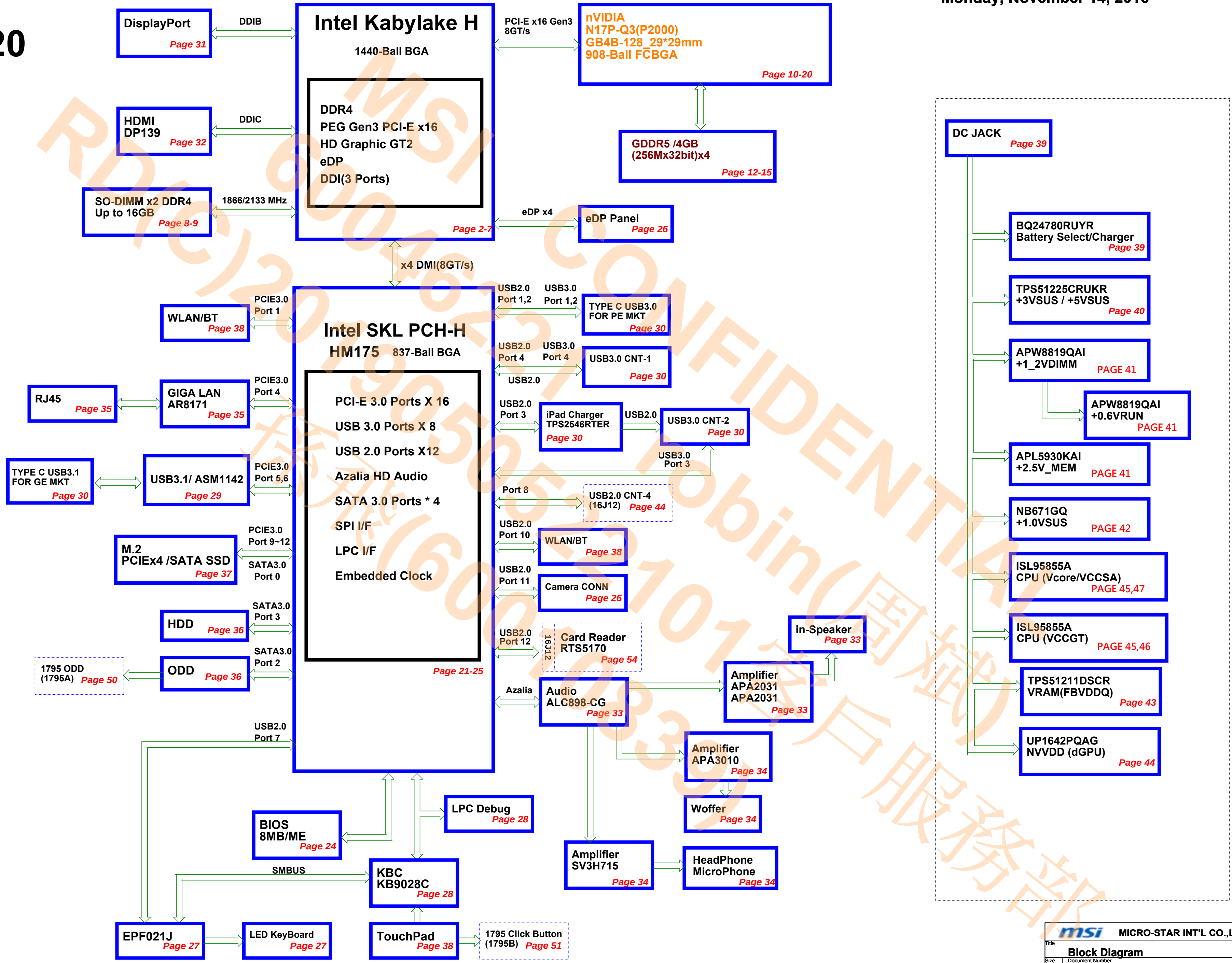
MS-16J5/MS-1795

Intel Kabylake Mobile

Ver:20

Monday, November 14, 2016



MSI CONFIDENTIAL

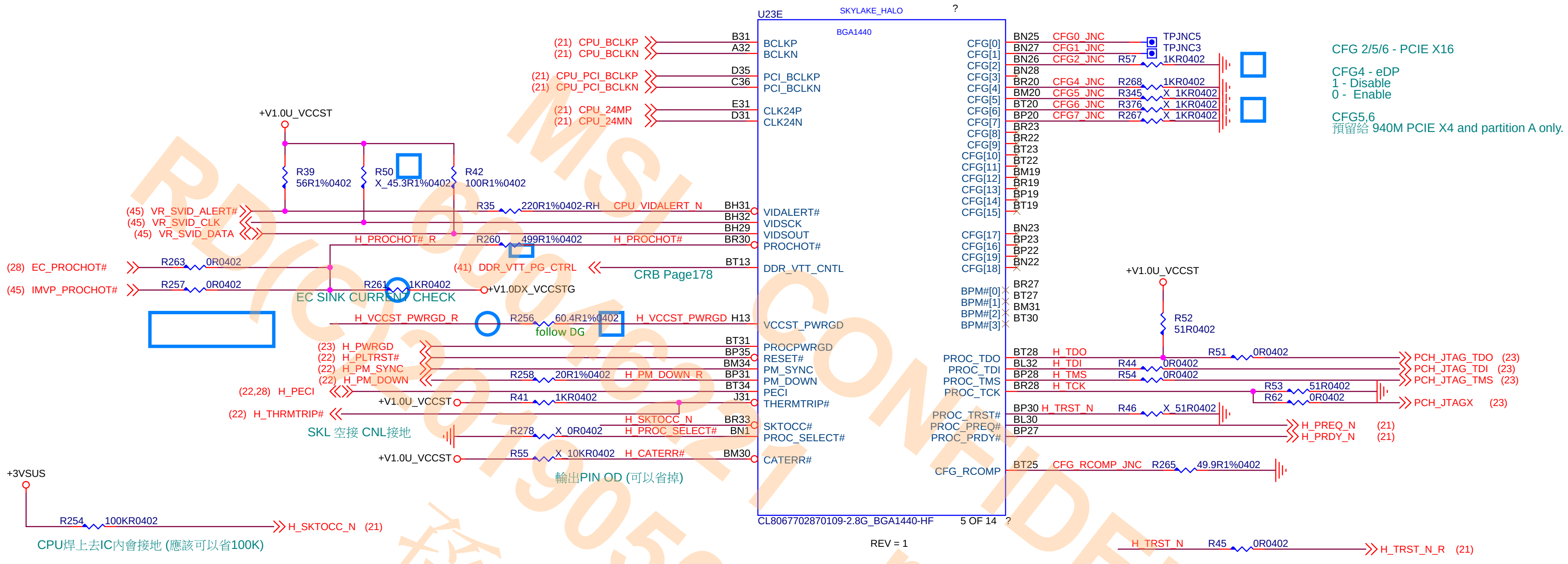
MICRO-STAR INT'L CO.,LTD.

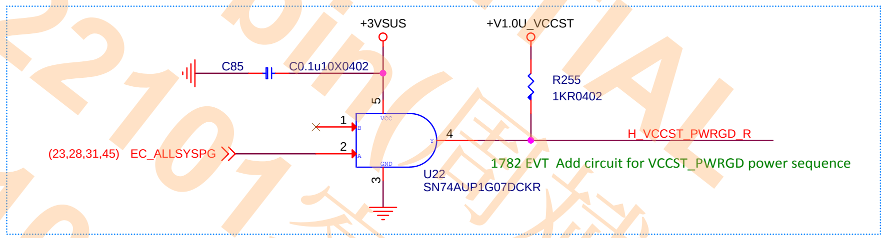
Title: Block Diagram

Document Number: MS-16J5

Rev: 10

Sheet 1 of 55





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

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

PCIE Express * Static X16 Lane Numbering Reversal	
CFG2	CFG[2]: PCI Express* Static x16 Lane Numbering Reversal. 1 = Normal operation 0 = Lane numbers reversed.

Intel 54492 Page 37,121

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

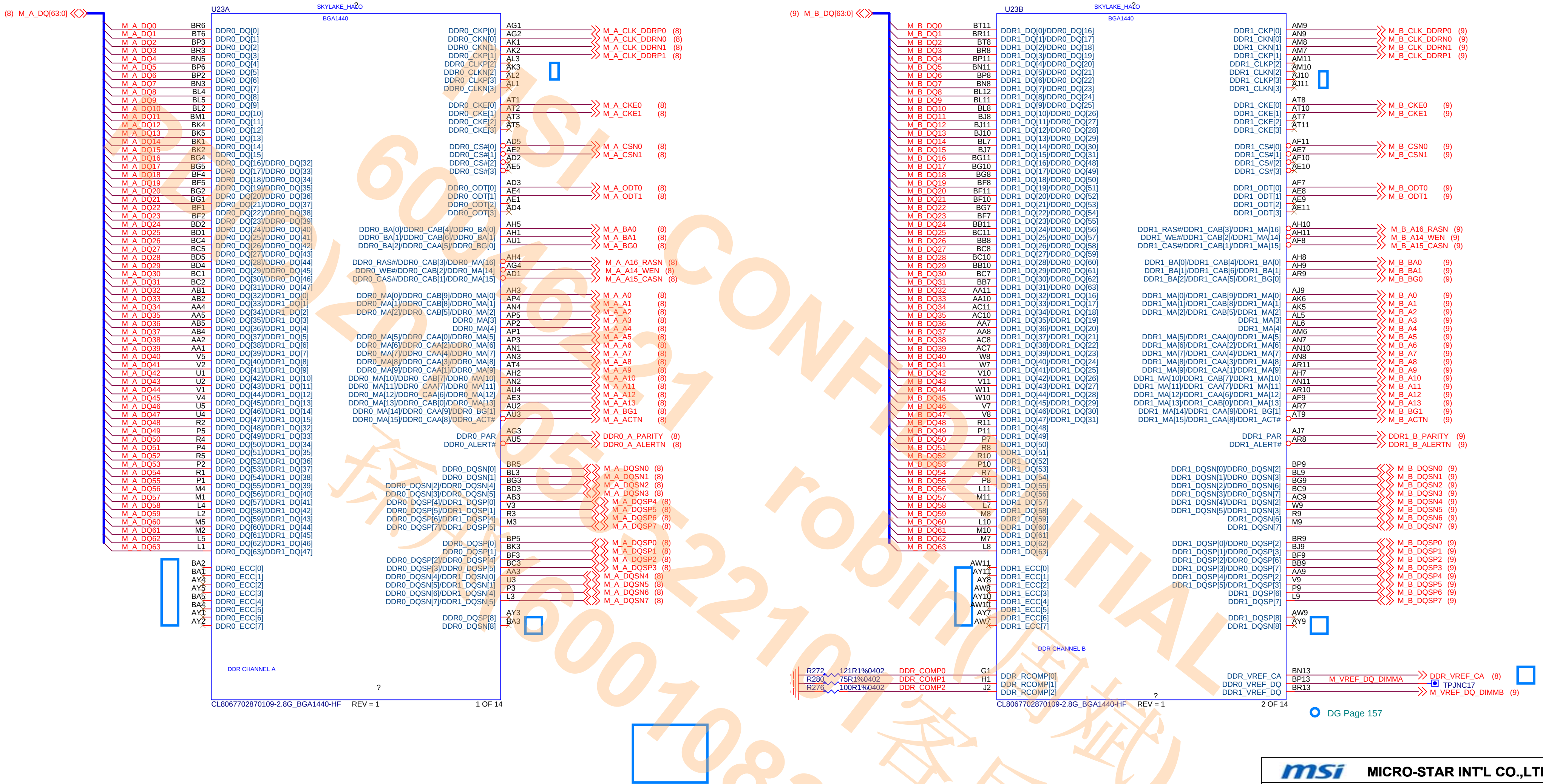
MSI CONFIDENTIAL

MICRO-STAR INT'L CO.,LTD.

Title	Skylake(HOST)	
Size A3	Document Number MS-16J5	Rev 10
Date: Monday, November 14, 2016	Sheet 2 of 55	

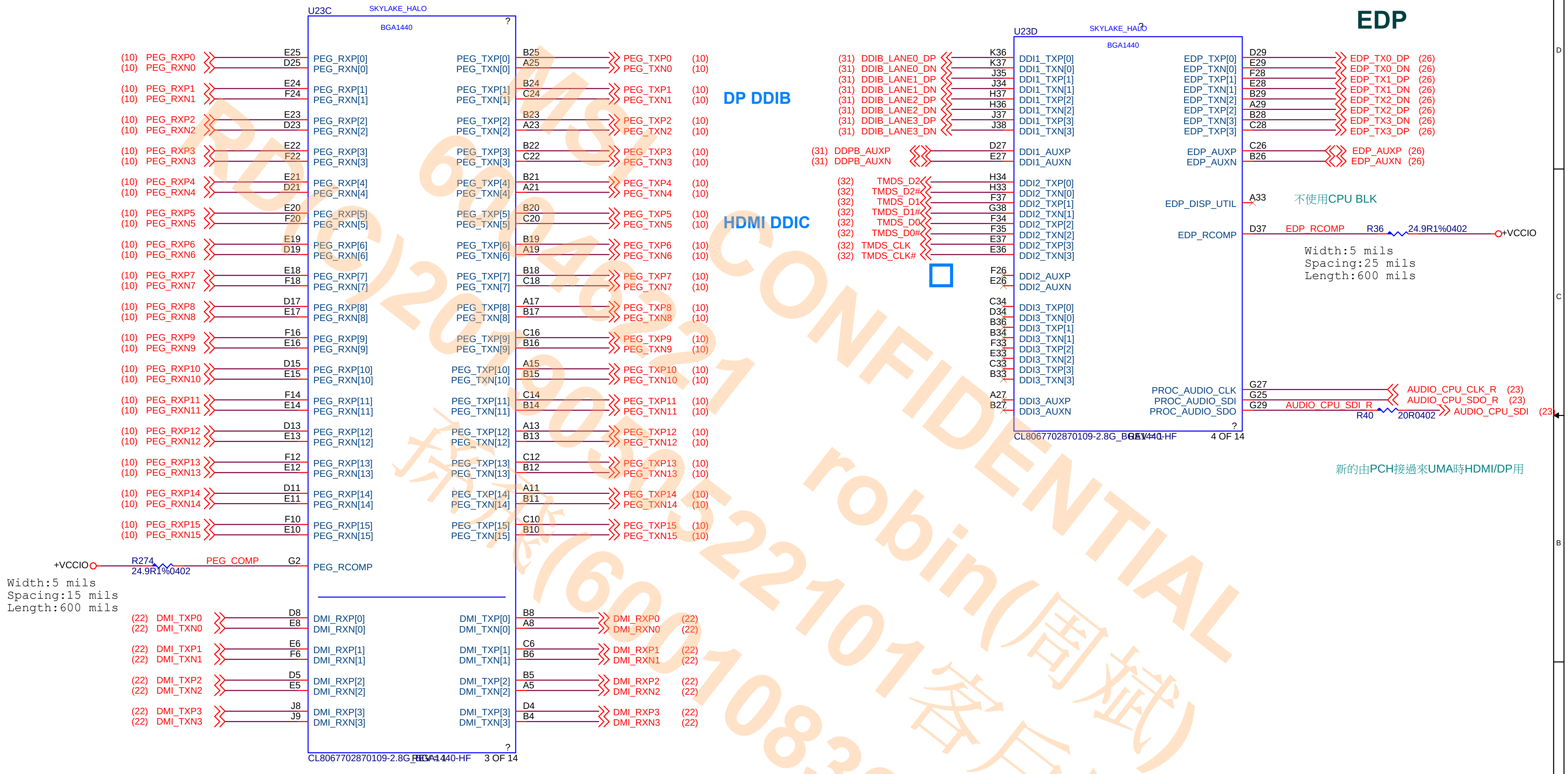
DDR Channel A

DDR Channel B



MSI CONFIDENTIAL

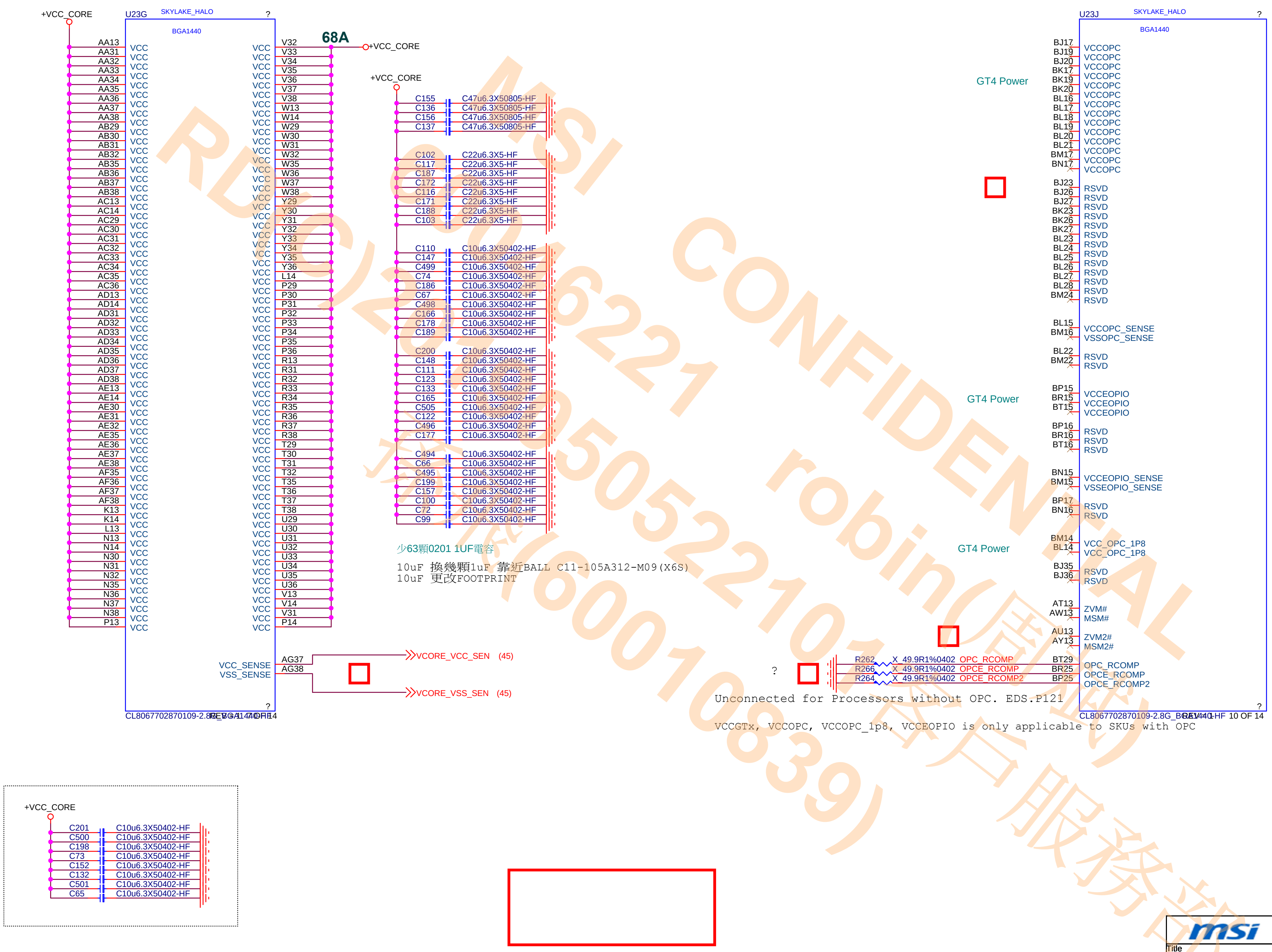
msi	MICRO-STAR INT'L CO.,LTD.
Title	Skylake(DDR4)
Size Custom	Document Number MS-16J5 — Rev 10
Date: Monday, November 14, 2016	Sheet 3 of 55



MICRO-STAR INT'L CO.,LTD.

Title	Skylake(DMI/Display)	
Size B	Document Number MS-16J5	Rev 10
Date: Monday, November 14, 2016	Sheet 4 of 55	

MSI CONFIDENTIAL
RD(C)2016 robin(周斌)
客户服务部



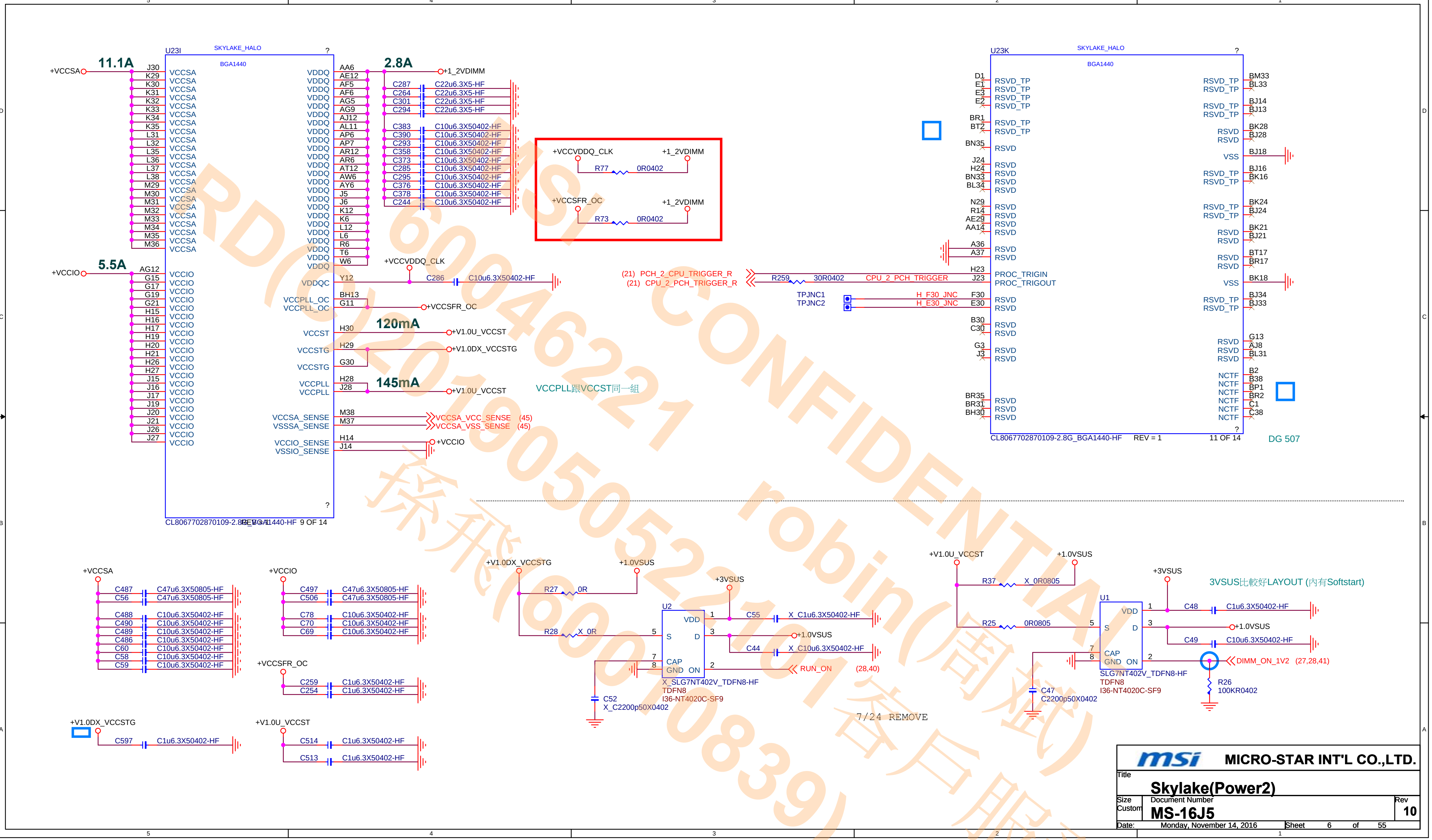
MSI CONFIDENTIAL

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

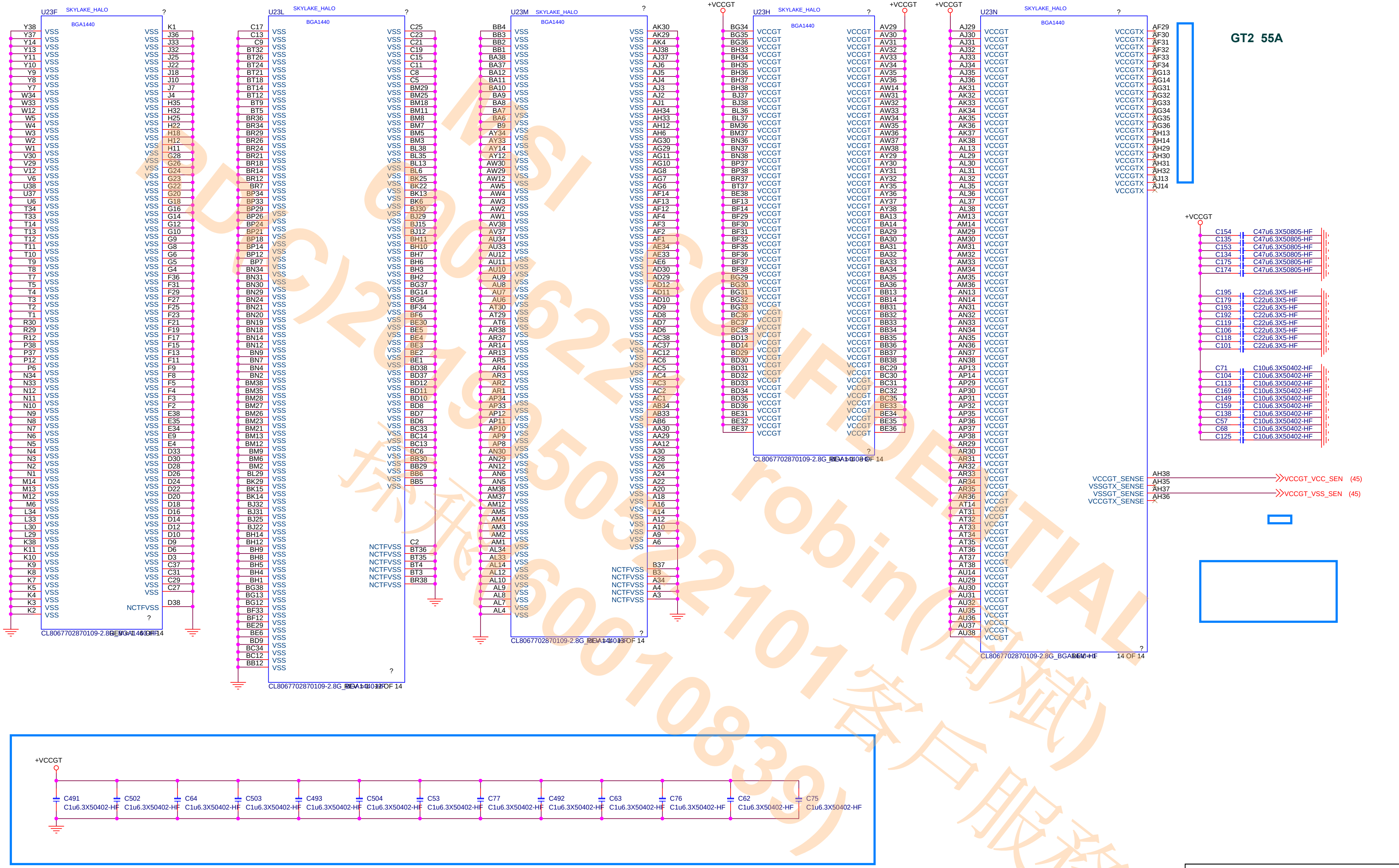
Title: Skylake(Power1)

Size: A3 | Document Number: MS-16J5 | Rev: 10

Date: Monday, November 14, 2016 | Sheet 5 of 55


U23I SKYLAKE_HALO BGA1440
+VCCSA 11.1A
VCCSA
+VCCIO 5.5A
VCCIO
2.8A +1_2VDIMM
VDDQ
C287 C264 C301 C294 C22u6.3X5-HF
C383 C390 C293 C358 C373 C285 C295 C376 C378 C244 C10u6.3X50402-HF
+VCCVDDQ_CLK
Y12 VDDQC C286 C10u6.3X50402-HF
VCCPLL_OC +VCCSFR_OC
VCCST 120mA +V1.0U_VCCST
VCCSTG +V1.0DX_VCCSTG
VCCPLL 145mA +V1.0U_VCCST
VCCPLL跟VCCST同一組
VCCSA_SENSE VCCSA_VCC_SENSE (45)
VSSSA_SENSE VCCSA_VSS_SENSE (45)
VCCIO_SENSE VSSIO_SENSE +VCCIO
CL8067702870109-2.8G_BGA1440-HF REV = 1 9 OF 14
+VCCVDDQ_CLK +1_2VDIMM R77 0R0402
+VCCSFR_OC +1_2VDIMM R73 0R0402
U23K SKYLAKE_HALO BGA1440
RSVD_TP RSVD VSS NCTF
(21) PCH_2_CPU_TRIGGER_R
(21) CPU_2_PCH_TRIGGER_R
R259 30R0402 CPU_2_PCH_TRIGGER
PROC_TRIGIN PROC_TRIGOUT
TPJNC1 TPJNC2 H_F30_JNC H_E30_JNC
CL8067702870109-2.8G_BGA1440-HF REV = 1 11 OF 14
DG 507
+VCCSA C487 C56 C47u6.3X50805-HF
C488 C490 C489 C486 C60 C58 C59 C10u6.3X50402-HF
+VCCIO C497 C506 C47u6.3X50805-HF
C78 C70 C69 C10u6.3X50402-HF
+VCCSFR_OC C259 C254 C1u6.3X50402-HF
+V1.0DX_VCCSTG C597 C1u6.3X50402-HF
+V1.0U_VCCST C514 C513 C1u6.3X50402-HF
+V1.0DX_VCCSTG +1.0VSUS R27 0R R28 X_0R
+3VSUS U2 VDD S D CAP GND ON
C55 X_C1u6.3X50402-HF
+1.0VSUS C44 X_C10u6.3X50402-HF
RUN_ON (28,40)
C52 X_C2200p50X0402
X_SLG7NT402V_TDFN8-HF TDFN8 I36-NT4020C-SF9
7/24 REMOVE
+V1.0U_VCCST +1.0VSUS R37 X_0R0805 R25 0R0805
+3VSUS 3VSUS比較好LAYOUT (內有Softstart)
U1 C48 C1u6.3X50402-HF
+1.0VSUS C49 C10u6.3X50402-HF
DIMM_ON_1V2 (27,28,41)
R26 100KR0402
C47 C2200p50X0402
SLG7NT402V_TDFN8-HF TDFN8 I36-NT4020C-SF9
msi MICRO-STAR INT'L CO.,LTD.
Title Skylake(Power2)
Size Custom Document Number MS-16J5 Rev 10
Date: Monday, November 14, 2016 Sheet 6 of 55

MSI CONFIDENTIAL



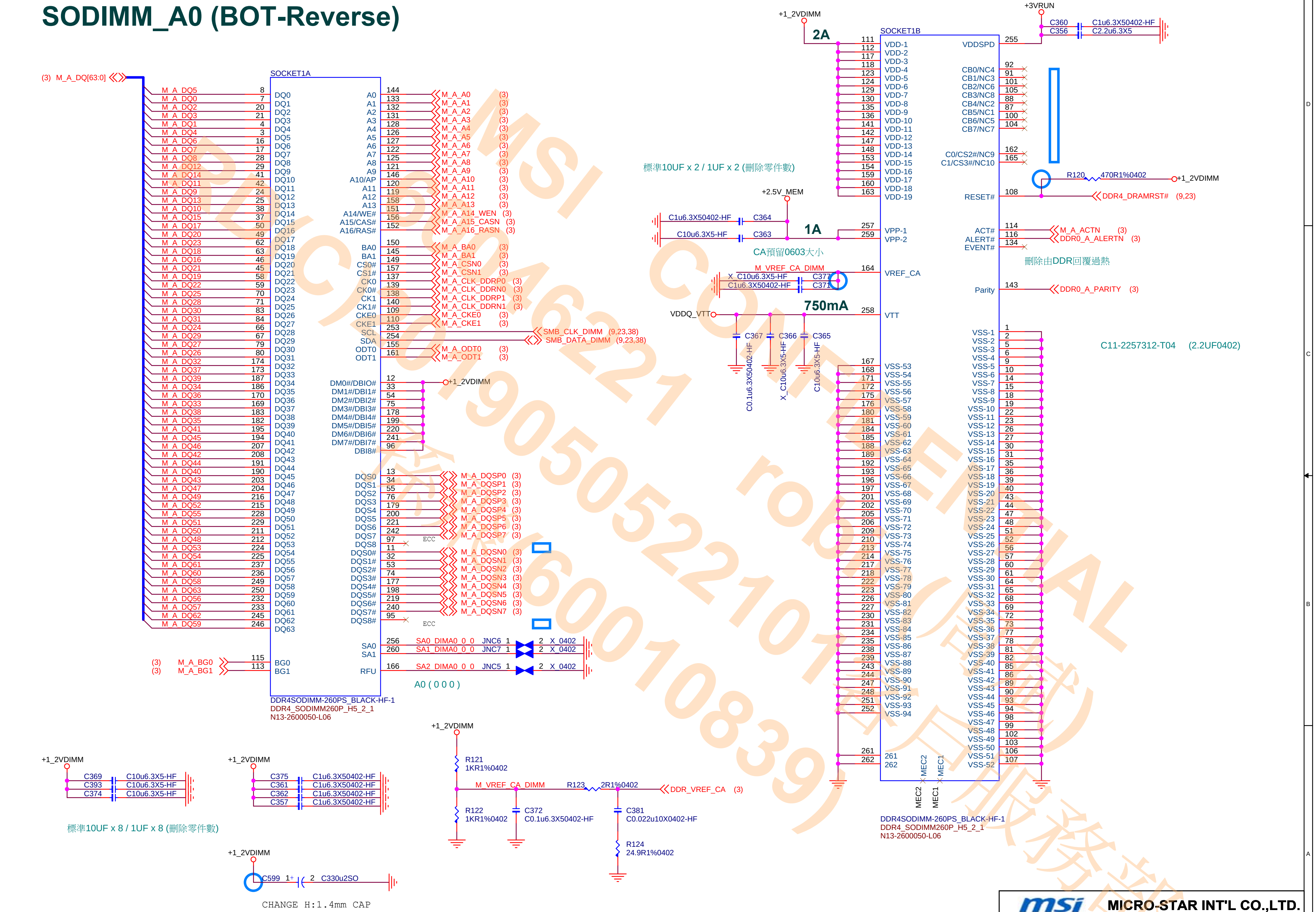
MICRO-STAR INT'L CO.,LTD.

Title: **Skylake(Power3)**

Size	Document Number	Rev
Custom	MS-16J5	10

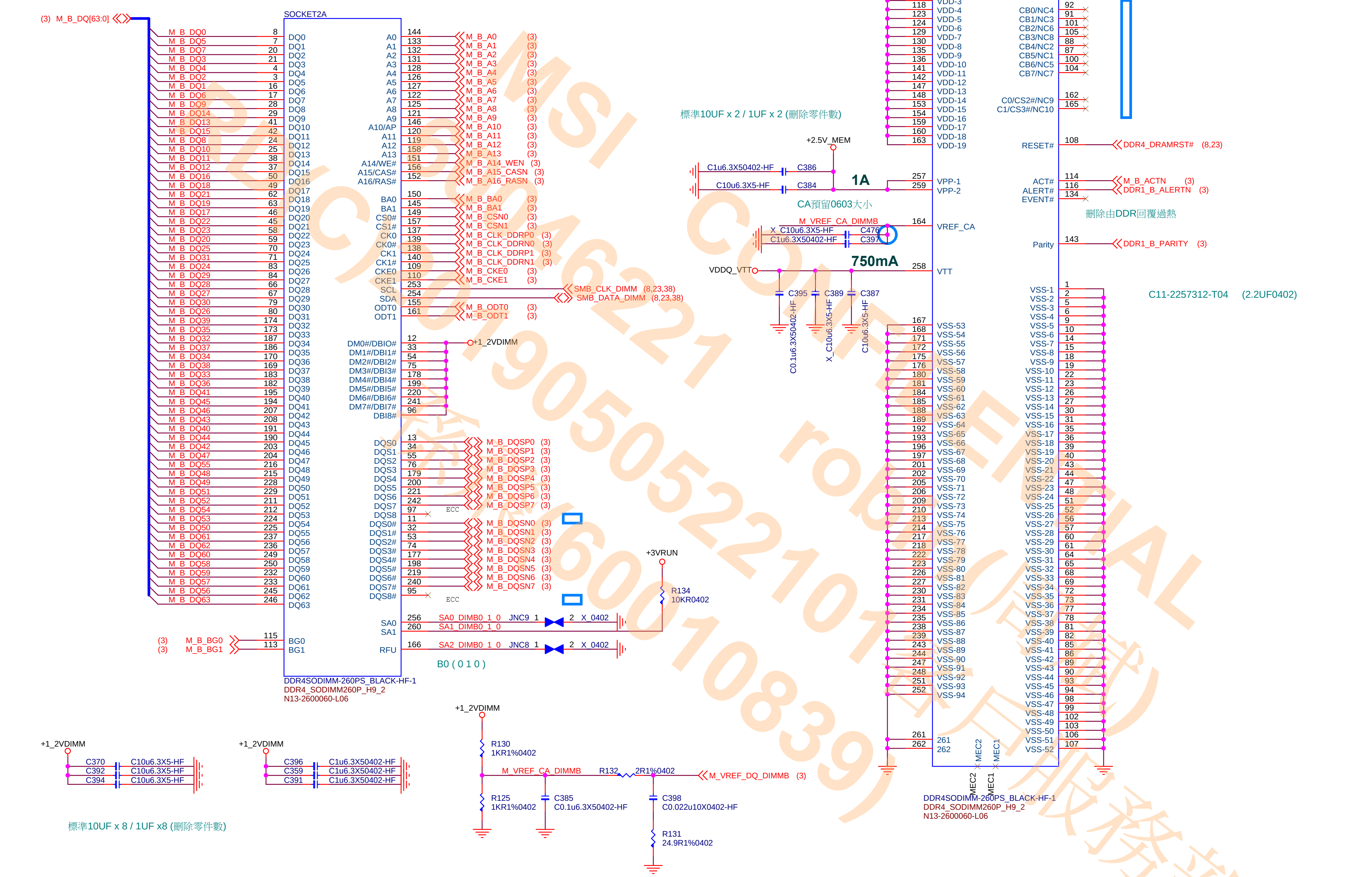
Date: Monday, November 14, 2016 Sheet 7 of 55

SODIMM_A0 (BOT-Reverse)



msi	MICRO-STAR INT'L CO.,LTD.	
Title	DDR4_SODIMM_A0	
Size Custom	Document Number MS-16J5	Rev 10
Date: Monday, November 14, 2016	Sheet 8 of 55	

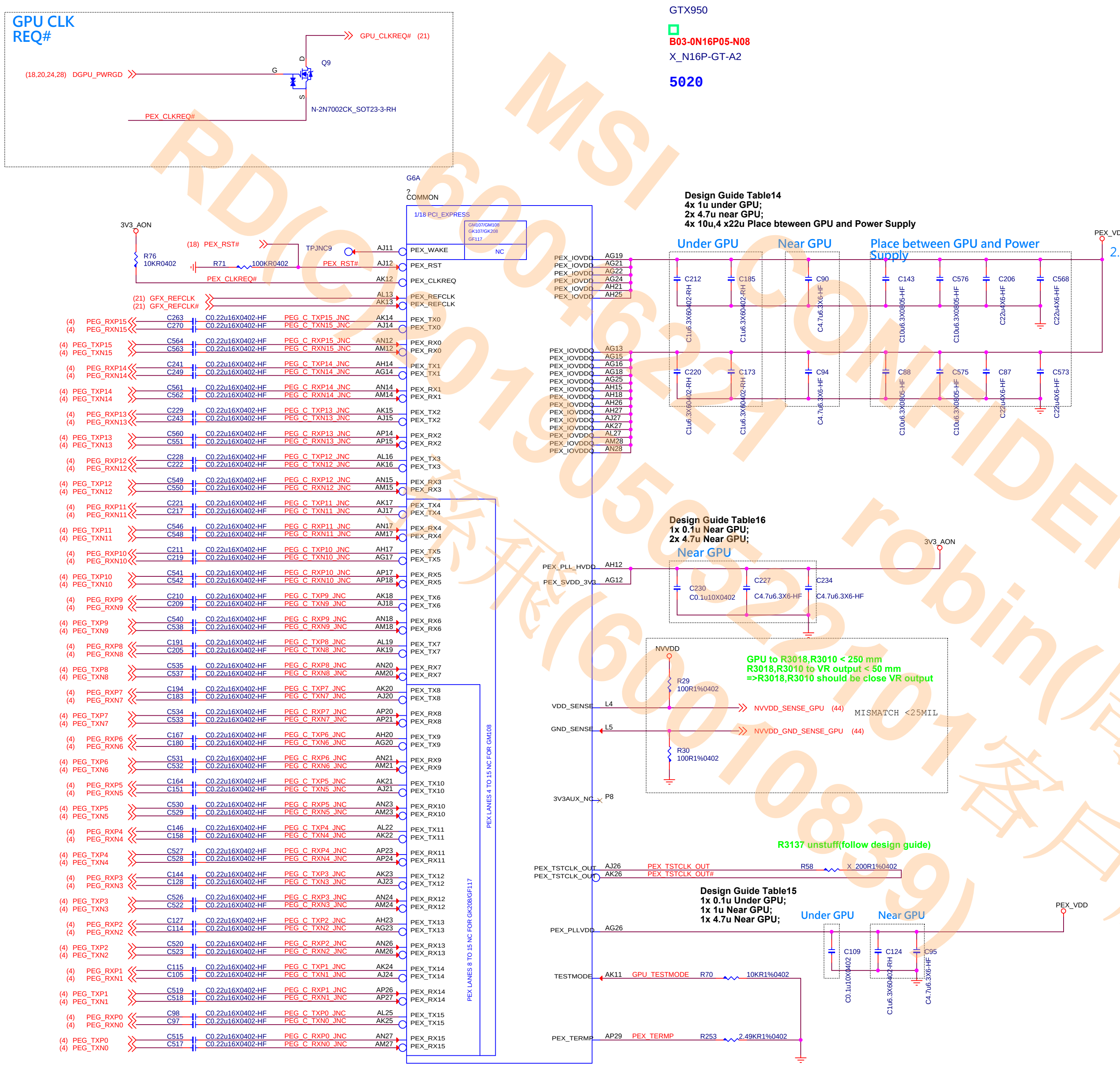
SODIMM_B0 (BOT-Reverse)



MSI CONFIDENTIAL

msi	MICRO-STAR INT'L CO.,LTD.	
Title	DDR4_SODIMM_B0	
Size Custom	Document Number MS-16J5	Rev 10
Date: Monday, November 14, 2016	Sheet 9 of 55	

N16P-GX(PCI-Express Gen3 x16 Interface)

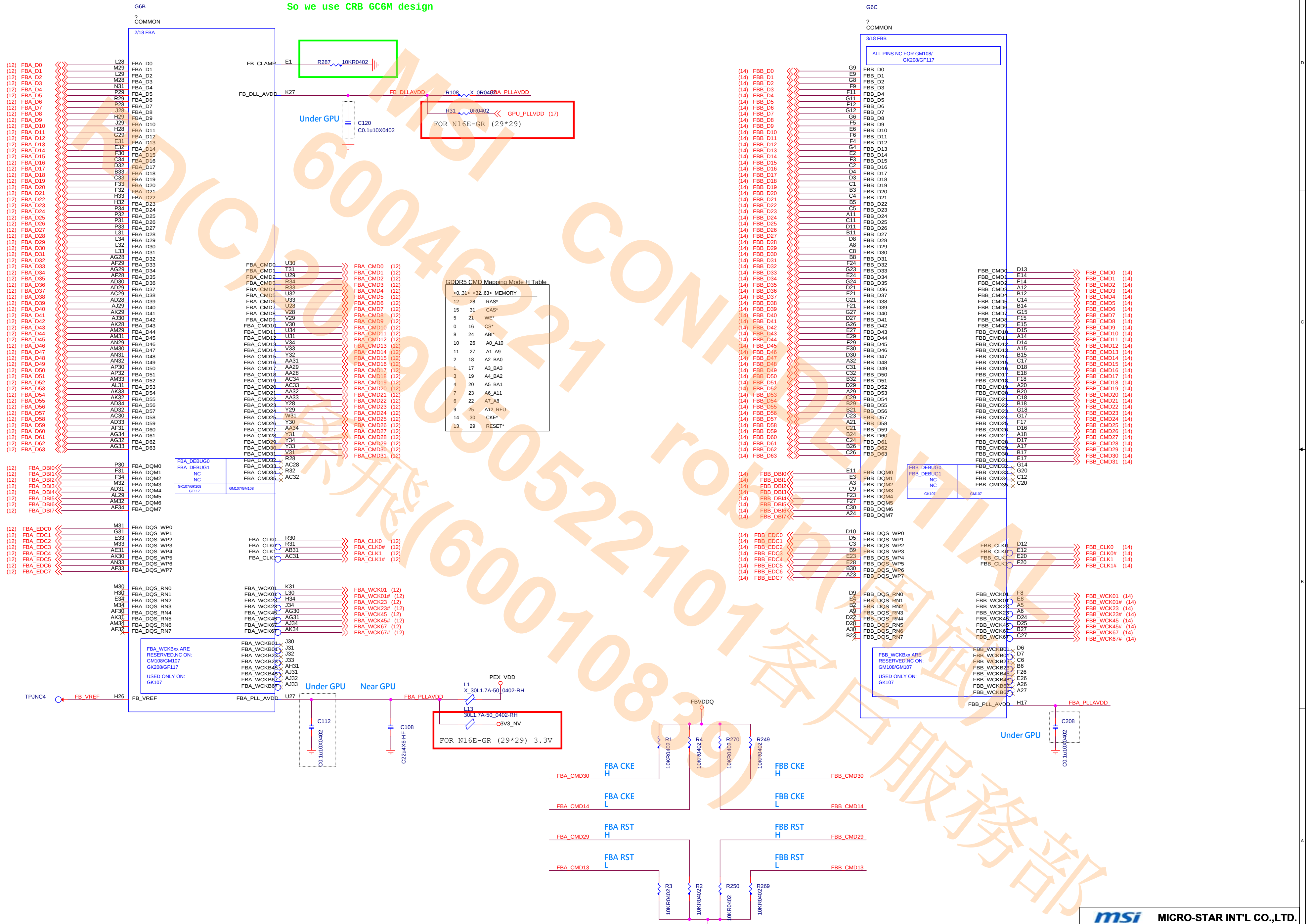


msi	MICRO-STAR INT'L CO.,LTD.
Title	N16P-GX_PCI-E Host
Size Custom	Document Number MS-16J5	Rev 10
Date: Monday, November 14, 2016	Sheet 10 of 55

MSI CONFIDENTIAL
RD(C)60046271 2019/05/02 22:10:01 robin(周斌)
客户服务部 余飛(60010839)

N16P-GX(Frame Buffer Interface)

GC6M is GC6 2.0 that it is for N15x or later GPU
So we use CRB GC6M design

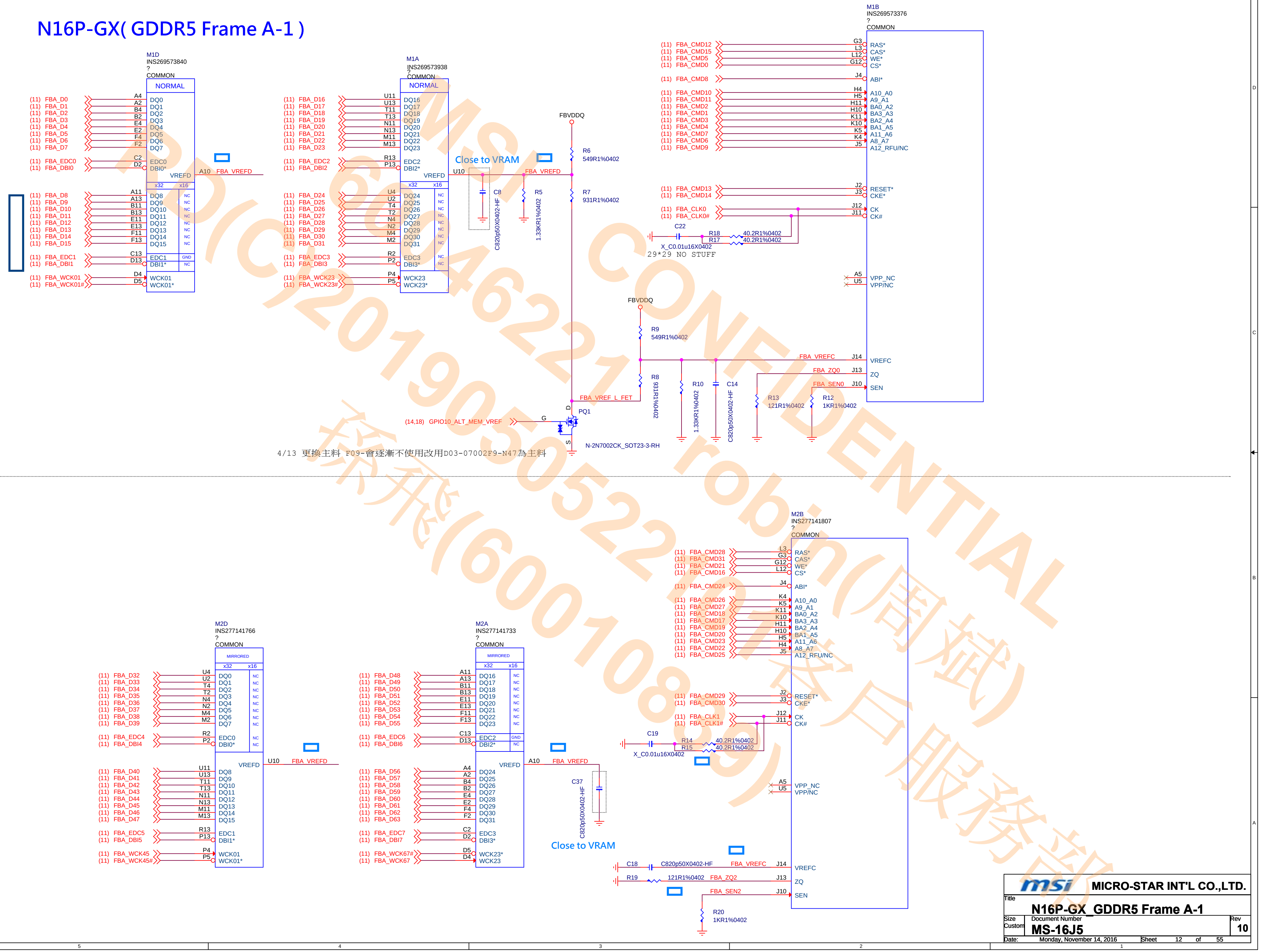


GDDR5 CMD Mapping Mode H Table

<0..31>	<32..63>	MEMORY
12	28	RAS*
15	31	CAS*
5	21	WE*
0	16	CS*
8	24	ABI*
10	26	A0_A10
11	27	A1_A9
2	18	A2_BA0
1	17	A3_BA3
3	19	A4_BA2
4	20	A5_BA1
7	23	A6_A11
6	22	A7_A8
9	25	A12_RFU
14	30	CKE*
13	29	RESET*

MICRO-STAR INT'L CO.,LTD.
Title: N16P-GX_MEM IF A/B
Size: Custom Document Number: MS-16J5 Rev: 10
Date: Monday, November 14, 2016 Sheet 11 of 55

N16P-GX(GDDR5 Frame A-1)

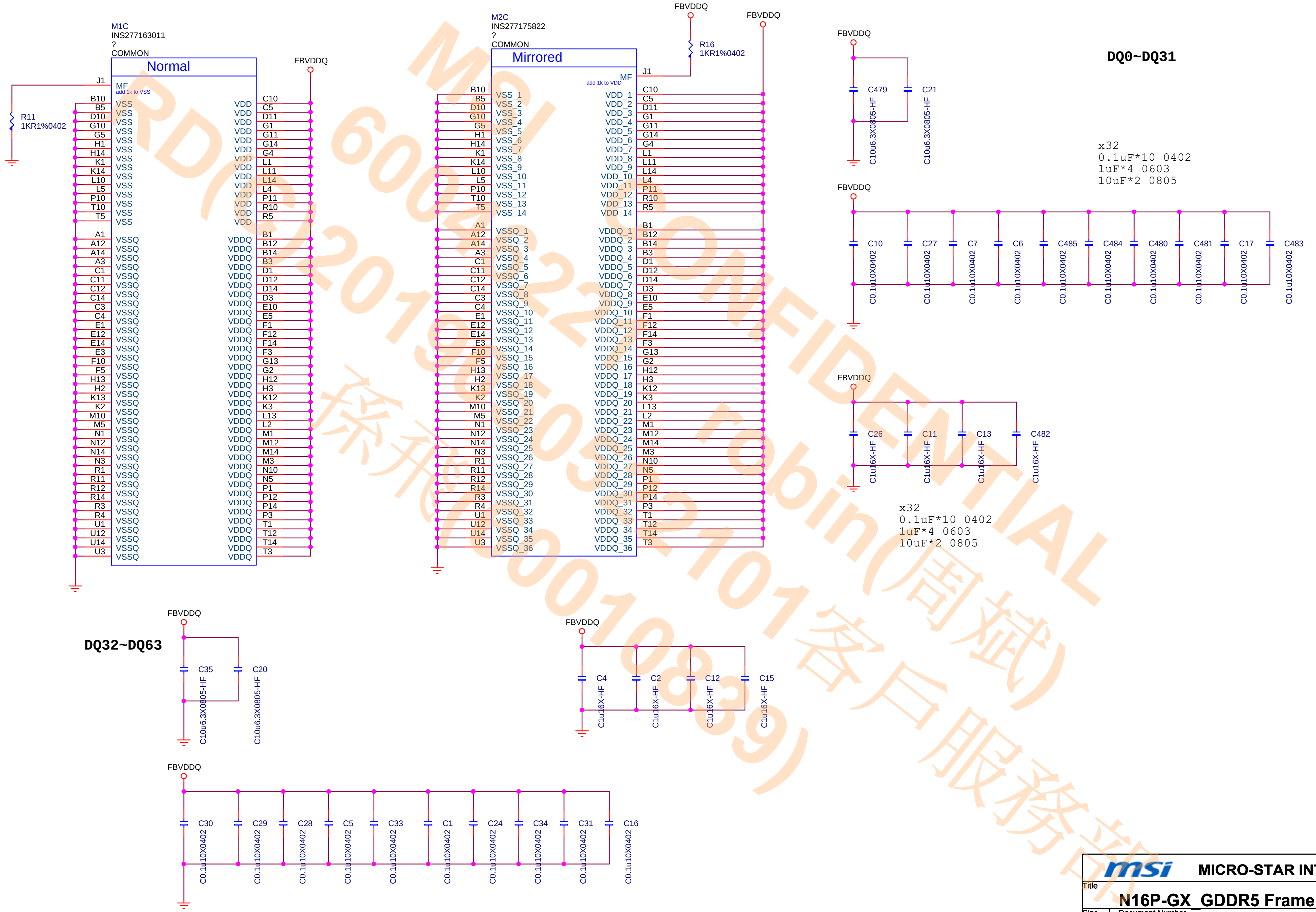


MSI CONFIDENTIAL
RD(C)201905221 robin(周斌)
徐飛(600108839) 客戶服務部

MICRO-STAR INT'L CO.,LTD.

Title	N16P-GX_GDDR5 Frame A-1
Size: Custom	Document Number: MS-16J5
Rev	10
Date:	Monday, November 14, 2016
Sheet	12 of 55

N16P-GX(GDDR5 Frame A-2)



DQ0~DQ31

x32
0.1uF*10 0402
1uF*4 0603
10uF*2 0805

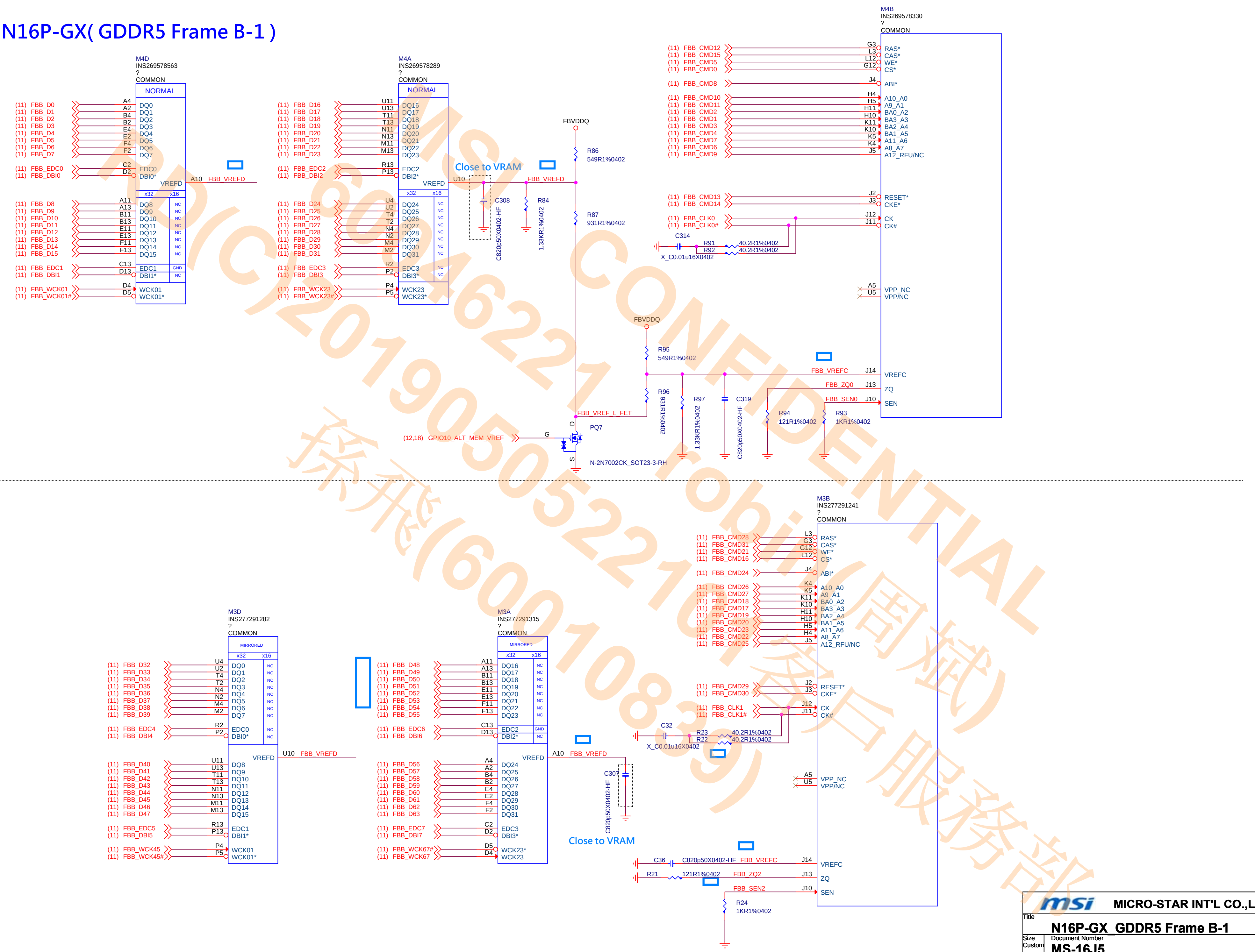
DQ32~DQ63

MICRO-STAR INT'L CO.,LTD.

Title	N16P-GX_GDDR5 Frame A-2	
Size A3	Document Number MS-16J5	Rev 10
Date: Monday, November 14, 2016	Sheet 13 of 55	

MSI CONFIDENTIAL
RD(E)20160014 6004 2017/01 robin(周斌)
探飛(1000108839) 客户服务部

N16P-GX(GDDR5 Frame B-1)



MSI CONFIDENTIAL
RD(C)2019050522 robin(周斌)
徐飛(60046221)
徐飛(60010839)客户服务部

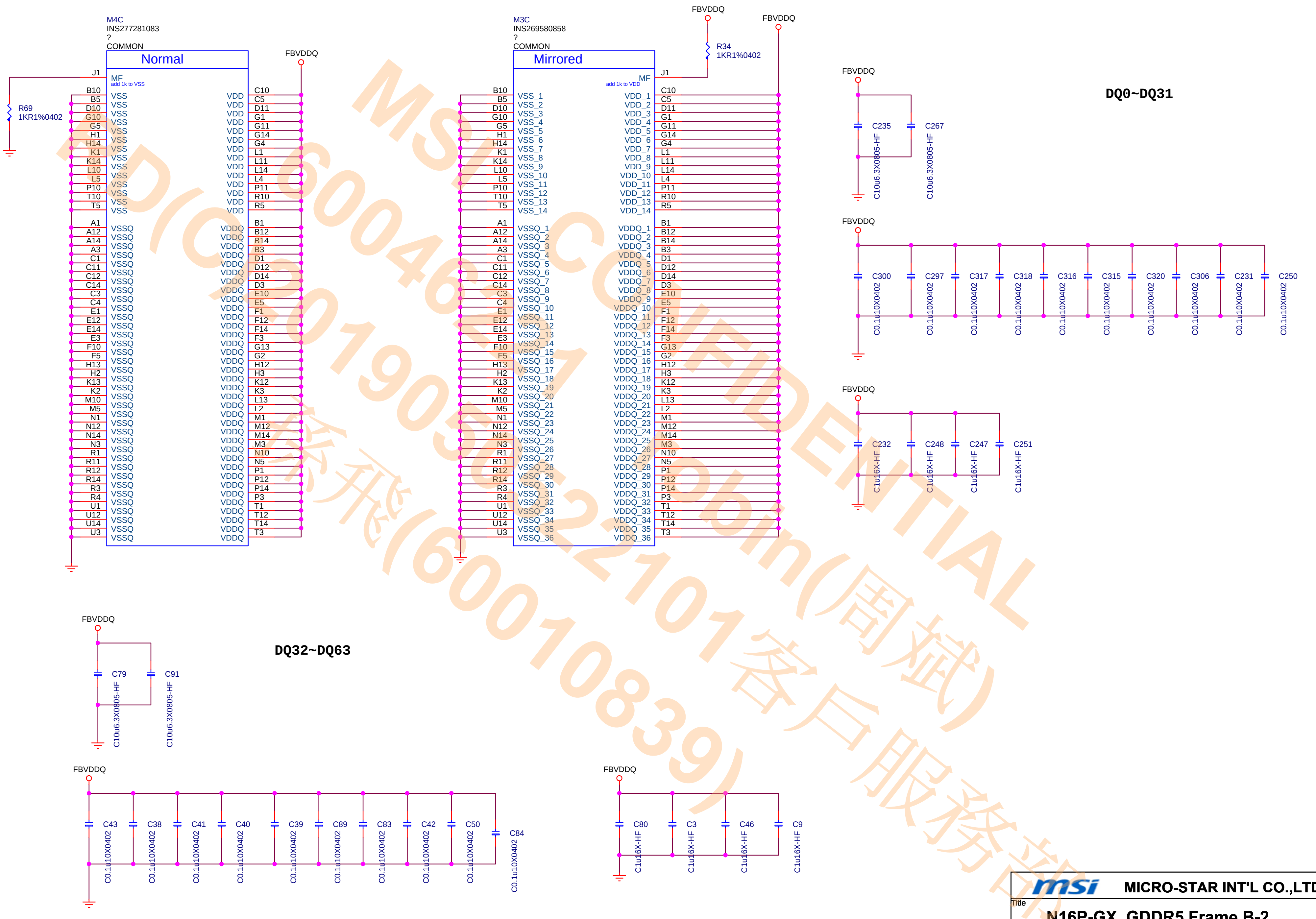
MICRO-STAR INT'L CO.,LTD.

Title: N16P-GX_GDDR5 Frame B-1

Size: Custom | Document Number: MS-16J5 | Rev: 10

Date: Monday, November 14, 2016 | Sheet 14 of 55

N16P-GX(GDDR5 Frame B-2)

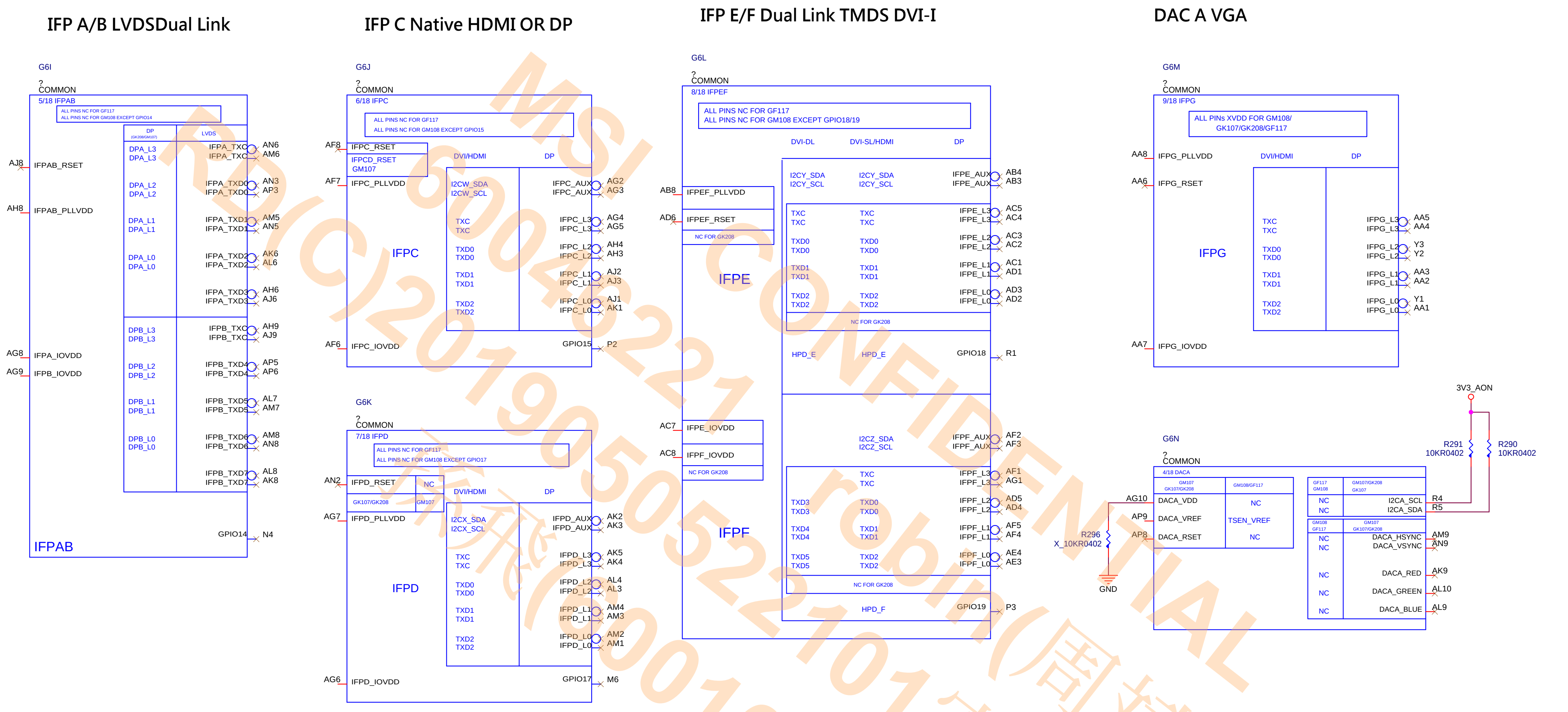


MSI CONFIDENTIAL
FD(C)2019050(2)101bm(周斌)
陈飛(600010839) 客户服务部

MICRO-STAR INT'L CO.,LTD.

Title	N16P-GX_GDDR5 Frame B-2
Size	A3
Document Number	MS-16J5
Rev	10
Date:	Monday, November 14, 2016
Sheet	15 of 55

N16P-GX(Display IF)



MSI CONFIDENTIAL
RD(C)20190505221 robin(周斌)
600482(2019052101客户服务部)
(陈飞)(830010839)

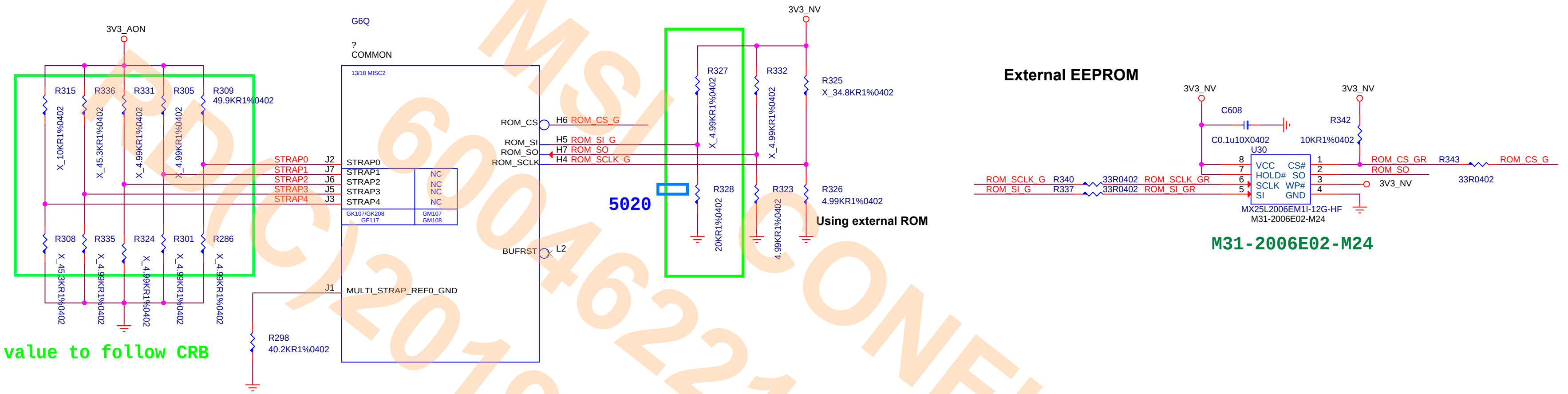
MICRO-STAR INT'L CO.,LTD.

Title: N16P-GX_Display IF

Size: Custom | Document Number: MS-16J5 | Rev: 10

Date: Monday, November 14, 2016 | Sheet 16 of 55

ROM, MULTI-LEVEL STRAPS



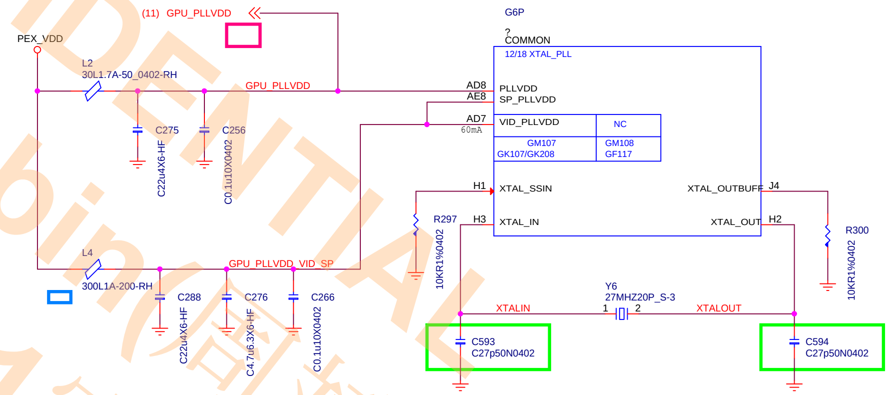
BOT 記得轉階層

BOT 記得轉階層

256*32bit

ROM_S1		V_BOT1	Samsung 256Mx32bit
R11-0203T12-W08	5020	M12-8032505-S02	5020
X_20KR1%0402		X_K4G80325FB-HC03	
ROM_M1 Micron 256Mx32bit			
R11-2492T12-W08	5020		
X_24.9KR1%0402			

ROM_SI	RAM_CFG[3:0]		
N17P-Q3			
Samsung GDDR5 : M12-8032505-S02		0x3 20K PD	Samsung 256Mx32bit
Micron GDDR5 :		0x4 25K PD	Micron 256Mx32bit
ROM_SO	DEVID_SEL PCIE_CFG SMB_ALT_ADDR VGADEVICE	5K PD	
ROM_SCLK	SOR_EXposed[3:0]	5K PD	
STRAP0		50K PU 3V3_AON	
STRAP1		Reserved	
STRAP2		Reserved	
STRAP3		Reserved	
STRAP4		Reserved	



C3438 and C3439 change to 27pF for SA

	GND	3V3
5K	0000	1000
10K	0001	1001
15K	0010	1010
20K	0011	1011
25K	0100	1100
30K	0101	1101
35K	0110	1110
45K	0111	1111
	PD	PU

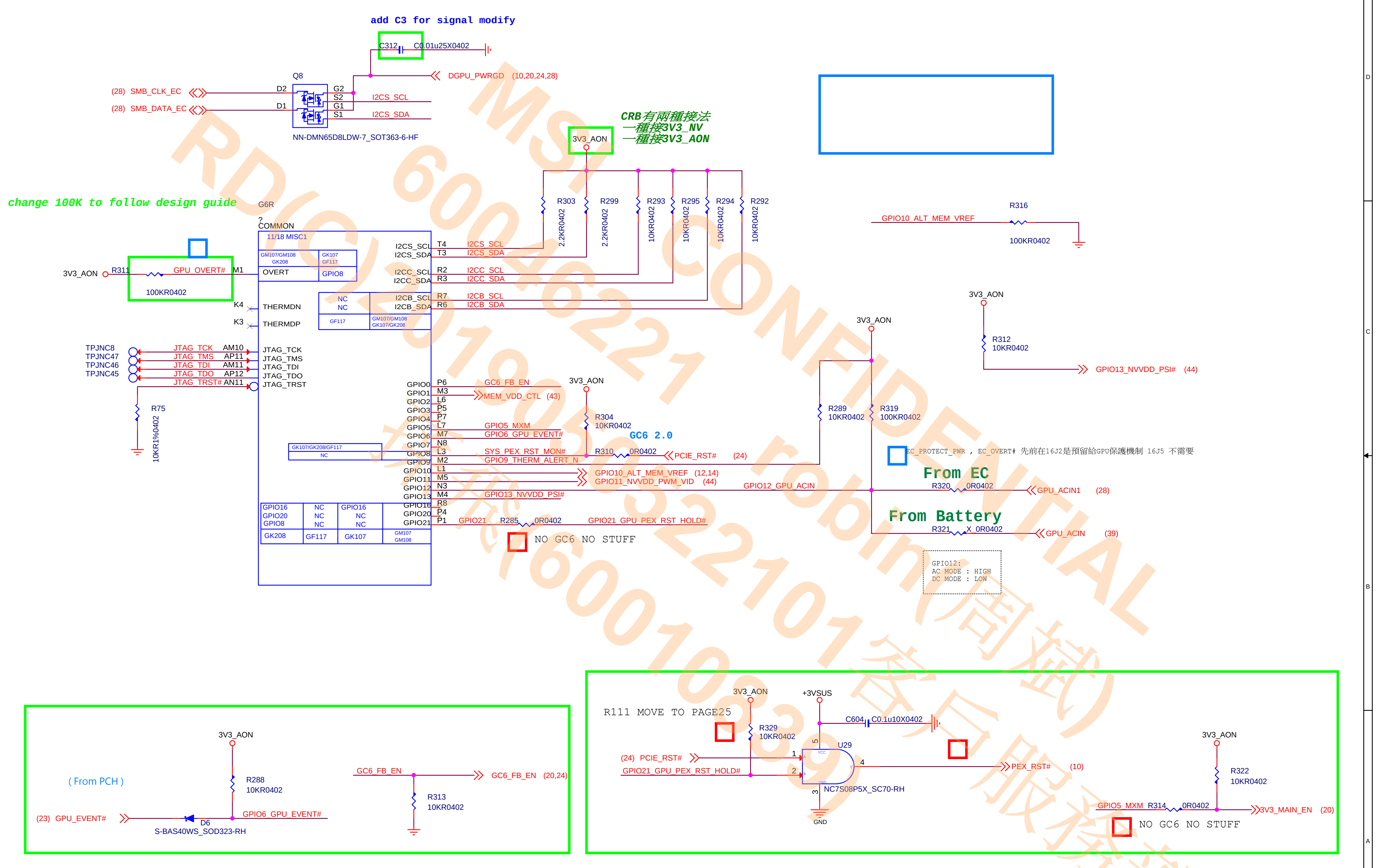
MSI CONFIDENTIAL
FDIC(600462211905052210) robin(胡斌)
深飞(60010839)合合服务部

MICRO-STAR INT'L CO.,LTD.

Title: N16P-GX_ROM & HW Straps

Size: Custom | Document Number: MS-16J5 | Rev: 10

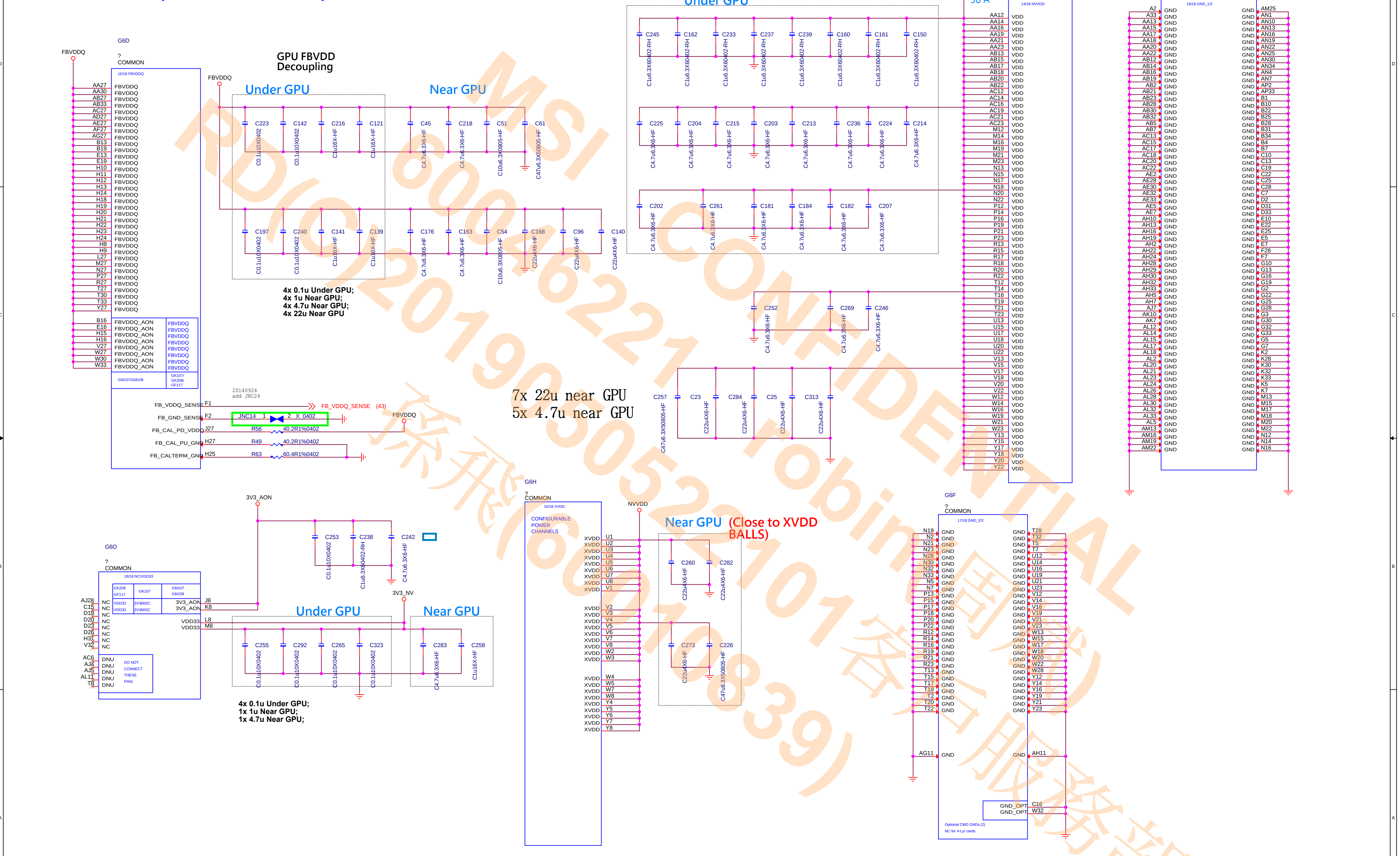
Date: Monday, November 14, 2016 | Sheet 17 of 55



MICRO-STAR INT'L CO.,LTD.

Title	N16P-GX_Thermal & GPIO	
Size: Custom	Document Number: MS-16J5	Rev: 10
Date: Monday, November 14, 2016	Sheet 18 of 55	

N16P-GX(Power & GND)



MSI CONFIDENTIAL

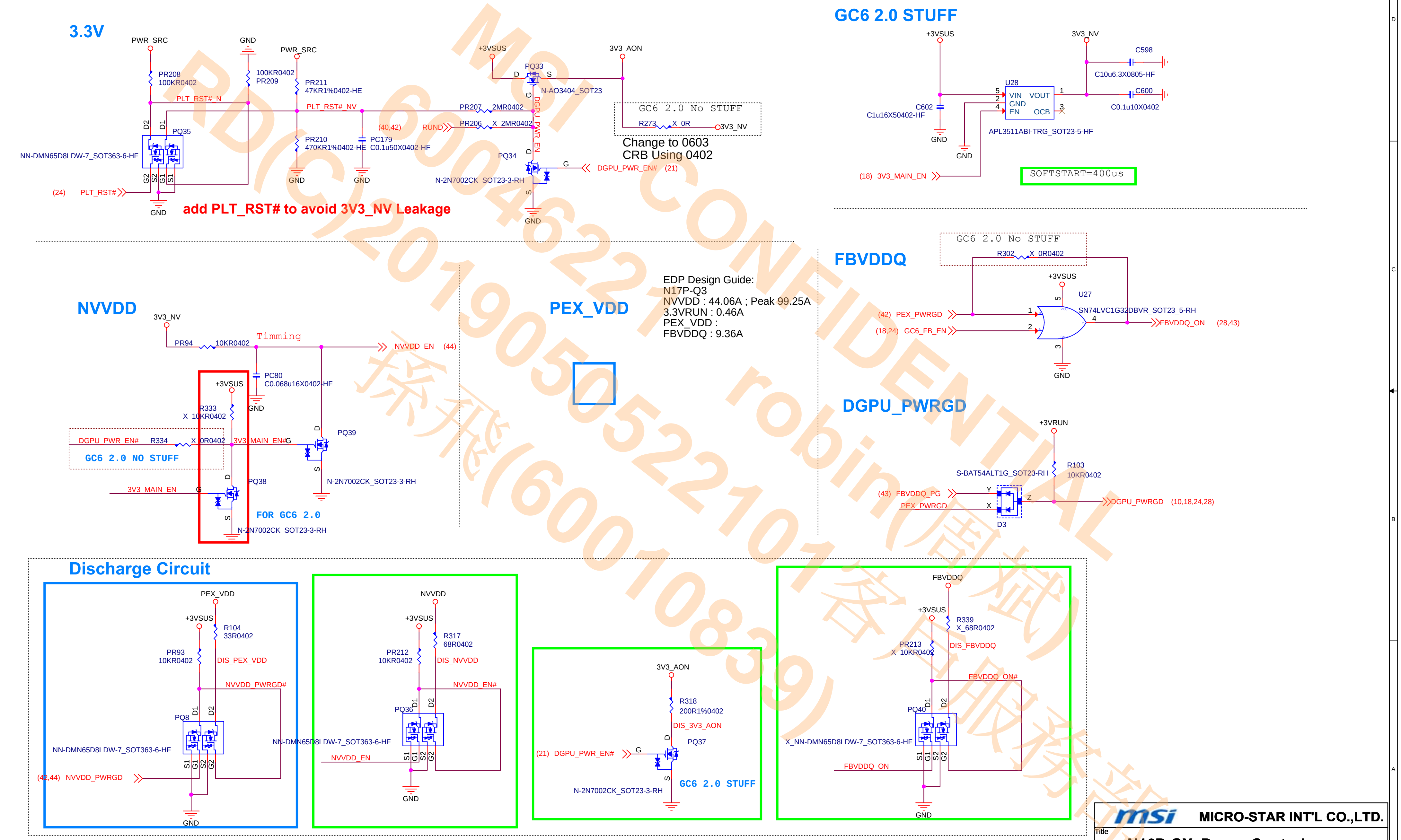
MICRO-STAR INT'L CO.,LTD.

Title	N16P-GX_Power & GND
Size Custom	Document Number MS-16J5
Rev	10
Date:	Monday, November 14, 2016
Sheet	19 of 55

N16P-GX(Power Control)

nVIDIA Power Sequence Control

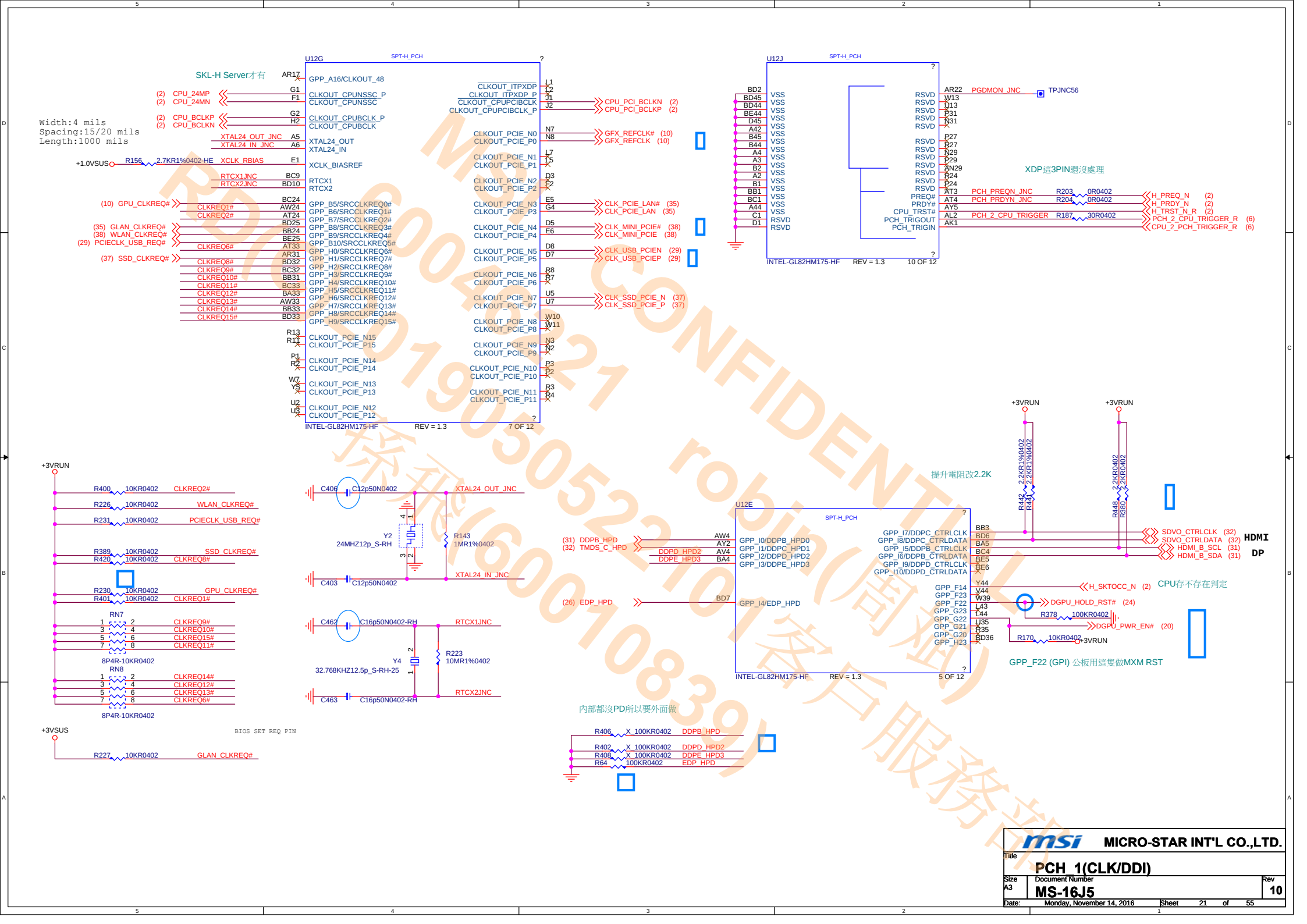
3V3_AON -> 3V3_NV -> NVVDD ->PEX_VDD -> FBVDDQ -> DGPUPWRGD

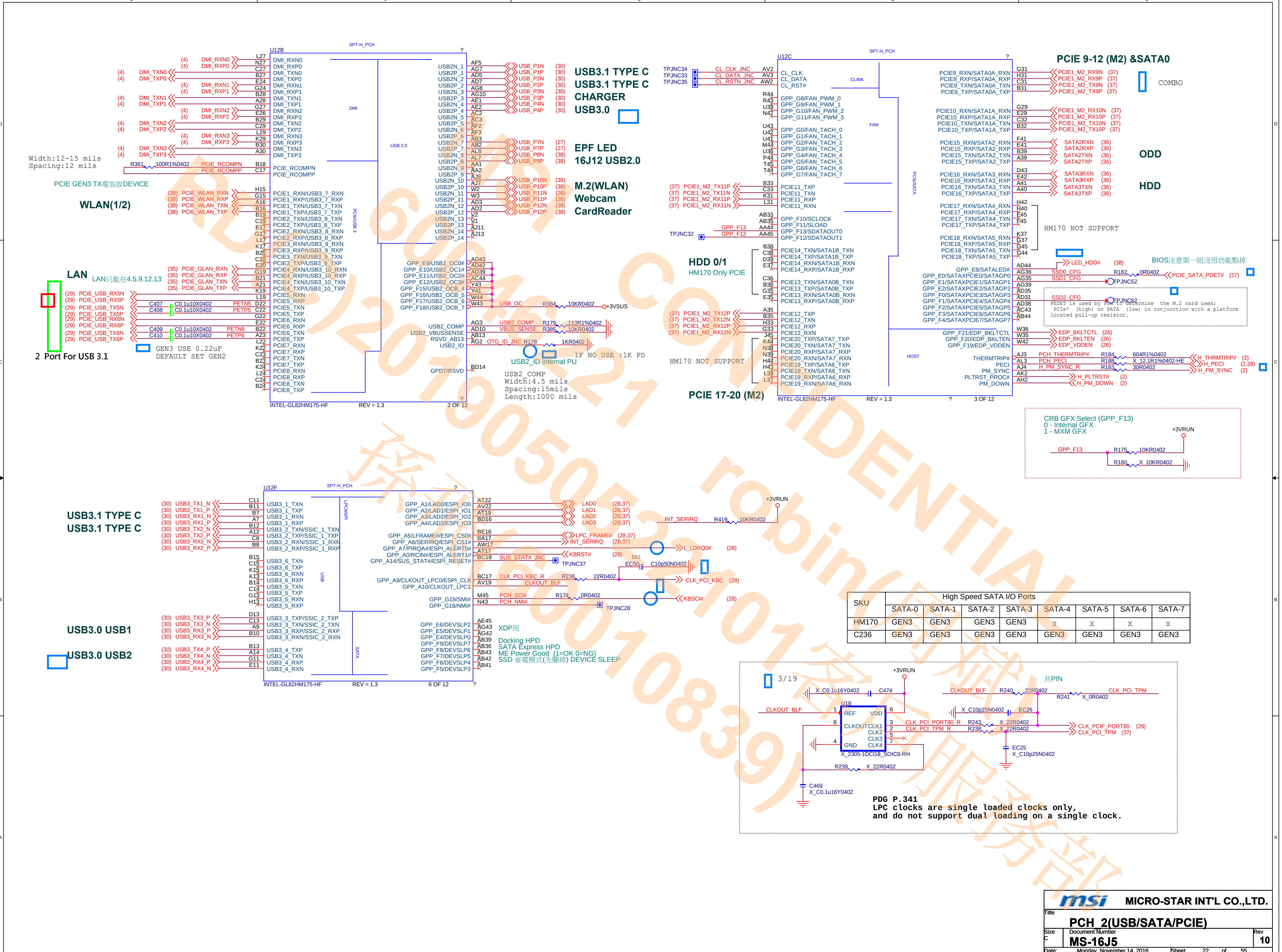


4/13更換料號
D03-7002D10-D07 轉到 D03-65D8L09-D07

msi	MICRO-STAR INT'L CO.,LTD.
Title	N16P-GX_Power Control
Size Custom / Document Number	MS-16J5
Rev	10
Date:	Monday, November 14, 2016
Sheet	20 of 55

MSI CONFIDENTIAL
RD(C)2019052210 robin(周斌)
600462217 採飛(600108839)客戶服務部


SKL-H Server才有
Width:4 mils
Spacing:15/20 mils
Length:1000 mils
U12G
SPT-H_PCH
INTEL-GL82HM175-HF
REV = 1.3
7 OF 12
U12J
10 OF 12
U12E
5 OF 12
XDP這3PIN還沒處理
提升電阻改2.2K
CPU存不存在判定
GPP_F22 (GPI) 公板用這隻做MXM RST
內部都沒PD所以要外面做
BIOS SET REQ PIN
HDMI
DP
MICRO-STAR INT'L CO.,LTD.
PCH_1(CLK/DDI)
MS-16J5
Monday, November 14, 2016
Sheet 21 of 55



SKU	High Speed SATA I/O Ports							
	SATA-0	SATA-1	SATA-2	SATA-3	SATA-4	SATA-5	SATA-6	SATA-7
HM170	GEN3	GEN3	GEN3	GEN3	X	X	X	X
C236	GEN3	GEN3	GEN3	GEN3	GEN3	GEN3	GEN3	GEN3

RD-2 600621 CONFIDENTIAL robin

MICRO-STAR INT'L CO.,LTD.

Title: PCH_2(USB/SATA/PCIE)

Size: C | Document Number: MS-16J5 | Rev: 10

Date: Monday, November 14, 2016 | Sheet 22 of 55

SMBALERT#
0 - Disable (Default Internal 20K PD)
1- Enable (AMT/SBA)

SML0ALERT#
0 - LPC (Default Internal 20K PD)
1- eSPI

PCH EDS Page 52

U12D

SPT-H_PCH

HDA_BITCLK
HDA_RST#
(33) CODEC_HDA_SDIN0
(28) FLASH_SECURITY
R208 1KR0402
HDA_SDO
HDA_SYNC

(4) AUDIO_CPU_SDO_R
(4) AUDIO_CPU_SDI
(4) AUDIO_CPU_CLK_R
R194 30R0402
R195 30R0402
AUDIO_CPU_SDO
AUDIO_CPU_CLK
新的UMA HDMI/DP用

+3VSUS
R416 X_2.2KR0402 SMBALERT#
R415 X_20KR0402-2
R405 X_2.2KR0402 SML0ALERT#
150K for DCI enable
R392 X_150KR0402 SML1ALERT#
R404 1KR0402 SUS_SMBCLK
R409 1KR0402 SUS_SMBDATA
RN4
SML0_CLK
SML0_DATA
SML1_DATA
SML1_CLK
8P4R-1KR0402
RN9
LAN_WAKE#
BATLOW#
PCIE_WAKE#
AC_PRESENT
8P4R-10KR0402
應該不用上件

RTCRST#
SRTCRST#
PCH_PWROK
(28) RSMRST#
X_0402
JNC18
RSMRST# JNC
SMBALERT#
SUS_SMBCLK
SUS_SMBDATA
SML0ALERT#
SML0_CLK
SML0_DATA
SML1ALERT#
SML1_CLK
SML1_DATA

HDA_BCLK
HDA_RST#
HDA_SDI0
HDA_SDI1
HDA_SDO
HDA_SYNC
RSVD_BD1
RSVD_BE2
DISPA_SDO
DISPA_SDI
DISPA_BCLK
GPP_D8/I2S0_SCLK
GPP_D7/I2S0_RXD
GPP_D6/I2S0_TXD
GPP_D5/I2S0_SFRM
GPP_D20/DMIC_DATA0
GPP_D19/DMIC_CLK0
GPP_D18/DMIC_DATA1
GPP_D17/DMIC_CLK1
RTCRST#
SRTCRST#
PCH_PWROK
RSMRST#
DSW_PWROK
GPP_C2/SMBALERT#
GPP_C0/SMBCLK
GPP_C1/SMBDATA
GPP_C5/SML0ALERT#
GPP_C3/SML0CLK
GPP_C4/SML0DATA
GPP_B23/SML1ALERT#/PCHHOT#
GPP_C6/SML1CLK
GPP_C7/SML1DATA
AUDIO
SMBUS
JTAG
INTEL-GL82HM175-HF
REV = 1.3
4 OF 12

GPP_A12/BMBUSY#/ISH_GP6/SX_EXIT_HOLDOFF#
GPP_A8/CLKRUN#
GPD11/LANPHYPC
GPD9/SLP_WLAN#
DRAM_RESET#
GPP_B2/VRALERT#
GPP_B1
GPP_B0
GPP_G17/ADR_COMPLETE
GPP_B11
SYS_PWROK
WAKE#
GPD6/SLP_A#
SLP_LAN#
GPP_B12/SLP_S0#
GPD4/SLP_S3#
GPD5/SLP_S4#
GPD10/SLP_S5#
GPD8/SUSCLK
GPD0/BATLOW#
GPP_A15/SUSACK#
GPP_A13/SUSWARN#/SUSPWRDNACK
GPD2/LAN_WAKE#
GPD1/ACPRESENT
SLP_SUS#
GPD3/PWRBTN#
SYS_RESET#
GPP_B14/SPKR
PROCPWRGD
ITP_PMODE
JTAGX
JTAG_TMS
JTAG_TDO
JTAG_TDI
JTAG_TCK

要查一下
TPJNC38
PM_CLKRUN# R235 X_0R0402
EC_CLKRUN# (28)
新的DDR由PCH做RESET
DDR4_DRAMRST# R410 0R0402
GPP_B2 R225 X_10KR0402 +3VSUS
DDR4_DRAMRST# (8,9)
GPU_EVENT# (18)
GPP_B11 (GPO)
PCIE_WAKE# (29,35,38)
TPJNC61
PM_SLP_S3# (28,47)
PM_SLP_S4# (28,41)
TPJNC58
R396 X_0R0402
WLAN_SUSCLK (38)
SUSCLK (28)
連EC
BATLOW#
SUSACK# JNC
TPJNC36
SUSPWRACK (28)
連EC
+3VSUS
R395 100KR0402
Add R715 pull high +3VSUS
PM_PWRBTN# (28)
0 - Enable TCO
LAN_WAKE#
SLP_SUS# JNC
AC_PRESENT (28)
TPJNC57
PM_SYSRST#
HDA_SPKR R232 X_1KR0402 +3VRUN
H_PWRGD (2)
PCH_JTAGX (2)
PCH_JTAG_TMS (2)
PCH_JTAG_TDO (2)
PCH_JTAG_TDI (2)
PCH_JTAG_TCK R200 X_51R0402

+3VRUN
PM_SYSRST# R206 10KR0402
SMB_CLK_DIMM R399 1KR0402
SMB_DATA_DIMM R407 1KR0402
NN-DMN65D8LDW-7_SOT363-6-HF
SUS_SMBCLK D1
SUS_SMBDATA D2
S1 G1 S2 G2
SMB_CLK_DIMM (8,9,38)
SMB_DATA_DIMM (8,9,38)
Q18
+3VSUS
+5VRUN
R383 100KR0402
R382 2.2KR0402
PWOK_SMB
C666 C0.1u6.3X50402-HF
Q14
NN-DMN65D8LDW-7_SOT363-6-HF
檢討漏電流
PM_PCH_PWROK
PCH_PWROK

+3VALW
R430 1.5KR0402
VCCRTC < 3.2V
R426 45.3KR1%0402
R428 X_0R0402
D9
1SS355_SOD323
D8
S-BAT54C_SOT23
選料注意切入電壓
RTCVCC
CRB 30K? DG 20K
R434 20KR0402-2 RTCRST#
C715 C1u10X0603
C717 C1u10X0603
G13
RTC_P2
R421 1KR0402
WIDTH:10MIL
RTC_P3
R433 20KR0402-2 SRTCRST#
30K?
C716 C1u10X0603
MEC1
MEC2
BAT1
BAT2PS_BLACK-RH-1
BATHOLD_S2_2
N91-02F0060-L06

(33) CODEC_HDA_BIT_CLK
(33) CODEC_HDA_SDOUT
(33) CODEC_HDA_RST#
(33) CODEC_HDA_SYNC
RN5
HDA_BITCLK
HDA_SDO
HDA_RST#
HDA_SYNC
8P4R-33R0402
EC18 X_C10p50N0402
EC20 X_C10p50N0402
EC21 X_C10p50N0402
EC22 X_C10p50N0402

+3VSUS
C665 C0.1u6.3X50402-HF
C457 C0.1u6.3X50402-HF
(45) CPU_PWROK
(2,28,31,45) EC_ALLSYSPG
RUN最後一根
PCH_PWROK
U14
NC7S08P5X_SC70-RH

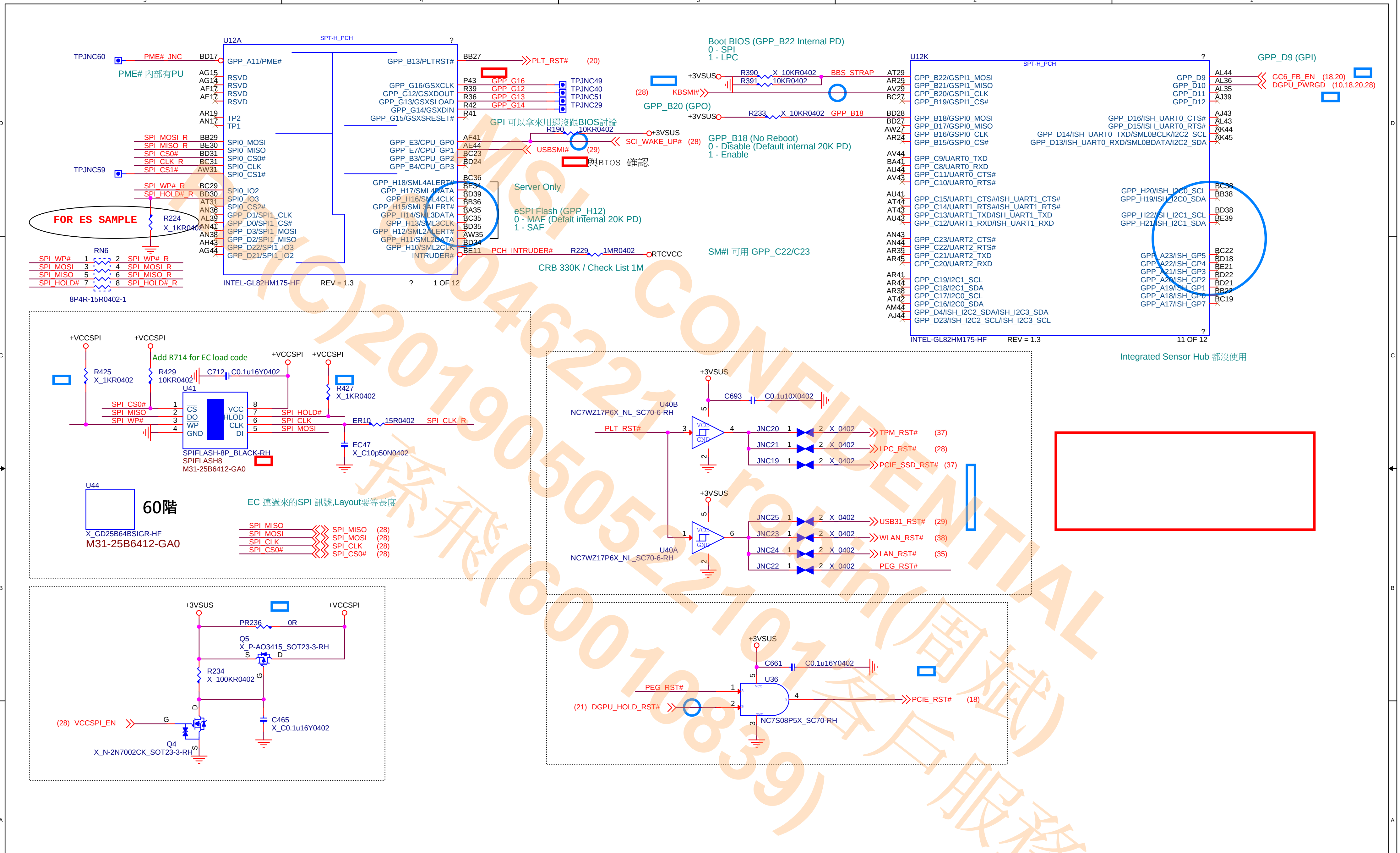
60階
BAT2
BAT-BCR2032P-RH
D06-0100101-K26

待改
+3VSUS
C446 C0.1u6.3X50402-HF
PCH_PWROK
(28) EC_PCH_PWROK
EC delay 100ms
SYS_PWROK
U15
NC7S08P5X_SC70-RH

Title	PCH_3(HDA/RTC/SMBUS)
Size / Custom	Document Number: MS-16J5
Rev	10
Date:	Monday, November 14, 2016
Sheet	23 of 55

MICRO-STAR INT'L CO.,LTD.

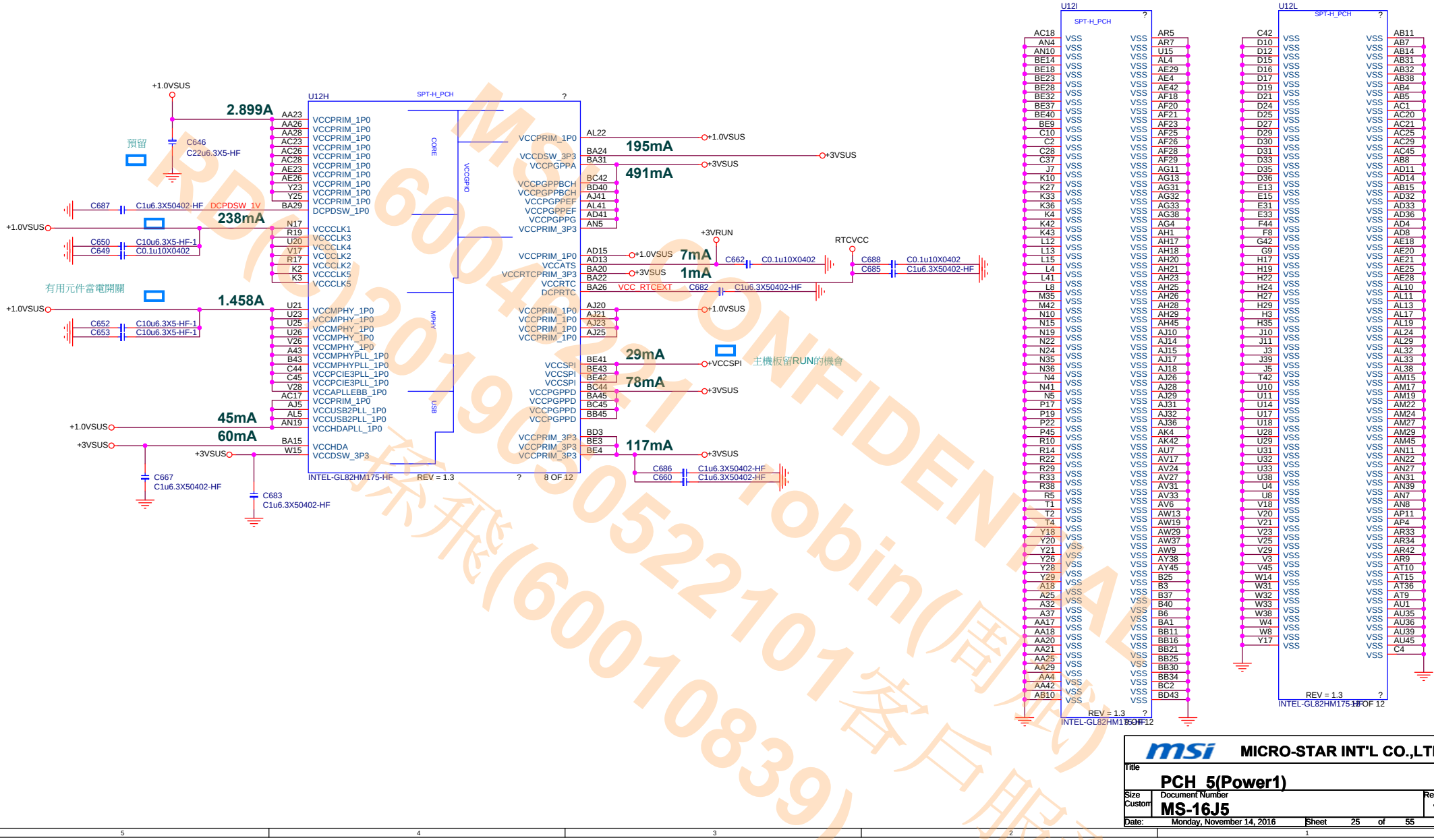
MSI CONFIDENTIAL
RD(Robin 13905221071 微信同號)
蔡飛(600010839) 客戶服務部



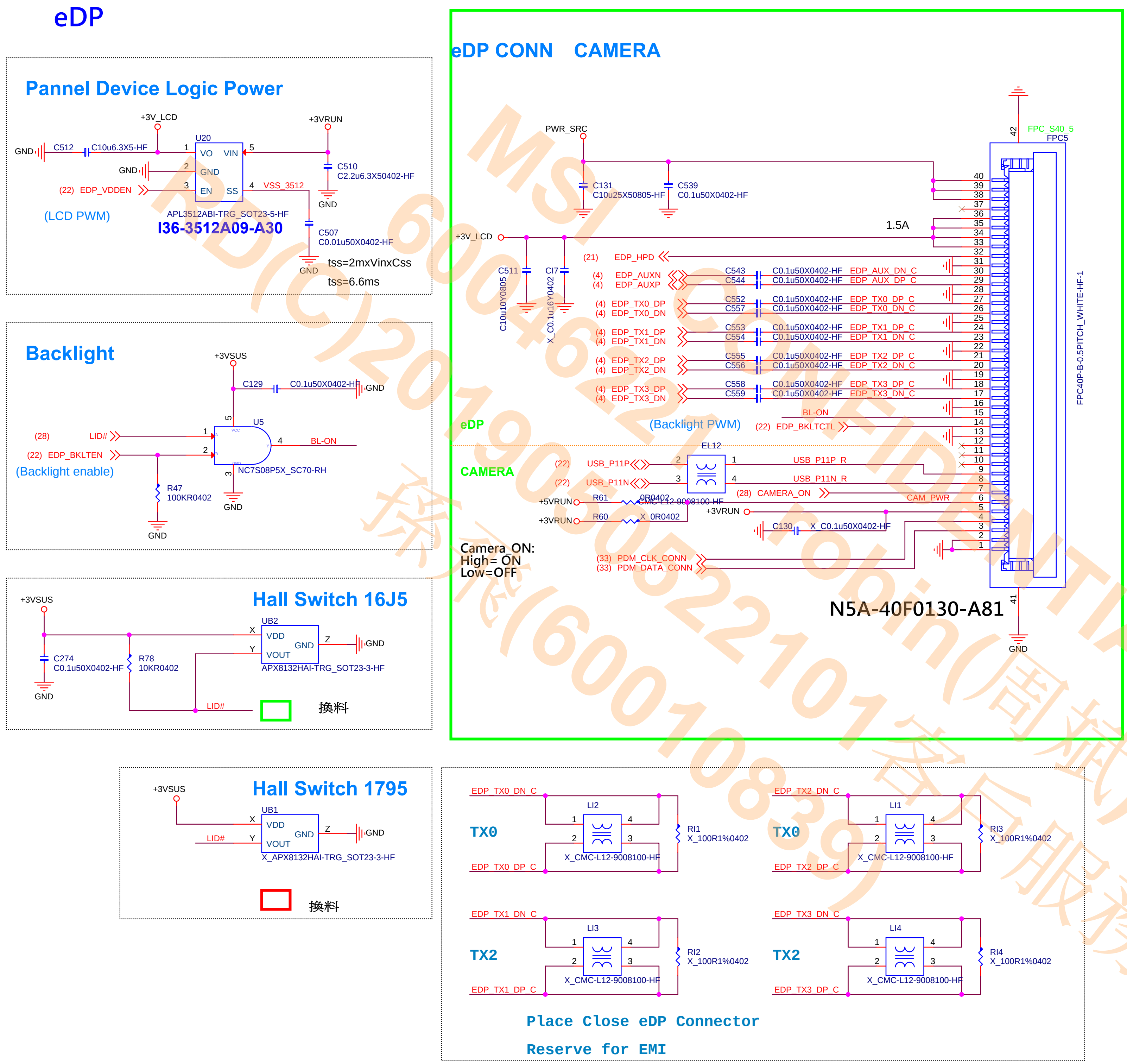
MICRO-STAR INT'L CO.,LTD.

Title	PCH_4(SPI/GPIO)
Size: Custom	Document Number: MS-16J5
Rev	10
Date:	Monday, November 14, 2016
Sheet	24 of 55

MSI CONFIDENTIAL


U12H
SPT-H_PCH
INTEL-GL82HM175-HF
REV = 1.3
8 OF 12
U12I
SPT-H_PCH
INTEL-GL82HM175-HF
REV = 1.3
U12L
SPT-H_PCH
INTEL-GL82HM175-HF
REV = 1.3
2.899A
預留
C646
C22u6.3X5-HF
C687
C1u6.3X50402-HF
DCPDSW_1V
238mA
C650
C649
C10u6.3X5-HF-1
C0.1u10X0402
有用元件當電開關
1.458A
C652
C653
C10u6.3X5-HF-1
45mA
60mA
C667
C1u6.3X50402-HF
C683
C1u6.3X50402-HF
195mA
491mA
7mA
1mA
C662
C0.1u10X0402
RTCVCC
C688
C685
C1u6.3X50402-HF
C682
29mA
78mA
主機板留RUN的機會
117mA
C686
C660
C1u6.3X50402-HF
MICRO-STAR INT'L CO.,LTD.
PCH_5(Power1)
MS-16J5
Monday, November 14, 2016
Sheet 25 of 55

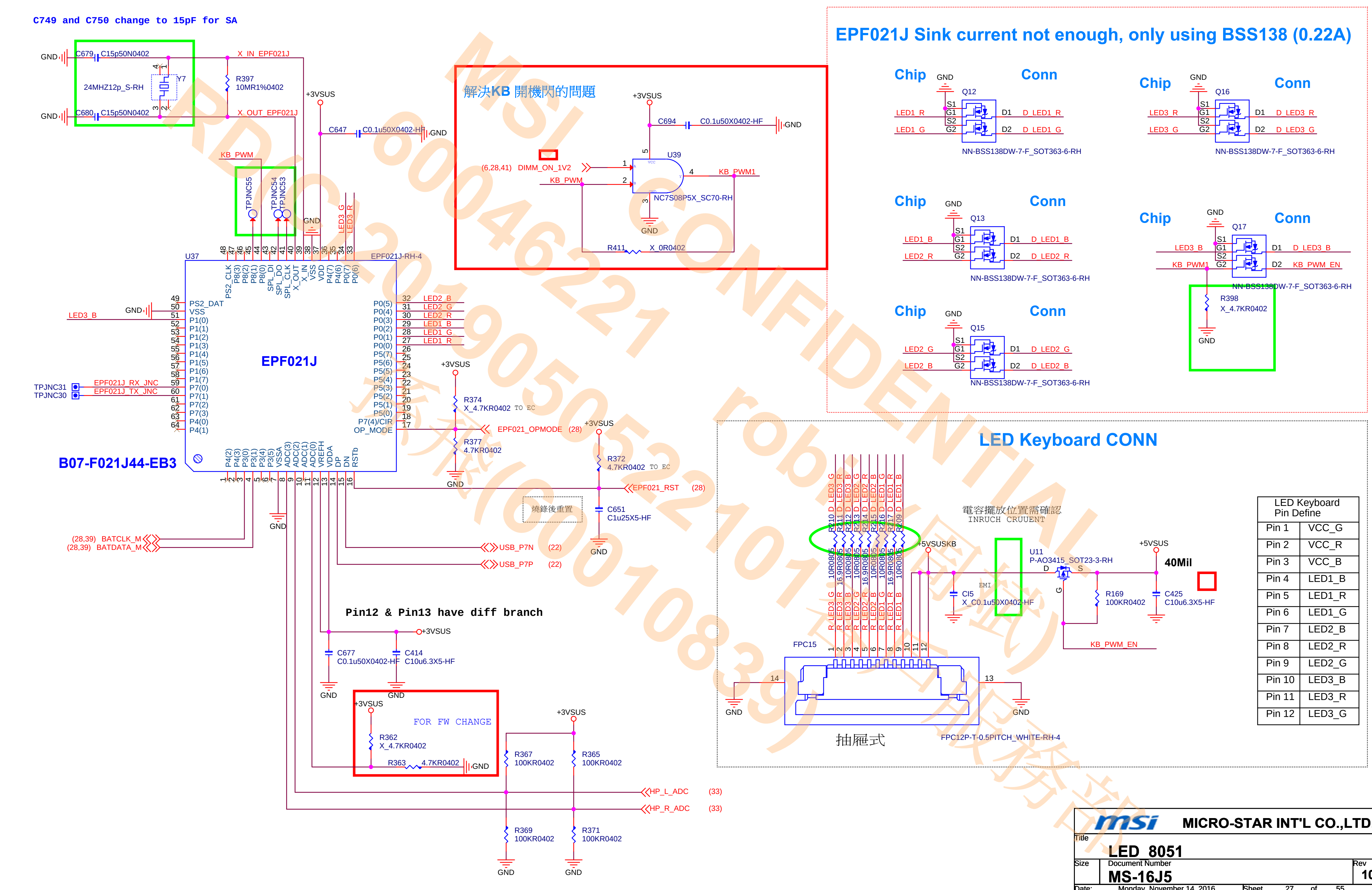
eDP



LCD Module Pin Define

Pin No	Symbol	Description
1	WP	EEPROM Write Protect(Keep open)
2	H_GND	High Speed Ground(0V)
3	eDP_Rx_3N	Complement Signal Link Lane 3
4	eDP_Rx_3P	True Signal Link Lane 3
5	H_GND	High Speed Ground(0V)
6	eDP_Rx_2N	Complement Signal Link Lane 2
7	eDP_Rx_2P	True Signal Link Lane 2
8	H_GND	H_GND
9	eDP_Rx_1N	Complement Signal Link Lane 1
10	eDP_Rx_1P	True Signal Link Lane 1
11	H_GND	H_GND
12	eDP_Rx_0N	Complement Signal Link Lane 0
13	eDP_Rx_0P	True Signal Link Lane 0
14	H_GND	H_GND
15	eDP_AUX_CH_P	True Signal Aux Channel
16	eDP_AUX_CH_N	Complement Signal Aux Channel
17	H_GND	H_GND
18	LCD_VCC	LCD logic and driver power
19	LCD_VCC	LCD logic and driver power
20	LCD_VCC	LCD logic and driver power
21	LCD_VCC	LCD logic and driver power
22	TEST	LCD Test Port
23	LCD_GND	LCD logic and driver ground(0V)
24	LCD_GND	LCD logic and driver ground(0V)
25	LCD_GND	LCD logic and driver ground(0V)
26	LCD_GND	LCD logic and driver ground(0V)
27	eDP_HPD	HPD signal pin
28	BL_GND	Backlight ground(0V)
29	BL_GND	Backlight ground(0V)
30	BL_GND	Backlight ground(0V)
31	BL_GND	Backlight ground(0V)
32	BL_ENABLE	Backlight enable
33	BL_PWM_DIM	System PWM signal input
34	SDA	I2C-bus Data
35	SCL	I2C-bus Clock
36	BL_PWR	Backlight power (5~21V)
37	BL_PWR	Backlight power (5~21V)
38	BL_PWR	Backlight power (5~21V)
39	BL_PWR	Backlight power (5~21V)
40	HSYNC	HSYNC output from Tcon

LED 8051 Controller



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

MSI CONFIDENTIAL

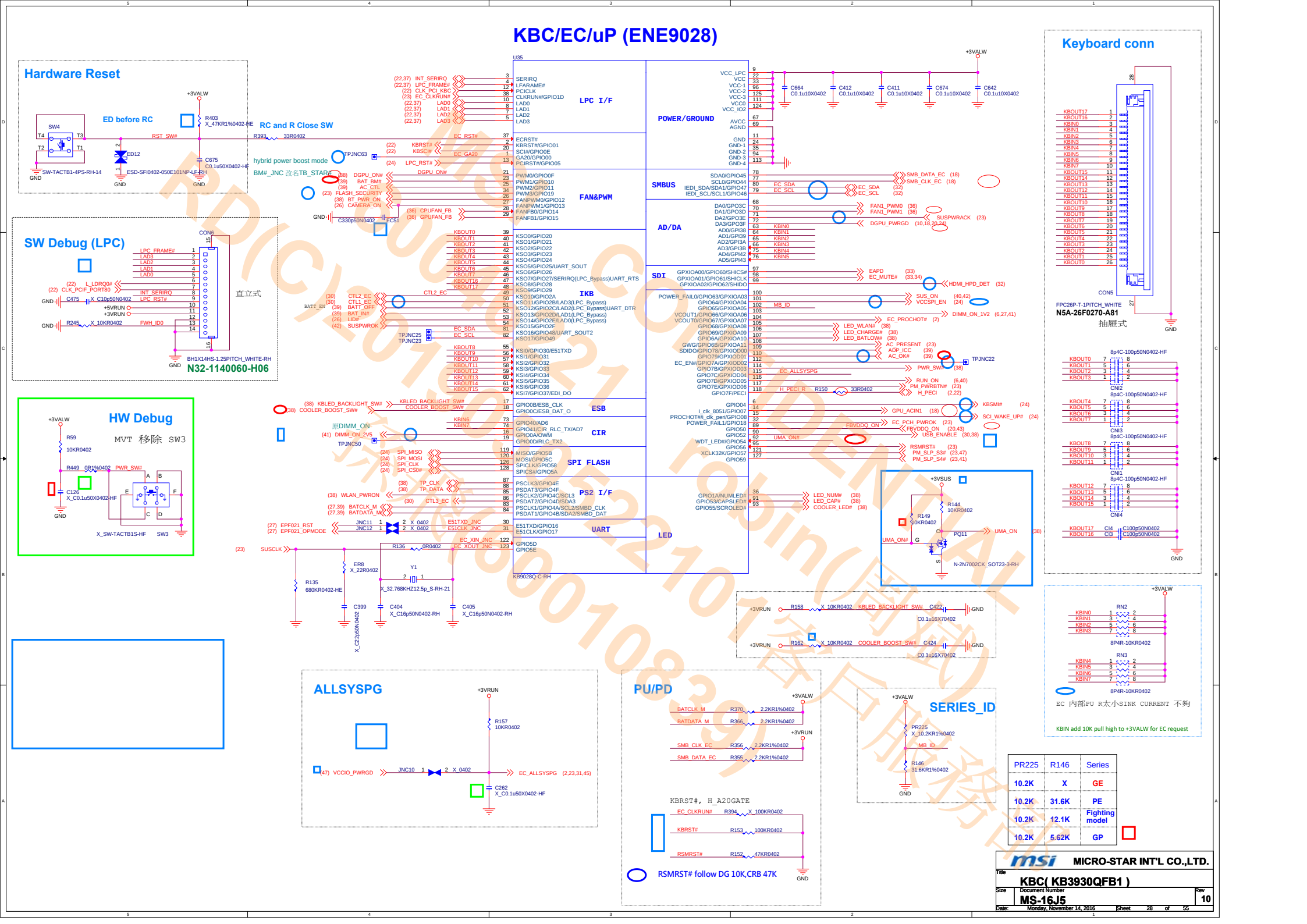
MICRO-STAR INT'L CO.,LTD.

Title: LED_8051

Size | Document Number: MS-16J5 | Rev: 10

Date: Monday, November 14, 2016 | Sheet 27 of 55

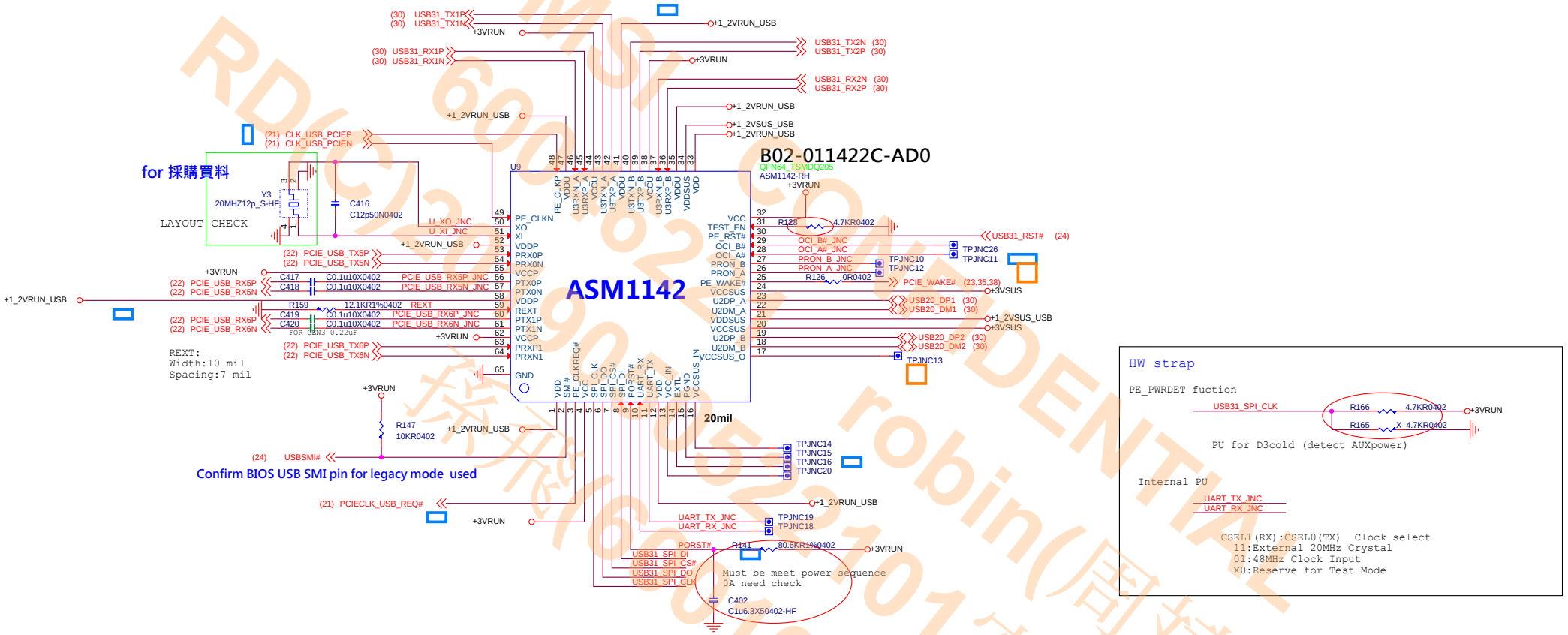
KBC/EC/uP (ENE9028)

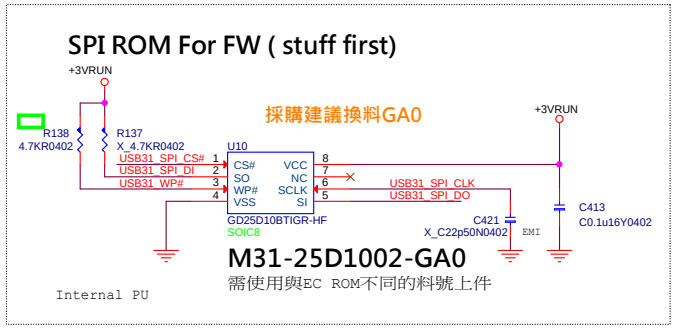


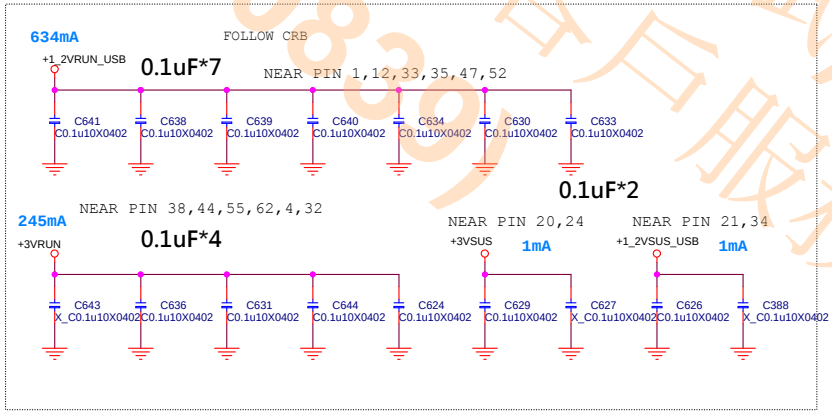
PR225	R146	Series
10.2K	X	GE
10.2K	31.6K	PE
10.2K	12.1K	Fighting model
10.2K	5.62K	GP

USB 3.0/ USB.3.1

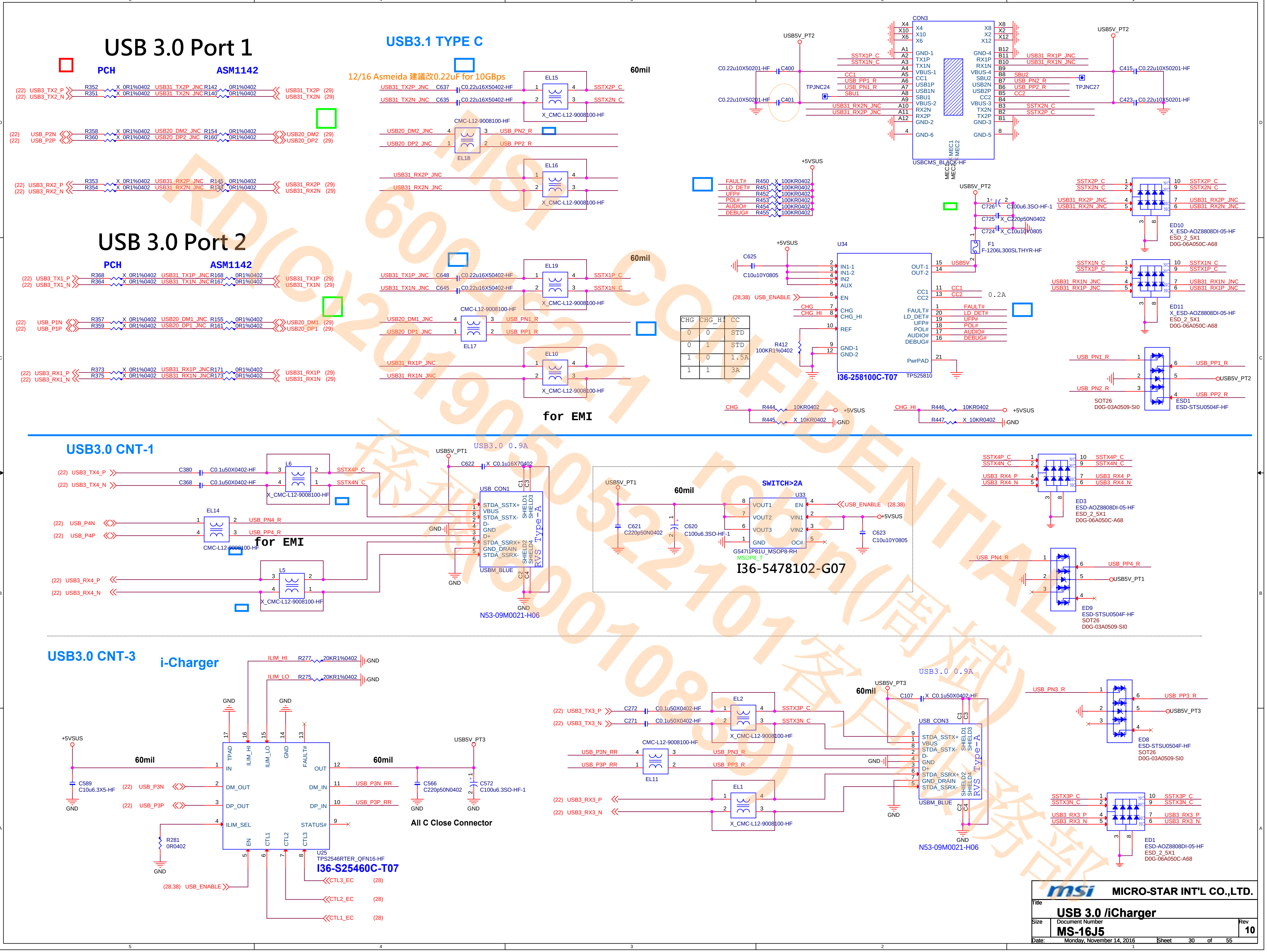
PCIE to USB 3.1







MICRO-STAR INT'L CO.,LTD.		
Title: USB 3.0 / USB 3.1		
Size	Document Number: MS-16J5	Rev: 10
Date: Monday, November 14, 2016	Sheet 29 of 55	

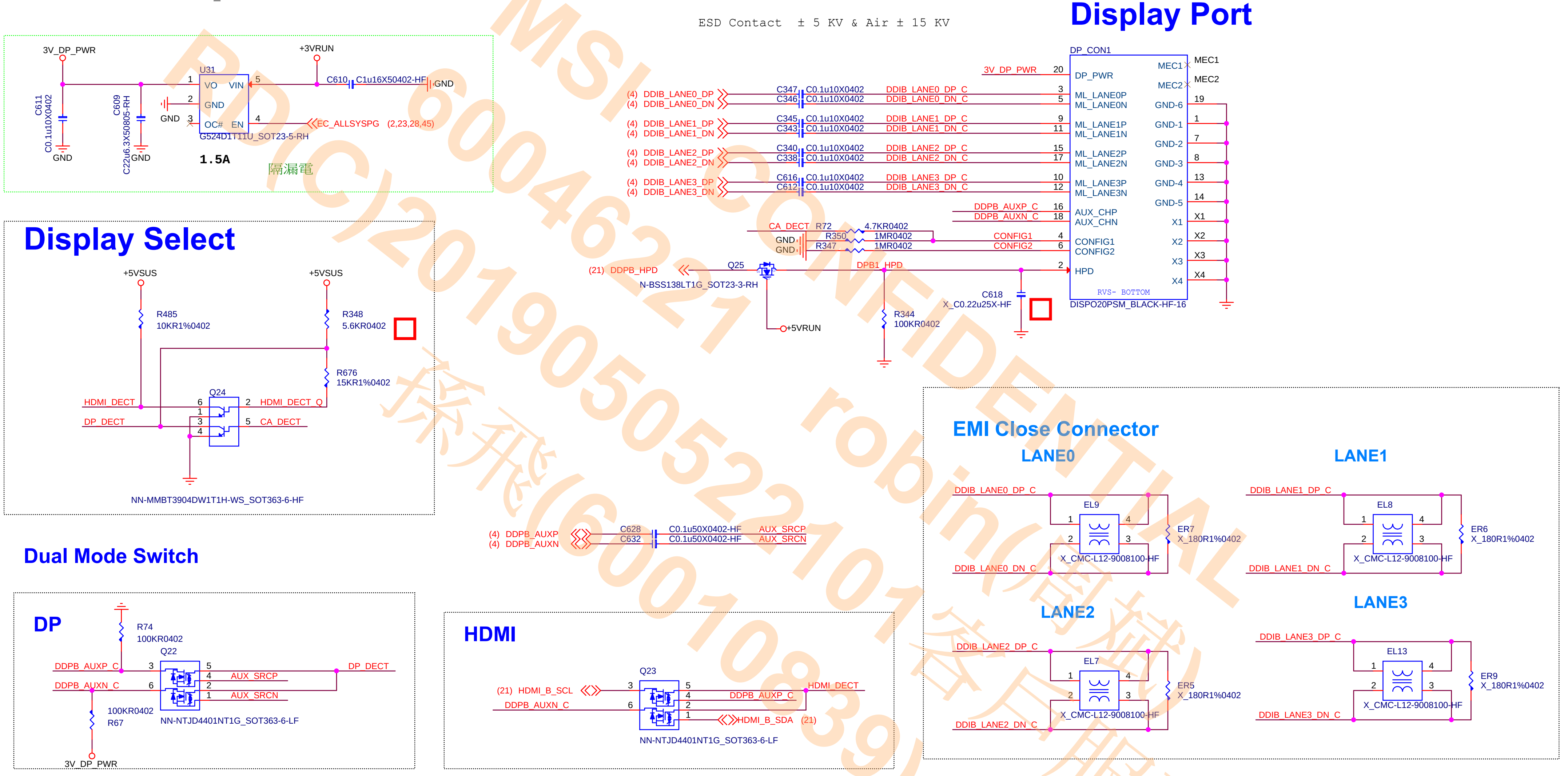


USB 3.0 Port 1
PCH
ASM1142
USB 3.0 Port 2
USB3.1 TYPE C
12/16 Asmeida 建議改0.22uF for 10GBps
60mil
for EMI
CON3
USBCMS_BLACK-HF
U34
TPS25810
I36-258100C-T07
CHG CHG_HI CC
0 0 STD
0 1 STD
1 0 1.5A
1 1 3A
USB3.0 CNT-1
USB3.0 0.9A
USB_CON1
USBM_BLUE
N53-09M0021-H06
SWITCH>2A
U33
G547I1P81U_MSOP8-RH
I36-5478102-G07
USB3.0 CNT-3
i-Charger
U25
TPS2546RTER_QFN16-HF
I36-S25460C-T07
All C Close Connector
USB_CON3
MICRO-STAR INT'L CO.,LTD.
Title
USB 3.0 /iCharger
Size
Document Number
MS-16J5
Rev
10
Date: Monday, November 14, 2016
Sheet 30 of 55

Display Port

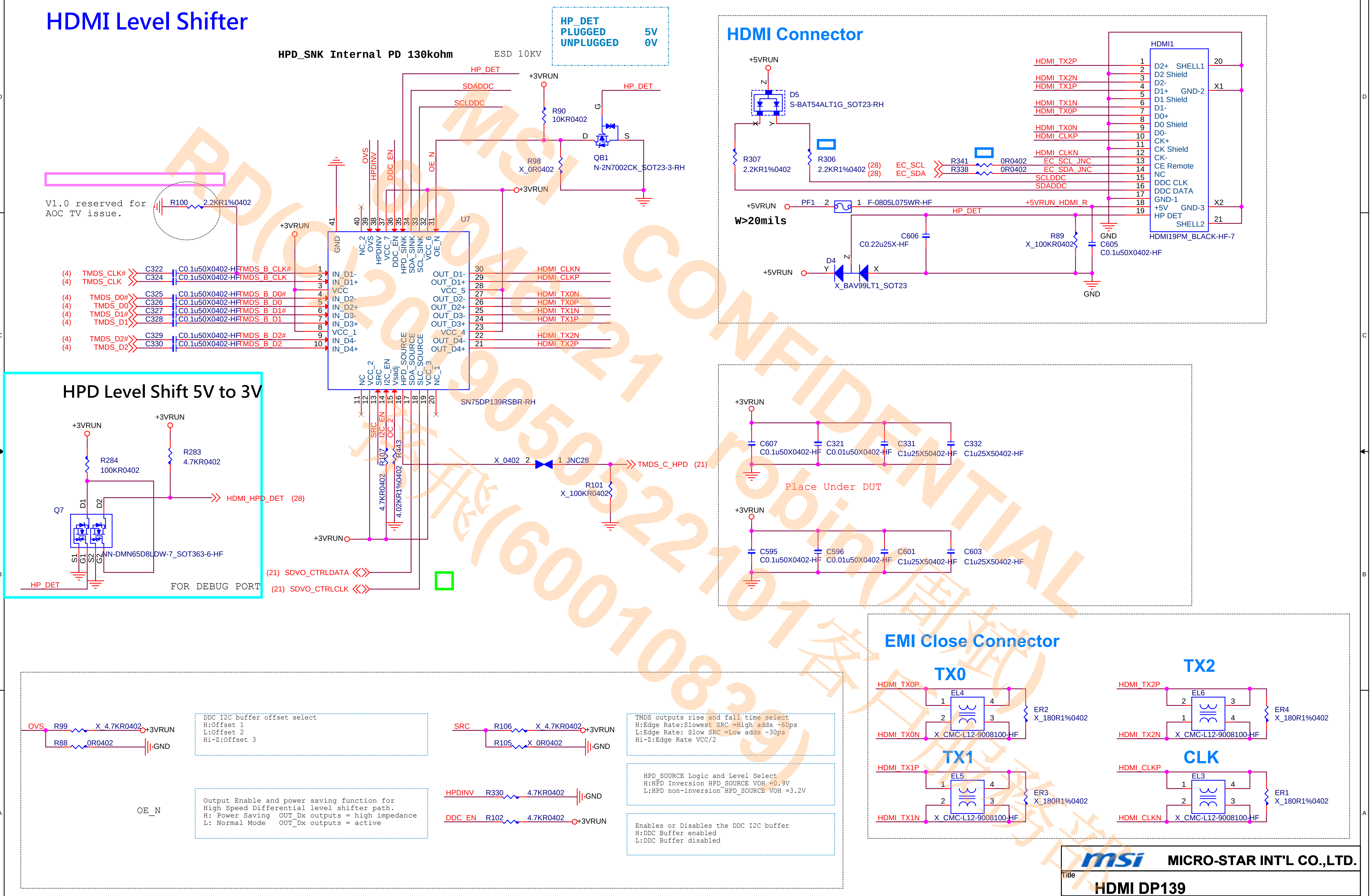
The preset trip limit must not exceed 3A at the Upstream device connector DP_PWR pin and 1.5A at the Downstream device connector DP_PWR pin.

ESD Contact ± 5 KV & Air ± 15 KV



msi	MICRO-STAR INT'L CO.,LTD.
Title	DP
Size / Document Number	MS-16J5
Rev	10
Date:	Monday, November 14, 2016
Sheet	31 of 55

MSI CONFIDENTIAL RD(C)2019050522101 robin(高斌) 6004621(6001088839) 探飛 客戶服務部



HDMI Level Shifter
HPD_SNK Internal PD 130kohm
ESD 10KV
HP_DET
PLUGGED 5V
UNPLUGGED 0V
V1.0 reserved for
AOC TV issue.
R100 2.2KR1%0402
U7
SN75DP139RSBR-RH
TMDS_CLK#
TMDS_CLK
TMDS_D0#
TMDS_D0
TMDS_D1#
TMDS_D1
TMDS_D2#
TMDS_D2
HDMI_CLKN
HDMI_CLKP
HDMI_TX0N
HDMI_TX0P
HDMI_TX1N
HDMI_TX1P
HDMI_TX2N
HDMI_TX2P
R90 10KR0402
R98 X_0R0402
QB1 N-2N7002CK_SOT23-3-RH
HPD Level Shift 5V to 3V
R284 100KR0402
R283 4.7KR0402
HDMI_HPD_DET (28)
Q7
NN-DMN65D8LDW-7_SOT363-6-HF
FOR DEBUG PORT
TMDS_C_HPD (21)
R101 X_100KR0402
R107 4.7KR0402
R443 4.02KR1%0402
(21) SDVO_CTRLDATA
(21) SDVO_CTRLCLK
HDMI Connector
D5 S-BAT54ALT1G_SOT23-RH
R307 2.2KR1%0402
R306 2.2KR1%0402
EC_SCL
EC_SDA
R341 0R0402
R338 0R0402
PF1 F-0805L075WR-HF
W>20mils
C606 C0.22u25X-HF
D4 X_BAV99LT1_SOT23
R89 X_100KR0402
C605 C0.1u50X0402-HF
HDMI1
HDMI19PM_BLACK-HF-7
Place Under DUT
C607 C0.1u50X0402-HF
C321 C0.01u50X0402-HF
C331 C1u25X50402-HF
C332 C1u25X50402-HF
C595 C0.1u50X0402-HF
C596 C0.01u50X0402-HF
C601 C1u25X50402-HF
C603 C1u25X50402-HF
EMI Close Connector
TX0
TX1
TX2
CLK
X_CMC-L12-9008100-HF
ER2 X_180R1%0402
ER3 X_180R1%0402
ER4 X_180R1%0402
ER1 X_180R1%0402
R99 X_4.7KR0402
R88 0R0402
DDC I2C buffer offset select
H:Offset 1
L:Offset 2
Hi-Z:Offset 3
Output Enable and power saving function for
High Speed Differential level shifter path.
H: Power Saving OUT_Dx outputs = high impedance
L: Normal Mode OUT_Dx outputs = active
OE_N
R106 X_4.7KR0402
R105 X_0R0402
R330 4.7KR0402
R102 4.7KR0402
TMDS outputs rise and fall time select
H:Edge Rate:Slowest SRC =High adds ~60ps
L:Edge Rate: Slow SRC =Low adds ~30ps
Hi-Z:Edge Rate VCC/2
HPD_SOURCE Logic and Level Select
H:HPD Inversion HPD_SOURCE VOH =0.9V
L:HPD non-inversion HPD_SOURCE VOH =3.2V
Enables or Disables the DDC I2C buffer
H:DDC Buffer enabled
L:DDC Buffer disabled

MSI CONFIDENTIAL

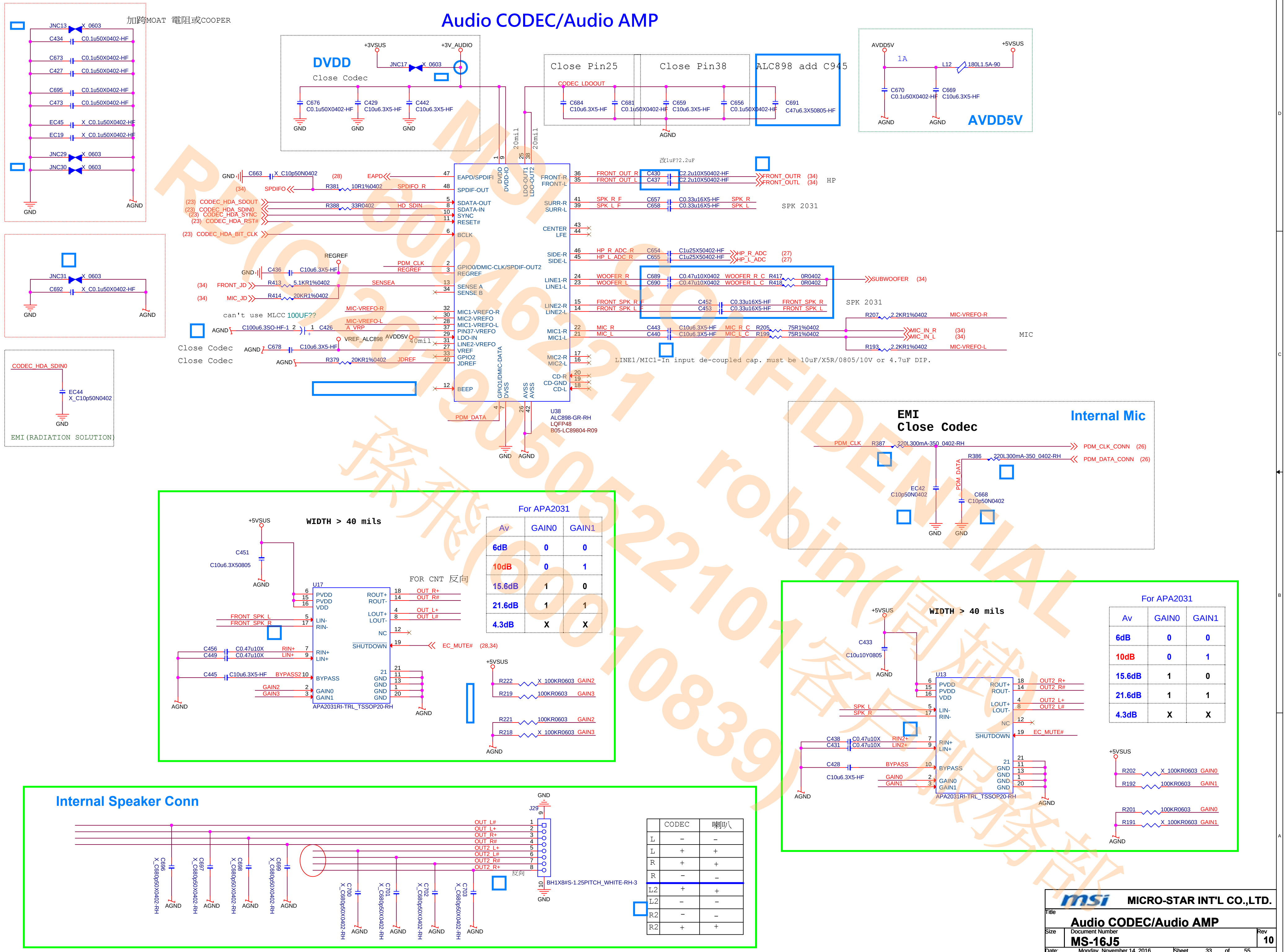
MICRO-STAR INT'L CO.,LTD.

Title: HDMI DP139

Size | Document Number: MS-16J5 | Rev: 10

Date: Monday, November 14, 2016 | Sheet 32 of 59

Audio CODEC/Audio AMP



For APA2031

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

For APA2031

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

	CODEC	喇叭
L	−	−
L	+	+
R	+	+
R	−	−
L2	+	+
L2	−	−
R2	−	−
R2	+	+

MSI CONFIDENTIAL
MSI 600462 robin(周燕) 2019050522101(600108391)
徐飛(600108391) 客戶服務部

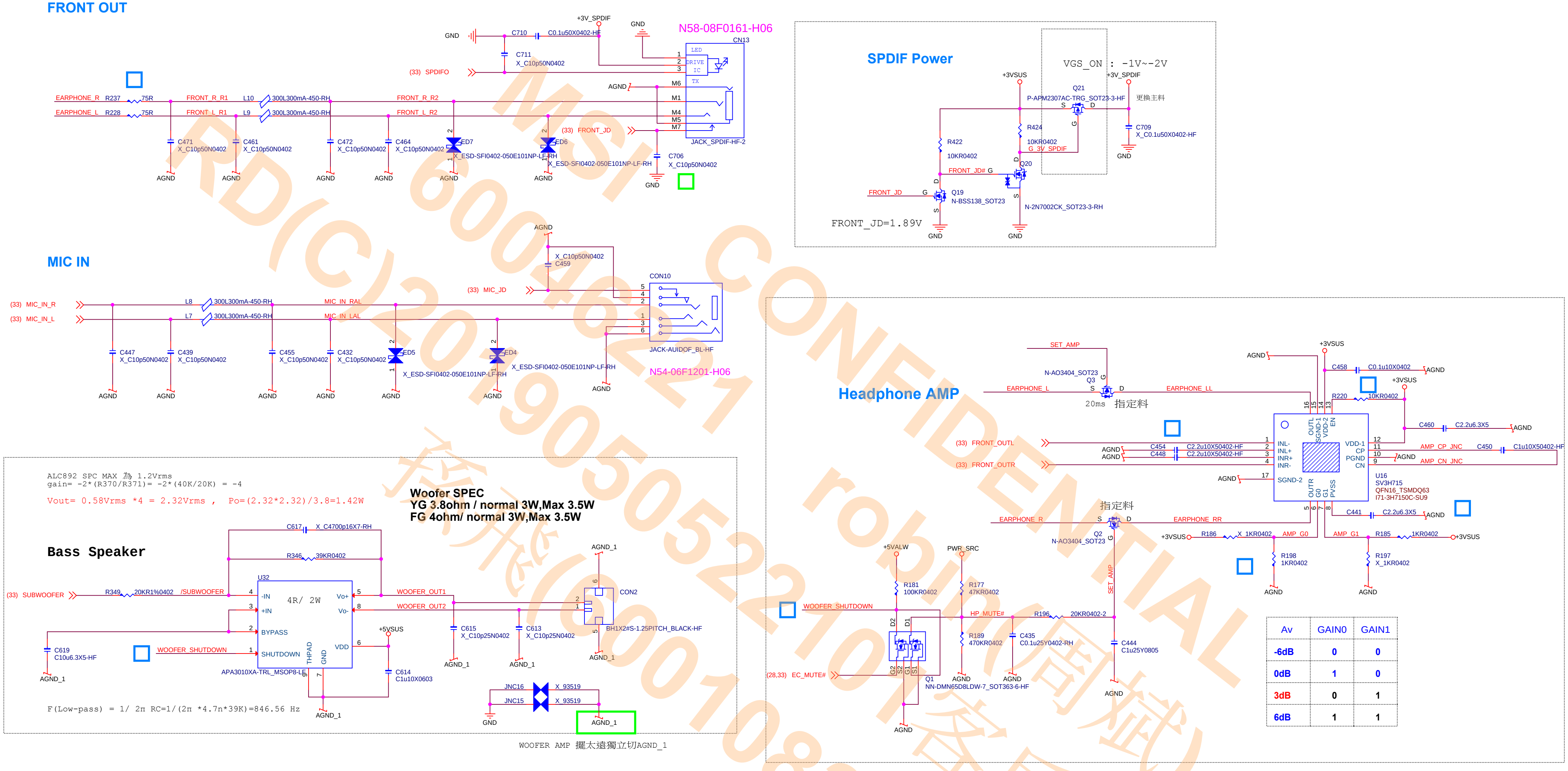
MICRO-STAR INT'L CO.,LTD.

Title: Audio CODEC/Audio AMP

Size | Document Number: MS-16J5 | Rev: 10

Date: Monday, November 14, 2016 | Sheet 33 of 55

Audio CONN /Woffer



Av	GAIN0	GAIN1
-6dB	0	0
0dB	1	0
3dB	0	1
6dB	1	1

MICRO-STAR INT'L CO.,LTD.

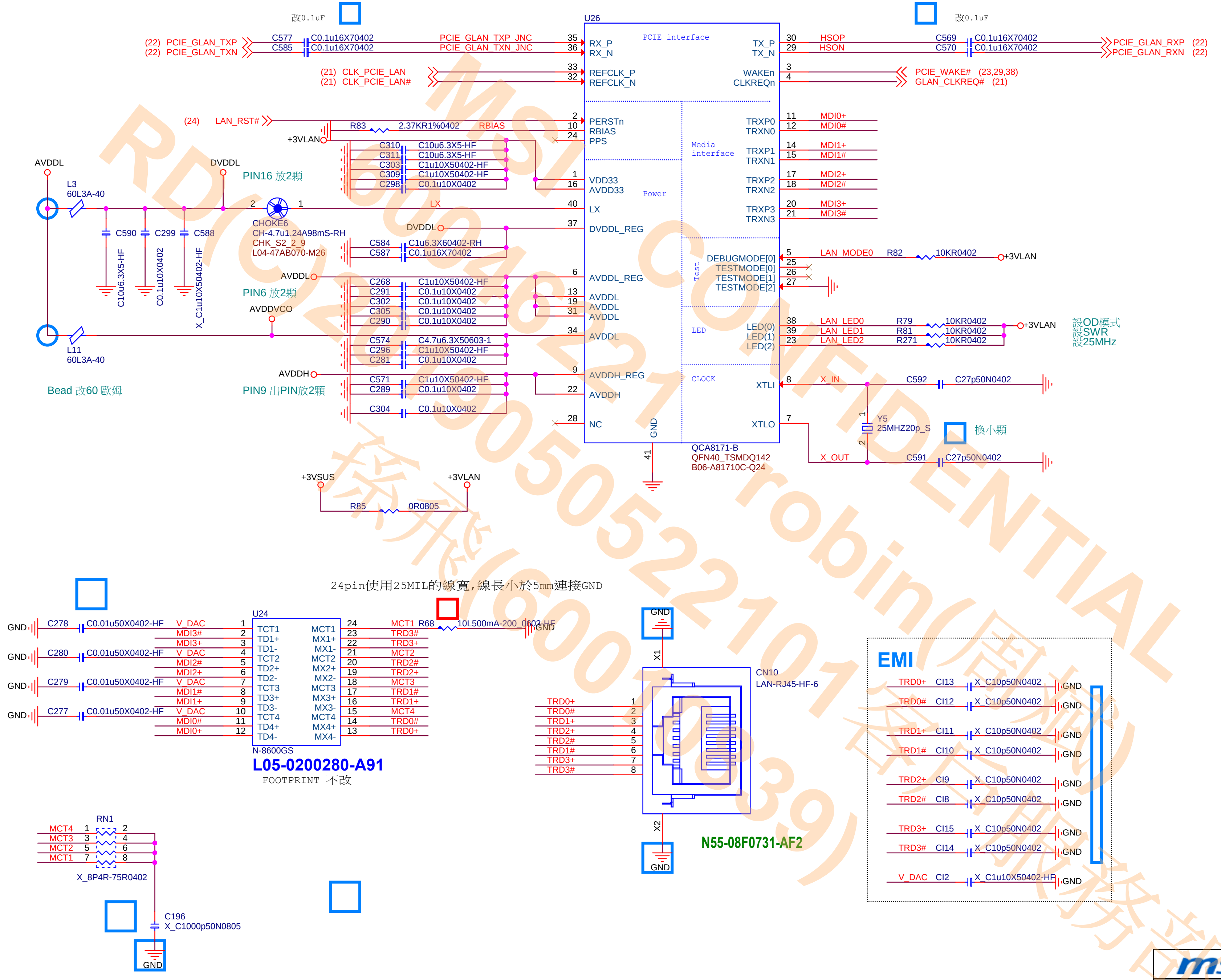
Title: Audio / Woffer

Size | Document Number: MS-16J5 | Rev: 10

Date: Monday, November 14, 2016 | Sheet 34 of 55

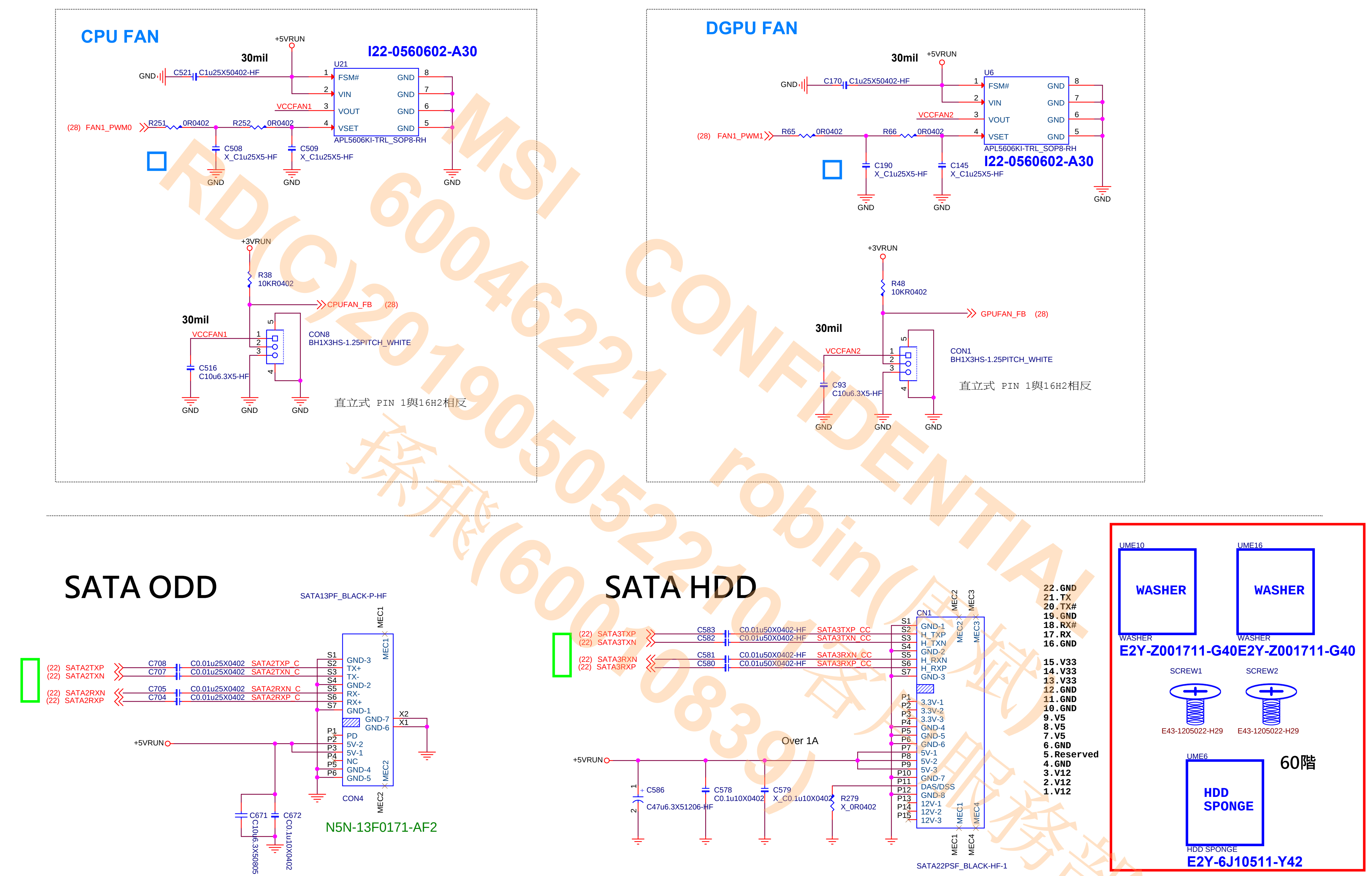
MSI RD(C)2019052210 CONFIDENTIAL robin(6004621) 徐(6001089) 客户服务部

GIGA LAN(AR8171)



MICRO-STAR INT'L CO.,LTD.

Title	GIGA LAN(AR8171)	
Size	Document Number: MS-16J5	Rev: 10
Date: Monday, November 14, 2016	Sheet 35 of 55	

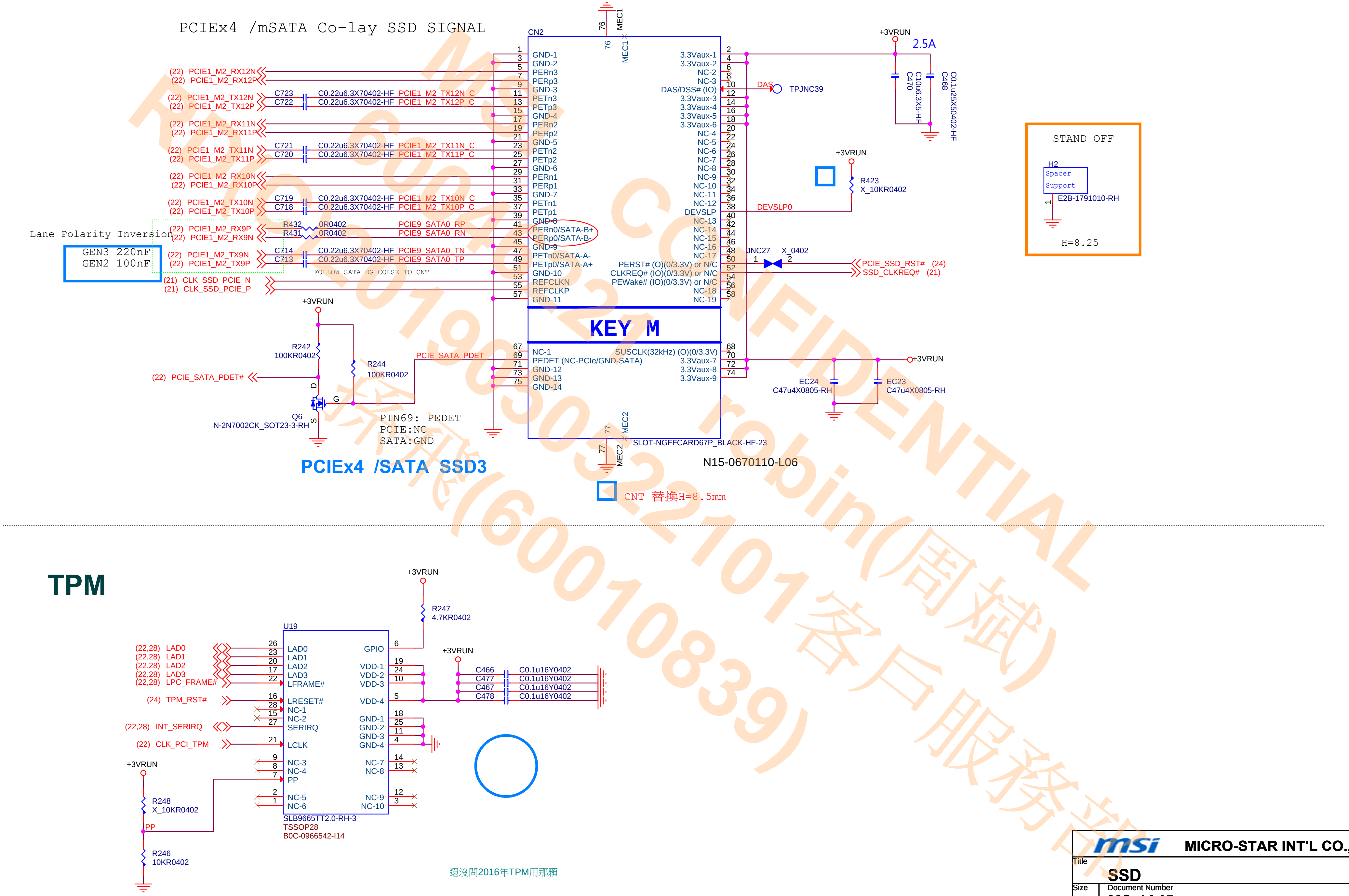


Title: ODD/HDD/FAN

Size	Document Number	Rev
A3	MS-16J5	10

Date: Monday, November 14, 2016 Sheet 36 of 55

MSI CONFIDENTIAL



MSI CONFIDENTIAL

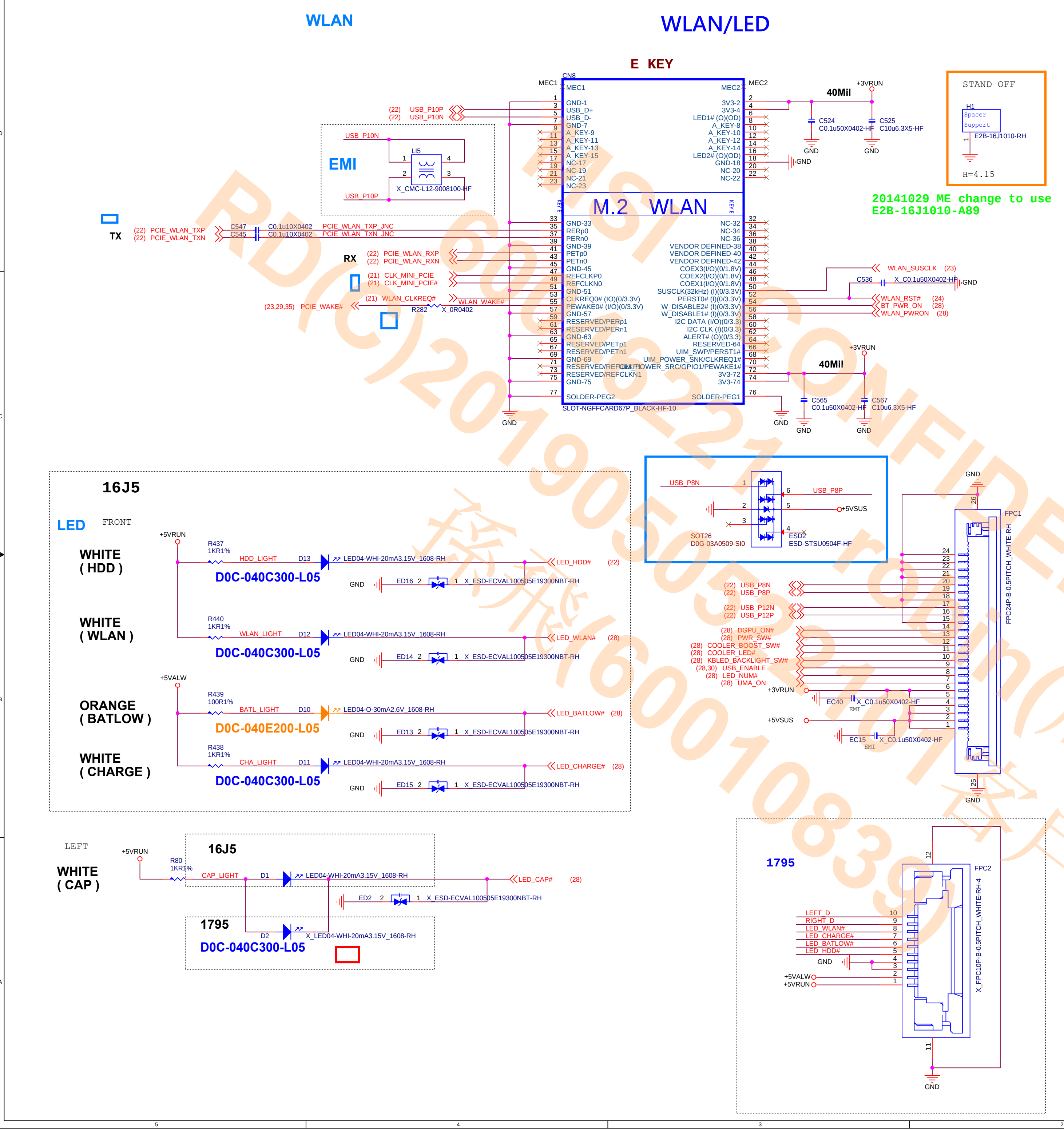
MICRO-STAR INT'L CO.,LTD.

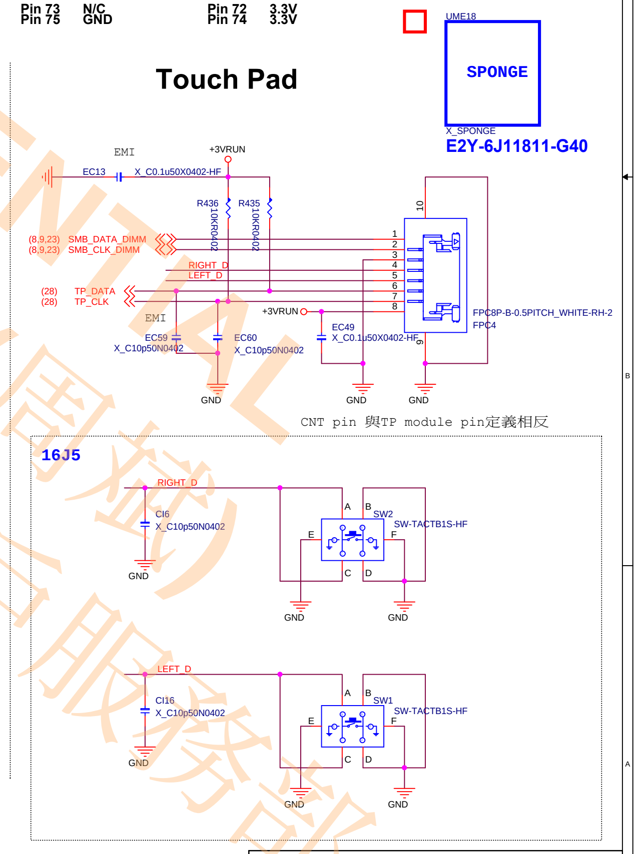
Title: **SSD**

Size	Document Number	Rev
	MS-16J5	10

Date: Monday, November 14, 2016 Sheet 37 of 55

WLAN/LED

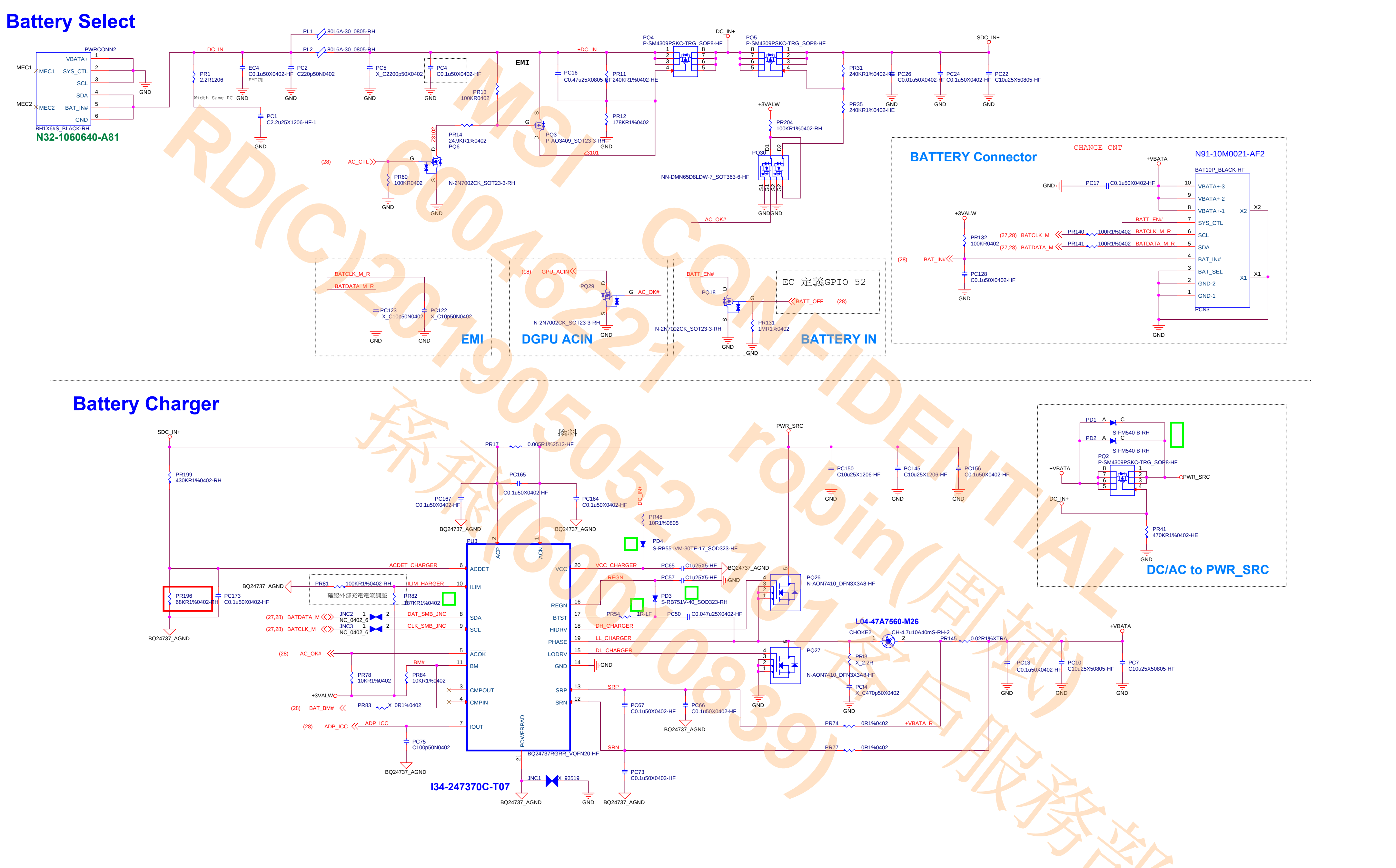




Pin 1	GND		
Pin 3	USB_D+	Pin 2	3.3V
Pin 5	USB_D-	Pin 4	3.3V
Pin 7	GND	Pin 6	LED1#
Pin 9	Module Key	Pin 8	Module Key
Pin 11	Module Key	Pin 10	Module Key
Pin 13	Module Key	Pin 12	Module Key
Pin 15	Module Key	Pin 14	Module Key
Pin 17	N/C	Pin 16	LED2#
Pin 19	N/C	Pin 18	GND
Pin 21	N/C	Pin 20	N/C
Pin 23	N/C	Pin 22	N/C
Pin 25	Module Key	Pin 24	Module Key
Pin 27	Module Key	Pin 26	Module Key
Pin 29	Module Key	Pin 28	Module Key
Pin 31	Module Key	Pin 30	Module Key
Pin 33	GND	Pin 32	N/C
Pin 35	PERP0	Pin 34	N/C
Pin 37	PERN0	Pin 36	N/C
Pin 39	GND	Pin 38	Clink Reset (I 3.3V)
Pin 41	PETP0	Pin 40	N/C
Pin 43	PETN0	Pin 42	N/C
Pin 45	GND	Pin 44	N/C
Pin 47	REFCLKP0	Pin 46	N/C
Pin 49	REFCLKN0	Pin 48	N/C
Pin 51	GND	Pin 50	N/C (SUSCLK (32kHz) for DSx)
Pin 53	CLKREQ0#	Pin 52	PERST0#
Pin 55	PEWAKE0#	Pin 54	BT_EN (W_DISABLE2#)
Pin 57	GND	Pin 56	WLAN_EN (W_DISABLE2#)
Pin 59	N/C	Pin 58	N/C
Pin 61	N/C	Pin 60	N/C
Pin 63	GND	Pin 62	N/C
Pin 65	N/C	Pin 64	Resever
Pin 67	N/C	Pin 66	N/C
Pin 69	GND	Pin 68	N/C
Pin 71	N/C	Pin 70	N/C
Pin 73	N/C	Pin 72	3.3V
Pin 75	GND	Pin 74	3.3V

MICRO-STAR INT'L CO.,LTD.
Title: WLAN /LED/TP
Size | Document Number: MS-16J5 | Rev: 20
Date: Monday, November 14, 2016 | Sheet 38 of 55

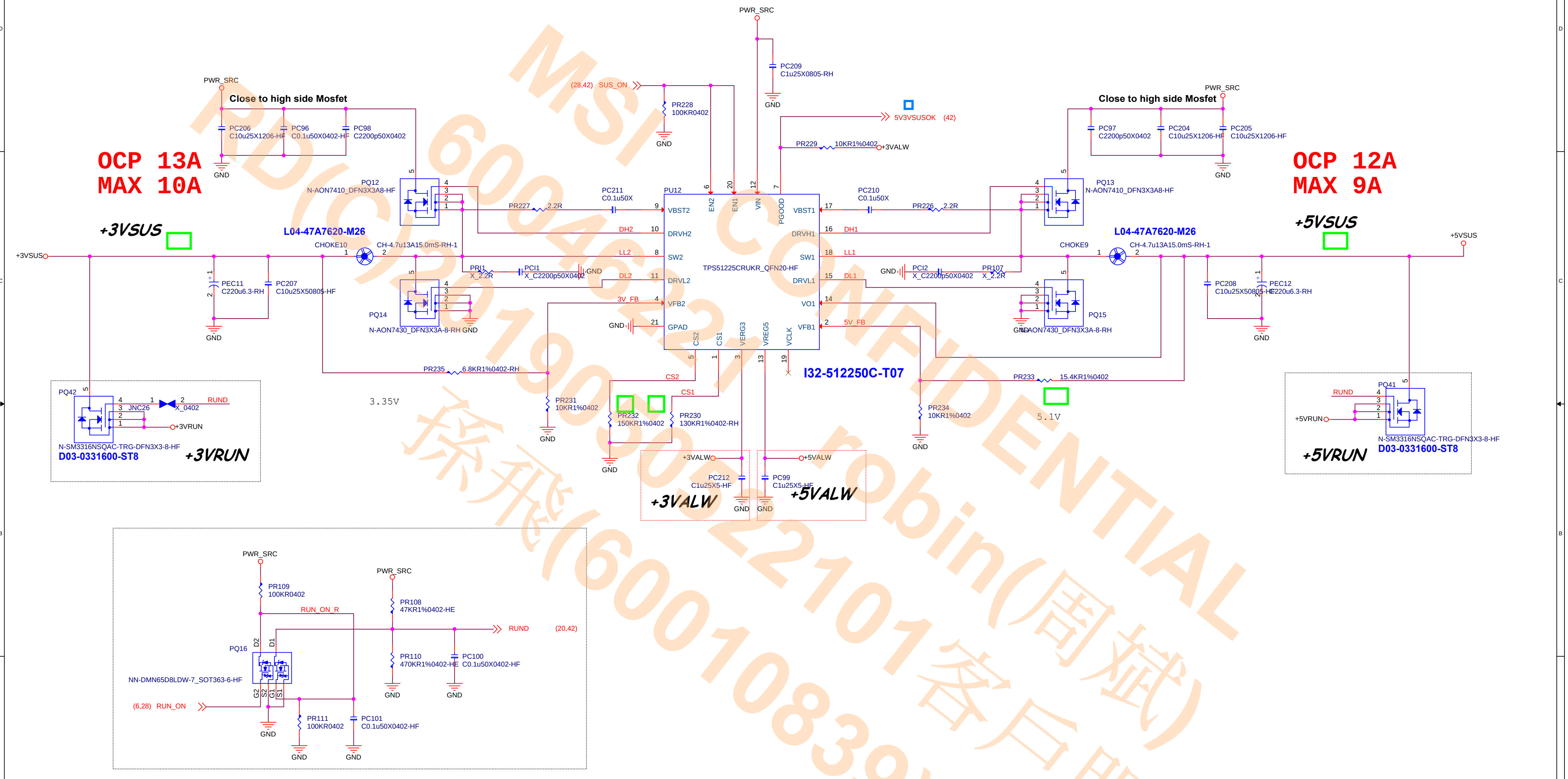
Battery Select/Charger



MICRO-STAR INT'L CO.,LTD.

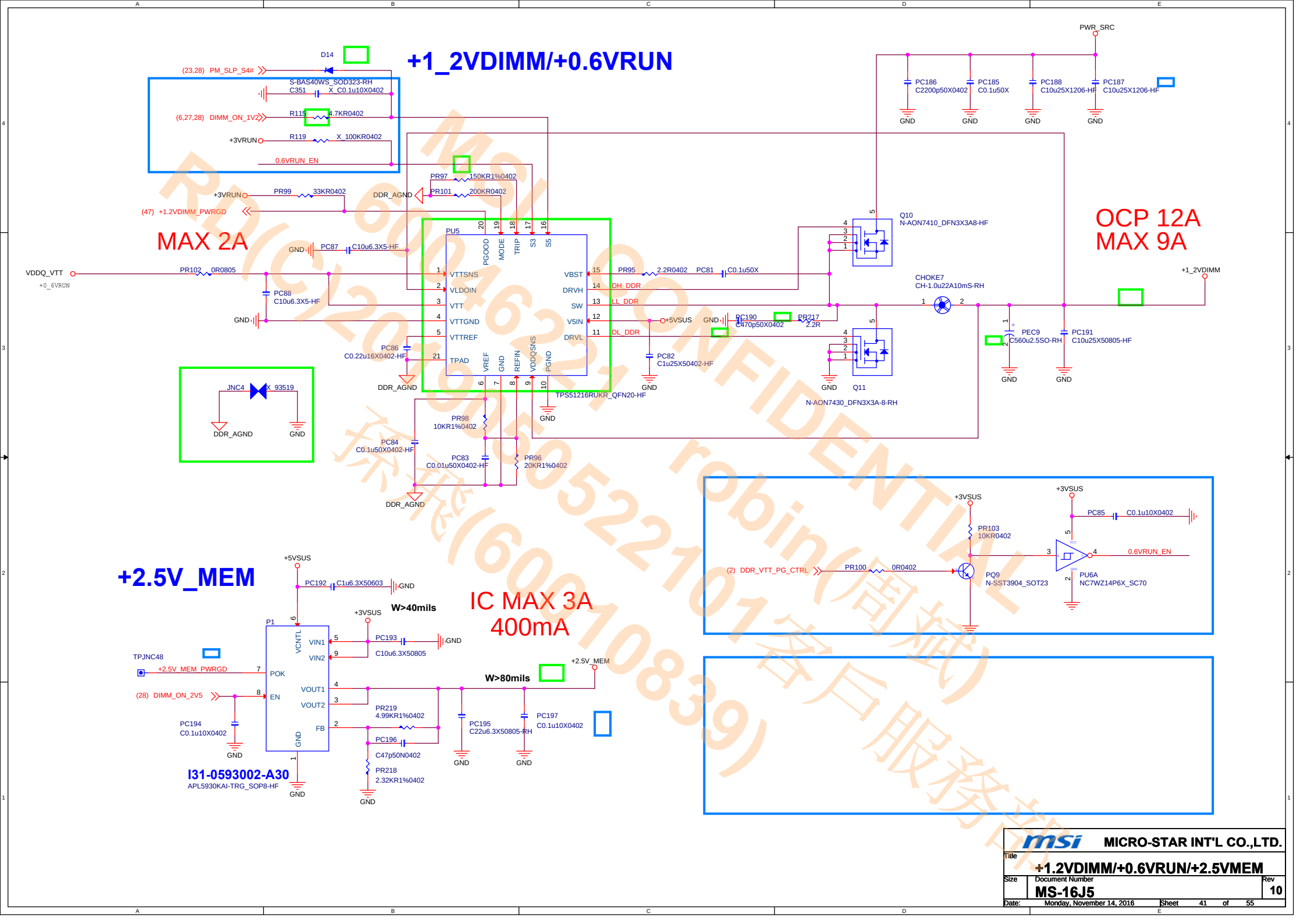
Title	Battery Select/Charger	
Size	Document Number: MS-16J5	Rev: 10
Date: Monday, November 14, 2016	Sheet 39 of 55	

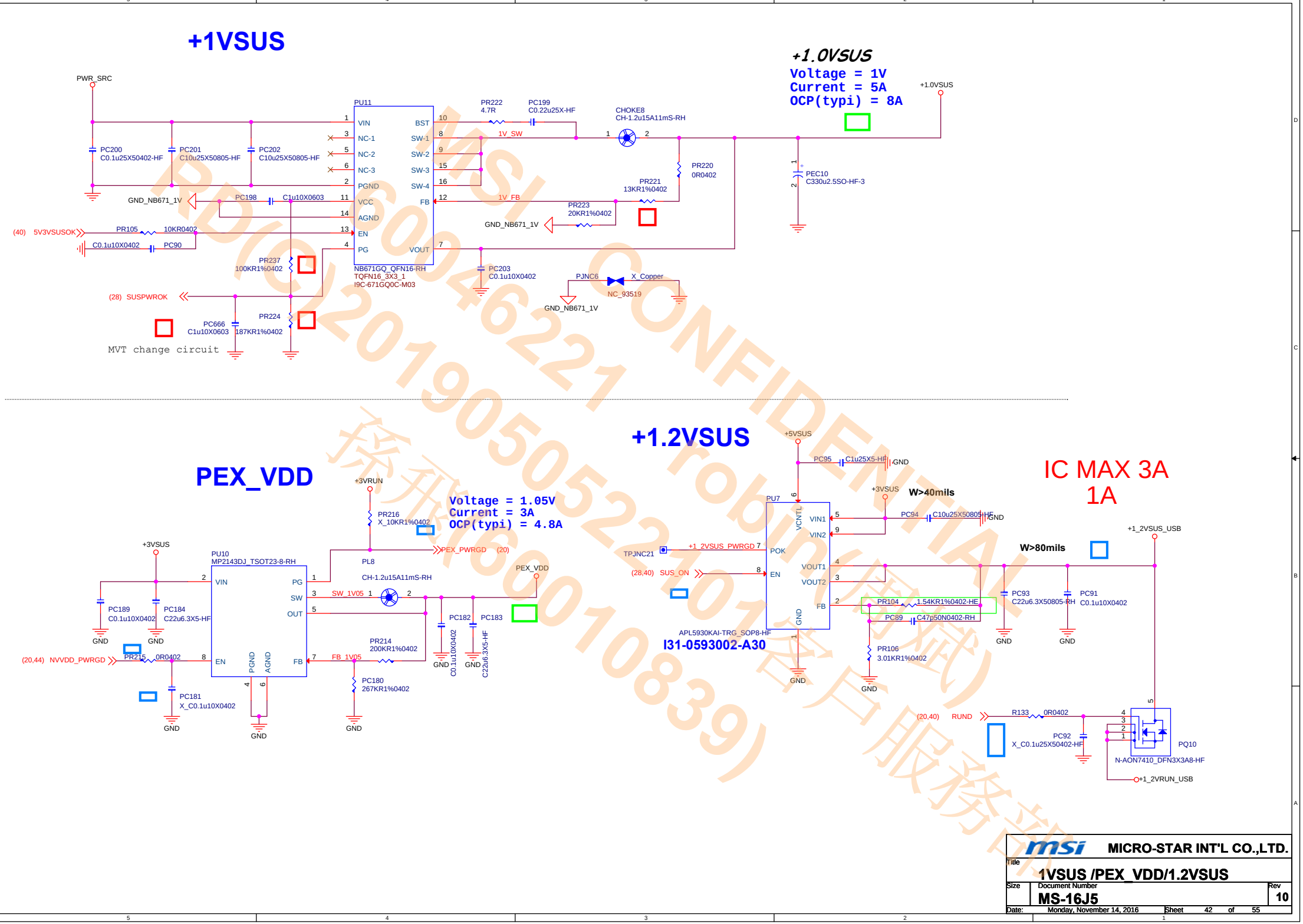
System Power



MSI CONFIDENTIAL
RD(C)2019092101 robin(周斌)
600462217
徐飛(600108 39)客户服务部

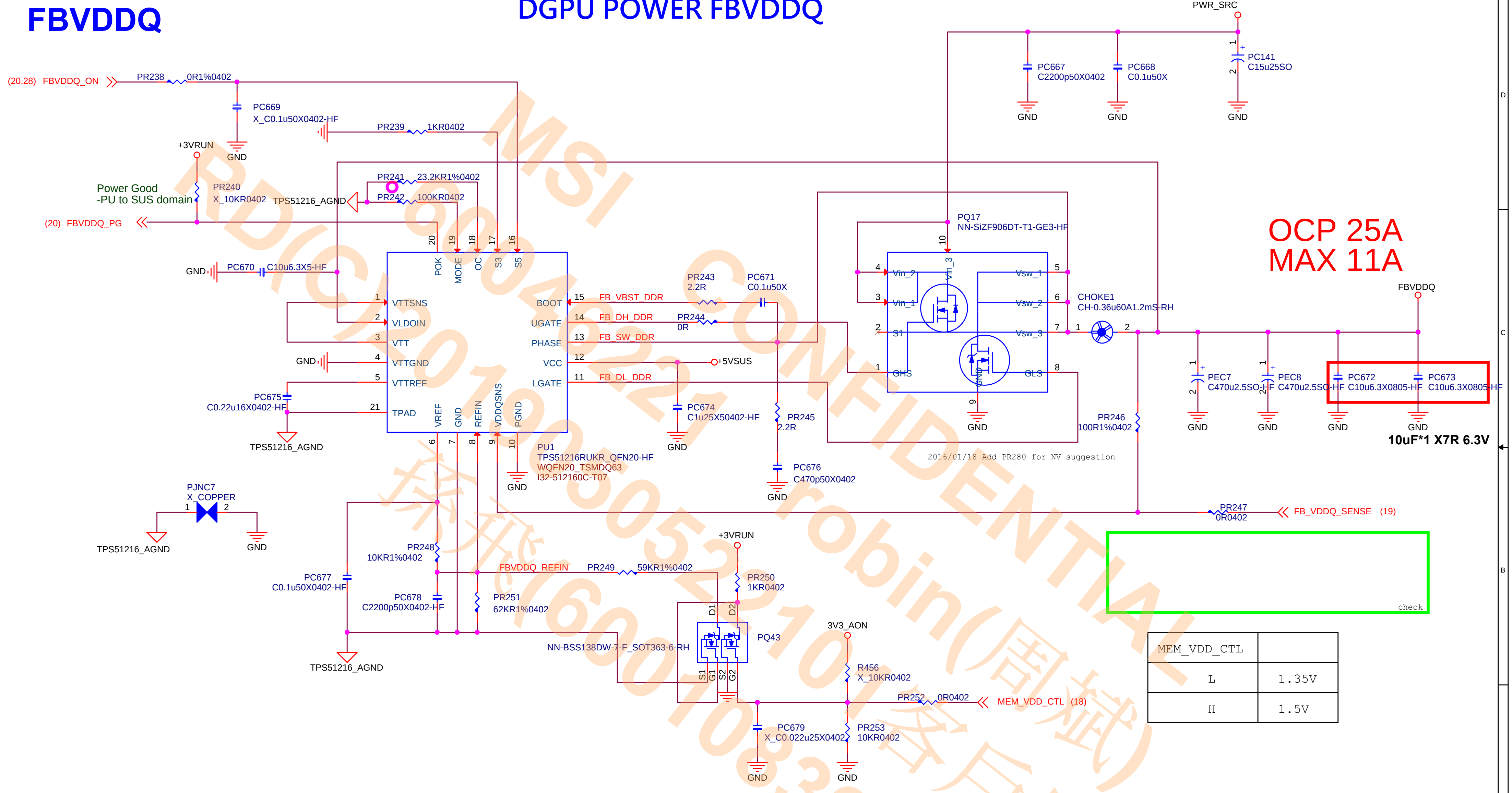
msi	MICRO-STAR INT'L CO.,LTD.
Title	System Power
Size / Document Number	MS-16J5
Rev	10
Date:	Monday, November 14, 2016
Sheet	40 of 55


+1_2VDIMM/+0.6VRUN
MAX 2A
OCP 12A
MAX 9A
+2.5V_MEM
IC MAX 3A
400mA
I31-0593002-A30
APL5930KAI-TRG_SOP8-HF
TPS51216RUKR_QFN20-HF
N-AON7430_DFN3X3A-8-RH
N-AON7410_DFN3X3A8-HF
W>40mils
W>80mils
MICRO-STAR INT'L CO.,LTD.
+1.2VDIMM/+0.6VRUN/+2.5VMEM
MS-16J5
Monday, November 14, 2016
41 of 55


+1VSUS
+1.0VSUS
Voltage = 1V
Current = 5A
OCP(typi) = 8A
PWR_SRC
PU11
NB671GQ_QFN16-RH
TQFN16_3X3_1
!9C-671GQ0C-M03
VIN
NC-1
NC-2
NC-3
PGND
VCC
AGND
EN
PG
BST
SW-1
SW-2
SW-3
SW-4
FB
VOUT
PC200 C0.1u25X50402-HF
PC201 C10u25X50805-HF
PC202 C10u25X50805-HF
PC198
C1u10X0603
PR222 4.7R
PC199 C0.22u25X-HF
1V_SW
CHOKE8 CH-1.2u15A11mS-RH
PR220 0R0402
PR221 13KR1%0402
PR223 20KR1%0402
1V_FB
PEC10 C330u2.5SO-HF-3
+1.0VSUS
GND_NB671_1V
(40) 5V3VSUSOK
PR105 10KR0402
C0.1u10X0402
PC90
PR237 100KR1%0402
PC203 C0.1u10X0402
PJNC6
X_Copper
NC_93519
(28) SUSPWROK
PC666 C1u10X0603
PR224 187KR1%0402
MVT change circuit
PEX_VDD
Voltage = 1.05V
Current = 3A
OCP(typi) = 4.8A
+3VRUN
PR216 X_10KR1%0402
PEX_PWRGD (20)
PU10
MP2143DJ_TSOT23-8-RH
VIN
PG
SW
OUT
EN
PGND
AGND
FB
PL8
CH-1.2u15A11mS-RH
SW_1V05
PEX_VDD
PC189 C0.1u10X0402
PC184 C22u6.3X5-HF
PC182
PC183
PR214 200KR1%0402
FB_1V05
PC180 267KR1%0402
(20,44) NVVDD_PWRGD
PR215 0R0402
PC181 X_C0.1u10X0402
+1.2VSUS
+5VSUS
PC95 C1u25X5-HF
PU7
APL5930KAI-TRG_SOP8-HF
I31-0593002-A30
VCNTL
VIN1
VIN2
POK
EN
VOUT1
VOUT2
FB
GND
+1_2VSUS_PWRGD
TPJNC21
(28,40) SUS_ON
PC94 C10u25X50805-HF
PC93 C22u6.3X50805-RH
PC91 C0.1u10X0402
PR104 1.54KR1%0402-HE
PC89 C47p50N0402-RH
PR106 3.01KR1%0402
+1_2VSUS_USB
W>40mils
W>80mils
IC MAX 3A
1A
(20,40) RUND
R133 0R0402
PC92 X_C0.1u25X50402-HF
PQ10
N-AON7410_DFN3X3A8-HF
+1_2VRUN_USB
MICRO-STAR INT'L CO.,LTD.
Title
1VSUS /PEX_VDD/1.2VSUS
Size
Document Number
MS-16J5
Rev
10
Date: Monday, November 14, 2016
Sheet 42 of 55

FBVDDQ

DGPU POWER FBVDDQ



MEM_VDD_CTL	
L	1.35V
H	1.5V

MICRO-STAR INT'L CO.,LTD.

Title: DGPU POWER FBVDDQ

Size | Document Number: MS-16J5 | Rev 10

Date: Monday, November 14, 2016 | Sheet 43 of 55

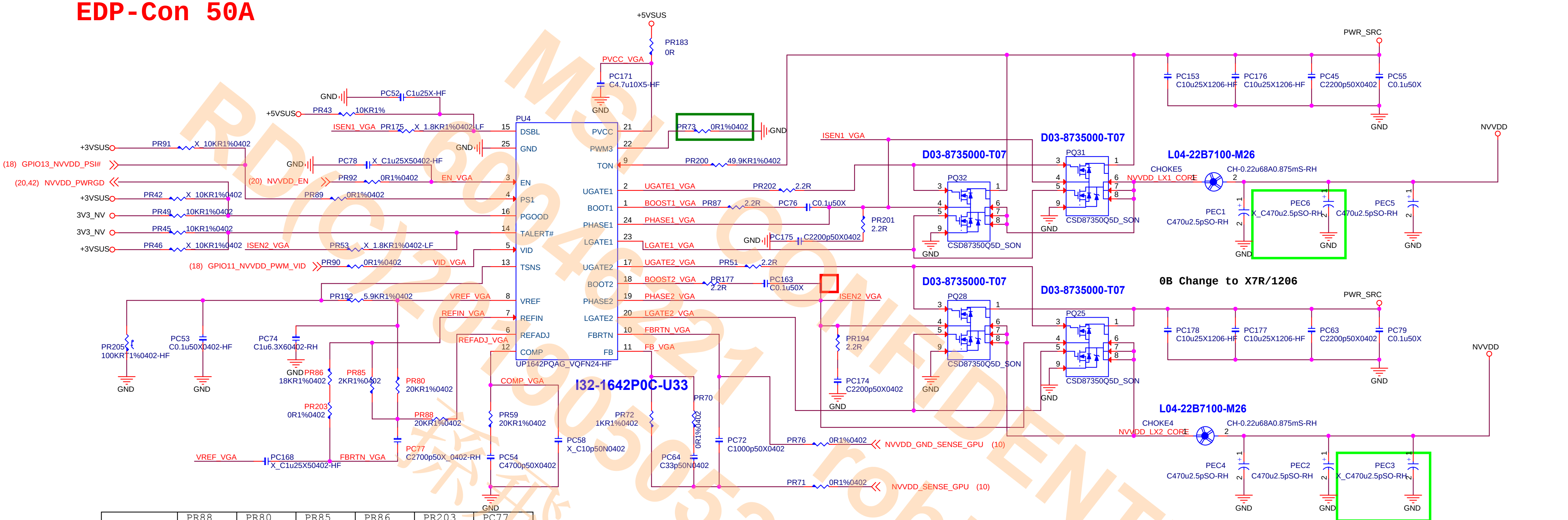
MSI CONFIDENTIAL RD(C)2019200522 robin(周斌) 客户服务部

DGPU POWER / UP1642PQAG

EDP-Peak 87A
EDP-Con 50A

DGPU POWER NVVDD

CONFIG A
VBoot:0.875V
Vmin:0.6V / Vmax:1.2V

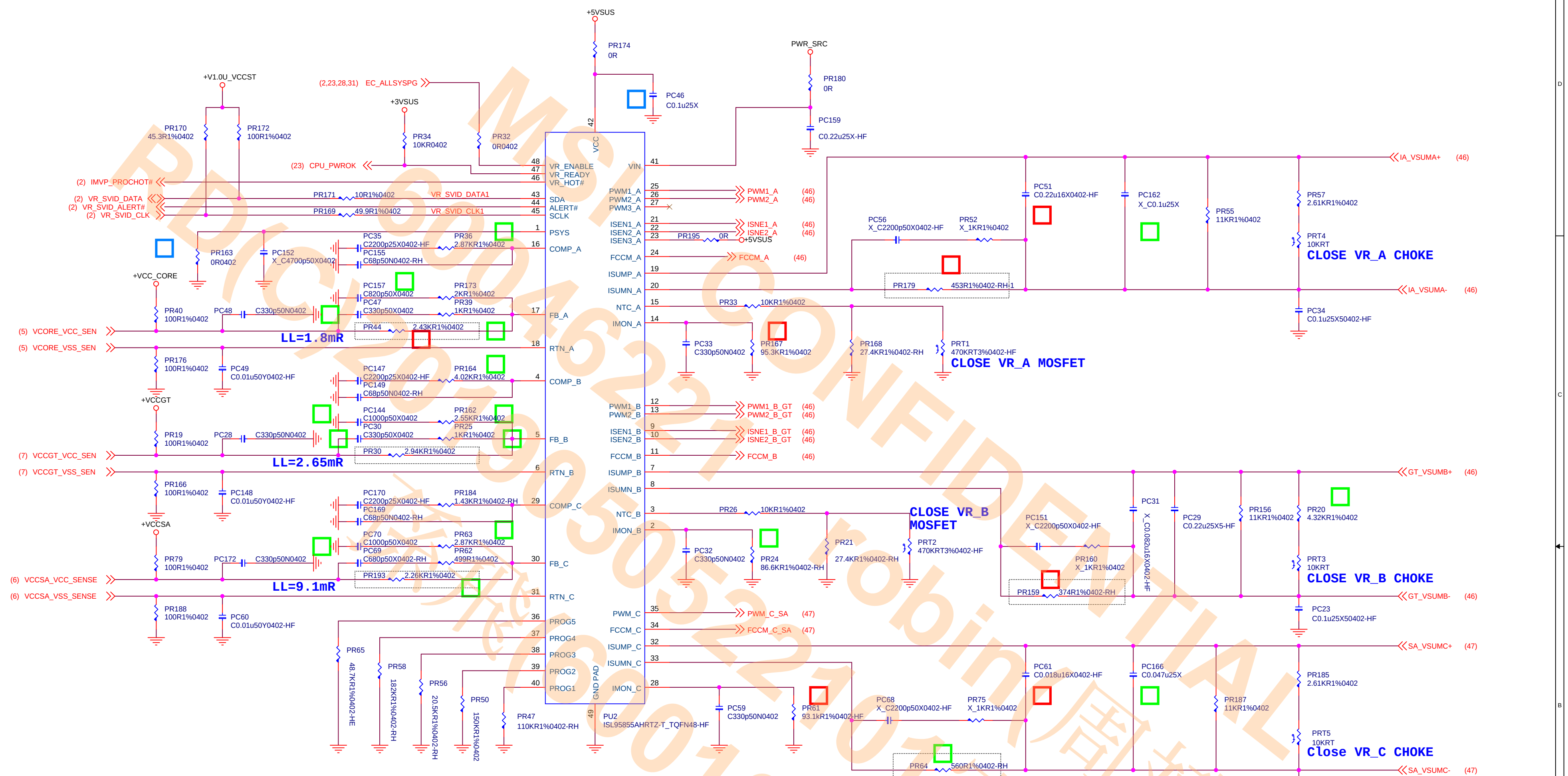


	PR88	PR80	PR85	PR86	PR203	PC77
CONFIG	R1	R2	R3	R4	R5	C
N16E-GT N16P-GX-B	20K	20K	2K	18K	0	2.7nF

20141029 power modify for GPU power setting
PR52,PR56: 39K ohm to 20K ohm
PR53: 1.5K ohm to 2K ohm
PR54: 30K ohm to 18K ohm
PR121: 1.5K ohm to 0 ohm
PC45: 1.5nF to 2.7nF

MSI CONFIDENTIAL

Skylake H-line 42 45W ISL95855A



SKL-H(4+2)

PROG1	110KR	Vboot=0V, Selw rate=30mV/us, VR_A=IA, VR_B=GT, VR_C=SA
PROG2	150KR	IMAX VR_A=70A, VR_A PSI1=1PH
PROG3	20.5KR	IMAX VR_B=60A, DROOP VR_B Active
PROG4	182KR	DROOP VR_A Active, DROOP VR_C Active, VR_A VR_B Frequency=750kHz
PROG5	48.7KR	IMAX VR_C=12A, Frequency=450kHz

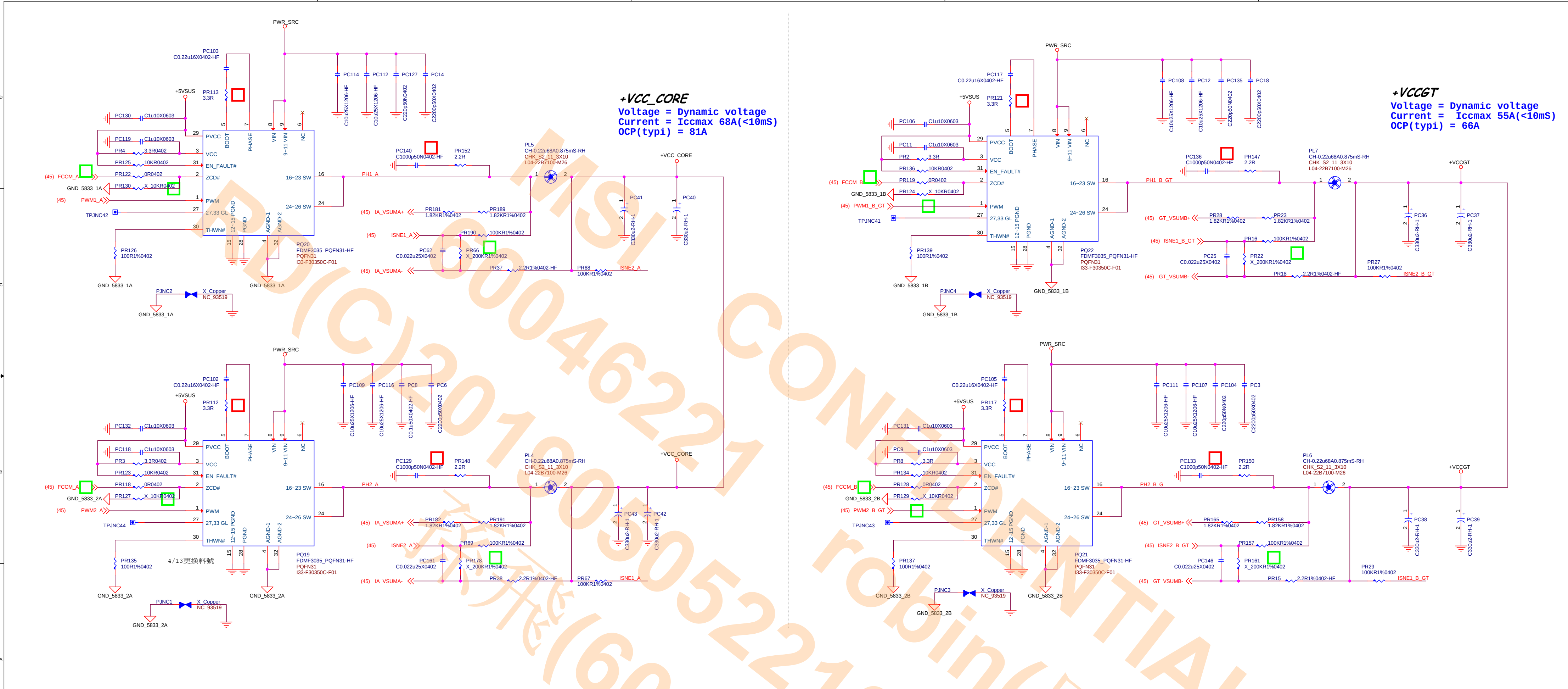
MSI CONFIDENTIAL

MICRO-STAR INT'L CO.,LTD.

Title: **Skylake CPU Power**

Size | Document Number: **MS-16J5** | Rev: 10

Date: Monday, November 14, 2016 | Sheet 45 of 55



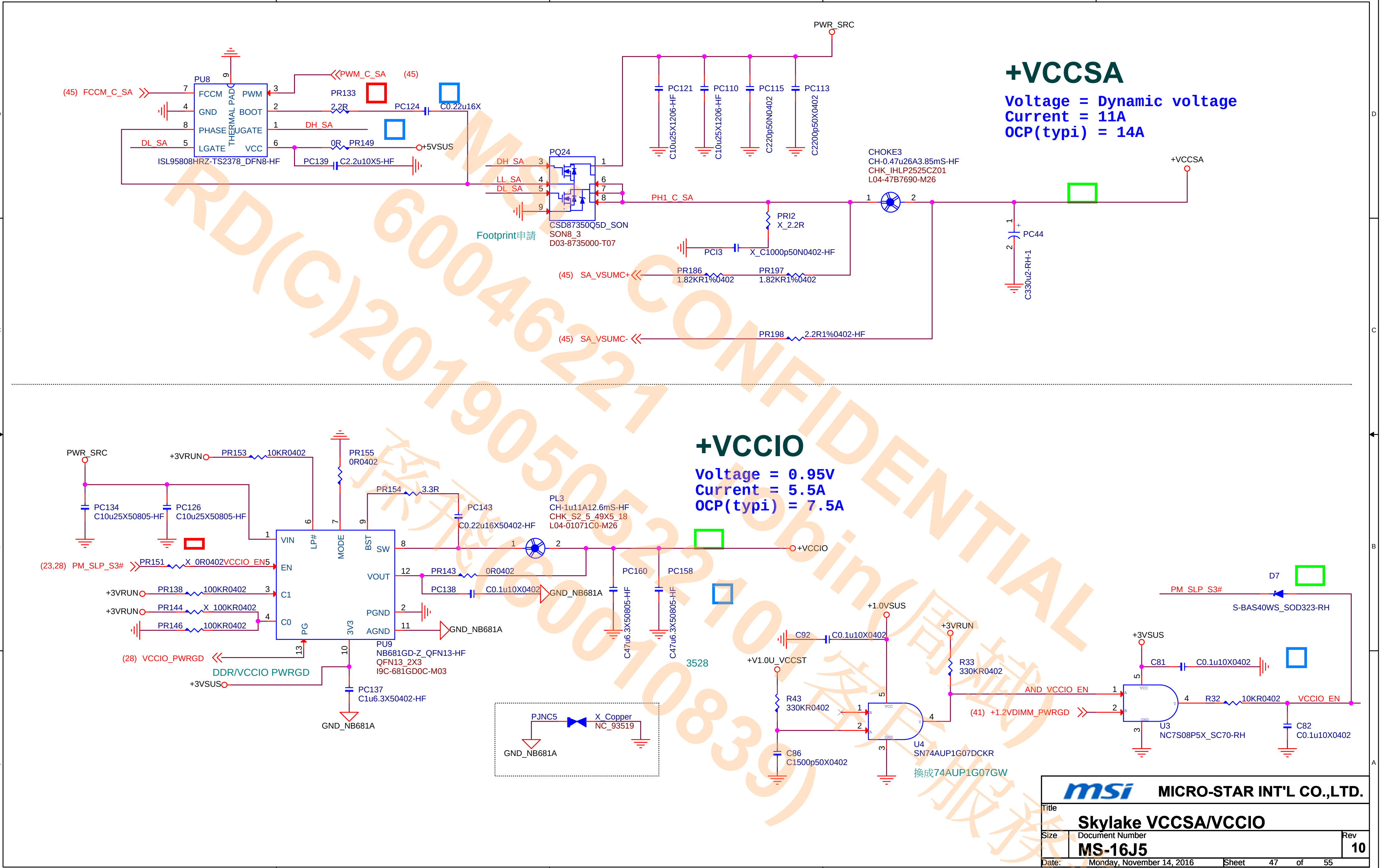
MICRO-STAR INT'L CO.,LTD.

Title: Skylake VCore/VCCGT

Size | Document Number: MS-16J5 | Rev: 10

Date: Monday, November 14, 2016 | Sheet 46 of 55

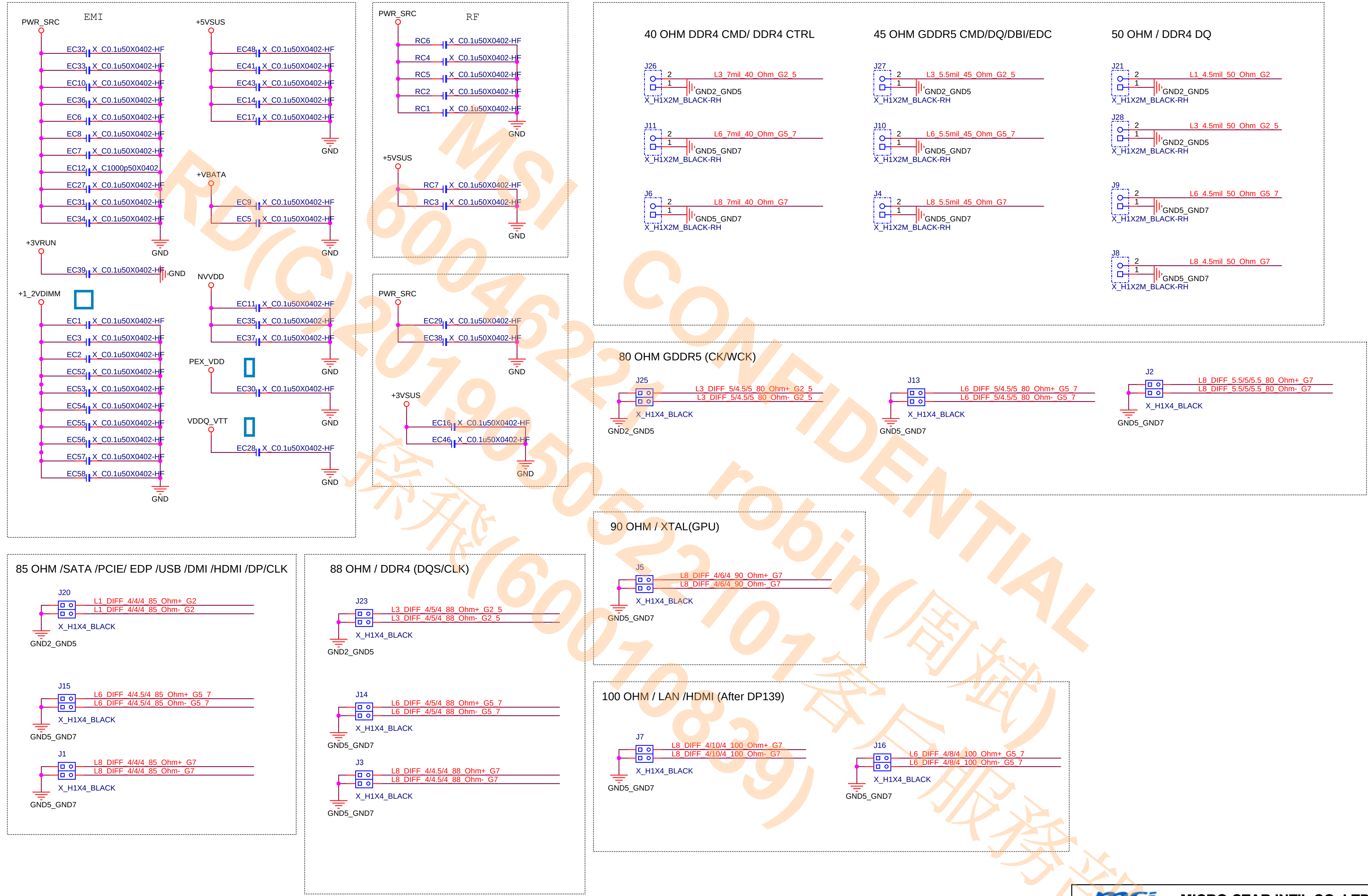
MSI CONFIDENTIAL
RD(C)(60046221)201805221019 robin(周斌)
徐飛(60010839)客戶服務部



MICRO-STAR INT'L CO.,LTD.

Title	Skylake VCCSA/VCCIO
Size	Document Number: MS-16J5
Rev	10
Date:	Monday, November 14, 2016
Sheet	47 of 55

MSI CONFIDENTIAL
RD(C)2019050522101bin(周劼)
60046221
徐飛(60010839)
客服務部



MSI CONFIDENTIAL

MICRO-STAR INT'L CO.,LTD.

Title: **EMI/ Impedance**

Size	Document Number	Rev
	MS-16J5	10

Date: Monday, November 14, 2016 Sheet 48 of 55

CPU/GPU Holes

MCPU4 H_R276D169_PB — GND X_CPU_HOLE
MCPU2 H_R276D169_PB — GND X_CPU_HOLE
MCPU3 H_R276D169_PB — GND X_CPU_HOLE
MCPU1 H_R276D169_PB — GND X_CPU_HOLE
MGPU2 H_R276D169_PB — GND X_CPU_HOLE
MGPU4 H_R276D169_PB — GND X_CPU_HOLE
MGPU1 H_R276D169_PB — GND X_CPU_HOLE
MGPU3 H_R276D169_PB — GND X_CPU_HOLE

FM7 FM18 FM22 FM3 FM17 FM10 FM16 FM13
FM23 FM8 FM9 FM21 FM19 FM20 FM11 FM24
FM2 FM6 FM14 FM1 FM4 FM12 FM15 FM5
X_FM

FM25 FM26 FM27 FM31 FM32 FM33
FM28 FM29 FM30 FM34
X_FM
4/13 新增

FM35 FM36 FM37 FM38 FM39 FM40 FM41 FM42
X_FM
2016/11/01 新增

OD 2.3

MH7 H_R197D118_PT X_ME_SCREW HOLE
MH4 H_R197D118_PT X_ME_SCREW HOLE
修改內徑3mm

MH9 H_R197D91 X_ME_SCREW HOLE
MH5 H_R197D91 X_ME_SCREW HOLE
MH6 H_R197D91 X_ME_SCREW HOLE

UME3 CPU BKT — CPU BKT — E2M-7810111-A89
UME4 GPU BKT — GPU BKT — 307-6H20211-C22
UME5 CPU MYLAR — X_CPU MYLAR — E2P-6J11211-Y42

UME1 HDMI Lable — HDMI ROYALTY — Y01-RHDMI03-000
UME12 USB3_CON_MYLAR — MYLAR — E2M-3570611-Y42
UME14 HDMI/DP MYLAR — MYLAR — E2M-3570611-Y42

Only 16J5

UME7 LED SPONGE — LED SPONGE — E2Y-6J10611-Y42
UME8 LED SPONGE — LED SPONGE — E2Y-6J10611-Y42
UME17 LED SPONGE — Hide Caps Lock LED_MYLAR — E2Y-6324111-Y42
UME11 HIDE_GAP_MYLAR — X_HIDE_GAP_MYLAR — E2P-6J11411-Y42

Only 1795

UME13 MB MYLAR — X_MB MYLAR — E2P-7910311-G40
UME15 — X_SPONGE — E2Y-7910211-G40

UME2 BIOS Lable — BIOS_LABEL — G51-N1CO041-A09
For MP

版邊 內3 / 外8

MH1 H_R197D118_PT X_ME_SCREW HOLE
HOLES_8X8_D3MM_VIA8 MH8 X_8x8
MH3 X_H_R197D118_PT_V3 H_R197D118_PT_V3 — GND
MH2 X_H_R197D118_PT_V3 H_R197D118_PT_V3 — GND

HOLE10 NPTH_80 X_NPTH_80
HOLE11 NPTH_80 X_NPTH_80
HOLE8 H_NR118D118_1 X_H_NR118D118_1
HOLE6 H_NR118D118_1 X_H_NR118D118_1
HOLE4 npth_98 X_npth_98
HOLE15 npth_98 X_npth_98
HOLE12 npth_98 X_npth_98
HOLE1 npth_98 X_npth_98
HOLE14 X_NPTH_80 NPTH_80
HOLE3 X_NPTH_80 NPTH_80
HOLE2 X_NPTH_80 NPTH_80
HOLE7 X_NPTH_80 NPTH_80
HOLE5 X_NPTH_80 NPTH_80
HOLE13 X_NPTH_80 NPTH_80
HOLE9 X_NPTH_80 NPTH_80

PCB1 PD0-16J5120-H73 — PD0-16J5120-H73
Hannstar: PD0-16J5120-H73

UME19 MB MYLAR — MB MYLAR — E2P-4A31811-G40

UME9 GPU_MYLAR — GPU MYLAR — E2P-6J51111-Y42

Top Spring

PAD7 X_HS-MS1011-RH ATE_C006_106
E23-1011040-CA7

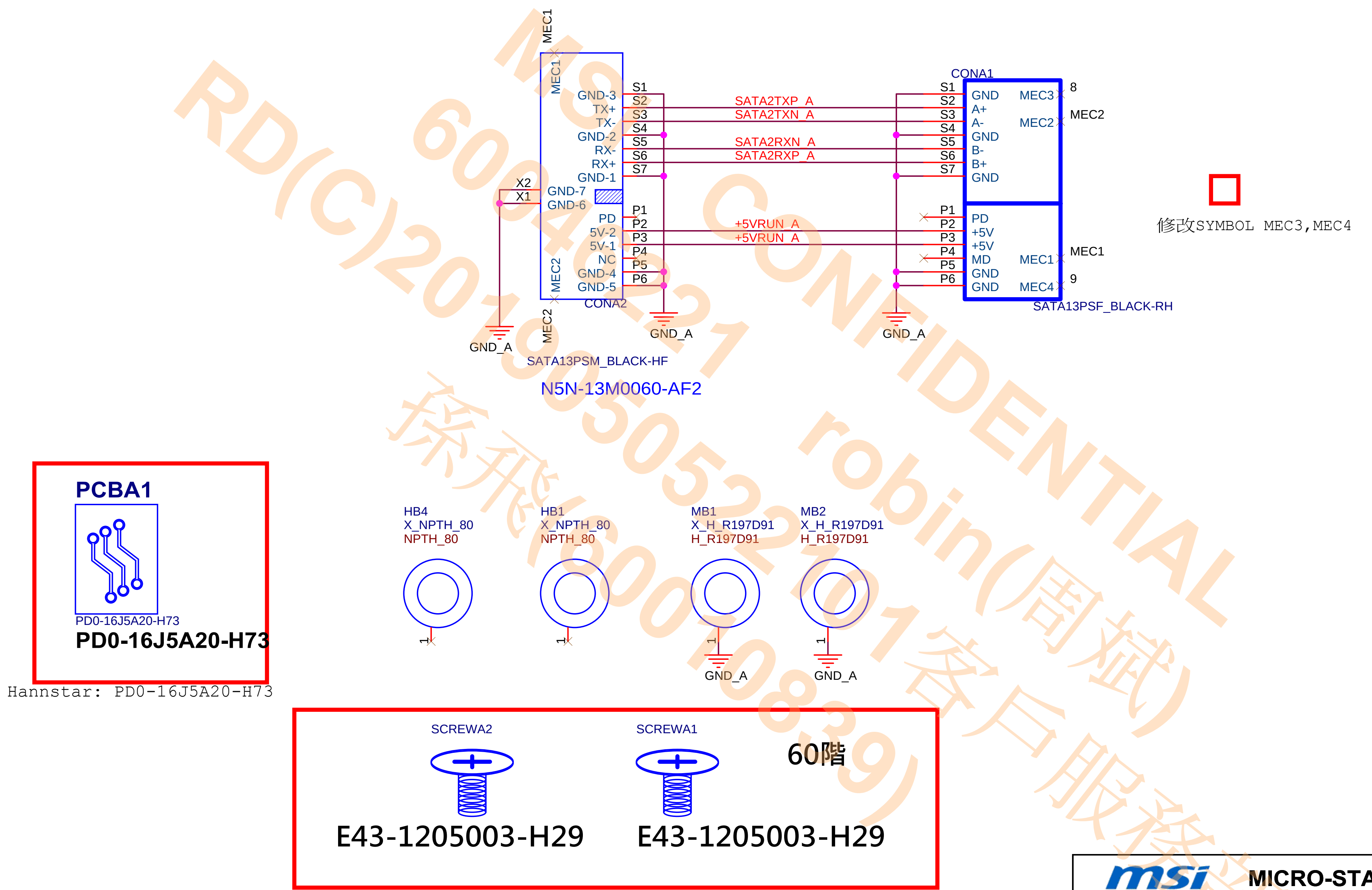
PAD3 X_HS-MS1011-RH ATE_C006_106
PAD2 X_HS-MS1011-RH ATE_C006_106
PAD8 X_HS-MS1011-RH ATE_C006_106
E23-1011040-CA7 E23-1011040-CA7 E23-1011040-CA7

BOT Spring

PAD4 X_HS-MS1011-RH ATE_C006_106
PAD6 X_HS-MS1011-RH ATE_C006_106
E23-1011040-CA7 E23-1011040-CA7

MICRO-STAR INT'L CO.,LTD.		
Title: Screw/ME		
Size	Document Number: MS-16J5	Rev: 10
Date: Monday, November 14, 2016	Sheet 49 of 55	

MSI CONFIDENTIAL
RD(C)2016 Robin(周斌) 採購(16091083) 客戶服務部


MEC1
GND-3
TX+
TX-
GND-2
RX-
RX+
GND-1
GND-7
GND-6
PD
5V-2
5V-1
NC
GND-4
GND-5
MEC2
X2
X1
S1 S2 S3 S4 S5 S6 S7
P1 P2 P3 P4 P5 P6
CONA2
SATA13PSM_BLACK-HF
N5N-13M0060-AF2
SATA2TXP_A
SATA2TXN_A
SATA2RXN_A
SATA2RXP_A
+5VRUN_A
+5VRUN_A
GND_A
CONA1
GND A+ A- GND B- B+ GND
PD +5V +5V MD GND GND
MEC3 MEC2 MEC1 MEC4
8
9
SATA13PSF_BLACK-RH
修改SYMBOL MEC3,MEC4
PCBA1
PD0-16J5A20-H73
PD0-16J5A20-H73
Hannstar: PD0-16J5A20-H73
HB4
X_NPTH_80
NPTH_80
HB1
X_NPTH_80
NPTH_80
MB1
X_H_R197D91
H_R197D91
MB2
X_H_R197D91
H_R197D91
SCREWA2
SCREWA1
60階
E43-1205003-H29
E43-1205003-H29

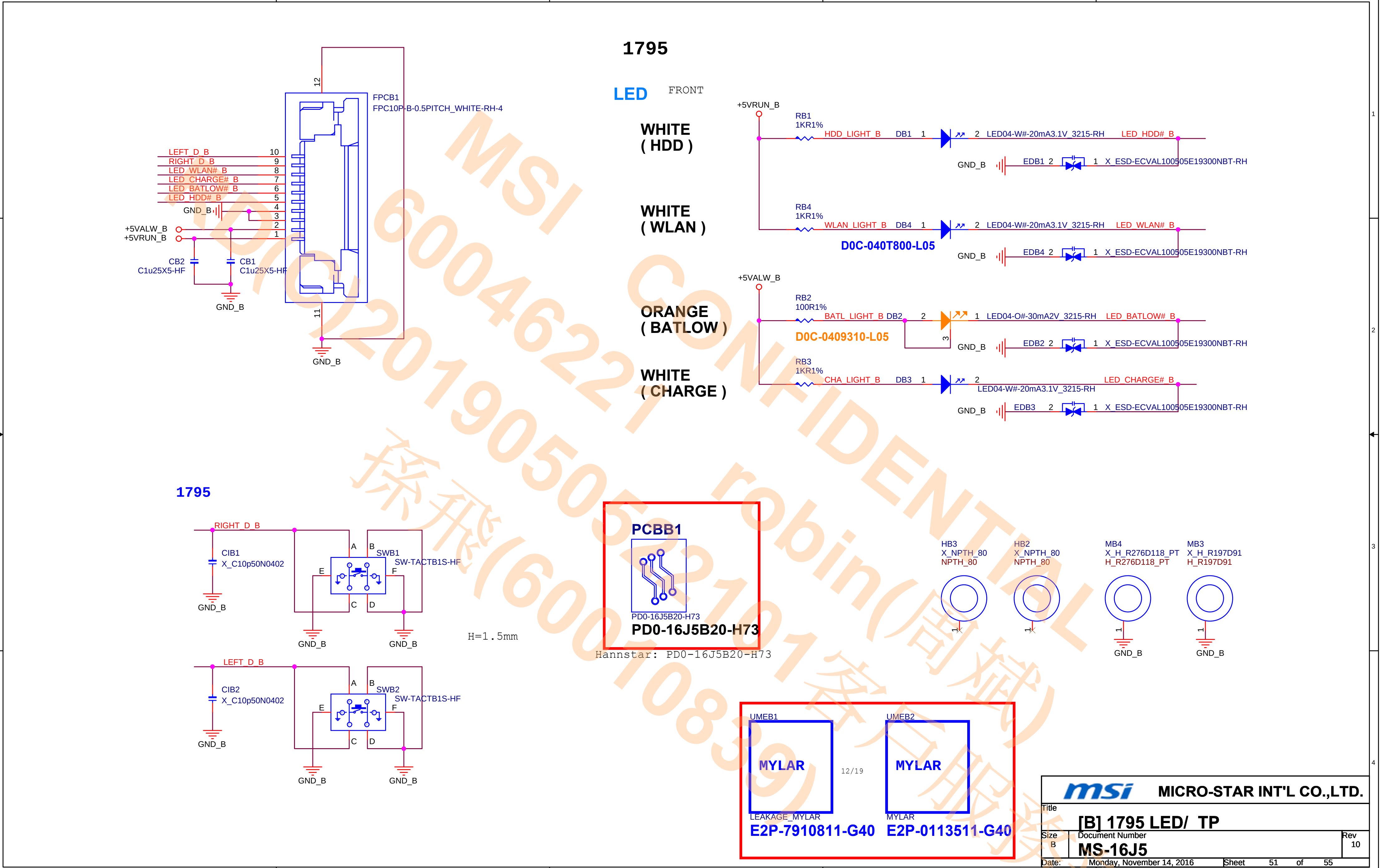
MSI CONFIDENTIAL
RD(C)20190305221 robin(周斌)
6004221
孫飛(60010839)客戶服務部

MICRO-STAR INT'L CO.,LTD.

Title
[A] 1795 ODD

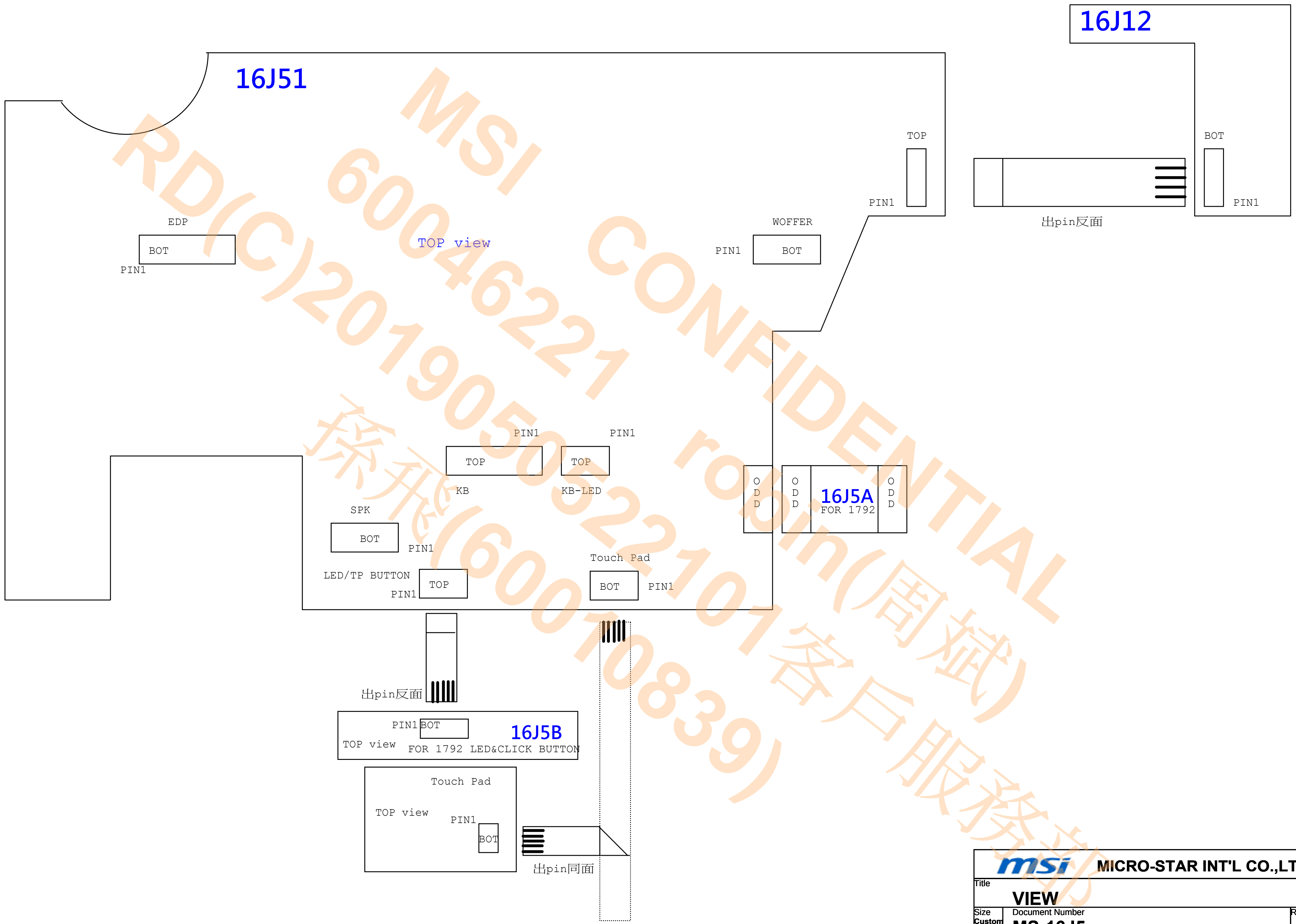
Size	Document Number	Rev
A4	MS-16J5	10

Date: Monday, November 14, 2016 Sheet 50 of 55



1795
LED
FRONT
WHITE (HDD)
WHITE (WLAN)
ORANGE (BATLOW)
WHITE (CHARGE)
+5VRUN_B
RB1 1KR1%
HDD_LIGHT_B
DB1 1 2 LED04-W#-20mA3.1V_3215-RH
LED_HDD#_B
GND_B
EDB1 2 1 X_ESD-ECVAL100505E19300NBT-RH
RB4 1KR1%
WLAN_LIGHT_B
DB4 1 2 LED04-W#-20mA3.1V_3215-RH
LED_WLAN#_B
D0C-040T800-L05
EDB4 2 1 X_ESD-ECVAL100505E19300NBT-RH
+5VALW_B
RB2 100R1%
BATL_LIGHT_B DB2 2 1 LED04-O#-30mA2V_3215-RH
LED_BATLOW#_B
D0C-0409310-L05
EDB2 2 1 X_ESD-ECVAL100505E19300NBT-RH
RB3 1KR1%
CHA_LIGHT_B
DB3 1 2 LED04-W#-20mA3.1V_3215-RH
LED_CHARGE#_B
EDB3 2 1 X_ESD-ECVAL100505E19300NBT-RH
FPCB1
FPC10P-B-0.5PITCH_WHITE-RH-4
LEFT_D_B 10
RIGHT_D_B 9
LED_WLAN#_B 8
LED_CHARGE#_B 7
LED_BATLOW#_B 6
LED_HDD#_B 5
GND_B 4
3
+5VALW_B 2
+5VRUN_B 1
12
11
CB2 C1u25X5-HF
CB1 C1u25X5-HF
GND_B
1795
RIGHT_D_B
CIB1 X_C10p50N0402
SWB1 SW-TACTB1S-HF
A B E F C D
GND_B
LEFT_D_B
CIB2 X_C10p50N0402
SWB2 SW-TACTB1S-HF
H=1.5mm
PCBB1
PD0-16J5B20-H73
PD0-16J5B20-H73
Hannstar: PD0-16J5B20-H73
HB3 X_NPTH_80 NPTH_80
HB2 X_NPTH_80 NPTH_80
MB4 X_H_R276D118_PT H_R276D118_PT
MB3 X_H_R197D91 H_R197D91
UMEB1
MYLAR
LEAKAGE_MYLAR
E2P-7910811-G40
12/19
UMEB2
MYLAR
MYLAR
E2P-0113511-G40
msi
MICRO-STAR INT'L CO.,LTD.
Title
[B] 1795 LED/ TP
Size B
Document Number
MS-16J5
Rev 10
Date: Monday, November 14, 2016
Sheet 51 of 55

MSI CONFIDENTIAL 600462211 (DC)20190505210 robin(周斌) 徐飛(600108839) 客戶服務部



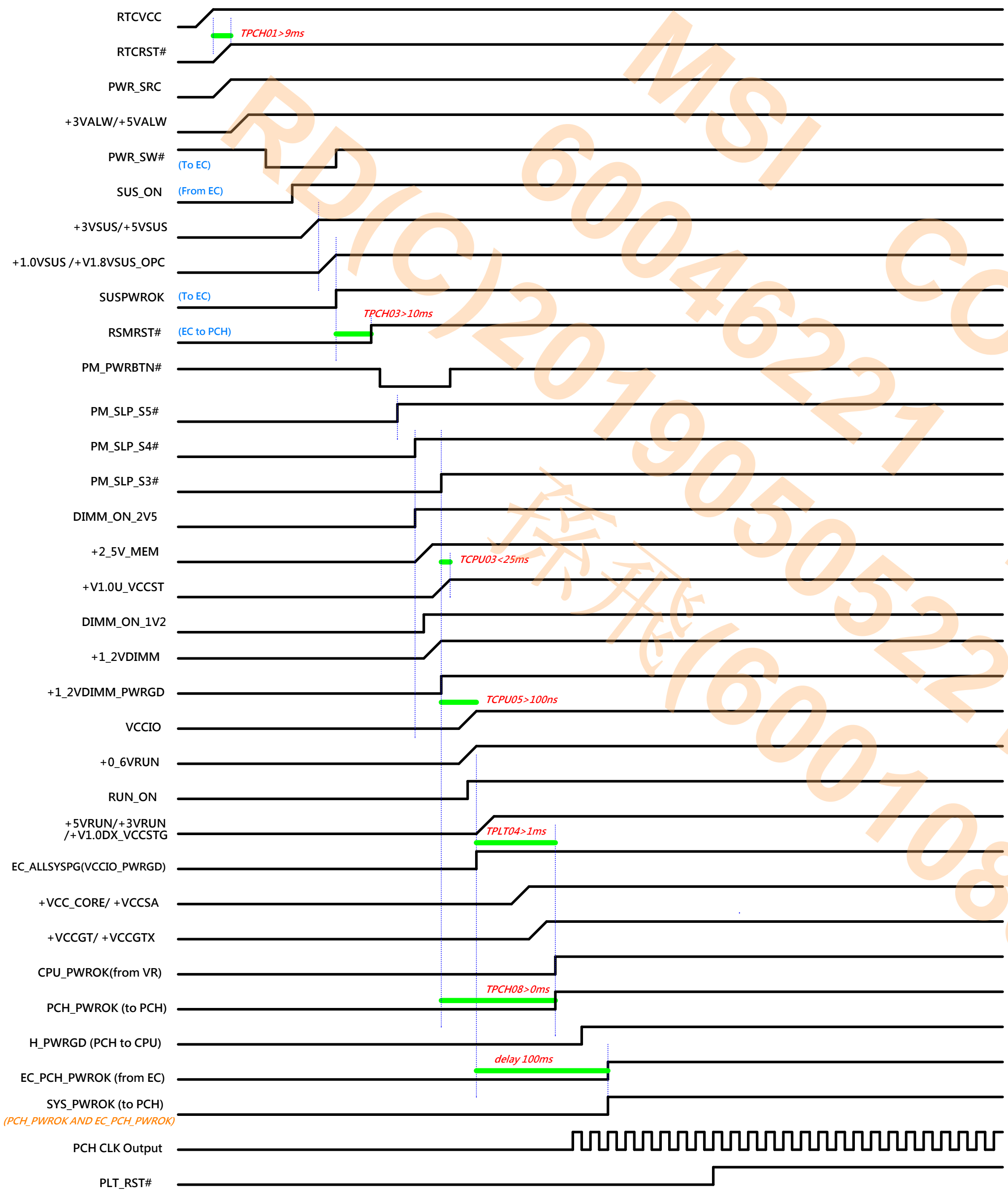
MSI CONFIDENTIAL
RD(C)201905221017
60046221
robin(周斌)
孫飛(60070839)
客戶服務部

MICRO-STAR INT'L CO.,LTD.

Title	VIEW	
Size Custom	Document Number MS-16J5	Rev 10
Date: Monday, November 14, 2016	Sheet 52 of 55	

Power on Sequence

G3 -> S0

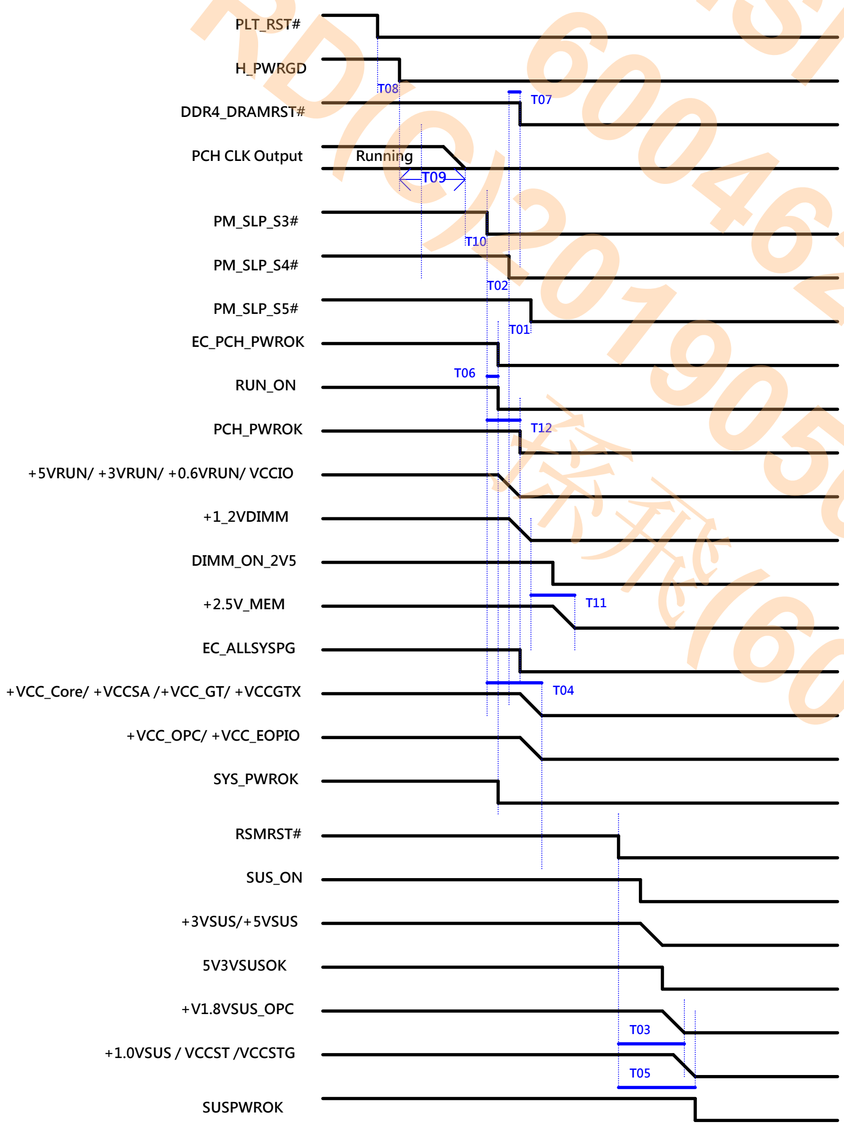


MSI CONFIDENTIAL
RD(C)201905052210
1客户服务部
robin(周斌)
蔡飛(6000462218)
6000108839

msi	MICRO-STAR INT'L CO.,LTD.	
Title	Power on Sequence	
Size	Document Number: MS-16J5	Rev: 10
Date: Monday, November 14, 2016	Sheet 53 of 55	

Power down Sequence

S0 -> G3



	MIN	MAX	Units	Description
T01	30		us	SLP_S5# assertion to SLP_S4#
T02	30		us	SLP_S4# assertion to SLP_S3#
T03	1		us	RSMRST# asserting to VccPRIM dropping 5% of nominal value
T04		500	ms	SLP_S3# assertion to VCC, VCCGT, VCCIO and VCCSA rails completely off.
T05	1		us	RSMRST# asserting to VccPRIM dropping 5% of nominal value
T06		1	us	SLP_S3# assertion to VCCIO VR disabled
T07	-100		ns	DDR_RESET# assertion to SLP_S4# assertion
T08	30		us	PLTRST# assertion to PROCPWRGD deassertion
T09	10		us	PROCPWRGD de-assertion to CLKOUT_BCLK turning OFF.
T10	1		us	CLKOUT_BCLK turning OFF to SLP_S3# assertion
T11	30		ms	VDDQ ramped down to VPP ramp down
T12	0		ms	SLP_S3# assertion to PCH_PWROK deassertion

MSI CONFIDENTIAL
RD(C)600462217 徐飛(600010839)
201905052101 robin(周斌) 客戶服務部

History

20

Page	Description
1	Change Block Diagram description
18	Add GPU GPIO1 net MEM_VDD_CTL to page43
35	Change LAN controller U26 to AR8171
37	STUFF TPM U19, and change to FW5.51
43	Change FBVDDQ power solution
45	Change CPU power controller PU2 to ISL95855AHRTZ-T
38	1. Modify Touch pad to support SMBUS 2. LED change to white R80, R437, R438, R440 -> 1Kohm D1, D2, D11, D12, D13 -> D0C-040C300-L05
51	LED change to white RB1, RB3, RB4 ->1Kohm DB1, DB3, DB4 ->D0C-040T800-L05
49	Add FM35, FM36, FM37, FM38, FM39, FM40, FM41, FM42
28	MB_ID set to low, UNSTUFF PR225, STUFF R146
6	STUFF R25, R26, C47, C48, C49, U1, UNSTUFF R37,

Page	Description

Page	Description

MSI CONFIDENTIAL
600046221
RD(C)20190505221O1客戶服務部
robin(周斌)
蔡飛(600010839)

msi	MICRO-STAR INT'L CO.,LTD.	
Title	History	
Size	Document Number MS-16J5	Rev 10
Date: Monday, November 14, 2016	Sheet 55 of 55	