

C116, NV18, 8MX16DDR, 128MB, Video IN/OUT, DVI-I, VGA

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HISTORY:

- A00
- X00: INITIAL VERSION
- X01 Remove R117, C87, C131, C143 for CKE
- Change C736, C743 to 18pf capacitors.
- Remove C1099 - additional Capacitor for AGPVREFcg
- Changed AGPVREFcg circuit.

C116 Base on P112 to Modify.


1. Change page 4~7 & page 18 Reference.
2. Change J1 foot print from slim type to stand D-SUB.
3. Remove I1394 function.
- ~~4. Page 2, change voltage C75.1 & Q2.E from 3V3 to A3V3.~~
5. Page 8, Add Twin Bios for MSI function.
6. Page 16 ,replace INTERNAL VIDEO CAPTURE CONNECTOR.
7. Page 17 ,ADD C874 & C1098 ALE CAP. (DUAL-LAY)
8. Page 18 , Add H/W Monitor founction for MSI .
9. Page 2 change Q508, Q509 footprint from SOT23 to SOT-6 U200 package.

00A change to version 100.

1. DACA and DACB signal swap.

600-10116-000X-A00

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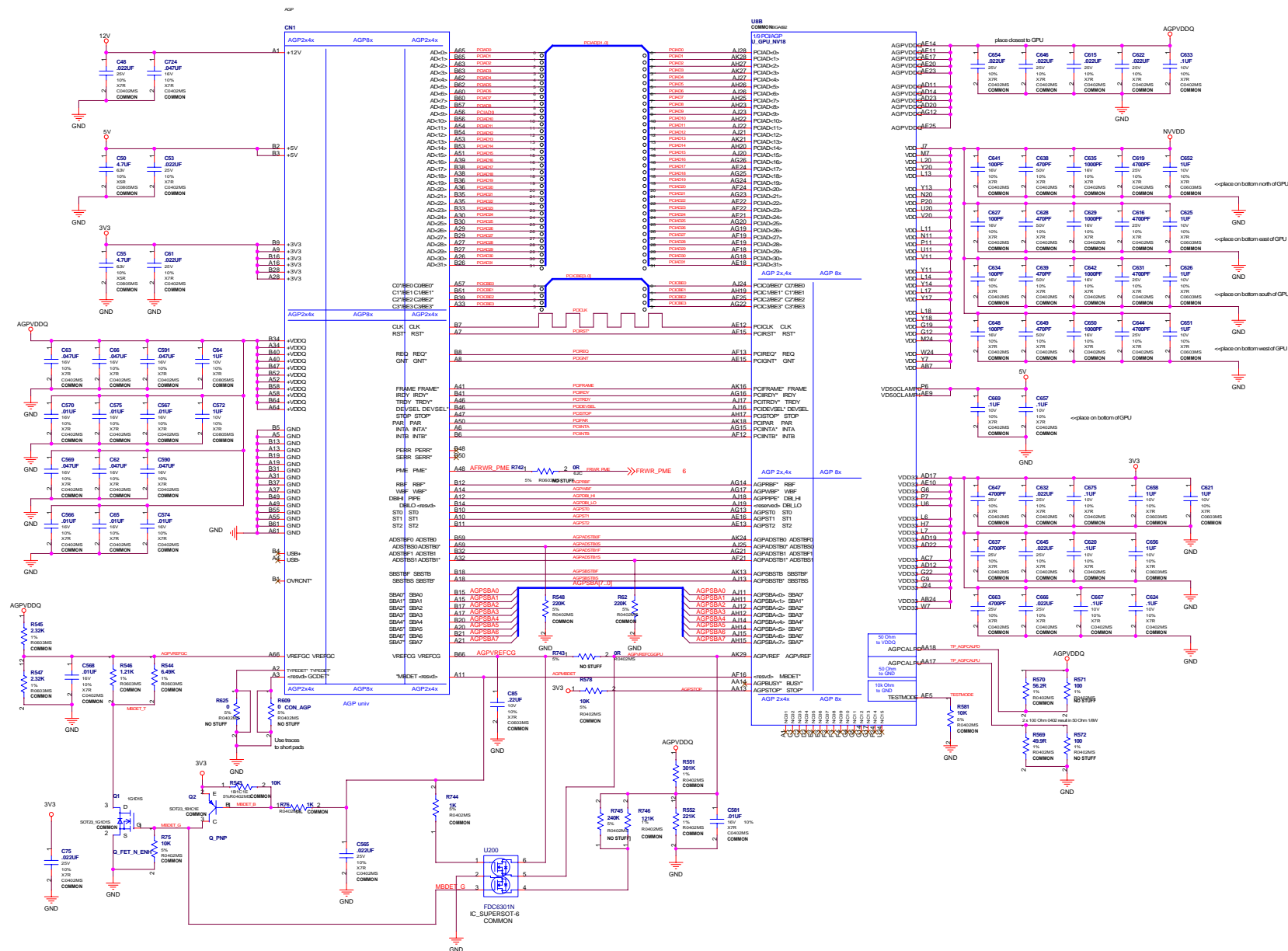
Micro-Star International Co., LTD.

MS-8895 base on C116 Modify

Size: Custom Document Number: TOP PAGE Rev: 100

Date: Wednesday, November 13, 2002 Sheet: 1 of 12

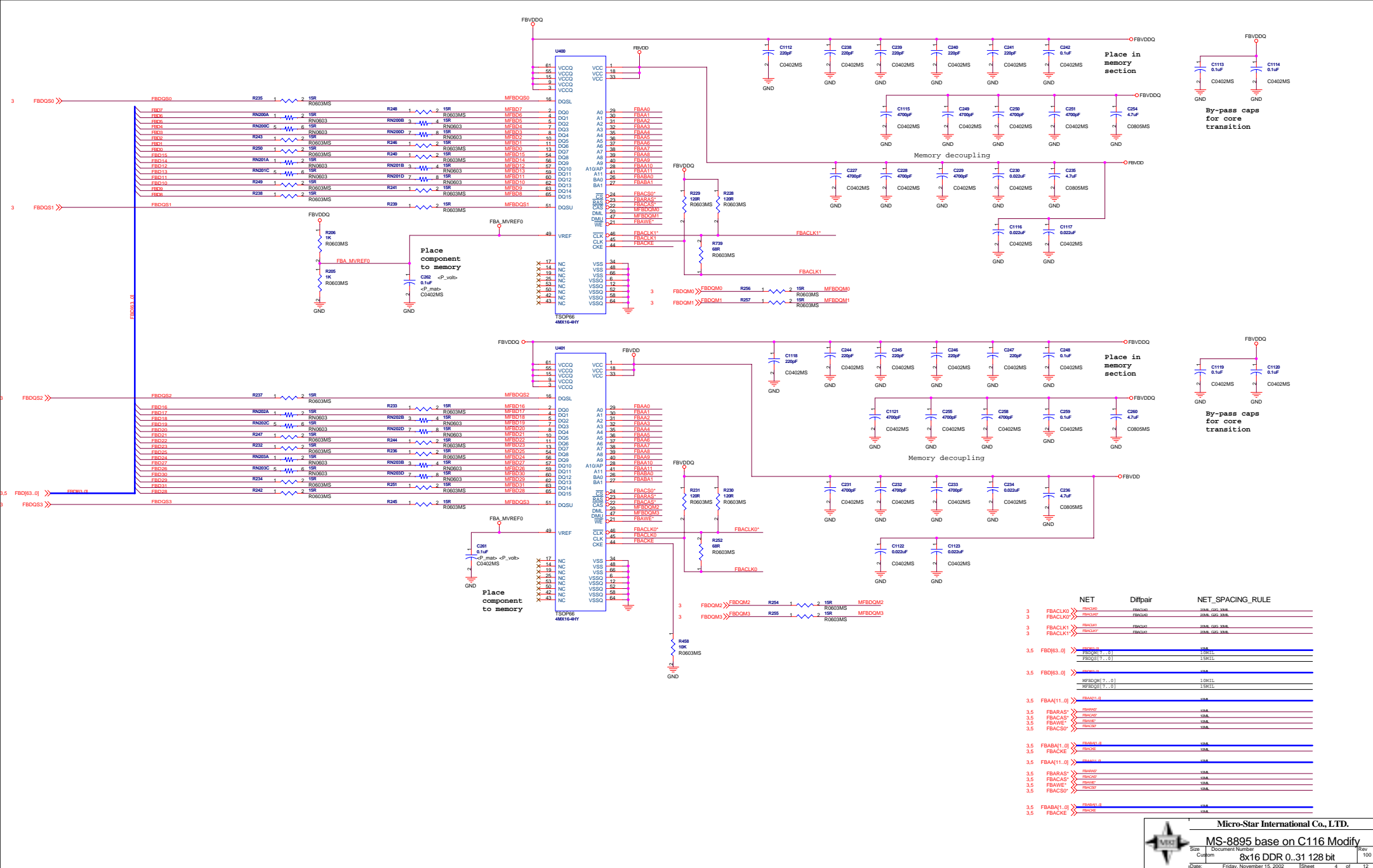
## NV18 AGP SECTION AND AGP CONNECTOR

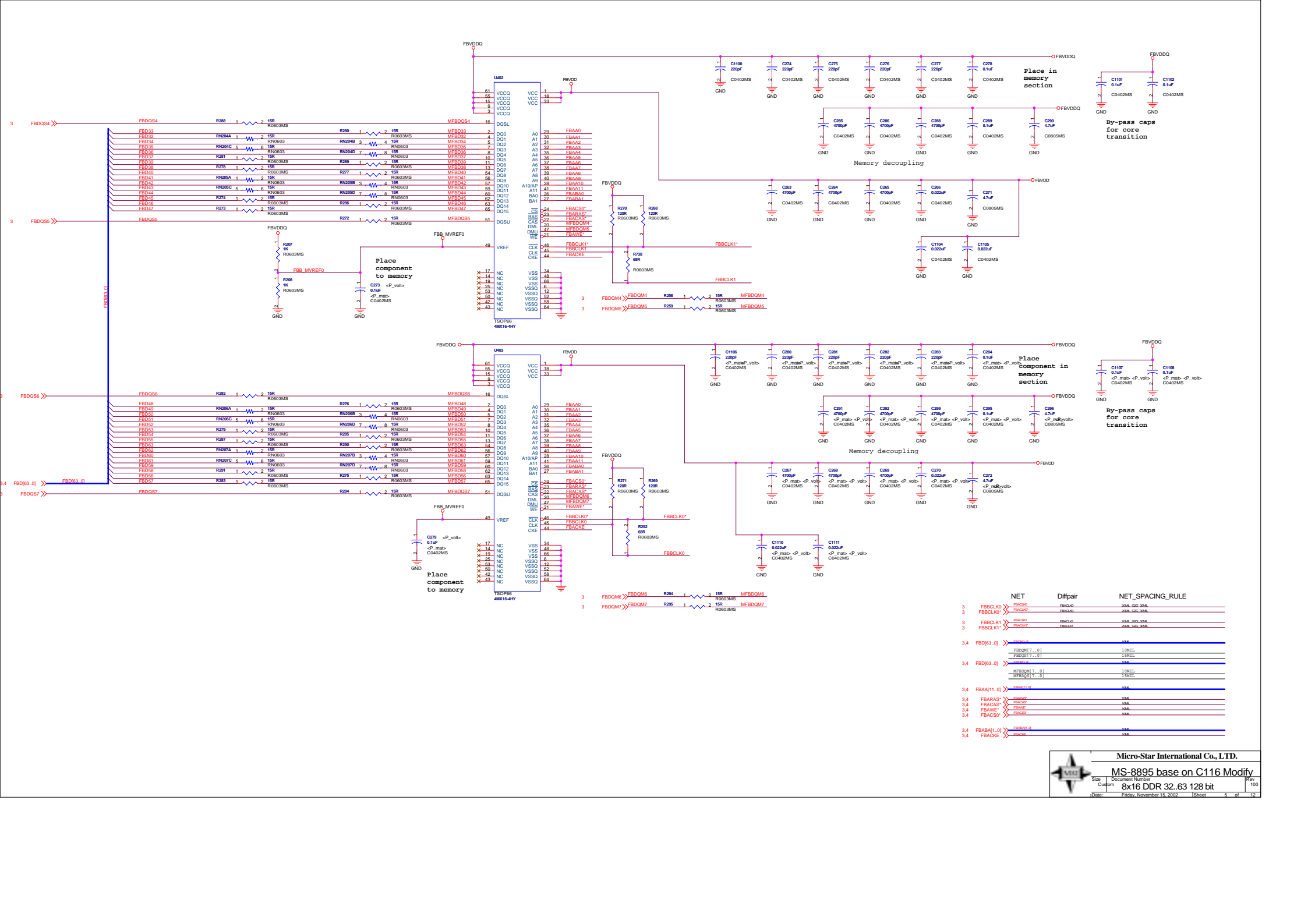


## AGP spacing rules

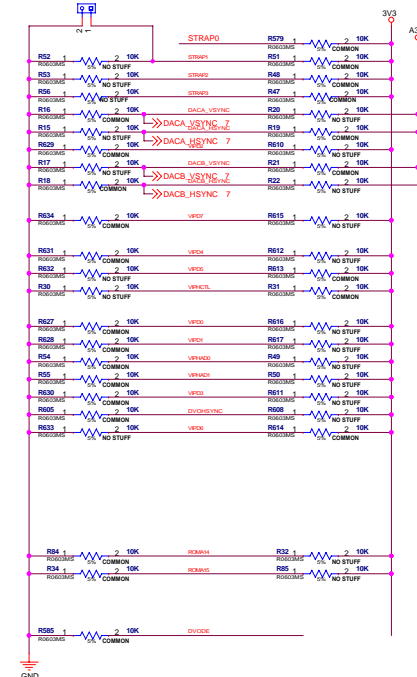
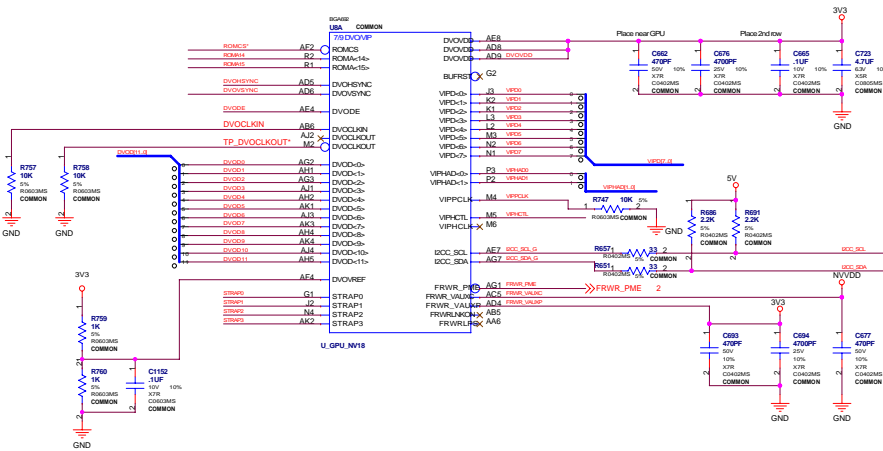
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PC0FRAME	10MBL
PC0R2	10MBL
PC0R3	10MBL
PC0R4	10MBL
PC0EVSSEL	10MBL
PC0PAR	10MBL
PC0INTA	10MBL
PC0R0B	10MBL
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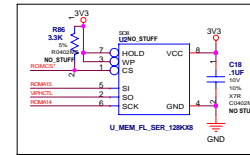
## NV18 STRAPPING, I/O INTERFACE, BIOS, FAN CONTROL AND TEMP SENSOR



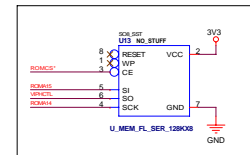
## STRAPPING OPTIONS

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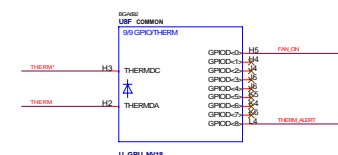
## BIOS (serial)



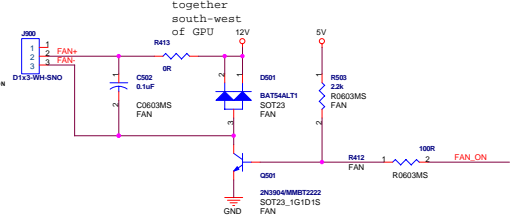
## BIOS (alternative)



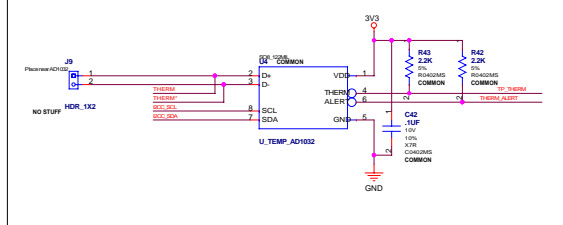
## NV18 GPIO



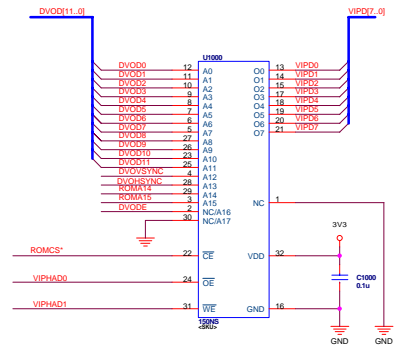
## FAN Control



## TEMP Sensor

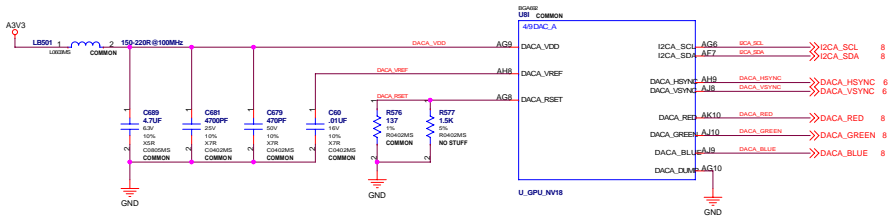


NET		Diffpair	NET_SPACING_RULE
THERM	THERM		20MIL G2G 30MIL
THERM*	THERM		20MIL G2G 30MIL
CUCCEL1.G		10MIL TRACE	
DUCKOUT1		20MIL TRACE	
DUCK2		10MIL TRACE	
DUCK3		10MIL TRACE	
DUCK5V1C		10MIL TRACE	
VMP1T.G		10MIL TRACE	3.2V
VMP1C1R		10MIL TRACE	3.2V

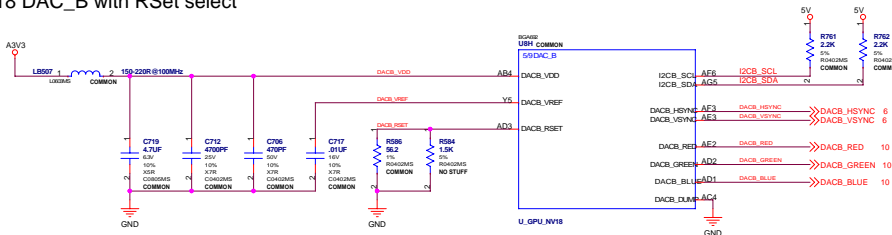


NV18 DAC\_A, DAC\_B, PLL, SYNC AMPL

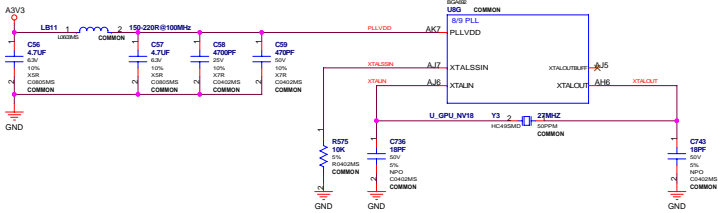
NV18 DAC\_A



NV18 DAC\_B with RSet select



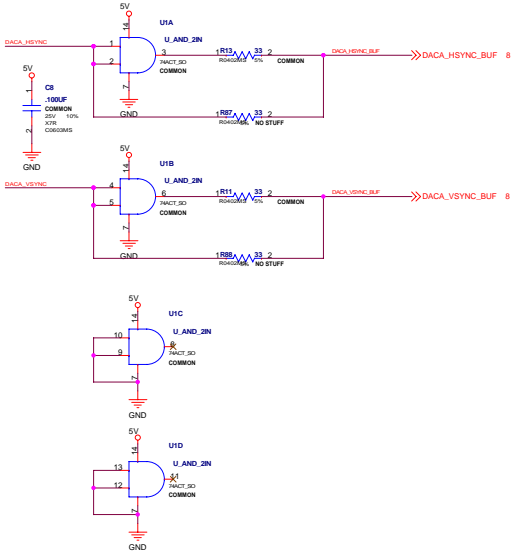
NV18 PLL



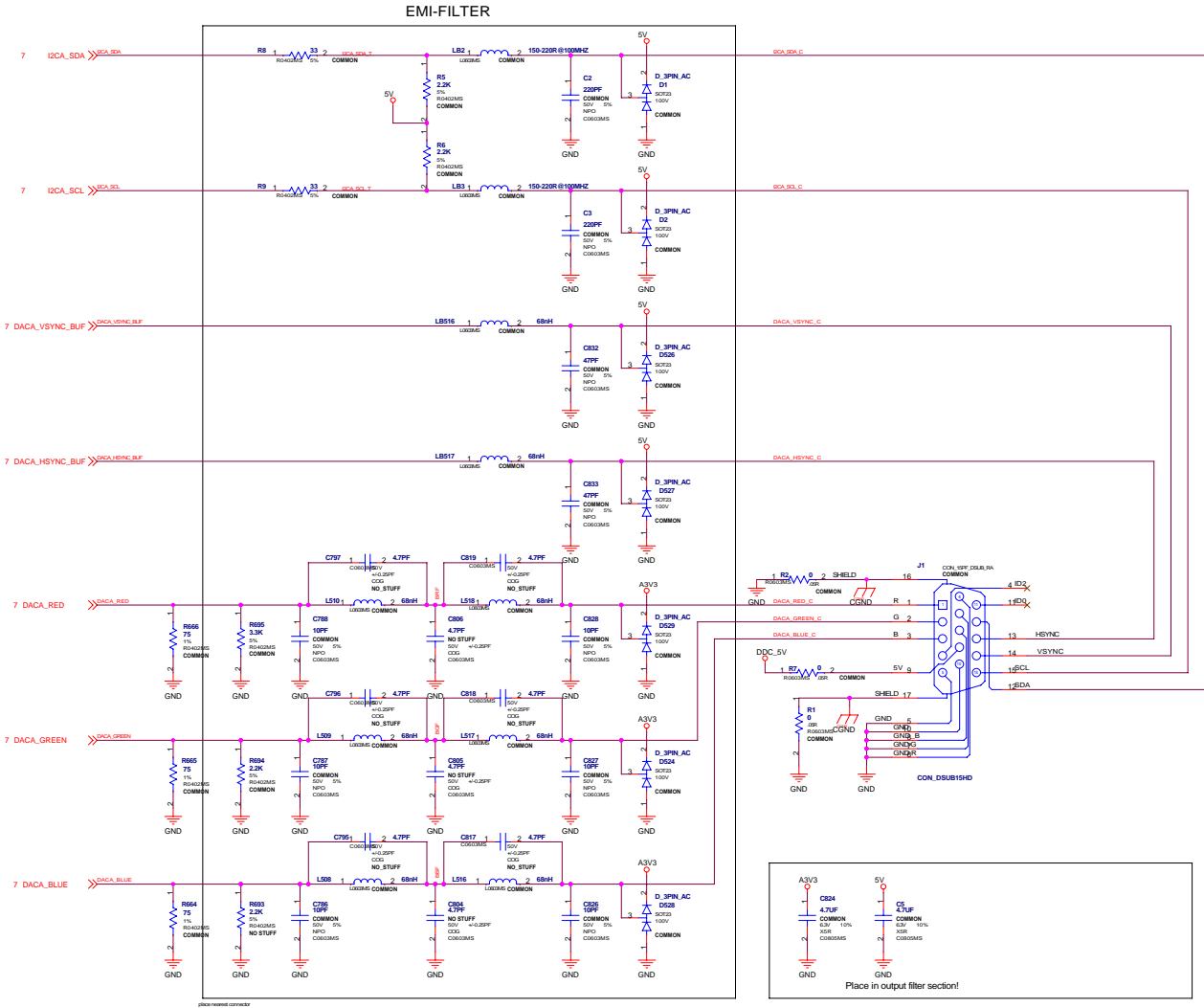
NET	NET_PHYSICAL_TYPE	VOLTAGE
DACA_VDD	10M_TRACE	3.3V
DACA_VREF	10M_TRACE	3.3V
DACA_RESET	10M_TRACE	3.3V
DACB_VDD	10M_TRACE	3.3V
DACB_VREF	10M_TRACE	3.3V
DACB_RESET	10M_TRACE	3.3V
PLL_VDD	10M_TRACE	3.3V

NET	Diffpair	NET_SPACING_RULE
8 DACA_RED	DACA_GREEN	20M_QOS_20M
8 DACA_GREEN	DACA_BLUE	20M_QOS_20M
8 DACA_BLUE	DACA_RED	20M_QOS_20M
10 DACB_RED	DACB_GREEN	20M_QOS_20M
10 DACB_GREEN	DACB_BLUE	20M_QOS_20M
10 DACB_BLUE	DACB_RED	20M_QOS_20M

SYNC Amplifier




DACB output



NET	NET_PHYSICAL_TYPE	IMPEDANCE_RULE	NET_SPACING_TYPE
DACA_RED_C	10MIL TRACE		20MIL
DACA_GREEN_C	10MIL TRACE		20MIL
DACA_BLUE_C	10MIL TRACE		20MIL
ARF	10MIL TRACE		20MIL
AGF	10MIL TRACE		20MIL
ABF	10MIL TRACE		20MIL

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Document Number: DAC B CONNECT

Date: Friday, November 15, 2002

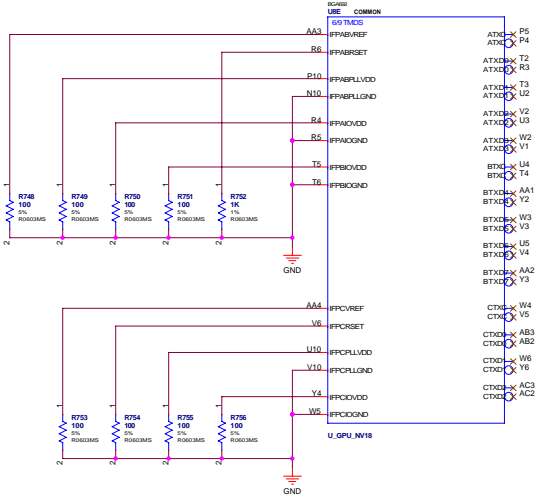
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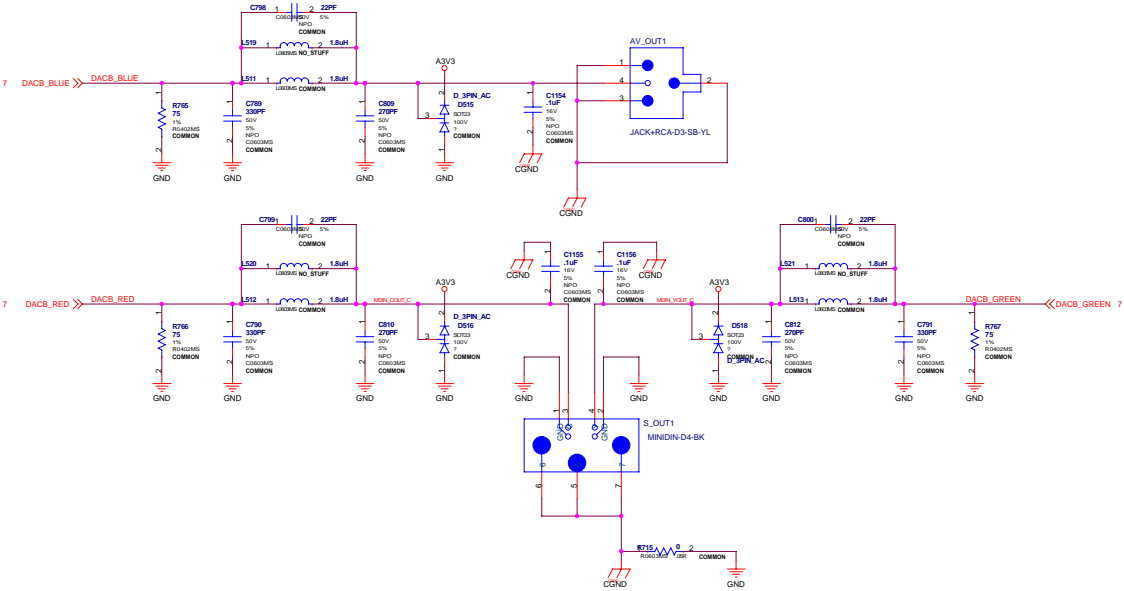
INTERNAL TMD5 POWER AND DECOUPLING

NET	NET_PHYSICAL_TYPE	VOLTAGE
PPVABREF	12MIL_TRACE	3.3V
PPVAPLLED	12MIL_TRACE	3.3V
PPACVDD	12MIL_TRACE	3.3V
PPBODD	12MIL_TRACE	3.3V
PPCVRP	12MIL_TRACE	3.3V
PPCPLLED	12MIL_TRACE	3.3V
PPCPOVDD	12MIL_TRACE	3.3V
PAS_RETURN	12MIL_TRACE	3.3V
TMDE_BACK	12MIL_TRACE	3.3V




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VIDEO IN/OUT CONNECTOR



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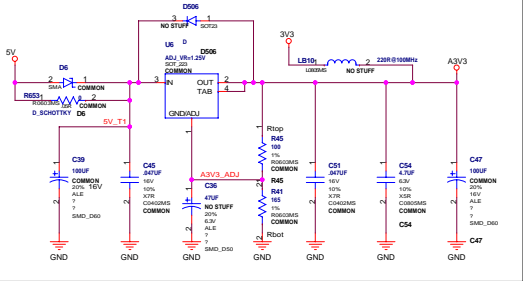
VIDEO IN/OUT CONNECT

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POWER SUPPLY

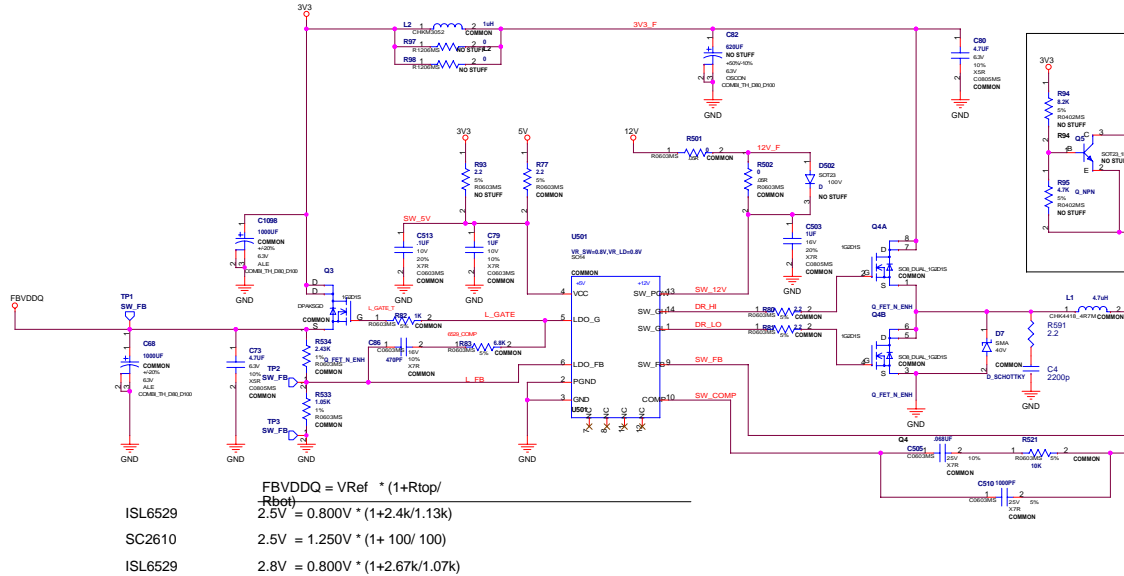
ANALOG 3V3



$V_{out} = V_{Ref} * (1 + R_{bot}/R_{top})$   
 $3.31V = 1.25V * (1 + (165/100))$

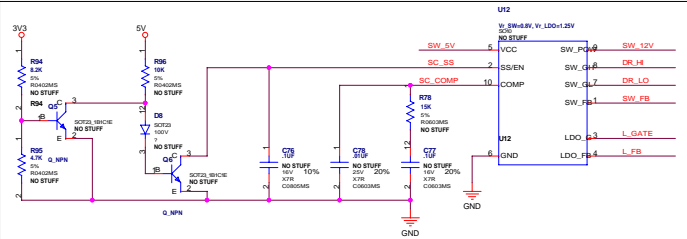
NET	NET_PHYSICAL_TYPE	VOLTAGE
3V3	12ML_TRACE	3.3V
A3V3	12ML_TRACE	3.3V
FBVDD	12ML_TRACE	2.5V
3V3TMD5	12ML_TRACE	2.5V
NVDD	12ML_TRACE	1.65V
5V	12ML_TRACE	5V
12V	12ML_TRACE	12V
3V3_F	12ML_TRACE	3.3V
12V_F	12ML_TRACE	12V
5V_FUSED	12ML_TRACE	5V
DDC_5V	12ML_TRACE	5V
SW_12V	10ML_TRACE	1.2V
SW_5V	10ML_TRACE	5V
DR_HI	10ML_TRACE	
DR_LO	10ML_TRACE	
SW_FB	10ML_TRACE	
SW_COMP	10ML_TRACE	
A3V3_ADJ	10ML_TRACE	
3V3TMD5_ADJ	10ML_TRACE	
FBVDD_ADJ	10ML_TRACE	
FBVDD_ADJ	10ML_TRACE	

NVDD-SWITCHER / FBVDD-LDO CONTROLLER ISL6529



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

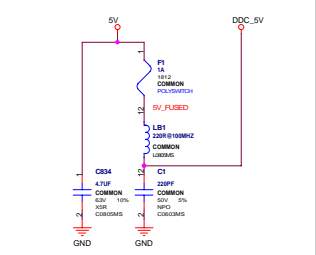
ALTERNATIVE TO ISL6529



$NVDD = V_{Ref} * (1 + R_{top}/R_{bot})$

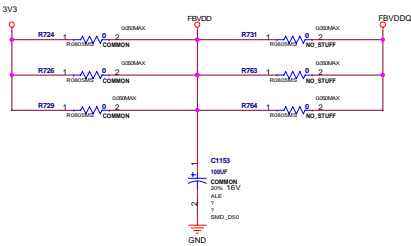
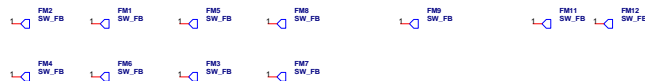
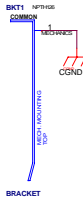
ISL6529  $1.656V = 0.800V * (1 + 1070/1000)$   
SC2610  $1.656V = 0.800V * (1 + 1070/1000)$

DDC 5V




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MECHANICS



NET	NET_PHYSICAL_TYPE	VOLTAGE
3V3	12M_TRACE	
FBVDD	12M_TRACE	
AV	12M_TRACE	
FBVDD_ADI	12M_TRACE	

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