MS-7529

Version 0A

CPU:

Intel Conroe (65W Dual core)

System Chipset:

Intel Bearlake - MCH (North Bridge)
Intel ICH7R (South Bridge)

On Board Chipset:

BIOS -- SPI
HD -- ALC888
LPC Super I/O -- F71882FG
LAN-- REALTEK RTL8111C Co-lay RTL8101E
CLOCK -- RTM876-665

Main Memory:

DDR II *2 (Max 4GB)

Expansion Slots:

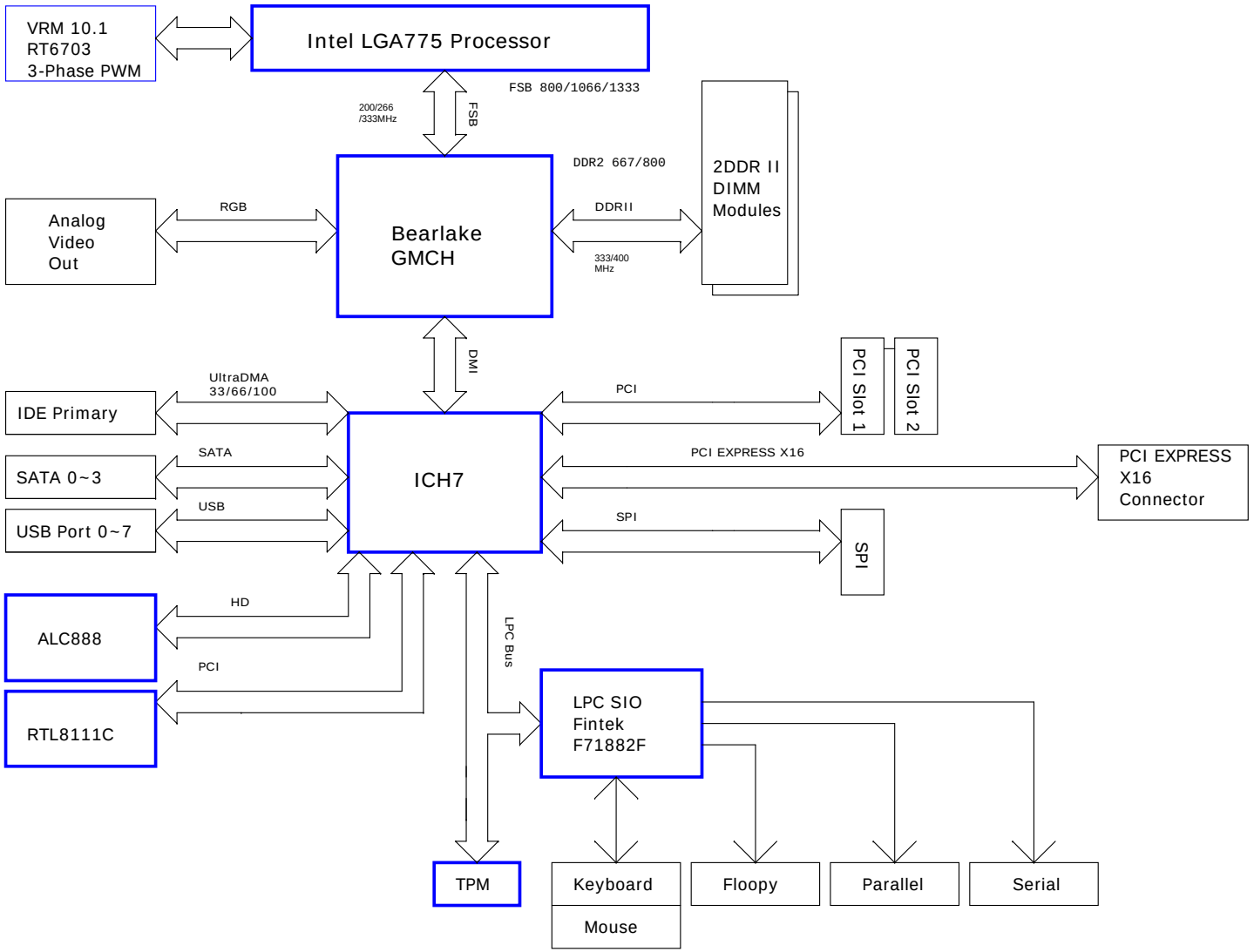
PCI2.3 SLOT * 2

PCI EXPRESS X16 SLOT

ST PWM:

Controller: 3 PHASES

Block Diagram



www.schematic-x.blogspot.com

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MS-7529		
Size: Custom	Document Description: BLOCK DIAGRAM	Rev: 0A
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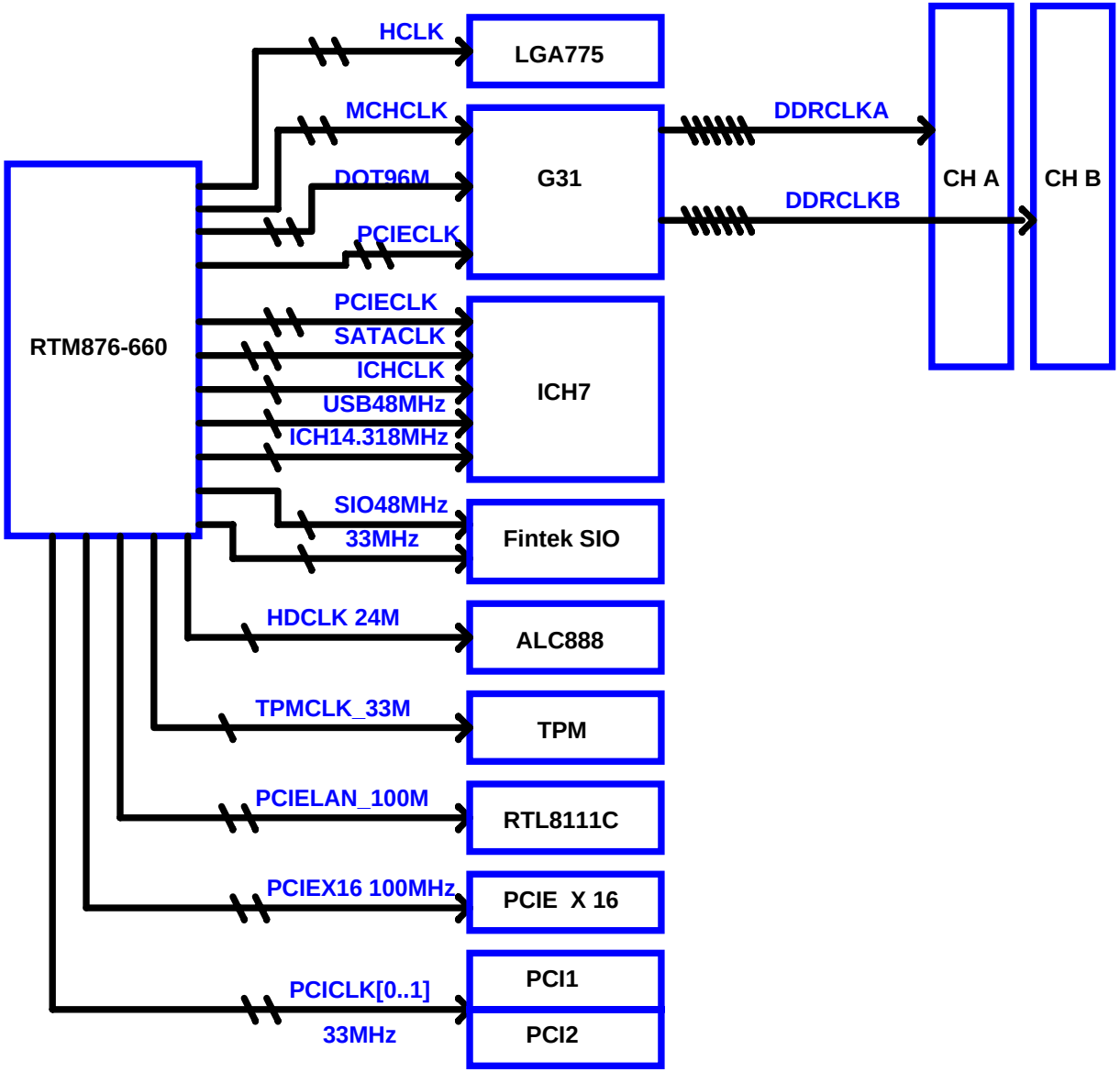
CLOCK MAP



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Size: Custom	Document Description: CLOCK MAP	Rev: 0A
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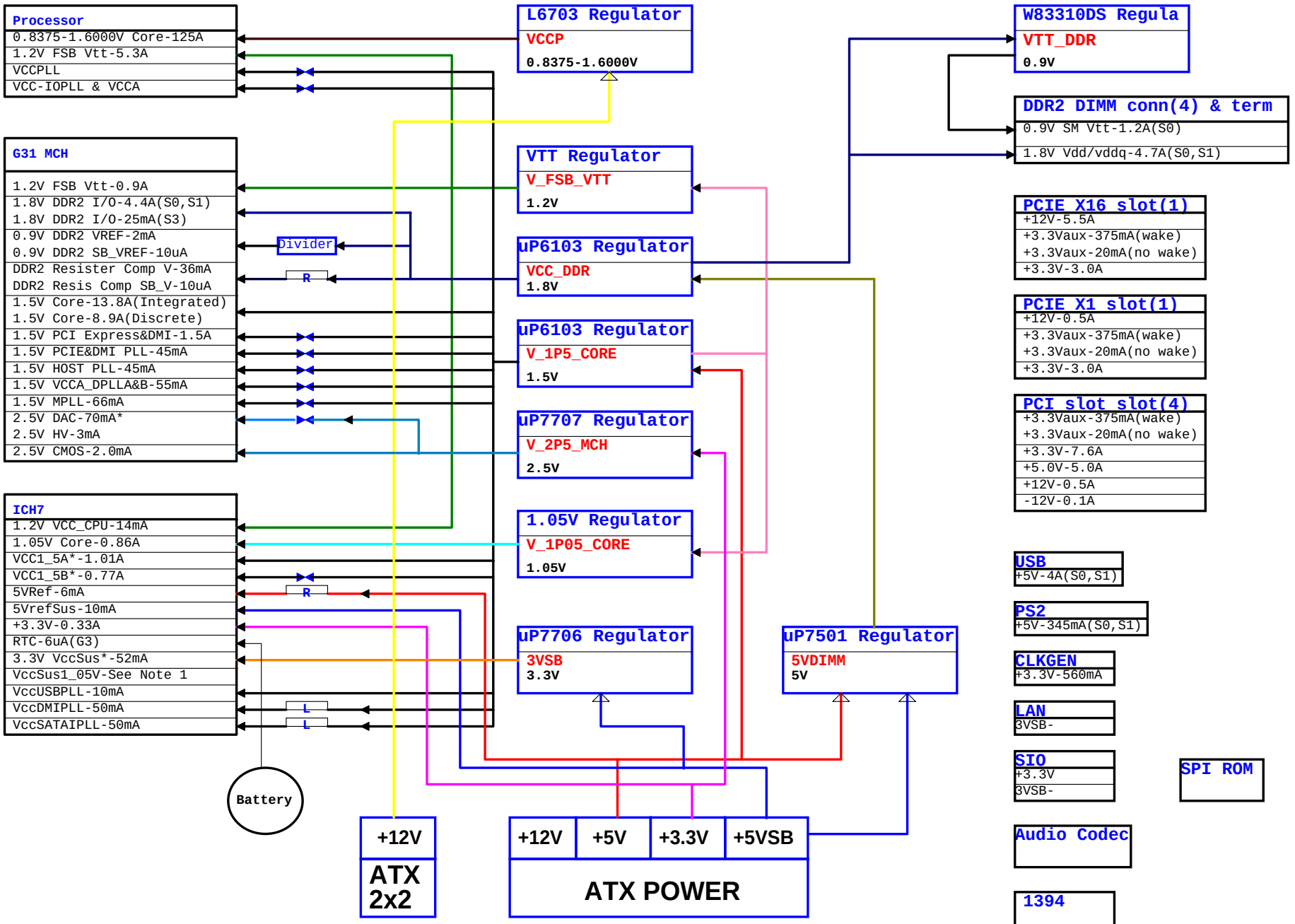

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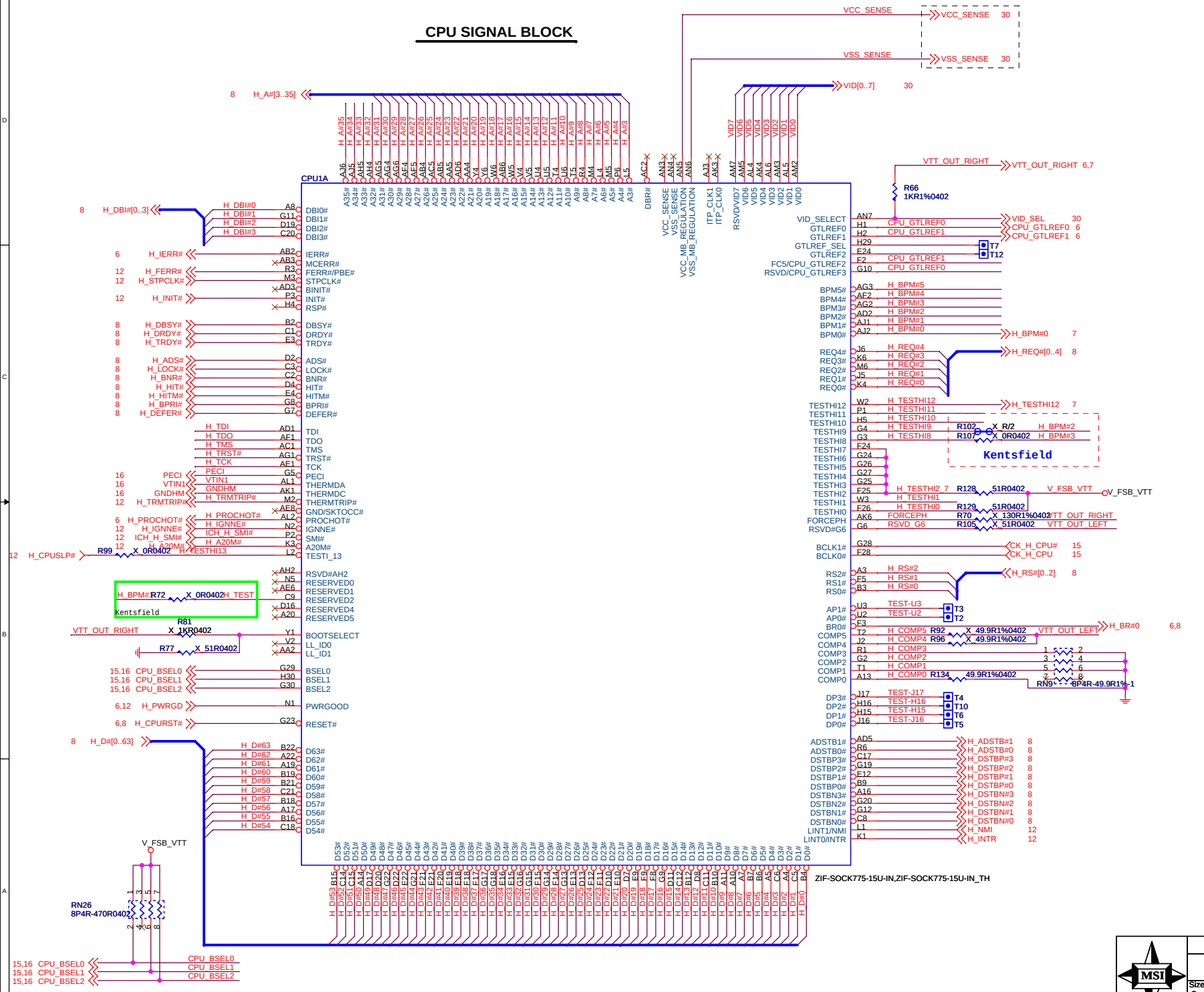
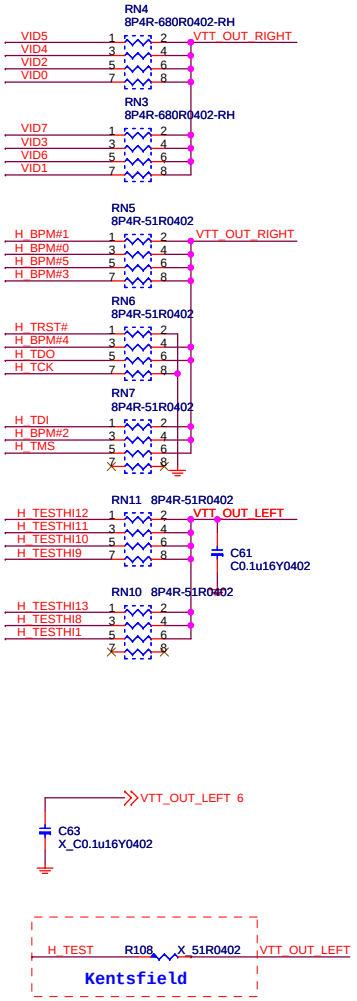
CPU SIGNAL BLOCK



PULL HIGHT PULL DOWN



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Size: Custom	Document Description: LGA775 - Signal		Rev: 0A
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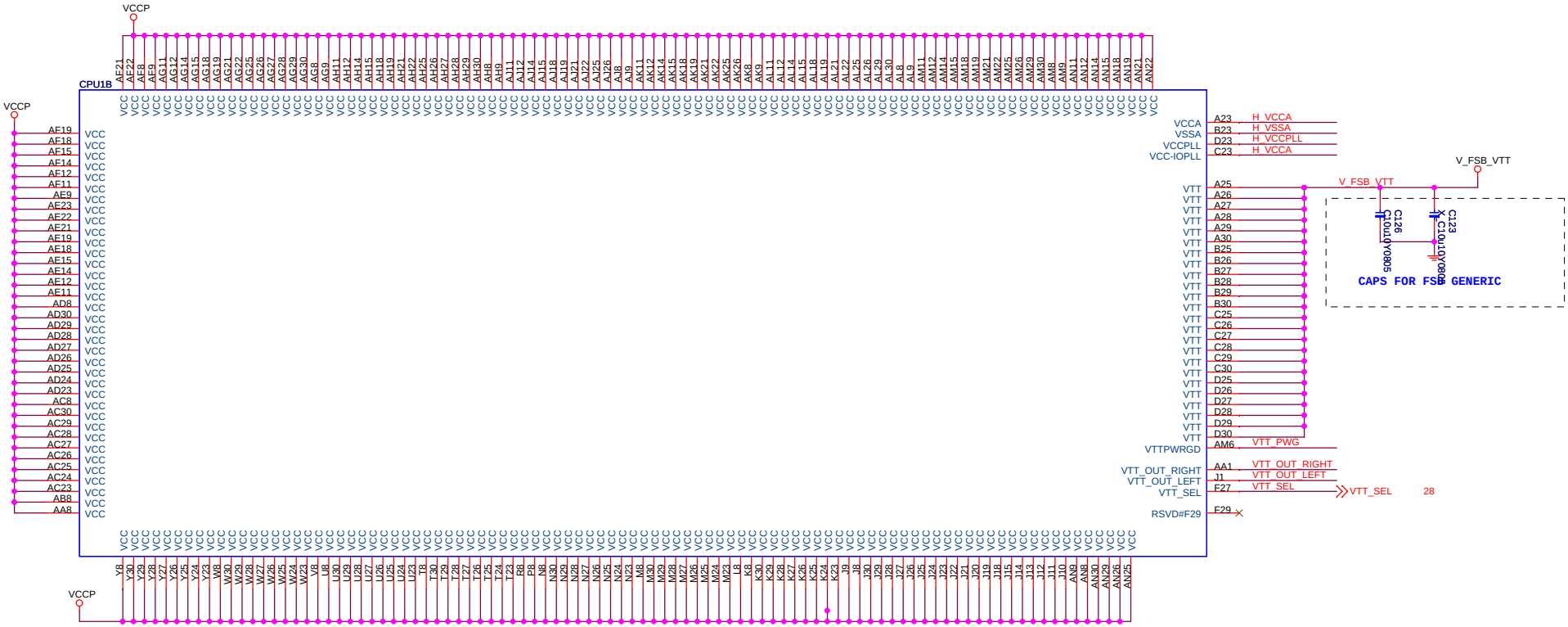
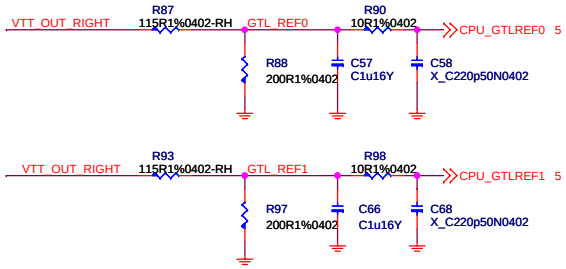
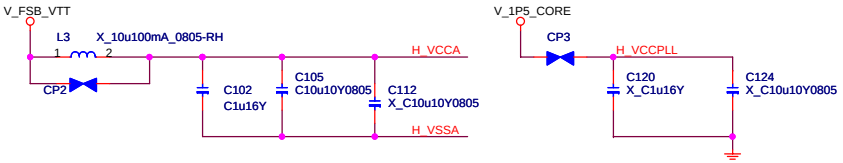


*GTLREF VOLTAGE SHOULD BE 0.67 * VTT = 0.8V (At VTT=1.2V)

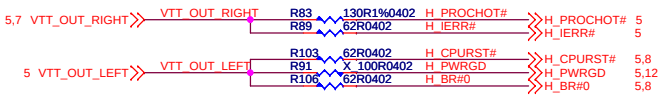


*PLACE COMPONENTS AS CLOSE AS POSSIBLE TO PROCESSOR SOCKET
*TRACE WIDTH TO CAPS MUST BE NO SMALLER THAN 12MILS

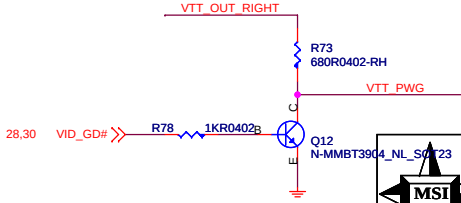


ZIF-SOCK775-15U-IN,ZIF-SOCK775-15U-IN_TH

PLACE AT CPU END OF ROUTE



VTT_PWRGOOD



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

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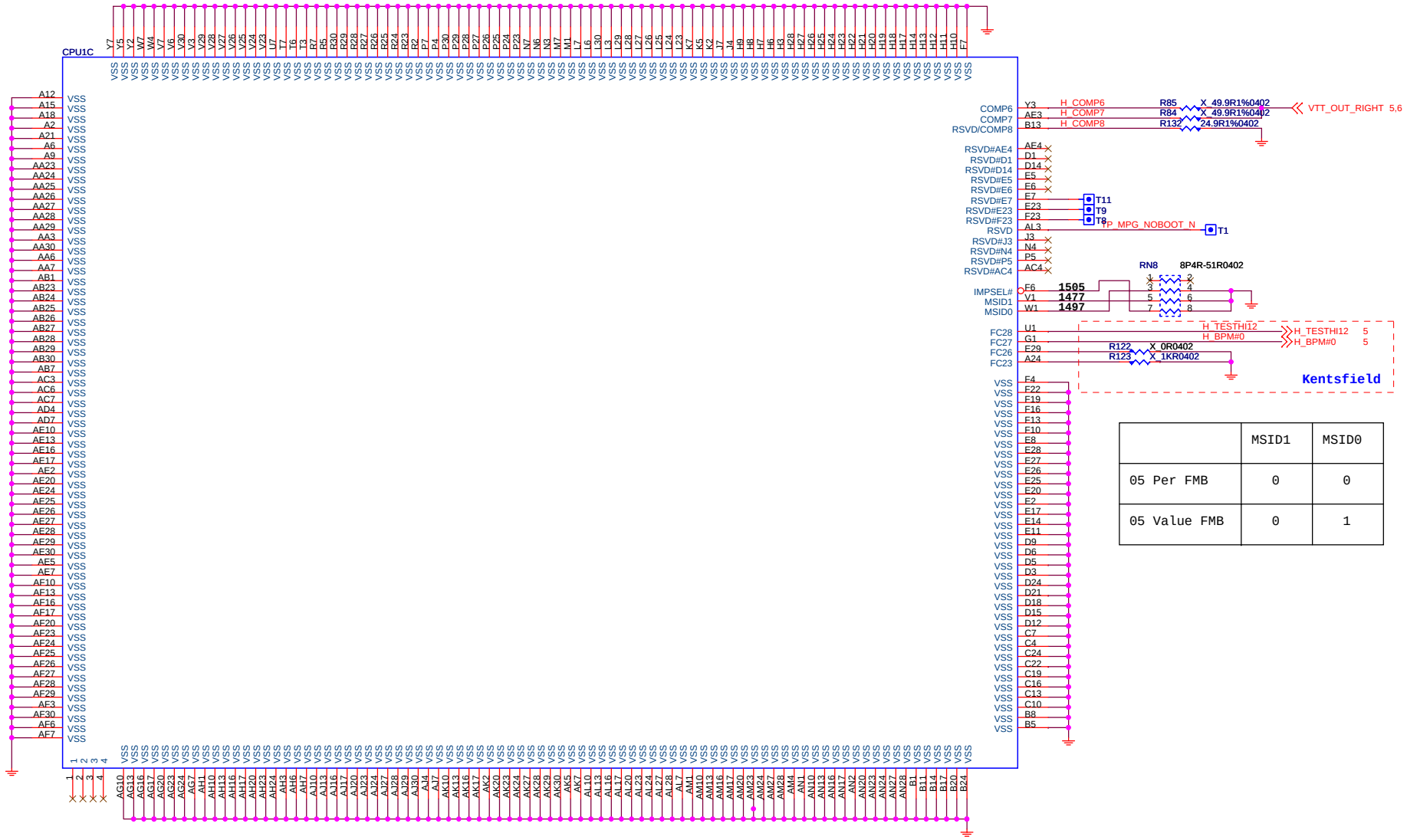
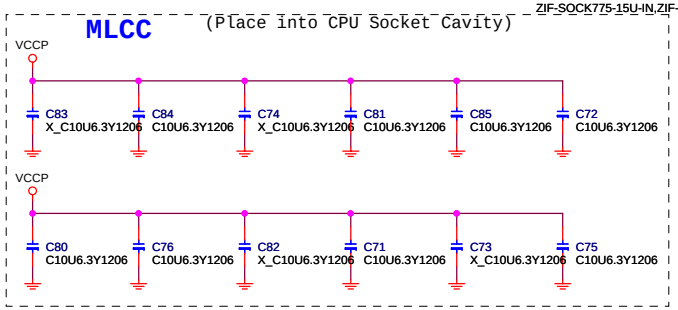


	MSID1	MSID0
05 Per FMB	0	0
05 Value FMB	0	1



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Custom	LGA775 - GND	0A

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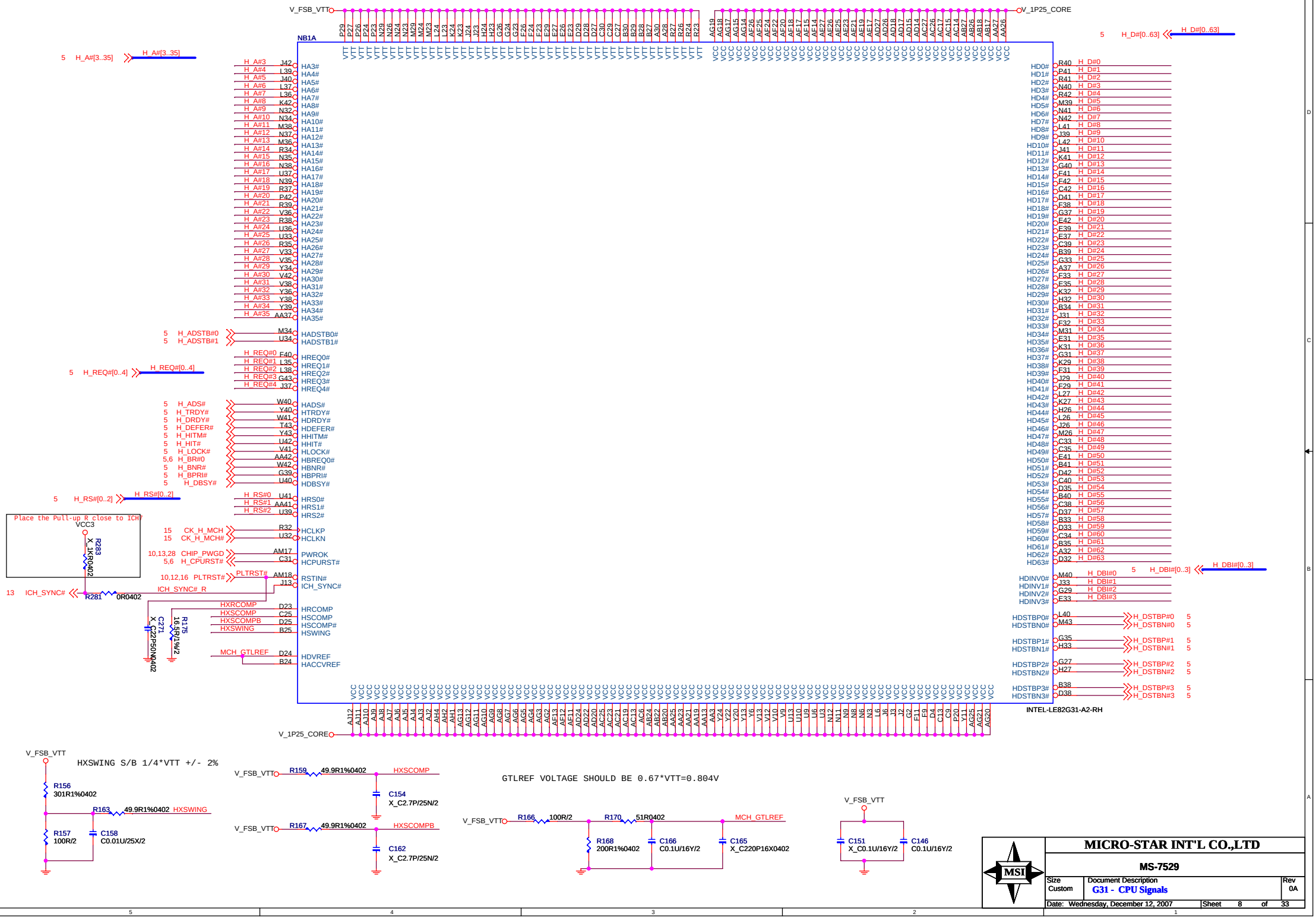
NB1A
V_FSB_VTT
V_1P25_CORE
INTEL-LE82G31-A2-RH
H_A#[3..35]
H_ADSTB#0
H_ADSTB#1
H_REQ#[0..4]
H_ADS#
H_TRDY#
H_DRDY#
H_DEFER#
H_HITM#
H_HIT#
H_LOCK#
H_BR#0
H_BNR#
H_BPRI#
H_DBSY#
H_RS#[0..2]
CK_H_MCH
CK_H_MCH#
CHIP_PWGD
H_CPURST#
PLTRST#
ICH_SYNC#
ICH_SYNC# R
HXRCOMP
HXSCOMP
HXSCOMPB
HXSWING
MCH_GTLREF
H_D#[0..63]
H_DBI#[0..3]
H_DSTBP#0
H_DSTBN#0
H_DSTBP#1
H_DSTBN#1
H_DSTBP#2
H_DSTBN#2
H_DSTBP#3
H_DSTBN#3
Place the Pull-up R close to ICH7
VCC3
R283 X_1KR0402
R281 0R0402
C271 X_C22P50N0402
R175 16.5R/1%/2
HXSWING S/B 1/4*VTT +/- 2%
R156 301R1%0402
R163 49.9R1%0402
R157 100R/2
C158 C0.01U/25X/2
R159 49.9R1%0402
C154 X_C2.7P/25N/2
R167 49.9R1%0402
C162 X_C2.7P/25N/2
GTLREF VOLTAGE SHOULD BE 0.67*VTT=0.804V
R166 100R/2
R170 51R0402
R168 200R1%0402
C166 C0.1U/16Y/2
C165 X_C220P16X0402
C151 X_C0.1U/16Y/2
C146 C0.1U/16Y/2
MICRO-STAR INT'L CO.,LTD
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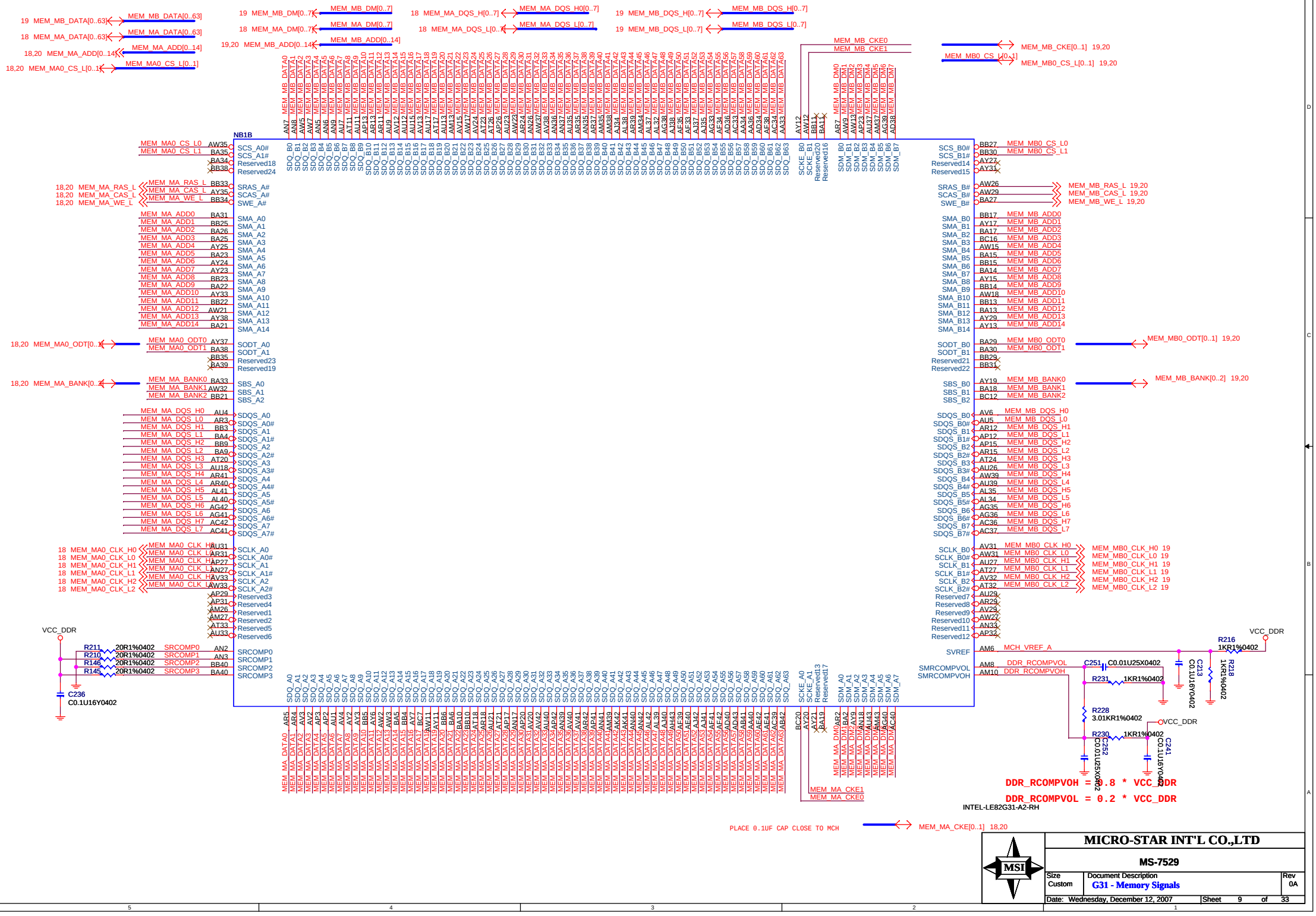

MICRO-STAR INT'L CO.,LTD		
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Size: Custom	Document Description: G31 - Memory Signals	Rev: 0A
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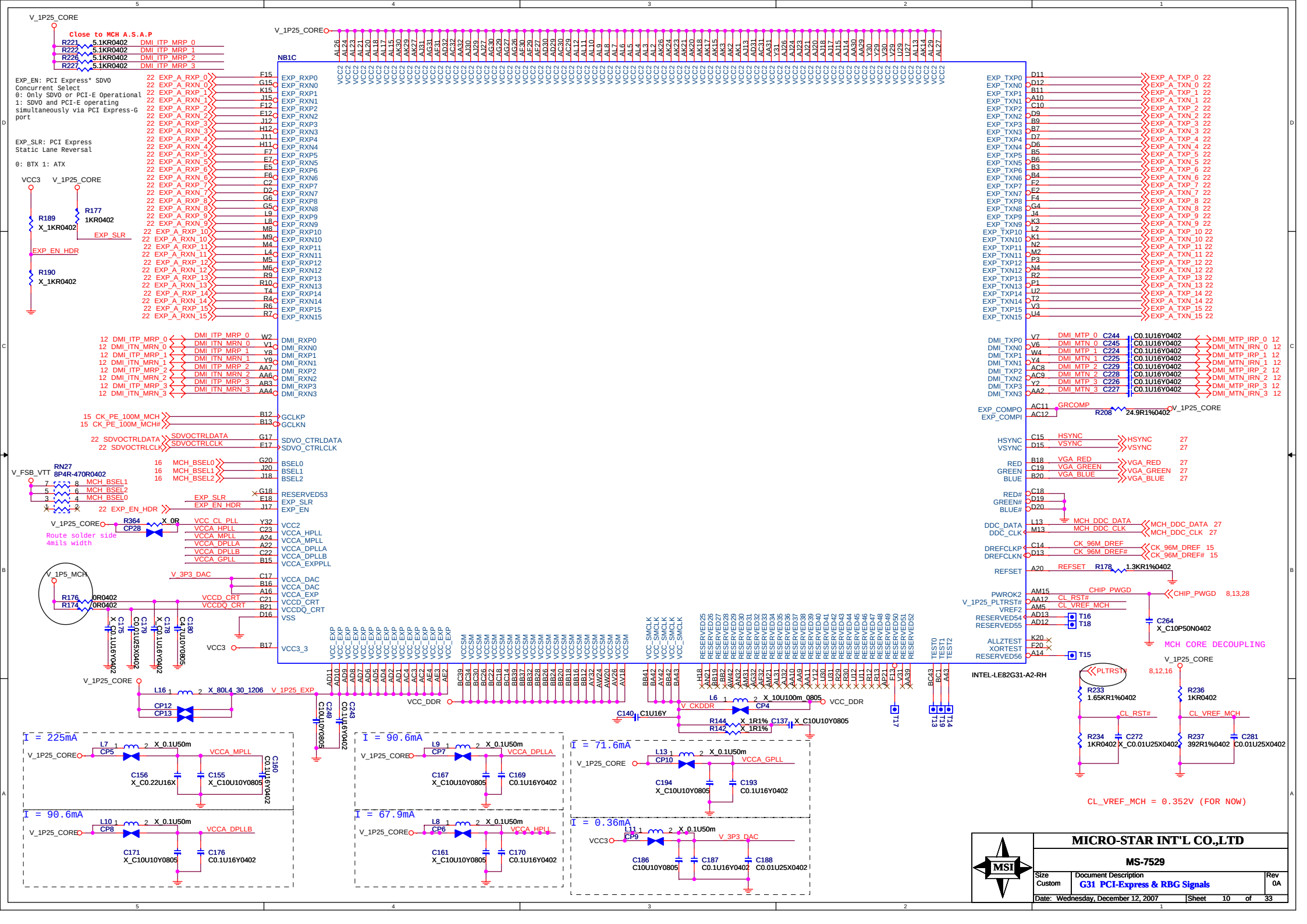
V_1P25_CORE
Close to MCH A.S.A.P
R221 5.1KR0402 DMI_ITP_MRP_0
R222 5.1KR0402 DMI_ITP_MRP_1
R226 5.1KR0402 DMI_ITP_MRP_2
R227 5.1KR0402 DMI_ITP_MRP_3
EXP_EN: PCI Express* SDVO Concurrent Select
0: Only SDVO or PCI-E Operational
1: SDVO and PCI-E operating simultaneously via PCI Express-G port
EXP_SLR: PCI Express Static Lane Reversal
0: BTX 1: ATX
VCC3
R189 X_1KR0402
R177 1KR0402
EXP_SLR
EXP_EN_HDR
R190 X_1KR0402
NB1C
EXP_RXP0
EXP_RXN0
EXP_RXP1
EXP_RXN1
EXP_RXP2
EXP_RXN2
EXP_RXP3
EXP_RXN3
EXP_RXP4
EXP_RXN4
EXP_RXP5
EXP_RXN5
EXP_RXP6
EXP_RXN6
EXP_RXP7
EXP_RXN7
EXP_RXP8
EXP_RXN8
EXP_RXP9
EXP_RXN9
EXP_RXP10
EXP_RXN10
EXP_RXP11
EXP_RXN11
EXP_RXP12
EXP_RXN12
EXP_RXP13
EXP_RXN13
EXP_RXP14
EXP_RXN14
EXP_RXP15
EXP_RXN15
EXP_TXP0
EXP_TXN0
EXP_TXP1
EXP_TXN1
EXP_TXP2
EXP_TXN2
EXP_TXP3
EXP_TXN3
EXP_TXP4
EXP_TXN4
EXP_TXP5
EXP_TXN5
EXP_TXP6
EXP_TXN6
EXP_TXP7
EXP_TXN7
EXP_TXP8
EXP_TXN8
EXP_TXP9
EXP_TXN9
EXP_TXP10
EXP_TXN10
EXP_TXP11
EXP_TXN11
EXP_TXP12
EXP_TXN12
EXP_TXP13
EXP_TXN13
EXP_TXP14
EXP_TXN14
EXP_TXP15
EXP_TXN15
DMI_ITP_MRP_0
DMI_ITN_MRN_0
DMI_ITP_MRP_1
DMI_ITN_MRN_1
DMI_ITP_MRP_2
DMI_ITN_MRN_2
DMI_ITP_MRP_3
DMI_ITN_MRN_3
DMI_RXP0
DMI_RXN0
DMI_RXP1
DMI_RXN1
DMI_RXP2
DMI_RXN2
DMI_RXP3
DMI_RXN3
DMI_TXP0
DMI_TXN0
DMI_TXP1
DMI_TXN1
DMI_TXP2
DMI_TXN2
DMI_TXP3
DMI_TXN3
GCLKP
GCLKN
SDVOCTRLDATA
SDVOCTRLCLK
SDVO_CTRLDATA
SDVO_CTRLCLK
RN27 8P4R-470R0402
V_FSB_VTT
MCH_BSEL0
MCH_BSEL1
MCH_BSEL2
BSEL0
BSEL1
BSEL2
RESERVED53
EXP_SLR
EXP_EN
VCC2
VCCA_HPLL
VCCA_MPLL
VCCA_DPLLA
VCCA_DPLLB
VCCA_EXPPLL
VCC_CL_PLL
R364 X_0R
CP28
Route solder side 4mils width
V_1P5_MCH
R176 0R0402
R174 0R0402
V_3P3_DAC
VCCA_DAC
VCCD_CRT
VCCDQ_CRT
VSS
VCC3_3
VCC_DDR
L16 X_80L4_30_1206
V_1P25_EXP
CP12
CP13
I = 225mA
L7 X_0.1U50m
CP5
VCCA_MPLL
C156 X_C0.22U16X
C155 X_C10U10Y0805
C160 C0.1U16Y0402
I = 90.6mA
L10 X_0.1U50m
CP8
VCCA_DPLLB
C171 X_C10U10Y0805
C176 C0.1U16Y0402
I = 90.6mA
L9 X_0.1U50m
CP7
VCCA_DPLLA
C167 X_C10U10Y0805
C169 C0.1U16Y0402
I = 67.9mA
L8 X_0.1U50m
CP6
VCCA_HPLL
C161 X_C10U10Y0805
C170 C0.1U16Y0402
I = 71.6mA
L13 X_0.1U50m
CP10
VCCA_GPLL
C194 X_C10U10Y0805
C193 C0.1U16Y0402
I = 0.36mA
L11 X_0.1U50m
CP9
V_3P3_DAC
C186 C10U10Y0805
C187 C0.1U16Y0402
C188 C0.01U25X0402
V_CKDDR
L6 X_10U100m_0805
CP4
C140 C1U16Y
R144 X_1R1%
R142 X_1R1%
C137 X_C10U10Y0805
INTEL-LE82G31-A2-RH
GRCOMP
R208 24.9R1%0402
HSYNC
VSYNC
VGA_RED
VGA_GREEN
VGA_BLUE
MCH_DDC_DATA
MCH_DDC_CLK
CK_96M_DREF
CK_96M_DREF#
REFSET
R178 1.3KR1%0402
CHIP_PWGD
CL_RST#
CL_VREF_MCH
C264 X_C10P50N0402
MCH CORE DECOUPLING
PLTRST#
R233 1.65KR1%0402
R234 1KR0402
C272 X_C0.01U25X0402
R236 1KR0402
R237 392R1%0402
C281 C0.01U25X0402
CL_VREF_MCH = 0.352V (FOR NOW)
MICRO-STAR INT'L CO.,LTD
MS-7529
Size Custom
Document Description
G31 PCI-Express & RBG Signals
Rev 0A
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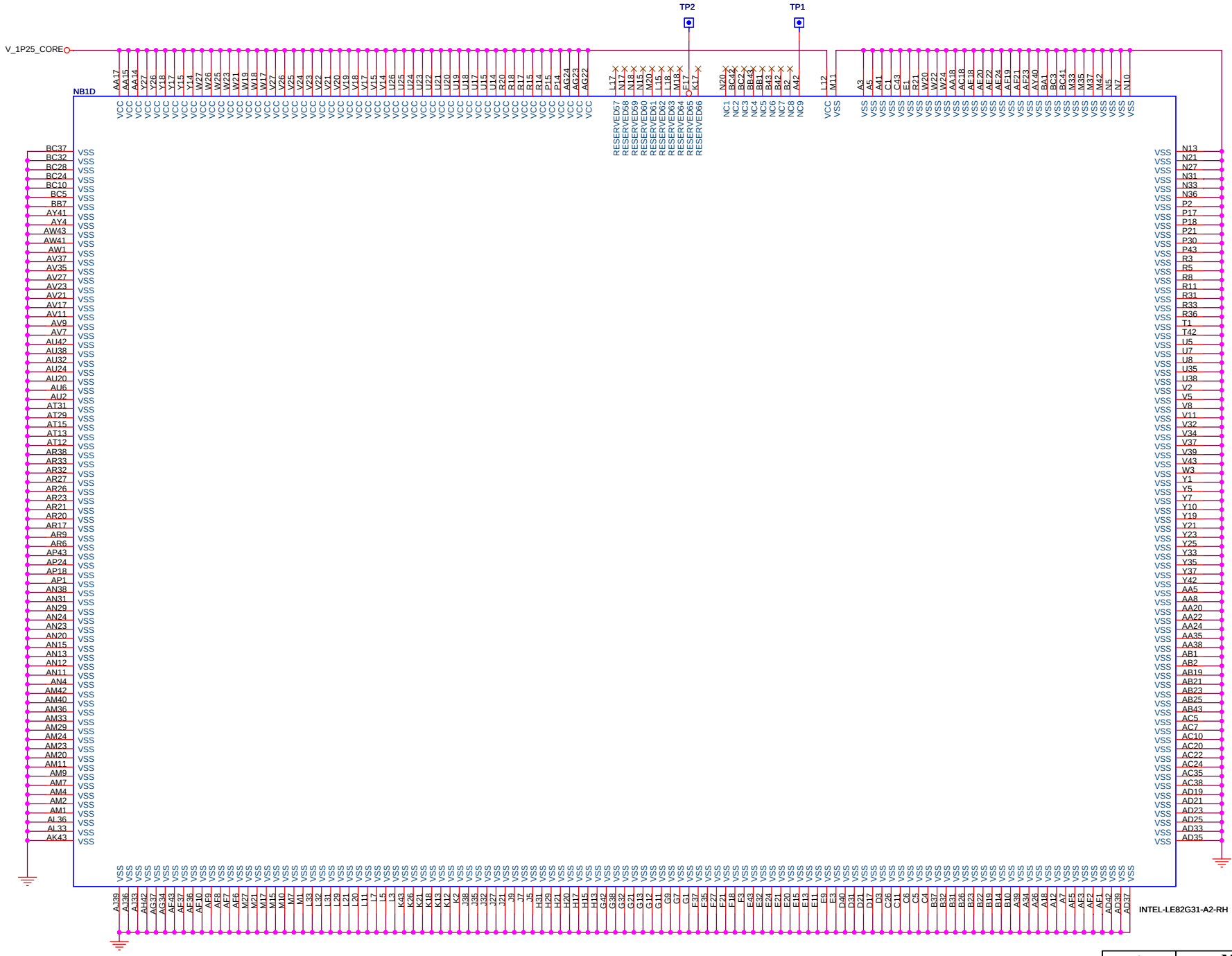

Place close to GMCH

VCC_DDR

C191 X_C2.2U6.3Y
C163 C2.2U6.3Y
C153 X_C2.2U6.3Y
C172 X_C2.2U6.3Y
C182 C2.2U6.3Y
C92 C2.2U6.3Y

MCH CORE DECOUPLING

V_1P25_CORE

C250 C10U10Y0805
C290 X_C10U10Y0805
C258 X_C0.1U16Y0402
C247 X_C10U10Y0805
C235 C0.1U16Y0402
C289 X_C10U10Y0805
C303 X_C10U10Y0805
C222 C0.1U16Y0402

5020 Parts

V_1P25_CORE

C456 X_C10U10Y0805
C457 X_C10U10Y0805
C451 X_C10U10Y0805
C452 X_C10U10Y0805
C453 X_C10U10Y0805
C240 X_C0.1U16Y0402

V_FSB_VTT

C455 X_C0.1U16X-1
C454 X_C0.1U16X-1

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Size: Custom	Document Description: Intel .G31 - GND	Rev: 0A
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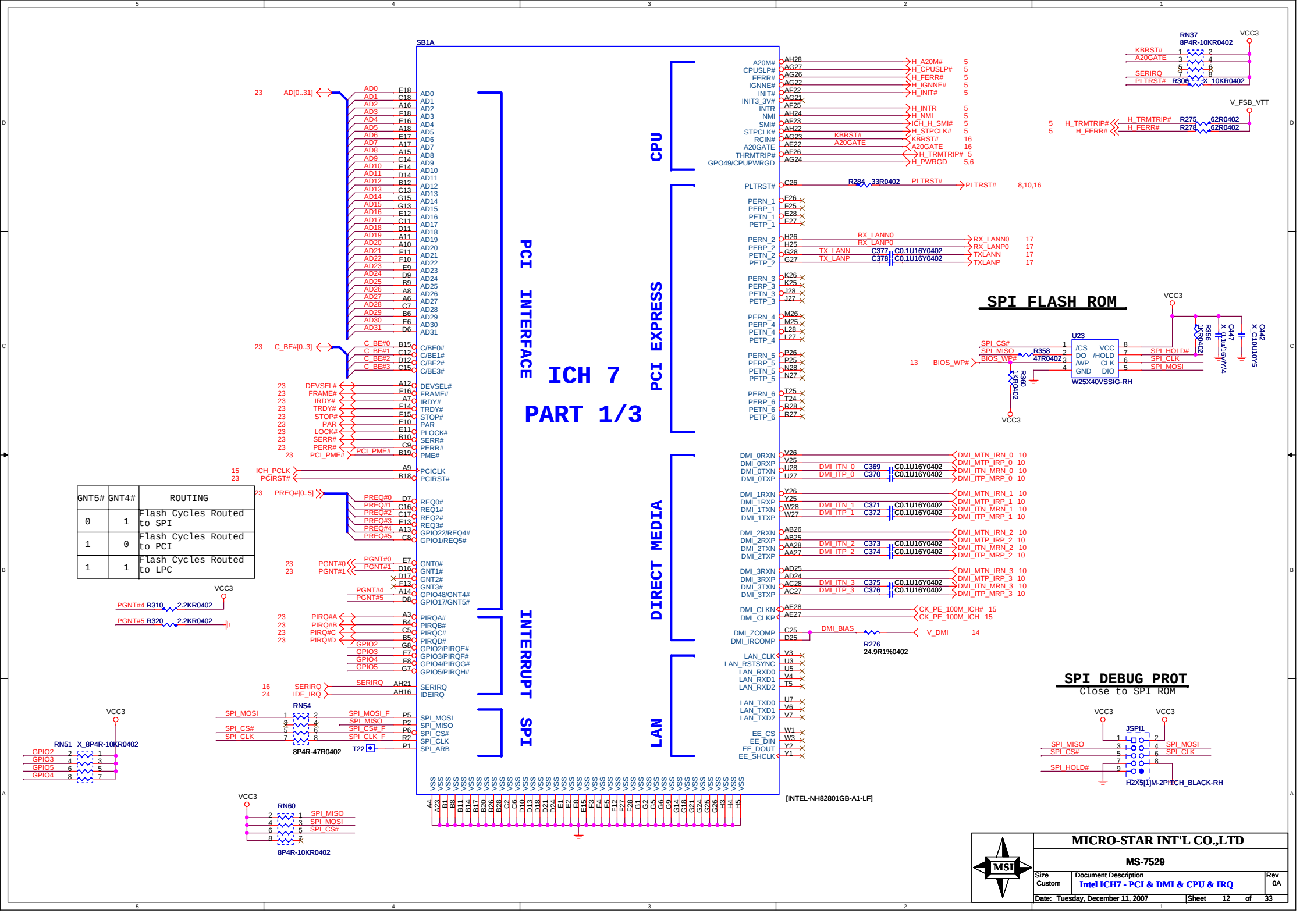
SB1A
ICH 7
PART 1/3
PCI INTERFACE
PCI EXPRESS
DIRECT MEDIA
INTERRUPT SPI
LAN
CPU
SPI FLASH ROM
SPI DEBUG PROT
Close to SPI ROM
[INTEL-NH82801GB-A1-LF]
GNT5# GNT4# ROUTING
0 1 Flash Cycles Routed to SPI
1 0 Flash Cycles Routed to PCI
1 1 Flash Cycles Routed to LPC
MICRO-STAR INT'L CO.,LTD
MS-7529
Intel ICH7 - PCI & DMI & CPU & IRQ
Size Custom
Rev 0A
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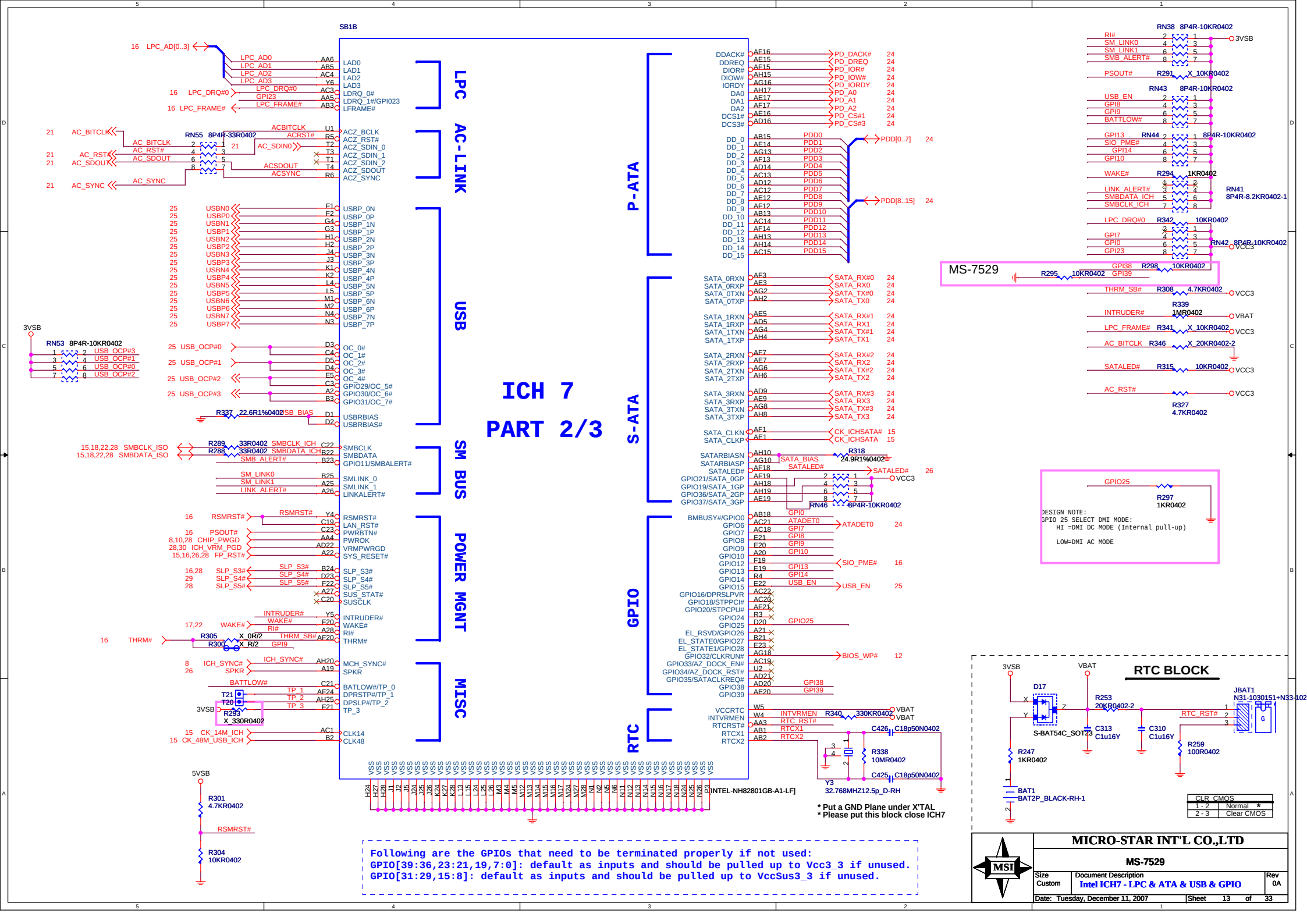
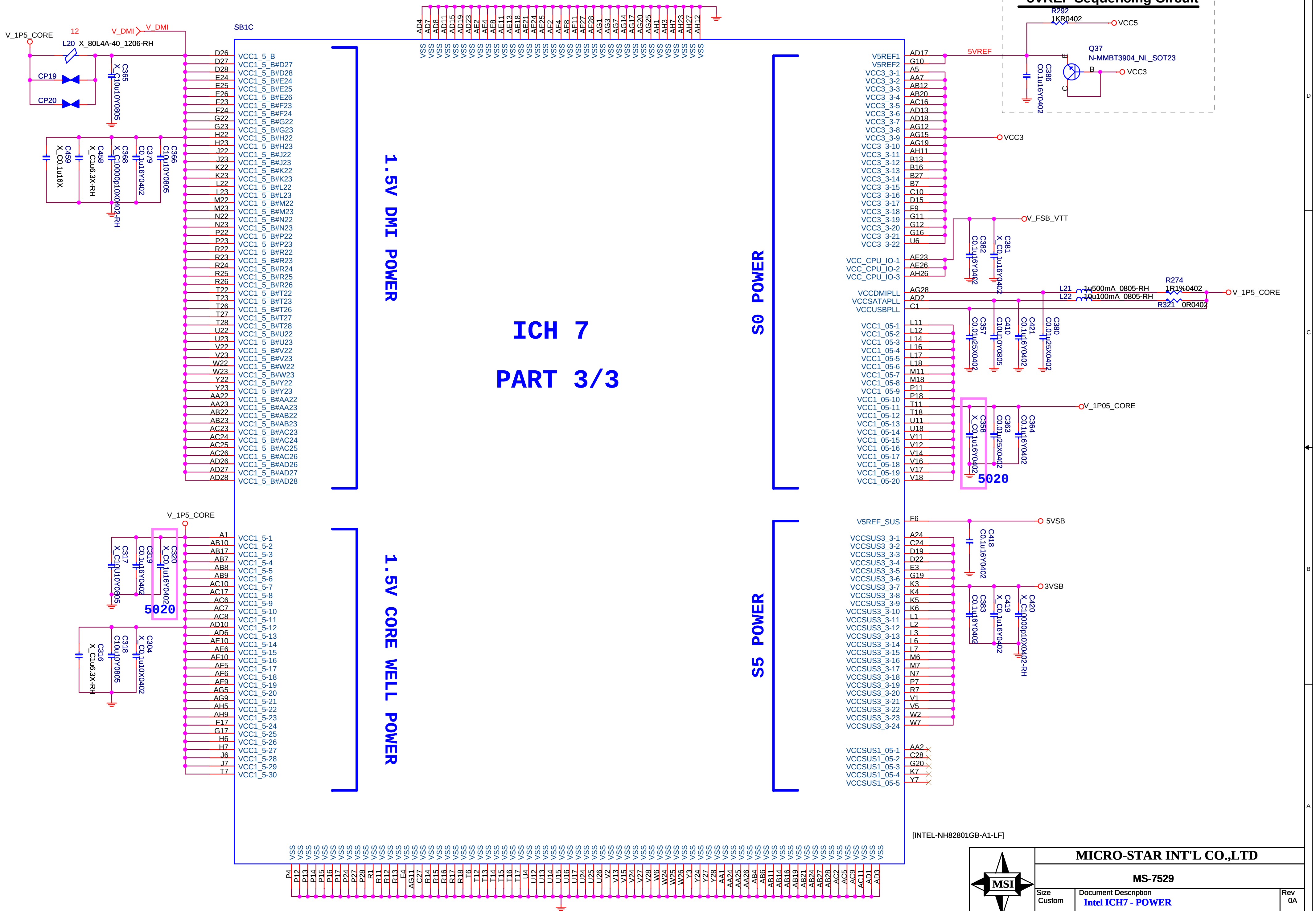

SB1B
ICH 7
PART 2/3
LPC
AC-LINK
USB
SM BUS
POWER MGNT
MISC
P-ATA
S-SATA
GPIO
RTC
LPC_AD[0..3]
LPC_AD0
LPC_AD1
LPC_AD2
LPC_AD3
LPC_DRQ#0
GPI23
LPC_FRAME#
LAD0
LAD1
LAD2
LAD3
LDRQ_0#
LDRQ_1#/GPI023
LFRAME#
AC_BITCLK
AC_RST#
AC_SDOUT
AC_SYNC
ACBITCLK
ACRST#
AC_SDIN0
ACSDOUT
ACSYNC
ACZ_BCLK
ACZ_RST#
ACZ_SDIN_0
ACZ_SDIN_1
ACZ_SDIN_2
ACZ_SDOUT
ACZ_SYNC
RN55 8P4R-33R0402
USBN0
USBP0
USBN1
USBP1
USBN2
USBP2
USBN3
USBP3
USBN4
USBP4
USBN5
USBP5
USBN6
USBP6
USBN7
USBP7
USBP_0N
USBP_0P
USBP_1N
USBP_1P
USBP_2N
USBP_2P
USBP_3N
USBP_3P
USBP_4N
USBP_4P
USBP_5N
USBP_5P
USBP_6N
USBP_6P
USBP_7N
USBP_7P
3VSB
RN53 8P4R-10KR0402
USB_OCP#3
USB_OCP#1
USB_OCP#0
USB_OCP#2
USB_OCP#0
USB_OCP#1
USB_OCP#2
USB_OCP#3
OC_0#
OC_1#
OC_2#
OC_3#
OC_4#
GPIO29/OC_5#
GPIO30/OC_6#
GPIO31/OC_7#
R337 22.6R1%0402
USB_BIAS
USBRBIAS
USBRBIAS#
15,18,22,28 SMBCLK_ISO
15,18,22,28 SMBDATA_ISO
R289 33R0402 SMBCLK_ICH
R288 33R0402 SMBDATA_ICH
SMB_ALERT#
SMBCLK
SMBDATA
GPIO11/SMBALERT#
SM_LINK0
SM_LINK1
LINK_ALERT#
SMLINK_0
SMLINK_1
LINKALERT#
RSMRST#
PSOUT#
CHIP_PWGD
ICH_VRM_PGD
FP_RST#
SLP_S3#
SLP_S4#
SLP_S5#
WAKE#
RI#
THRM#
R305 X_0R/2
R306 X_R/2
THRM_SB#
GPI9
SUS_STAT#
SUSCLK
INTRUDER#
RSMRST#
LAN_RST#
PWRBTN#
PWROK
VRMPWRGD
SYS_RESET#
SLP_S3#
SLP_S4#
SLP_S5#
ICH_SYNC#
SPKR
MCH_SYNC#
BATTLOW#
TP_1
TP_2
TP_3
BATLOW#/TP_0
DPRSTP#/TP_1
DPSLP#/TP_2
TP_3
R293 X_330R0402
CK_14M_ICH
CK_48M_USB_ICH
CLK14
CLK48
5VSB
R301 4.7KR0402
RSMRST#
R304 10KR0402
DDACK#
DDREQ
DIOR#
DIOW#
IORDY
DA0
DA1
DA2
DCS1#
DCS3#
PD_DACK#
PD_DREQ
PD_IOR#
PD_IOW#
PD_IORDY
PD_A0
PD_A1
PD_A2
PD_CS#1
PD_CS#3
DD_0
DD_1
DD_2
DD_3
DD_4
DD_5
DD_6
DD_7
DD_8
DD_9
DD_10
DD_11
DD_12
DD_13
DD_14
DD_15
PDD0
PDD1
PDD2
PDD3
PDD4
PDD5
PDD6
PDD7
PDD8
PDD9
PDD10
PDD11
PDD12
PDD13
PDD14
PDD15
PDD[0..7]
PDD[8..15]
SATA_0RXN
SATA_0RXP
SATA_0TXN
SATA_0TXP
SATA_1RXN
SATA_1RXP
SATA_1TXN
SATA_1TXP
SATA_2RXN
SATA_2RXP
SATA_2TXN
SATA_2TXP
SATA_3RXN
SATA_3RXP
SATA_3TXN
SATA_3TXP
SATA_RX#0
SATA_RX0
SATA_TX#0
SATA_TX0
SATA_RX#1
SATA_RX1
SATA_TX#1
SATA_TX1
SATA_RX#2
SATA_RX2
SATA_TX#2
SATA_TX2
SATA_RX#3
SATA_RX3
SATA_TX#3
SATA_TX3
SATA_CLKN
SATA_CLKP
CK_ICHSATA#
CK_ICHSATA
SATARBIASN
SATARBIASP
SATALED#
SATA_BIAS
R318 24.9R1%0402
RN46 8P4R-10KR0402
GPIO21/SATA_0GP
GPIO19/SATA_1GP
GPIO36/SATA_2GP
GPIO37/SATA_3GP
BMBUSY#/GPIO0
GPIO6
GPIO7
GPIO8
GPIO9
GPIO10
GPIO12
GPIO13
GPIO14
GPIO15
GPIO16/DPRSLPVR
GPIO18/STPPCI#
GPIO20/STPCPU#
GPIO24
GPIO25
EL_RSVD/GPIO26
EL_STATE0/GPIO27
EL_STATE1/GPIO28
GPIO32/CLKRUN#
GPIO33/AZ_DOCK_EN#
GPIO34/AZ_DOCK_RST#
GPIO35/SATACLKREQ#
GPIO38
GPIO39
GPIO0
ATADET0
GPI7
GPI8
GPI9
GPI10
GPI13
GPI14
USB_EN
GPIO25
BIOS_WP#
GPI38
GPI39
SIO_PME#
VCCRTC
INTVRMEN
RTCRST#
RTCX1
RTCX2
R340 330KR0402
RTC_RST#
C426 C18p50N0402
C425 C18p50N0402
R338 10MR0402
Y3 32.768MHZ12.5p_D-RH
VBAT
VCC3
VSS
INTEL-NH82801GB-A1-LF]
* Put a GND Plane under X'TAL
* Please put this block close ICH7
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.
RN38 8P4R-10KR0402
RI#
SM_LINK0
SM_LINK1
SMB_ALERT#
PSOUT#
R291 X_10KR0402
RN43 8P4R-10KR0402
USB_EN
GPI8
GPI9
BATTLOW#
RN44 8P4R-10KR0402
GPI13
SIO_PME#
GPI14
GPI10
WAKE#
R294 1KR0402
RN41 8P4R-8.2KR0402-1
LINK_ALERT#
SMBDATA_ICH
SMBCLK_ICH
LPC_DRQ#0
R342 10KR0402
GPI7
GPI0
GPI23
RN42 8P4R-10KR0402
GPI38
R298 10KR0402
GPI39
MS-7529
R295 10KR0402
THRM_SB#
R308 4.7KR0402
R339 1MR0402
INTRUDER#
LPC_FRAME#
R341 X_10KR0402
AC_BITCLK
R346 X_20KR0402-2
SATALED#
R315 10KR0402
AC_RST#
R327 4.7KR0402
GPIO25
R297 1KR0402
DESIGN NOTE:
GPIO 25 SELECT DMI MODE:
HI =DMI DC MODE (Internal pull-up)
LOW=DMI AC MODE
RTC BLOCK
3VSB
VBAT
D17
S-BAT54C_SOT23
R253 20KR0402-2
C313 C1u16Y
C310 C1u16Y
R259 100R0402
R247 1KR0402
BAT1
BAT2P_BLACK-RH-1
JBAT1
N31-1030151+N33-102
CLR_CMOS
1 - 2 Normal *
2 - 3 Clear CMOS
MICRO-STAR INT'L CO.,LTD
MS-7529
Size Custom
Document Description
Intel ICH7 - LPC & ATA & USB & GPIO
Rev 0A
Date: Tuesday, December 11, 2007
Sheet 13 of 33



MICRO-STAR INT'L CO.,LTD

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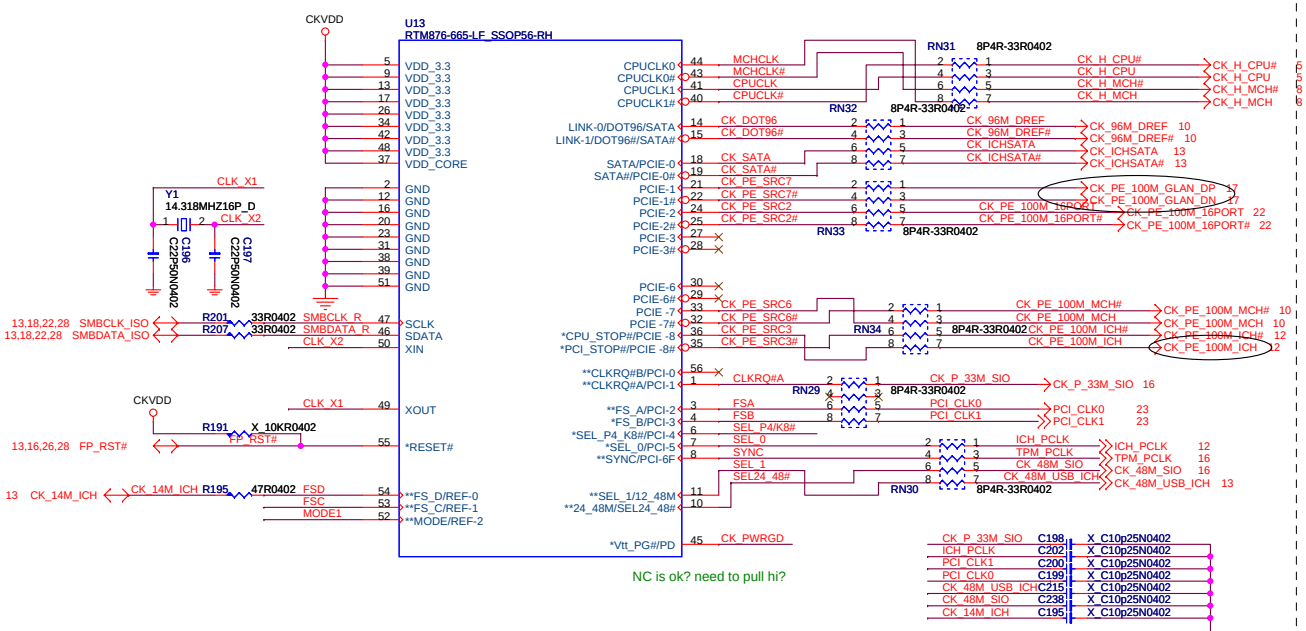
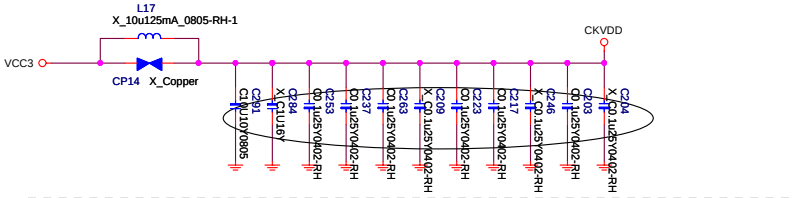
Clock Generator - RTM876-665





STRAPPING RESISTOR

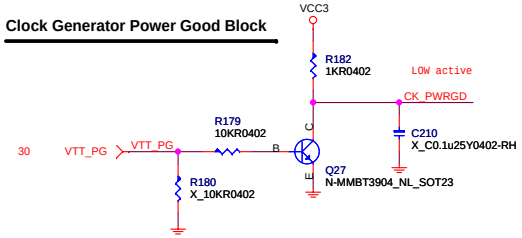
SEL_1	SEL_0	Chipset Support
0	0	SIS
1	0	VIA
0	1	Intel W/GFX
1	1	Intel

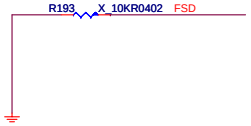
SEL_P4/K8#	PIN#40,41,43,44
0	K8 3.3V swing
1	P4 0.8V swing

MODE	PIN#35/36
0	PCIE-8 T/C
1	PCI STOP#/CPU_STOP#

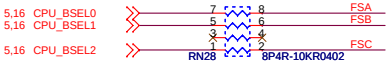
SEL24_48#	Pin#10
0	48Mhz
1	24Mhz

Clock Generator Power Good Block





CPU Frequency Selection

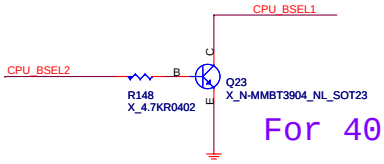


FS_C	FS_B	FS_A	CPU
0	0	0	266M
0	0	1	133M
0	1	0	200M
0	1	1	166M
1	0	0	333M
1	0	1	100M
1	1	0	400M
1	1	1	200M

CPU Frequency Selection

FS_C	FS_B	FS_A	CPU
0	0	1	133M
0	1	0	200M
0	0	0	266M
1	0	0	333M
1	1	0	400M

Only the selection in the table is valid



FSB	FS_C	FS_B	FS_A	CPU
800M	0	1	0	200M
1066M	0	0	0	266M
1333M	1	0	0	333M
1600M	1	1	0	400M

For 400MHz CPU Support

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MS-7529	
Size: Custom	Document Description: CLK-RTM 876-665
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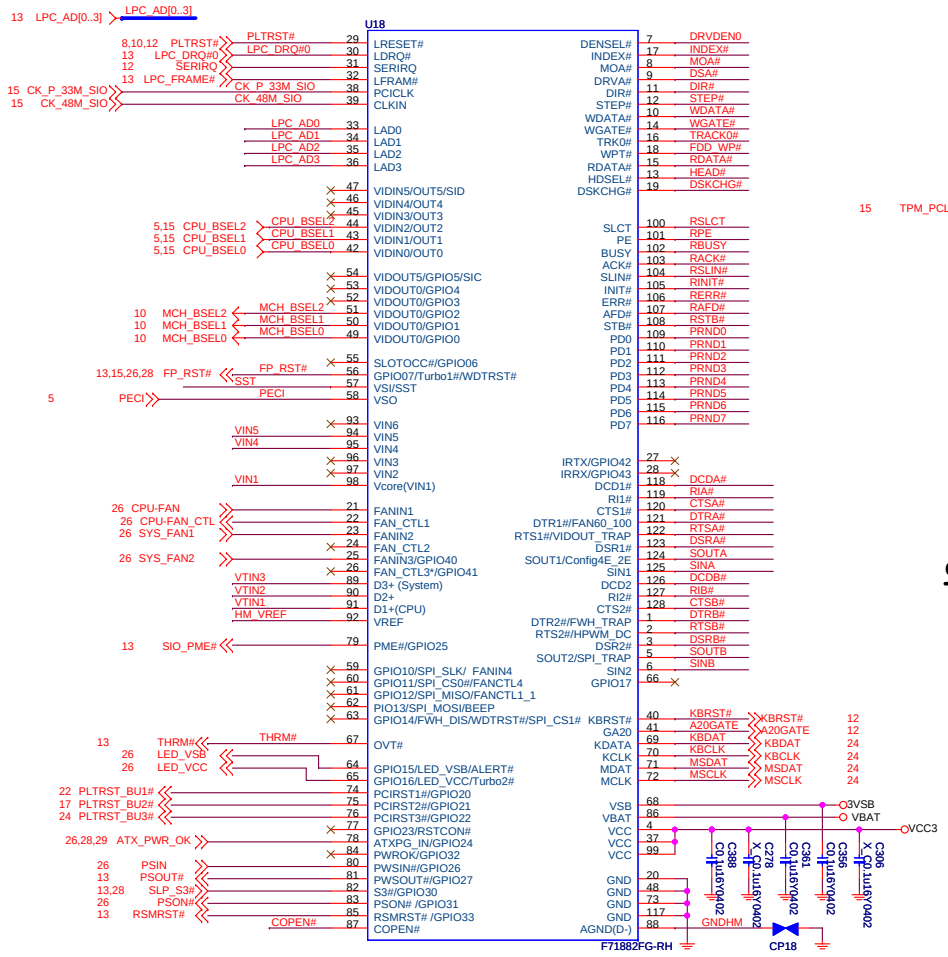
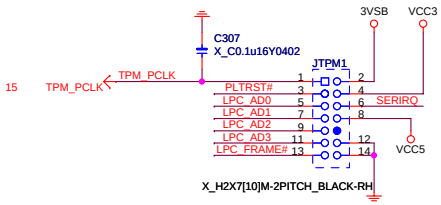
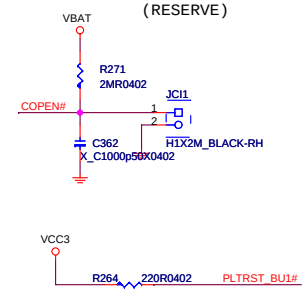


JLPC port for TPM

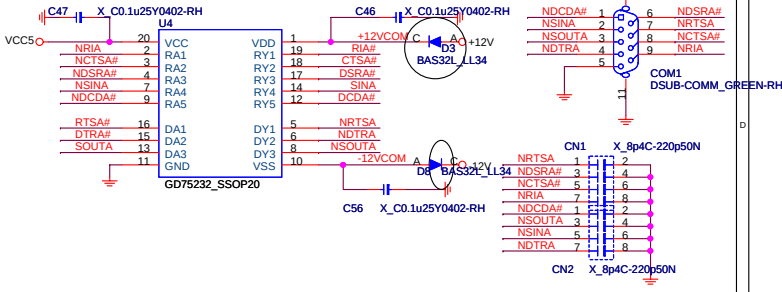


CASE OPEN CIRCUIT

(RESERVE)

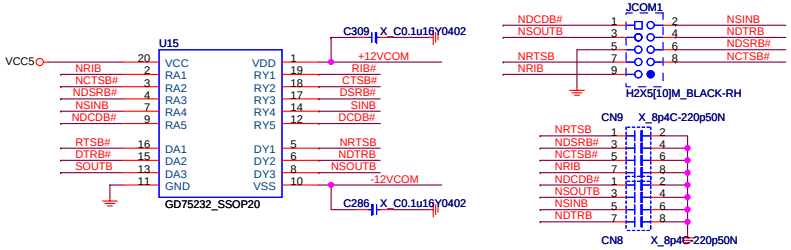


COM1

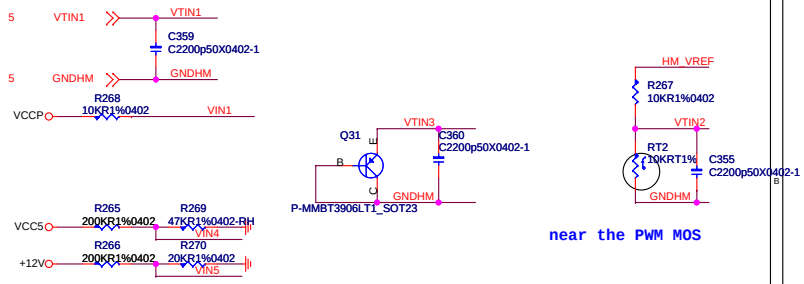


COM2

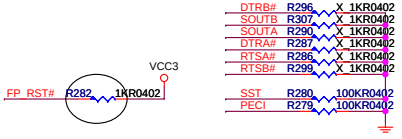
(RESERVE)



Thermal Resistor

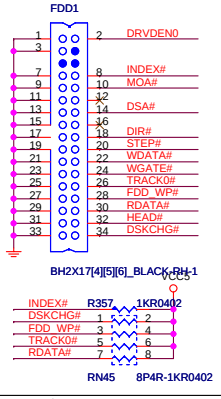


STRAPPING RESISTOR

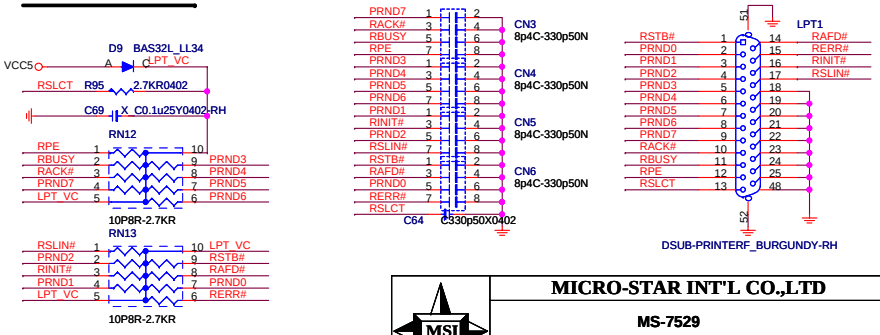


	Don't STUFF	STUFF
RTSB#	PWM FAN	LINEAR FAN
RTSA#	PIN49-54=VID_OUT PIN42-47=VIDIN	PIN49-54=GPIO PIN42-47=VIDIN/OUT
SOUTA	4E	2E
DTRB#,SOUTB	SPI_DISABLE	SPI_ENABLE
DTRA#	FAN START DUTY 60%	FAN START DUTY 100%

FLOPPY CONNECTOR



PARALLAL PORT



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Size: Custom	Document Description: SIO-Fintek F17882F & IO-Port
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R257=2K(R11-0202T12-R01) for 8101E;
R257=2.49k(R11-2491T12-R01) for 8111B/C

R215,C601,C180,R471
For 8111C only

C180 close to PIN63
C601 close to C180

R187
For 8111C only

R224
For 8111C only

For 8101E only

For 8101E only

For 8101E only

For 8101E only

R214
For 8101E only

C206,C239
For 8101E only

CHOKE
For 8111C only

R212
For 8101E only

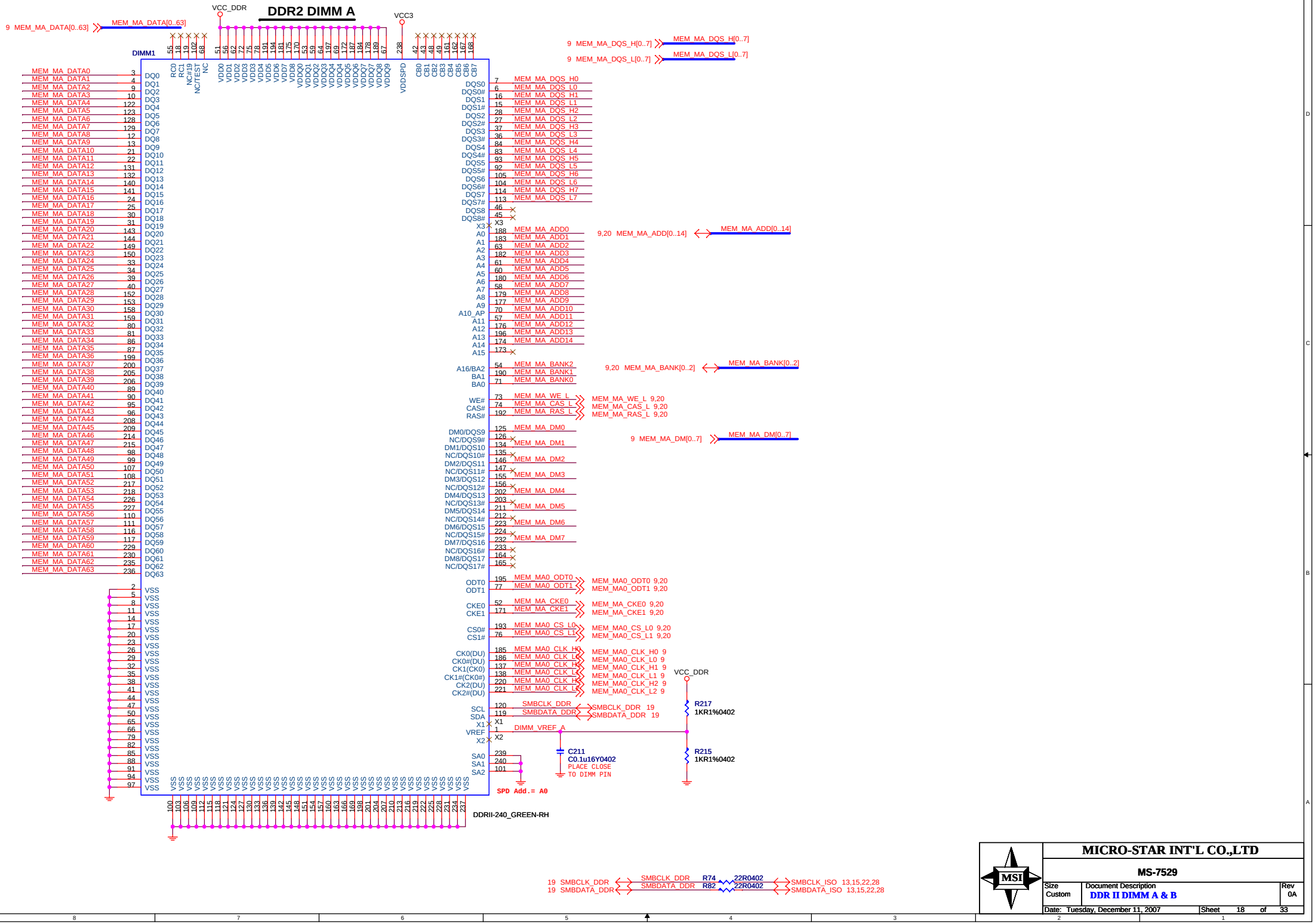
R477
For 8101E only

R476
For 8111C only

Giga-Lan	10/100-Lan
N58-22F0181-S42	N58-22F0201-S42
Link Active 1000 100 10	Yellow Blinking Orange Green None
19	19
20 Yellow	20 Yellow
21 Orange	21
22 Green	22 Green

Micro Star Restricted Secret

Title	RTL8101E/8111C
Rev	0A
Document Number	MS-7529
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: Wednesday, December 12, 2007
Sheet	17 of 33


DDR2 DIMM A
DIMM1
VCC_DDR
VCC3
9 MEM_MA_DATA[0..63]
MEM_MA_DATA[0..63]
9 MEM_MA_DQS_H[0..7]
MEM_MA_DQS_H[0..7]
9 MEM_MA_DQS_L[0..7]
MEM_MA_DQS_L[0..7]
9,20 MEM_MA_ADD[0..14]
MEM_MA_ADD[0..14]
9,20 MEM_MA_BANK[0..2]
MEM_MA_BANK[0..2]
9 MEM_MA_DM[0..7]
MEM_MA_DM[0..7]
MEM_MA_WE_L 9,20
MEM_MA_CAS_L 9,20
MEM_MA_RAS_L 9,20
MEM_MA0_ODT0 9,20
MEM_MA0_ODT1 9,20
MEM_MA_CKE0 9,20
MEM_MA_CKE1 9,20
MEM_MA0_CS_L0 9,20
MEM_MA0_CS_L1 9,20
MEM_MA0_CLK_H0 9
MEM_MA0_CLK_L0 9
MEM_MA0_CLK_H1 9
MEM_MA0_CLK_L1 9
MEM_MA0_CLK_H2 9
MEM_MA0_CLK_L2 9
SMBCLK_DDR 19
SMBDATA_DDR 19
DIMM_VREF_A
C211
C0.1u16Y0402
PLACE CLOSE TO DIMM PIN
R217
1KR1%0402
R215
1KR1%0402
SPD Add.= A0
DDRII-240_GREEN-RH
19 SMBCLK_DDR
19 SMBDATA_DDR
SMBCLK_DDR R74 22R0402
SMBDATA_DDR R82 22R0402
SMBCLK_ISO 13,15,22,28
SMBDATA_ISO 13,15,22,28
MICRO-STAR INT'L CO.,LTD
MS-7529
Size Custom
Document Description
DDR II DIMM A & B
Rev 0A
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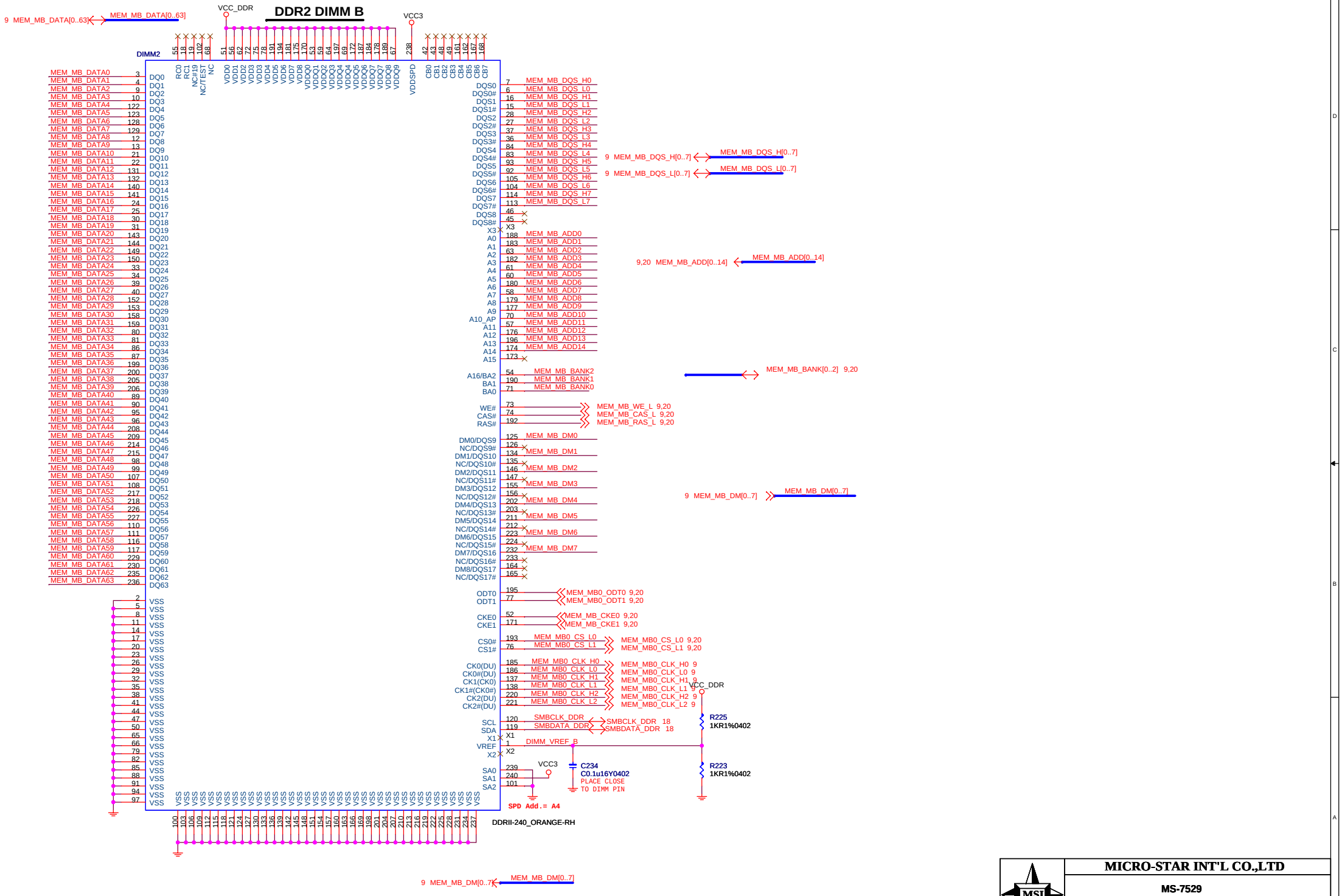

MICRO-STAR INT'L CO.,LTD	
MS-7529	
Size: Custom	Document Description: DDR II DIMM A & B
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CHANNEL A V_SM_VTT DECOULPING CAPS

VTT_DDR

C120 X_C4.7u6.3X5

VTT_DDR

C104 C0.1u16Y0402
C99 X_C0.1u16Y0402
C127 X_C0.1u16Y0402

CHANNEL B V_SM_VTT DECOULPING CAPS

VTT_DDR

C103 X_C4.7u6.3X5
C106 C4.7u6.3X5

VTT_DDR

C117 X_C0.1u16Y0402
C96 X_C0.1u16Y0402
C128 X_C0.1u16Y0402
C101 C0.1u16Y0402

VTT_DDR

MEM_MA_ADD4 2 1
MEM_MA_ADD3 4 3
MEM_MA_ADD1 6 5
MEM_MA_ADD2 8 7
RN20
8P4R-33R0402

MEM_MA_ADD7 2 1
MEM_MA_ADD8 4 3
MEM_MA_ADD5 6 5
MEM_MA_ADD6 8 7
RN22
8P4R-33R0402

MEM_MA_BANK2 2 1
MEM_MA_ADD12 4 3
MEM_MA_ADD11 6 5
MEM_MA_ADD9 8 7
RN24
8P4R-33R0402

9,18 MEM_MA_RAS_L
9,18 MEM_MA_WE_L
9,18 MEM_MA_CAS_L
MEM_MA_RAS_L 2 1
MEM_MA_WE_L 4 3
MEM_MA_CAS_L 6 5
MEM_MA_ADD13 8 7
RN17
8P4R-33R0402

MEM_MA_ADD14 R135 33R0402

MEM_MA_ADD0 2 1
MEM_MA_BANK1 4 3
MEM_MA_ADD10 6 5
MEM_MA_BANK0 8 7
RN19
8P4R-33R0402

MEM_MA0_ODT1 1 2
MEM_MA0_ODT0 3 4
MEM_MA0_CS_L1 5 6
MEM_MA0_CS_L0 7 8
RN15
8P4R-43R0402

MEM_MA_CKE0 R136 43R0402
MEM_MA_CKE1 R138 43R0402

9,18 MEM_MA_ADD[0..14]
9,18 MEM_MA_BANK[0..2]
9,18 MEM_MA0_CS_L[0..1]
9,18 MEM_MA_CKE[0..1]
9,18 MEM_MA0_ODT[0..1]

VTT_DDR

MEM_MB_ADD4 2 1
MEM_MB_ADD3 4 3
MEM_MB_ADD1 6 5
MEM_MB_ADD2 8 7
RN21
8P4R-33R0402

MEM_MB_BANK2 2 1
MEM_MB_ADD12 4 3
MEM_MB_ADD11 6 5
MEM_MB_ADD7 8 7
RN25
8P4R-33R0402

MEM_MB_ADD9 2 1
MEM_MB_ADD8 4 3
MEM_MB_ADD6 6 5
MEM_MB_ADD5 8 7
RN23
8P4R-33R0402

9,19 MEM_MB_RAS_L
9,19 MEM_MB_WE_L
9,19 MEM_MB_CAS_L
MEM_MB_RAS_L 2 1
MEM_MB_WE_L 4 3
MEM_MB_CAS_L 6 5
MEM_MB_ADD13 8 7
RN16
8P4R-33R0402

MEM_MB_ADD14 R137 33R0402

MEM_MB_ADD0 2 1
MEM_MB_ADD10 4 3
MEM_MB_BANK1 6 5
MEM_MB_BANK0 8 7
RN18
8P4R-33R0402

MEM_MB0_ODT1 1 2
MEM_MB0_CS_L1 3 4
MEM_MB0_ODT0 5 6
MEM_MB0_CS_L0 7 8
RN14
8P4R-43R0402
change RN

MEM_MB_CKE0 R141 43R0402
MEM_MB_CKE1 R139 43R0402

9,19 MEM_MB_ADD[0..14]
9,19 MEM_MB_BANK[0..2]
9,19 MEM_MB0_CS_L[0..1]
9,19 MEM_MB_CKE[0..1]
9,19 MEM_MB0_ODT[0..1]

VCC_DDR

C89 C1U10Y0402-RH
C108 C1U10Y0402-RH
C279 C0.1u16Y0402
C86 X_C0.1u16Y0402
C87 X_C0.1u16Y0402
C100 C0.1u16Y0402
C98 C0.1u16Y0402

VCC_DDR

C132 C1U10Y0402-RH
C95 X_C1U10Y0402-RH
C147 X_C0.1u16Y0402
C109 X_C0.1u16Y0402
C121 X_C0.1u16Y0402
C184 C0.1u16Y0402

EMI

VCC_DDR VTT_DDR

C113 X_C0.1u16Y0402

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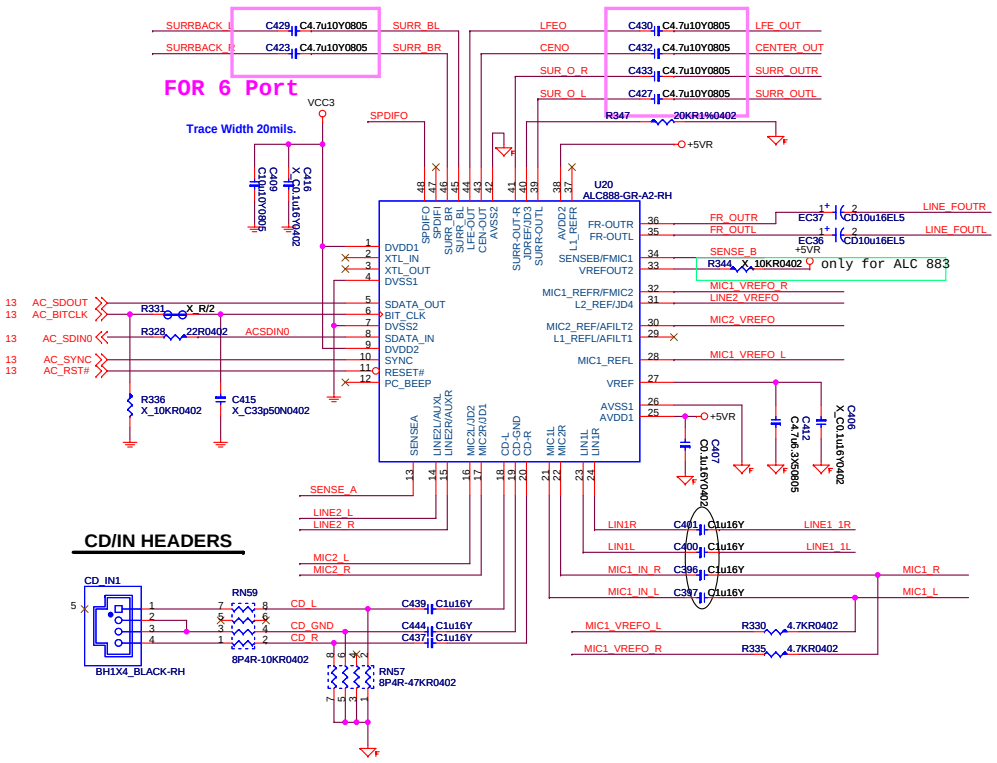
ALC888 CODEC

FOR 6 Port

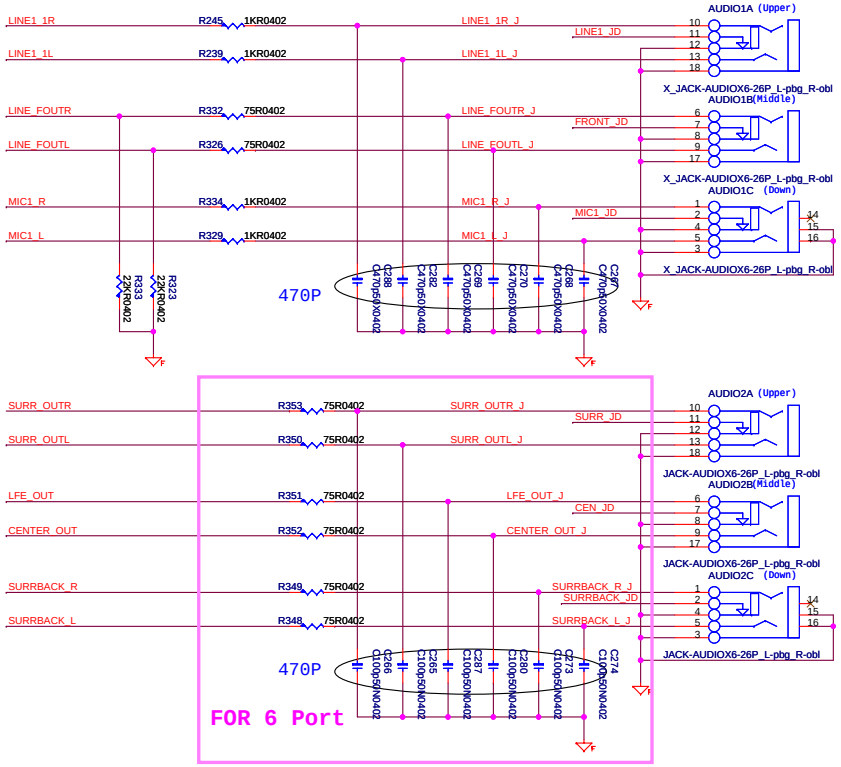
FOR 6 Port

Trace Width 20mils.

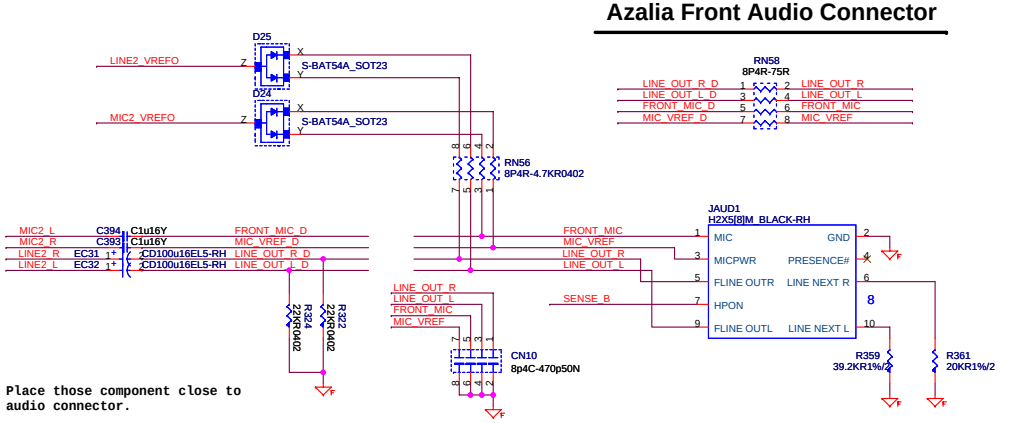


CD/IN HEADERS

ALC888 JACK

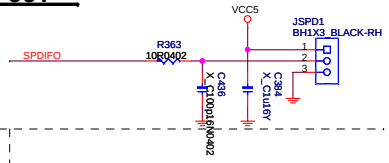


Azalia Front Audio Connector



ALC883 JACK DETECT

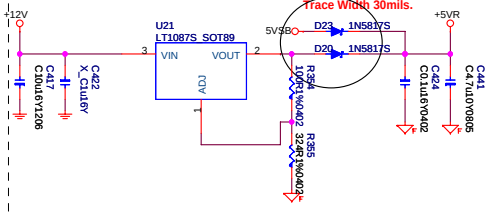
SPDIF OUT

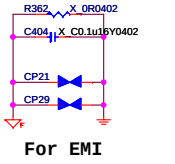


AUDIO CODE REGULATORS

FOR 6 Port

Trace Width 30mils.





For EMI

MSI	MICRO-STAR INT'L CO.,LTD	
	MS-7529	
Size: Custom	Document Description: 21 HD ALC888	Rev: 0A
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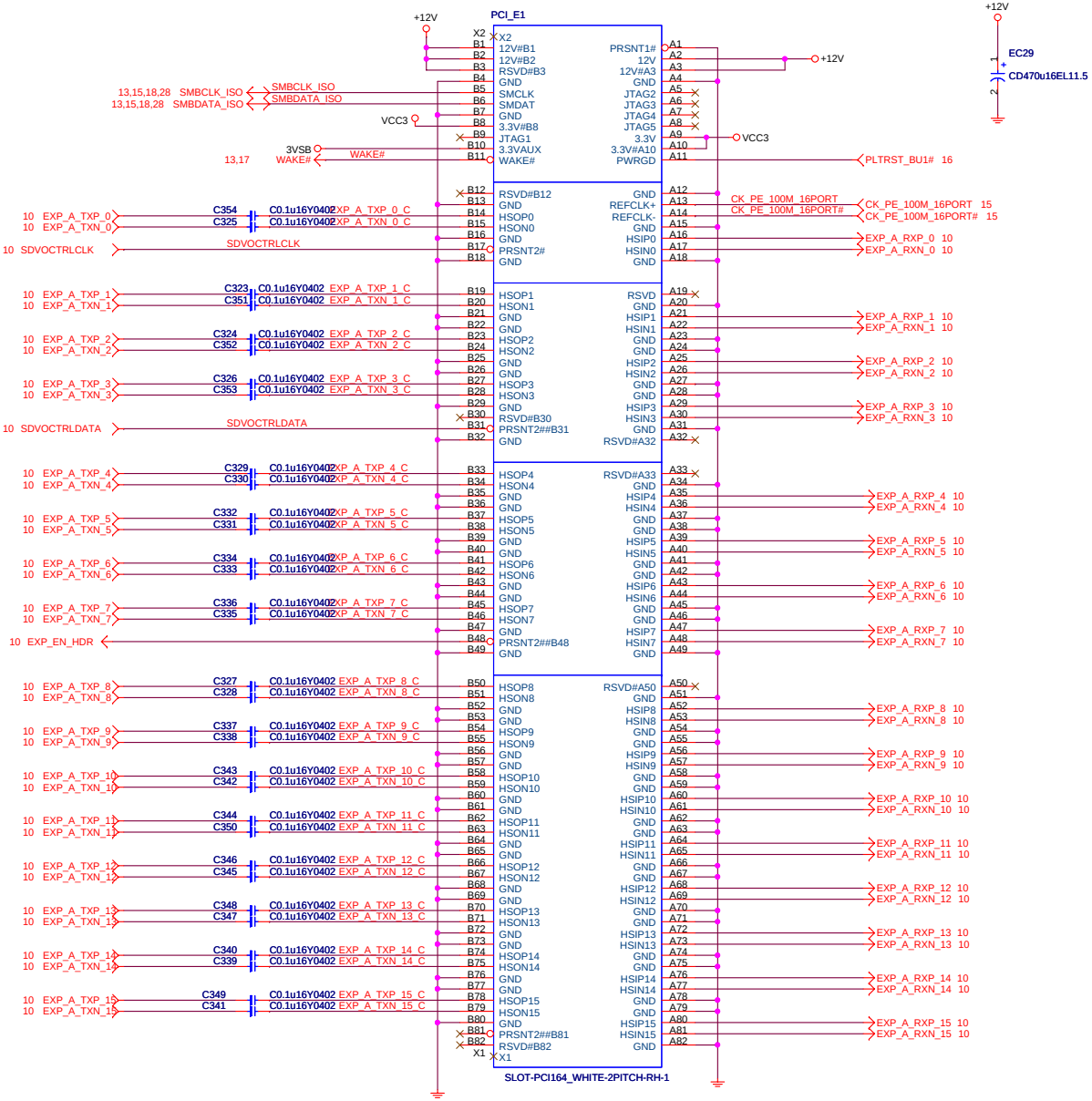
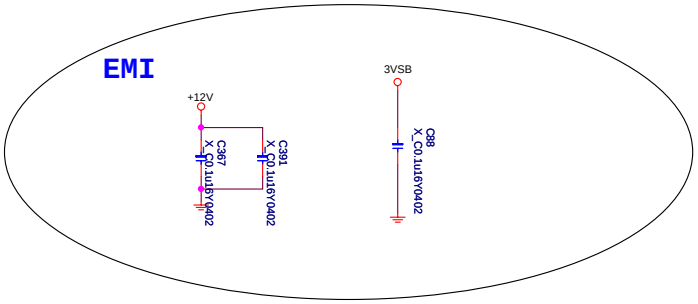
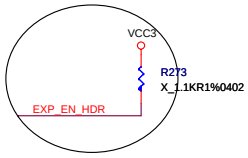
PCIE X16 PORT







MICRO-STAR INT'L CO.,LTD	
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Size: Custom	Document Description: PCI EXPRESSX16&X1 — Rev: 0A
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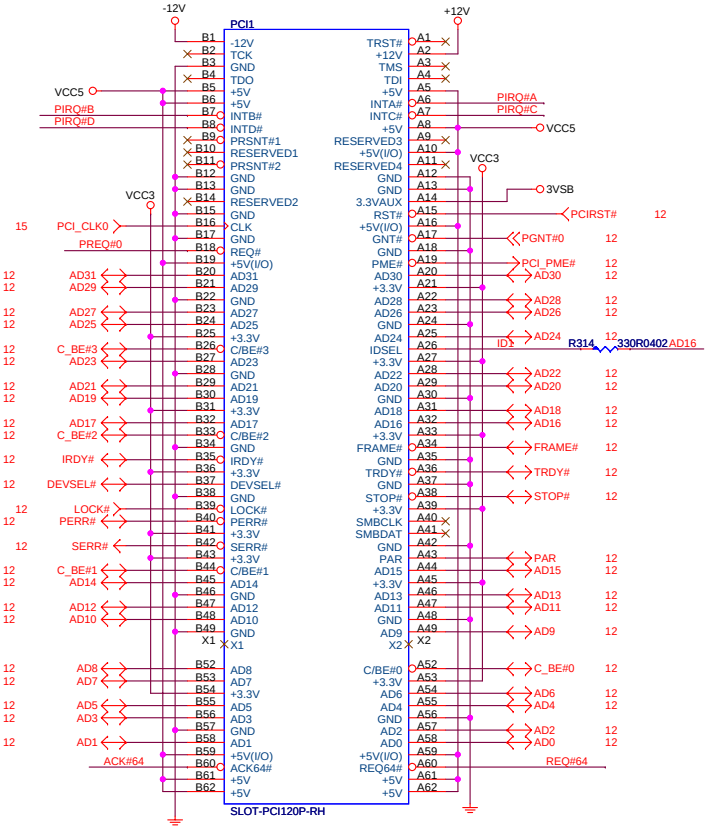
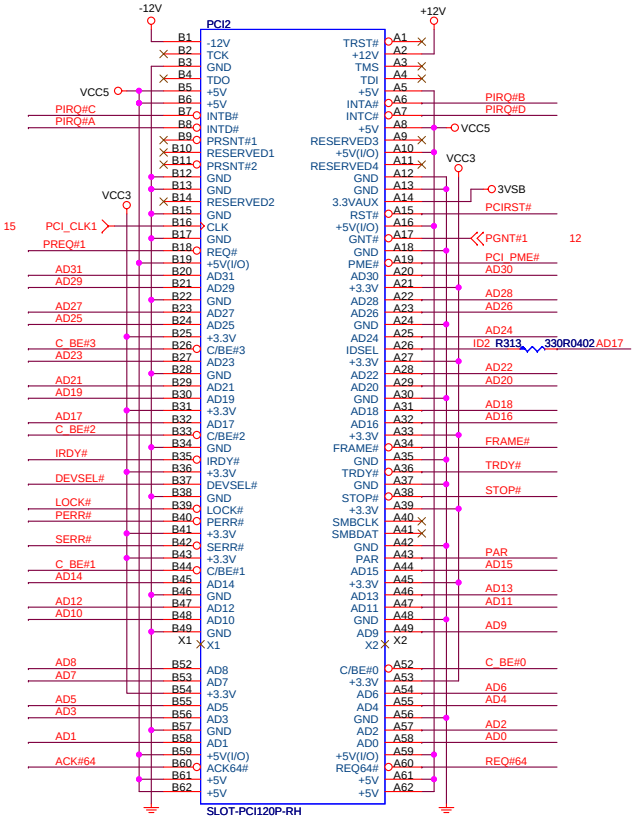
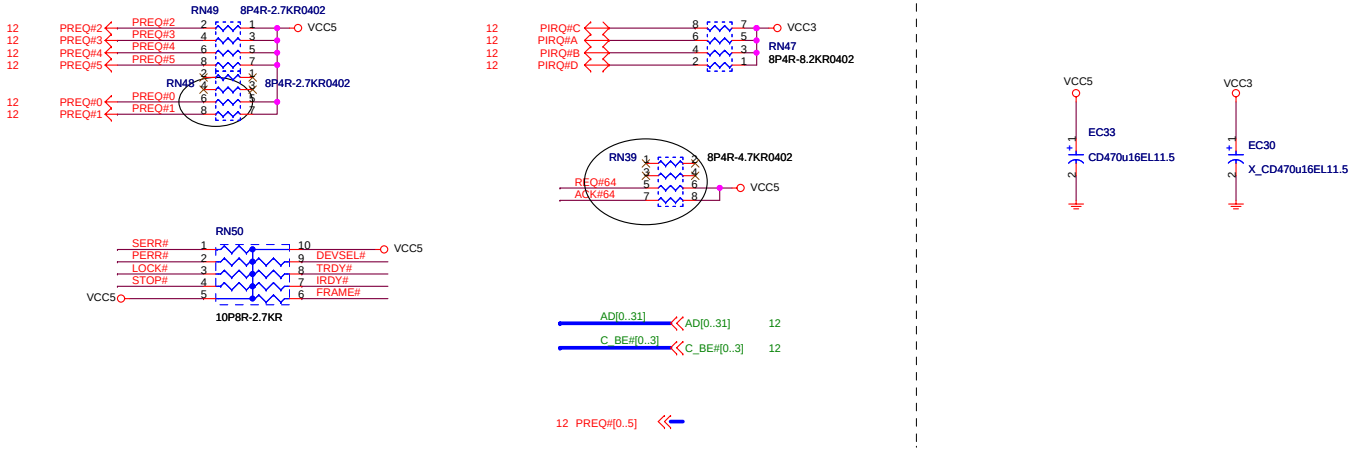
PCI SLOT 1 (PCI VER: 2.2 COMPLY)



PCI SLOT 2 (PCI VER: 2.2 COMPLY)



PCI PULL-UP / DOWN RESISTORS



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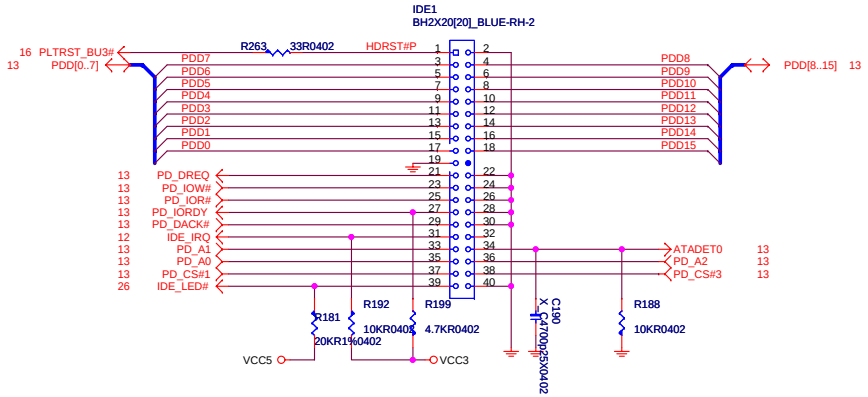
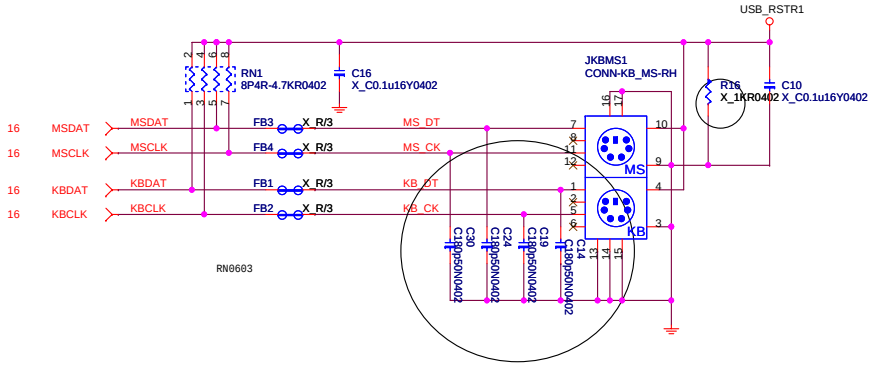
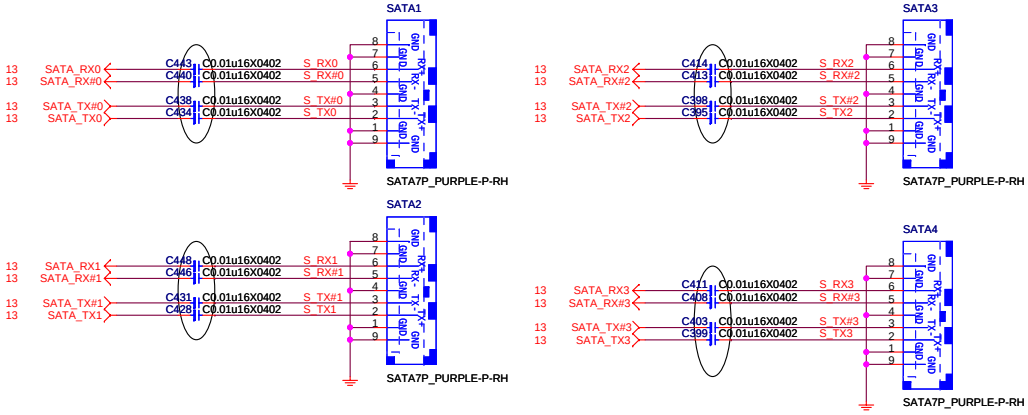
ATA 33/66/100 IDE Connectors



PS2 KEYBOARD & MOUSE CONNECTOR



SERIAL ATA CONNECTOR BLOCK



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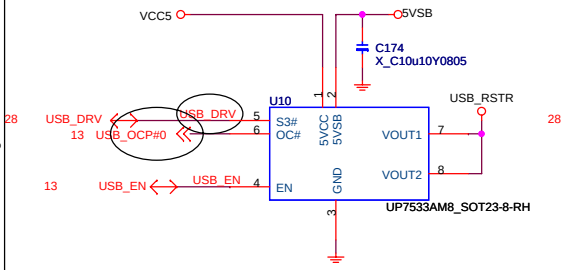
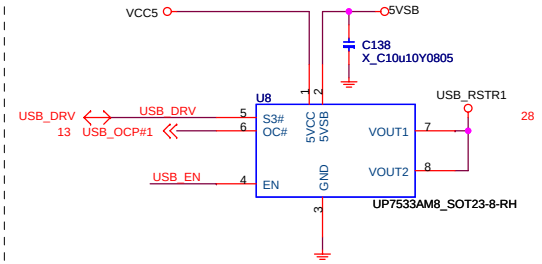
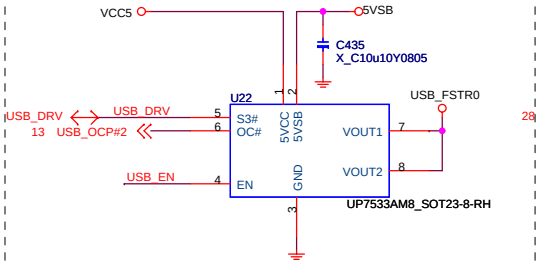
POWER CIRCUIT FOR USB PORT 0,1



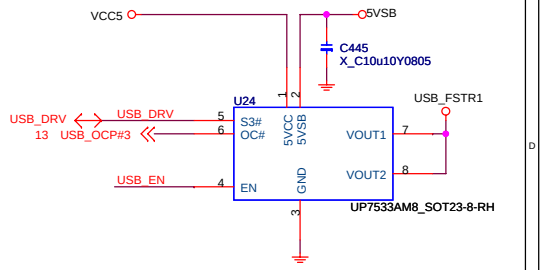
POWER CIRCUIT FOR USB PORT 2,3



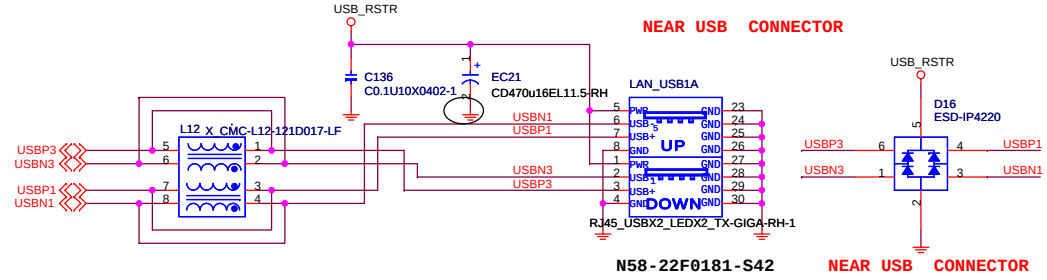
POWER CIRCUIT FOR USB PORT 4,5



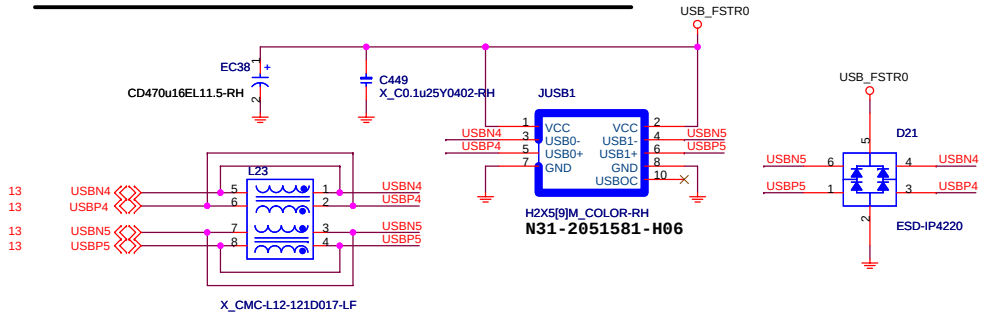
POWER CIRCUIT FOR USB PORT 6,7



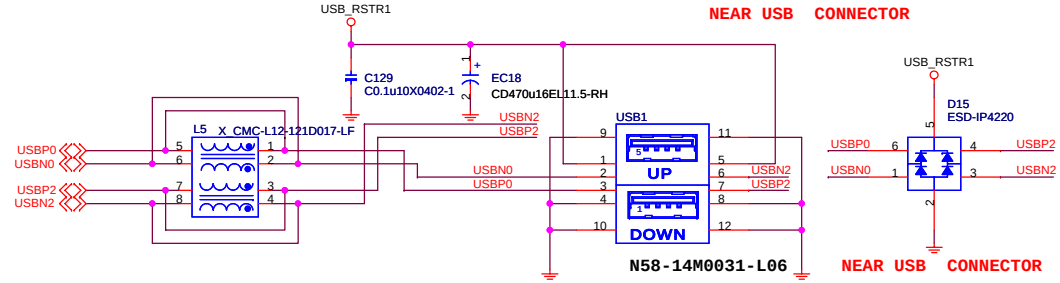
REAR PANEL USB CONNECTOR FOR USB PORT 0,1



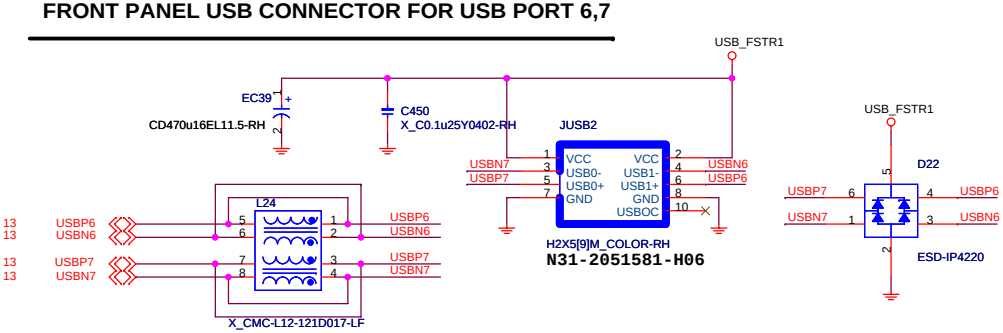
FRONT PANEL USB CONNECTOR FOR USB PORT 4,5



REAR PANEL USB CONNECTOR FOR USB PORT 2,3



FRONT PANEL USB CONNECTOR FOR USB PORT 6,7



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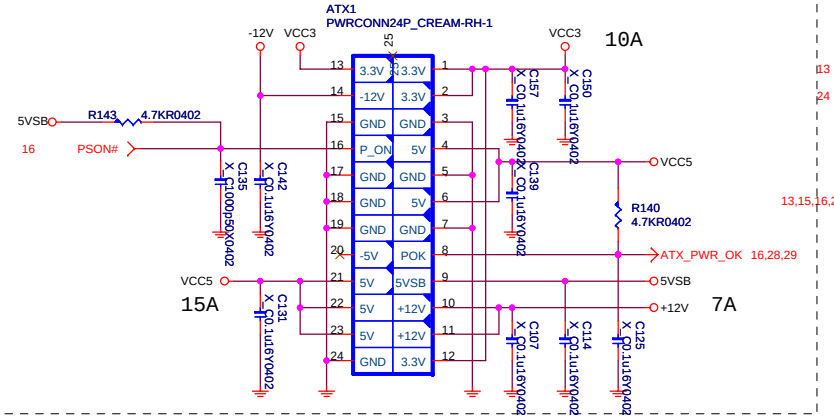
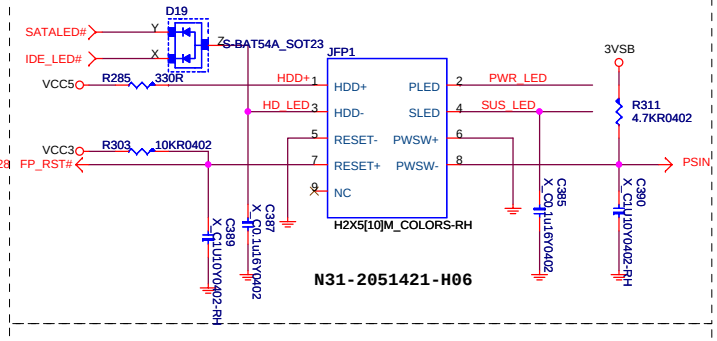
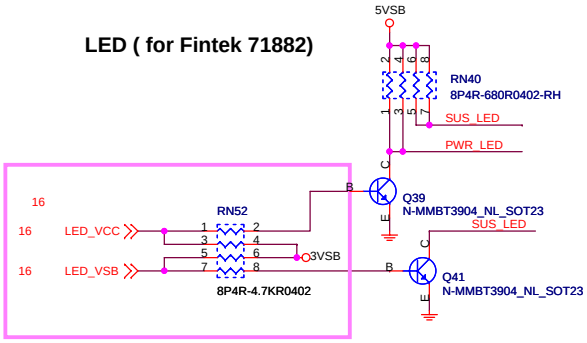
ATX Connector



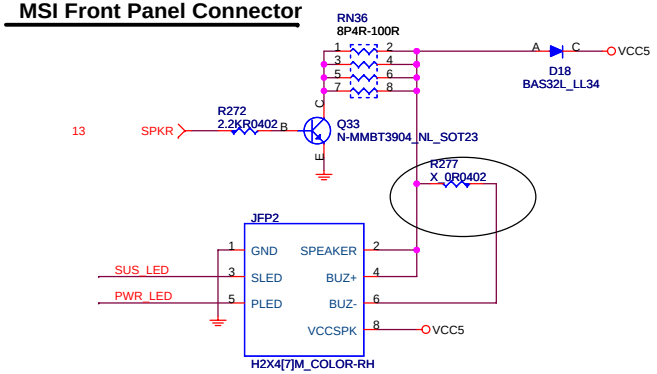
INTEL/PB Front Panel Connector



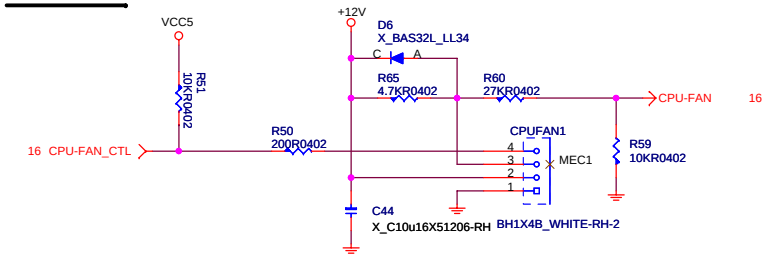
LED (for Fintek 71882)



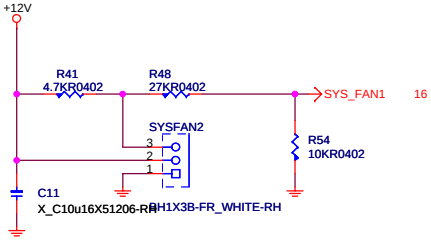
MSI Front Panel Connector



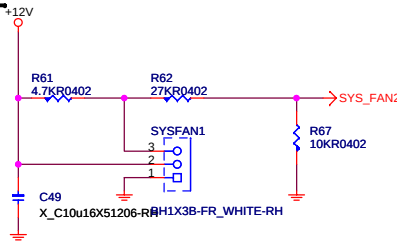
CPU FAN



SYSTEM FAN



PWR FAN



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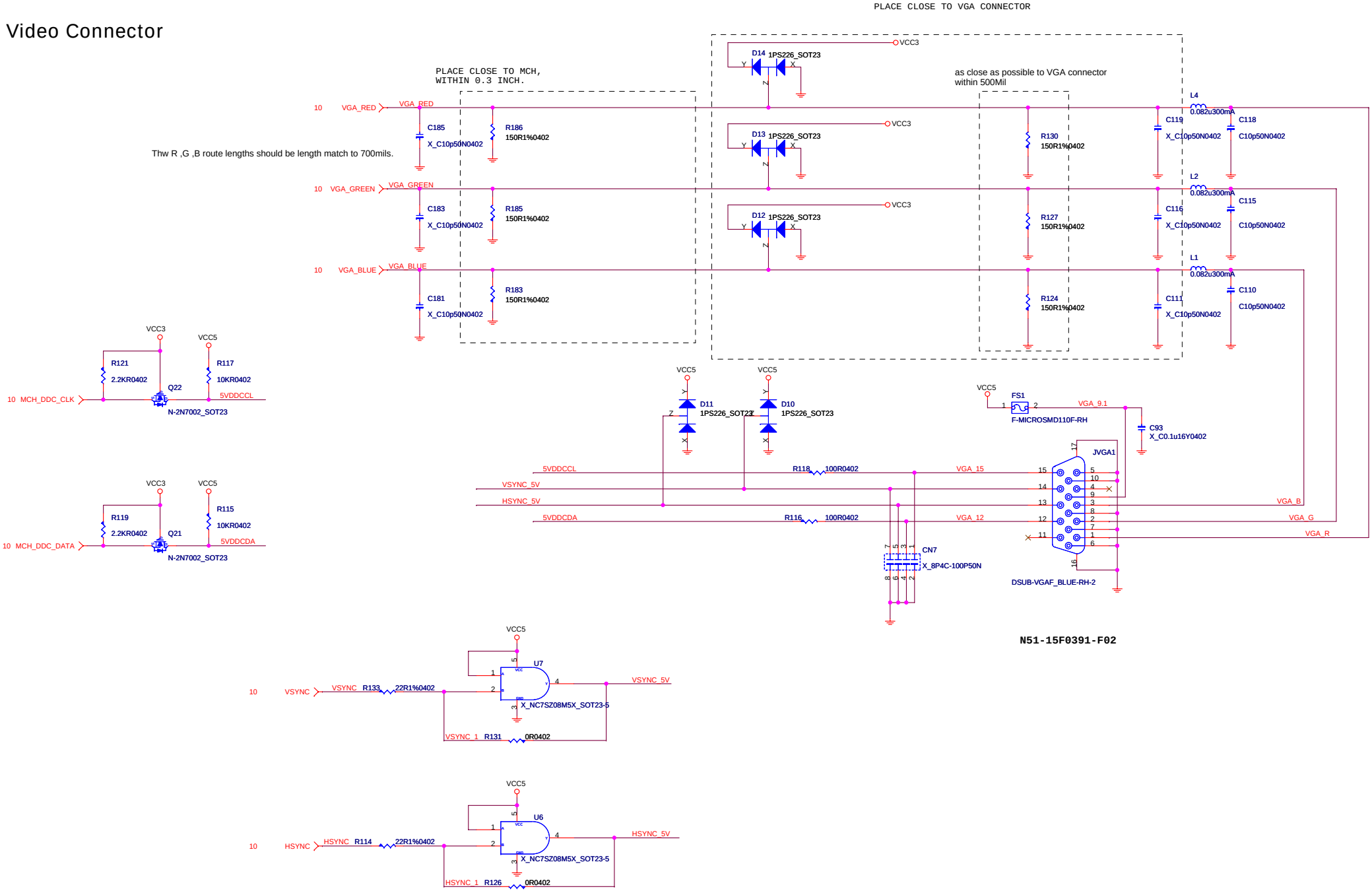
Video Connector



N51-15F0391-F02

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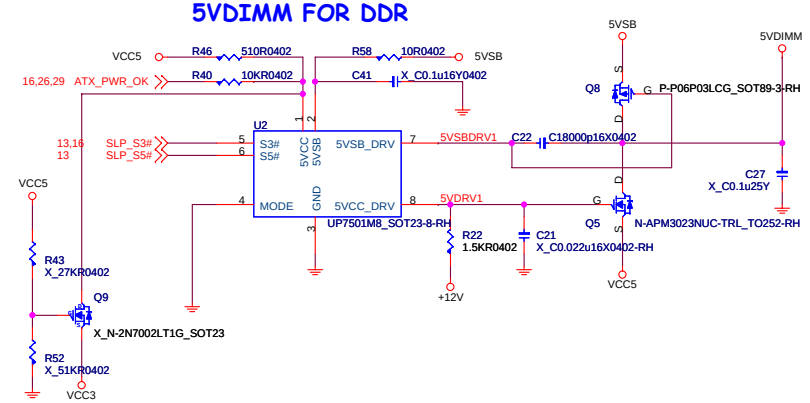
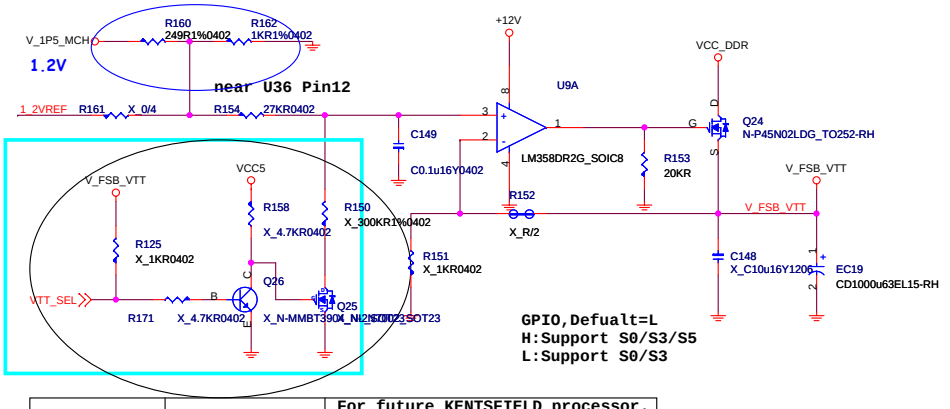
5VDIMM FOR DDR

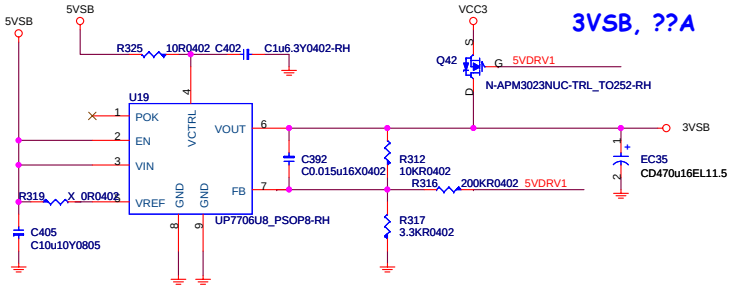


1.2V

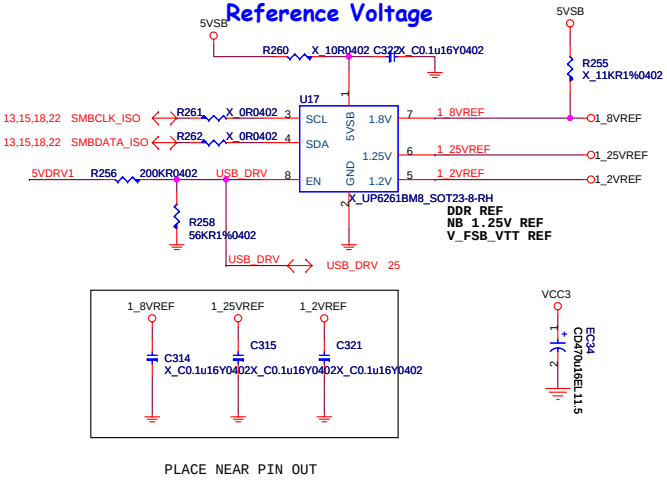


VTT_SEL = L	V_FSB_VTT=1.1V	For future KENTSFIELD processor. (FSB1333, Quad-Core)
VTT_SEL = H	V_FSB_VTT=1.2V	For normal processors.

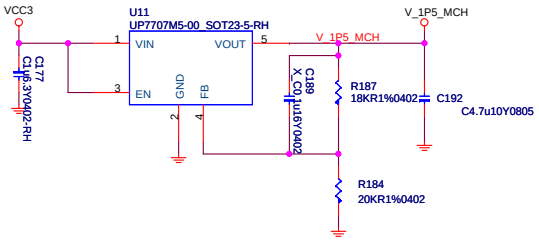
3VSB, ??A



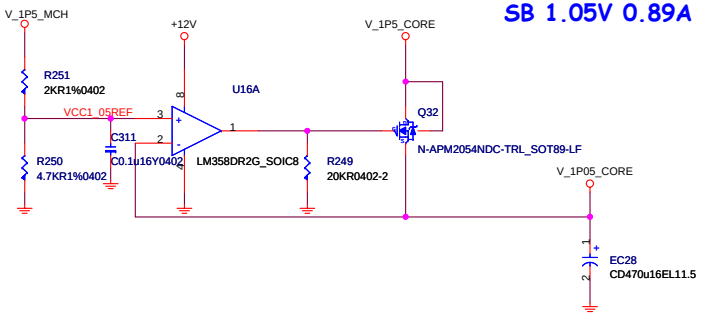
Reference Voltage

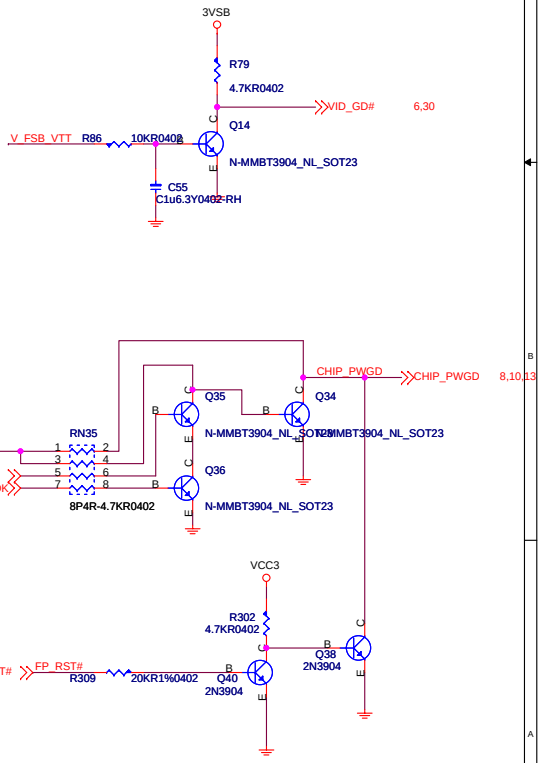


V_1P5_MCH, 500mA



SB 1.05V 0.89A





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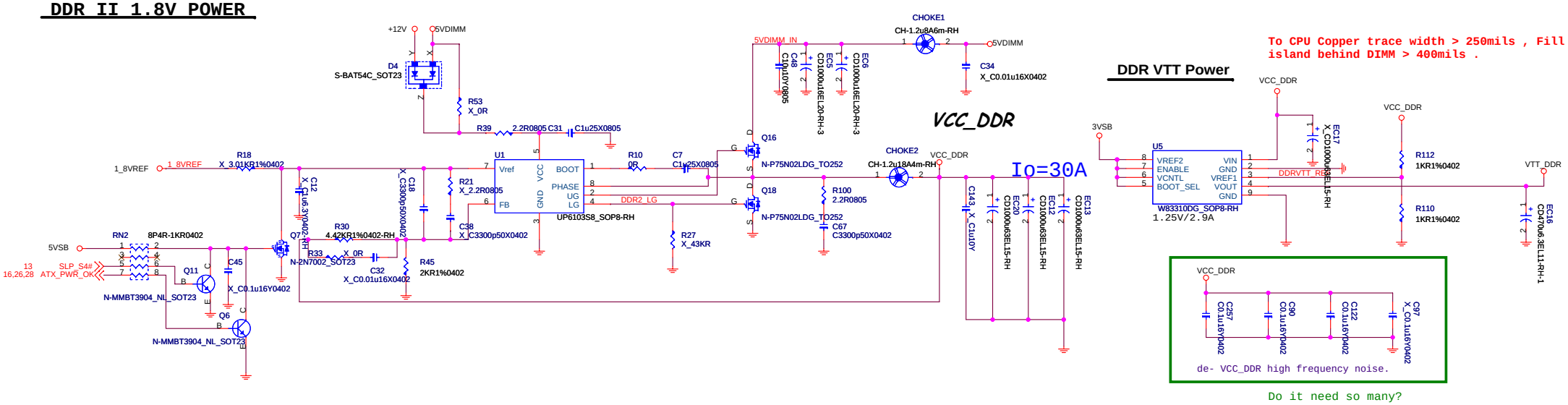
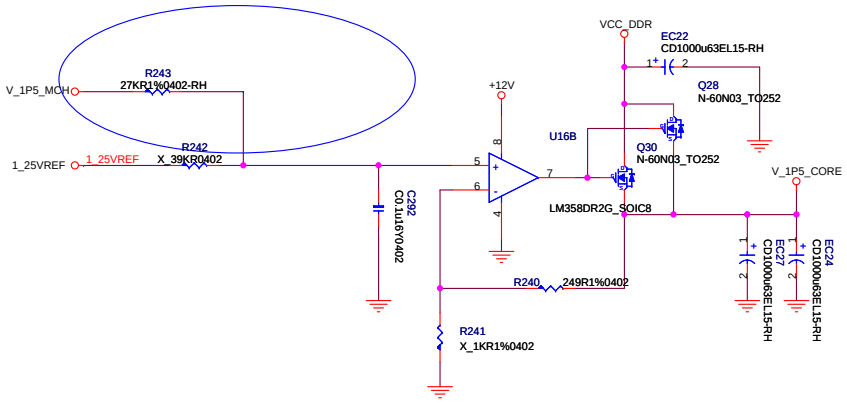
DDR II 1.8V POWER

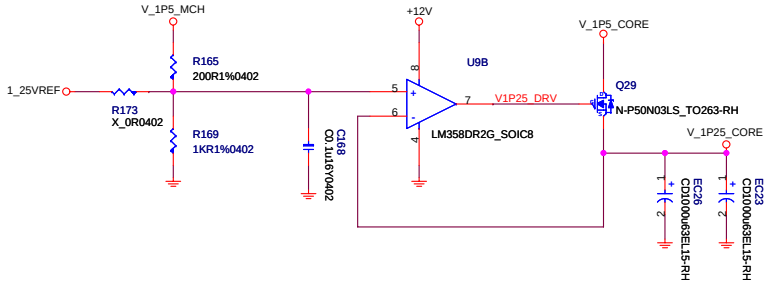


1.5V Core

For cost down



V_1P25_CORE 18.1A+2.47A+2.94A



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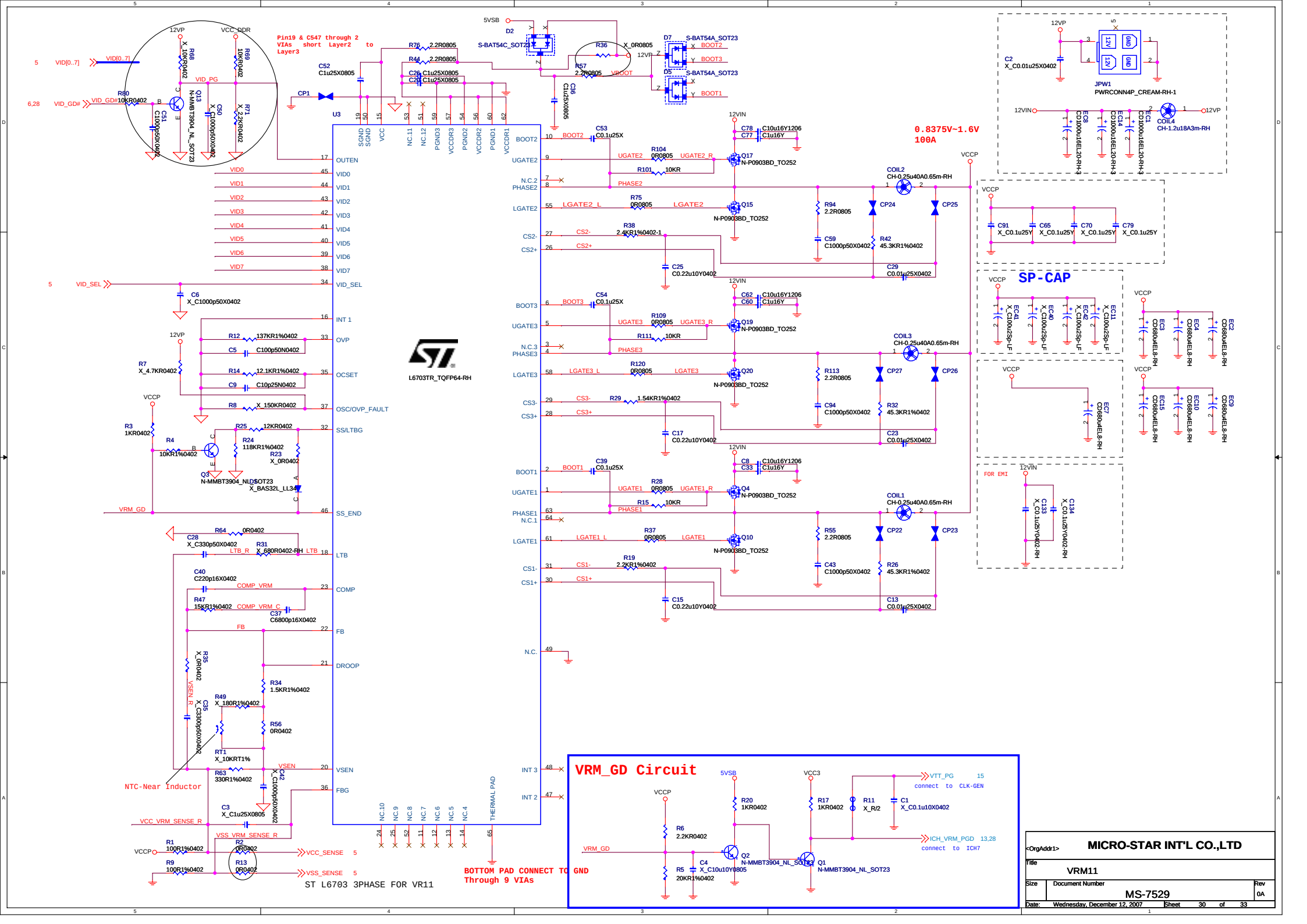
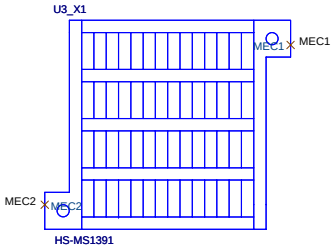
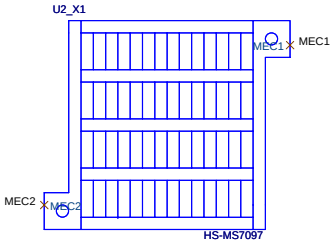
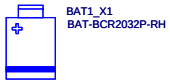

L6703TR_TQFP64-RH
ST L6703 3PHASE FOR VR11
Pin19 & C547 through 2 VIAs short Layer2 to Layer3
0.8375V~1.6V
100A
SP-CAP
VRM_GD Circuit
BOTTOM PAD CONNECT TO GND Through 9 VIAs
NTC-Near Inductor
JPW1
PWRCONN4P_CREAM-RH-1
COIL1
COIL2
COIL3
COIL4
CH-0.25u40A0.65m-RH
CH-1.2u18A3m-RH
MICRO-STAR INT'L CO.,LTD
VRM11
MS-7529
Wednesday, December 12, 2007

ICH7 HEATSINK

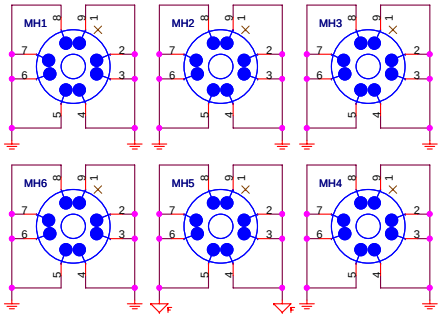


MCH HEATSINK

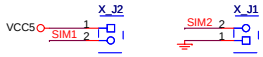




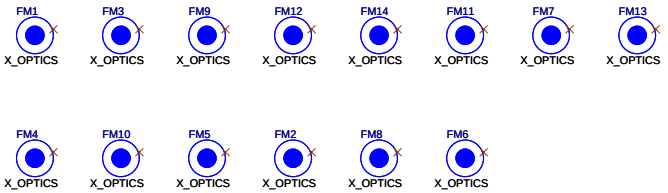
Mounting Holes



Simulation



Optics Orientation Holes



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ICH7

GPIO	Alt Func	PIN	I/O/NC	POWER	PU	SMI	TOL	DEFAULT	SIGNAL NAME
GPIO0	Unmultiplexed	AB18	I/O	CORE	N	Y	3.3V	GPI	GPI0(pull high)
GPIO1	REQ5#	C8	I/O	CORE	N	Y	5V	GPI	PREQ#5
GPIO2	PIRQE#	G8	I/OD	CORE	N	Y	5V	GPI	GPIO2(pull high)
GPIO3	PIRQF#	F7	I/OD	CORE	N	Y	5V	GPI	GPIO3(pull high)
GPIO4	PIRQG#	F8	I/OD	CORE	N	Y	5V	GPI	GPIO4(pull high)
GPIO5	PIRQH#	G7	I/OD	CORE	N	Y	5V	GPI	GPIO5(pull high)
GPIO6	Unmultiplexed	AC21	I/O	CORE	N	Y	3.3V	GPI	ATADET0
GPIO7	Unmultiplexed	AC18	I/O	CORE	N	Y	3.3V	GPI	STRAPPED HI
GPIO8	Unmultiplexed	E21	I/O	Resume	N	Y	3.3V	GPI	STRAPPED HI
GPIO9	Unmultiplexed	E20	I/O	Resume	N	Y	3.3V	GPI	STRAPPED HI
GPIO10	Unmultiplexed	A20	I/O	Resume	N	Y	3.3V	GPI	STRAPPED HI
GPIO11	SMBALERT#	B23	I/O	Resume	N	Y	3.3V	Native	STRAPPED HI
GPIO12	Unmultiplexed	F19	I/O	Resume	N	Y	3.3V	GPI	SIO_PME#
GPIO13	Unmultiplexed	E19	I/O	Resume	N	Y	3.3V	GPI	STRAPPED HI
GPIO14	Unmultiplexed	R4	I/O	Resume	N	Y	3.3V	GPI	STRAPPED HI
GPIO15	Unmultiplexed	E22	I/O	Resume	N	Y	3.3V	GPI	STRAPPED HI
GPIO16	Unmultiplexed	AC22	I/O	CORE	N	N	3.3V	GPO	NC
GPIO17	GNT5#	D8	I/O	CORE	N	N	3.3V	GPO	STRAPPED L
GPIO18	Unmultiplexed	AC20	I/O	CORE	N	N	3.3V	GPO	NC
GPIO19	SATA_1GP	AH18	I/O	CORE	N	N	3.3V	GPI	STRAPPED HI
GPIO20	Unmultiplexed	AF21	I/O	CORE	N	N	3.3V	GPO	NC
GPIO21	SATA_0GP	AF19	I/O	CORE	N	N	3.3V	GPI	STRAPPED HI
GPIO22	REQ4#	A13	I/O	CORE	N	N	3.3V	Native	STRAPPED HI
GPIO23	LDRQ_1#	AA5	I/O	CORE	N	N	3.3V	Native	STRAPPED HI
GPIO24	Unmultiplexed	R3	I/O	Resume	N	N	3.3V	GPO	NC
GPIO25	Unmultiplexed	D20	I/O	Resume	Y	N	3.3V	GPO	GPIO25(high 7507,low 7398)
GPIO26	Unmultiplexed	A21	I/O	Resume	N	N	3.3V	GPO	USB_EN
GPIO27	Unmultiplexed	B21	I/O	Resume	N	N	3.3V	GPO	NC
GPIO28	Unmultiplexed	E23	I/O	Resume	N	N	3.3V	GPO	NC
GPIO29	OC5#	C3	I/O	Resume	N	N	3.3V	GPI	USB_OCP#2
GPIO30	OC6#	A2	I/O	Resume	N	N	3.3V	GPI	USB_OCP#3
GPIO31	OC7#	B3	I/O	Resume	N	N	3.3V	GPI	USB_OCP#3
GPIO32	Unmultiplexed	AG18	I/O	CORE	N	N	3.3V	GPO	BIOS_WP#(fill with 1)
GPIO33	Unmultiplexed	AC19	I/O	CORE	N	N	3.3V	GPO	NC
GPIO34	Unmultiplexed	U2	I/O	CORE	N	N	3.3V	GPO	NC
GPIO35	SATACLKREQ#	AD21	I/O	CORE	N	N	3.3V	GPO	NC
GPIO36	SATA2GP	AH19	I/O	CORE	N	N	3.3V	GPI	STRAPPED HI
GPIO37	SATA3GP	AE19	I/O	CORE	N	N	3.3V	GPI	STRAPPED HI
GPIO38	Unmultiplexed	AD20	I/O	CORE	N	N	3.3V	GPI	STRAPPED HI
GPIO39	Unmultiplexed	AE20	I/O	CORE	N	N	3.3V	GPI	STRAPPED HI
GPIO48	GNT4#	A14	I/O	CORE	N	N	3.3V	Native	STRAPPED HI
GPIO49	CPUPWRGD	AG24	I/O	V_CPU_IO	N	N	V_CPU_IO	Native	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.

SIO Fintek71882FG(CONTINUE)

GPIO	Alt Func	PIN	Usage	Input/Output	NOTES
GPIO0	VIDOUT0	49	MCH_BSEL0	O12	
GPIO1	VIDOUT1	50	MCH_BSEL1	O12	
GPIO2	VIDOUT2	51	MCH_BSEL2	O12	
GPIO3	VIDOUT3	52	NC	O12	
GPIO4	VIDOUT4	53	NC	O12	
GPIO5	VIDOUT5/SIC	54	NC	I/OOD12t	
GPIO6	SLOTOCC#	55	GPO	I/OOD12t	
GPIO7	Turbo1#/WDTRST#	56	WDTRST#	OD12-5v	
GPIO15	LED_VSB/ALERT#	64	LED_VSB	OD12	
GPIO16	LED_VCC/Turbo2#	65	LED_VCC	OD12	
GPIO20	PCIRST1#	74	PCIRST1#	OD12	
GPIO21	PCIRST2#	75	PCIRST2#	O12	
GPIO22	PCIRST3#	76	PCIRST3#	O12	
GPIO23	RSTCON#	77	RSTCON#	OD12	
GPIO24	ATXPG_IN	78	ATXPG_IN	AIN	
GPIO32	PWROK	84	PWROK	OD12	
GPIO26	PWSIN#	80	PWSIN#	INts5v	
GPIO27	PWSOUT#	80	PWSOUT#	OD12	
GPIO30	S3#	82	S3#	INts5v	
GPIO31	PSON#	83	PSON#	OD12-5v	
GPIO33	RSMRST#	85	RSMRST#	OD12	
GPIO40	FANIN3	25	FANIN3	INts5v	
GPIO41	FAN_CTL3	26	FAN_CTL3(NC)	OD12-5v	
GPIO25	PME#	79	PME#	OD12-5v	
GPIO10	SPI_SLK/FANIN4	59	GPIO10(NC)	I/OOD12t	
GPIO11	SPI_CS0#/FANCTL4	60	GPIO11(NC)	I/OOD12t	
GPIO12	SPI_MISO/FANCTL1_1	61	GPIO12(NC)	I/OOD12t	
GPIO13	SPI_MOSI/BEEP	62	BEEP(NC)	OD24	
GPIO14	FWH_DIS/WDTRST#/SPI_CS1#	63	GPIO14	I/OOD12t	
GPIO42	IRTX	27	IRTX	O12	
GPIO43	IRRX	28	IRRX	INts	
GPIO17		66	NC	I/OOD12t	

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#C PIRQ#D PIRQ#A	PREQ#1 PGNT#1	AD17	PCI_CLK1

JCI1	*Chassis Intrusion*
Open	Normal
(1-2)	Chassis Open

DDRII DIMM Config.

DEVICE	ADRRESS	CLOCK
DIMM A	A0H	P_DDR0_A/N_DDR0_A P_DDR1_A/N_DDR1_A P_DDR2_A/N_DDR2_A
DIMM B	A4H	P_DDR0_B/N_DDR0_B P_DDR1_B/N_DDR1_B P_DDR2_B/N_DDR2_B

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

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0A Change list:

1. Add DMI Audio net name
2. Change LED Power pull high to 680 Change r20 to 1.5K
3. Change D10 D11 Power pull VCC5, Q20 Pull up VCC3
4. Delet R252 R254 C132 R22 C60,change U5 to I95-7523212-T07
5. Modify footprint : C_P3_5_D8_H9 NC_0402_6 NC_0603_10 C0805MSB C0603MS_BOT
6. Swap RN65 RN61 RN23 RN64 RN63 RN24 RN28 RN25 RN66 ; Delet EC20,
7. Add 5VCC TO 3VCC sequence
8. change TESTPIN30 to TPC20B
9. RENAME ,Swap RN37, X_J1 Change to GND , Change C300 C301 to 0.22UF
10. Modify V_1P25_CORE to G31

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