PG180-A02

256b GDDR6 x16
TALL DP + DP + DP + HDMI/DP + USB

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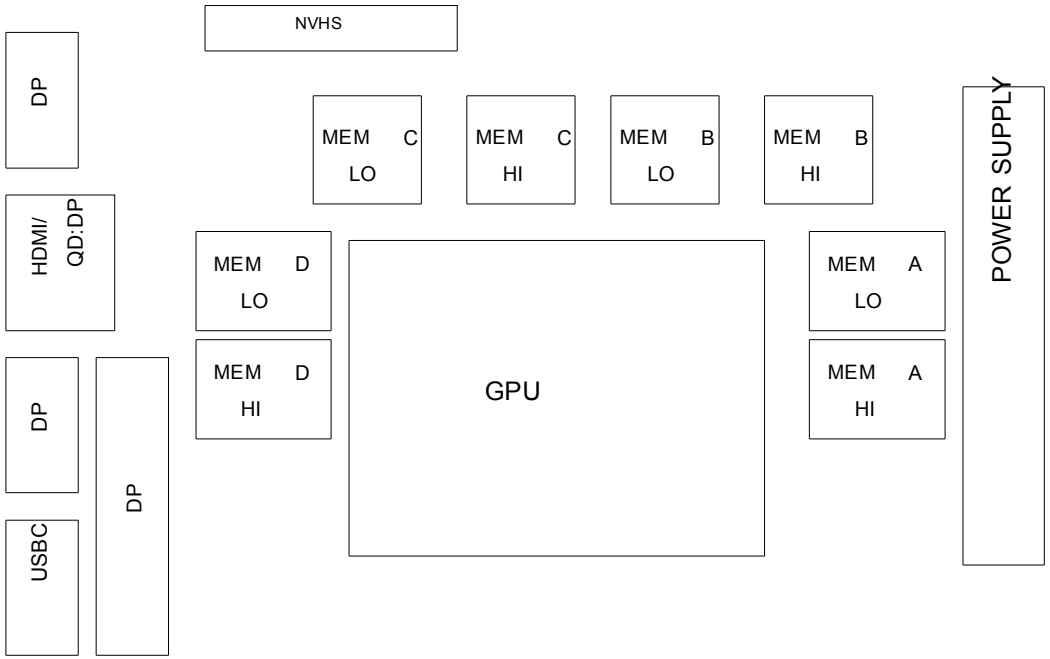

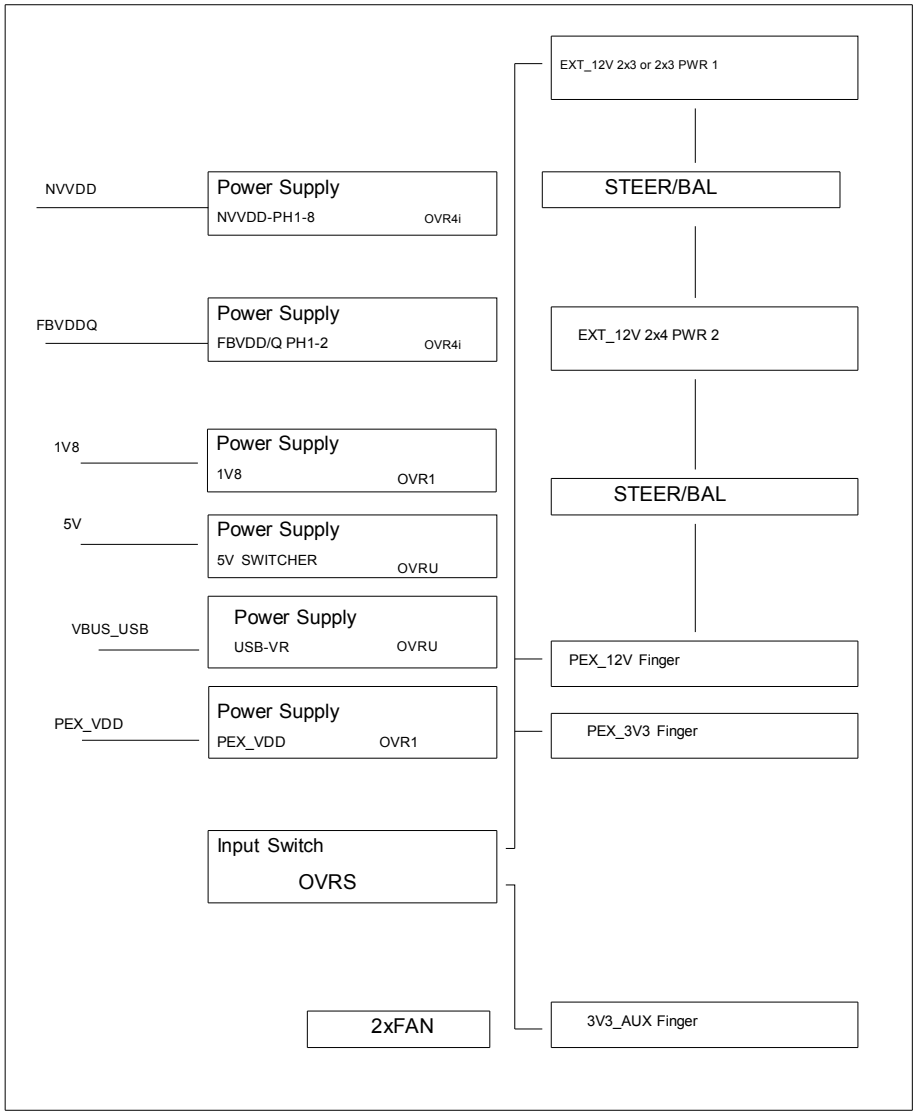

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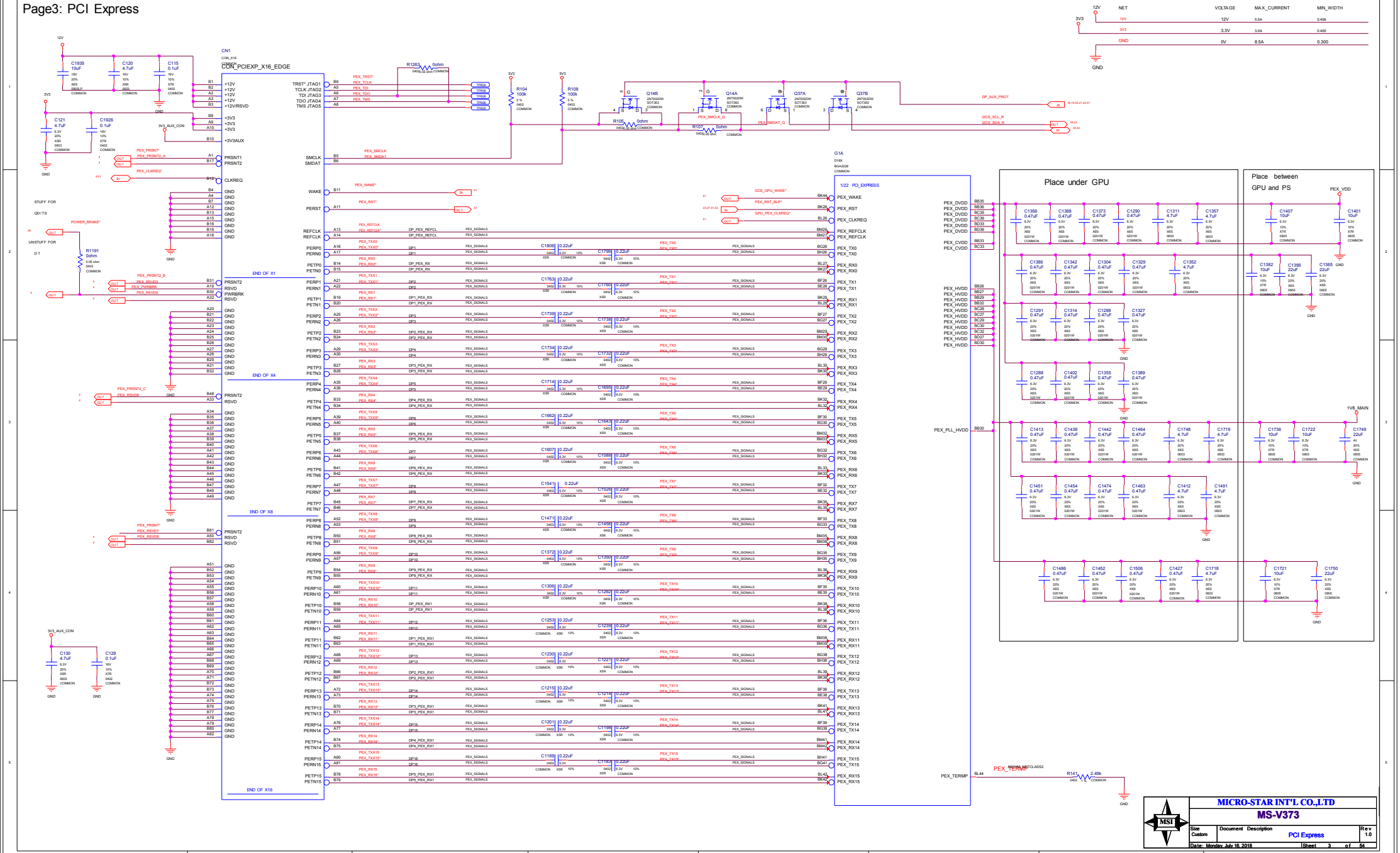
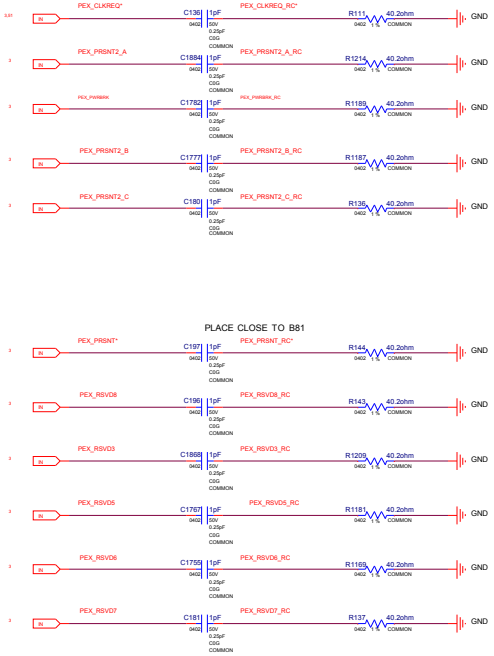


Page4: PCI Termination



PLACE CLOSE TO B81

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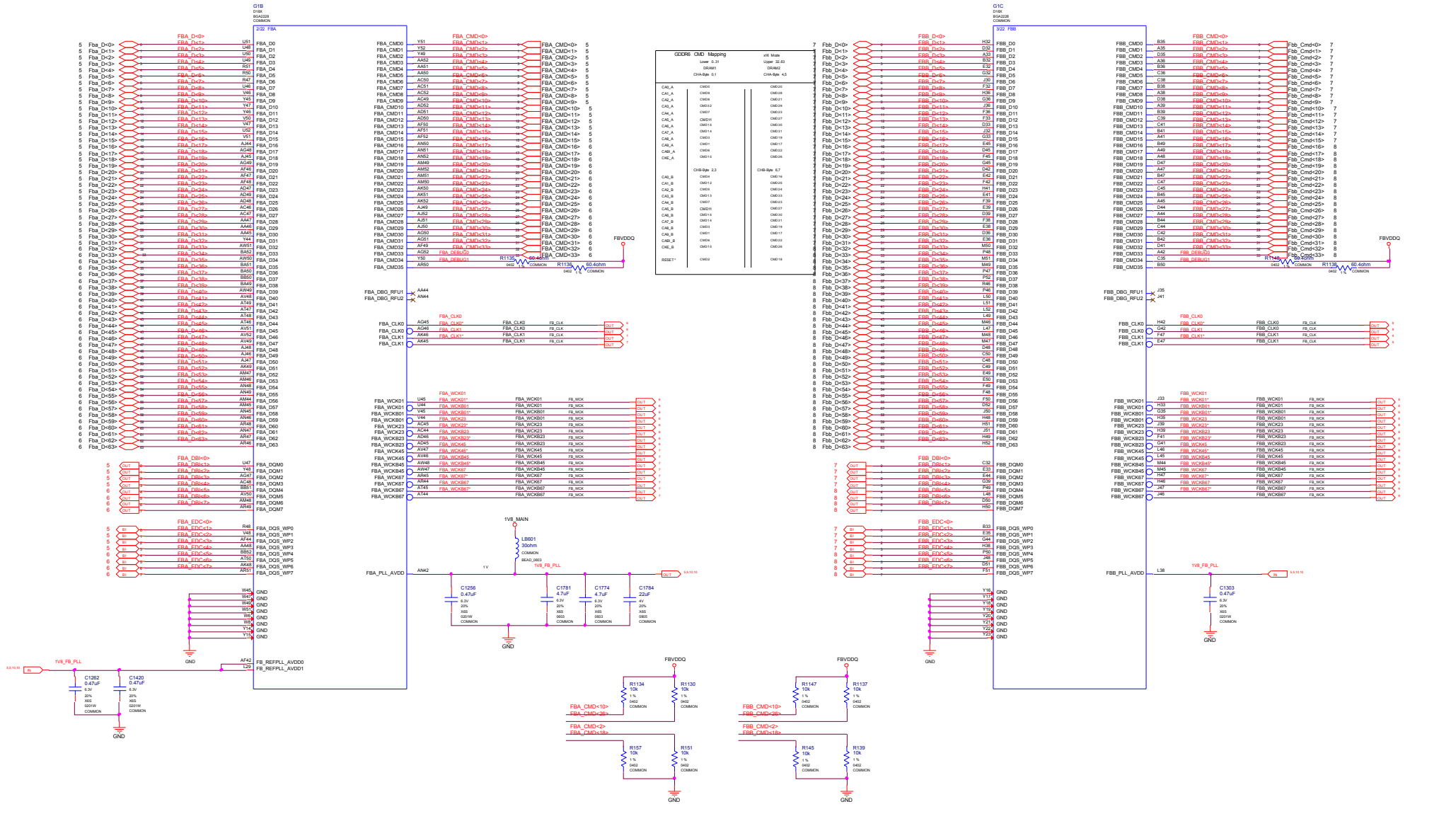
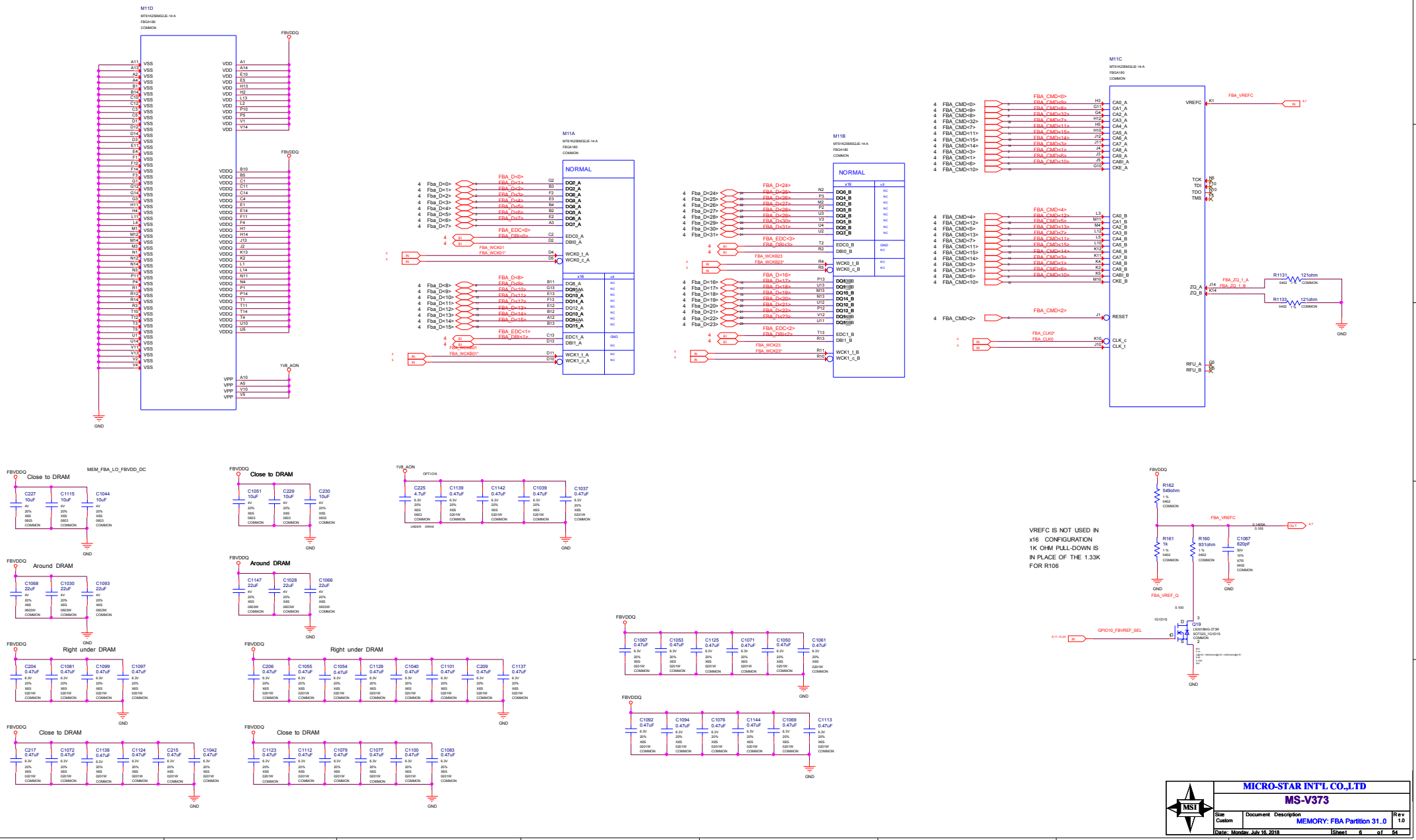
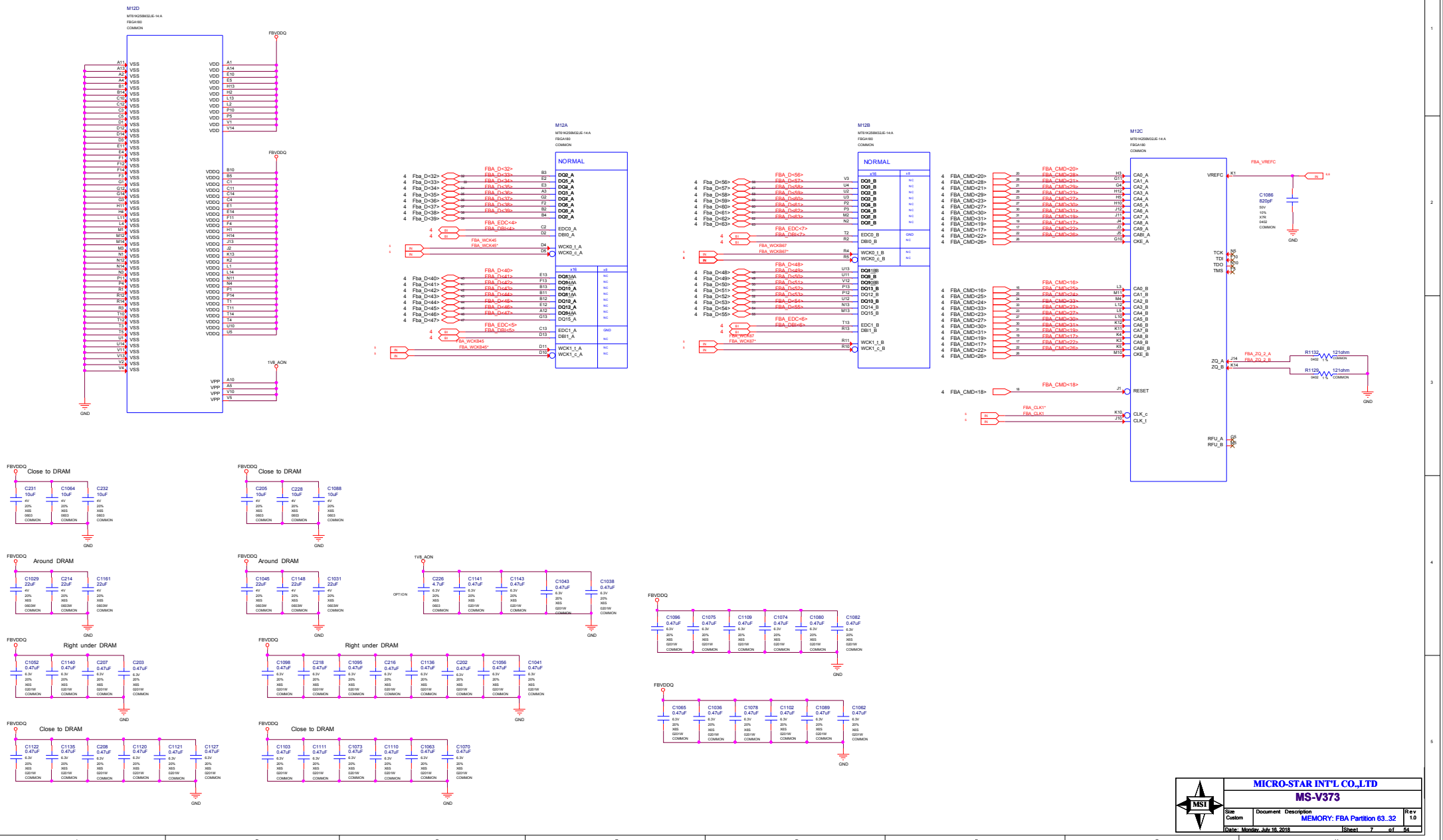
Page5: MEMORY: GPU Partition A/B



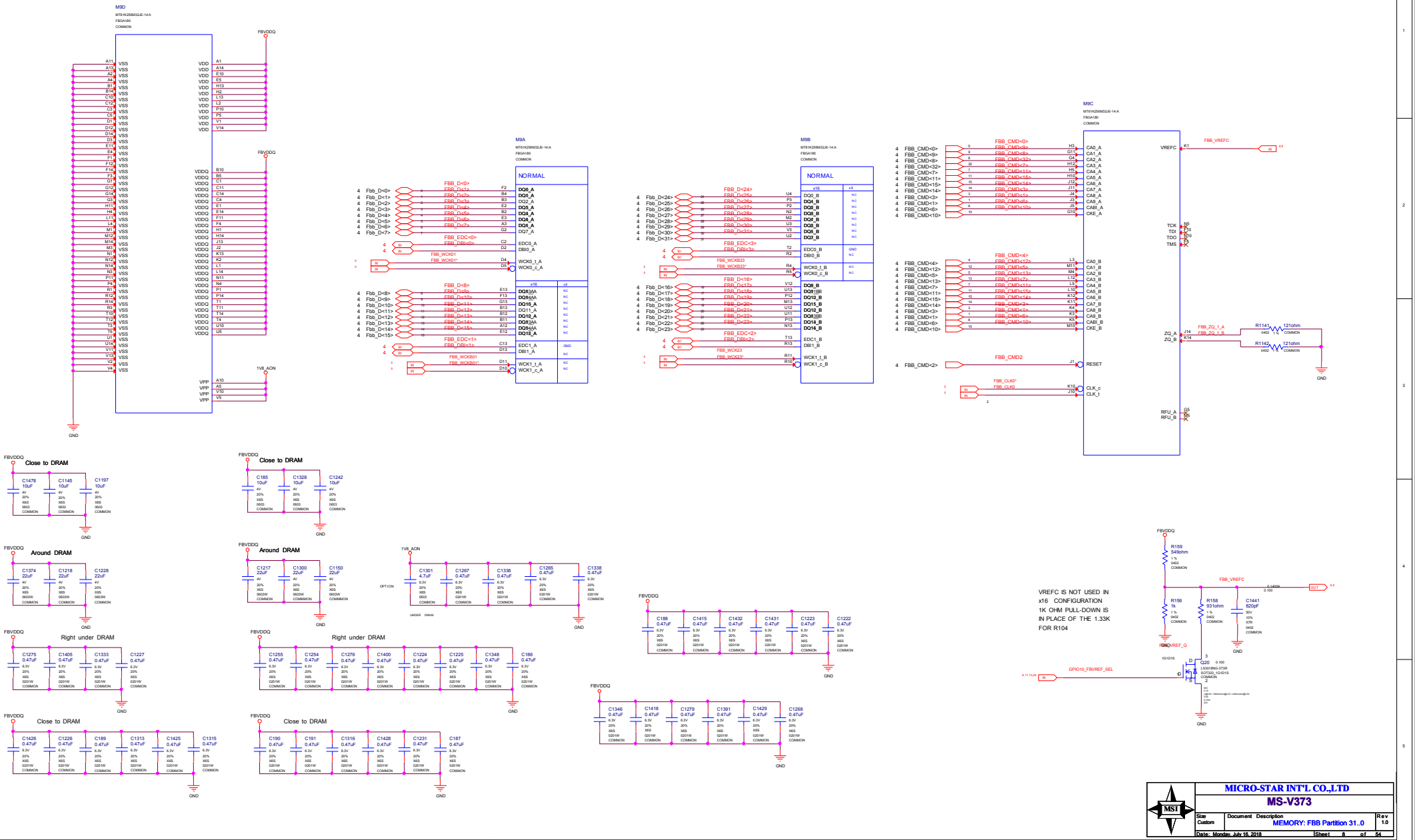
Page6: MEMORY: FBA Partition 31..0



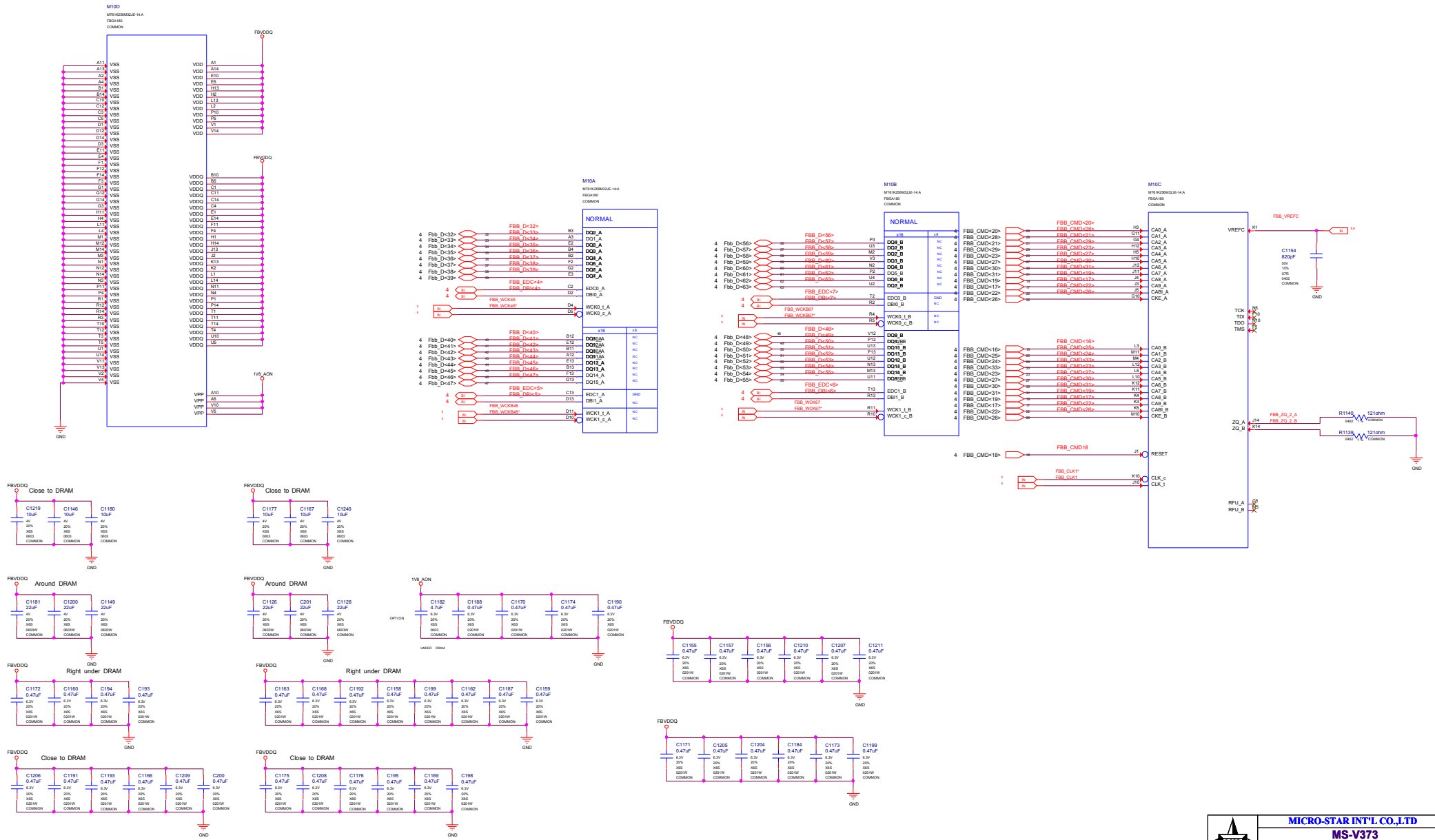
Page7: MEMORY: FBA Partition 63..32

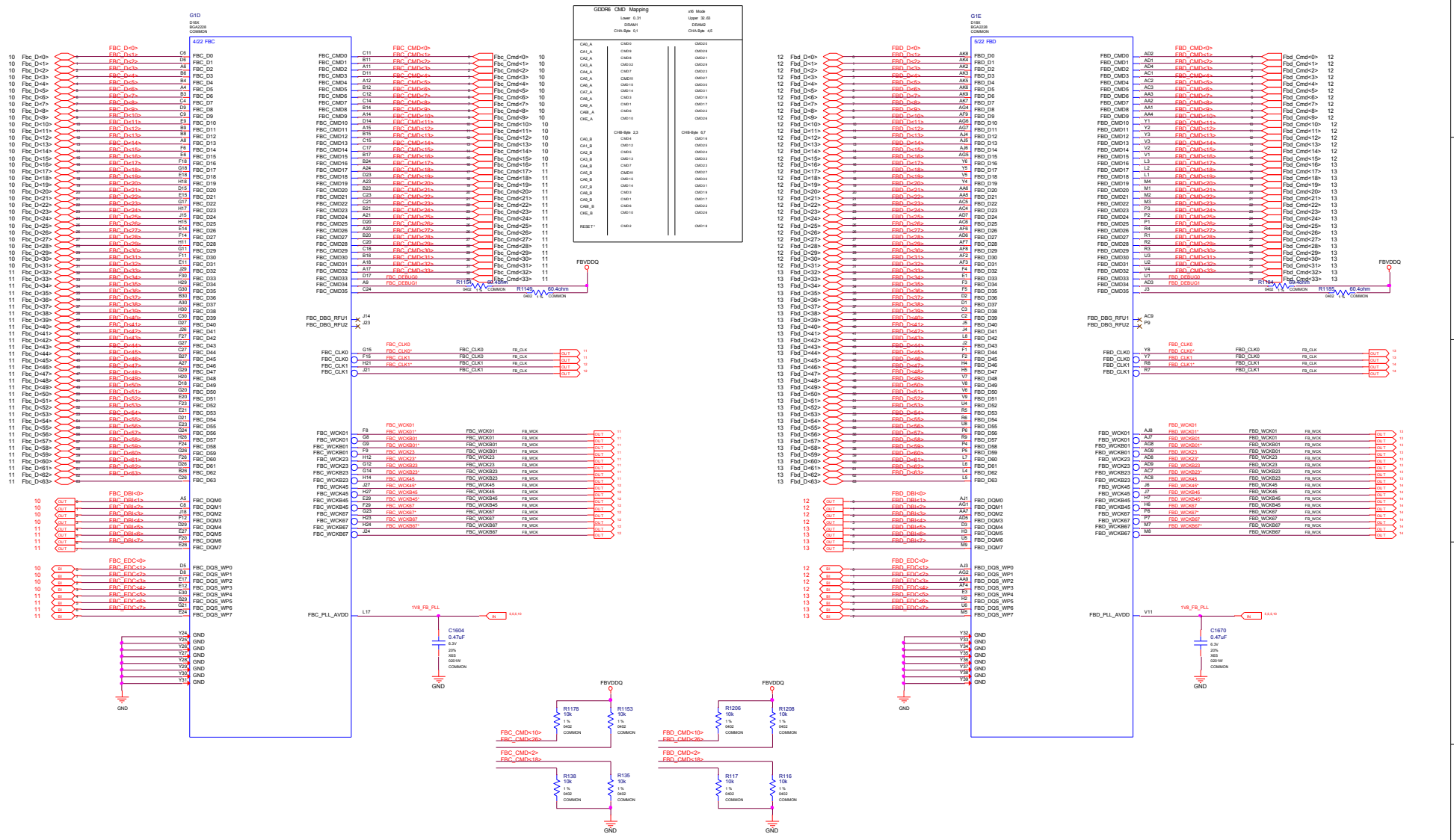


Page8: MEMORY: FBB Partition 31..0



Page9: MEMORY: FBB Partition 63..32




G1D
4/22 FBC
FBC_D0
FBC_D1
FBC_D2
FBC_D3
FBC_D4
FBC_D5
FBC_D6
FBC_D7
FBC_D8
FBC_D9
FBC_D10
FBC_D11
FBC_D12
FBC_D13
FBC_D14
FBC_D15
FBC_D16
FBC_D17
FBC_D18
FBC_D19
FBC_D20
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FBC_D26
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FBC_D29
FBC_D30
FBC_D31
FBC_D32
FBC_D33
FBC_D34
FBC_D35
FBC_D36
FBC_D37
FBC_D38
FBC_D39
FBC_D40
FBC_D41
FBC_D42
FBC_D43
FBC_D44
FBC_D45
FBC_D46
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FBC_D50
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FBC_D52
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FBC_D54
FBC_D55
FBC_D56
FBC_D57
FBC_D58
FBC_D59
FBC_D60
FBC_D61
FBC_D62
FBC_D63
FBC_DQM0
FBC_DQM1
FBC_DQM2
FBC_DQM3
FBC_DQM4
FBC_DQM5
FBC_DQM6
FBC_DQM7
FBC_DQS_WP0
FBC_DQS_WP1
FBC_DQS_WP2
FBC_DQS_WP3
FBC_DQS_WP4
FBC_DQS_WP5
FBC_DQS_WP6
FBC_DQS_WP7
GND
FBC_CMD0
FBC_CMD1
FBC_CMD2
FBC_CMD3
FBC_CMD4
FBC_CMD5
FBC_CMD6
FBC_CMD7
FBC_CMD8
FBC_CMD9
FBC_CMD10
FBC_CMD11
FBC_CMD12
FBC_CMD13
FBC_CMD14
FBC_CMD15
FBC_CMD16
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FBC_CMD27
FBC_CMD28
FBC_CMD29
FBC_CMD30
FBC_CMD31
FBC_CMD32
FBC_CMD33
FBC_CMD34
FBC_CMD35
FBC_DBG_RFU1
FBC_DBG_RFU2
FBC_CLK0
FBC_CLK0
FBC_CLK1
FBC_CLK1
FBC_WCK01
FBC_WCK01
FBC_WCKB01
FBC_WCKB01
FBC_WCK23
FBC_WCK23
FBC_WCKB23
FBC_WCKB23
FBC_WCK45
FBC_WCK45
FBC_WCKB45
FBC_WCKB45
FBC_WCK67
FBC_WCK67
FBC_WCKB67
FBC_WCKB67
FBC_PLL_AVDD
1V8_FB_PLL
C1604
0.47uF
GDDR6 CMD Mapping
Lower 0.2t
DRAM1
CHA-Byte 0,1
x16 Mode
Upper 32:63
DRAM2
CHA-Byte 4,5
CHB-Byte 2,3
CHB-Byte 6,7
RESET*
FBVDDQ
R1153
R1178
R1206
R1208
R138
R135
R117
R116
10k
FBC_CMD<10>
FBC_CMD<26>
FBC_CMD<2>
FBC_CMD<18>
G1E
5/22 FBD
FBD_D0
FBD_D1
FBD_D2
FBD_D3
FBD_D4
FBD_D5
FBD_D6
FBD_D7
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FBD_DQM1
FBD_DQM2
FBD_DQM3
FBD_DQM4
FBD_DQM5
FBD_DQM6
FBD_DQM7
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FBD_DQS_WP1
FBD_DQS_WP2
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FBD_DQS_WP4
FBD_DQS_WP5
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FBD_DQS_WP7
GND
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FBD_CMD2
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FBD_CMD9
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FBD_CMD31
FBD_CMD32
FBD_CMD33
FBD_CMD34
FBD_CMD35
FBD_DBG_RFU1
FBD_DBG_RFU2
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FBD_CLK0
FBD_CLK1
FBD_CLK1
FBD_WCK01
FBD_WCK01
FBD_WCKB01
FBD_WCKB01
FBD_WCK23
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FBD_WCKB23
FBD_WCKB23
FBD_WCK45
FBD_WCK45
FBD_WCKB45
FBD_WCKB45
FBD_WCK67
FBD_WCK67
FBD_WCKB67
FBD_WCKB67
FBD_PLL_AVDD
1V8_FB_PLL
C1670
0.47uF
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Custom
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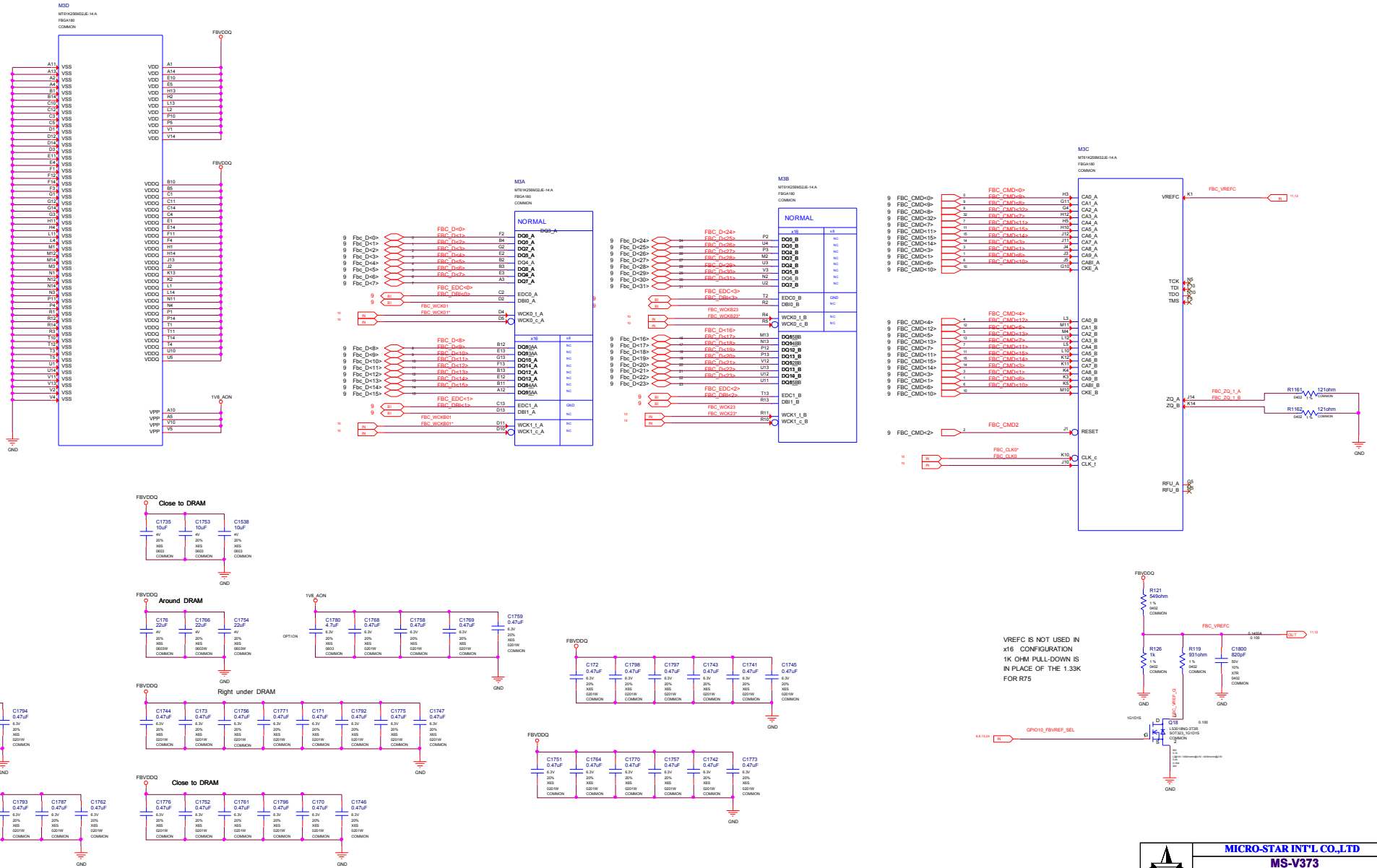

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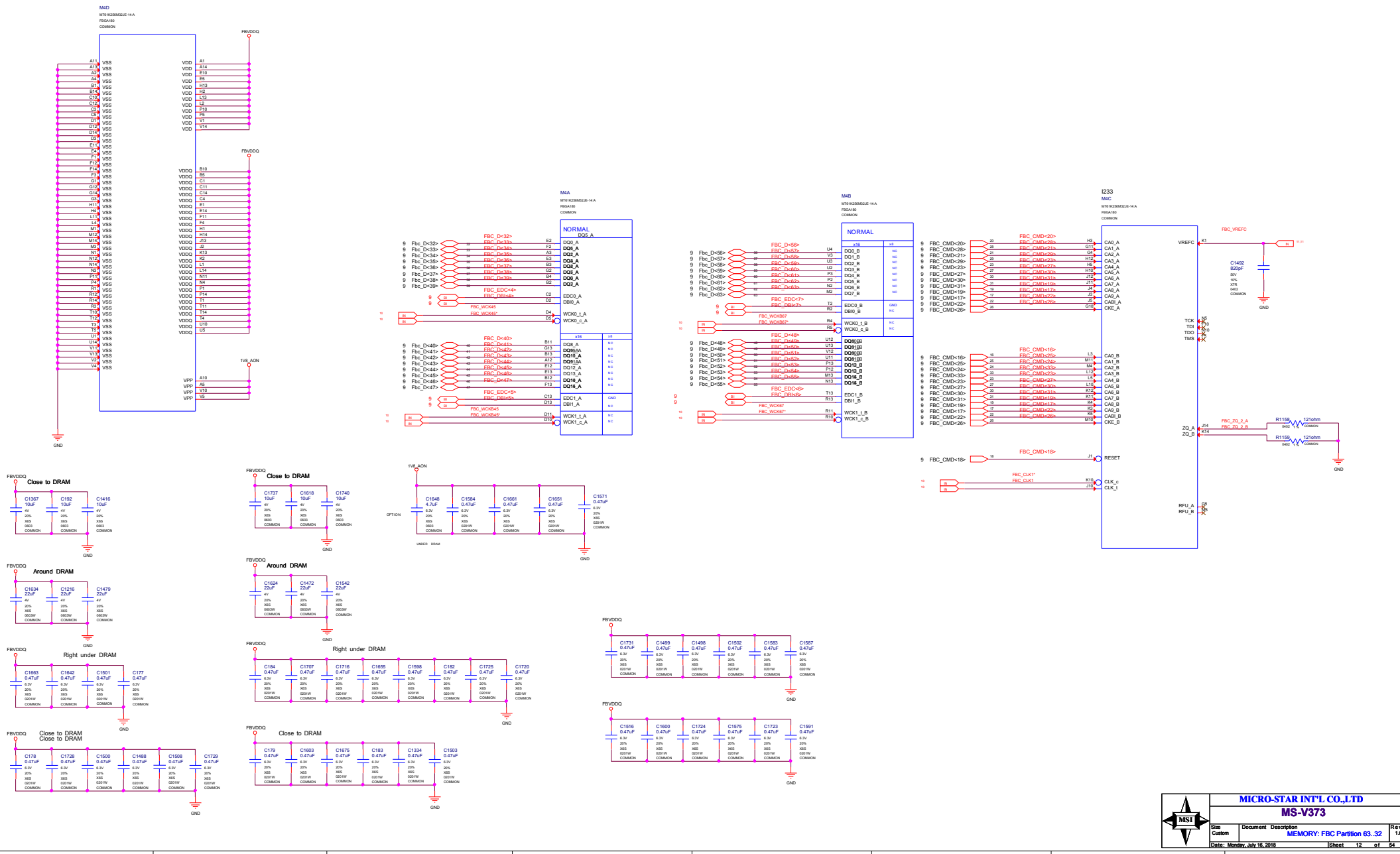
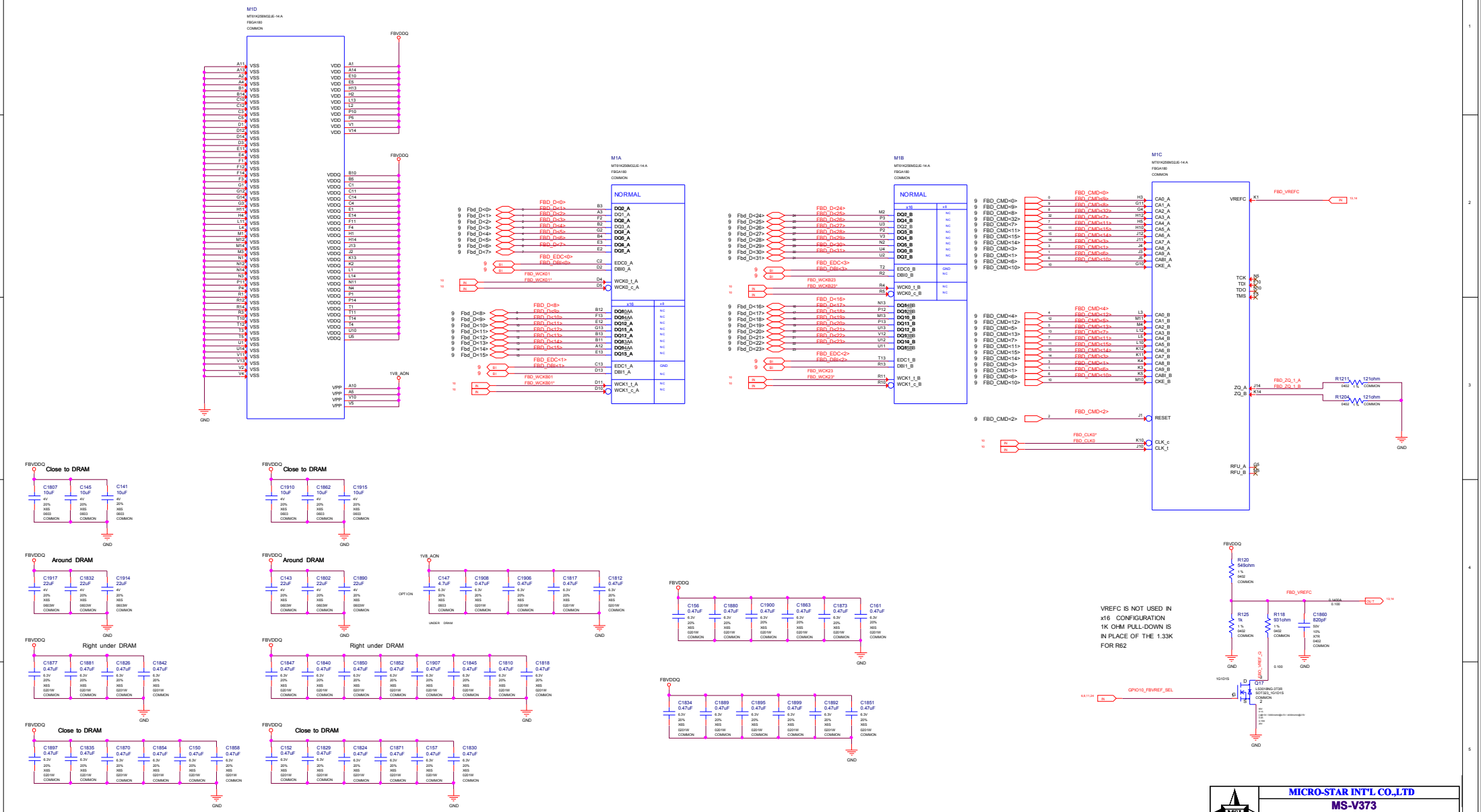
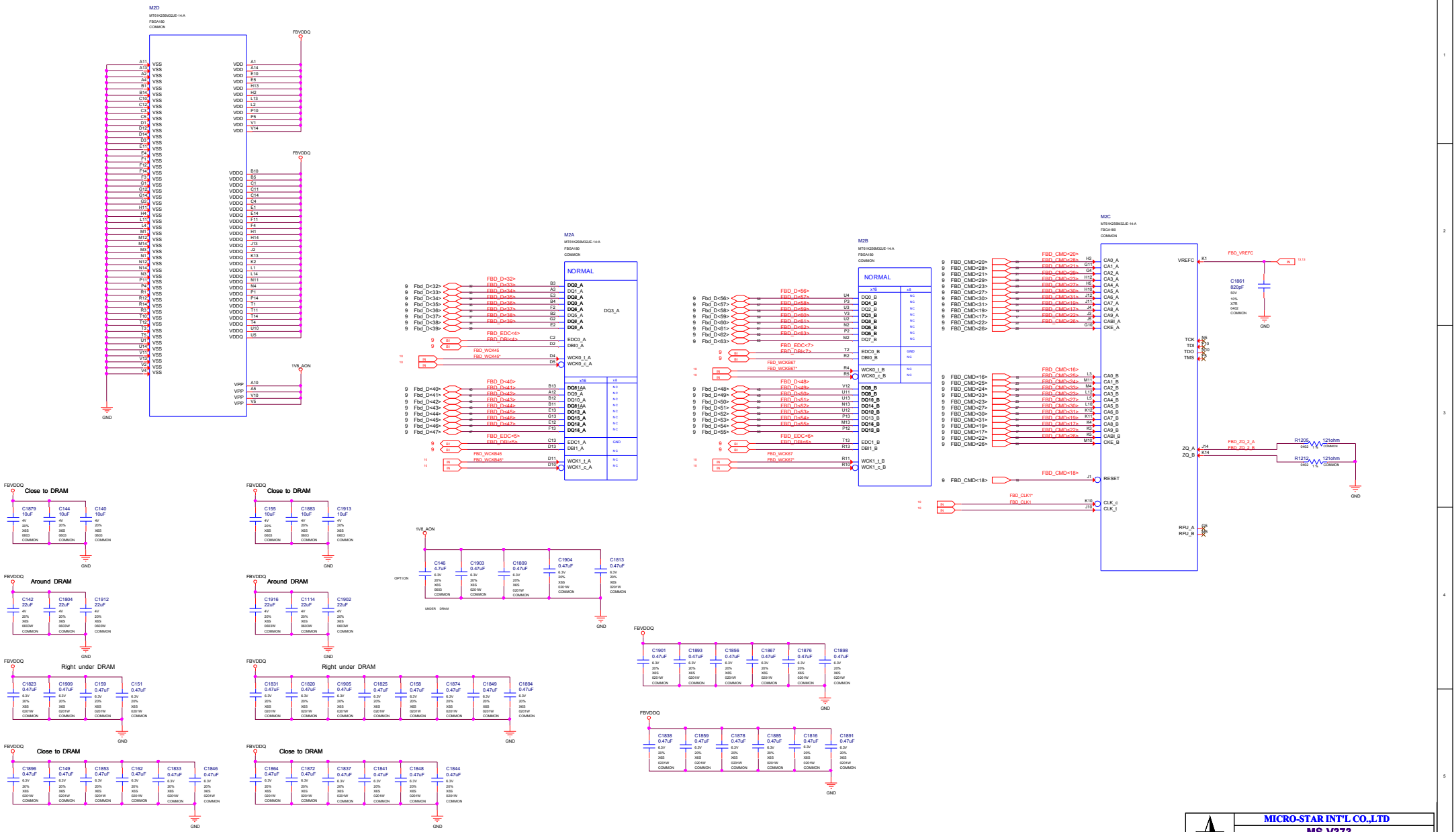


Page13: MEMORY: FBD Partition 31..0




M2D
M2A
M2B
M2C
NORMAL
FBVDDQ
1V8_AON
GND
Close to DRAM
Around DRAM
Right under DRAM
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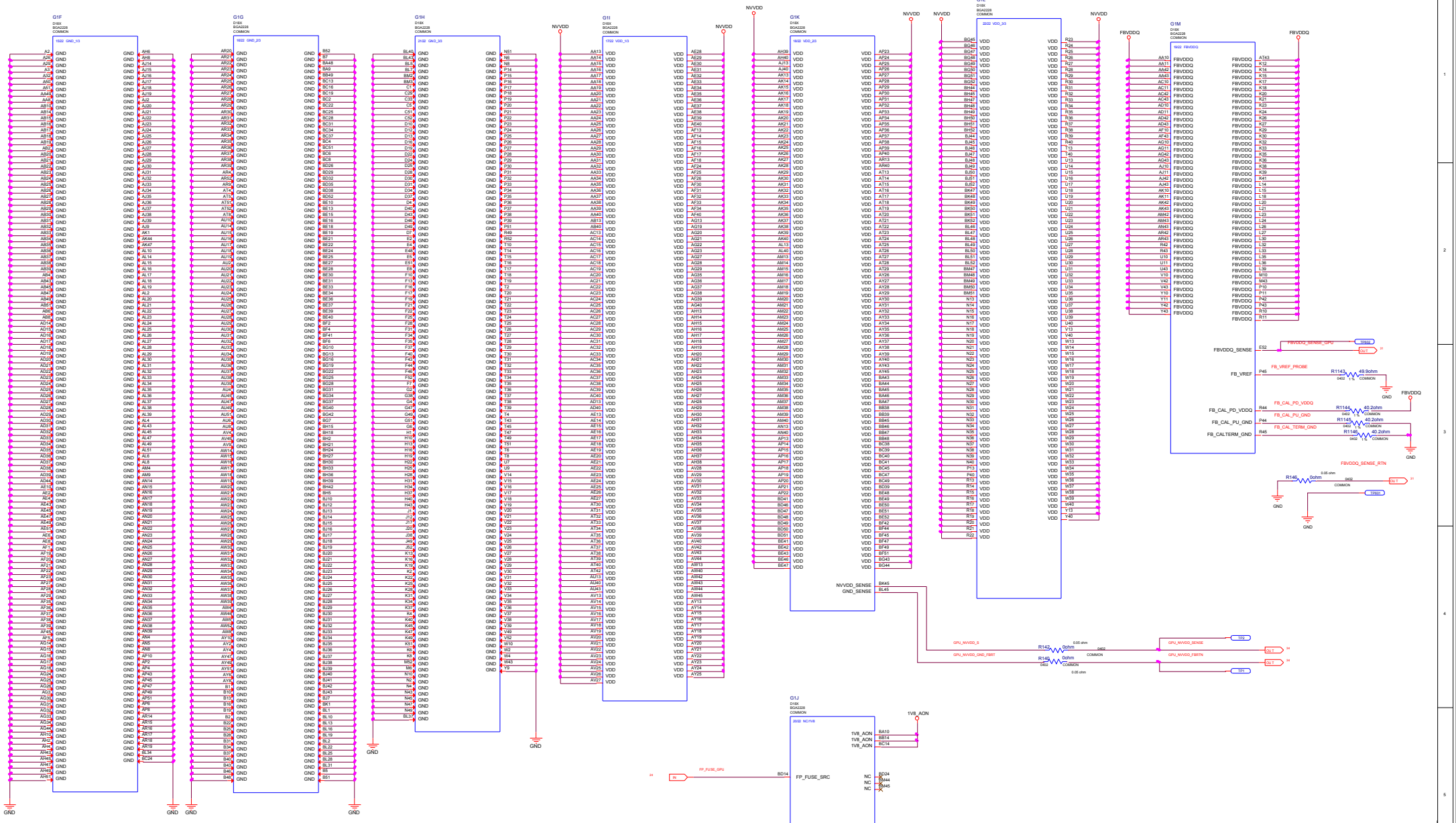
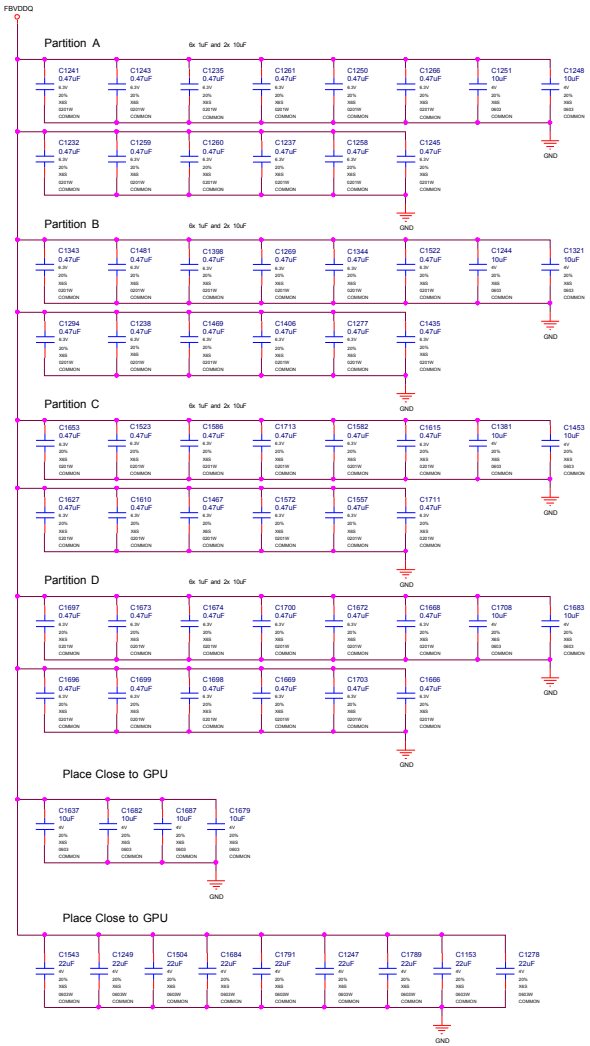
Page15: GPU PWR and GND



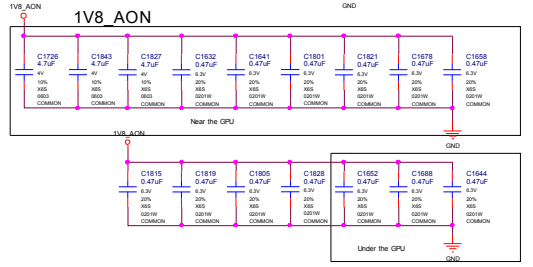
Page16: GPU Decoupling

FBVDDQ

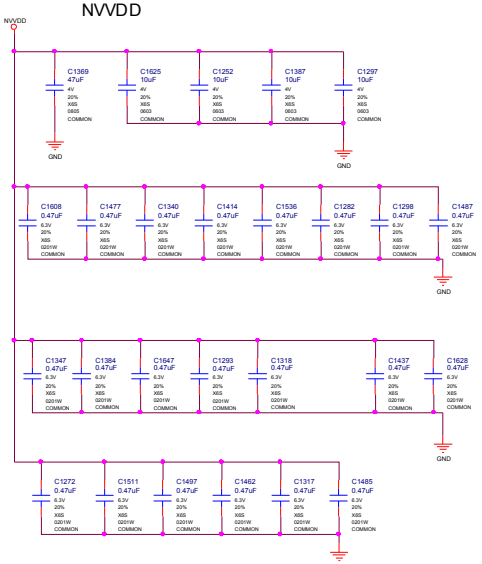


NVVDD

1V8_AON



NVVDD



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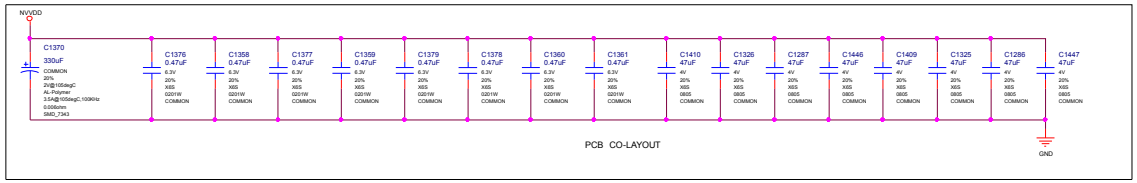

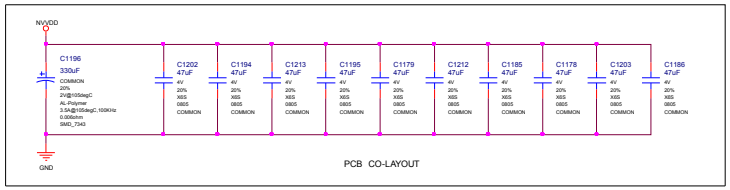

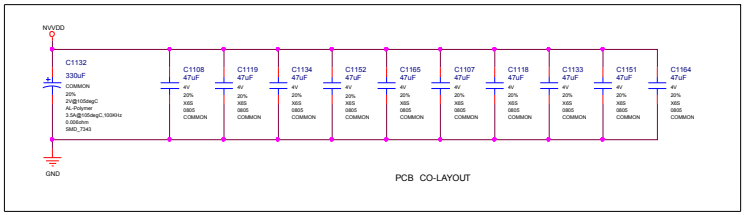

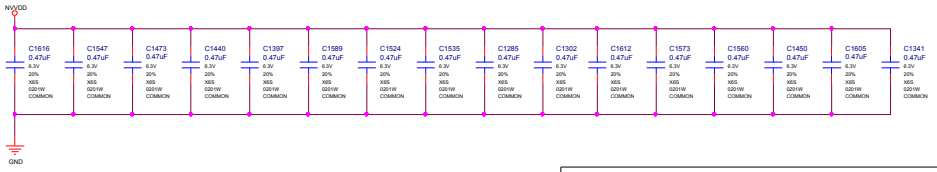

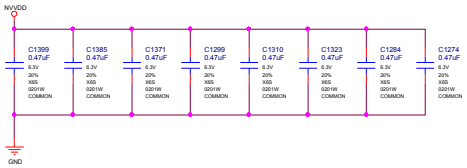

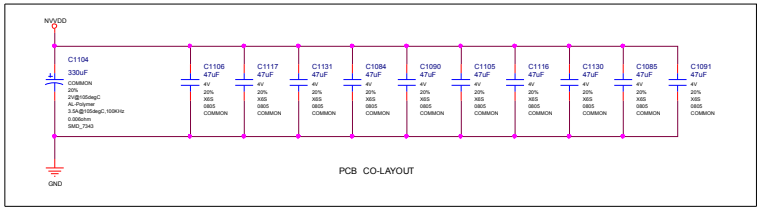

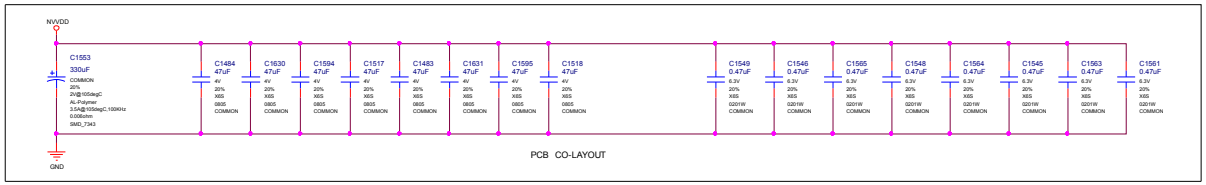

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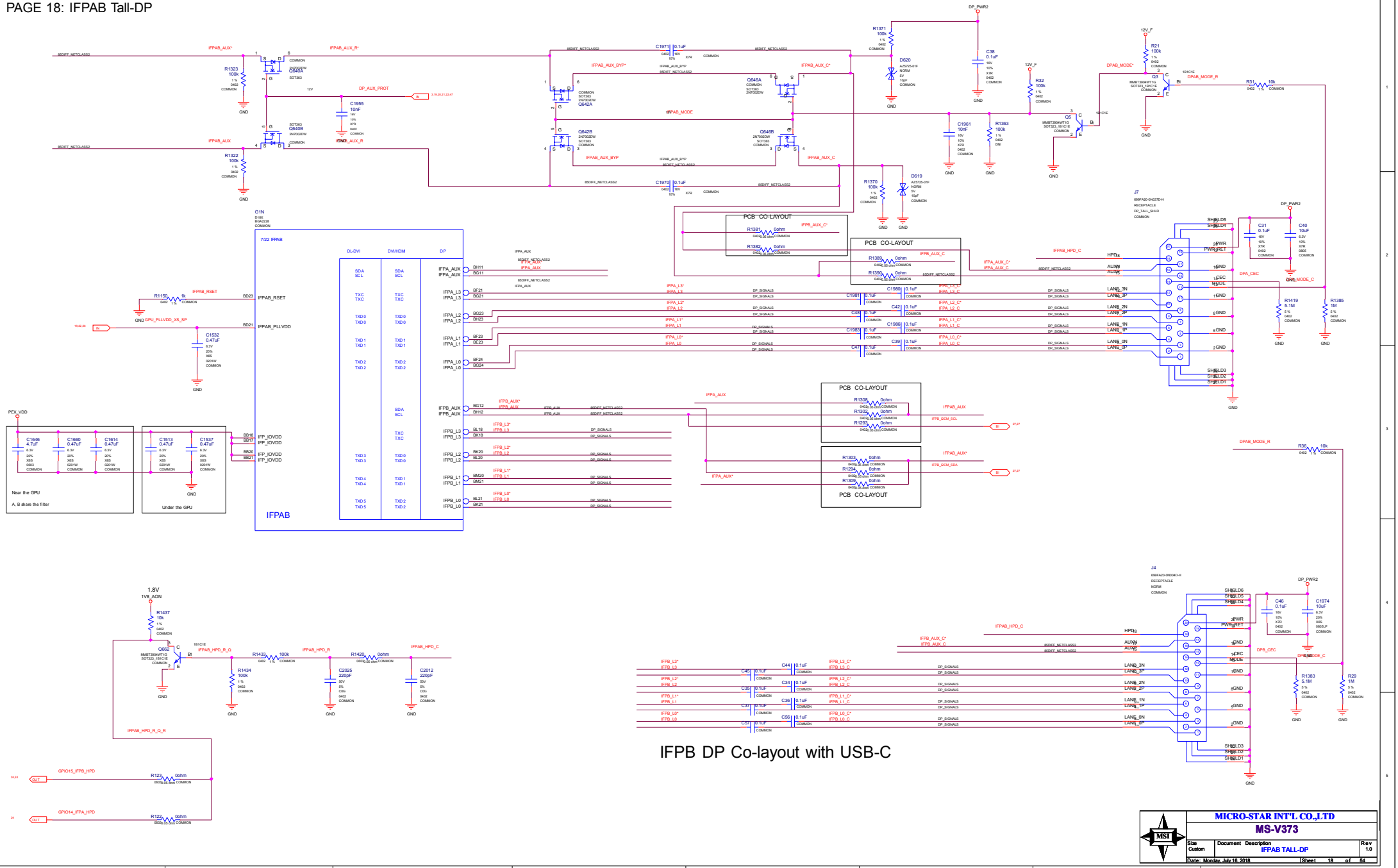
PAGE 18: IFPAB Tall-DP



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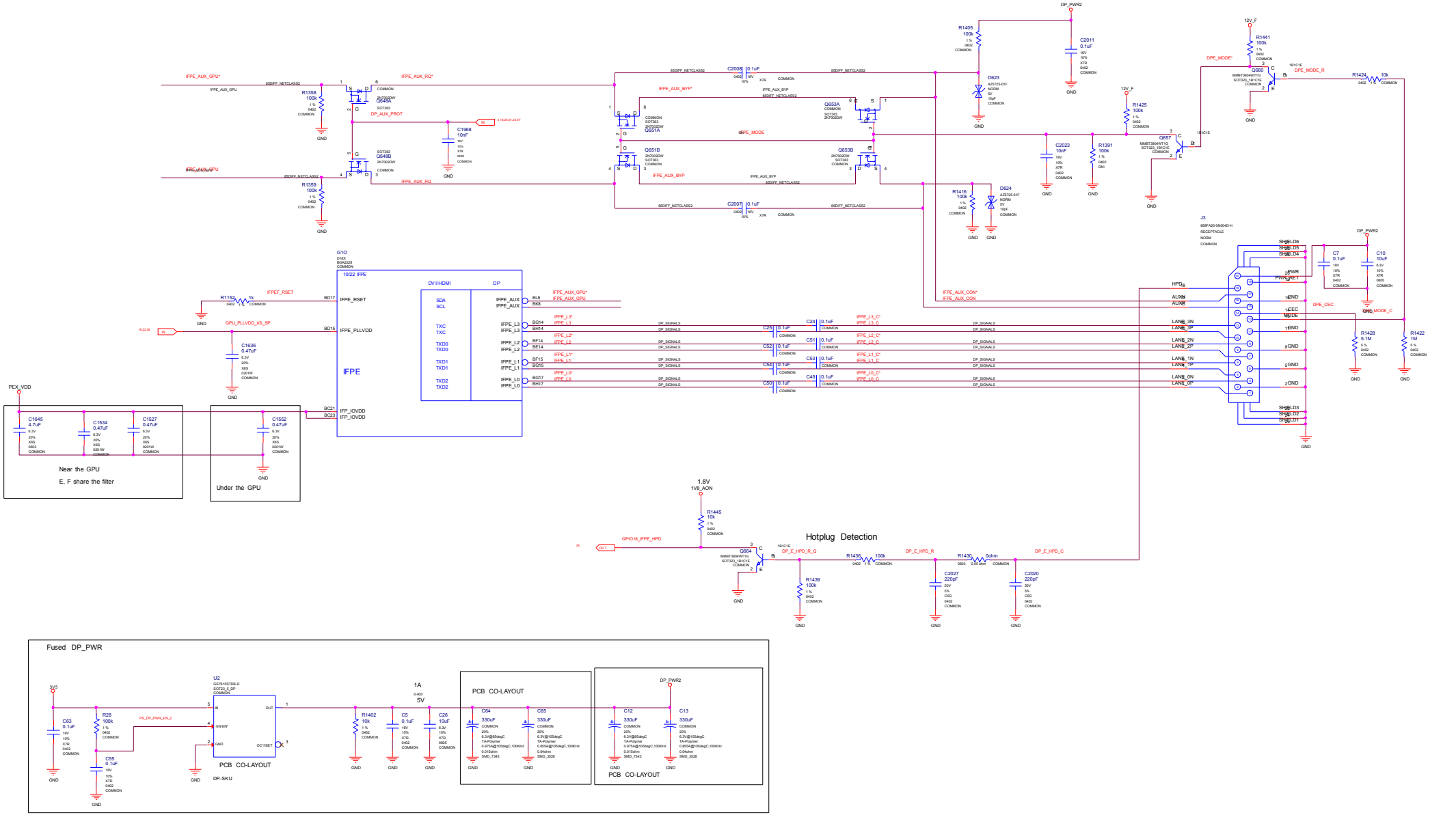
PAGE 19: IFPE DP



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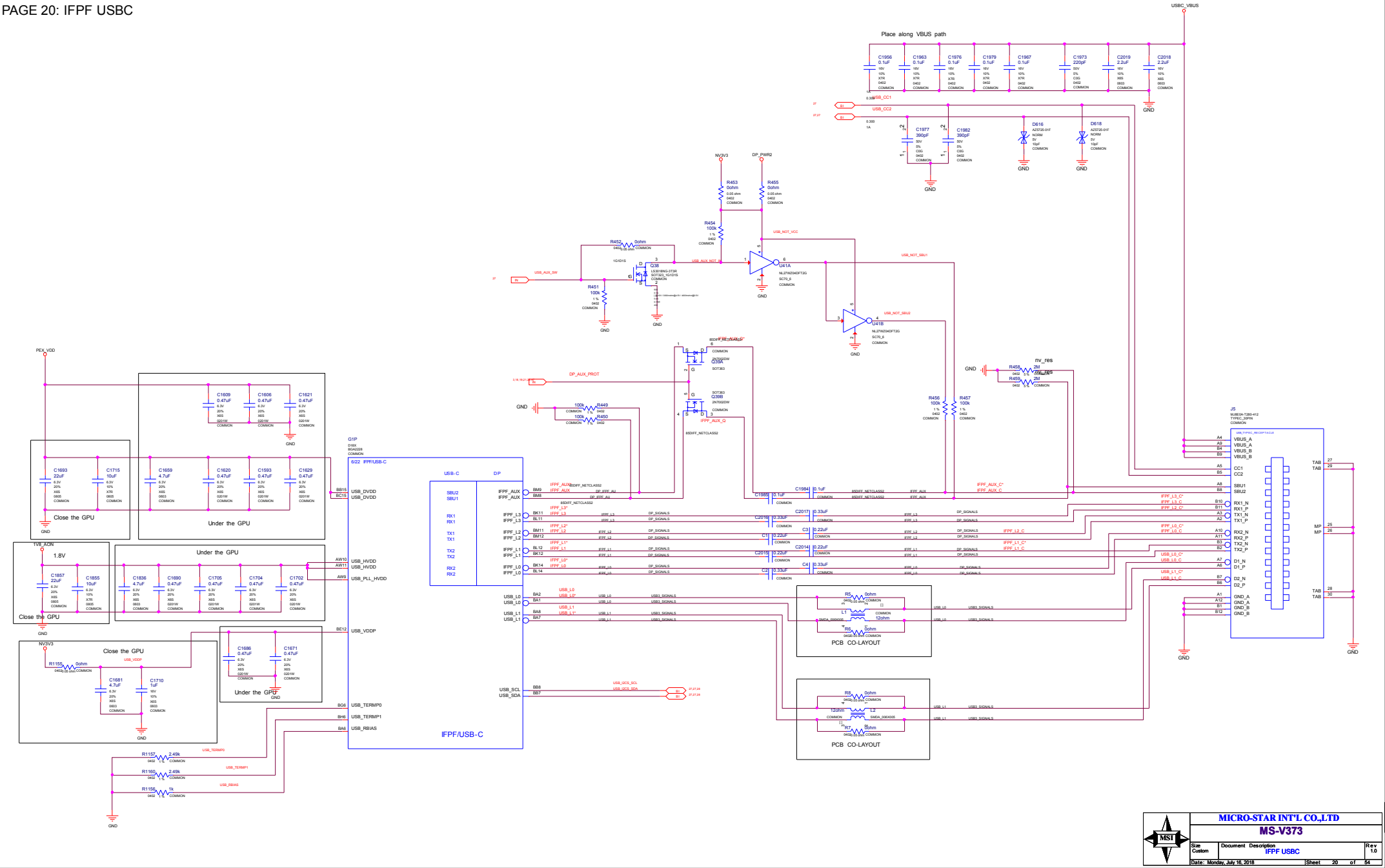
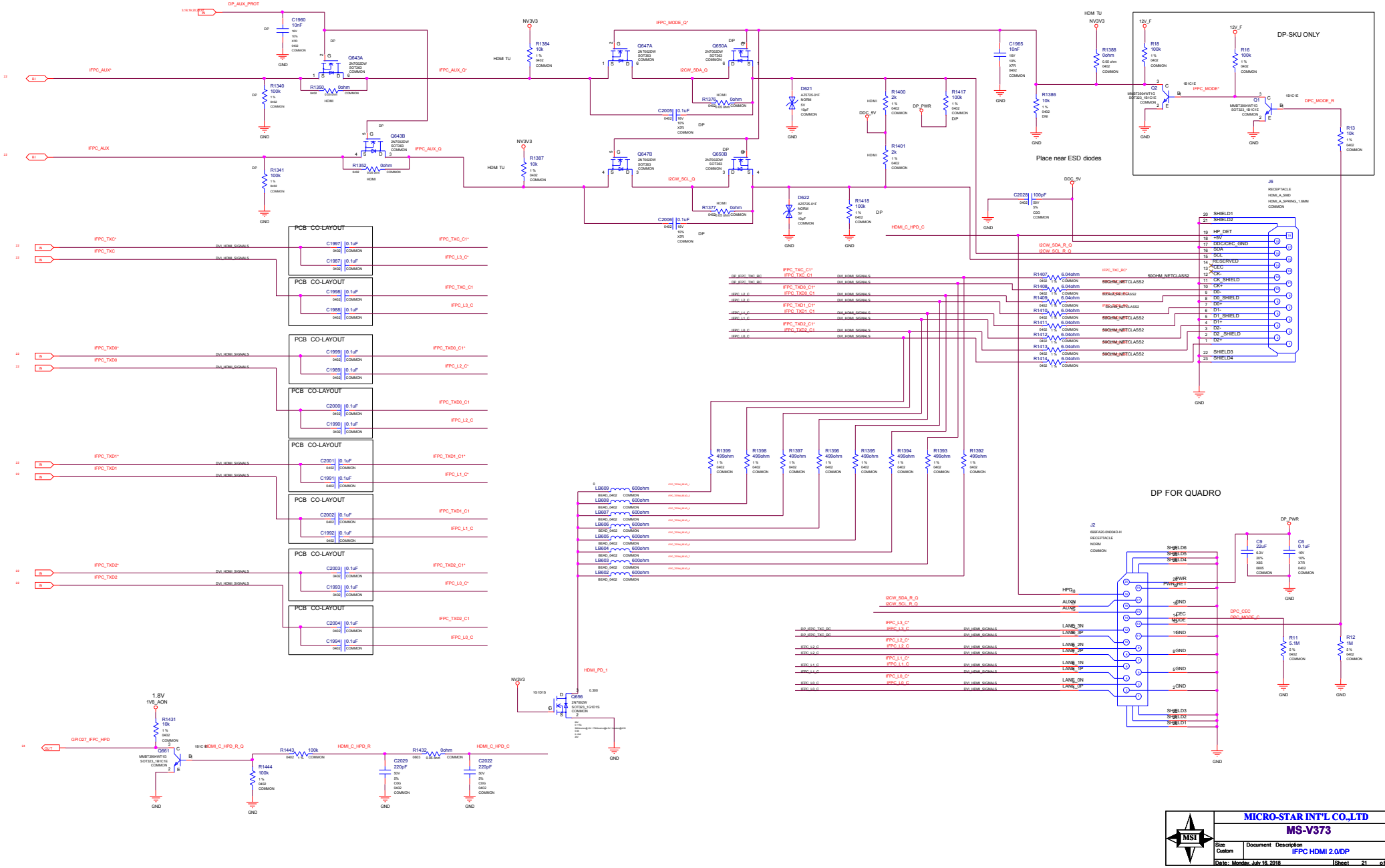
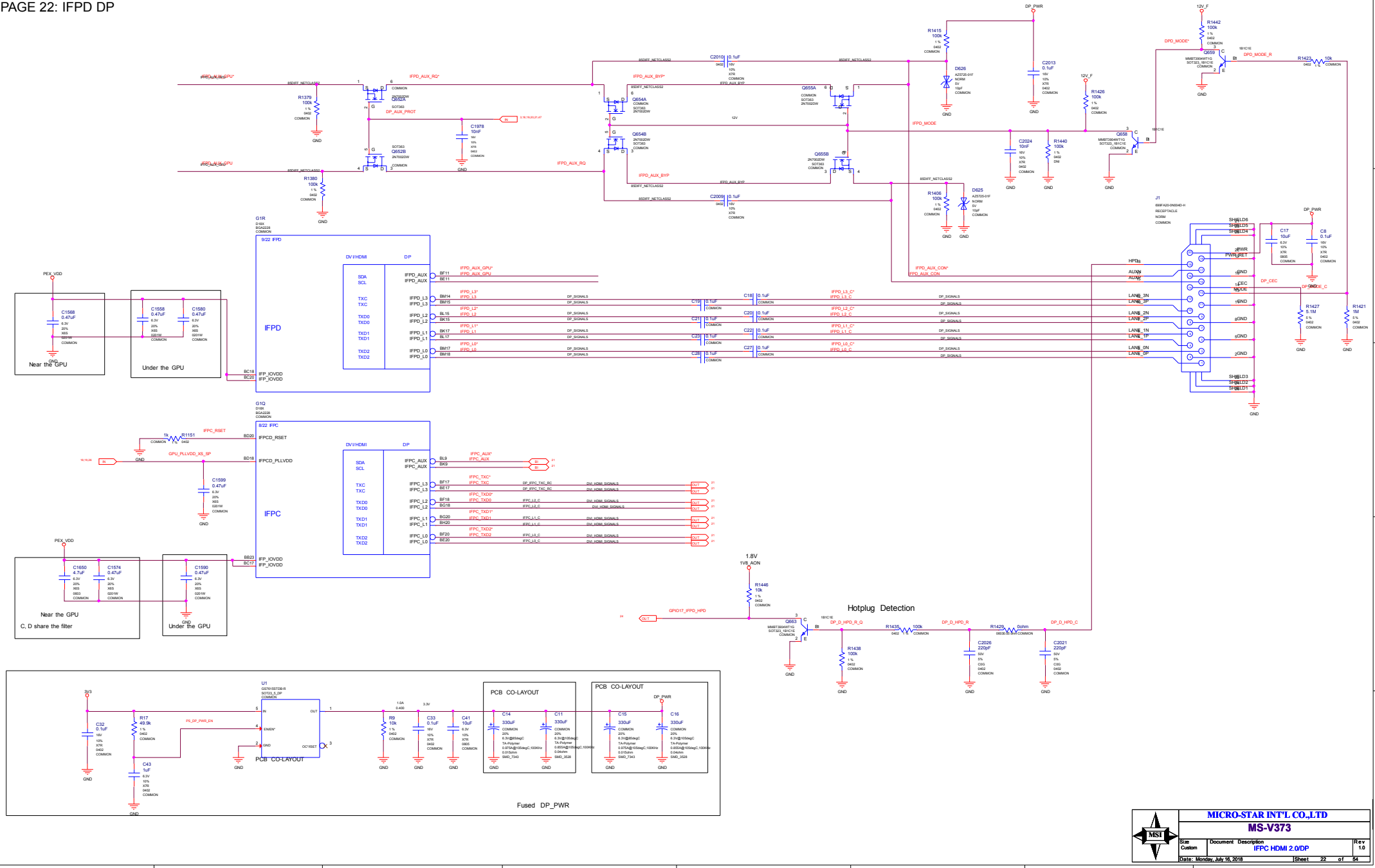
PAGE 20: IFPF USBC



PAGE 21:IFPC HDMI 2.0/DP

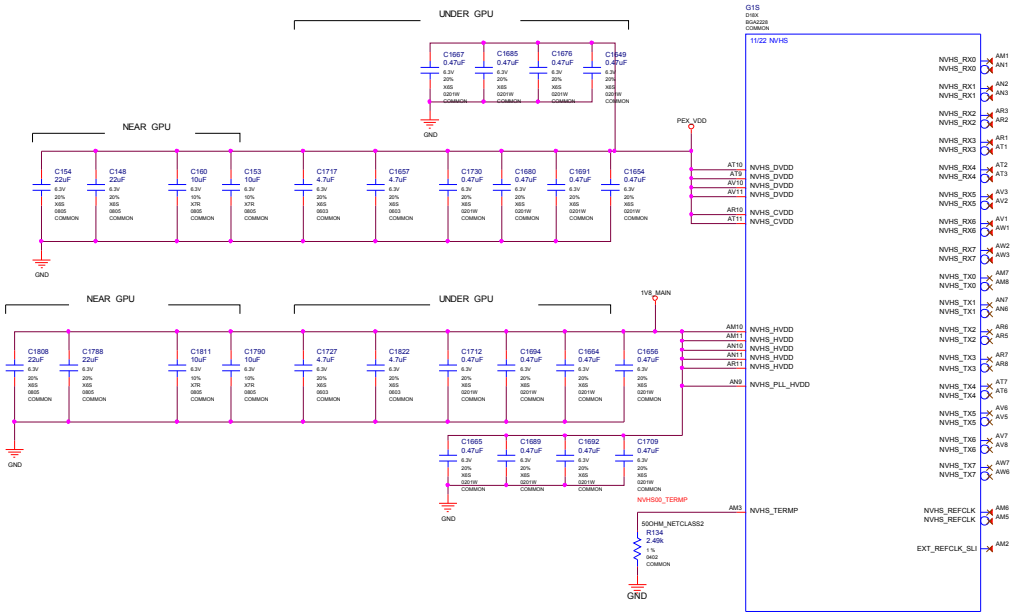


PAGE 22: IFPD DP



PAGE 23: NVHS Interface

Remove SLI



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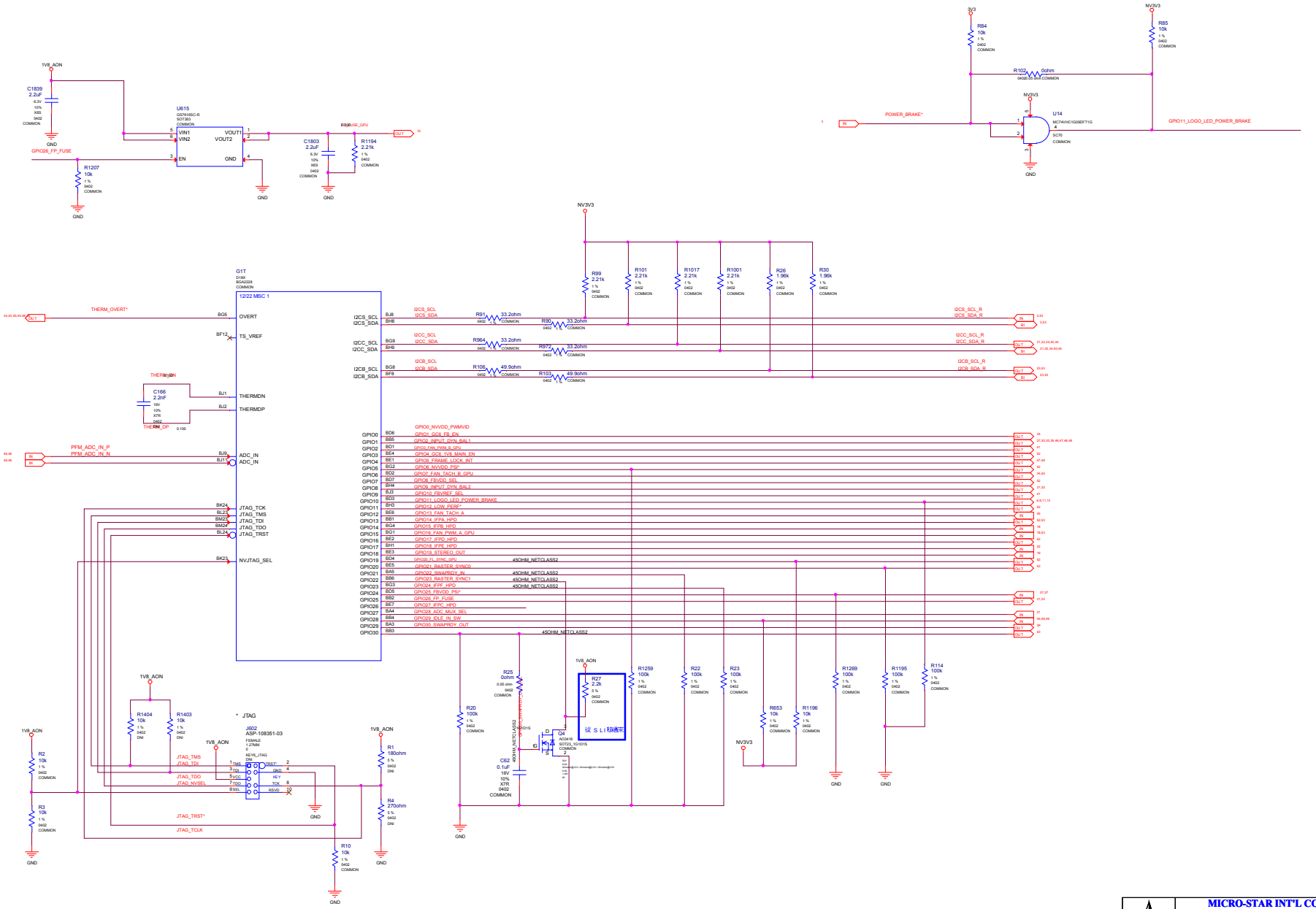
PAGE 24: MISC: Fan, Thermal, JTAG, GPIO, STEREO



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PAGE 25: MISC: ROM, Straps

H=High :Tied to 1.8V
M=Middle:Tied to 0.9V
L=Low :Tied to 0V

STRAP2	STRAP1	STRAP0	RAMCFG[4:0]	
L	L	L	00000	RAMCFG TBD
L	L	H	00001	RAMCFG TBD
L	H	L	00010	RAMCFG TBD
L	H	H	00011	RAMCFG TBD
H	H	L	00110	RAMCFG TBD
H	H	H	00111	RAMCFG TBD

DEFAULT

RAMCFG[4:0]	DENSITY	WIDTH	VENDOR
00000	8Gb	256-bit	Samsung
00001	8Gb	256-bit	Micron
00010	8Gb	256-bit	Hynix
00110	16Gb	256-bit	Samsung
00111	16Gb	256-bit	Samsung

ROM_SO	ROM_SI	ROM_SCLK	DUMMY[2:0],FS_OVERT	1:ENABLE 0:DISABLE
L	L	L	XXX1	FS_OVERT ENABLE
L	L	M	XXX0	FS_OVERT DISABLE

DEFAULT

STRAP5	STRAP4	STRAP3	SMB_ALT_ADDR	DEVID_SEL	PCIE_CFG	VGA_DEVICE
M	H	H	1	1	1	1
M	H	L	1	1	1	0
M	L	H	1	1	0	1
M	L	L	1	1	0	0
L	H	M	1	0	1	1
L	M	H	1	0	1	0
L	M	L	1	0	0	1
L	L	M	1	0	0	0
H	H	H	0	1	1	1
H	H	L	0	1	1	0
H	L	H	0	1	0	1
H	L	L	0	1	0	0
L	H	H	0	0	1	1
L	H	L	0	0	1	0
L	L	H	0	0	0	1
L	L	L	0	0	0	0

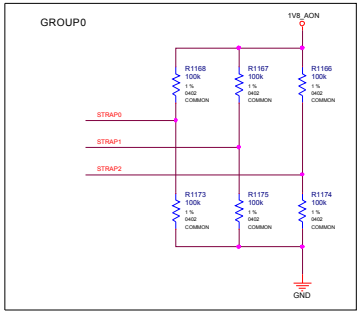
Default

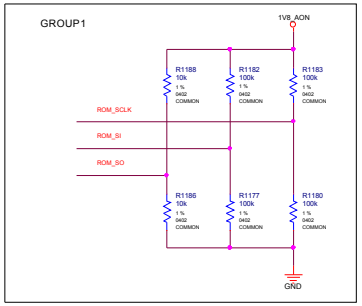
1:SMB_ALT_ADDR ENABLE
0:SMB_ALT_ADDR DISABLE

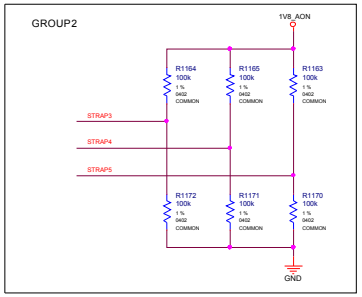
1:DEVID_SEL REBRAND
0:DEVID_SEL ORIGNAL

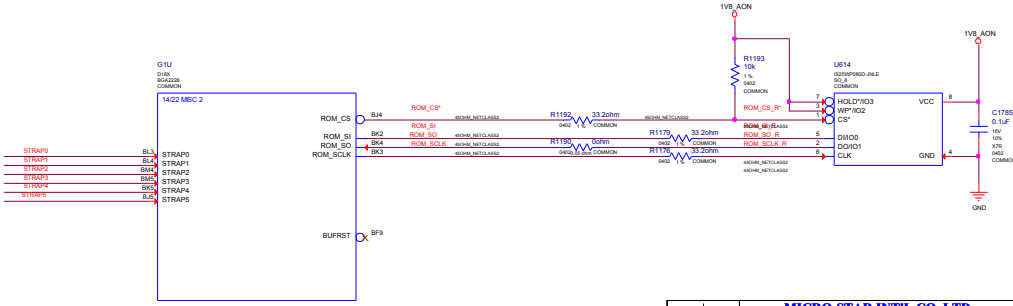
1:PCIE_CFG LOW POWER
0:PCIE_CFG HIGH POWER

1:VGA_DEVICE ENABLE
0:VGA_DEVICE DISABLE



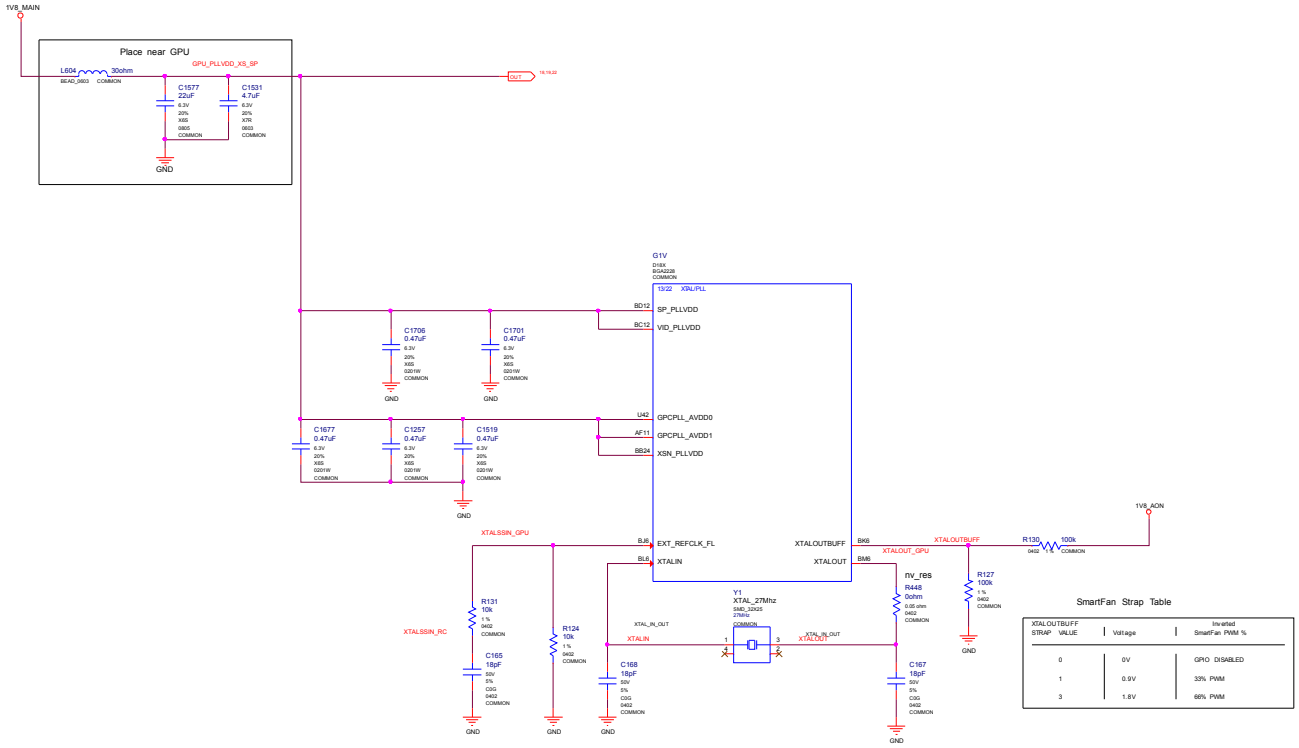






MSI	MICRO-STAR INT'L CO.,LTD	
	MS-V373	
Size: Custom	Document Description: MISC3: ROM, STRAPS	Rev: 1.0
Date: Monday, July 16, 2018	Sheet 25 of 54	

PAGE 26: MISC: XTAL. PLL



MICRO-STAR INT'L CO.,LTD

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Size: Custom | Document Description: MISC: XTAL, PLL | Rev: 1.0

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PAGE 27: MISC: USB PPC

PIN	ANX	CYP
1	TP	TP
2	RESET	VBUS_MON
3	NC	NC
4	ROLE_SEL (PD)	CC2
5	NC	VCON_5V
6	VDDD (3.3V)	CC1
7	VBUS_MON	RESET
8	NC	NC
9	CC2	I2CM_SDA
10	VCON_5V	I2CM_SCL
11	CC1	HPD
12	VDDD (3.3V)	NC
13	DVDD_IO (1.8V)	NC
14	VBUS_FET_EN	VBUS_FET_EN
15	DSCH_CTL	DSCH_CTL
16	HPD	I2CS_SDA
17	I2CM_SDA	I2CS_SCL
18	I2CM_SCL	NC
19	DVDD_IO (1.8V)	GND
20	NC	VDDD (3.3V)
21	I2CS_SDA	DVDD_IO (1.8V)
22	I2CS_SCL	VCCD (100nF)
23	SINK_CLT (PD)	NC
24	PWR_EN	PWR_EN

U620 CYPD4136-24LQXQT QFN24 COMMON

CYPD4136 | ANX3411 | ANX3411 | CYPD4136

VDD_IO	M_SDA	AVDD33	CC1
VDDD	INTP_OUT	ROLE_SELECT	CC2
VCCD	M_SCL	CC1	P2_3/
V5V	TEST_S	I2C_ADR_1/ GPIO	HPD_DETECT
		GPIO1	P1_2
P3_2/	HPD	CC2	P2_6
SCB3_I2C_SDA	CFG_SDA	VCONN_POWER	P0_0/
SCB3_I2C_SCL	SOURCE_CTL	VBUS_SENSE	P0_1
P1_1	RESET		XRES
P1_3	TEST_EN		
P1_5	VBUS_OCP		
P1_7	AVDD33		
P2_5	DVDD_IO	DVDD_IO	GND
P3_0	DISCHARG_CTL	GND	GND
P3_1	CFG_SCL		
P3_4	SINK_CTL		
P3_6			

USB_DVDD_IO ANX

PCB CO-LAYOUT

Place it closed to 5V regulator

UART RXD DEBUG PORT

CYP ONLY

DVDD_IO CYP

PD ANX

nv_res

U626 APL3503ABI-TRG SOT23_5_EFU COMMON

U619 SN74LVC1G32DCKR SC70 COMMON

Q634 US3HSNG-ZT3R SOT323_1GI1D1S COMMON

MICRO-STAR INT'L CO.,LTD	
MS-V373	
Size: Custom	Document Description: MISC: USB PPC
Rev: 1.0	
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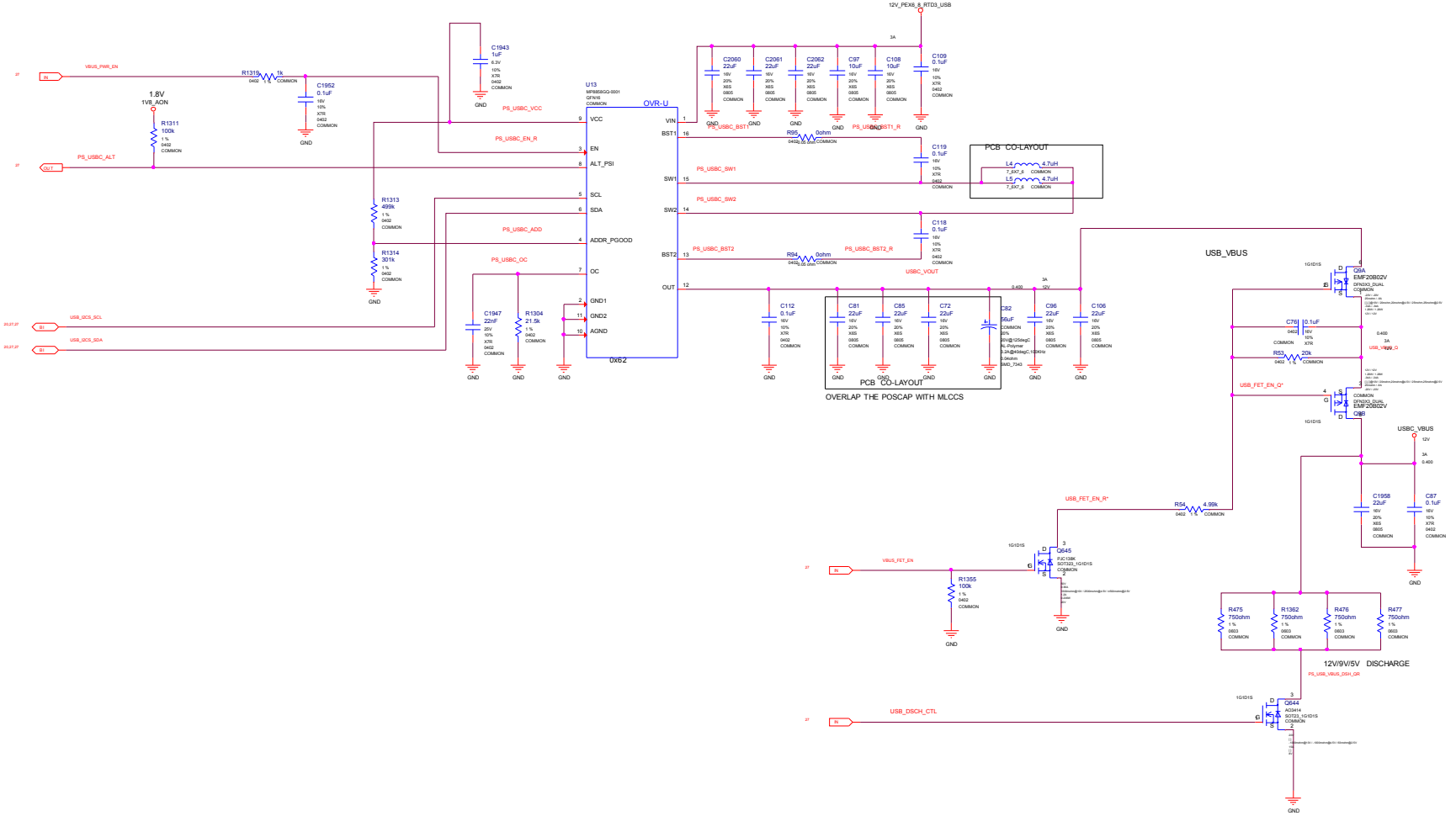
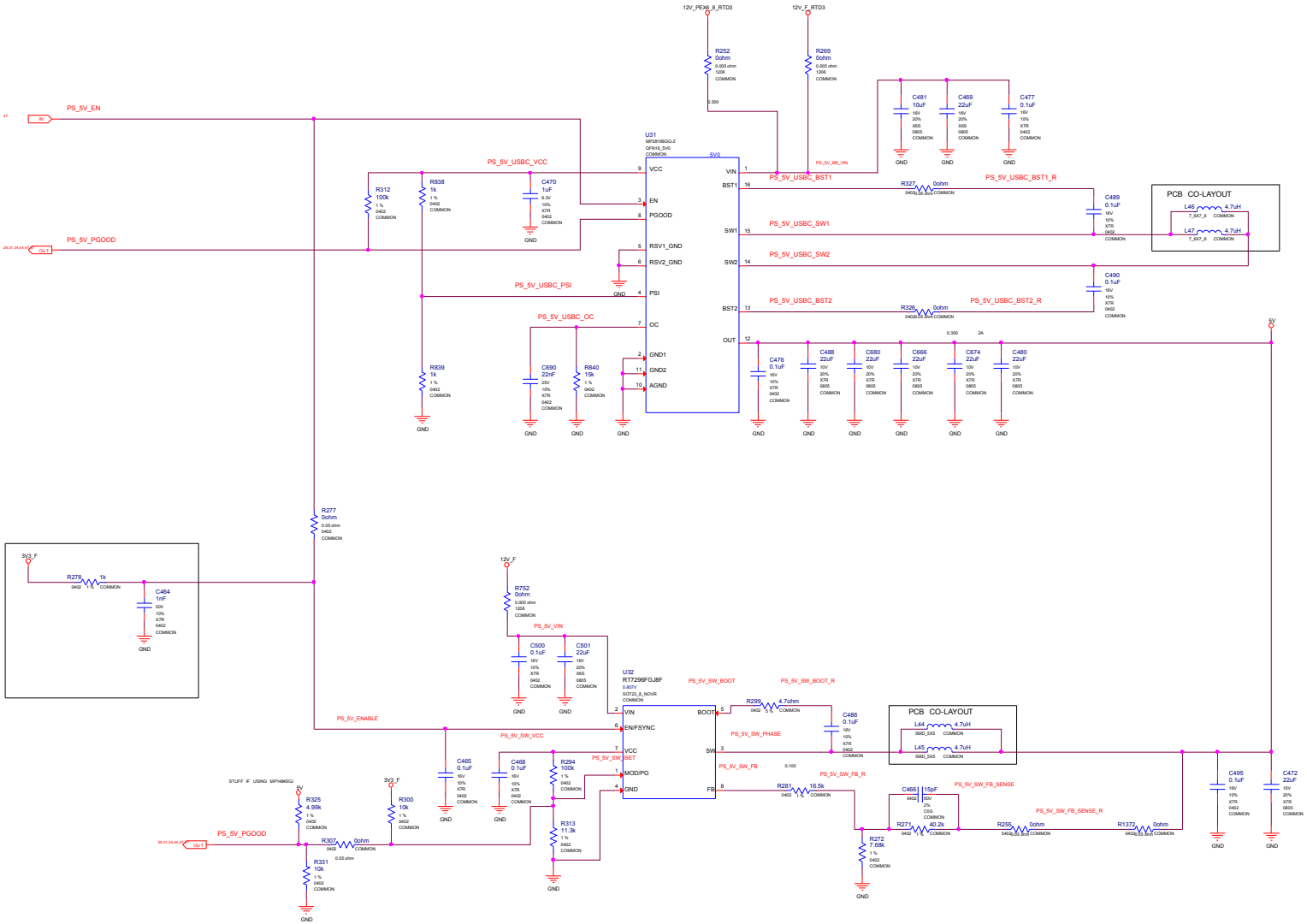
PAGE 28: PS: USB VR



MICRO-STAR INT'L CO.,LTD		
MS-V373		
Size: Custom	Document Description: PS: USB VR	Rev: 1.0
Date: Monday, July 16, 2018	Sheet 28 of 54	

PAGE 29: PS: 5V, 5V_BACKUP



MICRO-STAR INT'L CO.,LTD			
MS-V373			
Size: Custom	Document Description: PS: 5V, 5V BACKUP		Rev: 1.0
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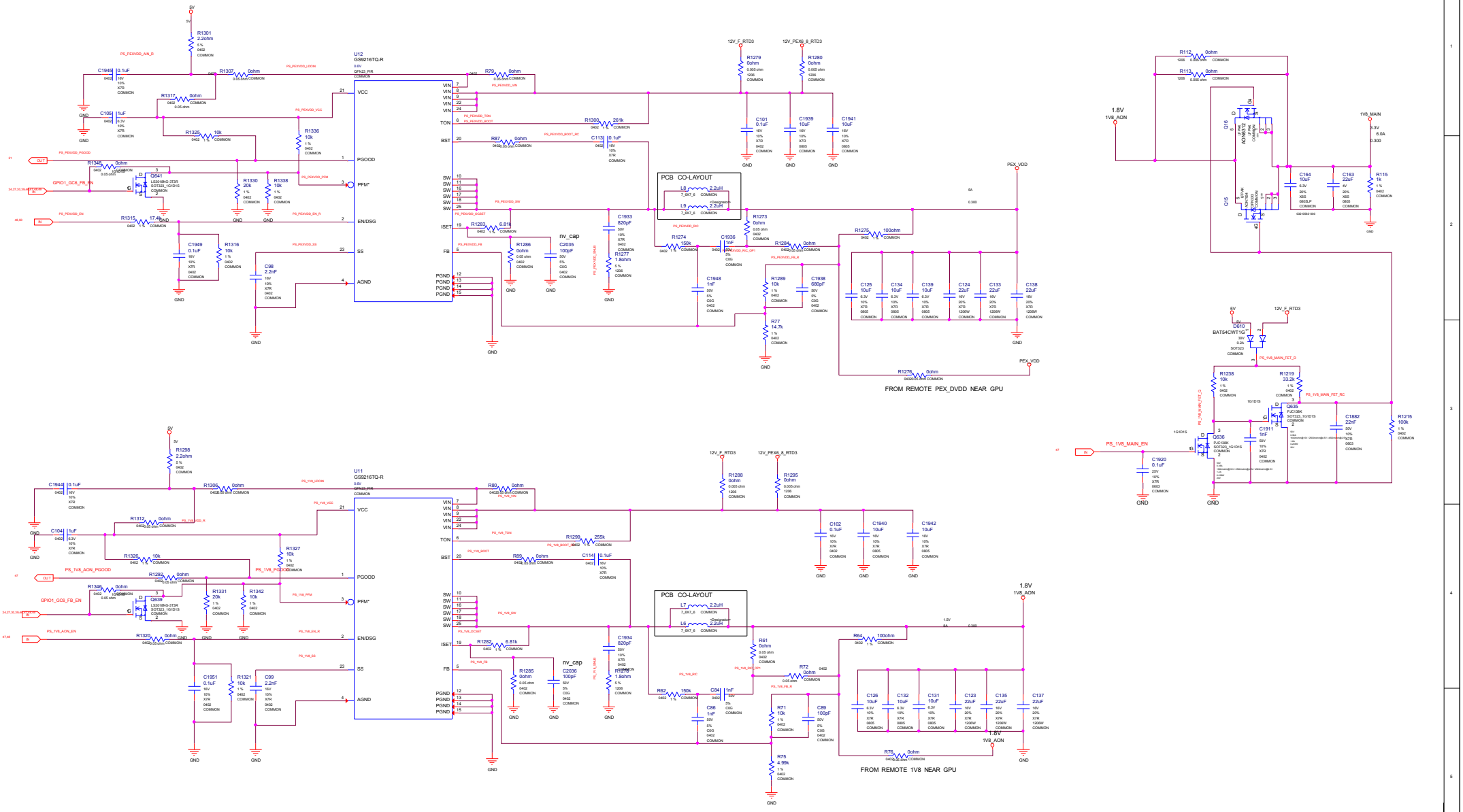
PAGE 30: PS: PEXVDD, 1V8



MICRO-STAR INT'L CO.,LTD

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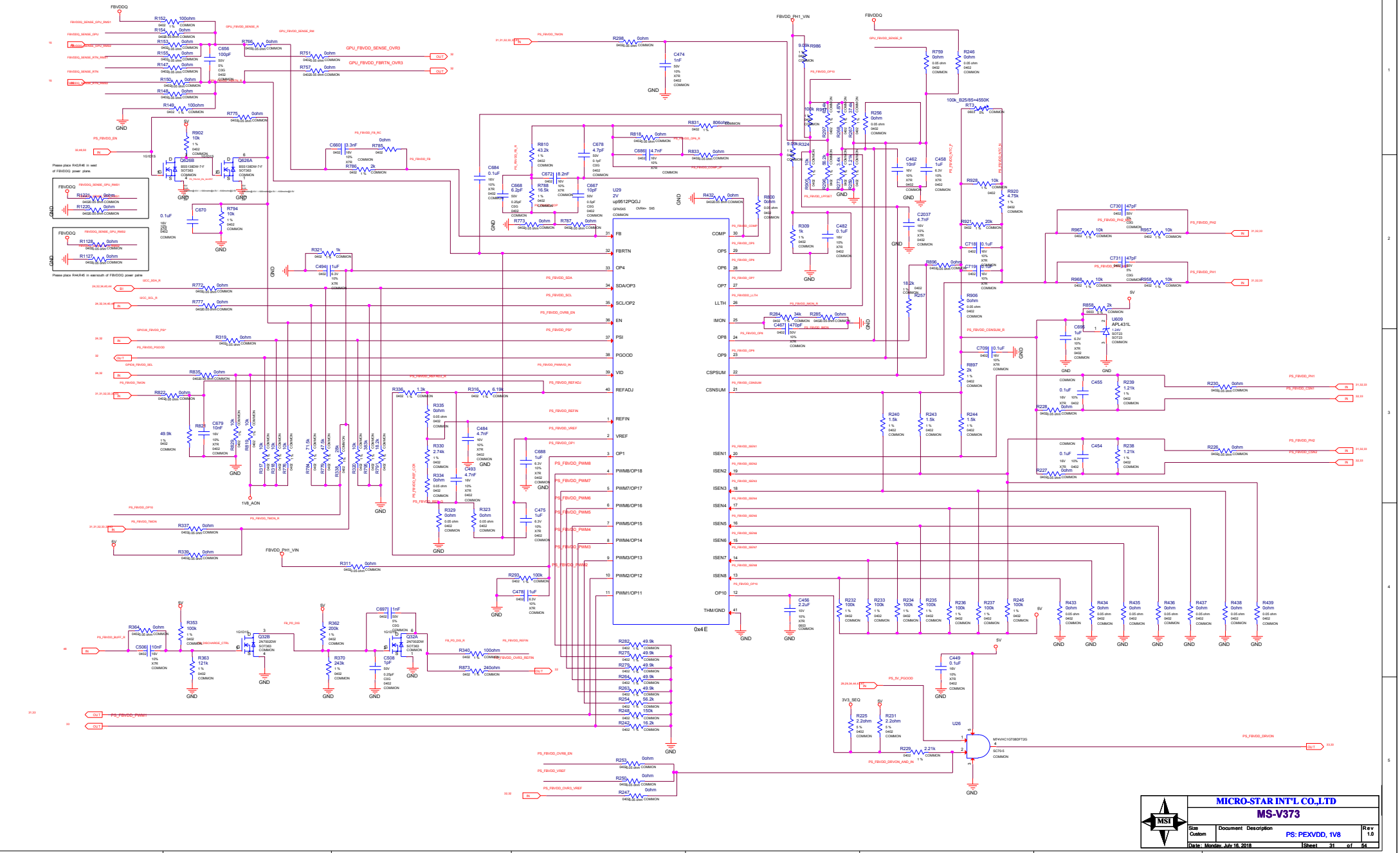
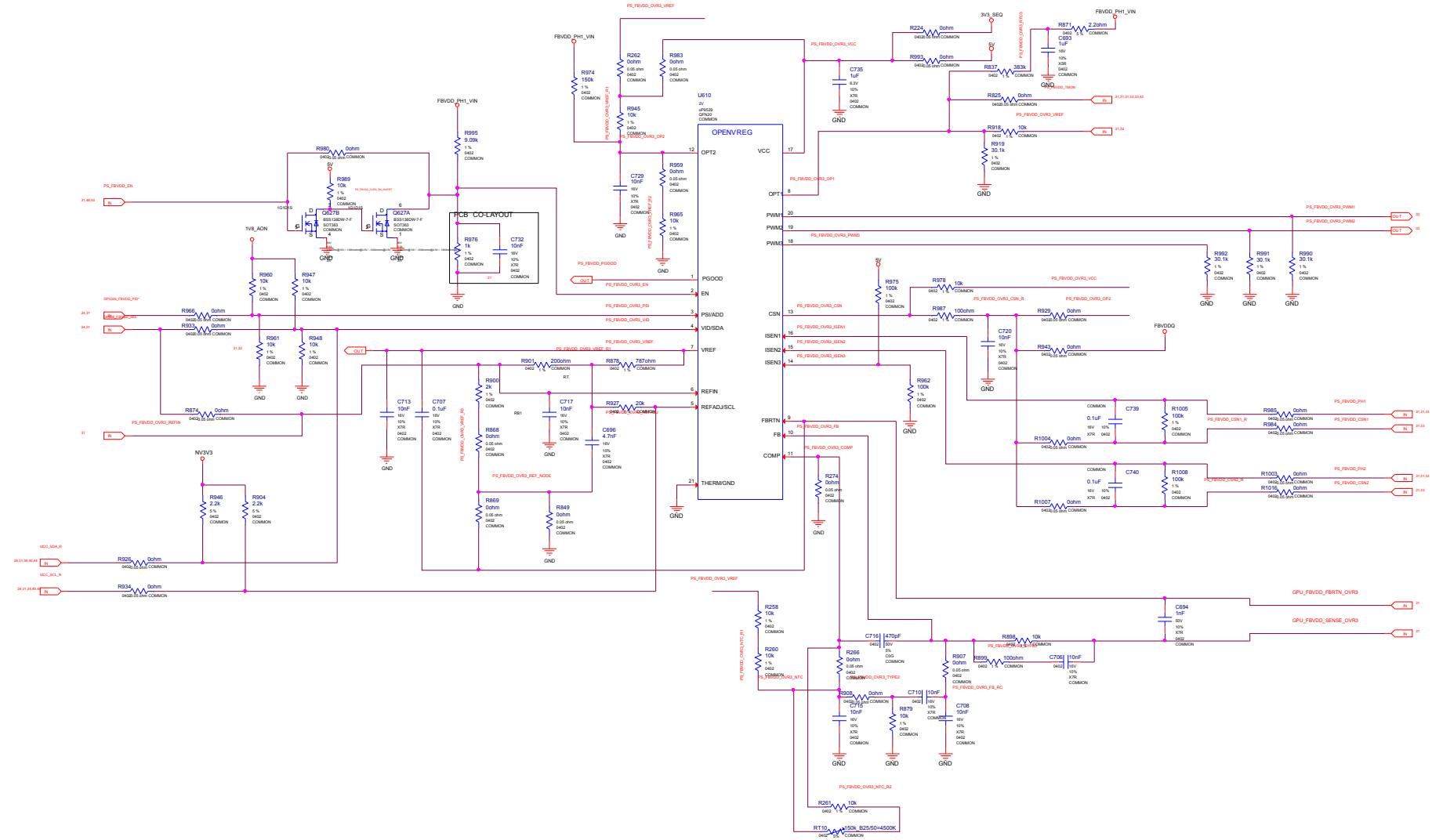
Size	Document Description	Rev
Custom	PS: PEXVDD, 1V8	1.0

Date: Monday, July 16, 2018 Sheet 30 of 54

PAGE 31: PS: FBVDD Controller

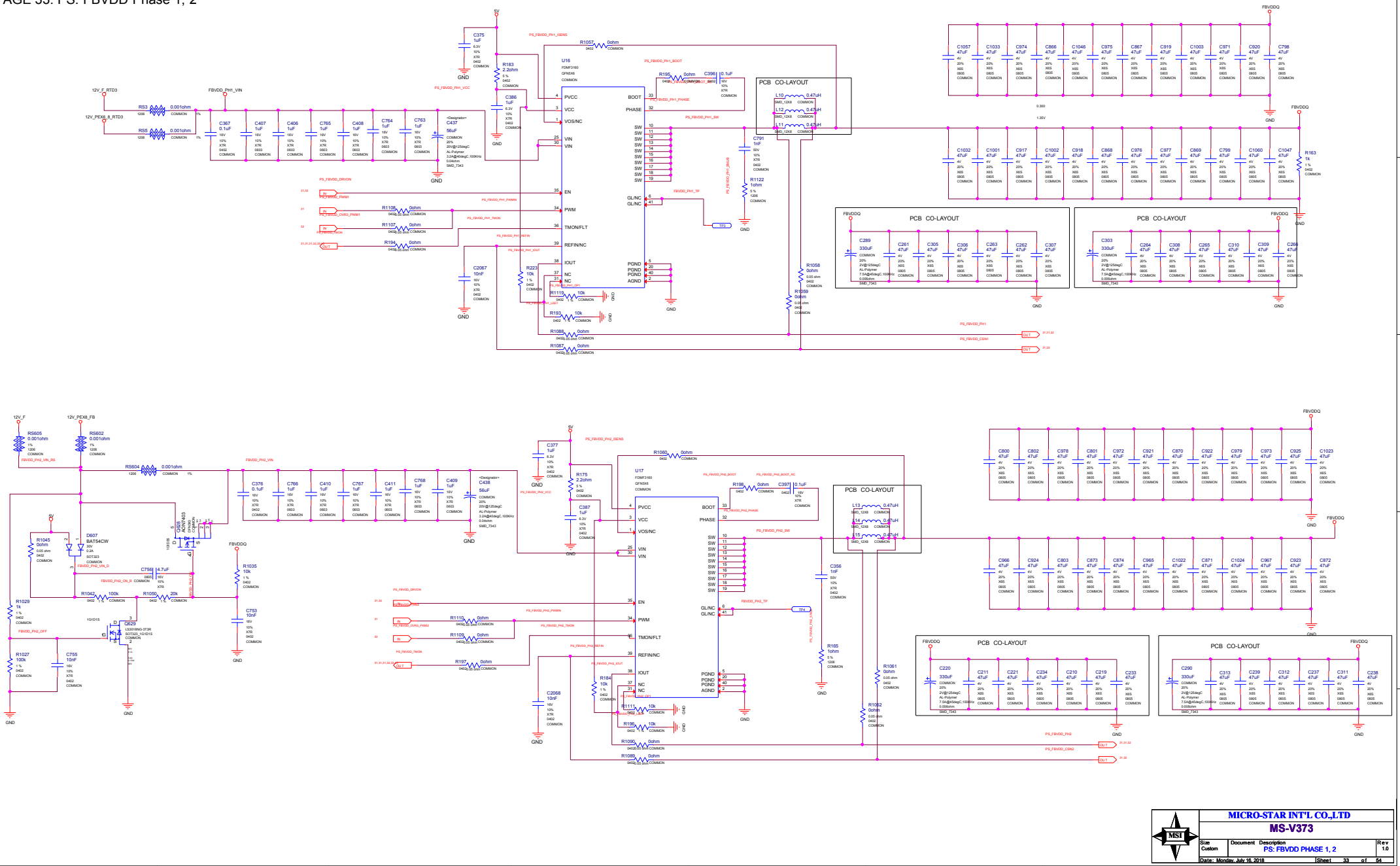


PAGE 32: PS: FBVDD Controller OVR3

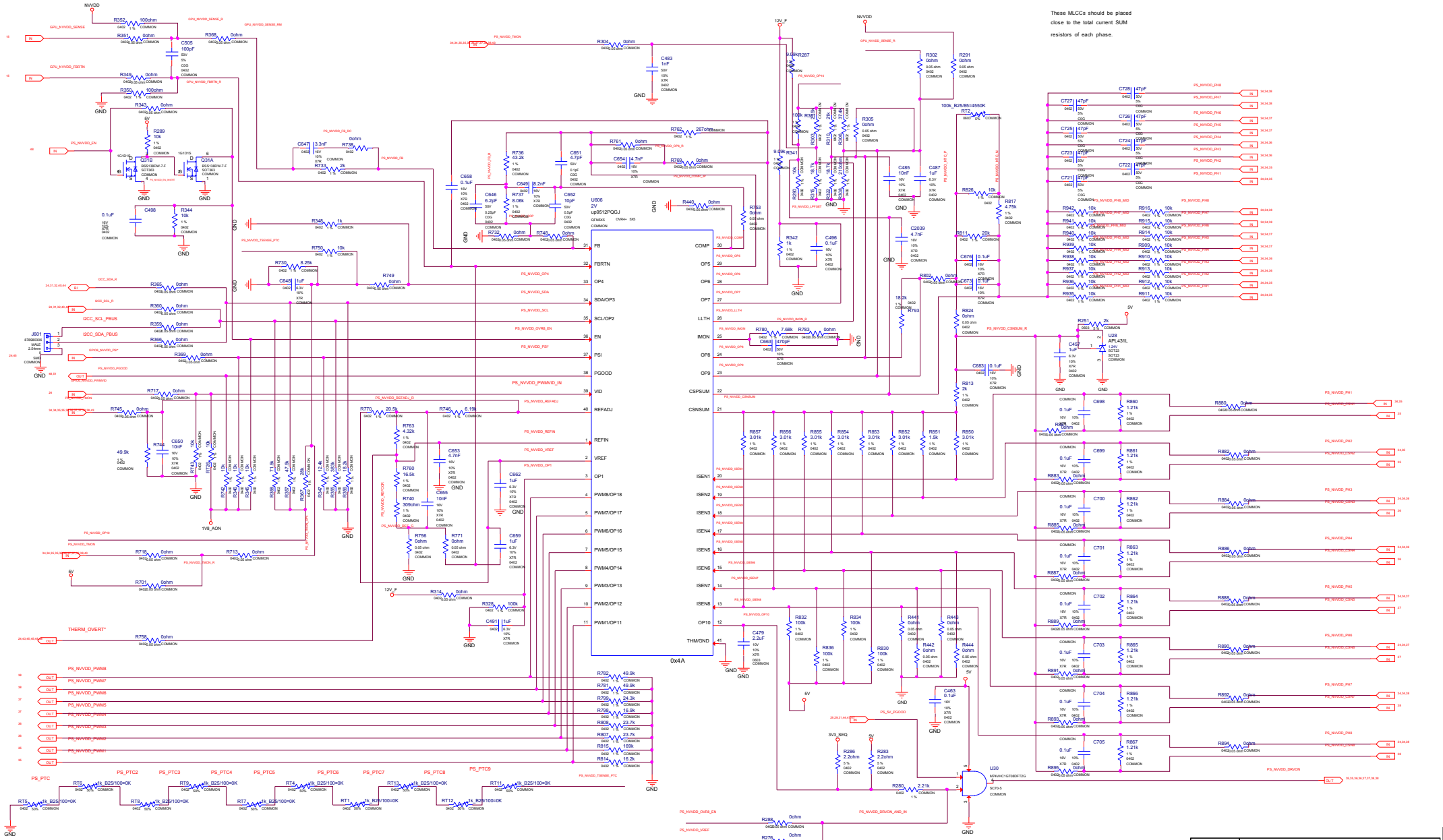


MICRO-STAR INT'L CO.,LTD		
MS-V373		
Size: Custom	Document Description: PS: FBVDD CONTROLLER OVR3	Rev: 1.0
Date: Monday, July 16, 2018	Sheet 32 of 54	

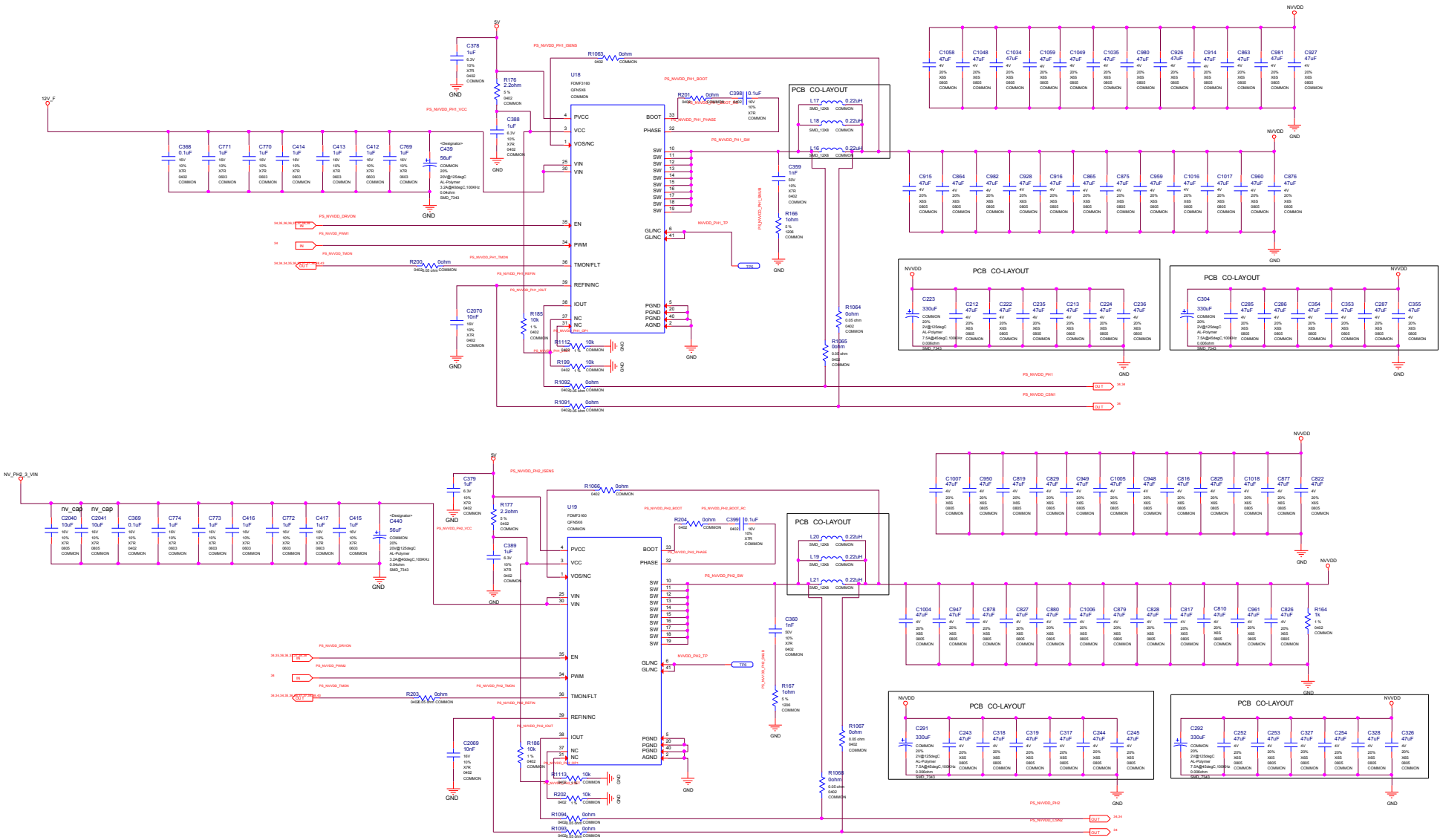
PAGE 33: PS: FBVDD Phase 1, 2



PAGE 34: PS: NVVDD Controller OVR8



PAGE 35: PS: NVVDD Phase 1, 2



MICRO-STAR INT'L CO.,LTD			
MS-V373			
Size: Custom	Document Description: PS: NVVDD Phase 1, 2		Rev: 1.0
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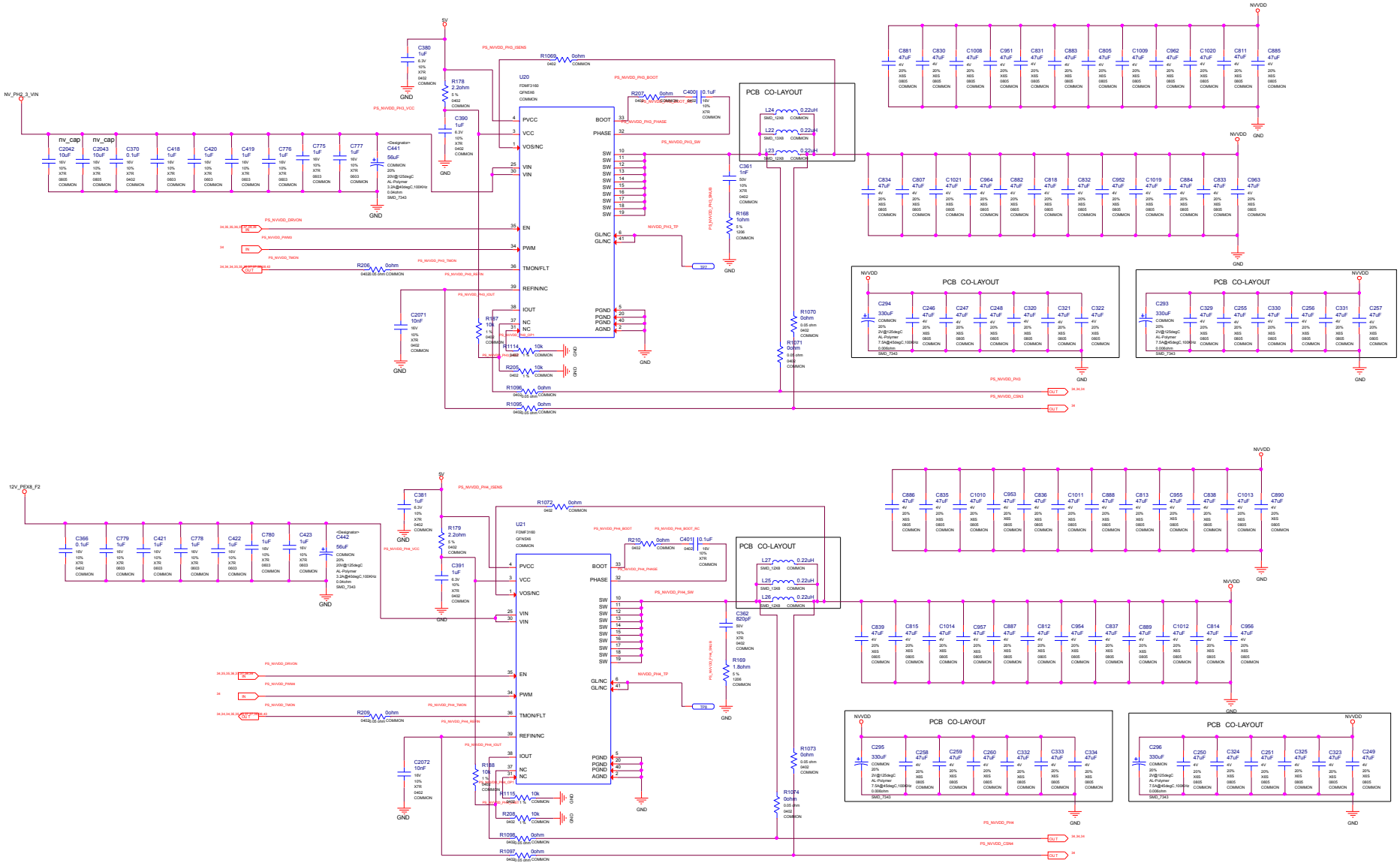
PAGE 36: PS: NVVDD Phase 3, 4



MICRO-STAR INT'L CO.,LTD
MS-V373
Size: Custom
Document Description: PS: NVVDD Phase 3, 4
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Date: Monday, July 16, 2018
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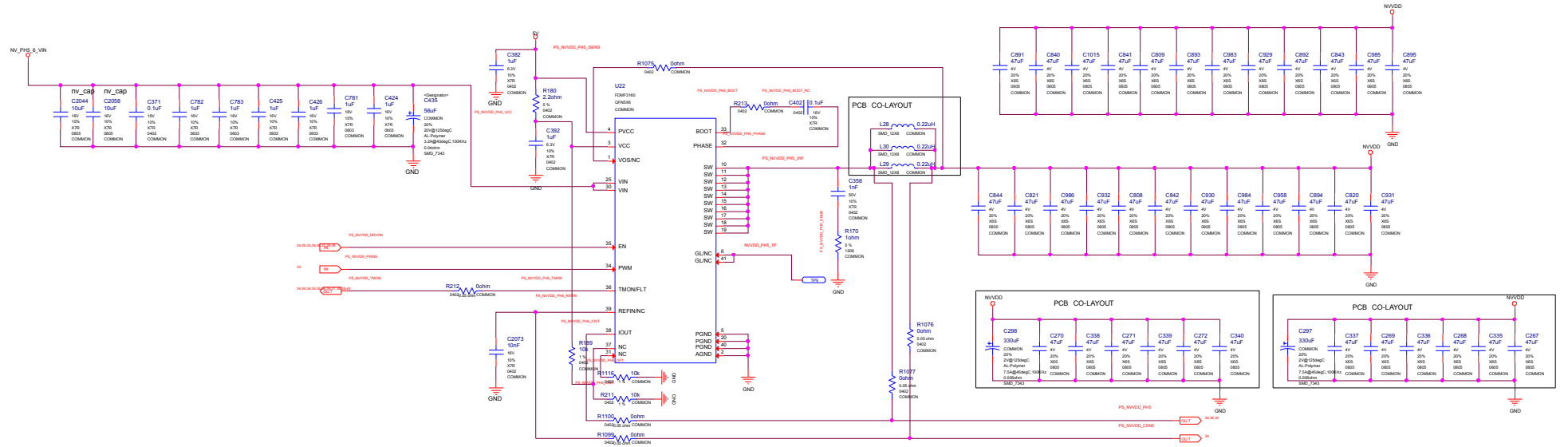
PAGE 37: PS: NVVDD Phase 5, 6



MICRO-STAR INT'L CO.,LTD	
MS-V373	
Size: Custom	Document Description: PS: NVVDD Phase 5, 6
Rev: 1.0	
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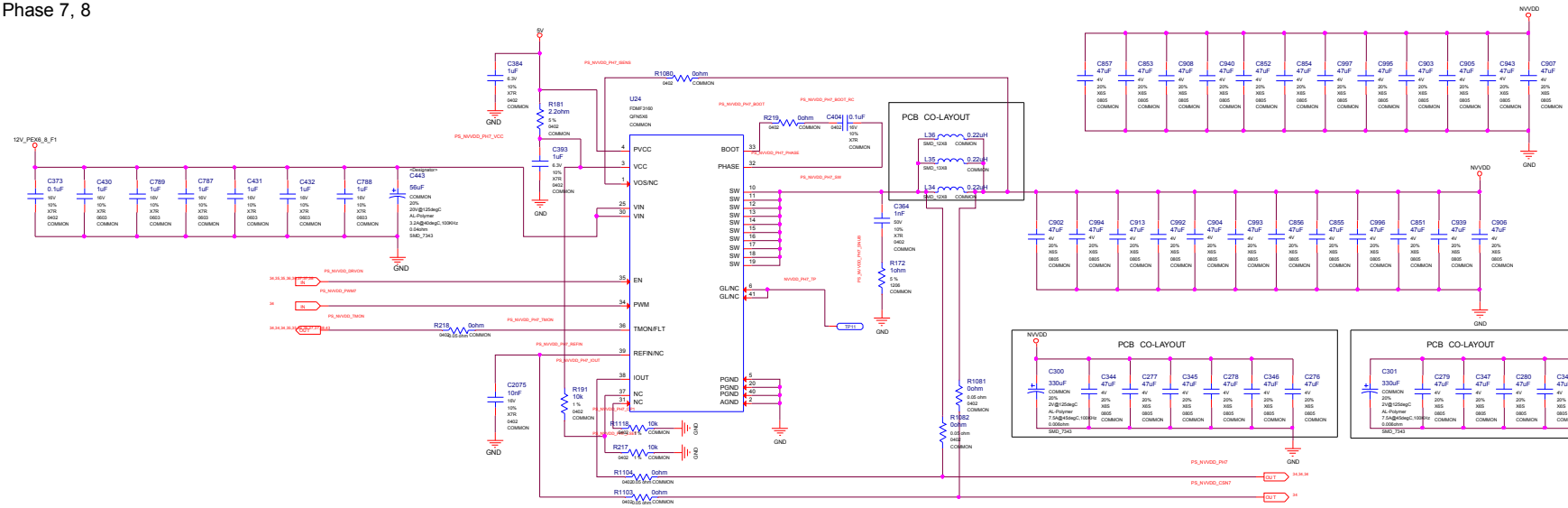
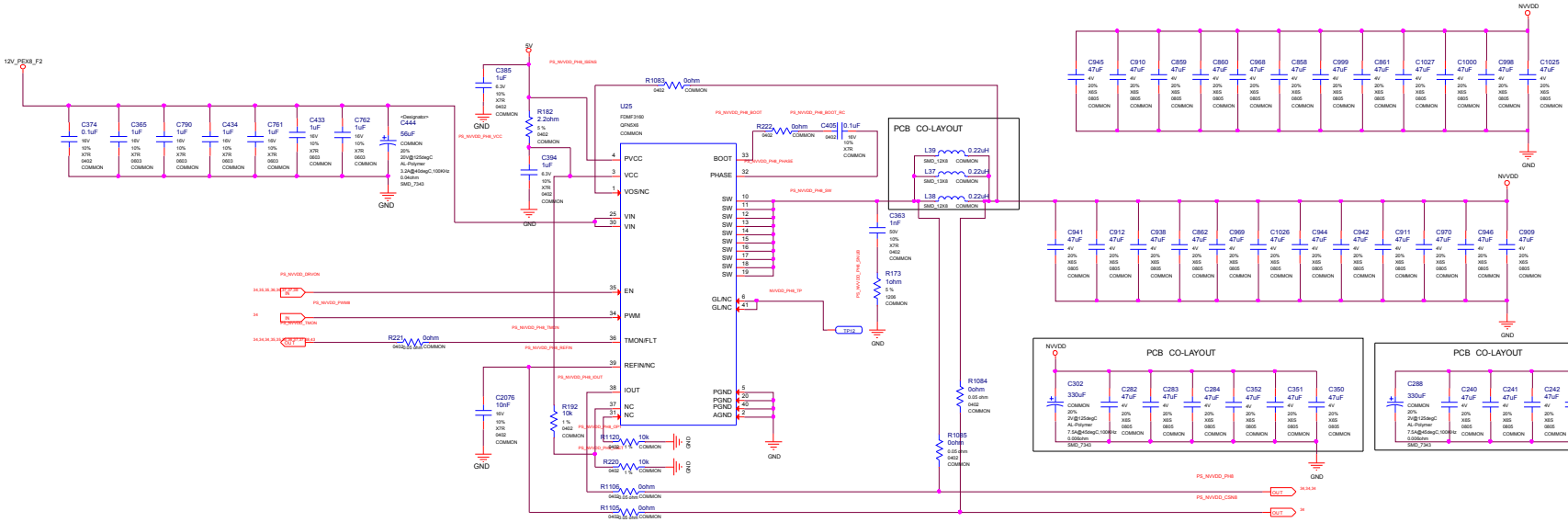
PAGE 38: PS:NVVDD Phase 7, 8





MICRO-STAR INT'L CO.,LTD			
MS-V373			
Size: Custom	Document Description: PS: NVDD Phase 7, 8		Rev: 1.0
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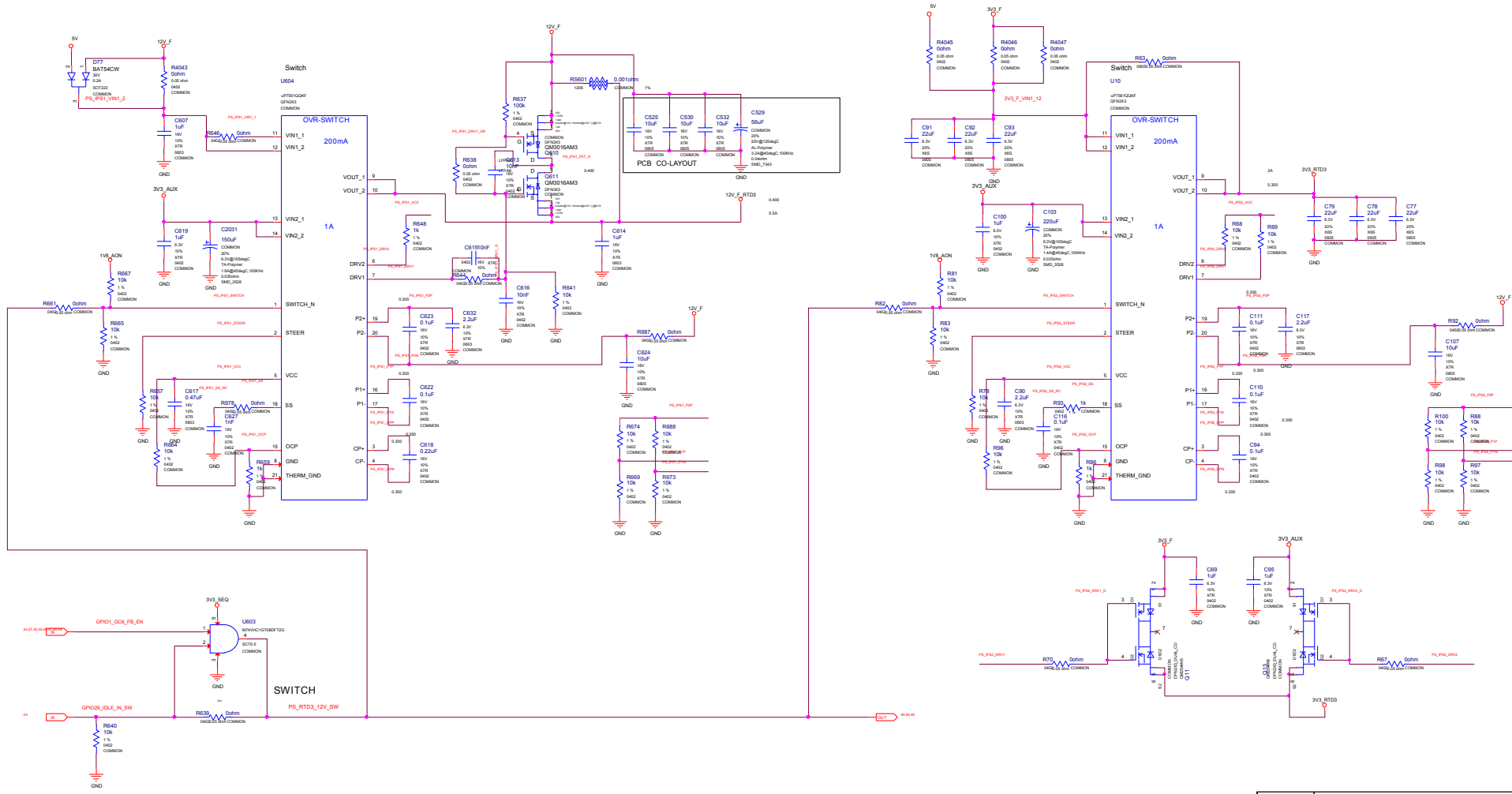
AND GATE LOGIC FOR P-BOARD

GPIO1	GPIO29	SWITCH	VOUT
0	0	0	12V_F
0	1	0	12V_F
1	0	0	12V_F
1	1	1	3V3A

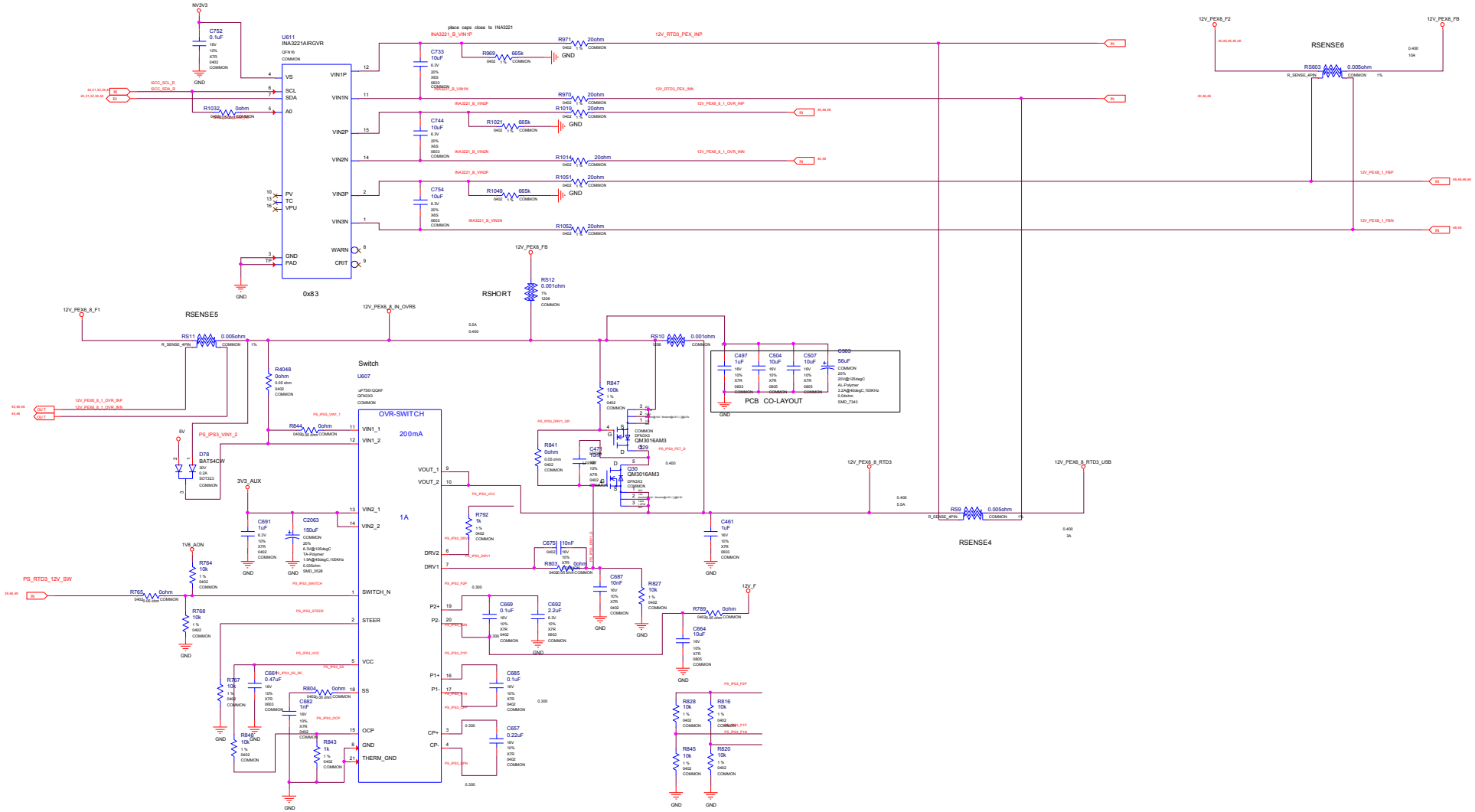
AND GATE LOGIC FOR P-BOARD

GPIO1	GPIO29	SWITCH	VOUT
0	0	0	3V3
0	1	0	3V3
1	0	0	3V3
1	1	1	3V3A



MICRO-STAR INT'L CO.,LTD	
MS-V373	
Size: Custom	Document Description: PS: INPUT SWITCH RTD3 — Rev 1.0
Date: Monday, July 16, 2018	Sheet 39 of 54

PAGE 40: PS: INPUT SWITCH RTD3 USB



MICRO-STAR INT'L CO.,LTD	
MS-V373	
Size: Custom	Document Description: PS: INPUT SWITCH RTD3 USB
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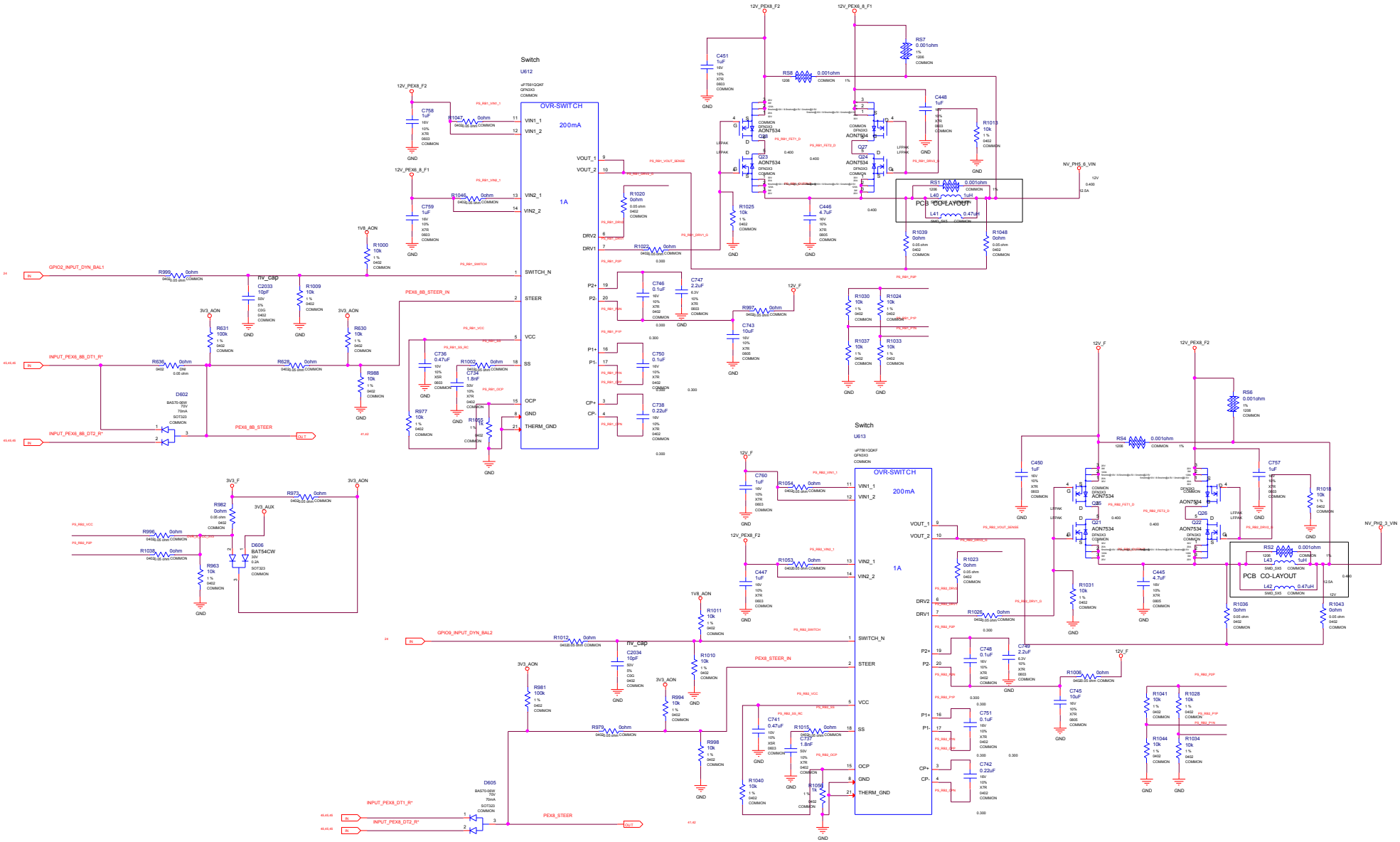
PAGE 41: PS: INPUT SWITCH Rail Balance



MICRO-STAR INT'L CO.,LTD			
MS-V373			
Size: Custom	Document Description: PS: INPUT SWITCH RAIL BALANCE		Rev: 1.0
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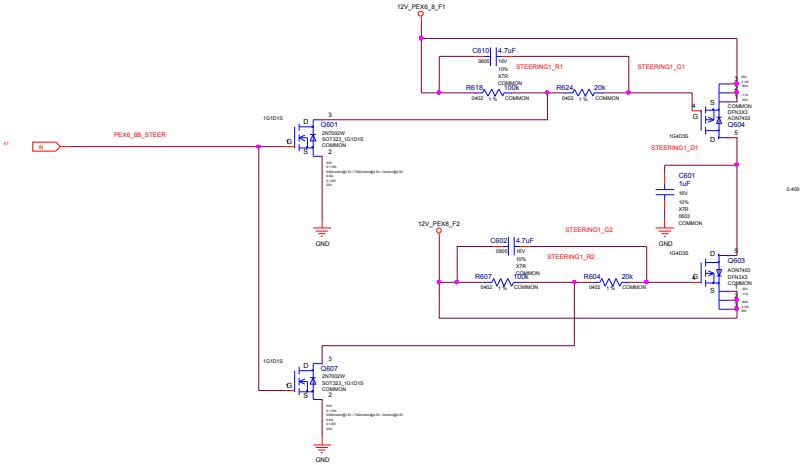
PAGE 42: PS: 12V CURRENT STEERING

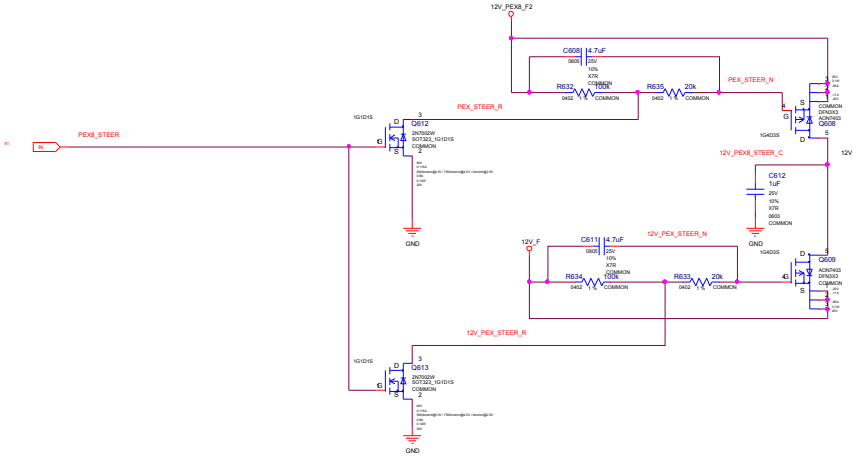
12V CURRENT STEERING (UNDER POWER BOOT):

GUIDES CURRENT FROM PEX EDGE TO PEX 6/8 PIN INPUT AREA



12V CURRENT STEERING (UNDER POWER BOOT):

GUIDES CURRENT FROM PEX EDGE TO PEX 8 PIN INPUT AREA



MSI	MICRO-STAR INT'L CO.,LTD	
	MS-V373	
Size: Custom	Document Description: PS: 12V CURRENT STEERING	Rev: 1.0
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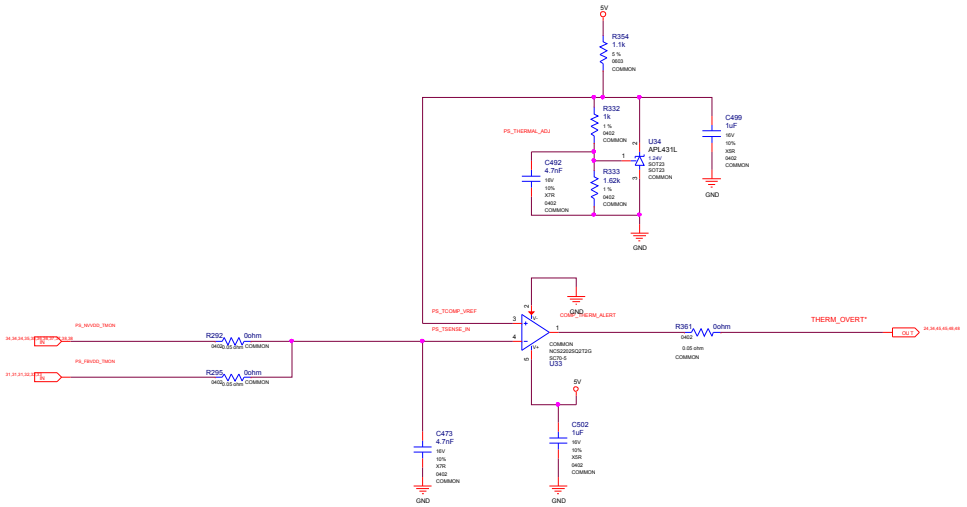
PAGE 43: PS: VR THERMAL PROTECTION



MSI	MICRO-STAR INT'L CO.,LTD	
	MS-V373	
Size: Custom	Document Description: PS: VR THERMAL PROTECTION	Rev: 1.0
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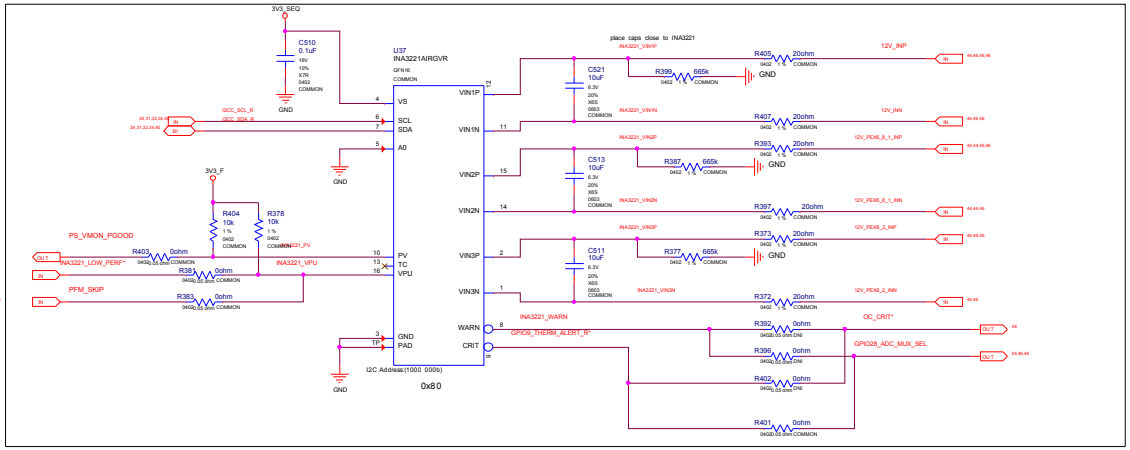
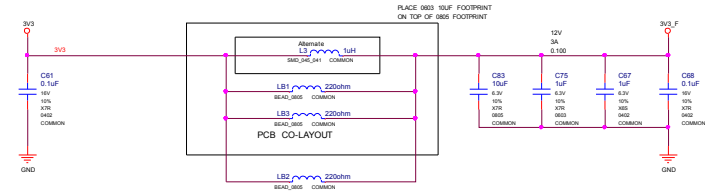
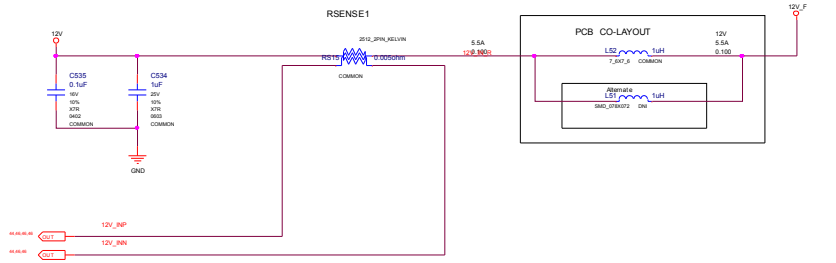
PAGE 44: PS: Inputs, Filtering, and Monitoring



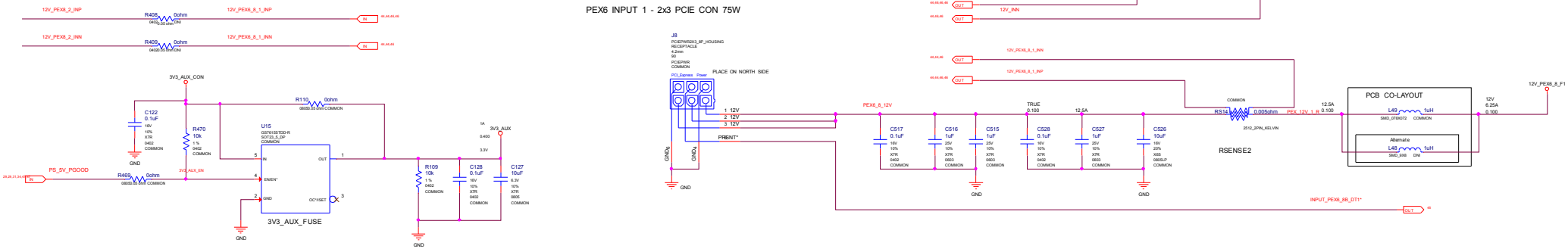
PEX 3V3 INPUT - 10W



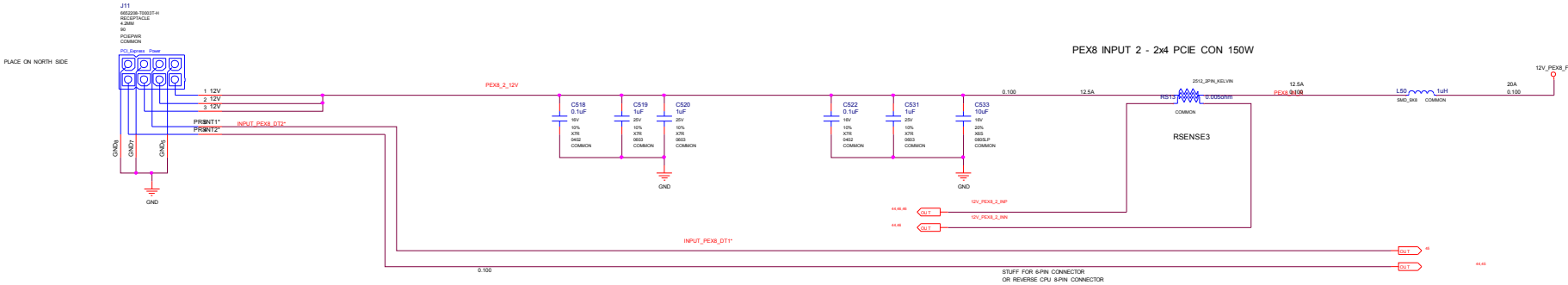
PEX_12V INPUT - 66W



PEX6 INPUT 1 - 2x3 PCIE CON 75W



PEX8 INPUT 2 - 2x4 PCIE CON 150W



MICRO-STAR INT'L CO.,LTD

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Size	Document Description	Rev
Custom	PS: INPUTS, FILTERING AND MONITORING	1.0

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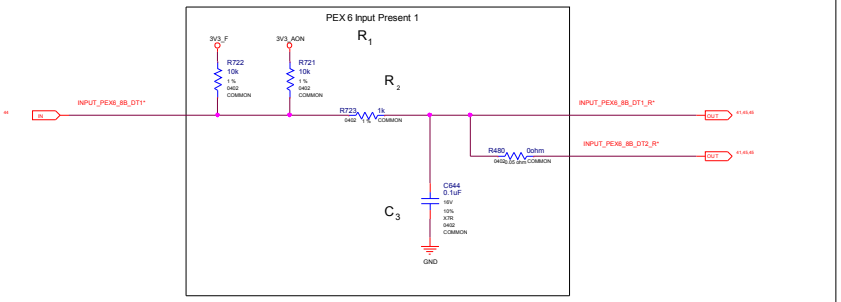

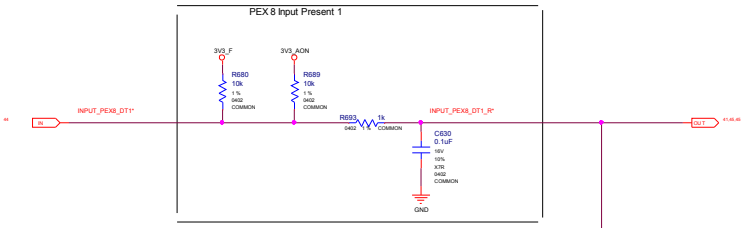

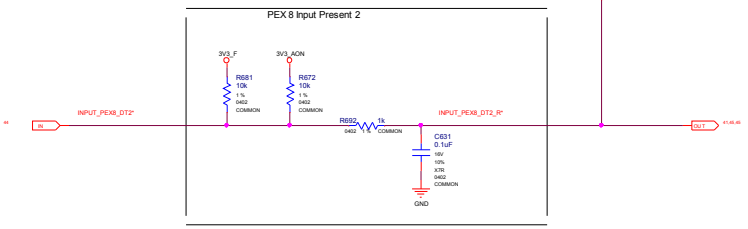

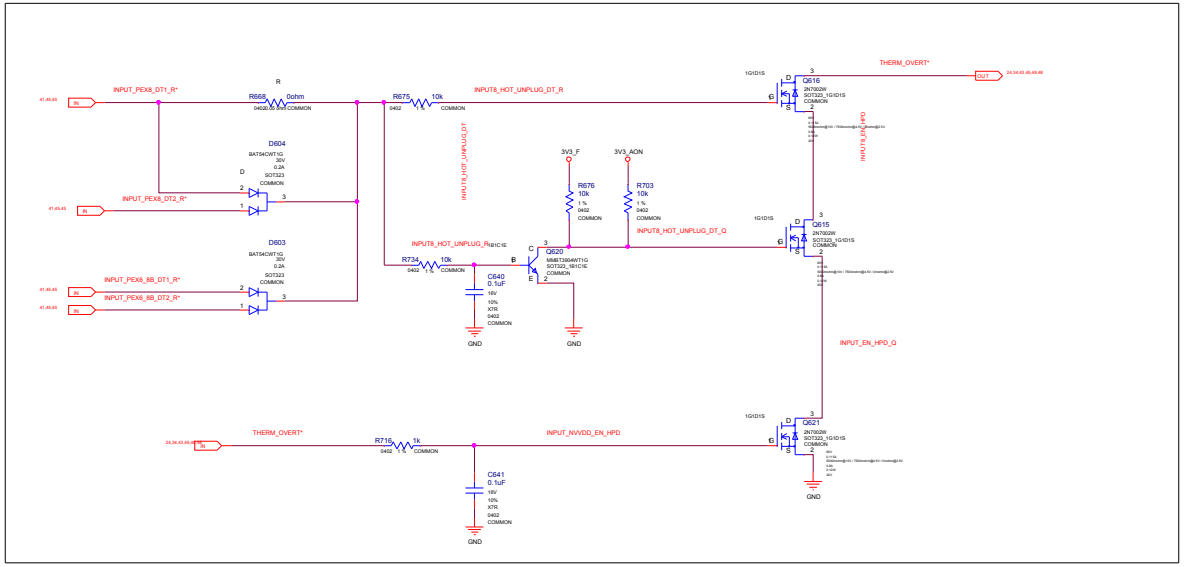

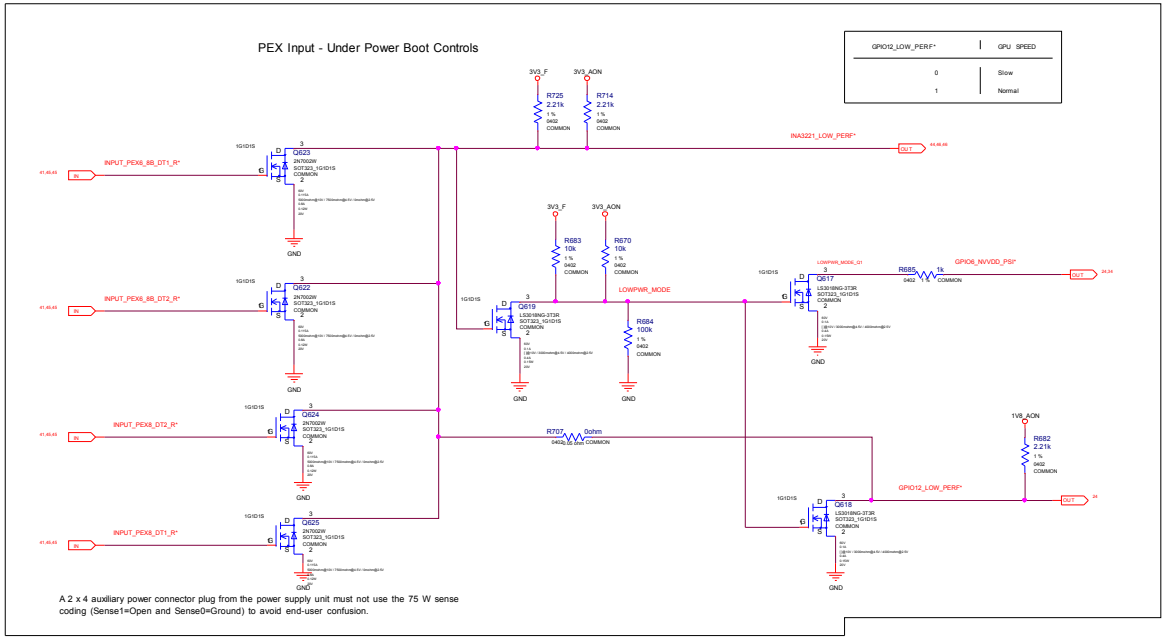

MICRO-STAR INT'L CO.,LTD

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Size	Document Description	Rev
Custom	PS: CURRENT STEERING,HOT UNPLUG DETECT	1.0

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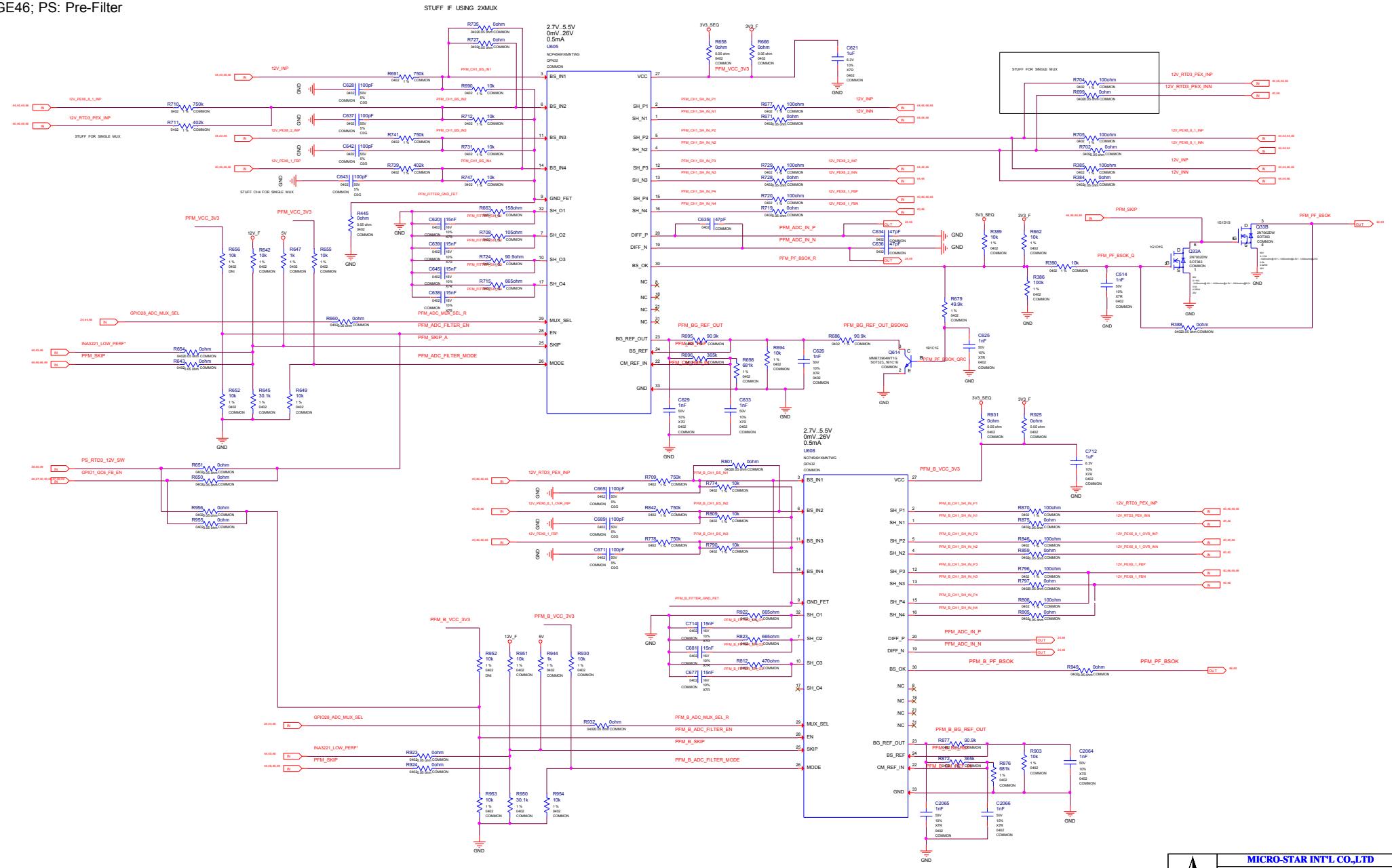
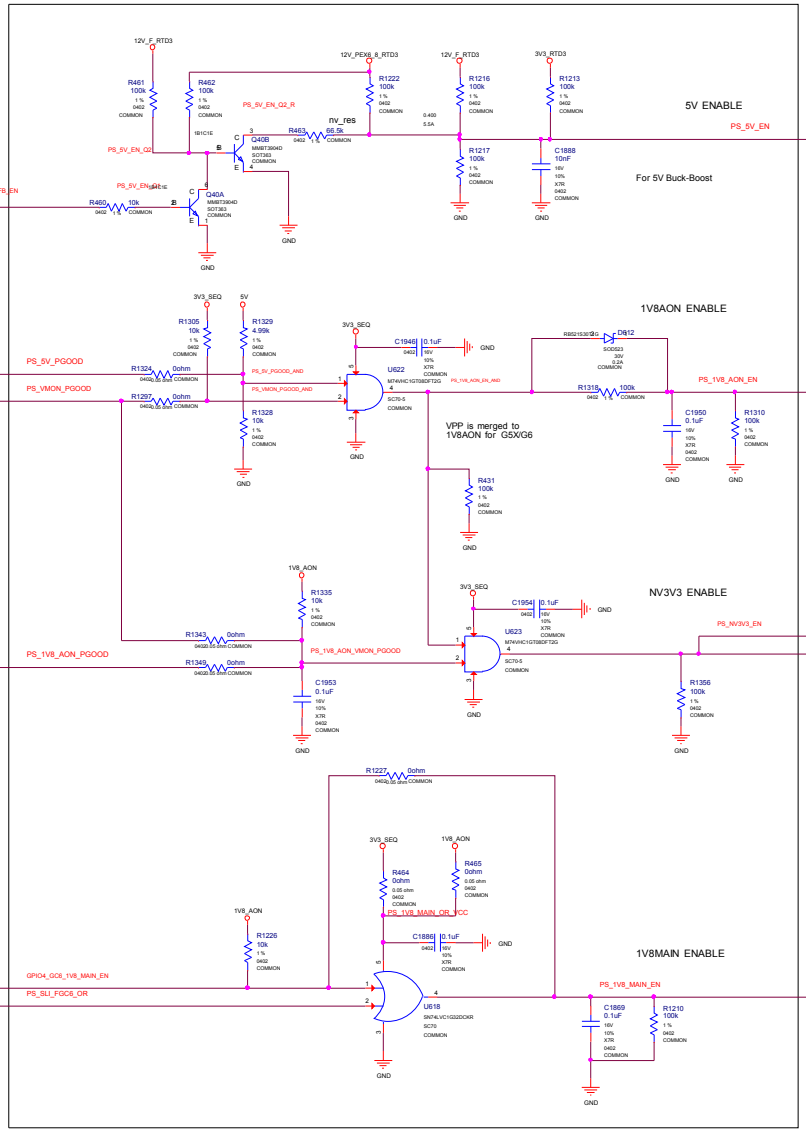
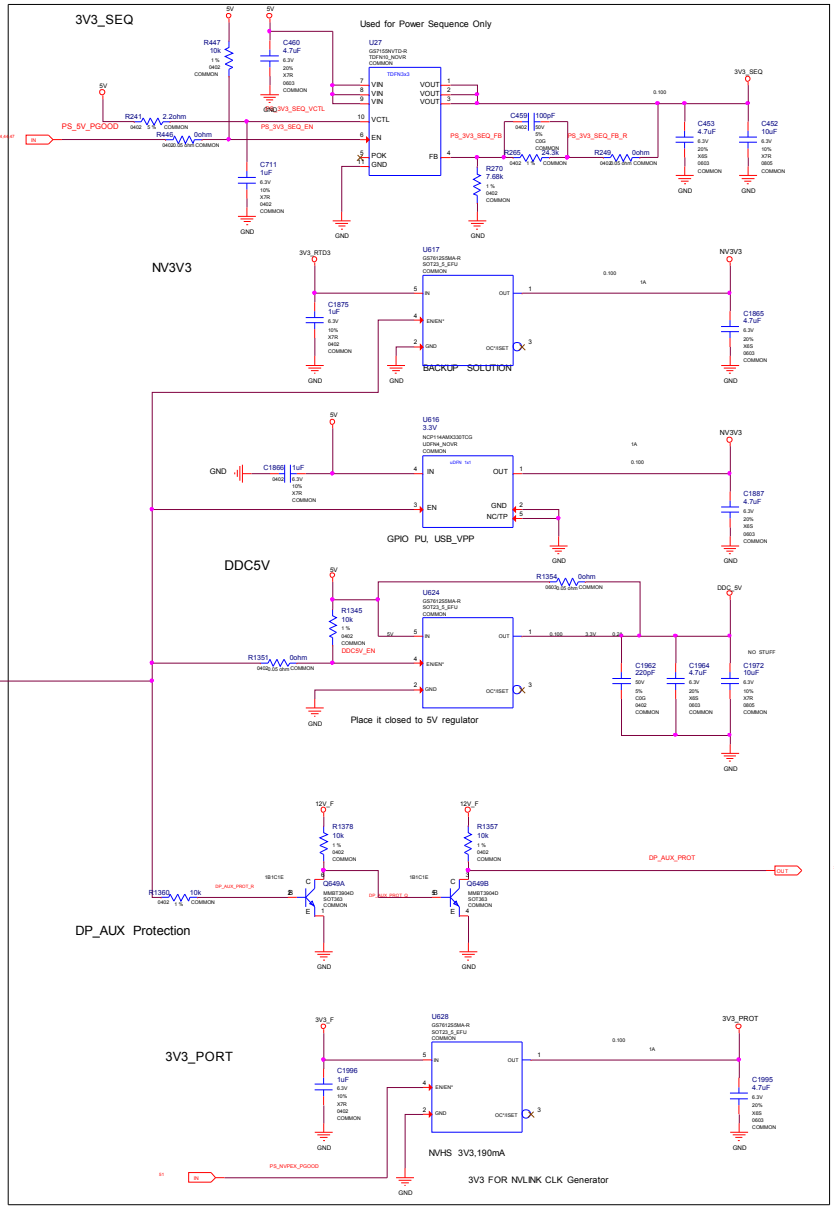
PAGE46; PS: Pre-Filter



MICRO-STAR INT'L CO.,LTD	
MS-V373	
Size: Custom	Document Description: PS: PRE-FILTER
Rev: 1.0	
Date: Monday, July 16, 2018	Sheet 46 of 54

PAGE 47: SEQUENCE:5V,1V8,NV3V3 ENABLE





MICRO-STAR INT'L CO.,LTD

MS-V373

Size	Document Description	Rev
Custom	SEQUENCE: 5V, 1V8, NV3V3 ENABLE	1.0

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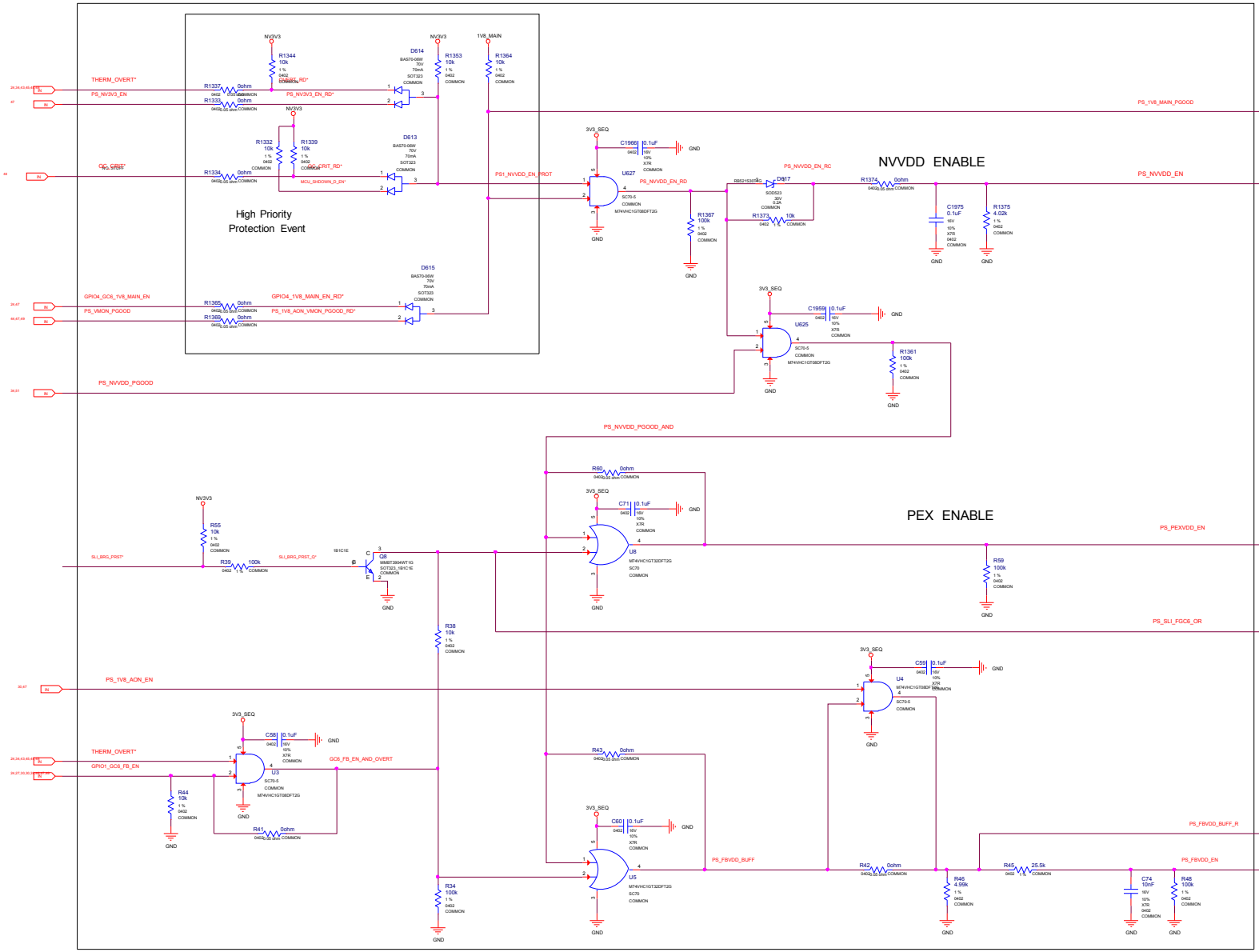
PAGE 48: SEQUENCE:NV,PEX,FB ENABLE



MICRO-STAR INT'L CO.,LTD		
MS-V373		
Size: Custom	Document Description: SEQUENCE: NV, PEX, FB ENABLE	Rev: 1.0
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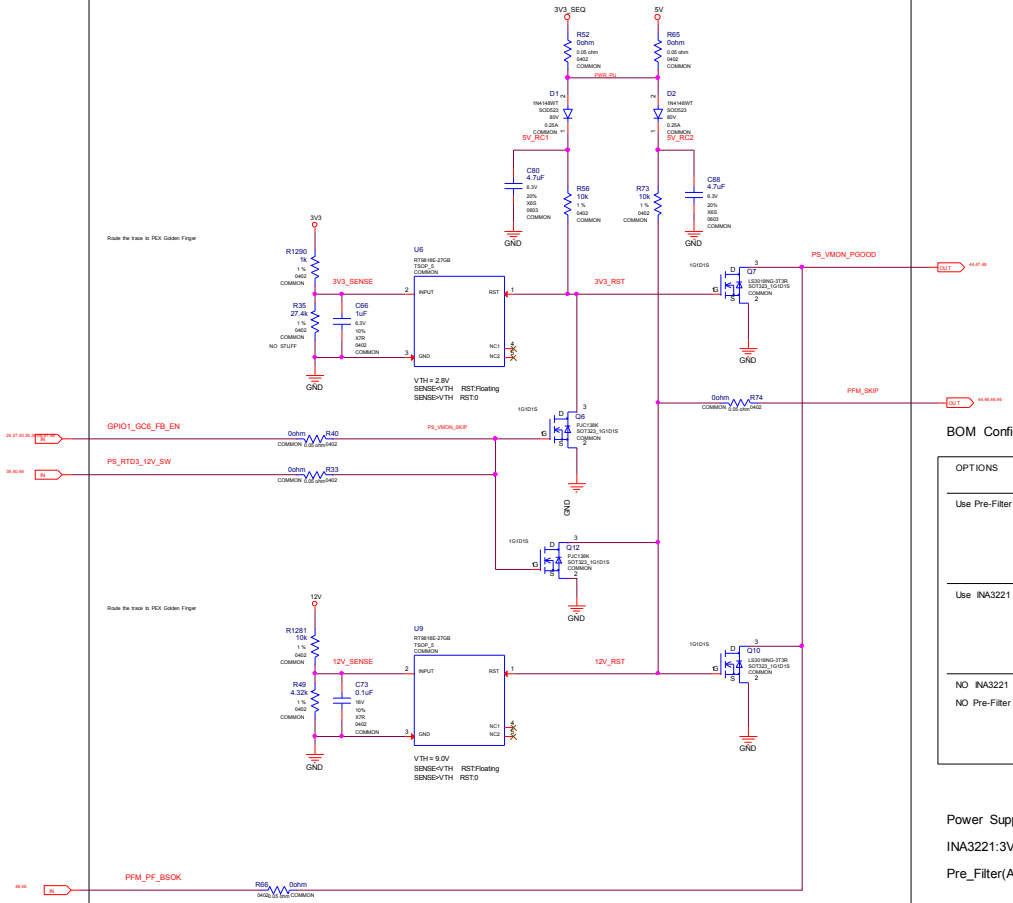
PCIE Voltage Monitor



Signal	Direction	Function
3V3	INPUT	Sense the 3V3 Voltage from PCIE golden finger
12V	INPUT	Sense the 12V Voltage from PCIE golden finger
PS_VMON_PGOOD	OPEN-DRAIN	Floating(H) once both 3V3 and 12V reach Vth
GC6_FB_EN	INPUT	Indicator for RTD3/GC6 residence,Use to Mask the VMON_PGOOD
PS_PF_SKIP	INPUT	From INA3221(VPU) or Pre-filter(SKIP)
PS_PF_BSOK	INPUT	From INA3221(PV) or Pre-filter(BS_OK)
PS_RTD3_12V_SW	INPUT	GC6_FB_EN && IDLE_IN_SW

BOM Configuration

OPTIONS	PEX3V3_SENSE	PEX12V_SENSE	OTHER_12V_SENSE
Use Pre-Filter	Pre-Filter NO STUFF U12 NO STUFF Q3,Q5 NO STUFF D15	Pre-Filter NO STUFF U13 NO STUFF Q4	Pre-Filter
Use INA3221	Voltage_Monitor	INA3221 NO STUFF U12 NO STUFF Q4	INA3221
NO INA3221 NO Pre-Filter	Voltage_Monitor	Voltage_Monitor	N/A

Power Supply

INA3221:3V3_SEQ

Pre_Filter(ADC_MUX):3V3(PEX)

Dual Pre-Filter case:

Only use the Primary Pre-Filter to sense 3V3PEX

and All Input 12Vs

MICRO-STAR INT'L CO.,LTD

MS-V373

Size: Custom | Document Description: SEQUENCE: PCIE VOLTAGE MONITOR | Rev: 1.0

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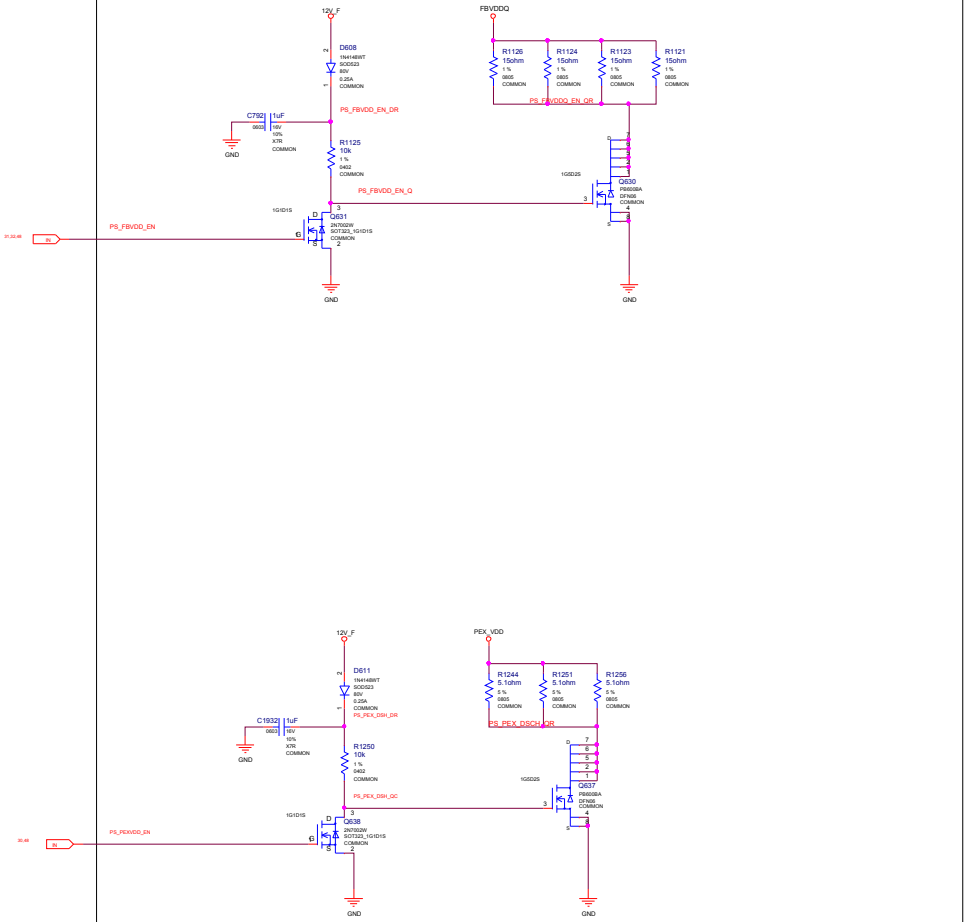
PAGE 50: SEQUENCE:DISCHARGE



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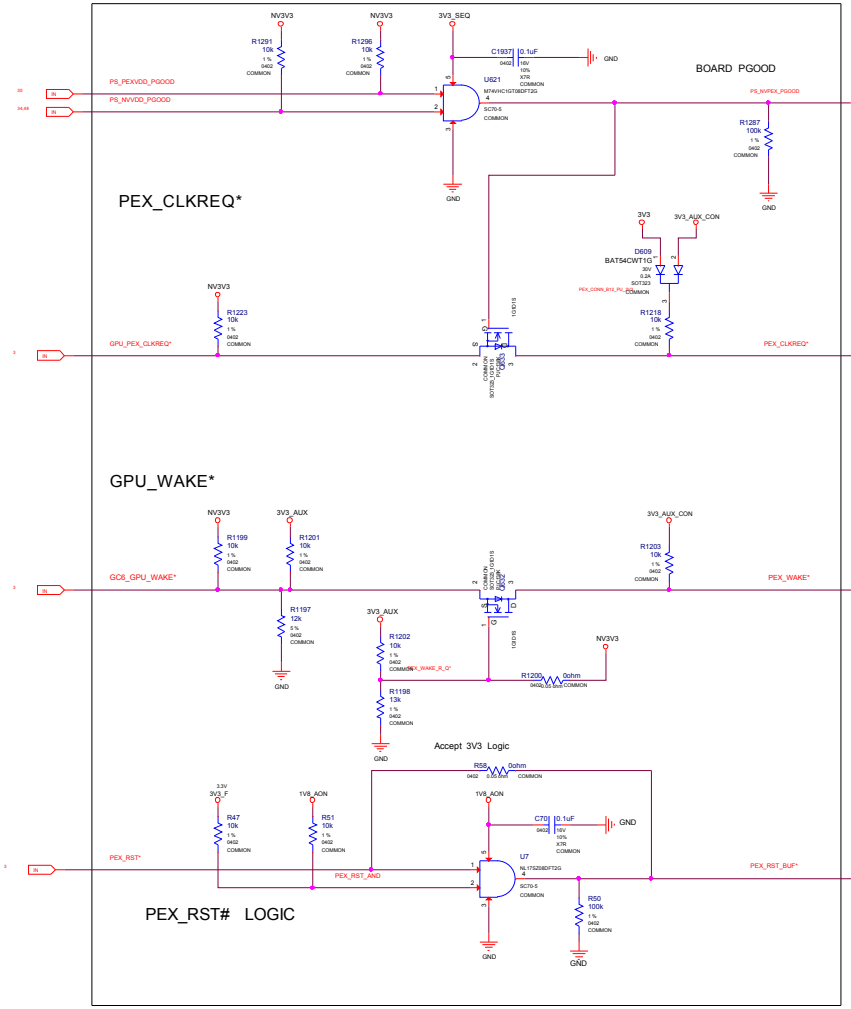
PAGE 51: SEQUENCE:MISC



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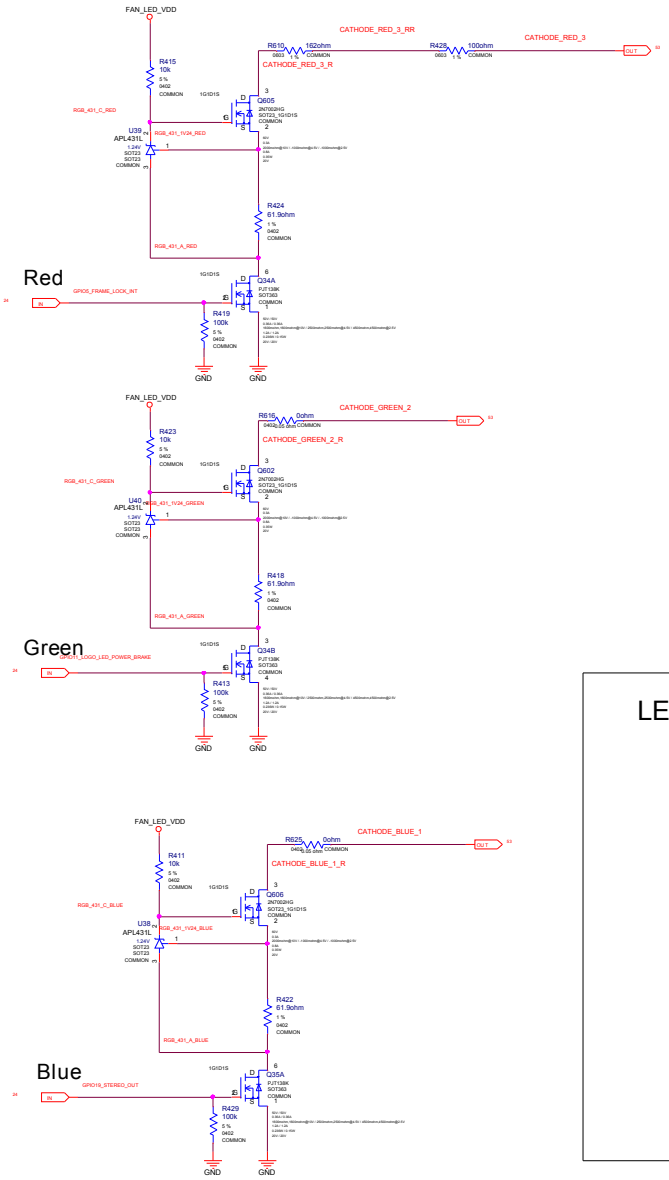
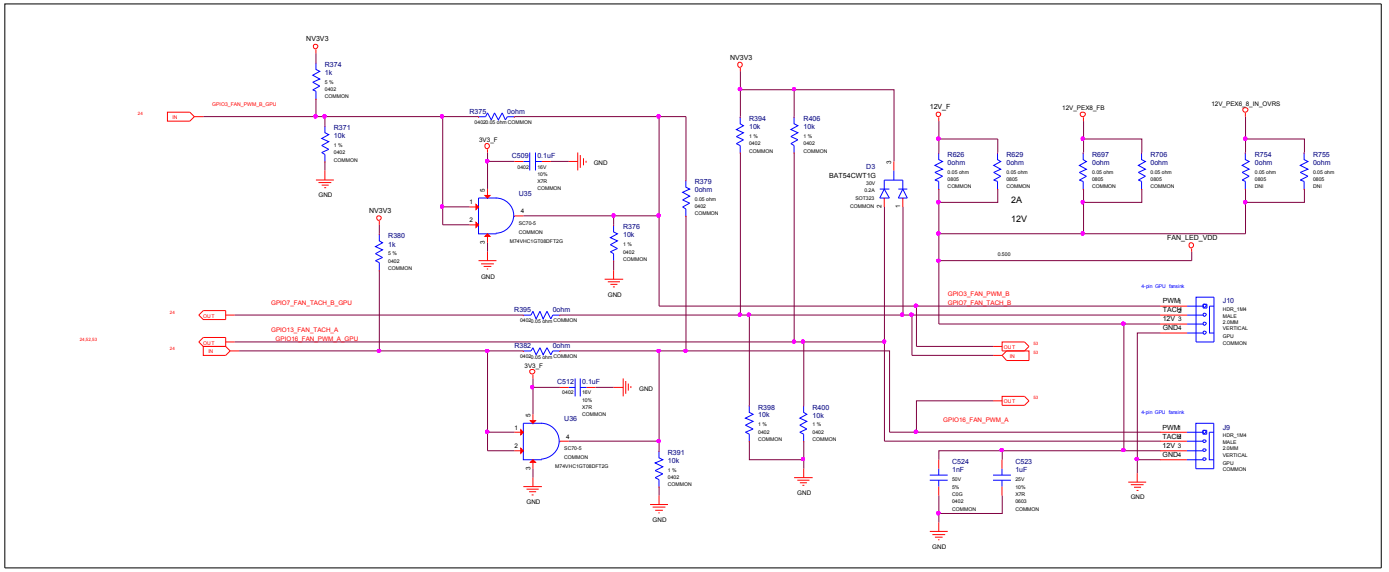
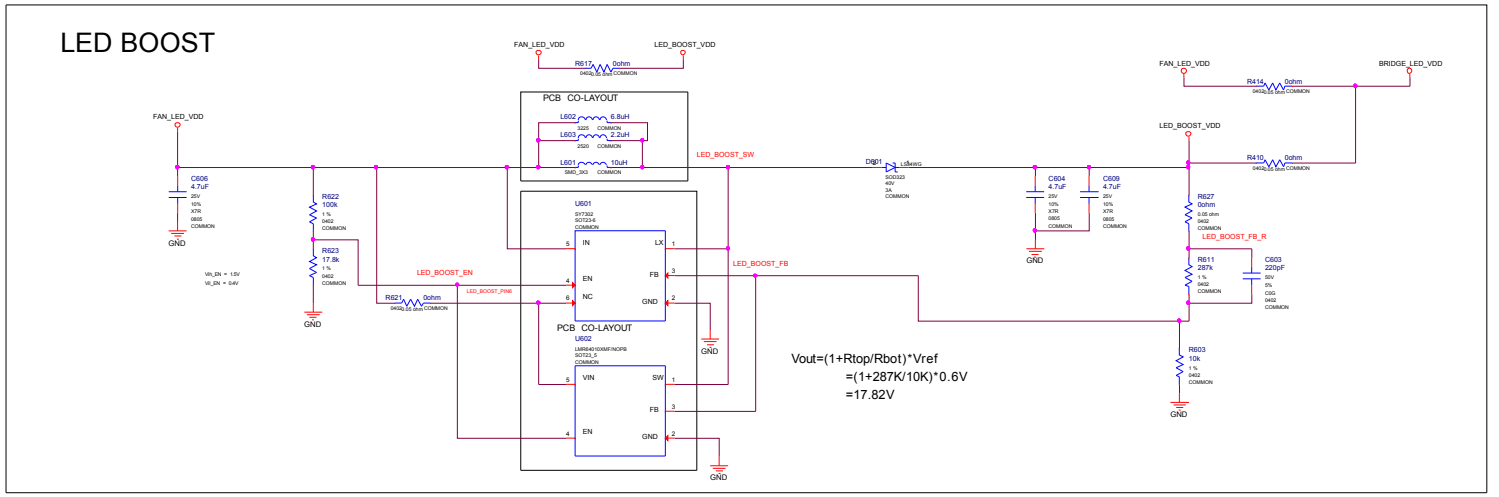
PAGE 52: LED & FAN HEADERS







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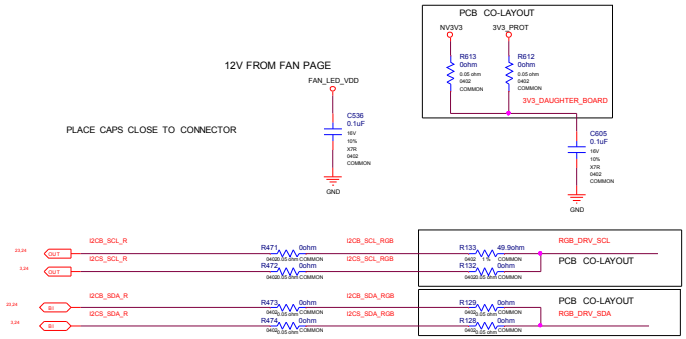
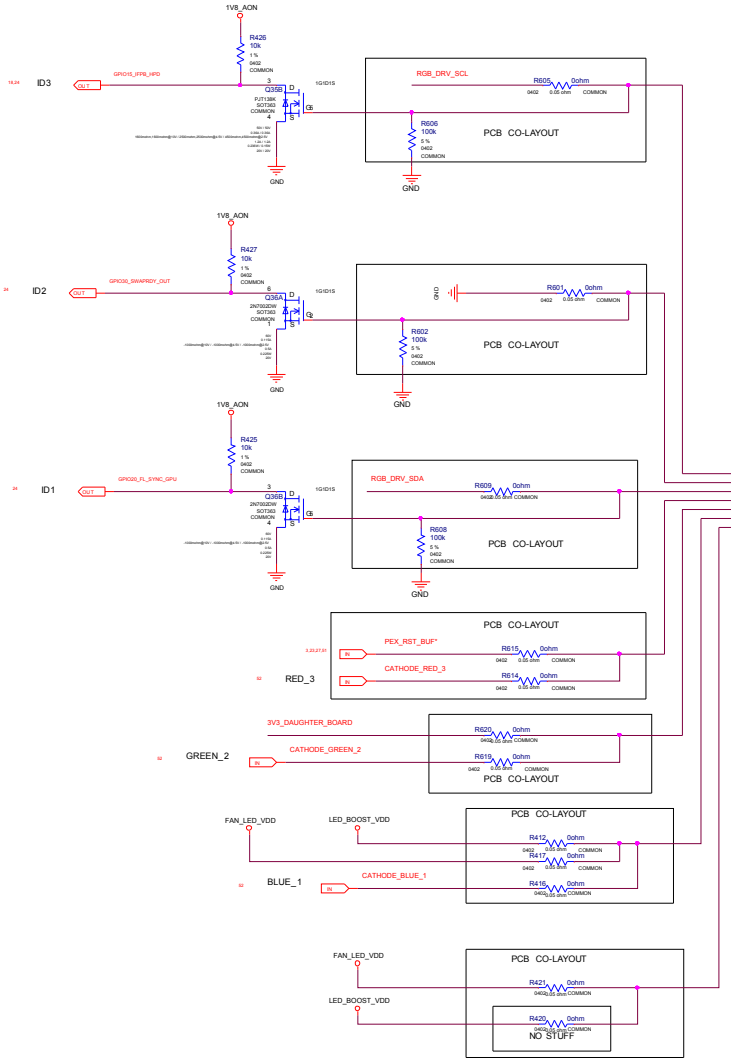
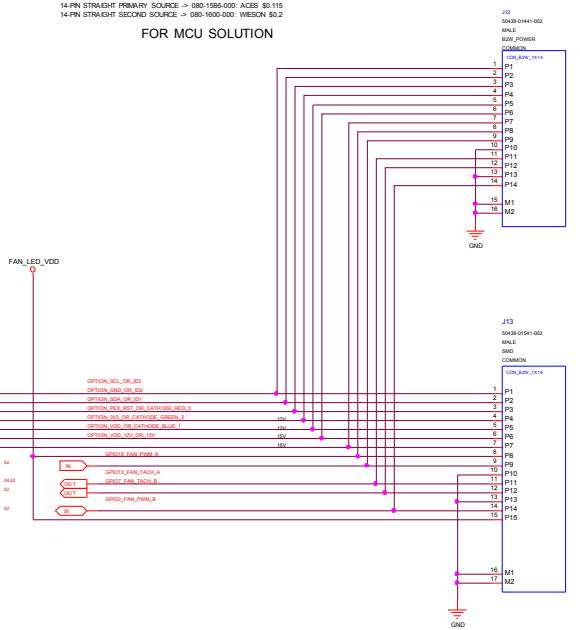
PAGE 53:LED2







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PAGE 54:MECHANICAL;BRACKET/THERMAL SOLUTION

BOARD STIFFENER

No connected mounting pins

MEC501
Back Cover
NOPIN
COMMON

GPU Socket Symbol

BGA SOCKET ASSY

72 connected mounting pins

MEC3
SOCKET_BGA
13PIN
COMMON

GND

GPU Mounting holes

MEC4-1 D18X X8 COMMON
MEC4-2 D18X X8 COMMON
MEC4-3 D18X X8 COMMON
MEC4-4 D18X X8 COMMON
MEC4-5 D18X X8 COMMON
MEC4-6 D18X X8 COMMON
MEC4-7 D18X X8 COMMON
MEC4-8 D18X X8 COMMON

GND

Mechanical Holes Symbol

MEC1-1 D18X Blower Mounting Holes X10 COMMON
MEC1-2 D18X Blower Mounting Holes X10 COMMON
MEC1-3 D18X Blower Mounting Holes X10 COMMON
MEC1-4 D18X Blower Mounting Holes X10 COMMON
MEC1-5 D18X Blower Mounting Holes X10 COMMON
MEC1-6 D18X Blower Mounting Holes X10 COMMON
MEC1-7 D18X Blower Mounting Holes X10 COMMON
MEC1-8 D18X Blower Mounting Holes X10 COMMON
MEC1-9 D18X Blower Mounting Holes X10 COMMON
MEC1-10 D18X Blower Mounting Holes X10 COMMON

GND

Brackets:

BKTA
BRACKET ATHLON ZP
COMMON

MECH_MOUNTING_AL

GND

Bracket Screw

BKTSCREW1
XXXV3720254
E41-1304099-H75

DPSCREW1
XXXV3720254
E43-1303012-H75

DPSCREW3
XXXV3720254
E43-1303012-H75

USBCSCREW1
XXXV3720254
E43-1303012-H75

BKTSCREW2
XXXV3720254
E41-1304099-H75

DPSCREW2
XXXV3720254
E43-1303012-H75

PCB1
PCB
109-GN082-00A
COMMON
VVVV3720254
PD0-0V37210-E48

HDMI_FEE1
HDMI
HDMI_FEE
COMMON
VVVV3720254
Y01-RHDMI03-000

FAN1
STIFFNER
NO PINS
XXXV3720254
GE3-V320001

HS1
STIFFNER
NO PINS
XXXV3720254
GE3-V303002

HS2
STIFFNER
NO PINS
XXXV3720254
GE3-V320101

PCIE1
STIFFNER
NO PINS
XXXV3720254
E24-V320010-P09

STIFFENER

J18
impedence
J18:L10_D_0.101/0.173MM_95_OHM

J17
X_PIN1*2
J17:L1_S_0.168MM_40_OHM

FM1 FM2 FM3 FM4 FM5 FM6 FM7 FM8
OPT
F_PAD_X

J19
impedence
J19:L1_D_0.122/0.1MM_80_OHM

J16
X_PIN1*2
J16:L10_S_0.11MM_50_OHM

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