LONGTRAIL

PowerPC 603/604

CHRP REFERENCE BOARD

(VER 2N)

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PASS-2

FOR GERBER RELEASED ON 09-21-96

*** 2S2P ***

Mon Sep 23 09:32:43 1996

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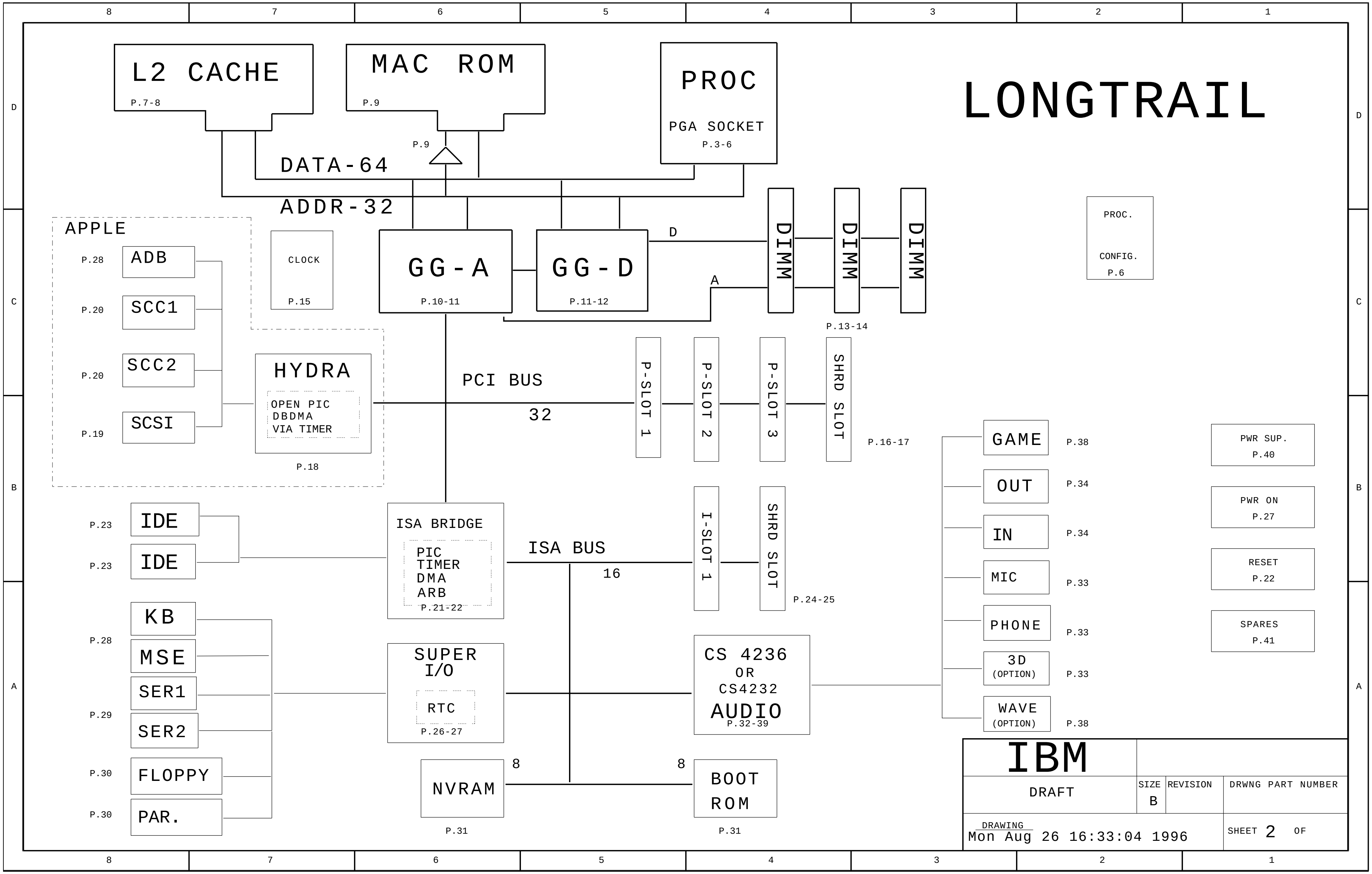
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CS 4236
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8
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8
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IBM
DRAFT
SIZE B
REVISION
DRWNG PART NUMBER
DRAWING
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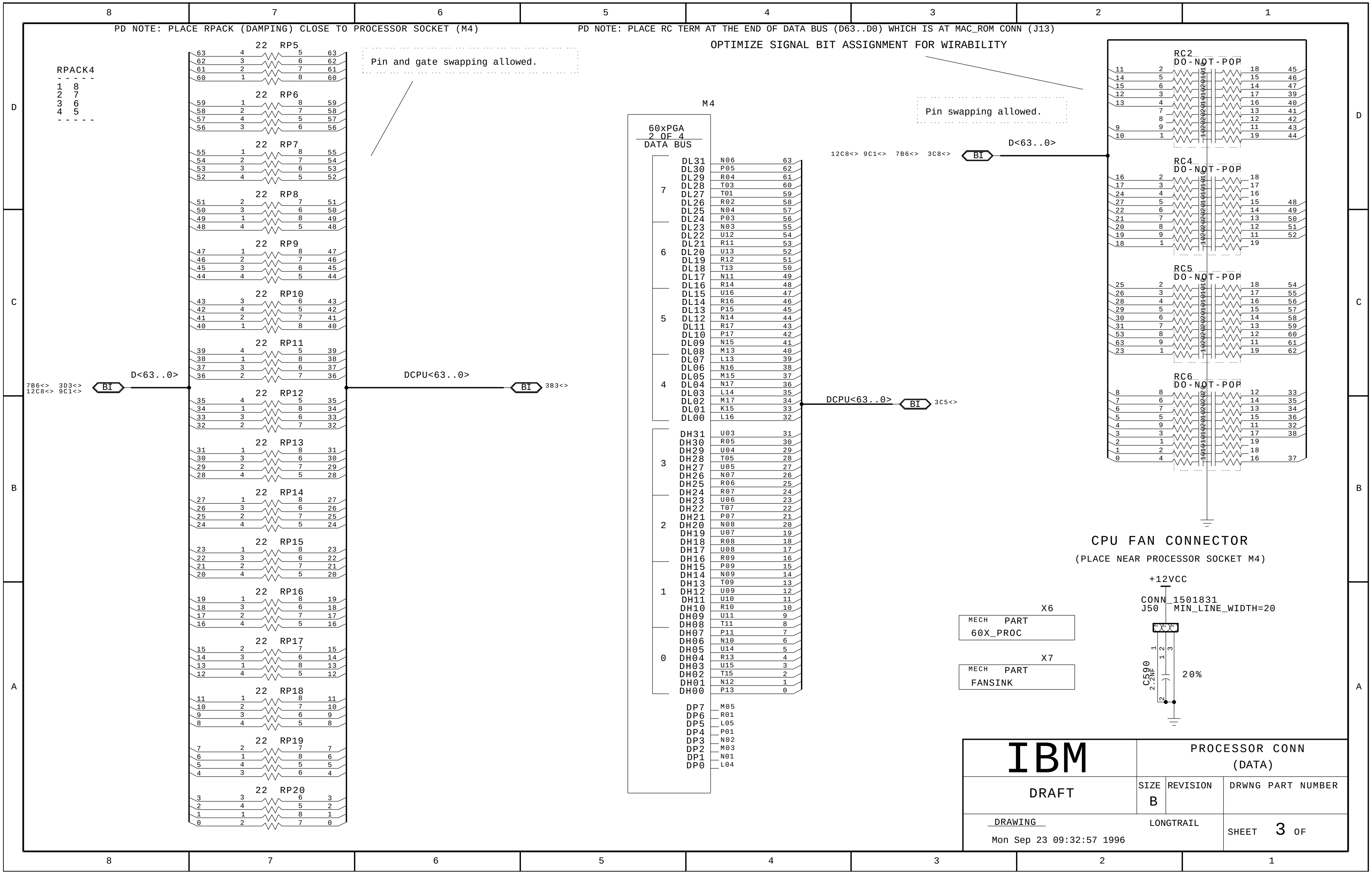
PD NOTE: PLACE RPACK (DAMPING) CLOSE TO PROCESSOR SOCKET (M4)
PD NOTE: PLACE RC TERM AT THE END OF DATA BUS (D63..D0) WHICH IS AT MAC_ROM CONN (J13)
OPTIMIZE SIGNAL BIT ASSIGNMENT FOR WIRABILITY
Pin and gate swapping allowed.
Pin swapping allowed.
RPACK4
1 8
2 7
3 6
4 5
22 RP5
22 RP6
22 RP7
22 RP8
22 RP9
22 RP10
22 RP11
22 RP12
22 RP13
22 RP14
22 RP15
22 RP16
22 RP17
22 RP18
22 RP19
22 RP20
D<63..0>
DCPU<63..0>
BI
M4
60xPGA
2 OF 4
DATA BUS
RC2
DO-NOT-POP
RC4
DO-NOT-POP
RC5
DO-NOT-POP
RC6
DO-NOT-POP
CPU FAN CONNECTOR
(PLACE NEAR PROCESSOR SOCKET M4)
+12VCC
CONN_1501831
J50 MIN_LINE_WIDTH=20
C590
2.2NF
20%
X6
MECH PART
60X_PROC
X7
MECH PART
FANSINK
IBM
PROCESSOR CONN
(DATA)
DRAFT
SIZE
B
REVISION
DRWNG PART NUMBER
DRAWING
LONGTRAIL
SHEET 3 OF
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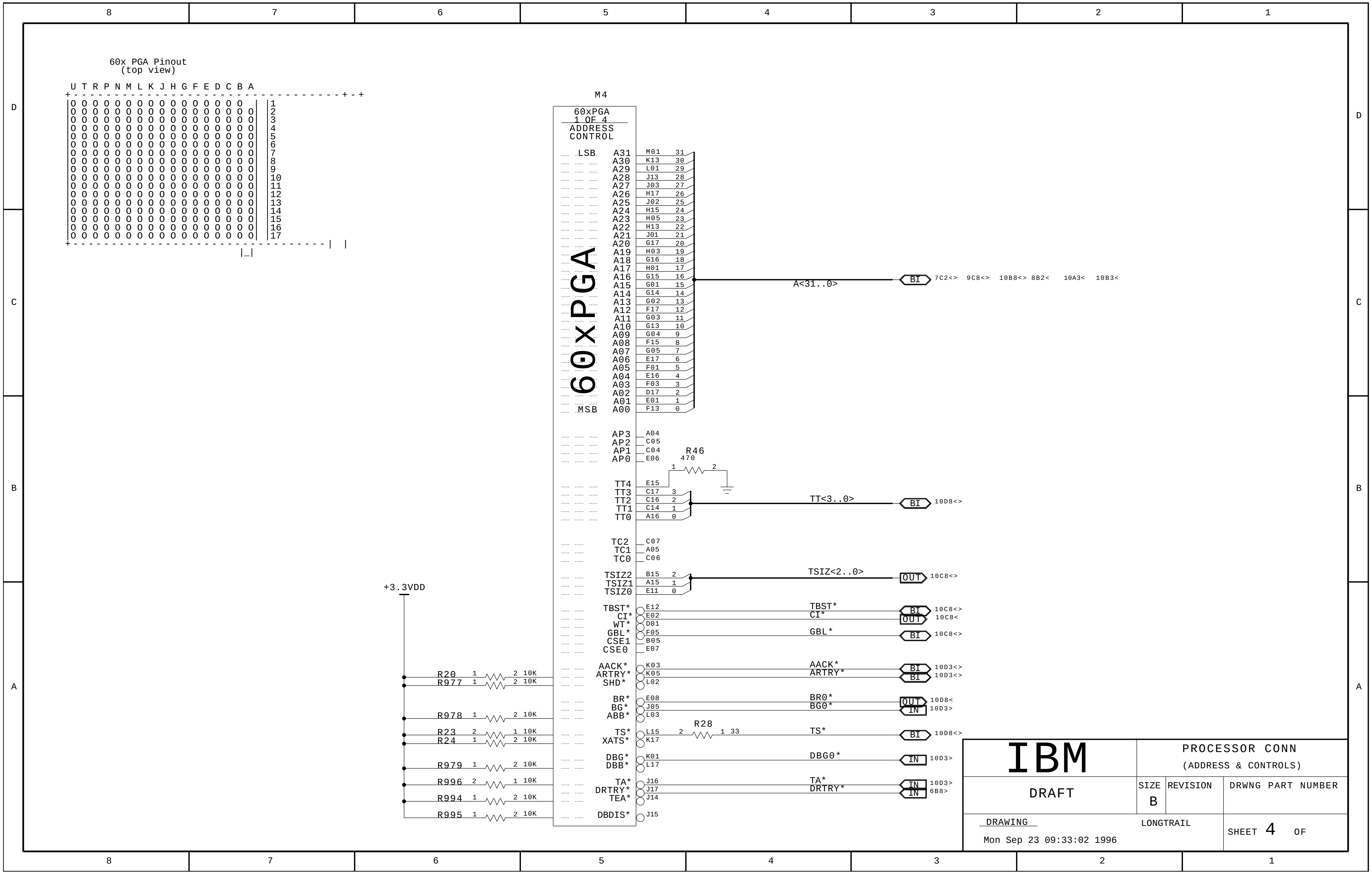
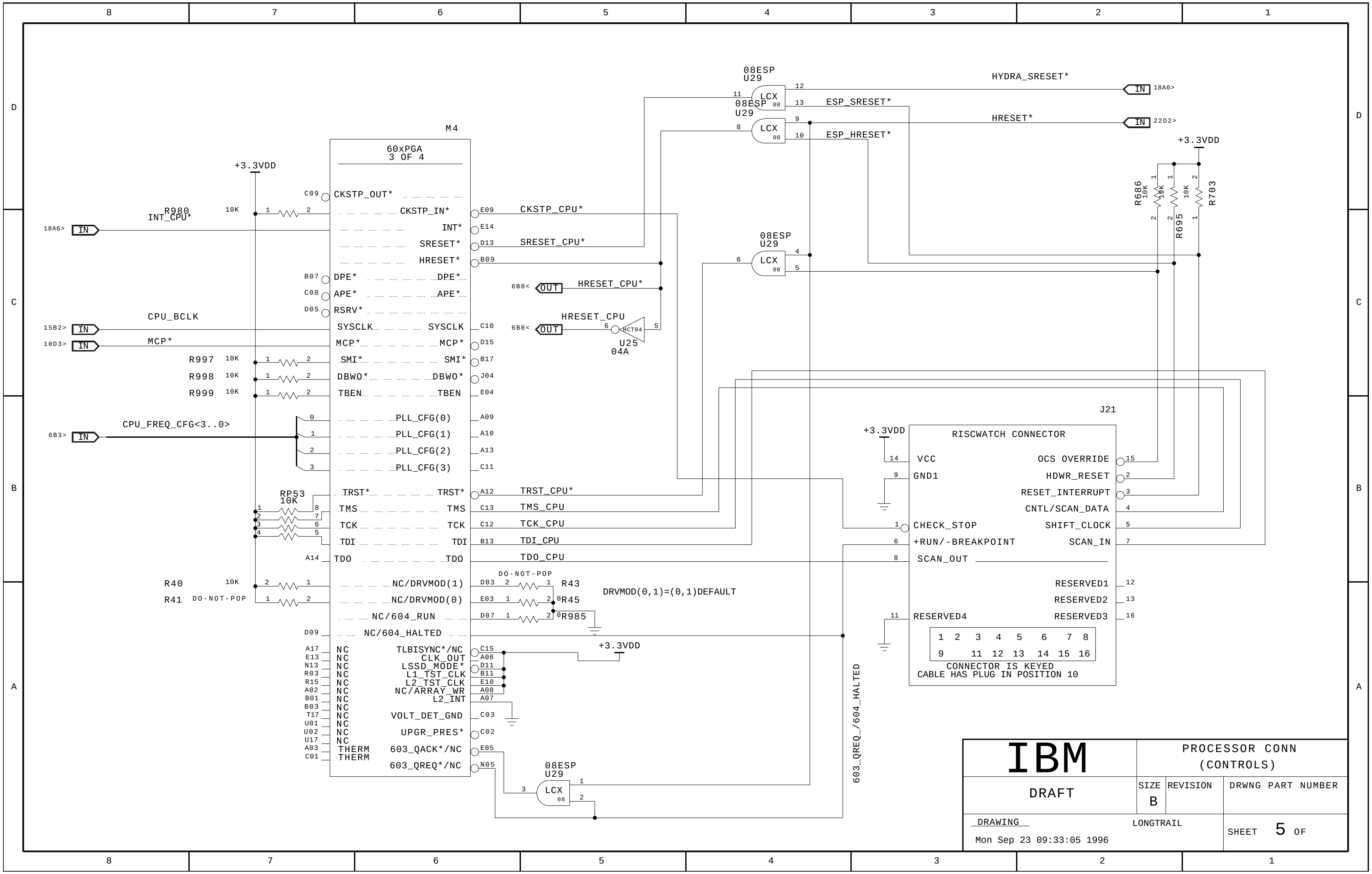


60x PGA Pinout
(top view)
U T R P N M L K J H G F E D C B A
M4
60xPGA
1 OF 4
ADDRESS
CONTROL
60xPGA
LSB A31 A30 A29 A28 A27 A26 A25 A24 A23 A22 A21 A20 A19 A18 A17 A16 A15 A14 A13 A12 A11 A10 A09 A08 A07 A06 A05 A04 A03 A02 A01
MSB A00
M01 K13 L01 J13 J03 H17 J02 H15 H05 H13 J01 G17 H03 G16 H01 G15 G01 G14 G02 F17 G03 G13 G04 F15 G05 E17 F01 E16 F03 D17 E01 F13
A<31..0>
BI
7C2<> 9C8<> 10B8<> 8B2< 10A3< 10B3<
AP3 AP2 AP1 AP0
A04 C05 C04 E06
R46
470
TT4 TT3 TT2 TT1 TT0
E15 C17 C16 C14 A16
TT<3..0>
10D8<>
TC2 TC1 TC0
C07 A05 C06
TSIZ2 TSIZ1 TSIZ0
B15 A15 E11
TSIZ<2..0>
OUT
10C8<>
TBST* CI* WT* GBL* CSE1 CSE0
E12 E02 D01 F05 B05 E07
10C8<> 10C8< 10C8<>
AACK* ARTRY* SHD*
K03 K05 L02
10D3<> 10D3<>
BR* BG* ABB*
E08 J05 L03
BR0* BG0*
10D8< 10D3>
TS* XATS*
L15 K17
R28
33
10D8<>
DBG* DBB*
K01 L17
DBG0*
IN
10D3>
TA* DRTRY* TEA*
J16 J17 J14
10D3> 6B8>
DBDIS*
J15
+3.3VDD
R20 R977 R978 R23 R24 R979 R996 R994 R995
10K
IBM
PROCESSOR CONN
(ADDRESS & CONTROLS)
DRAFT
SIZE
B
REVISION
DRWNG PART NUMBER
DRAWING
LONGTRAIL
Mon Sep 23 09:33:02 1996
SHEET 4 OF


M4
60xPGA
3 OF 4
+3.3VDD
R980
INT_CPU*
CKSTP_OUT*
CKSTP_IN*
INT*
SRESET*
HRESET*
DPE*
APE*
RSRV*
SYSCLK
MCP*
SMI*
DBWO*
TBEN
PLL_CFG(0)
PLL_CFG(1)
PLL_CFG(2)
PLL_CFG(3)
TRST*
TMS
TCK
TDI
TDO
NC/DRVMOD(1)
NC/DRVMOD(0)
NC/604_RUN
NC/604_HALTED
TLBISYNC*/NC
CLK_OUT
LSSD_MODE*
L1_TST_CLK
L2_TST_CLK
NC/ARRAY_WR
L2_INT
VOLT_DET_GND
UPGR_PRES*
603_QACK*/NC
603_QREQ*/NC
THERM
CPU_BCLK
MCP*
R997 10K
R998 10K
R999 10K
CPU_FREQ_CFG<3..0>
RP53 10K
R40 10K
R41 DO-NOT-POP
CKSTP_CPU*
SRESET_CPU*
HRESET_CPU*
HRESET_CPU
U25 04A
TRST_CPU*
TMS_CPU
TCK_CPU
TDI_CPU
TDO_CPU
DO-NOT-POP
R43
R45
R985
DRVMOD(0,1)=(0,1)DEFAULT
08ESP U29 LCX
HYDRA_SRESET*
ESP_SRESET*
HRESET*
ESP_HRESET*
+3.3VDD
R686 10K
R695 10K
R703 10K
603_QREQ_/604_HALTED
J21
RISCWATCH CONNECTOR
VCC
GND1
CHECK_STOP
+RUN/-BREAKPOINT
SCAN_OUT
RESERVED4
OCS OVERRIDE
HDWR_RESET
RESET_INTERRUPT
CNTL/SCAN_DATA
SHIFT_CLOCK
SCAN_IN
RESERVED1
RESERVED2
RESERVED3
1 2 3 4 5 6 7 8
9 11 12 13 14 15 16
CONNECTOR IS KEYED
CABLE HAS PLUG IN POSITION 10
IBM
PROCESSOR CONN
(CONTROLS)
DRAFT
SIZE B
REVISION
DRWNG PART NUMBER
DRAWING
LONGTRAIL
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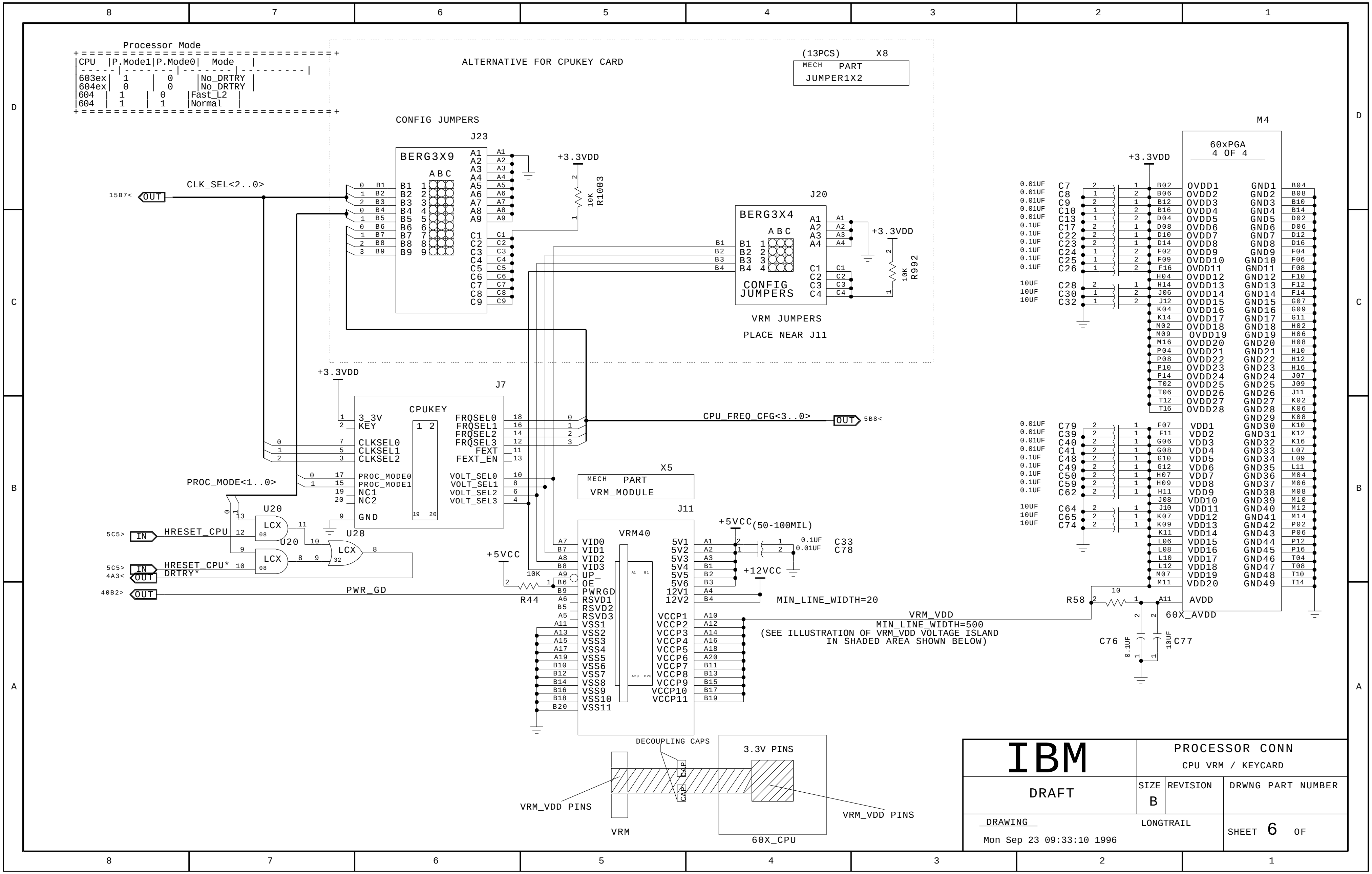
Processor Mode
CPU	P.Mode1	P.Mode0	Mode
603ex	1	0	No_DRTRY
604ex	0	0	No_DRTRY
604	1	0	Fast_L2
604	1	1	Normal
ALTERNATIVE FOR CPUKEY CARD
(13PCS) X8
MECH PART
JUMPER1X2
CONFIG JUMPERS
J23
BERG3X9
+3.3VDD
R1003
10K
CLK_SEL<2..0>
15B7< OUT
J20
BERG3X4
+3.3VDD
R992
10K
CONFIG JUMPERS
VRM JUMPERS
PLACE NEAR J11
+3.3VDD
J7
CPUKEY
3_3V
KEY
CLKSEL0
CLKSEL1
CLKSEL2
PROC_MODE0
PROC_MODE1
NC1
NC2
GND
FRQSEL0
FRQSEL1
FRQSEL2
FRQSEL3
FEXT
FEXT_EN
VOLT_SEL0
VOLT_SEL1
VOLT_SEL2
VOLT_SEL3
CPU_FREQ_CFG<3..0>
OUT 5B8<
PROC_MODE<1..0>
U20
LCX
U28
5C5< IN HRESET_CPU
5C5< IN HRESET_CPU*
4A3< OUT DRTRY*
40B2< OUT PWR_GD
+5VCC
R44
10K
MECH PART
X5
VRM_MODULE
J11
VRM40
VID0
VID1
VID2
VID3
UP_
OE
PWRGD
RSVD1
RSVD2
RSVD3
VSS1
VSS2
VSS3
VSS4
VSS5
VSS6
VSS7
VSS8
VSS9
VSS10
VSS11
5V1
5V2
5V3
5V4
5V5
5V6
12V1
12V2
VCCP1
VCCP2
VCCP3
VCCP4
VCCP5
VCCP6
VCCP7
VCCP8
VCCP9
VCCP10
VCCP11
+5VCC (50-100MIL)
0.1UF C33
0.01UF C78
+12VCC
MIN_LINE_WIDTH=20
VRM_VDD
MIN_LINE_WIDTH=500
(SEE ILLUSTRATION OF VRM_VDD VOLTAGE ISLAND
IN SHADED AREA SHOWN BELOW)
M4
60xPGA
4 OF 4
+3.3VDD
OVDD1 … OVDD28
GND1 … GND49
VDD1 … VDD20
AVDD
60X_AVDD
R58
10
C76
0.1UF
C77
10UF
DECOUPLING CAPS
3.3V PINS
CAP
VRM_VDD PINS
VRM
60X_CPU
IBM
PROCESSOR CONN
CPU VRM / KEYCARD
DRAFT
SIZE
B
REVISION
DRWNG PART NUMBER
DRAWING
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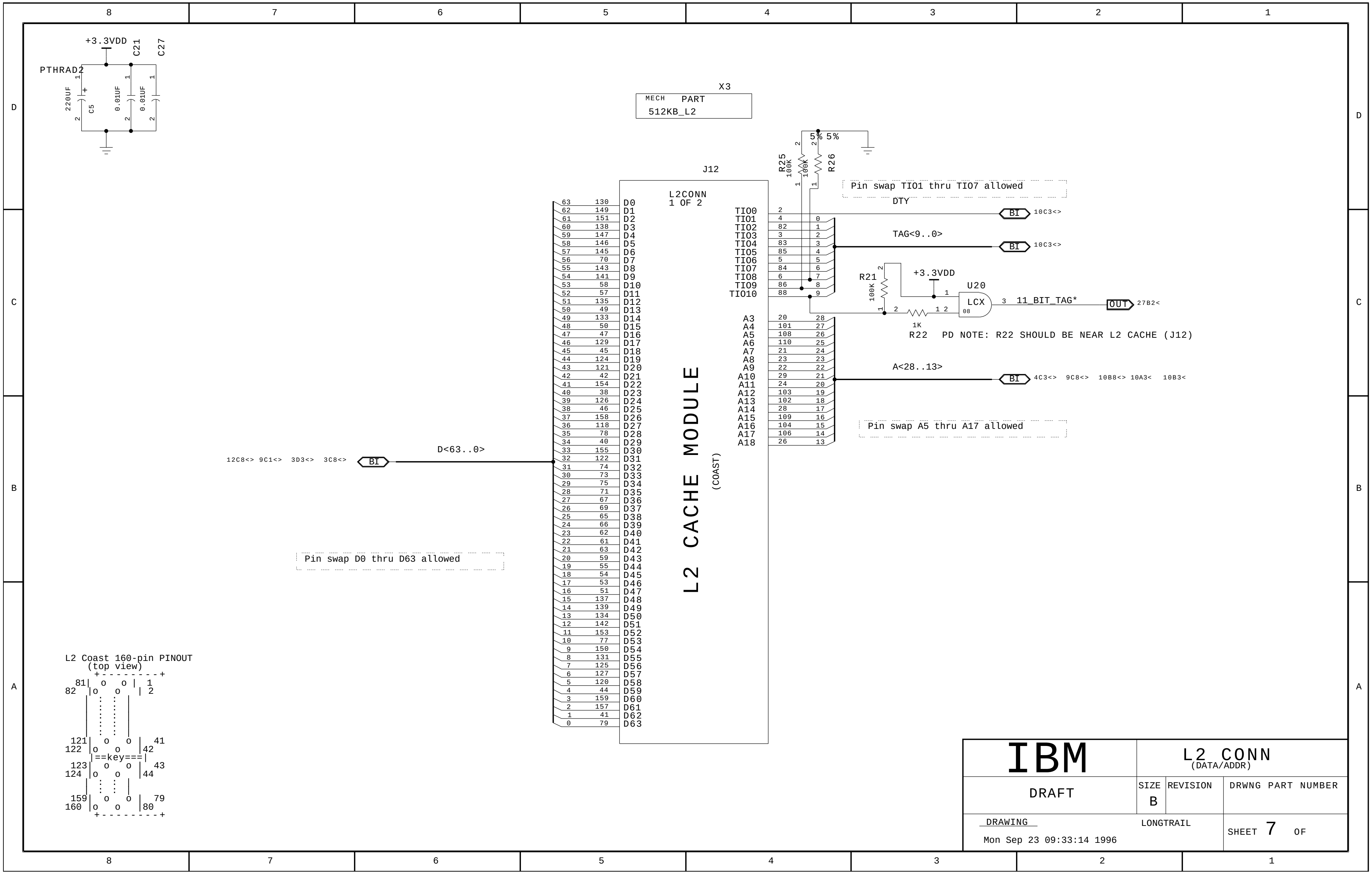

IBM	L2 CONN (DATA/ADDR)
DRAFT	SIZE B / REVISION / DRWNG PART NUMBER
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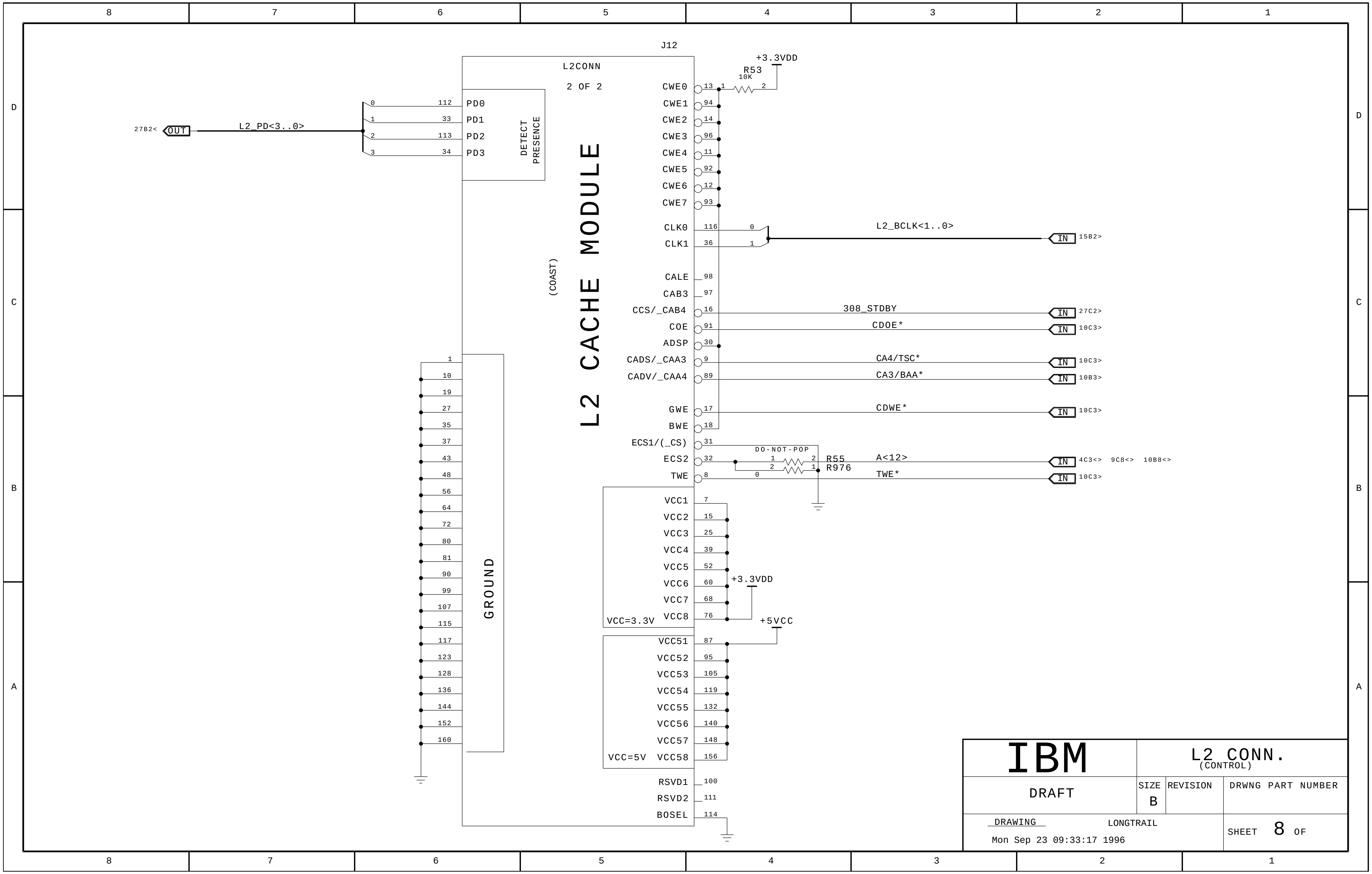
J12
L2CONN
2 OF 2
L2 CACHE MODULE
(COAST)
DETECT PRESENCE
GROUND
L2_PD<3..0>
27B2<
OUT
PD0
PD1
PD2
PD3
CWE0
CWE1
CWE2
CWE3
CWE4
CWE5
CWE6
CWE7
+3.3VDD
R53
10K
CLK0
CLK1
L2_BCLK<1..0>
IN
15B2>
CALE
CAB3
CCS/_CAB4
COE
ADSP
CADS/_CAA3
CADV/_CAA4
GWE
BWE
ECS1/(_CS)
ECS2
TWE
308_STDBY
27C2>
CDOE*
10C3>
CA4/TSC*
CA3/BAA*
10B3>
CDWE*
DO-NOT-POP
R55
R976
A<12>
4C3<> 9C8<> 10B8<>
TWE*
VCC1
VCC2
VCC3
VCC4
VCC5
VCC6
VCC7
VCC8
VCC=3.3V
+5VCC
VCC51
VCC52
VCC53
VCC54
VCC55
VCC56
VCC57
VCC58
VCC=5V
RSVD1
RSVD2
BOSEL
IBM
L2 CONN.
(CONTROL)
DRAFT
SIZE
B
REVISION
DRWNG PART NUMBER
DRAWING
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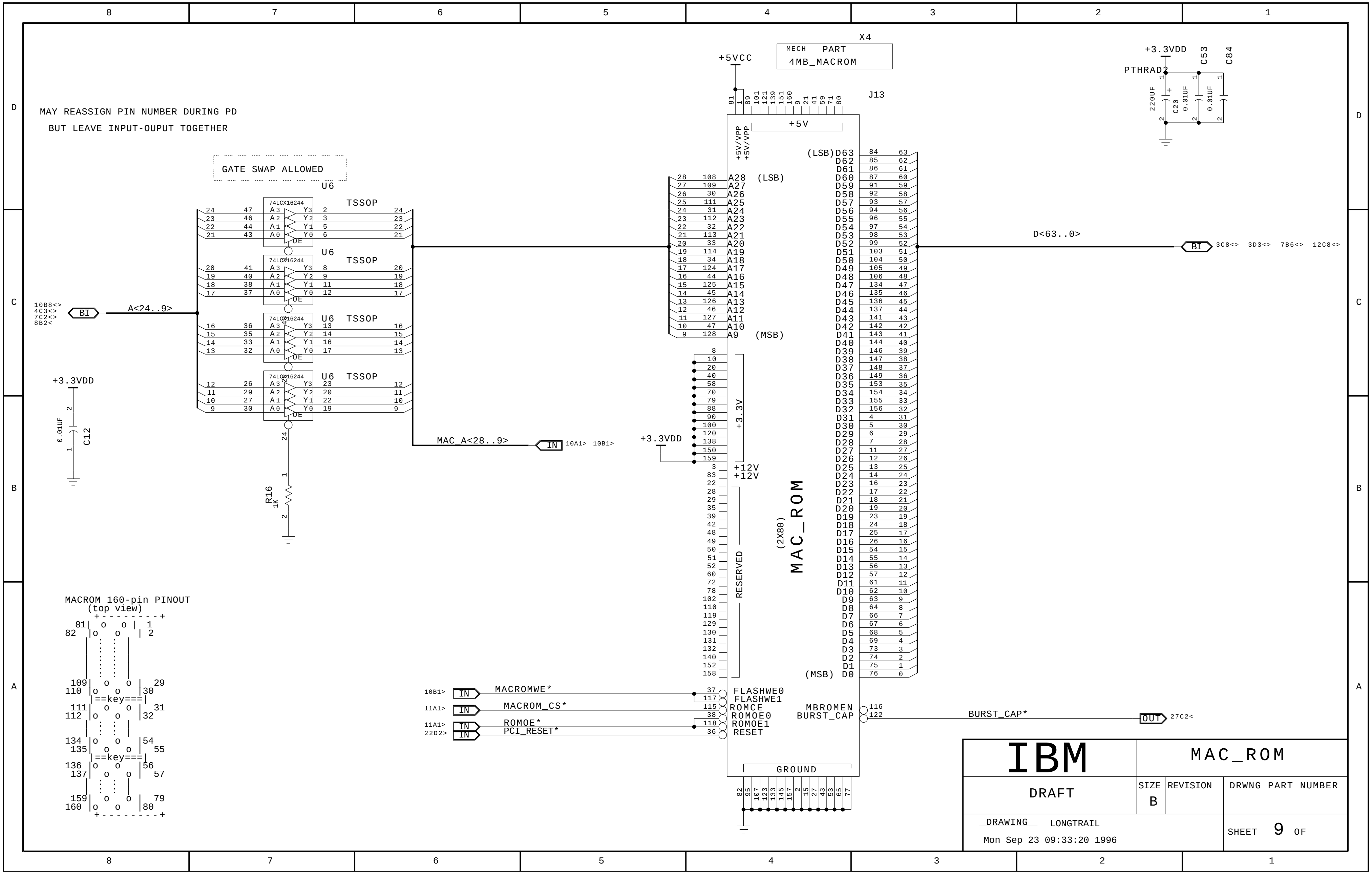
MAY REASSIGN PIN NUMBER DURING PD
BUT LEAVE INPUT-OUPUT TOGETHER
GATE SWAP ALLOWED
U6
TSSOP
74LCX16244
A<24..9>
BI
10B8<> 4C3<> 7C2<> 8B2<
MAC_A<28..9>
IN
10A1> 10B1>
+3.3VDD
0.01UF
C12
R16
1K
+5VCC
X4
MECH PART
4MB_MACROM
J13
+5V/VPP
+5V
(LSB)
(MSB)
+3.3V
+12V
RESERVED
(2X80)
MAC_ROM
GROUND
D<63..0>
3C8<> 3D3<> 7B6<> 12C8<>
PTHRAD2
220UF
C20
C53
C84
MACROMWE*
MACROM_CS*
ROMOE*
PCI_RESET*
10B1>
11A1>
22D2>
FLASHWE0
FLASHWE1
ROMCE
ROMOE0
ROMOE1
RESET
MBROMEN
BURST_CAP
BURST_CAP*
OUT
27C2<
MACROM 160-pin PINOUT
(top view)
==key===
IBM
MAC_ROM
DRAFT
SIZE
B
REVISION
DRWNG PART NUMBER
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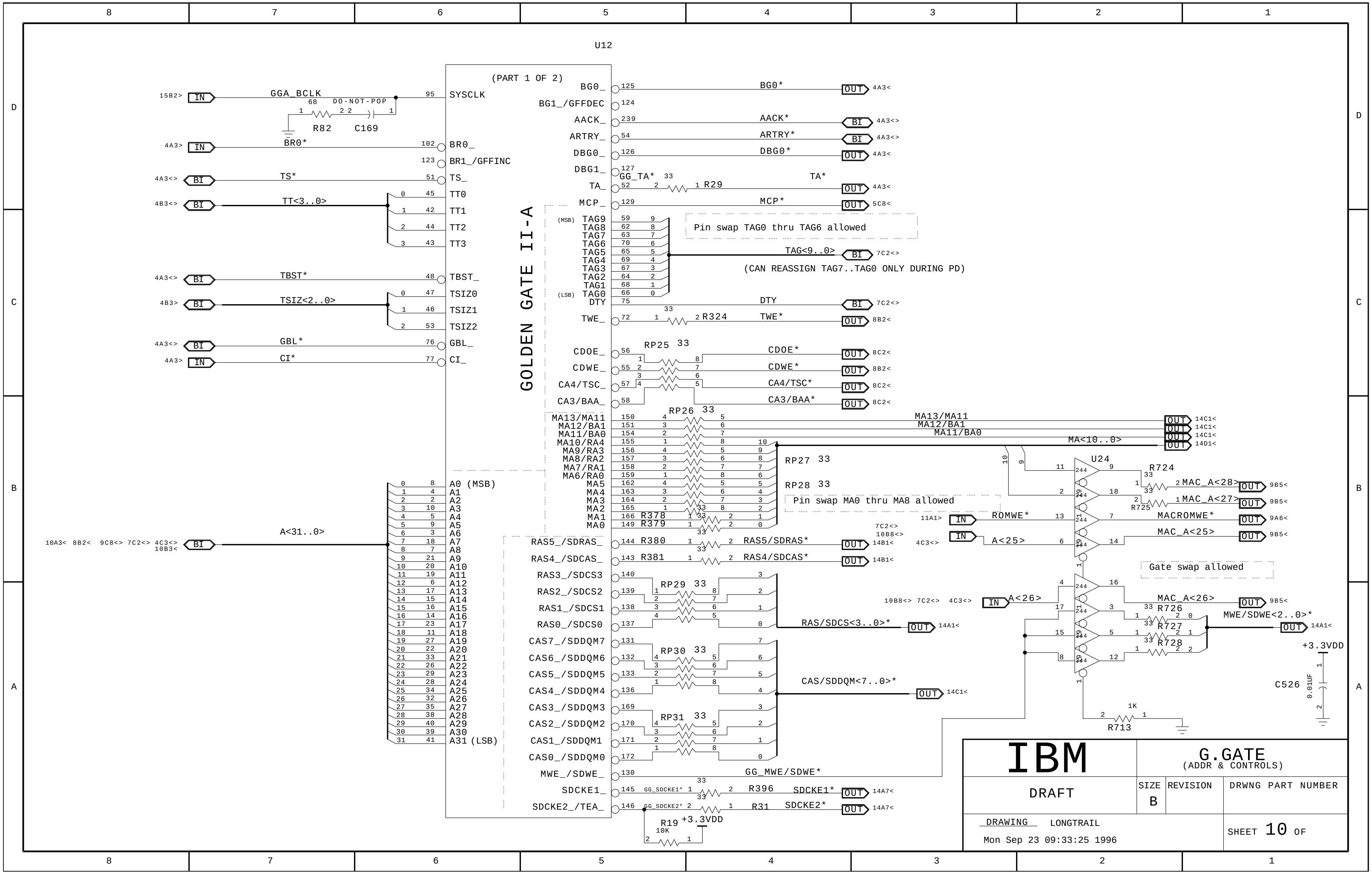
U12
(PART 1 OF 2)
GOLDEN GATE II-A
GGA_BCLK
SYSCLK
R82
C169
DO-NOT-POP
BR0*
BR0_
BR1_/GFFINC
TS*
TS_
TT<3..0>
TT0
TT1
TT2
TT3
TBST*
TBST_
TSIZ<2..0>
TSIZ0
TSIZ1
TSIZ2
GBL*
GBL_
CI*
CI_
A<31..0>
A0 (MSB)
A31 (LSB)
BG0_
BG0*
BG1_/GFFDEC
AACK_
AACK*
ARTRY_
ARTRY*
DBG0_
DBG0*
DBG1_
GG_TA*
R29
TA_
TA*
MCP_
MCP*
TAG9 (MSB)
TAG0 (LSB)
Pin swap TAG0 thru TAG6 allowed
TAG<9..0>
(CAN REASSIGN TAG7..TAG0 ONLY DURING PD)
DTY
TWE_
R324
TWE*
RP25 33
CDOE_
CDOE*
CDWE_
CDWE*
CA4/TSC_
CA4/TSC*
CA3/BAA_
CA3/BAA*
RP26 33
MA13/MA11
MA12/BA1
MA11/BA0
MA10/RA4
MA9/RA3
MA8/RA2
MA7/RA1
MA6/RA0
MA5
MA4
MA3
MA2
MA1
MA0
MA<10..0>
RP27 33
RP28 33
Pin swap MA0 thru MA8 allowed
R378
R379
U24
R724
MAC_A<28>
R725
MAC_A<27>
ROMWE*
MACROMWE*
A<25>
MAC_A<25>
Gate swap allowed
A<26>
MAC_A<26>
R726
R727
R728
MWE/SDWE<2..0>*
+3.3VDD
C526
0.01UF
R713
1K
RAS5_/SDRAS_
R380
RAS5/SDRAS*
RAS4_/SDCAS_
R381
RAS4/SDCAS*
RAS3_/SDCS3
RAS2_/SDCS2
RAS1_/SDCS1
RAS0_/SDCS0
RP29 33
RAS/SDCS<3..0>*
CAS7_/SDDQM7
CAS6_/SDDQM6
CAS5_/SDDQM5
CAS4_/SDDQM4
RP30 33
CAS/SDDQM<7..0>*
CAS3_/SDDQM3
CAS2_/SDDQM2
CAS1_/SDDQM1
CAS0_/SDDQM0
RP31 33
MWE_/SDWE_
GG_MWE/SDWE*
SDCKE1_
GG_SDCKE1*
R396
SDCKE1*
SDCKE2_/TEA_
GG_SDCKE2*
R31
SDCKE2*
R19
10K
+3.3VDD
IBM
DRAFT
G.GATE
(ADDR & CONTROLS)
SIZE B
REVISION
DRWNG PART NUMBER
DRAWING LONGTRAIL
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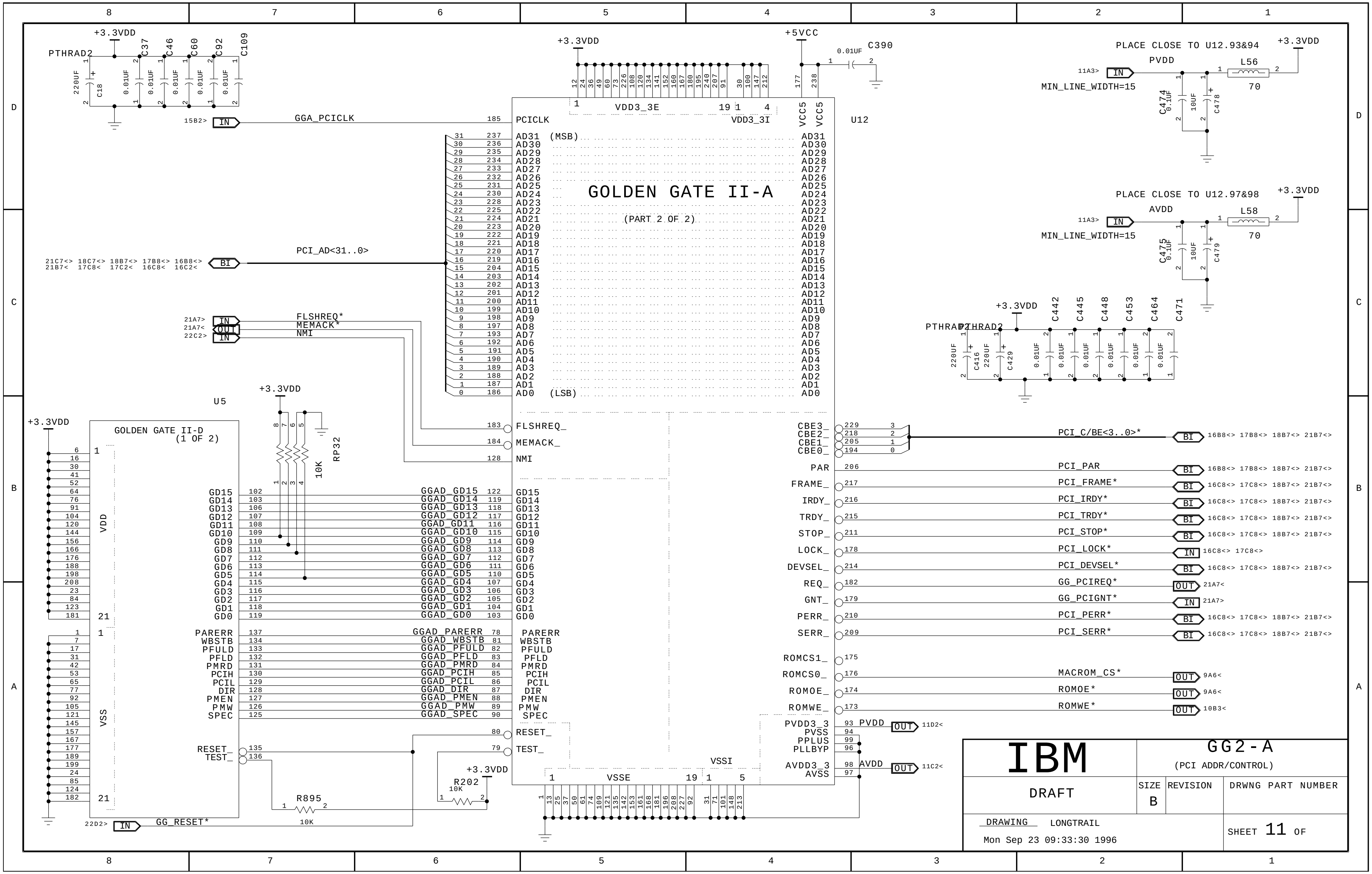
SHEET 10 OF


+3.3VDD
PTHRAD2
C37
C46
C60
C92
C109
220UF
C18
0.01UF
15B2> IN
GGA_PCICLK
PCI_AD<31..0>
21C7<> 18C7<> 18B7<> 17B8<> 16B8<>
21B7< 17C8< 17C2< 16C8< 16C2<
BI
21A7> IN FLSHREQ*
21A7< OUT MEMACK*
22C2> IN NMI
+3.3VDD
VDD3_3E
VDD3_3I
+5VCC
0.01UF
C390
VCC5
VCC5
U12
PCICLK
AD31 (MSB)
AD0 (LSB)
GOLDEN GATE II-A
(PART 2 OF 2)
FLSHREQ_
MEMACK_
NMI
CBE3_
CBE2_
CBE1_
CBE0_
PAR
FRAME_
IRDY_
TRDY_
STOP_
LOCK_
DEVSEL_
REQ_
GNT_
PERR_
SERR_
ROMCS1_
ROMCS0_
ROMOE_
ROMWE_
PVDD3_3
PVSS
PPLUS
PLLBYP
AVDD3_3
AVSS
VSSI
VSSE
RESET_
TEST_
PCI_C/BE<3..0>*
PCI_PAR
PCI_FRAME*
PCI_IRDY*
PCI_TRDY*
PCI_STOP*
PCI_LOCK*
PCI_DEVSEL*
GG_PCIREQ*
GG_PCIGNT*
PCI_PERR*
PCI_SERR*
MACROM_CS*
ROMOE*
ROMWE*
PVDD
AVDD
16B8<> 17B8<> 18B7<> 21B7<>
16C8<> 17C8<> 18B7<> 21B7<>
16C8<> 17C8<>
21A7<
21A7>
9A6<
10B3<
11D2<
11C2<
PLACE CLOSE TO U12.93&94
11A3> IN
MIN_LINE_WIDTH=15
L56
70
C474
0.1UF
10UF
C478
PLACE CLOSE TO U12.97&98
L58
C475
C479
C442
C445
C448
C453
C464
C471
C416
C429
U5
GOLDEN GATE II-D
(1 OF 2)
VDD
VSS
GD15
GD14
GD13
GD12
GD11
GD10
GD9
GD8
GD7
GD6
GD5
GD4
GD3
GD2
GD1
GD0
PARERR
WBSTB
PFULD
PFLD
PMRD
PCIH
PCIL
DIR
PMEN
PMW
SPEC
GGAD_GD15
GGAD_GD14
GGAD_GD13
GGAD_GD12
GGAD_GD11
GGAD_GD10
GGAD_GD9
GGAD_GD8
GGAD_GD7
GGAD_GD6
GGAD_GD5
GGAD_GD4
GGAD_GD3
GGAD_GD2
GGAD_GD1
GGAD_GD0
GGAD_PARERR
GGAD_WBSTB
GGAD_PFULD
GGAD_PFLD
GGAD_PMRD
GGAD_PCIH
GGAD_PCIL
GGAD_DIR
GGAD_PMEN
GGAD_PMW
GGAD_SPEC
10K
RP32
R202
R895
22D2> IN GG_RESET*
IBM
GG2-A
(PCI ADDR/CONTROL)
DRAFT
SIZE B
REVISION
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DRAWING LONGTRAIL
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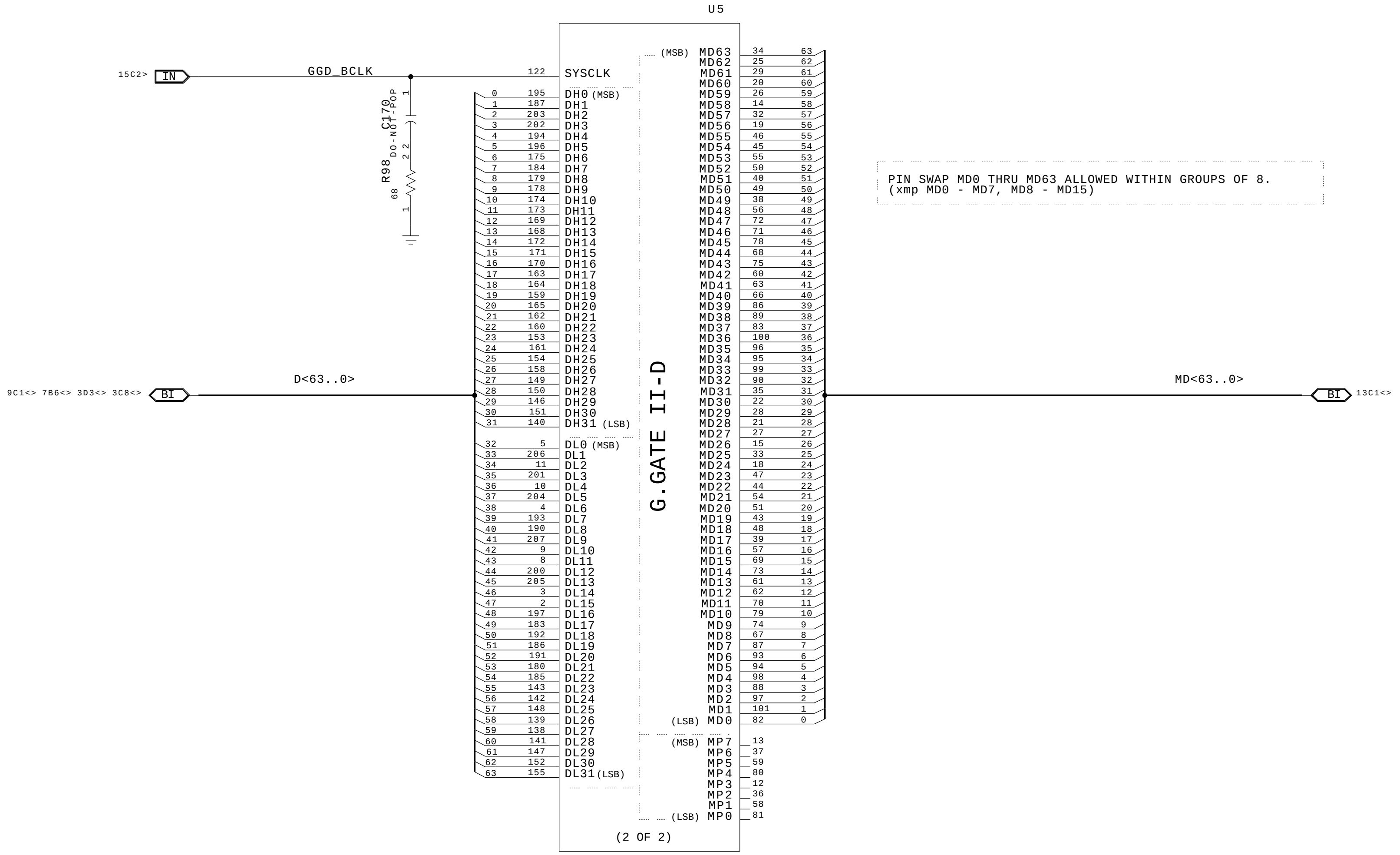

IBM	GGII-D (DATA)		
DRAFT	SIZE B	REVISION	DRWNG PART NUMBER
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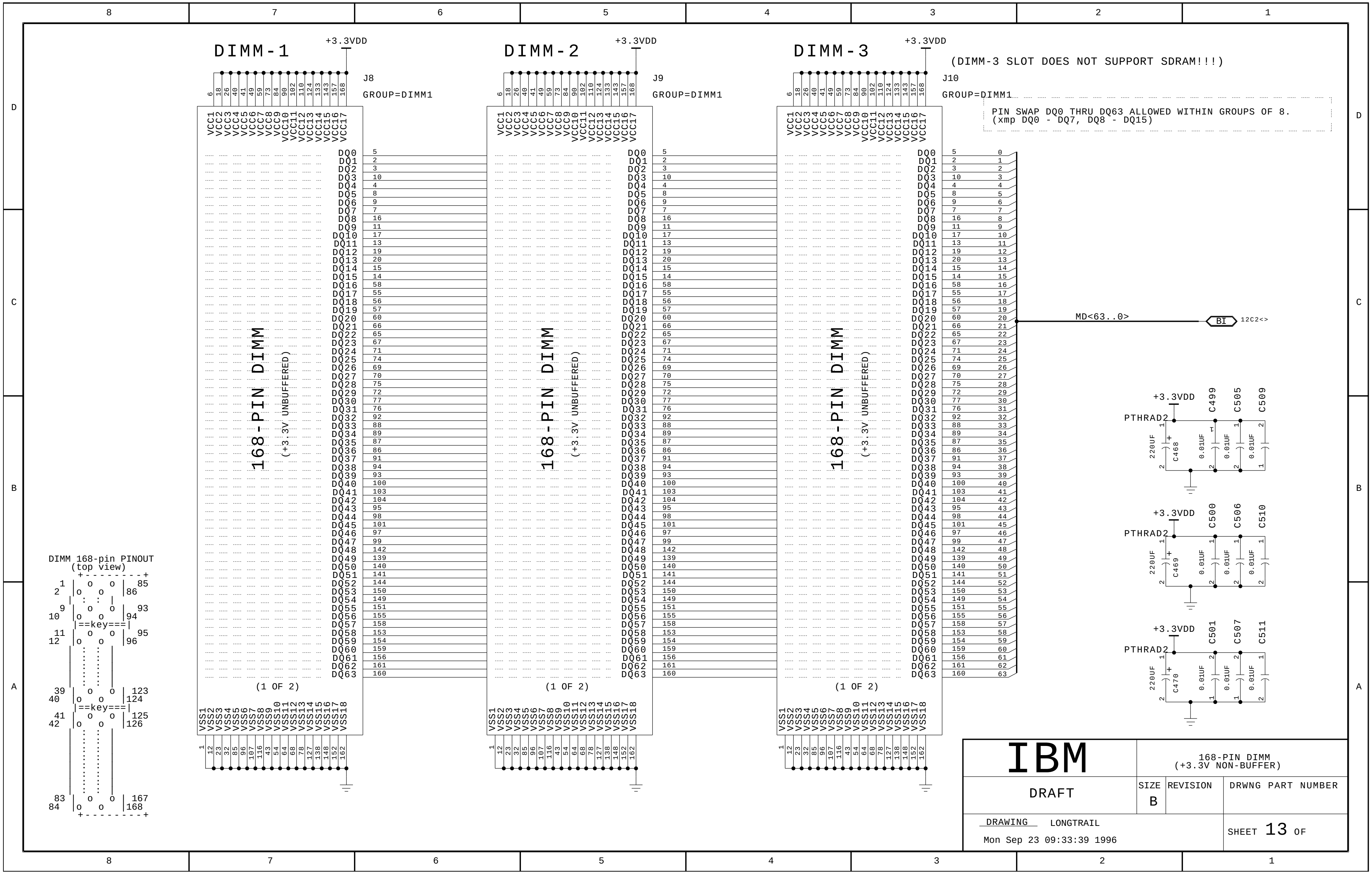
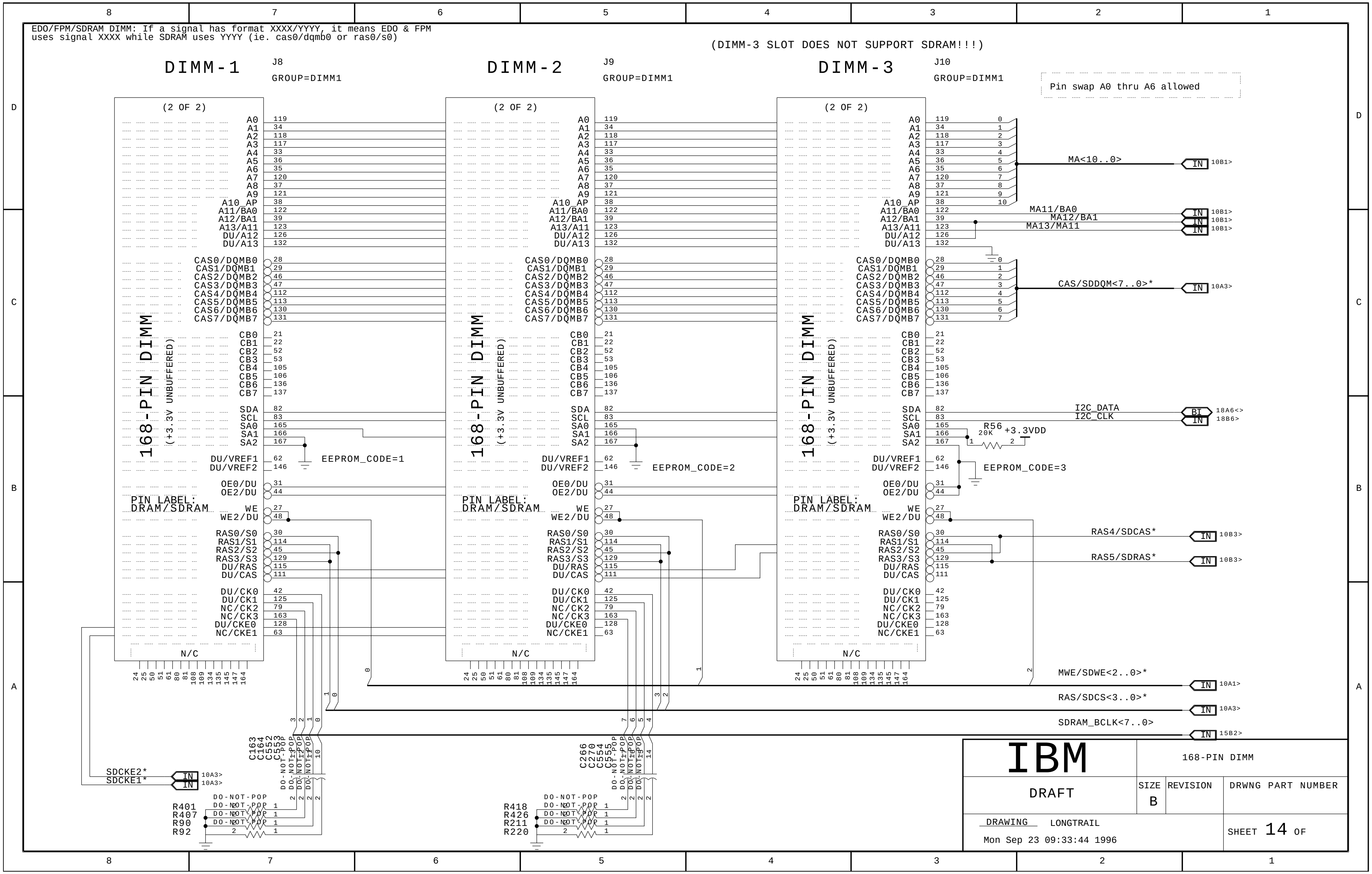
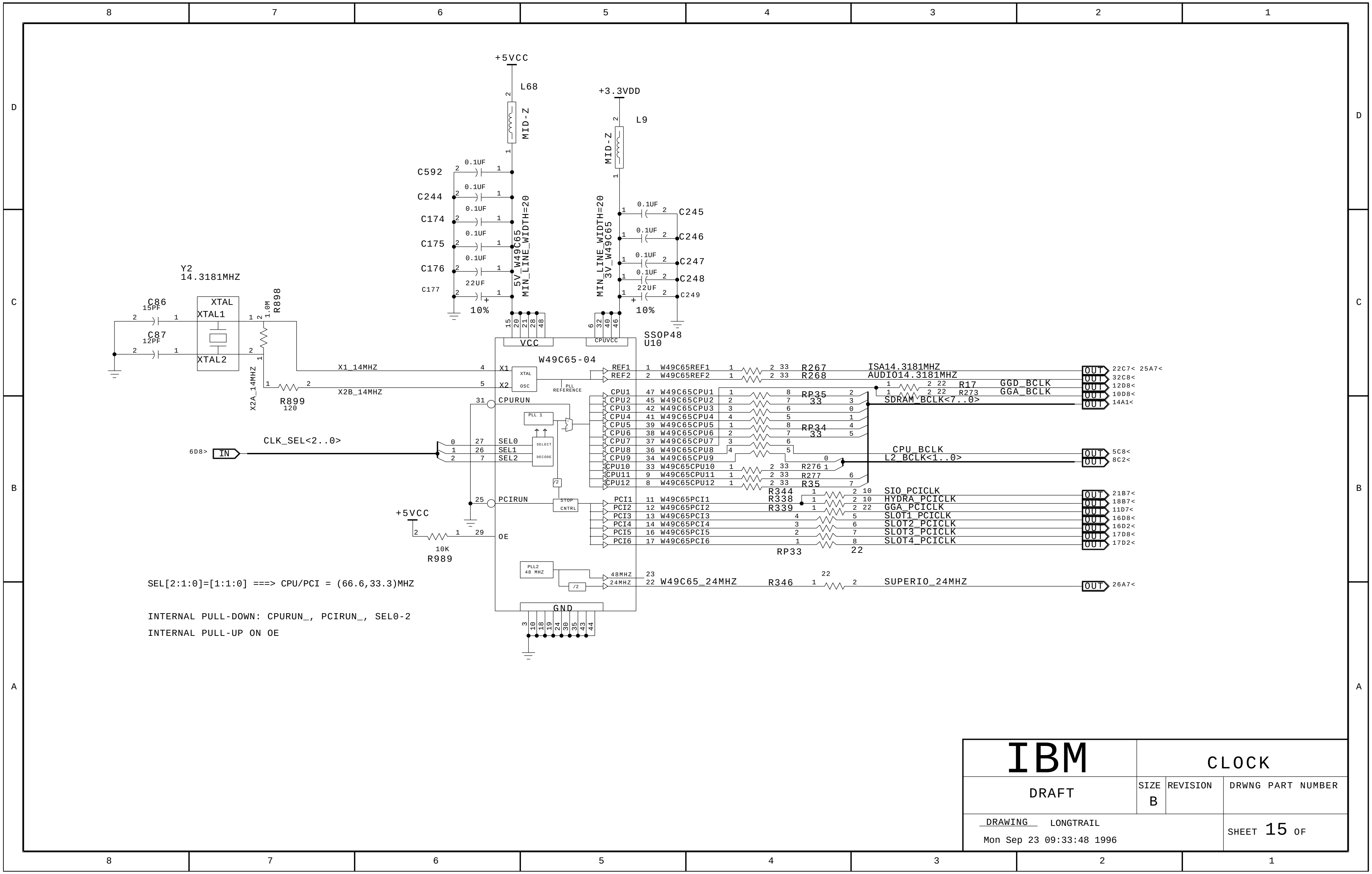
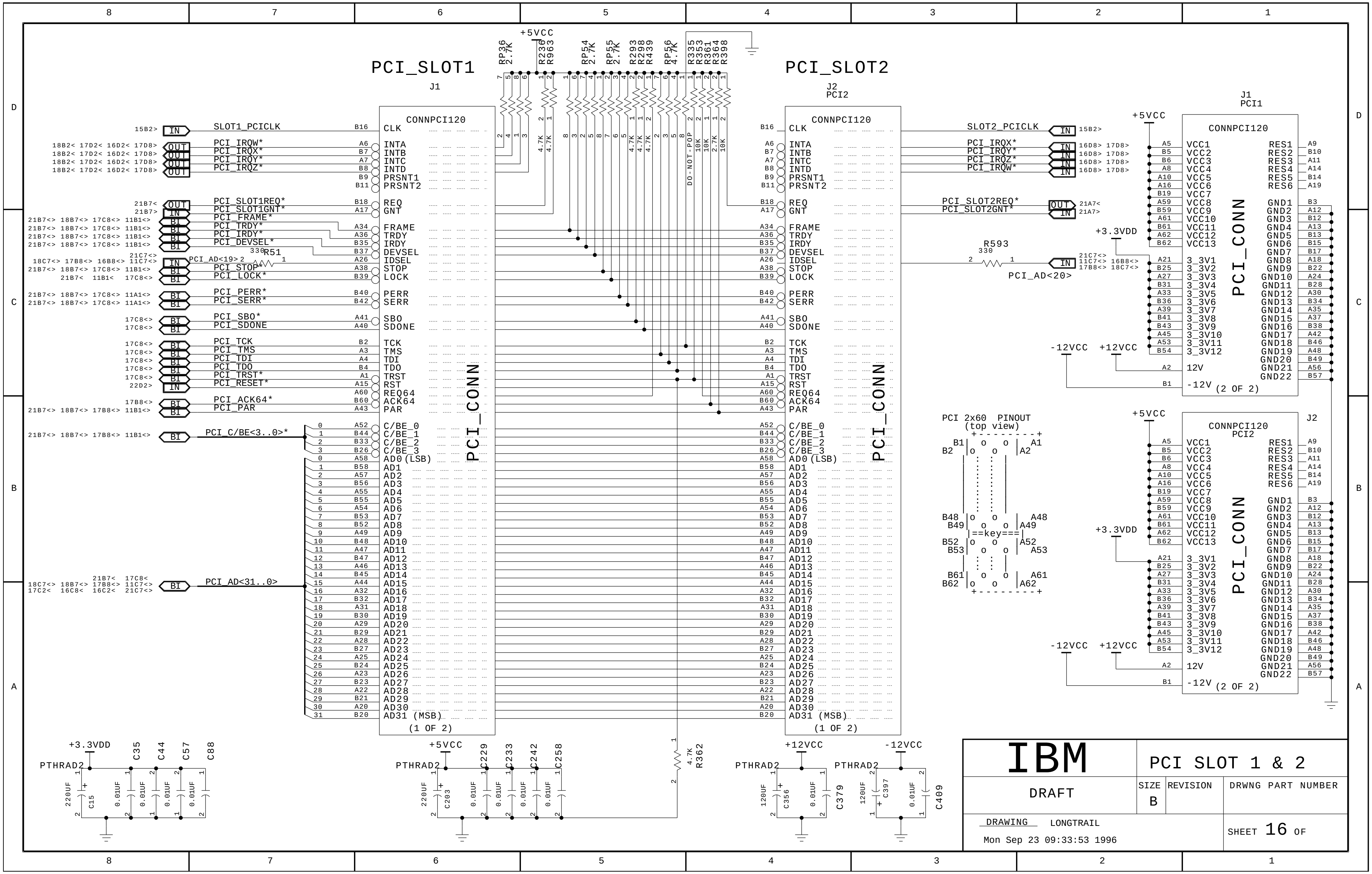
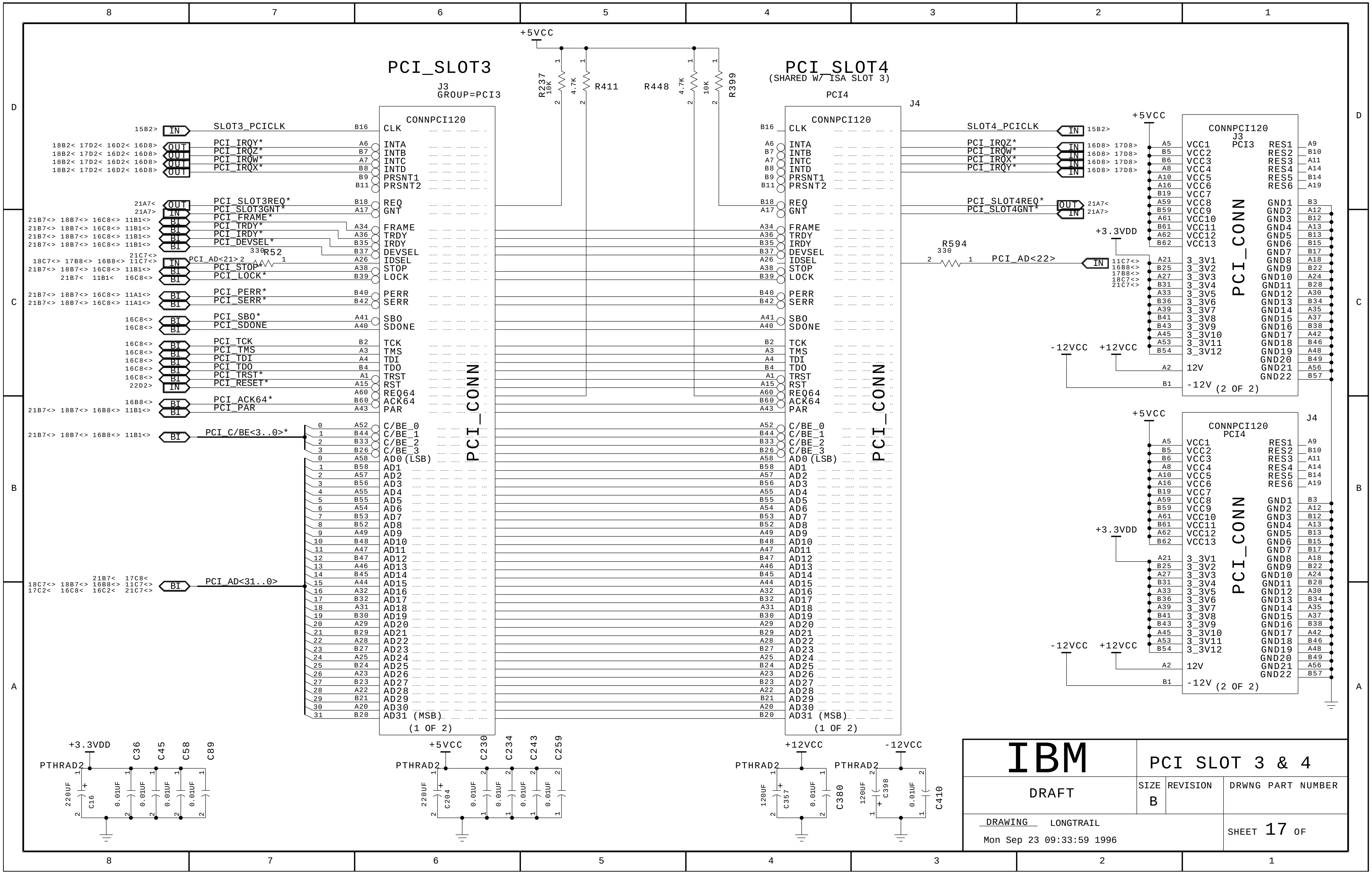

DIMM-1
DIMM-2
DIMM-3
+3.3VDD
J8
J9
J10
GROUP=DIMM1
(DIMM-3 SLOT DOES NOT SUPPORT SDRAM!!!)
PIN SWAP DQ0 THRU DQ63 ALLOWED WITHIN GROUPS OF 8.
(xmp DQ0 - DQ7, DQ8 - DQ15)
168-PIN DIMM
(+3.3V UNBUFFERED)
(1 OF 2)
MD<63..0>
BI
12C2<>
PTHRAD2
220UF
0.01UF
C468
C469
C470
C499
C500
C501
C505
C506
C507
C509
C510
C511
DIMM 168-pin PINOUT
(top view)
==key===
IBM
168-PIN DIMM
(+3.3V NON-BUFFER)
DRAFT
SIZE
B
REVISION
DRWNG PART NUMBER
DRAWING
LONGTRAIL
Mon Sep 23 09:33:39 1996
SHEET 13 OF


EDO/FPM/SDRAM DIMM: If a signal has format XXXX/YYYY, it means EDO & FPM
uses signal XXXX while SDRAM uses YYYY (ie. cas0/dqmb0 or ras0/s0)
(DIMM-3 SLOT DOES NOT SUPPORT SDRAM!!!)
DIMM-1
J8
GROUP=DIMM1
DIMM-2
J9
GROUP=DIMM1
DIMM-3
J10
GROUP=DIMM1
Pin swap A0 thru A6 allowed
(2 OF 2)
168-PIN DIMM
(+3.3V UNBUFFERED)
A0
A1
A2
A3
A4
A5
A6
A7
A8
A9
A10_AP
A11/BA0
A12/BA1
A13/A11
DU/A12
DU/A13
CAS0/DQMB0
CAS1/DQMB1
CAS2/DQMB2
CAS3/DQMB3
CAS4/DQMB4
CAS5/DQMB5
CAS6/DQMB6
CAS7/DQMB7
CB0
CB1
CB2
CB3
CB4
CB5
CB6
CB7
SDA
SCL
SA0
SA1
SA2
DU/VREF1
DU/VREF2
OE0/DU
OE2/DU
PIN LABEL:
DRAM/SDRAM
WE
WE2/DU
RAS0/S0
RAS1/S1
RAS2/S2
RAS3/S3
DU/RAS
DU/CAS
DU/CK0
DU/CK1
NC/CK2
NC/CK3
DU/CKE0
NC/CKE1
N/C
EEPROM_CODE=1
EEPROM_CODE=2
EEPROM_CODE=3
MA<10..0>
MA11/BA0
MA12/BA1
MA13/MA11
CAS/SDDQM<7..0>*
I2C_DATA
I2C_CLK
R56
20K
+3.3VDD
RAS4/SDCAS*
RAS5/SDRAS*
MWE/SDWE<2..0>*
RAS/SDCS<3..0>*
SDRAM_BCLK<7..0>
SDCKE2*
SDCKE1*
C163
C164
C552
C553
C266
C270
C554
C555
DO-NOT-POP
R401
R407
R90
R92
R418
R426
R211
R220
IN
BI
10B1>
10A3>
18A6<>
18B6>
10B3>
10A1>
15B2>
IBM
168-PIN DIMM
DRAFT
SIZE
B
REVISION
DRWNG PART NUMBER
DRAWING
LONGTRAIL
SHEET 14 OF
Mon Sep 23 09:33:44 1996


+5VCC
L68
MID-Z
C592
C244
C174
C175
C176
C177
0.1UF
22UF
10%
5V_W49C65
MIN_LINE_WIDTH=20
+3.3VDD
L9
3V_W49C65
C245
C246
C247
C248
C249
SSOP48
U10
W49C65-04
VCC
CPUVCC
GND
Y2
14.3181MHZ
XTAL
XTAL1
XTAL2
C86
15PF
C87
12PF
R898
1.0M
R899
120
X1_14MHZ
X2B_14MHZ
X2A_14MHZ
X1
X2
CPURUN
PCIRUN
OE
SEL0
SEL1
SEL2
CLK_SEL<2..0>
6D8>
IN
+5VCC
10K
R989
PLL 1
PLL2
48 MHZ
SELECT
DECODE
STOP
CNTRL
PLL REFERENCE
REF1
REF2
W49C65REF1
W49C65REF2
R267
R268
ISA14.3181MHZ
AUDIO14.3181MHZ
R17
R273
GGD_BCLK
GGA_BCLK
CPU1
CPU2
CPU3
CPU4
CPU5
CPU6
CPU7
CPU8
CPU9
CPU10
CPU11
CPU12
W49C65CPU1
W49C65CPU2
W49C65CPU3
W49C65CPU4
W49C65CPU5
W49C65CPU6
W49C65CPU7
W49C65CPU8
W49C65CPU9
W49C65CPU10
W49C65CPU11
W49C65CPU12
RP35
RP34
33
SDRAM_BCLK<7..0>
CPU_BCLK
L2_BCLK<1..0>
R276
R277
R35
R344
R338
R339
PCI1
PCI2
PCI3
PCI4
PCI5
PCI6
W49C65PCI1
W49C65PCI2
W49C65PCI3
W49C65PCI4
W49C65PCI5
W49C65PCI6
SIO_PCICLK
HYDRA_PCICLK
GGA_PCICLK
SLOT1_PCICLK
SLOT2_PCICLK
SLOT3_PCICLK
SLOT4_PCICLK
RP33
22
48MHZ
24MHZ
W49C65_24MHZ
R346
SUPERIO_24MHZ
OUT
22C7< 25A7<
32C8<
12D8<
10D8<
14A1<
5C8<
8C2<
21B7<
18B7<
11D7<
16D8<
16D2<
17D8<
17D2<
26A7<
SEL[2:1:0]=[1:1:0] ===> CPU/PCI = (66.6,33.3)MHZ
INTERNAL PULL-DOWN: CPURUN_, PCIRUN_, SEL0-2
INTERNAL PULL-UP ON OE
IBM
CLOCK
DRAFT
SIZE
B
REVISION
DRWNG PART NUMBER
DRAWING
LONGTRAIL
Mon Sep 23 09:33:48 1996
SHEET 15 OF


PCI_SLOT1
J1
CONNPCI120
PCI_CONN
(1 OF 2)
PCI_SLOT2
J2
PCI2
SLOT1_PCICLK
PCI_IRQW*
PCI_IRQX*
PCI_IRQY*
PCI_IRQZ*
PCI_SLOT1REQ*
PCI_SLOT1GNT*
PCI_FRAME*
PCI_TRDY*
PCI_IRDY*
PCI_DEVSEL*
PCI_AD<19>
R51
330
PCI_STOP*
PCI_LOCK*
PCI_PERR*
PCI_SERR*
PCI_SBO*
PCI_SDONE
PCI_TCK
PCI_TMS
PCI_TDI
PCI_TDO
PCI_TRST*
PCI_RESET*
PCI_ACK64*
PCI_PAR
PCI_C/BE<3..0>*
PCI_AD<31..0>
CLK
INTA
INTB
INTC
INTD
PRSNT1
PRSNT2
REQ
GNT
FRAME
TRDY
IRDY
DEVSEL
IDSEL
STOP
LOCK
PERR
SERR
SBO
SDONE
TCK
TMS
TDI
TDO
TRST
RST
REQ64
ACK64
PAR
C/BE_0
C/BE_1
C/BE_2
C/BE_3
AD0 (LSB)
AD31 (MSB)
+5VCC
RP36 2.7K
R236
R963
RP54 2.7K
RP55 2.7K
R293
R298
R439
RP56 4.7K
R335
R353
R361
R364
R398
DO-NOT-POP
SLOT2_PCICLK
PCI_IRQX*
PCI_IRQY*
PCI_IRQZ*
PCI_IRQW*
PCI_SLOT2REQ*
PCI_SLOT2GNT*
R593
330
PCI_AD<20>
J1
PCI1
+5VCC
+3.3VDD
-12VCC
+12VCC
VCC1
3_3V1
12V
-12V
RES1
GND1
GND22
(2 OF 2)
PCI 2X60 PINOUT
(top view)
==key===
+3.3VDD
PTHRAD2
C35
C44
C57
C88
C15
220UF
0.01UF
+5VCC
C229
C233
C242
C258
C203
R362
4.7K
+12VCC
-12VCC
C356
C379
C397
C409
120UF
IBM
PCI SLOT 1 & 2
DRAFT
SIZE
B
REVISION
DRWNG PART NUMBER
DRAWING
LONGTRAIL
Mon Sep 23 09:33:53 1996
SHEET 16 OF



IBM

PCI SLOT 3 & 4

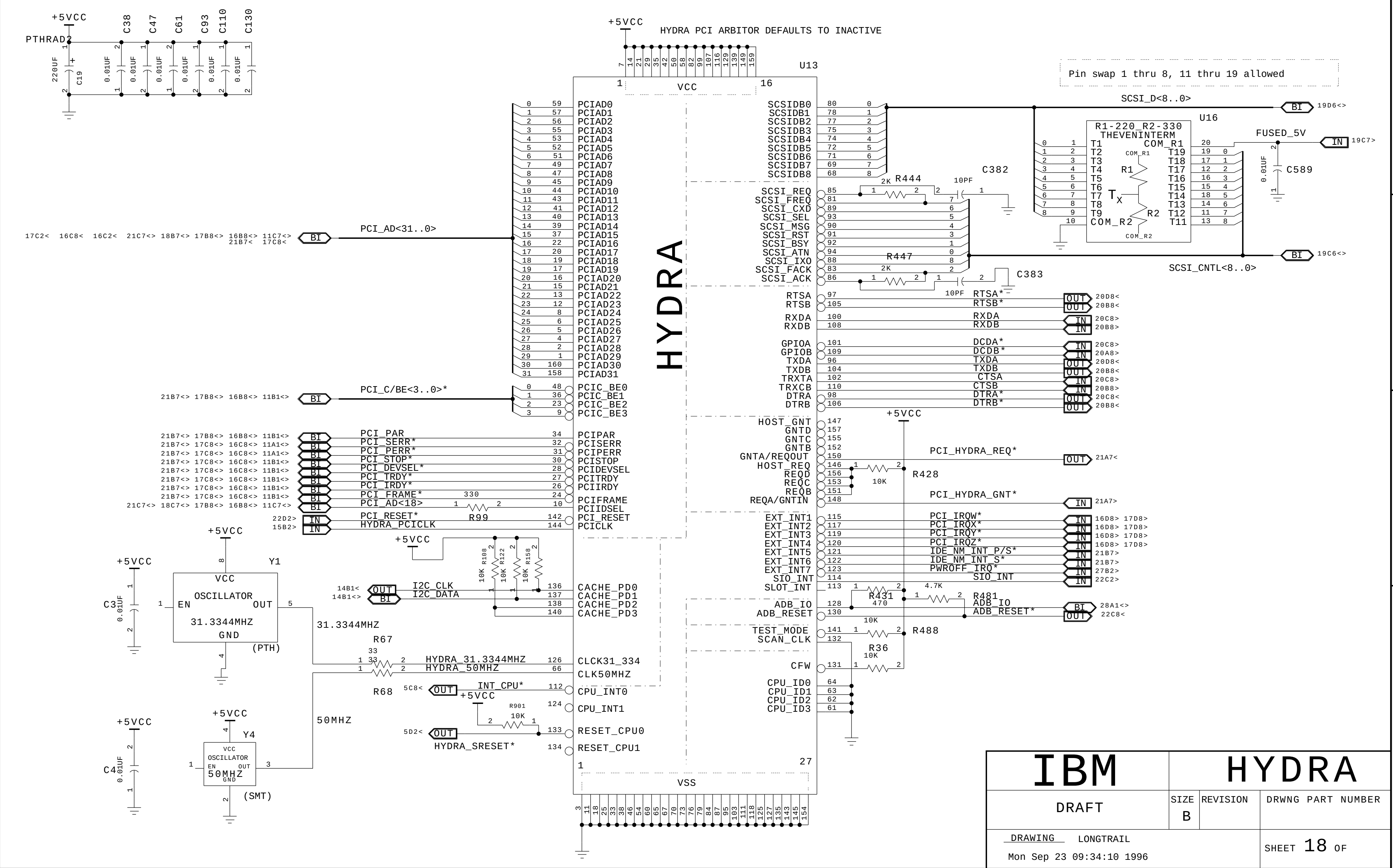
DRAFT

SIZE	REVISION	DRWNG PART NUMBER
B		

DRAWING LONGTRAIL

Mon Sep 23 09:33:59 1996

SHEET 17 OF



IBM

HYDRA

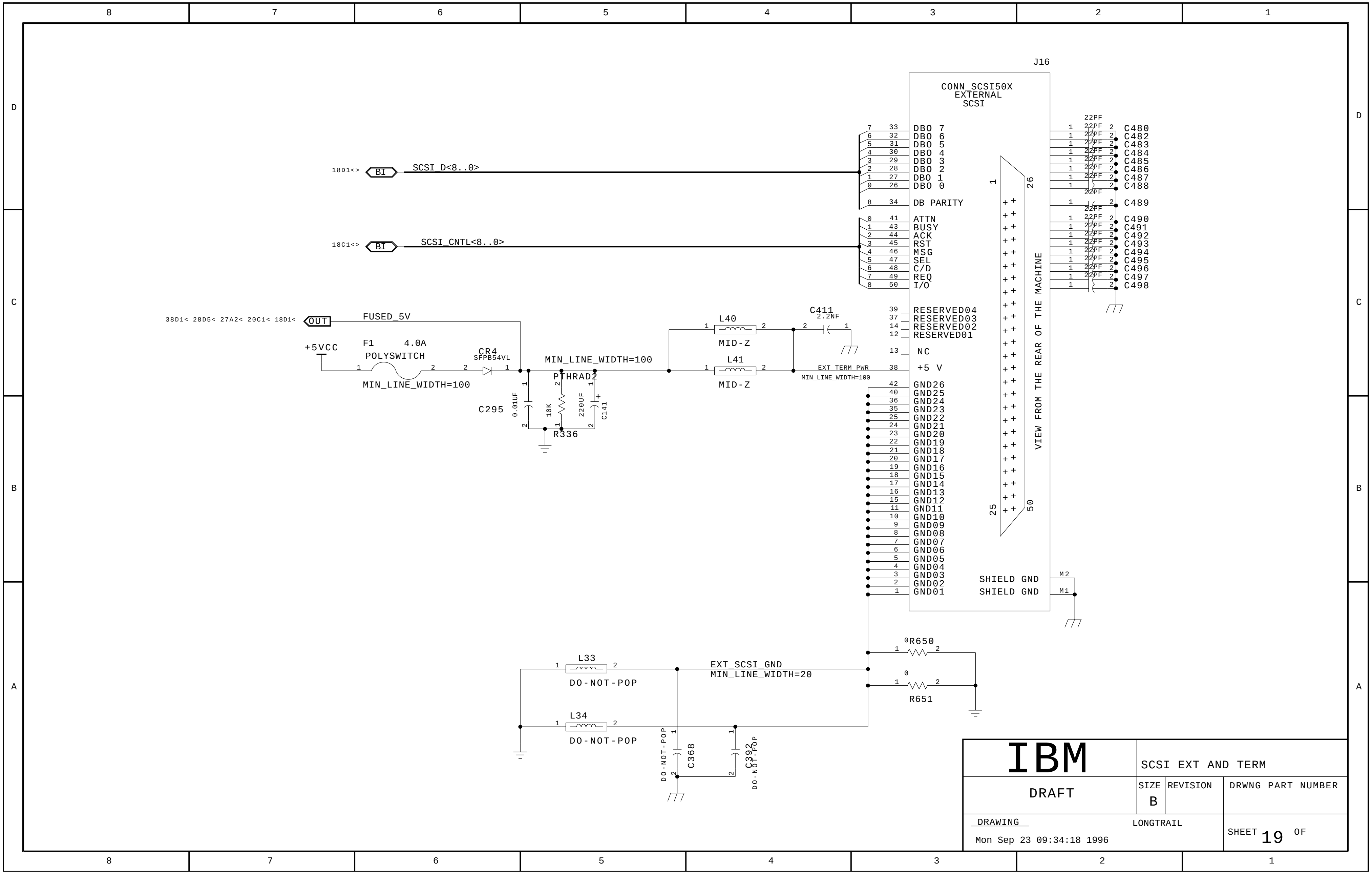
DRAFT

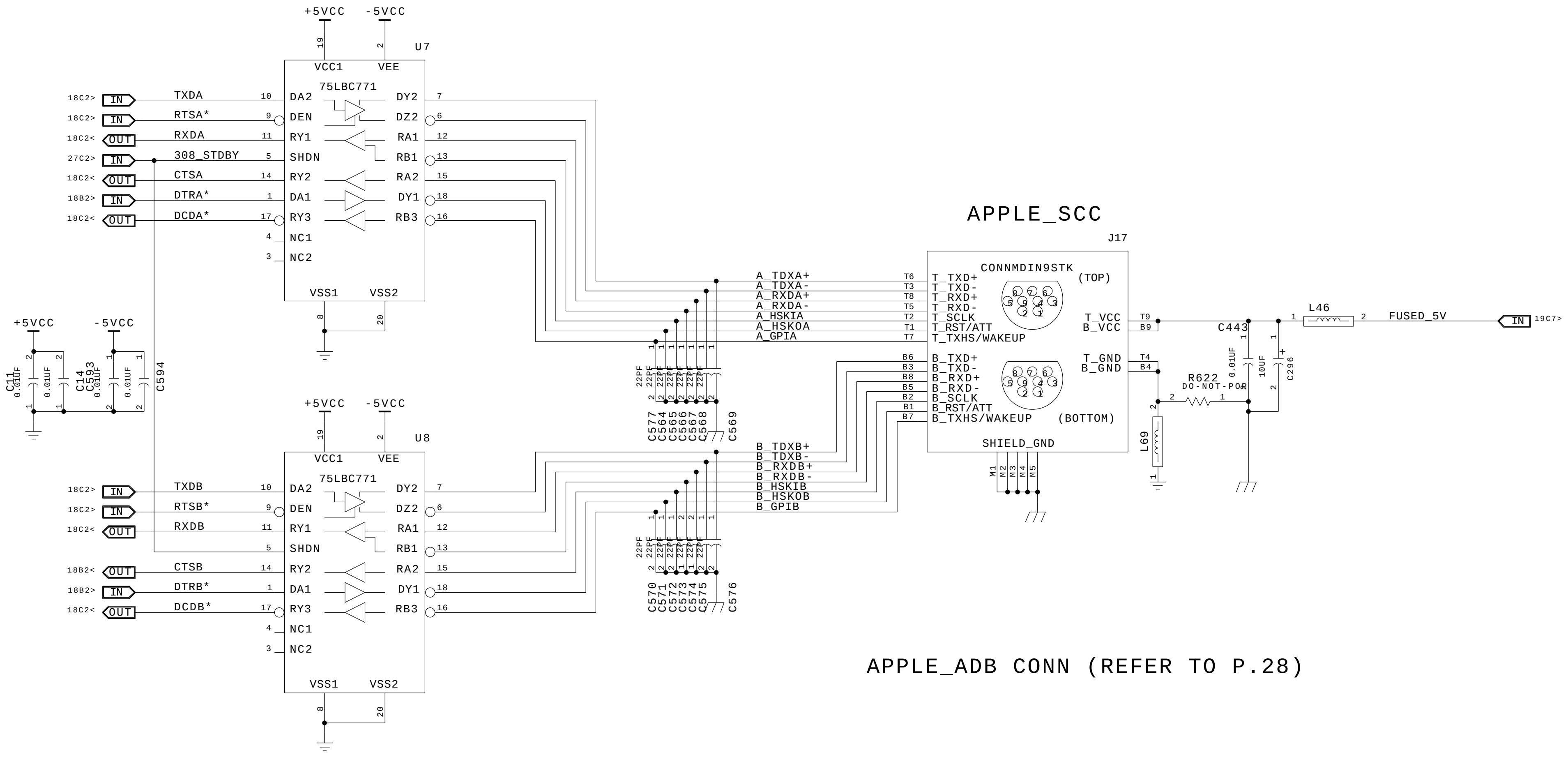
SIZE	REVISION	DRWNG PART NUMBER
B		

DRAWING LONGTRAIL

Mon Sep 23 09:34:10 1996

SHEET 18 OF


J16
CONN_SCSI50X
EXTERNAL
SCSI
DBO 7
DBO 6
DBO 5
DBO 4
DBO 3
DBO 2
DBO 1
DBO 0
DB PARITY
ATTN
BUSY
ACK
RST
MSG
SEL
C/D
REQ
I/O
RESERVED04
RESERVED03
RESERVED02
RESERVED01
NC
+5 V
GND26
GND25
GND24
GND23
GND22
GND21
GND20
GND19
GND18
GND17
GND16
GND15
GND14
GND13
GND12
GND11
GND10
GND09
GND08
GND07
GND06
GND05
GND04
GND03
GND02
GND01
SHIELD GND
SHIELD GND
VIEW FROM THE REAR OF THE MACHINE
C480
C482
C483
C484
C485
C486
C487
C488
C489
C490
C491
C492
C493
C494
C495
C496
C497
C498
22PF
18D1<>
BI
SCSI_D<8..0>
18C1<>
BI
SCSI_CNTL<8..0>
38D1< 28D5< 27A2< 20C1< 18D1<
OUT
FUSED_5V
+5VCC
F1 4.0A
POLYSWITCH
MIN_LINE_WIDTH=100
CR4
SFPB54VL
MIN_LINE_WIDTH=100
PTHRAD2
C295
0.01UF
10K
R336
220UF
C141
L40
MID-Z
L41
MID-Z
C411
2.2NF
EXT_TERM_PWR
MIN_LINE_WIDTH=100
R650
R651
0
L33
DO-NOT-POP
L34
DO-NOT-POP
EXT_SCSI_GND
MIN_LINE_WIDTH=20
C368
DO-NOT-POP
C392
DO-NOT-POP
IBM
SCSI EXT AND TERM
DRAFT
SIZE
B
REVISION
DRWNG PART NUMBER
DRAWING
LONGTRAIL
Mon Sep 23 09:34:18 1996
SHEET 19 OF



IBM

APPLE ADB & SCC

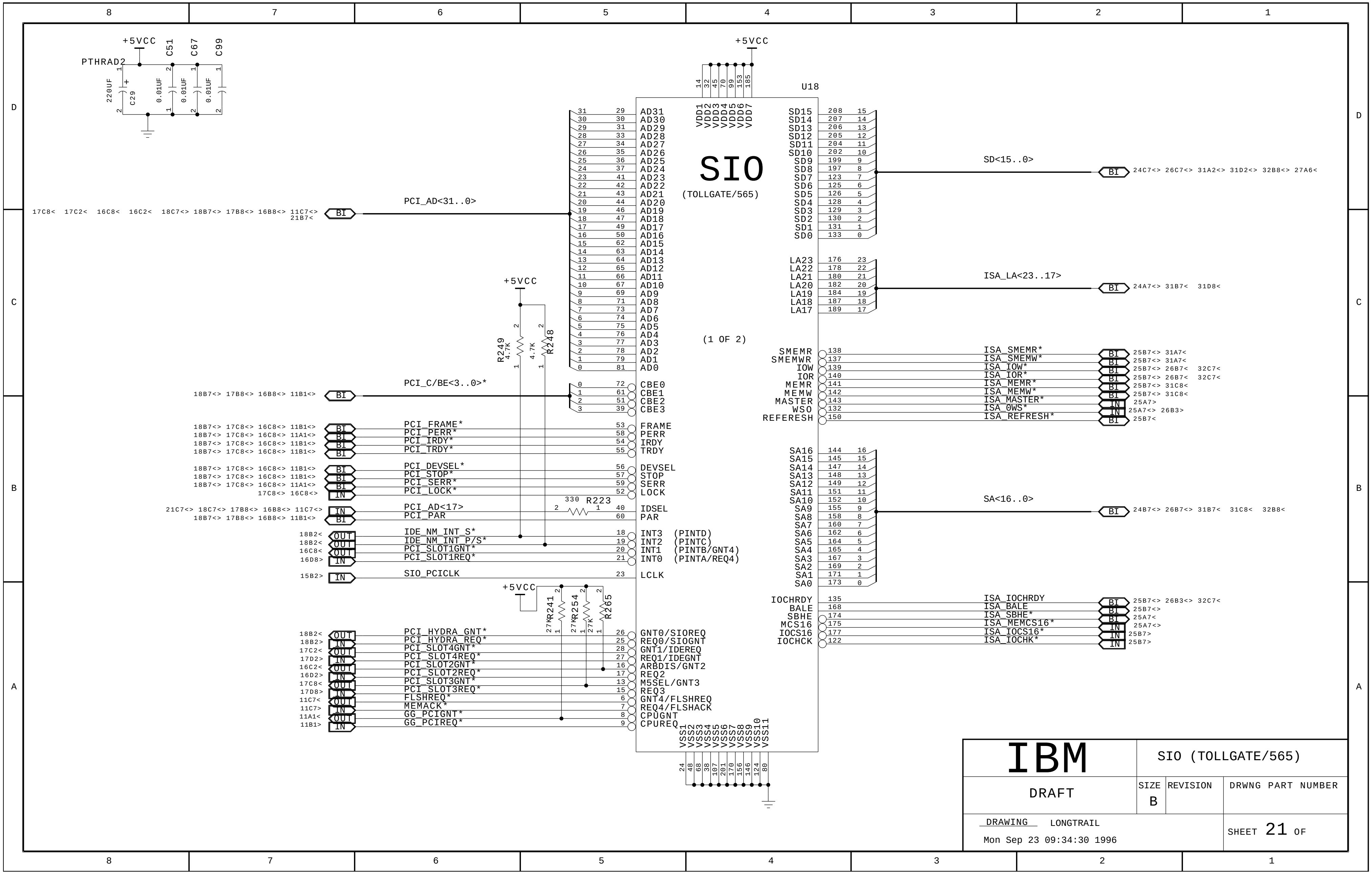
DRAFT

SIZE	REVISION	DRWNG PART NUMBER
B		

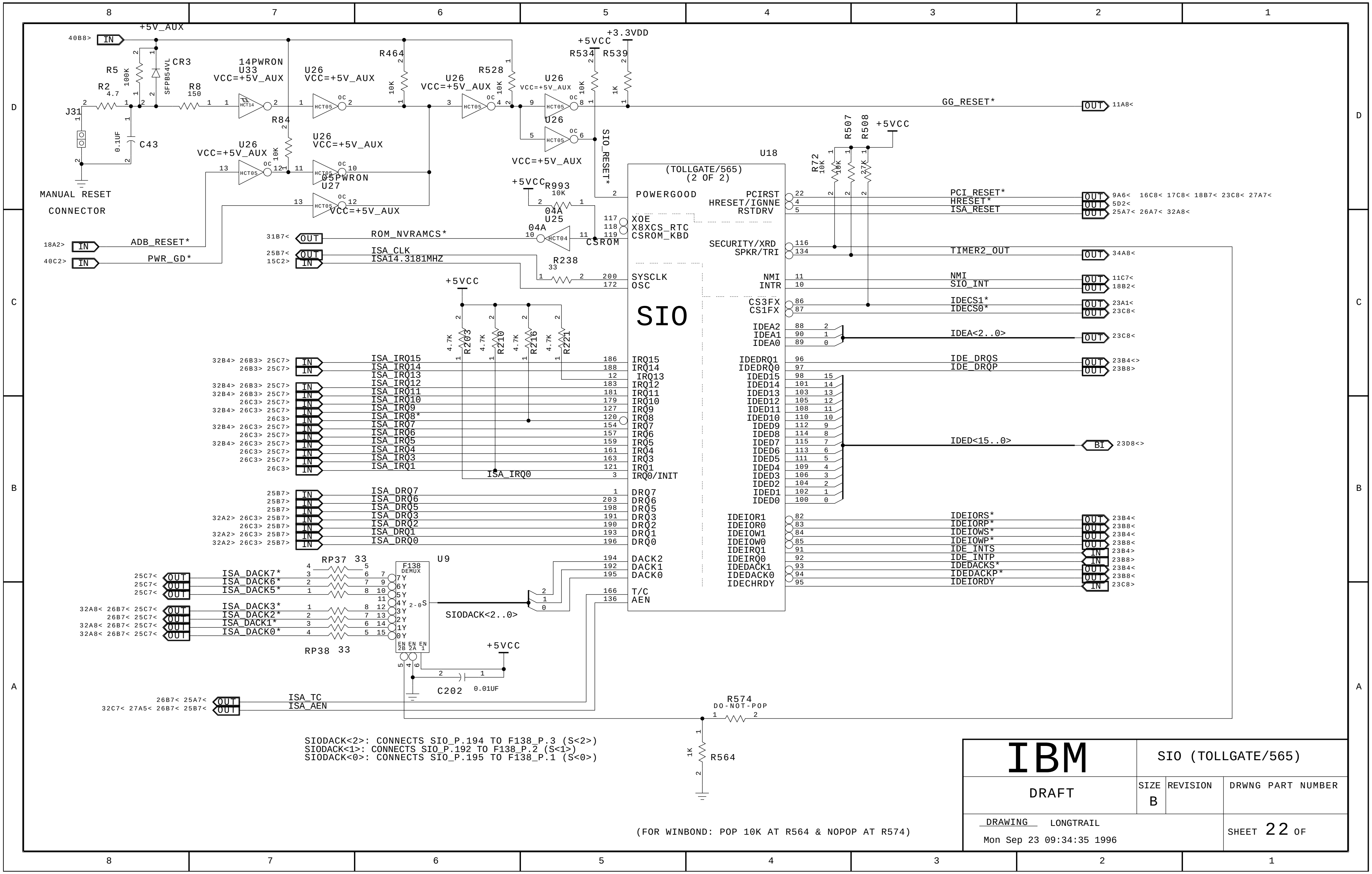
DRAWING LONGTRAIL

Mon Sep 23 09:34:27 1996

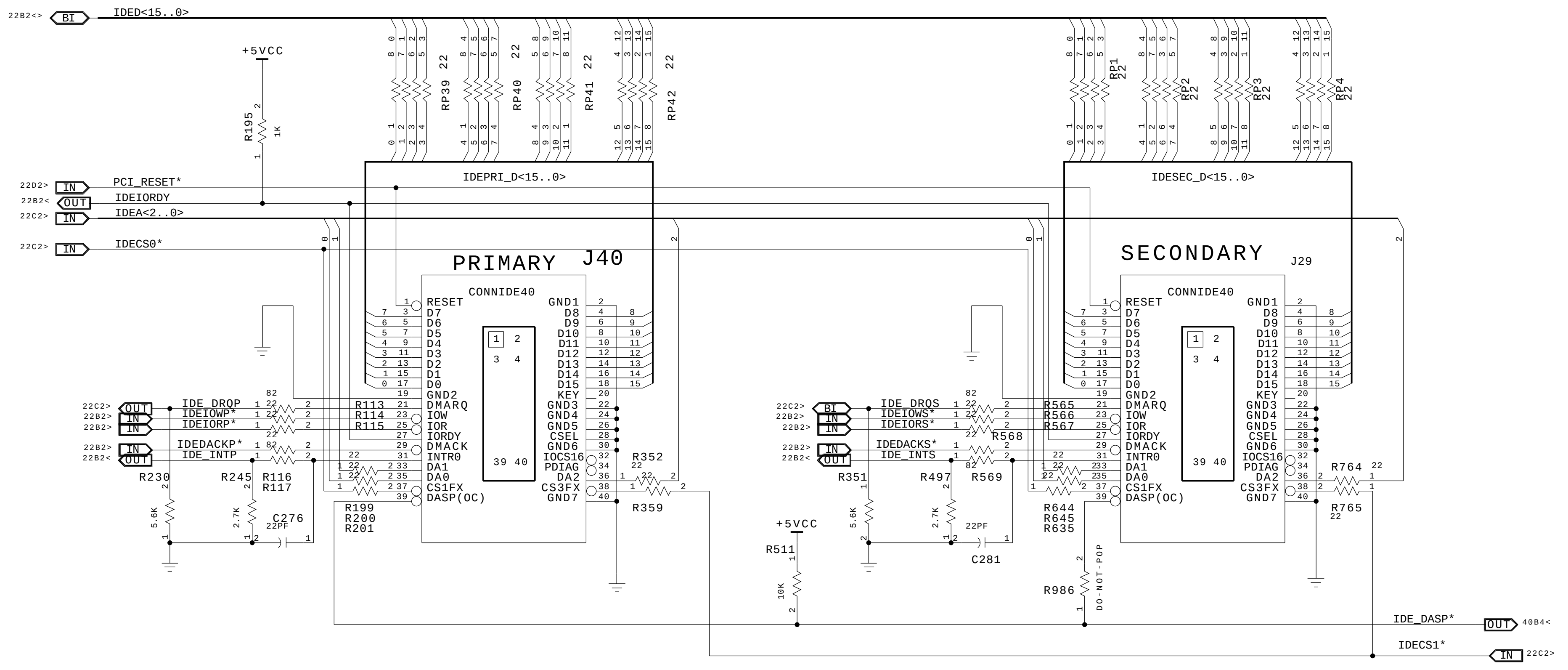
SHEET 20 OF



+5VCC
PTHRAD2
C51
C67
C99
220UF
C29
0.01UF
0.01UF
0.01UF
U18
SIO
(TOLLGATE/565)
(1 OF 2)
VDD1 VDD2 VDD3 VDD4 VDD5 VDD6 VDD7
VSS1 VSS2 VSS3 VSS4 VSS5 VSS6 VSS7 VSS8 VSS9 VSS10 VSS11
AD31 AD30 AD29 AD28 AD27 AD26 AD25 AD24 AD23 AD22 AD21 AD20 AD19 AD18 AD17 AD16 AD15 AD14 AD13 AD12 AD11 AD10 AD9 AD8 AD7 AD6 AD5 AD4 AD3 AD2 AD1 AD0
CBE0 CBE1 CBE2 CBE3
FRAME PERR IRDY TRDY DEVSEL STOP SERR LOCK IDSEL PAR
INT3 (PINTD)
INT2 (PINTC)
INT1 (PINTB/GNT4)
INT0 (PINTA/REQ4)
LCLK
GNT0/SIOREQ
REQ0/SIOGNT
GNT1/IDEREQ
REQ1/IDEGNT
ARBDIS/GNT2
REQ2
M5SEL/GNT3
REQ3
GNT4/FLSHREQ
REQ4/FLSHACK
CPUGNT
CPUREQ
SD15 SD14 SD13 SD12 SD11 SD10 SD9 SD8 SD7 SD6 SD5 SD4 SD3 SD2 SD1 SD0
LA23 LA22 LA21 LA20 LA19 LA18 LA17
SMEMR SMEMWR IOW IOR MEMR MEMW MASTER WSO REFERESH
SA16 SA15 SA14 SA13 SA12 SA11 SA10 SA9 SA8 SA7 SA6 SA5 SA4 SA3 SA2 SA1 SA0
IOCHRDY BALE SBHE MCS16 IOCS16 IOCHCK
PCI_AD<31..0>
17C8< 17C2< 16C8< 16C2< 18C7<> 18B7<> 17B8<> 16B8<> 11C7<> 21B7<
PCI_C/BE<3..0>*
18B7<> 17B8<> 16B8<> 11B1<>
PCI_FRAME*
PCI_PERR*
PCI_IRDY*
PCI_TRDY*
PCI_DEVSEL*
PCI_STOP*
PCI_SERR*
PCI_LOCK*
PCI_AD<17>
PCI_PAR
IDE_NM_INT_S*
IDE_NM_INT_P/S*
PCI_SLOT1GNT*
PCI_SLOT1REQ*
SIO_PCICLK
PCI_HYDRA_GNT*
PCI_HYDRA_REQ*
PCI_SLOT4GNT*
PCI_SLOT4REQ*
PCI_SLOT2GNT*
PCI_SLOT2REQ*
PCI_SLOT3GNT*
PCI_SLOT3REQ*
FLSHREQ*
MEMACK*
GG_PCIGNT*
GG_PCIREQ*
R249 4.7K
R248 4.7K
R223 330
R241 27K
R254 27K
R265 27K
SD<15..0>
24C7<> 26C7<> 31A2<> 31D2<> 32B8<> 27A6<
ISA_LA<23..17>
24A7<> 31B7< 31D8<
ISA_SMEMR*
ISA_SMEMW*
ISA_IOW*
ISA_IOR*
ISA_MEMR*
ISA_MEMW*
ISA_MASTER*
ISA_0WS*
ISA_REFRESH*
SA<16..0>
24B7<> 26B7<> 31B7< 31C8< 32B8<
ISA_IOCHRDY
ISA_BALE
ISA_SBHE*
ISA_MEMCS16*
ISA_IOCS16*
ISA_IOCHK*
IBM
SIO (TOLLGATE/565)
DRAFT
SIZE B
REVISION
DRWNG PART NUMBER
DRAWING LONGTRAIL
Mon Sep 23 09:34:30 1996
SHEET 21 OF



+5V_AUX
CR3
SFPB54VL
R5
100K
R2
4.7
R8
150
J31
C43
0.1UF
MANUAL RESET
CONNECTOR
14PWRON
U33
VCC=+5V_AUX
HCT14
U26
HCT05
R464
10K
R528
R84
05PWRON
U27
+5VCC
+3.3VDD
R534
R539
1K
GG_RESET*
SIO_RESET*
R993
04A
U25
HCT04
ROM_NVRAMCS*
ADB_RESET*
PWR_GD*
ISA_CLK
ISA14.3181MHZ
R238
33
CSROM
(TOLLGATE/565)
(2 OF 2)
U18
POWERGOOD
XOE
X8XCS_RTC
CSROM_KBD
SYSCLK
OSC
SIO
PCIRST
HRESET/IGNNE
RSTDRV
SECURITY/XRD
SPKR/TRI
NMI
INTR
CS3FX
CS1FX
R72
R507
R508
27K
PCI_RESET*
HRESET*
ISA_RESET
TIMER2_OUT
SIO_INT
IDECS1*
IDECS0*
IDEA2
IDEA1
IDEA0
IDEA<2..0>
IDEDRQ1
IDEDRQ0
IDE_DRQS
IDE_DRQP
IDED15
IDED0
IDED<15..0>
R203
R210
R216
R221
4.7K
ISA_IRQ15
ISA_IRQ14
ISA_IRQ13
ISA_IRQ12
ISA_IRQ11
ISA_IRQ10
ISA_IRQ9
ISA_IRQ8*
ISA_IRQ7
ISA_IRQ6
ISA_IRQ5
ISA_IRQ4
ISA_IRQ3
ISA_IRQ1
ISA_IRQ0
IRQ0/INIT
ISA_DRQ7
ISA_DRQ6
ISA_DRQ5
ISA_DRQ3
ISA_DRQ2
ISA_DRQ1
ISA_DRQ0
DACK2
DACK1
DACK0
T/C
AEN
IDEIOR1
IDEIOR0
IDEIOW1
IDEIOW0
IDEIRQ1
IDEIRQ0
IDEDACK1
IDEDACK0
IDECHRDY
IDEIORS*
IDEIORP*
IDEIOWS*
IDEIOWP*
IDE_INTS
IDE_INTP
IDEDACKS*
IDEDACKP*
IDEIORDY
RP37 33
RP38 33
U9
F138
DEMUX
ISA_DACK7*
ISA_DACK6*
ISA_DACK5*
ISA_DACK3*
ISA_DACK2*
ISA_DACK1*
ISA_DACK0*
SIODACK<2..0>
C202
0.01UF
ISA_TC
ISA_AEN
R574
DO-NOT-POP
R564
SIODACK<2>: CONNECTS SIO_P.194 TO F138_P.3 (S<2>)
SIODACK<1>: CONNECTS SIO_P.192 TO F138_P.2 (S<1>)
SIODACK<0>: CONNECTS SIO_P.195 TO F138_P.1 (S<0>)
(FOR WINBOND: POP 10K AT R564 & NOPOP AT R574)
IBM
SIO (TOLLGATE/565)
DRAFT
SIZE B
REVISION
DRWNG PART NUMBER
DRAWING LONGTRAIL
Mon Sep 23 09:34:35 1996
SHEET 22 OF



IBM

IDE

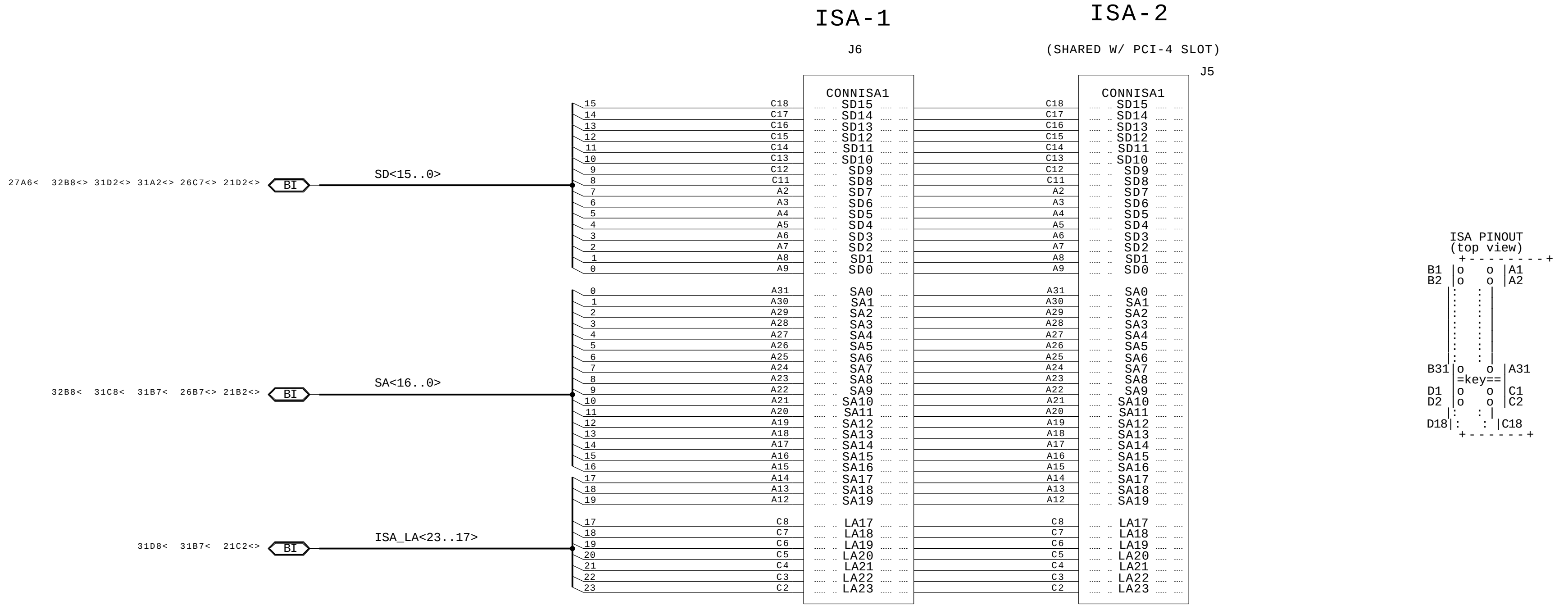
DRAFT

SIZE	REVISION	DRWNG PART NUMBER
B		

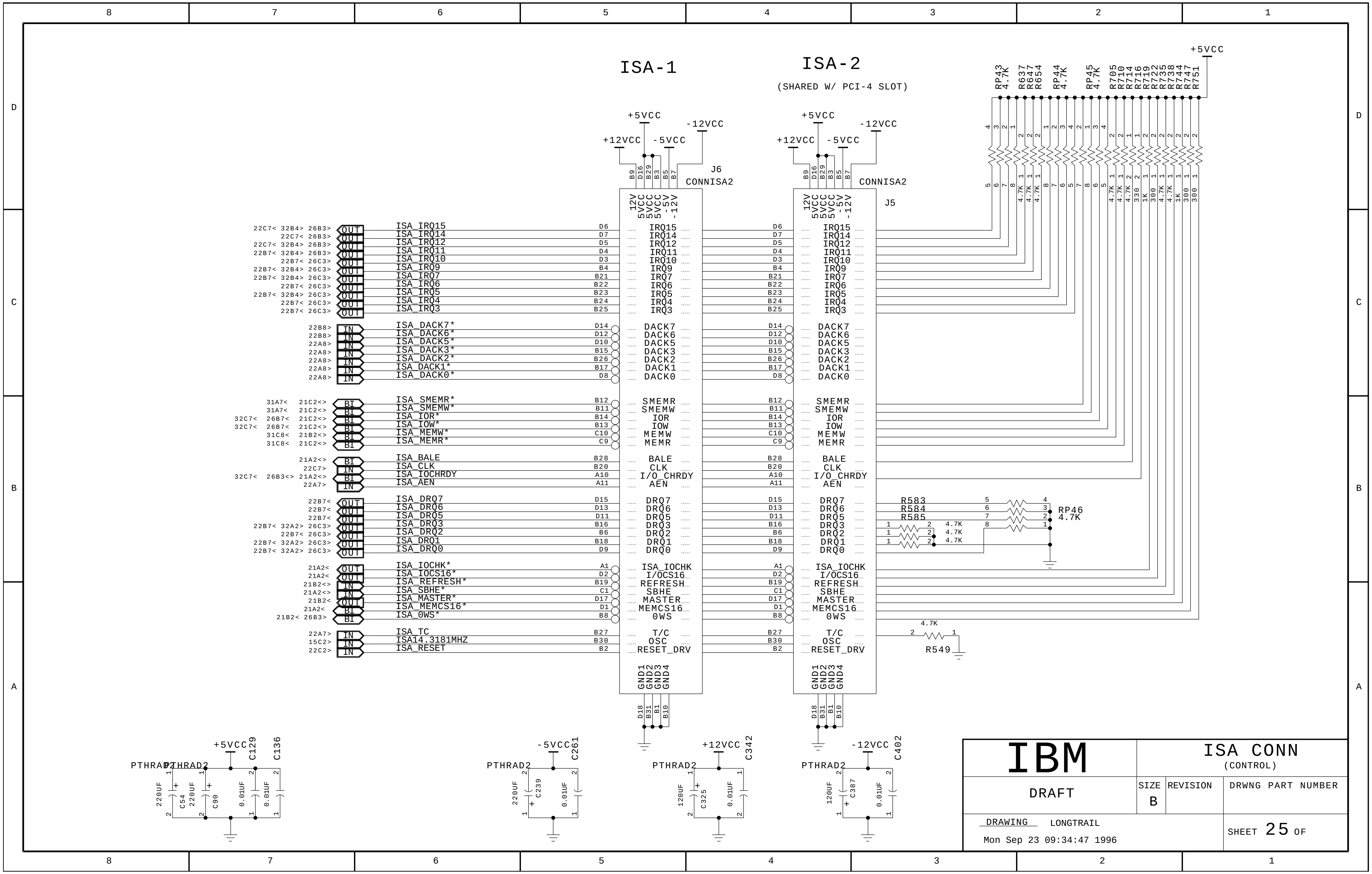
DRAWING LONGTRAIL

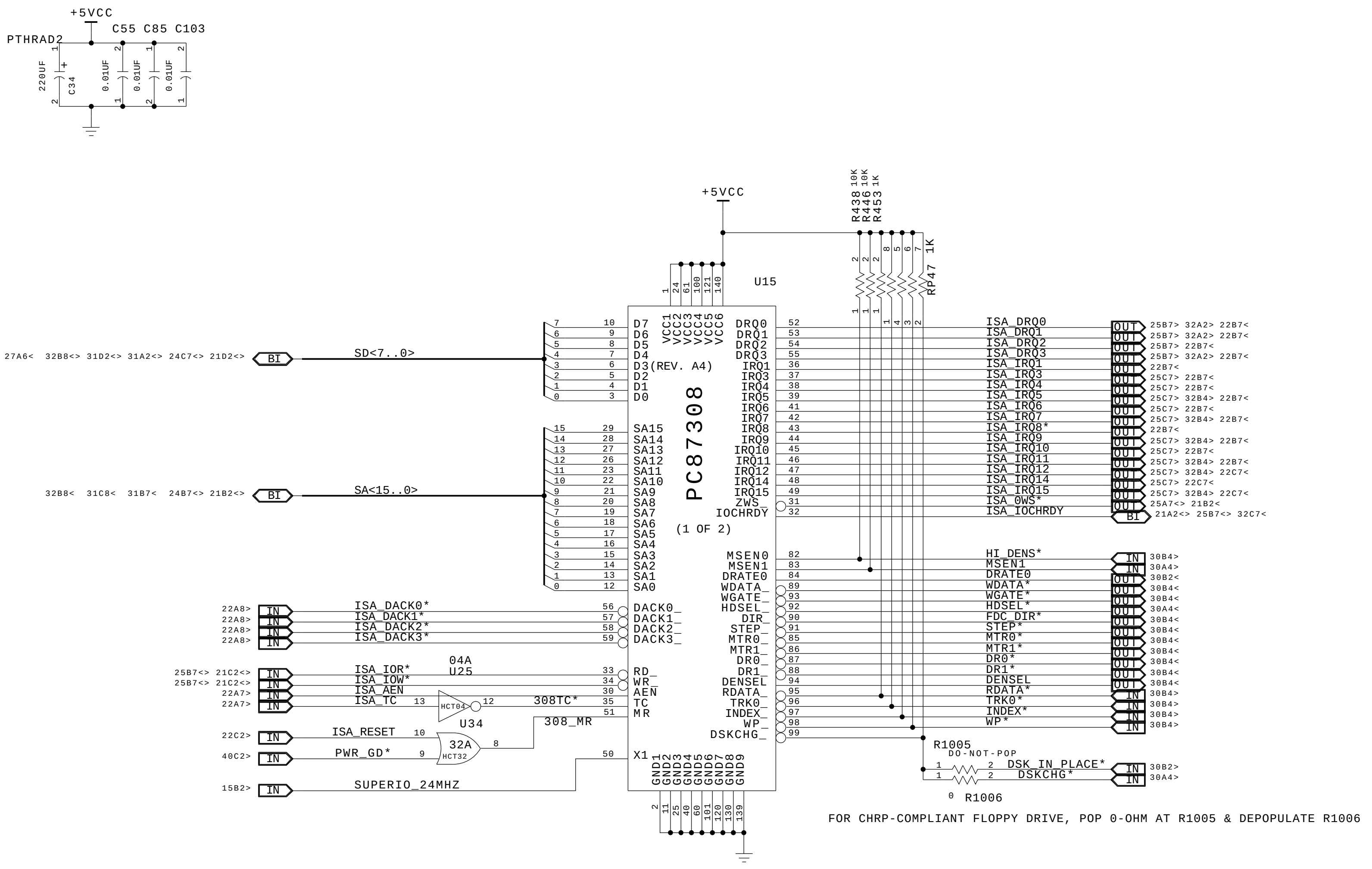
LAST_MODIFIED=Mon Sep 23 09:34:39 1996

SHEET 23 OF



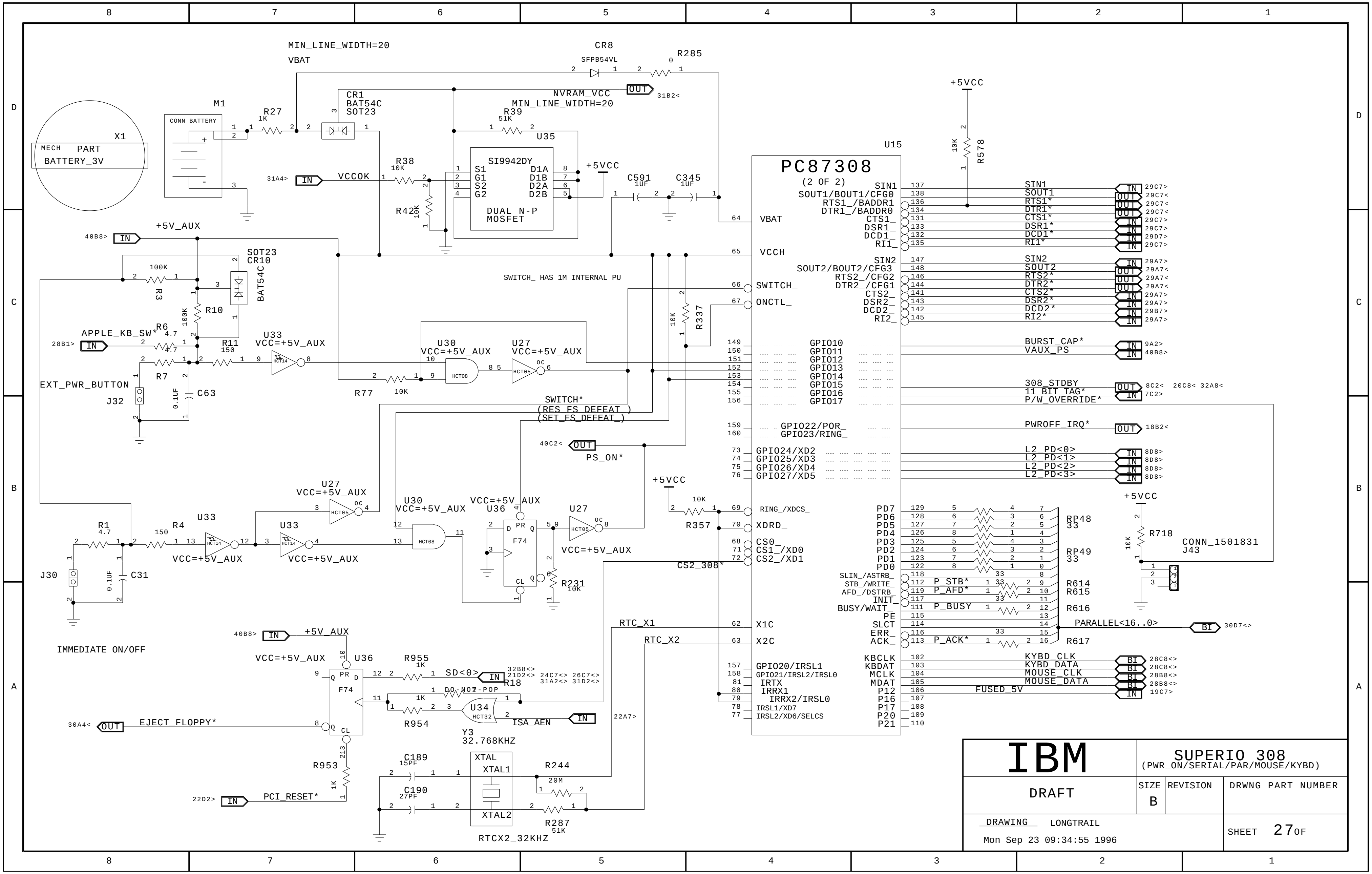
IBM	ISA CONN (ADDR/DATA)		
DRAFT	SIZE B	REVISION	DRWNG PART NUMBER
DRAWING LONGTRAIL Mon Sep 23 09:34:43 1996			SHEET 24 OF


ISA-1
ISA-2
(SHARED W/ PCI-4 SLOT)
+5VCC
-12VCC
+12VCC
-5VCC
J6
CONNISA2
J5
ISA_IRQ15
ISA_IRQ14
ISA_IRQ12
ISA_IRQ11
ISA_IRQ10
ISA_IRQ9
ISA_IRQ7
ISA_IRQ6
ISA_IRQ5
ISA_IRQ4
ISA_IRQ3
ISA_DACK7*
ISA_DACK6*
ISA_DACK5*
ISA_DACK3*
ISA_DACK2*
ISA_DACK1*
ISA_DACK0*
ISA_SMEMR*
ISA_SMEMW*
ISA_IOR*
ISA_IOW*
ISA_MEMW*
ISA_MEMR*
ISA_BALE
ISA_CLK
ISA_IOCHRDY
ISA_AEN
ISA_DRQ7
ISA_DRQ6
ISA_DRQ5
ISA_DRQ3
ISA_DRQ2
ISA_DRQ1
ISA_DRQ0
ISA_IOCHK*
ISA_IOCS16*
ISA_REFRESH*
ISA_SBHE*
ISA_MASTER*
ISA_MEMCS16*
ISA_0WS*
ISA_TC
ISA14.3181MHZ
ISA_RESET
R583
R584
R585
RP46
4.7K
R549
RP43
RP44
RP45
PTHRAD2
C129
C136
C54
C90
C239
C261
C325
C342
C387
C402
IBM
DRAFT
ISA CONN
(CONTROL)
SIZE
B
REVISION
DRWNG PART NUMBER
DRAWING
LONGTRAIL
Mon Sep 23 09:34:47 1996
SHEET 25 OF



FOR CHRP-COMPLIANT FLOPPY DRIVE, POP 0-OHM AT R1005 & DEPOPULATE R1006

IBM	SUPERIO 308		
DRAFT	SIZE B	REVISION	DRWNG PART NUMBER
DRAWING LONGTRAIL			SHEET 26 OF
Mon Sep 23 09:34:51 1996			

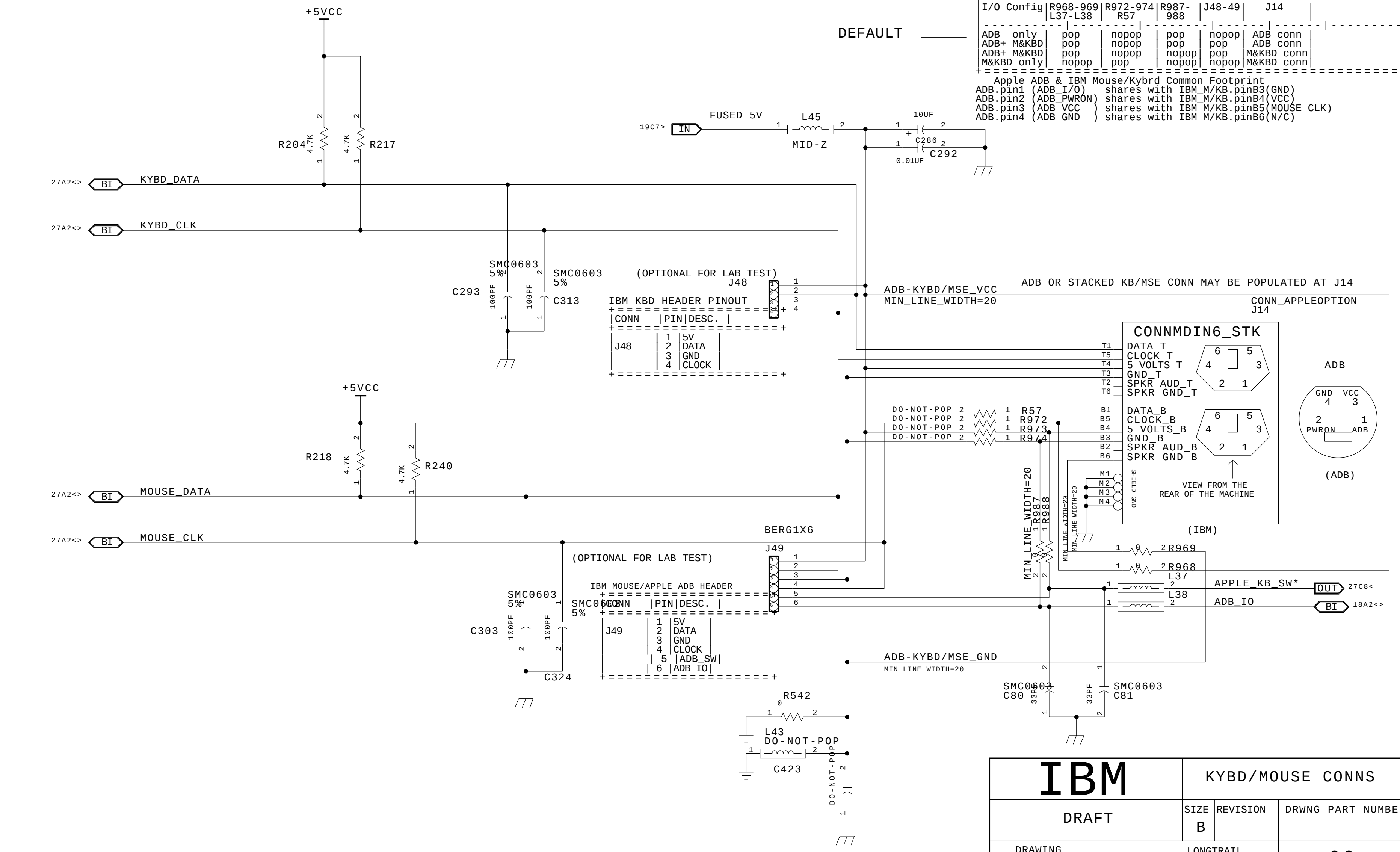


IBM	SUPERIO 308 (PWR_ON/SERIAL/PAR/MOUSE/KYBD)		
DRAFT	SIZE B	REVISION	DRWNG PART NUMBER
DRAWING LONGTRAIL Mon Sep 23 09:34:55 1996			SHEET 27 OF

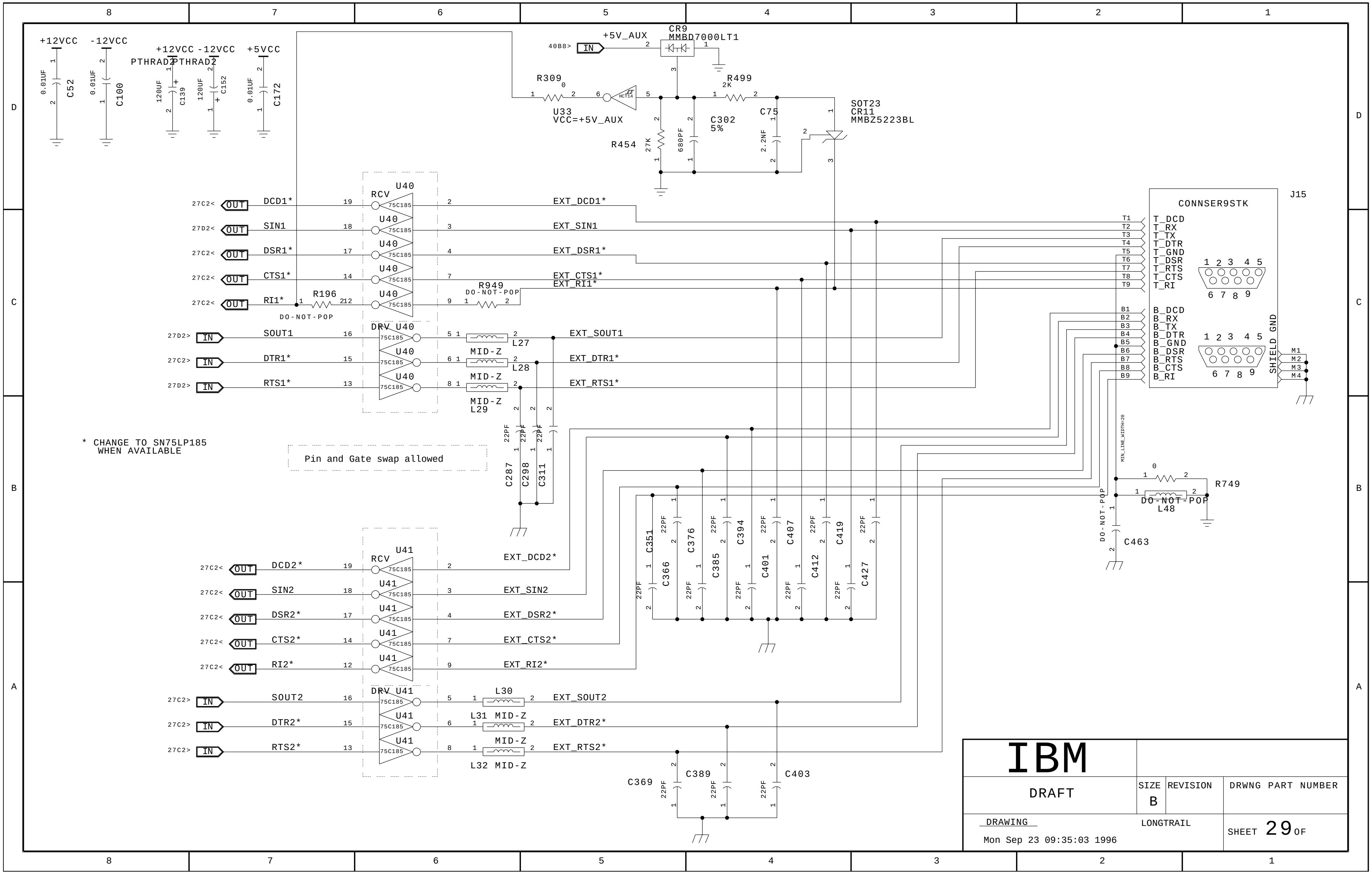
DEFAULT

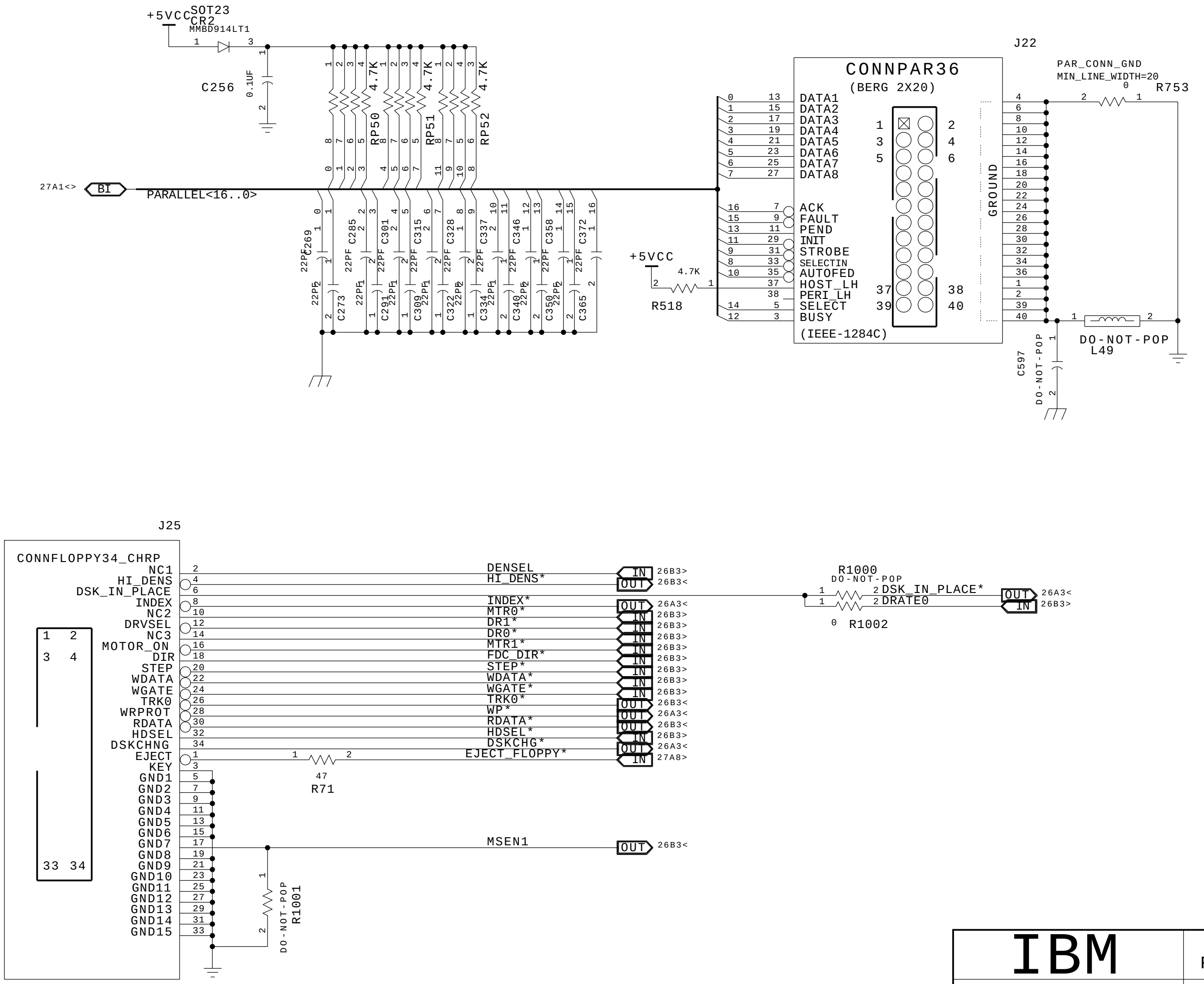
Apple ADB & IBM Mouse/Kybrd Conn. Config.					
I/O Config	R968-969 L37-L38	R972-974 R57	R987-988	J48-49	J14
ADB only	pop	nopop	pop	nopop	ADB conn
ADB+ M&KBD	pop	nopop	pop	pop	ADB conn
ADB+ M&KBD	pop	nopop	nopop	pop	M&KBD conn
M&KBD only	nopop	pop	nopop	nopop	M&KBD conn

Apple ADB & IBM Mouse/Kybrd Common Footprint
ADB.pin1 (ADB_I/O) shares with IBM_M/KB.pinB3(GND)
ADB.pin2 (ADB_PWRON) shares with IBM_M/KB.pinB4(VCC)
ADB.pin3 (ADB_VCC) shares with IBM_M/KB.pinB5(MOUSE_CLK)
ADB.pin4 (ADB_GND) shares with IBM_M/KB.pinB6(N/C)



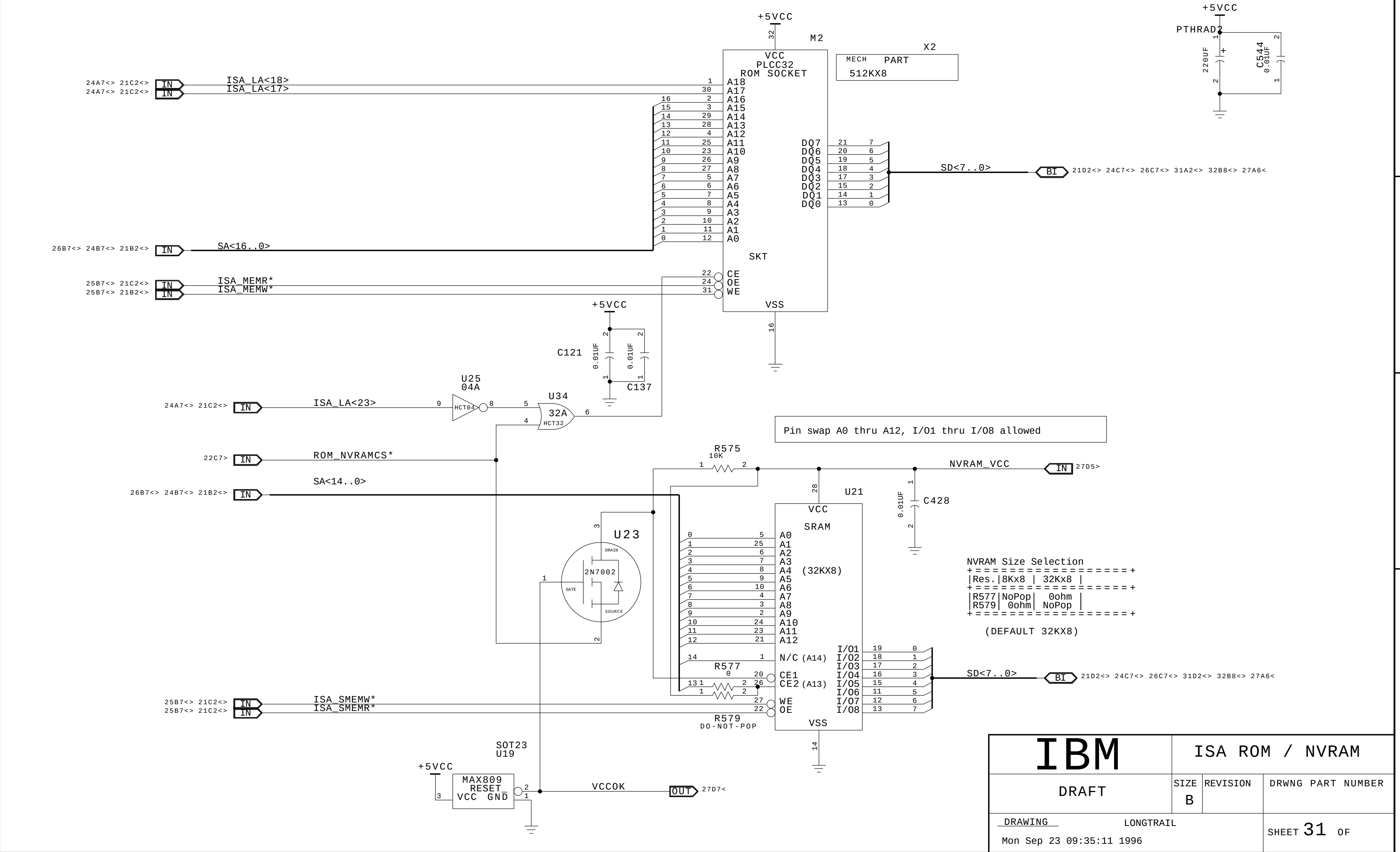
IBM	KYBD/MOUSE CONNS		
DRAFT	SIZE B	REVISION	DRWNG PART NUMBER
DRAWING Mon Sep 23 09:34:59 1996	LONGTRAIL		SHEET 28 OF


+12VCC -12VCC
+12VCC -12VCC
PTHRAD2 PTHRAD2
+5VCC
0.01UF C52
0.01UF C100
120UF C139
120UF C152
0.01UF C172
40B8> IN
+5V_AUX
CR9
MMBD7000LT1
R309
0
U33
VCC=+5V_AUX
HCT14
R499
2K
C302
5%
680PF
C75
2.2NF
R454
27K
SOT23
CR11
MMBZ5223BL
J15
CONNSER9STK
T_DCD
T_RX
T_TX
T_DTR
T_GND
T_DSR
T_RTS
T_CTS
T_RI
B_DCD
B_RX
B_TX
B_DTR
B_GND
B_DSR
B_RTS
B_CTS
B_RI
SHIELD GND
M1 M2 M3 M4
RCV U40
75C185
DCD1*
SIN1
DSR1*
CTS1*
RI1*
R196
DO-NOT-POP
EXT_DCD1*
EXT_SIN1
EXT_DSR1*
EXT_CTS1*
EXT_RI1*
R949
DO-NOT-POP
DRV U40
SOUT1
DTR1*
RTS1*
L27
L28
L29
MID-Z
EXT_SOUT1
EXT_DTR1*
EXT_RTS1*
22PF
C287
C298
C311
* CHANGE TO SN75LP185
WHEN AVAILABLE
Pin and Gate swap allowed
MIN_LINE_WIDTH=20
R749
DO-NOT-POP
L48
C463
RCV U41
DCD2*
SIN2
DSR2*
CTS2*
RI2*
EXT_DCD2*
EXT_SIN2
EXT_DSR2*
EXT_CTS2*
EXT_RI2*
C351
C366
C376
C385
C394
C401
C407
C412
C419
C427
DRV U41
SOUT2
DTR2*
RTS2*
L30
L31 MID-Z
L32 MID-Z
EXT_SOUT2
EXT_DTR2*
EXT_RTS2*
C369
C389
C403
IBM
DRAFT
SIZE
B
REVISION
DRWNG PART NUMBER
DRAWING
LONGTRAIL
SHEET 29 OF
Mon Sep 23 09:35:03 1996



FOR CHRP-COMPLIANT FLOPPY DRIVE, POPULATE 0-OHM AT R1000-1; DEPOPULATE R1002

IBM	FLOPPY/PARALLEL CONN		
DRAFT	SIZE B	REVISION	DRWNG PART NUMBER
DRAWING Mon Sep 23 09:35:07 1996	LONGTRAIL		SHEET 30 OF



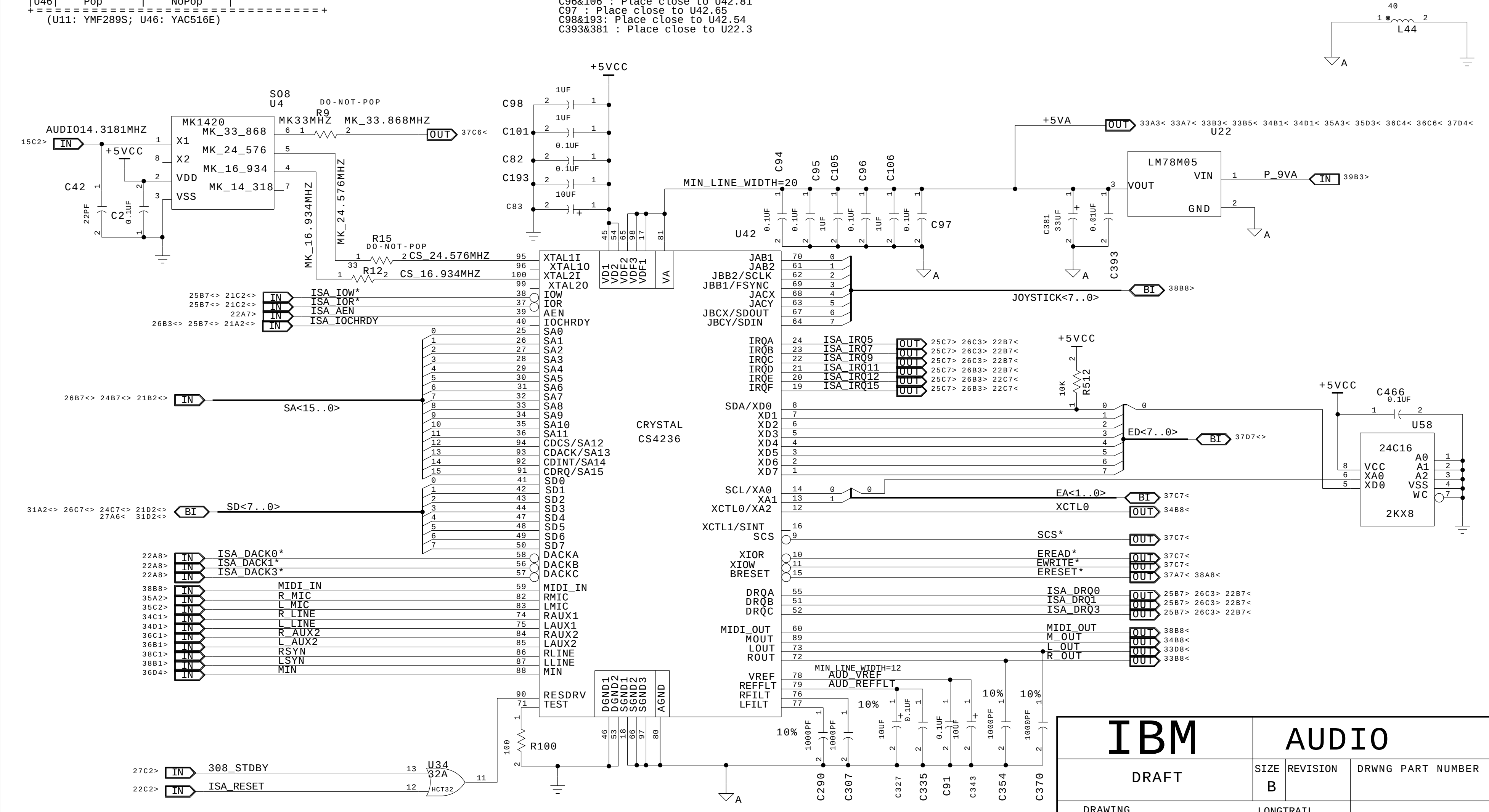
IBM	ISA ROM / NVRAM		
DRAFT	SIZE B	REVISION	DRWNG PART NUMBER
DRAWING LONGTRAIL Mon Sep 23 09:35:11 1996			SHEET 31 OF

AUDIO Chip Selection

Ref	CS4232	CS4236
U42	Pop w/ CS4232	Pop w/ CS4236
R9	Pop	NoPop
U11	Pop	NoPop
U46	Pop	NoPop

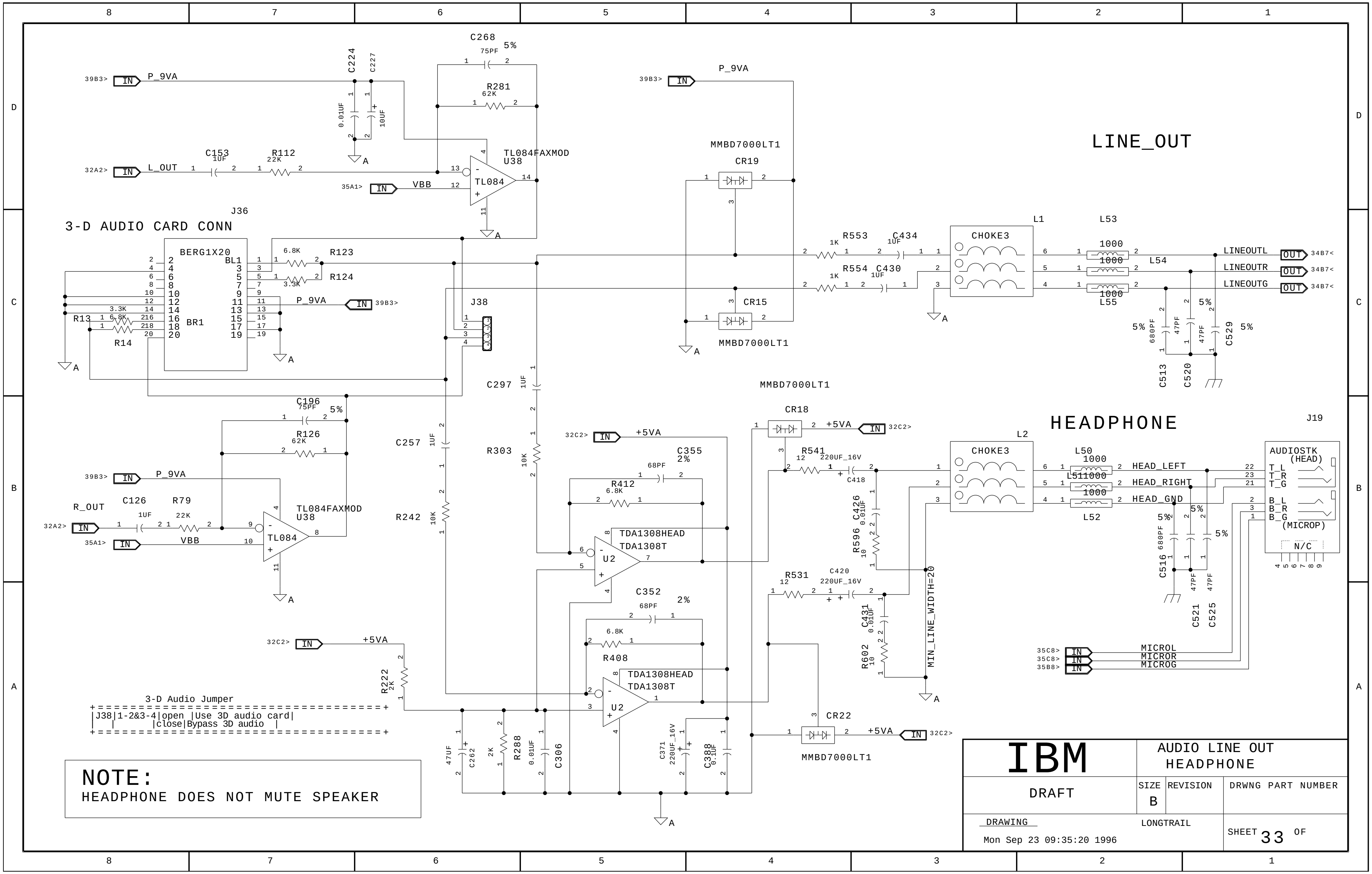
(U11: YMF289S; U46: YAC516E)

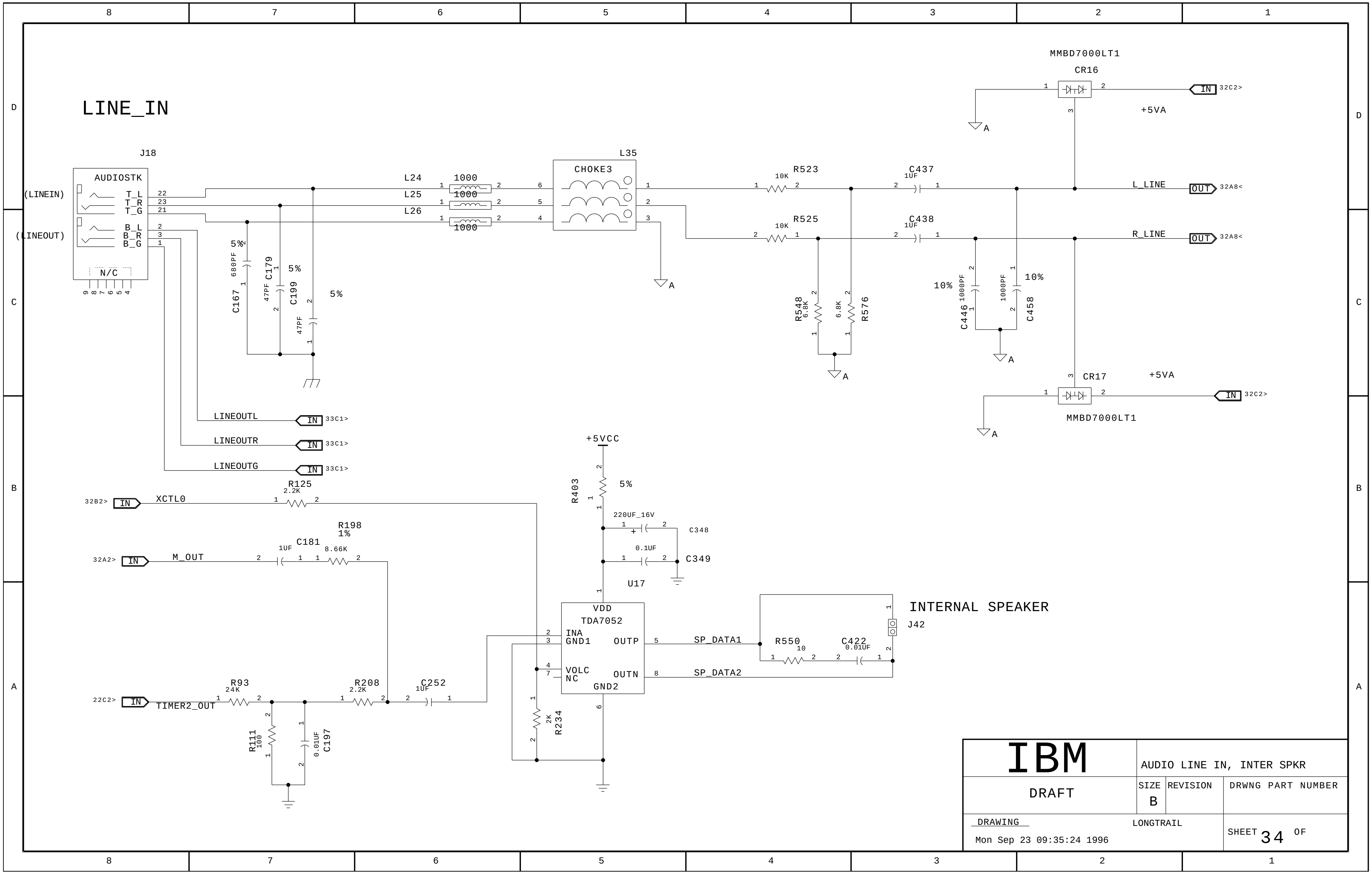
C82&101 : Place close to U42.45
C83 : Place between U42.45&54
C94 : Place close to U42.98
C95&105 : Place close to U42.17
C96&106 : Place close to U42.81
C97 : Place close to U42.65
C98&193: Place close to U42.54
C393&381 : Place close to U22.3

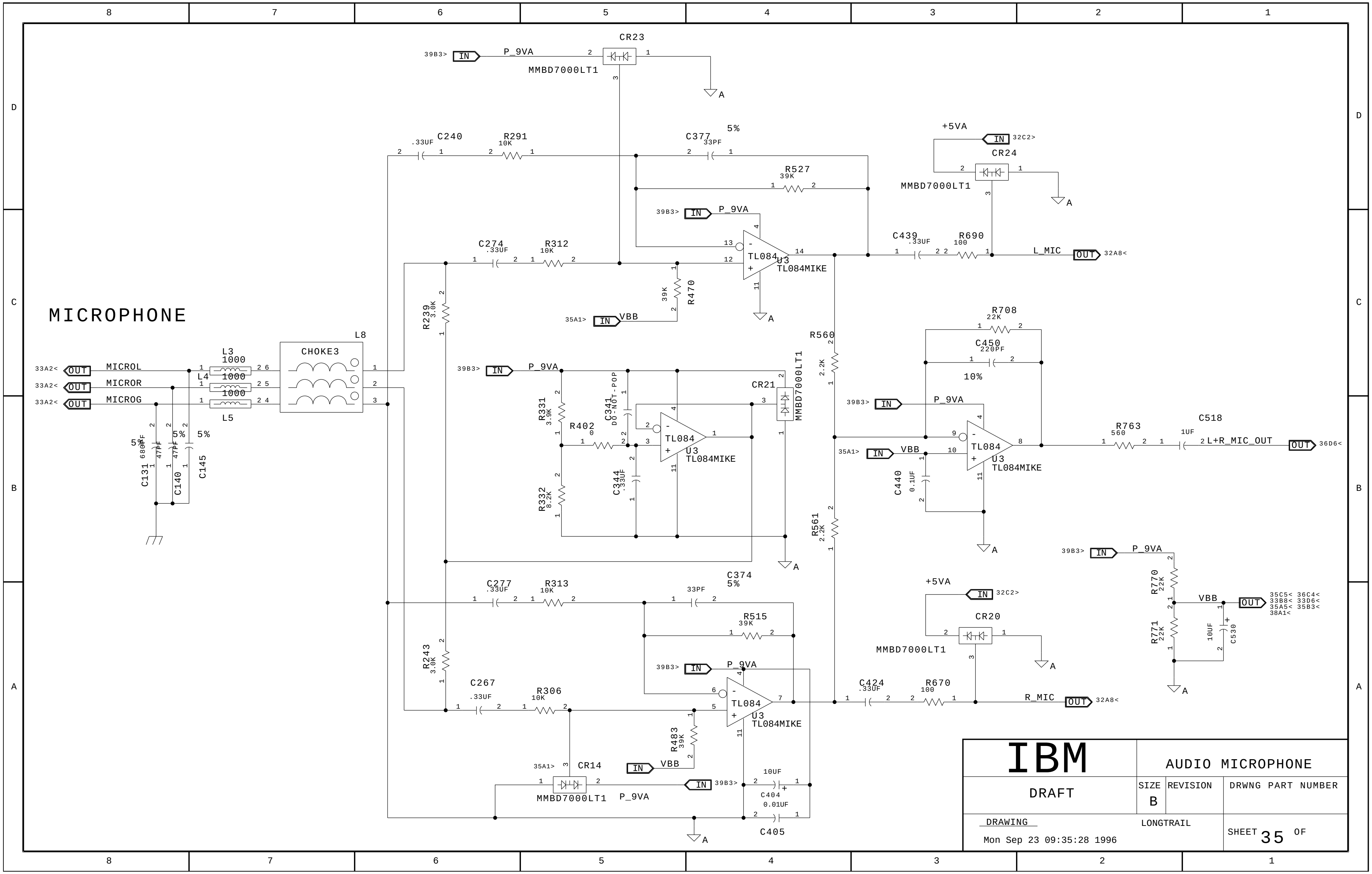


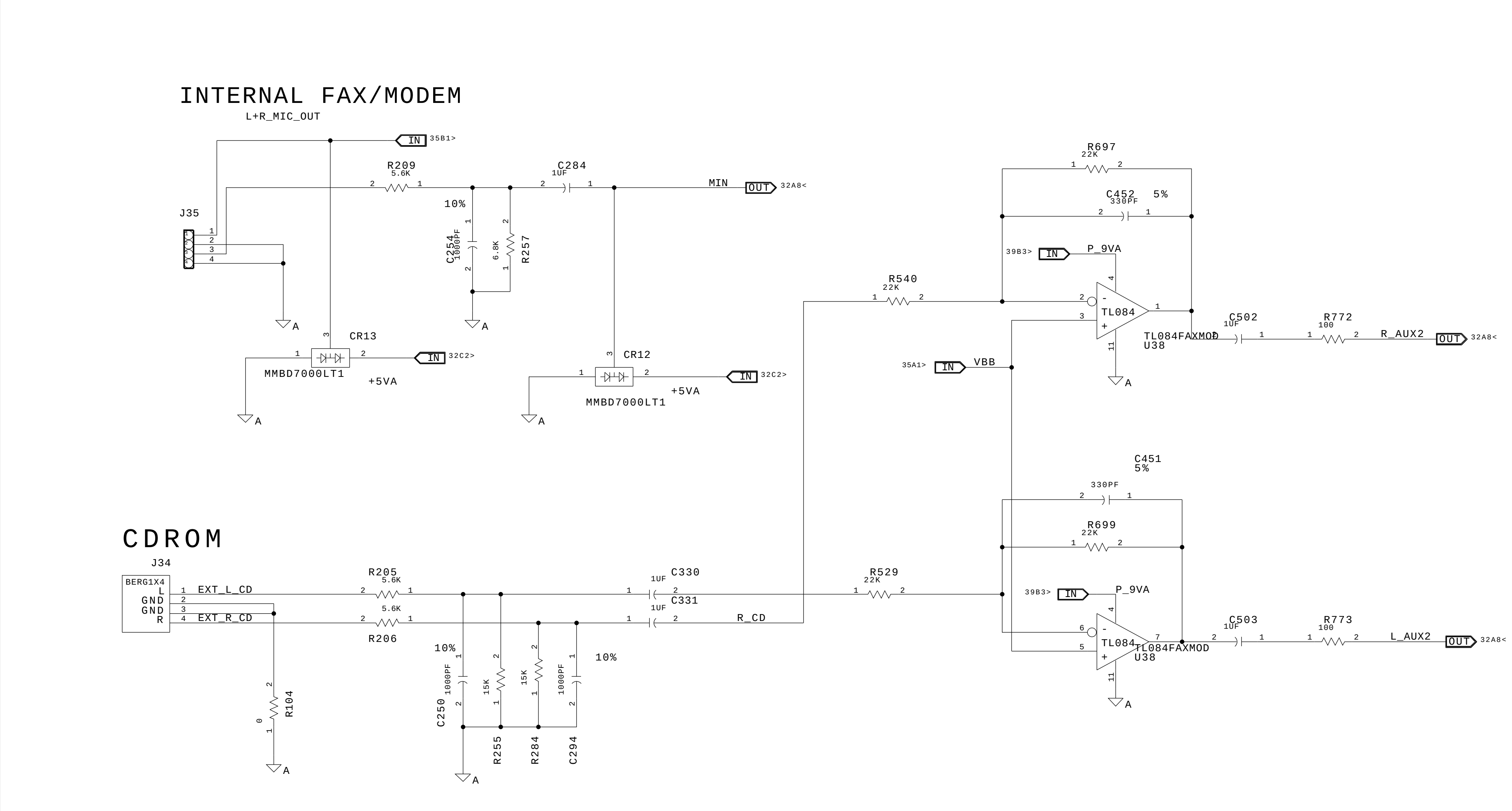
PLACE THESE CAPS CLOSE TO U42 PINS

IBM	AUDIO		
DRAFT	SIZE B	REVISION	DRWNG PART NUMBER
DRAWING	LONGTRAIL		SHEET 32 OF
Mon Sep 23 09:35:15 1996			

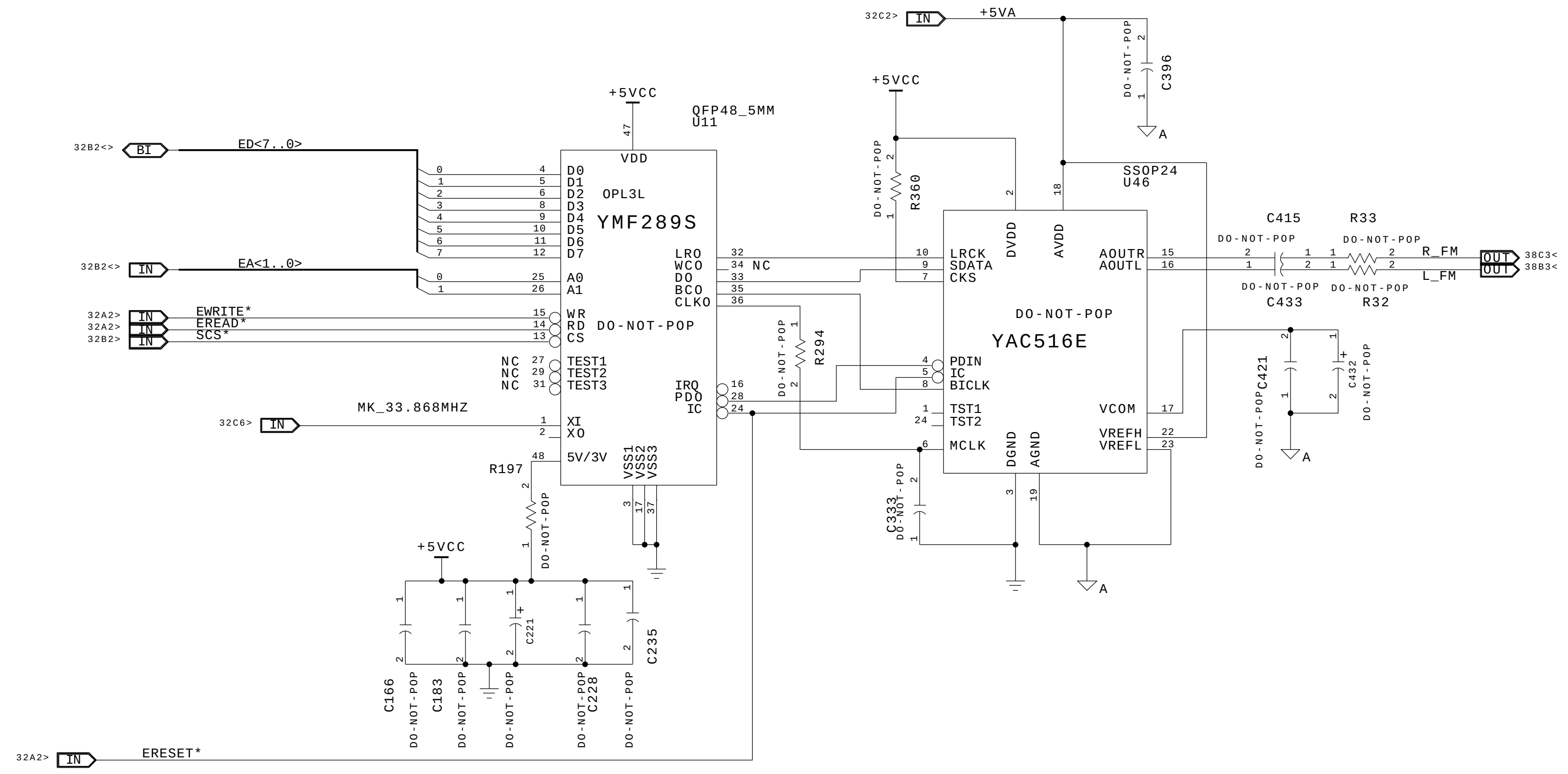

LINE_OUT
HEADPHONE
3-D AUDIO CARD CONN
J36
BERG1X20
BL1
BR1
R13
R14
J38
P_9VA
L_OUT
R_OUT
VBB
C224
C227
0.01UF
10UF
C268
75PF
5%
R281
62K
C153
1UF
R112
22K
TL084FAXMOD
U38
TL084
C196
75PF
5%
R126
62K
C126
1UF
R79
22K
C297
1UF
C257
1UF
R303
10K
R242
10K
R222
2K
+5VA
C355
68PF
2%
R412
6.8K
TDA1308HEAD
TDA1308T
U2
C352
68PF
2%
R408
6.8K
C262
47UF
R288
2K
C306
0.01UF
C371
220UF_16V
C388
0.1UF
MMBD7000LT1
CR19
CR15
CR18
CR22
R553
1K
C434
1UF
R554
1K
C430
1UF
CHOKE3
L1
L53
1000
L54
L55
LINEOUTL
LINEOUTR
LINEOUTG
OUT
34B7<
C513
680PF
C520
47PF
C529
R541
12
220UF_16V
C418
C426
0.01UF
R596
10
R531
12
C420
220UF_16V
C431
0.01UF
R602
10
MIN_LINE_WIDTH=20
L2
L50
L51
L52
HEAD_LEFT
HEAD_RIGHT
HEAD_GND
C516
C521
C525
J19
AUDIOSTK
(HEAD)
T_L
T_R
T_G
B_L
B_R
B_G
(MICROP)
N/C
MICROL
MICROR
MICROG
IN
39B3>
32A2>
35A1>
32C2>
35C8>
35B8>
A
3-D Audio Jumper
+====================================+
|J38|1-2&3-4|open |Use 3D audio card|
| | |close|Bypass 3D audio |
+====================================+
NOTE:
HEADPHONE DOES NOT MUTE SPEAKER
IBM
AUDIO LINE OUT
HEADPHONE
DRAFT
SIZE
B
REVISION
DRWNG PART NUMBER
DRAWING
LONGTRAIL
Mon Sep 23 09:35:20 1996
SHEET 33 OF


LINE_IN
J18
AUDIOSTK
(LINEIN)
(LINEOUT)
T_L
T_R
T_G
B_L
B_R
B_G
N/C
L24
L25
L26
1000
L35
CHOKE3
C167
680PF
5%
C179
47PF
C199
R523
10K
R525
C437
1UF
C438
R548
6.8K
R576
C446
1000PF
C458
10%
MMBD7000LT1
CR16
CR17
+5VA
L_LINE
R_LINE
OUT
32A8<
IN
32C2>
LINEOUTL
LINEOUTR
LINEOUTG
33C1>
32B2>
XCTL0
R125
2.2K
32A2>
M_OUT
C181
R198
1%
8.66K
22C2>
TIMER2_OUT
R93
24K
R208
C252
R111
100
C197
0.01UF
+5VCC
R403
220UF_16V
C348
0.1UF
C349
U17
VDD
TDA7052
INA
GND1
VOLC
NC
OUTP
OUTN
GND2
R234
2K
SP_DATA1
SP_DATA2
R550
10
C422
INTERNAL SPEAKER
J42
IBM
AUDIO LINE IN, INTER SPKR
DRAFT
SIZE
B
REVISION
DRWNG PART NUMBER
DRAWING
LONGTRAIL
Mon Sep 23 09:35:24 1996
SHEET 34 OF


MICROPHONE
CHOKE3
L8
L3 1000
L4 1000
L5 1000
MICROL
MICROR
MICROG
33A2< OUT
C131 680PF 5%
C140 47PF 5%
C145 47PF 5%
CR23 MMBD7000LT1
39B3> IN P_9VA
C240 .33UF
R291 10K
C377 33PF 5%
R527 39K
C274 .33UF
R312 10K
R470 39K
35A1> IN VBB
R239 3.0K
TL084 U3 TL084MIKE
C439 .33UF
R690 100
L_MIC OUT 32A8<
+5VA IN 32C2>
CR24 MMBD7000LT1
R560 2.2K
R561 2.2K
R331 3.9K
R402 0
C341 DO-NOT-POP
C344 .33UF
R332 8.2K
CR21 MMBD7000LT1
R708 22K
C450 220PF 10%
C440 0.1UF
R763 560
C518 1UF
L+R_MIC_OUT OUT 36D6<
C277 .33UF
R313 10K
C374 33PF 5%
R515 39K
R243 3.0K
C267 .33UF
R306 10K
R483 39K
CR14 MMBD7000LT1
C404 10UF
C405 0.01UF
C424 .33UF
R670 100
R_MIC OUT 32A8<
CR20 MMBD7000LT1
R770 22K
R771 22K
C530 10UF
VBB OUT 35C5< 36C4< 33B8< 33D6< 35A5< 35B3< 38A1<
IBM
AUDIO MICROPHONE
DRAFT
SIZE B
REVISION
DRWNG PART NUMBER
DRAWING
LONGTRAIL
Mon Sep 23 09:35:28 1996
SHEET 35 OF



IBM	CD ROM /FAX MODEM		
DRAFT	SIZE B	REVISION	DRWNG PART NUMBER
DRAWING Mon Sep 23 09:35:31 1996	LONGTRAIL		SHEET 36 OF

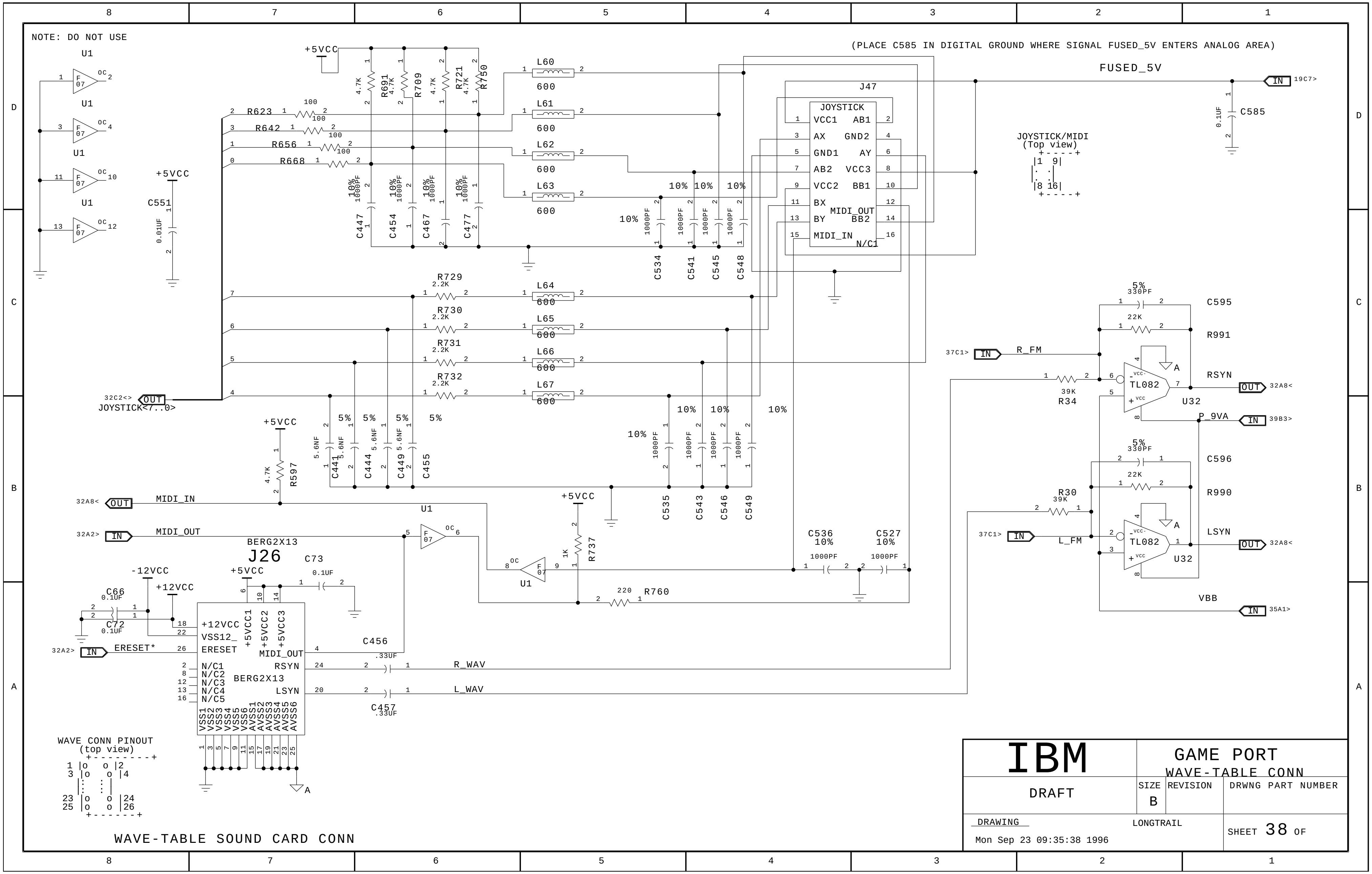


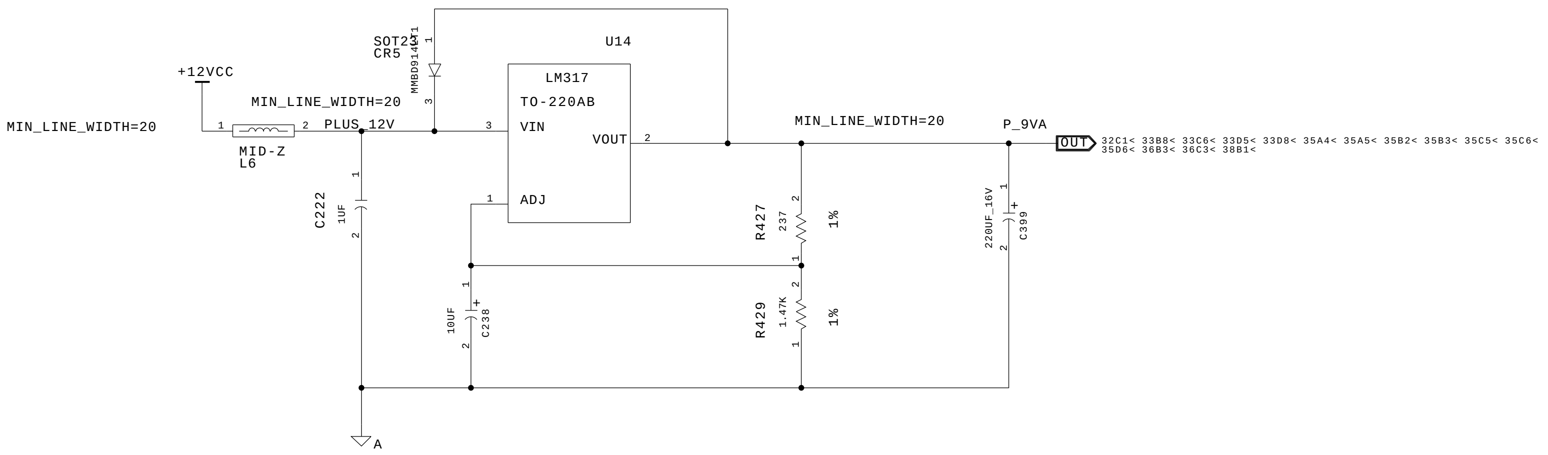
ASSEMBLY NOTE:

FOR CS4236 OPTION, DO NOT POPULATE ANY COMPONENT ON THIS SHEET

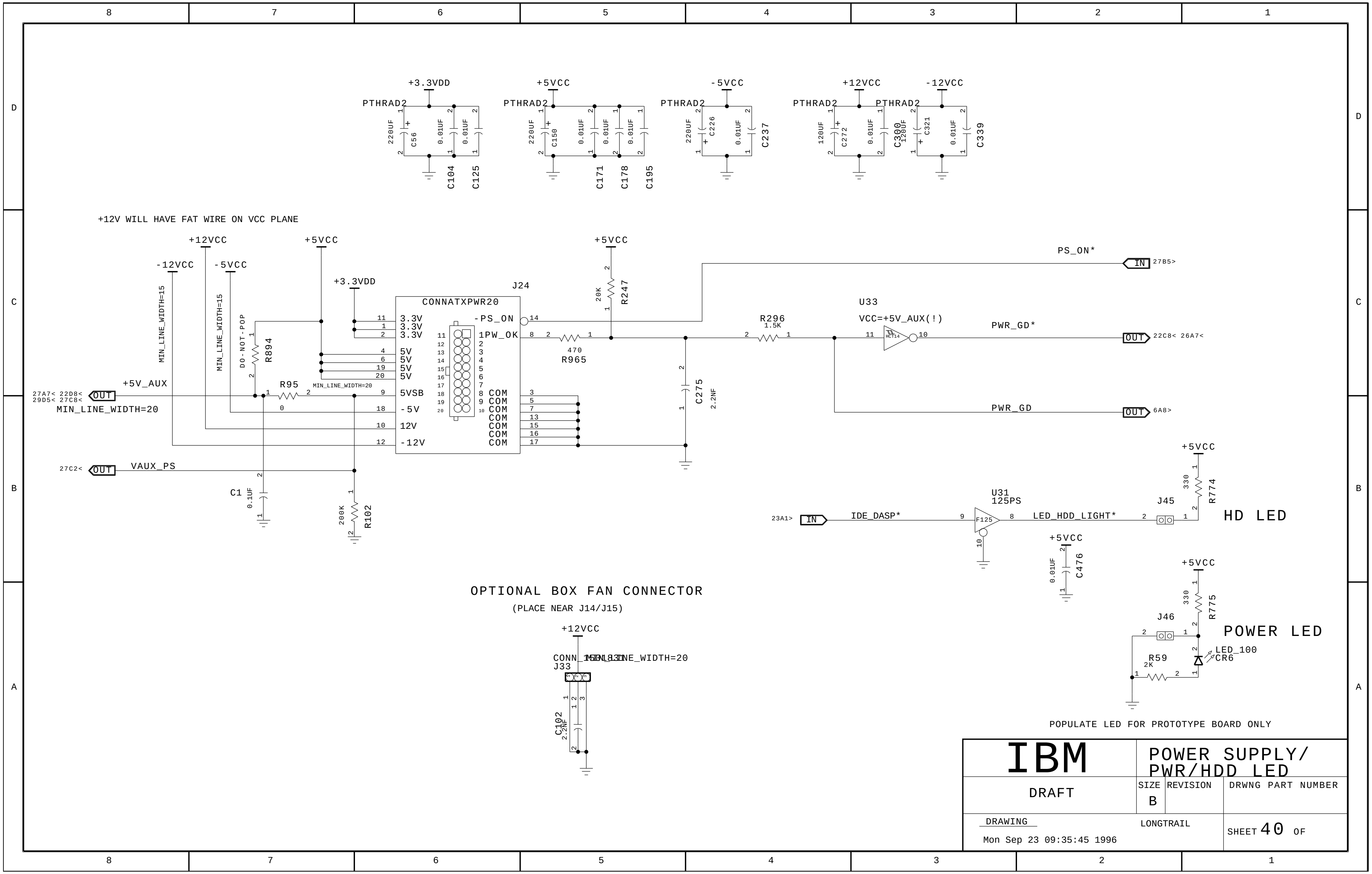
FOR CS4232 OPTION, POPULATE ALL COMPONENTS ON THIS SHEET

IBM	AUDIO			
DRAFT	SIZE B	REVISION	DRWNG PART NUMBER	
DRAWING Mon Sep 23 09:35:34 1996	LONGTRAIL		SHEET 37 OF	

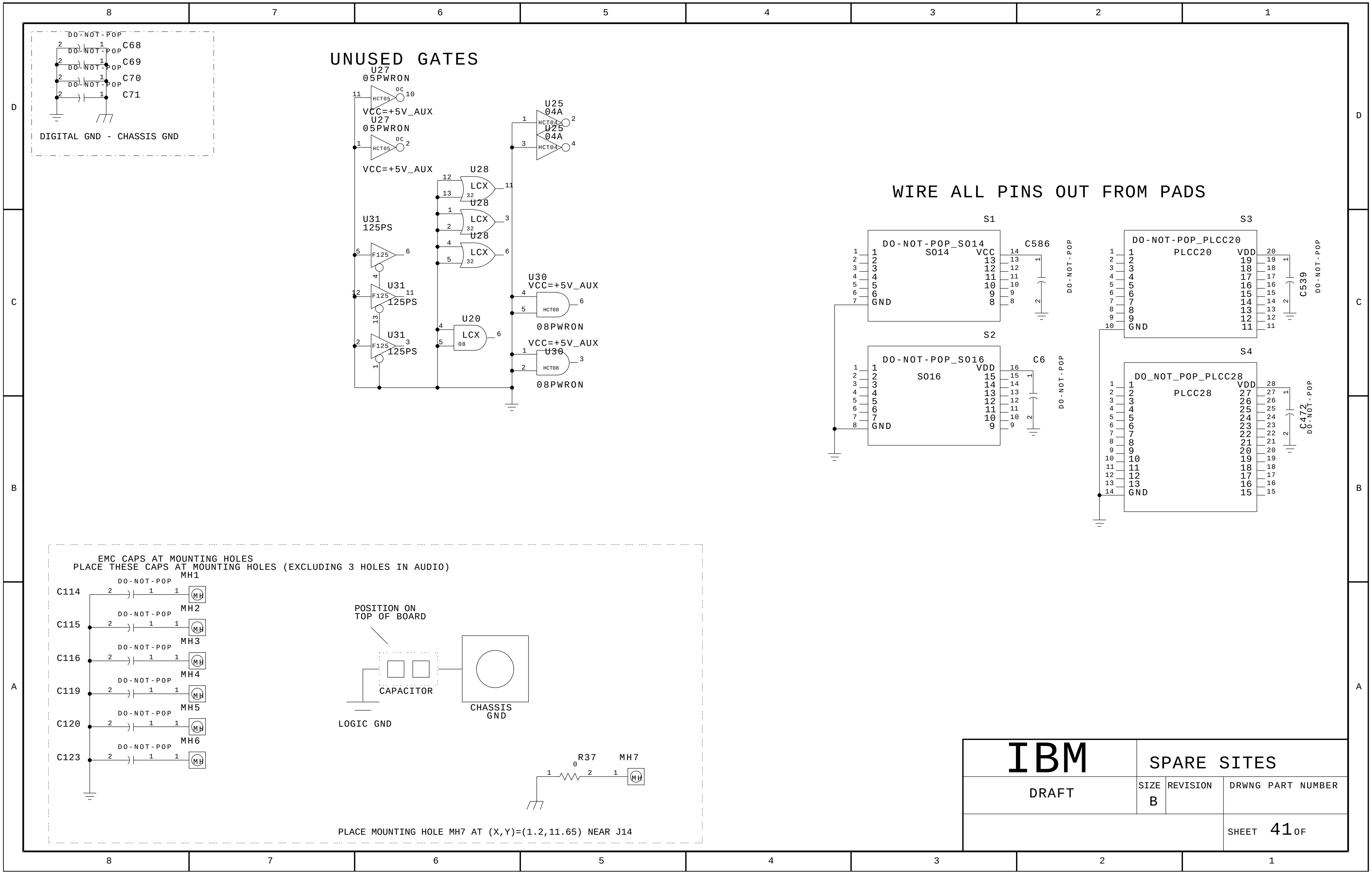

NOTE: DO NOT USE
(PLACE C585 IN DIGITAL GROUND WHERE SIGNAL FUSED_5V ENTERS ANALOG AREA)
FUSED_5V
J47
JOYSTICK
VCC1 AB1
AX GND2
GND1 AY
AB2 VCC3
VCC2 BB1
BX
BY MIDI_OUT BB2
MIDI_IN N/C1
JOYSTICK/MIDI
(Top view)
+----+
|1 9|
|8 16|
+----+
R623 R642 R656 R668
R691 R709 R721 R750
L60 L61 L62 L63 L64 L65 L66 L67
600
C447 C454 C467 C477
C534 C541 C545 C548
C585
C551
R729 R730 R731 R732
2.2K
C441 C444 C449 C455
C535 C543 C546 C549
JOYSTICK<7..0>
+5VCC
R597
MIDI_IN
MIDI_OUT
U1
R737
R760
C536
C527
C595
R991
R_FM
R34
TL082
U32
RSYN
P_9VA
C596
R990
R30
L_FM
LSYN
VBB
BERG2X13
J26
C73
-12VCC
+12VCC
C66
C72
ERESET*
+12VCC
VSS12_
ERESET
MIDI_OUT
RSYN
LSYN
N/C1 N/C2 N/C3 N/C4 N/C5
+5VCC1 +5VCC2 +5VCC3
VSS1 VSS2 VSS3 VSS4 VSS5 VSS6 AVSS1 AVSS2 AVSS3 AVSS4 AVSS5 AVSS6
C456
R_WAV
L_WAV
C457
WAVE CONN PINOUT
(top view)
1 |o o |2
3 |o o |4
23 |o o |24
25 |o o |26
WAVE-TABLE SOUND CARD CONN
IBM
GAME PORT
WAVE-TABLE CONN
DRAFT
SIZE B
REVISION
DRWNG PART NUMBER
DRAWING
LONGTRAIL
Mon Sep 23 09:35:38 1996
SHEET 38 OF



IBM	AUDIO +9V REGULATOR
DRAFT	SIZE B / REVISION / DRWNG PART NUMBER
DRAWING Mon Sep 23 09:35:42 1996	LONGTRAIL / SHEET 39 OF



+3.3VDD
+5VCC
-5VCC
+12VCC
-12VCC
PTHRAD2
220UF
C56
0.01UF
C104
C125
C150
C171
C178
C195
C226
C237
120UF
C272
C300
C321
C339
+12V WILL HAVE FAT WIRE ON VCC PLANE
MIN_LINE_WIDTH=15
DO-NOT-POP
R894
+5V_AUX
R95
MIN_LINE_WIDTH=20
VAUX_PS
C1
0.1UF
200K
R102
J24
CONNATXPWR20
3.3V
5V
5VSB
-5V
12V
-12V
-PS_ON
PW_OK
COM
470
R965
20K
R247
C275
2.2NF
PS_ON*
IN
R296
1.5K
U33
VCC=+5V_AUX(!)
PWR_GD*
OUT
PWR_GD
U31
125PS
IDE_DASP*
LED_HDD_LIGHT*
330
R774
J45
HD LED
C476
R775
J46
POWER LED
LED_100
CR6
R59
2K
OPTIONAL BOX FAN CONNECTOR
(PLACE NEAR J14/J15)
J33
C102
POPULATE LED FOR PROTOTYPE BOARD ONLY
IBM
POWER SUPPLY/
PWR/HDD LED
DRAFT
SIZE
B
REVISION
DRWNG PART NUMBER
DRAWING
LONGTRAIL
Mon Sep 23 09:35:45 1996
SHEET 40 OF



UNUSED GATES
WIRE ALL PINS OUT FROM PADS
DIGITAL GND - CHASSIS GND
DO-NOT-POP
C68
C69
C70
C71
U27
05PWRON
VCC=+5V_AUX
U25
04A
U28
LCX
U31
125PS
U20
U30
08PWRON
S1
DO-NOT-POP_SO14
SO14
C586
S2
DO-NOT-POP_SO16
SO16
C6
S3
DO-NOT-POP_PLCC20
PLCC20
C539
S4
DO_NOT_POP_PLCC28
PLCC28
C472
EMC CAPS AT MOUNTING HOLES
PLACE THESE CAPS AT MOUNTING HOLES (EXCLUDING 3 HOLES IN AUDIO)
C114
C115
C116
C119
C120
C123
MH1
MH2
MH3
MH4
MH5
MH6
POSITION ON
TOP OF BOARD
CAPACITOR
LOGIC GND
CHASSIS
GND
R37
MH7
PLACE MOUNTING HOLE MH7 AT (X,Y)=(1.2,11.65) NEAR J14
IBM
SPARE SITES
DRAFT
SIZE
B
REVISION
DRWNG PART NUMBER
SHEET 41 OF

LONGTRAIL-pass2 SCHEMATICS CHANGE HISTORY

```
20SEP96   SCHEMATICS VER.2N
-------    -----------------
1) P.27:  -  R27=1K; R285=0OHM
2) P.30:  -  R71=47OHM
18SEP96   SCHEMATICS VER.2M
-------    -----------------
1) P.04:  -  PULLDOWN TT4 AT CPU (M4.E15)
16SEP96   SCHEMATICS VER.2L
-------    -----------------
1) P.27:  -  CORRECTED +5V SUPPLY (INSTEAD +5V_AUX) AT PFET U35
12SEP96   SCHEMATICS VER.2K
-------    -----------------
1) P.23:  -  BACKANNOTATE FROM 9/11 BOARD FOR RPACK PIN SWAPS
2) P.27&31:- IMPROVE NVRAM VOLT SUPPLY CIRCUITRY TO ALLOW 5V 8K/32KX8 SRAM USAGE
3) P.22:  -  R564=1K & R574=DO-NO-POP

10SEP96   SCHEMATICS VER.2J
-------    -----------------
1) P.03:  -  RCTERM: REASSIGN CPU DATA BITS TO OPTIMIZE NET LENGTHS
2) ALL:   -  CHANGE 82UF TANTULUM CAPS TO 120UF; 150UF TO 220UF
3) P.27:  -  NEW NVRAM VOLTAGE SUPPLY CIRCUIT
4) P.32:  -  CORRECT ISA_IRQ15 AT CS4232 U42.PIN19

30AUG96   SCHEMATICS VER.2I
-------    -----------------
1) P.03:  -  RCTERM: ADDED GATE-SWAP FUNCTION IN CONCEPT MODEL
2) P.05:  -  60XPGA M4.C02: DELETED PULLUP & PULLDOWN
          -  CORRECT PINOUT (TEXT ONLY) INSIDE RISCWATCH CONNECTOR J21
23Aug96  Schematics Ver 2H
--------------------------
1) P.7    CHANGED PULLUPS ON TAG 8,9 TO PULLDOWNS PER VLSI
2) P.14  Changed DIMMS so that wires same between DIMMs
21Aug96  Schematics Ver 2G
-------    -----------------
1) all   Recieved the (we hope) version 2F schematics from Palpilot which
         they had gate swapped and we back annotated to form 2G.  no logic
         changes.
2) --    Built new physical models for flatpacks to contian 2 fiducials each
        rather than 4 fiducials. No logic wiring change.
3) --    Build new physical model for PGA to correct the pin numbering.
19Aug96  Schematics Ver 2F
-------    -----------------
1)       -Changed as many schematic symbols as possible to allow pin swapping
          and gate swapping; Specifically:
   all       RPAC -- gate and pin swap; can swap resistors between packages
                     or pins on a resistor
   P.3       RC Term -- pin swap all except power, gnd
   P.7       L2 at tags TIO1-TIO7 -- pin swap
   P.7       L2 at data 0:63 -- pin swap all
   P.7       L2 at addresses A5-A17 -- pin swap
   P9-10     244-type, 16244 type --  gate swap within an enable; both in and
                                      out change
   P.10      GG at MA 0:8 -- pin swap
   P.10      GGA at Tag 0:6 -- pin swap
   P.12      GGD at MD -- can swap pins within bytes, cannot swap bytes
   P.13      DIMMs a MD -- can swap pins within bytes, cannot swap bytes
   P.14      DIMMs at MA 0:6 -- pin swap
   P.18      SCSI(theveninterm) -- pin swap any but power, gnd
   P.29      serial port buffers --2 groups, can gate swap among each group
                                   not between groups: both in and out swap
2) P.12  -Delete parity
3) P.14  -Delete parity
4) P.30  -Changed schematic model to fit the physical model
5) P.31  -Change R575 to 10k
07Aug96  Schematics Ver 2E
-------    -----------------
1) P.07:  -  Added pullup resistors at Tag 07, 08 lines

07Aug96   Schematics Ver.2D
-------    -----------------
1) P.26&30:  -  Changed CHRP floppy pin out & connection to SuperI/O 308
2) P.06:     -  Eliminated RPack at VRM & CPU config jumpers J20 & J23
05Aug96   Schematics Ver.2C
-------    -----------------
1) P.22:  -  Added 10K PU at SIO U18.119 (CSROM_KBD) per VLSI
2) P.11:  -  Added MIN_LINE_WIDTH=15 (mils) to signals PVDD & AVDD at GG2 PLL
3) P.04:  -  Deleted short to +3.3v on DRTRY# signal
          -  Added 10K PU on signals #TA, #TEA, & DBDIS#
4) P.05:  -  Added 10K PU on signals #SMI, #DBWO, & TBEN
5) P.06:  -  Deleted signal name VRM_5V connecting VRM 5-volt pins to symbol +5v
6) P.27:  -  Deleted signal names #P_INIT, P_PE, P_SELECT, & #P_ERR
7) P.38:  -  Deleted short to GNDA on signal MIDI_OUT
8) P.33:  -  Deleted signal name LINE_OUT_RTN at L1.3
9) P.29:  -  Change POWER_GROUP from VCC=+5V_AUX(!) to VCC=+5V_AUX at U33.5&6
01Aug96   Schematics Ver.2B
-------    -----------------
1) P.06:  -  Changed DIP12 to berg3x4 & 3x9
          -  Changed CPU capacitor type and/or value
2) P.15,22,32- SIO14MHz becomes AUDIO14MHz;ISA14HHz is shared between SIO & slots
3) P.22:  -  Deleted PU/PD on SIO reset signals (pin 4,5,22)
4) P.32:  -  Added more caps at Crystal digital & analog 5v pins
5) P.41:  -  Added mounting holes models
6) P.10-11:- Deleted TOE#; added/swapped VDDE-I & VSSE-I pins; PVdd=pin93,PVss=pin94
7) almost all pages:  -  Changed 33uF tantulum to 150uf_6.3V Aluminum for 5v bus
          or 82uF_16V Aluminum for 12v bus
```

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27Jul96   Schematics Ver.2A (change to ver0.1E to 2A)
-------    -----------------
1) P.06:  -  Added pullup at CPU_SEL<2>
2) P.15:  -  Ground at U10.25,31 per ICWorks
          -  Added pullup at U10.29 per ICWorks
          -  Reassigned 2nd bank SDRAM clocks to worst skew CPU clocks
               because probably most of current SDRAM modules
               do not have CLK2 & CLK3 (out of 4 SDRAM clks 0-3)
          -  Changed damping R value at CPU clocks per ICWorks
3) P.16:  -  Changed values on PCI_IDSEL resistors to 330ohm per VLSI
          -  Changed values on PCI_REQ/GNT pullup at PCI slot1
4) P.17:  -  Changed values on PCI_IDSEL resistors to 330ohm per VLSI
5) P.18:  -  Change PCI_IDSEL resistors from 75ohm to 330ohm per VLSI
         (at PCI_slots, Hydra, SIO)
6) P.19:  -  Incread linewidth of FUSED_5V to 100mil to handle 5Amps
7) P.21:  -  Changed values on PCI_IDSEL resistors to 330ohm per VLSI
          -  Per VLSI, pop R574 & nopop R564 for Tollgate
          -  Added PU on ISA_RESET
          -  Added pulldown on PCI_RESET_ per Tollgate review
8) P.22:  -  ISA_IRQ8 changed to -ISA_IRQ8
9) P.28:  -  Change J49 to 6-pin to support ADB option
          -  Added R987 & R988
10)P.30:  -  Reassign pinout of 36-pin printer hdr J22 to make cable easier
          -  Added nopop cap at L49.1
11)P.33-38-  Renumbered choke3 component pin
          -  Redesigned audio Wave-table circuitry per G.Kokosoulis
          -  Eliminated +5vf at CS4232 on p.32
          *  Note: annotated schematics pages for cosmetics
-----------------------------------------------------------------------------
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```
*** Signal Cross-Reference ***
   --- for the entire design --

+5VA             32C2> 33A3< 33A7< 33B3< 33B5< 34B1<
                  34D1< 35A3< 35D3< 36C4< 36C6< 37D4<
+5V_AUX          40B8> 22D8< 27A7< 27C8< 29D5<
3V_W49C65        15C5
5V_W49C65        15C6
11_BIT_TAG *     7C2> 27B2<
31.3344MHZ       18A7
50MHZ          18A7
60X_AVDD         6A2
308TC *        26B6
308_MR           26A6
308_STDBY        27C2> 8C2< 20C8< 32A8<
603_QREQ_/604_HALTED 5A3
A <31..0>        4C3<> 7C2<> 9C8<> 10B8<> 8B2< 10A3<
                  10B3<
AACK *           4A3<> 10D3<>
ADB-KYBD/MSE_GND 28A3
ADB-KYBD/MSE_VCC 28C3
ADB_IO           18A2<> 28A1<>
ADB_RESET *      18A2> 22C8<
APPLE_KB_SW *    28B1> 27C8<
ARTRY *          4A3<> 10D3<>
AUDIO14.3181MHZ 15C2> 32C8<
AUD_REFFLT       32A4
AUD_VREF         32A4
AVDD           11A3> 11C2<
A_GPIA         20C5
A_HSKIA        20C5
A_HSKOA          20C5
A_RXDA+          20C5
A_RXDA-          20C5
A_TDXA+          20C5
A_TDXA-          20C5
BG0 *            10D3> 4A3<
BR0 *            4A3> 10D8<
BURST_CAP *      9A2> 27C2<
B_GPIB         20B5
B_HSKIB        20B5
B_HSKOB          20B5
B_RXDB+          20B5
B_RXDB-          20B5
B_TDXB+          20B5
B_TDXB-          20B5
CA3/BAA *        10B3> 8C2<
CA4/TSC *        10C3> 8C2<
CAS/SDDQM <7..0> * 10A3> 14C1<
CDOE *           10C3> 8C2<
CDWE *           10C3> 8B2<
CI *           4A3> 10C8<
CKSTP_CPU *      5C6
CLK_SEL <2..0>   6D8> 15B7<
CPU_BCLK         15B2> 5C8<
CPU_FREQ_CFG <3..0> 6B3> 5B8<
CS2_308 *        27B5
CSROM            22C5
CS_16.934MHZ     32C6
CS_24.576MHZ     32C6
CTS1 *           29C7> 27C2<
CTS2 *           29A7> 27C2<
CTSA             20C8> 18C2<
CTSB             20B8> 18B2<
D <63..0>        3C8<> 3D3<> 7B6<> 9C1<> 12C8<>
DBG0 *           10D3> 4A3<

DCD1 *           29D7> 27C2<
DCD2 *           29B7> 27C2<
DCDA *           20C8> 18C2<
DCDB *           20A8> 18C2<
DCPU <63..0>     3B3<> 3C5<>
DENSEL           26B3> 30B4<
DR0 *            26B3> 30B4<
DR1 *            26B3> 30B4<
DRATE0           26B3> 30B2<
DRTRY *          6B8> 4A3<
DSKCHG *         30A4> 26A3<
DSK_IN_PLACE *   30B2> 26A3<
DSR1 *           29C7> 27C2<
DSR2 *           29A7> 27C2<
DTR1 *           27C2> 29C7<
DTR2 *           27C2> 29A7<
DTRA *           18B2> 20C8<
DTRB *           18B2> 20B8<
DTY              7C2<> 10C3<>
EA <1..0>        32B2<> 37C7<
ED <7..0>        32B2<> 37D7<>
EJECT_FLOPPY *   27A8> 30A4<
EREAD *          32A2> 37C7<
ERESET *         32A2> 37A7< 38A8<
ESP_HRESET *     5D4
ESP_SRESET *     5D4
EWRITE *         32A2> 37C7<
EXT_CTS1 *     29C5
EXT_CTS2 *     29A6
EXT_DCD1 *       29D5
EXT_DCD2 *       29B6
EXT_DSR1 *       29C5
EXT_DSR2 *       29A6
EXT_DTR1 *     29C5
EXT_DTR2 *     29A5
EXT_L_CD         36B7
EXT_RI1 *      29C5
EXT_RI2 *      29A6
EXT_RTS1 *     29C5
EXT_RTS2 *     29A5
EXT_R_CD         36B7
EXT_SCSI_GND     19A4
EXT_SIN1       29C5
EXT_SIN2       29A6
EXT_SOUT1        29C5
EXT_SOUT2        29A5
EXT_TERM_PWR     19C4
FDC_DIR *        26B3> 30B4<
FLSHREQ *        21A7> 11C7<
FUSED_5V         19C7> 18D1< 20C1< 27A2< 28D5< 38D1<

GBL *            4A3<> 10C8<>
GGAD_DIR       11A6
GGAD_GD0         11A6
GGAD_GD1         11A6
GGAD_GD2         11A6
GGAD_GD3         11A6
GGAD_GD4         11B6
GGAD_GD5         11B6
GGAD_GD6         11B6
GGAD_GD7         11B6
GGAD_GD8         11B6
GGAD_GD9         11B6
GGAD_GD10        11B6
GGAD_GD11        11B6
GGAD_GD12        11B6

GGAD_GD13        11B6
GGAD_GD14        11B6
GGAD_GD15        11B6
GGAD_PARERR      11A6
GGAD_PCIH      11A6
GGAD_PCIL      11A6
GGAD_PFLD        11A6
GGAD_PFULD       11A6
GGAD_PMEN        11A6
GGAD_PMRD        11A6
GGAD_PMW         11A6
GGAD_SPEC        11A6
GGAD_WBSTB       11A6
GGA_BCLK         15B2> 10D8<
GGA_PCICLK       15B2> 11D7<
GGD_BCLK         15C2> 12D8<
GG_MWE/SDWE *    10A4
GG_PCIGNT *      21A7> 11A1<
GG_PCIREQ *      11B1> 21A7<
GG_RESET *       22D2> 11A8<
GG_SDCKE1 *      10A5
GG_SDCKE2 *      10A5
GG_TA *        10D5
HDSEL *          26B3> 30A4<
HEAD_GND         33B2
HEAD_LEFT        33B2
HEAD_RIGHT       33B2
HI_DENS *        30B4> 26B3<
HRESET *         22D2> 5D2<
HRESET_CPU       5C5> 6B8<
HRESET_CPU *     5C5> 6B8<
HYDRA_31.3344MHZ 18A6
HYDRA_50MHZ      18A6
HYDRA_PCICLK     15B2> 18B7<
HYDRA_SRESET *   18A6> 5D2<
I2C_CLK          18B6> 14B1<
I2C_DATA         14B1<> 18A6<>
IDEA <2..0>      22C2> 23C8<
IDECS0 *         22C2> 23C8<
IDECS1 *         22C2> 23A1<
IDED <15..0>     22B2<> 23D8<>
IDEDACKP *       22B2> 23B8<
IDEDACKS *       22B2> 23B4<
IDEIORDY         23C8> 22B2<
IDEIORP *        22B2> 23B8<
IDEIORS *        22B2> 23B4<
IDEIOWP *        22B2> 23B8<
IDEIOWS *        22B2> 23B4<
IDEPRI_D <15..0> 23C6
IDESEC_D <15..0> 23C3
IDE_DASP *       23A1> 40B4<
IDE_DRQP         22C2> 23B8>
IDE_DRQS         22C2> 23B4<>
IDE_INTP         23B8> 22B2<
IDE_INTS         23B4> 22B2<
IDE_NM_INT_P/S * 21B7> 18B2<
IDE_NM_INT_S *   21B7> 18B2<
INDEX *          30B4> 26A3<
INT_CPU *        18A6> 5C8<
ISA14.3181MHZ    15C2> 22C7< 25A7<
ISA_0WS *        25A7<> 26B3> 21B2<
ISA_AEN          22A7> 25B7< 26B7< 27A5< 32C7<
ISA_BALE         21A2<> 25B7<>
ISA_CLK          22C7> 25B7<
ISA_DACK0 *      22A8> 25C7< 26B7< 32A8<
ISA_DACK1 *      22A8> 25C7< 26B7< 32A8<

ISA_DACK2 *      22A8> 25C7< 26B7<
ISA_DACK3 *      22A8> 25C7< 26B7< 32A8<
ISA_DACK5 *      22A8> 25C7<
ISA_DACK6 *      22B8> 25C7<
ISA_DACK7 *      22B8> 25C7<
ISA_DRQ0         25B7> 26C3> 32A2> 22B7<
ISA_DRQ1         25B7> 26C3> 32A2> 22B7<
ISA_DRQ2         25B7> 26C3> 22B7<
ISA_DRQ3         25B7> 26C3> 32A2> 22B7<
ISA_DRQ5         25B7> 22B7<
ISA_DRQ6         25B7> 22B7<
ISA_DRQ7         25B7> 22B7<
ISA_IOCHK *      25B7> 21A2<
ISA_IOCHRDY      21A2<> 25B7<> 26B3<> 32C7<
ISA_IOCS16 *     25B7> 21A2<
ISA_IOR *        21C2<> 25B7<> 26B7< 32C7<
ISA_IOW *        21C2<> 25B7<> 26B7< 32C7<
ISA_IRQ0       22B6
ISA_IRQ1         26C3> 22B7<
ISA_IRQ3         25C7> 26C3> 22B7<
ISA_IRQ4         25C7> 26C3> 22B7<
ISA_IRQ5         25C7> 26C3> 32B4> 22B7<
ISA_IRQ6         25C7> 26C3> 22B7<
ISA_IRQ7         25C7> 26C3> 32B4> 22B7<
ISA_IRQ8 *       26C3> 22B7<
ISA_IRQ9         25C7> 26C3> 32B4> 22B7<
ISA_IRQ10        25C7> 26C3> 22B7<
ISA_IRQ11        25C7> 26B3> 32B4> 22B7<
ISA_IRQ12        25C7> 26B3> 32B4> 22C7<
ISA_IRQ13      22C6
ISA_IRQ14        25C7> 26B3> 22C7<
ISA_IRQ15        25C7> 26B3> 32B4> 22C7<
ISA_LA <23..17> 21C2<> 24A7<> 31B7< 31D8<
ISA_MASTER *     25A7> 21B2<
ISA_MEMCS16 *    25A7<> 21A2<
ISA_MEMR *       21C2<> 25B7<> 31C8<
ISA_MEMW *       21B2<> 25B7<> 31C8<
ISA_REFRESH *    21B2<> 25B7<
ISA_RESET        22C2> 25A7< 26A7< 32A8<
ISA_SBHE *       21A2<> 25A7<
ISA_SMEMR *      21C2<> 25B7<> 31A7<
ISA_SMEMW *      21C2<> 25B7<> 31A7<
ISA_TC           22A7> 25A7< 26B7<
JOYSTICK <7..0> 32C2<> 38B8>
KYBD_CLK         27A2<> 28C8<>
KYBD_DATA        27A2<> 28C8<>
L+R_MIC_OUT      35B1> 36D6<
L2_BCLK <1..0>   15B2> 8C2<
L2_PD <3..0>     8D8> 27B2<
LED_HDD_LIGHT * 40B2
LINEOUTG         33C1> 34B7<
LINEOUTL         33C1> 34B7<
LINEOUTR         33C1> 34B7<
LSYN             38B1> 32A8<
L_AUX2           36B1> 32A8<
L_FM             37C1> 38B3<
L_LINE         34D1> 32A8<
L_MIC            35C2> 32A8<
L_OUT            32A2> 33D8<
L_WAV          38A6
MA <10..0>       10B1> 14D1<
MA11/BA0         10B1> 14C1<
MA12/BA1         10B1> 14C1<
MA13/MA11        10B1> 14C1<
MACROMWE *       10B1> 9A6<
MACROM_CS *      11A1> 9A6<
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```
MAC_A <28..9>   10A1> 10B1> 9B5<
MCP *           10D3> 5C8<
MD <63..0>      12C2<> 13C1<>
MEMACK *        11C7> 21A7<
MICROG          35B8> 33A2<
MICROL          35C8> 33A2<
MICROR          35C8> 33A2<
MIDI_IN        38B8> 32A8<
MIDI_OUT        32A2> 38B8<
MIN            36D4> 32A8<
MK33MHZ         32C7
MK_16.934MHZ    32C7
MK_24.576MHZ    32C7
MK_33.868MHZ    32C6> 37C6<
MOUSE_CLK       27A2<> 28B8<>
MOUSE_DATA      27A2<> 28B8<>
MSEN1           30A4> 26B3<
MTR0 *          26B3> 30B4<
MTR1 *          26B3> 30B4<
MWE/SDWE <2..0> * 10A1> 14A1<
M_OUT           32A2> 34B8<
NMI            22C2> 11C7<
NVRAM_VCC       27D5> 31B2<
P/W_OVERRIDE *  27B2
PARALLEL <16..0> 27A1<> 30D7<>
PAR_CONN_GND    30D2
PCI_ACK64 *     16B8<> 17B8<>
PCI_AD <31..0>  11C7<> 16B8<> 17B8<> 18B7<> 18C7<>
                 21C7<> 16C2< 16C8< 17C2< 17C8< 21B7<

PCI_C/BE <3..0> * 11B1<> 16B8<> 17B8<> 18B7<>
                 21B7<>
PCI_DEVSEL *    11B1<> 16C8<> 17C8<> 18B7<> 21B7<>
PCI_FRAME *     11B1<> 16C8<> 17C8<> 18B7<> 21B7<>
PCI_HYDRA_GNT * 21A7> 18B2<
PCI_HYDRA_REQ * 18B2> 21A7<
PCI_IRDY *      11B1<> 16C8<> 17C8<> 18B7<> 21B7<>
PCI_IRQW *      16D8> 17D8> 16D2< 17D2< 18B2<
PCI_IRQX *      16D8> 17D8> 16D2< 17D2< 18B2<
PCI_IRQY *      16D8> 17D8> 16D2< 17D2< 18B2<
PCI_IRQZ *      16D8> 17D8> 16D2< 17D2< 18B2<
PCI_LOCK *      16C8<> 17C8<> 11B1< 21B7<
PCI_PAR         11B1<> 16B8<> 17B8<> 18B7<> 21B7<>
PCI_PERR *      11A1<> 16C8<> 17C8<> 18B7<> 21B7<>
PCI_RESET *     22D2> 9A6< 16C8< 17C8< 18B7< 23C8<
                 27A7<
PCI_SBO *       16C8<> 17C8<>
PCI_SDONE       16C8<> 17C8<>
PCI_SERR *      11A1<> 16C8<> 17C8<> 18B7<> 21B7<>
PCI_SLOT1GNT *  21B7> 16C8<
PCI_SLOT1REQ *  16D8> 21B7<
PCI_SLOT2GNT *  21A7> 16C2<
PCI_SLOT2REQ *  16D2> 21A7<
PCI_SLOT3GNT *  21A7> 17C8<
PCI_SLOT3REQ *  17D8> 21A7<
PCI_SLOT4GNT *  21A7> 17C2<
PCI_SLOT4REQ *  17D2> 21A7<
PCI_STOP *      11B1<> 16C8<> 17C8<> 18B7<> 21B7<>
PCI_TCK         16C8<> 17C8<>
PCI_TDI         16C8<> 17C8<>
PCI_TDO         16C8<> 17C8<>
PCI_TMS         16C8<> 17C8<>
PCI_TRDY *      11B1<> 16C8<> 17C8<> 18B7<> 21B7<>
PCI_TRST *      16C8<> 17C8<>
PLUS_12V        39C6
PROC_MODE <1..0> 6B7

PS_ON *         27B5> 40C2<
PVDD           11A3> 11D2<
PWROFF_IRQ *    27B2> 18B2<
PWR_GD          6A8> 40B2>
PWR_GD *        40C2> 22C8< 26A7<
P_9VA           39B3> 32C1< 33B8< 33C6< 33D5< 33D8<
                 35A4< 35A5< 35B2< 35B3< 35C5< 35C6<
                 35D6< 36B3< 36C3< 38B1<
P_ACK *        27A3
P_AFD *        27A3
P_BUSY          27A3
P_STB *        27B3
RAS/SDCS <3..0> * 10A3> 14A1<
RAS4/SDCAS *    10B3> 14B1<
RAS5/SDRAS *    10B3> 14B1<
RDATA *         30B4> 26B3<
RI1 *          29C7> 27C2<
RI2 *          29A7> 27C2<
ROMOE *         11A1> 9A6<
ROMWE *         11A1> 10B3<
ROM_NVRAMCS *   22C7> 31B7<
RSYN            38C1> 32A8<
RTCX2_32KHZ     27A6
RTC_X1         27A5
RTC_X2         27A5
RTS1 *          27D2> 29C7<
RTS2 *          27C2> 29A7<
RTSA *          18C2> 20D8<
RTSB *          18C2> 20B8<
RXDA            20C8> 18C2<
RXDB            20B8> 18C2<
R_AUX2          36C1> 32A8<
R_CD           36B5
R_FM            37C1> 38C3<
R_LINE          34C1> 32A8<
R_MIC           35A2> 32A8<
R_OUT           32A2> 33B8<
R_WAV          38A6
SA <16..0>      21B2<> 24B7<> 26B7<> 31B7< 31C8<
                 32B8<
SCS *           32B2> 37C7<
SCSI_CNTL <8..0> 18C1<> 19C6<>
SCSI_D <8..0>   18D1<> 19D6<>
SD <15..0>      21D2<> 24C7<> 26C7<> 31A2<> 31D2<>
                 32B8<> 27A6<
SDCKE1 *        10A3> 14A7<
SDCKE2 *        10A3> 14A7<
SDRAM_BCLK <7..0> 15B2> 14A1<
SIN1           29C7> 27D2<
SIN2           29A7> 27C2<
SIODACK <2..0>  22A6
SIO_INT        22C2> 18B2<
SIO_PCICLK      15B2> 21B7<
SIO_RESET *    22D5
SLOT1_PCICLK    15B2> 16D8<
SLOT2_PCICLK    15B2> 16D2<
SLOT3_PCICLK    15B2> 17D8<
SLOT4_PCICLK    15B2> 17D2<
SOUT1           27D2> 29C7<
SOUT2           27C2> 29A7<
SP_DATA1       34A4
SP_DATA2        34A4
SRESET_CPU *    5C6
STEP *          26B3> 30B4<
SUPERIO_24MHZ   15B2> 26A7<
SWITCH *       27B5

TA *           10D3> 4A3<
TAG <9..0>      7C2<> 10C3<>
TBST *          4A3<> 10C8<>
TCK_CPU         5B6
TDI_CPU        5B6
TDO_CPU         5B6
TIMER2_OUT      22C2> 34A8<
TMS_CPU         5B6
TRK0 *          30B4> 26B3<
TRST_CPU *      5B6
TS *            4A3<> 10D8<>
TSIZ <2..0>     4B3> 10C8<>
TT <3..0>       4B3<> 10D8<>
TWE *           10C3> 8B2<
TXDA            18C2> 20D8<
TXDB            18C2> 20B8<
VAUX_PS         40B8> 27C2<
VBAT           27D7
VBB             35A1> 33B8< 33D6< 35A5< 35B3< 35C5<
                 36C4< 38A1<
VCCOK           31A4> 27D7<
VRM_VDD         6A3
W49C65CPU1      15B5
W49C65CPU2      15B5
W49C65CPU3      15B5
W49C65CPU4      15B5
W49C65CPU5      15B5
W49C65CPU6      15B5
W49C65CPU7      15B5
W49C65CPU8      15B5
W49C65CPU9      15B5
W49C65CPU10     15B5
W49C65CPU11     15B5
W49C65CPU12     15B5
W49C65PCI1      15B5
W49C65PCI2      15B5
W49C65PCI3      15B5
W49C65PCI4      15B5
W49C65PCI5      15B5
W49C65PCI6      15B5
W49C65REF1      15C5
W49C65REF2      15C5
W49C65_24MHZ    15B5
WDATA *         26B3> 30B4<
WGATE *         26B3> 30B4<
WP *            30B4> 26A3<
X1_14MHZ        15C7
X2A_14MHZ       15B7
X2B_14MHZ       15B7
XCTL0           32B2> 34B8<
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*** Unit Cross-Reference ***
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C1	CAPACITOR	40B7
C2	CAPACITOR	32C8
C3	CAPACITOR	18A8
C4	CAPACITOR	18A8
C5	ELCAP	7D8
C6	CAPACITOR	41C2
C7	CAPACITOR	6D2
C8	CAPACITOR	6D2
C9	CAPACITOR	6D2
C10	CAPACITOR	6C2
C11	CAPACITOR	20B8
C12	CAPACITOR	9B8
C13	CAPACITOR	6C2
C14	CAPACITOR	20B8
C15	ELCAP	16A8
C16	ELCAP	17A8
C17	CAPACITOR	6C2
C18	ELCAP	11D8
C19	ELCAP	18D8
C20	ELCAP	9D2
C21	CAPACITOR	7D8
C22	CAPACITOR	6C2
C23	CAPACITOR	6C2
C24	CAPACITOR	6C2
C25	CAPACITOR	6C2
C26	CAPACITOR	6C2
C27	CAPACITOR	7D8
C28	CAPACITOR	6C2
C29	ELCAP	21D8
C30	CAPACITOR	6C2
C31	CAPACITOR	27B8
C32	CAPACITOR	6C2
C33	CAPACITOR	6B4
C34	ELCAP	26D8
C35	CAPACITOR	16A8
C36	CAPACITOR	17A8
C37	CAPACITOR	11D8
C38	CAPACITOR	18D8
C39	CAPACITOR	6B2
C40	CAPACITOR	6B2
C41	CAPACITOR	6B2
C42	CAPACITOR	32C8
C43	CAPACITOR	22D8
C44	CAPACITOR	16A8
C45	CAPACITOR	17A8
C46	CAPACITOR	11D8
C47	CAPACITOR	18D8
C48	CAPACITOR	6B2
C49	CAPACITOR	6B2
C50	CAPACITOR	6B2
C51	CAPACITOR	21D8
C52	CAPACITOR	29D8
C53	CAPACITOR	9D1
C54	ELCAP	25A8
C55	CAPACITOR	26D8
C56	ELCAP	40D6
C57	CAPACITOR	16A8
C58	CAPACITOR	17A8
C59	CAPACITOR	6B2
C60	CAPACITOR	11D7
C61	CAPACITOR	18D7
C62	CAPACITOR	6B2
C63	CAPACITOR	27B7
C64	CAPACITOR	6B2
C65	CAPACITOR	6B2
C66	CAPACITOR	38A8
C67	CAPACITOR	21D7
C68	CAPACITOR	41D8
C69	CAPACITOR	41D8
C70	CAPACITOR	41D8
C71	CAPACITOR	41D8
C72	CAPACITOR	38A8
C73	CAPACITOR	38B7
C74	CAPACITOR	6B2
C75	CAPACITOR	29D4
C76	CAPACITOR	6A2
C77	CAPACITOR	6A2
C78	CAPACITOR	6B4
C79	CAPACITOR	6B2
C80	CAPACITOR	28A3
C81	CAPACITOR	28A2
C82	CAPACITOR	32C6
C83	ELCAP	32C6
C84	CAPACITOR	9D1
C85	CAPACITOR	26D7
C86	CAPACITOR	15C8
C87	CAPACITOR	15C8
C88	CAPACITOR	16A7
C89	CAPACITOR	17A7
C90	ELCAP	25A7
C91	CAPACITOR	32A3
C92	CAPACITOR	11D7
C93	CAPACITOR	18D7
C94	CAPACITOR	32C4
C95	CAPACITOR	32C4
C96	CAPACITOR	32C4
C97	CAPACITOR	32C4
C98	CAPACITOR	32D6
C99	CAPACITOR	21D7
C100	CAPACITOR	29D8
C101	CAPACITOR	32C6
C102	CAPACITOR	40A5
C103	CAPACITOR	26D7
C104	CAPACITOR	40D6
C105	CAPACITOR	32C4
C106	CAPACITOR	32C4
C109	CAPACITOR	11D7
C110	CAPACITOR	18D7
C114	CAPACITOR	41A8
C115	CAPACITOR	41A8
C116	CAPACITOR	41A8
C119	CAPACITOR	41A8
C120	CAPACITOR	41A8
C121	CAPACITOR	31C5
C123	CAPACITOR	41A8
C125	CAPACITOR	40D6
C126	CAPACITOR	33B8
C129	CAPACITOR	25A7
C130	CAPACITOR	18D7
C131	CAPACITOR	35B8
C136	CAPACITOR	25A7
C137	CAPACITOR	31B5
C139	ELCAP	29D8
C140	CAPACITOR	35B8
C141	ELCAP	19B5
C145	CAPACITOR	35B7
C150	ELCAP	40D5
C152	ELCAP	29D7
C153	CAPACITOR	33D7
C163	CAPACITOR	14A7
C164	CAPACITOR	14A7
C166	CAPACITOR	37B6
C167	CAPACITOR	34C7
C169	CAPACITOR	10D6
C170	CAPACITOR	12D6
C171	CAPACITOR	40D5
C172	CAPACITOR	29D7
C174	CAPACITOR	15C6
C175	CAPACITOR	15C6
C176	CAPACITOR	15C6
C177	ELCAP	15C6
C178	CAPACITOR	40D5
C179	CAPACITOR	34C7
C181	CAPACITOR	34B7
C183	CAPACITOR	37B6
C189	CAPACITOR	27A6
C190	CAPACITOR	27A6
C193	CAPACITOR	32C6
C195	CAPACITOR	40D5
C196	CAPACITOR	33B7
C197	CAPACITOR	34A7
C199	CAPACITOR	34C7
C202	CAPACITOR	22A6
C203	ELCAP	16A6
C204	ELCAP	17A6
C221	ELCAP	37B5
C222	CAPACITOR	39B6
C224	CAPACITOR	33D6
C226	ELCAP	40D4
C227	ELCAP	33D6
C228	CAPACITOR	37B5
C229	CAPACITOR	16A6
C230	CAPACITOR	17A6
C233	CAPACITOR	16A6
C234	CAPACITOR	17A6
C235	CAPACITOR	37B5
C237	CAPACITOR	40D4
C238	ELCAP	39B6
C239	ELCAP	25A5
C240	CAPACITOR	35D6
C242	CAPACITOR	16A5
C243	CAPACITOR	17A5
C244	CAPACITOR	15D6
C245	CAPACITOR	15C5
C246	CAPACITOR	15C5
C247	CAPACITOR	15C5
C248	CAPACITOR	15C5
C249	ELCAP	15C4
C250	CAPACITOR	36A6
C252	CAPACITOR	34A6
C254	CAPACITOR	36C6
C256	CAPACITOR	30D6
C257	CAPACITOR	33B6
C258	CAPACITOR	16A5
C259	CAPACITOR	17A5
C261	CAPACITOR	25A5
C262	ELCAP	33A6
C266	CAPACITOR	14A5
C267	CAPACITOR	35A6
C268	CAPACITOR	33D6
C269	CAPACITOR	30C6
C270	CAPACITOR	14A5
C272	ELCAP	40D4
C273	CAPACITOR	30C6
C274	CAPACITOR	35C6
C275	CAPACITOR	40B4
C276	CAPACITOR	23B7
C277	CAPACITOR	35B6
C281	CAPACITOR	23B4
C284	CAPACITOR	36D6
C285	CAPACITOR	30C6
C286	ELCAP	28D3
C287	CAPACITOR	29B6
C290	CAPACITOR	32A4
C291	CAPACITOR	30C5
C292	CAPACITOR	28D3
C293	CAPACITOR	28C6
C294	CAPACITOR	36A5
C295	CAPACITOR	19B6
C296	ELCAP	20B2
C297	CAPACITOR	33C6
C298	CAPACITOR	29B5
C300	CAPACITOR	40D3
C301	CAPACITOR	30C5
C302	CAPACITOR	29D4
C303	CAPACITOR	28A6
C306	CAPACITOR	33A5
C307	CAPACITOR	32A4
C309	CAPACITOR	30C5
C311	CAPACITOR	29B5
C313	CAPACITOR	28C5
C315	CAPACITOR	30C5
C321	ELCAP	40D3
C322	CAPACITOR	30C5
C324	CAPACITOR	28A5
C325	ELCAP	25A4
C327	ELCAP	32A4
C328	CAPACITOR	30C5
C330	CAPACITOR	36B5
C331	CAPACITOR	36B5
C333	CAPACITOR	37B4
C334	CAPACITOR	30C5
C335	CAPACITOR	32A4
C337	CAPACITOR	30C5
C339	CAPACITOR	40D3
C340	CAPACITOR	30C5
C341	CAPACITOR	35B5
C342	CAPACITOR	25A4
C343	ELCAP	32A3
C344	CAPACITOR	35B5
C345	CAPACITOR	27D4
C346	CAPACITOR	30C5
C348	ELCAP	34B4
C349	CAPACITOR	34B5
C350	CAPACITOR	30C5
C351	CAPACITOR	29B5
C352	CAPACITOR	33A5
C354	CAPACITOR	32A3
C355	CAPACITOR	33B5
C356	ELCAP	16A4
C357	ELCAP	17A4
C358	CAPACITOR	30C5
C365	CAPACITOR	30C5
C366	CAPACITOR	29B5
C368	CAPACITOR	19A4
C369	CAPACITOR	29A5
C370	CAPACITOR	32A3
C371	ELCAP	33A5
C372	CAPACITOR	30C5
C374	CAPACITOR	35B4
C376	CAPACITOR	29B4

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C377	CAPACITOR	35D5
C379	CAPACITOR	16A4
C380	CAPACITOR	17A4
C381	ELCAP	32C3
C382	CAPACITOR	18D3
C383	CAPACITOR	18C3
C385	CAPACITOR	29B4
C387	ELCAP	25A3
C388	CAPACITOR	33A4
C389	CAPACITOR	29A5
C390	CAPACITOR	11D3
C392	CAPACITOR	19A4
C393	CAPACITOR	32C3
C394	CAPACITOR	29B4
C396	CAPACITOR	37D3
C397	ELCAP	16A3
C398	ELCAP	17A3
C399	ELCAP	39B3
C401	CAPACITOR	29B4
C402	CAPACITOR	25A3
C403	CAPACITOR	29A4
C404	ELCAP	35A4
C405	CAPACITOR	35A4
C407	CAPACITOR	29B4
C409	CAPACITOR	16A3
C410	CAPACITOR	17A3
C411	CAPACITOR	19C4
C412	CAPACITOR	29B4
C415	CAPACITOR	37C2
C416	ELCAP	11C3
C418	ELCAP	33B3
C419	CAPACITOR	29B4
C420	ELCAP	33B4
C421	CAPACITOR	37C2
C422	CAPACITOR	34A3
C423	CAPACITOR	28A4
C424	CAPACITOR	35A3
C426	CAPACITOR	33B3
C427	CAPACITOR	29B3
C428	CAPACITOR	31B3
C429	ELCAP	11C3
C430	CAPACITOR	33C3
C431	CAPACITOR	33A3
C432	ELCAP	37C2
C433	CAPACITOR	37C2
C434	CAPACITOR	33C3
C437	CAPACITOR	34D3
C438	CAPACITOR	34C3
C439	CAPACITOR	35C3
C440	CAPACITOR	35B3
C441	CAPACITOR	38B7
C442	CAPACITOR	11C2
C443	CAPACITOR	20C2
C444	CAPACITOR	38B6
C445	CAPACITOR	11C2
C446	CAPACITOR	34C3
C447	CAPACITOR	38C6
C448	CAPACITOR	11C2
C449	CAPACITOR	38B6
C450	CAPACITOR	35C3
C451	CAPACITOR	36B3
C452	CAPACITOR	36D3
C453	CAPACITOR	11C2
C454	CAPACITOR	38C6
C455	CAPACITOR	38B6
C456	CAPACITOR	38A6

C457	CAPACITOR	38A6
C458	CAPACITOR	34C2
C463	CAPACITOR	29B2
C464	CAPACITOR	11C2
C466	CAPACITOR	32B1
C467	CAPACITOR	38C6
C468	ELCAP	13B2
C469	ELCAP	13B2
C470	ELCAP	13A2
C471	CAPACITOR	11C2
C472	CAPACITOR	41B1
C474	CAPACITOR	11D2
C475	CAPACITOR	11C2
C476	CAPACITOR	40B2
C477	CAPACITOR	38C6
C478	ELCAP	11D1
C479	ELCAP	11C1
C480	CAPACITOR	19D2
C482	CAPACITOR	19D2
C483	CAPACITOR	19D2
C484	CAPACITOR	19D2
C485	CAPACITOR	19D2
C486	CAPACITOR	19D2
C487	CAPACITOR	19D2
C488	CAPACITOR	19D2
C489	CAPACITOR	19D2
C490	CAPACITOR	19C2
C491	CAPACITOR	19C2
C492	CAPACITOR	19C2
C493	CAPACITOR	19C2
C494	CAPACITOR	19C2
C495	CAPACITOR	19C2
C496	CAPACITOR	19C2
C497	CAPACITOR	19C2
C498	CAPACITOR	19C2
C499	CAPACITOR	13B1
C500	CAPACITOR	13B1
C501	CAPACITOR	13A1
C502	CAPACITOR	36C2
C503	CAPACITOR	36B2
C505	CAPACITOR	13B1
C506	CAPACITOR	13B1
C507	CAPACITOR	13A1
C509	CAPACITOR	13B1
C510	CAPACITOR	13B1
C511	CAPACITOR	13A1
C513	CAPACITOR	33C2
C516	CAPACITOR	33B2
C518	CAPACITOR	35B1
C520	CAPACITOR	33C1
C521	CAPACITOR	33A1
C525	CAPACITOR	33A1
C526	CAPACITOR	10A1
C527	CAPACITOR	38B3
C529	CAPACITOR	33C1
C530	ELCAP	35A1
C533	ELCAP	31D1
C534	CAPACITOR	38C5
C535	CAPACITOR	38B5
C536	CAPACITOR	38B4
C539	CAPACITOR	41C1
C541	CAPACITOR	38C4
C543	CAPACITOR	38B4
C544	CAPACITOR	31D1
C545	CAPACITOR	38C4
C546	CAPACITOR	38B4

C548	CAPACITOR	38C4
C549	CAPACITOR	38B4
C551	CAPACITOR	38D8
C552	CAPACITOR	14A7
C553	CAPACITOR	14A7
C554	CAPACITOR	14A5
C555	CAPACITOR	14A5
C564	CAPACITOR	20B5
C565	CAPACITOR	20B5
C566	CAPACITOR	20B5
C567	CAPACITOR	20B5
C568	CAPACITOR	20B5
C569	CAPACITOR	20B5
C570	CAPACITOR	20A5
C571	CAPACITOR	20A5
C572	CAPACITOR	20A5
C573	CAPACITOR	20A5
C574	CAPACITOR	20A5
C575	CAPACITOR	20A5
C576	CAPACITOR	20A5
C577	CAPACITOR	20B5
C585	CAPACITOR	38D1
C586	CAPACITOR	41C2
C589	CAPACITOR	18D1
C590	CAPACITOR	3A2
C591	CAPACITOR	27D5
C592	CAPACITOR	15D6
C593	CAPACITOR	20B8
C594	CAPACITOR	20B8
C595	CAPACITOR	38C1
C596	CAPACITOR	38B1
C597	CAPACITOR	30C3
CR1	SWDIODE	27D7
CR2	MMBD914LT1	30D6
CR3	SFPB54VL	22D8
CR4	SFPB54VL	19C6
CR5	MMBD914LT1	39C6
CR6	LEDA	40A1
CR8	SFPB54VL	27D5
CR9	SER_DIODE1	29D5
CR10	SWDIODE	27C7
CR11	ZENER	29D4
CR12	SER_DIODE1	36C5
CR13	SER_DIODE1	36C7
CR14	SER_DIODE1	35A5
CR15	SER_DIODE1	33C4
CR16	SER_DIODE1	34D2
CR17	SER_DIODE1	34C2
CR18	SER_DIODE1	33B4
CR19	SER_DIODE1	33D4
CR20	SER_DIODE1	35A3
CR21	SER_DIODE1	35C4
CR22	SER_DIODE1	33A4
CR23	SER_DIODE1	35D5
CR24	SER_DIODE1	35D3
F1	POLYSWITCH	19C6
J1	CONNPCI120	16D1 16D6
J2	CONNPCI120	16B1 16D4
J3	CONNPCI120	17D1 17D6
J4	CONNPCI120	17B1 17D3
J5	CONNISA2X49	24C2 25D3
J6	CONNISA2X49	24C4 25D4
J7	CPUKEY	6C6
J8	CONN168UBDIMM	13D6 14D7
J9	CONN168UBDIMM	13D5 14D5
J10	CONN168UBDIMM	13D3 14D3

J11	VRM40	6B5
J12	L2COAST160	7D4 8D5
J13	ROMSIMM160	9D3
J14	CONNMDIN6STK	28C1
J15	CONNSER9STK	29D1
J16	CONNSCSI50X	19D2
J17	CONNMDIN9STK	20C3
J18	AUDIOSTK	34D8
J19	AUDIOSTK	33B1
J20	BERG3X4	6D4
J21	CONNESPSLIM	5B2
J22	CONNPAR36	30D3
J23	BERG3X9	6D6
J24	CONNATXPWR20	40C6
J25	CONNFLPY34CHRP	30B6
J26	BERG2X13	38B7
J29	CONNIDE40B	23C2
J30	CONN_BERG1X2	27B8
J31	CONN_BERG1X2	22D8
J32	CONN_BERG1X2	27B8
J33	CONNBERG1X3	40A5
J34	CDROM_CONN	36B8
J35	CONNBERG1X4	36C8
J36	BERG1X20	33C7
J38	CONNBERG1X4	33C6
J40	CONNIDE40B	23C6
J42	CONN_BERG1X2	34A3
J43	CONNBERG1X3	27B2
J45	CONN_BERG1X2	40B2
J46	CONN_BERG1X2	40A2
J47	JOYSTICK	38D3
J48	CONNBERG1X4	28C4
J49	BERG1X6	28B4
J50	CONNBERG1X3	3A2
L1	FERRITE4532	33C2
L2	FERRITE4532	33B3
L3	FBEAD	35C7
L4	FBEAD	35C7
L5	FBEAD	35B7
L6	FBEAD	39B7
L8	FERRITE4532	35C6
L9	FBEAD	15D5
L24	FBEAD	34D6
L25	FBEAD	34D6
L26	FBEAD	34C6
L27	FBEAD	29C6
L28	FBEAD	29C6
L29	FBEAD	29B6
L30	FBEAD	29A6
L31	FBEAD	29A6
L32	FBEAD	29A6
L33	FBEAD	19A5
L34	FBEAD	19A5
L35	FERRITE4532	34D5
L37	FBEAD	28B2
L38	FBEAD	28A2
L40	FBEAD	19C4
L41	FBEAD	19C4
L43	FBEAD	28A4
L44	INDUCTOR	32D1
L45	FBEAD	28D4
L46	FBEAD	20C2
L48	FBEAD	29B2
L49	FBEAD	30C2
L50	FBEAD	33B2
L51	FBEAD	33B2

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L52	FBEAD	33B2
L53	FBEAD	33C2
L54	FBEAD	33C2
L55	FBEAD	33C2
L56	FBEAD	11D1
L58	FBEAD	11C1
L60	FBEAD	38D5
L61	FBEAD	38D5
L62	FBEAD	38D5
L63	FBEAD	38D5
L64	FBEAD	38C5
L65	FBEAD	38C5
L66	FBEAD	38C5
L67	FBEAD	38C5
L68	FBEAD	15D5
L69	FBEAD	20B3
M1	CONNBATTERY3	27D7
M2	PLCC32ROMSKT	31D4
M4	60XPGA	3D4 4D5 5D6 6D1
MH1	MTGHOLE	41B8
MH2	MTGHOLE	41A8
MH3	MTGHOLE	41A8
MH4	MTGHOLE	41A8
MH5	MTGHOLE	41A8
MH6	MTGHOLE	41A8
MH7	MTGHOLE	41A5
R1	RESISTOR	27B8
R2	RESISTOR	22D8
R3	RESISTOR	27C8
R4	RESISTOR	27B8
R5	RESISTOR	22D8
R6	RESISTOR	27C8
R7	RESISTOR	27C8
R8	RESISTOR	22D8
R9	RESISTOR	32D7
R10	RESISTOR	27C7
R11	RESISTOR	27C7
R12	RESISTOR	32C7
R13	RESISTOR	33C8
R14	RESISTOR	33C8
R15	RESISTOR	32C6
R16	RESISTOR	9B7
R17	RESISTOR	15C3
R18	RESISTOR	27A6
R19	RESISTOR	10A5
R20	RESISTOR	4A6
R21	RESISTOR	7C3
R22	RESISTOR	7C3
R23	RESISTOR	4A6
R24	RESISTOR	4A6
R25	RESISTOR	7D4
R26	RESISTOR	7D4
R27	RESISTOR	27D7
R28	RESISTOR	4A4
R29	RESISTOR	10D4
R30	RESISTOR	38B2
R31	RESISTOR	10A4
R32	RESISTOR	37C2
R33	RESISTOR	37C2
R34	RESISTOR	38B2
R35	RESISTOR	15B4
R36	RESISTOR	18A4
R37	RESISTOR	41A5
R38	RESISTOR	27D6
R39	RESISTOR	27D6
R40	RESISTOR	5B8

R41	RESISTOR	5A8
R42	RESISTOR	27C6
R43	RESISTOR	5B5
R44	RESISTOR	6A5
R45	RESISTOR	5A5
R46	RESISTOR	4B5
R51	RESISTOR	16C7
R52	RESISTOR	17C7
R53	RESISTOR	8D4
R55	RESISTOR	8B4
R56	RESISTOR	14B3
R57	RESISTOR	28B3
R58	RESISTOR	6A2
R59	RESISTOR	40A2
R67	RESISTOR	18A6
R68	RESISTOR	18A6
R71	RESISTOR	30A6
R72	RESISTOR	22D4
R77	RESISTOR	27B6
R79	RESISTOR	33B8
R82	RESISTOR	10D7
R84	RESISTOR	22D7
R90	RESISTOR	14A8
R92	RESISTOR	14A8
R93	RESISTOR	34A7
R95	RESISTOR	40C7
R98	RESISTOR	12C6
R99	RESISTOR	18B6
R100	RESISTOR	32A6
R102	RESISTOR	40B6
R104	RESISTOR	36A7
R108	RESISTOR	18B6
R111	RESISTOR	34A7
R112	RESISTOR	33D7
R113	RESISTOR	23B7
R114	RESISTOR	23B7
R115	RESISTOR	23B7
R116	RESISTOR	23B7
R117	RESISTOR	23B7
R122	RESISTOR	18B6
R123	RESISTOR	33C7
R124	RESISTOR	33C7
R125	RESISTOR	34B7
R126	RESISTOR	33B7
R158	RESISTOR	18B5
R195	RESISTOR	23C7
R196	RESISTOR	29C7
R197	RESISTOR	37B5
R198	RESISTOR	34B7
R199	RESISTOR	23B7
R200	RESISTOR	23B7
R201	RESISTOR	23B7
R202	RESISTOR	11A6
R203	RESISTOR	22C6
R204	RESISTOR	28D7
R205	RESISTOR	36B7
R206	RESISTOR	36B7
R208	RESISTOR	34A6
R209	RESISTOR	36D6
R210	RESISTOR	22C6
R211	RESISTOR	14A6
R216	RESISTOR	22C5
R217	RESISTOR	28D6
R218	RESISTOR	28B7
R220	RESISTOR	14A6
R221	RESISTOR	22C5

R222	RESISTOR	33A6
R223	RESISTOR	21B5
R230	RESISTOR	23B8
R231	RESISTOR	27B5
R234	RESISTOR	34A5
R236	RESISTOR	16D5
R237	RESISTOR	17D5
R238	RESISTOR	22C5
R239	RESISTOR	35C6
R240	RESISTOR	28B6
R241	RESISTOR	21A5
R242	RESISTOR	33B6
R243	RESISTOR	35A6
R244	RESISTOR	27A5
R245	RESISTOR	23B7
R247	RESISTOR	40C5
R248	RESISTOR	21C5
R249	RESISTOR	21C6
R254	RESISTOR	21A5
R255	RESISTOR	36A6
R257	RESISTOR	36C6
R265	RESISTOR	21A5
R267	RESISTOR	15C4
R268	RESISTOR	15C4
R273	RESISTOR	15B3
R276	RESISTOR	15B4
R277	RESISTOR	15B4
R281	RESISTOR	33D6
R284	RESISTOR	36A6
R285	RESISTOR	27D5
R287	RESISTOR	27A5
R288	RESISTOR	33A5
R291	RESISTOR	35D6
R293	RESISTOR	16D5
R294	RESISTOR	37C4
R296	RESISTOR	40C4
R298	RESISTOR	16D5
R303	RESISTOR	33B6
R306	RESISTOR	35A5
R309	RESISTOR	29D5
R312	RESISTOR	35C5
R313	RESISTOR	35B5
R324	RESISTOR	10C4
R331	RESISTOR	35B5
R332	RESISTOR	35B5
R335	RESISTOR	16D4
R336	RESISTOR	19B5
R337	RESISTOR	27C4
R338	RESISTOR	15B4
R339	RESISTOR	15B4
R344	RESISTOR	15B4
R346	RESISTOR	15B4
R351	RESISTOR	23B4
R352	RESISTOR	23B5
R353	RESISTOR	16D4
R357	RESISTOR	27B5
R359	RESISTOR	23B5
R360	RESISTOR	37C4
R361	RESISTOR	16D4
R362	RESISTOR	16A4
R364	RESISTOR	16D4
R378	RESISTOR	10B5
R379	RESISTOR	10B5
R380	RESISTOR	10B5
R381	RESISTOR	10B5
R396	RESISTOR	10A4

R398	RESISTOR	16D4
R399	RESISTOR	17D4
R401	RESISTOR	14A8
R402	RESISTOR	35B5
R403	RESISTOR	34B5
R407	RESISTOR	14A8
R408	RESISTOR	33A5
R411	RESISTOR	17D5
R412	RESISTOR	33B5
R418	RESISTOR	14A6
R426	RESISTOR	14A6
R427	RESISTOR	39B5
R428	RESISTOR	18B3
R429	RESISTOR	39B5
R431	RESISTOR	18A4
R438	RESISTOR	26D4
R439	RESISTOR	16D5
R444	RESISTOR	18D3
R446	RESISTOR	26D4
R447	RESISTOR	18C3
R448	RESISTOR	17D5
R453	RESISTOR	26D4
R454	RESISTOR	29D5
R464	RESISTOR	22D6
R470	RESISTOR	35C4
R481	RESISTOR	18A3
R483	RESISTOR	35A5
R488	RESISTOR	18A3
R497	RESISTOR	23B4
R499	RESISTOR	29D4
R507	RESISTOR	22D4
R508	RESISTOR	22D3
R511	RESISTOR	23B5
R512	RESISTOR	32B3
R515	RESISTOR	35A4
R518	RESISTOR	30C4
R523	RESISTOR	34D4
R525	RESISTOR	34C4
R527	RESISTOR	35D4
R528	RESISTOR	22D6
R529	RESISTOR	36B4
R531	RESISTOR	33B4
R534	RESISTOR	22D5
R539	RESISTOR	22D5
R540	RESISTOR	36C4
R541	RESISTOR	33B4
R542	RESISTOR	28A4
R548	RESISTOR	34C4
R549	RESISTOR	25A3
R550	RESISTOR	34A4
R553	RESISTOR	33C4
R554	RESISTOR	33C4
R560	RESISTOR	35C4
R561	RESISTOR	35B4
R564	RESISTOR	22A4
R565	RESISTOR	23B3
R566	RESISTOR	23B3
R567	RESISTOR	23B3
R568	RESISTOR	23B4
R569	RESISTOR	23B4
R574	RESISTOR	22A4
R575	RESISTOR	31B4
R576	RESISTOR	34C3
R577	RESISTOR	31A4
R578	RESISTOR	27D3
R579	RESISTOR	31A4

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R583	RESISTOR	25B3
R584	RESISTOR	25B3
R585	RESISTOR	25B3
R593	RESISTOR	16C3
R594	RESISTOR	17C3
R596	RESISTOR	33B3
R597	RESISTOR	38B7
R602	RESISTOR	33A3
R614	RESISTOR	27B2
R615	RESISTOR	27A2
R616	RESISTOR	27A2
R617	RESISTOR	27A2
R622	RESISTOR	20B3
R623	RESISTOR	38D7
R635	RESISTOR	23B3
R637	RESISTOR	25D2
R642	RESISTOR	38D7
R644	RESISTOR	23B3
R645	RESISTOR	23B3
R647	RESISTOR	25D2
R650	RESISTOR	19A3
R651	RESISTOR	19A3
R654	RESISTOR	25D2
R656	RESISTOR	38D7
R668	RESISTOR	38D7
R670	RESISTOR	35A3
R686	RESISTOR	5D2
R690	RESISTOR	35C3
R691	RESISTOR	38D6
R695	RESISTOR	5C2
R697	RESISTOR	36D3
R699	RESISTOR	36B3
R703	RESISTOR	5D1
R705	RESISTOR	25D2
R708	RESISTOR	35C3
R709	RESISTOR	38D6
R710	RESISTOR	25D2
R713	RESISTOR	10A2
R714	RESISTOR	25D2
R716	RESISTOR	25D2
R718	RESISTOR	27B2
R719	RESISTOR	25D2
R721	RESISTOR	38D6
R722	RESISTOR	25D2
R724	RESISTOR	10B2
R725	RESISTOR	10B2
R726	RESISTOR	10A2
R727	RESISTOR	10A2
R728	RESISTOR	10A2
R729	RESISTOR	38C6
R730	RESISTOR	38C6
R731	RESISTOR	38C6
R732	RESISTOR	38C6
R735	RESISTOR	25D2
R737	RESISTOR	38B5
R738	RESISTOR	25D2
R744	RESISTOR	25D2
R747	RESISTOR	25D1
R749	RESISTOR	29B1
R750	RESISTOR	38D6
R751	RESISTOR	25D1
R753	RESISTOR	30D2
R760	RESISTOR	38A5
R763	RESISTOR	35B2
R764	RESISTOR	23B2
R765	RESISTOR	23B2

R770	RESISTOR	35A2
R771	RESISTOR	35A2
R772	RESISTOR	36C2
R773	RESISTOR	36B2
R774	RESISTOR	40B1
R775	RESISTOR	40A1
R894	RESISTOR	40C7
R895	RESISTOR	11A7
R898	RESISTOR	15C7
R899	RESISTOR	15B7
R901	RESISTOR	18A5
R949	RESISTOR	29C6
R953	RESISTOR	27A7
R954	RESISTOR	27A6
R955	RESISTOR	27A6
R963	RESISTOR	16D5
R965	RESISTOR	40C5
R968	RESISTOR	28B2
R969	RESISTOR	28B2
R972	RESISTOR	28B3
R973	RESISTOR	28B3
R974	RESISTOR	28B3
R976	RESISTOR	8B4
R977	RESISTOR	4A6
R978	RESISTOR	4A6
R979	RESISTOR	4A6
R980	RESISTOR	5C8
R985	RESISTOR	5A5
R986	RESISTOR	23A3
R987	RESISTOR	28B3
R988	RESISTOR	28B3
R989	RESISTOR	15B6
R990	RESISTOR	38B1
R991	RESISTOR	38C1
R992	RESISTOR	6C3
R993	RESISTOR	22D5
R994	RESISTOR	4A6
R995	RESISTOR	4A6
R996	RESISTOR	4A6
R997	RESISTOR	5C8
R998	RESISTOR	5C8
R999	RESISTOR	5B8
R1000	RESISTOR	30B3
R1001	RESISTOR	30A6
R1002	RESISTOR	30B3
R1003	RESISTOR	6D5
R1005	RESISTOR	26A4
R1006	RESISTOR	26A4
RC2	RCTERM	3D1 3D1 3D2
RC4	RCTERM	3C1 3C1 3D1 3D1 3D2
RC5	RCTERM	3C1 3C2
RC6	RCTERM	3B1 3C1 3C2
RP1	RPAC4S	23D3
RP2	RPAC4S	23D3
RP3	RPAC4S	23D2
RP4	RPAC4S	23D2
RP5	RPAC4S	3D7
RP6	RPAC4S	3D7
RP7	RPAC4S	3D7
RP8	RPAC4S	3D7
RP9	RPAC4S	3C7
RP10	RPAC4S	3C7
RP11	RPAC4S	3C7
RP12	RPAC4S	3B7 3C7
RP13	RPAC4S	3B7
RP14	RPAC4S	3B7

RP15	RPAC4S	3B7
RP16	RPAC4S	3A7 3B7
RP17	RPAC4S	3A7
RP18	RPAC4S	3A7
RP19	RPAC4S	3A7
RP20	RPAC4S	3A7
RP25	RPAC4S	10C4 10C5
RP26	RPAC4S	10B4 10B5
RP27	RPAC4S	10B4
RP28	RPAC4S	10B4
RP29	RPAC4S	10A4 10A5 10B4
RP30	RPAC4S	10A4 10A5
RP31	RPAC4S	10A4 10A5
RP32	RPAC4S	11B7
RP33	RPAC4S	15B4
RP34	RPAC4S	15B4
RP35	RPAC4S	15B4 15C4 15C4
RP36	RPAC4S	16D5 16D6
RP37	RPAC4S	22B6 22B6 22B7
RP38	RPAC4S	22A6 22A7
RP39	RPAC4S	23C6 23D6 23D6
RP40	RPAC4S	23C6 23D6
RP41	RPAC4S	23C5 23D6
RP42	RPAC4S	23C5 23D5
RP43	RPAC4S	25D3
RP44	RPAC4S	25D2
RP45	RPAC4S	25D2
RP46	RPAC4S	25B2
RP47	RPAC4S	26C4
RP48	RPAC4S	27B2 27B3 27B3
RP49	RPAC4S	27B2 27B3 27B3
RP50	RPAC4S	30D5 30D6
RP51	RPAC4S	30D5
RP52	RPAC4S	30D5
RP53	RPAC4S	5B7
RP54	RPAC4S	16D5
RP55	RPAC4S	16D5
RP56	RPAC4S	16D5
S1	DO-NOT-POP	41C3
S2	DO-NOT-POP	41C3
S3	DO-NOT-POP	41C1
S4	DO-NOT-POP	41C1
U1	F07	38B5 38B6 38D8 38D8
U2	TDA1308T	33A5 33B5
U3	TL084	35A4 35B3 35B5 35C4
U4	MK1420	32D7
U5	GG2D	11B7 12D5
U6	74LCX16244	9C7 9D7
U7	75LBC771	20D6
U8	75LBC771	20B6
U9	F138	22B6
U10	W49C65_04	15C5
U11	YMF289S	37D5
U12	GG2A	10D5 11D4
U13	HYDRA	18D4
U14	LM317	39C5
U15	PC87308	26C5 27D3
U16	THEVENINTERM	18D2
U17	TDA7052	34B5
U18	SIO	21D4 22D4
U19	MAX809	31A6
U20	08	6B7 7C3 41C6
U21	SRAM	31B4
U22	LM78M05	32C2
U23	2N7002	31B5
U24	244	10A2 10B2

U25	HCT04	5C5 22C5 26B6 31B6 41D5
U26	HCT05	22D5 22D5 22D6 22D7
U27	HCT05	22D7 27B5 27B7 27C6 41D6
U28	32	6B7 41C6 41D6
U29	08	5A5 5C4 5D4
U30	HCT08	27B6 27C6 41C5
U31	F125	40B3 41C6
U32	TL082	38B2
U33	HCT14	22D7 27B7 27C7 29D5 40C3
U34	HCT32	26A6 27A6 31B5 32A6
U35	SI9942DY	27D5
U36	F74	27A6 27B6
U38	TL084	33B7 33D6 36A3 36C2
U40	SN75C185	29C6 29C6 29D6
U41	SN75C185	29A6 29A6 29B6 29B6
U42	CS4236	32C5
U46	YAC516E	37C3
U58	24C16	32B1
X1	PART	27D8
X2	PART	31D3
X3	PART	7D4
X4	PART	9D3
X5	PART	6B5
X6	PART	3A2
X7	PART	3A2
X8	PART	6D3
Y1	OSCILLATOR	18B7
Y2	XTAL	15C8
Y3	XTAL	27A6
Y4	OSC4	18A7

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