
Change Net from +MVDD_PWRGD to INPUT_RAILS_UP
+12V_BUS
+3.3V_BUS
+3.3V_AUX
PCIE1
U1A
SYMBOL 2
U1B
JTAG
HAWAII - REV 0.50
B03-0852005-A08
x16 PCIe
Mechanical Key
PERST#
CLKREQB
WAKE_
VDDC_I_EN
JTAG_LOOP
PRESENCE
APPLY
WAKEB
TESTEN
JTAG_TRSTB
OUT
15,17
17,20
10
MICRO-STAR INT'L CO.,LTD
MS-V308
Size
Custom
Document Description
01_Hawaii PCIE
Rev
2.2
Date: Monday, December 23, 2013
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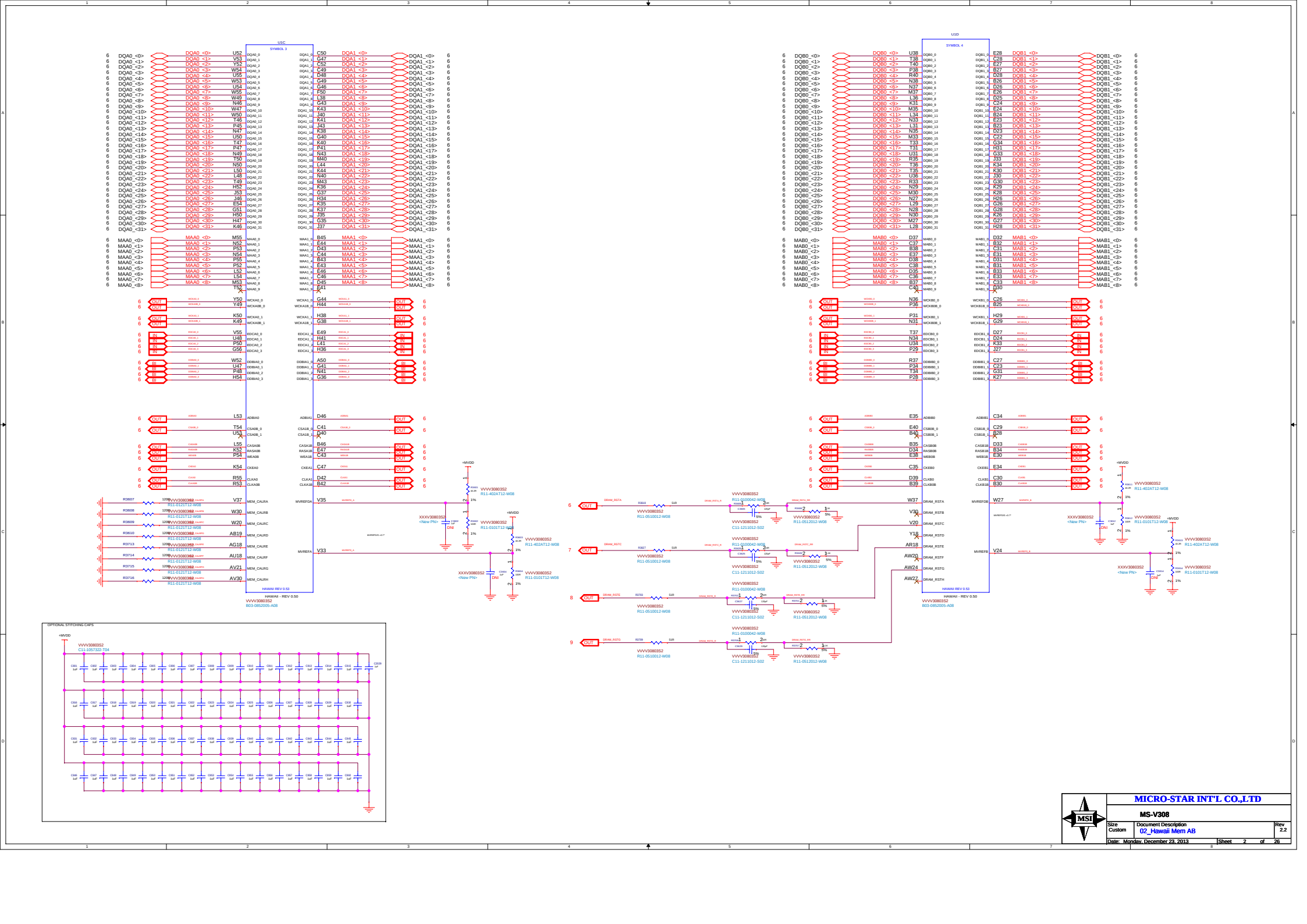
U2C
SYMBOL 3
U1D
SYMBOL 4
OPTIONAL STITCHING CAPS
+MVDD
MICRO-STAR INT'L CO.,LTD
MS-V308
Size
Custom
Document Description
02_Hawaii Mem AB
Rev
2.2
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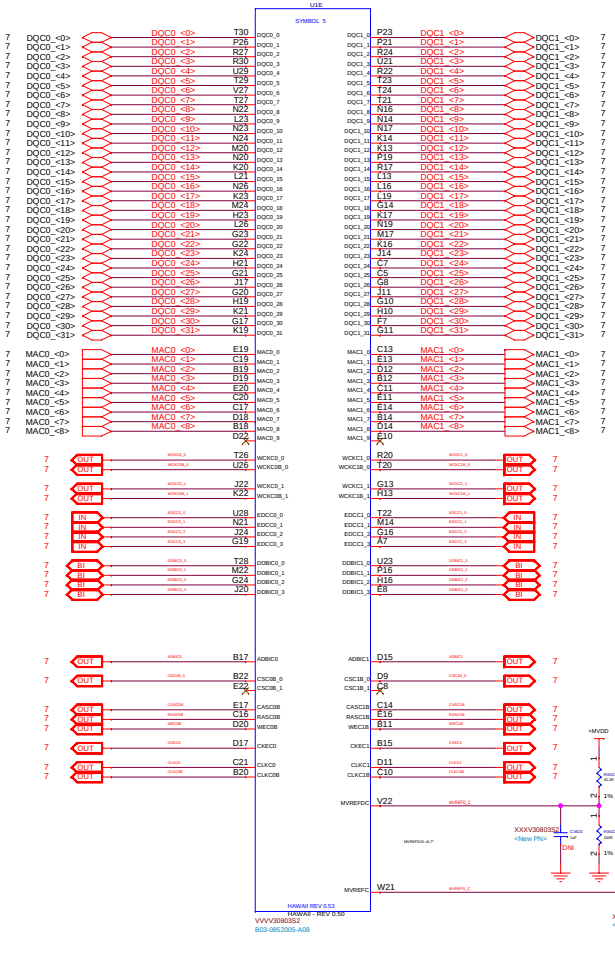
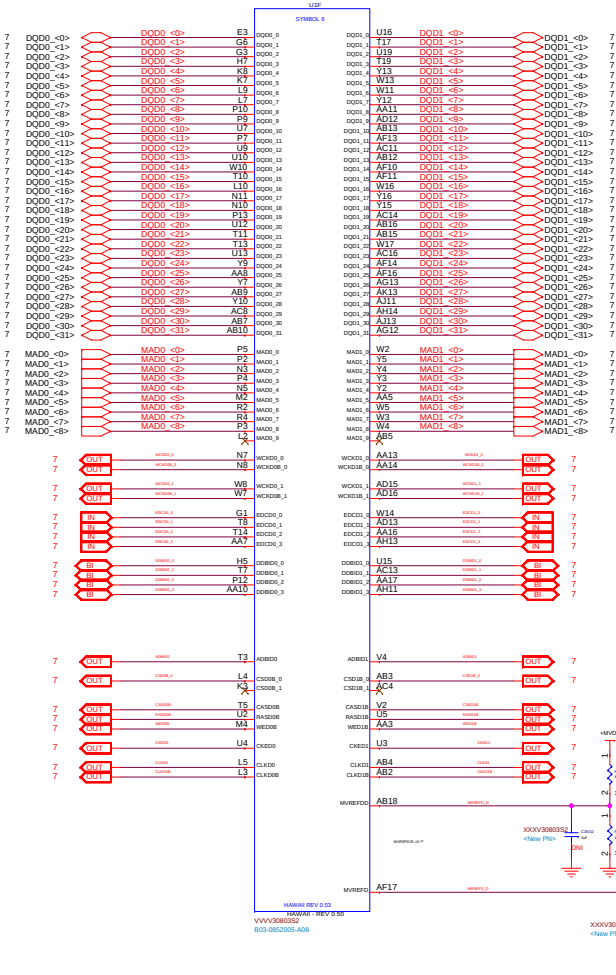
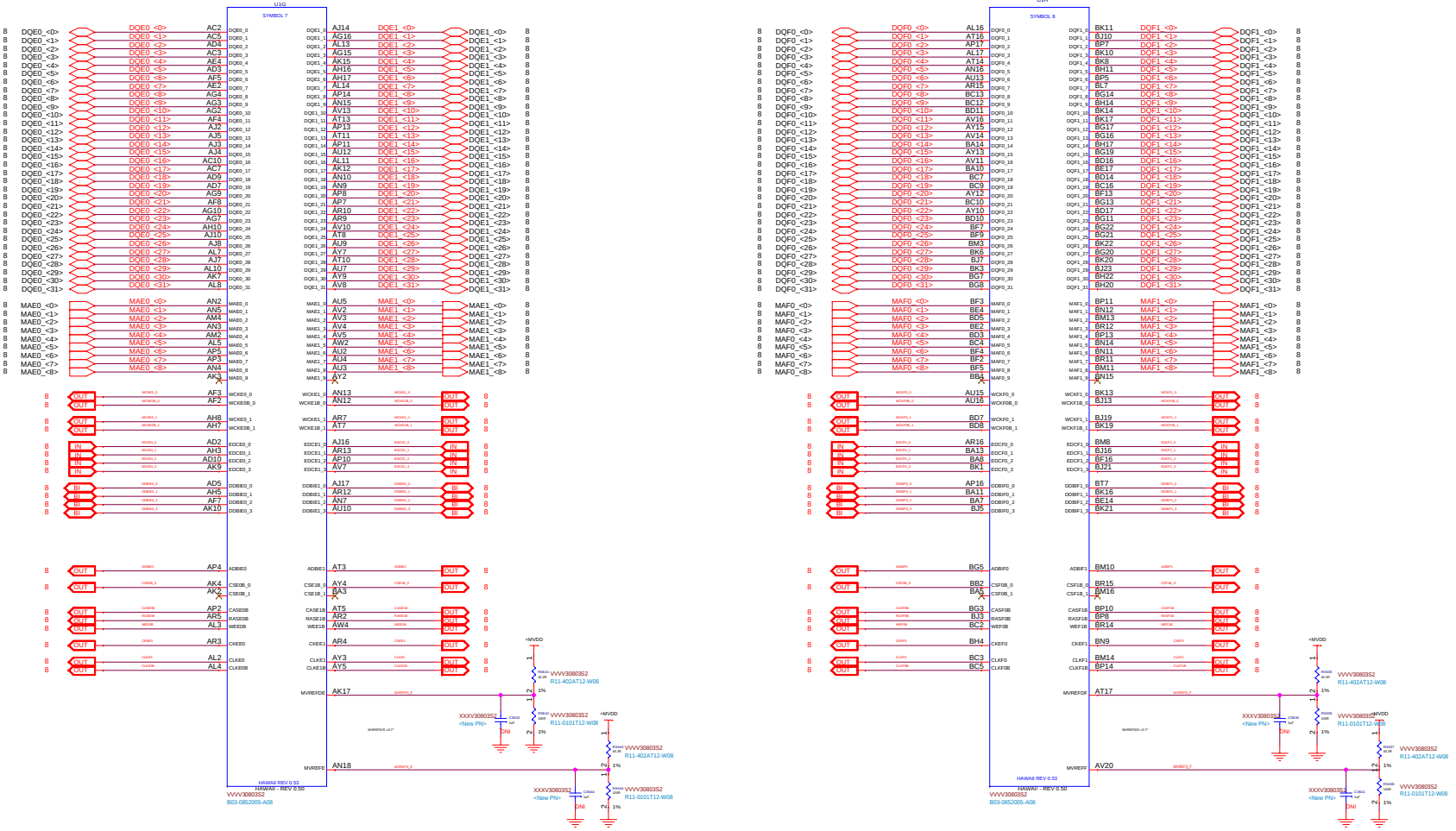




MICRO-STAR INT'L CO.,LTD		
MS-V308		
Size: Custom	Document Description: 03_Hawaii Mem CD	Rev: 2.2
Date: Monday, December 23, 2013	Sheet 3 of 26	



MICRO-STAR INT'L CO.,LTD	
MS-V308	
Size: Custom	Document Description: 04_Hawaii Mem EF
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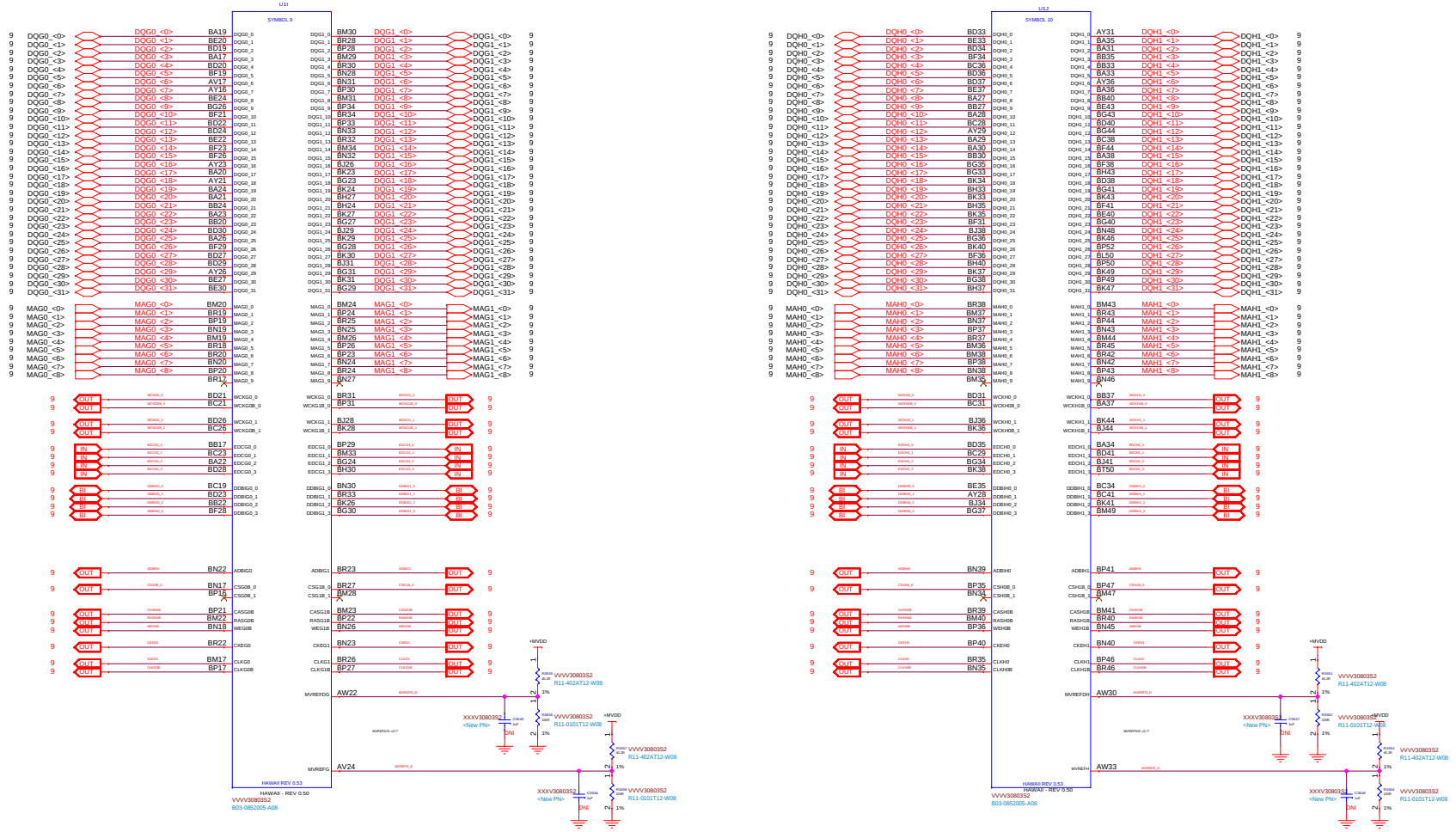
Date: Monday, December 23, 2013	Sheet 4 of 26



MICRO-STAR INT'L CO.,LTD

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Custom	05_Hawaii Mem GH	2.2

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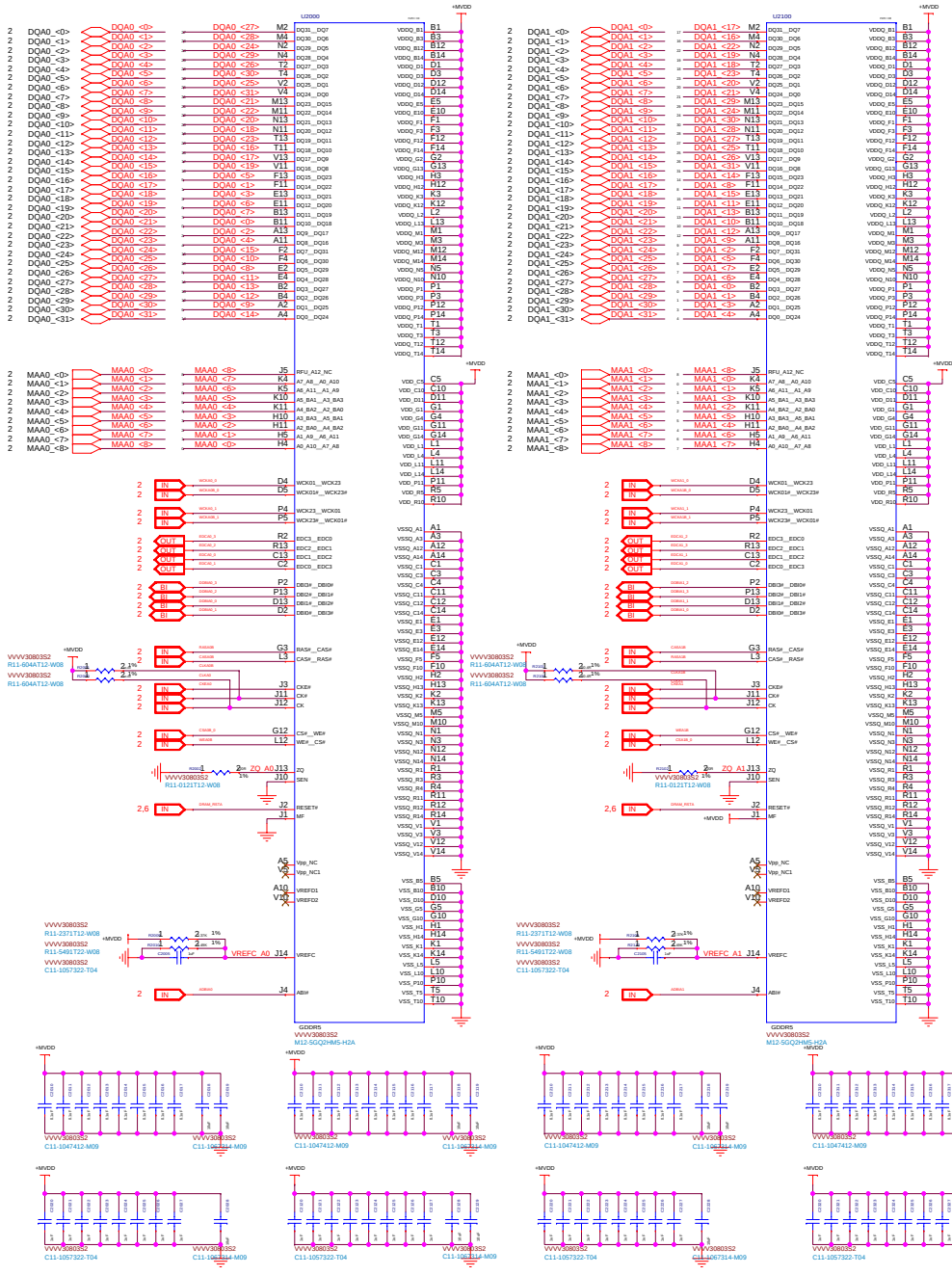

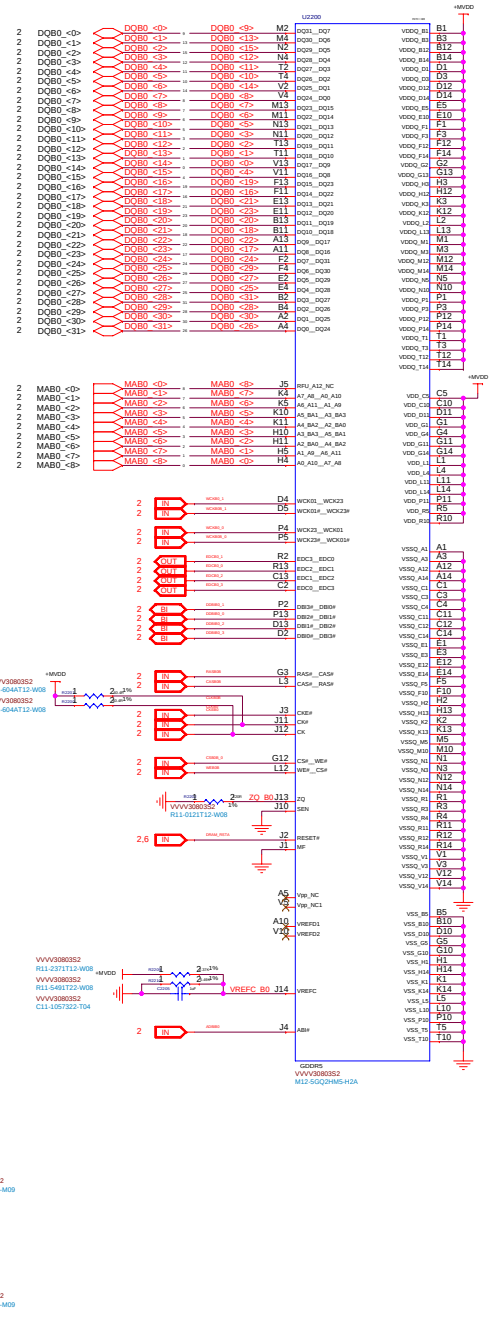

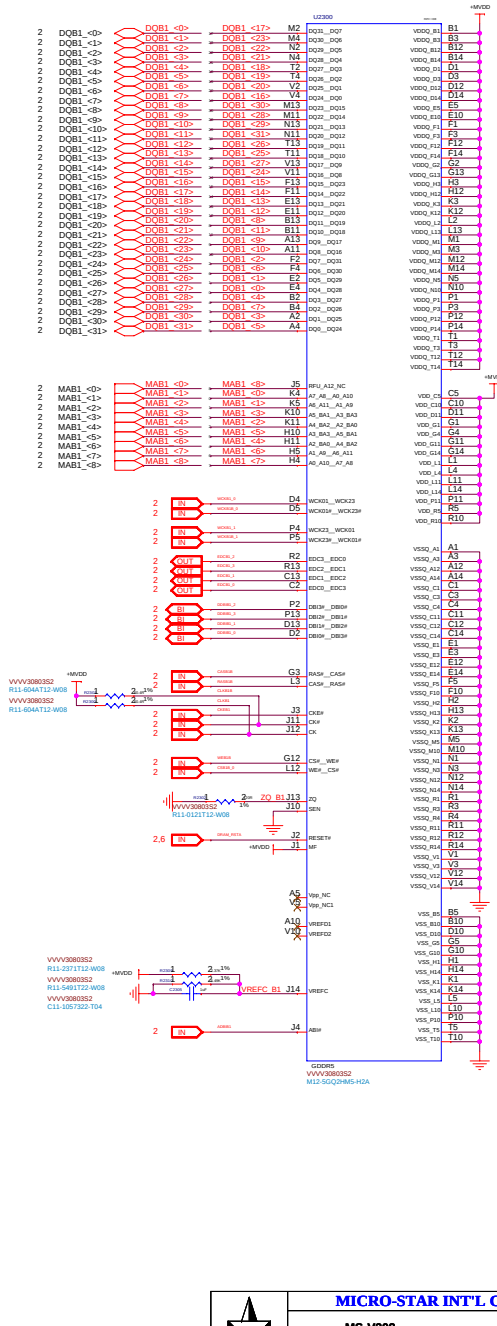

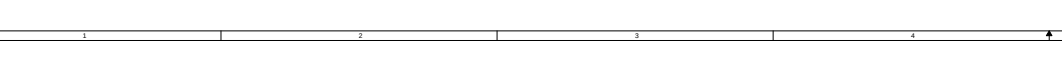

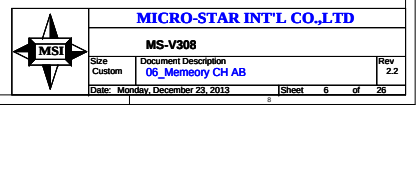
MICRO-STAR INT'L CO.,LTD
MS-V308
Size
Custom
Document Description
06_Memeory CH AB
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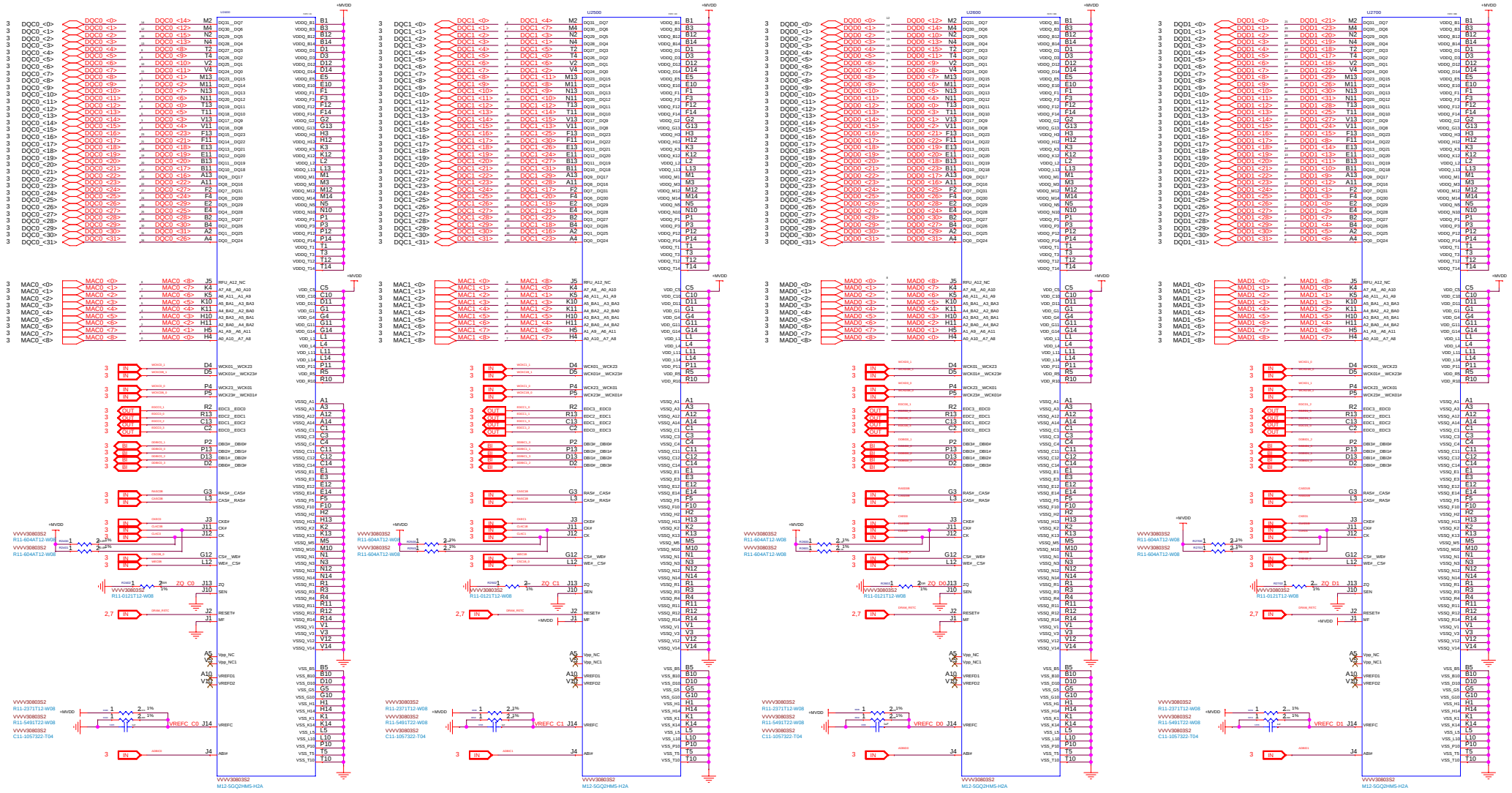

MSI	MICRO-STAR INT'L CO.,LTD		
	MS-V308		
Size: Custom	Document Description: 07_Memory CH CD		Rev: 2.2
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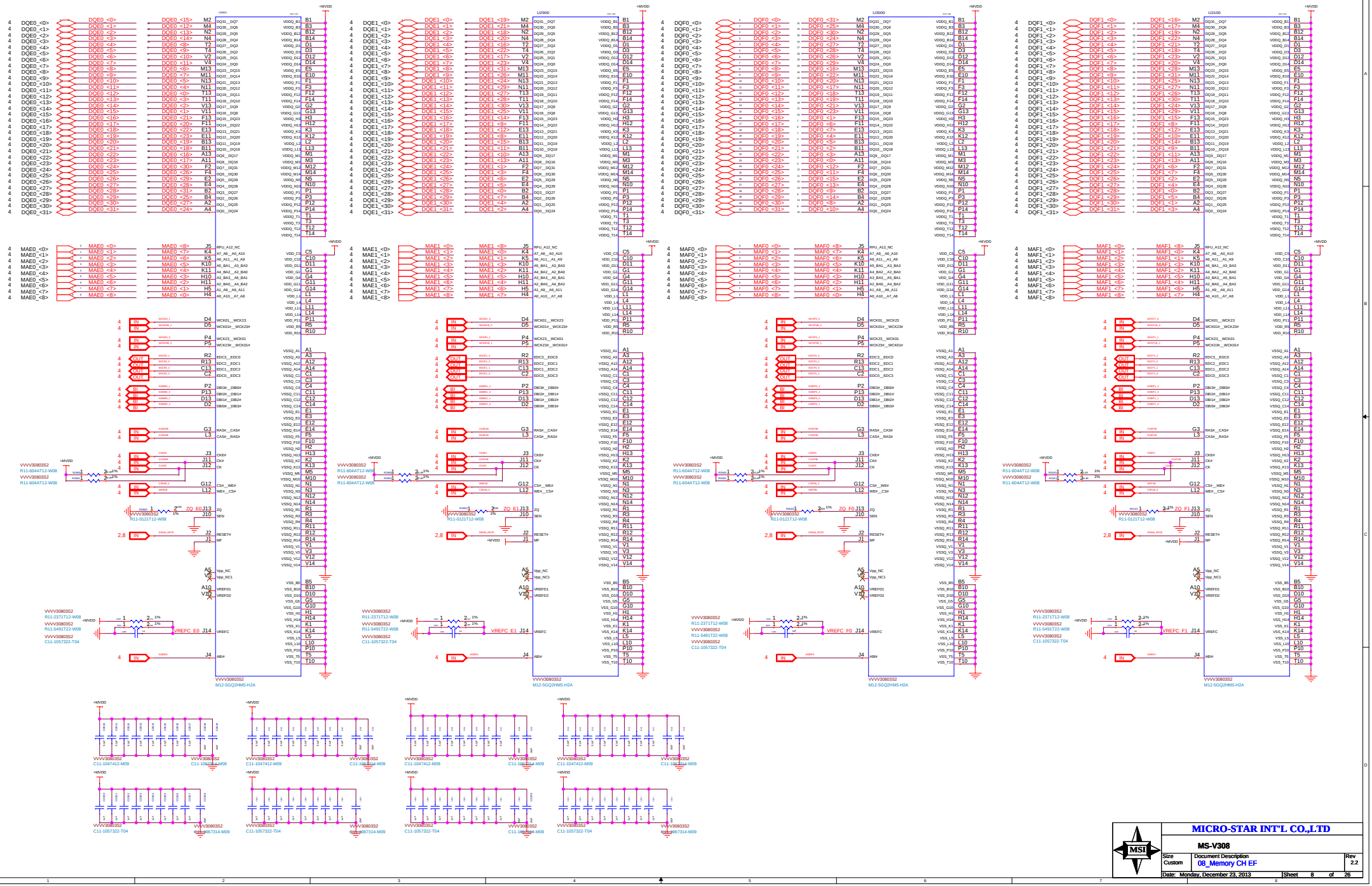

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MS-V308	
Size: Custom	Document Description: 08_Memory CH EF
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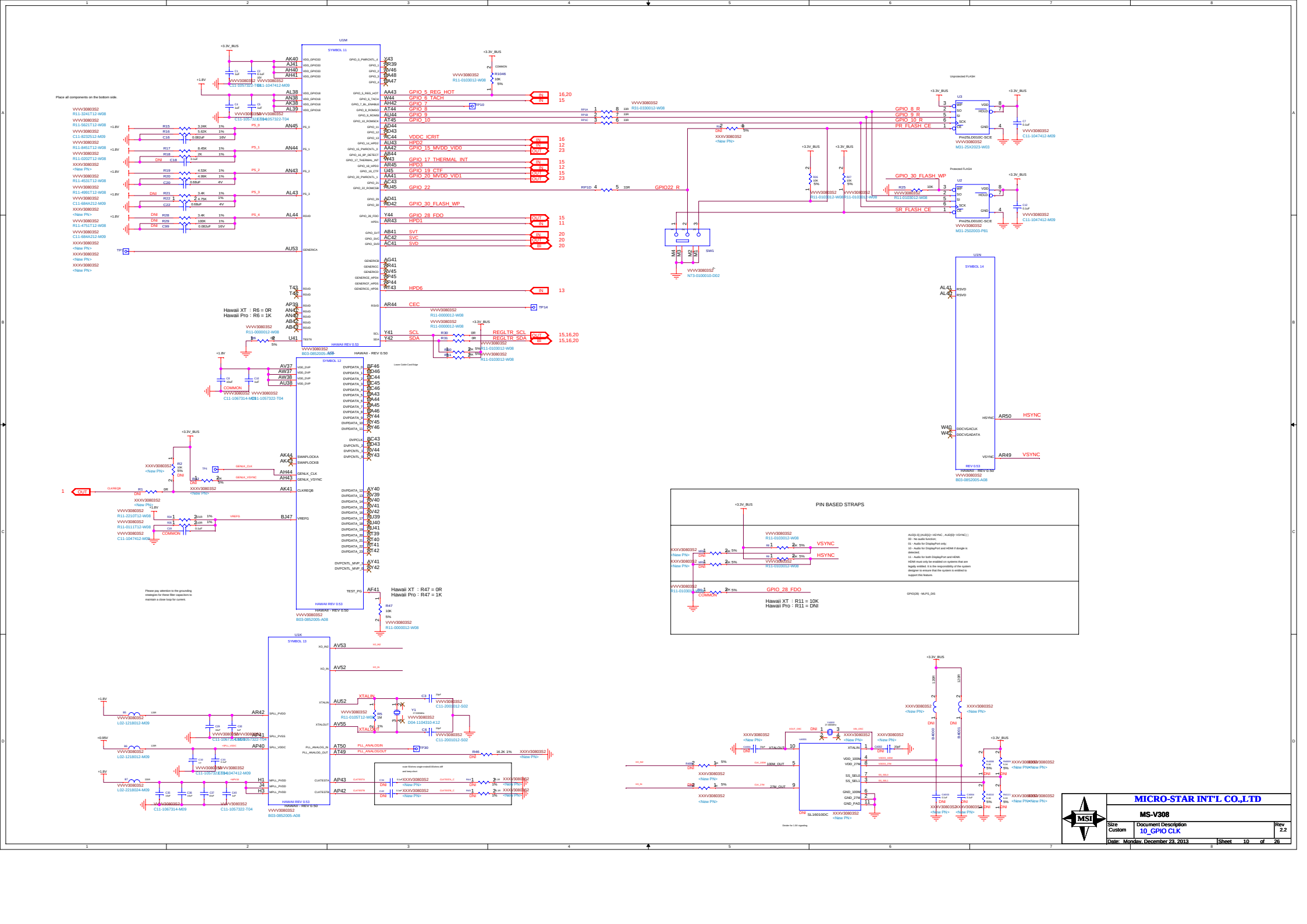
Place all components on the bottom side.
Hawaii XT : R6 = 0R
Hawaii Pro : R6 = 1K
Please pay attention to the grounding strategies for these filter capacitors to maintain a close loop for current.
PIN BASED STRAPS
Hawaii XT : R11 = 10K
Hawaii Pro : R11 = DNI
Hawaii XT : R47 = 0R
Hawaii Pro : R47 = 1K
MICRO-STAR INT'L CO.,LTD
MS-V308
Size Custom
Document Description 10_GPIO CLK
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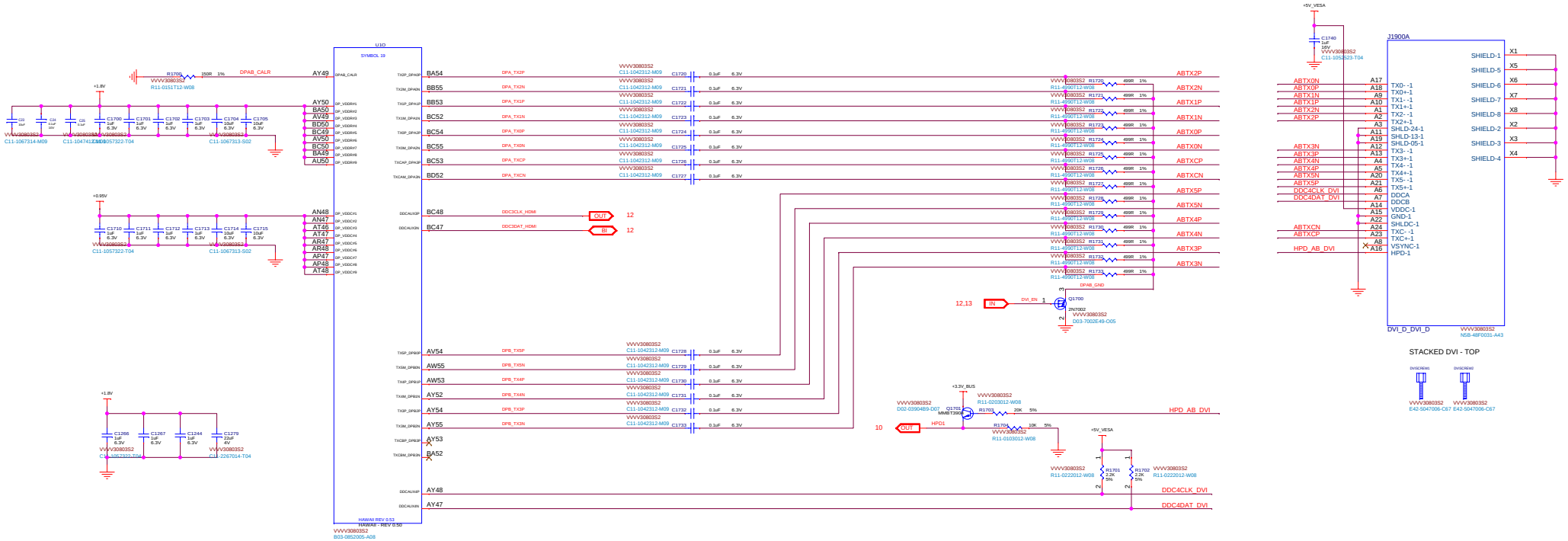
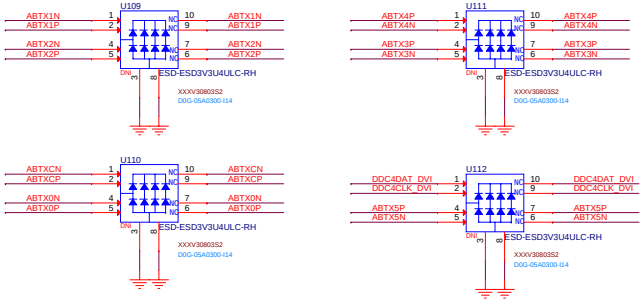


OPTIONAL ESD PROTECTION DIODES



MICRO-STAR INT'L CO.,LTD			
MS-V308			
Size: Custom	Document Description: 11_VPAB dDVI Top		Rev: 2.2
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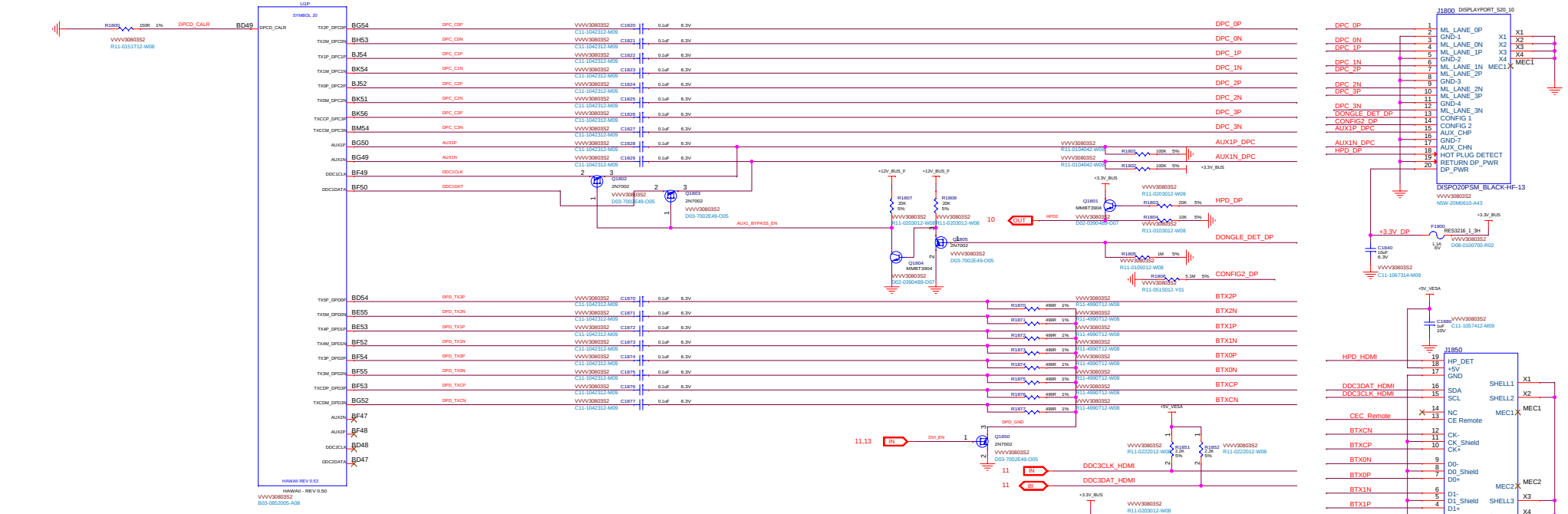
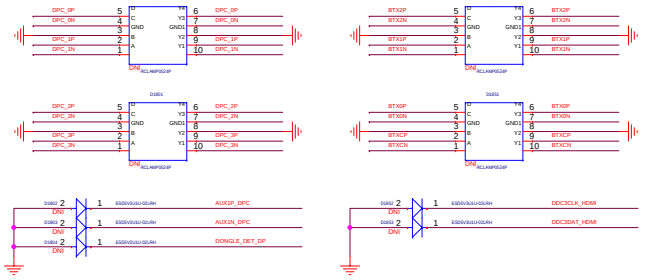


OPTIONAL ESD PROTECTION DIODES



MICRO-STAR INT'L CO.,LTD		
MS-V308		
Size: Custom	Document Description: 12_VPCD DP HDMI	Rev: 2.2
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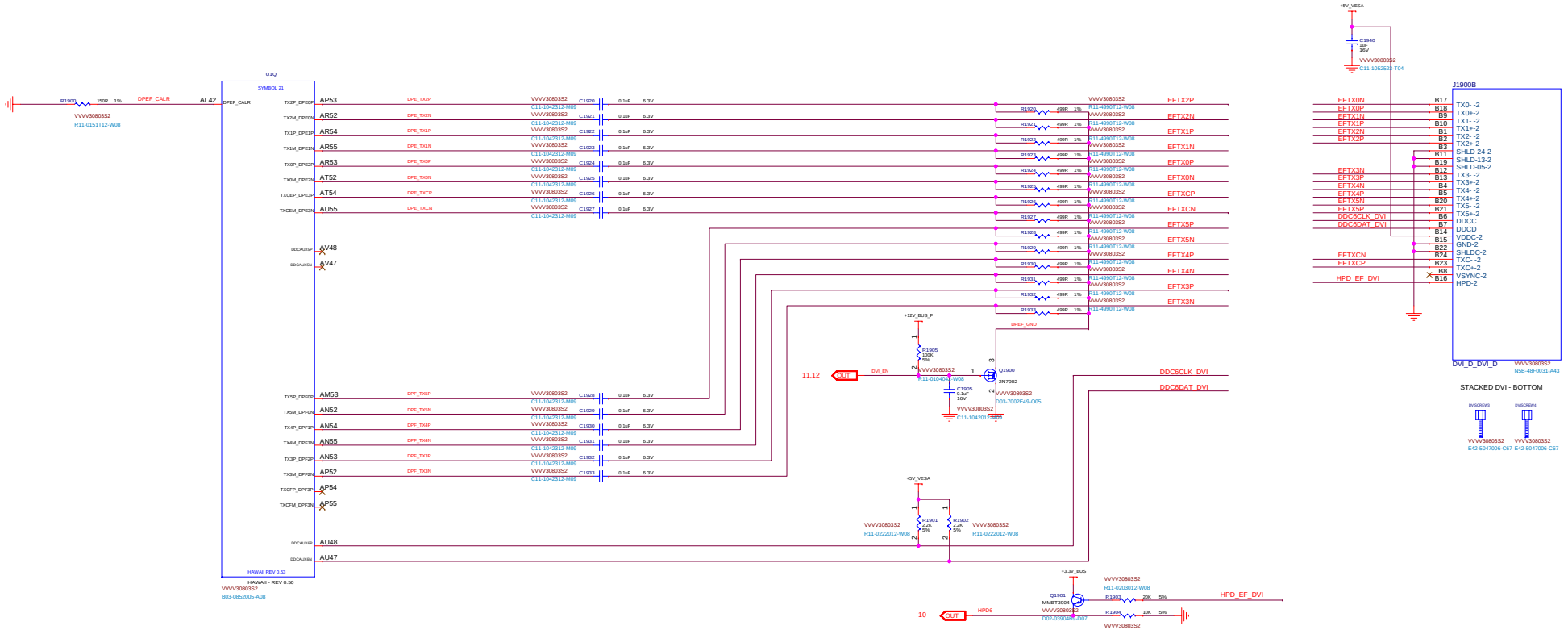
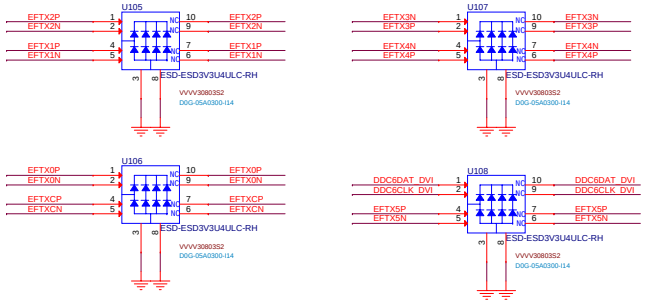


OPTIONAL ESD PROTECTION DIODES



MICRO-STAR INT'L CO.,LTD			
MS-V308			
Size: Custom	Document Description: 13_VPEF dDVI Bottom		Rev: 2.2
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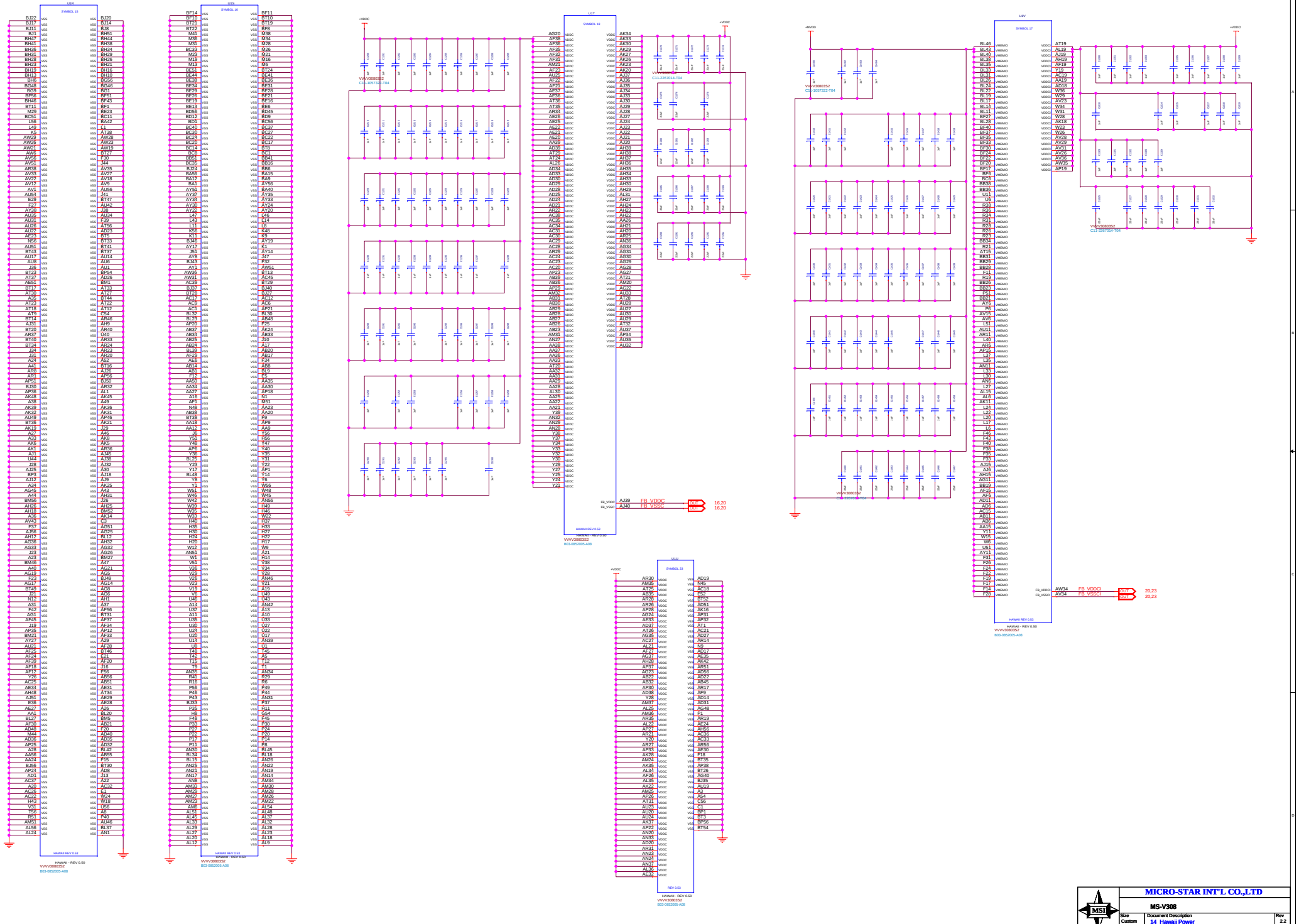
U1R
U1S
U1T
U1U
U1V
+VDDC
+VDDCI
FB_VDDC
FB_VSSC
FB_VDDCI
FB_VSSCI
16,20
20,23
MICRO-STAR INT'L CO.,LTD
MS-V308
Size
Custom
Document Description
14_Hawaii Power
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USE Q203 2020002300G, R200, R249, D1719

AND C3609 FOR CHEAPER FAN CONTROLLER.

REQUIRES BIG CHANGE IN FAN TABLE.

Critial Temperature Fault

CTF By-pass

For user-time CTF use R221-1%

For resistable CTF use R221-1k

To maximize fan output during CTF trigger.

Change net form +0.95_EN to INPUT_RAILS_UP

Impedance check point

optical cross point

Top & bottom each layer set 4 points

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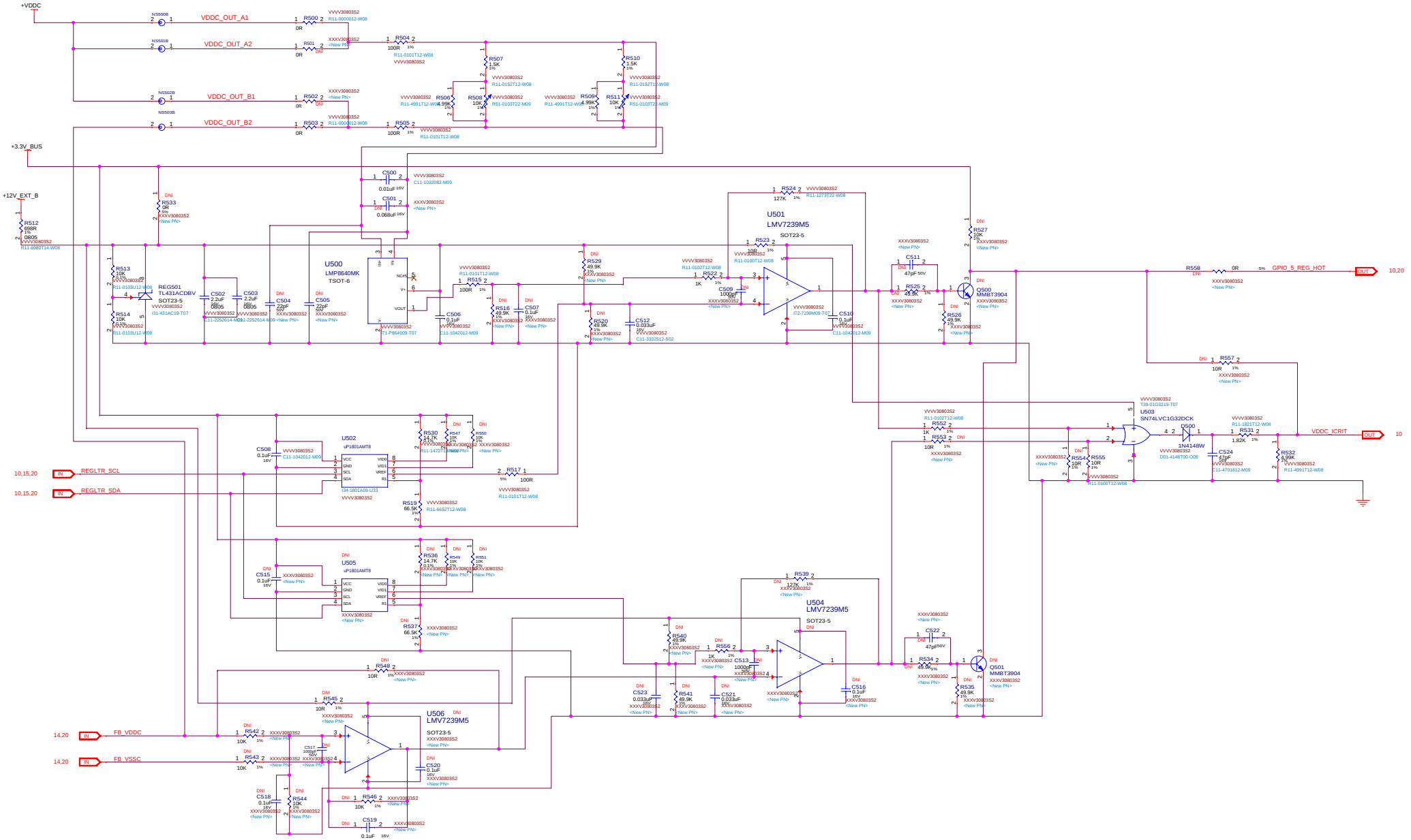
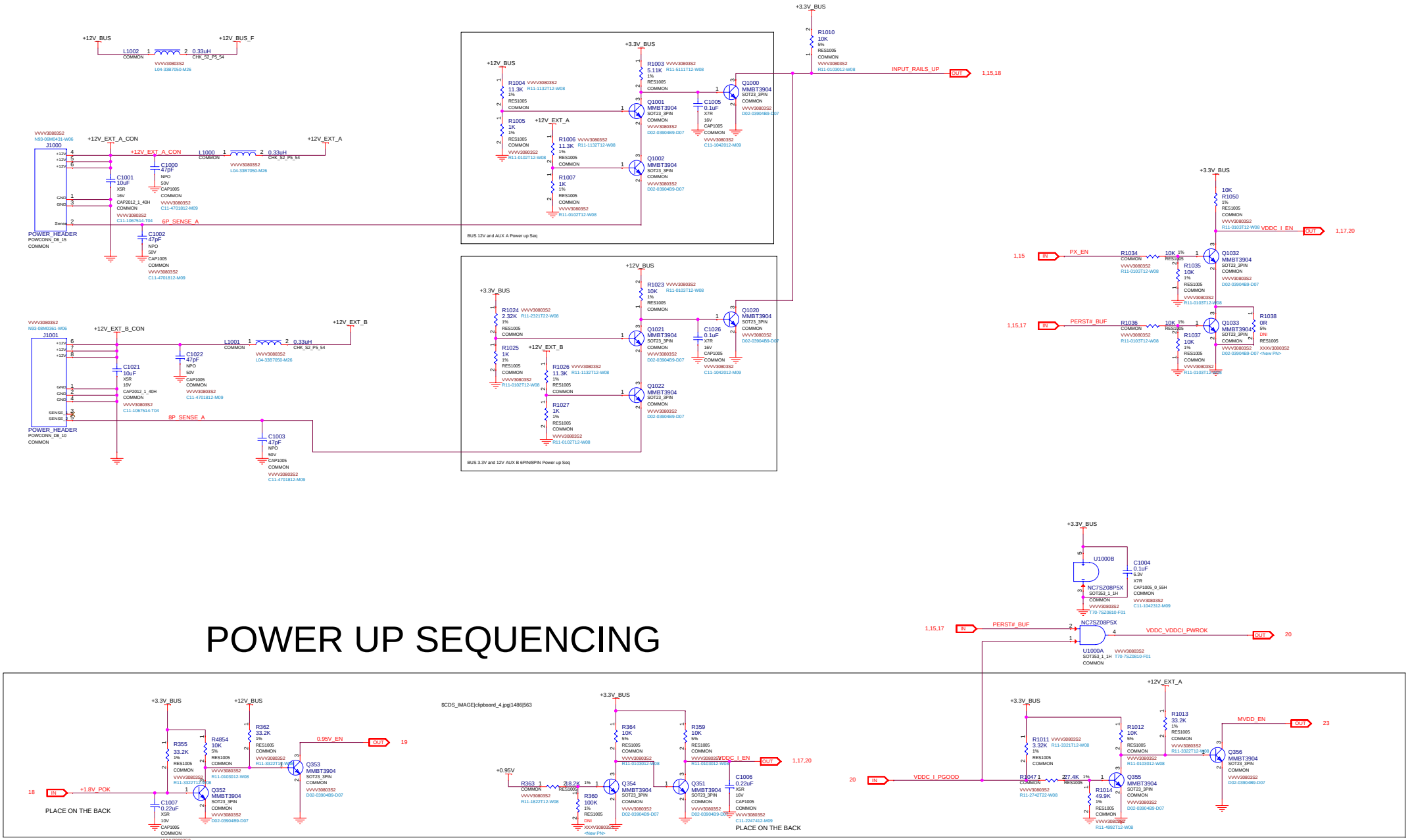

+VDDC
VDDC_OUT_A1
VDDC_OUT_A2
VDDC_OUT_B1
VDDC_OUT_B2
+3.3V_BUS
+12V_EXT_B
U500
LMP8640MK
TSOT-6
U501
LMV7239M5
SOT23-5
U502
uP1801AMT8
U503
SN74LVC1G32DCK
U504
LMV7239M5
U505
uP1801AMT8
U506
LMV7239M5
REG501
TL431ACDBV
SOT23-5
Q500
MMBT3904
Q501
MMBT3904
Q500
1N4148W
GPIO_5_REG_HOT
VDDC_ICRIT
REGLTR_SCL
REGLTR_SDA
FB_VDDC
FB_VSSC
MICRO-STAR INT'L CO.,LTD
MS-V308
16_PCC_VR_HOT
Monday, December 23, 2013

POWER UP SEQUENCING



MICRO-STAR INT'L CO.,LTD

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Custom	17_Power Management	2.2

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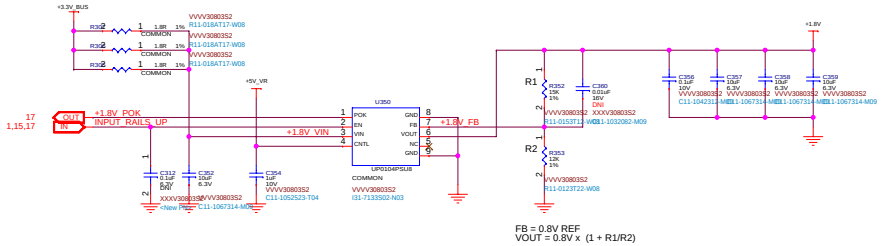
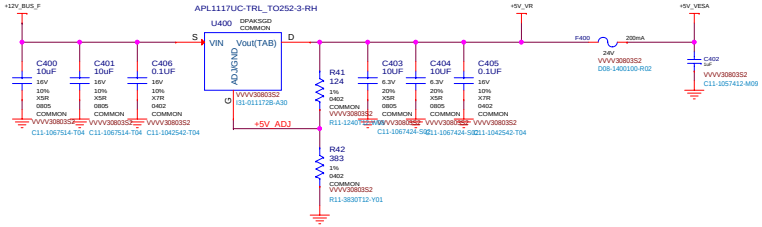
Regulators for +1.8V



Regulators for +5V, and +5V_VESA



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Custom	18_1.8V 5V Regulators	2.2

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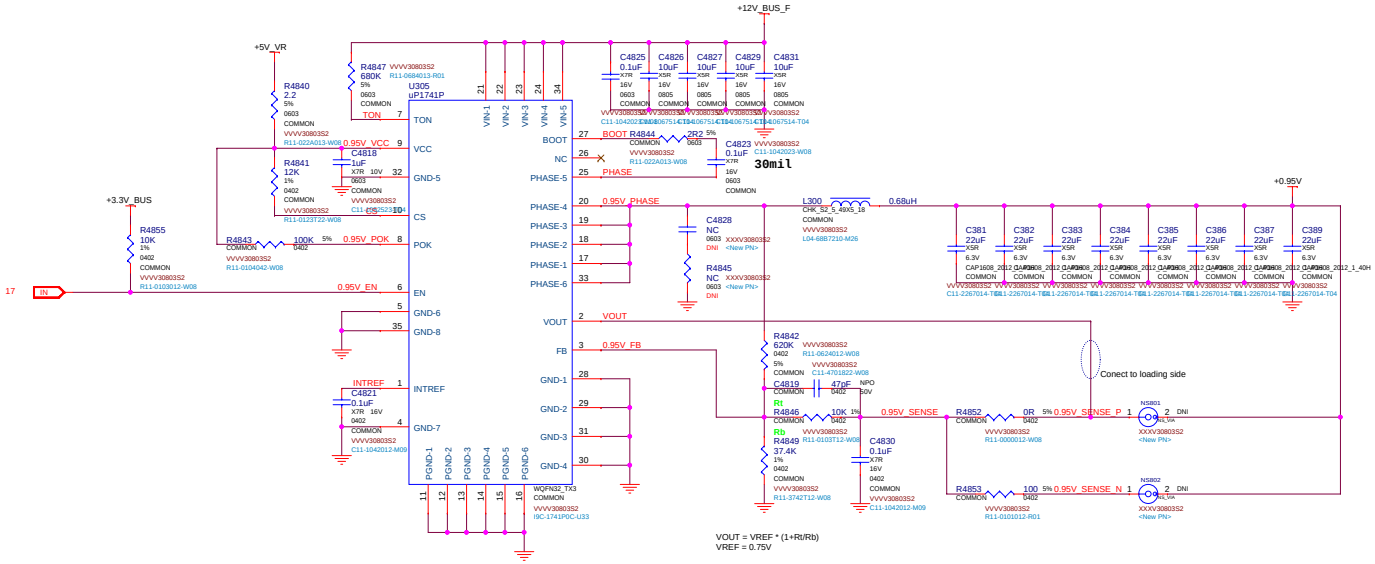

MICRO-STAR INT'L CO.,LTD			
MS-V308			
Size: Custom	Document Description: 19_0.95V Regulator		Rev: 2.2
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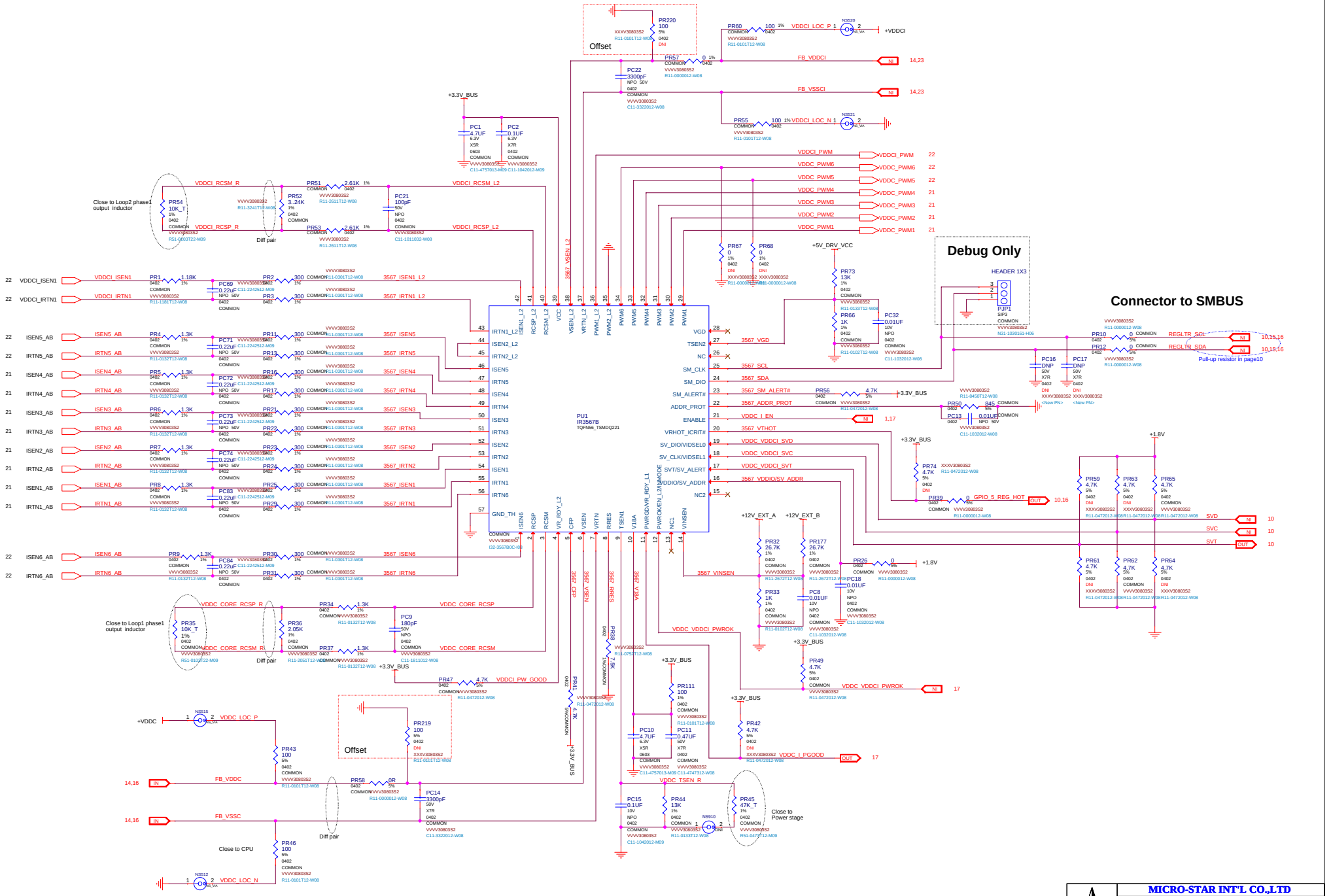
Offset
Debug Only
Connector to SMBUS
Close to Loop2 phase1 output inductor
Close to Loop1 phase1 output inductor
Diff pair
Close to CPU
Close to Power stage
PU1
IR3567B
TQFN56_TSMDQ221
HEADER 1X3
Pull-up resistor in page10
+3.3V_BUS
+5V_DRV_VCC
+12V_EXT_A
+12V_EXT_B
+1.8V
+VDDCI
VDDCI_PWM
VDDCI_ISEN1
VDDCI_IRTN1
ISEN5_AB
IRTN5_AB
ISEN4_AB
IRTN4_AB
ISEN3_AB
IRTN3_AB
ISEN2_AB
IRTN2_AB
ISEN1_AB
IRTN1_AB
ISEN6_AB
IRTN6_AB
VDDC_CORE_RCSP_R
VDDC_CORE_RCSM_R
VDDC_CORE_RCSP
VDDC_CORE_RCSM
VDDCI_RCSM_R
VDDCI_RCSP_R
VDDCI_RCSM_L2
VDDCI_RCSP_L2
FB_VDDCI
FB_VSSCI
FB_VDDC
FB_VSSC
VDDC_VDDCI_PWROK
VDDCI_PW_GOOD
VDDC_I_PGOOD
VDDC_TSEN_R
REGLTR_SCL
REGLTR_SDA
SVD
SVC
SVT
VDDC_LOC_P
VDDC_LOC_N
VDDCI_LOC_P
VDDCI_LOC_N
3567_VSEN_L2
3567_VINSEN
3567_VGD
3567_SCL
3567_SDA
3567_SM_ALERT#
3567_ADDR_PROT
VDDC_I_EN
3567_VTHOT
VDDC_VDDCI_SVD
VDDC_VDDCI_SVC
VDDC_VDDCI_SVT
3567_VDDIO/SV_ADDR
PR220 100 5% 0402 DNI XXXV3080352 R11-0101T12-W08
PR60 100 1% 0402 COMMON VVVV3080352 R11-0101T12-W08
PR57 0 1% 0402 COMMON VVVV3080352 R11-0000012-W08
PC22 3300pF NPO 50V 0402 COMMON VVVV3080352 C11-3322012-W08
PR55 100 1% 0402 COMMON VVVV3080352 R11-0101T12-W08
PC1 4.7UF 6.3V XSR 0603 COMMON VVVV3080352 C11-4757013-M09
PC2 0.1UF 6.3V X7R 0402 COMMON VVVV3080352 C11-1042012-M09
PR54 10K_T 1% 0402 COMMON VVVV3080352 R51-0103T22-M09
PR52 3.24K 1% 0402 COMMON VVVV3080352 R11-3241T13-W08
PR51 2.61K 1% 0402 COMMON VVVV3080352 R11-2611T12-W08
PR53 2.61K 1% 0402 COMMON VVVV3080352 R11-2611T12-W08
PC21 100pF 50V NPO 0402 COMMON VVVV3080352 C11-1011032-W08
PR67 0 1% 0402 DNI XXXV3080352 R11-0000012-W08
PR68 0 1% 0402 DNI XXXV3080352 R11-0000012-W08
PR73 13K 1% 0402 COMMON VVVV3080352 R11-0133T12-W08
PR66 1K 1% 0402 COMMON VVVV3080352 R11-0102T12-W08
PC32 0.01UF 10V NPO 0402 COMMON VVVV3080352 C11-1032012-W08
PR56 4.7K 5% 0402 COMMON VVVV3080352 R11-0472012-W08
PR50 845 1% 0402 COMMON VVVV3080352 R11-8450T12-W08
PC13 0.01UF NPO 50V 0402 COMMON VVVV3080352 C11-1032012-W08
PC16 DNP 50V X7R 0402 DNI XXXV3080352 <New PN>
PC17 DNP 50V X7R 0402 DNI XXXV3080352 <New PN>
PR10 0 5% 0402 COMMON VVVV3080352 R11-0000012-W08
PR12 0 5% 0402 COMMON VVVV3080352 R11-0000012-W08
PJP1 SIP3 COMMON VVVV3080352 N31-1030161-H06
PR74 4.7K 5% 0402 DNI XXXV3080352 R11-0472012-W08
PR39 0 5% 0402 COMMON VVVV3080352 R11-0000012-W08
PR59 4.7K 5% 0402 DNI XXXV3080352 R11-0472012-W08
PR63 4.7K 5% 0402 DNI XXXV3080352 R11-0472012-W08
PR65 4.7K 5% 0402 COMMON VVVV3080352 R11-0472012-W08
PR61 4.7K 5% 0402 DNI XXXV3080352 R11-0472012-W08
PR62 4.7K 5% 0402 COMMON VVVV3080352 R11-0472012-W08
PR64 4.7K 5% 0402 DNI XXXV3080352 R11-0472012-W08
PR26 0 5% 0402 COMMON VVVV3080352 R11-0000012-W08
PR32 26.7K 1% 0402 COMMON VVVV3080352 R11-2672T12-W08
PR177 26.7K 1% 0402 COMMON VVVV3080352 R11-2672T12-W08
PR33 1K 1% 0402 COMMON VVVV3080352 R11-0102T12-W08
PC18 0.01UF 10V NPO 0402 COMMON VVVV3080352 C11-1032012-W08
PC8 0.01UF 10V NPO 0402 COMMON VVVV3080352 C11-1032012-W08
PR49 4.7K 5% 0402 COMMON VVVV3080352 R11-0472012-W08
PR111 100 1% 0402 COMMON VVVV3080352 R11-0101T12-W08
PC10 4.7UF 6.3V XSR 0603 COMMON VVVV3080352 C11-4757013-M09
PC11 0.47UF 50V X7R 0402 COMMON VVVV3080352 C11-4747312-W08
PR42 4.7K 5% 0402 DNI XXXV3080352 R11-0472012-W08
PR15 0R 5% 0402 COMMON VVVV3080352 R11-0000012-W08
PC14 3300pF 50V X7R 0402 COMMON VVVV3080352 C11-3322012-W08
PC15 0.1UF 10V NPO 0402 COMMON VVVV3080352 C11-1042012-M09
PR44 13K 1% 0402 COMMON VVVV3080352 R11-0133T12-W08
PR45 47K_T 1% 0402 COMMON VVVV3080352 R51-0473T12-M09
PR46 100 5% 0402 COMMON VVVV3080352 R11-0101T12-W08
PR43 100 5% 0402 COMMON VVVV3080352 R11-0101T12-W08
PR219 100 5% 0402 DNI XXXV3080352 R11-0101T12-W08
PR47 4.7K 5% 0402 COMMON VVVV3080352 R11-0472012-W08
PR41 2.7K 5% 0402 COMMON VVVV3080352 R11-0755T12-W08
PR35 10K_T 1% 0402 COMMON VVVV3080352 R51-0103T22-M09
PR36 2.05K 1% 0402 COMMON VVVV3080352 R11-2051T12-W08
PR34 1.3K 1% 0402 COMMON VVVV3080352 R11-0132T12-W08
PR37 1.3K 1% 0402 COMMON VVVV3080352 R11-0132T12-W08
PC9 180pF 50V NPO 0402 COMMON VVVV3080352 C11-1811012-W08
PR1 1.18K 1% 0402 COMMON VVVV3080352 R11-1181T12-W08
PR2 300 1% 0402 COMMON VVVV3080352 R11-0301T12-W08
PR3 300 1% 0402 COMMON VVVV3080352 R11-0301T12-W08
PC69 0.22UF NPO 50V 0402 COMMON VVVV3080352 C11-2242512-M09
PR4 1.3K 1% 0402 COMMON VVVV3080352 R11-0132T12-W08
PR11 300 1% 0402 COMMON VVVV3080352 R11-0301T12-W08
PR13 300 1% 0402 COMMON VVVV3080352 R11-0301T12-W08
PC71 0.22UF NPO 50V 0402 COMMON VVVV3080352 C11-2242512-M09
PR5 1.3K 1% 0402 COMMON VVVV3080352 R11-0132T12-W08
PR16 300 1% 0402 COMMON VVVV3080352 R11-0301T12-W08
PR17 300 1% 0402 COMMON VVVV3080352 R11-0301T12-W08
PC72 0.22UF NPO 50V 0402 COMMON VVVV3080352 C11-2242512-M09
PR6 1.3K 1% 0402 COMMON VVVV3080352 R11-0132T12-W08
PR21 300 1% 0402 COMMON VVVV3080352 R11-0301T12-W08
PR22 300 1% 0402 COMMON VVVV3080352 R11-0301T12-W08
PC73 0.22UF NPO 50V 0402 COMMON VVVV3080352 C11-2242512-M09
PR7 1.3K 1% 0402 COMMON VVVV3080352 R11-0132T12-W08
PR23 300 1% 0402 COMMON VVVV3080352 R11-0301T12-W08
PR24 300 1% 0402 COMMON VVVV3080352 R11-0301T12-W08
PC74 0.22UF NPO 50V 0402 COMMON VVVV3080352 C11-2242512-M09
PR8 1.3K 1% 0402 COMMON VVVV3080352 R11-0132T12-W08
PR25 300 1% 0402 COMMON VVVV3080352 R11-0301T12-W08
PR29 300 1% 0402 COMMON VVVV3080352 R11-0301T12-W08
PC83 0.22UF NPO 50V 0402 COMMON VVVV3080352 C11-2242512-M09
PR9 1.3K 1% 0402 COMMON VVVV3080352 R11-0132T12-W08
PR30 300 1% 0402 COMMON VVVV3080352 R11-0301T12-W08
PR31 300 1% 0402 COMMON VVVV3080352 R11-0301T12-W08
PC84 0.22UF NPO 50V 0402 COMMON VVVV3080352 C11-2242512-M09
NS520
NS521
NS515
NS512
NS910
MICRO-STAR INT'L CO.,LTD
MS-V308
Size Custom
Document Description 20_VDDC & VDDCI Controller
Rev 2.2
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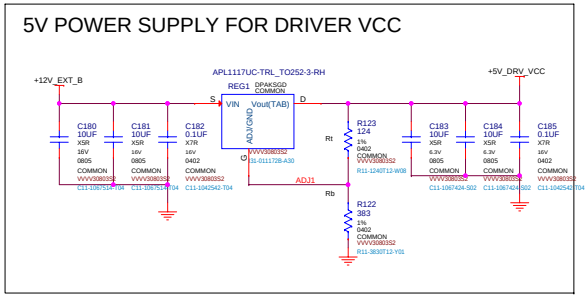

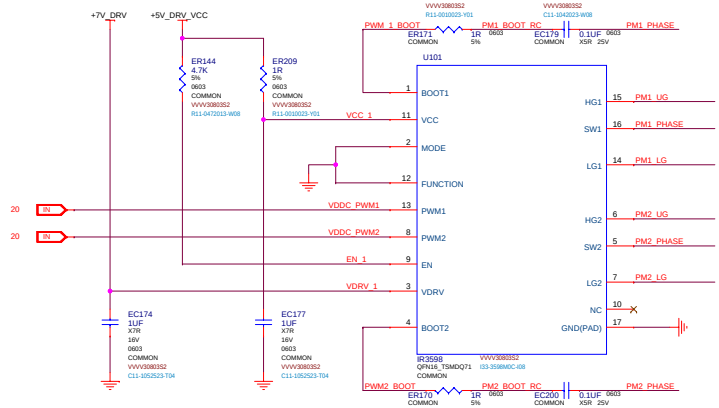

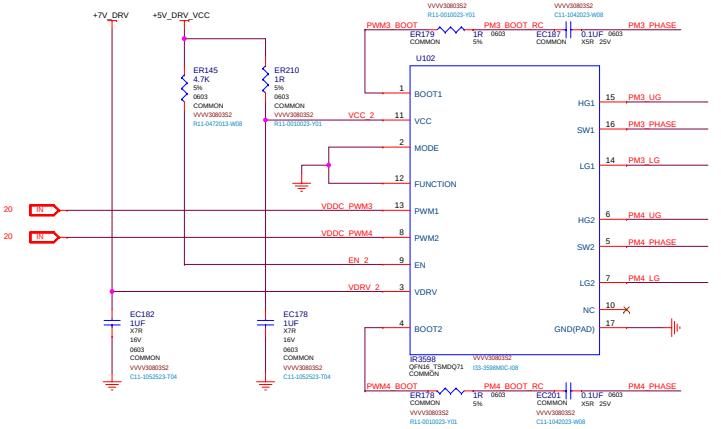

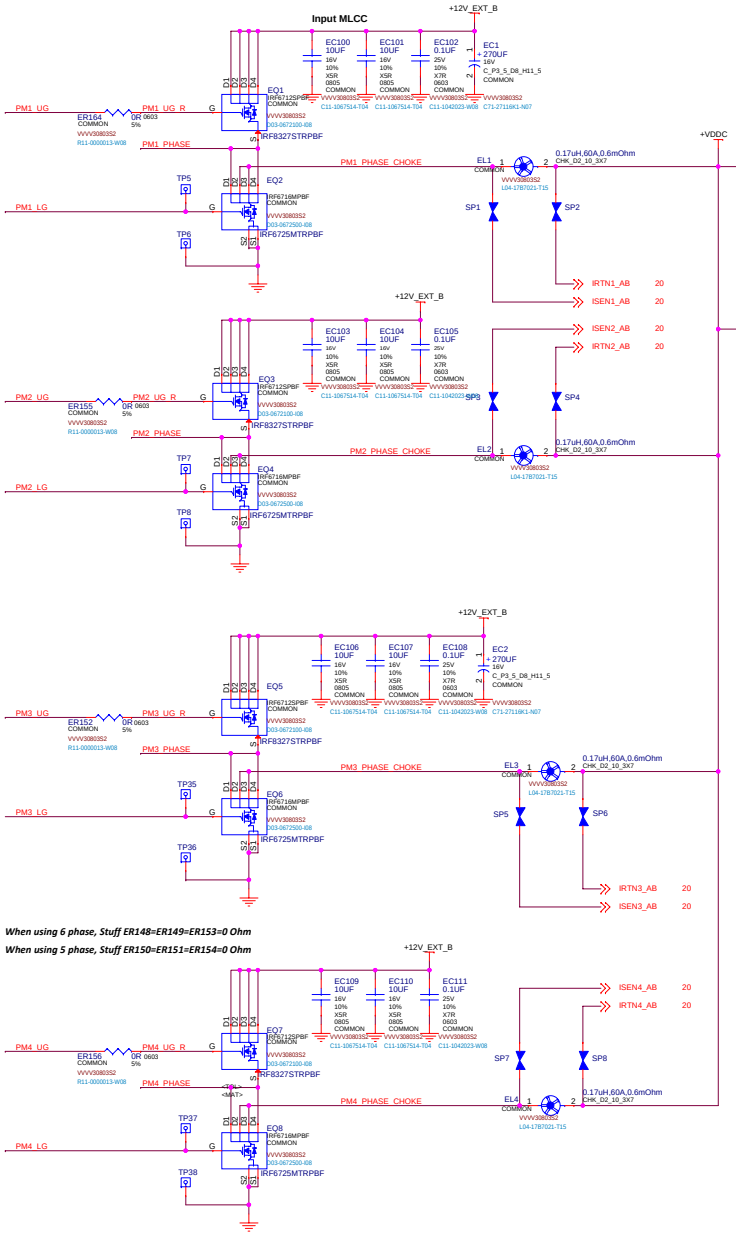

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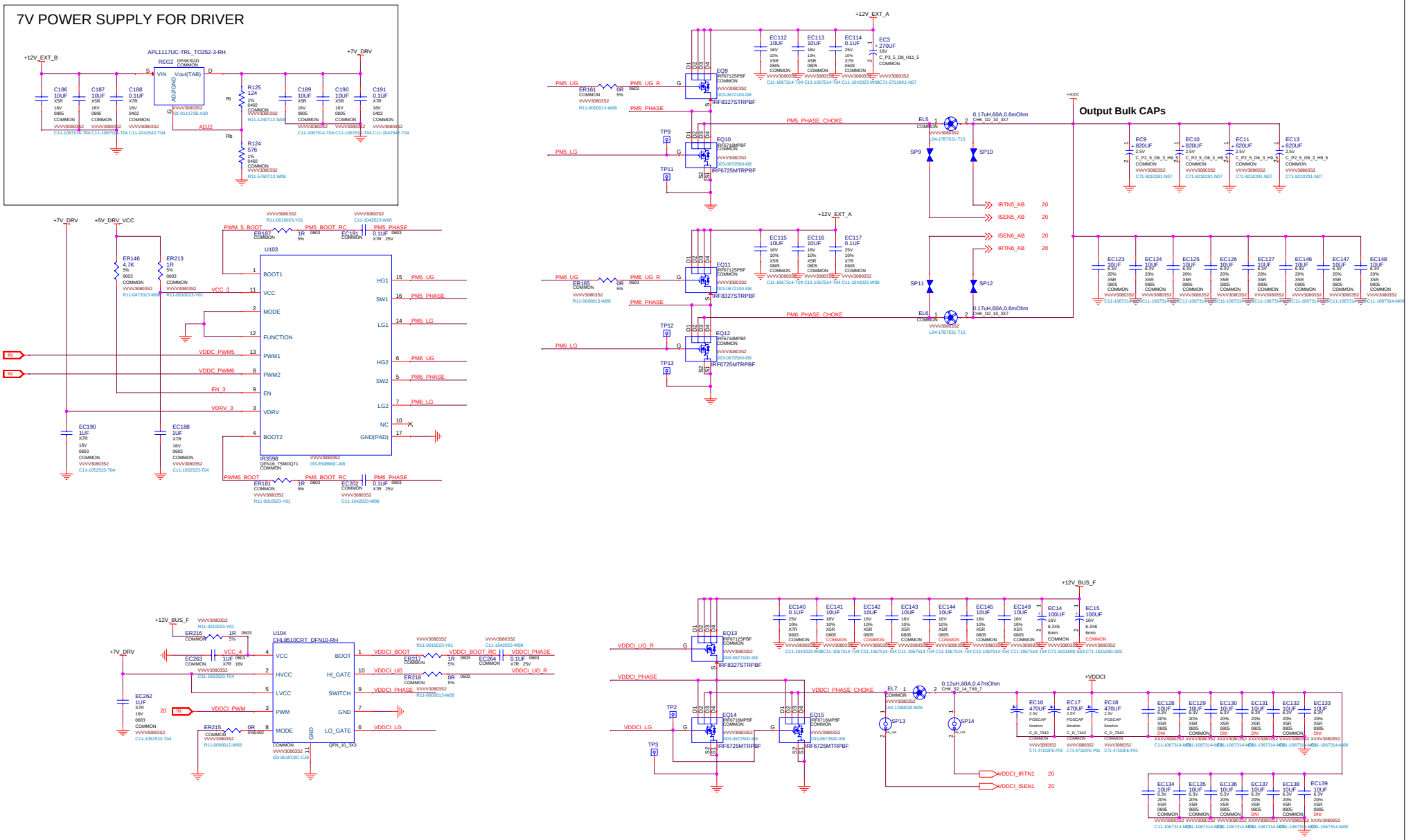
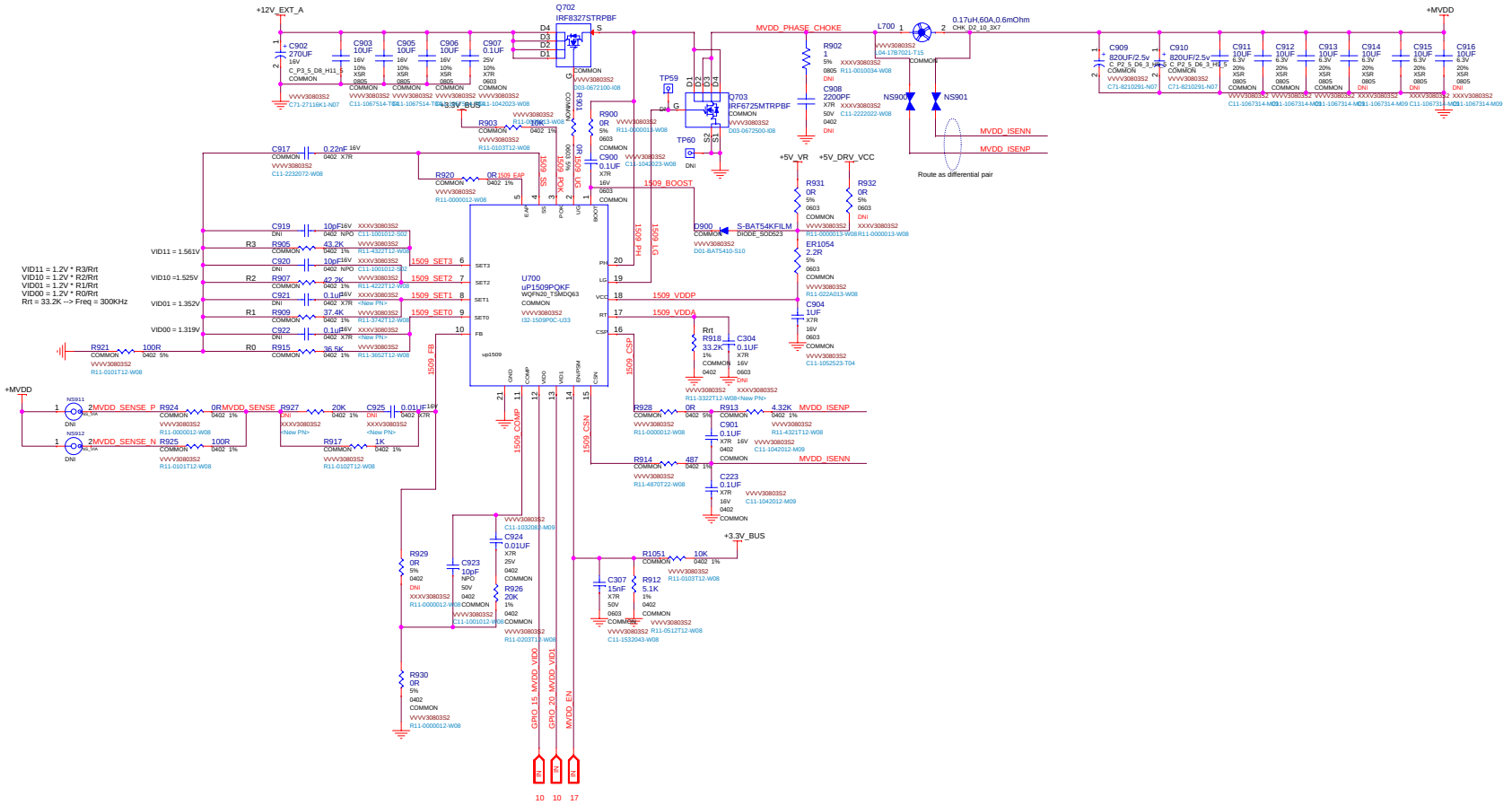
MS-V308			
Size: Custom	Document Description: P21-VDDC PHASE1-4		Rev: 2.2
Date: Monday, December 23, 2013	Sheet 21 of 26		


7V POWER SUPPLY FOR DRIVER
+12V_EXT_B
APL1117UC-TRL_TO252-3-RH
REG2
+7V_DRV
Output Bulk CAPs
+12V_EXT_A
+5V_DRV_VCC
U103
U104
CHL8510CRT_DFN10-RH
+12V_BUS_F
+VDDCI
MICRO-STAR INT'L CO.,LTD
MS-V308
22_VDDC Phase 5-6 & VDDCI
Monday, December 23, 2013



Company	MICRO-STAR INT'L CO.,LTD
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Remove

LED GREEN "ON" shows PX_EN

LED RED "ON" shows Fault

Remove

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Custom	24_Debug Circuitry	2.2

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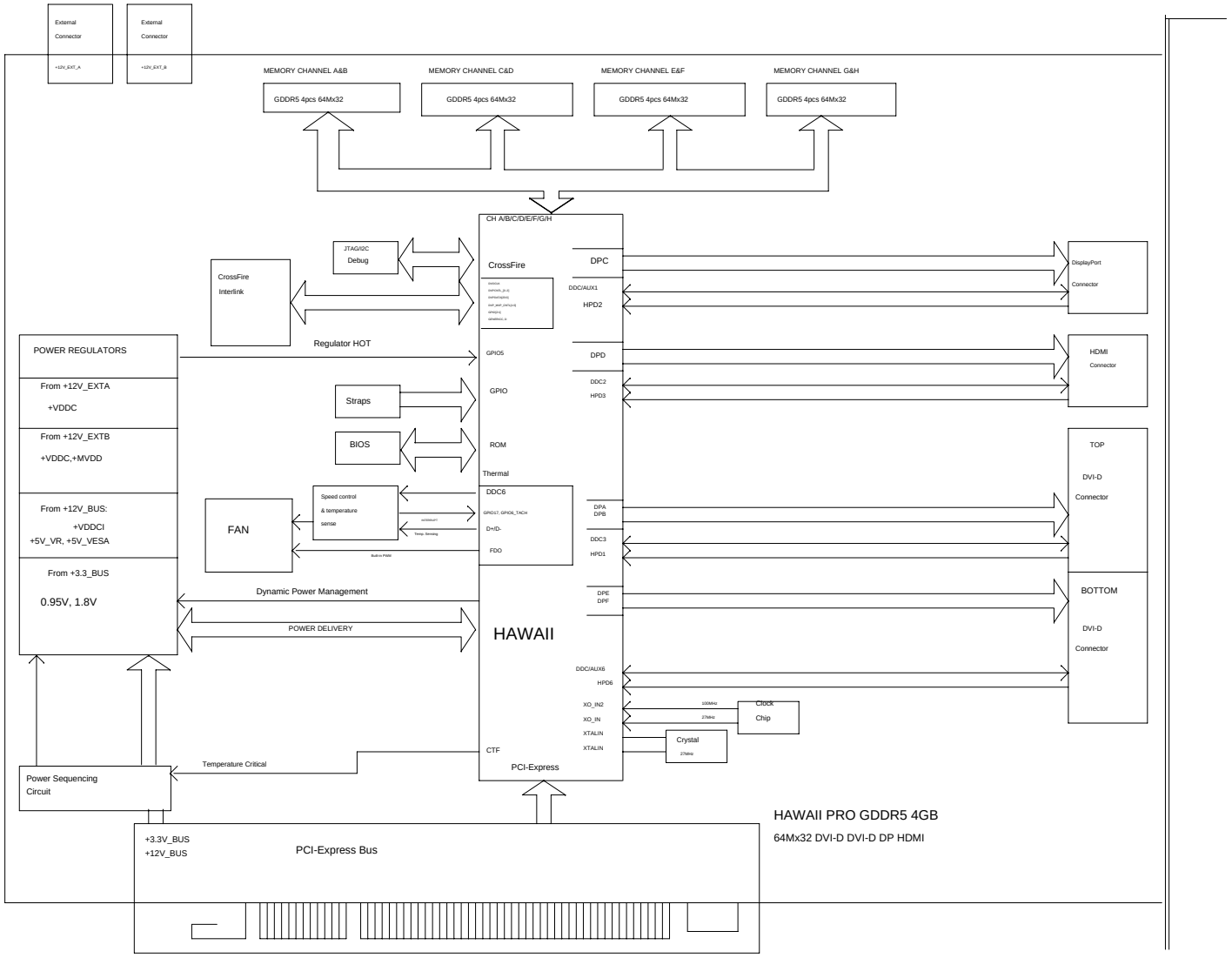

MSI	MICRO-STAR INT'L CO.,LTD	
	MS-V308	
Size: Custom	Document Description: 25_Block Diagram	Rev: 2.2
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1	00A	Feb01 2013	Initial release for engineering review.
2	00B	Apr12 2013	1) Added provision to combine Ext_A and Ext_B on MVDD input. 2) Added filter on 12V_BUS. 3) "Fixed" CTF_DIS connection. 4) MVDDPWRGOOD pull-up changed to 1.8V. 5) Removed diode from 1.8V_POK. 6) Improved power sequence for MVDD_EN.
3	00C	Jul24 2013	1) WAKEB enable changed to VDDC_I_EN. 2) Changed polarity of PCC comparator and added the circuitry to provide fast rising and delaied falling edgws 3) Added filter on MVDD enable input 4) Added provision to connect 1.8V_DAC directly to PCC comparator. 5) Added extra MLCCS and polymers for whining noise reduction.
4	00D	Sep30 2013	1) Added option for 300W board power. 2) Added option of PCC circuitry from C671 board. 3) Added VR_HOT option from C673. 4) Added extra filtering options for VDDC current measuring. 5) Added more caps on DP_VDDR.

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Page01：1. MVDD_PWRGD change to INPUT_RAILS_UP
2. Remove JTAG

Page10：Remove CF Test Point

Page11：1. Change DVI footprint and library
2. Add ESD

Page12：1. Change DP/HDMI footprint and library
2. Add ESD

Page13：1. Change DVI footprint and library
2. Add ESD

Page15：0.95V_EN change to INPUT_RAILS_UP

Page16：Copy from C671 PCC circuit

Page17：Copy from C671 sequence circuit

Page18：1. Change 1.8V LDO
2. 5V change to 1117

Page19：0.95V Change to I9C-1741P0C-U33

Page20：VDDC/VDDCI controller change to IR3567B

Page23：MVDD PWM change to I32-1509P0C-U33

Page24：Remove Debug circuit

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Page17：1. L1000/L1001/L1002/J1000/J1001 change footprint
2.Remove R1020/R1021/MJ1001

Page19：Add 0.95_En pull-high resistor

Page21：Add Ext_12V input MLCC

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No change

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Size	Document Description	Rev
Custom	26_Revision History	2.2

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