

8

7

6

5

4

3

2

1

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
DATE

ENG APPD
DATE

G

396923

PRODUCTION RELEASED

08/26/05

?

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PCB NOTES AND HOLES

MPC7450 MAXBUS INTERFACE

MPC7450 DATA

CPU PLL AND CONFIGURATION STRAPS

INTREPID MAXBUS AND BOOT STRAPS

INTREPID MEMORY INTERFACE / BOOT ROM

DDR MEMORY MUXES

200PIN DDR MEMORY SODIMM CONNECTORS

INTREPID AGP 4X/PCI

INTREPID ENET/FW/UATA/EIDE INTERFACES

INTREPID GPIOs/SERIAL/USB INTERFACES/SSCG

INTREPID POWER RAILS

INTREPID DECOUPLING

CARDBUS CONTROLLER (PCI1510)

M11 AGP & CLOCKS

M11 LVDS/TMDS/VGA/GPIO & GPU VCORE

SIL178 DUAL TMDS TRANSMITTER

M11 ANALOG, POWER, GND

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VIDEO CONNECTORS - INVERTER, DVI, S-VIDEO DUAL-CHANNEL LVDS

LMU, LIGHT SENSOR, BOOTBANGER, SLEEP LED SPIDEY - KBD,TPAD,HALL EFFECT,PWR BUTTON

MMM, BATTERY CURRENT SENSE

INTERNAL CONNECTORS - DVD, CARDSLOT, HARD DRIVE, LEFT USB/BLEETOOTH

FAN CONTROLLER, MODEM, SOUND SERIAL DEBUG (JOLLY ROGER, PWR/NMI/RESET)

USB 2.0

MARVELL GIGABIT ETHERNET PHY

FIREWIRE A/B PHY

FIREWIRE A/B CONNECTORS, PORT POWER LIMITER

PMU (POWER MANAGEMENT UNIT)

BATTERY CHARGER AND CONNECTOR

12.8V SYSTEM POWER SUPPLY / PMU POWER SUPPLY

3.3V / 5V SYSTEM POWER SUPPLIES

CPU CORE VOLTAGE POWER SUPPLY

1.5V/ 1.8V / 2.5V SYSTEM POWER SUPPLIES

SIGNAL CONSTRAINTS (1 OF 3) - DIGITAL/CLK

SIGNAL CONSTRAINTS (2 OF 3) - DIGITAL/DIFF

SIGNAL CONSTRAINTS (3 OF 3) - POWER NETS

FUNCTIONAL TEST POINTS

REVISION HISTORY (1 OF 1)

SCHEMATIC CREF AND NETLIST REPORTS

SCHEM,MLB,PB17"

08/25/2005

BOM OPTIONS

D3_HOT

D3_COLD

GPU_SS

GPU_SWITCH

SERIAL_DEBUG

VCORE_OFFSET

1_8V_MAXBUS

1_5V_MAXBUS

NEC_USB

INTREPID_USB

BBANG

NO_BBANG

ATI_MEMIO_HI

ATI_MEMIO_LO

SSCG

NO_SSCG

5V_HD_LOGIC

3V_HD_LOGIC

EXT_TMDS

INT_TMDS

MMM

INT_CLK

EXT_CLK

STUFF

✓

✓

✓

✓

✓

✓

✓

✓

✓

✓

✓

✓

✓

✓

✓

✓

✓

✓

NO STUFF

✓

✓

✓

✓

✓

✓

✓

PART#

QTY

DESCRIPTION

REFERENCE DESIGNATOR(S)

BOM OPTION

051-6694

1

SCHEM,MLB,PB17

SCH1

820-1688

1

PCBF,MLB,PB17

PCB1

826-4393

1

LABEL,PCB,28MM X 6MM

EEE:U3Y

LABEL_R15

DIMENSIONS ARE IN MILLIMETERS

XX : _____

X.XX : _____

X.XXX : _____

ANGLES : _____

DO NOT SCALE DRAWING

THIRD ANGLE PROJECTION

METRIC

DRAFTER

ENG APPD

QA APPD

RELEASE

DESIGN CK

MFG APPD

DESIGNER

SCALE

NONE

SIZE

D

MATERIAL/FINISH

NOTED AS

APPLICABLE

Apple Computer Inc.

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TITLE

SCHEM,MLB,PB17"

DRAWING NUMBER

051-6694

REV.

G

SHT

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OF

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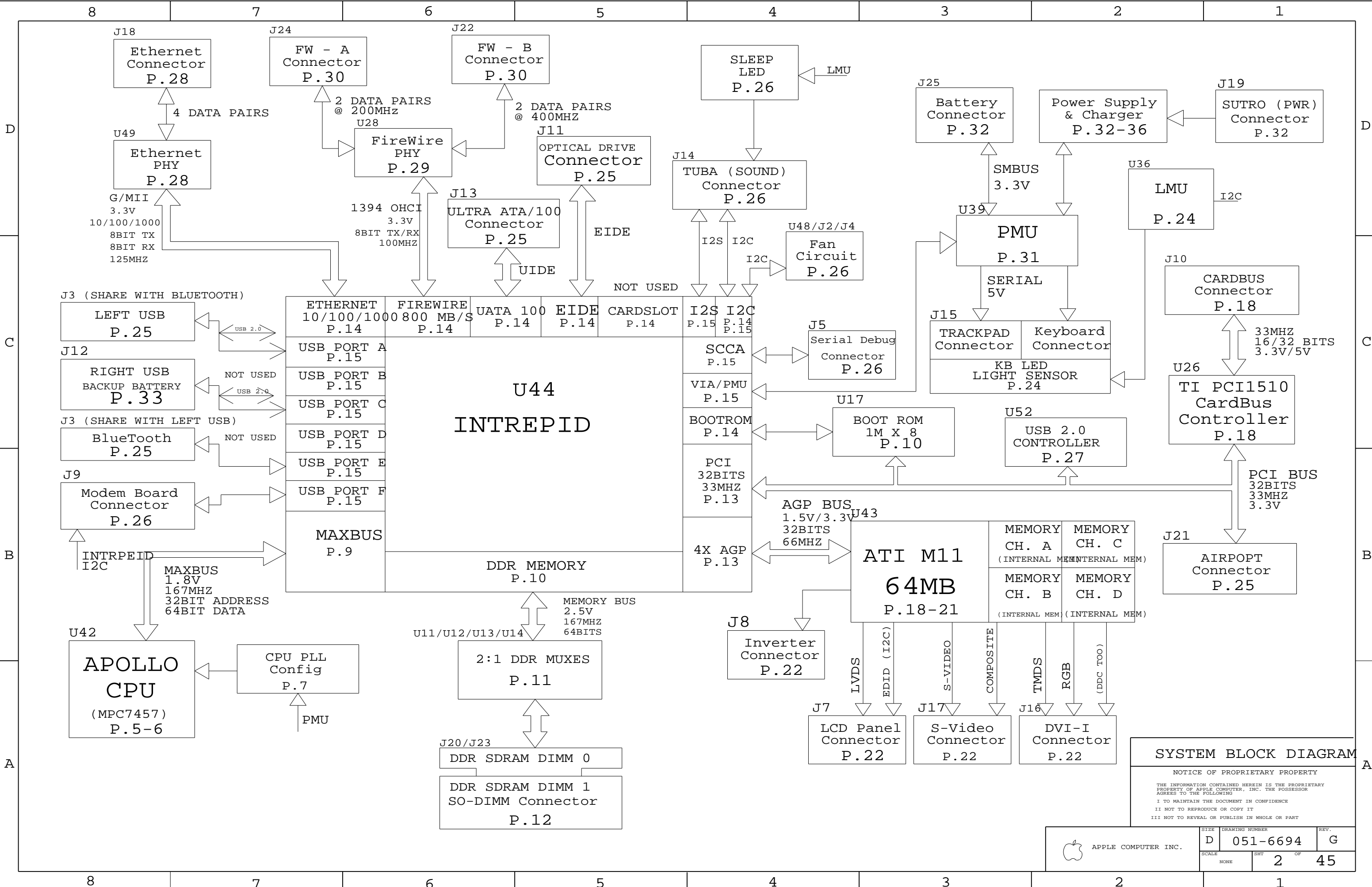
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SYSTEM BLOCK DIAGRAM

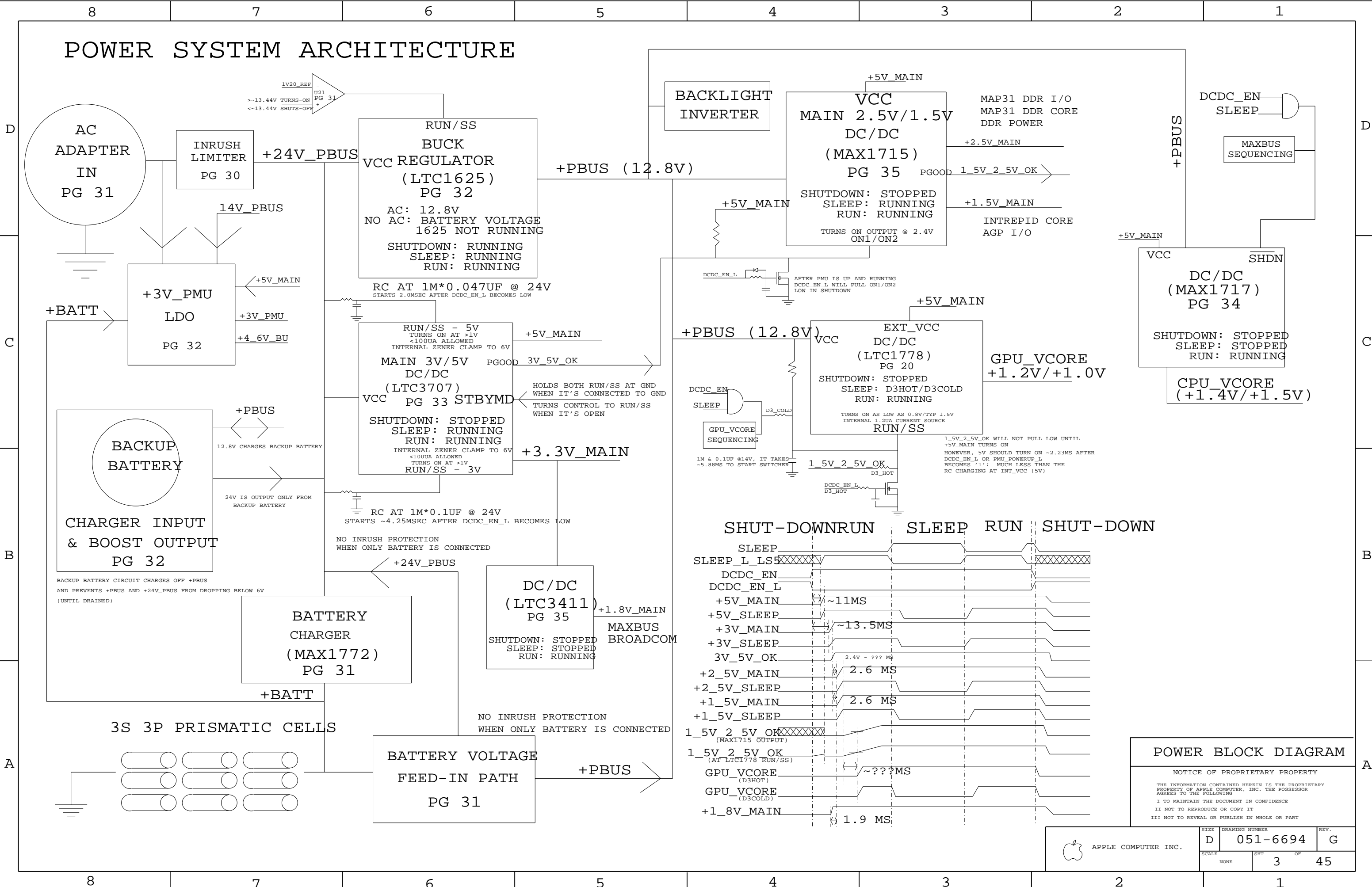
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PCB SPECS

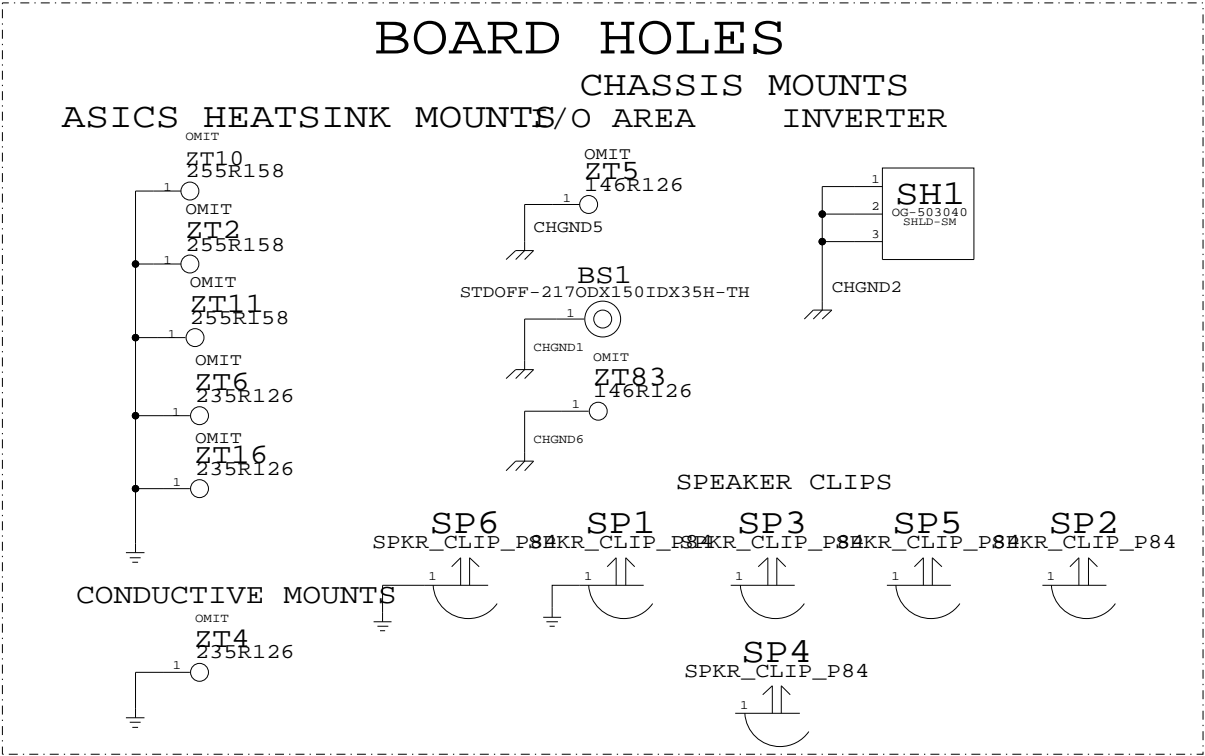
THICKNESS : 1.2 MM / 0.047 IN
1/2 OZ CU THICKNESS: 0.7 MILS
1.0 OZ CU THICKNESS: 1.4 MILS

IMPEDANCE : 50 OHMS +/- 10%
DIELECTRIC: FR-4
LAYER COUNT: 12
SIGNAL TRACE WIDTH: 4 MILS
SIGNAL TRACE SPACING: 4 MILS
PREPREG THICKNESS: 2-3 MILS

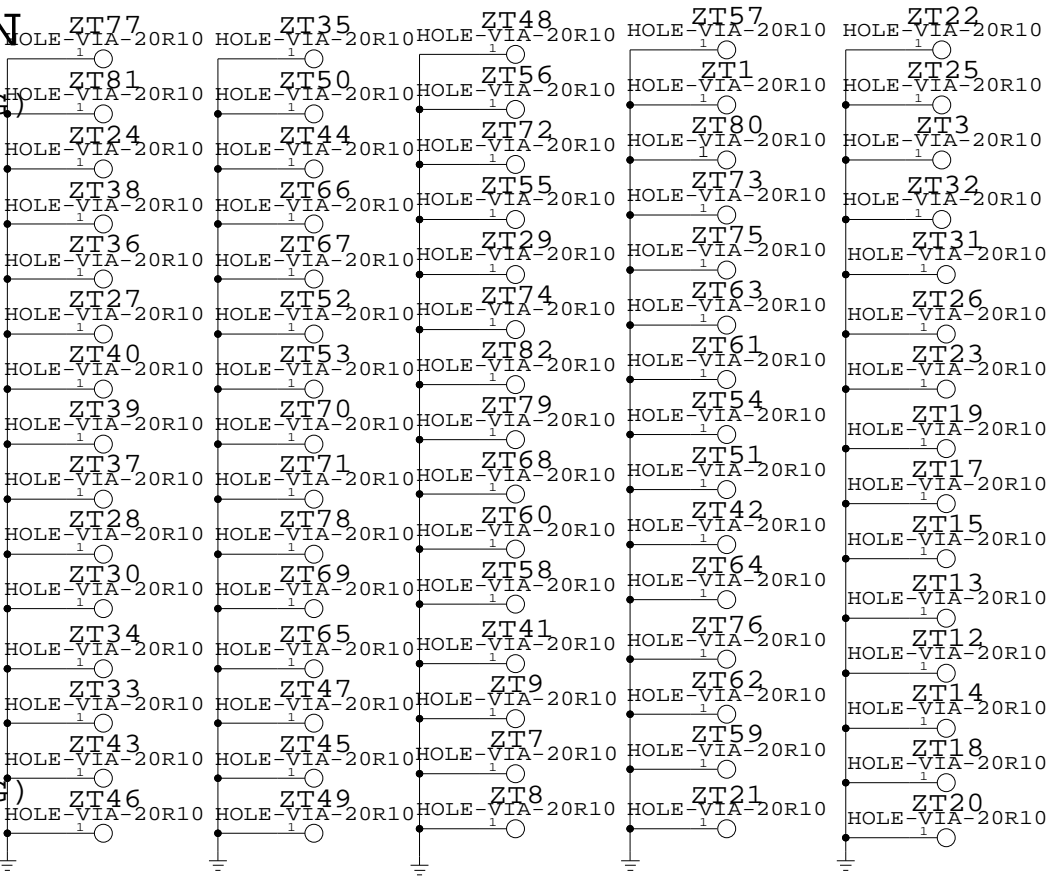
SEE PCB CAD FILES FOR MORE SPECIFIC INFO.

BOARD STACK-UP AND CONSTRUCTION

1	SIGNAL (1/3 OZ + COPPER PLATING)	
2	PREPREG (3MIL)	GROUND (1/2 OZ)
3	LAMINATE (4MIL)	SIGNAL (1/2 OZ)
4	PREPREG (3MIL)	
5	LAMINATE (4MIL)	GROUND (1/2 OZ)
6	PREPREG (2MIL)	CUT POWER PLANE(1 OZ)
7	LAMINATE (3MIL)	CUT POWER PLANE(1 OZ)
8	PREPREG (2MIL)	GROUND (1/2 OZ)
9	LAMINATE (4MIL)	SIGNAL (1/2 OZ)
10	PREPREG (3MIL)	SIGNAL (1/2 OZ)
11	LAMINATE (4MIL)	GROUND (1/2 OZ)
12	SIGNAL (1/3 OZ + COPPER PLATING)	



GROUND VIAS



BOARD INFORMATION

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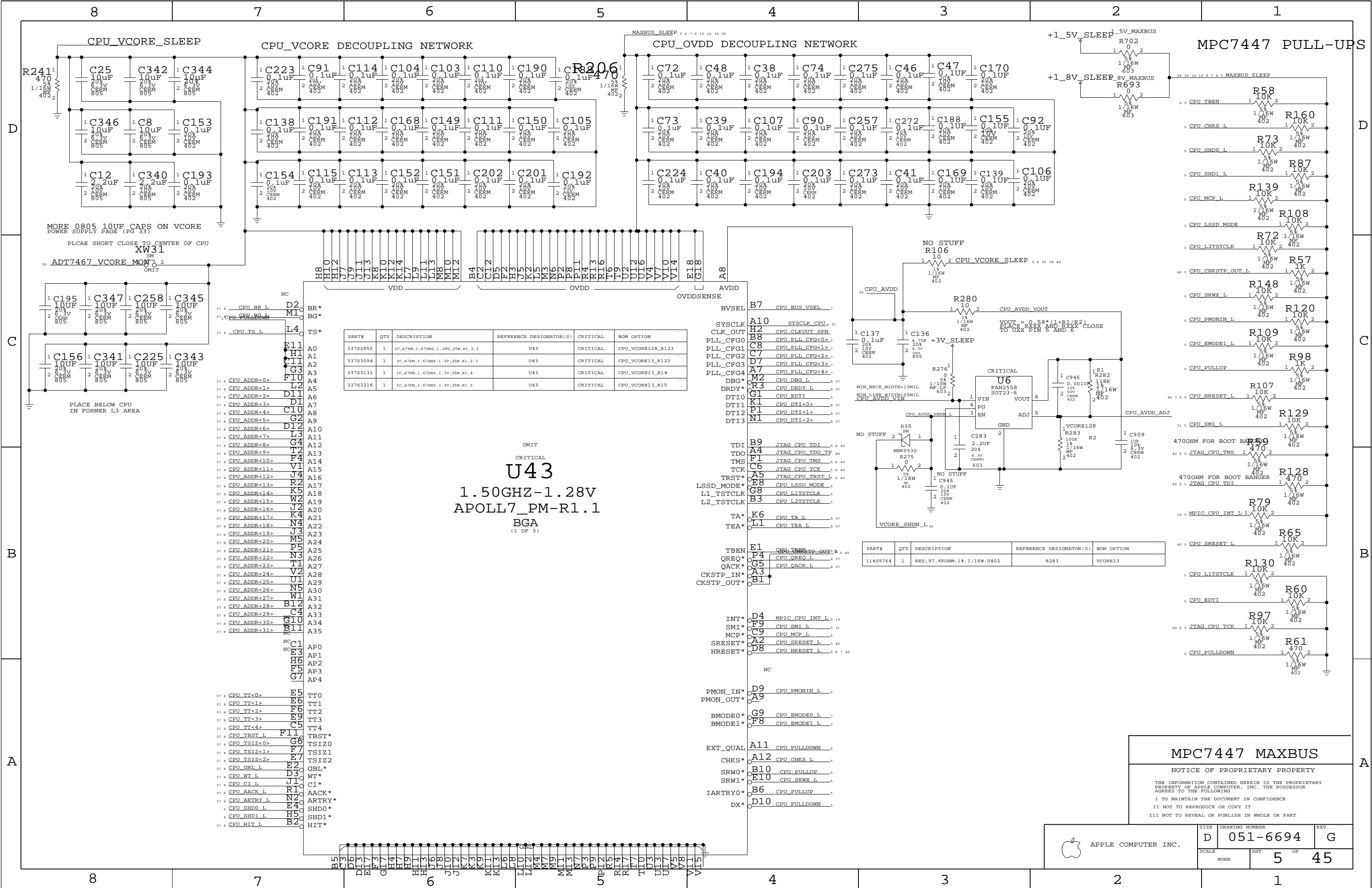
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SCALE	SHT	OF
NONE	4	45



INTREPID BOOT STRAPS

MAXBUS PULL-UPS

INTREPID BOOT STRAPS

INTrepid MaxBus

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INTREPID BOOT STRAPS

MAXBUS PULL-UPS

INTREPID BOOT STRAPS

INTrepid MaxBus

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SCALE NONE SHT 8 OF 45

APPLE COMPUTER INC.

INTREPID BOOT STRAPS

MAXBUS SLEEP

BIT 32 TO 39

NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF

R642¹ R135¹ R123¹ R153¹ R166¹ R179¹ R651¹ R178¹

CPU_DATA<32> CPU_DATA<33> CPU_DATA<34> CPU_DATA<35> CPU_DATA<36> CPU_DATA<37> CPU_DATA<38> CPU_DATA<39>

NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF

R136¹ R643¹ R639¹ R657¹ R664¹ R673¹ R143¹ R674¹

DPR_TPMODESEL_NXT[2] ANALYZER_CLK_EN[1] PDR_TRIPMODESEL_NXT[1]

MAXBUS SLEEP

BIT 40 TO 47

NO STUFF NO STUFF NO STUFF EXT_CLK NO STUFF INT_CLK INT_CLK

R122¹ R142¹ R164¹ R134¹ R184¹ R177¹ R152¹ R165¹

CPU_DATA<40> CPU_DATA<41> CPU_DATA<42> CPU_DATA<43> CPU_DATA<44> CPU_DATA<45> CPU_DATA<46> CPU_DATA<47>

NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF

R640¹ R652¹ R665¹ R644¹ R683¹ R675¹ R658¹ R666¹

Spare Spare PLL4MODESEL_NXT[2] EXT_CLK EXT_CLK EXT_CLK EXT_CLK

MODE A (2.5X) IS FOR STATIC OPERATION
MODE C (2.0X) IS FOR CLOCK SLOW OPERATION

MAXBUS SLEEP

BIT 48 TO 55

EXT_CLK EXT_CLK NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF

R131¹ R121¹ R162¹ R151¹ R162¹ R141¹ R183¹ R176¹

CPU_DATA<48> CPU_DATA<49> CPU_DATA<50> CPU_DATA<51> CPU_DATA<52> CPU_DATA<53> CPU_DATA<54> CPU_DATA<55>

INT_CLK INT_CLK NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF

R645¹ R641¹ R668¹ R659¹ R667¹ R653¹ R684¹ R676¹

DPR_REF_CLK_OUTPUTABLE_H[1] SEL_PDR_EXCISE[1] Spare

MaxBus output impedance

BIT2 BIT1 BIT0

111: 28.6 ohm
011: 33.3 ohm
101: 40 ohm
001: 50 ohm
110: 66.6 ohm
010: 100 ohm
100: 200 ohm
000: 200 ohm

THE FOLLOWING STRAP BITS CAN BE CHANGED BY SOFTWARE:

1/ D47 - SELAGPSREADCLK - SLEEP/WAKE CYCLE REQUIRED
2/ D46 - SELPCIISPREADCLK - SLEEP/WAKE CYCLE REQUIRED
3/ D44 - PLL4MODESEL_NXT<0> - SLEEP/WAKE CYCLE REQUIRED
4/ D43 - PLL4MODESEL_NXT<1> - SLEEP/WAKE CYCLE REQUIRED
5/ D42 - PLL4MODESEL_NXT<2> - SLEEP/WAKE CYCLE REQUIRED
6/ D33 - ANALYZERCLK_EN_H - IMMEDIATE EFFECT

IF A STRAP IS NOT LISTED, THEN IT CANNOT BE CHANGED BY SOFTWARE

MAXBUS PULL-UPS

CPU_TS_L CPU_TA_L CPU_ARTRY_L CPU_BR_L CPU_HIT_L CPU_DRDY_L CPU_TEA_L CPU_AACK_L CPU_DBG_L CPU_BG_L CPU_QREQ_L

RP21 RP21 RP21 RP23 RP24 RP23 RP23 RP24 RP21 RP24

INTREPID BOOT STRAPS

BIT 56 TO 63

NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF

R140¹ R161¹ R175¹ R132¹ R131¹ R150¹ R174¹ R182¹

CPU_DATA<56> CPU_DATA<57> CPU_DATA<58> CPU_DATA<59> CPU_DATA<60> CPU_DATA<61> CPU_DATA<62> CPU_DATA<63>

NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF NO STUFF

R654¹ R669¹ R677¹ R646¹ R647¹ R660¹ R678¹ R685¹

Spare Spare Spare PCIL_PROQ_L / PCIL_GNT2_L PCIL_PROQ_L / PCIL_GNT1_L PCIL_PROQ_L / PCIL_GNT0_L Firewire PHY Interface Processor Bus Mode

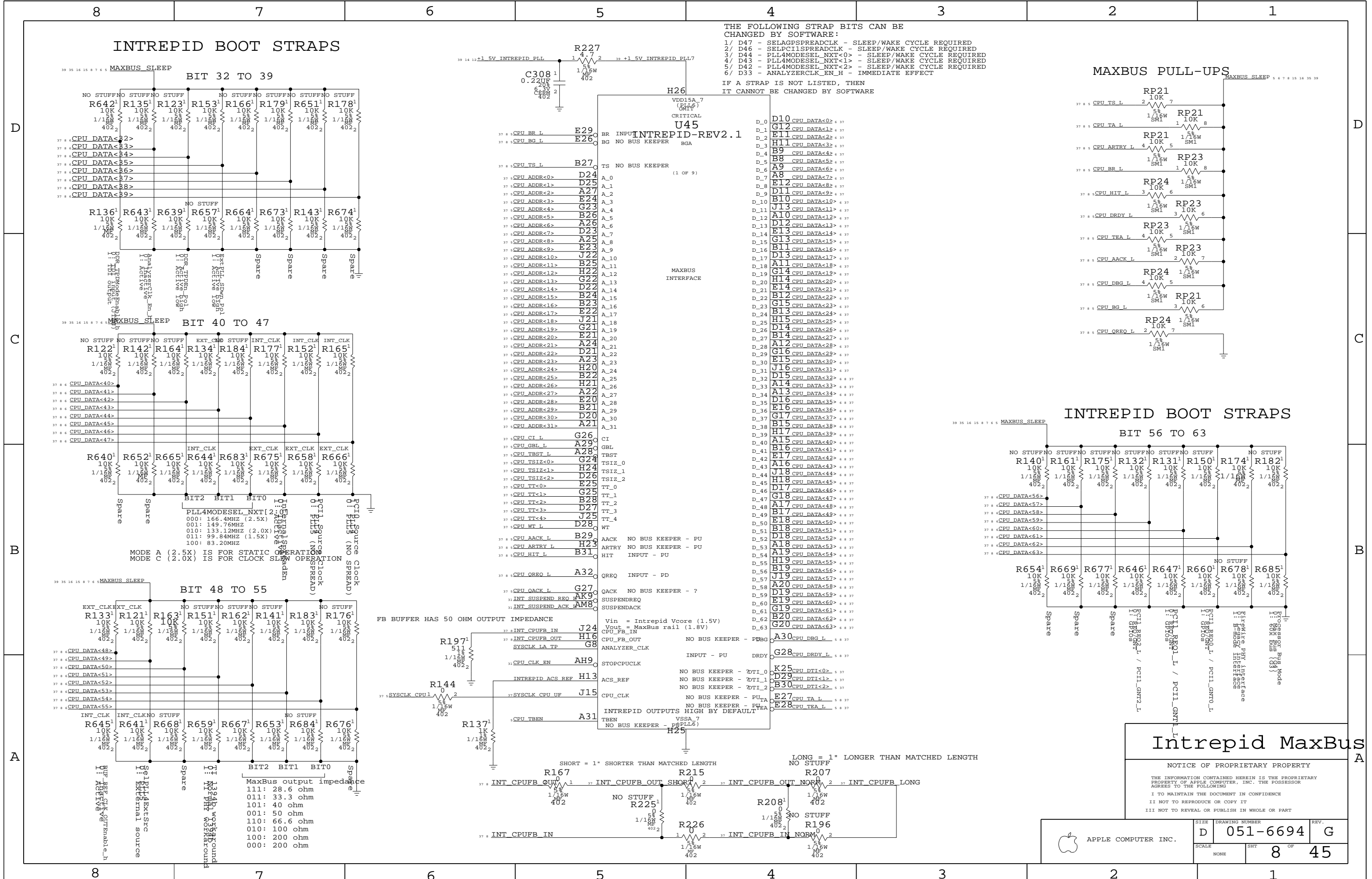
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INTREPID BOOT STRAPS

MAXBUS PULL-UPS

INTREPID BOOT STRAPS

INTrepid MaxBus

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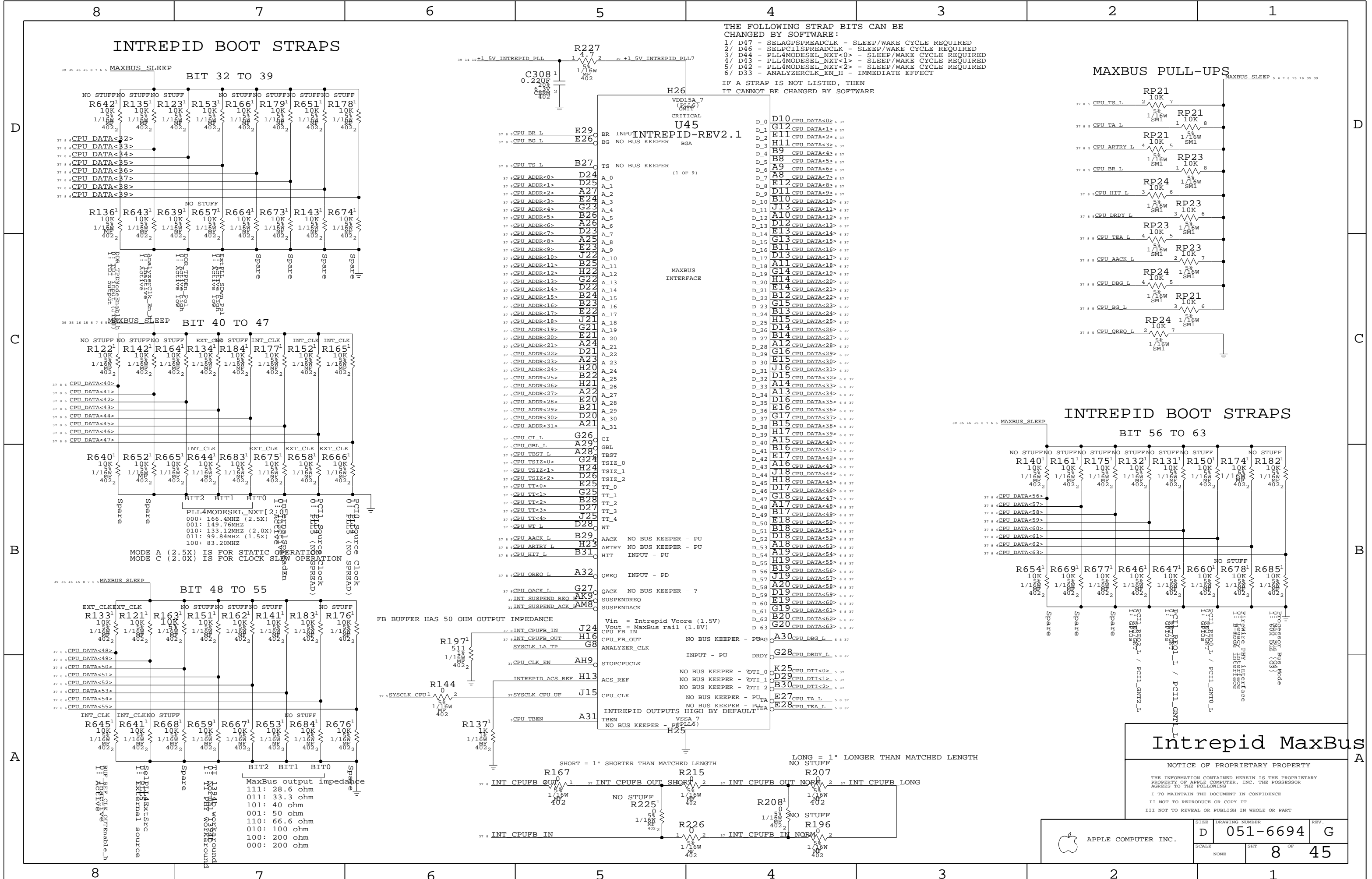
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INTREPID BOOT STRAPS

MAXBUS SLEEP

BIT 32 TO 39

NO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFF

R642¹ R135¹ R123¹ R153¹ R166¹ R179¹ R651¹ R178¹

10K 10K 10K 10K 10K 10K 10K 10K

1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W

402 402 402 402 402 402 402 402

CPU_DATA<32> CPU_DATA<33> CPU_DATA<34> CPU_DATA<35> CPU_DATA<36> CPU_DATA<37> CPU_DATA<38> CPU_DATA<39>

NO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFF

R136¹ R643¹ R639¹ R657¹ R664¹ R673¹ R143¹ R674¹

10K 10K 10K 10K 10K 10K 10K 10K

1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W

402 402 402 402 402 402 402 402

MAXBUS SLEEP

BIT 40 TO 47

NO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFF

R122¹ R142¹ R164¹ R134¹ R184¹ R177¹ R152¹ R165¹

10K 10K 10K 10K 10K 10K 10K 10K

1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W

402 402 402 402 402 402 402 402

CPU_DATA<40> CPU_DATA<41> CPU_DATA<42> CPU_DATA<43> CPU_DATA<44> CPU_DATA<45> CPU_DATA<46> CPU_DATA<47>

NO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFF

R640¹ R652¹ R665¹ R644¹ R683¹ R675¹ R658¹ R666¹

10K 10K 10K 10K 10K 10K 10K 10K

1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W

402 402 402 402 402 402 402 402

MAXBUS SLEEP

BIT 48 TO 55

EXT_CLKEXT_CLKEXT_CLKEXT_CLKEXT_CLKEXT_CLKEXT_CLK

R133¹ R121¹ R162¹ R151¹ R162¹ R141¹ R183¹ R176¹

10K 10K 10K 10K 10K 10K 10K 10K

1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W

402 402 402 402 402 402 402 402

CPU_DATA<48> CPU_DATA<49> CPU_DATA<50> CPU_DATA<51> CPU_DATA<52> CPU_DATA<53> CPU_DATA<54> CPU_DATA<55>

INT_CLKINT_CLKINT_CLKINT_CLKINT_CLKINT_CLKINT_CLK

R645¹ R641¹ R668¹ R659¹ R667¹ R653¹ R684¹ R676¹

10K 10K 10K 10K 10K 10K 10K 10K

1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W

402 402 402 402 402 402 402 402

MAXBUS SLEEP

BIT 56 TO 63

NO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFF

R140¹ R161¹ R175¹ R132¹ R131¹ R150¹ R174¹ R182¹

10K 10K 10K 10K 10K 10K 10K 10K

1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W

402 402 402 402 402 402 402 402

CPU_DATA<56> CPU_DATA<57> CPU_DATA<58> CPU_DATA<59> CPU_DATA<60> CPU_DATA<61> CPU_DATA<62> CPU_DATA<63>

NO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFF

R654¹ R669¹ R677¹ R646¹ R647¹ R660¹ R678¹ R685¹

10K 10K 10K 10K 10K 10K 10K 10K

1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W

402 402 402 402 402 402 402 402

MAXBUS SLEEP

BIT 64 TO 71

NO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFF

R140¹ R161¹ R175¹ R132¹ R131¹ R150¹ R174¹ R182¹

10K 10K 10K 10K 10K 10K 10K 10K

1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W

402 402 402 402 402 402 402 402

CPU_DATA<64> CPU_DATA<65> CPU_DATA<66> CPU_DATA<67> CPU_DATA<68> CPU_DATA<69> CPU_DATA<70> CPU_DATA<71>

NO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFF

R654¹ R669¹ R677¹ R646¹ R647¹ R660¹ R678¹ R685¹

10K 10K 10K 10K 10K 10K 10K 10K

1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W

402 402 402 402 402 402 402 402

MAXBUS SLEEP

BIT 72 TO 79

NO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFF

R140¹ R161¹ R175¹ R132¹ R131¹ R150¹ R174¹ R182¹

10K 10K 10K 10K 10K 10K 10K 10K

1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W

402 402 402 402 402 402 402 402

CPU_DATA<72> CPU_DATA<73> CPU_DATA<74> CPU_DATA<75> CPU_DATA<76> CPU_DATA<77> CPU_DATA<78> CPU_DATA<79>

NO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFF

R654¹ R669¹ R677¹ R646¹ R647¹ R660¹ R678¹ R685¹

10K 10K 10K 10K 10K 10K 10K 10K

1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W

402 402 402 402 402 402 402 402

MAXBUS SLEEP

BIT 80 TO 87

NO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFF

R140¹ R161¹ R175¹ R132¹ R131¹ R150¹ R174¹ R182¹

10K 10K 10K 10K 10K 10K 10K 10K

1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W

402 402 402 402 402 402 402 402

CPU_DATA<80> CPU_DATA<81> CPU_DATA<82> CPU_DATA<83> CPU_DATA<84> CPU_DATA<85> CPU_DATA<86> CPU_DATA<87>

NO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFF

R654¹ R669¹ R677¹ R646¹ R647¹ R660¹ R678¹ R685¹

10K 10K 10K 10K 10K 10K 10K 10K

1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W

402 402 402 402 402 402 402 402

MAXBUS SLEEP

BIT 88 TO 95

NO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFFNO STUFF

R140¹ R161¹

INTREPID BOOT STRAPS

MAXBUS PULL-UPS

INTREPID BOOT STRAPS

INTrepid MaxBus

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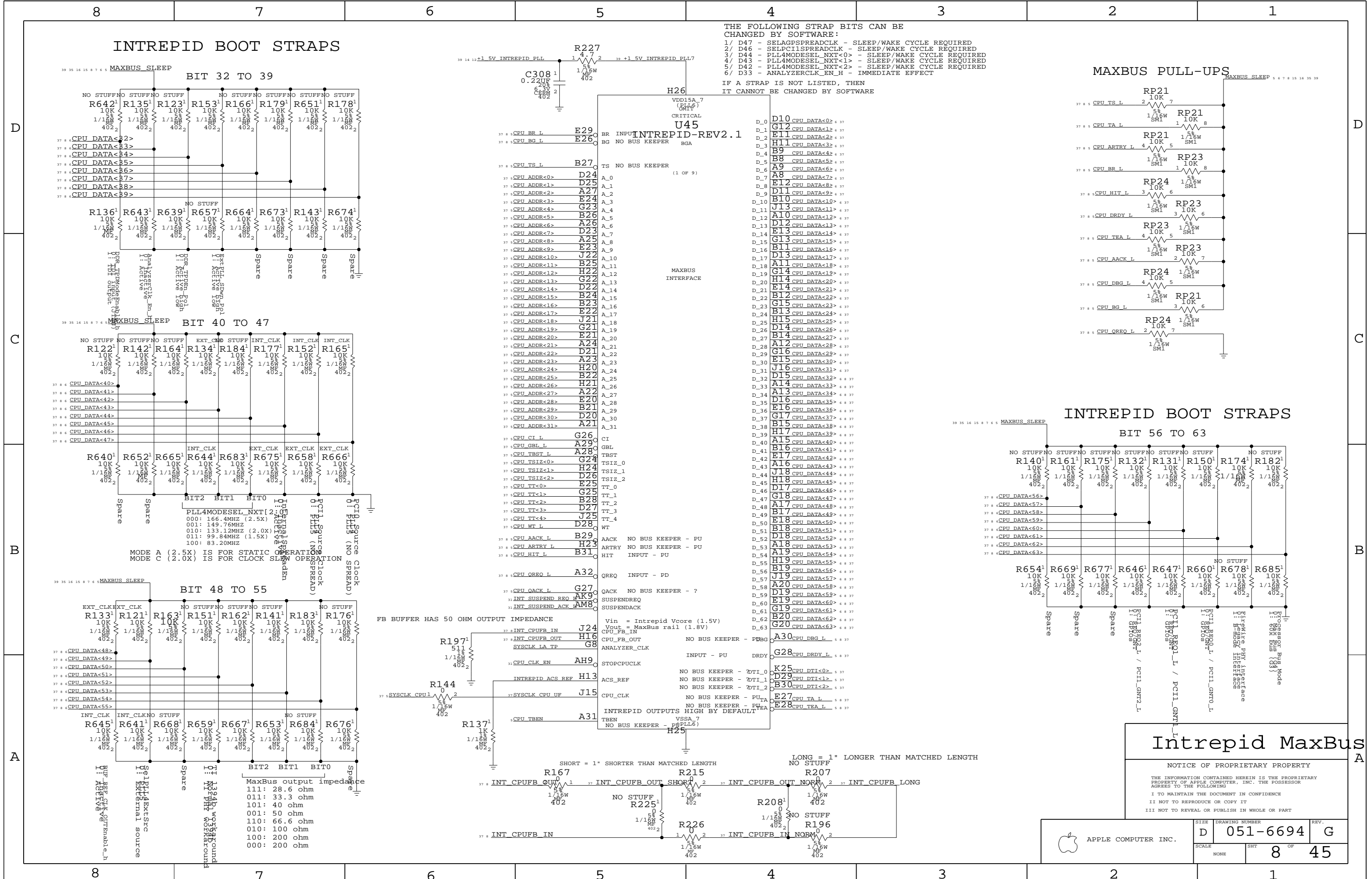
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INTREPID BOOT STRAPS

MAXBUS PULL-UPS

INTREPID BOOT STRAPS

INTrepid MaxBus

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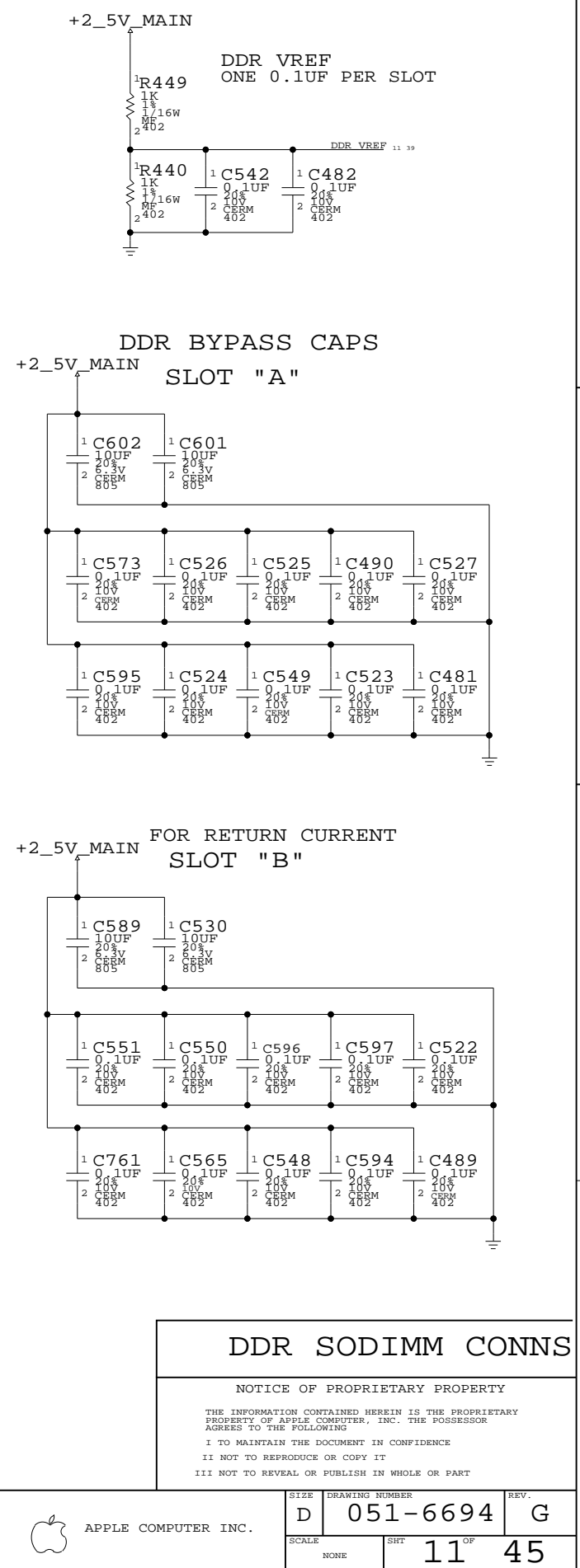
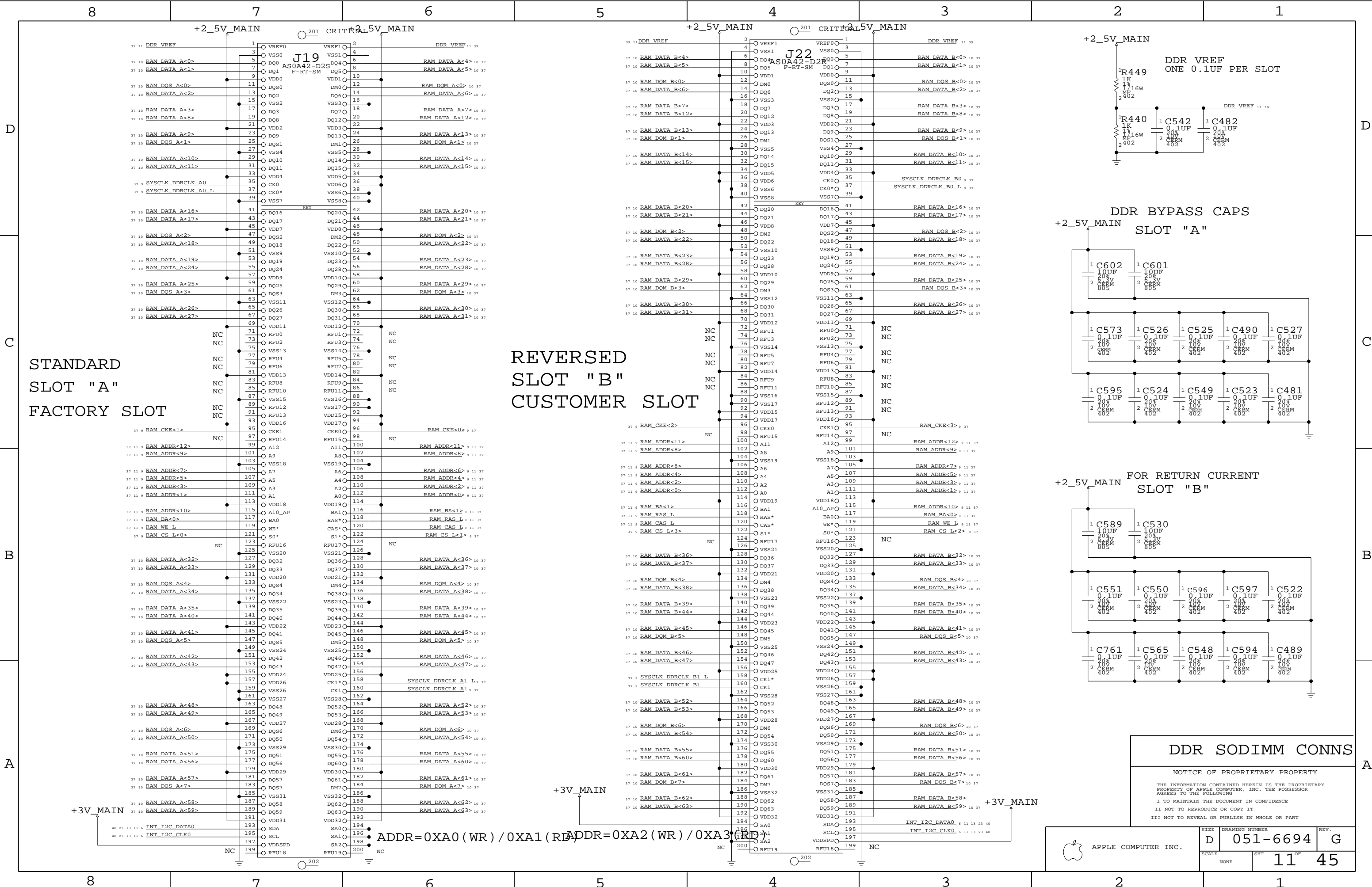
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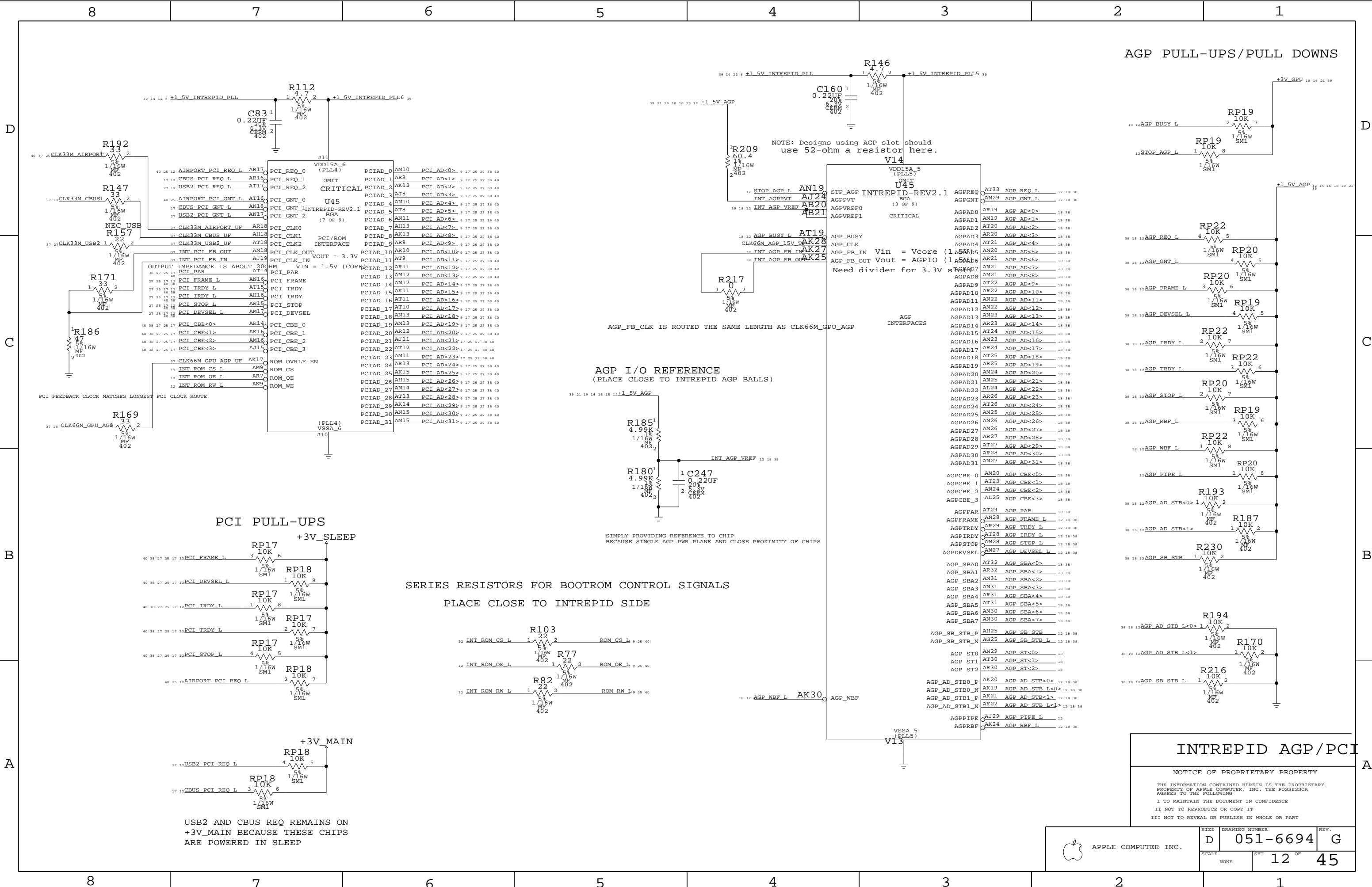
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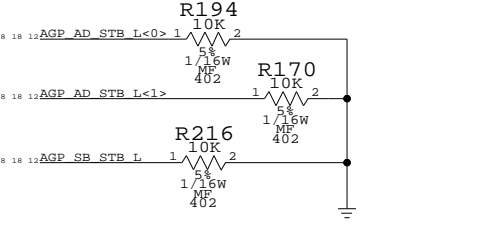
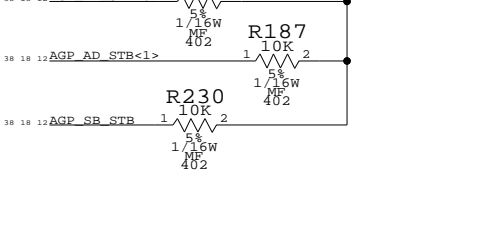
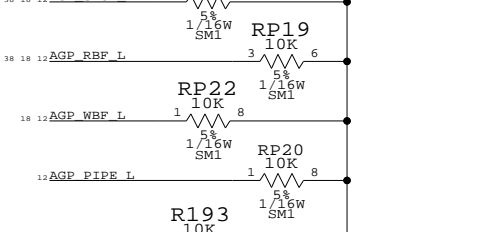
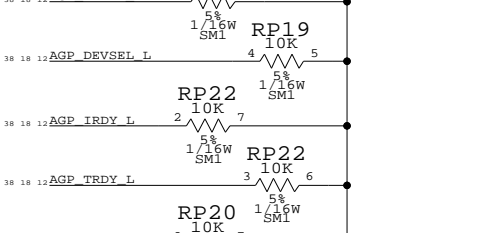
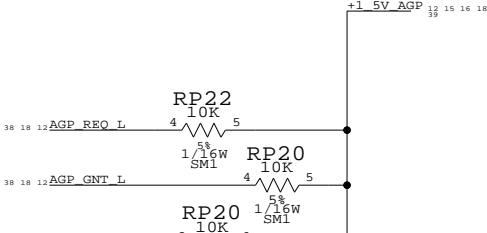
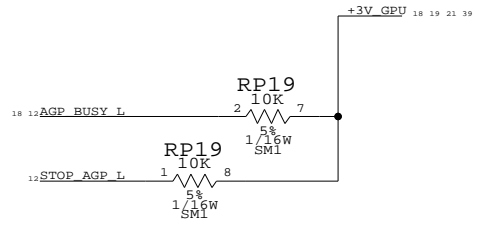
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D			SCALE	SHT	11 OF 45



AGP PULL-UPS/PULL DOWNS



INTREPID AGP/PCI

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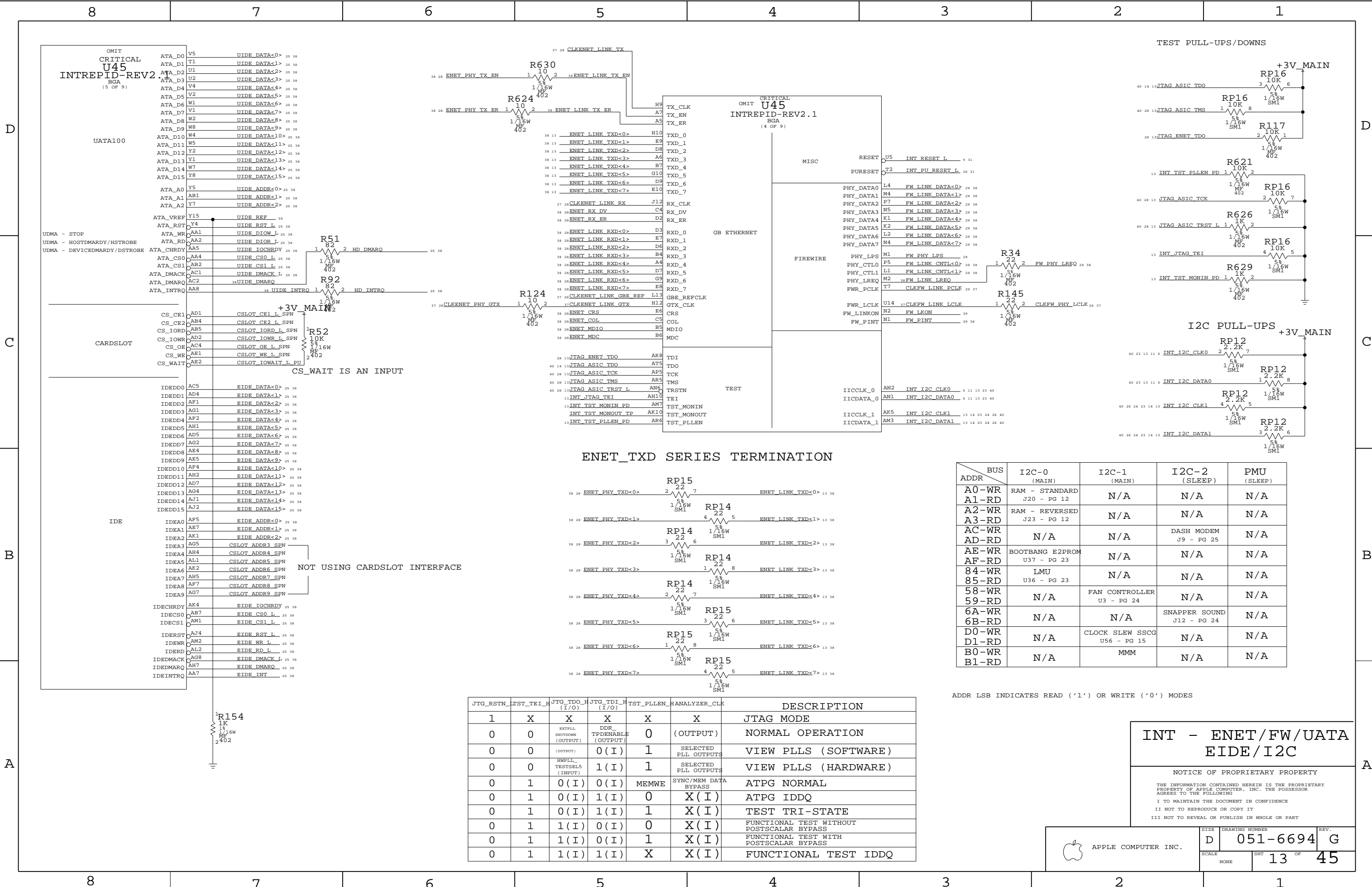
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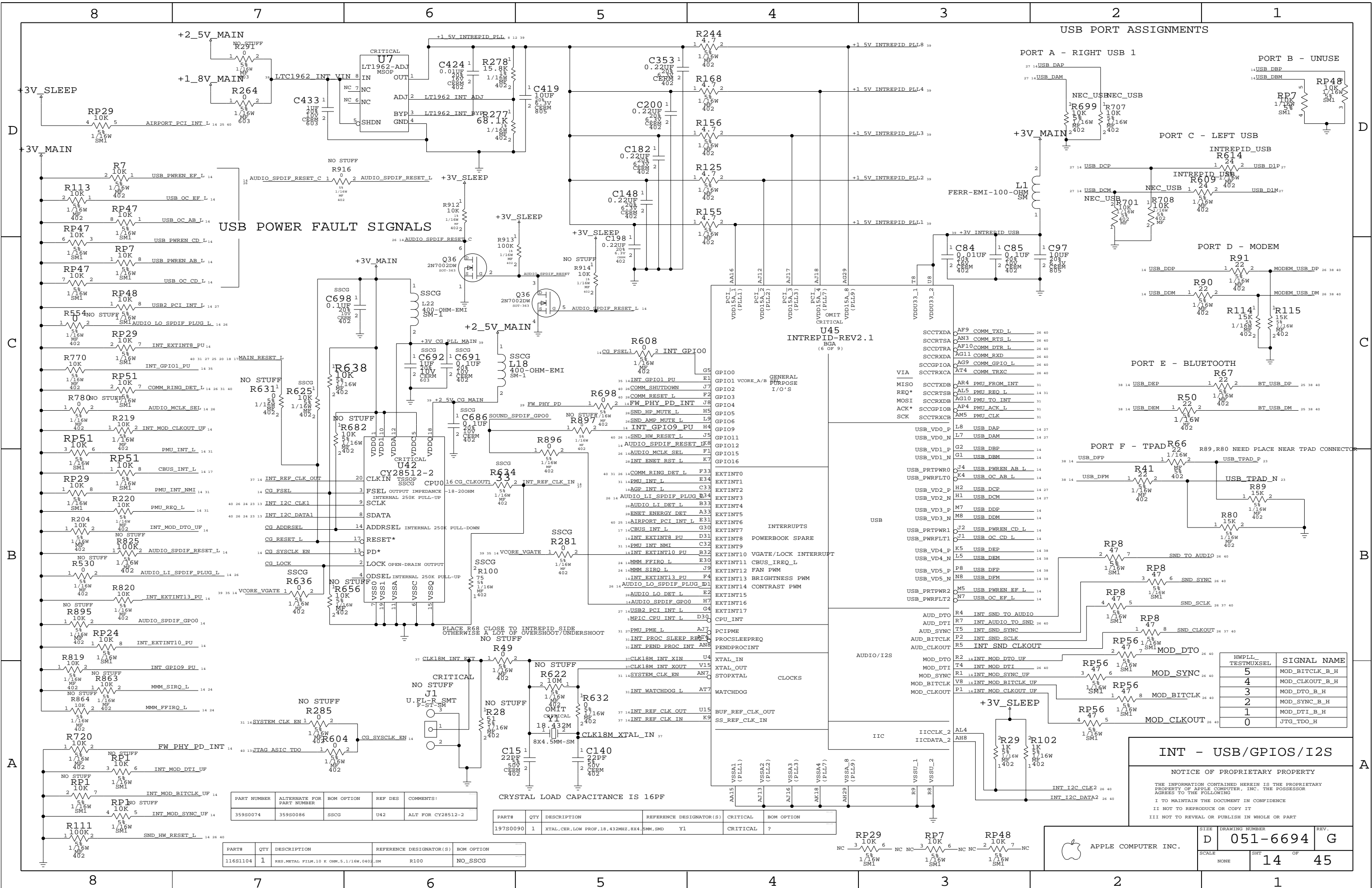
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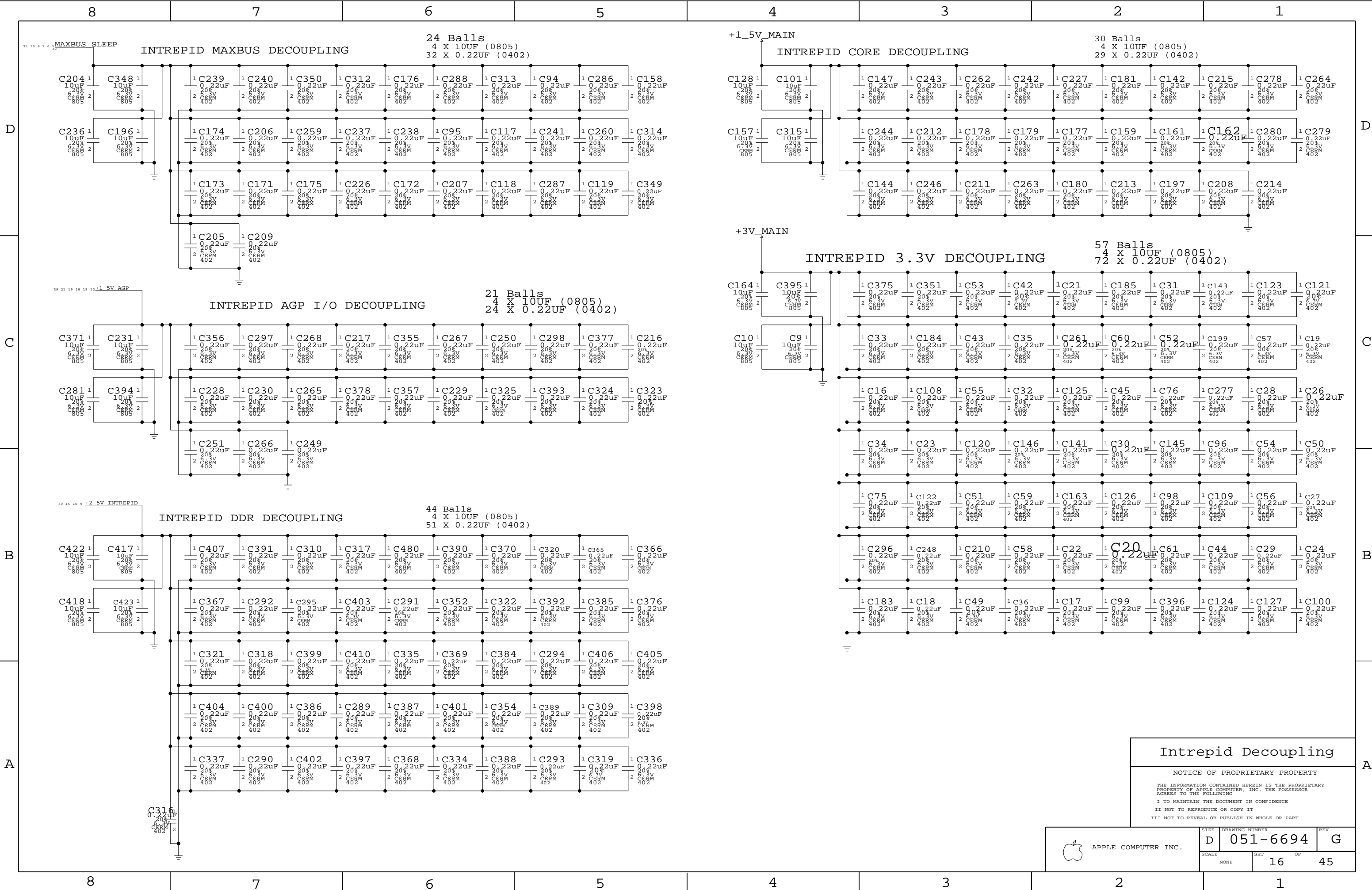


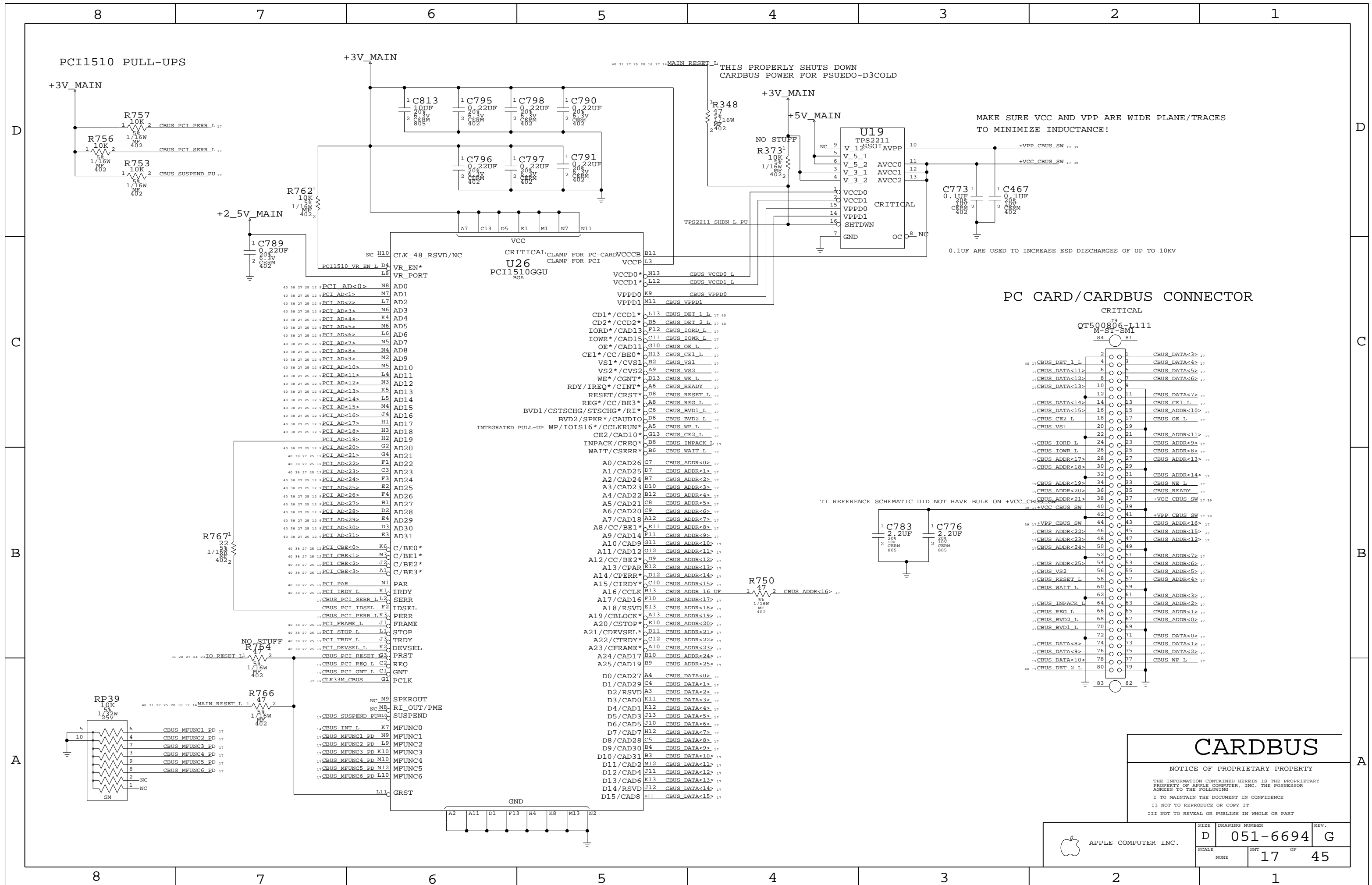
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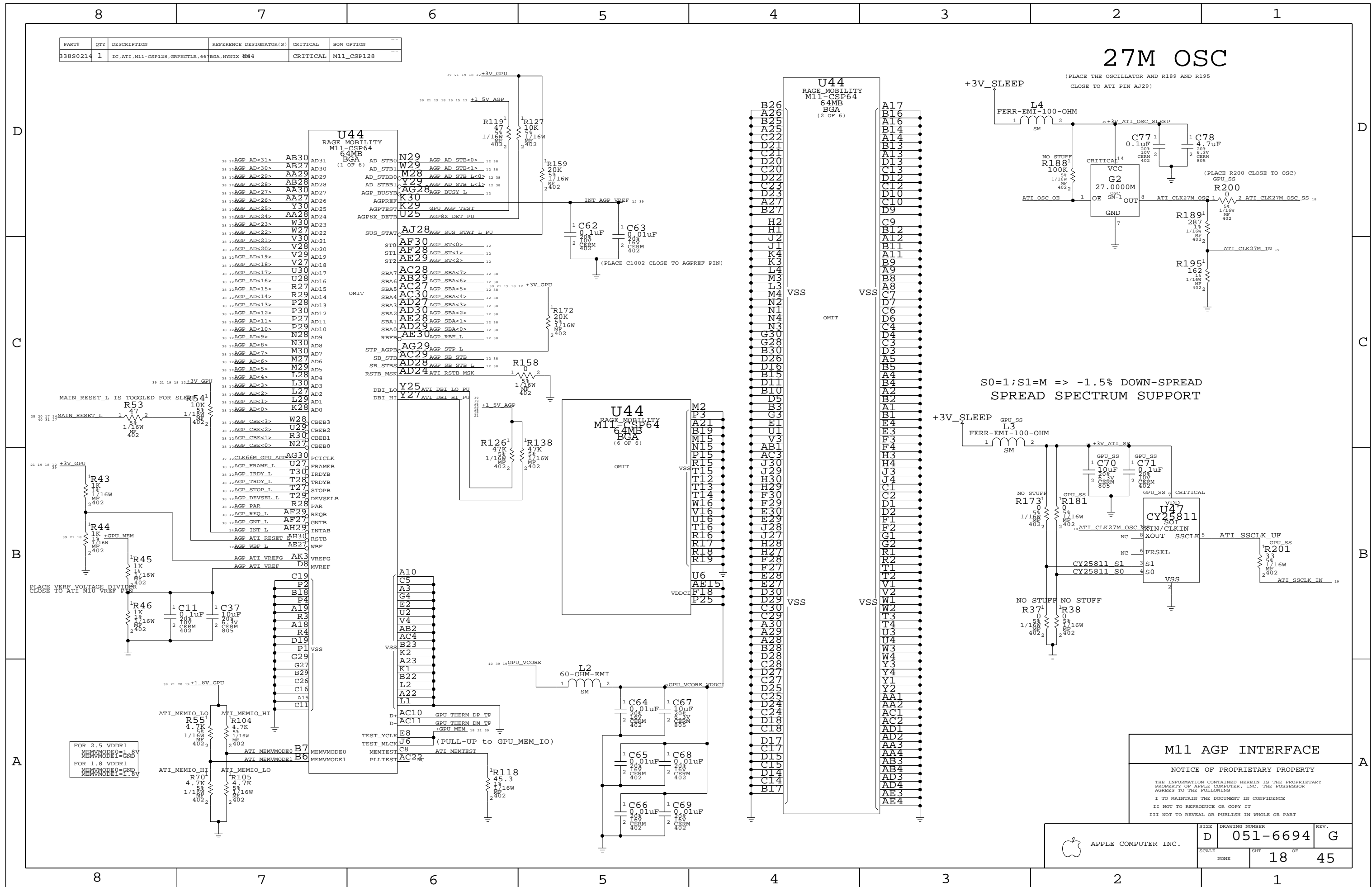
SIZE	DRAWING NUMBER	REV.
D	051-6694	G
SCALE	SHT	OF
NONE	12	45

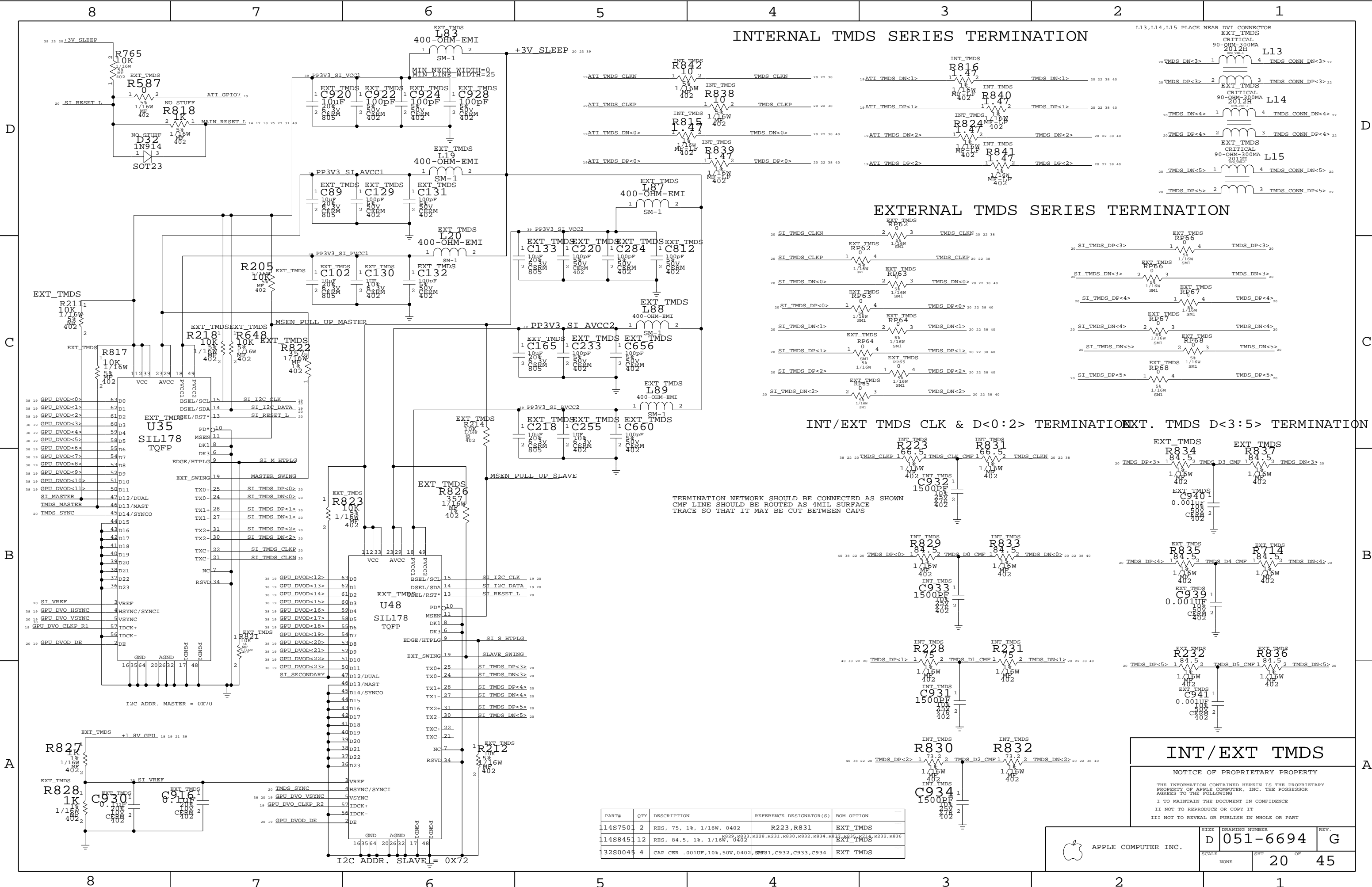




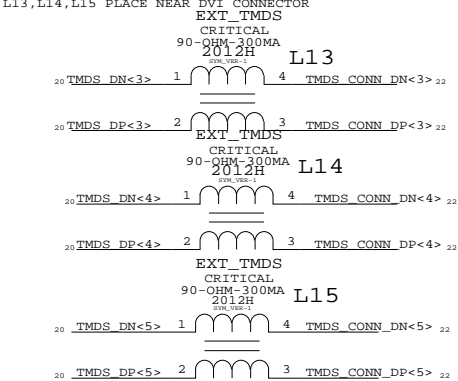




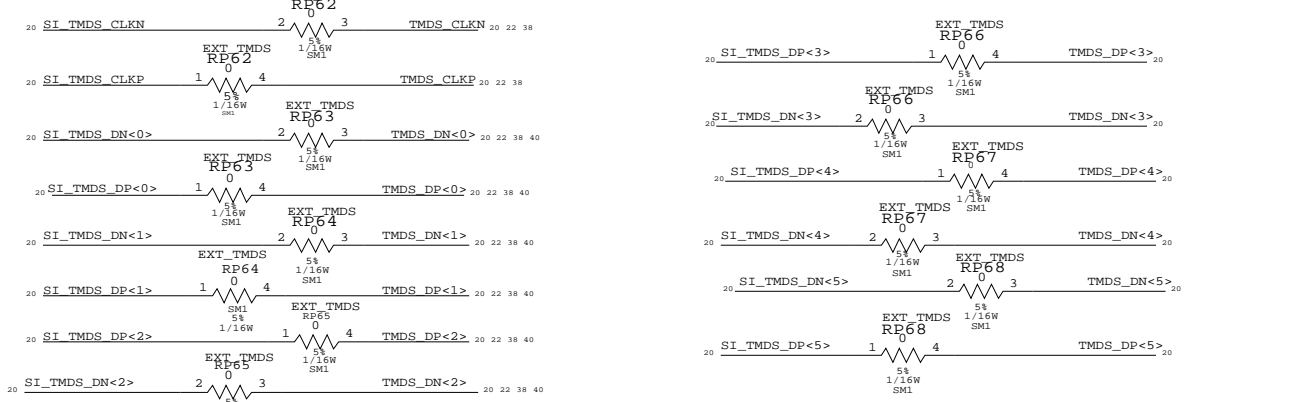




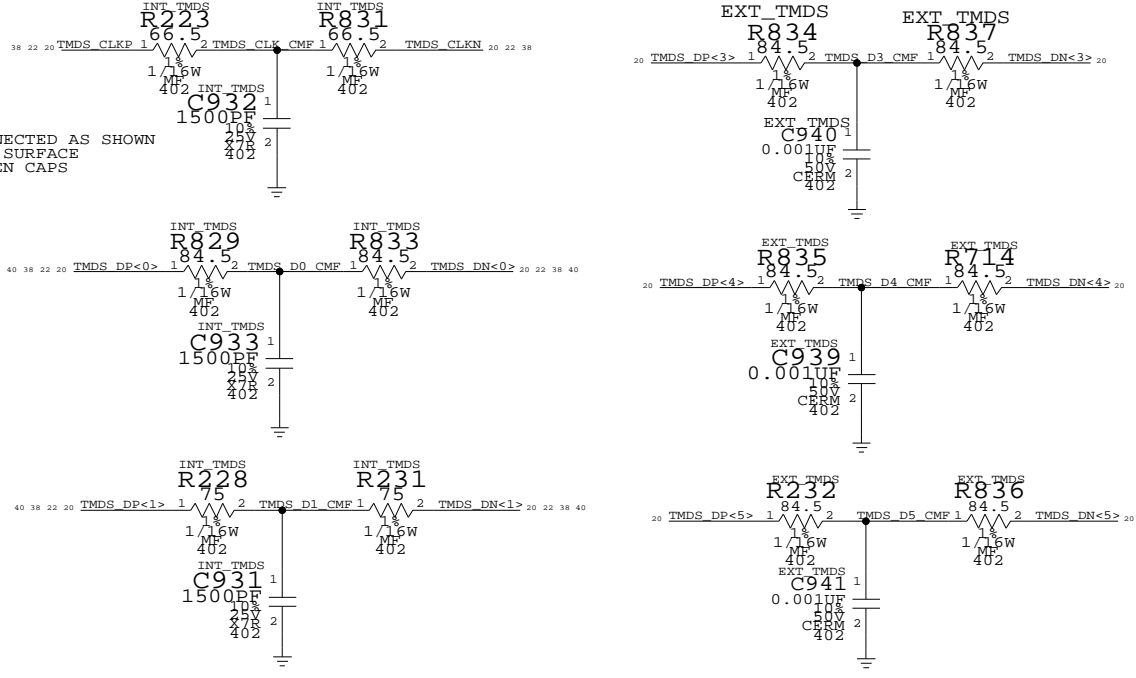
INTERNAL TMDs SERIES TERMINATION



EXTERNAL TMDs SERIES TERMINATION



INT/EXT TMDs CLK & D<0:2> TERMINATION




INT/EXT TMDs

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PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
114S7501	2	RES, 75, 1%, 1/16W, 0402	R223,R831	EXT_TMDs
114S8451	12	RES, 84.5, 1%, 1/16W, 0402	R228,R231,R830,R832,R834,R836,R838,R840,R842,R844,R846,R848,R850	EXT_TMDs
132S0045	4	CAP CER .001UF,10%,50V,0402	C931,C932,C933,C934	EXT_TMDs

 APPLE COMPUTER INC.

SIZE

D

DRAWING NUMBER

051-6694

REV.

G

SCALE

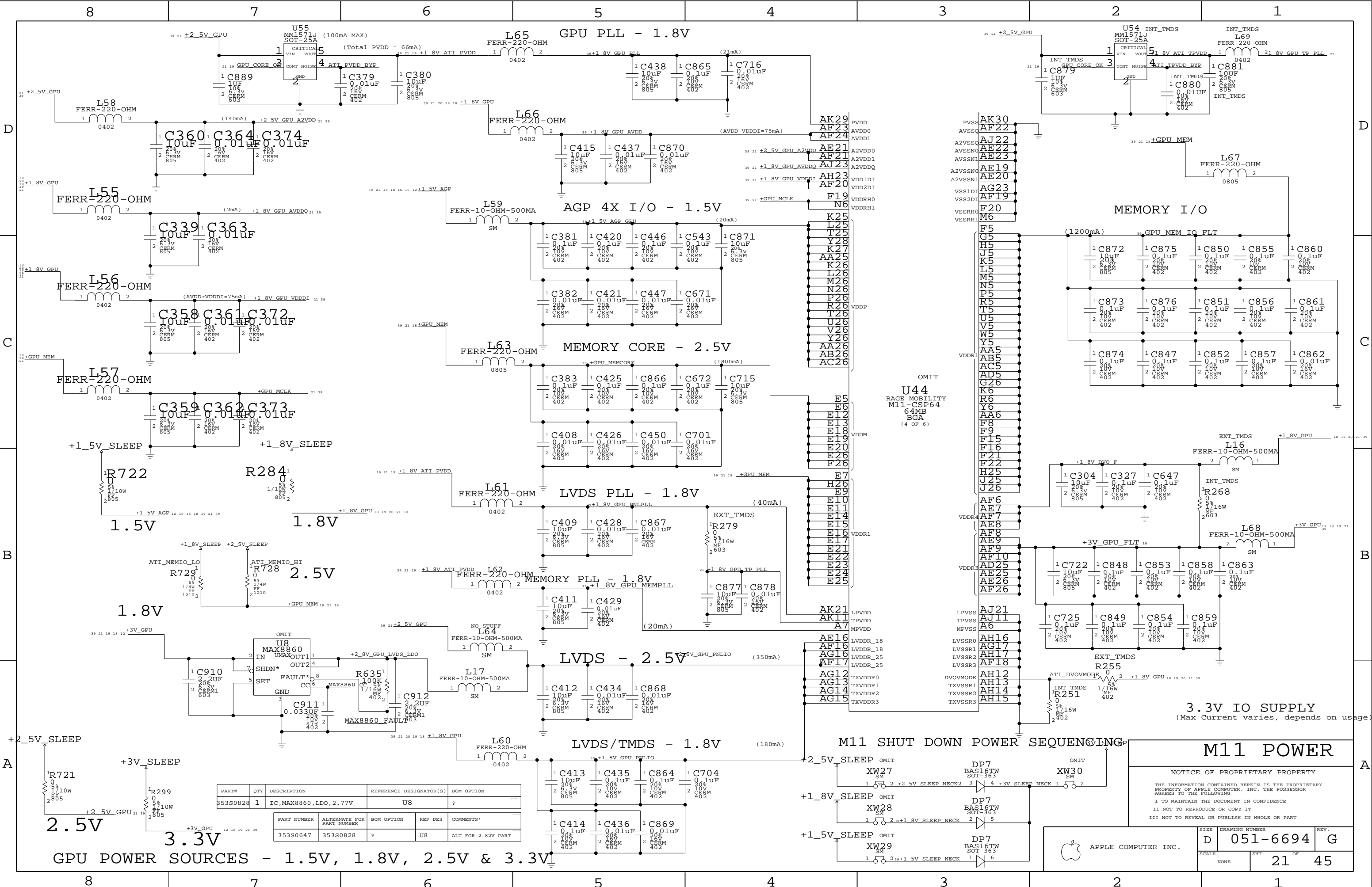
NONE

SHT

20

OF

45



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
353S0828	1	IC, MAX8860, LDO, 2.77V	U8	?
PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
353S0647	353S0828	?	U8	ALT FOR 2.82V PART

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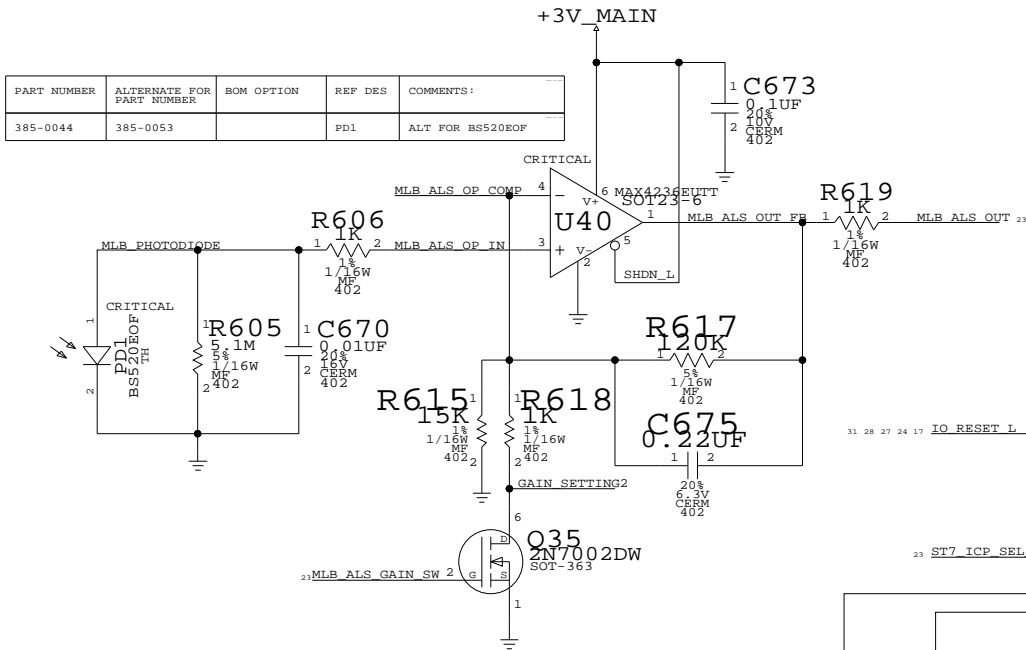
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SCALE	NONE	SHT	21	OF	45

MLB - ALS SENSOR

PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
385-0044	385-0053		PD1	ALT FOR BS520EOP

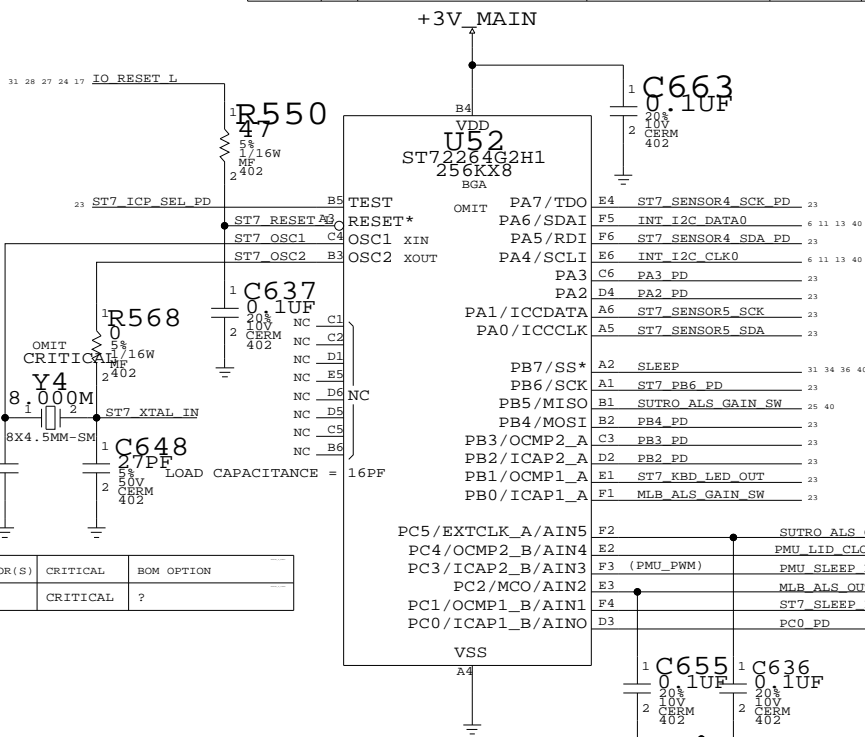


PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
353S0856	353S0504	?	U40	ALT FOR SUPPLY PROBLEM

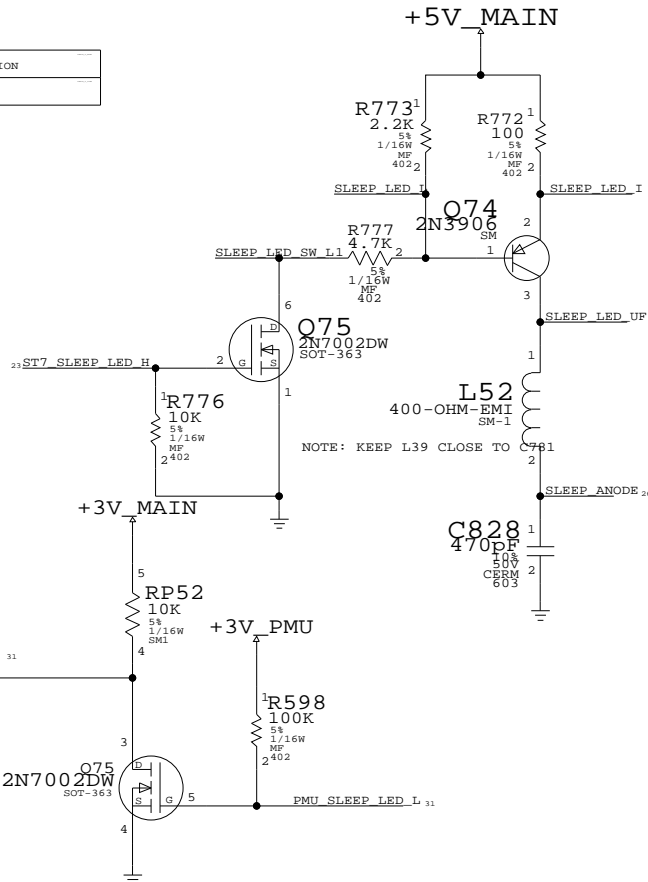
PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
197S0091	1	XTAL,CER,LOW PROF,8.000MHZ,8X4.5MM,SMD	Y4	CRITICAL	?

LMU

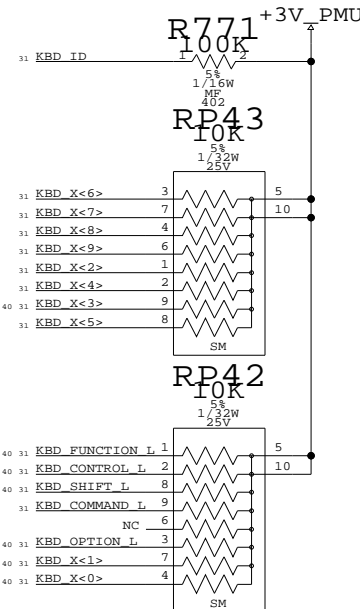
PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
341S1194	1	IC,LMU,P84	U52	CRITICAL	?



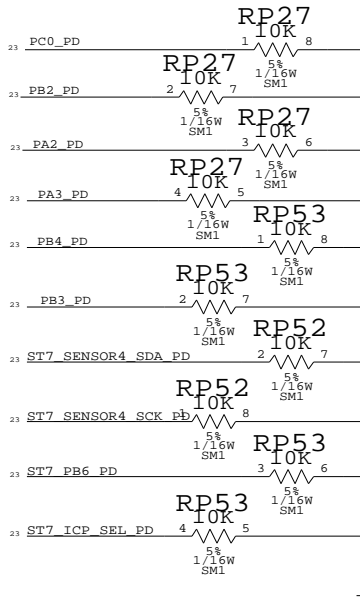
SLEEP LED



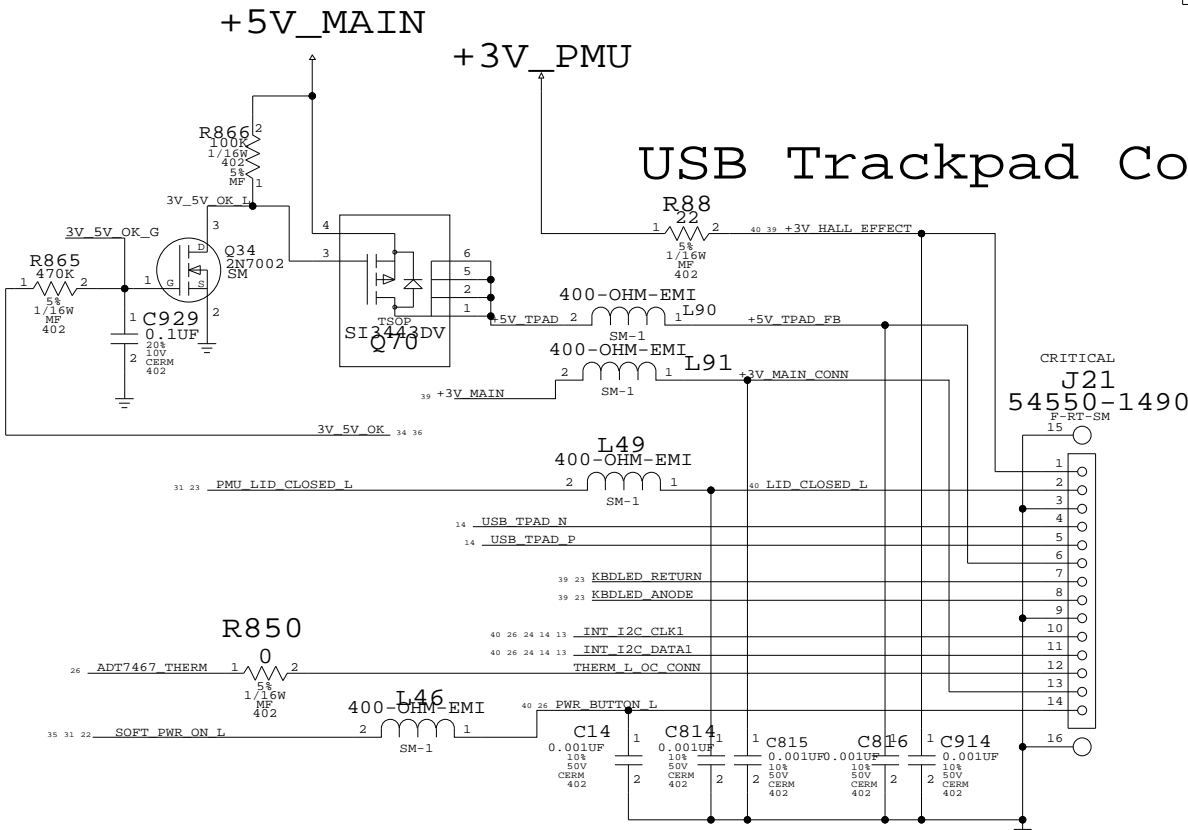
KEYBOARD PULLUPS



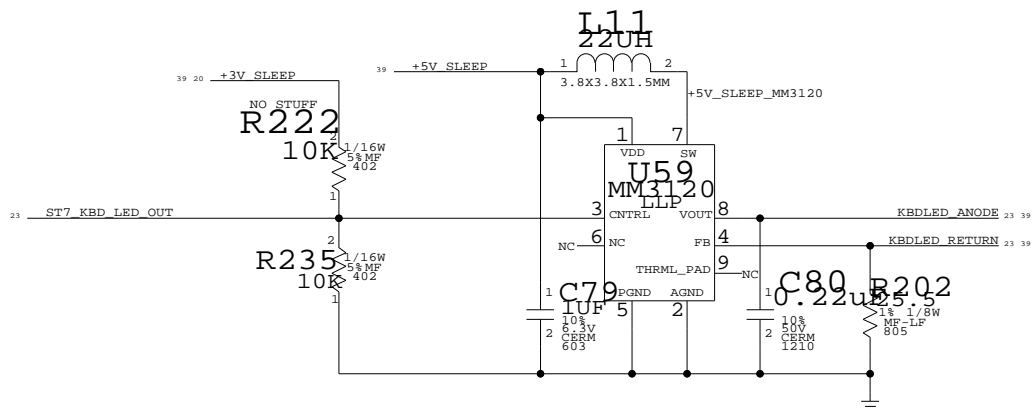
LMU PULL-DOWNS



USB Trackpad Connector



Keyboard LED Driver



LMU/BOOTBANGER/SPIDEY

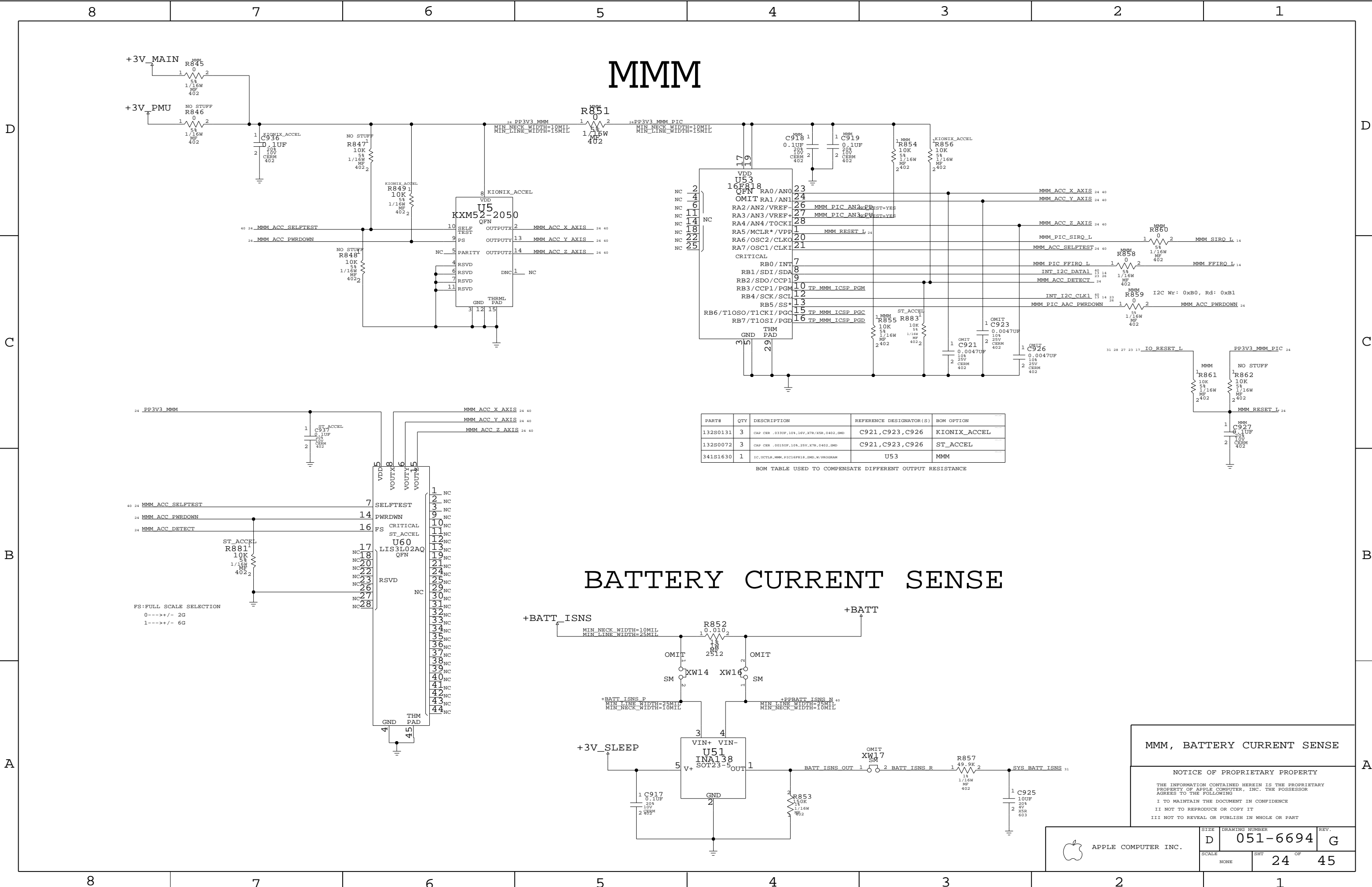
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NONE	23	45



MMM

BATTERY CURRENT SENSE

PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	BOM OPTION
132S0131	3	CAP CER .033UF,10%,16V,X7R,X5R,0402,SMD	C921,C923,C926	KIONIX_ACCEL
132S0072	3	CAP CER .0015UF,10%,25V,X7R,0402,SMD	C921,C923,C926	ST_ACCEL
341S1630	1	IC,UCTLR,MMM,PI316F818,SMD,W/PROGRAM	U53	MMM

BOM TABLE USED TO COMPENSATE DIFFERENT OUTPUT RESISTANCE

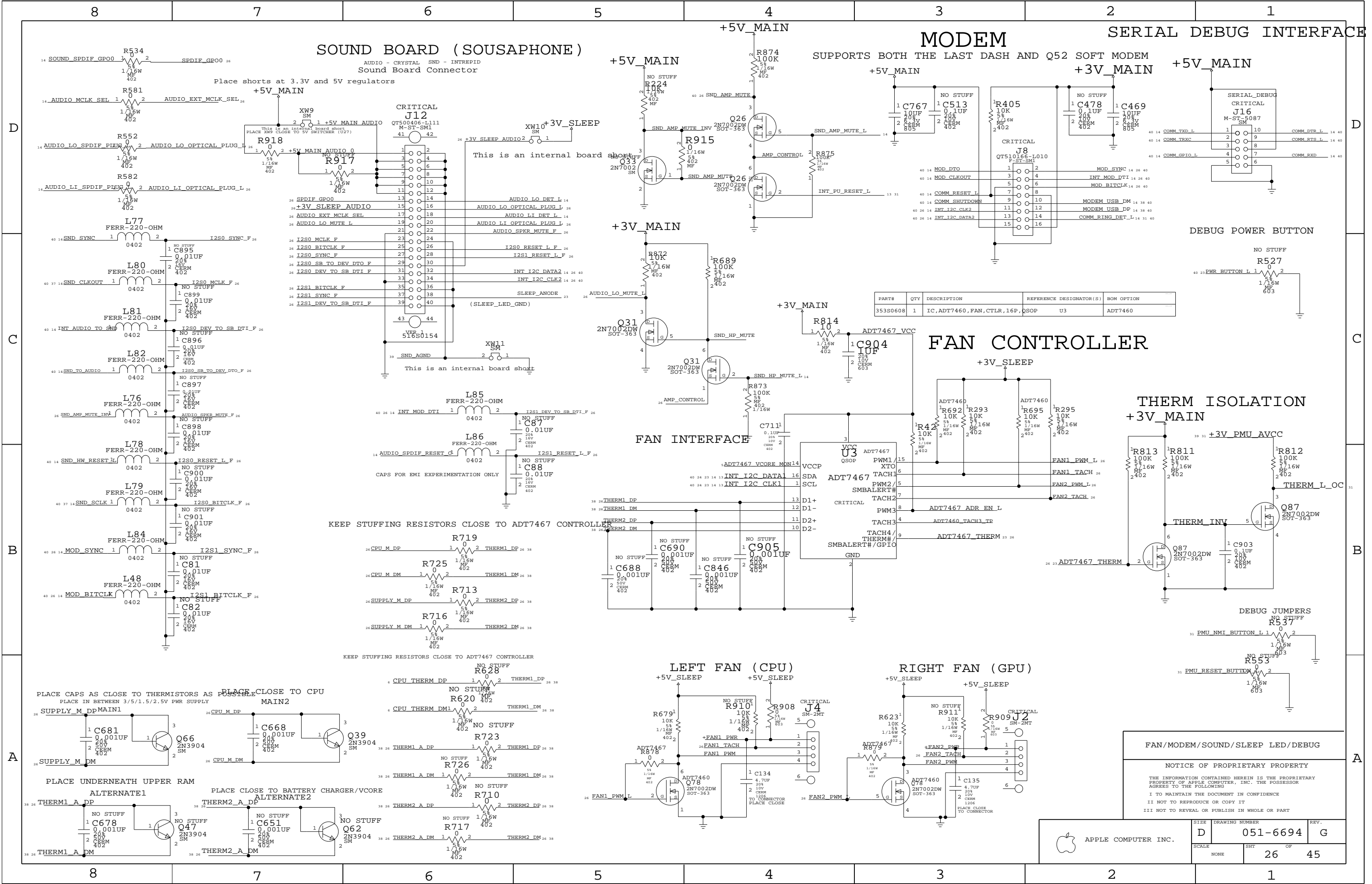
MMM, BATTERY CURRENT SENSE

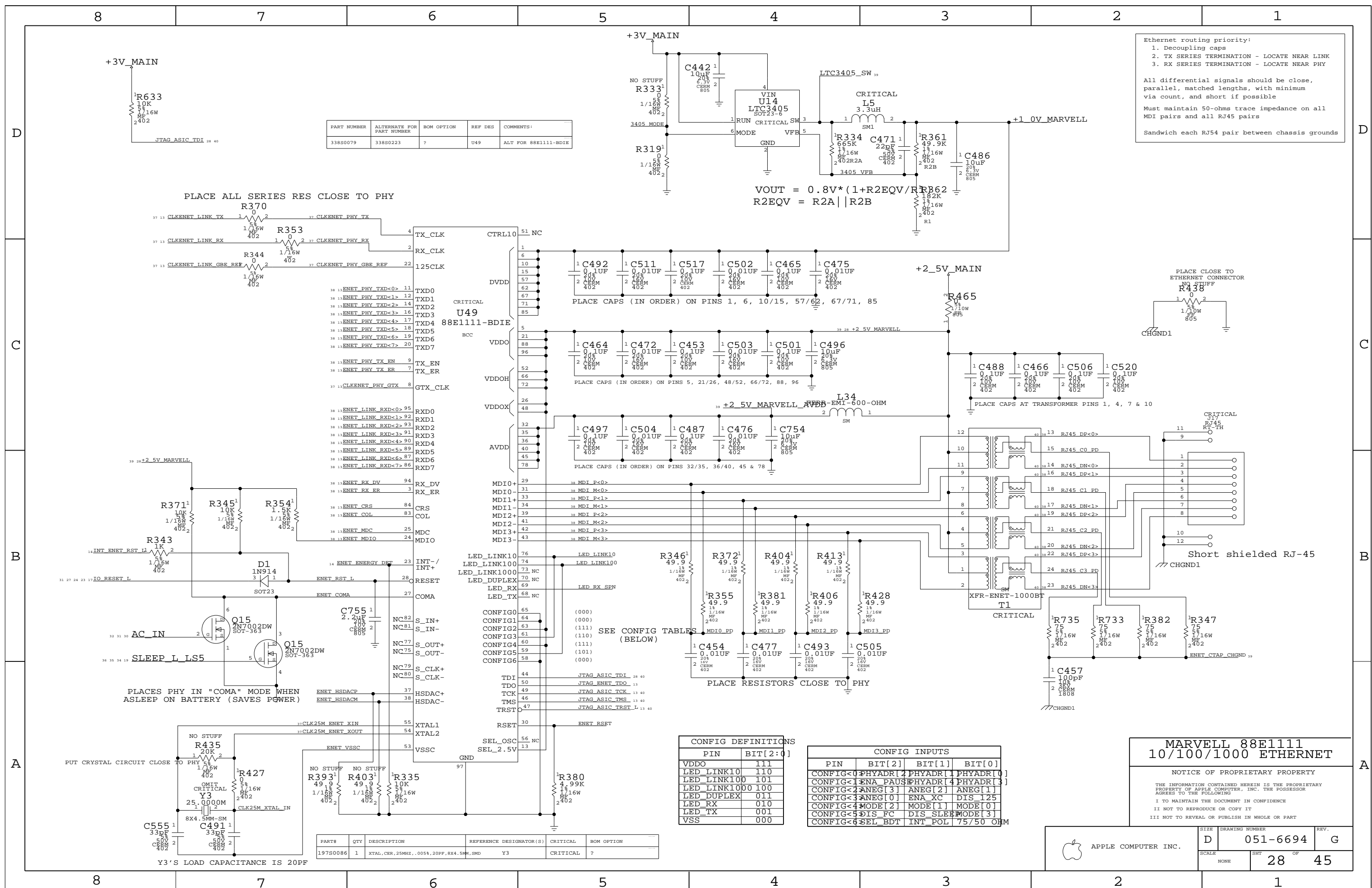
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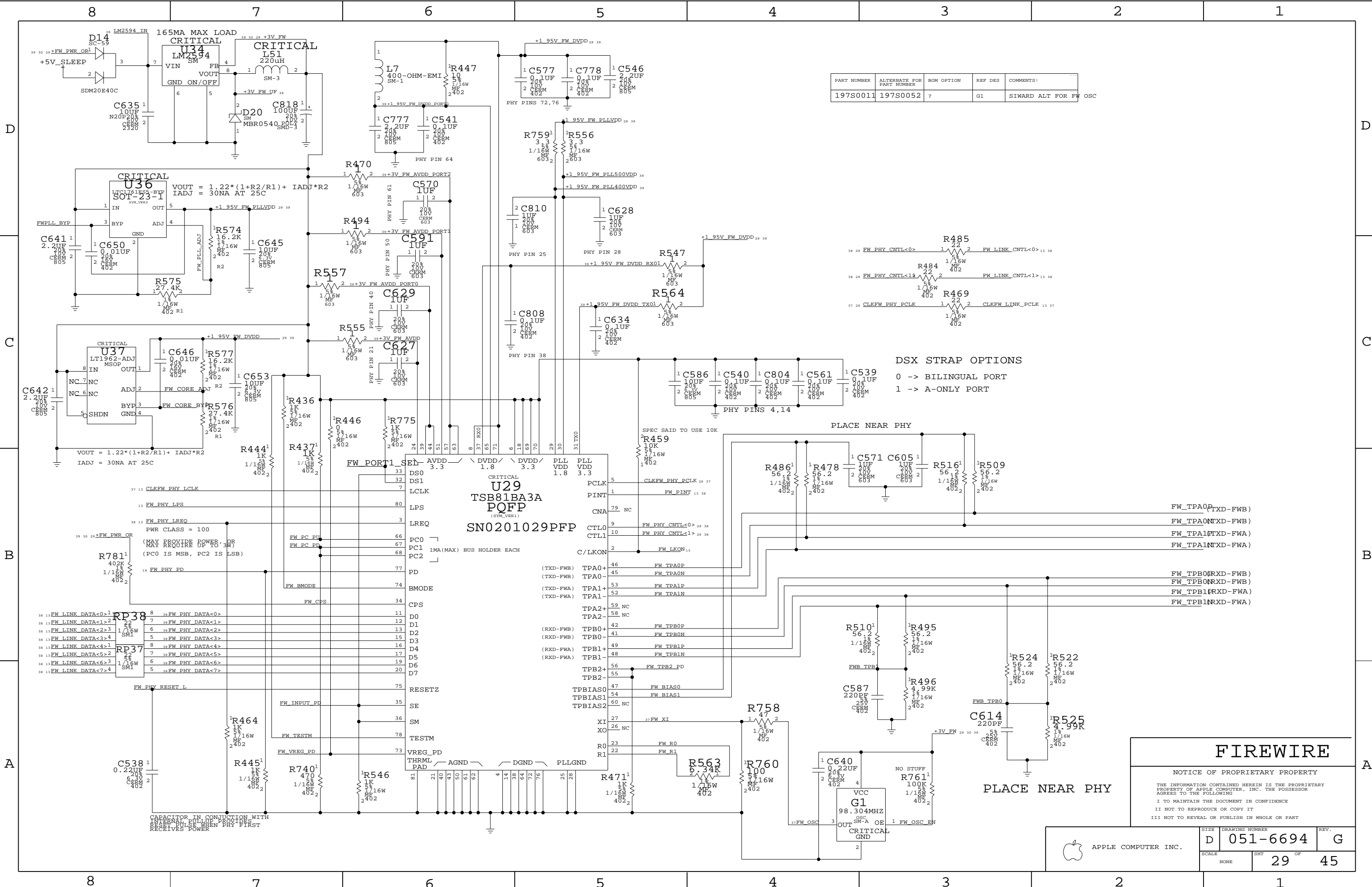


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SIZE	DRAWING NUMBER	REV.
D	051-6694	G
SCALE	SHT	OF
NONE	24	45







PART NUMBER	ALTERNATE FOR PART NUMBER	BOM OPTION	REF DES	COMMENTS:
197S0011	197S0052	?	G1	SIWARD ALT FOR FW OSC

DSX STRAP OPTIONS

- 0 -> BILINGUAL PORT
- 1 -> A-ONLY PORT

FIREWIRE

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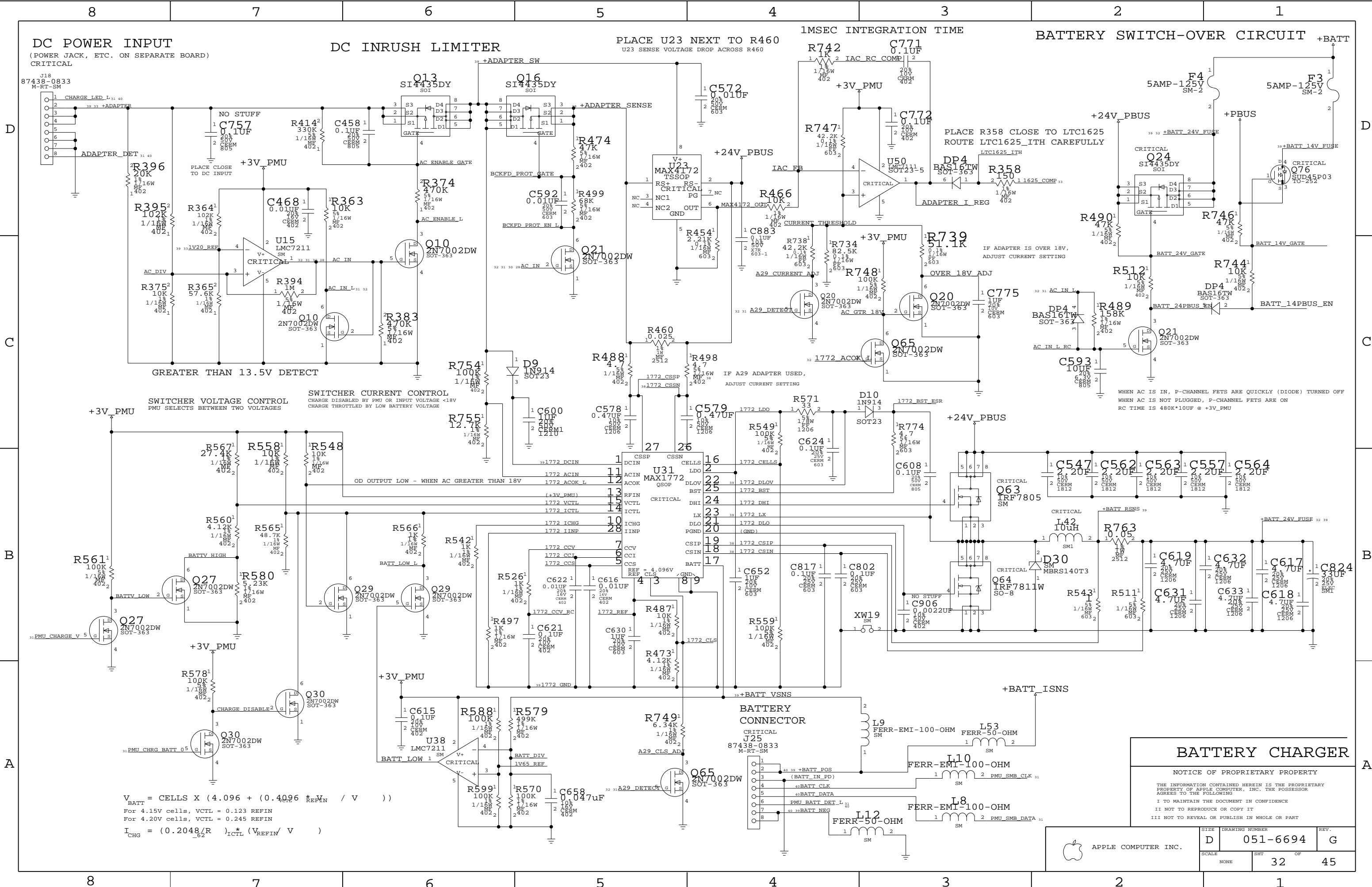
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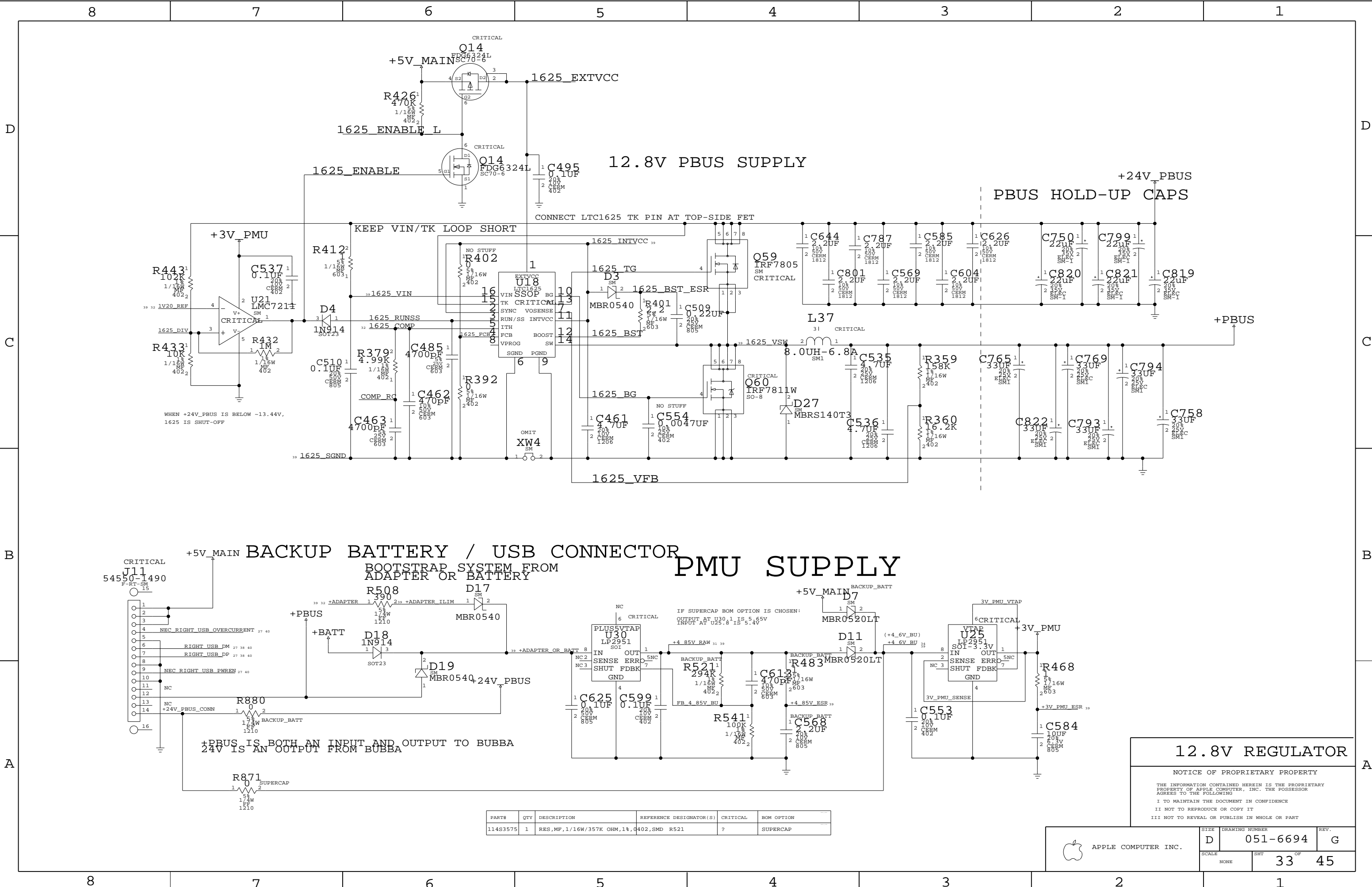
SIZE	DRAWING NUMBER	REV.
D	051-6694	G
SCALE	SHT	OF
NONE	29	45



$$V_{BATT} = CELLS \times (4.096 + (0.4096 \times \frac{V_{REFIN}}{V}))$$

For 4.15V cells, VCTL = 0.123 REFIN
For 4.20V cells, VCTL = 0.245 REFIN

$$I_{CHG} = (0.2048/R_{ICTL}) \times (V_{REFIN}/V)$$



PART#	QTY	DESCRIPTION	REFERENCE DESIGNATOR(S)	CRITICAL	BOM OPTION
114S3575	1	RES,MF,1/16W/357K OHM,1%,402,SMD	R521	?	SUPERCAP

12.8V REGULATOR

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SCALE: NONE

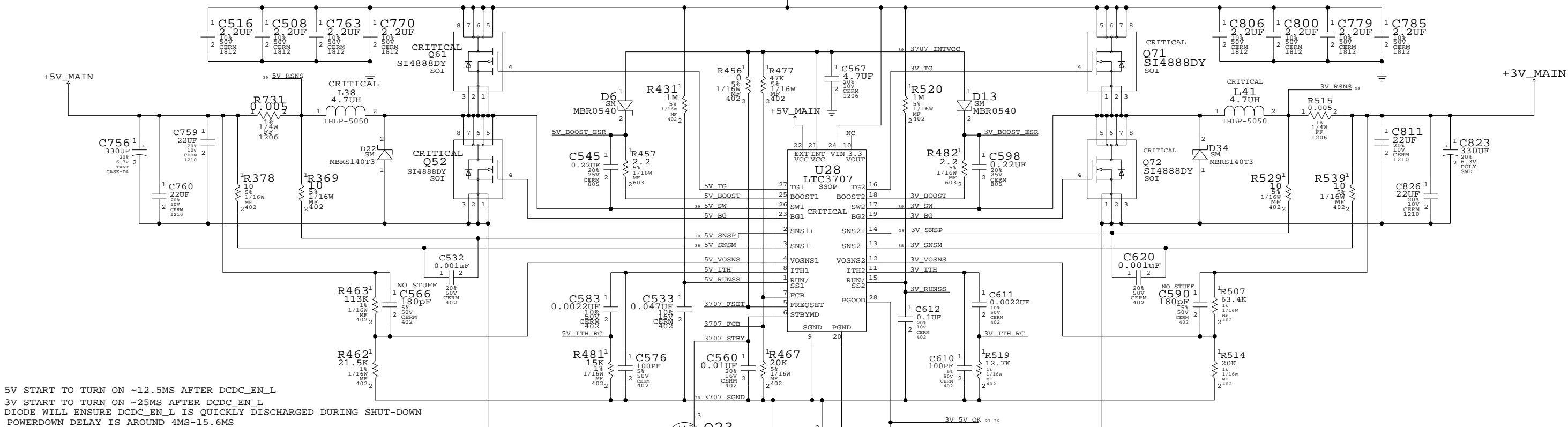
DRAWING NUMBER: D 051-6694

SHT: 33 OF 45

REV.: G

3.3V/5V MAIN SUPPLY

+24V_PBUS



5V START TO TURN ON ~12.5MS AFTER DCDC_EN_L
3V START TO TURN ON ~25MS AFTER DCDC_EN_L
DIODE WILL ENSURE DCDC_EN_L IS QUICKLY DISCHARGED DURING SHUT-DOWN
POWERDOWN DELAY IS AROUND 4MS-15.6MS

THERE'S NO 10UF INPUT CAP
BECAUSE Q21 IS PLACED AT
OUTPUT OF +3V_MAIN SWITCHER

THIS SIGNAL IS OPEN COLLECTOR TO GND WHEN POWER IS NOT GOOD
220PF IS USED TO QUIET NOISE ON PGOOD ONCE INTERNAL OPEN DRAIN IS DISENGAGED

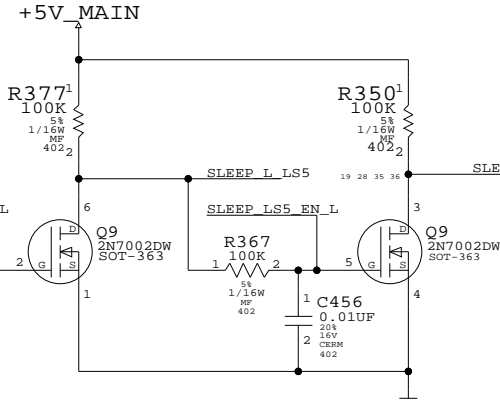
DCDC_EN TRUTH TABLE

PMU_POWER_UP	SLEEP	DCDC_EN	DCDC_EN_L	State
0	0	1	0	Run
1 (2.99V)	1	1	0	Sleep
1	0	0	1	Shutdown
+3V_PMU	+3V_PMU	+4_6V_BU	+3V_PMU	VOLTAGE

+5V_SLEEP LOADS

- 1) OPTICAL DRIVE
- 2) DVI
- 3) TRACKPAD
- 4) FANS
- 5) FIREWIRE PHY

SLEEP LEVEL SHIFTER (3V -> 5V)



+3V_SLEEP LOADS

- 1) CPU PLL Config Control
- 2) INTREPID - IIC AND PCI PULL-UPS
- 3) MAP31 - 3V RAIL (IF USING D3COLD)
- 4) GRAPHIC CHIP SPREAD SPECTRUM CHIP
- 5) LVDS DDC PULL-UPS
- 6) DVI LEVEL SHIFTERS & PULL-UPS & HPD
- 7) SOUND BOARD
- 8) BOOT BANGER
- 9) HARD DRIVE (IF USING 3V LOGIC)
- 10) WIRELESS (IF POWERING OFF IN SLEEP)
- 11) PMU - IIC Pull-ups
- 12) PCI PULL-UPS

3.3V/5V REGULATOR

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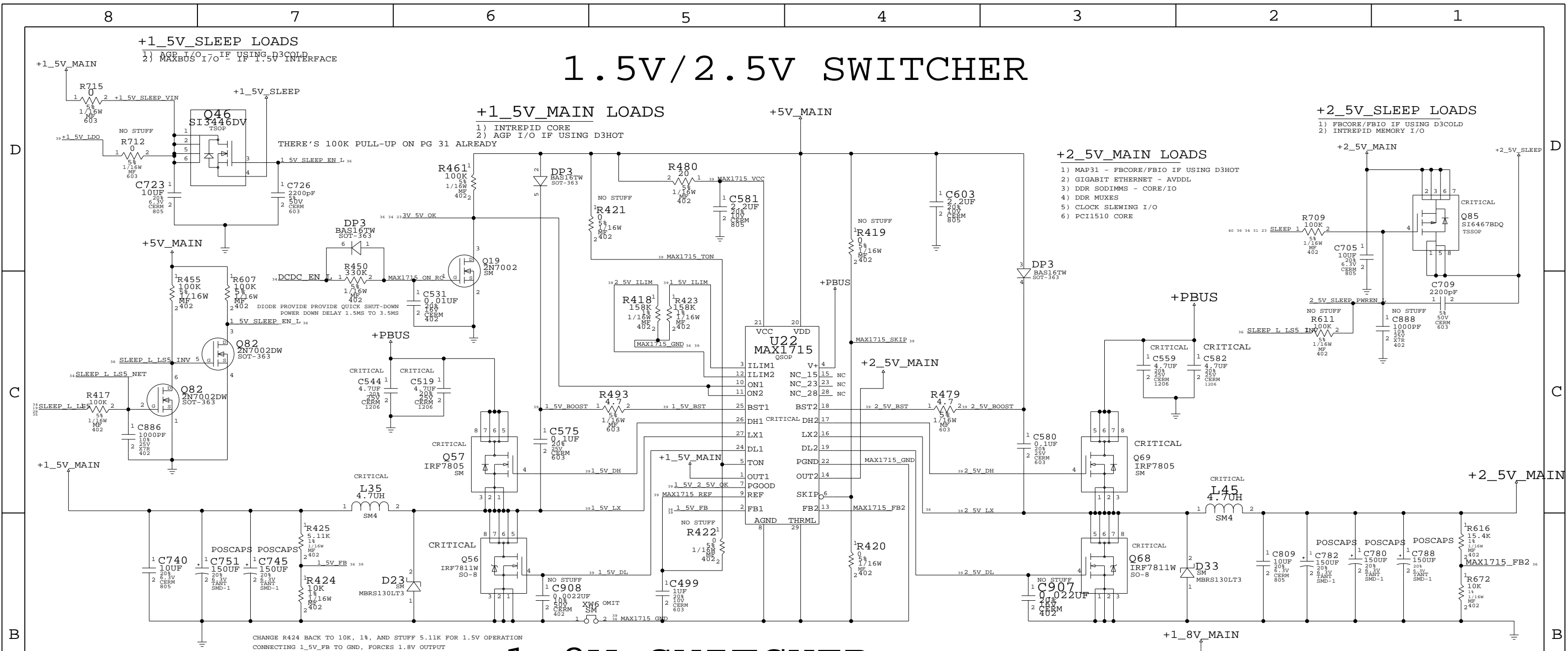


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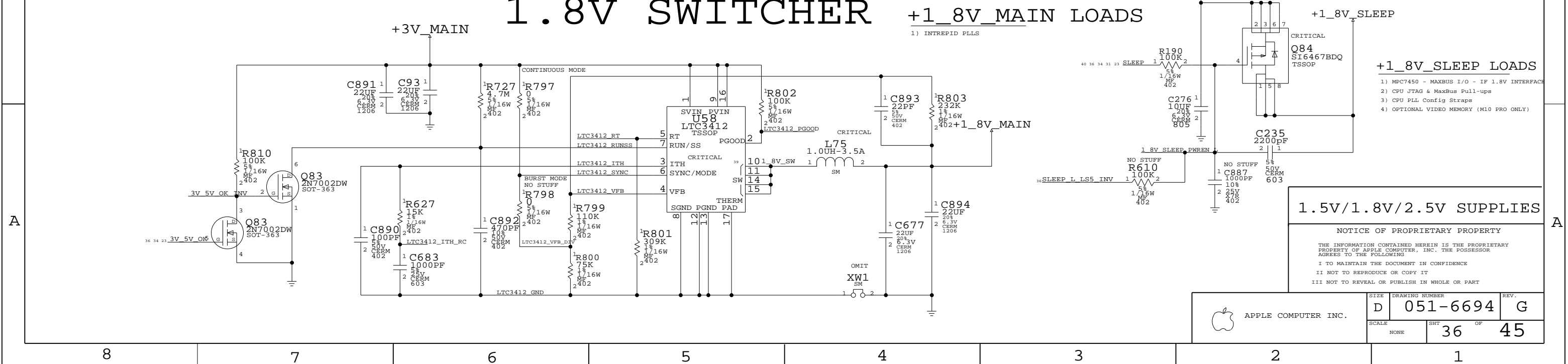
SIZE D DRAWING NUMBER 051-6694 REV. G

SCALE NONE SHT 34 OF 45

1.5V/2.5V SWITCHER



1.8V SWITCHER



8								7				6				5				4				3				2				1			

8		7		6		5		4		3		2		1					
FUNCTIONAL TEST POINTS																			
D	FUNC_TEST=YES JTAG_ASIC_TMS 13 28	FUNC_TEST=YES TMDS_CONN_CLKP 22 38	FUNC_TEST=YES TV_C 22	FUNC_TEST=YES PCI_AD<7> 9 12 17 25 27 38	FUNC_TEST=YES PCI_PAR 12 17 25 27 38	FUNC_TEST=YES EIDE_OPTICAL_CS0_L 25 38			FUNC_TEST=YES +5V_INV_SW 22 39										
	FUNC_TEST=YES JTAG_ASIC_TDI 28	FUNC_TEST=YES VGA_R 22	FUNC_TEST=YES TV_Y 22	FUNC_TEST=YES PCI_AD<8> 9 12 17 25 27 38	FUNC_TEST=YES PCI_CBE<0> 12 17 25 27 38	FUNC_TEST=YES EIDE_OPTICAL_CS1_L 25 38			FUNC_TEST=YES LEFT_USB_DM 25 27 38										
	FUNC_TEST=YES JTAG_ASIC_TDO 13 14	FUNC_TEST=YES VGA_G 22	FUNC_TEST=YES TV_COMP 22	FUNC_TEST=YES PCI_AD<9> 9 12 17 25 27 38	FUNC_TEST=YES PCI_CBE<1> 12 17 25 27 38	FUNC_TEST=YES EIDE_OPTICAL_RST_L 25 38			FUNC_TEST=YES LEFT_USB_DP 25 27 38										
	FUNC_TEST=YES JTAG_ASIC_TCK 13 28	FUNC_TEST=YES VGA_B 22	FUNC_TEST=YES SND_TO_AUDIO 14 26	FUNC_TEST=YES PCI_AD<10> 9 12 17 25 27 38	FUNC_TEST=YES PCI_CBE<2> 12 17 25 27 38	FUNC_TEST=YES EIDE_OPTICAL_WR_L 25 38			FUNC_TEST=YES RIGHT_USB_DM 27 33 38										
	FUNC_TEST=YES JTAG_ASIC_TRST_L 13 28	FUNC_TEST=YES VGA_VSYNC 22	FUNC_TEST=YES SND_SYNC 14 26	FUNC_TEST=YES PCI_AD<11> 9 12 17 25 27 38	FUNC_TEST=YES PCI_CBE<3> 12 17 25 27 38	FUNC_TEST=YES EIDE_OPTICAL_IOCHRDY 25 38			FUNC_TEST=YES RIGHT_USB_DP 27 33 38										
	FUNC_TEST=YES CPU_CHKSTP_OUT_L 5	FUNC_TEST=YES VGA_HSYNC 22	FUNC_TEST=YES SND_CLKOUT 14 26 37	FUNC_TEST=YES PCI_AD<12> 9 12 17 25 27 38	FUNC_TEST=YES AIRPORT_PCI_REQ_L 12 25	FUNC_TEST=YES EIDE_OPTICAL_INT 25 38			FUNC_TEST=YES NEC_LEFT_USB_PWREN 25 27										
	FUNC_TEST=YES CPU_SRESET_L 5	FUNC_TEST=YES DVI_DDC_CLK_UF 22		FUNC_TEST=YES PCI_AD<13> 9 12 17 25 27 38	FUNC_TEST=YES AIRPORT_PCI_GNT_L 12 25	FUNC_TEST=YES TPAD_F_TXD			FUNC_TEST=YES NEC_LEFT_USB_OVERCURRENT 25 27										
	FUNC_TEST=YES CPU_HRESET_L 5 6 7	FUNC_TEST=YES DVI_DDC_DATA_UF 22		FUNC_TEST=YES PCI_AD<14> 9 12 17 25 27 38	FUNC_TEST=YES AIRPORT_PCI_INT_L 14 25	FUNC_TEST=YES TPAD_F_RXD			FUNC_TEST=YES NEC_RIGHT_USB_PWREN 27 33										
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	FUNC_TEST=YES JTAG_CPU_TCK 5 6	FUNC_TEST=YES LVDS_L1N 19 22 38	FUNC_TEST=YES SND_HP_SENSE_L	FUNC_TEST=YES PCI_AD<18> 9 12 17 25 27 38	FUNC_TEST=YES EIDE_OPTICAL_DATA<3> 25 38	FUNC_TEST=YES COMM_RING_DET_L 14 26 31													
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B		FUNC_TEST=YES LVDS_U1P 19 22 38		FUNC_TEST=YES PCI_AD<27> 9 12 17 25 27 38	FUNC_TEST=YES EIDE_OPTICAL_DATA<12> 25 38	FUNC_TEST=YES KBD_FUNCTION_L 23 31			FUNC_TEST=YES CLK33M_AIRPORT 12 25 37										
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		FUNC_TEST=YES LVDS_DDC_CLK 19 22		FUNC_TEST=YES PCI_FRAME_L 12 17 25 27 38	FUNC_TEST=YES EIDE_OPTICAL_RD_L 25 38	FUNC_TEST=YES KBD_FUNCTION_L 23 31			FUNC_TEST=YES JTAG_CPU_TRST_L 5 6 40										
		FUNC_TEST=YES LVDS_DDC_DATA 19 22		FUNC_TEST=YES PCI_TRDY_L 12 17 25 27 38	FUNC_TEST=YES EIDE_OPTICAL_DMAACK_L 25 38	FUNC_TEST=YES KBD_FUNCTION_L 23 31			FUNC_TEST=YES GPU_VCORE 18 19 39										
		FUNC_TEST=YES BRIGHT_PWM 22		FUNC_TEST=YES PCI_IRDY_L 12 17 25 27 38	FUNC_TEST=YES EIDE_OPTICAL_ADDR<0> 25 38	FUNC_TEST=YES KBD_FUNCTION_L 23 31			FUNC_TEST=YES MOD_BITCLK 14 26										
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A									FUNC_TEST=YES +5V_DDC_SLEEP 22 39										
									FUNC_TEST=YES +12_8V_INV 22 39	FUNCTIONAL TEST POINTS									
	FUNCTIONAL TEST POINTS																		
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