

MS8888

18P112, NV18, 4Mx32DDR, 64MB, Video IN, TV OUT, DVI-I, VGA, AGP8X, Hardware Monitor, Twin BIOS

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HISTORY:

A00

- X00: INITIAL VERSION
- X01: Removed MBDet circuit bypass resistor  
STRAP resistors, stuffing options set  
STRAP resistors, USER strap :=0  
DACB RSET modification resistor 1%->5%  
SYNC amplifier, bypass resistors removed  
DACB RGB filter, bypass capacitors set to NO STUFF  
DVI-HPD signal, voltage divider 10k/15k set near DVI  
24MHZ signal to 1394, changed stuffing option to disable trace  
VIDEO in connector internal, added A3V3 decoupling caps.  
DVOCLKOUT signal, series termination added  
PD input 1394, stuffing option of series resistor set to NO STUFF  
LDOs, calculation information added  
LDO for TMDSPLL, changed resistor values to create 3V3  
LDO for TMDSPLL, complex bypass resistors simplified.  
1394 POWERCLASS, 5VSENSE signal renamed to EXTsense and generated from 12VEXT  
ADDED OFFPAGE SYMBOLS, OPTICAL IMPROVEMENTS

A01

- X00: Replaced NV18 symbol\_9. Pin changes Thermal sensor  
Changed TMDS constraints to 10MIL\_G2G\_30MIL  
Changed THERM, THERM\* constraints to 10MIL\_G2G\_10MIL  
Added SST45VF BIOS type with necessary strap resistors.  
Added Pullup on ROMCS\*  
Replaced backdrive diode TMDS3V3 by SCHOTTKY type with 1A  
Added bypass resistors to Sync Amplifier  
Changed GND pinusage on internal 1394 connector  
Added compensation to FBVDD regulator  
Added supply rail from 3V3 for switching regulator to solve 3V3 shutdown  
Added alternative circuit to solve switch reg. 3v3 shutdown  
Added hex jack screws as symbols  
Added cap for CG\_VREF on AGP  
Added bypass resistors for primary inductor of switch regulator  
Added pulldown for 7114 TRST Jtag signal

A02

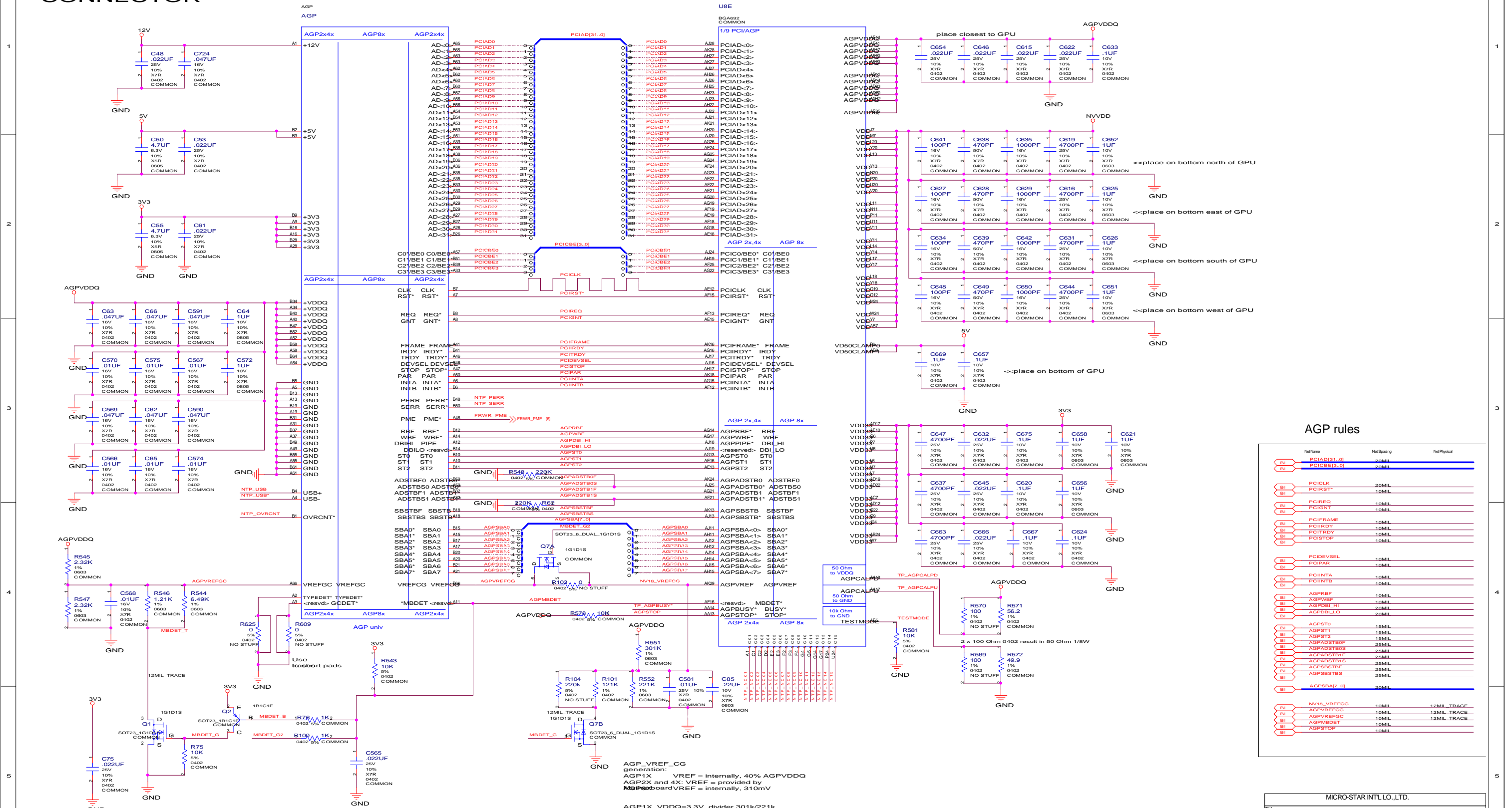
- X00: Changed AGPVREF\_CG rule to 12mil tracewidth  
Page2: changed AGPVREF\_CG generation for 8X mode  
Page6: Added series resistor in FRWR\_PME\_

602-10112-000X-A02 for SKU 801-10112-000X-000

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Cover Sheet			
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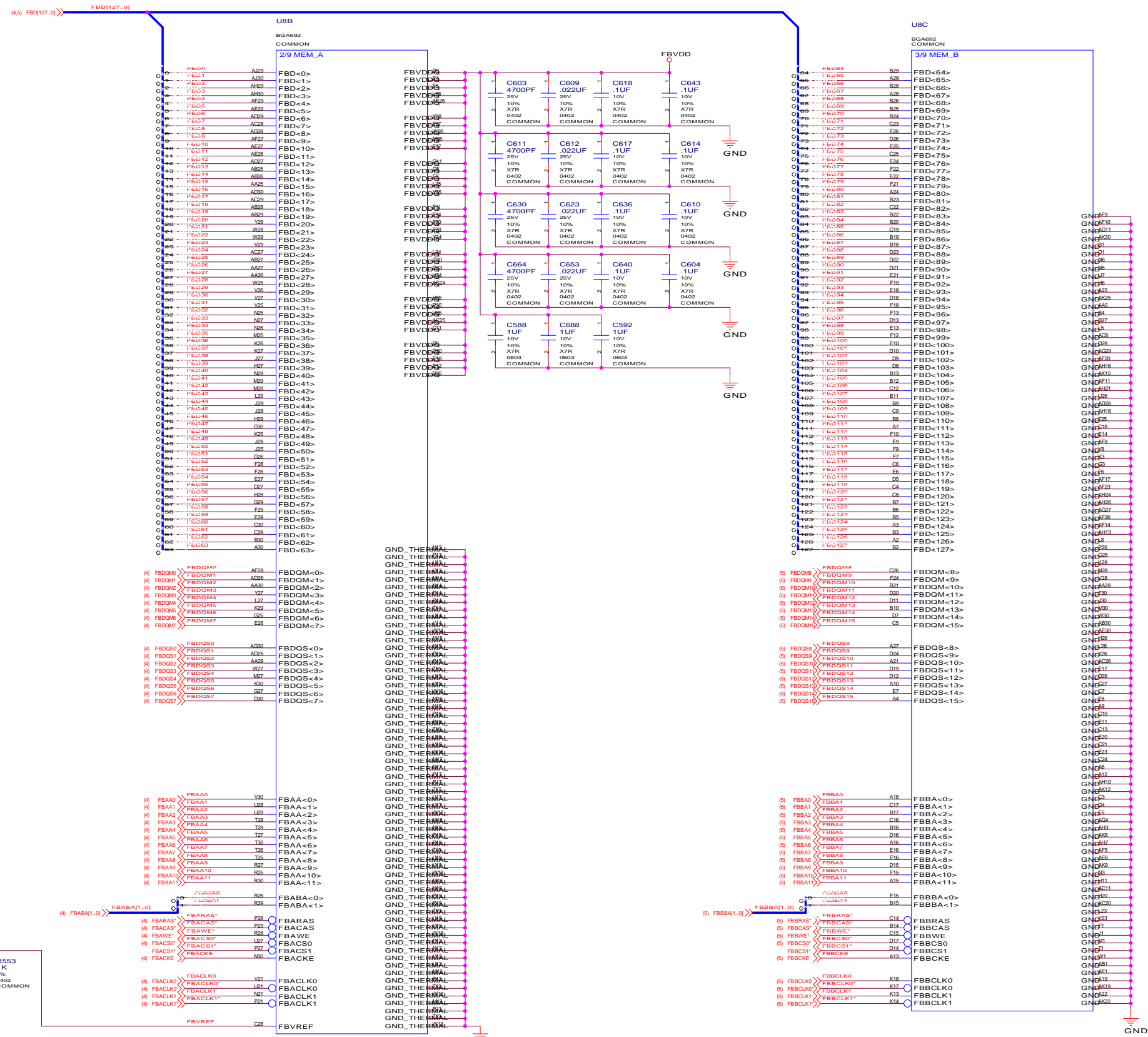
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## NV18 AGP SECTION AND AGP CONNECTOR



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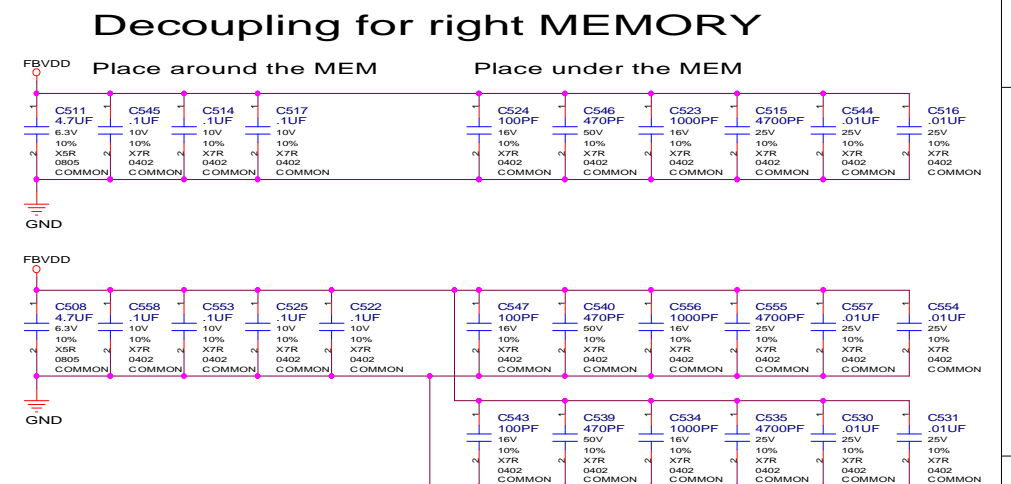
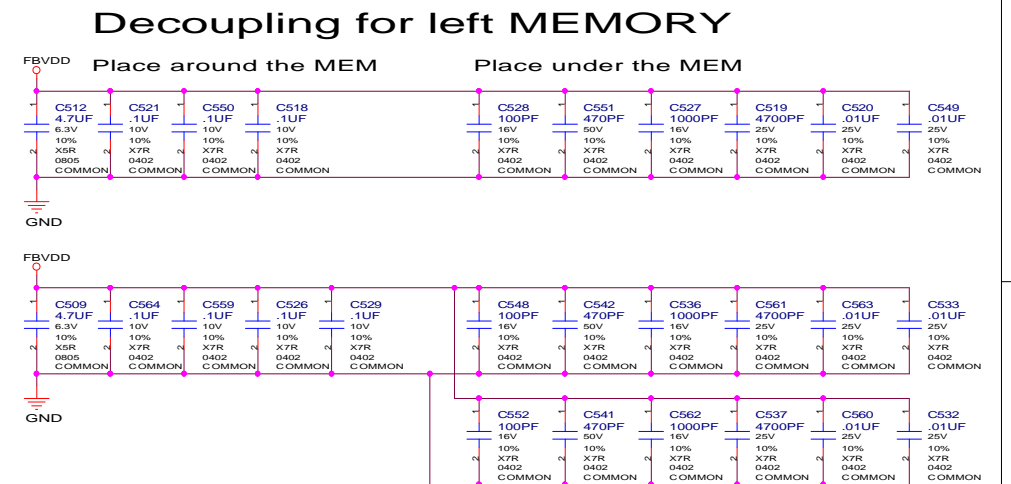
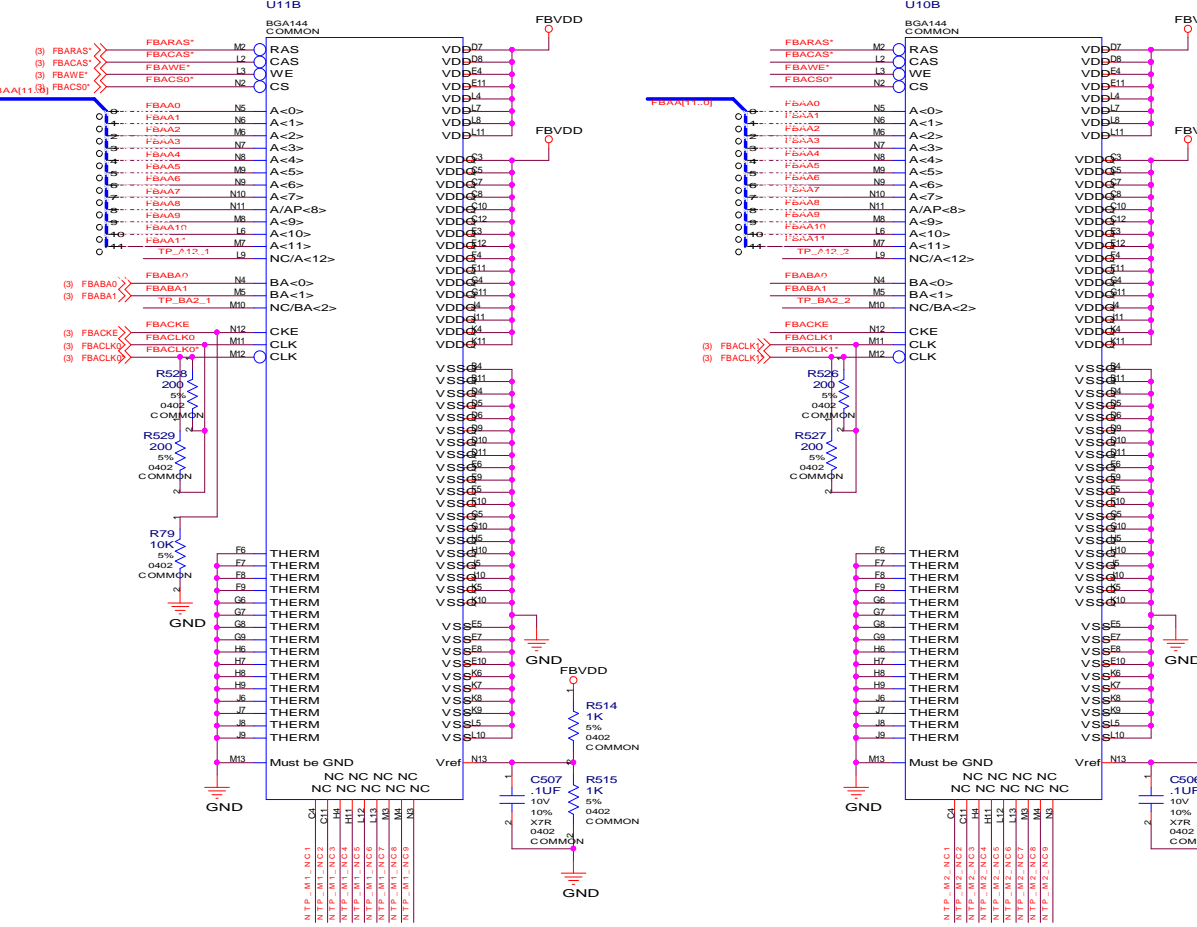
## NV18 FRAMEBUFFER INTERFACE AND DECOUPLING



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Title <b>NV18 Frame Buffer Interface</b>			
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PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY

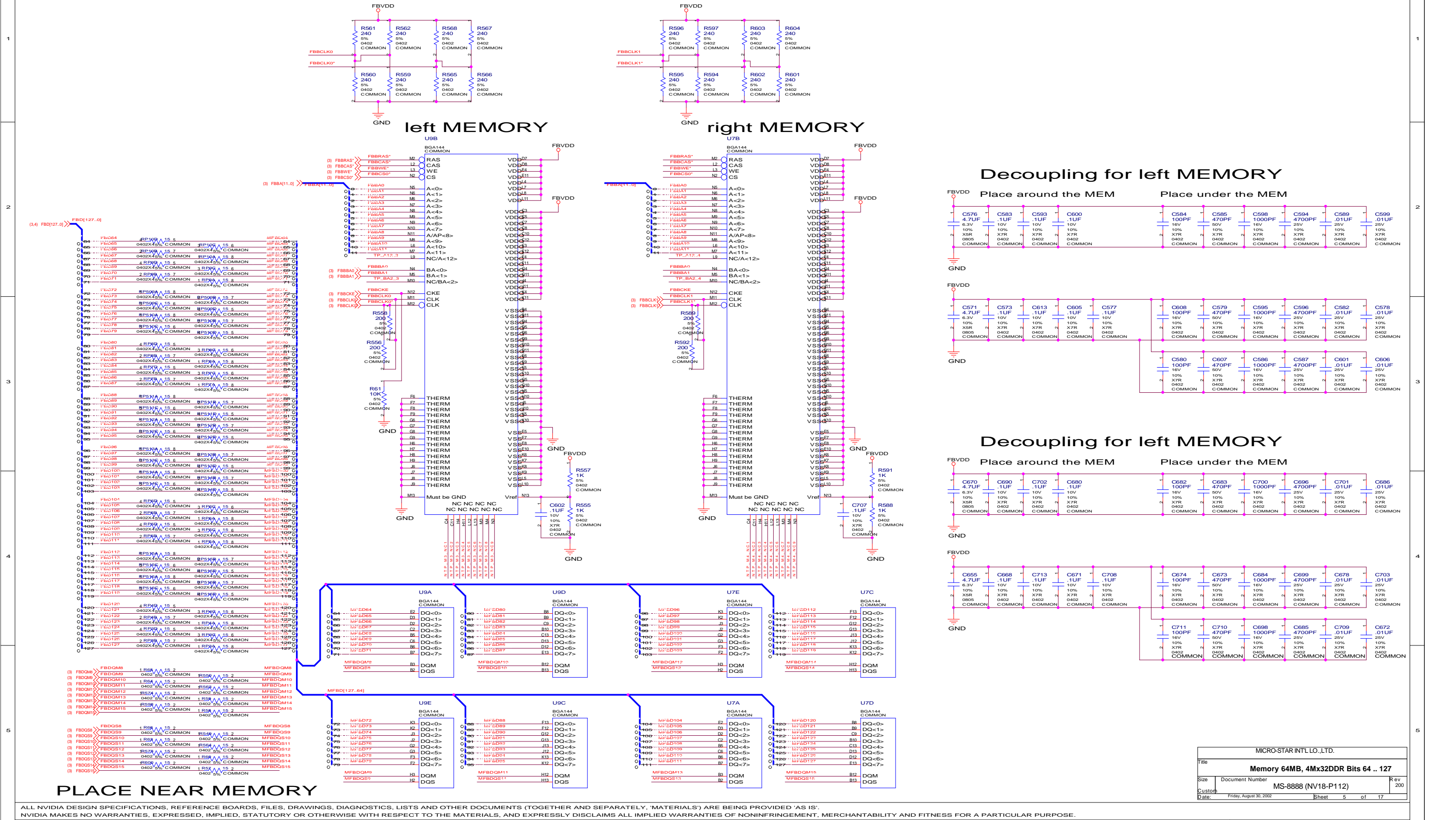


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MICRO-STAR INT'L CO., LTD.			
Title <b>Memory 64MB, 4Mx32DDR Bits 0.63</b>			
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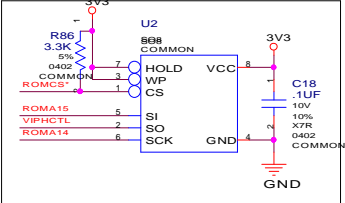


MEMORY 64MB, 4Mx32DDR, bits 64..127  
PLACE ALL DISCRETE COMPONENTS AS NEAR AS POSSIBLE TO MEMORY

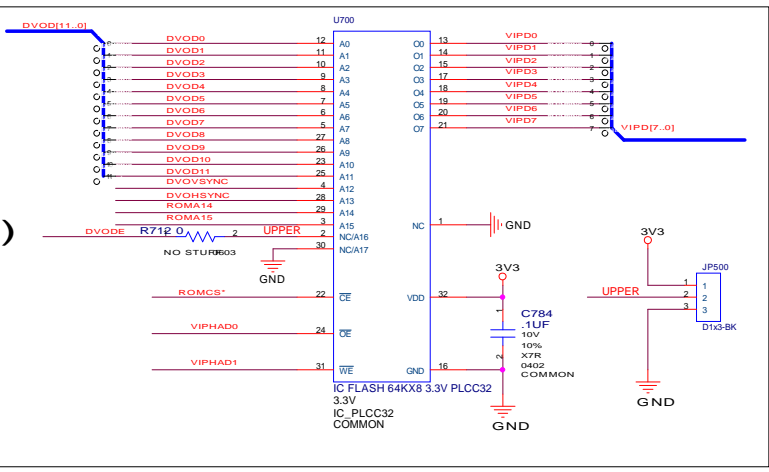


# NV18 STRAPPING, I/O INTERFACE, BIOS, FAN CONTROL AND TEMP SENSOR

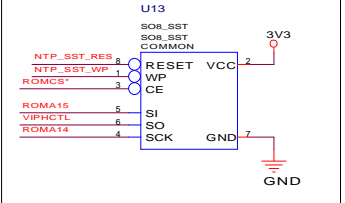
## BIOS (serial)



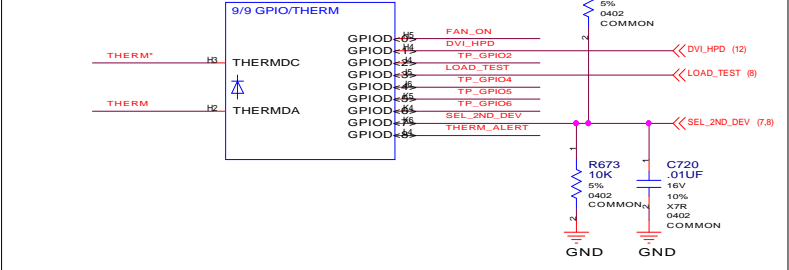
## BIOS (parallel) -- Twin BIOS



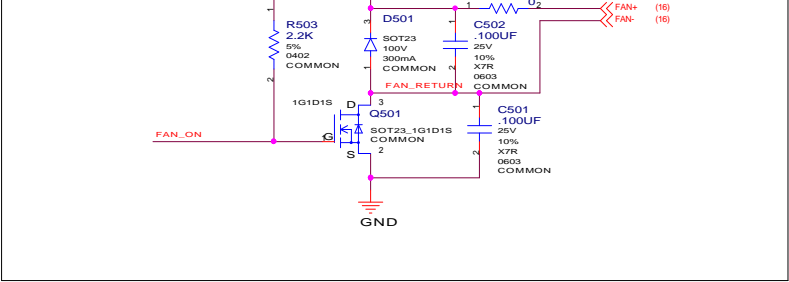
## BIOS (alternative)



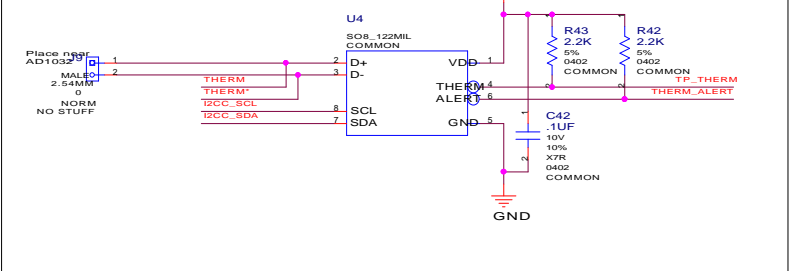
## NV18 GPIO



## FAN Control



## TEMP Sensor



## STRAPPING OPTIONS

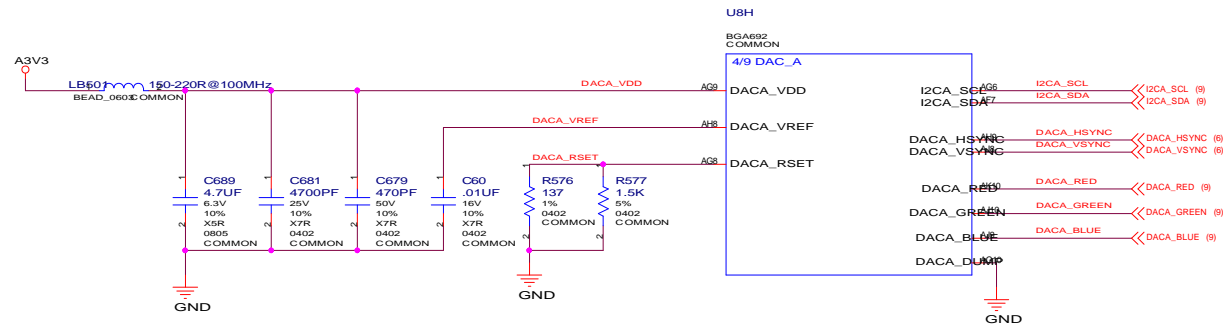
Bit	Signal	VALUE_ID	VALUES
00	PCI_AD_SWAP	PCI_AD	0 REVERSED
01	SUB_VENDOR	SUB_VENDOR	0 NORMAL
02	RAM_CFG_0	RAM_CFG[3:0]	0000 2Mx32
03	RAM_CFG_1	RAM_CFG[3:0]	0000 2Mx32
04	RAM_CFG_2	RAM_CFG[3:0]	0000 4Mx16
05	RAM_CFG_3	RAM_CFG[3:0]	0000 8Mx16
06	CRYSTAL_0	CRYSTAL[1:0]	00 5.000 Mhz
07	TV_MODE_0	TVMODE[1:0]	00 SECAM
08	TV_MODE_1	TVMODE[1:0]	01 NTSC
09	AGP4x/8x	AGP_SBA	0 SBA enabled
10	AGP_SBA	AGP_SBA	1 SBA disabled
11	AGP_FASTWR	AGP_FASTWR	0
12	PCI_DEVID_0	PCI_DEVID[3:0]	0000 0x0180 ... 1111 0x018F
13	PCI_DEVID_1	PCI_DEVID[3:0]	0
14	BUS_TYPE	BUS_TYPE[0]	0 PCI
15	FP_IFACE	FP_IFACE	1 AGP
16	USER_0	USER_0	0
17	USER_1	USER_1	0
18	USER_2	USER_2	0
19	USER_3	USER_3	0
20	PCI_DEVID_2	PCI_DEVID[3:0]	0
21	PCI_DEVID_3	PCI_DEVID[3:0]	0
22	CRYSTAL_1	CRYSTAL_1	0
23	FB_0	FB_0	0
24	FB_1	FB_1	0
25	BR	BR	0
26	BR_128M	BR_128M	0
27	BR_AGP	BR_AGP	0
28	BR_IO	BR_IO	0
29	ROM_TYPE_0	ROM_TYPE[1:0]	00 Parallel
30	ROM_TYPE_1	ROM_TYPE[1:0]	01 Serial AT25F
31	ROM_TYPE_2	ROM_TYPE[1:0]	10 Serial SST45VF
32	ROM_TYPE_3	ROM_TYPE[1:0]	11 RPU
01	1394_EN_0	1394[0]	0 disabled
02	1394_EN_1	1394[1]	1 enabled

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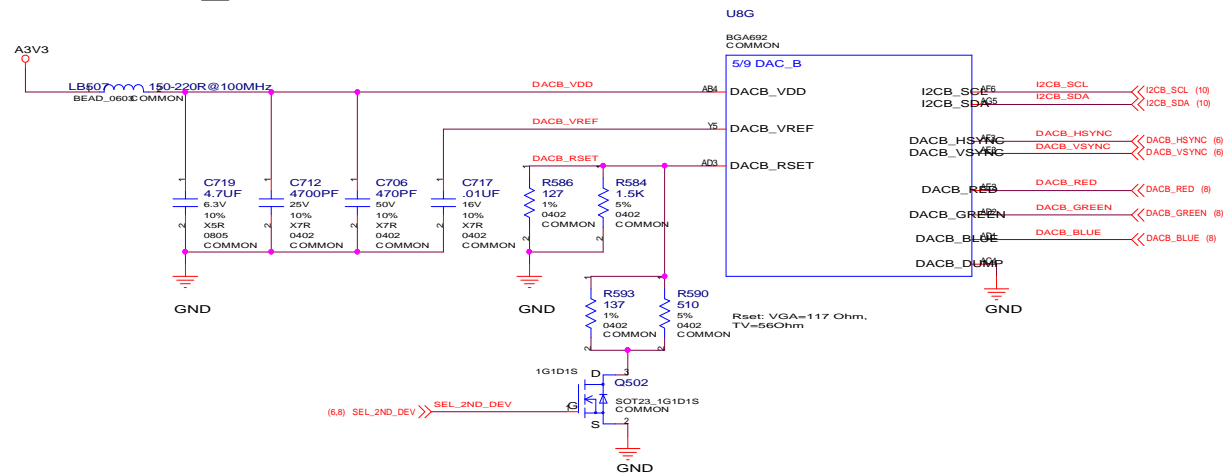
MICRO-STAR INT'L CO., LTD.			
Title	NV18 Strapping / BIOS / Fan / Thermal Control		
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NV18 DAC\_A, DAC\_B, PLL, SYNC  
AMPL

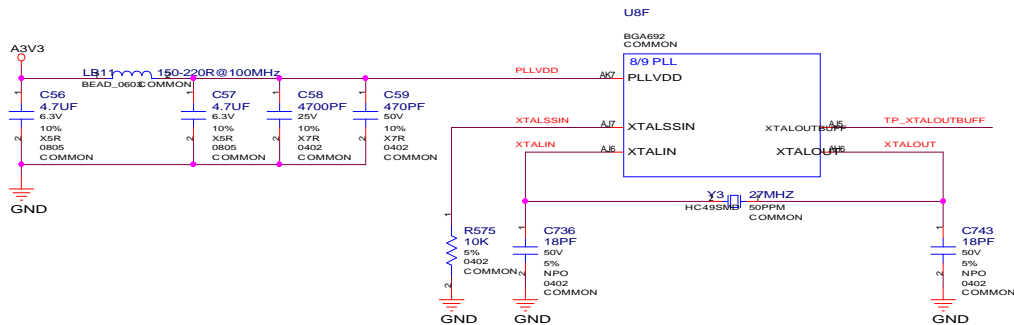
NV18  
DAC\_A



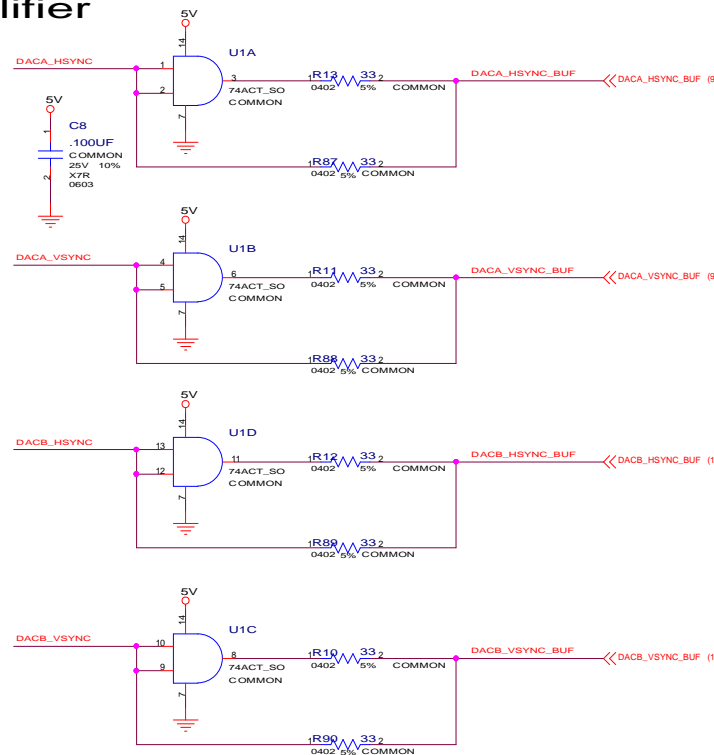
NV18 DAC\_B with RSet select



NV18  
PLL



SYNC  
Amplifier



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NV18 DAC A/B			
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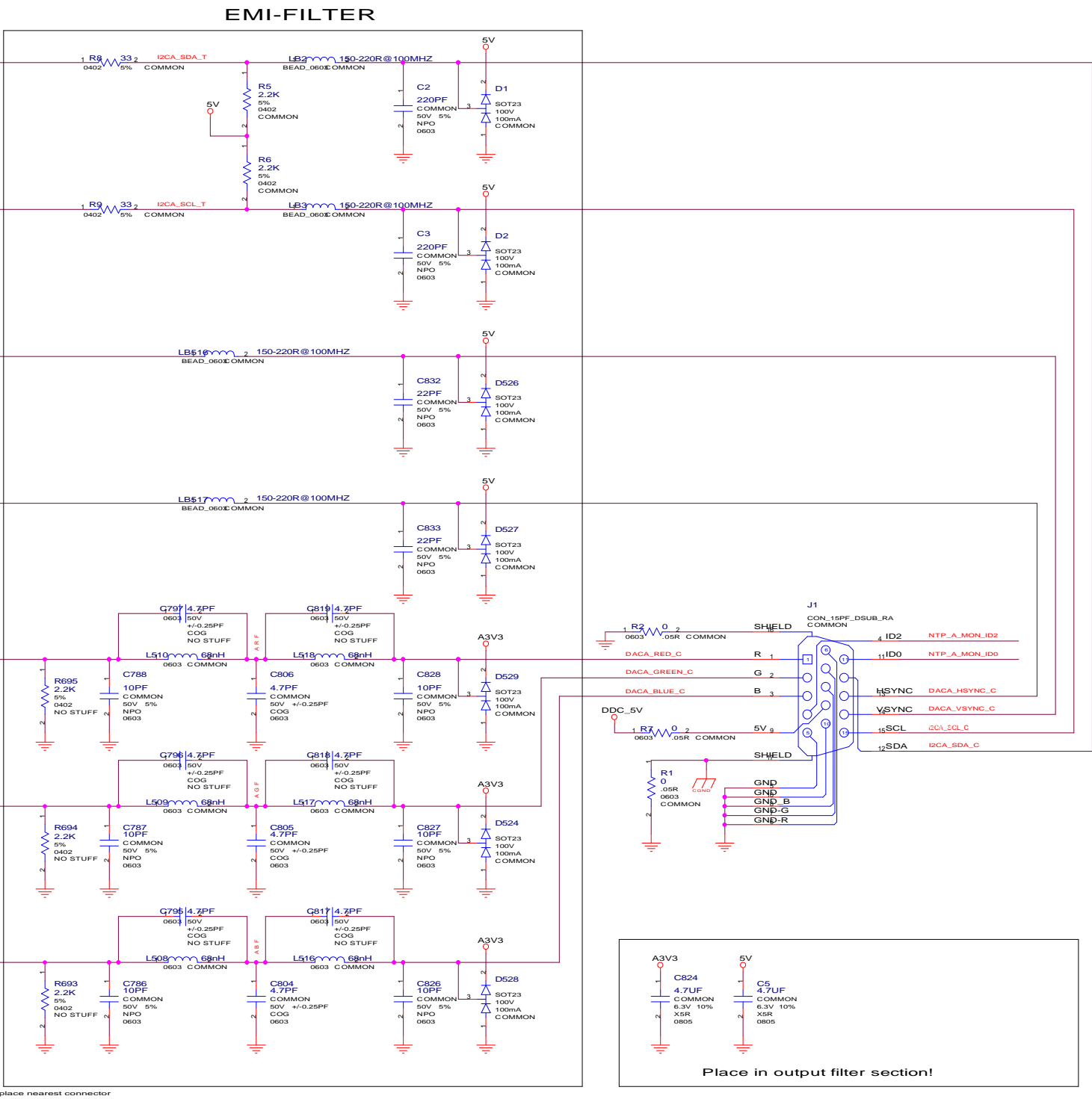
## 1

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DACA output

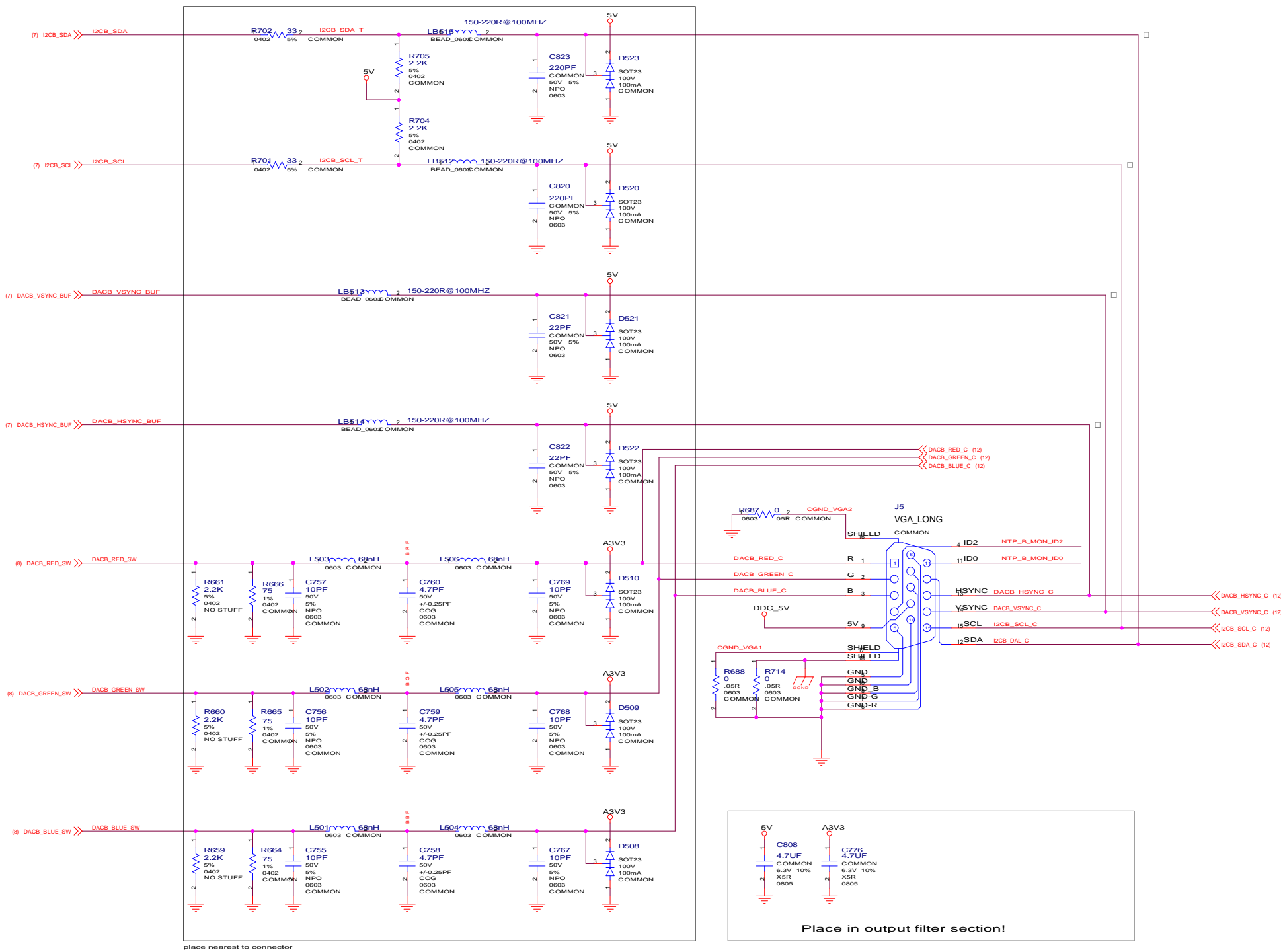


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DACA Output - VGA			
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DACB  
output

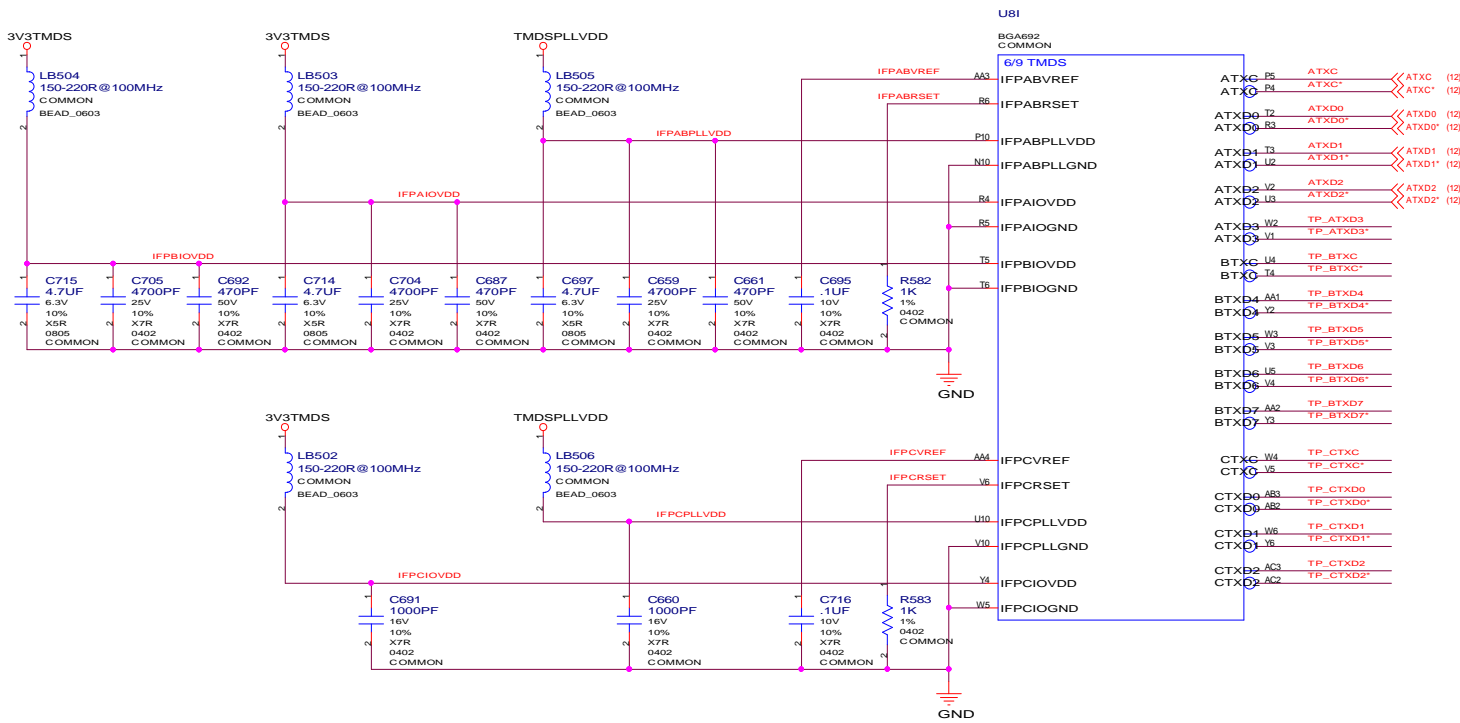
EMI-FILTER



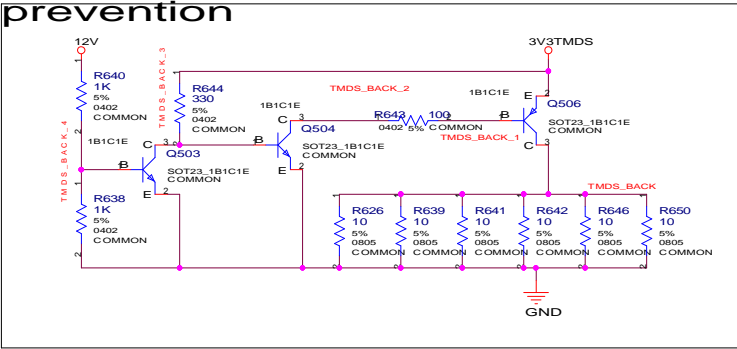
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DACB Output -- VGA			
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INTERNAL TMDS POWER AND DECOUPLING



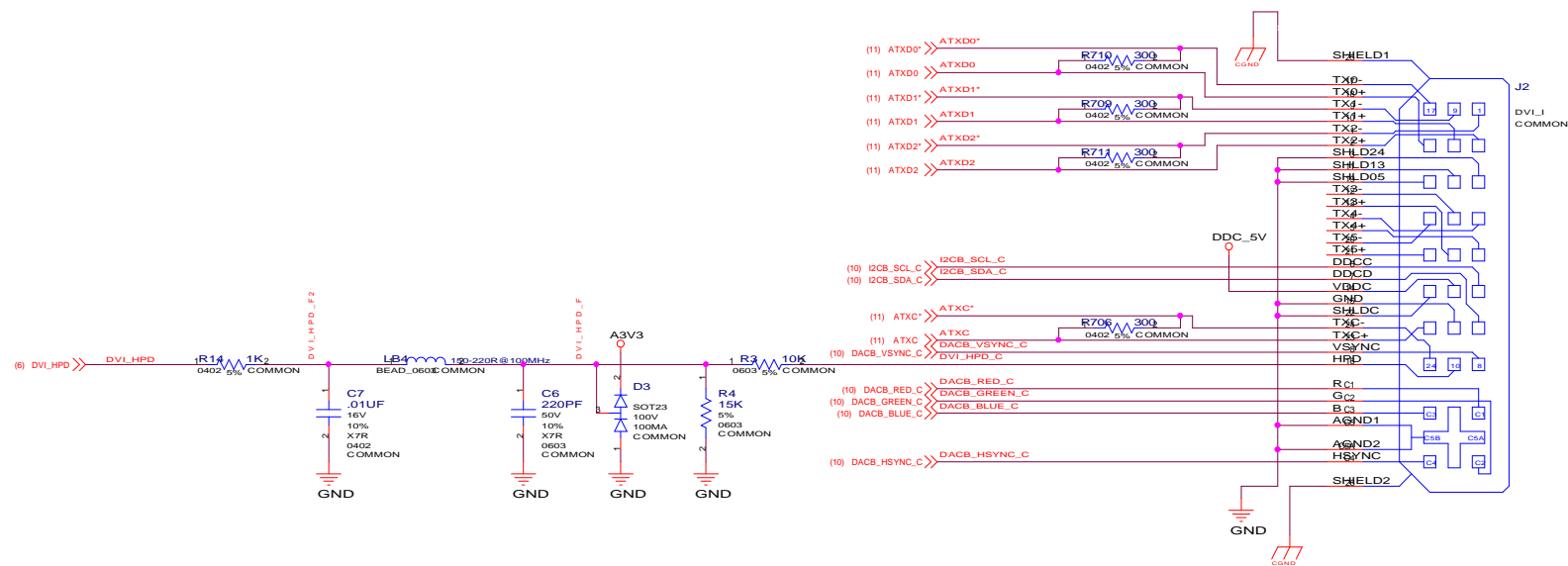
TMDS backdrive prevention



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NV18 TMDS Power			
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DVI\_I  
OUTPUT

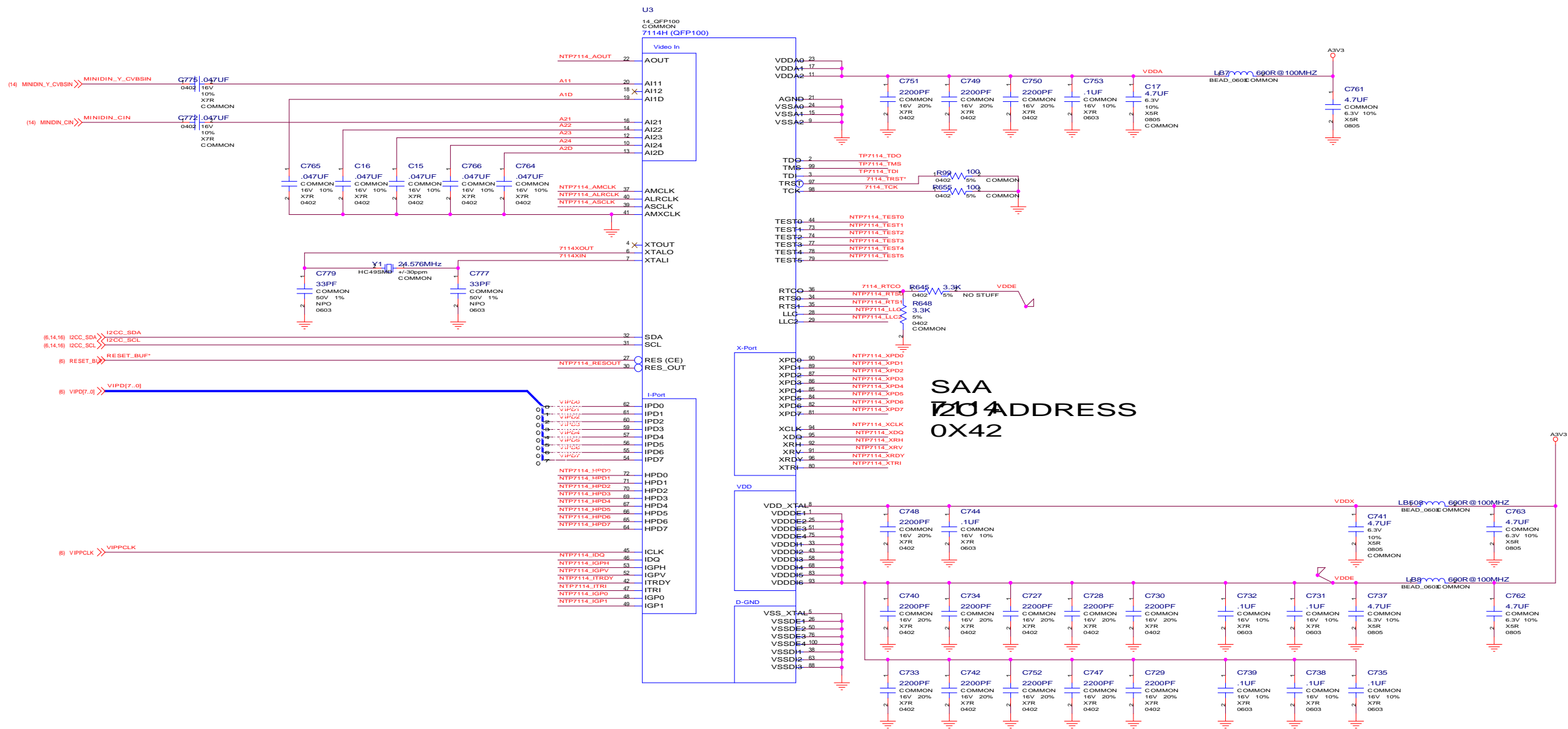


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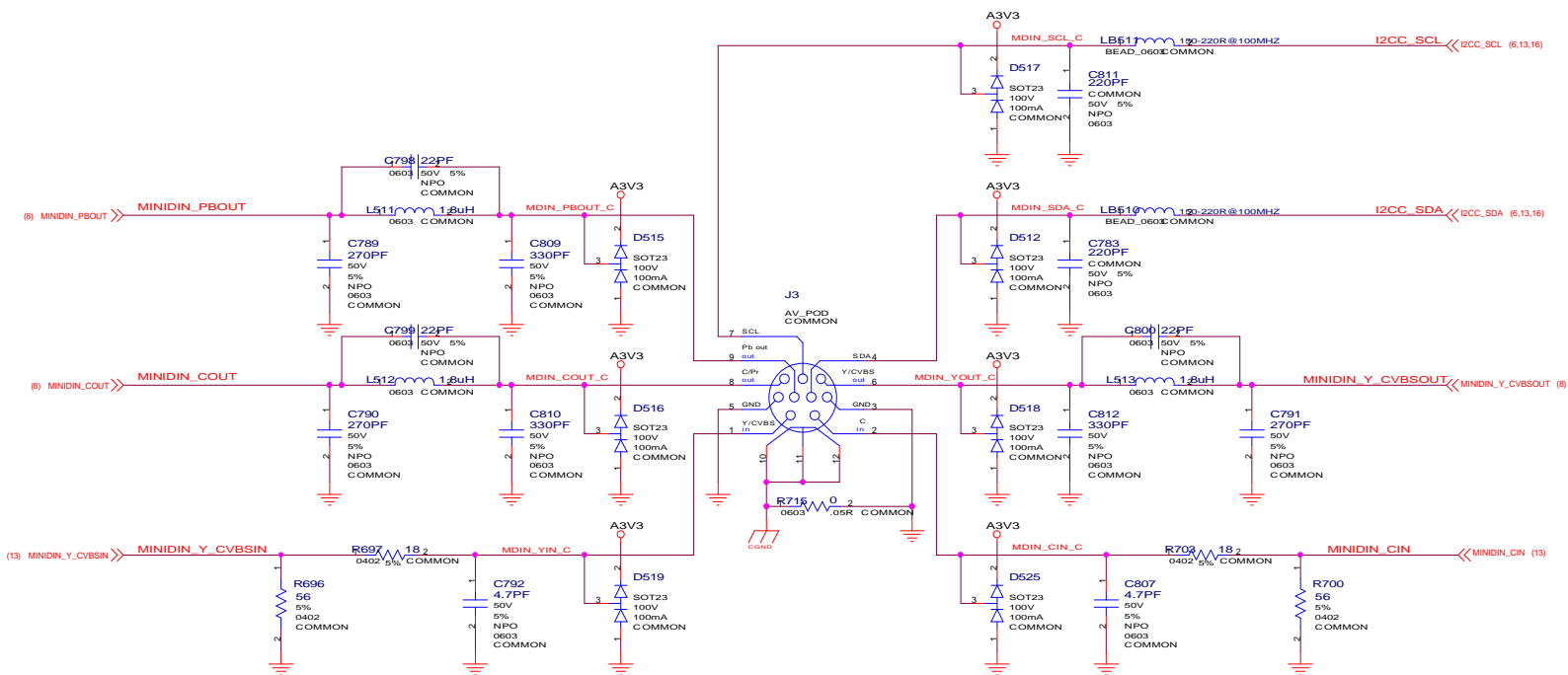
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VIDEO  
CAPTURE

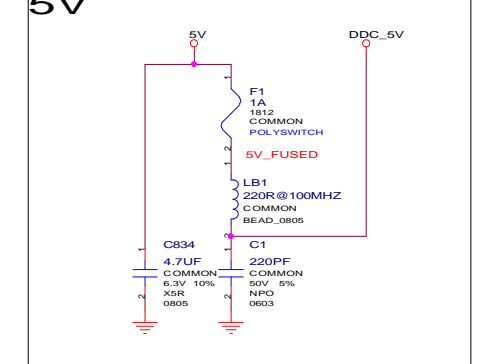
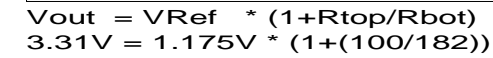
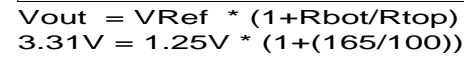
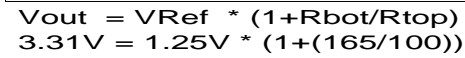


VIDEO IN/OUT CONNECTOR

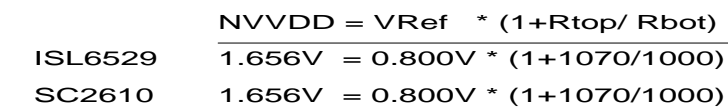


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Video In/Out Connector			
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ANALOG  
3V3

	$FBVDD = V_{Ref} * (1 + R_{top} / R_{bot})$
ISL6529	$2.5V = 0.800V * (1 + 2.4k / 1.13k)$
SC2610	$2.5V = 1.250V * (1 + 100 / 100)$
ISL6529	$2.8V = 0.800V * (1 + 2.67k / 1.07k)$



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