

MS-7712

Version : 1.0

CPU :

INTEL Sandy Bridge-E Processor

System Chipset :

INTEL Patsburg Chipset

On Board Chipset :

VRM 12 -- ISL6366 6 Phase

Gigabit LAN -- RTL8111E

USB 3.0 -- UPD720202

HDA Codec -- Realtek ALC892

Super I/O -- F71889AD

SPI Flash 64Mb

Main Memory :


4 Channel DDR III * 4 (Max 16GB)

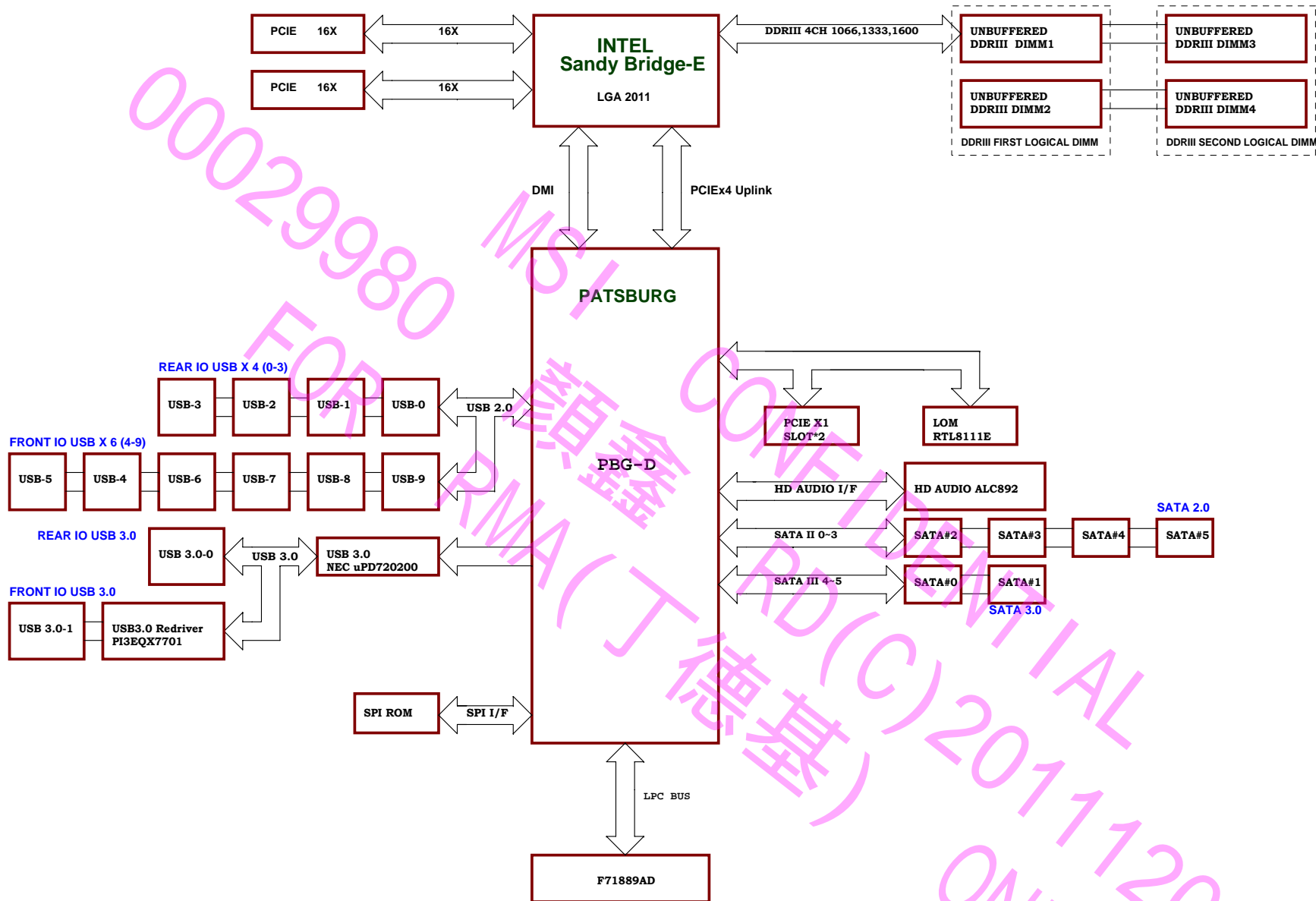
Expansion Slot :

PCI Express x16 Slot * 2

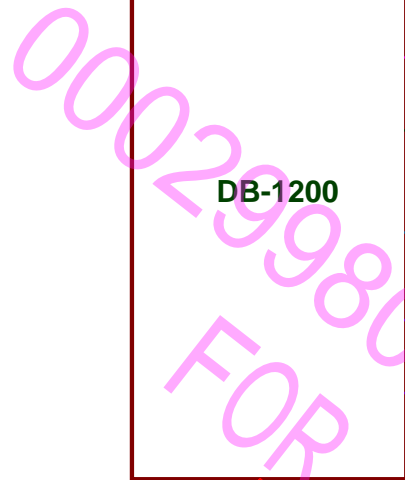
PCI Express x1 Slot * 2

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6	SNB-E MEMORY CONTROLLER
7	SNB-E MISC/RESERVED
8	SNB-E PCIE/DMI
9	SNB-E POWER
10	SNB-E GND
11	DDR III DIMM 1 / DIMM 2
12	DDR III DIMM 3 / DIMM 4
13	DDR III DQ VREF
14	PBG-PCIE/USB/DMI/SAS
15	PBG-PCI/SATA
16	PBG-SMB/LPC/AUDIO/RTC
17	PBG-NVRAM
18	PBG-POWER
19	PBG-GND
20	Clock Gen 932SQ420D
21	Clock Buffer DB1200
22	PCIE X16 slot
23	PCIE x1 Slots
24	SIO-Fintek F71889AD
25	Gigabit LAN - RTL8111E
26	USB 3.0 NEC UPD720202
27	N/A
28	SATA Port
29	Audio Codec ALC892
30	FAN Port
31	Front / Rear USB Connectors
32	PBG Core Power
33	DDR Power
34	CPU_VTT
35	VRD12 - ISL6366
36	VSA POWER
37	VCCP POWER
38	CPU Decoupling Caps
39	ATX F_Panel/EMI/LED
40	CPU XDP

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MICRO-START INT'L CO.,LTD.		
Title Block Diagram		
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REFCLK 100MHz

QPI BCLK 100MHz

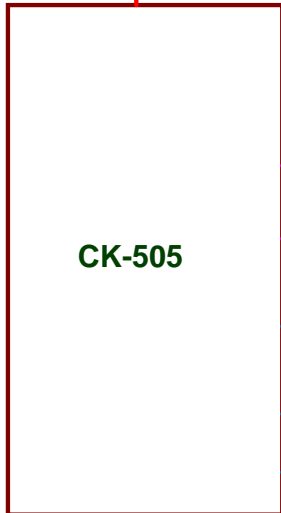
PCIE GENIII 100MHz

CLKIN 100MHz

DMI 100MHz



DB1200 100MHz



PCIE 100MHz


PCIE 100MHz

PCI 33MHz

PCI 33MHz

48MHz



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11 MEM_MA_DATA[63..0] ← MEM_MA_DATA[63..0]

MEM_MA_DATA0	CC7	DDR0_DQ_00	CH8	MEM_MA_DQS_H0	MEM_MA_DQS_H0	11
MEM_MA_DATA1	CC8	DDR0_DQ_01	CG7	MEM_MA_DQS_L0	MEM_MA_DQS_L0	11
MEM_MA_DATA2	CK8	DDR0_DQ_02				
MEM_MA_DATA3	CL8	DDR0_DQ_03	CF4	MEM_MA_DQS_H1	MEM_MA_DQS_H1	11
MEM_MA_DATA4	BY6	DDR0_DQ_04	CE3	MEM_MA_DQS_L1	MEM_MA_DQS_L1	11
MEM_MA_DATA5	CA7	DDR0_DQ_05				
MEM_MA_DATA6	CL7	DDR0_DQ_06	CK14	MEM_MA_DQS_H2	MEM_MA_DQS_H2	11
MEM_MA_DATA7	CG6	DDR0_DQ_07	CH14	MEM_MA_DQS_L2	MEM_MA_DQS_L2	11
MEM_MA_DATA8	CB4	DDR0_DQ_08				
MEM_MA_DATA9	CB4	DDR0_DQ_09	CE11	MEM_MA_DQS_H3	MEM_MA_DQS_H3	11
MEM_MA_DATA10	CH4	DDR0_DQ_10	CD10	MEM_MA_DQS_L3	MEM_MA_DQS_L3	11
MEM_MA_DATA11	CA1	DDR0_DQ_11				
MEM_MA_DATA12	CA1	DDR0_DQ_12	CC33	MEM_MA_DQS_H4	MEM_MA_DQS_H4	11
MEM_MA_DATA13	CA3	DDR0_DQ_13	CE33	MEM_MA_DQS_L4	MEM_MA_DQS_L4	11
MEM_MA_DATA14	CG3	DDR0_DQ_14				
MEM_MA_DATA15	CG5	DDR0_DQ_15	CJ33	MEM_MA_DQS_H5	MEM_MA_DQS_H5	11
MEM_MA_DATA16	CK12	DDR0_DQ_16	CL33	MEM_MA_DQS_L5	MEM_MA_DQS_L5	11
MEM_MA_DATA17	CM12	DDR0_DQ_17				
MEM_MA_DATA18	CK16	DDR0_DQ_18	CD40	MEM_MA_DQS_H6	MEM_MA_DQS_H6	11
MEM_MA_DATA19	CM16	DDR0_DQ_19	CB40	MEM_MA_DQS_L6	MEM_MA_DQS_L6	11
MEM_MA_DATA20	CG13	DDR0_DQ_20				
MEM_MA_DATA21	CL11	DDR0_DQ_21	CK40	MEM_MA_DQS_H7	MEM_MA_DQS_H7	11
MEM_MA_DATA22	CH15	DDR0_DQ_22	CH40	MEM_MA_DQS_L7	MEM_MA_DQS_L7	11
MEM_MA_DATA23	CL15	DDR0_DQ_23				
MEM_MA_DATA24	BY10	DDR0_DQ_24	CC17			
MEM_MA_DATA25	BY12	DDR0_DQ_25	CC17			
MEM_MA_DATA26	CB12	DDR0_DQ_26	CE7			
MEM_MA_DATA27	CB12	DDR0_DQ_27	CE7			
MEM_MA_DATA28	CB12	DDR0_DQ_28	CE7			
MEM_MA_DATA29	CB12	DDR0_DQ_29	CE7			
MEM_MA_DATA30	CH10	DDR0_DQ_30	CE7			
MEM_MA_DATA31	CF10	DDR0_DQ_31	CE7			
MEM_MA_DATA32	CE31	DDR0_DQ_32	CE7			
MEM_MA_DATA33	CE31	DDR0_DQ_33	CE7			
MEM_MA_DATA34	CE31	DDR0_DQ_34	CE7			
MEM_MA_DATA35	CC36	DDR0_DQ_35	CE7			
MEM_MA_DATA36	CC36	DDR0_DQ_36	CE7			
MEM_MA_DATA37	CC36	DDR0_DQ_37	CE7			
MEM_MA_DATA38	CC36	DDR0_DQ_38	CE7			
MEM_MA_DATA39	CC36	DDR0_DQ_39	CE7			
MEM_MA_DATA40	CL31	DDR0_DQ_40	CE7			
MEM_MA_DATA41	CL31	DDR0_DQ_41	CE7			
MEM_MA_DATA42	CL36	DDR0_DQ_42	CE7			
MEM_MA_DATA43	CL36	DDR0_DQ_43	CE7			
MEM_MA_DATA44	CK30	DDR0_DQ_44	CE7			
MEM_MA_DATA45	CH30	DDR0_DQ_45	CE7			
MEM_MA_DATA46	CK34	DDR0_DQ_46	CE7			
MEM_MA_DATA47	CH34	DDR0_DQ_47	CE7			
MEM_MA_DATA48	CB38	DDR0_DQ_48	CE7			
MEM_MA_DATA49	CB38	DDR0_DQ_49	CE7			
MEM_MA_DATA50	CE41	DDR0_DQ_50	CE7			
MEM_MA_DATA51	CD42	DDR0_DQ_51	CE7			
MEM_MA_DATA52	CC47	DDR0_DQ_52	CE7			
MEM_MA_DATA53	CE47	DDR0_DQ_53	CE7			
MEM_MA_DATA54	CC41	DDR0_DQ_54	CE7			
MEM_MA_DATA55	CH58	DDR0_DQ_55	CE7			
MEM_MA_DATA56	CK38	DDR0_DQ_56	CE7			
MEM_MA_DATA57	CH42	DDR0_DQ_57	CE7			
MEM_MA_DATA58	CK42	DDR0_DQ_58	CE7			
MEM_MA_DATA59	CK37	DDR0_DQ_59	CE7			
MEM_MA_DATA60	CK37	DDR0_DQ_60	CE7			
MEM_MA_DATA61	CK41	DDR0_DQ_61	CE7			
MEM_MA_DATA62	CK41	DDR0_DQ_62	CE7			
MEM_MA_DATA63	CK41	DDR0_DQ_63	CE7			


RSVD_037
RSVD_038
RSVD_039
RSVD_040
RSVD_041
RSVD_042
RSVD_043
RSVD_044
RSVD_045
RSVD_046
RSVD_047
RSVD_048
RSVD_049
RSVD_050
RSVD_051
RSVD_052
RSVD_053
RSVD_054

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MEM_MB_DATA0	CP4	DDR1_DQ_00	CR3	MEM_MB_DQS_H0	MEM_MB_DQS_H0	11
MEM_MB_DATA1	CP2	DDR1_DQ_01	CT4	MEM_MB_DQS_L0	MEM_MB_DQS_L0	11
MEM_MB_DATA2	CV4	DDR1_DQ_02				
MEM_MB_DATA3	CV4	DDR1_DQ_03	DE9	MEM_MB_DQS_H1	MEM_MB_DQS_H1	11
MEM_MB_DATA4	CM4	DDR1_DQ_04	DC9	MEM_MB_DQS_L1	MEM_MB_DQS_L1	11
MEM_MB_DATA5	CL3	DDR1_DQ_05				
MEM_MB_DATA6	CV2	DDR1_DQ_06	CI9	MEM_MB_DQS_H2	MEM_MB_DQS_H2	11
MEM_MB_DATA7	CV8	DDR1_DQ_07	CV8	MEM_MB_DQS_L2	MEM_MB_DQS_L2	11
MEM_MB_DATA8	DA7	DDR1_DQ_08				
MEM_MB_DATA9	DC7	DDR1_DQ_09	CI15	MEM_MB_DQS_H3	MEM_MB_DQS_H3	11
MEM_MB_DATA10	DC11	DDR1_DQ_10	CR15	MEM_MB_DQS_L3	MEM_MB_DQS_L3	11
MEM_MB_DATA11	DE11	DDR1_DQ_11				
MEM_MB_DATA12	CV6	DDR1_DQ_12	CP32	MEM_MB_DQS_H4	MEM_MB_DQS_H4	11
MEM_MB_DATA13	DB6	DDR1_DQ_13	CT22	MEM_MB_DQS_L4	MEM_MB_DQS_L4	11
MEM_MB_DATA14	DB10	DDR1_DQ_14				
MEM_MB_DATA15	DB10	DDR1_DQ_15	DB34	MEM_MB_DQS_H5	MEM_MB_DQS_H5	11
MEM_MB_DATA16	CI7	DDR1_DQ_16	CV34	MEM_MB_DQS_L5	MEM_MB_DQS_L5	11
MEM_MB_DATA17	CI7	DDR1_DQ_17				
MEM_MB_DATA18	CP10	DDR1_DQ_18	CI38	MEM_MB_DQS_H6	MEM_MB_DQS_H6	11
MEM_MB_DATA19	CP10	DDR1_DQ_19	CV38	MEM_MB_DQS_L6	MEM_MB_DQS_L6	11
MEM_MB_DATA20	CP6	DDR1_DQ_20				
MEM_MB_DATA21	CV9	DDR1_DQ_21	DC38	MEM_MB_DQS_H7	MEM_MB_DQS_H7	11
MEM_MB_DATA22	CR13	DDR1_DQ_22	DE38	MEM_MB_DQS_L7	MEM_MB_DQS_L7	11
MEM_MB_DATA23	CV10	DDR1_DQ_23				
MEM_MB_DATA24	CV10	DDR1_DQ_24	DC15			
MEM_MB_DATA25	CV10	DDR1_DQ_25	DE15			
MEM_MB_DATA26	CV10	DDR1_DQ_26	CT2			
MEM_MB_DATA27	CV10	DDR1_DQ_27	CR1			
MEM_MB_DATA28	CV10	DDR1_DQ_28				
MEM_MB_DATA29	CV10	DDR1_DQ_29	RSVD_021			
MEM_MB_DATA30	CV10	DDR1_DQ_30	RSVD_022			
MEM_MB_DATA31	CV10	DDR1_DQ_31	DB8			
MEM_MB_DATA32	CV10	DDR1_DQ_32	CP8			
MEM_MB_DATA33	CV10	DDR1_DQ_33	CT8			
MEM_MB_DATA34	CV10	DDR1_DQ_34				
MEM_MB_DATA35	CV10	DDR1_DQ_35	CT14			
MEM_MB_DATA36	CV10	DDR1_DQ_36	CP14			
MEM_MB_DATA37	CV10	DDR1_DQ_37				
MEM_MB_DATA38	CV10	DDR1_DQ_38	CU33			
MEM_MB_DATA39	CV10	DDR1_DQ_39	RSVD_027			
MEM_MB_DATA40	CV10	DDR1_DQ_40	RSVD_028			
MEM_MB_DATA41	CV10	DDR1_DQ_41	DC33			
MEM_MB_DATA42	CV10	DDR1_DQ_42	DE33			
MEM_MB_DATA43	CV10	DDR1_DQ_43				
MEM_MB_DATA44	CV10	DDR1_DQ_44	CP38			
MEM_MB_DATA45	CV10	DDR1_DQ_45	CT38			
MEM_MB_DATA46	CV10	DDR1_DQ_46				
MEM_MB_DATA47	CV10	DDR1_DQ_47	RSVD_033			
MEM_MB_DATA48	CV10	DDR1_DQ_48	CT38			
MEM_MB_DATA49	CV10	DDR1_DQ_49				
MEM_MB_DATA50	CV10	DDR1_DQ_50	RSVD_034			
MEM_MB_DATA51	CV10	DDR1_DQ_51	RSVD_035			
MEM_MB_DATA52	CV10	DDR1_DQ_52	DB15			
MEM_MB_DATA53	CV10	DDR1_DQ_53				
MEM_MB_DATA54	CV10	DDR1_DQ_54				
MEM_MB_DATA55	CV10	DDR1_DQ_55				
MEM_MB_DATA56	CV10	DDR1_DQ_56				
MEM_MB_DATA57	CV10	DDR1_DQ_57				
MEM_MB_DATA58	CV10	DDR1_DQ_58				
MEM_MB_DATA59	CV10	DDR1_DQ_59				
MEM_MB_DATA60	CV10	DDR1_DQ_60				
MEM_MB_DATA61	CV10	DDR1_DQ_61				
MEM_MB_DATA62	CV10	DDR1_DQ_62				
MEM_MB_DATA63	CV10	DDR1_DQ_63				

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12 MEM_MC_DATA[63..0] <-


MEM_MC_DATA0_T40	DDR2_DQ_00	DDR2_DQS_DP_00	V38 MEM MC DQS_H0	MEM_MC_DQS_H0 12
MEM_MC_DATA1_V40	DDR2_DQ_01	DDR2_DQS_DN_00	T38 MEM MC DQS_L0	MEM_MC_DQS_L0 12
MEM_MC_DATA2_P40	DDR2_DQ_02			
MEM_MC_DATA3_T36	DDR2_DQ_03	DDR2_DQS_DP_01	AB38 MEM MC DQS_H1	MEM_MC_DQS_H1 12
MEM_MC_DATA4_R41	DDR2_DQ_04	DDR2_DQS_DN_01	AD38 MEM MC DQS_L1	MEM_MC_DQS_L1 12
MEM_MC_DATA5_U41	DDR2_DQ_05			
MEM_MC_DATA6_R37	DDR2_DQ_06	DDR2_DQS_DP_02	U31 MEM MC DQS_H2	MEM_MC_DQS_H2 12
MEM_MC_DATA7_U37	DDR2_DQ_07	DDR2_DQS_DN_02	W31 MEM MC DQS_L2	MEM_MC_DQS_L2 12
MEM_MC_DATA8_A41	DDR2_DQ_08			
MEM_MC_DATA9_AD40	DDR2_DQ_09	DDR2_DQS_DP_03	AC33 MEM MC DQS_H3	MEM_MC_DQS_H3 12
MEM_MC_DATA10_A43	DDR2_DQ_10	DDR2_DQS_DN_03	AA33 MEM MC DQS_L3	MEM_MC_DQS_L3 12
MEM_MC_DATA11_AC37	DDR2_DQ_11			
MEM_MC_DATA12_AC41	DDR2_DQ_12	DDR2_DQS_DP_04	AE11 MEM MC DQS_H4	MEM_MC_DQS_H4 12
MEM_MC_DATA13_A44	DDR2_DQ_13	DDR2_DQS_DN_04	AC11 MEM MC DQS_L4	MEM_MC_DQS_L4 12
MEM_MC_DATA14_AE38	DDR2_DQ_14			
MEM_MC_DATA15_AE37	DDR2_DQ_15	DDR2_DQS_DP_05	AC7 MEM MC DQS_H5	MEM_MC_DQS_H5 12
MEM_MC_DATA16_U33	DDR2_DQ_16	DDR2_DQS_DN_05	AB8 MEM MC DQS_L5	MEM_MC_DQS_L5 12
MEM_MC_DATA17_R33	DDR2_DQ_17			
MEM_MC_DATA18_W28	DDR2_DQ_18	DDR2_DQS_DP_06	W11 MEM MC DQS_H6	MEM_MC_DQS_H6 12
MEM_MC_DATA19_U28	DDR2_DQ_19	DDR2_DQS_DN_06	U11 MEM MC DQS_L6	MEM_MC_DQS_L6 12
MEM_MC_DATA20_T34	DDR2_DQ_20			
MEM_MC_DATA21_P34	DDR2_DQ_21	DDR2_DQS_DP_07	AB4 MEM MC DQS_H7	MEM_MC_DQS_H7 12
MEM_MC_DATA22_V30	DDR2_DQ_22	DDR2_DQS_DN_07	AC3 MEM MC DQS_L7	MEM_MC_DQS_L7 12
MEM_MC_DATA23_T30	DDR2_DQ_23			
MEM_MC_DATA24_AE38	DDR2_DQ_24	DDR2_DQS_DP_08	AC23 MEM MC DQS_H8	MEM_MC_DQS_H8 12
MEM_MC_DATA25_AE33	DDR2_DQ_25	DDR2_DQS_DN_08	AB28 MEM MC DQS_L8	MEM_MC_DQS_L8 12
MEM_MC_DATA26_AE33	DDR2_DQ_26			
MEM_MC_DATA27_AE33	DDR2_DQ_27	RSVD_001	U39 X	
MEM_MC_DATA28_A36	DDR2_DQ_28	RSVD_002	W39 X	
MEM_MC_DATA29_W36	DDR2_DQ_29			
MEM_MC_DATA30_AE33	DDR2_DQ_30	RSVD_003	AB40 X	
MEM_MC_DATA31_AD32	DDR2_DQ_31	RSVD_004	AC39 X	
MEM_MC_DATA32_AE13	DDR2_DQ_32			
MEM_MC_DATA33_AE13	DDR2_DQ_33	RSVD_005	V32 X	
MEM_MC_DATA34_AE11	DDR2_DQ_34	RSVD_006	T32 X	
MEM_MC_DATA35_AE10	DDR2_DQ_35			
MEM_MC_DATA36_AE10	DDR2_DQ_36	RSVD_007	V34 X	
MEM_MC_DATA37_AE10	DDR2_DQ_37	RSVD_008	AB35 X	
MEM_MC_DATA38_AE10	DDR2_DQ_38			
MEM_MC_DATA39_AE10	DDR2_DQ_39	RSVD_009	AB19 X	
MEM_MC_DATA40_V6	DDR2_DQ_40	RSVD_010	AD13 X	
MEM_MC_DATA41_Y6	DDR2_DQ_41			
MEM_MC_DATA42_AE8	DDR2_DQ_42	RSVD_011	Y8 X	
MEM_MC_DATA43_AE7	DDR2_DQ_43	RSVD_012	AA7 X	
MEM_MC_DATA44_U7	DDR2_DQ_44			
MEM_MC_DATA45_W7	DDR2_DQ_45	RSVD_013	T12 X	
MEM_MC_DATA46_AE8	DDR2_DQ_46	RSVD_014	V12 X	
MEM_MC_DATA47_AE7	DDR2_DQ_47			
MEM_MC_DATA48_R13	DDR2_DQ_48	RSVD_015	AC6 X	
MEM_MC_DATA49_U13	DDR2_DQ_49	RSVD_016	AD4 X	
MEM_MC_DATA50_T10	DDR2_DQ_50			
MEM_MC_DATA51_V10	DDR2_DQ_51	RSVD_017	AC28 X	
MEM_MC_DATA52_T14	DDR2_DQ_52	RSVD_018	AD28 X	
MEM_MC_DATA53_V14	DDR2_DQ_53			
MEM_MC_DATA54_R9	DDR2_DQ_54			
MEM_MC_DATA55_U9	DDR2_DQ_55			
MEM_MC_DATA56_W3	DDR2_DQ_56			
MEM_MC_DATA57_Y4	DDR2_DQ_57			
MEM_MC_DATA58_AE4	DDR2_DQ_58			
MEM_MC_DATA59_AE5	DDR2_DQ_59			
MEM_MC_DATA60_U9	DDR2_DQ_60			
MEM_MC_DATA61_V4	DDR2_DQ_61			
MEM_MC_DATA62_AE2	DDR2_DQ_62			
MEM_MC_DATA63_AE3	DDR2_DQ_63			
AF30	DDR2_ECC_0			
AF28	DDR2_ECC_1			
Y26	DDR2_ECC_2			
AB26	DDR2_ECC_3			
AB30	DDR2_ECC_4			
AD30	DDR2_ECC_5			
W27	DDR2_ECC_6			
W25	DDR2_ECC_7			

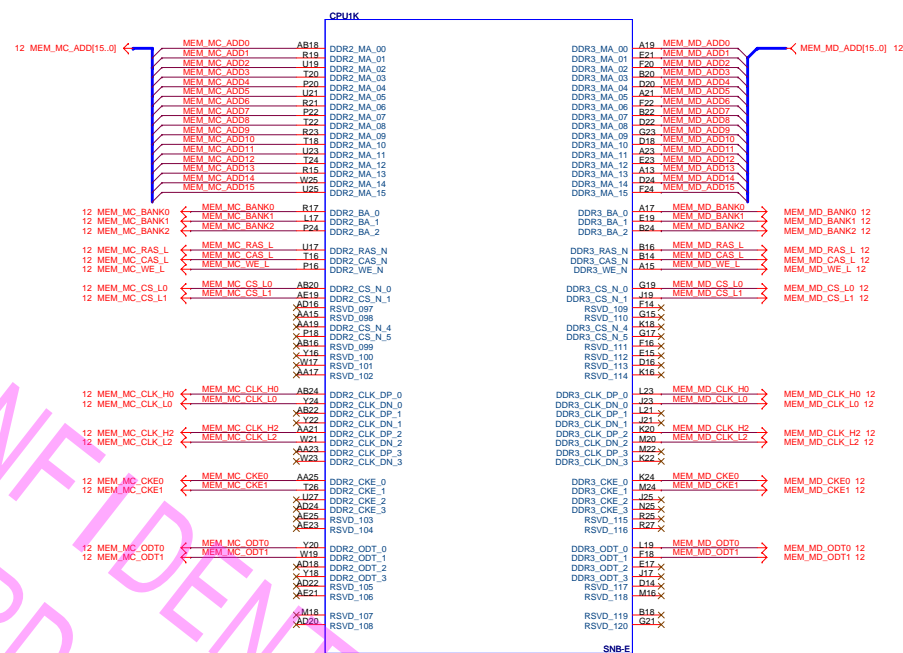
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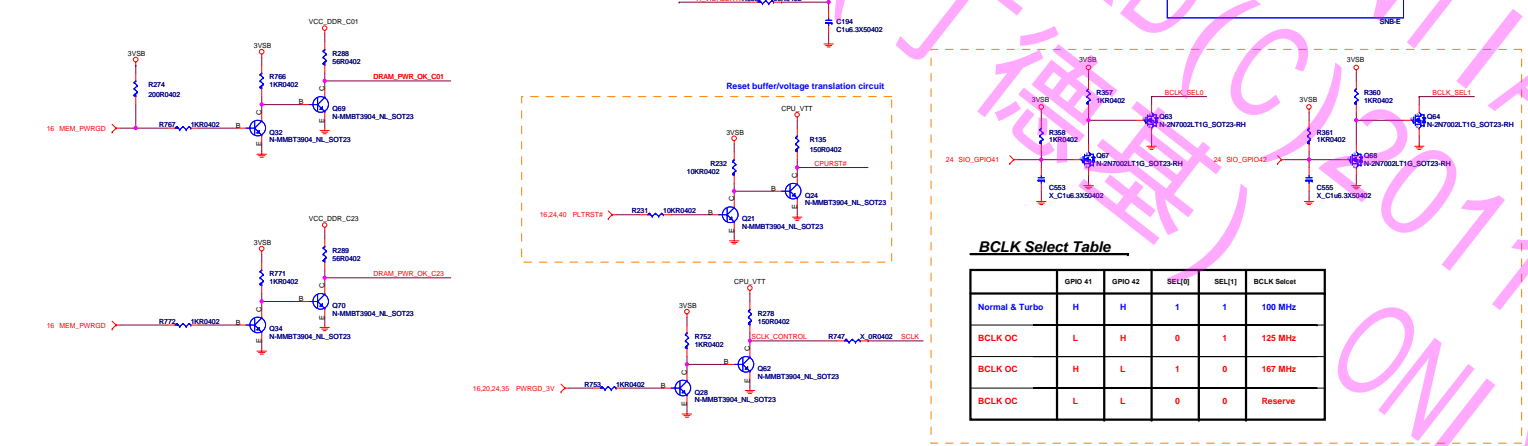
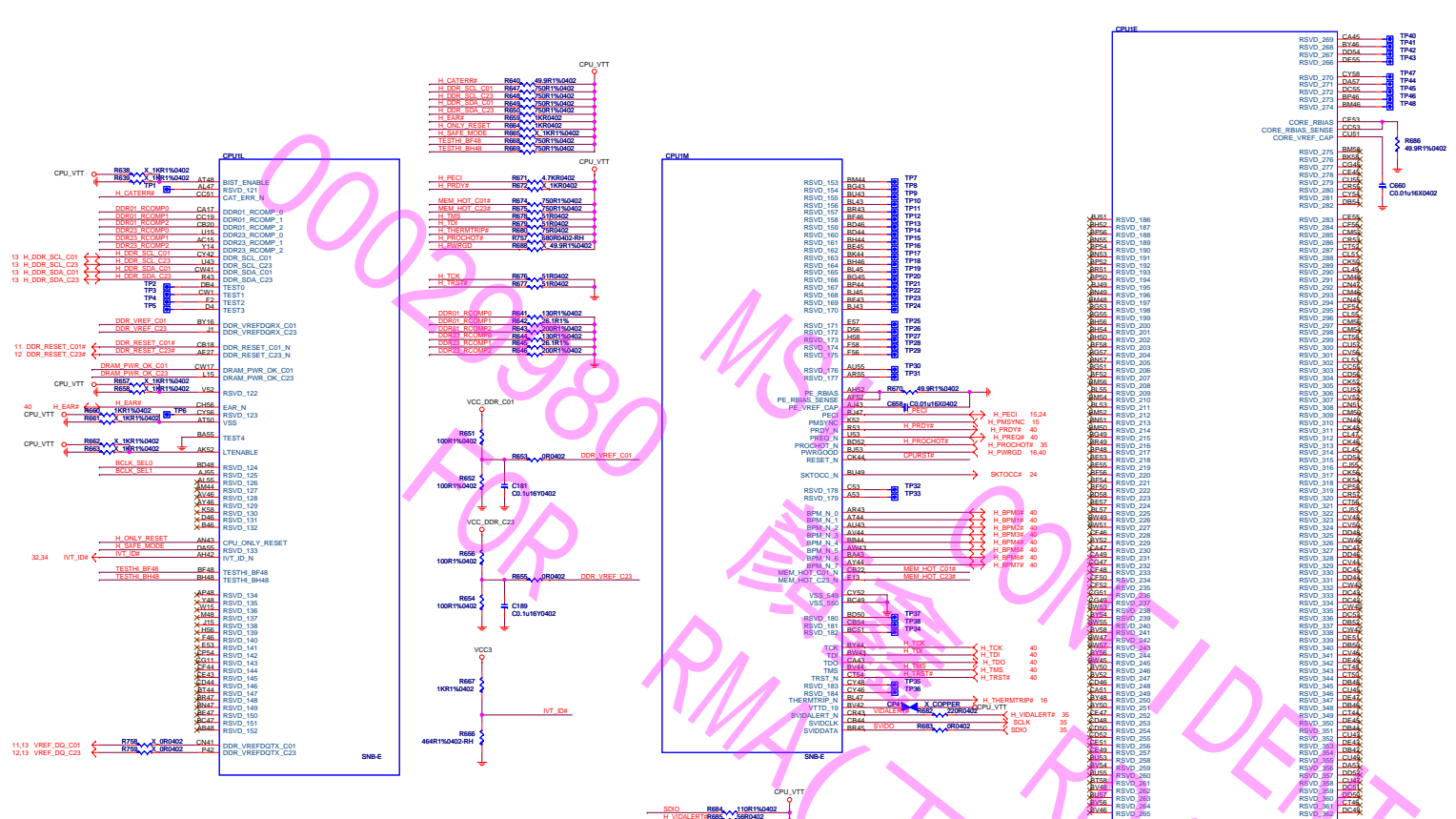
12 MEM_MD_DATA[63..0] <-

MEM_MD_DATA0_B40	DDR3_DQ_00	DDR3_DQS_DP_00	D38 MEM MD DQS_H0	MEM_MD_DQS_H0 12
MEM_MD_DATA1_A39	DDR3_DQ_01	DDR3_DQS_DN_00	B38 MEM MD DQS_L0	MEM_MD_DQS_L0 12
MEM_MD_DATA2_C37	DDR3_DQ_02			
MEM_MD_DATA3_E37	DDR3_DQ_03	DDR3_DQS_DP_01	J37 MEM MD DQS_H1	MEM_MD_DQS_H1 12
MEM_MD_DATA4_F40	DDR3_DQ_04	DDR3_DQS_DN_01	L37 MEM MD DQS_L1	MEM_MD_DQS_L1 12
MEM_MD_DATA5_D40	DDR3_DQ_05			
MEM_MD_DATA6_F38	DDR3_DQ_06	DDR3_DQS_DP_02	E33 MEM MD DQS_H2	MEM_MD_DQS_H2 12
MEM_MD_DATA7_A37	DDR3_DQ_07	DDR3_DQS_DN_02	G33 MEM MD DQS_L2	MEM_MD_DQS_L2 12
MEM_MD_DATA8_N30	DDR3_DQ_08			
MEM_MD_DATA9_L39	DDR3_DQ_09	DDR3_DQS_DP_03	N29 MEM MD DQS_H3	MEM_MD_DQS_H3 12
MEM_MD_DATA10_L36	DDR3_DQ_10	DDR3_DQS_DN_03	P28 MEM MD DQS_L3	MEM_MD_DQS_L3 12
MEM_MD_DATA11_J36	DDR3_DQ_11			
MEM_MD_DATA12_M40	DDR3_DQ_12	DDR3_DQS_DP_04	D10 MEM MD DQS_H4	MEM_MD_DQS_H4 12
MEM_MD_DATA13_K36	DDR3_DQ_13	DDR3_DQS_DN_04	B10 MEM MD DQS_L4	MEM_MD_DQS_L4 12
MEM_MD_DATA14_K36	DDR3_DQ_14			
MEM_MD_DATA15_H38	DDR3_DQ_15	DDR3_DQS_DP_05	N11 MEM MD DQS_H5	MEM_MD_DQS_H5 12
MEM_MD_DATA16_A35	DDR3_DQ_16	DDR3_DQS_DN_05	L11 MEM MD DQS_L5	MEM_MD_DQS_L5 12
MEM_MD_DATA17_F34	DDR3_DQ_17			
MEM_MD_DATA18_D32	DDR3_DQ_18	DDR3_DQS_DP_06	K5 MEM MD DQS_H6	MEM_MD_DQS_H6 12
MEM_MD_DATA19_F32	DDR3_DQ_19	DDR3_DQS_DN_06	J7 MEM MD DQS_L6	MEM_MD_DQS_L6 12
MEM_MD_DATA20_E36	DDR3_DQ_20			
MEM_MD_DATA21_C39	DDR3_DQ_21	DDR3_DQS_DP_07	M4 MEM MD DQS_H7	MEM_MD_DQS_H7 12
MEM_MD_DATA22_A33	DDR3_DQ_22	DDR3_DQS_DN_07	L3 MEM MD DQS_L7	MEM_MD_DQS_L7 12
MEM_MD_DATA23_B32	DDR3_DQ_23			
MEM_MD_DATA24_M32	DDR3_DQ_24	DDR3_DQS_DP_08	E27 X	
MEM_MD_DATA25_L31	DDR3_DQ_25	DDR3_DQS_DN_08	G27 X	
MEM_MD_DATA26_M28	DDR3_DQ_26			
MEM_MD_DATA27_L27	DDR3_DQ_27	RSVD_055	E39 X	
MEM_MD_DATA28_L33	DDR3_DQ_28	RSVD_056	G39 X	
MEM_MD_DATA29_K32	DDR3_DQ_29			
MEM_MD_DATA30_N27	DDR3_DQ_30	RSVD_057	M38 X	
MEM_MD_DATA31_M26	DDR3_DQ_31	RSVD_058	K38 X	
MEM_MD_DATA32_D17	DDR3_DQ_32			
MEM_MD_DATA33_A11	DDR3_DQ_33	RSVD_059	D34 X	
MEM_MD_DATA34_C9	DDR3_DQ_34	RSVD_060	B34 X	
MEM_MD_DATA35_E9	DDR3_DQ_35			
MEM_MD_DATA36_F12	DDR3_DQ_36	RSVD_061	N31 X	
MEM_MD_DATA37_B12	DDR3_DQ_37	RSVD_062	M30 X	
MEM_MD_DATA38_F10	DDR3_DQ_38			
MEM_MD_DATA39_A9	DDR3_DQ_39	RSVD_063	E11 X	
MEM_MD_DATA40_H13	DDR3_DQ_40	RSVD_064	G11 X	
MEM_MD_DATA41_L13	DDR3_DQ_41			
MEM_MD_DATA42_J9	DDR3_DQ_42	RSVD_065	K12 X	
MEM_MD_DATA43_L9	DDR3_DQ_43	RSVD_066	M12 X	
MEM_MD_DATA44_K14	DDR3_DQ_44			
MEM_MD_DATA45_M14	DDR3_DQ_45	RSVD_067	G7 X	
MEM_MD_DATA46_K10	DDR3_DQ_46	RSVD_068	H6 X	
MEM_MD_DATA47_M10	DDR3_DQ_47			
MEM_MD_DATA48_E7	DDR3_DQ_48	RSVD_069	J3 X	
MEM_MD_DATA49_F8	DDR3_DQ_49	RSVD_070	K4 X	
MEM_MD_DATA50_N7	DDR3_DQ_50			
MEM_MD_DATA51_P6	DDR3_DQ_51	RSVD_071	E28 X	
MEM_MD_DATA52_C7	DDR3_DQ_52	RSVD_072	H28 X	
MEM_MD_DATA53_D6	DDR3_DQ_53			
MEM_MD_DATA54_M6	DDR3_DQ_54			
MEM_MD_DATA55_G3	DDR3_DQ_55			
MEM_MD_DATA57_H2	DDR3_DQ_56			
MEM_MD_DATA58_N3	DDR3_DQ_57			
MEM_MD_DATA59_P4	DDR3_DQ_58			
MEM_MD_DATA60_F4	DDR3_DQ_59			
MEM_MD_DATA61_H4	DDR3_DQ_60			
MEM_MD_DATA62_L1	DDR3_DQ_61			
MEM_MD_DATA63_M2	DDR3_DQ_62			
	DDR3_DQ_63			
XG29	DDR3_ECC_0			
XJ29	DDR3_ECC_1			
XE25	DDR3_ECC_2			
XG25	DDR3_ECC_3			
XF30	DDR3_ECC_4			
XH30	DDR3_ECC_5			
XF28	DDR3_ECC_6			
XH26	DDR3_ECC_7			

SNB-E

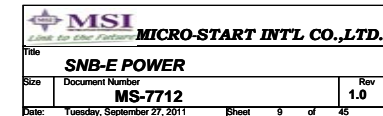
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Title SNB-E MEMORY 3 & 4		
Size	Document Number MS-7712	Rev 1.0
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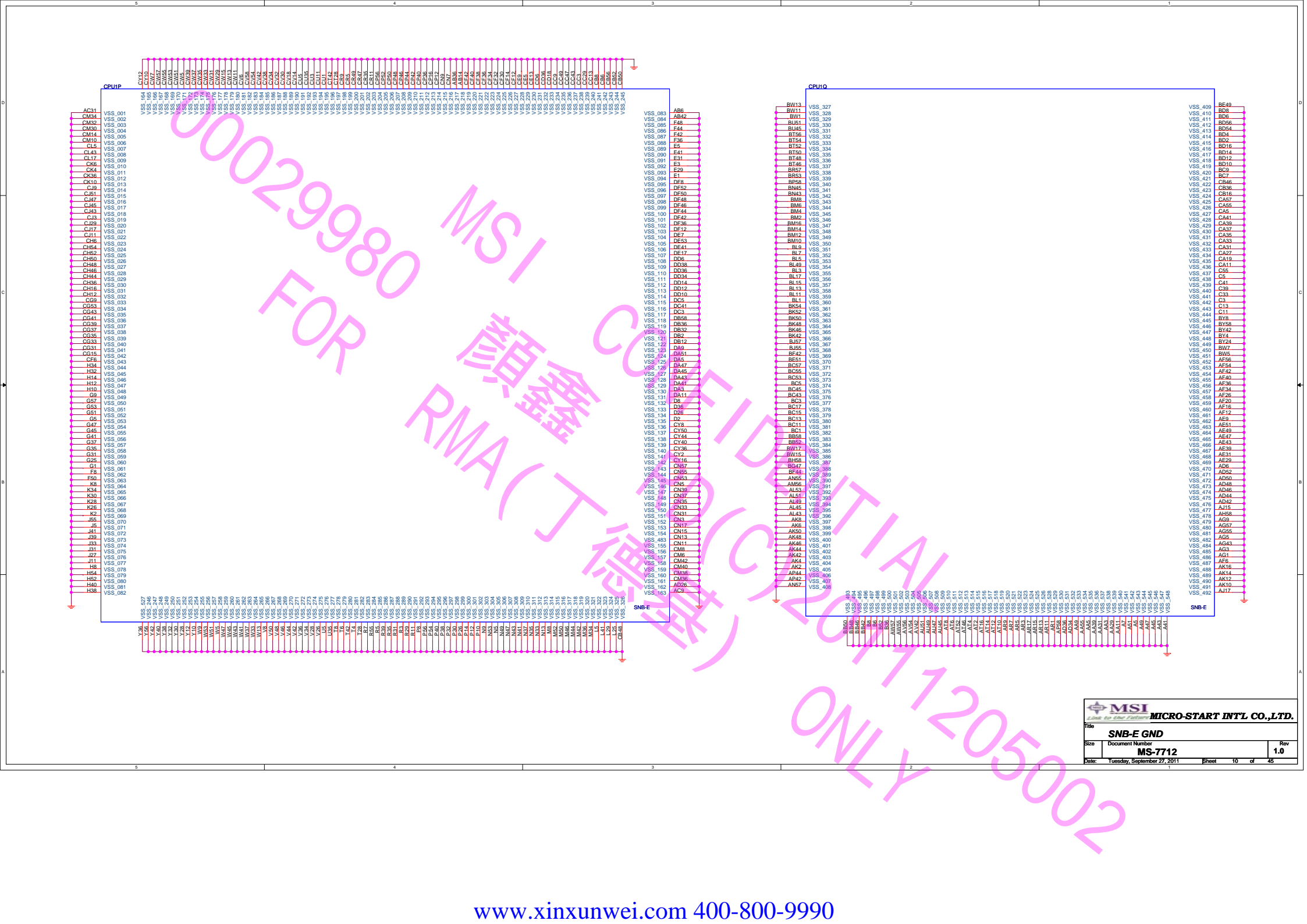




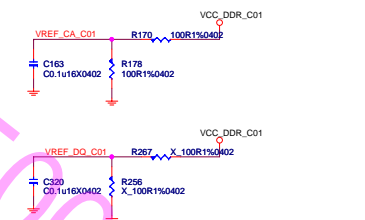
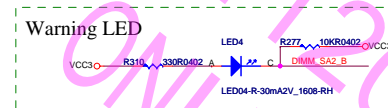
BCLK Select Table

	GPIO 41	GPIO 42	SEL[0]	SEL[1]	BCLK Select
Normal & Turbo	H	H	1	1	100 MHz
BCLK OC	L	H	0	1	125 MHz
BCLK OC	H	L	1	0	167 MHz
BCLK OC	L	L	0	0	Reserve

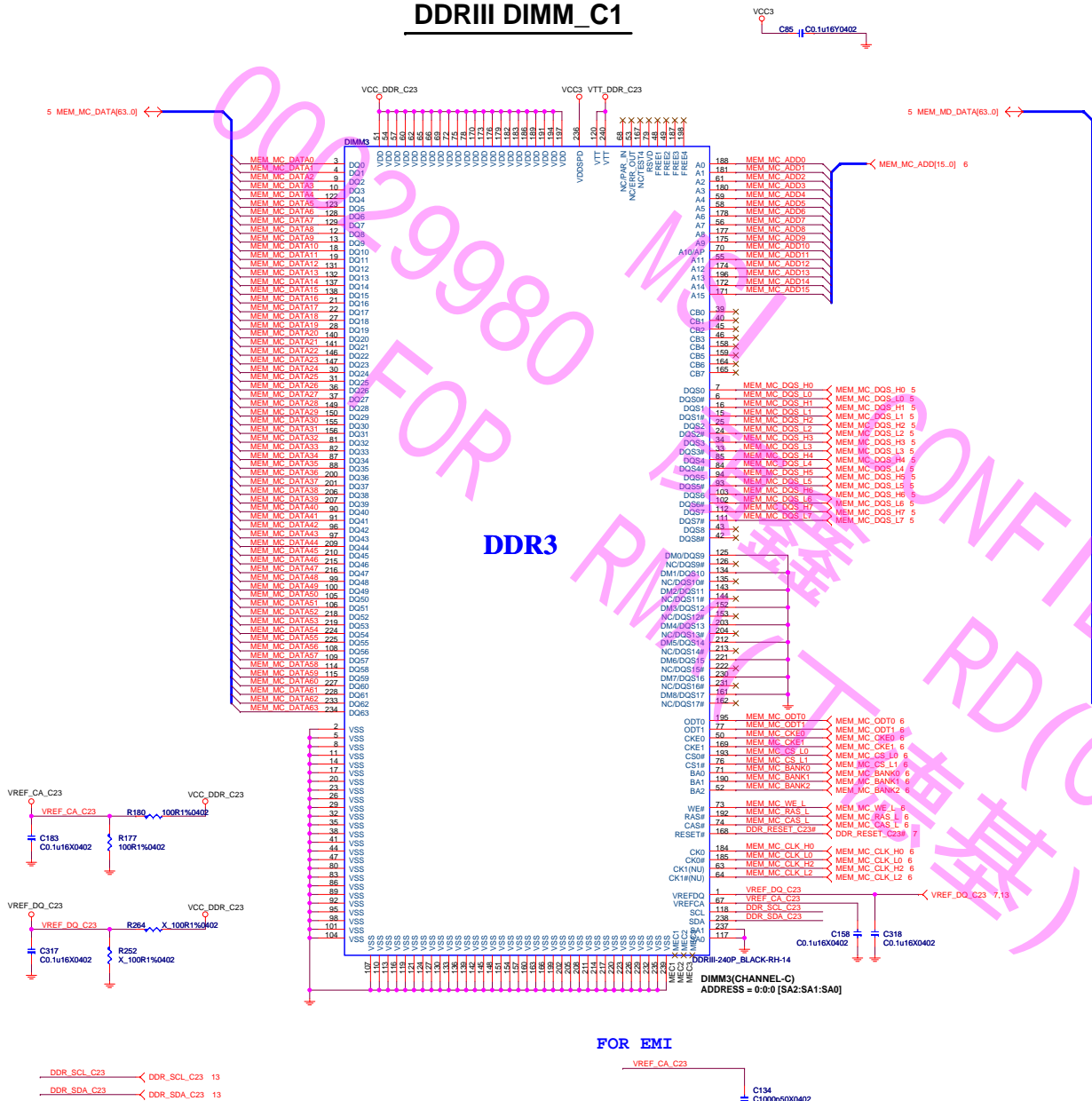




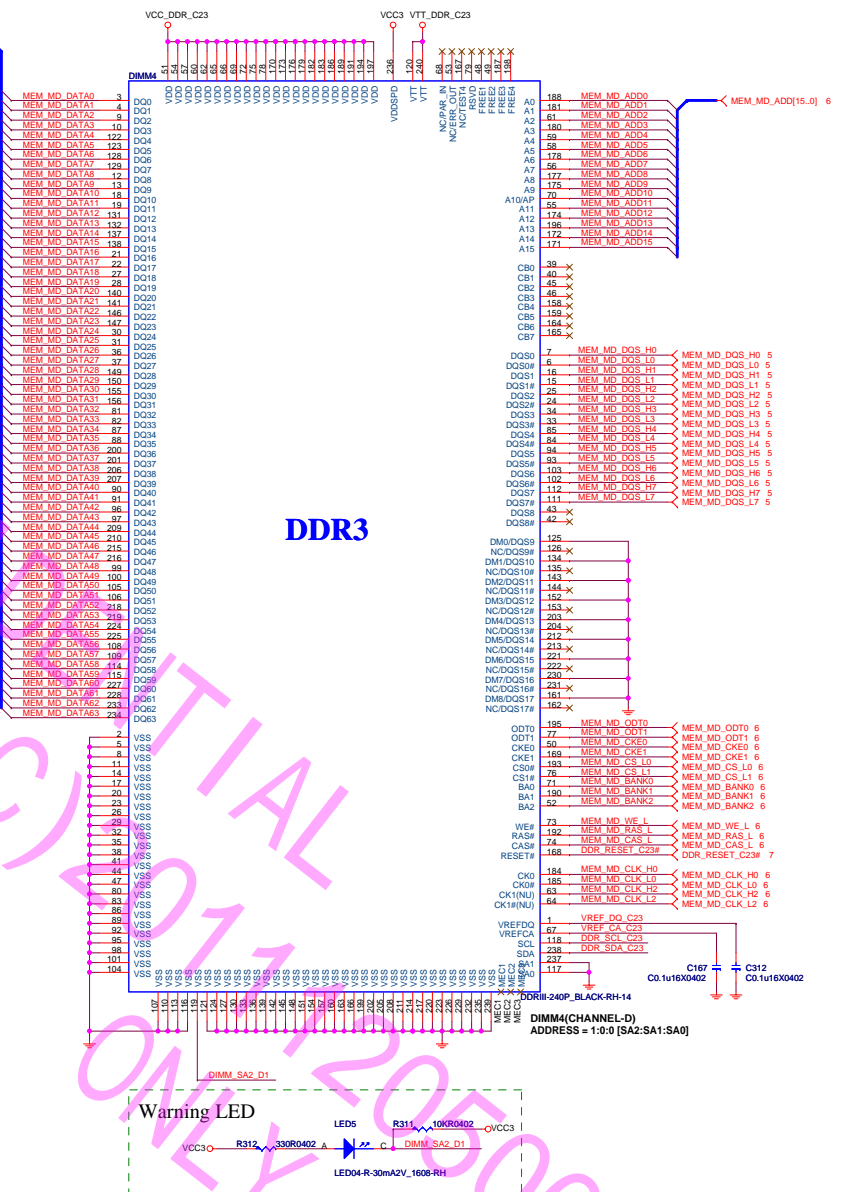
DDRIII DIMM_B1

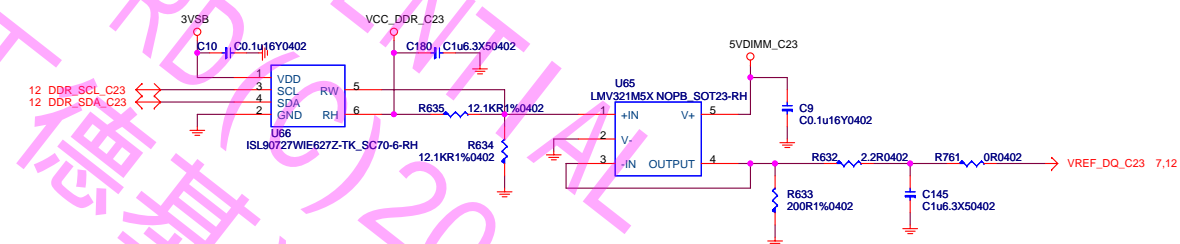
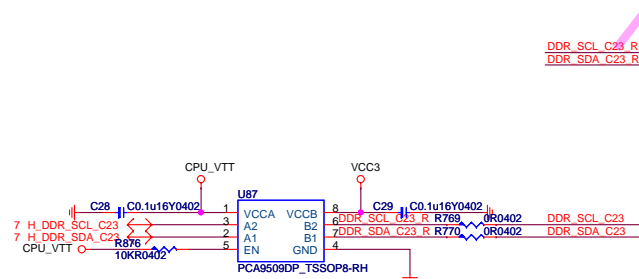
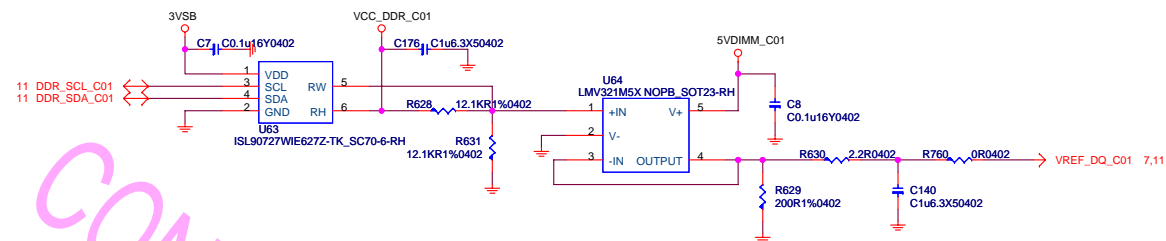
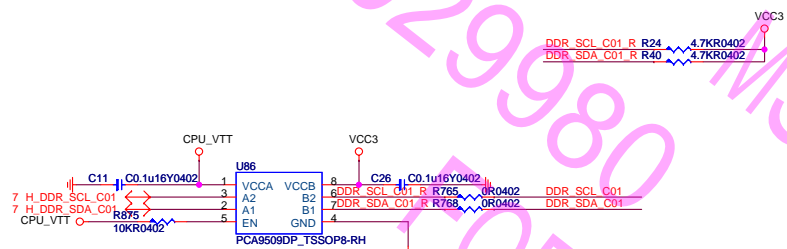


DDRIII DIMM_C1

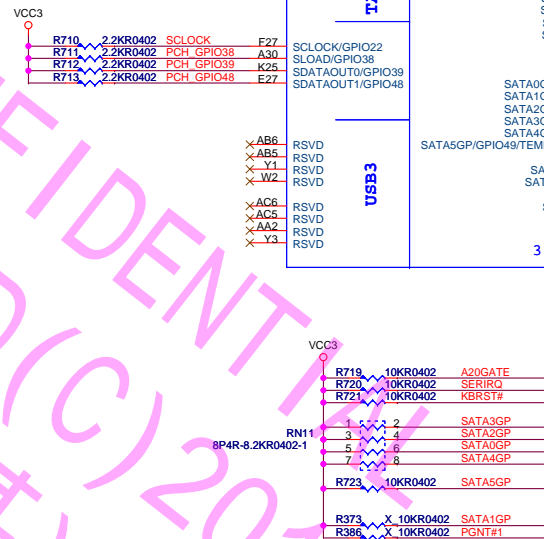
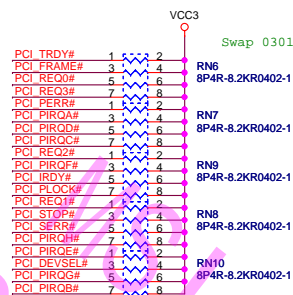


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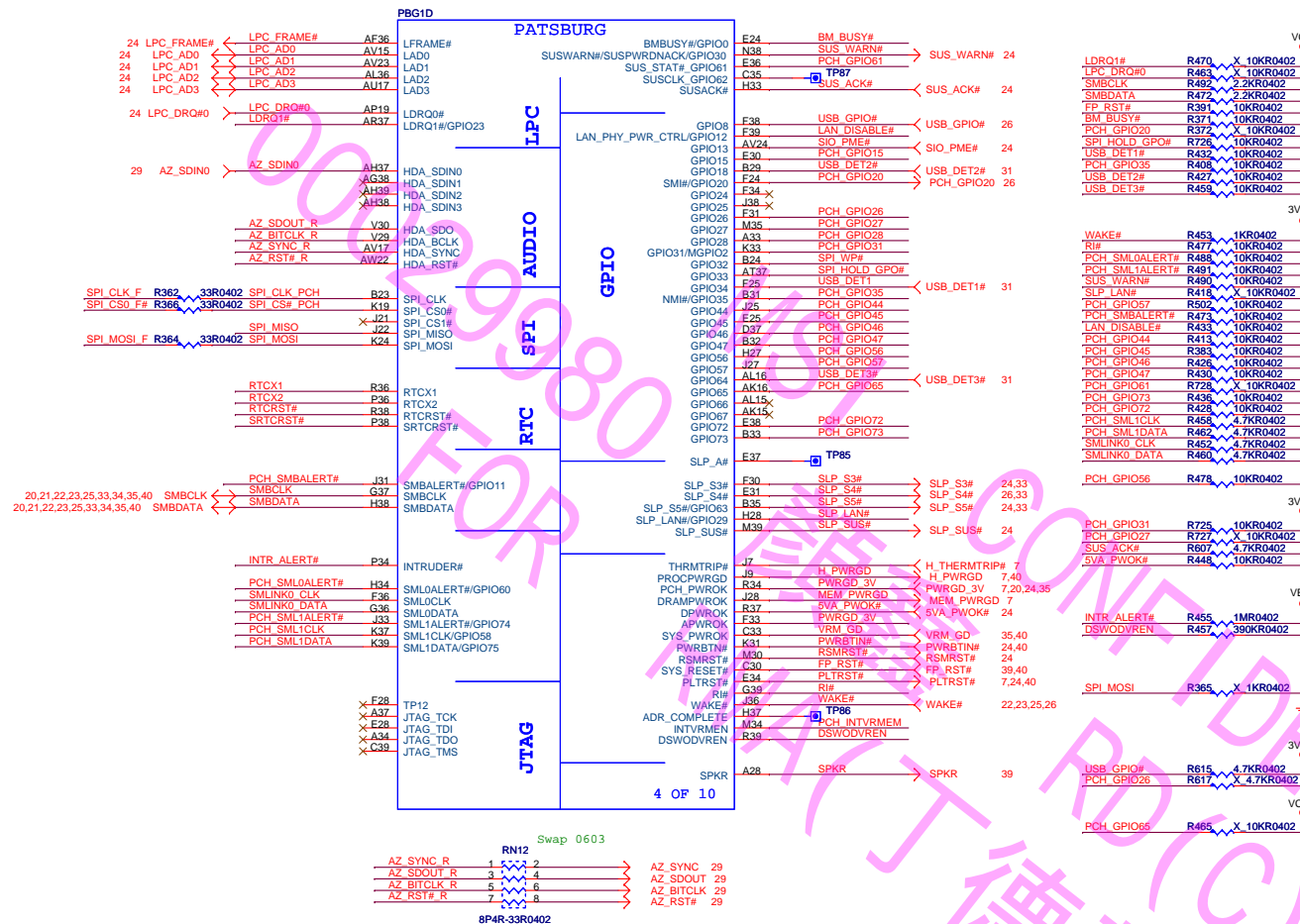




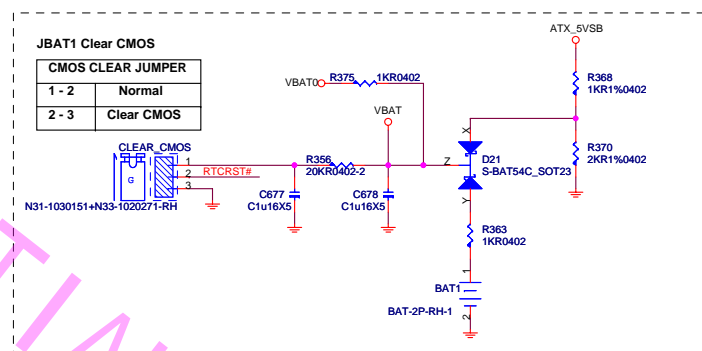
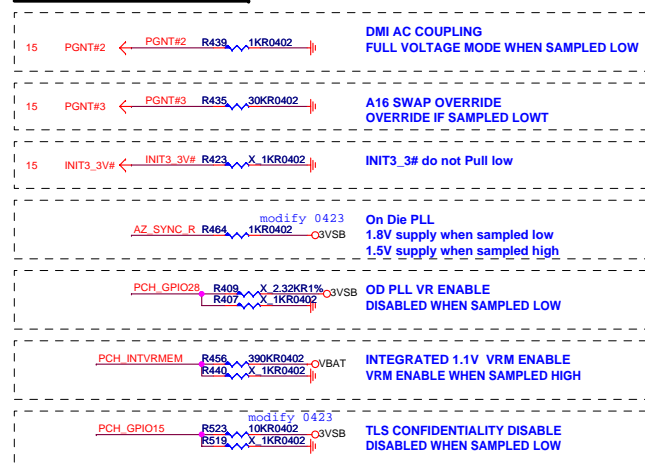




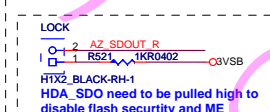
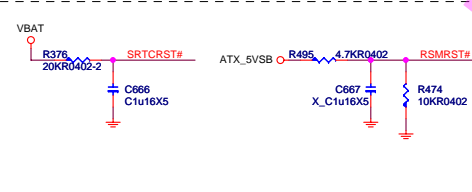
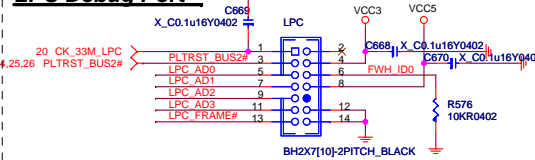
BOOT DEVICE	GNT1#	SATA1GP/GPIO
LPC	0	0
PCI	1	0
SPI	1	1



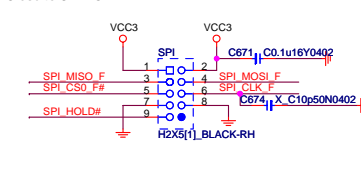
REQUIRED STRAPS



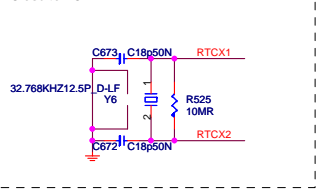
LPC Debug Port



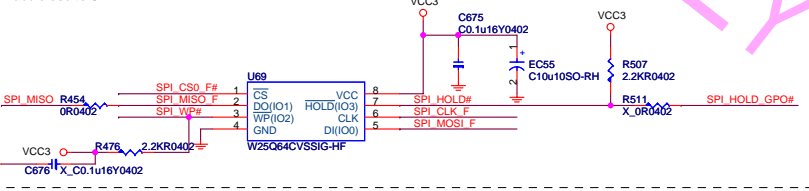
SPI DEBUG PROT

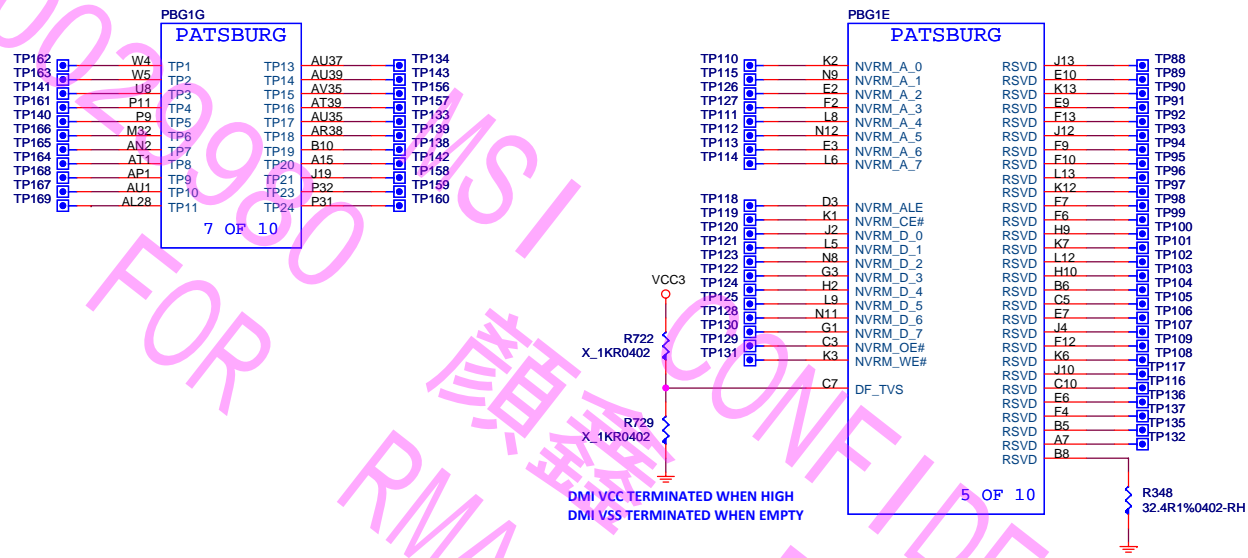


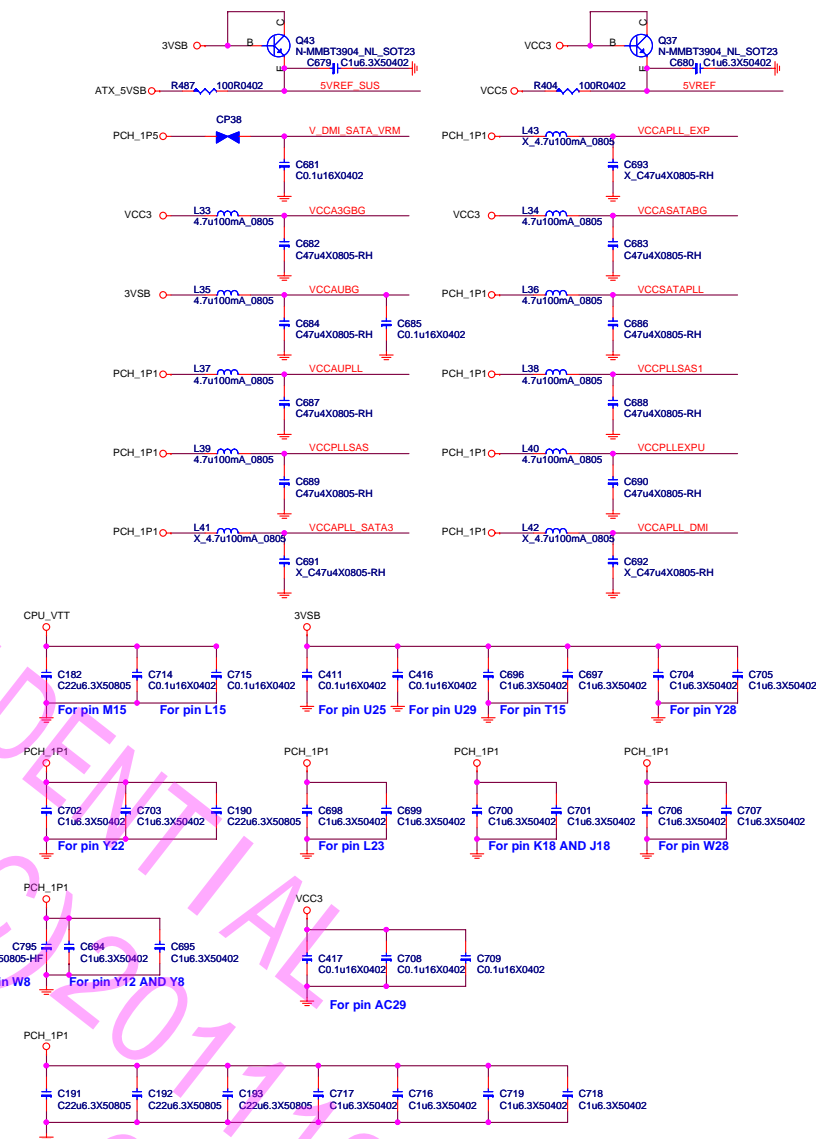
RTC Block

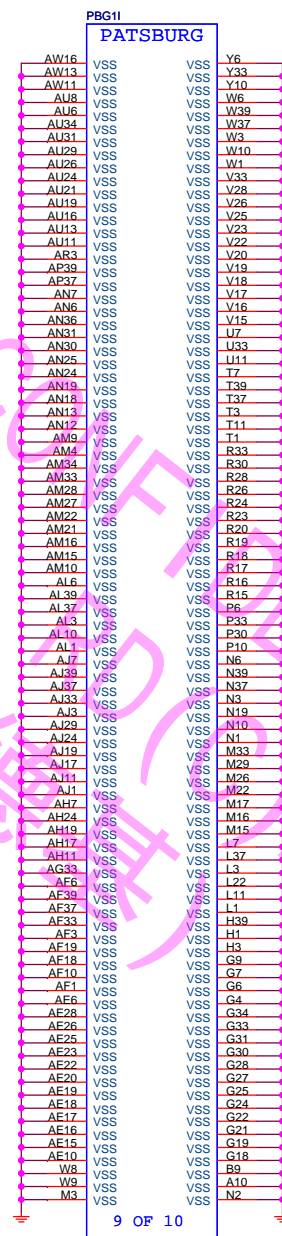
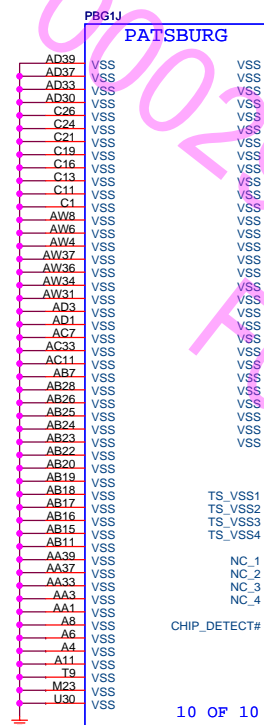


SPI FLASH ROM

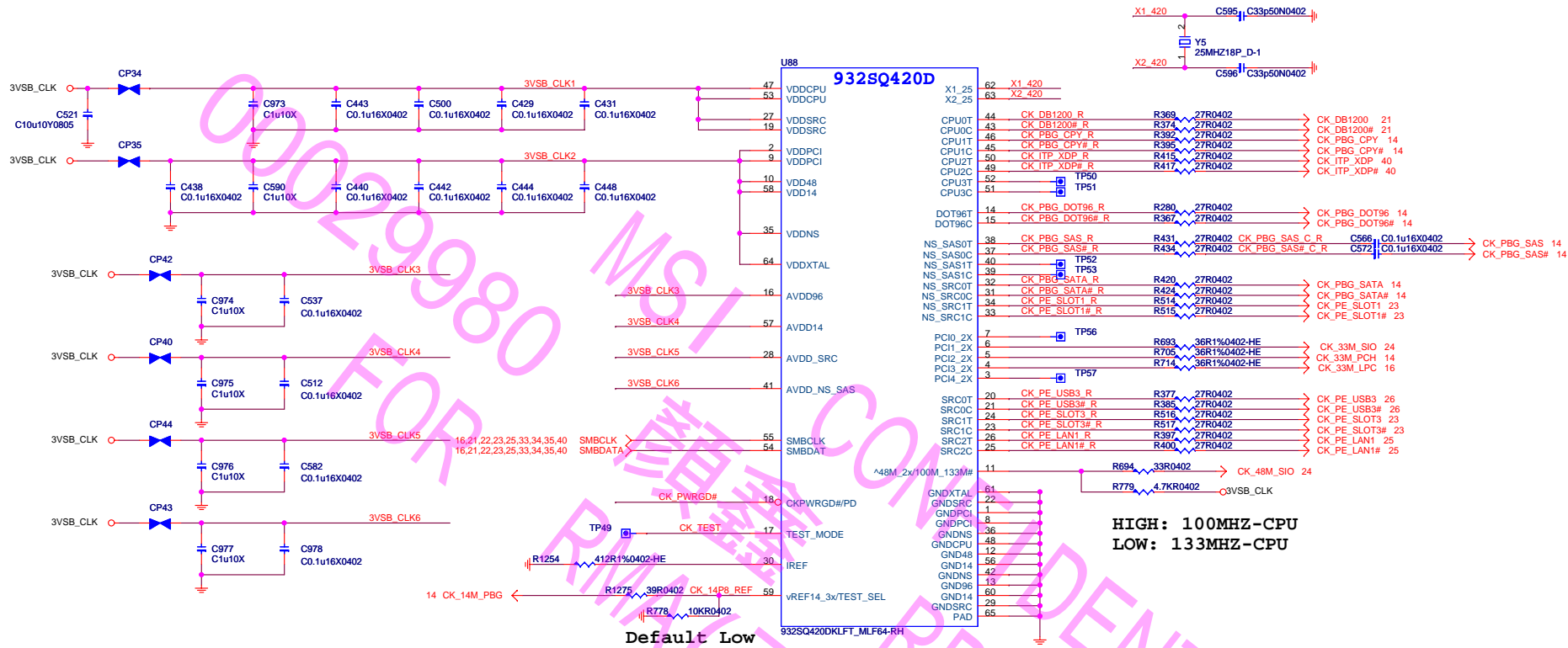




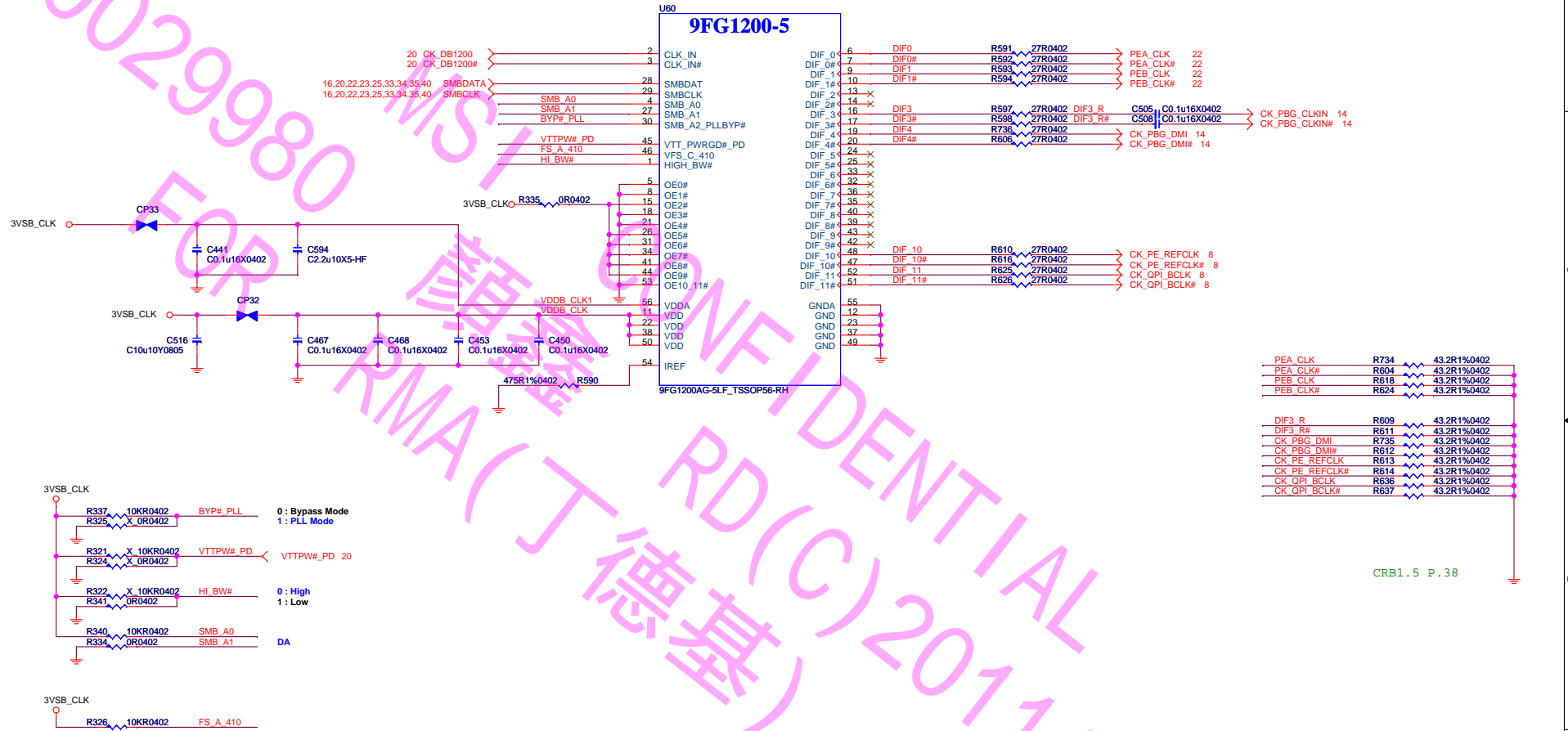




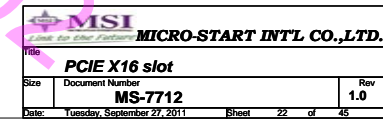
Clock Gen 932SQ420D



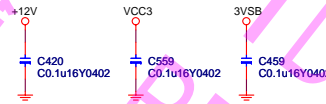
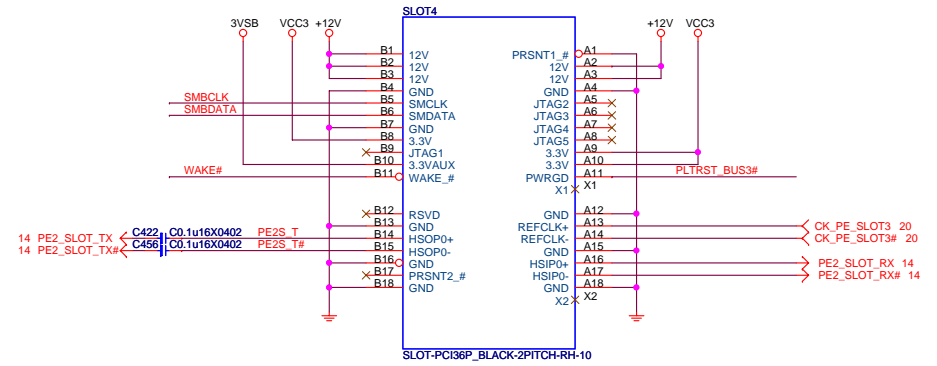
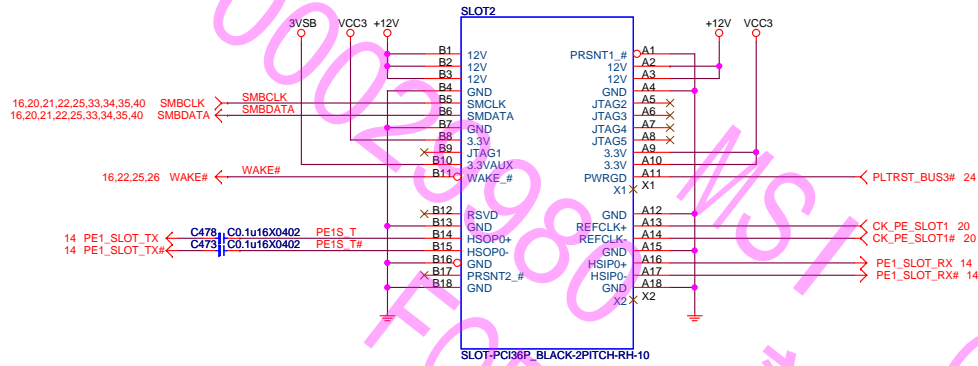
Clock Buffer 9FG1200D



T0T1			
CX2	PRSN1T#	A1	+12V
12VB#1	12V	A2	C568 X 0.0u10V4002
12VB#2	12VB#3	A3	GND
GND	GND	A4	GND
SMCLK	JTAG0	A5	X
SMUT#	JTAG1	A6	X
GND	JTAG2	A7	X
3.3VB#8	JTAG3	A8	X
3.3VAUX	3.3VA#10	A9	VCC3
WAKE#	PWRST#	A10	PLTRST_BUS1#
		A11	
RSVD#B12	GND	A12	PEB CLK
HSP0	REFCLK	A13	PEB CLK#
HSN0	REFCLK	A14	EXP B RXP 15
HSP1	HSN1	A15	EXP B RXP 15
PRNST#2	HSN2	A16	EXP B RXN 15
GND	GND	A17	
		A18	
RSVD	RSVD	A19	X
HSP01	GND	A20	EXP B RXP 14
HSN01	HSN1	A21	EXP B RXN 14
HSP2	HSN2	A22	EXP B RXP 18
HSN2	HSN2	A23	EXP B RXP 15
GND	HSP7	A24	
HSN3	HSN2	A25	EXP B RXP 12
HSP3	GND	A26	EXP B RXP 12
RSVD#B30	RSVD#B30	A27	EXP B RXN 12
PRNST#2#B31	GND	A28	X
GND	RSVD#A32	A29	
		A30	
		A31	
RSVD#A33	A33	A32	EXP B RXP 11
HSP4	A34	A33	EXP B RXN 11
HSN4	A35	A34	EXP B RXP 10
GND	A36	A35	EXP B RXN 10
HSN5	A37	A36	EXP B RXP 9
GND	A38	A37	EXP B RXN 9
HSN6	A39	A38	EXP B RXP 8
HSN6	A40	A39	EXP B RXN 8
HSP7	A41	A40	
HSN7	A42	A41	
HSP7#B48	A43	A42	
GND	A44	A43	
	A45	A44	
	A46	A45	
	A47	A46	
	A48	A47	
	A49	A48	
RSVD#A50	A51	A49	
GND	A52	A50	EXP B RXP 7
HSN8	A53	A51	EXP B RXN 7
GND	A54	A52	EXP B RXP 6
HSP9	A55	A53	EXP B RXN 6
HSN9	A56	A54	EXP B RXP 5
HSP10	A57	A55	EXP B RXN 5
HSN10	A58	A56	EXP B RXP 4
GND	A59	A57	EXP B RXN 4
HSN11	A60	A58	EXP B RXP 3
HSN11	A61	A59	EXP B RXN 3
HSP12	A62	A60	EXP B RXP 2
HSN12	A63	A61	EXP B RXN 2
HSP13	A64	A62	EXP B RXP 1
HSN13	A65	A63	EXP B RXN 1
GND	A66	A64	
RSVD#14	A67	A65	
HSN14	A68	A66	
GND	A69	A67	
HSN15	A70	A68	
PRNST#2#B81	A71	A69	
RSVD#B82	A72	A70	
	A73	A71	
	A74	A72	
	A75	A73	
	A76	A74	
	A77	A75	
	A78	A76	
	A79	A77	
	A80	A78	
	A81	A79	
	A82	A80	
	A83	A81	
	A84	A82	
	A85	A83	
	A86	A84	
	A87	A85	
	A88	A86	
	A89	A87	
	A90	A88	
	A91	A89	
	A92	A90	
	A93	A91	
	A94	A92	
	A95	A93	
	A96	A94	
	A97	A95	
	A98	A96	
	A99	A97	
	A100	A98	
	A101	A99	
	A102	A100	
	A103	A101	
	A104	A102	
	A105	A103	
	A106	A104	
	A107	A105	
	A108	A106	</



PCI EXPRESS X1 SLOT



MICRO-START INT'L CO.,LTD.		
PCIE x1 SLOTS		
Size	Document Number	Rev
	MS-7712	1.0
Date:	Tuesday, September 27, 2011	Sheet 23 of 45

00029980
FOR


MSI

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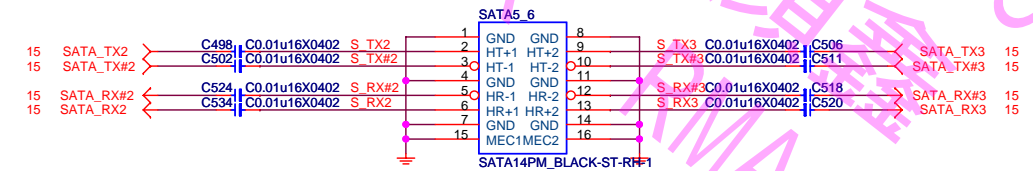
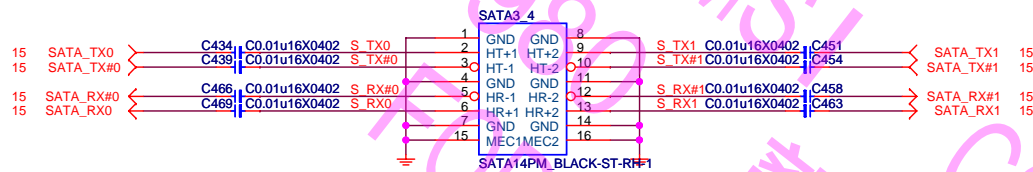
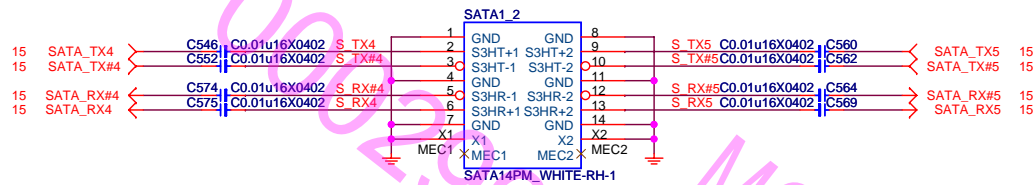
RMA(丁德基)


CONFIDENTIAL

RD(C)20111205002
ONLY

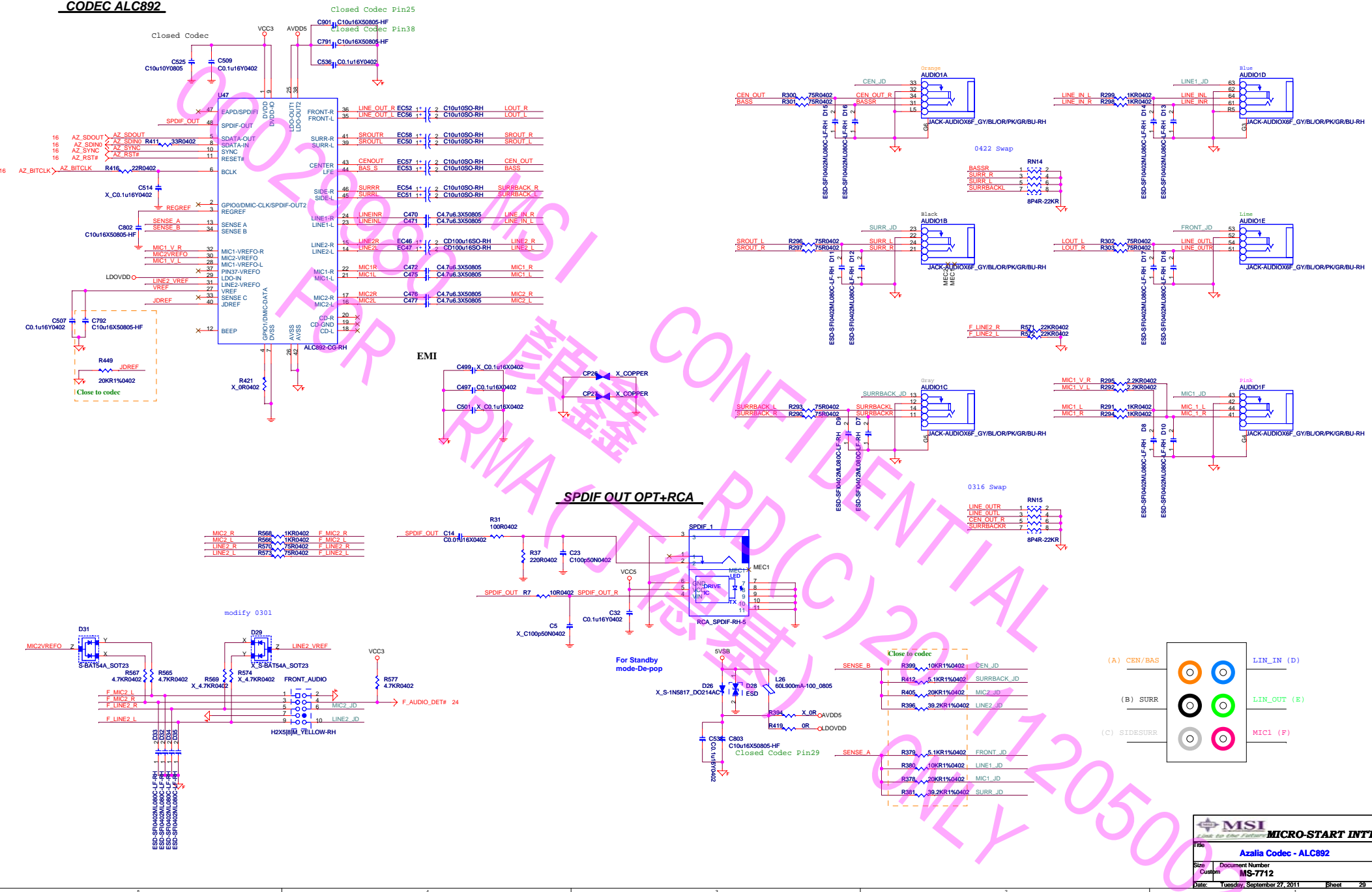
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Title					
N/A					
Size	Document Number				Rev
	MS-7712				1.0
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SATA Connector

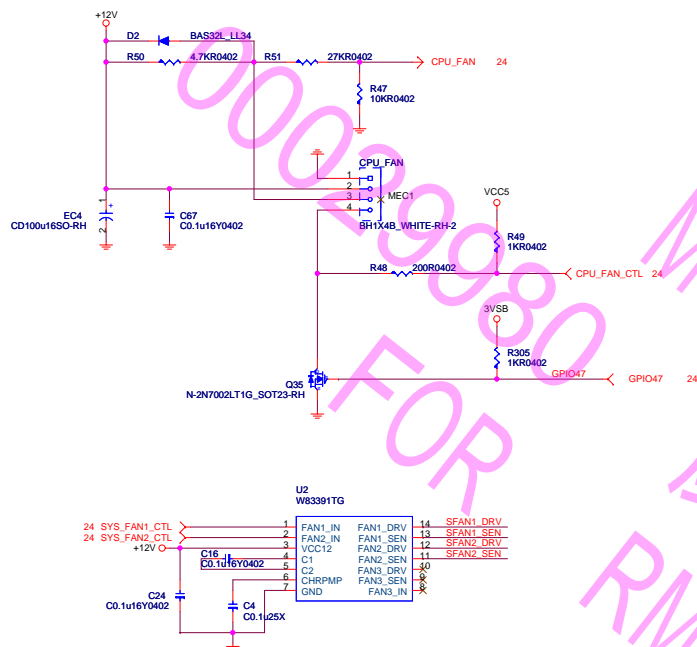


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Title		
SATA Port		
Size	Document Number	Rev
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Date:	Tuesday, September 27, 2011	Sheet 28 of 45

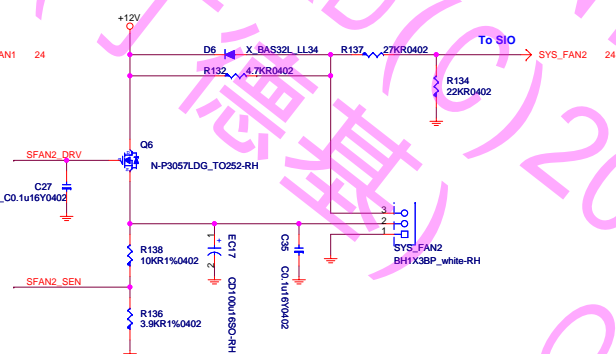
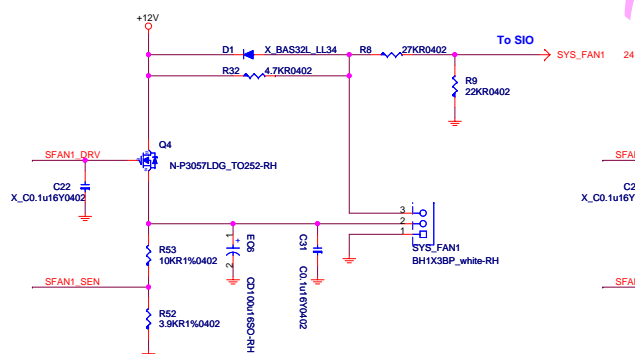
CODEC ALC892



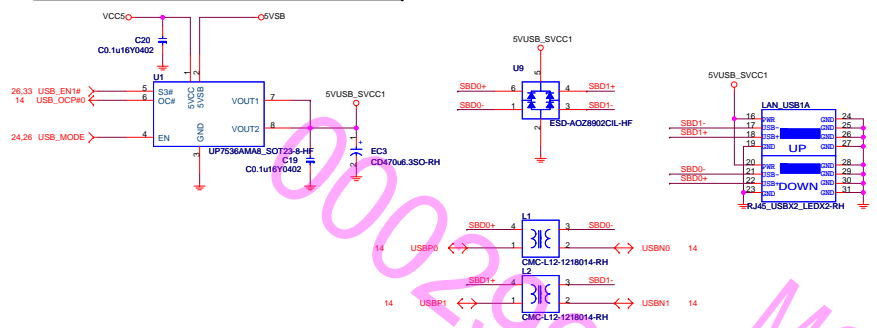
CPU Fan



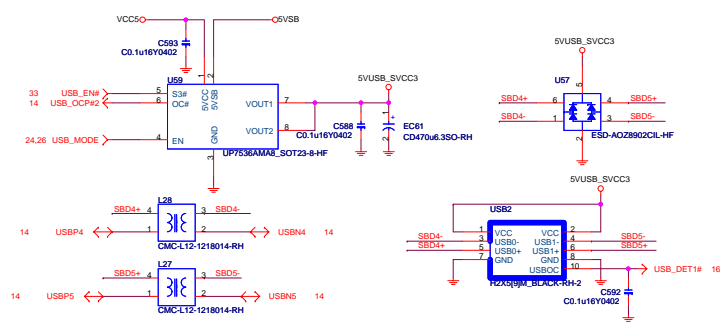
System Fan



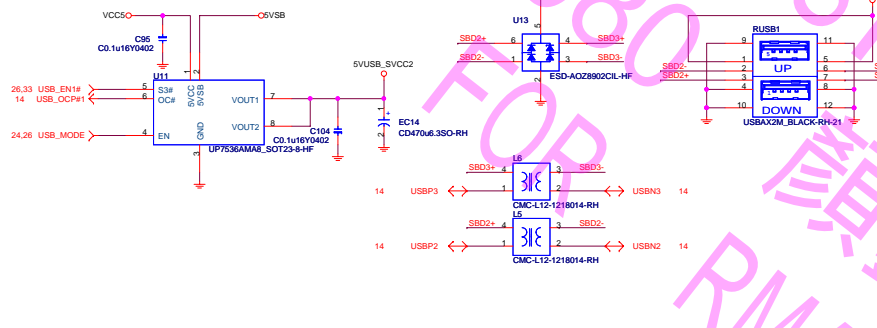
Rear USB Connector For USB Port 0 / 1



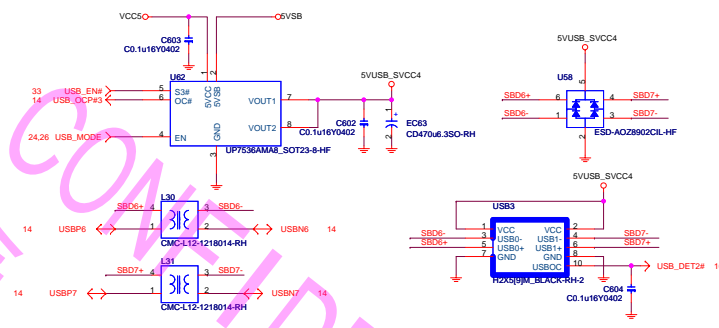
Front Panel USB Connector For USB Port 4 / 5



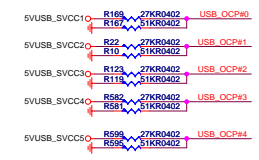
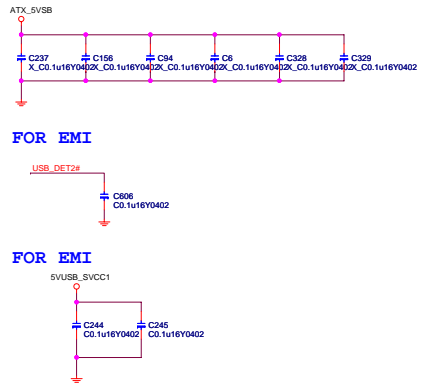
Rear USB Connector For USB Port 2 / 3



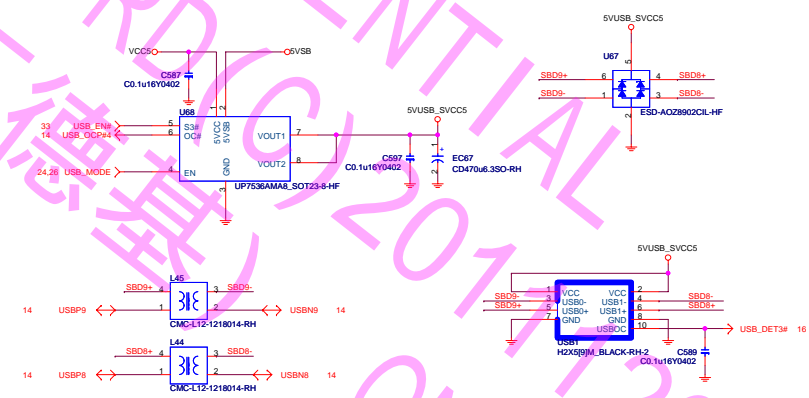
Front Panel USB Connector For USB Port 6 / 7



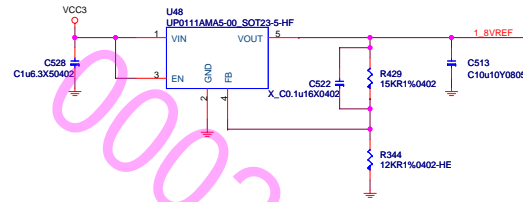
FOR EMI



Front Panel USB Connector For USB Port 8 / 9

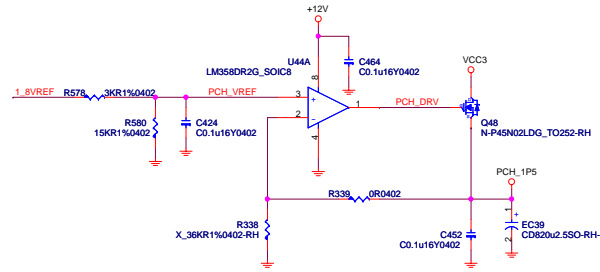


1.8V Reference Power



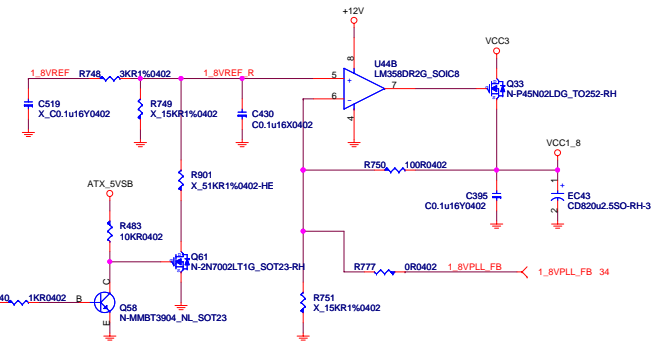
PBG 1.5V Power Rail

Linear 1.5V, 0.512A Imax



VCCPLL Power Rail

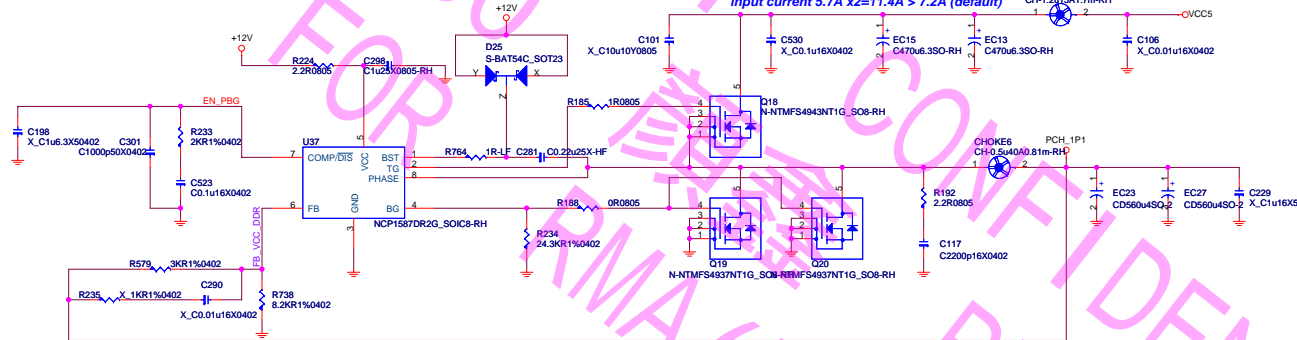
Linear 1.8V, 2A Imax



IVT_ID#		VOLTAGE
H	SNB-E	1.8V(normal)
L	IVB-E	1.7V

PBG Core Power Rail

Switching 1 phase 1.1V, 16.4A Imax



$$V_{out} = 0.8 \left[\frac{R738 (GND) + R579}{R738} \right]$$

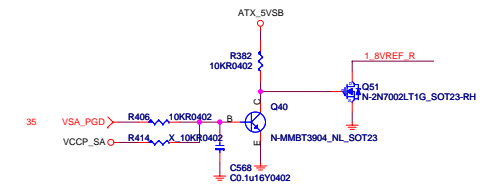
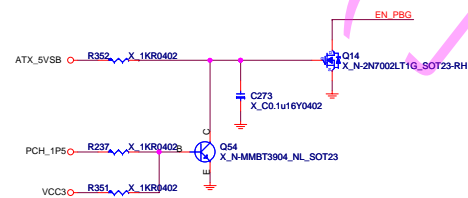
$$= 0.8 \left[\frac{(8.2 + 3)}{8.2} \right]$$

$$= 1.09268 (V)$$

$$I_{oach} = (I_{ocset} * R_{ocset}) / R_{dson}$$

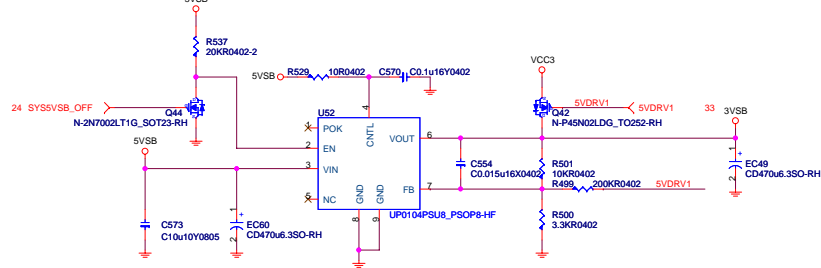
$$= (10\mu A * 24.3K) / 7.2m$$

$$= 33.75A (> 1.5 * 16.64A)$$



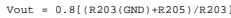
3VSB Power Rail

1.09A

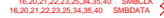


Switch 1 Phase 1.5V 17A

Switch 1 Phase 1.5V 17A



Switch 1 Phase 1.5V 17A

+12V 

OFF-BOARD CONSOLE

RI (KOhm)	10	1.3	2.3	3	3.9	OPEN
-----------	----	-----	-----	---	-----	------

OFFICIAL RECORD

RL (KOhm)	10	1.3	2.3	3	3.9	OPEN
-----------	----	-----	-----	---	-----	------

Linear, 0.75V - 1A

Linear, 0.75V - 1A



DDR3M / S1 Power Decoupling Caps:

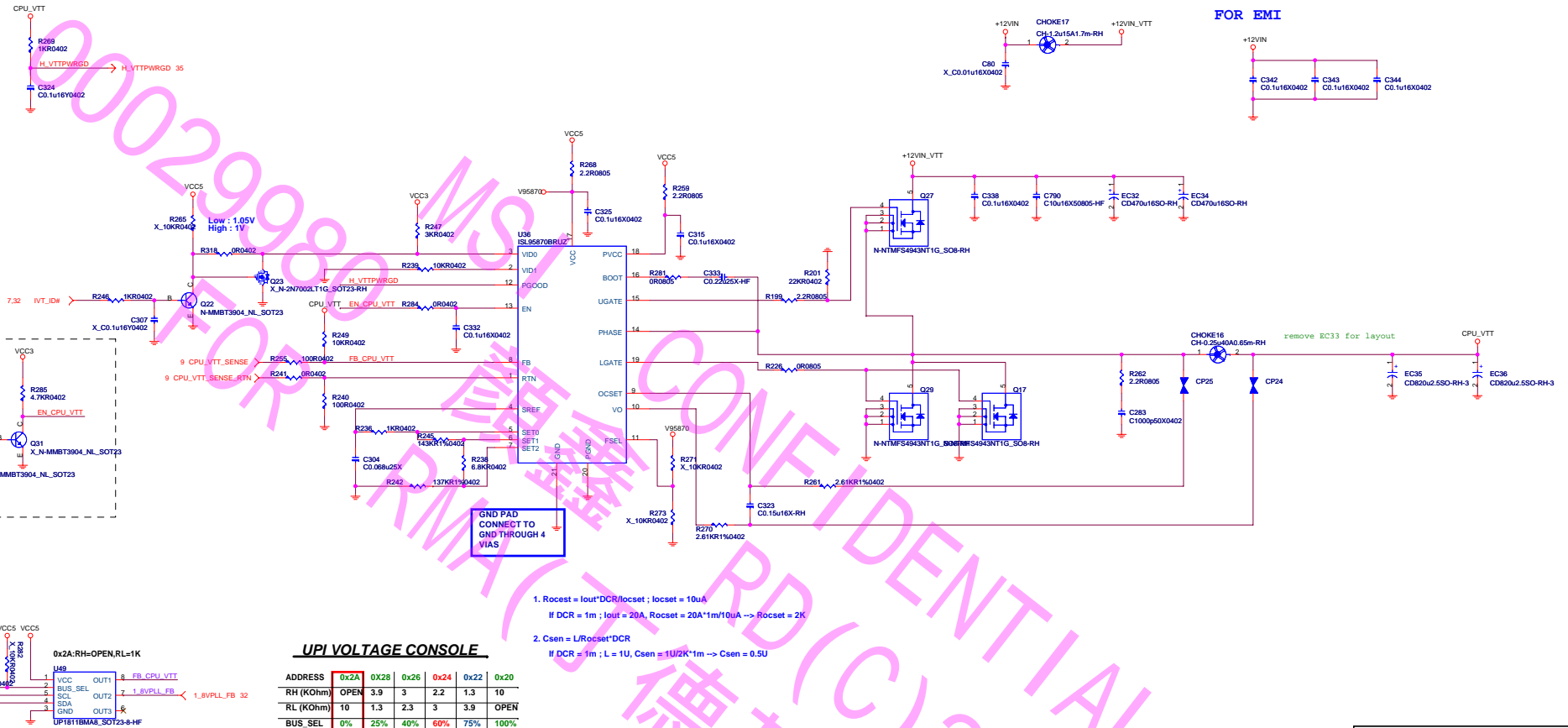


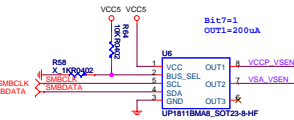
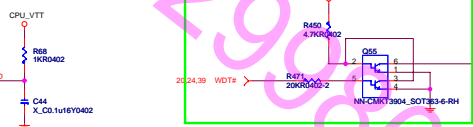
FOR EMI

EMI CAPs



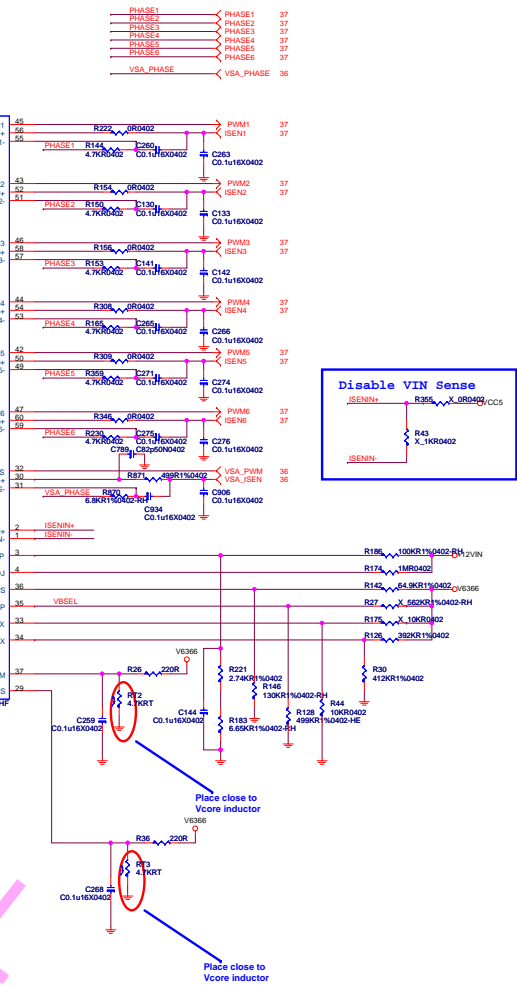
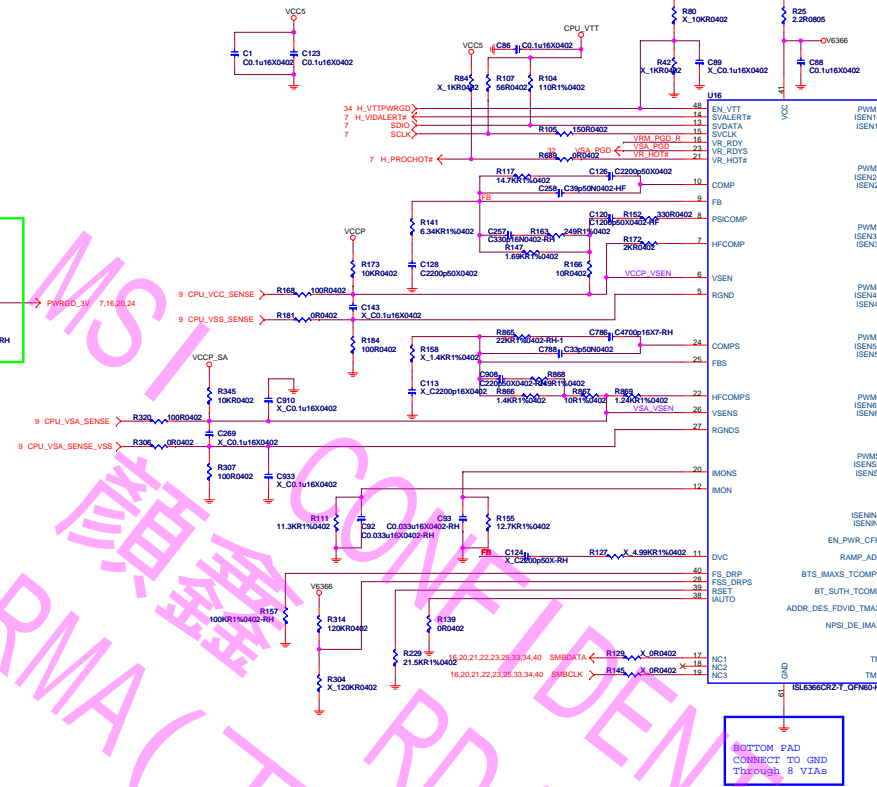
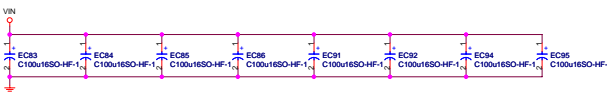
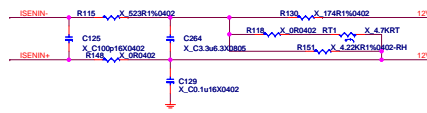
CPU VTT Power Rail
Switch 1 Phase 1.05V 22A



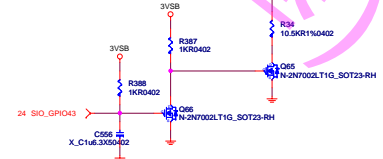
[illegible]

0x20:RH=10K,RL=open;Bit7=1

ADDRESS	0x2A	0x28	0x26	0x24	0x22	0x20
RH (KOhm)	OPEN	3.9	3	2.2	1.3	10
RL (KOhm)	10	1.3	2.3	3	3.9	OPEN
BUS_SEL	0%	25%	40%	60%	75%	100%



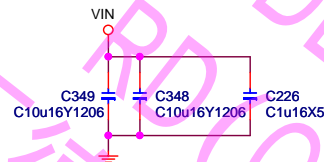
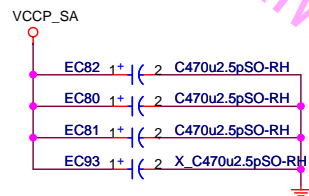
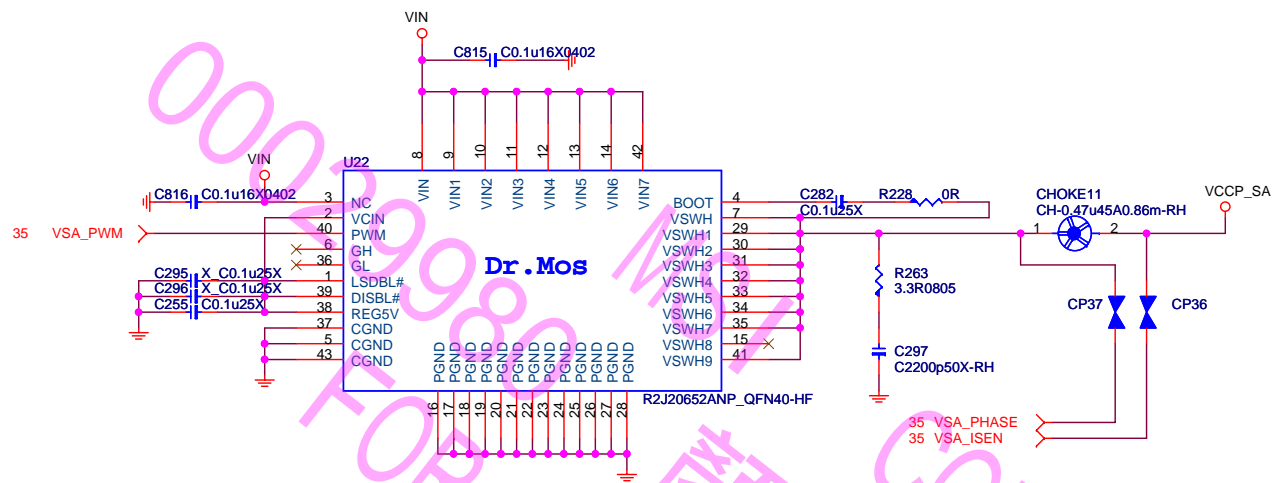
	GPIO 43	Resistor	Vboot
Normal & Turbo	H	Floating	0V
BCLK OC	L	499/10.5 =10 Kohm	1V

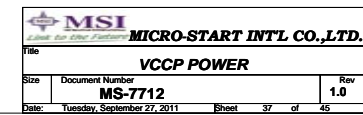


BOTTOM PAD
CONNECT TO GND
Through 8 VIAs

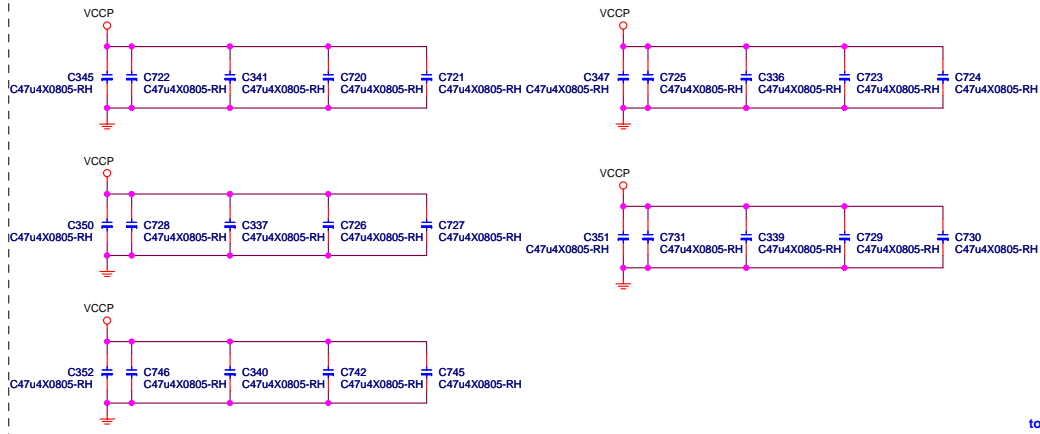
Place close to
Vcore inductor

Place close to
Vcore inductor

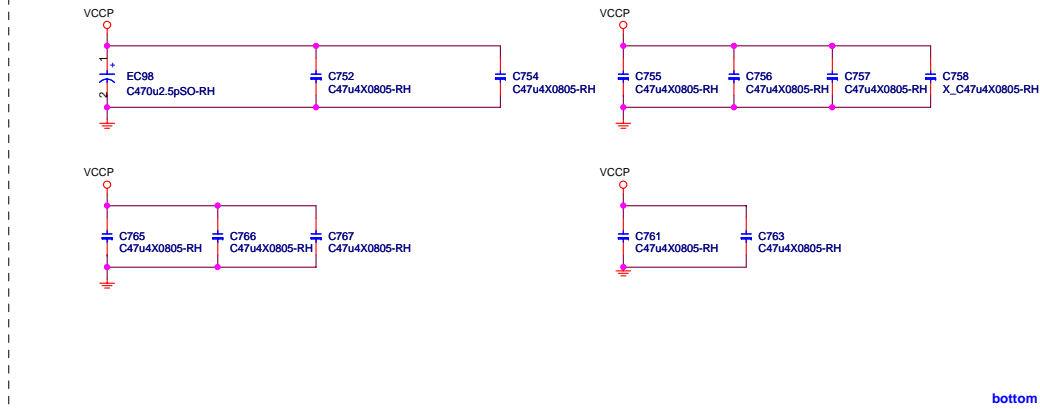




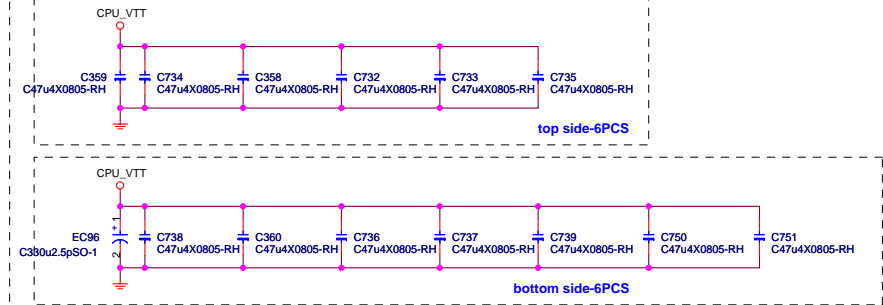
VCCP Decoupling



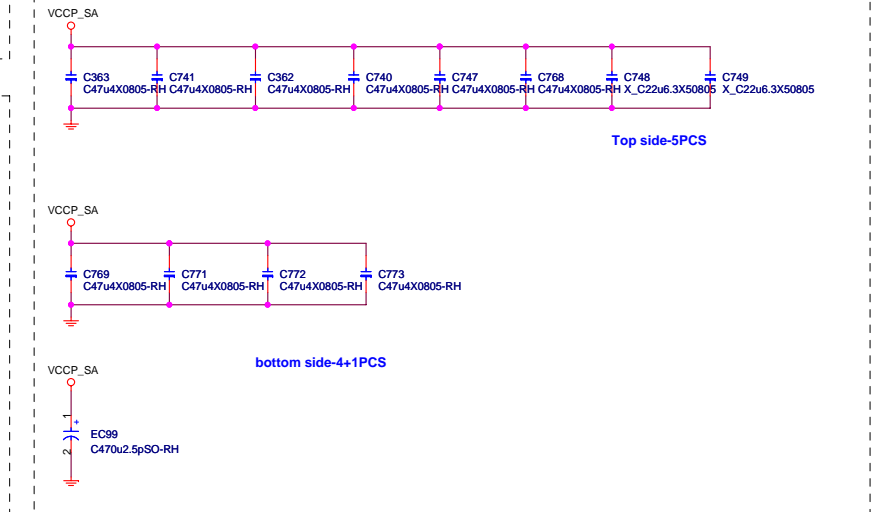
VCCP Decoupling Bottom Side



CPU VTT Decoupling



CPU VSA Decoupling

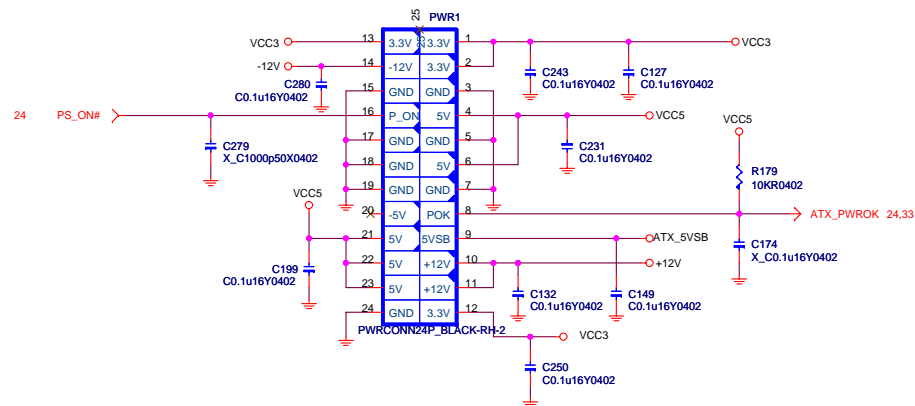


CPU VCC_DDR Decoupling

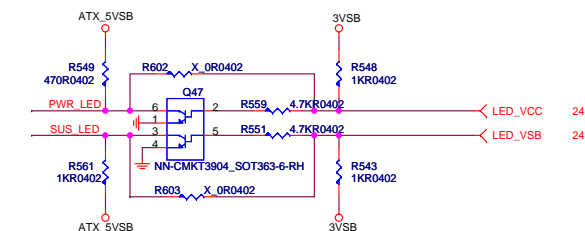


ATX Power Connector / Front Panel / LED

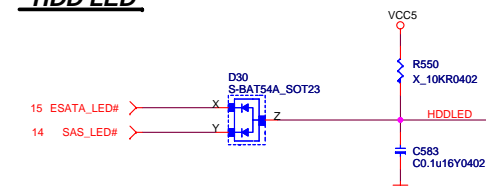
24 Pin ATX Power Connector



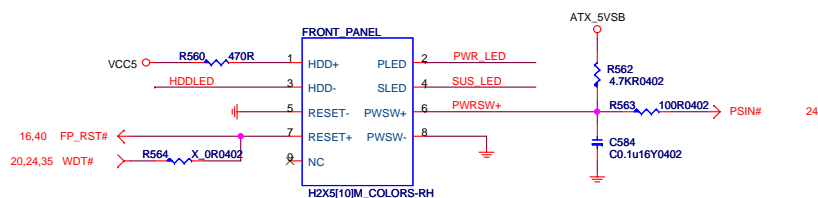
Power LED



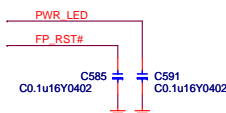
HDD LED



Front Panel



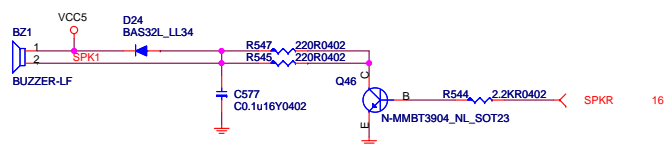
For EMI
(close pin header)



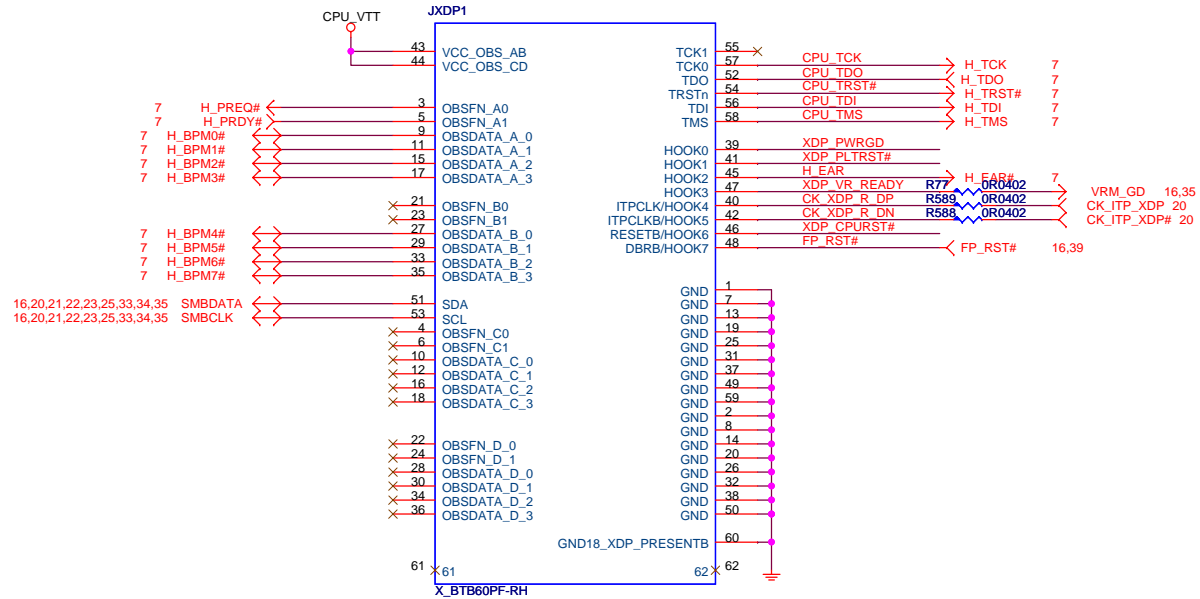
FOR EMI



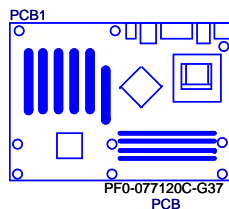
Buzzer Circuit



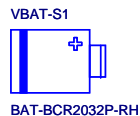
CPU XDP PORT



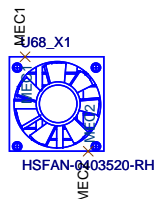
Manual Parts



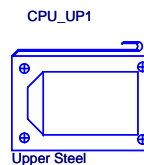
精成PF0-077120C-G37



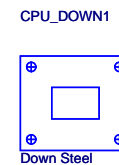
BAT-BCR2032P-RH



HSFAN-0403520-RH

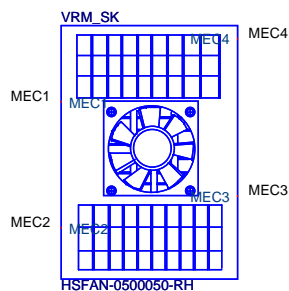
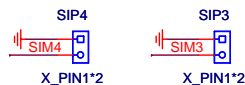


Upper Steel



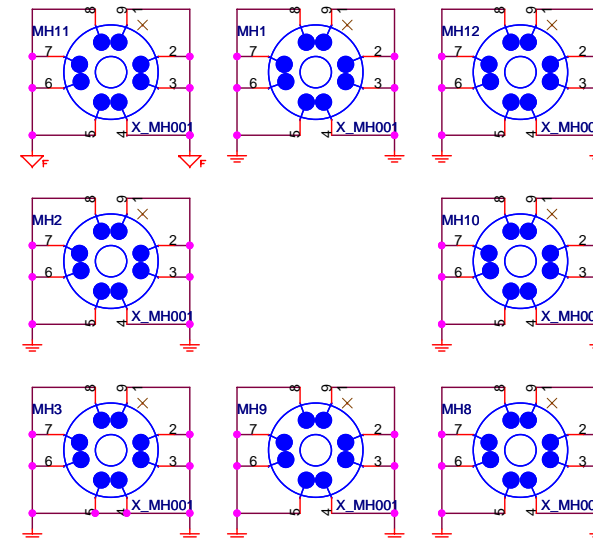
Down Steel

Simulation



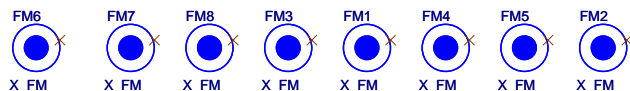
PCB Mounting Holes


Mounting Holes



Optics Orientation Holes

Optical Fiducial Marks-120



 MICRO-START INT'L CO.,LTD.		
Title		
Manual Parts & Option Parts		
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