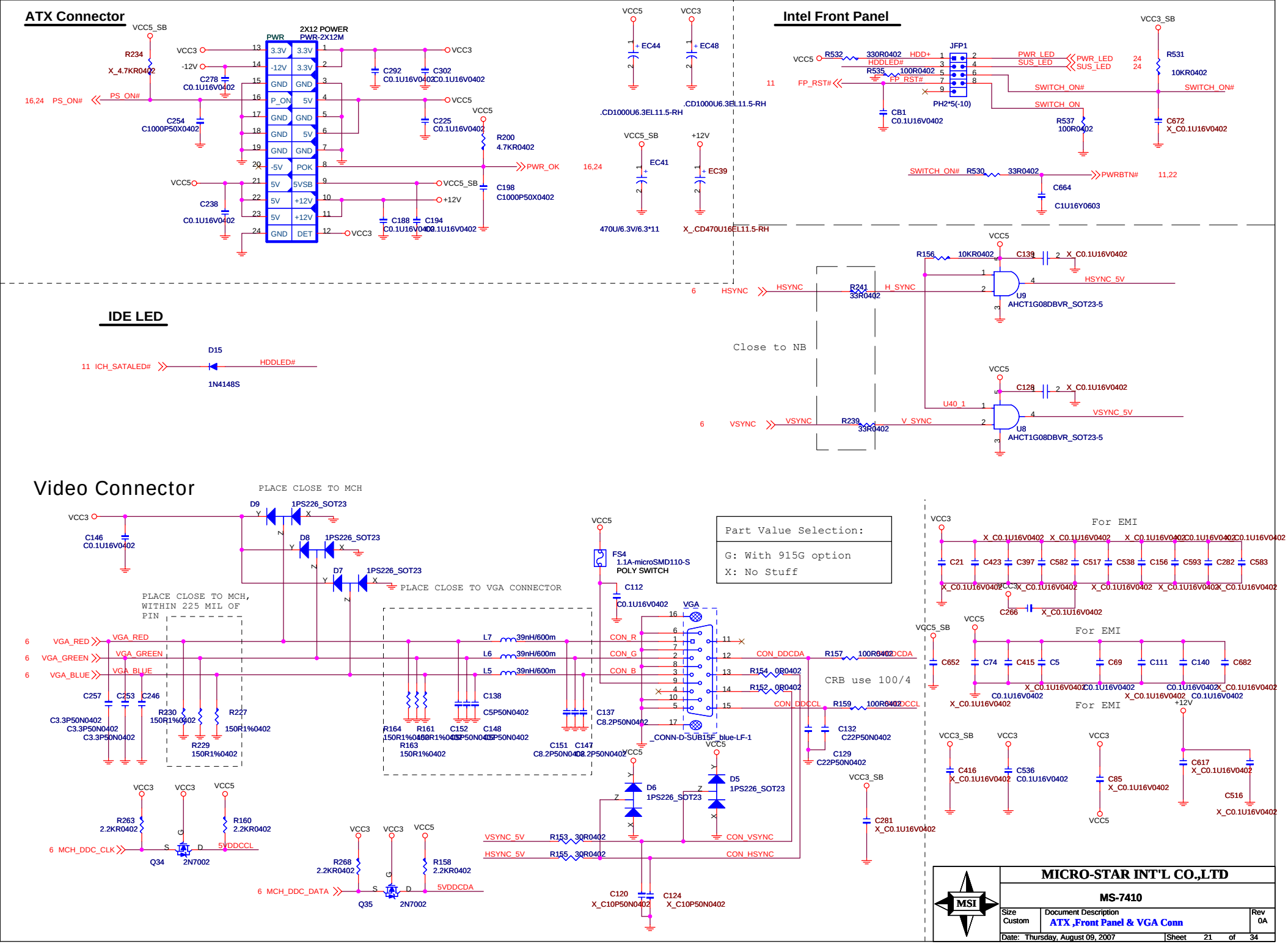


MICRO-STAR INT'L CO.,LTD

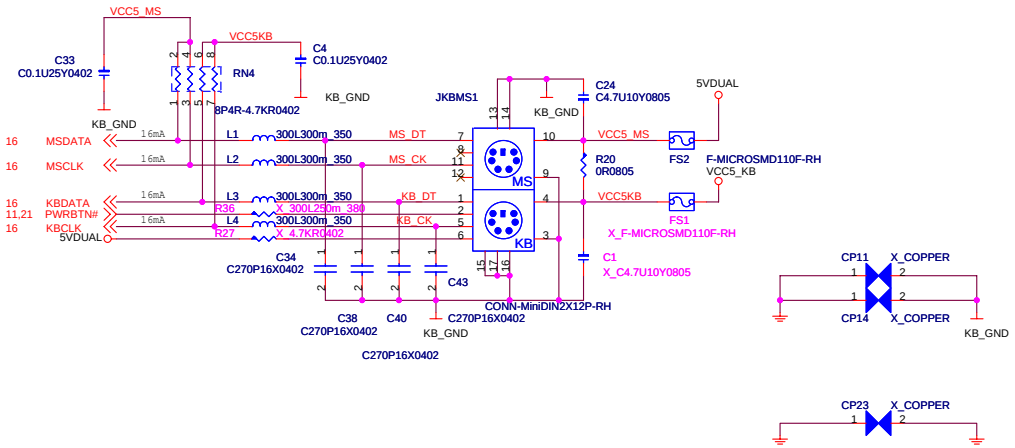
MS-7410

Size	Document Description	Rev
Custom	USB CONNECTORS	0A

Date: Thursday, August 09, 2007 Sheet 20 of 34

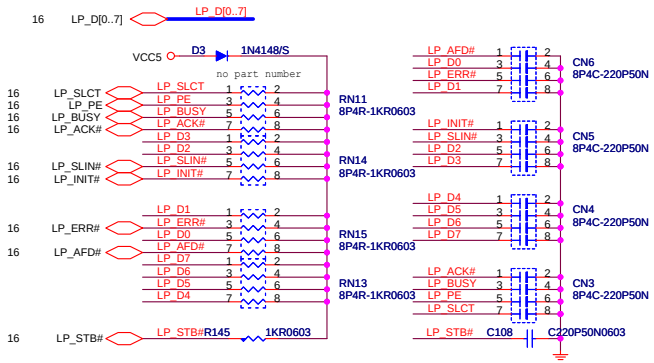

ATX Connector
2X12 POWER
PWR-2X12M
PS_ON#
PWR_OK
Intel Front Panel
JFP1
PWR_LED
SUS_LED
FP_RST#
SWITCH_ON#
PWRBTN#
IDE LED
D15
1N4148S
ICH_SATALED#
HDDLED#
Close to NB
HSYNC
VSYNC
H_SYNC
V_SYNC
HSYNC_5V
VSYNC_5V
U9
U8
AHCT1G08DBVR_SOT23-5
Video Connector
PLACE CLOSE TO MCH
PLACE CLOSE TO VGA CONNECTOR
PLACE CLOSE TO MCH, WITHIN 225 MIL OF PIN
VGA_RED
VGA_GREEN
VGA_BLUE
VGA
_CONN-D-SUB15F_blue-LF-1
CRB use 100/4
Part Value Selection:
G: With 915G option
X: No Stuff
For EMI
MCH_DDC_CLK
MCH_DDC_DATA
Q34
Q35
2N7002
MICRO-STAR INT'L CO.,LTD
MS-7410
ATX ,Front Panel & VGA Conn
Date: Thursday, August 09, 2007
Sheet 21 of 34

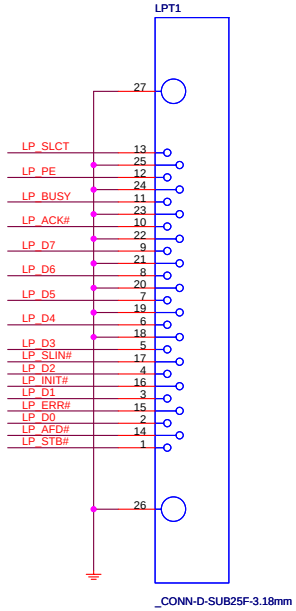
PS2 KEYBOARD & MOUSE CONNECTOR



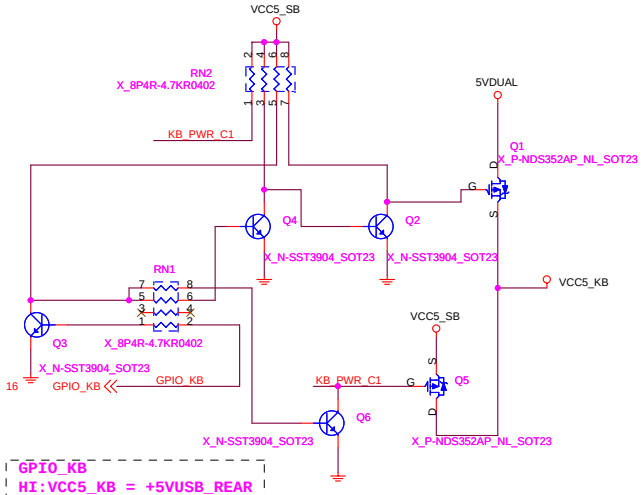
	FS2	R20	C24	L1	L2	C33	C33	C34	C38	FS1	C1	R27	R36
ROPROS-MA	V	V	V	V	V	V	V	V	V	X	X	X	X
ROPROS-VS	X	X	X	X	X	X	X	X	X	V	V	V	V
ROPROS-NECCA	V	V	V	V	V	V	V	V	V	X	X	X	X

PARALLAL PORT



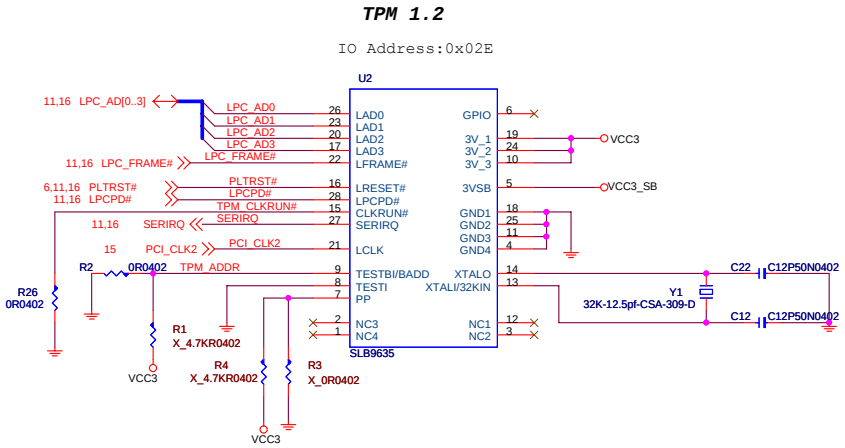


K/B Power supply function for ROPROS-VS



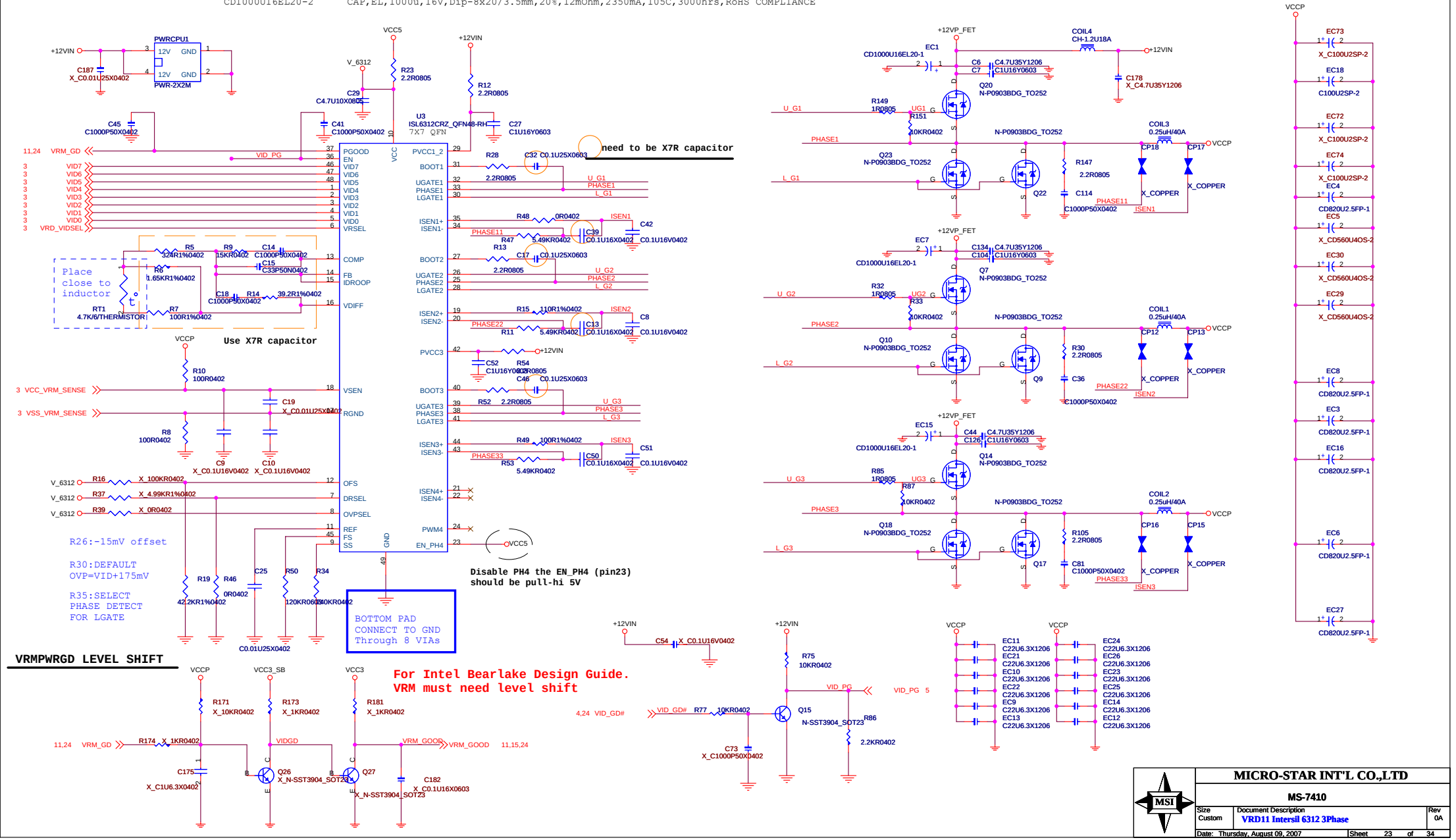
GPIO_KB
HI:VCC5_KB = +5VUSB_REAR
LOW:VCC5_KB = VCC5_SB
VCC DUAL(+5VUSB_REAR)
S0/S1:VCC5
S3:VCC5_SB
S4/S5:0V

T.P.M FOR ROPROS-MA



Voltage Regular Module

N-P0903BDG_TO252	mosfet/n-channel,P0903BDG,SMT/TO252,Rds(on)=9.5mΩ(10V/25A),Vgs(on) =1~3V,Id=50A,Ciss=1800pf,Qg=50nC,Vds=25V,Vgs=±20V,RoHS compliance
P75N02LDG/TO252	mosfet/n-channel,P75N02LDG,SMT/TO252,Rds(on)=7mΩ(@10V,30A),Vgs(on)=1~3V,Id=75A,Ciss=5000pf,Qg=140nC,Vds=25V,Vgs=±20V,RoHS compliance
C100U2SP	ESR<13mΩ,Ripple cur.<2.7A,LC<12uA,105C
CD560U4OS-2	CAP,OS-CON,560u/4V,Dip-2/8*9/3.5mm,ESR<7mohm, Ripplecur.=6100mA ,Lc. <500uA,SPEC series,RoHS compliance
1800UF/6.3V	ESR<12mΩ, Ripplecur<2350mA,105C, longlife change from 2000hrs to 3000hrs ,KZJ series
0.25uH/40A	,IND CHOKE,0.25uH,20%,DIP/8.5mm,40A,0.6mOhm,,,PEW,FERRITE,SQUARE,RoHS COMPLIANCE
CH-1.1U25A-LF	IND CHOKE,1.1uH,20%,DIP/9mm,25A,1.4mOhm,5.5T,0.9mmx3,PEW,IRON,,LEAD FREE
CD1000U16EL20-2	CAP,EL,1000u,16V,Dip-8x20/3.5mm,20%,12mOhm,2350mA,105C,3000hrs,RoHS COMPLIANCE



ACPI Controller MS-7

VDIMM LINEAR OR PWM SELECT

VDIMM MODE	EXTRAM
LINEAR REGULATOR	PULL LOW
PWM REGULATOR	PULL HIGH

3VSB MODE SELECT

3VSB MODE	3VDLDEC#
SINGLE MOSFET	PULL HIGH
DUAL MOSFET	PULL LOW

DDR AND DDR II VOLT SELECT

DDRTYPE	VDIMM
PULL LOW	2.5V
PULL HIGH	1.8V

V_FSB_VTT 6.2A

D03-06N030B-I14

THIS PIN IS OPEN DRAIN OUTPUT

VTT SEL

VTT_SEL = L	V_FSB_VTT=1.1V	For future KENTSFIELD processor. (FSB1333, Quad-Core)
VTT_SEL = H	V_FSB_VTT=1.2V	For normal processors.

DDR VTT Power

5V DUAL Power

VCC3_SB Power

1.5V POWER

Reserved for V_1P5_CORE soft-start

V_1P05_ICH 2A

VCC_DDR (18 A)

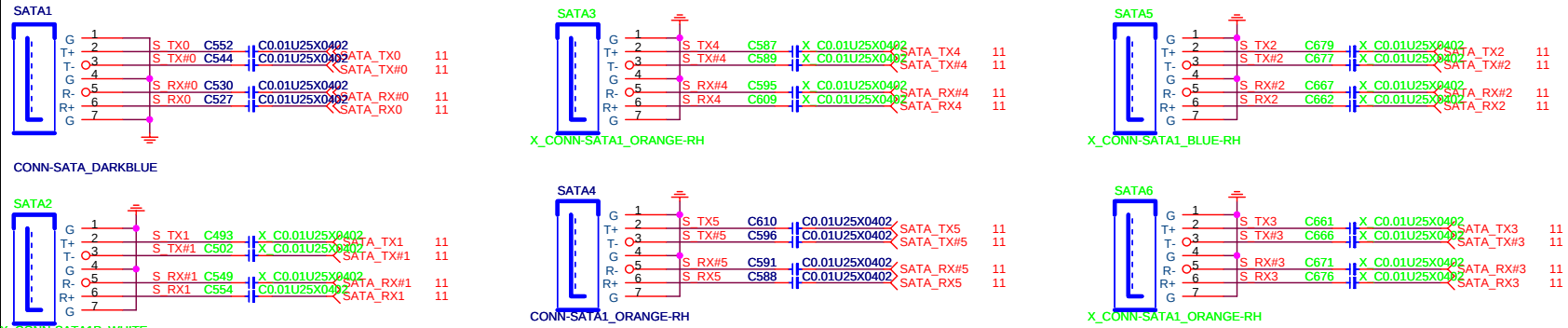
Irms=18*0.48=8.64A
Icap (total) =5.7A*2=11.4A >8.64A
Iinput=18*0.36/0.9=7.2A,so need choose 1.2UH/8A choke

Vout=1.8V 12A

Turn off V_1P5_ICH when enter S3.close to in ms7

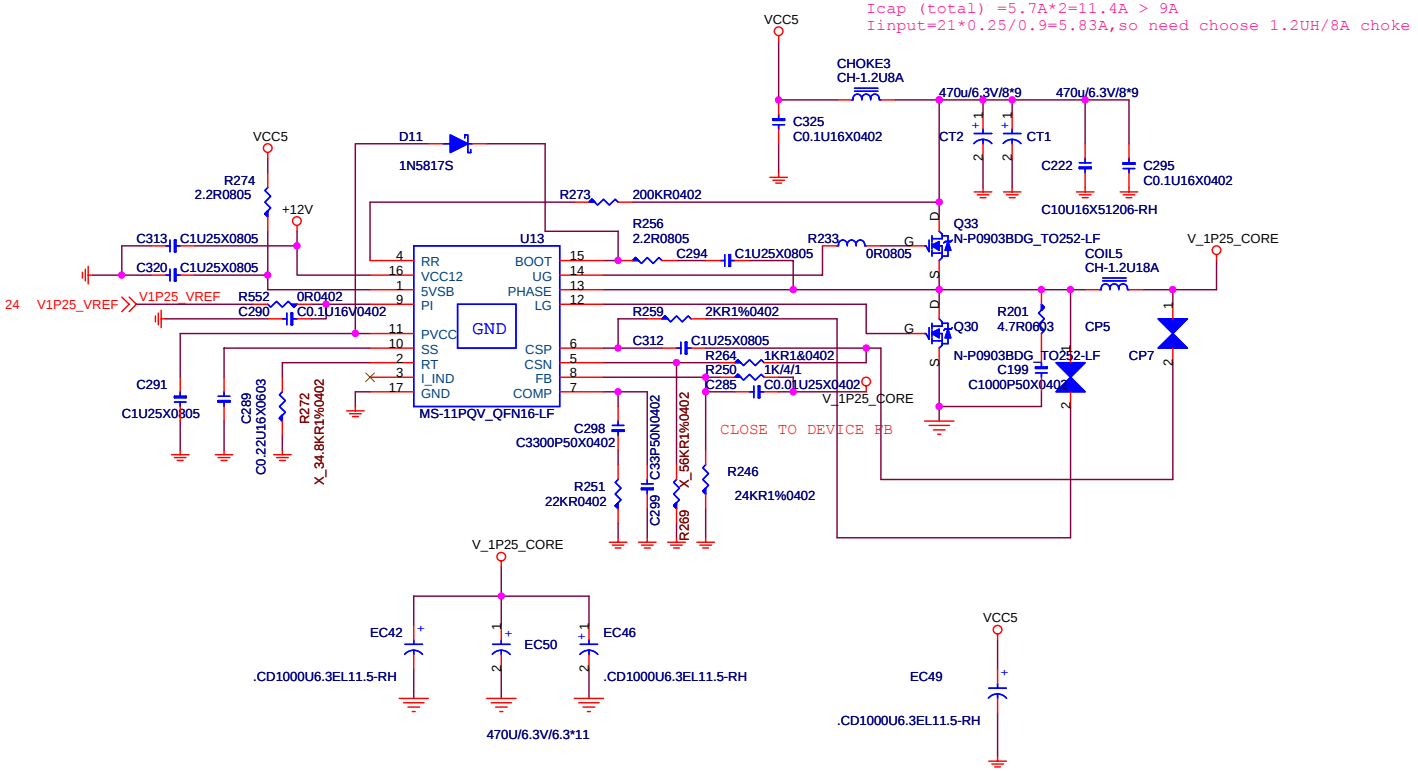
MICRO-STAR INT'L CO.,LTD	
MS-7410	
Size: Custom	Document Description: MS7 ACPI Controller
Rev: 0A	
Date: Thursday, August 09, 2007	Sheet 24 of 34

SERIAL ATA CONNECTOR BLOCK SATA1&SATA4 FOR ROPROS-MA/VS USE



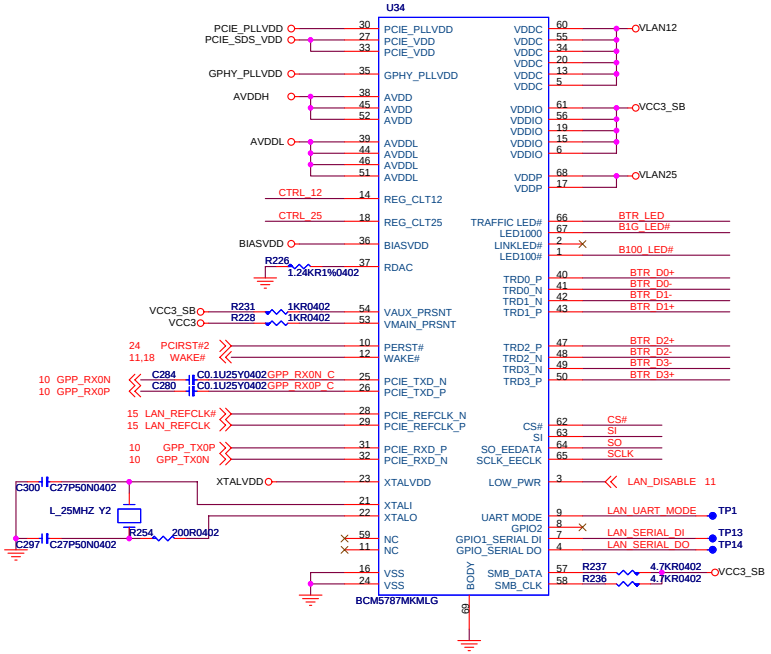
GMCH 1.25V POWER (21.3A)

Irms=21*0.433=9.09A
Icap (total) =5.7A*2=11.4A > 9A
Iinput=21*0.25/0.9=5.83A,so need choose 1.2UH/8A choke

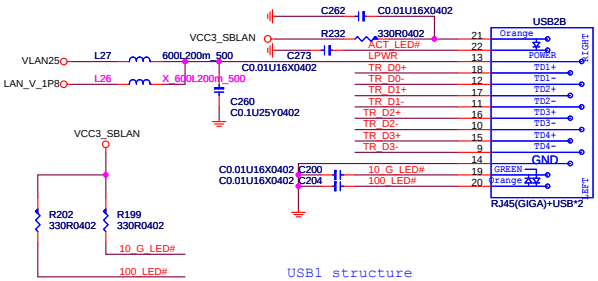


MICRO-STAR INT'L CO.,LTD		
MS-7410		
Size B	Document Description SATA&V_1P25_CORE	Rev 0A
Date: Thursday, August 09, 2007	Sheet 25 of 34	

BCM5787M LAN CHIP (ROPROS-MA USE)



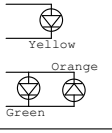
LAN Connector

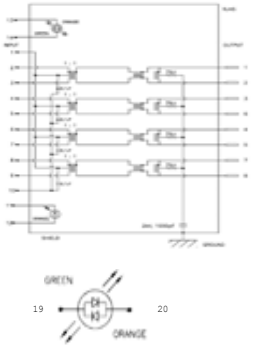


Giga-Lan

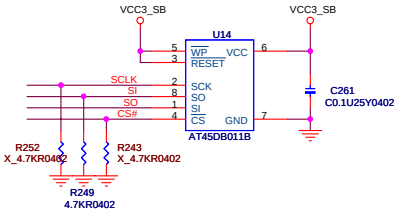
N58-22F0271-S42

Link	Yellow
Active	Blinking
1000	Orange
100	Green
10	None



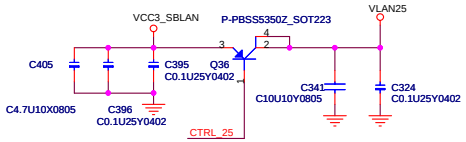


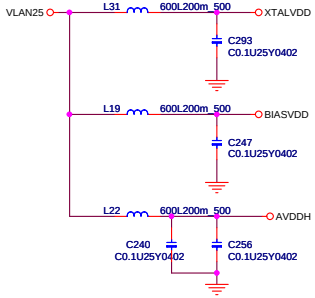
LAN EEPROM



LAN 2.5 POWER

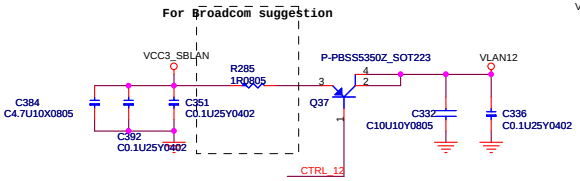
(235mA)

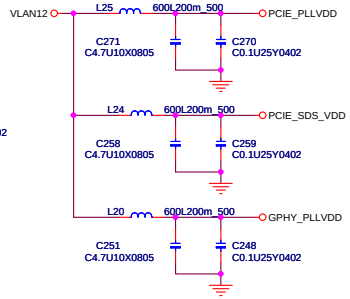




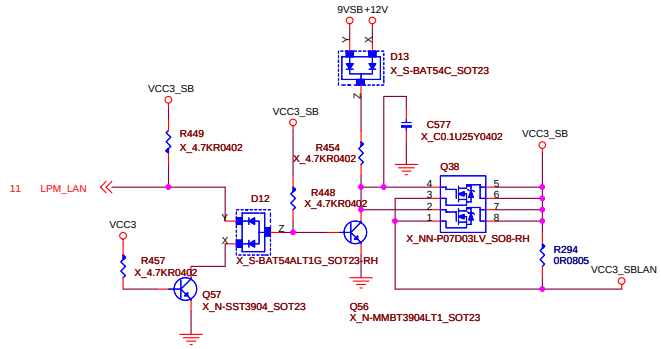
LAN 1.2 POWER

(590mA)



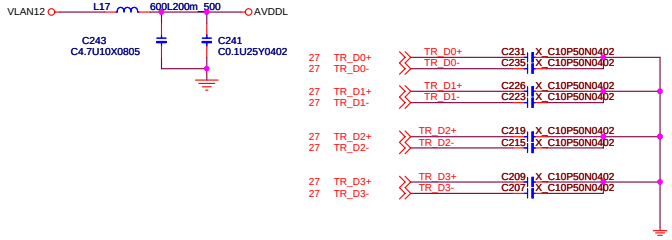


Power control for power consumption

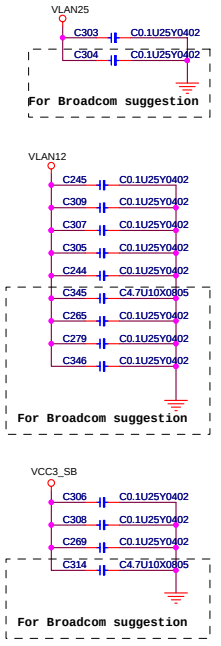


EMI SUGGESTION

EMI SUGGESTION

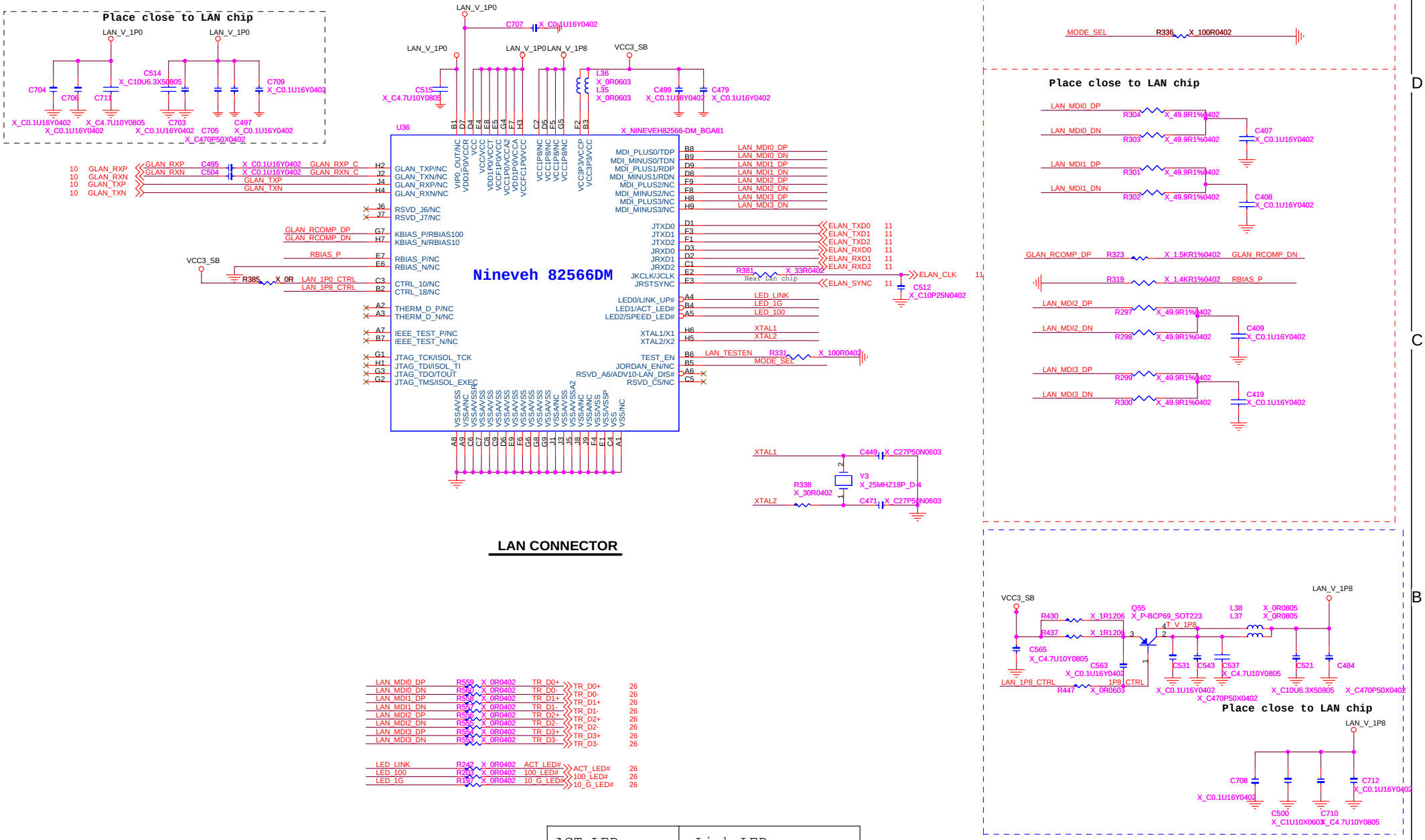


Bypass CAPs



MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7410	
Size: Custom	Document Description: Broadcom-BCM5787M	Rev: 0A
Date: Thursday, August 09, 2007	Sheet 26 of 34	

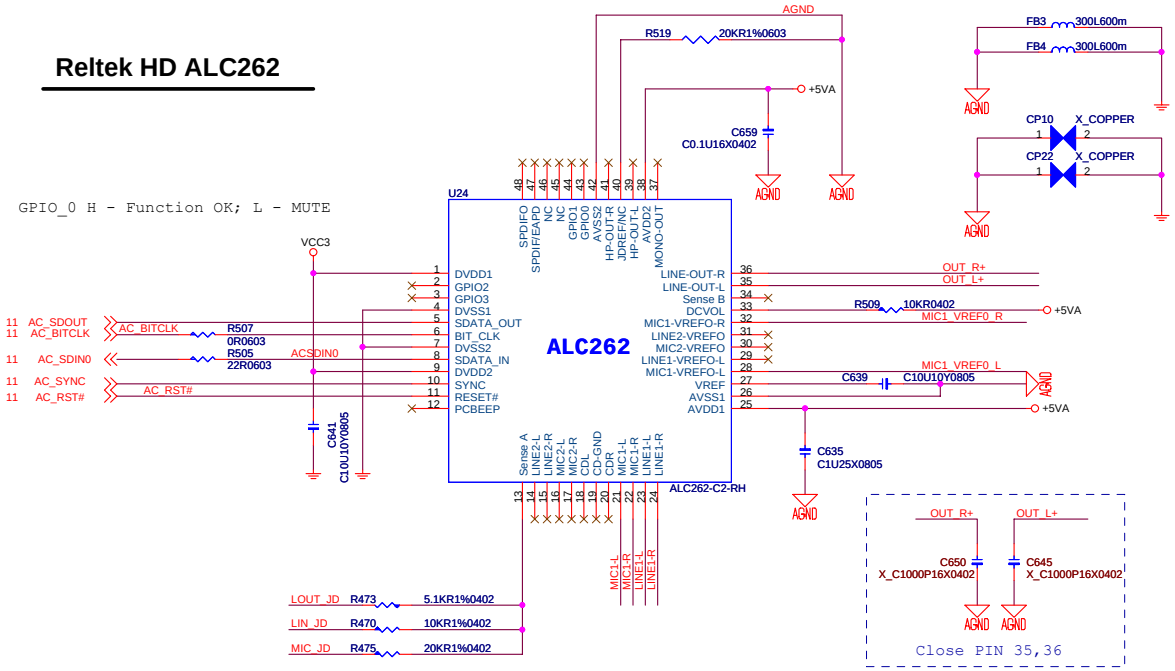
LAN - NINEVEH (ROPROS-VS USE)

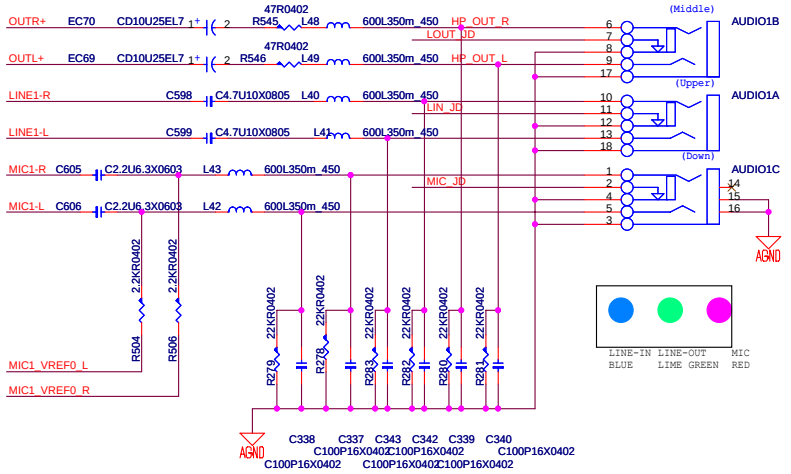


ACT_LED	Link_LED
S0: LOW	S0: LOW
S1/S3/S4/S5: HIGH	S5: HIGH
	S1/S3/S4: WOL EN-->LOW WOL DIS-->HIGH

MICRO-STAR INT'L CO.,LTD	
MS-7410	
Size: Custom	Document Description: LAN-NINEVEH 82566
Rev: 0A	
Date: Thursday, August 09, 2007	Sheet 27 of 34

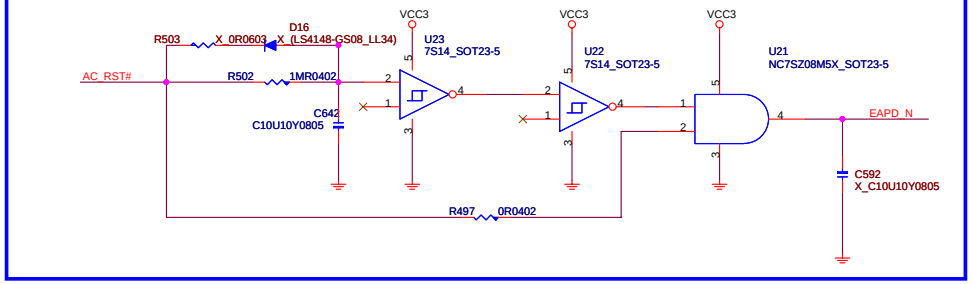
Reltek HD ALC262



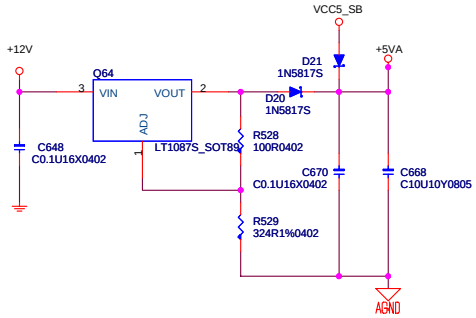


08/01 UPDATE

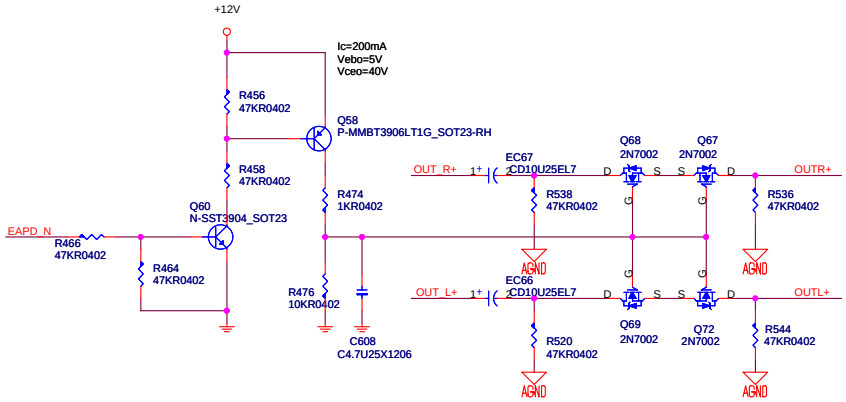
POP noise circuit



AUDIO CODE REGULATORS



Smooth pop noise circuit for Line-out



MICRO-STAR INT'L CO.,LTD		
MS-7410		
Size: Custom	Document Description: HD Audio ALC262	Rev: 0A
Date: Thursday, August 09, 2007	Sheet 28 of 34	

ICH9

GPIO	Alt Func	Pin	I/O/NC	Power	PU	Tol	Default	Signal Name or condition
GPIO[0]	ATADET0	N7	I/O	Vcc3	Y	3.3	INPUT	ATADET0 PULL HIGH 10K
GPIO[1]	PULL HIGH	AK21	I/O	Vcc3	Y	3.3	INPUT	PULL HIGH 10K
GPIO[2]	PIRQ#E	K6	I/O	Vcc3	Y	3.3	INPUT	PULL HIGH 8.2K
GPIO[3]	PIRQ#F	L7	I/O	Vcc3	Y	3.3	INPUT	PULL HIGH 8.2K
GPIO[4]	PIRQ#G	F2	I/O	Vcc3	Y	3.3	INPUT	PULL HIGH 8.2K
GPIO[5]	PIRQ#H	G2	I/O	Vcc3	Y	3.3	INPUT	PULL HIGH 8.2K
GPIO[6]	PULL HIGH	AH22	I/O	Vcc3	Y	3.3	INPUT	PULL HIGH 10K
GPIO[7]	PULL HIGH	AK23	I/O	Vcc3	Y	3.3	INPUT	PULL HIGH 10K
GPIO[8]	ICH GP8 PU	A20	I/O	Vcc3SB	Y	3.3	INPUT	PULL HIGH 10K
GPIO[9]	SIO SMI#	A18	NC	Vcc3	N	3.3	WOL EN	NC
GPIO[10]	ICH GP10 PU	C17	I/O	Vcc3SB	Y	3.3	INPUT	PULL HIGH 10K
GPIO[11]	SMB ALERT#	C16	I/O	Vcc3SB	Y	3.3	SMB ALERT#	PULL HIGH 10K
GPIO[12]	NC	A8	NC	Vcc3SB	N	3.3	OUTPUT	SIO SMI#
GPIO[13]	SIO PME#	A19	I/O	Vcc3SB	Y	3.3	INPUT	SIO PME#
GPIO[14]	CLR PW	A9	I/O	Vcc3SB	Y	3.3	INPUT	PULL HIGH 10K
GPIO[15]	NC	C15	NC	Vcc3SB	Y	3.3	STP PCI#	NC
GPIO[16]	NC	M2	NC	Vcc3	Y	3.3	OUTPUT	NC
GPIO[17]	PULL HIGH	AH21	I/O	Vcc3	Y	3.3	INPUT	PULL HIGH 10K
GPIO[18]	NC	K1	NC	Vcc3	N	3.3	OUTPUT	NC
GPIO[19]	SATA1GP PU	AE20	I/O	Vcc3	Y	3.3	INPUT	PULL HIGH 10K
GPIO[20]	NC	AF5	NC	Vcc3	N	3.3	OUTPUT	NC
GPIO[21]	SATA0GP PU	AK25	I/O	Vcc3	Y	3.3	INPUT	PULL HIGH 10K
GPIO[22]	ICH SGP22 PU	AJ24	I/O	Vcc3	Y	3.3	INPUT	PULL HIGH 10K
GPIO[23]	LDRQ 1#	J3	I/O	Vcc3	Y	3.3	LDRQ 1#	PULL HIGH 10K
GPIO[24]	LPM LAN	A14	NC	Vcc3SB	N	3.3	OUTPUT	LPM LAN
GPIO[25]	NC	B18	NC	Vcc3SB	N	3.3	STP CPU#	NC
GPIO[26]	NC	C11	NC	Vcc3SB	N	3.3	S4 STATE#	NC
GPIO[27]	NC	A11	NC	Vcc3SB	N	3.3	QRT STATE0	NC
GPIO[28]	NC	G18	NC	Vcc3SB	N	3.3	QRT STATE1	NC
GPIO[29]	USB OC#2	N1	I/O	Vcc3SB	Y	3.3	OC#2	USB OC#2
GPIO[30]	USB OC#3	N5	I/O	Vcc3SB	Y	3.3	OC#3	USB OC#3
GPIO[31]	USB OC#3	M1	I/O	Vcc3SB	Y	3.3	OC#3	USB OC#3
GPIO[32]	SPI WP#	K2	I/O	Vcc3	N	3.3	OUTPUT	SPI WP#
GPIO[33]	SPI HOLD GPO#	AF6	I/O	Vcc3	N	3.3	OUTPUT	SPI HOLD GPO#
GPIO[34]	LAN DISABLE	AH5	I/O	Vcc3	N	3.3	OUTPUT	LAN DISABLE
GPIO[35]	NC	L1	NC	Vcc3	N	3.3	OUTPUT	NC
GPIO[36]	SATA2GP PU	AE21	I/O	Vcc3	Y	3.3	INPUT	SATA2GP PU
GPIO[37]	SATA3GP PU	AE22	I/O	Vcc3	Y	3.3	INPUT	SATA3GP PU
GPIO[38]	ICH SGP38 PU	AK24	I/O	Vcc3	Y	3.3	INPUT	ICH SGP38 PU
GPIO[39]	ICH SGP39 PD	AH23	I/O	Vcc3	Y	3.3	SDATAOUT0	ICH SGP39 PD
GPIO[40]	USB OC#0	N3	I/O	Vcc3SB	Y	3.3	OC#0	USB OC#0
GPIO[41]	USB OC#1	P7	I/O	Vcc3SB	Y	3.3	OC#1	USB OC#1
GPIO[42]	USB OC#1	R7	I/O	Vcc3SB	Y	3.3	OC#1	USB OC#1
GPIO[43]	USB OC#2	N2	I/O	Vcc3SB	Y	3.3	OC#2	USB OC#2
GPIO[44]	USB OC#3	P3	I/O	Vcc3SB	Y	3.3	OC#3	USB OC#3
GPIO[45]	USB OC#3	R6	I/O	Vcc3SB	Y	3.3	OC#3	USB OC#3
GPIO[46]	USB OC#3	T7	I/O	Vcc3SB	Y	3.3	OC#3	USB OC#3
GPIO[47]	USB OC#3	P1	I/O	Vcc3SB	Y	3.3	OC#3	USB OC#3
GPIO[48]	ICH SGP48 PD	AD20	I/O	Vcc3	Y	3.3	SDATAOUT1	PULL HIGH 10K
GPIO[49]	DMI STRAP	AJ25	I/O	Vcc3	N	3.3	OUTPUT	PULL LOW 2.2K
GPIO[50]	PREQ#1	G13	I/O	Vcc5	Y	5.5	PREQ#1	PULL HIGH 2.7K
GPIO[51]	PGNT#1	A7	I/O	Vcc3	N	3.3	PGNT#1	PGNT#1
GPIO[52]	PREQ#2	F13	I/O	Vcc5	Y	5.5	PREQ#2	PULL HIGH 2.7K
GPIO[53]	PGNT#2	C7	I/O	Vcc3	N	3.3	PGNT#2	STRAP PIN
GPIO[54]	PREQ#3	G8	I/O	Vcc5	Y	5.5	PREQ#3	PULL HIGH 2.7K
GPIO[55]	PGNT#3	F7	I/O	Vcc3	N	3.3	PGNT#3	STRAP PIN
GPIO[56]	ICH GP56 PU	F16	I/O	Vcc3SB	Y	3.3	GPIO SEL	PULL HIGH 10K
GPIO[57]	ICH GP57 PU	C12	I/O	Vcc3SB	Y	3.3	INPUT	PULL HIGH 10K
GPIO[58]	SPI CS1#	F23	I/O	Vcc3SB	Y	3.3	SPI CS1#	SPI CS1#
GPIO[59]	USB OC#0	P5	I/O	Vcc3SB	Y	3.3	OC#0	USB OC#0
GPIO[60]	LINK ALERT#	F18	I/O	Vcc3SB	Y	3.3	LINK ALERT#	LINK ALERT#

FWH Note: FWH GPs should only be used for static options, do not put dynamic nets on these

GPIO	Pin#	Power	Tol	Signal Name
FPGI[0]	6	Main	3.3	pull-down
FPGI[1]	5	Main	3.3	pull-high
FPGI[2]	4	Main	3.3	pull-high
FPGI[3]	3	Main	3.3	pull-high
FPGI[4]	30	Main	3.3	pull-down

PCI Config.

DEVICE	MCP1 INT Pin	REQ#/GNT#	IDSEL	CLOCK
PCI1	PIRQ#A PIRQ#B PIRQ#C PIRQ#D	PREQ#0 PGNT#0	AD16	PCI_CLK0
PCI2	PIRQ#B PIRQ#D PIRQ#C PIRQ#A	PREQ#1 PGNT#1	AD17	PCI_CLK1

DDRII DIMM Config.

DEVICE	ADDRESS	CLOCK
DIMM 1	A0H	MCLK_A0/MCLK_A#0 MCLK_A1/MCLK_A#1 MCLK_A2/MCLK_A#2
DIMM 2	A2H	MCLK_A1/MCLK_A#3 MCLK_A2/MCLK_A#4 MCLK_A2/MCLK_A#5
DIMM 3	A4H	MCLK_B0/MCLK_B#0 MCLK_B2/MCLK_B#1 MCLK_B1/MCLK_B#2
DIMM 4	A6H	MCLK_B0/MCLK_B#3 MCLK_B1/MCLK_B#4 MCLK_B2/MCLK_B#5

JUMPER SETTING

JBAT1	(1-2)NORMAL	(2-3)CLEAR

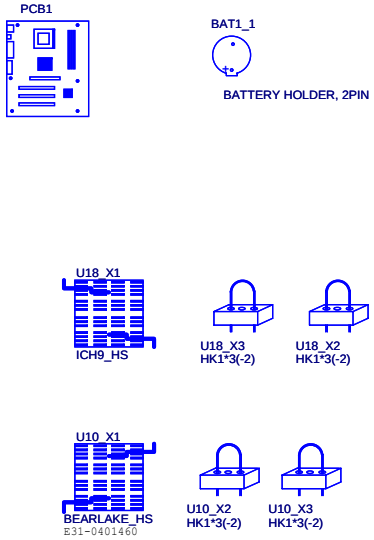
MICRO-STAR INT'L CO.,LTD

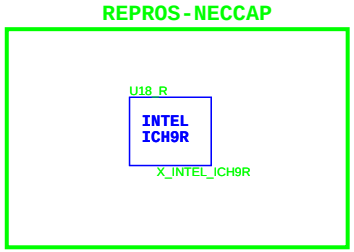
MS-7410

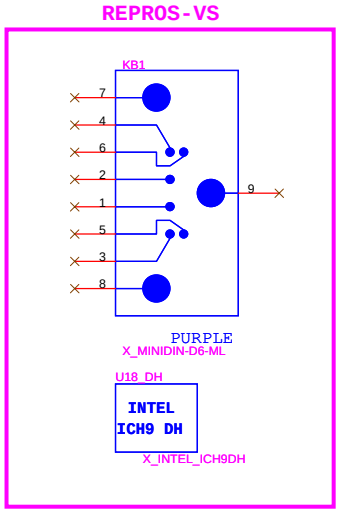
Size: Custom | Document Description: GPIO & Jumper setting | Rev: 0A

Date: Wednesday, August 08, 2007 | Sheet 29 of 34

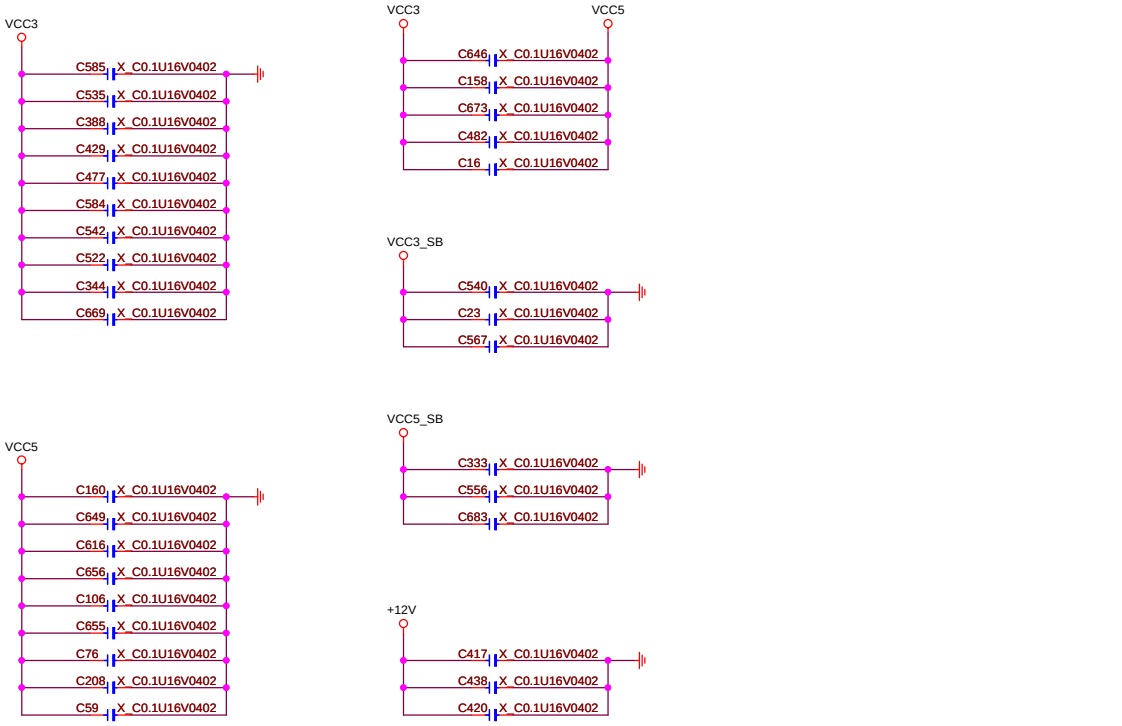
MANUAL PART





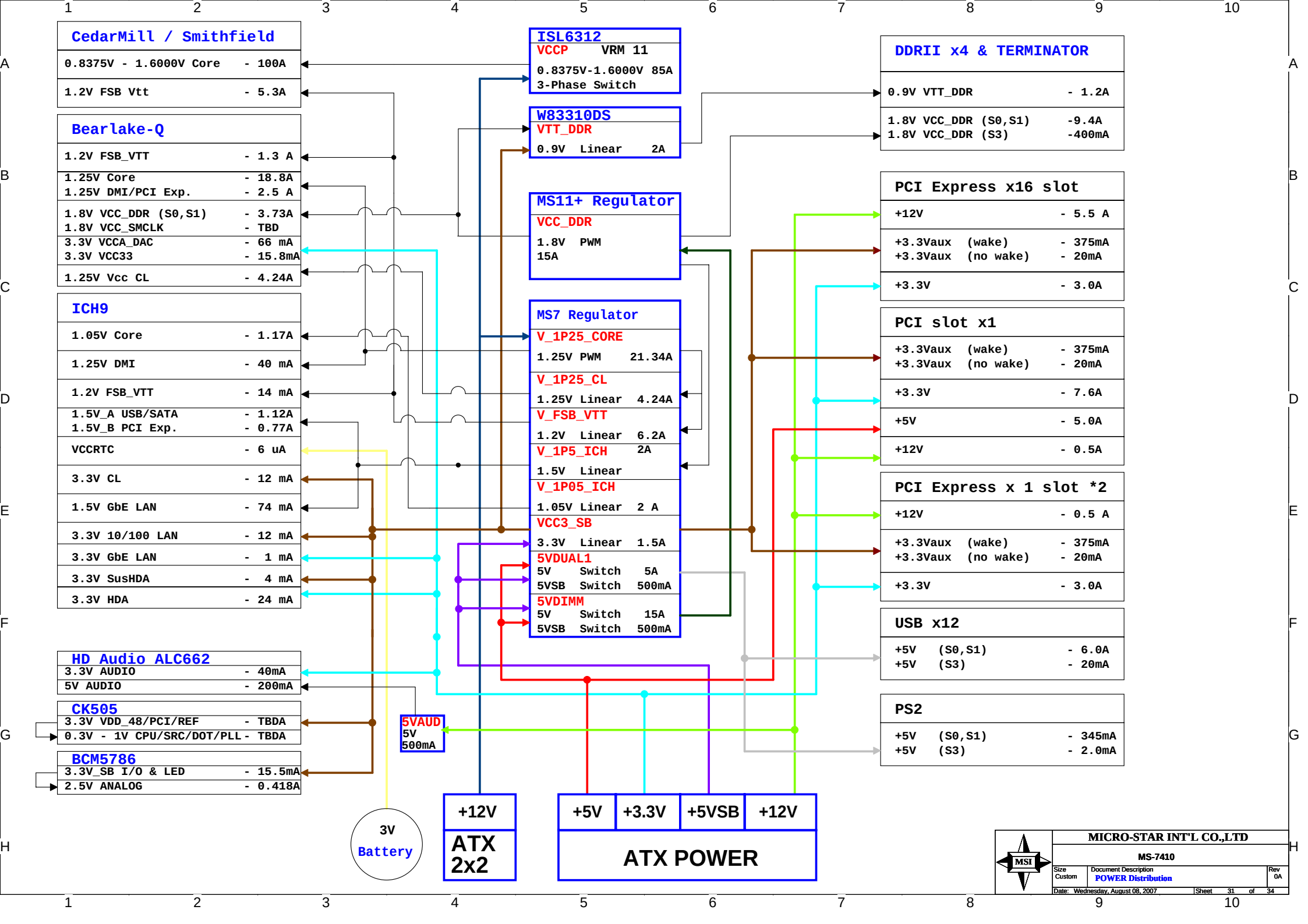


EMI SUGGESTION



Model option table

Model type	Function	BOM Config	ERP BOM No.
MS7410-MA	INTEL G33 + ICH9 + Broadcom Giga Lan		
MS7410-VS	INTEL G33 + ICH9DH + Intel 82566 Giga Lan		
MS7410-NECCAP	INTEL G33 + ICH9R + Broadcom Giga Lan		


CedarMill / Smithfield
0.8375V - 1.6000V Core - 100A
1.2V FSB Vtt - 5.3A
Bearlake-Q
1.2V FSB_VTT - 1.3 A
1.25V Core - 18.8A
1.25V DMI/PCI Exp. - 2.5 A
1.8V VCC_DDR (S0,S1) - 3.73A
1.8V VCC_SMCLK - TBD
3.3V VCCA_DAC - 66 mA
3.3V VCC33 - 15.8mA
1.25V Vcc CL - 4.24A
ICH9
1.05V Core - 1.17A
1.25V DMI - 40 mA
1.2V FSB_VTT - 14 mA
1.5V_A USB/SATA - 1.12A
1.5V_B PCI Exp. - 0.77A
VCCRTC - 6 uA
3.3V CL - 12 mA
1.5V GbE LAN - 74 mA
3.3V 10/100 LAN - 12 mA
3.3V GbE LAN - 1 mA
3.3V SusHDA - 4 mA
3.3V HDA - 24 mA
HD Audio ALC662
3.3V AUDIO - 40mA
5V AUDIO - 200mA
CK505
3.3V VDD_48/PCI/REF - TBDA
0.3V - 1V CPU/SRC/DOT/PLL - TBDA
BCM5786
3.3V_SB I/O & LED - 15.5mA
2.5V ANALOG - 0.418A
ISL6312
VCCP VRM 11
0.8375V-1.6000V 85A
3-Phase Switch
W83310DS
VTT_DDR
0.9V Linear 2A
MS11+ Regulator
VCC_DDR
1.8V PWM
15A
MS7 Regulator
V_1P25_CORE
1.25V PWM 21.34A
V_1P25_CL
1.25V Linear 4.24A
V_FSB_VTT
1.2V Linear 6.2A
V_1P5_ICH 2A
1.5V Linear
V_1P05_ICH
1.05V Linear 2 A
VCC3_SB
3.3V Linear 1.5A
5VDUAL1
5V Switch 5A
5VSB Switch 500mA
5VDIMM
5V Switch 15A
5VSB Switch 500mA
5VAUD
5V
500mA
3V
Battery
+12V
ATX
2x2
+5V
+3.3V
+5VSB
+12V
ATX POWER
DDRII x4 & TERMINATOR
0.9V VTT_DDR - 1.2A
1.8V VCC_DDR (S0,S1) -9.4A
1.8V VCC_DDR (S3) -400mA
PCI Express x16 slot
+12V - 5.5 A
+3.3Vaux (wake) - 375mA
+3.3Vaux (no wake) - 20mA
+3.3V - 3.0A
PCI slot x1
+3.3Vaux (wake) - 375mA
+3.3Vaux (no wake) - 20mA
+3.3V - 7.6A
+5V - 5.0A
+12V - 0.5A
PCI Express x 1 slot *2
+12V - 0.5 A
+3.3Vaux (wake) - 375mA
+3.3Vaux (no wake) - 20mA
+3.3V - 3.0A
USB x12
+5V (S0,S1) - 6.0A
+5V (S3) - 20mA
PS2
+5V (S0,S1) - 345mA
+5V (S3) - 2.0mA
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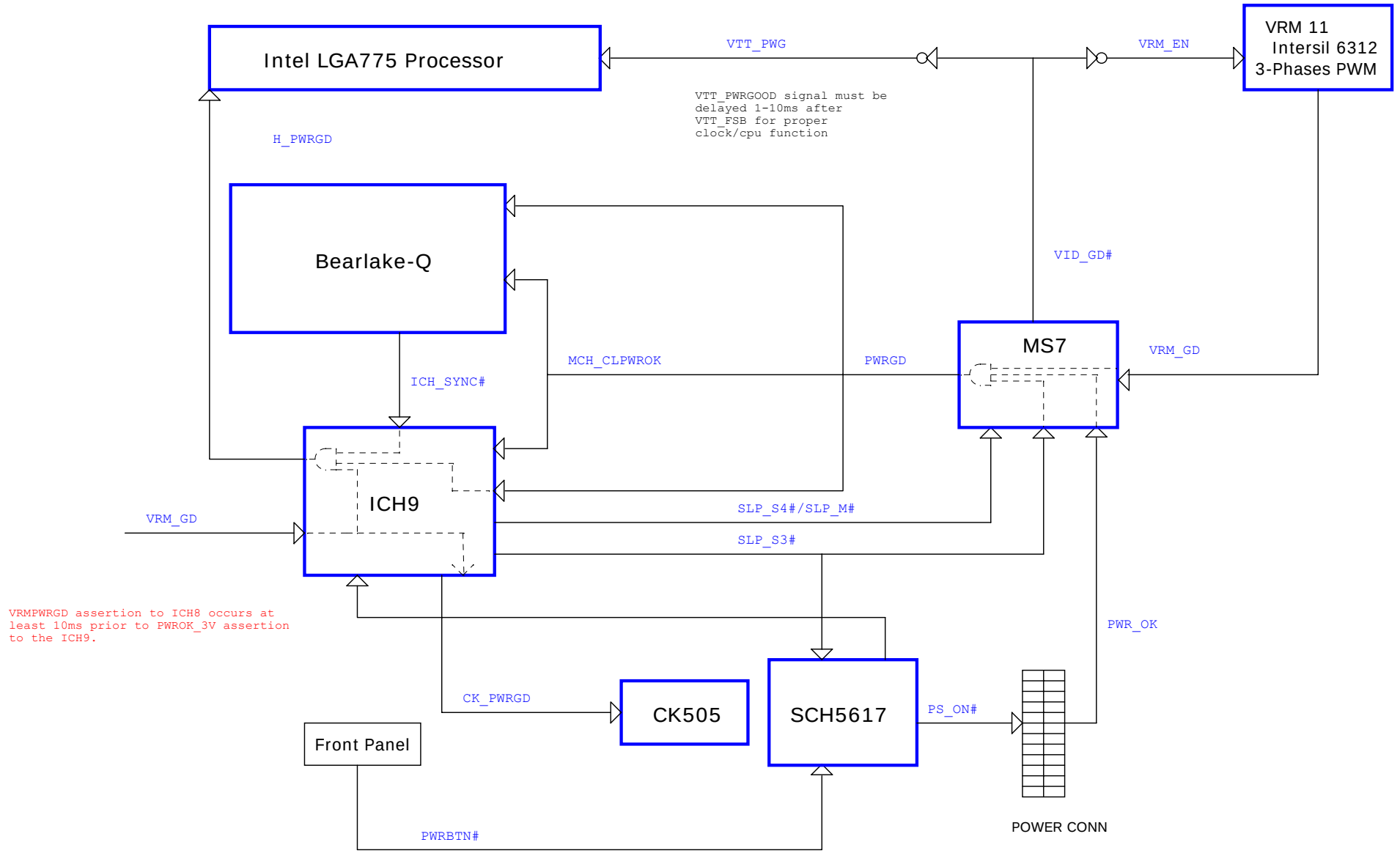
Size Custom
Document Description
POWER Distribution
Rev 0A
Date: Wednesday, August 08, 2007
Sheet 31 of 34

PWROK MAP



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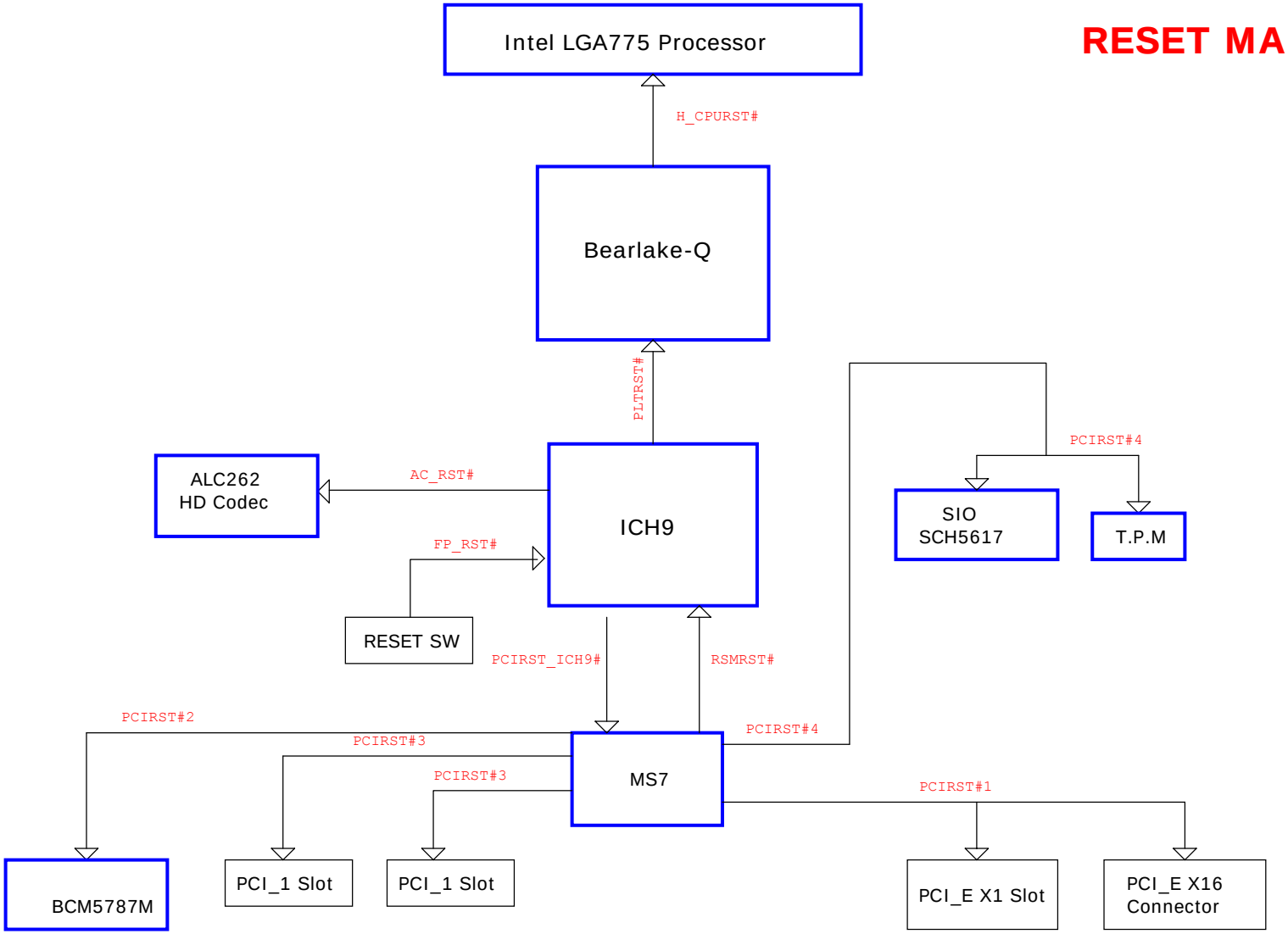
Size: Custom	Document Description: PWROK MAP	Rev: 0A
Date: Wednesday, August 08, 2007	Sheet 32 of 34	

RESET MAP



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Date: Wednesday, August 08, 2007	Sheet 33 of 34	

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Date: Wednesday, August 08, 2007 | Sheet 34 of 34