

# SERVICE MANUAL

# SAT-W60 RM-Y804

*U.S. Model*



SAT-W60



RM-Y804

## SPECIFICATIONS

### Terminals:

Video In (2)  
Video Out (2)  
Audio (R/L) In (2)  
Audio (R/L) Out (2)  
S-Video In (1) /Out (1)  
Tel Line (1)  
Microphone In (1)  
Printer Port (DB25) (1)  
VCR Control (1)  
Digital Audio Out (1)  
USB Port (2)  
Satellite In (2)  
CH3-CH4 Switch (1)  
VHF/UHF In/Out (1)  
AC In (1)

### Dimensions: (w/h/d)

430 x 70 x 290 mm (w/h/d)  
(17 x 2<sup>3/4</sup> x 11<sup>1/2</sup> inches)

### Weight:

Approx. 4.3 kg (9.4 lbs.)

### Power Requirements:

AC 120V

### Power Consumption:

90 W Max

### Supplied Accessories:

Remote Control RM-Y804 (1)  
Size AA Batteries (2)  
AC Power Cord (1)  
A/V (Audio/Video) Cable (1)  
Telephone Cable (1)  
S-Video Cable (1)  
T Splitter (1)  
Coaxial Cable (1)  
IR Blaster (1)  
Wireless Keyboard KI-W250 (1)  
Access Card (1)

### Optional Accessories:

Local Antenna ANJ-AA1  
Installation Kit ANJ-DS2  
Amplifier EAC-DA1  
Diplexer EAC-DD1  
Voltage Switch EAC-DV2  
Satellite Dish Antenna: SAN-24MD1  
SAN-18D4

*Design and specifications are subject to change without notice.*

## SAFETY CHECK-OUT

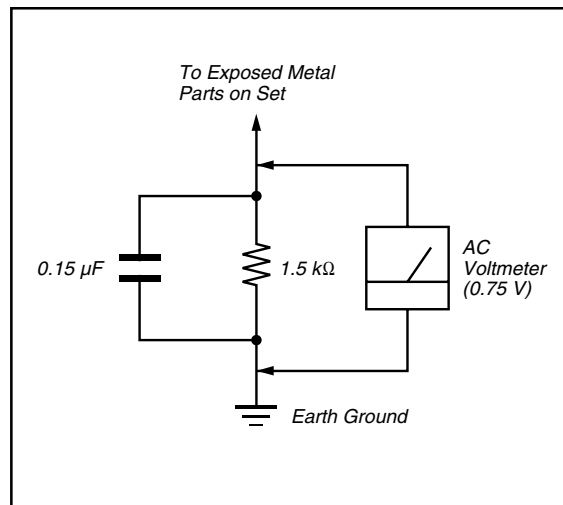
After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the B+ and HV to see if they are specified values. Make sure your instruments are accurate; be suspicious of your HV meter if sets always have low HV.
8. Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC Leakage. Check leakage as described below.

### Leakage Test

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microampere). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instructions.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low voltage scale. The Simpson's 250 and Sanwa SH-63Trd are examples of passive VOMs that are suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Figure A)



**Figure A**

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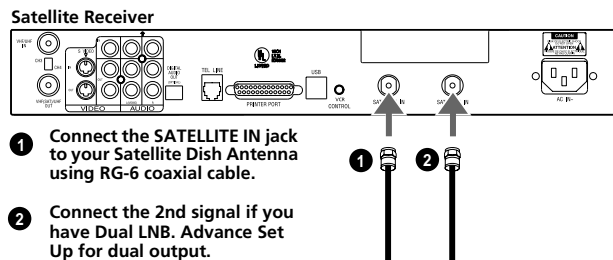
<i>Section</i>	<i>Title</i>	<i>Page</i>
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## SECTION 1 GENERAL

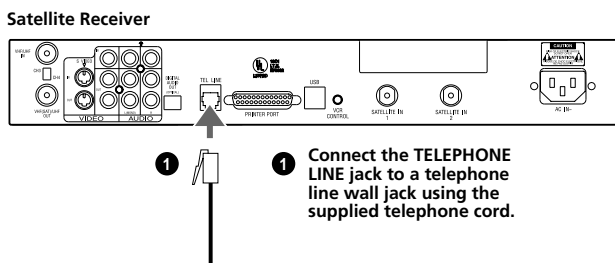
The instructions mentioned here are partial abstracts from the Operating Instruction Manual.  
The page numbers shown reflect those of the Operating Instruction Manual.

## Satellite Receiver

## Step 1: Connecting the Antenna



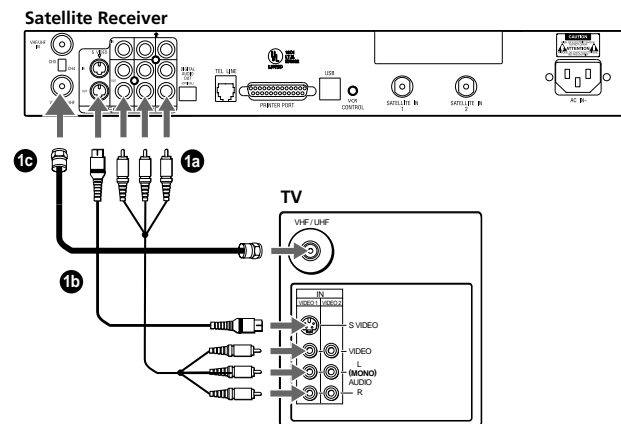
## Step 2: Connecting Your Phone Line



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## Connecting Your Satellite Receiver

## Step 3: Connecting Your TV Set



- 1a If your TV has A/V input jacks**  
Connect the VIDEO OUT jacks on your Satellite Receiver to the A/V input jacks on your TV using the supplied A/V cable. (Be sure to match the colors on the jacks with the colored plugs on the A/V cable.) If your TV has only one audio input, connect it to the L(MONO) jack on the Satellite Receiver.
- 1b If your TV has an S-Video input**  
Use an S-Video cable instead of the yellow video connection. S-Video cable is supplied.
- 1c If your TV does not have A/V jacks**  
Connect the VHF/UHF OUT jack to the VHF/UHF input jack on your TV using coaxial cable. Set the CH3/CH4 switch to the channel that does not carry off-air broadcasts in your area.

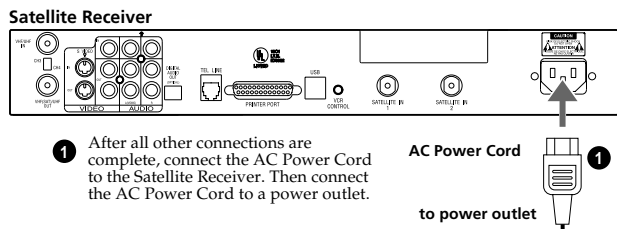
**Note**

With this connection, your input source is channel 3 or channel 4 depending on how you set the CH3/CH4 switch on the Satellite Receiver.

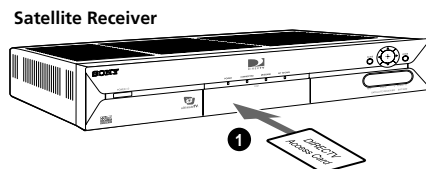
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## Satellite Receiver

### Step 4: Connecting the AC Power



### Step 5: Checking the Access Card



- 1 Open the access door by applying gentle pressure to the latch and releasing. Make sure the DIRECTV Access Card is firmly inserted into the front left hand slot of the Satellite Receiver. After the DIRECTV Access Card is inserted (correctly), **DO NOT** remove it unless instructed to do so by your service provider.

### Step 6: Activating Your Service

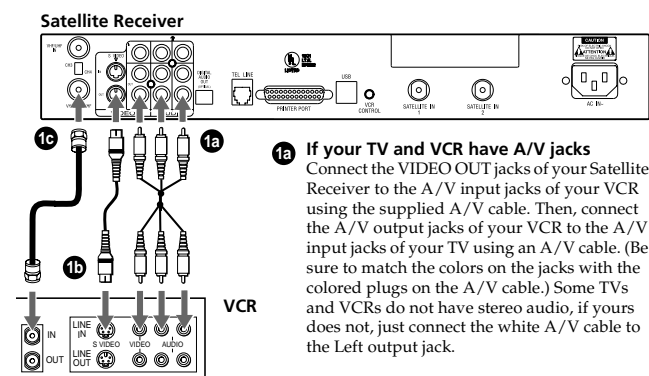
After checking the DIRECTV Access Card and your Satellite Dish Antenna is installed, you are ready to begin enjoying service.

Call DIRECTV at 1-800-DIRECTV (347-3288) to begin digital satellite programming.

For DIRECTV and UltimateTV operational instructions, please refer to the User Guide.

## Connecting Your Satellite Receiver

### Advanced Connection: Connecting Your VCR



- 1b If your TV and VCR have S-Video jacks  
Use an S-Video cable instead of the yellow video connection. S-Video cable is supplied.

#### Tip

To allow your Satellite Receiver to control the recording functions of your VCR, see page 14.

- 1c If your TV and VCR do not have A/V jacks

Connect the VHF(SAT)/UHF OUT jack on the Satellite Receiver to the VHF/UHF input jack on your VCR using coaxial cable. Then, connect the VHF/UHF output jack on your VCR to the VHF/UHF input jack on your TV using a second coaxial cable. Set the CH3/CH4 switch to the channel that does not carry off-air broadcasts in your area.

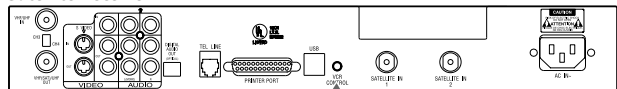
#### Note

With this connection, your input source is channel 3 or channel 4 depending on how you set the CH3/CH4 switch on

## Satellite Receiver

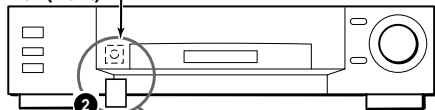
## Advanced Connection: Connecting Your IR Blaster

## Satellite Receiver

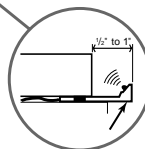


- 1** To allow the Satellite Receiver to control your VCR  
Connect the IR Blaster to the VCR CONTROL jack on the Satellite Receiver.

## VCR (front) IR Sensor



- 2** In front of the VCR  
Place the IR Blaster under and in front of the VCR. The IR Blaster must extend just in front of the infrared sensor of the VCR.

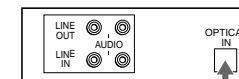
**Tip**

If the infrared sensor is not marked on your VCR, shine a flashlight into the front panel of the VCR to locate the sensor.

## Connecting Your Satellite Receiver

## Advanced Connection: Connecting an Audio System

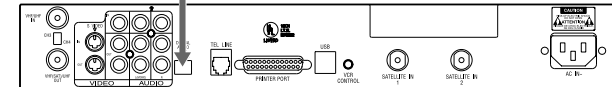
## Audio Receiver



- 1** If you have a digital or Dolby Digital audio system  
Connect the DIGITAL OUT (OPTICAL) of the Satellite Receiver to the optical digital input of your audio system.

**1**

## Satellite Receiver

**Tip**

If you connect your Satellite Receiver to a Dolby Digital receiver, set the Dolby Digital option of the Audio display to Auto Select.

## Advanced Connection: Connecting a Microphone

## Satellite Receiver



- 1** If you have a Microphone  
First, remove the cover from the microphone jack, then connect the microphone plug to the Satellite Receiver's Microphone IN jack.

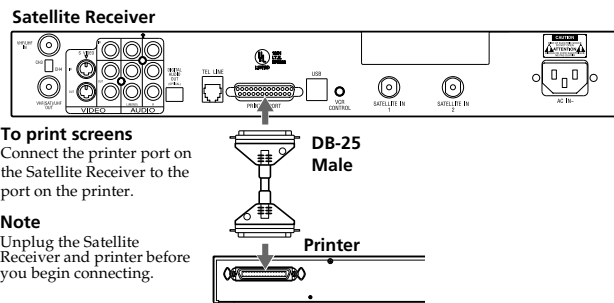
**1**

**Tip**

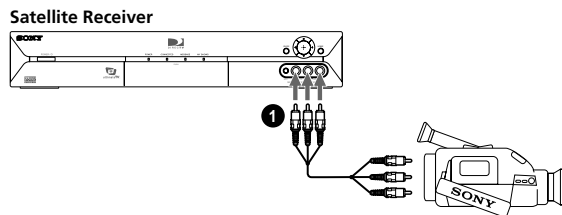
Check "Help" screen for a list of compatible microphones.

## Advanced Connection: Connecting a Printer

Connecting a printer to your Satellite Receiver enables you to print Web pages and e-mail messages. The Satellite Receiver is not compatible with all printers. Check the on-line instructions for a list of the latest compatible printers.

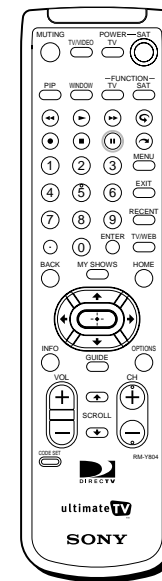


## Advanced Connection: Connecting a Camcorder



- 1 If you have a Camcorder**  
First, remove the cover from the A/V jacks, then, using A/V cables, connect the camcorder's A/V OUT jacks to the Satellite Receiver's A/V IN jacks.

**Note**  
If you have a mono camcorder, connect its left audio output to the Satellite Receiver's AUDIO L (white) jack.



<b>Muting</b>	Press to mute the sound. Press again, or press VOL +, to restore the sound. (For the TV only)
<b>TV/VIDEO</b>	Cycles through the video inputs of your TV.
<b>TV POWER</b>	Turns your TV on and off.
<b>SAT POWER</b>	Turns your Satellite Receiver on and off.
<b>PIP</b>	Turns the Picture-in-Picture features of the Satellite Receiver on and off.
<b>WINDOW</b>	Selects the active window while in PIP mode, allowing you to change the Main or PIP window. (For the Satellite Receiver only)
<b>TV FUNCTION</b>	Selects TV feature control.
<b>SAT FUNCTION</b>	Selects Satellite Receiver feature control.
<b>⏪ Button</b>	Review button.
<b>⏩ Button</b>	Play button.
<b>⏭ Button</b>	Forward scan button.
<b>⏮ Button</b>	Record button.
<b>⏸ Button</b>	Stop button.
<b>⏹ Button</b>	Pause button.
<b>⏮ Button</b>	Replay button.
<b>⏭ Button</b>	Jump ahead button.
<b>0 - 9 Buttons</b>	Select channels or enter numbers in text boxes.
<b>○</b>	Adds period to separate major/minor channel numbers.
<b>MENU</b>	Opens the TV Main Menu.
<b>EXIT</b>	Closes all on-screen displays, including program guides and menus.
<b>ENTER</b>	Activates the selected channel on your TV.

## Satellite Receiver

<b>OPTIONS</b>	Displays the OPTIONS panel.
<b>RECENT</b>	Displays and allows you to access the most recently viewed Web pages and TV channels.
<b>SCROLL ▲/▼ Buttons</b>	Moves the page up or down when the page is too long to be displayed on the screen.
<b>HOME</b>	Displays the Web Home or TV Home screen.
<b>BACK</b>	Displays the last screen viewed, or hides the on-screen keyboard.
<b>TV/WEB</b>	Press the button to switch between TV and WebTV modes.
<b>Arrow Buttons</b>	Move the yellow highlight box to a different command or activity on the screen; select different keys when the on-screen keyboard is displayed.
<b>MY SHOWS</b>	Displays a list of programs that you have recorded with your Satellite Receiver.
<b>INFO</b>	Displays information on the program you are viewing.
<b>GUIDE</b>	Displays information on available programs, including channel, time and date.
<b>◆ Button</b>	Activates a highlighted link or command; displays the on-screen keyboard.
<b>VOL +/-</b>	Increases and decreases the volume.
<b>CH +/-</b>	Moves to the next or previous channel.
<b>CODE SET</b>	Used for programming the remote control to operate your TV. See page 21 for details.

## Satellite Receiver

## Troubleshooting

Symptom	Possible Cause and remedies
TV POWER button doesn't turn on TV.	The remote control has not been properly programmed. See "Setting up the Remote Control" on page 21. The batteries in the remote control or wireless keyboard could be weak. Check the batteries and replace them if necessary.
No picture, no sound.	Make sure the AC Power Cord is connected. Check that the TV/VIDEO switch is set correctly. Make sure the Satellite Receiver is properly connected. If you connected using a S-Video or A/V cables, make sure they are properly connected. If your TV must be set to a certain channel to view other devices to which it is connected, make sure this channel is selected. Check that the correct video input is selected by pressing the TV/VIDEO button. If your TV is not connected using the S-Video or A/V cables, set the CH3-CH4 switch on the back of the Satellite Receiver to the opposite channel to which it is currently set.
No sound.	If you connected the Satellite Receiver using A/V cables, make sure the cables are properly connected.
Can't change TV channels while using WebTV service.	Make sure you select the TV FUNCTION button.
The WebTV service screens disappear after pressing the CHANNEL +/- buttons.	Press the TV/VIDEO button on the remote control until the WebTV screen appears.
VCR Control doesn't seem to be working correctly.	Check that the IR Blaster is positioned directly in front of the infrared sensor area of your cable box and/or VCR. Follow the on-line instructions in the "Settings" link, accessible from the TV Home page of the WebTV service.

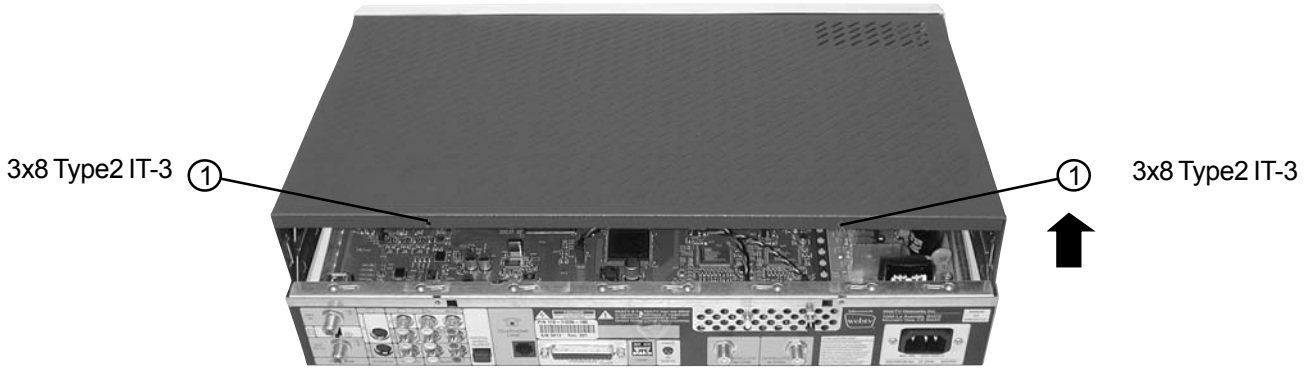


## Other Information

Symptom	Possible Cause and remedies
The Satellite Receiver gets extremely hot.	Check the placement of the Satellite Receiver. Place the Satellite Receiver in a location with adequate ventilation. Do not place the Satellite Receiver in a cabinet or on a TV. If the heat is excessive, contact your Sony dealer.
The Satellite Receiver turns off and on by itself.	This is often caused by static build up. Turn off the Satellite Receiver and disconnect the AC Power Cord from the power outlet. Then reconnect the AC Power Cord to the power outlet and turn on the Satellite Receiver. If this does not solve the problem, contact your Sony dealer.
The Satellite Receiver will not turn on.	Make sure the AC Power Cord is securely connected to the Satellite Receiver and a power outlet.
The Satellite Receiver will not connect to the WebTV Network after receiving an upgrade from the WebTV service.	Turn off the Satellite Receiver and disconnect the AC Power Cord from the power outlet. Then reconnect the AC Power Cord to the power outlet and turn on the Satellite Receiver. You may need to repeat this procedure three or four times to solve the problem.
The Message Indicator light is not working.	You can set your Satellite Receiver to check for messages automatically. However, if you check for messages yourself before the Satellite Receiver is set to do so automatically, the Message Indicator may not light until the Satellite Receiver checks again. You may want to consider setting the Satellite Receiver to check for mail when you usually are not connected.
Remote control or keyboard is no longer working.	Replace the batteries. Try pressing the SAT FUNCTION button.
No channels are viewable.	Activate your service by contacting DIRECTV at 1-800-DIRECTV (347-3288) Check the status of your service with UltimateTV at 1-877-ULTIMATE (858-4628)

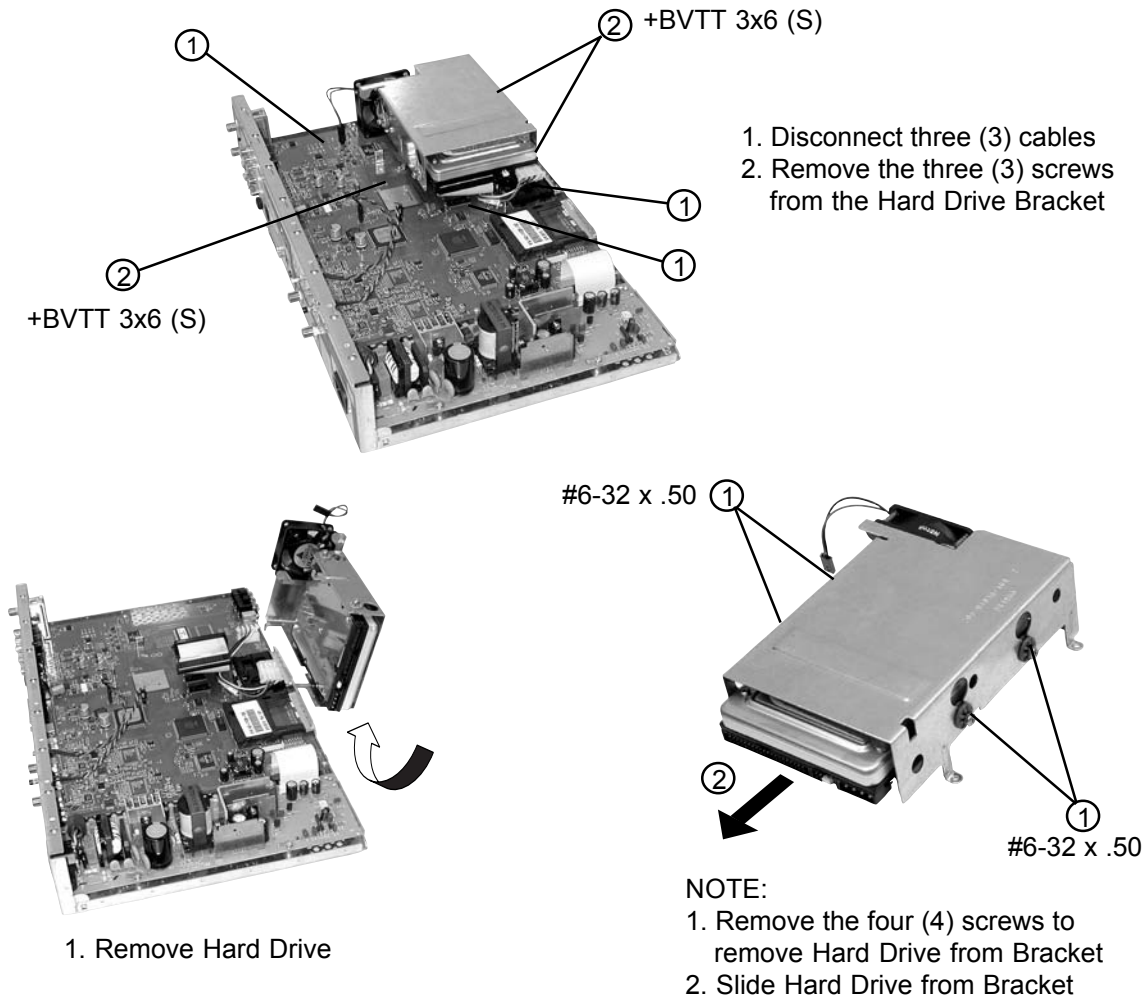
## SECTION 2 DISASSEMBLY

### 2-1. UPPER COVER REMOVAL



1. Remove Two (2) Screws
2. Pull Upper Cover up approximately 3 inches.
3. Slide forward making sure to slide the tabs out of the lower case front.

### 2-2. HARD DRIVE REMOVAL



1. Disconnect three (3) cables
2. Remove the three (3) screws from the Hard Drive Bracket

1. Remove Hard Drive

- NOTE:
1. Remove the four (4) screws to remove Hard Drive from Bracket
  2. Slide Hard Drive from Bracket

## SECTION 3

### SYSTEM SELF TEST

#### SELF TEST:

1. From home page go to [settings].
2. Go to [system test].
  - a. Connect a phone line to the phone jack on the back of the unit.
  - b. Connect both tuners to a SAT signal.
  - c. Make sure that the CAM card is in.
3. Press [Run Test].

This test checks both tuner's signal and that the modem detects a dial tone. Also, it checks that the CAM card is inserted and valid. Test will show the serial number on the card.
4. Go to [Receiver Info] from the same system test menu.

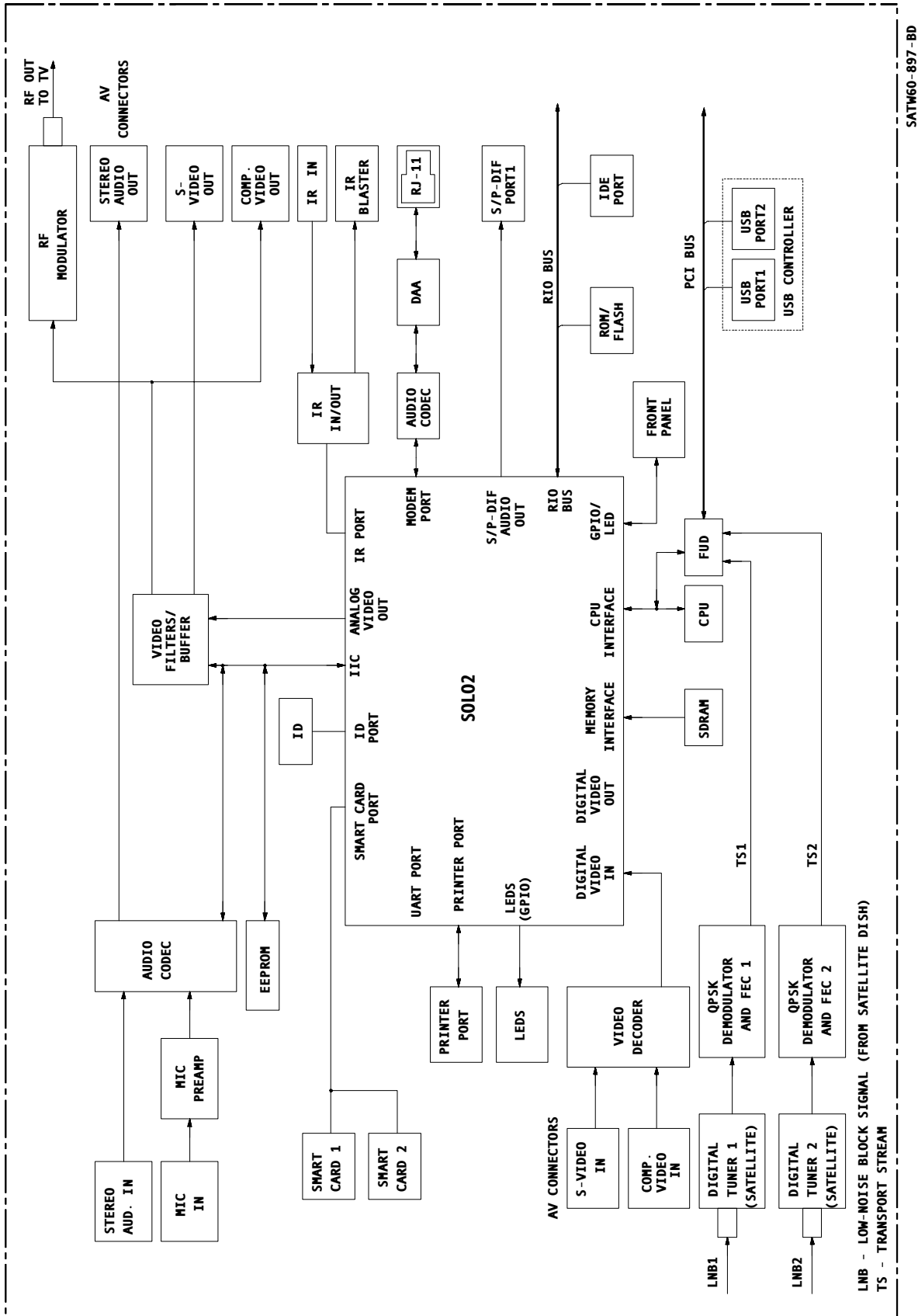
This provides the following information on the box:

  - Manufacturer: Sony Model number:
  - Serial number:
  - Client software:
  - Boot rom version:
  - SSID:
5. To show the date the box was last upgraded along with the version, select [Upgrades] from the SAT receiver information menu.
6. Go to the settings menu and select [Hooking Up]
7. Go to [Signal Strength]

This will show the signal strength for each tuner. It is also possible to change transponder numbers to verify both even and odd transponders.

SECTION 4  
DIAGRAMS

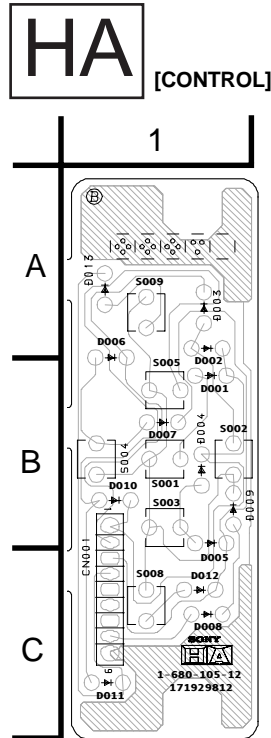
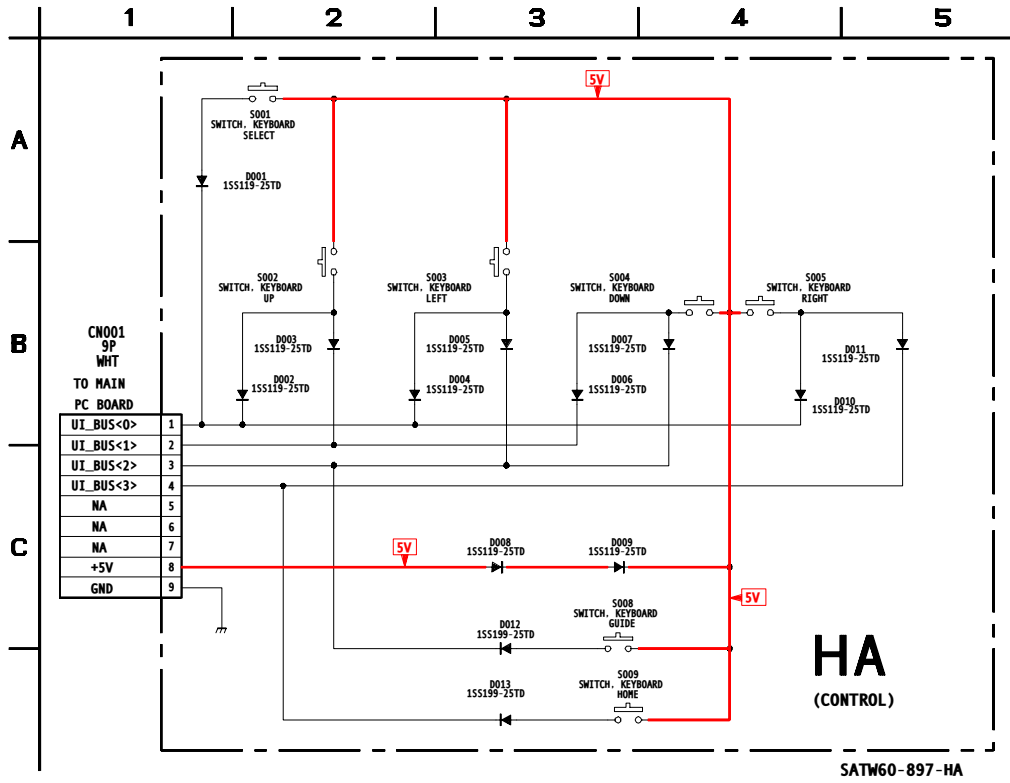
4-1. BLOCK DIAGRAM



SATW60-897-BD

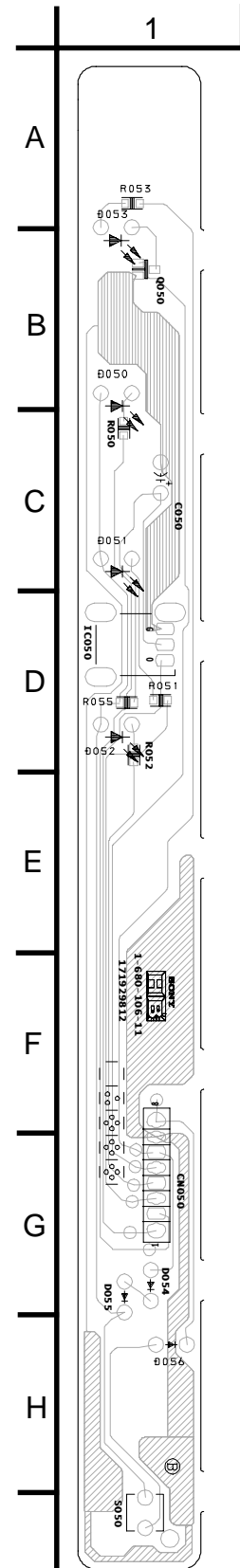
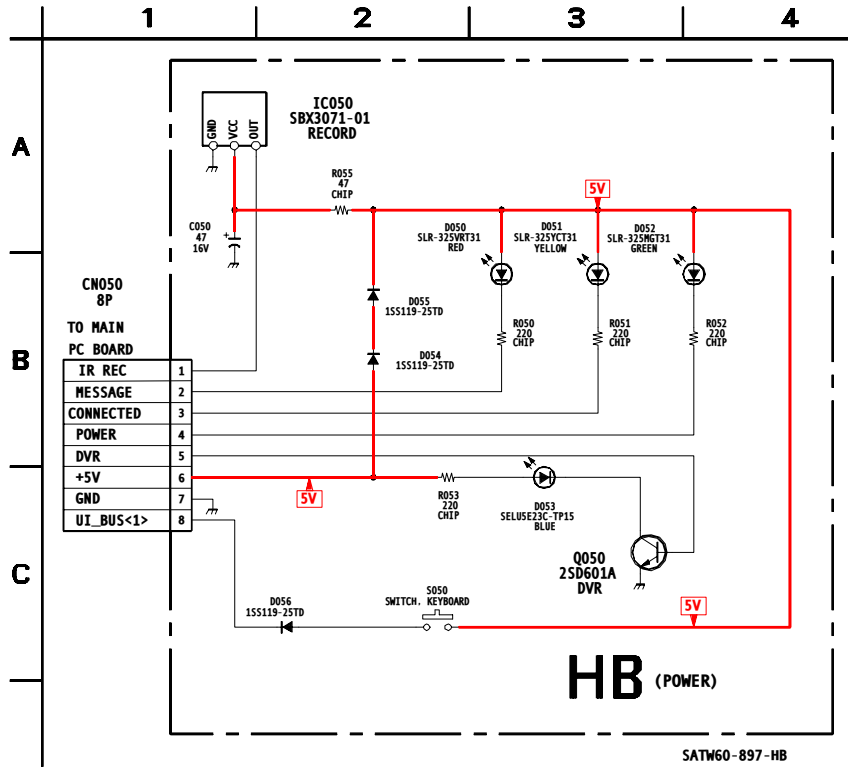
4-2. SCHEMATIC DIAGRAMS

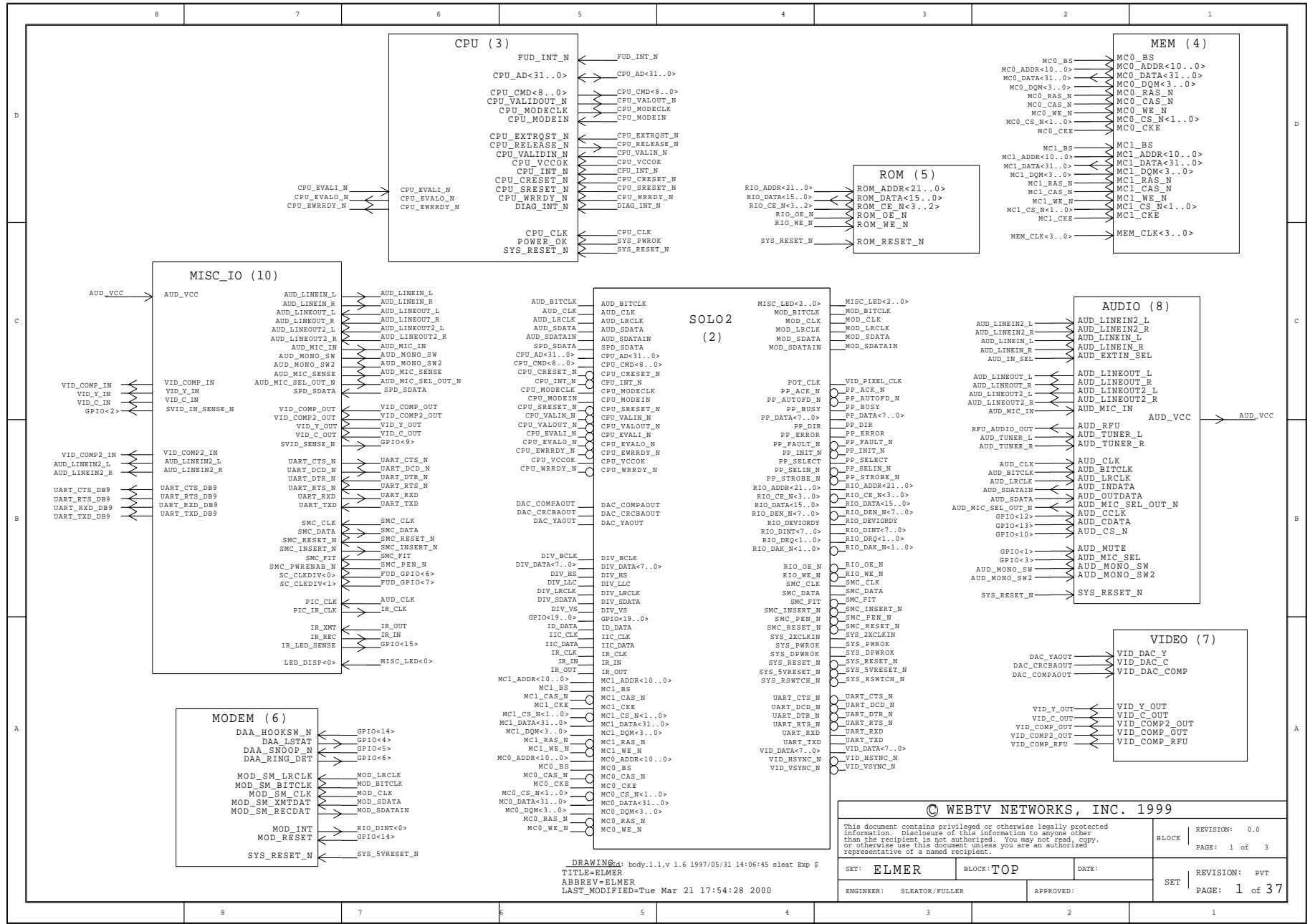
HA Board Schematic Diagram



**HB** [POWER]

HB Board Schematic Diagram

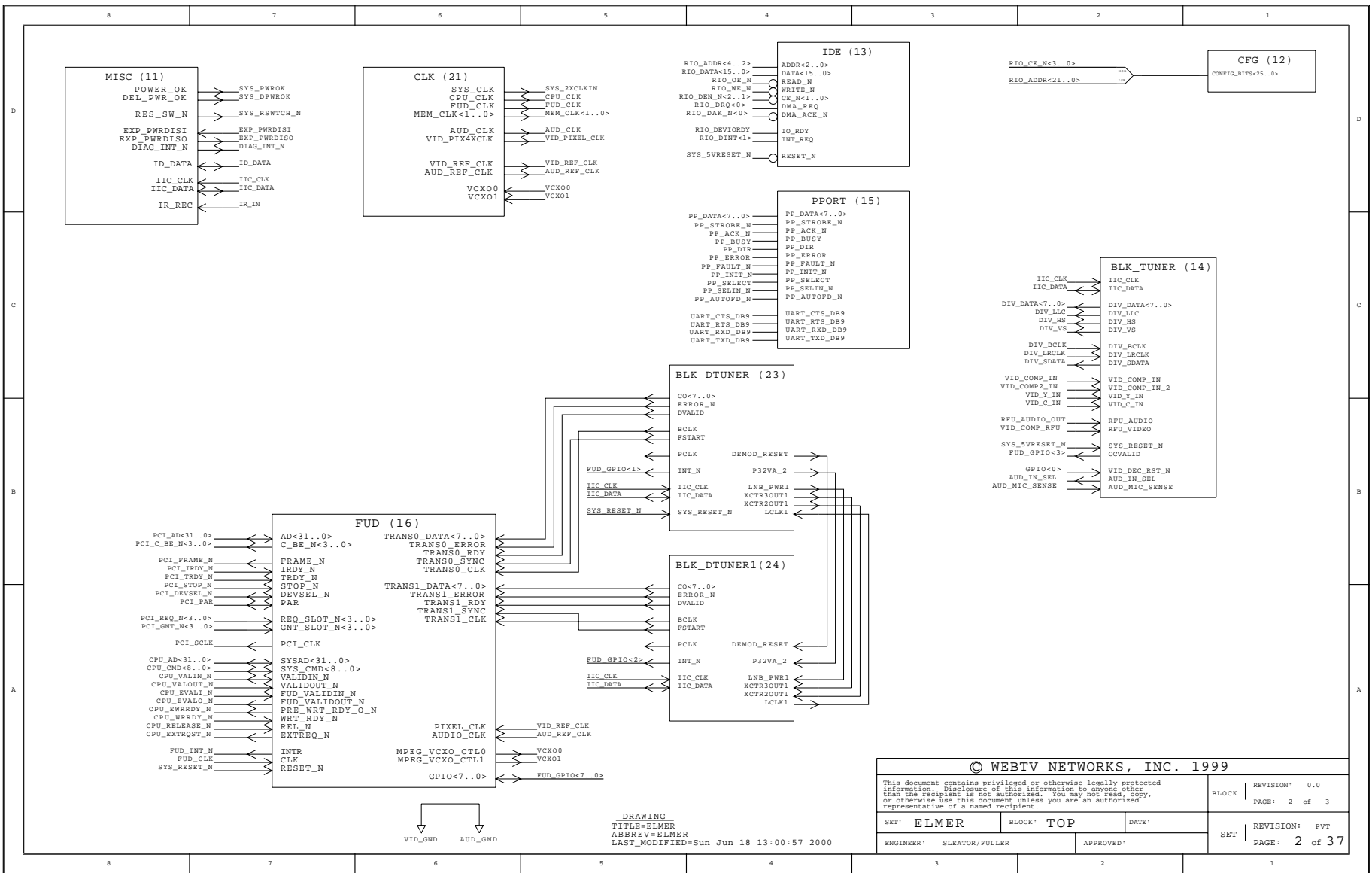




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# CPU INTERRUPTS

CPU\_INT<0>: CPU INTERRUPT FROM SOLO2  
 CPU\_INT<2>: FUD2 INTERRUPT  
 CPU\_INT<4>: DIAG INTERRUPT

## RIO ENABLES

0 FREE  
 1 HARD DISK REGISTER SET 1  
 2 HARD DISK REGISTER SET 2  
 3 FREE  
 4 FREE  
 5 FREE  
 6 FREE  
 7 FREE

## RIO\_DINT<7..0> MAPPING

0 FREE  
 1 DISK  
 2 FREE  
 3 FREE  
 4 FREE  
 5 FREE  
 6 FREE  
 7 FREE

## SOLO2 GPIO MAP

GPIO<0> BT835 RESET  
 GPIO<1> SYS\_AUD\_MUTE  
 GPIO<2> SVIDEO\_IN\_SENSE  
 GPIO<3> AUD\_MIC\_SEL  
 \* GPIO<4> DAA\_LSTAT  
 \* GPIO<5> DAA\_SNOOP\_N  
 \* GPIO<6> DAA\_RING\_DET  
 GPIO<7> FREE  
 GPIO<8> FREE  
 GPIO<9> SVIDEO\_SENSE  
 GPIO<10> SYS\_AUD\_CS\_N  
 GPIO<11> FREE  
 GPIO<12> SYS\_AUD\_CCLK  
 GPIO<13> SYS\_AUD\_CDATA  
 \* GPIO<14> DAA\_HOOKSW\_N  
 GPIO<15> IR\_BLAISTER\_LED\_SENSE  
 GPIO<16> UI\_BUS<0>  
 GPIO<17> UI\_BUS<1>  
 GPIO<18> UI\_BUS<2>  
 GPIO<19> UI\_BUS<3>

\* GPIO'S NEEDED ONLY FOR SOFT MODEM.

## IIC DEV ADDRESS MAP

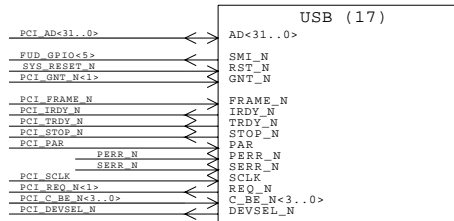
ADDR	DEVICE
0X18	DIGITAL TUNER
0X1A	DIGITAL TUNER 1
0X88	BT835 VIDEO DECODER
0XA0	AT24C01A EEPROM

## FUD2 GPIO MAP

GPIO<0> FREE  
 GPIO<1> DTUNER INT  
 GPIO<2> DTUNER1 INT  
 GPIO<3> BT835 "CLOSED CAPTION" INTERRUPT  
 GPIO<4> LED\_BLUE (RECORD INDICATOR)  
 GPIO<5> USB INTERRUPT  
 GPIO<6> SC\_CLKDIV<0>  
 GPIO<7> SC\_CLKDIV<1>

## BT835 GPIO MAP

GPIO<0> MIC SENSE (ACT HI IF AUD\_MIC\_SEL ACTIVE; ACT LO IF AUD\_MIC\_SEL INACTIVE)  
 GPIO<1> FREE  
 GPIO<2> FREE  
 GPIO<3> RFU\_BYPASS  
 GPIO<4> FREE  
 GPIO<5> AUDIO\_EXTIN\_SELECT  
 GPIO<6> FREE  
 GPIO<7> FREE



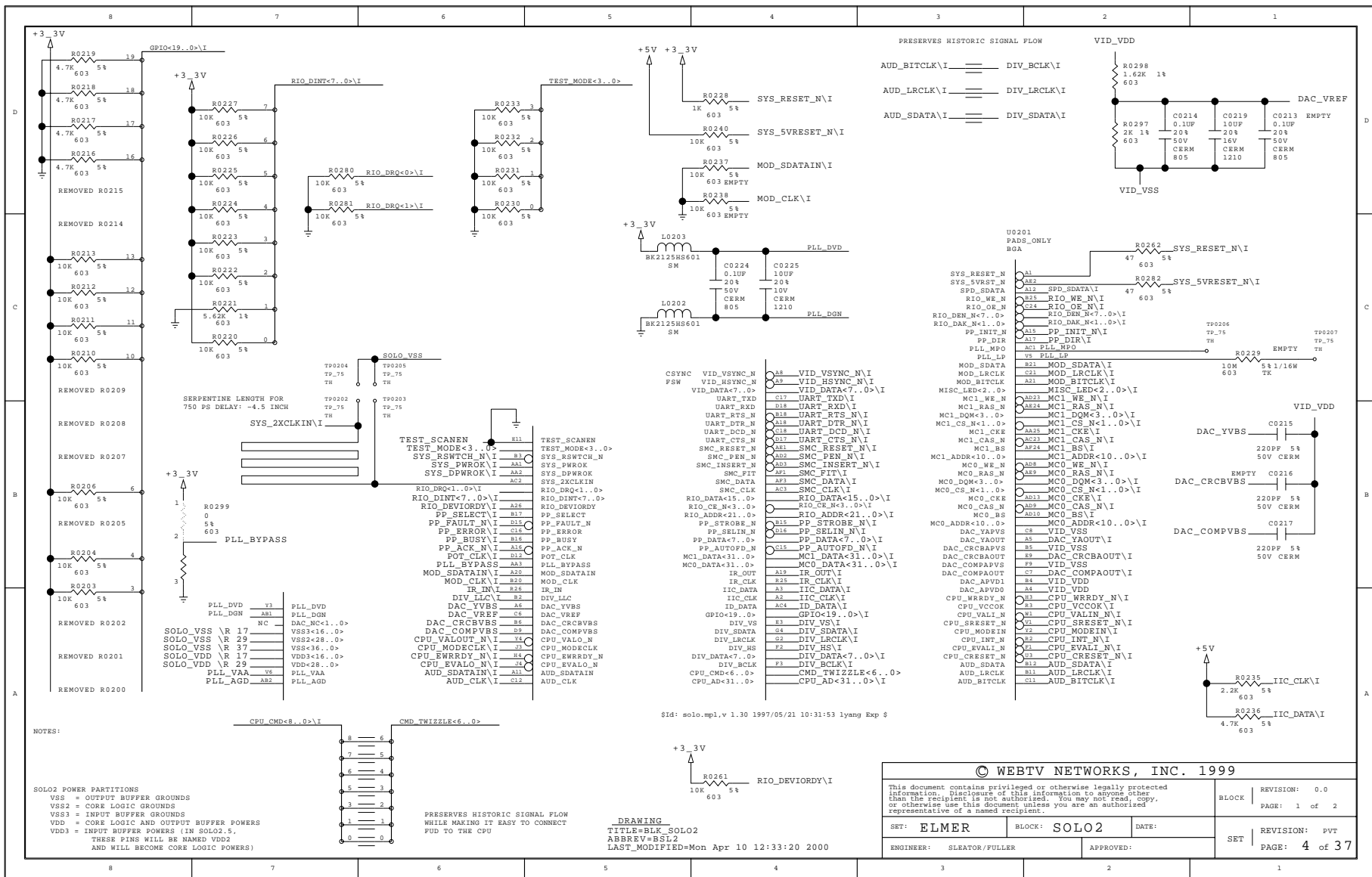
FROM THE SUCUNIT DOC

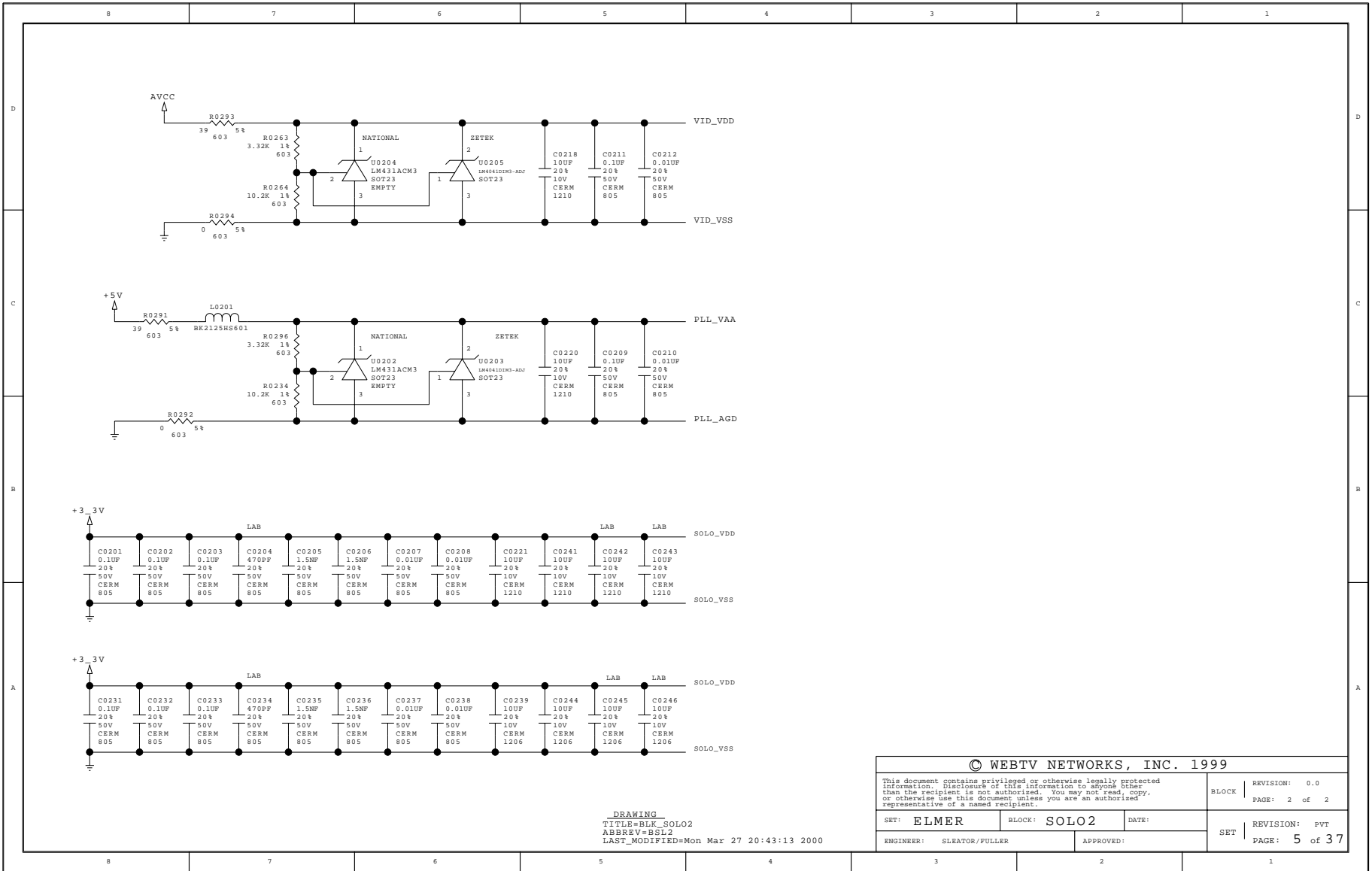
SERIAL/MODEM	SMARTCARD	GPIO
UART_RXD (I)	SMC_DATA (IO)	GPIO[0] (IO)
UART_TXD (O)	SMC_CLK (IO)	GPIO[1] (IO)
UART_DTR_N (O)	SMC_PEN_N (O)	GPIO[2] (IO)
UART_RTS_N (O)	SMC_RESET_N (O)	GPIO[3] (IO)
UART_CTS_N (I)	SMC_INSERT_N (I)	GPIO[4] (IO)
UART_DCD_N (I)	SMC_PIT (I)	GPIO[5] (IO)

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SET: <b>ELMER</b>	BLOCK: <b>TOP</b>	DATE:	PAGE: 3 of 3
ENGINEER: SLEATOR/FULLER	APPROVED:	SET	REVISION: PVT
			PAGE: 3 of 37

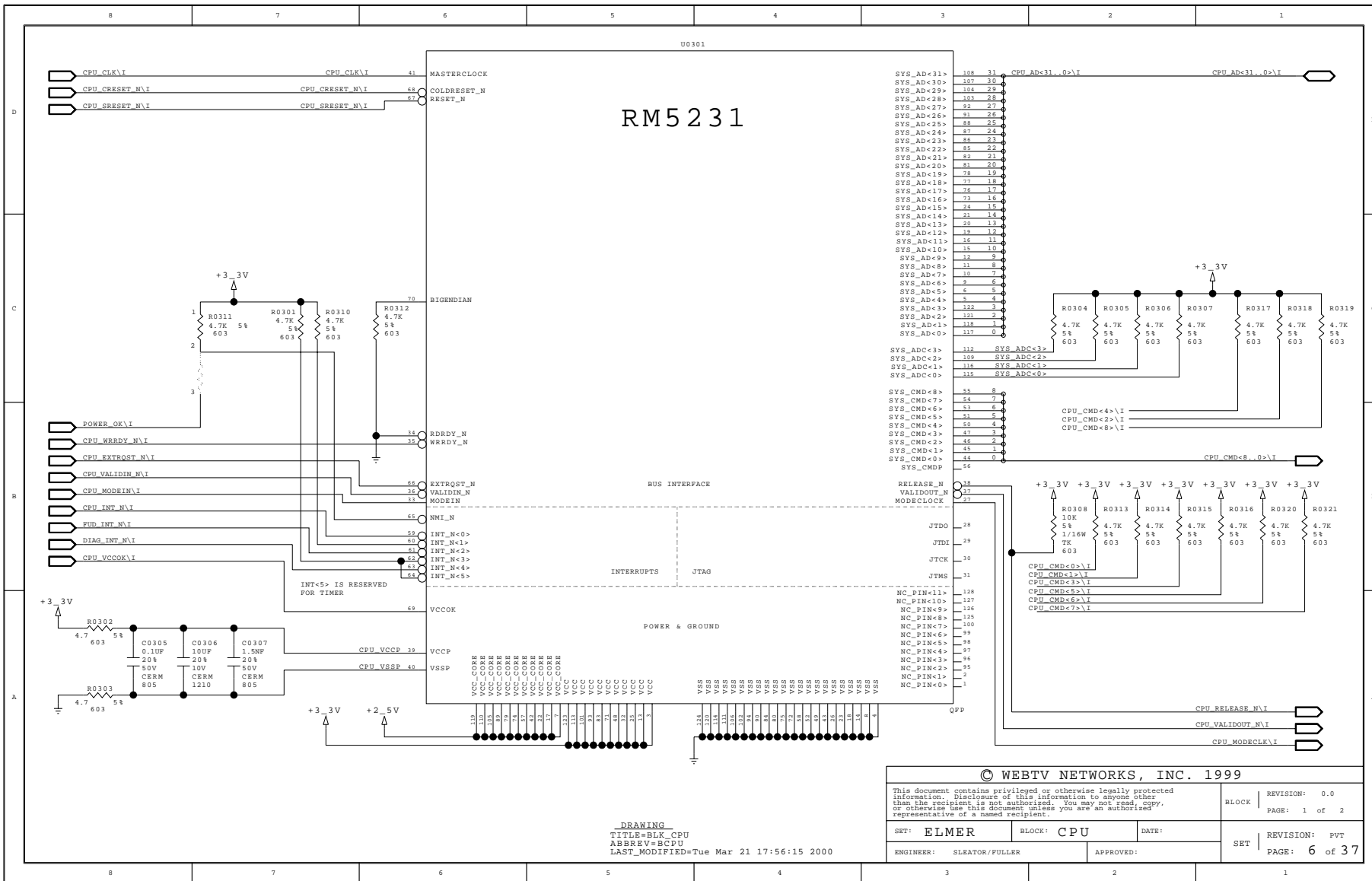
DRAWING  
 TITLE=ELMER  
 ABBREV=ELMER  
 LAST\_MODIFIED=Tue Mar 21 17:54:55 2000





DRAWING  
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 ABBREV=BSL2  
 LAST\_MODIFIED=Mon Mar 27 20:43:13 2000

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SET: ELMER	BLOCK: SOLO2	DATE:	SET   REVISION: PVT
ENGINEER: SLEATOR/FULLER	APPROVED:		PAGE: 5 of 37



RM5231

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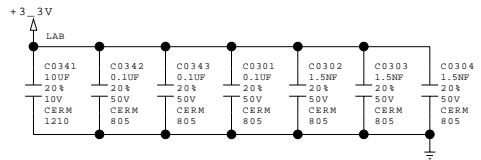
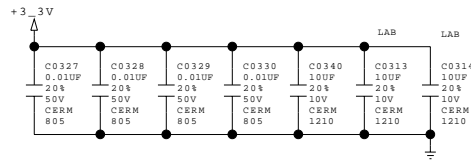
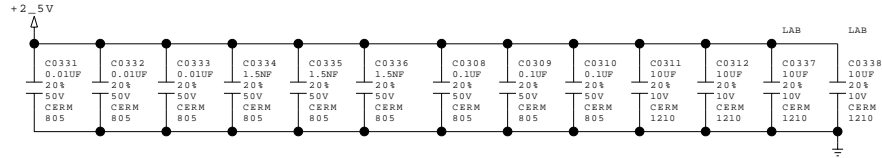
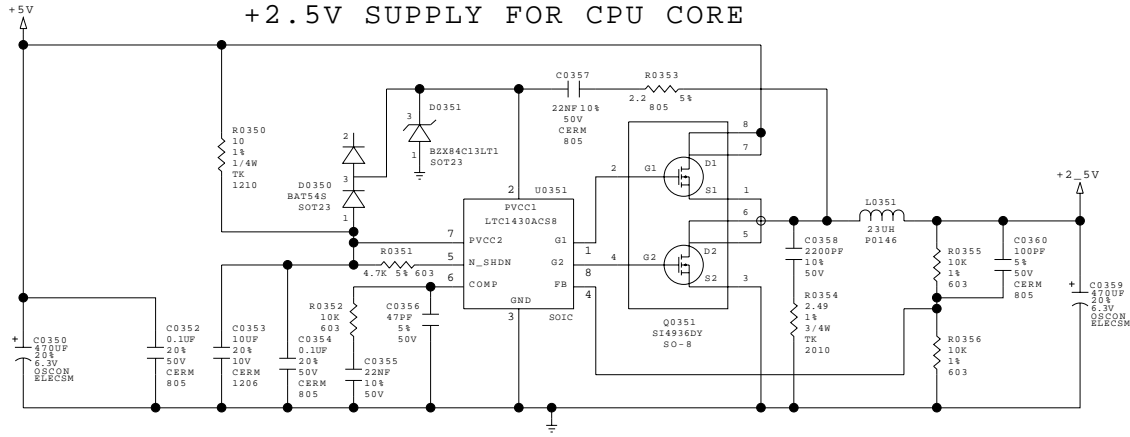
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BLOCK	REVISION: 0.0
	PAGE: 1 of 2
SET	REVISION: PVT
	PAGE: 6 of 37

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 LAST\_MODIFIED=Tue Mar 21 17:56:15 2000

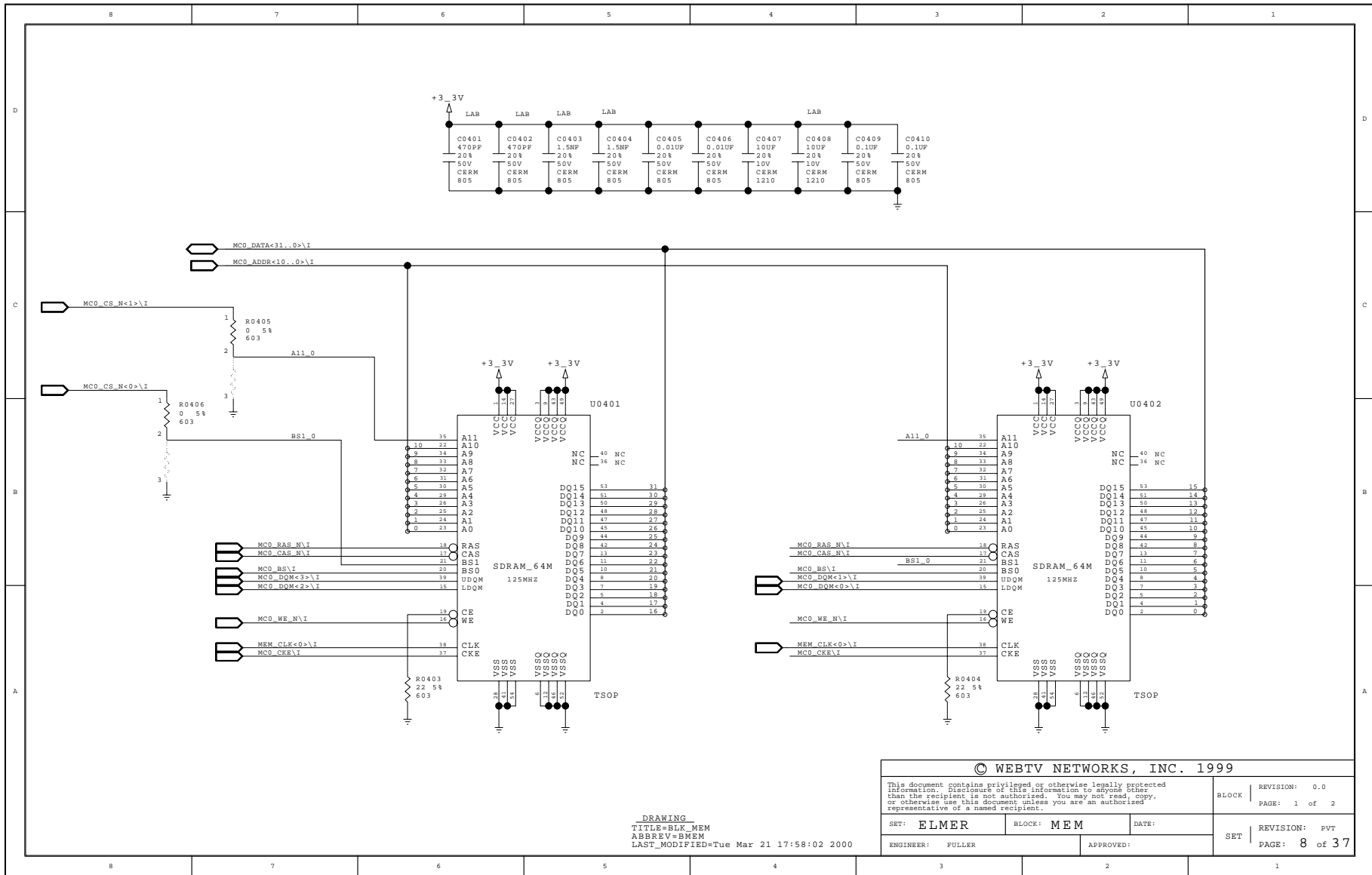
SET: ELMER	BLOCK: CPU	DATE:
ENGINEER: SLEATOR/FULLER	APPROVED:	

**+2.5V SUPPLY FOR CPU CORE**



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SET: ELMER	BLOCK: CPU	DATE:	REVISION: PVT PAGE: 7 of 37
ENGINEER: EGNER	APPROVED:		

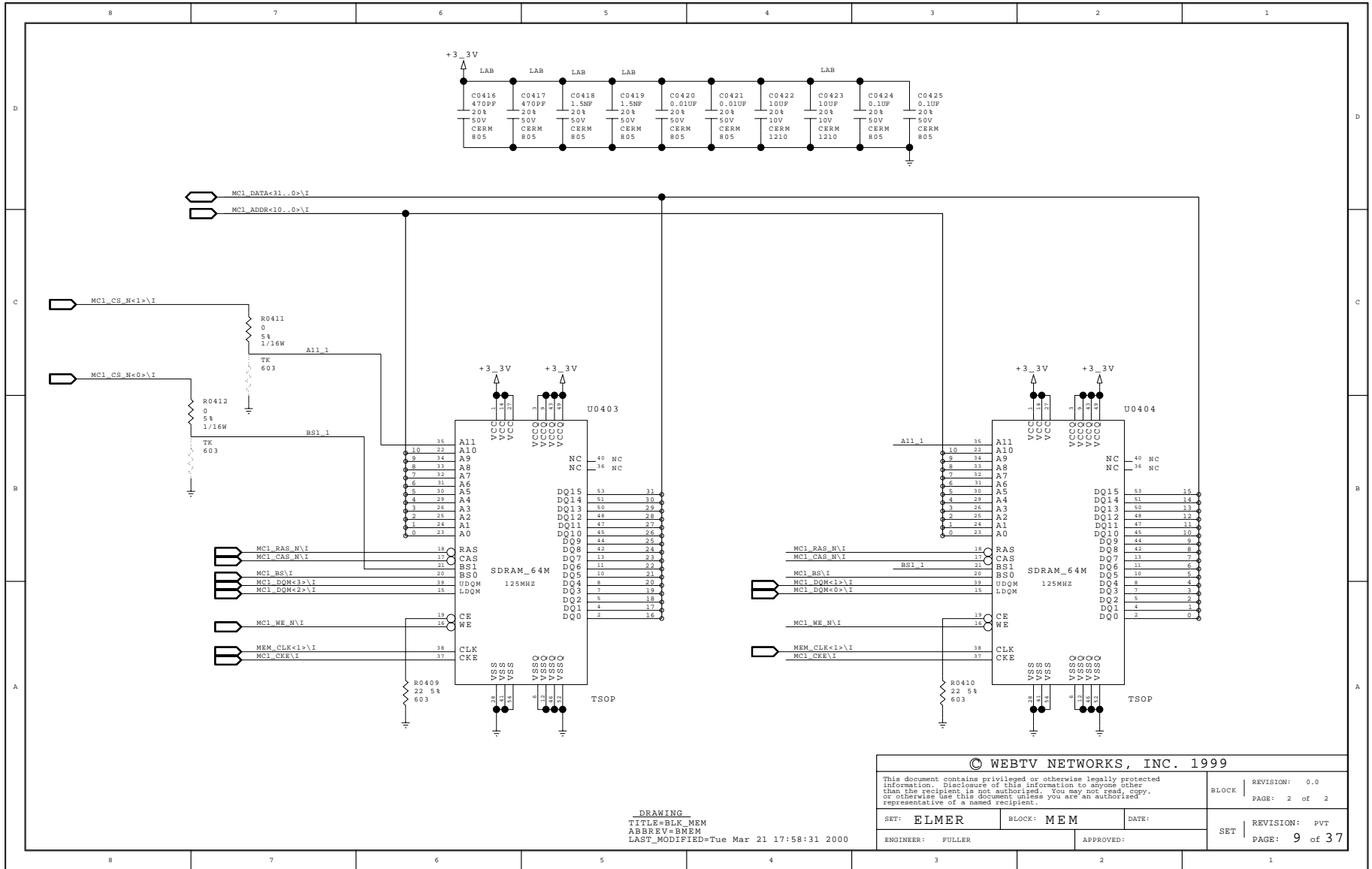
DRAWING  
 TITLE=BLK\_CPU  
 ABBREV=BCPU  
 LAST\_MODIFIED=Thu May 25 00:43:36 2000



— 22 —

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SET: ELMER	BLOCK: MEM	DATE:	REVISION: PVT
ENGINEER: FULLER	APPROVED:		PAGE: 8 of 37

DRAWING  
 TITLE=BLK\_MEM  
 ABBREV=BWEM  
 LAST\_MODIFIED=Tue Mar 21 17:58:02 2000

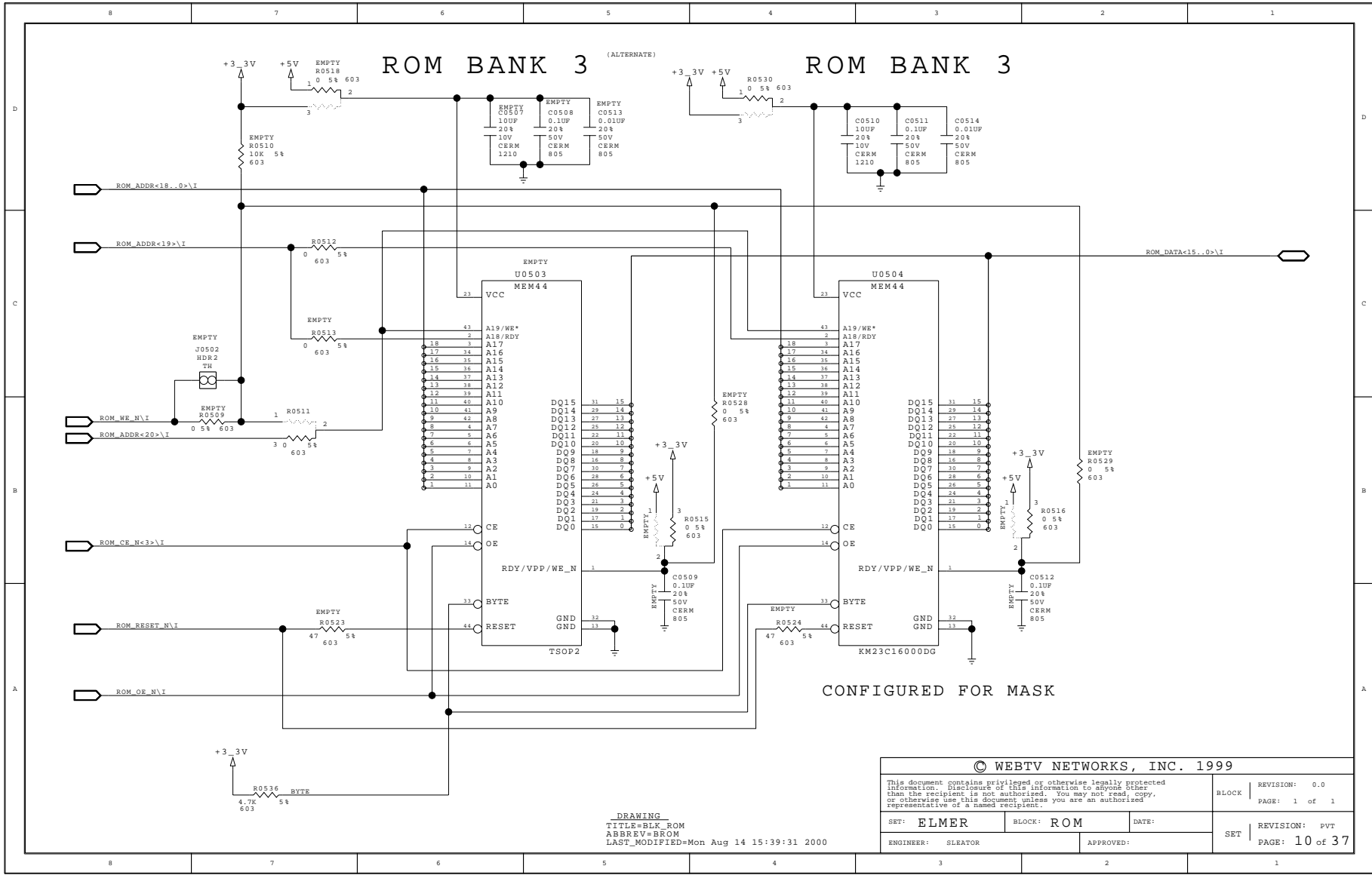


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SET: ELMER	BLOCK: MEM	DATE:	BLOCK   REVISION: 0.0
ENGINEER: FULLER	APPROVED:	SET   REVISION: PVT	PAGE: 2 of 2
		SET   REVISION: PVT	PAGE: 9 of 37

DRAWING  
 TITLE=BLK\_MEM  
 ABBREV=BMEM  
 LAST\_MODIFIED=Tue Mar 21 17:58:31 2000



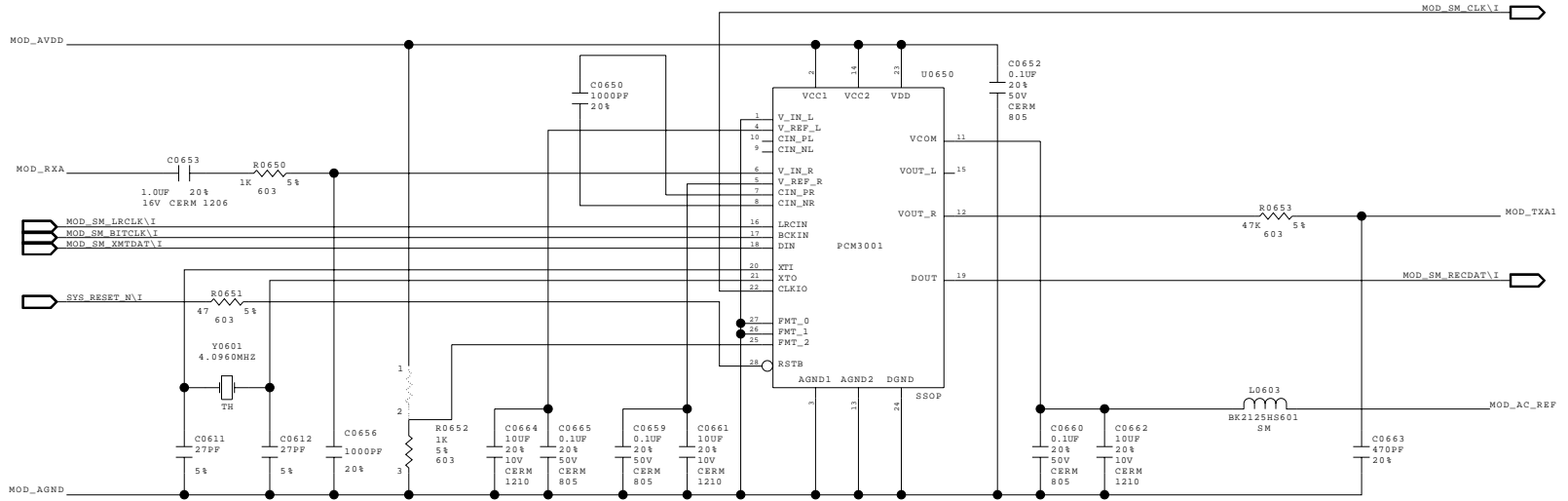
— 24 —

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SET: ELMER	BLOCK: ROM	DATE:	REVISION: PVT
ENGINEER: SLEATOR	APPROVED:	PAGE: 10 of 37	

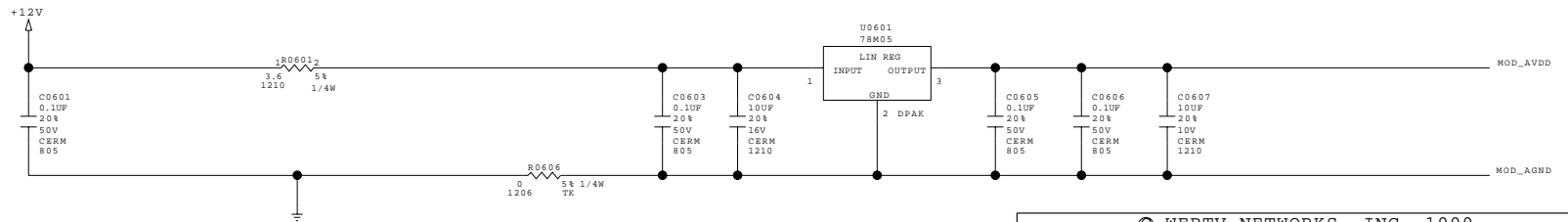
DRAWING  
 TITLE=BLK\_ROM  
 ABBREV=BROM  
 LAST\_MODIFIED=Mon Aug 14 15:39:31 2000



### SOFT MODEM CODEC



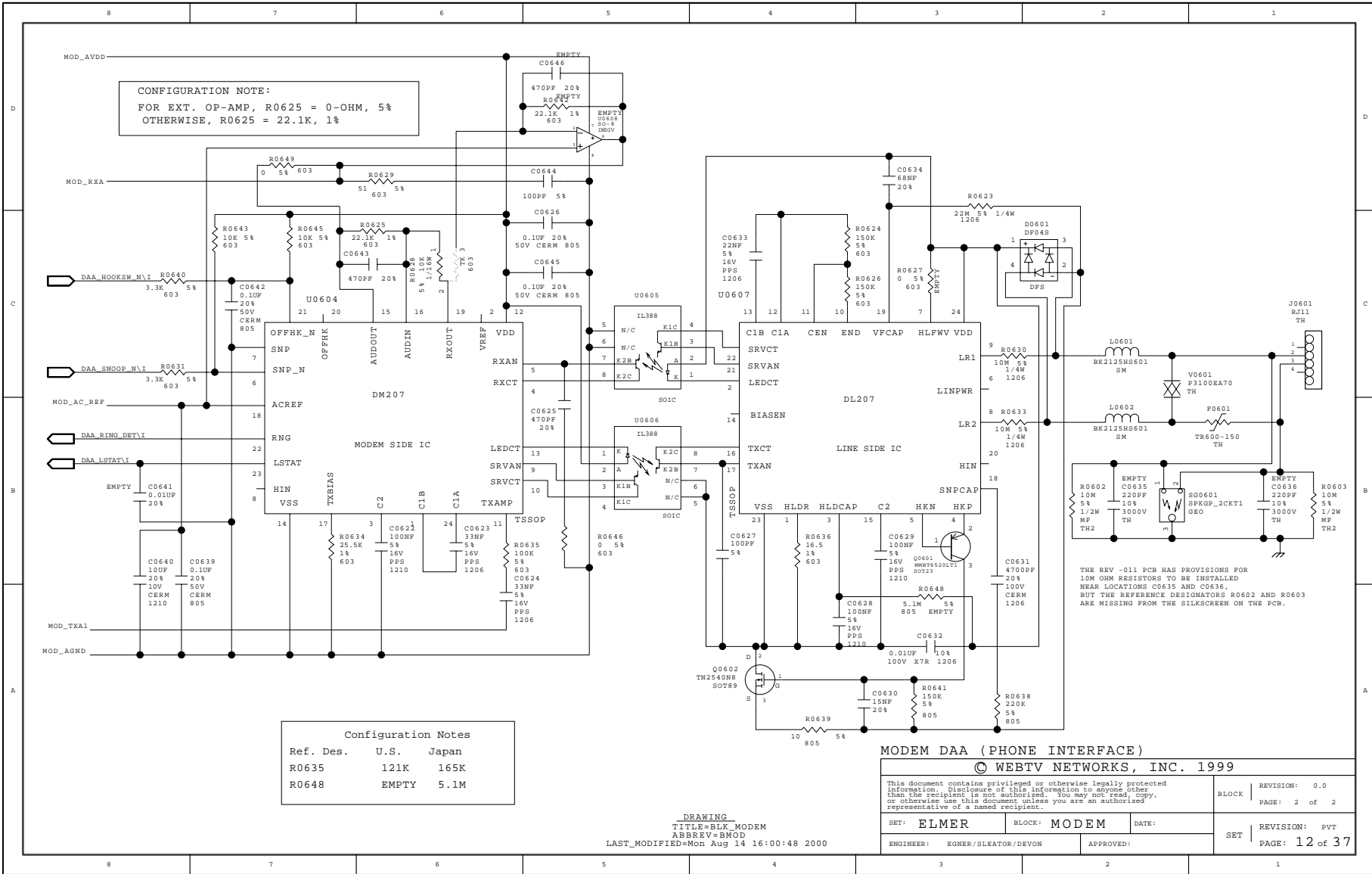
### CODEC POWER SUPPLY

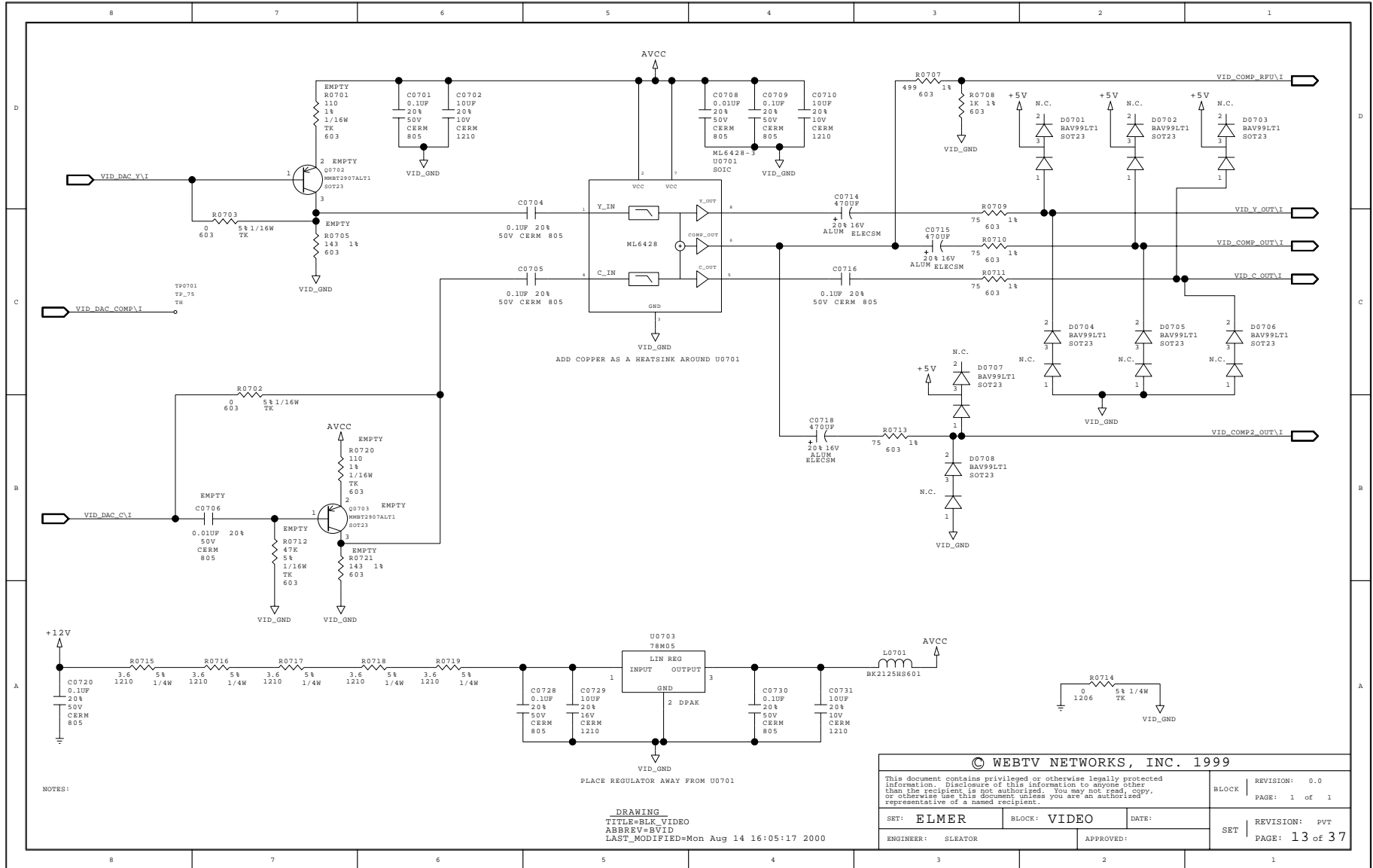


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SET: ELMER	BLOCK: MODEM	DATE:	REVISION: PVT PAGE: 11 of 37
ENGINEER: EGMER/SLEATOR	APPROVED:		

DRAWING  
 TITLE=BLK\_MODEM  
 ABBREV=BMOD  
 LAST\_MODIFIED=Mon Aug 14 16:04:21 2000



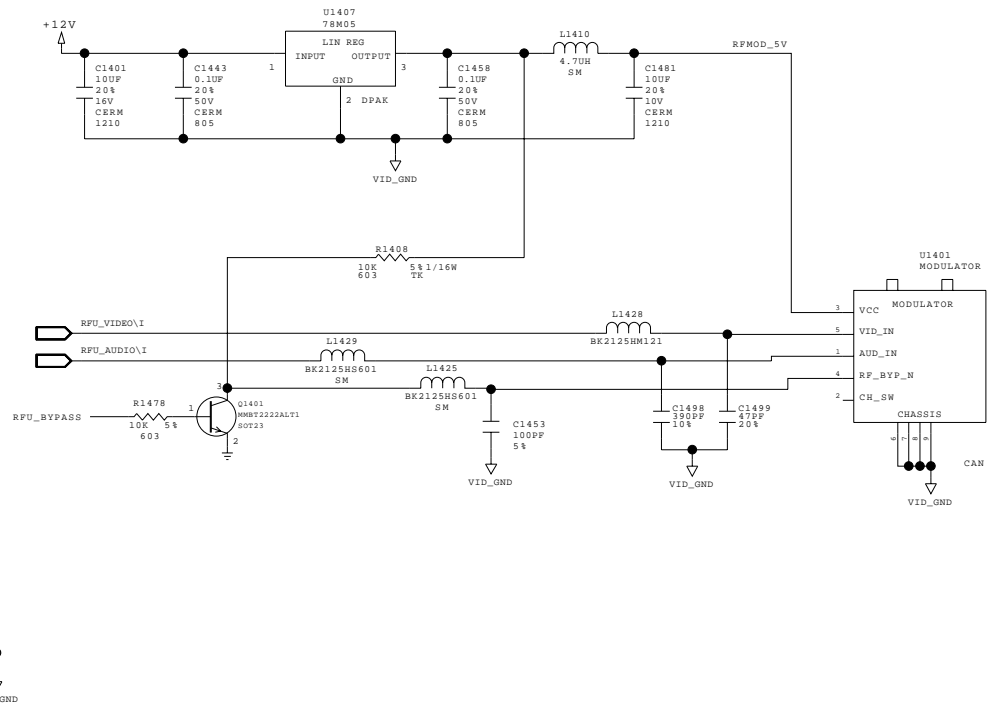


NOTES:

PLACER REGULATOR AWAY FROM U0701

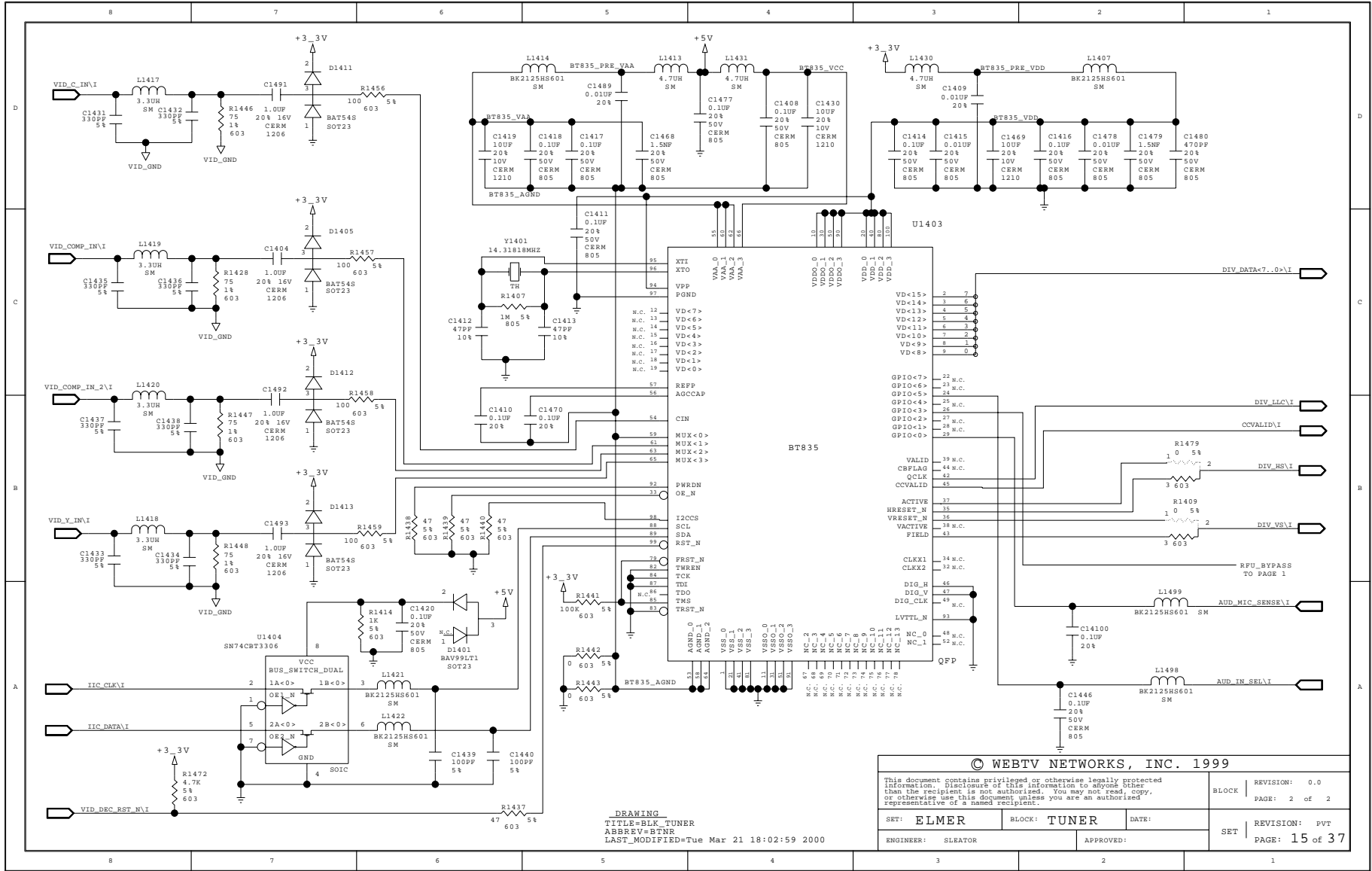
**DRAWING**  
 TITLE=BLK\_VIDEO  
 ABBREV=BVID  
 LAST\_MODIFIED=Mon Aug 14 16:05:17 2000

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SET: ELMER	BLOCK: VIDEO	DATE:	REVISION: PVT
ENGINEER: SLEATOR	APPROVED:		PAGE: 13 of 37



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SET: <b>ELMER</b>	BLOCK: <b>TUNER</b>	DATE:	REVISION: PVT
ENGINEER: SLEATOR/SUZUKI	APPROVED:	PAGE: 14 of 37	

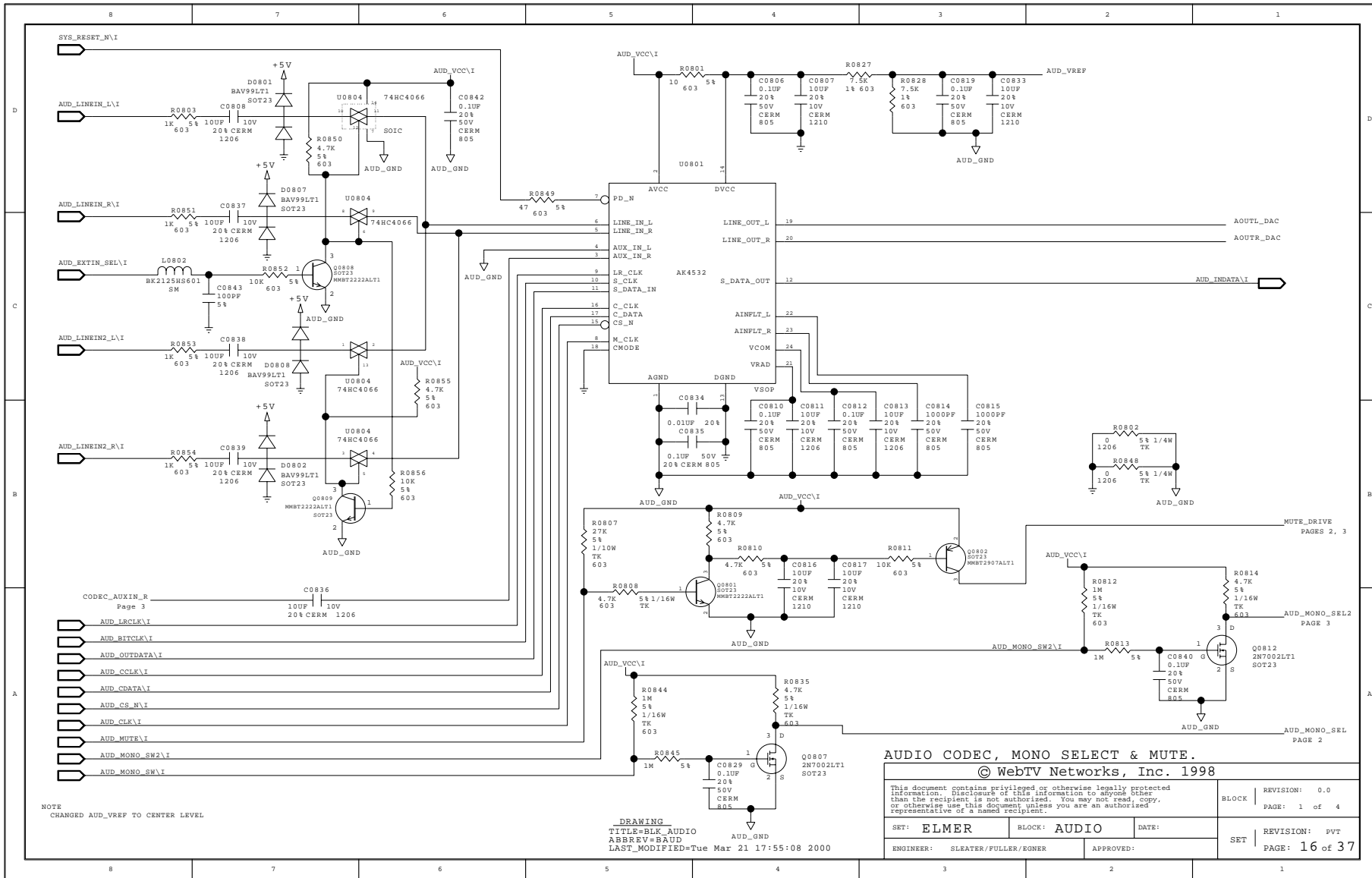
DRAWING  
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 ABBREV=BFNR  
 LAST\_MODIFIED=Tue Mar 21 18:02:48 2000



**DRAWING**  
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 ABBREV=BTNR  
 LAST\_MODIFIED=Tue Mar 21 18:02:59 2000

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		PAGE:	2 of 2
SET: ELMER	BLOCK: TUNER	DATE:	
ENGINEER: SLEATOR	APPROVED:	SET:	REVISION: PVT
		PAGE:	15 of 37

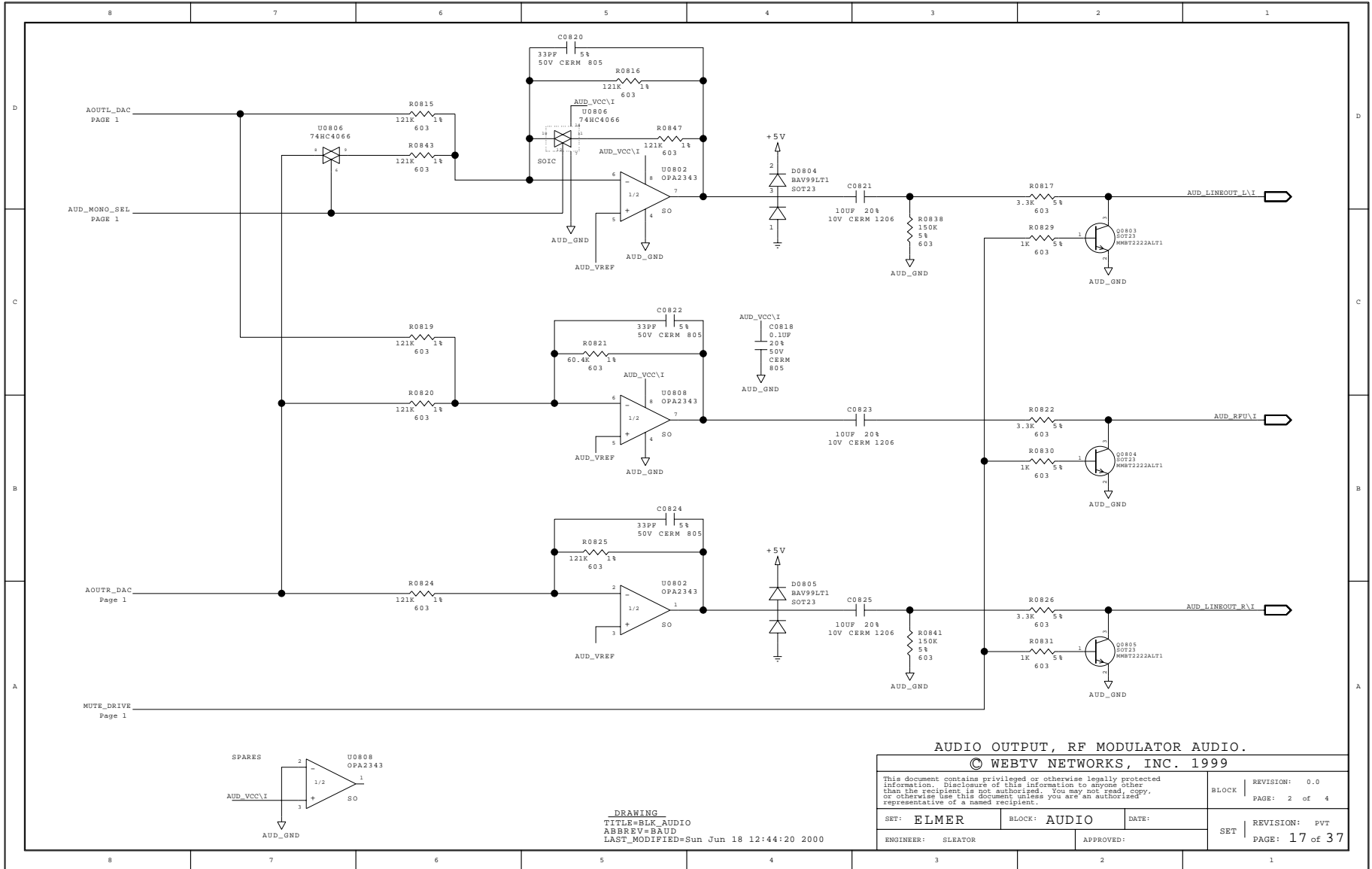


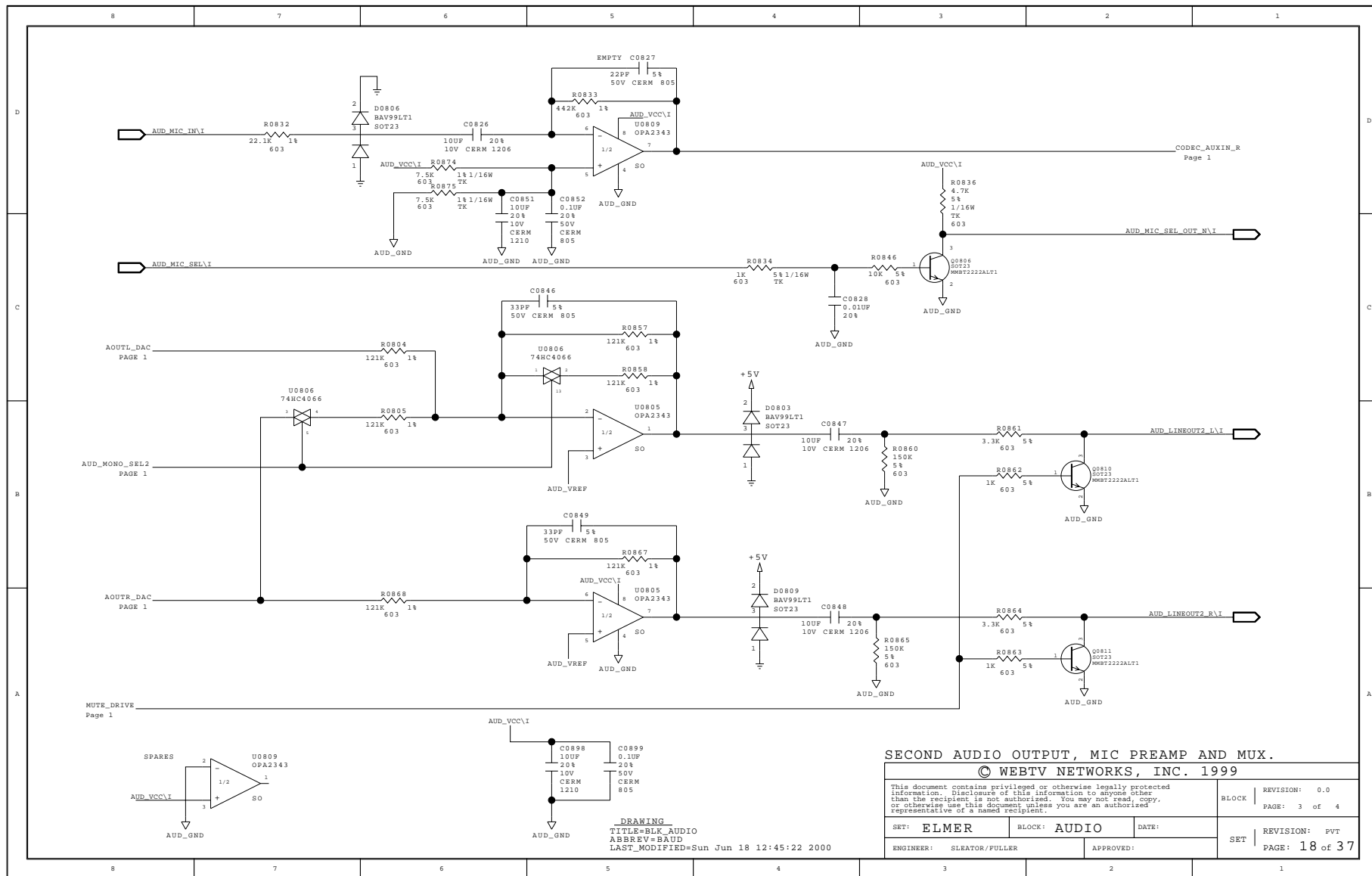
NOTE  
CHANGED AUD\_VREF TO CENTER LEVEL

DRAWING  
TITLE=BLK AUDIO  
ABBREV=BAUD  
LAST\_MODIFIED=Tue Mar 21 17:55:08 2000

**AUDIO CODEC, MONO SELECT & MUTE.**  
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SET: ELMER	BLOCK: AUDIO	DATE:
ENGINEER: SLEATER/FULLER/EGNER	APPROVED:	REVISION: PVT
		PAGE: 16 of 37



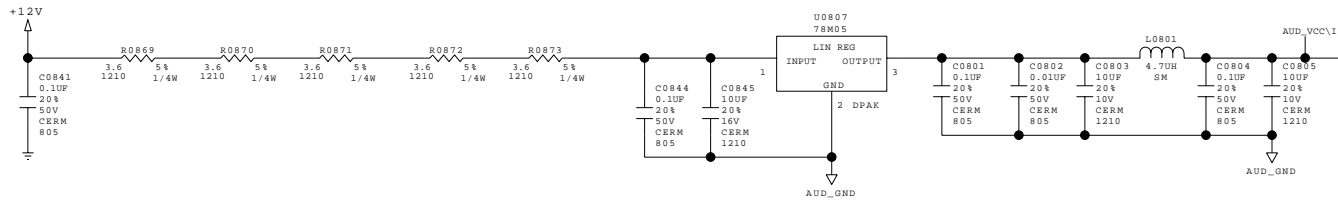


**SECOND AUDIO OUTPUT, MIC PREAMP AND MUX.**  
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		PAGE	3 of 4
SET: ELMER	BLOCK: AUDIO	DATE:	REVISION: PVT
ENGINEER: SLEATOR/FULLER	APPROVED:	SET	PAGE: 18 of 37

**DRAWING**  
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 ABBREV=BAUD  
 LAST\_MODIFIED=Sun Jun 18 12:45:22 2000



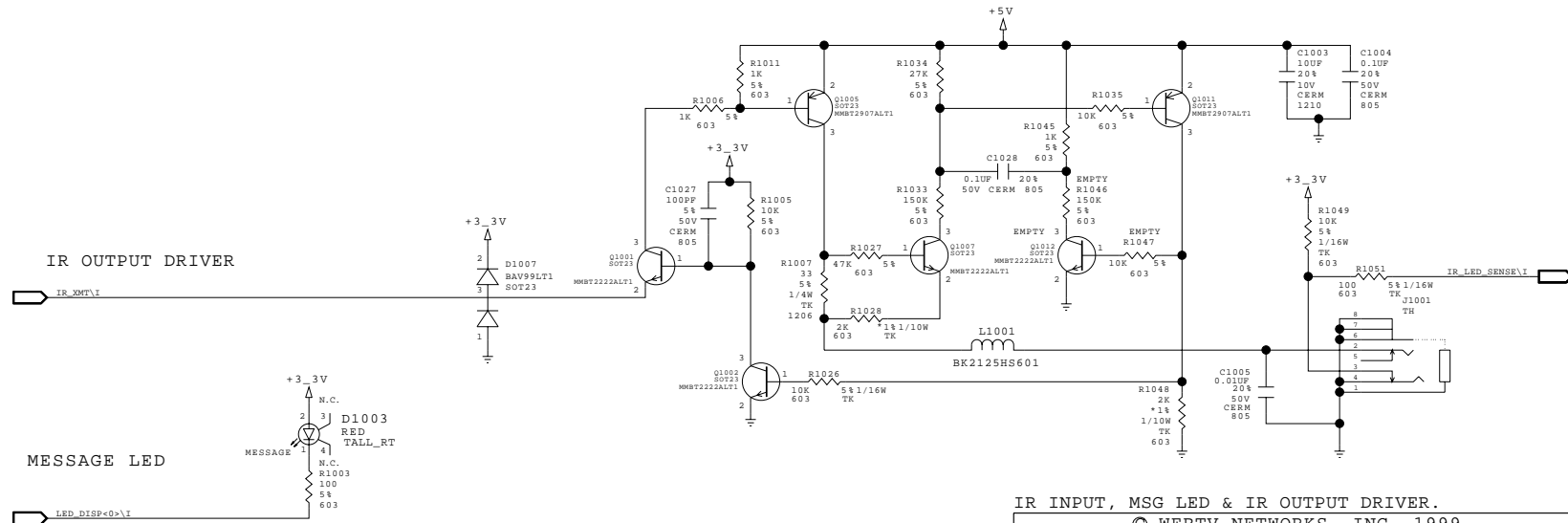
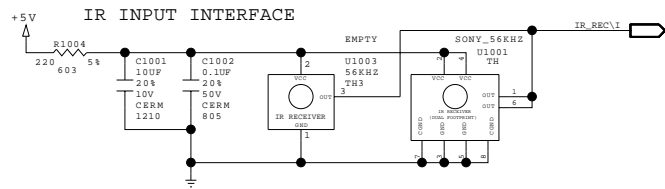


AUDIO OUTPUT, RF MODULATOR AUDIO.

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SET: ELMER	BLOCK: AUDIO	DATE:
ENGINEER: SLEATOR	APPROVED:	SET   REVISION: PVT PAGE: 19 of 37

DRAWING  
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 ABBREV=BAUD  
 LAST\_MODIFIED=Mon Aug 14 16:06:17 2000

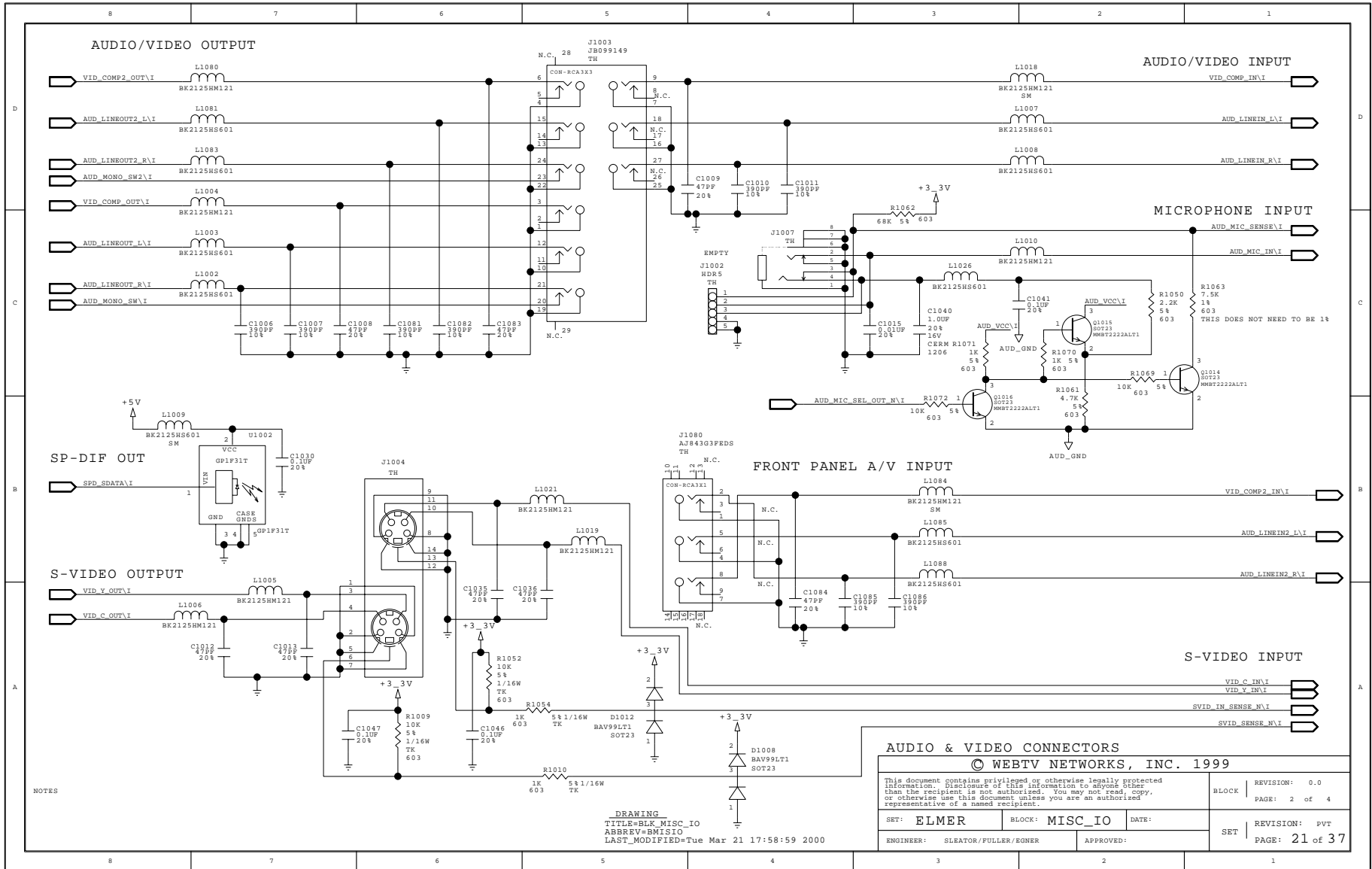


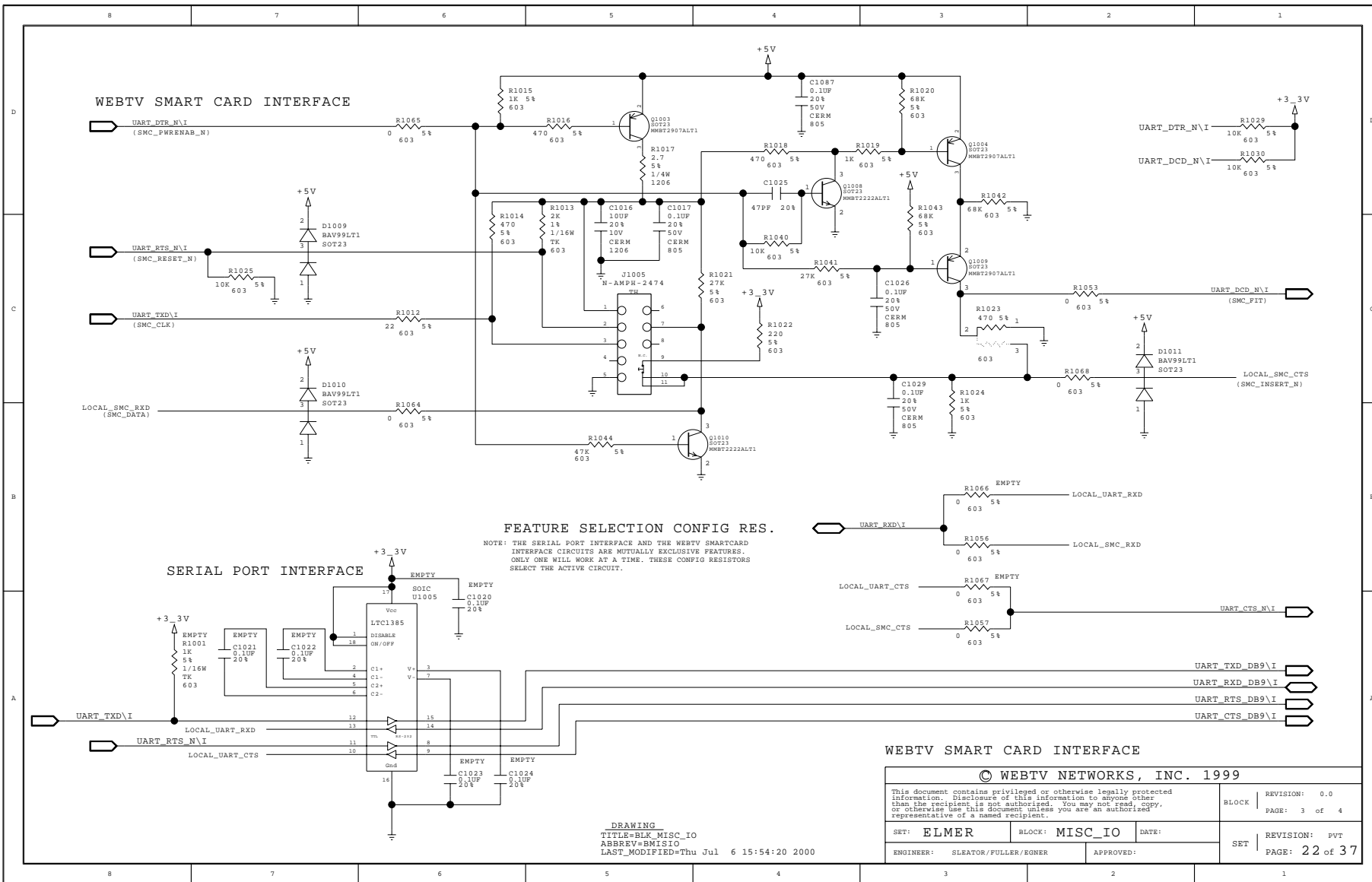
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SET: ELMER	BLOCK: MISC_IO	DATE:	PAGE: 1 of 4
ENGINEER: SLEATOR/FULLER	APPROVED:	SET	REVISION: PVT
			PAGE: 20 of 37

DRAWING  
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 ABBREV=BMSISIO  
 LAST\_MODIFIED=Wed Jul 19 16:48:45 2000

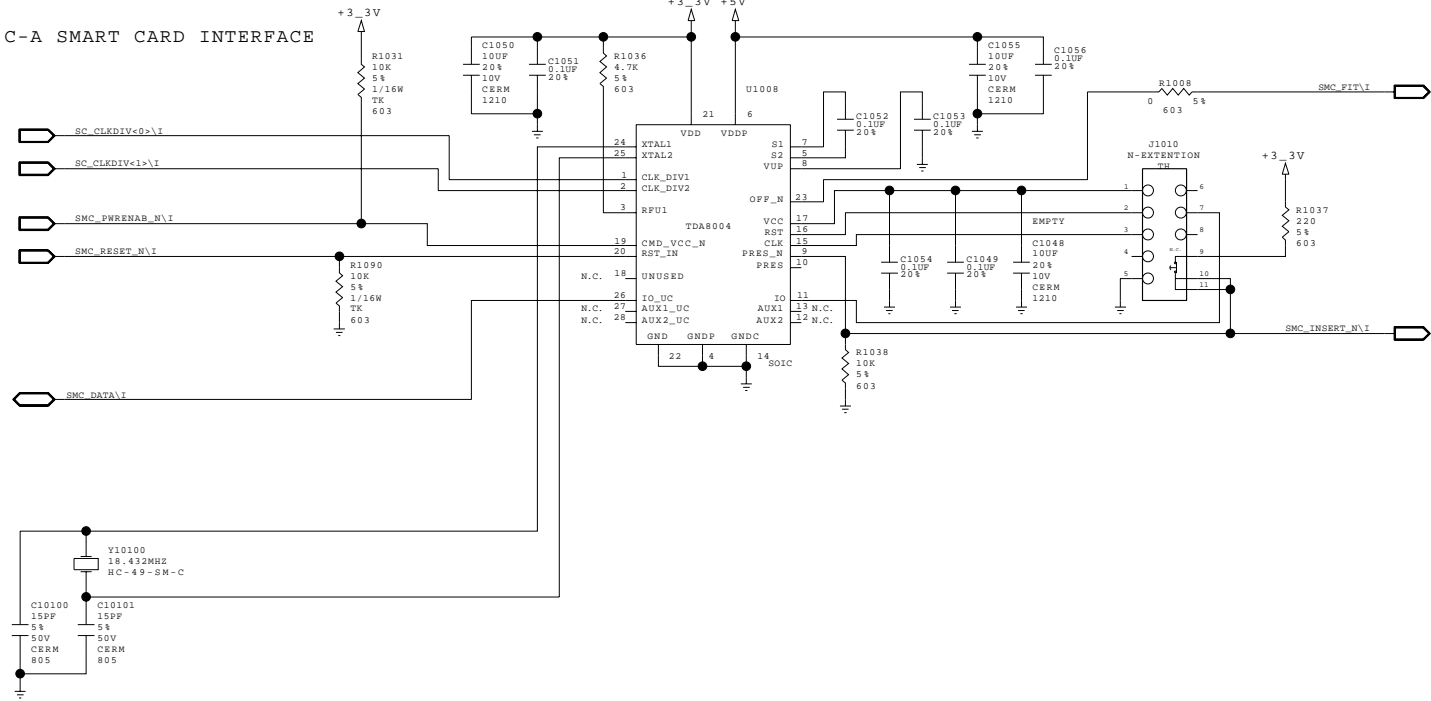
\* - 5% IS SUFFICIENT





WEBTV SMART CARD INTERFACE			© WEBTV NETWORKS, INC. 1999	
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SET: ELMER			BLOCK: MISC_IO	DATE:
ENGINEER: SLEATOR/FULLER/EGNER			APPROVED:	APPROVED:
SET: REVISION: PVT			PAGE: 22 of 37	

### C-A SMART CARD INTERFACE



### C-A SMART CARD INTERFACE

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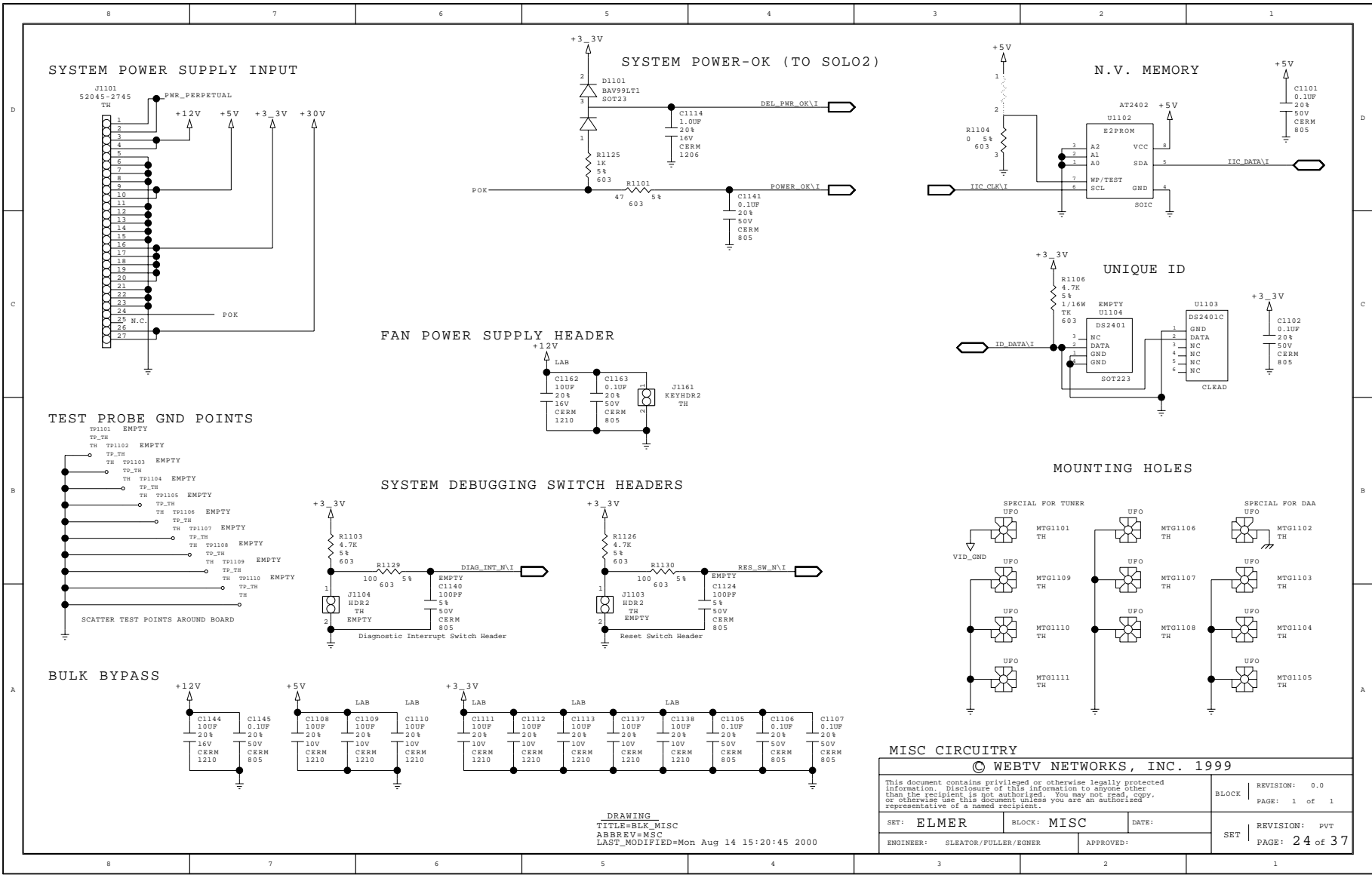
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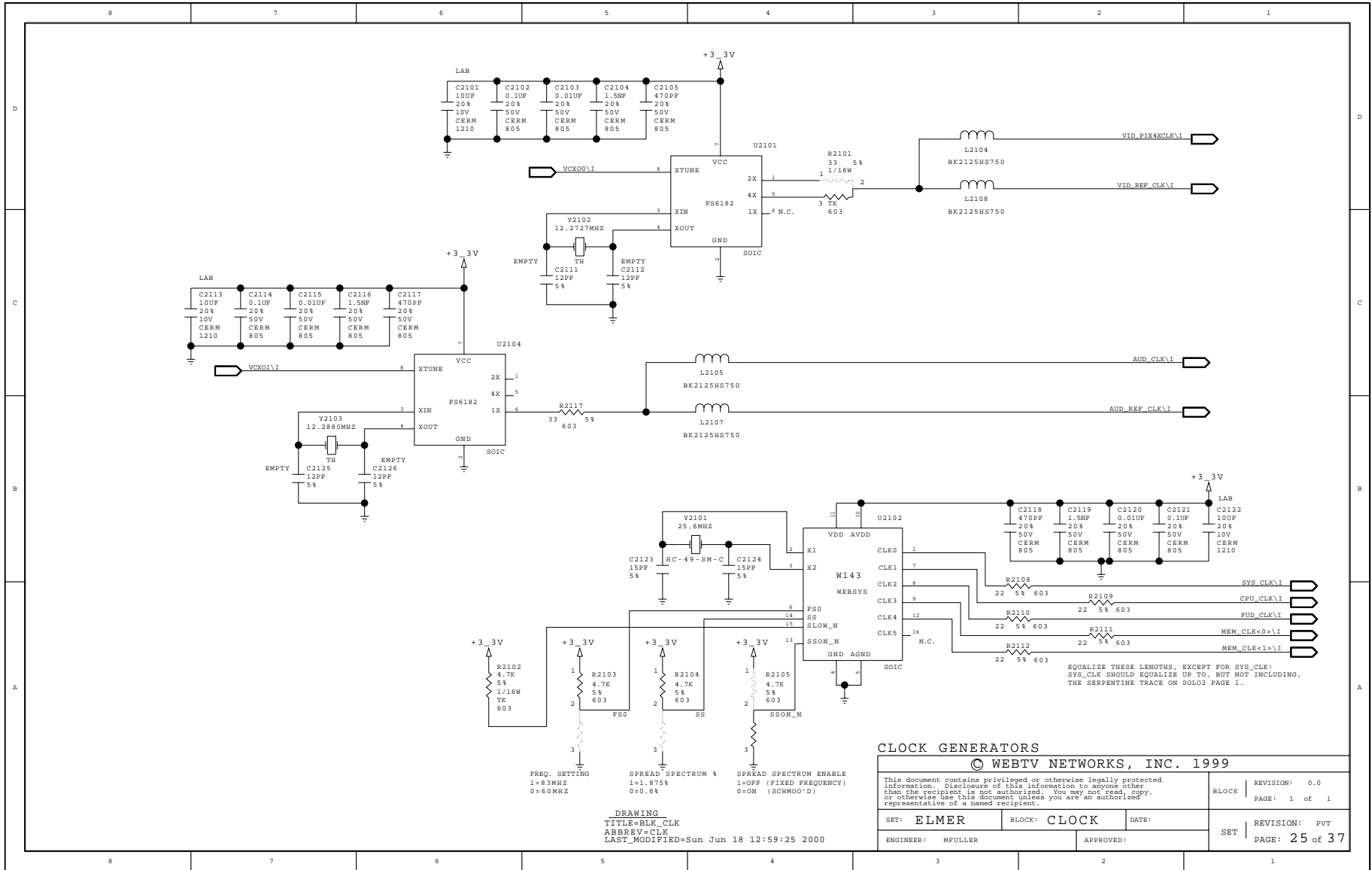
BLOCK	REVISION: 0.0
	PAGE: 4 of 4

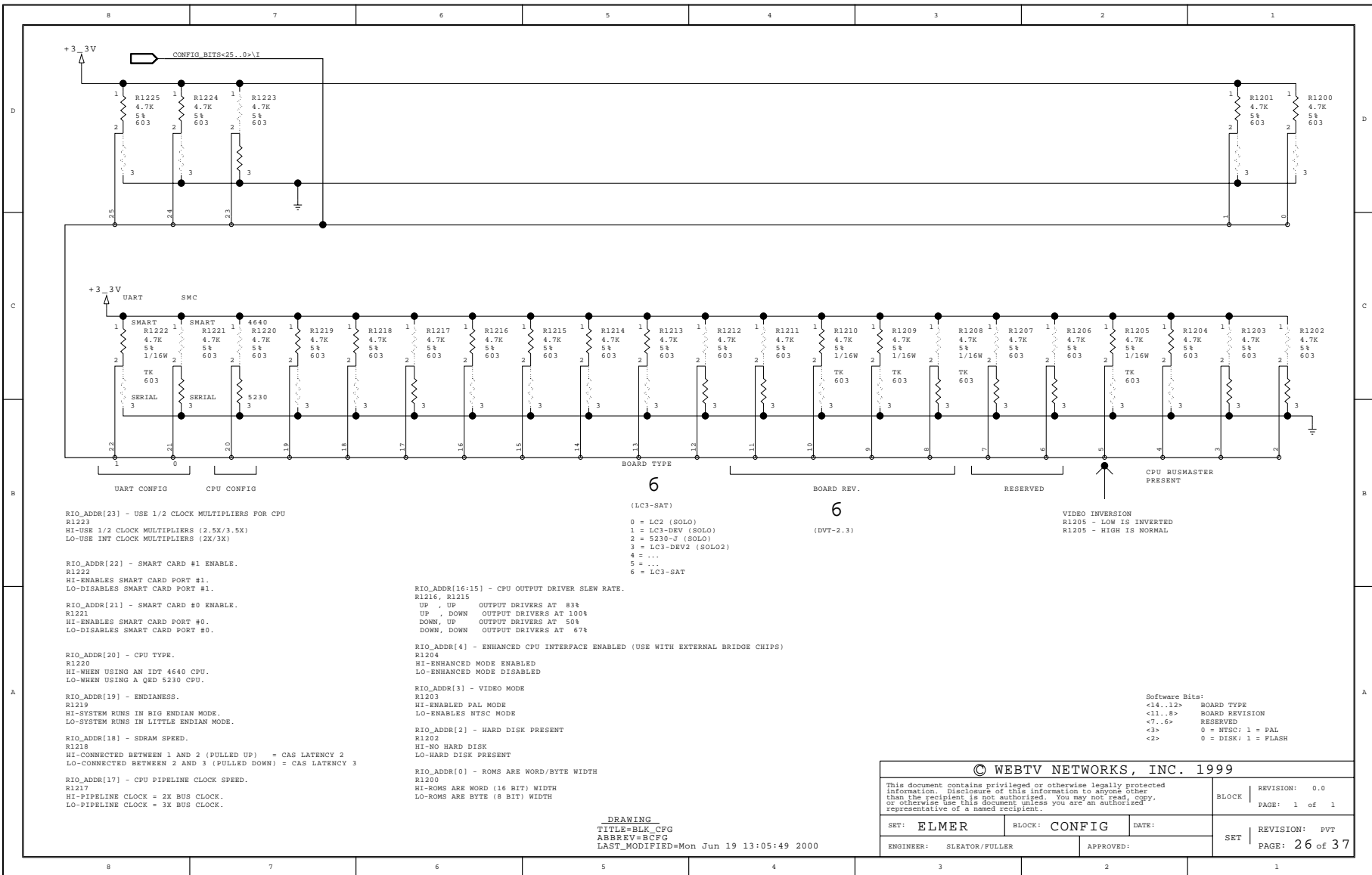
SET: ELMER	BLOCK: MISC_IO	DATE:
ENGINEER: SLEATOR	APPROVED:	

SET	REVISION: PVT
	PAGE: 23 of 37

DRAWING  
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 ABBREV=BMISIO  
 LAST\_MODIFIED=Thu May 25 01:00:28 2000

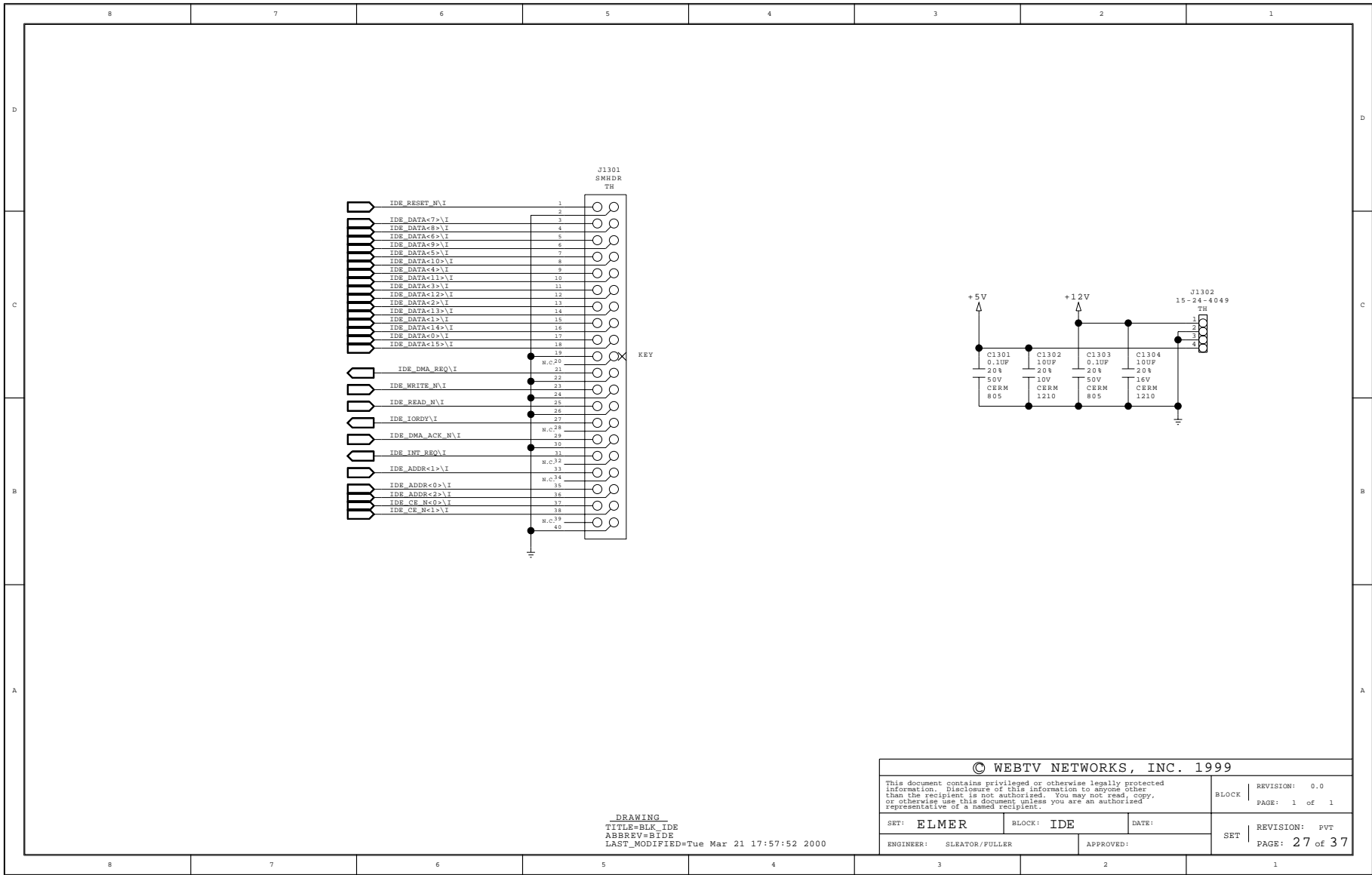






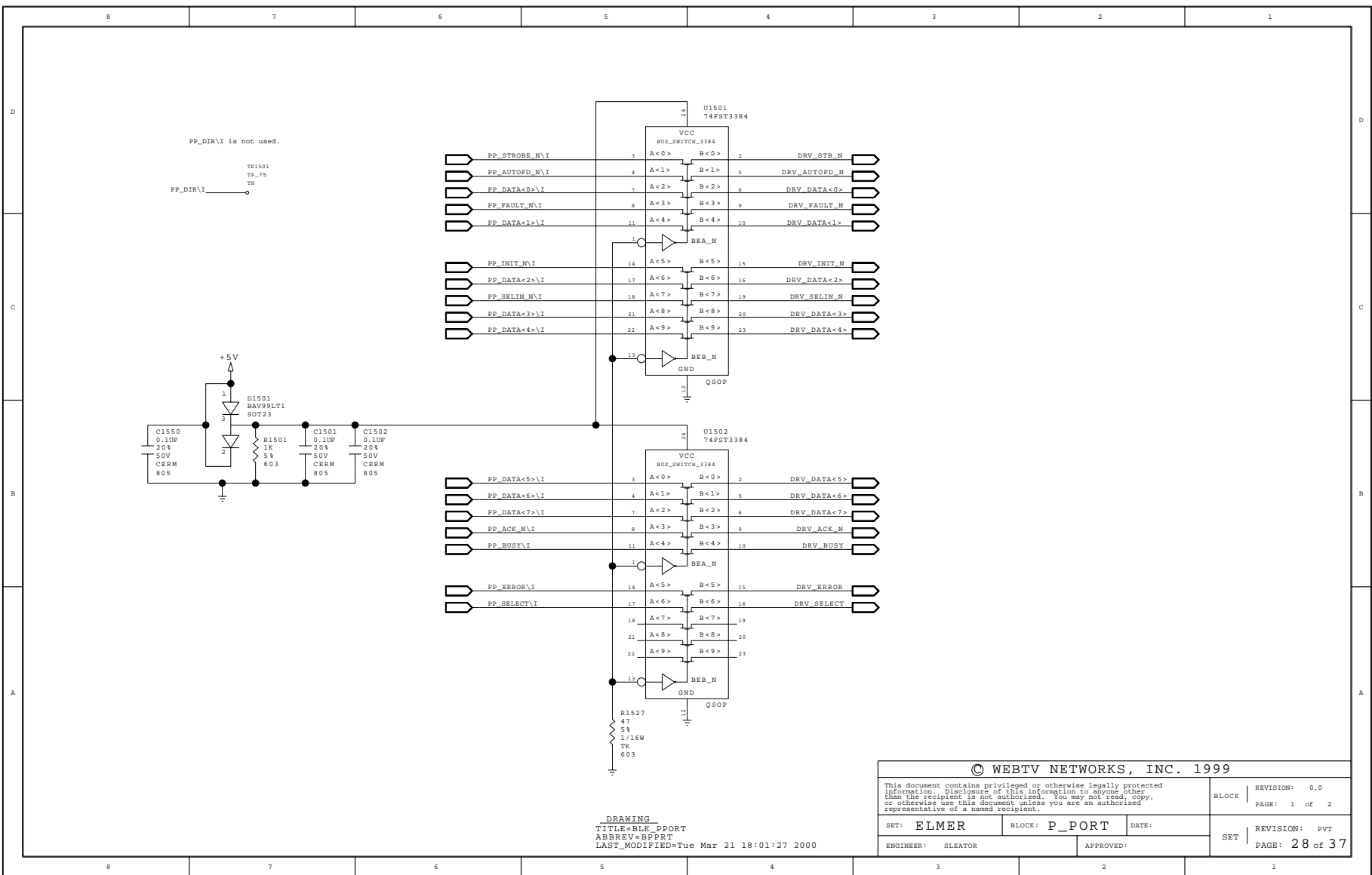
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SET: <b>ELMER</b>	BLOCK: <b>CONFIG</b>	DATE:	REVISION: 0.0
ENGINEER: SLEATOR/FULLER	APPROVED:		PAGE: 1 of 1
			REVISION: PVT
			PAGE: 26 of 37





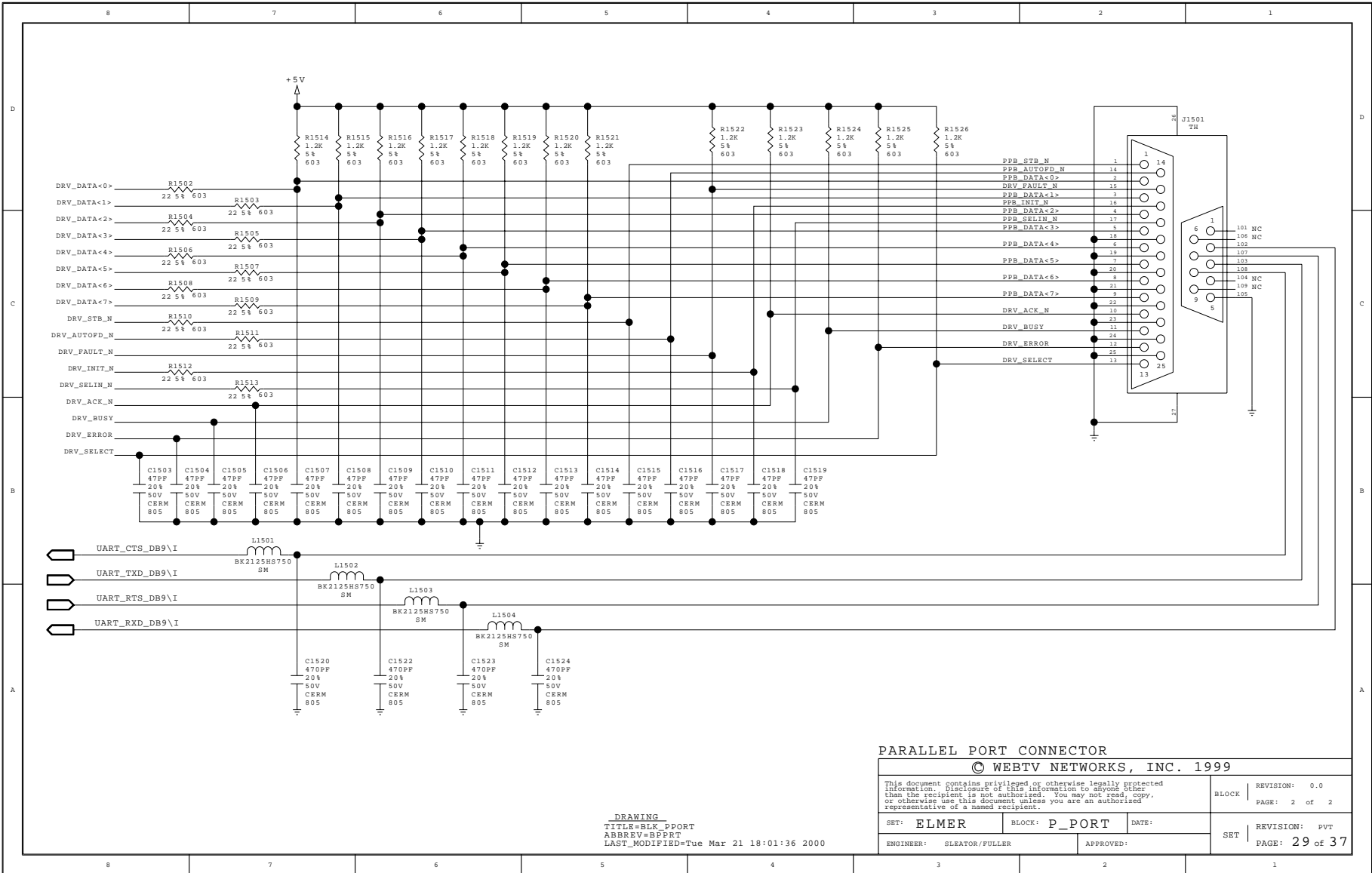
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 TITLE=BLK\_IDE  
 ABBREV=BIDE  
 LAST\_MODIFIED=Tue Mar 21 17:57:52 2000

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SET: ELMER	BLOCK: IDE	DATE:	REVISION: 0.0
ENGINEER: SLEATOR/FULLER	APPROVED:	SET	PAGE: 1 of 1
			REVISION: PVT
			PAGE: 27 of 37



DRAWING  
 TITLE=BLK\_PPORT  
 ABBREV=BPPRT  
 LAST\_MODIFIED=Tue Mar 21 18:01:27 2000

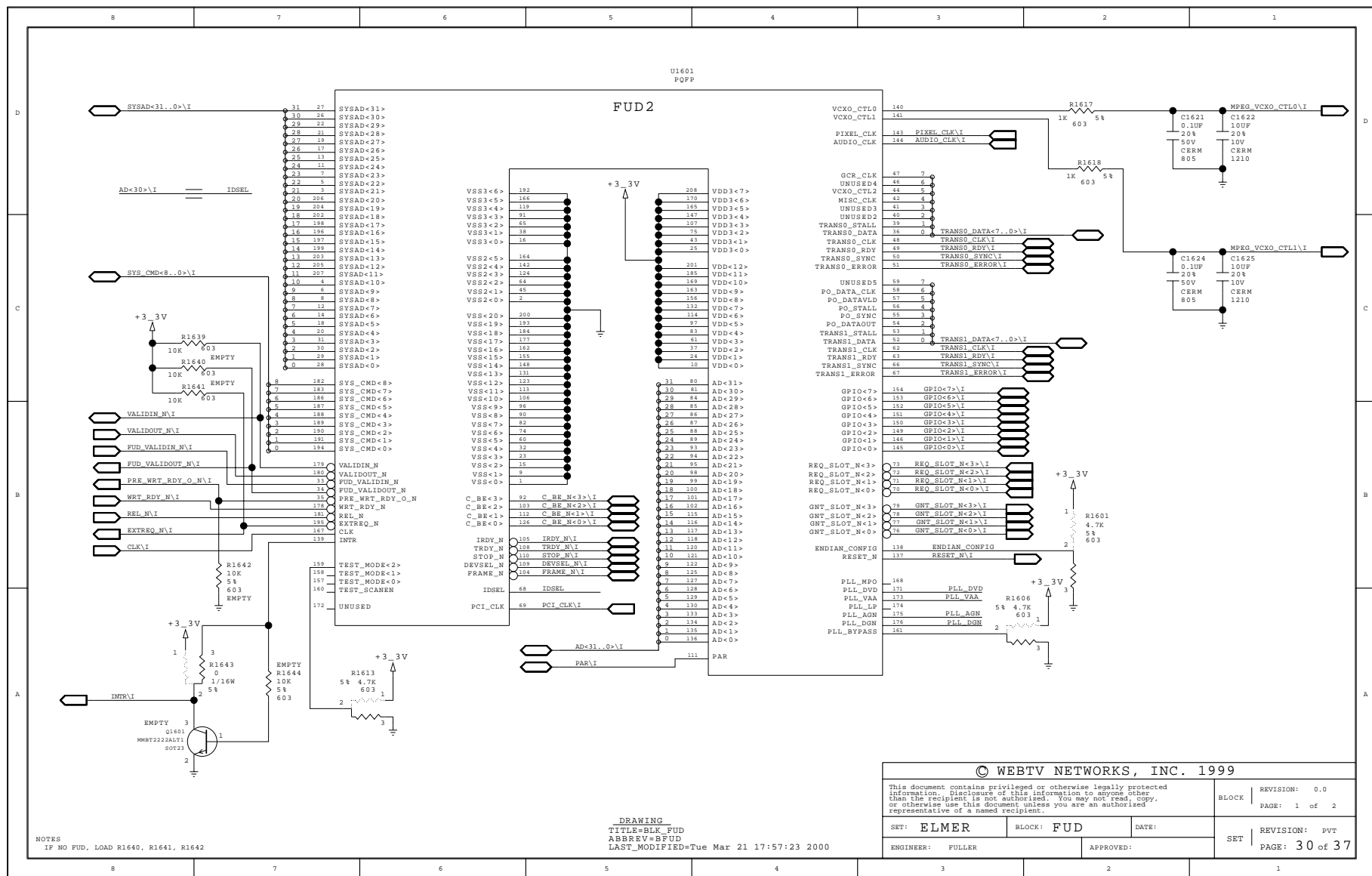
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			PAGE: 1 of 2
SET: ELMER	BLOCK: P_PORT	DATE:	REVISION: PVT
ENGINEER: SLEATOR	APPROVED:		PAGE: 28 of 37



PARALLEL PORT CONNECTOR  
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SET: <b>ELMER</b>	BLOCK: <b>P_PORT</b>	DATE:
ENGINEER: SLEATOR/FULLER	APPROVED:	SET: PVT REVISION: PVT PAGE: 29 of 37

DRAWING  
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 ABBREV=BDPC  
 LAST\_MODIFIED=Tue Mar 21 18:01:36 2000



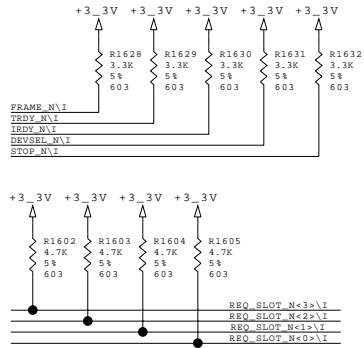
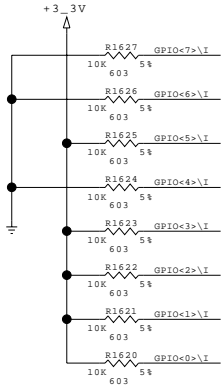
— 44 —

NOTES  
IF NO PUD, LOAD R1640, R1641, R1642

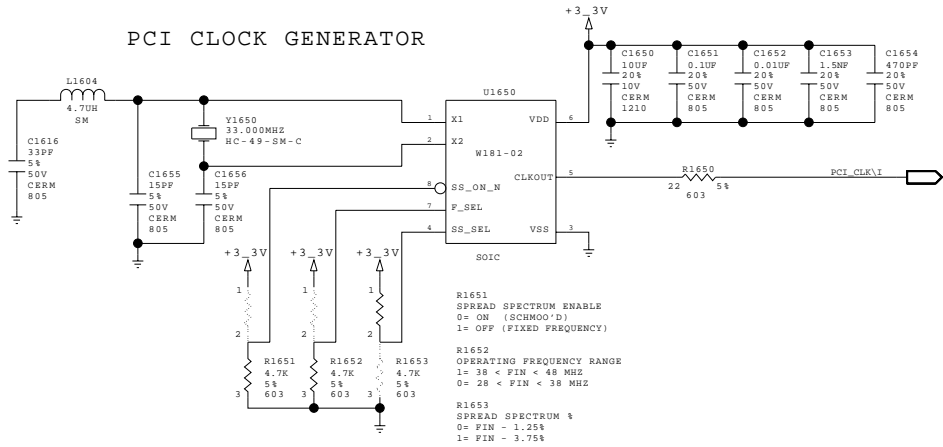
DRAWING  
TITLE=BLK\_FUD  
ABBRV=B\_FUD  
LAST\_MODIFIED=Tue Mar 21 17:57:23 2000

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SET: ELMER	BLOCK: FUD	DATE:
ENGINEER: FULLER	APPROVED:	REVISION: PVT PAGE: 30 of 37

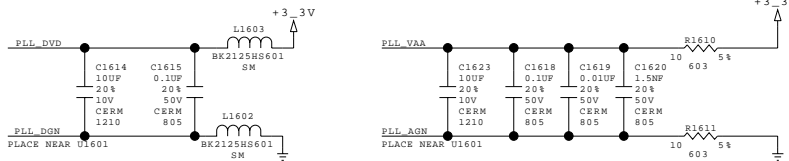
### PULL RESISTORS



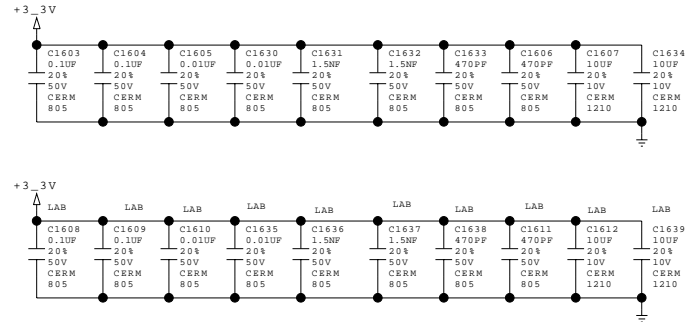
### PCI CLOCK GENERATOR



### VOLTAGE REFERENCE AND PLL SUPPLIES



### BYPASS CAPS



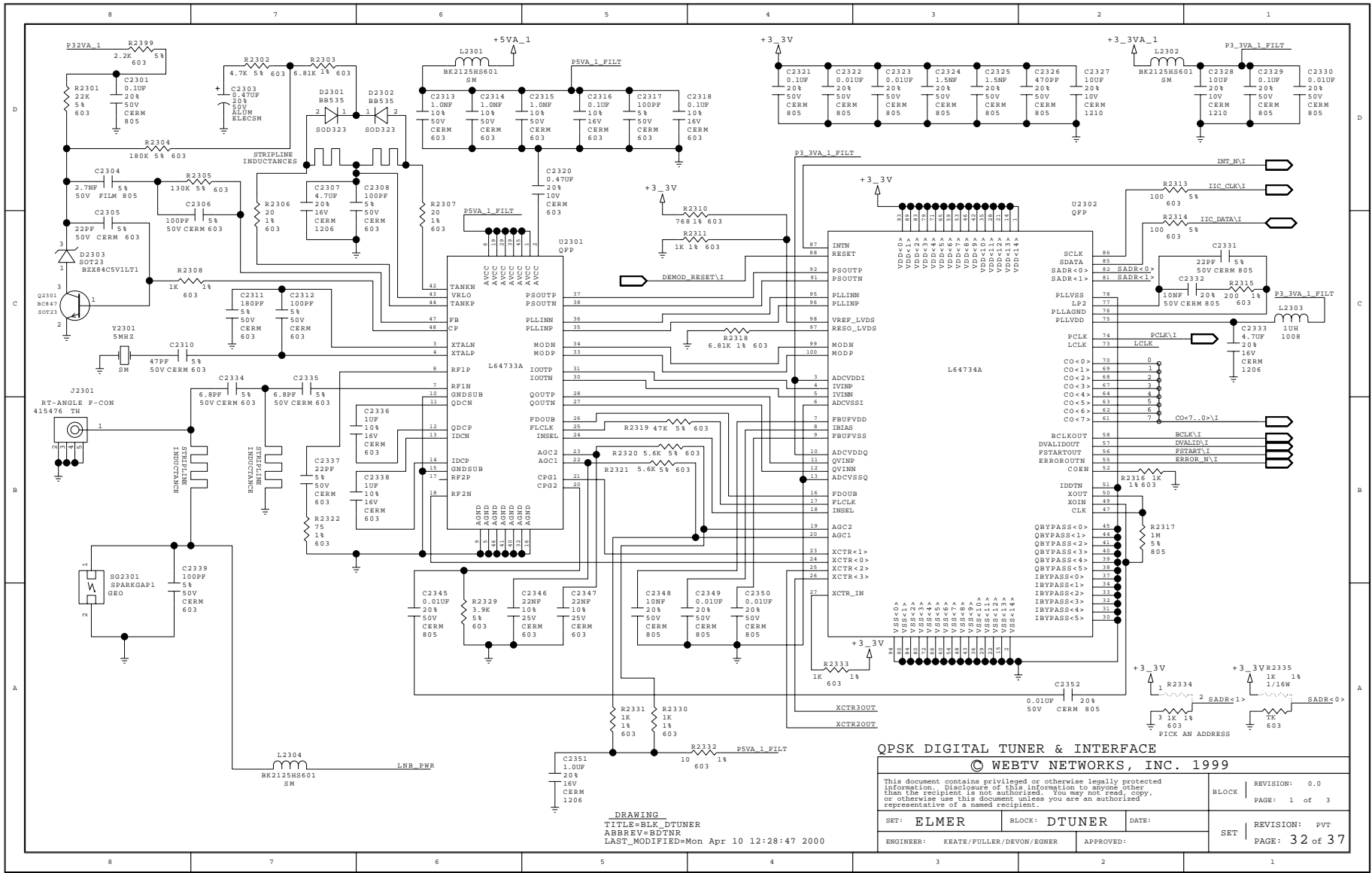
### FUD'S FLUFF

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SET: <b>ELMER</b>	BLOCK: <b>FUD</b>	DATE:	REVISION: <b>PVT</b> PAGE: <b>31 of 37</b>
ENGINEER: <b>FULLER</b>	APPROVED:		

NOTES:  
GPIO<4> PULLED LOW TO DISABLE BLUE LED ON RESET

DRAWING  
TITLE=BLK\_FUD  
ABBREV=FUD  
LAST\_MODIFIED=Sun Jun 18 13:08:39 2000



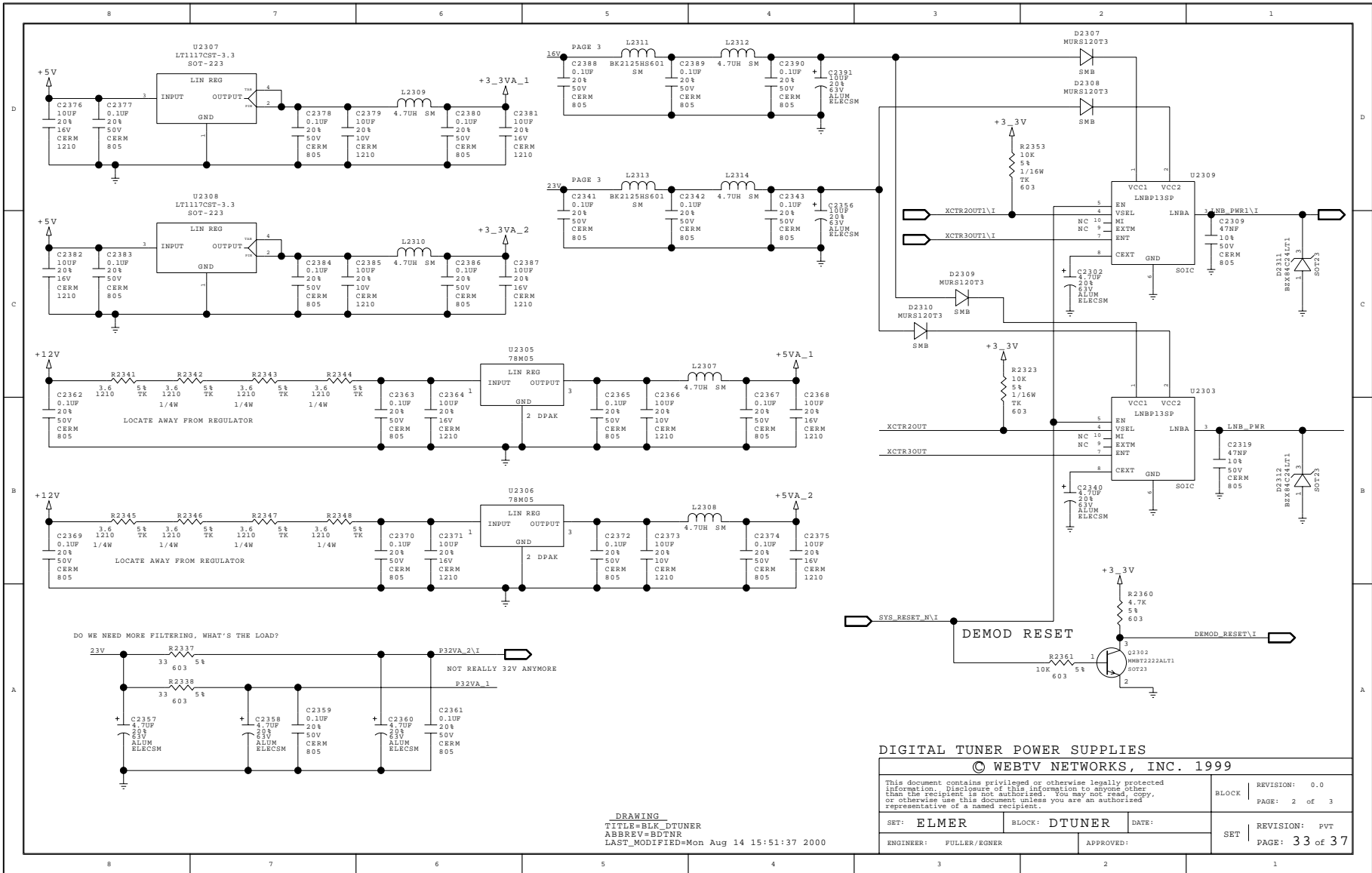
— 46 —

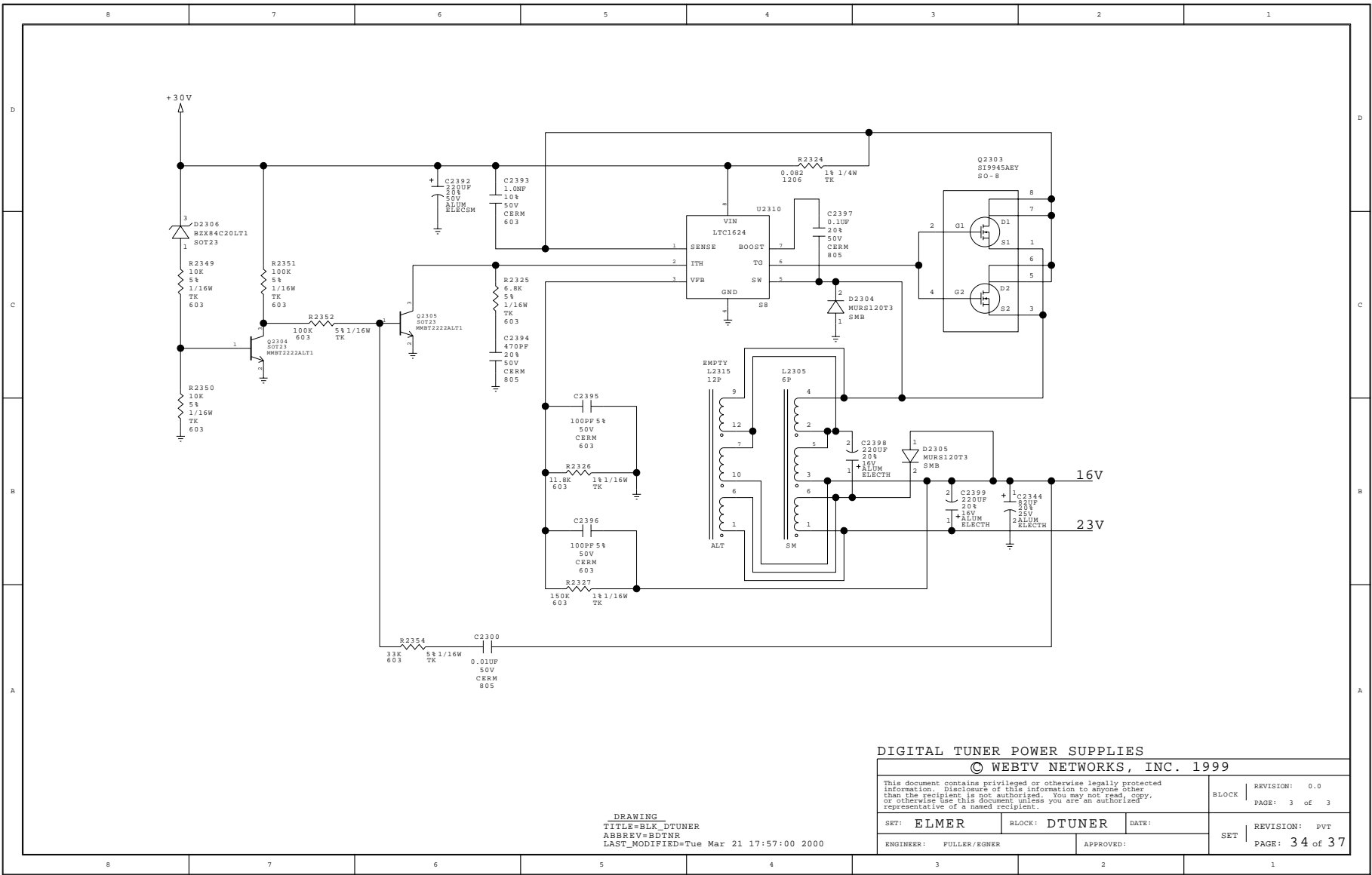
**DRAWING**  
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 ABBREV=BDTNR  
 LAST\_MODIFIED=Mon Apr 10 12:28:47 2000

**OPK DIGITAL TUNER & INTERFACE**  
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SET: <b>ELMER</b>	BLOCK: <b>DTUNER</b>	DATE:	BLOCK   REVISION: 0.0
ENGINEER: KEATE/PULLER/DEVON/ROGNER	APPROVED:		PAGE: 1 of 3
			SET   REVISION: PVT
			PAGE: 32 of 37

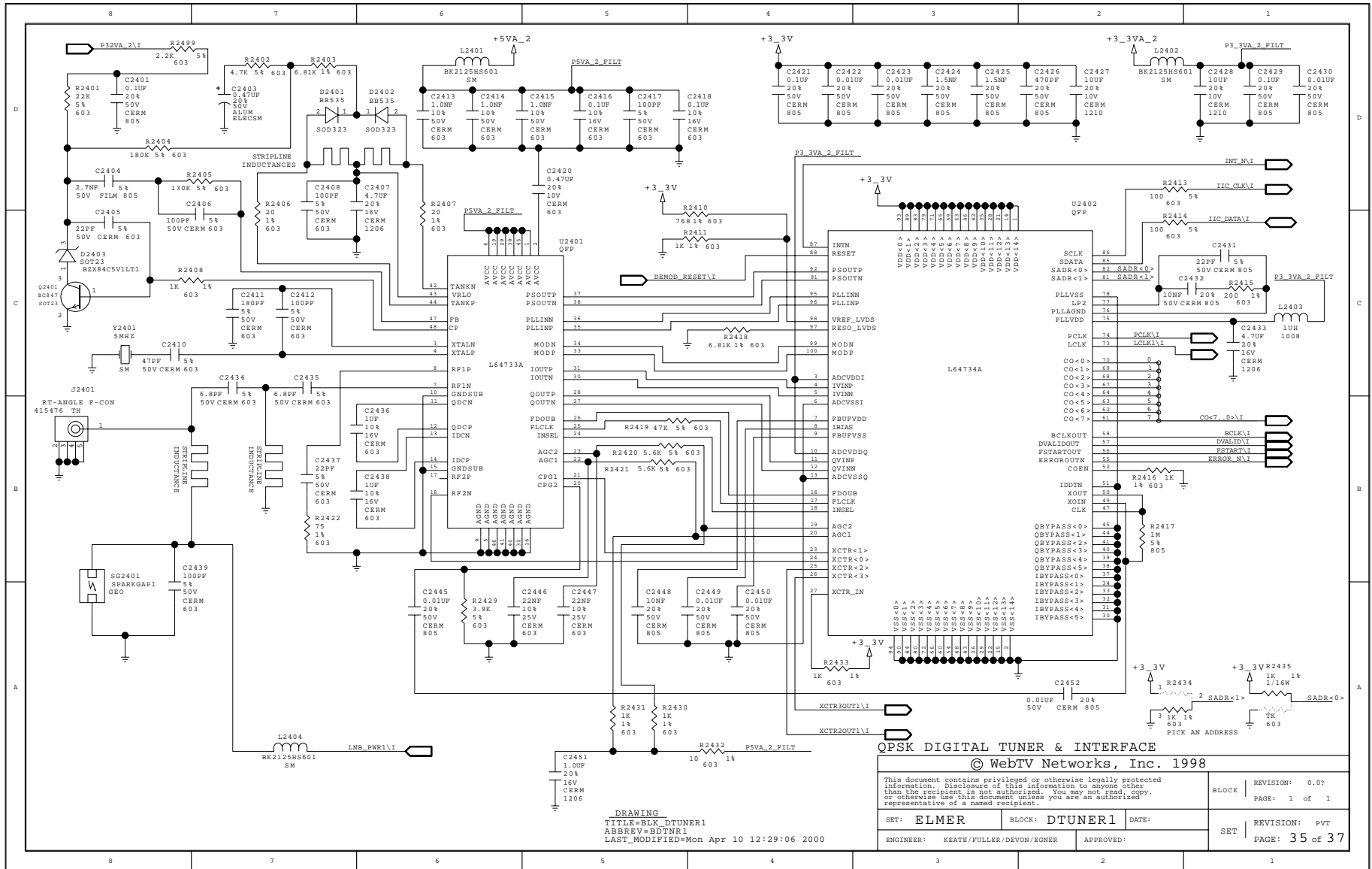




<b>DIGITAL TUNER POWER SUPPLIES</b>			
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			REVISION: PVT
			PAGE: 34 of 37

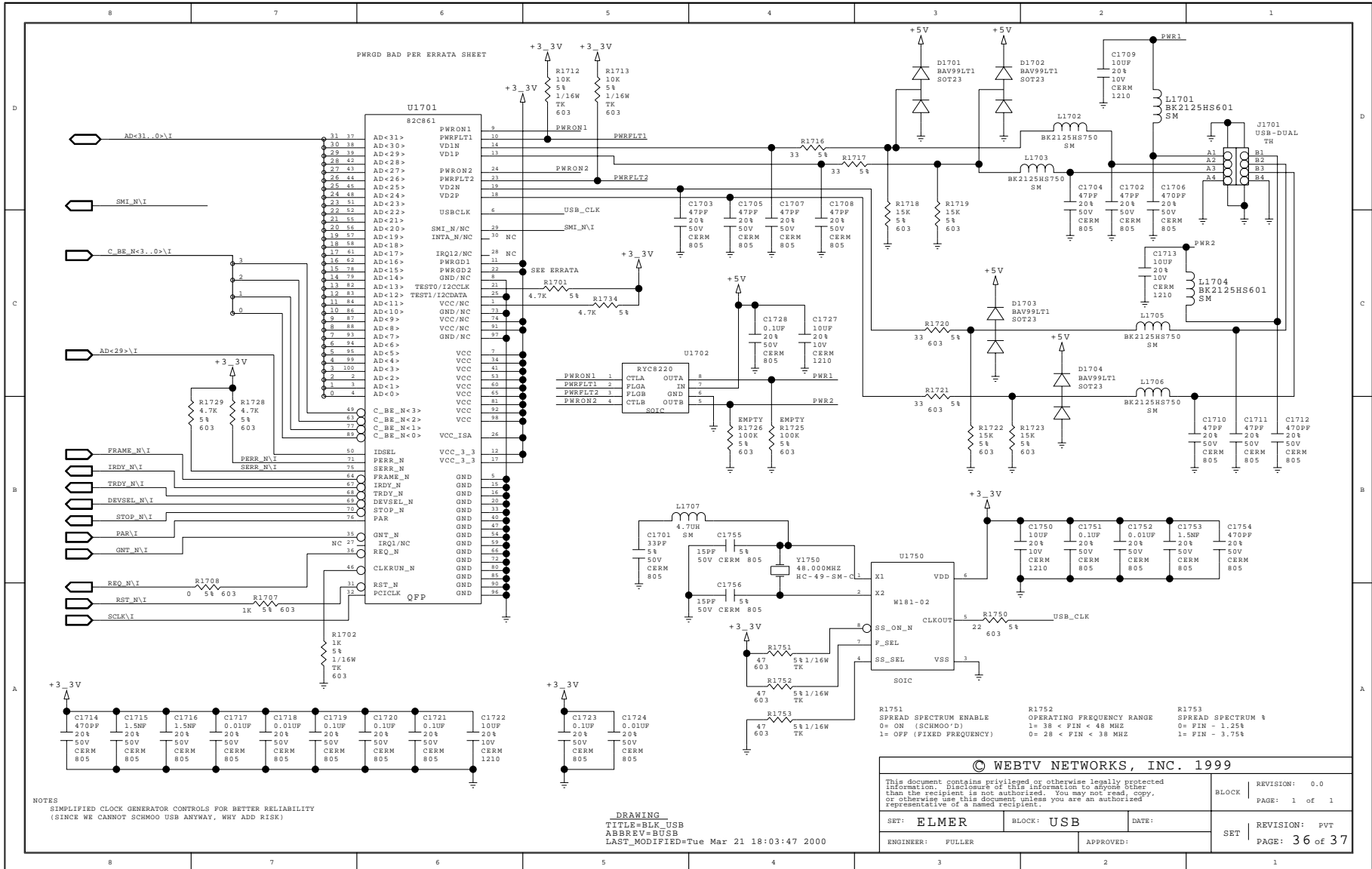
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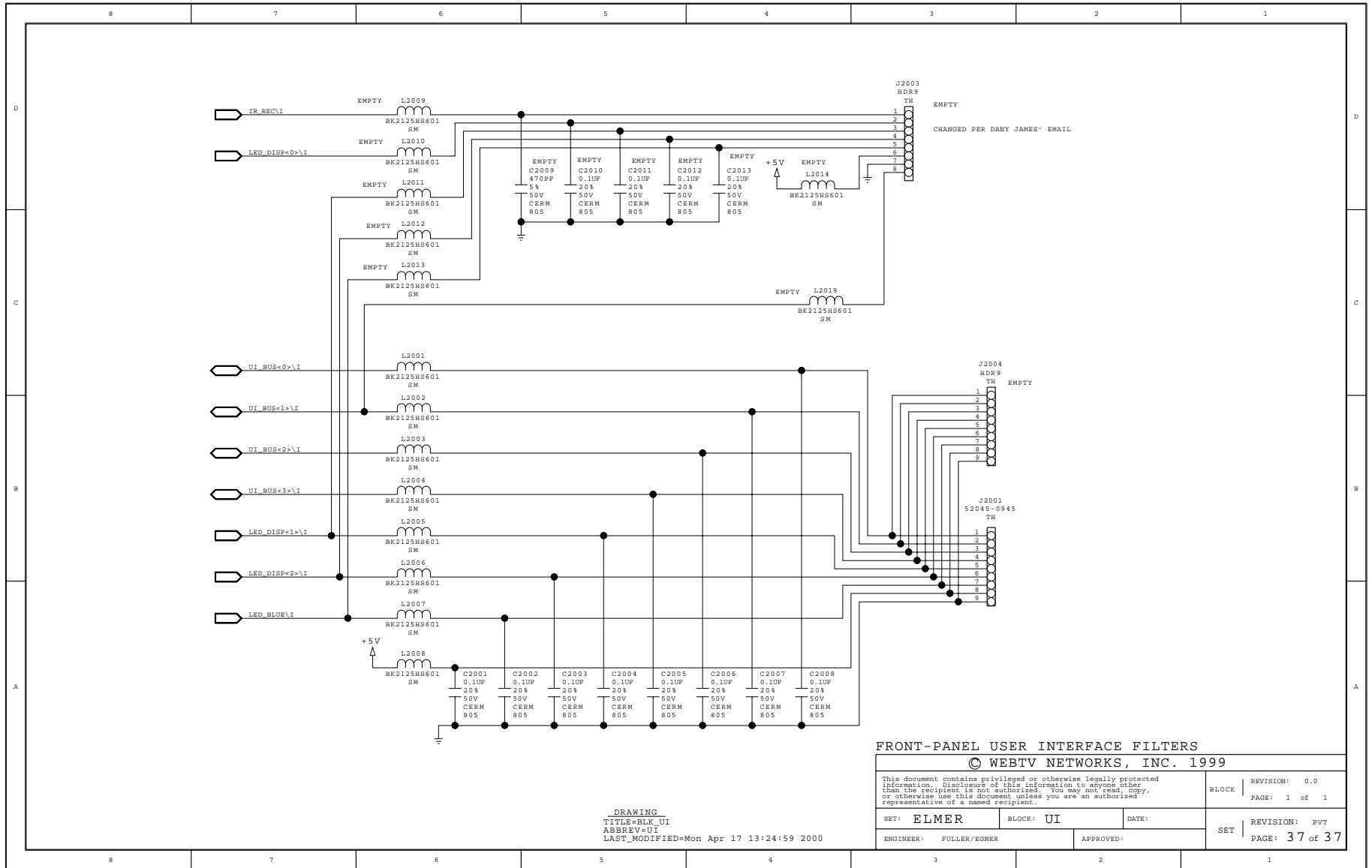




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<b>QPSK DIGITAL TUNER &amp; INTERFACE</b>		<b>© WebTV Networks, Inc. 1998</b>	
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ENGINEER: KEATE/FULLER/DEVON/EGNER	APPROVED:	SET	PAGE: 35 of 37





FRONT-PANEL USER INTERFACE FILTERS

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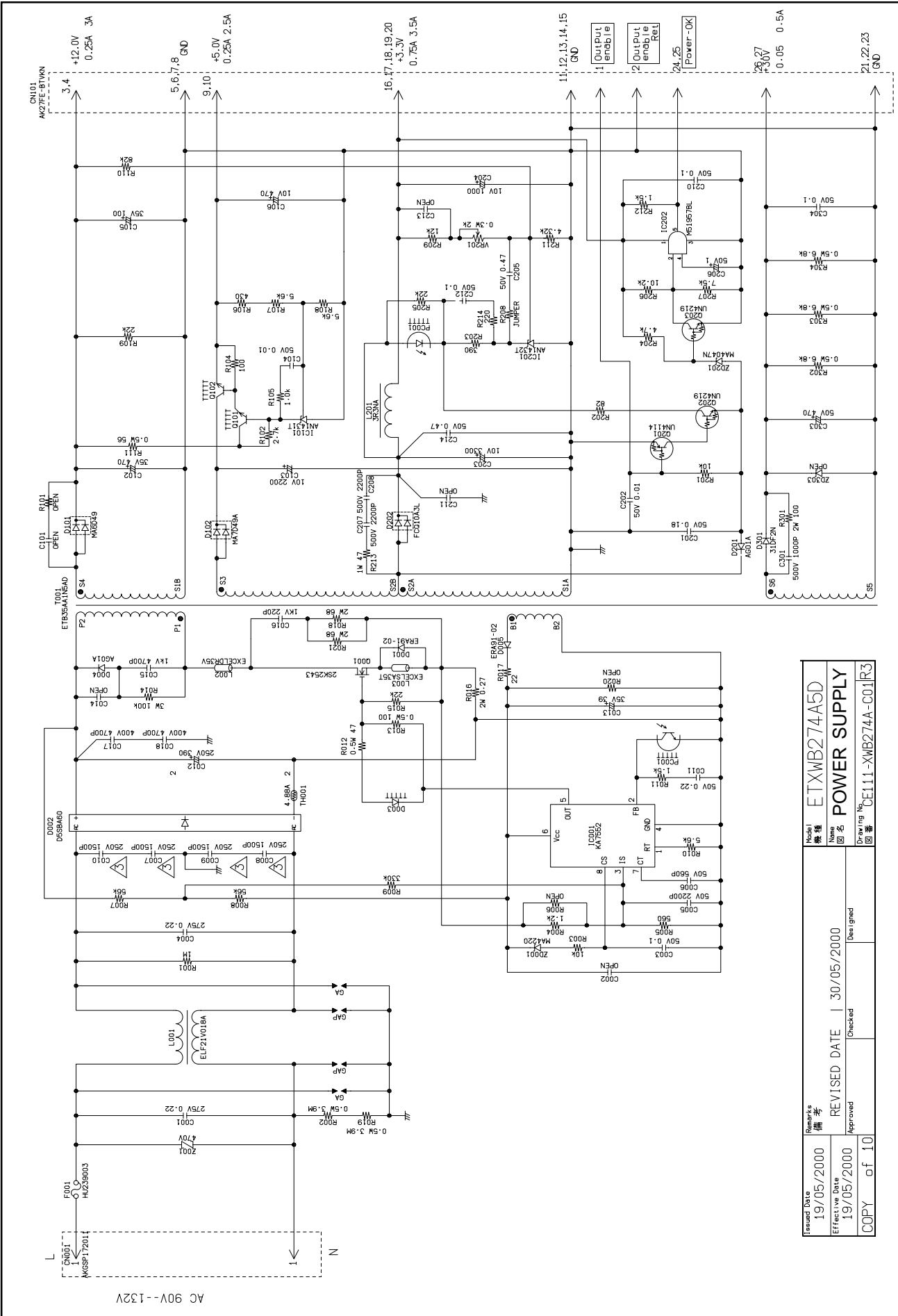
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	PAGE: 37 of 37




Model 機種	ETXWB274A5D	
Name 圖名	POWER SUPPLY	
Revised Date 備考	19/05/2000	REVISIED DATE   30/05/2000
Effective Date 備考	19/05/2000	Approved
Checked	Designed	
Drawing No. 圖番	CE111-XWB274A-C01R3	
COPY of 10		

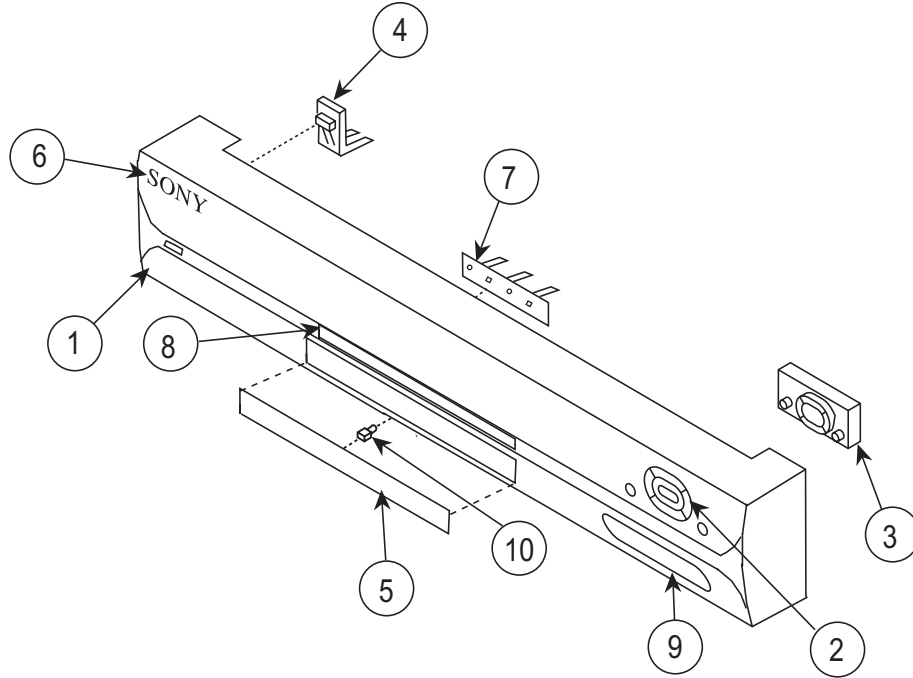
## SECTION 5 EXPLODED VIEW

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The component parts of an assembly are indicated by the reference numbers in the remarks column.
- Items marked \* are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

**Note:** The components identified by shading and mark  are critical for safety. Replace only with part number specified.

**Note:** Les composants identifiés par un trame et une marque  sont critiques pour la securite. Ne les remplacer que par une piece portant le numero specifie.

### 5-1. FRONT PANEL VIEW



REF. NO.	PART NO.	DESCRIPTION	REMARK
1	X-4039-984-1	PANEL ASSY, FRONT	
2		BUTTON, CURSOR	(For location purpose only)
3		BUTTON, MULTI	(For location purpose only)
4		BUTTON, POWER	(For location purpose only)
5		DOOR	(For location purpose only)
6		EMBLEM (NO.5), SONY	(For location purpose only)
7		GUIDE, LED	(For location purpose only)
8		PANEL, INDICATOR	(For location purpose only)
9	4-079-948-02	CAP, A/V JACK	
10		CATCHER, PUSH	(For location purpose only)

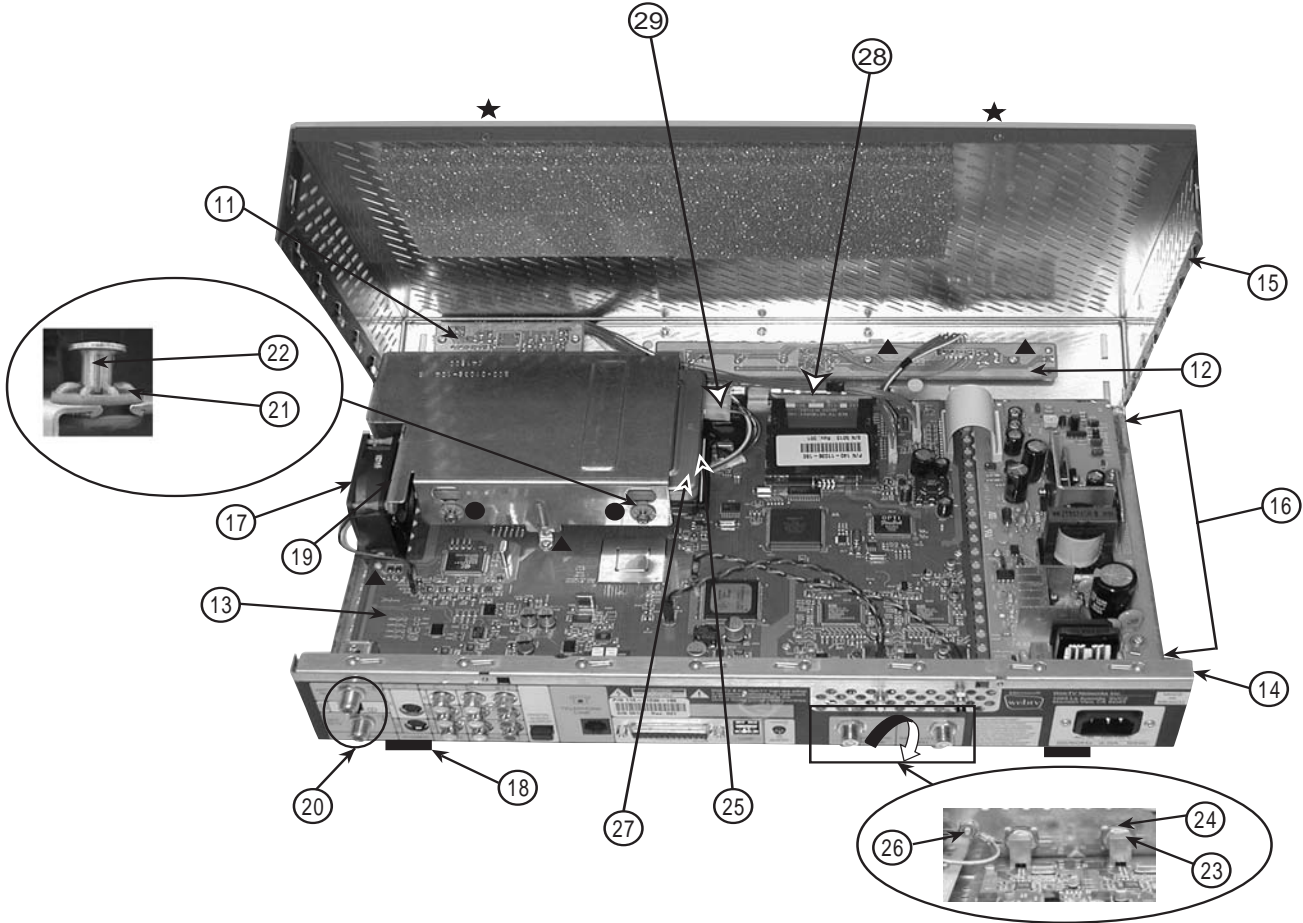
# SAT-W60

**Note:** The components identified by shading and mark  $\triangle$  are critical for safety. Replace only with part number specified.

**Note:** Les composants identifiés par un trame et une marque  $\triangle$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

## 5-2. REAR VIEW

- ★ 7-685-646-79 SCREW +BVTP 3X8 TYPE2 IT-3
- ▲ 7-685-871-01 SCREW +BVTT 3X6 (S)
- 4-080-137-01 SCREW (#6-32 X .50)

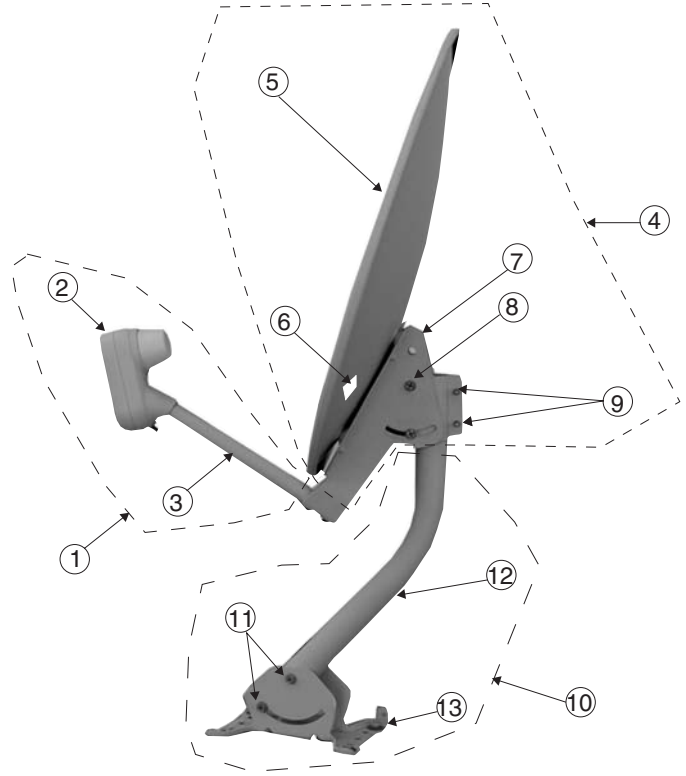


REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
11	* A-1372-908-A	HA BOARD, MOUNTED		26	4-080-138-01	NUT (6/32), HEX	
12	* A-1372-909-A	HB BOARD, MOUNTED		27	9-885-019-98	HDD (ST340810ACE)	
13	* 1-761-405-12	MAIN PC BOARD		28	9-885-015-30	EMI SHIELD PLATE	
14	* 4-079-593-01	CASE, LOWER		29	* 1-900-803-34	CONNECTOR ASSY, HD 4P	
15	* 4-082-119-01	CASE, UPPER					
16	$\triangle$ 1-468-574-11	POWER SUPPLY					
17	4-079-599-01	FAN					
18	* 4-064-828-01	FOOT					
19	4-079-949-01	RUBBER, FAN MOUNT					
20	3-682-691-00	NUT, WASHER HEXAGON					
21	4-079-950-01	GROMMET DAMPENING					
22	4-080-139-01	GROMMET, METAL FERRULE					
23	4-080-474-01	NUT (3/8) PANEL					
24	4-080-475-01	WASHER (3/8 DIA), PANEL					
25	* 1-900-803-33	CABLE, RIBBON 40P					

**5-3. SAN-18D4**

REF.NO.	PART NO.	DESCRIPTION	REMARK
1 *	X-4035-040-2	ARM ASSY, LNB11-13	(2,3)
2	8-598-326-02	CONVERTER, BS SAC-DA201	
3 *	4-061-590-01	ARM, LNB SUPPORT	
5	4-061-583-01	REFLECTOR	
4	X-4035-039-2	REFLECTOR MOUNT ASSY	(5-9)
6 *	4-061-576-11	MODEL NUMBER LABEL	
7	4-061-584-01	MOUNTING BASE REFLECTOR	
8	4-061-581-01	BOLT, 1/4- 20 UNC x 1/2 FORMING	
9	4-061-587-01	BOLT, 1/4-20 UNC X 7/8	
10	X-4035-030-1	MOUNT ASSY, UNIVERSAL	(8-9)
11	4-061-591-01	BOLT, 1/4-20 UNC x 1/2	
12 *	4-061-588-01	UNIVERSAL MOUNT MAST	
13 *	4-061-589-01	UNIVERSAL MOUNT FOOT	

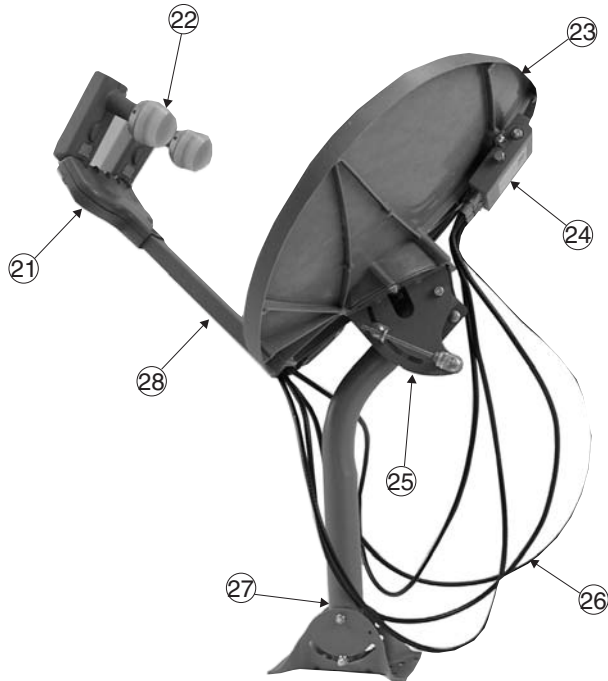
PACKAGING / ACCESSORY ITEMS NOT SHOWN:  
 4-049-203-01 WATERPROOF COVER  
 4-049-478-01 CLIP (2)  
 3-867-457-21 INSTRUCTION MANUAL  
 4-061-577-11 CARTON



**5-4. SAN-24MD1**

REF.NO.	PART NO.	DESCRIPTION	REMARK
21	* 9-885-008-31	LNB HOUSING	
22	* 9-885-008-26	LNB DUAL OUTPUT (2)	
23	9-885-008-21	REFLECTOR	
24	9-885-008-27	OUTDOOR MULTI-SWITCH 4X4	
25	* 9-885-008-23	TILT AZ-EI ASSEMBLY	
26	9-885-008-28	CABLE SET	
27	9-885-008-24	UNIVERSAL MOUNT ASSY	
28	* 9-885-008-25	LNB SUPPORT ARM	

ACCESSORY ITEMS NOT SHOWN:  
 \* 9-885-008-29 HARDWARE BAG  
 9-885-008-30 HARDWARE BAG FINE TUNE ADJ.





**SECTION 6  
ELECTRICAL PARTS LIST**

**Note:**

The components identified by shading and mark  $\triangle$  are critical for safety. Replace only with part number specified.

**Note:**

Les composants identifiés par un trame et une marque  $\triangle$  sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- Items marked \* are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

**RESISTORS**

- All resistors are in ohms
- F : nonflammable

When indicating parts by reference number, please include the board name.

REF. NO.	PART NO.	DESCRIPTION	REMARK	REF. NO.	PART NO.	DESCRIPTION	REMARK
----------	----------	-------------	--------	----------	----------	-------------	--------



\* A-1372-908-A HA BOARD, MOUNTED

**CONNECTOR**

CN001 \* 1-564-524-11 PLUG, CONNECTOR 9P

**DIODE**

D001 8-719-911-19 DIODE 1SS119-25TD  
 D002 8-719-911-19 DIODE 1SS119-25TD  
 D003 8-719-911-19 DIODE 1SS119-25TD

D004 8-719-911-19 DIODE 1SS119-25TD  
 D005 8-719-911-19 DIODE 1SS119-25TD  
 D006 8-719-911-19 DIODE 1SS119-25TD  
 D007 8-719-911-19 DIODE 1SS119-25TD  
 D008 8-719-911-19 DIODE 1SS119-25TD

D009 8-719-911-19 DIODE 1SS119-25TD  
 D010 8-719-911-19 DIODE 1SS119-25TD  
 D011 8-719-911-19 DIODE 1SS119-25TD  
 D012 8-719-911-19 DIODE 1SS119-25TD  
 D013 8-719-911-19 DIODE 1SS119-25TD

**SWITCH**

S001 1-572-198-11 SWITCH, KEYBOARD  
 S002 1-572-198-11 SWITCH, KEYBOARD  
 S003 1-572-198-11 SWITCH, KEYBOARD  
 S004 1-572-198-11 SWITCH, KEYBOARD  
 S005 1-572-198-11 SWITCH, KEYBOARD  
 S008 1-572-198-11 SWITCH, KEYBOARD  
 S009 1-572-198-11 SWITCH, KEYBOARD



\* A-1372-909-A HB BOARD, MOUNTED

**CAPACITOR**

C050 1-124-589-11 ELECT 47 $\mu$ F 20% 16V

**CONNECTOR**

CN050 \* 1-564-523-11 PLUG, CONNECTOR 8P

**DIODE**

D050 8-719-050-05 DIODE SLR-325VRT31  
 D051 8-719-060-26 DIODE SLR-325YCT31  
 D052 8-719-050-06 DIODE SLR-325MGT31  
 D053 8-719-069-45 DIODE SELU5E23C-TP15  
 D054 8-719-911-19 DIODE 1SS119-25TD  
 D055 8-719-911-19 DIODE 1SS119-25TD  
 D056 8-719-911-19 DIODE 1SS119-25TD

**IC**

IC050 8-742-207-20 HYB IC SBX3071-01

**TRANSISTOR**

Q050 8-729-422-27 TRANSISTOR 2SD601A-QRS-TX

**RESISTOR**

R050 1-216-033-00 RES-CHIP 220 5% 1/10W  
 R051 1-216-033-00 RES-CHIP 220 5% 1/10W  
 R052 1-216-033-00 RES-CHIP 220 5% 1/10W  
 R053 1-216-033-00 RES-CHIP 220 5% 1/10W  
 R055 1-216-017-91 RES-CHIP 47 5% 1/10W

**SWITCH**

S050 1-572-198-11 SWITCH, KEYBOARD



Reference Number	Sony Part Number	Part Description
C0204, C0234, C0401, C0402, C0416, C0417, C0625, C0643, C0663, C1480, C1520, C1522-C1524, C1606, C1611, C1633, C1638, C1654, C1706, C1712, C1714, C1754, C2009, C2105, C2117, C2118, C2326, C2394, C2426	9-885-012-20	CAP-CER, 470PF
C0356, C1008, C1009, C1012, C1013, C1025, C1035, C1036, C1083, C1084, C1499, C1503-C1519, C1702-C1705, C1707, C1708, C1710, C1711	9-885-012-19	CAP-CER, 47PF
C0826	9-885-028-70	CAP-CER, 10UF, Y5V,+80/-20%,10V
C2392	9-885-028-65	CAP, AL-ELEC, 220UF, 20%,50V
C23101	9-885-028-71	CAP-CER, 1UF 5V, +80/-20%,50V
D0601	9-885-011-71	DIODE-BRDGERECT
D0701-D0708, D0801-D0809, D1007-D1012, D1101, D1401, D1501, D1701-D1704	9-885-011-75	DIODE-ARRAY
D1003	9-885-011-73	DIODE-LED
D2301, D2302, D2401, D2402	9-885-011-77	DIODE-VARACTOR
D2303, D2403	9-885-011-78	DIODE-ZEN, 5.1V
D2304, D2305, D2307-D2310	9-885-011-70	DIODE-RECT, SI, 200V, 2A
D2306	9-885-011-79	DIODE-ZEN, 20V3
D2311, D2312	9-885-011-76	DIODE-ZEN
F0601	9-885-012-22	PROT, POLYSW, TR600-150, 3A, 600V
J0601	9-885-011-24	CONN-TEL, RJ-11, 2
J1003	9-885-028-63	CON-AV, RCA, 3X3,SHLD,PCB
J1004	9-885-011-27	CONN-AV, S-VID, DUAL STACK
J1005	9-885-011-29	CONN-SMART, 8
J1010	9-885-015-31	CONN-SMART CARD
J1301		CONN-HDR
J1501	9-885-011-26	CONN-DSUB, SNGL, 25P
J1701	9-885-011-25	CONN-USB, DUAL STACK
J2301, J2401	9-885-011-28	CONN-COAX, F
L0201-L0203, L0601-L0603, L0701, L0802, L1001-L1003, L1007-L1009, L1026, L1081, L1083, L1085, L1088, L1407, L1414, L1421, L1422, L1425, L1429, L1498, L1499, L1602, L1603, L1701, L1704, L2001-L2014, L2019, L2301, L2302, L2304, L2311, L2313, L2401, L2402, L2404	9-885-012-24	FER, 600, 100MHZ, 200MA
L2305	9-885-028-68	IND, 11UH, 20%, 750MA, U/SHLD
Q0351	9-885-011-82	IC-MOSFET
Q0601	9-885-011-68	XSTR-PNP
Q0602	9-885-011-69	XSTR-FET
Q0801, Q0803-Q0806, Q0808-Q0811, Q1001, Q1002, Q1007, Q1008, Q1010, Q1014-Q1016, Q1401, Q2302, Q2304, Q2305	9-885-011-81	XSTR-NPN
Q0802, Q1003-Q1005, Q1009, Q1011	9-885-011-80	XSTR-PNP
Q0807, Q0812	9-885-011-72	XSTR-FET, N-CH, 2N7002
Q2301, Q2401	9-885-011-83	XSTR-NPN
Q2303	9-885-011-74	XSTR-FET
R0354	9-885-012-23	RES-PWR, 1%, 1/2W, 2010
R1501	9-885-028-69	RES, 1K, THK, 5% 1/16W,0603
U0203, U0205	9-885-011-84	IC-VREG, 2.5V
U0301	9-885-011-89	IC-CPU, 64BIT-RISC
U0351	9-885-012-04	IC-SWREG
U0401-U0404	9-885-011-67	MEM-SDRAM
U0504	9-885-028-66	MEM-MASK, MERCURY BOOT BLD
U0601, U0703, U0807, U1407, U2305, U2306	9-885-011-85	IC-VREG, +5V, 78M05ACDT, 500MA
U0604	9-885-011-94	IC-DAA, MODEM-SIDE, DM207, 5V, 10MA
U0605, U0606	9-885-011-95	IC-DAA, LINEOPTCLPLR, IL388, 5V, 450MW
U0607	9-885-011-93	IC-DAA
U0650	9-885-011-96	IC-CODEC, STEREO
U0701	9-885-011-98	IC-FILT
U0801	9-885-011-97	IC-CODEC, 2-CH AUDIO
U0802, U0805, U0808, U0809	9-885-011-88	IC-OPAMP, SINGLE SUP
U0804, U0806	9-885-012-02	IC-SW, QUAD BILATERAL
U1	9-885-011-30	IC-ASIC
U1002	9-885-028-67	CONN-OPT, XMTR, 3MB/SEC,5V
U1008	9-885-012-07	IC-SMART
U1103	9-885-011-66	MEM-SSID
U1401	9-885-011-23	SUBASSMBLY-MODULATOR
U1403	9-885-011-99	IC-DCCR, VIDEO
U1404	9-885-012-00	IC-SW, DUAL FET BUS
U1501, U1502	9-885-012-01	IC-SW, 10BIT BUS
U1601	9-885-011-65	IC-ASIC
U1650, U1750	9-885-011-91	IC-CLKGEN
U1701	9-885-012-03	IC-INTFC
U1702	9-885-012-09	IC-USB
U2101, U2104	9-885-011-92	IC-CLKGEN, VXCO
U2102	9-885-011-90	IC-CLKGEN
U2301, U2401	9-885-012-05	IC-TUNER
U2302, U2402	9-885-012-06	IC-TUNER
U2303, U2309	9-885-011-87	IC-VREG, 15-25V, LNBP13SP, 900MA
U2305/2306	9-885-028-64	IC-VREG, +5V 500MA, 5%, D-PAK
U2307, U2308	9-885-011-86	IC-VREG, +3.3V, 1117CST, 800MA
U2310	9-885-012-08	IC-SWREG

**1-761-405-12 MAIN PC BOARD, COMPLETE**

<b>Reference Number</b>	<b>Sony Part Number</b>	<b>Part Description</b>
Y0601	9-885-012-13	XTAL, 4.096MHZ
Y10100	9-885-012-14	XTAL, 18.432MHZ
Y1401	9-885-012-12	XTAL, 14.31818MHZ
Y1650	9-885-012-16	XTAL, 33.000MHZ
Y1750	9-885-012-17	XTAL, 48.000MHZ
Y2101	9-885-012-15	XTAL, 25.600MHZ
Y2102	9-885-012-10	XTAL, 12.2727MHZ
Y2103	9-885-012-11	XTAL, 12.288MHZ
Y2301, Y2401	9-885-012-18	XTAL, 5.000MHZ

REF.NO.	PART NO.	DESCRIPTION	REMARK	REF.NO.	PART NO.	DESCRIPTION	REMARK
<b>ACCESSORIES AND PACKAGING</b>							
1-769-758-11		CABLE, MODULAR (WITH PLUG)					
4-079-602-02	*	CARTON, INDIVIDUAL					
1-575-335-21		CORD, CONNECTION (S VIDEO)					
1-751-271-12		CORD, CONNECTION (AV)					
1-558-226-11		CORD, CONNECTION (COAXIAL)					
4-079-600-01		CUSHION, RIGHT					
4-079-943-22		MANUAL, INSTRUCTION					
1-779-110-11	*	PLUG, ADAPTOR					
1-782-913-21		IR BLASTER					
1-783-722-11	△	CORD SET, POWER					
<b>REMOTE COMMANDER</b>							
1-476-337-11		REMOTE COMMANDER (RM-Y804)					
4-978-977-01		BATTERY COVER (RM-Y804)					

HISTORY INFORMATION FOR THE FOLLOWING MANUAL:

# SERVICE MANUAL

# SAT-W60

 RM-Y804

*U.S. Model*

**ORIGINAL MANUAL ISSUE DATE: 10/2000**

ALL REVISIONS AND UPDATES TO THE ORIGINAL MANUAL ARE APPENDED TO THE END OF THE PDF FILE.

REVISION DATE	REVISION TYPE	SUBJECT
10/2000		
10/2002		No revisions or updates are applicable at this time. Manual Updated.

# PRINTING THE SERVICE MANUAL

The PDF of this service manual is not designed to be printed from cover to cover. The pages vary in size, and must therefore be printed in sections based on page dimensions.

## NON-SCHEMATIC PAGES

Data that does NOT INCLUDE schematic diagrams are formatted to 8.5 x 11 inches and can be printed on standard letter-size and/or A4-sized paper.

## SCHEMATIC DIAGRAMS

The schematic diagram pages are provided in two ways, full size and tiled. The full-sized schematic diagrams are formatted on paper sizes between 8.5" x 11" and 18" x 30" depending upon each individual diagram size. Those diagrams that are LARGER than 11" x 17" in full-size mode have been tiled for your convenience and can be printed on standard 11" x 17" (tabloid-size) paper, and reassembled.

### TO PRINT FULL SIZE SCHEMATIC DIAGRAMS

---

If you have access to a large paper plotter or printer capable of outputting the full-sized diagrams, output as follows:


- 1) Note the page size(s) of the schematics you want to output as indicated in the middle window at the bottom of the viewing screen.
- 2) Go to the File menu and select Print Set-up. Choose the printer name and driver for your large format printer. Confirm that the printer settings are set to output the indicated page size or larger.
- 3) Close the Print Set Up screen and return to the File menu. Select "Print..." Input the page number of the schematic(s) you want to print in the print range window. Choose OK.

### TO PRINT TILED VERSION OF SCHEMATICS

---

Schematic pages that are larger than 11" x 17" full-size are provided in a 11" x 17" printable tiled format near the end of the document. These can be printed to tabloid-sized paper and assembled to full-size for easy viewing.



If you have access to a printer capable of outputting the tabloid size (11" x 17") paper, then output the tiled version of the diagram as follows:


- 1) Note the page number(s) of the schematics you want to output as indicated in the middle window at the bottom of the viewing screen.
- 2) Go to the File menu and select Print Set-up. Choose the printer name and driver for your printer. Confirm that the plotter settings are set to output 11" x 17", or tabloid size paper in landscape (  ) mode.
- 3) Close the Print Set Up screen and return to the File menu. Select "Print..." Input the page number of the schematic(s) you want to print in the print range window. Choose OK.

### TO PRINT SPECIFIC SECTIONS OF A SCHEMATIC

---

To print just a particular section of a PDF, rather than a full page, access the Graphics Select tool in the Acrobat Reader tool bar.

- 1) To view the Graphics Select Tool, press and HOLD the mouse button over the Text Select Tool which looks like: . This tool will expand to reveal to additional tools. Choose the Graphics Select tool by placing the cursor over the button on of the far right that looks like: 
- 2) After selecting the Graphics Select Tool, place your cursor in the document window and the cursor will change to a plus (+) symbol. Click and drag the cursor over the area you want to print. When you release the mouse button, a marquee (or dotted lined box) will be displayed outlining the area you selected.
- 3) With the marquee in place, go to the file menu and select the "Print..." option. When the print window appears, choose the option under the section called "Print Range" which says "Selected Graphic".

Select OK and the output will print only the area that you outlined with the marquee. 

(continued >)

## ON-SCREEN SEARCH OPTION

All of the text within the service manual PDF is content searchable. This means that you can enter any text, word, phrase or reference number that appears in the manual, and the PDF software will search, find and move the cursor to the location where you requested text first appears. This feature can be particularly useful in locating components on a specific schematic or printed wire circuit board (PWB) diagrams.

Follow these steps to effectively locate a component on a schematic diagram:

- 1) Locate the schematic you want to search by clicking on the corresponding bookmark on the left side of the screen. The view on the right of the screen will then jump to the desired schematic page.
- 2) Magnify the diagram to at least 400% before conducting a component search. This will enable you to easily view the reference number when it is highlighted on screen. To do this, click on the magnifying glass button on the tool bar at the top of the screen. Move the cursor over the diagram and RIGHT click you mouse. Select the 400% magnification option on the pop-up menu. Click on the button with the icon of the open hand to deactivate the magnification tool
- 3) Search the diagram (or the entire manual) by clicking on the binocular button tool at the top of the screen. The "Find" window will appear and allow you to type in your desired text. Type in a reference designator, such as R502, and click on the "Find" button. If the component is not on the diagram, but is listed anywhere else in the manual, the cursor will jump to the first location the text is found in the file. To find another instance of that same text, click on the binocular button again and select "Find Again."