# 8884 VER:00A

GF4-Ti 4200, 4MX16 / 8MX16 DDR, DUAL-VGA, S-IN/OUT, AV-IN/OUT, CATV-IN, AGP4X

PCI DEVICE ID 0X0=0X253 FOR NV25.

| Sub Assemblies | Description |
|---|---|
| COMMON | Components are stuffed for all SKUs |
| NO_STUFF | Components are not stuffed |
| PRI_DVI_I | Components stuffed for Primary VGA |
| PRI_PROT | Components stuffed for Primary Protection |
| SEC_DVI_I | Components stuffed for Secondary DVI |
| SEC_PROT | Components stuffed for Secondary Protection |
| AGP3VFBDQ | Components stuffed for AGP 3.3V to FBVDD |
| FBVDD-FBDQ | Components stuffed for FBVDDQ 2.5V to FBVDD |
| PLL-SEQ | Components stuffed for PLL Sequence |
| PWR-SEQ | Components stuffed for Power Sequence |
| PWR-SEQ-BP | Components stuffed for Power Sequence By-PASS |
| NVVDD-2602 | Components stuffed for NVVDD Power |
| FBVDD-2602 | Components stuffed for FBVDD Power |
| SC1541 | Components stuffed for 3.3VL Fixed |
| SC1565 | Components stuffed for SC1565 - 3.3VL Adj. |
| FB64LO | Components stuffed for FBA_DATA and FBD_DATA |
| FB64UP | Components stuffed for FBC_DATA and FBD_DATA |
| SER-PROM | Components stuffed for Serial PROM |
| PAR-PROM | Components stuffed for Parallel PROM |
| FAN_HS-LFT | Components stuffed for Fan / Blower left of the GPU |
| FAN_HS-RGT | Components stuffed for Fan / Blower east of the GPU |
| FAN_SNK | Fan Sink Component |
| HEAT_SNK | Heat Sink Component |
| VIVO | Components stuffed for Video IN/OUT |
| VIDO-7104 | SAA7104 Video Out |
| CX-ENC-TVOUT | Components stuffed for CX25871 - TV-OUT |
| SOCKET | Components stuffed for Socket |
| 64MB-4MX16 | Components stuffed for Mem-CFG: 64MB (4Mx16) memory |
| BRACKET | IO Bracket / VGA-DIN-DVI-I |
| BRACKET-VGA | IO Bracket / VGA- -DVI-I |
| FBVDQ-2602 | Components stuffed for FBVDDQ Power |
| FBVDD_ADJ | Components to adjust FBVVD out voltage. |
| FBVDQ_ADJ | Components to adjust FBVVDQ out voltage. |


| Title | Section | Page |
|---|---|---|
| Cover Sheet | 0.a | 1 |
| AGP Interface | 1.a | 2 |
| NV25 Frame Buffer Intefrace | 2.a | 3 |
| Frame Buffer 0..31 | 2.b | 4 |
| Frame Buffer 32..63 | 2.c | 5 |
| Frame Buffer 64..95 | 2.d | 6 |
| Frame Buffer 96..128 | 2.e | 7 |
| DVO BUS | 3.a | 8 |
| SAA7108 __ VIVO | 3.b | 9 |
| NV25 DAC A/B | 4.a | 10 |
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| DAC-A __ SEC-VGA | 4.c | 12 |
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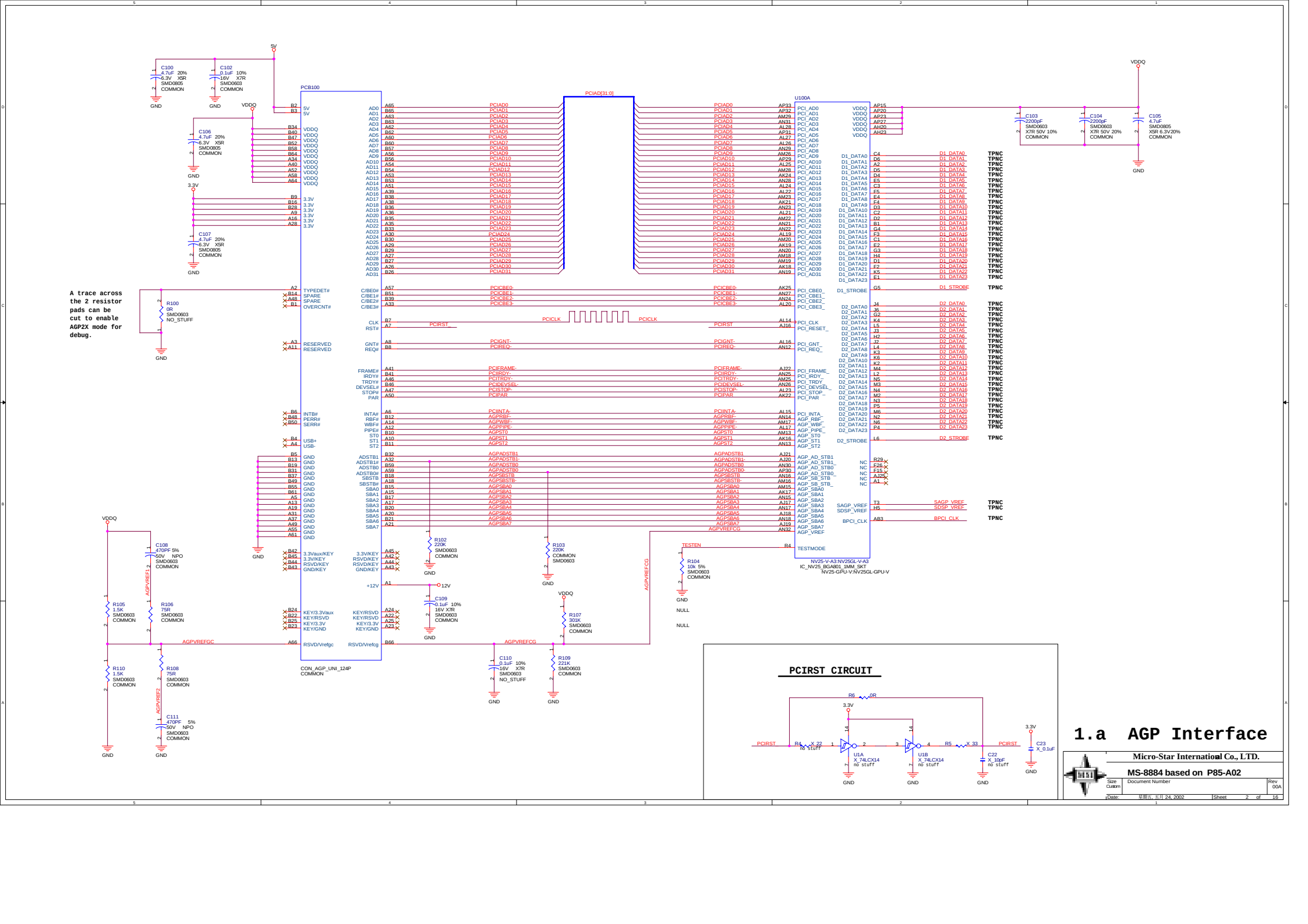
| NV25 Strap / P-S BIOS | 6.a | 14 |
| | | |
| | | |
| | | |


NVVDD : 1.641 to 1.690

FBVDD : 3.19 to 3.34

FBVDDQ : 2.54 to 2.65

## 0.a Cover Page


A trace across the 2 resistor pads can be cut to enable AGP2X mode for debug.
PCB100
CON_AGP_UNI_124P
COMMON
U100A
NV25-V-A3:NV25GL-V-A3
IC_NV25_BGA801_1MM_SKT
NV25-GPU-V:NV25GL-GPU-V
PCIRST CIRCUIT
1.a AGP Interface
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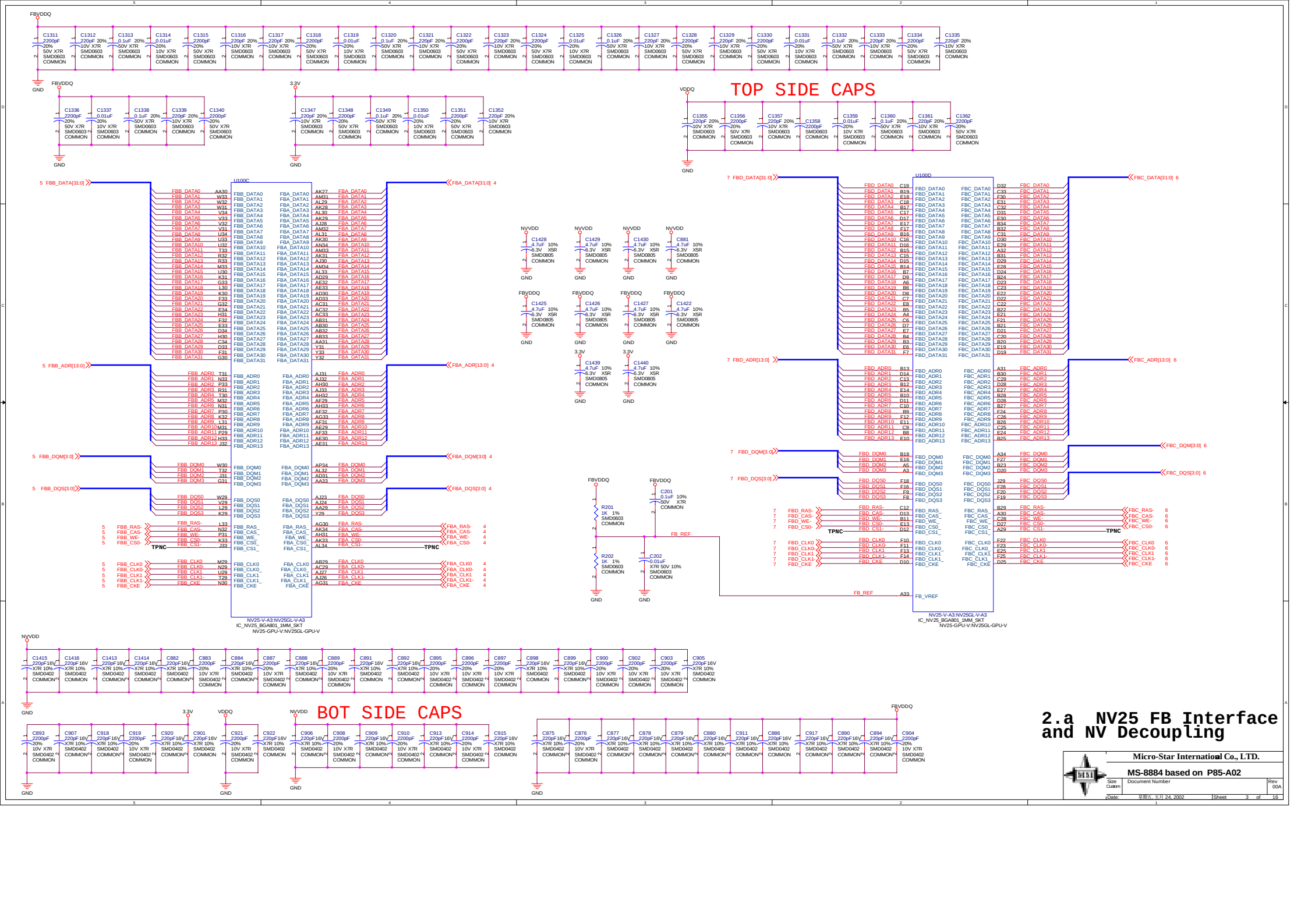
MS-8884 based on P85-A02
Size Custom
Document Number
Rev 00A
Date: 星期五, 九月 24, 2002
Sheet 2 of 16


TOP SIDE CAPS
BOT SIDE CAPS
U100C
U100D
NV25-V-A3:NV25GL-V-A3
IC_NV25_BGA801_1MM_SKT
NV25-GPU-V:NV25GL-GPU-V
TPNC
2.a NV25 FB Interface and NV Decoupling
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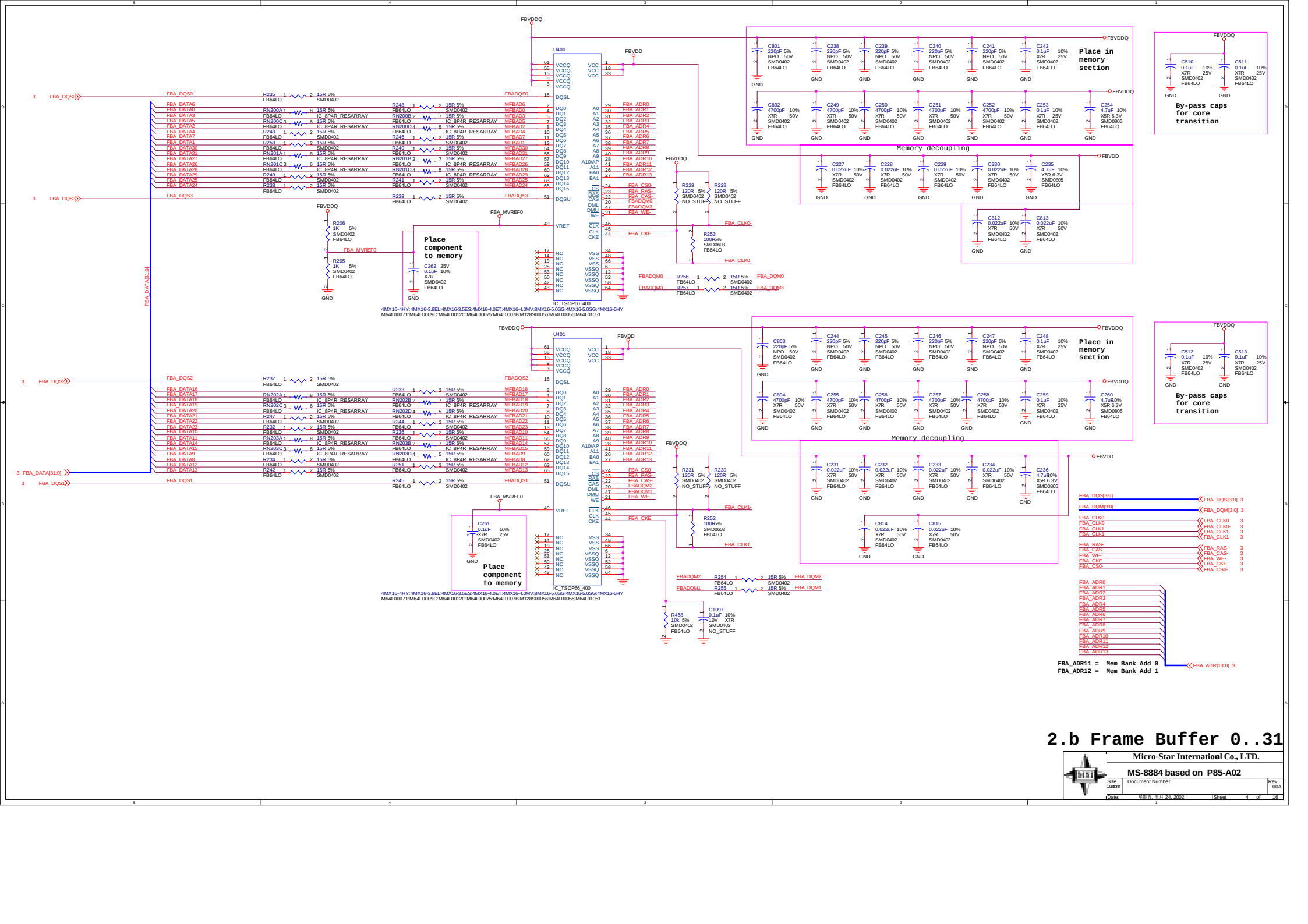


# 2.b Frame Buffer 0..31

| | |
|---|---|
| Micro-Star International Co., LTD. | |
| MS-8884 based on P85-A02 | |
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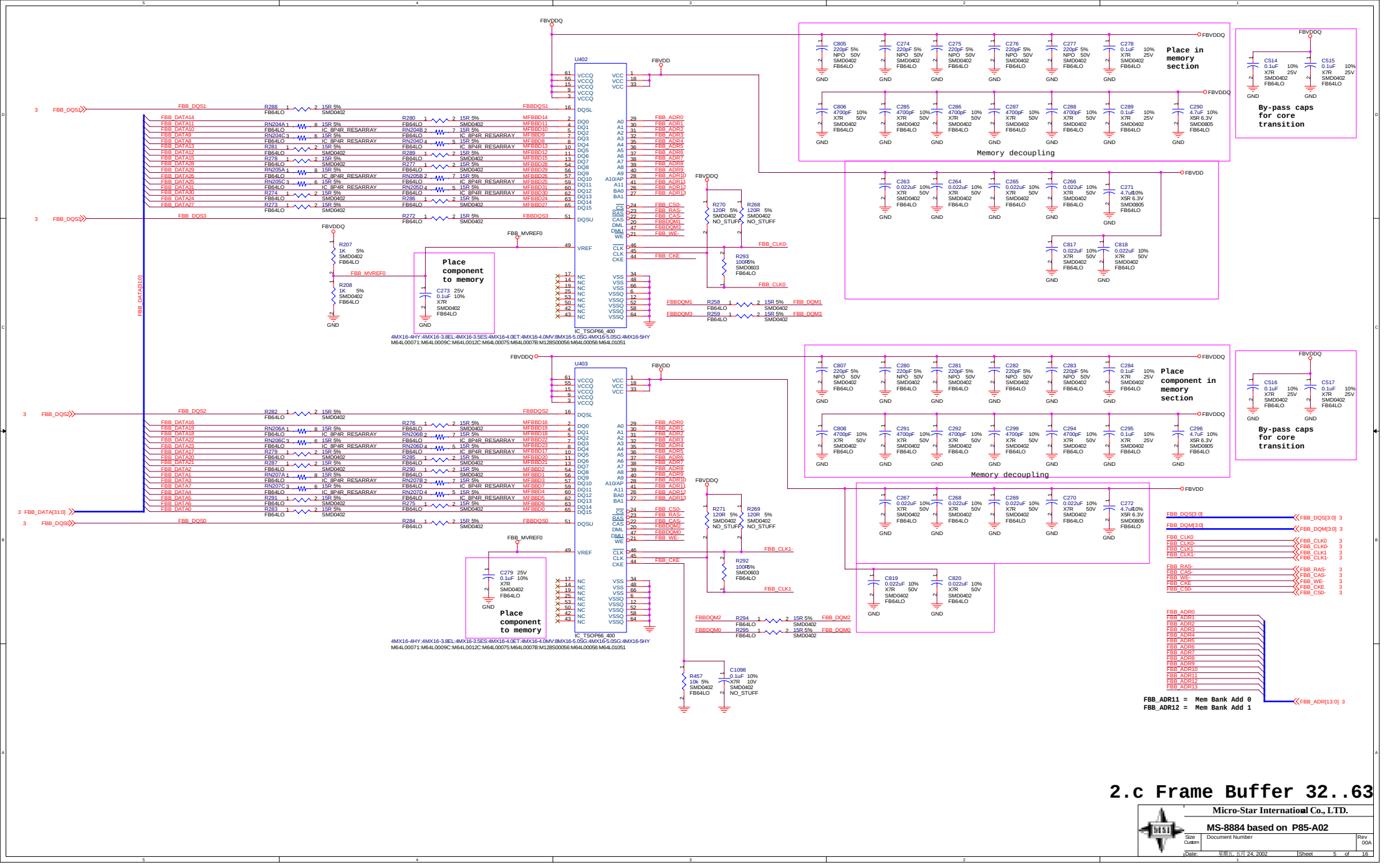


# 2.c Frame Buffer 32..63

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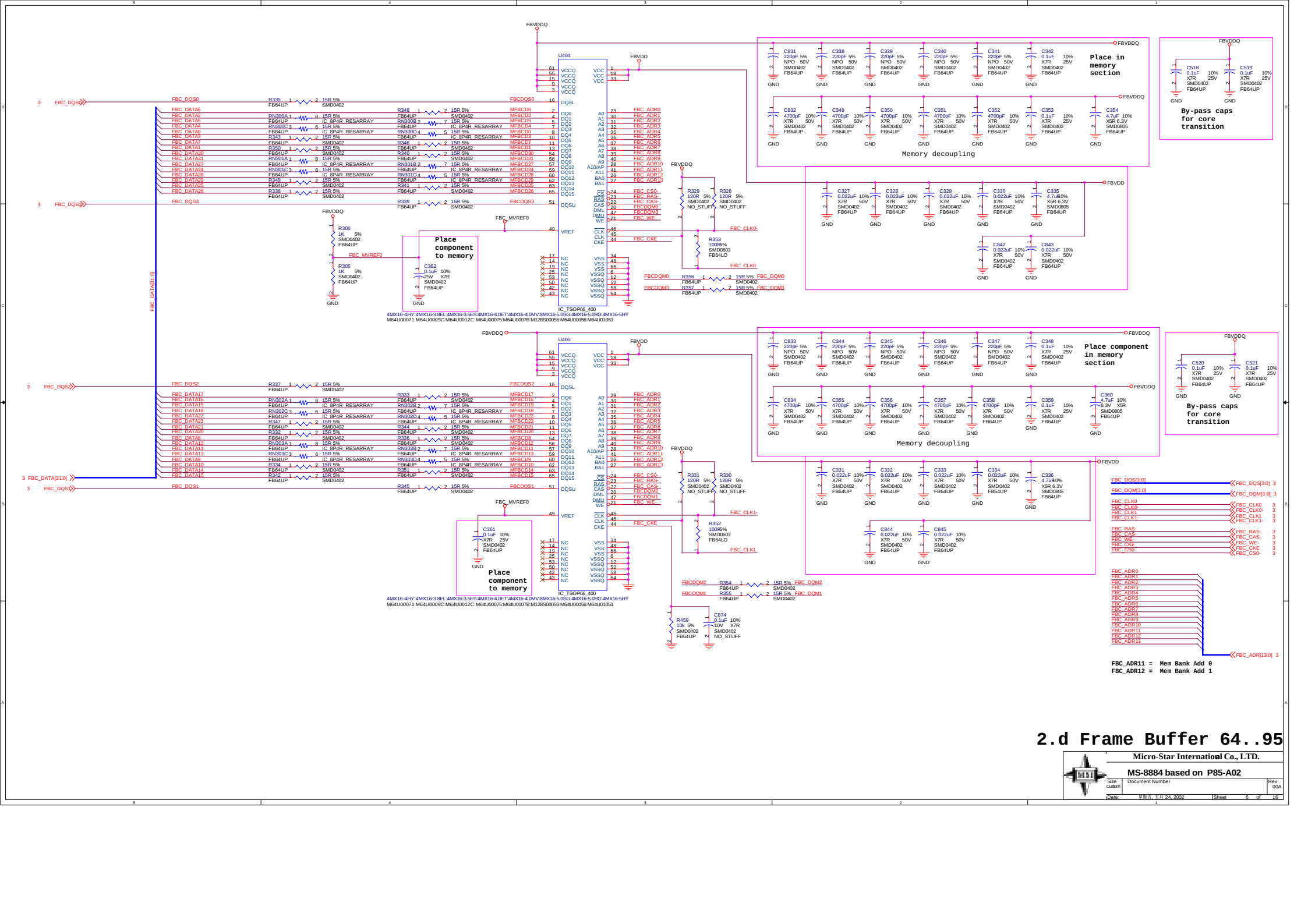
FBVDDQ
U404
U405
IC_TSOP66_400
4MX16-4HY:4MX16-3.8EL:4MX16-3.5ES:4MX16-4.0ET:4MX16-4.0MV:8MX16-5.0SG:4MX16-5.0SG:4MX16-5HY
M64U00071:M64U0009C:M64U0012C:M64U00075:M64U0007B:M128S00056:M64U00056:M64U01051
Place component to memory
Place in memory section
Memory decoupling
By-pass caps for core transition
FBC_DQS[3:0]
FBC_DQM[3:0]
FBC_CLK0
FBC_CLK0-
FBC_CLK1
FBC_CLK1-
FBC_RAS-
FBC_CAS-
FBC_WE-
FBC_CKE
FBC_CS0-
FBC_ADR[13:0]
FBC_ADR11 = Mem Bank Add 0
FBC_ADR12 = Mem Bank Add 1
2.d Frame Buffer 64..95
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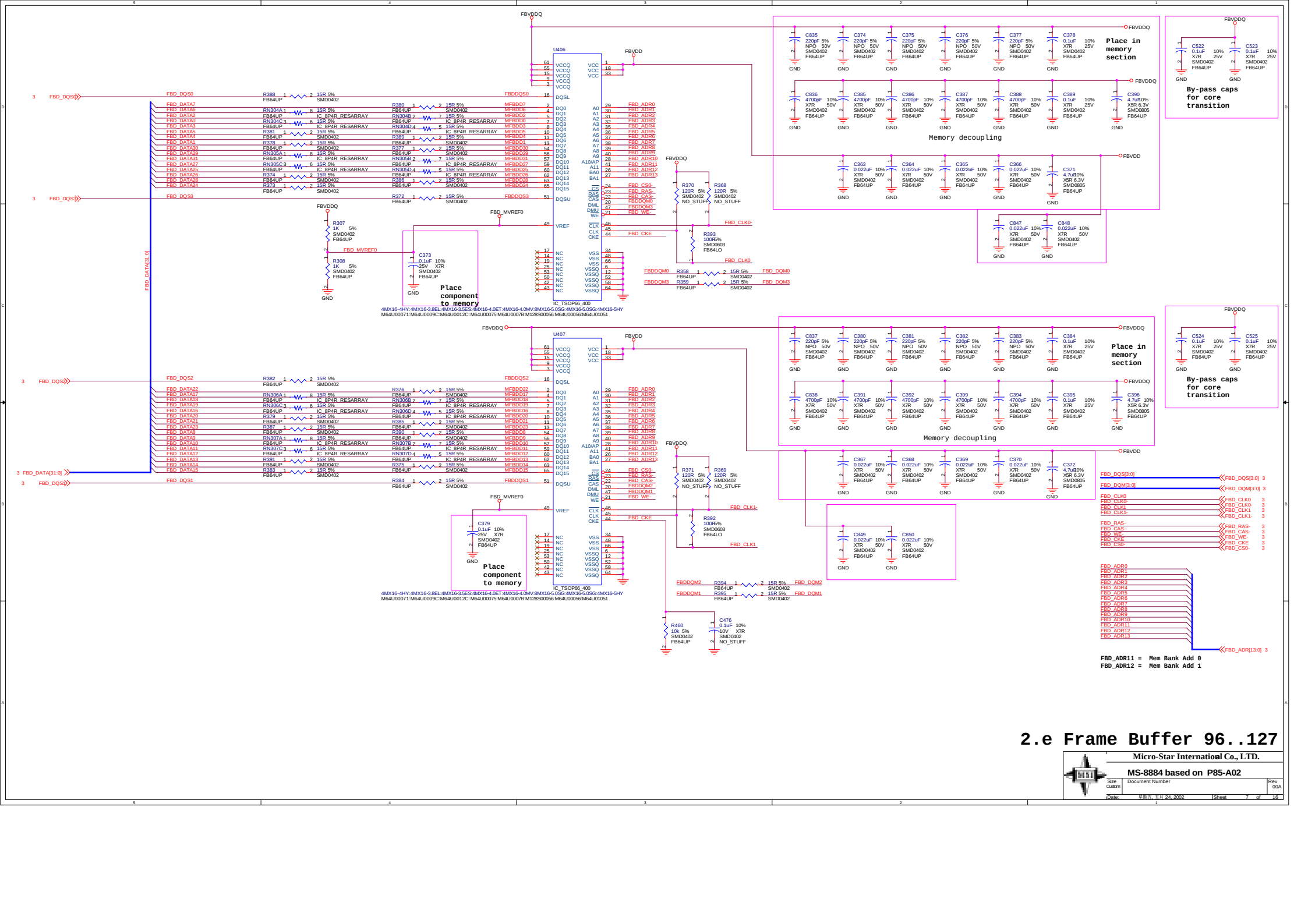
FBVDDQ
FBVDD
U406
U407
IC_TSOP66_400
4MX16-4HY:4MX16-3.8EL:4MX16-3.5ES:4MX16-4.0ET:4MX16-4.0MV:8MX16-5.0SG:4MX16-5.0SG:4MX16-5HY
M64U00071:M64U0009C:M64U0012C:M64U00075:M64U0007B:M128S00056:M64U00056:M64U01051
Place in memory section
Memory decoupling
By-pass caps for core transition
Place component to memory
FBD_DQS[3:0]
FBD_DQM[3:0]
FBD_CLK0
FBD_CLK0-
FBD_CLK1
FBD_CLK1-
FBD_RAS-
FBD_CAS-
FBD_WE-
FBD_CKE
FBD_CS0-
FBD_ADR[13:0]
FBD_ADR11 = Mem Bank Add 0
FBD_ADR12 = Mem Bank Add 1
2.e Frame Buffer 96..127
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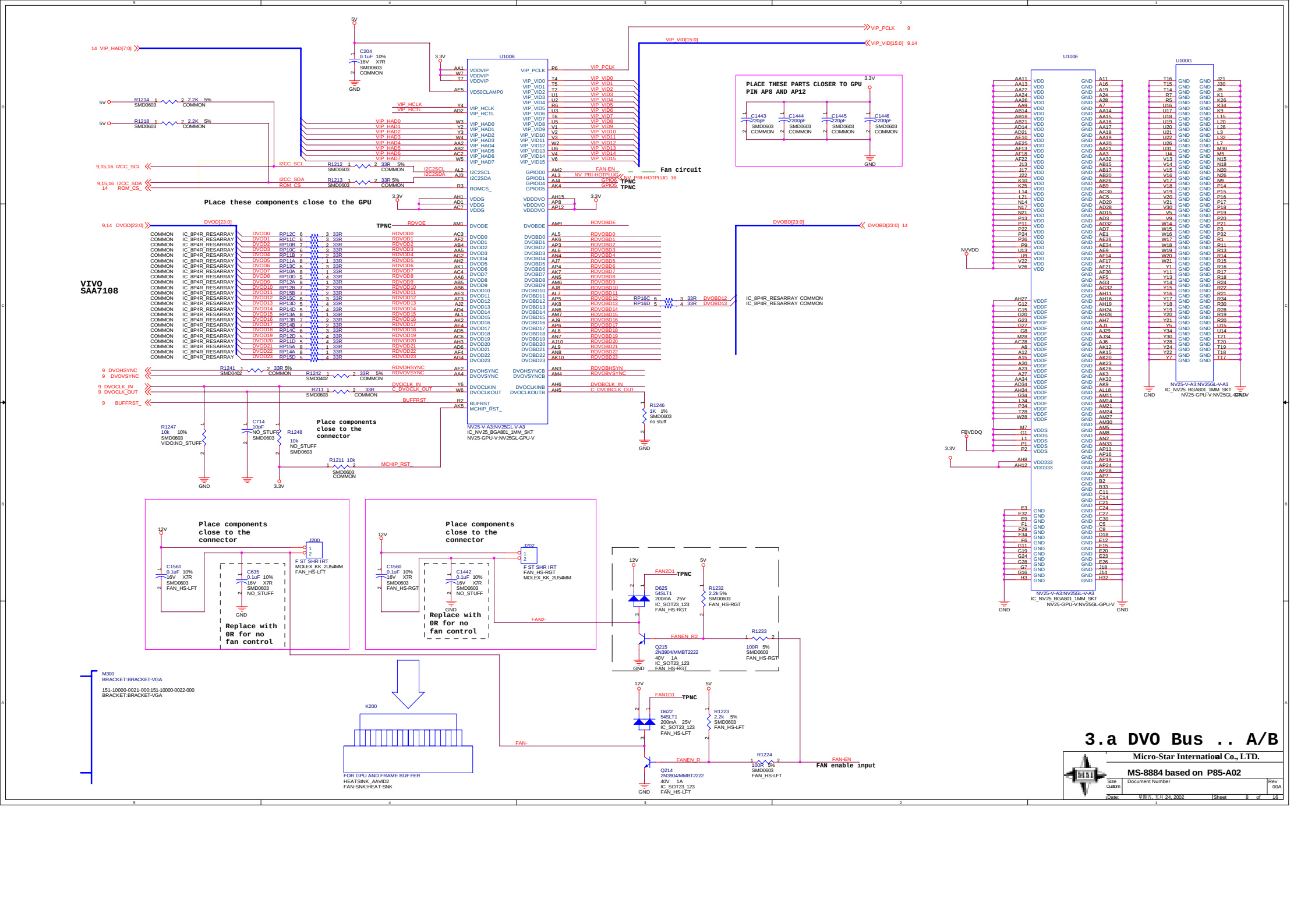
VIVO
SAA7108
Place these components close to the GPU
Place components close to the connector
Replace with 0R for no fan control
PLACE THESE PARTS CLOSER TO GPU PIN AP8 AND AP12
Fan circuit
FAN enable input
TPNC
U100B
U100E
U100G
NV25-V-A3:NV25GL-V-A3
IC_NV25_BGA801_1MM_SKT
NV25-GPU-V:NV25GL-GPU-V
FOR GPU AND FRAME BUFFER
HEATSINK_AAVID2
FAN-SNK:HEAT-SNK
3.a DVO Bus .. A/B
Micro-Star International Co., LTD.
MS-8884 based on P85-A02
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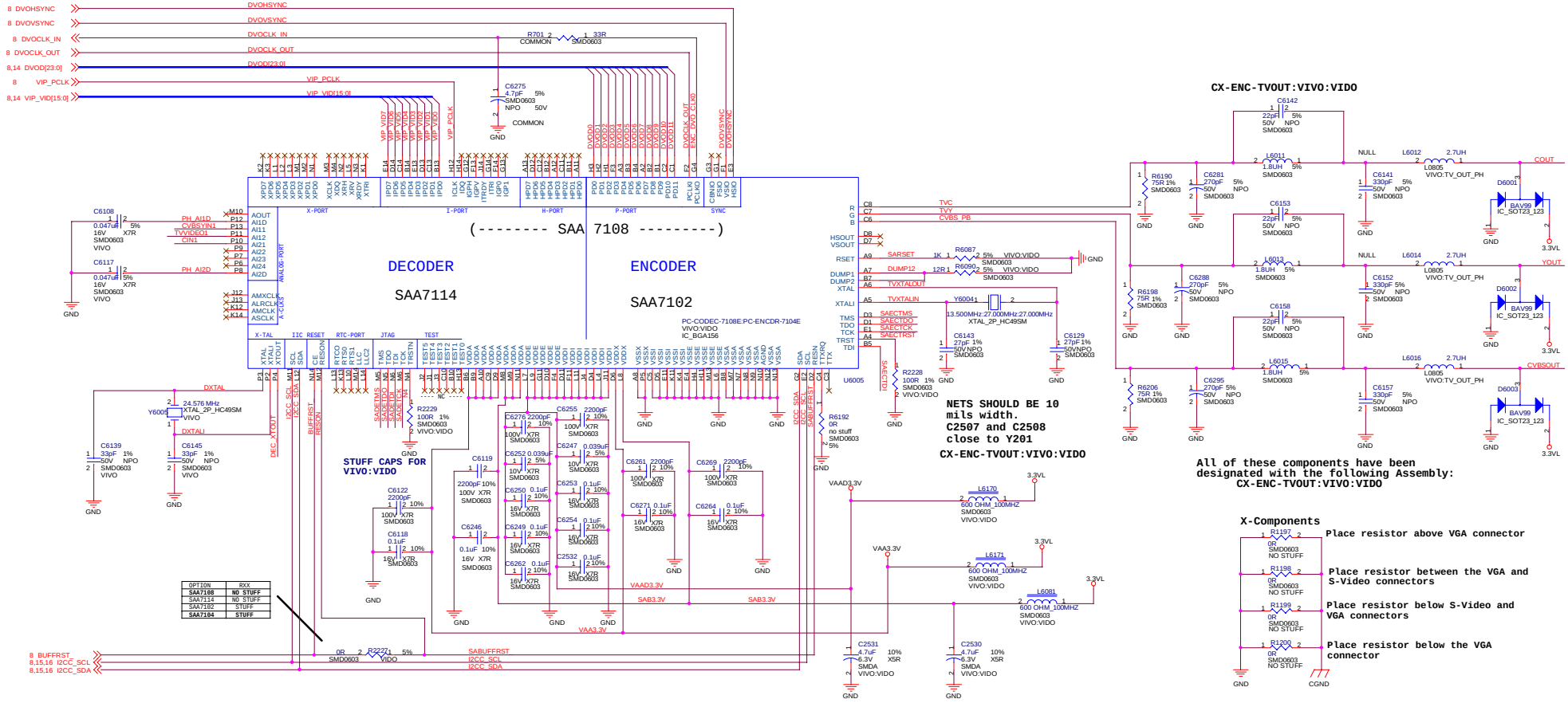


# 3.b SAA7108 - VIVO

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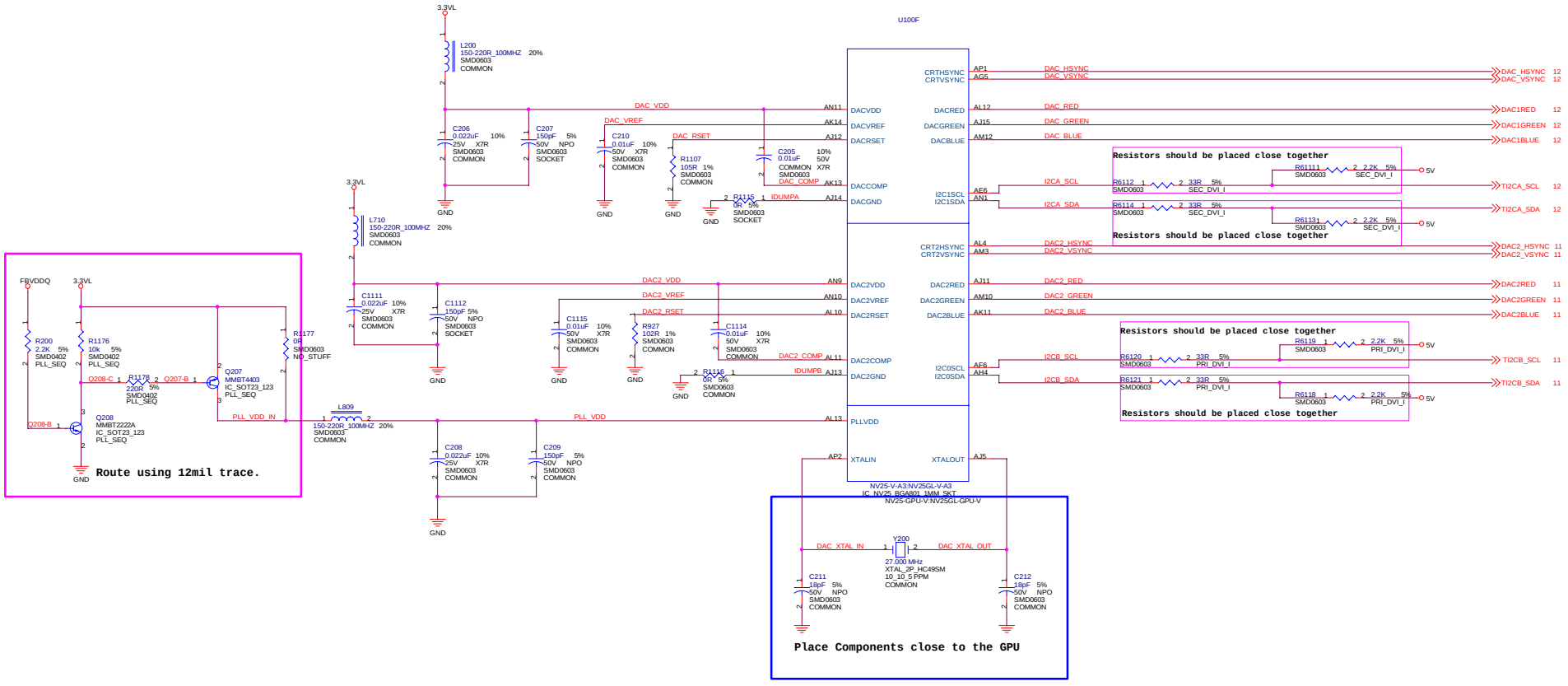


# 4.a NV25 .. PLL / DAC / I2C

| | | |
|---|---|---|
| Micro-Star International Co., LTD. | | |
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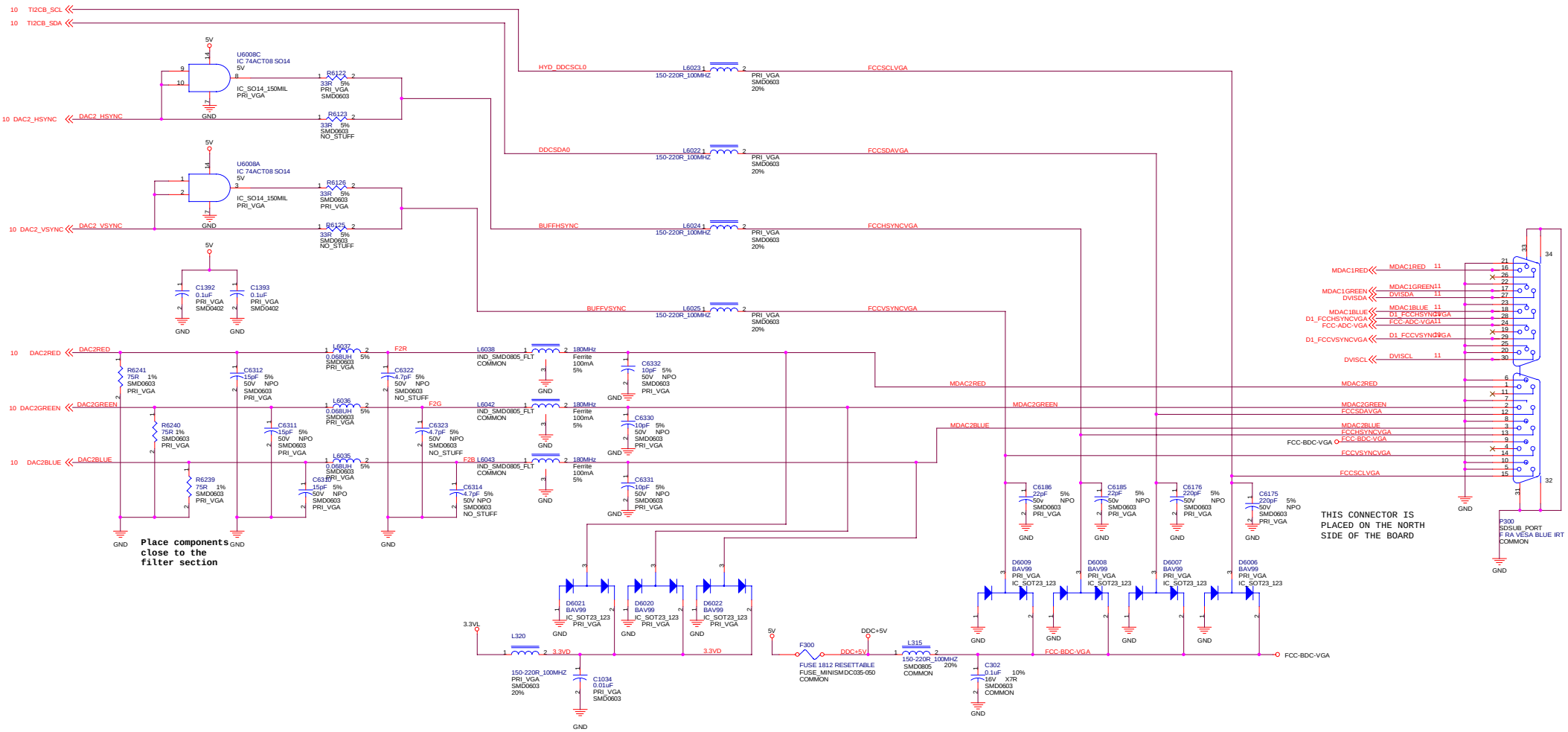


# 4.b DACB I/O, I2C0 -- SEC

| | |
|---|---|
| Micro-Star International Co., LTD. | |
| MS-8884 based on P85-A02 | |
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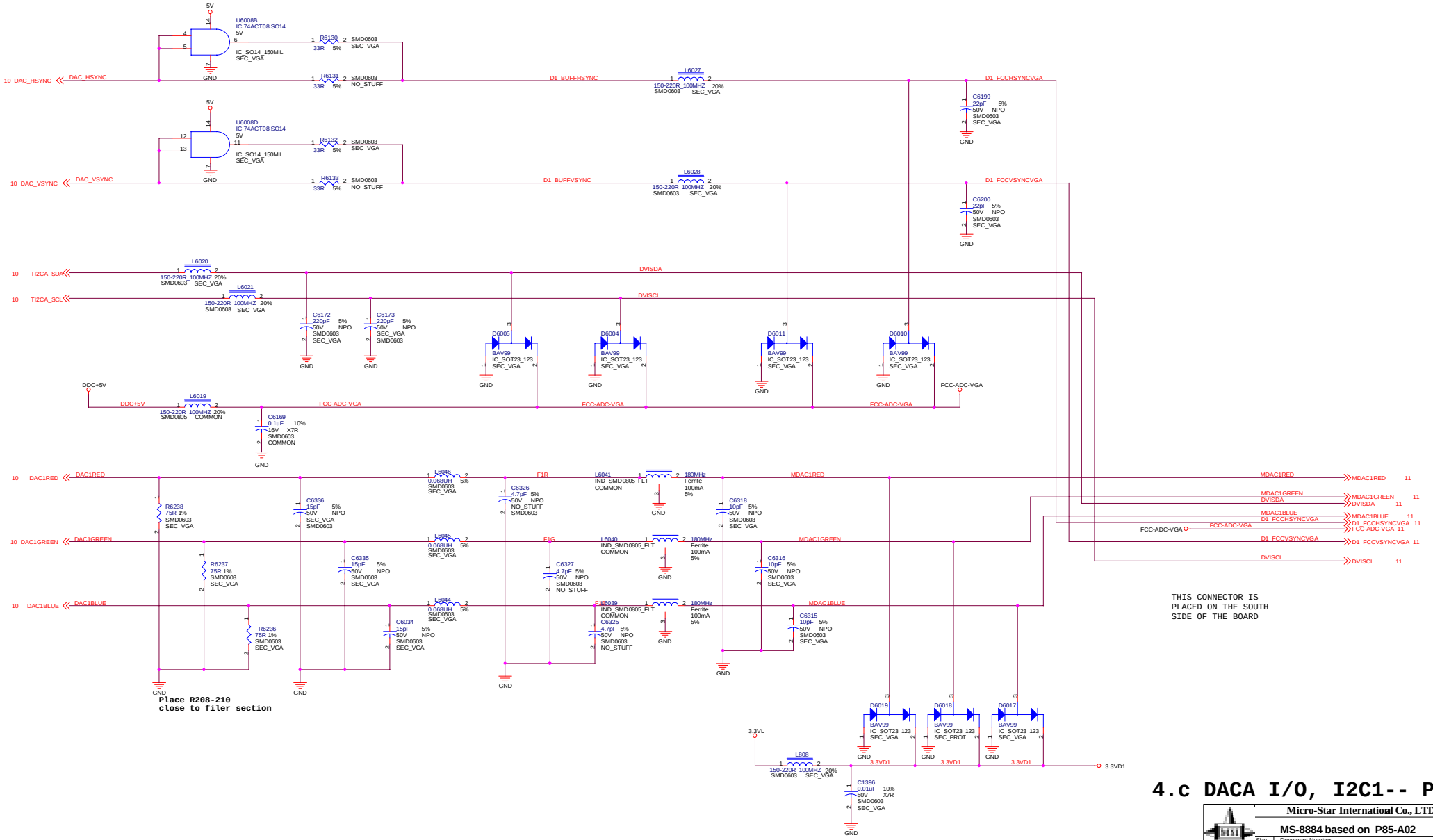


# 4.c DACA I/O, I2C1-- PRI

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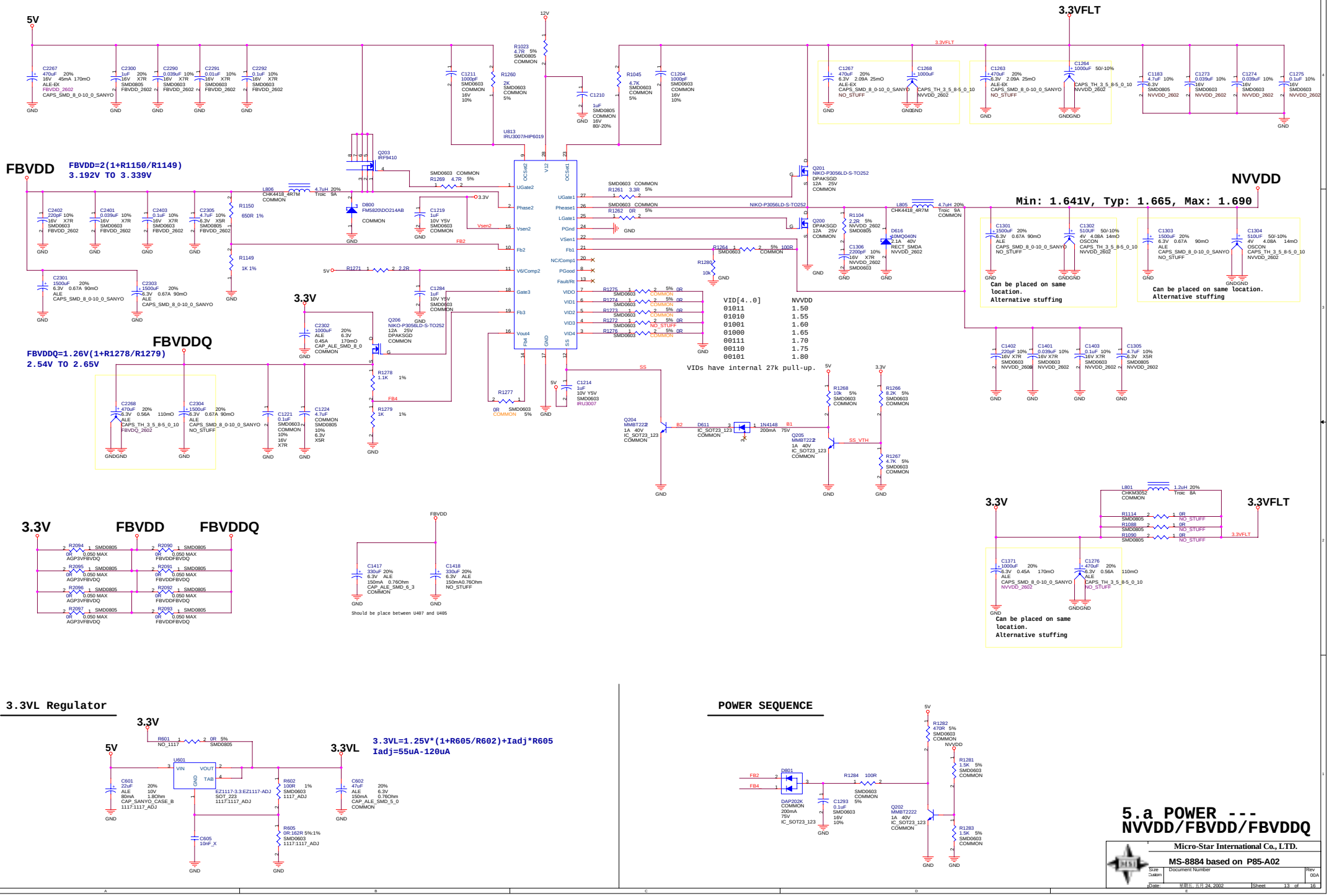
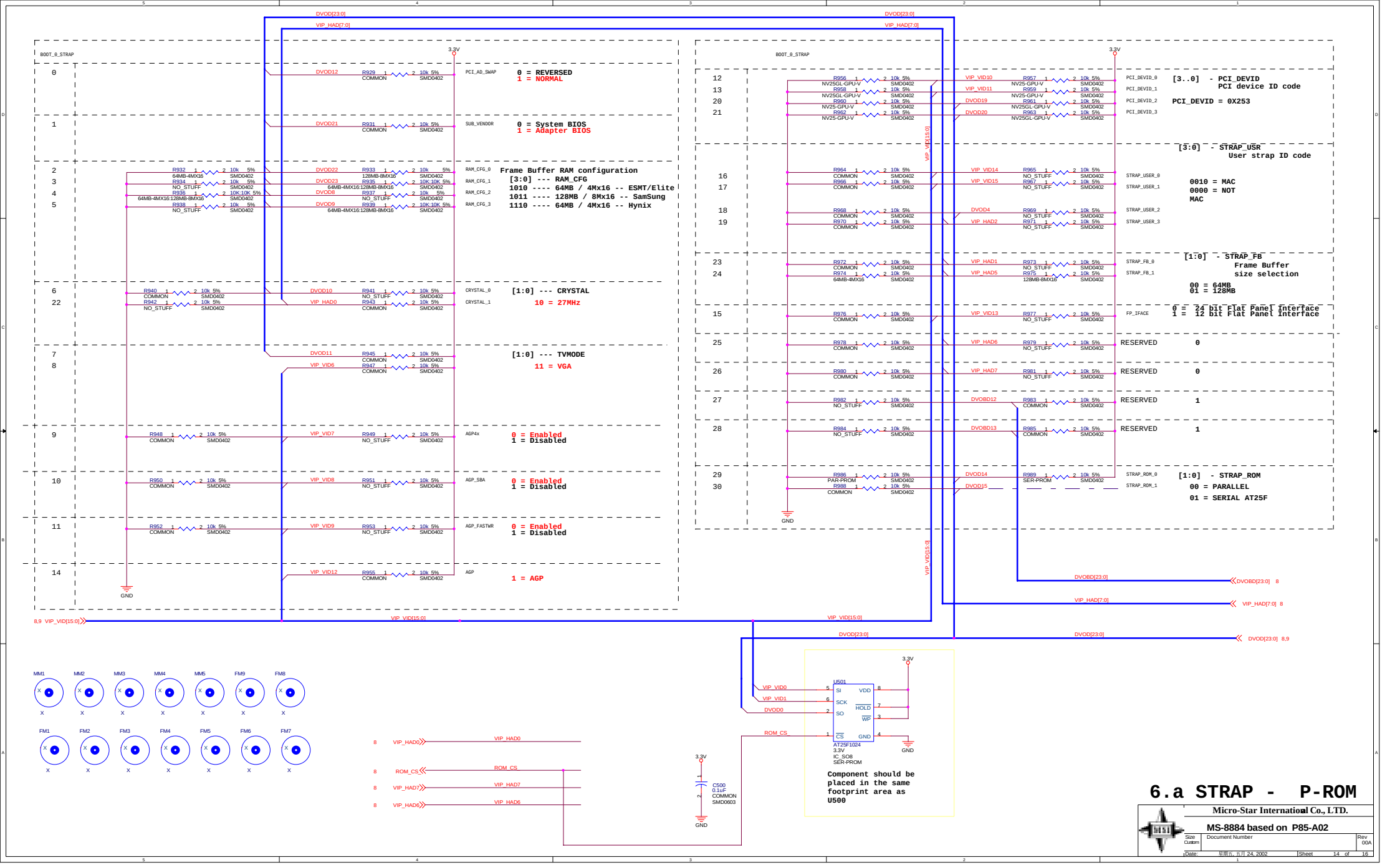

5V
3.3VFLT
FBVDD
FBVDD=2(1+R1150/R1149)
3.192V TO 3.339V
NVDDD
Min: 1.641V, Typ: 1.665, Max: 1.690
FBVDDQ
FBVDDQ=1.26V(1+R1278/R1279)
2.54V TO 2.65V
3.3V
VID[4..0] NVDD
01011 1.50
01010 1.55
01001 1.60
01000 1.65
00111 1.70
00110 1.75
00101 1.80
VIDs have internal 27k pull-up.
Can be placed on same location.
Alternative stuffing
3.3VL Regulator
3.3VL=1.25V*(1+R605/R602)+Iadj*R605
Iadj=55uA-120uA
POWER SEQUENCE
5.a POWER --- NVVDD/FBVDD/FBVDDQ
Micro-Star International Co., LTD.
MS-8884 based on P85-A02




# 6.a STRAP - P-ROM

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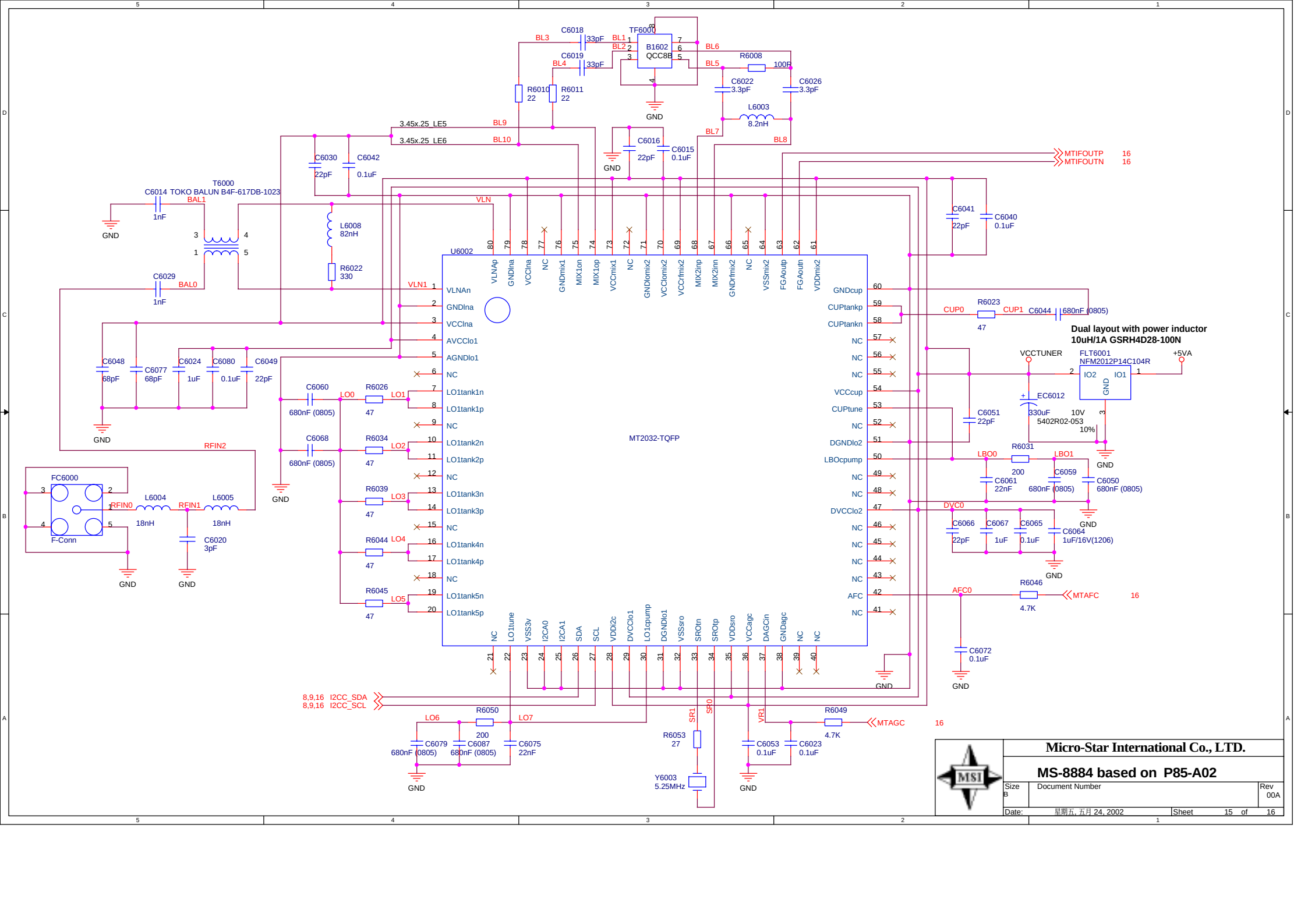
TF6000
B1602 QCC8B
C6018 33pF
C6019 33pF
R6008 100R
C6022 3.3pF
C6026 3.3pF
L6003 8.2nH
R6010 22
R6011 22
C6016 22pF
C6015 0.1uF
C6030 22pF
C6042 0.1uF
T6000
C6014 TOKO BALUN B4F-617DB-1023
C6029 1nF
L6008 82nH
R6022 330
U6002
MT2032-TQFP
VLNAn
GNDlna
VCClna
AVCClo1
AGNDlo1
LO1tank1n
LO1tank1p
LO1tank2n
LO1tank2p
LO1tank3n
LO1tank3p
LO1tank4n
LO1tank4p
LO1tank5n
LO1tank5p
GNDcup
CUPtankp
CUPtankn
VCCcup
CUPtune
DGNDlo2
LBOcpump
DVCClo2
AFC
C6041 22pF
C6040 0.1uF
R6023 47
C6044 680nF (0805)
C6048 68pF
C6077 68pF
C6024 1uF
C6080 0.1uF
C6049 22pF
C6060 680nF (0805)
C6068 680nF (0805)
R6026 47
R6034 47
R6039 47
R6044 47
R6045 47
FC6000
F-Conn
L6004 18nH
L6005 18nH
C6020 3pF
C6051 22pF
FLT6001 NFM2012P14C104R
EC6012 330uF 10V 5402R02-053 10%
R6031 200
C6061 22nF
C6059 680nF (0805)
C6050 680nF (0805)
C6066 22pF
C6067 1uF
C6065 0.1uF
C6064 1uF/16V(1206)
R6046 4.7K
C6072 0.1uF
R6050 200
C6079 680nF (0805)
C6087 680nF (0805)
C6075 22nF
R6053 27
Y6003 5.25MHz
C6053 0.1uF
C6023 0.1uF
R6049 4.7K
Dual layout with power inductor
10uH/1A GSRH4D28-100N
MTIFOUTP 16
MTIFOUTN 16
MTAFC 16
MTAGC 16
8,9,16 I2CC_SDA
8,9,16 I2CC_SCL
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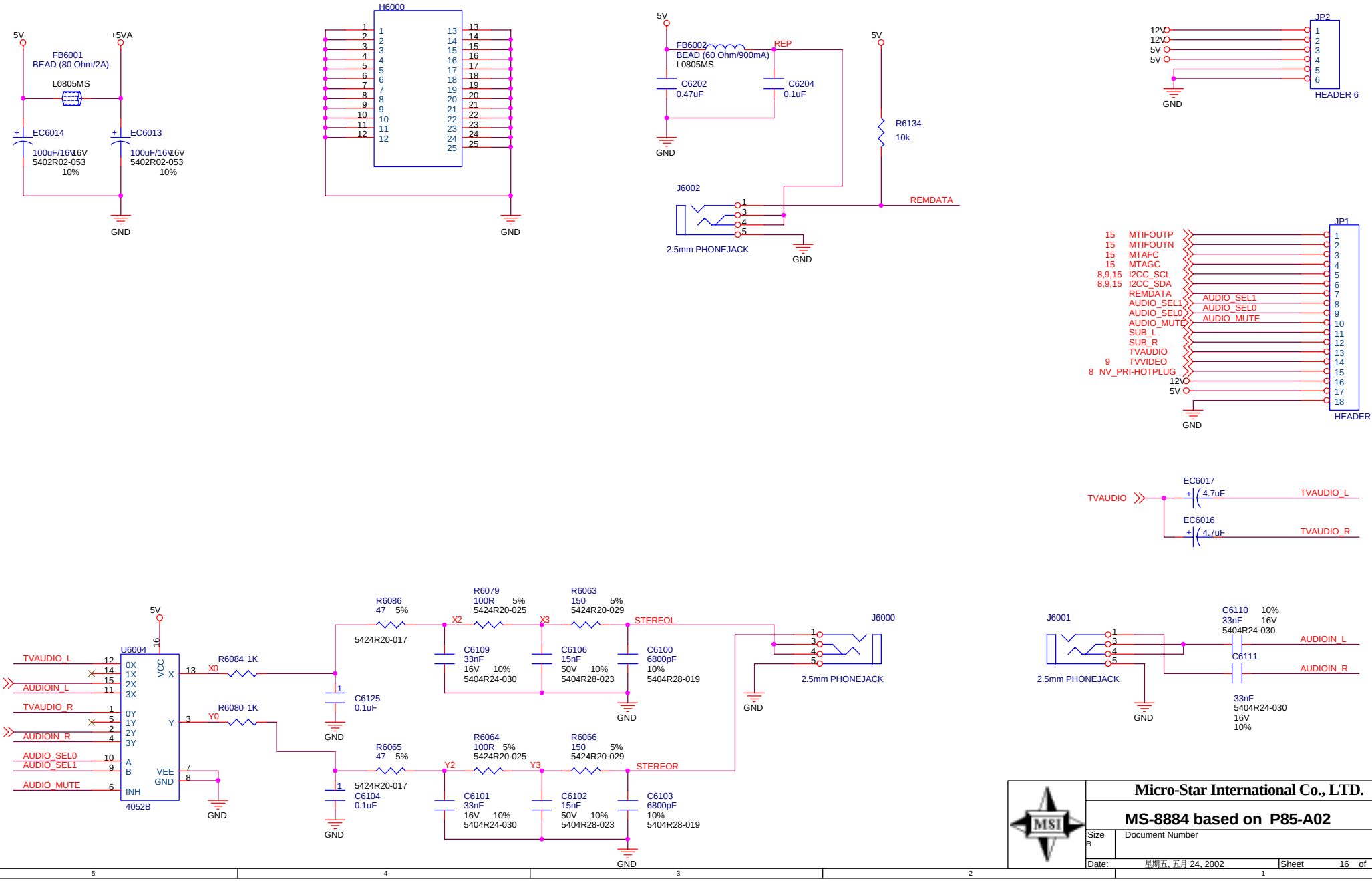


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