MS-7B18

ATX

Ver: 1.0

CFL Platform

CPU:

Coffee lake S

System Chipset:

Z390 PCH_H

Onboard Chip:

HD Audio Codec:ALC892

LAN-Intel I219

LAN-Intel I211

SIO:NTC6797

Flash ROM: SPI 128 MB X1

Main Memory:

*DDRIV (5000MHz) * 4 (Dual Channel)*

ACPI:

LDO

PWM:

IMVP8 -UPI9521

Expansion Slots:

*PCI Express (X16) Slot * 1*

*PCI Express (X4) Slot * 2*

*PCI Express (X1) Slot * 2*

*M2 (X4) Slot * 2*

Other:

*SATA3.0 *6*

*USB2.0 *6*

*REAL USB3.1 Gen2 *3+TYPEC*1*

*FRONT USB3.1 Gen1 *4*

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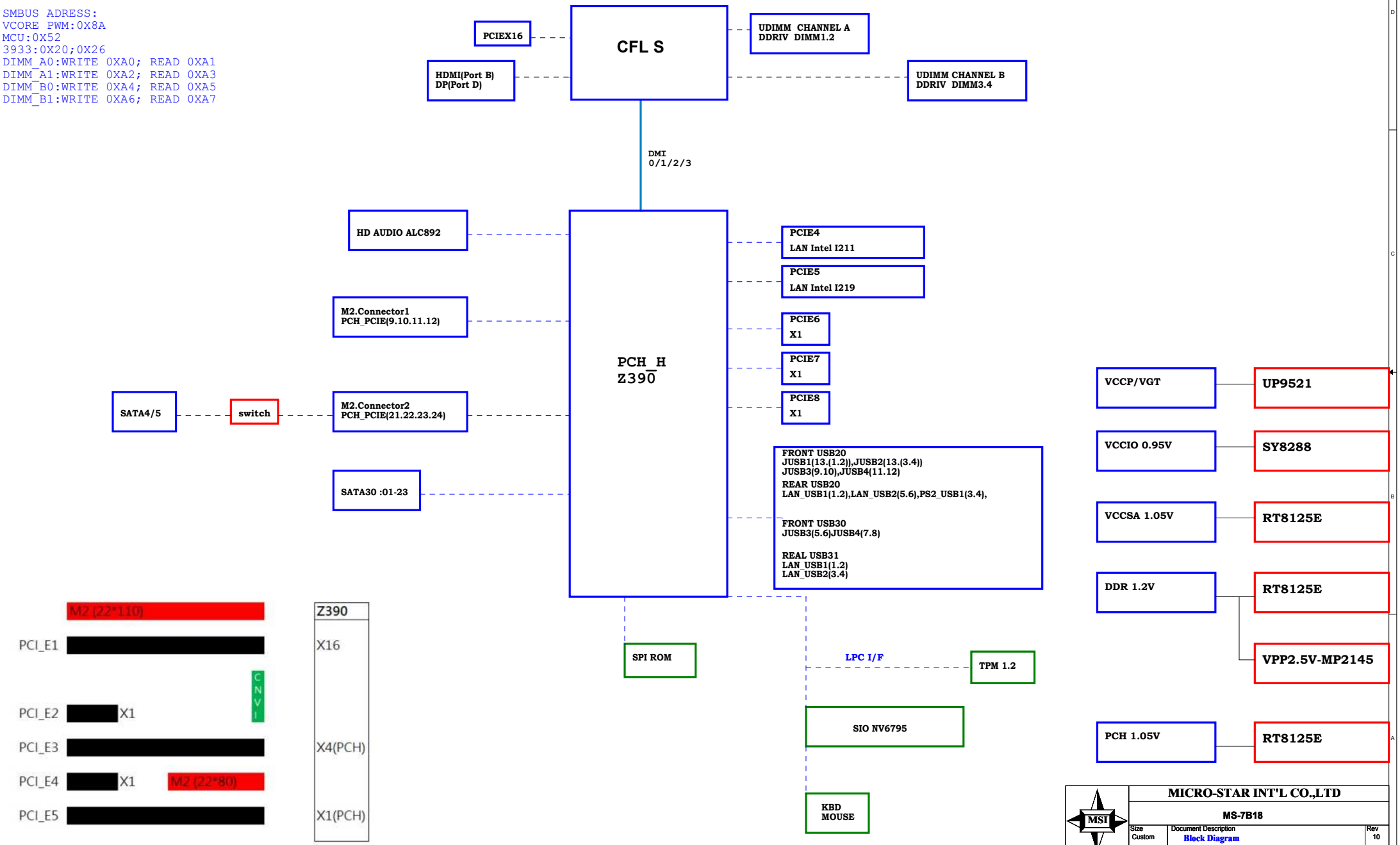
MS-7B17 Block Diagram

SMBUS ADRESS:
VCORE PWM:0X8A
MCU:0X52
3933:0X20;0X26
DIMM_A0:WRITE 0XA0; READ 0XA1
DIMM_A1:WRITE 0XA2; READ 0XA3
DIMM_B0:WRITE 0XA4; READ 0XA5
DIMM_B1:WRITE 0XA6; READ 0XA7



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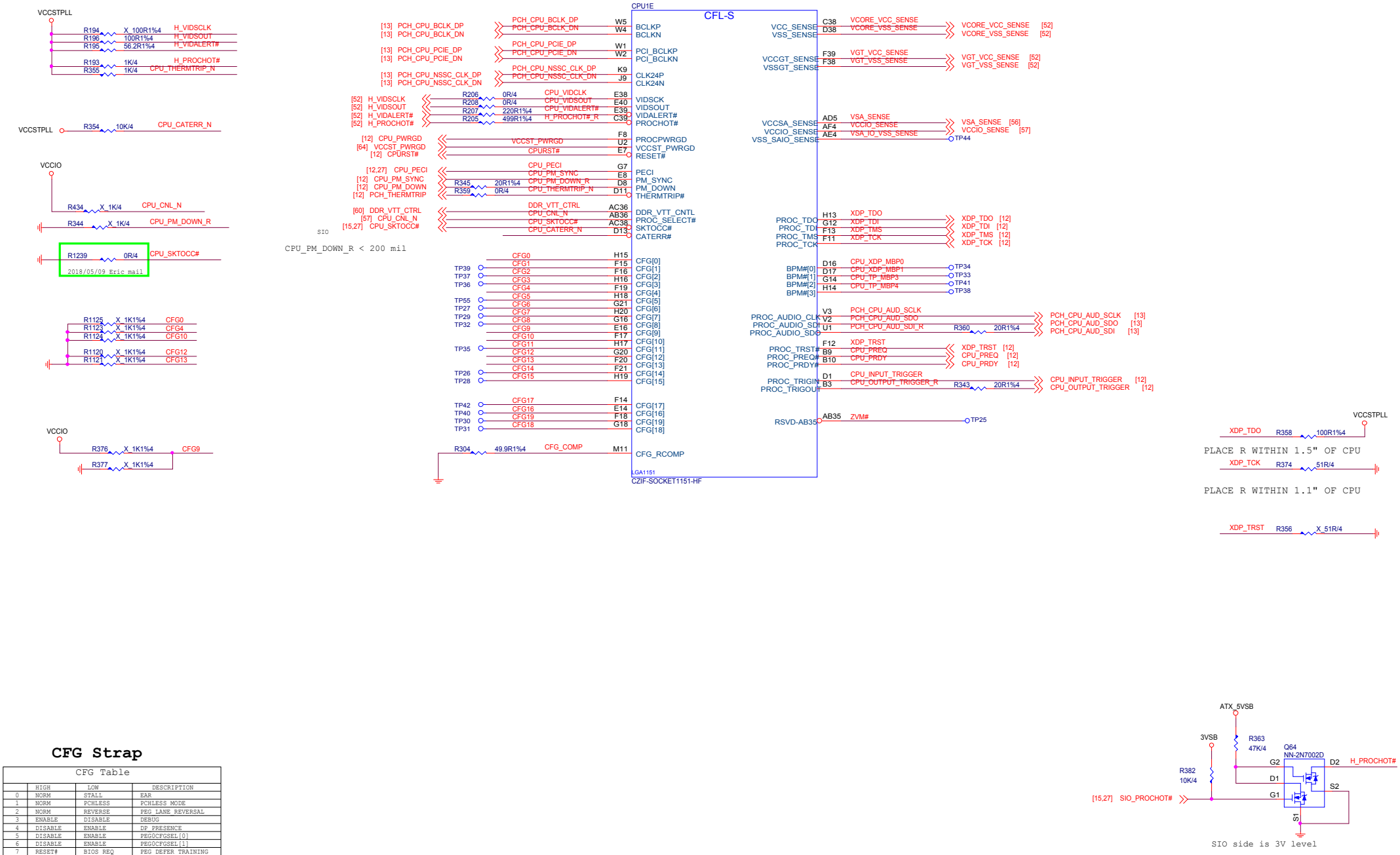

CFG Strap

CFG Table

	HIGH	LOW	DESCRIPTION
0	NORM	STALL	EAR
1	NORM	PCHLESS	PCHLESS MODE
2	NORM	REVERSE	PEG LANE REVERSAL
3	ENABLE	DISABLE	DEBUG
4	DISABLE	ENABLE	DP PRESENCE
5	DISABLE	ENABLE	PEG0CFGSEL[0]
6	DISABLE	ENABLE	PEG0CFGSEL[1]
7	RESET#	BIOS REQ	PEG DEFER TRAINING
8	DISABLE	ENABLE	CFG UNLOCK
9	PRESENT	NO PRESENT	SVID NOT PRESENT
10	ACTIVATE	NO ACTIVATE	SAFE MODE BOOT
11	DC COUPLED	AC COUPLED	DMI AC
12	SPT	NOT SPT	PCH TYPE
13	SVID	FIXED	VCCSA SVID
14	RSVD		
15	RSVD		

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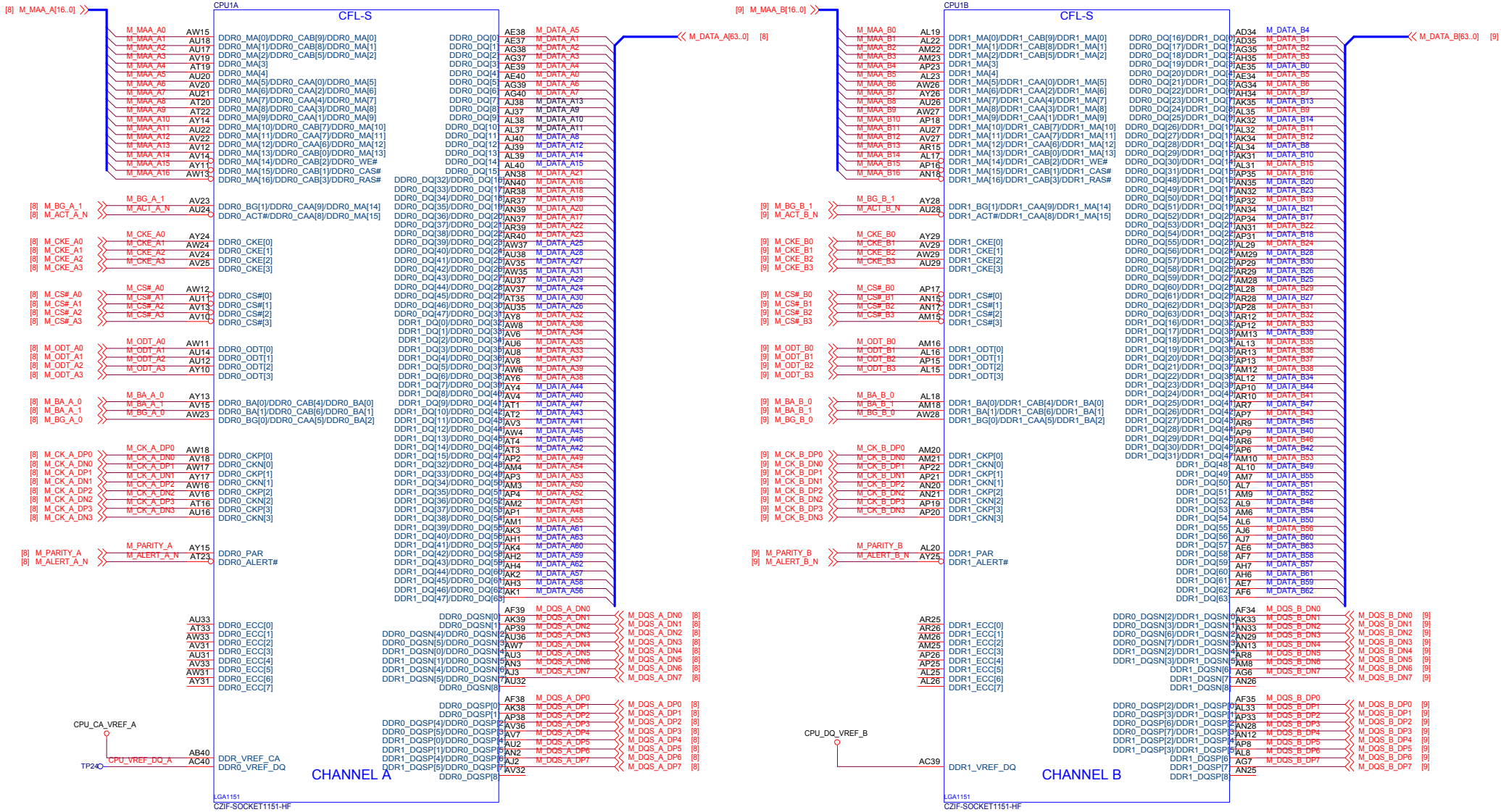
SOCKET PN N12-151A010-L06



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Custom	CPU-Memory	10

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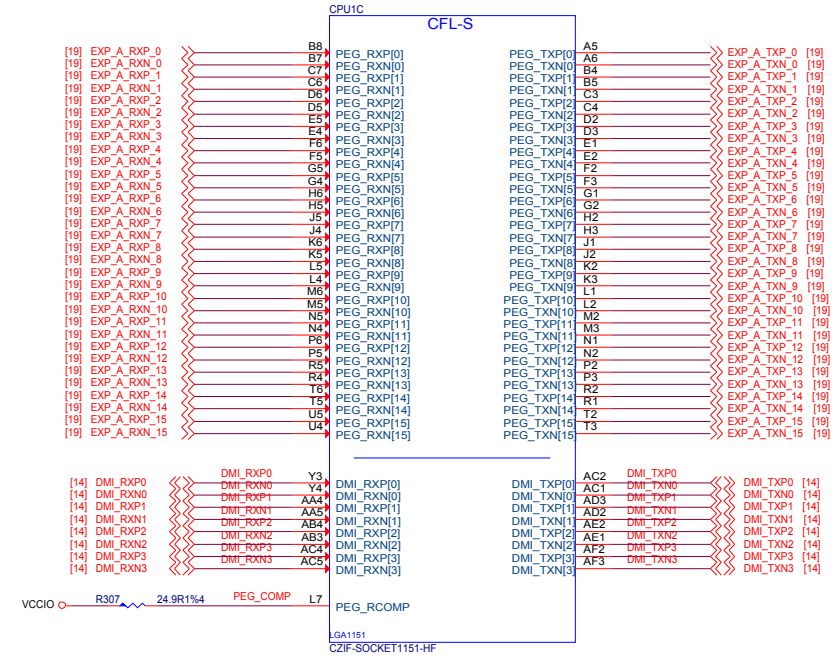
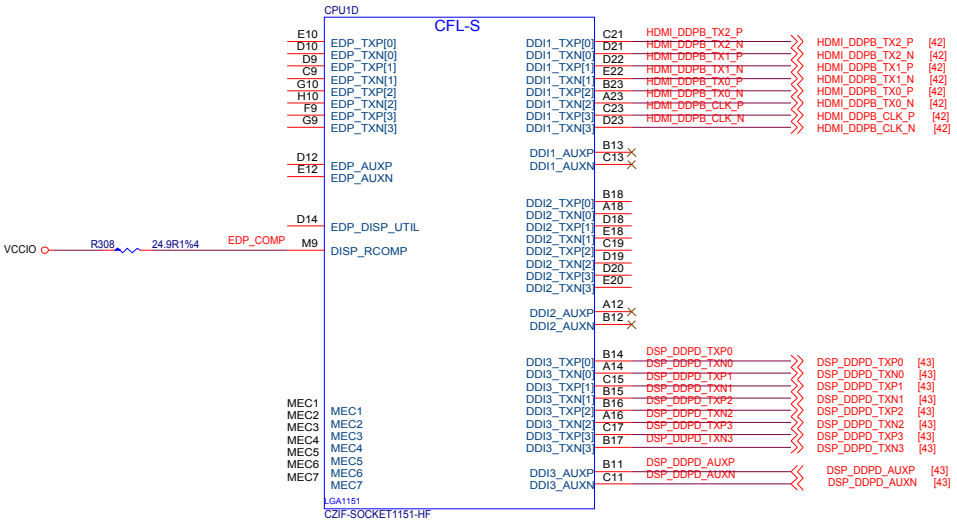
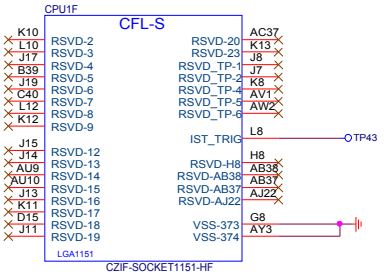


L<=0.4 inch





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Size	Document Description	Rev
Custom	CPU-PEG/Display/RSD	10

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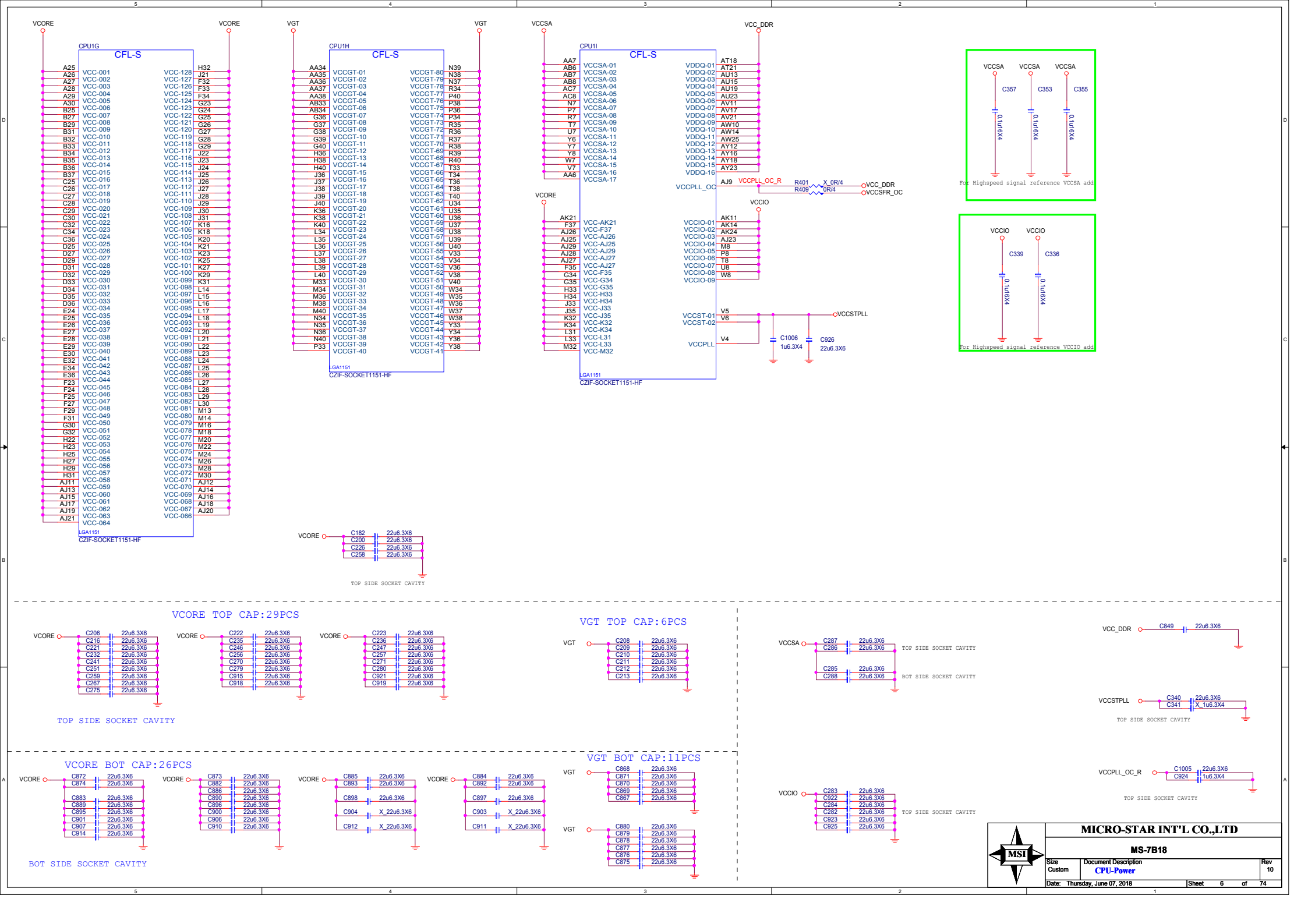

MICRO-STAR INT'L CO.,LTD	
MS-7B18	
Size: Custom	Document Description: CPU-Power
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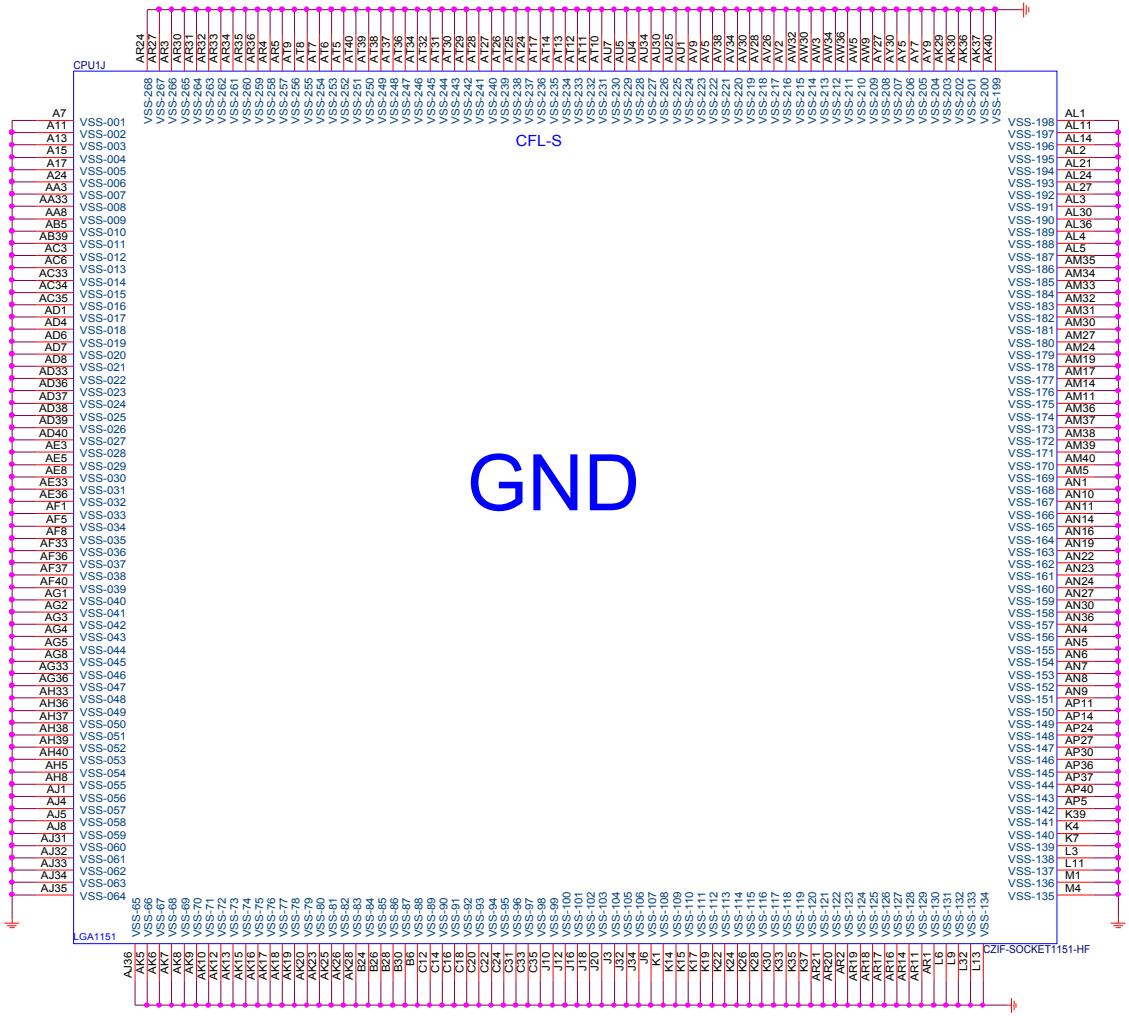

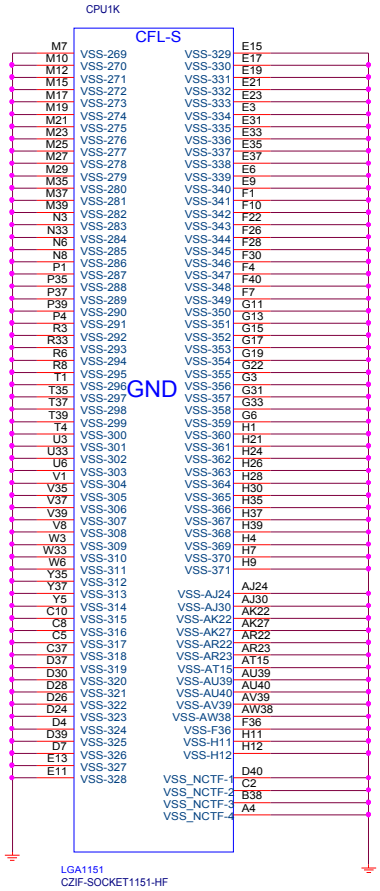

MICRO-STAR INT'L CO.,LTD	
MS-7B18	
Size: Custom	Document Description: CPU-GND
Rev: 10	
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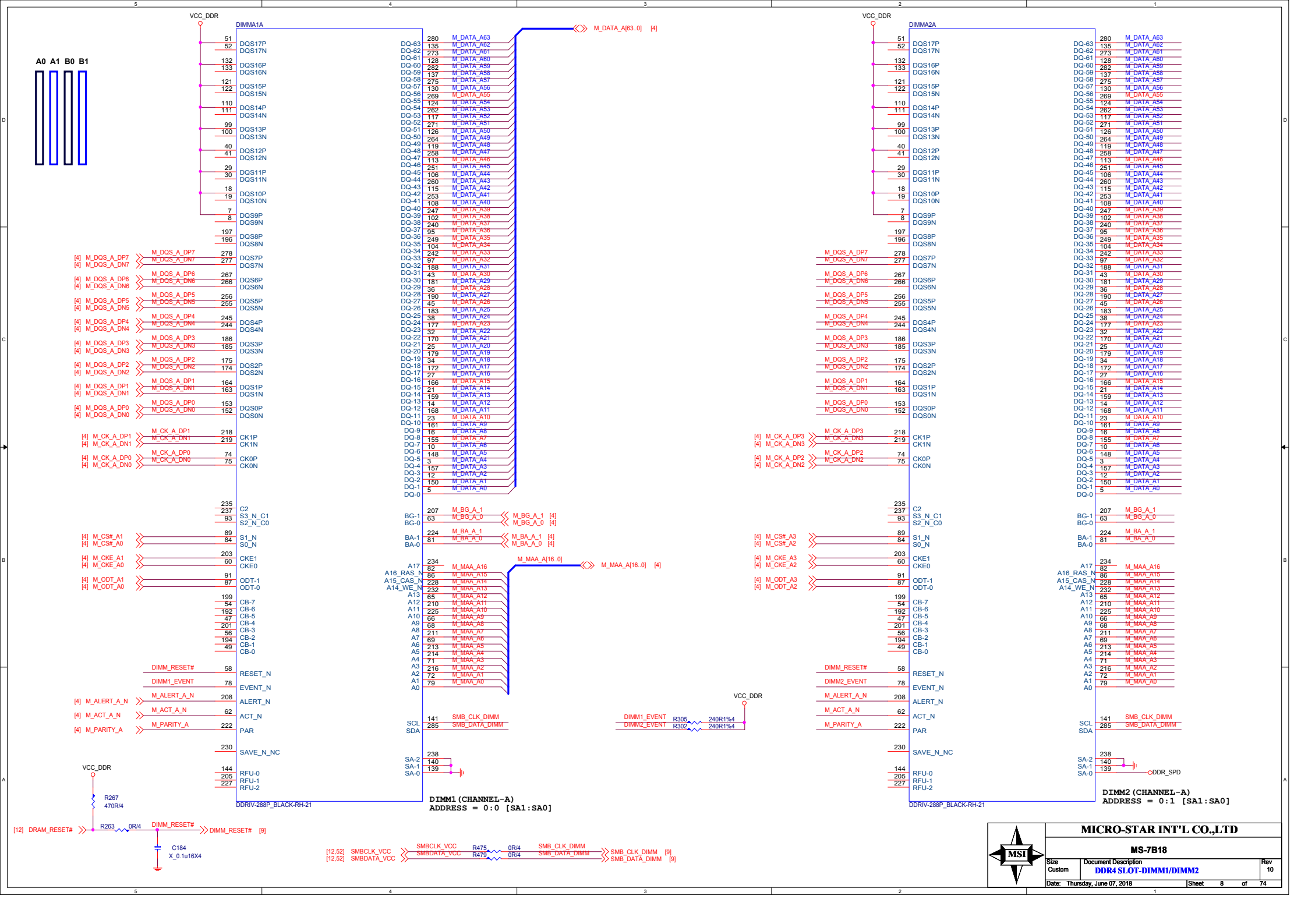

MICRO-STAR INT'L CO.,LTD	
MS-7B18	
Size: Custom	Document Description: DDR4 SLOT-DIMM1/DIMM2
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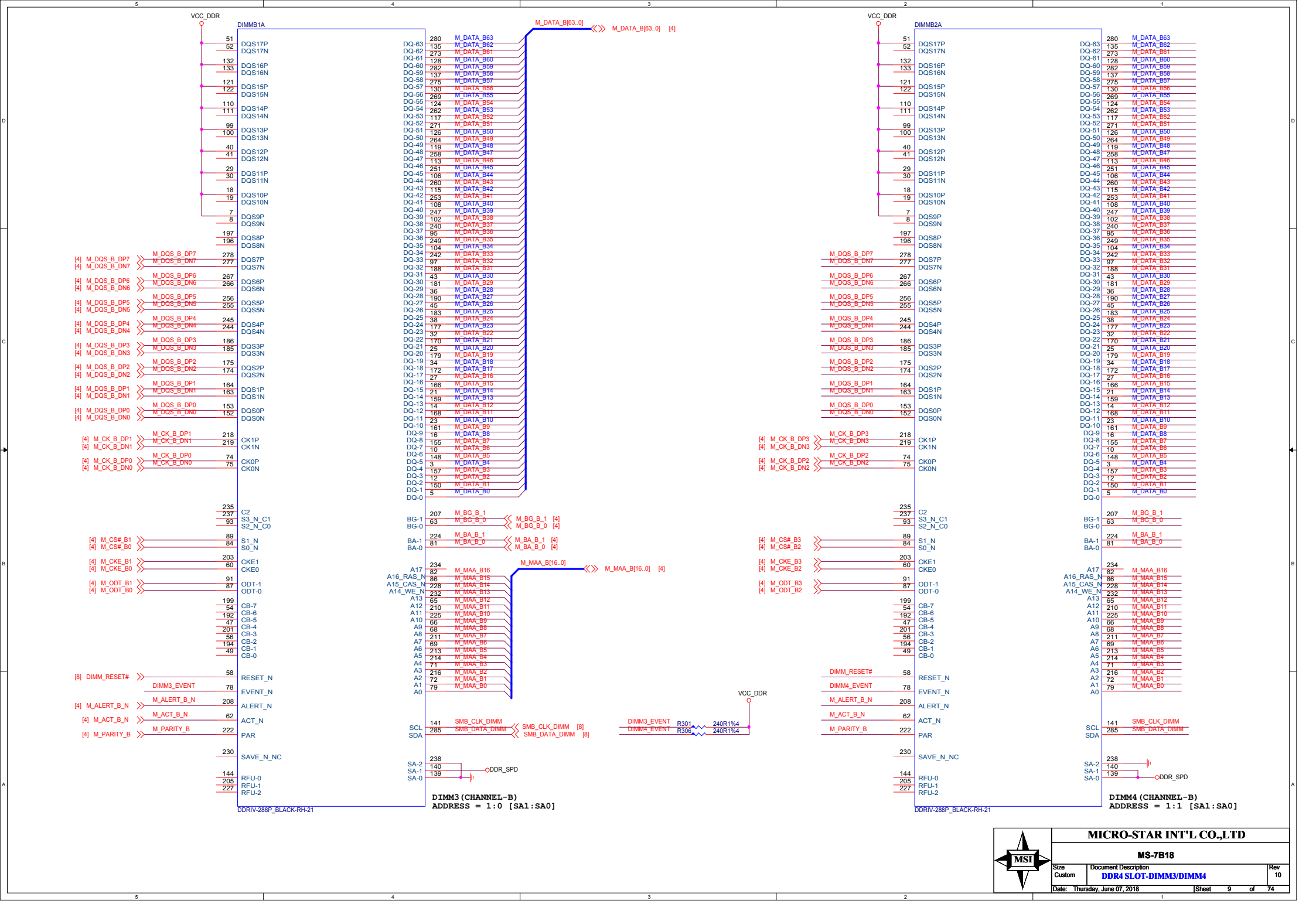
VCC_DDR
DIMMB1A
M_DATA_B[63..0]
M_DATA_B[63..0] [4]
DQS17P
DQS17N
DQS16P
DQS16N
DQS15P
DQS15N
DQS14P
DQS14N
DQS13P
DQS13N
DQS12P
DQS12N
DQS11P
DQS11N
DQS10P
DQS10N
DQS9P
DQS9N
DQS8P
DQS8N
DQS7P
DQS7N
DQS6P
DQS6N
DQS5P
DQS5N
DQS4P
DQS4N
DQS3P
DQS3N
DQS2P
DQS2N
DQS1P
DQS1N
DQS0P
DQS0N
CK1P
CK1N
CK0P
CK0N
C2
S3_N_C1
S2_N_C0
S1_N
S0_N
CKE1
CKE0
ODT-1
ODT-0
CB-7
CB-6
CB-5
CB-4
CB-3
CB-2
CB-1
CB-0
RESET_N
EVENT_N
ALERT_N
ACT_N
PAR
SAVE_N_NC
RFU-0
RFU-1
RFU-2
DQ-63
DQ-62
DQ-61
DQ-60
DQ-59
DQ-58
DQ-57
DQ-56
DQ-55
DQ-54
DQ-53
DQ-52
DQ-51
DQ-50
DQ-49
DQ-48
DQ-47
DQ-46
DQ-45
DQ-44
DQ-43
DQ-42
DQ-41
DQ-40
DQ-39
DQ-38
DQ-37
DQ-36
DQ-35
DQ-34
DQ-33
DQ-32
DQ-31
DQ-30
DQ-29
DQ-28
DQ-27
DQ-26
DQ-25
DQ-24
DQ-23
DQ-22
DQ-21
DQ-20
DQ-19
DQ-18
DQ-17
DQ-16
DQ-15
DQ-14
DQ-13
DQ-12
DQ-11
DQ-10
DQ-9
DQ-8
DQ-7
DQ-6
DQ-5
DQ-4
DQ-3
DQ-2
DQ-1
DQ-0
BG-1
BG-0
BA-1
BA-0
A17
A16_RAS_N
A15_CAS_N
A14_WE_N
A13
A12
A11
A10
A9
A8
A7
A6
A5
A4
A3
A2
A1
A0
M_MAA_B[16..0]
M_MAA_B[16..0] [4]
SCL
SDA
SMB_CLK_DIMM
SMB_DATA_DIMM
SA-2
SA-1
SA-0
DDR_SPD
DDRIV-288P_BLACK-RH-21
DIMM3(CHANNEL-B)
ADDRESS = 1:0 [SA1:SA0]
DIMM3_EVENT
DIMM4_EVENT
R301
R306
240R1%4
DIMMB2A
DIMM4(CHANNEL-B)
ADDRESS = 1:1 [SA1:SA0]
MICRO-STAR INT'L CO.,LTD
MS-7B18
Size
Custom
Document Description
DDR4 SLOT-DIMM3/DIMM4
Rev
10
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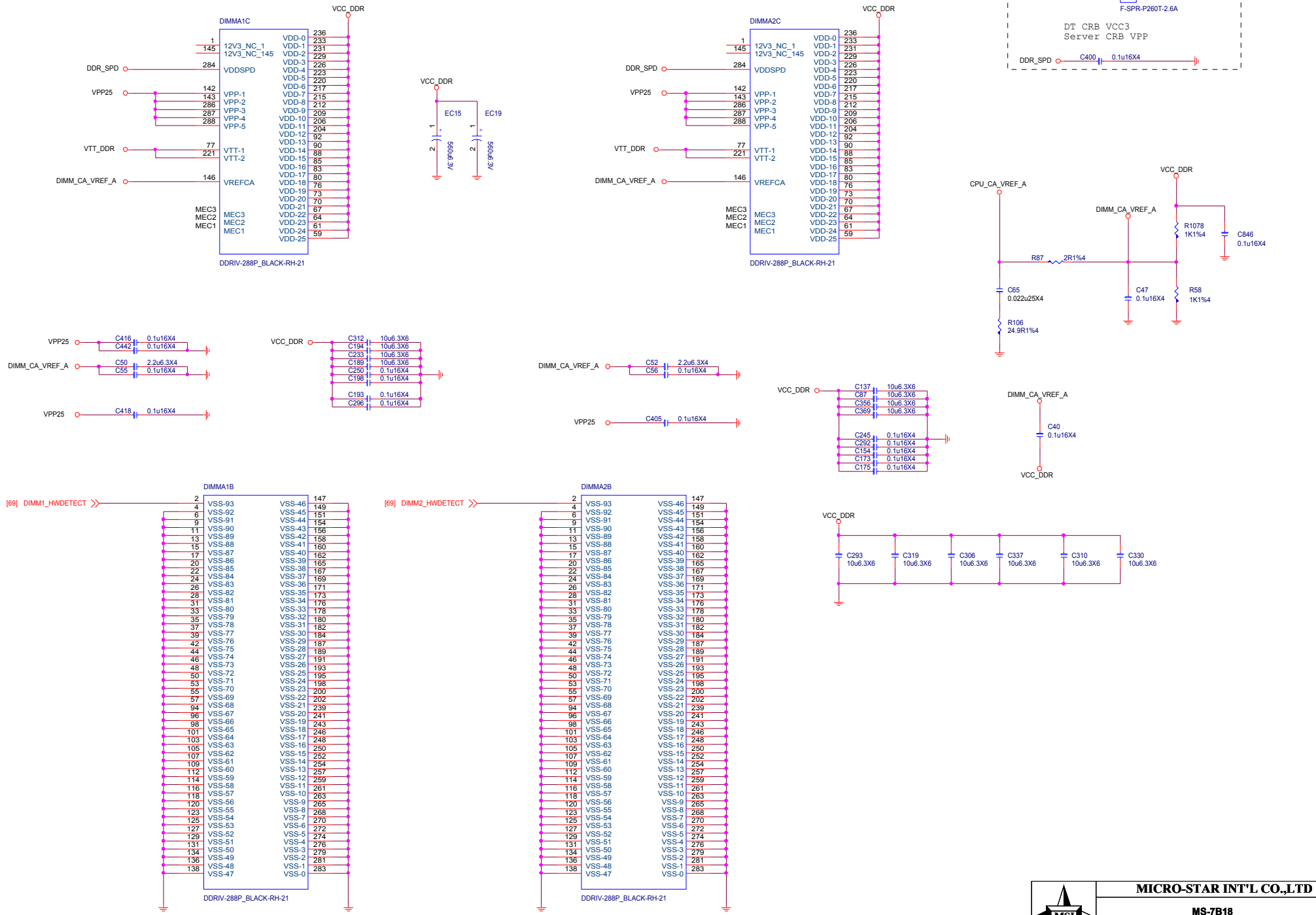

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Size	Document Description	Rev
Custom	DDR4-POWER/GND-1	10

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DIMMB1C
DIMMB2C
VCC_DDR
12V3_NC_1
12V3_NC_145
DDR_SPD
VDDSPD
VPP25
VPP-1
VPP-2
VPP-3
VPP-4
VPP-5
VTT_DDR
VTT-1
VTT-2
DIMM_CA_VREF_B
VREFCA
MEC3
MEC2
MEC1
VDD-0 … VDD-25
DDRIV-288P_BLACK-RH-21
CPU_DQ_VREF_B
R88 2R1%4
C66 0.022u25X4
R107 24.9R1%4
C51 0.1u16X4
R1081 1K1%4
R1072 1K1%4
C845 0.1u16X4
C844 0.1u16X4
C406 0.1u16X4
C417 0.1u16X4
C48 2.2u6.3X4
C848 0.1u16X4
C409 0.1u16X4
C214 10u6.3X6
C227 10u6.3X6
C243 10u6.3X6
C291 10u6.3X6
C201 0.1u16X4
C179 0.1u16X4
C118 0.1u16X4
C289 0.1u16X4
C196 0.1u16X4
C42 2.2u6.3X4
C57 0.1u16X4
C436 0.1u16X4
C309 10u6.3X6
C301 10u6.3X6
C313 10u6.3X6
C204 0.1u16X4
C240 0.1u16X4
C217 0.1u16X4
C229 0.1u16X4
C202 0.1u16X4
DIMMB1B
DIMMB2B
[69] DIMM3_HWDETECT
[69] DIMM4_HWDETECT
VSS-0 … VSS-93

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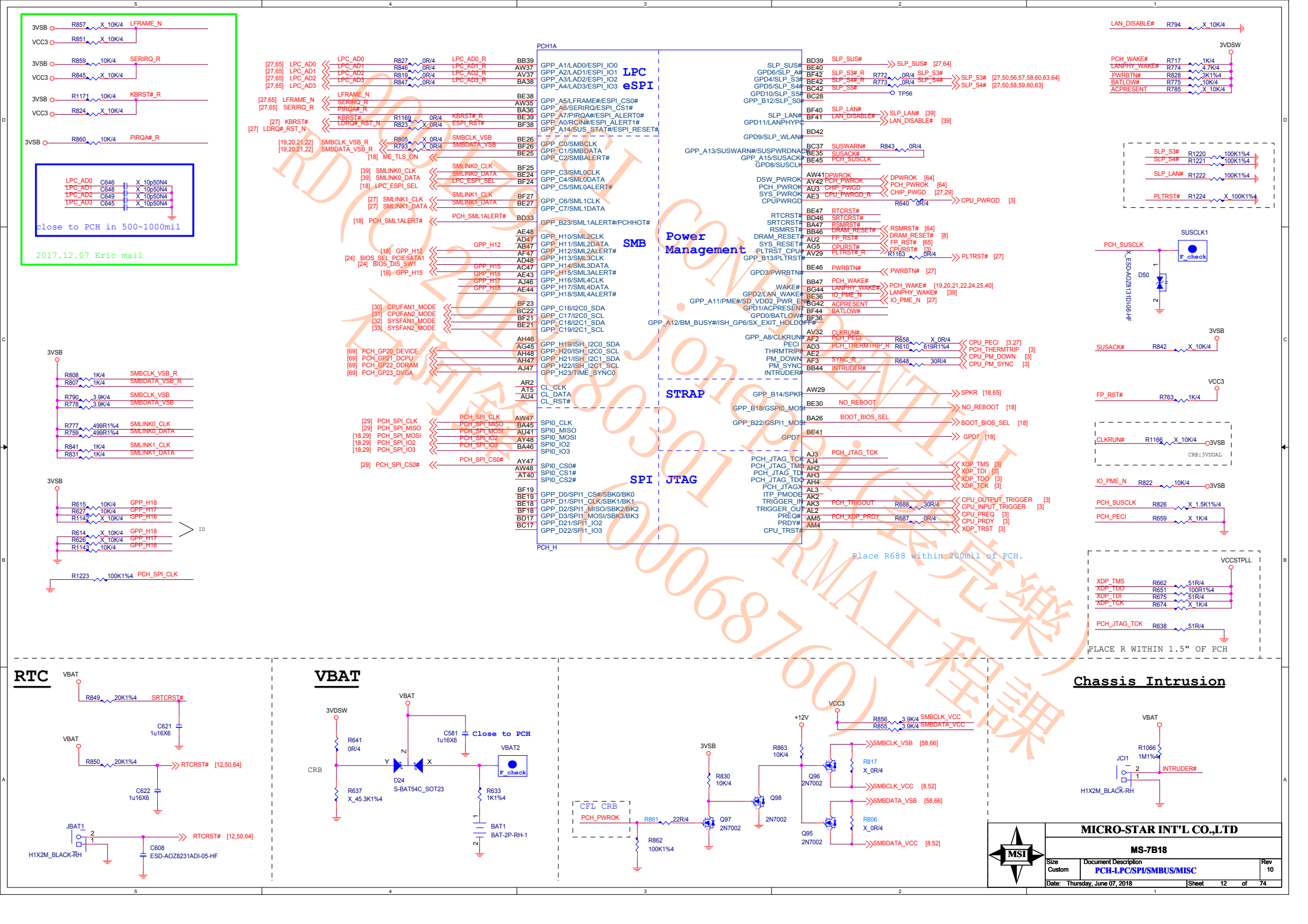
3VSB R857 X_10K/4 LFRAME_N
VCC3 R851 X_10K/4
3VSB R859 10K/4 SERIRQ_R
VCC3 R845 X_10K/4
3VSB R1171 10K/4 KBRST#_R
VCC3 R824 X_10K/4
3VSB R860 10K/4 PIRQA#_R
LPC_AD0 C646 X_10p50N4
LPC_AD1 C648 X_10p50N4
LPC_AD2 C649 X_10p50N4
LPC_AD3 C645 X_10p50N4
close to PCH in 500~1000mil
2017.12.07 Eric mail
PCH1A
LPC eSPI
SMB
Power Management
STRAP
SPI
JTAG
PCH_H
Place R688 within 200mil of PCH.
PLACE R WITHIN 1.5" OF PCH
RTC
VBAT
R849 20K1%4 SRTCRST#
C621 1u16X6
R850 20K1%4 RTCRST# [12,50,64]
C622 1u16X6
JBAT1
H1X2M_BLACK-RH
C608 ESD-AOZ8231ADI-05-HF
VBAT
3VDSW
R641 0R/4
CRB
R637 X_45.3K1%4
C581 1u16X6
Close to PCH
D24 S-BAT54C_SOT23
VBAT2
F_check
R633 1K1%4
BAT1 BAT-2P-RH-1
CFL CRB
PCH_PWROK
R861 22R/4
R862 100K1%4
3VSB
R830 10K/4
Q97 2N7002
Q98 2N7002
+12V
R863 10K/4
Q96 2N7002
Q95 2N7002
VCC3
R856 3.9K/4 SMBCLK_VCC
R855 3.9K/4 SMBDATA_VCC
R817 X_0R/4
R806 X_0R/4
SMBCLK_VSB [58,66]
SMBCLK_VCC [8,52]
SMBDATA_VSB [58,66]
SMBDATA_VCC [8,52]
Chassis Intrusion
VBAT
R1066 1M1%4
JCI1
INTRUDER#
H1X2M_BLACK-RH
MICRO-STAR INT'L CO.,LTD
MS-7B18
Size Custom
Document Description PCH-LPC/SPI/SMBUS/MISC
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PCH_CLK

Close to PCH

C585 12p50N6 — RTCX2
C584 12p50N6 — RTCX1
R705 10M/6 <1 inch
Y2 32.768KHZ12.5p

XTAL_24M_PCH_OUT
R601 200K1%4 — XTAL_24M_PCH_IN
PDG
R597 0R/4
24M_OUT R590 0R/4 24M_R
R604 0R/4
Y1 24MHZ12p
24M_IN
C561 18p50N4
C563 18p50N4

XCLK_BIASREF < 1000 mil

[27] CLK_SIO_PCI
[65] CLK_24M_TPM
C619 X_12p50N6
R804 22R/4 CLK_PCH_LPC1
R858 22R/4 CLK_PCH_24M
C652 X_10p25N4
RTCX1
RTCX2
XTAL_24M_PCH_IN
XTAL_24M_PCH_OUT
R581 60.4R1%4 XCLK_BIASREF
[26] CNV_REFCLK0_38P4M
R1134 10K/4

PCH1E

BB36	GPP_A9/CLKOUT_LPC0/ESPI_CLK	LPC
BB34	GPP_A10/CLKOUT_LPC1	
BA49	RTCX1	RTC
BA48	RTCX2	
U10	XTAL_IN	24MHZ
U9	XTAL_OUT	
T3	XCLK_BIASREF	
R6	CLKIN_XTAL	
BF31	GPP_B5/SRCCLKREQ0#	CLK_REQ
BE31	GPP_B6/SRCCLKREQ1#	
AR32	GPP_B7/SRCCLKREQ2#	
BB30	GPP_B8/SRCCLKREQ3#	
BA30	GPP_B9/SRCCLKREQ4#	
AN29	GPP_B10/SRCCLKREQ5#	
AE47	GPP_H0/SRCCLKREQ6#	
AC48	GPP_H1/SRCCLKREQ7#	
AE41	GPP_H2/SRCCLKREQ8#	
AF48	GPP_H3/SRCCLKREQ9#	
AC41	GPP_H4/SRCCLKREQ10#	
AC39	GPP_H5/SRCCLKREQ11#	
AE39	GPP_H6/SRCCLKREQ12#	
AB48	GPP_H7/SRCCLKREQ13#	
AC44	GPP_H8/SRCCLKREQ14#	
AC43	GPP_H9/SRCCLKREQ15#	

[25] CLKREQ#4 — CLKREQ#4, CLKREQ#5
CLKREQ#6, CLKREQ#7
[39] CLKREQ#9
CLKREQ#12, CLKREQ#13
[24] CLKREQ#15

PCH_H

CLKOUT_CPUBCLK_P/N B8/C8 PCH_CPU_BCLK_DP/DN → PCH_CPU_BCLK_DP/DN [3]
CLKOUT_CPUNSSC_P/N D7/C6 PCH_CPU_NSSC_CLK_DP/DN → PCH_CPU_NSSC_CLK_DP/DN [3]
CLKOUT_CPUPCIBCLK_P/N A6/B6 PCH_CPU_PCIE_DP/DN → PCH_CPU_PCIE_DP/DN [3]
CLKOUT_ITPXDP_P/N Y4/Y3

AJ7	CLKOUT_PCIE_P0	
AJ6	CLKOUT_PCIE_N0	
AH10	CLKOUT_PCIE_P1	
AH9	CLKOUT_PCIE_N1	
AE15	CLKOUT_PCIE_P2	
AE14	CLKOUT_PCIE_N2	
AE7	CLKOUT_PCIE_P3	
AE6	CLKOUT_PCIE_N3	
AC3	CLKOUT_PCIE_P4	CLK_M2_2_DP → CLK_M2_2_DP [25]
AC2	CLKOUT_PCIE_N4	CLK_M2_2_DN → CLK_M2_2_DN [25]
AB3	CLKOUT_PCIE_P5	CLK_PE4_DP → CLK_PE4_DP [21]
AB2	CLKOUT_PCIE_N5	CLK_PE4_DN → CLK_PE4_DN [21]
W3	CLKOUT_PCIE_P6	CLK_PE1_DP → CLK_PE1_DP [19]
W4	CLKOUT_PCIE_N6	CLK_PE1_DN → CLK_PE1_DN [19]
W6	CLKOUT_PCIE_P7	CLK_PE2_DP → CLK_PE2_DP [21]
W7	CLKOUT_PCIE_N7	CLK_PE2_DN → CLK_PE2_DN [21]
AC15	CLKOUT_PCIE_P8	
AC14	CLKOUT_PCIE_N8	
U3	CLKOUT_PCIE_P9	CLK_LAN_DP → CLK_LAN_DP [39]
U2	CLKOUT_PCIE_N9	CLK_LAN_DN → CLK_LAN_DN [39]
AC11	CLKOUT_PCIE_P10	CLK_I211_DP → CLK_I211_DP [40]
AC9	CLKOUT_PCIE_N10	CLK_I211_DN → CLK_I211_DN [40]
AE11	CLKOUT_PCIE_P11	
AE9	CLKOUT_PCIE_N11	
AC6	CLKOUT_PCIE_P12	CLK_PE5_DP → CLK_PE5_DP [22]
AC7	CLKOUT_PCIE_N12	CLK_PE5_DN → CLK_PE5_DN [22]
Y2	CLKOUT_PCIE_P13	CLK_PE3_DP → CLK_PE3_DP [20]
AA1	CLKOUT_PCIE_N13	CLK_PE3_DN → CLK_PE3_DN [20]
T1	CLKOUT_PCIE_P14	
T2	CLKOUT_PCIE_N14	
V3	CLKOUT_PCIE_P15	CLK_M2_1_DP → CLK_M2_1_DP [24]
V2	CLKOUT_PCIE_N15	CLK_M2_1_DN → CLK_M2_1_DN [24]

3VSB
R605 10K/4 CLKREQ#9
VCC3
10K/4 R1168 CLKREQ#4
10K/4 R593 CLKREQ#15

R1167 X_10K/4 CLKREQ#5
R598 X_10K/4 CLKREQ#6
R592 X_10K/4 CLKREQ#7
R587 X_10K/4 CLKREQ#12
R1231 X_10K/4 CLKREQ#13
2018.04.11 Robert mail

PCH_AUDIO

AZ_BITCLK
C605 X_12p50N6

PCH1D

[36] AZ_SDIN0 → AZ_SDIN0	BE11	HDA_SDI0/I2S0_RXD
	BF10	HDA_SDI1/I2S1_RXD
[18] AZ_SDOUT_R / [36] AZ_SDOUT → AZ_SDOUT_R, R789 33R/4, AZ_SDOUT_R	BF12	HDA_SDO/I2S0_TXD
[36] AZ_BITCLK → AZ_BITCLK, R728 33R/4, AZ_BITCLK_LR	BD11	HDA_BCLK/I2S0_SCLK
[36] AZ_RST# → AZ_RST#, R1230 33R/4, AZ_RST#_R	BE10	HDA_RST#/I2S1_SCLK
[36] AZ_SYNC → AZ_SYNC, R799 33R/4, AZ_SYNC_R	BG13	HDA_SYNC/I2S0_SFRM
[3] PCH_CPU_AUD_SDO → R695 30R/4 PCH_CPU_AUD_SDO_R	AM2	HDACPU_SDO
[3] PCH_CPU_AUD_SDI	AN3	HDACPU_SDI
[3] PCH_CPU_AUD_SCLK → R704 30R/4 PCH_CPU_AUD_SCLK_R	AM3	HDACPU_SCLK
	BE12	I2S1_TXD/SNDW2_DATA
	BD12	I2S1_SFRM/SNDW2_CLK
[26] CRF_RST_PCH_N → R1156 33R/4 CRF_RST_N_R	BE16	GPP_D5/I2S2_SFRM/CNV_RF_RESET#
[26] M.2_BT_CLKREQ0_PCH → R1157 33R/4 M.2_BT_CLKREQ0_R	BA17	GPP_D6/I2S2_TXD/MODEM_CLKREQ
	AW18	GPP_D7/I2S2_RXD
	AV18	GPP_D8/I2S2_SCLK
	AW15	GPP_D17/DMIC_CLK1/SNDW3_CLK
	AV16	GPP_D18/DMIC_DATA1/SNDW3_DATA
	BD16	GPP_D19/DMIC_CLK0/SNDW4_CLK
	BF15	GPP_D20/DMIC_DATA0/SNDW4_DATA

AUDIO

PCH_H

PORT B

AL13	GPP_I5/DDPB_CTRLCLK	HDMI_DDPB_CTRLCLK → HDMI_DDPB_CTRLCLK [42]
AR8	GPP_I6/DDPB_CTRLDATA	HDMI_DDPB_CTRLDATA → HDMI_DDPB_CTRLDATA [42]
AT6	GPP_I0/DDPB_HPD0/DISP_MISC0	HDMI_DDPB_HPD → HDMI_DDPB_HPD [42]

PORT C

AN13	GPP_I7/DDPC_CTRLCLK	
AL10	GPP_I8/DDPC_CTRLDATA	
AN10	GPP_I1/DDPC_HPD1/DISP_MISC1	DVI_DDPC_HPD R1235 100K/4 (7B18 Not use DVI)

PORT D

AL9	GPP_I9/DDPD_CTRLCLK	DSP_DDPD_CTRLCLK → DSP_DDPD_CTRLCLK [43]
AR3	GPP_I10/DDPD_CTRLDATA	DSP_DDPD_CTRLDATA → DSP_DDPD_CTRLDATA [43]
AP9	GPP_I2/DPPD_HPD2/DISP_MISC2	DSP_DDPD_HPD → DSP_DDPD_HPD [43]

PORT F

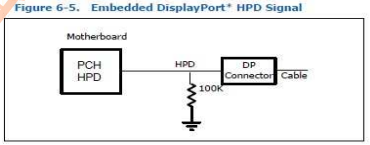
AT49	GPP_F22/DDPF_CTRLCLK	TP12
AN40	GPP_F23/DDPF_CTRLDATA	TP48

eDP

AV44	GPP_F19/EDP_VDDEN	
AV46	GPP_F20/EDP_BKLTEN	
AU48	GPP_F21/EDP_BKLTCTL	
AN6	GPP_I4/EDP_HPD/DISP_MISC4	EDP_HPD_R R1144 100K1%4
AL15	GPP_I3/DPPE_HPD3/DISP_MISC3	DDPE_HPD R1141 10K/4

VCC3
HDMI_DDPB_CTRLCLK R755 2.2K/4
HDMI_DDPB_CTRLDATA R754 2.2K/4
DSP_DDPD_CTRLCLK R724 2.2K/4
DSP_DDPD_CTRLDATA R742 2.2K/4
DSP_DDPD_HPD R1148 100K/4

Figure 6-5. Embedded DisplayPort* HPD Signal



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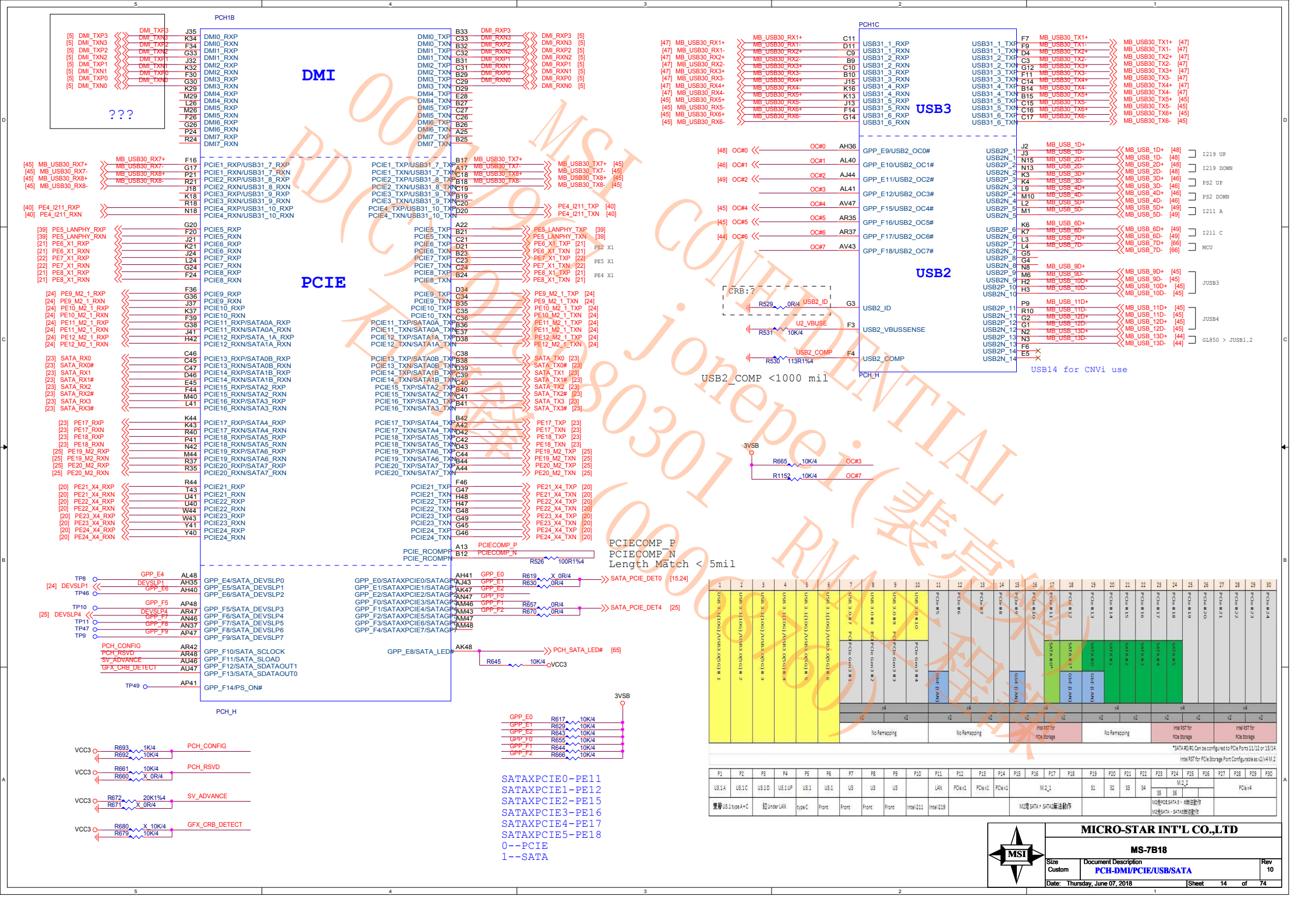
PCH1B
DMI
PCIE
PCH_H
PCH1C
USB3
USB2
USB2_COMP <1000 mil
PCIECOMP_P
PCIECOMP_N
Length Match < 5mil
USB14 for CNVi use
SATAXPCIE0-PE11
SATAXPCIE1-PE12
SATAXPCIE2-PE15
SATAXPCIE3-PE16
SATAXPCIE4-PE17
SATAXPCIE5-PE18
0--PCIE
1--SATA
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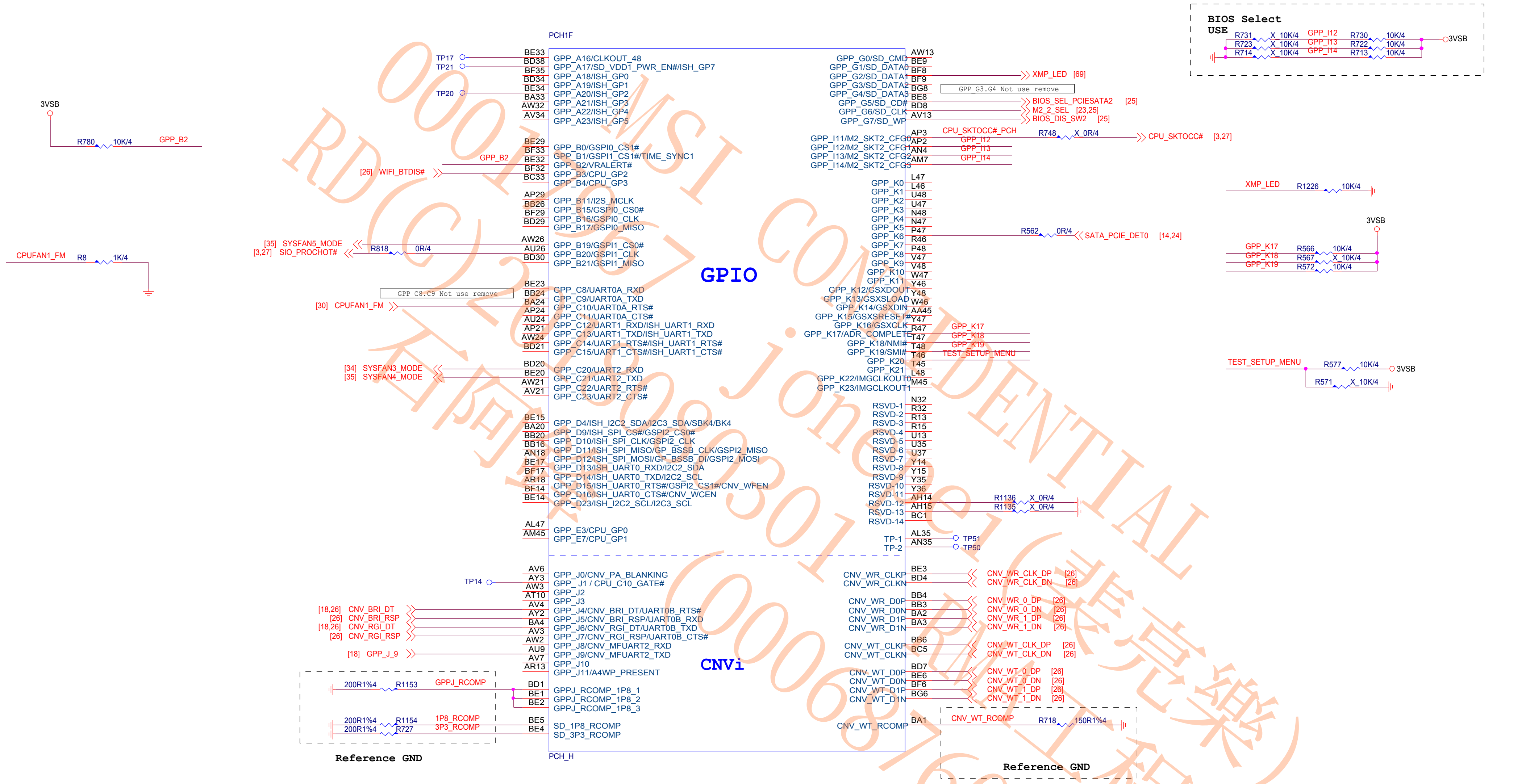
BIOS Select
USE
R731 X 10K/4
R723 X 10K/4
R714 X 10K/4
GPP_I12
GPP_I13
GPP_I14
R730 10K/4
R722 10K/4
R713 10K/4
3VSB
PCH1F
GPIO
CNVi
3VSB
R780 10K/4 GPP_B2
CPUFAN1_FM R8 1K/4
TP17
TP21
TP20
TP14
GPP_A16/CLKOUT_48
GPP_A17/SD_VDD1_PWR_EN#/ISH_GP7
GPP_A18/ISH_GP0
GPP_A19/ISH_GP1
GPP_A20/ISH_GP2
GPP_A21/ISH_GP3
GPP_A22/ISH_GP4
GPP_A23/ISH_GP5
GPP_B0/GSPI0_CS1#
GPP_B1/GSPI1_CS1#/TIME_SYNC1
GPP_B2/VRALERT#
GPP_B3/CPU_GP2
GPP_B4/CPU_GP3
GPP_B11/I2S_MCLK
GPP_B15/GSPI0_CS0#
GPP_B16/GSPI0_CLK
GPP_B17/GSPI0_MISO
GPP_B19/GSPI1_CS0#
GPP_B20/GSPI1_CLK
GPP_B21/GSPI1_MISO
GPP_C8/UART0A_RXD
GPP_C9/UART0A_TXD
GPP_C10/UART0A_RTS#
GPP_C11/UART0A_CTS#
GPP_C12/UART1_RXD/ISH_UART1_RXD
GPP_C13/UART1_TXD/ISH_UART1_TXD
GPP_C14/UART1_RTS#/ISH_UART1_RTS#
GPP_C15/UART1_CTS#/ISH_UART1_CTS#
GPP_C20/UART2_RXD
GPP_C21/UART2_TXD
GPP_C22/UART2_RTS#
GPP_C23/UART2_CTS#
GPP_D4/ISH_I2C2_SDA/I2C3_SDA/SBK4/BK4
GPP_D9/ISH_SPI_CS#/GSPI2_CS0#
GPP_D10/ISH_SPI_CLK/GSPI2_CLK
GPP_D11/ISH_SPI_MISO/GP_BSSB_CLK/GSPI2_MISO
GPP_D12/ISH_SPI_MOSI/GP_BSSB_DI/GSPI2_MOSI
GPP_D13/ISH_UART0_RXD/I2C2_SDA
GPP_D14/ISH_UART0_TXD/I2C2_SCL
GPP_D15/ISH_UART0_RTS#/GSPI2_CS1#/CNV_WFEN
GPP_D16/ISH_UART0_CTS#/CNV_WCEN
GPP_D23/ISH_I2C2_SCL/I2C3_SCL
GPP_E3/CPU_GP0
GPP_E7/CPU_GP1
GPP_J0/CNV_PA_BLANKING
GPP_J1 / CPU_C10_GATE#
GPP_J2
GPP_J3
GPP_J4/CNV_BRI_DT/UART0B_RTS#
GPP_J5/CNV_BRI_RSP/UART0B_RXD
GPP_J6/CNV_RGI_DT/UART0B_TXD
GPP_J7/CNV_RGI_RSP/UART0B_CTS#
GPP_J8/CNV_MFUART2_RXD
GPP_J9/CNV_MFUART2_TXD
GPP_J10
GPP_J11/A4WP_PRESENT
GPPJ_RCOMP_1P8_1
GPPJ_RCOMP_1P8_2
GPPJ_RCOMP_1P8_3
SD_1P8_RCOMP
SD_3P3_RCOMP
PCH_H
[26] WIFI_BTDIS#
[35] SYSFAN5_MODE
[3,27] SIO_PROCHOT# R818 0R/4
GPP_C8,C9 Not use remove
[30] CPUFAN1_FM
[34] SYSFAN3_MODE
[35] SYSFAN4_MODE
[18,26] CNV_BRI_DT
[26] CNV_BRI_RSP
[18,26] CNV_RGI_DT
[26] CNV_RGI_RSP
[18] GPP_J_9
200R1%4 R1153 GPPJ_RCOMP
200R1%4 R1154 1P8_RCOMP
200R1%4 R727 3P3_RCOMP
Reference GND
GPP_G0/SD_CMD
GPP_G1/SD_DATA0
GPP_G2/SD_DATA1
GPP_G3/SD_DATA2
GPP_G4/SD_DATA3
GPP_G5/SD_CD#
GPP_G6/SD_CLK
GPP_G7/SD_WP
XMP_LED [69]
GPP_G3,G4 Not use remove
BIOS_SEL_PCIESATA2 [25]
M2_2_SEL [23,25]
BIOS_DIS_SW2 [25]
GPP_I11/M2_SKT2_CFG0
GPP_I12/M2_SKT2_CFG1
GPP_I13/M2_SKT2_CFG2
GPP_I14/M2_SKT2_CFG3
CPU_SKTOCC#_PCH R748 X 0R/4 CPU_SKTOCC# [3,27]
GPP_K0
GPP_K1
GPP_K2
GPP_K3
GPP_K4
GPP_K5
GPP_K6
GPP_K7
GPP_K8
GPP_K9
GPP_K10
GPP_K11
GPP_K12/GSXDOUT
GPP_K13/GSXSLOAD
GPP_K14/GSXDIN
GPP_K15/GSXSRESET#
GPP_K16/GSXCLK
GPP_K17/ADR_COMPLETE
GPP_K18/NMI#
GPP_K19/SMI#
GPP_K20
GPP_K21
GPP_K22/IMGCLKOUT0
GPP_K23/IMGCLKOUT1
R562 0R/4 SATA_PCIE_DET0 [14,24]
TEST_SETUP_MENU
RSVD-1 … RSVD-14
R1136 X 0R/4
R1135 X 0R/4
TP-1 TP51
TP-2 TP50
CNV_WR_CLKP
CNV_WR_CLKN
CNV_WR_D0P
CNV_WR_D0N
CNV_WR_D1P
CNV_WR_D1N
CNV_WT_CLKP
CNV_WT_CLKN
CNV_WT_D0P
CNV_WT_D0N
CNV_WT_D1P
CNV_WT_D1N
CNV_WT_RCOMP
CNV_WR_CLK_DP [26]
CNV_WR_CLK_DN [26]
CNV_WR_0_DP [26]
CNV_WR_0_DN [26]
CNV_WR_1_DP [26]
CNV_WR_1_DN [26]
CNV_WT_CLK_DP [26]
CNV_WT_CLK_DN [26]
CNV_WT_0_DP [26]
CNV_WT_0_DN [26]
CNV_WT_1_DP [26]
CNV_WT_1_DN [26]
CNV_WT_RCOMP R718 150R1%4
Reference GND
XMP_LED R1226 10K/4
3VSB
GPP_K17 R566 10K/4
GPP_K18 R567 X 10K/4
GPP_K19 R572 10K/4
TEST_SETUP_MENU R577 10K/4 3VSB
R571 X 10K/4

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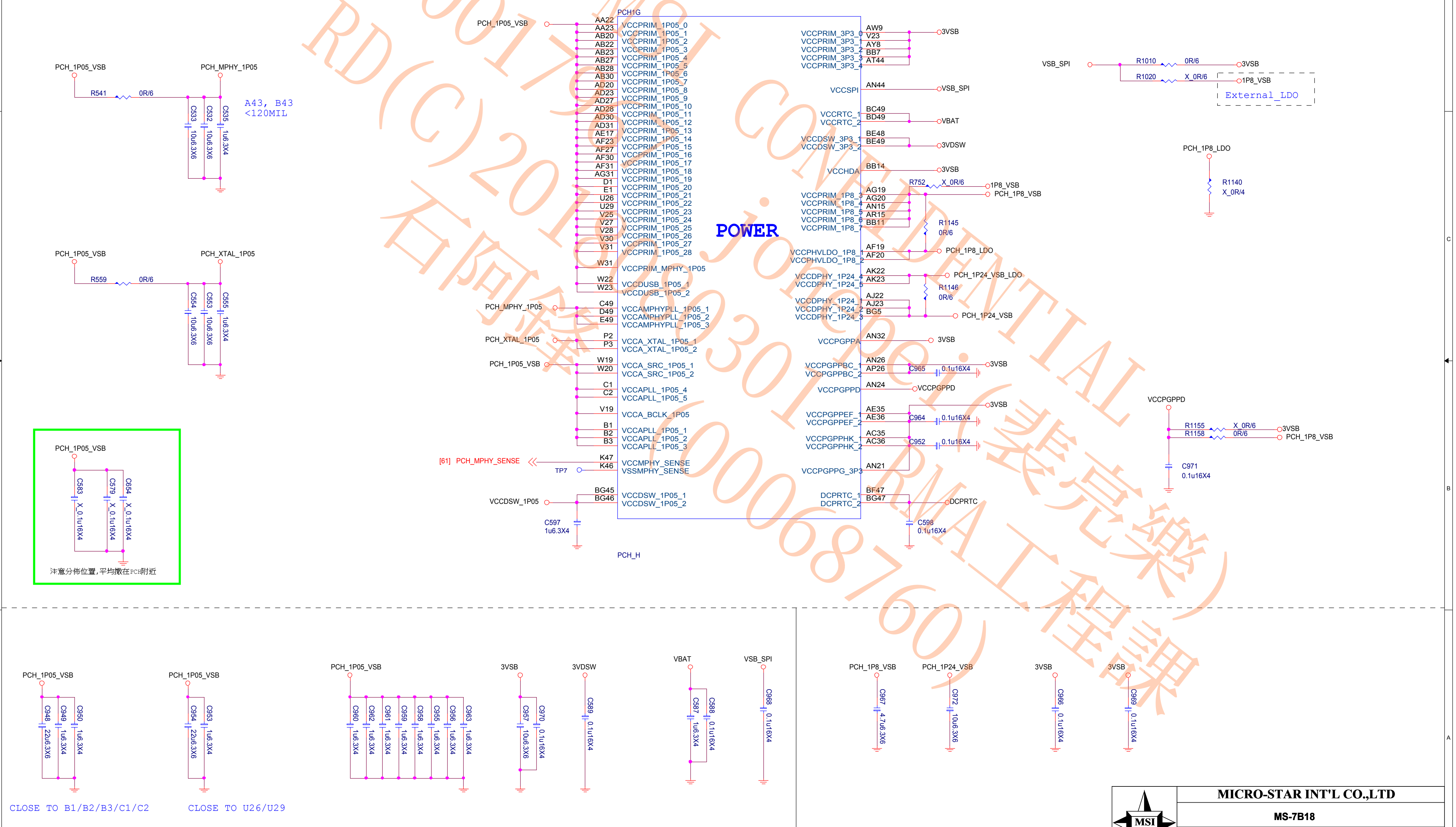

PCH1G
POWER
PCH_H
PCH_1P05_VSB
PCH_MPHY_1P05
PCH_XTAL_1P05
VCCDSW_1P05
[61] PCH_MPHY_SENSE
TP7
VCCPRIM_1P05_0 … VCCPRIM_1P05_28
VCCPRIM_MPHY_1P05
VCCDUSB_1P05_1
VCCDUSB_1P05_2
VCCAMPHYPLL_1P05_1
VCCAMPHYPLL_1P05_2
VCCAMPHYPLL_1P05_3
VCCA_XTAL_1P05_1
VCCA_XTAL_1P05_2
VCCA_SRC_1P05_1
VCCA_SRC_1P05_2
VCCAPLL_1P05_4
VCCAPLL_1P05_5
VCCA_BCLK_1P05
VCCAPLL_1P05_1
VCCAPLL_1P05_2
VCCAPLL_1P05_3
VCCMPHY_SENSE
VSSMPHY_SENSE
VCCDSW_1P05_1
VCCDSW_1P05_2
VCCPRIM_3P3_0 … VCCPRIM_3P3_4
VCCSPI
VCCRTC_1
VCCRTC_2
VCCDSW_3P3_1
VCCDSW_3P3_2
VCCHDA
VCCPRIM_1P8_3 … VCCPRIM_1P8_7
VCCPHVLDO_1P8_1
VCCPHVLDO_1P8_2
VCCDPHY_1P24_4
VCCDPHY_1P24_5
VCCDPHY_1P24_1
VCCDPHY_1P24_2
VCCDPHY_1P24_3
VCCPGPPA
VCCPGPPBC_1
VCCPGPPBC_2
VCCPGPPD
VCCPGPPEF_1
VCCPGPPEF_2
VCCPGPPHK_1
VCCPGPPHK_2
VCCPGPPG_3P3
DCPRTC_1
DCPRTC_2
3VSB
VSB_SPI
VBAT
3VDSW
1P8_VSB
PCH_1P8_VSB
PCH_1P8_LDO
PCH_1P24_VSB_LDO
PCH_1P24_VSB
VCCPGPPD
DCPRTC
R752 X_0R/6
R1145 0R/6
R1146 0R/6
R1010 0R/6
R1020 X_0R/6
External_LDO
R1140 X_0R/4
R1155 X_0R/6
R1158 0R/6
C971 0.1u16X4
C965 0.1u16X4
C964 0.1u16X4
C952 0.1u16X4
C598 0.1u16X4
C597 1u6.3X4
R541 0R/6
R559 0R/6
C533 10u6.3X6
C532 10u6.3X6
C535 1u6.3X4
A43, B43
<120MIL
C554 10u6.3X6
C553 10u6.3X6
C555 1u6.3X4
C583 X_0.1u16X4
C579 X_0.1u16X4
C654 X_0.1u16X4
注意分佈位置，平均擺在PCH附近
C948 22u6.3X6
C949 1u6.3X4
C950 1u6.3X4
C954 22u6.3X6
C953 1u6.3X4
C960 1u6.3X4
C962 1u6.3X4
C961 1u6.3X4
C959 1u6.3X4
C958 1u6.3X4
C955 1u6.3X4
C956 1u6.3X4
C963 1u6.3X4
C957 10u6.3X6
C970 0.1u16X4
C589 0.1u16X4
C587 1u6.3X4
C588 0.1u16X4
C968 0.1u16X4
C967 4.7u6.3X6
C972 10u6.3X6
C966 0.1u16X4
C969 0.1u16X4
CLOSE TO B1/B2/B3/C1/C2
CLOSE TO U26/U29

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Custom	PCH-GND	10

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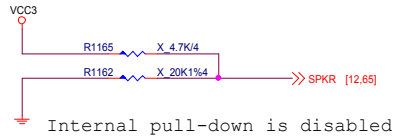
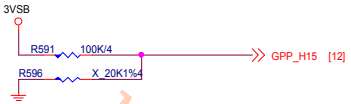
TOP Swap

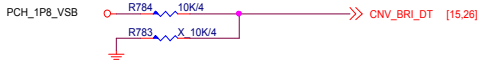


Internal pull-down is disabled after PLTRST#

Reserved

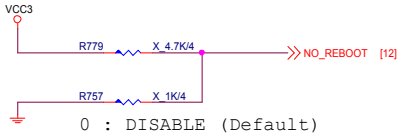


ESPI FLASH SHARING MODE



XTAL FREQUENCY SELECTION
1 = 24MHZ (25MHZ WHEN XTAL FREQ DIVIDER NON ZERO
0 = 38.4/19.2MHZ

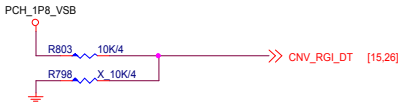
No Reboot



0 : DISABLE (Default)
1 : ENABLE

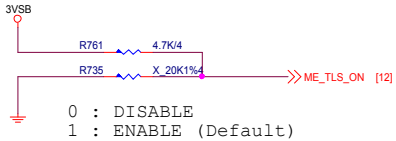
Reserved

Modem Reference Clock Source Select



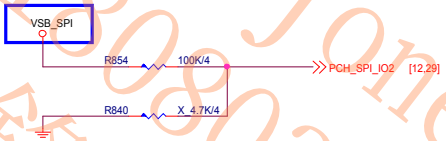
CNL EDS
0 = Integrated CNVi enable
1 = Integrated CNVi disable

AMT and SBA with confidentiality

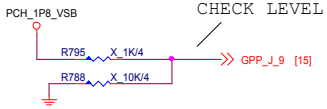


0 : DISABLE
1 : ENABLE (Default)

Reserved



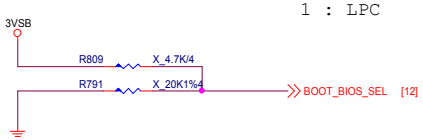
1.8V VCCPSPI



SELECT THE SPI BIOS FLASH INTERFACE OPERATING VOLTAGE
0 = VCCPSPI IS CONNECTED TO 3.3V RAIL - DEFAULT
1 = VCCPSPI IS CONNECTED TO 1.8V RAIL
PCH HAS INTERNAL 20K PD

Boot BIOS

0 : SPI
1 : LPC



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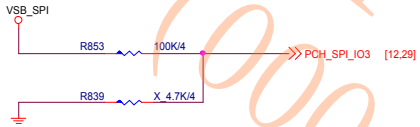

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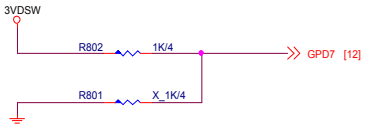
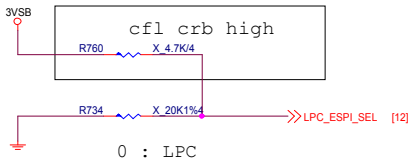


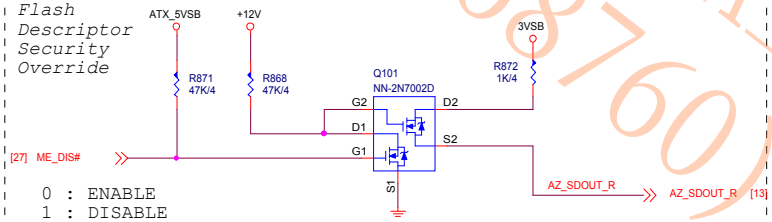
XTAL INPUT MODE
0 = XTAL INPUT IS SINGLE-ENDED
1 = XTAL INPUT IS DIFFERENTIAL
PCH HAS INTERNAL 20K PD

LPC eSPI Mode



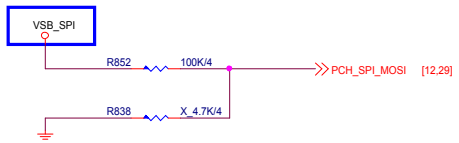
0 : LPC
1 : eSPI

Flash Descriptor Security Override

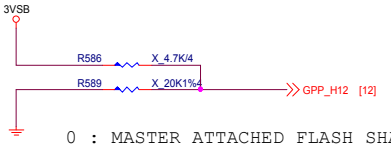


0 : ENABLE
1 : DISABLE

Reserved



ESPI FLASH SHARING MODE



0 : MASTER ATTACHED FLASH SHARING
1 : SLAVE ATTACHED FLASH SHARING

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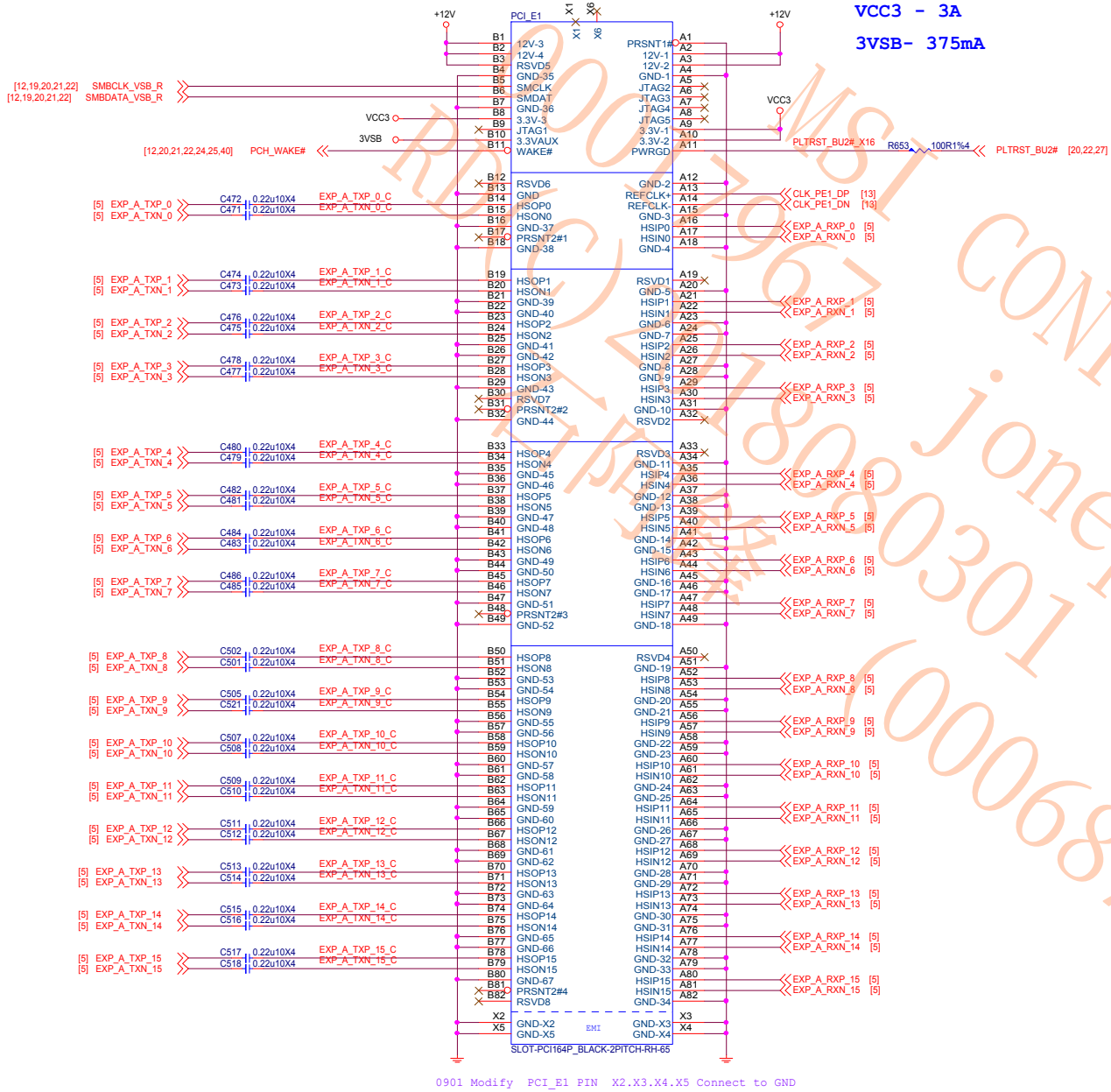
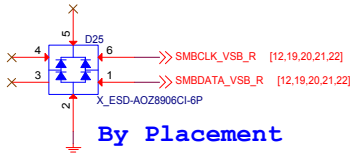
PCI_Express X16 Slot

12V - 5.5A
VCC3 - 3A
3VSB- 375mA



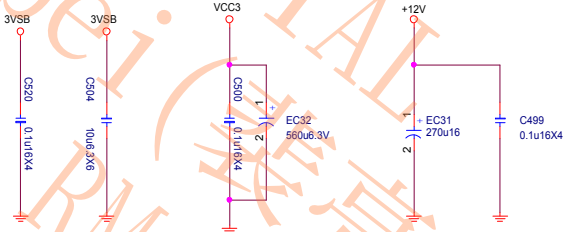
0901 Modify PCI_E1 PIN X2.X3.X4.X5 Connect to GND

SMBUS ESD



By Placement

Main:D0G-05A0529-A68
AVL:D0G-45B0510-I14



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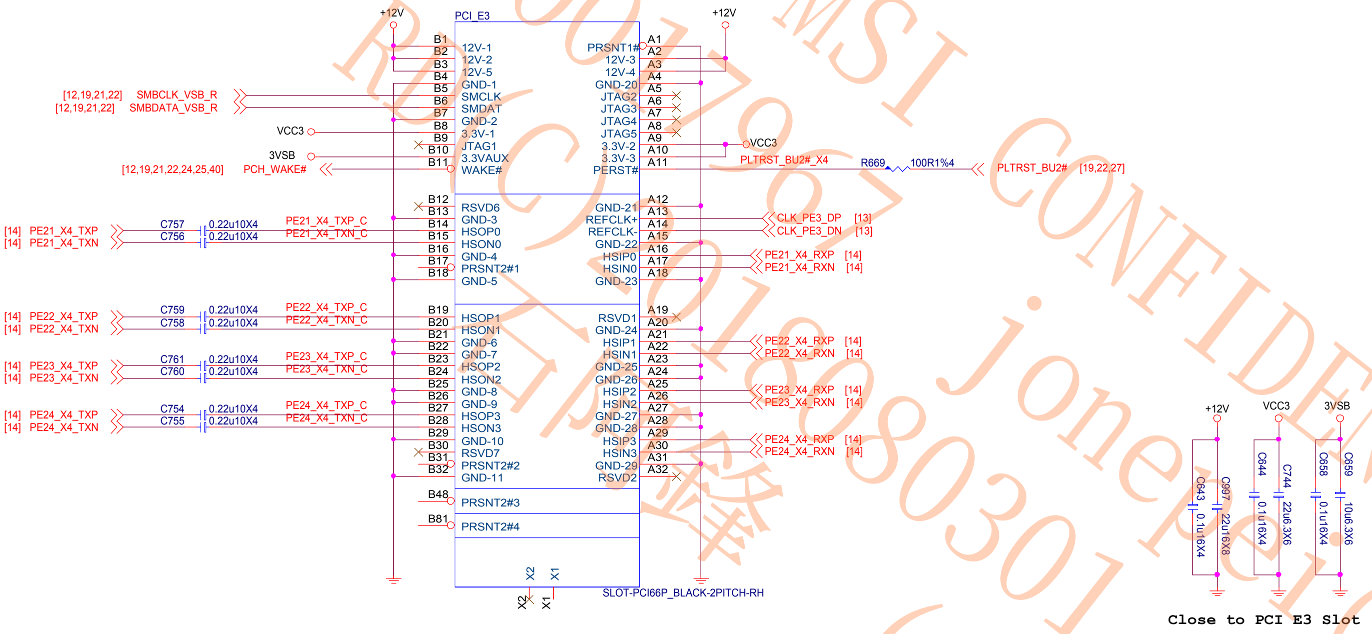
PCI_Express X4 Slot

12V - 2.1A
VCC3 - 3A
3VSBV - 375mA



PCI_E3
+12V
B1 B2 B3 B4 B5 B6 B7 B8 B9 B10 B11
12V-1 12V-2 12V-5 GND-1 SMCLK SMDAT GND-2 3.3V-1 JTAG1 3.3VAUX WAKE#
[12,19,21,22] SMBCLK_VSB_R
[12,19,21,22] SMBDATA_VSB_R
VCC3
3VSB
[12,19,21,22,24,25,40] PCH_WAKE#
PRSNT1# 12V-3 12V-4 GND-20 JTAG2 JTAG3 JTAG4 JTAG5 3.3V-2 3.3V-3 PERST#
A1 A2 A3 A4 A5 A6 A7 A8 A9 A10 A11
PLTRST_BU2#_X4
R669 100R1%4
PLTRST_BU2# [19,22,27]
B12 B13 B14 B15 B16 B17 B18
RSVD6 GND-3 HSOP0 HSON0 GND-4 PRSNT2#1 GND-5
[14] PE21_X4_TXP C757 0.22u10X4 PE21_X4_TXP_C
[14] PE21_X4_TXN C756 0.22u10X4 PE21_X4_TXN_C
GND-21 REFCLK+ REFCLK- GND-22 HSIP0 HSIN0 GND-23
A12 A13 A14 A15 A16 A17 A18
CLK_PE3_DP [13]
CLK_PE3_DN [13]
PE21_X4_RXP [14]
PE21_X4_RXN [14]
B19 B20 B21 B22 B23 B24 B25 B26 B27 B28 B29 B30 B31 B32
HSOP1 HSON1 GND-6 GND-7 HSOP2 HSON2 GND-8 GND-9 HSOP3 HSON3 GND-10 RSVD7 PRSNT2#2 GND-11
[14] PE22_X4_TXP C759 0.22u10X4 PE22_X4_TXP_C
[14] PE22_X4_TXN C758 0.22u10X4 PE22_X4_TXN_C
[14] PE23_X4_TXP C761 0.22u10X4 PE23_X4_TXP_C
[14] PE23_X4_TXN C760 0.22u10X4 PE23_X4_TXN_C
[14] PE24_X4_TXP C754 0.22u10X4 PE24_X4_TXP_C
[14] PE24_X4_TXN C755 0.22u10X4 PE24_X4_TXN_C
RSVD1 GND-24 HSIP1 HSIN1 GND-25 GND-26 HSIP2 HSIN2 GND-27 GND-28 HSIP3 HSIN3 GND-29 RSVD2
A19 A20 A21 A22 A23 A24 A25 A26 A27 A28 A29 A30 A31 A32
PE22_X4_RXP [14]
PE22_X4_RXN [14]
PE23_X4_RXP [14]
PE23_X4_RXN [14]
PE24_X4_RXP [14]
PE24_X4_RXN [14]
B48 PRSNT2#3
B81 PRSNT2#4
X2 X1
SLOT-PCI66P_BLACK-2PITCH-RH
+12V VCC3 3VSB
C643 0.1u16X4
C997 22u16X8
C644 0.1u16X4
C744 22u6.3X6
C658 0.1u16X4
C659 10u6.3X6
Close to PCI E3 Slot

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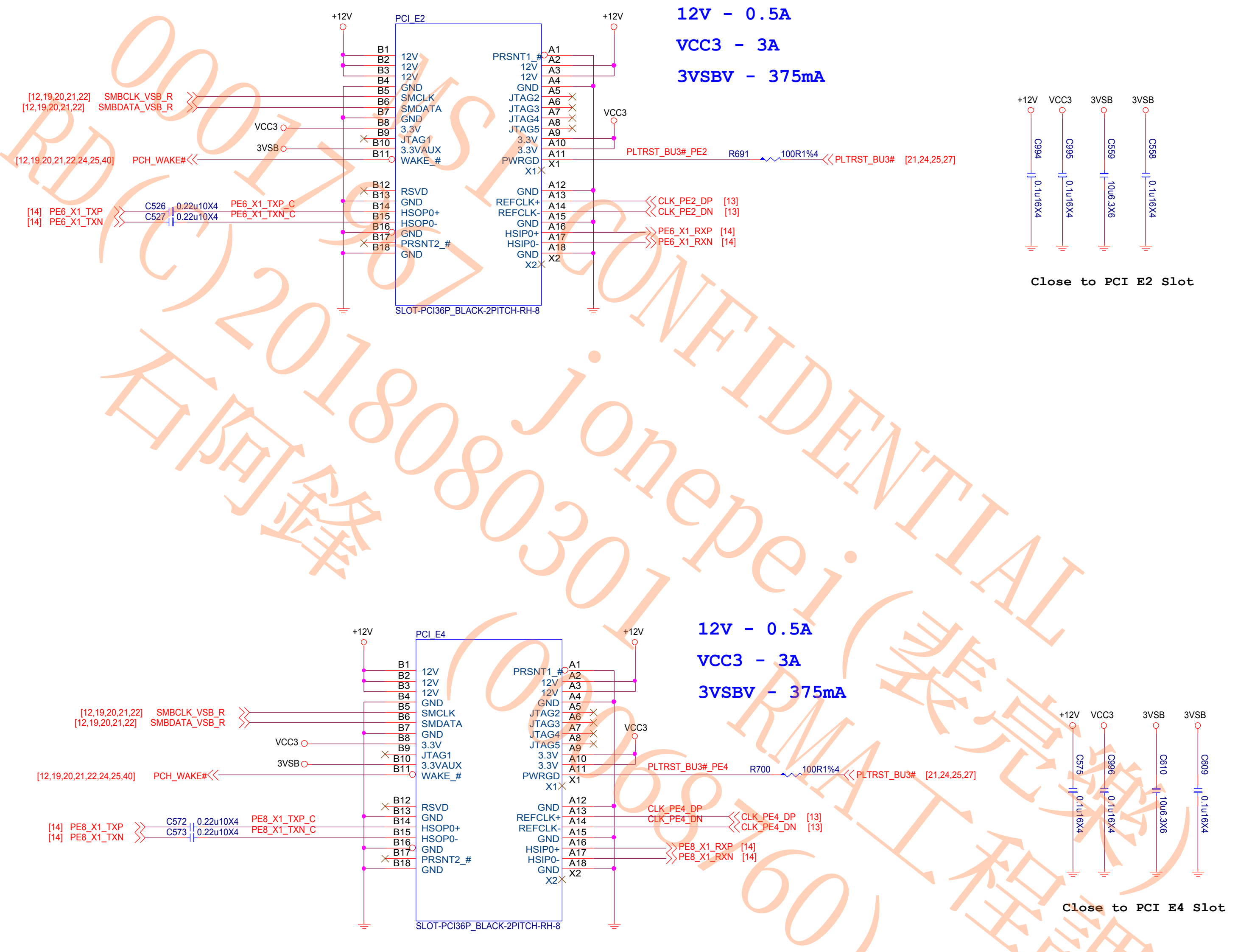

PCI_E2
SLOT-PCI36P_BLACK-2PITCH-RH-8
12V - 0.5A
VCC3 - 3A
3VSBV - 375mA
B1 B2 12V B3 12V B4 12V B5 GND B6 SMCLK B7 SMDATA B8 GND B9 3.3V B10 JTAG1 B11 3.3VAUX WAKE_#
B12 RSVD B13 GND B14 HSOP0+ B15 HSOP0- B16 GND B17 PRSNT2_# B18 GND
A1 PRSNT1_# A2 12V A3 12V A4 GND A5 JTAG2 A6 JTAG3 A7 JTAG4 A8 JTAG5 A9 3.3V A10 3.3V A11 PWRGD X1
A12 GND A13 REFCLK+ A14 REFCLK- A15 GND A16 HSIP0+ A17 HSIP0- A18 GND X2
[12,19,20,21,22] SMBCLK_VSB_R
[12,19,20,21,22] SMBDATA_VSB_R
[12,19,20,21,22,24,25,40] PCH_WAKE#
[14] PE6_X1_TXP
[14] PE6_X1_TXN
C526 0.22u10X4 PE6_X1_TXP_C
C527 0.22u10X4 PE6_X1_TXN_C
PLTRST_BU3#_PE2 R691 100R1%4 PLTRST_BU3# [21,24,25,27]
CLK_PE2_DP [13]
CLK_PE2_DN [13]
PE6_X1_RXP [14]
PE6_X1_RXN [14]
+12V VCC3 3VSB 3VSB
C994 0.1u16X4
C995 0.1u16X4
C559 10u6.3X6
C558 0.1u16X4
Close to PCI E2 Slot
PCI_E4
SLOT-PCI36P_BLACK-2PITCH-RH-8
[12,19,20,21,22] SMBCLK_VSB_R
[12,19,20,21,22] SMBDATA_VSB_R
[12,19,20,21,22,24,25,40] PCH_WAKE#
[14] PE8_X1_TXP
[14] PE8_X1_TXN
C572 0.22u10X4 PE8_X1_TXP_C
C573 0.22u10X4 PE8_X1_TXN_C
PLTRST_BU3#_PE4 R700 100R1%4 PLTRST_BU3# [21,24,25,27]
CLK_PE4_DP [13]
CLK_PE4_DN [13]
PE8_X1_RXP [14]
PE8_X1_RXN [14]
C575 0.1u16X4
C996 0.1u16X4
C610 10u6.3X6
C609 0.1u16X4
Close to PCI E4 Slot

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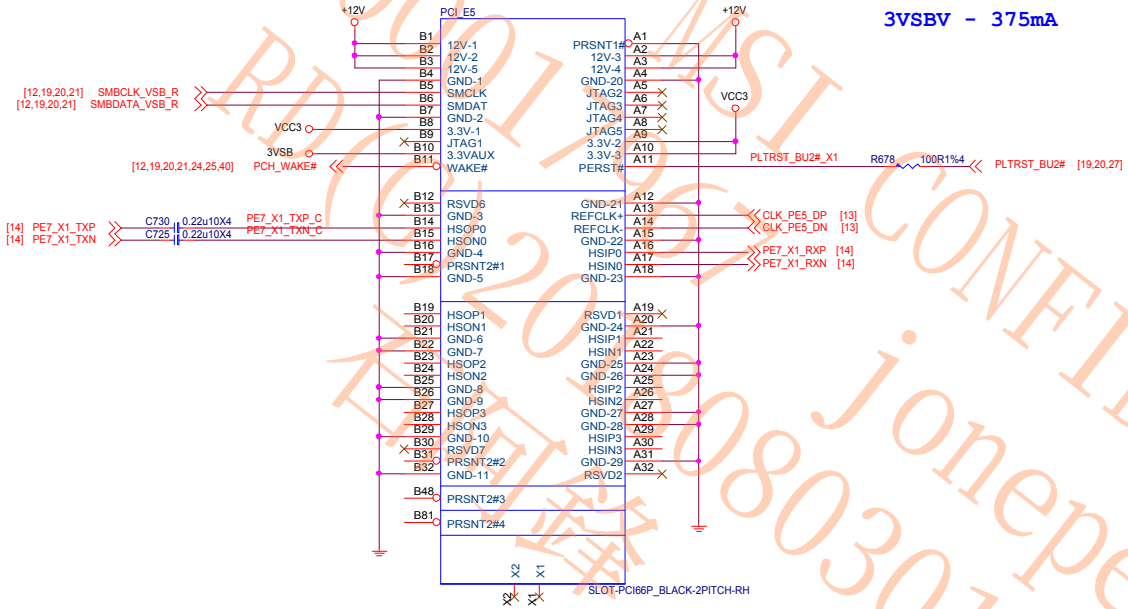
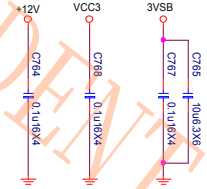
PCI_Express X1 Slot

12V - 2.1A

VCC3 - 3A

3VSBV - 375mA





Close to PCI E5 Slot

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Size: Custom	Document Description: PCIE SLOT - PCH(PE5)
Rev: 10	
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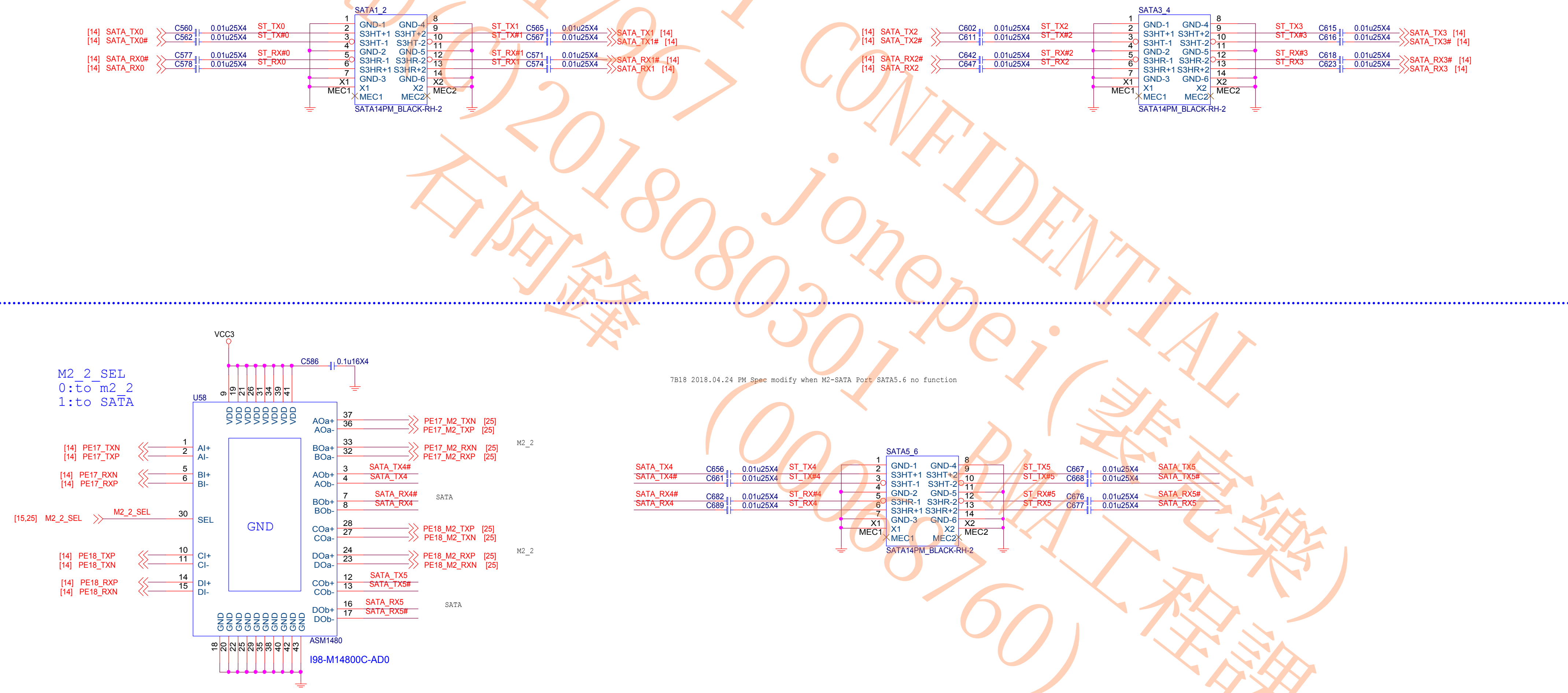
SATA Connector



SATA1_2
SATA14PM_BLACK-RH-2
SATA3_4
SATA5_6
GND-1 GND-4 S3HT+1 S3HT+2 S3HT-1 S3HT-2 GND-2 GND-5 S3HR-1 S3HR-2 S3HR+1 S3HR+2 GND-3 GND-6 X1 X2 MEC1 MEC2
[14] SATA_TX0
[14] SATA_TX0#
[14] SATA_RX0#
[14] SATA_RX0
SATA_TX1 [14]
SATA_TX1# [14]
SATA_RX1# [14]
SATA_RX1 [14]
[14] SATA_TX2
[14] SATA_TX2#
[14] SATA_RX2#
[14] SATA_RX2
SATA_TX3 [14]
SATA_TX3# [14]
SATA_RX3# [14]
SATA_RX3 [14]
0.01u25X4
M2_2_SEL
0:to m2_2
1:to SATA
VCC3
C586 0.1u16X4
U58
ASM1480
I98-M14800C-AD0
GND
[14] PE17_TXN
[14] PE17_TXP
[14] PE17_RXN
[14] PE17_RXP
[15,25] M2_2_SEL
[14] PE18_TXP
[14] PE18_TXN
[14] PE18_RXP
[14] PE18_RXN
PE17_M2_TXN [25]
PE17_M2_TXP [25]
PE17_M2_RXN [25]
PE17_M2_RXP [25]
PE18_M2_TXP [25]
PE18_M2_TXN [25]
PE18_M2_RXP [25]
PE18_M2_RXN [25]
M2_2
SATA
7B18 2018.04.24 PM Spec modify when M2-SATA Port SATA5.6 no function

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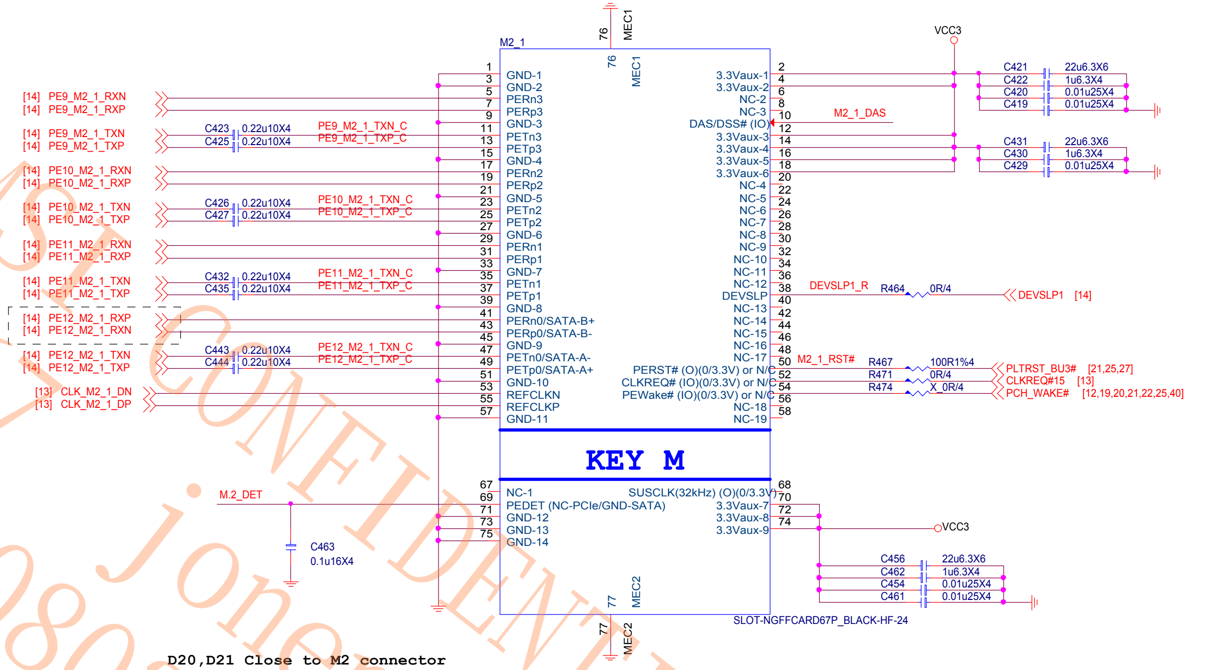
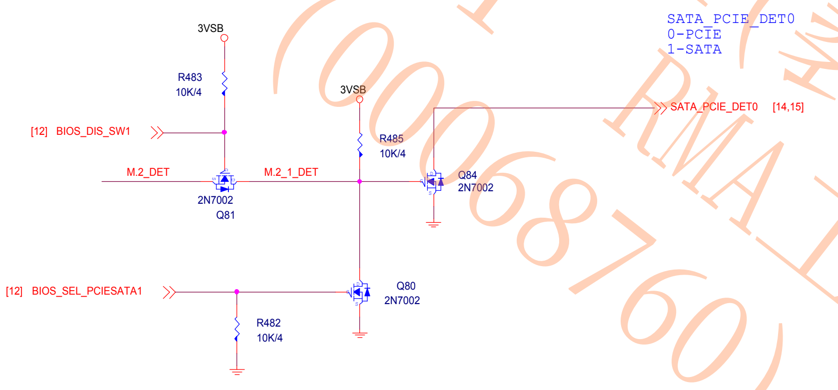
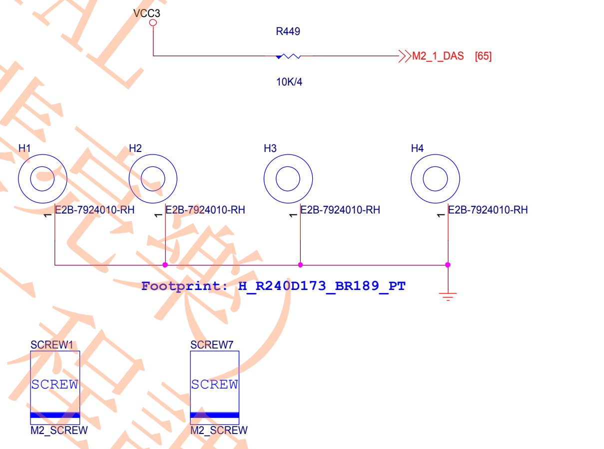

M2_1
MEC1
KEY M
PE9_M2_1_RXN
PE9_M2_1_RXP
PE9_M2_1_TXN
PE9_M2_1_TXP
PE10_M2_1_RXN
PE10_M2_1_RXP
PE10_M2_1_TXN
PE10_M2_1_TXP
PE11_M2_1_RXN
PE11_M2_1_RXP
PE11_M2_1_TXN
PE11_M2_1_TXP
PE12_M2_1_RXP
PE12_M2_1_RXN
PE12_M2_1_TXN
PE12_M2_1_TXP
CLK_M2_1_DN
CLK_M2_1_DP
M.2_DET
C463 0.1u16X4
VCC3
M2_1_DAS
DEVSLP1_R
R464 0R/4
DEVSLP1 [14]
M2_1_RST#
R467 100R1%4
R471 0R/4
R474 X_0R/4
PLTRST_BU3# [21,25,27]
CLKREQ#15 [13]
PCH_WAKE# [12,19,20,21,22,25,40]
SLOT-NGFFCARD67P_BLACK-HF-24
D20,D21 Close to M2 connector





BIOS_MODE

BIOS_DIS_SW1	M1_SEL_PCIESATA	Mode
0	1	M2-SATA
0	0	M2-PCIE
GPI(1)	GPI(0)	AUTO

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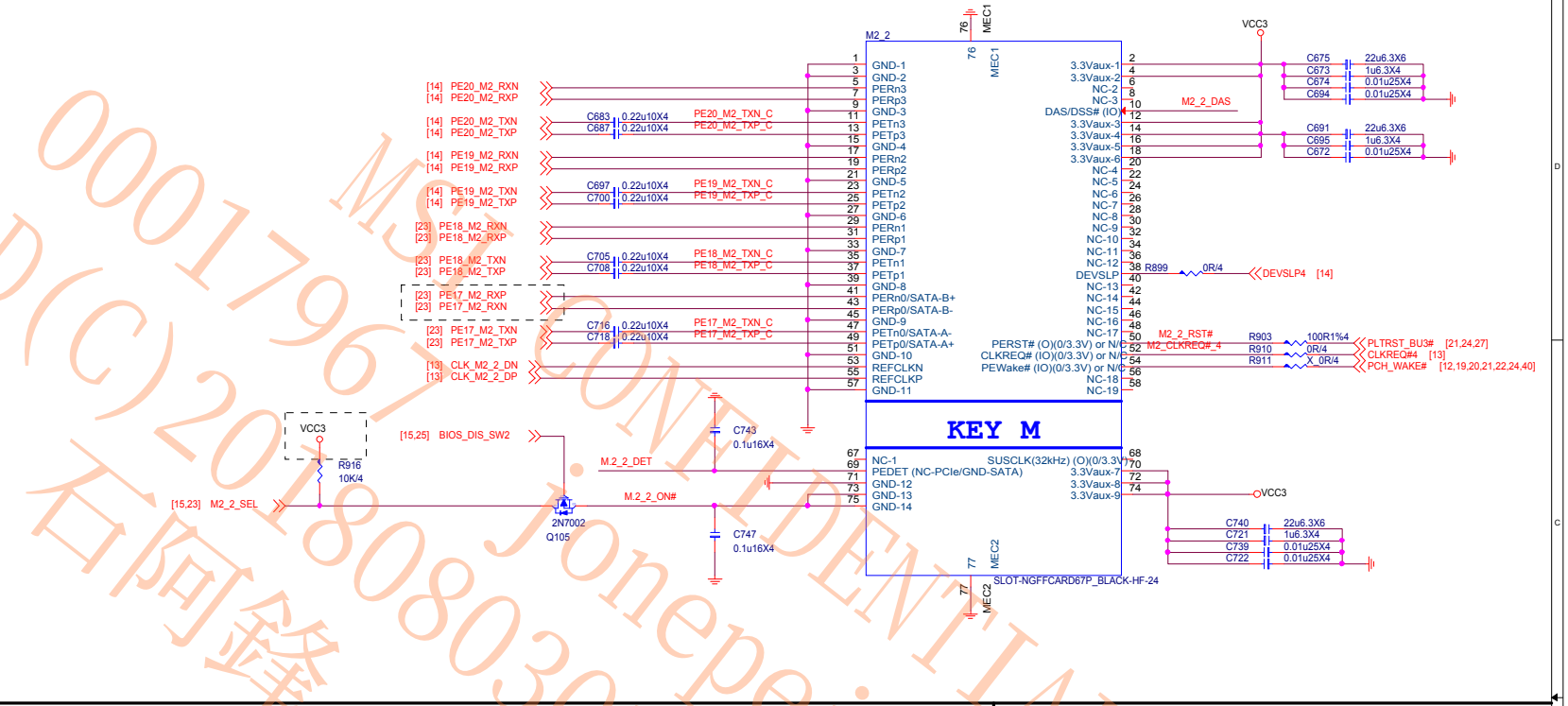

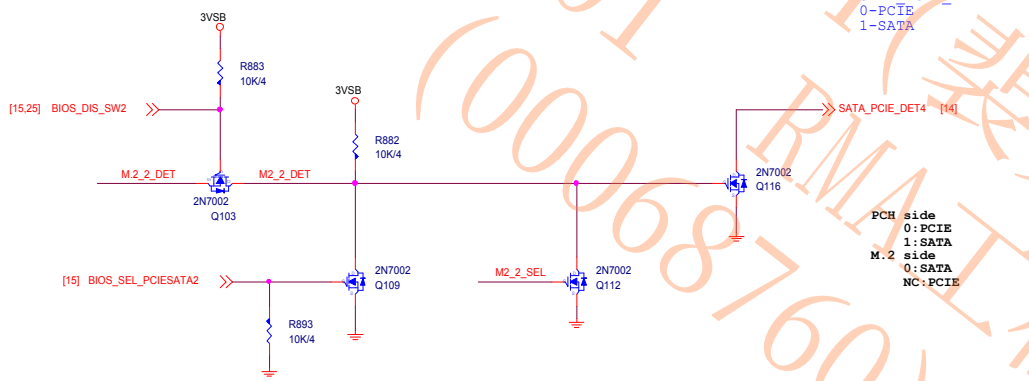

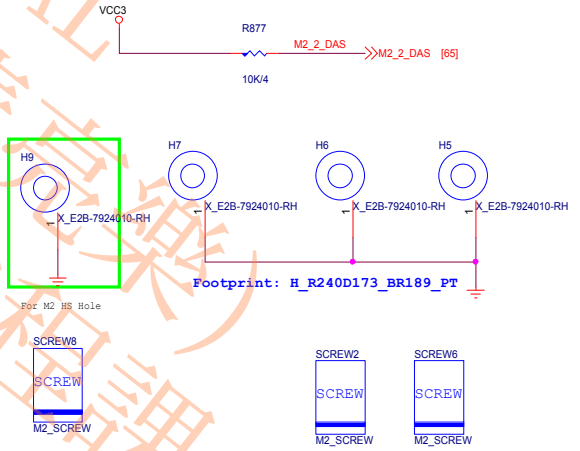

BIOS_MODE

HW_MODE

M2_2_SEL	*M2_2_DET*	*SATA_PCIE_DET4*	*Mode*
1	*1*	*1*	***SATA5.6***
0	*0*	*1*	***M2-SATA***
0	*1*	*0*	***M2-PCIE***

default

GPP_G7 GPP_G6 GPP_G5

BIOS_DIS_SW2	*M2_2_SEL*	*BIOS_SEL_PCIESATA2*	*Mode*
GPI(1)	*GPI(1)*	*GPI(0)*	*AUTO*
0	*1*	*0*	***SATA5***
0	*0*	*1*	***M2-SATA***
0	*0*	*0*	***M2-PCIE***

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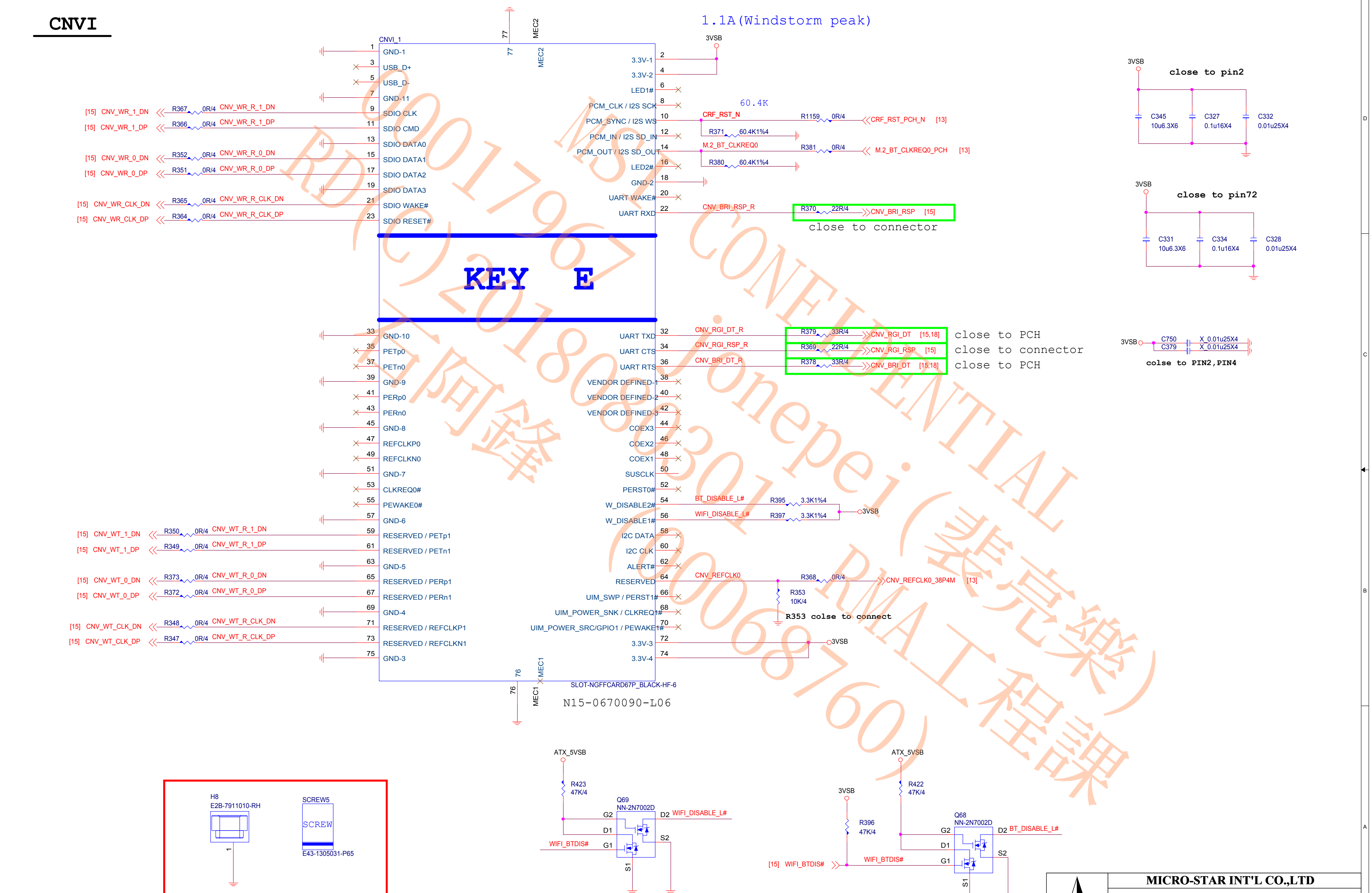
CNVI



1.1A(Windstorm peak)
CNVI_1
GND-1
USB_D+
USB_D-
GND-11
SDIO CLK
SDIO CMD
SDIO DATA0
SDIO DATA1
SDIO DATA2
SDIO DATA3
SDIO WAKE#
SDIO RESET#
KEY E
GND-10
PETp0
PETn0
GND-9
PERp0
PERn0
GND-8
REFCLKP0
REFCLKN0
GND-7
CLKREQ0#
PEWAKE0#
GND-6
RESERVED / PETp1
RESERVED / PETn1
GND-5
RESERVED / PERp1
RESERVED / PERn1
GND-4
RESERVED / REFCLKP1
RESERVED / REFCLKN1
GND-3
3.3V-1
3.3V-2
LED1#
PCM_CLK / I2S SCK
PCM_SYNC / I2S WS
PCM_IN / I2S SD_IN
PCM_OUT / I2S SD_OUT
LED2#
GND-2
UART WAKE#
UART RXD
UART TXD
UART CTS
UART RTS
VENDOR DEFINED-1
VENDOR DEFINED-2
VENDOR DEFINED-3
COEX3
COEX2
COEX1
SUSCLK
PERST0#
W_DISABLE2#
W_DISABLE1#
I2C DATA
I2C CLK
ALERT#
RESERVED
UIM_SWP / PERST1#
UIM_POWER_SNK / CLKREQ1#
UIM_POWER_SRC/GPIO1 / PEWAKE1#
3.3V-3
3.3V-4
MEC1
MEC2
SLOT-NGFFCARD67P_BLACK-HF-6
N15-0670090-L06
[15] CNV_WR_1_DN R367 0R/4 CNV_WR_R_1_DN
[15] CNV_WR_1_DP R366 0R/4 CNV_WR_R_1_DP
[15] CNV_WR_0_DN R352 0R/4 CNV_WR_R_0_DN
[15] CNV_WR_0_DP R351 0R/4 CNV_WR_R_0_DP
[15] CNV_WR_CLK_DN R365 0R/4 CNV_WR_R_CLK_DN
[15] CNV_WR_CLK_DP R364 0R/4 CNV_WR_R_CLK_DP
[15] CNV_WT_1_DN R350 0R/4 CNV_WT_R_1_DN
[15] CNV_WT_1_DP R349 0R/4 CNV_WT_R_1_DP
[15] CNV_WT_0_DN R373 0R/4 CNV_WT_R_0_DN
[15] CNV_WT_0_DP R372 0R/4 CNV_WT_R_0_DP
[15] CNV_WT_CLK_DN R348 0R/4 CNV_WT_R_CLK_DN
[15] CNV_WT_CLK_DP R347 0R/4 CNV_WT_R_CLK_DP
3VSB
60.4K
CRF_RST_N R1159 0R/4 CRF_RST_PCH_N [13]
R371 60.4K1%4
M.2_BT_CLKREQ0 R381 0R/4 M.2_BT_CLKREQ0_PCH [13]
R380 60.4K1%4
CNV_BRI_RSP_R R370 22R/4 CNV_BRI_RSP [15]
close to connector
CNV_RGI_DT_R R379 33R/4 CNV_RGI_DT [15,18]
CNV_RGI_RSP_R R369 22R/4 CNV_RGI_RSP [15]
CNV_BRI_DT_R R378 33R/4 CNV_BRI_DT [15,18]
close to PCH
close to connector
close to PCH
BT_DISABLE_L# R395 3.3K1%4
WIFI_DISABLE_L# R397 3.3K1%4
3VSB
CNV_REFCLK0 R368 0R/4 CNV_REFCLK0_38P4M [13]
R353 10K/4
R353 colse to connect
3VSB
close to pin2
C345 10u6.3X6
C327 0.1u16X4
C332 0.01u25X4
3VSB
close to pin72
C331 10u6.3X6
C334 0.1u16X4
C328 0.01u25X4
3VSB
C750 X_0.01u25X4
C379 X_0.01u25X4
colse to PIN2,PIN4
ATX_5VSB
R423 47K/4
Q69 NN-2N7002D
G2 D2 WIFI_DISABLE_L#
D1 S2
WIFI_BTDIS# G1
S1
3VSB
ATX_5VSB
R422 47K/4
R396 47K/4
Q68 NN-2N7002D
G2 D2 BT_DISABLE_L#
D1
[15] WIFI_BTDIS# WIFI_BTDIS# G1 S2
S1
H8
E2B-7911010-RH
SCREW5
SCREW
E43-1305031-P65
2018.01.19 需確認

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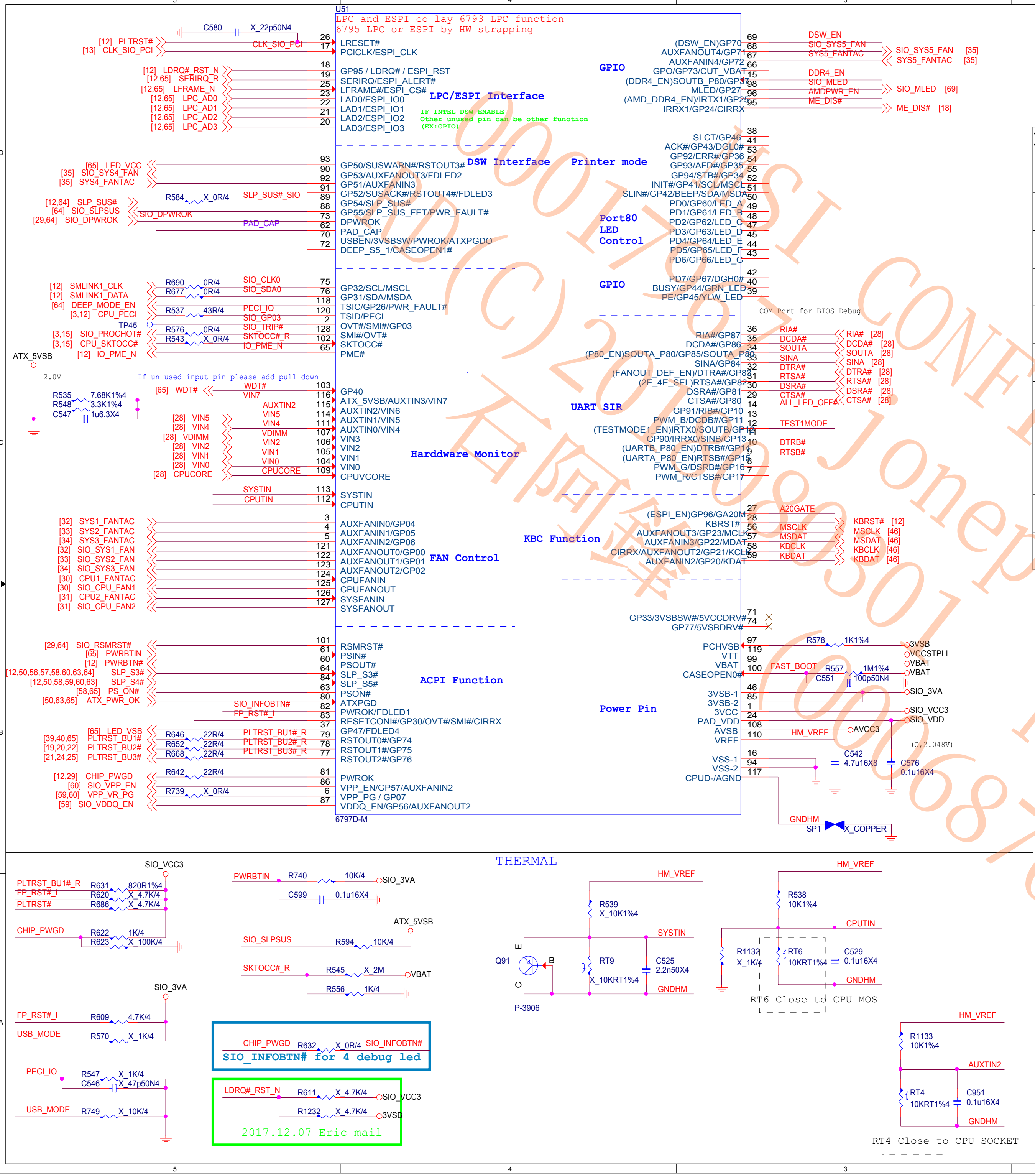
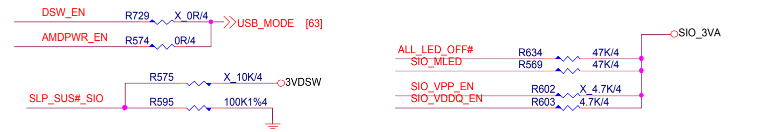
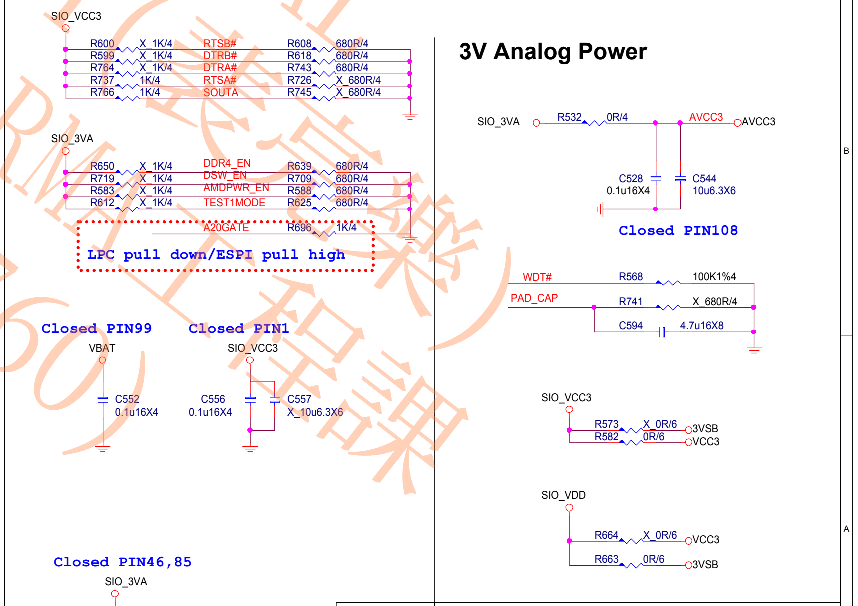

U51
LPC and ESPI co lay 6793 LPC function
6795 LPC or ESPI by HW strapping
LPC/ESPI Interface
GPIO
IF INTEL DSW ENABLE
Other unused pin can be other function
(EX:GPIO)
DSW Interface
Printer mode
Port80 LED Control
GPIO
COM Port for BIOS Debug
If un-used input pin please add pull down
UART SIR
Harddware Monitor
KBC Function
FAN Control
ACPI Function
Power Pin
6797D-M
THERMAL
P-3906
RT6 Close to CPU MOS
RT4 Close to CPU SOCKET
SIO_INFOBTN# for 4 debug led
2017.12.07 Eric mail



POWER ON STRAPPING PIN FOR NCT6797

PIN	NAME	Circuit NAME	0	1	Strap Point
9	UARTA_P80_EN	RTSB#	DISABLE UARTA80	ENABLE UARTA80	LRESET
10	UARTB_P80_EN	DTRB#	DISABLE UARTB80	ENABLE UARTB80	LRESET
12	TEST1MODE_EN	TEST1MODE	DISABLE TEST1MODE	ENABLE TEST1MODE	LRESET
15	DDR4_EN	DDR4_EN	Disable	Enable	
27	ESPI_EN	A20GATE	LPC	ESPI	
31	2E_4E_SEL	RTSA#	I/O ADDRESS 2E	I/O ADDRESS 4E	LRESET
32	FANOUT_DEF_EN	DTRA#	default 50%	default 100%	INTERNAL PWROK
34	P80_EN	SOUTA	ENABLE Non_PORT80	ENABLE PORT80	LRESET
69	DSW_EN	DSW_EN	DISABLE INTEL DSW	ENABLE INTEL DSW	INTERNAL RSMRST
96	AMDPWR_EN	AMDPWR_EN	DISABLE AMD PWR SEQ	ENABLE AMD PWR SEQ	INTERNAL RSMRST

Note:
If PIN34 strapping low,BIOS must programming LPT or GPIO



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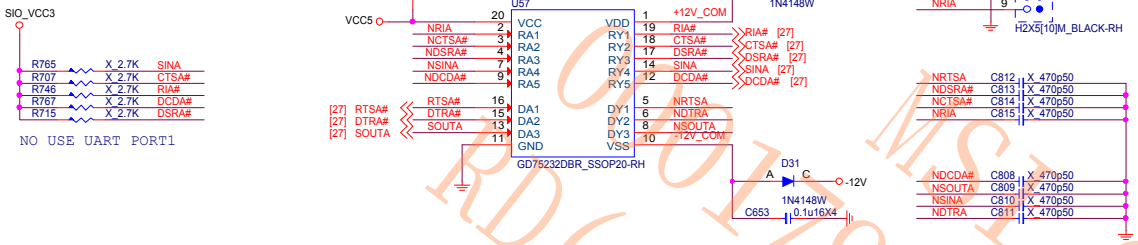
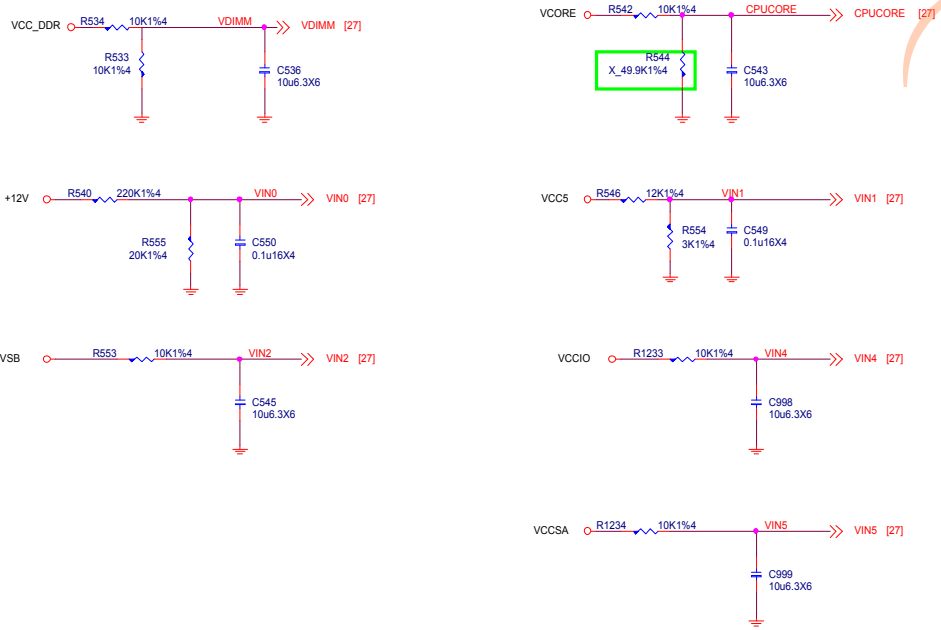
SERIAL PORT 1



HW Monitor - Voltage

SIO HM Voltage voer 2V will not detect



RSMRST# USE solution

2017.11.30 robert mail remove

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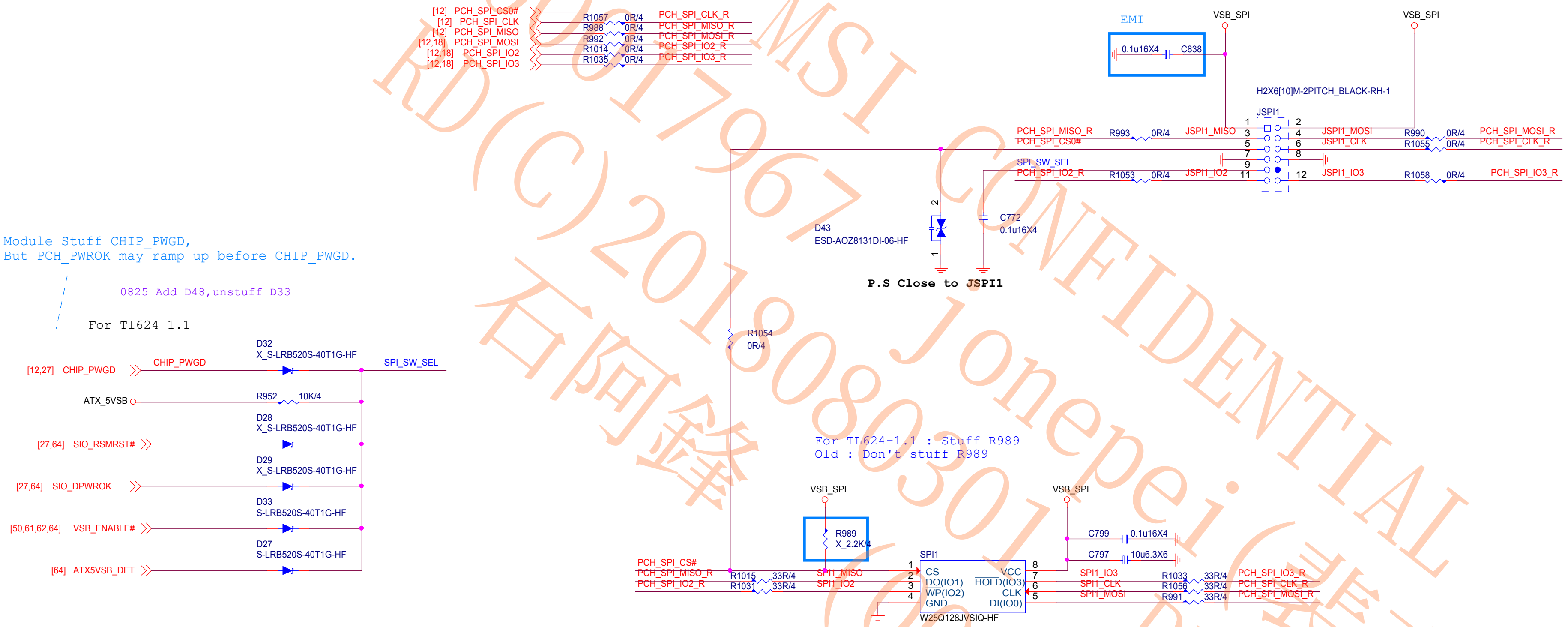
Note: ROM & JSPI1 Reference GND



[12] PCH_SPI_CS0#
[12] PCH_SPI_CLK
[12] PCH_SPI_MISO
[12,18] PCH_SPI_MOSI
[12,18] PCH_SPI_IO2
[12,18] PCH_SPI_IO3
R1057 0R/4 PCH_SPI_CLK_R
R988 0R/4 PCH_SPI_MISO_R
R992 0R/4 PCH_SPI_MOSI_R
R1014 0R/4 PCH_SPI_IO2_R
R1035 0R/4 PCH_SPI_IO3_R
EMI
0.1u16X4 C838
VSB_SPI
VSB_SPI
H2X6[10]M-2PITCH_BLACK-RH-1
JSPI1
PCH_SPI_MISO_R R993 0R/4 JSPI1_MISO
PCH_SPI_CS0#
SPI_SW_SEL
PCH_SPI_IO2_R R1053 0R/4 JSPI1_IO2
JSPI1_MOSI R990 0R/4 PCH_SPI_MOSI_R
JSPI1_CLK R1055 0R/4 PCH_SPI_CLK_R
JSPI1_IO3 R1058 0R/4 PCH_SPI_IO3_R
D43
ESD-AOZ8131DI-06-HF
C772
0.1u16X4
P.S Close to JSPI1
Module Stuff CHIP_PWGD,
But PCH_PWROK may ramp up before CHIP_PWGD.
0825 Add D48,unstuff D33
For Tl624 1.1
R1054
0R/4
D32
X_S-LRB520S-40T1G-HF
[12,27] CHIP_PWGD
CHIP_PWGD
SPI_SW_SEL
ATX_5VSB
R952 10K/4
D28
X_S-LRB520S-40T1G-HF
[27,64] SIO_RSMRST#
D29
X_S-LRB520S-40T1G-HF
[27,64] SIO_DPWROK
D33
S-LRB520S-40T1G-HF
[50,61,62,64] VSB_ENABLE#
D27
S-LRB520S-40T1G-HF
[64] ATX5VSB_DET
For TL624-1.1 : Stuff R989
Old : Don't stuff R989
VSB_SPI
R989
X_2.2K/4
VSB_SPI
C799 0.1u16X4
C797 10u6.3X6
SPI1
PCH_SPI_CS#
PCH_SPI_MISO_R R1015 33R/4 SPI1_MISO
PCH_SPI_IO2_R R1031 33R/4 SPI1_IO2
CS
DO(IO1)
WP(IO2)
GND
VCC
HOLD(IO3)
CLK
DI(IO0)
W25Q128JVSIQ-HF
SPI1_IO3 R1033 33R/4 PCH_SPI_IO3_R
SPI1_CLK R1056 33R/4 PCH_SPI_CLK_R
SPI1_MOSI R991 33R/4 PCH_SPI_MOSI_R

For TL624-1.1
SKYLAKE : Stuff D10/D17/R353
B85/H87 : Stuff D8/D9/R353
Others : Stuff R272

MICRO-STAR INT'L CO.,LTD

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Custom	Dual BIOS	10

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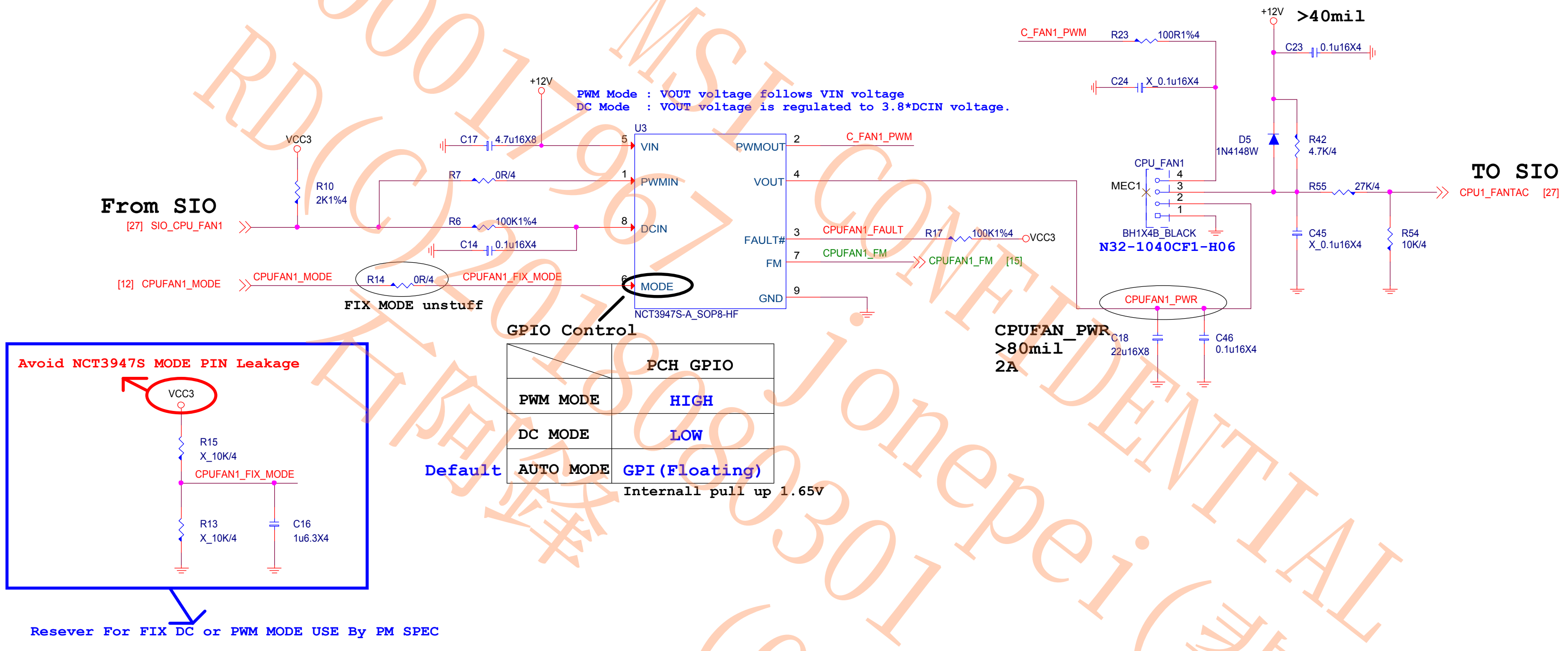
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

1.Mode GPIO BIOS can swtich PWM/DC MODE



PWM Mode : VOUT voltage follows VIN voltage
DC Mode : VOUT voltage is regulated to 3.8*DCIN voltage.
From SIO
[27] SIO_CPU_FAN1
[12] CPUFAN1_MODE
CPUFAN1_MODE
VCC3
R10
2K1%4
+12V
C17
4.7u16X8
R7
0R/4
R6
100K1%4
C14
0.1u16X4
R14
0R/4
CPUFAN1_FIX_MODE
FIX MODE unstuff
U3
VIN
PWMIN
DCIN
MODE
PWMOUT
VOUT
FAULT#
FM
GND
NCT3947S-A_SOP8-HF
C_FAN1_PWM
CPUFAN1_FAULT
R17
100K1%4
VCC3
CPUFAN1_FM
CPUFAN1_FM [15]
C_FAN1_PWM
R23
100R1%4
C24
X_0.1u16X4
+12V
>40mil
C23
0.1u16X4
D5
1N4148W
R42
4.7K/4
CPU_FAN1
MEC1
BH1X4B_BLACK
N32-1040CF1-H06
R55
27K/4
TO SIO
CPU1_FANTAC [27]
C45
X_0.1u16X4
R54
10K/4
CPUFAN1_PWR
CPUFAN_PWR
>80mil
2A
C18
22u16X8
C46
0.1u16X4
GPIO Control
Avoid NCT3947S MODE PIN Leakage
VCC3
R15
X_10K/4
CPUFAN1_FIX_MODE
R13
X_10K/4
C16
1u6.3X4
Resever For FIX DC or PWM MODE USE By PM SPEC

	PCH GPIO
PWM MODE	HIGH
DC MODE	LOW
AUTO MODE	GPI(Floating)

Default: AUTO MODE

Internall pull up 1.65V

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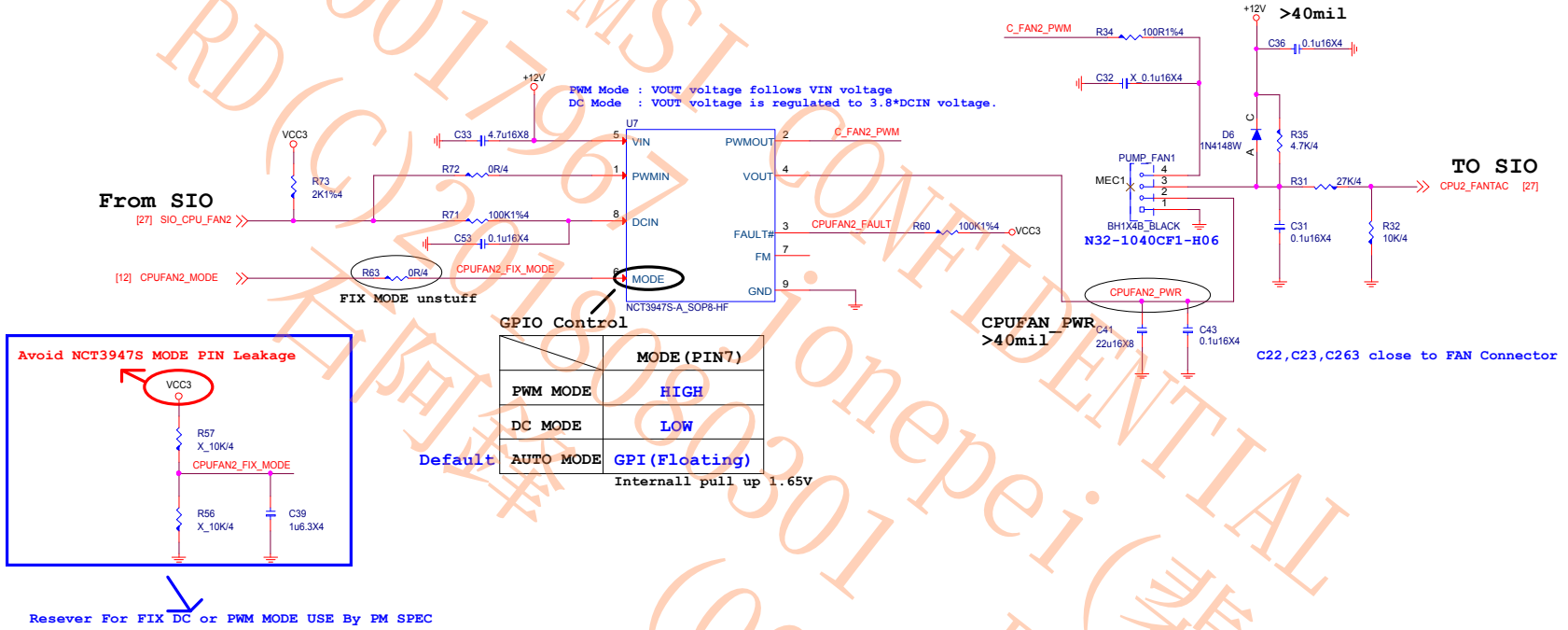
TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

1.Mode GPIO BIOS can swtich PWM/DC MODE



	MICRO-STAR INT'L CO.,LTD	
	MS-7B18	
Size: Custom	Document Description: PUMP_FAN1	Rev: 10
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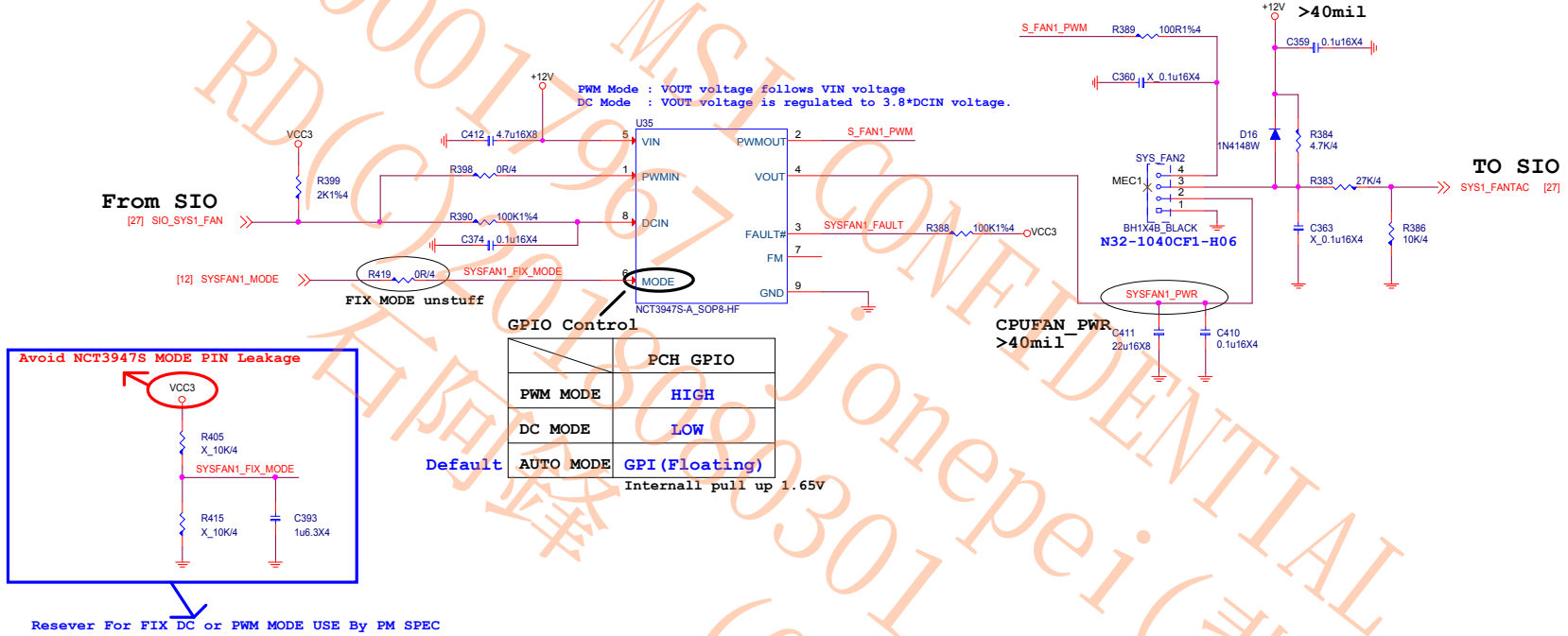
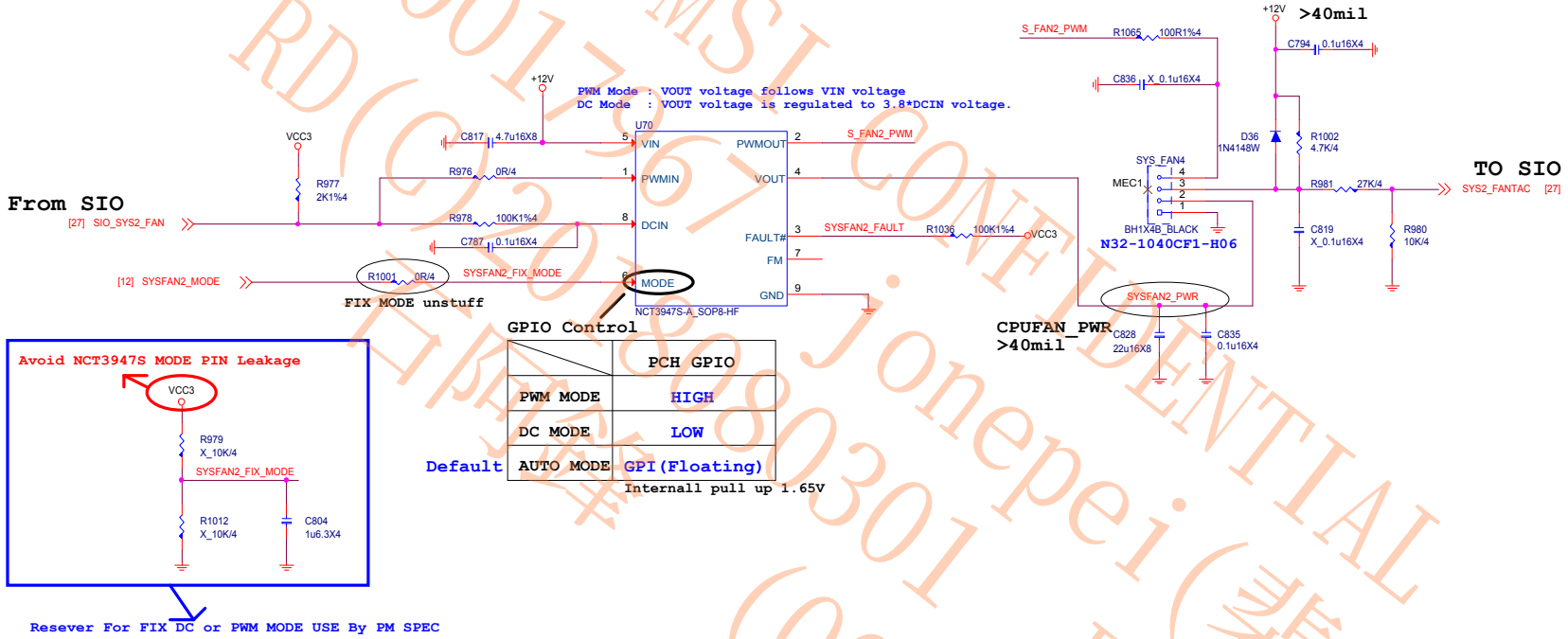


MICRO-STAR INT'L CO.,LTD	
MS-7B18	
Size: Custom	Document Description: SYSTEM FAN1
Rev: 10	
Date: Thursday, June 07, 2018	Sheet 32 of 74

TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

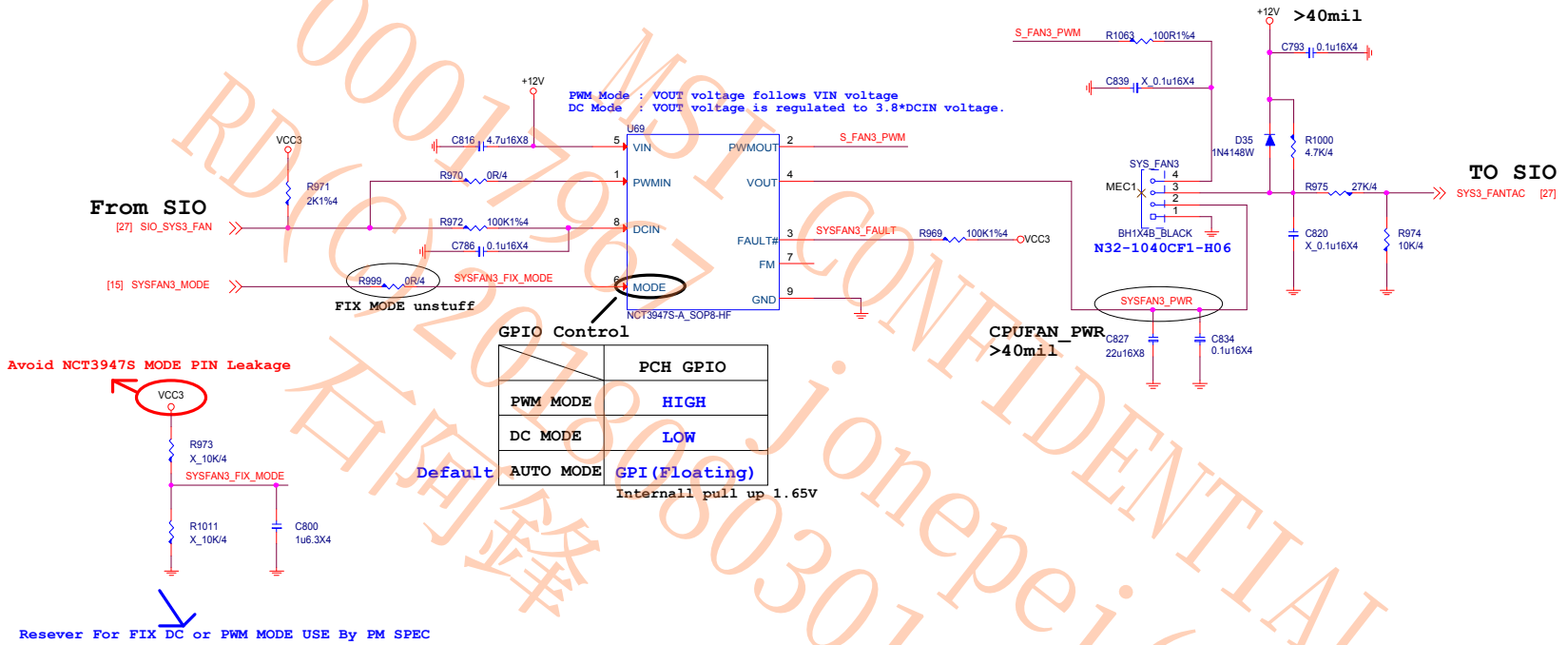
1.Mode GPIO BIOS can swtich PWM/DC MODE



MICRO-STAR INT'L CO.,LTD	
MS-7B18	
Size: Custom	Document Description: SYSTEM FAN2 — Rev: 10
Date: Thursday, June 07, 2018	Sheet 33 of 74

TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

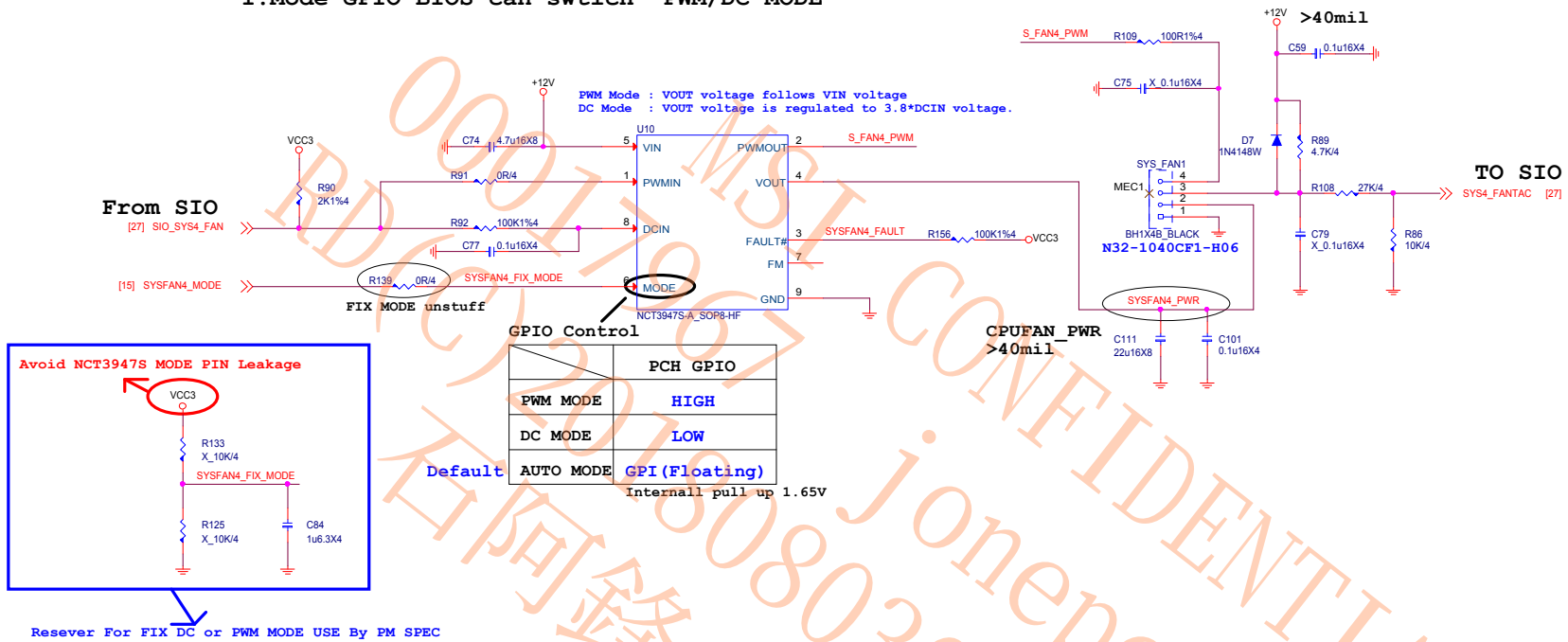
1.Mode GPIO BIOS can swtich PWM/DC MODE

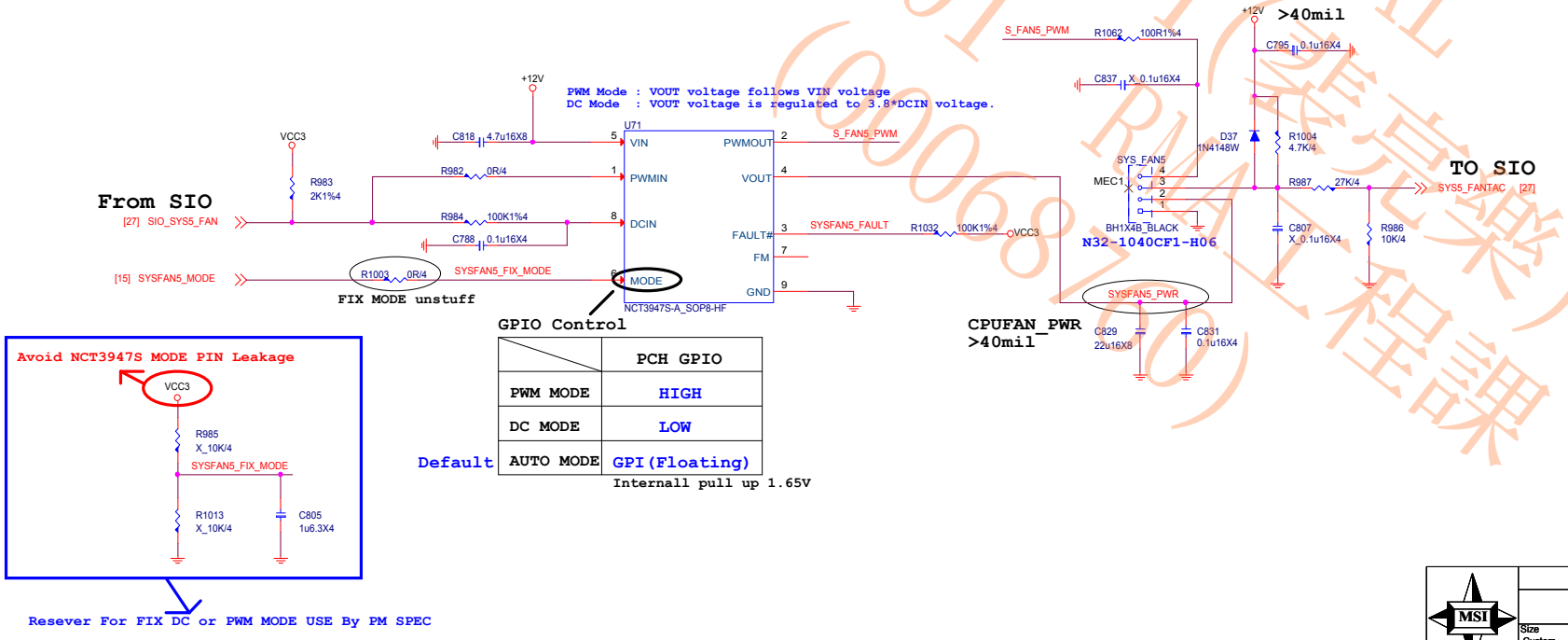


MICRO-STAR INT'L CO.,LTD	
MS-7B18	
Size: Custom	Document Description: SYSTEM FAN3 — Rev: 10
Date: Thursday, June 07, 2018	Sheet 34 of 74

TYPE K : 4 PIN CPU FAN USE NCT3947S USE PCH GPIO CONTROL FAN MODE

1.Mode GPIO BIOS can swtich PWM/DC MODE





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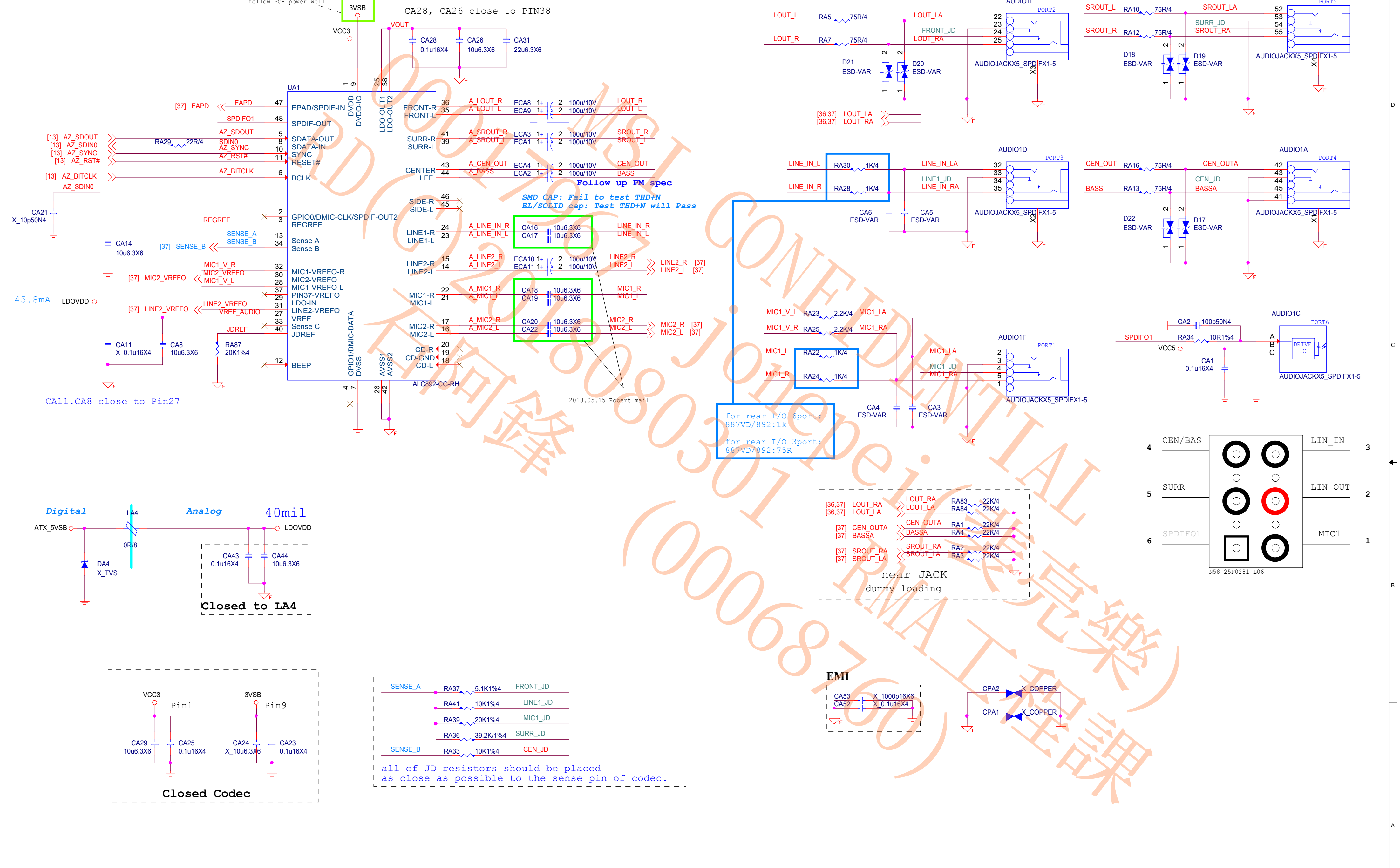
TYPE B ALC892


follow PCH power well
3VSB
CA31 close to PIN25
CA28, CA26 close to PIN38
VOUT
VCC3
CA28 0.1u16X4
CA26 10u6.3X6
CA31 22u6.3X6
UA1
EPAD/SPDIF-IN
SPDIF-OUT
SDATA-OUT
SDATA-IN
SYNC
RESET#
BCLK
GPIO0/DMIC-CLK/SPDIF-OUT2
REGREF
Sense A
Sense B
MIC1-VREFO-R
MIC2-VREFO
MIC1-VREFO-L
PIN37-VREFO
LDO-IN
LINE2-VREFO
VREF
Sense C
JDREF
BEEP
DVDD
DVDD-IO
LDO-OUT1
LDO-OUT2
GPIO1/DMIC-DATA
DVSS
AVSS1
AVSS2
FRONT-R
FRONT-L
SURR-R
SURR-L
CENTER
LFE
SIDE-R
SIDE-L
LINE1-R
LINE1-L
LINE2-R
LINE2-L
MIC1-R
MIC1-L
MIC2-R
MIC2-L
CD-R
CD-GND
CD-L
ALC892-CG-RH
[37] EAPD
[13] AZ_SDOUT
[13] AZ_SDINO
[13] AZ_SYNC
[13] AZ_RST#
[13] AZ_BITCLK
AZ_SDINO
RA29 22R/4
CA21 X_10p50N4
REGREF
CA14 10u6.3X6
[37] SENSE_B
SENSE_A
[37] MIC2_VREFO
45.8mA
LDOVDD
[37] LINE2_VREFO
VREF_AUDIO
JDREF
CA11 X_0.1u16X4
CA8 10u6.3X6
RA87 20K1%4
CA11.CA8 close to Pin27
ECA8 100u/10V
ECA9 100u/10V
ECA3 100u/10V
ECA1 100u/10V
ECA4 100u/10V
ECA2 100u/10V
Follow up PM spec
SMD CAP: Fail to test THD+N
EL/SOLID cap: Test THD+N will Pass
CA16 10u6.3X6
CA17 10u6.3X6
ECA10 100u/10V
ECA11 100u/10V
CA18 10u6.3X6
CA19 10u6.3X6
CA20 10u6.3X6
CA22 10u6.3X6
2018.05.15 Robert mail
LINE2_R [37]
LINE2_L [37]
MIC2_R [37]
MIC2_L [37]
LOUT_L RA5 75R/4 LOUT_LA
LOUT_R RA7 75R/4 LOUT_RA
FRONT_JD
D21 ESD-VAR
D20 ESD-VAR
AUDIO1E
AUDIOJACKX5_SPDIFX1-5
[36,37] LOUT_LA
[36,37] LOUT_RA
SROUT_L RA10 75R/4 SROUT_LA
SROUT_R RA12 75R/4 SROUT_RA
SURR_JD
D18 ESD-VAR
D19 ESD-VAR
AUDIO1B
LINE_IN_L RA30 1K/4 LINE_IN_LA
LINE_IN_R RA28 1K/4 LINE_IN_RA
LINE1_JD
CA6 ESD-VAR
CA5 ESD-VAR
AUDIO1D
CEN_OUT RA16 75R/4 CEN_OUTA
BASS RA13 75R/4 BASSA
CEN_JD
D22 ESD-VAR
D17 ESD-VAR
AUDIO1A
MIC1_V_L RA23 2.2K/4 MIC1_LA
MIC1_V_R RA25 2.2K/4 MIC1_RA
MIC1_L RA22 1K/4
MIC1_R RA24 1K/4
MIC1_JD
AUDIO1F
CA4 ESD-VAR
CA3 ESD-VAR
for rear I/O 6port: 887VD/892:1k
for rear I/O 3port: 887VD/892:75R
AUDIO1C
CA2 100p50N4
SPDIFO1 RA34 10R1%4
VCC5
DRIVE IC
CA1 0.1u16X4
CEN/BAS
LIN_IN
SURR
LIN_OUT
SPDIFO1
MIC1
N58-25F0281-L06
[36,37] LOUT_RA
[36,37] LOUT_LA
[37] CEN_OUTA
[37] BASSA
[37] SROUT_RA
[37] SROUT_LA
RA83 22K/4
RA84 22K/4
RA1 22K/4
RA4 22K/4
RA2 22K/4
RA3 22K/4
near JACK
dummy loading
Digital
Analog
40mil
ATX_5VSB
LA4 0R/8
LDOVDD
DA4 X_TVS
CA43 0.1u16X4
CA44 10u6.3X6
Closed to LA4
VCC3 Pin1
3VSB Pin9
CA29 10u6.3X6
CA25 0.1u16X4
CA24 X_10u6.3X6
CA23 0.1u16X4
Closed Codec
SENSE_A RA37 5.1K1%4 FRONT_JD
RA41 10K1%4 LINE1_JD
RA39 20K1%4 MIC1_JD
RA36 39.2K1%4 SURR_JD
SENSE_B RA33 10K1%4 CEN_JD
all of JD resistors should be placed
as close as possible to the sense pin of codec.
EMI
CA53 X_1000p16X6
CA52 X_0.1u16X4
CPA2 X_COPPER
CPA1 X_COPPER

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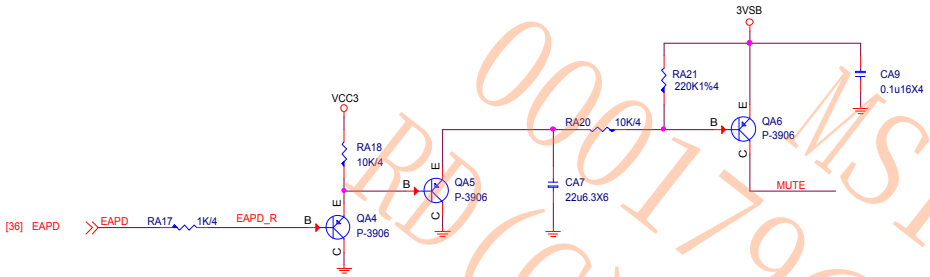
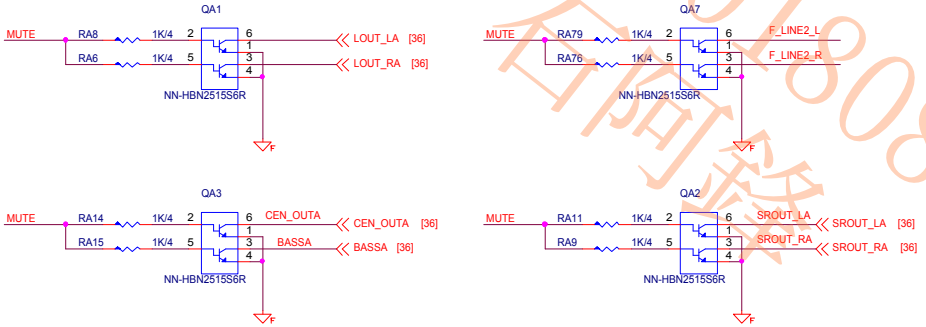
Rear Line OUT De-POP circuit

(De-pop circuit for Rear Line out & Front Headphone out)

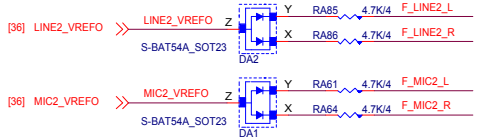


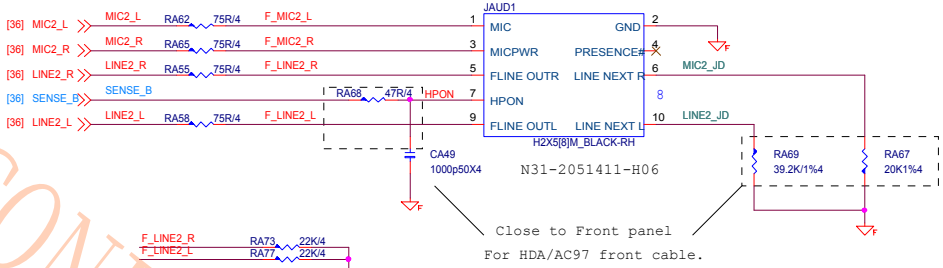
Digital

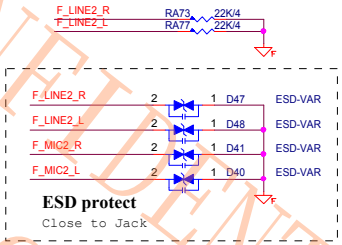
Analog



Audio moat is transparent and width 40mil







MICRO-STAR INT'L CO.,LTD		
MS-7B18		
Size: Custom	Document Description: AUDIO-ACL1220-2	Rev: 10
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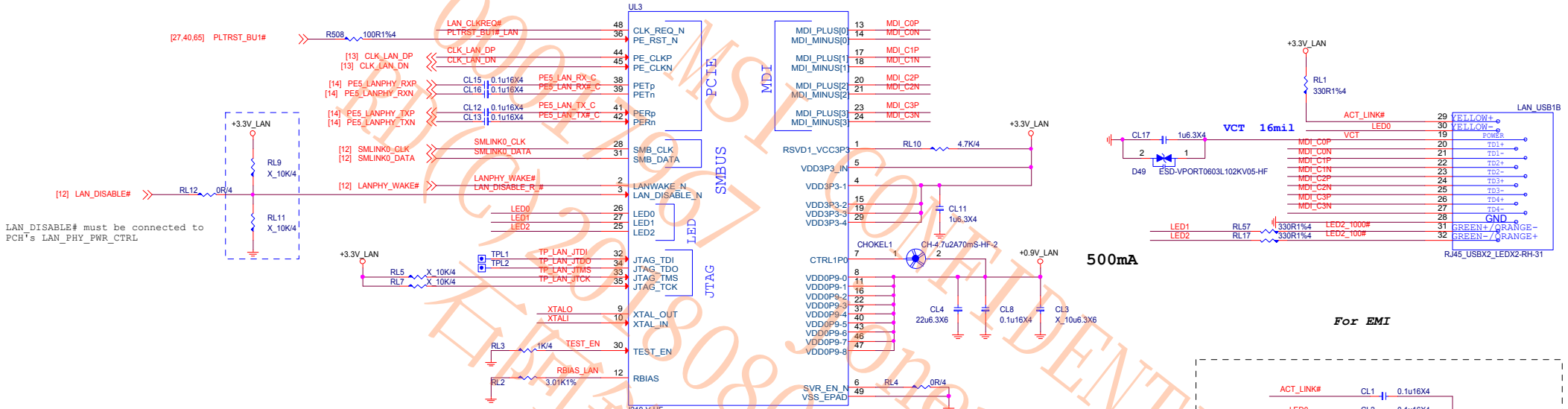
LAN1-- I219

Intel Lan- i219

B06-0I2190C-I06

LAN Connector-A+A



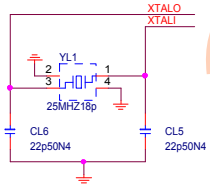
[12] LAN_DISABLE# RL12 0R/4

LAN_DISABLE# must be connected to PCH's LAN_PHY_PWR_CTRL

RL9 X_10K/4

RL11 X_10K/4

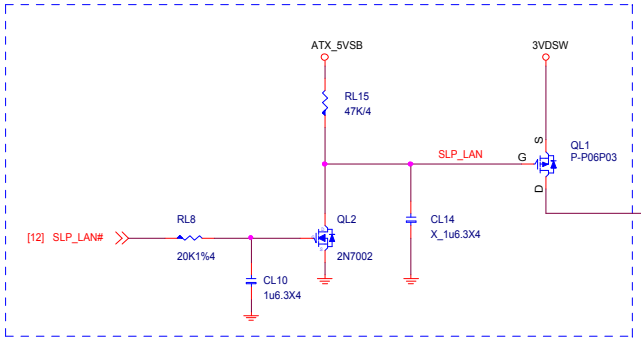
PCH's PCIECLKRQ<n> port mustbe mapped to PCH's PET/R<n+1>port.
If CLK_REQ_N is not used, pin48 is pulled up 10KR to 3.3V_LAN



AVL:D04-1005700-SC6

The 10Kohm pull-up resistor (RL14) of CLK_REQ_N
is connected to 3.3V Suspend/Core/etc.
power well, depending on the power well
of PCH's input PCIECLKRQ<n> buffer.

support WOL from Deep Sx:
Power source from 3VA (DSW power) & make sure MAX current is enough to support i218/i219.

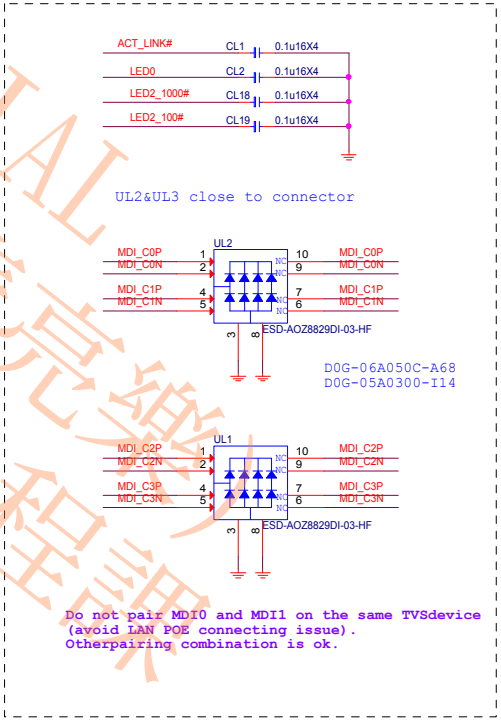


+3.3V_LAN

I218:132mA
I219:542mA

Note:These caps closed to PHY

For EMI



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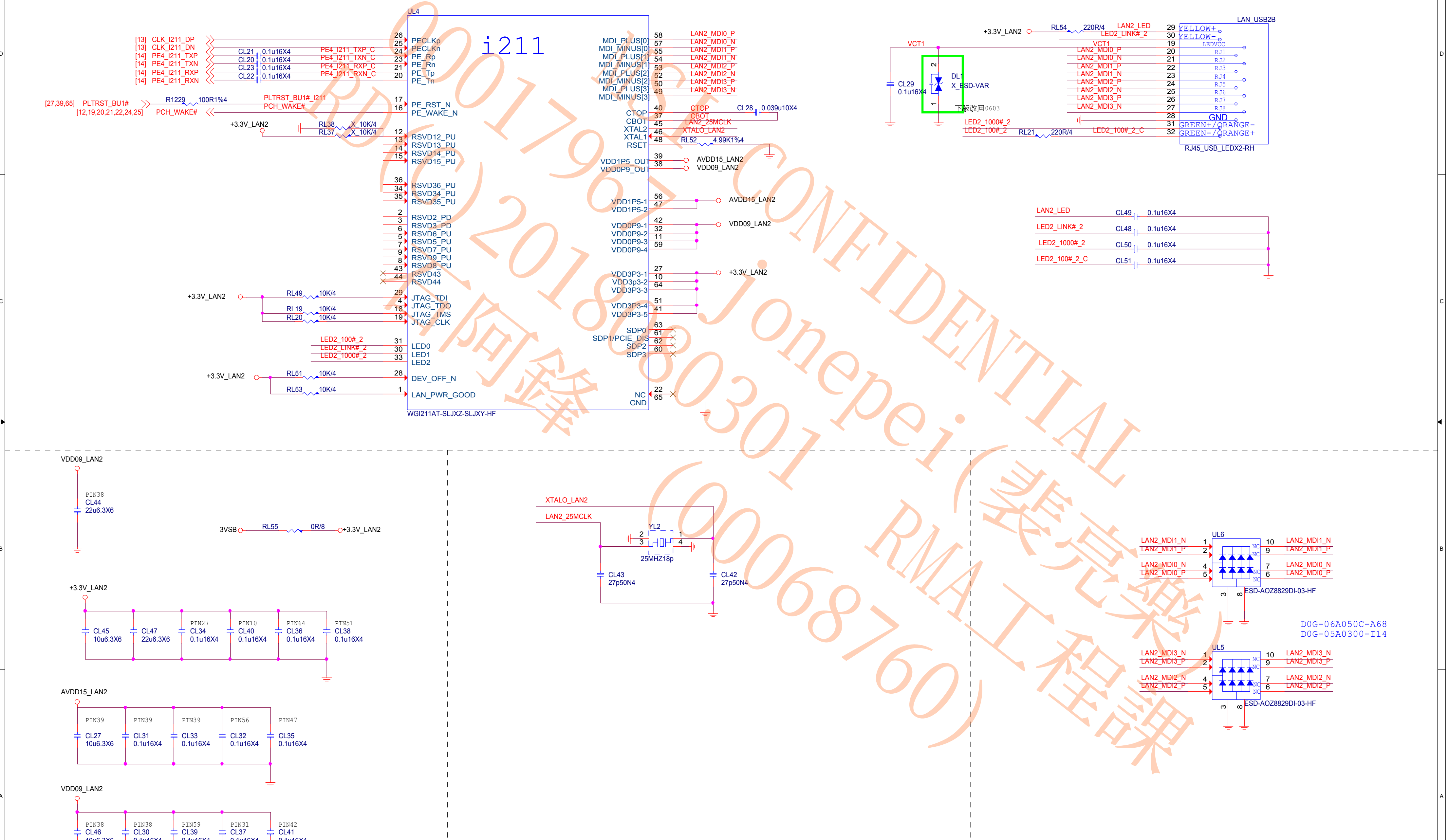
LAN2-- I211AT

Intel Lan- i211

LAN Connector-A+C



UL4
i211
[13] CLK_I211_DP
[13] CLK_I211_DN
[14] PE4_I211_TXP
[14] PE4_I211_TXN
[14] PE4_I211_RXP
[14] PE4_I211_RXN
CL21 0.1u16X4
CL20 0.1u16X4
CL23 0.1u16X4
CL22 0.1u16X4
PE4_I211_TXP_C
PE4_I211_TXN_C
PE4_I211_RXP_C
PE4_I211_RXN_C
PECLKp
PECLKn
PE_Rp
PE_Rn
PE_Tp
PE_Tn
[27,39,65] PLTRST_BU1#
R1229 100R1%4
PLTRST_BU1#_I211
[12,19,20,21,22,24,25] PCH_WAKE#
PE_RST_N
PE_WAKE_N
+3.3V_LAN2
RL38 X_10K/4
RL37 X_10K/4
RSVD12_PU
RSVD13_PU
RSVD14_PU
RSVD15_PU
RSVD36_PU
RSVD34_PU
RSVD35_PU
RSVD2_PD
RSVD3_PD
RSVD6_PU
RSVD5_PU
RSVD7_PU
RSVD9_PU
RSVD8_PU
RSVD43
RSVD44
RL49 10K/4
RL19 10K/4
RL20 10K/4
JTAG_TDI
JTAG_TDO
JTAG_TMS
JTAG_CLK
LED2_100#_2
LED2_LINK#_2
LED2_1000#_2
LED0
LED1
LED2
RL51 10K/4
RL53 10K/4
DEV_OFF_N
LAN_PWR_GOOD
WGI211AT-SLJXZ-SLJXY-HF
MDI_PLUS[0]
MDI_MINUS[0]
MDI_PLUS[1]
MDI_MINUS[1]
MDI_PLUS[2]
MDI_MINUS[2]
MDI_PLUS[3]
MDI_MINUS[3]
LAN2_MDI0_P
LAN2_MDI0_N
LAN2_MDI1_P
LAN2_MDI1_N
LAN2_MDI2_P
LAN2_MDI2_N
LAN2_MDI3_P
LAN2_MDI3_N
CTOP
CBOT
XTAL2
XTAL1
RSET
CL28 0.039u10X4
LAN2_25MCLK
XTALO_LAN2
RL52 4.99K1%4
VDD1P5_OUT
VDD0P9_OUT
AVDD15_LAN2
VDD09_LAN2
VDD1P5-1
VDD1P5-2
VDD0P9-1
VDD0P9-2
VDD0P9-3
VDD0P9-4
VDD3P3-1
VDD3p3-2
VDD3P3-3
VDD3P3-4
VDD3P3-5
+3.3V_LAN2
SDP0
SDP1/PCIE_DIS
SDP2
SDP3
NC
GND
+3.3V_LAN2
RL54 220R/4
LAN2_LED
LED2_LINK#_2
VCT1
CL29 0.1u16X4
DL1 X_ESD-VAR
下版改回0603
LED2_1000#_2
LED2_100#_2
RL21 220R/4
LED2_100#_2_C
LAN_USB2B
YELLOW+
YELLOW-
LEDVCC
RJ1
RJ2
RJ3
RJ4
RJ5
RJ6
RJ7
RJ8
GND
GREEN+/ORANGE-
GREEN-/ORANGE+
RJ45_USB_LEDX2-RH
LAN2_LED CL49 0.1u16X4
LED2_LINK#_2 CL48 0.1u16X4
LED2_1000#_2 CL50 0.1u16X4
LED2_100#_2_C CL51 0.1u16X4
VDD09_LAN2
PIN38 CL44 22u6.3X6
3VSB RL55 0R/8 +3.3V_LAN2
XTALO_LAN2
LAN2_25MCLK
YL2 25MHZ18p
CL43 27p50N4
CL42 27p50N4
UL6
ESD-AOZ8829DI-03-HF
UL5
ESD-AOZ8829DI-03-HF
D0G-06A050C-A68
D0G-05A0300-I14
+3.3V_LAN2
CL45 10u6.3X6
CL47 22u6.3X6
PIN27 CL34 0.1u16X4
PIN10 CL40 0.1u16X4
PIN64 CL36 0.1u16X4
PIN51 CL38 0.1u16X4
AVDD15_LAN2
PIN39 CL27 10u6.3X6
PIN39 CL31 0.1u16X4
PIN39 CL33 0.1u16X4
PIN56 CL32 0.1u16X4
PIN47 CL35 0.1u16X4
VDD09_LAN2
PIN38 CL46 10u6.3X6
PIN38 CL30 0.1u16X4
PIN59 CL39 0.1u16X4
PIN31 CL37 0.1u16X4
PIN42 CL41 0.1u16X4

MICRO-STAR INT'L CO.,LTD

MS-7B18

Size	Document Description	Rev
Custom	Intel Lan2- i211	10

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MS-7B18		
Size: Custom	Document Description: XXX	Rev: 10
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HDMI, DVI : 1920x1200 at 60 Hz (16:10 WUXGA)

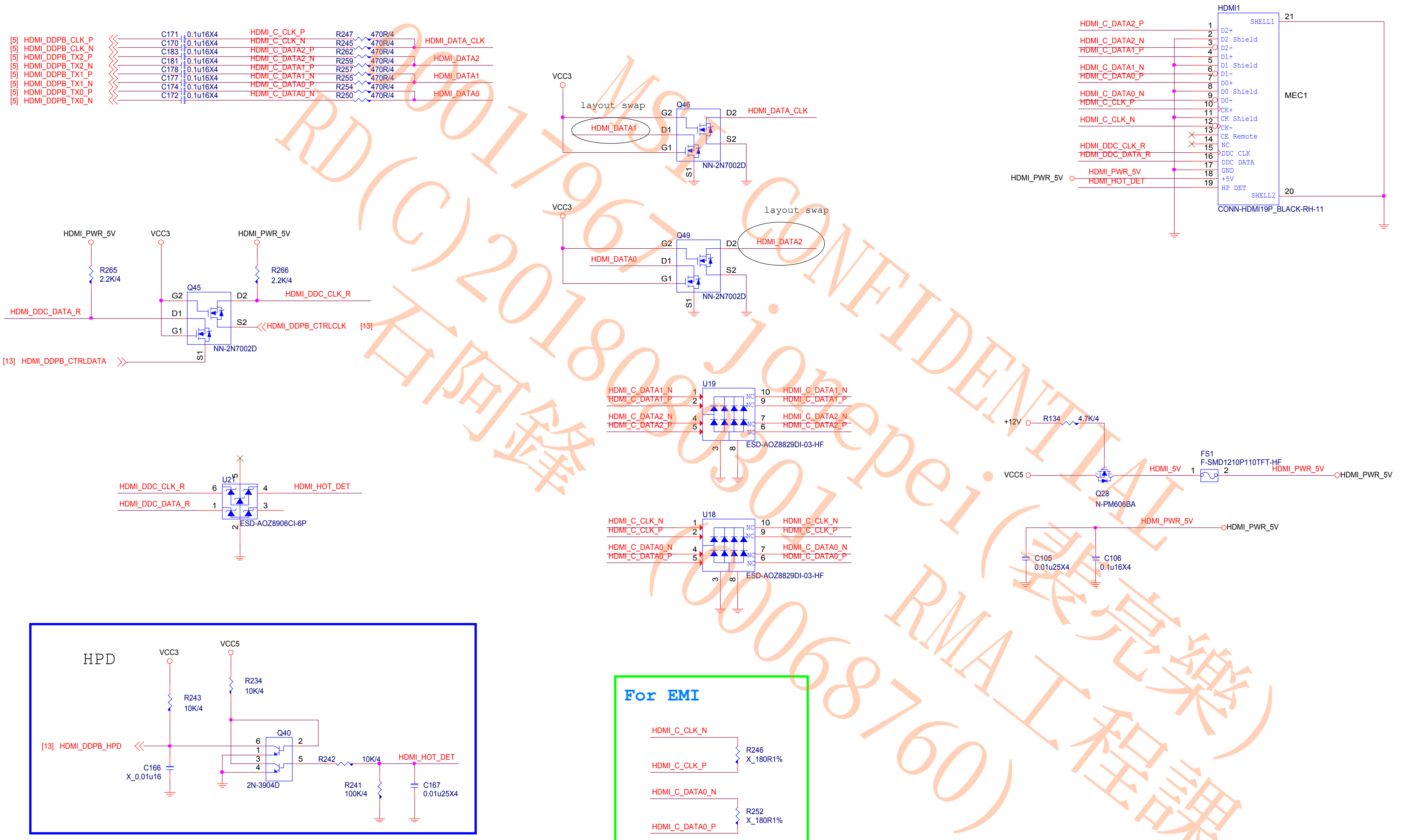
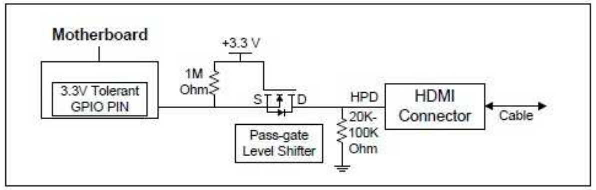

[5] HDMI_DDPB_CLK_P
[5] HDMI_DDPB_CLK_N
[5] HDMI_DDPB_TX2_P
[5] HDMI_DDPB_TX2_N
[5] HDMI_DDPB_TX1_P
[5] HDMI_DDPB_TX1_N
[5] HDMI_DDPB_TX0_P
[5] HDMI_DDPB_TX0_N
C171 0.1u16X4
C170 0.1u16X4
C183 0.1u16X4
C181 0.1u16X4
C178 0.1u16X4
C177 0.1u16X4
C174 0.1u16X4
C172 0.1u16X4
HDMI_C_CLK_P
HDMI_C_CLK_N
HDMI_C_DATA2_P
HDMI_C_DATA2_N
HDMI_C_DATA1_P
HDMI_C_DATA1_N
HDMI_C_DATA0_P
HDMI_C_DATA0_N
R247 470R/4
R245 470R/4
R262 470R/4
R259 470R/4
R257 470R/4
R255 470R/4
R254 470R/4
R250 470R/4
HDMI_DATA_CLK
HDMI_DATA2
HDMI_DATA1
HDMI_DATA0
VCC3
layout swap
Q46
G2 D2 HDMI_DATA_CLK
HDMI_DATA1 D1
G1 S2
NN-2N7002D
S1
VCC3
layout swap
Q49
G2 D2 HDMI_DATA2
HDMI_DATA0 D1
G1 S2
NN-2N7002D
S1
HDMI1
SHELL1 21
HDMI_C_DATA2_P 1 D2+
2 D2 Shield
HDMI_C_DATA2_N 3 D2-
HDMI_C_DATA1_P 4 D1+
5 D1 Shield
HDMI_C_DATA1_N 6 D1-
HDMI_C_DATA0_P 7 D0+
8 D0 Shield
HDMI_C_DATA0_N 9 D0-
HDMI_C_CLK_P 10 CK+
11 CK Shield
HDMI_C_CLK_N 12 CK-
13 CE Remote
14 NC
HDMI_DDC_CLK_R 15 DDC CLK
HDMI_DDC_DATA_R 16 DDC DATA
17 GND
HDMI_PWR_5V 18 +5V
HDMI_HOT_DET 19 HP DET
SHELL2 20
MEC1
CONN-HDMI19P_BLACK-RH-11
HDMI_PWR_5V
HDMI_PWR_5V
VCC3
HDMI_PWR_5V
R265 2.2K/4
R266 2.2K/4
Q45
G2 D2 HDMI_DDC_CLK_R
HDMI_DDC_DATA_R D1
S2 HDMI_DDPB_CTRLCLK [13]
G1
NN-2N7002D
S1
[13] HDMI_DDPB_CTRLDATA
U19
HDMI_C_DATA1_N 1 10 HDMI_C_DATA1_N
HDMI_C_DATA1_P 2 9 HDMI_C_DATA1_P
HDMI_C_DATA2_N 4 7 HDMI_C_DATA2_N
HDMI_C_DATA2_P 5 6 HDMI_C_DATA2_P
ESD-AOZ8829DI-03-HF
U18
HDMI_C_CLK_N 1 10 HDMI_C_CLK_N
HDMI_C_CLK_P 2 9 HDMI_C_CLK_P
HDMI_C_DATA0_N 4 7 HDMI_C_DATA0_N
HDMI_C_DATA0_P 5 6 HDMI_C_DATA0_P
ESD-AOZ8829DI-03-HF
U21
HDMI_DDC_CLK_R 6 4 HDMI_HOT_DET
HDMI_DDC_DATA_R 1 3
ESD-AOZ8906CI-6P
+12V
R134 4.7K/4
VCC5
Q28
N-PM606BA
HDMI_5V
FS1
F-SMD1210P110TFT-HF
HDMI_PWR_5V
HDMI_PWR_5V
HDMI_PWR_5V
C105 0.01u25X4
C106 0.1u16X4
HPD
VCC3
VCC5
R243 10K/4
R234 10K/4
[13] HDMI_DDPB_HPD
Q40
2N-3904D
C166 X_0.01u16
R242 10K/4
HDMI_HOT_DET
R241 100K/4
C167 0.01u25X4
For EMI
HDMI_C_CLK_N
HDMI_C_CLK_P
R246 X_180R1%
HDMI_C_DATA0_N
HDMI_C_DATA0_P
R252 X_180R1%
HDMI_C_DATA1_N
HDMI_C_DATA1_P
R256 X_180R1%
HDMI_C_DATA2_N
HDMI_C_DATA2_P
R260 X_180R1%

Figure 7-9. HDMI 1.4* HPD Cost Reduced Level Shifter Design Recommendation



Note: 3.3V transistor gate supply must turn off when CPU power is turned off.

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DP

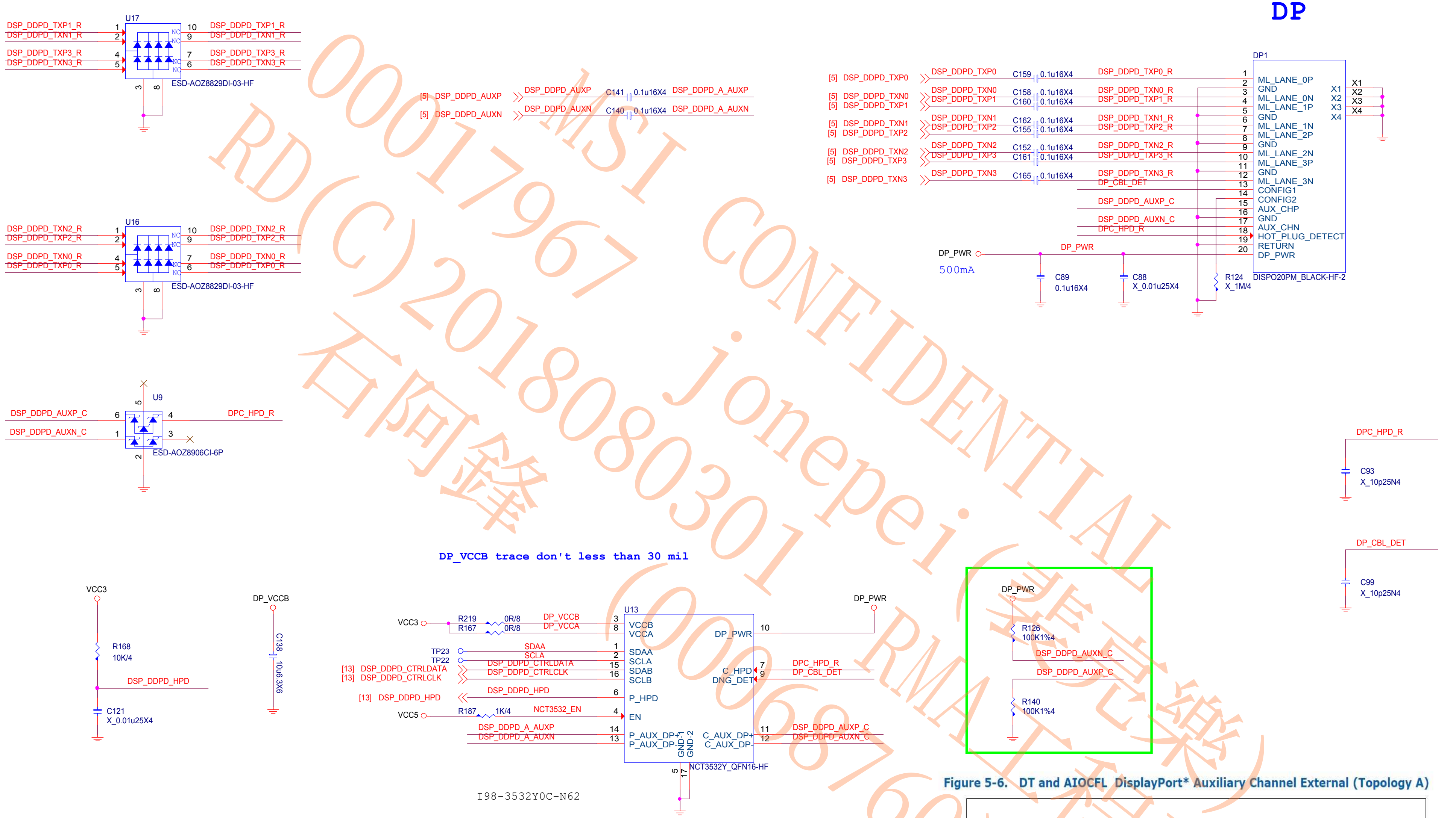
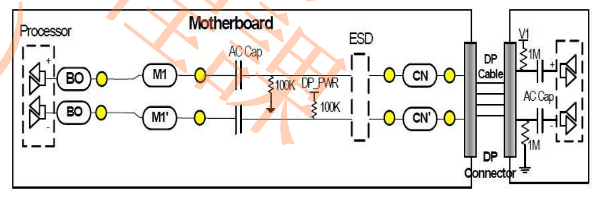

DP
U17
DSP_DDPD_TXP1_R
DSP_DDPD_TXN1_R
DSP_DDPD_TXP3_R
DSP_DDPD_TXN3_R
ESD-AOZ8829DI-03-HF
U16
DSP_DDPD_TXN2_R
DSP_DDPD_TXP2_R
DSP_DDPD_TXN0_R
DSP_DDPD_TXP0_R
ESD-AOZ8829DI-03-HF
U9
DSP_DDPD_AUXP_C
DSP_DDPD_AUXN_C
DPC_HPD_R
ESD-AOZ8906CI-6P
[5] DSP_DDPD_AUXP
[5] DSP_DDPD_AUXN
C141 0.1u16X4 DSP_DDPD_A_AUXP
C140 0.1u16X4 DSP_DDPD_A_AUXN
[5] DSP_DDPD_TXP0
[5] DSP_DDPD_TXN0
[5] DSP_DDPD_TXP1
[5] DSP_DDPD_TXN1
[5] DSP_DDPD_TXP2
[5] DSP_DDPD_TXN2
[5] DSP_DDPD_TXP3
[5] DSP_DDPD_TXN3
C159 C158 C160 C162 C155 C152 C161 C165 0.1u16X4
DP1
ML_LANE_0P
GND
ML_LANE_0N
ML_LANE_1P
GND
ML_LANE_1N
ML_LANE_2P
GND
ML_LANE_2N
ML_LANE_3P
GND
ML_LANE_3N
CONFIG1
CONFIG2
AUX_CHP
GND
AUX_CHN
HOT_PLUG_DETECT
RETURN
DP_PWR
DP_CBL_DET
DSP_DDPD_AUXP_C
DSP_DDPD_AUXN_C
DPC_HPD_R
DP_PWR
500mA
C89 0.1u16X4
C88 X_0.01u25X4
R124 X_1M/4
DISPO20PM_BLACK-HF-2
C93 X_10p25N4
DP_CBL_DET
C99 X_10p25N4
DP_VCCB trace don't less than 30 mil
VCC3
R168 10K/4
DSP_DDPD_HPD
C121 X_0.01u25X4
DP_VCCB
C138 10u6.3X6
R219 0R/8 DP_VCCB
R167 0R/8 DP_VCCA
TP23 SDAA
TP22 SCLA
[13] DSP_DDPD_CTRLDATA
[13] DSP_DDPD_CTRLCLK
[13] DSP_DDPD_HPD
VCC5 R187 1K/4 NCT3532_EN
DSP_DDPD_A_AUXP
DSP_DDPD_A_AUXN
U13
VCCB
VCCA
SDAA
SCLA
SDAB
SCLB
P_HPD
EN
P_AUX_DP+
P_AUX_DP-
GND
GND_2
DP_PWR
C_HPD
DNG_DET
C_AUX_DP+
C_AUX_DP-
NCT3532Y_QFN16-HF
I98-3532Y0C-N62
DP_PWR
R126 100K1%4
DSP_DDPD_AUXN_C
DSP_DDPD_AUXP_C
R140 100K1%4

Figure 5-6. DT and AIOCFL DisplayPort* Auxiliary Channel External (Topology A)



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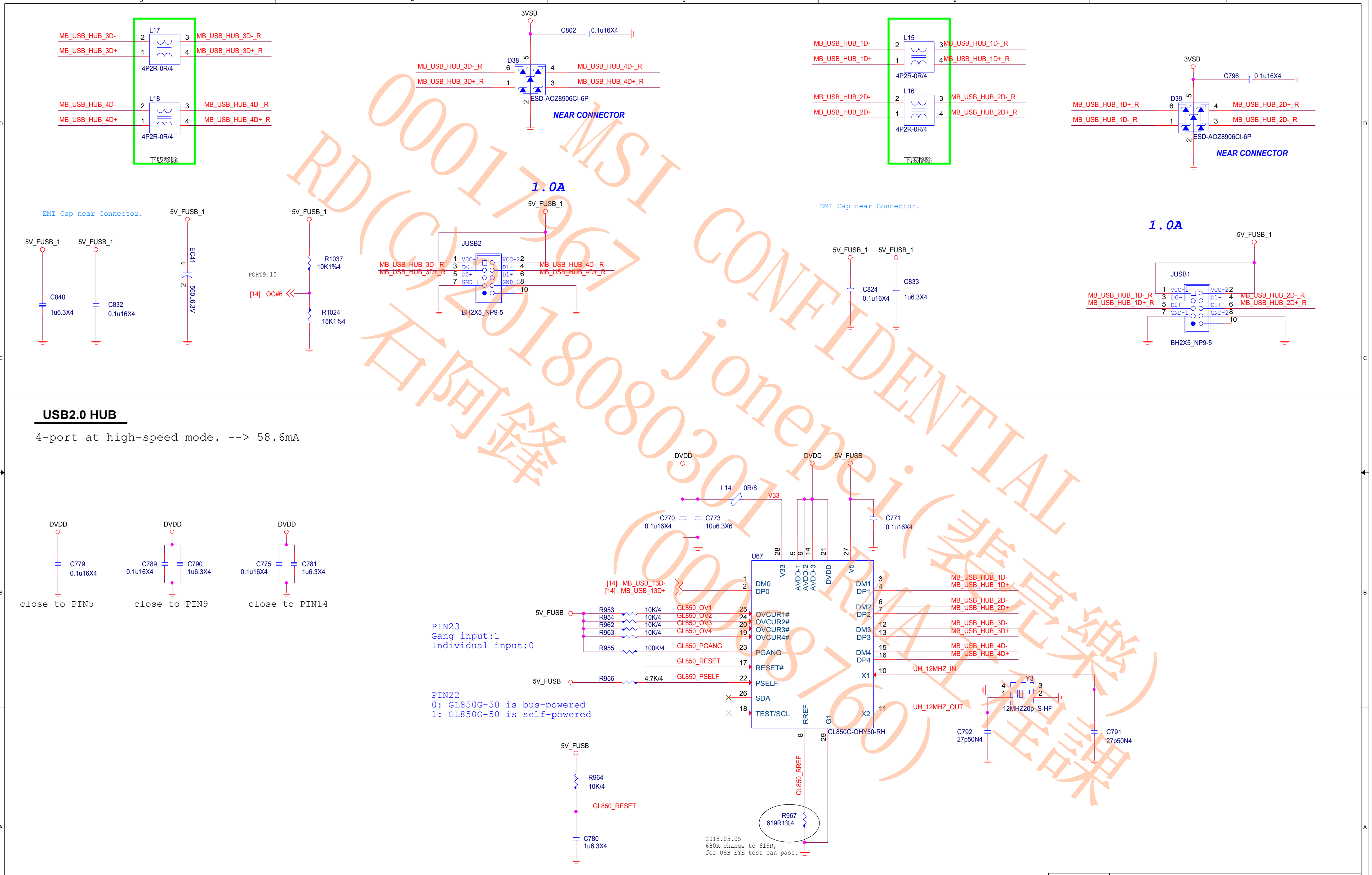

MB_USB_HUB_3D-
MB_USB_HUB_3D+
MB_USB_HUB_3D-_R
MB_USB_HUB_3D+_R
L17
L18
4P2R-0R/4
MB_USB_HUB_4D-
MB_USB_HUB_4D+
MB_USB_HUB_4D-_R
MB_USB_HUB_4D+_R
下版移除
3VSB
C802
0.1u16X4
D38
ESD-AOZ8906CI-6P
NEAR CONNECTOR
L15
L16
MB_USB_HUB_1D-
MB_USB_HUB_1D+
MB_USB_HUB_1D-_R
MB_USB_HUB_1D+_R
MB_USB_HUB_2D-
MB_USB_HUB_2D+
MB_USB_HUB_2D-_R
MB_USB_HUB_2D+_R
C796
D39
EMI Cap near Connector.
5V_FUSB_1
C840
1u6.3X4
C832
0.1u16X4
EC41
560u6.3V
PORT9.10
[14] OC#6
R1037
10K1%4
R1024
15K1%4
1.0A
JUSB2
BH2X5_NP9-5
C824
C833
JUSB1
USB2.0 HUB
4-port at high-speed mode. --> 58.6mA
DVDD
C779
C789
C790
1u6.3X4
C775
C781
close to PIN5
close to PIN9
close to PIN14
5V_FUSB
L14
0R/8
V33
C770
C773
10u6.3X6
C771
U67
[14] MB_USB_13D-
[14] MB_USB_13D+
DM0
DP0
OVCUR1#
OVCUR2#
OVCUR3#
OVCUR4#
PGANG
RESET#
PSELF
SDA
TEST/SCL
AVDD-1
AVDD-2
AVDD-3
DM1
DP1
DM2
DP2
DM3
DP3
DM4
DP4
X1
X2
RREF
GL850G-OHY50-RH
R953
R954
R962
R963
10K/4
GL850_OV1
GL850_OV2
GL850_OV3
GL850_OV4
R955
100K/4
GL850_PGANG
GL850_RESET
R956
4.7K/4
GL850_PSELF
PIN23
Gang input:1
Individual input:0
PIN22
0: GL850G-50 is bus-powered
1: GL850G-50 is self-powered
UH_12MHZ_IN
UH_12MHZ_OUT
Y3
12MHZ20p_S-HF
C792
27p50N4
C791
27p50N4
R964
10K/4
C780
1u6.3X4
GL850_RREF
R967
619R1%4
2015.05.05
680R change to 619R,
for USB EYE test can pass.

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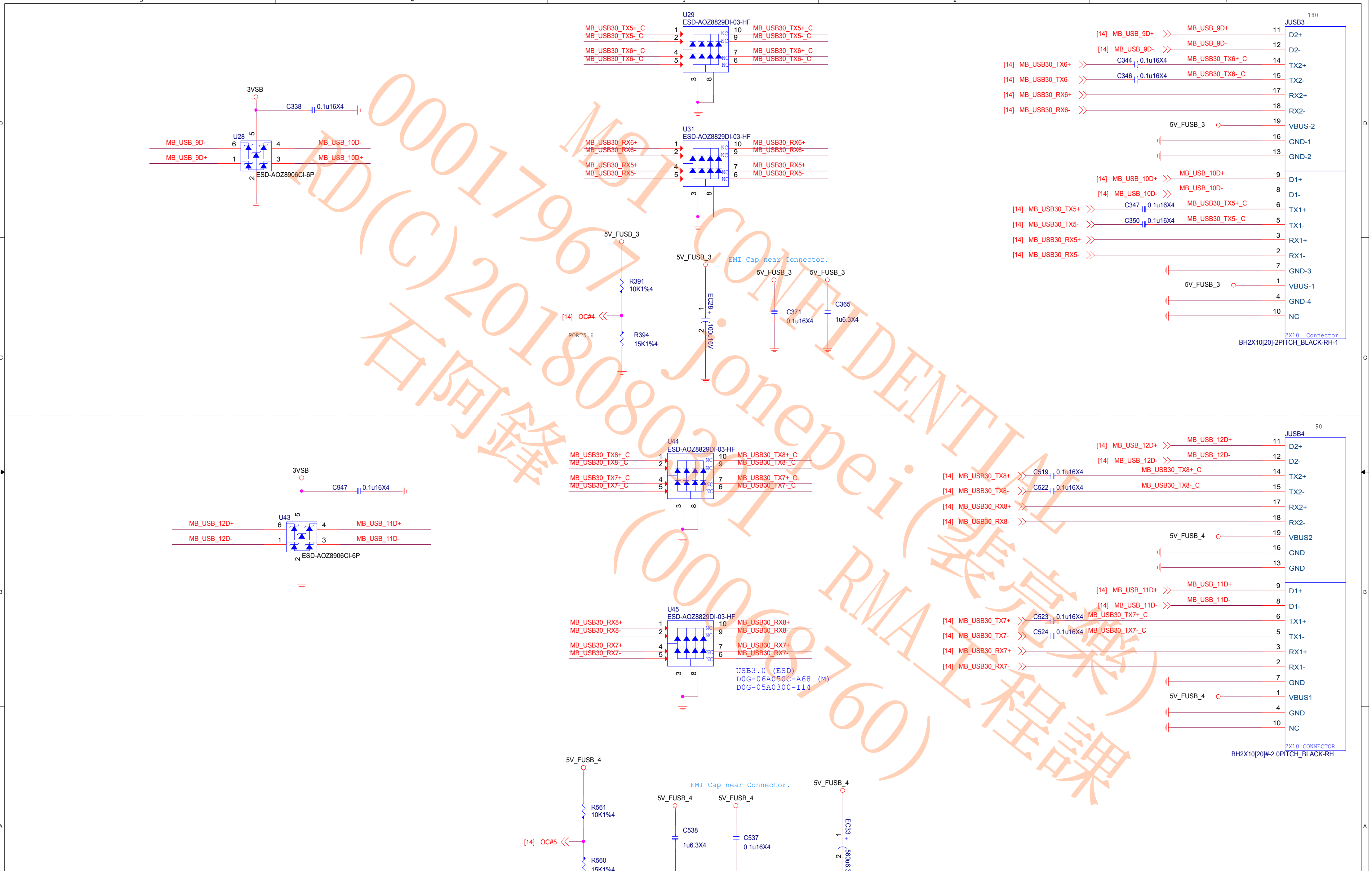

U29
ESD-AOZ8829DI-03-HF
MB_USB30_TX5+_C
MB_USB30_TX5-_C
MB_USB30_TX6+_C
MB_USB30_TX6-_C
U31
ESD-AOZ8829DI-03-HF
MB_USB30_RX6+
MB_USB30_RX6-
MB_USB30_RX5+
MB_USB30_RX5-
3VSB
C338 0.1u16X4
U28
ESD-AOZ8906CI-6P
MB_USB_9D-
MB_USB_9D+
MB_USB_10D-
MB_USB_10D+
5V_FUSB_3
R391 10K1%4
[14] OC#4
PORT5.6
R394 15K1%4
EC28 100u16V
EMI Cap near Connector.
C371 0.1u16X4
C365 1u6.3X4
JUSB3
180
[14] MB_USB_9D+
[14] MB_USB_9D-
[14] MB_USB30_TX6+
[14] MB_USB30_TX6-
[14] MB_USB30_RX6+
[14] MB_USB30_RX6-
C344 0.1u16X4
C346 0.1u16X4
MB_USB30_TX6+_C
MB_USB30_TX6-_C
[14] MB_USB_10D+
[14] MB_USB_10D-
[14] MB_USB30_TX5+
[14] MB_USB30_TX5-
[14] MB_USB30_RX5+
[14] MB_USB30_RX5-
C347 0.1u16X4
C350 0.1u16X4
MB_USB30_TX5+_C
MB_USB30_TX5-_C
D2+
D2-
TX2+
TX2-
RX2+
RX2-
VBUS-2
GND-1
GND-2
D1+
D1-
TX1+
TX1-
RX1+
RX1-
GND-3
VBUS-1
GND-4
NC
2X10_Connector
BH2X10[20]-2PITCH_BLACK-RH-1
U44
ESD-AOZ8829DI-03-HF
MB_USB30_TX8+_C
MB_USB30_TX8-_C
MB_USB30_TX7+_C
MB_USB30_TX7-_C
3VSB
C947 0.1u16X4
U43
ESD-AOZ8906CI-6P
MB_USB_12D+
MB_USB_12D-
MB_USB_11D+
MB_USB_11D-
U45
ESD-AOZ8829DI-03-HF
MB_USB30_RX8+
MB_USB30_RX8-
MB_USB30_RX7+
MB_USB30_RX7-
USB3.0 (ESD)
D0G-06A050C-A68 (M)
D0G-05A0300-I14
JUSB4
90
[14] MB_USB_12D+
[14] MB_USB_12D-
[14] MB_USB30_TX8+
[14] MB_USB30_TX8-
[14] MB_USB30_RX8+
[14] MB_USB30_RX8-
C519 0.1u16X4
C522 0.1u16X4
MB_USB30_TX8+_C
MB_USB30_TX8-_C
5V_FUSB_4
[14] MB_USB_11D+
[14] MB_USB_11D-
[14] MB_USB30_TX7+
[14] MB_USB30_TX7-
[14] MB_USB30_RX7+
[14] MB_USB30_RX7-
C523 0.1u16X4
C524 0.1u16X4
MB_USB30_TX7+_C
MB_USB30_TX7-_C
VBUS2
GND
VBUS1
2X10_CONNECTOR
BH2X10[20]#-2.0PITCH_BLACK-RH
R561 10K1%4
[14] OC#5
R560 15K1%4
C538 1u6.3X4
C537 0.1u16X4
EC33 560u6.3V

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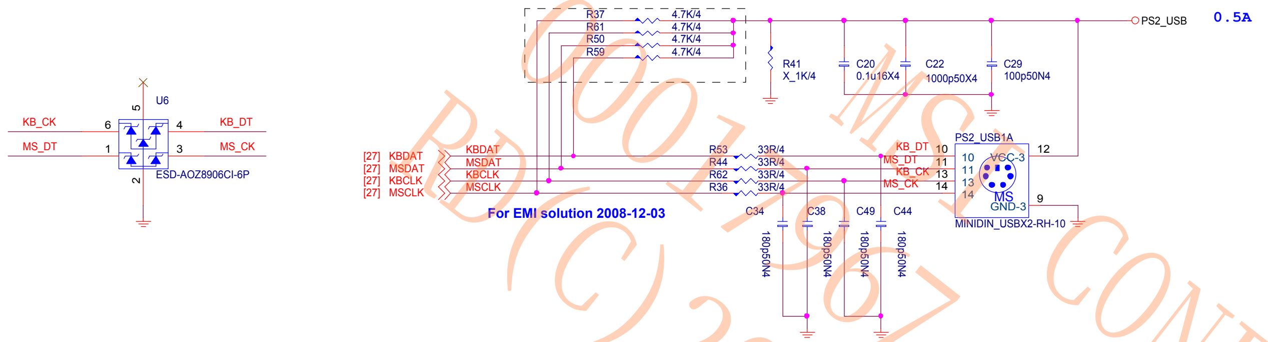
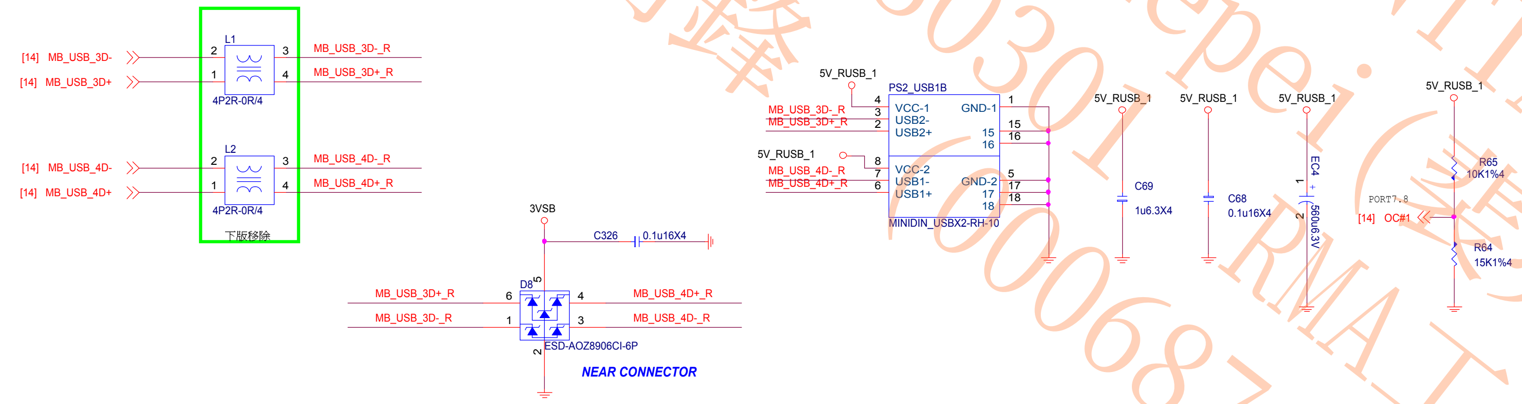
PS2 KEYBOARD & MOUSE CONNECTOR



KB_CK
MS_DT
KB_DT
MS_CK
U6
ESD-AOZ8906CI-6P
R37 4.7K/4
R61 4.7K/4
R50 4.7K/4
R59 4.7K/4
PS2_USB
0.5A
R41 X_1K/4
C20 0.1u16X4
C22 1000p50X4
C29 100p50N4
[27] KBDAT
[27] MSDAT
[27] KBCLK
[27] MSCLK
KBDAT
MSDAT
KBCLK
MSCLK
R53 33R/4
R44 33R/4
R62 33R/4
R36 33R/4
For EMI solution 2008-12-03
C34
C38
C49
C44
180p50N4
PS2_USB1A
VCC-3
MS
GND-3
MINIDIN_USBX2-RH-10

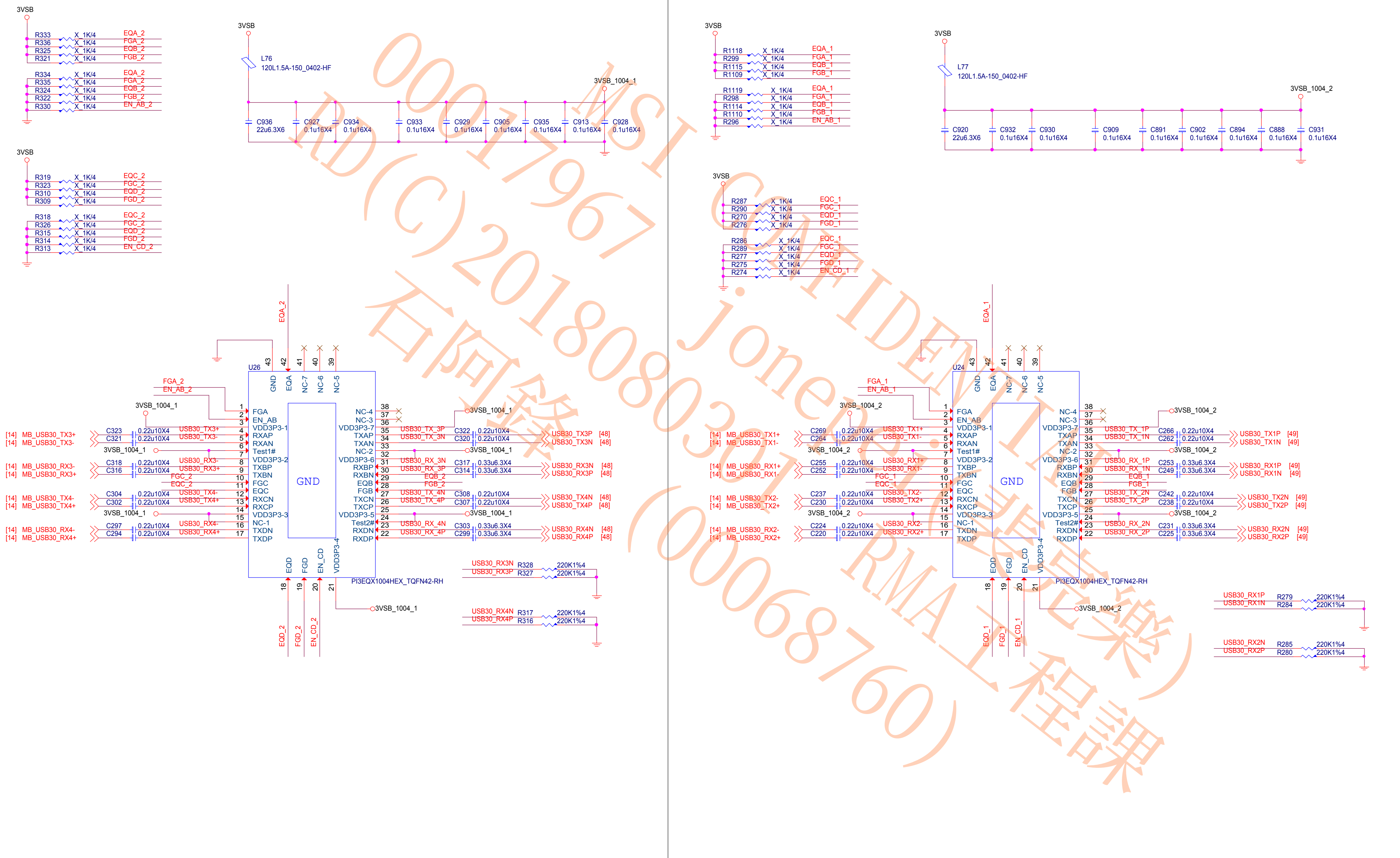
PS2-USB



[14] MB_USB_3D-
[14] MB_USB_3D+
[14] MB_USB_4D-
[14] MB_USB_4D+
L1
L2
4P2R-0R/4
MB_USB_3D-_R
MB_USB_3D+_R
MB_USB_4D-_R
MB_USB_4D+_R
下版移除
3VSB
C326 0.1u16X4
D8
ESD-AOZ8906CI-6P
NEAR CONNECTOR
5V_RUSB_1
PS2_USB1B
VCC-1
USB2-
USB2+
GND-1
VCC-2
USB1-
USB1+
GND-2
MINIDIN_USBX2-RH-10
C69 1u6.3X4
C68 0.1u16X4
EC4 560u6.3V
R65 10K1%4
R64 15K1%4
PORT7.8
[14] OC#1

Rear USB3.1 Redriver

Rear USB3.1 Redriver



3VSB
R333 X_1K/4 EQA_2
R336 X_1K/4 FGA_2
R325 X_1K/4 EQB_2
R321 X_1K/4 FGB_2
R334 X_1K/4 EQA_2
R335 X_1K/4 FGA_2
R324 X_1K/4 EQB_2
R322 X_1K/4 FGB_2
R330 X_1K/4 EN_AB_2
R319 X_1K/4 EQC_2
R323 X_1K/4 FGC_2
R310 X_1K/4 EQD_2
R309 X_1K/4 FGD_2
R318 X_1K/4 EQC_2
R326 X_1K/4 FGC_2
R315 X_1K/4 EQD_2
R314 X_1K/4 FGD_2
R313 X_1K/4 EN_CD_2
L76 120L1.5A-150_0402-HF
3VSB_1004_1
C936 22u6.3X6
C927 0.1u16X4
C934 0.1u16X4
C933 0.1u16X4
C929 0.1u16X4
C905 0.1u16X4
C935 0.1u16X4
C913 0.1u16X4
C928 0.1u16X4
U26
PI3EQX1004HEX_TQFN42-RH
GND
[14] MB_USB30_TX3+ C323 0.22u10X4 USB30_TX3+
[14] MB_USB30_TX3- C321 0.22u10X4 USB30_TX3-
[14] MB_USB30_RX3- C318 0.22u10X4 USB30_RX3-
[14] MB_USB30_RX3+ C316 0.22u10X4 USB30_RX3+
[14] MB_USB30_TX4- C304 0.22u10X4 USB30_TX4-
[14] MB_USB30_TX4+ C302 0.22u10X4 USB30_TX4+
[14] MB_USB30_RX4- C297 0.22u10X4 USB30_RX4-
[14] MB_USB30_RX4+ C294 0.22u10X4 USB30_RX4+
USB30_TX_3P C322 0.22u10X4 USB30_TX3P [48]
USB30_TX_3N C320 0.22u10X4 USB30_TX3N [48]
USB30_RX_3N C317 0.33u6.3X4 USB30_RX3N [48]
USB30_RX_3P C314 0.33u6.3X4 USB30_RX3P [48]
USB30_TX_4N C308 0.22u10X4 USB30_TX4N [48]
USB30_TX_4P C307 0.22u10X4 USB30_TX4P [48]
USB30_RX_4N C303 0.33u6.3X4 USB30_RX4N [48]
USB30_RX_4P C299 0.33u6.3X4 USB30_RX4P [48]
USB30_RX3N R328 220K1%4
USB30_RX3P R327 220K1%4
USB30_RX4N R317 220K1%4
USB30_RX4P R316 220K1%4
3VSB
R1118 X_1K/4 EQA_1
R299 X_1K/4 FGA_1
R1115 X_1K/4 EQB_1
R1109 X_1K/4 FGB_1
R1119 X_1K/4 EQA_1
R298 X_1K/4 FGA_1
R1114 X_1K/4 EQB_1
R1110 X_1K/4 FGB_1
R296 X_1K/4 EN_AB_1
R287 X_1K/4 EQC_1
R290 X_1K/4 FGC_1
R270 X_1K/4 EQD_1
R276 X_1K/4 FGD_1
R286 X_1K/4 EQC_1
R289 X_1K/4 FGC_1
R277 X_1K/4 EQD_1
R275 X_1K/4 FGD_1
R274 X_1K/4 EN_CD_1
L77 120L1.5A-150_0402-HF
3VSB_1004_2
C920 22u6.3X6
C932 0.1u16X4
C930 0.1u16X4
C909 0.1u16X4
C891 0.1u16X4
C902 0.1u16X4
C894 0.1u16X4
C888 0.1u16X4
C931 0.1u16X4
U24
PI3EQX1004HEX_TQFN42-RH
[14] MB_USB30_TX1+ C269 0.22u10X4 USB30_TX1+
[14] MB_USB30_TX1- C264 0.22u10X4 USB30_TX1-
[14] MB_USB30_RX1+ C255 0.22u10X4 USB30_RX1+
[14] MB_USB30_RX1- C252 0.22u10X4 USB30_RX1-
[14] MB_USB30_TX2- C237 0.22u10X4 USB30_TX2-
[14] MB_USB30_TX2+ C230 0.22u10X4 USB30_TX2+
[14] MB_USB30_RX2- C224 0.22u10X4 USB30_RX2-
[14] MB_USB30_RX2+ C220 0.22u10X4 USB30_RX2+
USB30_TX_1P C266 0.22u10X4 USB30_TX1P [49]
USB30_TX_1N C262 0.22u10X4 USB30_TX1N [49]
USB30_RX_1P C253 0.33u6.3X4 USB30_RX1P [49]
USB30_RX_1N C249 0.33u6.3X4 USB30_RX1N [49]
USB30_TX_2N C242 0.22u10X4 USB30_TX2N [49]
USB30_TX_2P C238 0.22u10X4 USB30_TX2P [49]
USB30_RX_2N C231 0.33u6.3X4 USB30_RX2N [49]
USB30_RX_2P C225 0.33u6.3X4 USB30_RX2P [49]
USB30_RX1P R279 220K1%4
USB30_RX1N R284 220K1%4
USB30_RX2N R285 220K1%4
USB30_RX2P R280 220K1%4

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LAN1 USB2.0 &3.0

1.8A

[14] MB_USB_2D+
[14] MB_USB_2D-
[14] MB_USB_1D+
[14] MB_USB_1D-
[47] USB30_TX3P
[47] USB30_TX3N
[47] USB30_RX3P
[47] USB30_RX3N
[47] USB30_TX4P
[47] USB30_TX4N
[47] USB30_RX4P
[47] USB30_RX4N

U27
ESD-AOZ8829DI-03-HF
USB30_RX3P
USB30_RX3N
USB30_TX3N
USB30_TX3P

U25
ESD-AOZ8829DI-03-HF
USB30_RX4P
USB30_RX4N
USB30_TX4P
USB30_TX4N

3VSB
C857 0.1u16X4
D15
MB_USB_2D+
MB_USB_2D-
MB_USB_1D+
MB_USB_1D-
ESD-AOZ8906CI-6P

LAN_USB1A
MB_USB_1D+
MB_USB_1D-
USB30_TX4P
USB30_TX4N
USB30_RX4P
USB30_RX4N
MB_USB_2D+
MB_USB_2D-
USB30_TX3P
USB30_TX3N
USB30_RX3P
USB30_RX3N
D1+
D1-
SSTX1+
SSTX1-
SSRX1+
SSRX1-
UP
D0+
D0-
SSTX0+
SSTX0-
SSRX0+
SSRX0-
DOWN
VBUS-2
GND_D-2
GND-6
GND-7
GND-8
GND-9
GND-10
VBUS-1
GND_D-1
GND-1
GND-2
GND-3
GND-4
GND-5
5V_RUSB_3
RJ45_USBX2_LEDX2-RH-31

5V_RUSB_3
R424 10K1%4
PORT13.14
[14] OC#0
R436 15K1%4

5V_RUSB_3
C364 1u6.3X4
C361 0.1u16X4
EC29 560u6.3V
C274 22u6.3X6

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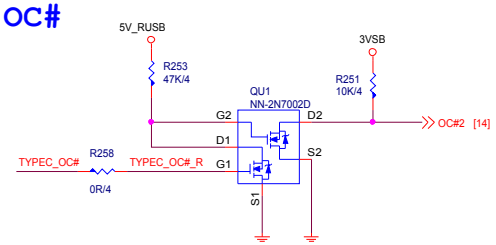
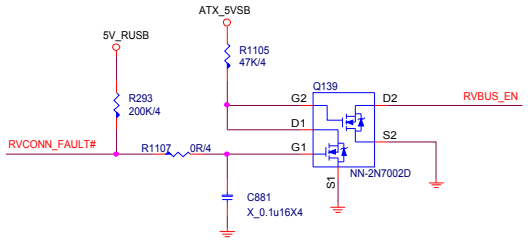
VBUS OC#



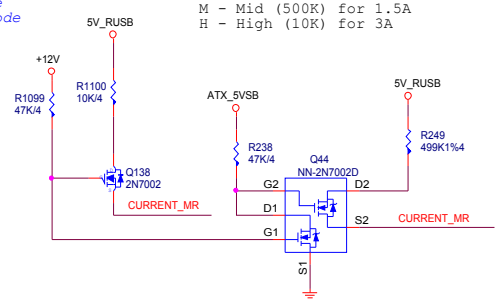
VCONN OC#

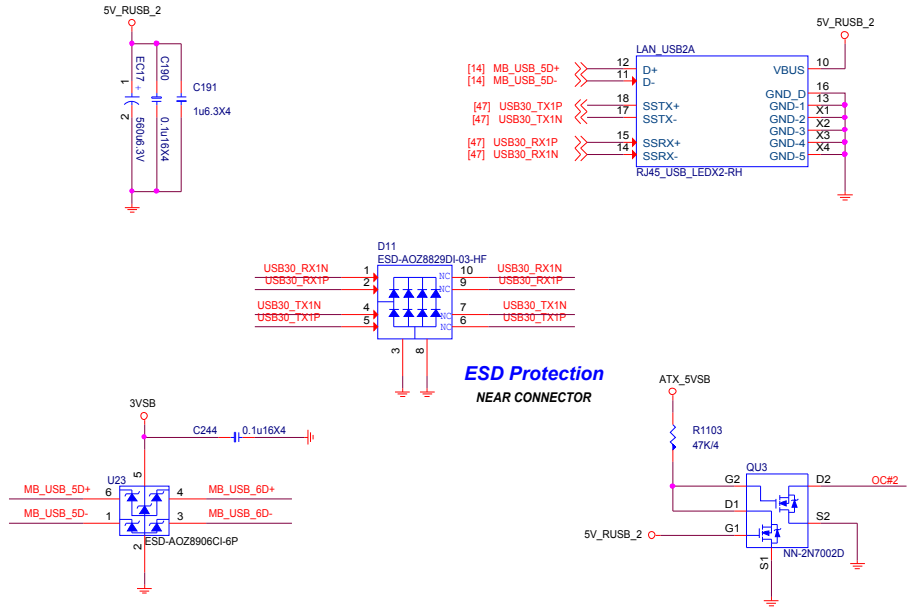


Current Mode

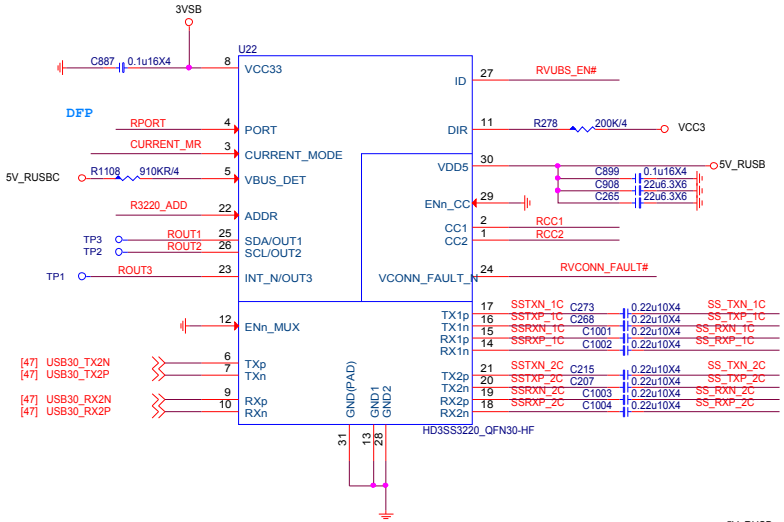
3A under S0 mode
1.5A under S3 mode

L - Default for 900mA
M - Mid (500K) for 1.5A
H - High (10K) for 3A

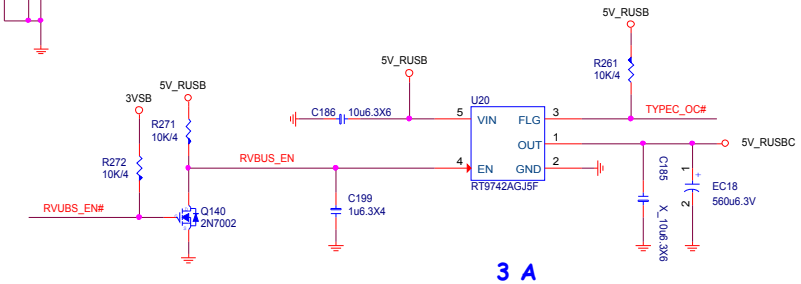




USB Type-C MUX with Configuration Channel (CC)



R3220_ ADD	High	Low	NC
RPORT	0x67 DFP(V)	0x47 UFP	GPIO mode(V) DRP



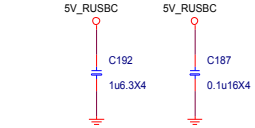
3 A

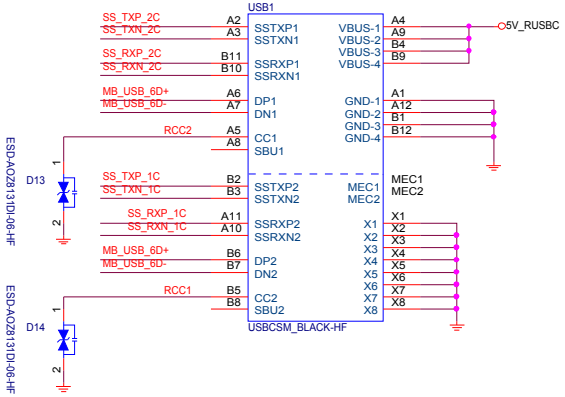
min 80mil.

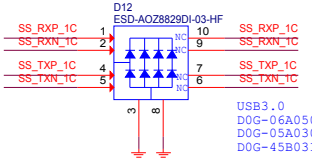
TYPE-C

[14] MB_USB_6D+
[14] MB_USB_6D-

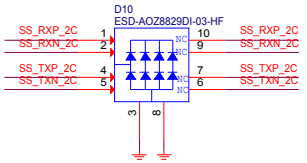
close to Type C Connector







ESD Protection
NEAR CONNECTOR



USB3.0
D0G-06A050C-A68 Main
D0G-05A0300-I14 AVL
D0G-45B031C-O05 AVL

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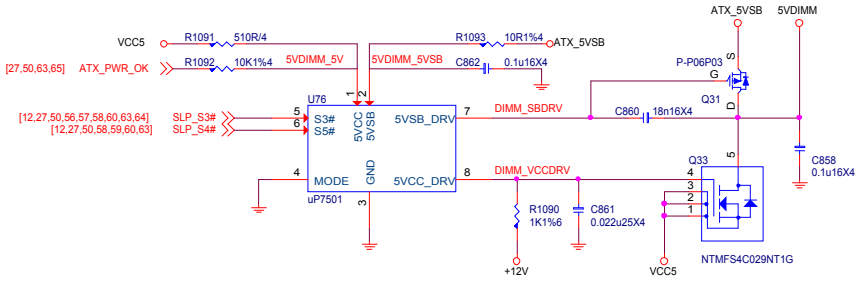
5VDIMM FOR DDR

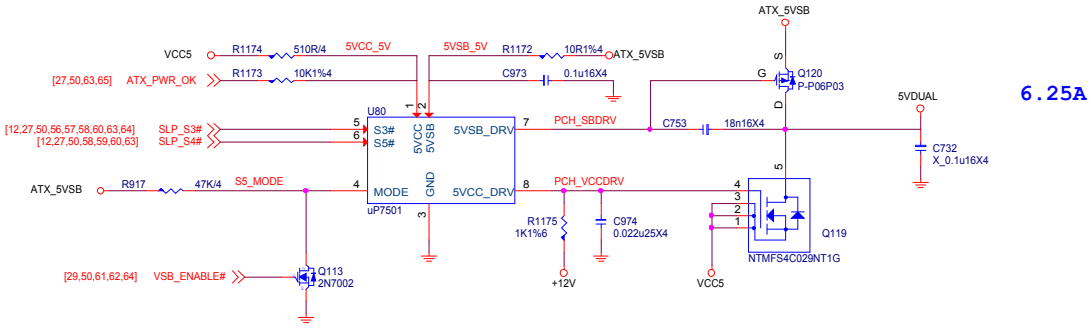
4.8A



7501 Mode
H:Support S0/S3/S5
L:Support S0/S3

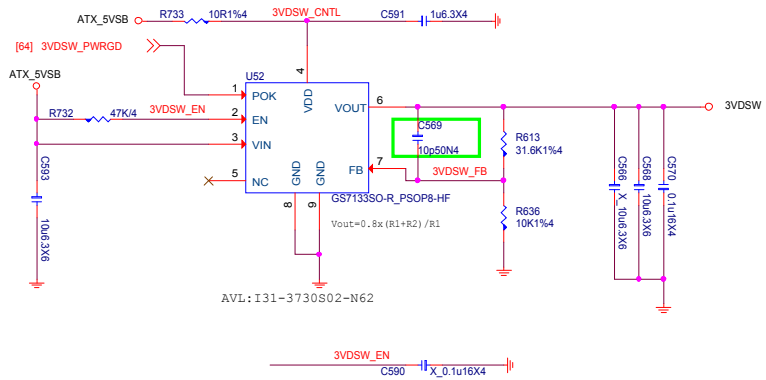
5VDUAL

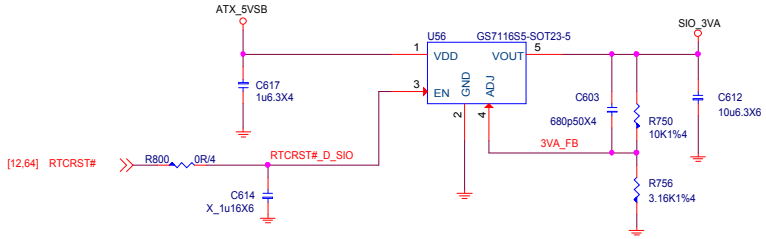
6.25A



3VDSW

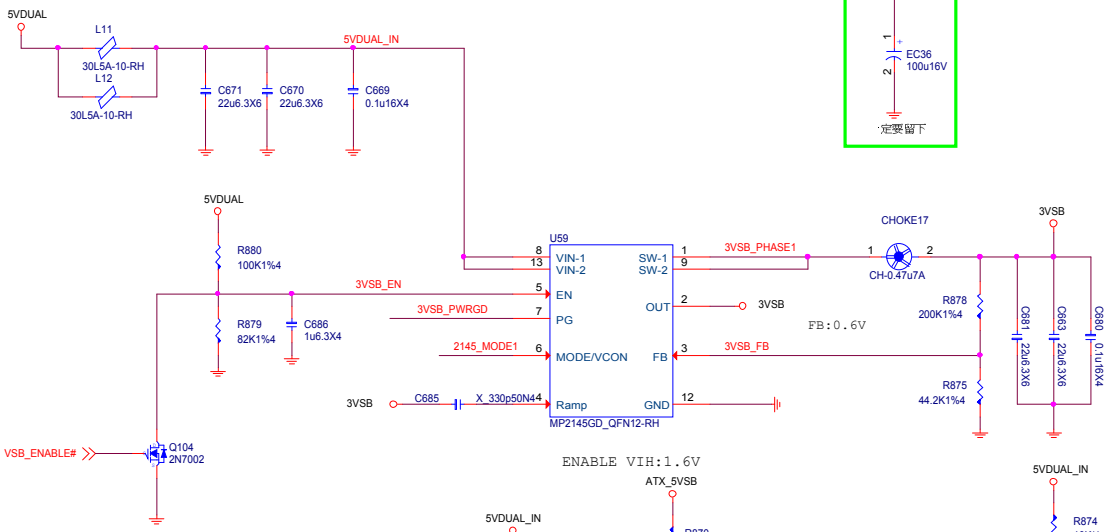
0.512A

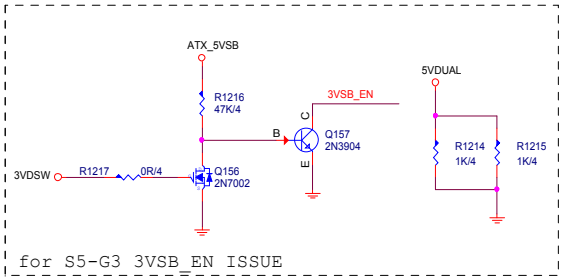


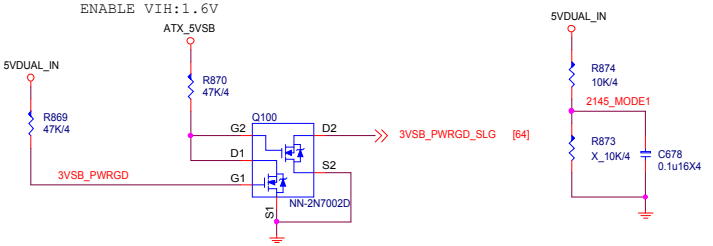


3VSB cost down

4.7A







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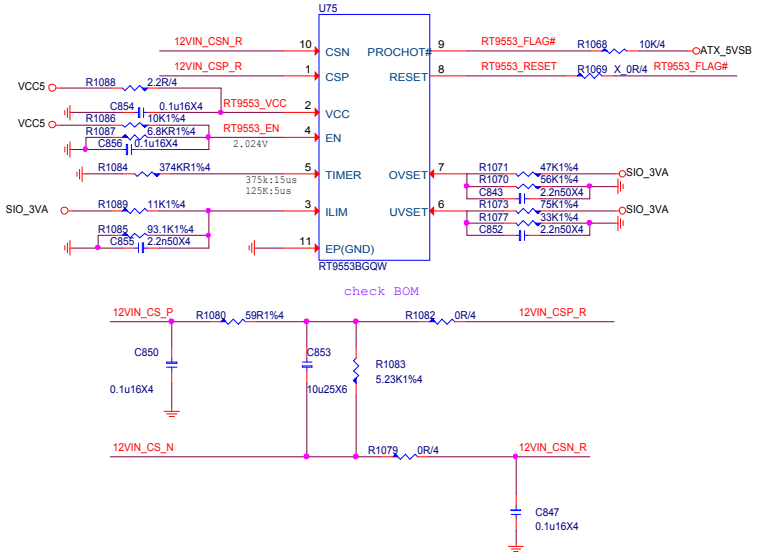
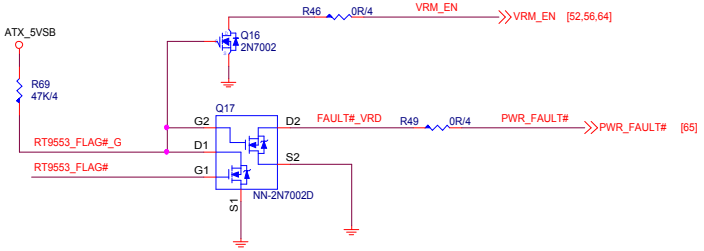
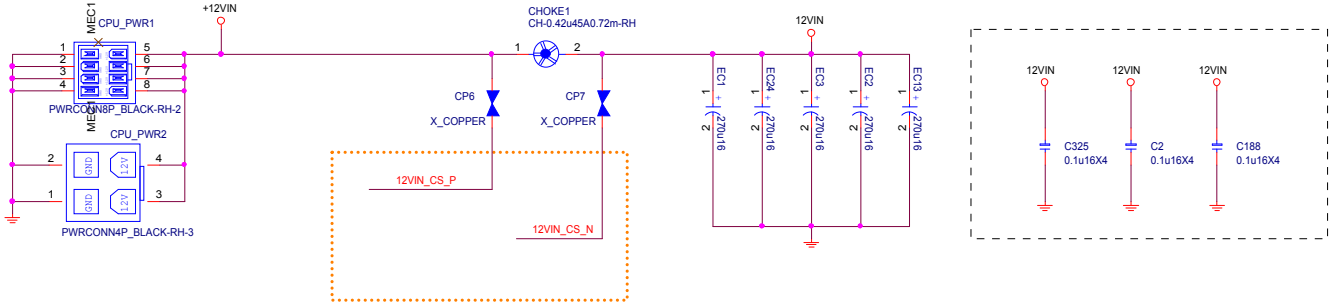




OCP:34A*1.3=44.2A
Real OCP:??A



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Size: Custom	Document Description: Rear I/O PS2		Rev: 10
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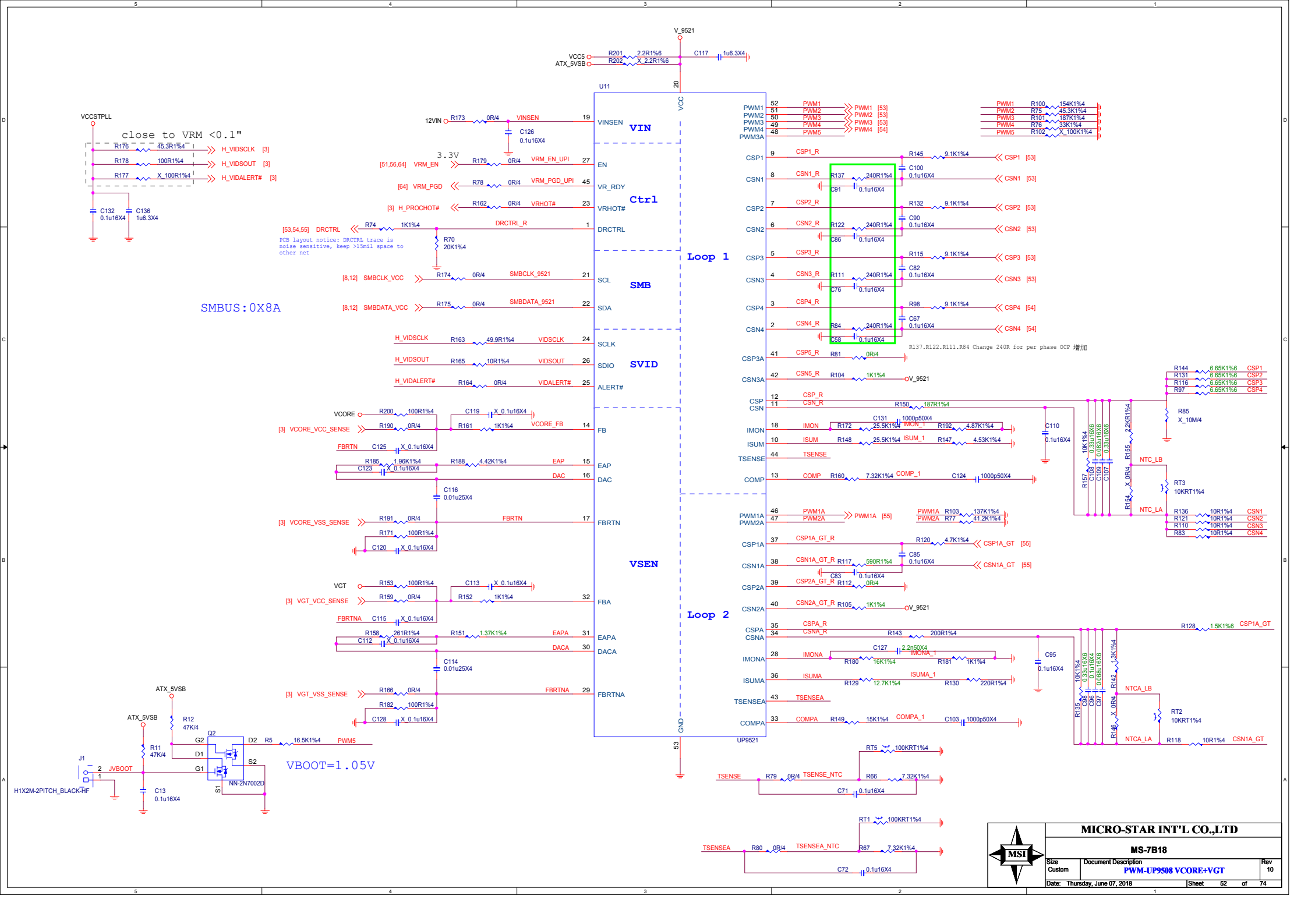

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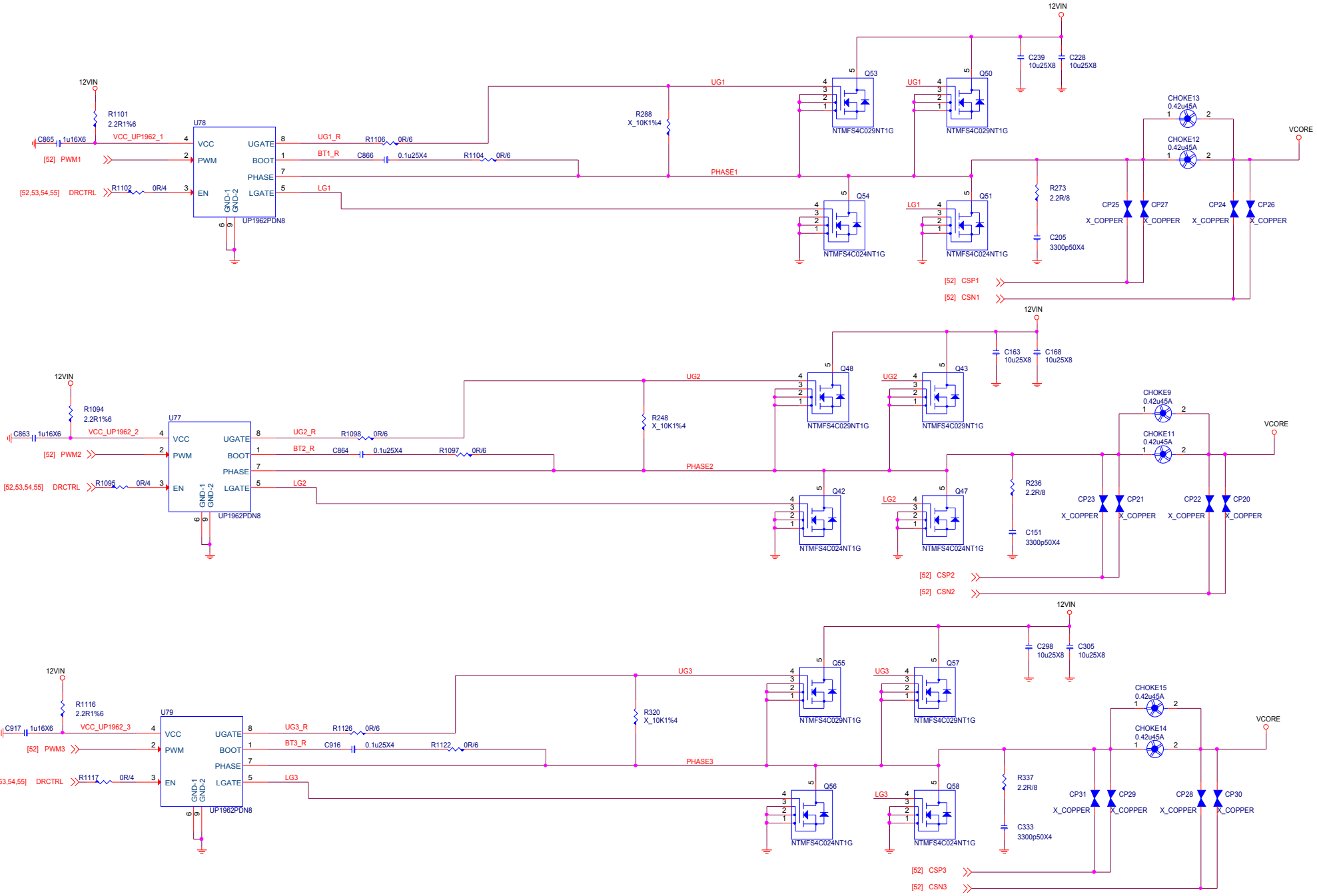

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Size: Custom	Document Description: VCORE MOS-PHASE 1~2	Rev: 10
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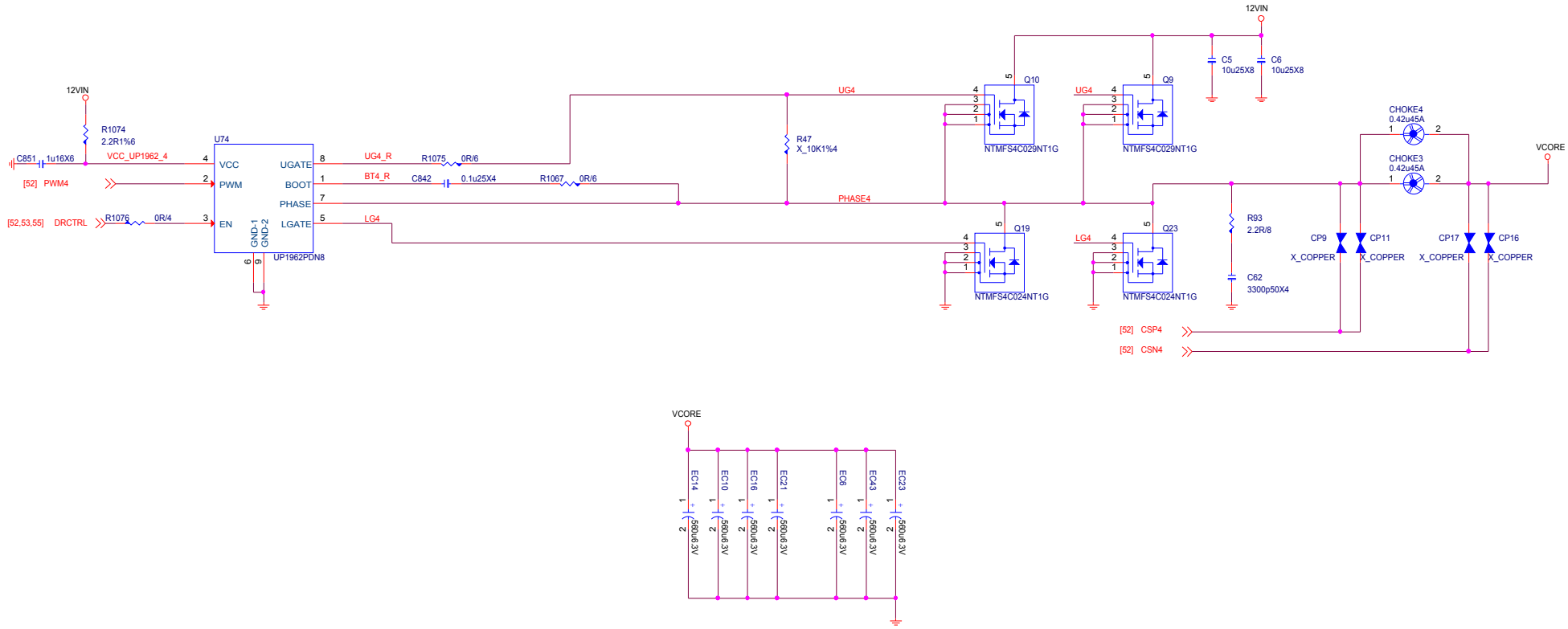

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Size: Custom	Document Description: VCORE MOS-PHASE 3~4	Rev: 10
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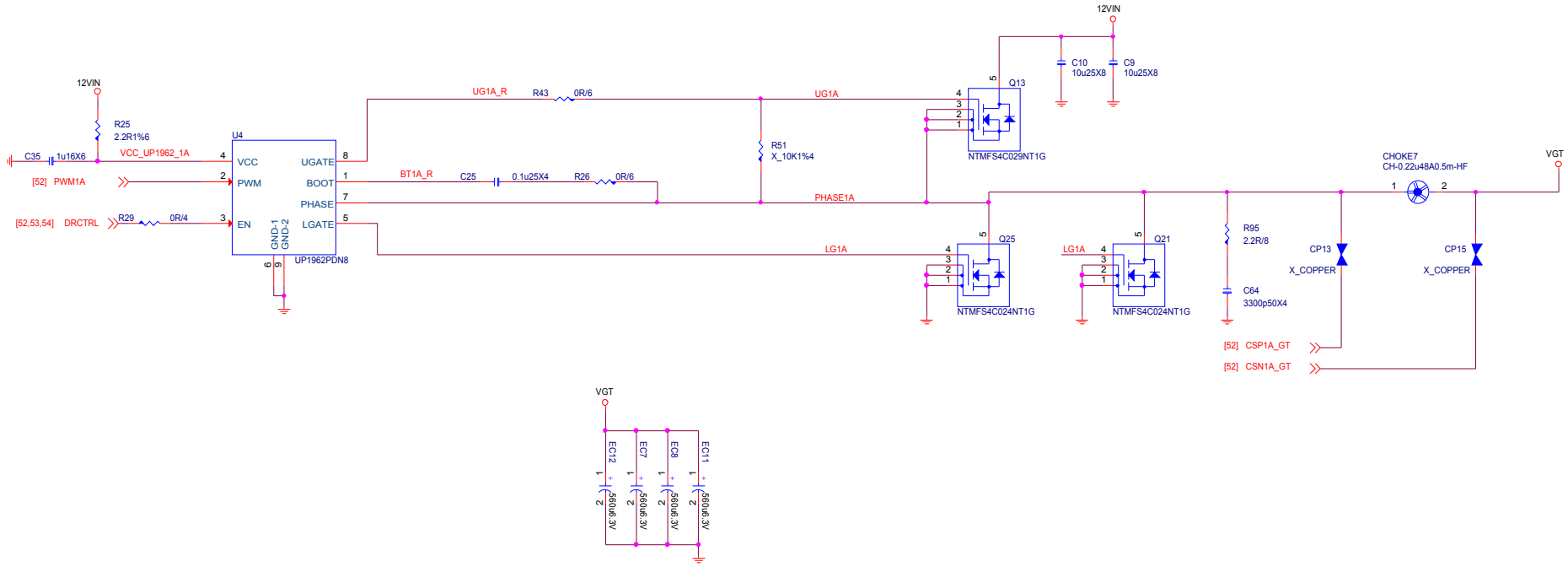

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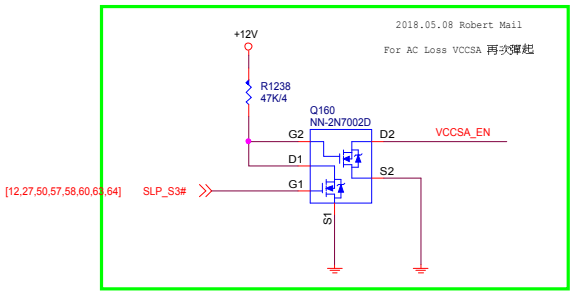
SA Power:1.05V,11.1A

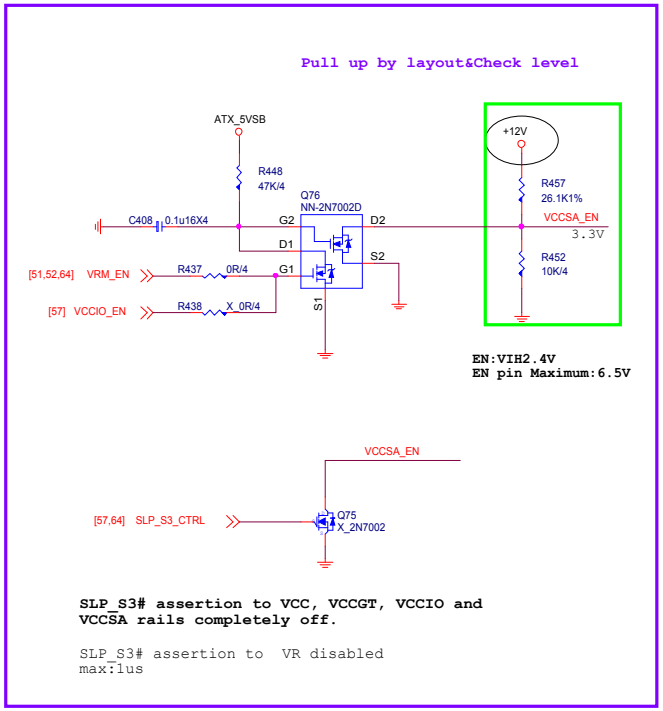
OCP:14.43A

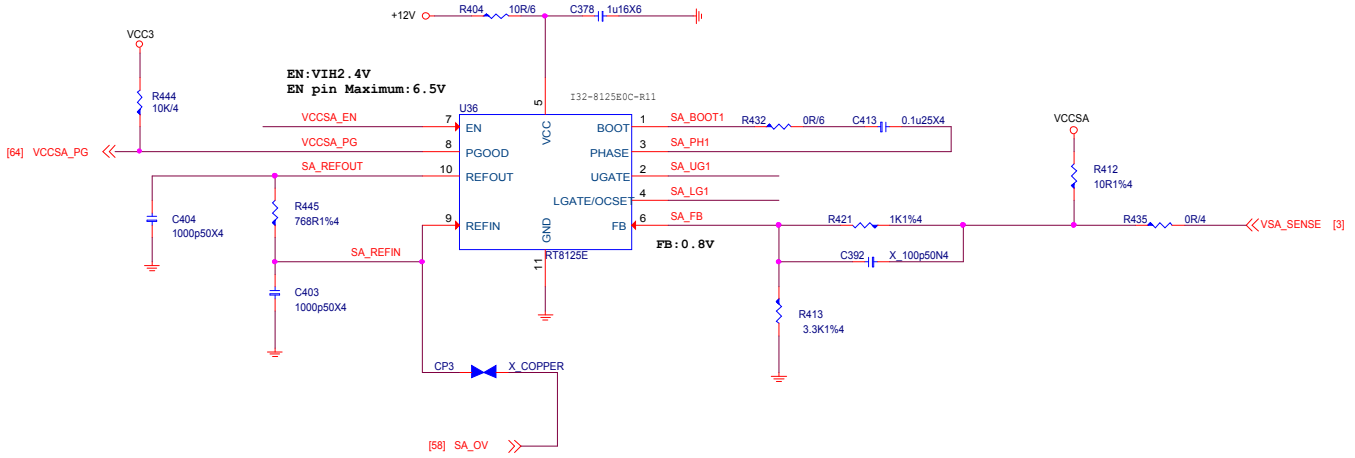
Rocset = 1.3* Imax * Rdson(low) / Iocset
= 14.43* 2.8mohm / 10uA
= 4.04K

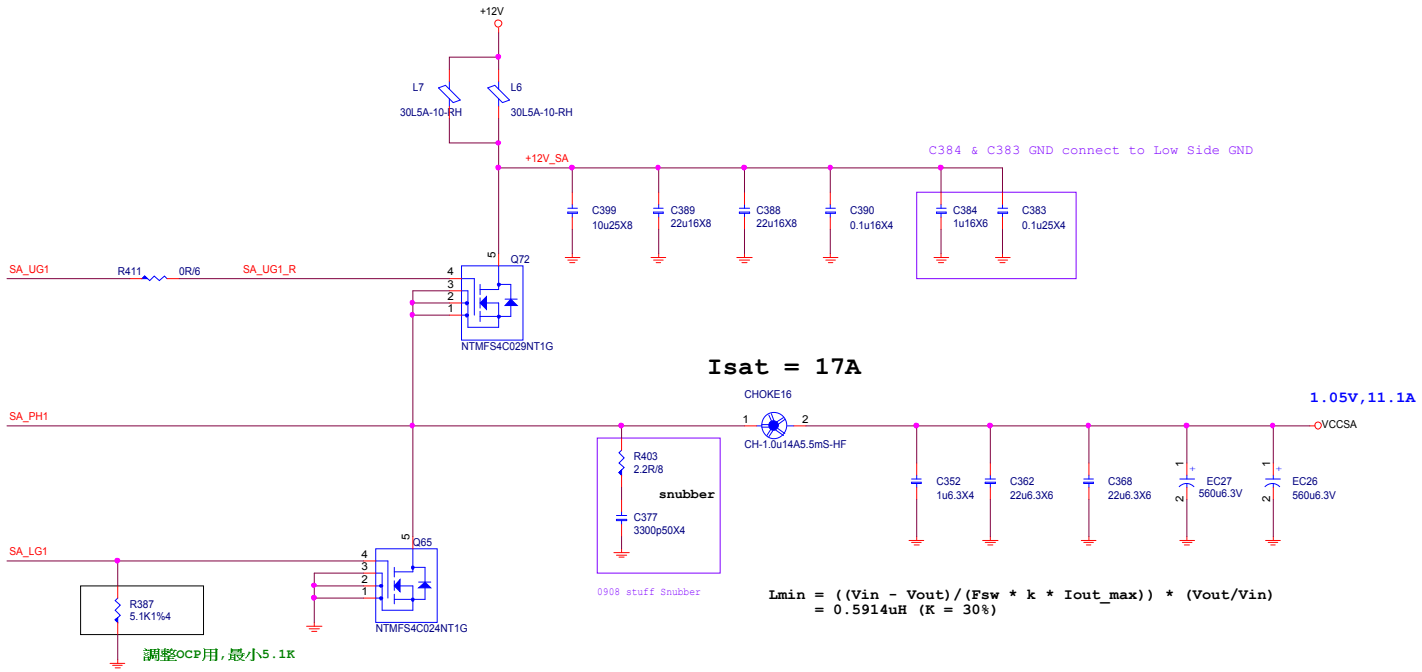
Rdson(low)10V
MOS : 2.8mohm
最低5.1K

D03-4C02403-O05
*Current limit= 5.1K*10uA/2.3mohm)=22.17A*
*Current limit= 5.1K*10uA/2.8mohm)=18.21A*









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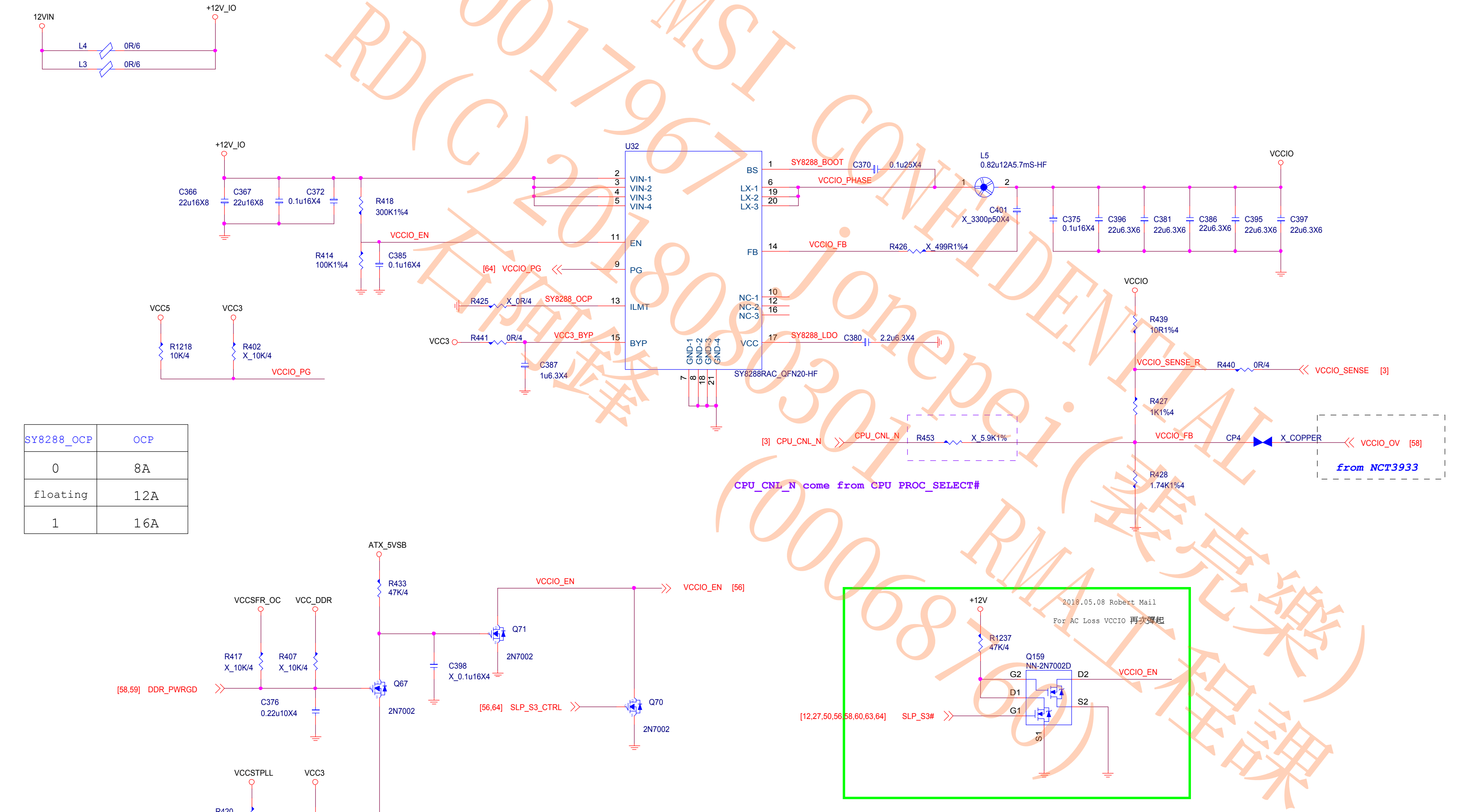
IO Power:0.95V,6.4A

IMAX 10A
ILIMIT=10A~12A
*IOC=ILIMIT+40%*IMAX/2=12A~14A.*



12VIN
+12V_IO
L4 0R/6
L3 0R/6
+12V_IO
C366 22u16X8
C367 22u16X8
C372 0.1u16X4
R418 300K1%4
R414 100K1%4
C385 0.1u16X4
VCCIO_EN
[64] VCCIO_PG
R425 X_0R/4 SY8288_OCP
VCC3 R441 0R/4 VCC3_BYP
C387 1u6.3X4
U32
VIN-1
VIN-2
VIN-3
VIN-4
EN
PG
ILMT
BYP
BS
LX-1
LX-2
LX-3
FB
NC-1
NC-2
NC-3
VCC
GND-1
GND-2
GND-3
GND-4
SY8288RAC_QFN20-HF
SY8288_BOOT C370 0.1u25X4
VCCIO_PHASE
L5 0.82u12A5.7mS-HF
C401 X_3300p50X4
VCCIO_FB R426 X_499R1%4
SY8288_LDO C380 2.2u6.3X4
VCCIO
C375 0.1u16X4
C396 22u6.3X6
C381 22u6.3X6
C386 22u6.3X6
C395 22u6.3X6
C397 22u6.3X6
VCC5
VCC3
R1218 10K/4
R402 X_10K/4
VCCIO_PG
VCCIO
R439 10R1%4
VCCIO_SENSE_R R440 0R/4 VCCIO_SENSE [3]
R427 1K1%4
[3] CPU_CNL_N
CPU_CNL_N R453 X_5.9K1%
VCCIO_FB CP4 X_COPPER VCCIO_OV [58]
from NCT3933
R428 1.74K1%4
CPU_CNL_N come from CPU PROC_SELECT#
ATX_5VSB
R433 47K/4
VCCIO_EN
VCCIO_EN [56]
Q71 2N7002
C398 X_0.1u16X4
VCCSFR_OC
VCC_DDR
R417 X_10K/4
R407 X_10K/4
[58,59] DDR_PWRGD
C376 0.22u10X4
Q67 2N7002
[56,64] SLP_S3_CTRL
Q70 2N7002
VCCSTPLL
VCC3
R420 X_10K/4
R406 10K/4
[58] VCCSTPLL_PWRGD
R416 X_0R/4
C373 X_0.1u16X4
R400 X_10K/4
Q66 2N7002
+12V
2018.05.08 Robert Mail
For AC Loss VCCIO 再次彈起
R1237 47K/4
Q159 NN-2N7002D
G2 D2 VCCIO_EN
D1
G1 S2
S1
[12,27,50,56,58,60,63,64] SLP_S3#

SY8288_OCP	OCP
0	8A
floating	12A
1	16A

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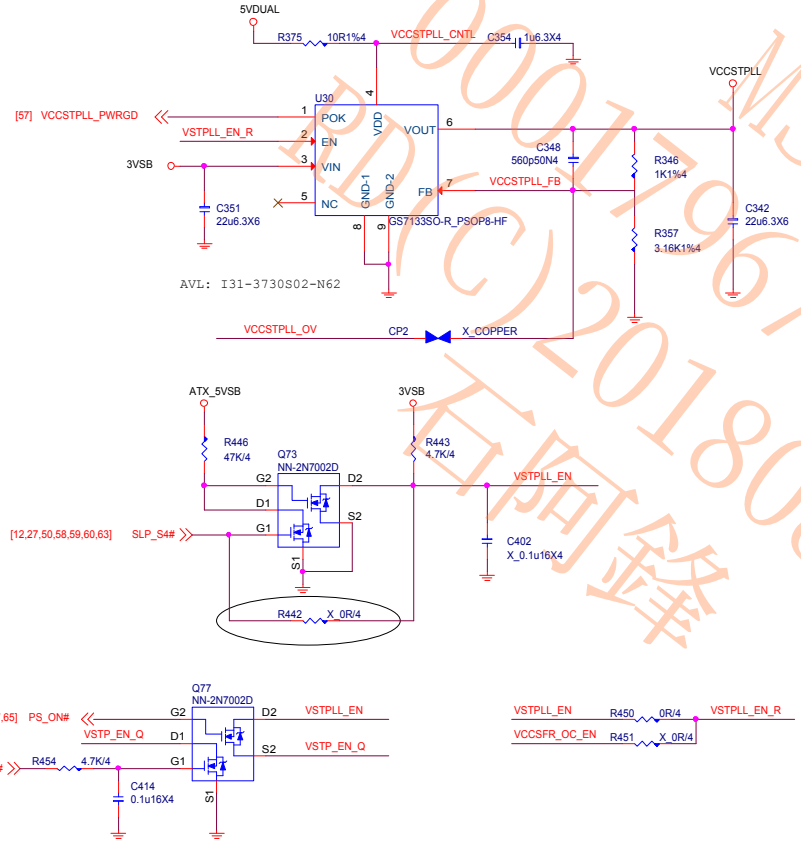
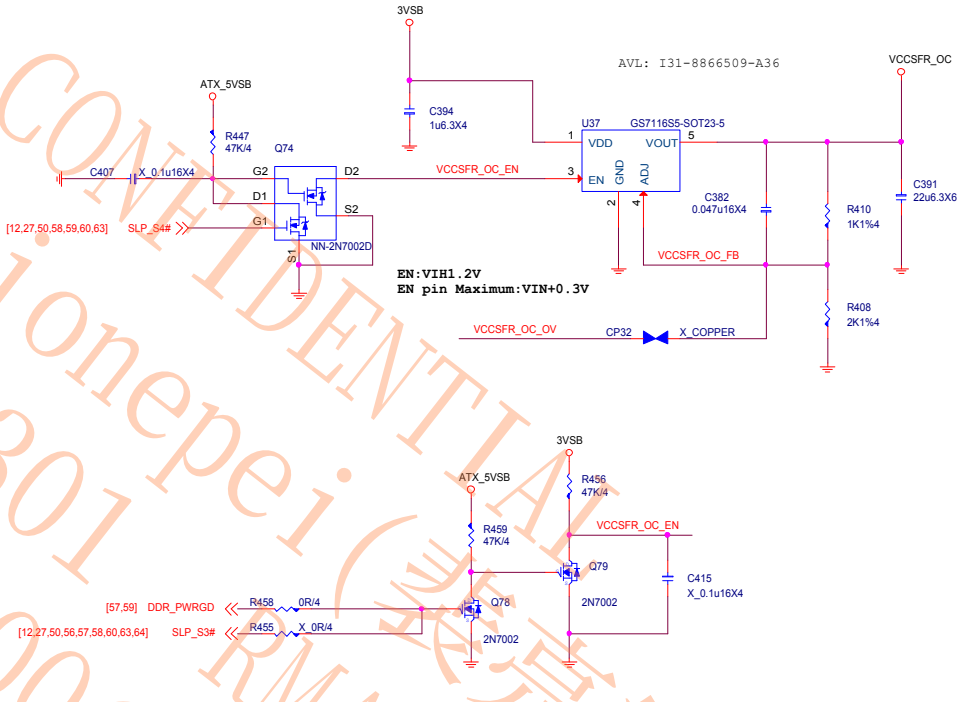
VCCSTPLL

1.05V; 230mA



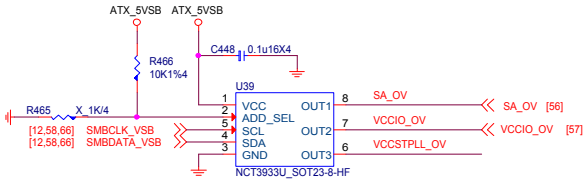
VCCPLL_OC

1.2V; 130mA

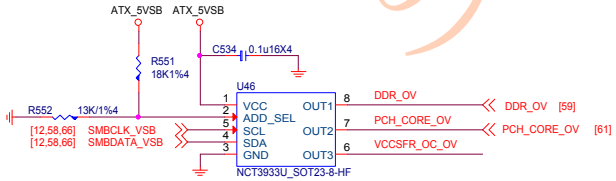


VOLTAGE CONSOLE

0x20:RH=10K,RL=OPEN



0x26:RH=18K,RL=13K



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DDR4 Power:1.2V,19.7A   *OCP:25.61A*

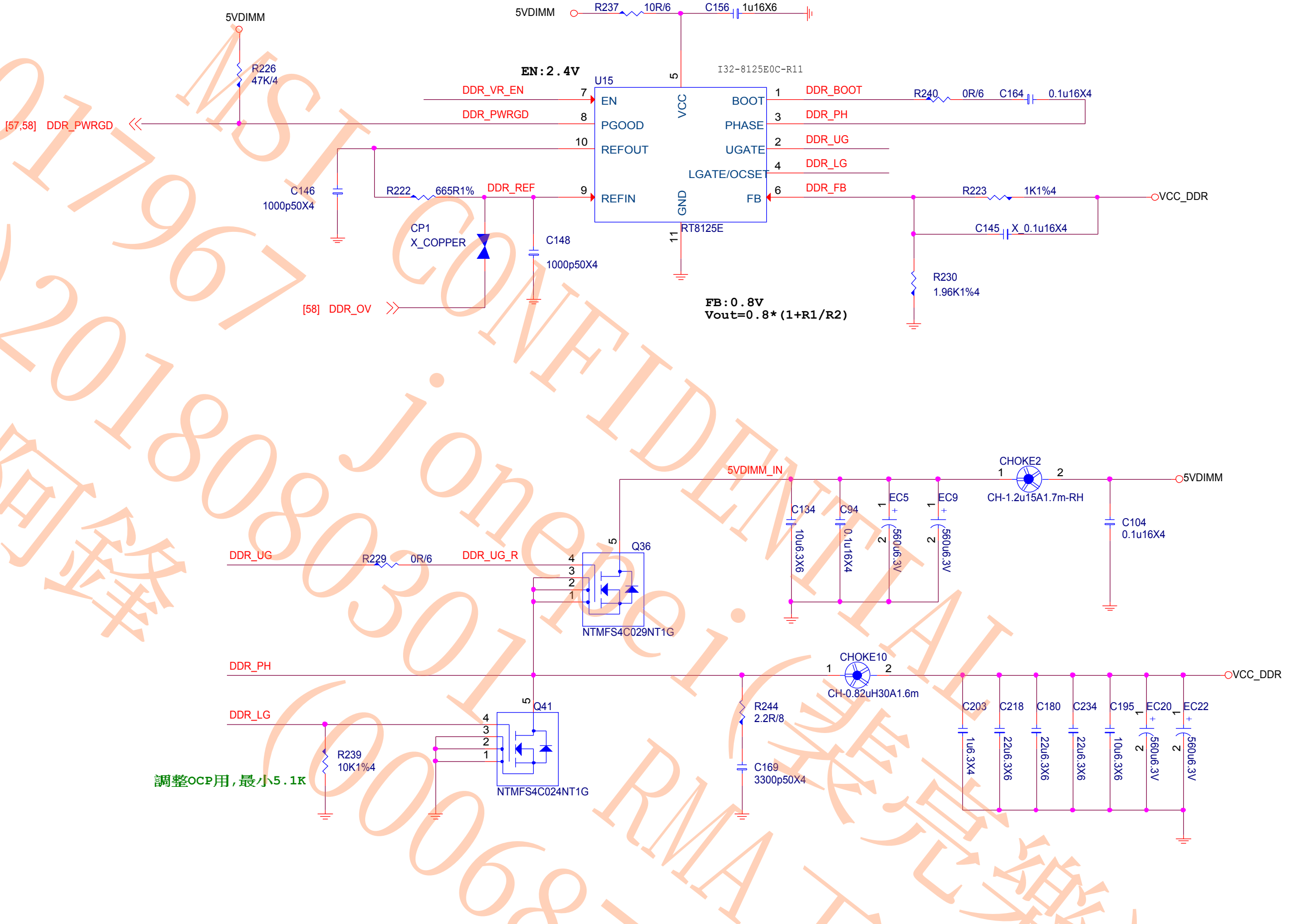
3.3A FOR CPU
15.7A FOR 4DIMM
0.7A FOR DDR VTT

Rdson(low) 5V
D03-4C02403-005 : 4mohm

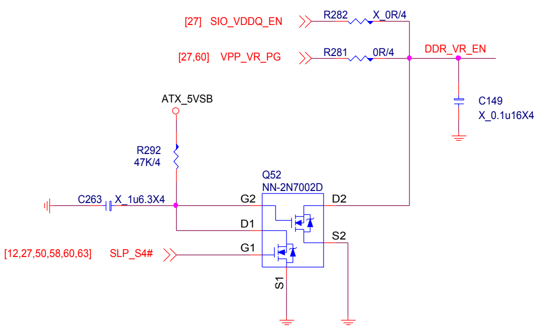
OCP = 25.61A

Rocset = 1.3 * Imax * Rdson(low) / Iocset
= 25.61* 4mohm / 10uA
= 10.244K

D03-4C02403-005
*Current limit= 10K*10uA/3.3mohm)=30.3A*
*Current limit= 10K*10uA/4mohm)=25A*



5VDIMM
R226 47K/4
[57,58] DDR_PWRGD
EN:2.4V
DDR_VR_EN
DDR_PWRGD
R237 10R/6
C156 1u16X6
U15
EN
PGOOD
REFOUT
REFIN
VCC
GND
BOOT
PHASE
UGATE
LGATE/OCSET
FB
RT8125E
I32-8125E0C-R11
DDR_BOOT
DDR_PH
DDR_UG
DDR_LG
DDR_FB
R240 0R/6
C164 0.1u16X4
R223 1K1%4
VCC_DDR
C145 X_0.1u16X4
R230 1.96K1%4
C146 1000p50X4
R222 665R1%
DDR_REF
CP1 X_COPPER
C148 1000p50X4
[58] DDR_OV
FB:0.8V
Vout=0.8*(1+R1/R2)
5VDIMM_IN
CHOKE2
CH-1.2u15A1.7m-RH
C134 10u6.3X6
C94 0.1u16X4
EC5 560u6.3V
EC9 560u6.3V
C104 0.1u16X4
R229 0R/6
DDR_UG_R
Q36
NTMFS4C029NT1G
CHOKE10
CH-0.82uH30A1.6m
R244 2.2R/8
C169 3300p50X4
Q41
NTMFS4C024NT1G
R239 10K1%4
調整OCP用,最小5.1K
C203 1u6.3X4
C218 22u6.3X6
C180 22u6.3X6
C234 22u6.3X6
C195 10u6.3X6
EC20 560u6.3V
EC22 560u6.3V



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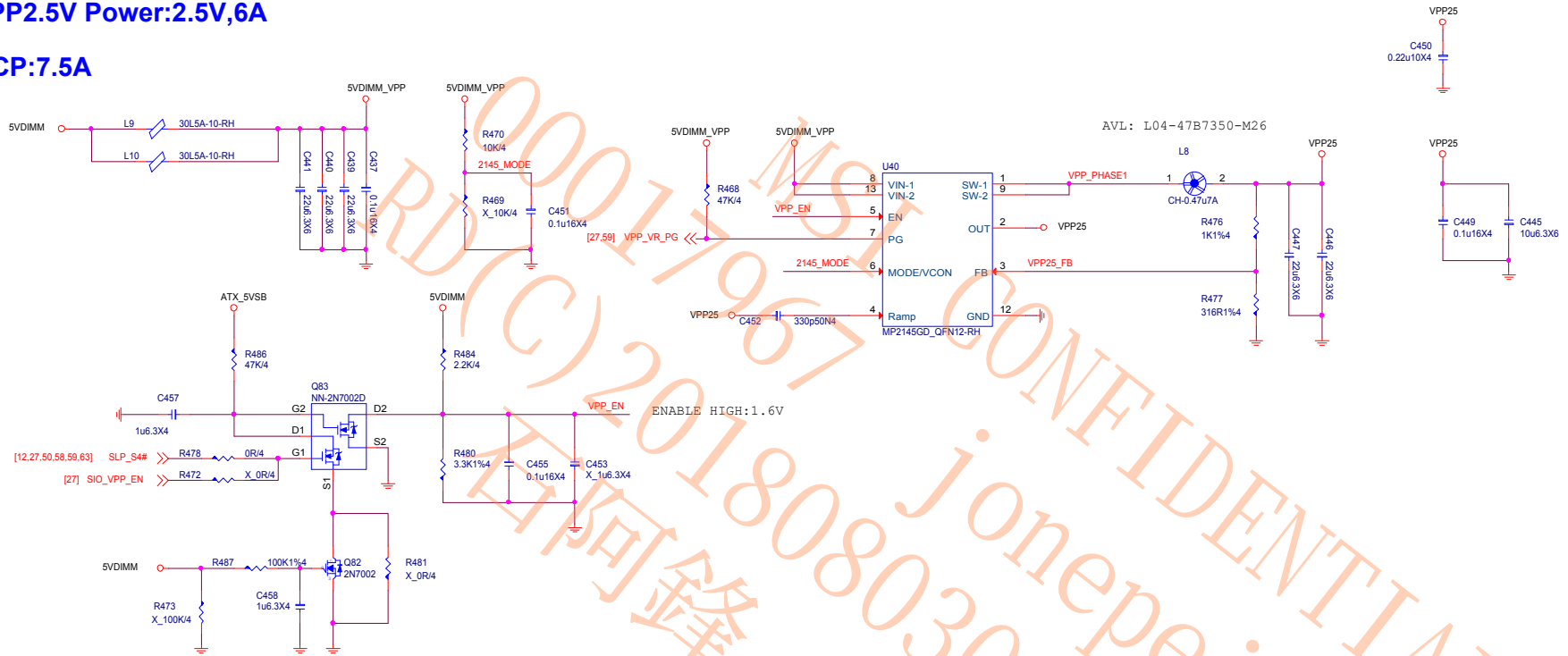
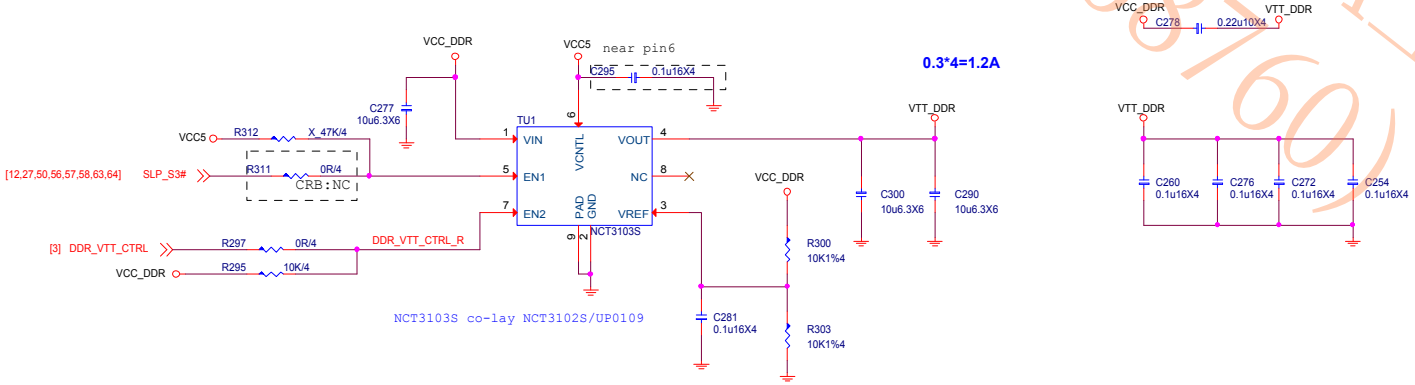
VPP2.5V Power:2.5V,6A

OCP:7.5A



DDR VTT Power

To CPU Copper trace width > 250mils , Fill island behind DIMM > 400mils .



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PCH_1VSB Power:1.05V,14A

OCP = 18.2A

```
Rocset = 1.3 * Imax * Rdson(low) / Iocset
       = 18.2 * 4mohm / 10uA
       = 7.28K
```

Rdson(low) 5V

D03-4C02403-O05 : 4mohm

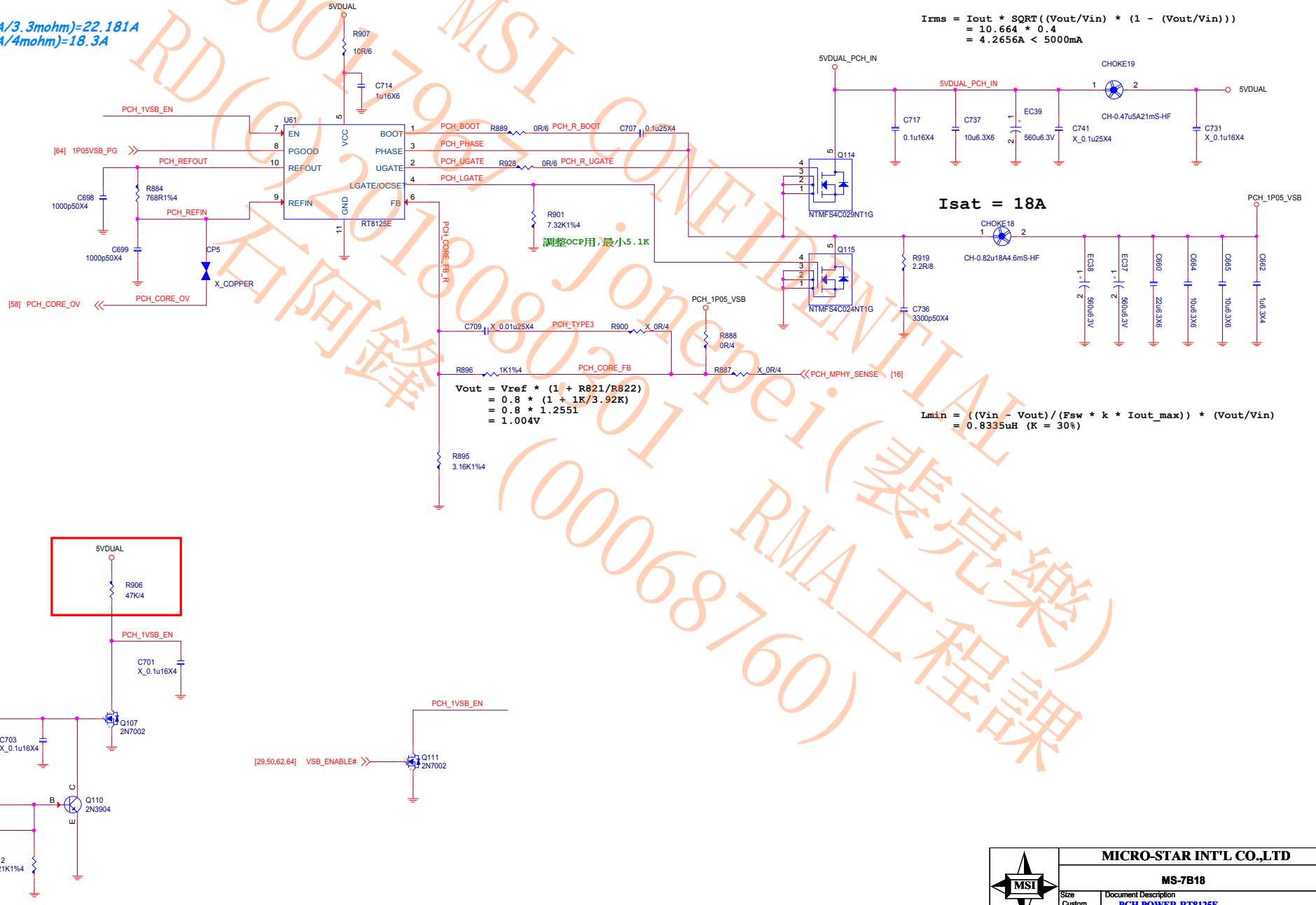
D03-4C02403-O05
*Current limit= 7.32K*10uA/3.3mohm)=22.181A*
*Current limit= 7.32K*10uA/4mohm)=18.3A*

```
Irms = Iout * SQRT((Vout/Vin) * (1 - (Vout/Vin)))
     = 10.664 * 0.4
     = 4.2656A < 5000mA
```

Isat = 18A

```
Vout = Vref * (1 + R821/R822)
     = 0.8 * (1 + 1K/3.92K)
     = 0.8 * 1.2551
     = 1.004V
```

```
Lmin = ((Vin - Vout)/(Fsw * k * Iout_max)) * (Vout/Vin)
     = 0.8335uH (K = 30%)
```



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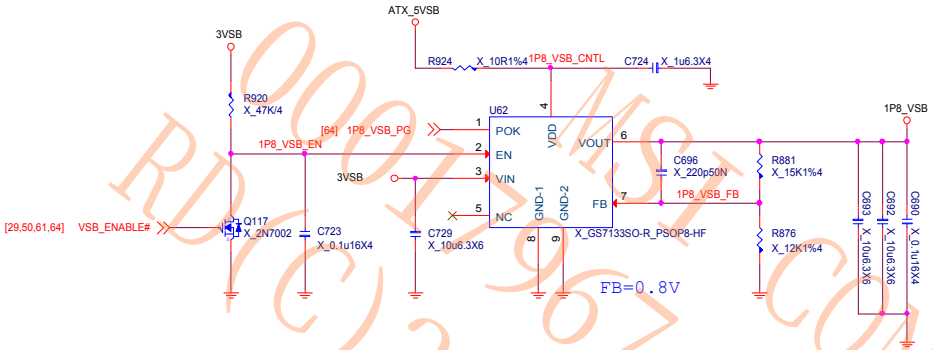
1P8_VSB



MSI	MICRO-STAR INT'L CO.,LTD	
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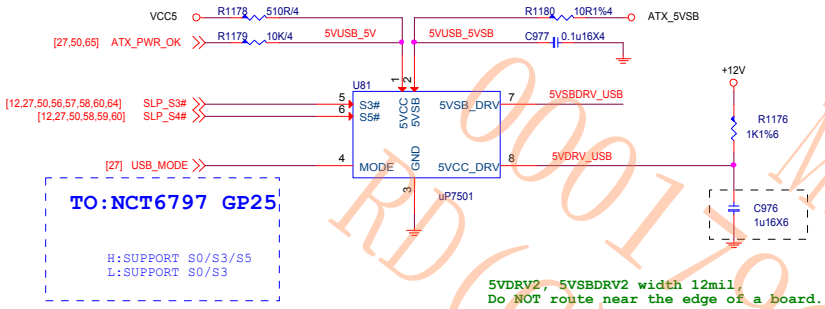
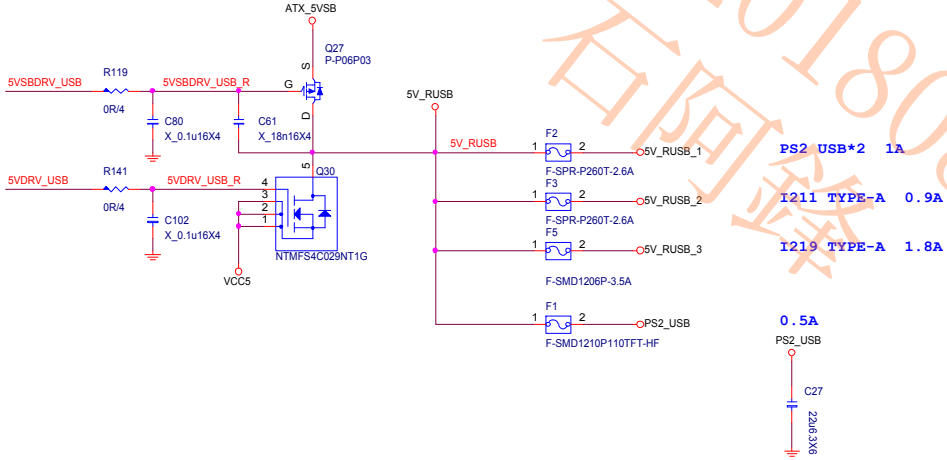
USB POWER



5VDRV2, 5VSBDRV2 width 12mil,
Do NOT route near the edge of a board.

REAR USB PORT POWER



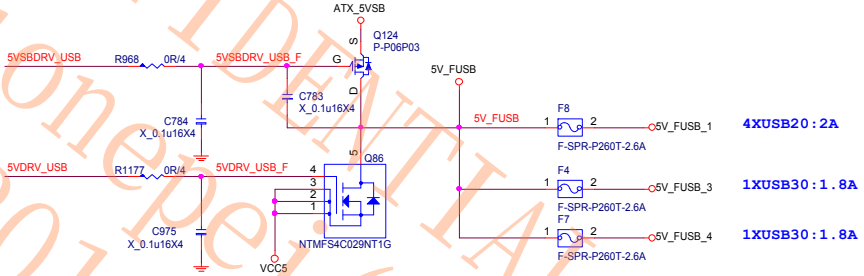
PS2 USB*2 1A

I211 TYPE-A 0.9A

I219 TYPE-A 1.8A

0.5A

FRONT USB PORT POWER



4XUSB20:2A

1XUSB30:1.8A

1XUSB30:1.8A

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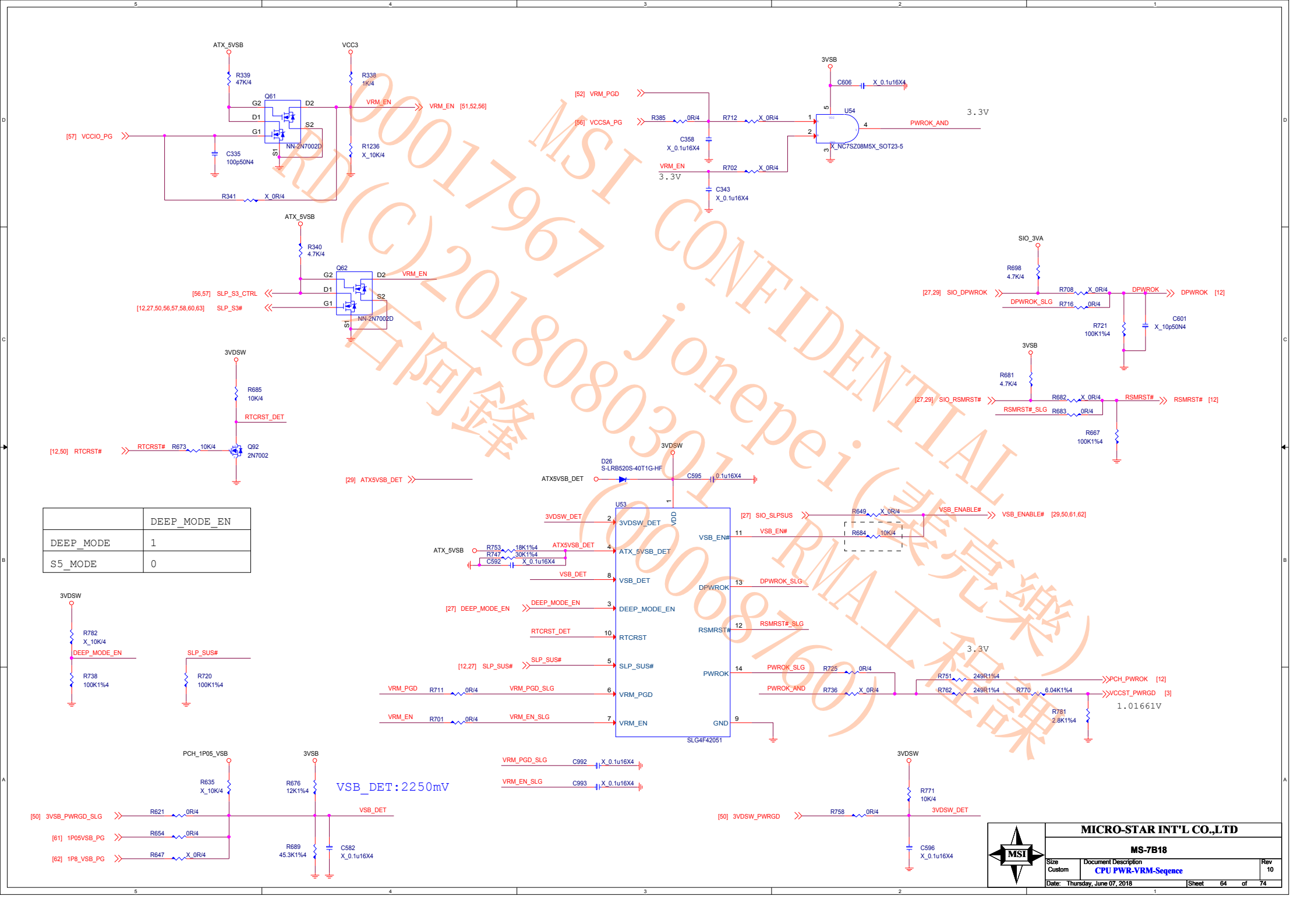

	DEEP_MODE_EN
DEEP_MODE	1
S5_MODE	0

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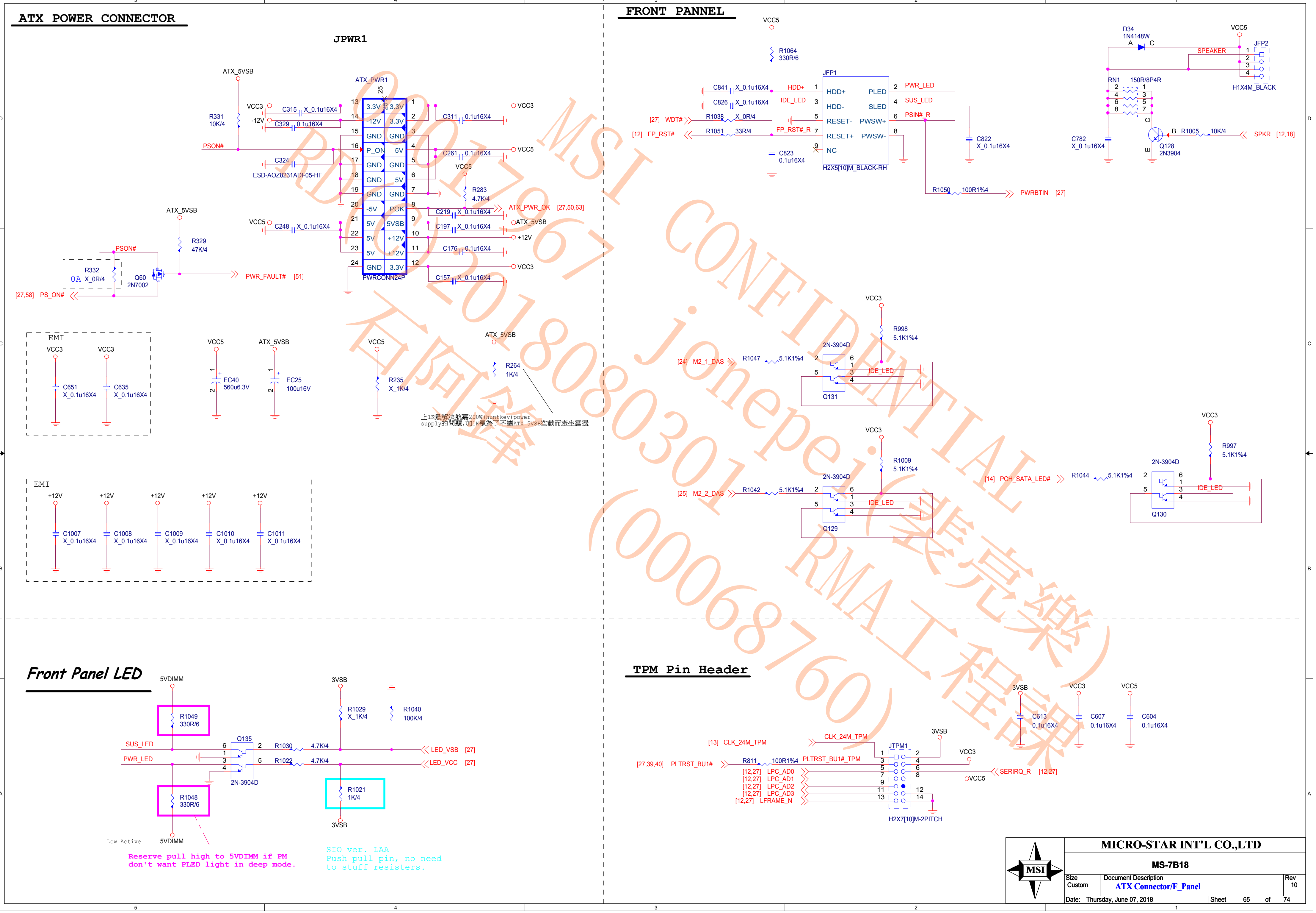
ATX POWER CONNECTOR
JPWR1
ATX_PWR1
PWRCONN24P
3.3V 3.3V
-12V 3.3V
GND GND
P_ON 5V
GND GND
GND 5V
GND GND
-5V POK
5V 5VSB
5V +12V
5V +12V
GND 3.3V
ATX_5VSB
R331 10K/4
PSON#
VCC3
-12V
C315 X_0.1u16X4
C329 0.1u16X4
C324
ESD-AOZ8231ADI-05-HF
VCC5
C248 X_0.1u16X4
C311 0.1u16X4
C261 0.1u16X4
R283 4.7K/4
C219 X_0.1u16X4
ATX_PWR_OK [27,50,63]
C197 X_0.1u16X4
+12V
C176 0.1u16X4
C157 X_0.1u16X4
R329 47K/4
R332 0A X_0R/4
Q60 2N7002
PWR_FAULT# [51]
[27,58] PS_ON#
EMI
C651 X_0.1u16X4
C635 X_0.1u16X4
EC40 560u6.3V
EC25 100u16V
R235 X_1K/4
R264 1K/4
上1K是解決航嘉200W(huntkey)power supply的問題,加1K是為了不讓ATX_5VSB空載而產生震盪
C1007 X_0.1u16X4
C1008 X_0.1u16X4
C1009 X_0.1u16X4
C1010 X_0.1u16X4
C1011 X_0.1u16X4
FRONT PANNEL
R1064 330R/6
JFP1
H2X5[10]M_BLACK-RH
HDD+ PLED
HDD- SLED
RESET- PWSW+
RESET+ PWSW-
NC
C841 X_0.1u16X4
C826 X_0.1u16X4
HDD+
IDE_LED
[27] WDT#
R1038 X_0R/4
[12] FP_RST#
R1051 33R/4
FP_PST#_R
C823 0.1u16X4
PWR_LED
SUS_LED
PSIN#_R
C822 X_0.1u16X4
R1050 100R1%4
PWRBTIN [27]
D34 1N4148W
SPEAKER
JFP2
H1X4M_BLACK
RN1 150R/8P4R
C782 X_0.1u16X4
Q128 2N3904
R1005 10K/4
SPKR [12,18]
R998 5.1K1%4
2N-3904D
[24] M2_1_DAS
R1047 5.1K1%4
Q131
R1009 5.1K1%4
[25] M2_2_DAS
R1042 5.1K1%4
Q129
R997 5.1K1%4
[14] PCH_SATA_LED#
R1044 5.1K1%4
Q130
Front Panel LED
5VDIMM
R1049 330R/6
Q135
2N-3904D
R1030 4.7K/4
R1022 4.7K/4
3VSB
R1029 X_1K/4
R1040 100K/4
LED_VSB [27]
LED_VCC [27]
R1048 330R/6
R1021 1K/4
Low Active
Reserve pull high to 5VDIMM if PM don't want PLED light in deep mode.
SIO ver. LAA Push pull pin, no need to stuff resisters.
TPM Pin Header
C613 0.1u16X4
C607 0.1u16X4
C604 0.1u16X4
[13] CLK_24M_TPM
CLK_24M_TPM
JTPM1
H2X7[10]M-2PITCH
[27,39,40] PLTRST_BU1#
R811 100R1%4
PLTRST_BU1#_TPM
[12,27] LPC_AD0
[12,27] LPC_AD1
[12,27] LPC_AD2
[12,27] LPC_AD3
[12,27] LFRAME_N
SERIRQ_R [12,27]
MICRO-STAR INT'L CO.,LTD
MSI
MS-7B18
Size Custom
Document Description
ATX Connector/F_Panel
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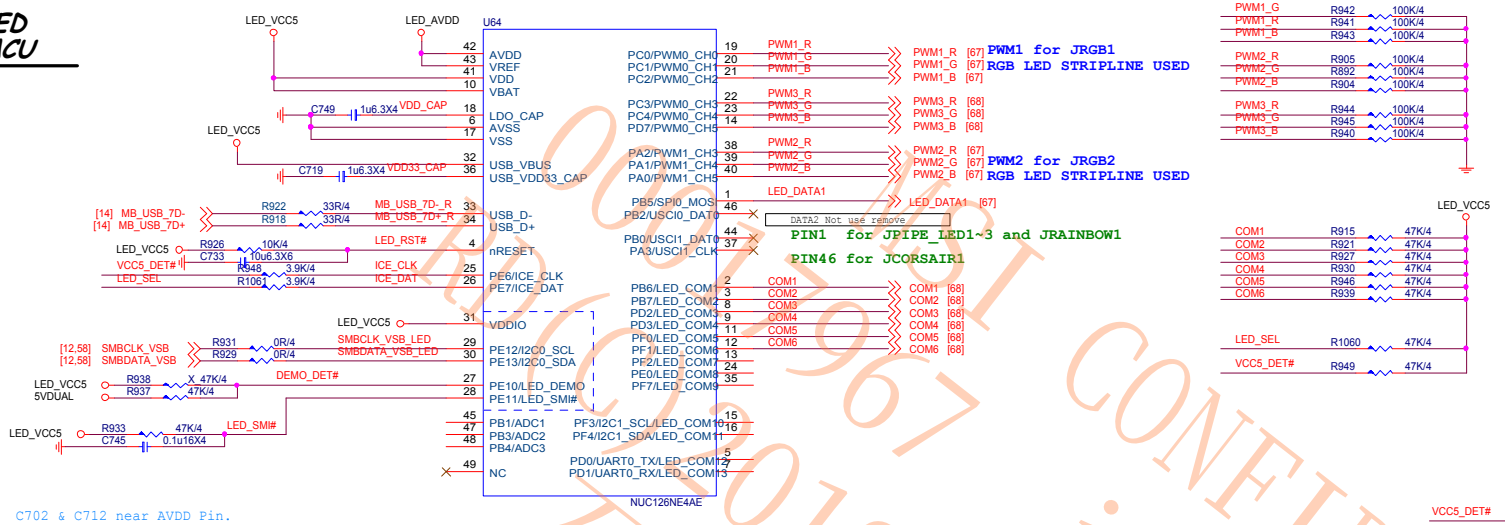
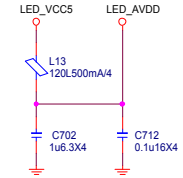
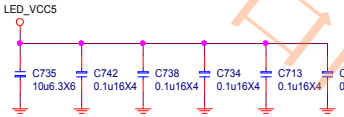
LED MCU



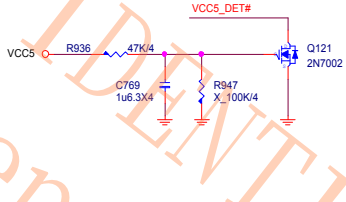
C702 & C712 near AVDD Pin.





C735 & C742 near VDD Pin.
C738 & C734 near VREF & VBAT Pin.
C713 & C746 near VDDIO & USB VBUS Pin.

7B18 Not use remove



If SPEC has LED demo function without demo button,
DEMO_DET# must pull up to LED_VCC5,Q319 need to stuff and control by LED_VCC5_EN.
PS. R2069 remove, R2032 and Q319 need to stuff

EXTERNAL POWER INPUT

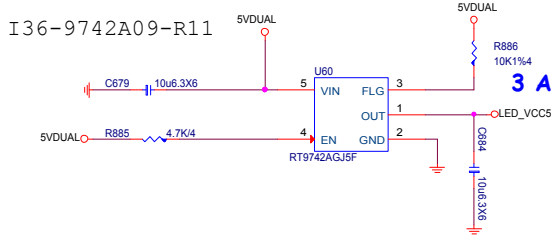
7B18 Not use remove

External Power

7B18 Not use remove

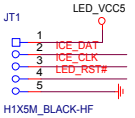
Voltage HW monitor

7B18 Not use remove



JT1 for FW update

For FW update.



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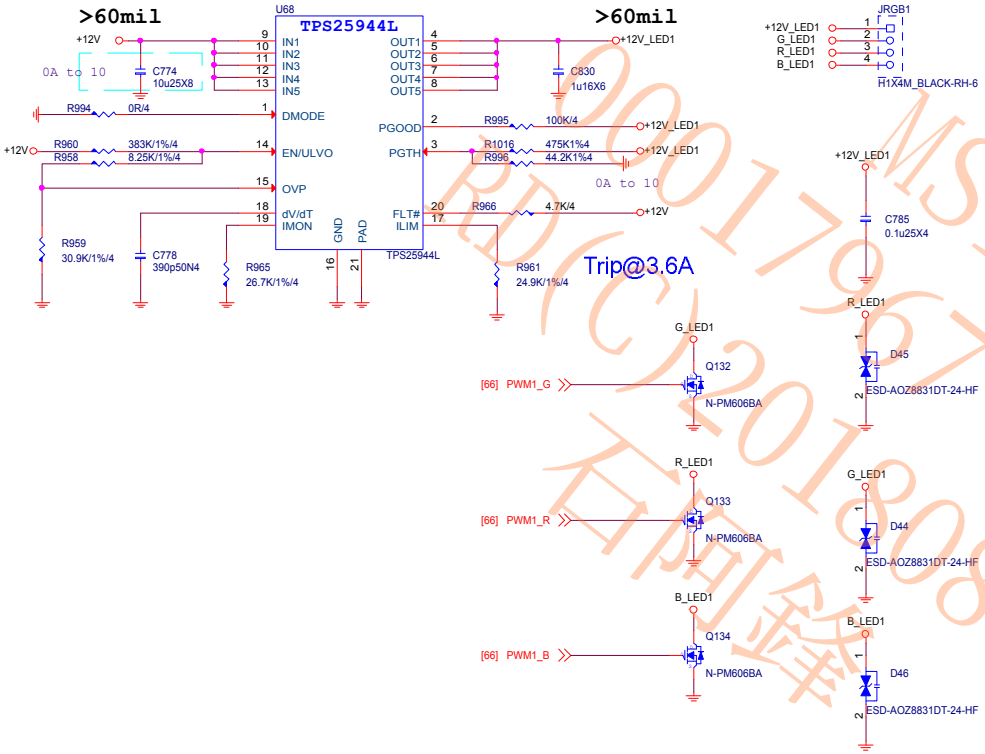
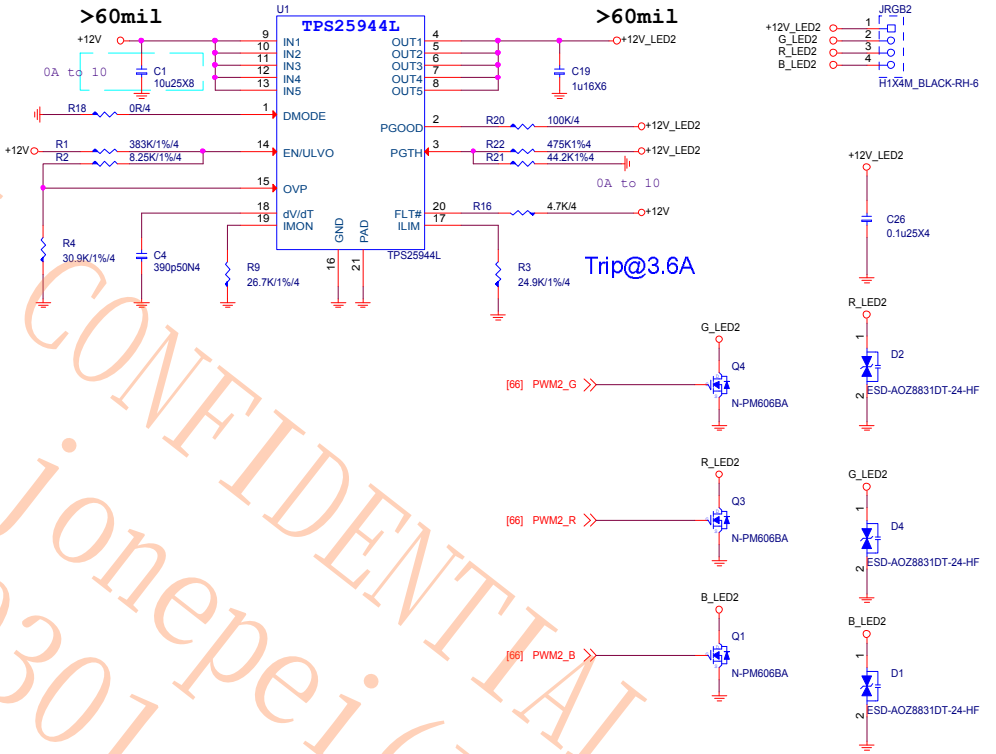
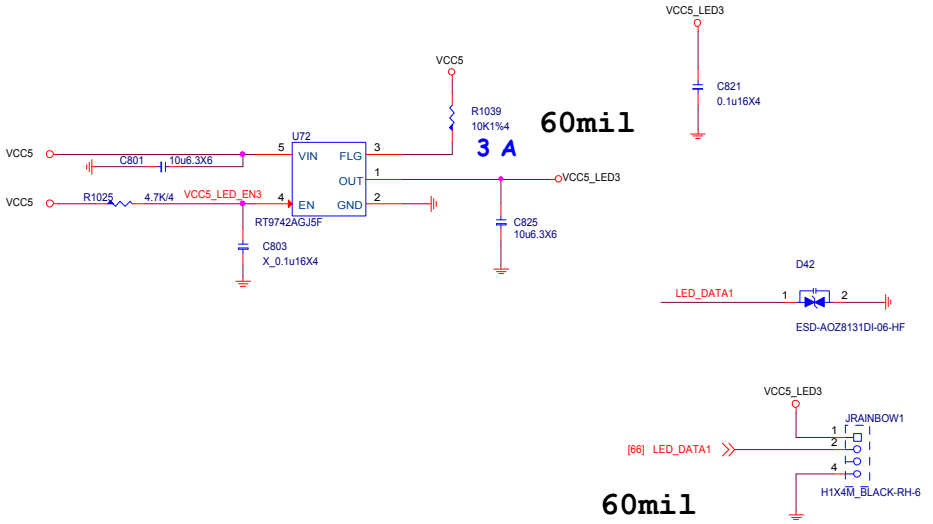
JRGB1



JRGB2



LED STRIPLINE JRAINBOW1



JCORSAIR1

7B18 Not use remove

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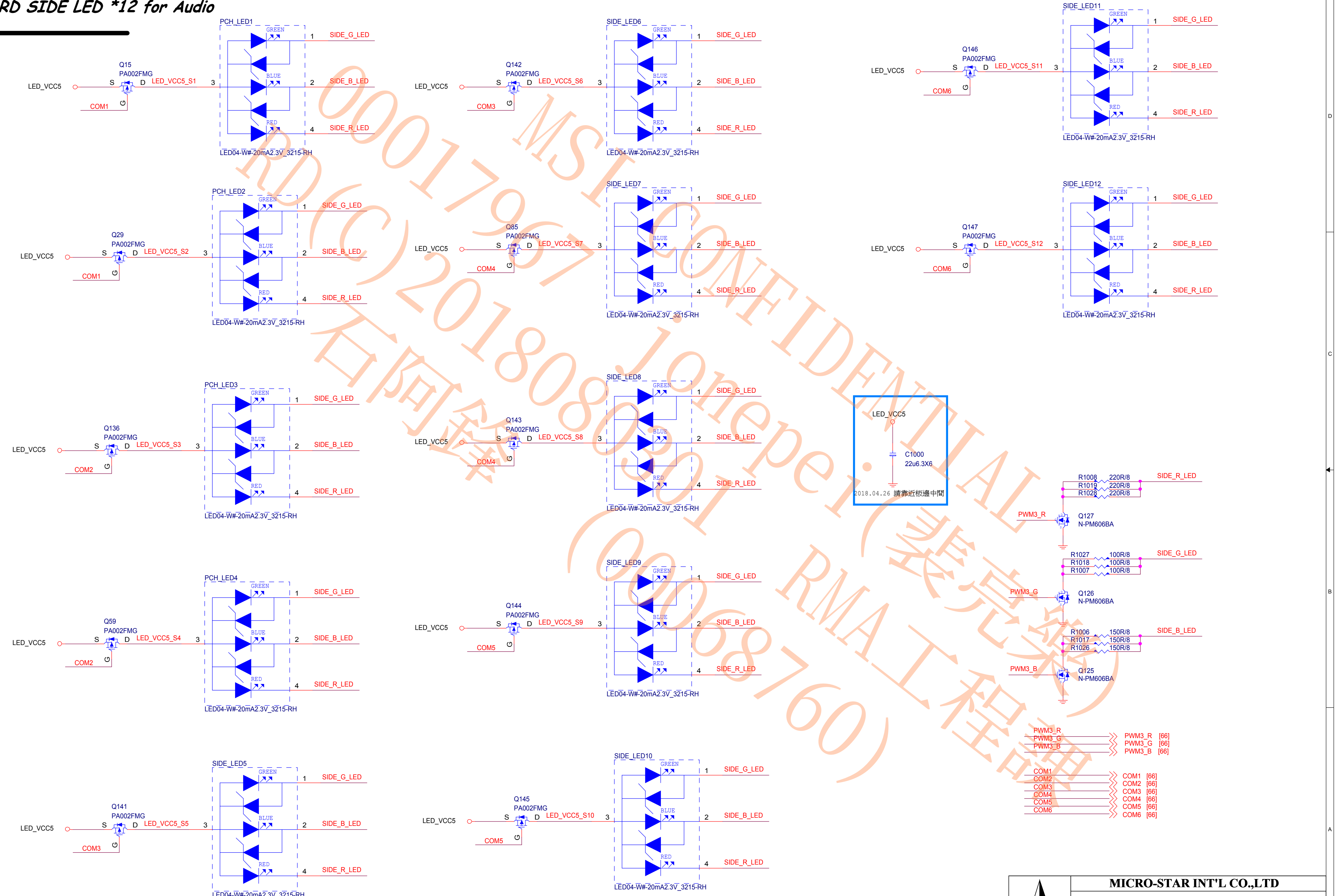
BOARD SIDE LED *12 for Audio


PCH_LED1
PCH_LED2
PCH_LED3
PCH_LED4
SIDE_LED5
SIDE_LED6
SIDE_LED7
SIDE_LED8
SIDE_LED9
SIDE_LED10
SIDE_LED11
SIDE_LED12
GREEN
BLUE
RED
LED04-W#-20mA2.3V_3215-RH
SIDE_G_LED
SIDE_B_LED
SIDE_R_LED
LED_VCC5
PA002FMG
Q15
Q29
Q136
Q59
Q141
Q142
Q85
Q143
Q144
Q145
Q146
Q147
LED_VCC5_S1
LED_VCC5_S2
LED_VCC5_S3
LED_VCC5_S4
LED_VCC5_S5
LED_VCC5_S6
LED_VCC5_S7
LED_VCC5_S8
LED_VCC5_S9
LED_VCC5_S10
LED_VCC5_S11
LED_VCC5_S12
COM1
COM2
COM3
COM4
COM5
COM6
C1000
22u6.3X6
2018.04.26 請靠近板邊中間
R1008 220R/8
R1019 220R/8
R1028 220R/8
PWM3_R
Q127
N-PM606BA
R1027 100R/8
R1018 100R/8
R1007 100R/8
PWM3_G
Q126
N-PM606BA
R1006 150R/8
R1017 150R/8
R1026 150R/8
PWM3_B
Q125
N-PM606BA
PWM3_R [66]
PWM3_G [66]
PWM3_B [66]
COM1 [66]
COM2 [66]
COM3 [66]
COM4 [66]
COM5 [66]
COM6 [66]

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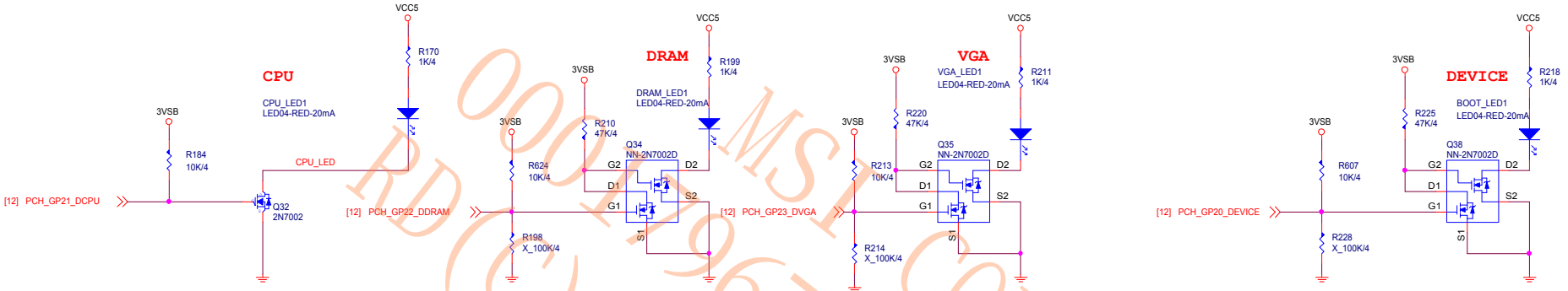
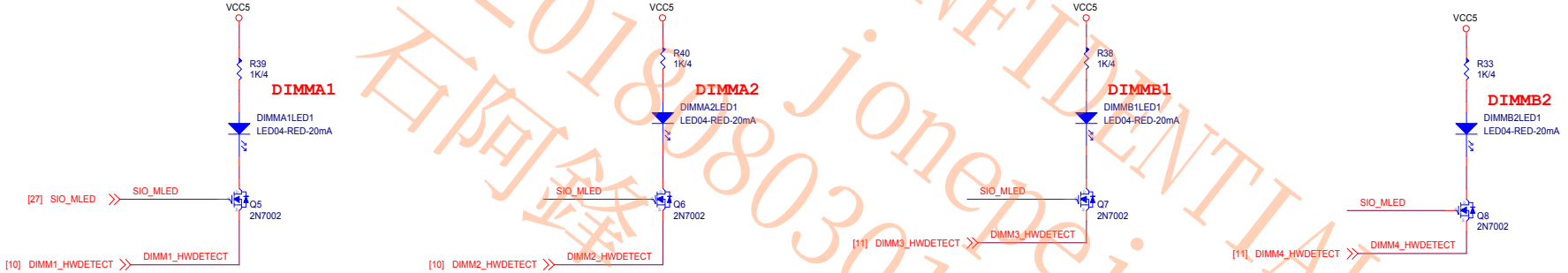
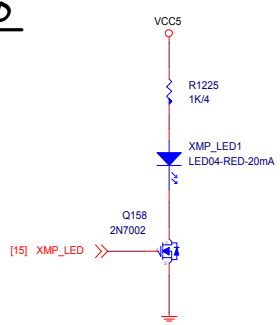


DIMM SLOT LED



XMP LED



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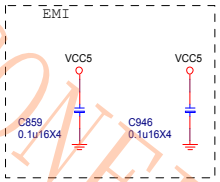
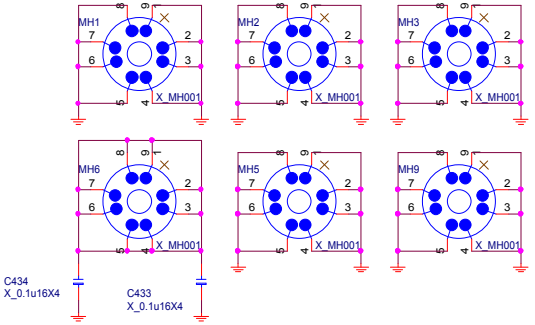
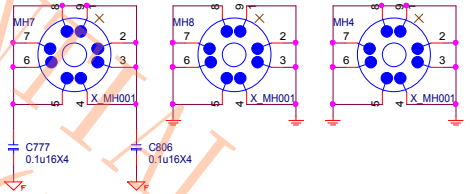
PD0-07B1810-E48
PD0-07B1810-G37

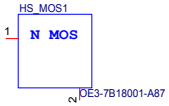


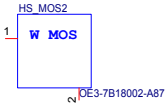
Mounting Holes



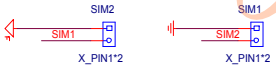


HEATSINK

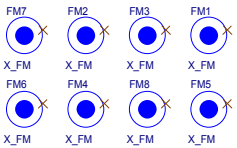


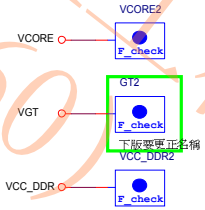


Simulation



Optical Fiducial Marks-120





VCORE	VCORE1
VGT	GT1
VCCSA	VCCSA1
VCCIO	VCCIO1
VCC_DDR	VCC_DDR1
VTT_DDR	VTT_DDR1
PCH_1P05_VSB	PCH_1VSB1
5VDUAL	5VDUAL1
5VDIMM	5VDIMM1
3VSB	3VSB1
VBAT	VBAT1
VPP25	VPP1

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