

SCOPE MODULE (A03)

HIGH VOLTAGE BOARD

MODEL RTP4019A

SCHEMATIC DIAGRAM, CIRCUIT BOARD DETAIL,
AND PARTS LIST

parts list

RTP4019A Scope High Voltage Board

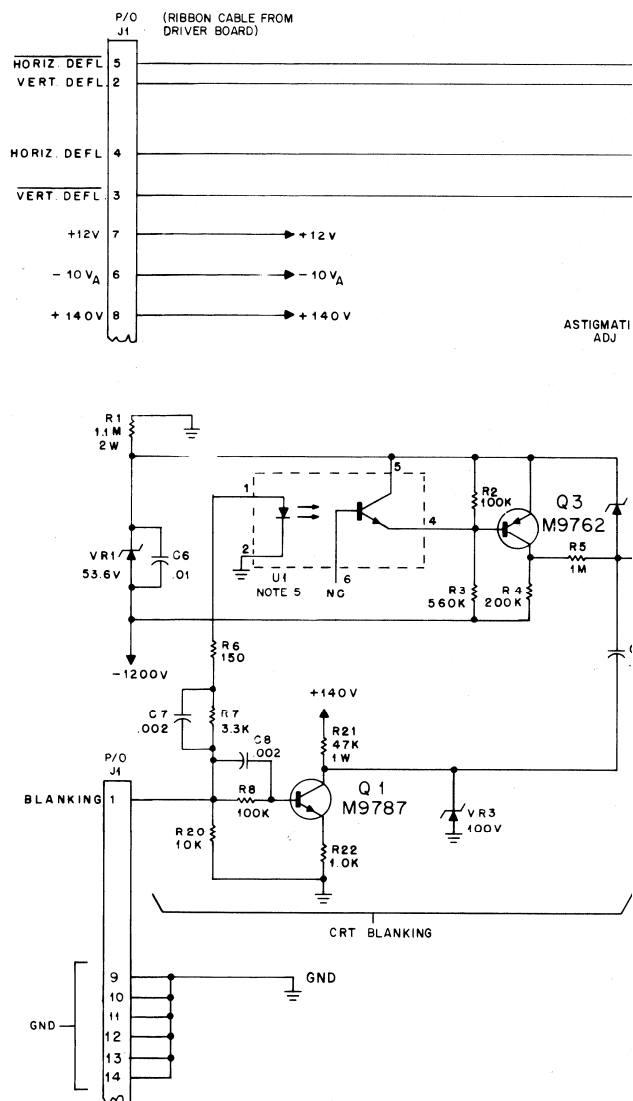
PL-8484-O

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
capacitor, fixed:		
C1, 2, 3	21-83596E19	.01 $\pm$ 20%; 3000 V
C4	21-82428B40	.01 + 60-40%; 250 V
C5	21-83596E19	.01 $\pm$ 20%; 3000 V
C6	21-82428B40	.01 + 60-40%; 250 V
C7, 8	21-82187B27	.002 $\pm$ 40%; 100 V
connector, receptacle:		
J1	9-84906E01	female, 14 contact
transistor: (see note)		
Q1	48-869787	NPN; type M9787
Q3	48-869762	PNP; type M9762
resistor, fixed; $\pm$ 5%; 1/4 W:		
unless otherwise stated		
R1	6-127B23	1.1 meg; 2 W
R2	6-124A97	100k
R3	6-124B16	560k
R4	6-124B05	200k
R5	6-124B22	1.0 meg
R6	6-124A29	150
R7	6-124A61	3.3k
R8	6-124A97	100k
R9, 10	6-124B30	2.2 meg
R11	6-124A97	100k
R12	6-124B44	8.2 meg
R13	6-124B14	470k
R14, 15	6-124A91	56k
R16	18-83452F32	var. 10k
R17	18-80378A13	var. 2.0 meg
R18	18-80378A14	var. 1.0 meg
R19	18-83457F17	var. 50k
R20	6-124A73	10k
R21	6-126A89	47k; 1 W
R22	6-124A49	1k
R23	6-124B12	390k
integrated circuit: (see note)		
U1	51-80348A81	opto isolator
voltage regulator: (see note)		
VR1	48-83461E30	Zener, 53.6 V
VR2, 3	48-80378A17	Zener, 100 V
socket, crt:		
X1	9-80377A07	female; 13 contact
mechanical parts		
	1-80350A01	SOCKET, crt, assembly
		includes:
	29-82713M01	TERMINAL, pin, male; 10 used
	39-10184A24	CONTACT, receptacle; 5 used

note: For optimum performance, diodes, transistors, and integrated circuits must be ordered by Motorola part numbers.

NOTES

1. CIRCLED NUMBERS, E.G., ① INDICATE CONNECTION POINTS TO CRT SOCKET XI.
2. R23 IS LOCATED ON SOLDER SIDE ON LATER VERSIONS.
3. TRACE ROTATION COIL L1 IS MOUNTED ON THE NECK OF THE CRT.



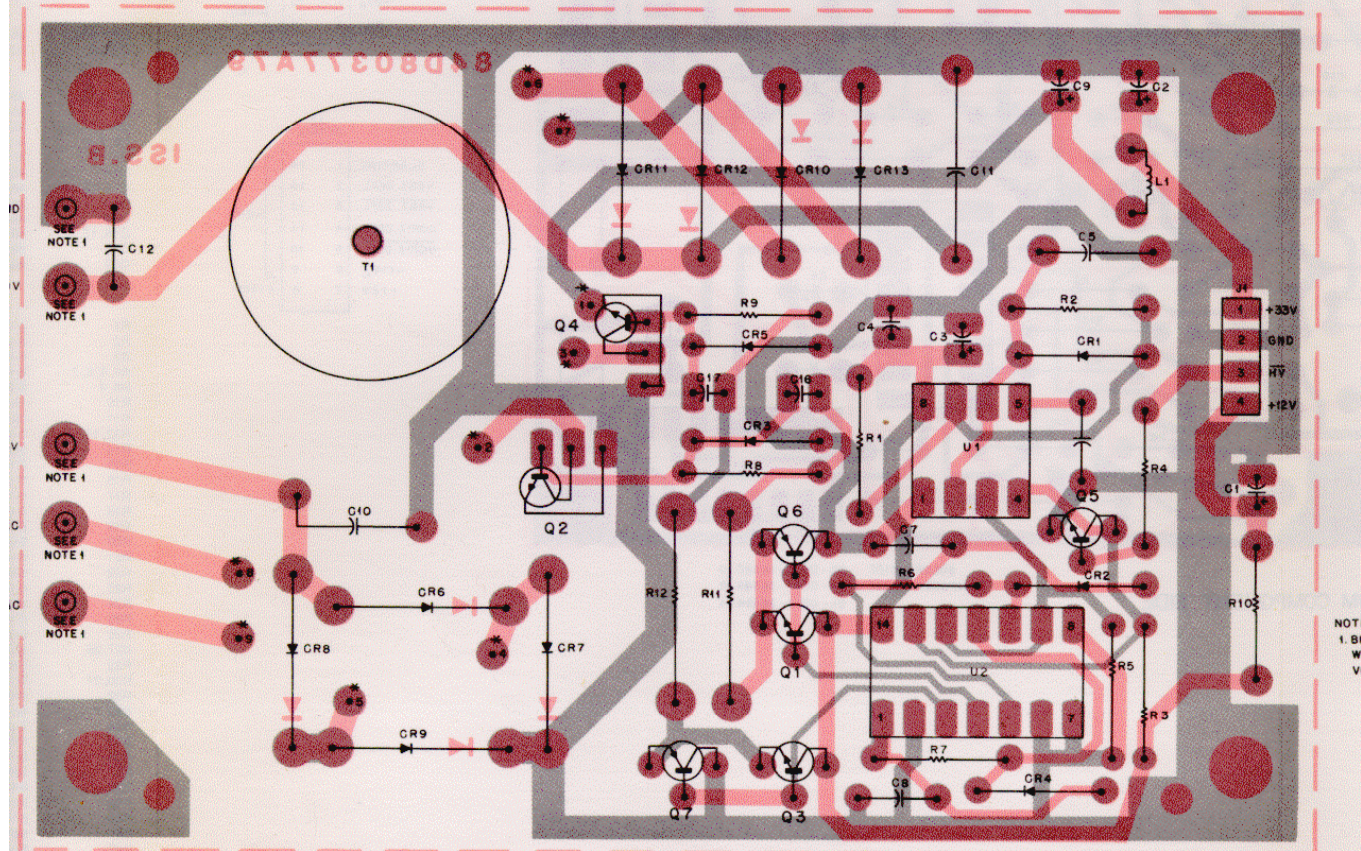
parts list

RTP4020A High Voltage Power Supply Board

PL-8458-O

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
capacitor, fixed $\pm 10\%$; 250 V: unless otherwise stated:		
C1	23-84665F01	10 uF + 100-10%; 25 V
C2	23-84908L01	2.2 uF $\pm 20\%$; 50 V
C3	23-84665F01	10 uF + 100-10%; 25 V
C4	21-84008H03	0.15 uF + 80-20%; 50 V
C5	8-82096J02	.0047 uF
	or 8-82096J07	.0056 uF
	or 8-84326A30	.0045 $\pm 1\%$
	or 8-84326A03	.0042 $\pm 1\%$
C6	21-82428B40	.01 uF + 60-40%; 250 V
C7, 8	21-863629	330 pF $\pm 10\%$; 600 V
C9	23-84908L01	2.2 uF $\pm 20\%$; 50 V
C10	21-83596E19	.01 uF + 80-20%; 3000 V
C11	21-80378A15	0.47 uF $\pm 10\%$; 400 V
C12	21-832502	.01 uF + 60-40%; 250 V
C16, 17	21-84008H03	0.15 uF + 80-20%; 50 V
diode: (see note)		
CR1 thru 5	48-83654H01	silicon
CR6, 7, 8, 9	48-83024H01	silicon
CR10, 11, 12, 13	48-82095C02	silicon
connector, plug:		
J1	28-80390A59	male; 4-contact, right angle
coil, rf:		
L1	24-5649E01	choke; 600 uH
transistor: (see note)		
Q1	48-869706	NPN; type M9706
Q2	48-80395A95	NPN; type MJE243
Q3	48-869706	NPN; type M9706
Q4	48-80395A95	NPN; type MJE243
Q5	48-869570	NPN; M9750
Q6, 7	48-869649	PNP; M9649
resistor, fixed: $\pm 5\%$; 1/4 W: unless otherwise stated		
R1	6-124A67	5.6k
R2	6-124A69	6.8k
R3	6-124A73	10k
R4	6-124A97	100k
R5	6-124A62	3.6k
R6, 7	6-124A83	27k
R8, 9	6-124A69	6.8k
R10	6-124A33	220
R11, 12	6-125B70	1; 1/2 W
transformer:		
T1	25-80378A16	high voltage
integrated circuit: (see note)		
U1	51-84371K65	timer
U2	51-82884L49	quad exclusive or gate
mechanical parts		
	2-115123	NUT, 10-32 x 3/8 x 1/8"
	3-118030	SCREW, machine; 10-32 x 1/8"
	4-1712	WASHER, flat
	26-80378A69	SHIELD

note: For optimum performance, diodes, transistors, and integrated circuits must be ordered by Motorola part numbers.

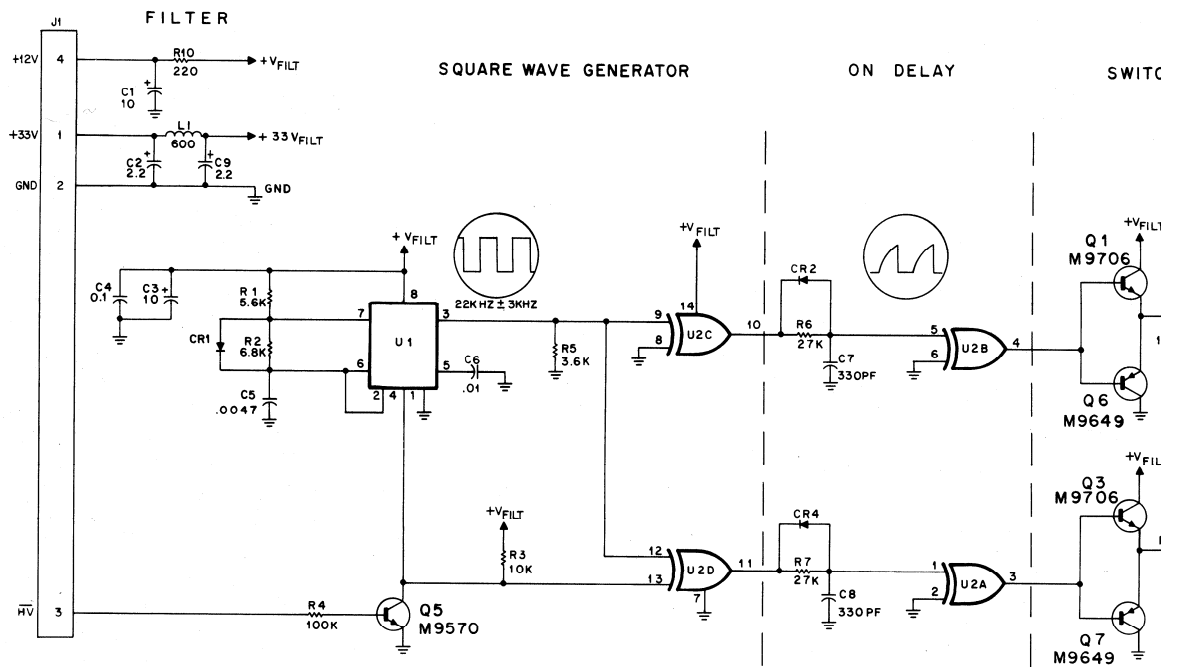


* CONNECTION POINT FOR WIRES FROM TRANSFORMER T1.

SHOWN FROM COMPONENT SIDE

SOLDER SIDE ● BD-CEPS-36372-0
COMPONENT SIDE ● BD-CEPS-36373-0
OL-CEPS-36371-A

NOTI
1. BL
W
VI



Notes:

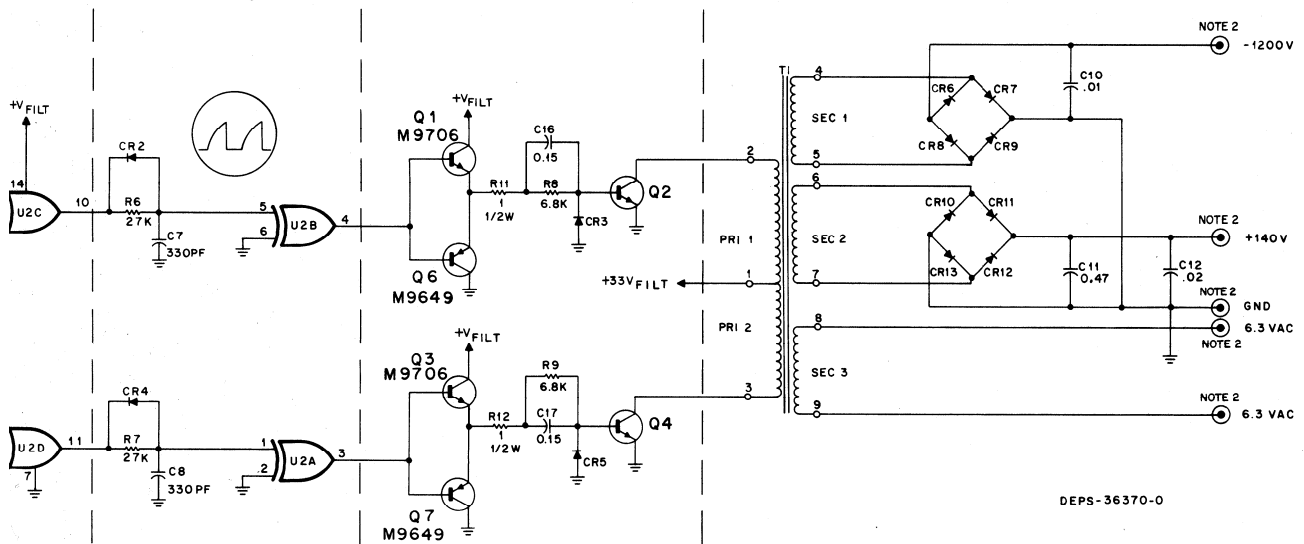
1. Unless otherwise specified; all resistors are in ohms, 1/4 capacitors are in microfarads; all inductors are in microhenries.
2. Bubble pins for wires from high voltage board.
3. Integrated circuits on this board are TTL and CMOS devices.

Reference Designation	Mfg's Description	+ V Fil.
U1	Timer	8
U2	Quad Exclusive Or Gate	14

HIGH VOLT

SCHEMATIC DI

R ON DELAY SWITCHING DRIVE



Notes:

1. Unless otherwise specified; all resistors are in ohms, 1/4 watt, 5%; all capacitors are in microfarads; all inductors are in microhenries.
2. Bubble pins for wires from high voltage board.
3. Integrated circuits on this board are TTL and CMOS devices.

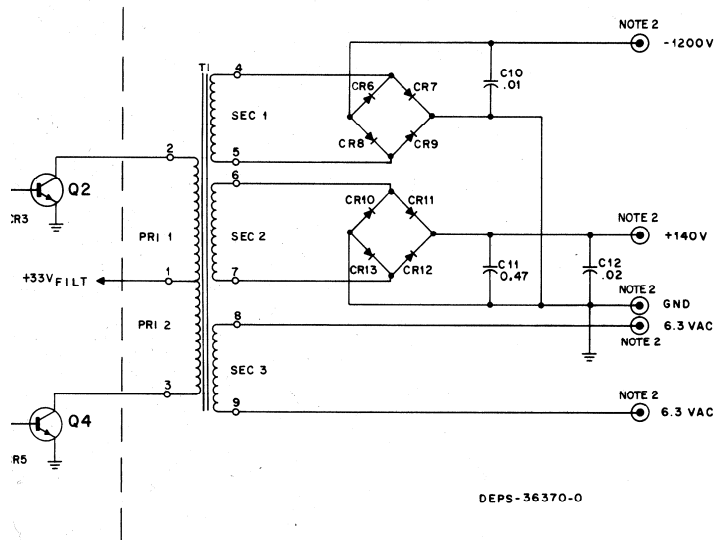
Reference Designation	Mfg's Description	+ V Fil.	Gnd
U1	Timer	8	1
U2	Quad Exclusive Or Gate	14	7

SCOPE MODULE (A03)

HIGH VOLTAGE POWER SUPPLY BOARD

MODEL RTP4020A
SCHEMATIC DIAGRAM, CIRCUIT BOARD DETAIL,
AND PARTS LIST

VE



HIGH VOLTAGE POWER SUPPLY

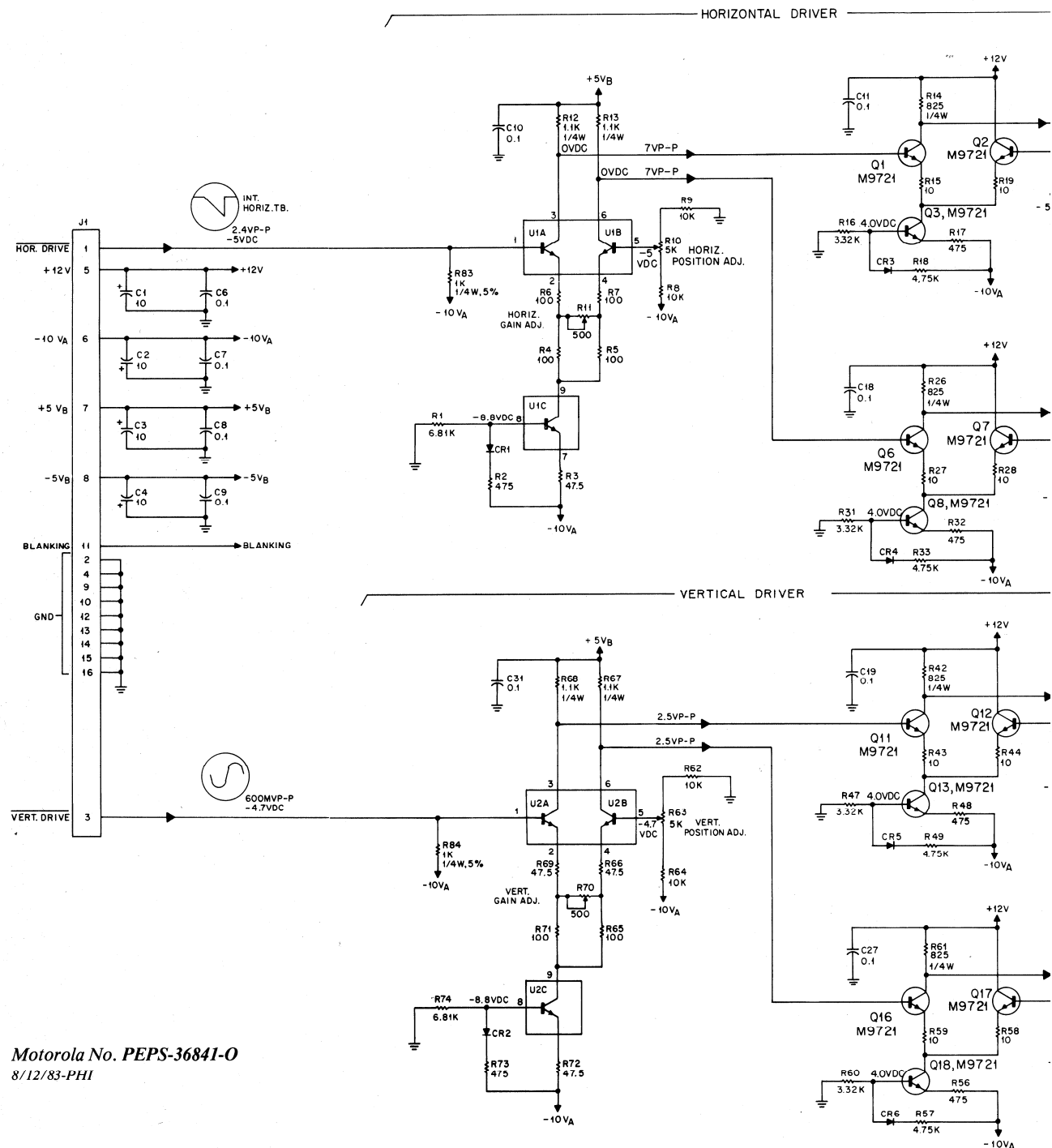
Motorola No. PEPS-36843-0
8/12/83-PHI

SCOPE MODULE (A03)

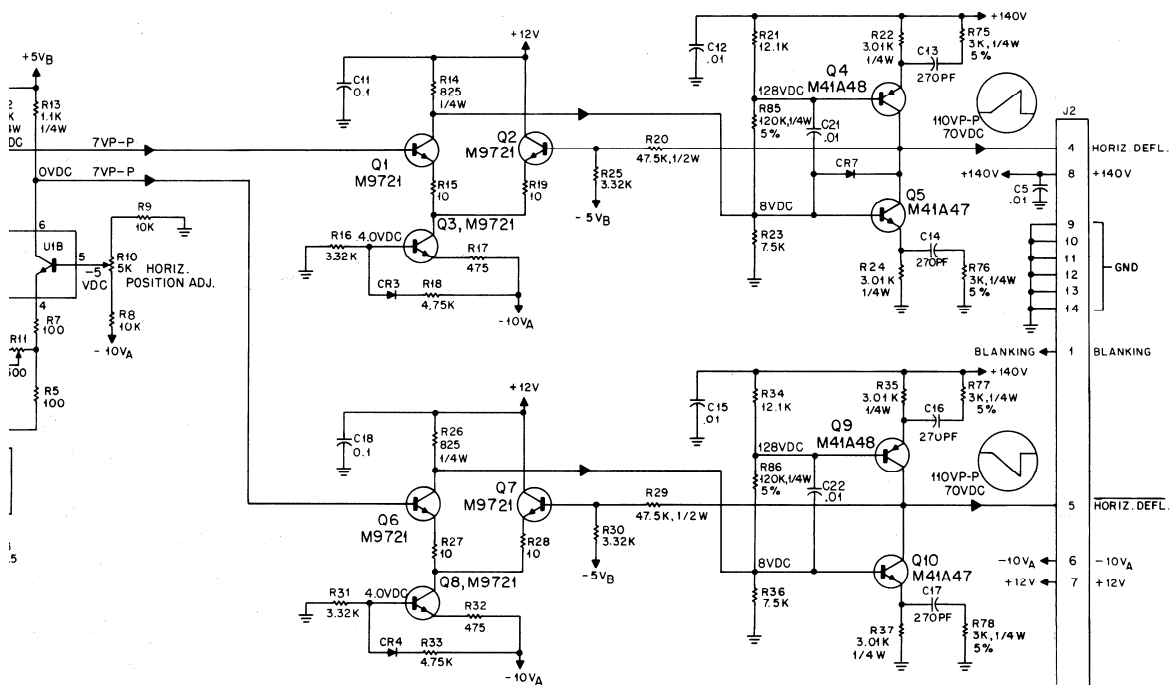
DRIVER BOARD

MODEL RTC4021A

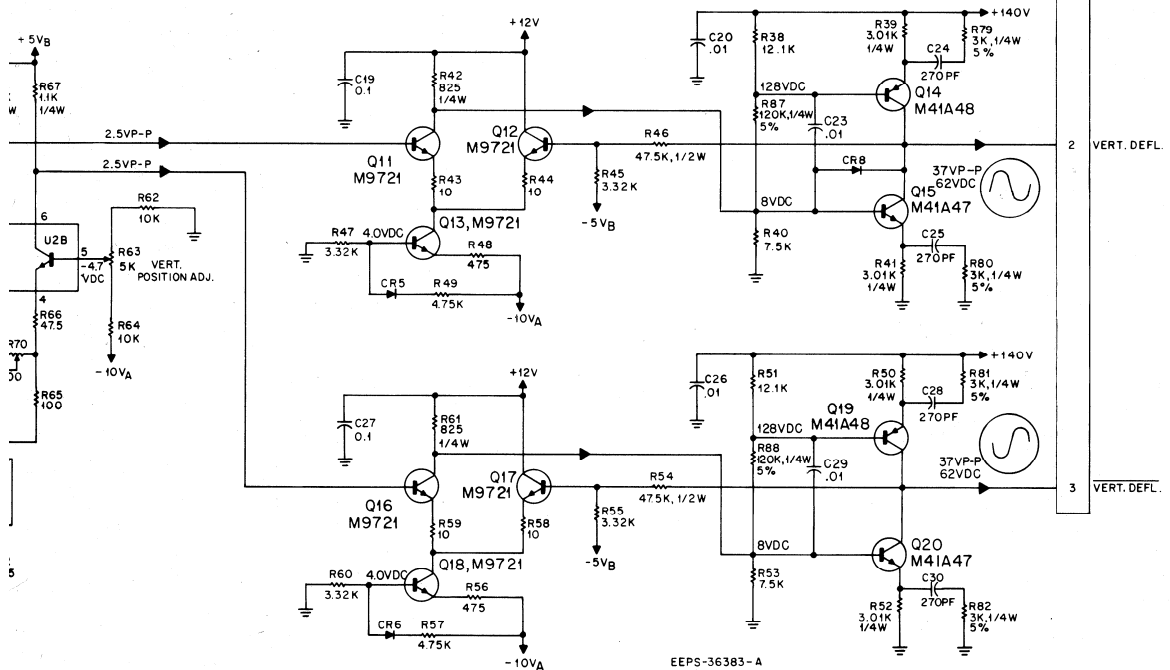
SCHEMATIC DIAGRAM, CIRCUIT BOARD DETAIL,
AND PARTS LIST



HORIZONTAL DRIVER



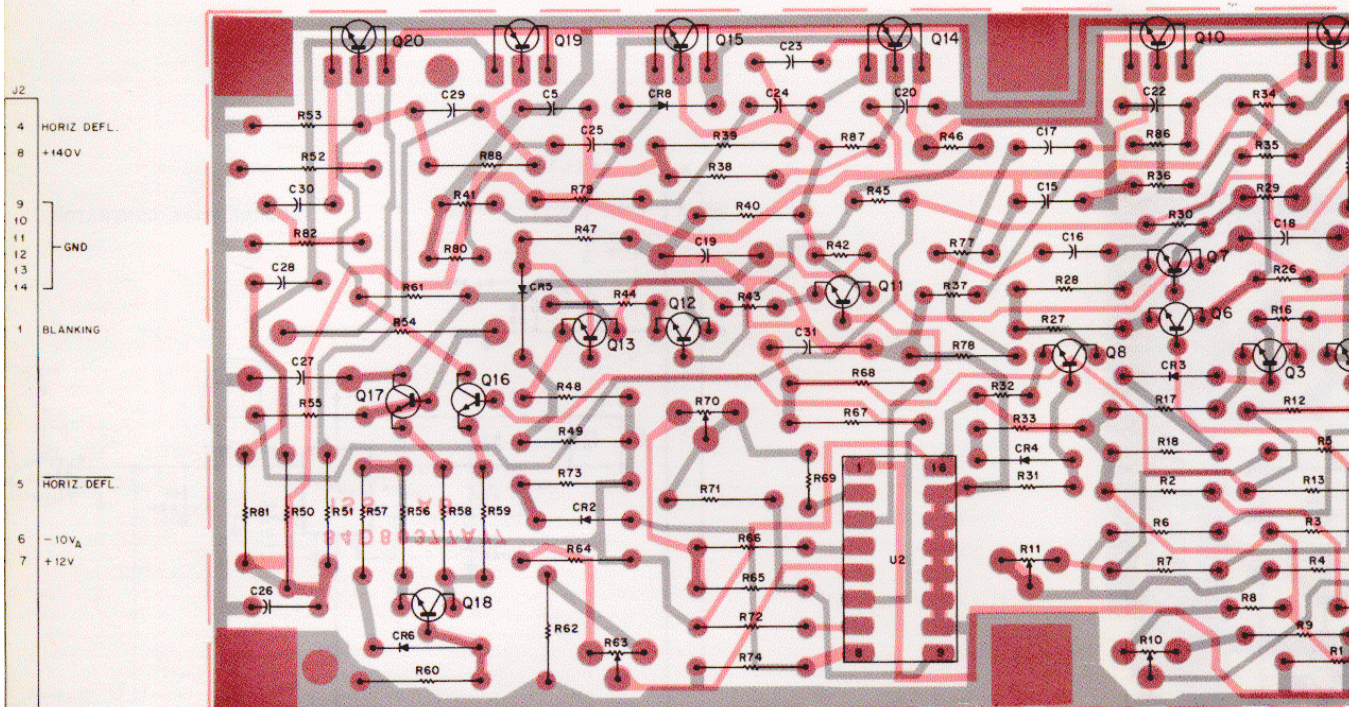
VERTICAL DRIVER



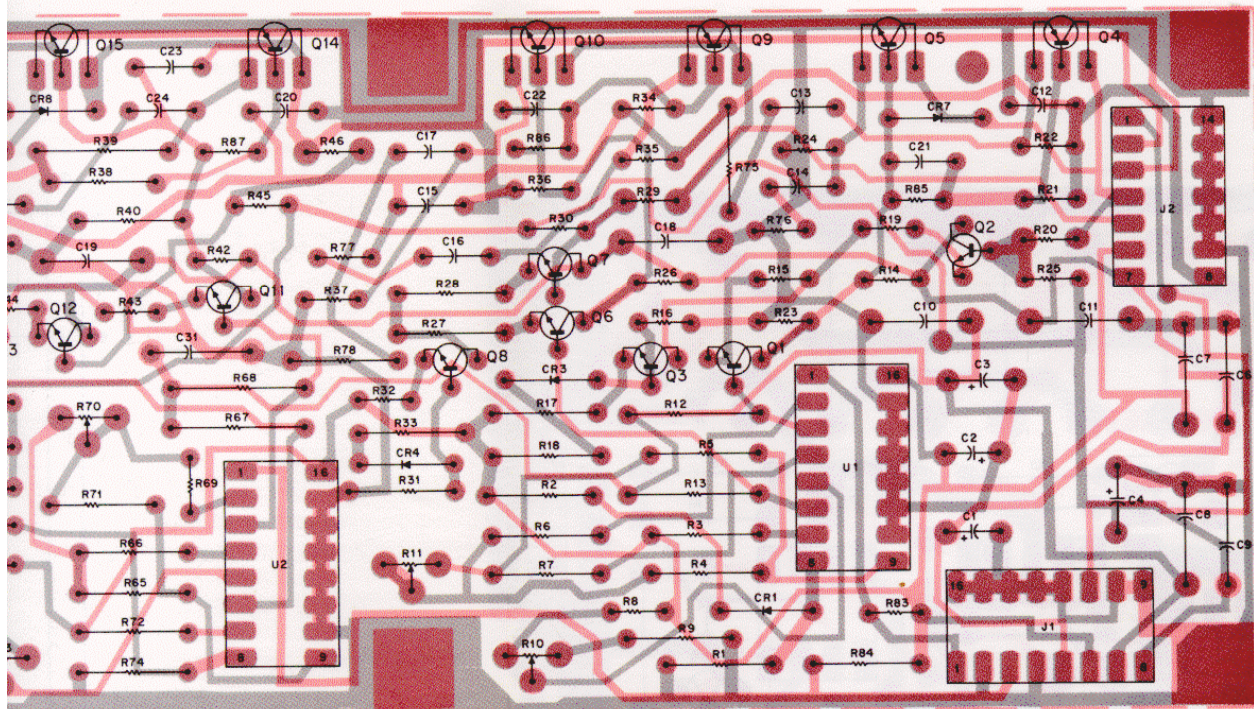
UNUSED FUNCTIONS
 10 11 13 14
 12 15
 U1 AND U2
 (4 PNP TRANSISTORS TOTAL)

NOTE:
 Unless otherwise
 capacitors are in n

Reference Desi
 U1
 U2



Reference Designation	Manufacturer's Description	-10 V _A	GND
U1	Transistor Array	Pin 16	Pins 10-15
U2	Transistor Array	Pin 16	Pins 10-15



SHOWN FROM COMPONENT SIDE

SOLDER SIDE • BD-DEPS-36385-0
 COMPONENT SIDE • BD-DEPS-36386-0
 OL-DEPS-36384-A

8 watt; all

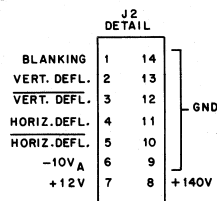
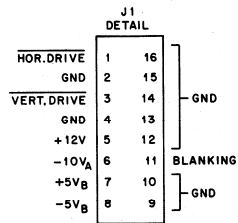
GND

ns 10-15
 ns 10-15

parts list

RTC4021A Scope Driver Board

PL-8457-O



REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
capacitor, fixed uF; + 60-40%; 250 V: unless otherwise stated:		
C1, 2, 3, 4	23-84665F01	10 uF + 100-10%; 25 V
C5	21-82428B40	.01
C6 thru 11	21-82372C01	0.1 uF + 80-20%; 25 V
C12	21-82428B40	.01 uF
C13, 14	21-859179	270 pF ± 5%; 300 V
C15	21-82428B40	.01
C16, 17	21-859179	270 pF ± 5%; 300 V
C18, 19	21-82372C01	0.1 uF + 80-20%; 25 V
C20, 21, 22, 23	21-82428B40	.01
C24, 25	21-859179	270 pF ± 5%; 300 V
C26	21-82428B40	.01
C27	21-82372C01	0.1 uF + 80-20%; 25 V
C28	21-859179	270 pF ± 5%; 300 V
C29	21-82428B40	.01
C30	21-859179	270 pF ± 5%; 300 V
C31	21-82372C01	0.1 uF + 80-20%; 25 V
diode: (see note)		
CR1 thru 6	48-83654H01	silicon
CR7, 8	48-82420C15	silicon
transistor: (see note)		
Q1, 2, 3	48-869721	NPN; type 2N5209
Q4	48-80341A48	PNP; type MPSU60
Q5	48-80341A47	NPN; type MPSU10
Q6, 7, 8	48-869721	NPN; type 2N5209
Q9	48-80341A48	PNP; type MPSU60
Q10	48-80341A47	NPN; type MPSU10
Q11, 12, 13	48-869721	NPN; type 2N5209
Q14	48-80341A48	PNP; type MPSU60
Q15	48-80341A47	NPN; type MPSU10
Q16, 17, 18	48-869721	NPN; type 2N5209
Q19	48-80341A48	PNP; type MPSU60
Q20	48-80341A47	NPN; type MPSU10
resistor, fixed: ± 1%; 1/8 W: unless otherwise stated		
R1	6-10621C75	6.81k
R2	6-10621B63	475
R3	6-10621A66	47.5
R4, 5, 6, 7	6-10621A97	100
R8, 9	6-10621C91	10k
R10	18-83452F12	variable; 5k
R11	18-83452F08	variable; 500
R12, 13	6-80313A96	1.1k; 1/4 W
R14	6-84444A02	825; 1/4 W
R15	6-10621A01	10
R16	6-10621C45	3.32k
R17	6-10621B63	475
R18	6-10621C60	4.75k
R19	6-10621A01	10
R20	6-80378A20	47.5k; 1/2 W
R21	6-10621C99	12.1k
R22	6-80313A97	3.01k; 1/4 W
R23	6-10621C79	7.5k
R24	6-80313A97	3.01k; 1/4 W
R25	6-10621C45	3.32k
R26	6-84444A02	825; 1/4 W
R27, 28	6-10621A01	10
R29	6-80378A20	47.5k; 1/2 W
R30, 31	6-10621C45	3.32k
R32	6-10621B63	475
R33	6-10621C60	4.75k
R34	6-10621C99	12.1k
R35	6-80313A97	3.01k; 1/4 W
R36	6-10621C79	7.5k
R37	6-80313A97	3.01k; 1/4 W
R38	6-10621C99	12.1k
R39	6-80313A97	3.01k; 1/4 W
R40	6-10621C79	7.5k
R41	6-80313A97	3.01k; 1/4 W
R42	6-84444A02	825; 1/4 W
R43, 44	6-10621A01	10
R45	6-10621C45	3.32k
R46	6-80378A20	47.5k; 1/2 W
R47	6-10621C45	3.32k
R48	6-10621B63	475
R49	6-10621C60	4.75k
R50	6-80313A97	3.01k; 1/4 W
R51	6-10621C99	12.1k
R52	6-80313A97	3.01k; 1/4 W
R53	6-10621C79	7.5k
R54	6-80378A20	47.5k; 1/2 W
R55	6-10621C45	3.32k
R56	6-10621B63	475
R57	6-10621C60	4.75k
R58, 59	6-10621A01	10
R60	6-10621C45	3.32k
R61	6-84444A02	825; 1/4 W
R62	6-10621C91	10k
R63	18-83452F12	variable; 5k
R64	6-10621C91	10k
R65	6-10621A97	100
R66	6-10621A66	47.5

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
R67, 68	6-80313A96	1.1k; 1/4 W
R69	6-10621A66	47.5
R70	18-83452F08	variable; 500
R71	6-10621A97	100
R72	6-10621A66	47.5
R73	6-10621B63	475
R74	6-10621C75	6.81k
R75 thru 82	6-124A60	3k $\pm$ 5%; 1/4 W
R83, 84	6-124A49	1k $\pm$ 5%; 1/4 W
R85 thru 88	6-124A99	120k $\pm$ 5%; 1/4 W
U1, 2	51-83629M10	integrated circuit: (see note) linear transistor array
mechanical parts		
	9-84906E01	SOCKET, 14 contact
	9-84906E02	SOCKET, 16 contact

note: For optimum performance, diodes, transistors, and integrated circuits must be ordered by Motorola part numbers.

1. DESCRIPTION

1.1 The scope amplifier board develops the signals necessary to drive the scope module (A03). AC and dc voltages are developed for the scope driver board. In addition, vertical signal amplification and dc level shift are provided. A blanking signal is applied to the scope high voltage board.

1.2 The scope amplifier operates in auto or normal modes. When a triggerable vertical signal is present, a sweep is developed in both auto or normal modes. When a triggerable signal is not present, the sweep is blanked in the normal mode and free running in the auto mode. An external horizontal input is available at the front panel.

2. THEORY OF OPERATION

2.1 ADDRESS/DATA LATCH

When address lines A0-A3 are low, the scope data lines D0-D7 are clocked into latch U23. The output of U23 is buffered and level shifted by U1 and U17.

2.2 INTERNAL HORIZONTAL TIME BASE

An internal horizontal time base is generated by a ramp generator and the blanking and trigger hold off circuitry.

2.2.1 Ramp Generator

The ramp signal is developed using an integrator with a constant voltage applied. The sweep rate is determined by R44, R45, R46 and C3, C4, and C5. The combinations of the RC network produce six sweep rates over a six decade range between 1 microsecond and 100 milliseconds.

2.2.2 Blanking and Trigger Hold Off Circuitry

2.2.2.1 When the ramp voltage reaches 6 volts, the output of U8B is a blanking pulse which is us-

ed to short circuit the integrator (via switch U4C) and develop a hold off time (U9B). During this time, U8A and U10B are disabled. In the normal triggering mode, U10B is always disabled thus keeping the blanking signal high and preventing the ramp from starting until a trigger pulse is present at U12B. The output of U12B is a negative-going pulse to U10A, which resets U8B if all other inputs are low. This starts the ramp signal.

2.2.2.2 In the auto triggering mode with no trigger pulse present, U9B allows sufficient time for the retrace to occur before applying a low to U10B. When this occurs, U8B is clocked low and the ramp cycle begins. U12A delays the free-running auto triggering by disabling U10B for about 0.2 seconds following the last trigger pulse from U12B. Free-run operation begins if there are no other trigger pulses during that time.

2.3 EXTERNAL HORIZONTAL

An externally generated horizontal signal applied to the EXT HORIZ input jack on the service monitor front panel is amplified and level shifted by U19A and U19B.

2.4 VERTICAL AMPLIFIER

Amplifier U14 forms a differential amplifier and current source for amplifying the vertical signal. A VERTICAL vernier control on the front panel is connected between emitter resistors and is used to control gain. When in the calibrated position (fully CCW), maximum signal gain is attained.

2.5 TRIGGER LEVEL/OUTPUT

The amplified vertical signal is compared to the trigger level set by the TRIG LEVEL control. The output signal is a squarewave with the duty cycle dependent upon the control setting. The high-to-low transition coincides with a point on the rising edge of the vertical signal input from the front panel interface board.

parts list

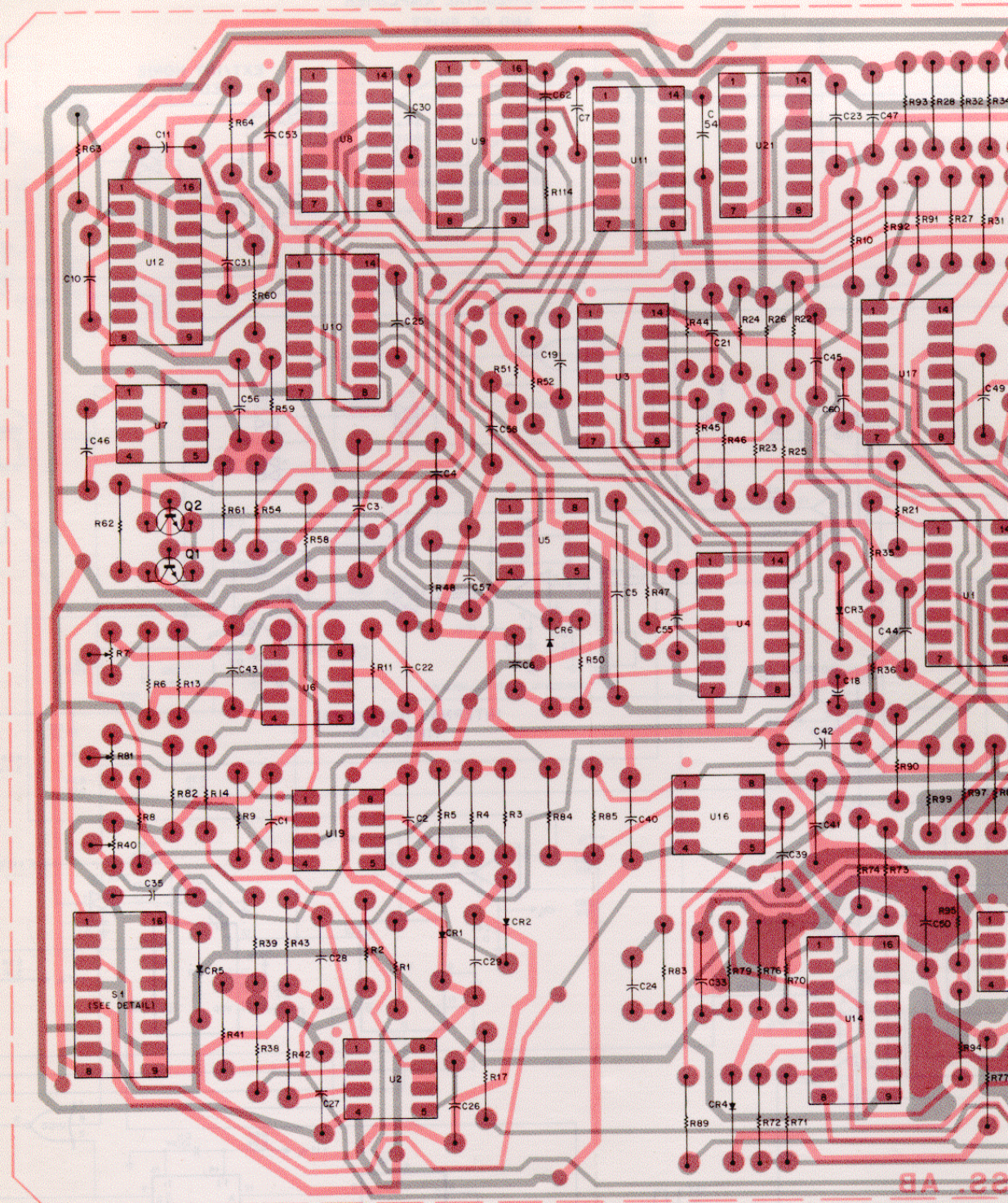
RTC4022A Scope Amplifier Board

PL-8455-O

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
C1, 2	21-82372C01	capacitor, fixed: pF; $\pm 5\%$; 500 V; unless otherwise stated
C3	20-83601B10	0.1 uF + 80-20%; 25 V
C4	21-840812	variable; 100
C5	8-82317B02	200
C6	21-868681	0.25 uF $\pm 10\%$; 100 V
C7	21-847601	47; 300 V
C8, 9		1000 uF
C10	8-84637L22	NOT USED
C11	21-850118	0.22 uF $\pm 10\%$; 100 V
C12, 13	23-84665F01	100
C14, 15	8-84637L34	10 uF + 100-10%; 25 V
C16, 17	8-84637L31	0.33 uF $\pm 10\%$; 100 V
C18	23-84665F01	.047 uF $\pm 10\%$; 250 V
C19	21-82372C01	10 uF + 100-10%; 25 V
C20	23-84665F01	0.1 uF + 80-20%; 25 V
C21, 22, 23	21-82372C01	10 uF + 100-10%; 25 V
C24	21-832502	0.1 uF + 80-20%; 25 V
C25 thru 58	21-82372C01	.02 uF + 60-40%; 250 V
C59	21-847091	0.1 uF + 80-20%; 25 V
C60	21-863623	80 $\pm 2\%$; 300 V
C61		56
C62	21-82187B27	NOT USED
CR1, 2, 3, 4	48-83654H01	diode: (see note)
CR5	48-82466H01	silicon
CR6 thru 9	48-83654H01	silicon
J1	9-84231B02	connector, receptacle:
J2	9-84906E02	female; single contact (phone)
Q1	48-869571	female; 16 contact, IC
Q2	48-869570	transistor: (see note)
		PNP; type M9571
		NPN; type M9570
R1	6-10621C75	resistor, fixed; $\pm 5\%$; 1/8 W; unless otherwise stated
R2	6-124A73	6.81k $\pm 1\%$
R3	6-10621C91	10k; 1/4 W
R4	6-10621D29	10k $\pm 1\%$
R5	6-10621C75	24.3k $\pm 1\%$
R6	6-10621D49	6.81k $\pm 1\%$
R7	18-83452F32	39.2k $\pm 1\%$
R8	6-10621C91	variable; 10k
R9	6-10621D29	10k $\pm 1\%$
R10	6-124A73	24.3k $\pm 1\%$
R11	6-10621C79	10k; 1/4 W
R12		7.5k $\pm 1\%$
R13	6-10621C41	NOT USED
R14	6-10621C63	3.01k $\pm 1\%$
R15	6-10621C67	5.11k $\pm 1\%$
R16		5.62k $\pm 1\%$
R17	6-10621C91	NOT USED
R18	6-10621C24	10k $\pm 1\%$
R19	6-124A79	2.0k $\pm 1\%$
R20	6-124A53	18k; 1/4 W
R21	6-124A60	1.5k; 1/4 W
R22	6-124A69	3k; 1/4 W
R23	6-124A60	6.8k; 1/4 W
R24	6-124A69	3k; 1/4 W
R25	6-124A60	6.8k; 1/4 W
R26	6-124A69	3k; 1/4 W
R27	6-124A60	6.8k; 1/4 W
R28	6-129A69	3k; 1/4 W
R29	6-124A79	6.8k; 1/4 W
R30	6-124A53	18k; 1/4 W
R31 thru 36	6-124A66	1.5k; 1/4 W
R37		5.1k; 1/4 W
U38	6-10621C63	NOT USED
U39	6-10621B31	5.11k $\pm 1\%$
U40	18-83452F09	221 $\pm 1\%$
U41	6-10621C91	variable; 1k
U42	6-10621C63	10k $\pm 1\%$
U43	6-10621C63	5.11k $\pm 1\%$
U44	6-10621C91	10k $\pm 1\%$
U45	6-10621C74	6.65k $\pm 1\%$
U46	6-10621D71	66.5k $\pm 1\%$
U47	6-10621E68	665k $\pm 1\%$
U48	6-1024A25	100; 1/4 W
U49	6-10621C63	5.11k $\pm 1\%$
U50		NOT USED
U51	6-124A92	62k; 1/4 W
U52	6-124B14	470k; 1/4 W
U53	6-124A73	10k; 1/4 W
U54		NOT USED
U55	6-124A65	4.7k; 1/4 W
U56	6-10621C63	5.11k $\pm 1\%$
U57, 60	6-10621C91	10k $\pm 1\%$
U58, 61, 62	6-124A91	56k; 1/4 W
U59	6-124B21	910k; 1/4 W
U60	6-124A69	6.8k; 1/4 W
U61		NOT USED
U62	6-10621C63	5.11k $\pm 1\%$

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
R69, 70	6-10621B98	1.1k $\pm 1\%$
R71	6-10621A66	47.5 $\pm 1\%$
R72, 73	6-84444A10	2.74k $\pm 1\%$
R74	6-10621A66	47.5k $\pm 1\%$
R75		NOT USED
R76	6-10621D41	32.4k $\pm 1\%$
R77	6-10621C49	3.65k $\pm 1\%$
R78	6-10621B52	365 $\pm 1\%$
R79	6-10621C20	1.82k $\pm 1\%$
R80		NOT USED
R81	18-83452F30	variable; 500
R82	6-124A38	360; 1/4 W
R83	6-10621D88	100k $\pm 1\%$
R84	6-10621C91	10k $\pm 1\%$
R85	6-10621D57	47.5k $\pm 1\%$
R86	6-10621C99	12.1k $\pm 1\%$
R87		NOT USED
R88	6-10621C88	9.31k $\pm 1\%$
R89	6-10621D88	100k $\pm 1\%$
R90	6-124A73	10k; 1/4 W
R91	6-124B37	4.3 meg; 1/4 W
R92, 93	6-124A66	5.1k; 1/4 W
R94, 95	6-10621C91	10k $\pm 1\%$
R96	6-10621D96	121k $\pm 1\%$
R97	6-10621C32	2.43k $\pm 1\%$
R98		NOT USED
R99	6-10621D29	24.3k $\pm 1\%$
R100	6-10621C91	10k $\pm 1\%$
R101		NOT USED
R102	6-124A68	6.2k; 1/4 W
R114	6-124A01	10; 1/4 W
U1	51-84371K59	integrated circuit: (see note)
U2	51-84371K63	quad comparator
U3, 4	51-82884L48	dual operational amplifier
U5, 6	51-80365A09	quad analog switch
U7	51-80347A38	operational amplifier
U8	51-82884L13	voltage comparator
U9	51-82884L53	dual D flip-flop
U10	51-82884L17	dual precision monostable multivibrator
U11	51-82884L05	triple 3-input NOR gate
U12	51-82884L53	quad 2-input NAND gate
U13	51-80365A07	dual precision monostable multivibrator
U14	51-83629M10	operational amplifier
U15	51-84371K60	linear transistor array
U16	51-80365A07	single operational amplifier
U17	51-84371K59	operational amplifier
U18	51-82609M20	quad comparator
U19	51-80365A07	negative voltage regulator
U20	51-84561L76	operational amplifier
U21	51-82884L05	positive voltage regulator
U22	51-84561L38	quad 2-input NAND gate
U23	51-82609M17	triple 3-input NOR gate
U24	51-80365A29	octal D-type flip-flop
		negative voltage regulator
mechanical parts		
	9-84906E02	SOCKET, 16 pin
	45-80395A42	ACTUATOR, ejector; 2 used
	75-80378A83	PAD

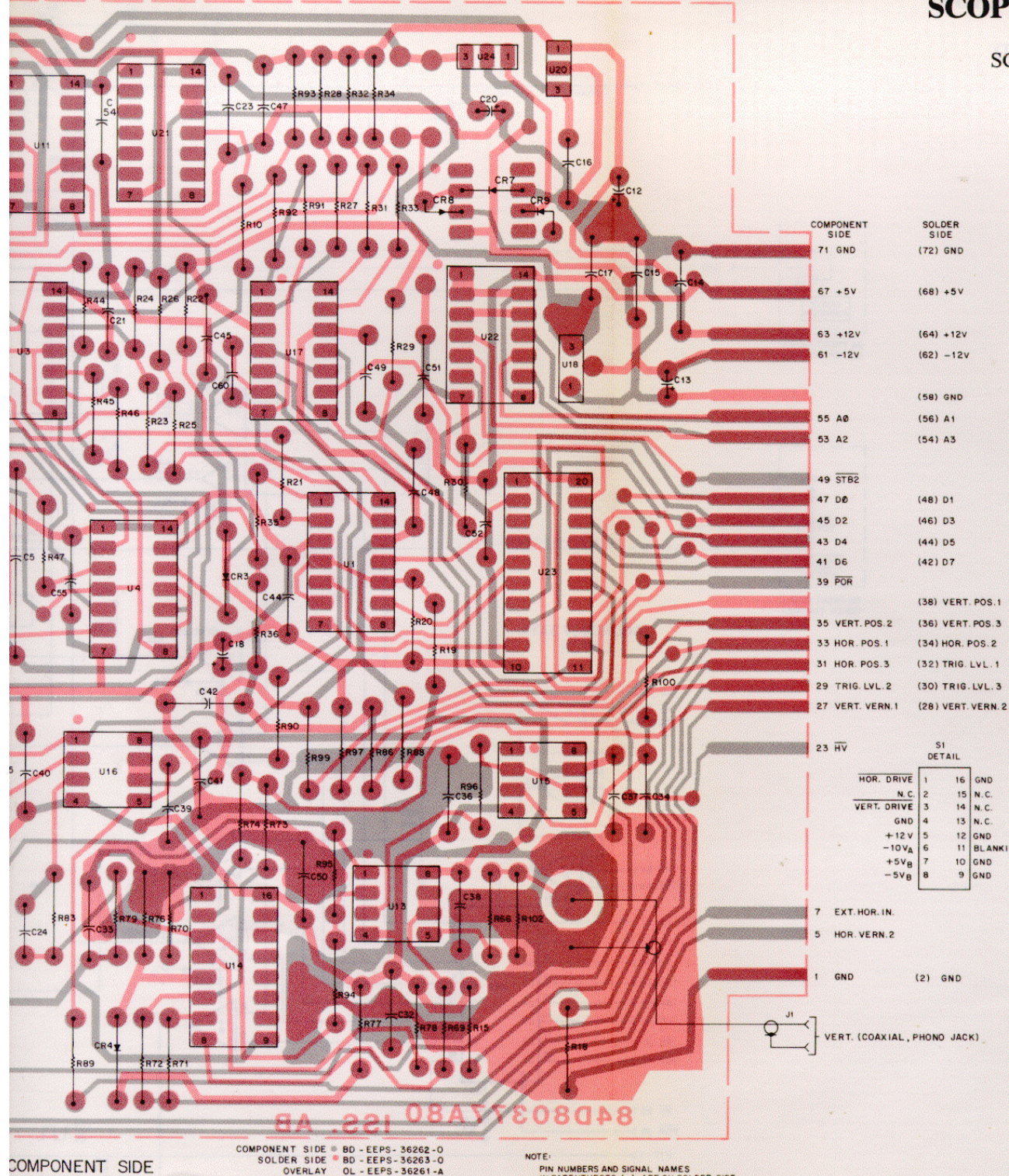
note: For optimum performance, diodes, transistors, and integrated circuits must be ordered by Motorola part numbers.



SHOWN FROM COMPONENT SIDE

COMPONENT SIDE • BD - EE
SOLDER SIDE • BD - EE
OVERLAY OL - EE

SCHEM.



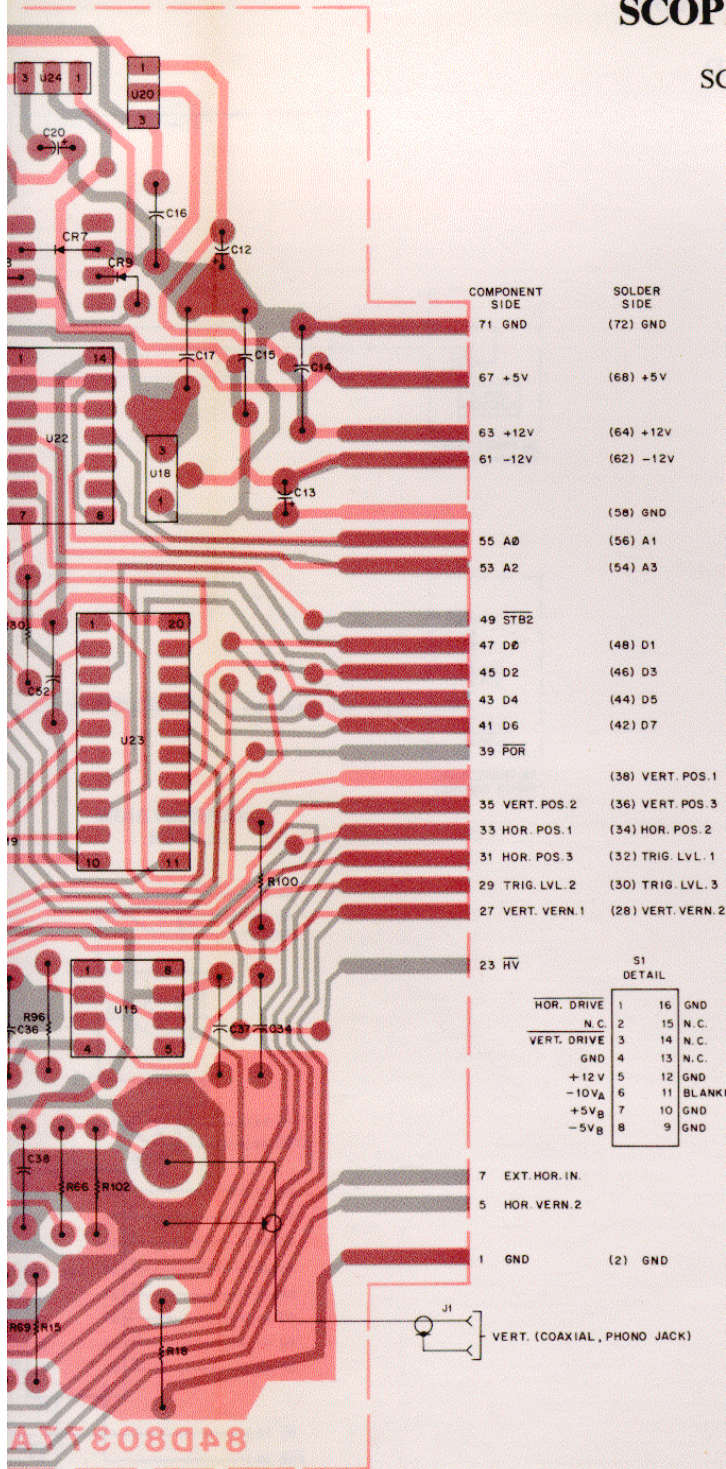
COMPONENT SIDE

COMPONENT SIDE BD - EEPS- 36262 -0
SOLDER SIDE BD - EEPS- 36263 -0
OVERLAY OL - EEPS- 36261 -A

NOTE:
PIN NUMBERS AND SIGNAL NAMES
IN PARENTHESES, (), ARE ON SOLDER SIDE

SCOPE AMPLIFIER BOARD (A04)

MODEL RTL4022A
SCHEMATIC DIAGRAM, CIRCUIT BOARD
DETAIL, AND PARTS LIST



NOTE:
PIN NUMBERS AND SIGNAL NAMES
IN PARENTHESES, (), ARE ON SOLDER SIDE.

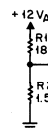
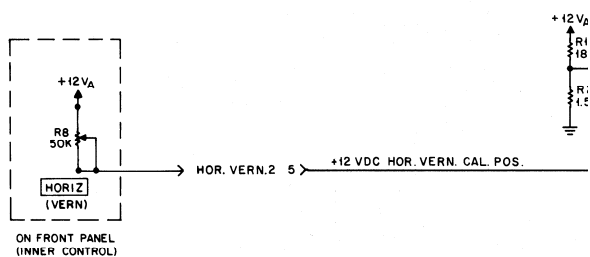
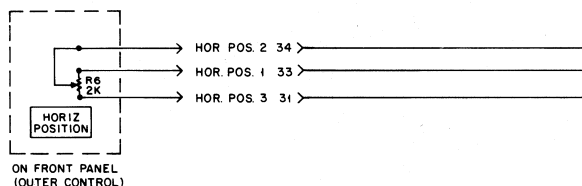
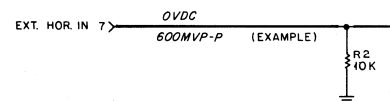
Motorola No. PEPS-36844-0
(Sheet 1 of 3)
8/12/83- PHI

SCOPE AMPLIFIER BOARD

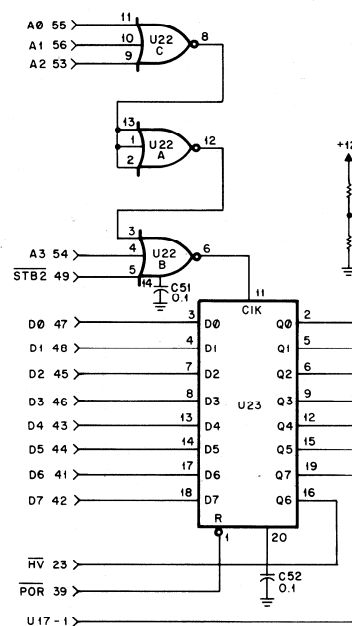
SCOPE AMPLIFIER BOARD (A04)

MODEL RTL4022A

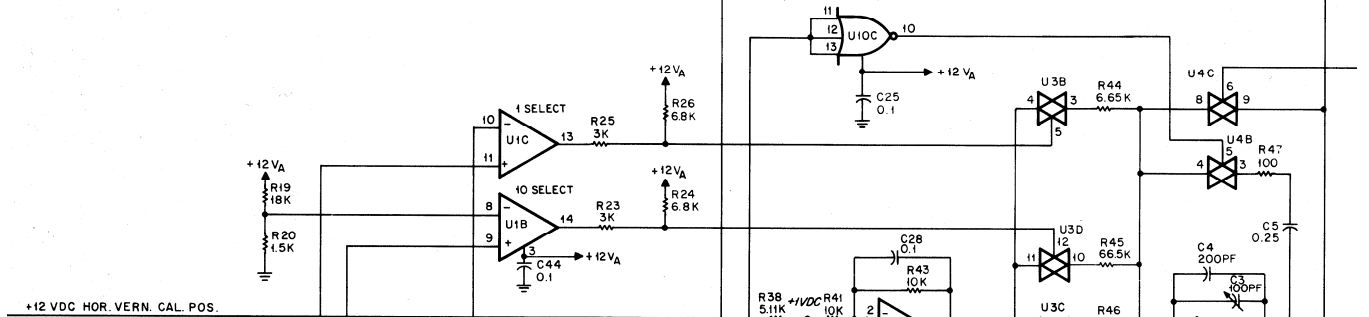
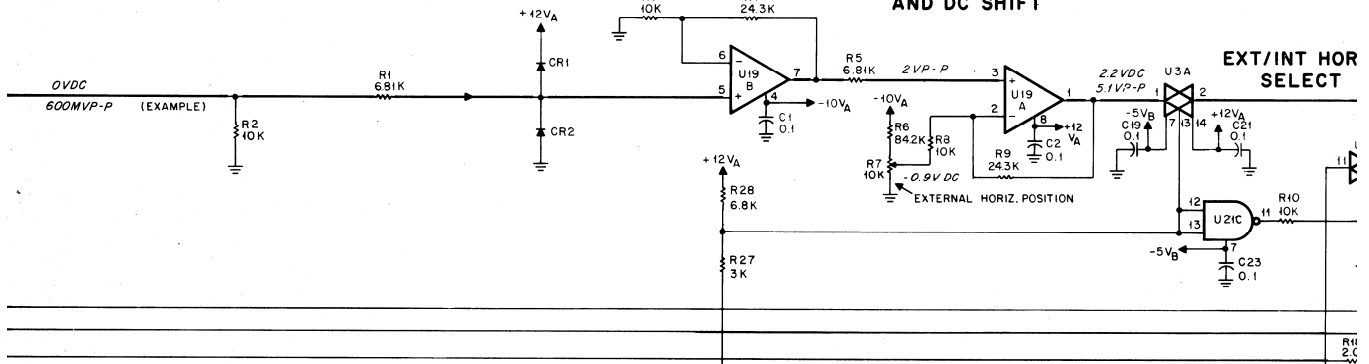
SCHEMATIC DIAGRAM, CIRCUIT BOARD
DETAIL, AND PARTS LIST



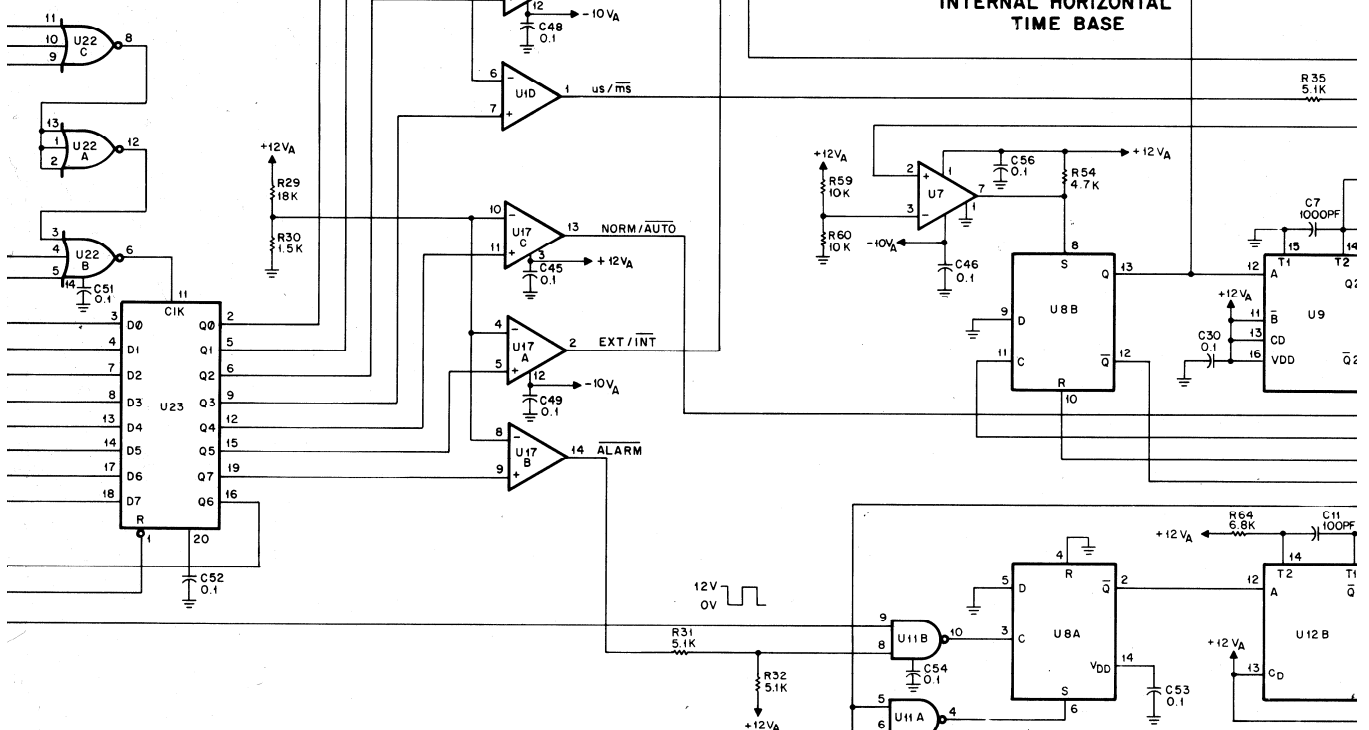
ADDRESS / DATA LATCH



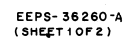
EXTERNAL HORIZONTAL AMPLIFIER AND DC SHIFT

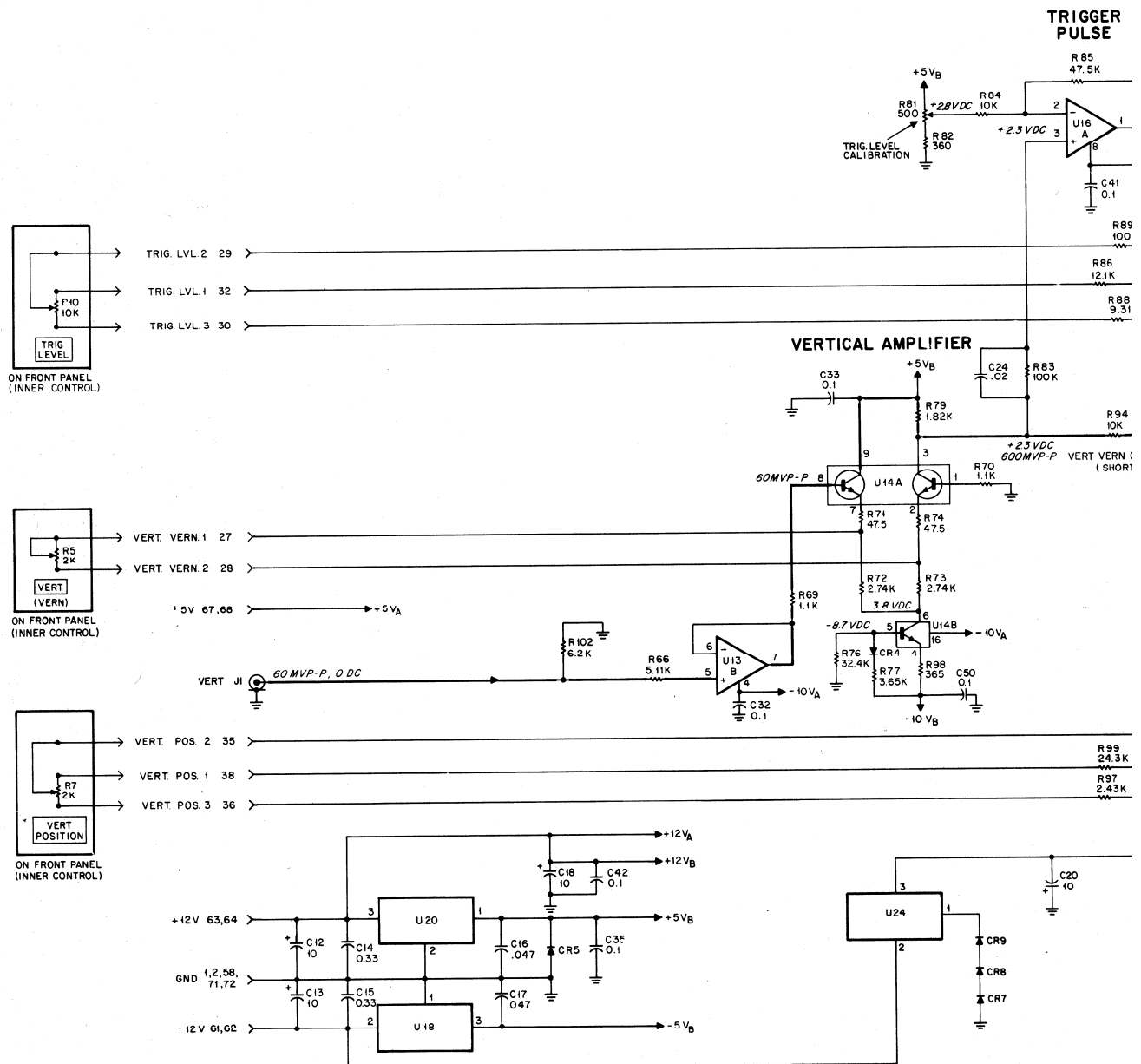


DDRESS / DATA LATCH



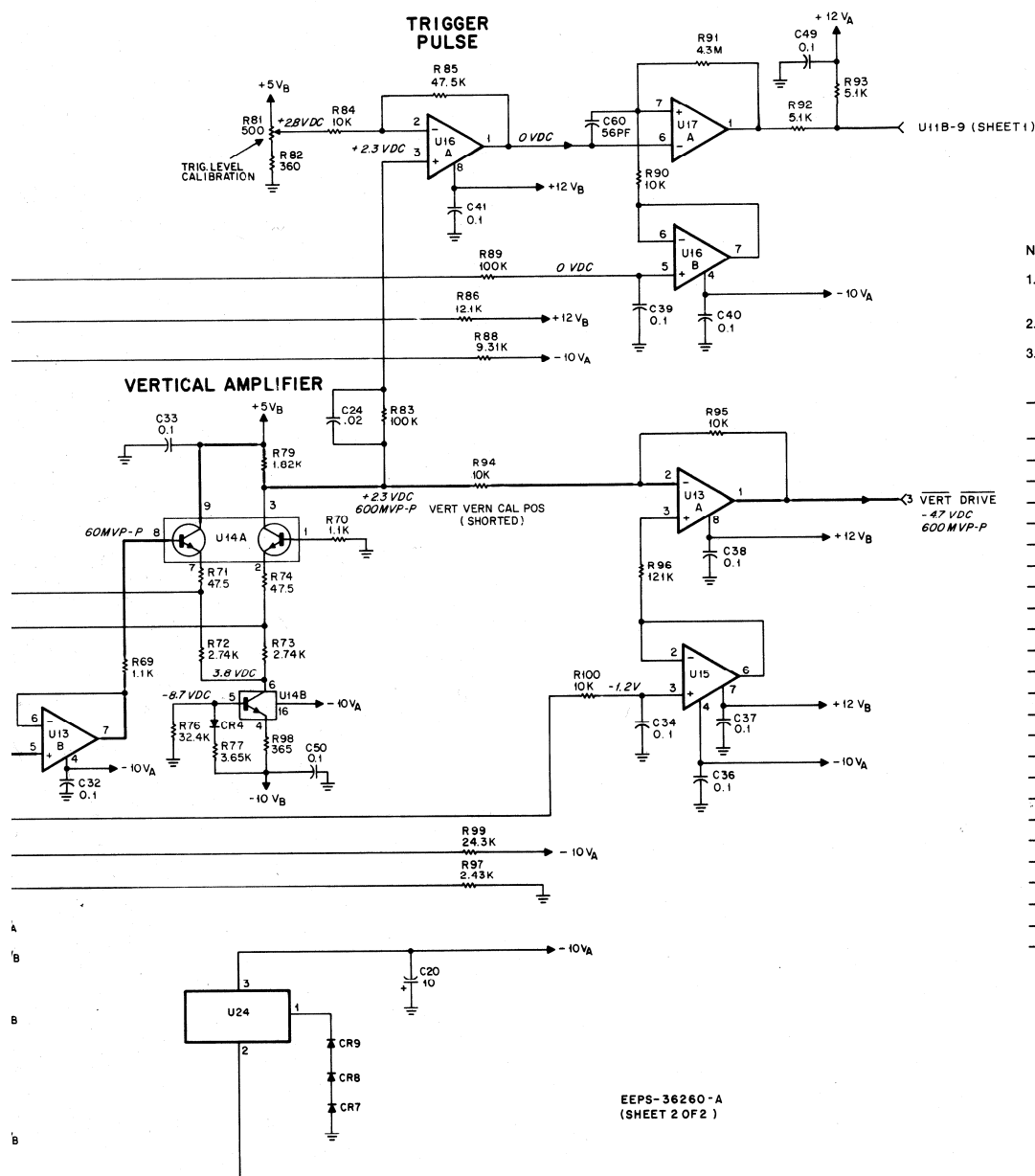
FT





SCOPE AM

SCHEMA



NOTES:

1. Unless otherwise indicated, all resistor values are microfarads; and inductors are
2. IC types are TTL and CMOS devices.
3. Types and connections for the integrate follows:

Reference Designation	Mfr's Description
U1	Quad Comparator
U2	Dual Op-Amp
U3	Quad Analog Switch
U4	Quad Analog Switch
U5	Op Amp
U6	Op Amp
U7	Voltage Comparator
U8	Dual-D Flip-Flop
U9	Dual Retrigger Monostable
U10	Triple 3-Input NOR
U11	Quad 2-Input NAND
U12	Dual Retrigger Monostable
U13	Dual Op Amp
U14	NPN/PNP Trans Array
U15	Op Amp
U16	Dual Op Amp
U17	Quad Comparator
U18	Neg Voltage Reg
U19	Dual Op Amp
U20	Pos Voltage Reg
U21	Quad 2-Input NAND
U22	Triple 3-Input NOR
U23	Octal F-F Comm Clk
U24	Neg Voltage Reg