MS-7407 Ver : 0A

Intel (R) LGA775 Processor (130W)

Intel (R) (GMCH G31) + ICH7 Chipset

CPU:

Intel Core 2 Duo/Extreme/Quad & Pentium D Processor

System Chipset:

Intel G31 (North Bridge) Rev :

Intel ICH7 (South Bridge) Rev :

On Board Chipset:

CLOCK : ICS9LP505

PLC LAN ET82566DC

LPC Super I/O : W83627DHG Ver :

Audio Codec : ALC888 7.1 Channel Ver : A1

BIOS : SPI- 16M

Main Memory:

DDR II * 2 (Max 4GB)

Expansion Slots:

PCI X SLOT *1 (FOR PCIE & PCI Riser)

Title COVER

Rev 0A

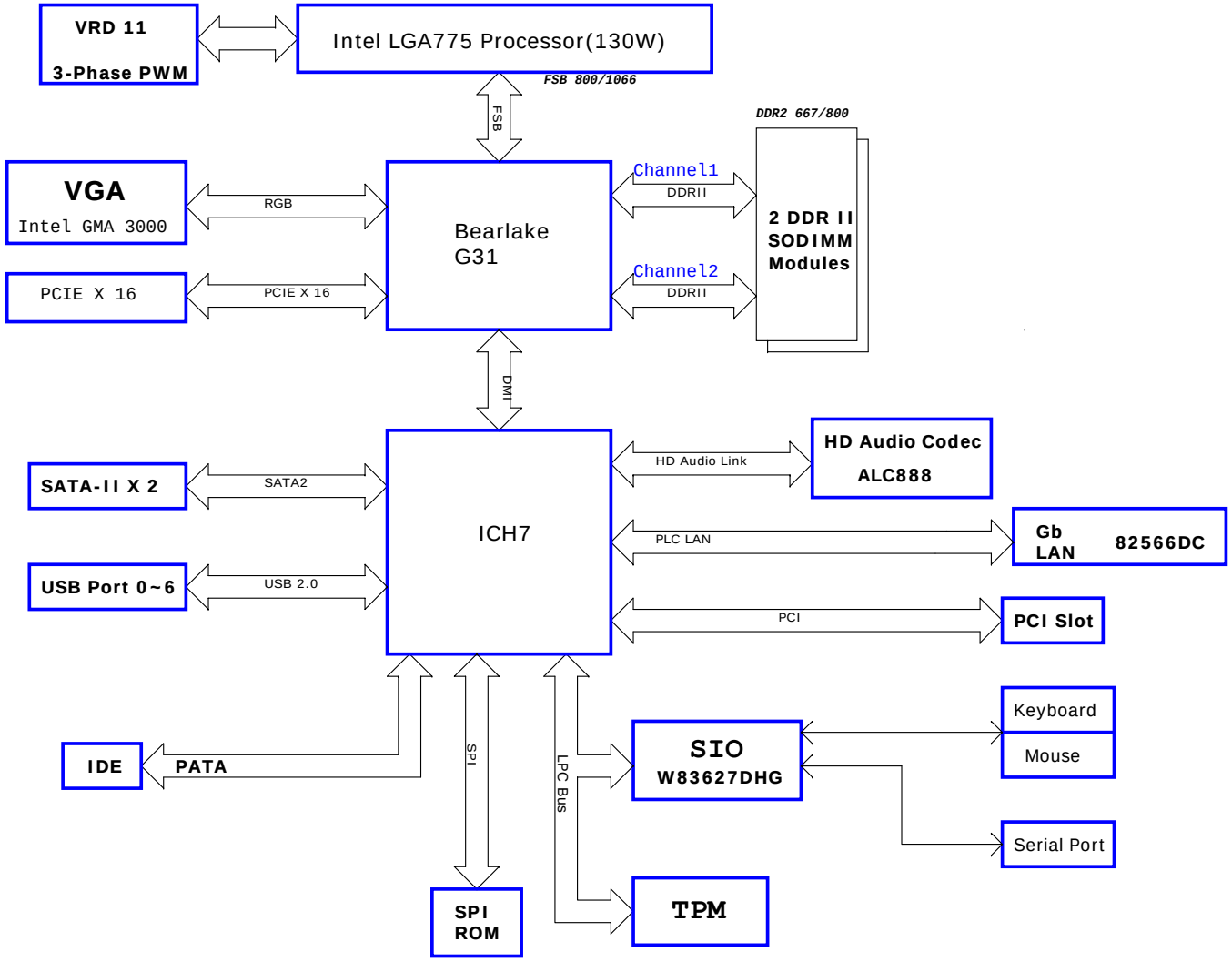
Document Number MS-7407

MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City,
Taipei Hsien, Taiwan
http://www.msi.com.tw

Last Revision Date: Thursday, May 31, 2007

Sheet 1 of 35

Block Diagram



Micro Star Restricted Secret		
Title	***BLOCK DIAGRAM***	Rev 0A
Document Number	*MS-7407*	
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Thursday, May 31, 2007	
	Sheet 2 of 35	

ICH7

GPIO	Alt Func	Pin	I/O/NC	Power	PU	SMI	Tol	Default	Signal Name
GPIO[0]	BM_BUSY#	AB18	I/O	Vcc3p3	N	Y	3.3	Input	strapped high
GPIO[1]	PCIREQ[5]#	C8	I/O	V5REF	N	Y	5	Input	PREQ#5
GPIO[2]	PIRQE#	G8	I/OD	V5REF	N	Y	5	Input	PIRQ#E
GPIO[3]	PIRQF#	F7	I/OD	V5REF	N	Y	5	Input	PIRQ#F
GPIO[4]	PIRQG#	F8	I/OD	V5REF	N	Y	5	Input	PIRQ#G
GPIO[5]	PIRQH#	G7	I/OD	V5REF	N	Y	5	Input	PIRQ#H
GPIO[6]	unmuxed	AC21	I/O	Vcc3p3	N	Y	3.3	Input	ATADET0
GPIO[7]	unmuxed	AC18	I/O	Vcc3p3	N	Y	3.3	Input	strapped high
GPIO[8]	unmuxed	E21	I/O	VccSus3p3	N	Y	3.3	Input	SIO_PME#
GPIO[9]	unmuxed	E20	I/O	VccSus3p3	N	Y	3.3	Input	strapped high
GPIO[10]	unmuxed	A20	I/O	VccSus3p3	N	Y	3.3	Input	strapped high
GPIO[11]	SMBALERT#	B23	I/O	VccSus3p3	N	Y	3.3	Input	strapped high
GPIO[12]	unmuxed	F19	I/O	VccSus3p3	N	Y	3.3	Input	strapped high
GPIO[13]	unmuxed	E19	I/O	VccSus3p3	N	Y	3.3	Input	strapped high
GPIO[14]	unmuxed	R4	I/O	VccSus3p3	N	Y	3.3	Input	strapped high
GPIO[15]	unmuxed	E22	I/O	VccSus3p3	N	Y	3.3	Input	strapped high
GPIO[16]	unmuxed	AC22	I/O	Vcc3p3	N	N	3.3	0	NC
GPIO[17]	PCIGNT[5]#	D8	I/O	Vcc3p3	N	N	3.3	N/A	PGNT#5
GPIO[18]	unmuxed	AC20	I/O	Vcc3p3	N	N	3.3	1	SIO_HOLD#
GPIO[19]	SATA1GP	AH18	I/O	Vcc3p3	N	N	3.3	Input	strapped high
GPIO[20]	unmuxed	AF21	I/O	Vcc3p3	N	N	3.3	1	NC
GPIO[21]	SATA0GP	AF19	I/O	Vcc3p3	N	N	3.3	Input	strapped high
GPIO[22]	PCIREQ[4]#	A13	I/O	Vcc3p3	N	N	3.3	Input	PREQ#4
GPIO[23]	LDRQ1#	AA5	I/O	Vcc3p3	N	N	3.3	Input	NC
GPIO[24]	unmuxed	R3	I/O	VccSus3p3	N	N	3.3	No Change	LANPHY_DIS#
GPIO[25]	unmuxed	D20	I/O	VccSus3p3	Y	N	3.3	1	DMI_MODE
GPIO[26]	unmuxed	A21	I/O	VccSus3p3	N	N	3.3	0	NC
GPIO[27]	unmuxed	B21	I/O	VccSus3p3	N	N	3.3	0	LAN2_EN
GPIO[28]	unmuxed	E23	I/O	VccSus3p3	N	N	3.3	0	NC
GPIO[29]	OC5#	C3	I/O	VccSus3p3	N	N	3.3	Input	USB_OCP#4
GPIO[30]	OC6#	A2	I/O	VccSus3p3	N	N	3.3	Input	USB_OCP#4
GPIO[31]	OC7#	B3	I/O	VccSus3p3	N	N	3.3	Input	USB_OCP#4
GPIO[32]	unmuxed	AG18	I/O	Vcc3p3	N	N	3.3	1	SPI_WP#
GPIO[33]	unmuxed	AC19	I/O	Vcc3p3	N	N	3.3	1	NC
GPIO[34]	unmuxed	U2	I/O	Vcc3p3	N	N	3.3	0	NC
GPIO[35]	unmuxed	AD21	I/O	Vcc3p3	N	N	3.3	1	NC
GPIO[36]	SATA2GP	AH19	I/O	Vcc3p3	N	N	3.3	Input	strapped high
GPIO[37]	SATA3GP	AE19	I/O	Vcc3p3	N	N	3.3	Input	strapped high
GPIO[38]	unmuxed	AD20	I/O	Vcc3p3	N	N	3.3	Input	strapped high
GPIO[39]	unmuxed	AE20	I/O	Vcc3p3	N	N	3.3	Input	strapped high
GPIO[48]	GNT4#	A14	I/O	Vcc3p3	N	N	3.3	N/A	PGNT#4
GPIO[49]	CPUPWRGD	AG24	I/O	V_CPU_IO	N	N	CPU	N/A	H_PWRGD

Following are the GPIOs that need to be terminated properly if not used:
GPIO[39:36,23:21,19,7:0]: default as inputs and should be pulled up to Vcc3_3 if unused.
GPIO[31:29,15:8]: default as inputs and should be pulled up to VccSus3_3 if unused.

PCI Config.

DEVICE	MCP1 INT Pin	REQ#/GNT#	IDSEL	CLOCK
PCI Slot 1	PIRQ#A PIRQ#B PIRQ#C PIRQ#D	PREQ#0 PGNT#0	AD20	PCI_CLK1
PCI Slot 2	PIRQ#C PIRQ#D PIRQ#A PIRQ#B	PREQ#2 PGNT#2	AD21	PCI_CLK2
1394	PIRQ#B	PREQ#1 PGNT#1	AD19	1394_PCLK

PCI RESET DEVICE

Signals	Target
PCIRST#1	SIO,TPM
PCIRST#2	1394,PCIE X16 SLOT
PCIRST#3	PCI SLOT 1,2
PLTRST#	MS7
HD_RST#	Primary IDE

DDRII DIMM Config.

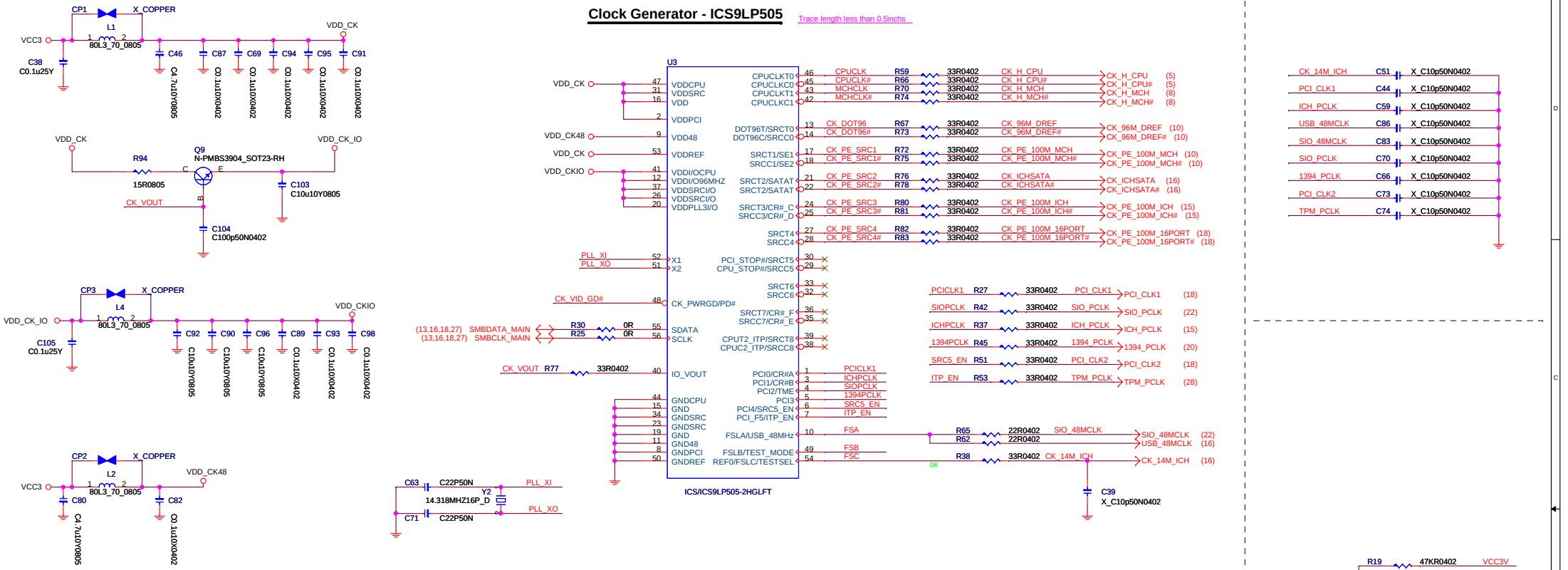
DEVICE	ADDRESS	CLOCK
DIMM 1	A0H	SCLK_A0/SCLK_A#0 SCLK_A1/SCLK_A#1 SCLK_A2/SCLK_A#2
DIMM 2	A2H	SCLK_B0/SCLK_B#0 SCLK_B1/SCLK_B#1 SCLK_B2/SCLK_B#2

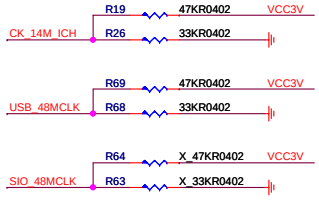
JUMPER SETTING

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

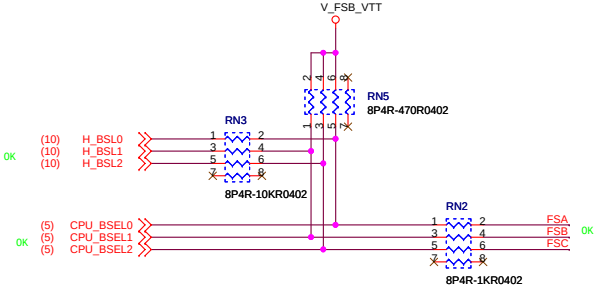
Clock Generator - ICS9LP505

Trace length less than 0.5inchs

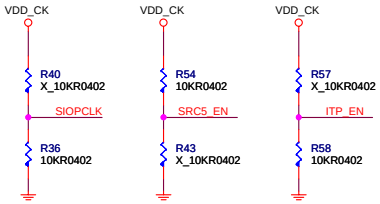




BSEL[0..2] Level Shift

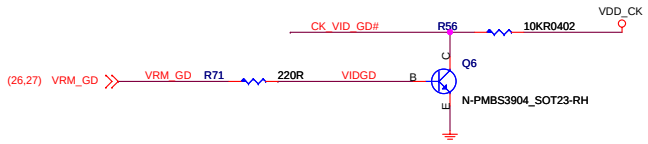


BSEL			TABLE
2	1	0	FSB FREQUENCY
0	0	0	266 MHz (1066)
0	1	0	200 MHZ (800)
0	0	1	133 MHZ (533)

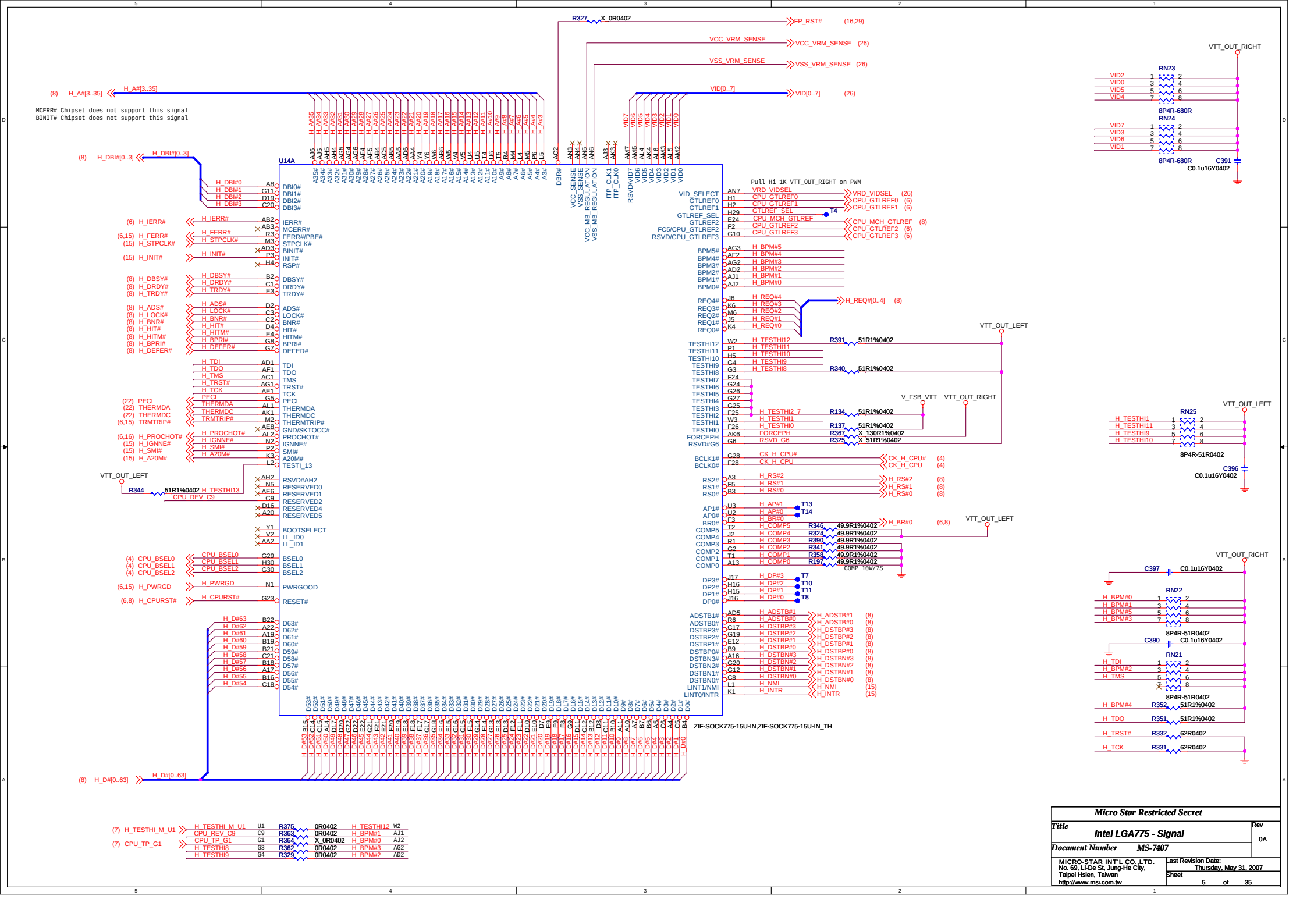


SIGNAL	Pull-High	Pull-Low
SIOPCLK	Trusted Mode	Overclocking
SRC5_EN	Enable SRC5/SRC5#	Enable CPU_STOP#/PCI_STOP#
ITP_EN	CPU_ITPCLK	For SRCCLK8

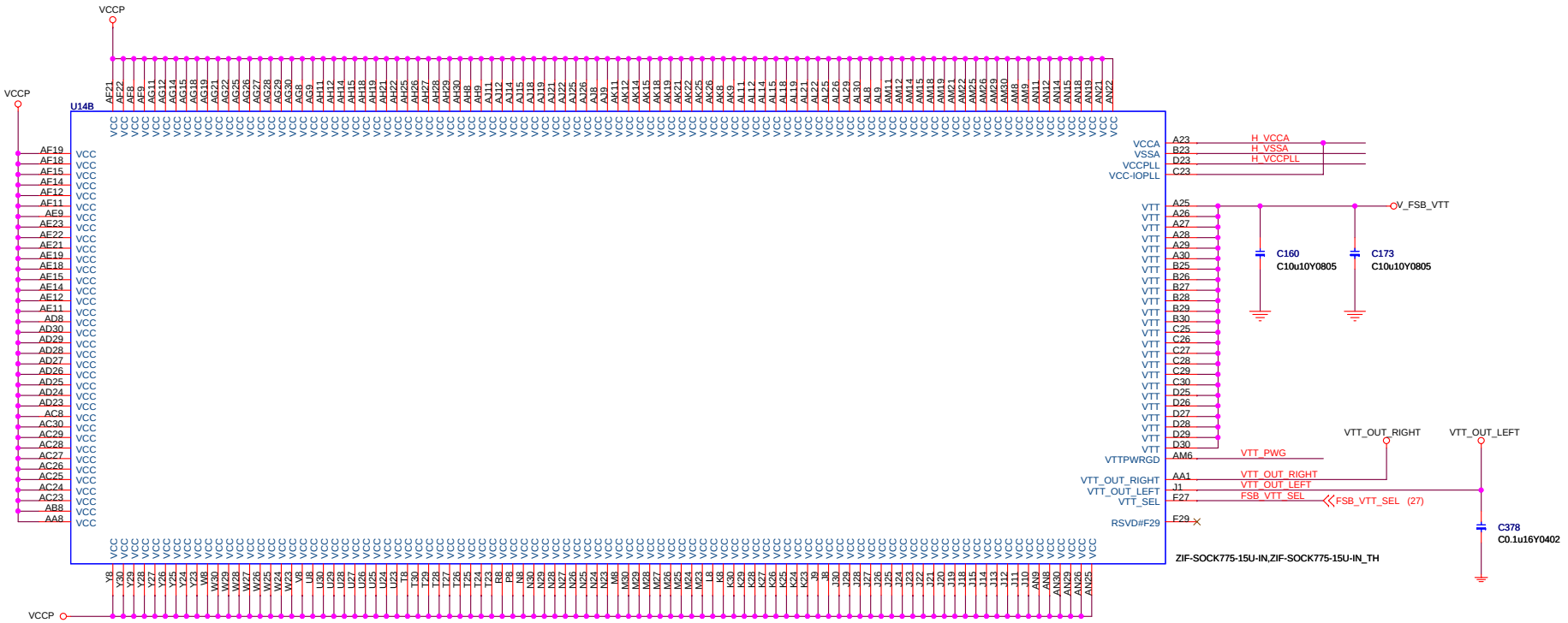
Clock Generator VTT Power Down Block

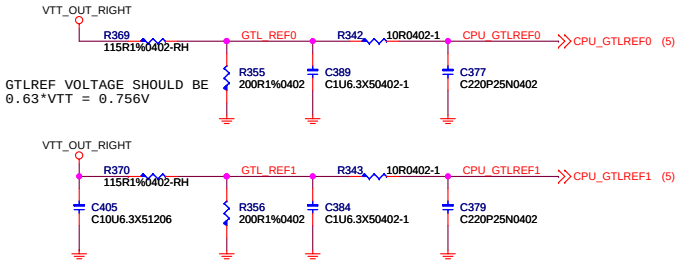


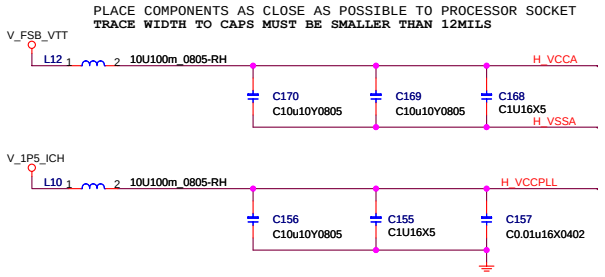
Micro Star Restricted Secret	
Title: Clock Generator - ICS954119	Rev: 0A
Document Number: MS-7407	
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Thursday, May 31, 2007
	Sheet 4 of 35



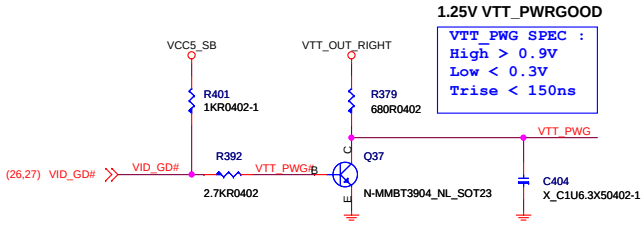
Micro Star Restricted Secret	
Title: **Intel LGA775 - Signal**	Rev: 0A
Document Number: **MS-7407**	
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Thursday, May 31, 2007
	Sheet 5 of 35

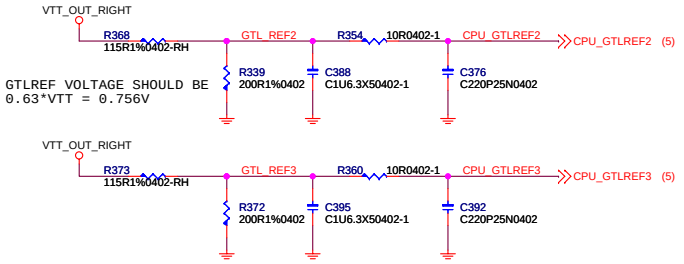


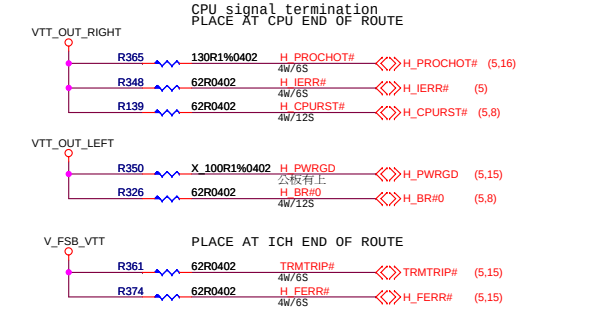




VTT_PWRGOOD

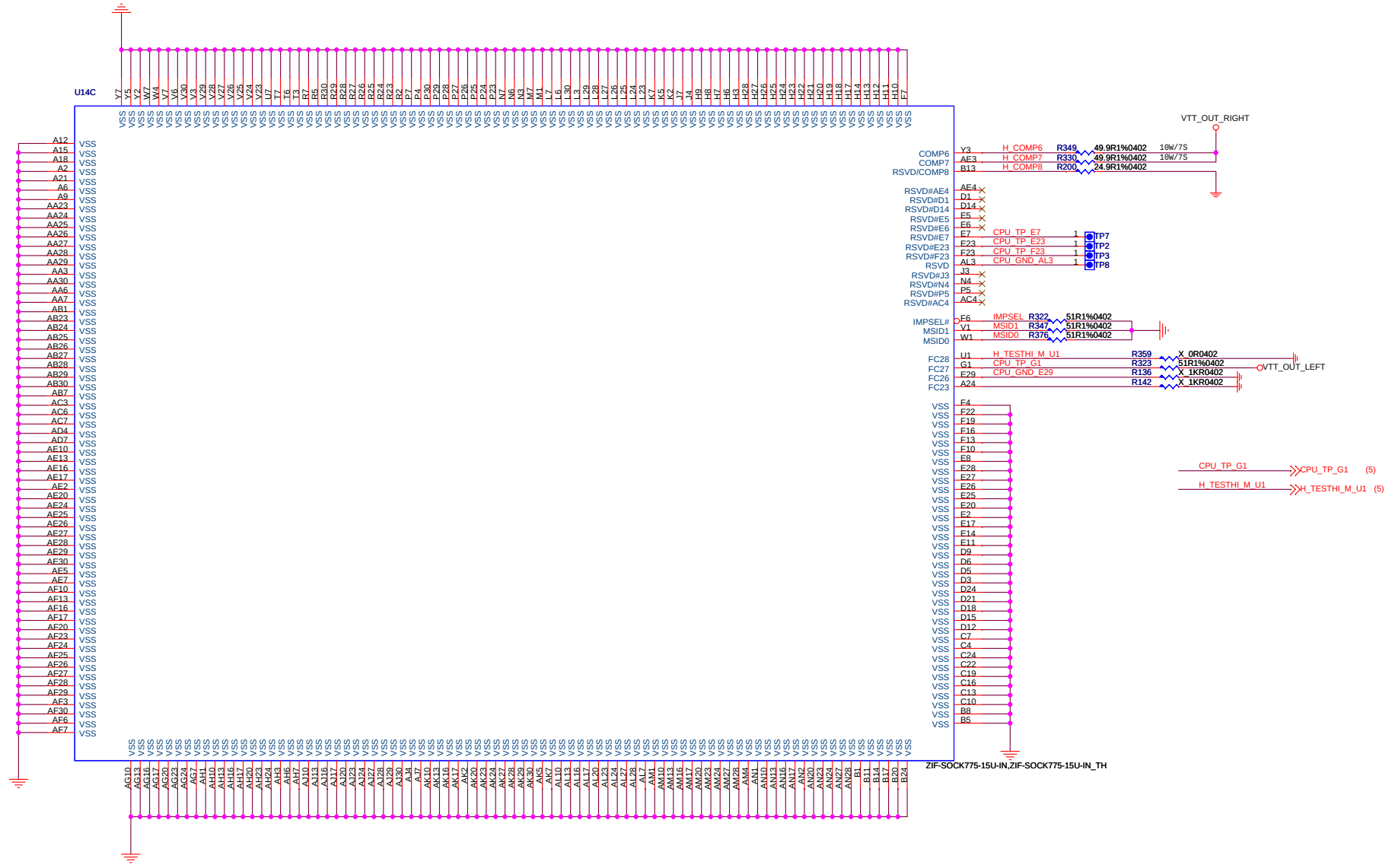




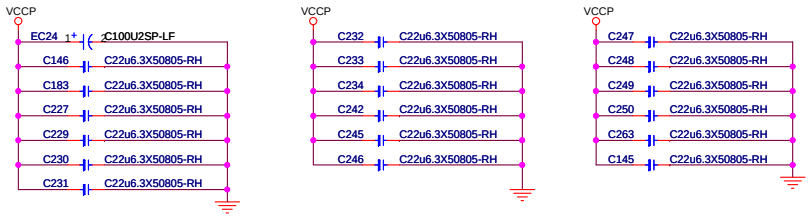


Title	Intel LGA775 - Power
Rev	0A
Document Number	MS-7407
Last Revision Date	Thursday, May 31, 2007
Sheet	6 of 35

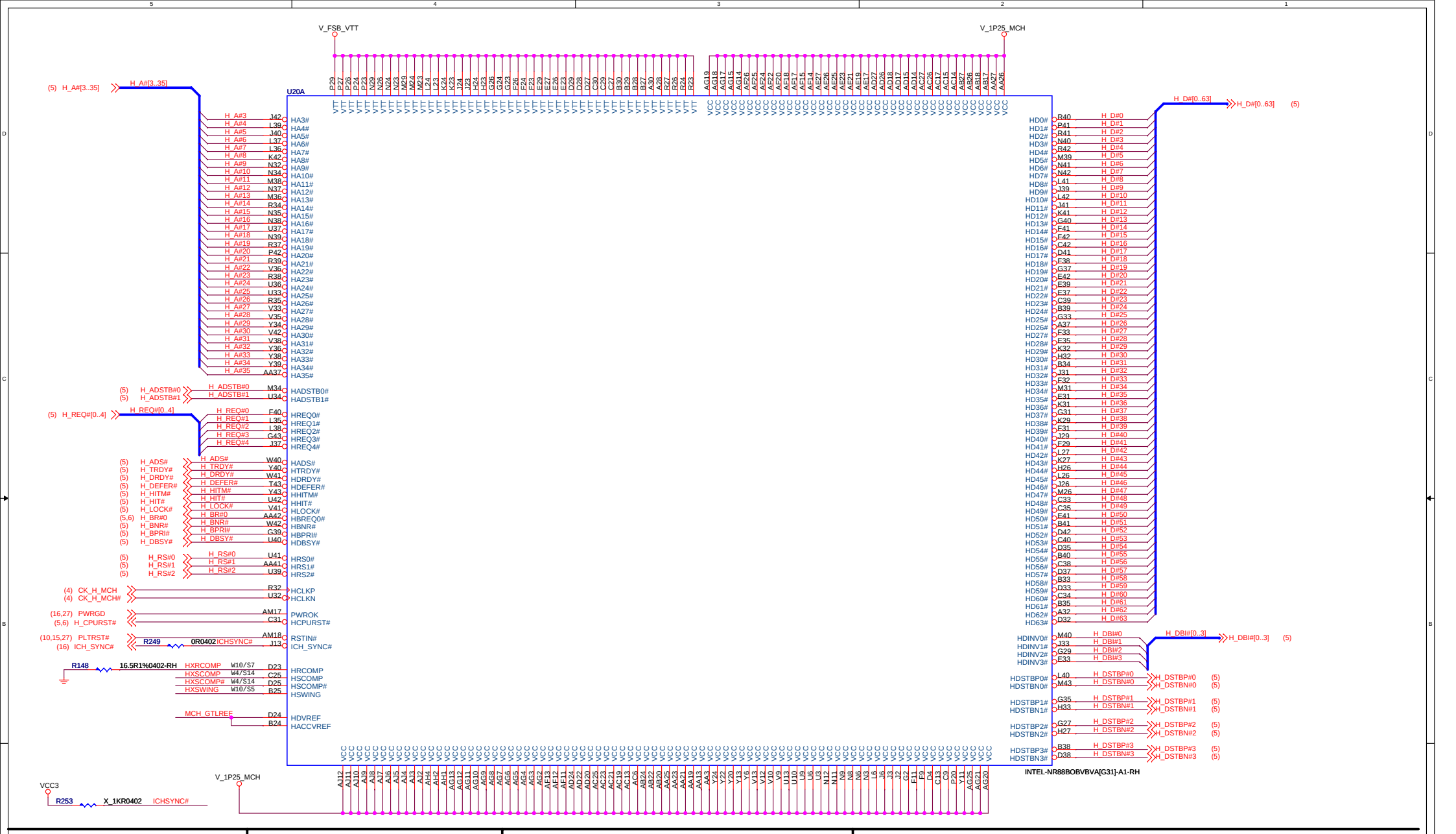
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City,
Taipei Hsien, Taiwan
http://www.msi.com.tw

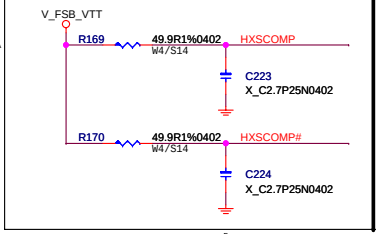


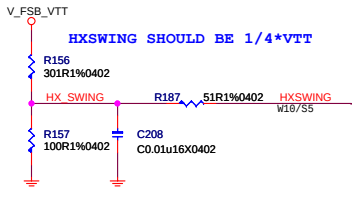
CPU DECOUPLING CAPACITORS

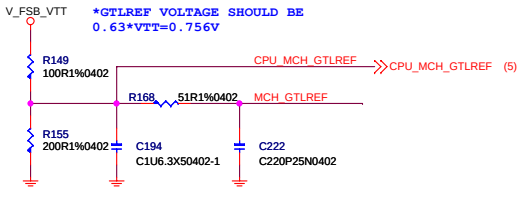


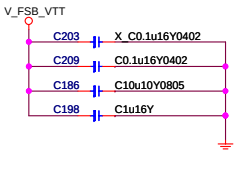
Micro Star Restricted Secret		
Title	*Intel LGA775 - GND*	Rev 0A
Document Number	*MS-7407*	
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Thursday, May 31, 2007	Sheet 7 of 35

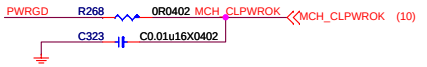












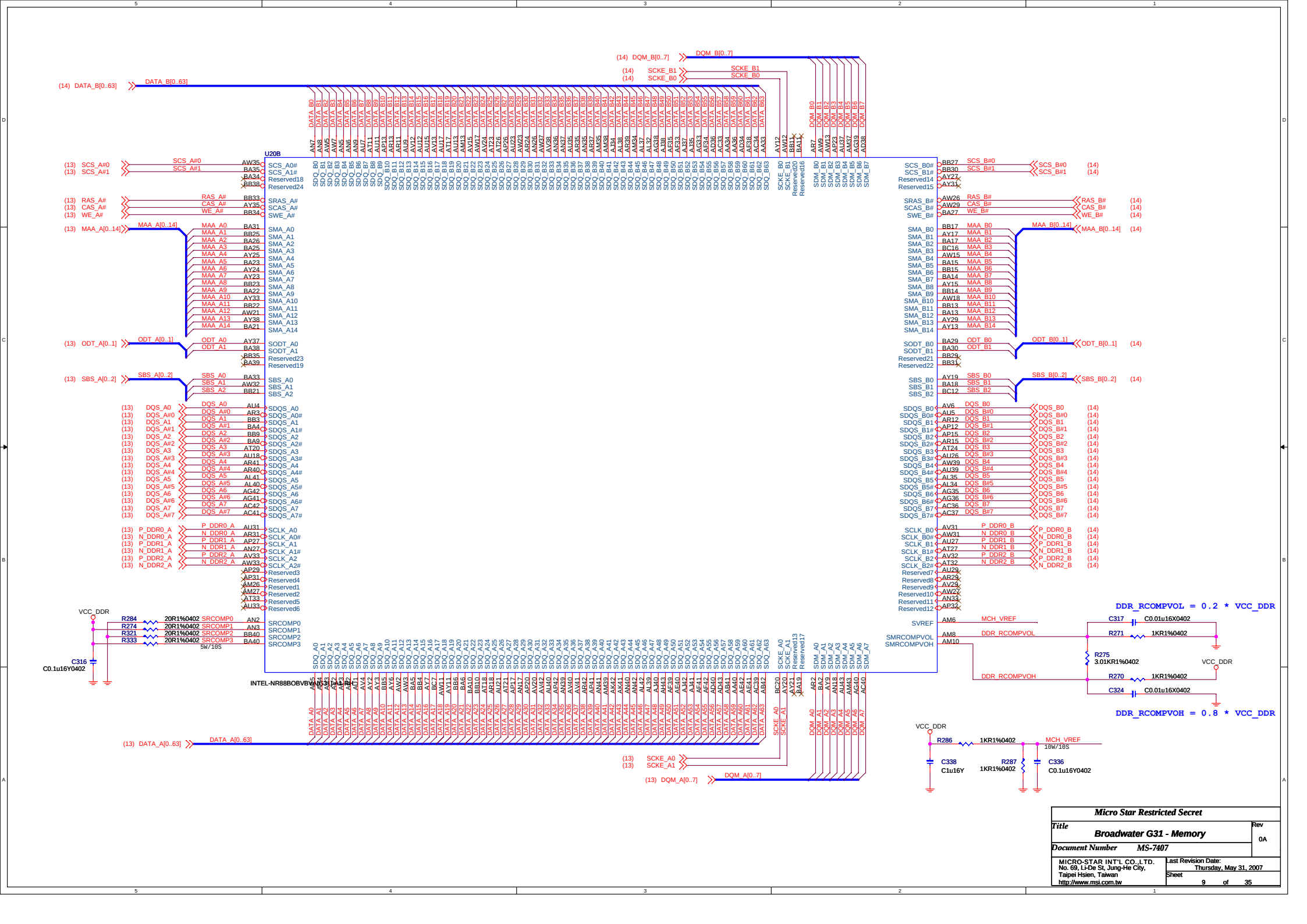
Micro Star Restricted Secret

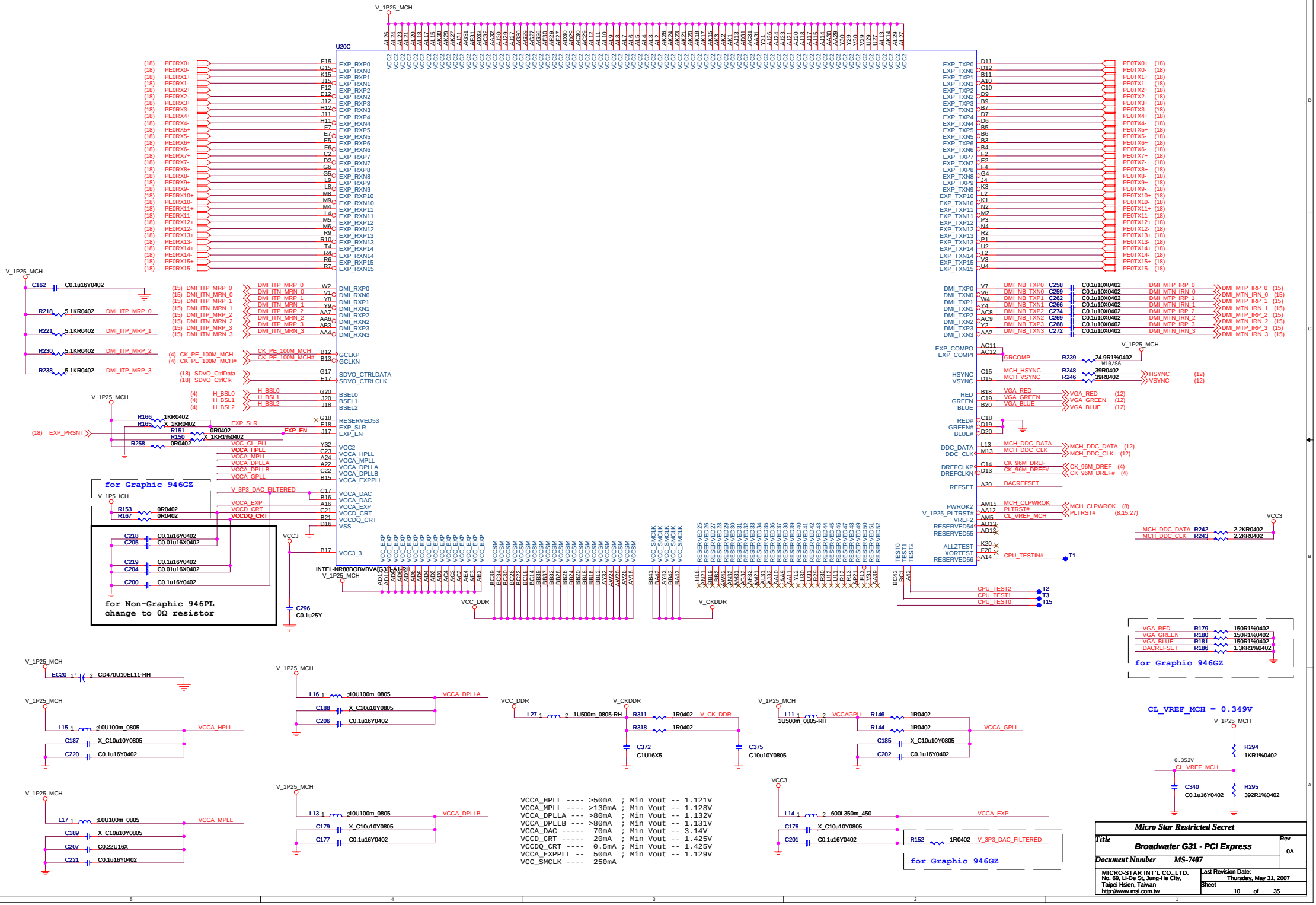
Title	Broadwater G31 - CPU
Rev	0A
Document Number	MS-7407

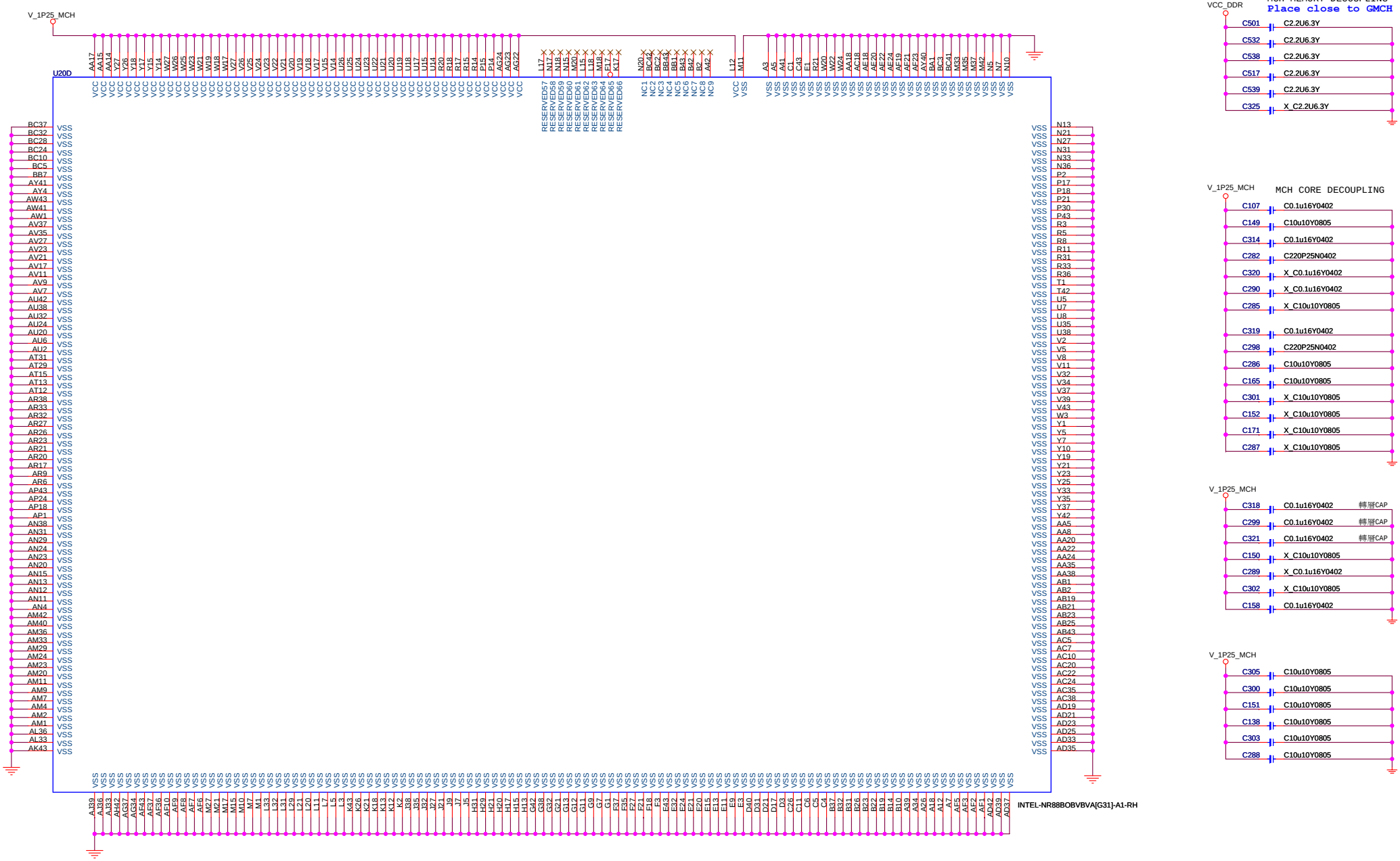
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City,
Taipei Hsien, Taiwan
http://www.msi.com.tw

Last Revision Date: Thursday, May 31, 2007

Sheet 8 of 35


U20B
INTEL-NR88BOBVBA
DDR_RCOMPVOL = 0.2 * VCC_DDR
DDR_RCOMPVOH = 0.8 * VCC_DDR
Micro Star Restricted Secret
Broadwater G31 - Memory
0A
MS-7407
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City,
Taipei Hsien, Taiwan
http://www.msi.com.tw
Thursday, May 31, 2007
9 of 35


U20C
INTEL-NR88BOBVBVA[G31-A1-R0]
V_1P25_MCH
V_1P5_ICH
VCC3
VCC_DDR
V_CKDDR
for Graphic 946GZ
for Non-Graphic 946PL
change to 0Ω resistor
CL_VREF_MCH = 0.349V
VCCA_HPLL ---- >50mA ; Min Vout -- 1.121V
VCCA_MPLL ---- >130mA ; Min Vout -- 1.128V
VCCA_DPLLA --- >80mA ; Min Vout -- 1.132V
VCCA_DPLLB --- >80mA ; Min Vout -- 1.131V
VCCA_DAC ----- 70mA ; Min Vout -- 3.14V
VCCD_CRT ----- 20mA ; Min Vout -- 1.425V
VCCDQ_CRT ---- 0.5mA ; Min Vout -- 1.425V
VCCA_EXPPLL -- 50mA ; Min Vout -- 1.129V
VCC_SMCLK ---- 250mA
Micro Star Restricted Secret
Broadwater G31 - PCI Express
0A
MS-7407
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City,
Taipei Hsien, Taiwan
http://www.msi.com.tw
Thursday, May 31, 2007
10 of 35

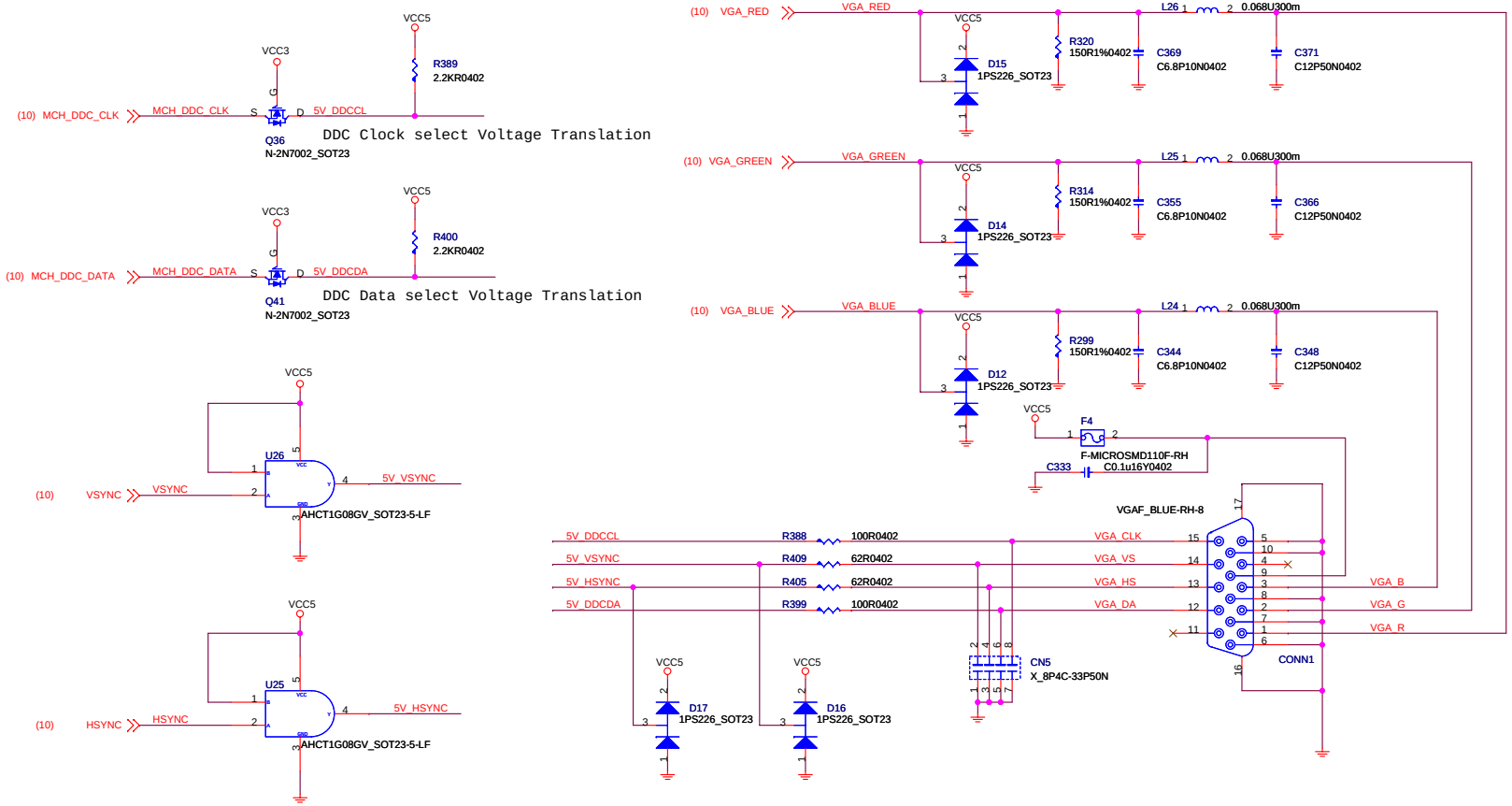


Micro Star Restricted Secret		
Title	***Broadwater G31 - Power / GND***	Rev 0A
Document Number	*MS-7407*	
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Thursday, May 31, 2007	
	Sheet 11 of 35	

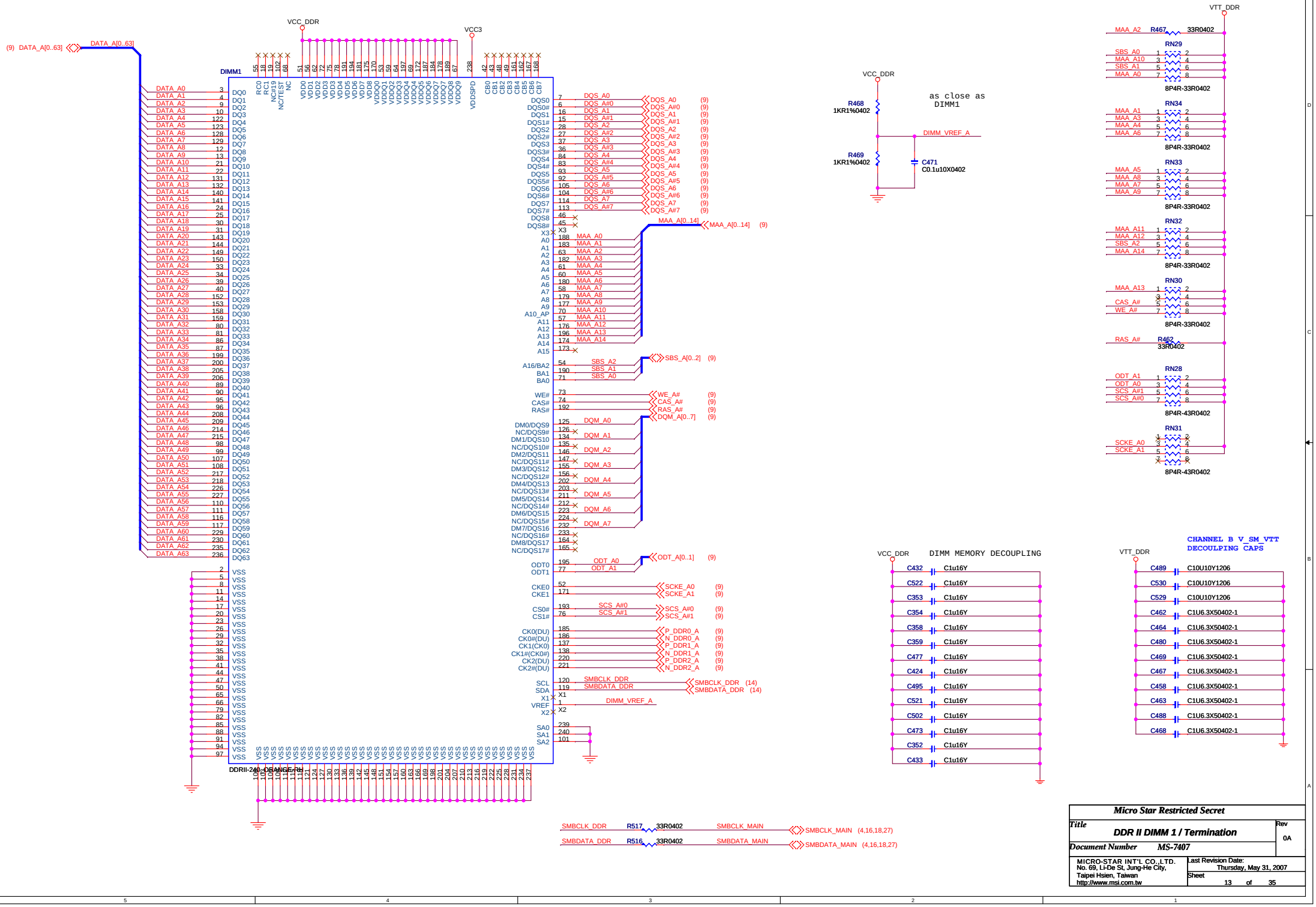
close VGA connector

DDC Clock select Voltage Translation

DDC Data select Voltage Translation



Micro Star Restricted Secret		
Title **VGA Connector**		Rev 0A
Document Number *MS-7407*		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Thursday, May 31, 2007	Sheet 12 of 35



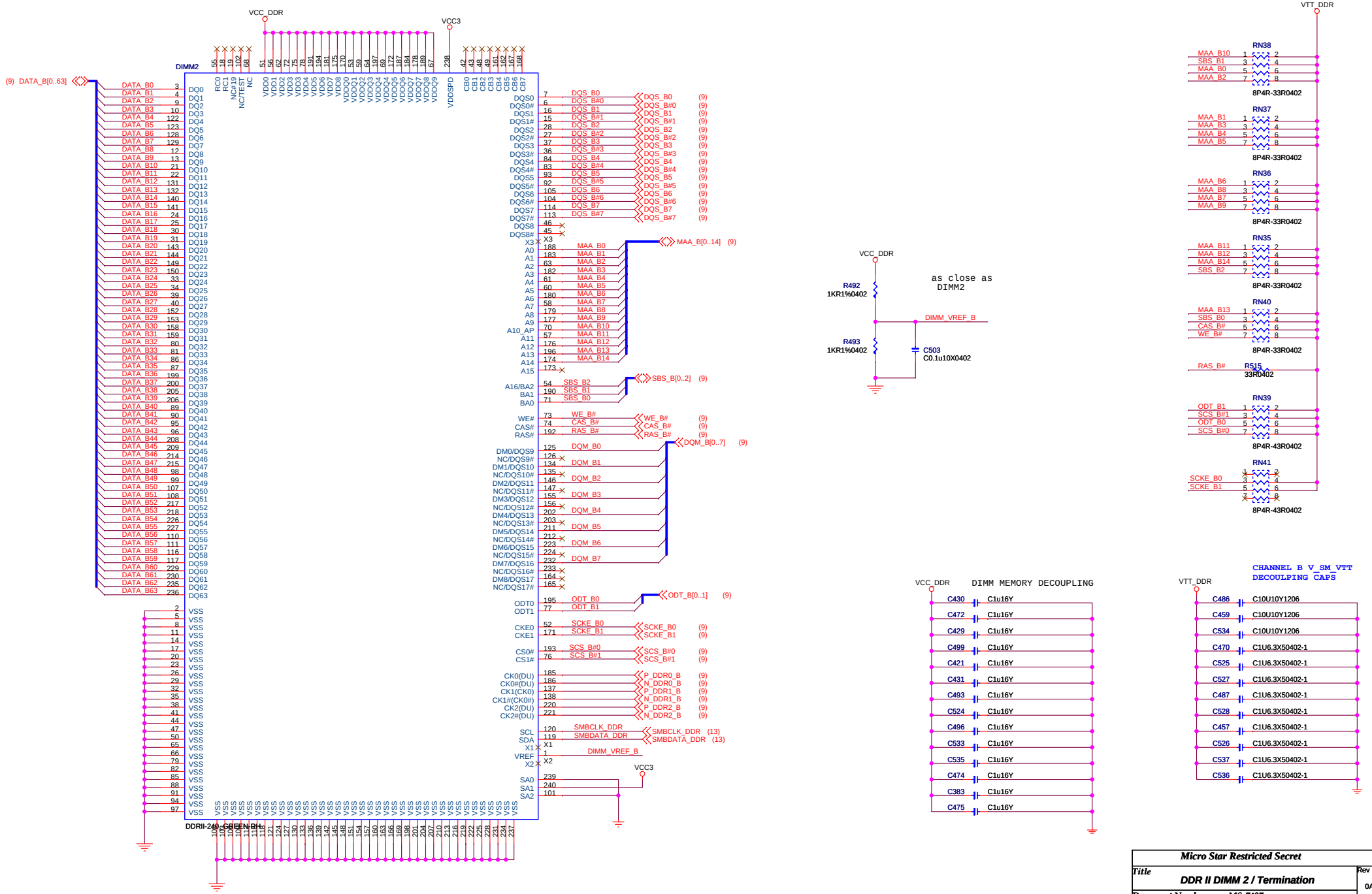
Micro Star Restricted Secret

Title	DDR II DIMM 1 / Termination
Rev	0A
Document Number	MS-7407

MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City,
Taipei Hsien, Taiwan
http://www.msi.com.tw

Last Revision Date: Thursday, May 31, 2007

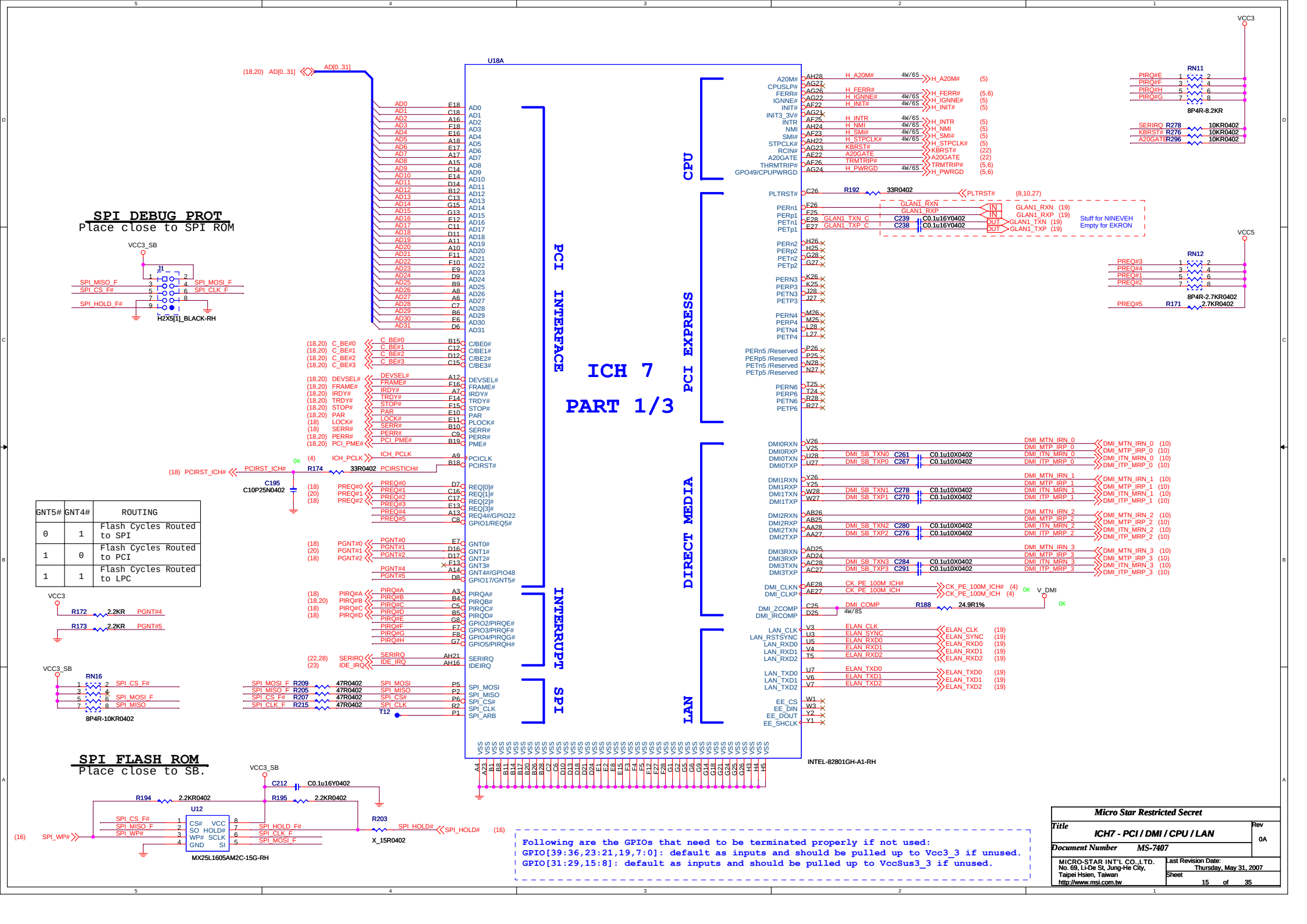
Sheet 13 of 35



Micro Star Restricted Secret

Title	DDR II DIMM 2 / Termination
Rev	0A
Document Number	MS-7407
Last Revision Date	Thursday, May 31, 2007
Sheet	14 of 35

MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City,
Taipei Hsien, Taiwan
http://www.msi.com.tw



GNT5#	GNT4#	ROUTING
0	1	Flash Cycles Routed to SPI
1	0	Flash Cycles Routed to PCI
1	1	Flash Cycles Routed to LPC

ICH 7 PART 2/3

U18B
INTEL-82801GH-A1-RH

R89 reserved, The signal has an integrated pull-up of 18k~42k.

FWH 10K Pull HI 3V

Prevent leakage current

Resistor length less than 500mil

CLEAR CMOS JUMPER

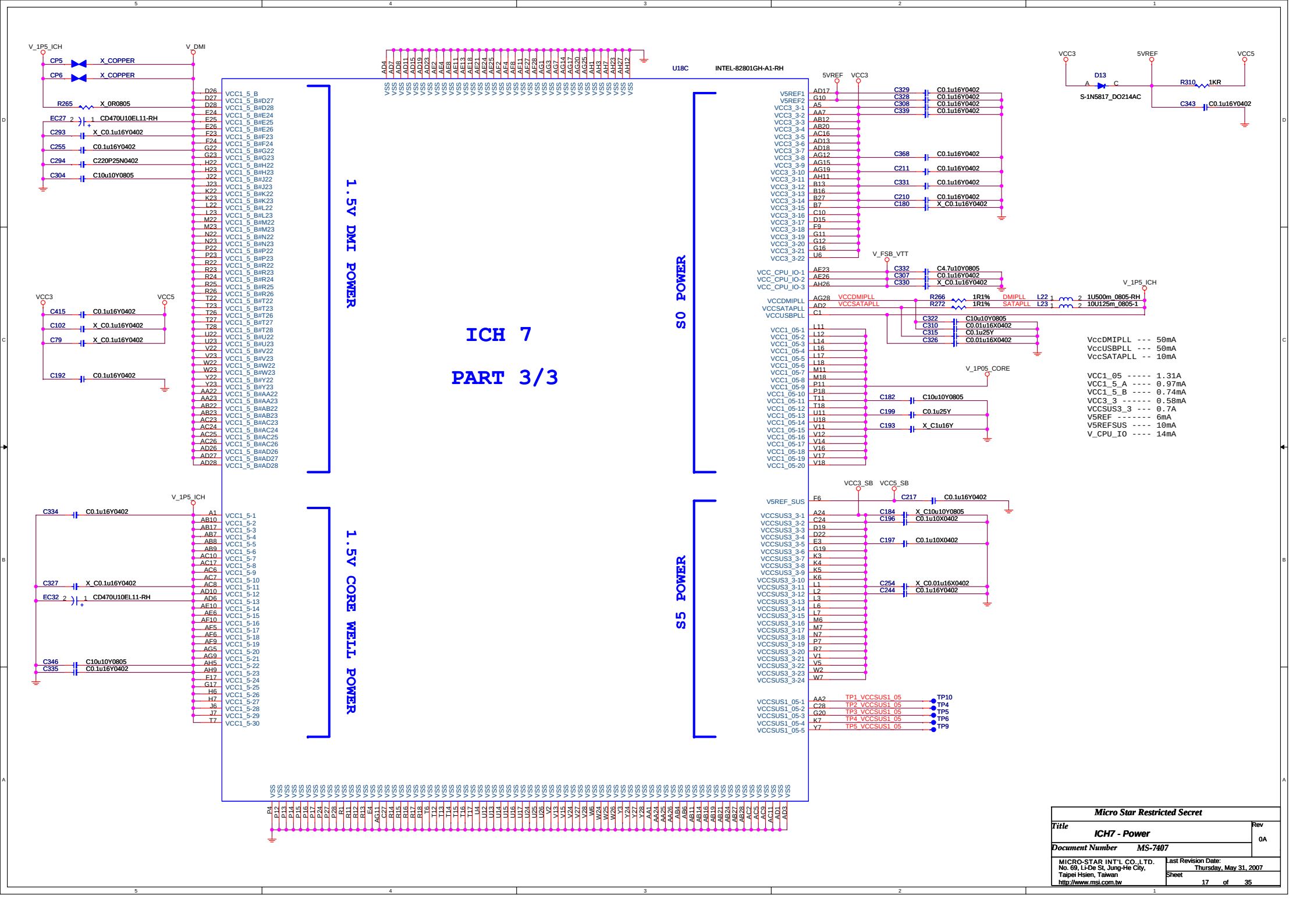
CMOS CLEAR	NORMAL	CLEAR
JBAT1	(1-2)	(2-3)

BATTERY

Close to Pin AA3 of ICH7.

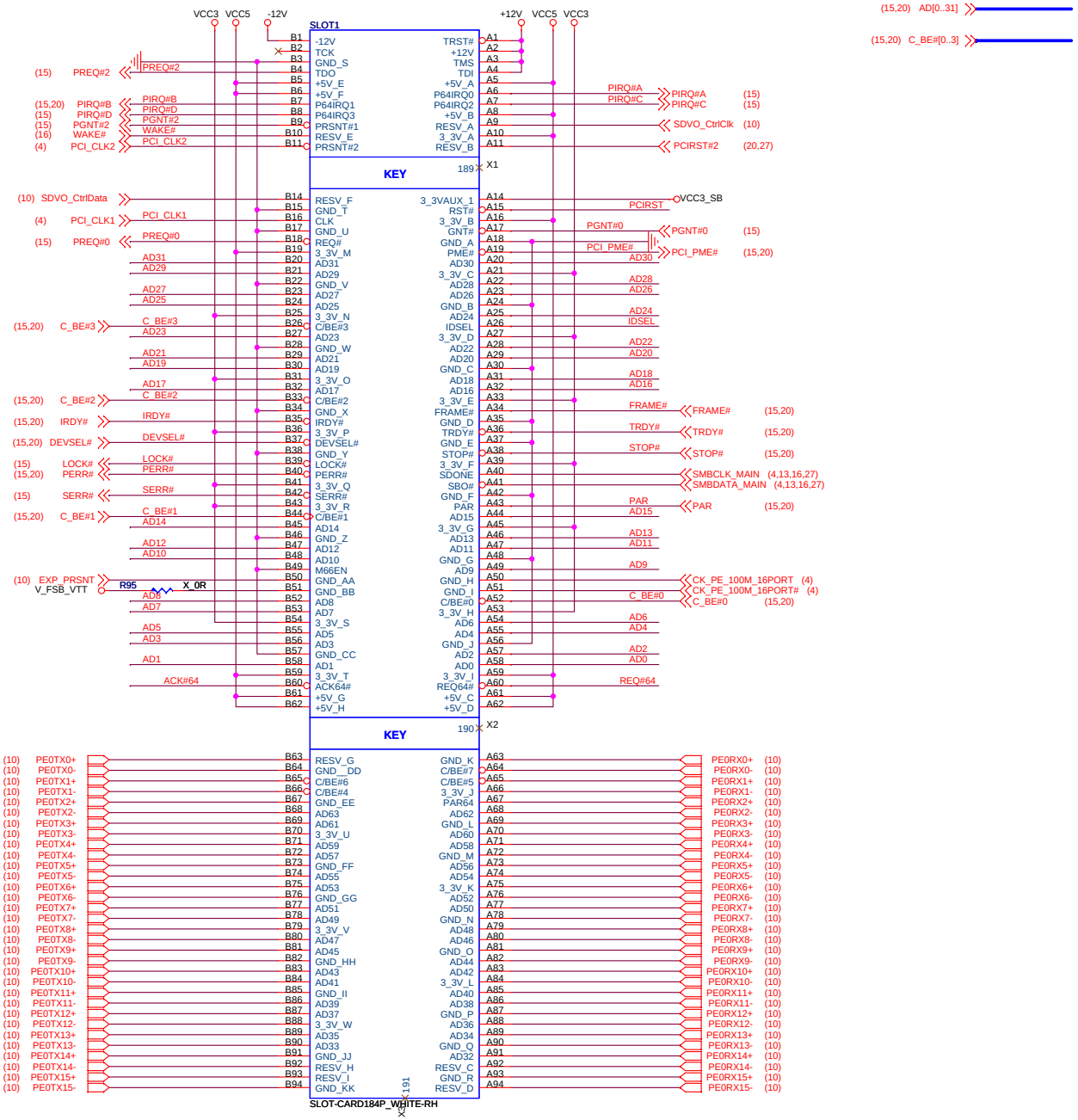
The RC time delay should be in the range of 18~25ms, C66 for VBAT.

Micro Star Restricted Secret	
Title: ICH7 - LPC / ATA / USB	Rev: 0A
Document Number: MS-7407	
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Thursday, May 31, 2007
	Sheet 16 of 35



Micro Star Restricted Secret

Title: ICH7 - Power		Rev: 0A
Document Number: MS-7407		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Thursday, May 31, 2007	Sheet 17 of 35

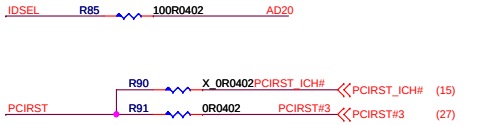


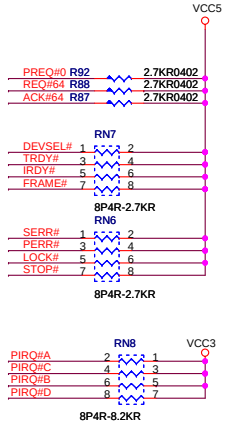
PCI 1

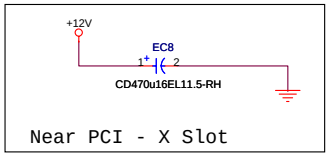
IDSEL: AD20
INT: PIRQ# ABCD
REQ: PREQ#0
GNT: PGNT#0
CLK: PCI_CLK1

PCI 2

IDSEL: AD21
INT: PIRQ# CDAB
REQ: PREQ#2
GNT: PGNT#2
CLK: PCI_CLK2







Micro Star Restricted Secret	
Title: PCI-X Slot	Rev: 0A
Document Number: MS-7407	
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Thursday, May 31, 2007
	Sheet 18 of 35

NINEVEH 82566DC
EKRON 82562V

Empty for EKRON
LAN1_V_1P0 R32 X_0R0402
EMPTY TO USE EXT PNP 1.0V VR
STUFF TO USE ON-DIE 1.0V VR
LAN1_V_1P8 R29 10KR0402
EMPTY TO USE ON DIE 1.0V VR
STUFF TO USE EXT 1.0V VR

LAN1_V_1P0 C15 C0.1u16Y0402
LAN1_V_1P0 LAN1_V_1P8 VCC3_SB
C76 C0.1u16Y0402 C75 C0.1u16Y0402

Stuff For EKRON
Empty for NINEVEH
VCC3_SB R23 X_0R0805 LAN1_V_1P0

EKRON - 10/100 PHY, LCI
NINEVEH - Gb PHY, GLCI+LCI

Stuff for NINEVEH
Empty for EKRON
(15) GLAN1_RXP OUT2 GLAN1_RXP C29 C0.1u16Y0402 GLAN1_RXP_C H2
(15) GLAN1_RXN OUT2 GLAN1_RXN C24 C0.1u16Y0402 GLAN1_RXN_C J2
(15) GLAN1_TXP IN1 GLAN1_TXP J4
(15) GLAN1_TXN IN1 GLAN1_TXN H4

U1 [82566DC-RH]
GLAN_TXP/NC GLAN_TXN/NC GLAN_RXP/NC GLAN_RXN/NC
RSVD_J6/NC RSVD_J7/NC
GLAN1_RCOMP_DP G7 GLAN1_RCOMP_DN H7
KBIAS_P/RBIAS100 KBIAS_N/RBIAS10
R13 1.4KR1%0402 RBIAS_P/NC RBIAS_N/NC E7 E6
TP1 LAN1_1P0_CTRL C3 LAN1_1P8_CTRL B2
CTRL_10/NC CTRL_18/NC
THERM_D_P/NC THERM_D_N/NC A2 A3
IEEE_TEST_P/NC IEEE_TEST_N/NC A7 B7
LAN1_TDI G1 LAN1_TMS G2
JTAG_TCK/ISOL_TCK JTAG_TDI/ISOL_TI JTAG_TDO/TOUT JTAG_TMS/ISOL_EXEC H1 G3 G2

MDI_PLUS0/TDP B8 LAN1_TR_D0+
MDI_MINUS0/TDN B9 LAN1_TR_D0-
MDI_PLUS1/RDP D9 LAN1_TR_D1+
MDI_MINUS1/RDN D8 LAN1_TR_D1-
MDI_PLUS2/NC F9 LAN1_TR_D2+
MDI_MINUS2/NC F8 LAN1_TR_D2-
MDI_PLUS3/NC H8 LAN1_TR_D3+
MDI_MINUS3/NC H9 LAN1_TR_D3-

JTXD0 D1 ELAN_TXD0 ELAN_TXD0 (15)
JTXD1 F3 ELAN_TXD1 ELAN_TXD1 (15)
JTXD2 F1 ELAN_TXD2 ELAN_TXD2 (15)
JRXD0 D3 ELAN_RXD0 ELAN_RXD0 (15)
JRXD1 D2 ELAN_RXD1 ELAN_RXD1 (15)
JRXD2 C1 ELAN_RXD2 ELAN_RXD2 (15)
JKCLK/JCLK E2 R22 33R0402 Near Lan chip ELAN_CLK (15)
JRSTSYNC E3 ELAN_SYNC (15)

LED0/LINK_UP# A4 LAN1_LED_LINK
LED1/ACT_LED# B4 LAN1_LED_1G
LED2/SPEED_LED# A5 LAN1_LED_100

XTAL1/X1 H6 XTAL1
XTAL2/X2 H5 XTAL2

TEST_EN B6 LAN1_TESTEN
JORDAN_EN/NC B5 MODE_SEL R48 100R1%0402
RSVD_A6/ADV10-LAN_DIS# A6 LAN1_DIS#
RSVD_C5/NC C5

VSSA/VSS VSSA/NC VSSA/VSS#3 VSSA/VSS#C7 VSSA/VSS#C8 VSSA/VSS#C9 VSSA/VSS#D6 VSSA/VSS#E8 VSSA/VSS#E6 VSSA/VSS#G6 VSSA/VSS#G8 VSSA/VSS#G9 VSSA/NC#J1 VSSA/VSS#J3 VSSA/VSS#J2 VSSA/NC#J8 VSSA/NC#J9 VSS/VSS VSS/VSSP VSS VSS/NC
A8 A9 C6 C7 C8 D6 E9 F6 G6 G8 G9 J1 J2 J8 J9 F4 E1 C4 A1

VCC1P8/NC VCC1P8/NC#D5 VCC1P8/NC#E5 VCC1P8/NC#F5 VCC1P8/NC#G5 VCC3P3/VCCP VCC3P3/VCC
B1 D7 D4 E4 B5 G4 E7 H3 C2 D5 E5 C5 F2 B3

VRD_OUT/NC VDD1P0/VCCR VCC VCC/VCC VDD1P0/VCCT VCCF1P0/VCC VCC1P0/VCCA2 VDD1P0/VCCA VCCF1P0/VCC
B1 D7 D4 E4 B5 G4 E7 H3

LAN1_V_1P0
C8 C0.1u16Y0402
C9 C0.1u16Y0402
C10 C0.1u16Y0402
C11 C0.1u16Y0402
C31 C10u10Y0805

LAN1_V_1P0 LAN1_V_1P8
C12 C0.1u16Y0402 C41 C1U10X
C13 C0.1u16Y0402 C72 C1U10X
C32 C10u10Y0805 C81 C1U10X
C77 C0.1u16Y0402
C78 C0.1u16Y0402

82566 Max Power
3.3V : 28mA
1.8V : 440mA
1.0V : 297mA

XTAL1 C18 C22P50N
Y1 25MHZ18P_D-1
XTAL2 C20 C22P50N

Place close to LAN chip
LAN1_TR_D0+ R24 49.9R1%0402 C47 C0.1u25Y
LAN1_TR_D0- R28 49.9R1%0402
LAN1_TR_D1+ R17 49.9R1%0402 C33 C0.1u25Y
LAN1_TR_D1- R20 49.9R1%0402

LAN1_TR_D2+ R10 49.9R1%0402 C30 C0.1u25Y
LAN1_TR_D2- R8 49.9R1%0402
LAN1_TR_D3+ R6 49.9R1%0402 C7 C0.1u25Y
LAN1_TR_D3- R7 49.9R1%0402

Stuff for NINEVEH
Empty for EKRON
STUFF 49.9 OHM STRAP FOR EKRON, 54.9 OHM FOR NINEVEH

LAN1_DIS# R46 X_0R0402 IN LANPHY_DIS# (16)
LAN1_TDI R11 X_1KR1%0402 VCC3_SB
LAN1_TMS R14 X_1KR1%0402 VCC3_SB

STUFF STRAP FOR EKRON
EMPTY FOR NINEVEH

VCC3_SB R2 220R0402 LAN1_LED 19
LAN1_LED_LINK R12 0R0402 LAN1_LED_1 20
CONN2B
R18 X_0R0402 VCC3_SB
21 LAN1_LED2 R21 0R0402 LAN1_LED_1G
22 LAN1_LED_11 R33 220R0402 LAN1_LED_100
CONN-RJ45_USBX2_LEDX2_TX-RH-27

LAN1_TR_D3- LAN1_TR_D2- LAN1_TR_D1- LAN1_TR_D0-
LAN1_TR_D3+ LAN1_TR_D2+ LAN1_TR_D1+ LAN1_TR_D0+

LAN1_V_1P8
R49 0R
C68 C0.1u16Y0402

LAN1_LED C21 C1000P16X0402
LAN1_LED2 C43 C1000P16X0402
LAN1_LED_1 C26 C1000P16X0402
LAN1_LED_11 C64 C1000P16X0402

MODE_SEL R47 X_100R0402
Stuff for KUMERAN Only Mode
Empty for KUM+JORDAN Mode
STUFF STRAP FOR EKRON
EMPTY FOR NINEVEH

GLAN1_RCOMP_DP
R5 X_649R1%0402
Stuff 649 OHM For EKRON
Empty for NINEVEH
R4 1.4KR1%0402
GLAN1_RCOMP_DN
R3 X_619R1%0402
Stuff 619 OHM For EKRON
Empty for NINEVEH
Stuff for NINEVEH
Empty for EKRON

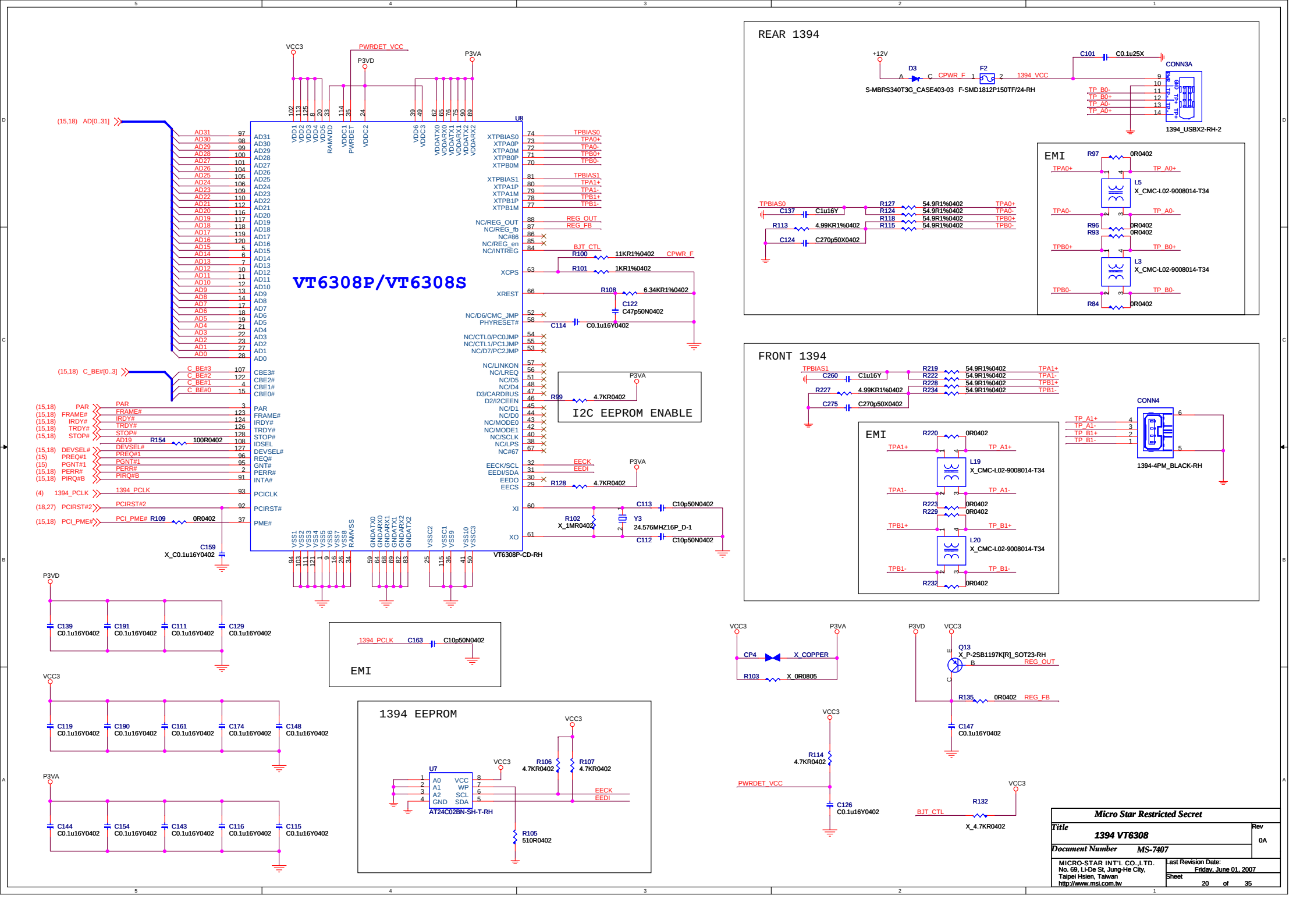
Stuff for NINEVEH
Empty for EKRON

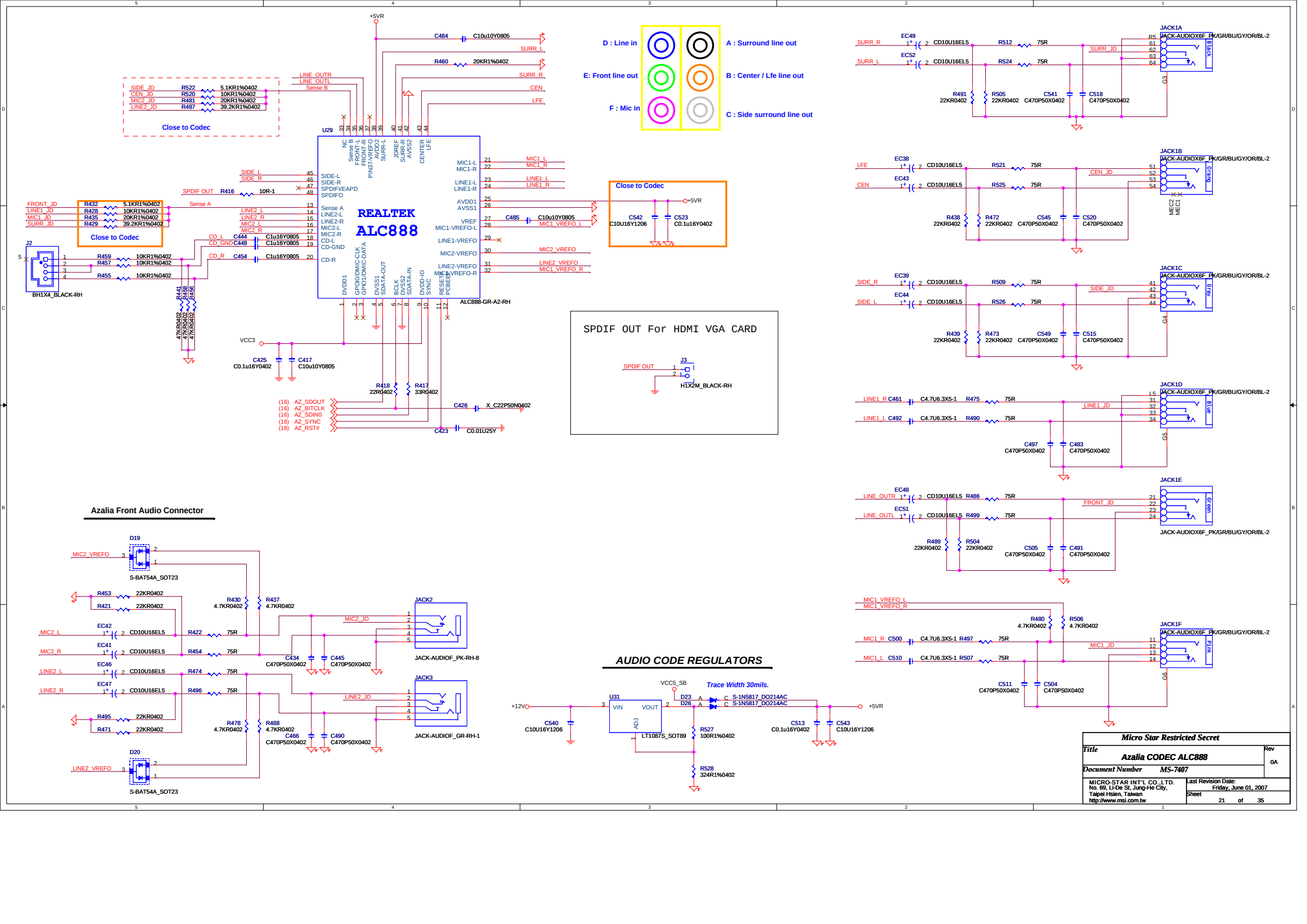
VCC3_SB
R39 1R1206
R50 1R1206
Q4 P-BCP69_SOT223
EC5 CD470U10EL11-RH
C27 C47u10Y0805
C48 C0.01U50X0805
LAN1_1P8_CTRL
C50 C10u6.3X50805
C65 C10u6.3X50805
C61 C10u6.3X50805
C49 C0.1u16Y0402
C42 C0.1u16Y0402
C0.1u16Y0402
LAN1_V_1P8
Place close to LAN chip

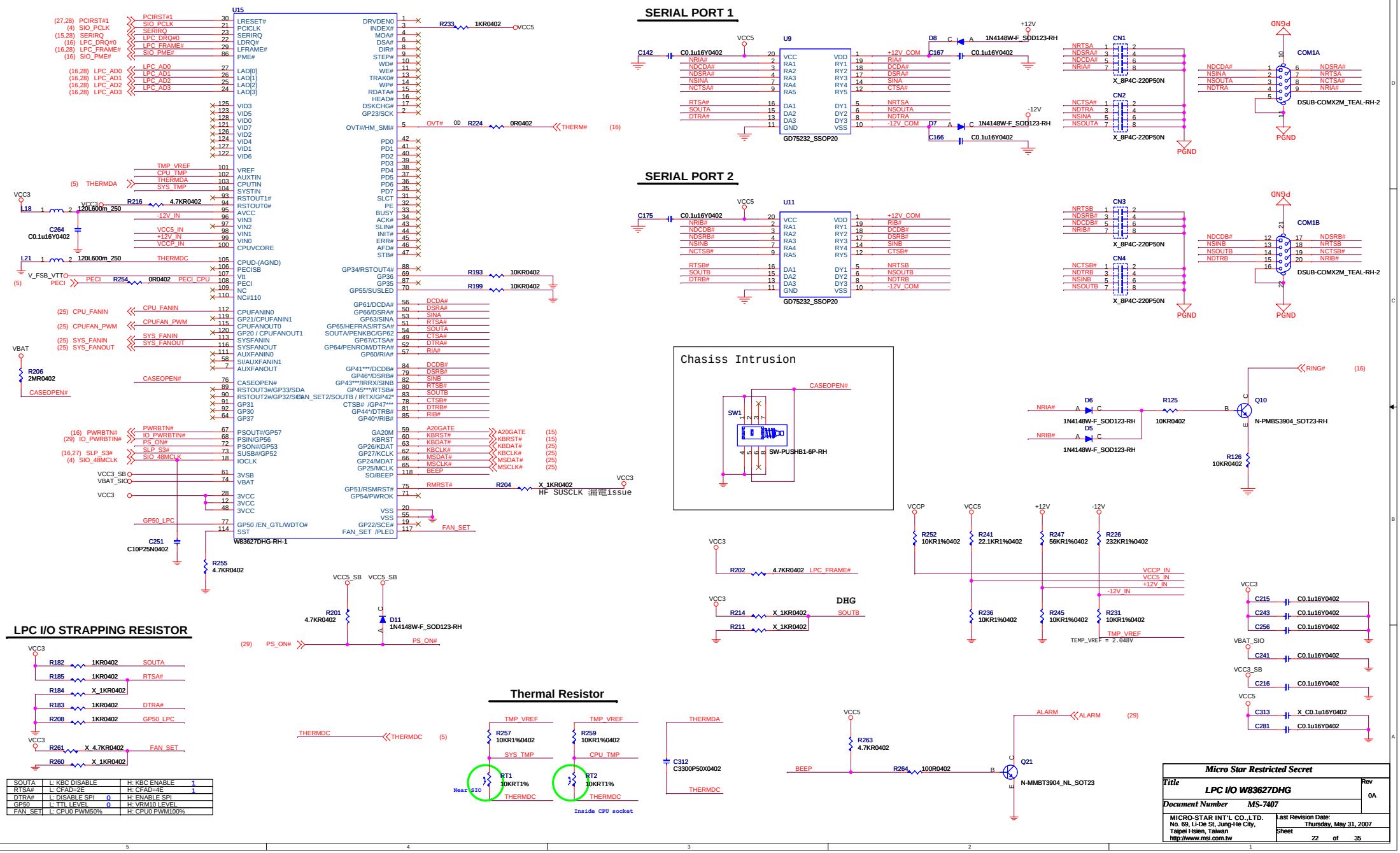
VCC3_SB
R9 1R1206
R16 1R1206
Q2 P-BCP69_SOT223
C28 C47u10Y0805
C23 X_C0.01U50X0805
LAN1_1P0_CTRL
C25 C10u6.3X50805
C19 C10u6.3X50805
C16 C10u6.3X50805
C17 C0.1u16Y0402
C14 C0.1u16Y0402
C0.1u16Y0402
LAN1_V_1P0
Place close to LAN chip

LED0# = Link 1000# (0111)
LED1# = Link/ACT# (0100)
LED2# = Link 100# (0110)

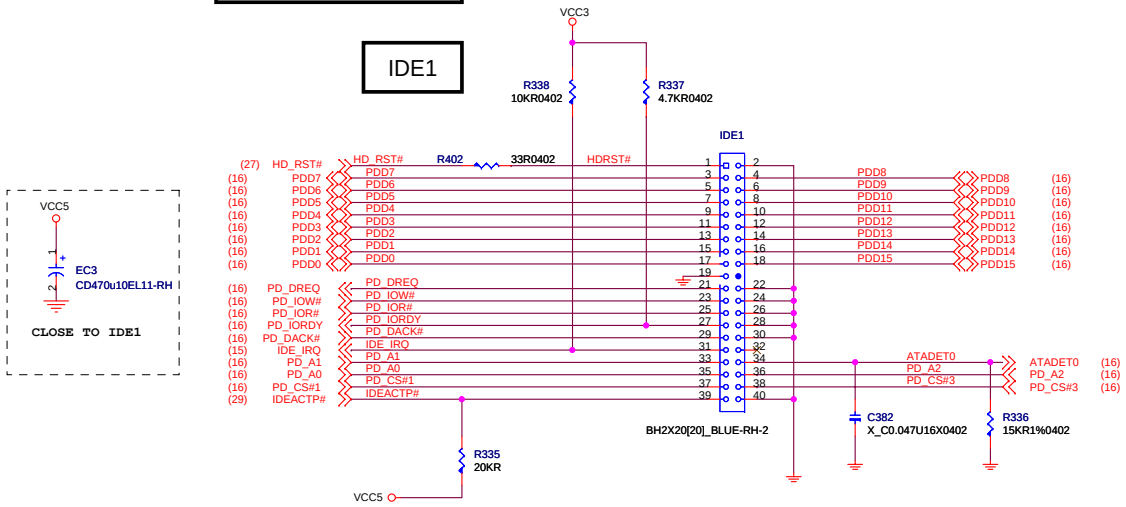
Micro Star Restricted Secret		
Title: PLC LAN 82566DC		Rev: 0A
Document Number: MS-7407		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Thursday, May 31, 2007	Sheet 19 of 35


VT6308P/VT6308S
VT6308P-CD-RH
U8
REAR 1394
FRONT 1394
I2C EEPROM ENABLE
1394 EEPROM
EMI
U7
AT24C02BN-SH-T-RH
1394_USBX2-RH-2
CONN3A
CONN4
1394-4PM_BLACK-RH
Micro Star Restricted Secret
Title
1394 VT6308
Rev
0A
Document Number
MS-7407
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City,
Taipei Hsien, Taiwan
http://www.msi.com.tw
Last Revision Date:
Friday, June 01, 2007
Sheet
20 of 35

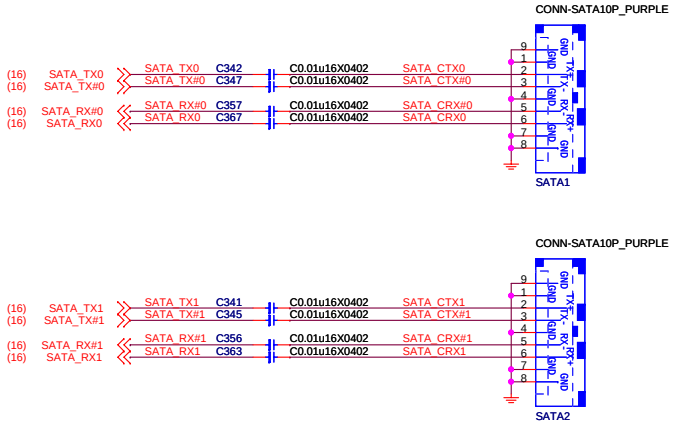

REALTEK
ALC888
ALC888-GR-A2-RH
U29
+5VR
Close to Codec
SIDE_JD
CEN_JD
MIC2_JD
LINE2_JD
R522 5.1KR1%0402
R520 10KR1%0402
R481 20KR1%0402
R487 39.2KR1%0402
LINE_OUTR
LINE_OUTL
Sense B
C484 C10u10Y0805
R460 20KR1%0402
SURR_L
SURR_R
CEN
LFE
D : Line in
A : Surround line out
E: Front line out
B : Center / Lfe line out
F : Mic in
C : Side surround line out
SIDE_L
SIDE_R
SPDIF OUT
R416 10R-1
Sense A
FRONT_JD
LINE1_JD
MIC1_JD
SURR_JD
R432 5.1KR1%0402
R428 10KR1%0402
R435 20KR1%0402
R429 39.2KR1%0402
LINE2_L
LINE2_R
MIC2_L
MIC2_R
CD_L
CD_GND
CD_R
C444 C1u16Y0805
C448 C1u16Y0805
C454 C1u16Y0805
J2
BH1X4_BLACK-RH
R459 10KR1%0402
R457 10KR1%0402
R455 10KR1%0402
R441 47KR0402
R458 47KR0402
R456 47KR0402
VCC3
C425 C0.1u16Y0402
C417 C10u10Y0805
MIC1_L
MIC1_R
LINE1_L
LINE1_R
AVDD1
AVSS1
VREF
MIC1-VREFO-L
LINE1-VREFO
MIC2-VREFO
LINE2-VREFO
MIC2-VREFO-R
C485 C10u10Y0805
MIC1_VREFO_L
MIC2_VREFO
LINE2_VREFO
MIC1_VREFO_R
C542 C10U16Y1206
C523 C0.1u16Y0402
R418 22R0402
R417 33R0402
C426 X_C22P50N0402
C423 C0.01U25Y
(16) AZ_SDOUT
(16) AZ_BITCLK
(16) AZ_SDIN0
(16) AZ_SYNC
(16) AZ_RST#
SPDIF OUT For HDMI VGA CARD
SPDIF OUT
J3
H1X2M_BLACK-RH
JACK1A
JACK1B
JACK1C
JACK1D
JACK1E
JACK1F
JACK-AUDIOX6F_PK/GR/BU/GY/OR/BL-2
SURR_R
SURR_L
LFE
CEN
SIDE_R
SIDE_L
LINE1_R
LINE1_L
LINE_OUTR
LINE_OUTL
MIC1_R
MIC1_L
MIC1_VREFO_L
MIC1_VREFO_R
MIC2/MEC1
Azalia Front Audio Connector
D19
S-BAT54A_SOT23
D20
MIC2_VREFO
LINE2_VREFO
JACK2
JACK3
JACK-AUDIOF_PK-RH-8
JACK-AUDIOF_GR-RH-1
MIC2_L
MIC2_R
LINE2_L
LINE2_R
AUDIO CODE REGULATORS
Trace Width 30mils.
VCC5_SB
+12V
U31
VIN
VOUT
ADJ
LT1087S_SOT89
D23 S-1N5817_DO214AC
D26 S-1N5817_DO214AC
R527 100R1%0402
R528 324R1%0402
C540 C10U16Y1206
C513 C0.1u16Y0402
C543 C10U16Y1206
Micro Star Restricted Secret
Title
Azalia CODEC ALC888
Rev
0A
Document Number
MS-7407
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City,
Taipei Hsien, Taiwan
http://www.msi.com.tw
Last Revision Date:
Friday, June 01, 2007
Sheet
21 of 35


SERIAL PORT 1
SERIAL PORT 2
U15
W83627DHG-RH-1
U9
U11
GD75232_SSOP20
COM1A
COM1B
DSUB-COMX2M_TEAL-RH-2
X_8P4C-220P50N
Chasiss Intrusion
SW-PUSHB1-6P-RH
N-PMBS3904_SOT23-RH
N-MMBT3904_NL_SOT23
LPC I/O STRAPPING RESISTOR
Thermal Resistor
DHG
HF SUSCLK 漏電issue
Micro Star Restricted Secret
LPC I/O W83627DHG
MS-7407
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City,
Taipei Hsien, Taiwan
http://www.msi.com.tw
Thursday, May 31, 2007
22 of 35

IDE Connector

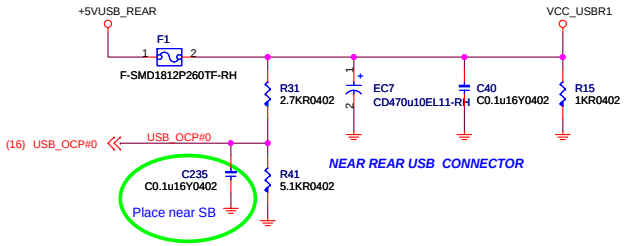


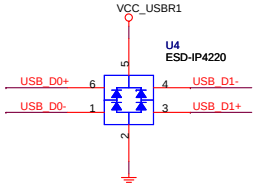
SATA CONNECTOR



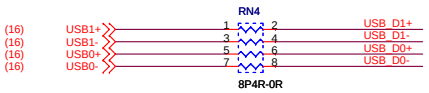
Micro Star Restricted Secret		
Title	*IDE /SATA Connector*	Rev 0A
Document Number	*MS-7407*	
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Friday, June 01, 2007	Sheet 23 of 35

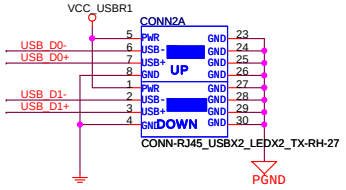
POWER CIRCUIT FOR USB PORT 0,1,2,3



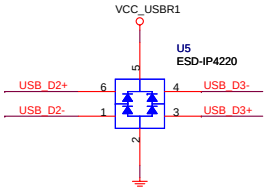


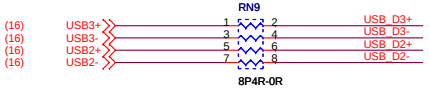
REAR PANEL USB CONNECTOR FOR USB PORT 0,1

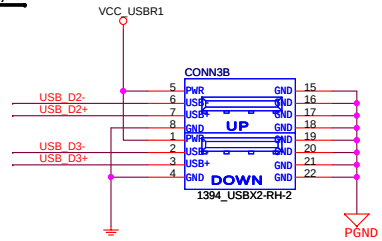




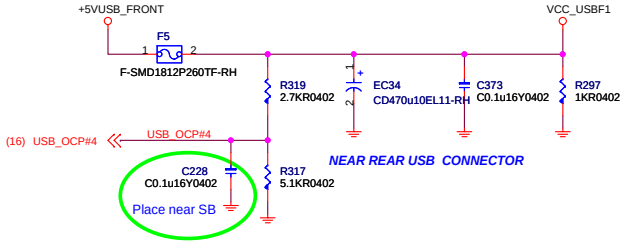
FRONT PANEL USB CONNECTOR FOR USB PORT 2,3

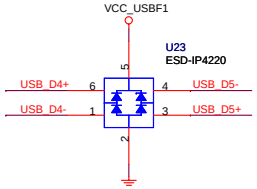




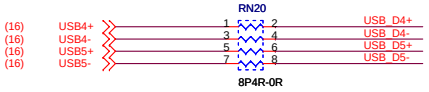


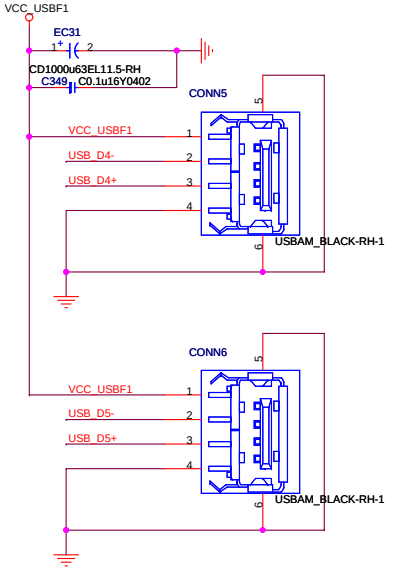
POWER CIRCUIT FOR USB PORT 4,5



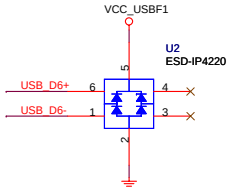


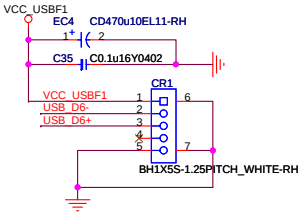
FRONT PANEL USB CONNECTOR FOR USB PORT 4,5





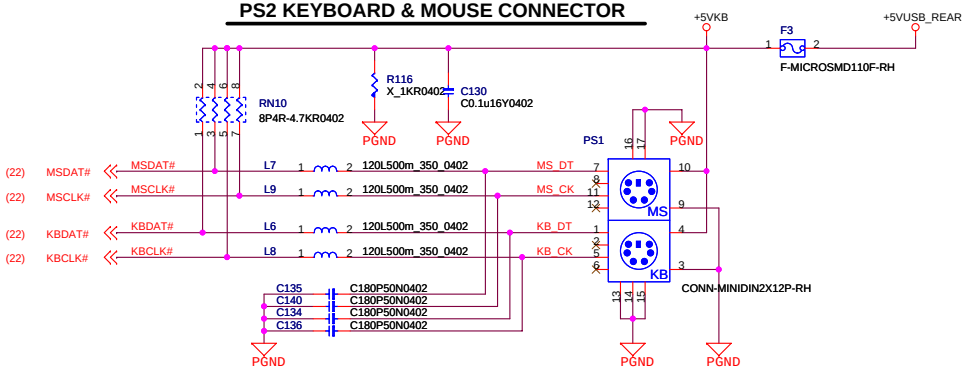
CARD READER USB CONNECTOR FOR USB PORT 6,



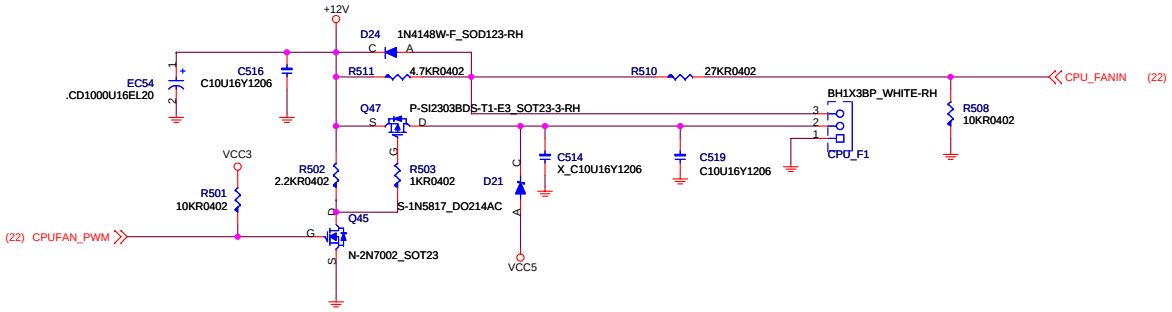


Micro Star Restricted Secret		
Title **USB Connector**		Rev 0A
Document Number MS-7407		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Friday, June 01, 2007 Sheet 24 of 35	

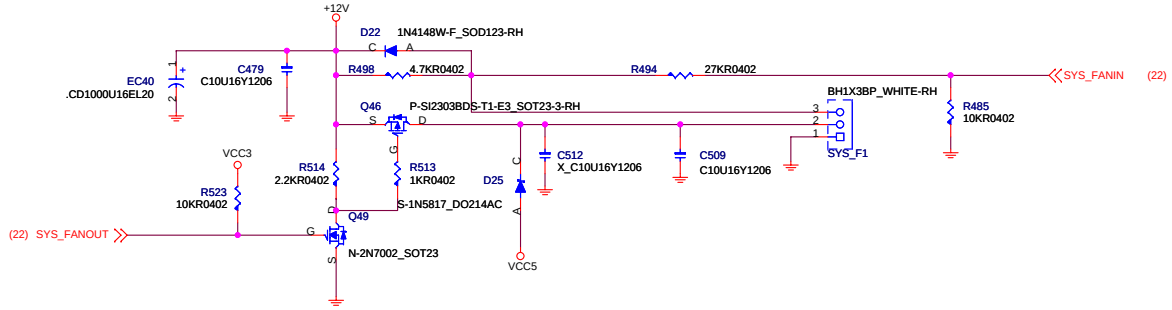
PS2 KEYBOARD & MOUSE CONNECTOR



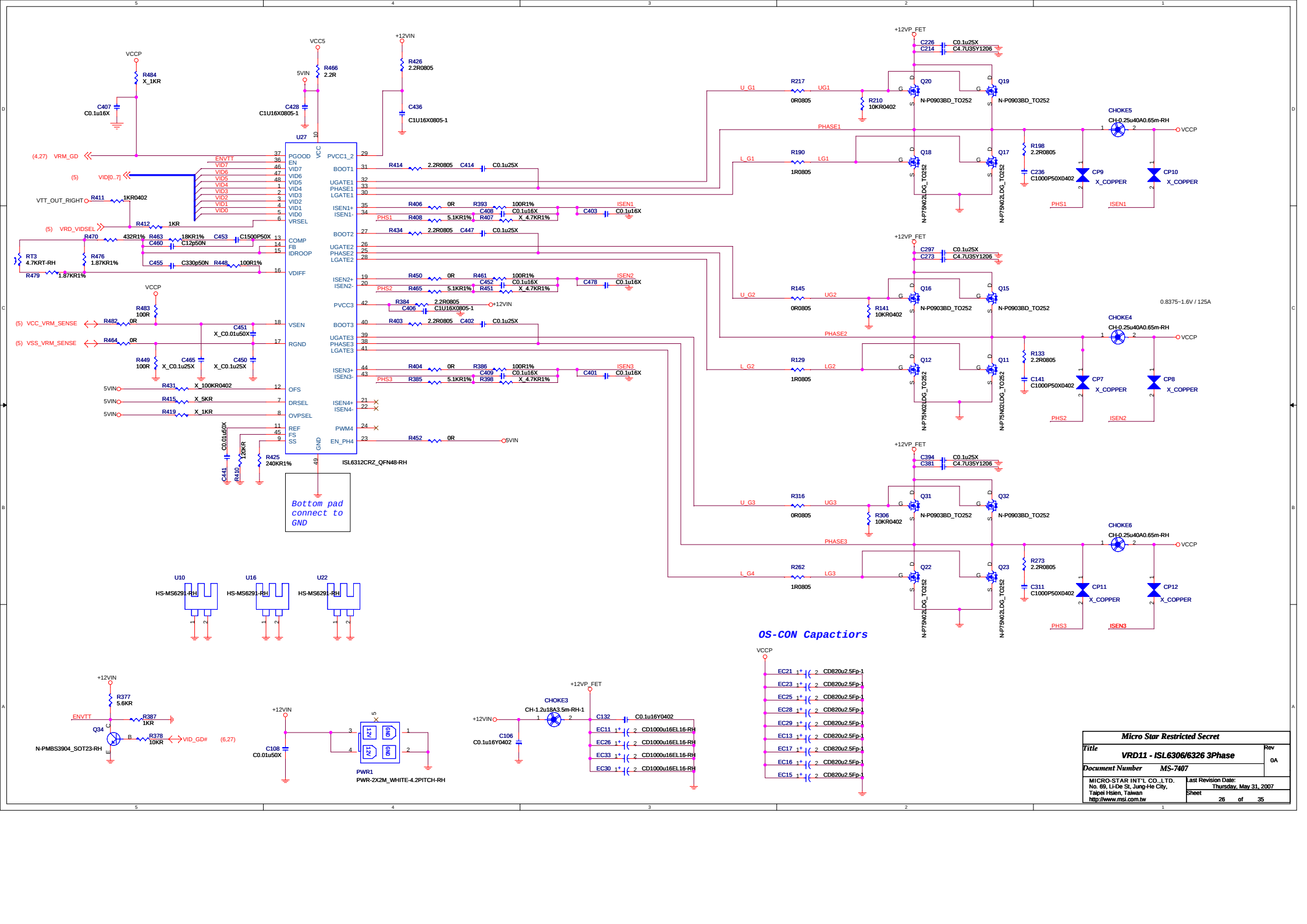
CPU FAN



SYSTEM FAN



Micro Star Restricted Secret		
Title **KB/MS & FAN**		Rev 0A
Document Number *MS-7407*		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Thursday, May 31, 2007	Sheet 25 of 35


U27
ISL6312CRZ_QFN48-RH
Bottom pad connect to GND
OS-CON Capactiors
CHOKE5
CH-0.25u40A0.65m-RH
CHOKE4
CH-0.25u40A0.65m-RH
CHOKE6
CH-0.25u40A0.65m-RH
CHOKE3
CH-1.2u18A3.5m-RH-1
U10
U16
U22
HS-MS6291-RH
PWR1
PWR-2X2M_WHITE-4.2PITCH-RH
N-PMBS3904_SOT23-RH
N-P0903BD_TO252
N-P75N02LDG_TO252
0.8375~1.6V / 125A
Micro Star Restricted Secret
Title
VRD11 - ISL6306/6326 3Phase
Rev
0A
Document Number
MS-7407
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City,
Taipei Hsien, Taiwan
http://www.msi.com.tw
Last Revision Date:
Thursday, May 31, 2007
Sheet
26 of 35

ACPI Controller MS-7

VDIMM LINEAR OR PWM SELECT

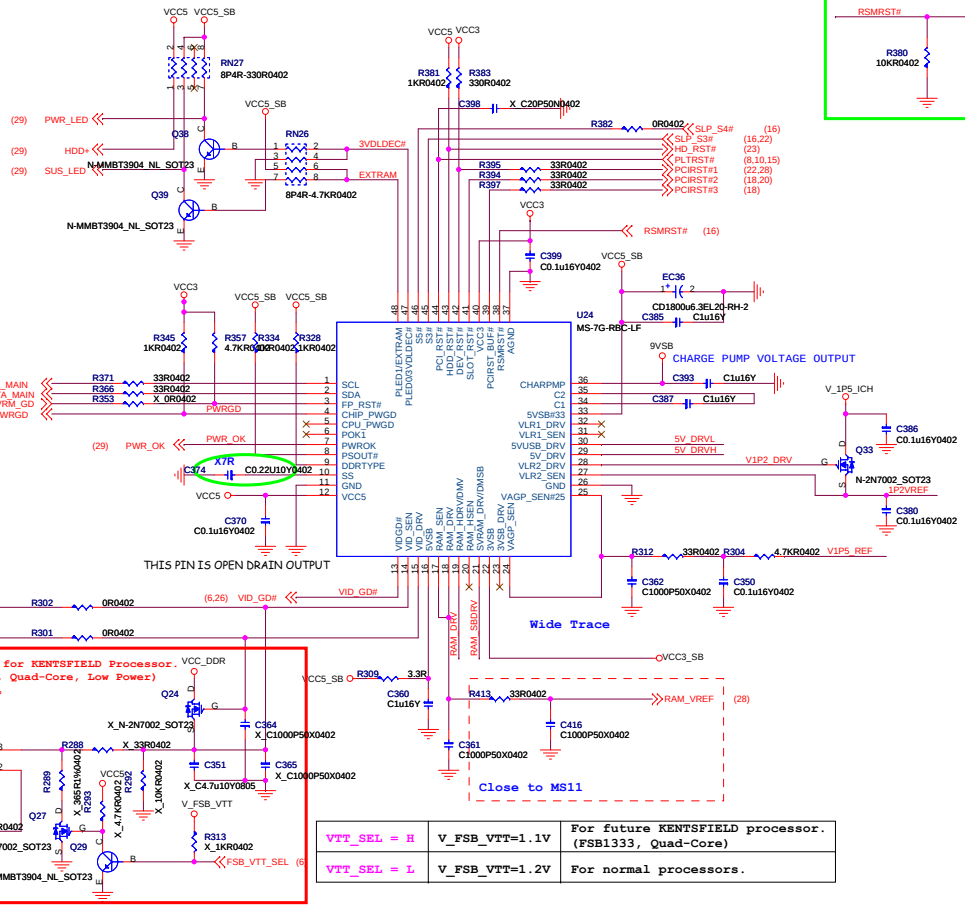
VDIMM MODE	EXTRAM
LINEAR REGULATOR	PULL LOW
PWM REGULATOR	PULL HIGH

3VSB MODE SELECT

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

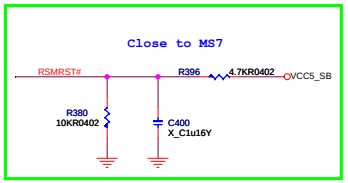
DDR I & DDR II VOLT SELECT

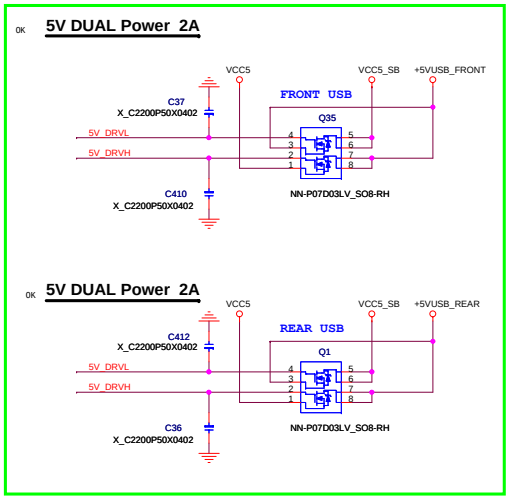
DDRTYPE	VDIMM
PULL LOW	2.5V
PULL HIGH	1.8V

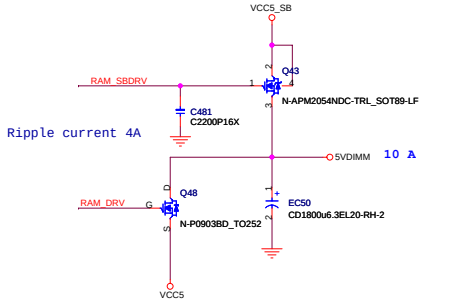


V_FSB_VTT 6A

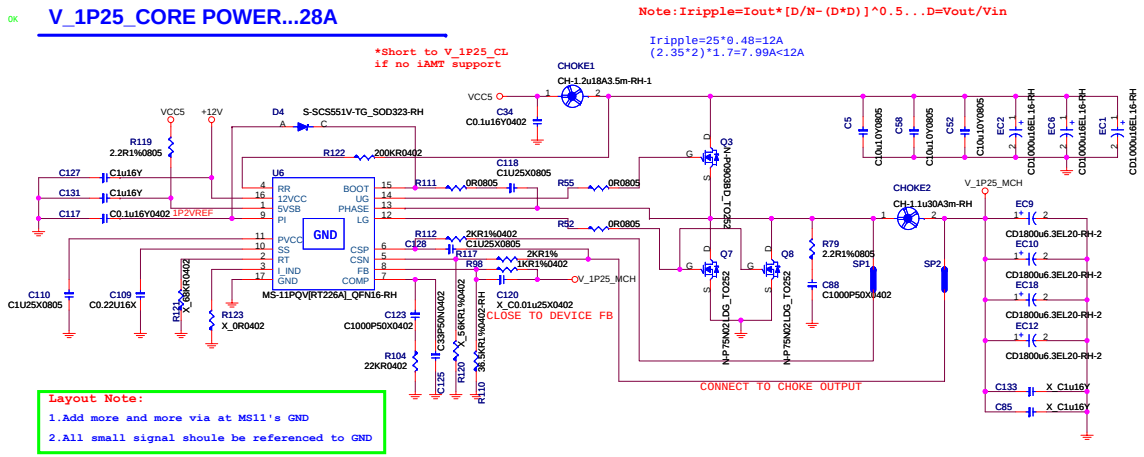
VTT_SEL = H	V_FSB_VTT=1.1V	For future KENTSFIELD processor. (FSB1333, Quad-Core
VTT_SEL = L	V_FSB_VTT=1.2V	For normal processors.





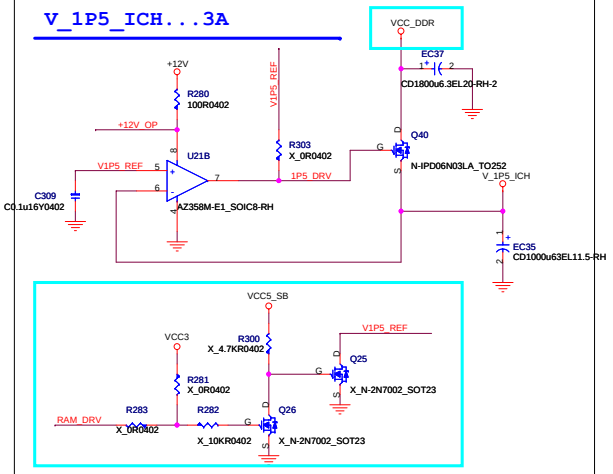


V_1P25_CORE POWER...28A

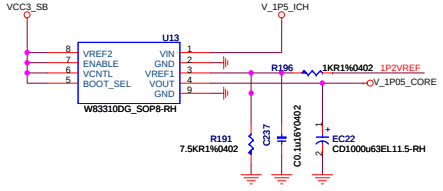


Layout Note:
1.Add more and more via at MS11's GND
2.All small signal shoule be referenced to GND

V_1P5_ICH...3A



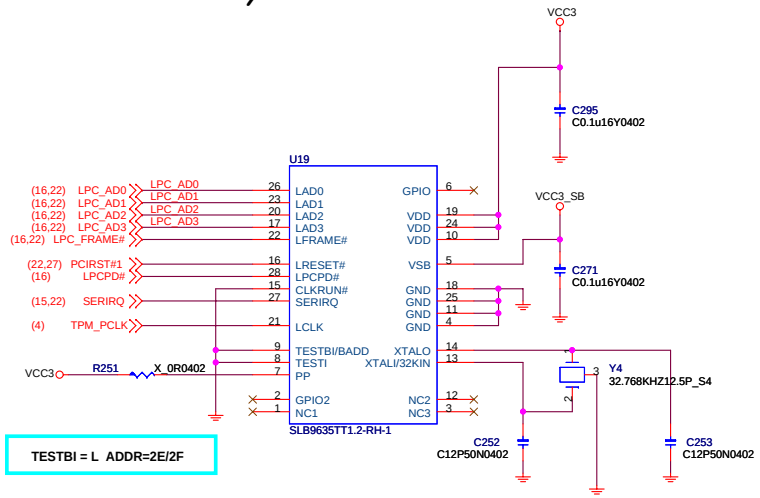
V_1P05_ICH...1.31A



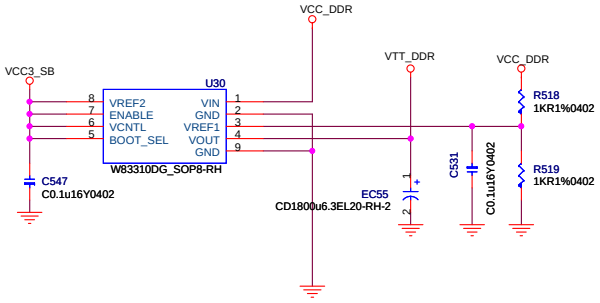
Title	MS7 ACPI Controller
Rev	0A
Document Number	MS-7407
Last Revision Date	Thursday, May 31, 2007
Sheet	27 of 35

MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City,
Taipei Hsien, Taiwan
http://www.msi.com.tw

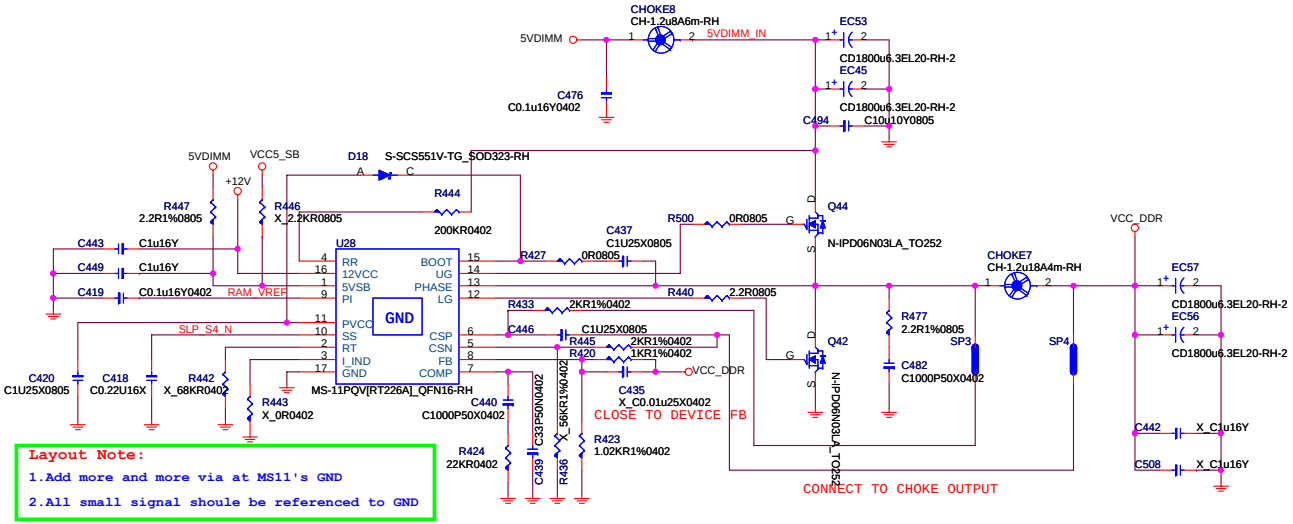
TPM - Security Controller



DDR II VTT POWER

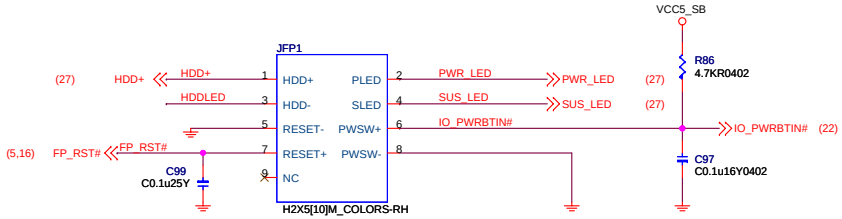


DDR II 1.8V POWER...16A

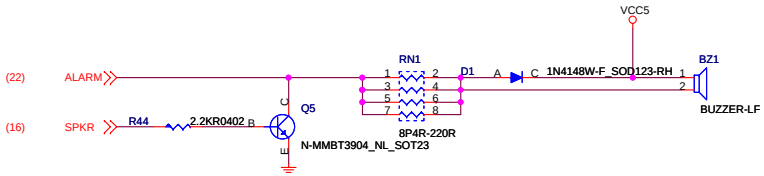


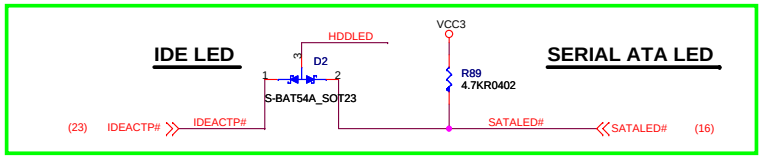
Micro Star Restricted Secret		
Title: TPM & DDRII Power		Rev: 0A
Document Number: MS-7407		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Friday, June 01, 2007 Sheet 28 of 35	

Intel Front Panel

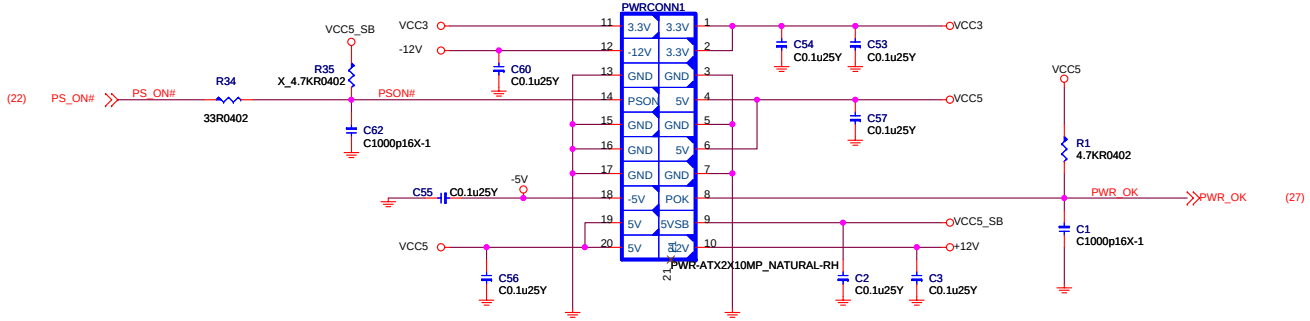


BUZZER





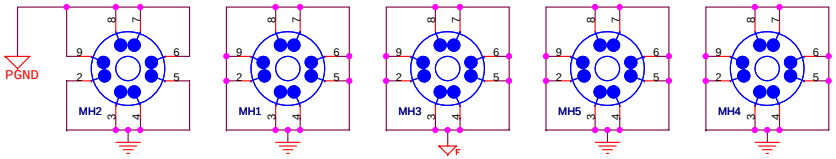
ATX

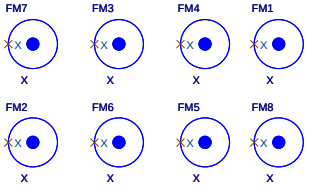


Micro Star Restricted Secret		
Title: Front ATX & Panel & LED		Rev: 0A
Document Number: MS-7407		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Thursday, May 31, 2007	Sheet 29 of 35

PCB1

MS-7407 0A

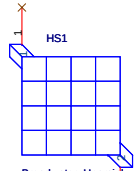




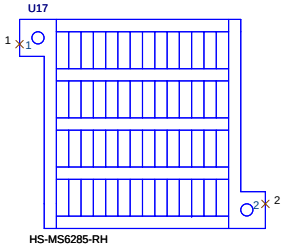
BAT2

BAT-BCR2032P-RH

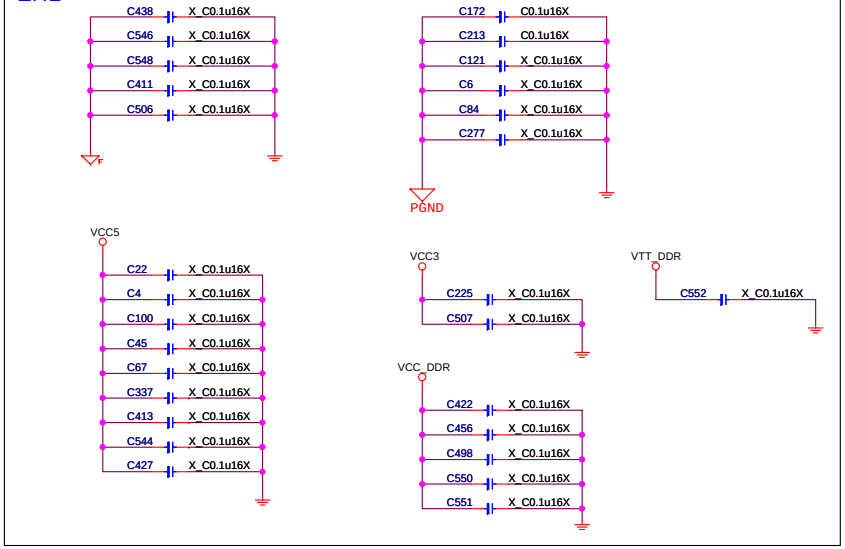
NB HEATSINK

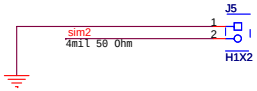


SB HEATSINK



EMI



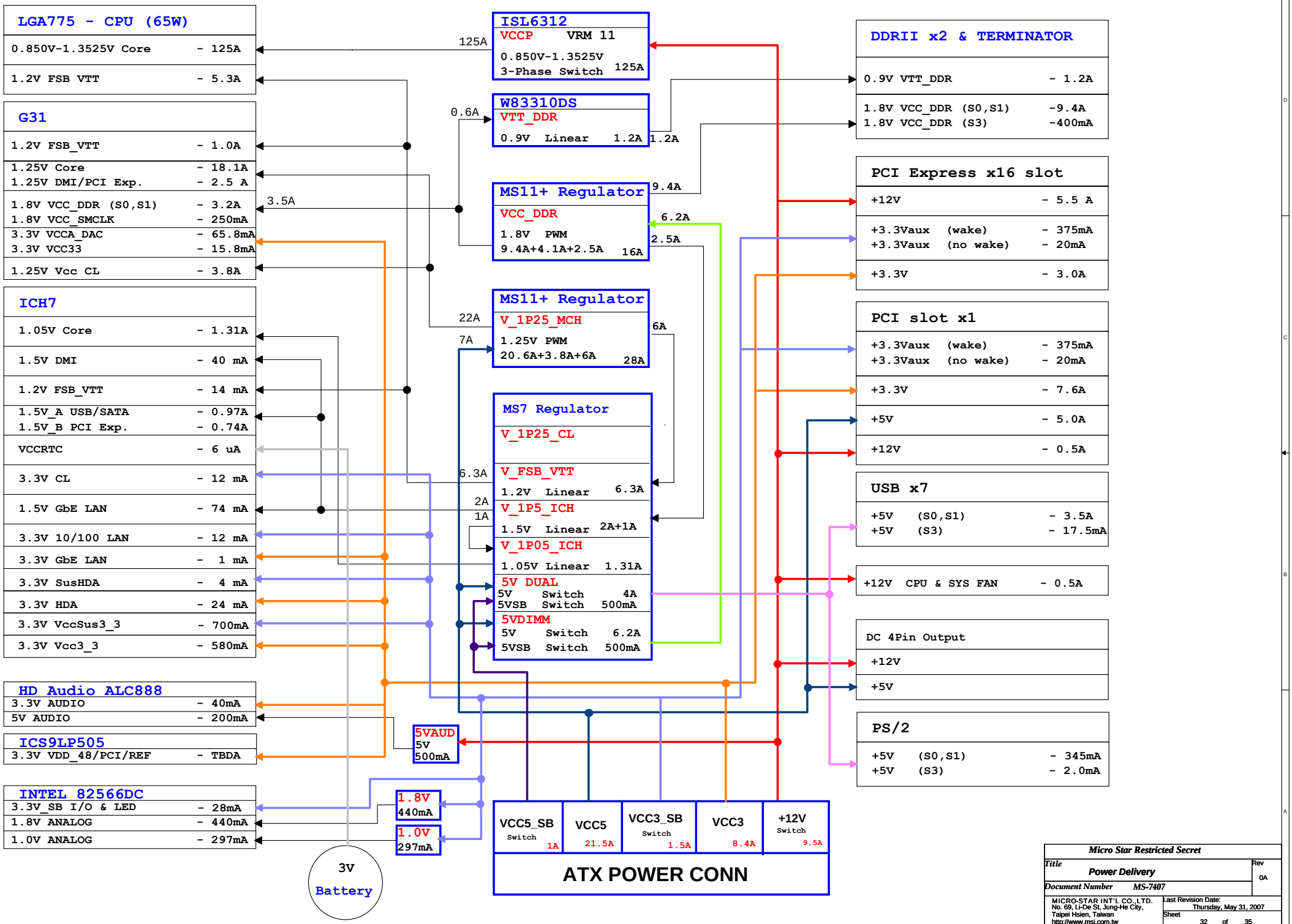


Micro Star Restricted Secret		
Title: Manual Parts		Rev: 0A
Document Number: MS-7407		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Thursday, May 31, 2007 Sheet 30 of 35	

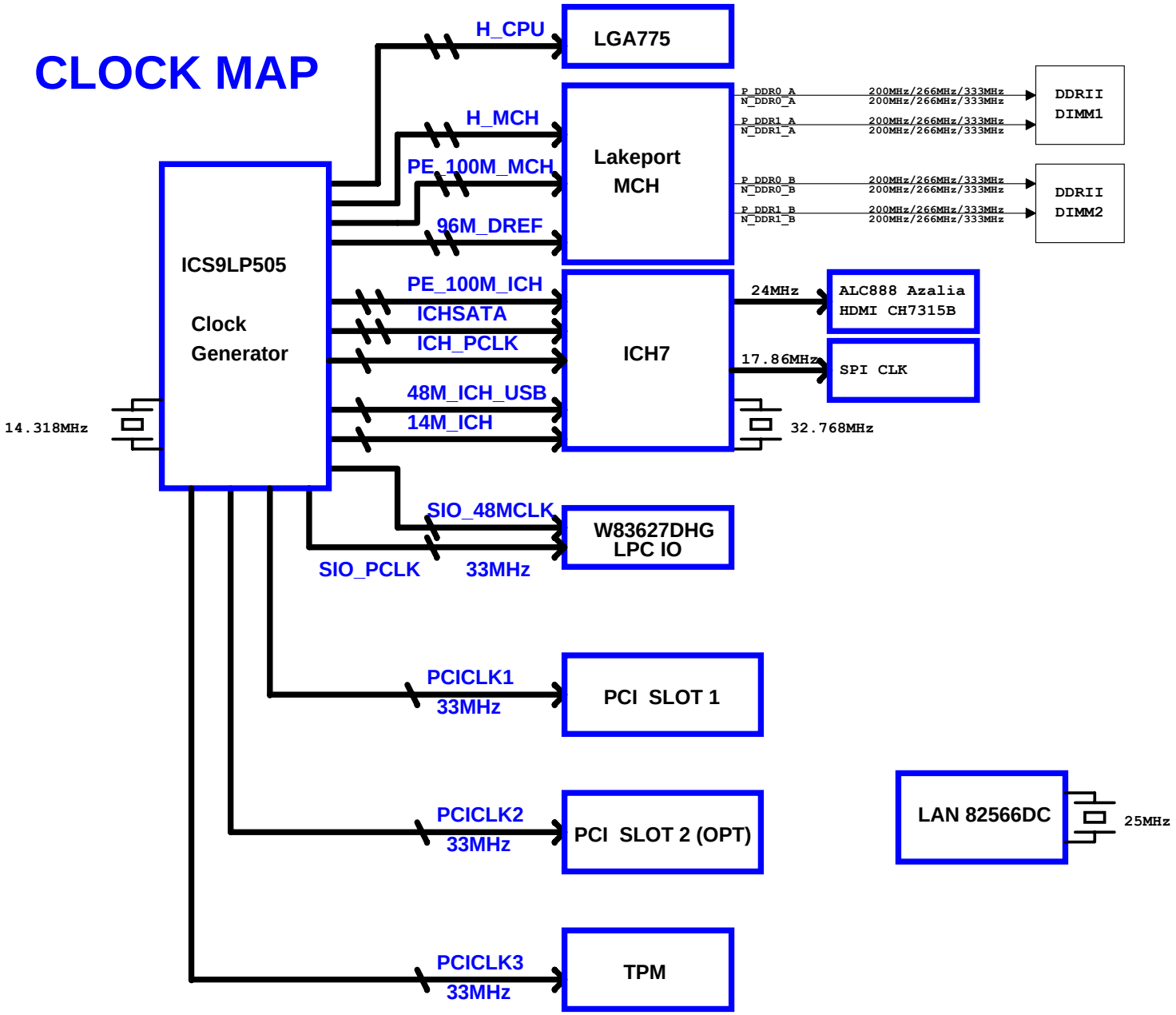
MS-7406 bug history list

1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		

31		
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		

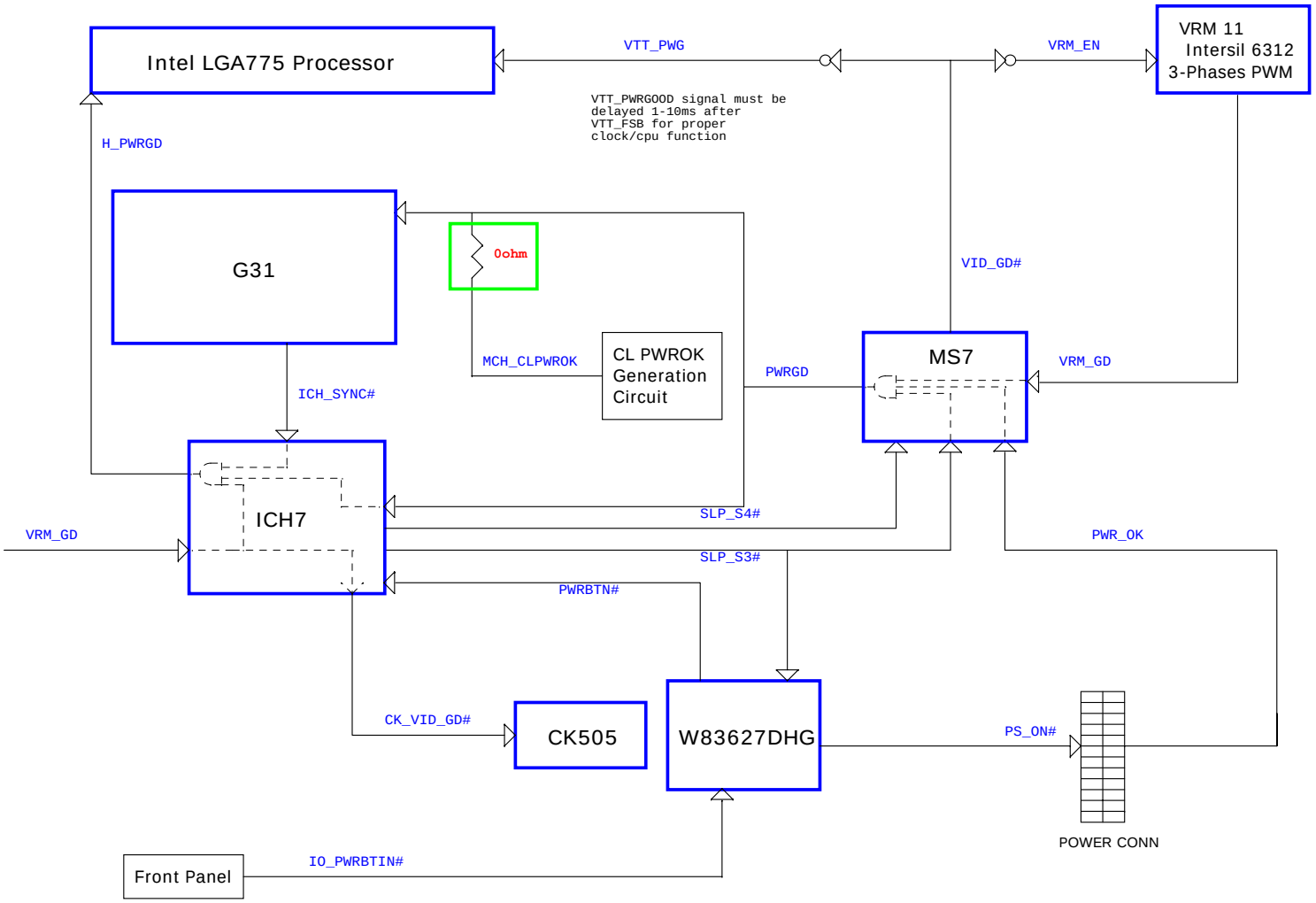

LGA775 - CPU (65W)
0.850V-1.3525V Core - 125A
1.2V FSB VTT - 5.3A
G31
1.2V FSB_VTT - 1.0A
1.25V Core - 18.1A
1.25V DMI/PCI Exp. - 2.5 A
1.8V VCC_DDR (S0,S1) - 3.2A
1.8V VCC_SMCLK - 250mA
3.3V VCCA_DAC - 65.8mA
3.3V VCC33 - 15.8mA
1.25V Vcc CL - 3.8A
ICH7
1.05V Core - 1.31A
1.5V DMI - 40 mA
1.2V FSB_VTT - 14 mA
1.5V_A USB/SATA - 0.97A
1.5V_B PCI Exp. - 0.74A
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
3.3V VccSus3_3 - 700mA
3.3V Vcc3_3 - 580mA
HD Audio ALC888
3.3V AUDIO - 40mA
5V AUDIO - 200mA
ICS9LP505
3.3V VDD_48/PCI/REF - TBDA
INTEL 82566DC
3.3V_SB I/O & LED - 28mA
1.8V ANALOG - 440mA
1.0V ANALOG - 297mA
3V
Battery
ISL6312
VCCP VRM 11
0.850V-1.3525V
3-Phase Switch 125A
125A
W83310DS
VTT_DDR
0.9V Linear 1.2A
0.6A
1.2A
MS11+ Regulator
VCC_DDR
1.8V PWM
9.4A+4.1A+2.5A 16A
3.5A
9.4A
6.2A
2.5A
MS11+ Regulator
V_1P25_MCH
1.25V PWM
20.6A+3.8A+6A 28A
22A
7A
6A
MS7 Regulator
V_1P25_CL
V_FSB_VTT
1.2V Linear 6.3A
6.3A
V_1P5_ICH
1.5V Linear 2A+1A
2A
1A
V_1P05_ICH
1.05V Linear 1.31A
5V DUAL
5V Switch 4A
5VSB Switch 500mA
5VDIMM
5V Switch 6.2A
5VSB Switch 500mA
5VAUD
5V
500mA
1.8V
440mA
1.0V
297mA
DDRII x2 & 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
USB x7
+5V (S0,S1) - 3.5A
+5V (S3) - 17.5mA
+12V CPU & SYS FAN - 0.5A
DC 4Pin Output
+12V
+5V
PS/2
+5V (S0,S1) - 345mA
+5V (S3) - 2.0mA
VCC5_SB Switch 1A
VCC5 21.5A
VCC3_SB Switch 1.5A
VCC3 8.4A
+12V Switch 9.5A
ATX POWER CONN
Micro Star Restricted Secret
Title
Power Delivery
Rev
0A
Document Number MS-7407
MICRO-STAR INT'L CO.,LTD.
No. 69, Li-De St, Jung-He City,
Taipei Hsien, Taiwan
http://www.msi.com.tw
Last Revision Date:
Thursday, May 31, 2007
Sheet
32 of 35

CLOCK MAP



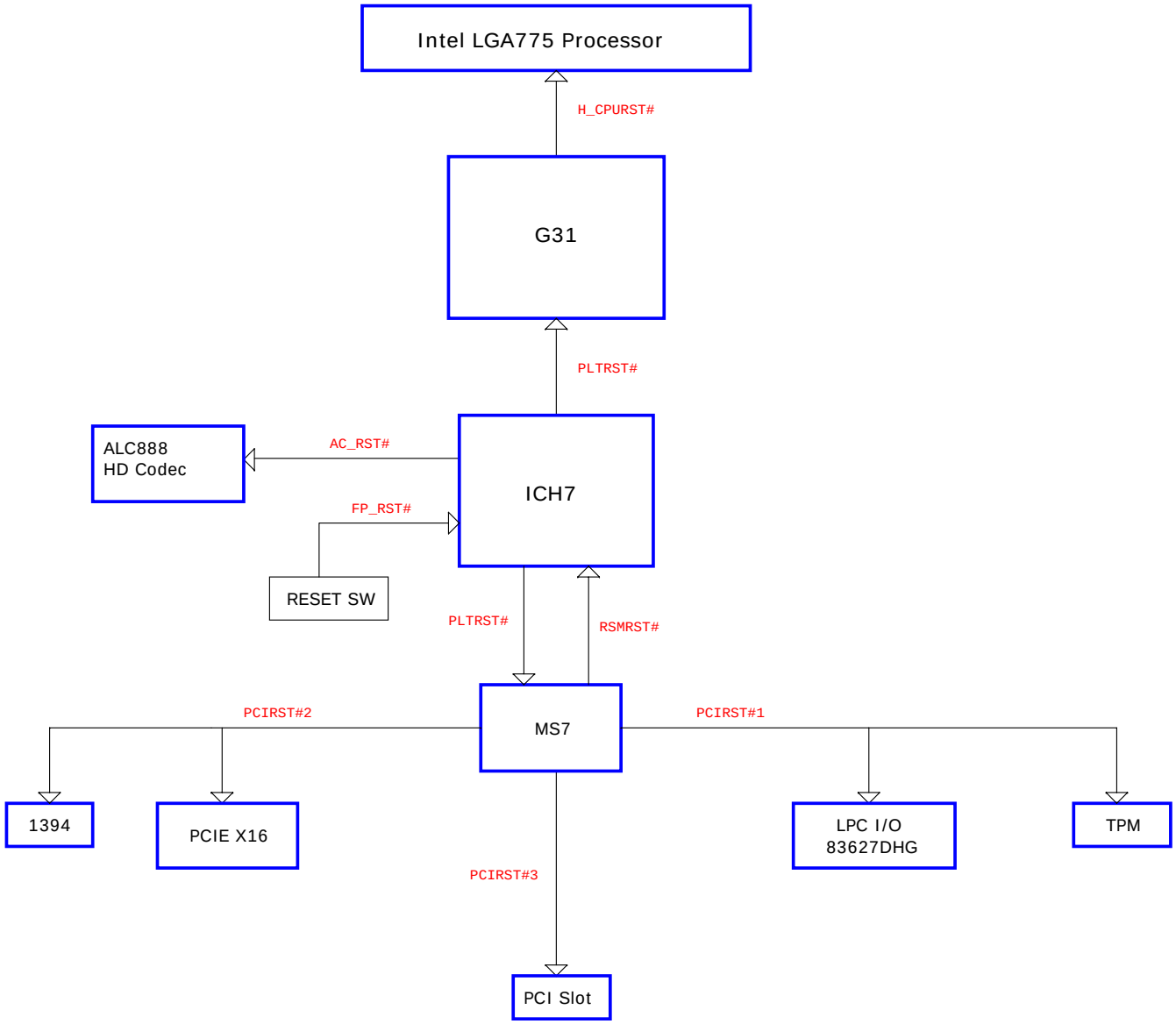
Micro Star Restricted Secret	
Title CLOCK MAP	Rev 0A
Document Number MS-7407	
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Thursday, May 31, 2007
	Sheet 33 of 35

PWROK MAP



Micro Star Restricted Secret		
Title	***PWOK MAP***	Rev 0A
Document Number	*MS-7407*	
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Thursday, May 31, 2007	
	Sheet 34 of 35	

RESET MAP



Micro Star Restricted Secret		
Title **Reset MAP**		Rev 0A
Document Number *MS-7407*		
MICRO-STAR INT'L CO.,LTD. No. 69, Li-De St, Jung-He City, Taipei Hsien, Taiwan http://www.msi.com.tw	Last Revision Date: Thursday, May 31, 2007	
	Sheet 35 of 35	