

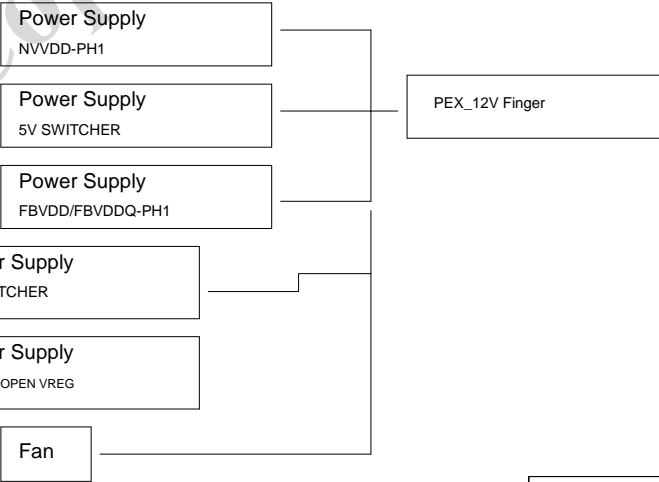
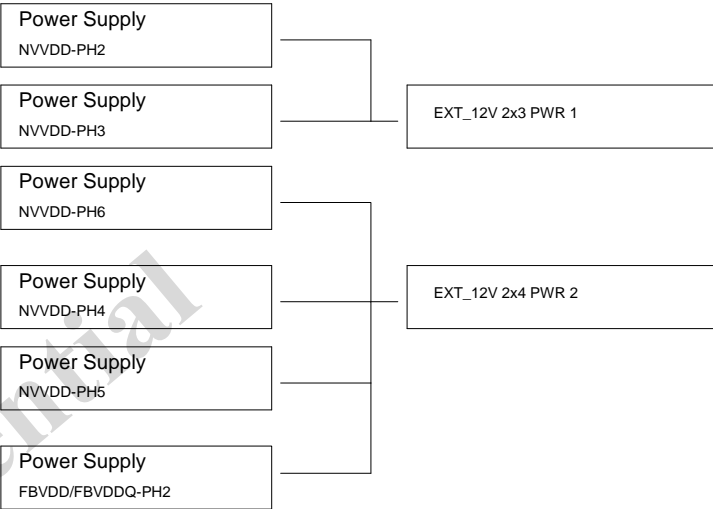
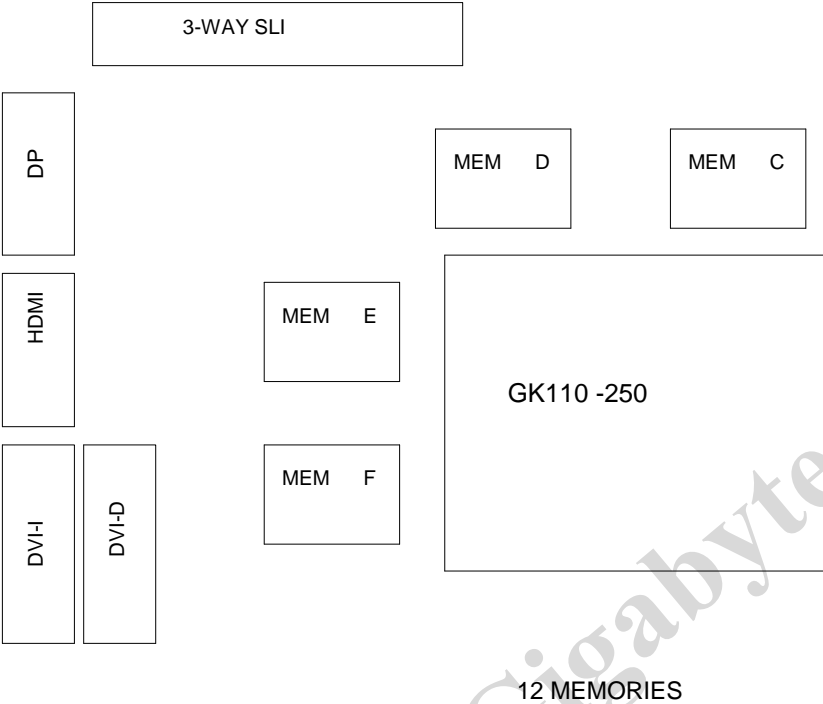
P2083-B01

GK110, 3GB GDDR5, 384b, 64Mx32 +128Mx32
DVI_I+DVI_D + HDMI + DP

TABLE OF CONTENTS

Page	Description	Page	Description
1	Table of Contents	26	MIOA/B and Framelock Interface
2	Block Diagram	27	MISC1: Fan, Thermal, JTAG, GPIO
3	PCI Express	28	MISC2: ROM, XTAL, Straps
4	MEMORY: GPU Partition A/B	29	PS: 5V, PEX_VDD
5	MEMORY: FBA[31:0]	30	PS: FBVDD/Q
6	MEMORY: FBA[63:32]	31	PS: NVVDD Controller
7	MEMORY: FBB[31:0]	32	PS: NVVDD Phase 1,2
8	MEMORY: FBB[63:32]	33	PS: NVVDD Phase 3,4
9	MEMORY: GPU Partition C/D	34	PS: NVVDD Phase 5,6
10	MEMORY: FBC[31:0]	35	Power Connector Hot Unplug Detect
11	MEMORY: FBC[63:32]	36	PS: Inputs, Filtering, and Monitoring
12	MEMORY: FBD[31:0]	37	PS: Shutdown
13	MEMORY: FBD[63:32]	38	PS: 12V Current Steering
14	MEMORY: GPU Partition E/F	39	MECH: Bracket/Thermal
15	MEMORY: FBE[31:0]	40	POWER BRAKE AND LED
16	MEMORY: FBE[63:32]		
17	MEMORY: FBF[31:0]		
18	MEMORY: FBF[63:32]		
19	GPU PWR and GND		
20	GPU Decoupling		
21	DACA Interface		
22	IFPAB DVI-I-DL		
23	IFPEF DVI-D-DL		
24	IFPC HDMI IFPC		
25	IFPD DP		

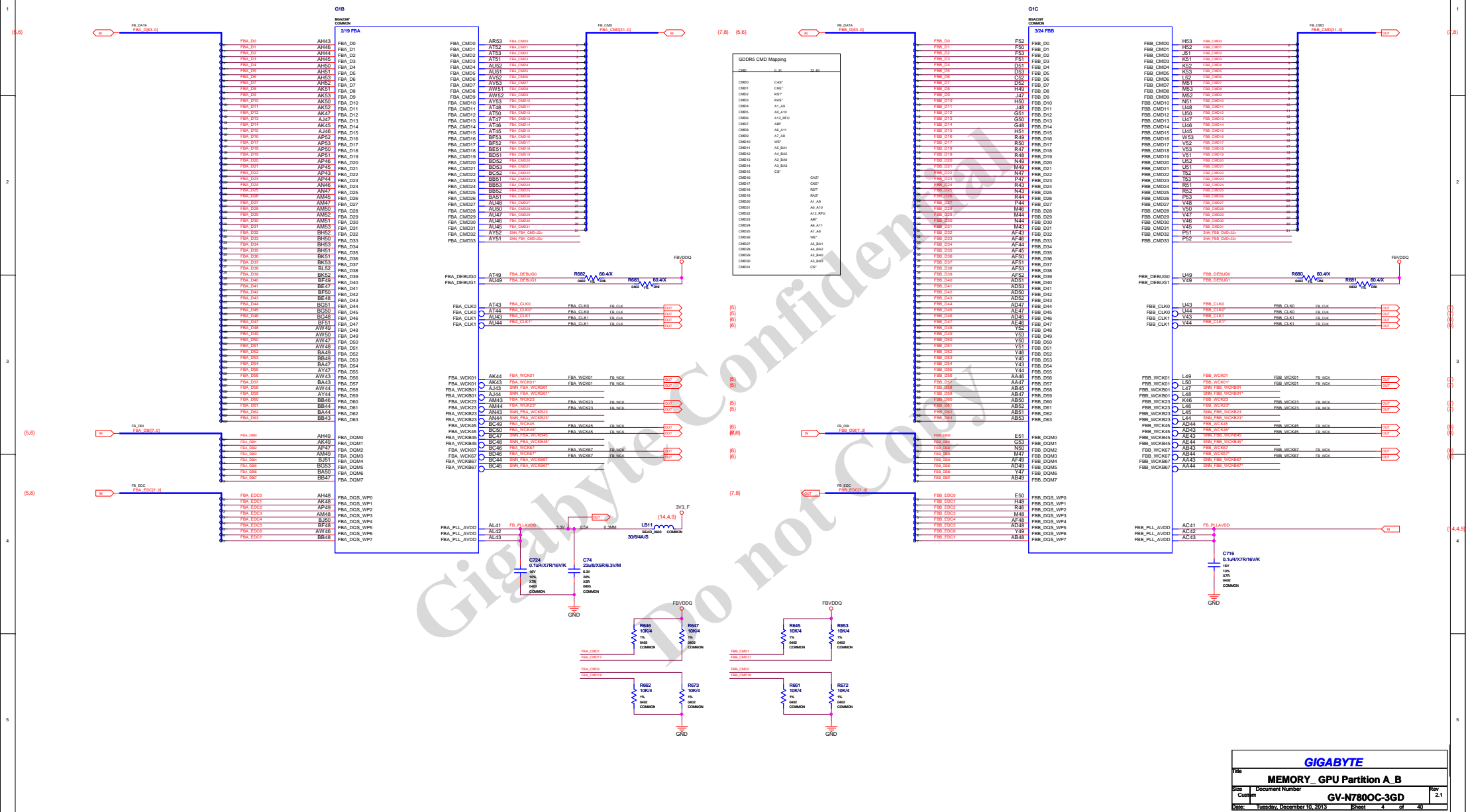
DESKTOP SKU SKU 0020

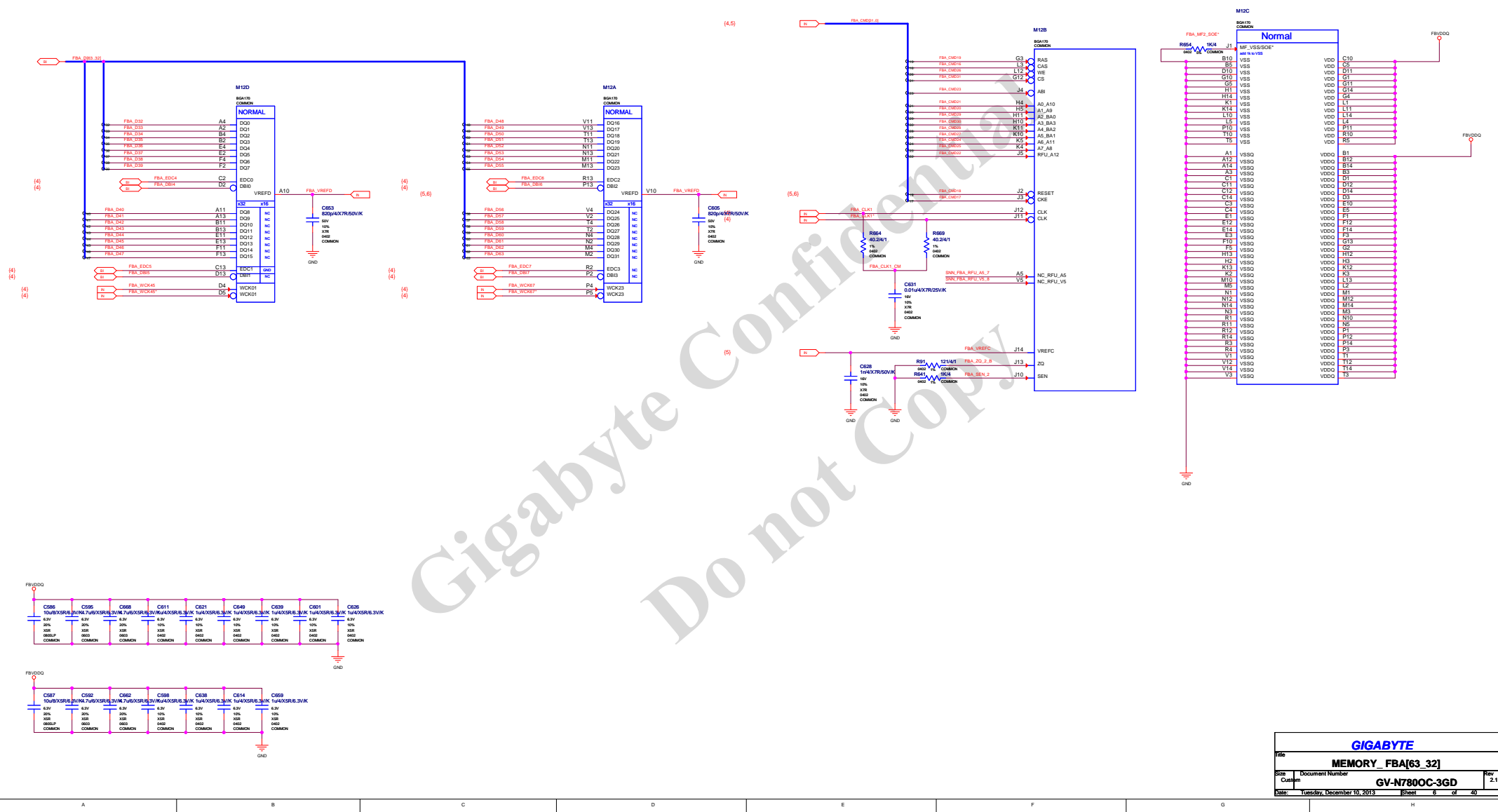


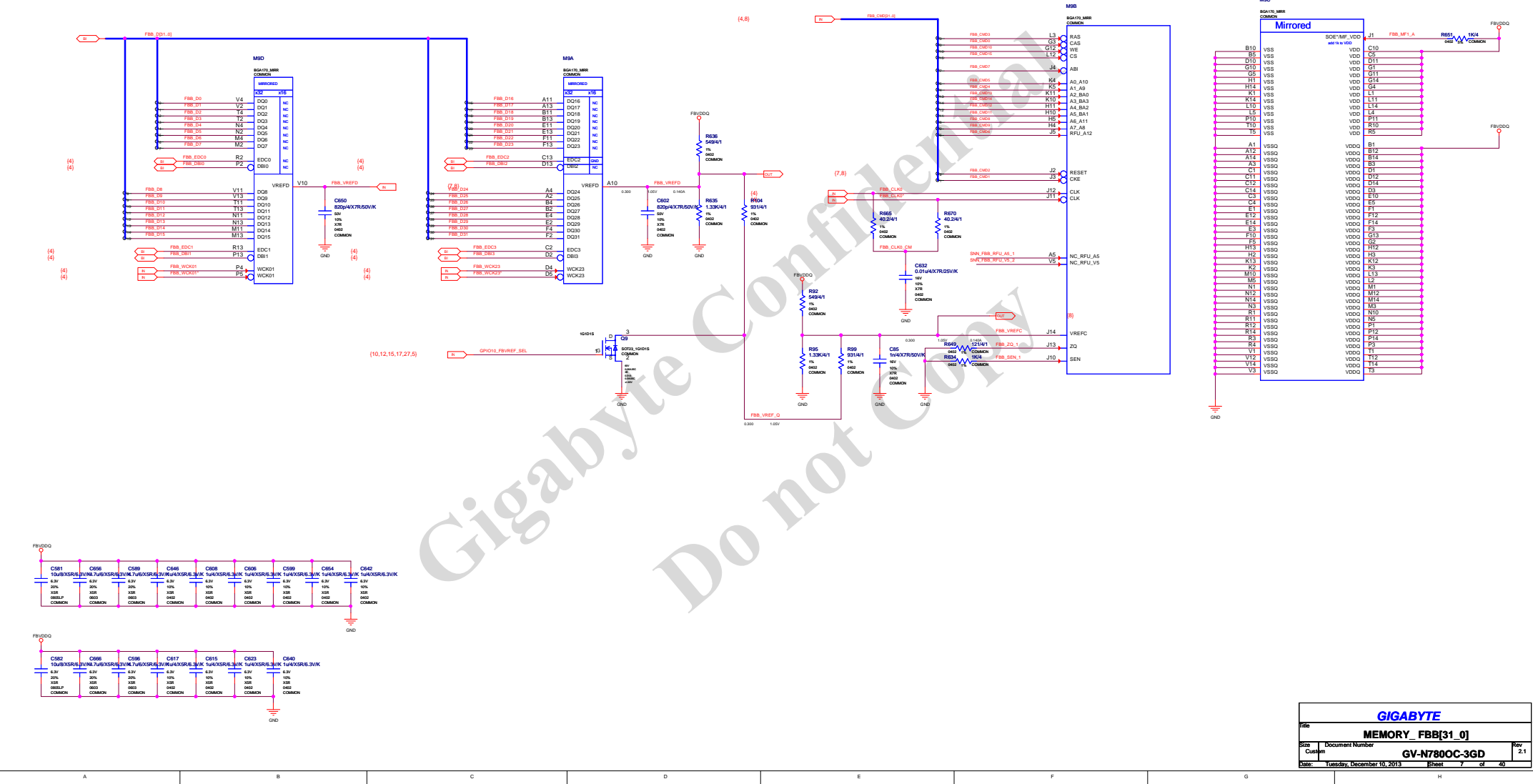
IMPLIED WARRANTIES INCLUDING, WITHOUT LIMITATION, THE WARRANTIES OF DESIGN, OF NONINFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR ARISING FROM A COURSE OF DEALING, TRADE USAGE, TRADE PRACTICE, OR INDUSTRY STANDARDS.

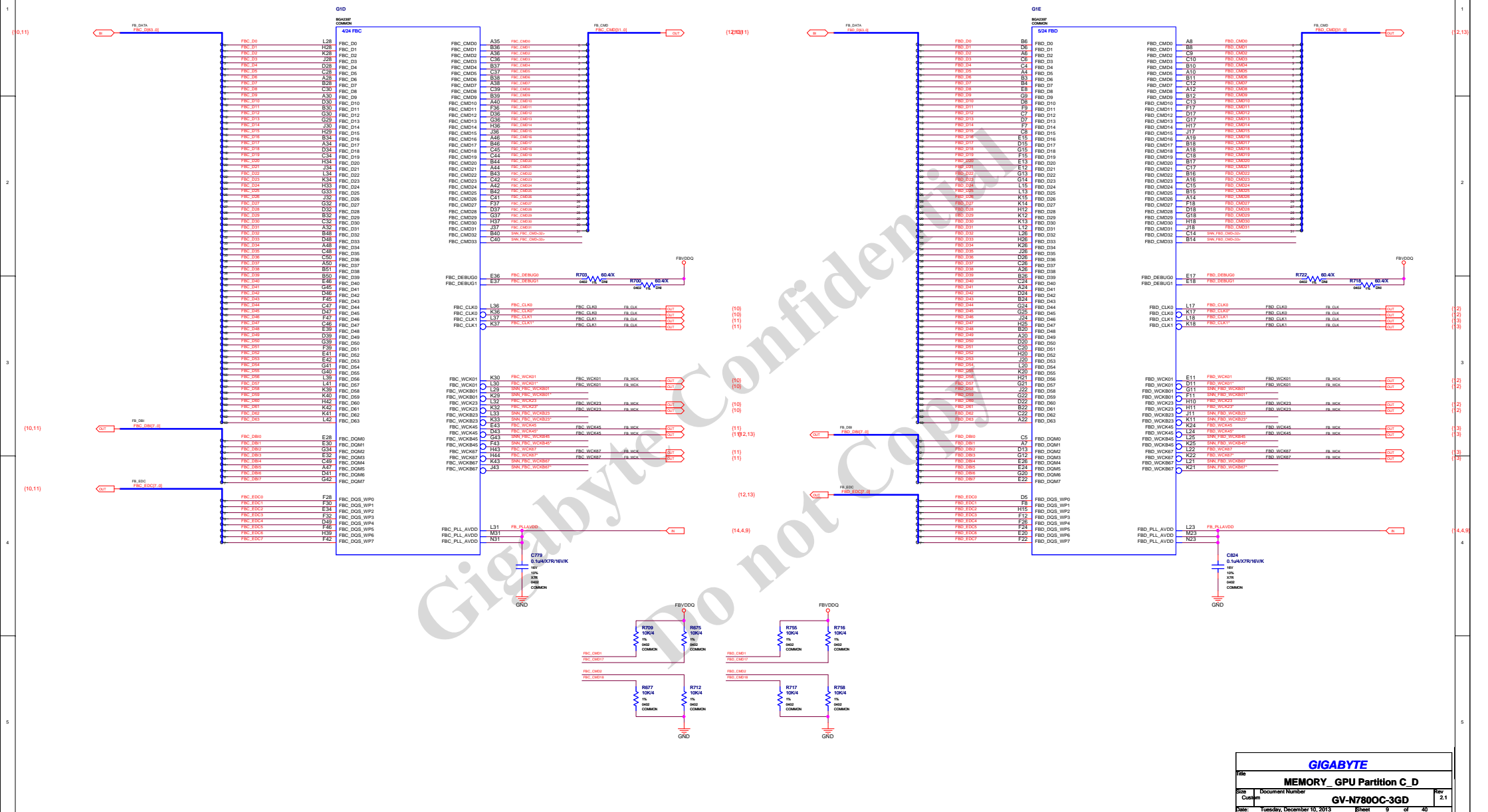
GIGABYTE			
Title			
Block Diagram			
Size	Document Number		Rev
Custom	GV-N780OC-3GD		2.1
Date: Tuesday, December 10, 2013		Sheet	2 of 40

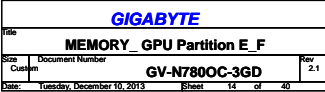


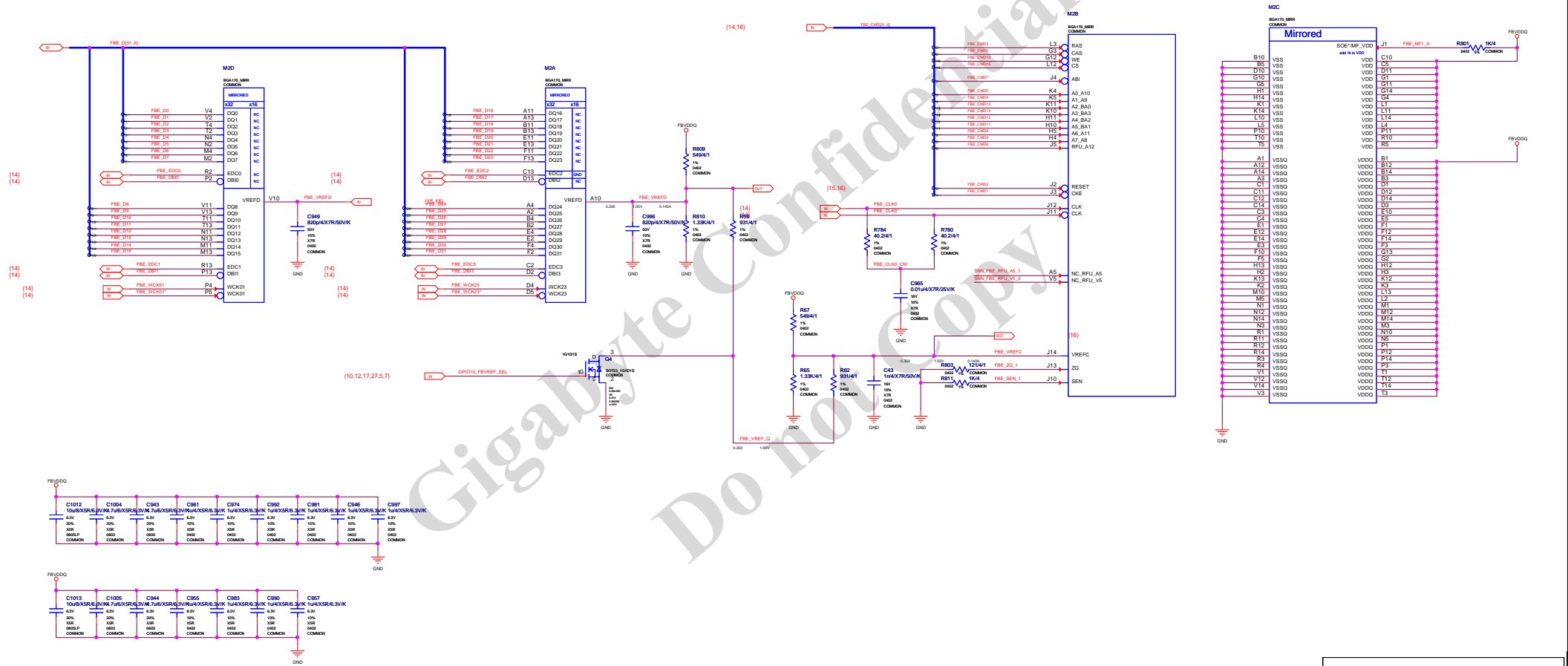


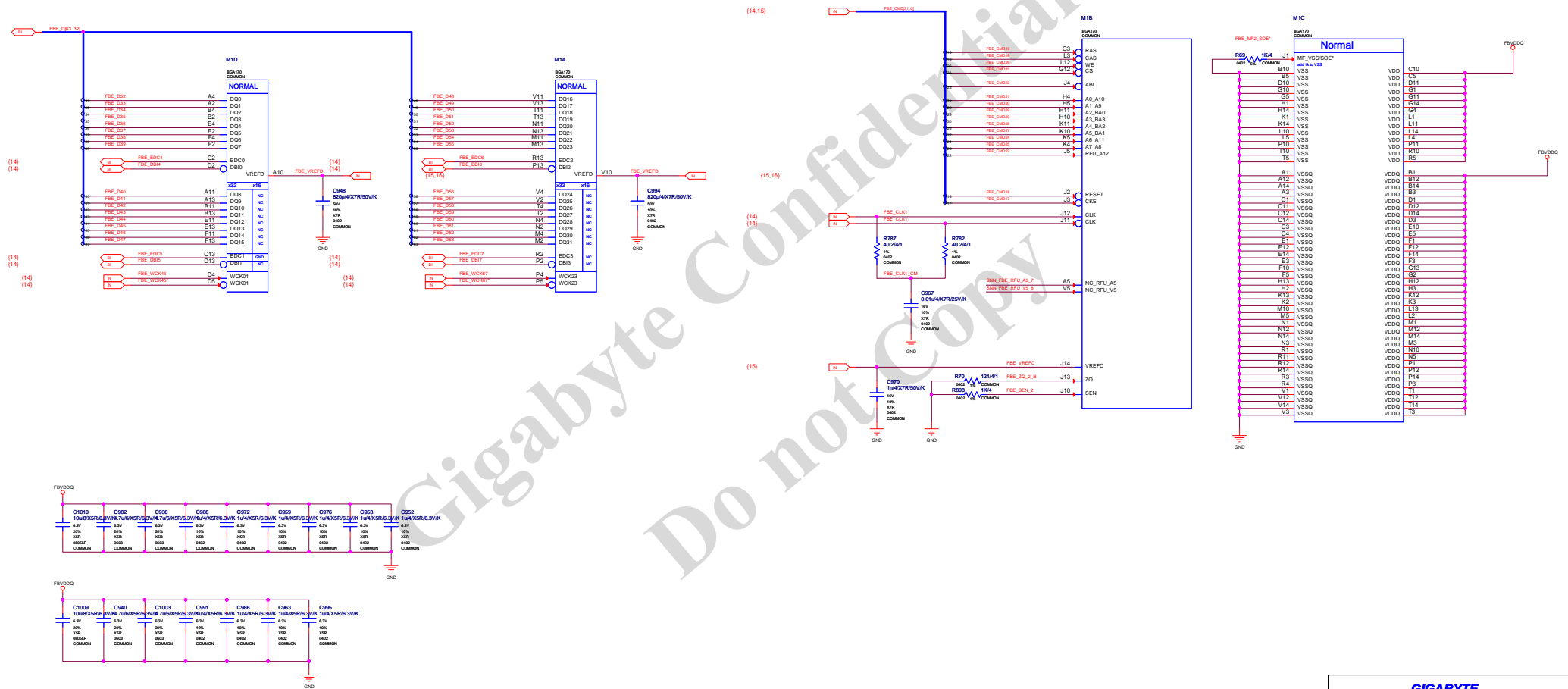


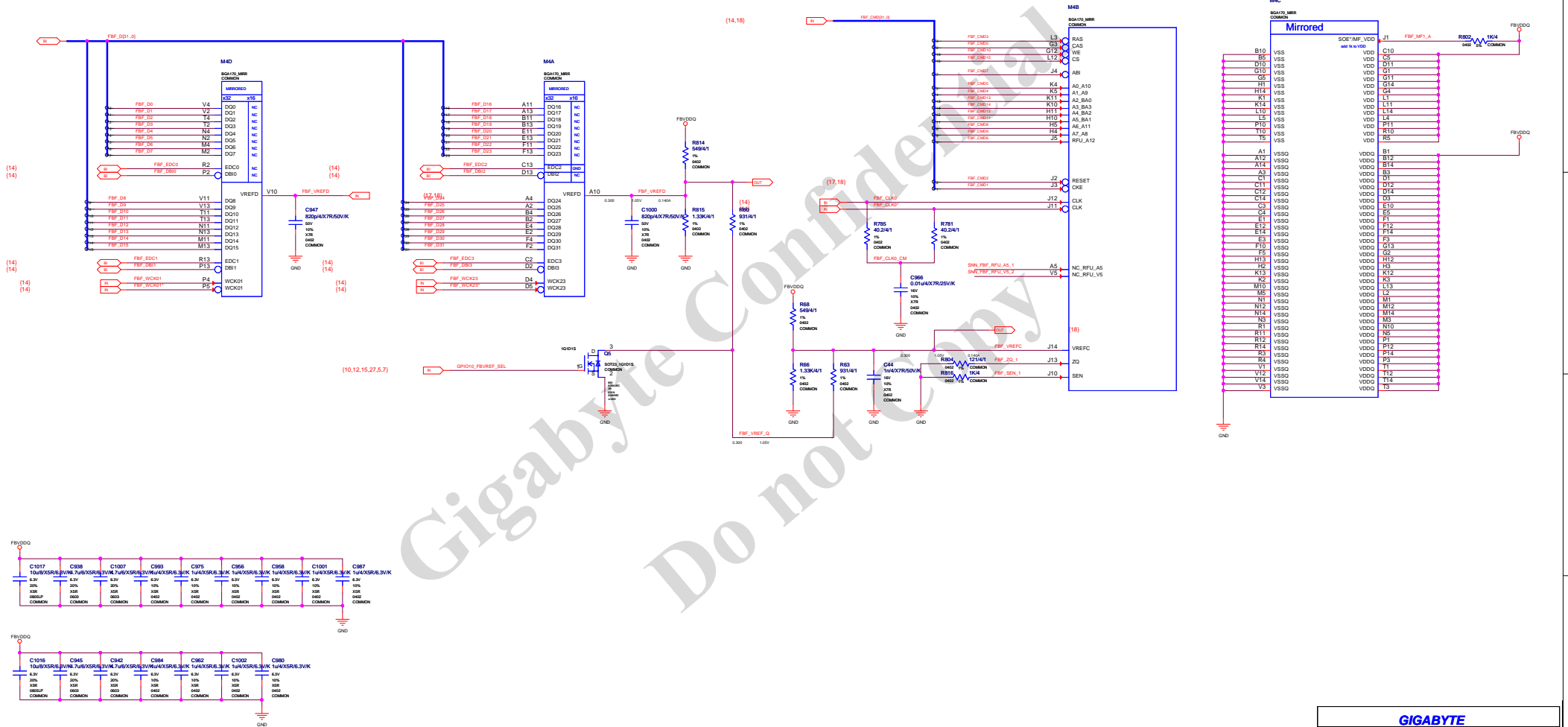


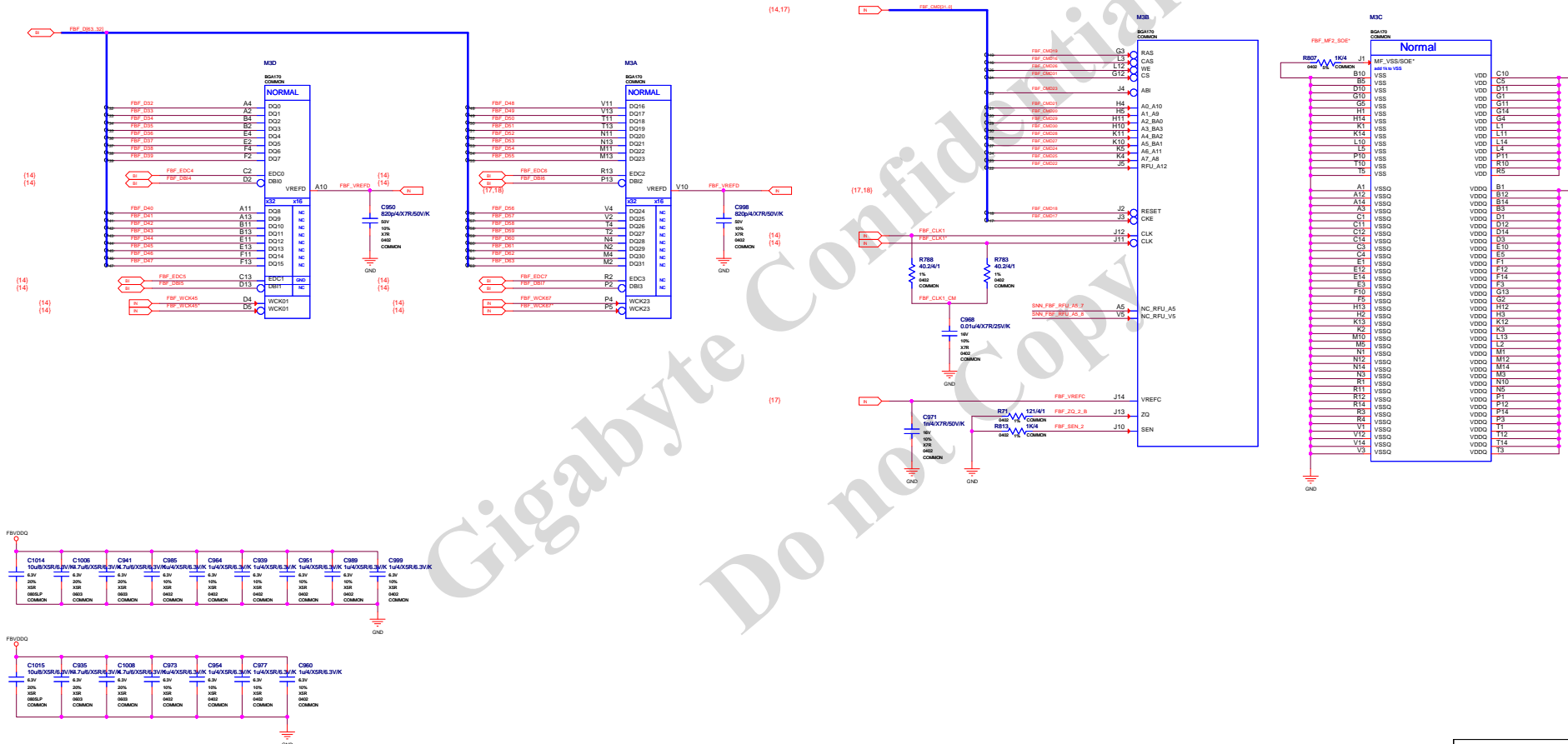












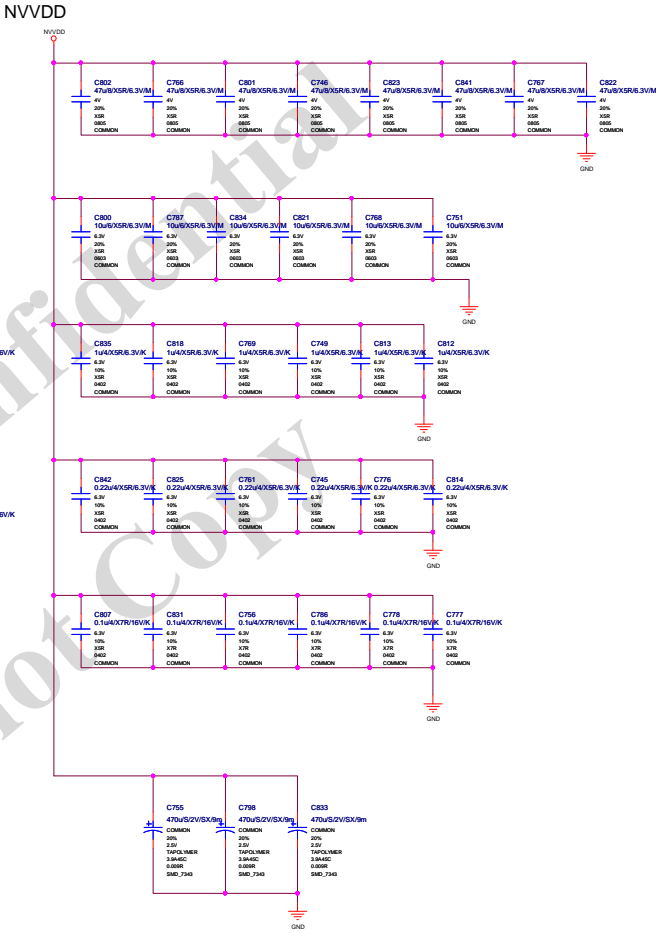
Based on GB3-X GDDR5 FBVDDQ Decap Guideline

FBVDDQ
0.1uF, 1uF, 0402 (Place Under GPU)
4.7uF, 0603 (Place Near GPU)
10uF, 0805 (Place Near GPU)
22uF, 0805 (Place Near GPU)



IF LAYOUT SPACE PERMITS
PLACE 0805 BETWEEN GPU AND MEM

NVVDD Decoupling caps. Place under GPU.



8x 47uF, 0805

6x 10uF, 0603

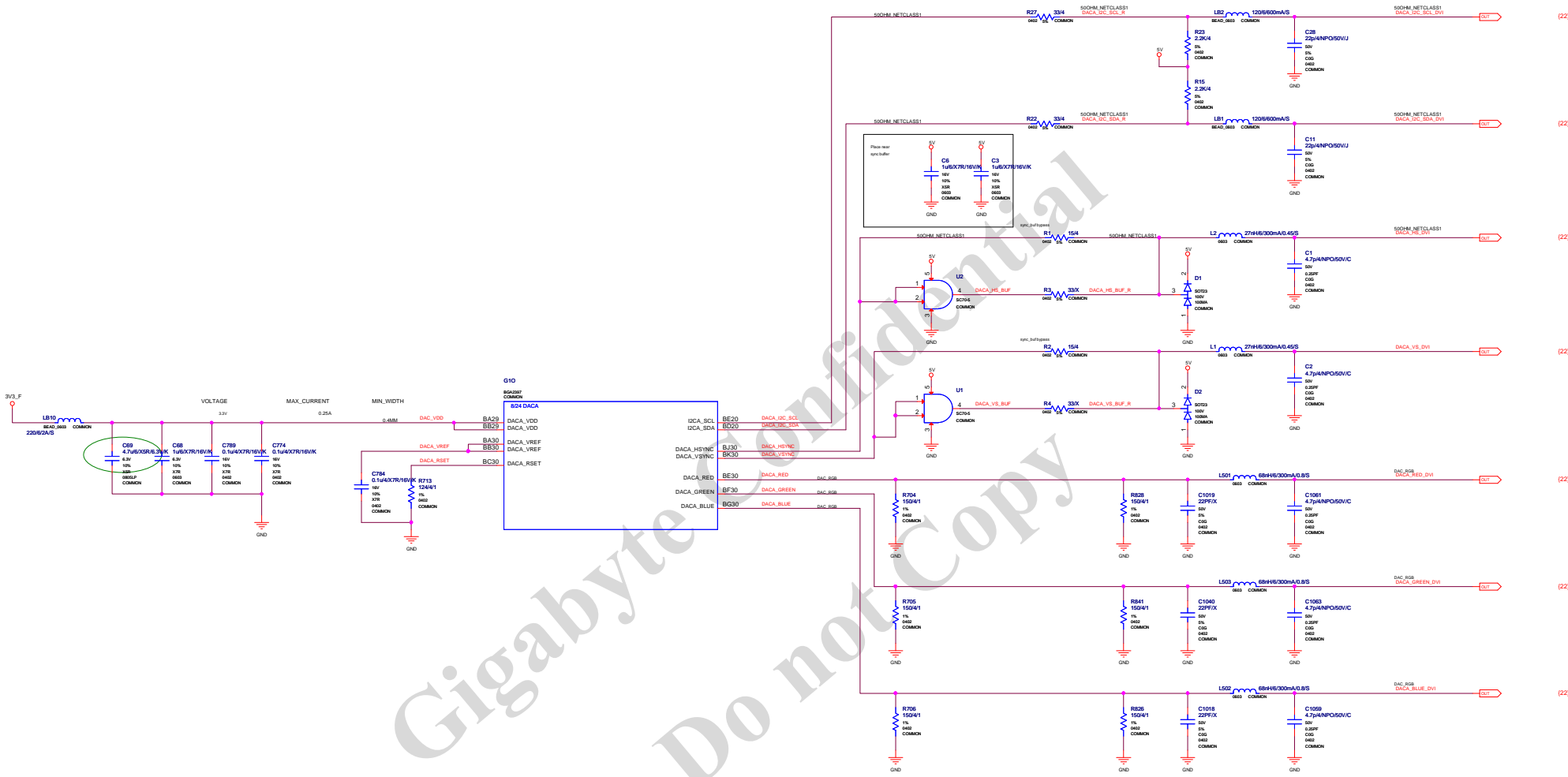
4x 1uF, 0402

4x 0.22uF, 0402

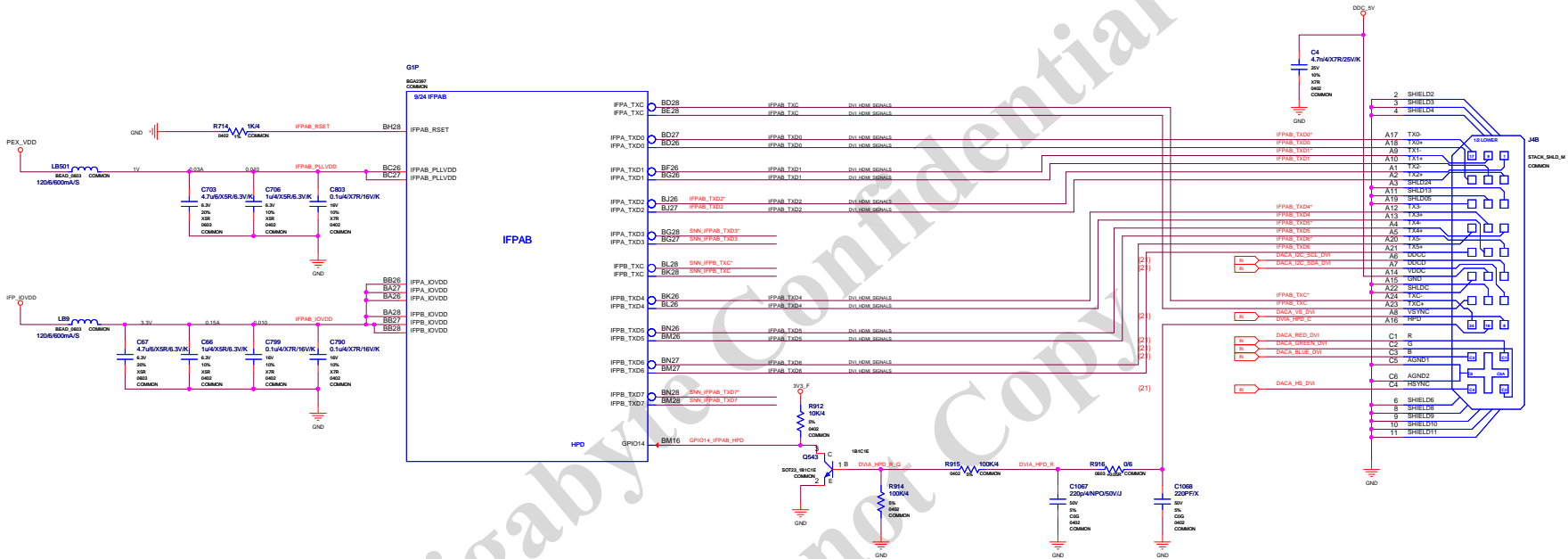
4x 0.1uF, 0402

3x 330uF, SMD7343

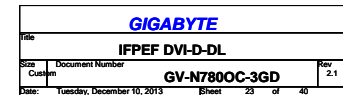
GIGABYTE			
GPU Decoupling			
Size	Document Number	Rev	2.1
Custom	GV-N7800C-3GD		
Date:	Tuesday, December 10, 2013	Sheet	20 of 40

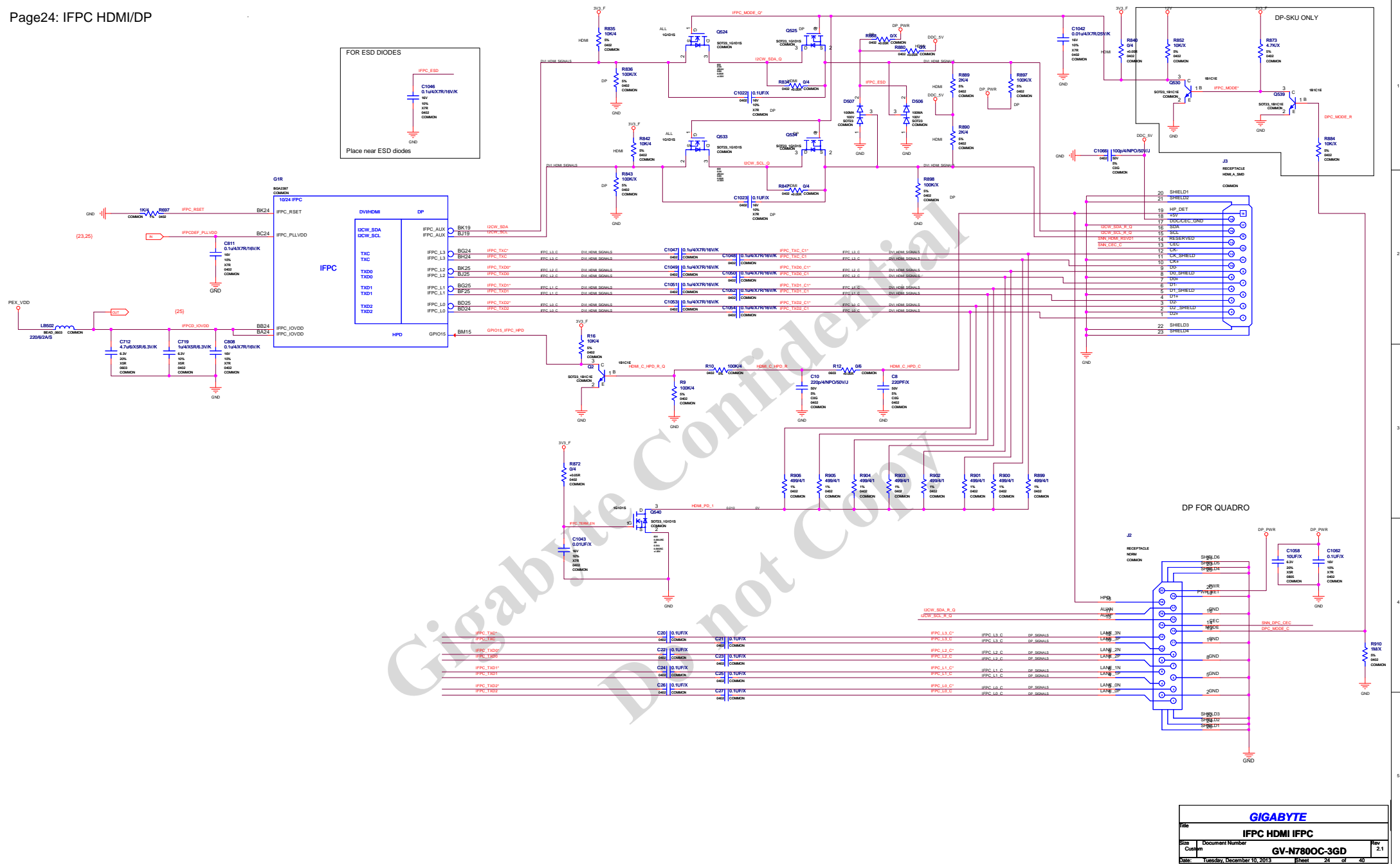


GIGABYTE			
Title			
DACA Interface			
Size	Document Number	Rev	
mm	GV-N780OC-3GD	2.1	
Date:		Tuesday, December 10, 2013	Sheet 21 of 40



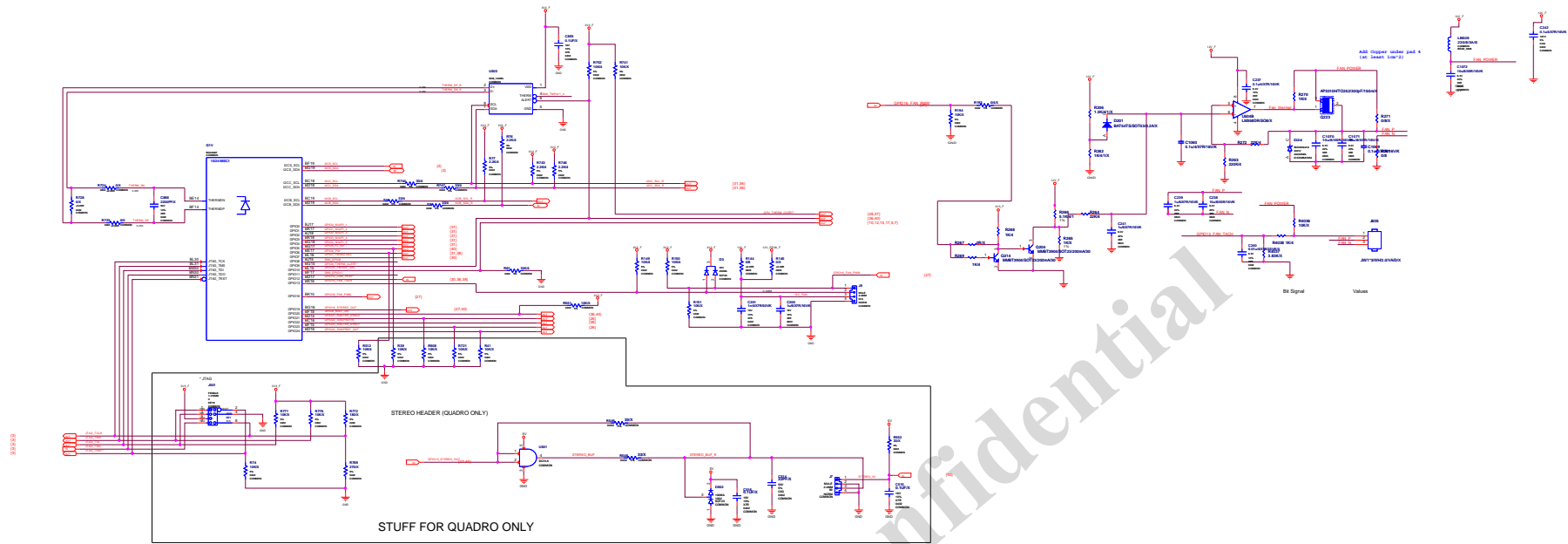
GIGABYTE			
Title			
IFPAB DVI-I-DL			
Size	Document Number	Rev	
Custom	GV-N780OC-3GD	2.1	
Date: Tuesday, December 10, 2013		Sheet	22 of 40





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





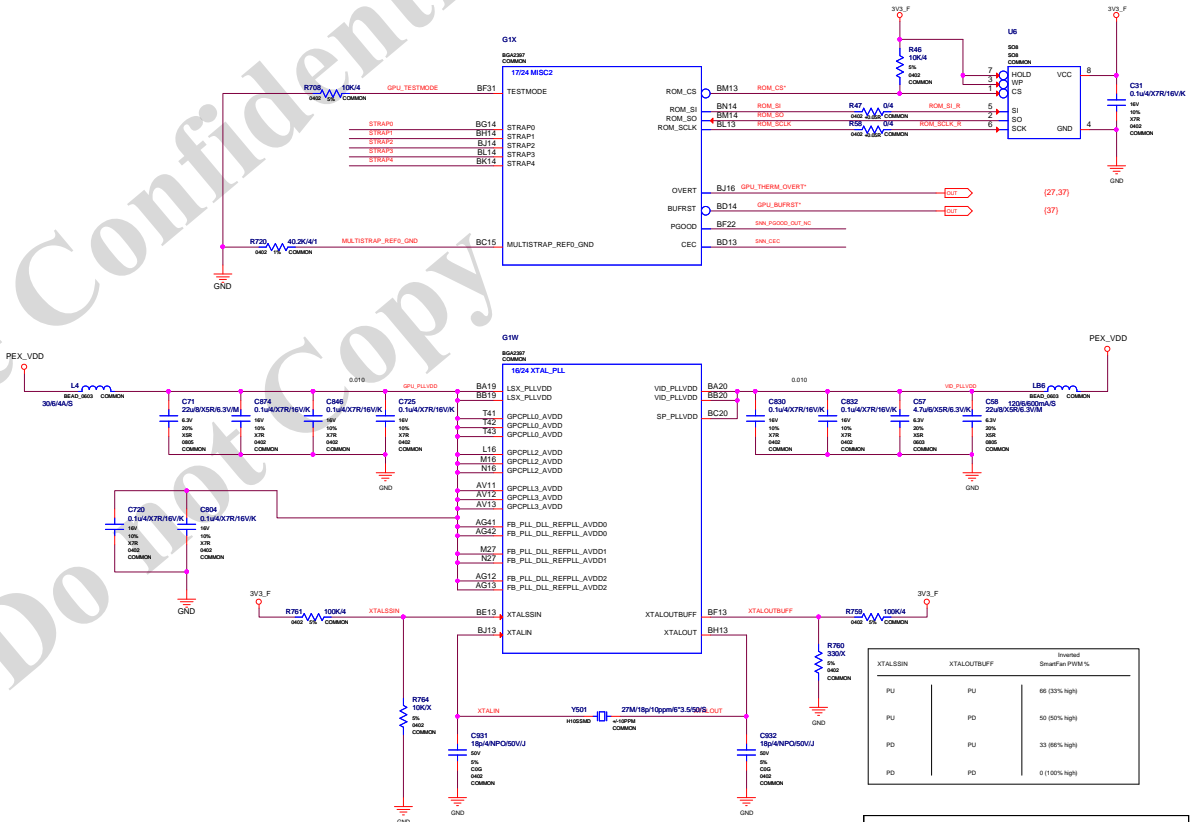
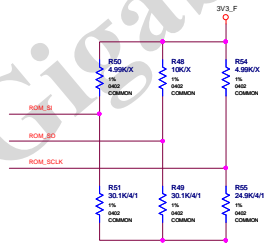
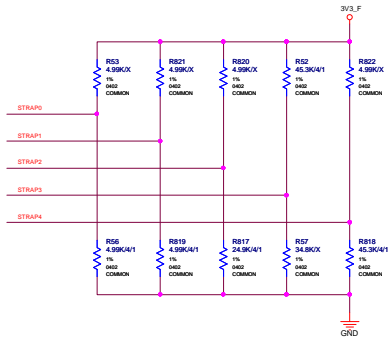
STRAP0	USER_BIT [3:0]*	0000*	5K PD*
STRAP1	3GIO_PADCFG_LUT_ADR*	0000*	5K PD Desktop*
STRAP2	PCI_DEVID [3:0]*	0100* (DEVID :0x1004)	25K PD -300 GPU PCI DEV ID 0x1004
STRAP3	SOR_EXPOSED [3:0]*	1111*	45K PU*
STRAP4	DP_PLL_VDD_33V*	1* FOR 3_3V*	
	PEX_MAX_SPEED*	1* FOR GEN2/3*	45K PD*
	PEX_SPD_CHANGE_GEN3*	1* ENABLED*	
	*		
ROM_SI	RAMCFG[0]*	0*	64Mx32 384 16 SAMSUNG (P8RAM0)111 - 45K PD 64Mx32 384 16 ELPIDA (P8RAM0)1011 - 30K PD 64Mx32 384 16 HYNIX (P8RAM0)110 - 30K PD
	RAMCFG[1]*	1*	45K PD*
	RAMCFG[2]*	1*	
	RAMCFG[3]*	0*	
	VGA_DEVICE*	1*	
ROM_SO	SMB_ALT_ADDR*	0*	30K PD*
	FB[0]_APERTURE_SIZE*	1* For 128MB*	
	FB[1]_APERTURE_SIZE*	0* For 128MB*	
	PEX_PLL_EN_TERM100*	0* DISABLED*	
ROM_SCLK	PCI_DEVID_EXT[5]	0*	25k PD*
	SUB_VENDOR*	1* Dedicated BIOS*	PCIe DEV ID SKU
	PCI_DEVID_EXT[4]*	0*	0X1004 SKU20

	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

x32 DENSITY MODE STRAPS		
CFG[3:0]	Config	Vendor
0000	Reserved	
0001	32Mx32 384-bit Elpida	
0010	32Mx32 384-bit Hynix	
0011	32Mx32 384-bit Samsung	
0100	Reserved	
0101	64Mx32 384-bit Elpida	
0110	64Mx32 384-bit Hynix	
0111	64Mx32 384-bit Samsung	
1000	Reserved	
1001	32Mx32 320-bit Elpida	
1010	32Mx32 320-bit Hynix	
1011	32Mx32 320-bit Samsung	
1100	Reserved	
1101	64Mx32 320-bit Elpida	
1110	64Mx32 320-bit Hynix	
1111	64Mx32 320-bit Samsung	

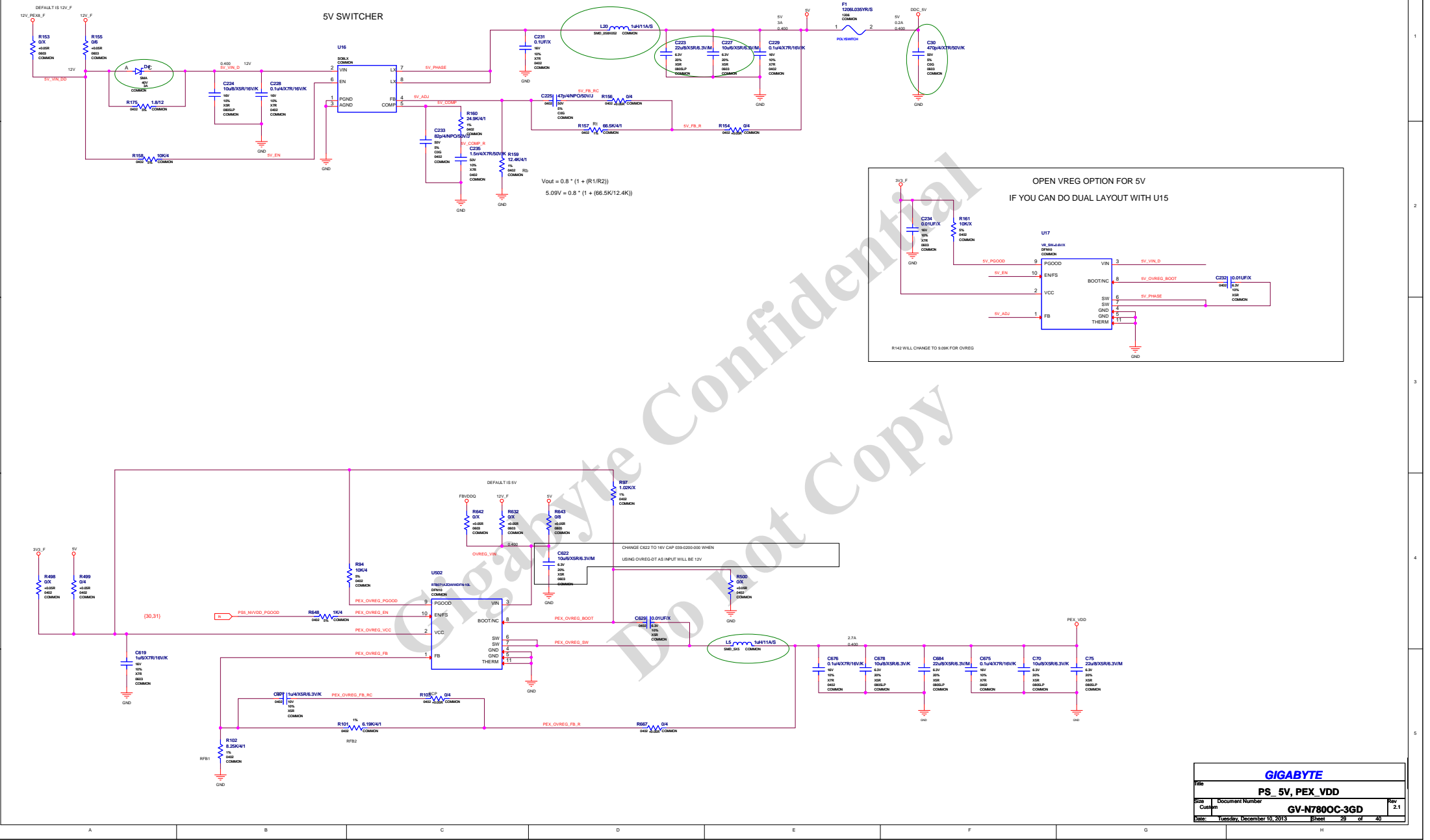
x16 DENSITY MODE STRAPS		
CFG[3:0]	Config	Vendor
0000	Reserved	
0001	64Mx16 384-bit Elpida	
0010	64Mx16 384-bit Hynix	
0011	64Mx16 384-bit Samsung	
0100	Reserved	
0101	128Mx16 384-bit Elpida	
0110	128Mx16 384-bit Hynix	
0111	128Mx16 384-bit Samsung	
1000	Reserved	
1001	64Mx16 320-bit Elpida	
1010	64Mx16 320-bit Hynix	
1011	64Mx16 320-bit Samsung	
1100	Reserved	
1101	128Mx16 320-bit Elpida	
1110	128Mx16 320-bit Hynix	
1111	128Mx16 320-bit Samsung	

	MULTI_STRAP_REF0_GND
BINARY PRODUCTION	NC
BINARY BRINGUP	NC
MULTI LEVEL	45.3K 1% TO GND



XTALSSIN	XTALOUTBUFF	Inverted
PU	PU	66 (33% high)
PU	PD	50 (50% high)
PD	PU	33 (66% high)
PD	PD	0 (100% high)

GIGABYTE			
Title			
MISC2_ROM, XTAL, Straps			
Size	Document Number	Rev	
Custom	GV-N780OC-3GD	2.1	
Date:	Tuesday, December 10, 2013	Sheet	28 of 40



VID Table					
GPIO4	GPIO3	GPIO2	GPIO1	GPIO0	VOUT
GPIO4	GPIO3	GPIO2	GPIO1	GPIO0	VOUT
0	0	0	0	0	1.0500V
0	0	0	0	1	1.0500V
0	0	0	1	0	1.1000V
0	0	0	1	1	1.1500V
0	0	1	0	0	1.2000V
0	0	1	0	1	1.2500V
0	0	1	1	0	1.3000V
0	0	1	1	1	1.3500V
0	1	0	0	0	1.4000V
0	1	0	0	1	1.4500V
0	1	0	1	0	1.5000V
0	1	0	1	1	1.5500V
0	1	1	0	0	1.6000V
0	1	1	0	1	1.6500V
0	1	1	1	0	1.7000V
0	1	1	1	1	1.7500V
1	0	0	0	0	1.8000V
1	0	0	0	1	1.8500V
1	0	0	1	0	1.9000V
1	0	0	1	1	1.9500V
1	0	1	0	0	2.0000V
1	0	1	0	1	2.0500V
1	0	1	1	0	2.1000V
1	0	1	1	1	2.1500V
1	1	0	0	0	2.2000V
1	1	0	0	1	2.2500V
1	1	0	1	0	2.3000V
1	1	0	1	1	2.3500V
1	1	1	0	0	2.4000V
1	1	1	0	1	2.4500V
1	1	1	1	0	2.5000V
1	1	1	1	1	2.5500V

BOOT START (0x11)

- 1. Boot start (0x11) (0x11)
- 2. Boot start (0x11) (0x11)
- 3. Boot start (0x11) (0x11)
- 4. Boot start (0x11) (0x11)

P-STATE VOLTAGES

- 1. P-state (0x11) (0x11) (0x11)
- 2. P-state (0x11) (0x11) (0x11)

NO-LOAD OFFSET

- 1. No-load offset (0x11) (0x11) (0x11)
- 2. No-load offset (0x11) (0x11) (0x11)

NO-LOAD OFFSET

- 1. No-load offset (0x11) (0x11) (0x11)
- 2. No-load offset (0x11) (0x11) (0x11)

NO-LOAD OFFSET

- 1. No-load offset (0x11) (0x11) (0x11)
- 2. No-load offset (0x11) (0x11) (0x11)

NO-LOAD OFFSET

- 1. No-load offset (0x11) (0x11) (0x11)
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NO-LOAD OFFSET

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NO-LOAD OFFSET

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NO-LOAD OFFSET

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NO-LOAD OFFSET

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NO-LOAD OFFSET

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NO-LOAD OFFSET

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NO-LOAD OFFSET

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NO-LOAD OFFSET

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NO-LOAD OFFSET

- 1. No-load offset (0x11) (0x11) (0x11)
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NO-LOAD OFFSET

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NO-LOAD OFFSET

- 1. No-load offset (0x11) (0x11) (0x11)
- 2. No-load offset (0x11) (0x11) (0x11)

NO-LOAD OFFSET

- 1. No-load offset (0x11) (0x11) (0x11)
- 2. No-load offset (0x11) (0x11) (0x11)

NO-LOAD OFFSET

- 1. No-load offset (0x11) (0x11) (0x11)
- 2. No-load offset (0x11) (0x11) (0x11)

NO-LOAD OFFSET

- 1. No-load offset (0x11) (0x11) (0x11)
- 2. No-load offset (0x11) (0x11) (0x11)

NO-LOAD OFFSET

- 1. No-load offset (0x11) (0x11) (0x11)
- 2. No-load offset (0x11) (0x11) (0x11)

NO-LOAD OFFSET

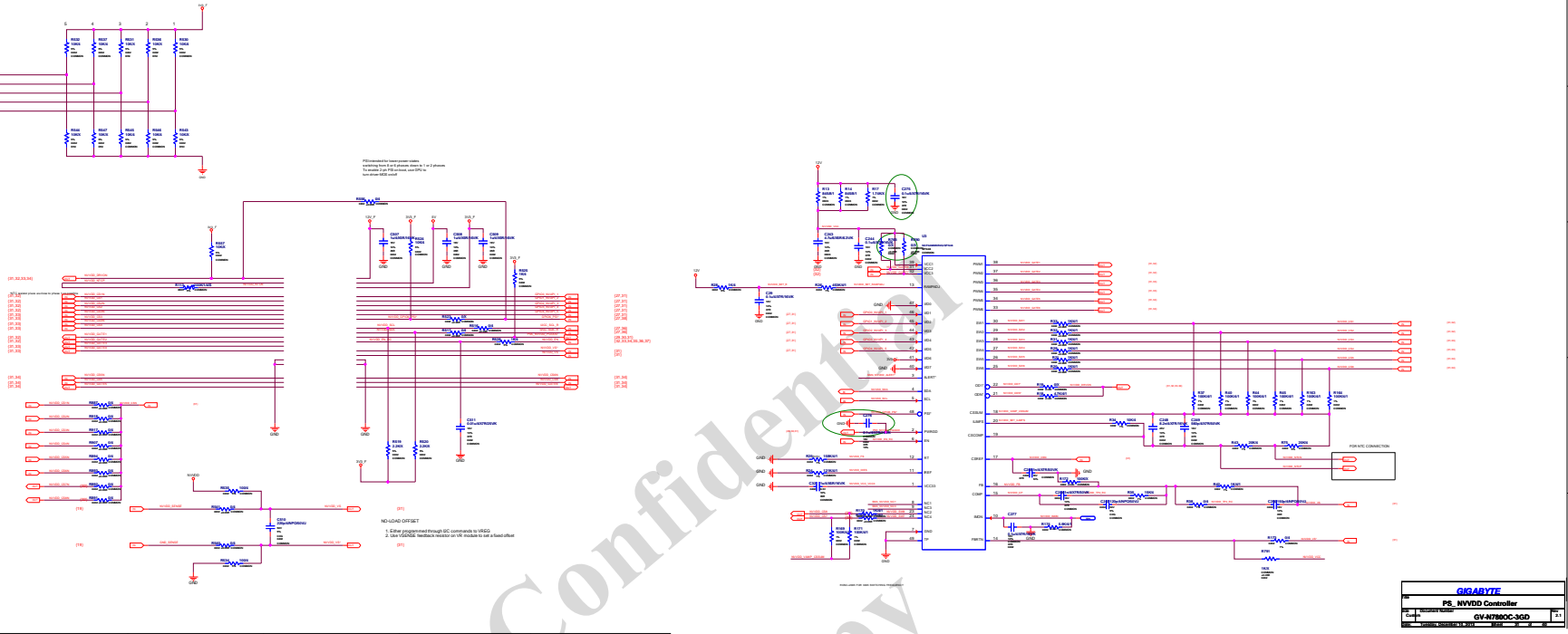
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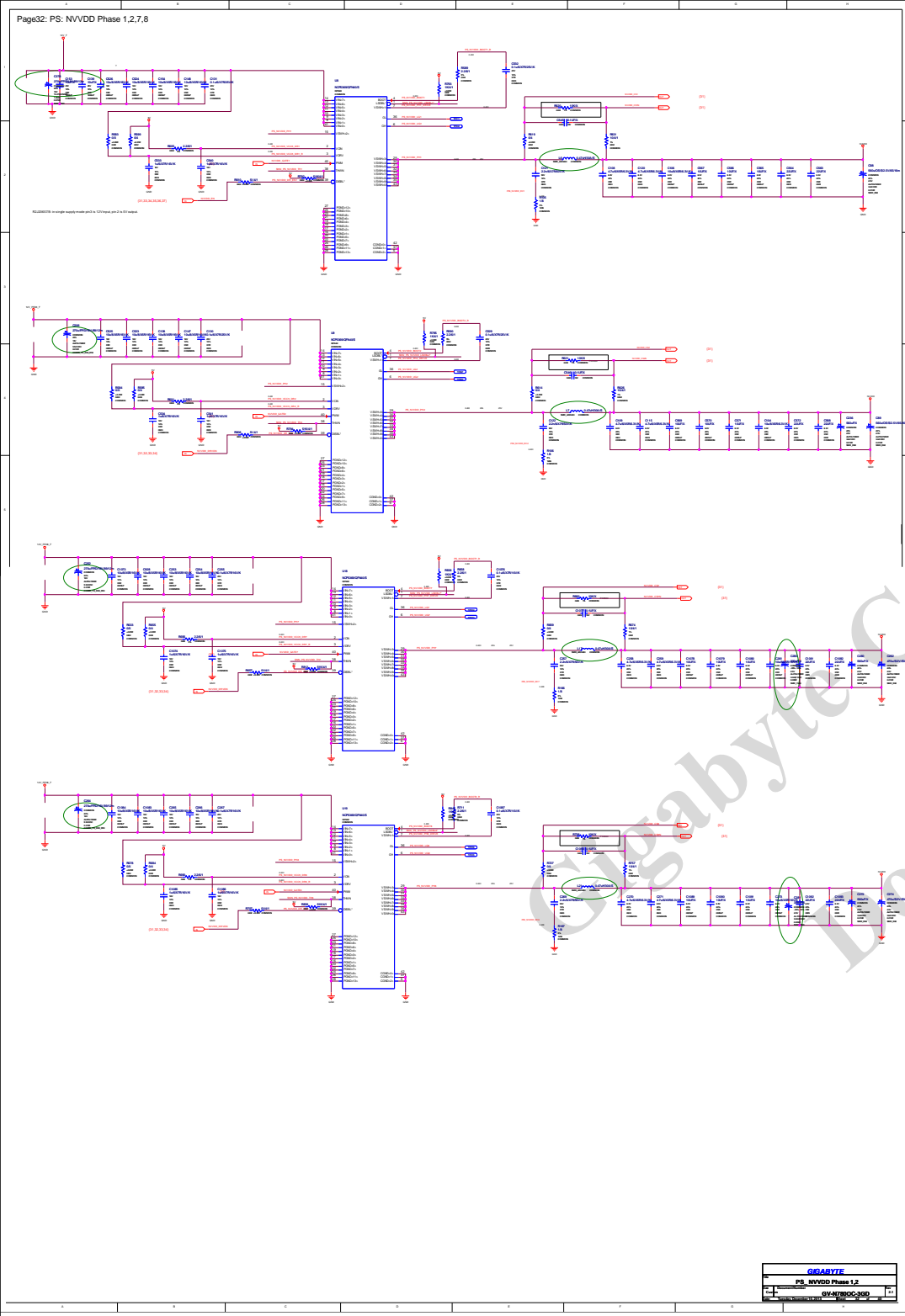
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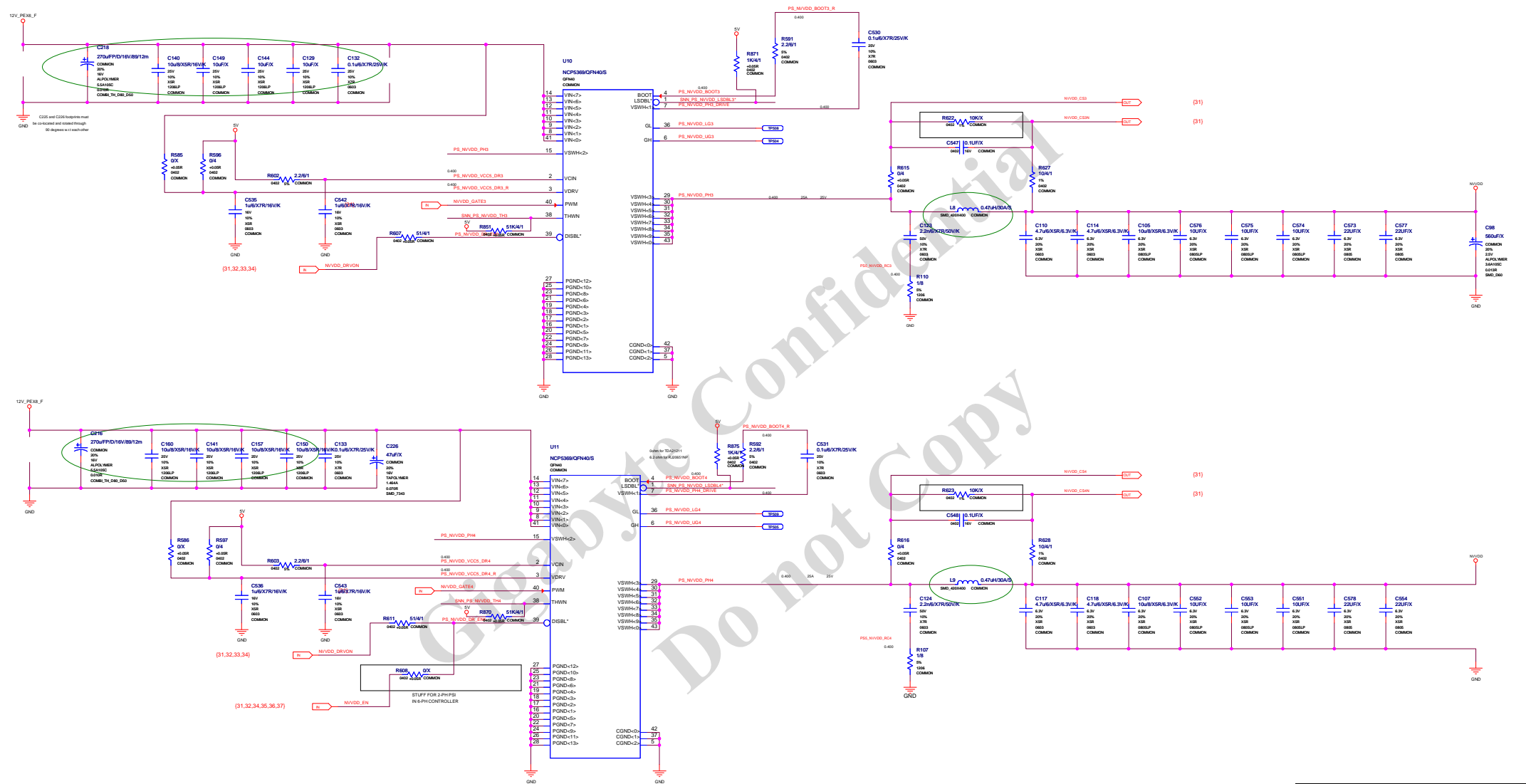
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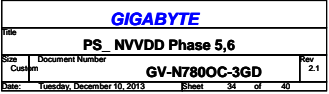
NO-LOAD OFFSET

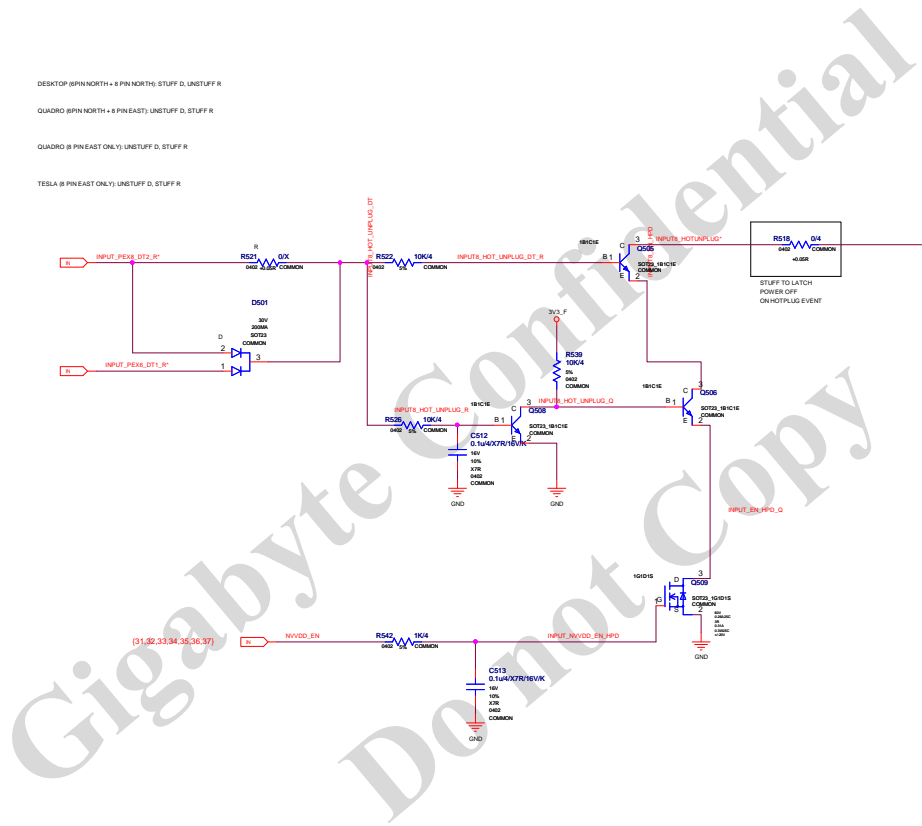
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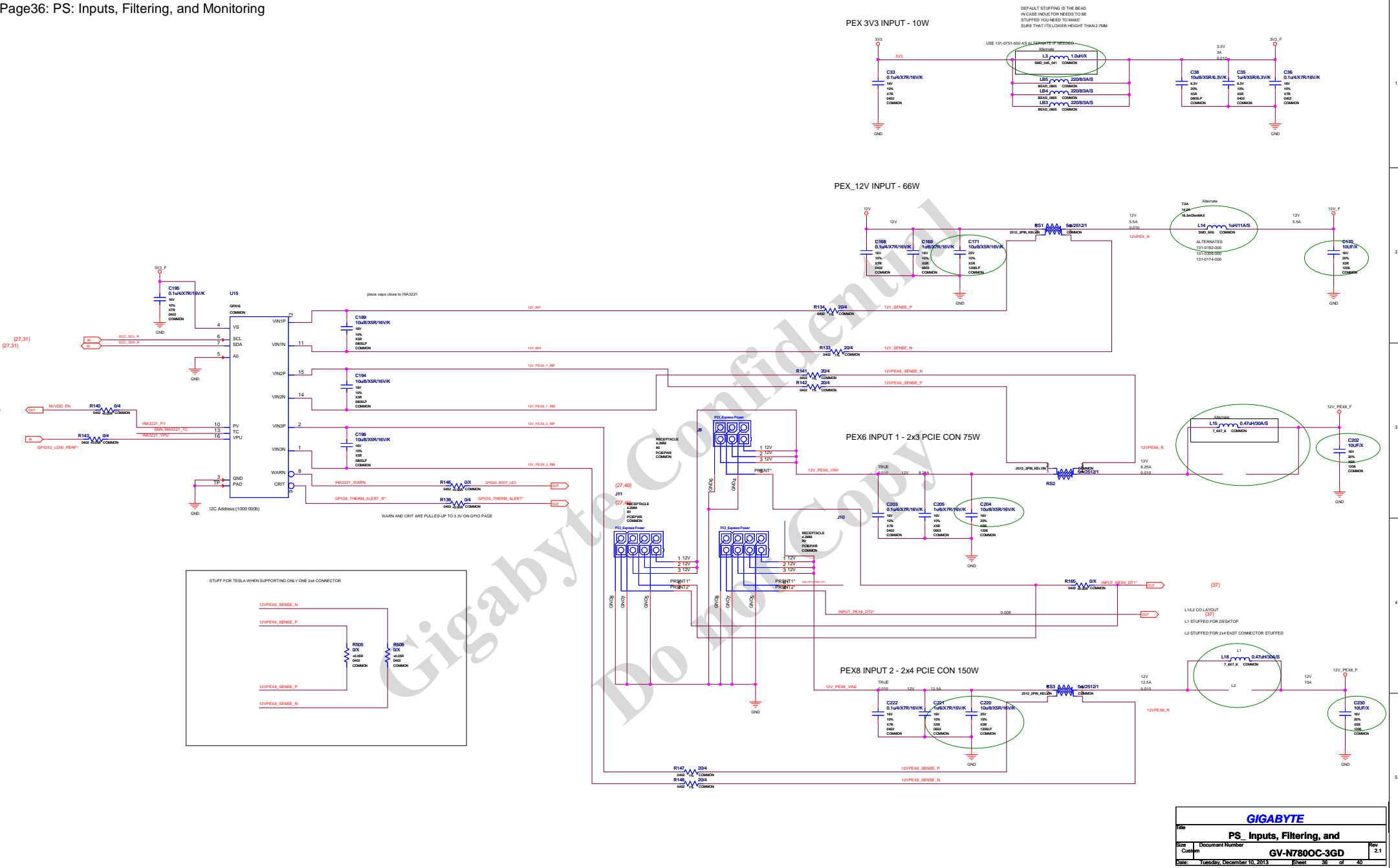












(27,28)

(3)

PUT_PE

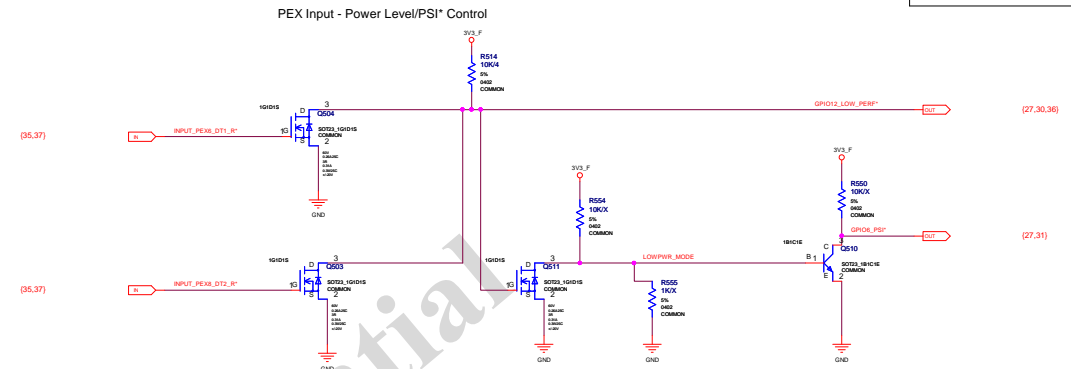
{36}

GIGABYTE			
Title PS_Shutdown			
Size	Document Number	Rev	
Custom	GV-N780OC-3GD	2	
Date:	Tuesday, December 10, 2013	Sheet	37 of 40

GPIO12_LOW_PERF*	GPU SPEED
0	Slow
1	Normal

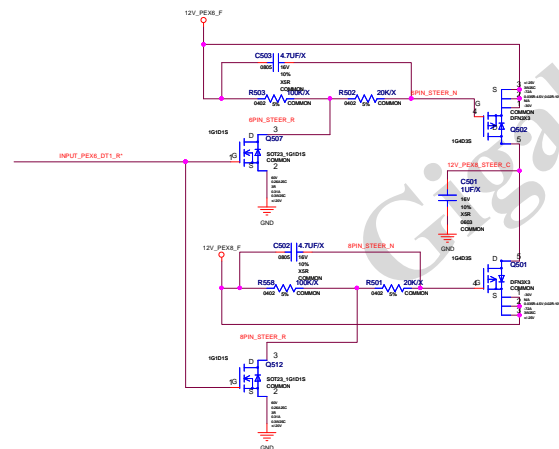
DT SKU + WS SKU:
FULL POWER WHEN BOTH 6PIN+8PIN ARE PRESENT
STUFF Q508 AND Q509

TESLA SKU:
FULL POWER WHEN 6PIN+8PIN OR 8PIN ONLY ARE PRESENT
STUFF Q508 ONLY



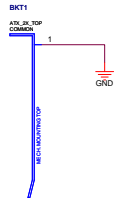
12V Current Steering FETs FROM 8PIN TO 6PIN (TESLA ONLY)

STUFF FOR TESLA ONLY



Brackets:

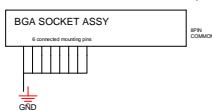
DVIDVI_HDMI_DP - 151-10001-0405-076



Bracket Screw



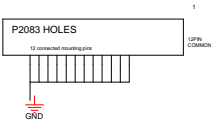
GPU SOCKET



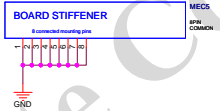
Hockey Stick



Mechanical Holes Symbol



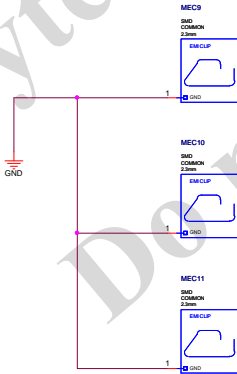
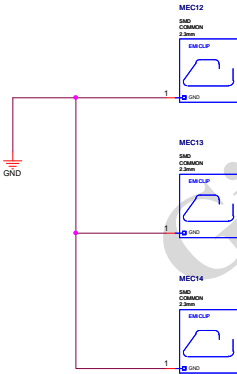
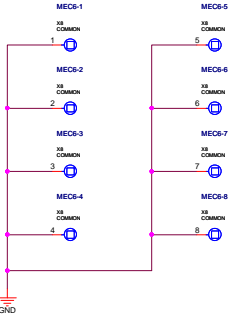
GPU Stiffener (BRING-UP COOLER)



Stiffener



Bring Up Cooler



GIGABYTE			
Title			
MECH_Bracket_Thermal			
Size	Document Number	Rev	
Custom	GV-N780OC-3GD	2.1	
Date:	Tuesday, December 10, 2013	Sheet	39 of 40

