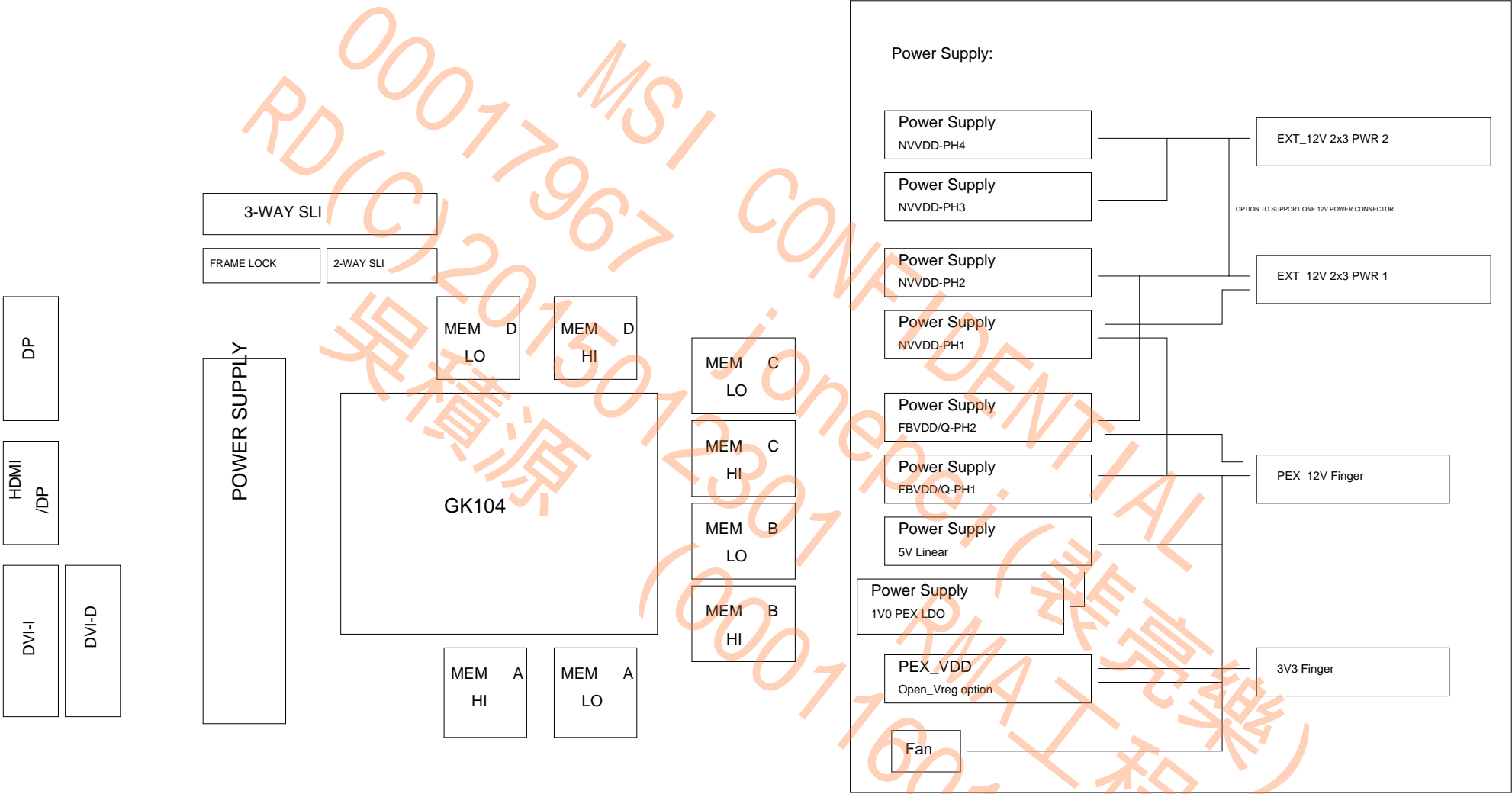


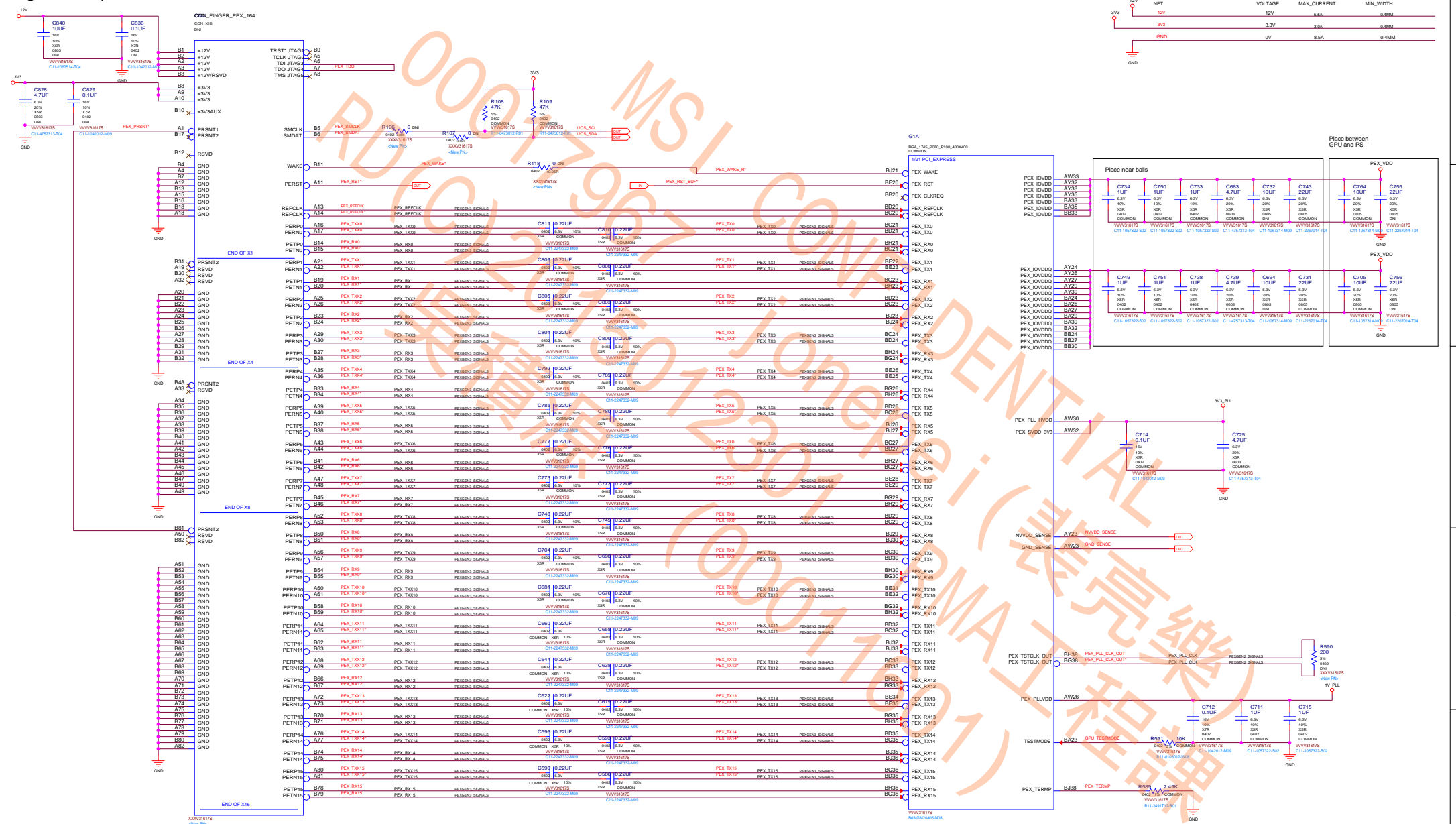
TABLE OF CONTENTS

Page	Description
	Base on V284-81
P4~11	1. Del co-layout 16bit memory 2. Add FBVDDQ decoupling capacitor
P13	Add NVVDD decoupling capacitor
P15	1. Add ESD PROTECTION 2. Add AC Coupling capacitors
P16~18	Add ESD PROTECTION
P19	Change MIOA/B circuit
P21	Add 6-pin Fan connector
P25	PWM change to NCP81174
P26	Change to NCP81162 DOUBLERS
P27~28	Change to NCP81061
P29	Change to reverse 6 & 8-pin Power Connector
P32	Add NCT7511 FAN2
P33	Power Connector Hot unplug
P34	Add GeForce Logo LED & VID_PLL power
P31	Add GTX970 demoboard Current Steering circuit


TABLE OF CONTENTS

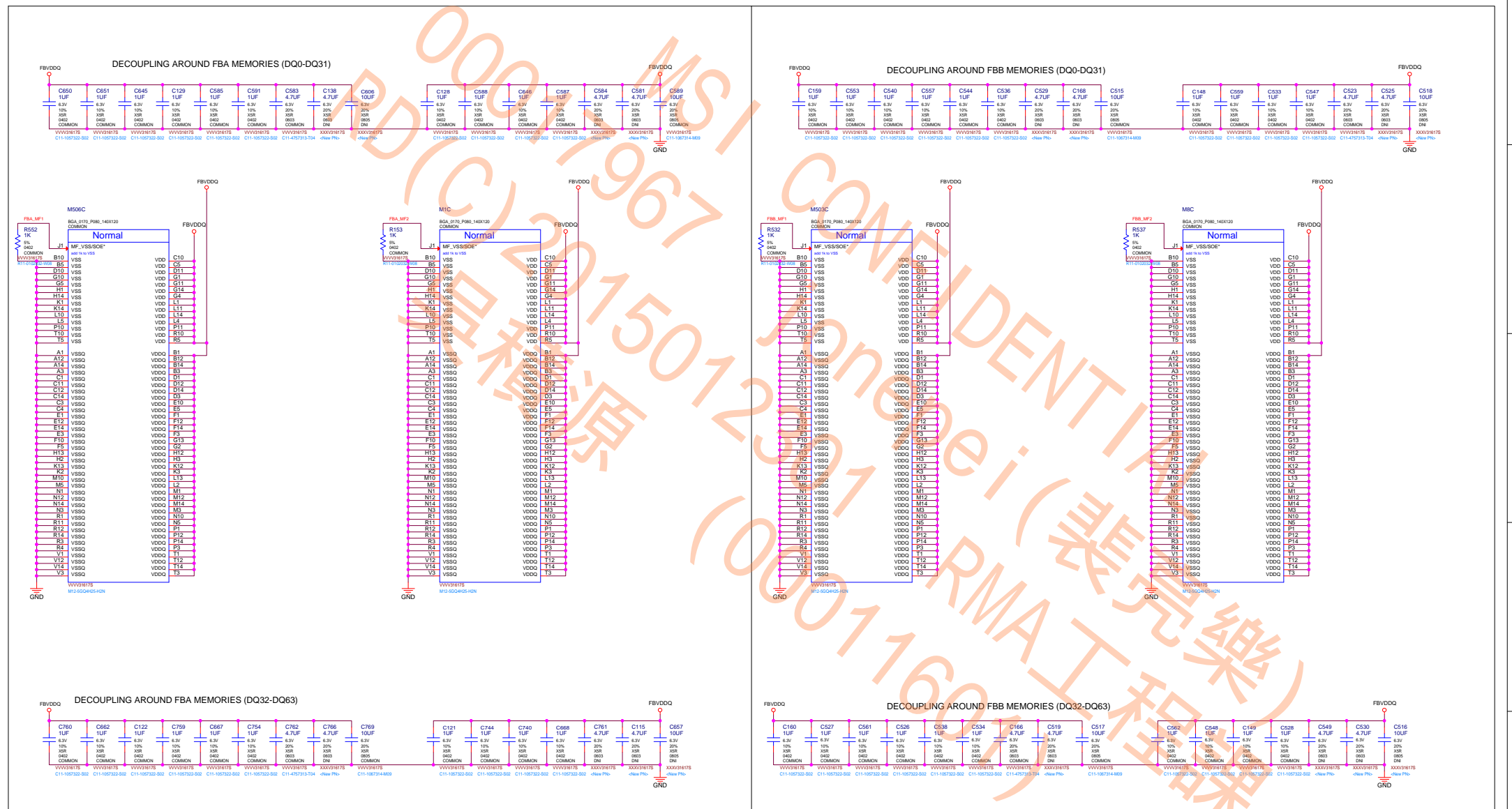
Page Description

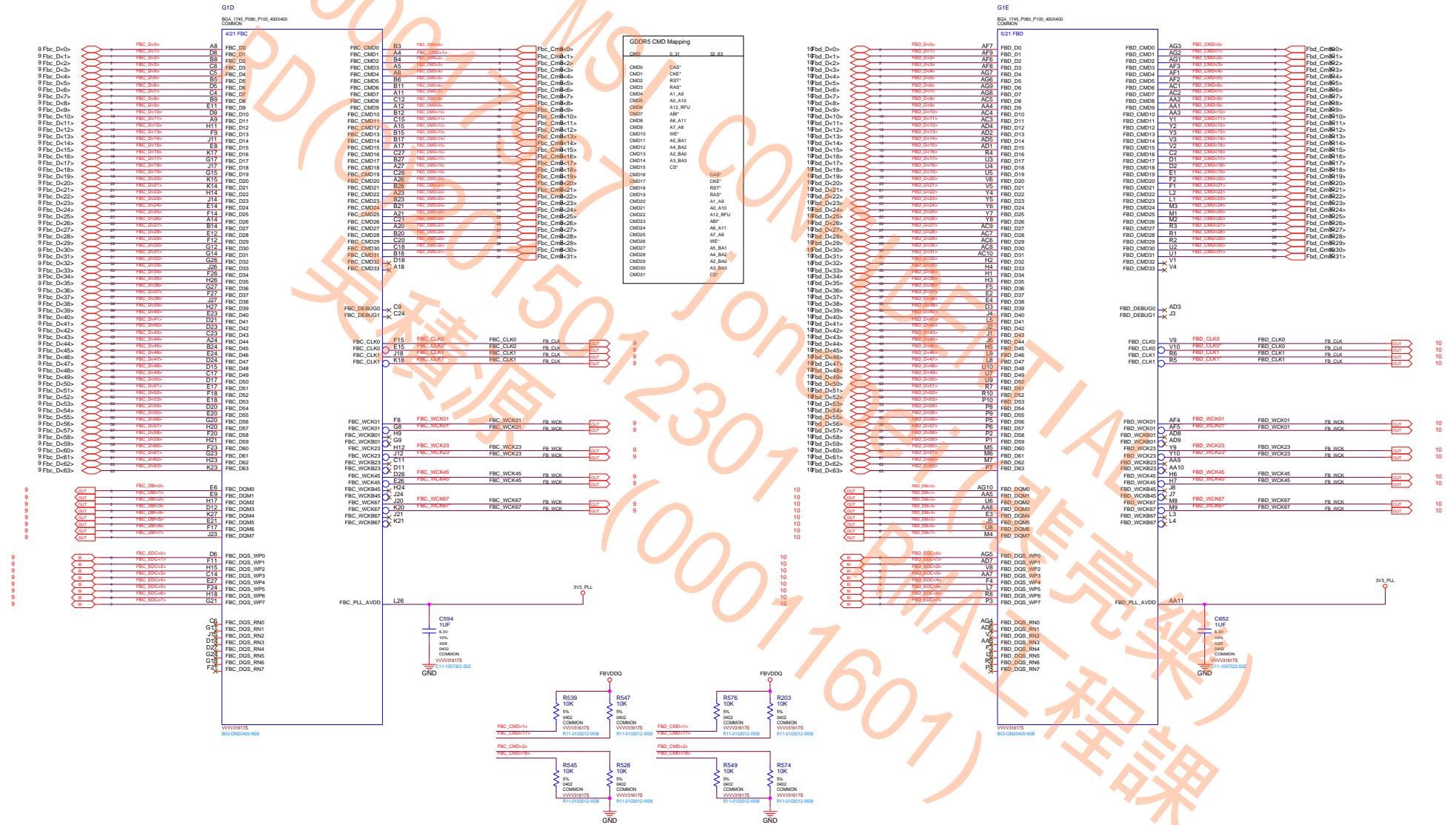


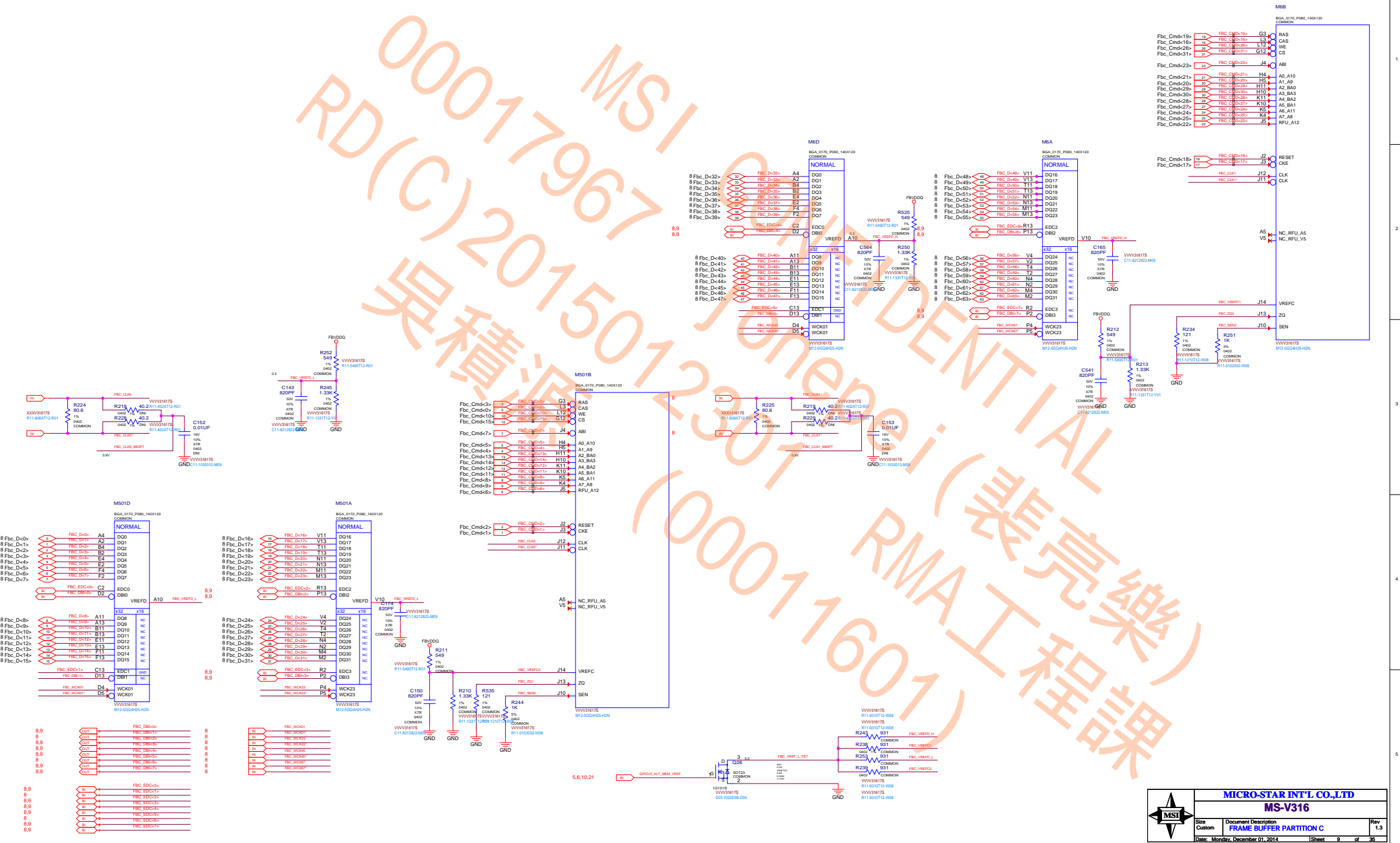


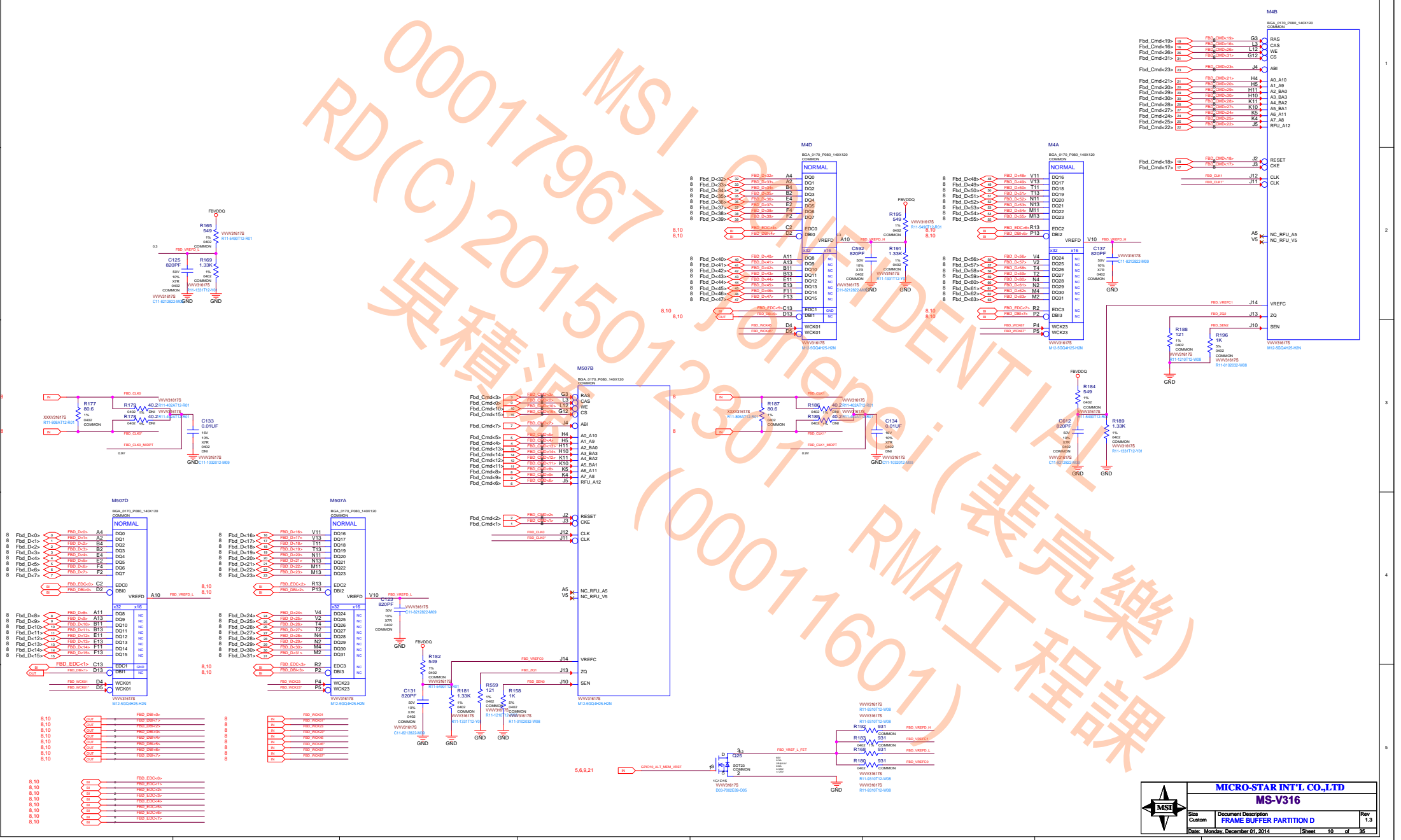


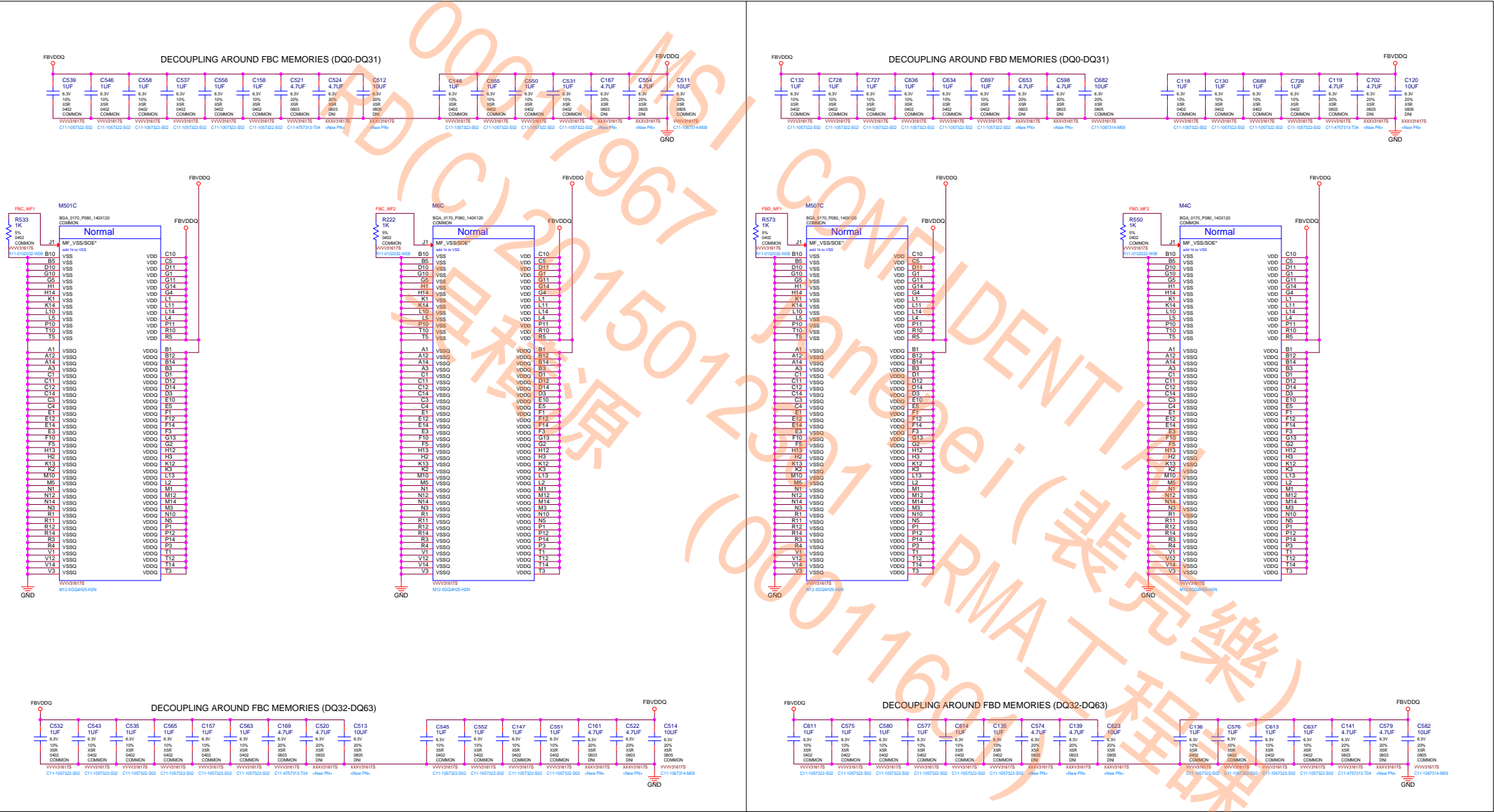
	MICRO-STAR INT'L CO.,LTD		
	MS-V316		
	Size Custom	Document Description FRAME BUFFER PARTITION B	Rev 1.3
Date: Monday, December 01, 2014		Sheet 6 of 35	

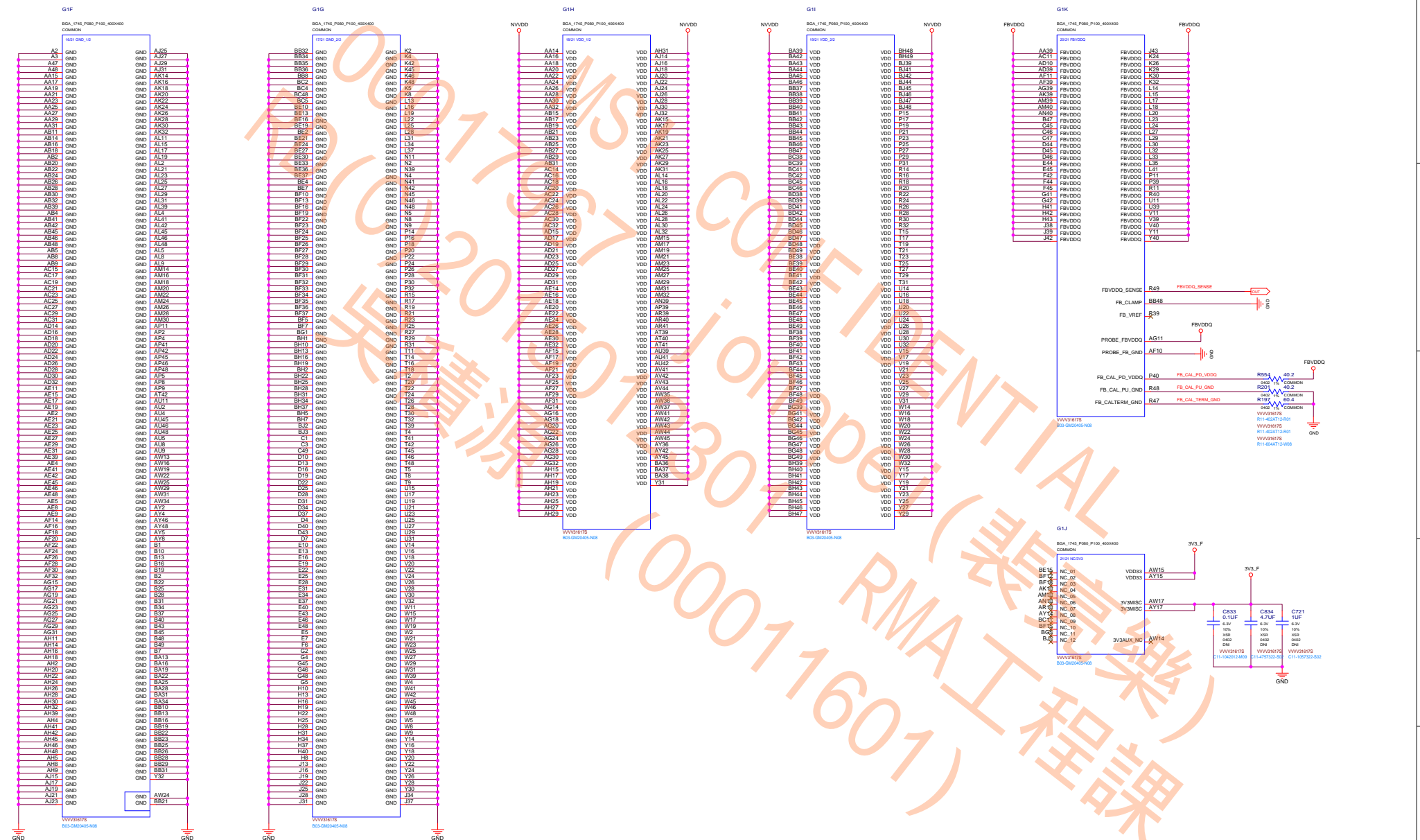








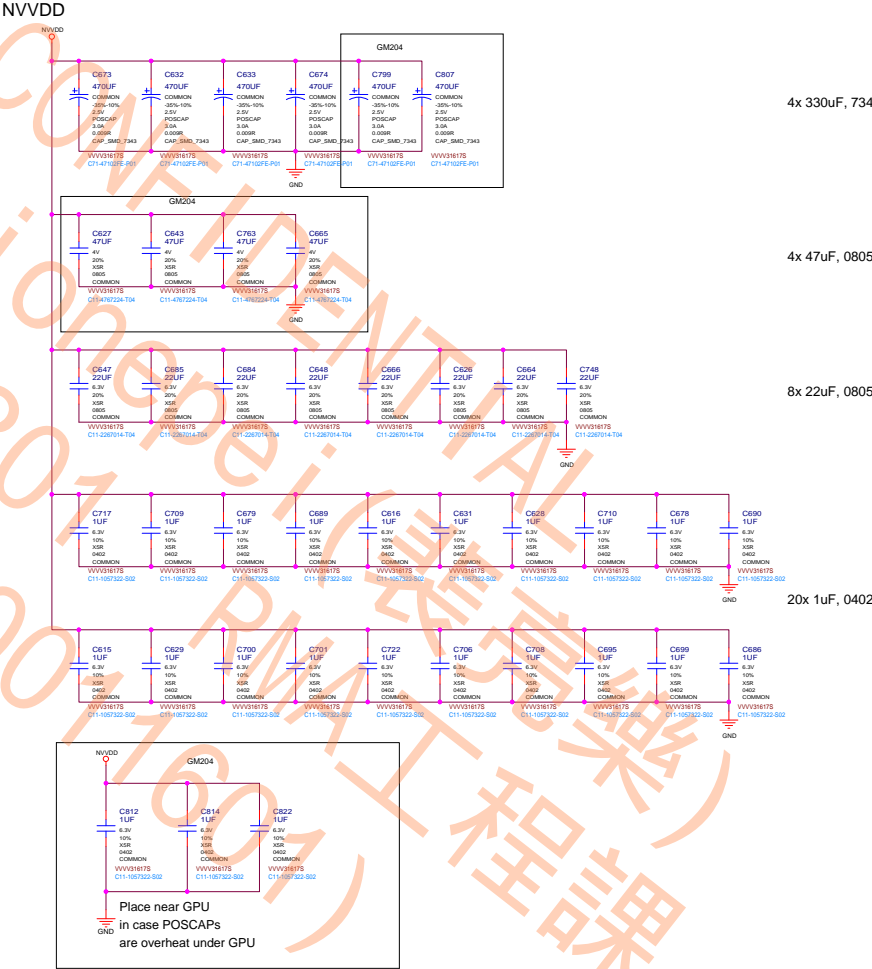


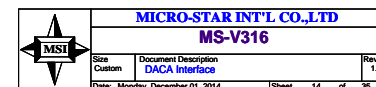
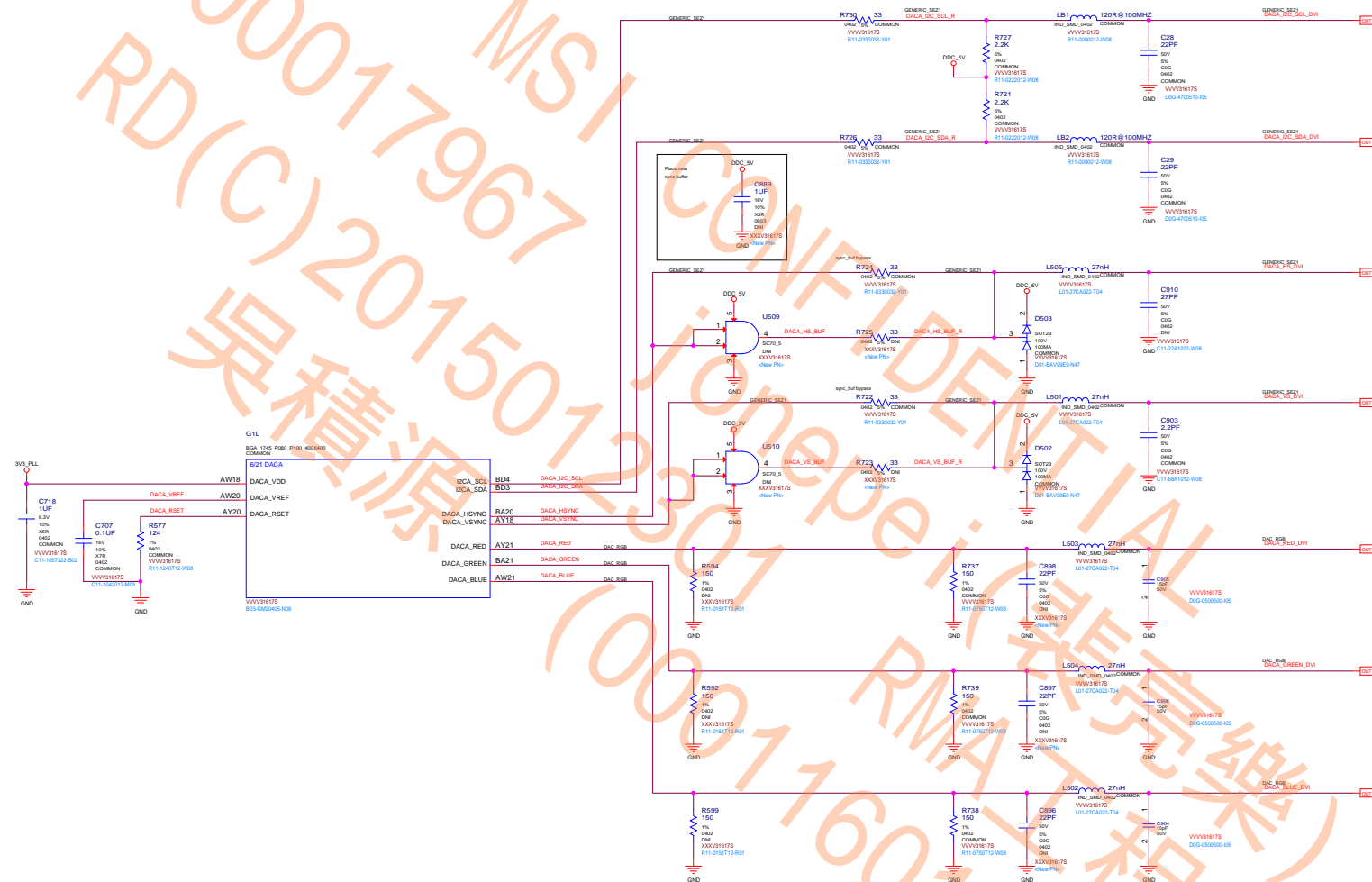


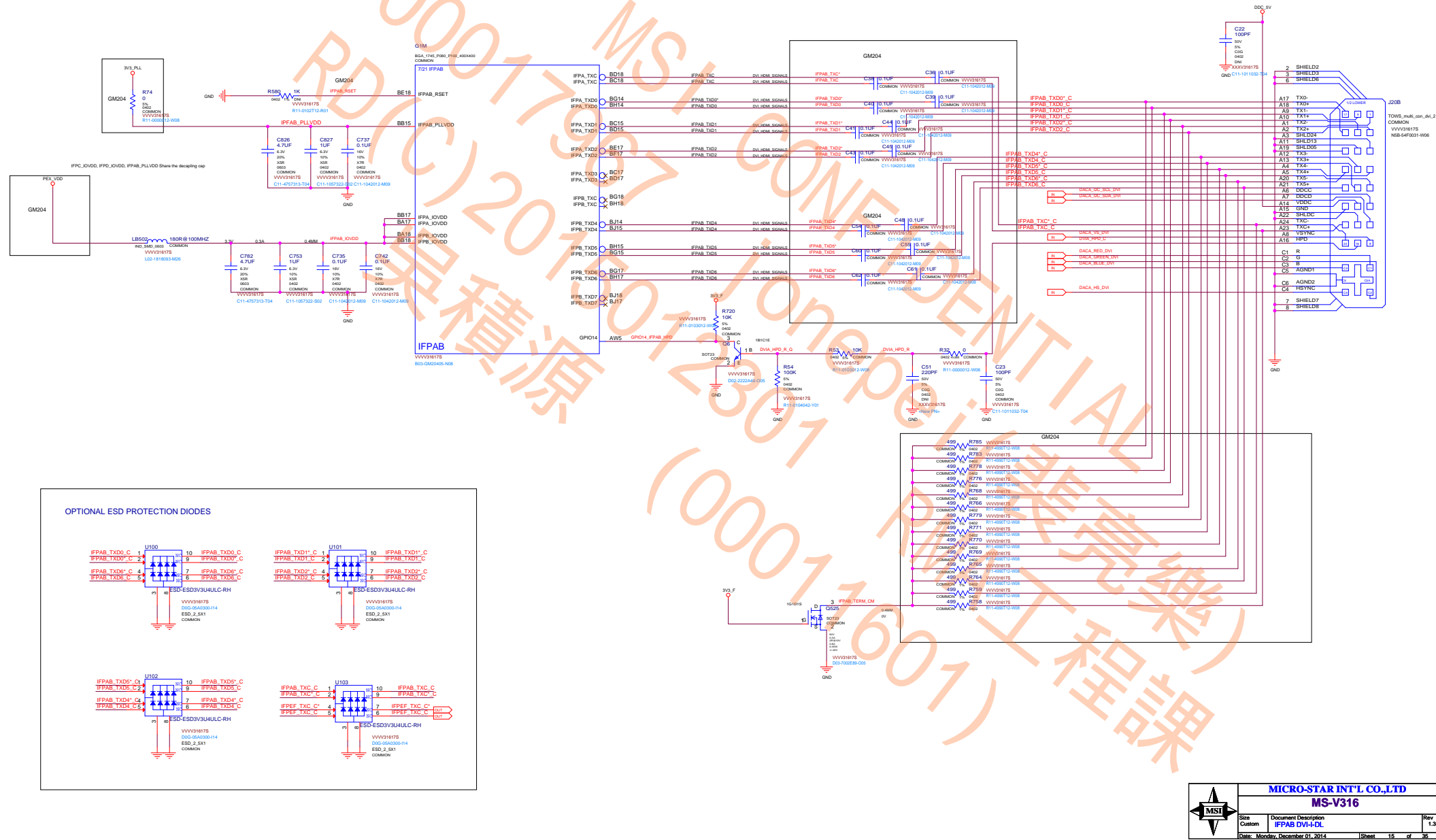
Based on GB2-X GDDR5 FBVDDQ Decap Guideline

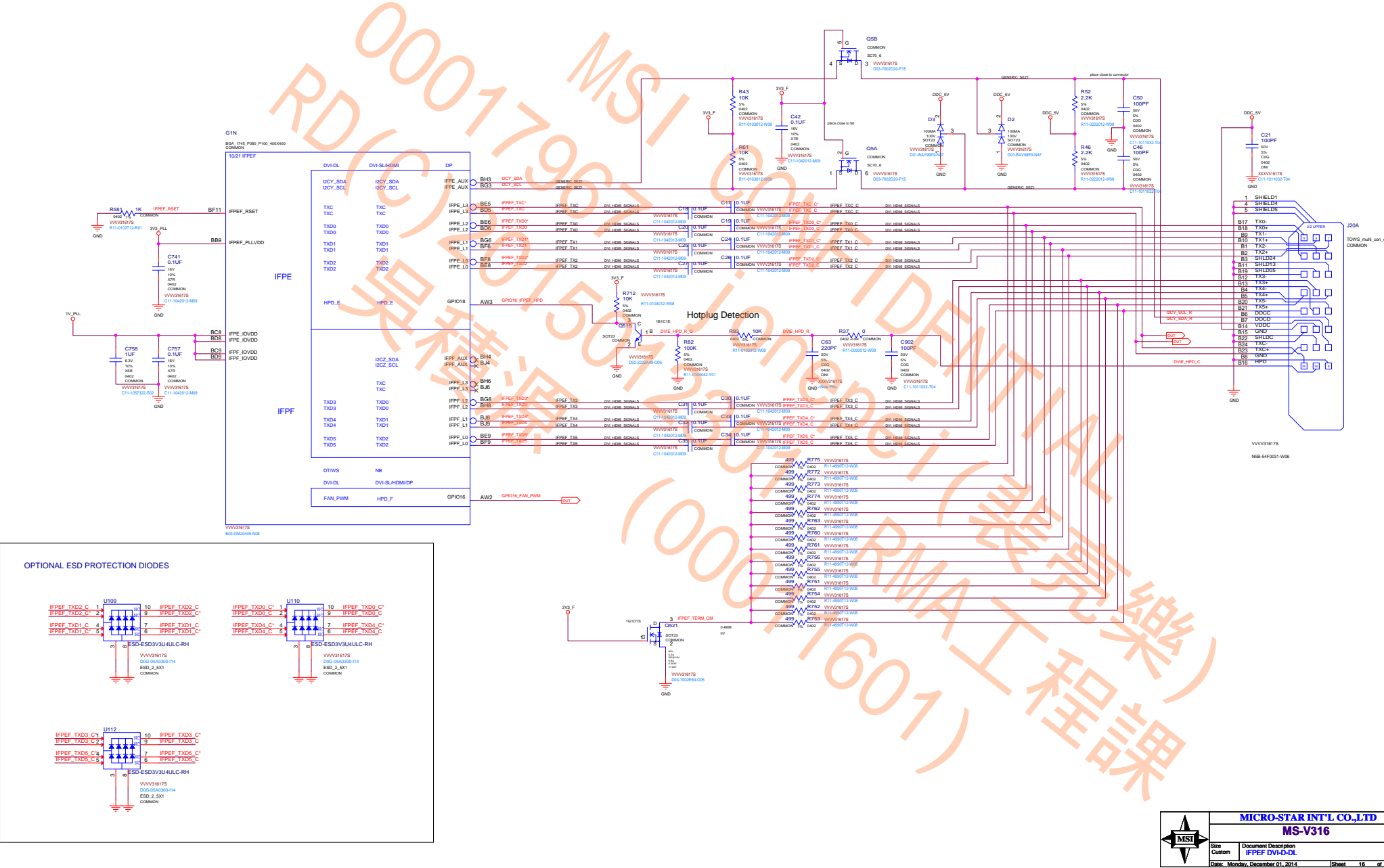


NVVDD Decoupling caps. Place under GPU.





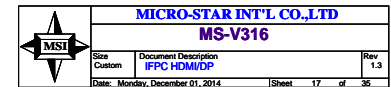
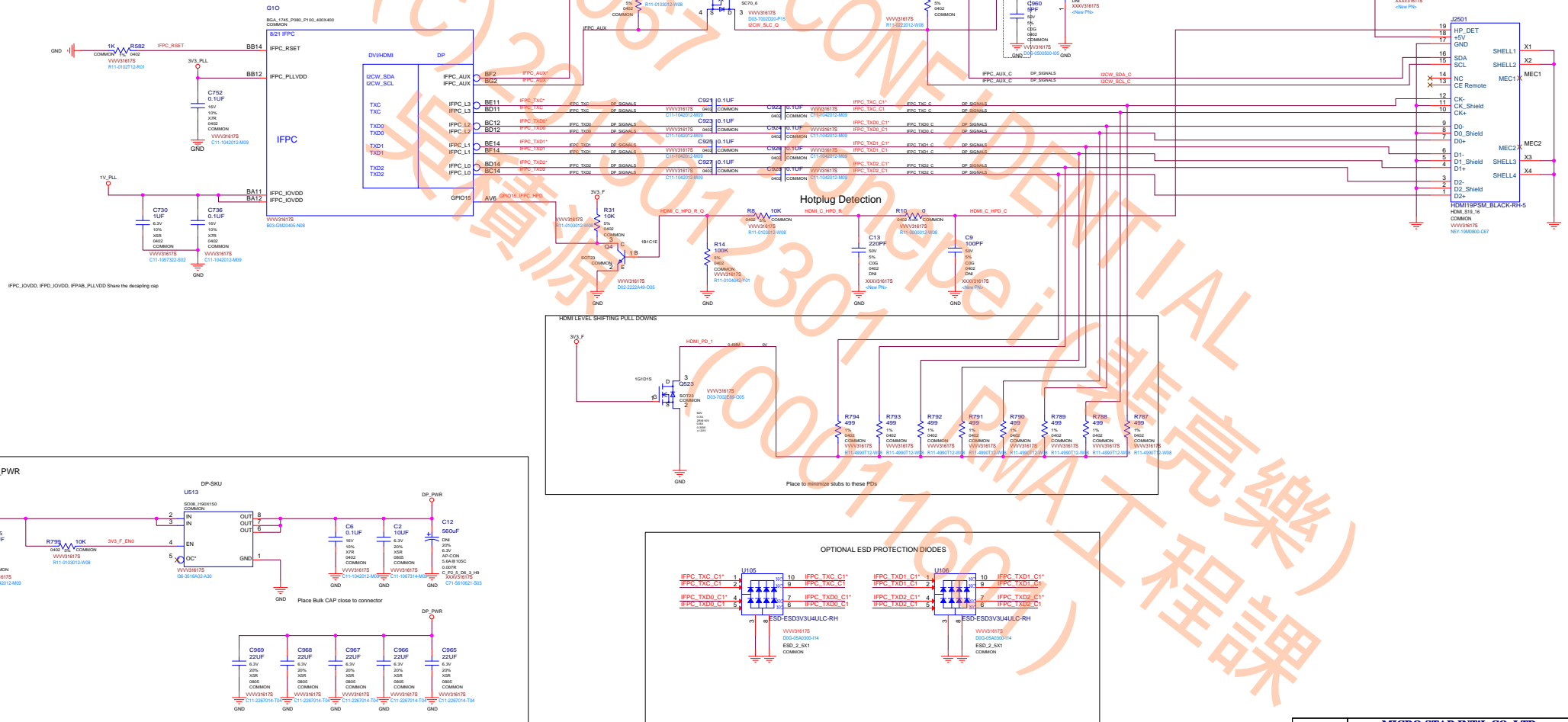




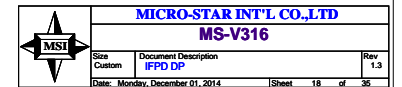
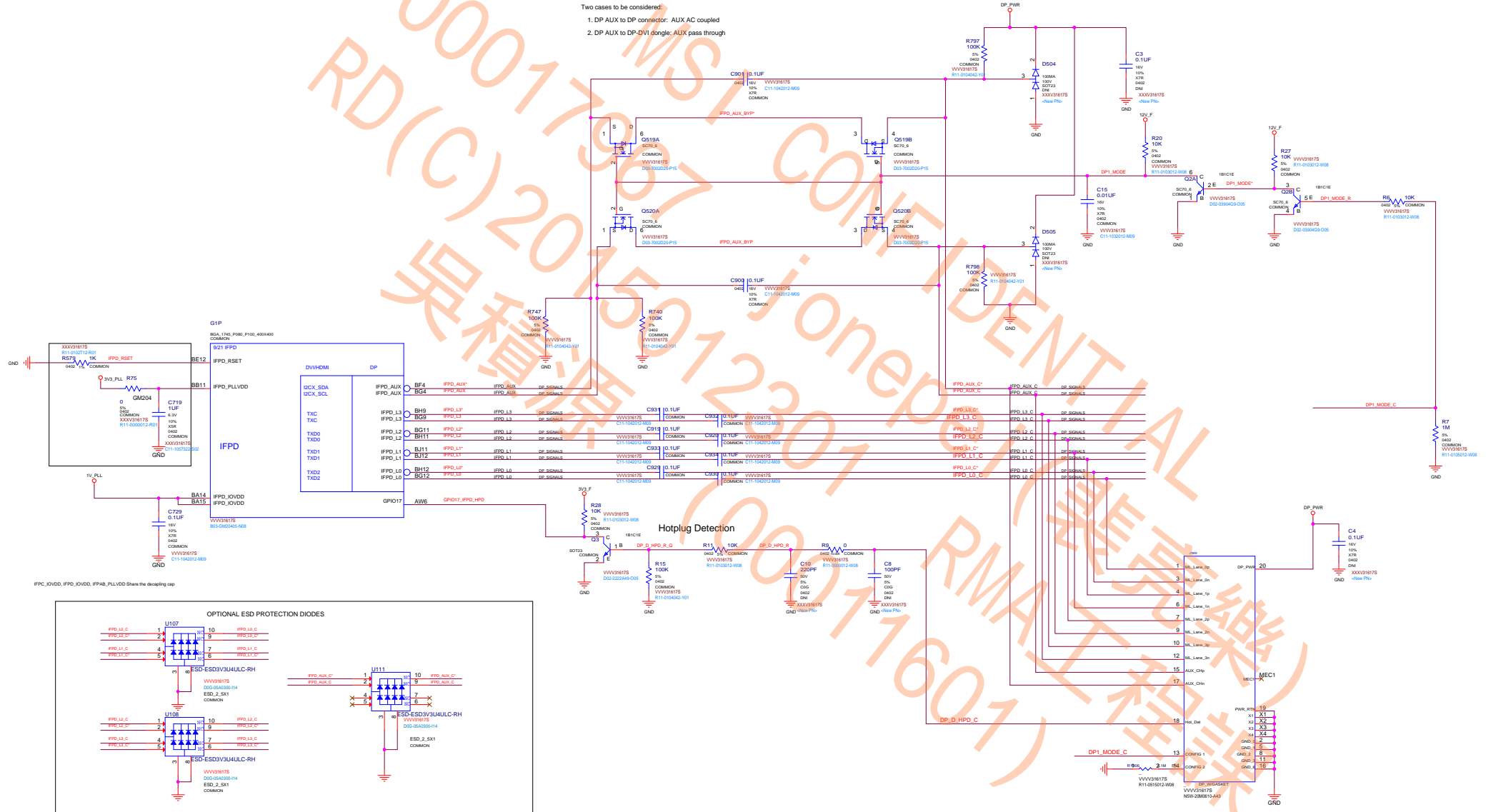
Two cases to be considered:

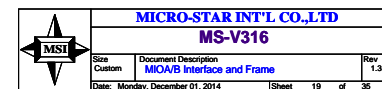
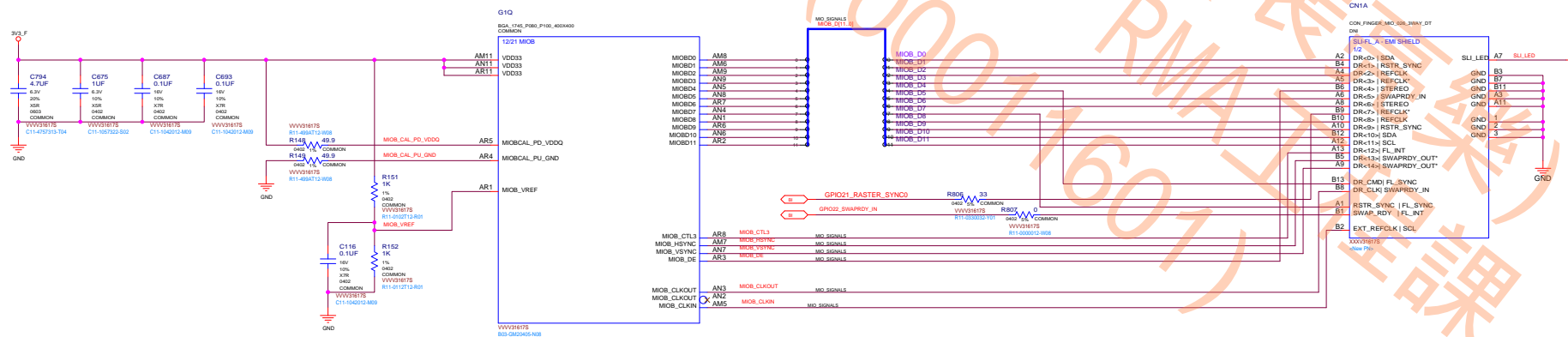
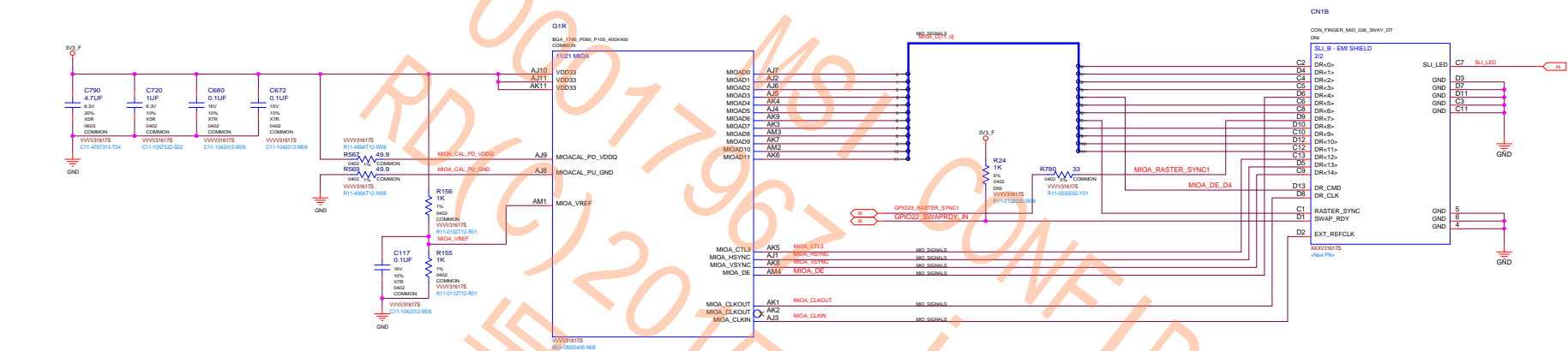
1. DP AUX to DP connector: AUX AC coupled
2. DP AUX to DP-DVI dongle: AUX pass through

* I2C to DDC level switching



1. DP AUX to DP connector: AUX AC coupled
2. DP AUX to DP-DVI dongle: AUX pass through





MSI CONFIDENTIAL
00017967 jonepei (裴亮樂)
RD(C)2015012301 RMA工程課
吳積源 (00011601)

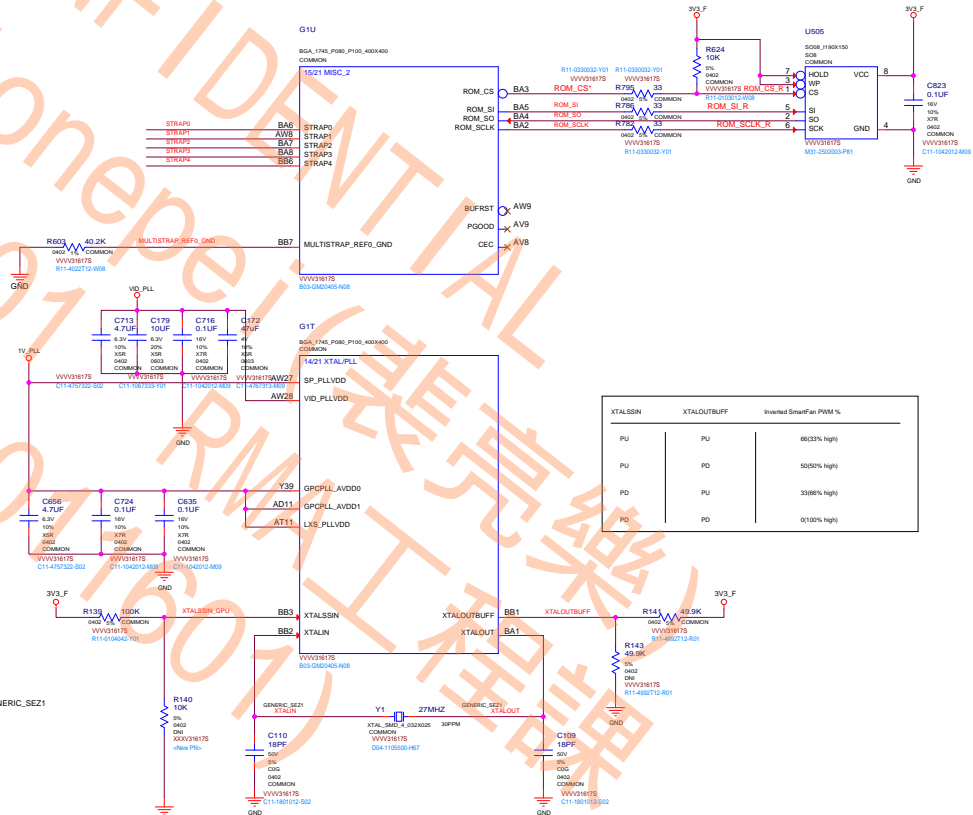
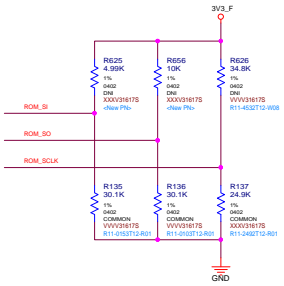
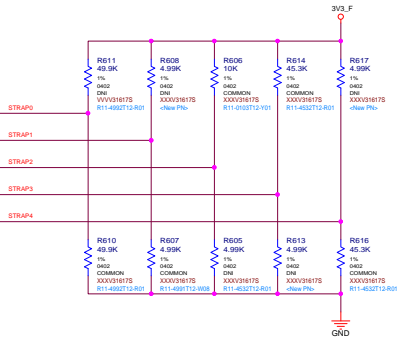
	MICRO-STAR INT'L CO.,LTD		
	MS-V316		
	Size	Document Description	Rev
	Custom	STEREO CONNECTOR	1.3
Date: Monday, December 01, 2014		Sheet	20 of 36

STRAP0	USER_BIT [3:0]*	0000*	5K PD*
STRAP1	3GIO_PADCFG_LUT_ADR*	0000*	5K PD Desktop*
STRAP2	PCI_DEVID [3:0]*	1001 - (0x1189)*	10K PU ~325 GPU*
STRAP3	SOR_EXPOSED [3:0]*	1111*	45K PU*
STRAP4	DP_PLL_VDD_33V*	1* FOR 3_3V*	
	PEX_MAX_SPEED*	1* FOR GEN2/3*	45K PD*
	PEX_SPD_CHANGE_GEN3*	1* ENABLED*	
	*		
ROM_SI	RAMCFG[0]*	0*	
	RAMCFG[1]*	1*	64Mx32/512 bit Hynix for SMDs primary memory 35K PD*
	RAMCFG[2]*	1*	
	RAMCFG[3]*	0*	
ROM_SO	VGA_DEVICE*	1*	
	SMB_ALT_ADDR*	0*	30k PD*
	FB[0]_APERTURE_SIZE*	1* For 128MB*	
	FB[1]_APERTURE_SIZE*	0* For 128MB*	
ROM_SCLK	PEX_PLL_EN_TERM100*	0* DISABLE*	
	PCI_DEVID_EXT[5]*	0* For 0x1189*	25K PD*
	SUB_VENDOR*	1* Dedicated BIOS*	
	PCI_DEVID_EXT[4]*	0* For 0x1189*	

	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

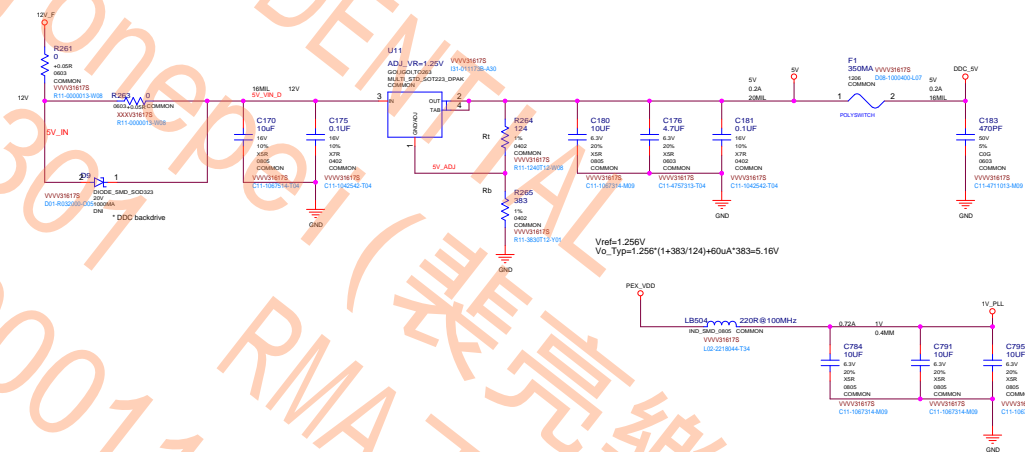
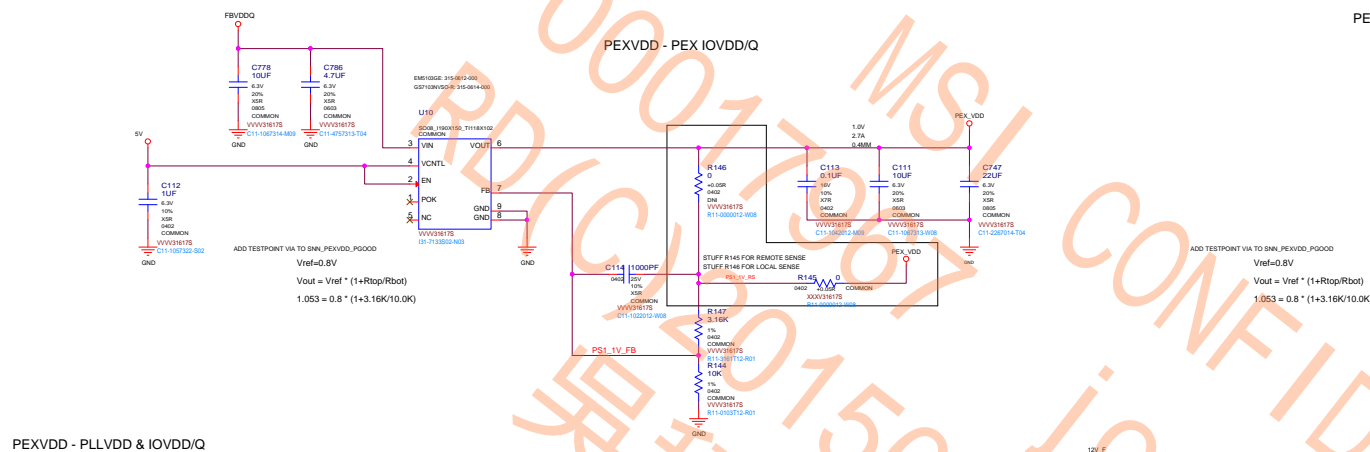
CFG[3:0] Config Width	Vendor
0000	Reserved
0001	32Mx32 256-bit Elpida
0010	32Mx32 256-bit Hynix
0011	32Mx32 256-bit Samsung
0100	Reserved
0101	64Mx32 256-bit Elpida
0110	64Mx32 256-bit Hynix
0111	64Mx32 256-bit Samsung

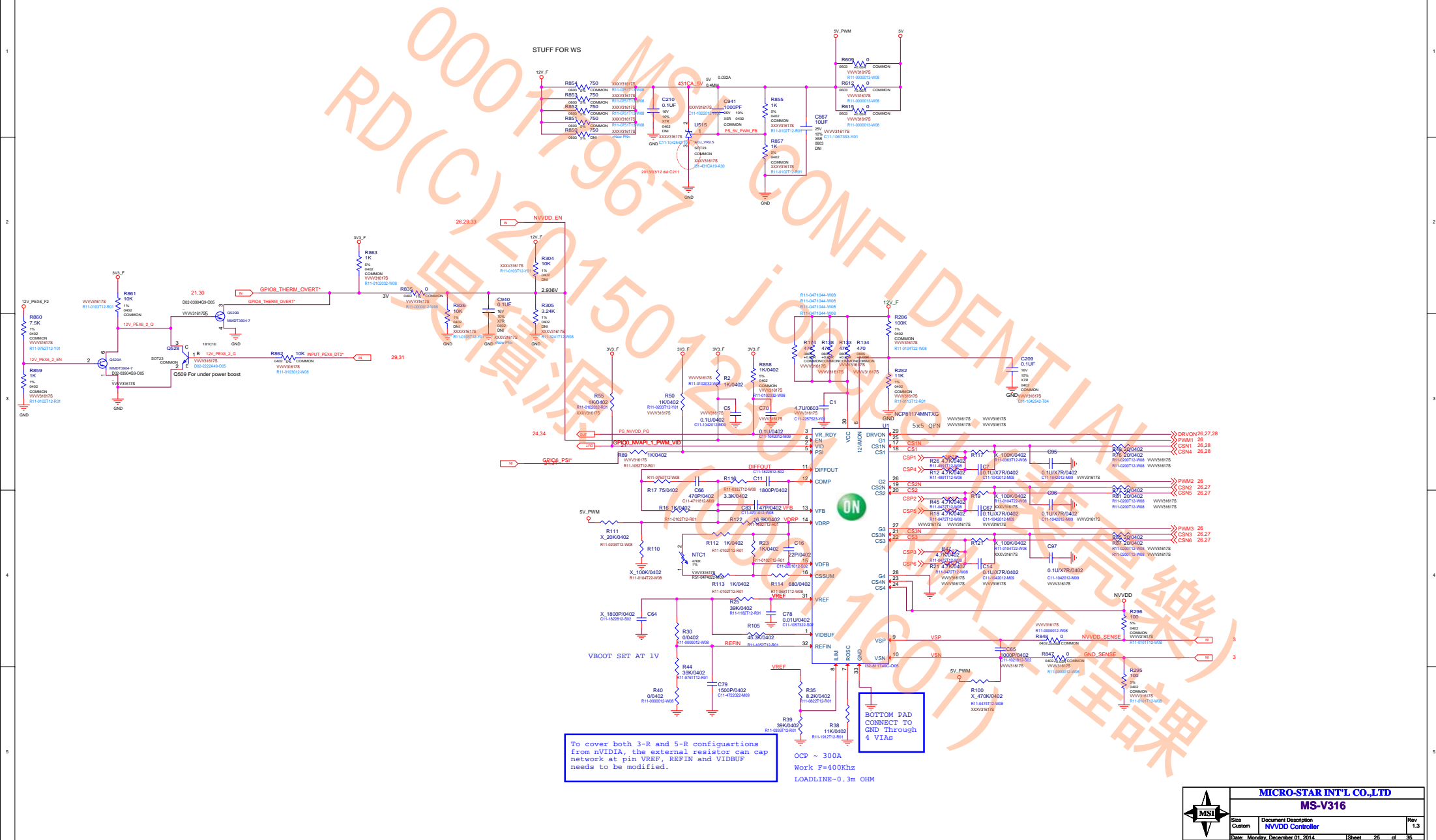
	MULTI_STRAP_REF0_GND
BINARY PRODUCTION	NC
BINARY BRINGUP	NC
MULTI-LEVEL	40.2K 1% TO GND



XTALSSIN	XTALOUTBUFF	Inverted SmartFan PWM %
PU	PU	86(32% High)
PU	PD	50(50% High)
PD	PU	33(66% High)
PD	PD	0(100% High)

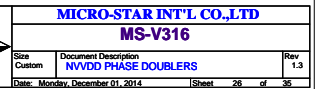
	MICRO-STAR INT'L CO.,LTD		
	MS-V316		
	Size Custom	Document Description MISC2: ROM, XTAL, Straps	Rev 1.3
Date: Monday, December 01, 2014 Sheet 22 of 35			


$$V_{o_Typ} = 0.8 \cdot (1 + 1K/3.09K) = 1.059V$$

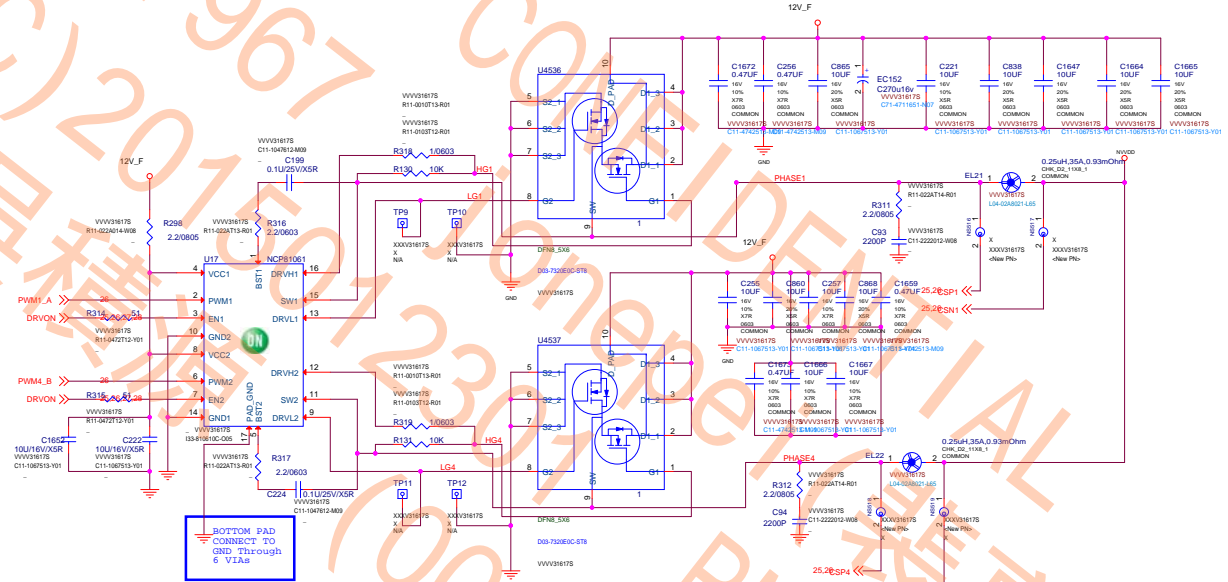


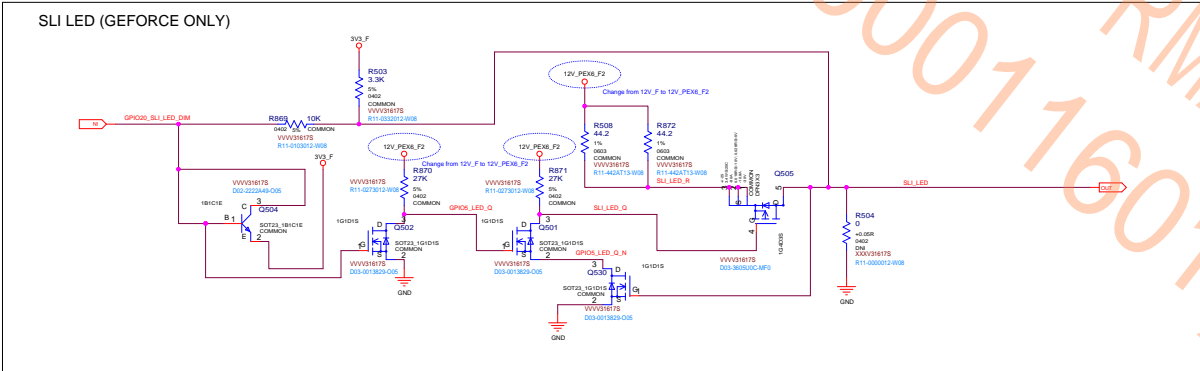
MICRO-STAR INT'L CO.,LTD
MS-V316

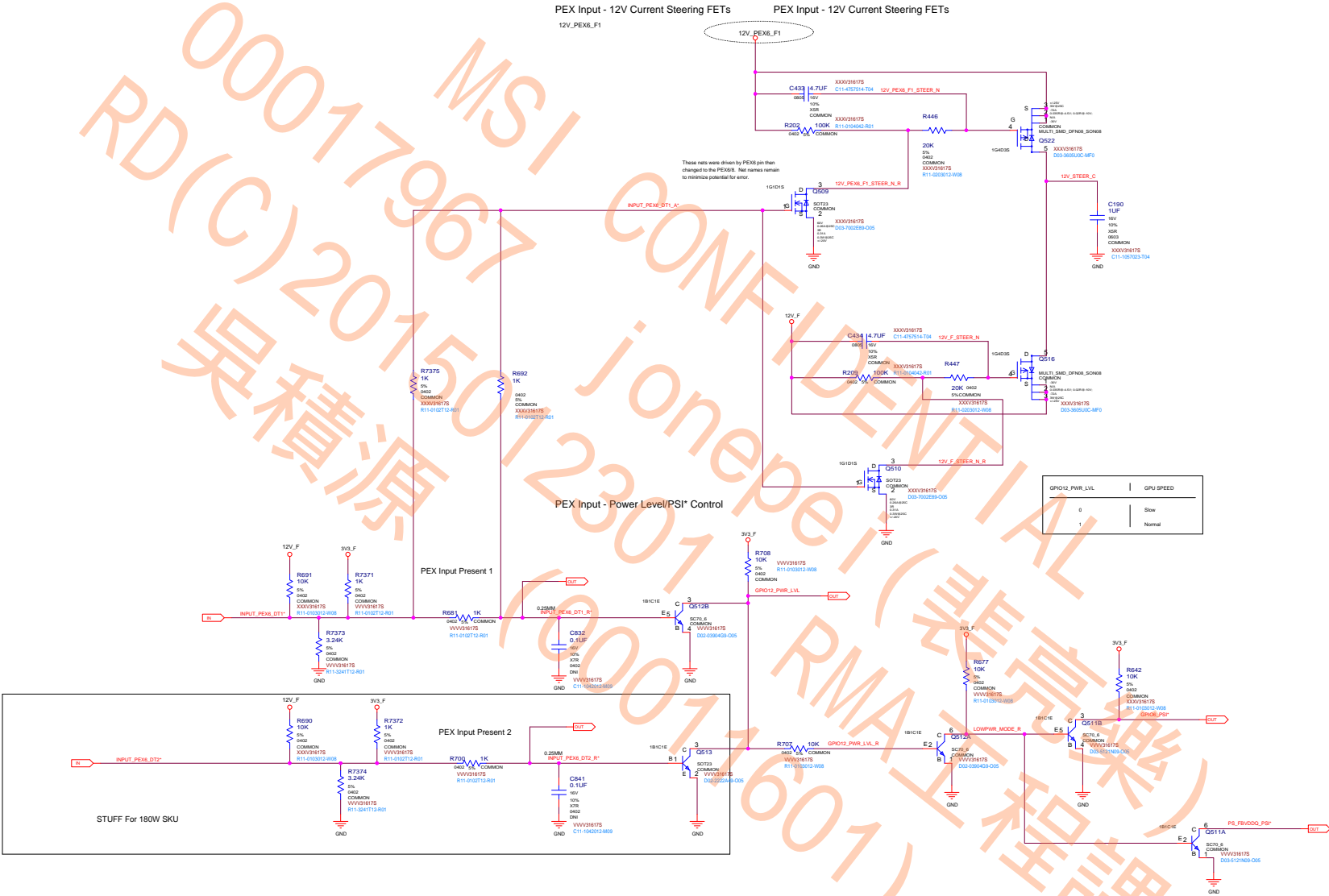
Size Custom	Document Description NWDD Controller	Rev 1.3
Date: Monday, December 01, 2014		Sheet 25 of 35











Thermal IC : NCT7511Y

Layout notice :
*Add ground shielding for D+ and Dtraces.
*D+/D- route has to be away from the high noise area.
*The recommended traces width and ground shielding spacing are 10mils.

Thermal Diode

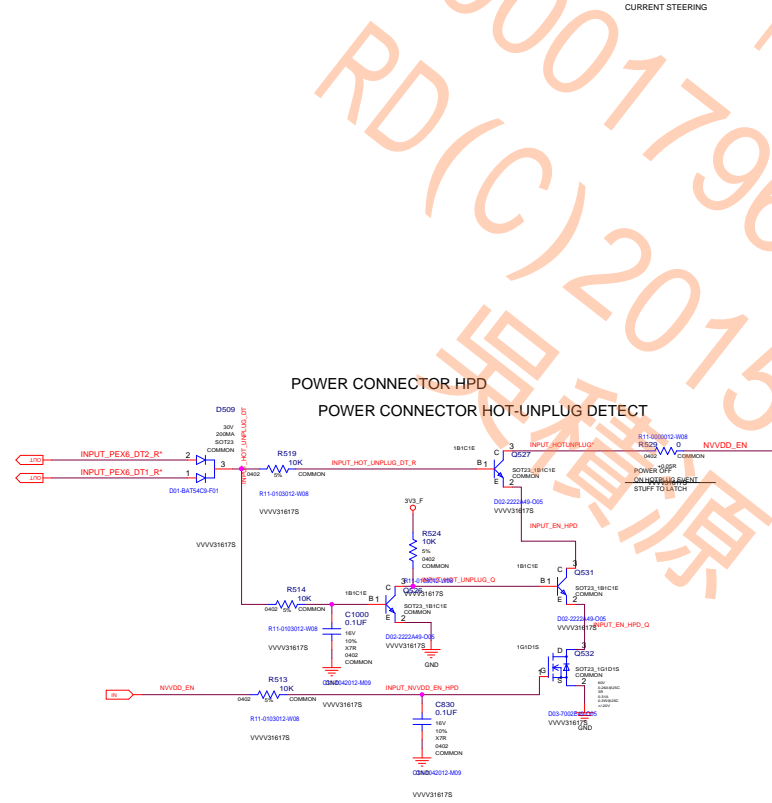
Please refer datasheet
TCRIT_SET Table
If floating,shutdown temp. set to 65℃

EEPROM

Fan connector option

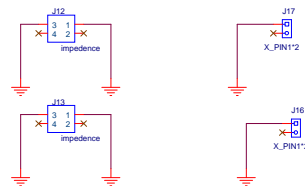
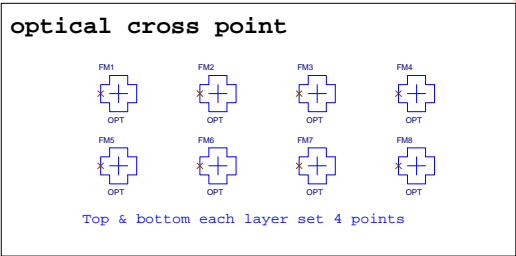
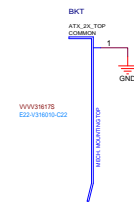
MICRO-STAR INT'L CO.,LTD		
MS-V316		
Size	Document Description	Rev
Custom	NCT7511 FAN2	1.3
Date: Monday, December 01, 2014		Sheet 32 of 36

PEX Input - NVVDD Power Sequence

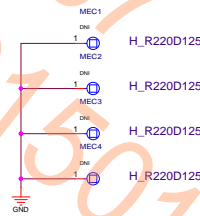




Brackets:



GPU Stiffener:



MOUNTING HOLES FOR HS:

