

M39 - DVT

11/16/05

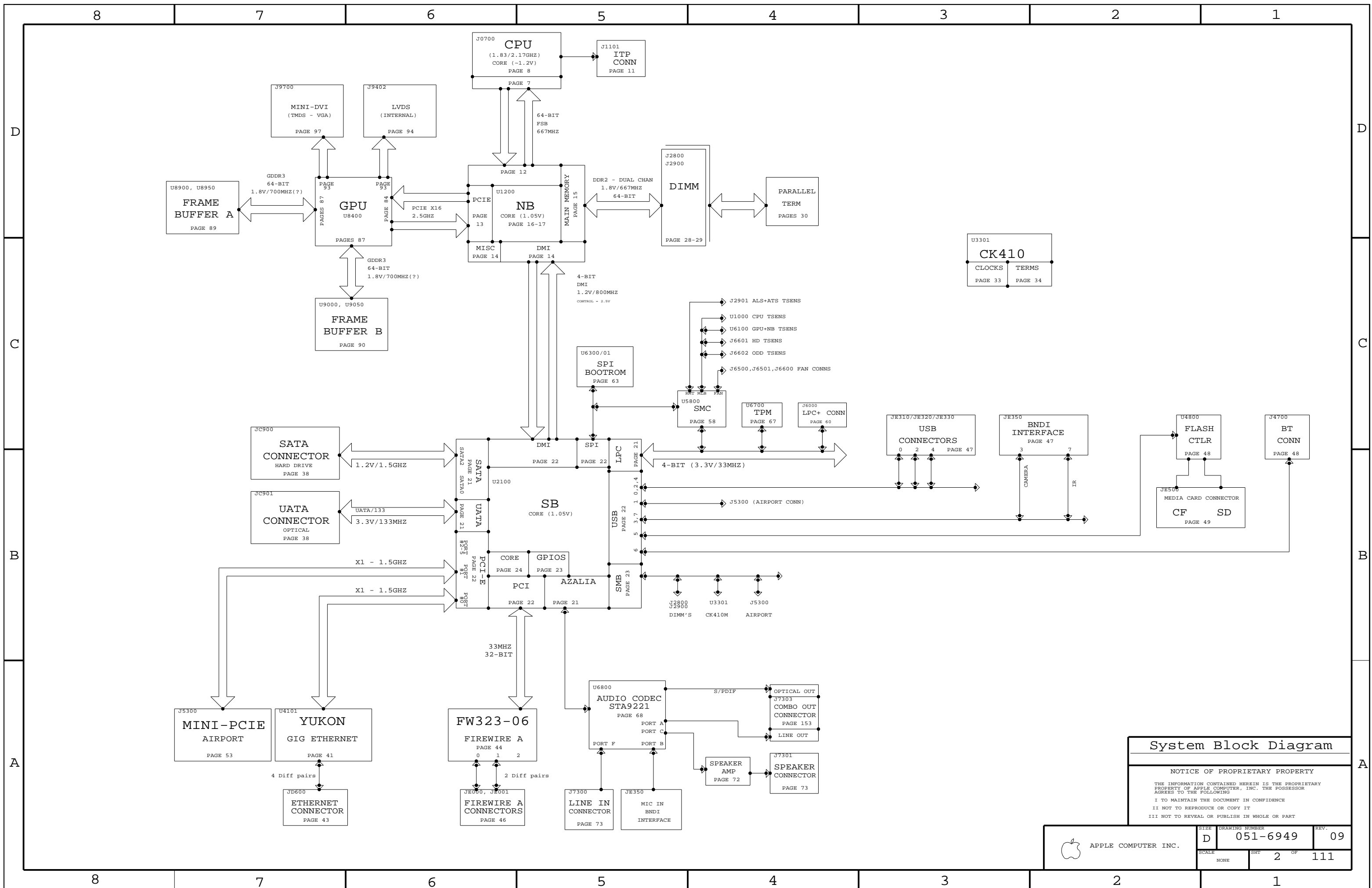
1. ALL RESISTANCE VALUES ARE IN OHMS, 0.1 WATT +/- 5%.
2. ALL CAPACITANCE VALUES ARE IN MICROFARADS.
3. ALL CRYSTALS & OSCILLATOR VALUES ARE IN HERTZ.

| REV | ZONE | ECN | DESCRIPTION OF CHANGE | CK APPD | ENG APPD |
|-----|------|--------|-----------------------|----------|----------|
| | | | | DATE | DATE |
| 06 | | 400374 | ENGINEERING RELEASED | 09/16/05 | 06/22/04 |

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|----------|-----|-----|---------|-------------------------------------|
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| 5 | JD | JD | 5 | FUNC TEST |
| 6 | RT | RT | 6 | POWER CONNECTOR / POWER ALIAS |
| (M42) 7 | MS | JD | 7 | CPU - BUS INTERFACE |
| (M42) 8 | MS | JD | 8 | CPU - PWR & GND |
| 9 | MS | JD | 9 | CPU - DECAPS |
| (M42) 10 | MS | JD | 10 | CPU - THERMAL SENSOR |
| M42 11 | MS | JD | 11 | CPU - ITP CONN |
| M1 12 | PS | JH | 12 | NB - CPU INTERFACE |
| M1 13 | PS | JH | 13 | NB - VIDEO INTERFACE |
| 14 | PS | JH | 14 | NB - MISC INTERFACES |
| M1 15 | PS | JH | 15 | NB - DDR2 INTERFACE |
| M1 16 | PS | JH | 16 | NB - POWER 1 |
| M1 17 | PS | JH | 17 | NB - POWER 2 |
| M1 18 | PS | JH | 18 | NB - GROUNDS |
| 19 | PS | JH | 19 | NB - DECAPS |
| M1 20 | PS | JH | 20 | NB - CONFIG STRAPS |
| 21 | JD | JD | 21 | SB - RTC, LAN, AUDIO, ATA, CPU, LPC |
| 22 | JD | JD | 22 | SB - PCIE, SPI, USB, DMI, PCI |
| 23 | JD | JD | 23 | SB - SMB, GPIO, PM, CLKS |
| 24 | JD | JD | 24 | SB - POWERS AND GROUNDS |
| 25 | JD | JD | 25 | SB - DECAPS |
| 26 | JD | JD | 26 | SB - MISC |
| 27 | JD | JD | 27 | SB - SMB BUS CONNECTIONS |
| 28 | PS | JD | 28 | DDR2 - SO-DIMM CONN A |
| 29 | PS | JD | 29 | DDR2 - SO-DIMM CONN B (REVERSED) |
| 30 | PS | JD | 30 | DDR2 - TERMINATION |
| M1 31 | RT | RT | 31 | DDR2 - VTT SUPPLY |
| M42 33 | JD | JD | 32 | CLOCKS - GENERATOR |
| 34 | JD | JD | 33 | CLOCKS - TERMINATIONS |
| 38 | JD | JD | 34 | ATA (SATA AND IDE) CONN'S |
| (M42) 41 | JD | JD | 35 | LAN - YUKON'S PCIE INTERFACE |
| 42 | JD | JD | 36 | LAN - YUKON'S PWR, MISC |
| 43 | JD | JD | 37 | LAN - CONN |
| 44 | JD | JD | 38 | FIREWIRE - FW323-06 |
| 45 | JD | JD | 39 | FIREWIRE - DECAPS |
| 46 | JD | JD | 40 | FIREWIRE - CONN'S |
| 47 | JD | JD | 41 | USB - CONN'S |
| 49 | JD | JD | 42 | USB - FLASH CONN |

| PAGE | DRI | PDF | CIRCUIT | |
|-------|-----|-----|---------|--------------------------------|
| 53 | JD | JD | 43 | PCI-E - AIRPORT MINI-PCIE CONN |
| 54 | JD | JD | 44 | PCI-E - UNUSED PORTS |
| 58 | MS | MS | 45 | SMC - H8S2116 |
| 59 | MS | MS | 46 | SMC - SMB BUSSES, MISC |
| 60 | MS | MS | 47 | SMC - LPC+ CONN |
| 61 | JH | JH | 48 | SMC - GPU/NB THERMAL SENSOR |
| RX 63 | MS | JD | 49 | SMC - SPI BOOTROM |
| 65 | MS | MS | 50 | SMC - FANS |
| 66 | MS | MS | 51 | SMC - FANS |
| 67 | JD | JD | 52 | SMC - TPM |
| SO 68 | PT | JD | 53 | AUDIO - CODEC, VREG, MIC BIAS |
| SO 72 | PT | JD | 54 | AUDIO - INTERNAL SPEAKER AMP |
| SO 73 | PT | JD | 55 | AUDIO - I/O CONN'S, EMC |
| SO 74 | PT | JD | 56 | AUDIO - DETECT TRANSLATORS |
| RP 75 | RT | RT | 57 | VR - CPU CORE |
| RP 76 | RT | RT | 58 | VR - CPU I-V SENSE CKT |
| RP 77 | RT | RT | 59 | VR - "S0" 1.2V & 2.5V (GRAFIX) |
| RP 78 | RT | RT | 60 | VR - "S0" 1.8V |
| RP 79 | RT | RT | 61 | VR - "S3" 1.8V |
| RP 80 | RT | RT | 62 | VR - "S0" 1.5V |
| RP 81 | RT | RT | 63 | VR - "S0" 1.05V |
| RP 83 | RT | RT | 64 | VR - "S3" 3.3V AND 5V |
| JH 84 | JH | JH | 65 | GPU - M56 PCI-E |
| M1 85 | JH | JH | 66 | GPU - VCORE SUPPLY |
| M1 86 | JH | JH | 67 | GPU - M56 CORE PWR |
| M1 87 | JH | JH | 68 | GPU - M56 FRAME BUFFER |
| M1 88 | JH | JH | 69 | GPU - MISC |
| M1 89 | JH | JH | 70 | GPU - GDDR SDRAM A |
| M1 90 | JH | JH | 71 | GPU - GDDR SDRAM B |
| M1 91 | JH | JH | 72 | GPU - M56 GPIO, DVO, MISC |
| M1 92 | JH | JH | 73 | GPU - M56 CLOCKS |
| M1 93 | JH | JH | 74 | GPU - M56 VIDEO INTERFACES |
| JH 94 | JH | JH | 75 | GPU - INTERNAL DISPLAY CONN'S |
| JH 95 | JH | JH | 76 | GPU - TP'S |
| JH 96 | JH | JH | 77 | GPU - TMDS, INVERTER, EXT VGA |
| JH 97 | JH | JH | 78 | GPU - EXTERNAL DISPLAY CONN'S |

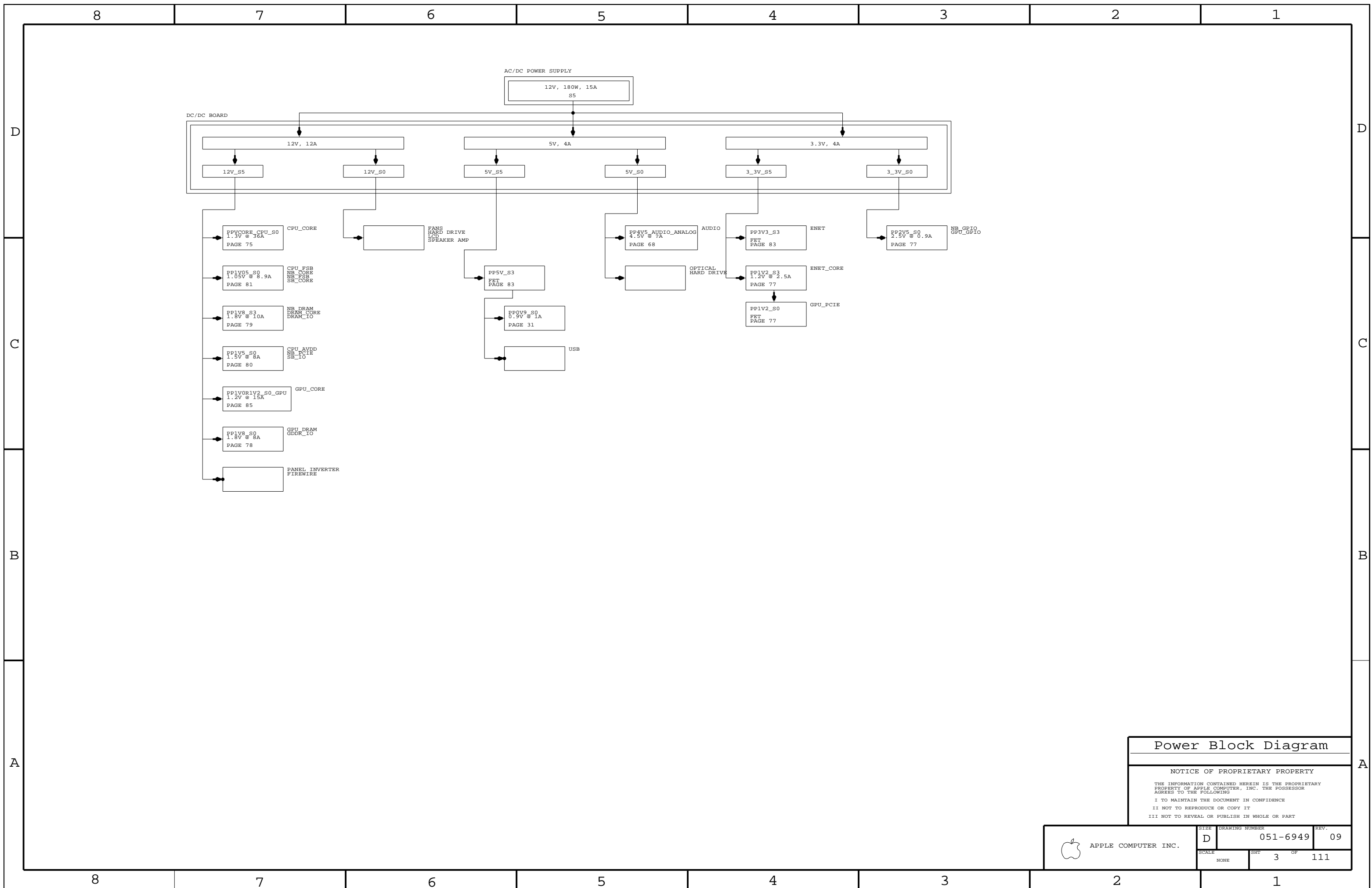
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|--|---|---|
| <p style="font-size: small;">DIMENSIONS ARE IN MILLIMETERS</p> <p>XX : _____</p> <p>X.XX : _____</p> <p>X.XXX : _____</p> <p>ANGLES : _____</p> <p style="text-align: center;">DO NOT SCALE DRAWING</p> <div style="text-align: center;"> <p style="font-size: x-small;">THIRD ANGLE PROJECTION</p> </div> | <p>METRIC</p> | <div style="text-align: right;"> <p>Apple Computer Inc.</p> </div> <hr/> <p style="font-size: x-small; text-align: center;">NOTICE OF PROPRIETARY PROPERTY</p> <p style="font-size: x-small; text-align: center;">THE INFORMATION CONTAINED HEREIN IS THE PROPRIETARY PROPERTY OF APPLE COMPUTER, INC. THE POSSESSOR AGREES TO THE FOLLOWING</p> <p style="font-size: x-small; text-align: center;">I TO MAINTAIN THE DOCUMENT IN CONFIDENCE</p> <p style="font-size: x-small; text-align: center;">II NOT TO REPRODUCE OR COPY IT</p> <p style="font-size: x-small; text-align: center;">III NOT TO REVEAL OR PUBLISH IN WHOLE OR PART</p> <hr/> <p style="text-align: center; font-weight: bold;">SCHEM, M39</p> <hr/> <p style="text-align: right;">DRAWING NUMBER 051-6950 REV. 06</p> |
| <p style="font-size: x-small;">RELEASE</p> <p style="font-size: x-small;">SCALE</p> <p style="font-size: x-small;">NONE</p> | <p style="font-size: x-small;">MATERIAL/FINISH NOTED AS APPLICABLE</p> <p style="font-size: x-small;">SIZE D</p> | <p>SHEET 1 OF 111</p> |



System Block Diagram

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Power Block Diagram

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COMMON

| PART# | QTY | DESCRIPTION | REFERENCE DESIGNATOR(S) | CRITICAL | BOM OPTION |
|---------------------|-----|--|-------------------------|----------|------------|
| 511S0025 | 1 | IC,CPU-SKT,479BGA | J0700 | CRITICAL | |
| 338S0269 | 1 | IC,945GM,NORTHBRIDGE | U1200 | CRITICAL | |
| 343S0385 | 1 | IC,SB,652BGA | U2100 | CRITICAL | |
| 742-0048 | 1 | BAT,COIN,3V,220MAH,CR2032 | BT2600 | CRITICAL | |
| 359S0101 | 1 | IC,CY28445-5,CLK GEN,68PIN QFP | U3301 | CRITICAL | |
| 338S0270 | 1 | IC,88E8053,GIGABIT NET XVR,64P QFN,MD | U4101 | CRITICAL | |
| (335S0382) 341S1797 | 1 | IC,ENET LAN ROM | U4102 | CRITICAL | |
| 338S0279 | 1 | IC,FW32306,1394A LINK,TQFP | U4400 | CRITICAL | |
| 338S0274 | 1 | IC,SMC,HSS/2116,BLANK | U5800 | CRITICAL | |
| 341S1789 | 1 | IC,TPM,TSSOP,28P | U6700 | CRITICAL | LEMENU |
| 353S1235 | 1 | IC,CPU VREG,IMVP,TWO PHASE | U7500 | CRITICAL | |
| 338S0266 | 1 | IC,ATI,M56P,GRAFIX CTLR,880BGA,LF | U8400 | CRITICAL | ATI_B24 |
| 338S0305 | 1 | IC,ATI,M56P,GRAFIX CTLR,880BGA,LF | U8400 | CRITICAL | ATI_A24 |
| 128S0078 | 3 | CAP,EL,AL,330UF,20V,16V,10X12,7MM,SMD,LF | C7517,C7518,C7910 | CRITICAL | |

M38

| PART# | QTY | DESCRIPTION | REFERENCE DESIGNATOR(S) | CRITICAL | BOM OPTION |
|---------------------|-----|------------------------------|-------------------------|----------|-------------|
| 051-6949 | 1 | PCB,SCHEM,MLB,M38 | SCH1 | | 17_INCH_LCD |
| 820-1919 | 1 | PCB,FAB,MLB,M38 | MLB1 | | 17_INCH_LCD |
| (335S0384) 341T0003 | 1 | EFI ROM,M38 | U6301 | CRITICAL | 17_INCH_LCD |
| 337S3241 | 1 | M38/M39 LOW-SPEED CPU (QINY) | CPU | CRITICAL | CPU_M38 |
| 337S3242 | 1 | M00-SPEED CPU (QINZ) | CPU | CRITICAL | CPU_M00 |

M39

| PART# | QTY | DESCRIPTION | REFERENCE DESIGNATOR(S) | CRITICAL | BOM OPTION |
|---------------------|-----|------------------------|-------------------------|----------|-------------|
| 051-6950 | 1 | PCB,SCHEM,MLB,M39 | SCH1 | | 20_INCH_LCD |
| 820-1888 | 1 | PCB,FAB,MLB,M39 | MLB1 | | 20_INCH_LCD |
| (335S0384) 341T0004 | 1 | EFI ROM,M39 | U6301 | CRITICAL | 20_INCH_LCD |
| 337S3243 | 1 | M39 HI-SPEED CPU (QHJ) | CPU | CRITICAL | CPU_M39 |

M38 / M39

| PART# | QTY | DESCRIPTION | REFERENCE DESIGNATOR(S) | CRITICAL | BOM OPTION |
|----------|-----|-------------------------------------|-------------------------|----------|---------------------|
| 333S0354 | 4 | IC,SGRAM,GDDR3,8MX32,700MHZ,136FBGA | U8900,U8950,U9000,U9050 | CRITICAL | ATI_FB_128M_SAMSUNG |
| 333S0358 | 4 | IC,SGRAM,GDDR3,8MX32,700MHZ,136FBGA | U8900,U8950,U9000,U9050 | CRITICAL | ATI_FB_128M_HYNIX |

M39 - CTO

| PART# | QTY | DESCRIPTION | REFERENCE DESIGNATOR(S) | CRITICAL | BOM OPTION |
|----------|-----|--------------------------------------|-------------------------|----------|---------------------|
| 333S0350 | 4 | IC,SGRAM,GDDR3,16MX32,700MHZ,136FBGA | U8900,U8950,U9000,U9050 | CRITICAL | ATI_FB_256M_SAMSUNG |
| 333S0351 | 4 | IC,SGRAM,GDDR3,16MX32,700MHZ,136FBGA | U8900,U8950,U9000,U9050 | CRITICAL | ATI_FB_256M_HYNIX |

| PART NUMBER | ALTERNATE FOR PART NUMBER | BOM OPTION | REF DES | COMMENTS: |
|-------------|---------------------------|------------|-----------------------------|--------------------------------------|
| 126S0096 | 126S0076 | | C7801 | SANYO W16CK680EX 680UF 16V LFP |
| 126S0086 | 126S0078 | | C699,C940,C1900,C1901,C1968 | SANYO W6CE330F8 330UF 6.3V LFP |
| 128S0080 | 128S0078 | | C7517,C7518,C7910 | SANYO 160VP330W 330UF 16V SMD LFP |
| 197S0177 | 197S0020 | | Y4101 | XTAL,25MHZ,50PPM,16PF,3.2X2.5 SMD,LF |
| 338S0302 | 338S0266 | | U8400 | IC,ATI,M36D,GRAFIX CTLR,880BGA,LF |

Table Items

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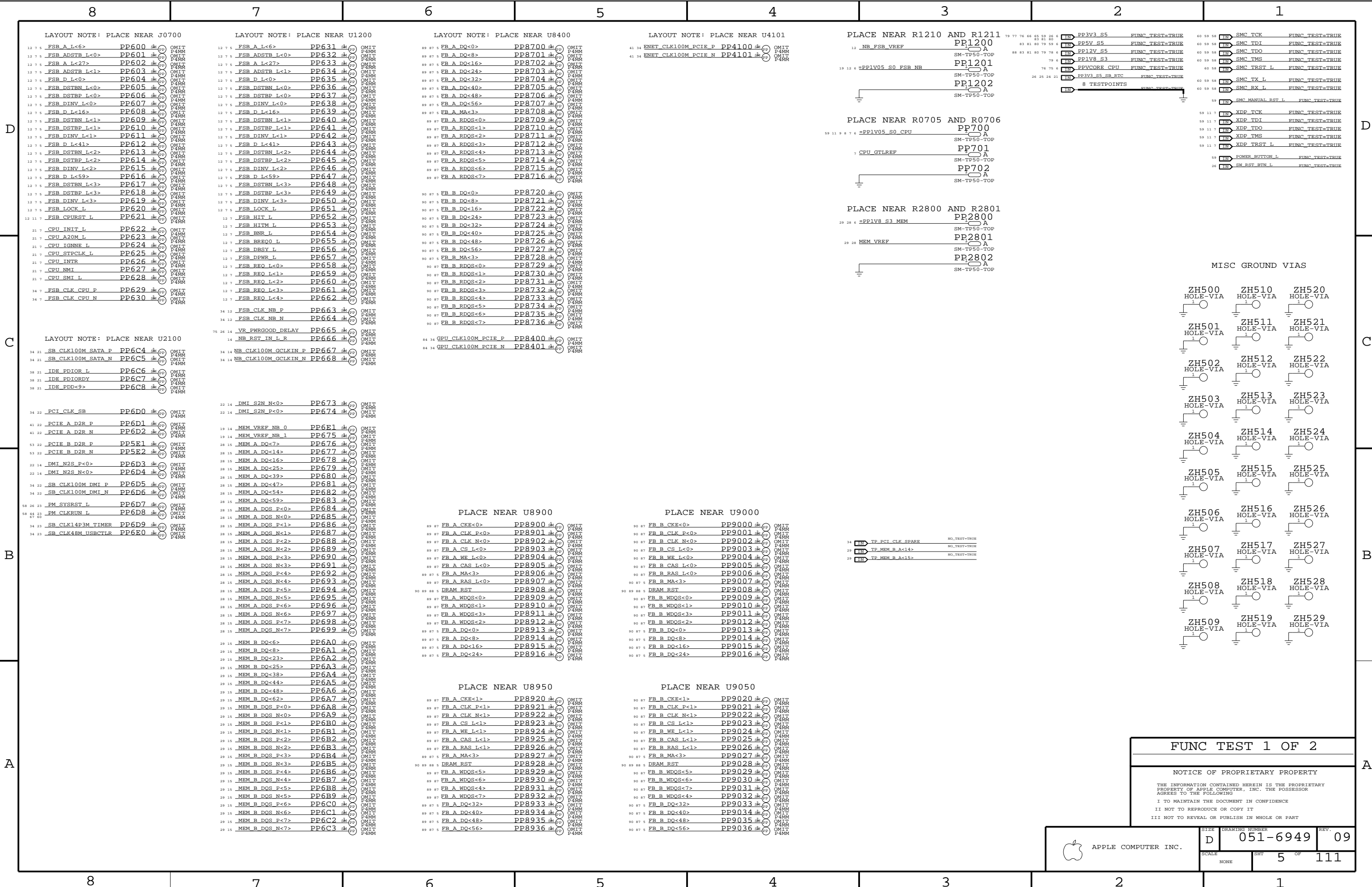
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LAYOUT NOTE: PLACE NEAR J0700

LAYOUT NOTE: PLACE NEAR U1200

LAYOUT NOTE: PLACE NEAR U8400

LAYOUT NOTE: PLACE NEAR U4101

PLACE NEAR R1210 AND R1211

PLACE NEAR R0705 AND R0706

PLACE NEAR R2800 AND R2801

MISC GROUND VIAS

PLACE NEAR U8900

PLACE NEAR U9000

PLACE NEAR U8950

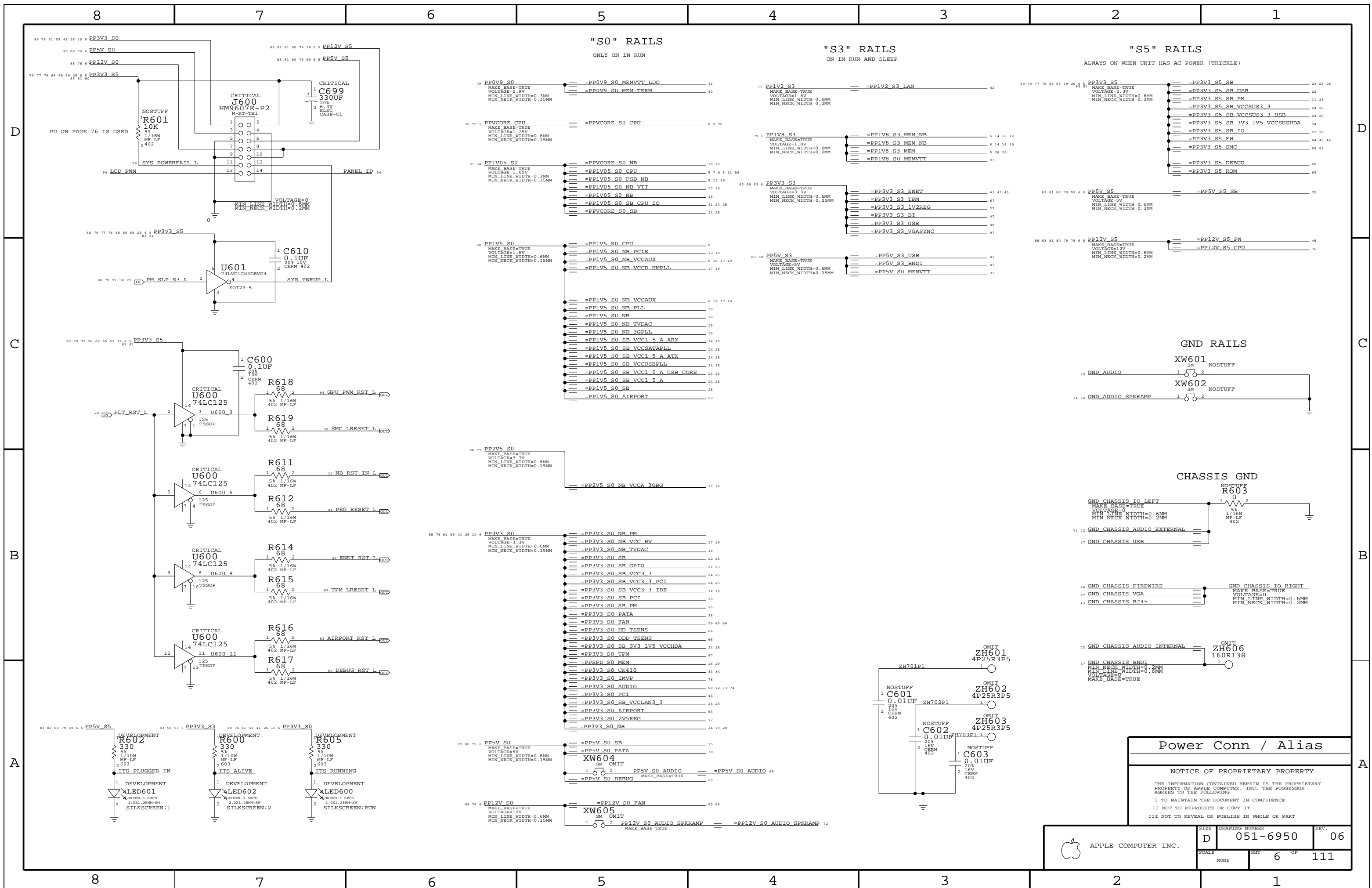
PLACE NEAR U9050

FUNC TEST 1 OF 2

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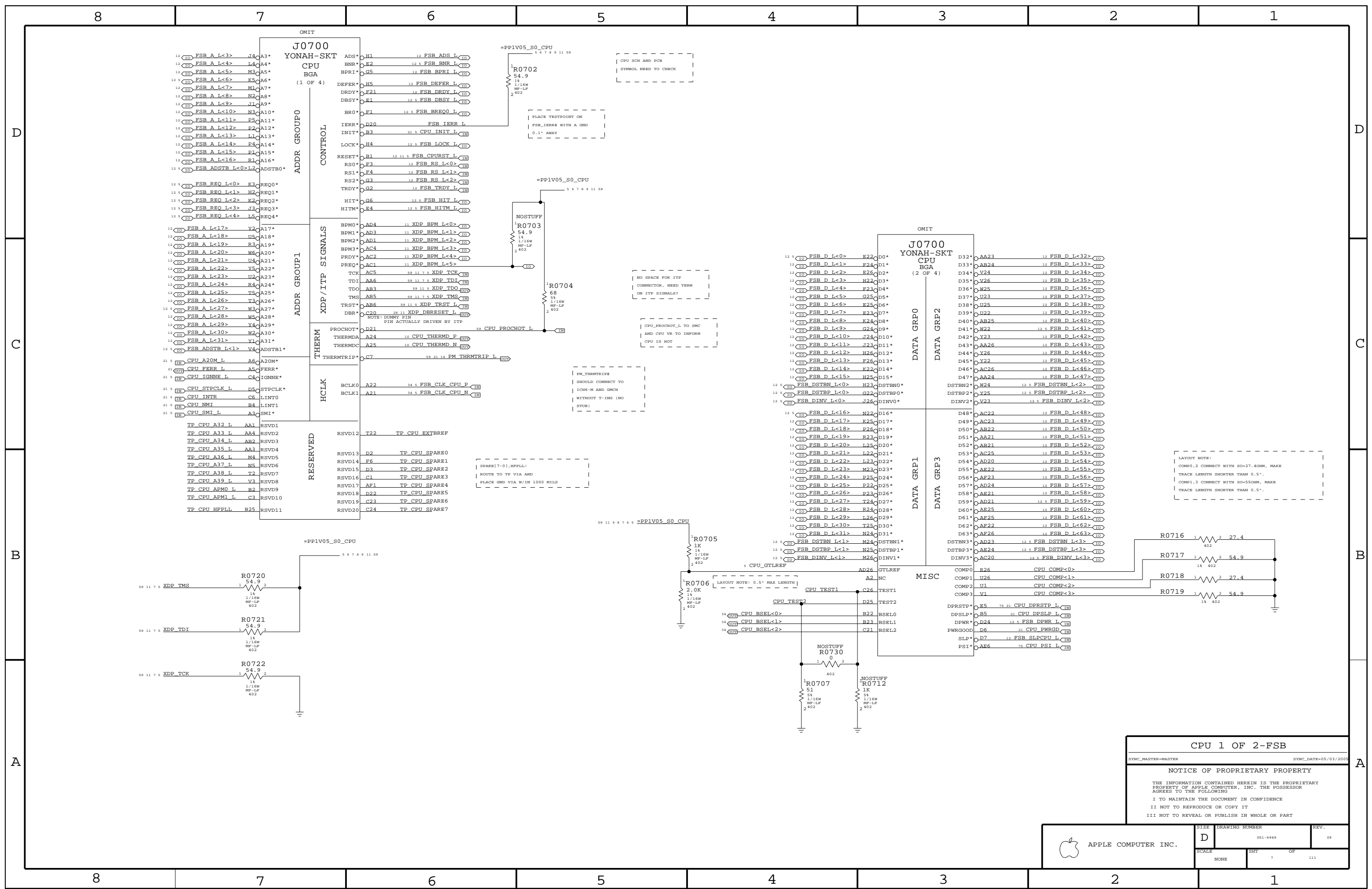


Power Conn / Alias

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CPU 1 OF 2-FSB

SYNC_MASTER=MASTER SYNC_DATE=05/03/2005

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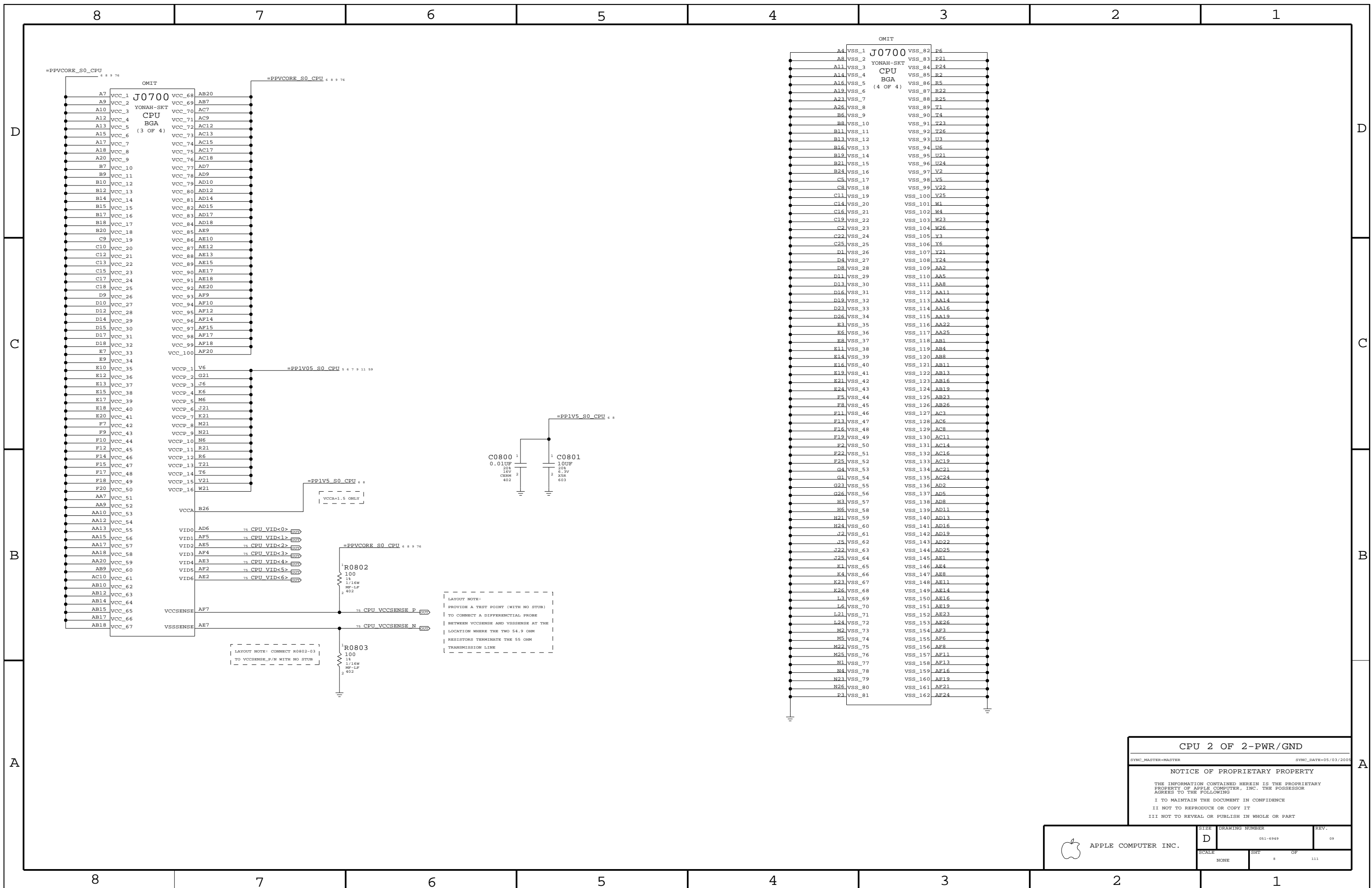
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CPU 2 OF 2-PWR/GND

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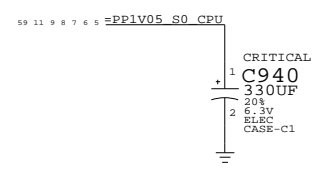
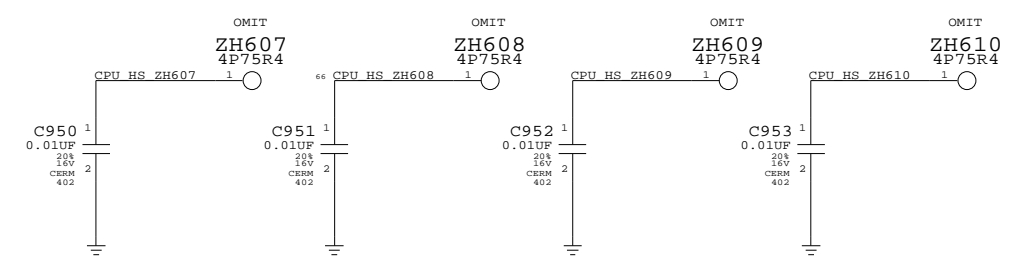
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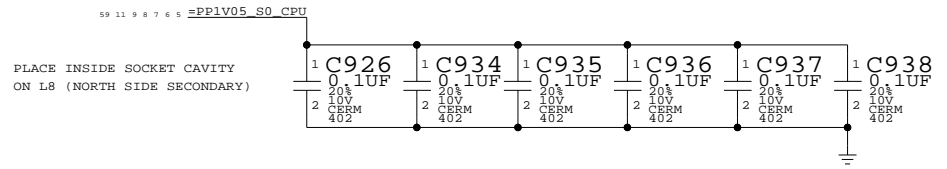
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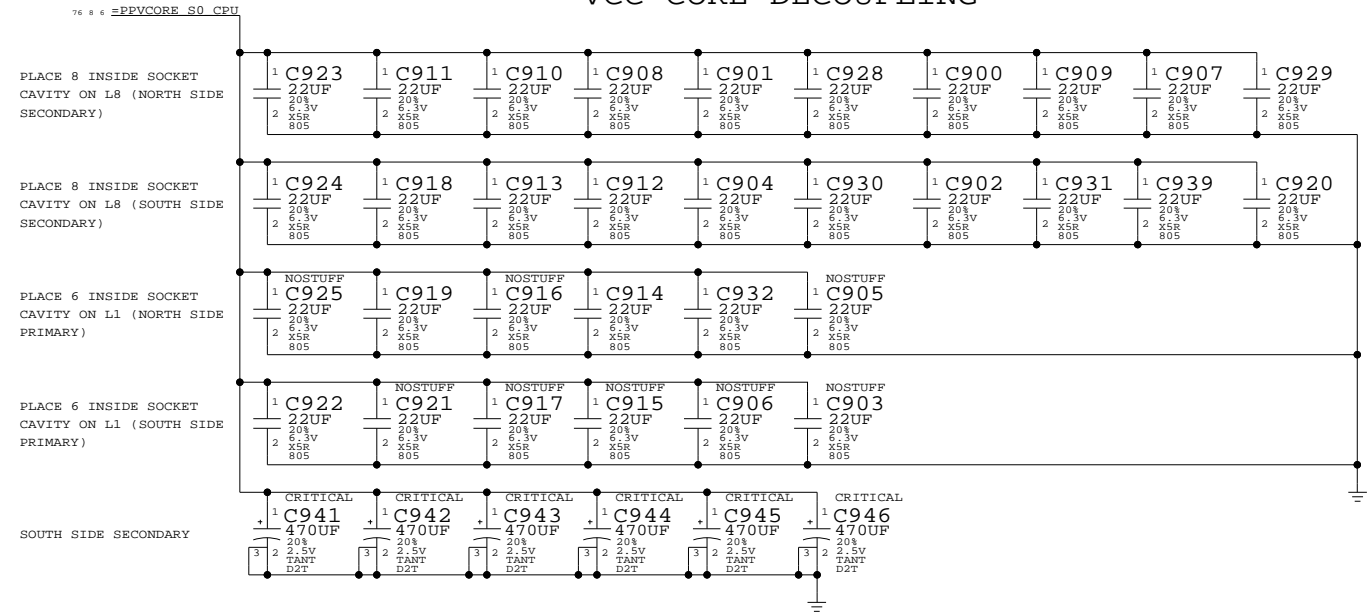
CPU HEATSINK MOUNTING HOLES



VCCP CORE DECOUPLING



VCC CORE DECOUPLING



CPU DECAPS & VID<>

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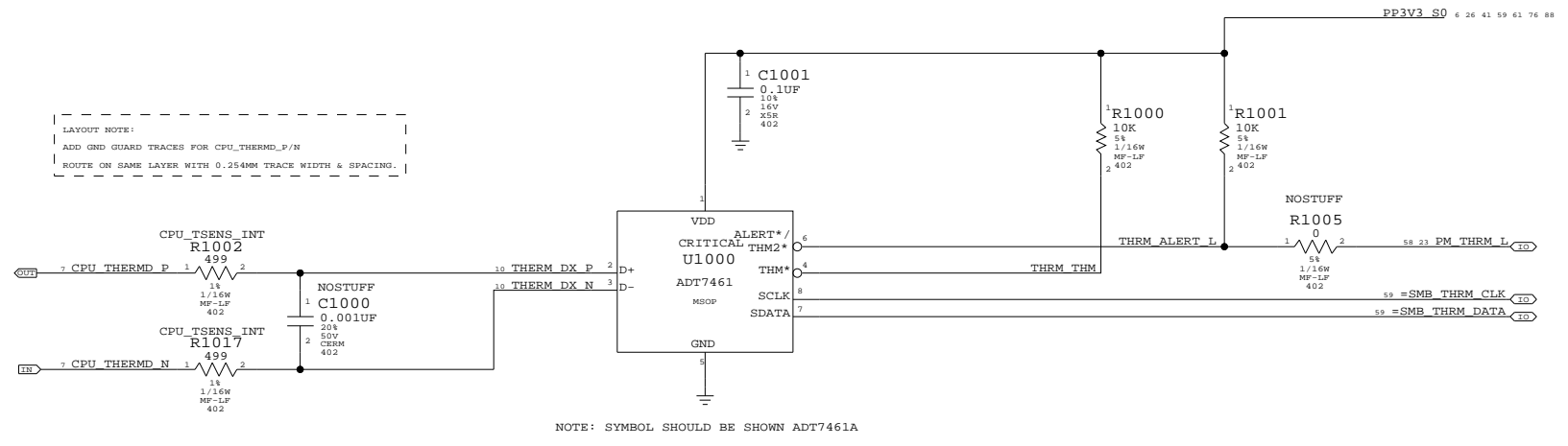
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CPU THERMAL SENSOR

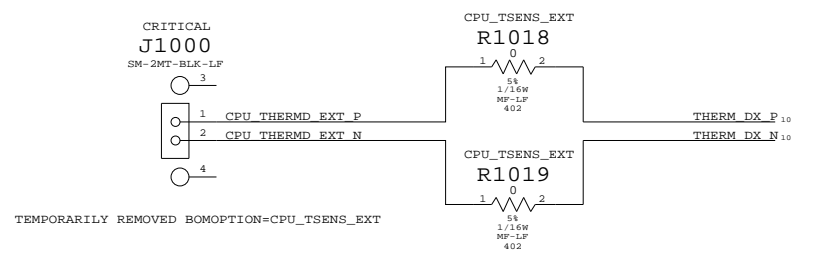
NOTE:
IF CPU T DIODE TO BE READ IN OFF STATE,
THEN THIS SHOULD BE S5

LAYOUT NOTE:
ADD GND GUARD TRACES FOR CPU_THERMD_P/N
ROUTE ON SAME LAYER WITH 0.254MM TRACE WIDTH & SPACING.



NOTE: SYMBOL SHOULD BE SHOWN ADT7461A

LAYOUT NOTE:
PLACE R1002 AND R1018 SUCH THAT THEY SHARE ONE PAD
PLACE R1017 AND R1019 SUCH THAT THEY SHARE ONE PAD



CPU TEMP SENSOR

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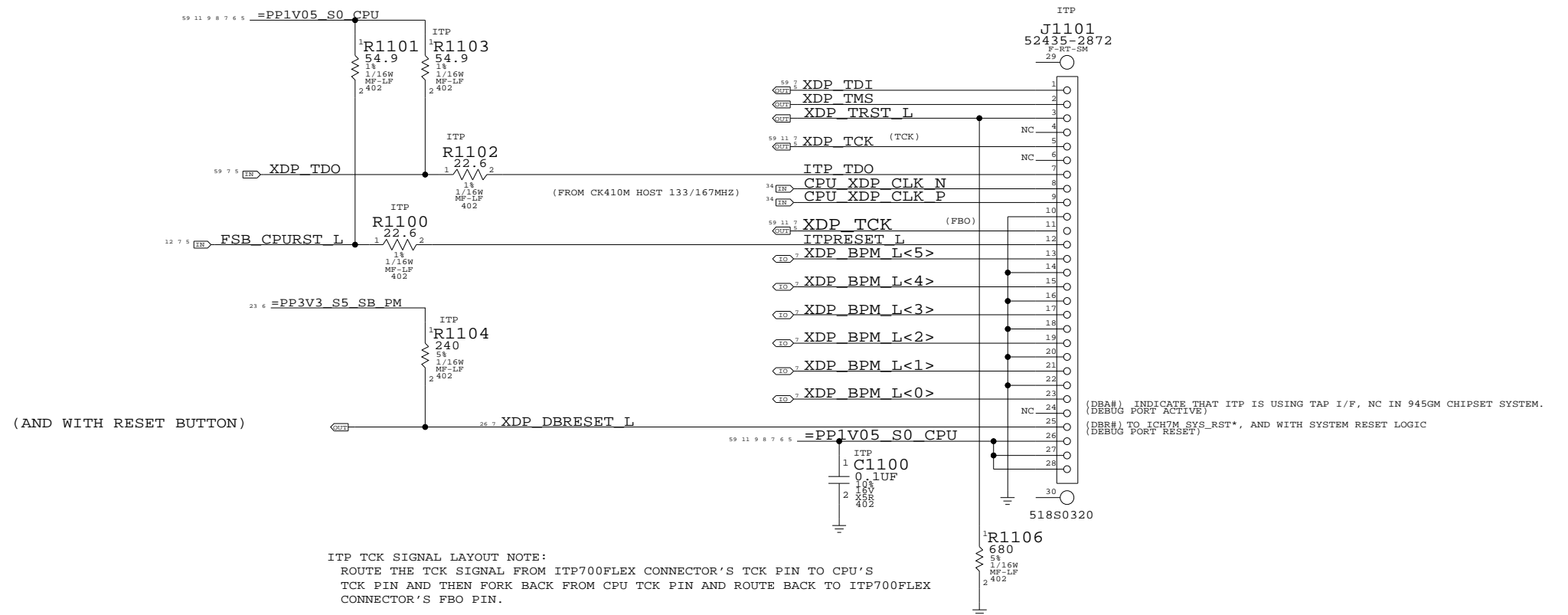
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CPU ITP700FLEX DEBUG SUPPORT



CPU ITP700FLEX DEBUG
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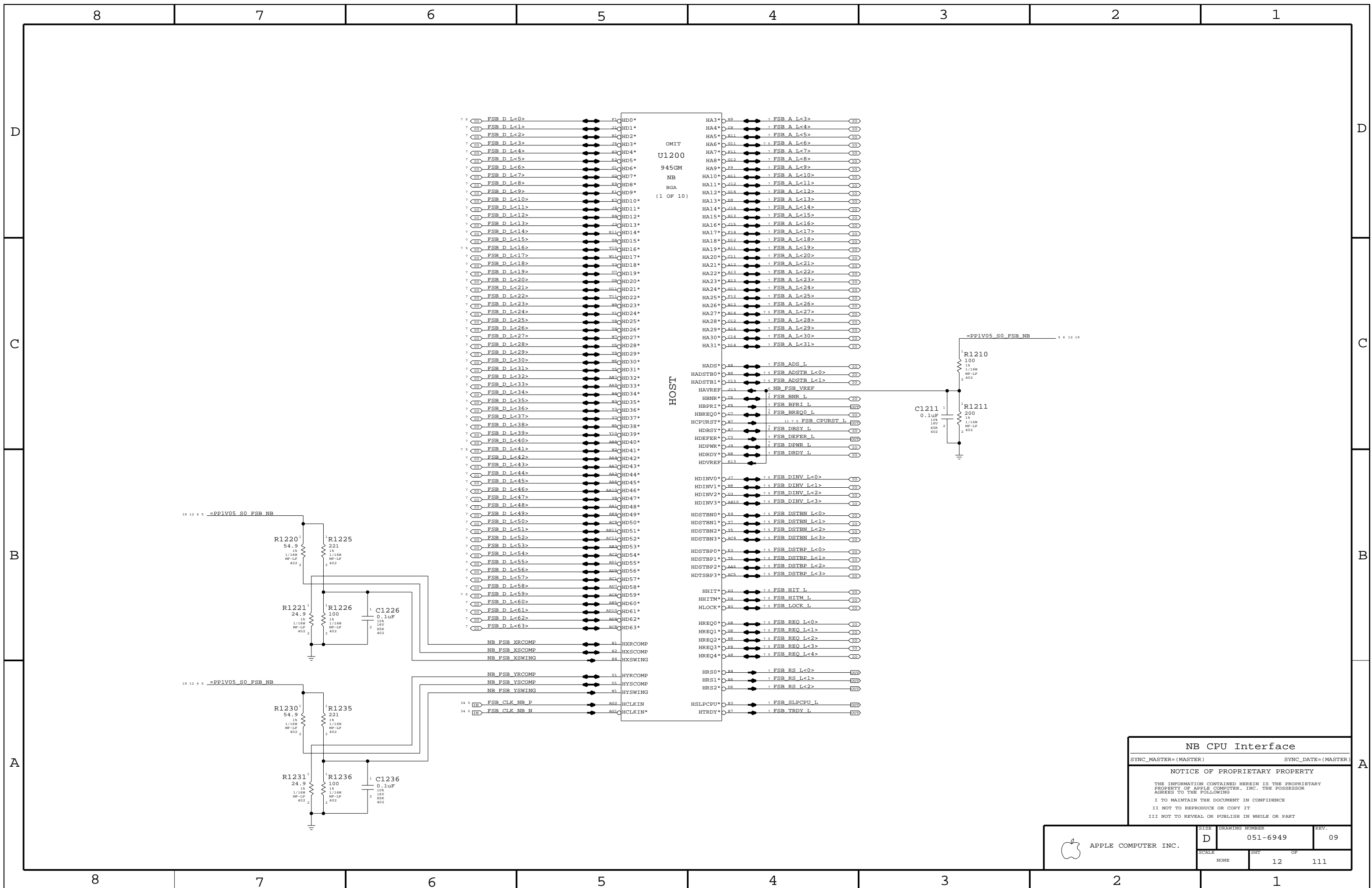
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NB CPU Interface

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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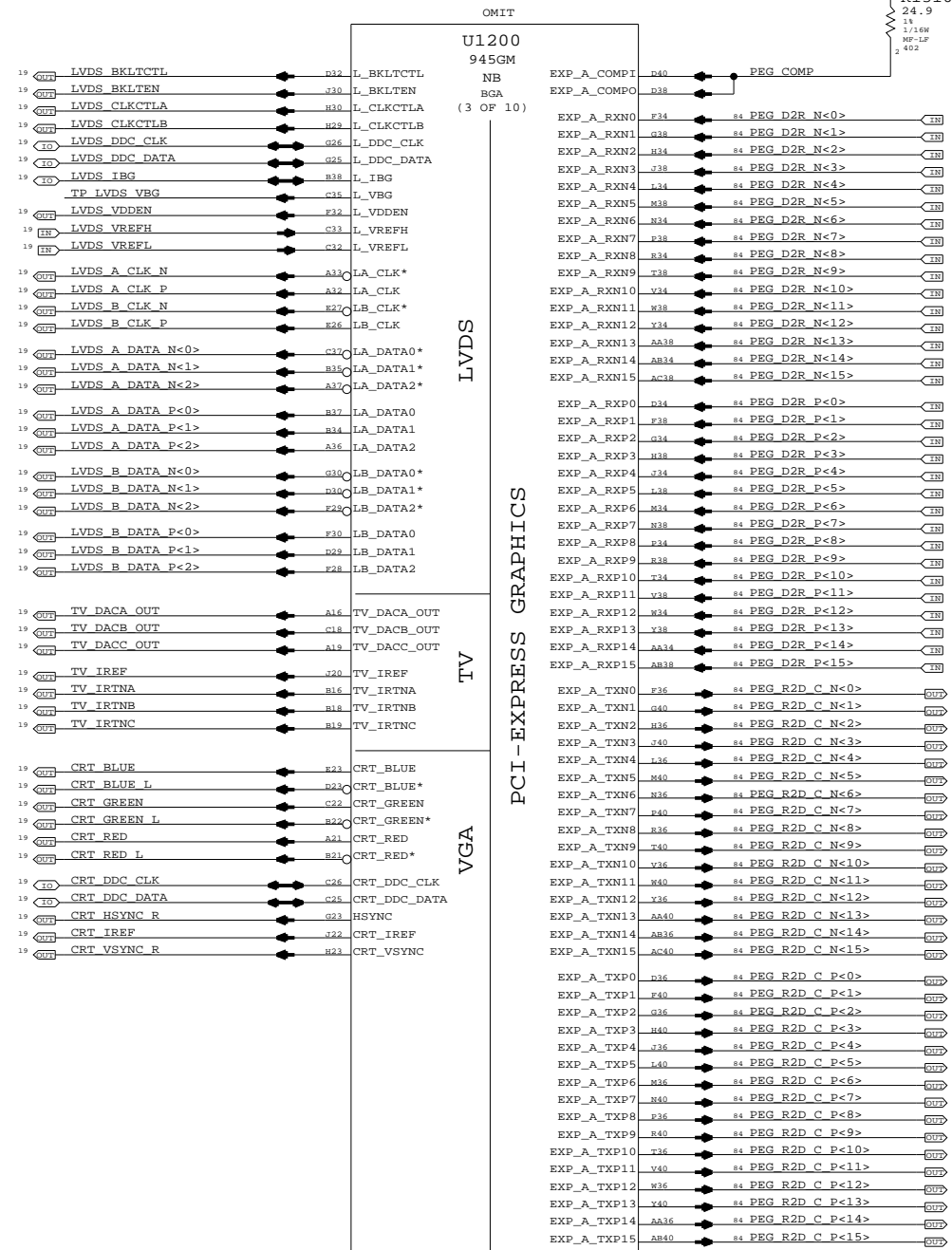
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LVDS Disable
 Can leave all signals NC if LVDS is not implemented
 Tie VCC_TXLVDS and VCCA_LVDS to GND. If SDVO is used
 VCCD_LVDS must remain powered with proper decoupling.
 Otherwise, tie VCCD_LVDS to GND also.

TV-Out Signal Usage:
 Composite: DACA only
 S-Video: DACB & DACC only
 Component: DACA, DACB & DACC
 Unused DAC outputs must remain powered, but can omit
 filtering components. Unused DAC outputs should
 connect to GND through 75-ohm resistors.

TV-Out Disable
 Tie DACx_OUT, IRTNx, and IREF to 1.5V power rail.
 Tie VCCD_TVDAC, VCCD_QTVDAC, VCCA_TVDACx, and
 VCCA_TVVBG to 1.5V power rail. Tie VSSA_TVVBG to GND.

CRT Disable
 Tie R/R#/G/G#/B/B# and IREF to VCC Core rail, tie
 HSYNC and VSYNC to GND. Tie VCCA_CRTDAC to VCC Core
 rail, and tie VSSA_CRTDAC and VCC_SYNC to GND.



SDVO Alternate Function

SDVO_TVCLKIN#
 SDVO_INT#
 SDVO_FLDSTALL#

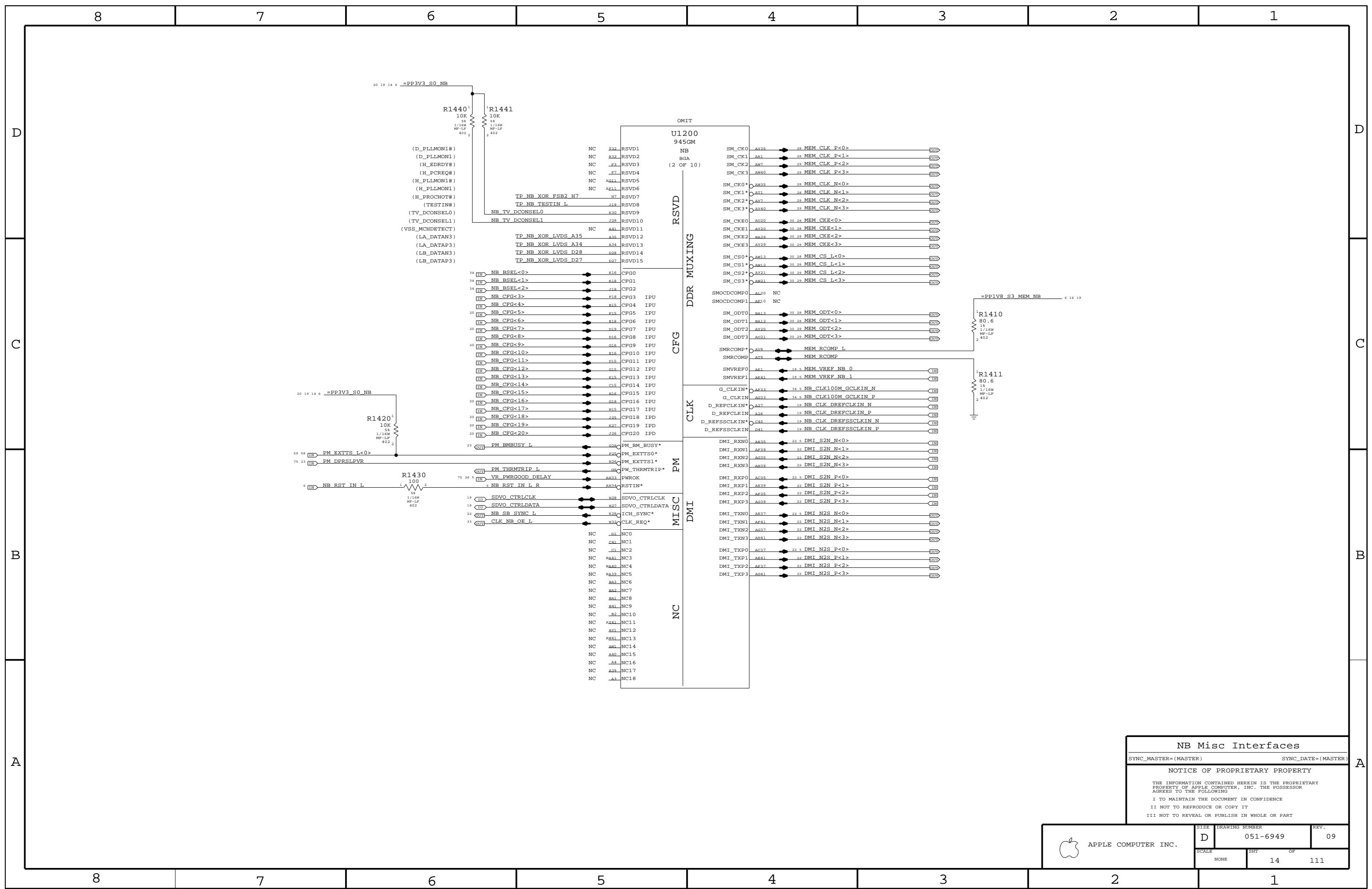
SDVO_TVCLKIN
 SDVO_INT
 SDVO_FLDSTALL

SDVOB_RED#
 SDVOB_GREEN#
 SDVOB_BLUE#
 SDVOB_CLKN
 SDVOC_RED#
 SDVOC_GREEN#
 SDVOC_BLUE#
 SDVOC_CLKN

SDVOB_RED
 SDVOB_GREEN
 SDVOB_BLUE
 SDVOB_CLKP
 SDVOC_RED
 SDVOC_GREEN
 SDVOC_BLUE
 SDVOC_CLKP

NB PEG / Video Interfaces
 SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)
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| | D | 051-6949 | 09 |
| SCALE | SHT OF | | |
| NONE | 13 | | 111 |



NB Misc Interfaces

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

NOTICE OF PROPRIETARY PROPERTY

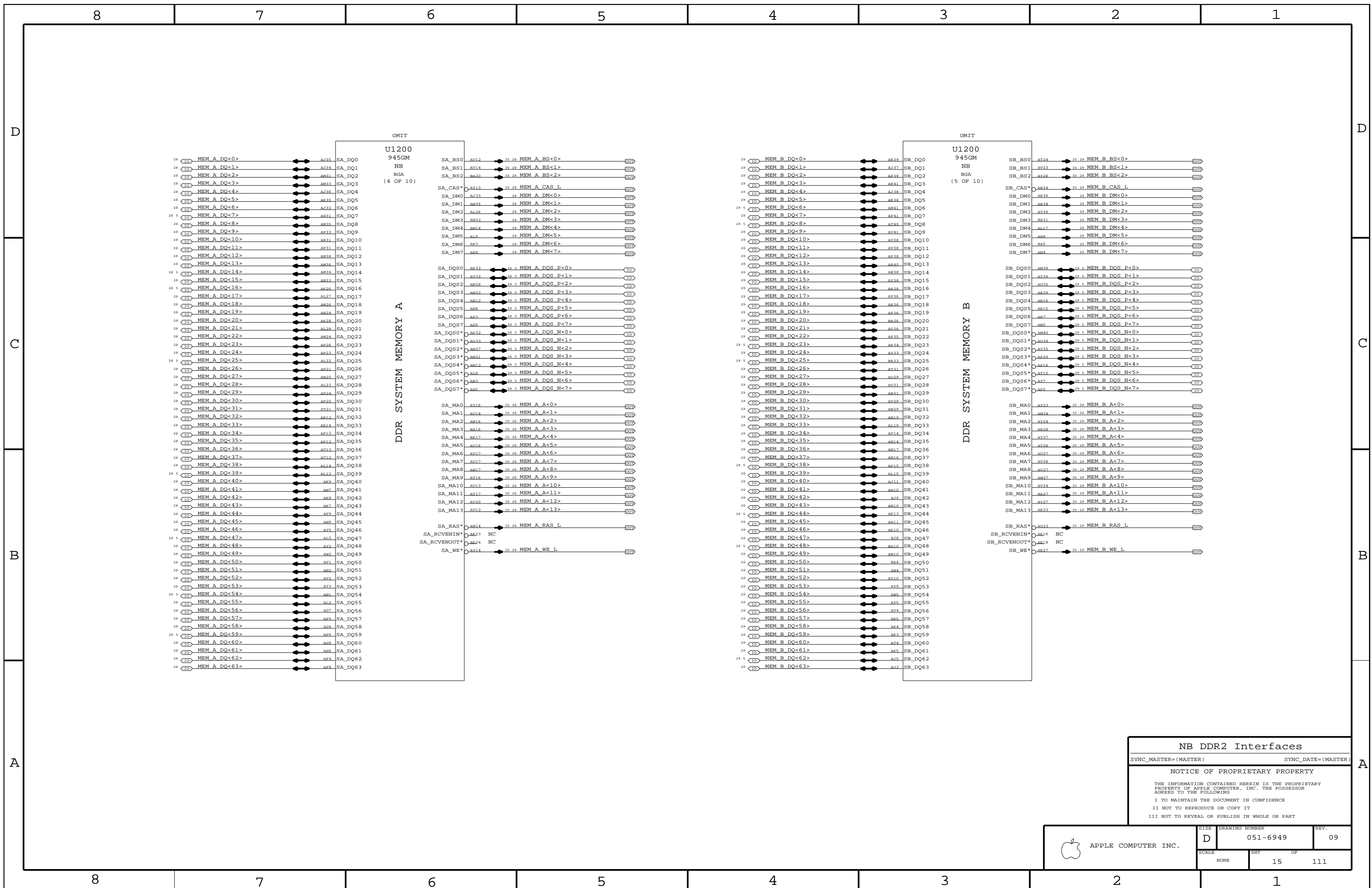
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| | SCALE: NONE | SHEET: 14 | OF: 111 |



NB DDR2 Interfaces

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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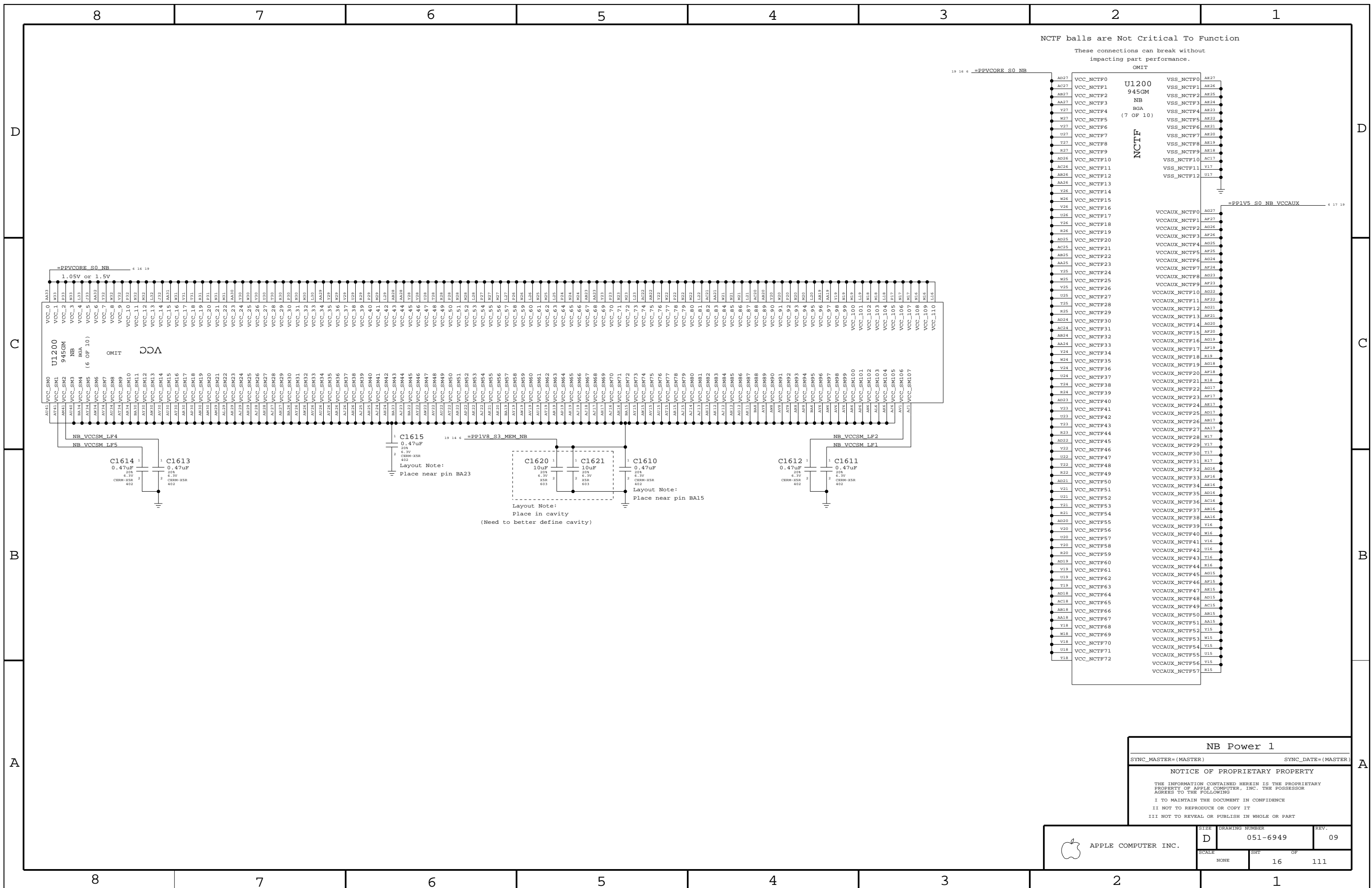
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NCTF balls are Not Critical To Function
 These connections can break without impacting part performance.

U1200
 945GM
 NB
 BGA
 (7 OF 10)

NCTF

VCC

NB VCCSM LF4
 NB VCCSM LF5

C1614
 0.47uF
 204
 6.3V
 CERM-XSR
 402

C1613
 0.47uF
 204
 6.3V
 CERM-XSR
 402

C1615
 0.47uF
 204
 6.3V
 CERM-XSR
 402

C1620
 10uF
 204
 6.3V
 XSR
 603

C1621
 10uF
 204
 6.3V
 XSR
 603

C1610
 0.47uF
 204
 6.3V
 CERM-XSR
 402

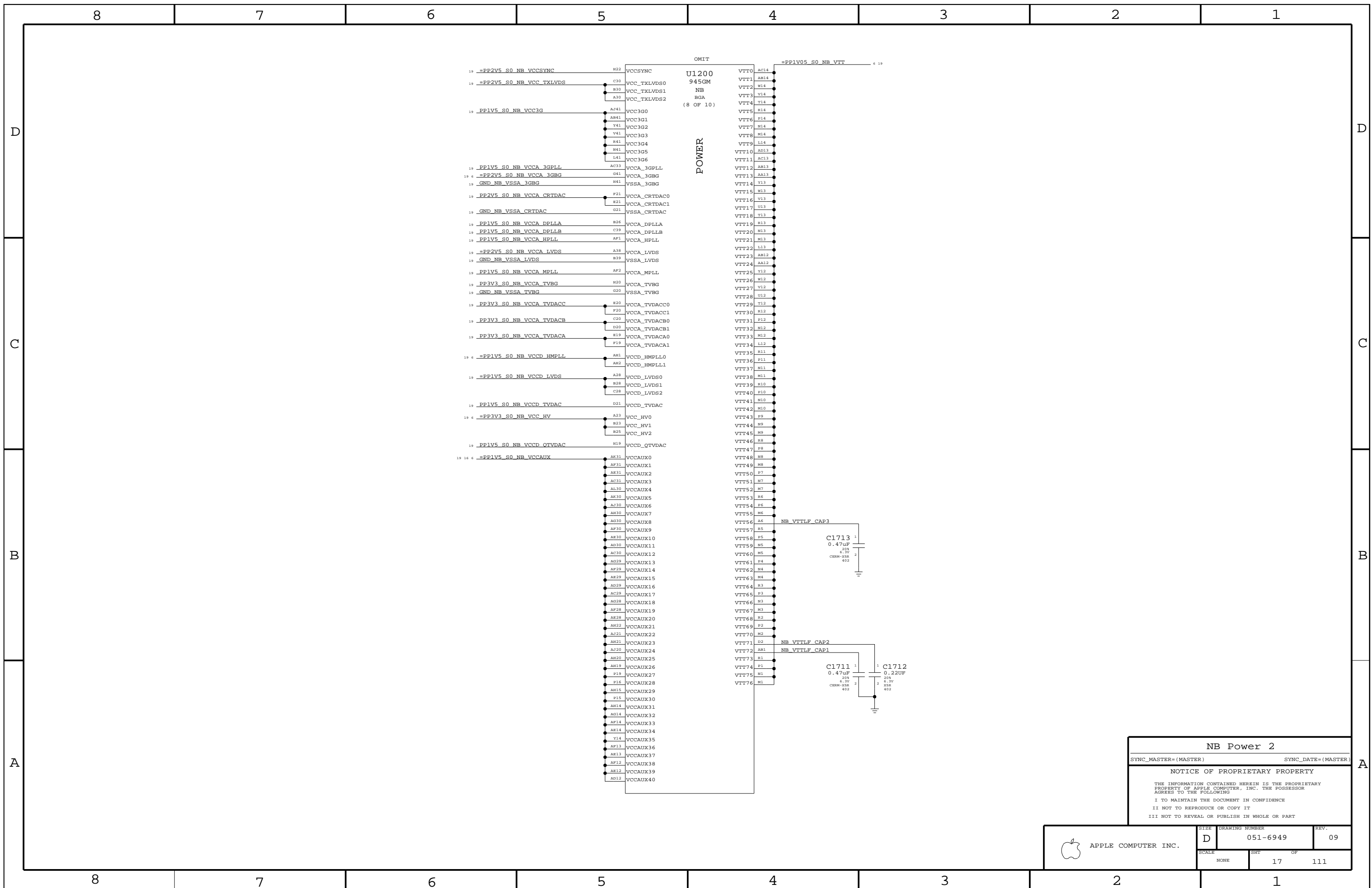
C1612
 0.47uF
 204
 6.3V
 CERM-XSR
 402

C1611
 0.47uF
 204
 6.3V
 CERM-XSR
 402

NB Power 1
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| NONE | 16 | | 111 |



NB Power 2

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)


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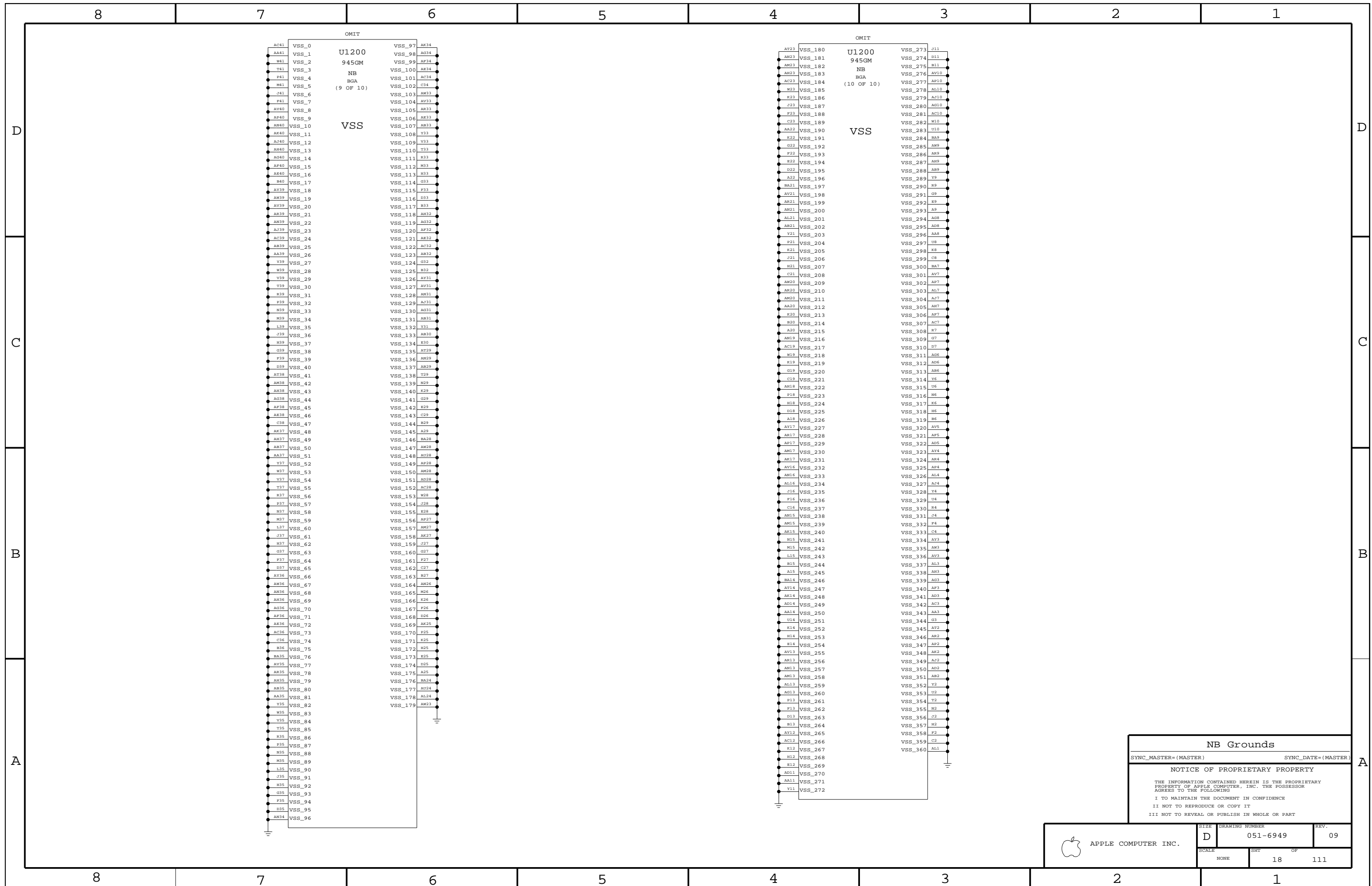
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NB Grounds

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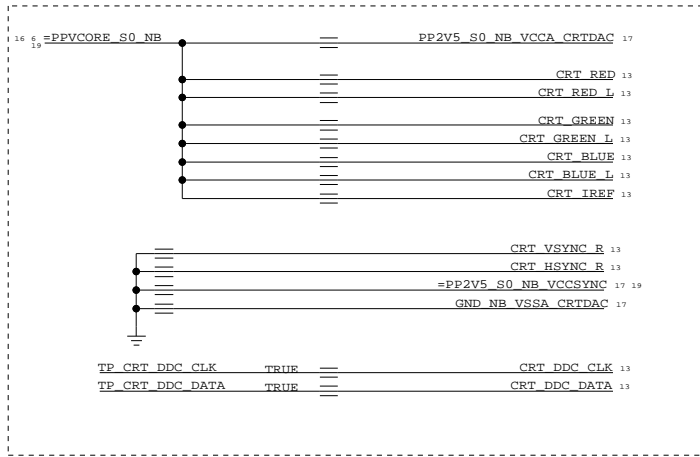
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| | SCALE NONE | SHEET 18 | OF 111 |

Power Interface

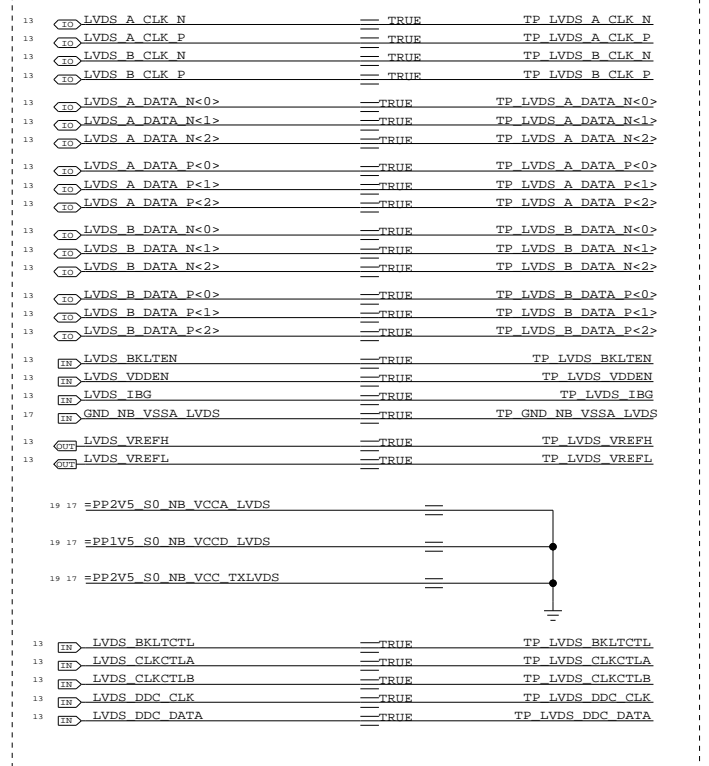
These are the power signals that leave the NB "block"

| | |
|------------------------|------------|
| PP1V05_S0_FSB_NB | 5 6 12 |
| PPVCORE_S0_NB | 6 16 19 |
| PP1V05_S0_NB | 6 |
| PP1V05_S0_NB_VTT | 6 17 19 |
| PP1V5_S0_NB | 6 19 |
| PP1V5_S0_NB_PCIE | 6 13 |
| PP1V5_S0_NB_PLL | 6 19 |
| PP1V5_S0_NB_TVDAC | 6 19 |
| PP1V5_S0_NB_VCCD_HMPLL | 6 19 |
| PP1V5_S0_NB_VCCD_HV | 6 17 19 |
| PP1V5_S0_NB_VCCAUX | 6 16 17 19 |
| PP1V8_S3_MEM_NB | 6 14 16 19 |
| PP2V5_S0_NB_VCCSYNCR | 17 19 |
| PP2V5_S0_NB_VCC_TXLVDS | 17 19 |
| PP2V5_S0_NB_VCCA_3GBG | 6 17 19 |
| PP2V5_S0_NB_VCCA_LVDS | 17 19 |
| PP3V3_S0_NB | 6 14 20 |
| PP3V3_S0_NB_TVDAC | 6 |
| PP3V3_S0_NB_VCC_HV | 6 17 19 |

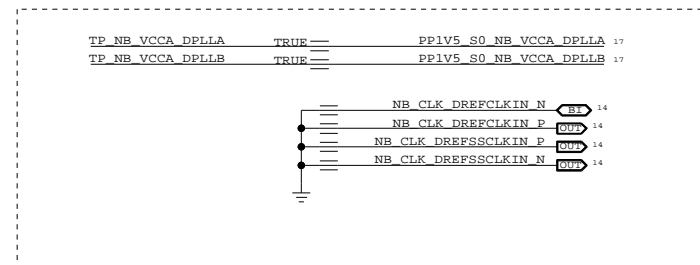
TVOUT DISABLE



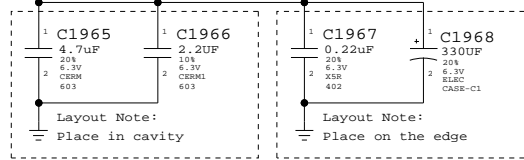
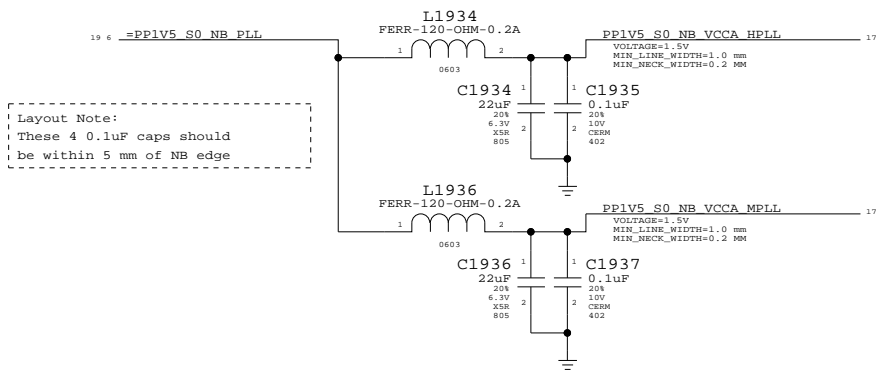
LVDS DISABLE



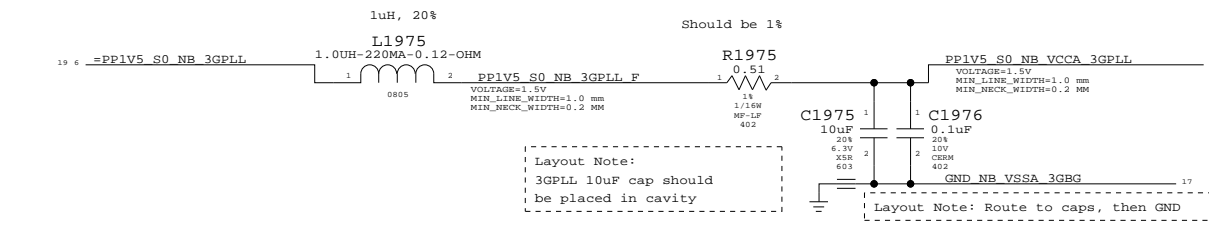
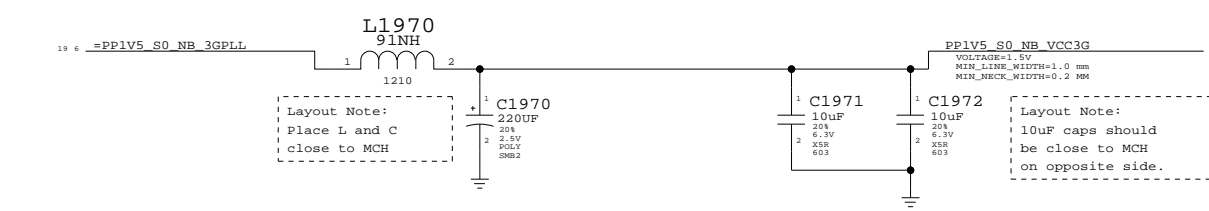
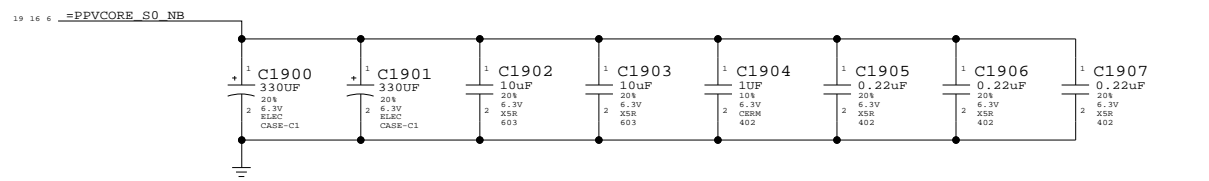
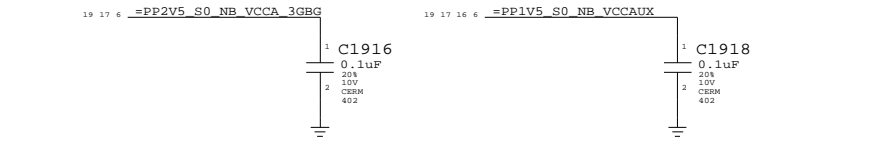
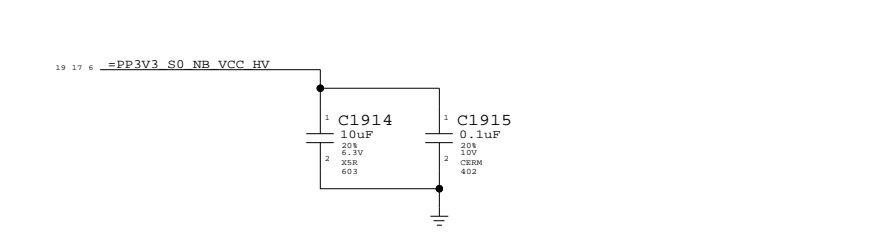
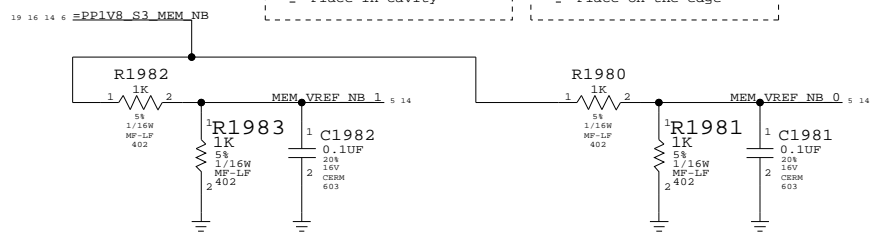
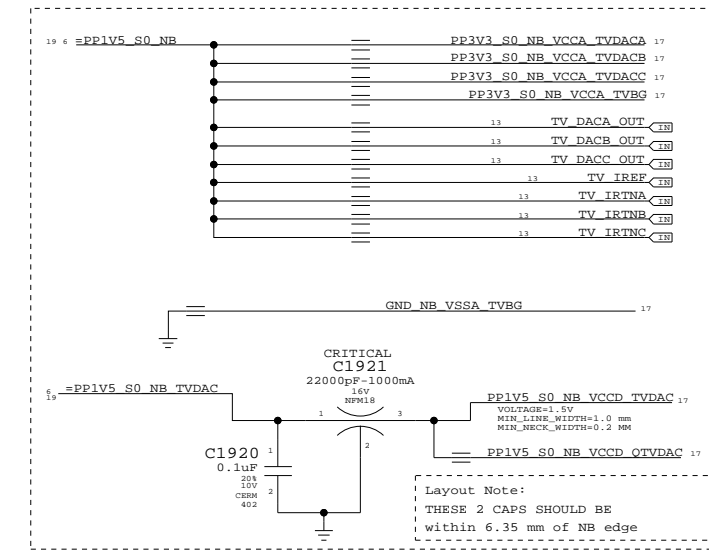
DISPLAY DISABLE



Layout Note:
These 4 0.1uF caps should be within 5 mm of NB edge

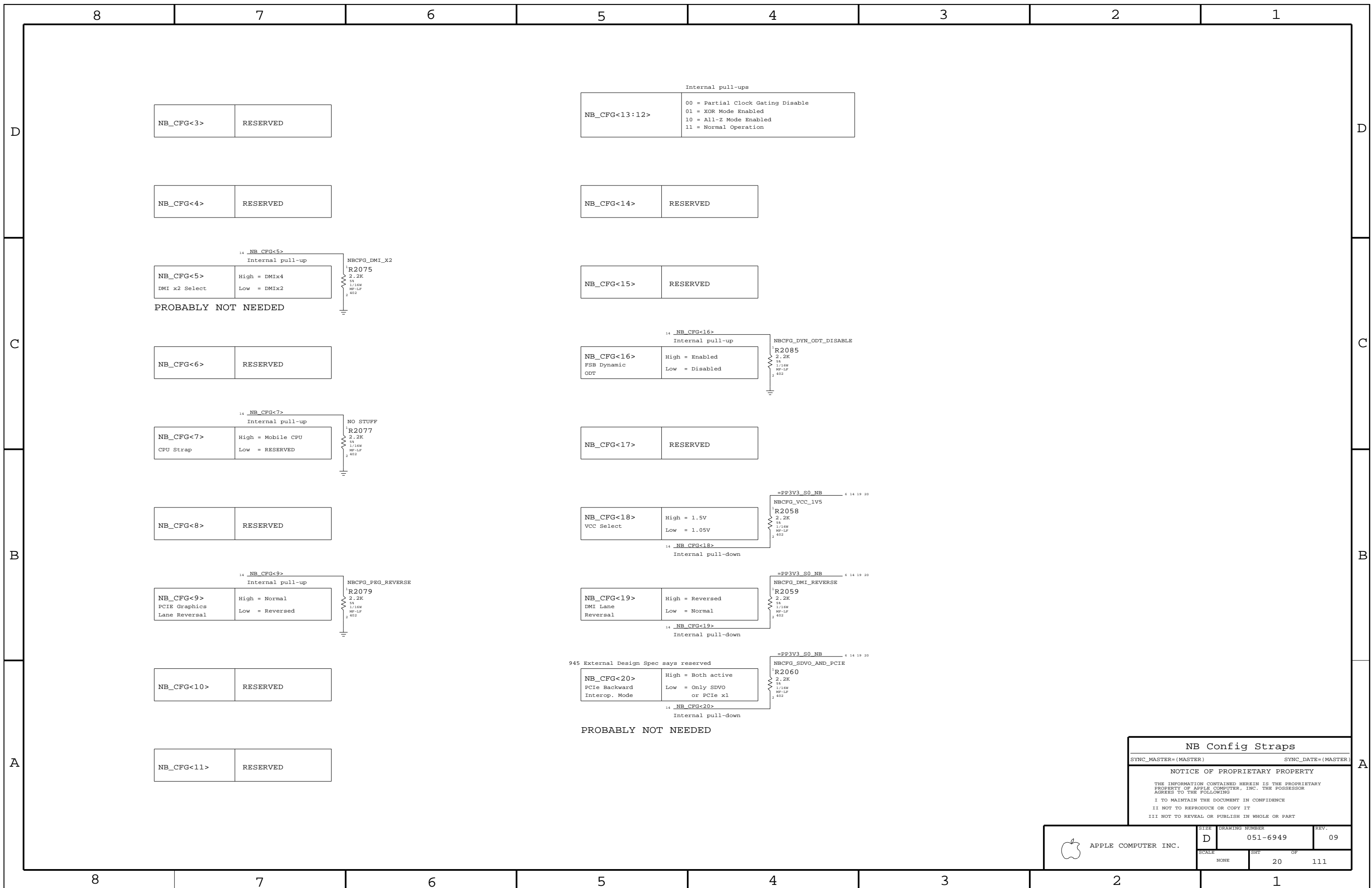


TVOUT DISABLE



NB (GM) Decoupling
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| SCALE: NONE | SHEET: 19 | OF: 111 | |



Internal pull-ups

| | |
|---------------|--|
| NB_CFG<13:12> | 00 = Partial Clock Gating Disable 01 = XOR Mode Enabled 10 = All-Z Mode Enabled 11 = Normal Operation |
|---------------|--|

| | |
|-----------|----------|
| NB_CFG<3> | RESERVED |
|-----------|----------|

| | |
|------------|----------|
| NB_CFG<14> | RESERVED |
|------------|----------|

| | |
|-----------|----------|
| NB_CFG<4> | RESERVED |
|-----------|----------|

14 NB_CFG<5>
Internal pull-up

| | |
|-----------|--|
| NB_CFG<5> | High = DMIX4 DMI x2 Select Low = DMIX2 |
|-----------|--|

PROBABLY NOT NEEDED

| | |
|------------|----------|
| NB_CFG<15> | RESERVED |
|------------|----------|

| | |
|-----------|----------|
| NB_CFG<6> | RESERVED |
|-----------|----------|

14 NB_CFG<16>
Internal pull-up

| | |
|------------|--|
| NB_CFG<16> | High = Enabled FSB Dynamic ODT Low = Disabled |
|------------|--|

14 NB_CFG<7>
Internal pull-up

| | |
|-----------|--|
| NB_CFG<7> | High = Mobile CPU CPU Strap Low = RESERVED |
|-----------|--|

NO STUFF

| | |
|------------|----------|
| NB_CFG<17> | RESERVED |
|------------|----------|

| | |
|-----------|----------|
| NB_CFG<8> | RESERVED |
|-----------|----------|

=PP3V3_S0_NB 6 14 19 20
NBCFG_VCC_LV5

| | |
|------------|--|
| NB_CFG<18> | High = 1.5V VCC Select Low = 1.05V |
|------------|--|

14 NB_CFG<18>
Internal pull-down

14 NB_CFG<9>
Internal pull-up

| | |
|-----------|---|
| NB_CFG<9> | High = Normal PCIe Graphics Lane Reversal Low = Reversed |
|-----------|---|

=PP3V3_S0_NB 6 14 19 20
NBCFG_DMI_REVERSE

| | |
|------------|---|
| NB_CFG<19> | High = Reversed DMI Lane Reversal Low = Normal |
|------------|---|

14 NB_CFG<19>
Internal pull-down

| | |
|------------|----------|
| NB_CFG<10> | RESERVED |
|------------|----------|

945 External Design Spec says reserved
=PP3V3_S0_NB 6 14 19 20
NBCFG_SDVO_AND_PCIE

| | |
|------------|---|
| NB_CFG<20> | High = Both active PCIe Backward Interop. Mode Low = Only SDVO or PCIe x1 |
|------------|---|

14 NB_CFG<20>
Internal pull-down

| | |
|------------|----------|
| NB_CFG<11> | RESERVED |
|------------|----------|

PROBABLY NOT NEEDED

NB Config Straps

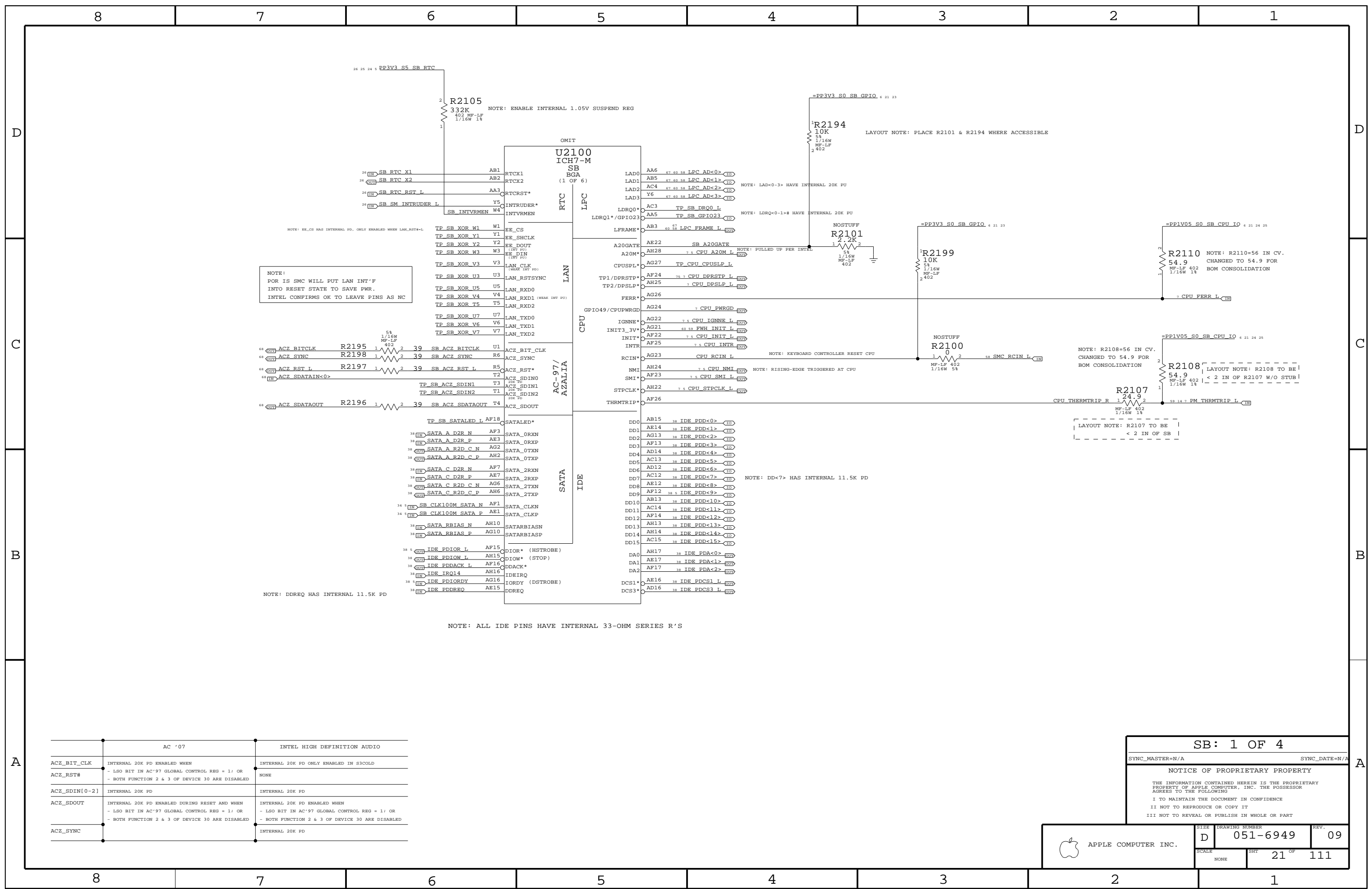
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NOTE:
 POR IS SMC WILL PUT LAN INT'F
 INTO RESET STATE TO SAVE PWR.
 INTEL CONFIRMS OK TO LEAVE PINS AS NC

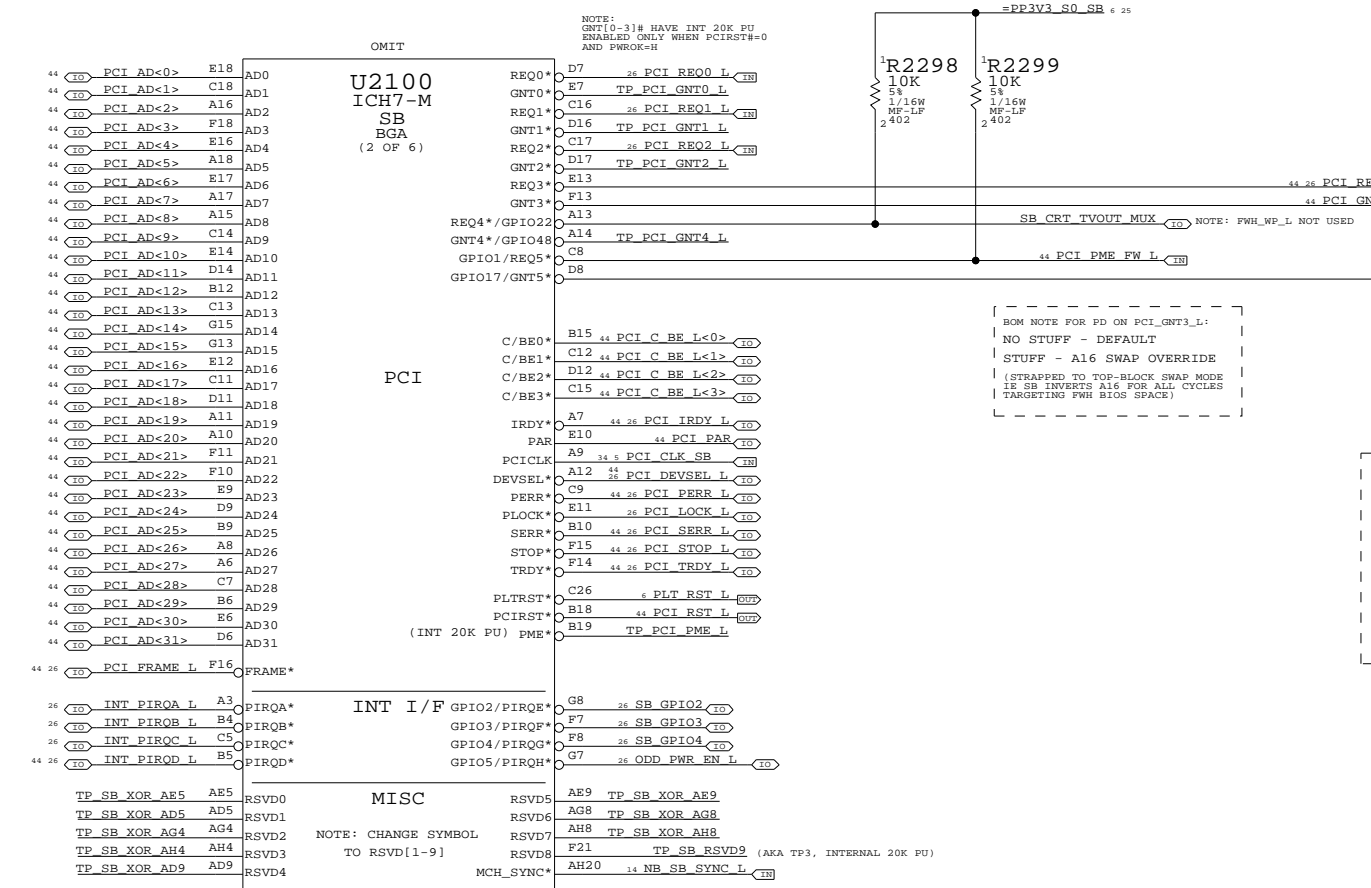
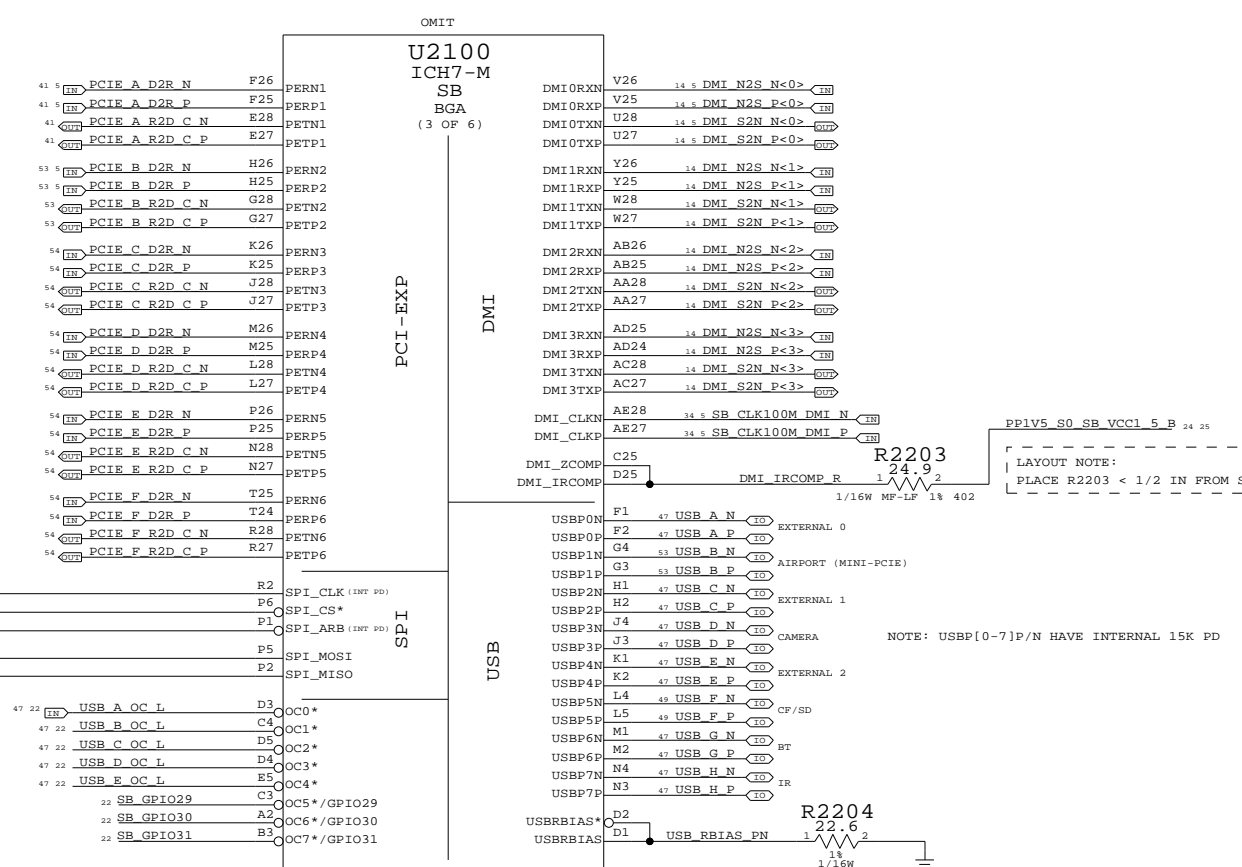
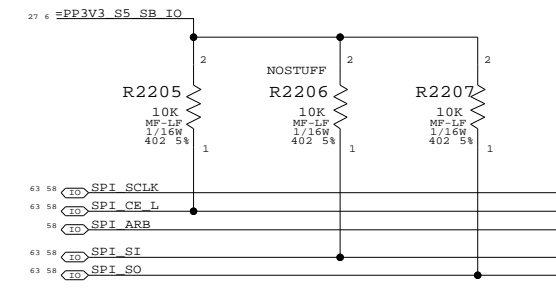
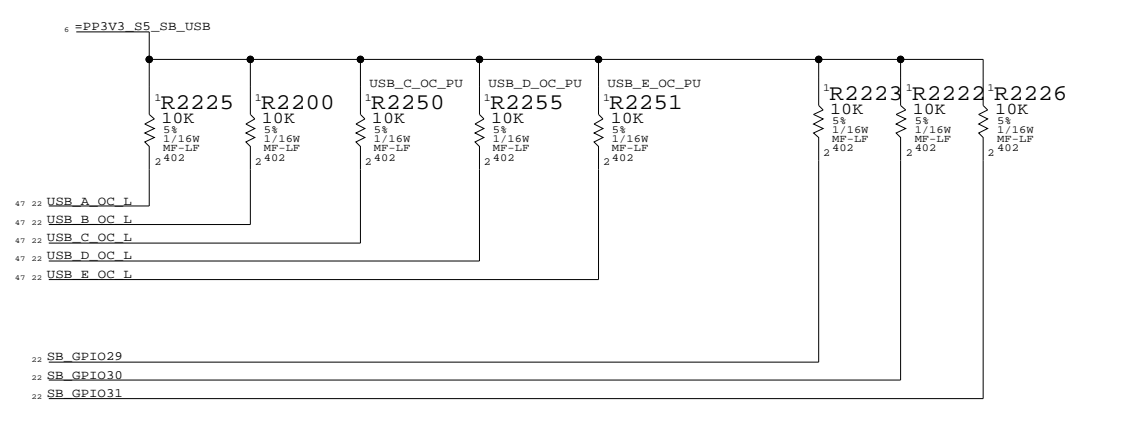
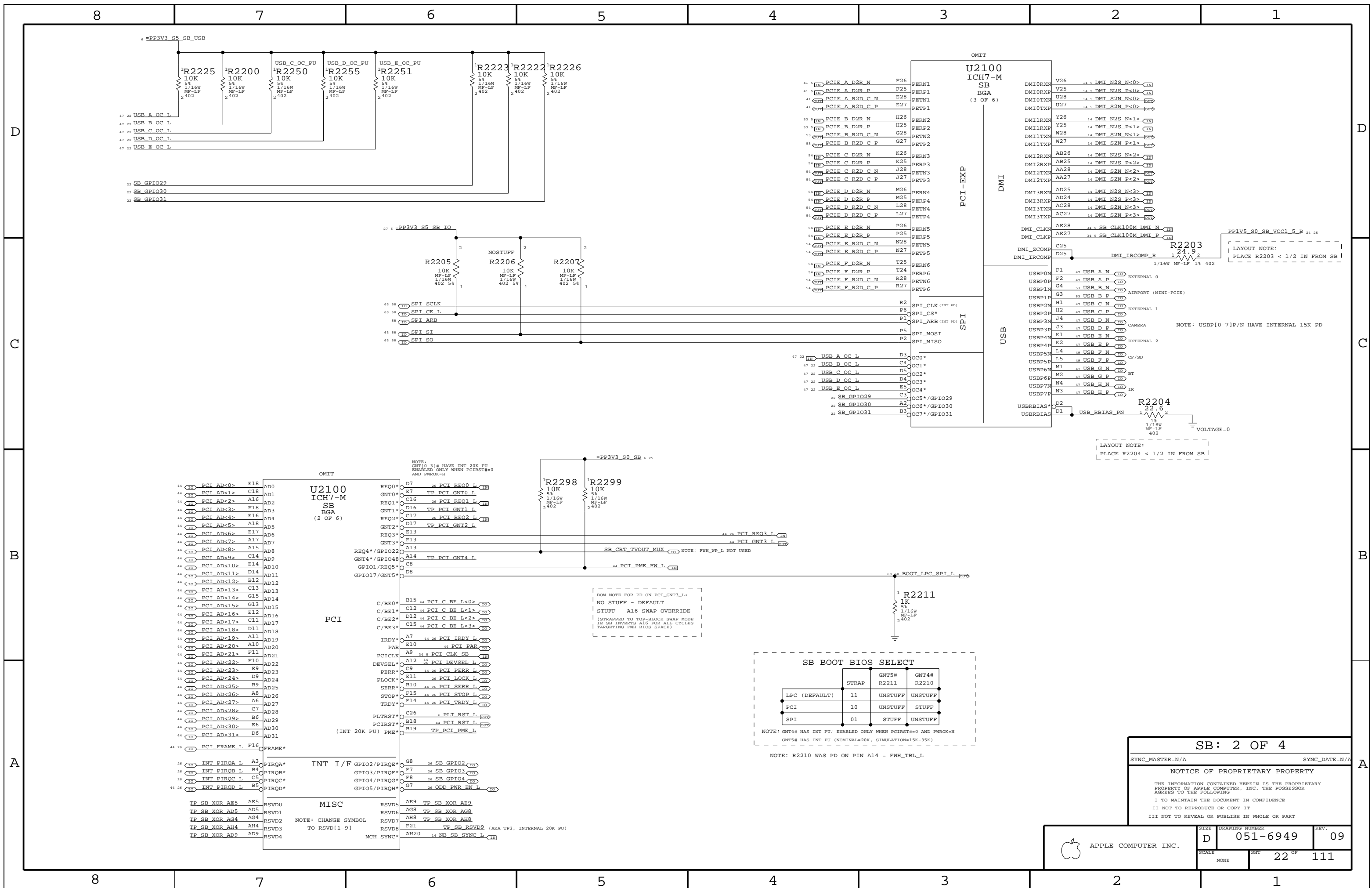
NOTE: DDREQ HAS INTERNAL 11.5K PD

NOTE: ALL IDE PINS HAVE INTERNAL 33-OHM SERIES R'S

| AC '07 | INTEL HIGH DEFINITION AUDIO |
|---------------|---|
| ACZ_BIT_CLK | INTERNAL 20K PD ENABLED WHEN - LSO BIT IN AC'97 GLOBAL CONTROL REG = 1; OR |
| ACZ_RST# | INTERNAL 20K PD ONLY ENABLED IN S3COLD |
| ACZ_SDIN[0-2] | NONE |
| ACZ_SDOUT | INTERNAL 20K PD |
| ACZ_SYNC | INTERNAL 20K PD ENABLED DURING RESET AND WHEN - LSO BIT IN AC'97 GLOBAL CONTROL REG = 1; OR - BOTH FUNCTION 2 & 3 OF DEVICE 30 ARE DISABLED |
| | INTERNAL 20K PD |

| | |
|--|---------------|
| SB: 1 OF 4 | |
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| NONE | | | |



SB: 2 OF 4

SYNC_MASTER=N/A SYNC_DATE=N/A

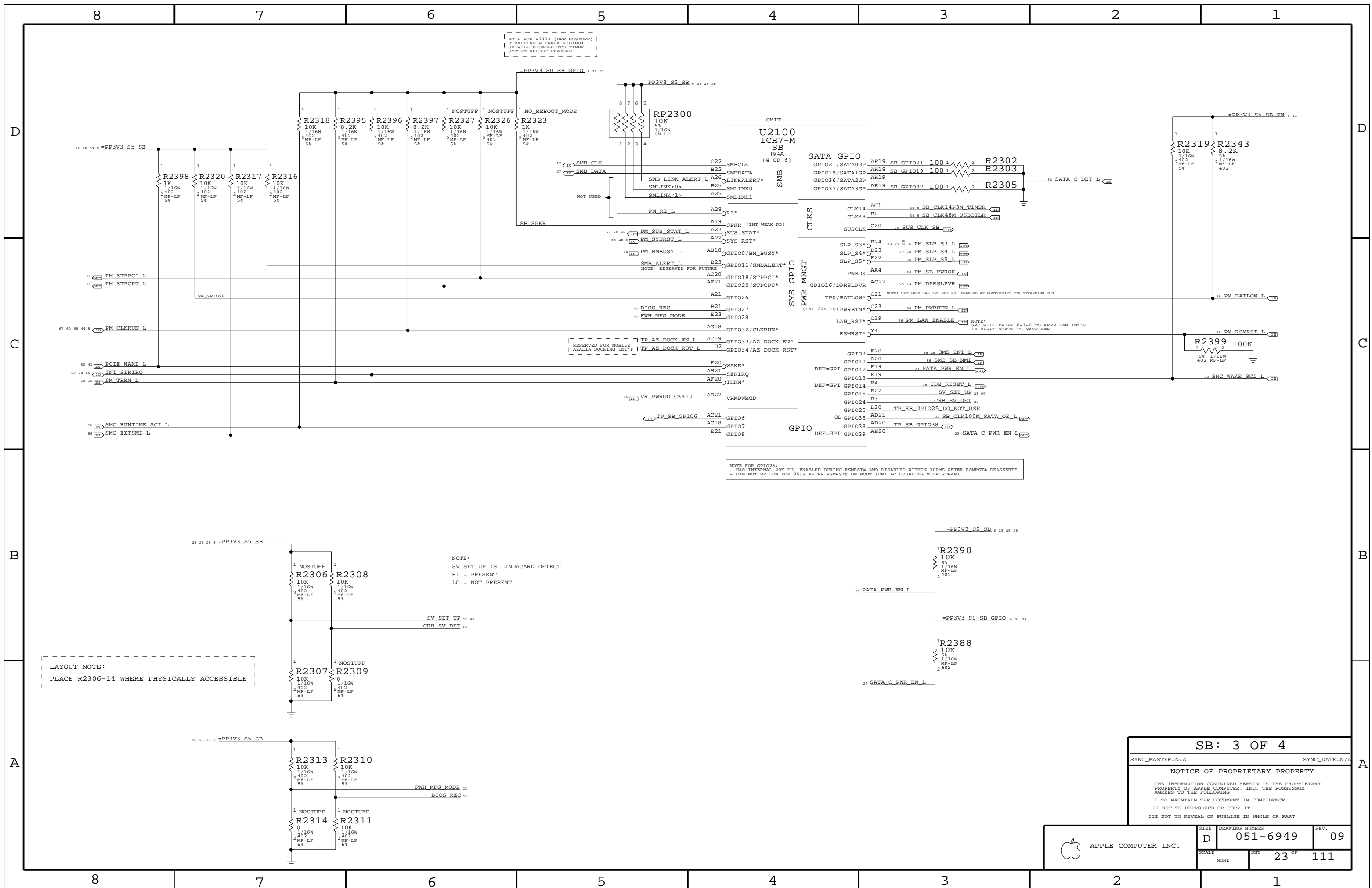
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NOTE FOR R2323 (DEF=NOSTUFF) | STRAPPING # PWROK RISING: SB WILL DISABLE TOO TIMER SYSTEM REBOOT FEATURE

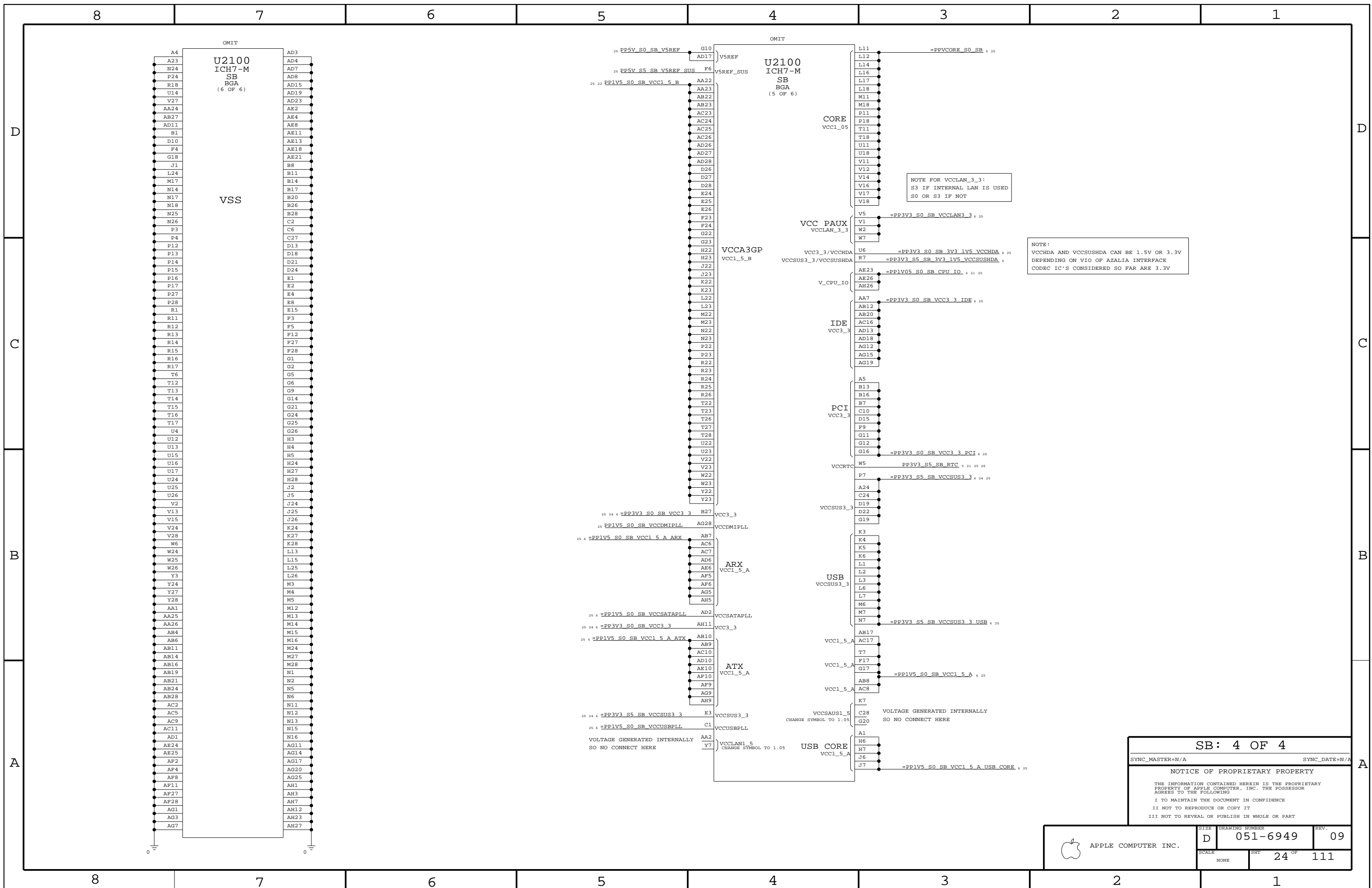
NOTE FOR GPIO25:
 - HAS INTERNAL 20K PU, ENABLED DURING RSMRST# AND DISABLED WITHIN 100MS AFTER RSMRST# DEASSERTS
 - CAN NOT BE LOW FOR 35US AFTER RSMRST# ON BOOT (DMI AC COUPLING MODE STRAP)

NOTE:
 SV_SET_UP IS LINDACARD DETECT
 HI = PRESENT
 LO = NOT PRESENT

LAYOUT NOTE:
 PLACE R2306-14 WHERE PHYSICALLY ACCESSIBLE

SB: 3 OF 4
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NOTE FOR VCCLAN_3_3:
S3 IF INTERNAL LAN IS USED
S0 OR S3 IF NOT

NOTE:
VCC3_3/VCC3_3_3/VCC3_3_3_3 CAN BE 1.5V OR 3.3V
DEPENDING ON VIO OF AZALIA INTERFACE
CODEC IC'S CONSIDERED SO FAR ARE 3.3V

SB: 4 OF 4

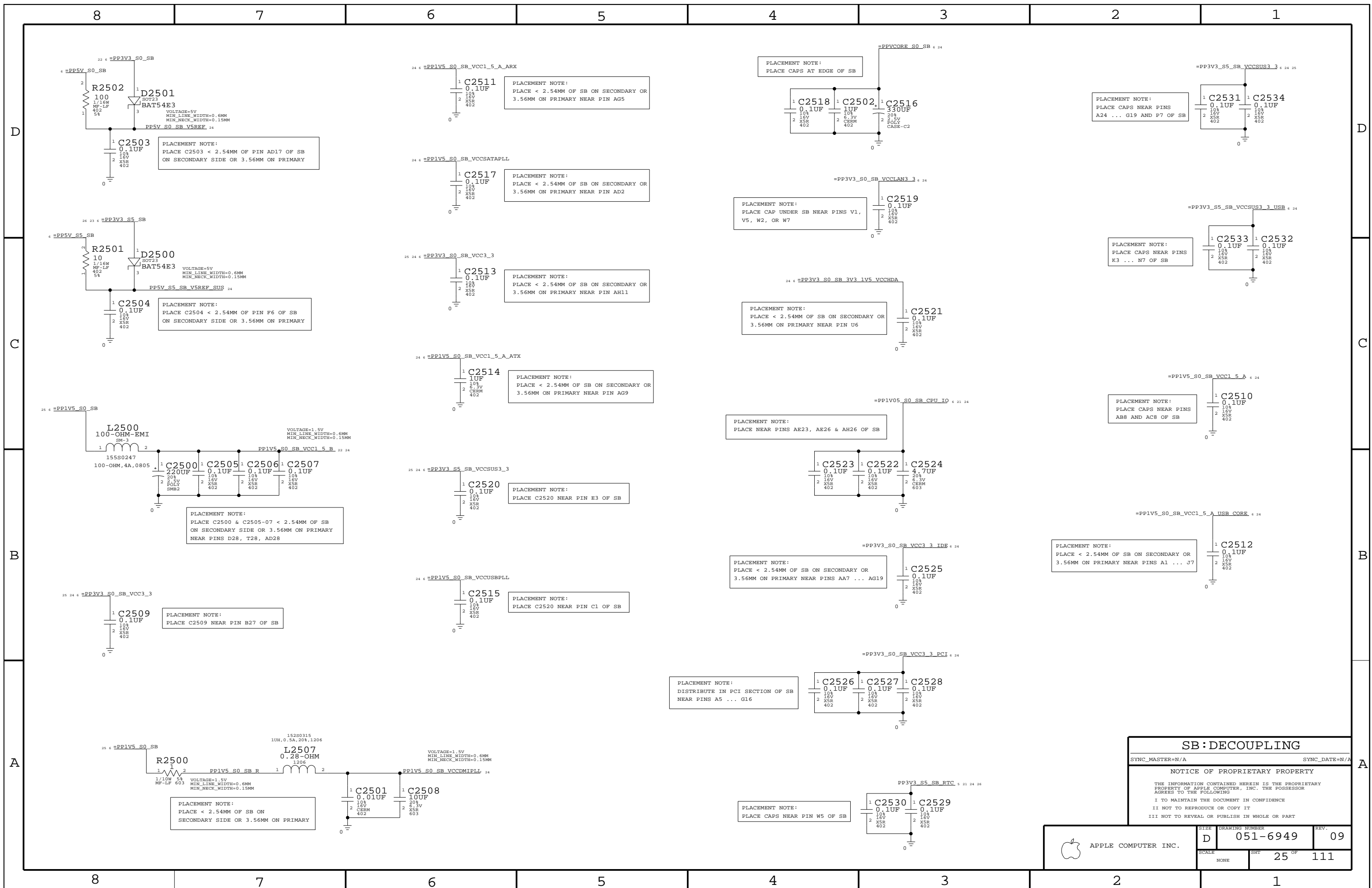
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| | SCALE: NONE | SHEET: 24 OF 111 | |



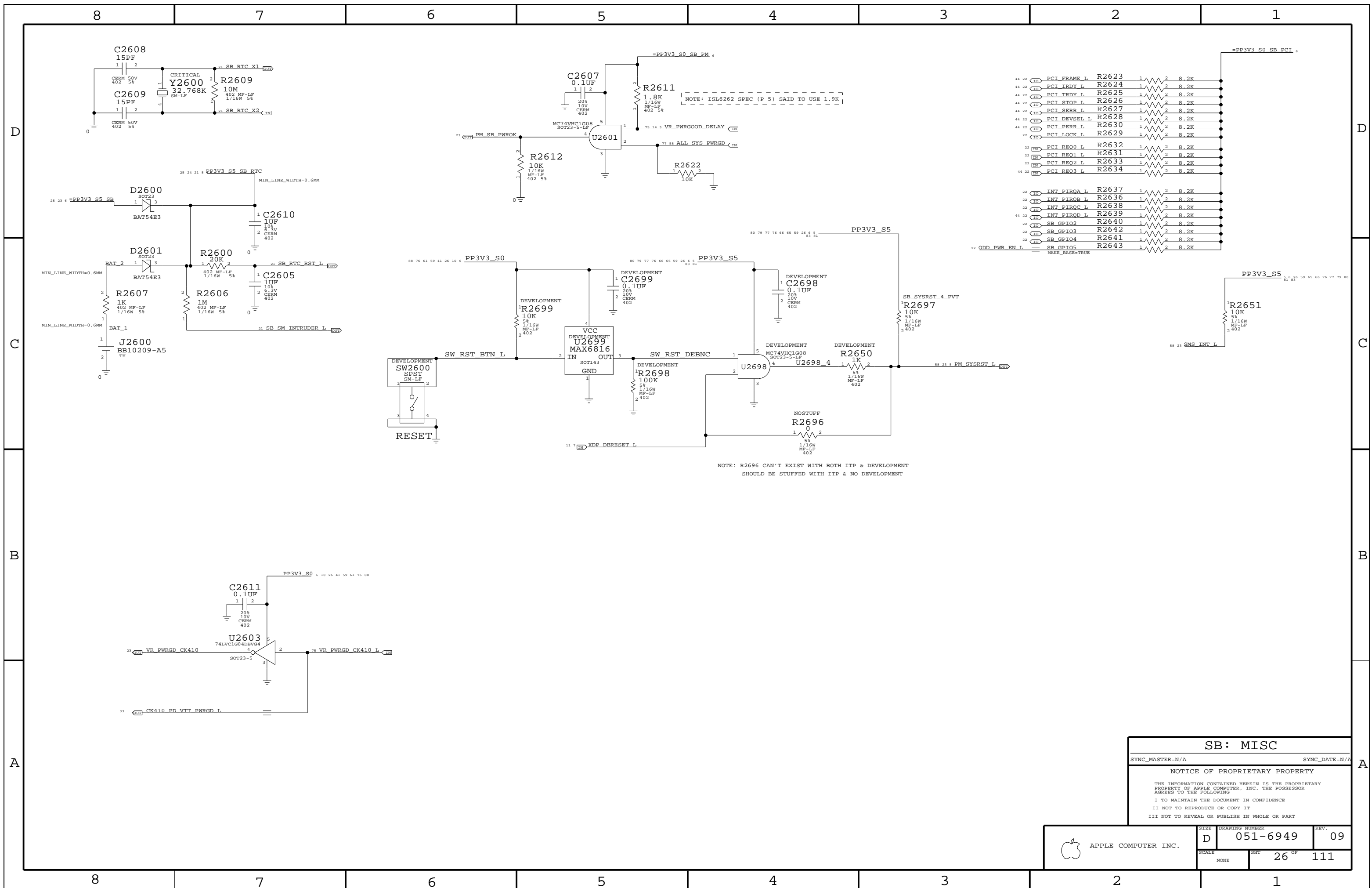
SB: DECOUPLING

SYNC_MASTER=N/A SYNC_DATE=N/A

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SB: MISC

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| SCALE | SHT | OF | |
| NONE | 26 | 111 | |

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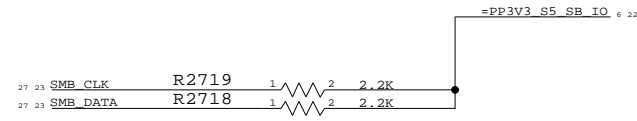
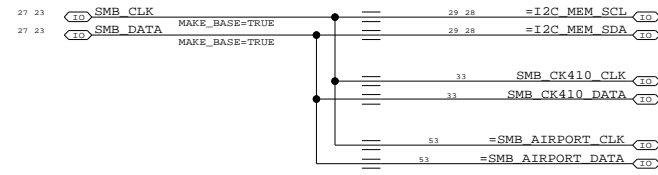
2

1

D

D

SB I2C BUSSES



C

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B

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A

A

SB: SMB HUB

SYNC_MASTER=N/A SYNC_DATE=N/A

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| | SCALE NONE | SHEET 27 OF | TOTAL SHEETS 111 |

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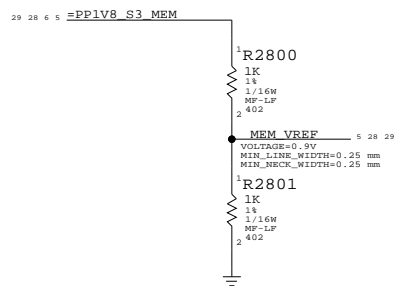
Page Notes

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- =PP1V8_S3_MEM
- =PPSPD_S0_MEM (2.5V - 3.3V)

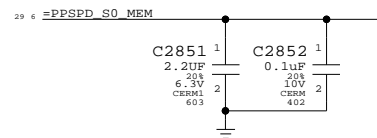
Signal aliases required by this page:
- =I2C_MEM_SCL
- =I2C_MEM_SDA

BOM options provided by this page:
(NONE)

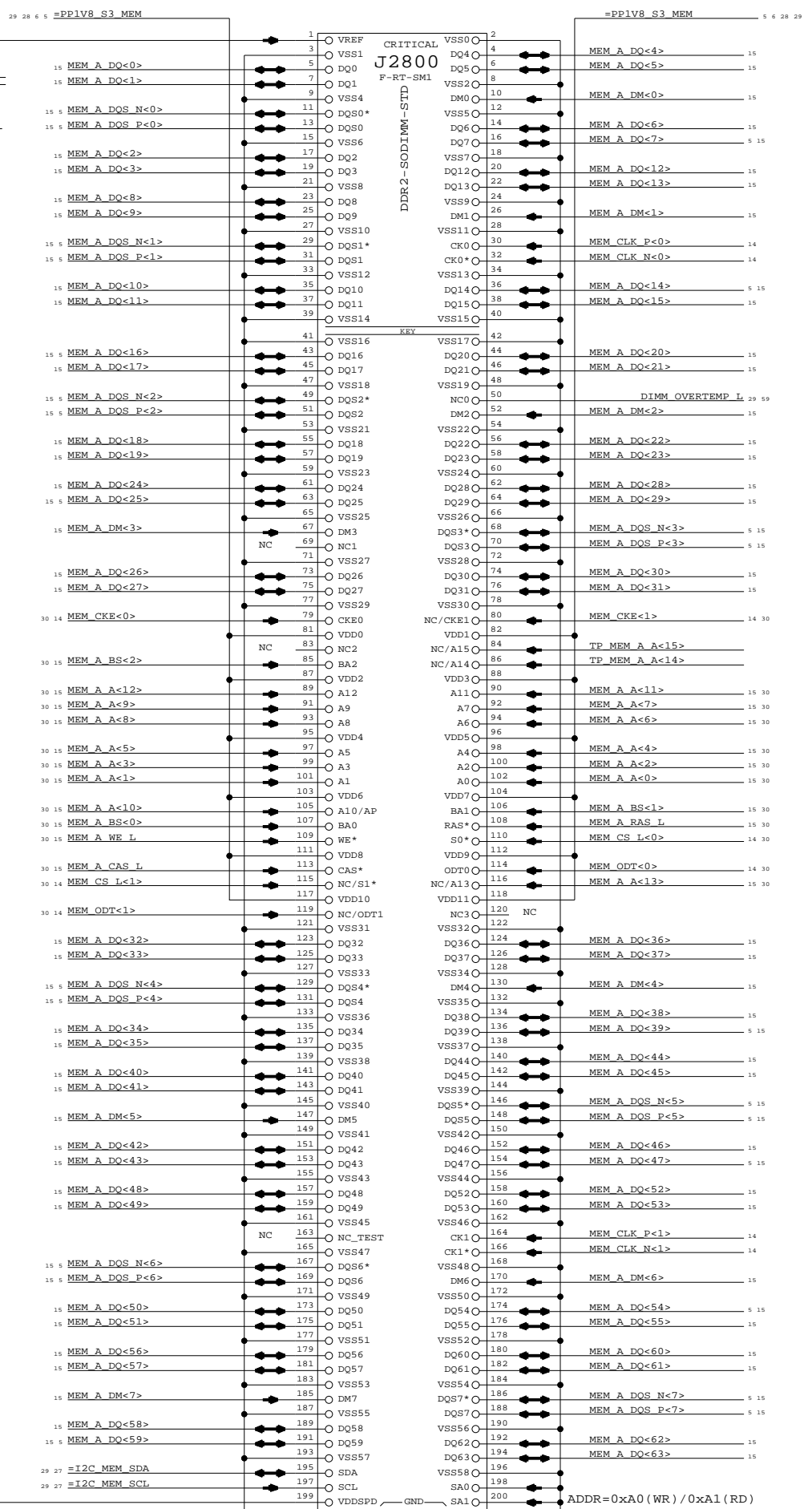
DDR2 VRef One 0.1uF per connector



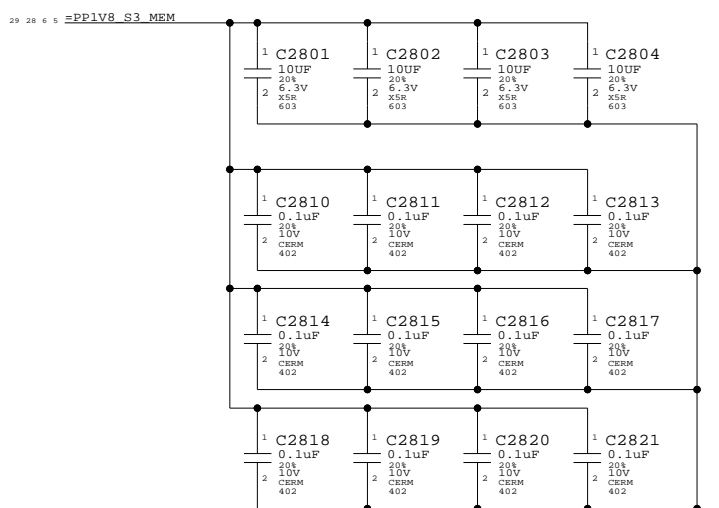
Yellow uses 10K divider and TLV2463 to drive MCH and DIMM connectors.
(See Capell Valley pg 47)



516S0403



DDR2 Bypass Caps (For return current)



DDR2 SO-DIMM Connector A

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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| APPLE COMPUTER INC. | SIZE: D | DRAWING NUMBER: 051-6949 | REV.: 09 |
| | SCALE: NONE | SHT: 28 | OF: 111 |

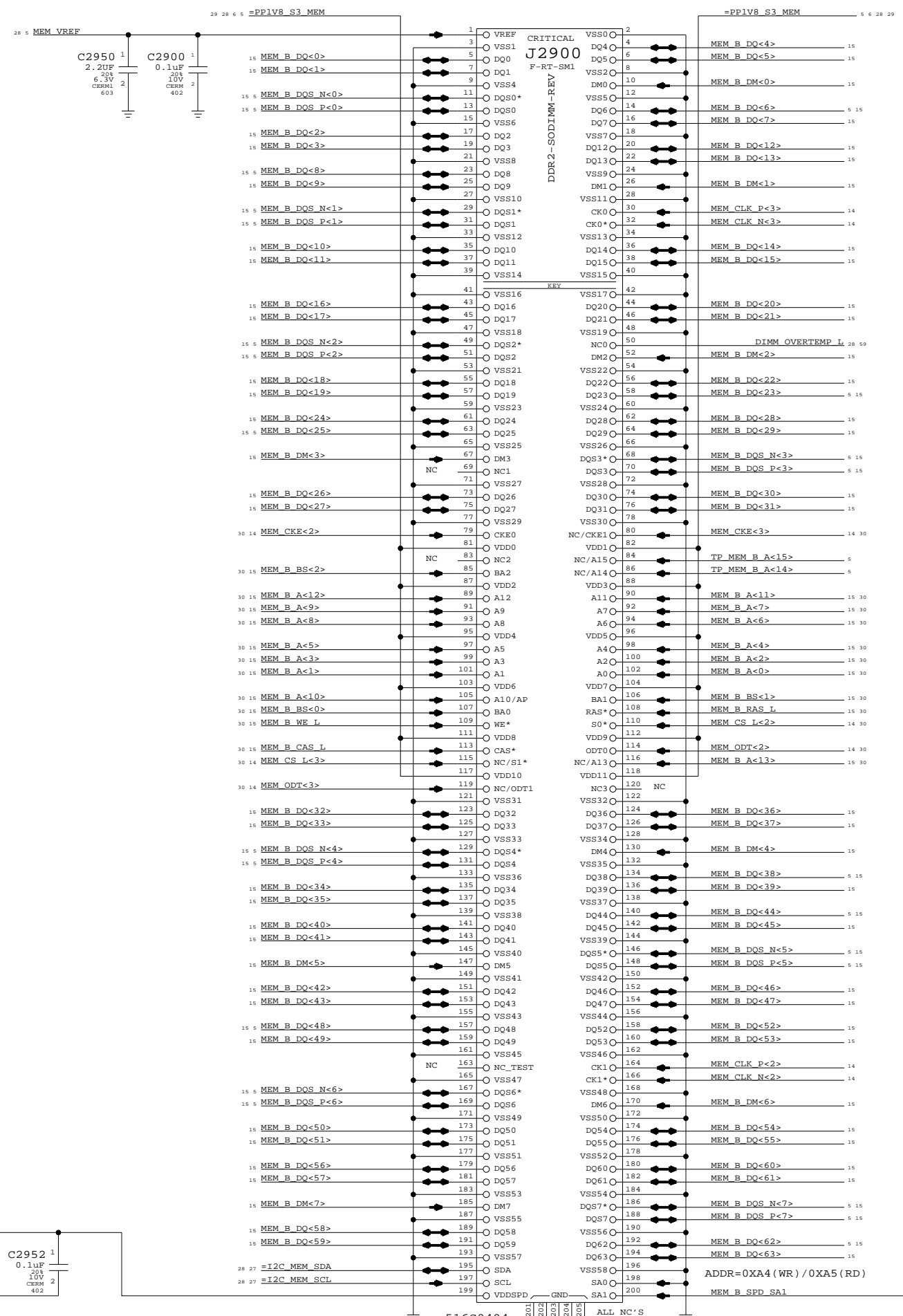
Page Notes

Power aliases required by this page:
 - =PP1V8_S3_MEM
 - =PPSPD_S0_MEM (2.5V - 3.3V)

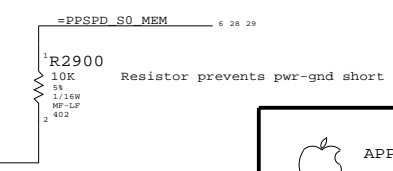
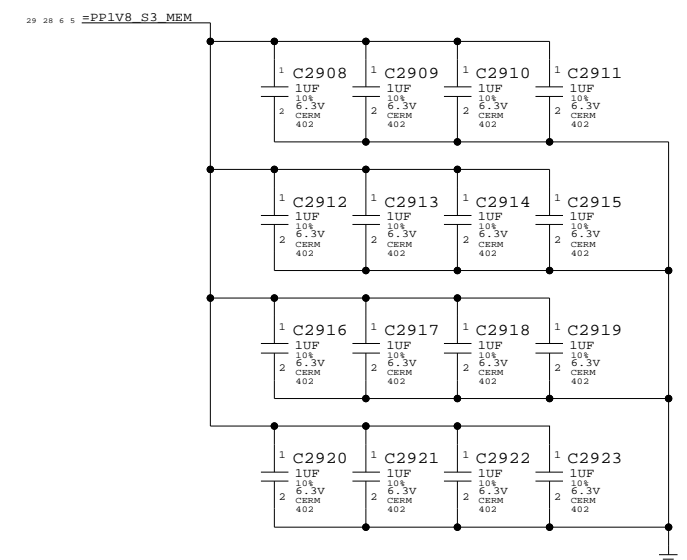
Signal aliases required by this page:
 - =I2C_MEM_SCL
 - =I2C_MEM_SDA

BOM options provided by this page:
 (NONE)

NOTE: This page does not supply VREF.
 The reference voltage must be provided by another page.



DDR2 Bypass Caps (For return current)



DDR2 SO-DIMM Connector B

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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| | NONE | D 051-6949 | 09 |
| | SHT | OF | |
| | 29 | 111 | |

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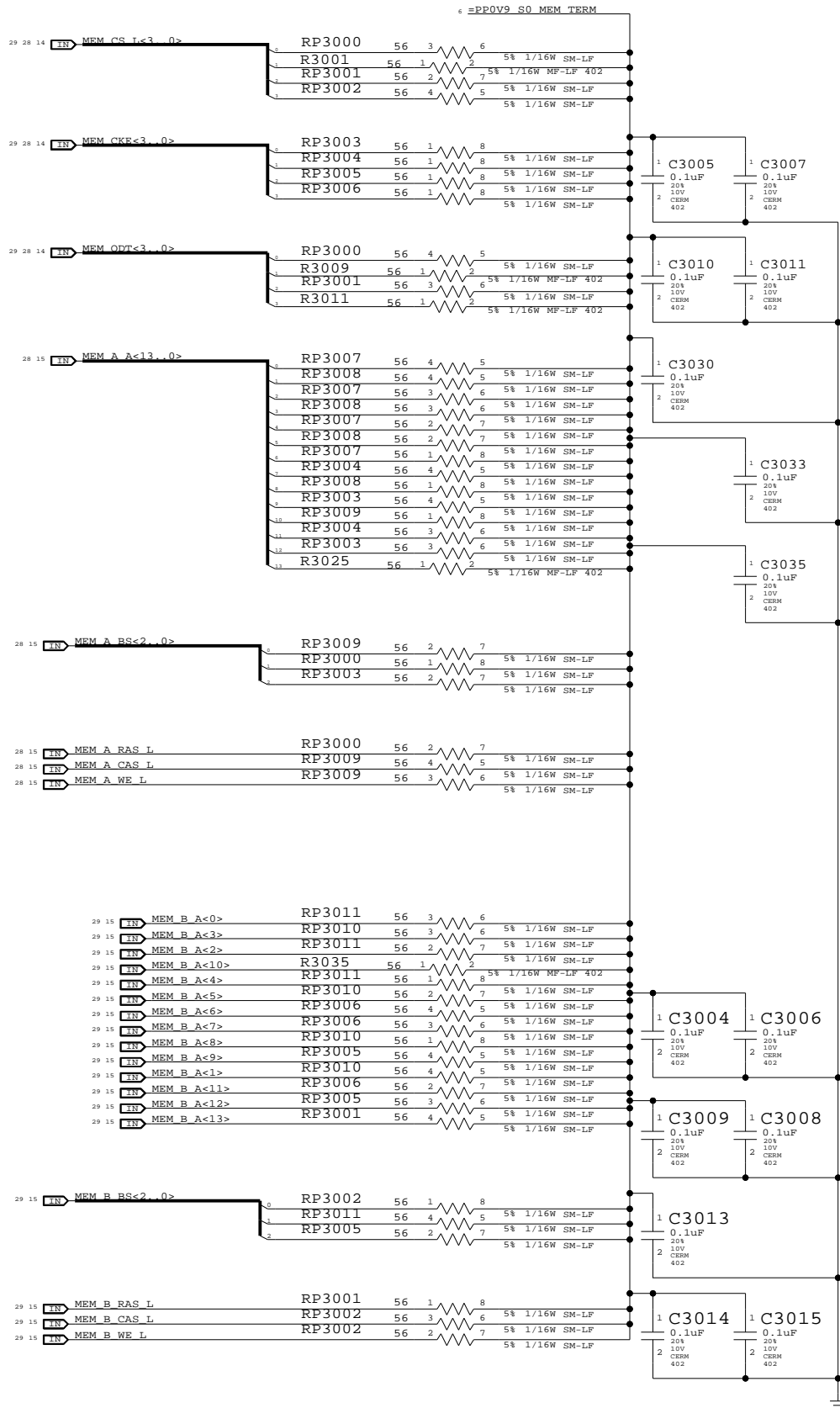
4

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1

One cap for each side of every RPAK, one cap for every two discrete resistors
BOMOPTION shown at the top of each group applies to every part below it



Memory Active Termination

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| SCALE | SHT | | OF |
| NONE | 30 | | 111 |

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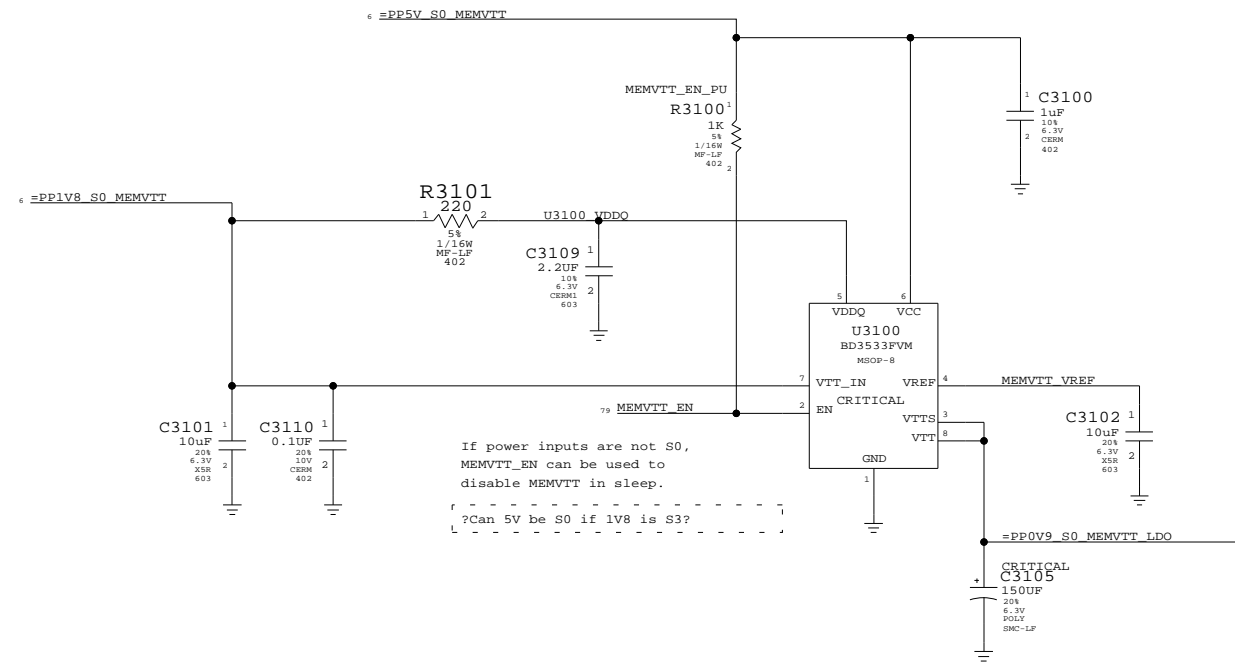
Page Notes

Power aliases required by this page:
 - =PP5V_S0_MEMVTT
 - =PP1V8_S0_MEMVTT
 - =PP0V9_S0_MEMVTT_LDO

Signal aliases required by this page:
 (NONE)

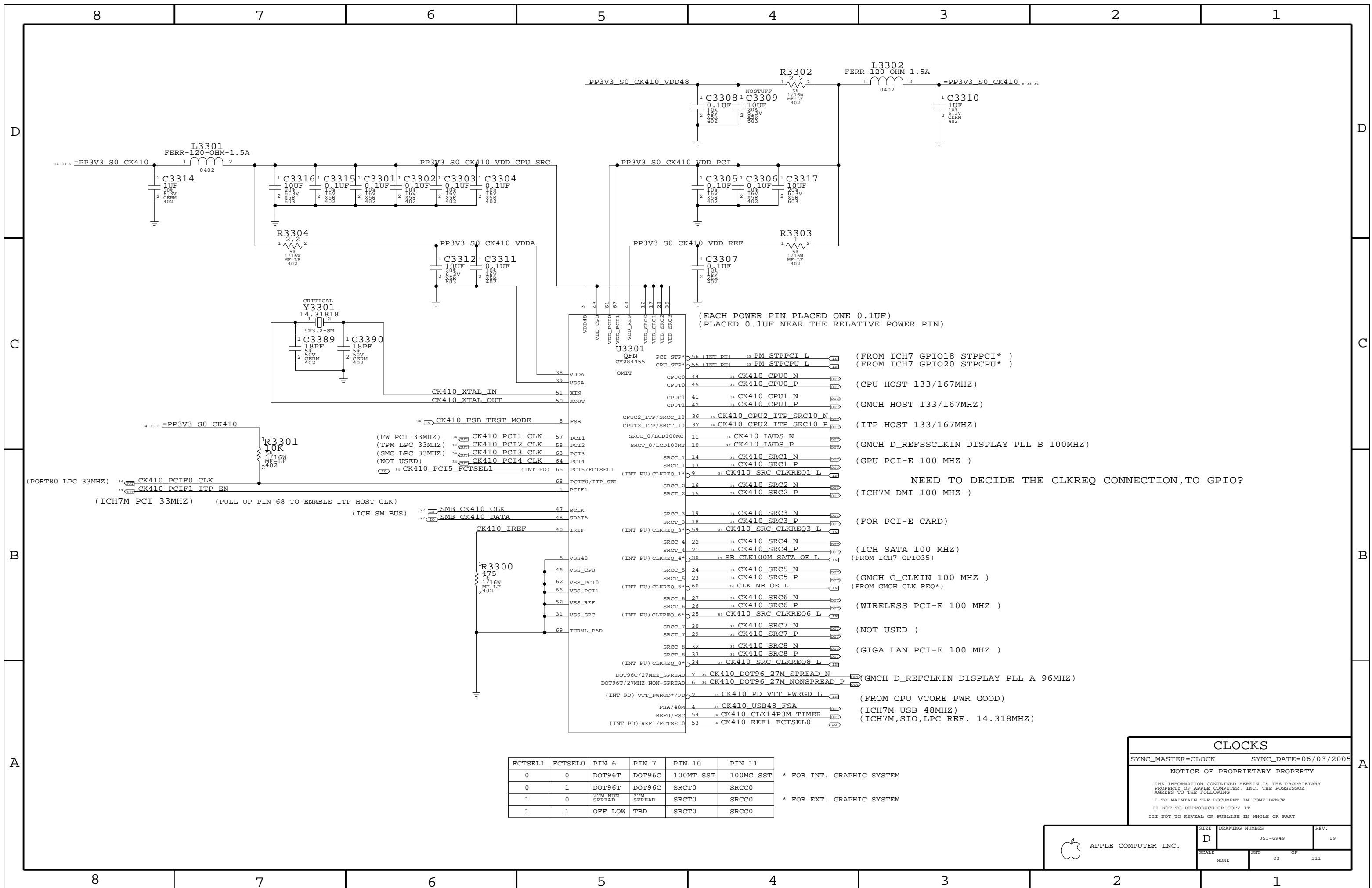
BOM options provided by this page:
 (NONE)

DDR2 Vtt Regulator



Memory Vtt Supply
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| | D | 051-6949 | 09 |
| SCALE | SHT | OF | |
| NONE | 31 | 111 | |



(FW PCI 33MHZ) CK410 PCI1 CLK
 (TPM LPC 33MHZ) CK410 PCI2 CLK
 (SMC LPC 33MHZ) CK410 PCI3 CLK
 (NOT USED) CK410 PCI4 CLK
 CK410 PCI5 FCTSEL1 (INT PD)

(ICH7M PCI 33MHZ) CK410 PCIF0 ITP_EN
 (PULL UP PIN 68 TO ENABLE ITP HOST CLK)
 (ICH SM BUS) SMB CK410 CLK
 SMB CK410 DATA

| FCTSEL1 | FCTSELO | PIN 6 | PIN 7 | PIN 10 | PIN 11 |
|---------|---------|----------------|------------|-----------|-----------|
| 0 | 0 | DOT96T | DOT96C | 100MT_SST | 100MC_SST |
| 0 | 1 | DOT96T | DOT96C | SRCT0 | SRCC0 |
| 1 | 0 | 27M NON SPREAD | 27M SPREAD | SRCT0 | SRCC0 |
| 1 | 1 | OFF LOW | TBD | SRCT0 | SRCC0 |

* FOR INT. GRAPHIC SYSTEM

* FOR EXT. GRAPHIC SYSTEM

- 56 (INT PU) PM STPPCI L (FROM ICH7 GPIO18 STPPCI*)
- 55 (INT PU) PM STPCPU L (FROM ICH7 GPIO20 STPCPU*)
- 44 CK410 CPU0 N (CPU HOST 133/167MHZ)
- 45 CK410 CPU0 P
- 41 CK410 CPU1 N (GMCH HOST 133/167MHZ)
- 42 CK410 CPU1 P
- 36 CK410 CPU2 ITP_SRC10 N (ITP HOST 133/167MHZ)
- 37 CK410 CPU2 ITP_SRC10 P
- 11 CK410 LVDS N (GMCH D_REFSSCLKIN DISPLAY PLL B 100MHZ)
- 10 CK410 LVDS P
- 14 CK410 SRC1 N (GPU PCI-E 100 MHZ)
- 13 CK410 SRC1 P
- 9 CK410 SRC CLKREQ1 L (NEED TO DECIDE THE CLKREQ CONNECTION, TO GPIO?)
- 16 CK410 SRC2 N (ICH7M DMI 100 MHZ)
- 15 CK410 SRC2 P
- 19 CK410 SRC3 N (FOR PCI-E CARD)
- 18 CK410 SRC3 P
- 59 CK410 SRC CLKREQ3 L
- 22 CK410 SRC4 N (ICH SATA 100 MHZ)
- 21 CK410 SRC4 P (FROM ICH7 GPIO35)
- 20 SB_CLK100M_SATA_OE L
- 24 CK410 SRC5 N (GMCH G_CLKIN 100 MHZ)
- 23 CK410 SRC5 P (FROM GMCH CLK_REQ*)
- 60 CLK_NB_OE L
- 27 CK410 SRC6 N (WIRELESS PCI-E 100 MHZ)
- 26 CK410 SRC6 P
- 25 CK410 SRC CLKREQ6 L
- 30 CK410 SRC7 N (NOT USED)
- 29 CK410 SRC7 P
- 32 CK410 SRC8 N (GIGA LAN PCI-E 100 MHZ)
- 33 CK410 SRC8 P
- 34 CK410 SRC CLKREQ8 L
- 7 CK410 DOT96 27M SPREAD N (GMCH D_REFCLKIN DISPLAY PLL A 96MHZ)
- 6 CK410 DOT96 27M NONSPREAD P
- 2 CK410 PD VTT_PWRGD L (FROM CPU VCORE PWR GOOD)
- 4 CK410 USB48_FSA (ICH7M USB 48MHZ)
- 54 CK410 CLK14P3M_TIMER (ICH7M,SIO,LPC REF. 14.318MHZ)
- 53 CK410 REF1_FCTSELO

CLOCKS

SYNC_MASTER=CLOCK SYNC_DATE=06/03/2005

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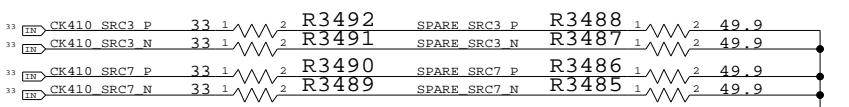
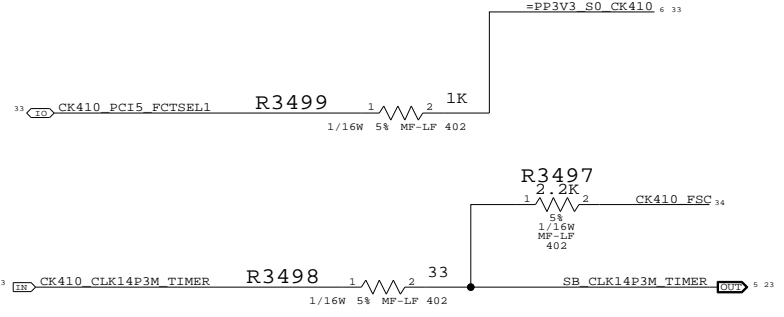
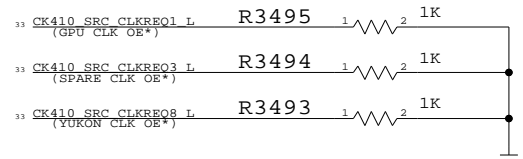
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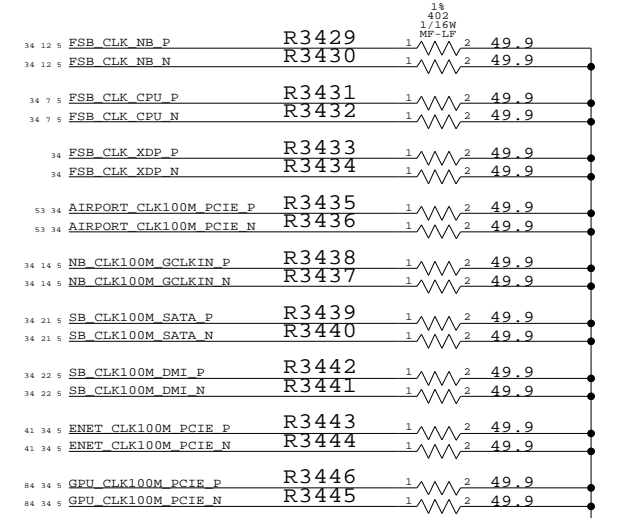
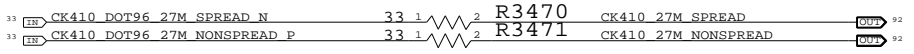
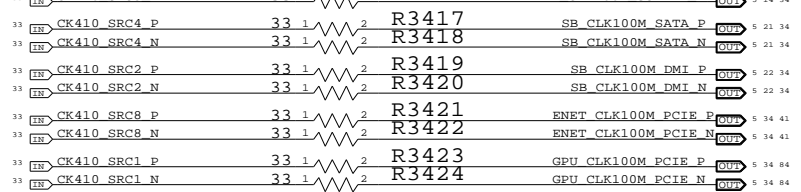
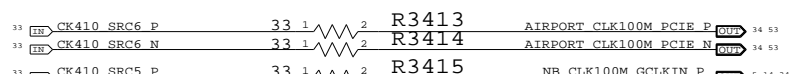
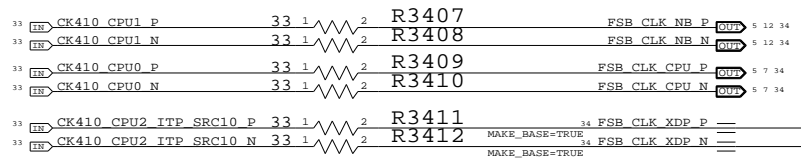
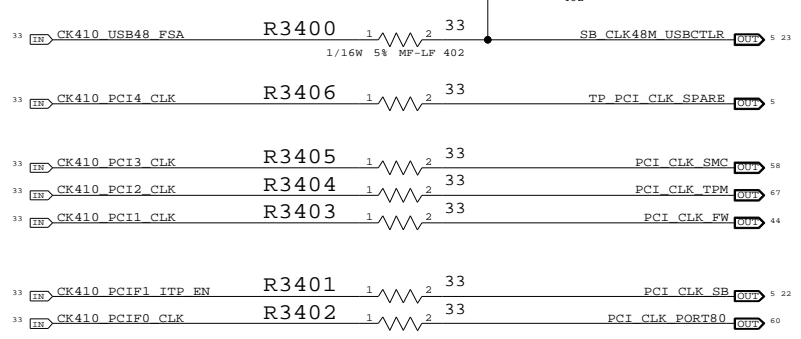
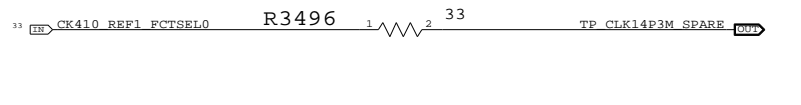
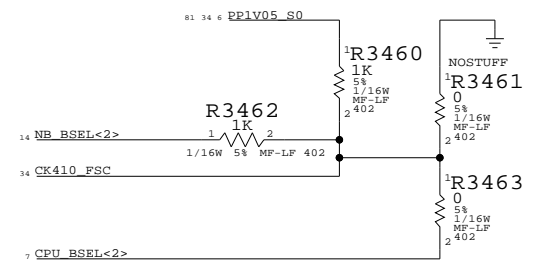
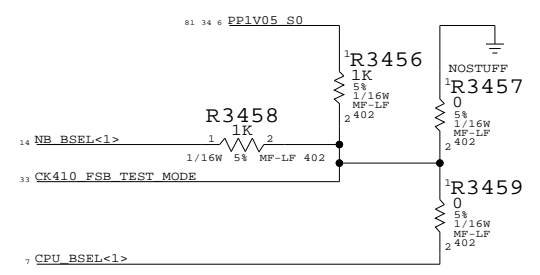
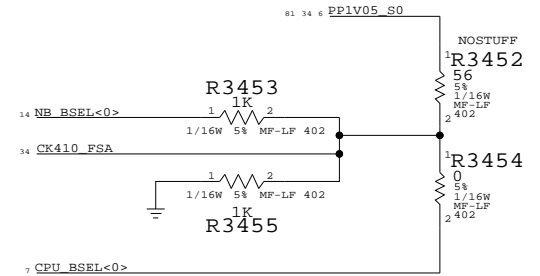
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|-------|----------------|------|
| SIZE | DRAWING NUMBER | REV. |
| D | 051-6949 | 09 |
| SCALE | SHT | OF |
| NONE | 33 | 111 |

NOTE: USE THESE PULL-DOWNS IF NOT CONNECTED TO GPIO'S



FSB FREQUENCY SELECT:

| | STUFF | NO STUFF |
|----------------------------|----------------------------------|----------------------------------|
| CPU DRIVEN | R3452 R3453 R3454 R3455 | R3456 R3457 R3458 R3459 |
| 533MHZ (133MHZ CPU CLK) | R3452 R3453 R3454 R3455 | R3456 R3457 R3458 R3459 |
| 667MHZ (166MHZ CPU CLK) | R3452 R3453 R3454 R3455 | R3456 R3457 R3458 R3459 |



CLOCKS: TERMINATIONS

SYNC_MASTER=N/A SYNC_DATE=N/A

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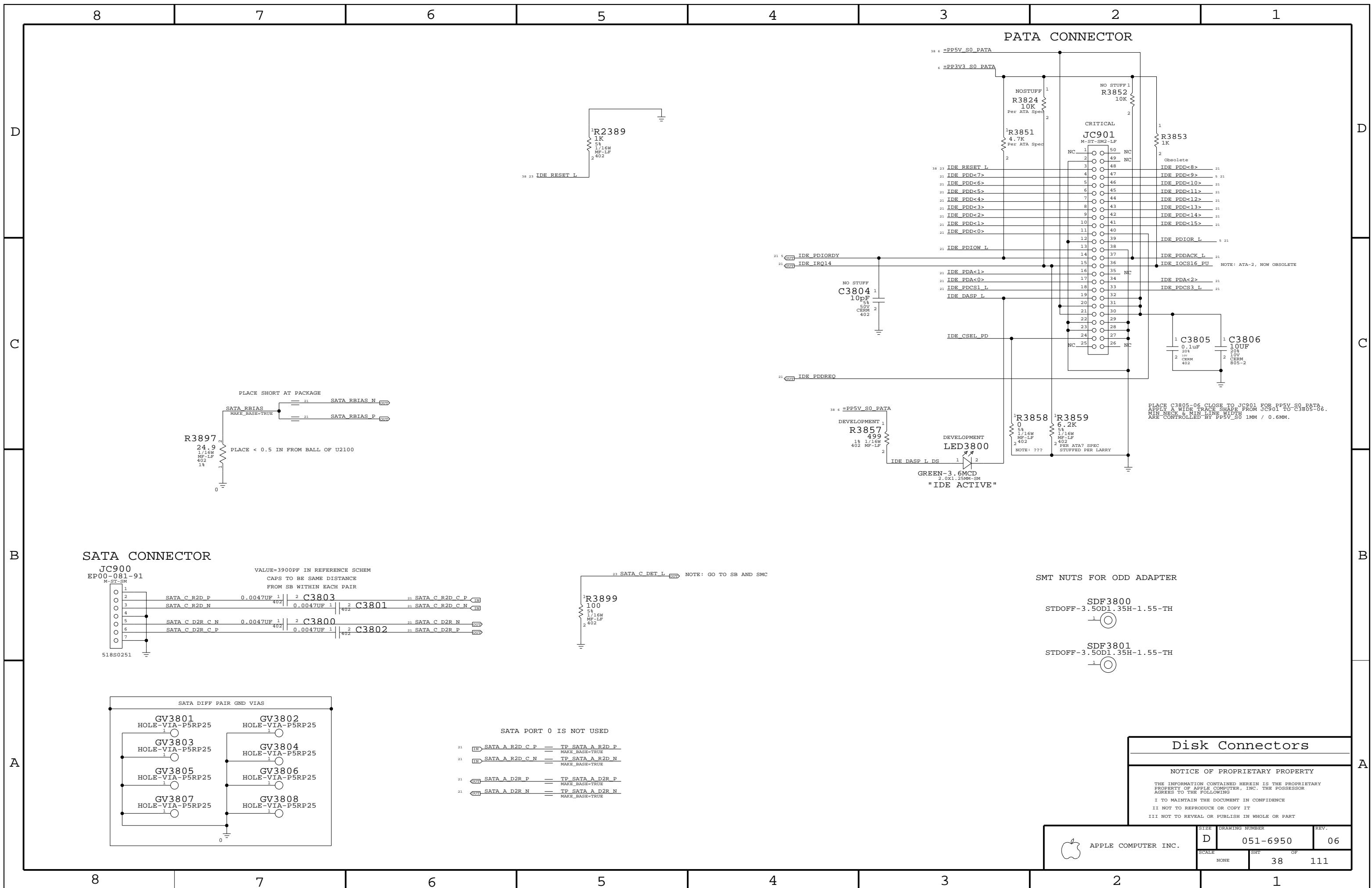
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SCALE: NONE SHEET: 34 OF 111

SIZE: D DRAWING NUMBER: 051-6949 REV: 09



PATA CONNECTOR

Disk Connectors

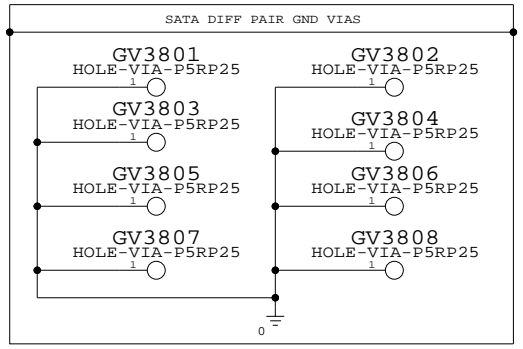
SATA CONNECTOR

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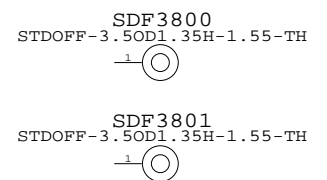
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| APPLE COMPUTER INC. | SIZE | DRAWING NUMBER | REV. |
| | D | 051-6950 | 06 |
| SCALE | NONE | SHT | OF |
| | | 38 | 111 |

SATA PORT 0 IS NOT USED

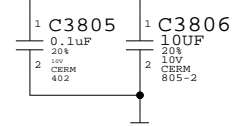
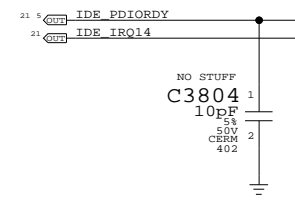
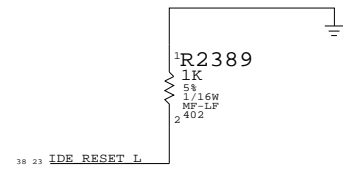
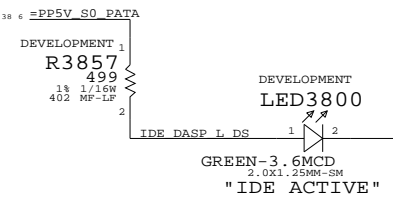
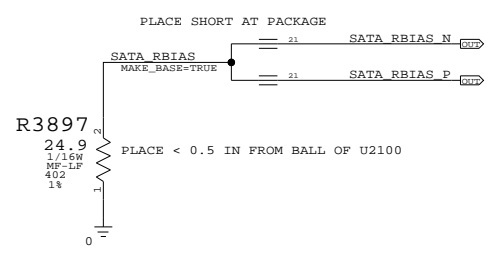
IN SATA A R2D C P == TP SATA A R2D P
 MAKE_BASE=TRUE
 IN SATA A R2D C N == TP SATA A R2D N
 MAKE_BASE=TRUE
 OUT SATA A D2R P == TP SATA A D2R P
 MAKE_BASE=TRUE
 OUT SATA A D2R N == TP SATA A D2R N
 MAKE_BASE=TRUE



SMT NUTS FOR ODD ADAPTER



PLACE C3805-06 CLOSE TO JC901 FOR PP5V_S0_PATA.
 APPLY A WIDE TRACE SHAPE FROM JC901 TO C3805-06.
 MIN NECK & MIN LINE WIDTHS
 ARE CONTROLLED BY PP5V_S0 1MM / 0.6MM.



8 7 6 5 4 3 2 1

D

D

C

C

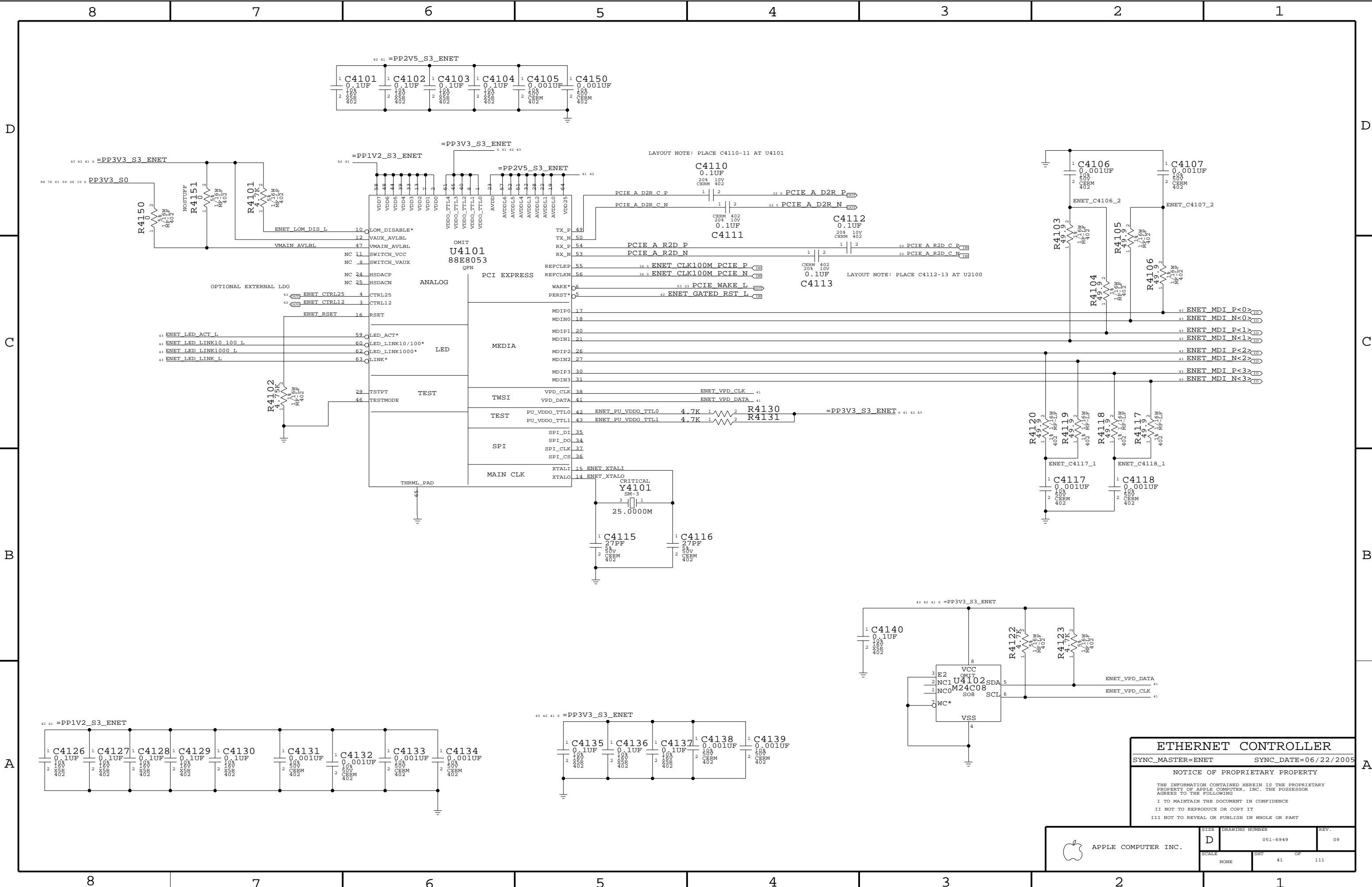
B

B

A

A

8 7 6 5 4 3 2 1



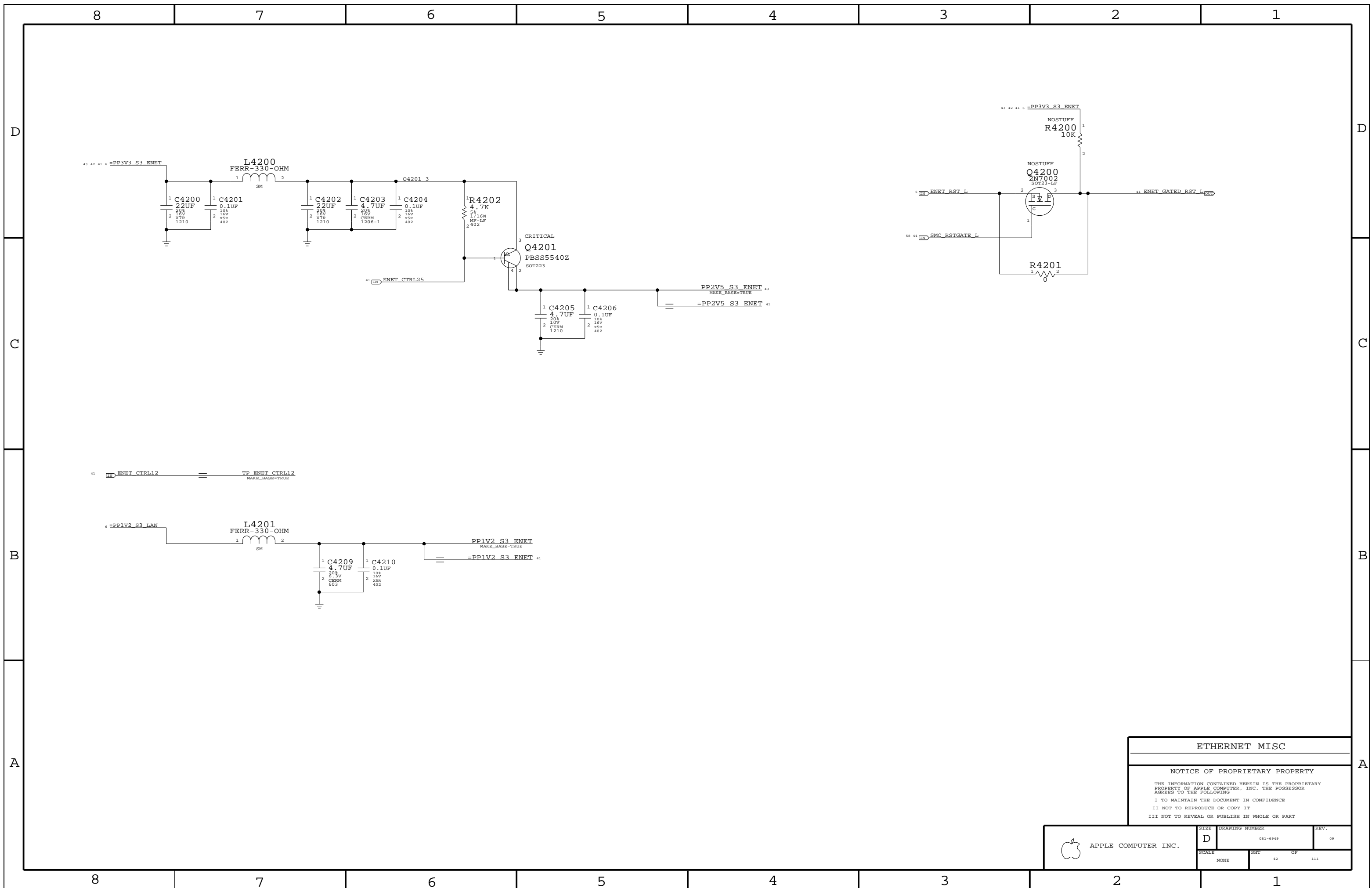
ETHERNET CONTROLLER

SYNC_MASTER=ENET SYNC_DATE=06/22/2005

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| | SCALE: NONE | SHEET: 41 | OF: 111 |



ETHERNET MISC

NOTICE OF PROPRIETARY PROPERTY

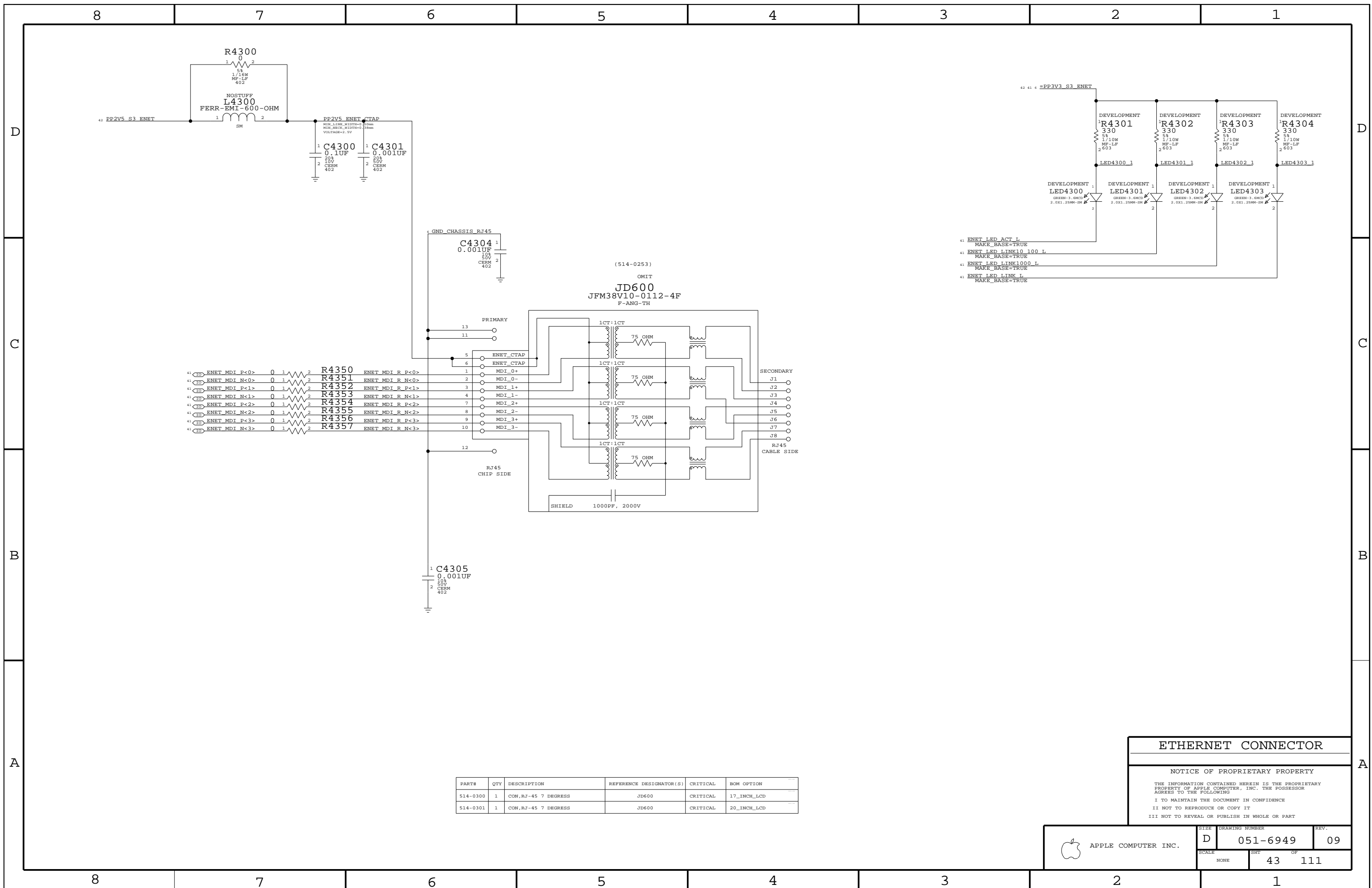
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| | SCALE NONE | SHEET 42 | OF 111 |



| | | | | | |
|---------------|---|---|---|-------|-----------------|
| ENET MDI P<0> | 0 | 1 | 2 | R4350 | ENET MDI R P<0> |
| ENET MDI N<0> | 0 | 1 | 2 | R4351 | ENET MDI R N<0> |
| ENET MDI P<1> | 0 | 1 | 2 | R4352 | ENET MDI R P<1> |
| ENET MDI N<1> | 0 | 1 | 2 | R4353 | ENET MDI R N<1> |
| ENET MDI P<2> | 0 | 1 | 2 | R4354 | ENET MDI R P<2> |
| ENET MDI N<2> | 0 | 1 | 2 | R4355 | ENET MDI R N<2> |
| ENET MDI P<3> | 0 | 1 | 2 | R4356 | ENET MDI R P<3> |
| ENET MDI N<3> | 0 | 1 | 2 | R4357 | ENET MDI R N<3> |

| PART# | QTY | DESCRIPTION | REFERENCE DESIGNATOR(S) | CRITICAL | BOM OPTION |
|----------|-----|---------------------|-------------------------|----------|-------------|
| 514-0300 | 1 | CON,RJ-45 7 DEGRESS | JD600 | CRITICAL | 17_INCH_LCD |
| 514-0301 | 1 | CON,RJ-45 7 DEGRESS | JD600 | CRITICAL | 20_INCH_LCD |

ETHERNET CONNECTOR

NOTICE OF PROPRIETARY PROPERTY

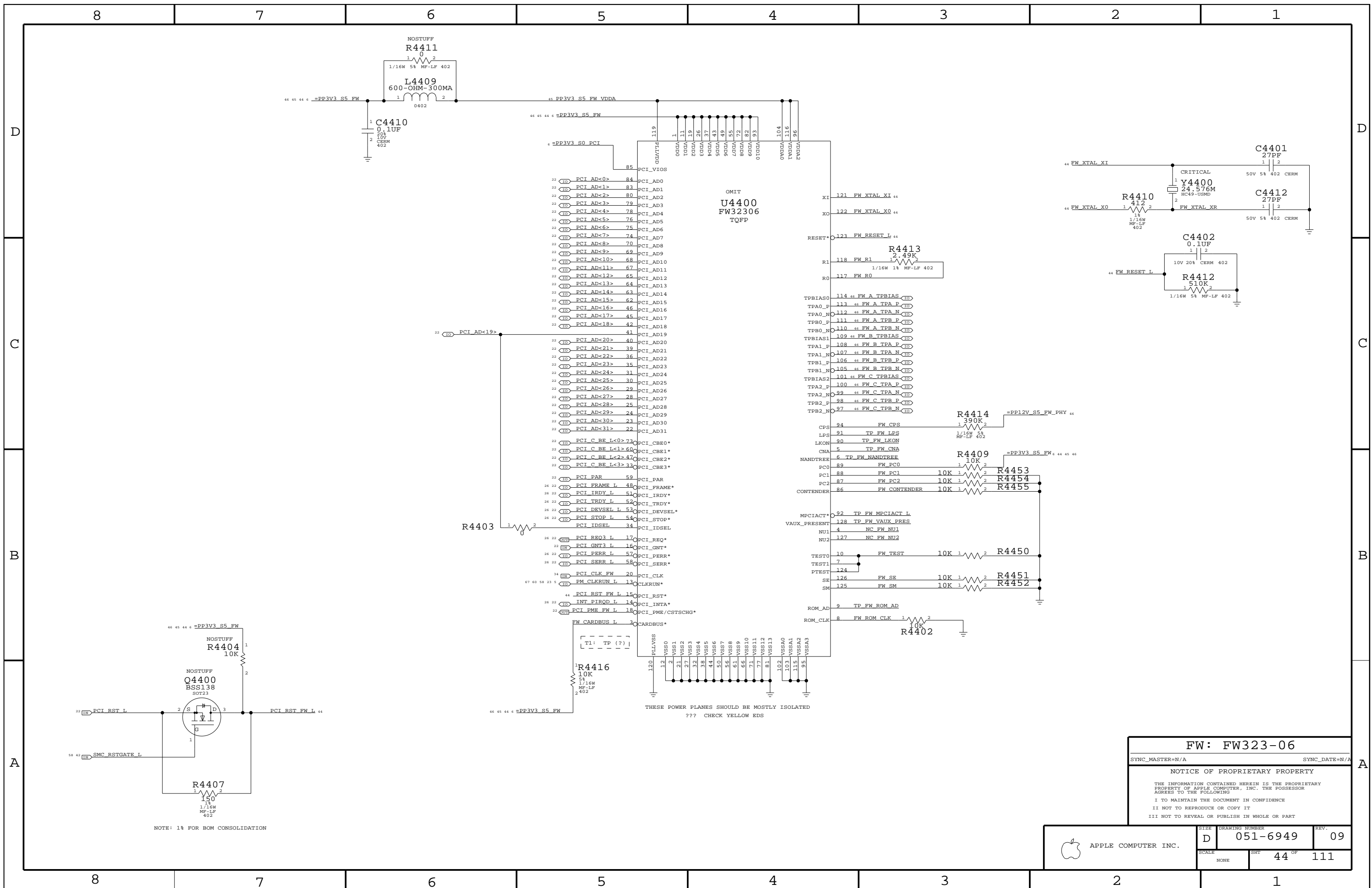
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| | SCALE NONE | SHEET 43 | OF 111 |



FW: FW323-06

SYNC_MASTER=N/A SYNC_DATE=N/A

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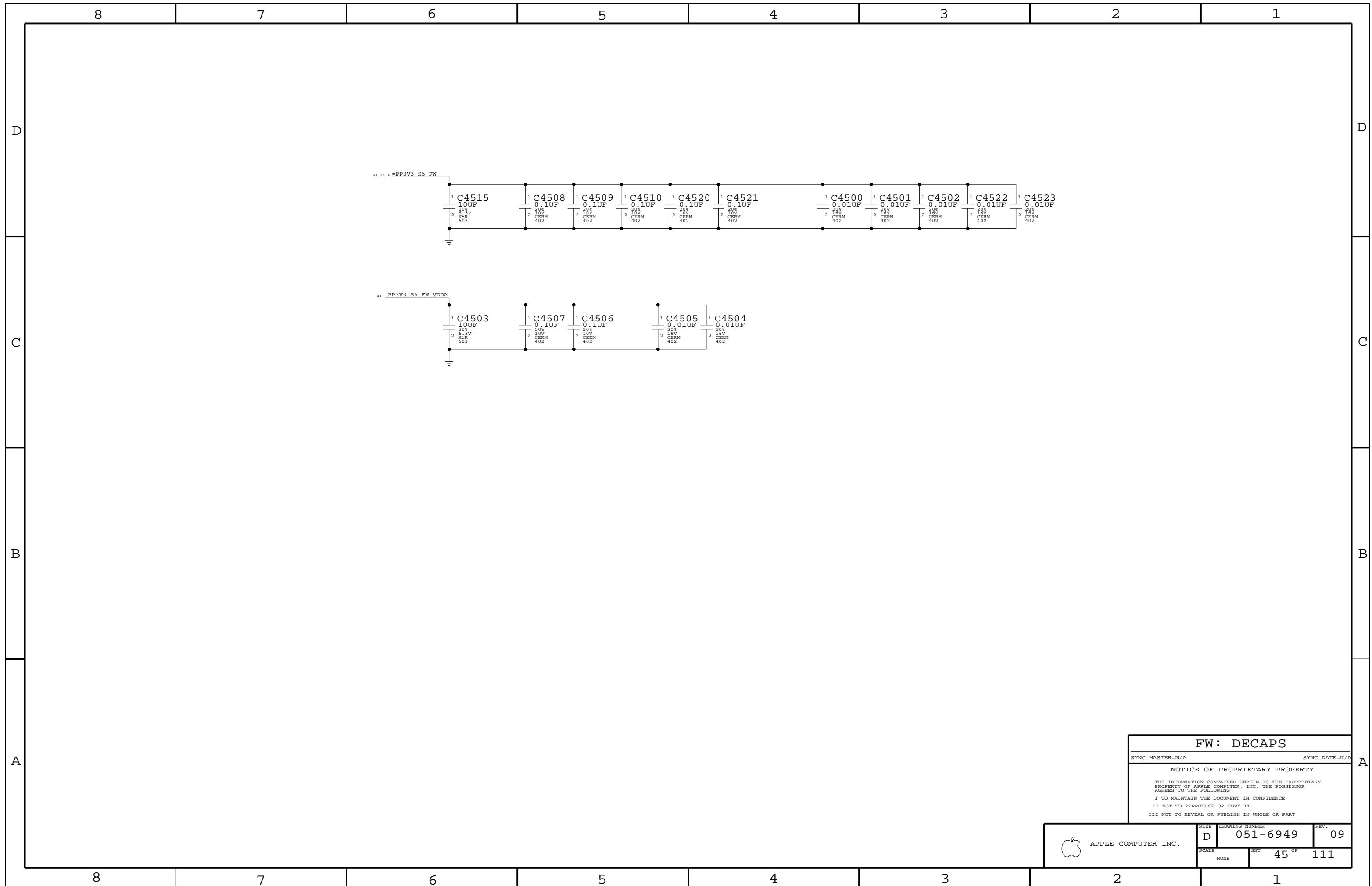
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| | DRAWING NUMBER | | REV. |
| | D | 051-6949 | 09 |
| SCALE | | SHT | OF |
| NONE | | 44 | 111 |



FW: DECAPS

SYNC_MASTER=N/A SYNC_DATE=N/A

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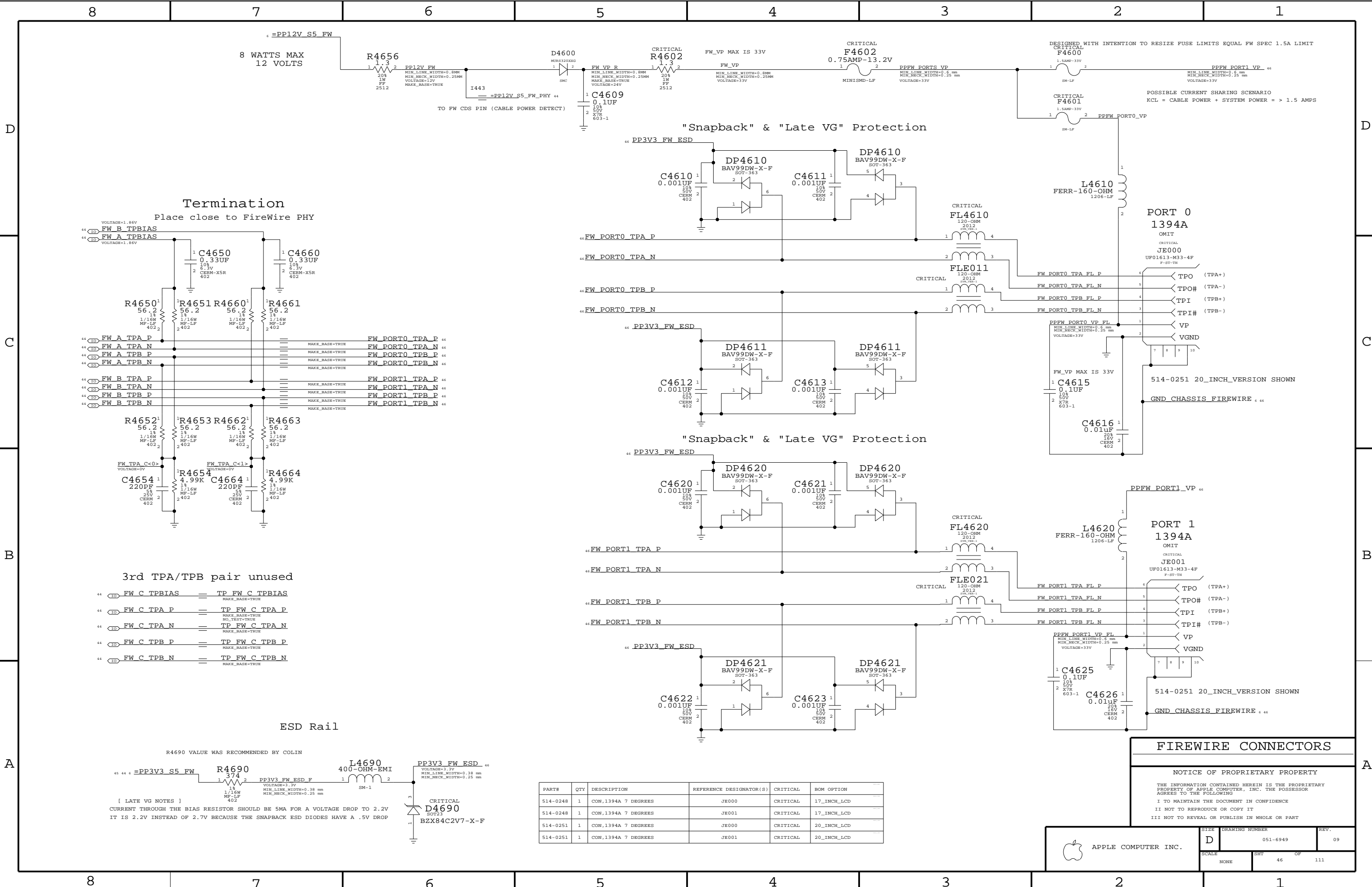
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|---------------------|------------------|-----------------------------------|-------------------|
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| | SCALE NONE | SHEET 45 OF 111 | |



| PART# | QTY | DESCRIPTION | REFERENCE DESIGNATOR(S) | CRITICAL | BOM OPTION |
|----------|-----|----------------------|-------------------------|----------|-------------|
| 514-0248 | 1 | CON, 1394A 7 DEGREES | JE000 | CRITICAL | 17_INCH_LCD |
| 514-0248 | 1 | CON, 1394A 7 DEGREES | JE001 | CRITICAL | 17_INCH_LCD |
| 514-0251 | 1 | CON, 1394A 7 DEGREES | JE000 | CRITICAL | 20_INCH_LCD |
| 514-0251 | 1 | CON, 1394A 7 DEGREES | JE001 | CRITICAL | 20_INCH_LCD |

FIREWIRE CONNECTORS

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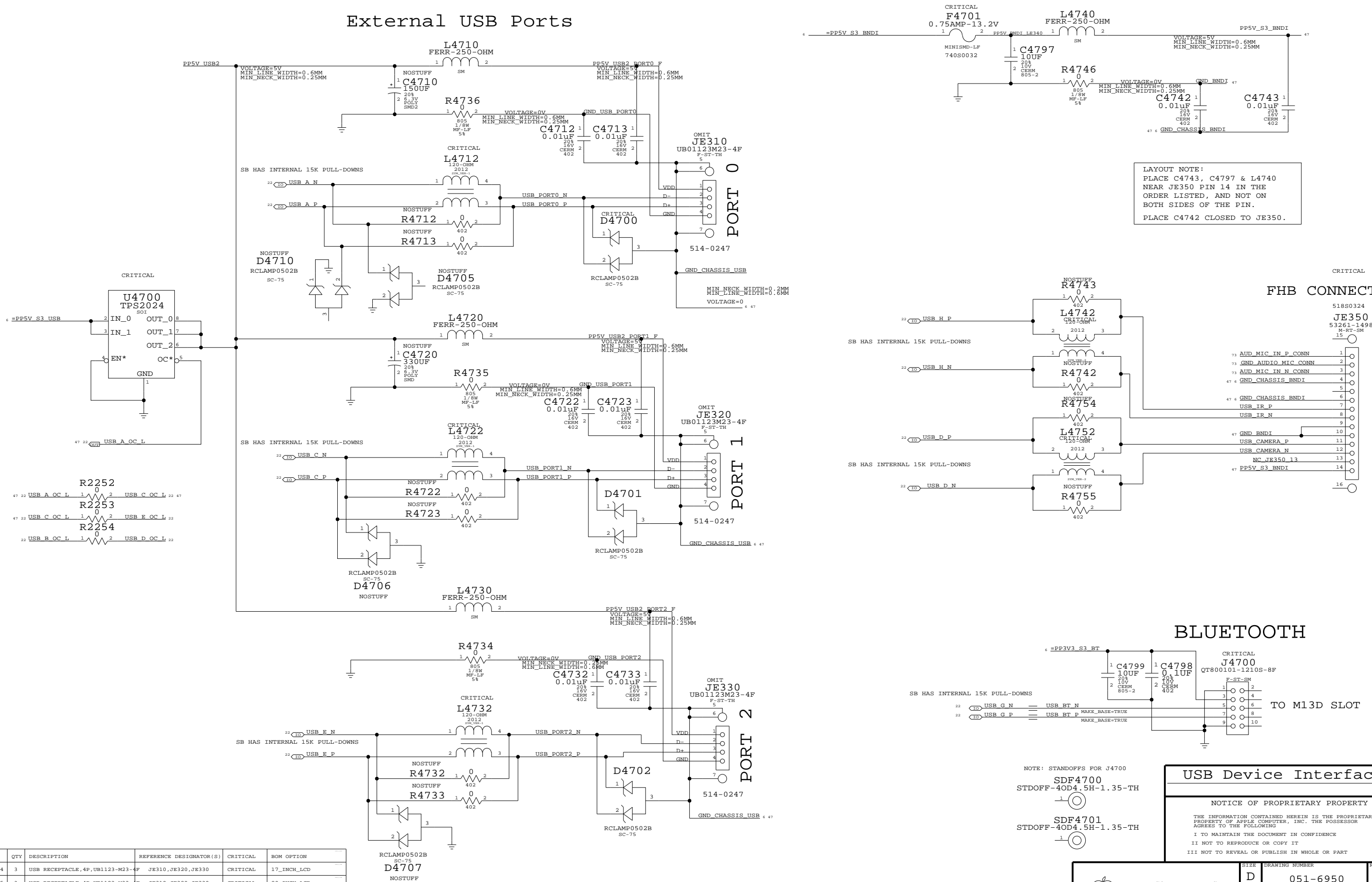
APPLE COMPUTER INC.

SCALE: NONE SHEET: 46 OF 111

DRAWING NUMBER: 051-6949

REV: 09

External USB Ports



LAYOUT NOTE:
 PLACE C4743, C4797 & L4740
 NEAR JE350 PIN 14 IN THE
 ORDER LISTED, AND NOT ON
 BOTH SIDES OF THE PIN.
 PLACE C4742 CLOSED TO JE350.

| PART# | QTY | DESCRIPTION | REFERENCE DESIGNATOR(S) | CRITICAL | BOM OPTION |
|----------|-----|-----------------------------------|-------------------------|----------|-------------|
| 514-0294 | 3 | USB RECEPTACLE, 4P, UB1123-M23-4F | JE310, JE320, JE330 | CRITICAL | 17_INCH_LCD |
| 514-0295 | 3 | USB RECEPTACLE, 4P, UB1123-M33-4F | JE310, JE320, JE330 | CRITICAL | 20_INCH_LCD |

| | | | |
|---------------------|-------|-----|-----|
| APPLE COMPUTER INC. | SCALE | SHT | OF |
| | NONE | 47 | 111 |

USB Device Interfaces

NOTE: STANDOFFS FOR J4700

SDF4700
 STDOFF-40D4.5H-1.35-TH

SDF4701
 STDOFF-40D4.5H-1.35-TH

CRITICAL
 J4700
 QT800101-1210S-8F

| | | | |
|---------------------|------|----------------|------|
| APPLE COMPUTER INC. | SIZE | DRAWING NUMBER | REV. |
| | D | 051-6950 | 06 |

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NOTICE OF PROPRIETARY PROPERTY

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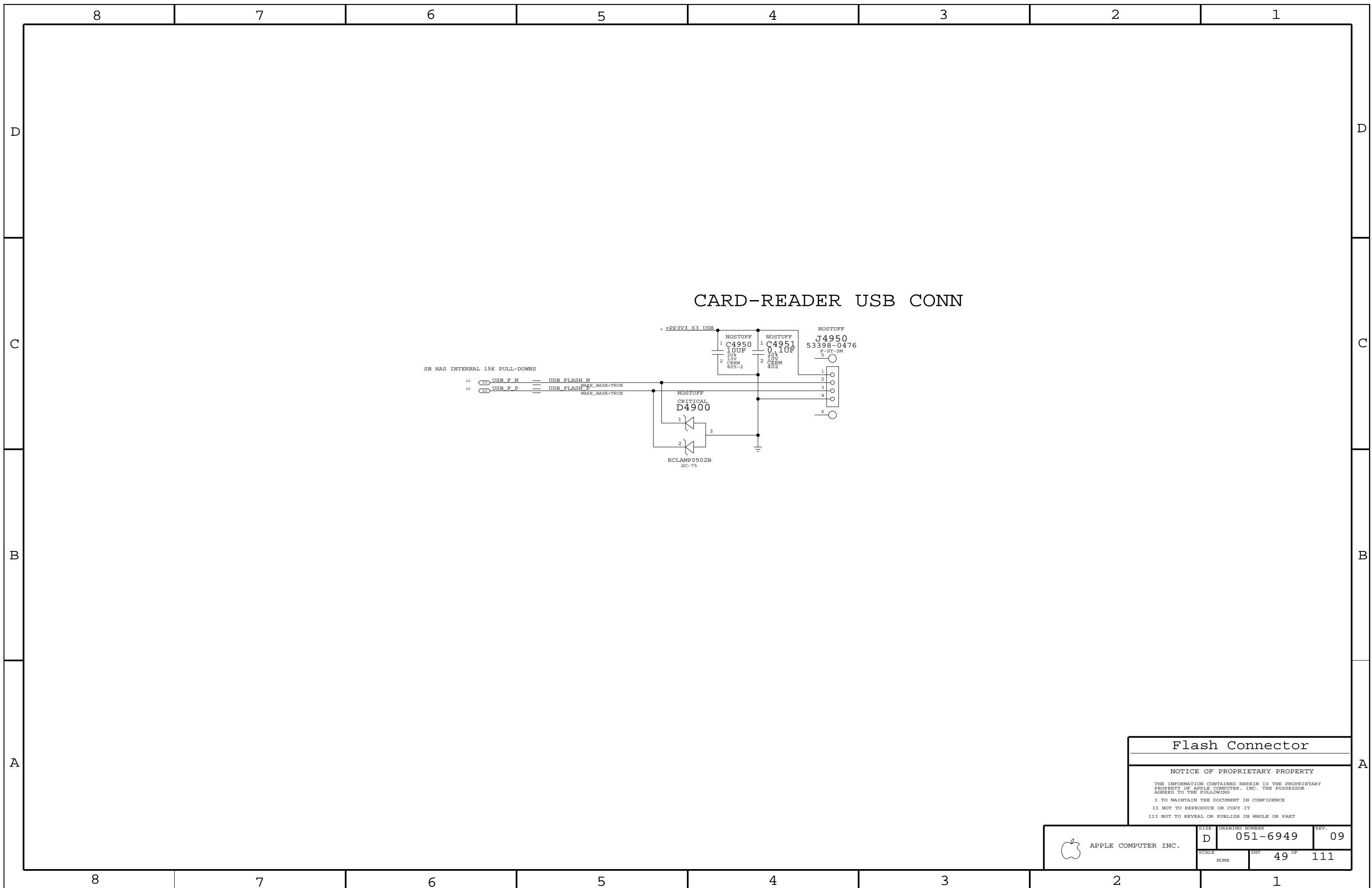
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| | | |
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| SIZE | DRAWING NUMBER | REV. |
| D | 051-6949 | 09 |
| SCALE | SHT | OF |
| NONE | 48 | 111 |



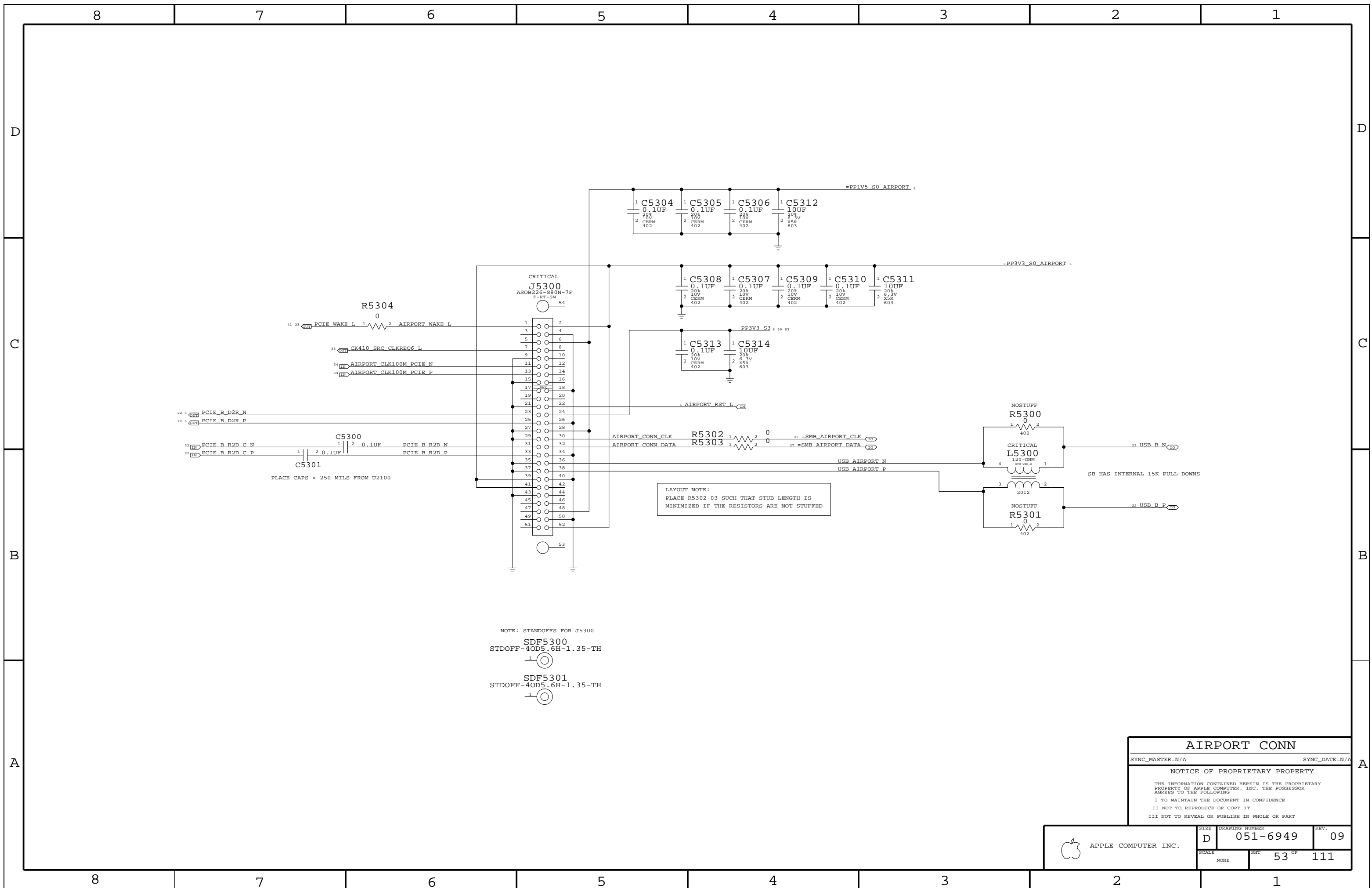
Flash Connector

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| APPLE COMPUTER INC. | SIZE D | DRAWING NUMBER 051-6949 | REV. 09 |
| | SCALE NONE | SHT 49 OF 111 | |



LAYOUT NOTE:
 PLACE R5302-03 SUCH THAT STUB LENGTH IS
 MINIMIZED IF THE RESISTORS ARE NOT STUFFED

NOTE: STANDOFFS FOR J5300

SDF5300
 STDOFF-4OD5.6H-1.35-TH



SDF5301
 STDOFF-4OD5.6H-1.35-TH



AIRPORT CONN

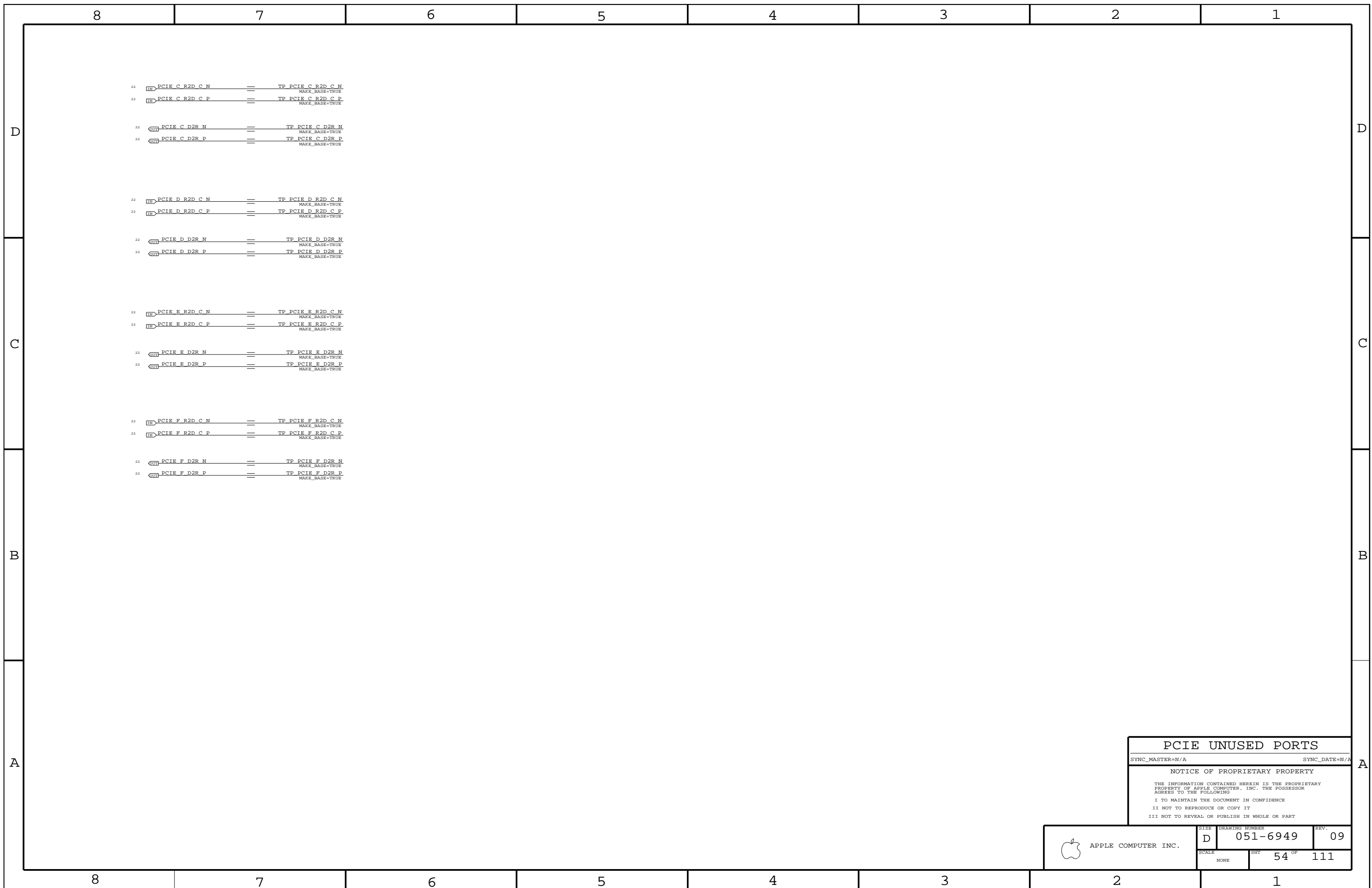
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| APPLE COMPUTER INC. | SIZE D | DRAWING NUMBER 051-6949 | REV. 09 |
| | SCALE NONE | SHEET 53 OF | TOTAL SHEETS 111 |



| | | | | | |
|----|-----|----------------|----|-------------------|----------------|
| 22 | IN | PCIE C R2D C N | == | TP PCIE C R2D C N | MAKE_BASE=TRUE |
| 22 | IN | PCIE C R2D C P | == | TP PCIE C R2D C P | MAKE_BASE=TRUE |
| 22 | OUT | PCIE C D2R N | == | TP PCIE C D2R N | MAKE_BASE=TRUE |
| 22 | OUT | PCIE C D2R P | == | TP PCIE C D2R P | MAKE_BASE=TRUE |
| 22 | IN | PCIE D R2D C N | == | TP PCIE D R2D C N | MAKE_BASE=TRUE |
| 22 | IN | PCIE D R2D C P | == | TP PCIE D R2D C P | MAKE_BASE=TRUE |
| 22 | OUT | PCIE D D2R N | == | TP PCIE D D2R N | MAKE_BASE=TRUE |
| 22 | OUT | PCIE D D2R P | == | TP PCIE D D2R P | MAKE_BASE=TRUE |
| 22 | IN | PCIE E R2D C N | == | TP PCIE E R2D C N | MAKE_BASE=TRUE |
| 22 | IN | PCIE E R2D C P | == | TP PCIE E R2D C P | MAKE_BASE=TRUE |
| 22 | OUT | PCIE E D2R N | == | TP PCIE E D2R N | MAKE_BASE=TRUE |
| 22 | OUT | PCIE E D2R P | == | TP PCIE E D2R P | MAKE_BASE=TRUE |
| 22 | IN | PCIE F R2D C N | == | TP PCIE F R2D C N | MAKE_BASE=TRUE |
| 22 | IN | PCIE F R2D C P | == | TP PCIE F R2D C P | MAKE_BASE=TRUE |
| 22 | OUT | PCIE F D2R N | == | TP PCIE F D2R N | MAKE_BASE=TRUE |
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PCIE UNUSED PORTS

SYNC_MASTER=N/A SYNC_DATE=N/A

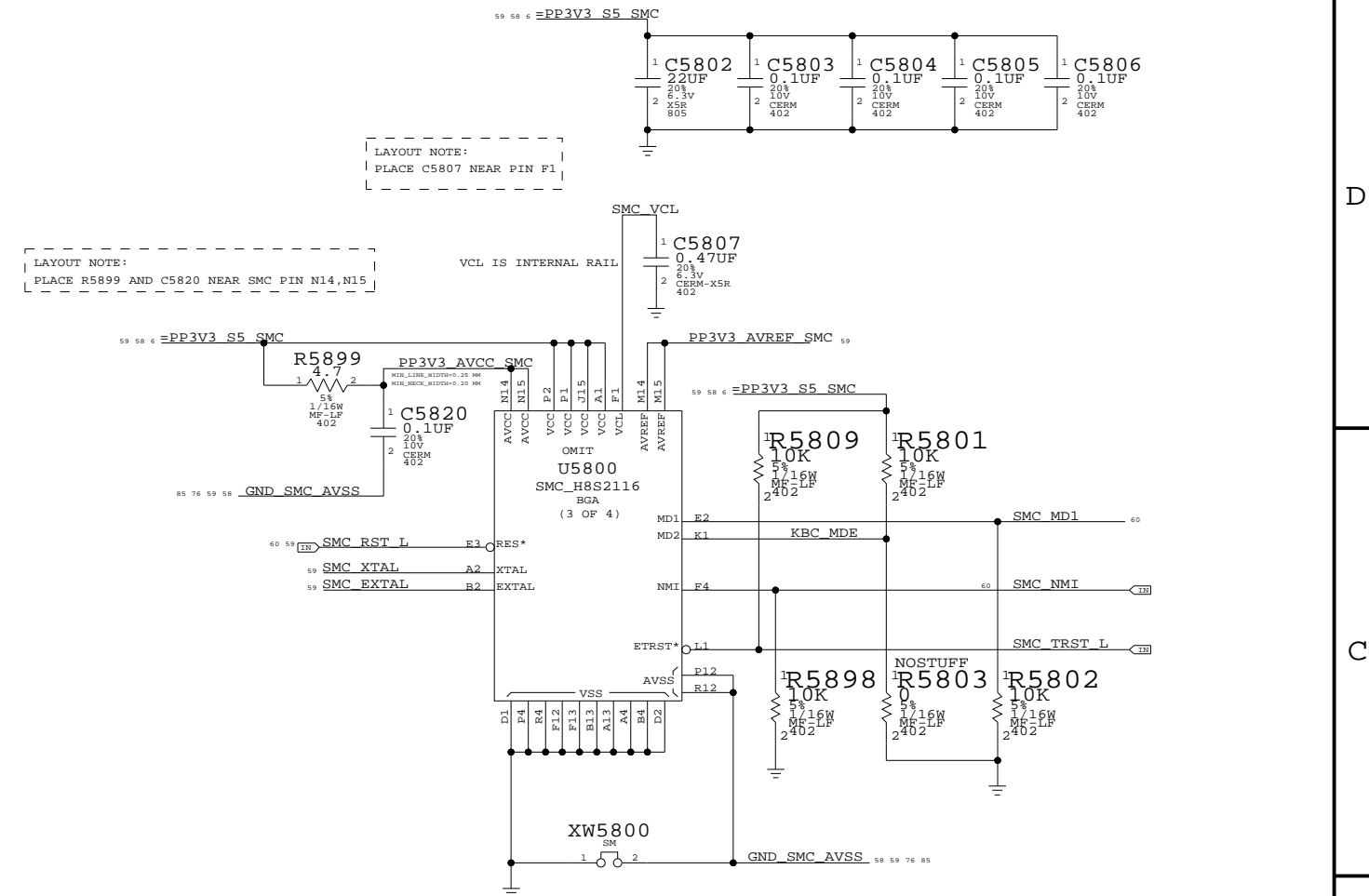
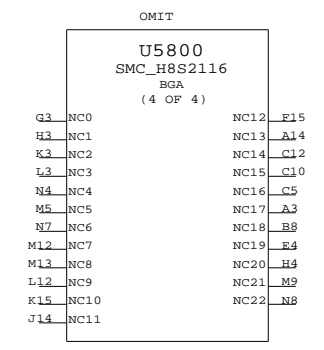
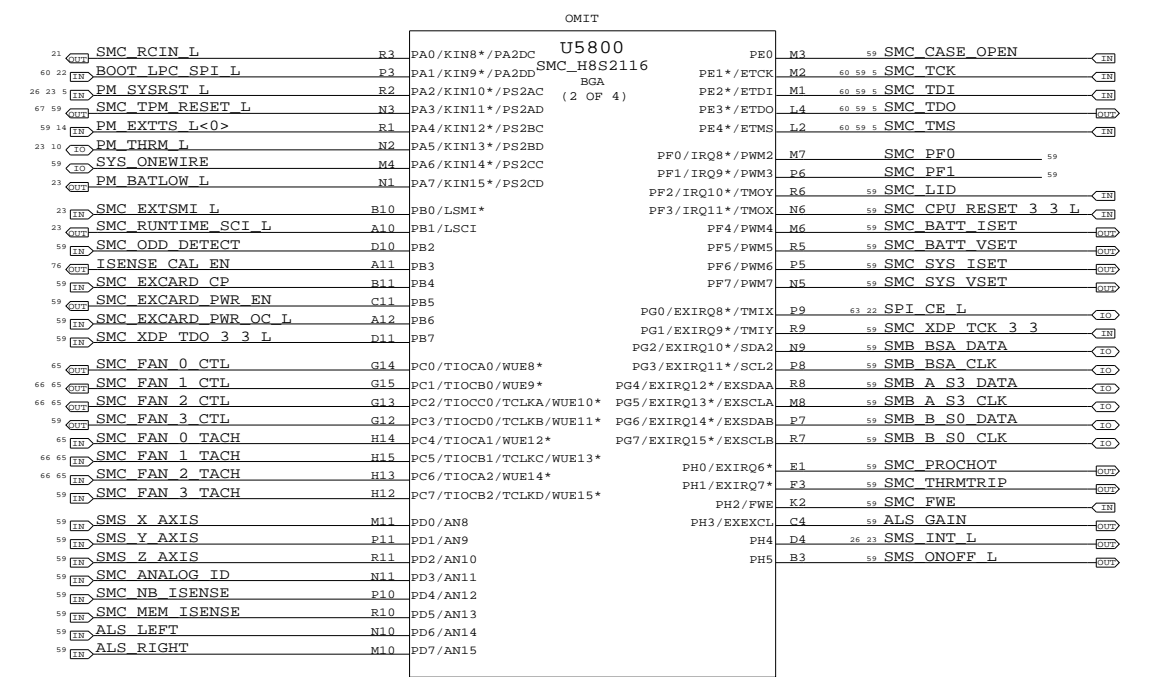
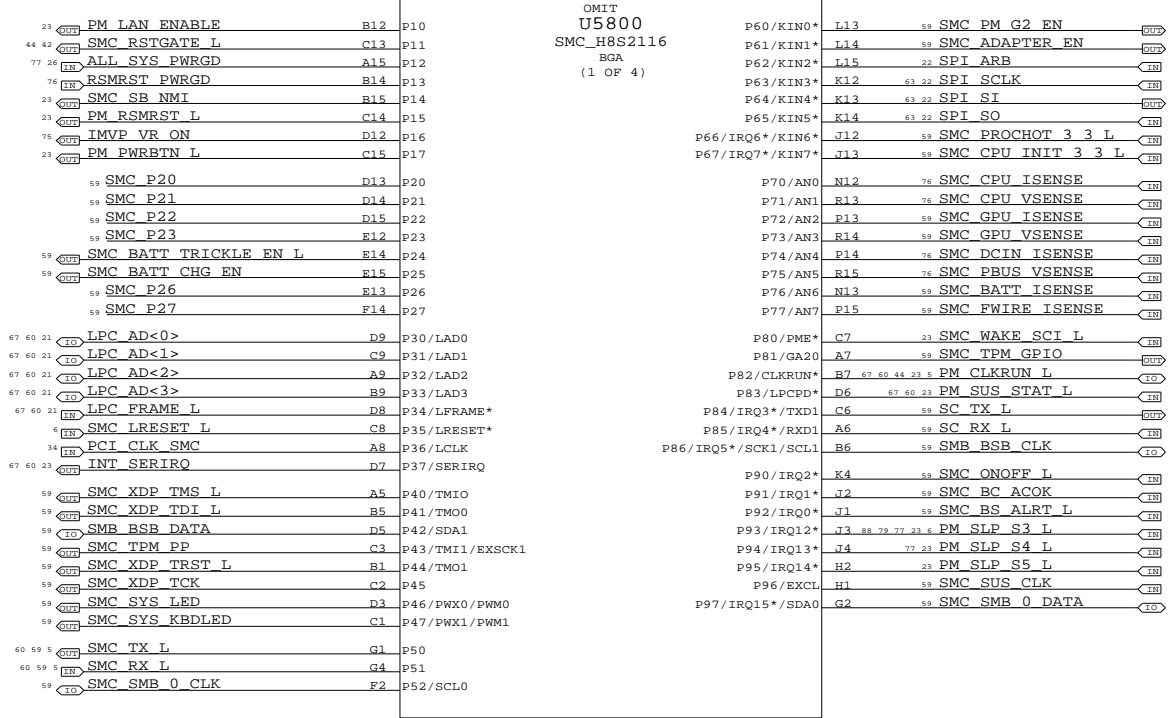
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| | D | 051-6949 | 09 |
| SCALE | SHT | OF | |
| NONE | 54 | 111 | |

UNUSED PINS HAVE THE FORMAT SMC_XXX WHERE XXX IS THE PORT NUMBER. THEY ARE SET BY SOFTWARE TO BE DRIVEN OUTPUTS ALWAYS SO THEY CAN BE LEFT NO-CONNECTED.

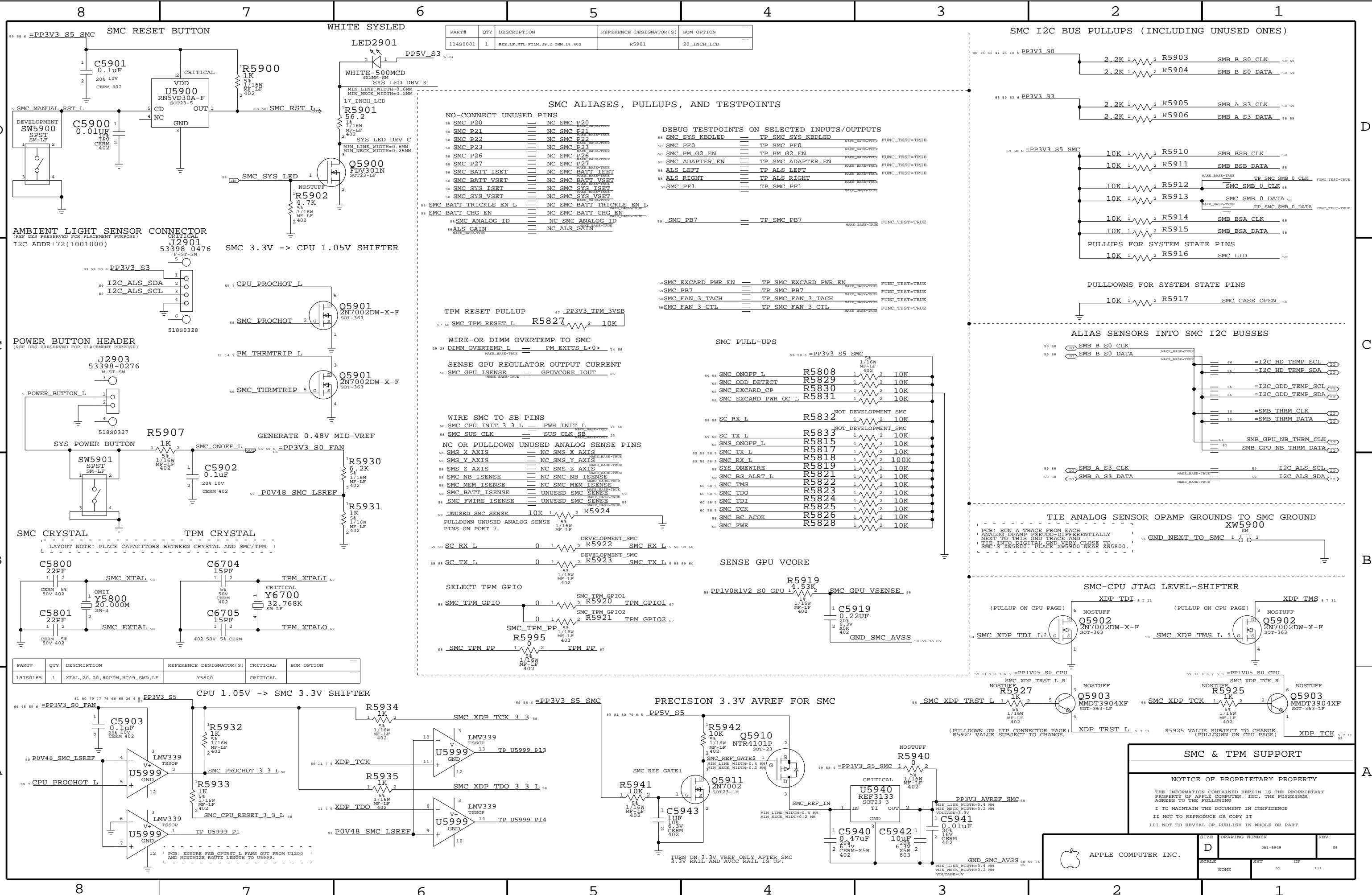


LAYOUT NOTE: PLACE C5807 NEAR PIN F1

LAYOUT NOTE: PLACE R5899 AND C5820 NEAR SMC PIN N14,N15

SMC
SYNC_MASTER=N/A SYNC_DATE=N/A
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DRAWING NUMBER: 051-6949
REV: 09
SCALE: NONE SHT: 58 OF 111



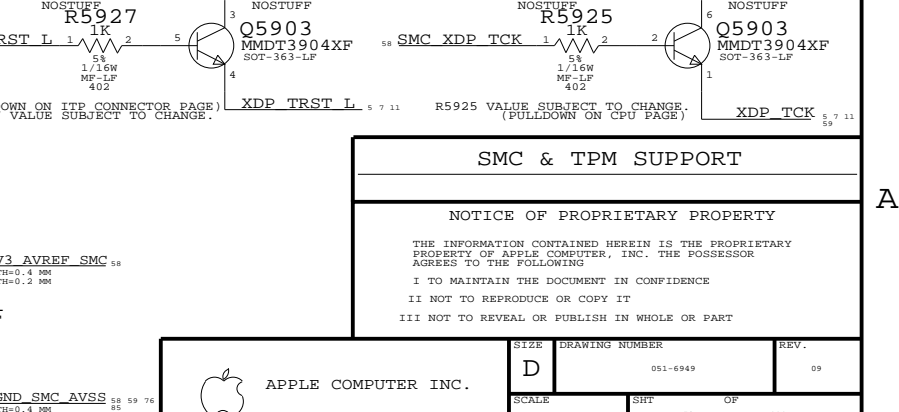
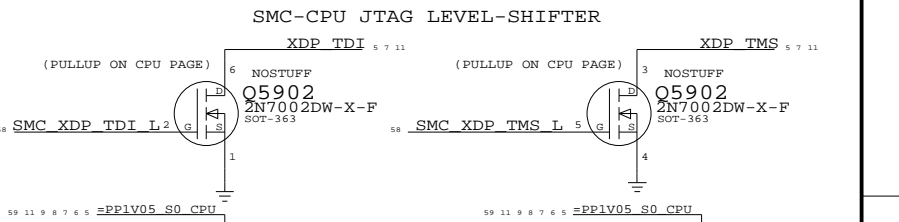
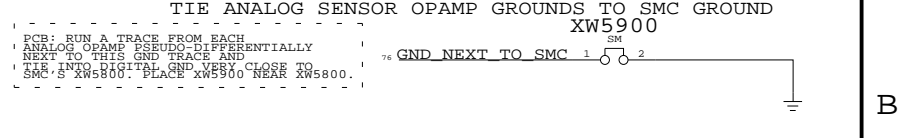
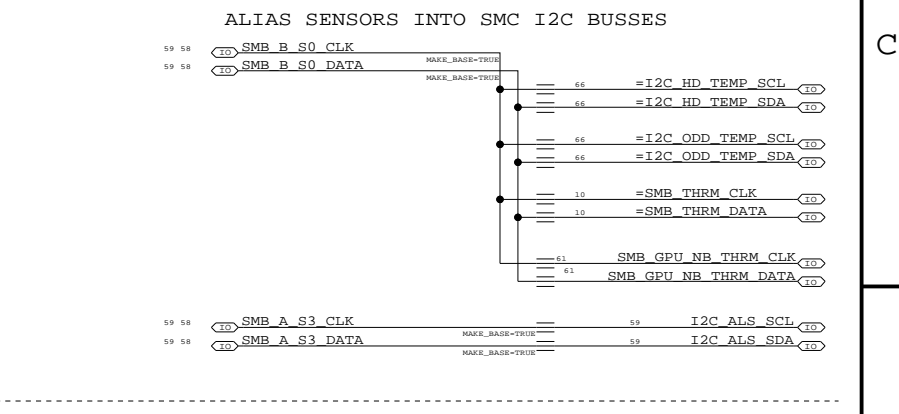
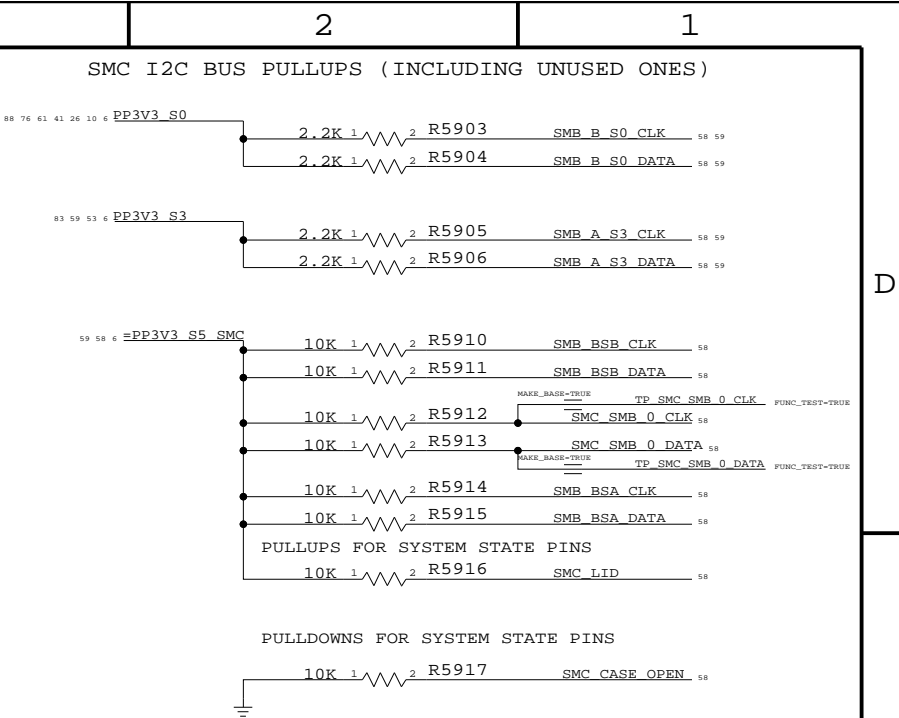
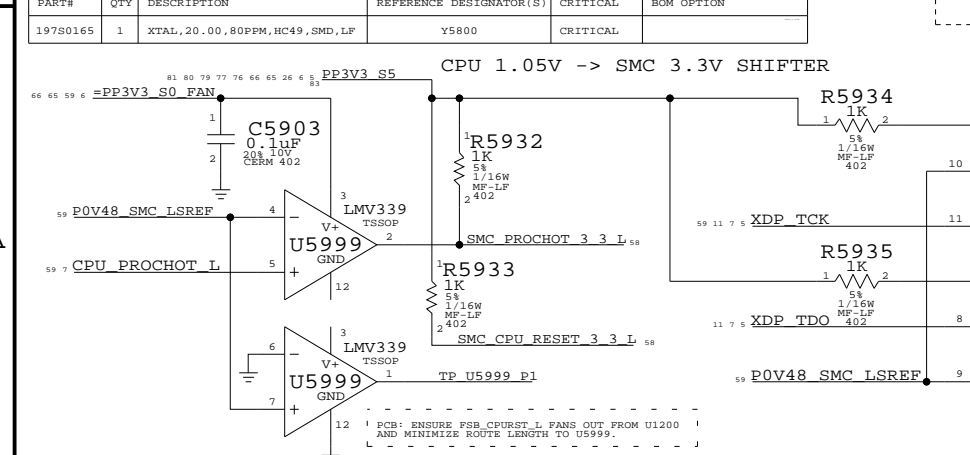
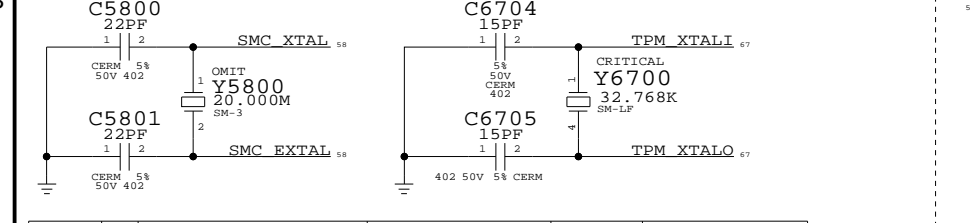
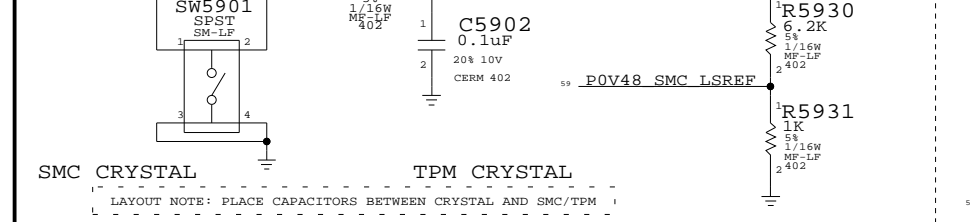
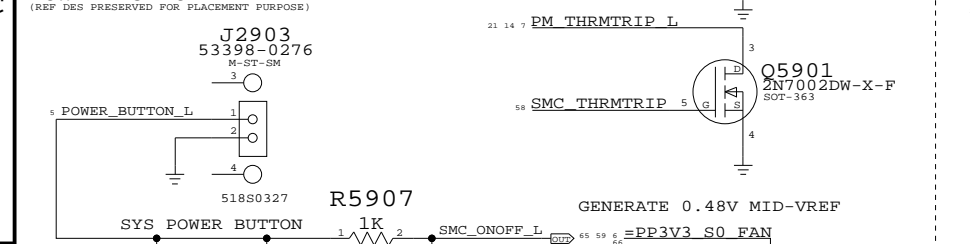
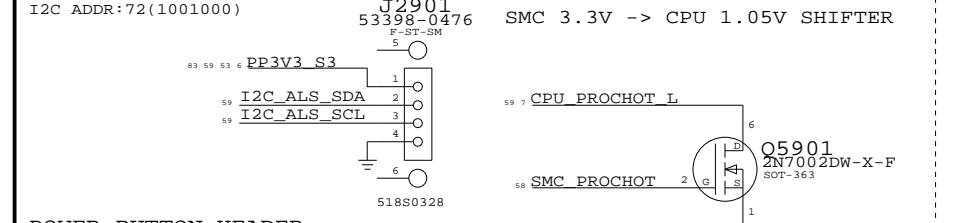
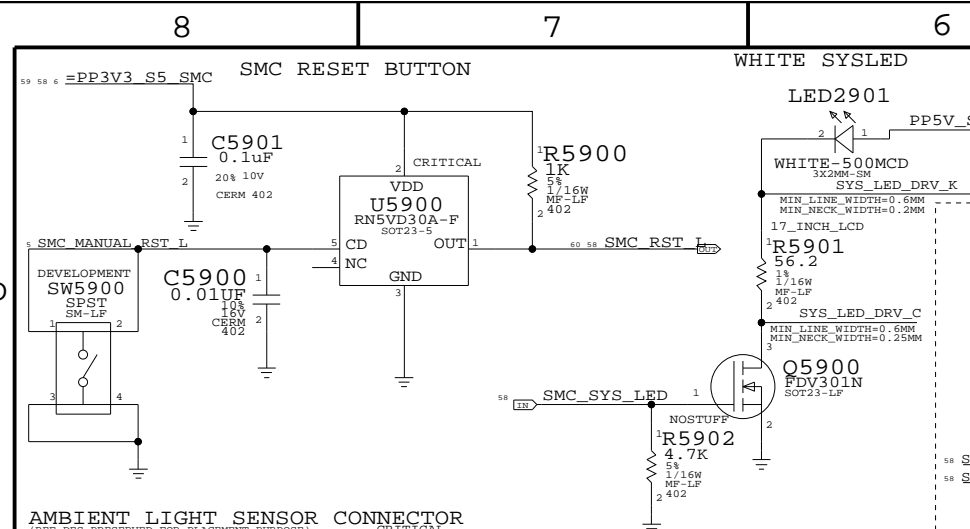
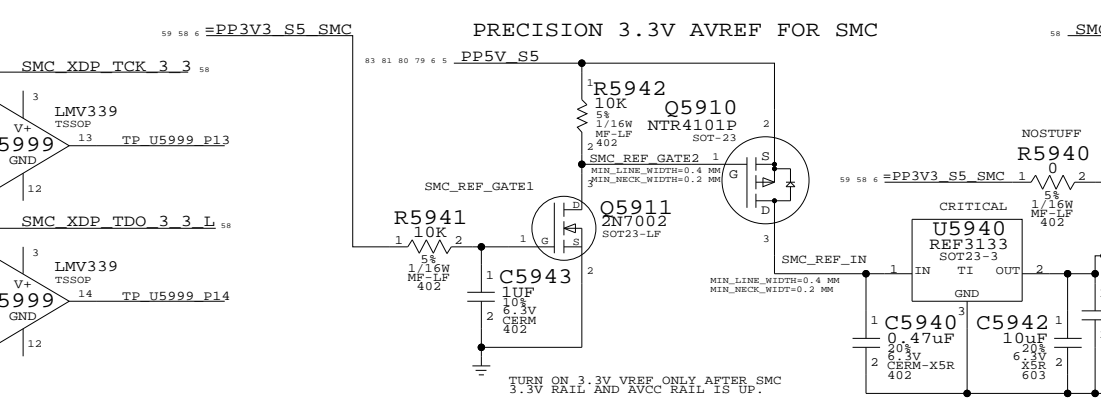
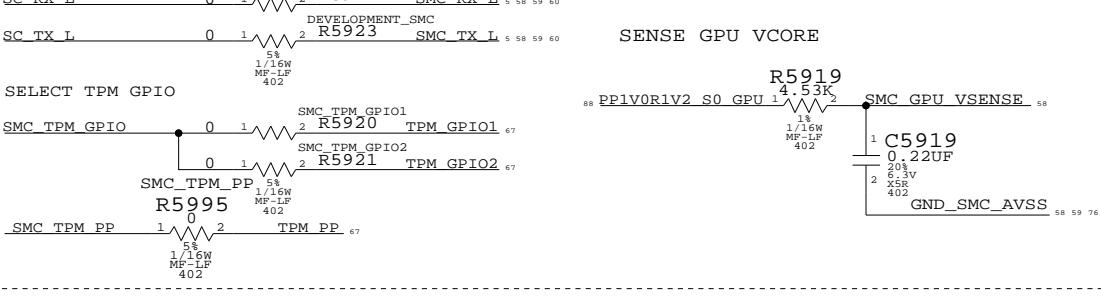
| PART# | QTY | DESCRIPTION | REFERENCE DESIGNATOR(S) | BOM OPTION |
|----------|-----|---------------------------------|-------------------------|-------------|
| 11450081 | 1 | RES,LP,WTL FILM,39.2 OHM,18,402 | R5901 | 20_INCH_LCD |

SMC ALIASES, PULLUPS, AND TESTPOINTS

| NO-CONNECT UNUSED PINS | DEBUG TESTPOINTS ON SELECTED INPUTS/OUTPUTS |
|--|--|
| 58 SMC P20 == NC SMC P20 | 58 SMC SYS_KBDLED == TP_SMC_SYS_KBDLED MAKE_BASE=TRUE FUNC_TEST=TRUE |
| 58 SMC P21 == NC SMC P21 | 58 SMC PF0 == TP_SMC_PF0 MAKE_BASE=TRUE |
| 58 SMC P22 == NC SMC P22 | 58 SMC PM_G2_EN == TP_PM_G2_EN MAKE_BASE=TRUE |
| 58 SMC P23 == NC SMC P23 | 58 SMC_ADAPTER_EN == TP_SMC_ADAPTER_EN MAKE_BASE=TRUE FUNC_TEST=TRUE |
| 58 SMC P26 == NC SMC P26 | 58 ALS_LEFT == TP_ALS_LEFT MAKE_BASE=TRUE FUNC_TEST=TRUE |
| 58 SMC P27 == NC SMC P27 | 58 ALS_RIGHT == TP_ALS_RIGHT MAKE_BASE=TRUE FUNC_TEST=TRUE |
| 58 SMC_BATT_ISET == NC SMC_BATT_ISET | 58 SMC_PF1 == TP_SMC_PF1 MAKE_BASE=TRUE |
| 58 SMC_BATT_VSET == NC SMC_BATT_VSET | |
| 58 SMC_SYS_ISET == NC SMC_SYS_ISET | |
| 58 SMC_SYS_VSET == NC SMC_SYS_VSET | |
| 58 SMC_BATT_TRICKLE_EN_L == NC SMC_BATT_TRICKLE_EN_L | 59 SMC_PB7 == TP_SMC_PB7 MAKE_BASE=TRUE FUNC_TEST=TRUE |
| 58 SMC_BATT_CHG_EN == NC SMC_BATT_CHG_EN | |
| 58 SMC_ANALOG_ID == NC SMC_ANALOG_ID | |
| 58 ALS_GAIN == NC ALS_GAIN | |

SMC PULL-UPS

| | | |
|------------------------|-------|------|
| 58 SMC_ONOFF_L | R5808 | 10K |
| 58 SMC_ODD_DETECT | R5829 | 10K |
| 58 SMC_EXCARD_CP | R5830 | 10K |
| 58 SMC_EXCARD_PWR_OC_L | R5831 | 10K |
| 58 SC_RX_L | R5832 | 10K |
| 58 SC_TX_L | R5833 | 10K |
| 58 SMS_ONOFF_L | R5815 | 10K |
| 58 SMC_TX_L | R5817 | 10K |
| 58 SMC_RX_L | R5818 | 100K |
| 58 SYS_ONEWIRE | R5819 | 10K |
| 58 SMC_BS_ALERT_L | R5821 | 10K |
| 58 SMC_TMS | R5822 | 10K |
| 58 SMC_TDO | R5823 | 10K |
| 58 SMC_TDI | R5824 | 10K |
| 58 SMC_TCK | R5825 | 10K |
| 58 SMC_BC_ACOK | R5826 | 10K |
| 58 SMC_FWE | R5828 | 10K |



| PART# | QTY | DESCRIPTION | REFERENCE DESIGNATOR(S) | CRITICAL | BOM OPTION |
|----------|-----|------------------------------|-------------------------|----------|------------|
| 19750165 | 1 | XTAL,20.00,80PPM,HC49,SMD,LF | Y5800 | CRITICAL | |

SMC & TPM SUPPORT

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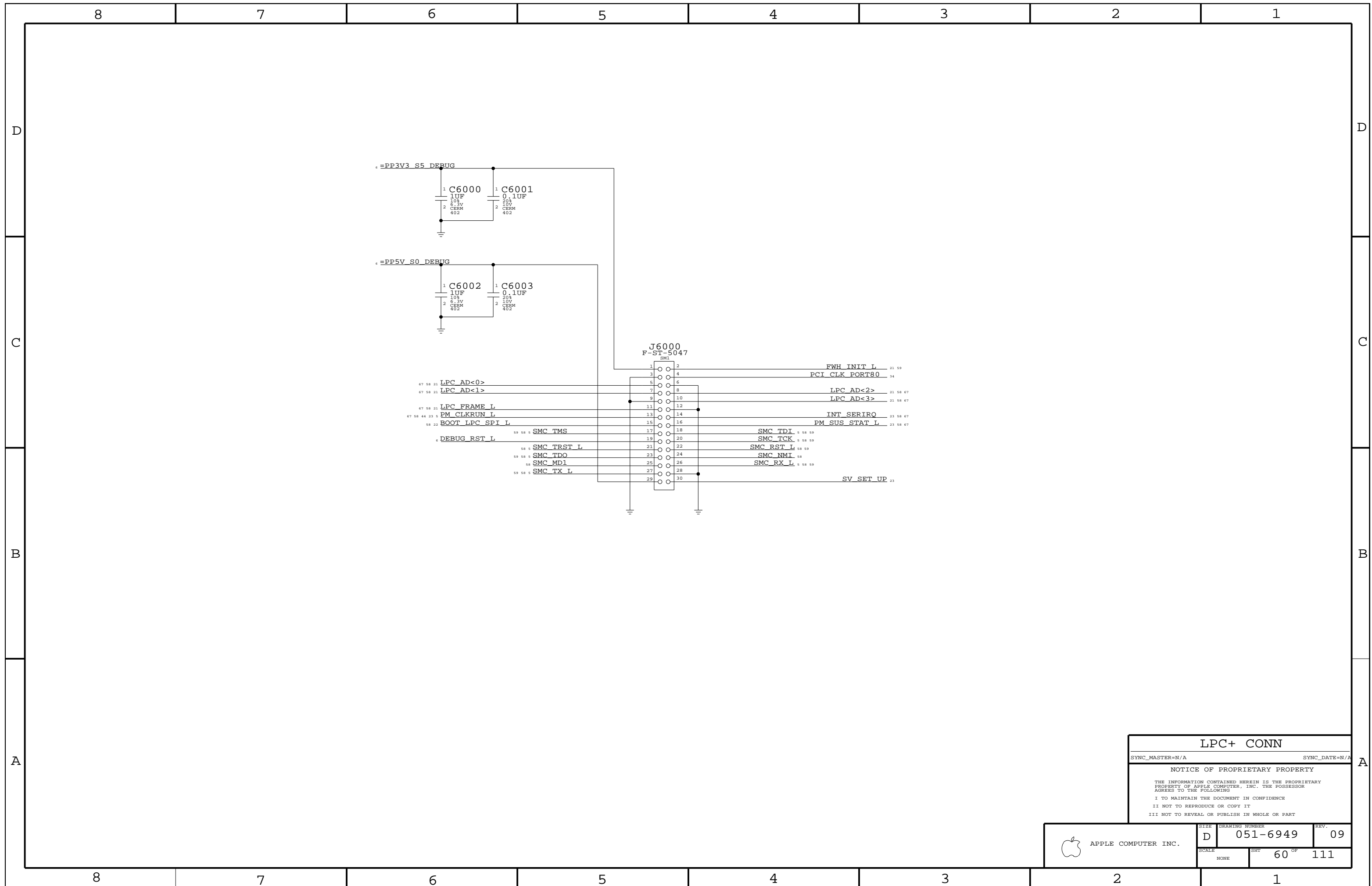
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| D | 051-6949 | 09 |
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| NONE | 59 | 111 |



APPLE COMPUTER INC.



LPC+ CONN

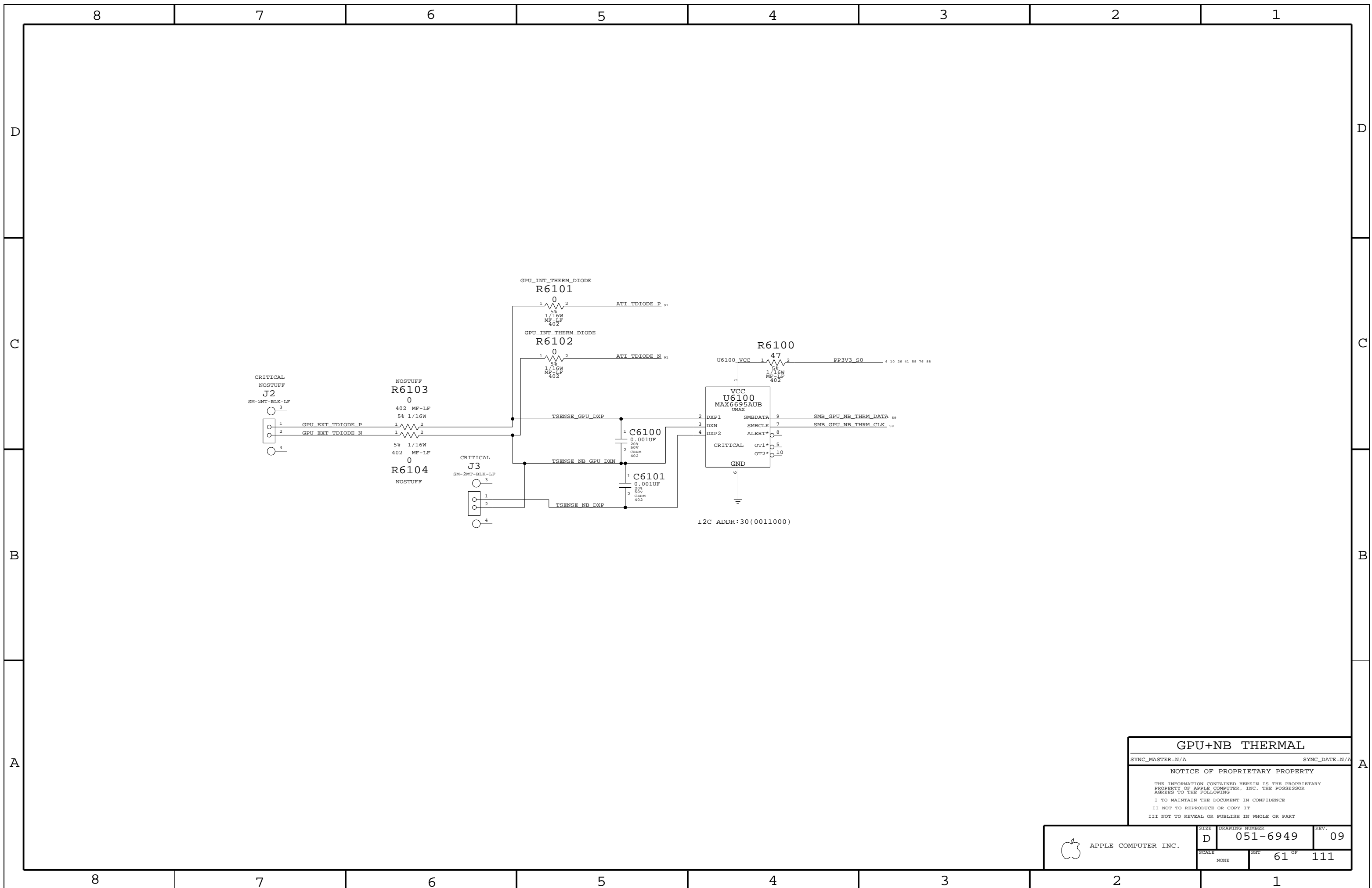
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| | SCALE NONE | SHEET 60 OF 111 | |



GPU+NB THERMAL

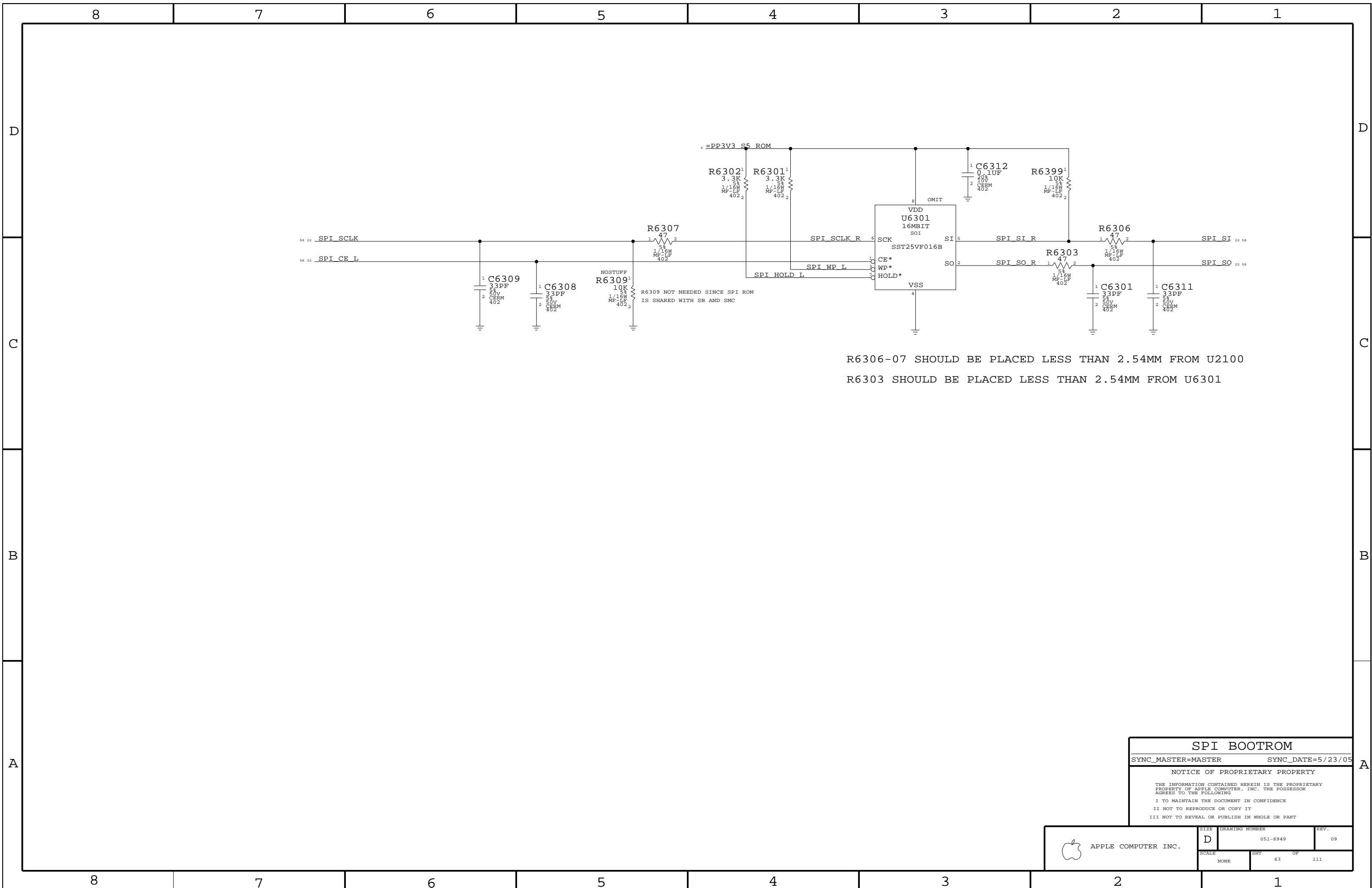
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| | SCALE | SHT | OF |
| | NONE | 61 | 111 |

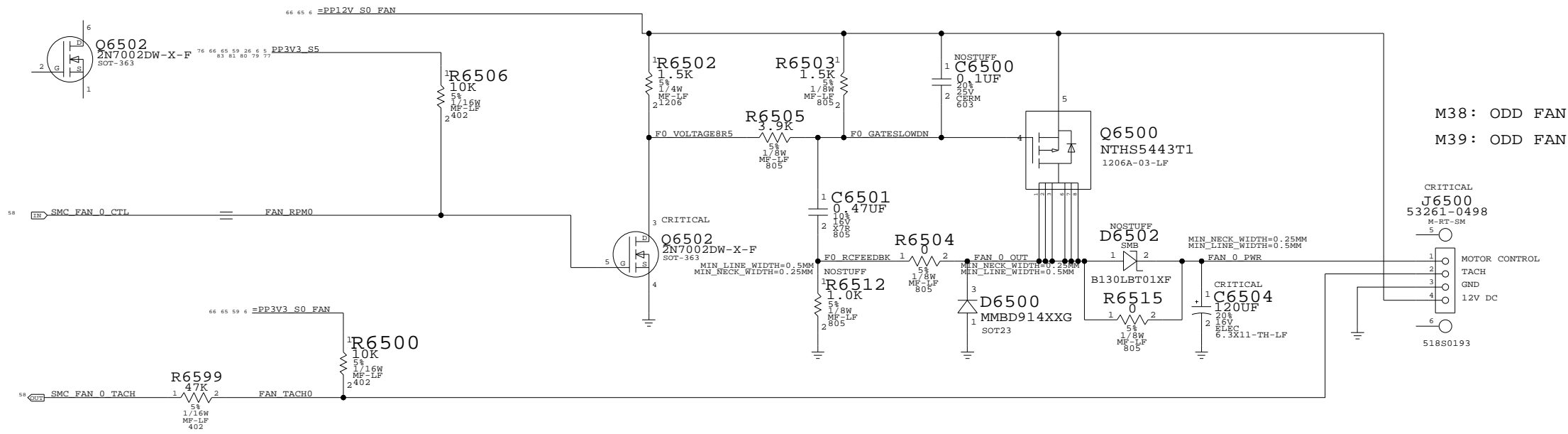


R6306-07 SHOULD BE PLACED LESS THAN 2.54MM FROM U2100
R6303 SHOULD BE PLACED LESS THAN 2.54MM FROM U6301

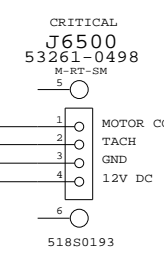
SPI BOOTROM
SYNC_MASTER=MASTER SYNC_DATE=5/23/05
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| | D | 051-6949 | 09 |
| | SCALE | SHEET | OF |
| | NONE | 63 | 111 |

FAN 0

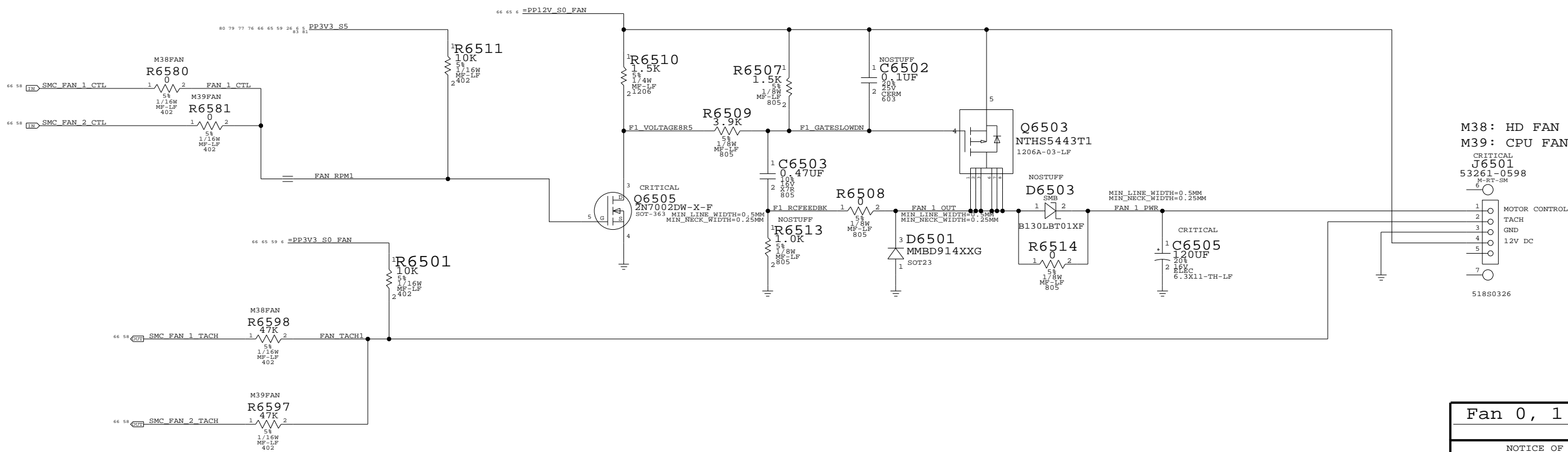


M38: ODD FAN
M39: ODD FAN

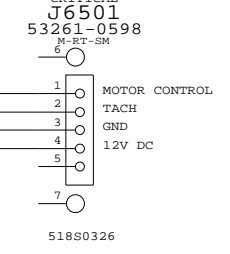


NOTE: ADDED TO PROTECT SMC

FAN 1



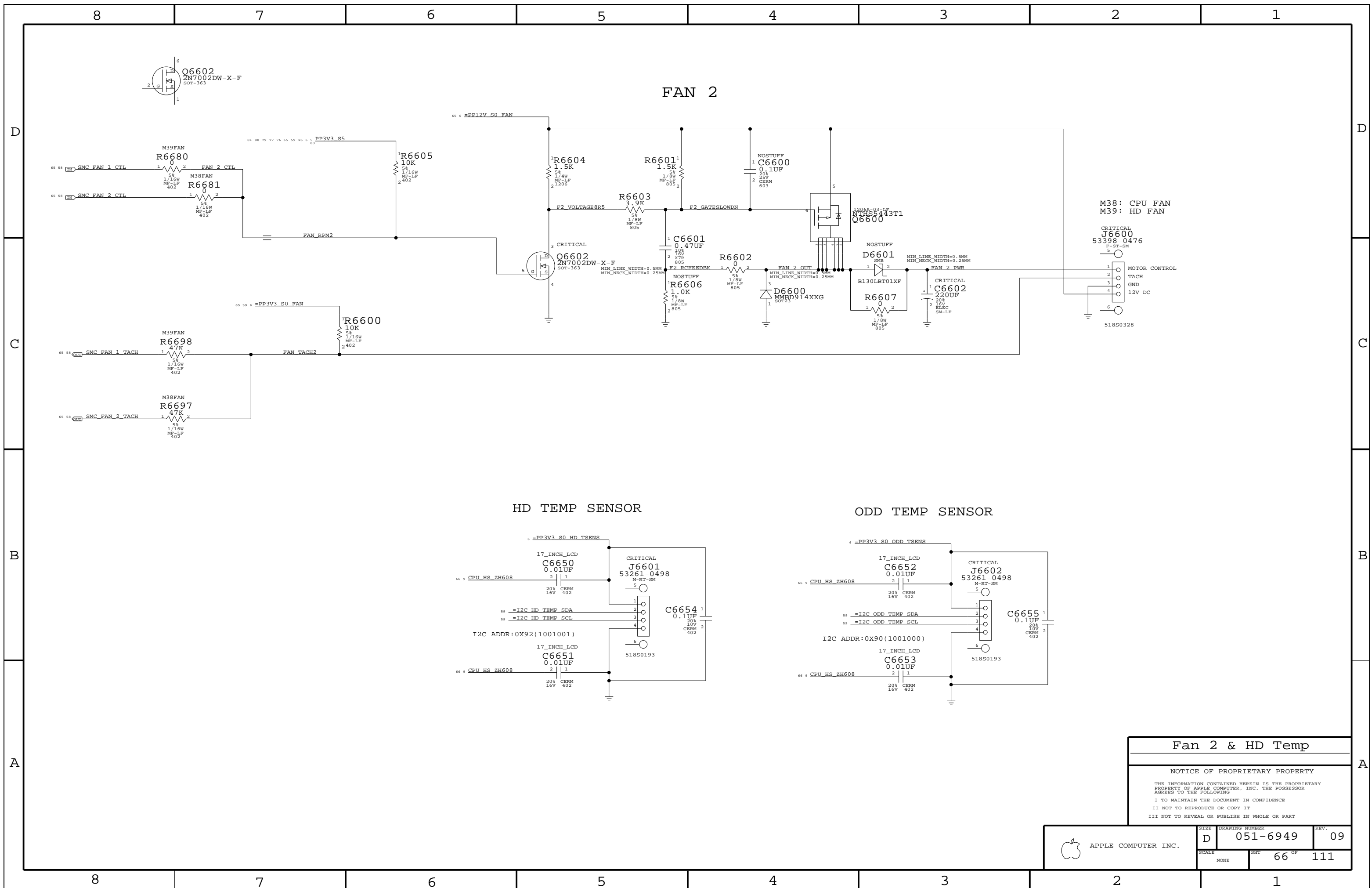
M38: HD FAN
M39: CPU FAN



Fan 0, 1 & System Temp

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| NONE | 65 | 111 | |



FAN 2

HD TEMP SENSOR

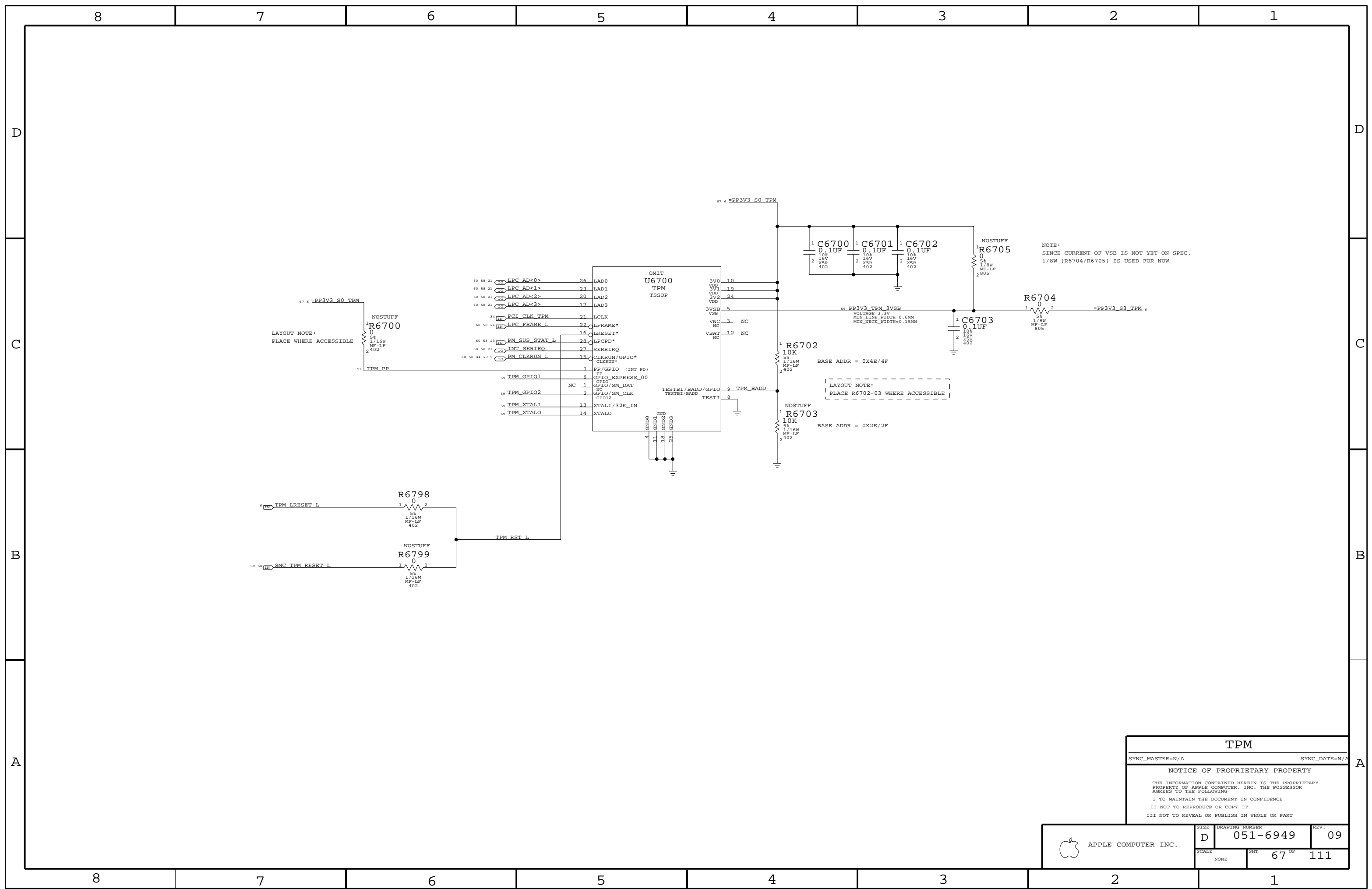
ODD TEMP SENSOR

Fan 2 & HD Temp

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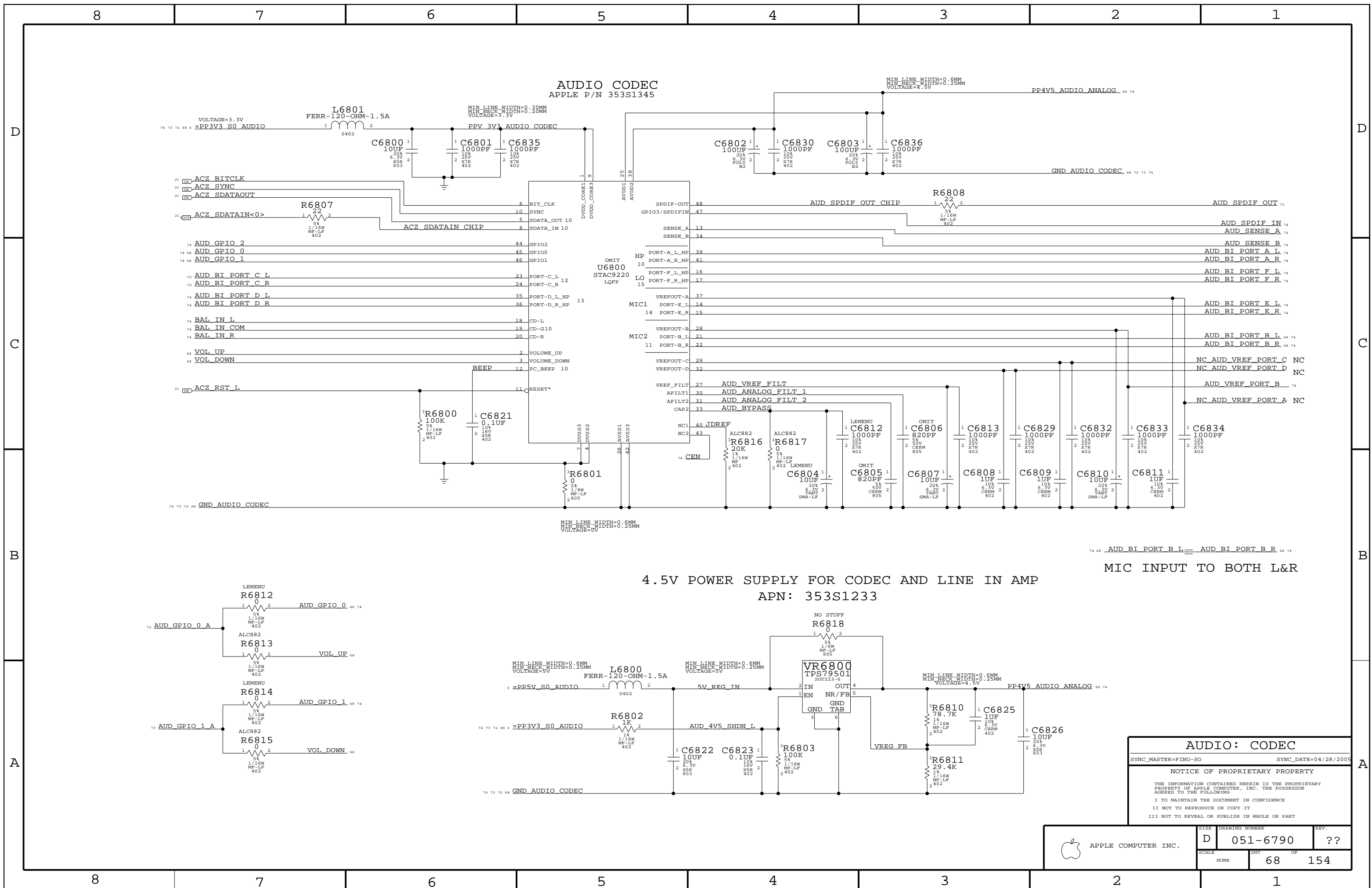
LAYOUT NOTE:
PLACE WHERE ACCESSIBLE

LAYOUT NOTE:
PLACE R6702-03 WHERE ACCESSIBLE

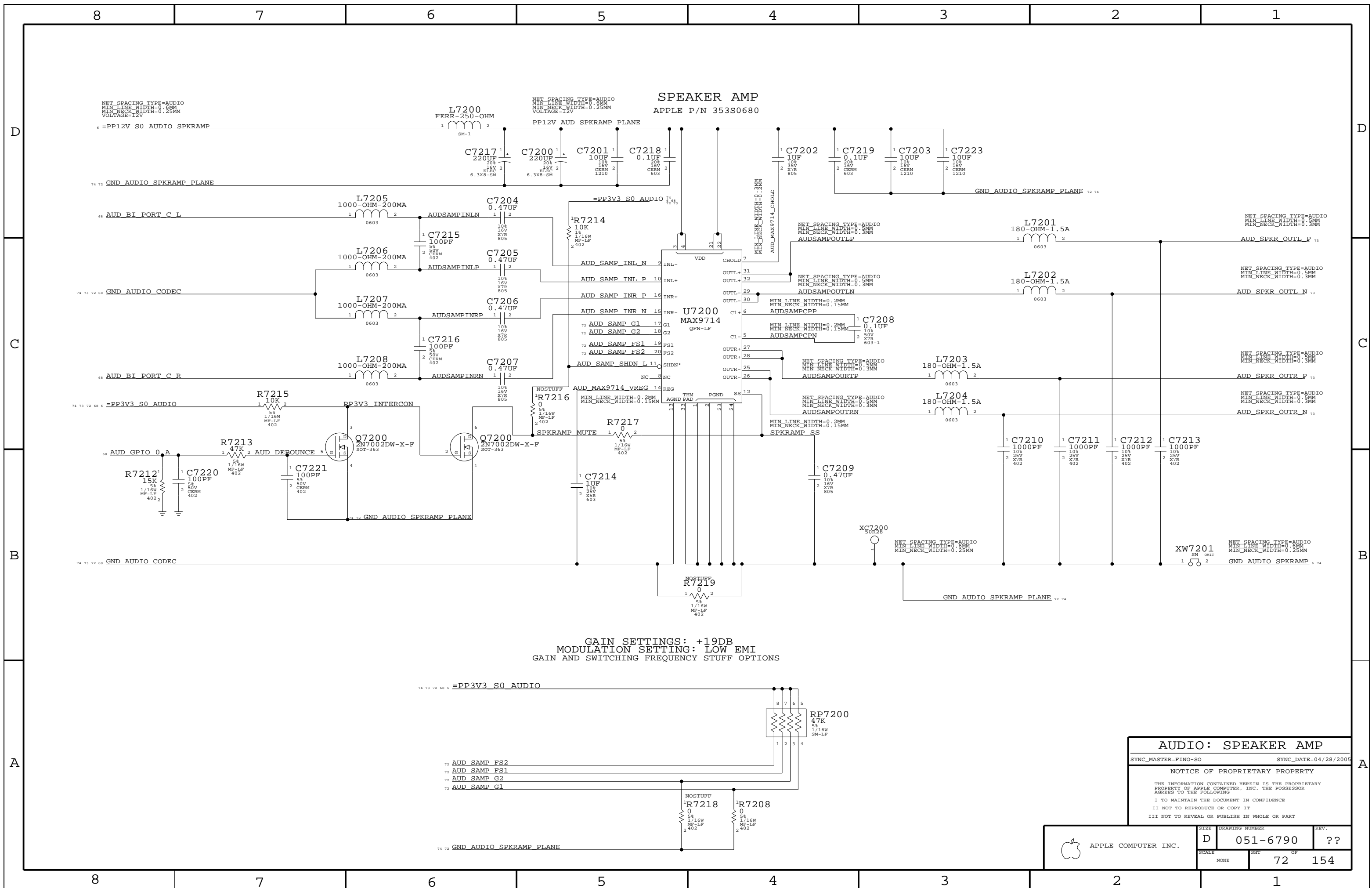
NOTE:
SINCE CURRENT OF VSB IS NOT YET ON SPEC,
1/8W (R6704/R6705) IS USED FOR NOW

| | |
|--|---------------|
| TPM | |
| SYNC_MASTER=N/A | SYNC_DATE=N/A |
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| | D | 051-6949 | 09 |
| SCALE | SHT | 67 OF 111 | |
| NONE | | | |



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| APPLE COMPUTER INC. | SIZE: D | DRAWING NUMBER: 051-6790 | REV.: ?? |
| | SCALE: NONE | SHEET: 68 | OF: 154 |

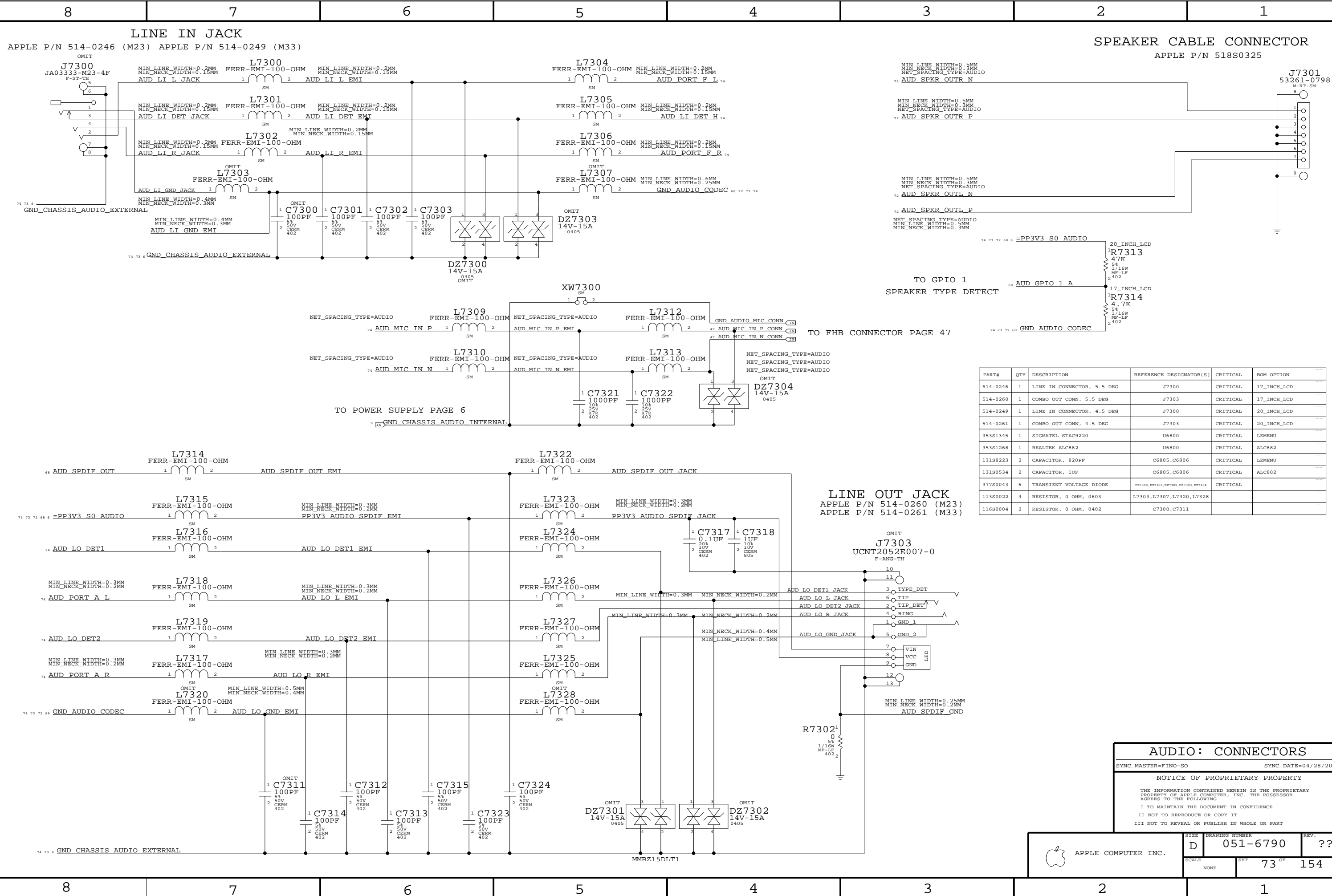


SPEAKER AMP
APPLE P/N 353S0680

GAIN SETTINGS: +19DB
MODULATION SETTING: LOW EMI
GAIN AND SWITCHING FREQUENCY STUFF OPTIONS

AUDIO: SPEAKER AMP
SYNC_MASTER=FINO-SO SYNC_DATE=04/28/2005
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| SCALE | NONE | SHT | OF |
| | | 72 | 154 |

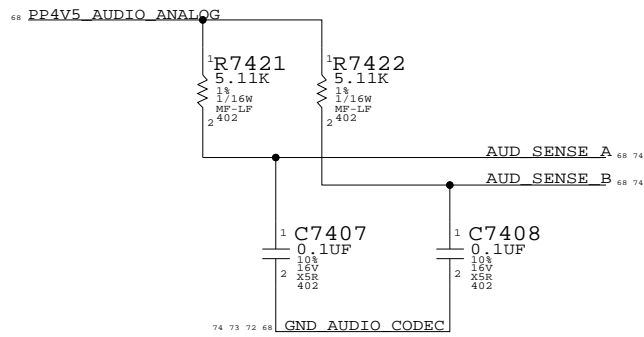


| PART# | QTY | DESCRIPTION | REFERENCE DESIGNATOR(S) | CRITICAL | BOM OPTION |
|----------|-----|----------------------------|------------------------------------|----------|-------------|
| 514-0246 | 1 | LINE IN CONNECTOR, 5.5 DEG | J7300 | CRITICAL | 17_INCH_LCD |
| 514-0260 | 1 | COMBO OUT CONN, 5.5 DEG | J7303 | CRITICAL | 17_INCH_LCD |
| 514-0249 | 1 | LINE IN CONNECTOR, 4.5 DEG | J7300 | CRITICAL | 20_INCH_LCD |
| 514-0261 | 1 | COMBO OUT CONN, 4.5 DEG | J7303 | CRITICAL | 20_INCH_LCD |
| 353S1345 | 1 | SIGMATEL STAC9220 | U6800 | CRITICAL | LEMENU |
| 353S1268 | 1 | REALTEK ALC882 | U6800 | CRITICAL | ALC882 |
| 131S8223 | 2 | CAPACITOR, 820PF | C6805,C6806 | CRITICAL | LEMENU |
| 131S0534 | 2 | CAPACITOR, 1UF | C6805,C6806 | CRITICAL | ALC882 |
| 377S0043 | 5 | TRANSIENT VOLTAGE DIODE | DZ7300,DZ7301,DZ7302,DZ7303,DZ7304 | CRITICAL | |
| 113S0022 | 4 | RESISTOR, 0 OHM, 0603 | L7303,L7307,L7320,L7328 | | |
| 116S0004 | 2 | RESISTOR, 0 OHM, 0402 | C7300,C7311 | | |

AUDIO: CONNECTORS
 SYNC_MASTER=FINO-SO SYNC_DATE=04/28/2005
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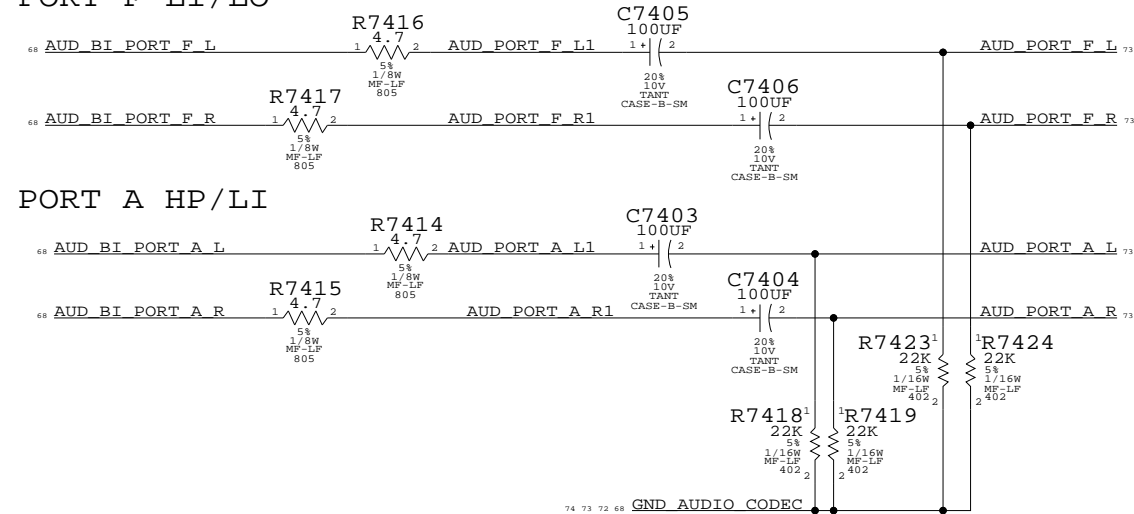
JACK SENSE PULL UPS (PLACE NEXT TO CODEC)



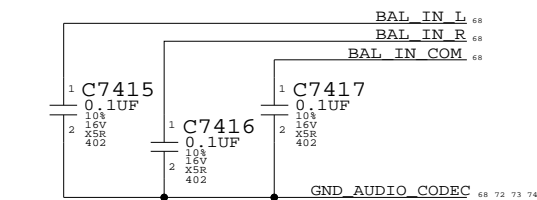
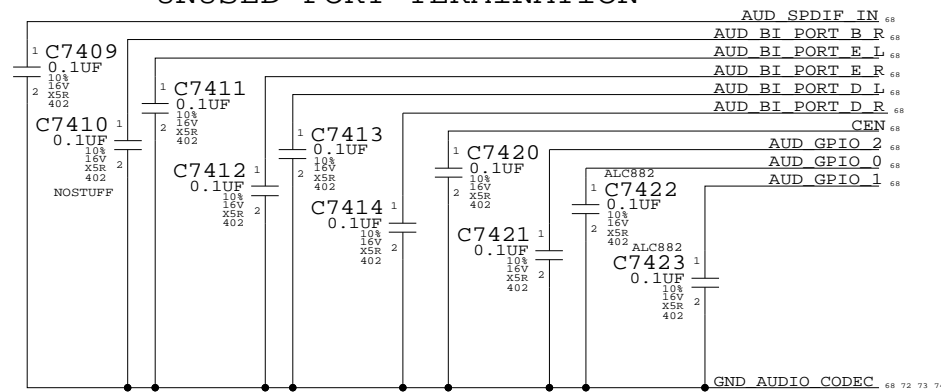
USED PORTS
 PORT A HP/LI
 PORT B MIC IN
 PORT C BI SPEAKERS
 PORT F LI/LO

UNUSED PORTS
 PORT E
 PORT D

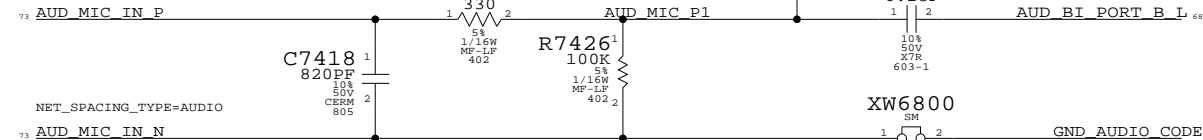
PORT F LI/LO



UNUSED PORT TERMINATION

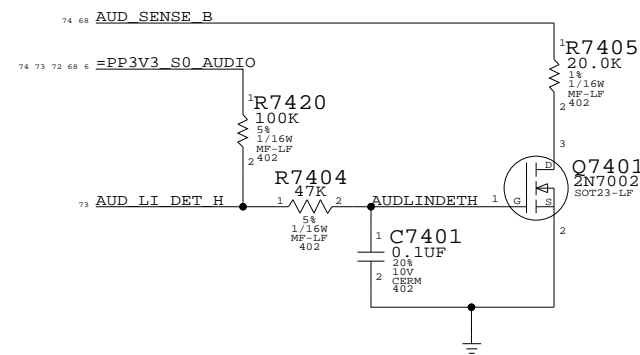


NET_SPACING_TYPE=AUDIO

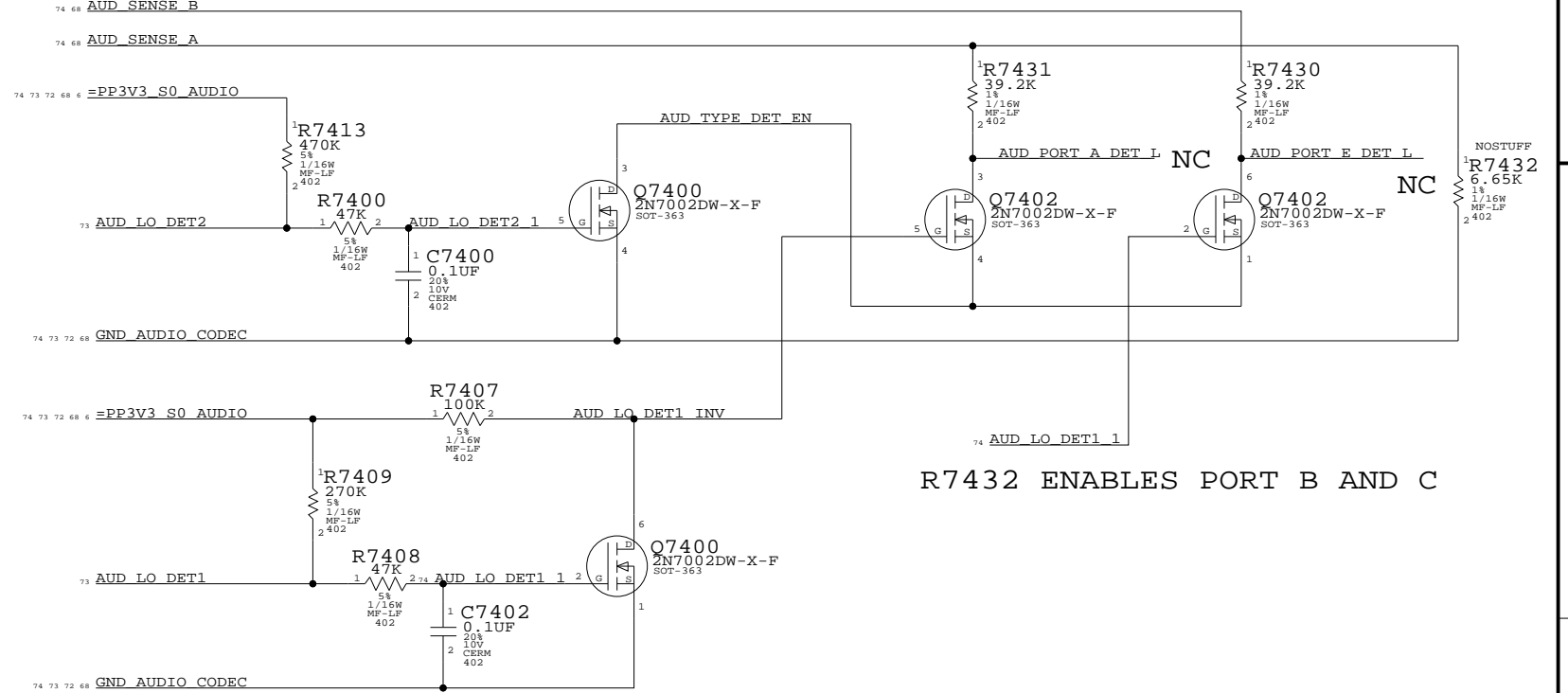


MICROPHONE IMPEDANCE MATCHING CIRCUIT

PORT F (LI/LO) PLUG DETECT

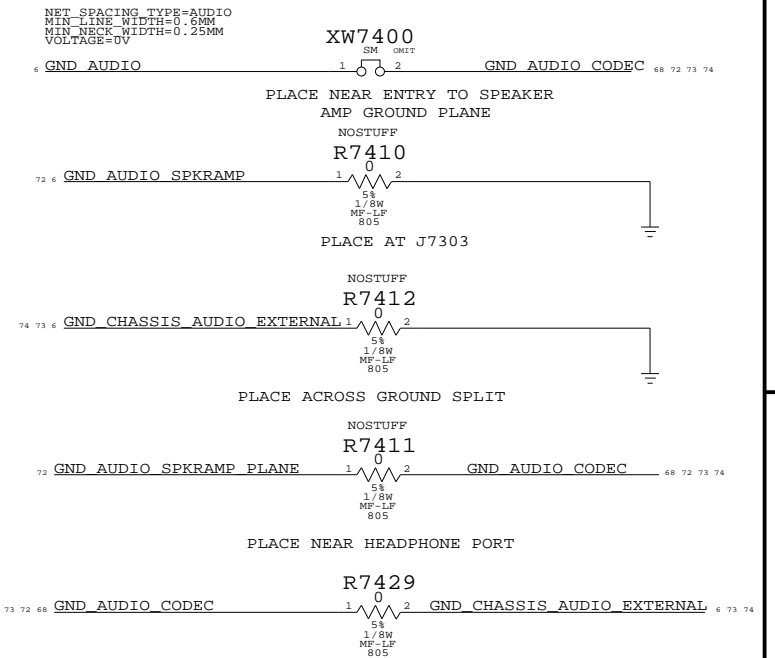


PORT A/H (HP/LI/DIG_OUT) PLUG DETECT (E TELLS H TO COME ON)



R7432 ENABLES PORT B AND C

AUDIO GROUND RETURNS



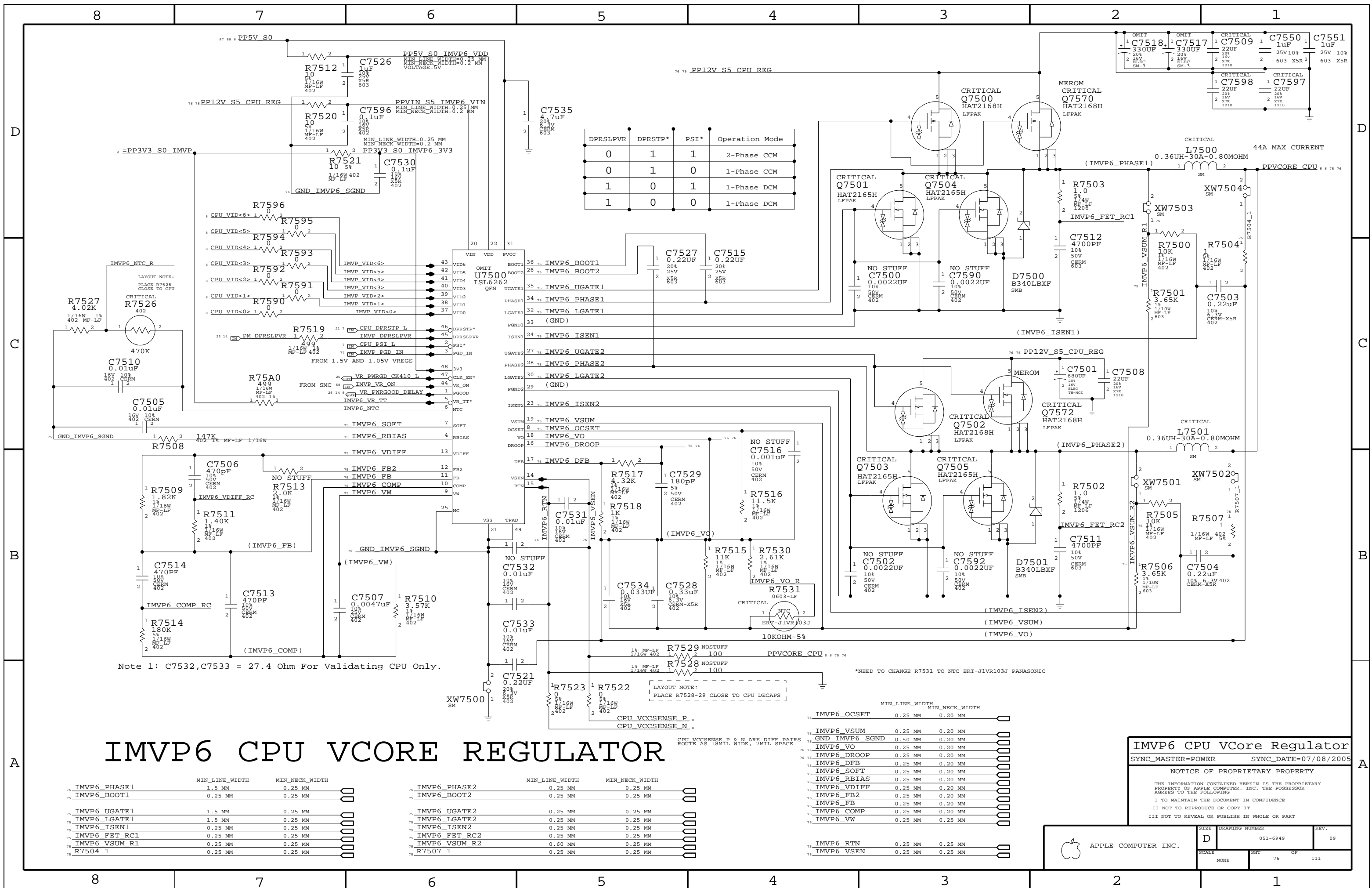
AUDIO: POWER SUPPLIES

SYNC_MASTER=FINO-SO SYNC_DATE=04/28/2005

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| SCALE | NONE | SHT | OF |
| | | 74 | 154 |



| DPRSLPVR | DPRSTP* | PSI* | Operation Mode |
|----------|---------|------|----------------|
| 0 | 1 | 1 | 2-Phase CCM |
| 0 | 1 | 0 | 1-Phase CCM |
| 1 | 0 | 1 | 1-Phase DCM |
| 1 | 0 | 0 | 1-Phase DCM |

| NO STUFF | C7516 | C7515 |
|------------------|------------------|------------------|
| 0.0022UF | 20% 25V X5R 402 | 20% 25V X5R 603 |
| 10% 50V CERM 402 | 10% 50V CERM 402 | 10% 50V CERM 402 |

Note 1: C7532,C7533 = 27.4 Ohm For Validating CPU Only.

*NEED TO CHANGE R7531 TO NTC ERT-J1VR103J PANASONIC

IMVP6 CPU VCore Regulator

| | MIN_LINE_WIDTH | MIN_NECK_WIDTH |
|---------------|----------------|----------------|
| IMVP6_PHASE1 | 1.5 MM | 0.25 MM |
| IMVP6_BOOT1 | 0.25 MM | 0.25 MM |
| IMVP6_UGATE1 | 1.5 MM | 0.25 MM |
| IMVP6_LGATE1 | 1.5 MM | 0.25 MM |
| IMVP6_ISEN1 | 0.25 MM | 0.25 MM |
| IMVP6_FET_RC1 | 0.25 MM | 0.25 MM |
| IMVP6_VSUM_R1 | 0.25 MM | 0.25 MM |
| R7504_1 | 0.25 MM | 0.25 MM |

| | MIN_LINE_WIDTH | MIN_NECK_WIDTH |
|---------------|----------------|----------------|
| IMVP6_PHASE2 | 0.25 MM | 0.25 MM |
| IMVP6_BOOT2 | 0.25 MM | 0.25 MM |
| IMVP6_UGATE2 | 0.25 MM | 0.25 MM |
| IMVP6_LGATE2 | 0.25 MM | 0.25 MM |
| IMVP6_ISEN2 | 0.25 MM | 0.25 MM |
| IMVP6_FET_RC2 | 0.25 MM | 0.25 MM |
| IMVP6_VSUM_R2 | 0.60 MM | 0.25 MM |
| R7507_1 | 0.25 MM | 0.25 MM |

| | MIN_LINE_WIDTH | MIN_NECK_WIDTH |
|----------------|----------------|----------------|
| IMVP6_OCSET | 0.25 MM | 0.20 MM |
| IMVP6_VSUM | 0.25 MM | 0.20 MM |
| GND_IMVP6_SGND | 0.50 MM | 0.20 MM |
| IMVP6_VO | 0.25 MM | 0.20 MM |
| IMVP6_DROOP | 0.25 MM | 0.20 MM |
| IMVP6_DFB | 0.25 MM | 0.20 MM |
| IMVP6_SOFT | 0.25 MM | 0.20 MM |
| IMVP6_RBIAS | 0.25 MM | 0.20 MM |
| IMVP6_VDIFF | 0.25 MM | 0.20 MM |
| IMVP6_FB2 | 0.25 MM | 0.20 MM |
| IMVP6_FB | 0.25 MM | 0.20 MM |
| IMVP6_COMP | 0.25 MM | 0.20 MM |
| IMVP6_VW | 0.25 MM | 0.25 MM |
| IMVP6_RTIN | 0.25 MM | 0.25 MM |
| IMVP6_VSEN | 0.25 MM | 0.25 MM |

IMVP6 CPU VCore Regulator
 SYNC_MASTER=POWER SYNC_DATE=07/08/2005

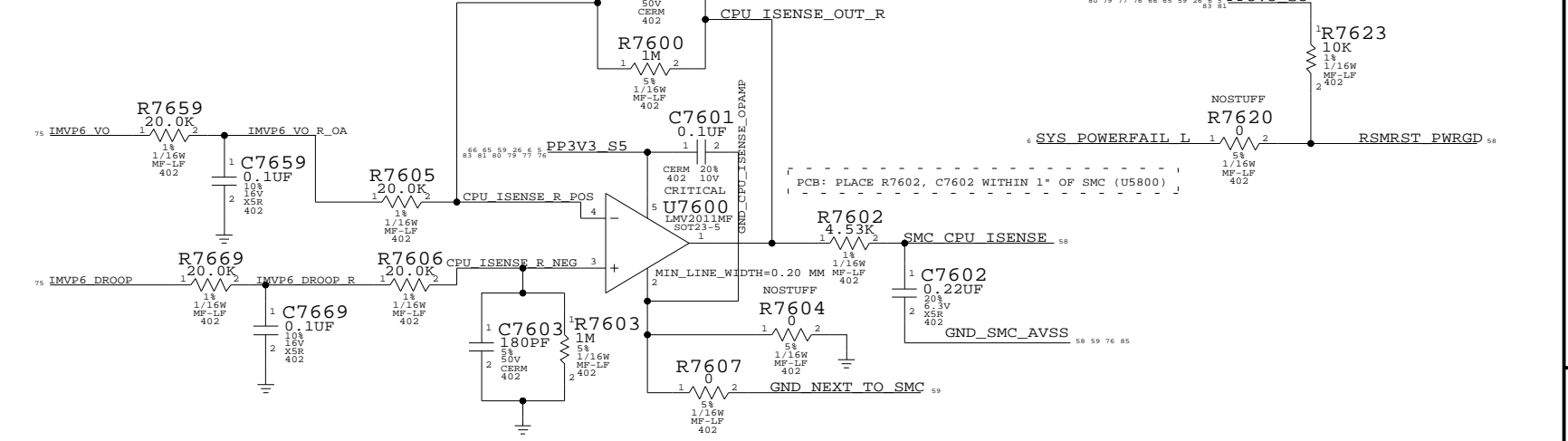
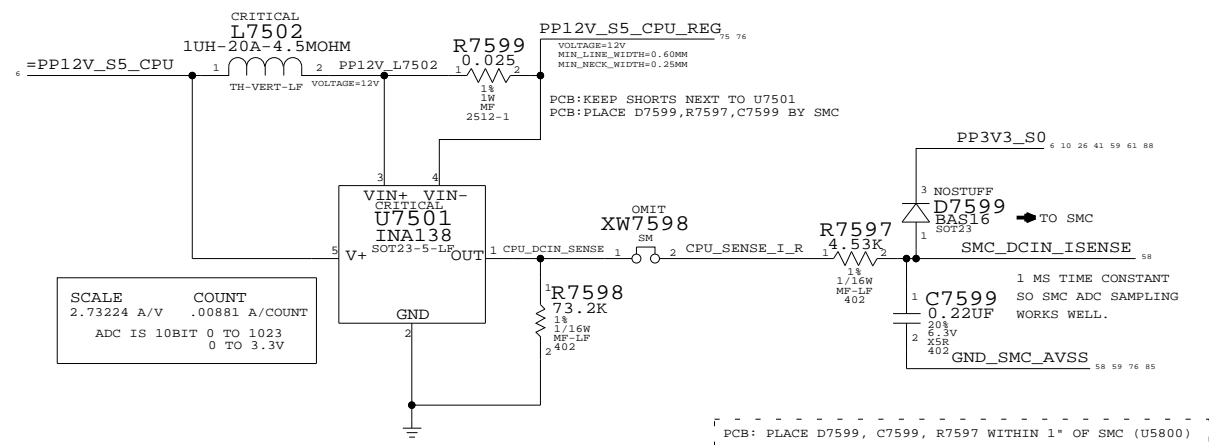
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| | NONE | D 051-6949 | 09 |
| | SHEET | OF | |
| | 75 | 111 | |

PROCESSOR VCORE CURRENT SENSE
(USING 12V INPUT CURRENT TO DERIVE CPU CURRENT)

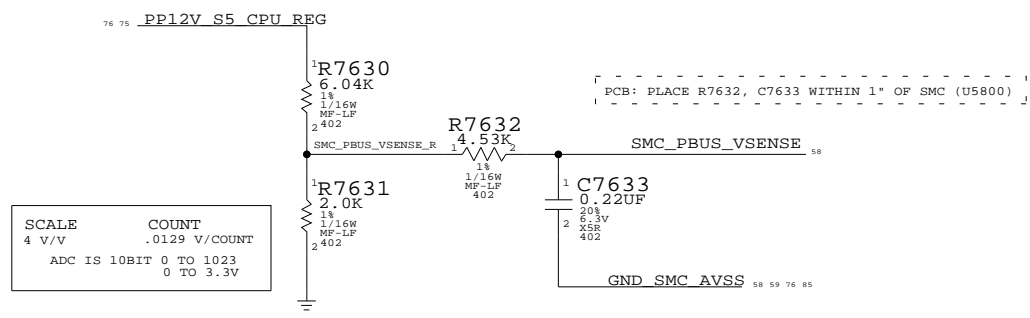
PROCESSOR VCORE CURRENT SENSE
(MEASURING DC/DC INDUCTOR DCR TO DERIVE CPU CURRENT)

SMC PWRGD PULLUP

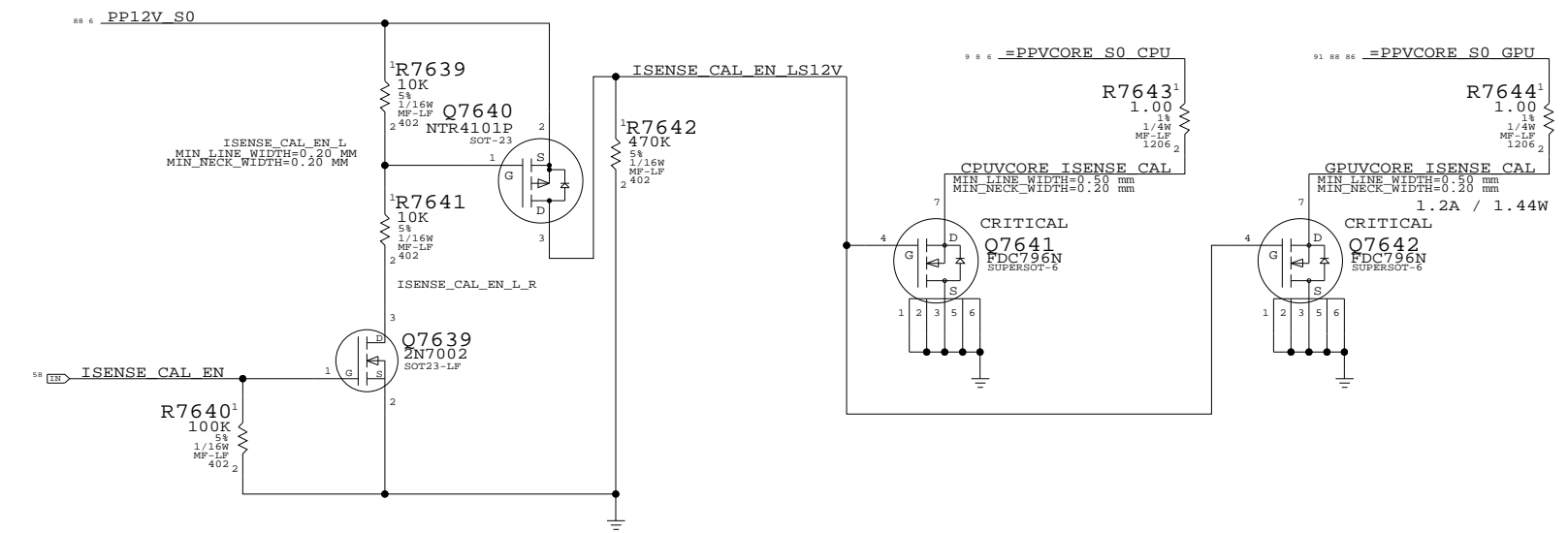


PROCESSOR DCIN VOLTAGE SENSE
(SCALING 12V INPUT VOLTAGE TO SMC)

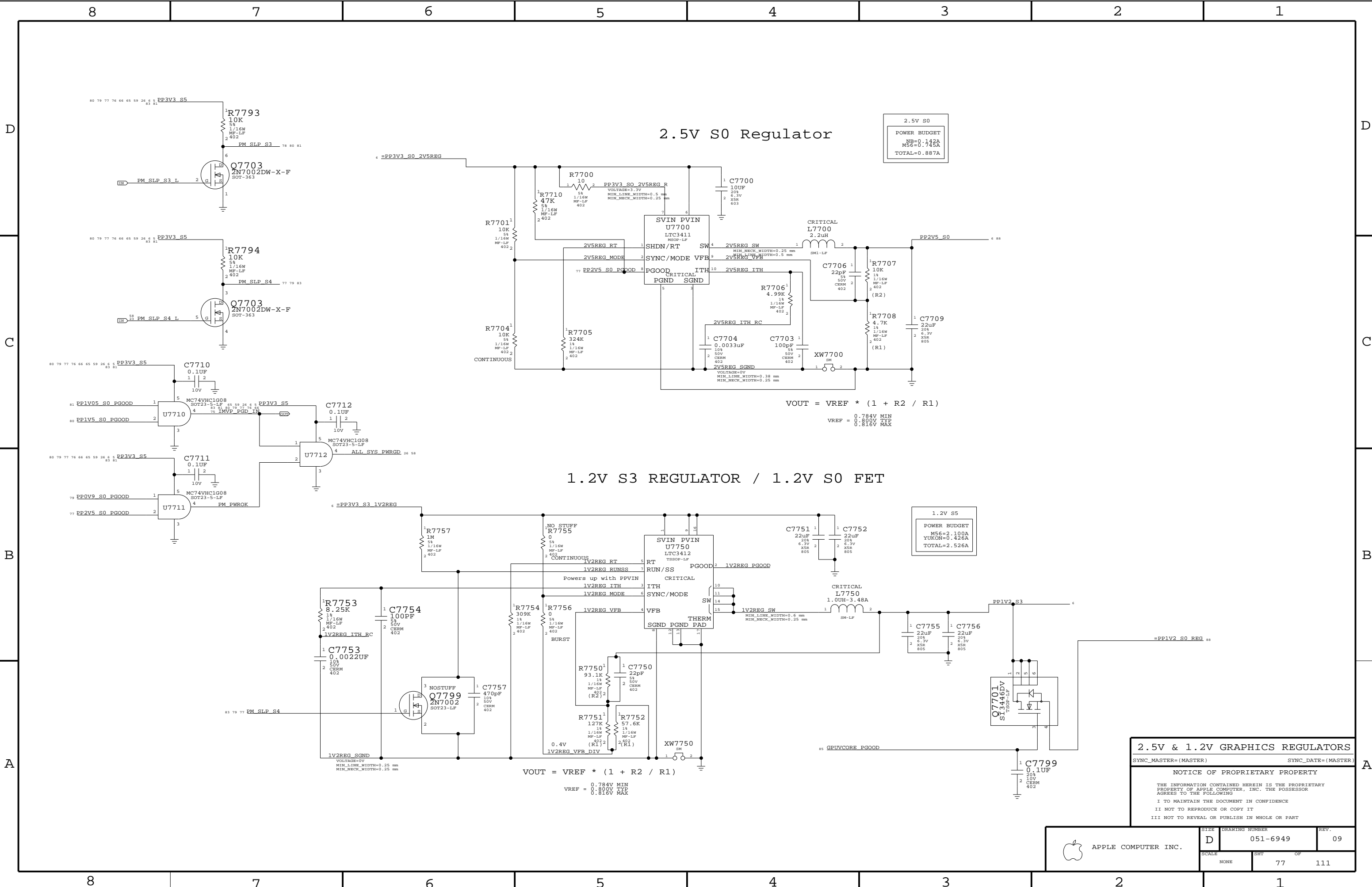
PROCESSOR VCORE SENSE



Current Sense Calibration Circuit
Switches in fixed load on power supplies to calibrate current sense circuits



CPU SENSE CIRCUITRIES
SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)
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2.5V & 1.2V GRAPHICS REGULATORS

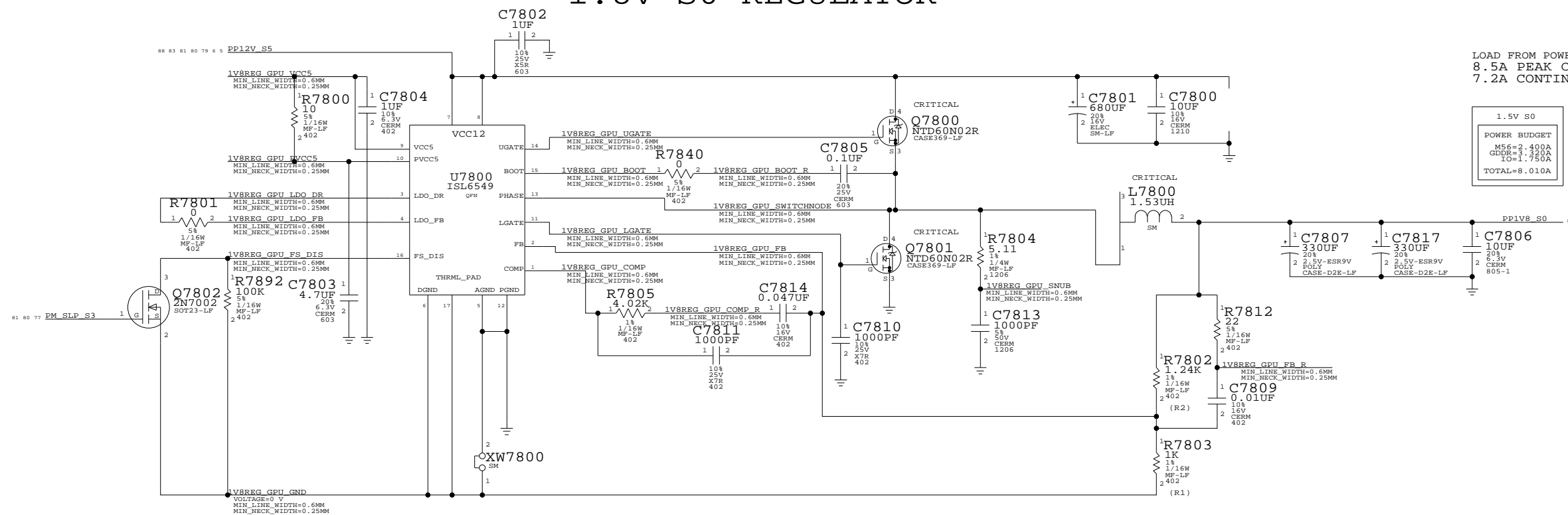
SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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| SCALE | SHT | OF | |
| NONE | 77 | | 111 |

1.8V S0 REGULATOR



LOAD FROM POWER BUDGET
8.5A PEAK CURRENT DRAW
7.2A CONTINUOUS CURRENT DRAW

| |
|--------------|
| 1.5V S0 |
| POWER BUDGET |
| M56=2.400A |
| GDDR=1.720A |
| TO=1.750A |
| TOTAL=8.010A |

$$V_{OUT} = V_{REF} * (1 + R2/R1)$$

VREF = 0.784V MIN
0.800V TYP
0.816V MAX

1.8V GDDR REGULATOR

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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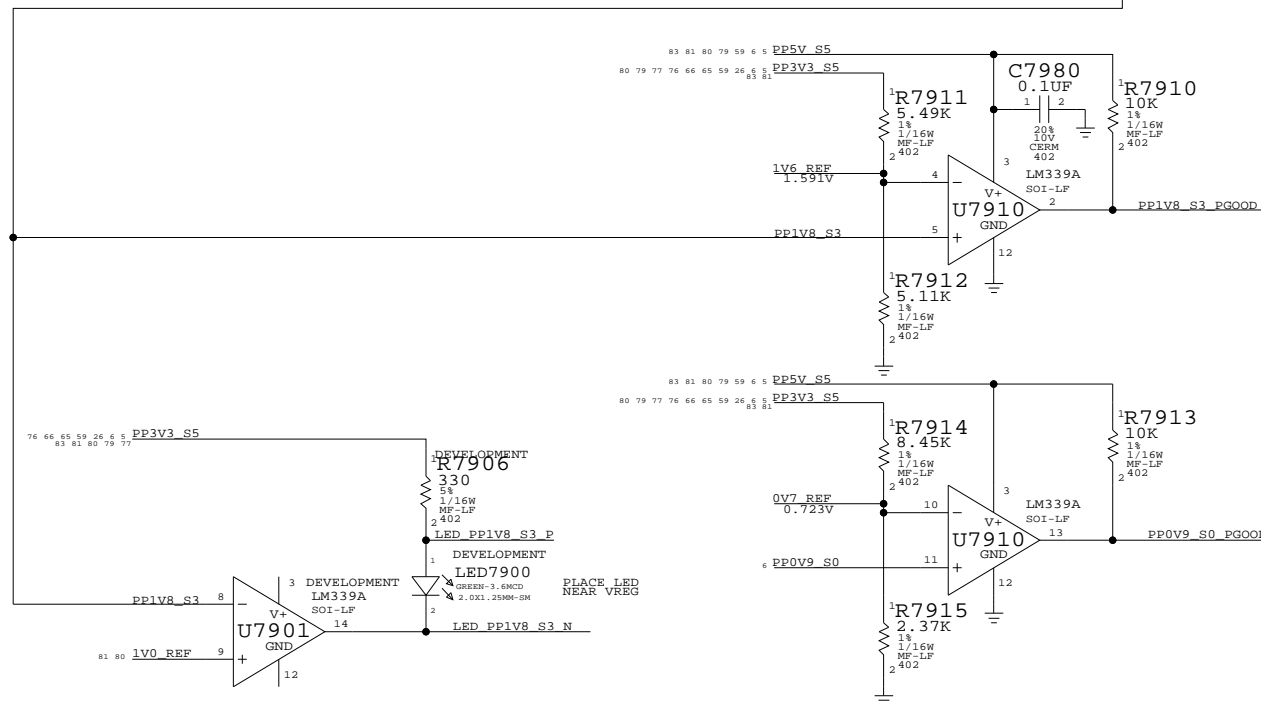
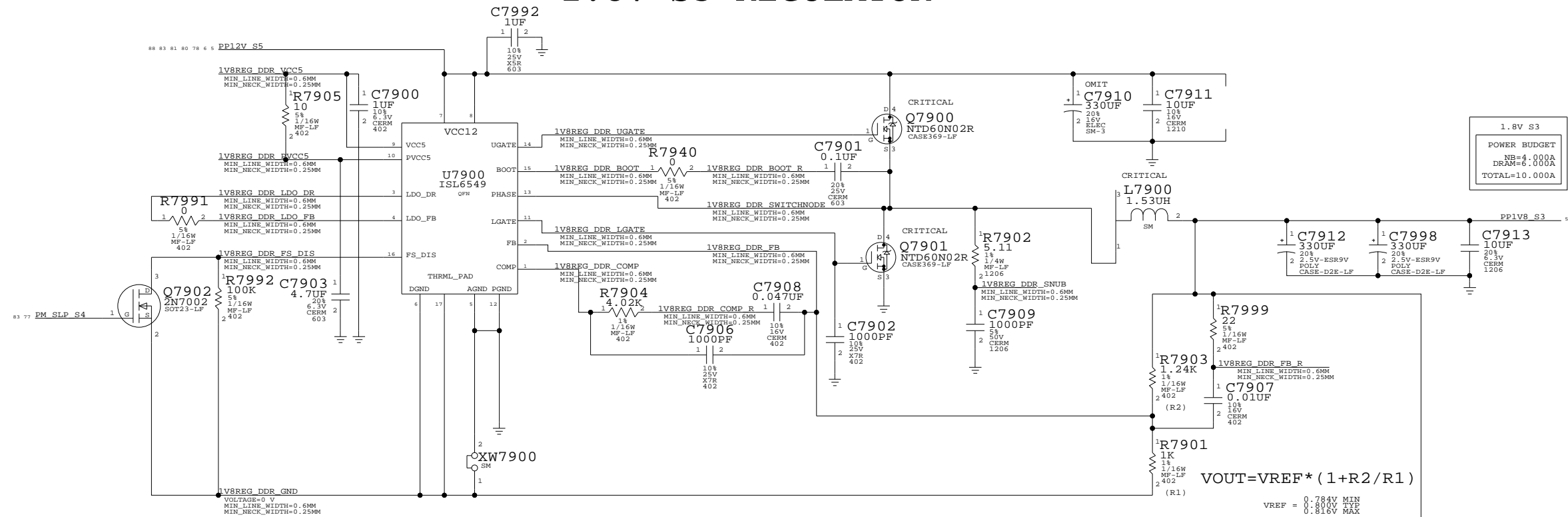
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| NONE | | | |

TRUE

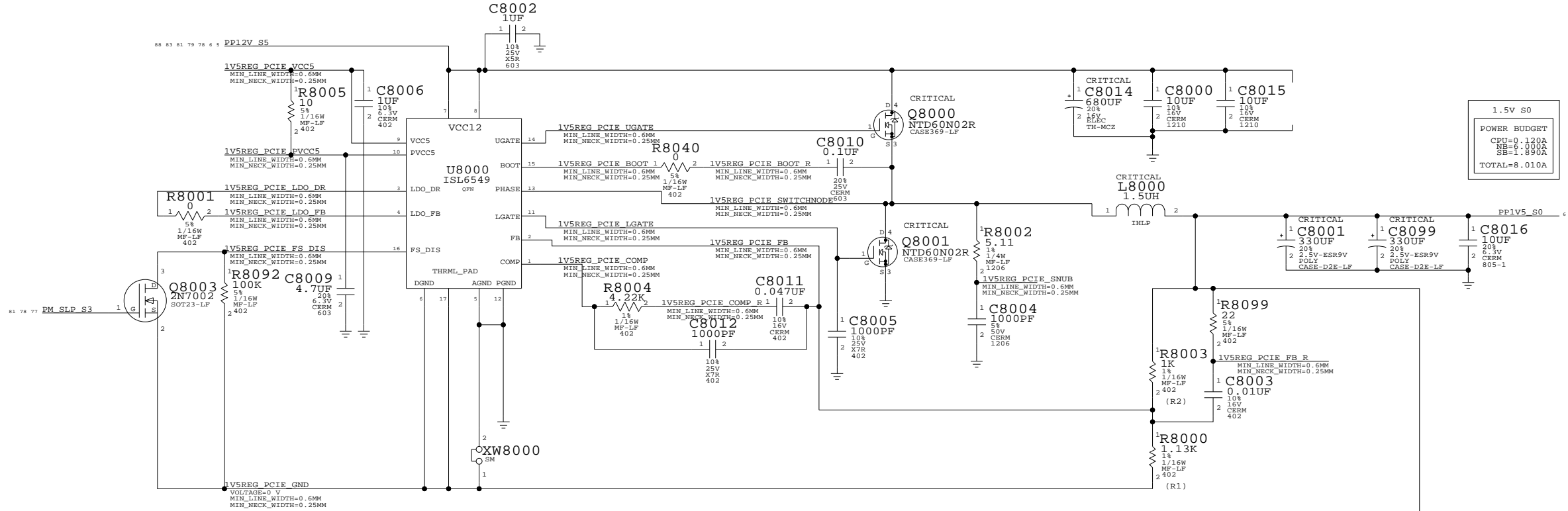
1.8V S3 REGULATOR



1.8V Vreg
 SYNC_MASTER=M23-PC SYNC_DATE=04/12/2005
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1.5V S0 REGULATOR

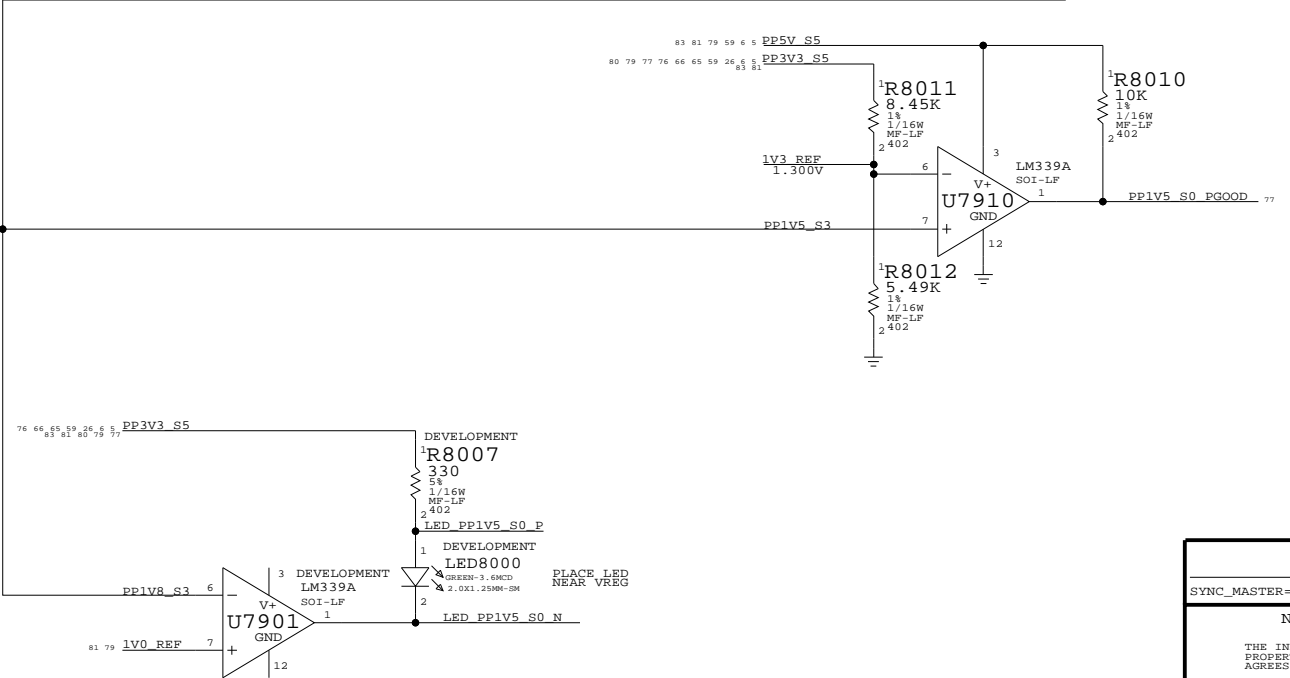


$$V_{OUT} = V_{REF} * (1 + R2/R1)$$

$$V_{REF} = 0.784V \text{ MIN}$$

$$V_{REF} = 0.800V \text{ TYP}$$

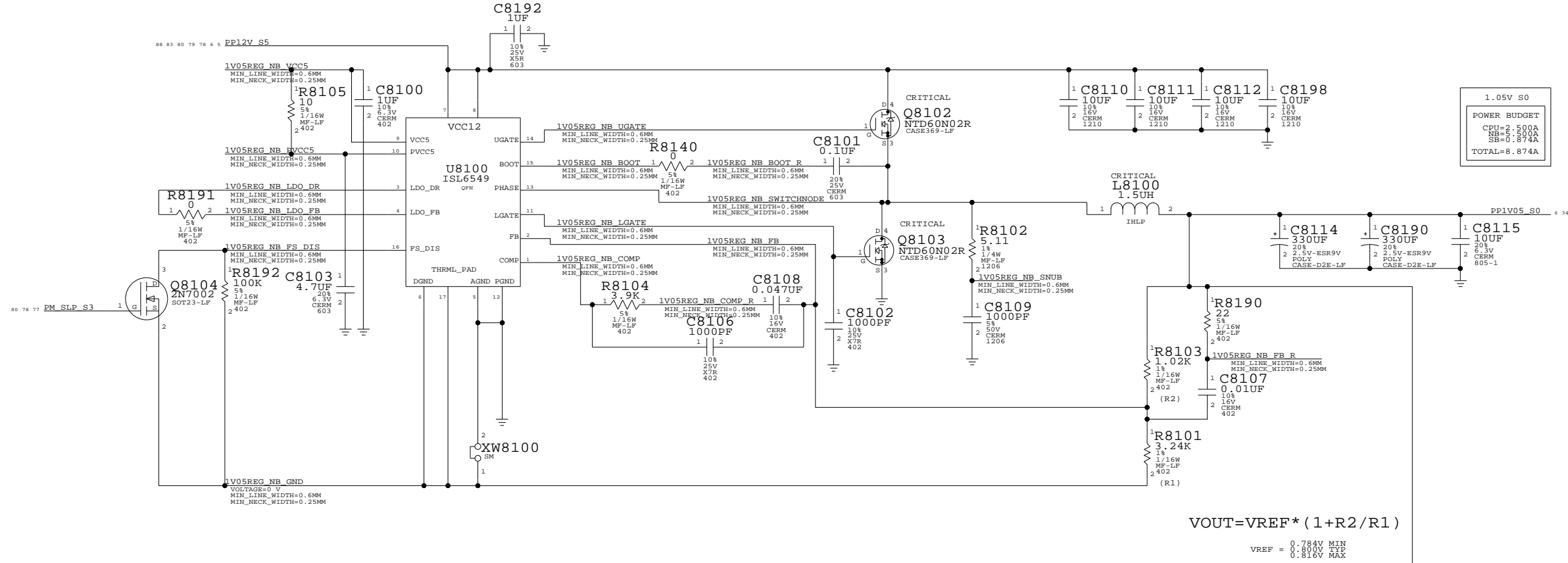
$$V_{REF} = 0.816V \text{ MAX}$$



1.5V Vreg
 SYNC_MASTER=FINO-PC SYNC_DATE=05/18/2005
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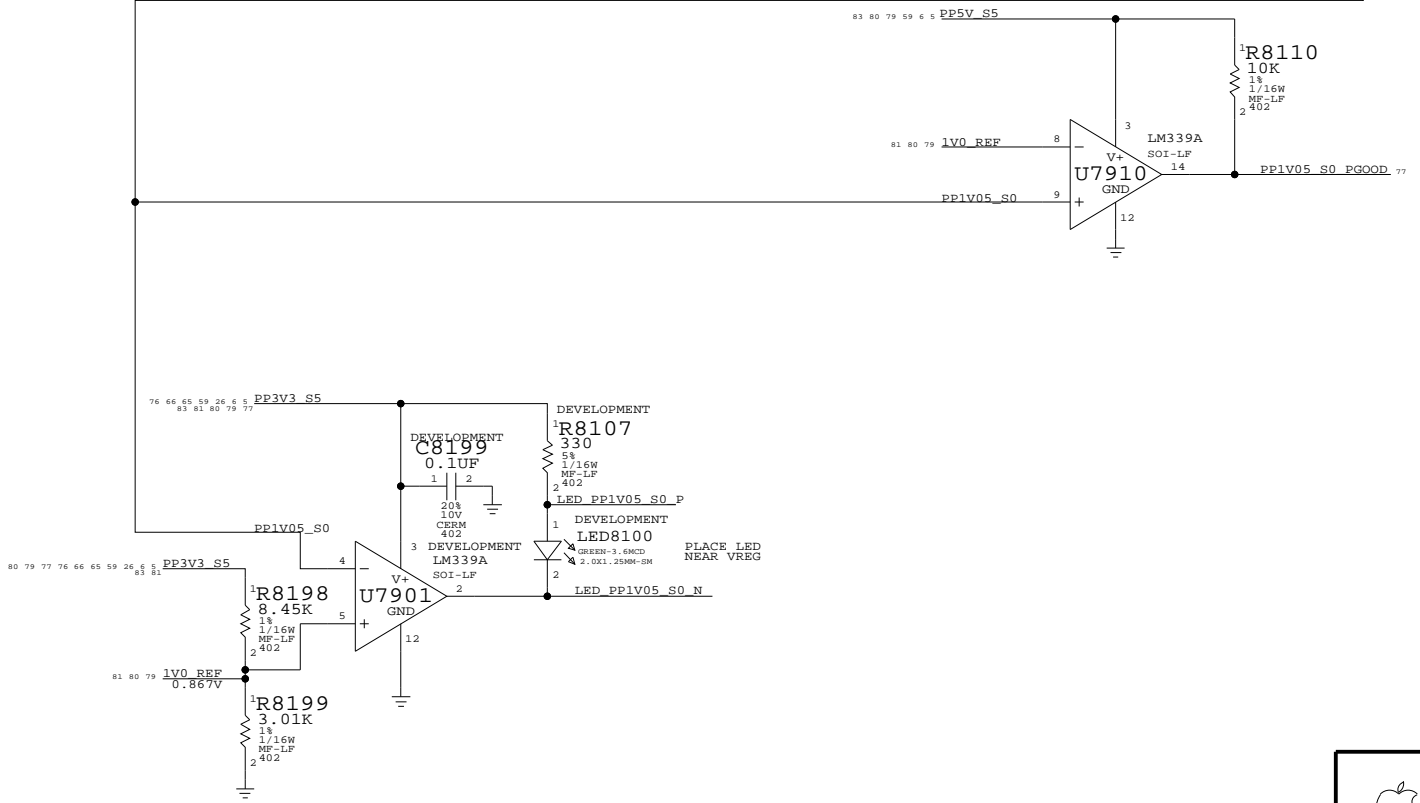
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| APPLE COMPUTER INC. | SIZE | DRAWING NUMBER | REV. |
| | D | 051-6950 | 06 |
| SCALE | SHT | 80 OF | 111 |
| NONE | | | |

1.05V S0 REGULATOR



$$V_{OUT} = V_{REF} * (1 + R2/R1)$$

VREF = 0.784V MIN
0.800V TYP
0.816V MAX



1.05V VREG

SYNC_MASTER=M38-RT SYNC_DATE=05/18/2005

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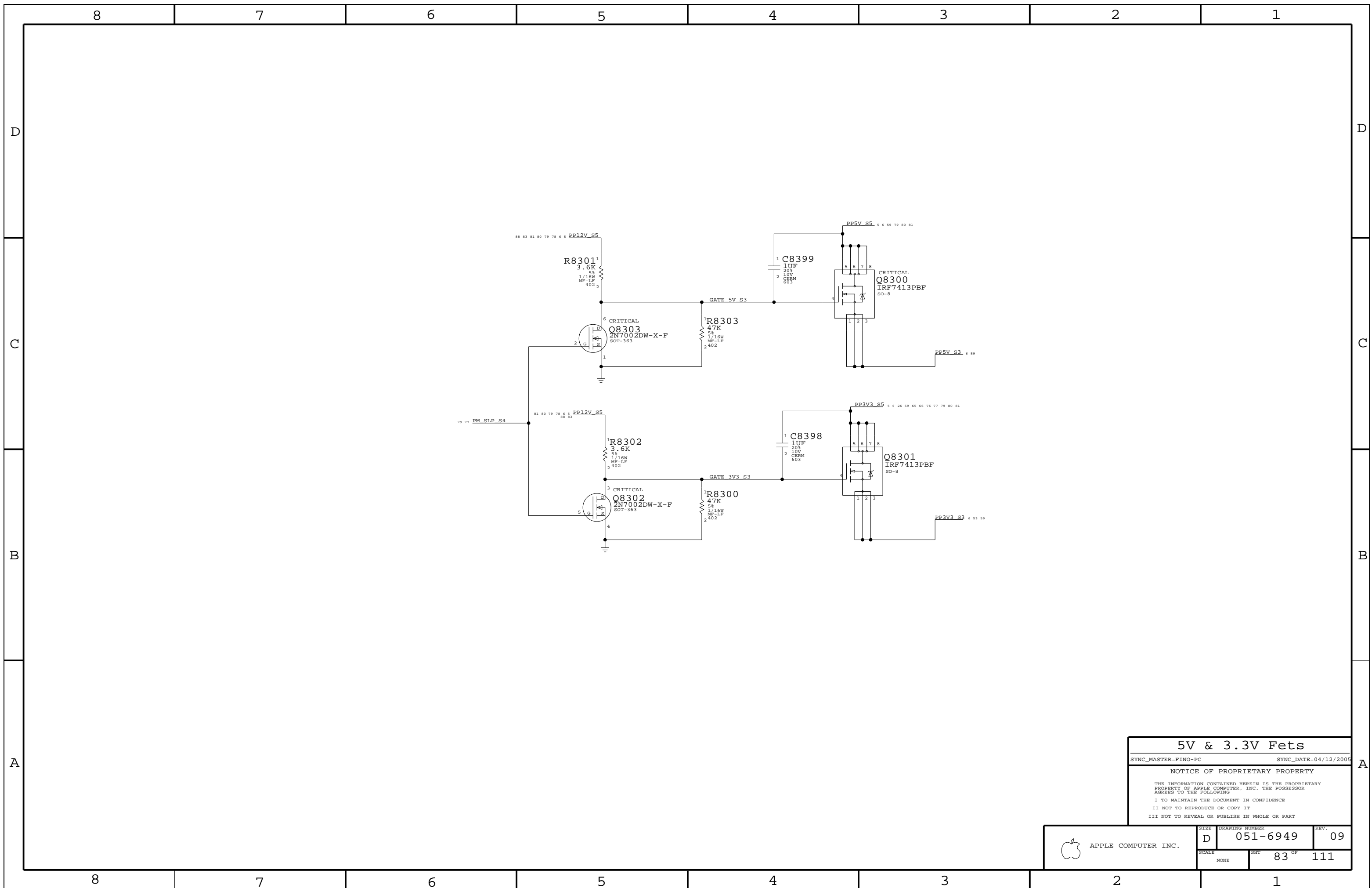
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5V & 3.3V Fets

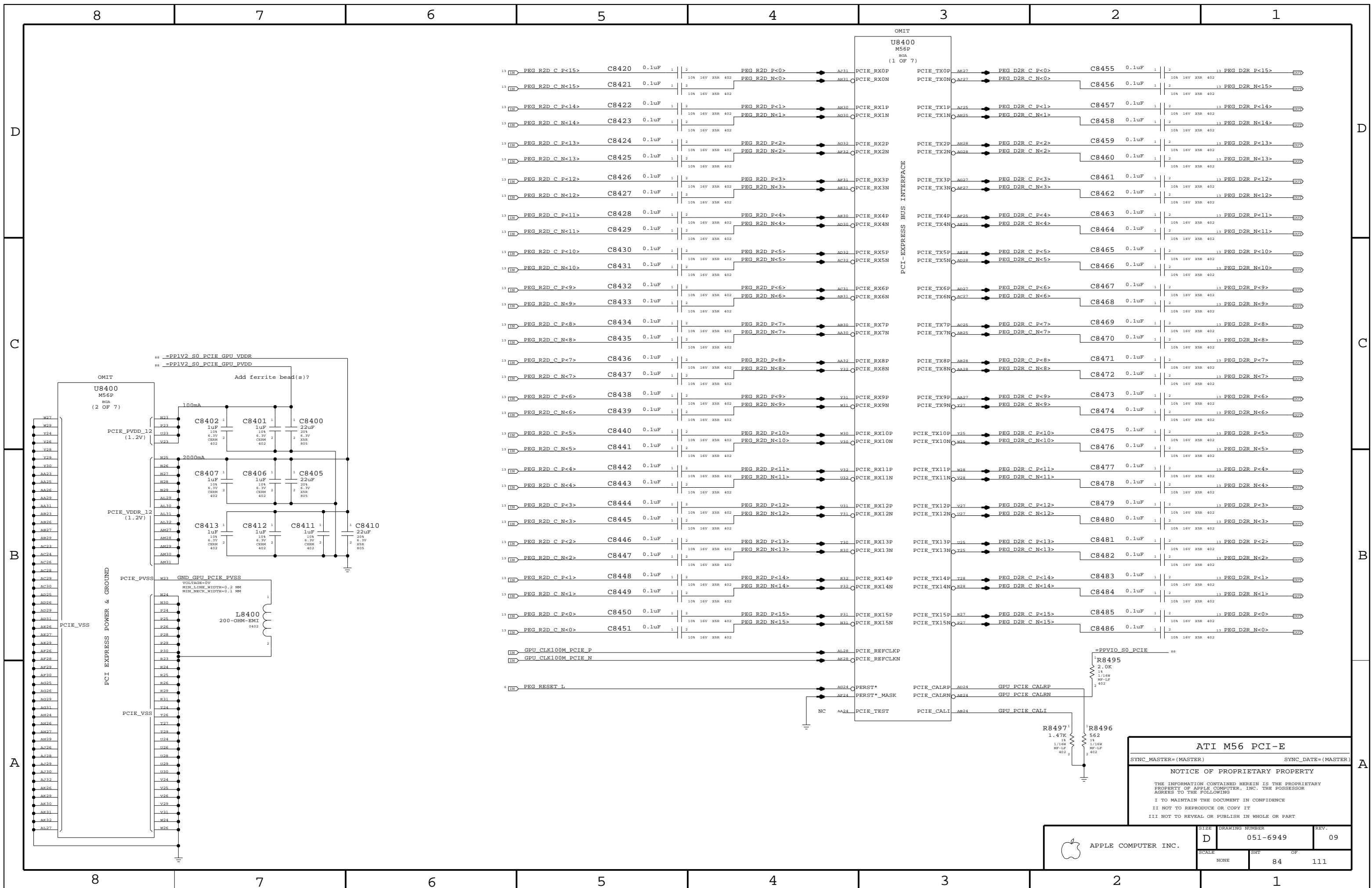
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ATI M56 PCI-E

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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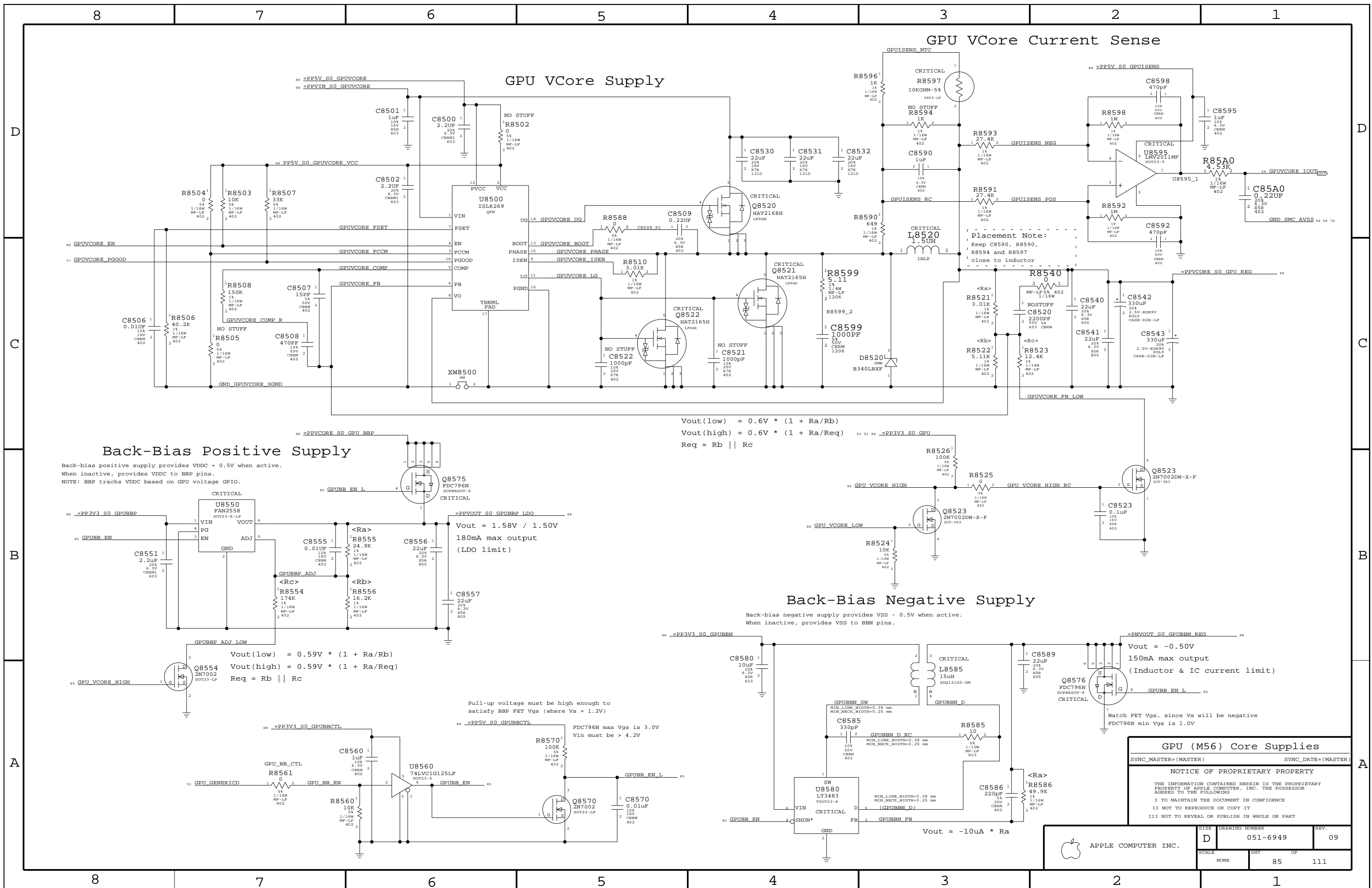
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GPU VCore Supply

GPU VCore Current Sense

Placement Note:
 Keep C8590, R8590, R8594 and R8597 close to inductor

$$V_{out}(low) = 0.6V * (1 + R_a/R_b)$$

$$V_{out}(high) = 0.6V * (1 + R_a/Req)$$

$$Req = R_b || R_c$$

Back-Bias Positive Supply

Back-bias positive supply provides VDDC + 0.5V when active. When inactive, provides VDDC to BBP pins.
 NOTE: BBP tracks VDDC based on GPU voltage GPIO.

$$V_{out} = 1.58V / 1.50V$$

180mA max output (LDO limit)

$$V_{out}(low) = 0.59V * (1 + R_a/R_b)$$

$$V_{out}(high) = 0.59V * (1 + R_a/Req)$$

$$Req = R_b || R_c$$

Pull-up voltage must be high enough to satisfy BBP FET Vgs (where Vs = 1.2V)
 FDC796N max Vgs is 3.0V
 Vin must be > 4.2V

Back-Bias Negative Supply

Back-bias negative supply provides VSS - 0.5V when active. When inactive, provides VSS to BBN pins.

$$V_{out} = -0.50V$$

150mA max output (Inductor & IC current limit)

$$V_{out} = -10\mu A * R_a$$

GPU (M56) Core Supplies

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)
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| NONE | 85 | 111 | |

Page Notes

Power aliases required by this page:
 - =PP1V5_GPU_VDD15
 - =PP1VR1V3_GPU_VCORE

Signal aliases required by this page:
 (NONE)

BOM options provided by this page:
 (NONE)

8 7 6 5 4 3 2 1

D

D

C

C

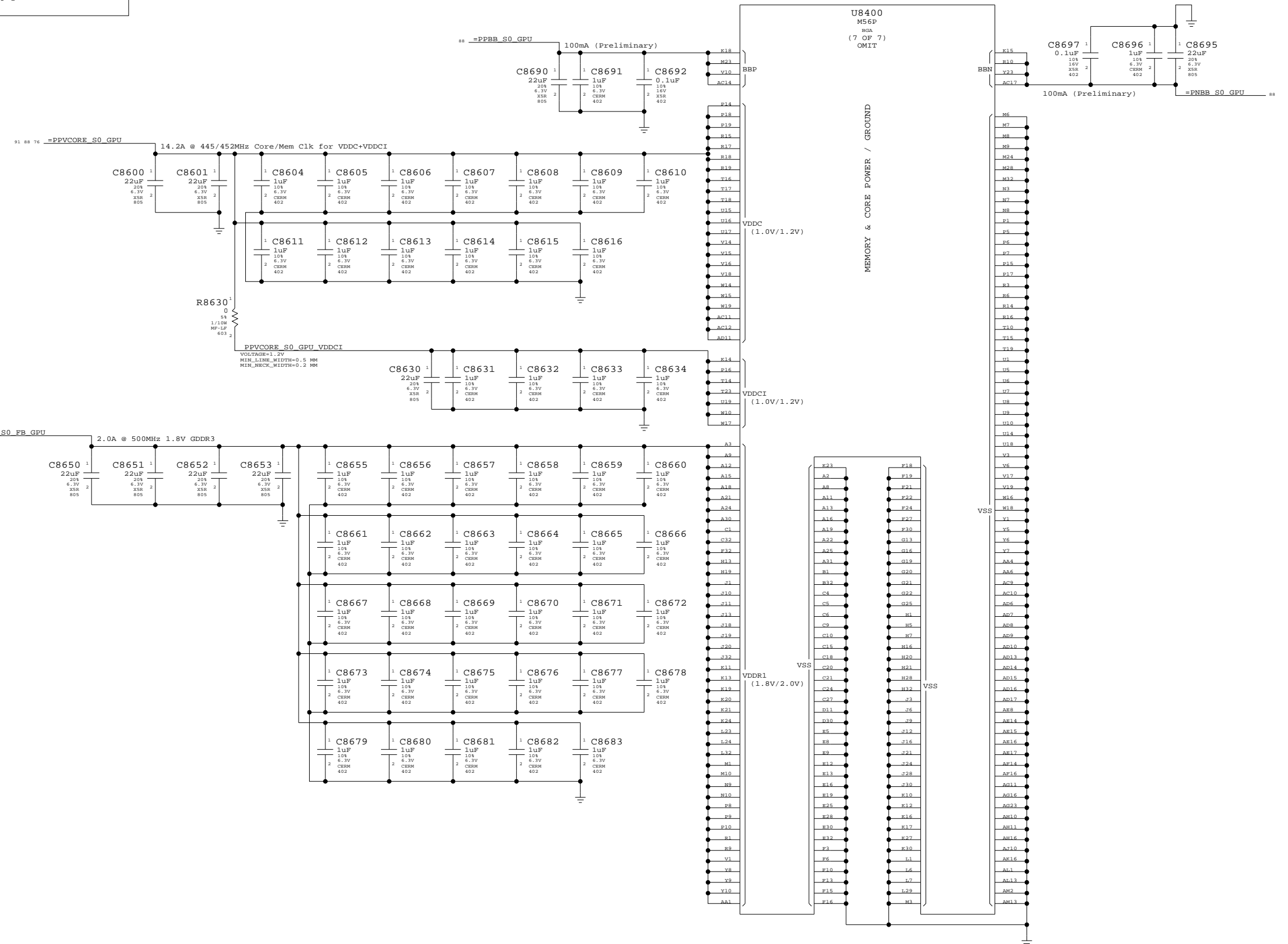
B

B

A

A

8 7 6 5 4 3 2 1



ATI M56 Core Power

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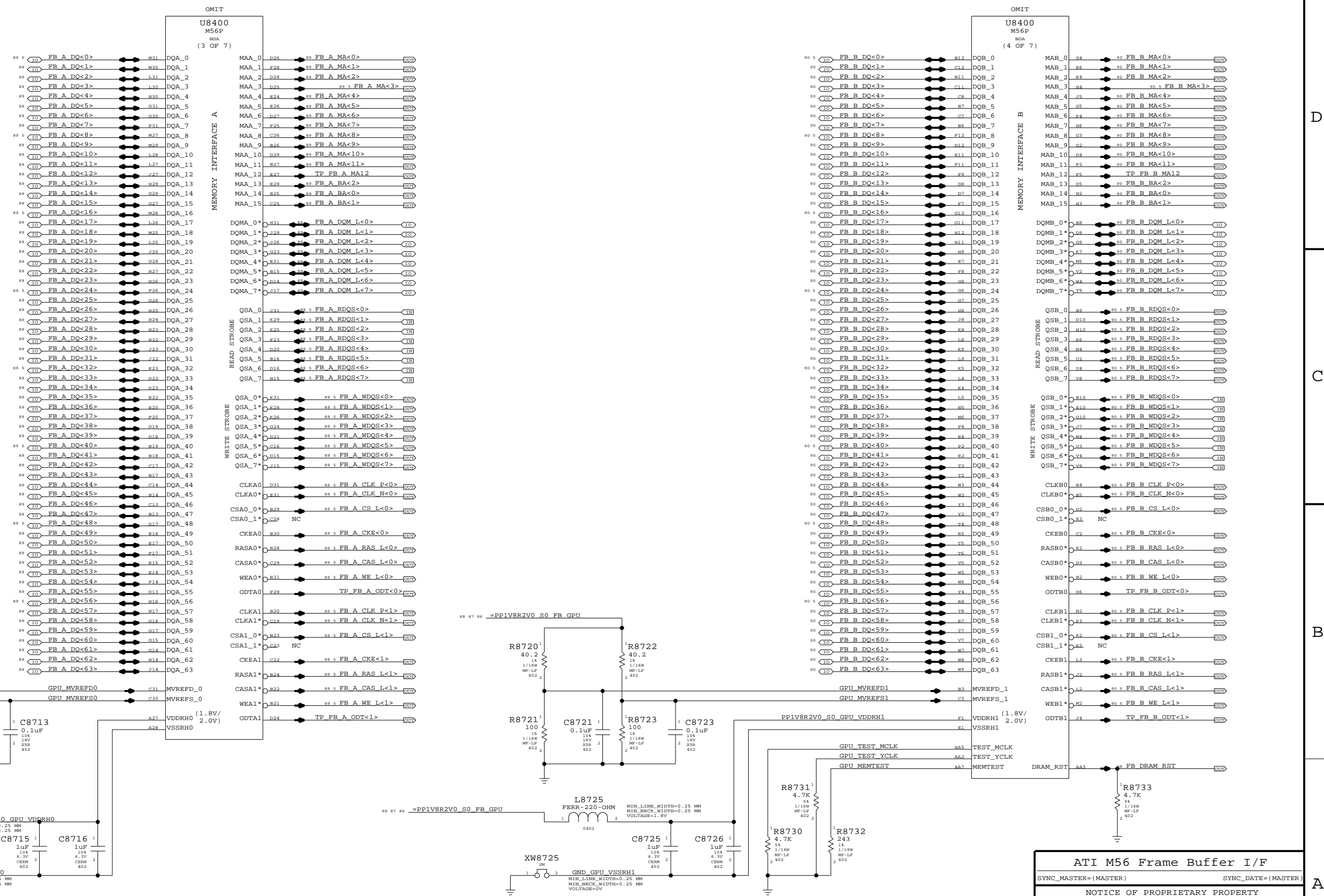
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| | | 86 | 111 |

Page Notes

Power aliases required by this page:
- =PP1V8R2V0_S0_FB_GPU
Signal aliases required by this page:
(NONE)
BOM options provided by this page:
(NONE)



ATI M56 Frame Buffer I/F

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Apple Computer Inc. logo and drawing information: DRAWING NUMBER 051-6949, REV. 09, SCALE NONE, SHEET 87 OF 111.

8

7

6

5

4

3

2

1

"S0" GPU RAILS

ONLY ON IN RUN

59 EP1V0R1V2_S0_GPU
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.2V

85 PP5V_S0_GPUVCORE_VCC
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=5V

PP1V2_GPU_IO_S0
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.2V

PPBB_S0_GPU
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.5MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.2V

PPNB_S0_GPU
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.5MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=0V

76 61 59 41 26 10 6 PP3V3_S0
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.2V

77 6 PP2V5_S0
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.2V

PP1V8R2V0_S0_FB_GPU
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.8V

83 81 80 79 78 6 5 PP12V_S5
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.2V

76 6 PP12V_S0
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=1.2V

97 76 6 PP5V_S0
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=5V

85 GPUVCORE_EN
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=5V

87 FB_DRAM_RST
 MAKE_BASE=TRUE
 MIN_LINE_WIDTH=0.6MM
 MIN_NECK_WIDTH=0.125MM
 VOLTAGE=5V

M56 GPIOs

94 91 GPU_GPIO_0
 10K 1/16W 2 R8813
 GPIO 0 = TRANSMITTER POWER SAVINGS ENABLE
 INTERNAL PULL DOWN, ATI RECOMMENDS HIGH

91 GPU_GPIO_1
 10K 1/16W 2 R8802
 GPIO 1 = TRANSMITTER DE-EMPHASIS ENABLE
 INTERNAL PULL DOWN, ATI RECOMMENDS HIGH

91 GPU_GPIO_2
 NOSTUFE 2 R8803
 10K 1/16W 2 R8804

91 GPU_GPIO_3
 NOSTUFE 2 R8804
 10K 1/16W 2 R8805

91 GPU_GPIO_4
 NOSTUFE 2 R8805
 GPIO 4 = DEBUG SIGNALS OUT

91 GPU_GPIO_5
 10K 1/16W 2 R8806

91 GPU_GPIO_6
 NOSTUFE 2 R8807
 10K 1/16W 2 R8808

TP_GPU_GPIO_7
 MAKE_BASE=TRUE
 91 GPU_GPIO_7

91 GPU_GPIO_8
 NOSTUFE 2 R8808
 10K 1/16W 2 R8809

NC_GPU_GPIO_10
 MAKE_BASE=TRUE
 91 GPU_GPIO_10

91 GPU_GPIO_9
 NOSTUFE 2 R8809
 10K 1/16W 2 R8812

91 GPU_GPIO_13
 NOSTUFE 2 R8812
 ATI_FB_256M

91 GPU_GPIO_12
 10K 1/16W 2 R8810
 10K 1/16W 2 R8811

91 GPU_GPIO_11
 NOSTUFE 2 R8811
 10K 1/16W 2 R8812

GPIO 9,13,12,11 = ROM ID CFG
 INTERNAL PULL DOWN
 0010 = 256 M APERATURE SIZE

91 GPU_GPIO_24
 ATI_FB_256M
 10K 1/16W 2 R8830

91 GPU_GPIO_27
 ATI_FB_HYNIX
 10K 1/16W 2 R8831

91 GPU_GPIO_28
 10K 1/16W 2 R8832
 10K 1/16W 2 R8833

91 GPU_GPIO_29
 TMD5_PANEL
 10K 1/16W 2 R8833

85 GPU_VCORE_LOW
 MAKE_BASE=TRUE
 10K 1/16W 2 R8850
 GPIO 15 = SWITCH CORE VOLTAGE HIGH TO LOW
 EXTERNAL PULL DOWN RECOMMENDED

=PP3V3_S0_GPU_VDDR3 88 91

TP_GPU_GPIO_14 GPU_GPIO_14 91

MAKE_BASE=TRUE

TP_GPU_GPIO_17 GPU_GPIO_17 91

MAKE_BASE=TRUE

TP_GPU_VGA_R GPU_VGA_R 91

MAKE_BASE=TRUE

TP_GPU_VGA_G GPU_VGA_G 91

MAKE_BASE=TRUE

TP_GPU_VGA_B GPU_VGA_B 91

MAKE_BASE=TRUE

TP_GPU_VGA_HSYNC GPU_VGA_HSYNC 91

MAKE_BASE=TRUE

TP_GPU_VGA_VSYNC GPU_VGA_VSYNC 91

MAKE_BASE=TRUE

TP_GPU_TV_Y GPU_TV_Y 91

MAKE_BASE=TRUE

TP_GPU_TV_COMP GPU_TV_COMP 91

MAKE_BASE=TRUE

TP_GPU_TV_C GPU_TV_C 91

MAKE_BASE=TRUE

TP_GPU_DDC_B_CLK GPU_DDC_B_CLK 91

MAKE_BASE=TRUE

TP_GPU_DDC_B_DATA GPU_DDC_B_DATA 91

MAKE_BASE=TRUE

GPU MISC

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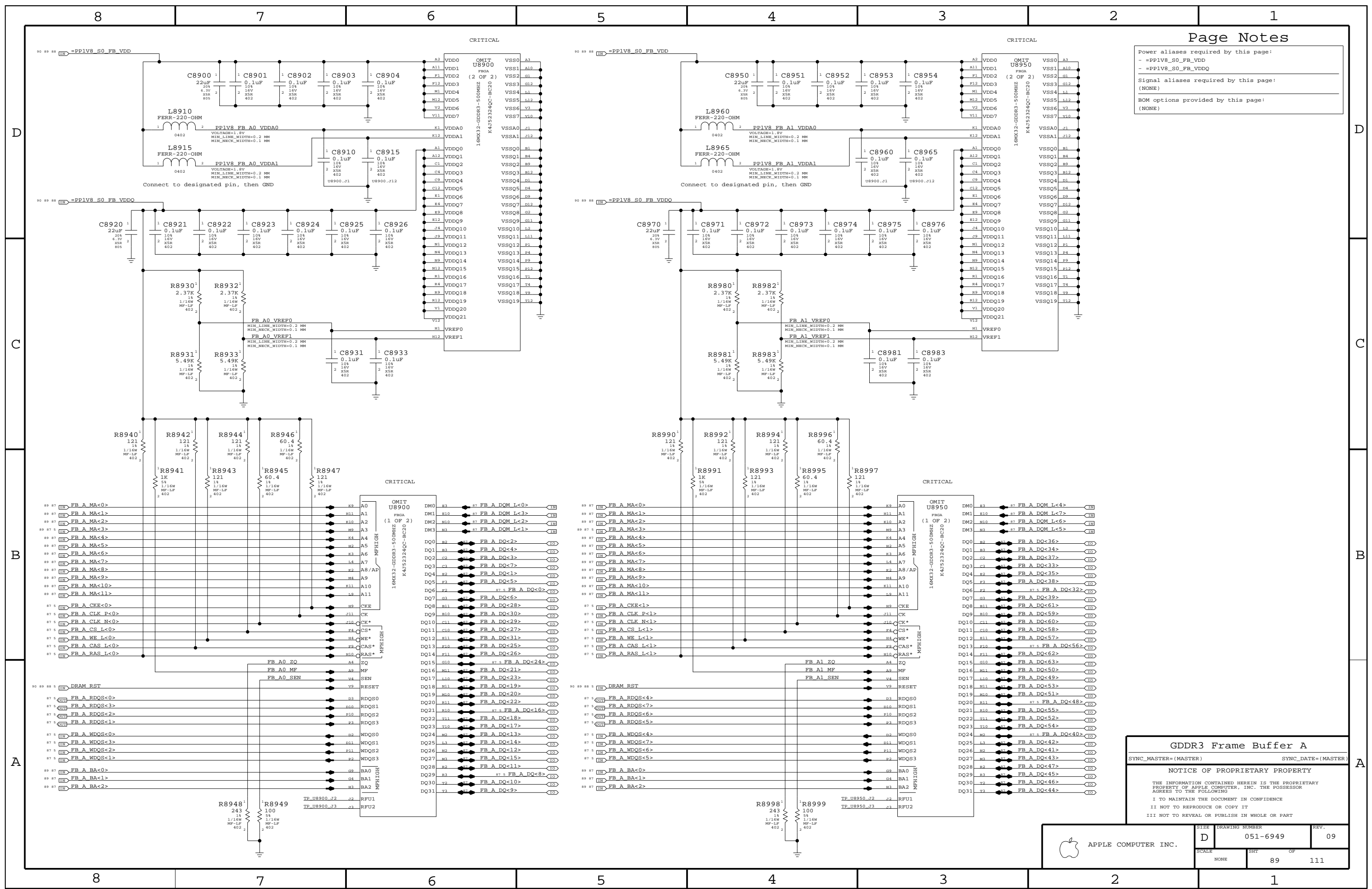
2

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Power aliases required by this page:
 - =PPIV8_S0_FB_VDD
 - =PPIV8_S0_FB_VDDQ

Signal aliases required by this page:
 (NONE)

BOM options provided by this page:
 (NONE)



GDDR3 Frame Buffer A

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

NOTICE OF PROPRIETARY PROPERTY

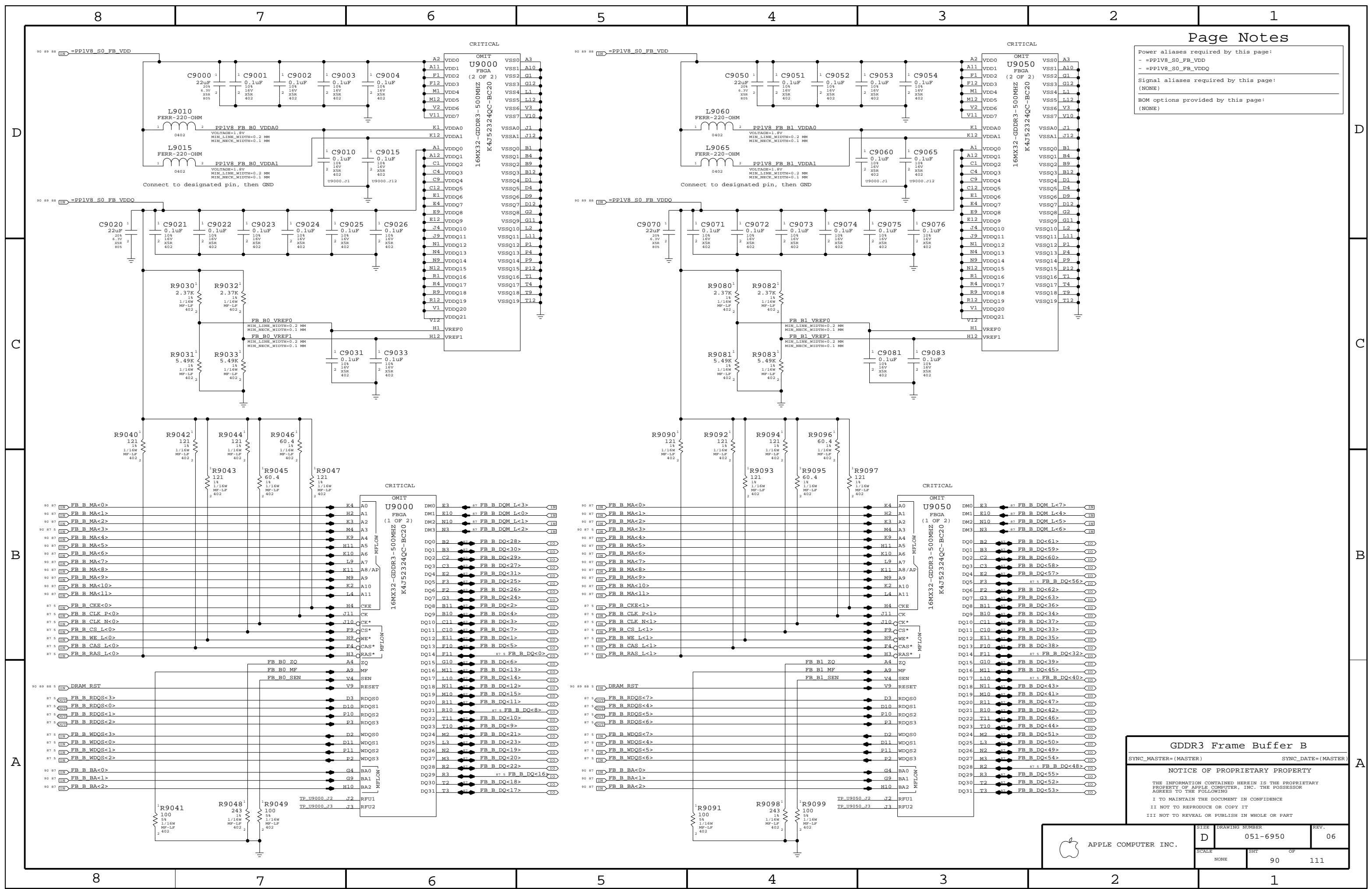
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Power aliases required by this page:
 - =PPIV8_S0_FB_VDD
 - =PPIV8_S0_FB_VDDQ

Signal aliases required by this page:
 (NONE)

BOM options provided by this page:
 (NONE)



GDDR3 Frame Buffer B
 SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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Page Notes

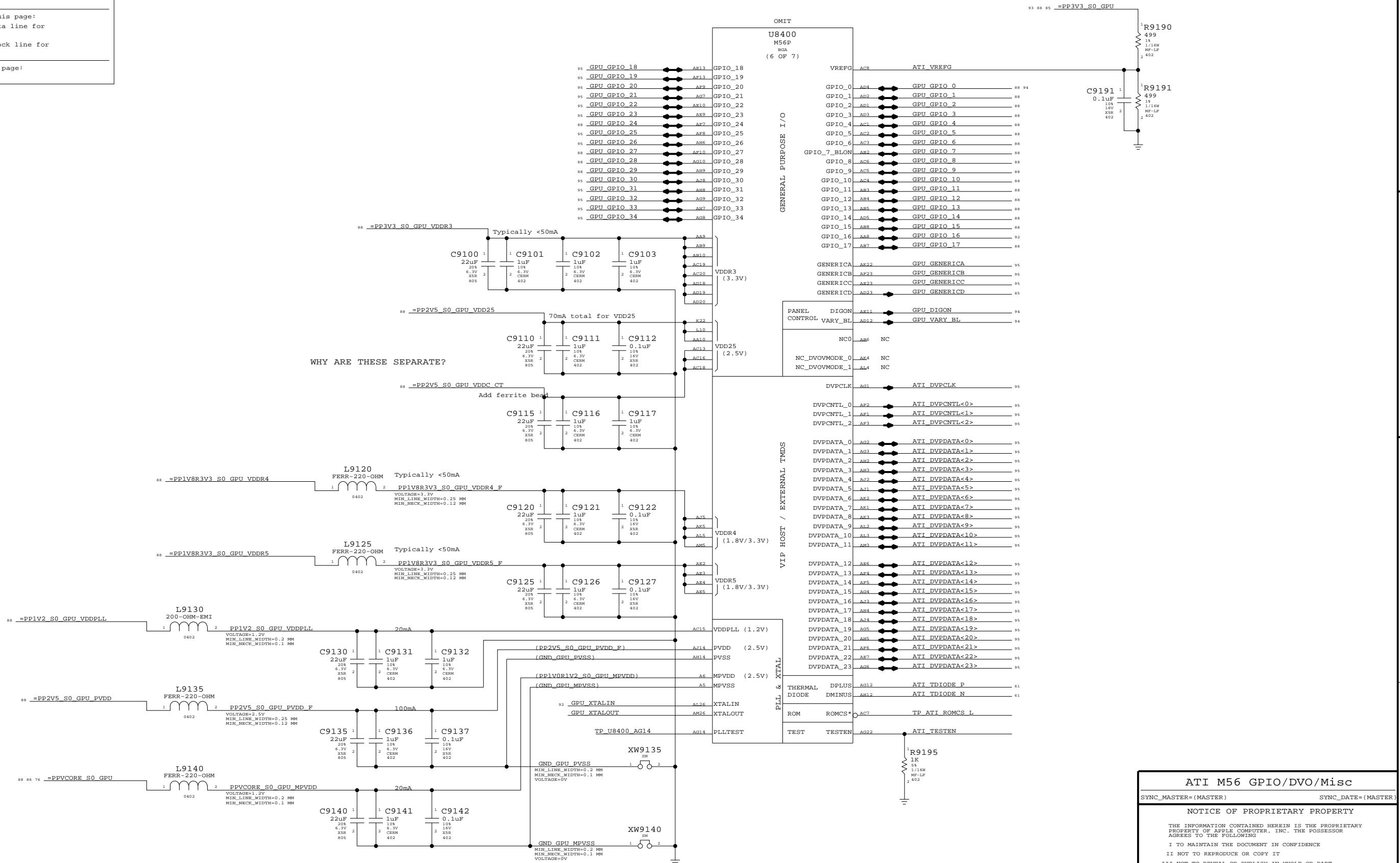
Power aliases required by this page:

- =PP3V3_GPU_GPIOS
- =PP2V5_PVDD
- =PP1V8_GPU_LVDS_PLL

Signal aliases required by this page:

- =I2C_GPU_TMDS_SDA - I2C data line for external TMDS transmitters
- =I2C_GPU_TMDS_SCL - I2C clock line for external TMDS transmitters

BOM options provided by this page:
(NONE)



ATI M56 GPIO/DVO/Misc

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

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| APPLE COMPUTER INC. | SIZE D | DRAWING NUMBER 051-6949 | REV. 09 |
| | SCALE NONE | SHEET 91 | OF 111 |

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Page Notes

Power aliases required by this page:

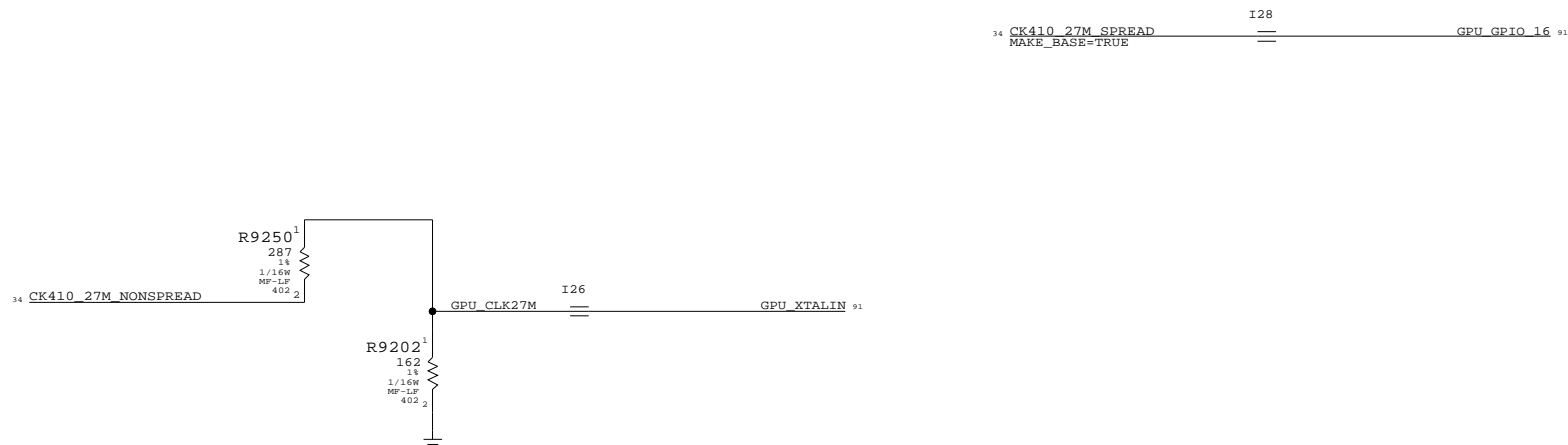
- =PP3V3_GPU_CLOCKS - =PP3V3_GPU_PWRSEQ
- =PPVIN_GPU_LVDDR_LDO - =PP2V5_GPU_PWRSEQ
- =PP2V5_GPU_LVDDR_LDO - =PP1V8_GPU_PWRSEQ
- =PP1V5_GPU_PWRSEQ

Signal aliases required by this page:

(NONE)

BOM options provided by this page:

- GPU_SS - GPU_LVDDR_2V8



| | |
|--|----------------------|
| GPU CLOCKS | |
| SYNC_MASTER=BOZEMAN | SYNC_DATE=05/21/2005 |
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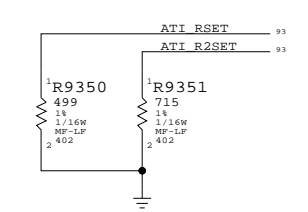
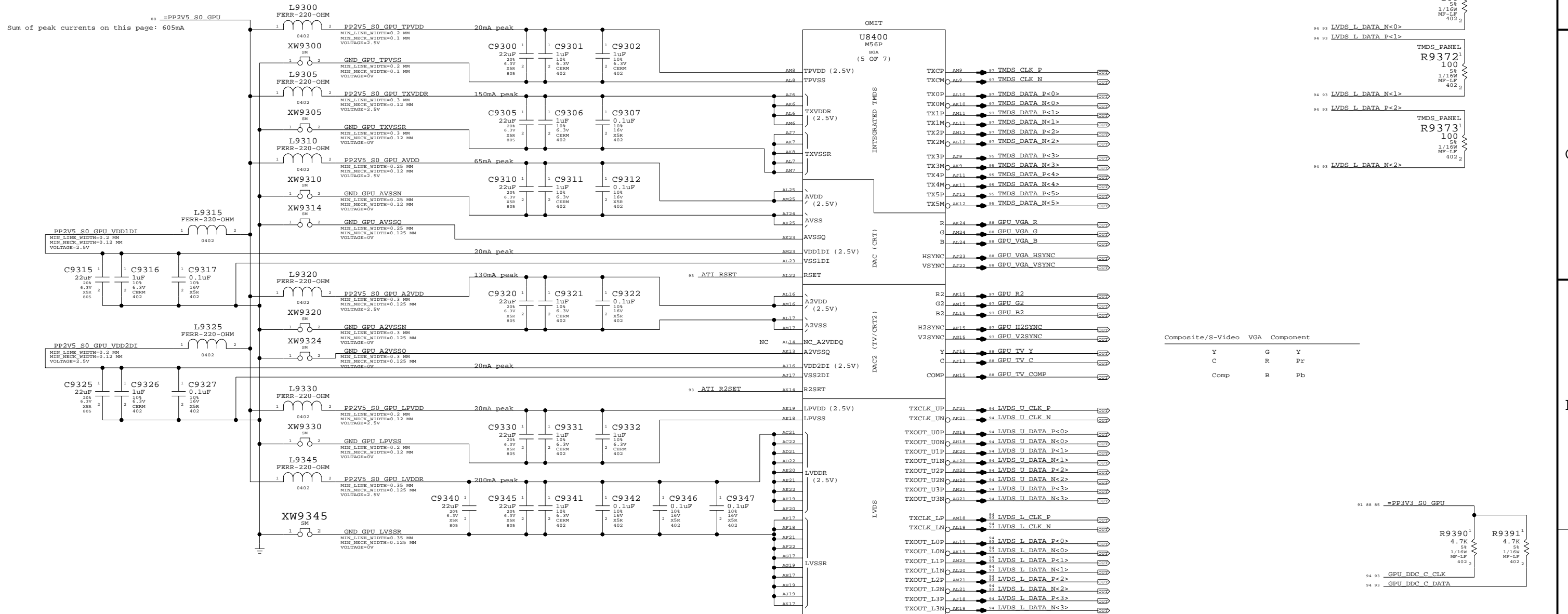
Page Notes

Power aliases required by this page:
 - =PP2V5_S0_GPU
 - =PP1V8R2V5_S0_GPU_LVDDR

Signal aliases required by this page:
 (NONE)

BOM options provided by this page:
 (NONE)

TERMINATION FOR TMDS USAGE OF LVDS PINS
 PLACE CLOSE TO GPU (U8400)



ATI M56 Video Interfaces

SYNC_MASTER=(MASTER) SYNC_DATE=(MASTER)

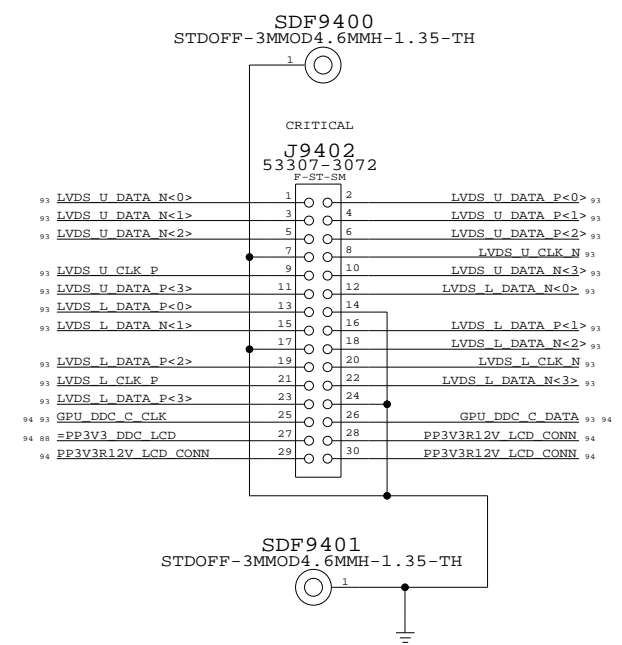
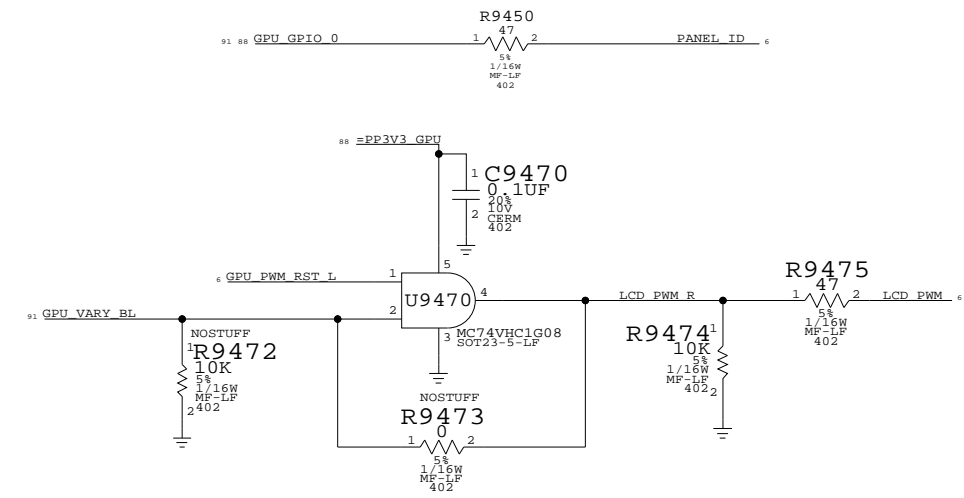
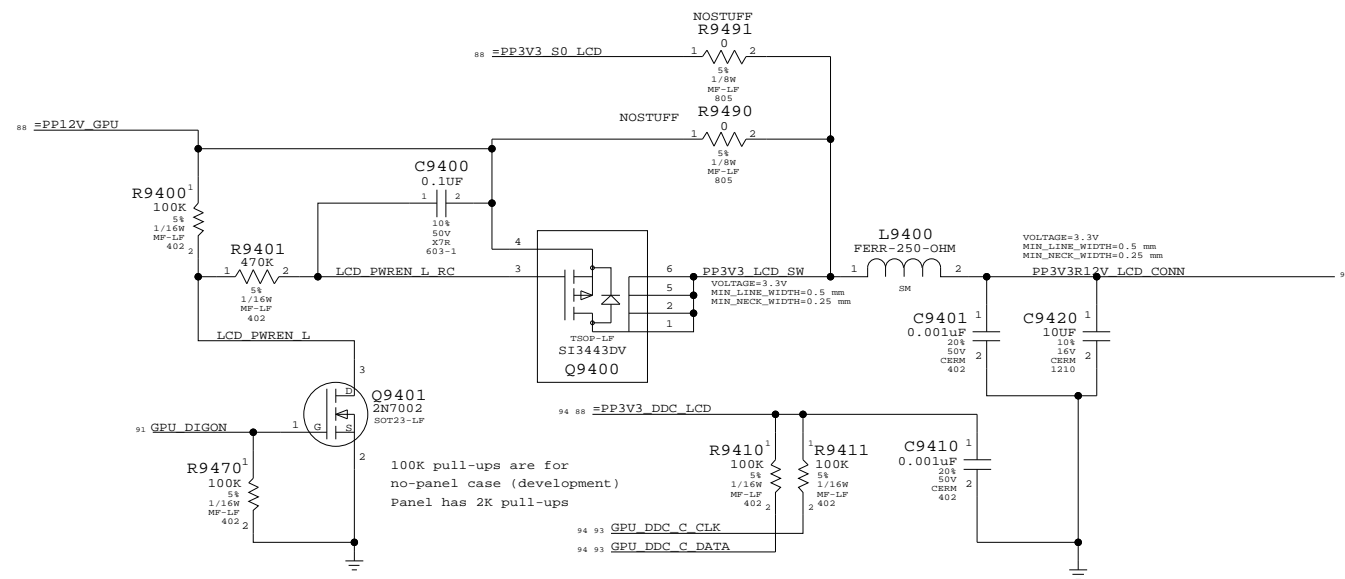
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| | NONE | 051-6949 | 09 |
| | SHT | OF | |
| | 93 | 111 | |

LCD (LVDS) INTERFACE

INVERTER INTERFACE



Internal Display Conns
 SYNC_MASTER=BOZEMAN SYNC_DATE=04/27/2005
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| SCALE | SHT | | OF |
| NONE | 94 | | 111 |

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TP GPU GPIO<19> == GPU_GPIO_19 91
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 MAKE_BASE=TRUE

TP GPU GENERIC C == GPU_GENERIC C 91
 MAKE_BASE=TRUE

C

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M56 TPS


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| NONE | 95 | | 111 |

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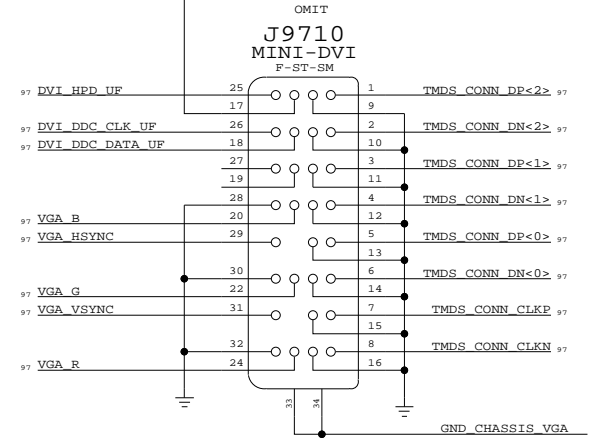
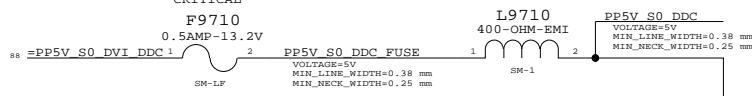
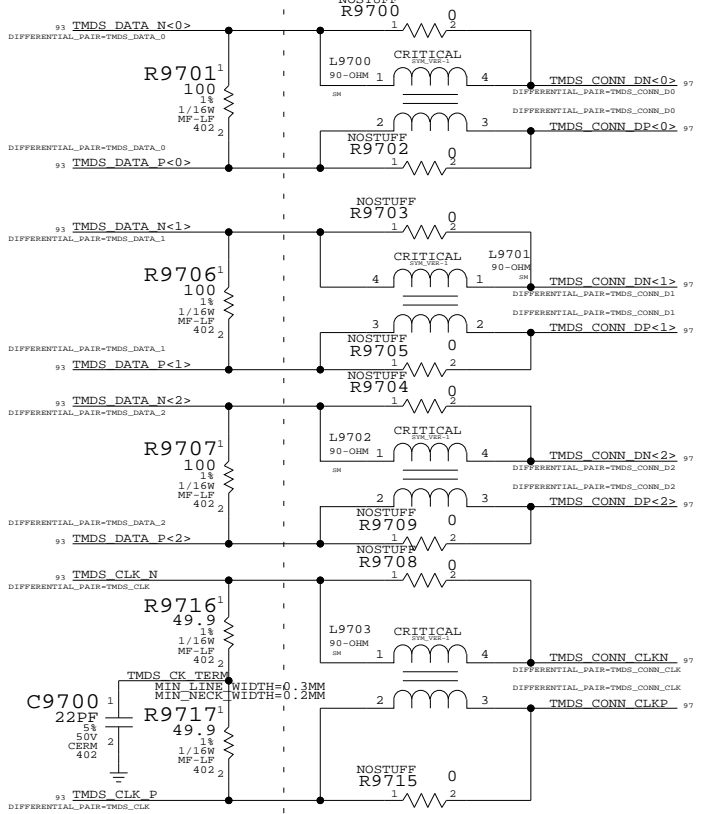
1

PLACE LEFT SIDE
AS CLOSE TO GPU (U8400)
AS POSSIBLE

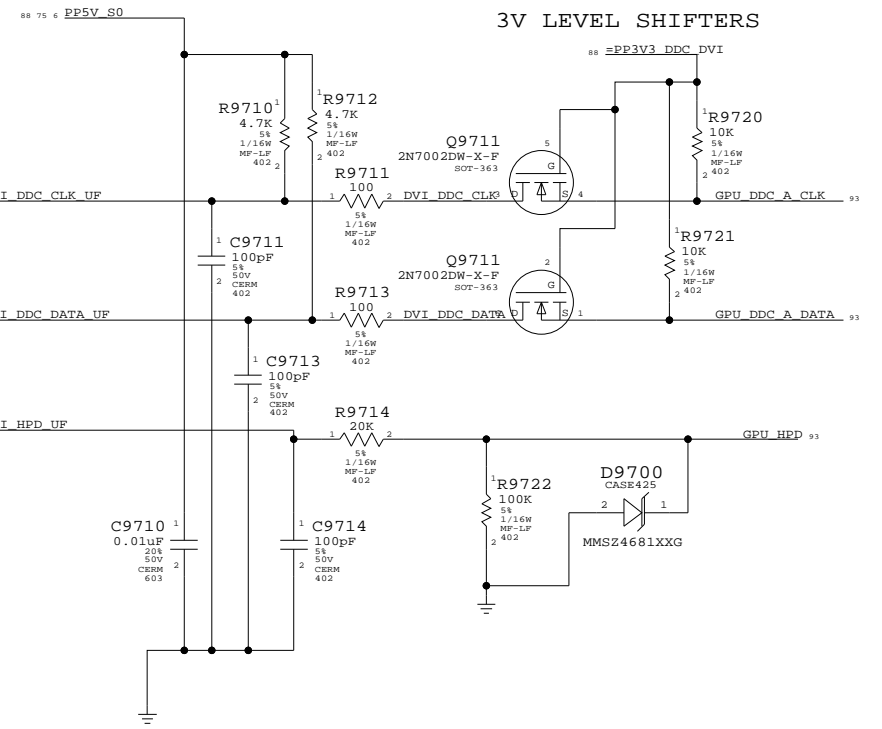
PLACE FILTER CLOSE
TO TMD5 CONNECTOR

DVI DDC CURRENT LIMIT DVI INTERFACE

(55mA requirement per DVI spec)

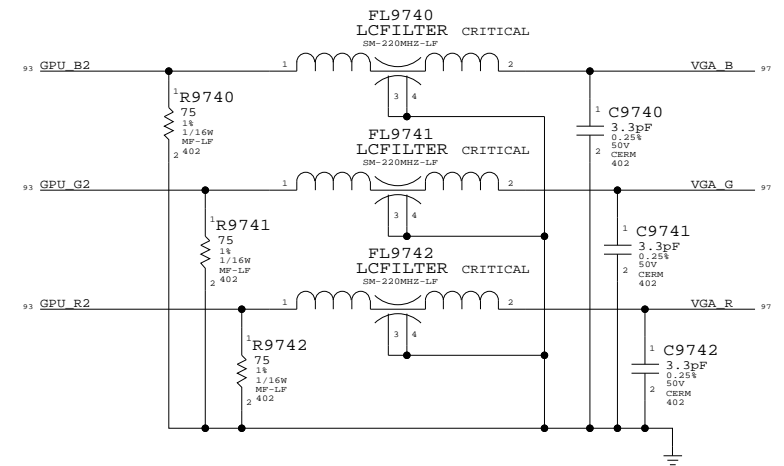


| PART# | QTY | DESCRIPTION | REFERENCE DESIGNATOR(S) | CRITICAL | BOM OPTION |
|----------|-----|---------------------------------|-------------------------|----------|-------------|
| 51480114 | 1 | CONN, 32-P MINI-DVI RCPT MG3,LF | J9710 | CRITICAL | 17_INCH_LCD |
| 51480116 | 1 | CONN, 32-P MINI-DVI RCPT MG3,LF | J9710 | CRITICAL | 20_INCH_LCD |

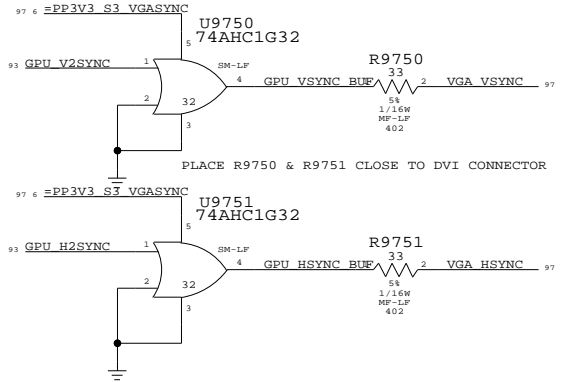


ANALOG FILTERING

PLACE CLOSE TO CONNECTOR



VGA SYNC BUFFERS



External Display Conns
 SYNC_MASTER=BOZEMAN SYNC_DATE=04/14/2005
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Table with 8 columns (labeled 8-1) and 4 rows (labeled A-D). Column 8 contains a Basenet Report header and a list of Basenet signals and their locations. Columns 7-5 contain lists of signals and their locations for various components like GPU, GPU_VDD, GPU_VDD2, GPU_VDD3, GPU_VDD4, GPU_VDD5, GPU_VDD6, GPU_VDD7, GPU_VDD8, GPU_VDD9, GPU_VDD10, GPU_VDD11, GPU_VDD12, GPU_VDD13, GPU_VDD14, GPU_VDD15, GPU_VDD16, GPU_VDD17, GPU_VDD18, GPU_VDD19, GPU_VDD20, GPU_VDD21, GPU_VDD22, GPU_VDD23, GPU_VDD24, GPU_VDD25, GPU_VDD26, GPU_VDD27, GPU_VDD28, GPU_VDD29, GPU_VDD30, GPU_VDD31, GPU_VDD32, GPU_VDD33, GPU_VDD34, GPU_VDD35, GPU_VDD36, GPU_VDD37, GPU_VDD38, GPU_VDD39, GPU_VDD40, GPU_VDD41, GPU_VDD42, GPU_VDD43, GPU_VDD44, GPU_VDD45, GPU_VDD46, GPU_VDD47, GPU_VDD48, GPU_VDD49, GPU_VDD50, GPU_VDD51, GPU_VDD52, GPU_VDD53, GPU_VDD54, GPU_VDD55, GPU_VDD56, GPU_VDD57, GPU_VDD58, GPU_VDD59, GPU_VDD60, GPU_VDD61, GPU_VDD62, GPU_VDD63, GPU_VDD64, GPU_VDD65, GPU_VDD66, GPU_VDD67, GPU_VDD68, GPU_VDD69, GPU_VDD70, GPU_VDD71, GPU_VDD72, GPU_VDD73, GPU_VDD74, GPU_VDD75, GPU_VDD76, GPU_VDD77, GPU_VDD78, GPU_VDD79, GPU_VDD80, GPU_VDD81, GPU_VDD82, GPU_VDD83, GPU_VDD84, GPU_VDD85, GPU_VDD86, GPU_VDD87, GPU_VDD88, GPU_VDD89, GPU_VDD90, GPU_VDD91, GPU_VDD92, GPU_VDD93, GPU_VDD94, GPU_VDD95, GPU_VDD96, GPU_VDD97, GPU_VDD98, GPU_VDD99, GPU_VDD100. Column 4 contains a list of signals and their locations for various components like GPU_VDD101, GPU_VDD102, GPU_VDD103, GPU_VDD104, GPU_VDD105, GPU_VDD106, GPU_VDD107, GPU_VDD108, GPU_VDD109, GPU_VDD110, GPU_VDD111, GPU_VDD112, GPU_VDD113, GPU_VDD114, GPU_VDD115, GPU_VDD116, GPU_VDD117, GPU_VDD118, GPU_VDD119, GPU_VDD120, GPU_VDD121, GPU_VDD122, GPU_VDD123, GPU_VDD124, GPU_VDD125, GPU_VDD126, GPU_VDD127, GPU_VDD128, GPU_VDD129, GPU_VDD130, GPU_VDD131, GPU_VDD132, GPU_VDD133, GPU_VDD134, GPU_VDD135, GPU_VDD136, GPU_VDD137, GPU_VDD138, GPU_VDD139, GPU_VDD140, GPU_VDD141, GPU_VDD142, GPU_VDD143, GPU_VDD144, GPU_VDD145, GPU_VDD146, GPU_VDD147, GPU_VDD148, GPU_VDD149, GPU_VDD150, GPU_VDD151, GPU_VDD152, GPU_VDD153, GPU_VDD154, GPU_VDD155, GPU_VDD156, GPU_VDD157, GPU_VDD158, GPU_VDD159, GPU_VDD160, GPU_VDD161, GPU_VDD162, GPU_VDD163, GPU_VDD164, GPU_VDD165, GPU_VDD166, GPU_VDD167, GPU_VDD168, GPU_VDD169, GPU_VDD170, GPU_VDD171, GPU_VDD172, GPU_VDD173, GPU_VDD174, GPU_VDD175, GPU_VDD176, GPU_VDD177, GPU_VDD178, GPU_VDD179, GPU_VDD180, GPU_VDD181, GPU_VDD182, GPU_VDD183, GPU_VDD184, GPU_VDD185, GPU_VDD186, GPU_VDD187, GPU_VDD188, GPU_VDD189, GPU_VDD190, GPU_VDD191, GPU_VDD192, GPU_VDD193, GPU_VDD194, GPU_VDD195, GPU_VDD196, GPU_VDD197, GPU_VDD198, GPU_VDD199, GPU_VDD200. Column 3 contains a list of signals and their locations for various components like GPU_VDD201, GPU_VDD202, GPU_VDD203, GPU_VDD204, GPU_VDD205, GPU_VDD206, GPU_VDD207, GPU_VDD208, GPU_VDD209, GPU_VDD210, GPU_VDD211, GPU_VDD212, GPU_VDD213, GPU_VDD214, GPU_VDD215, GPU_VDD216, GPU_VDD217, GPU_VDD218, GPU_VDD219, GPU_VDD220, GPU_VDD221, GPU_VDD222, GPU_VDD223, GPU_VDD224, GPU_VDD225, GPU_VDD226, GPU_VDD227, GPU_VDD228, GPU_VDD229, GPU_VDD230, GPU_VDD231, GPU_VDD232, GPU_VDD233, GPU_VDD234, GPU_VDD235, GPU_VDD236, GPU_VDD237, GPU_VDD238, GPU_VDD239, GPU_VDD240, GPU_VDD241, GPU_VDD242, GPU_VDD243, GPU_VDD244, GPU_VDD245, GPU_VDD246, GPU_VDD247, GPU_VDD248, GPU_VDD249, GPU_VDD250, GPU_VDD251, GPU_VDD252, GPU_VDD253, GPU_VDD254, GPU_VDD255, GPU_VDD256, GPU_VDD257, GPU_VDD258, GPU_VDD259, GPU_VDD260, GPU_VDD261, GPU_VDD262, GPU_VDD263, GPU_VDD264, GPU_VDD265, GPU_VDD266, GPU_VDD267, GPU_VDD268, GPU_VDD269, GPU_VDD270, GPU_VDD271, GPU_VDD272, GPU_VDD273, GPU_VDD274, GPU_VDD275, GPU_VDD276, GPU_VDD277, GPU_VDD278, GPU_VDD279, GPU_VDD280, GPU_VDD281, GPU_VDD282, GPU_VDD283, GPU_VDD284, GPU_VDD285, GPU_VDD286, GPU_VDD287, GPU_VDD288, GPU_VDD289, GPU_VDD290, GPU_VDD291, GPU_VDD292, GPU_VDD293, GPU_VDD294, GPU_VDD295, GPU_VDD296, GPU_VDD297, GPU_VDD298, GPU_VDD299, GPU_VDD300. Column 2 contains a list of signals and their locations for various components like GPU_VDD301, GPU_VDD302, GPU_VDD303, GPU_VDD304, GPU_VDD305, GPU_VDD306, GPU_VDD307, GPU_VDD308, GPU_VDD309, GPU_VDD310, GPU_VDD311, GPU_VDD312, GPU_VDD313, GPU_VDD314, GPU_VDD315, GPU_VDD316, GPU_VDD317, GPU_VDD318, GPU_VDD319, GPU_VDD320, GPU_VDD321, GPU_VDD322, GPU_VDD323, GPU_VDD324, GPU_VDD325, GPU_VDD326, GPU_VDD327, GPU_VDD328, GPU_VDD329, GPU_VDD330, GPU_VDD331, GPU_VDD332, GPU_VDD333, GPU_VDD334, GPU_VDD335, GPU_VDD336, GPU_VDD337, GPU_VDD338, GPU_VDD339, GPU_VDD340, GPU_VDD341, GPU_VDD342, GPU_VDD343, GPU_VDD344, GPU_VDD345, GPU_VDD346, GPU_VDD347, GPU_VDD348, GPU_VDD349, GPU_VDD350, GPU_VDD351, GPU_VDD352, GPU_VDD353, GPU_VDD354, GPU_VDD355, GPU_VDD356, GPU_VDD357, GPU_VDD358, GPU_VDD359, GPU_VDD360, GPU_VDD361, GPU_VDD362, GPU_VDD363, GPU_VDD364, GPU_VDD365, GPU_VDD366, GPU_VDD367, GPU_VDD368, GPU_VDD369, GPU_VDD370, GPU_VDD371, GPU_VDD372, GPU_VDD373, GPU_VDD374, GPU_VDD375, GPU_VDD376, GPU_VDD377, GPU_VDD378, GPU_VDD379, GPU_VDD380, GPU_VDD381, GPU_VDD382, GPU_VDD383, GPU_VDD384, GPU_VDD385, GPU_VDD386, GPU_VDD387, GPU_VDD388, GPU_VDD389, GPU_VDD390, GPU_VDD391, GPU_VDD392, GPU_VDD393, GPU_VDD394, GPU_VDD395, GPU_VDD396, GPU_VDD397, GPU_VDD398, GPU_VDD399, GPU_VDD400. Column 1 contains a list of signals and their locations for various components like GPU_VDD401, GPU_VDD402, GPU_VDD403, GPU_VDD404, GPU_VDD405, GPU_VDD406, GPU_VDD407, GPU_VDD408, GPU_VDD409, GPU_VDD410, GPU_VDD411, GPU_VDD412, GPU_VDD413, GPU_VDD414, GPU_VDD415, GPU_VDD416, GPU_VDD417, GPU_VDD418, GPU_VDD419, GPU_VDD420, GPU_VDD421, GPU_VDD422, GPU_VDD423, GPU_VDD424, GPU_VDD425, GPU_VDD426, GPU_VDD427, GPU_VDD428, GPU_VDD429, GPU_VDD430, GPU_VDD431, GPU_VDD432, GPU_VDD433, GPU_VDD434, GPU_VDD435, GPU_VDD436, GPU_VDD437, GPU_VDD438, GPU_VDD439, GPU_VDD440, GPU_VDD441, GPU_VDD442, GPU_VDD443, GPU_VDD444, GPU_VDD445, GPU_VDD446, GPU_VDD447, GPU_VDD448, GPU_VDD449, GPU_VDD450, GPU_VDD451, GPU_VDD452, GPU_VDD453, GPU_VDD454, GPU_VDD455, GPU_VDD456, GPU_VDD457, GPU_VDD458, GPU_VDD459, GPU_VDD460, GPU_VDD461, GPU_VDD462, GPU_VDD463, GPU_VDD464, GPU_VDD465, GPU_VDD466, GPU_VDD467, GPU_VDD468, GPU_VDD469, GPU_VDD470, GPU_VDD471, GPU_VDD472, GPU_VDD473, GPU_VDD474, GPU_VDD475, GPU_VDD476, GPU_VDD477, GPU_VDD478, GPU_VDD479, GPU_VDD480, GPU_VDD481, GPU_VDD482, GPU_VDD483, GPU_VDD484, GPU_VDD485, GPU_VDD486, GPU_VDD487, GPU_VDD488, GPU_VDD489, GPU_VDD490, GPU_VDD491, GPU_VDD492, GPU_VDD493, GPU_VDD494, GPU_VDD495, GPU_VDD496, GPU_VDD497, GPU_VDD498, GPU_VDD499, GPU_VDD500.

D

C

B

A

D

C

B

A

Table with 8 columns and 1 row, containing a grid of identifiers and values. The grid is divided into sections labeled A, B, C, and D. Each cell contains a unique identifier followed by a numerical value.

A

B

C

D

A

B

C

D

Table with 8 columns (labeled 8 to 1) and multiple rows of data. Each row contains a unique part number and a corresponding description. The table is organized into a grid with alphanumeric labels (A, B, C, D) along the top and bottom edges.

D
C
B
A

D
C
B
A

| | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | | | | |
|---|-------|----------------------|----------------|-------|---------|-----------|-------|---------|-----------|-------|---------|-----------|
| D | Q8301 | TRA_IRF7413_SO-8 | m39[83B4] | R2306 | RES_402 | m39[23B7] | R3454 | RES_402 | m39[34B7] | R5818 | RES_402 | m39[58B3] |
| | Q8302 | TRA_2N7002DW_SOT-363 | m39[83B5] | R2307 | RES_402 | m39[23A7] | R3455 | RES_402 | m39[34B8] | R5819 | RES_402 | m39[58B3] |
| | Q8303 | TRA_2N7002DW_SOT-363 | m39[83C5] | R2308 | RES_402 | m39[23B7] | R3456 | RES_402 | m39[34B7] | R5821 | RES_402 | m39[58B3] |
| | Q8520 | TRA_HAT2168H_LFFPAK | m39[85D4] | R2309 | RES_402 | m39[23A7] | R3457 | RES_402 | m39[34B7] | R5822 | RES_402 | m39[58B3] |
| | Q8521 | TRA_HAT2165H_LFFPAK | m39[85C4] | R2310 | RES_402 | m39[23A7] | R3458 | RES_402 | m39[34B8] | R5823 | RES_402 | m39[58B3] |
| | Q8522 | TRA_HAT2165H_LFFPAK | m39[85C5] | R2311 | RES_402 | m39[23A7] | R3459 | RES_402 | m39[34A7] | R5824 | RES_402 | m39[58B3] |
| | Q8523 | TRA_2N7002DW_SOT-363 | m39[85B3 85B2] | R2313 | RES_402 | m39[23A7] | R3460 | RES_402 | m39[34A7] | R5825 | RES_402 | m39[58B3] |
| | Q8554 | TRA_2N7002_SOT23-LF | m39[85A8] | R2314 | RES_402 | m39[23A7] | R3461 | RES_402 | m39[34A7] | R5826 | RES_402 | m39[58B3] |
| | Q8570 | TRA_2N7002_SOT23-LF | m39[85A5] | R2316 | RES_402 | m39[23D7] | R3462 | RES_402 | m39[34A8] | R5827 | RES_402 | m39[58B3] |
| | Q8575 | TRA_FDC796N_SUPERSOT | m39[85B6] | R2317 | RES_402 | m39[23D7] | R3463 | RES_402 | m39[34A7] | R5828 | RES_402 | m39[58B3] |
| C | Q8576 | TRA_FDC796N_SUPERSOT | m39[85A2] | R2318 | RES_402 | m39[23D7] | R3470 | RES_402 | m39[34A5] | R5829 | RES_402 | m39[58B3] |
| | Q9400 | TRA_SI3443DV_TSOP-LF | m39[94C7] | R2319 | RES_402 | m39[23D2] | R3471 | RES_402 | m39[34A5] | R5830 | RES_402 | m39[58B3] |
| | Q9401 | TRA_2N7002_SOT23-LF | m39[94C7] | R2320 | RES_402 | m39[23D7] | R3485 | RES_402 | m39[34D1] | R5831 | RES_402 | m39[58B3] |
| | Q9711 | TRA_2N7002DW_SOT-363 | m39[97D2 97C2] | R2323 | RES_402 | m39[23D5] | R3486 | RES_402 | m39[34D1] | R5832 | RES_402 | m39[58B3] |
| | R75A0 | RES_402 | m39[75C7] | R2326 | RES_402 | m39[23D6] | R3487 | RES_402 | m39[34D1] | R5833 | RES_402 | m39[58B3] |
| | R85A0 | RES_402 | m39[85B1] | R2327 | RES_402 | m39[23D6] | R3488 | RES_402 | m39[34D1] | R5834 | RES_402 | m39[58B3] |
| | R600 | RES_603 | m39[6A7] | R2343 | RES_402 | m39[23D1] | R3489 | RES_402 | m39[34D2] | R5835 | RES_402 | m39[58B3] |
| | R601 | RES_402 | m39[6A8] | R2388 | RES_402 | m39[23A3] | R3490 | RES_402 | m39[34D2] | R5836 | RES_402 | m39[58B3] |
| | R602 | RES_603 | m39[6A8] | R2389 | RES_402 | m39[38D5] | R3491 | RES_402 | m39[34D2] | R5837 | RES_402 | m39[58B3] |
| | R603 | RES_402 | m39[6B1] | R2390 | RES_402 | m39[23B3] | R3492 | RES_402 | m39[34D2] | R5838 | RES_402 | m39[58B3] |
| B | R605 | RES_603 | m39[6A7] | R2395 | RES_402 | m39[23D7] | R3493 | RES_402 | m39[34D7] | R5839 | RES_402 | m39[58B3] |
| | R611 | RES_402 | m39[6B7] | R2396 | RES_402 | m39[23D6] | R3494 | RES_402 | m39[34D7] | R5840 | RES_402 | m39[58B3] |
| | R612 | RES_402 | m39[6B7] | R2397 | RES_402 | m39[23D6] | R3495 | RES_402 | m39[34D7] | R5841 | RES_402 | m39[58B3] |
| | R614 | RES_402 | m39[6B7] | R2398 | RES_402 | m39[23D8] | R3496 | RES_402 | m39[34C5] | R5842 | RES_402 | m39[58B3] |
| | R615 | RES_402 | m39[6B7] | R2399 | RES_402 | m39[23C1] | R3497 | RES_402 | m39[34D4] | R5843 | RES_402 | m39[58B3] |
| | R616 | RES_402 | m39[6A7] | R2500 | RES_603 | m39[25A8] | R3498 | RES_402 | m39[34D5] | R5844 | RES_402 | m39[58B3] |
| | R617 | RES_402 | m39[6A7] | R2501 | RES_402 | m39[25C8] | R3499 | RES_402 | m39[34D5] | R5845 | RES_402 | m39[58B3] |
| | R618 | RES_402 | m39[6C7] | R2502 | RES_402 | m39[25D8] | R3824 | RES_402 | m39[38D2] | R5846 | RES_402 | m39[58B3] |
| | R619 | RES_402 | m39[6B7] | R2600 | RES_402 | m39[26C7] | R3851 | RES_402 | m39[38D3] | R5847 | RES_402 | m39[58B3] |
| | R7072 | RES_402 | m39[7D6] | R2606 | RES_402 | m39[26C7] | R3852 | RES_402 | m39[38D2] | R5848 | RES_402 | m39[58B3] |
| A | R7073 | RES_402 | m39[7C6] | R2607 | RES_402 | m39[26C8] | R3853 | RES_402 | m39[38D2] | R5849 | RES_402 | m39[58B3] |
| | R7074 | RES_402 | m39[7C5] | R2609 | RES_402 | m39[26D7] | R3857 | RES_402 | m39[38B3] | R5850 | RES_402 | m39[58B3] |
| | R7075 | RES_402 | m39[7B4] | R2611 | RES_402 | m39[26D5] | R3858 | RES_402 | m39[38B3] | R5851 | RES_402 | m39[58B3] |
| | R7076 | RES_402 | m39[7B5] | R2612 | RES_402 | m39[26D5] | R3859 | RES_402 | m39[38B2] | R5852 | RES_402 | m39[58B3] |
| | R7077 | RES_402 | m39[7A4] | R2622 | RES_402 | m39[26D4] | R3897 | RES_402 | m39[38B7] | R5853 | RES_402 | m39[58B3] |
| | R7078 | RES_402 | m39[7A3] | R2623 | RES_402 | m39[26D2] | R3899 | RES_402 | m39[38B5] | R5854 | RES_402 | m39[58B3] |
| | R7079 | RES_402 | m39[7B1] | R2624 | RES_402 | m39[26D2] | R4101 | RES_402 | m39[41D7] | R5855 | RES_402 | m39[58B3] |
| | R7080 | RES_402 | m39[7B1] | R2625 | RES_402 | m39[26D2] | R4102 | RES_402 | m39[41C7] | R5856 | RES_402 | m39[58B3] |
| | R7081 | RES_402 | m39[7B1] | R2626 | RES_402 | m39[26D2] | R4103 | RES_402 | m39[41C2] | R5857 | RES_402 | m39[58B3] |
| | R7082 | RES_402 | m39[7B1] | R2627 | RES_402 | m39[26D2] | R4104 | RES_402 | m39[41C2] | R5858 | RES_402 | m39[58B3] |

