PG160-B02

8GB GDDR6, 256b, X16
Tall DVI-D + USBC/DP + DP + HDMI/DP + DP

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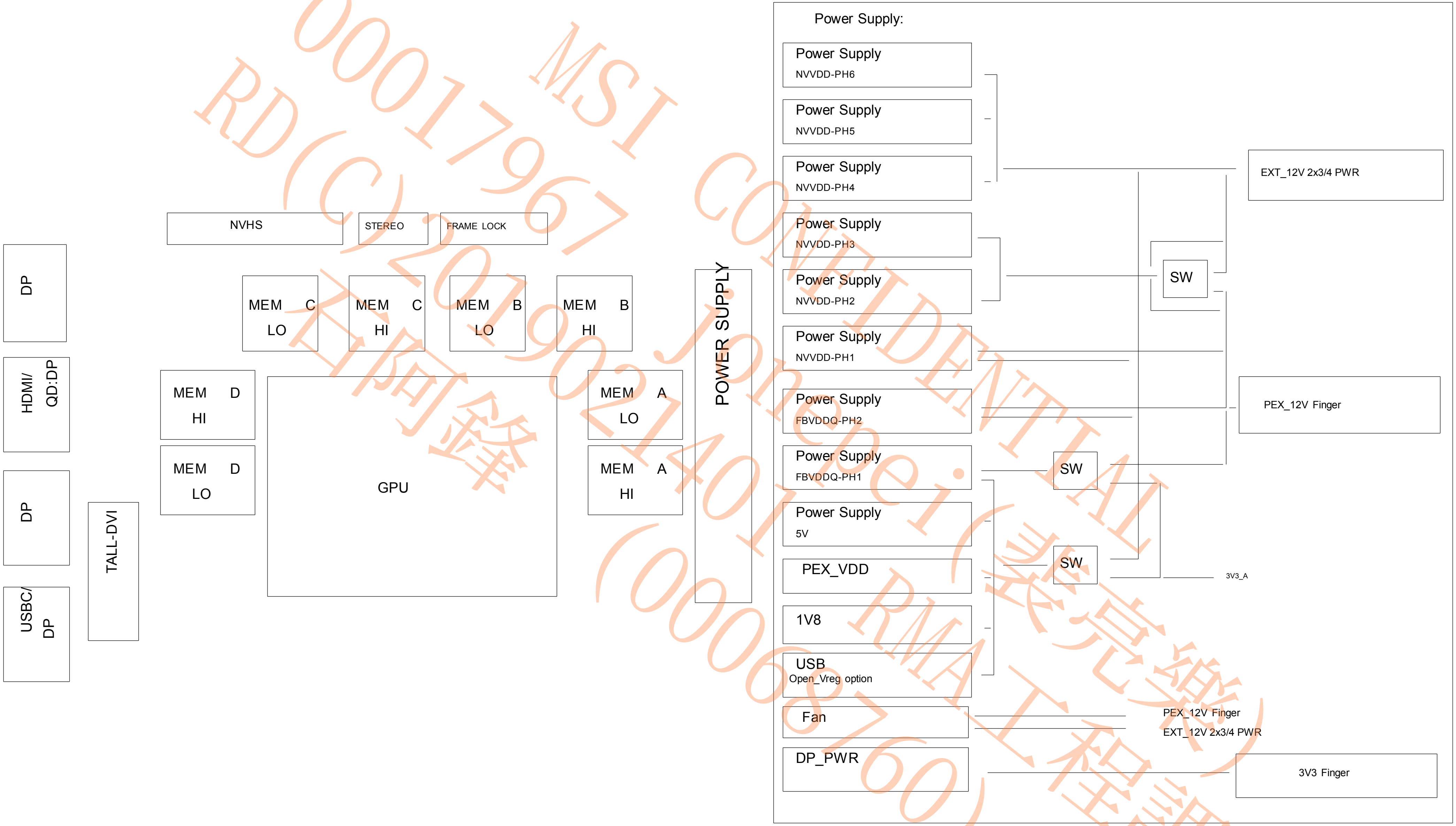

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Page3: PCI Express

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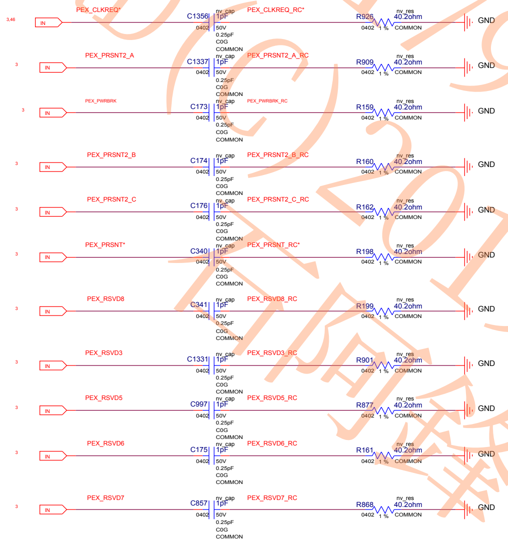
Page4: PCIE RC TERM



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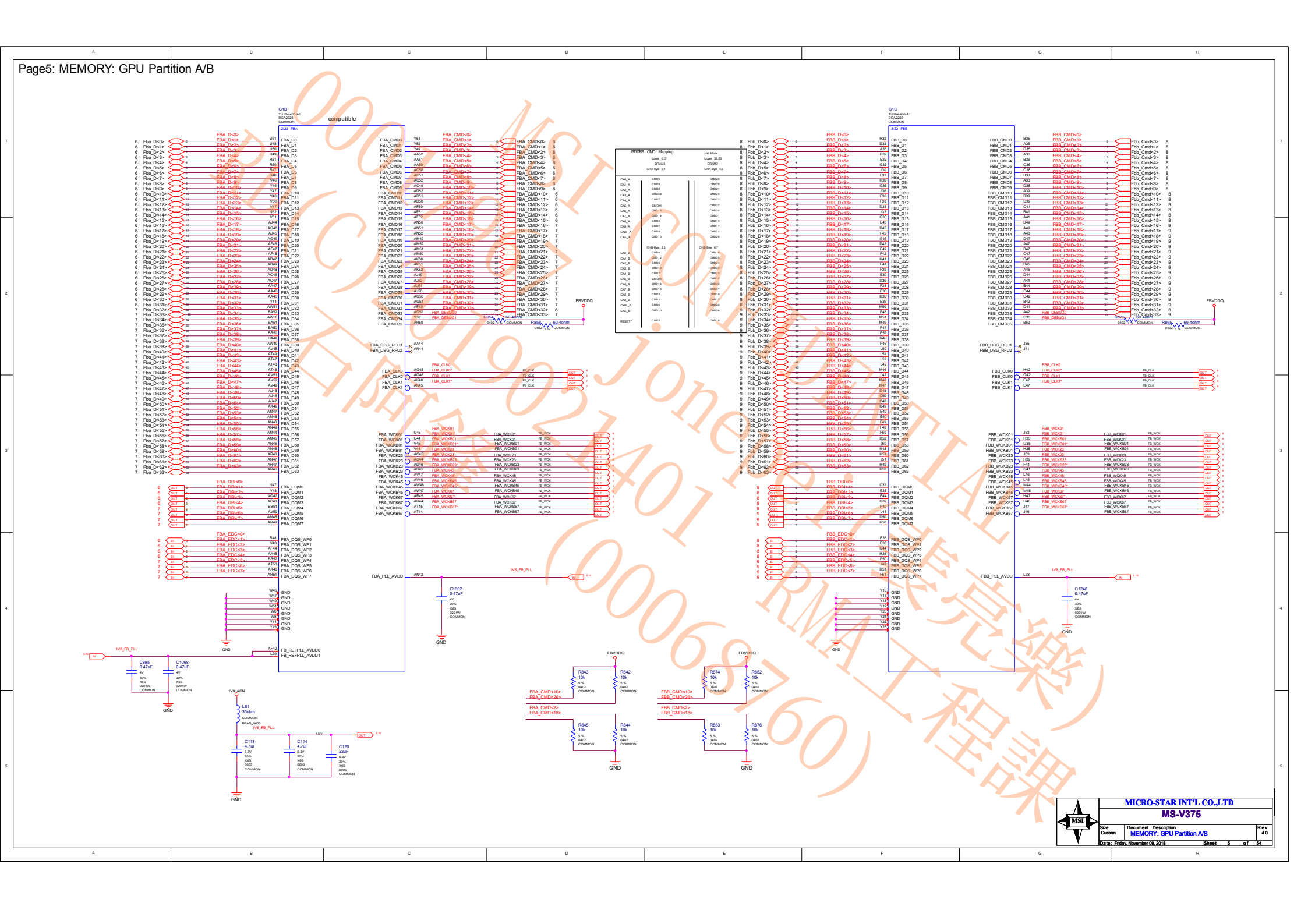
Page5: MEMORY: GPU Partition A/B
G1B
TU104-400-A1
BGA2228
COMMON
3/22 FBA
compatible
G1C
TU104-400-A1
BGA2228
COMMON
3/22 FBB
GDDR6 CMD Mapping
Lower 0..31
DRAM1
CHA-Byte 0,1
Upper 32..63
DRAM2
CHA-Byte 4,5
x16 Mode
CHB-Byte 2,3
CHB-Byte 6,7
FBVDDQ
1V8_FB_PLL
1V8_AON
GND
COMMON
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MEMORY: GPU Partition A/B
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Page6: MEMORY: FBA Partition 31..0

M11D
MT61K256M32JE-14:A
FBGA180
COMMON

M11A
MT61K256M32JE-14:A
FBGA180
COMMON
NORMAL

M11B
MT61K256M32JE-14:A
FBGA180
COMMON
NORMAL

M11C
MT61K256M32JE-14:A
FBGA180
COMMON

FBVDDQ
1V8_AON
GND

Close to DRAM
C707 10uF 4V 20% X6S 0603 COMMON
C231 10uF 4V 20% X6S 0603 COMMON
C204 10uF 4V 20% X6S 0603 COMMON
C727 10uF 4V 20% X6S 0603 COMMON

Around DRAM
C682 10uF 4V 20% X6S 0603 COMMON
C719 10uF 4V 20% X6S 0603 COMMON

Around DRAM
C701 22uF 4V 20% X6S 0603W COMMON
C726 22uF 4V 20% X6S 0603W COMMON
C782 22uF 4V 20% X6S 0603W COMMON
C777 22uF 4V 20% X6S 0603W COMMON
C776 22uF 4V 20% X6S 0603W COMMON
C1737 22uF 4V 20% X6S 0603W COMMON

Right under DRAM
C208 0.47uF 4V 30% X6S 0201W COMMON
C772 0.47uF 4V 30% X6S 0201W COMMON
C248 0.47uF 4V 30% X6S 0201W COMMON
C198 0.47uF 4V 30% X6S 0201W COMMON
C238 0.47uF 4V 30% X6S 0201W COMMON
C697 0.47uF 4V 30% X6S 0201W COMMON
C244 0.47uF 4V 30% X6S 0201W COMMON
C239 0.47uF 4V 30% X6S 0201W COMMON

Close to DRAM
C750 0.47uF 4V 30% X6S 0201W COMMON
C704 0.47uF 4V 30% X6S 0201W COMMON
C769 0.47uF 4V 30% X6S 0201W COMMON
C684 0.47uF 4V 30% X6S 0201W COMMON
C693 0.47uF 4V 30% X6S 0201W COMMON
C698 0.47uF 4V 30% X6S 0201W COMMON
C687 0.47uF 4V 30% X6S 0201W COMMON
C757 0.47uF 4V 30% X6S 0201W COMMON
C729 0.47uF 4V 30% X6S 0201W COMMON
C711 0.47uF 4V 30% X6S 0201W COMMON

Right under DRAM
C210 0.47uF 4V 30% X6S 0201W COMMON
C246 0.47uF 4V 30% X6S 0201W COMMON
C242 0.47uF 4V 30% X6S 0201W COMMON
C752 0.47uF 4V 30% X6S 0201W COMMON
C738 0.47uF 4V 30% X6S 0201W COMMON
C735 0.47uF 4V 30% X6S 0201W COMMON
C690 0.47uF 4V 30% X6S 0201W COMMON
C699 0.47uF 4V 30% X6S 0201W COMMON

Close to DRAM
C680 0.47uF 4V 30% X6S 0201W COMMON
C679 0.47uF 4V 30% X6S 0201W COMMON
C683 0.47uF 4V 30% X6S 0201W COMMON
C677 0.47uF 4V 30% X6S 0201W COMMON
C691 0.47uF 4V 30% X6S 0201W COMMON
C756 0.47uF 4V 30% X6S 0201W COMMON
C749 0.47uF 4V 30% X6S 0201W COMMON
C724 0.47uF 4V 30% X6S 0201W COMMON
C714 0.47uF 4V 30% X6S 0201W COMMON
C725 0.47uF 4V 30% X6S 0201W COMMON

1V8_AON
C1664 0.47uF 4V 30% X6S 0201W COMMON
C1663 0.47uF 4V 30% X6S 0201W COMMON
C1662 0.47uF 4V 30% X6S 0201W COMMON
C1661 0.47uF 4V 30% X6S 0201W COMMON
C1660 0.47uF 4V 30% X6S 0201W COMMON
C1659 0.47uF 4V 30% X6S 0201W COMMON
C1658 0.47uF 4V 30% X6S 0201W COMMON
C1657 0.47uF 4V 30% X6S 0201W COMMON

FBVDDQ
R1144 549ohm 1% 0402 COMMON
FBA_VREFC
R1143 1k 1% 0402 COMMON
R1138 931ohm 1% 0402 COMMON
C1726 820pF 50V 10% X7R 0402 COMMON
GND
FBA_VREF_O
GPIO10_FBVREF_SEL
Q546 LSS0184NG-3T3R SOT323_1G1D1S COMMON

VREFC IS NOT USED IN x16 CONFIGURATION
1K OHM PULL-DOWN IS IN PLACE OF THE 1.33K FOR R106

FBA_VREFC
FBA_ZQ_1_A
FBA_ZQ_1_B
R1163 121ohm 0402 1% COMMON
R1157 121ohm 0402 1% COMMON
GND

FBA_CLK0
FBA_CLK0*
RESET
TCK
TDI
TDO
TMS
RFU_A
RFU_B

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Page7: MEMORY: FBA Partition 63..32

Page8: MEMORY: FBB Partition 31..0

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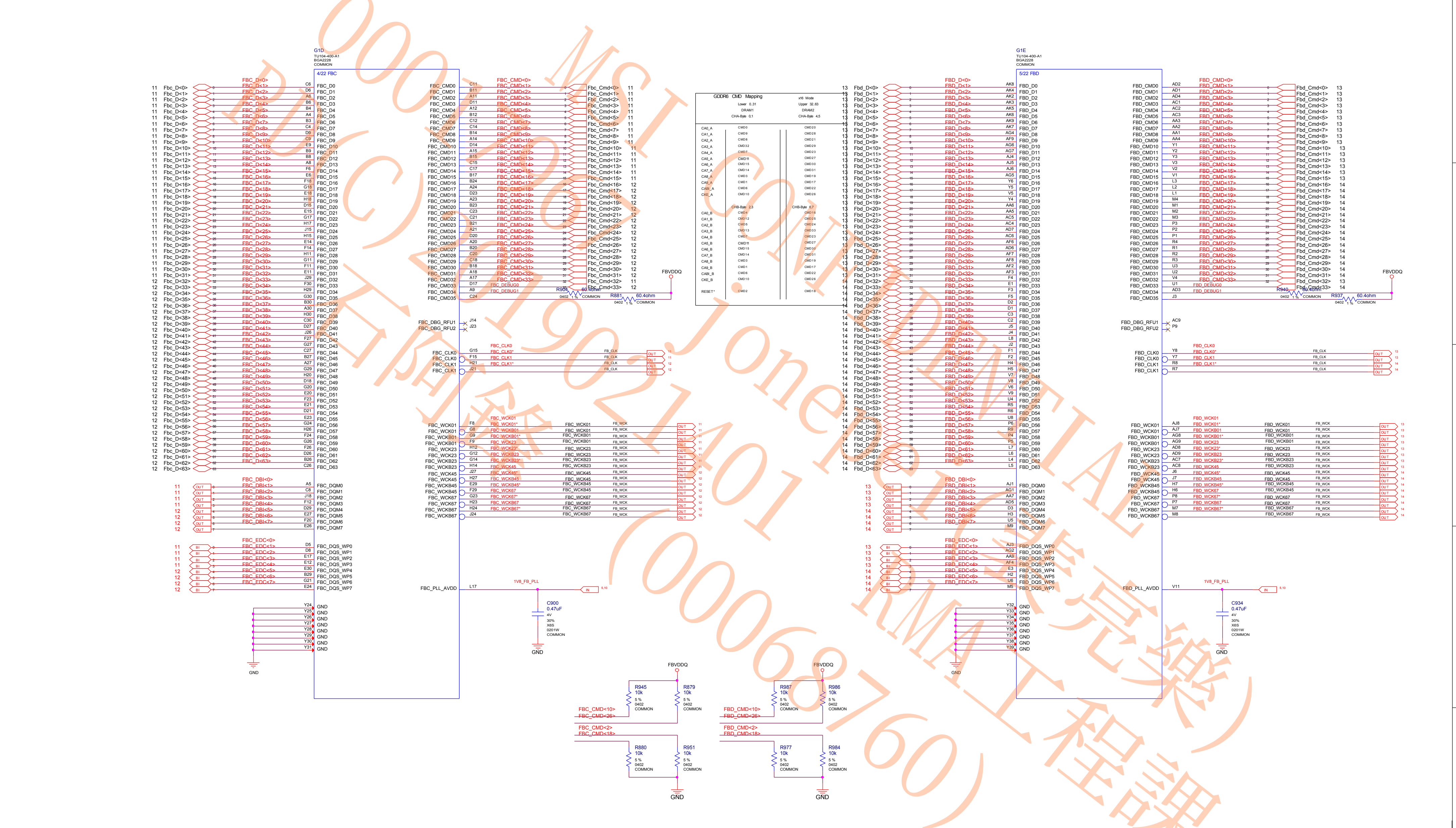
Page10: MEMORY: GPU Partition C/D



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Page13: MEMORY: FBD Partition 31..0

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Page14: MEMORY: FBD Partition 63..32

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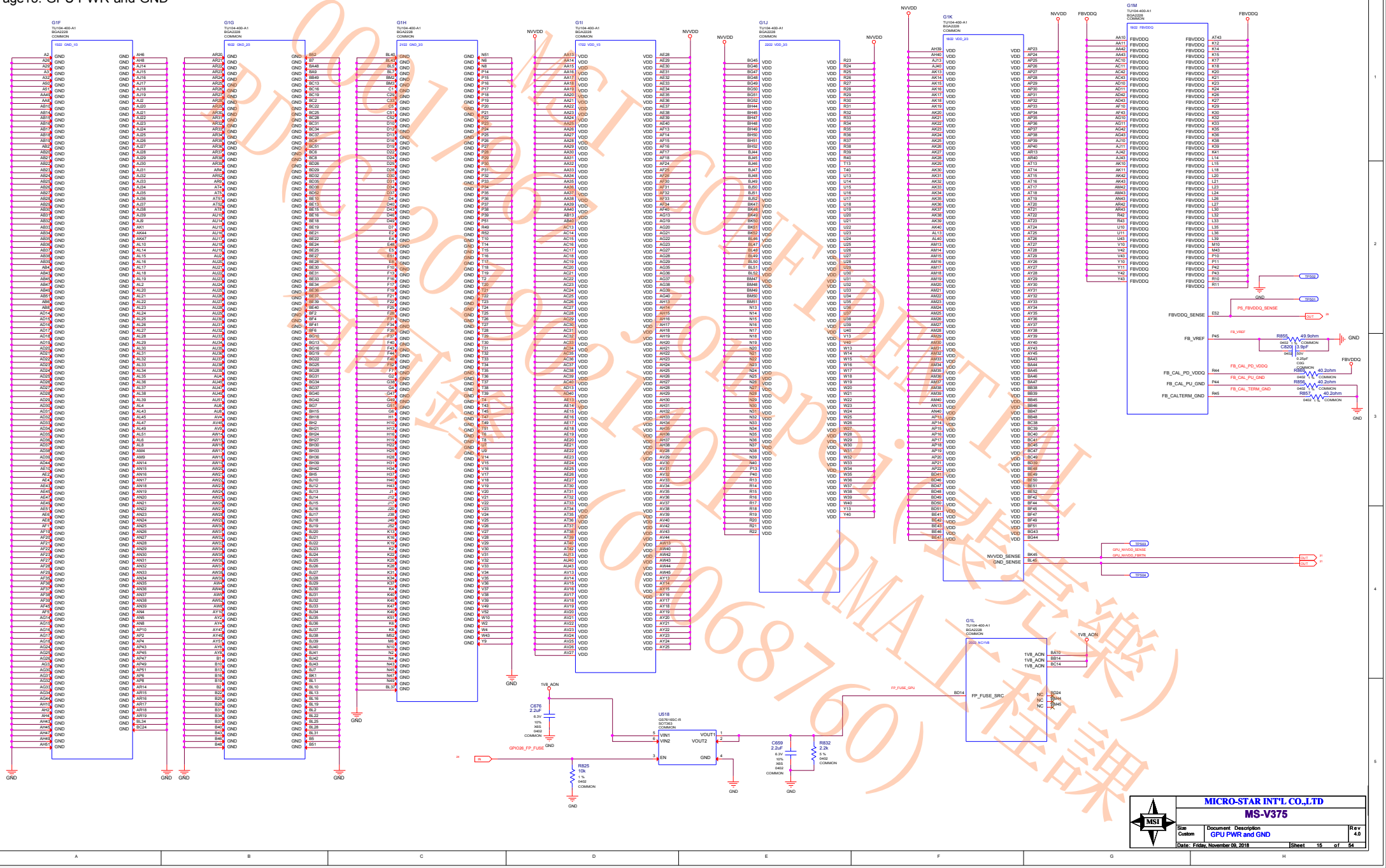
Page15: GPU PWR and GND



Page16: GPU Decoupling 1

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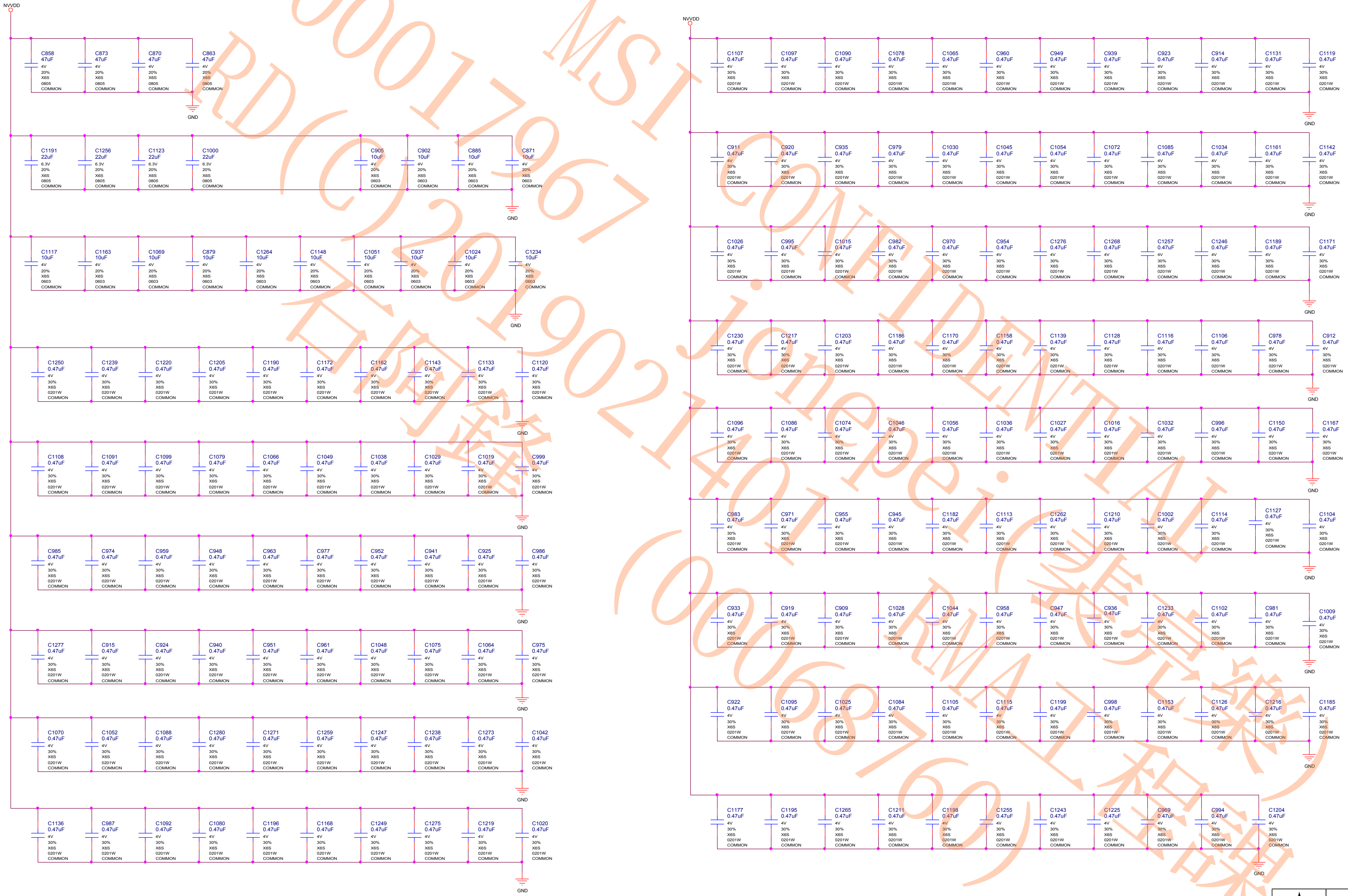
Page17: GPU Decoupling 2

NVVDD



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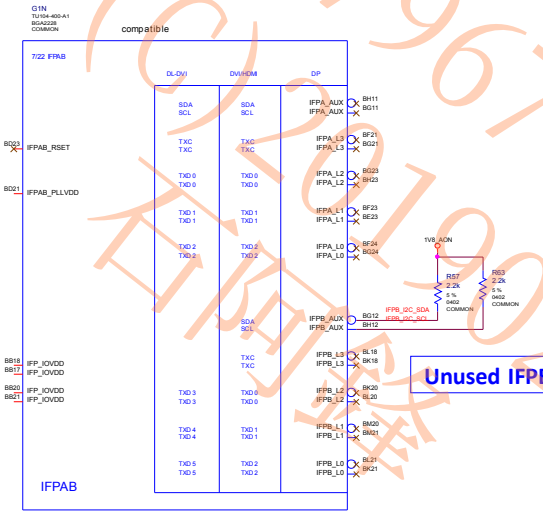
Page18: IFPAB DVI-D-DL

delete Link AB ◦



Unused IFPB_I2C* leaving Pull high resistor to 1.8V ◦

9.3 UNUSED PINS

If an IFP link is unused, in general it should be left unconnected. This includes Main and Aux links. IFPxy_RSET and IFPxy_PLLVDD (xy=AB,CD,EF) can be left unconnected if neither of IFPx /IFPy is in use. For example, If neither link of the IFPA/IFPB macro is to be used, then IFPAB_PLLVDD and IFPAB_RSET should be left disconnected, and all signals and references associated with Link A and Link B should also be left unconnected.

IFP_IOVDD rail can be unconnected if no IFP link is used.If any IFP is used, all IFP_IOVDD balls must be connected to power rail.

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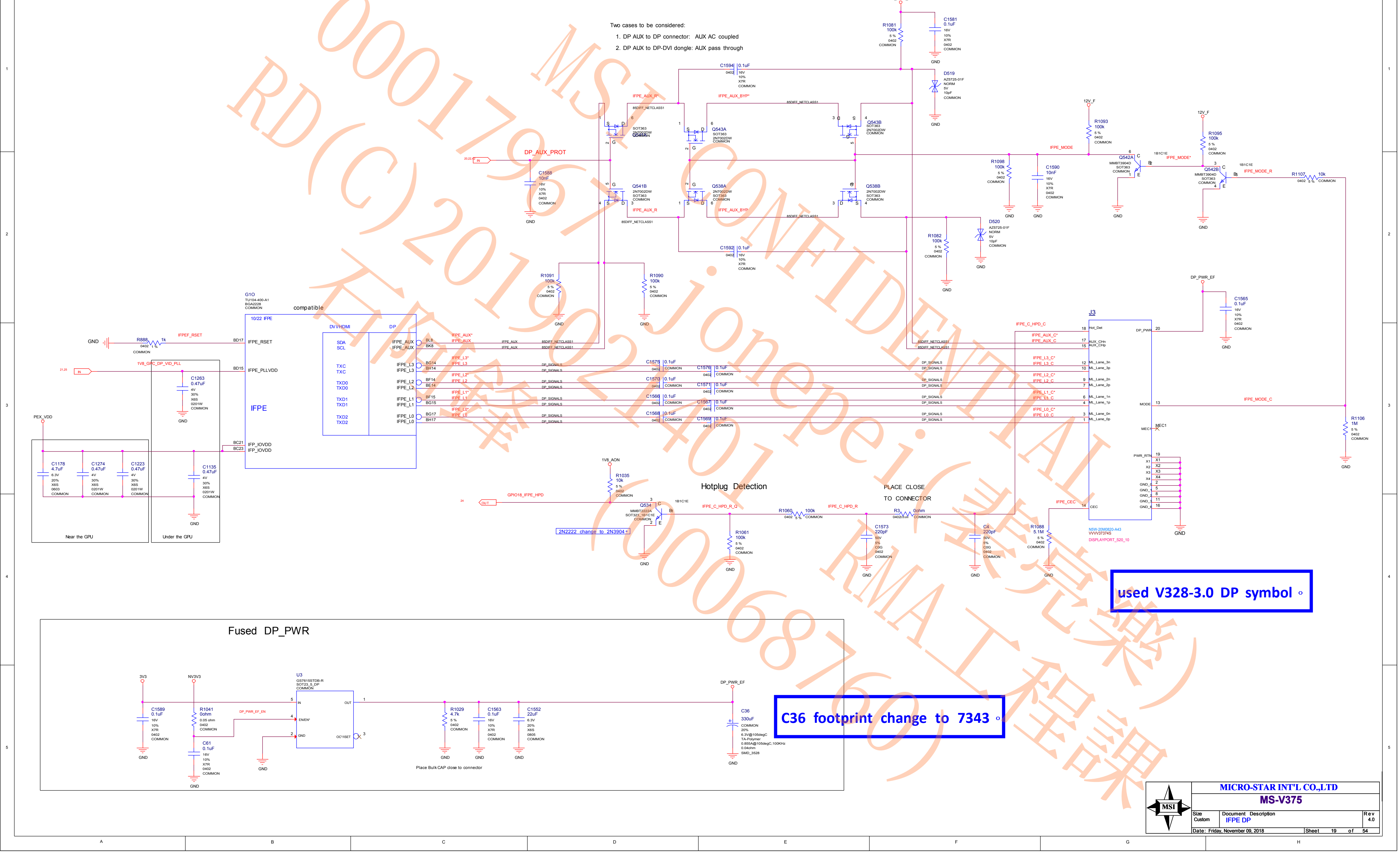
Page19: IFPE DP



Two cases to be considered:
1. DP AUX to DP connector: AUX AC coupled
2. DP AUX to DP-DVI dongle: AUX pass through
DP_PWR_EF
R1081 100k
C1581 0.1uF
C1594 0.1uF
D519 AZ5725-01F
DP_AUX_PROT
C1588 10nF
IFPE_AUX_R*
IFPE_AUX_BYP*
Q541A
Q543A
Q543B
Q541B
Q538A
Q538B
IFPE_AUX_R
IFPE_AUX_BYP
C1592 0.1uF
R1082 100k
D520 AZ5725-01F
12V_F
R1093 100k
R1095 100k
IFPE_MODE
IFPE_MODE*
IFPE_MODE_R
Q542A
Q542B
R1098 100k
C1590 10nF
R1107 10k
R1091 100k
R1090 100k
G10
TU104-400-A1
BGA2228
compatible
10/22 IFPE
DVI/HDMI
DP
IFPE_RSET
IFPE_PLLVDD
IFPE
IFP_IOVDD
SDA
SCL
TXC
TXD0
TXD1
TXD2
IFPE_AUX
IFPE_L3
IFPE_L2
IFPE_L1
IFPE_L0
GND
R888 1k
IFPEF_RSET
1V8_GPC_DP_VID_PLL
C1263 0.47uF
PEX_VDD
C1178 4.7uF
C1274 0.47uF
C1223 0.47uF
C1135 0.47uF
Near the GPU
Under the GPU
C1575 0.1uF
C1576 0.1uF
C1570 0.1uF
C1571 0.1uF
C1566 0.1uF
C1567 0.1uF
C1568 0.1uF
C1569 0.1uF
J3
IFPE_C_HPD_C
IFPE_AUX_C*
IFPE_AUX_C
IFPE_L3_C*
IFPE_L3_C
IFPE_L2_C*
IFPE_L2_C
IFPE_L1_C*
IFPE_L1_C
IFPE_L0_C*
IFPE_L0_C
Hot_Det
AUX_CHn
AUX_CHp
ML_Lane_3n
ML_Lane_3p
ML_Lane_2n
ML_Lane_2p
ML_Lane_1n
ML_Lane_1p
ML_Lane_0n
ML_Lane_0p
DP_PWR
MODE
IFPE_MODE_C
MEC1
PWR_RTN
CEC
IFPE_CEC
C1565 0.1uF
R1106 1M
NSW-20M0820-A43
DISPLAYPORT_S20_10
1V8_AON
R1035 10k
GPIO18_IFPE_HPD
Q534
MMBT2222A
2N2222 change to 2N3904
Hotplug Detection
IFPE_C_HPD_R_Q
IFPE_C_HPD_R
R1060 100k
R1061 100k
PLACE CLOSE
TO CONNECTOR
R3 0ohm
C1573 220pF
C4 220pF
R1088 5.1M
used V328-3.0 DP symbol。
Fused DP_PWR
3V3
NV3V3
C1589 0.1uF
R1041 0ohm
C61 0.1uF
DP_PWR_EF_EN
U3
GS7615STDB-R
SOT23_5_DP
IN
OUT
ENEN*
GND
OC*/ISET
R1029 4.7k
C1563 0.1uF
C1552 22uF
Place Bulk CAP close to connector
C36 330uF
C36 footprint change to 7343。
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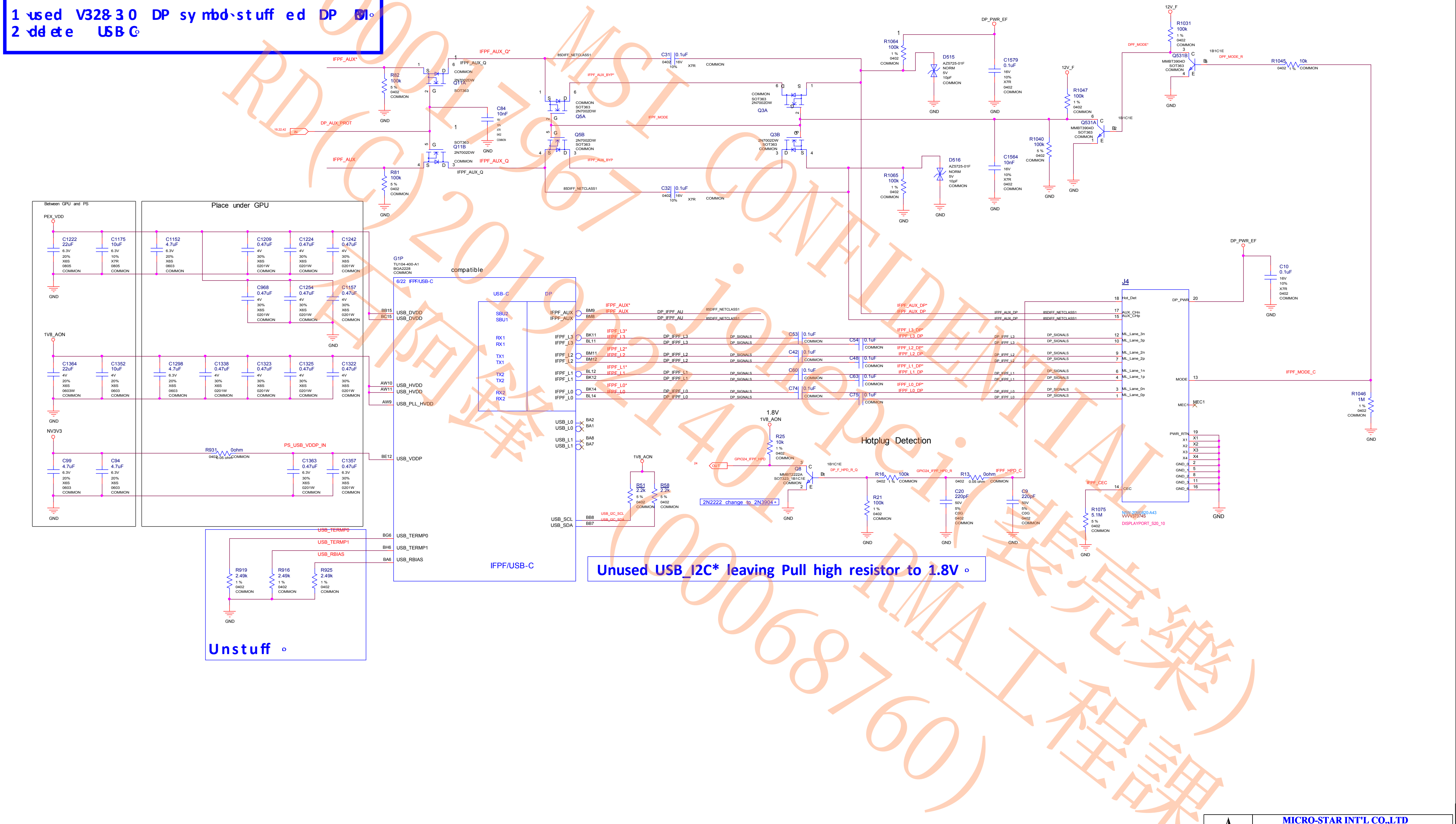
Page20: IFPF USB-C

1 used V328-3.0 DP symbol-stuff ed DP MI。
2 delete USB C。



Between GPU and PS
Place under GPU
PEX_VDD
1V8_AON
NV3V3
compatible
G1P
IFPF/USB-C
USB-C
DP
USB_DVDD
USB_HVDD
USB_PLL_HVDD
USB_VDDP
USB_TERMP0
USB_TERMP1
USB_RBIAS
IFPF_AUX
IFPF_L3
IFPF_L2
IFPF_L1
IFPF_L0
USB_SCL
USB_SDA
IFPF_AUX_Q
DP_AUX_PROT
DP_PWR_EF
12V_F
Hotplug Detection
IFPF_HPD_C
IFPF_CEC
IFPF_MODE_C
J4
Hot_Det
AUX_CHn
AUX_CHp
ML_Lane_3n
ML_Lane_3p
ML_Lane_2n
ML_Lane_2p
ML_Lane_1n
ML_Lane_1p
ML_Lane_0n
ML_Lane_0p
MODE
CEC
DISPLAYPORT_S20_10
2N2222 change to 2N3904。
Unused USB_I2C* leaving Pull high resistor to 1.8V 。
Unstuff 。
GND

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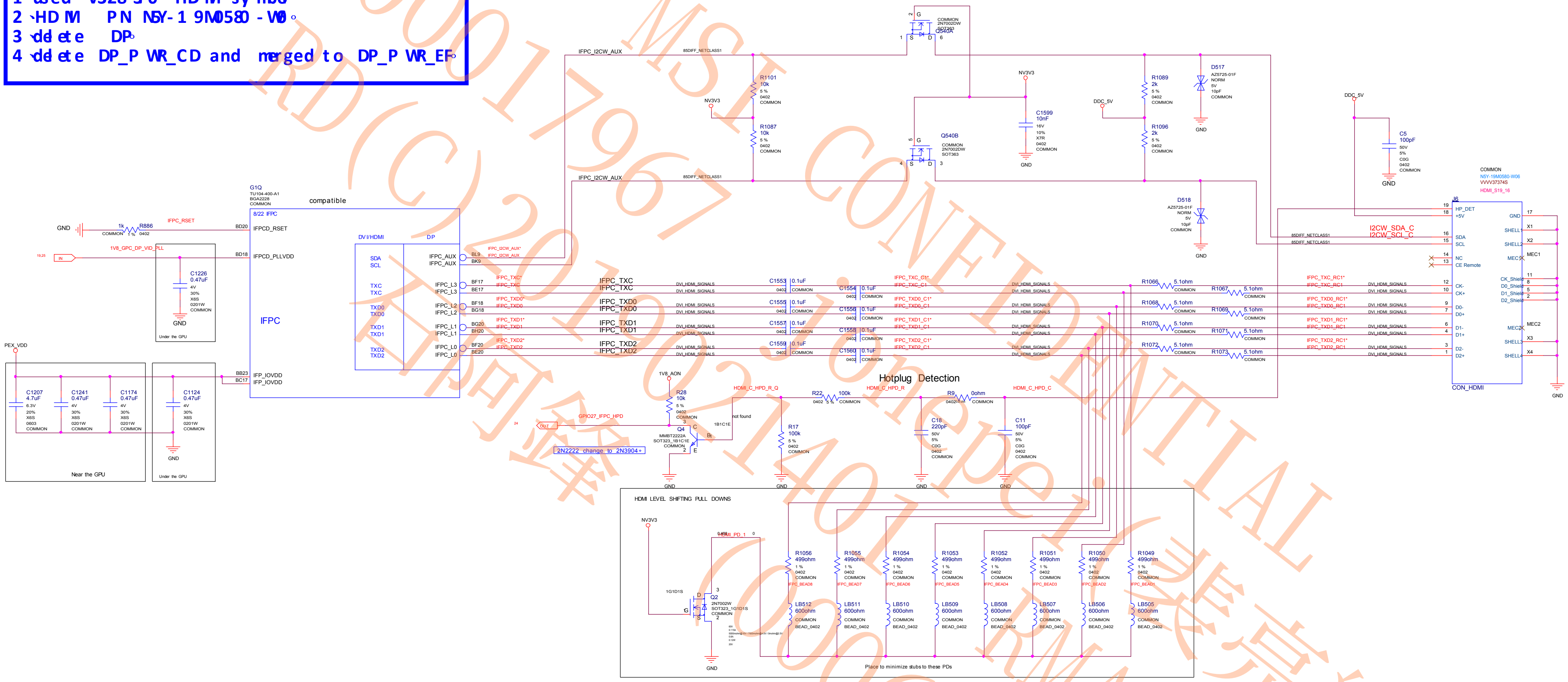
Page21: IFPC HDMI/DP

1、used V328-30 HDMI symbol。
2、HDMI PN N5Y-19M0580-W0。
3、delete DP。
4、delete DP_PWR_CD and merged to DP_PWR_EF。



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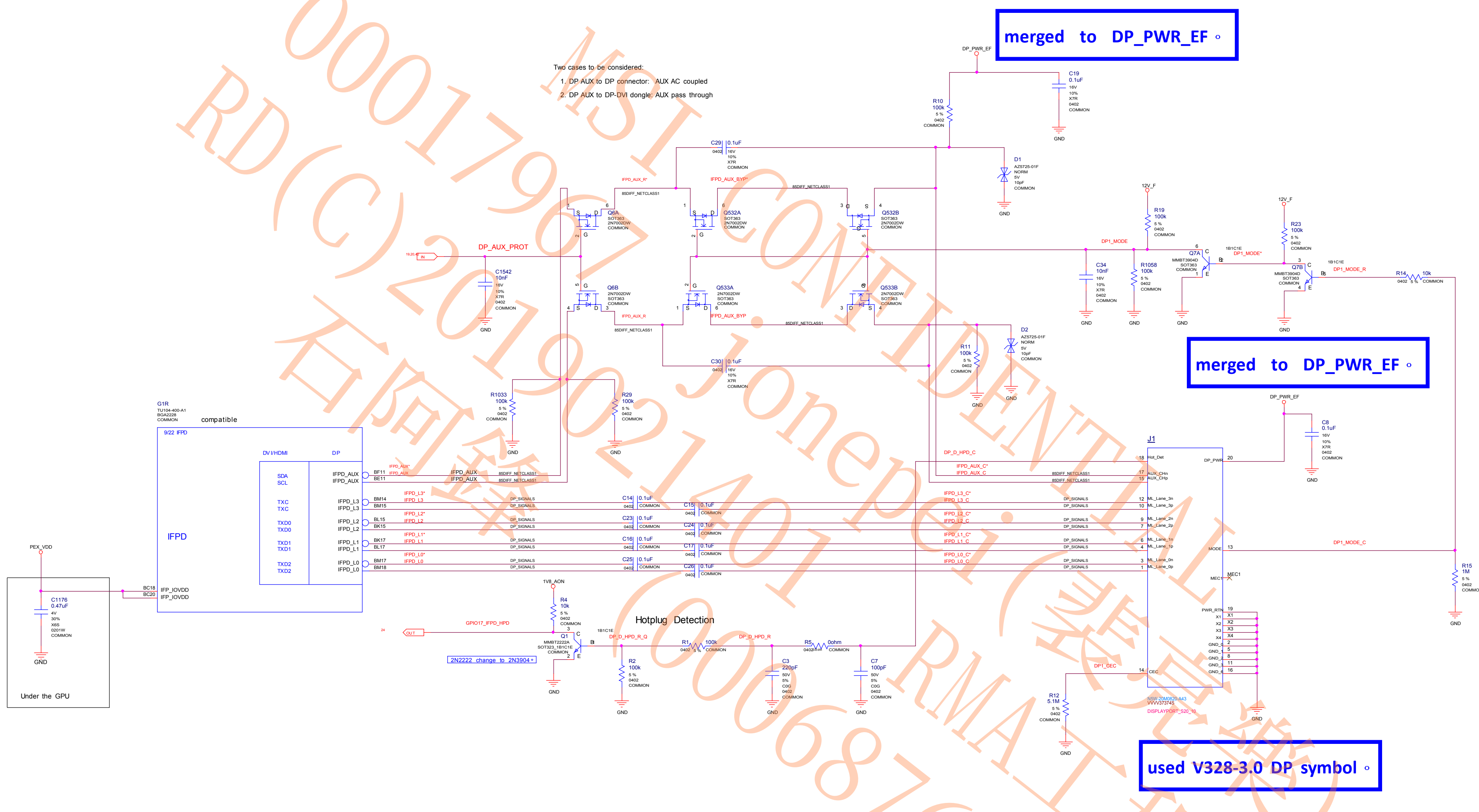
Page22: IFPD DP



merged to DP_PWR_EF。
merged to DP_PWR_EF。
used V328-3.0 DP symbol。
Two cases to be considered:
1. DP AUX to DP connector: AUX AC coupled
2. DP AUX to DP-DVI dongle: AUX pass through
DP_AUX_PROT
Hotplug Detection
2N2222 change to 2N3904。
Under the GPU
compatible
IFPD
DVI/HDMI
DP
SDA
SCL
TXC
TXD0
TXD1
TXD2
IFPD_AUX
IFPD_L3
IFPD_L2
IFPD_L1
IFPD_L0
IFP_IOVDD
PEX_VDD
1V8_AON
12V_F
DP_PWR_EF
GPIO17_IFPD_HPD
DP_D_HPD_R_Q
DP_D_HPD_R
DP_D_HPD_C
DP1_MODE
DP1_MODE_R
DP1_MODE_C
DP1_CEC
Hot_Det
AUX_CHn
AUX_CHp
ML_Lane_3n
ML_Lane_3p
ML_Lane_2n
ML_Lane_2p
ML_Lane_1n
ML_Lane_1p
ML_Lane_0n
ML_Lane_0p
MODE
CEC
PWR_RTN
DP_PWR
MEC1
J1
DISPLAYPORT_S20_16
Q6A
Q6B
Q532A
Q532B
Q533A
Q533B
Q7A
Q7B
Q1
D1
D2
G1R
GND

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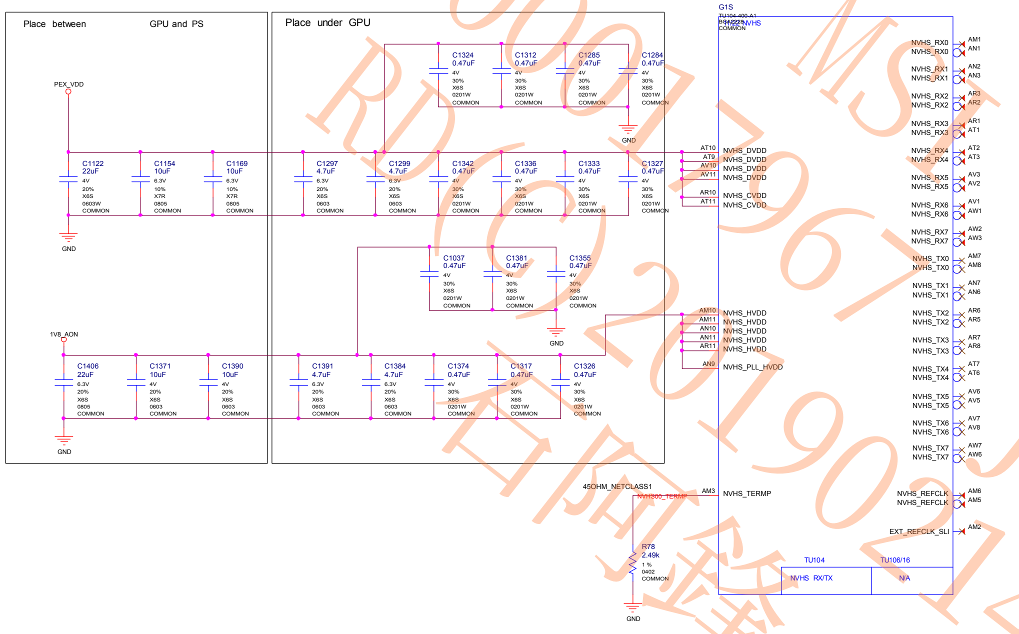
Page23: NVHS Interface and Frame Lock



Place between GPU and PS
Place under GPU
PEX_VDD
1V8_AON
GND
G1S
NVHS
C1122 22uF
C1154 10uF
C1169 10uF
C1297 4.7uF
C1299 4.7uF
C1342 0.47uF
C1336 0.47uF
C1333 0.47uF
C1327 0.47uF
C1324 0.47uF
C1312 0.47uF
C1285 0.47uF
C1284 0.47uF
C1037 0.47uF
C1381 0.47uF
C1355 0.47uF
C1406 22uF
C1371 10uF
C1390 10uF
C1391 4.7uF
C1384 4.7uF
C1374 0.47uF
C1317 0.47uF
C1326 0.47uF
NVHS_DVDD
NVHS_CVDD
NVHS_HVDD
NVHS_PLL_HVDD
45OHM_NETCLASS1
NVHS_TERMP
R78 2.49k
NVHS_RX0
NVHS_RX1
NVHS_RX2
NVHS_RX3
NVHS_RX4
NVHS_RX5
NVHS_RX6
NVHS_RX7
NVHS_TX0
NVHS_TX1
NVHS_TX2
NVHS_TX3
NVHS_TX4
NVHS_TX5
NVHS_TX6
NVHS_TX7
NVHS_REFCLK
EXT_REFCLK_SLI
TU104
TU106/16
NVHS RX/TX
N/A

delete Frame Lock。

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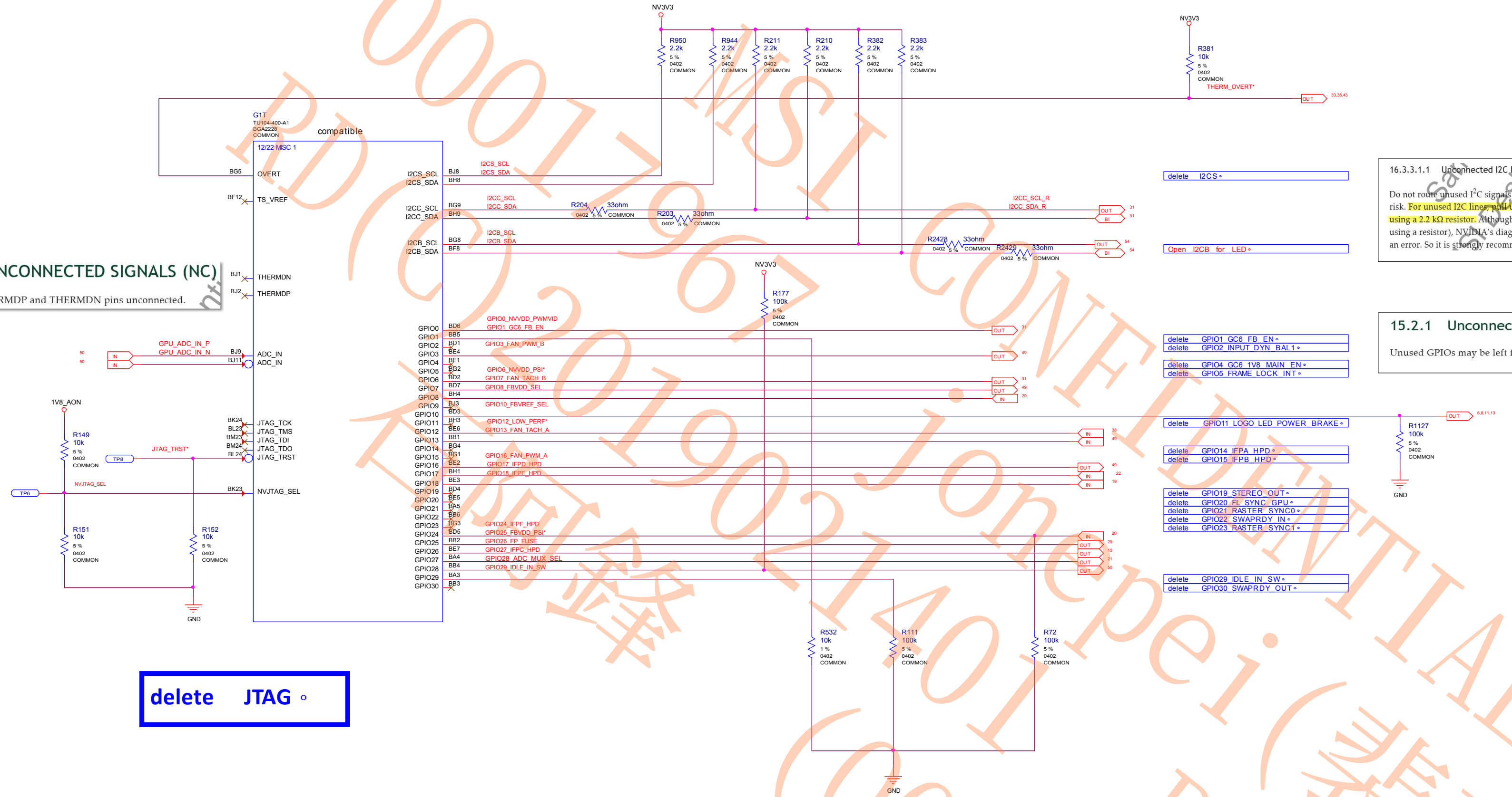
Page24: MISC1: Fan, Thermal, JTAG, GPIO


NV3V3
R950 2.2k 5 % 0402 COMMON
R944 2.2k 5 % 0402 COMMON
R211 2.2k 5 % 0402 COMMON
R210 2.2k 5 % 0402 COMMON
R382 2.2k 5 % 0402 COMMON
R383 2.2k 5 % 0402 COMMON
R381 10k 5 % 0402 COMMON
THERM_OVERT*
G1T TU104-400-A1 BGA2228 COMMON
compatible
12/22 MISC 1
OVERT
TS_VREF
THERMDN
THERMDP
ADC_IN
ADC_IN
GPU_ADC_IN_P
GPU_ADC_IN_N
JTAG_TCK
JTAG_TMS
JTAG_TDI
JTAG_TDO
JTAG_TRST
NVJTAG_SEL
JTAG_TRST*
1V8_AON
R149 10k 5 % 0402 COMMON
R151 10k 5 % 0402 COMMON
R152 10k 5 % 0402 COMMON
GND
I2CS_SCL
I2CS_SDA
I2CC_SCL
I2CC_SDA
I2CB_SCL
I2CB_SDA
I2CC_SCL_R
I2CC_SDA_R
R204 33ohm
R203 33ohm
R2428 33ohm
R2429 33ohm
GPIO0 GPIO1 GPIO2 GPIO3 GPIO4 GPIO5 GPIO6 GPIO7 GPIO8 GPIO9 GPIO10 GPIO11 GPIO12 GPIO13 GPIO14 GPIO15 GPIO16 GPIO17 GPIO18 GPIO19 GPIO20 GPIO21 GPIO22 GPIO23 GPIO24 GPIO25 GPIO26 GPIO27 GPIO28 GPIO29 GPIO30
GPIO0_NVVDD_PWMVID
GPIO1_GC6_FB_EN
GPIO3_FAN_PWM_B
GPIO6_NVVDD_PSI*
GPIO7_FAN_TACH_B
GPIO8_FBVDD_SEL
GPIO10_FBVREF_SEL
GPIO12_LOW_PERF*
GPIO13_FAN_TACH_A
GPIO16_FAN_PWM_A
GPIO17_IFPD_HPD
GPIO18_IFPE_HPD
GPIO24_IFPF_HPD
GPIO25_FBVDD_PSI*
GPIO26_FP_FUSE
GPIO27_IFPC_HPD
GPIO28_ADC_MUX_SEL
GPIO29_IDLE_IN_SW
NV3V3
R177 100k 5 % 0402 COMMON
R1127 100k 5 % 0402 COMMON
R532 10k 1 % 0402 COMMON
R111 100k 5 % 0402 COMMON
R72 100k 5 % 0402 COMMON
GND
delete I2CS
Open I2CB for LED
delete GPIO1_GC6_FB_EN
delete GPIO2_INPUT_DYN_BAL1
delete GPIO4_GC6_1V8_MAIN_EN
delete GPIO5_FRAME_LOCK_INT
delete GPIO11_LOGO_LED_POWER_BRAKE
delete GPIO14_IFPA_HPD
delete GPIO15_IFPB_HPD
delete GPIO19_STEREO_OUT
delete GPIO20_FL_SYNC_GPU
delete GPIO21_RASTER_SYNC0
delete GPIO22_SWAPRDY_IN
delete GPIO23_RASTER_SYNC1
delete GPIO29_IDLE_IN_SW
delete GPIO30_SWAPRDY_OUT

14.5 UNCONNECTED SIGNALS (NC)

Leave the THERMDP and THERMDN pins unconnected.

16.3.3.1.1 Unconnected I2C Pins

Do not route unused I²C signals on the PCB in order to protect the GPU from outside ESD risk. For unused I2C lines, pull up both the I2Cx_SCL and I2Cx_SDA lines to 1.8V or 3.3V, using a 2.2 kΩ resistor. Although unused I2C lines can be soft-grounded (that is, grounded using a resistor), NVIDIA's diagnostic program expects them to be pulled up and will flag an error. So it is strongly recommended that unused I2C lines be pulled up.

15.2.1 Unconnected Signals

Unused GPIOs may be left floating (NC) on the board design.

delete JTAG。

Unused delete STEREO。

Unused delete GPIO11_LOGO_LED_POWER_BRAKE。

Page25: MISC2: ROM, XTAL, Straps

STRAP2	STRAP1	STRAP0	RAMCFG[4:0]
L	L	L	00000
L	L	H	00001
L	H	L	00010
L	H	H	00011
H	H	L	00110
H	H	H	00111
L	L	M	01000

RAMCFG[4:0]	DENSITY	WIDTH	VENDOR	DIE
00000	8Gb	256-bit	Samsung	C
00001	8Gb	256-bit	Micron	A
00010	8Gb	256-bit	Hynix	M
00011	8Gb	256-bit	Samsung	C
00100	8Gb	256-bit	Micron	A
00101	8Gb	256-bit	Hynix	M
00110	16Gb	256-bit	Samsung	M
00111				

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

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 DEFAULT
L	L	L	0	0	0	0

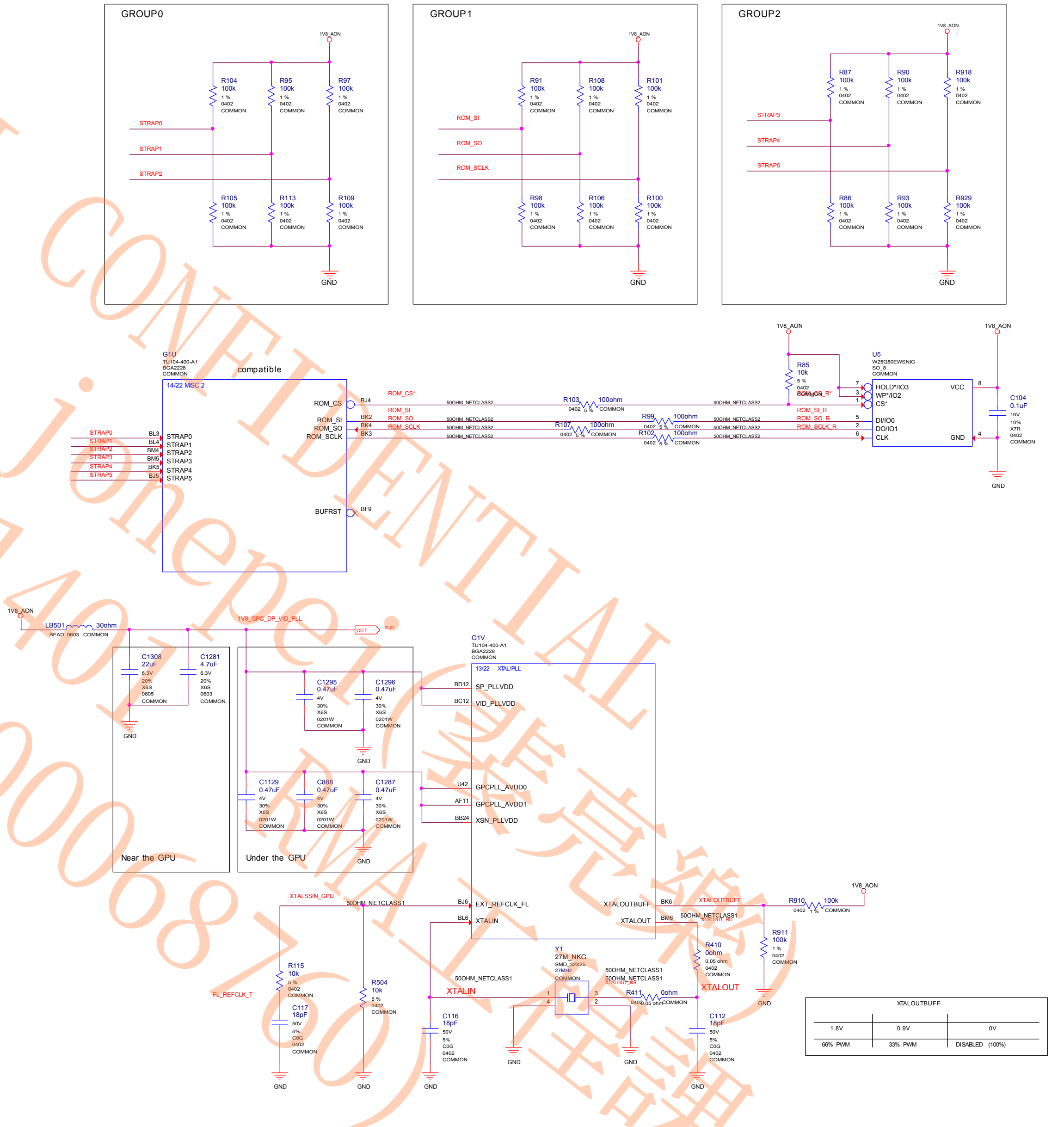
H=High :Tied to 1.8V
M=Middle:Tied to 0.9V
L=Low :Tied to 0V

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



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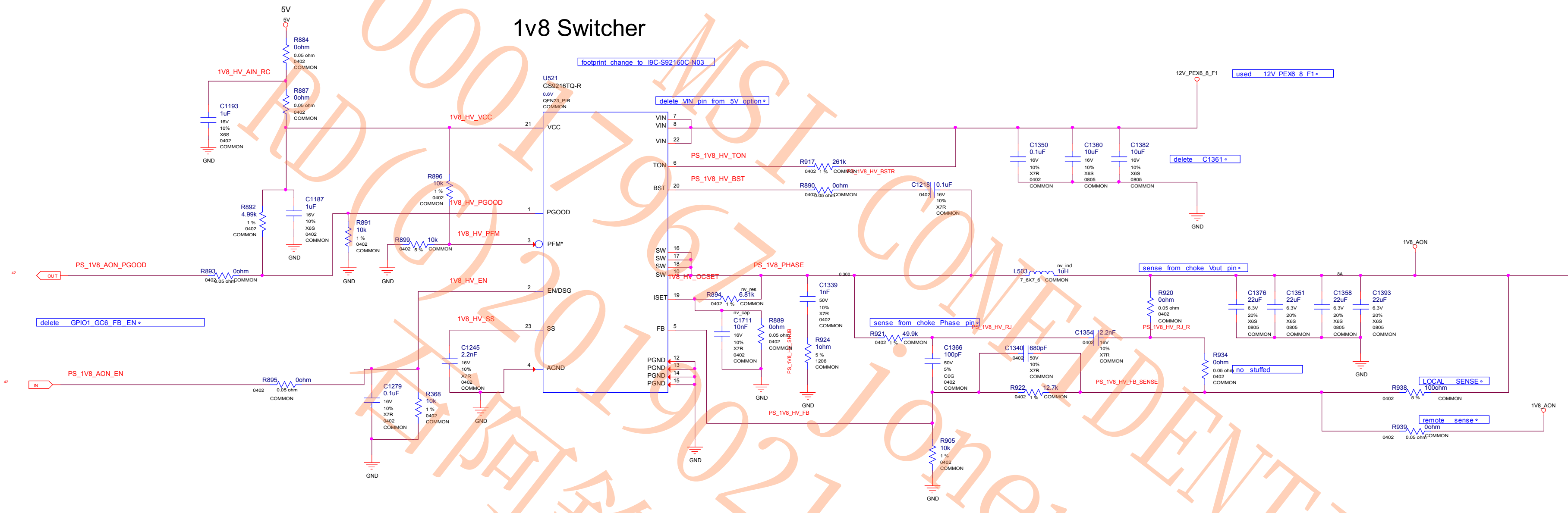
Page26: PS: 1V8 PLL, 1V8_AON

1v8 Switcher



5V
R884 0ohm
R887 0ohm
1V8_HV_AIN_RC
C1193 1uF
R892 4.99k
C1187 1uF
R891 10k
R896 10k
R899 10k
R893 0ohm
R895 0ohm
C1279 0.1uF
R368 10k
C1245 2.2nF
PS_1V8_AON_PGOOD
PS_1V8_AON_EN
delete GPIO1_GC6_FB_EN
1V8_HV_VCC
1V8_HV_PGOOD
1V8_HV_PFM
1V8_HV_EN
1V8_HV_SS
U521 GS9216TQ-R
footprint change to I9C-S92160C-N03
delete VIN pin from 5V option
VIN
VCC
TON
BST
PGOOD
PFM*
EN/DSG
SS
AGND
SW
ISET
FB
PGND
PS_1V8_HV_TON
PS_1V8_HV_BST
PS_1V8_PHASE
1V8_HV_OCSET
R917 261k
R890 0ohm
C1218 0.1uF
R894 6.81k
C1711 10nF
R889 0ohm
C1339 1nF
R924 1ohm
12V_PEX8_8_F1
used 12V_PEX8_8_F1
C1350 0.1uF
C1360 10uF
C1382 10uF
delete C1361
L503 1uH
sense from choke Vout pin
sense from choke Phase pin
R921 49.9k
C1366 100pF
C1340 680pF
R922 12.7k
C1354 2.2nF
R920 0ohm
R934 0ohm
no stuffed
PS_1V8_HV_FB_SENSE
PS_1V8_HV_FB
R905 10k
C1376 22uF
C1351 22uF
C1358 22uF
C1393 22uF
1V8_AON
R938 100ohm
LOCAL SENSE
R939 0ohm
remote sense
C1258 10uF
C1405 22uF
GND

1 L503 PN L04-01074K0-L65 / footprint : CHK_S2_7_3X6_61
2 delete colayout PWM ouput choke
3 delete 1V8_MAIN and merged to 1V8_AON

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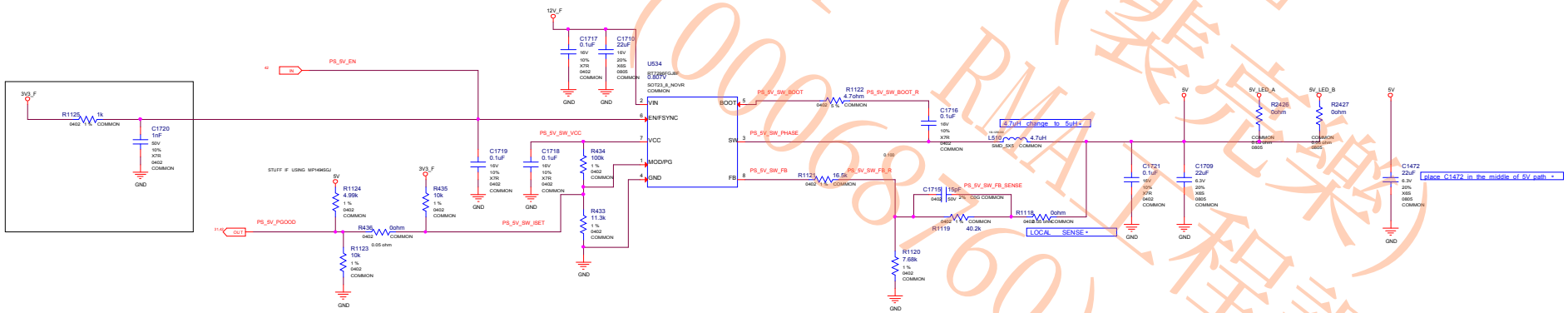
Page27: PS: 5V

1 L510 P/N L04-0507010-L65 / footprint : CHK_S2_5_4X5_23
2 delete colayout PWM ouput choke.
3 unused RTD3 delete Buck-Boost regulator.



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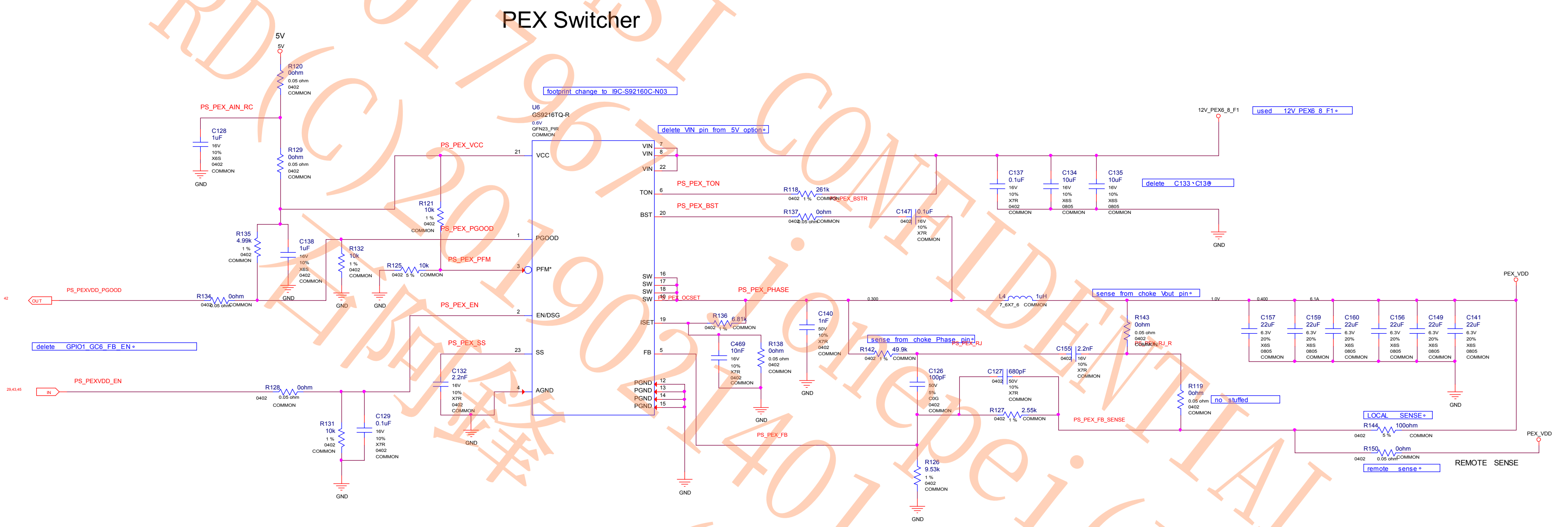
Page28: PS: PEXVDD



PEX Switcher
5V
R120 0ohm
PS_PEX_AIN_RC
footprint change to I9C-S92160C-N03
U6 GS9216TQ-R
delete VIN pin from 5V option
12V_PEX6_8_F1
used 12V_PEX6_8_F1
PS_PEX_VCC
VCC
VIN
TON
BST
PGOOD
PFM*
EN/DSG
SS
AGND
SW
ISET
FB
PGND
PS_PEX_TON
PS_PEX_BST
R118 261k
R137 0ohm
C147 0.1uF
C137 0.1uF
C134 10uF
C135 10uF
delete C133, C136
PS_PEX_PGOOD
PS_PEX_PFM
PS_PEX_EN
PS_PEX_SS
PS_PEXVDD_PGOOD
R134 0ohm
delete GPIO1_GC6_FB_EN
PS_PEXVDD_EN
R128 0ohm
PS_PEX_PHASE
L4 1uH
sense from choke Vout pin
PEX_VDD
R143 0ohm
C157 22uF
C159 22uF
C160 22uF
C156 22uF
C149 22uF
C141 22uF
R136 6.81k
C469 10nF
R138 0ohm
C140 1nF
sense from choke Phase pin
R142 49.9k
C155 2.2nF
C126 100pF
C127 680pF
R127 2.55k
R119 0ohm
no stuffed
PS_PEX_FB_SENSE
LOCAL SENSE
R144 100ohm
R150 0ohm
remote sense
REMOTE SENSE
PS_PEX_FB
R126 9.53k
GND

1 L4 PN L04-010741O-L65 / footprint : CHK_S2_7_3X6_61
2 delete col ayout PWM ouput choke

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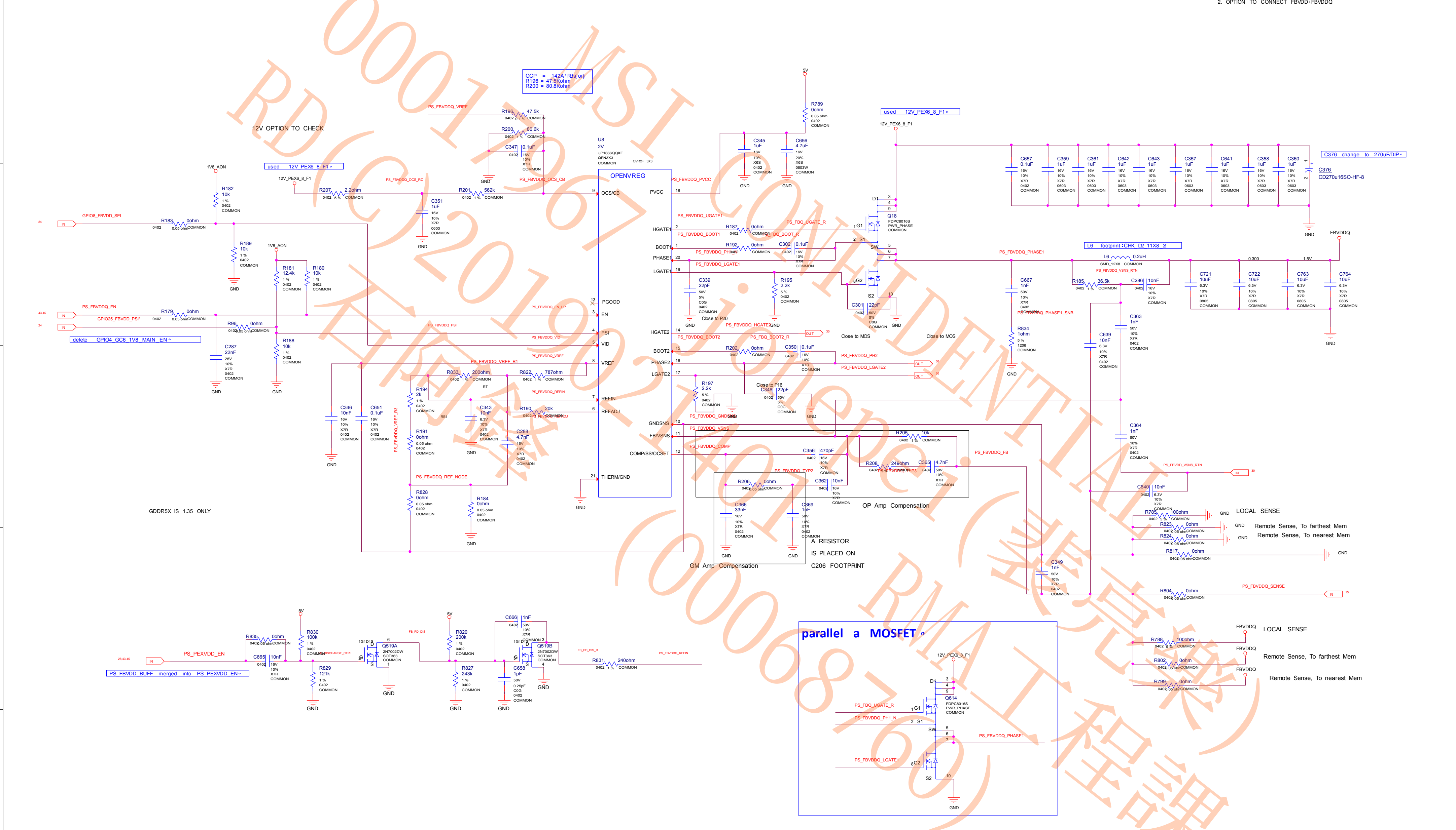
Page29: PS: FBVDDQ



2. OPTION TO CONNECT FBVDD+FBVDDQ
OCP = 142A*Rds on
R196 = 47.5Kohm
R200 = 80.8Kohm
12V OPTION TO CHECK
used 12V_PEX6_8_F1
U8
2V
uP1666QQKF
QFN3X3
OPENVREG
OCS/CB
PVCC
HGATE1
BOOT1
PHASE1
LGATE1
PGOOD
EN
PSI
VID
VREF
REFIN
REFADJ
GNDSNS
FB/VSNS
COMP/SS/OCSET
THERM/GND
HGATE2
BOOT2
PHASE2
LGATE2
Q18
FDPC8016S
PWR_PHASE
L6 footprint : CHK_D2_11X8_2
L6 0.2uH
C376 change to 270uF/DIP
C376
CD270u16SO-HF-8
FBVDDQ
PS_FBVDDQ_PHASE1
PS_FBVDDQ_EN
GPIO8_FBVDD_SEL
GPIO25_FBVDD_PSI
delete GPIO4_GC6_1V8_MAIN_EN
Close to MOS
Close to P20
Close to P16
OP Amp Compensation
GM Amp Compensation
A RESISTOR
IS PLACED ON
C206 FOOTPRINT
GDDR5X IS 1.35 ONLY
LOCAL SENSE
Remote Sense, To farthest Mem
Remote Sense, To nearest Mem
PS_FBVDDQ_SENSE
PS_PEXVDD_EN
PS_FBVDD_BUFF merged into PS_PEXVDD_EN
Q519A
Q519B
2N7002DW
SOT363
parallel a MOSFET
Q614
FDPC8016S
PWR_PHASE

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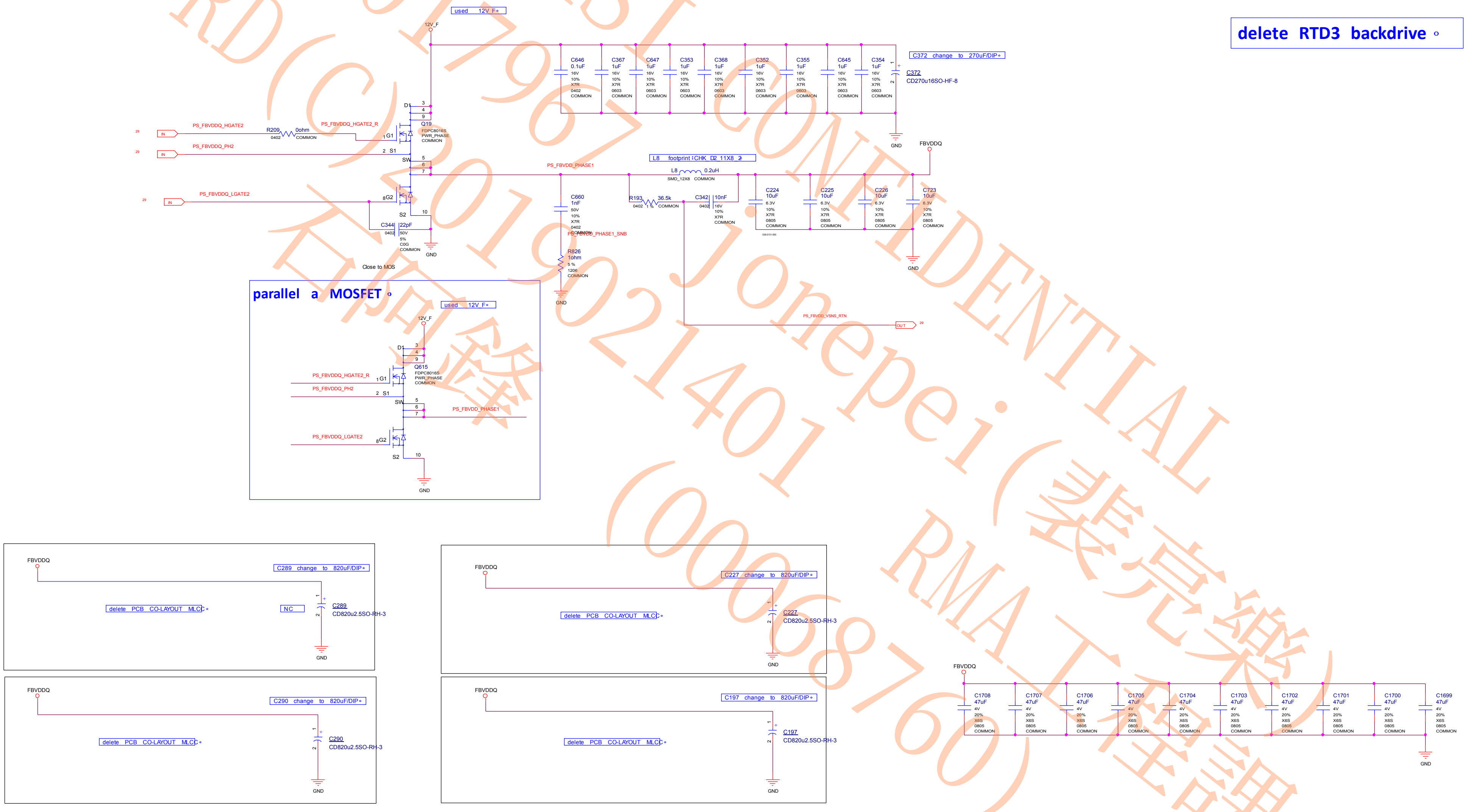
Page30: PS: FBVDDQ PH2



delete RTD3 backdrive。
used 12V_F。
12V_F
C372 change to 270uF/DIP。
C646 0.1uF 16V 10% X7R 0402 COMMON
C367 1uF
C647 1uF
C353 1uF
C368 1uF
C352 1uF
C355 1uF
C645 1uF
C354 1uF
C372
CD270u16SO-HF-8
GND
PS_FBVDDQ_HGATE2
PS_FBVDDQ_PH2
PS_FBVDDQ_LGATE2
R209 0ohm 0402 COMMON
PS_FBVDDQ_HGATE2_R
Q19
FDPC8016S
PWR_PHASE
COMMON
D1
G1
S1
SW
G2
S2
PS_FBVDD_PHASE1
L8 footprint : CHK_D2_11X8_2。
L8 0.2uH SMD_12X8 COMMON
FBVDDQ
C660 1nF 50V 10% X7R 0402 COMMON
R193 36.5k 0402 1% COMMON
C342 10nF 0402 16V 10% X7R COMMON
C224 10uF
C225 10uF
C226 10uF
C723 10uF
C344 22pF 0402 50V 5% C0G COMMON
PS_FBVDD_PHASE1_SNB
R826 1ohm 5% 1206 COMMON
Close to MOS
PS_FBVDD_VSNS_RTN
OUT
parallel a MOSFET。
used 12V_F。
Q615
FDPC8016S
PWR_PHASE
COMMON
PS_FBVDDQ_HGATE2_R
PS_FBVDDQ_PH2
PS_FBVDD_PHASE1
PS_FBVDDQ_LGATE2
C289 change to 820uF/DIP。
delete PCB CO-LAYOUT MLCC。
NC
C289
CD820u2.5SO-RH-3
C227 change to 820uF/DIP。
C227
CD820u2.5SO-RH-3
C290 change to 820uF/DIP。
C290
CD820u2.5SO-RH-3
C197 change to 820uF/DIP。
C197
CD820u2.5SO-RH-3
C1708 47uF 4V 20% X6S 0805 COMMON
C1707 47uF
C1706 47uF
C1705 47uF
C1704 47uF
C1703 47uF
C1702 47uF
C1701 47uF
C1700 47uF
C1699 47uF

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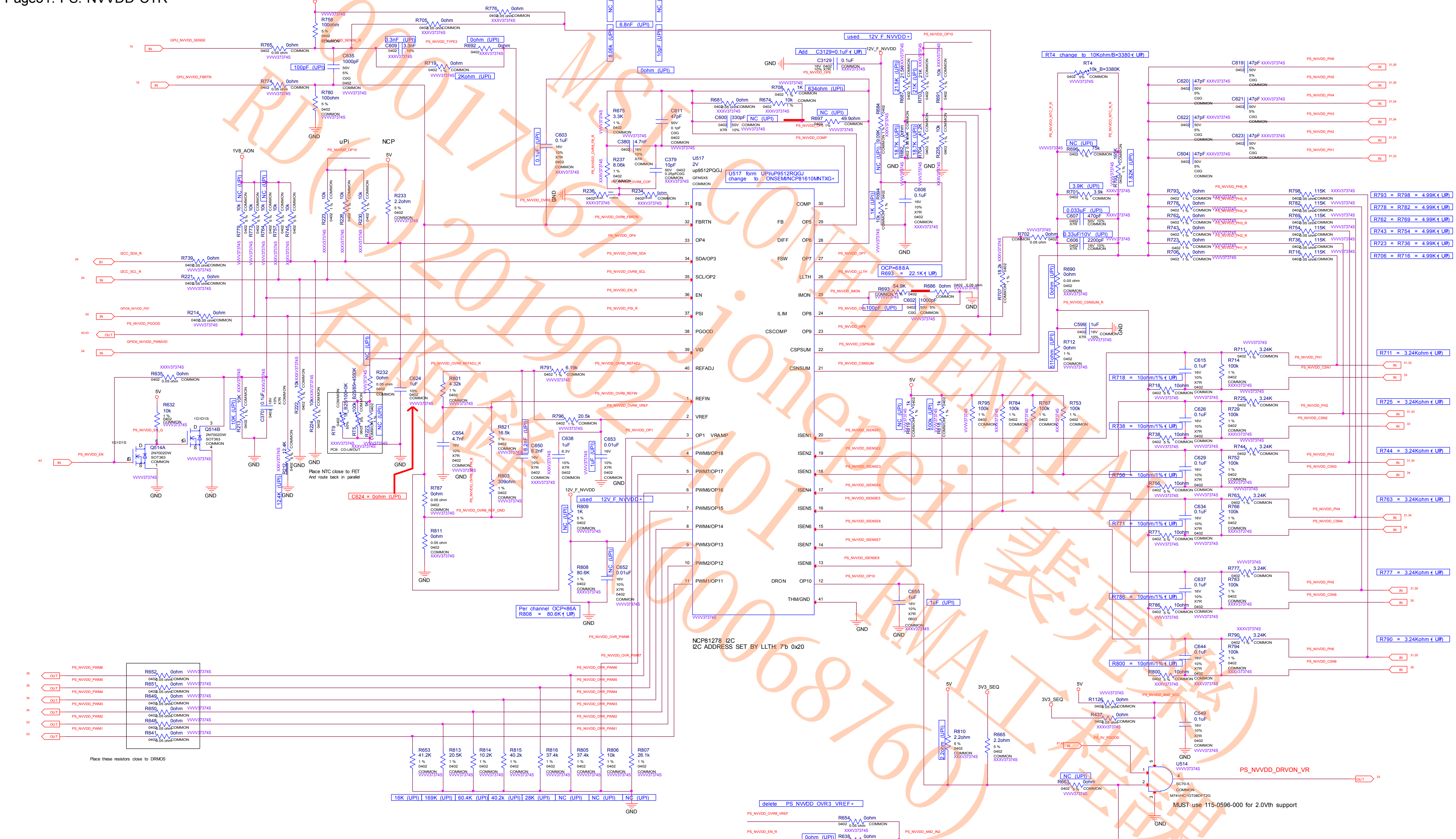
Page31: PS: NVVDD CTR



NVVDD
1V8_AON
uPi
NCP
5V
NCP81278 I2C
I2C ADDRESS SET BY LLTH: 7'b 0x20
U517 form UPI/uP9512RQGJ change to ONSEMI/NCP81610MNTXG+
OCP=68A R693 = 22.1K (UPI)
Per channel OCP=86A R808 = 80.6K (UPI)
C624 = 0ohm (UPI)
Place NTC close to FET And route back in parallel
Place these resistors close to DRMOS
RT4 change to 10Kohm/B=3380 (UPI)
used 12V_F_NVVDD+
Add C3129=0.1uF (UPI)
delete PS_NVVDD_OVR3_VREF+
uPI EN has internal PU to 2.4V
PS_NVVDD_DRVON_VR
MUST use 115-0596-000 for 2.0Vth support
3V3_SEQ
R793 = R798 = 4.99K (UPI)
R778 = R782 = 4.99K (UPI)
R762 = R769 = 4.99K (UPI)
R743 = R754 = 4.99K (UPI)
R723 = R736 = 4.99K (UPI)
R706 = R716 = 4.99K (UPI)
R711 = 3.24Kohm (UPI)
R725 = 3.24Kohm (UPI)
R744 = 3.24Kohm (UPI)
R763 = 3.24Kohm (UPI)
R777 = 3.24Kohm (UPI)
R790 = 3.24Kohm (UPI)

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Page32: PS: NVVDD CTR OVR3i

delete all unused

MSI	MICRO-STAR INT'L CO.,LTD	
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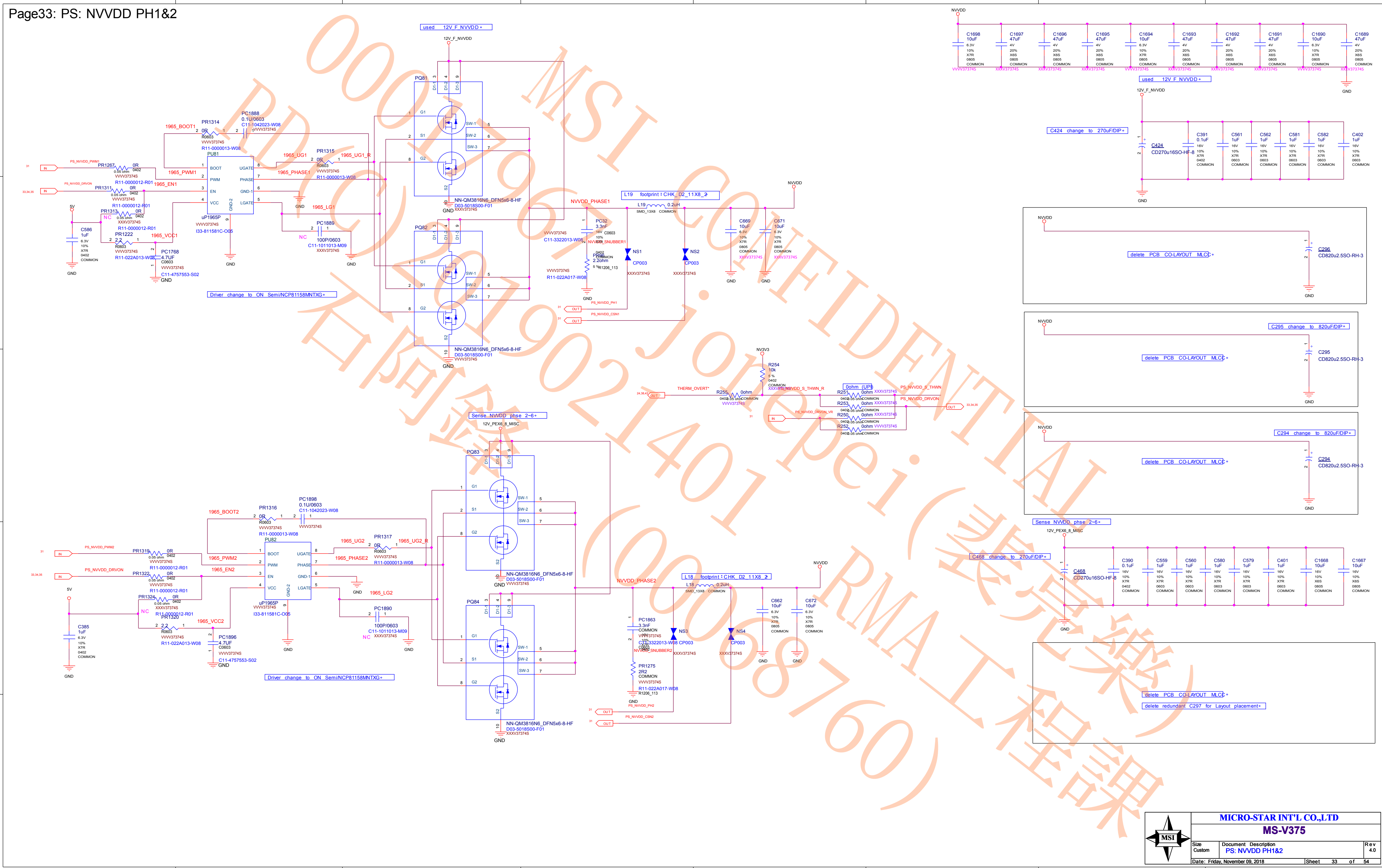
Page33: PS: NVVDD PH1&2



used 12V_F_NVVDD
12V_F_NVVDD
PQ81
NN-QM3816N6_DFN5x6-8-HF
D03-5018S00-F01
PQ82
PQ83
PQ84
PU81
PU82
uP1965P
I33-811581C-O05
BOOT
PWM
EN
VCC
UGATE
PHASE
GND-1
LGATE
GND-2
1965_BOOT1
1965_PWM1
1965_EN1
1965_VCC1
1965_UG1
1965_UG1_R
1965_PHASE1
1965_LG1
1965_BOOT2
1965_PWM2
1965_EN2
1965_VCC2
1965_UG2
1965_UG2_R
1965_PHASE2
1965_LG2
PS_NVVDD_PWM1
PS_NVVDD_DRVON
PS_NVVDD_PWM2
PR1314
PR1315
PR1267
PR1311
PR1313
PR1222
PR1316
PR1317
PR1319
PR1322
PR1324
PR1320
PC1888
0.1U/0603
C11-1042023-W08
PC1889
100P/0603
C11-1011013-M09
PC1768
4.7UF
C11-4757553-S02
PC1898
PC1890
PC1896
C586
C385
1uF
5V
NC
GND
Driver change to ON Semi/NCP81158MNTXG
NVVDD_PHASE1
NVVDD_PHASE2
L19 footprint : CHK_D2_11X8_2
L18 footprint : CHK_D2_11X8_2
0.2uH
NVVDD
PC32
3.3nF
C11-3322013-W08
NVVDD_SNUBBER1
NVVDD_SNUBBER2
PR1274
2.2ohm
R11-022A017-W08
NS1
NS2
NS3
NS4
CP003
C669
C671
C662
C672
10uF
PS_NVVDD_PH1
PS_NVVDD_CSN1
PS_NVVDD_PH2
PS_NVVDD_CSN2
PC1863
PR1275
2R2
NV3V3
R254
10k
THERM_OVERT*
R255
R251
R253
R250
R252
0ohm (UP)
PS_NVVDD_S_THWN_R
PS_NVVDD_S_THWN
PS_NVVDD_DRVON
PS_NVVDD_DRVON_VR
Sense NVVDD phse 2~6
12V_PEX8_8_MISC
C1698
C1697
C1696
C1695
C1694
C1693
C1692
C1691
C1690
C1689
47uF
C424 change to 270uF/DIP
C424
CD270u16SO-HF-8
C391
C561
C562
C581
C582
C402
C296
CD820u2.5SO-RH-3
C295 change to 820uF/DIP
C295
C294 change to 820uF/DIP
C294
delete PCB CO-LAYOUT MLCC
C468 change to 270uF/DIP
C468
C390
C559
C560
C580
C579
C401
C1668
C1667
delete redundant C297 for Layout placement
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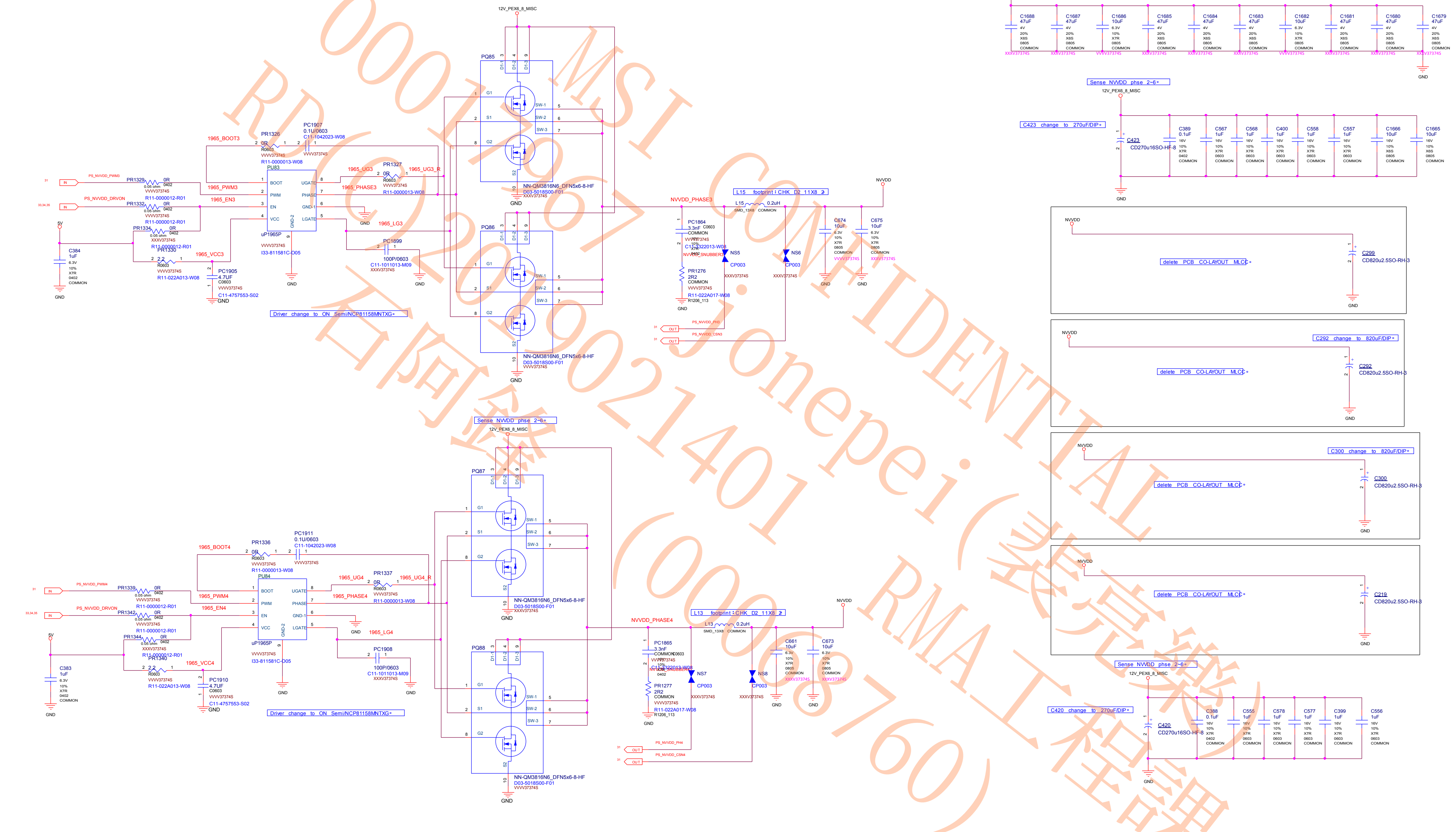
Page34: PS: NVVDD PH3&4



Sense NVVDD phse 2~6*
12V_PEX8_8_MISC
PQ85
PQ86
PQ87
PQ88
NN-QM3816N6_DFN5x6-8-HF
D03-5018S00-F01
PU83
PU84
uP1965P
1965_BOOT3
1965_PWM3
1965_EN3
1965_VCC3
1965_UG3
1965_UG3_R
1965_PHASE3
1965_LG3
1965_BOOT4
1965_PWM4
1965_EN4
1965_VCC4
1965_UG4
1965_UG4_R
1965_PHASE4
1965_LG4
PS_NVVDD_PWM3
PS_NVVDD_DRVON
PS_NVVDD_PWM4
PS_NVVDD_PH3
PS_NVVDD_CSN3
PS_NVVDD_PH4
PS_NVVDD_CSN4
NVVDD_PHASE3
NVVDD_PHASE4
L15 footprint : CHK_D2_11X8_2
L13 footprint : CHK_D2_11X8_2
Driver change to ON Semi/NCP81158MNTXG*
C423 change to 270uF/DIP*
C420 change to 270uF/DIP*
C292 change to 820uF/DIP*
C300 change to 820uF/DIP*
delete PCB CO-LAYOUT MLCC*
NVVDD
5V
GND

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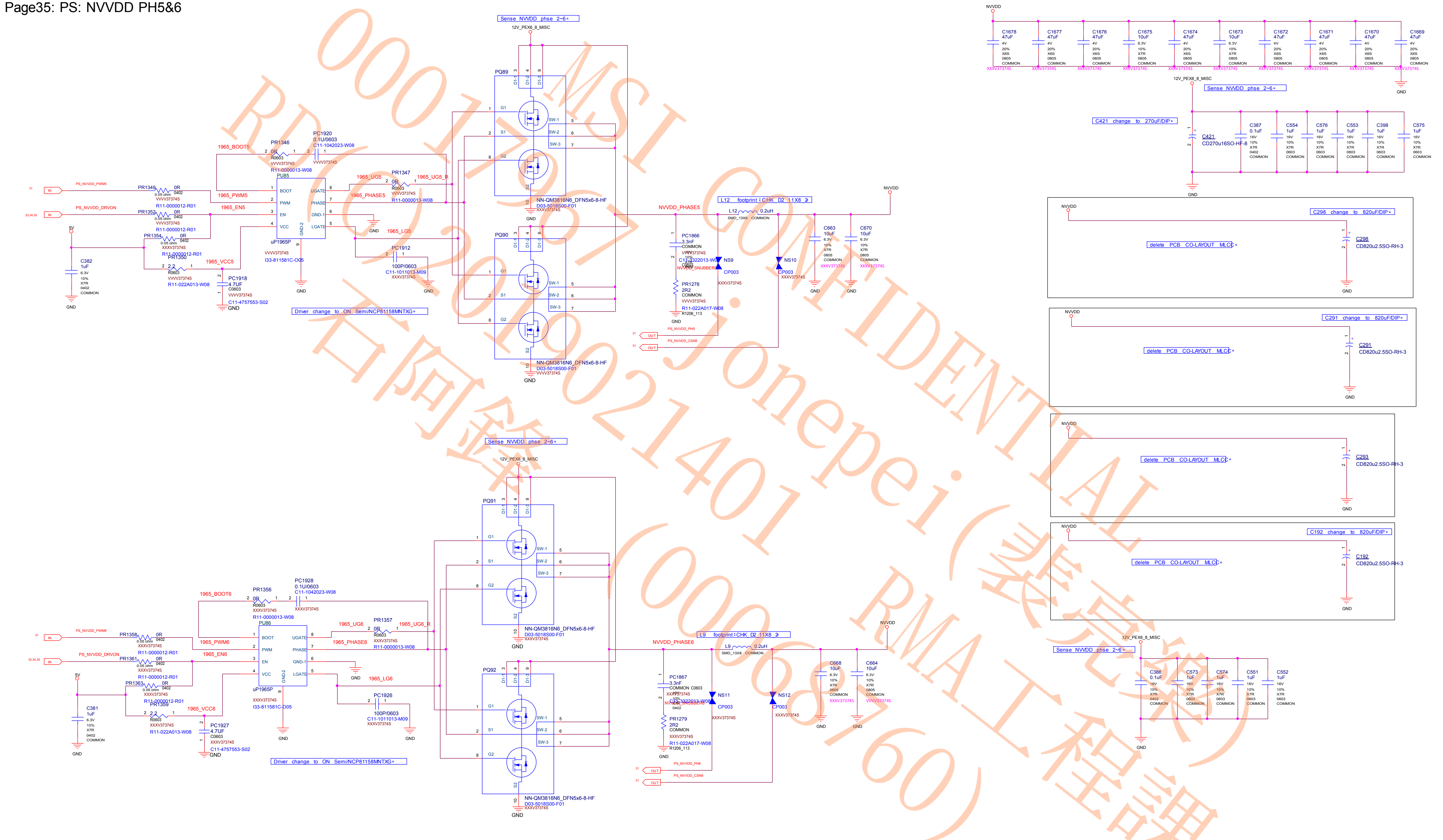
Page35: PS: NVVDD PH5&6



Sense NVVDD phse 2~6
12V_PEX6_8_MISC
PQ89
NN-QM3816N6_DFN5x6-8-HF
D03-5018S00-F01
PQ90
PQ91
PQ92
PU85
PU86
uP1965P
I33-811581C-O05
PC1920 0.1U/0603 C11-1042023-W08
PC1928 0.1U/0603 C11-1042023-W08
PR1346
PR1347
PR1349
PR1352
PR1354
PR1350
PR1356
PR1357
PR1358
PR1361
PR1363
PR1359
PC1912 100P/0603 C11-1011013-M09
PC1926 100P/0603 C11-1011013-M09
PC1918 4.7UF C0603 C11-4757553-S02
PC1927 4.7UF C0603 C11-4757553-S02
C382 1uF
C381 1uF
1965_BOOT5
1965_PWM5
1965_EN5
1965_VCC5
1965_UG5
1965_UG5_R
1965_PHASE5
1965_LG5
1965_BOOT6
1965_PWM6
1965_EN6
1965_VCC6
1965_UG6
1965_UG6_R
1965_PHASE6
1965_LG6
PS_NVVDD_PWM5
PS_NVVDD_PWM6
PS_NVVDD_DRVON
PS_NVVDD_PH5
PS_NVVDD_CSN5
PS_NVVDD_PH6
PS_NVVDD_CSN6
Driver change to ON Semi/NCP81158MNTXG
NVVDD_PHASE5
NVVDD_PHASE6
L12 footprint: CHK_D2_11X8_2
L9 footprint: CHK_D2_11X8_2
L12 0.2uH
L9 0.2uH
PC1866 3.3nF
PC1867 3.3nF
PR1278 2R2
PR1279 2R2
NS9
NS10
NS11
NS12
CP003
C663 10uF
C670 10uF
C668 10uF
C664 10uF
NVVDD
C1678 47uF
C1677 47uF
C1676 47uF
C1675 10uF
C1674 47uF
C1673 10uF
C1672 47uF
C1671 47uF
C1670 47uF
C1669 47uF
C421 change to 270uF/DIP
C421 CD270u16SO-HF-8
C387 0.1uF
C554 1uF
C576 1uF
C553 1uF
C398 1uF
C575 1uF
C298 change to 820uF/DIP
C298 CD820u2.5SO-RH-3
C291 change to 820uF/DIP
C291 CD820u2.5SO-RH-3
C293 CD820u2.5SO-RH-3
C192 change to 820uF/DIP
C192 CD820u2.5SO-RH-3
delete PCB CO-LAYOUT MLCC
C386 0.1uF
C573 1uF
C574 1uF
C551 1uF
C552 1uF
GND
5V

MICRO-STAR INT'L CO.,LTD

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Custom	PS: NVVDD PH5&6	4.0

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Page36: Input Power Balancing Switcher

removed U511 for fixed NVVDD 12Vi nput:
1、merged 3V3_AON to 3V3_F。
2、unused and delete 3V3_AUX。
3、unused and delete 3V3_AUX_CON。
4、NVVDD_DYN_VIN merged to 12V_PEX6_8_F1。

delete GPIO2_INPUT_DYN_BAL1 。

delete INPUT_PEX6_DT1_STEER 。

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Size: Custom | Document Description: Input Power Balancing Switcher | Rev: 4.0
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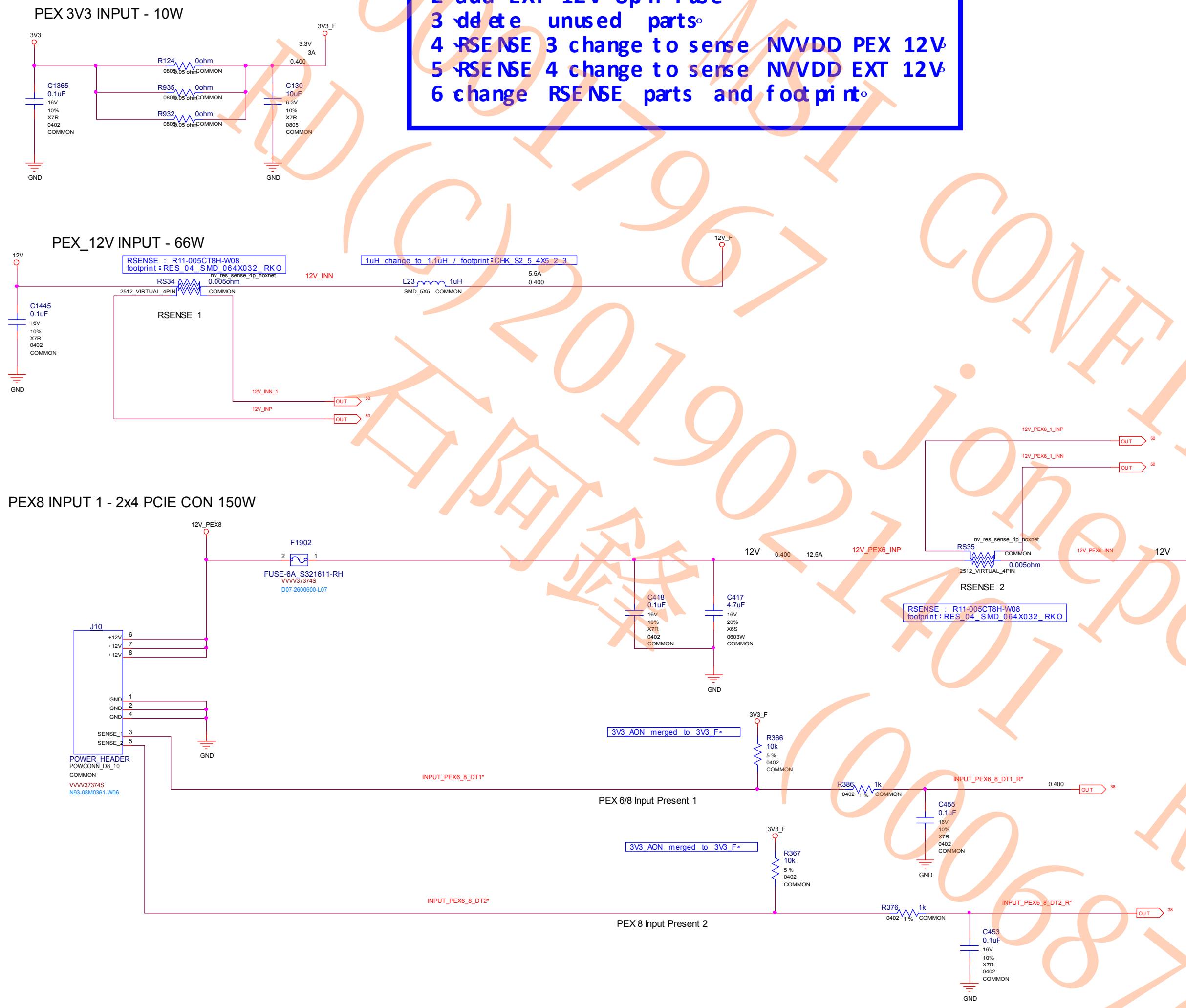
Page37: PS: Inputs, Filtering, and Monitoring

1 changed EXT 12V 8pin PN and footprint。
2 add EXT 12V 8pin Fuse。
3 delete unused parts。
4 RSENSE 3 change to sense NVVDD PEX 12V。
5 RSENSE 4 change to sense NVVDD EXT 12V。
6 change RSENSE parts and footprint。



PEX 3V3 INPUT - 10W
3V3
C1365
0.1uF
R124 0ohm
R935 0ohm
R932 0ohm
3V3_F
3.3V
3A
C130
10uF
GND
PEX_12V INPUT - 66W
12V
C1445
0.1uF
RSENSE : R11-005CT8H-W08
footprint : RES_04_SMD_064X032_RKO
RS34 0.005ohm
RSENSE 1
12V_INN
1uH change to 1.1uH / footprint:CHK_S2_5_4X5_2_3
L23 1uH
12V_F
12V_INN_1
12V_INP
PEX8 INPUT 1 - 2x4 PCIE CON 150W
12V_PEX8
F1902
FUSE-6A_S321611-RH
C418
0.1uF
C417
4.7uF
12V
12.5A
12V_PEX8_INP
RS35
0.005ohm
RSENSE 2
12V_PEX8_1_INP
12V_PEX8_1_INN
1uH change to 0.33uH / footprint:CHK_S2_7_1X6_8
L99 1uH
12V_PEX8_8_F1
C378
4.7uF
RS37
0.005ohm
RSENSE 3
Sense NVVDD phse 2~6。
12V_PEX8_8_MISC
MISC_VIN_INP_1
MISC_VIN_INN_1
J10
+12V
GND
SENSE_1
SENSE_2
POWER_HEADER
POWCONN_D8_10
3V3_AON merged to 3V3_F。
R366
10k
INPUT_PEX8_8_DT1*
PEX 6/8 Input Present 1
R386 1k
INPUT_PEX8_8_DT1_R*
C455
0.1uF
R367
10k
INPUT_PEX8_8_DT2*
PEX 8 Input Present 2
R376 1k
INPUT_PEX8_8_DT2_R*
C453
0.1uF
used 12V_F。
12V_F
USB_VIN_INP
USB_VIN_INN
RS36
0.005ohm
RSENSE 4
12V_F_NVVDD
Sense NVVDD phse 1。
C65
4.7uF
remove 3V3_AUX Fuse unused

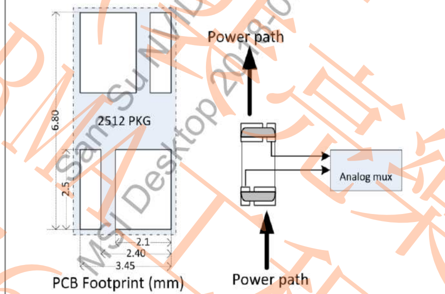

Sense resistors should be located as close as possible to the OVR-M input pins. Otherwise sensor output signals may exhibit larger measurement errors due to additional trace inductance and noise coupling in the signal from nearby noise-generating sections of the board.

Figure 5.10 Connection for 2-Pin Sense Resistor (2512 Package)

If customer prefers using a 2-pin sense resistor instead, we recommend implementing a 4-pin footprint with two large PADs for the high current path and two small PADs for sensing line, to emulate the functionality of a 4-pin resistor.

Note: Two-pin sense resistor can be used, but the sensing signal MUST connect to resistor pad directly. Connect the sensing signal to nearby power plane may cause large measurement error.

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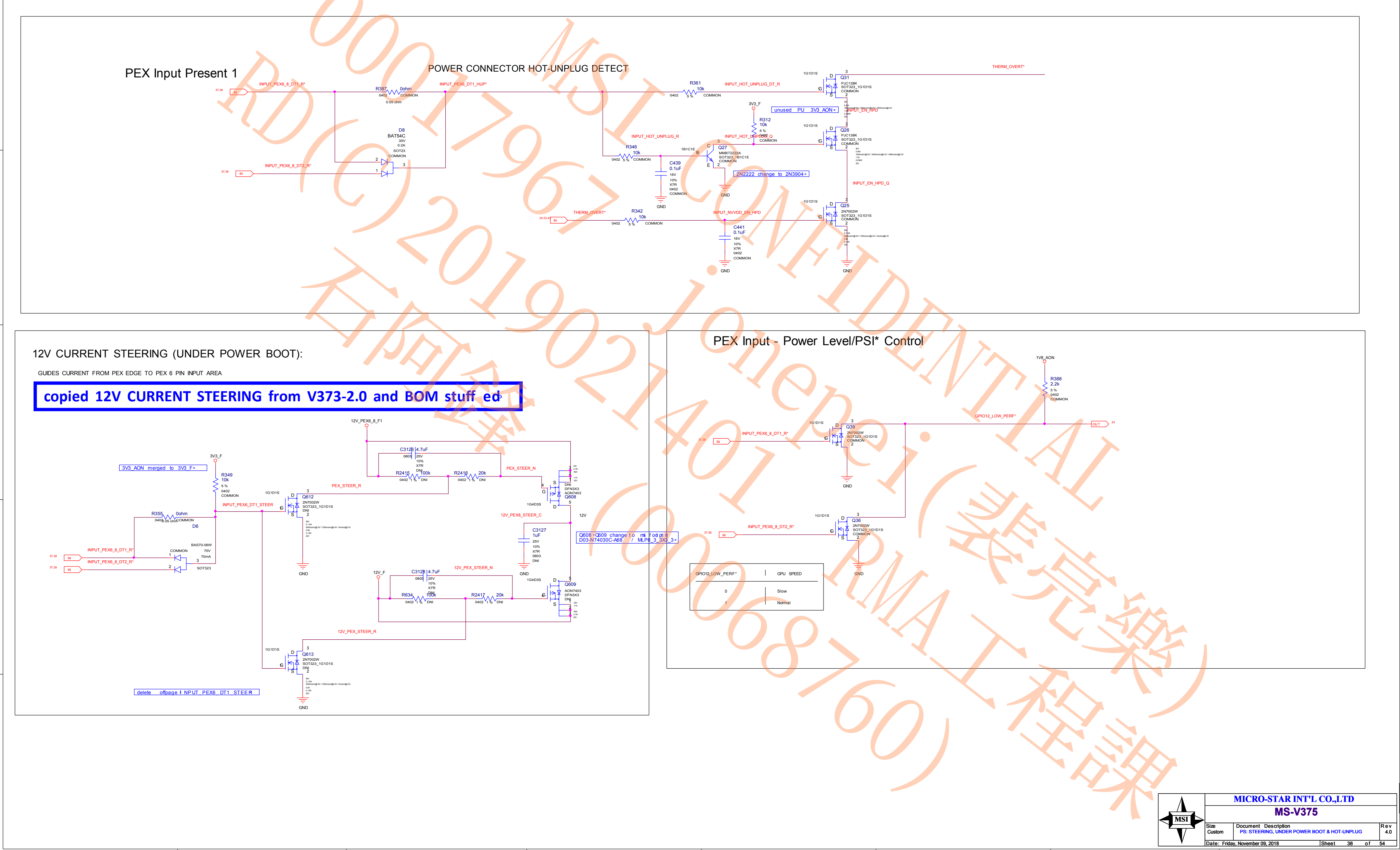
Page38: PS: STEERING, UNDER POWER BOOT & HOT-UNPLUG



PEX Input Present 1
POWER CONNECTOR HOT-UNPLUG DETECT
INPUT_PEX6_8_DT1_R*
INPUT_PEX6_8_DT2_R*
R387 0ohm 0402 COMMON 0.05 ohm
INPUT_PEX6_DT1_HUP*
R361 10k 0402 5 % COMMON
INPUT_HOT_UNPLUG_DT_R
THERM_OVERT*
Q31 PJC138K SOT323_1G1D1S COMMON
D8 BAT54C 30V 0.2A SOT23 COMMON
unused PU 3V3_AON
INPUT_EN_HPD
3V3_F
R312 10k 5 % 0402 COMMON
INPUT_HOT_UNPLUG_R
INPUT_HOT_UNPLUG_Q
Q26 PJC138K SOT323_1G1D1S COMMON
R346 10k 0402 5 % COMMON
Q27 MMBT2222A SOT323_1B1C1E COMMON
C439 0.1uF 16V 10% X7R 0402 COMMON
2N2222 change to 2N3904
INPUT_EN_HPD_Q
GND
THERM_OVERT*
R342 10k 0402 5 % COMMON
INPUT_NVVDD_EN_HPD
Q25 2N7002W SOT323_1G1D1S COMMON
C441 0.1uF 16V 10% X7R 0402 COMMON
12V CURRENT STEERING (UNDER POWER BOOT):
GUIDES CURRENT FROM PEX EDGE TO PEX 6 PIN INPUT AREA
copied 12V CURRENT STEERING from V373-2.0 and BOM stuff ed
12V_PEX6_8_F1
C3126 4.7uF 0805 25V 10% X7R DNI
R2415 100k 0402 1 % DNI
R2416 20k 0402 1 % DNI
PEX_STEER_N
PEX_STEER_R
Q608 DNI DFN3X3 AON7403
3V3_F
3V3_AON merged to 3V3_F
R349 10k 5 % 0402 COMMON
INPUT_PEX6_DT1_STEER
Q612 2N7002W SOT323_1G1D1S DNI
R355 0ohm 0402 0.05 ohm COMMON
D6 BAS70-06W 70V 70mA SOT323 COMMON
INPUT_PEX6_8_DT1_R*
INPUT_PEX6_8_DT2_R*
12V_PEX8_STEER_C
12V
C3127 1uF 25V 10% X7R 0603 DNI
Q608 Q609 change to mi foot print D03-N74030C-A68 / MLP8_3_3X3_3
12V_F
C3128 4.7uF 0805 25V 10% X7R DNI
12V_PEX_STEER_N
R634 100k 0402 1 % DNI
R2417 20k 0402 1 % DNI
Q609 AON7403 DFN3X3 DNI
12V_PEX_STEER_R
Q613 2N7002W SOT323_1G1D1S DNI
delete offpage INPUT_PEX6_DT1_STEER
PEX Input - Power Level/PSI* Control
1V8_AON
R388 2.2k 5 % 0402 COMMON
GPIO12_LOW_PERF*
INPUT_PEX6_8_DT1_R*
Q39 2N7002W SOT323_1G1D1S COMMON
INPUT_PEX6_8_DT2_R*
Q36 2N7002W SOT323_1G1D1S COMMON
GPIO12_LOW_PERF* | GPU SPEED
0 | Slow
1 | Normal
MICRO-STAR INT'L CO.,LTD
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Document Description PS: STEERING, UNDER POWER BOOT & HOT-UNPLUG
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Page39: BUCKBOOST

delete regulator for USBC_VBUS。

Unused USB_I2C* leaving Pull high resistor to 1.8V。

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Page40: PPC

delete PPC。

Unused USB_I2C* leaving Pull high resistor to 1.8V。

Unused IFPB_I2C* leaving Pull high resistor to 1.8V。

delete GPIO24_IFPF_HPD。

delete PEX_RST_BUF*。

delete GPIO1_GC6_FB_EN。

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Custom	PPC	4.0

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Page41: 12V & 3V3_A SWITCHER

unused and delete all ◦

delete GPIO1_GC6_FB_EN *

delete GPIO29_IDLE_IN_SW *

delete off-page 2PS_RTD_SWT.CH

unused and delete C404 *

MSI	MICRO-STAR INT'L CO.,LTD	
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Size: Custom	Document Description: 12V & 3V3_A SWITCHER	Rev: 4.0
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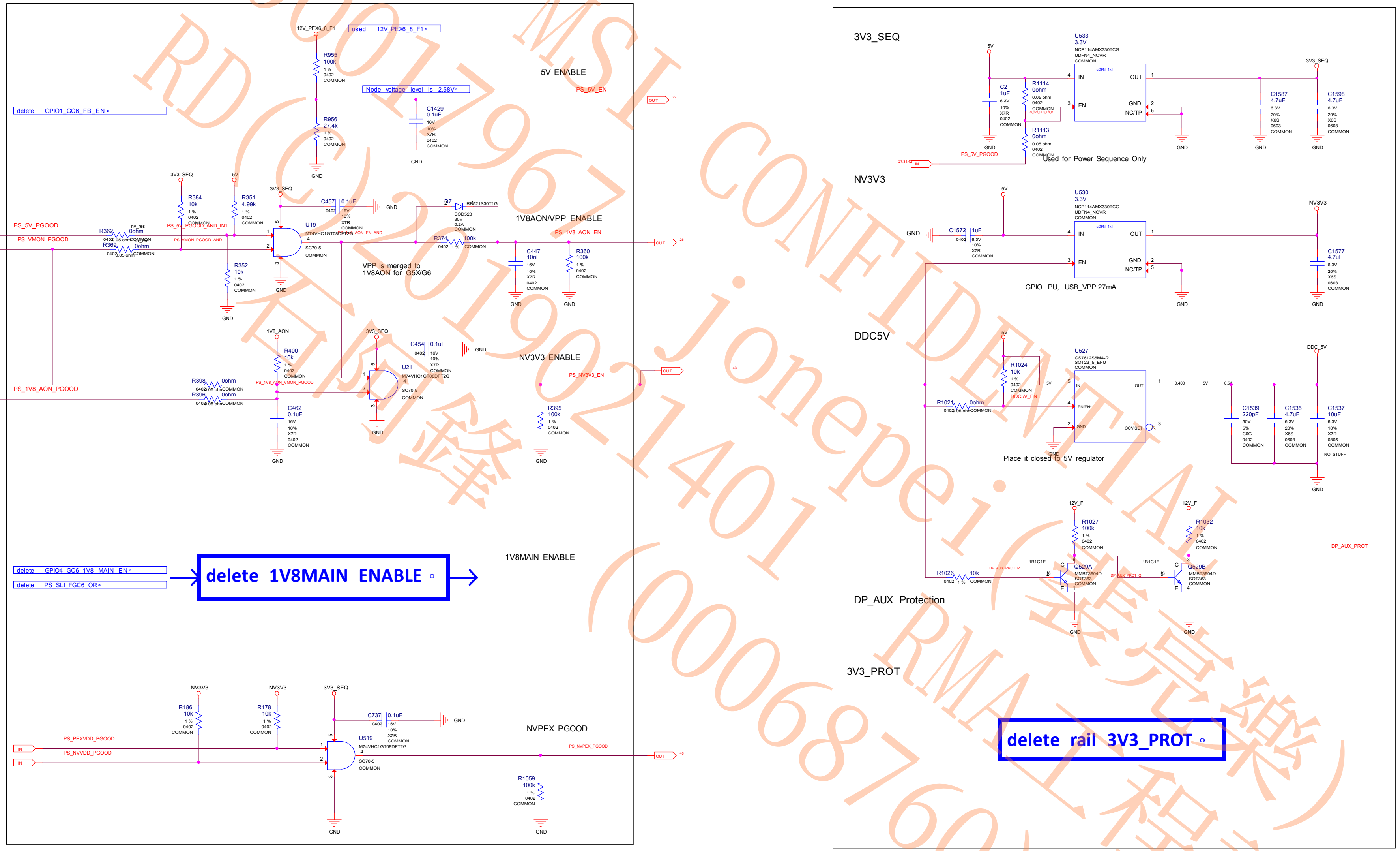
Page42: SEQ:5V,1V8,NV3V3 ENABLE



5V ENABLE
PS_5V_EN
Node voltage level is 2.58V
used 12V_PEX6_8_F1
delete GPIO1_GC6_FB_EN
R955 100k
R956 27.4k
C1429 0.1uF
1V8AON/VPP ENABLE
PS_5V_PGOOD
PS_VMON_PGOOD
PS_1V8_AON_EN
U19 M74VHC1GT08DFT2G
R362 0ohm
R369 0ohm
R384 10k
R351 4.99k
R352 10k
C457 0.1uF
D7 RB521S30T1G
R374 100k
C447 10nF
R360 100k
VPP is merged to 1V8AON for G5X/G6
NV3V3 ENABLE
PS_1V8_AON_PGOOD
PS_NV3V3_EN
U21 M74VHC1GT08DFT2G
R398 0ohm
R396 0ohm
R400 10k
C454 0.1uF
C462 0.1uF
R395 100k
1V8MAIN ENABLE
delete GPIO4_GC6_1V8_MAIN_EN
delete PS_SLI_FGC6_OR
delete 1V8MAIN ENABLE。
NVPEX PGOOD
PS_PEXVDD_PGOOD
PS_NVVDD_PGOOD
PS_NVPEX_PGOOD
U519 M74VHC1GT08DFT2G
R186 10k
R178 10k
C737 0.1uF
R1059 100k
3V3_SEQ
U533 3.3V NCP114AMX330TCG
R1114 0ohm
R1113 0ohm
C2 1uF
C1587 4.7uF
C1598 4.7uF
Used for Power Sequence Only
NV3V3
U530 3.3V NCP114AMX330TCG
C1572 1uF
C1577 4.7uF
GPIO PU, USB_VPP:27mA
DDC5V
U527 G5761255MA-R
R1024 10k
R1021 0ohm
C1539 220pF
C1535 4.7uF
C1537 10uF
Place it closed to 5V regulator
DP_AUX Protection
R1027 100k
R1032 10k
R1026 10k
Q529A MMBT3904D
Q529B MMBT3904D
DP_AUX_PROT
3V3_PROT
delete rail 3V3_PROT。

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Size: Custom | Document Description: SEQ:5V,1V8,NV3V3 ENABLE | Rev 4.0

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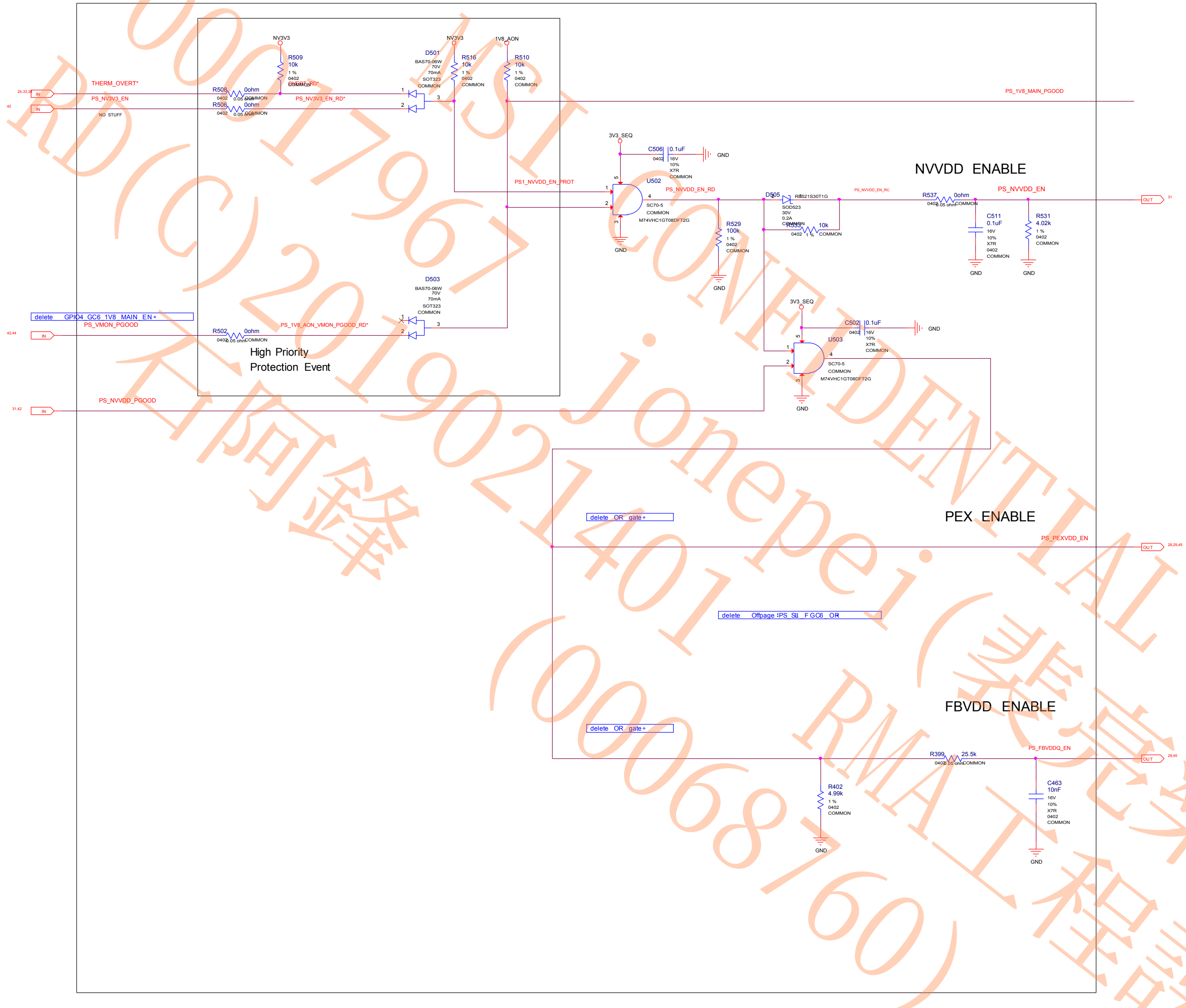
Page43: SEQ:NV,PEX,FB ENABLE



NV3V3
R509
10k
D501
BAS70-06W
R516
10k
1V8_AON
R510
10k
THERM_OVERT*
PS_NV3V3_EN
R508
0ohm
R506
0ohm
NO STUFF
PS_NV3V3_EN_RD*
PS_1V8_MAIN_PGOOD
3V3_SEQ
C506
0.1uF
GND
NVVDD ENABLE
PS1_NVVDD_EN_PROT
U502
PS_NVVDD_EN_RD
D505
RB521S30T1G
SOD523
R537
0ohm
PS_NVVDD_EN
C511
0.1uF
R531
4.02k
R529
100k
10k
SC70-5
M74VHC1GT08DFT2G
D503
BAS70-06W
delete GPIO4_GC6_1V8_MAIN_EN+
PS_VMON_PGOOD
R502
0ohm
PS_1V8_AON_VMON_PGOOD_RD*
High Priority
Protection Event
C502
0.1uF
U503
PS_NVVDD_PGOOD
PEX ENABLE
delete OR gate+
PS_PEXVDD_EN
delete Offpage:PS_SII_F GC6_OR
FBVDD ENABLE
delete OR gate+
R399
25.5k
PS_FBVDDQ_EN
R402
4.99k
C463
10nF
OUT
IN

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Custom	SEQ:NV,PEX,FB ENABLE	4.0

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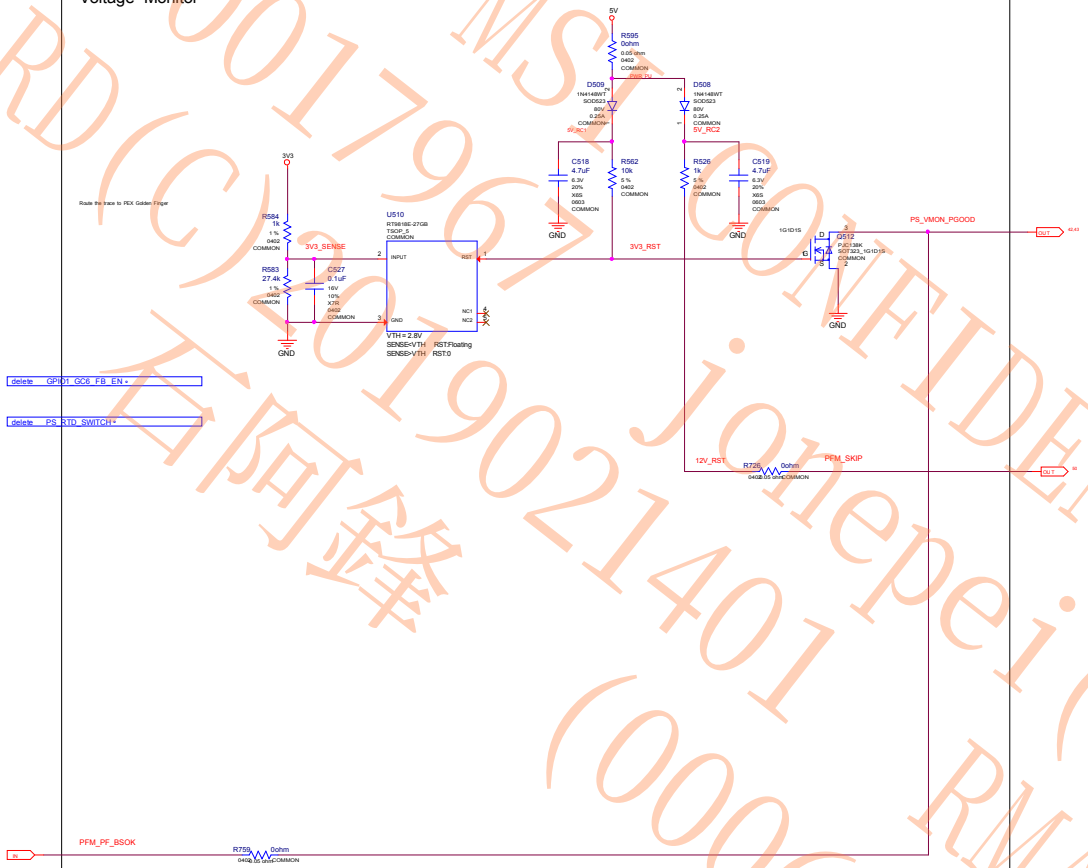
Page44: SEQUENCE:Voltage Monitor

delete unused parts。

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)

BOM Configuration

OPTIONS	PEX3V3_SENSE	PEX12V_SENSE	OTHER_12V_SENSE
Use Pre-Filter	Pre-Filter	Pre-Filter	Pre-Filter
Use INA3221	Voltage_Monitor	INA3221	INA3221
NO INA3221 NO Pre-Filter	Voltage_Monitor	Voltage_Monitor	N/A

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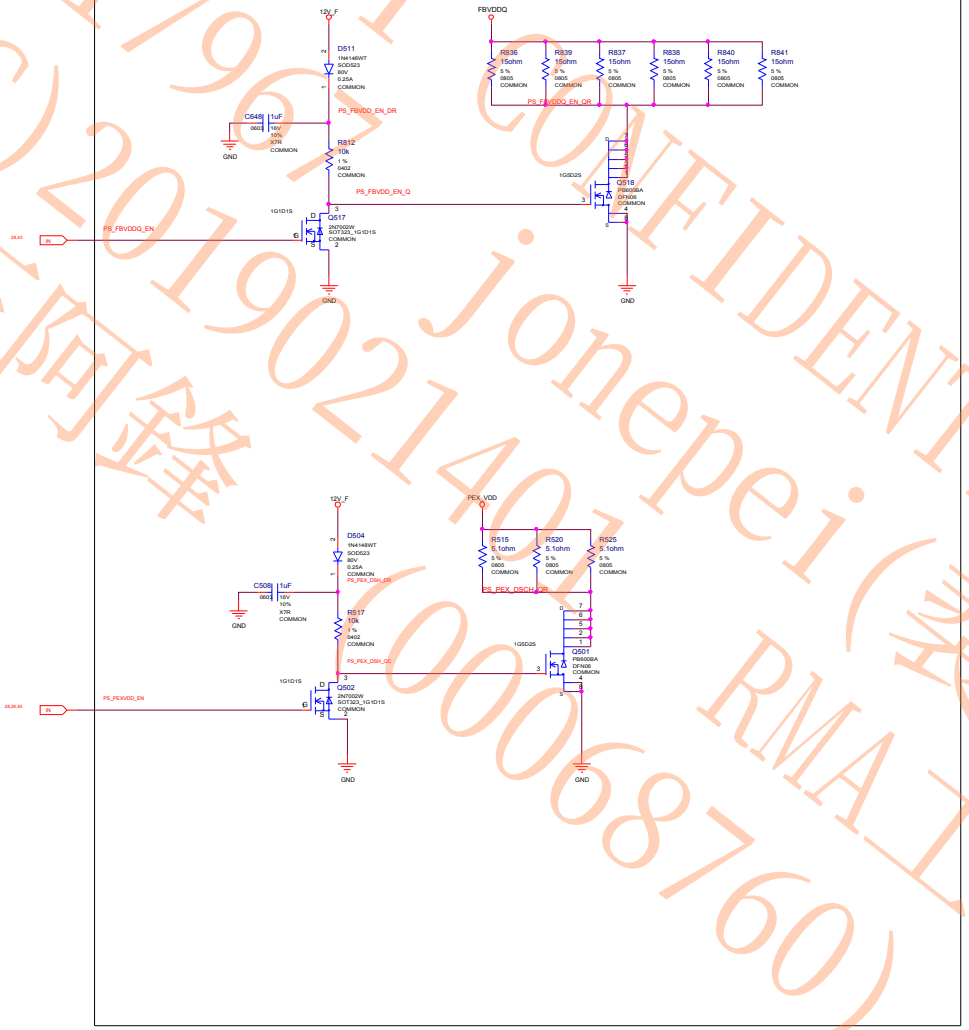
Page45: SEQUENCE:Discharge



MSI	MICRO-STAR INT'L CO.,LTD	
	MS-V375	
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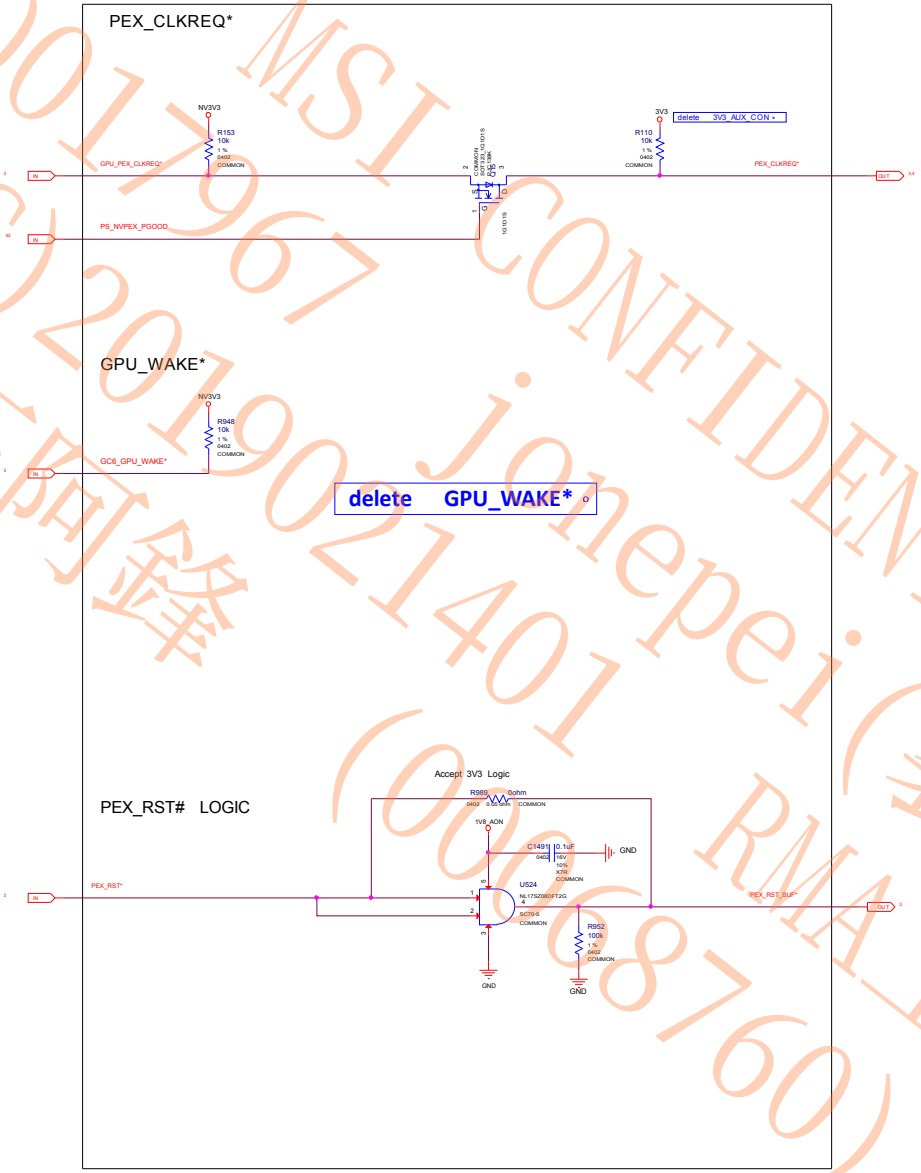
Page46: SEQUENCE:MISC



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MS-V375	
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Page47: LOGO LED

delete all unused

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Custom	LOGO LED	4.0

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Page48: LED DRIVER & Boost

delete all unused

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Size: Custom | Document Description: LED DRIVER & Boost | Rev: 4.0
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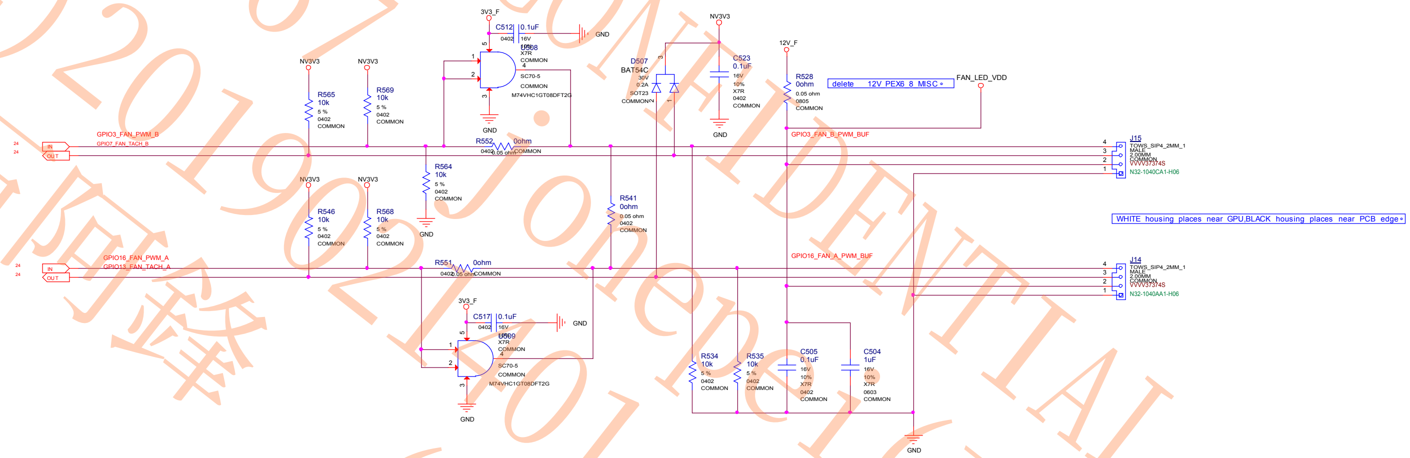
Page49: DUAL FAN

copied V373-2.0 housing PN and footprint。



MICRO-STAR INT'L CO.,LTD

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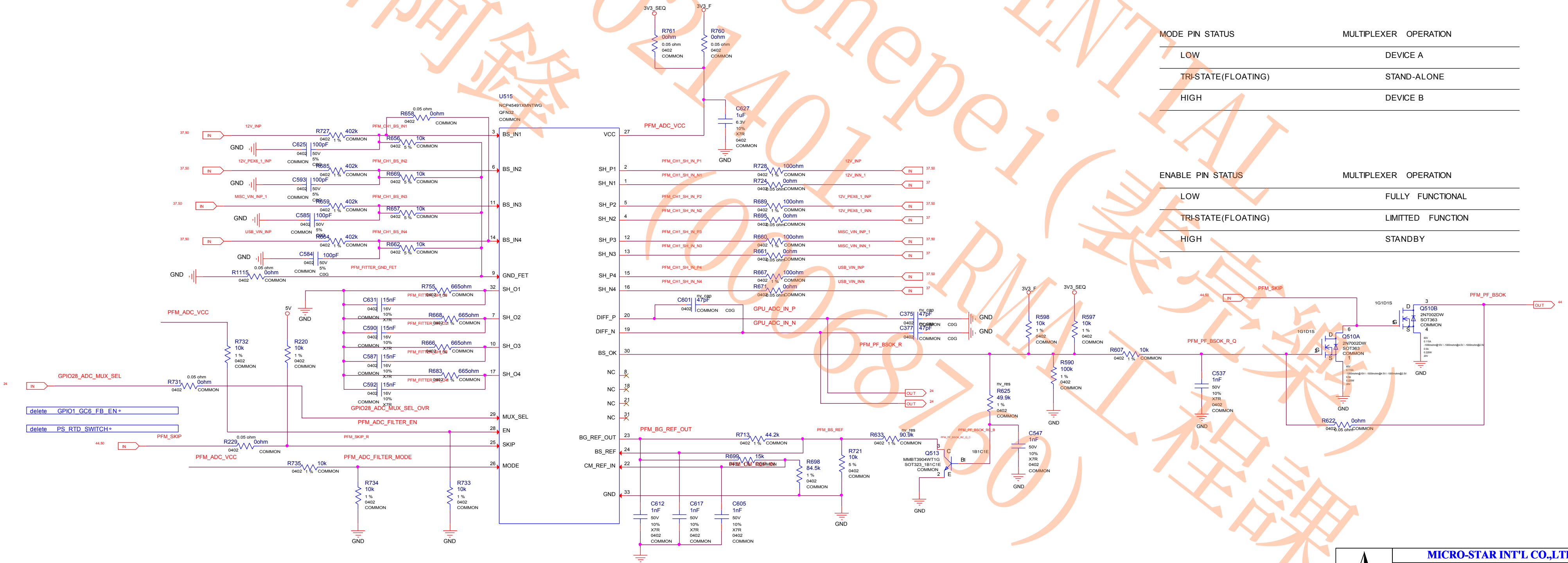
Page50: PWR SENSE


U515
NCP45491XMNTWG
QFN32
COMMON
BS_IN1
BS_IN2
BS_IN3
BS_IN4
GND_FET
SH_O1
SH_O2
SH_O3
SH_O4
MUX_SEL
EN
SKIP
MODE
VCC
SH_P1
SH_N1
SH_P2
SH_N2
SH_P3
SH_N3
SH_P4
SH_N4
DIFF_P
DIFF_N
BS_OK
NC
BG_REF_OUT
BS_REF
CM_REF_IN
GND
3V3_SEQ
3V3_F
5V
PFM_ADC_VCC
GPIO28_ADC_MUX_SEL
GPIO28_ADC_MUX_SEL_OVR
PFM_ADC_FILTER_EN
PFM_ADC_FILTER_MODE
PFM_SKIP
PFM_BG_REF_OUT
PFM_PF_BSOK
PFM_PF_BSOK_R
PFM_PF_BSOK_R_Q
GPU_ADC_IN_P
GPU_ADC_IN_N
12V_INP
12V_PEX8_1_INP
MISC_VIN_INP_1
USB_VIN_INP
delete GPIO1_GC6_FB_EN+
delete PS_RTD_SWITCH+
Q510A
2N7002DW
SOT363
Q510B
Q513
MMBT3904WT1G
SOT323_1B1C1E

MODE PIN STATUS	MULTIPLEXER OPERATION
LOW	DEVICE A
TRI-STATE(FLOATING)	STAND-ALONE
HIGH	DEVICE B

ENABLE PIN STATUS	MULTIPLEXER OPERATION
LOW	FULLY FUNCTIONAL
TRI-STATE(FLOATING)	LIMITED FUNCTION
HIGH	STANDBY

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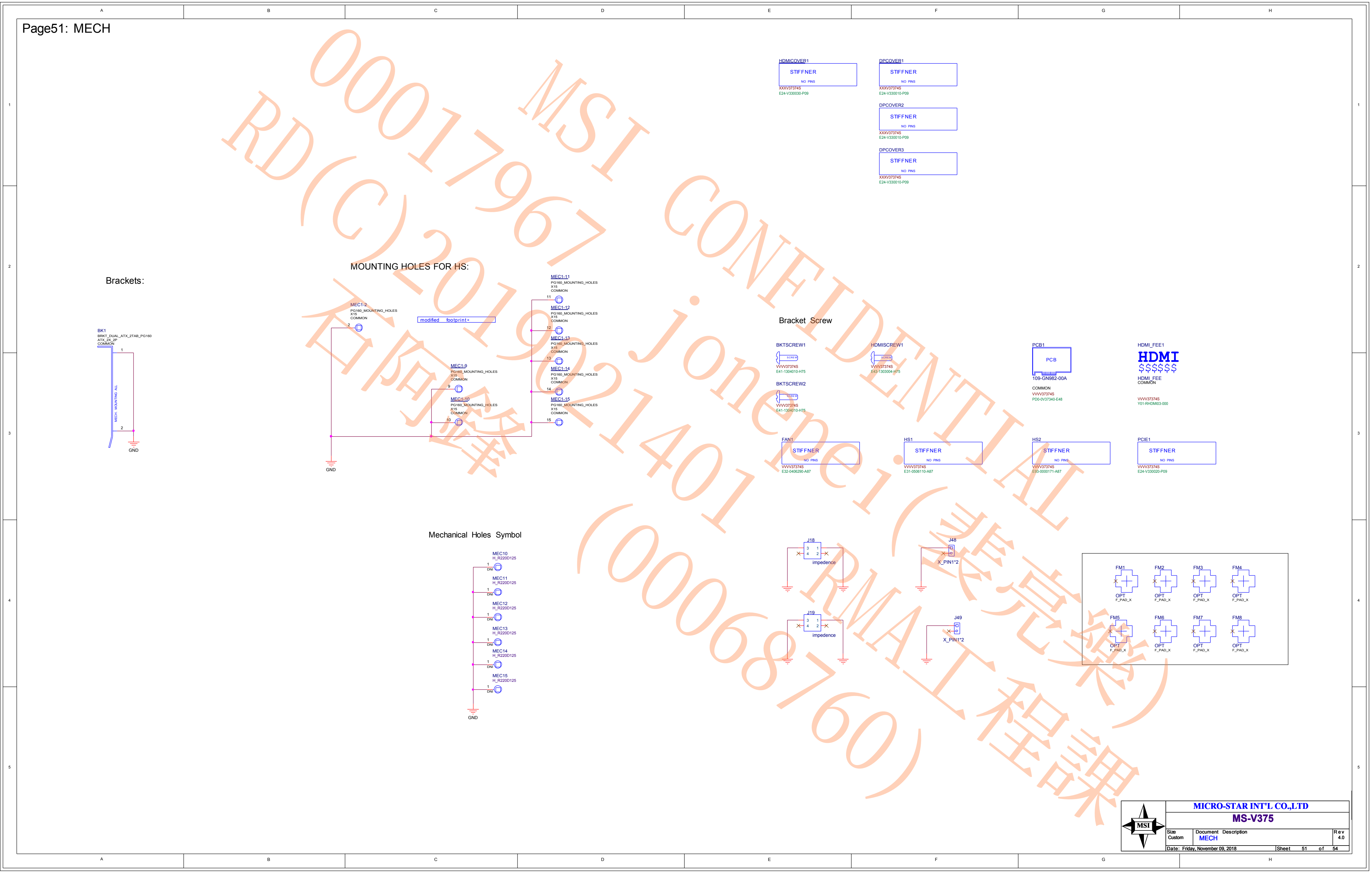

Page51: MECH
Brackets:
BK1
BRKT_DUAL_ATX_2TAB_PG160
ATX_2X_2P
COMMON
GND
MOUNTING HOLES FOR HS:
MEC1-2
PG160_MOUNTING_HOLES
X15
COMMON
modified footprint+
MEC1-9
MEC1-10
MEC1-11
MEC1-12
MEC1-13
MEC1-14
MEC1-15
GND
Mechanical Holes Symbol
MEC10
H_R220D125
MEC11
MEC12
MEC13
MEC14
MEC15
GND
HDMICOVER1
STIFFNER
NO PINS
E24-V330030-P09
DPCOVER1
STIFFNER
E24-V330010-P09
DPCOVER2
STIFFNER
DPCOVER3
STIFFNER
Bracket Screw
BKTSCREW1
E41-1304010-H75
HDMISCREW1
E43-1303004-H75
BKTSCREW2
E41-1304010-H75
PCB1
PCB
109-GN982-00A
COMMON
PD0-0V37340-E48
HDMI_FEE1
HDMI
$$$$$$
HDMI_FEE
COMMON
Y01-RHDMI03-000
FAN1
STIFFNER
E32-0406290-A87
HS1
STIFFNER
E31-0506110-A87
HS2
STIFFNER
E93-0000171-A87
PCIE1
STIFFNER
E24-V330020-P09
J18
impedence
J19
impedence
J48
X_PIN1*2
J49
X_PIN1*2
FM1
FM2
FM3
FM4
FM5
FM6
FM7
FM8
OPT
F_PAD_X
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MECH
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Page52: PTC

improved FBVDDQ PSU parts don't require a PTC

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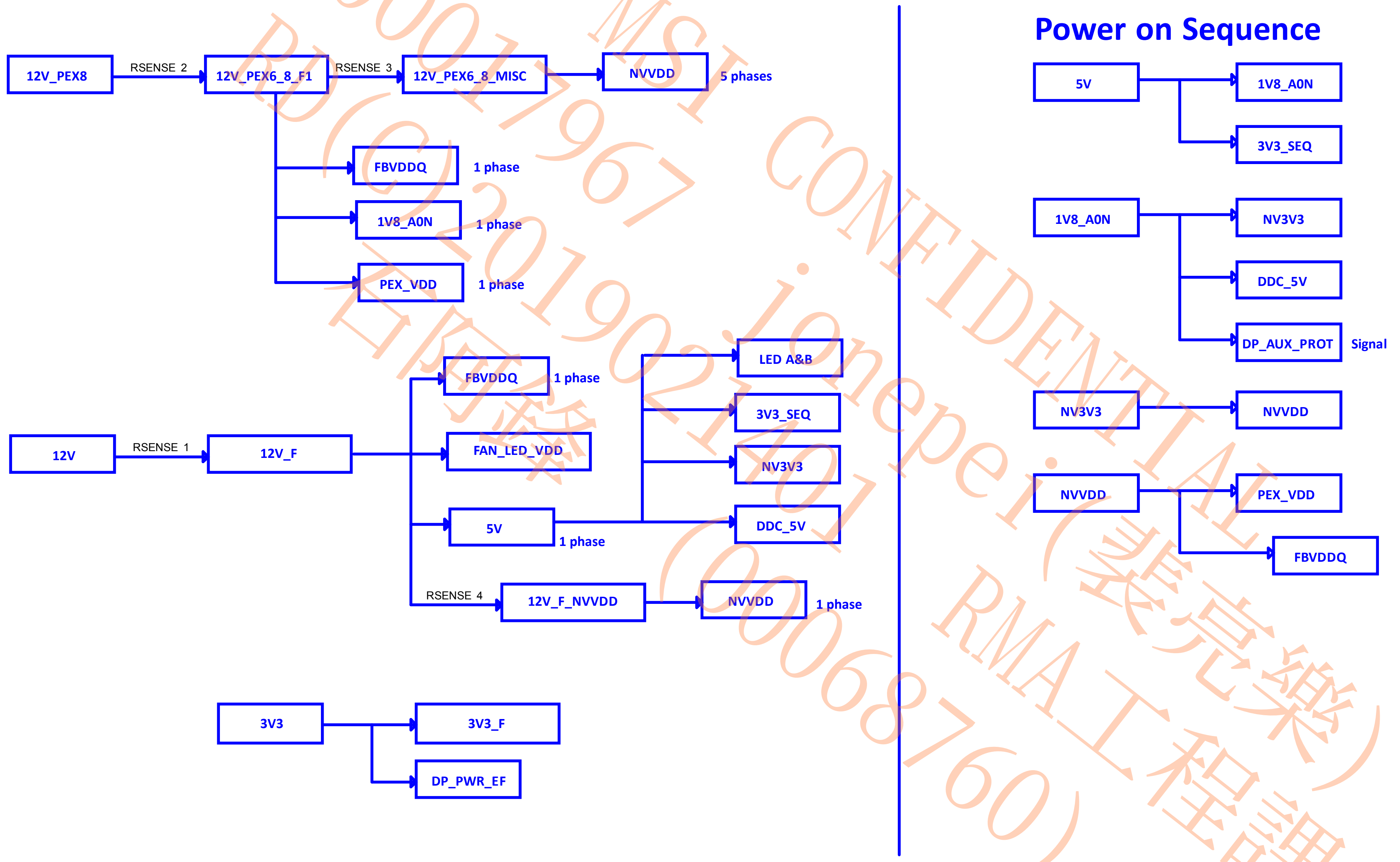
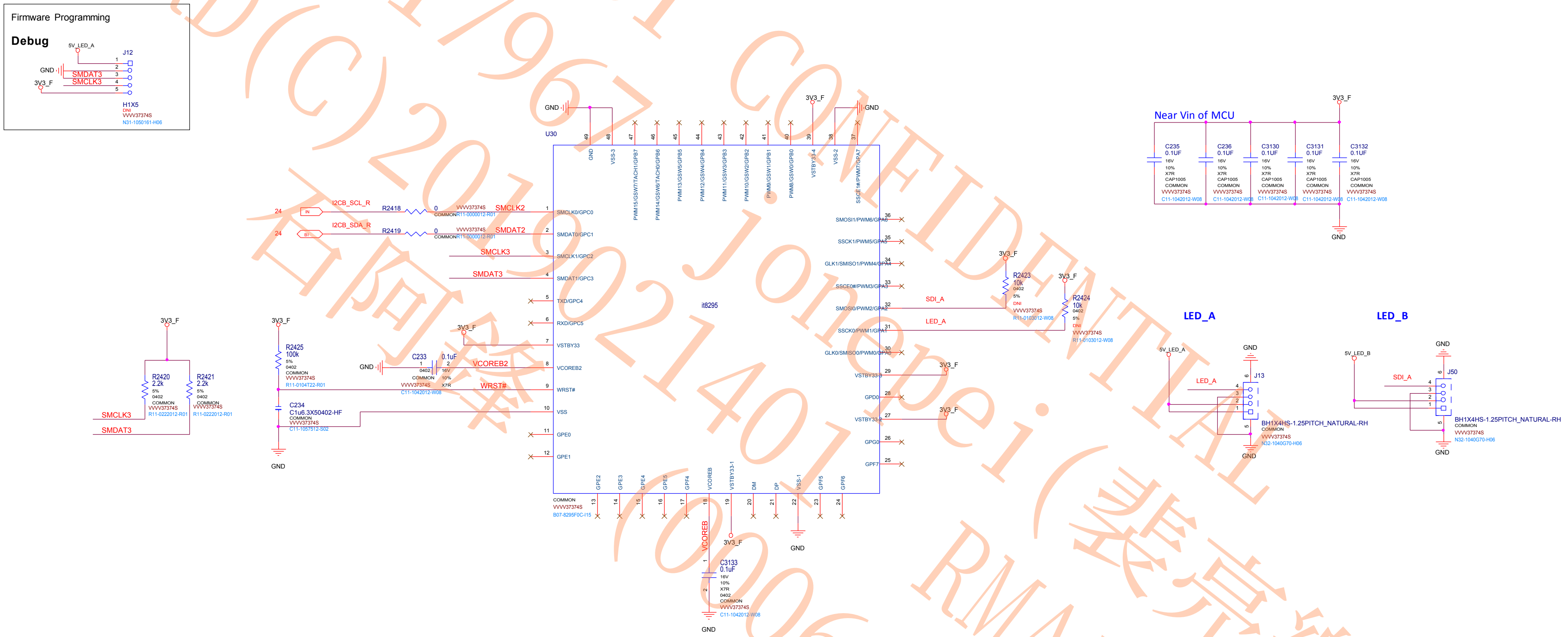


Page54: LED_CONTROLLER_IT8295



Firmware Programming
Debug
J12
H1X5
5V_LED_A
GND
SMDAT3
SMCLK3
3V3_F
U30
it8295
SMCLK0/GPC0
SMDAT0/GPC1
SMCLK1/GPC2
SMDAT1/GPC3
TXD/GPC4
RXD/GPC5
VSTBY33
VCOREB2
WRST#
VSS
GPE0
GPE1
I2CB_SCL_R
I2CB_SDA_R
R2418
R2419
SMCLK2
SMDAT2
SMCLK3
SMDAT3
VCOREB2
WRST#
R2425
100k
C233
0.1uF
C234
C1u6.3X50402-HF
R2420
2.2k
R2421
2.2k
SMOSI1/PWM6/GPA6
SSCK1/PWM5/GPA5
GLK1/SMISO1/PWM4/GPA4
SSCE0#/PWM3/GPA3
SMOSI0/PWM2/GPA2
SSCK0/PWM1/GPA1
GLK0/SMISO0/PWM0/GPA0
VSTBY33-3
GPD0
VSTBY33-2
GPG0
GPF7
R2423
10k
R2424
10k
SDI_A
LED_A
VCOREB
C3133
0.1uF
Near Vin of MCU
C235
C236
C3130
C3131
C3132
0.1UF
LED_A
LED_B
J13
J50
5V_LED_A
5V_LED_B
BH1X4HS-1.25PITCH_NATURAL-RH

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