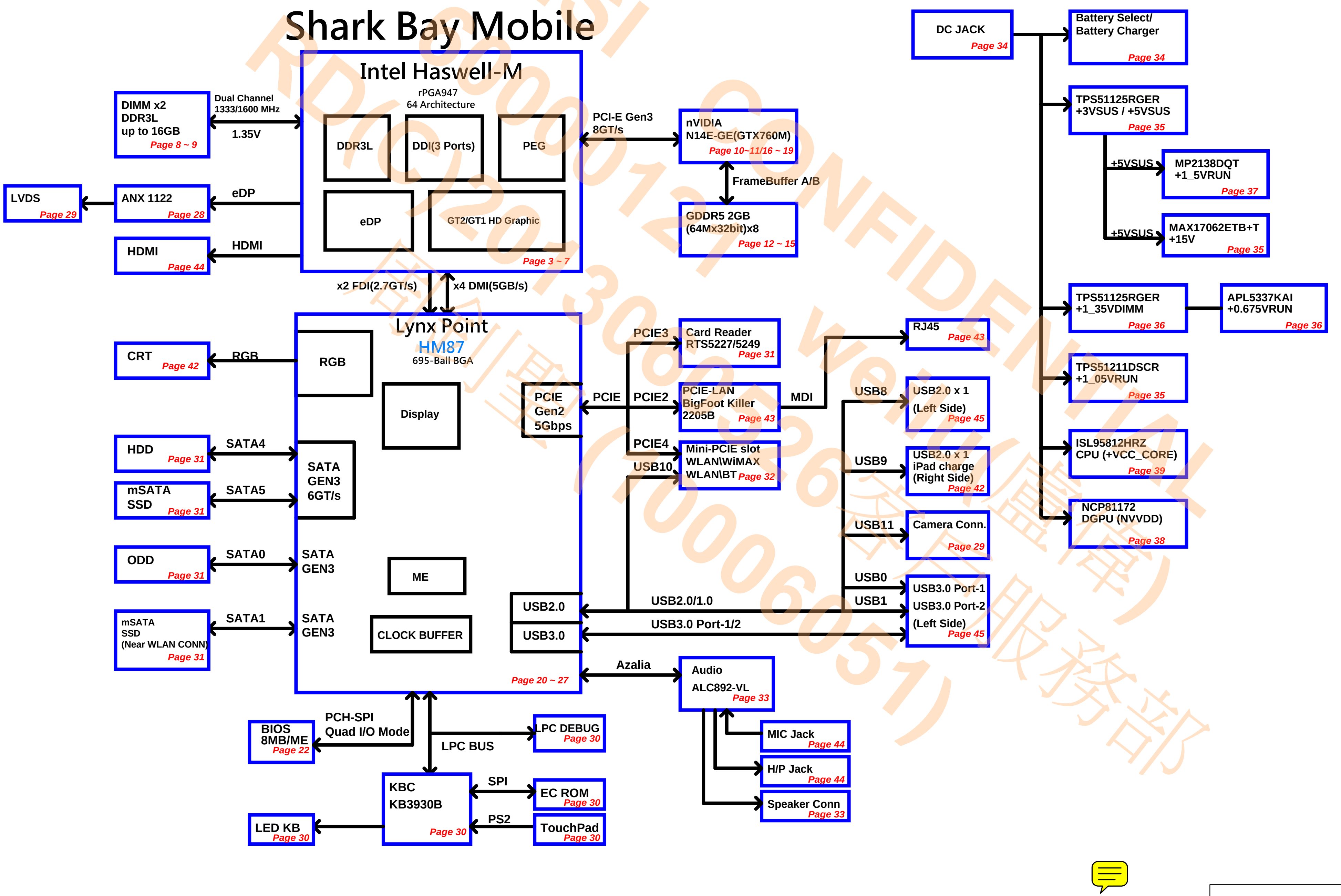
MS-16GC ver:1.1



Title: Block Diagram

Size: Custom | Document Number: MS-16GC | Rev: 11

Date: Friday, April 26, 2013 | Sheet 1 of 50

SCHEMATIC ANNOTATIONS AND BOARD INFORMATION

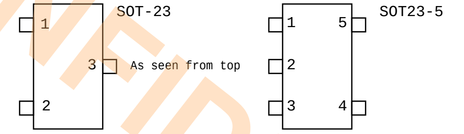
Voltage Rails

Voltage	Description	Control Signal
PWR_SRC	AC ADAPTER OR BATTERY IN	
+5VALW	5.0V always on power rail	PWR_SRC
+3VALW	3.3V always on power rail	PWR_SRC
+5VSUS	5.0V power rail	SUS_ON
+3VSUS	3.3V power rail	SUS_ON
+1_35VDIMM	1.35V DDR3L power rail (off in S4-S5)	PM_SLP_S4#
+0_675VRUN	0.675V DDR3L Termination voltage (off in S3-S5)	PM_SLP_S3#
+5VRUN	5.0V switched power rail (off in S3-S5)	PM_SLP_S3#
+3VRUN	3.3V switched power rail (off in S3-S5 / M0)	PM_SLP_S3#
+1_5VRUN	1.5V switched power rail (off in S3-S5)	PM_SLP_S3#
+VCC_CORE	1.8V Core Voltage for Processor	VR_ON
+1_05VRUN	1.05V rail for Processor	PM_SLP_S3#
NVVDD	0.6~1.2V(VBoot:0.9V)Core Voltage for nVIDIA N14E-GE DGPU	GPIO11_GPUVID
+3V3_NV	3.3V GPU I/O power rail (off in Optimus OFF)	DGPU_PWR_EN#
FBVDDQ	1.35V FB / GDDR5 power rail (off in Optimus OFF)	GPU_PWRGD
PEX_VDD	1.05V PLL power rail (off in Optimus OFF)	GPU_PWRGD

Net Naming Conventions

Suffix
```
#  =  Active Low Signal
```
Prefix
```
H  =  Host
M  =  DDR Memory
TP =  Test Point (does not connect anywhere else)
```

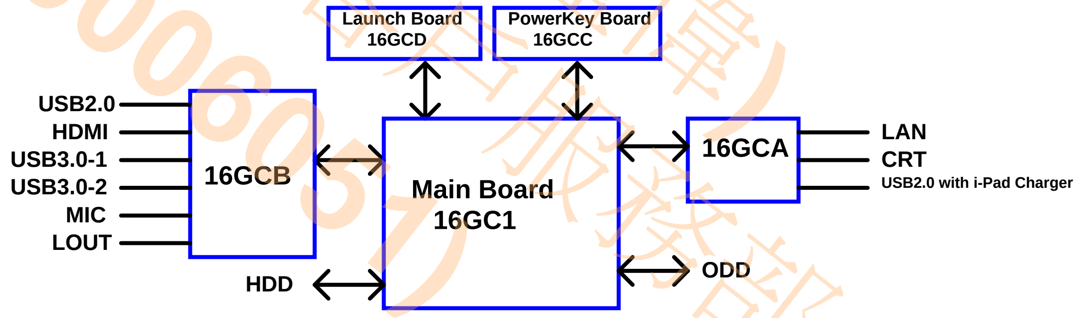
PCB Footprints



POWER STATES

STATE \ SIGNAL	SLP_S3#	SLP_S4#	SLP_S5#	+V*ALW	+*VSUS	+*VRUN	Clocks
S0(Full ON)	HIGH	HIGH	HIGH	ON	ON	ON	ON
S3(Suspend to RAM)	LOW	HIGH	HIGH	ON	ON	OFF	OFF
S4(Suspend to Disk)	LOW	LOW	HIGH	ON	OFF	OFF	OFF
S5 (Soft OFF)	LOW	LOW	LOW	ON	OFF	OFF	OFF

Note : WHEN AC MODE , System turn on then +V*SUS will always keep high



Title	Platform
Size	Custom
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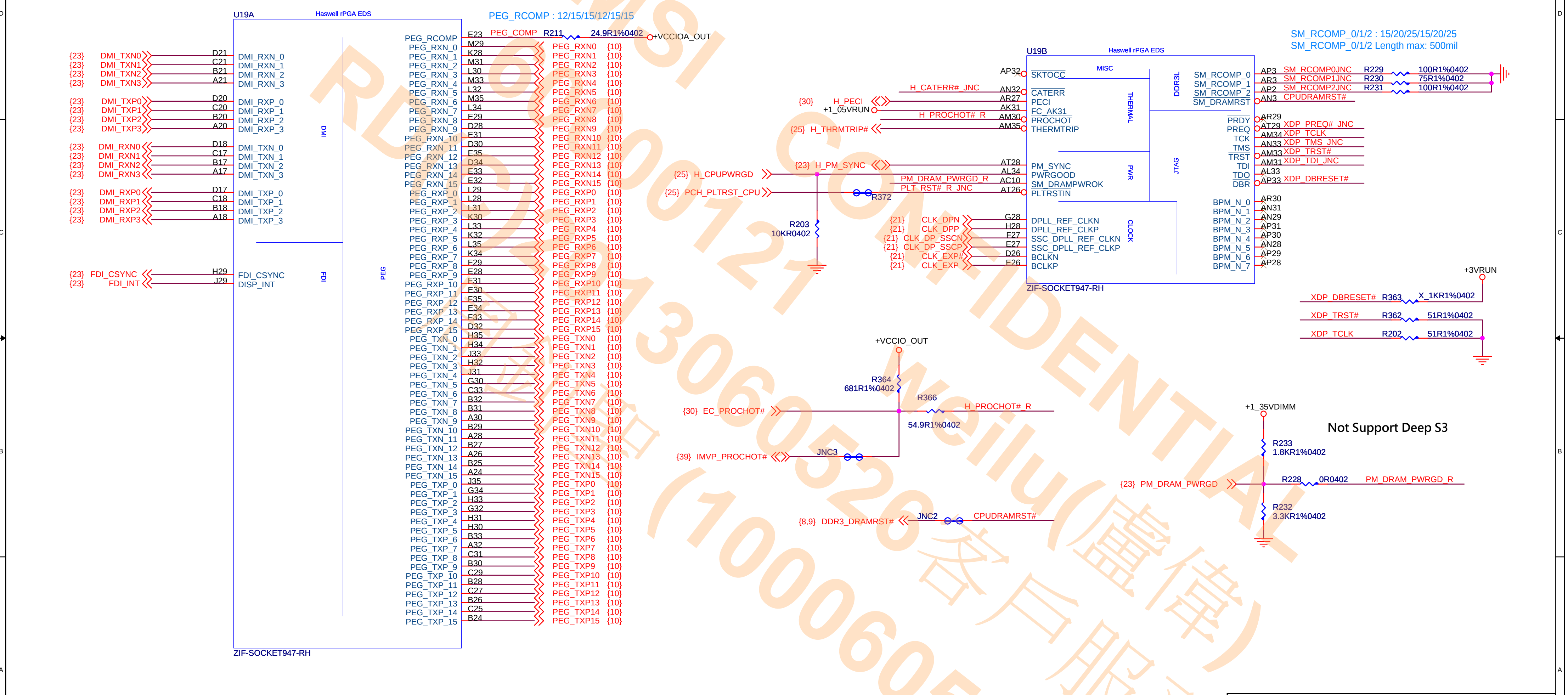
Haswell (DMI,PEG,FDI)

Haswell (CLK,MISC,JTAG)

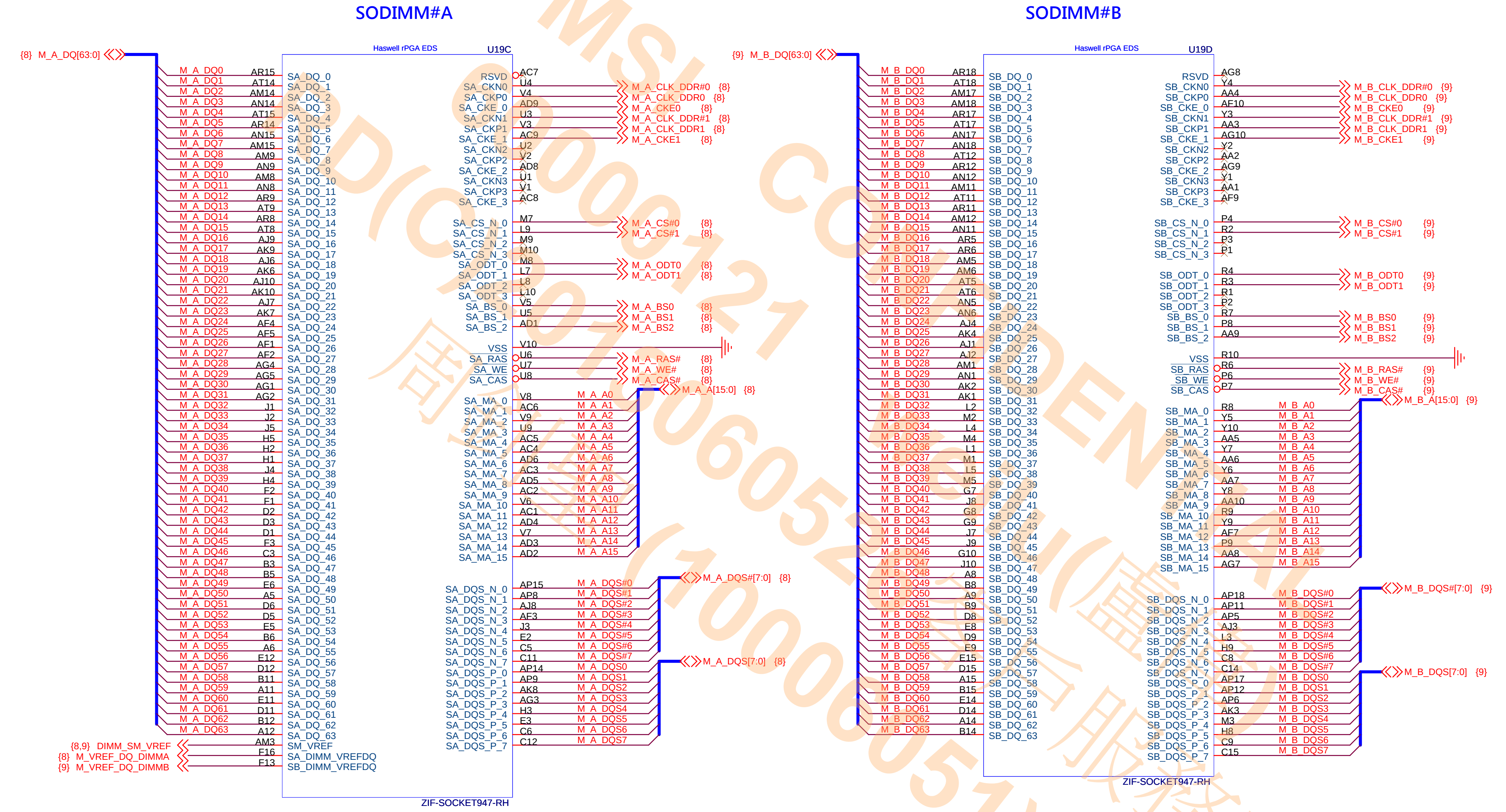


Title: CPU-1 (Host Bus)

Size: Custom | Document Number: MS-16GC | Rev: 11

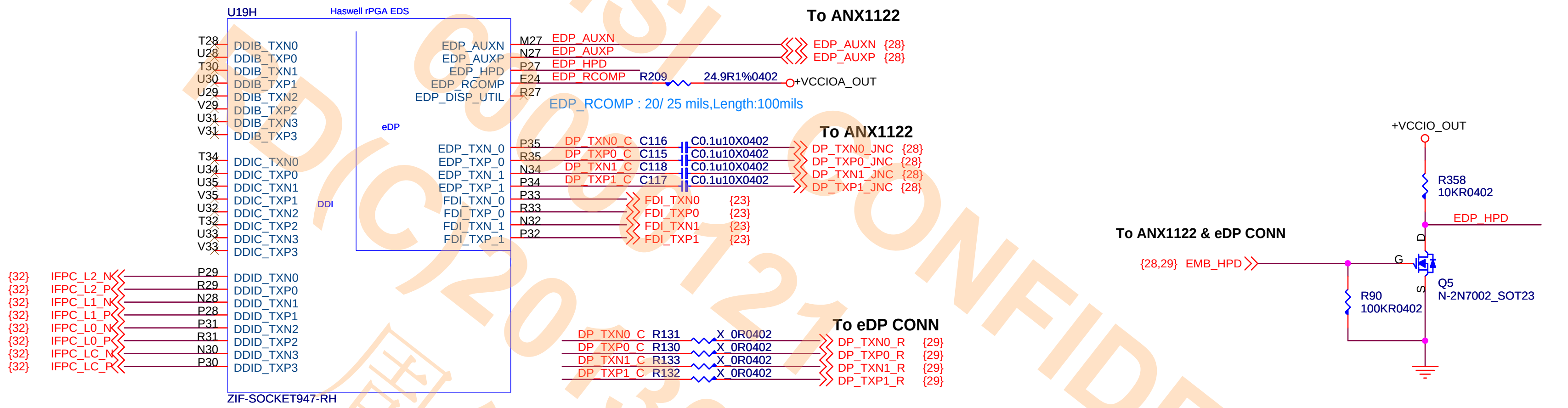
Date: Friday, April 26, 2013 | Sheet 3 of 50

Haswell (DDR3L)

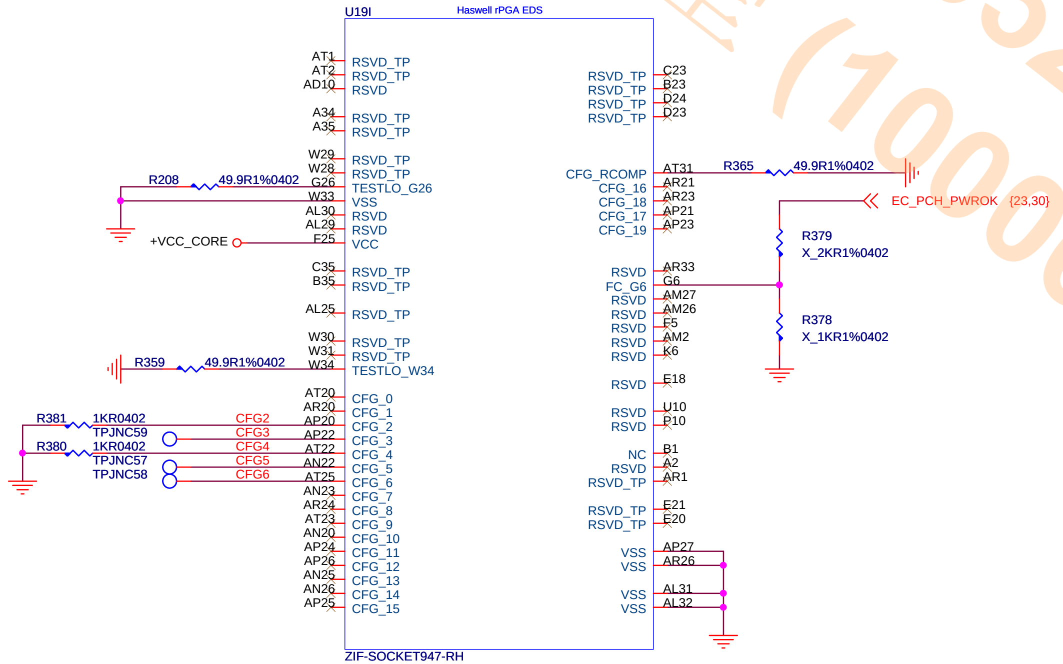


Title	CPU-2 (DDR3L)	
Size: Custom	Document Number: MS-16GC	Rev: 11
Date: Friday, April 26, 2013	Sheet 4 of 50	

Haswell (Display)



Haswell (Reserved)



PCI Express* Static x16 Lane Numbering Reversal	
CFG2	1 = Normal operation 0 = Lane numbers reversed.

MSR Privacy Bit Feature	
CFG3	1 = Debug capability is determined by IA32_Debug_Interface_MSR (0xC80) bit[0] setting 0 = IA32_Debug_Interface_MSR (0xC80) bit[0] default setting overridden

eDP enable	
CFG4	1 = Disabled 0 = Enabled

PCI Express* Bifurcation	
CFG[5:6]	00 = 1 x8, 2 x4 PCI Express 01 = reserved 10 = 2 x8 PCI Express 11 = 1 x16 PCI Express

PEG DEFER TRAINING	
CFG7	1: (Default) PEG Train immediately following xxRESETB de assertion 0: PEG Wait for BIOS for training

Title	CPU-3 (Display/Reserved)
Size: Custom	Document Number: MS-16GC
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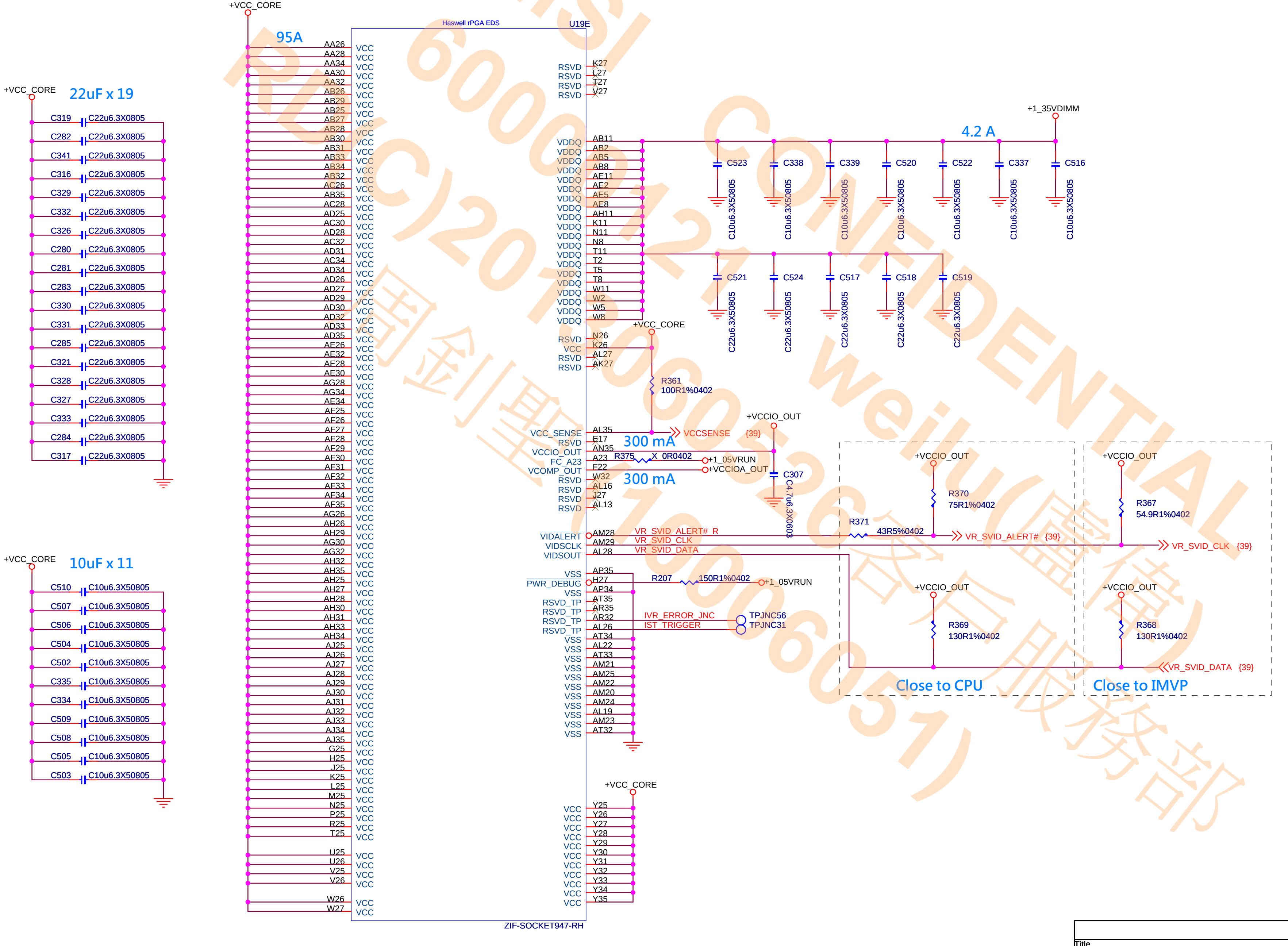
Date:	Friday, April 26, 2013
Sheet	5 of 50

Haswell (POWER)



Title	CPU-4 (Power)
Size	Custom
Document Number	MS-16GC
Rev	11
Date:	Friday, April 26, 2013
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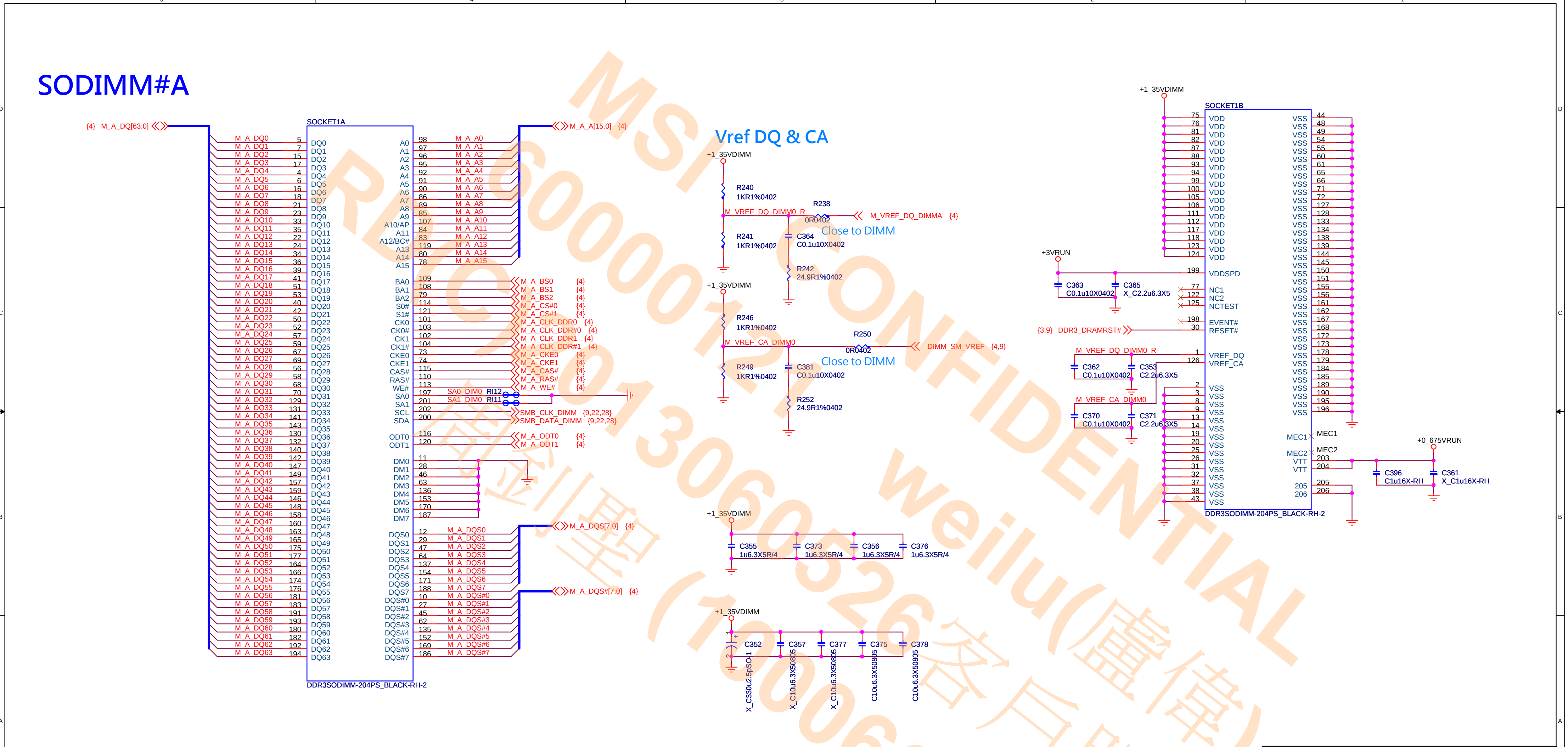
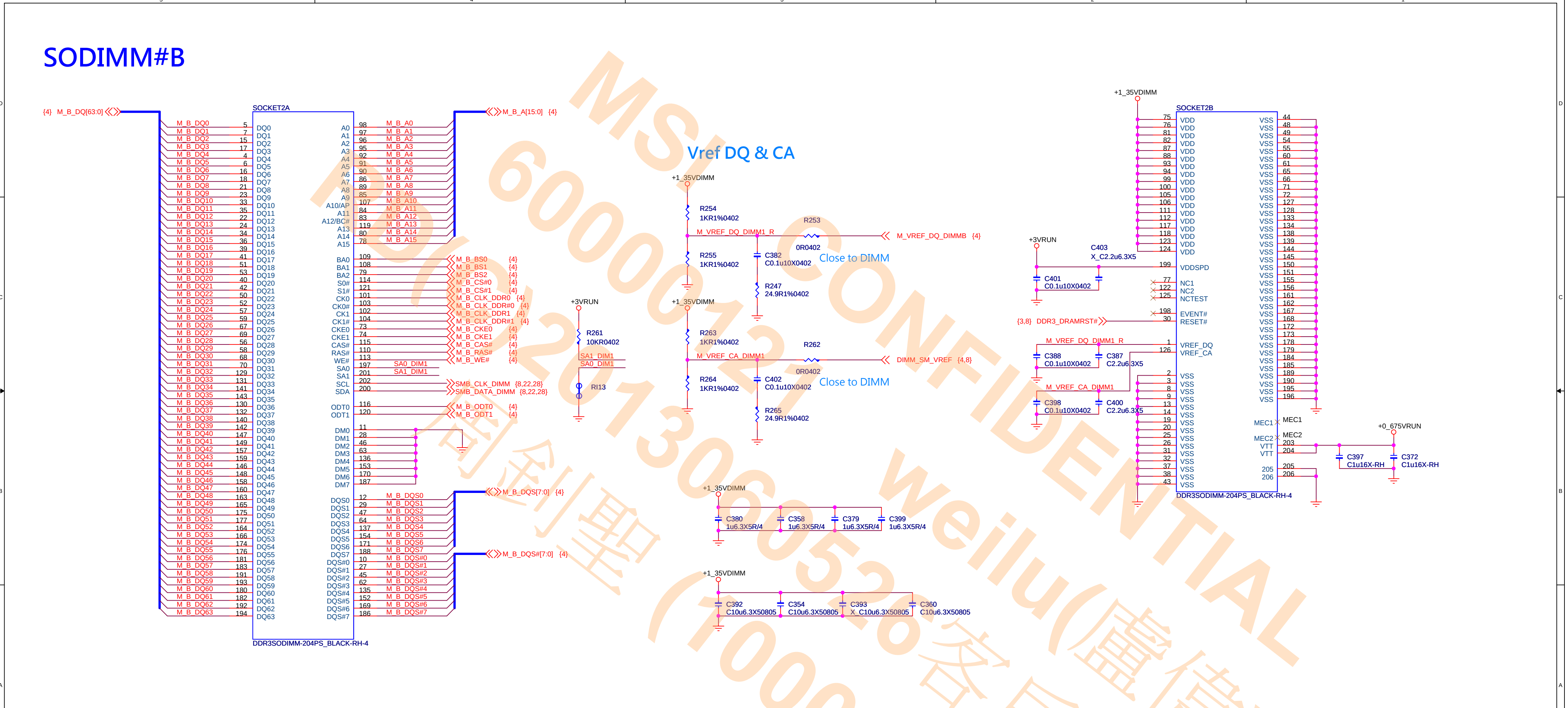
Haswell (GND)

Title	CPU-5 (GND)	
Size Custom	Document Number MS-16GC	Rev 11
Date: Friday, April 26, 2013	Sheet 7 of 50	



Title	DDR3L SODIMM 0	
Size: Custom	Document Number: MS-16GC	Rev: 11
Date: Friday, April 26, 2013	Sheet 8 of 50	



Title	DDR3L SODIMM 1
Size: Custom	Document Number: MS-16GC
Rev	11
Date:	Friday, April 26, 2013
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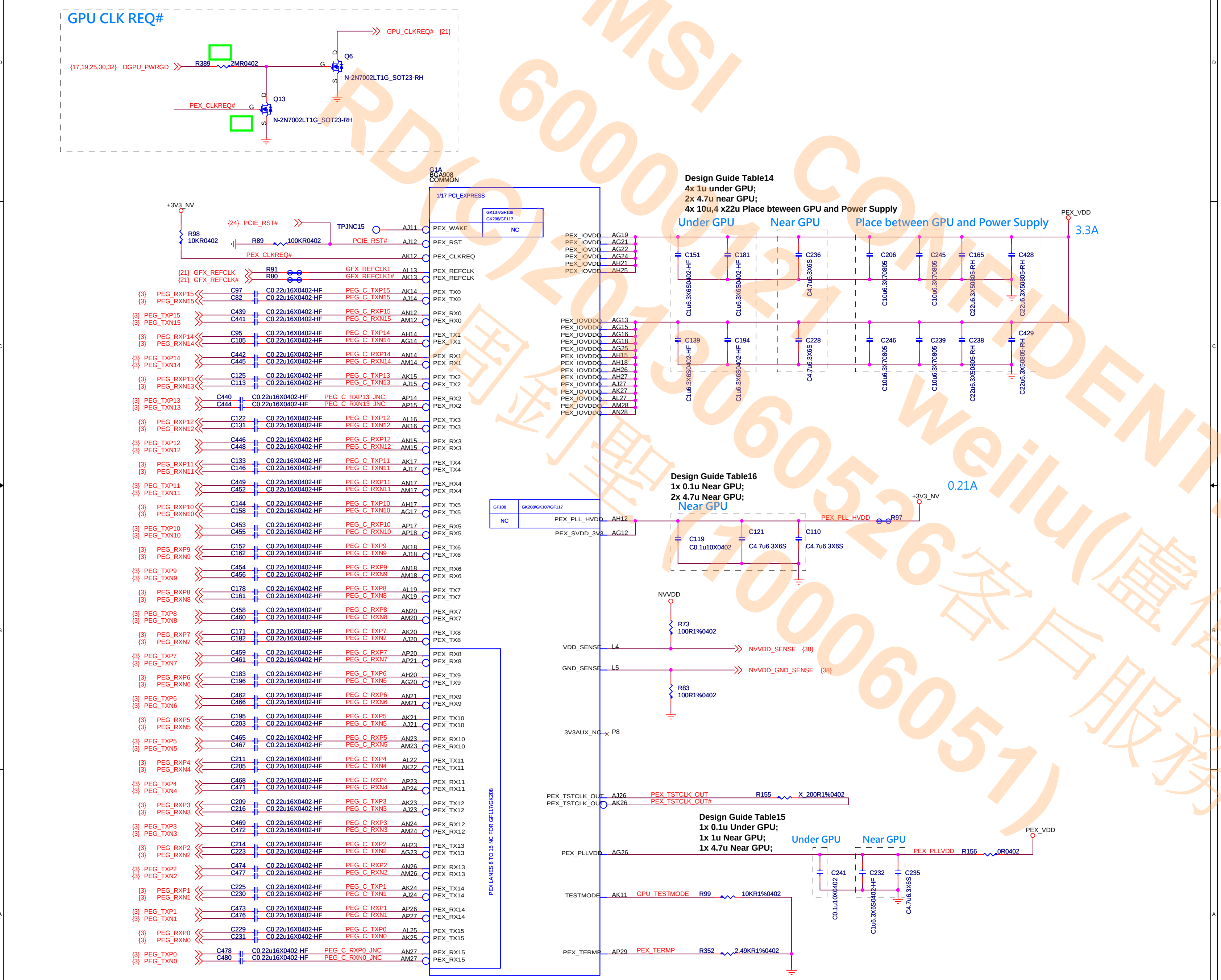
N14E-GE(PCI-Express Gen3 x16 Interface)



Title	N14E-GE_PCI-E Host
Size	Custom
Document Number	MS-16GC
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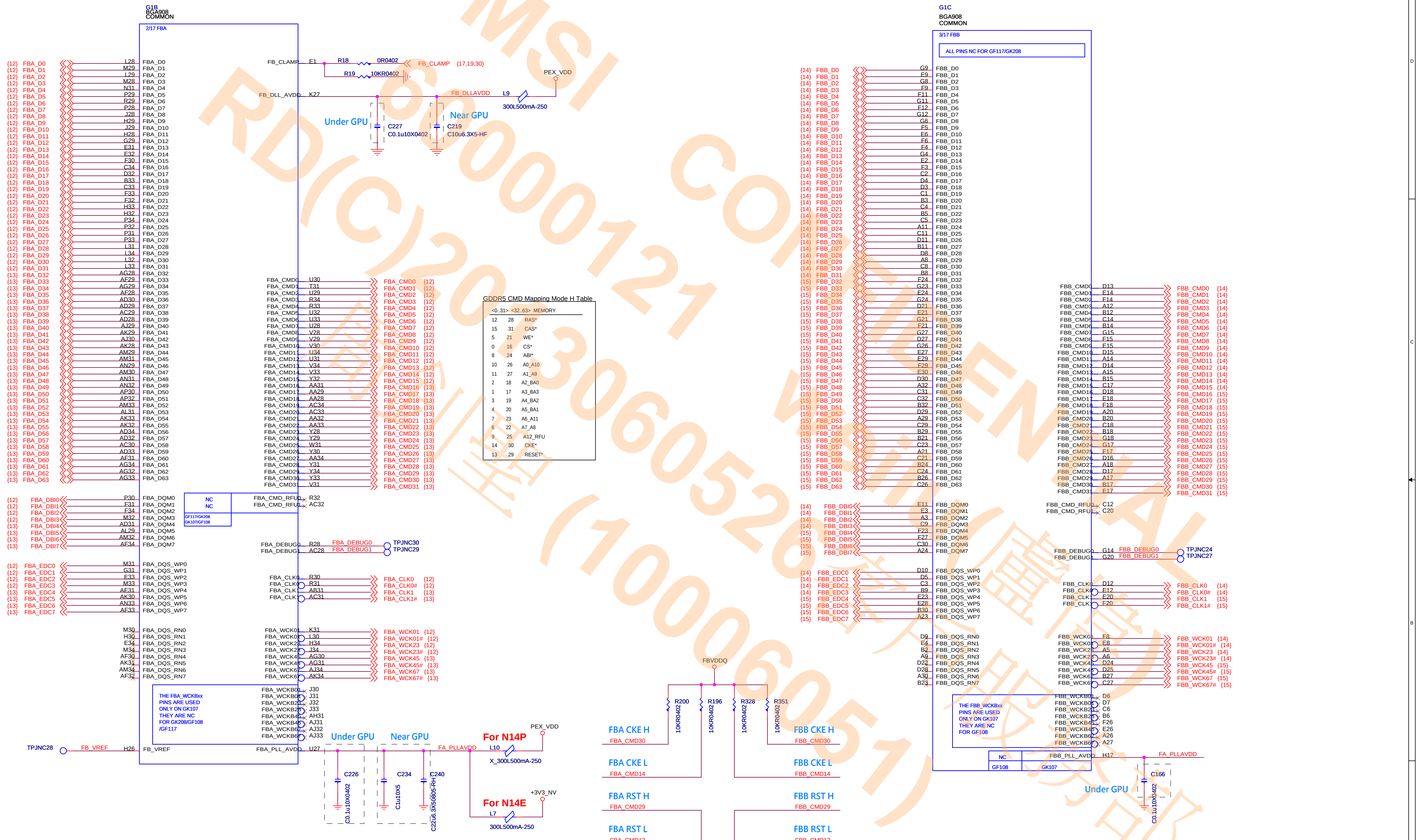
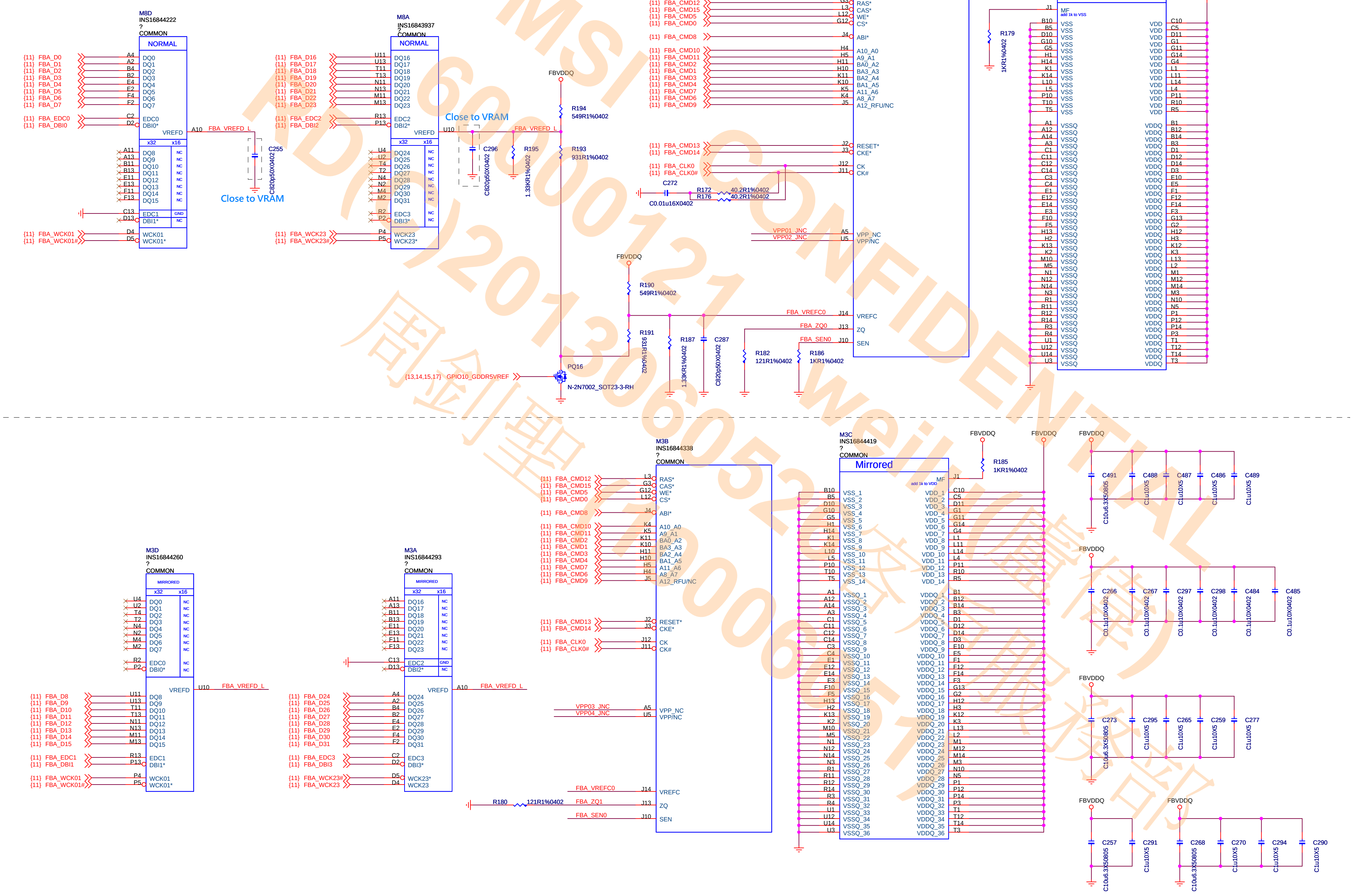
N14E-GE(Frame Buffer Interface)



G1B
BGA908
COMMON
2/17 FBA
G1C
BGA908
COMMON
3/17 FBB
ALL PINS NC FOR GF117/GK208
FB_CLAMP
FB_DLL_AVDD
FB_DLLAVDD
PEX_VDD
Under GPU
Near GPU
C227 C0.1u10X0402
C219 C10u6.3X5-HF
300L500mA-250
GDDR5 CMD Mapping Mode H Table
FBA_DEBUG0
FBA_DEBUG1
TPJNC30
TPJNC29
FBB_DEBUG0
FBB_DEBUG1
TPJNC24
TPJNC27
THE FBA_WCKBxx PINS ARE USED ONLY ON GK107 THEY ARE NC FOR GK208/GF108 /GF117
THE FBB_WCKBxx PINS ARE USED ONLY ON GK107 THEY ARE NC FOR GF108
FBVDDQ
FBA CKE H
FBA CKE L
FBA RST H
FBA RST L
FBB CKE H
FBB CKE L
FBB RST H
FBB RST L
TPJNC28
FB_VREF
FA_PLLAVDD
For N14P
For N14E
X_300L500mA-250
+3V3_NV
C226
C234
C240
C166

SKU	FBA_PLL_AVDD Power Rail
N14E-GE	+3V3_NV
N14P-GT	PEX_VDD
N14P-GS	PEX_VDD

N14E-GE(GDDR5 Frame A-1)

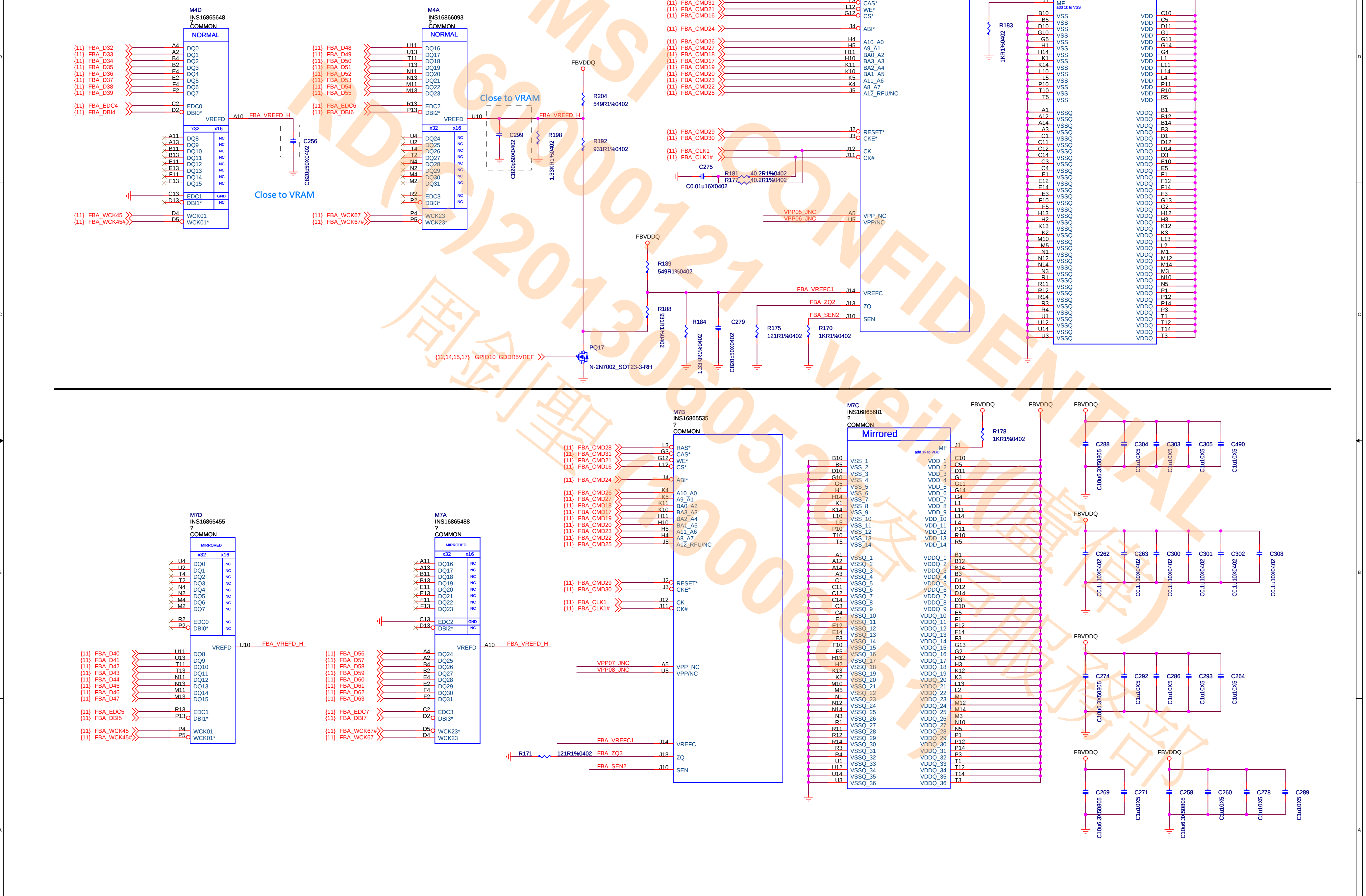


Title: N14E-GE_GDDR5 Frame A-1

Size: Custom | Document Number: MS-16GC | Rev: 11

Date: Friday, April 26, 2013 | Sheet 12 of 50

N14E-GE(GDDR5 Frame A-2)



Title	N14E-GE_GDDR5 Frame A-2
Size: Custom	Document Number: MS-16GC
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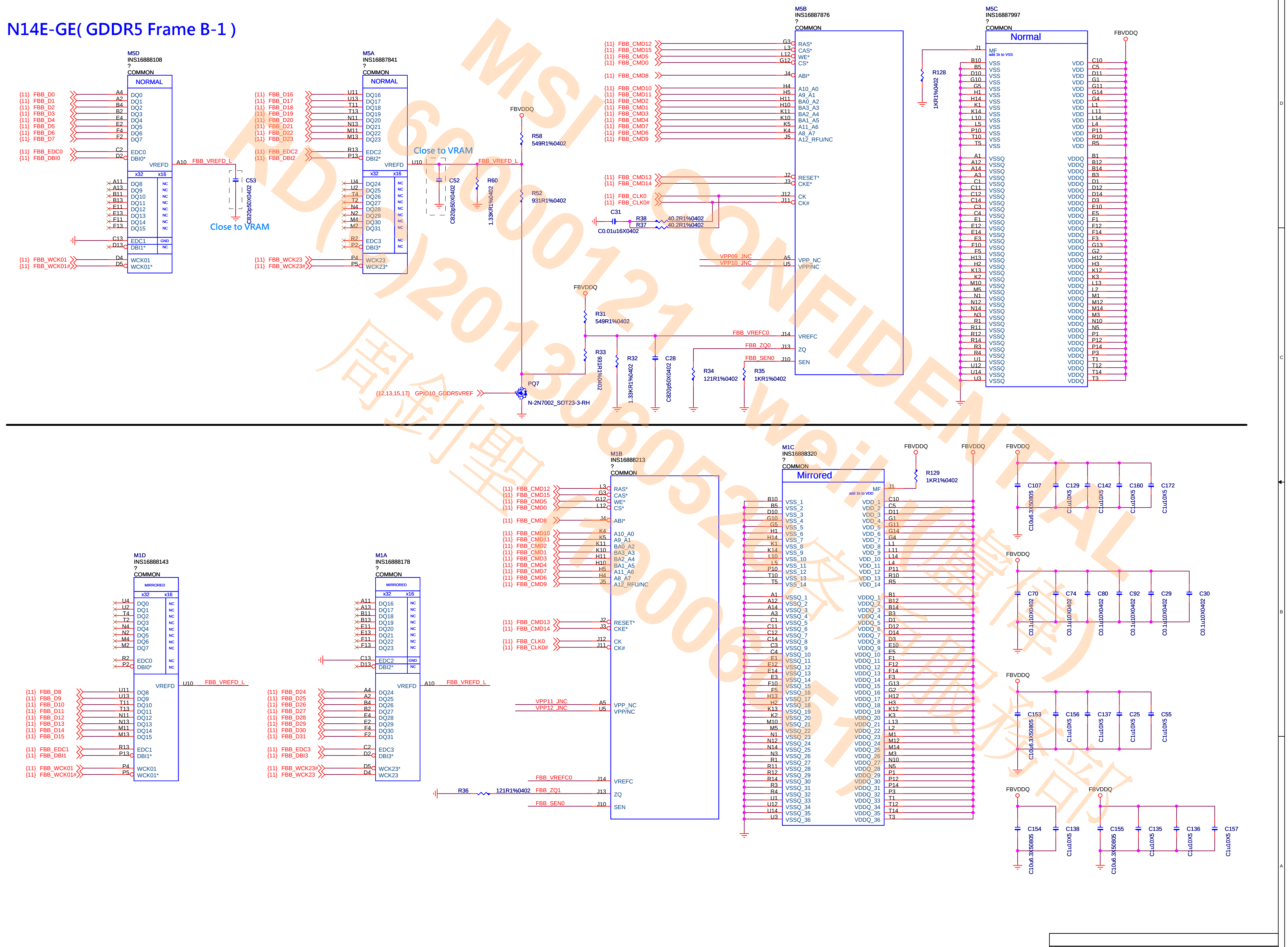
N14E-GE(GDDR5 Frame B-1)



Title	N14E-GE_GDDR5 Frame B-1
Size	Custom
Document Number	MS-16GC
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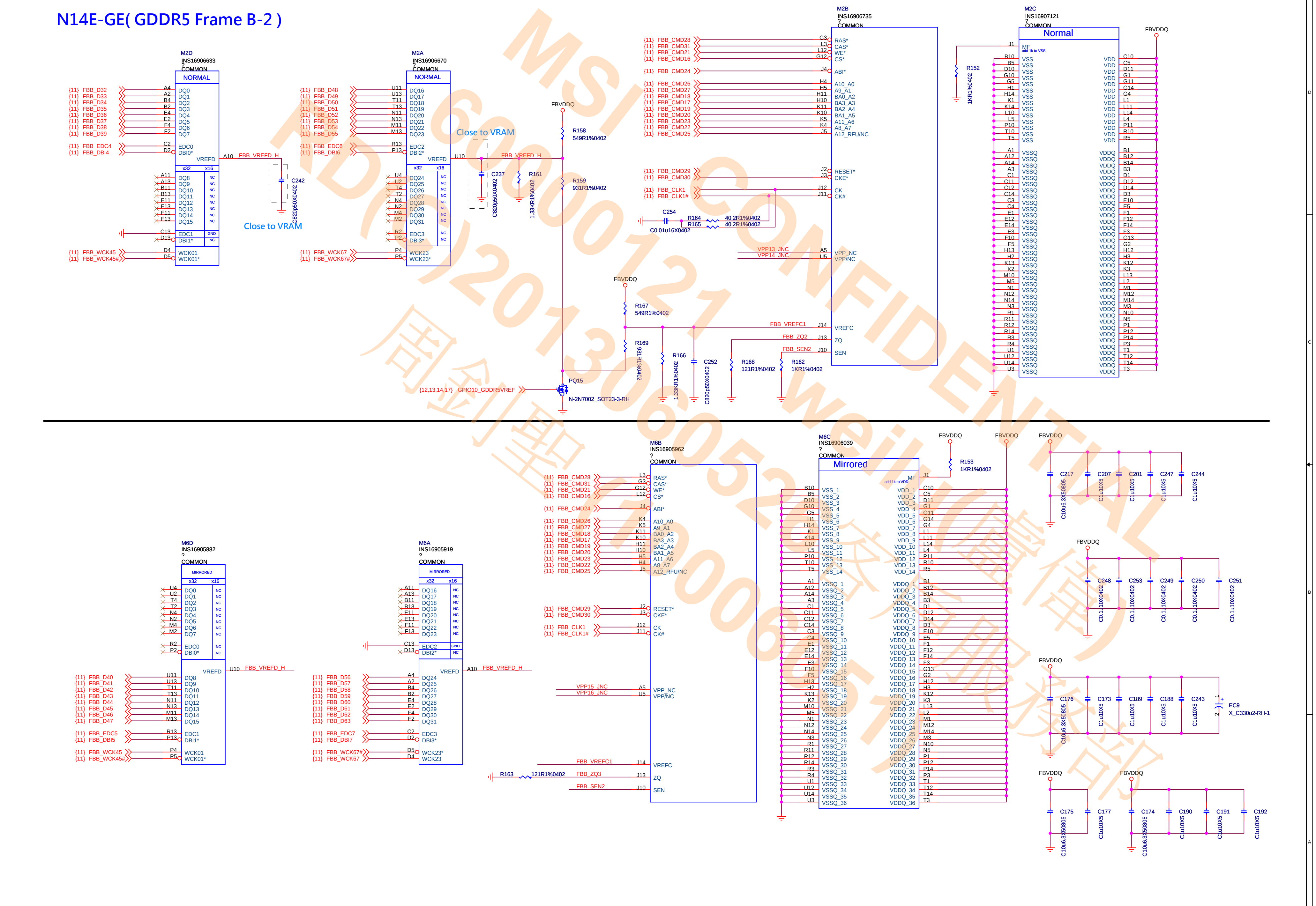
N14E-GE(GDDR5 Frame B-2)



Title	N14E-GE_GDDR5 Frame B-2
Size	Custom
Document Number	MS-16GC
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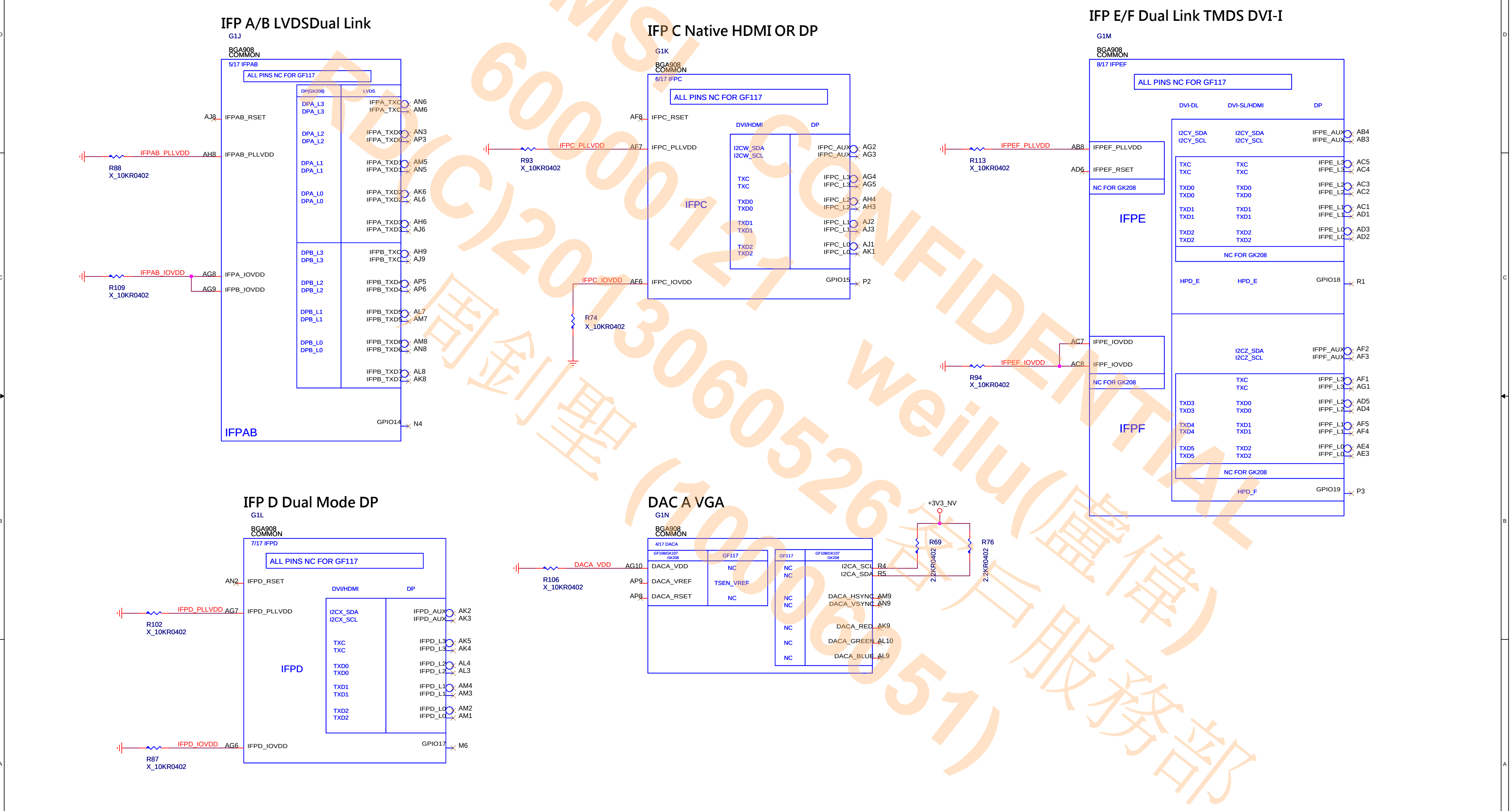
N14E-GE(Display IF)



Title	N14E-GE_Display IF		
Size: Custom	Document Number: MS-16GC		Rev: 11
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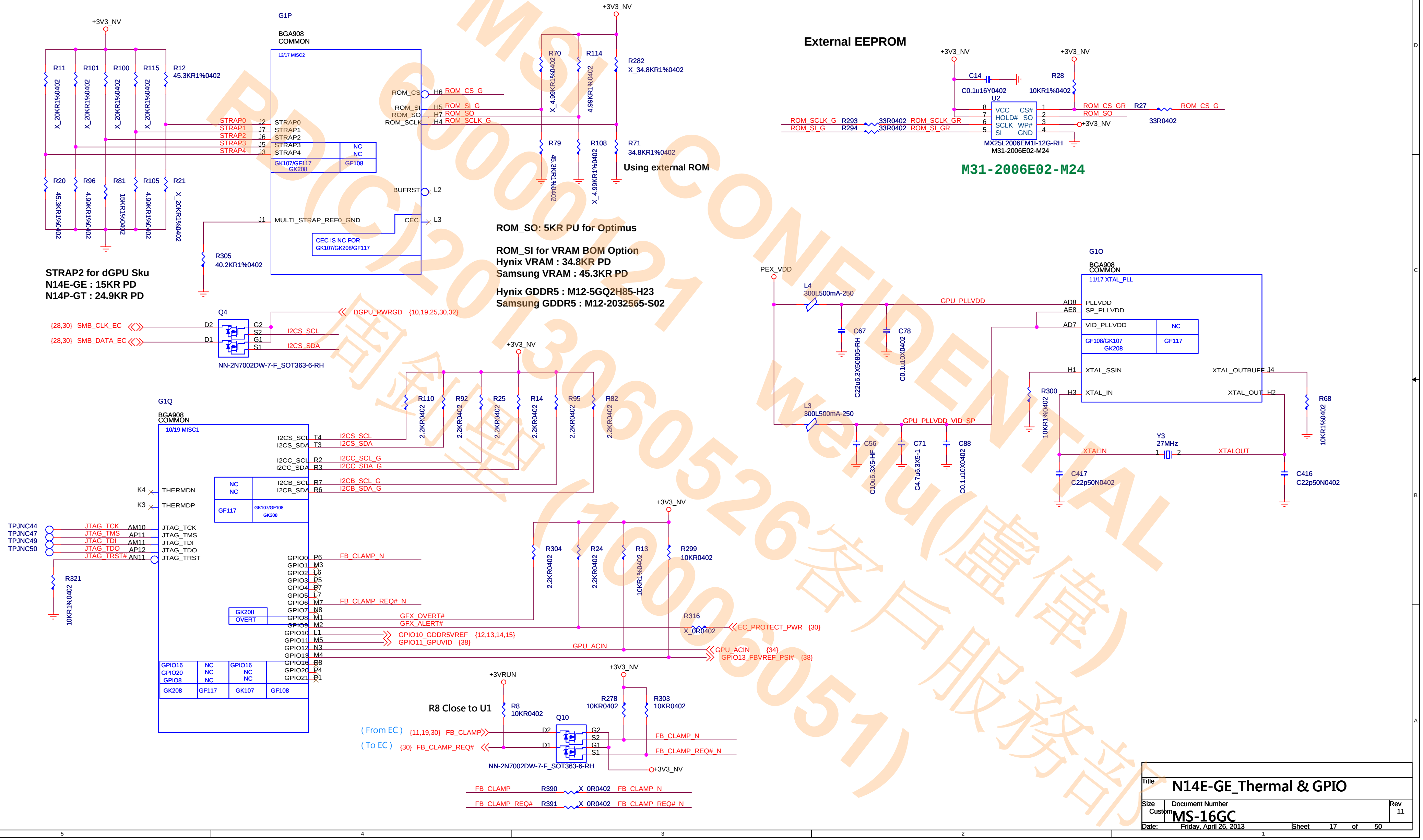
N14E-GE(Thermal & GPIO)



G1P
BGA908 COMMON
12/17 MISC2
+3V3_NV
R11 R101 R100 R115 R12
45.3KR1%0402
X_20KR1%0402
STRAP0 STRAP1 STRAP2 STRAP3 STRAP4
J2 J7 J6 J5 J3
GK107/GF117 GK208
GF108
NC
R20 R96 R81 R105 R21
45.3KR1%0402 4.99KR1%0402 15KR1%0402 4.99KR1%0402 X_20KR1%0402
ROM_CS H6 ROM_CS_G
ROM_SI H5 ROM_SI_G
ROM_SO H7 ROM_SO
ROM_SCLK H4 ROM_SCLK_G
R70 R114 R282
X_34.8KR1%0402
X_4.99KR1%0402 4.99KR1%0402
R79 R108 R71
45.3KR1%0402 X_4.99KR1%0402 34.8KR1%0402
Using external ROM
BUFRST L2
MULTI_STRAP_REF0_GND J1
CEC L3
CEC IS NC FOR GK107/GK208/GF117
R305 40.2KR1%0402
STRAP2 for dGPU Sku
N14E-GE : 15KR PD
N14P-GT : 24.9KR PD
ROM_SO: 5KR PU for Optimus
ROM_SI for VRAM BOM Option
Hynix VRAM : 34.8KR PD
Samsung VRAM : 45.3KR PD
Hynix GDDR5 : M12-5GQ2H85-H23
Samsung GDDR5 : M12-2032565-S02
External EEPROM
C14 C0.1u16Y0402
R28 10KR1%0402
U2
VCC CS# HOLD# SO SCLK WP# SI GND
ROM_CS_GR R27 ROM_CS_G 33R0402
ROM_SCLK_G R293 33R0402 ROM_SCLK_GR
ROM_SI_G R294 33R0402 ROM_SI_GR
MX25L2006EM1I-12G-RH
M31-2006E02-M24
M31-2006E02-M24
Q4
DGPU_PWRGD {10,19,25,30,32}
{28,30} SMB_CLK_EC
{28,30} SMB_DATA_EC
I2CS_SCL I2CS_SDA
NN-2N7002DW-7-F_SOT363-6-RH
G1O
BGA908 COMMON
11/17 XTAL_PLL
PEX_VDD
L4 300L500mA-250
GPU_PLLVDD
AD8 PLLVDD
AE8 SP_PLLVDD
AD7 VID_PLLVDD
GF108/GK107 GK208 GF117 NC
C67 C22u6.3X50805-RH
C78 C0.1u10X0402
L3 300L500mA-250
GPU_PLLVDD_VID_SP
C56 C10u6.3X5-HF
C71 C4.7u6.3X5-1
C88 C0.1u10X0402
H1 XTAL_SSIN
H3 XTAL_IN
XTAL_OUTBUFF J4
XTAL_OUT H2
R300 10KR1%0402
R68 10KR1%0402
Y3 27MHz
XTALIN XTALOUT
C417 C22p50N0402
C416 C22p50N0402
G1Q
BGA908 COMMON
10/19 MISC1
+3V3_NV
R110 R92 R25 R14 R95 R82
2.2KR0402
I2CS_SCL T4 I2CS_SCL
I2CS_SDA T3 I2CS_SDA
I2CC_SCL R2 I2CC_SCL_G
I2CC_SDA R3 I2CC_SDA_G
I2CB_SCL R7 I2CB_SCL_G
I2CB_SDA R6 I2CB_SDA_G
K4 THERMDN
K3 THERMDP
GF117 GK107/GF108 GK208
TPJNC44 TPJNC47 TPJNC49 TPJNC50
JTAG_TCK AM10
JTAG_TMS AP11
JTAG_TDI AM11
JTAG_TDO AP12
JTAG_TRST# AN11
R321 10KR1%0402
GPIO0 P6 FB_CLAMP_N
GPIO1 M3
GPIO2 L6
GPIO3 P5
GPIO4 P7
GPIO5 L7
GPIO6 M7 FB_CLAMP_REQ#_N
GPIO7 N8
GPIO8 M1 GFX_OVERT#
GPIO9 M2 GFX_ALERT#
GPIO10 L1 GPIO10_GDDR5VREF {12,13,14,15}
GPIO11 M5 GPIO11_GPUVID {38}
GPIO12 N3 GPU_ACIN
GPIO13 M4
GPIO16 R8
GPIO20 P4
GPIO21 P1
GK208 OVERT
GPIO16 GPIO20 GPIO8 NC
GK208 GF117 GK107 GF108
R304 R24 R13 R299
2.2KR0402 2.2KR0402 10KR1%0402 10KR0402
R316 X_0R0402
EC_PROTECT_PWR {30}
GPU_ACIN {34}
GPIO13_FBVREF_PSI# {38}
+3VRUN
R8 Close to U1
R8 10KR0402
R278 10KR0402
R303 10KR0402
Q10
(From EC) {11,19,30} FB_CLAMP
(To EC) {30} FB_CLAMP_REQ#
FB_CLAMP_N
FB_CLAMP_REQ#_N
NN-2N7002DW-7-F_SOT363-6-RH
FB_CLAMP R390 X_0R0402 FB_CLAMP_N
FB_CLAMP_REQ# R391 X_0R0402 FB_CLAMP_REQ#_N
Title N14E-GE_Thermal & GPIO
Size Custom
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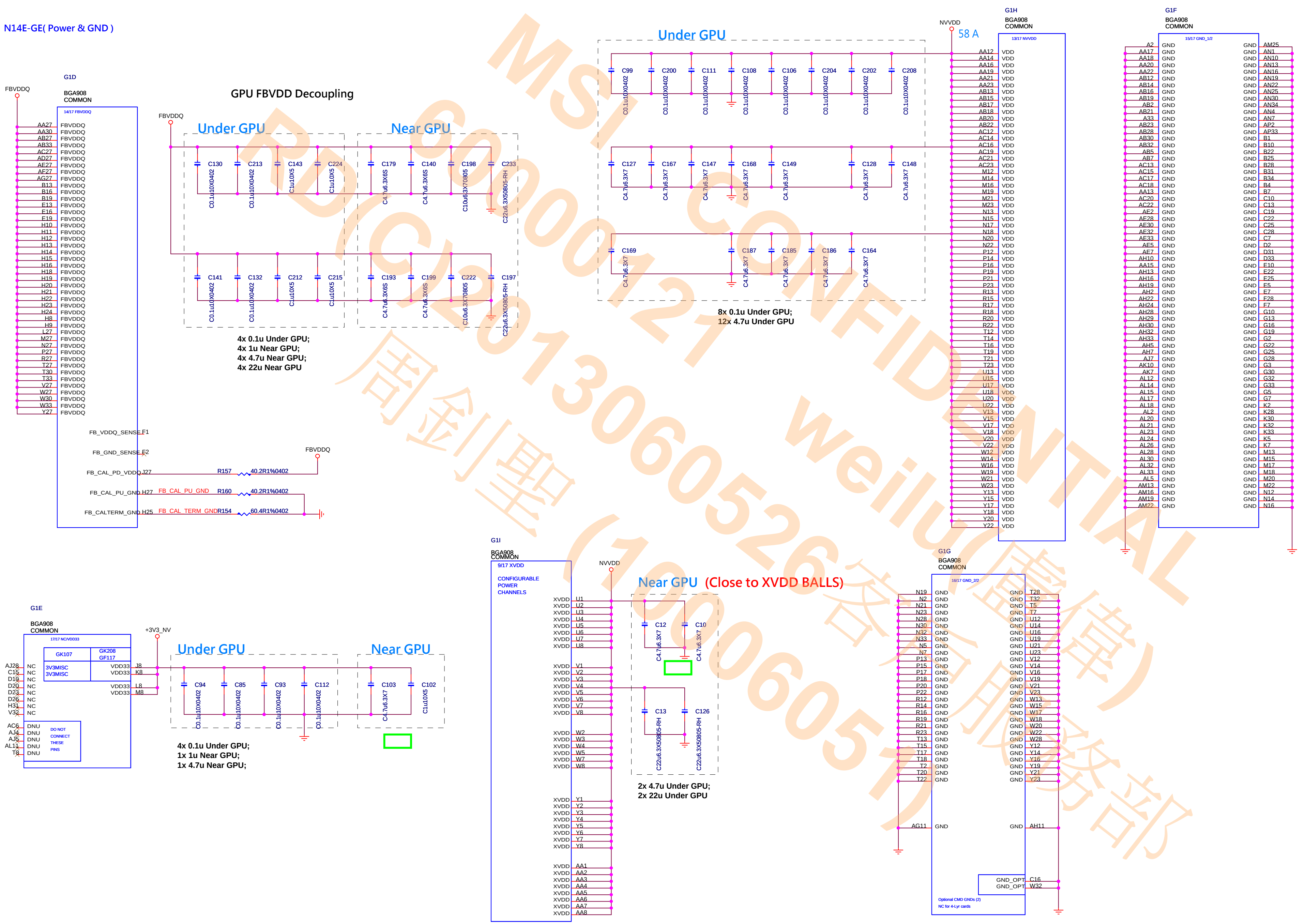
N14E-GE(Power & GND)



Title	N14E-GE_Power & GND	
Size: Custom	Document Number: MS-16GC	Rev: 11
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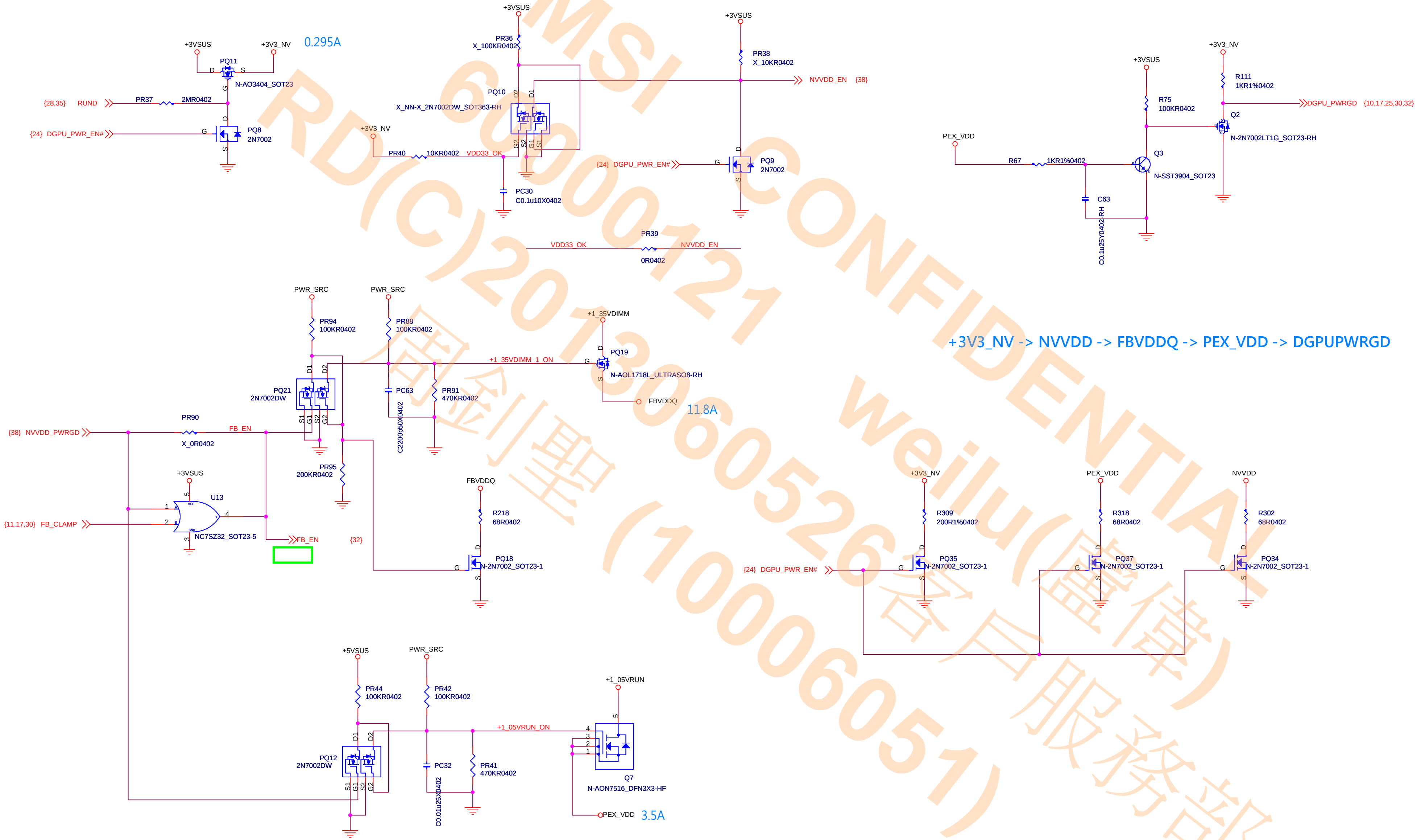
N14E-GE(Power Control)



Title	N14E-GE_Power Control	
Size: Custom	Document Number: MS-16GC	Rev: 11
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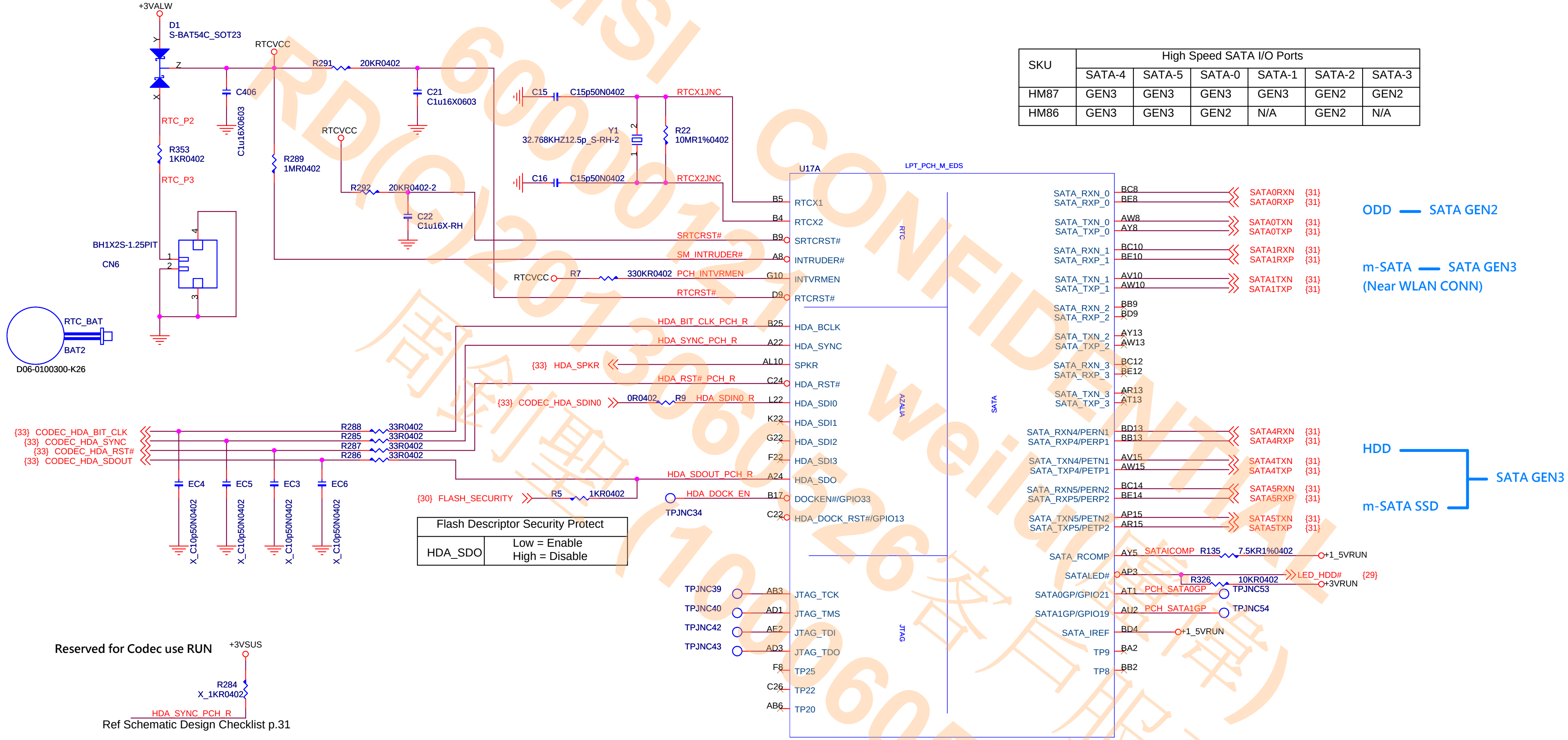
Lynx Point (HDA,JTAG,SATA)

SKU	High Speed SATA I/O Ports					
	SATA-4	SATA-5	SATA-0	SATA-1	SATA-2	SATA-3
HM87	GEN3	GEN3	GEN3	GEN3	GEN2	GEN2
HM86	GEN3	GEN3	GEN2	N/A	GEN2	N/A



Title	PCH-1 (HDA/JTAG/SATA)
Size: Custom	Document Number: MS-16GC
Rev	11
Date:	Friday, April 26, 2013
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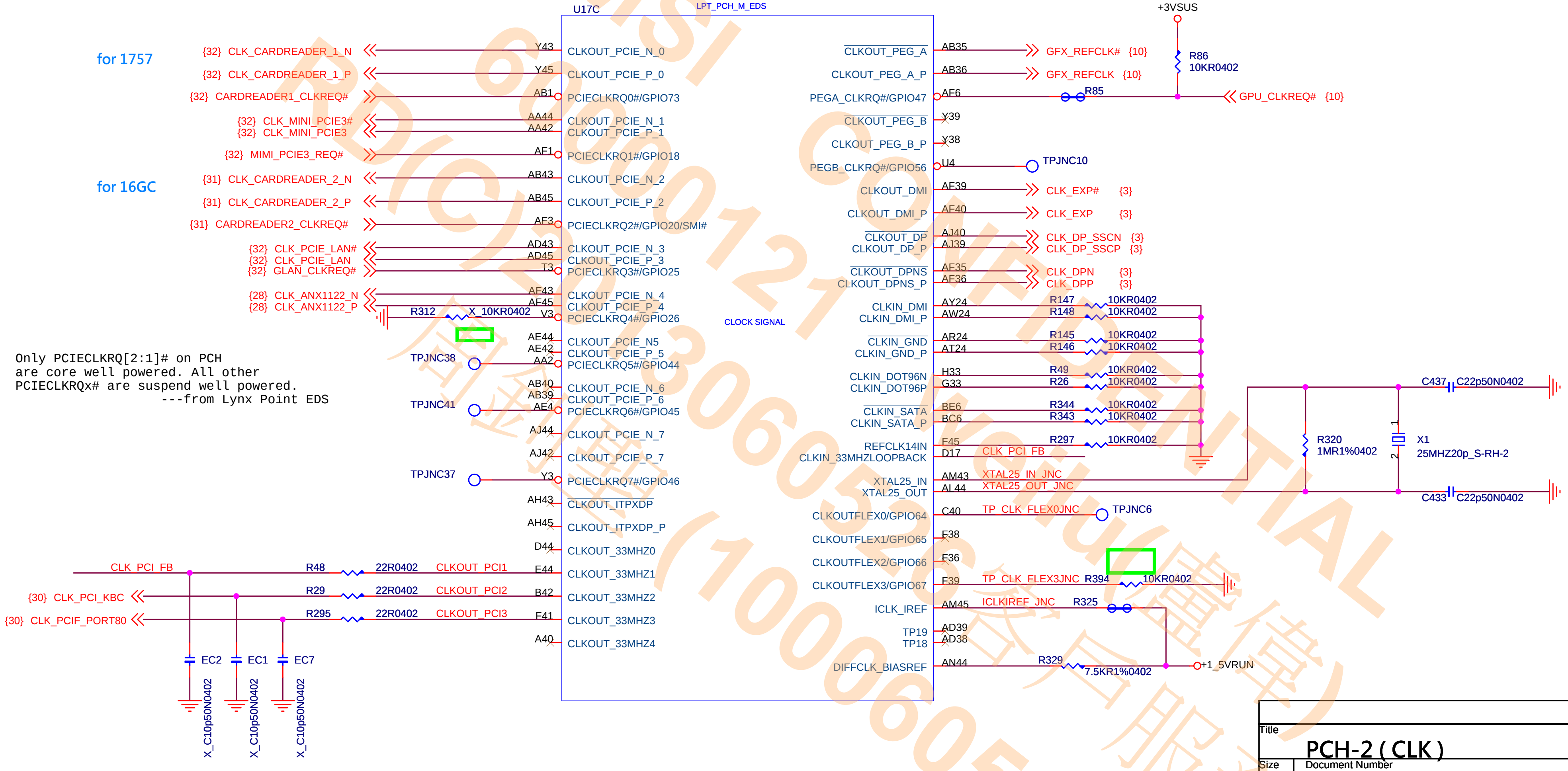
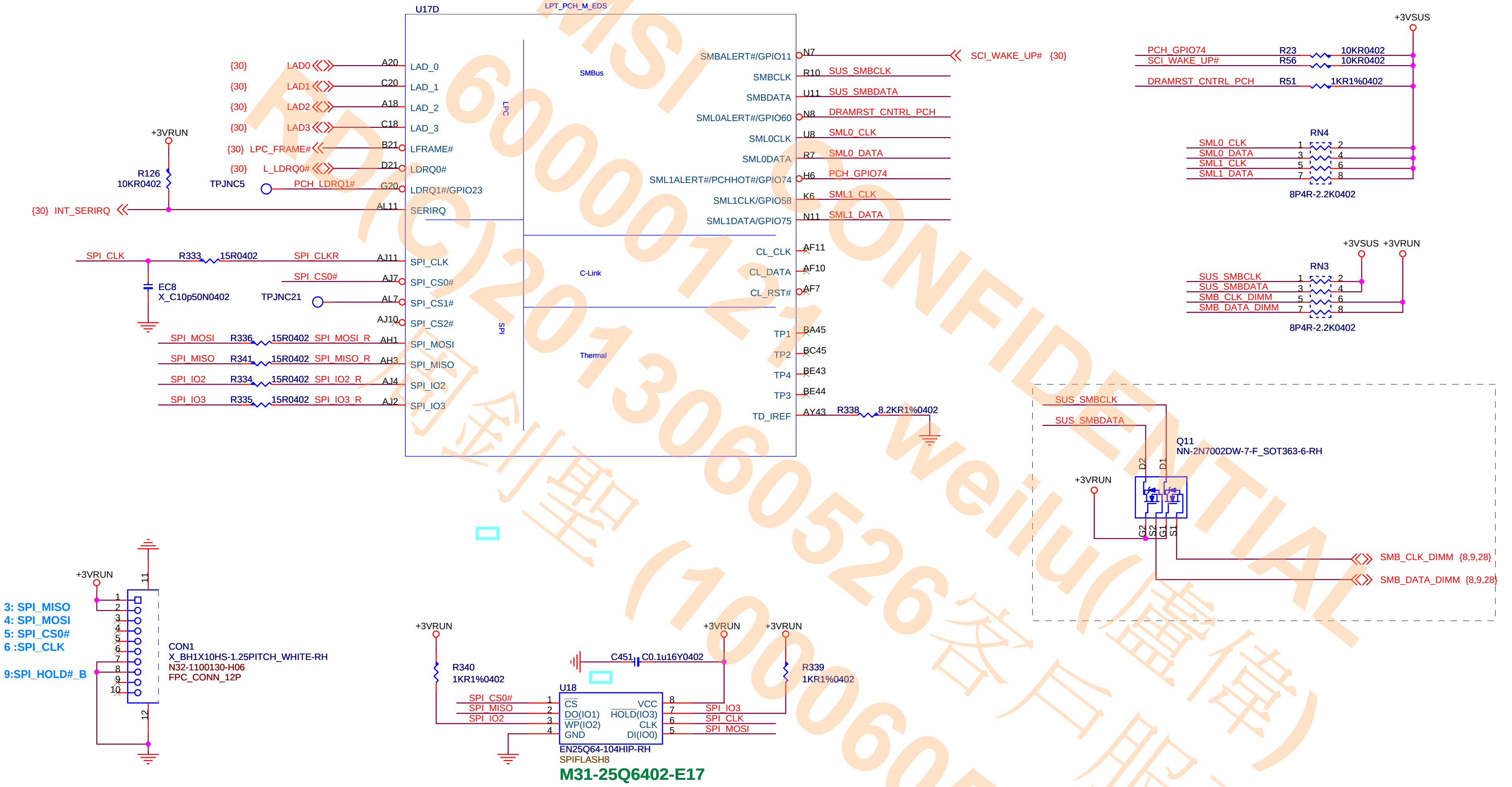
Lynx Point (Clock)



Title	PCH-2 (CLK)	
Size: Custom	Document Number: MS-16GC	Rev: 11
Date: Friday, April 26, 2013	Sheet 21 of 50	

Lynx Point (LPC,SMBUS)

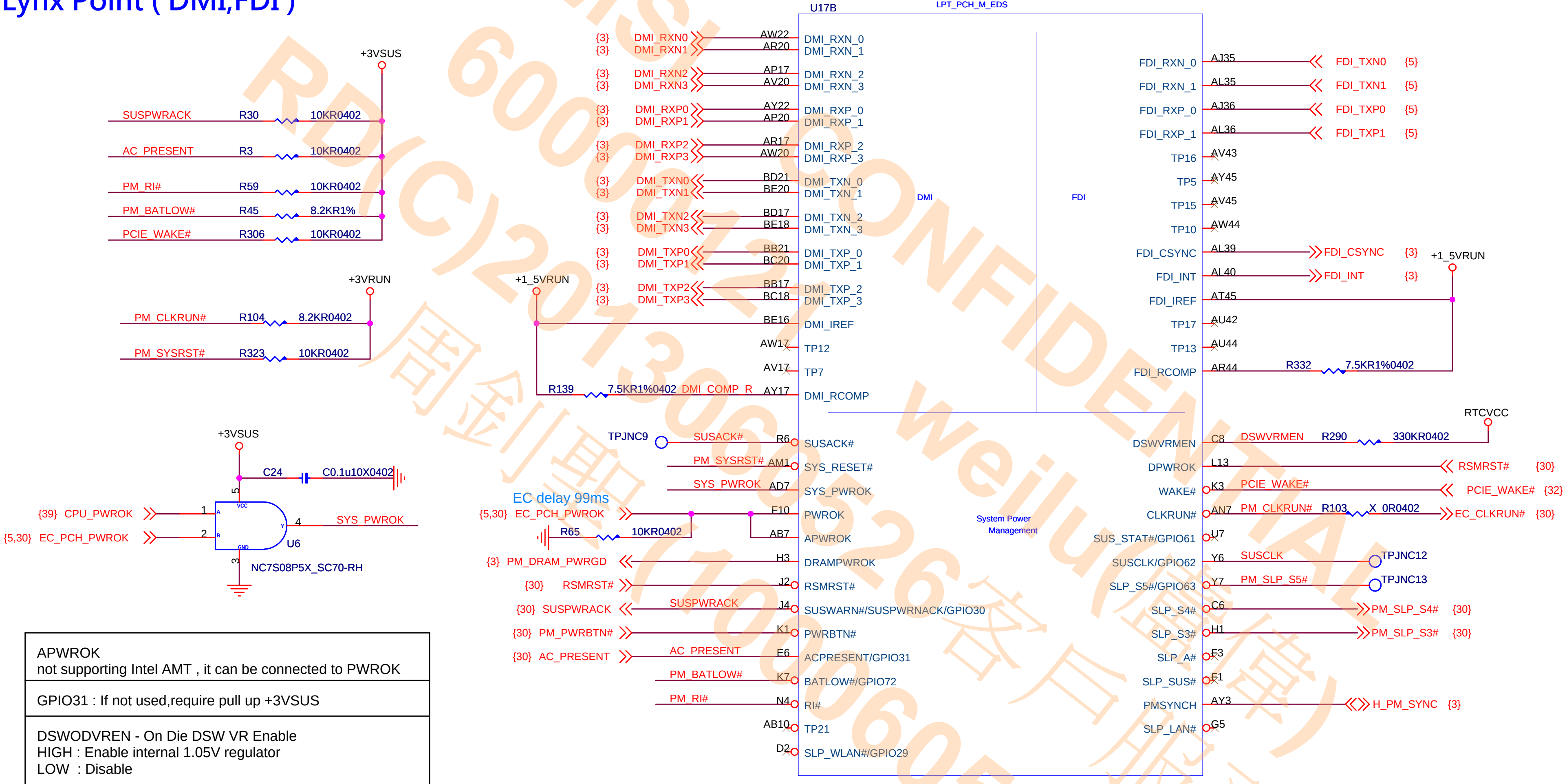


Title: PCH-3 (LPC,SMBUS)

Size: Custom | Document Number: MS-16GC | Rev: 11

Date: Friday, April 26, 2013 | Sheet 22 of 50

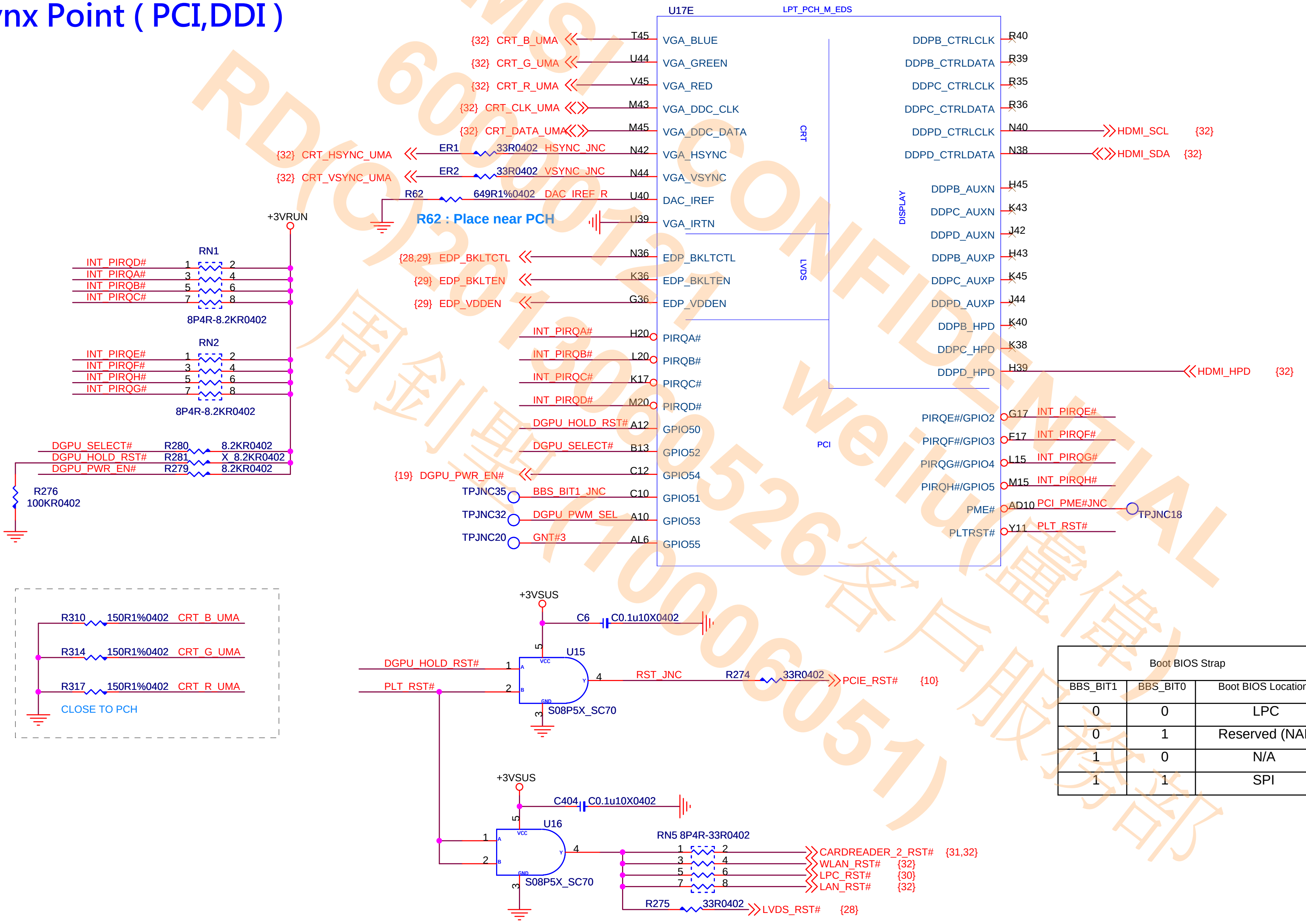
Lynx Point (DMI,FDI)



APWROK not supporting Intel AMT , it can be connected to PWROK
GPIO31 : If not used,require pull up +3VSUS
DSWODVREN - On Die DSW VR Enable HIGH : Enable internal 1.05V regulator LOW : Disable
DPWROK Without deep s4/s5 support tied together with RSMRST#

Title	PCH-4 (DMI,FDI)	
Size Custom	Document Number MS-16GC	Rev 11
Date: Friday, April 26, 2013	Sheet 23 of 50	

Lynx Point (PCI,DDI)



Boot BIOS Strap		
BBS_BIT1	BBS_BIT0	Boot BIOS Location
0	0	LPC
0	1	Reserved (NAND)
1	0	N/A
1	1	SPI

Title
PCH-5 (PCI,DDI)

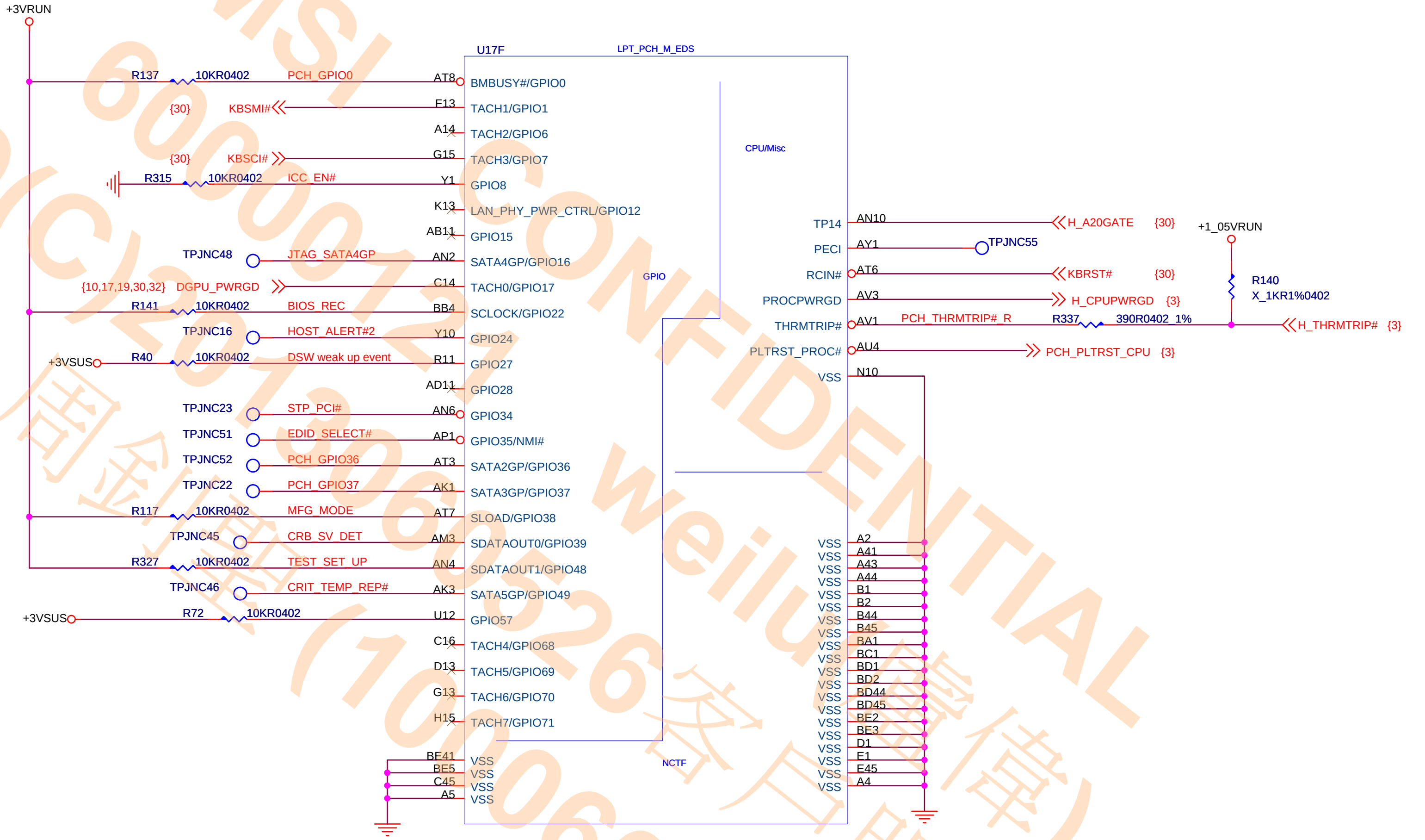
Size: Custom
Document Number: MS-16GC
Rev: 11

Date: Friday, April 26, 2013

Lynx Point (GPIO,MISC)

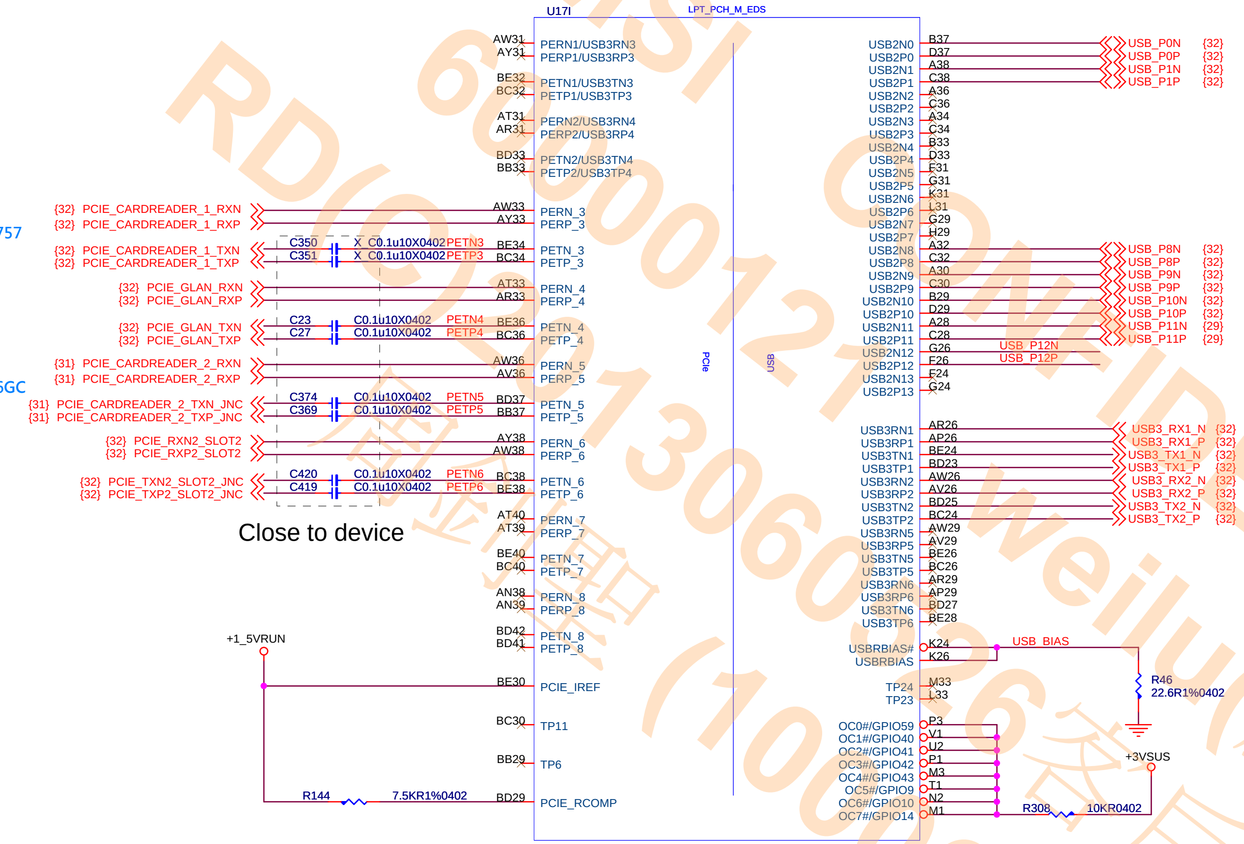
GPIO Setting : Ref 486708_LPT_EDS Section2.24

PLL ON DIE VR_ENABLE	
GPIO28	Internal pull high (Enable)
	Low: Disable



Title	PCH-6 (GPIO,MISC)		
Size: Custom	Document Number: MS-16GC		Rev: 11
Date: Friday, April 26, 2013	Sheet 25 of 50		

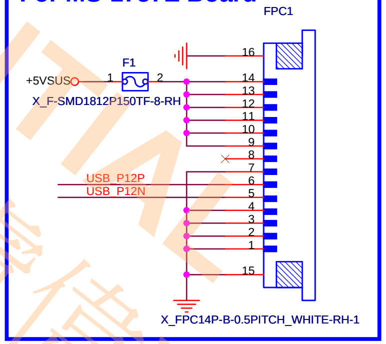
Lynx Point (PCIE,USB)



USB

USB 2.0	USB 3.0	Device	Note
0	1	USB 3.0 Port 1	(16GCB/1757B)
1	2	USB 3.0 Port 2	(16GCB/1757B)
2			NC
3			NC
4			NC
5			NC
6			NC
7			NC
8		USB 2.0 Port	(16GCB)
9		USB 2.0 Port	(16GCA/1757A)
10		WLAN	
11		WebCam	
12		USB 2.0 Port	(1757E)
13			NC
	3		NC
	4		NC
	5		NC
	6		NC

For MS-1757E Board



Title: PCH-7 (PCIE,USB)
Size: Custom | Document Number: MS-16GC | Rev: 11
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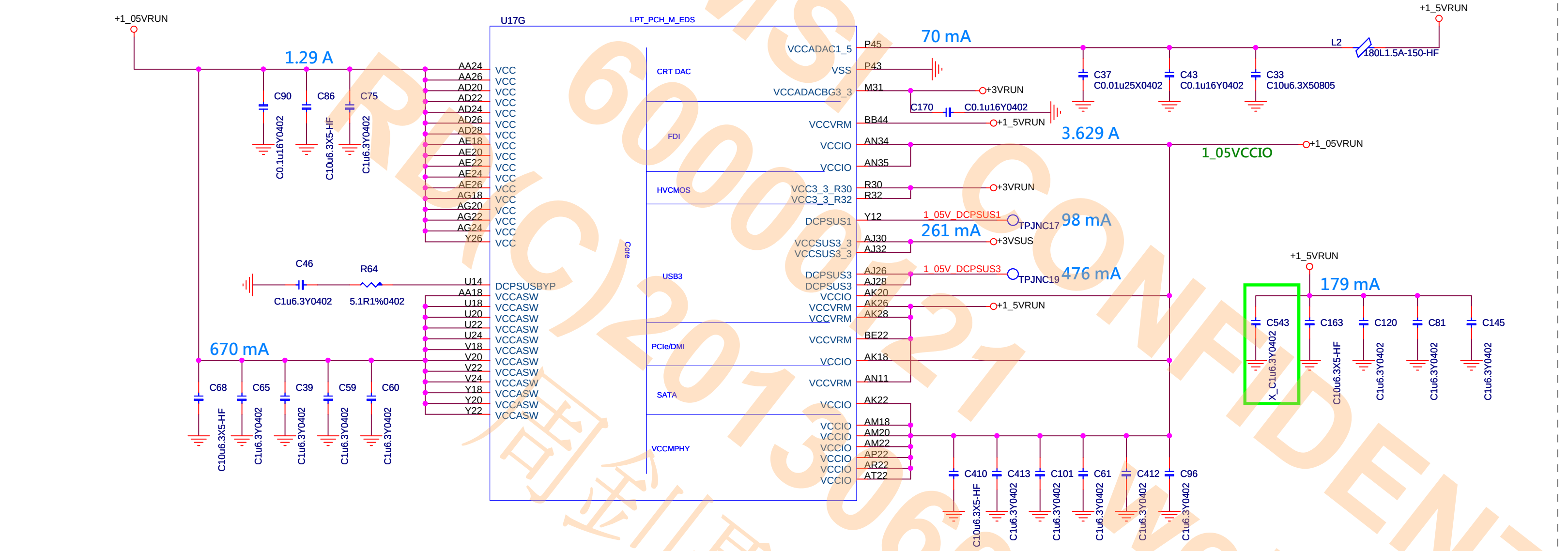
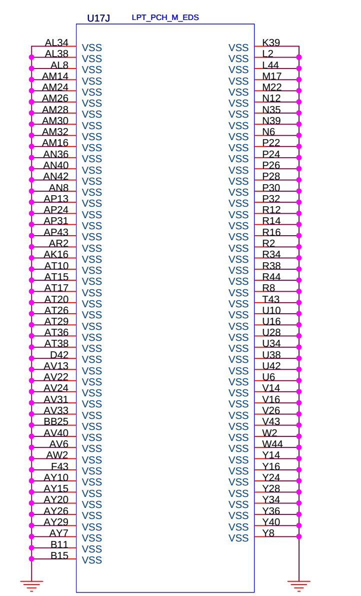
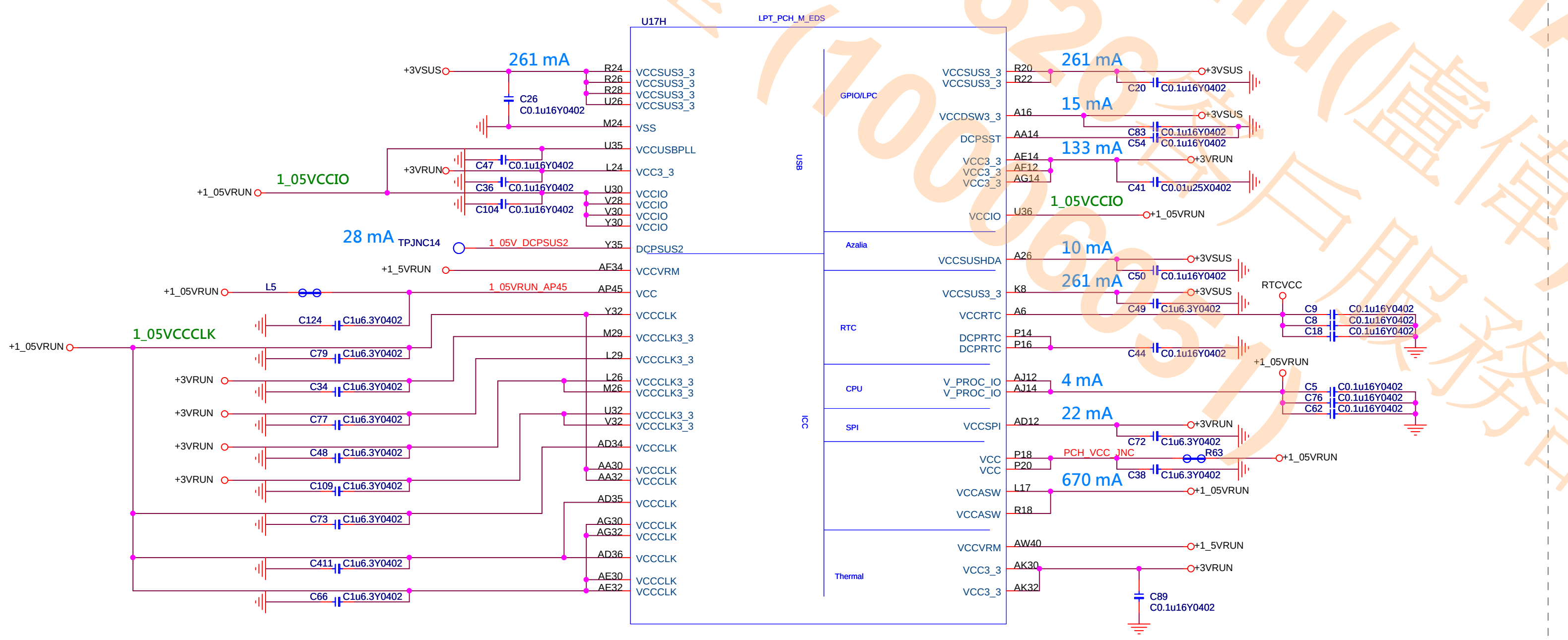
Lynx Point (Power)

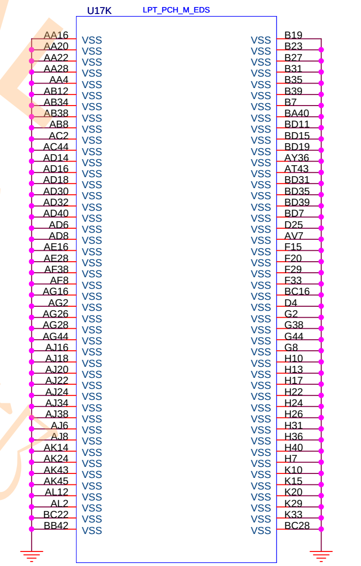


Lynx Point (GND)



Lynx Point (Power)





Title	PCH-8 (Power,GND)
Size	Custom
Document Number	MS-16GC
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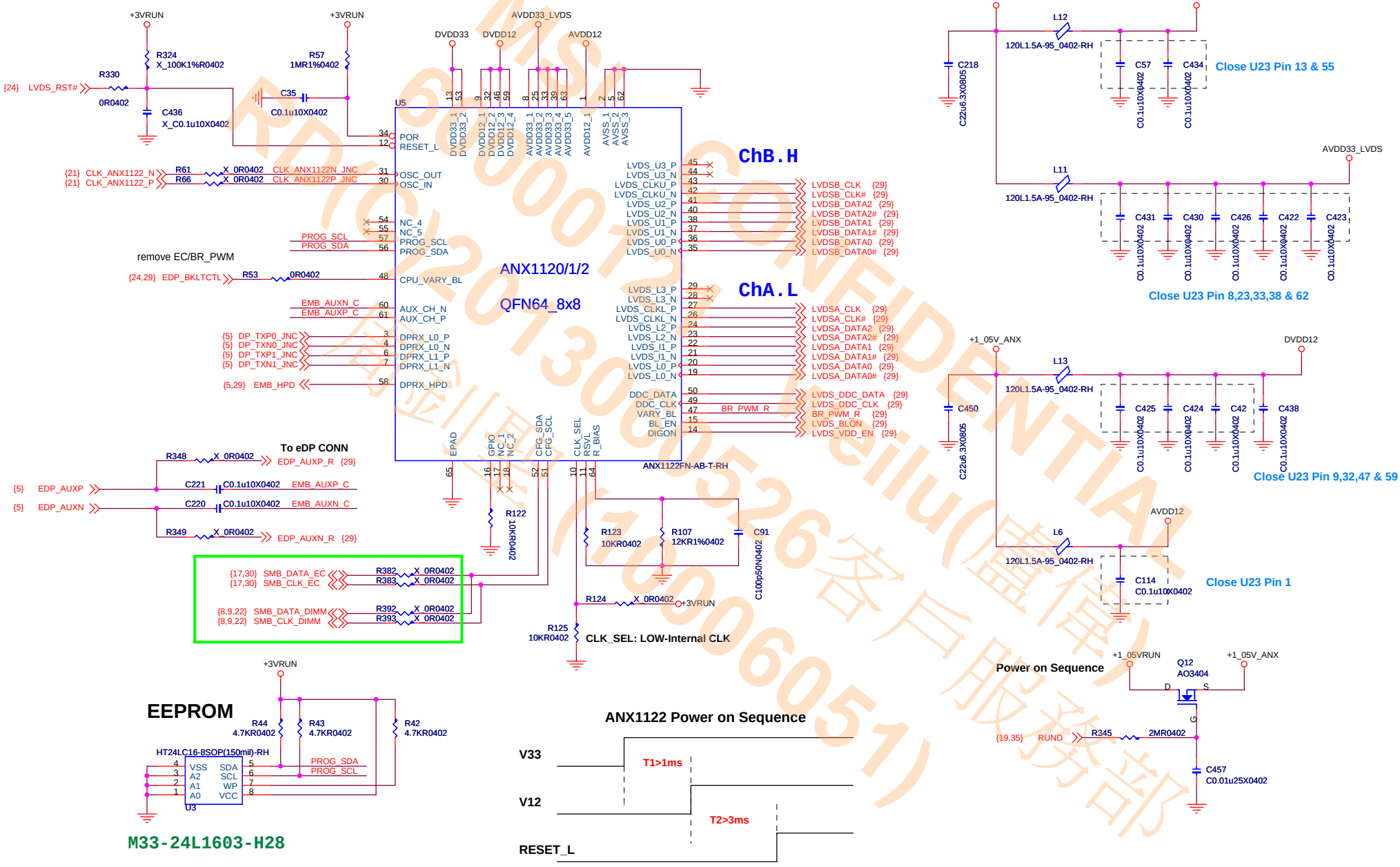
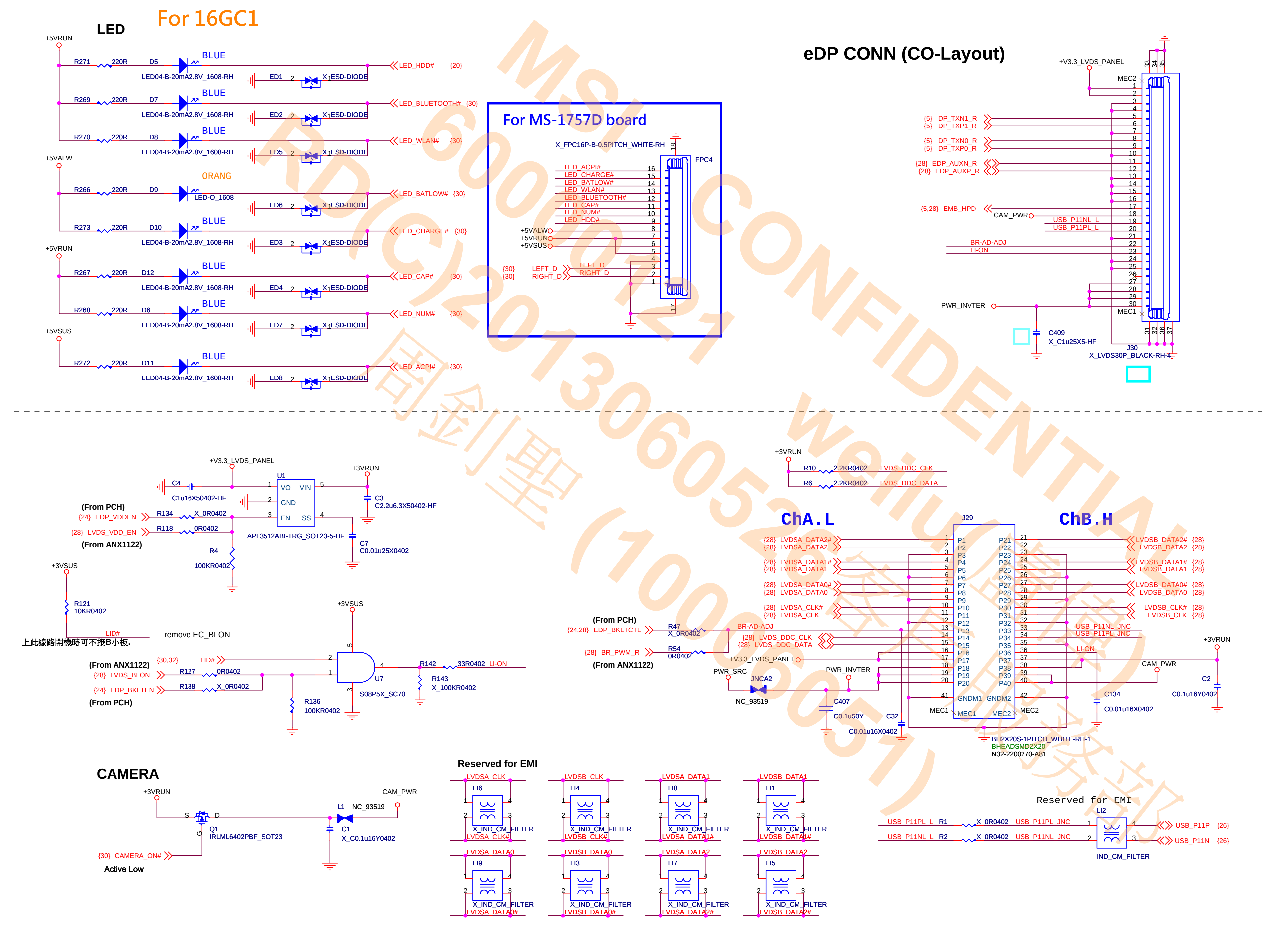
eDP to LVDS



Title	eDP to LVDS (ANX1122)		
Size: Custom	Document Number: MS-16GC		Rev: 11
Date: Friday, April 26, 2013	Sheet 28 of 50		



Title	FAN/LED/LVDS
Size	Custom
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Date:	Friday, April 26, 2013
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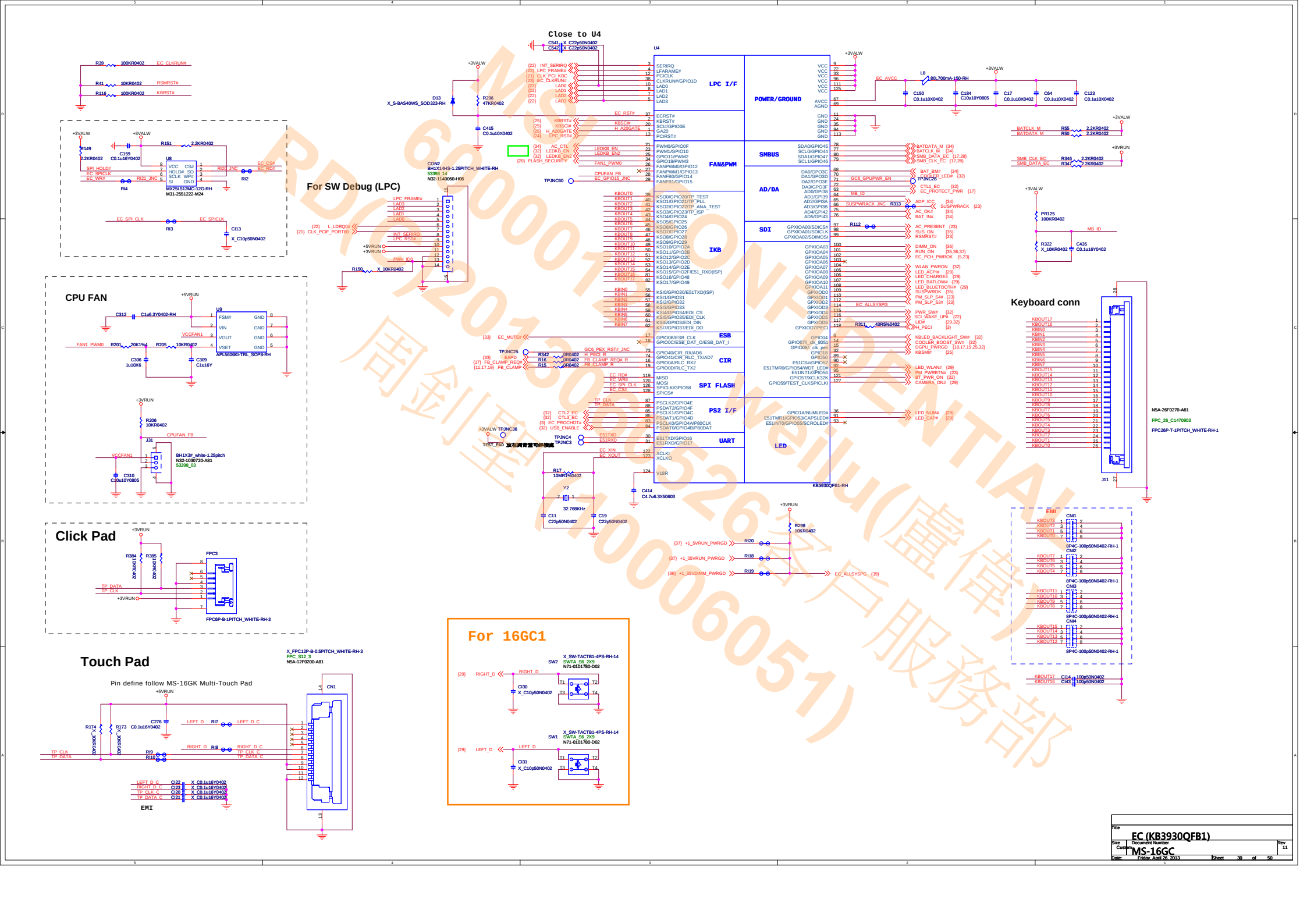
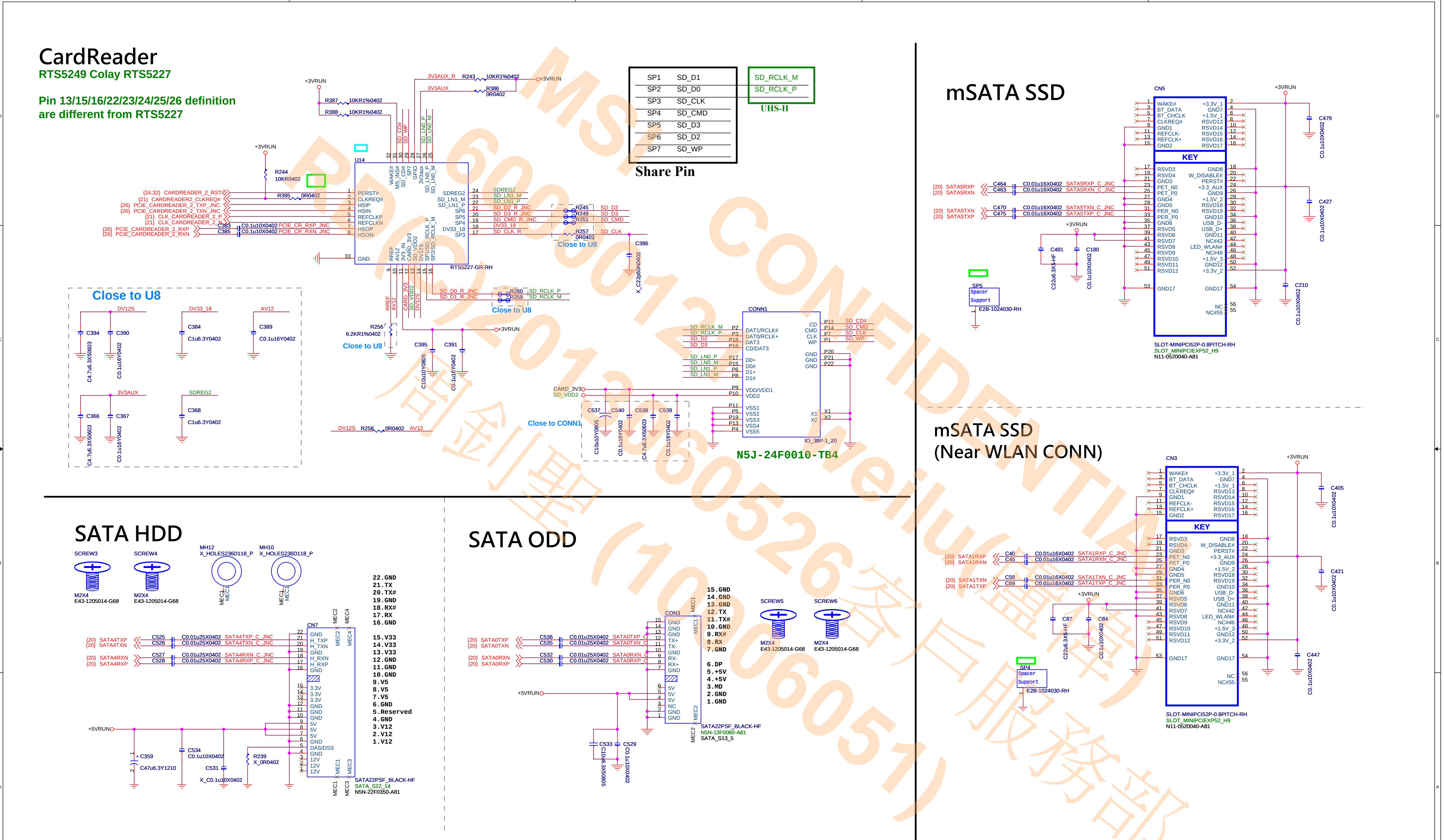

Close to U4
For SW Debug (LPC)
CPU FAN
Click Pad
Touch Pad
For 16GC1
Keyboard conn
LPC I/F
POWER/GROUND
SMBUS
FAN&PWM
AD/DA
SDI
IKB
ESB
CIR
SPI FLASH
PS2 I/F
UART
LED
KB3930QFB1-RH
EC (KB3930QFB1)
MS-16GC


CardReader
RTS5249 Colay RTS5227
Pin 13/15/16/22/23/24/25/26 definition
are different from RTS5227
U14
RTS5227-GR-RH
Close to U8
SP1 SD_D1
SP2 SD_D0
SP3 SD_CLK
SP4 SD_CMD
SP5 SD_D3
SP6 SD_D2
SP7 SD_WP
Share Pin
SD_RCLK_M
SD_RCLK_P
UHS-II
CONN1
N5J-24F0010-TB4
Close to CONN1
mSATA SSD
CN5
SLOT-MINIPCI52P-0.8PITCH-RH
SLOT_MINIPCIEXP52_H9
N11-0520040-A81
mSATA SSD
(Near WLAN CONN)
CN3
SATA HDD
CN7
SATA22PSF_BLACK-HF
SATA_S22_14
N5N-22F0350-A81
22.GND
21.TX
20.TX#
19.GND
18.RX#
17.RX
16.GND
15.V33
14.V33
13.V33
12.GND
11.GND
10.GND
9.V5
8.V5
7.V5
6.GND
5.Reserved
4.GND
3.V12
2.V12
1.V12
SATA ODD
CN3
SATA22PSF_BLACK-HF
N5N-13F0080-A81
SATA_S13_5
15.GND
14.GND
13.GND
12.TX
11.TX#
10.GND
9.RX#
8.RX
7.GND
6.DP
5.+5V
4.+5V
3.MD
2.GND
1.GND

Title	Card Reader/HDD/SSD/ODD
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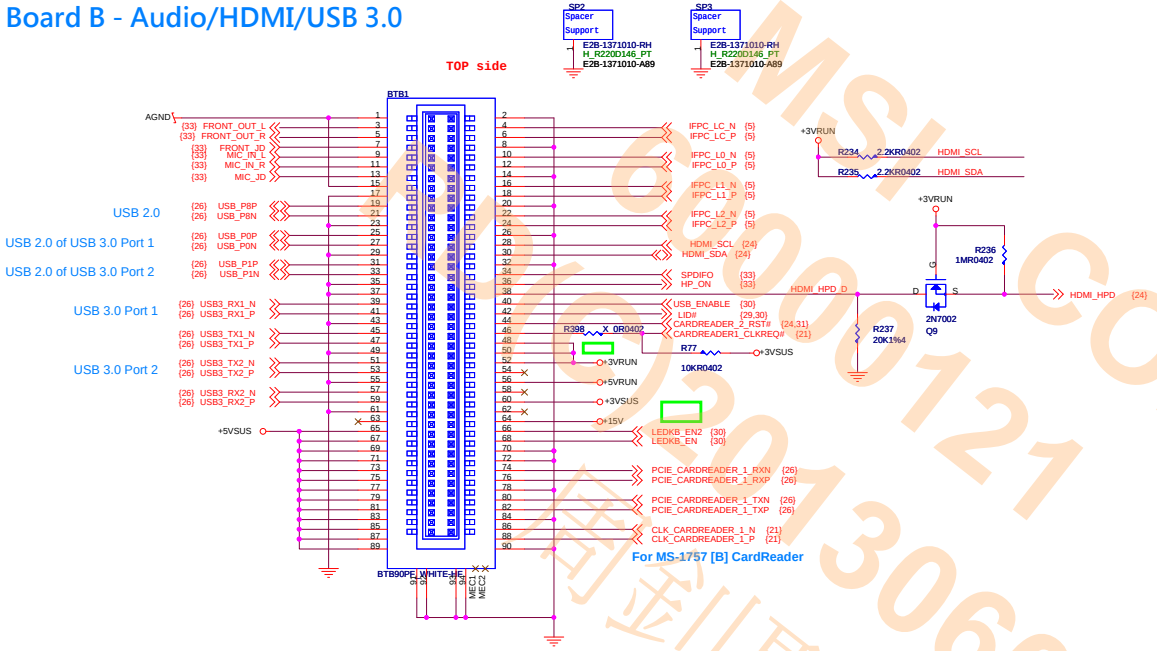
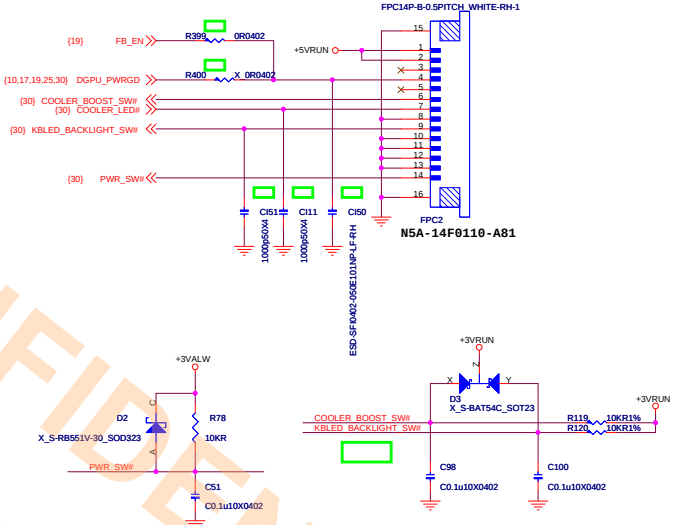
TOP side

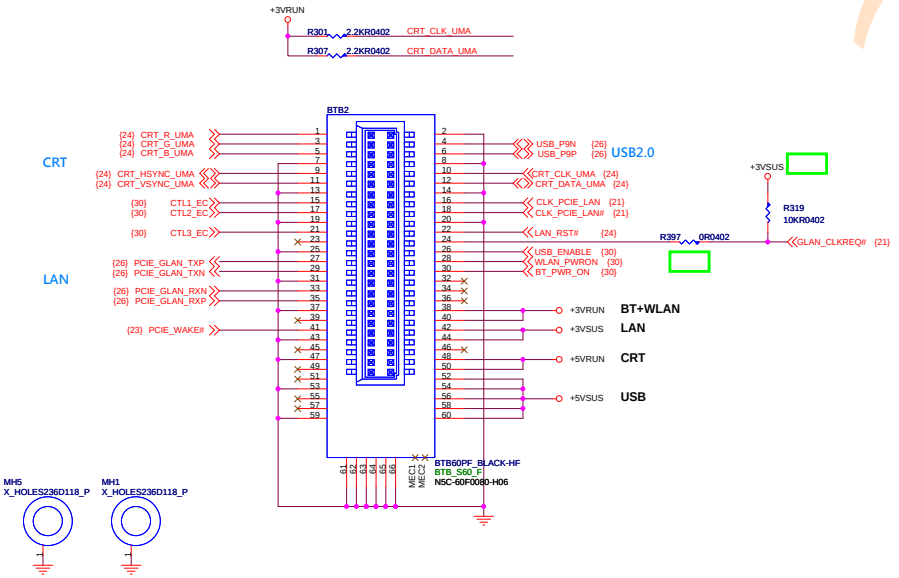
Board B - Audio/HDMI/USB 3.0



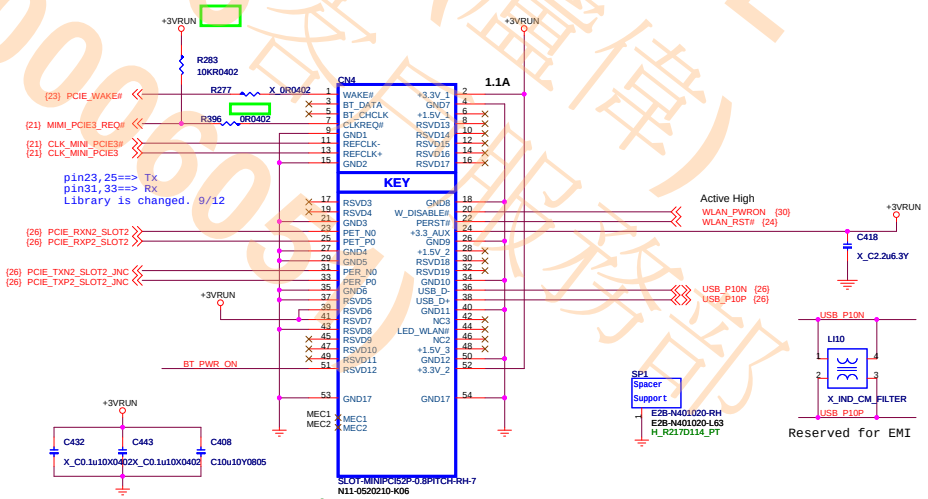
To 16GCC(Power Key Board) / FPCC1



Board A - CRT/USB/WLAN/BT/LAN



WLAN CARD



Title	BTB Connector
Size / Document Number	Custom / MS-16GC
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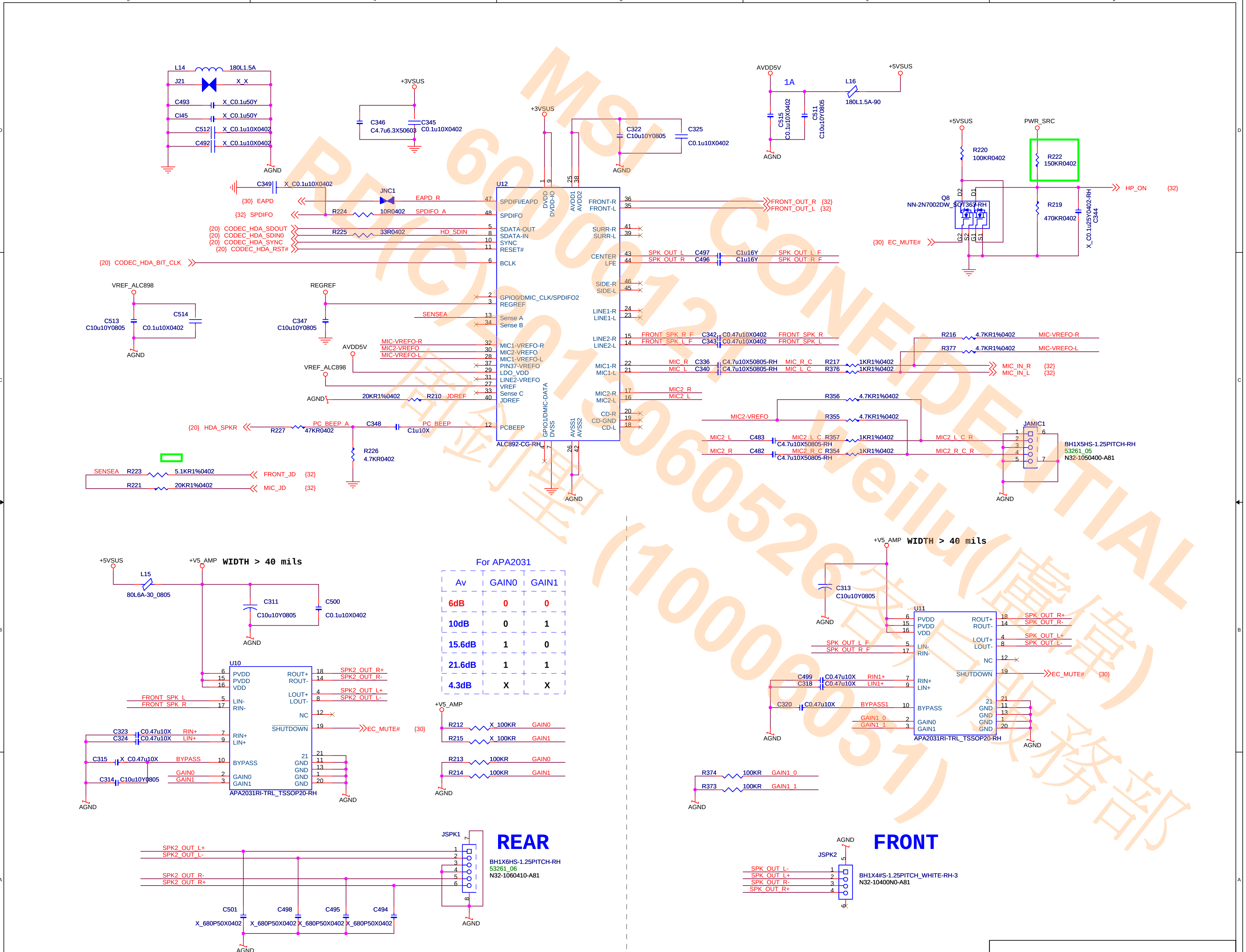


For APA2031

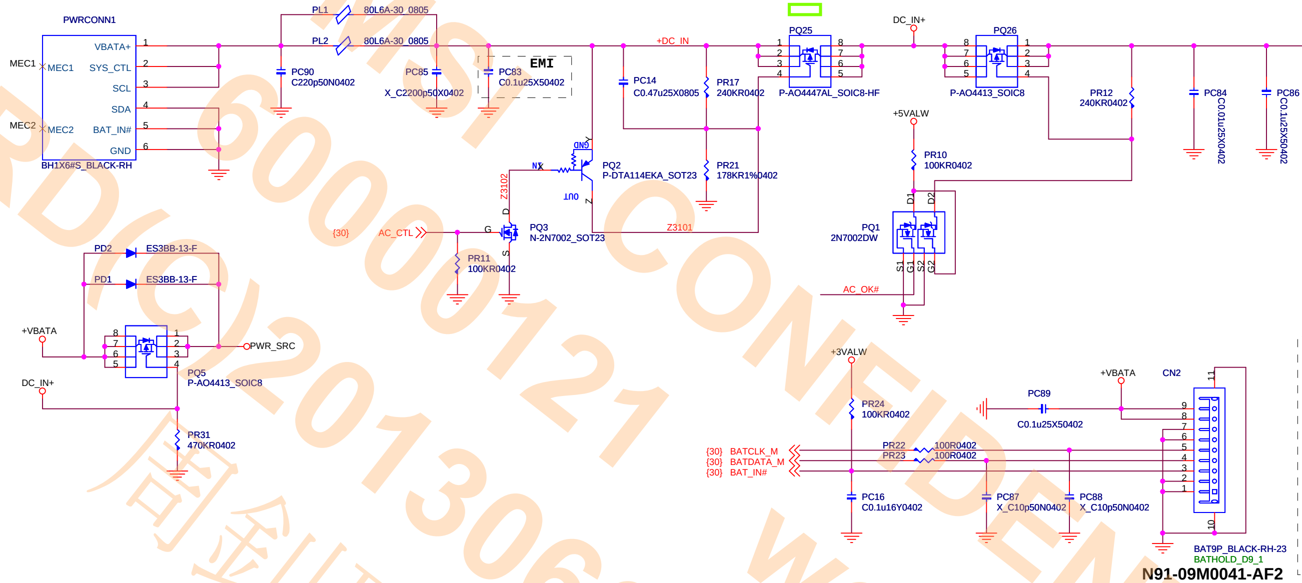
Av	GAIN0	GAIN1
6dB	0	0
10dB	0	1
15.6dB	1	0
21.6dB	1	1
4.3dB	X	X

Title: Audio CODEC/Audio AMP

Size: Custom | Document Number: MS-16GC | Rev: 11

Date: Friday, April 26, 2013 | Sheet 33 of 50

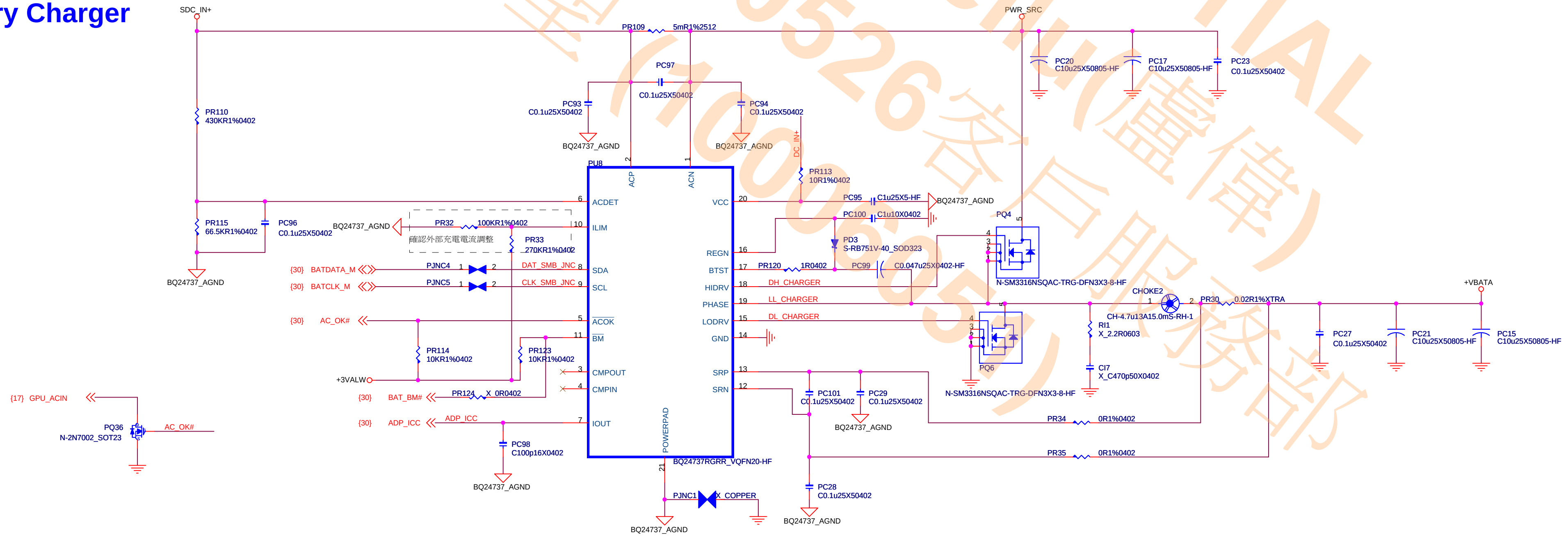
Battery Select



JBAT1 Pin Definition

1: GND
2: GND
3: BAT_IN#
4: SMBDATA
5: SMBCLK
6: NC
7: NC
8: VBATA+
9: VBATA+

Battery Charger



Title	Battery Select/Charger
Size	Custom
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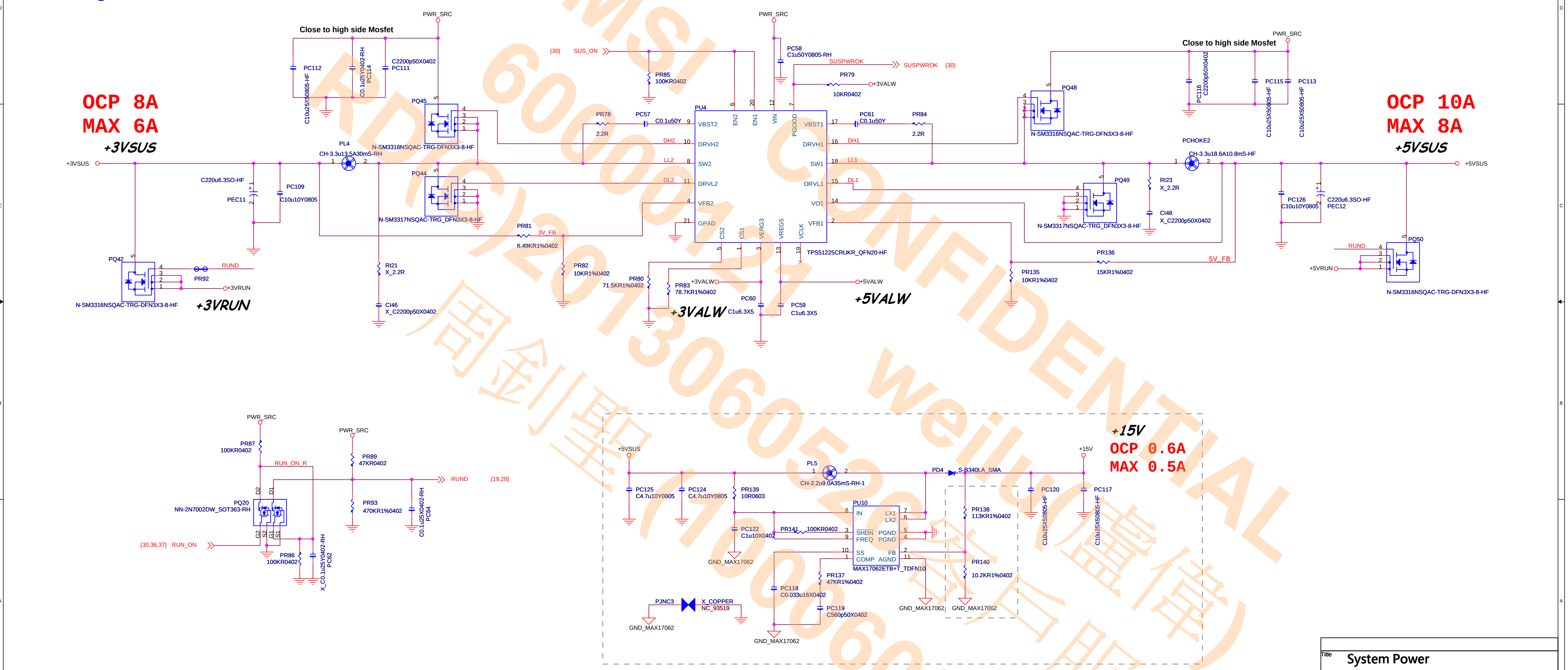
System Power



Title	System Power	
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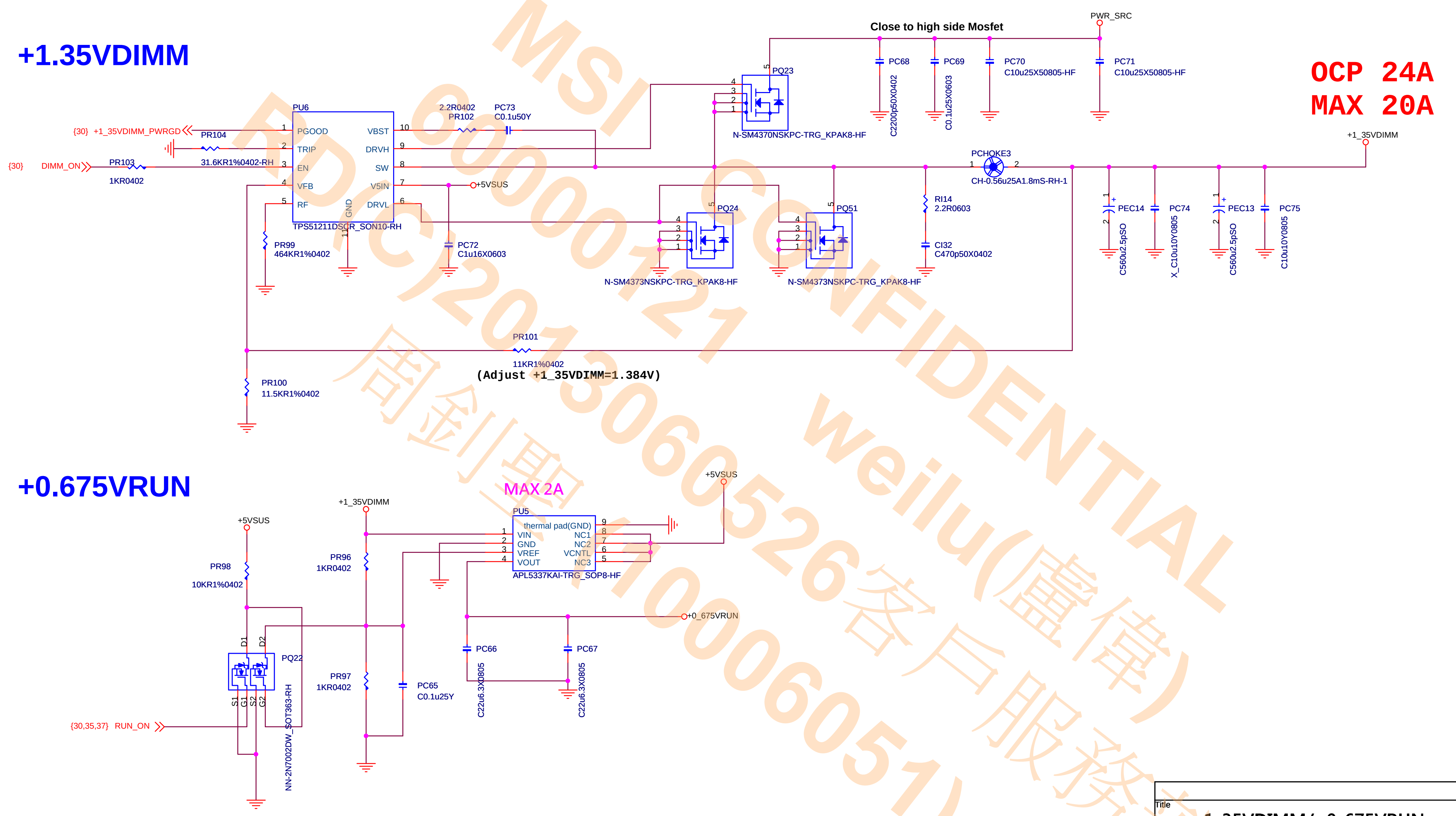
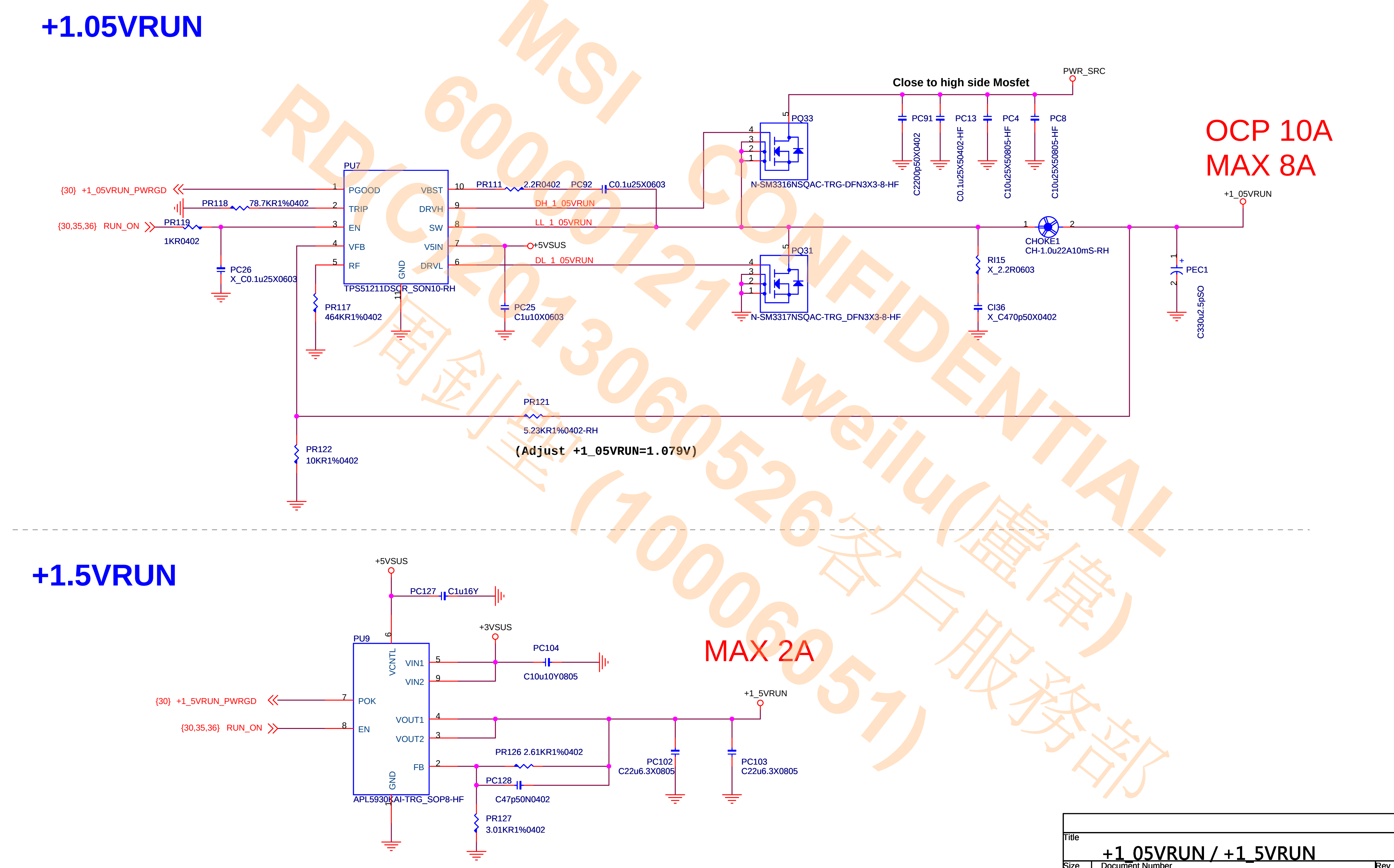


Title	+1_35VDIMM/+0_675VRUN	
Size: Custom	Document Number: MS-16GC	Rev: 11
Date: Friday, April 26, 2013	Sheet 36 of 50	



Title	+1_05VRUN / +1_5VRUN	
Size: Custom	Document Number: MS-16GC	Rev: 11
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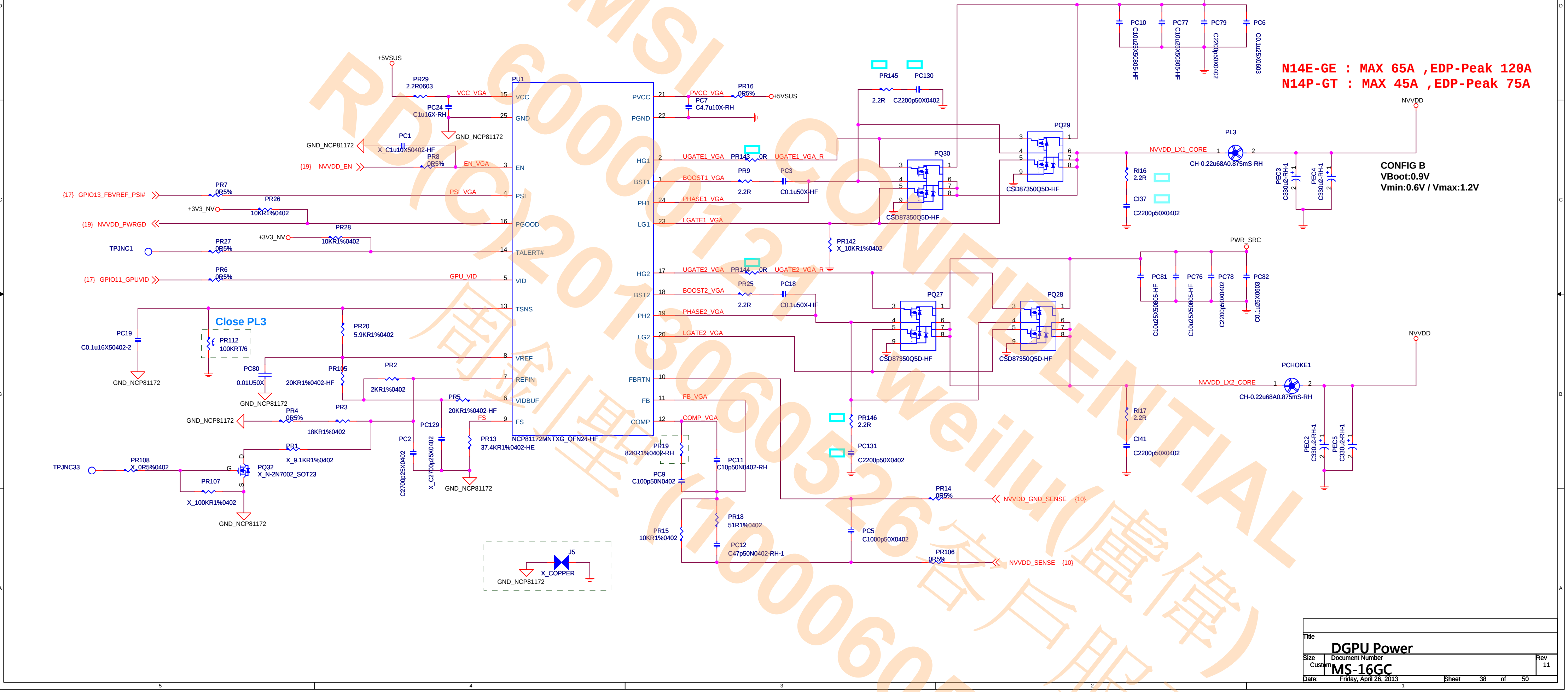
DGPU POWER / NCP81172



N14E-GE : MAX 65A ,EDP-Peak 120A
N14P-GT : MAX 45A ,EDP-Peak 75A
CONFIG B
VBoot:0.9V
Vmin:0.6V / Vmax:1.2V
Close PL3
PU1
NCP81172MNTXG_QFN24-HF
VCC
GND
EN
PSI
PGOOD
TALERT#
VID
TSNS
VREF
REFIN
VIDBUF
FS
PVCC
PGND
HG1
BST1
PH1
LG1
HG2
BST2
PH2
LG2
FBRTN
FB
COMP
+5VSUS
PR29 2.2R0603
VCC_VGA
PC24 C1u16X-RH
GND_NCP81172
PC1 X_C1u10X50402-HF
PR8 0R5%
EN_VGA
{19} NVVDD_EN
{17} GPIO13_FBVREF_PSI#
PR7 0R5%
PSI_VGA
+3V3_NV
PR26 10KR1%0402
{19} NVVDD_PWRGD
PR28 10KR1%0402
TPJNC1
PR27 0R5%
{17} GPIO11_GPUVID
PR6 0R5%
GPU_VID
PC19 C0.1u16X50402-2
PR112 100KRT/6
PR20 5.9KR1%0402
PC80 0.01U50X
PR105 20KR1%0402-HF
PR2 2KR1%0402
PR5 20KR1%0402-HF
PR4 0R5%
PR3 18KR1%0402
PR1 X_9.1KR1%0402
PC2 C2700p25X0402
PC129 X_C2700p25X0402
PR13 37.4KR1%0402-HE
TPJNC33
PR108 X_0R5%0402
PQ32 X_N-2N7002_SOT23
PR107 X_100KR1%0402
J5 X_COPPER
PVCC_VGA
PC7 C4.7u10X-RH
PR16 0R5%
UGATE1_VGA
PR143 0R
UGATE1_VGA_R
BOOST1_VGA
PR9 2.2R
PC3 C0.1u50X-HF
PHASE1_VGA
LGATE1_VGA
PR142 X_10KR1%0402
UGATE2_VGA
PR144 0R
UGATE2_VGA_R
BOOST2_VGA
PR25 2.2R
PC18 C0.1u50X-HF
PHASE2_VGA
LGATE2_VGA
FB_VGA
COMP_VGA
PR19 82KR1%0402-RH
PC9 C100p50N0402
PC11 C10p50N0402-RH
PR18 51R1%0402
PR15 10KR1%0402
PC12 C47p50N0402-RH-1
PR146 2.2R
PC131 C2200p50X0402
PC5 C1000p50X0402
PR14 0R5%
NVVDD_GND_SENSE {10}
PR106 0R5%
NVVDD_SENSE {10}
PR145 2.2R
PC130 C2200p50X0402
PQ30 CSD87350Q5D-HF
PQ29 CSD87350Q5D-HF
PQ27 CSD87350Q5D-HF
PQ28 CSD87350Q5D-HF
PWR_SRC
PC10 C10u25X50805-HF
PC77 C10u25X50805-HF
PC79 C2200p50X0402
PC6 C0.1u25X0603
NVVDD
PL3 CH-0.22u68A0.875mS-RH
NVVDD_LX1_CORE
PR16 2.2R
PC37 C2200p50X0402
PEC3 C330u2-RH-1
PEC4 C330u2-RH-1
PC81 C10u25X50805-HF
PC76 C10u25X50805-HF
PC78 C2200p50X0402
PC82 C0.1u25X0603
PCHOKE1 CH-0.22u68A0.875mS-RH
NVVDD_LX2_CORE
PR17 2.2R
PC41 C2200p50X0402
PEC2 C330u2-RH-1
PEC5 C330u2-RH-1
Title
DGPU Power
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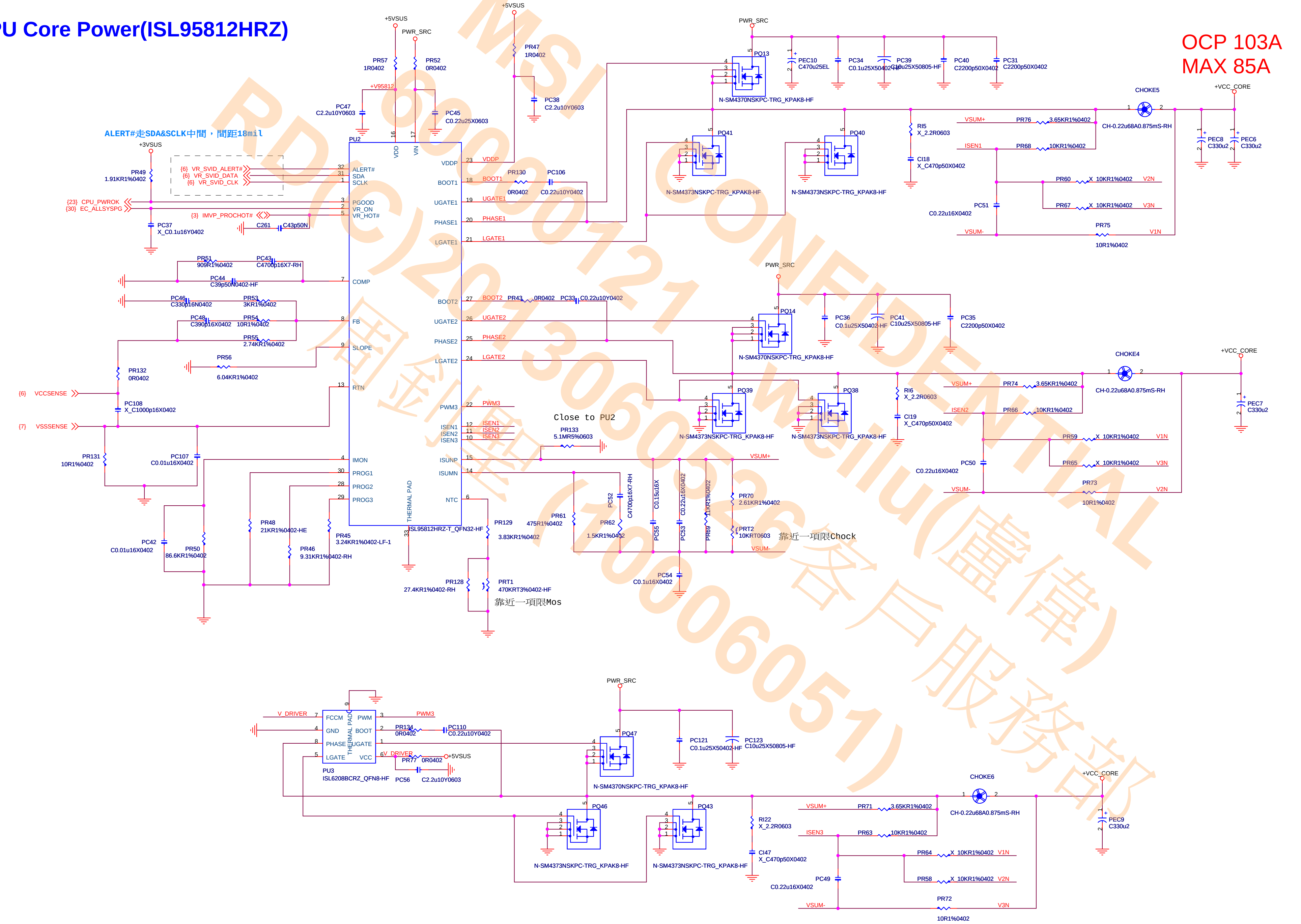
CPU Core Power(ISL95812HRZ)

OCP 103A
MAX 85A



Title	CPU Power		
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HOLES_NR91D91
H4

NPTH118
H5

HOLE118
H7

HOLE118
H1

HOLE118
H2

HOLE118
H6

HOLES_8X8_D3MM_VIA8
MH13 X_8x8

H_R315D118_PT_V3
MH2 X_8x8

HOLES_8X8_D3MM_VIA3
MH9 X_8x8

H_R295D118_V3
MH4 X_8x8

HOLES_8X8_D3MM_VIA8
MH8 X_8x8

H_R315D118_PT_V3
MH3 X_8x8

MH11
X_8.5x8.5

HOLES_8X8_D3MM_VIA3
MH7 X_8x8

HOLES_8X8_D3MM_VIA8
MH6 X_8x8

HOLES_8X8_D3MM_VIA8
MH14 X_8x8

FM10 FM15 FM18 FM13 FM4 FM19 FM3 FM8 FM9 FM6 FM5 FM17 FM1 FM14 FM7 FM16 FM11 FM12 FM2

TOP SPRING

PAD7 X_HS-MS1011-RH E23-1011040-CA7
PAD9 X_HS-MS1011-RH E23-1011040-CA7
PAD5 X_HS-MS1011-RH E23-1011040-CA7
PAD2 X_HS-MS1011-RH E23-1011040-CA7
PAD8 X_HS-MS1011-RH E23-1011040-CA7
PAD13 X_HS-MS1011-RH E23-1011040-CA7

BOT SPRING

PAD4 X_HS-MS1011-RH E23-1029060-CA7
PAD16 X_HS-MS1011-RH E23-1011040-CA7
PAD17 X_HS-MS1011-RH E23-1011040-CA7

CPU

CPU_H2 X_CPU SCREW HOLE HOLES_R276D185P_PT
CPU_H1 X_CPU SCREW HOLE HOLES_R276D185P_PT
CPU_H4 X_CPU SCREW HOLE HOLES_R276D185P_PT
CPU_H3 X_CPU SCREW HOLE HOLES_R276D185P_PT

Bracket1 CPU Bracket 307-6G10212-A89
UME4 ME E2Y-Z001711-Y42
UME5 ME E2Y-Z001711-Y42
UME6 ODD CONN mylar E2P-6G14611-Y42
UME10 ME E2Y-6G11211-Y40
Bracket2 GPU Bracket 307-6G10311-A20
UME7 ME E2M-6G11612-Y42
UME8 ME E2Y-6G10912-Y42
UME9 ME E2Y-6G11211-Y40
UME11 ME E2Y-6G11211-Y40

SCREW1 X_M2X3 E43-1203003-G68
SCREW2 X_M2X3 E43-1203003-G68

04/20
ADD SB Heatsink and Screw x2

GPU

GPU_H2 X_CPU SCREW HOLE HOLES_R276D185P_PT
GPU_H1 X_CPU SCREW HOLE HOLES_R276D185P_PT
H_NR177D177_1
H3
GPU_H4 X_CPU SCREW HOLE HOLES_R276D185P_PT
GPU_H3 X_CPU SCREW HOLE HOLES_R276D185P_PT

RACK1 X_RACK1 E2P-6310611-K23
RACK2 X_RACK1 E2P-6310611-K23

UME1 PCB
HDMI ROYALTY
Y01-RHDMI03-000

PCB1 PCB

UME16 BIOS LABEL
BIOS_LABEL

For MP: BIOS Label

Title	Screw/ME	
Size: Custom	Document Number: MS-16GC	Rev: 11
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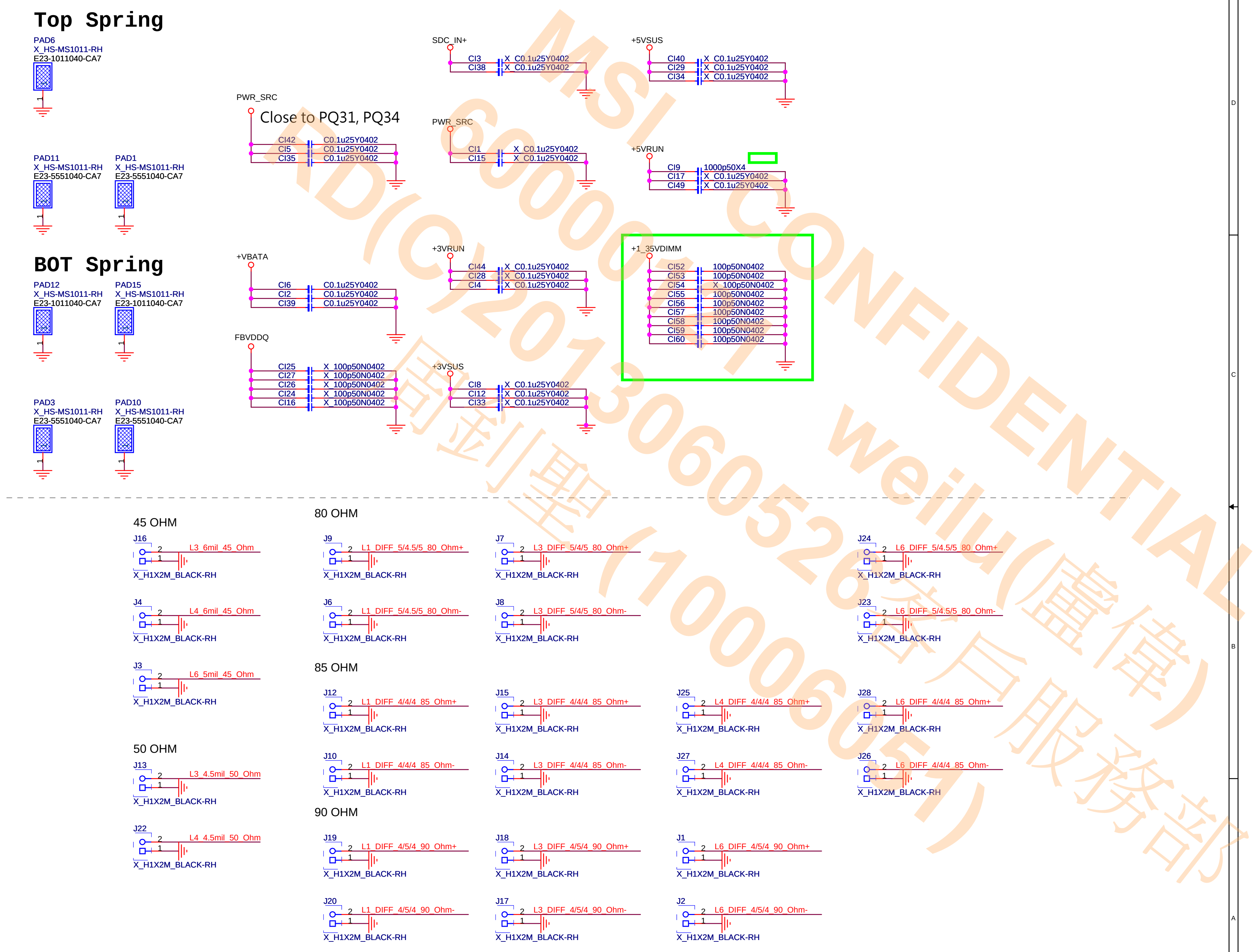
Top Spring
PAD6
X_HS-MS1011-RH
E23-1011040-CA7
PAD11
X_HS-MS1011-RH
E23-5551040-CA7
PAD1
X_HS-MS1011-RH
E23-5551040-CA7
BOT Spring
PAD12
X_HS-MS1011-RH
E23-1011040-CA7
PAD15
X_HS-MS1011-RH
E23-1011040-CA7
PAD3
X_HS-MS1011-RH
E23-5551040-CA7
PAD10
X_HS-MS1011-RH
E23-5551040-CA7
PWR_SRC
Close to PQ31, PQ34
CI42 C0.1u25Y0402
CI5 C0.1u25Y0402
CI35 C0.1u25Y0402
+VBATA
CI6 C0.1u25Y0402
CI2 C0.1u25Y0402
CI39 C0.1u25Y0402
FBVDDQ
CI25 X_100p50N0402
CI27 X_100p50N0402
CI26 X_100p50N0402
CI24 X_100p50N0402
CI16 X_100p50N0402
SDC_IN+
CI3 X_C0.1u25Y0402
CI38 X_C0.1u25Y0402
PWR_SRC
CI1 X_C0.1u25Y0402
CI15 X_C0.1u25Y0402
+3VRUN
CI44 X_C0.1u25Y0402
CI28 X_C0.1u25Y0402
CI4 X_C0.1u25Y0402
+3VSUS
CI8 X_C0.1u25Y0402
CI12 X_C0.1u25Y0402
CI33 X_C0.1u25Y0402
+5VSUS
CI40 X_C0.1u25Y0402
CI29 X_C0.1u25Y0402
CI34 X_C0.1u25Y0402
+5VRUN
CI9 1000p50X4
CI17 X_C0.1u25Y0402
CI49 X_C0.1u25Y0402
+1_35VDIMM
CI52 100p50N0402
CI53 100p50N0402
CI54 X_100p50N0402
CI55 100p50N0402
CI56 100p50N0402
CI57 100p50N0402
CI58 100p50N0402
CI59 100p50N0402
CI60 100p50N0402
45 OHM
J16 L3_6mil_45_Ohm X_H1X2M_BLACK-RH
J4 L4_6mil_45_Ohm X_H1X2M_BLACK-RH
J3 L6_5mil_45_Ohm X_H1X2M_BLACK-RH
50 OHM
J13 L3_4.5mil_50_Ohm X_H1X2M_BLACK-RH
J22 L4_4.5mil_50_Ohm X_H1X2M_BLACK-RH
80 OHM
J9 L1_DIFF_5/4.5/5_80_Ohm+ X_H1X2M_BLACK-RH
J6 L1_DIFF_5/4.5/5_80_Ohm- X_H1X2M_BLACK-RH
J7 L3_DIFF_5/4/5_80_Ohm+ X_H1X2M_BLACK-RH
J8 L3_DIFF_5/4/5_80_Ohm- X_H1X2M_BLACK-RH
J24 L6_DIFF_5/4.5/5_80_Ohm+ X_H1X2M_BLACK-RH
J23 L6_DIFF_5/4.5/5_80_Ohm- X_H1X2M_BLACK-RH
85 OHM
J12 L1_DIFF_4/4/4_85_Ohm+ X_H1X2M_BLACK-RH
J10 L1_DIFF_4/4/4_85_Ohm- X_H1X2M_BLACK-RH
J15 L3_DIFF_4/4/4_85_Ohm+ X_H1X2M_BLACK-RH
J14 L3_DIFF_4/4/4_85_Ohm- X_H1X2M_BLACK-RH
J25 L4_DIFF_4/4/4_85_Ohm+ X_H1X2M_BLACK-RH
J27 L4_DIFF_4/4/4_85_Ohm- X_H1X2M_BLACK-RH
J28 L6_DIFF_4/4/4_85_Ohm+ X_H1X2M_BLACK-RH
J26 L6_DIFF_4/4/4_85_Ohm- X_H1X2M_BLACK-RH
90 OHM
J19 L1_DIFF_4/5/4_90_Ohm+ X_H1X2M_BLACK-RH
J20 L1_DIFF_4/5/4_90_Ohm- X_H1X2M_BLACK-RH
J18 L3_DIFF_4/5/4_90_Ohm+ X_H1X2M_BLACK-RH
J17 L3_DIFF_4/5/4_90_Ohm- X_H1X2M_BLACK-RH
J1 L6_DIFF_4/5/4_90_Ohm+ X_H1X2M_BLACK-RH
J2 L6_DIFF_4/5/4_90_Ohm- X_H1X2M_BLACK-RH

Title
EMI
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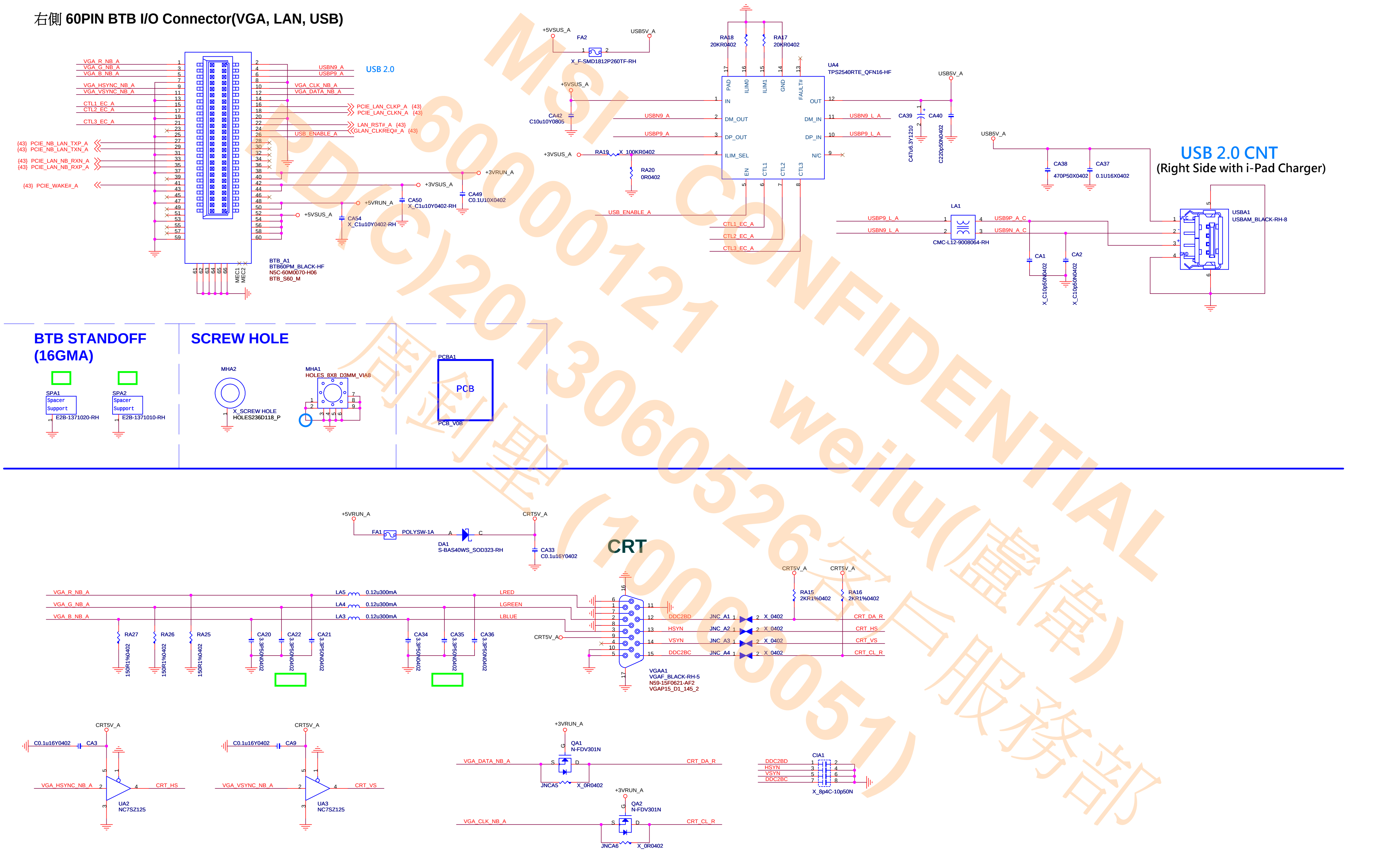

Title	[A] BTB CNT/CRT/USB/WLAN/BT
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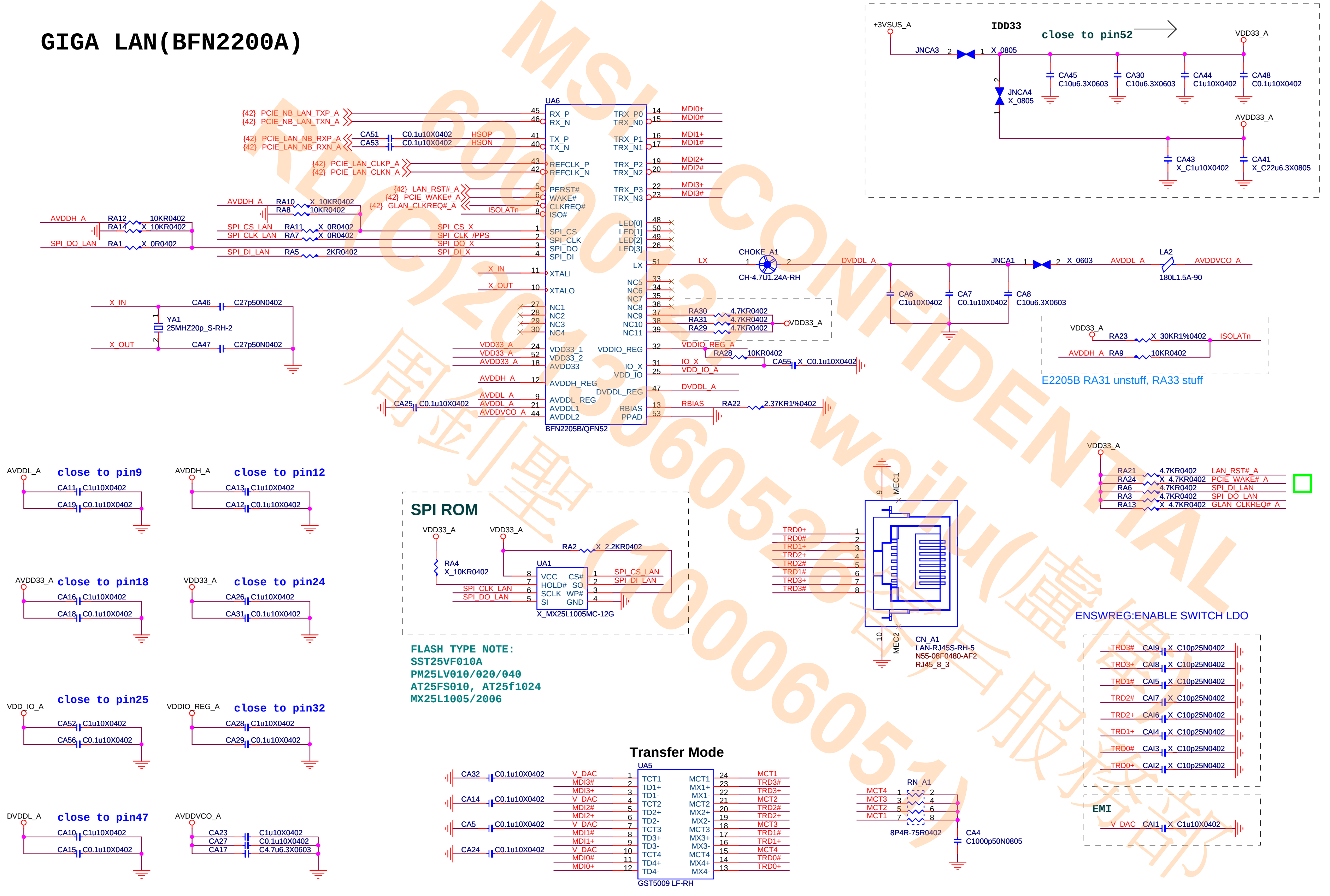
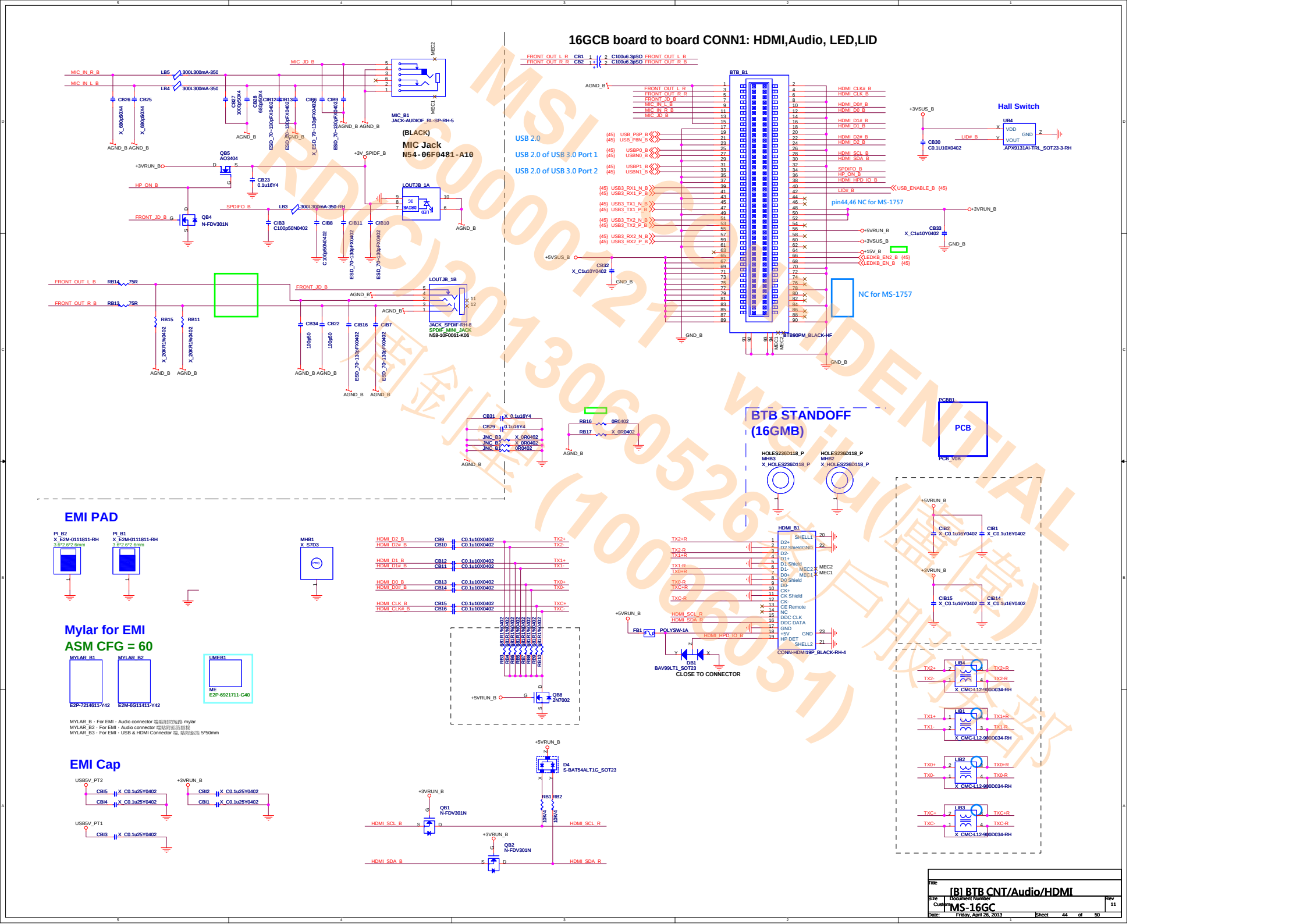
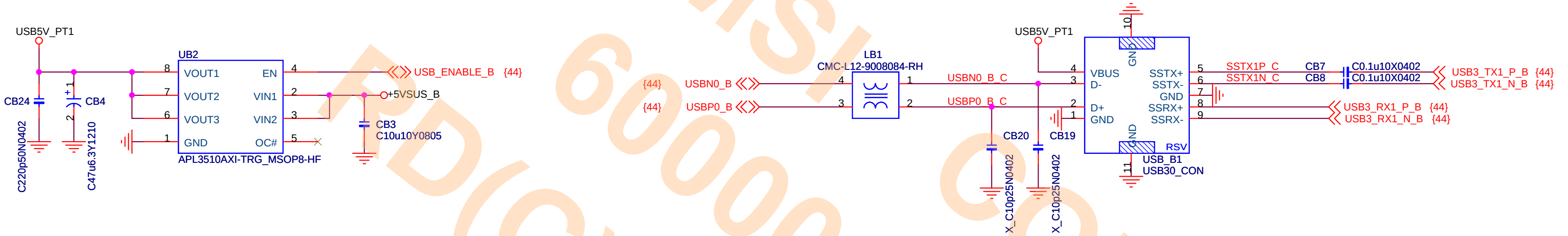
GIGA LAN(BFN2200A)



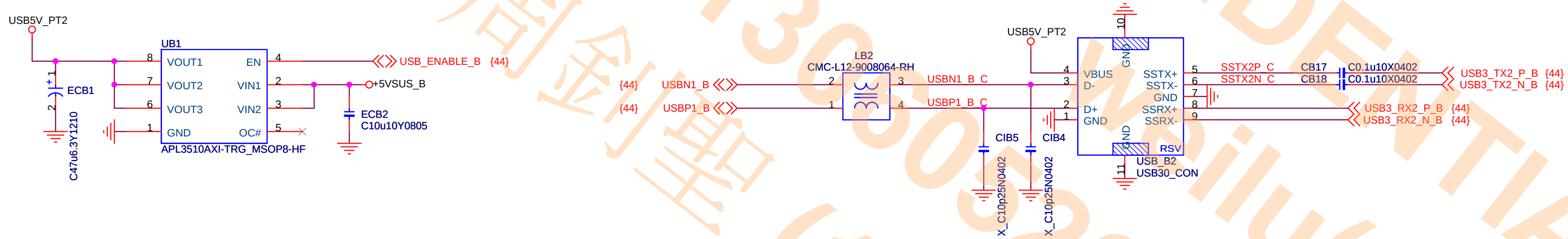
FLASH TYPE NOTE:
SST25VF010A
PM25LV010/020/040
AT25FS010, AT25f1024
MX25L1005/2006


16GCB board to board CONN1: HDMI,Audio, LED,LID
USB 2.0
USB 2.0 of USB 3.0 Port 1
USB 2.0 of USB 3.0 Port 2
Hall Switch
pin44,46 NC for MS-1757
NC for MS-1757
BTB STANDOFF
(16GMB)
EMI PAD
Mylar for EMI
ASM CFG = 60
EMI Cap
MIC Jack
N54-06F0481-A10
(BLACK)
CLOSE TO CONNECTOR
[B] BTB CNT/Audio/HDMI
MS-16GC

USB 3.0 CNT1
(USB3.0 Left Side - UP)

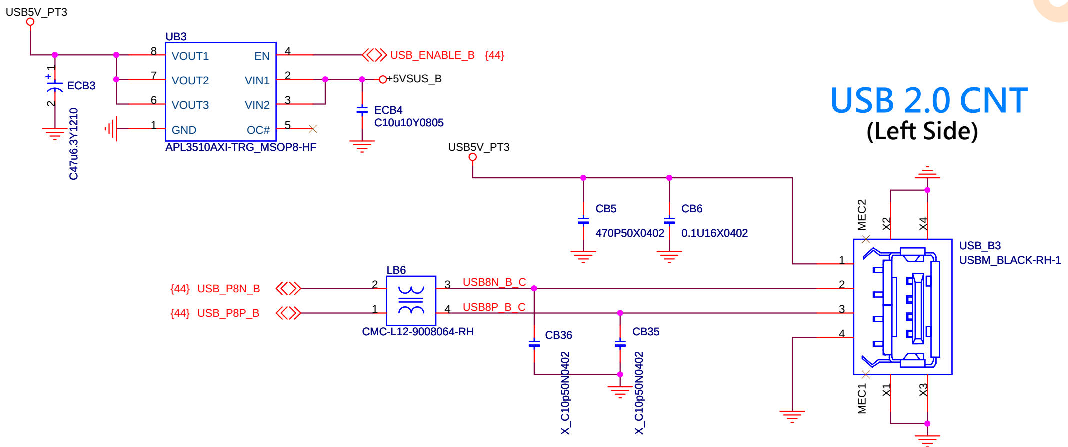


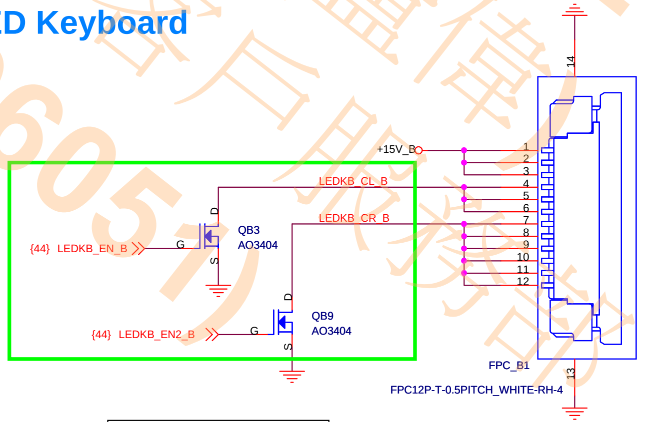
USB 3.0 CNT 2
(USB3.0 Left Side - Down)



LED Keyboard

USB 2.0 CNT
(Left Side)





LED Keyboard Pin Define	
Pin 1	VCC_G
Pin 2	VCC_R
Pin 3	VCC_B
Pin 4	LED1_B
Pin 5	LED1_R
Pin 6	LED1_G
Pin 7	LED2_B
Pin 8	LED2_R
Pin 9	LED2_G
Pin 10	LED3_B
Pin 11	LED3_R
Pin 12	LED3_G

LED Forward Voltage	
R_Max	2.4V x 4 pcs = 9.6V
G_Max	3.3V x 4 pcs = 13.2V
B_Max	3.3V x 4 pcs = 13.2V

N5A-12F0190-A81

Title	[B] USB3.0x2/USB2.0x1/LED KB	
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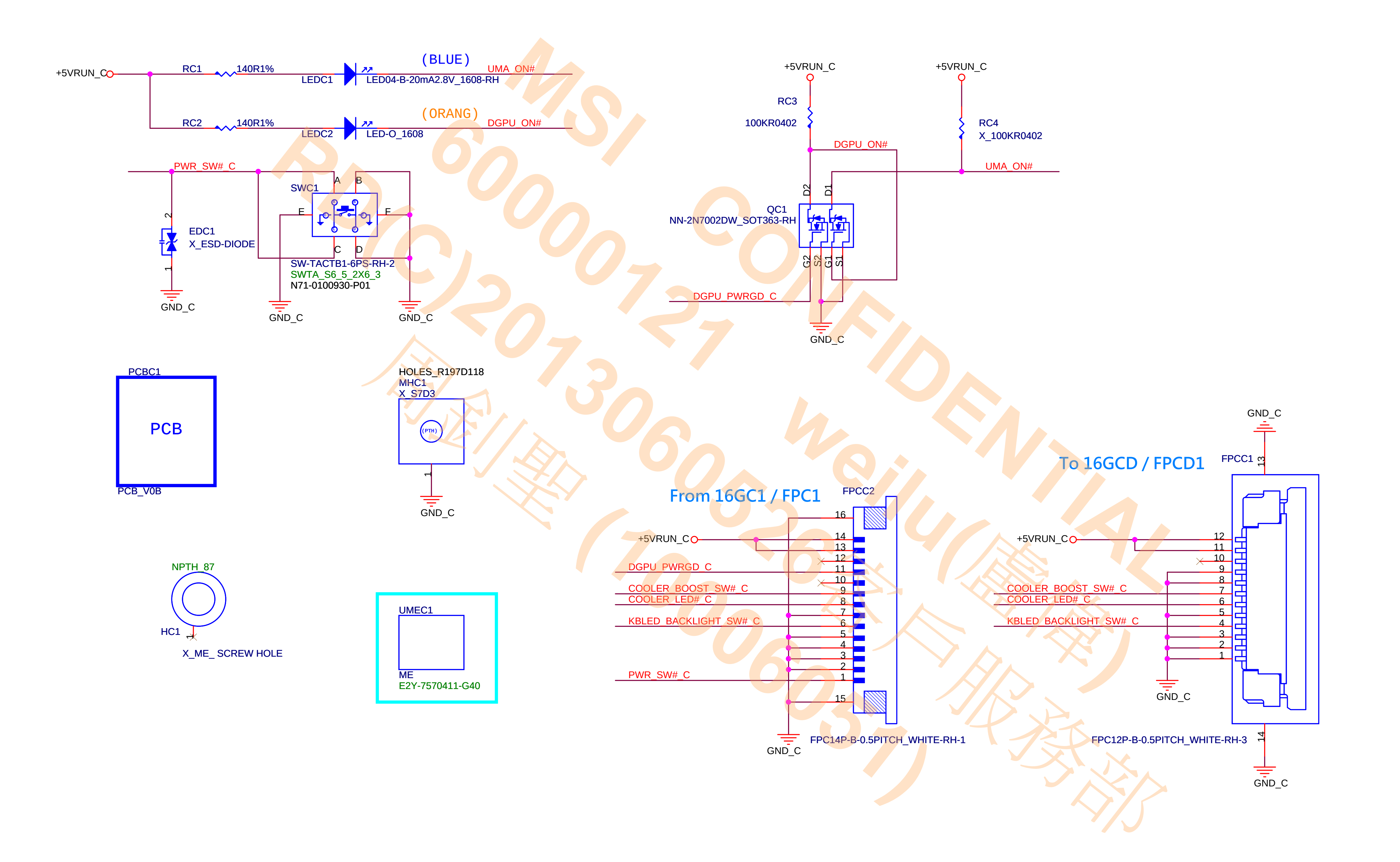
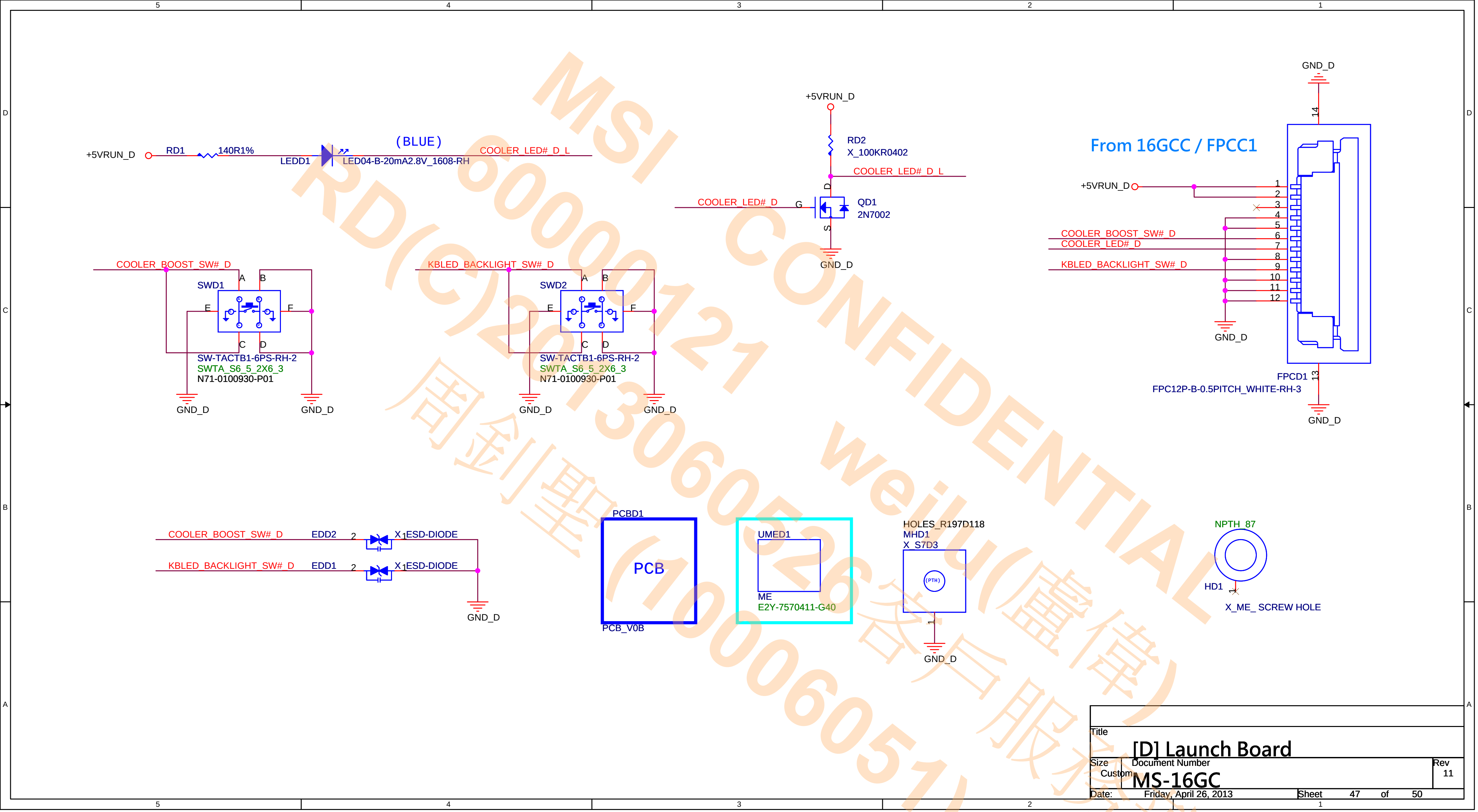


Title	[C] Power SW Board	
Size: Custom	Document Number: MS-16GC	Rev: 11
Date: Friday, April 26, 2013	Sheet 46 of 50	


+5VRUN_D
RD1
140R1%
LEDD1
(BLUE)
LED04-B-20mA2.8V_1608-RH
COOLER_LED#_D_L
+5VRUN_D
RD2
X_100KR0402
COOLER_LED#_D_L
COOLER_LED#_D
QD1
2N7002
GND_D
From 16GCC / FPCC1
GND_D
+5VRUN_D
COOLER_BOOST_SW#_D
COOLER_LED#_D
KBLED_BACKLIGHT_SW#_D
GND_D
FPCD1
FPC12P-B-0.5PITCH_WHITE-RH-3
GND_D
COOLER_BOOST_SW#_D
SWD1
SW-TACTB1-6PS-RH-2
SWTA_S6_5_2X6_3
N71-0100930-P01
GND_D
GND_D
KBLED_BACKLIGHT_SW#_D
SWD2
SW-TACTB1-6PS-RH-2
SWTA_S6_5_2X6_3
N71-0100930-P01
GND_D
GND_D
COOLER_BOOST_SW#_D
EDD2
X_ESD-DIODE
KBLED_BACKLIGHT_SW#_D
EDD1
X_ESD-DIODE
GND_D
PCBD1
PCB
PCB_V0B
UMED1
ME
E2Y-7570411-G40
HOLES_R197D118
MHD1
X_S7D3
GND_D
NPTH_87
HD1
X_ME_SCREW HOLE
Title
[D] Launch Board
Size
Custom
Document Number
MS-16GC
Rev
11
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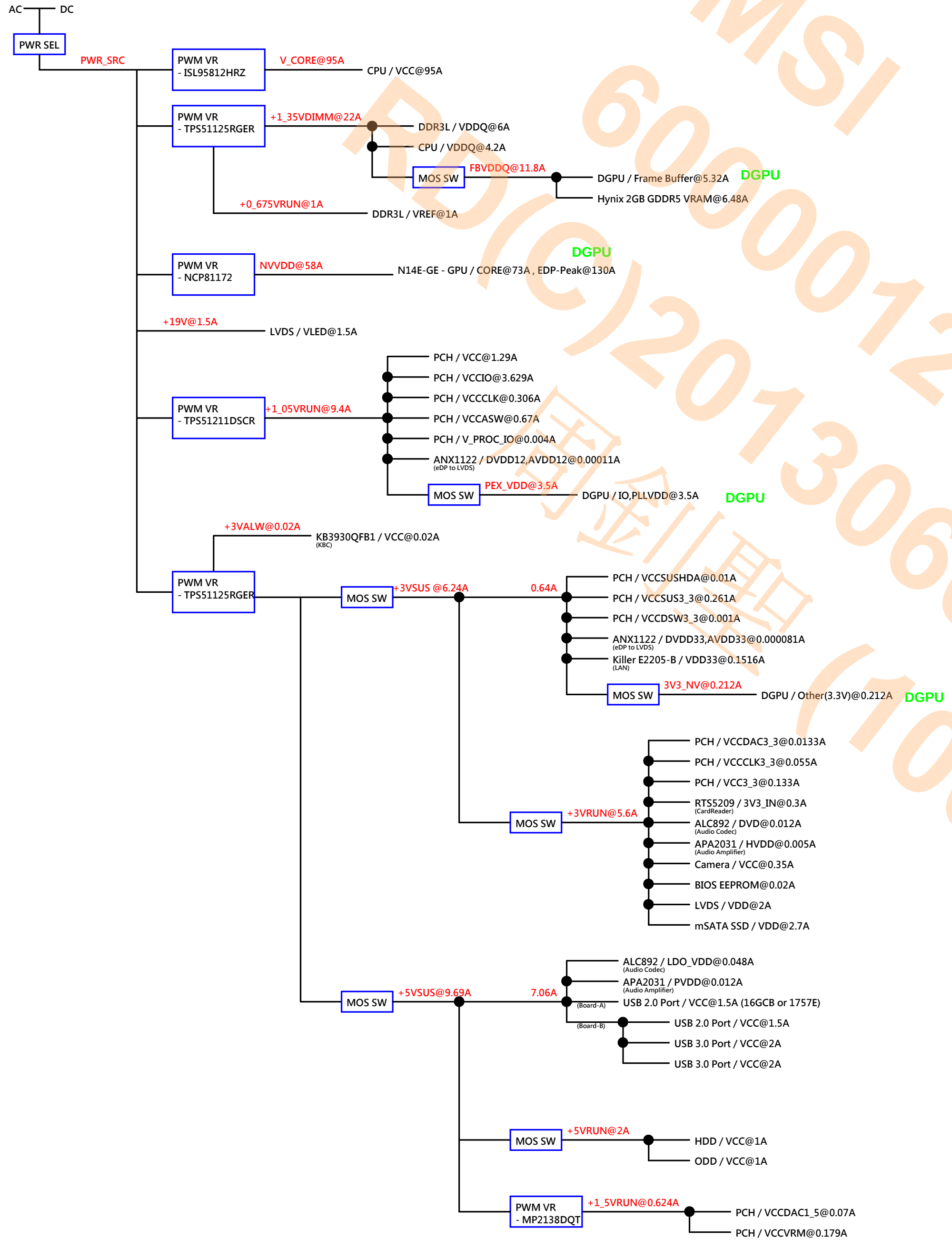
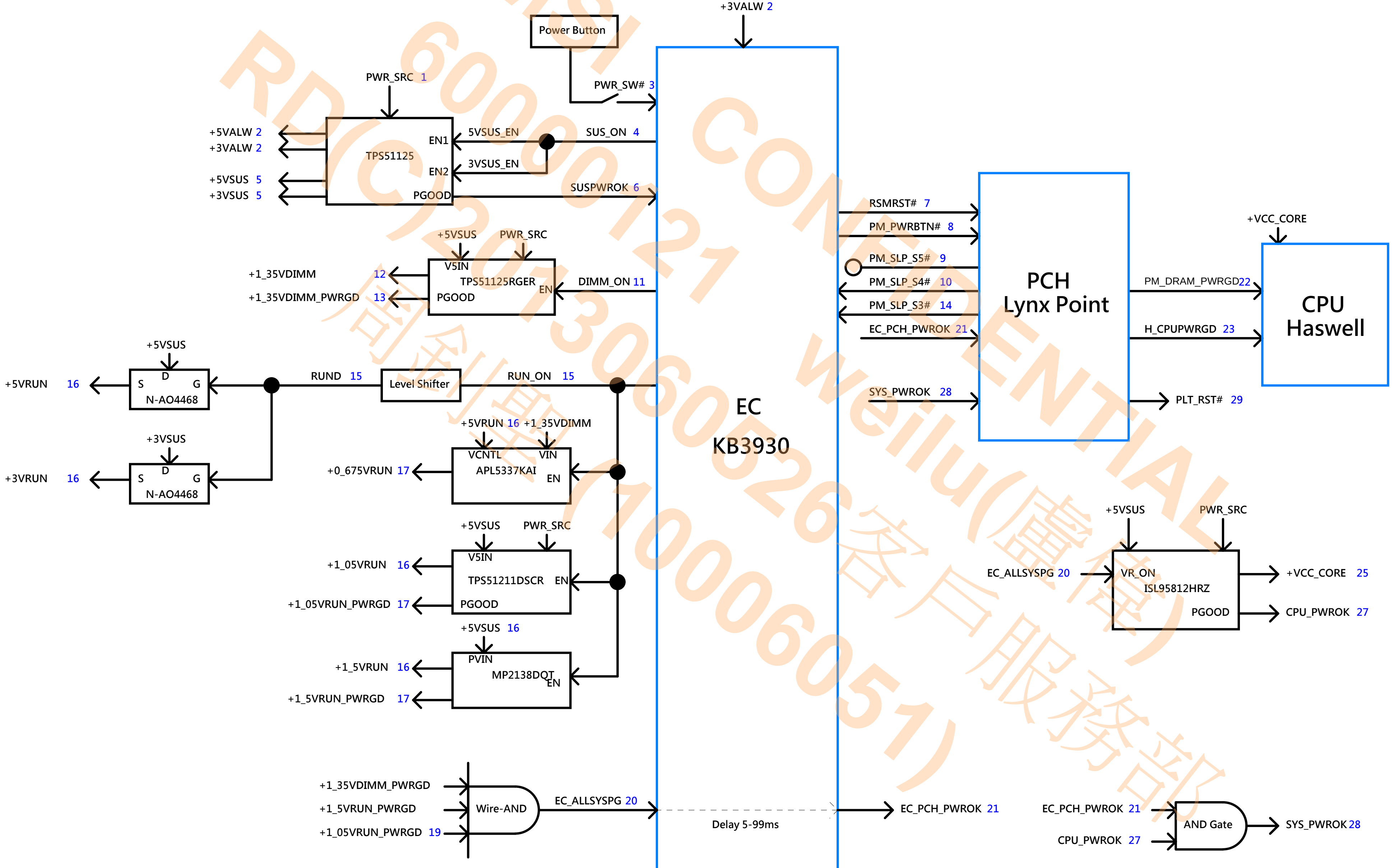
16GC Power Delivery Chart



16GC Power on Block Diagram



Title	Power on Block Diagram
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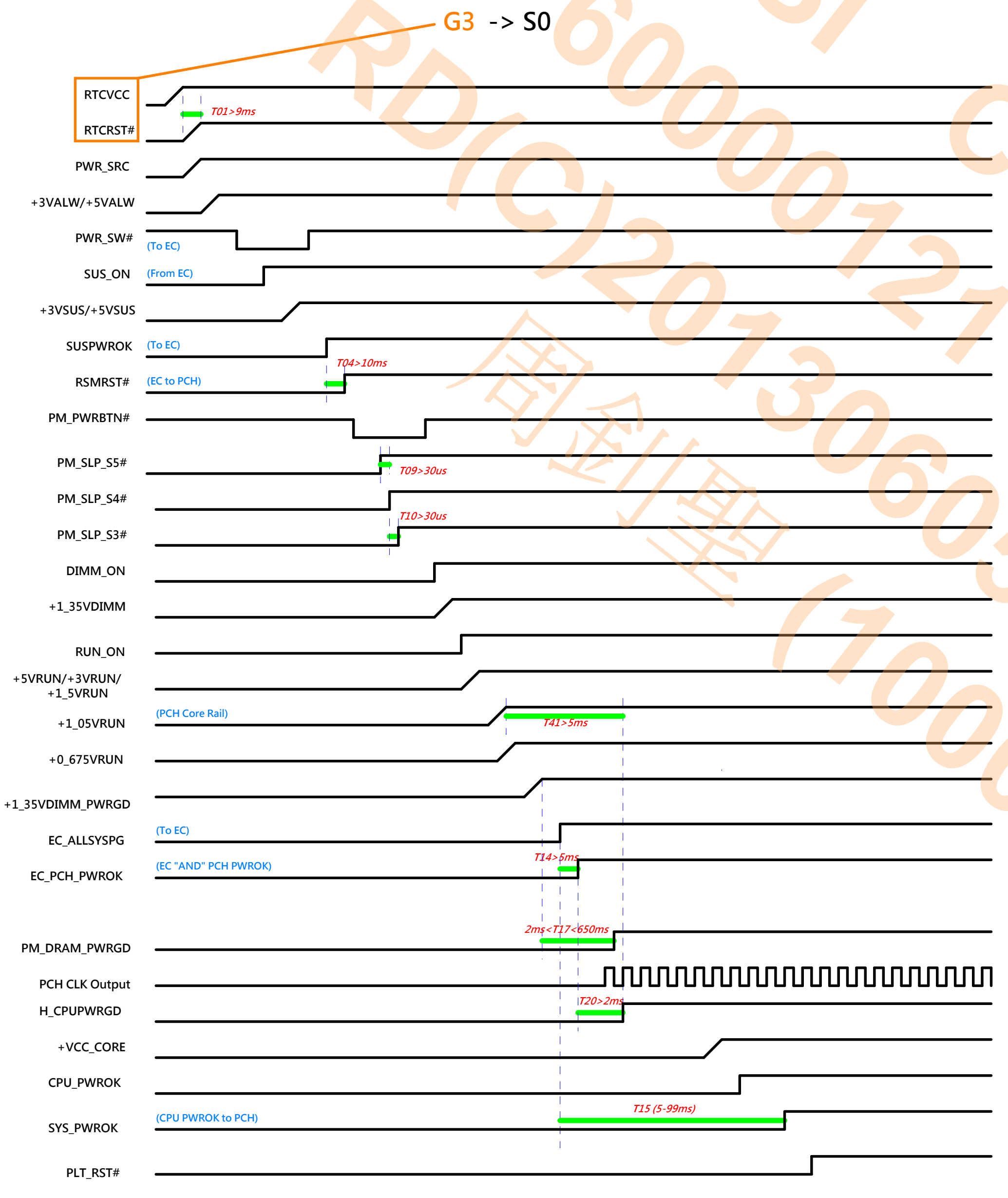
Power on Sequence



Title	Power on Sequence	
Size: Custom	Document Number: MS-16GC	Rev: 11
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