

**COMPUTER:**  
RADIO SHACK TRS-80 COLOR  
COMPUTER 2  
MODELS 26-3134, 26-3136.



TECHNICAL SERVICE DATA FOR YOUR COMPUTER

## PRELIMINARY SERVICE CHECKS

This data provides the user with a time-saving service tool which is designed for quick isolation and repair of Computer malfunctions.

Check all interconnecting cables for good connection and correct hookup before making service checks.

Disconnect all peripherals except the Monitor from the Computer to eliminate possible external malfunctions.

## TEST EQUIPMENT AND TOOLS

### TEST EQUIPMENT

Digital Volt/Ohm Meter  
Logic Probe  
Frequency Counter  
TV Monitor

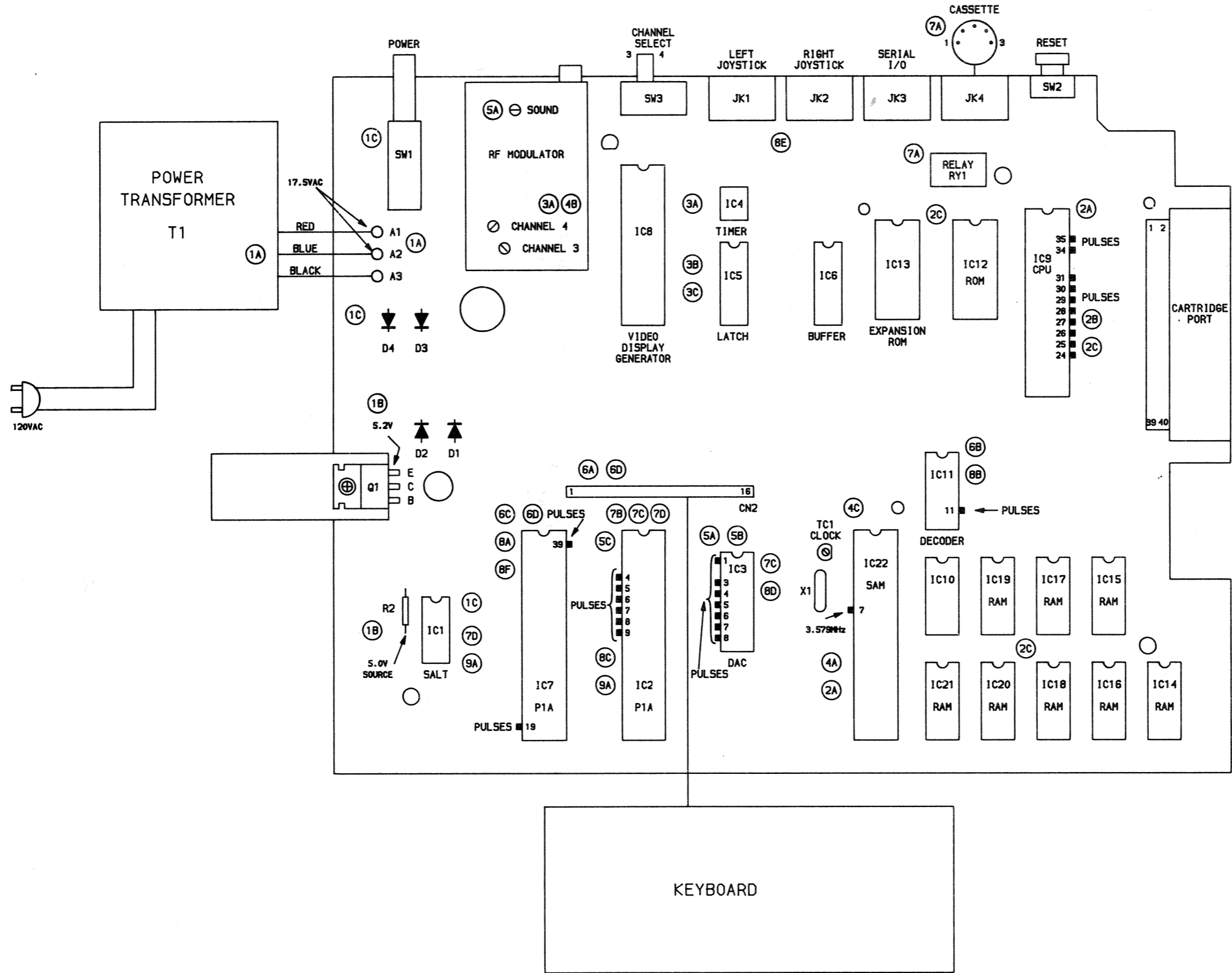
### TOOLS

Low Wattage Soldering Iron  
Desoldering Equipment  
Contact Cleaner (non spray type)  
Phillips Screwdriver  
Flat Blade Screwdriver  
IC Insertion and Removal Tools 14, 16, 24 and 40 pin  
Alignment Tools GC Electronics 9440

## REPLACEMENT PARTS AND DESCRIPTION

IDENT	PART NO.	DESCRIPTION
D3	DX2321	Diode, 30D1
D4	DX2321	Diode, 30D1
IC1	MX6201	IC, SC77527P
IC2	AMX4578	IC, MC6821P
IC3	MX6202	IC, SC77526P
IC5	AMX4227	IC, SN74LS273P
IC7	MX6211	IC, SC67331P
IC8	AMX4575	IC, MC6847P
IC9	MX5560	IC, MC6809EP
IC11	AMX4583	IC, SN74LS138N
IC13	MX6200	IC, 804236A
IC14	MX6199	IC, RAM MB8118-12P
IC21		thru
IC22	MX6198	IC, 74LS783
Q1	2SD526	Transistor
R2	N0001EGE	Resistor, .1 ohm, 1W
RY1	AR8166	Relay
SW1	AS2900	Switch, Power
T1	ATA1056	Transformer, Power

# PRELIMINARY SERVICE CHECKS (Continued)



RADIO SHACK COLOR COMPUTER 2  
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# PRELIMINARY SERVICE CHECKS (Continued)

## SERVICE CHECKS

MATCH THE NUMBERS ON THE INTERCONNECTING DIAGRAM AND PHOTOS WITH THE NUMBERS ON THE SERVICE CHECKS TO BE PERFORMED.

①

### COMPUTER DEAD

- (A) Check for 17.5VAC between Connectors A1 and A2. If the voltage is missing at Connectors A1 and A2, check Power Transformer (T1) for an open winding. Also check for continuity between the center tap of the Power Transformer secondary winding and Connector A3. Check for an open power cord.
- (B) If the voltage is correct at Connectors A1 and A2, check for 5.0V at the 5.0V source. If 5.0V is missing, check Resistor R2, check for 5.2V at the emitter of Transistor Q1. If the voltage is present at the emitter of Q1, check Resistor R2.
- (C) If the voltage is missing at the emitter of Q1, check Transistor Q1 and IC1. Also check Diodes D3 and D4. Check Power Switch (SW1).

If all of the voltages are correct, refer to the "Microprocessor Operation" section.

②

### MICROPROCESSOR OPERATION

- (A) Computer is dead. Check for pulses at pins 34 and 35 of the CPU IC (IC9). If pulses are missing, check the SAM IC (IC22) by substitution.
- (B) If pulses are present at pins 34 and 35 of IC9, check for data pulses on pins 24 thru 31 of IC9 when the Computer is turned On. If there are no data pulses present, check IC9 by substitution.
- (C) If data pulses appear on pins 24 thru 31 of IC9 and then suddenly stop, check RAM ICs (IC14 thru IC21), ROM IC (IC12) and Expansion RAM IC (IC13) by substitution.

③

### VIDEO

- (A) No video. Check the Video Display Generator IC (IC8) and the RF Modulator by substitution.
- (B) Dots are missing from alphanumeric characters. Check (IC8) by substitution.
- (C) Wrong characters appear on the screen. Check Latch IC (IC5) and IC8 by substitution.

④

### COLOR

- (A) No color. Check for 3.579MHz at pin 7 of SAM IC (IC22). If the 3.579MHz signal is missing, check IC22 by substitution.
- (B) If the 3.579MHz signal is present at pin 7 of IC22, check the RF Modulator by substitution.

- (C) Colors are not correct. Check for a frequency of 3.579MHz at pin 7 of SAM IC (IC22). If the frequency is not correct, check the adjustment of Clock Trimer TC1, see "Miscellaneous Adjustments". Also check IC22 by substitution.

⑤

### SOUND

- (A) No sound. Type in and run the following program:

10 SOUND 200,200: GOTO 10

Check for pulses at pin 1 of DAC IC (IC3). If the pulses are present, check the adjustment of the Sound Coil, see "Miscellaneous Adjustments".

- (B) If pulses are not present at pin 1 of IC3, check for pulses at pins 3 thru 8 of IC3. If the pulses are present, check IC3 by substitution.
- (C) If the pulses are missing at pins 3 thru 8 of IC3, check PIA IC (IC2) by substitution.

⑥

### KEYBOARD

- (A) Keyboard is dead. Check the keyboard Connector (CN2) for good connections.
- (B) If the keyboard connector checks good, check for pulses at pin 11 of Decoder IC (IC11). If pulses are missing, check IC11 by substitution.
- (C) If pulses are present at pin 11 of IC11, check PIA IC (IC7) by substitution.
- (D) A group of keys do not work. Check the keyboard Connector (CN2) for good connections. Also check IC7 by substitution.

⑦

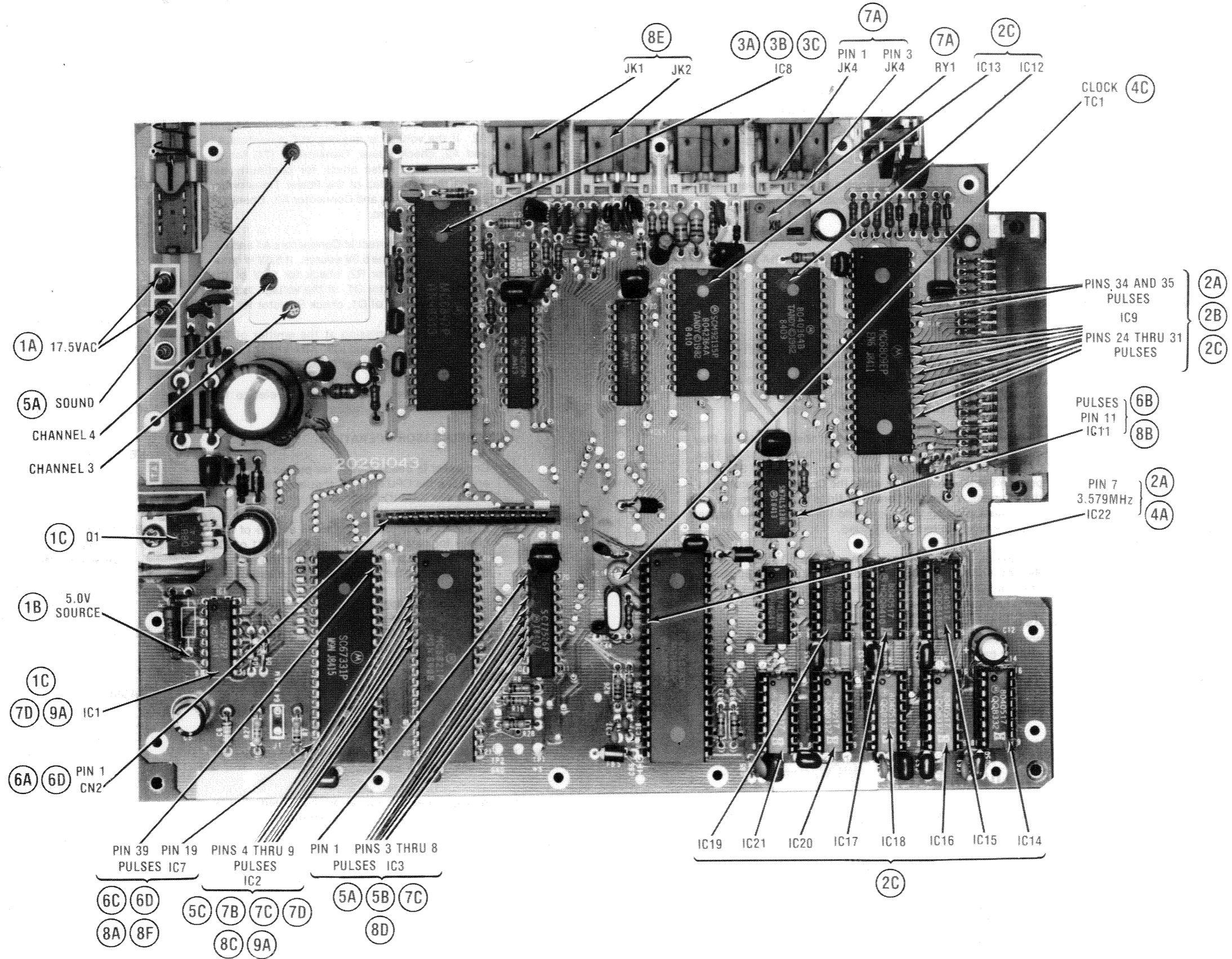
### CASSETTE

- (A) Cassette motor will not run or runs all the time. Check Relay RY1 contacts between pins 1 and 3 of Connector JK4. If the cassette motor will not run, check for continuity between pins 1 and 3 while saving a program on tape or loading a program from tape. If the cassette motor runs all of the time, check for a short (relay contacts stuck).
- (B) If Relay RY1 checks good, check PIA IC (IC2) by substitution.
- (C) Programs cannot be saved on tape. Check IC2 and DAC IC (IC3) by substitution.
- (D) Programs cannot be loaded from tape. Check IC2 and SALT IC (IC1) by substitution.

CC15

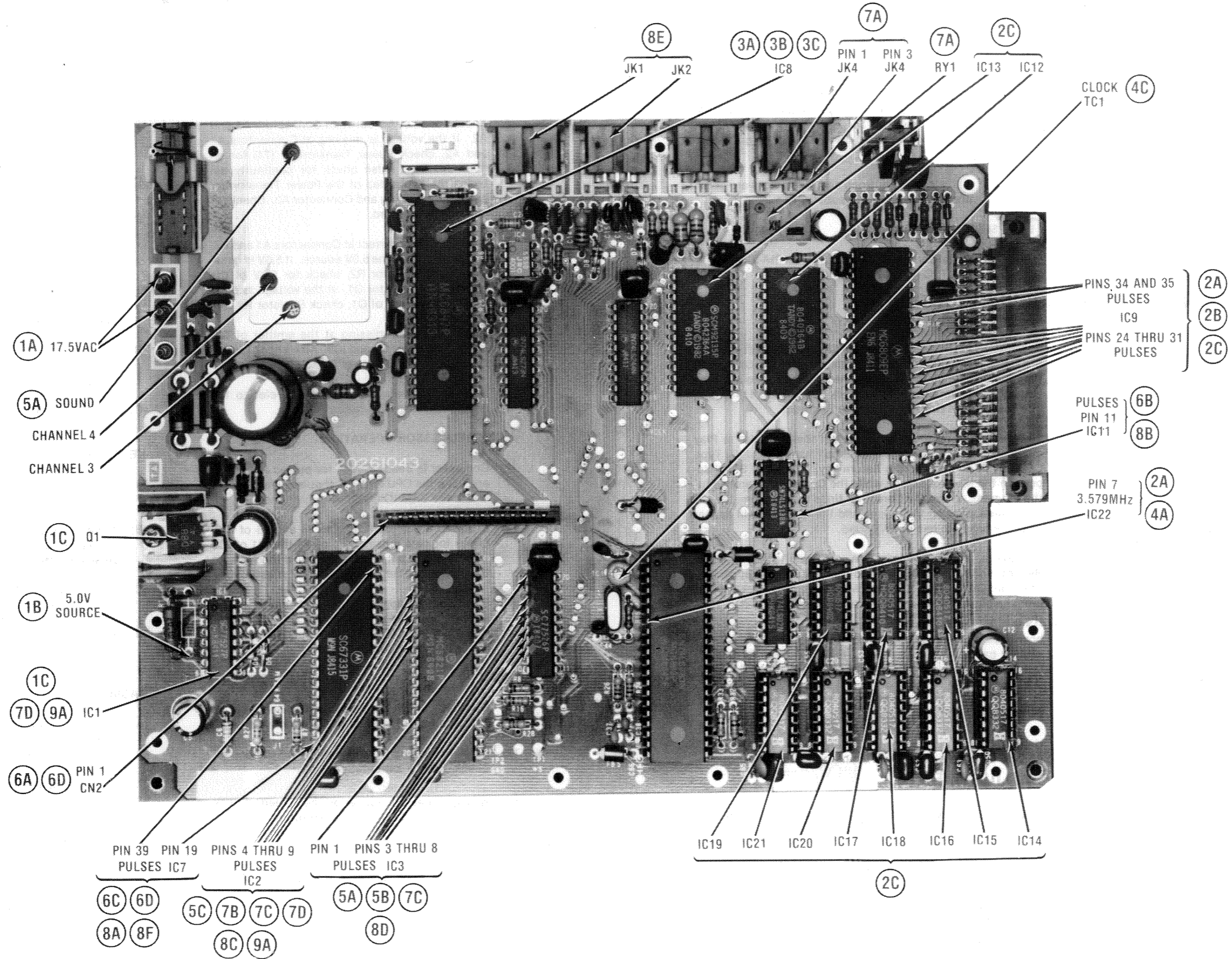
RADIO SHACK COLOR COMPUTER 2  
MODEL 26-3134, 26-3136

PRELIMINARY SERVICE CHECKS (Continued)



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 MODELS 26-3134, 26-3136

PRELIMINARY SERVICE CHECKS (Continued)



RADIO SHACK COLOR COMPUTER 2  
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# PRELIMINARY SERVICE CHECKS (Continued)

## SERVICE CHECKS

### 8 JOYSTICKS

- (A) Joystick does not work. Type in and run the following program:

```
10 FOR X=0 TO 3
20 Y=JOYSTK(X)
30 NEXT X: GOTO 10
```

While the program is running check for pulses at pins 19 and 39 of PIA IC (IC7). If pulses are missing, check IC7 by substitution.

- (B) If pulses are present at pins 19 and 39 of IC7, check for pulses at pin 11 of Decoder IC (IC11). If the pulses are missing at pin 11 of IC11, check IC11 by substitution.

- (C) If pulses are present at pin 11 of IC11, check for pulses at pins 4 thru 9 of PIA IC (IC2). If the pulses are missing, check IC2 by substitution.

- (D) If pulses are present at pins 4 thru 9 of IC2, check DAC IC (IC3) by substitution.

- (E) Joystick buttons do not work. Check the joystick buttons for continuity. Also check joystick Connectors JK1 and JK2 for good connections.

- (F) If the joystick buttons and connectors are good, check PIA IC (IC7) by substitution.

### 9 SERIAL I/O PORT

- (A) Serial port does not work. Check PIA IC (IC2) and SALT IC (IC1) by substitution.

## GENERAL OPERATING INSTRUCTIONS

### POWER UP

The Computer will come up in Basic mode when turned On with no cartridge in the slot. If a cartridge is installed, the Computer will come up running the program in the cartridge.

### RESET

The Computer will be Reset by pressing the Reset button (SW2) located on right rear of cabinet.

### BASIC PROGRAMS

A Basic program in the Computer RAM can be started by typing RUN and then pressing the ENTER key. The program can be stopped by pressing the BREAK key or the Reset button.

### CASSETTE OPERATION

Connect a cassette recorder to the Cassette Socket (JK4) on the Computer using the cable furnished with the Computer. Plug the black plug on the cable into the Earphone jack, the large gray plug into the Auxiliary jack and the small gray plug into the Remote On/Off jack on the Recorder.

To load a program from cassette, put the Recorder in Play mode with the volume turned about half way up. Type CLOAD and then press the Return key. The letter S will appear on the Monitor screen while the Computer searches for the program. When the Computer finds the program, the letter F will appear on the screen and the word OK will appear after the program has been loaded.

To save a program to cassette, put the Recorder in the Record mode. Type CSAVE and then press the Return key. The word OK will appear on the Monitor screen after the program has been saved and the Recorder will shut Off.

## DISASSEMBLY INSTRUCTIONS

### CABINET REMOVAL

Remove six Phillips screws from cabinet bottom. Turn Computer right side up and remove cover.

### MAIN BOARD REMOVAL

Carefully disconnect keyboard cable from Main board and remove Keyboard. Unplug Power Transformer from Main

board. Remove six Phillips screws holding Main board to cabinet base and remove board. Remove shield from bottom of Main board by removing 17 clips that attach it to the board.

### POWER TRANSFORMER REMOVAL

Unplug Power Transformer from Main board. Remove two Phillips screws holding Power Transformer to cabinet base.

## MISCELLANEOUS ADJUSTMENTS

### CLOCK ADJUST

Connect the input of a frequency counter to pin 7 of SAM IC (IC22). Adjust the Clock Trimmer (TC1) for a frequency of 3.579545MHz.

### RF MODULATOR

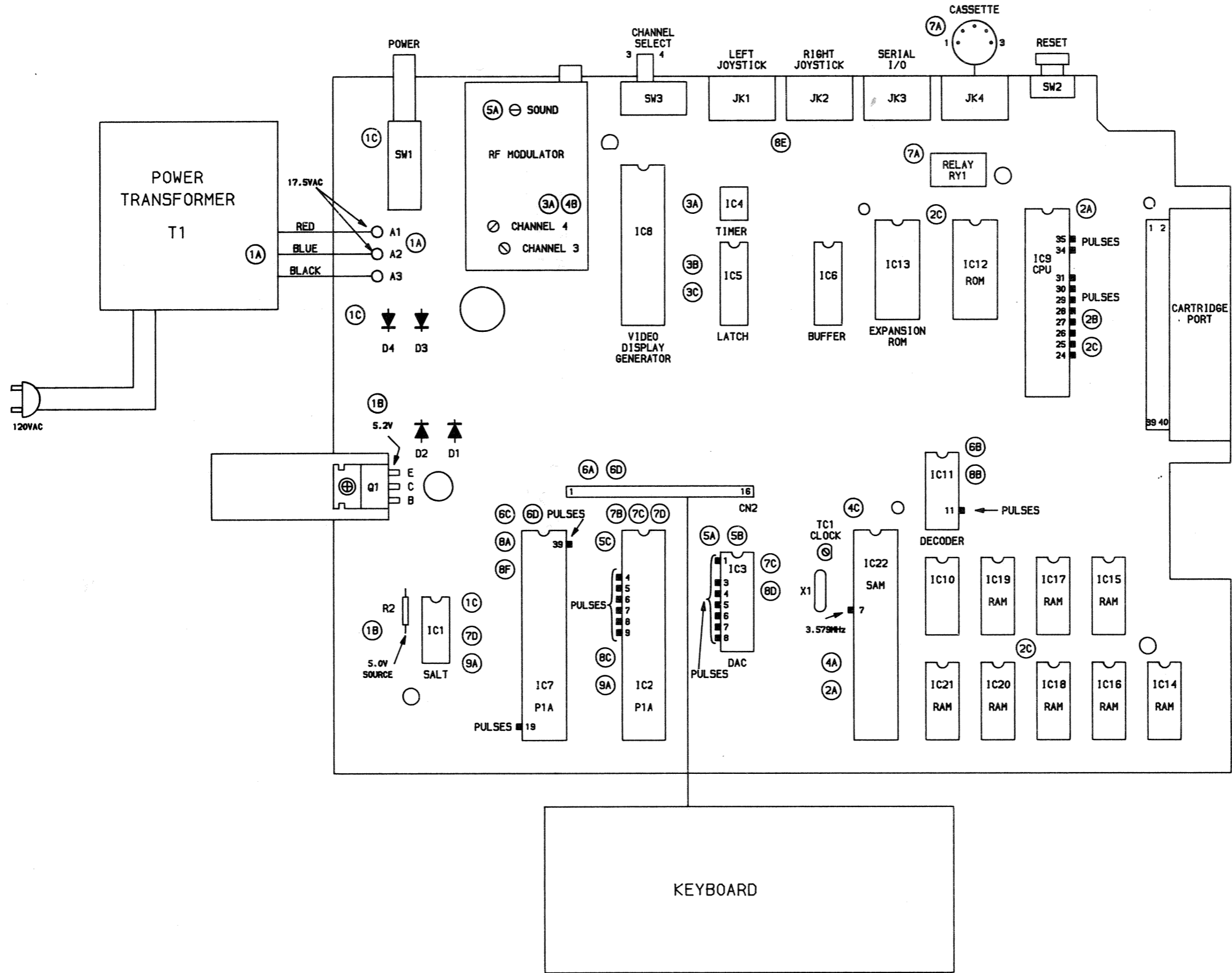
Connect Computer to a TV Monitor. Set the TV and the

Channel Select Switch (SW3) to Channel 4. Type in and run the following program:

```
10 SOUND 200,200: GOTO10
```

Adjust the Channel 4 Coil for best picture and sound. Adjust the sound coil for best sound with minimum noise. Set the TV and the Channel Select Switch SW3 to Channel 3. Adjust the Channel 3 Trimmer for best picture and sound.

PRELIMINARY SERVICE CHECKS (Continued)



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# PRELIMINARY SERVICE CHECKS (Continued)

## PREVENTATIVE MAINTENANCE

### ENVIRONMENT

Computers perform best in a clean, cool area that is below 80 degrees Fahrenheit and free of dust and smoke particles. Even though home Computers are not affected by cigarette smoke as much as commercial Computers are affected, it is better to maintain a smoke-free area around the Computer. Do not block cabinet vents of any of the Computer system; Computer, Monitor, Printer, or other power devices.

### ELECTRICAL POWER

Variations in the line voltage can affect the Computer. Try to avoid these fluctuations by using an AC receptacle that is on a power line not used by appliances or other heavy current demand devices. A power-surge protector, power-line conditioner, or non-interruptible power supply may be needed to cure the problem. **Do not** switch power On and Off frequently.

### KEYBOARD

Liquids spilled into the Keyboard can ruin it. Immediately after a spill occurs, disconnect the Computer power plug from AC power outlet. Then, if circuitry or contacts are contaminated, disassemble the Keyboard and carefully rinse the Keyboard printed circuit board with distilled water and let it dry. Use a cotton swab to clean between the keys. Use a non-abrasive contact cleaner and lint-free wipers on accessible connectors and contacts.

### DISK DRIVES

Clean the read/write heads of the Disk Drives about once a month or after 100 hours usage. Use only an approved head cleaning kit.

Handle carefully to preserve proper disk head alignment. A sudden bump or jolt to the Disk Drives can knock the disk head out of alignment. If the disk drive must be transported, place an old disk in slot and close door during transport.

Store disks in their protective covers and never touch the disk surface. Observe the disk handling precautions usually found on the back of disk protective covers.

### PRINTERS

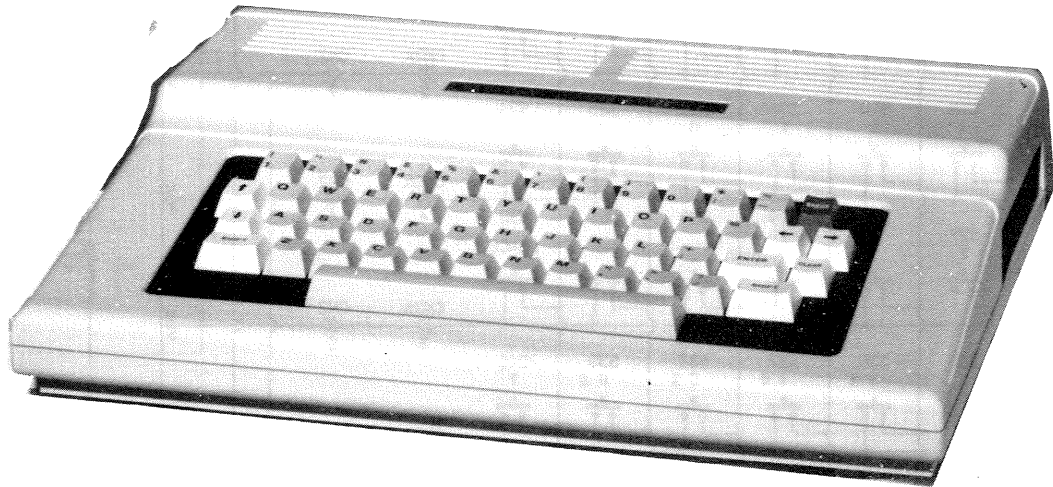
Carefully vacuum the Printer regularly. Wipe surface areas clean using a light all-purpose cleaner. Do not oil the machine. The oil will collect abrasive grit and dust. The dust will act as a blanket. This can cause components to overheat and fail.

### STATIC ELECTRICITY

Static electricity discharge can affect the Computer. In order to minimize the possibility, use anti-static mats, sprays, tools and materials, and maintain good humidity in the Computer environment.

### MONITOR

Use an isolation transformer with any Monitor that does not come as part of the system since some Monitors use a HOT chassis (chassis connected to one side of the AC line). The face of the Monitor should never be left on for long periods of time at high brightness level except when pattern is being changed periodically. Use caution when cleaning anti-glare screens, to preserve the glare-reduction feature.

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ENCLOSED

**SAFETY PRECAUTIONS**

See page 18.

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**SAMS**™**Howard W. Sams & Co.**

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The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed.

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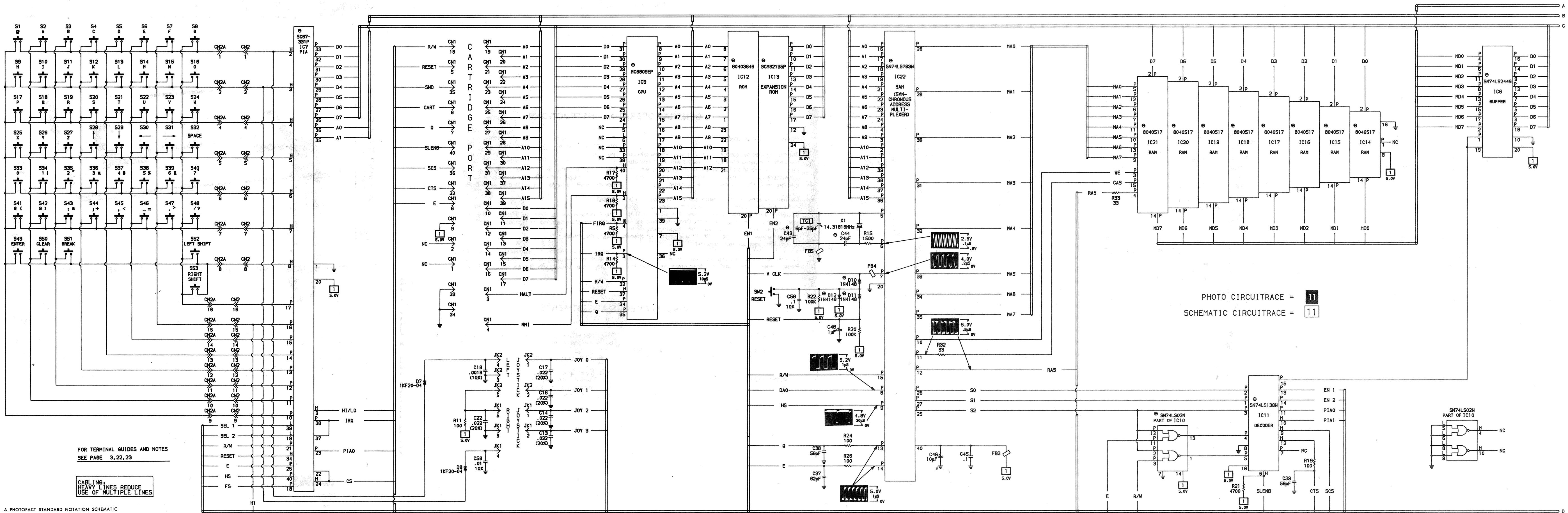
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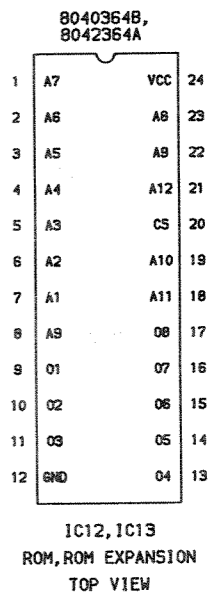
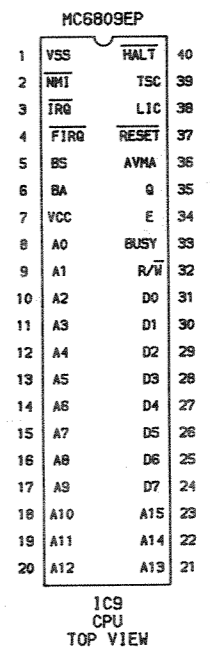
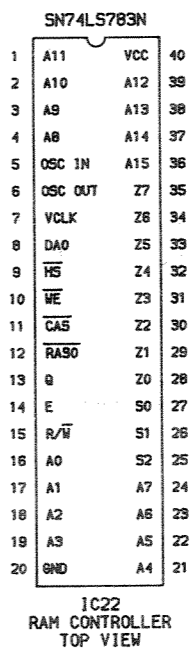
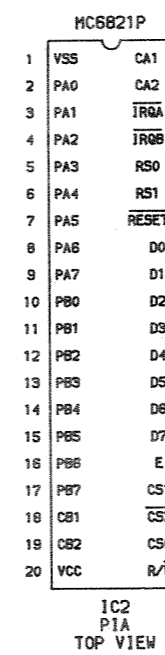
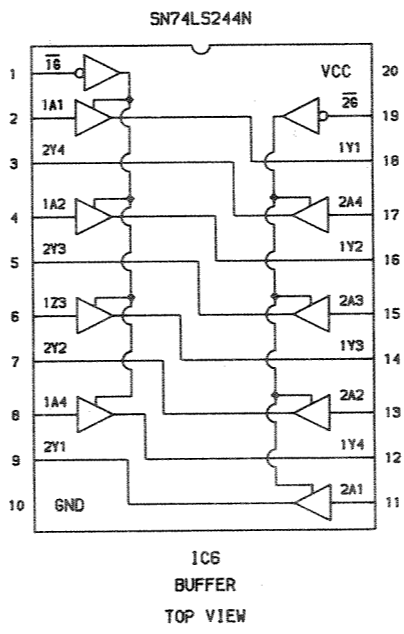
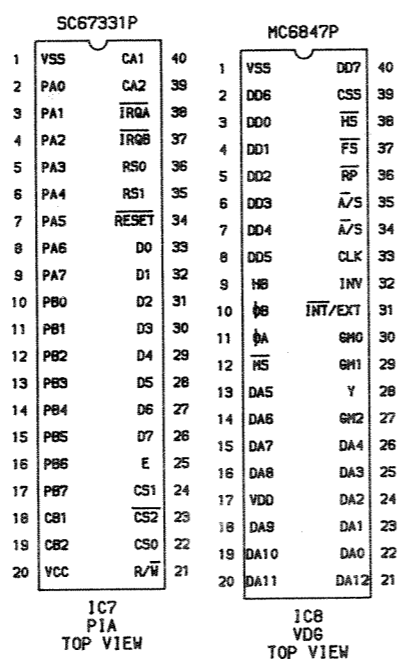
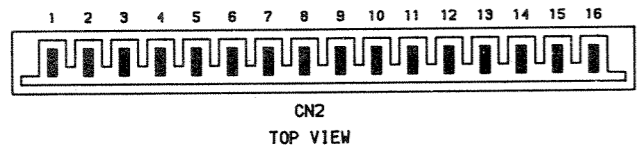
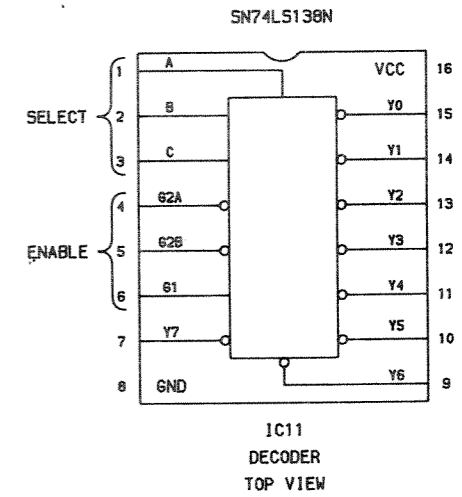
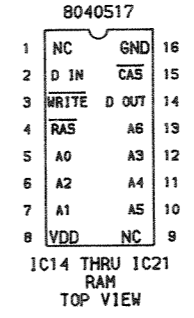
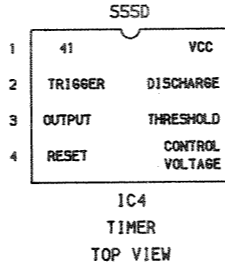
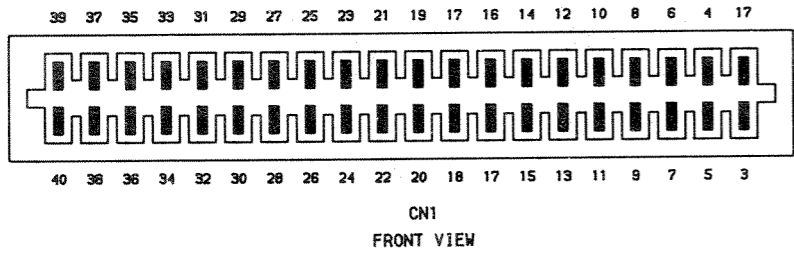
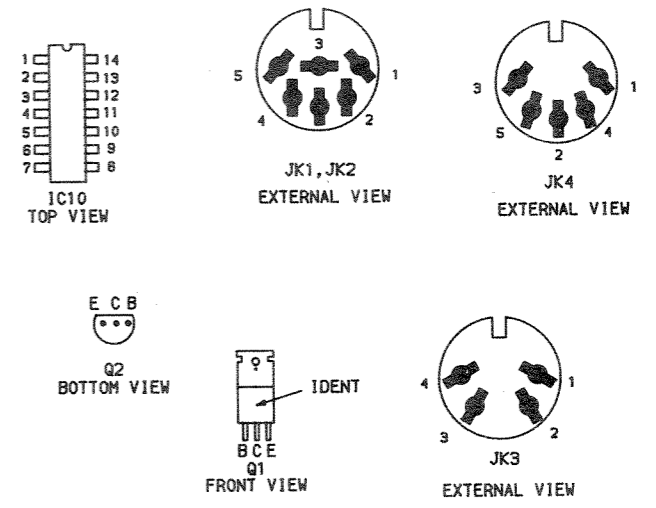
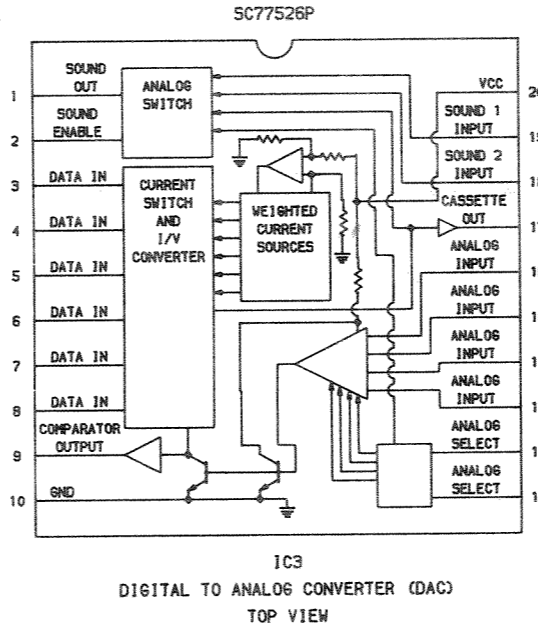
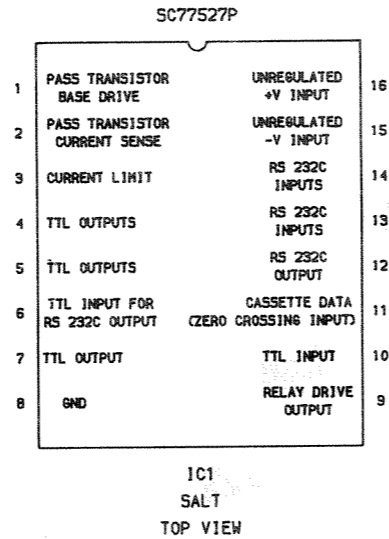
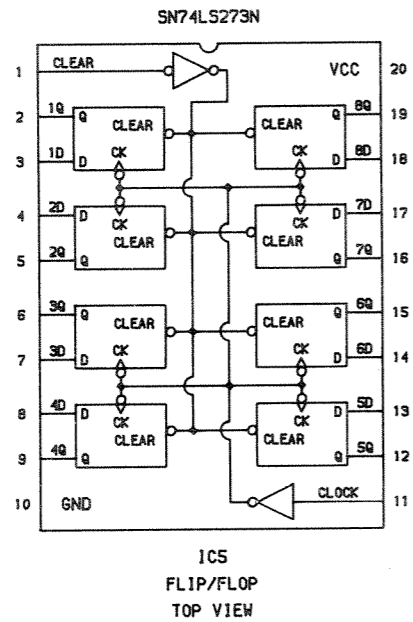


FOR TERMINAL GUIDES AND NOTES  
SEE PAGE 3,22,23

CABLING HEAVY LINES REDUCE  
USE OF MULTIPLE LINES

PHOTO CIRCUITRACE = **11**  
SCHEMATIC CIRCUITRACE = **11**

# IC PINOUTS & TERMINAL GUIDES



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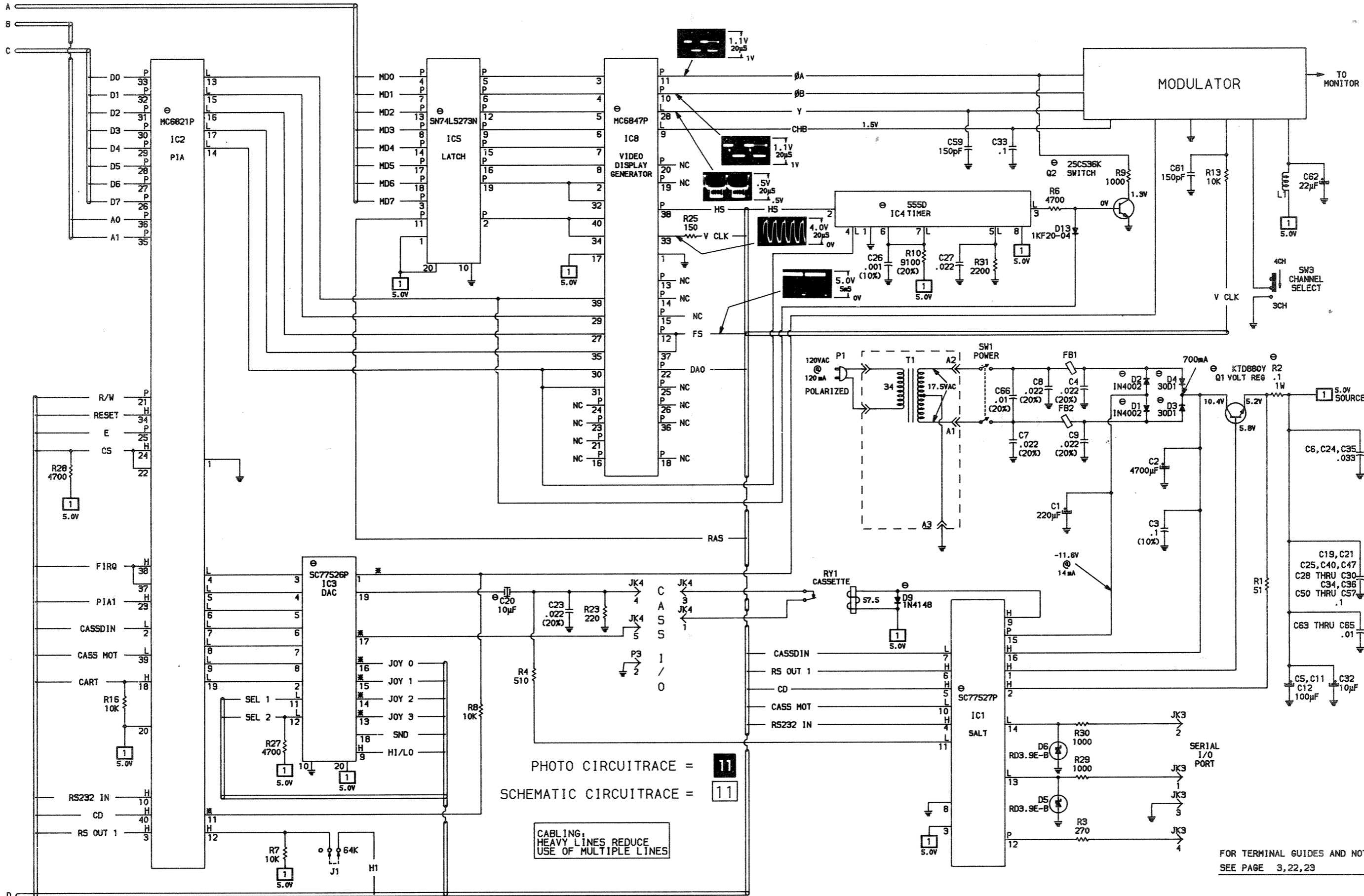


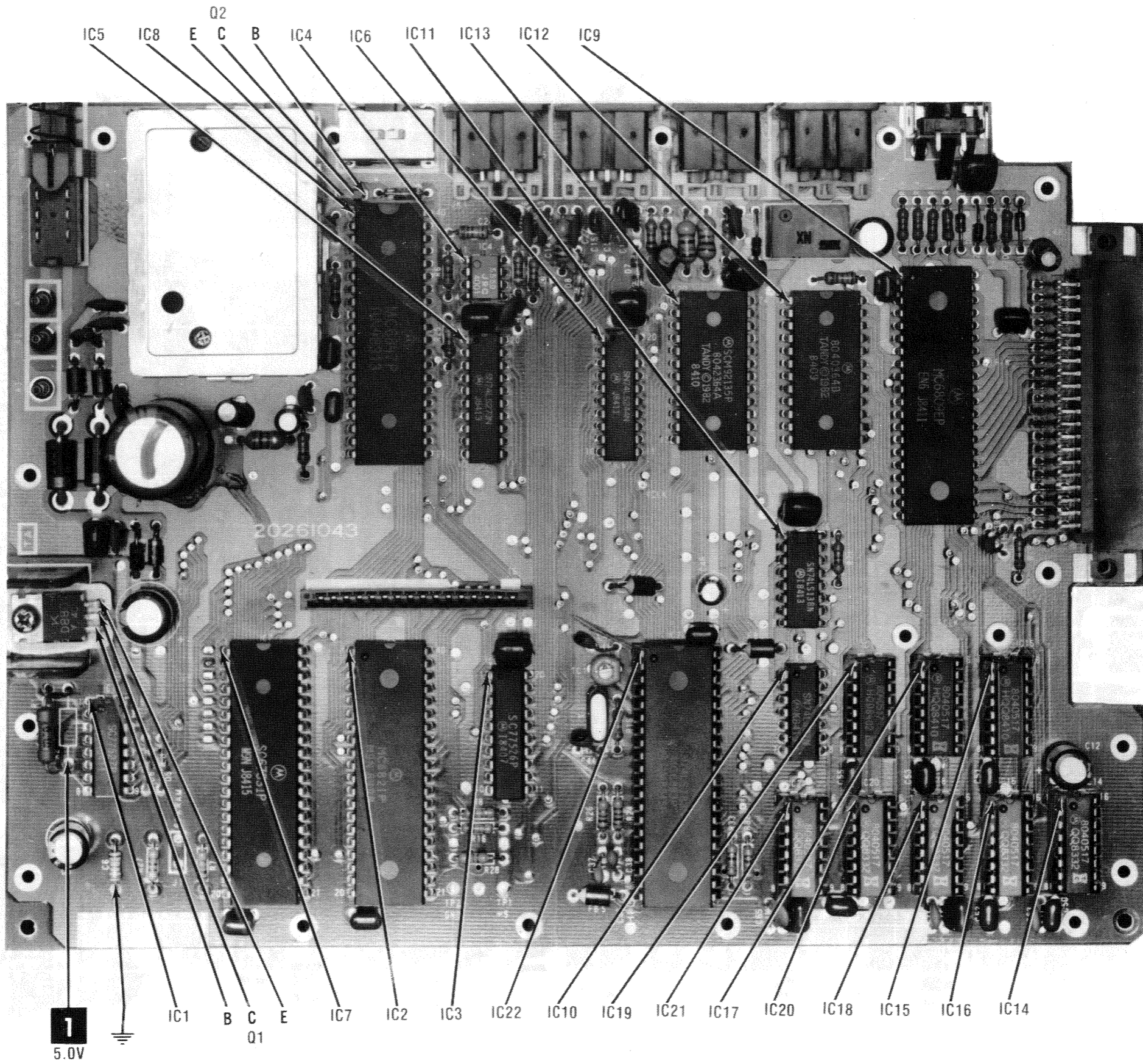
PHOTO CIRCUITRACE = 11  
 SCHEMATIC CIRCUITRACE = 11

CABLING,  
 HEAVY LINES REDUCE  
 USE OF MULTIPLE LINES

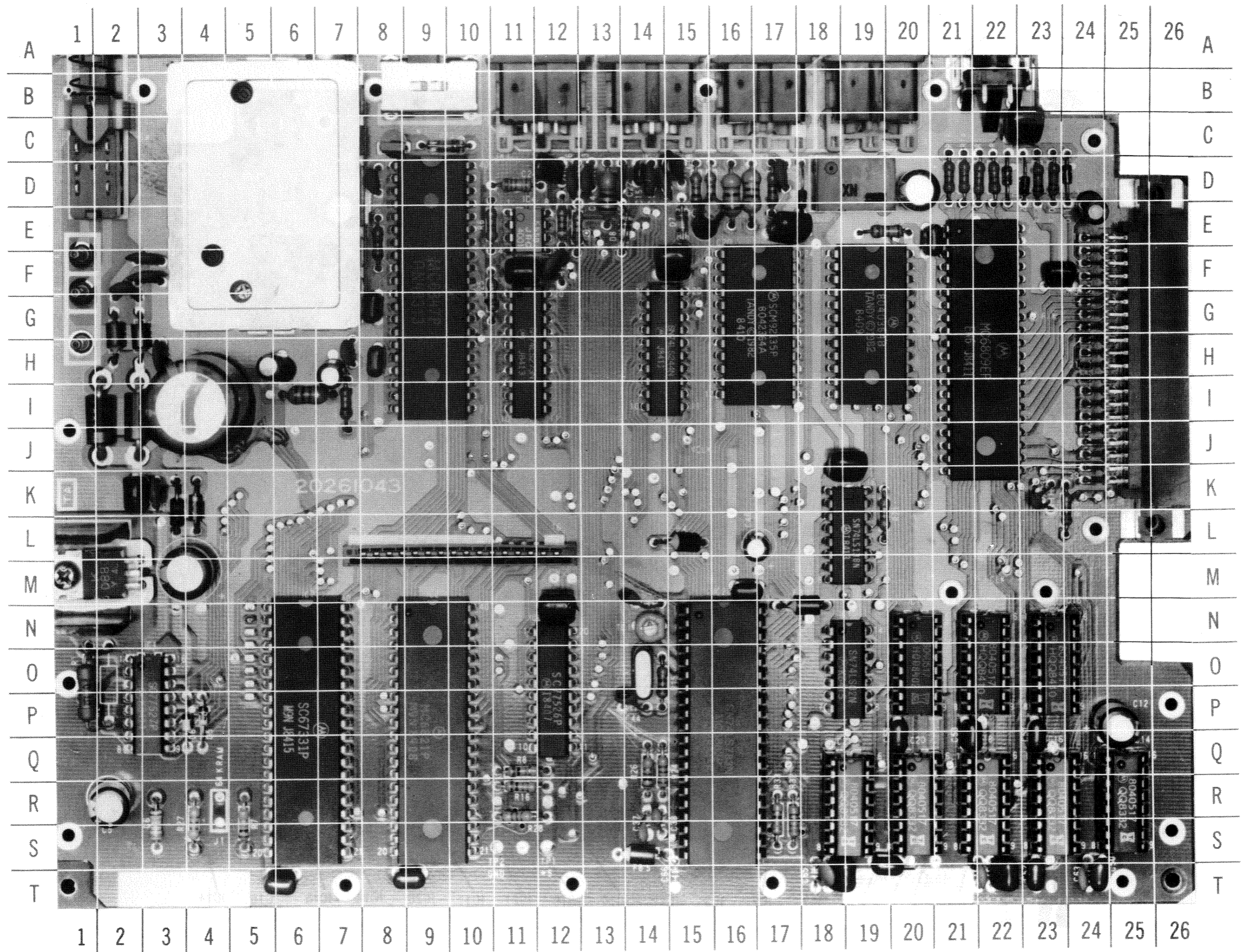
FOR TERMINAL GUIDES AND NOTES  
 SEE PAGE 3, 22, 23

A PHOTOFACIT STANDARD NOTATION SCHEMATIC

WITH **CIRCUITRACE**



NOTE: ARROWS ON IC'S INDICATE PIN 1 UNLESS NOTED.



RADIO SHACK COLOR COMPUTER 2  
 MODEL 26-3134, 26-3136

# GridTrace LOCATION GUIDE

A1	F-1	D10	D-22	TC1	N-14
A2	F-1	D11	D-24	X1	O-14
A3	H-1	D12	D-23		
C1	M-4	D13	C-10		
C2	I-4	FB1	G-2		
C3	K-2	FB2	G-3		
C4	K-3	FB3	N-18		
C5	R-2	FB4	L-15		
C6	R-3	FB5	S-14		
C7	F-3	IC1	O-3		
C8	F-3	IC2	O-19		
C9	H-3	IC3	O-12		
C11	D-20	IC4	E-11		
C12	P-25	IC5	G-11		
C13	D-12	IC6	G-14		
C14	D-13	IC7	O-6		
C15	D-14	IC8	E-9		
C16	D-14	IC9	G-22		
C17	D-14	IC10	O-19		
C18	D-15	IC11	L-19		
C19	N-12	IC12	G-19		
C20	E-15	IC13	G-17		
C21	F-11	IC14	R-25		
C22	D-13	IC15	O-23		
C23	D-17	IC16	R-23		
C24	D-11	IC17	O-22		
C25	F-15	IC18	R-22		
C26	D-12	IC19	O-20		
C27	F-12	IC20	R-20		
C28	T-9	IC21	R-19		
C29	T-6	IC22	O-16		
C30	H-8	JK1	B-12		
C32	H-6	JK2	B-14		
C33	G-8	JK3	B-17		
C34	K-19	JK4	B-19		
C35	E-20	L1	I-6		
C36	E-17	Q1	M-2		
C37	S-14	Q2	C-8		
C38	R-14	R1	O-1		
C39	K-23	R2	O-1		
C40	F-24	R3	D-16		
C43	M-14	R4	D-17		
C44	P-14	R5	D-22		
C45	M-16	R6	E-11		
C46	L-16	R7	R-5		
C47	F-21	R8	Q-11		
C48	E-24	R9	E-8		
C50	T-24	R10	E-12		
C51	Q-23	R11	D-13		
C52	T-23	R13	I-7		
C53	Q-21	R14	D-21		
C54	T-22	R15	O-14		
C55	Q-20	R16	R-11		
C56	T-19	R17	D-22		
C57	T-18	R18	D-21		
C58	C-23	R19	K-24		
C59	D-8	R20	D-23		
C61	H-7	R21	L-19		
C62	H-7	R22	D-23		
C63	T-24	R23	D-16		
C64	T-22	R24	Q-14		
C65	T-18	R25	G-11		
C66	F-2	R26	Q-14		
CN1	H-26	R27	R-4		
CN2	L-10	R28	R-11		
D1	K-4	R29	D-15		
D2	K-3	R30	D-16		
D3	I-2	R31	E-12		
D4	I-2	R32	R-17		
D5	P-4	R33	R-17		
D6	P-4	RY1	D-19		
D7	E-15	SW1	D-1		
D8	E-14	SW2	B-22		
D9	D-18	SW3	B-9		

# CC15

RADIO SHACK COLOR COMPUTER 2  
MODEL 26-3134, 26-3136



## TEST EQUIPMENT

Test Equipment listed by Manufacturer illustrates typical or equivalent equipment used by SAMS' Engineers to obtain measurements and is compatible with most types used by field service technicians.

### TEST EQUIPMENT (COMPUTERFACTS)

Equipment Name	B & K Precision Equipment No.	Sencore Equipment No.	Simpson Equipment No.
OSCILLOSCOPE	1570A,1590A,1596	SC61	454
LOGIC PROBE	DP51		
LOGIC PULSER	DP101		
DIGITAL VOM	2830	DVM37,DVM56,SC61	463,467,470,474,467E
ANALOG VOM	277		260-7,160,165, 260-6XL,260-7P, 260-6XLP
ISOLATION TRANSFORMER	TR110,1604,1653,1655	PR57	
FREQUENCY COUNTER	1803,1805	FC71,SC61	710
COLOR BAR GENERATOR	1211A,1248,1251,1260	CG25,VA62	431
RGB GENERATOR	1260		
FUNCTION GENERATOR	3020		420A,420D
HI-VOLTAGE PROBE VOM/DMM Accessory probes	HV-44	HP200	248 00168,00411,00749
TEMPERATURE PROBE	TP-28		IR-10,00760,00758; 383,389,388
CRT ANALYZER	467,470	CR70	

### COMPUTER DEAD

Disconnect all peripheral equipment from Computer except the Monitor. Turn Computer On and check for proper operation. If Computer operates properly, turn Computer Off and reconnect peripherals one at a time. Recheck the operation of Computer each time a peripheral is connected until the peripheral causing the problem is found.

If Computer does not operate properly with peripherals disconnected, check for 5.0V at pin 3 of SALT IC (IC1). If the voltage is missing, refer to the "Power Supply" section of this Troubleshooting guide. If the power supply voltage is correct, check for pulses on Data lines (pins 24 thru 31) and Address lines (pins 8 thru 23) of CPU IC (IC9). If pulses are missing at any of the pins, refer to the "Microprocessor Operation" section of this Troubleshooting guide. If pulses are present at all of the pins, refer to the "Video" section.

### POWER SUPPLY

Computer is dead. Check for 5.0V at pin 3 of SALT IC (IC1). If the voltage at pin 3 of IC1 is less than 4.75V, measure voltage at collector of Voltage Regulator Transistor (Q1). If Q1 collector voltage is at least 7.5V, measure the voltage drop across Resistor R2. If the voltage across R2 is 0.2V or greater, the power supply may be in the foldback (shut-down) mode. Check Capacitors C5, C6 and C11 for possible shorts. Also check for other shorted components that may be overloading the power supply. If the voltage across R2 is approximately 1.0V, check Resistor R2 for an open condition. If the voltage across R2 is less than 0.2V, check Transistor Q1 and IC1.

If voltage at the collector of Q1 is less than 7.5V, check for approximately 17.5VAC between the anodes of D3 and D4. If the voltage is missing, check Power Switch (SW1). Also check Power Transformer (T1) for a possible open winding. If the 17.5VAC is present, check Diodes D3 and D4. Also check Capacitors C2 and C3 and the printed circuit board for possible shorts.

## TROUBLESHOOTING

If 5.0V is present at pin 3 of IC1, check for approximately - 10V at pin 15 of IC1. If - 10V is missing, check Diodes D1 and D2 and Capacitor C1. If the voltages are normal at pins 3 and 15 of IC1, use a scope to check for AC ripple at pin 3 of IC1. The AC ripple should be less than 0.4V peak-to-peak. If excessive 60Hz ripple is present, check Diodes D3 and D4. If excessive 120Hz ripple is present, check Capacitor C2. If excessive 150-200Hz ripple is present, check Capacitors C5 and C11 and IC1.

### MICROPROCESSOR OPERATION

Computer is dead, power supply checks good. Use a scope to check the data lines (pins 24 thru 31 of IC9) for activity. If there is no activity on the data lines, check the operation of the reset circuit by observing the logic reading at pin 37 of the CPU IC (IC9). Pin 37 of the CPU should be Low when the Computer is turned On and then immediately go High. The reading on pin 37 should also be Low whenever the Reset Switch (SW2) is pressed. If the logic reading is not correct at pin 37 of the CPU when the Computer is turned On, check Capacitor C48, Diodes D10, D11 and D12 and Resistor R20. If the Power On reset works properly but the Reset Switch (SW2) does not work, check Switch SW2, Capacitor C58, Resistor R22 and Diodes D11 and D12.

If the reset circuit is working properly, check for the 894.886KHz E and Q clock pulses at pins 34 and 35 of CPU IC9. If the clock pulses are missing, check the waveform at pin 6 of the SAM (Synchronous Address Multiplexer) IC22. If the waveform is missing at pin 6, check Crystal X1, Capacitors C43 and C44, Resistor R15 and Trimmer TC1. If the waveform is present at pin 6 of IC22, check for the Q and E clock pulses at pins 13 and 14 of IC22. If the clock pulses are present at pins 13 and 14 of IC22, check IC22 and Capacitors C37 and C38.

## TROUBLESHOOTING (Continued)

If the E and Q clock pulses are present at pins 34 and 35 of CPU IC9, check for a logic High at pins 2, 3, 4 and 40 of IC9. In addition, pin 3 (IRQ line) should have a short, low-going, 60-Hz pulse on it. If the logic reading is not correct at any pin, check the ICs and other components connected to the pin having an incorrect reading. Also check the CPU IC9.

If any of the address or data lines are not generating valid TTL logic levels, check the CPU IC9. If the CPU is good, check the other devices on the address or the data bus for possible shorts. If the address lines are functioning normally, there may be a processing problem due to a defective device enable line. Check the ROM chip enable line (pin 20 of IC12) and the PIA chip enable line (pin 23 of IC7) for activity. If signals are absent on either of these lines, check the SAM IC (IC22) by substitution. The SAM can also be checked by observing lines 50 through 52 (pins 25, 26 and 27) for activity with a scope. If the SAM is good, use a scope to check Decoder IC (IC11) and NAND gate IC10 for proper inputs and outputs.

If pulses appear on the data lines (pins 24 through 31 of IC9) when the Computer is turned On and then suddenly stop, check the RAM ICs (IC14 thru IC21), ROM IC (IC12) and Expansion ROM IC (IC13).

### VIDEO

No video. Check the waveform at pin 28 of the Video Display Generator IC (IC8). If the waveform is present, check for 5.0V at the junction of L1 and C62. If the voltage is missing, check Choke L1 for an open condition. If L1 is good, refer to the "Power Supply" section of this Troubleshooting Guide. If the waveform is missing at pin 28 of IC8, check IC8. Also check Capacitor C59 for possible short to ground.

If dots are missing from the alphanumeric characters, check Video Display Generator IC (IC8). If the wrong characters appear on the Monitor screen, check for pulses at pins 2, 5, 6, 9, 12, 15, 16 and 19 of Latch IC5. If pulses are missing at any of the pins, check IC5. If pulses are present at IC5, check IC8.

### VIDEO GRAPHICS

One or more of the graphics modes do not work. Type in and run the following program:

```
10 FOR X=0 TO 4
20 PMODE X: SCREEN X
30 NEXT X: GOTO 10
```

This program continually switches between the five graphics modes that are available. While the program is running, check for pulses at pins 27, 29, 30 and 35 of Video Display Generator IC (IC8). If pulses are missing, check the PIA (IC2) and the SAM (IC22). If the pulses are present, check IC22.

### COLOR

No color. Check the 3.579MHz waveform at the junction of C61 and R13. If the waveform is missing or has an amplitude of less than 100mV peak-to-peak, check Resistor R13 and Capacitor C61. Also check for the 3.579MHz clock signal at pin 33 of the Video Display Generator (IC8). The

clock signal should have an amplitude of approximately 4.0V peak-to-peak. If the clock signal is missing at pin 33 of IC8, check SAM IC (IC22).

If the 3.579MHz waveform is present at the junction of C61 and R13, check the Phase A and Phase B waveforms at pins 10 and 11 of the Video Display Generator (IC8). If either waveform is missing, check IC8. Also check the CH B output at pin 9 of IC8. The CH B output should be a steady DC value in the range of 0.5V to 2.0V. If the CH B output is missing, check IC8. If IC8 is good, check for a possible bad modulator that may be loading the chroma signals from IC8. If color is missing in the high-resolution mode, check Timer IC (IC4) and Switch Transistor (Q2).

Colors are not correct. Check the Phase A and Phase B signals at pins 10 and 11 of IC8. If either signal is missing or incorrect, check IC8. Also check Timer IC4. Transistor Q2 and associated components if the Phase A signal is incorrect. Incorrect colors may also be caused by a defective modulator. If the color on the left side of the screen is a different shade than the rest of the screen, check Timer IC4. Also check Capacitor C26 and Resistor R10.

### SOUND

No sound. Type in and run the following Basic program.

```
10 SOUND 200,200: GOTO 10
```

This program produces a continuous sound from the Monitor speaker. While the program is running, check for the waveform in Figure 1 at pin 1 of DAC IC (IC3). If the waveform is missing, check for pulses at pins 3 thru 8 of IC3. If pulses are present at pins 3 thru 8 of IC3, check IC3. If pulses are missing at pins 3 thru 8 of IC3, check PIA IC (IC2). If the output waveform is present at pin 1 of IC3, check the modulator. Also check for continuity between pin 1 of IC3 and the sound input of the modulator.

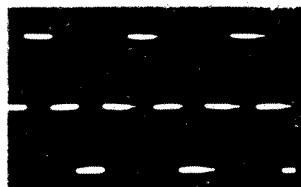


Figure 1

### KEYBOARD

Keyboard is dead. Check the Keyboard Connector (CN2) for good connections. Also check for a broken flex cable between the Keyboard and the Main board. If the Keyboard cable and Connector CN2 check good, check for pulses at pin 11 of Decoder IC (IC11). If pulses are missing, check IC11. If pulses are present at pin 11 of IC11, check PIA IC (IC7). Also check Capacitors C15 and C18 on pin 4 of the joystick Connectors for possible shorts.

## TROUBLESHOOTING (Continued)

One key is erratic or dead. Replace the Keyboard. If a group of keys do not work, check the Keyboard and Keyboard cable. Also check Connector CN2. The Keyboard and Keyboard cable can be checked by referring to the Keyboard matrix on the schematic diagram. Select the row and column lines for an inoperative key and check for continuity between the two lines at Connector CN2 while pressing the key. If a group of keys are inoperative, check the row or common line common to the defective keys. If Keyboard and cable are defective, replace the keyboard. If the Keyboard and cable and Connector CN2 are good, check PIA IC (IC7).

Wrong character appears on screen when Key is pressed. Check the Keyboard for possible shorts. If the Keyboard is good, check the Main board for a possible short.

### SERIAL I/O PORT

Output missing at serial I/O port (Connector JK3). Disconnect any equipment connected to the serial I/O port. Type in and run the following Basic program.

```
10 POKE 65312,2
20 POKE 65312,0
30 GOTO 10
```

Check for an approximately 40Hz square wave having a minimum amplitude of 6 volts peak-to-peak at pin 4 of Connector JK3. If the 40Hz square wave is missing at pin 4 of JK3, check for the signal at pin 12 of SALT IC (IC1). If the square wave is present at pin 12 of IC1, check Resistor R3 and Connector JK3. If the square wave is missing at pin 12 of IC1, check IC1. Also check PIA IC (IC2). If the negative portion of the square wave is missing at pin 4 of JK3, check for approximately -10V at pin 15 of IC1. If the negative voltage is missing at pin 15 of IC1, refer to the "Power Supply" section of this Troubleshooting Guide. If the negative voltage is present at pin 15 of IC1 and the negative portion of the square wave is missing, replace IC1.

Serial input does not work. Ground pin 1 of Connector JK3 and check for a logic High at pin 5 of IC1. Next, connect pin 1 of JK3 to the +5 volt source and check for a logic Low at pin 5 of IC1. Pin 4 of IC1 should go logic High when pin 2 of JK3 is connected to ground and pin 4 of IC1 should go logic Low when pin 2 of JK3 is connected to the +5 volt source. If any of the above conditions are not met, check IC1. Also check PIA IC (IC2).

### CASSETTE

Cassette motor does not turn Off. Check for 0V at pin 39 of PIA IC (IC2). If the voltage at pin 39 is not correct, check IC2. If the voltage is correct at pin 39 of IC2, check for 5.0V at pin 9 of SALT IC (IC1). If the voltage is not correct at pin 9 of IC1, check IC1. If the voltage is correct at pin 9 of IC1, check Cassette Relay (RY1) for possible sticking contacts.

Cassette motor will not turn On. Type in and run the following Basic program. This program turns On the cassette motor.

```
10 POKE 65313,60
```

After running the program, check for 2.8V at PIA IC (IC2). If the voltage is not correct at pin 39 of IC2, check IC2 by substitution. If the voltage is correct at pin 39 of IC2, check for .1V at pin 9 of SALT IC (IC1). If the voltage is not correct at pin 9 of IC1, check IC1, Relay RY1 and Diode D9.

Programs cannot be saved to cassette. Type in and run the following basic program. This program continuously saves itself to the cassette.

```
10 CSAVE: GOTO 10
```

While the program is running, use a scope to check for pulses at pin 17 of DAC IC (IC3). If pulses are present, check Connector JK4. If pulses are missing at pin 17 of IC3, check for pulses at pins 5 thru 9 of PIA IC (IC2). If any pulses are missing, check IC2. If pulses are present at pins 5 thru 9 of IC2, replace IC3.

Programs cannot be loaded from cassette. Inject a 4V peak-to-peak 1kHz square wave at pin 4 of Cassette Connector JK4. Check for an approximately 1V peak-to-peak square wave at pin 11 of SALT IC (IC1). If the waveform is missing, check Connector JK4, Resistors R4 and R23, and Capacitor C23. If the waveform is present at pin 11 of IC1, check for an approximately 5V peak-to-peak square wave at pin 2 of PIA IC (IC2). If the waveform is missing at pin 2 of IC2, check IC3. If the waveform is present at pin 2 of IC2, check IC2.

### JOYSTICK

Joysticks do not work. Type in and run the following Basic program to check the operation of the joysticks.

```
10 FOR X = 0 TO 3
20 N(X) = JOYSTK(X)
30 NEXT X
40 PRINT "RIGHT JOYSTICK HORIZONTAL = "; N(0)
50 PRINT "RIGHT JOYSTICK VERTICAL = "; N(1)
60 PRINT "LEFT JOYSTICK HORIZONTAL = "; N(2)
70 PRINT "LEFT JOYSTICK VERTICAL = "; N(3)
80 PRINT "RIGHT BUTTON = "; (PEEK(65280) AND 1)
90 PRINT "LEFT BUTTON = "; (PEEK(65280) AND 2)
100 FOR T = 1 TO 100: NEXT T:CLS: GOTO 10
```

The numbers that appear on the Monitor screen for the joystick horizontal and vertical positions should vary from 0 to 63 while the joystick is being operated. The numbers that appear for the joystick buttons should change to the number 0 whenever the button is pressed.

Check joystick Connectors JK1 and JK2 for good connections. While running the above program, check for pulses at pins 19 and 39 of PIA IC (IC7). If pulses are missing at pin 19 or pin 39 of IC7, check IC7. If pulses are present at pins 19 and 39 of IC7, check for pulses at pin 10 of Decoder IC (IC11). If pulses are missing at pin 10 of IC11, check IC11. If pulses are present at pin 10 of IC11, check for pulses at pins 4 thru 9 of PIA IC (IC2). If pulses are missing at pins 4 thru 9 of IC2, check IC2. If pulses are present at pins 4 thru 9 of IC2, check IC3. Also check Capacitors C13, C14, C16 and C17 at the joystick connectors.

Joystick buttons do not work. If the right joystick button does not work, check for a logic Low at pin 3 of PIA IC (IC7) while pressing the right joystick pushbutton. If the logic reading is correct, check IC7. If the logic reading is not correct at pin 3 of IC7, check Connector JK1 for good connections and check the right joystick button for continuity. If the left joystick pushbutton does not work, check for a logic Low at pin 2 of IC7 while pressing the left joystick button. If the reading is correct, check IC7. If the reading is not correct at pin 2 of IC7, check Connector JK2 for good connections and check the left joystick button for continuity.

# PARTS LIST AND DESCRIPTION

When ordering parts, state Model, Part Number, and Description

## SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFGR. PART No.	REPLACEMENT DATA					ZENITH PART No.
			NOTES	NTE PART No.	ECG PART No.	RCA PART No.	WORKMAN PART No.	
D1,2	1N4002 SRIK-2 10E1 30D1 GP30B G3B	DX0206		NTE116 NTE116 NTE116 NTE156 NTE5801 NTE5801	ECG116 ECG116 ECG116 ECG156 ECG5801 ECG5801	SK3311 SK3313/116 SK3313/116 SK3031/156 SK9004/5801 SK9004/5801	WEP155 WEP158/116 WEP158/116 WEP4008/5809 WEP4001/5801 WEP4001/5801	212-76-02 212-76-02 212-76-02 212-Z9000 903-334 903-334
D5,6	RD3-9E-B GZA3-9(Y) UZ-3-9 RD3-9EN RD3-9EL	DX2323		NTE5007A NTE5007A NTE5007A NTE5007A NTE5007A	ECG5007A ECG5007A ECG5007A ECG5007A ECG5007A	SK3A9/5007A SK3A9/5007A SK3A9/5007A SK3A9/5007A SK3A9/5007A	WEP1407/5007 WEP1407/5007 WEP1407/5007 WEP1407/5007 WEP1407/5007	
D7,8 D9 thru D12 D13	1KF20-04 1N4148 1S953 1KF20-04	DX2322 DX0022 DX2327 DX2322		NTE109 NTE519 NTE519 NTE109	ECG109 ECG519 ECG519 ECG109	SK3090/109 SK3100/519 SK3100/519 SK3090/109	WEP134/109 WEP925/519 WEP925/519 WEP134/109	103-Z9001 103-131 103-131 103-Z9001
IC1	SC77527P 8050527	MX6201						
IC2	SC77527 MC6821P MC6821 MBL6821N HD6821P	AMX4578		NTE6821 NTE6821 NTE6821 NTE6821	ECG6821 ECG6821 ECG6821 ECG6821			HE-443-843 HE-443-843 HE-443-843 HE-443-843
IC3	SC77526P 8050526 SC77526	MX6202						
IC4	555D NJM555D NE555P 555	MX5741		NTE955M NTE955M NTE955M NTE955M	ECG955M ECG955M ECG955M ECG955M	SK3564/955M SK3564/955M SK3564/955M SK3564/955M	WEP2119/955M WEP2119/955M WEP2119/955M WEP2119/955M	221-Z9042 221-Z9042 221-Z9042 221-Z9042
IC5	SN74LS273N MB74LS273M HD74LS273P 74LS273	AMX4227		NTE74LS273 NTE74LS273 NTE74LS273 NTE74LS273	ECG74LS273 ECG74LS273 ECG74LS273 ECG74LS273	SK74LS273 SK74LS273 SK74LS273 SK74LS273		HE-443-805 HE-443-805 HE-443-805 HE-443-805

CC15

RADIO SHACK COLOR COMPUTER 2  
MODELS 26-3134, 26-3136

## 2 PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

### SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	NOTES	REPLACEMENT DATA					
				NTE PART No.	ECG PART No.	RCA PART No.	WORKMAN PART No.	ZENITH PART No.	
IC6	SN74LS244N	AMX3864		NTE74LS244	ECG74LS244	SK74LS244		HE-443-791	
	MB74LS244M			ECG74LS244	SK74LS244	HE-443-791			
	HD74LS244P			ECG74LS244	SK74LS244	HE-443-791			
	74LS244			ECG74LS244	SK74LS244	HE-443-791			
IC7	SC67331P	MX6211							
	SC67331								
	MC6847P								
	MC6847								
IC8	MC6847P	AMX4575							
	MC6847								
IC9	MC6809EP	MX5560		NTE6809E	ECG6809E				
	MC6809E			ECG6809E					
	HD6809EP			ECG6809E					
	HD68A09EP			ECG6809E					
IC10	SN74LS02N	AMX3551		NTE74LS02	ECG74LS02	SK74LS02		HE-443-779	
	MB74LS02M			ECG74LS02	SK74LS02	HE-443-779			
	HD74LS02P			ECG74LS02	SK74LS02	HE-443-779			
	74LS02			ECG74LS02	SK74LS02	HE-443-779			
IC11	SN74LS138N	AMX4583		NTE74LS138	ECG74LS138	SK74LS138		HE-443-877	
	MB74LS138M			ECG74LS138	SK74LS138	HE-443-877			
	HD74LS138P			ECG74LS138	SK74LS138	HE-443-877			
	74LS138			ECG74LS138	SK74LS138	HE-443-877			
IC12	8040364B	MX6203							
	UPD236C-1								
	SCM92135P								
	8042364A								
IC13	UPD2364C-1	MX6200							
IC14 thru IC21	8040517	MX6199							
	MB8118-12P								
	MCM4517-20								
	MCM4517P-15								

(3)

# PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

## SEMICONDUCTORS (Select replacement transistor for best results)

ITEM No.	TYPE No.	MFR. PART No.	REPLACEMENT DATA					ZENITH PART No.
			NOTES	NTE PART No.	ECG PART No.	RCA PART No.	WORKMAN PART No.	
1C22	SN74LS783N 74LS785 74LS785 MC6883P MC6883	MX6198						
Q1	(KT)D880Y KTD880(Y) KTD880(GR) 2SD313(E) 2SD313(F)	2SD526		NTE152 NTE152 NTE152 NTE152 NTE152	ECG152 ECG152 ECG152 ECG152 ECG152	SK3893/152 SK3893/152 SK3893/152 SK3893/152 SK3893/152	WEP745/152 WEP745/152 WEP745/152 WEP745/152 WEP745/152	121-987-03 121-987-03 121-987-03 121-987-03 121-987-03
Q2	2SC536K 2SC536K(G) 2SC945(P)	2SC536 2SC945		NTE85 NTE85 NTE85	ECG85 ECG85 ECG85	SK3245/199 SK3245/199 SK3124A/289A	WEP536 WEP536 WEP736/123A*	121-972 121-972 121-972

\* Lead configuration may vary from original.

(KT) Prefix = Korea  
(3) Used in 26-3136 only.

## WIRING DATA

Shielded Hook-up Wire .....	Use BELDEN No. 8408 or 1048 (Single-Conductor) 8208 (Two-Conductor)
General-use Unshielded Hook-up Wire .....	Use BELDEN No. 8529 (Solid) Available in 13 Colors 8522 (Stranded) Available in 13 Colors
300-Ohm Input Lead .....	Use BELDEN No. 8225
75-Ohm Input Lead .....	Use BELDEN No. 8241

RADIO SHACK COLOR COMPUTER 2  
MODELS 26-3134, 26-3136

## PARTS LIST AND DESCRIPTION (Continued)

When ordering parts, state Model, Part Number, and Description

### ELECTROLYTIC CAPACITORS

ITEM No.	RATING	MFR. PART No.
C20	10uF 16V 20% NP	CC106MDAP

### CAPACITORS

ITEM No.	RATING	MFR. PART No.
C43	24 NPO 50V 5%	CC240J JCP
C44	24 NPO 50V 5%	CC240J JCP
TC1	6 - 50	AC0988

### RESISTORS (Power and Special)

ITEM No.	RATING	REPLACEMENT DATA		
		MFR. PART No.	NTE PART No.	WORKMAN PART No.
R2	.01 5% 1W Metal Film	N0001 EGE	1WD10	

### COILS & TRANSFORMERS (Sweep Circuits)

ITEM No.	FUNCTION	MFR. PART No.	OTHER IDENTIFICATION	NOTES
T2 L1	Power RF Choke (100uH)	ATA1056 ACA8339		

### MISCELLANEOUS

ITEM No.	PART NAME	MFR. PART No.	NOTES
FB1 Thru FB4	Ferrite Bead		
RY1 S1 Thru S53	Relay Switch	AR8166	Cassette Key
SW1 SW2 SW3	Switch	AS2900 AS2849 AS2847	Power Reset Channel
X1	Crystal Foot	MX1112 AHC2450	14.31818MHz RUSSELL Industries Replacement REC-2085 (4 Required)
	PC Board	20261043 (1)	Main

(1) Number on unit.

### CABINETS & CABINET PARTS (When ordering specify model, chassis & color)

ITEM	PART No.	ITEM	PART No.
Cabinet Top	AZ7134	Knob, Power	AK5012
Cabinet Bottom	AZ7135	Knob, Reset	AK5638

# LOGIC CHART

PIN NO.	IC IC1	PIN NO.	IC IC2	PIN NO.	IC IC2	PIN NO.	IC IC3	IC IC4	IC IC5	IC IC6	PIN NO.	IC IC7	PIN NO.	IC IC7
1	H	1	L	21	P	1	*	L	H	P	1	L	21	P
2	H	2	L	22	H	2	L	P	P	P	2	H	22	H
3	H	3	H	23	H	3	L	L	P	P	3	H	23	P
4	H	4	L	24	H	4	L	L	P	P	4	H	24	H
5	H	5	L	25	P	5	L	L	P	P	5	H	25	P
6	H	6	L	26	P	6	L	L	P	P	6	H	26	P
7	L	7	L	27	P	7	L	L	P	P	7	H	27	P
8	L	8	L	28	P	8	L	H	P	P	8	H	28	P
9	H	9	L	29	P	9	H		P	P	9	H	29	P
10	L	10	H	30	P	10	L	L	L	L	10	P	30	P
11	L	11	*	31	P	11	L		P	P	11	P	31	P
12	P	12	H	32	P	12	L		P	P	12	P	32	P
13	L	13	L	33	P	13	*		P	P	13	P	33	P
14	L	14	L	34	H	14	*		P	P	14	P	34	H
15	P	15	L	35	P	15	*		P	P	15	P	35	P
16	H	16	L	36	P	16	*		P	P	16	P	36	P
17		17	L	37	H	17	*		P	P	17	P	37	P
18		18	H	38	H	18			P	P	18	P	38	P
19		19	L	39	L	19			P	P	19	L	39	L
20		20	H	40	H	20	H		H	H	20	H	40	P
PIN NO.	IC IC8	PIN NO.	IC IC8	PIN NO.	IC IC9	PIN NO.	IC IC9	PIN NO.	IC IC10	IC IC11	PIN NO.	IC IC12	PIN NO.	IC IC12
1	L	21	P	1	L	21	P	1	P	P	1	P	13	P
2	P	22	P	2	H	22	P	2	P	P	2	P	14	P
3	P	23	P	3	P	23	P	3	P	P	3	P	15	P
4	P	24	P	4	*	24	P	4	H	P	4	P	16	P
5	P	25	P	5	P	25	P	5	L	P	5	P	17	P
6	P	26	P	6	L	26	P	6	L	H	6	P	18	P
7	P	27	L	7	H	27	P	7	L	P	7	P	19	P
8	P	28	L	8	P	28	P	8	L	L	8	P	20	P
9	L	29	L	9	P	29	P	9	L	H	9	P	21	P
10	P	30	L	10	P	30	P	10	H	H	10	P	22	P
11	P	31	L	11	P	31	P	11	P	P	11	P	23	P
12	P	32	P	12	P	32	P	12	P	H	12	L	24	H
13	P	33		13	P	33	P	13	P	P				
14	P	34	P	14	P	34	P	14	H	P				
15	P	35	L	15	P	35	P	15		P				
16	P	36	P	16	P	36	P	16		H				
17	H	37	P	17	P	37	H	17						
18	P	38	P	18	P	38	P	18						
19	P	39	L	19	P	39	L	19						
20	P	40	P	20	P	40	H	20						

**RADIO SHACK COLOR COMPUTER 2**  
**MODELS 26-3134, 26-3136**



## LOGIC CHART (Continued)

PIN NO.	IC 13	PIN NO.	IC 13	PIN NO.	IC 14	IC 15	IC 16	IC 17	IC 18	IC 19	IC 20	IC 21
1	P	13	P	1	*	*	*	*	*	*	*	*
2	P	14	P	2	P	P	P	P	P	P	P	P
3	P	15	P	3	P	P	P	P	P	P	P	P
4	P	16	P	4	P	P	P	P	P	P	P	P
5	P	17	P	5	P	P	P	P	P	P	P	P
6	P	18	P	6	P	P	P	P	P	P	P	P
7	P	19	P	7	P	P	P	P	P	P	P	P
8	P	20	P	8	H	H	H	H	H	H	H	H
9	P	21	P	9	P	P	P	P	P	P	P	P
10	P	22	P	10	P	P	P	P	P	P	P	P
11	P	23	P	11	P	P	P	P	P	P	P	P
12	L	24	H	12	P	P	P	P	P	P	P	P
13				13	P	P	P	P	P	P	P	P
14				14	P	P	P	P	P	P	P	P
15				15	P	P	P	P	P	P	P	P
16				16	L	L	L	L	L	L	L	L

PIN NO.	IC 22	PIN NO.	IC 22
1	P	21	P
2	P	22	P
3	P	23	P
4	P	24	P
5	P	25	P
6	P	26	P
7	P	27	P
8	P	28	P
9	P	29	P
10	P	30	P
11	P	31	P
12	P	32	P
13	P	33	P
14	P	34	P
15	P	35	P
16	P	36	P
17	P	37	P
18	P	38	P
19	P	39	P
20	L	40	H

Logic Probe Display

L = Low

H = High

P = Pulse

\* = Open (No light On)

Note: Logic probe readings taken with computer turned On, no keys pressed, unless otherwise noted.

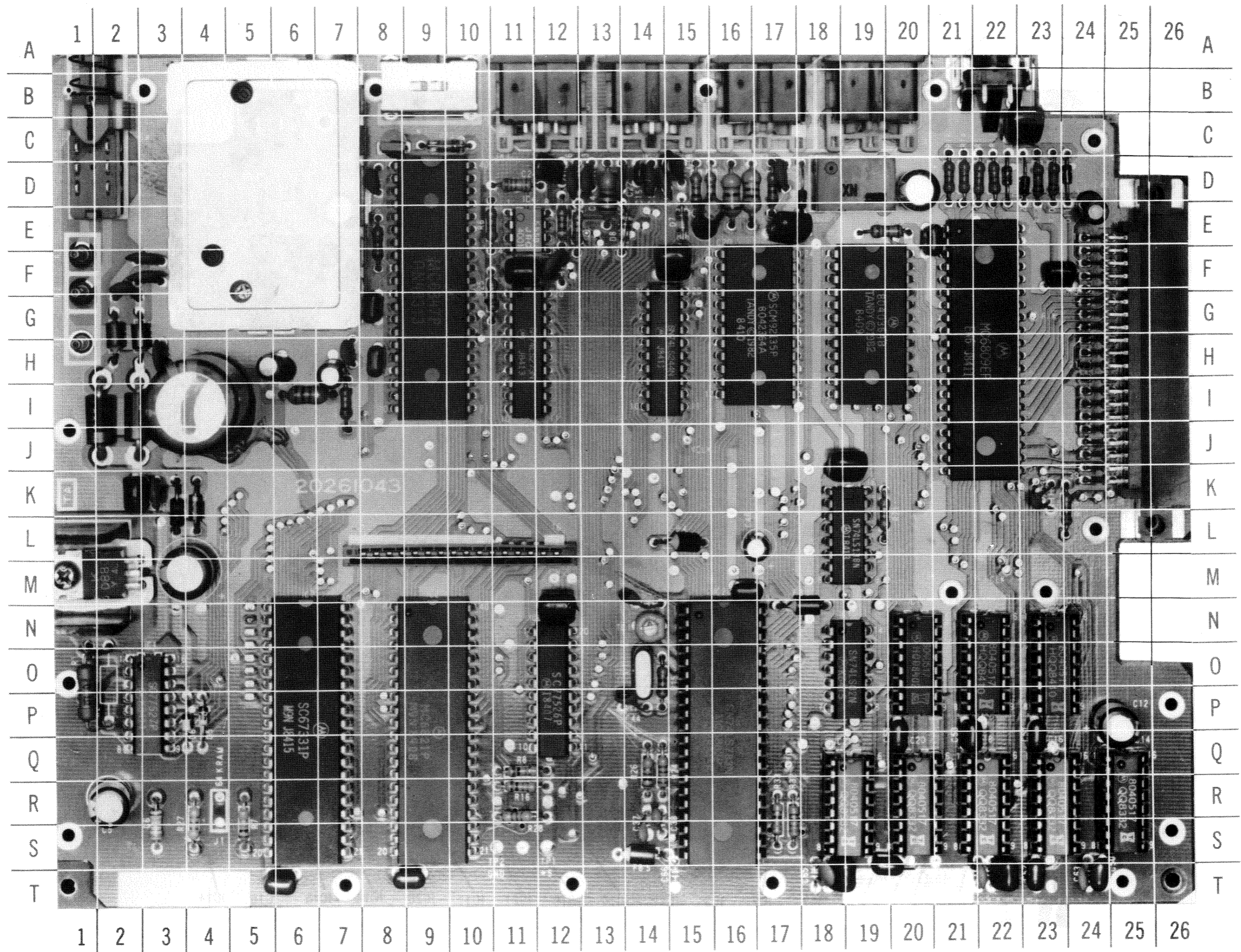
## LINE DEFINITIONS

A0 THRU A15 ..... Address  
CART ..... Cartridge Presence Interrupt  
CAS ..... Column Address Strobe  
CASS MOT ..... Cassette Motor  
CASSDIN ..... Cassette Data Input  
CD ..... Status Interrupt Input (RS232C)  
CTS ..... Cartridge Select Signal  
D0 THRU D7 ..... Data  
DA0 ..... Display Address Zero  
E ..... Clock, 1/16 Master Clock, CPU RAM Addressing  
EN1 ..... ROM Enable  
EN2 ..... ROM Expansion Enable  
FIRQ . Fast Interrupt Request, Does Not Maintain Registers  
FS ..... Field Sync  
H1 ..... Chip Select, PIA CS0 and CS1  
HALT ..... Halt CPU Input  
HI/LO ..... Joystick Reference Level, X and Y Axis  
HS ..... Horizontal Sync  
IRQ ..... Interrupt Request  
JOY 0 THRU JOY 3 ..... Joystick Inputs  
MA0 THRU MA7 ..... Memory Address  
MD0 THRU MD7 ..... Memory Data  
NMI ..... Nonmaskable Interrupt  
PIA0 ..... Peripheral Interface Adapter Zero  
PIA1 ..... Peripheral Interface Adapter One  
Q ..... Clock, 1/16 Master Clock,  
Leads E Clock by Ninety Degrees  
R/W ..... Read/Write  
RAS ..... Row Address Strobe  
RESET ..... Reset  
RS OUT 1 ..... Transistor/Transistor Logic Input  
for RS232C Output  
RS232 ..... RS232 Interface System  
RS232 IN ..... RS232 Interface System Input  
SCS ..... Spare Cartridge Signal, Selects Address Space  
SEL 1, SEL 2 ..... PIA Select Outputs, Joysticks or Sound  
SLENB ..... Select Enable, Disables Internal Selection,  
Utilities Unused  
SND ..... Sound Source in Cartridge  
V CLK ..... Video Clock  
VDG CLK ..... Video Display Generator Clock  
WE ..... Write Enable

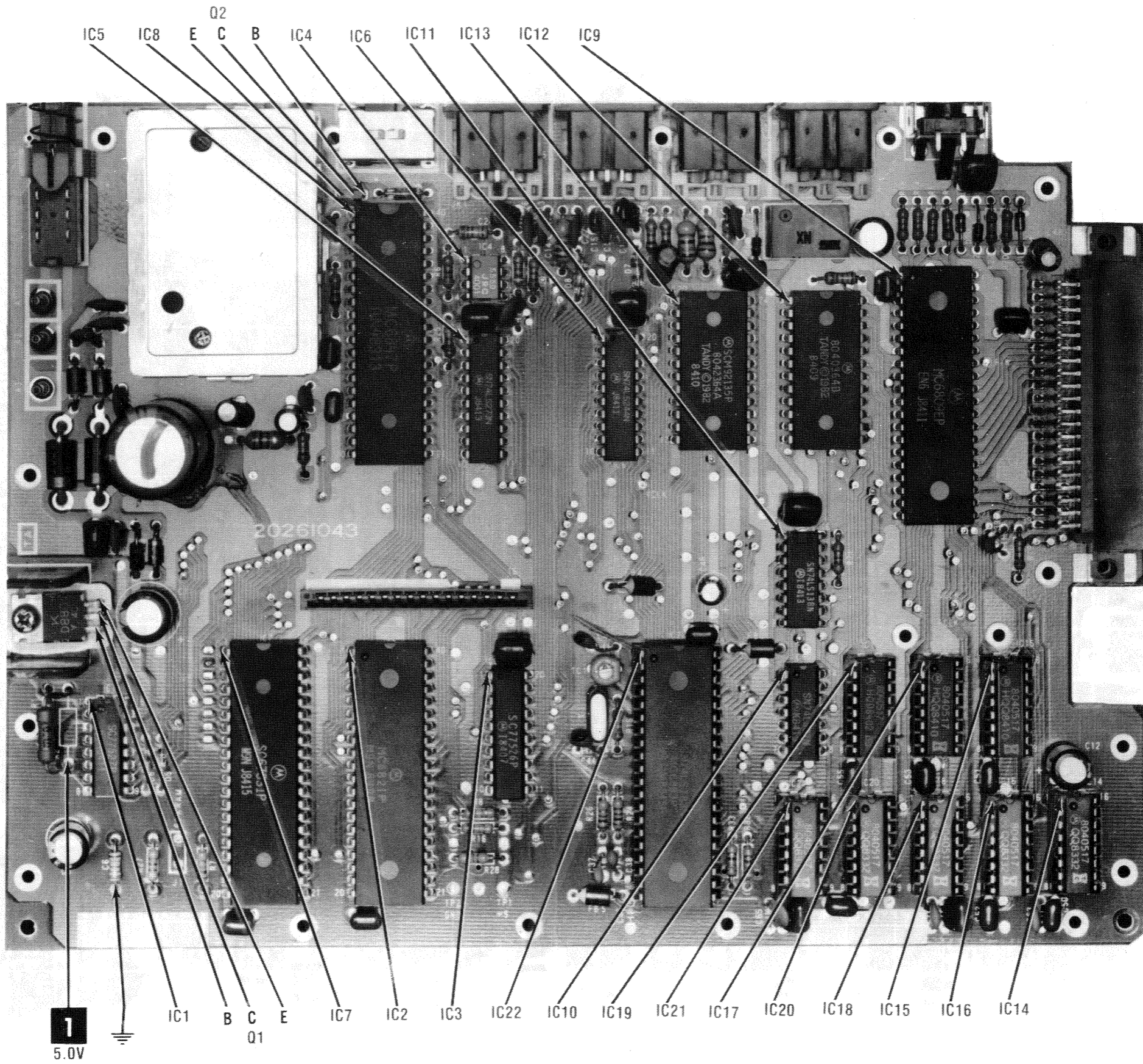
RADIO SHACK COLOR COMPUTER 2  
MODEL 26-3134, 26-3136

## **SAFETY PRECAUTIONS**

1. Use an isolation transformer for servicing.
2. Maintain AC line voltage at rated input.
3. Remove AC power from the Computer before servicing or installing electrostatically sensitive devices. Examples of typical ES devices are integrated circuits and semiconductor "chip" components.
4. Use extreme caution when handling the printed circuit boards. Some semiconductor devices can be damaged easily by static electricity. Drain off any electrostatic charge on your body by touching a known earth ground. Wear a commercially available discharging wrist strap device. This should be removed prior to applying power to the unit under test.
5. Use a grounded-tip, low voltage soldering iron.
6. Use an isolation (times 10) probe on scope.
7. Do not remove or install board, floppy disk drives, printers, or other peripherals with power On.
8. Do not use freon-propelled sprays. These can generate electrical charges sufficient to damage semiconductor devices.
9. The Computer cabinet is equipped with vents to prevent heat build-up. Never block, cover, or obstruct these vents.
10. Instructions should be given, especially to children, that objects should not be dropped or pushed into the vents of the cabinet. This could cause shock or equipment damage.
11. Never expose the Computer to water. If exposed to water, turn the unit off. Do not place the Computer near possible water sources.
12. Never leave the Computer unattended or plugged into the AC outlet for long periods of time. Remove AC plug from AC outlet during lightning storms.
13. Never use liquids or aerosols directly on the Computer. Spray on cloth and then apply to the Computer cabinet. Make sure the Computer is disconnected from the AC power line.



RADIO SHACK COLOR COMPUTER 2  
 MODEL 26-3134, 26-3136



NOTE: ARROWS ON IC'S INDICATE PIN 1 UNLESS NOTED.

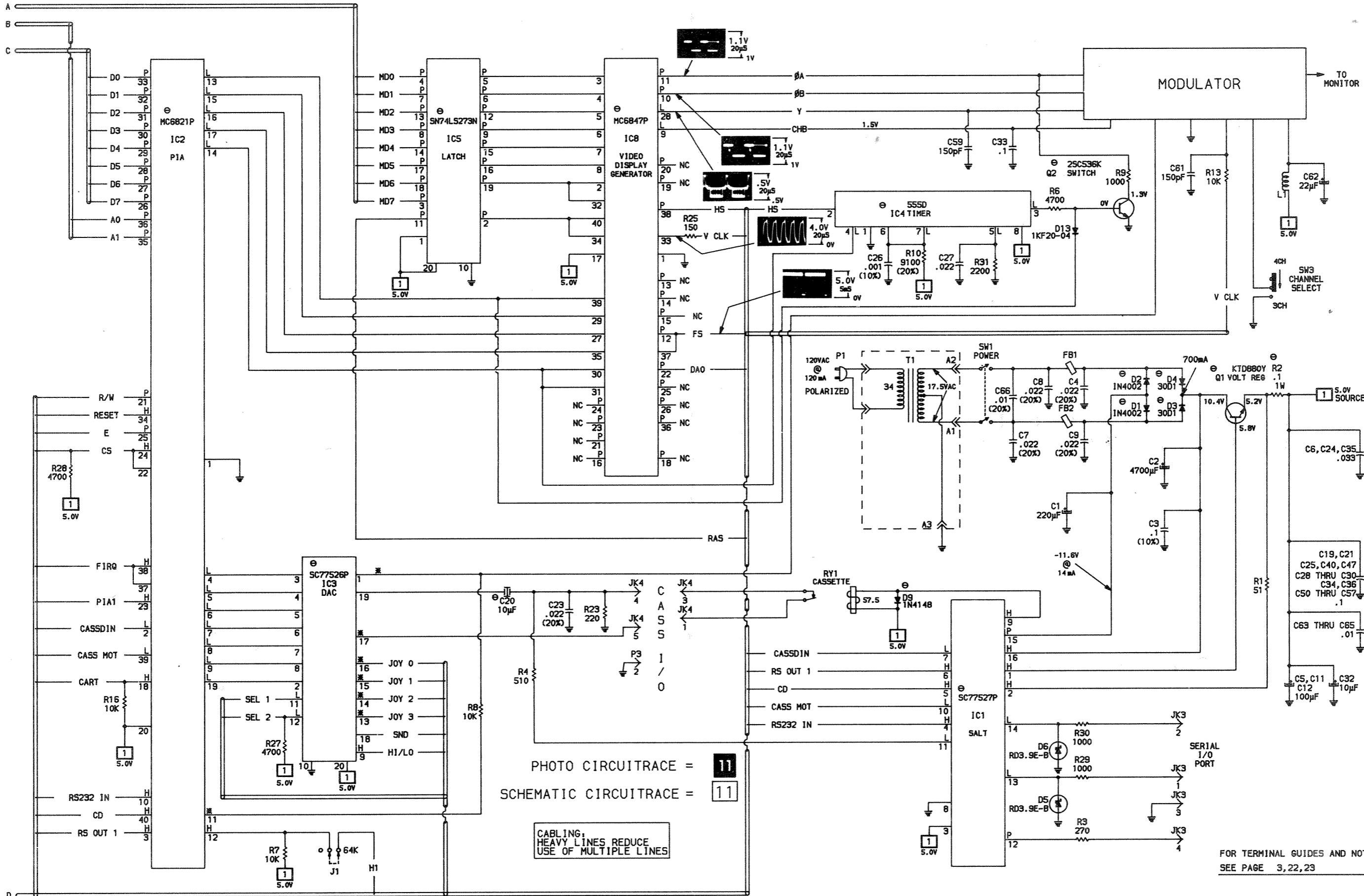


PHOTO CIRCUITRACE = 11  
 SCHEMATIC CIRCUITRACE = 11

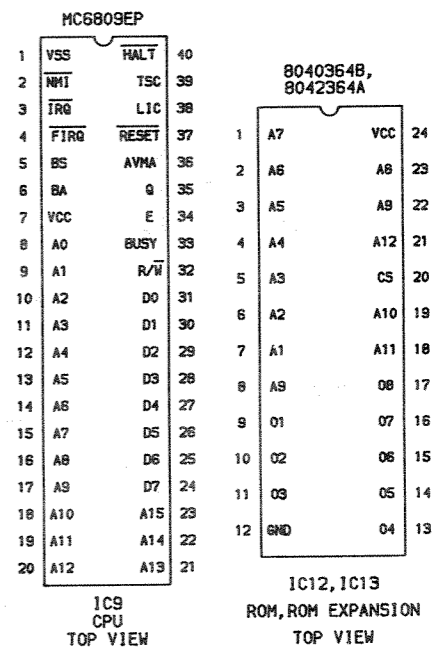
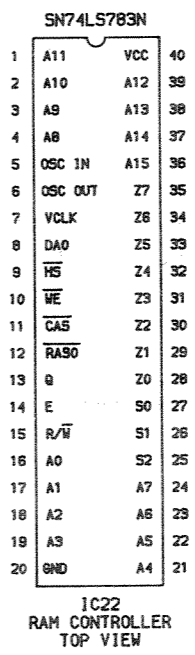
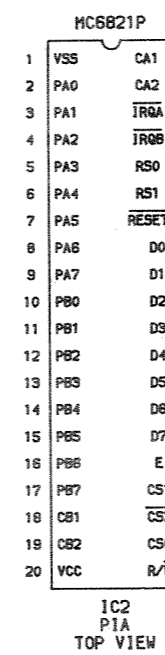
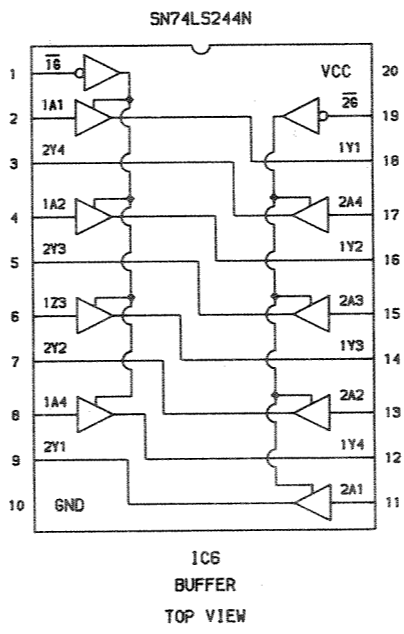
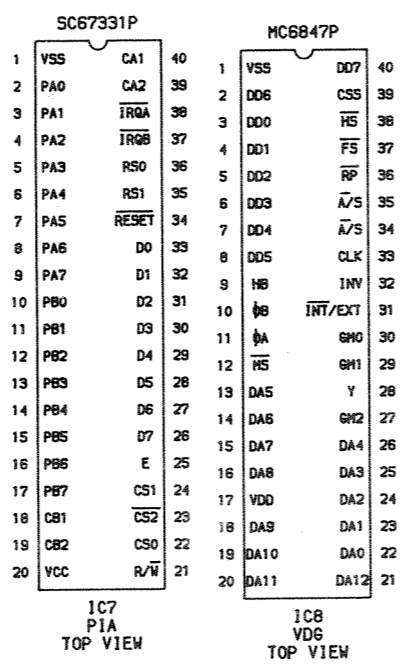
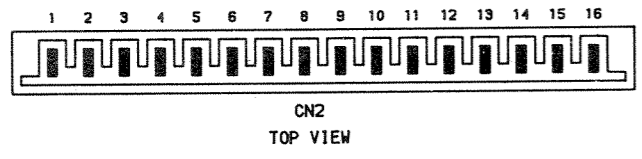
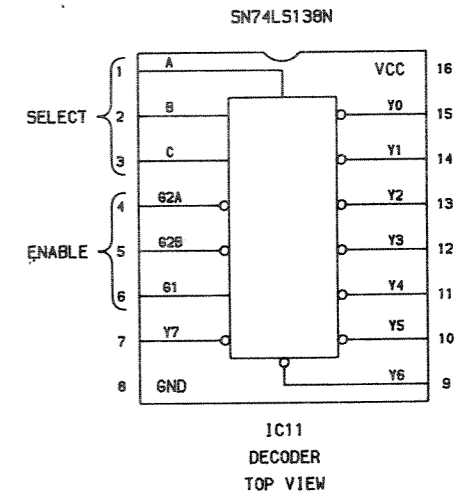
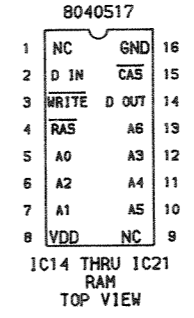
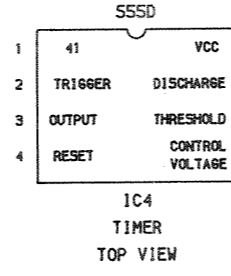
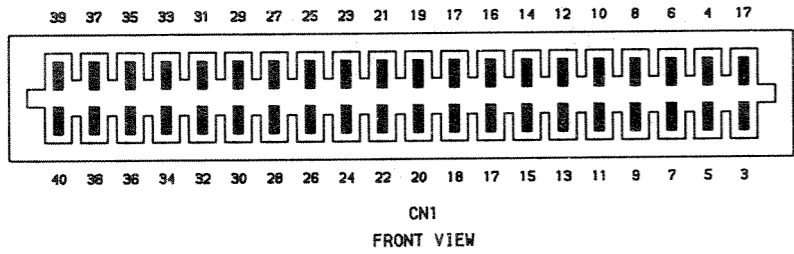
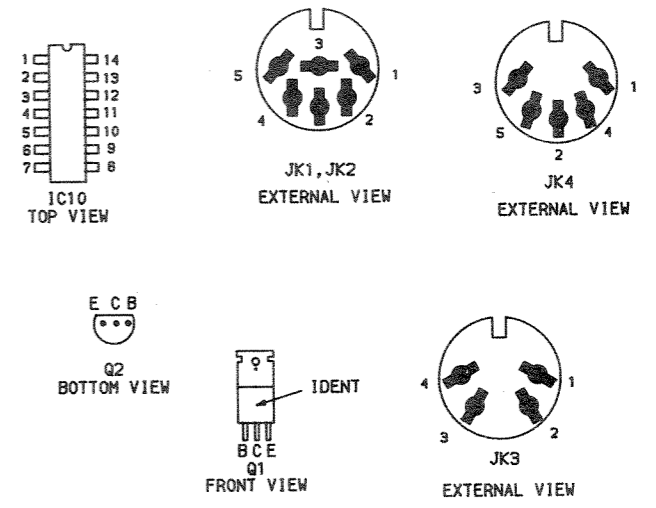
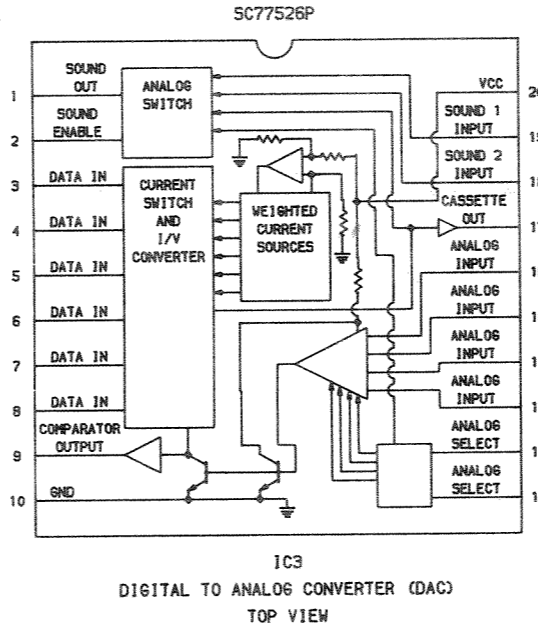
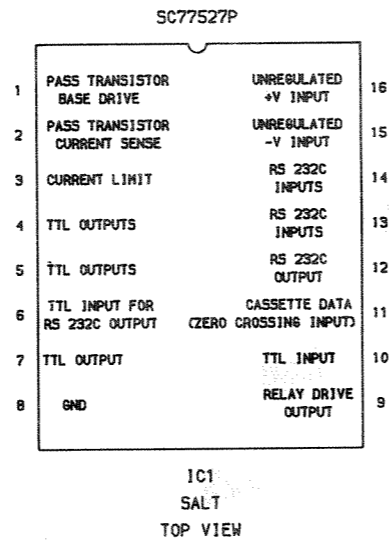
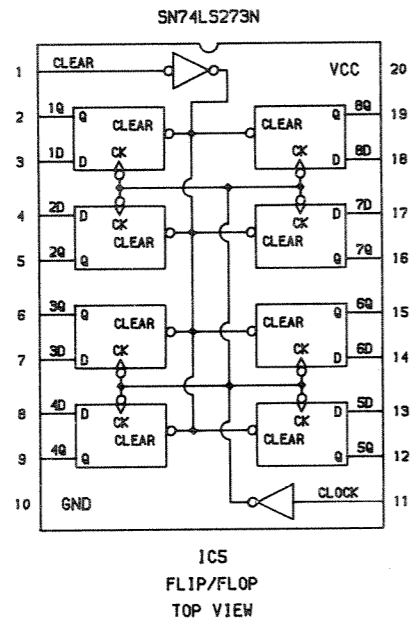
CABLING,  
 HEAVY LINES REDUCE  
 USE OF MULTIPLE LINES

FOR TERMINAL GUIDES AND NOTES  
 SEE PAGE 3, 22, 23

A PHOTOFACIT STANDARD NOTATION SCHEMATIC

WITH **CIRCUITRACE**

# IC PINOUTS & TERMINAL GUIDES



CC15 RADIO SHACK COLOR COMPUTER 2 MODELS 26-3134, 26-3136

## SCHEMATIC NOTES

~~—~~ Circuitry not used in some versions

--- Circuitry used in some versions

o See parts list

⊕ Ground

⌘ Chassis

▽ Common tie point

Waveforms and voltages taken from ground, unless noted otherwise.

Voltages, Waveforms and Logic probe readings taken with computer turned On, no keys pressed, unless otherwise noted.

Waveforms taken with triggered scope and Sweep/Time switch in Calibrate position, scope input set for DC coupling on 0 reference voltage waveforms. Switch to AC input to view waveforms after DC reference is measured when necessary. Each waveform is 7 cm. width with DC reference voltage given at the bottom line of each waveform.

Time in  $\mu$ sec. per cm, given with p-p reading at the end of each waveform.

Item numbers in rectangles appear in the alignment/adjustment instructions.

Supply voltages maintained as shown at input.

Voltages measured with digital meter, no signal.

Controls adjusted for normal operation.

Terminal identification may not be found on unit.

Capacitors are 50 volts or less, 5% unless noted.

Electrolytic capacitors are 50 volts or less, 20% unless noted.

Resistors are  $\frac{1}{2}W$  or less, 5% unless noted.

Value in ( ) used in some versions.

Measurements with switching as shown, unless noted.

Logic Probe Display

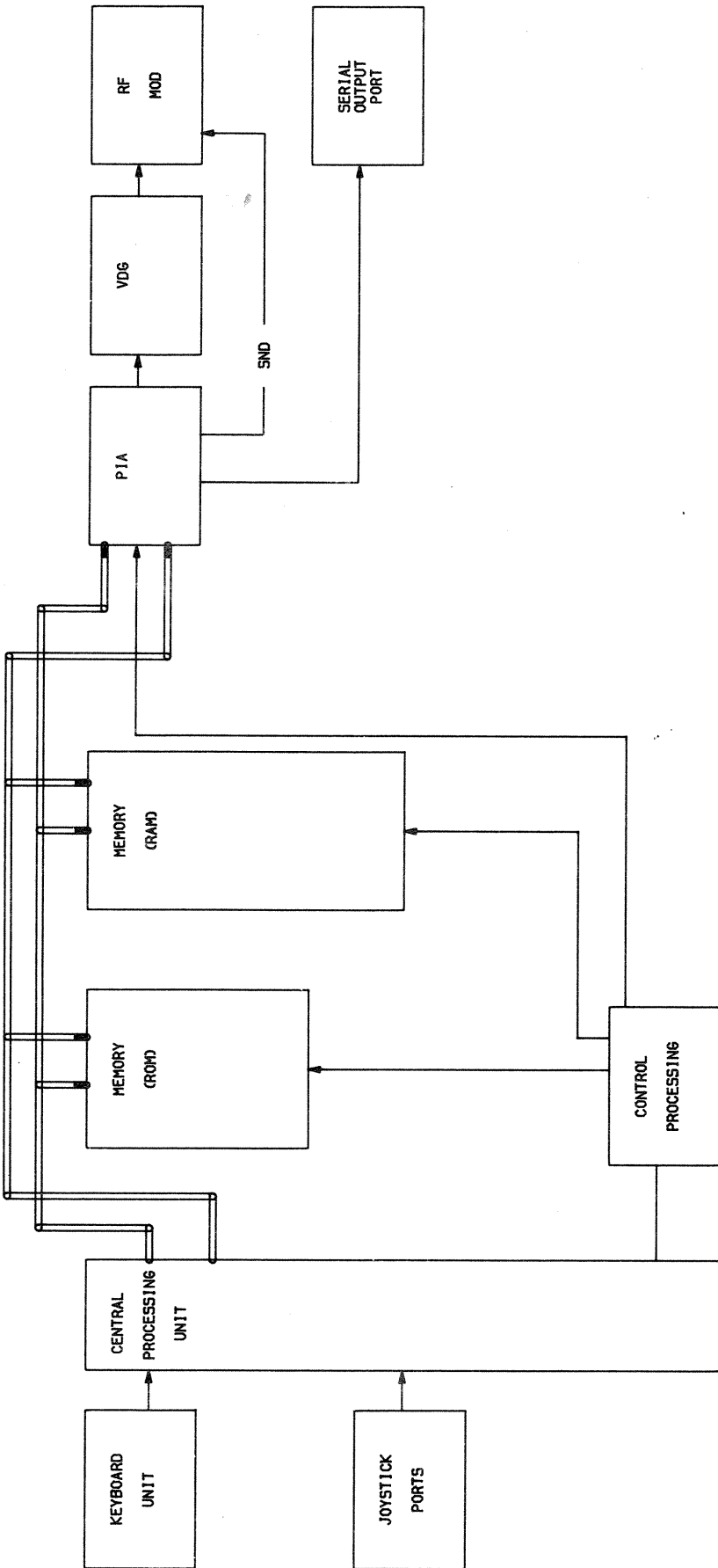
L = Low

H = High

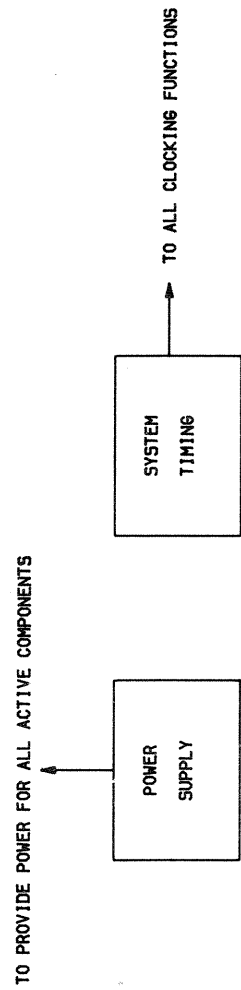
P = Pulse

\* = Open (No light On)





**BLOCK DIAGRAM**



## DISASSEMBLY INSTRUCTIONS

### CABINET REMOVAL

Remove six Phillips screws from cabinet bottom. Turn Computer right side up and remove cover.

### MAIN BOARD REMOVAL

Carefully disconnect keyboard cable from Main board and remove Keyboard. Unplug Power Transformer from Main

board. Remove six Phillips screws holding Main board to cabinet base and remove board. Remove shield from bottom of Main board by removing 17 clips that attach it to the board.

### POWER TRANSFORMER REMOVAL

Unplug Power Transformer from Main board. Remove two Phillips screws holding Power Transformer to cabinet base.

## GENERAL OPERATING INSTRUCTIONS

### CASSETTE OPERATION

Connect a cassette recorder to the Cassette Socket (JK4) on the Computer using the cable furnished with the Computer. Plug the black plug on the cable into the Earphone jack, the large gray plug into the Auxiliary jack and the small gray plug into the Remote On/Off jack on the Recorder.

To load a program from cassette, put the Recorder in Play mode with the volume turned about half way up. Type CLOAD and then press the Return key. The letter S will appear on the Monitor screen while the Computer searches for the program. When the Computer finds the program, the letter F will appear on the screen and the word OK will appear after the program has been loaded.

To save a program to cassette, put the Recorder in the Record mode. Type CSAVE and then press the Return key.

The word OK will appear on the Monitor screen after the program has been saved and the Recorder will shut Off.

### POWER UP

The Computer will come up in Basic mode when turned On with no cartridge in the slot. If a cartridge is installed, the Computer will come up running the program in the cartridge.

### RESET

The Computer will be Reset by pressing the Reset button (SW2) located on right rear of cabinet.

### BASIC PROGRAMS

A Basic program in the Computer RAM can be started by typing RUN and then pressing the ENTER key. The program can be stopped by pressing the BREAK key or the Reset button.

## MISCELLANEOUS ADJUSTMENTS

### CLOCK ADJUST

Connect the input of a frequency counter to pin 7 of SAM IC (IC22). Adjust the Clock Trimmer (TC1) for a frequency of 3.579545MHz.

### RF MODULATOR

Connect Computer to a TV Monitor. Set the TV and the

Channel Select Switch (SW3) to Channel 4. Type in and run the following program:

```
10 SOUND 200,200: GOTO10
```

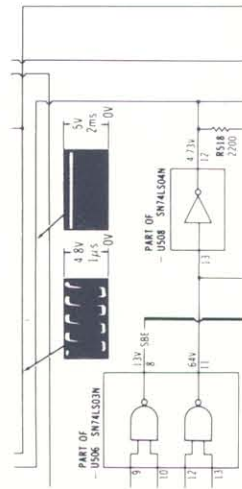
Adjust the Channel 4 Coil for best picture and sound. Adjust the sound coil for best sound with minimum noise. Set the TV and the Channel Select Switch SW3 to Channel 3. Adjust the Channel 3 Trimmer for best picture and sound.

If seal is broken, nonreturnable.



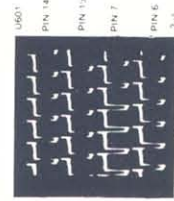
**COMPUTERFACTS™ put easy to use, informative technical data right at your fingertips. Each edition includes specific service information on the individual component, along with some overall troubleshooting hints.**

- The following information is just a sample of the many valuable time saving features contained in this exclusive Sams COMPUTERFACTS publication:
- Preliminary Service Checks section is an easy to use, step by step guide for the experienced technician or hobbyist, and even beginners.
- SAMS famous industry accepted standardized notation schematics containing CIRCUITRACE®, GRIDTRACE™, waveforms, voltages and stage identification.



- Step by Step Troubleshooting guides the technician through the necessary procedures to quickly locate the problem.

**TROUBLESHOOTING**



**MICROPROCESSOR CHIP (CPU) OPERATION**

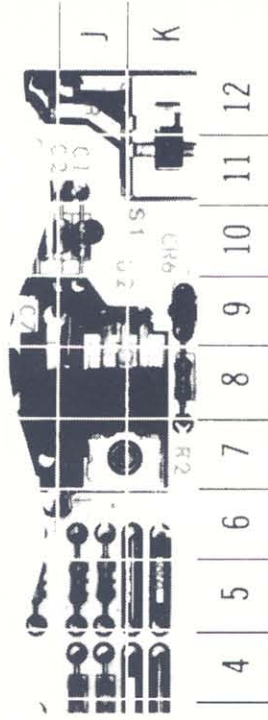
Verify the processor is functioning by checking the signals on the address lines (0 thru 24 IC U60), and the data lines (pins 41 thru 56) using a logic probe or a scope. If a logic probe is used, refer to the Logic Chart for the correct readings. If a scope is used, the waveforms on the address lines should be similar to Figure 1. The waveforms on the data lines should be similar to Figure 2.

**LOGIC**

PIN NO.	IC U100	PIN NO.	IC U100	IC U102	IC U103	IC U104	IC U105	IC U106	IC U107	IC U108	IC U109
1	P	21	P	J	L	L	L	L	L	L	L
2	P	22	P	2	P	P	P	P	P	P	P
3	P	23	P	3	H	H	H	H	H	H	H

- Logic Chart containing logic probe readings to isolate defective circuitry and components.

- Quick Component Location using the SAMS exclusive GRIDTRACE, CIRCUITRACE, and component photographs.



- Complete Components Parts List in an easy to use format with field replacements shown when possible. SAMS unique semiconductor, chip and IC cross-reference gives you many replacements to choose from and is available at your Electronic Distributor.

**SEMICONDUCTORS (Select replacement for best results)**

ITEM No	TYPE No	MEGR PART No	ECG PART No	GENERAL ELECTRIC PART No	MOTOROLA PART No	REPLACEMENT DATA				WORKMAN PART No	ZENITH PART No
						NTE PART No	RCA PART No	RCA PART No	RCA PART No		
D102	15553	1149-2576	EG0519	GE-514	1N4935	NTE519	5K9091/177	MEP025/519	103-131		
D103	1N60F M	1149-2527	EG109	1N60	1N4004	NTE109	5K0088	MEP134/109	103-29001		
D201	1N4004BP	1201-4205	EGG116	GE-504A	1N4004	NTE116	5K3312	MEP157	212-76-02		
D503	15553	1149-2576	EG0519	GE-514	1N4935	NTE519	5K9091/177	MEP025/519	103-131		

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