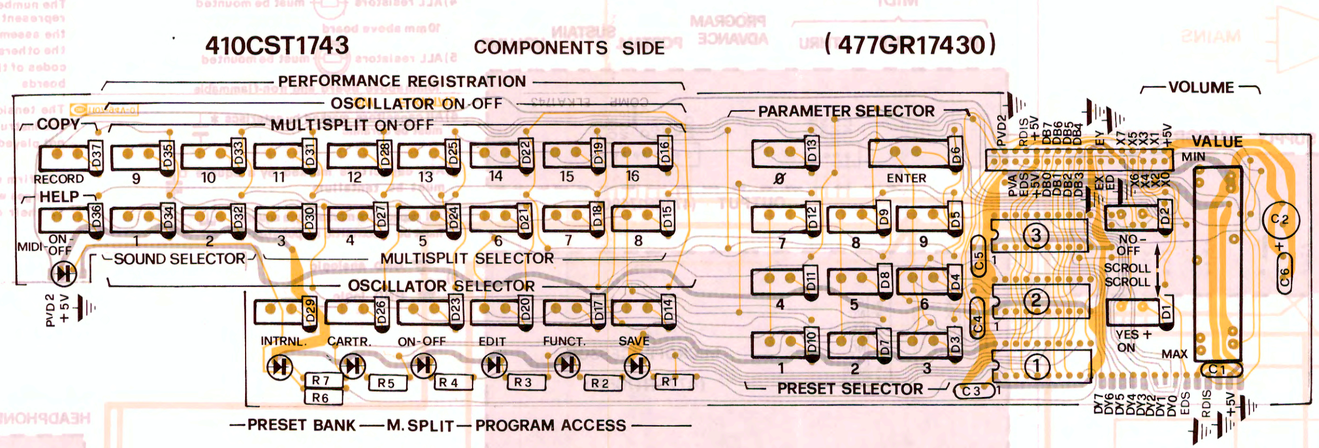
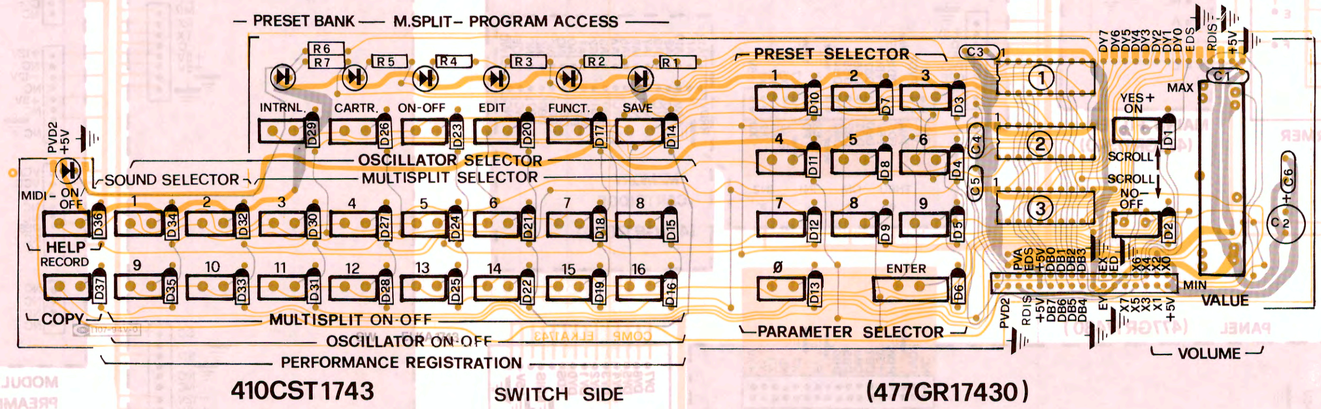




Model : ER33
Sheet No. 2a

Designed by

Drawn by Vholi Vrevo

WIRING CONNECTION DIAGRAM

1) ALL resistors —□— are carbon film 1/4w 5%
2) ALL resistors marked by a point —□•— must be metal film 2%
3) ALL capacitors marked by a point ⊣•⊢ must be plastic film 2%
4) ALL resistors ⊂□⊃ must be mounted 10mm above board
5) ALL resistors ⊂□⊃ must be mounted 10mm above board and non-flammable
6) All capacitors marked by asteriscs * must be ceramic
7) ALL capacitors marked by a square □ must be tantalium
8) All capacitors marked by a square △ must be electrolitic no polarized
9) GND analogic
   GND logic

ALL diodes are:
FDH 9439 Fairchild
or 125 ITT
or BA 130
or 2pF

The numbers in brackets (477GR ....) represent the ELKA codes of the assembled boards whilst the others represent the ELKA codes of the non-assembled boards

The tensions are measured when the instrument is turned on but not played

The firm reserves the right to make changes without any warning and to their own discretion

MAINS

MIDI
IN OUT THRU

PROGRAM ADVANCE

PORTAM.

SUSTAIN

VOLUME

POWER SUPPLY (477GR17330)
X1 X2 +5V +12V X3 X4

OUTPUT (477GR17490)
IN1 IN2 OM THR
PAD AC +5V D NC OPE

MICROPROCESSOR
(477GR1705B)
TX RX NC NC
F0 NC RES NC NC NC VCB VCA
−12V +12V +5V +5V MR
+5V D A PAD PE NC NC NC
NC PVD2 RDIS +5V DB7 DB6 DB5 DB4 EV X7 X5 X3 X1 +5V
NC NC PVA EDS +5V OV DB1 DB2 DB3 EX ED X6 X4 X2 X0
A12 A11 A10 A9 A8 A7 A6 A5 A4 A3 A2 A1 A0 NC NC NC NC NC NC NC
RRDY +5V NC NC NC NC NC DB0 DB1 DB2 DB3 DB4 DB5 DB6 DB7 NC NC
THRU OM IN1 IN2

TRANSFORMER
X1 X2 X3 X4 E F

MAINS FILTER
(477GR17340)
B NC A C D E F

MEMORY
CARTRIDGE
(477GR17020)

PANEL (477GR17430)
PVD2 +5V
C D
MASTER VOLUME
ON OFF
PVD2 +5V

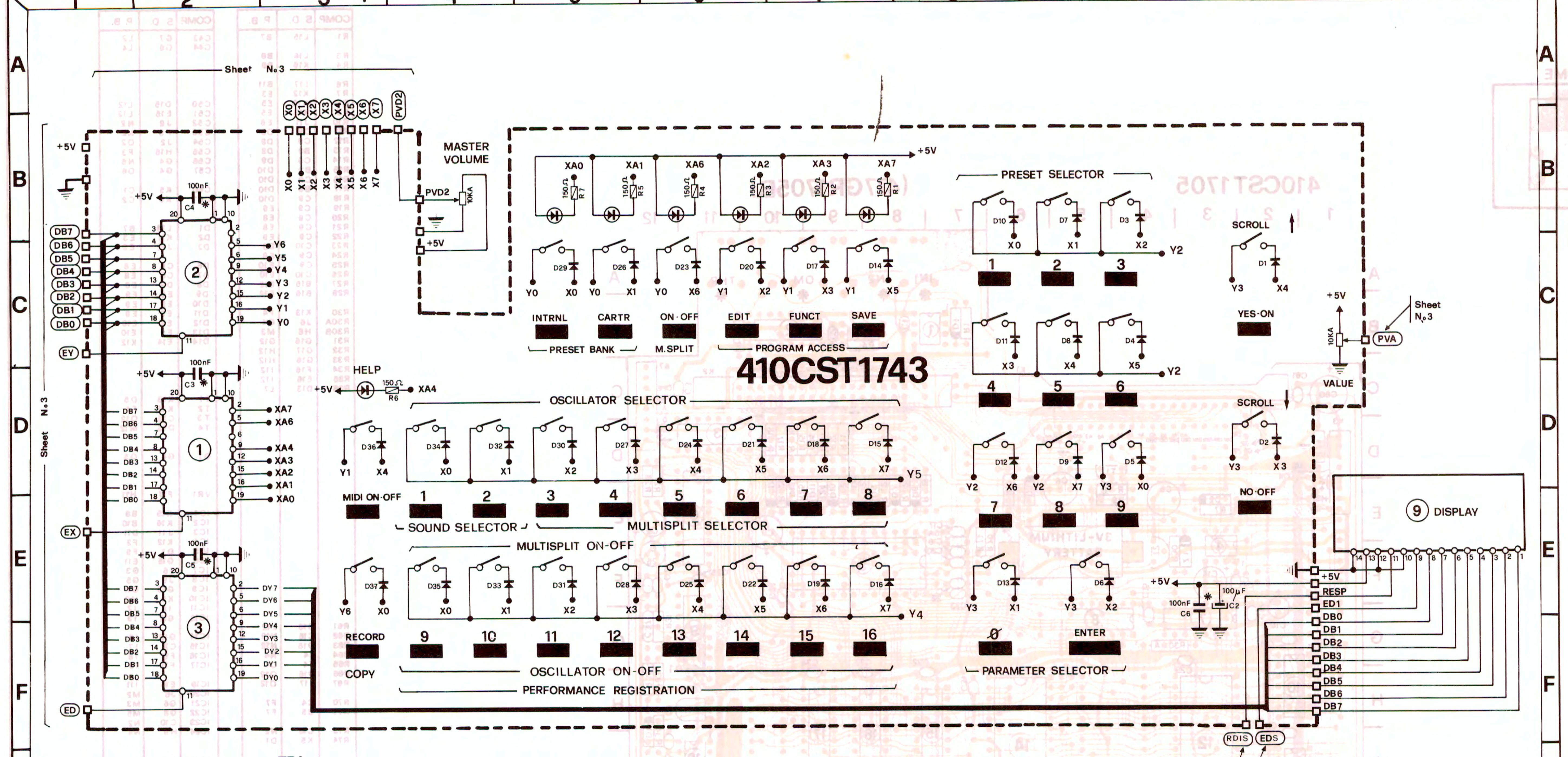
DISPLAY
DV7 DV6 DV5 DV4 DV3 DV2 DV1 DV0 EDS RDIS +5V

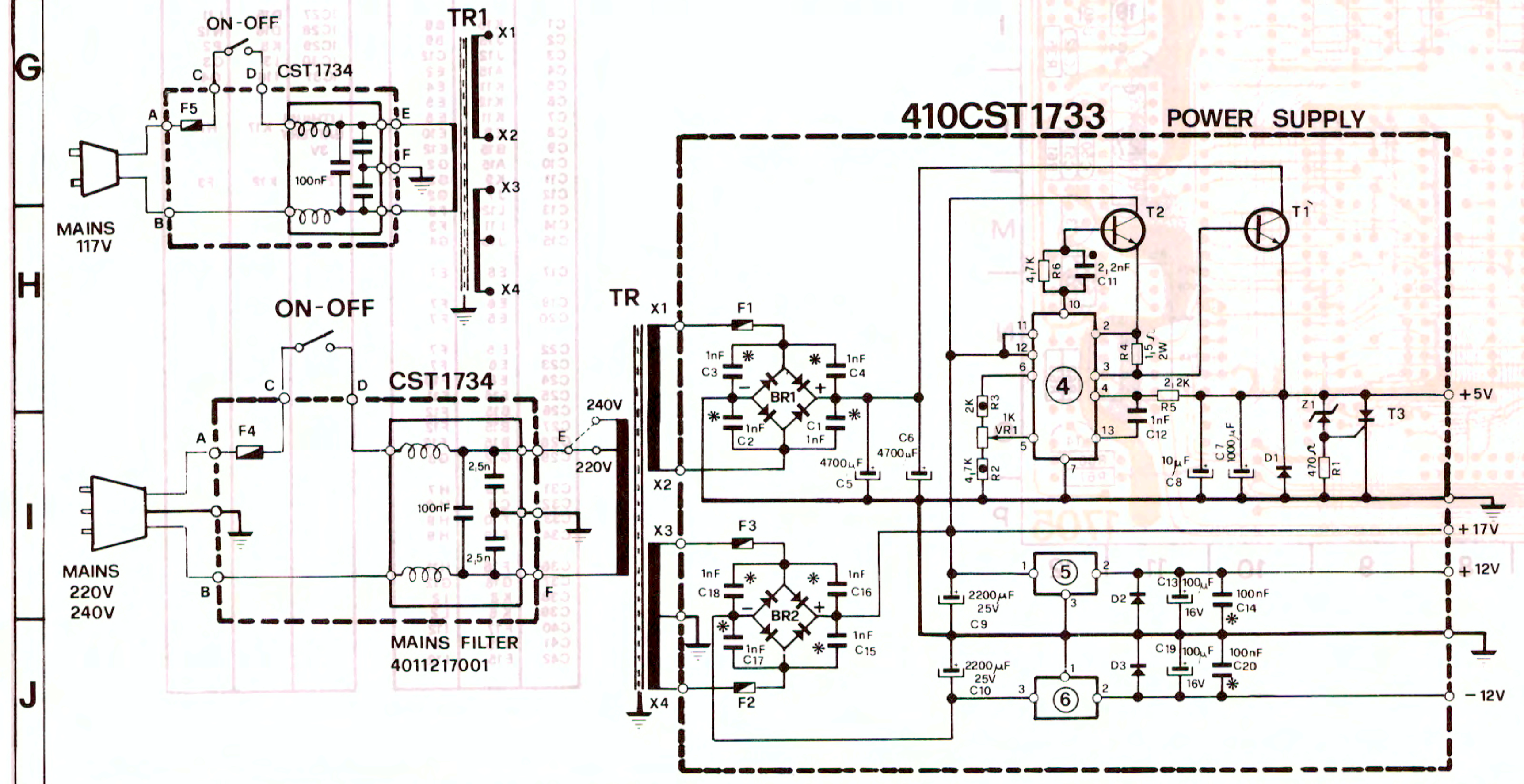
GENERATION (477GR17081)
MR RX TX C +5V +5V
SC SD NC NC −12V +12V

HEADPHONE LEVEL GENERAL

MODULATOR AND PREAMP. OUT
(477GR1707B)
SD NC NC SC NC C NC
+12V NC −12V NC +5V NC NC
VCA VCB NC NC NC RES NC F0
NC NC NC NC NC

Model : ER33
Sheet N° 1


410CST1743
MASTER VOLUME
PRESET SELECTOR
SCROLL
INTRNL
CARTR
ON-OFF
EDIT
FUNCT
SAVE
PRESET BANK
M.SPLIT
PROGRAM ACCESS
YES-ON
VALUE
HELP
OSCILLATOR SELECTOR
MIDI ON-OFF
NO-OFF
SOUND SELECTOR
MULTISPLIT SELECTOR
MULTISPLIT ON-OFF
9 DISPLAY
RECORD
COPY
ENTER
OSCILLATOR ON-OFF
PERFORMANCE REGISTRATION
PARAMETER SELECTOR
Sheet N.3

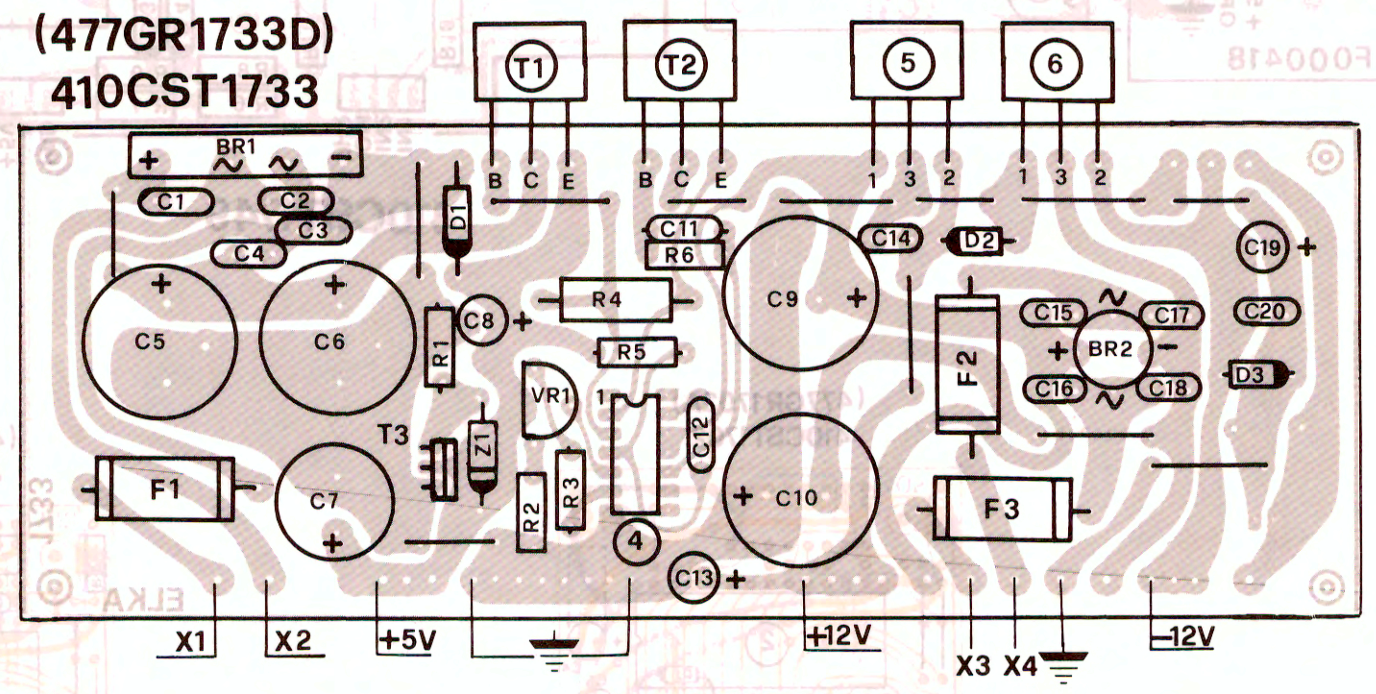


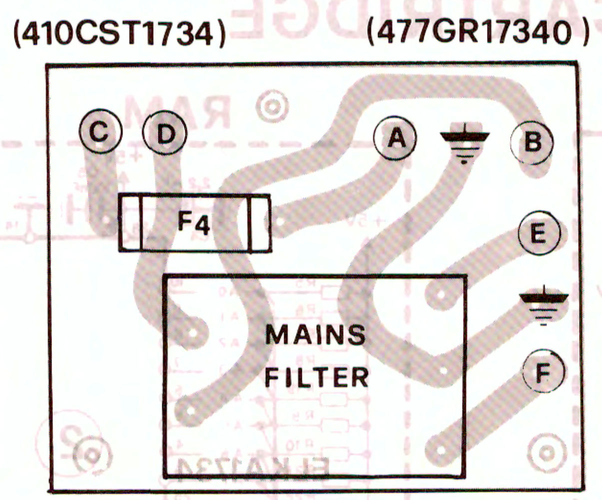
I.C.		
CODE	TYPE	MANUF.
4	LM723	
5	78M12	
6	79M12	
2	74LS377	
1	74AS374	
3	74LS377	
9 DISPLAY	LCDLM016L	

CODE	TYPE	TRANS.
T1	TIP3055	
T2	TIP121	
T3	TIC116D	

LED = 935 B55

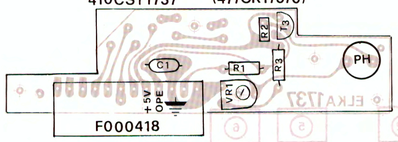
Z1 = 5,6V 0,5W
D1 = IN5404
D2-D3 = 10D2 - 1N4002
F1 = Fuse 5AT
F2-F3 = » 500mAT
F4 = » 500mAT
F5 = » 1AT
BR1 = B80 C5000/3300
BR2 = W02-BS2-PG120
TR = TRANSFORMER T 146
TR1 = » T 146K

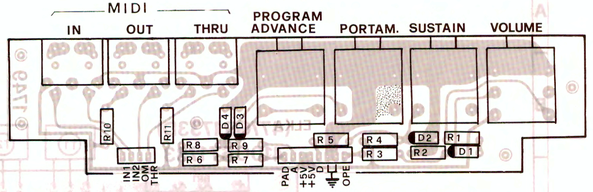




Model: ER 33
Sheet N. 2

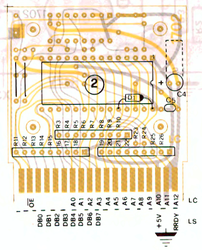
410CST1737 (477GR17370)



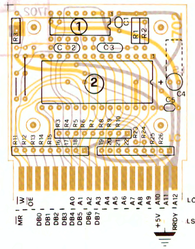


410CST1749 (477GR17490)

(477GR1702A)
410CST1702

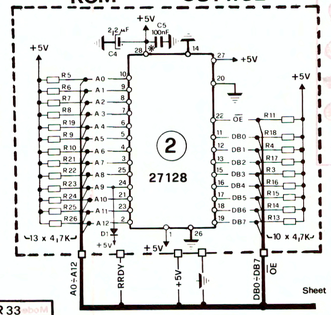


(477GR17020)
410CST1702

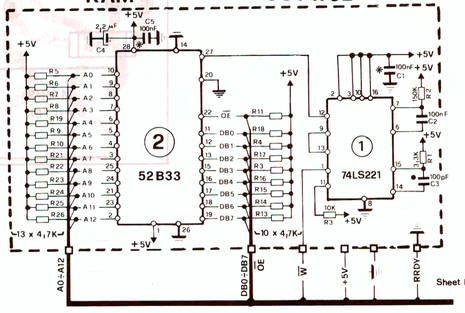


CARTRIDGE

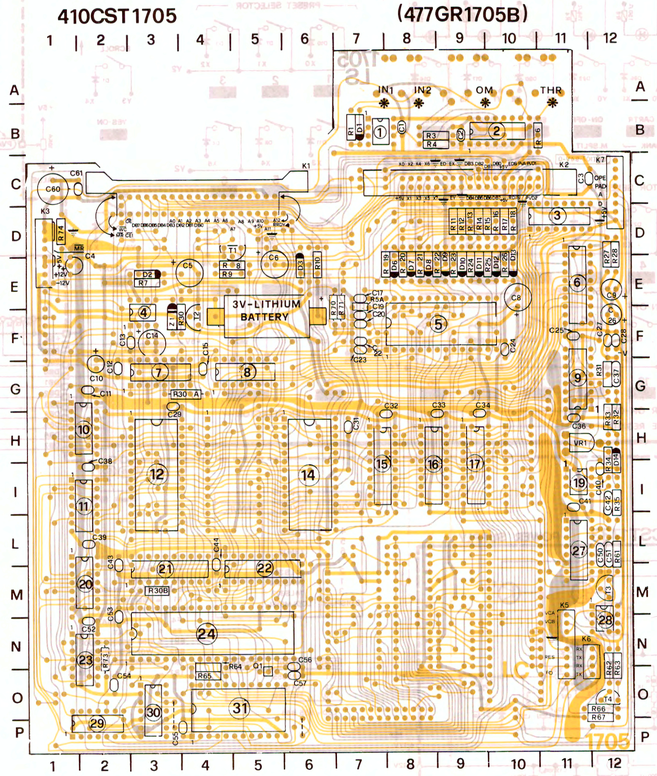
ROM CST1702



RAM CST1702



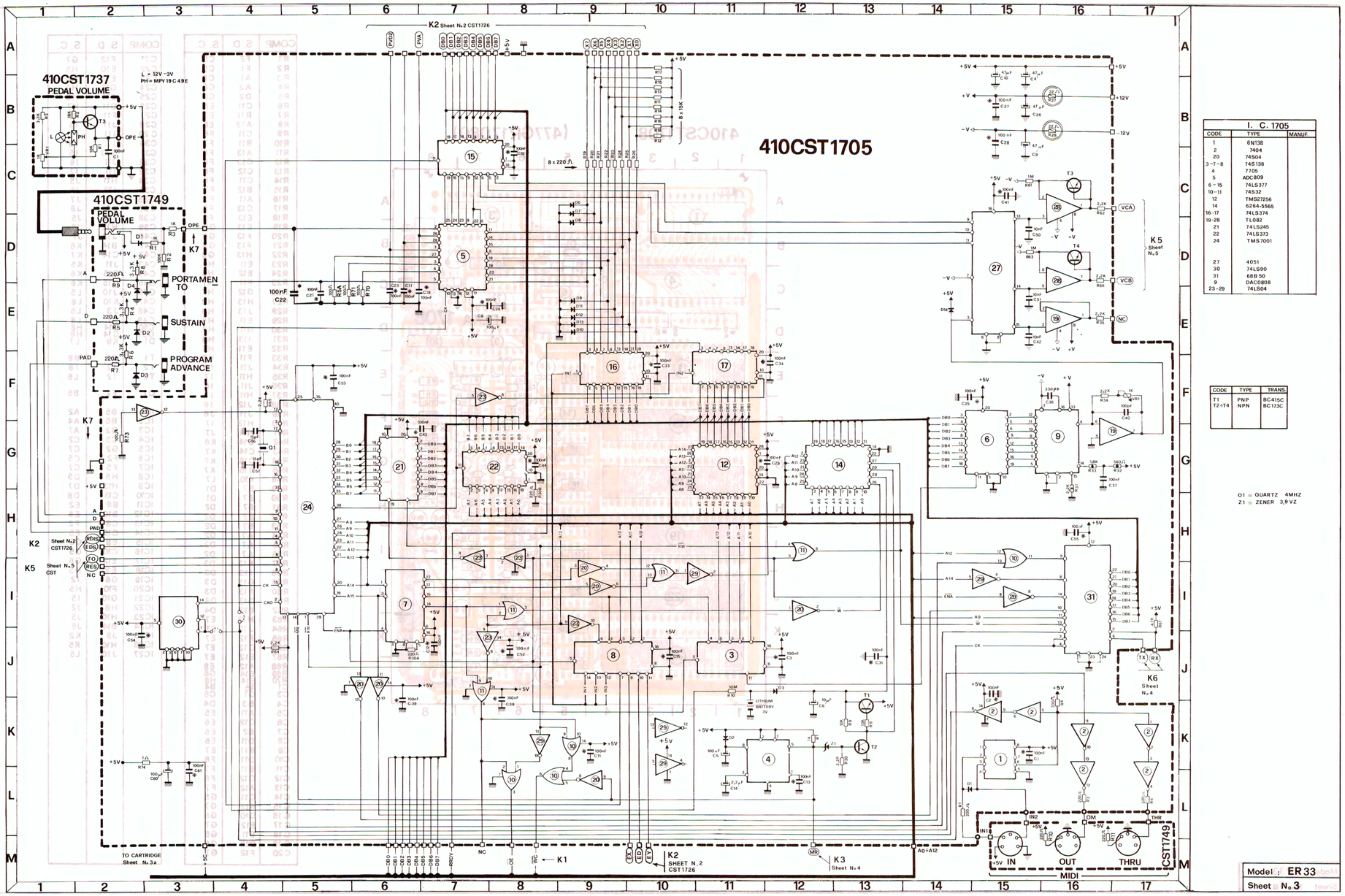
410CST1705 (477GR1705B)



COMP.	S. D.	P. B.
R1	L15	B7
R3	L16	B9
R4	K16	B9
R6	L17	B11
R7	K12	E3
R8	K13	E5
R9	K13	E5
R10	J11	E6
R11	C9	D9
R12	C9	D9
R13	B9	D9
R14	C9	D9
R15	B9	D10
R16	C9	D10
R17	B9	D10
R18	C9	D10
R19	C9	E8
R20	C9	E8
R21	C9	E8
R22	C9	E9
R23	C10	E9
R24	C9	E9
R25	C9	E10
R26	C10	E10
R27	B16	E12
R28	B16	E12
R30	K13	F4
R30A	J6	G4
R30B	H6	M3
R31	G16	G12
R32	G17	H12
R33	G16	H12
R34	F16	I12
R35	E16	I12
R36	D13	L7
R61	C16	L12
R62	C16	N12
R63	D16	N12
R64	J4	N4
R65	F4	O4
R66	D18	O12
R67	I17	O12
R70	C4	F7
R71	B5	F7
R73	C10	N2
R74	K5	D1
C1	K15	B8
C2	J15	B9
C3	J12	C12
C4	A15	E2
C5	K11	E4
C6	K12	E5
C7	K11	E6
C8	E8	E10
C9	B15	E12
C10	A15	G2
C11	K9	G2
C12	J7	G2
C13	L12	F3
C14	L11	F3
C15	J10	G4
C17	E6	E7
C19	E6	F7
C20	E5	F7
C22	E5	F7
C23	E5	F7
C24	E8	F10
C25	F14	F11
C26	B15	F12
C27	B15	F12
C28	B15	F12
C29	G12	G3
C31	J13	H7
C32	C9	H8
C33	F10	H9
C34	F12	H9
C36	F16	H11
C37	G16	G12
C38	K8	I2
C39	K6	L2
C40	F17	I12
C41	C15	I11
C42	E15	I12

COMP.	S. D.	P. B.
C43	G7	L2
C44	G8	L4
C50	D15	L12
C51	E15	L12
C52	J8	N2
C53	F5	N2
C54	J2	O2
C55	H16	P3
C56	G4	N6
C57	G4	O6
C60	K5	C1
C61	K5	C2
D1	L14	B7
D2	K11	E3
D3	J12	E6
D6	C9	E8
D7	C9	E8
D8	D9	E8
D9	E9	E9
D10	E9	E9
D11	E9	E9
D12	E9	E10
D13	E9	E10
D14	E14	K12
T1	K13	D5
T2	K13	F4
T3	C16	O12
T4	D16	M12
Q1	G4	O5
VR1	F17	H11
IC1	K15	B8
IC2	K16	B10
IC3	J11	D11
IC4	K12	F3
IC5	D7	F9
IC6	G15	E11
IC7	I6	G3
IC8	J9	G5
IC9	G16	G11
IC10	K9	H2
IC11	I8	I2
IC12	G11	I3
IC14	G13	I6
IC15	C7	I7
IC16	F9	I8
IC17	F11	I9
IC19	E16	I11
IC20	J6	M2
IC21	G6	M3
IC22	G8	M5
IC23	C10	N2
IC24	H5	N4
IC27	D15	L11
IC28	D16	N12
IC29	K8	P2
IC30	I3	Q3
IC31	I16	Q4
LITHIUM BATTERY 3V	K17	H11
Z1	K12	F3

Model : ER 33
Sheet N° 3a

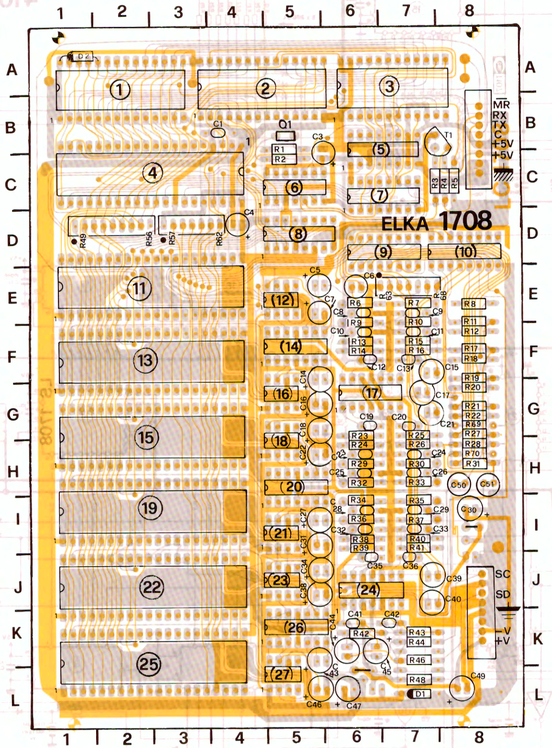


I. C. 1705		
CODE	TYPE	MANUF.
1	6N138	
2	7404	
20	74S04	
3-7-8	74S138	
4	7705	
5	ADC809	
6-15	74LS377	
10-11	74S32	
12	TMS27256	
14	6264-5565	
16-17	74LS374	
19-28	TL082	
21	74LS245	
22	74LS373	
24	TMS 7001	
27	4051	
30	74LS190	
31	6818 50	
9	DAC0808	
23-29	74LS04	

CODE	TYPE	TRANS.
T1 T2÷T4	PNP NPN	BC415C BC173C

Q1 = QUARTZ 4MHZ
Z1 = ZENER 3,9 VZ

410CST1708 (477GR17080)

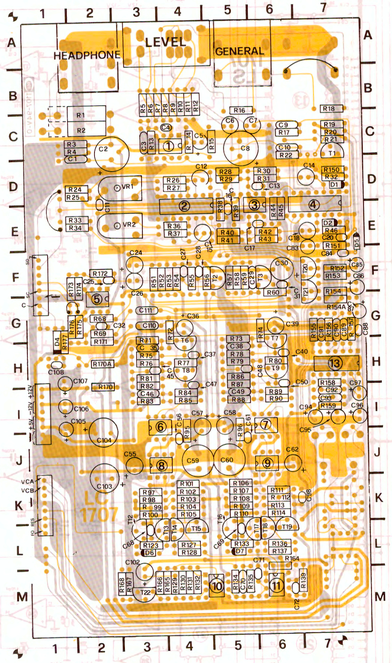


COMP.	S. D.	S. C.
R1	F2	C5
R2	F1	C5
R3	A1	C8
R4	A2	C8
R5	D2	C8
R6	C11	E6
R7	B11	E7
R8	A13	E8
R9	C11	F6
R10	B11	F7
R11	A13	F8
R12	C13	F8
R13	C12	F6
R14	C11	F6
R15	B12	F7
R16	A11	F7
R17	C13	F8
R18	E13	F8
R19	E13	G8
R20	F13	G8
R21	F13	G8
R22	H13	G8
R23	E11	H6
R24	E12	H6
R25	F11	H7
R26	G12	H7
R27	H13	H8
R28	J13	H8
R29	E11	H6
R30	G11	H7
R31	I13	H8
R32	E11	H6
R33	F11	H7
R34	J11	I6
R35	H11	I7
R36	J11	I6
R37	H11	I7
R38	J12	I6
R39	J11	J6
R40	H12	I7
R41	H11	J7
R42	B14	K6
R43	C14	K7
R44	D15	K7
R46	B15	K7
R48	K10	L7
R49	B7	D1
R50	B7	D1
R51	B7	D2
R52	B7	D2
R53	B7	D2
R54	A7	D2
R55	A7	D2
R56	A7	D2
R57	K13	D3
R58	I13	D3
R59	G13	D3
R60	F13	D3
R61	D13	D4
R62	B13	D4
R63	H12	E7
R64	J12	E7
R65	F12	E7
R66	C12	E7
R67	E12	E7
R68	A12	E8
R69	E14	G8
R70	E14	H8
C1	A5	B4
C3	G1	C6
C4	B3	D4
C5	A11	E5
C6	C12	E6
C7	B2	E5
C8	D11	E6
C9	B11	E7
C10	D11	F6
C11	B11	F7
C12	C12	F6
C13	A12	F7
C14	C11	G5
C15	A12	G7
C16	D10	G5
C17	E12	G7
C18	E11	G5
C19	D12	G6
C20	F12	G7

COMP.	S. D.	S. C.
C21	F12	G7
C22	E10	H5
C23	E11	H6
C24	G11	H7
C25	E11	H6
C26	G11	H7
C27	F11	I5
C28	J11	I6
C29	I11	I7
C30	I1	I8
C31	G10	I5
C32	J11	I6
C33	I11	I7
C34	H11	J5
C35	I12	J6
C36	H12	J7
C37	I3	J8
C38	I10	J5
C39	H12	J7
C40	J12	J7
C41	B14	K6
C42	C14	K7
C43	J11	K5
C44	B15	K6
C45	D15	K6
C46	J10	L5
C47	K10	L6
C48	J3	L6
C49	J1	L8
C50	B14	H8
C51	C14	H8
D1	K9	L7
T1	A1	B8
T2	I2	I8
T3	I2	L6
Q1	E2	B5
IC1	B5	A2
IC2	B6	A4
IC3	B2	A7
IC4	C3	C2
IC5	G2	C7
IC6	F2	C5
IC7	F5	C7
IC8	H5	D5
IC9	H13	D7
IC10	C13	D8
IC11	B8	E2
IC12	B10	E5
IC13	C8	F2
IC14	C10	F5
IC15	E8	G2
IC16	C10	G5
IC17	E12	G6
IC18	E10	H5
IC19	G8	I2
IC20	F10	H5
IC21	G10	I5
IC22	H8	J2
IC23	H10	J5
IC24	B14	J6
IC25	J8	K2
IC26	H10	K5
IC27	J10	L5

Model : ER33
Sheet No. 4a

410CST1707 (477GR1707B)

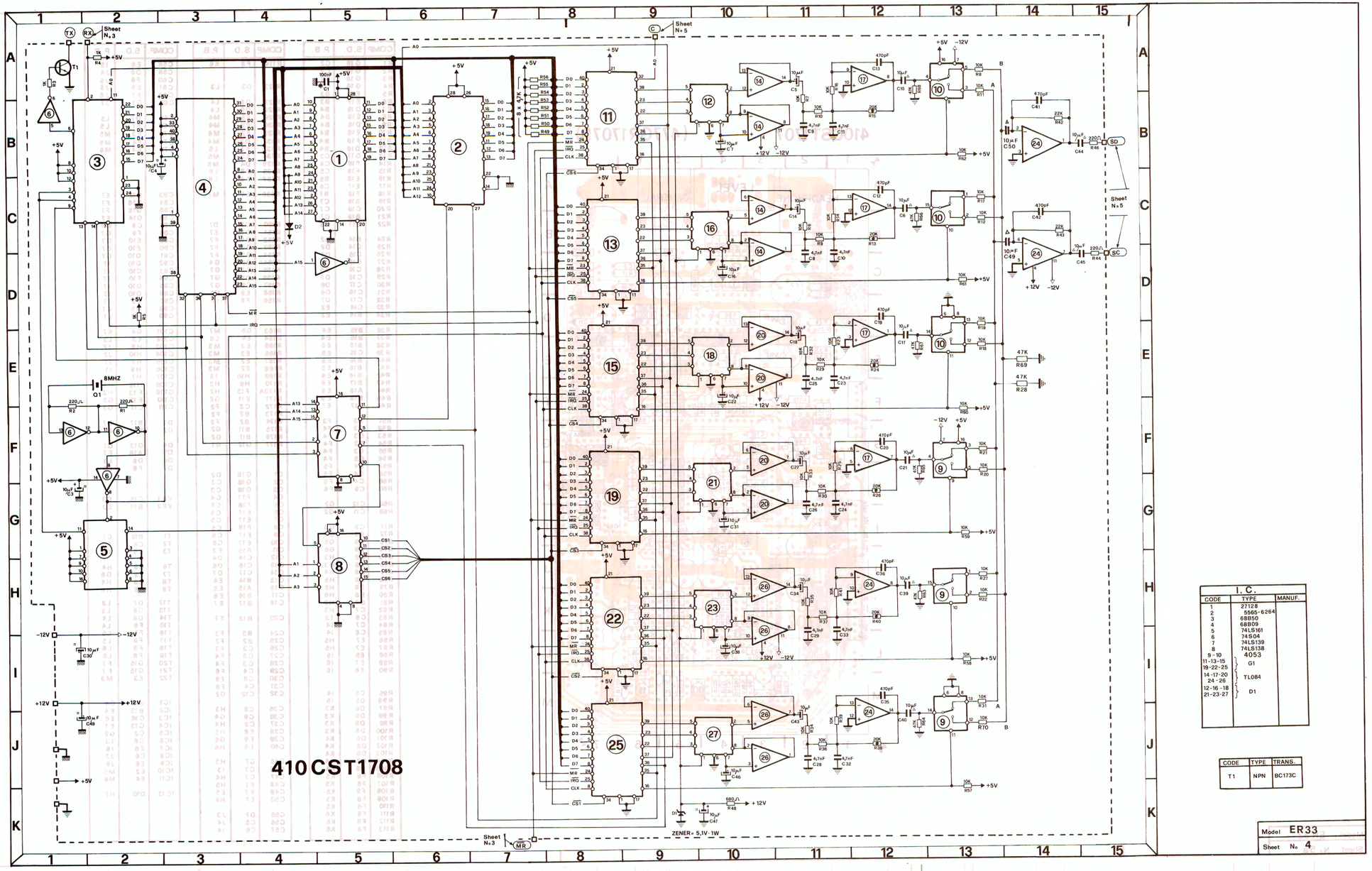


COMP.	S.D.	P.B.
R1	G19	C2
R2	G19	C2
R3	G18	C2
R4	G18	C2
R5	E18	B3
R6	E17	B3
R7	D18	B4
R8	E18	B4
R9	D18	B4
R10	E18	B4
R11	F18	B4
R12	D18	B4
R13	G17	C3
R14	F18	C4
R15	F18	C5
R16	E18	B5
R17	E17	C6
R18	F18	B7
R19	B19	C7
R20	C19	C7
R21	B19	C7
R22	E17	C6
R24	B14	D2
R25	C14	D2
R26	C15	D4
R27	C15	D4
R28	C16	D5
R29	C16	D5
R30	C17	D6
R31	C16	D6
R32	C17	D7
R33	C14	E2
R34	B14	E2
R36	B15	E4
R37	B15	E4
R38	B15	E5
R39	C15	E5
R40	B16	E5
R41	B16	E5
R42	B16	E6
R43	B17	E6
R44	A18	E6
R45	B18	E6
R46	B17	E7
R51	B3	F3
R52	C3	F4
R53	C3	F4
R54	C3	F4
R55	C3	F4
R56	C5	F5
R57	C4	F5
R58	C4	F5
R59	C4	F5
R60	C5	F6
R68	C12	G2
R69	C11	G2
R71	C9	G3
R72	B9	G4
R73	E9	G5
R74	D9	G6
R75	C8	H3
R76	C8	H3
R77	C8	H4
R78	E8	H5
R79	E8	H5
R80	E8	H6
R81	C7	H3
R82	C7	H3
R83	C6	I3
R84	C7	I4
R85	C6	I4
R86	E7	H5
R87	E7	H5
R88	E6	I5
R89	E7	I6
R90	E6	I6
R95	C5	I4
R96	D5	I5
R97	D6	K3
R98	D9	K3
R99	D8	K3
R100	D6	K3
R101	D6	K4
R102	D8	K4
R103	D8	K4
R104	D8	K4
R105	D8	K4
R106	F6	K5
R107	F6	K5
R108	F9	K5
R109	F8	K5
R110	F6	K5
R111	F9	K6
R112	F8	K6
R113	F8	K6

COMP.	S.D.	P.B.
R114	F8	K6
R123	D3	L3
R127	D8	L4
R128	D8	L4
R129	E3	M4
R130	E2	M4
R131	E2	M4
R132	D3	M4
R133	F7	L5
R134	E3	M5
R135	D4	M5
R136	F8	L6
R137	F8	L6
R139	E4	M7
R150	D14	D7
R151	D12	E7
R152	G15	F7
R153	G16	F7
R154	G15	F7
R154A	G14	G4
R155	E10	G7
R156	D10	G7
R157	C9	G7
R158	E9	H7
R159	F9	I7
R163	G5	M7
R164	E4	L6
R165	E3	M3
R166	E3	M3
R167	E2	M3
R168	E2	M3
R169	H10	I3
R170	H8	H2
R170A	F13	H2
R171	E11	G2
R172	C2	F2
R173	B2	F2
R174	B2	F2
R175	B11	G2
R176	B11	G2
R177	G12	G1
C1	G18	D2
C2	G18	C3
C3	G18	C3
C4	F17	C4
C5	F18	C4
C6	E17	C5
C7	E17	C5
C8	F18	C5
C9	E17	C6
C10	E17	C6
C11	A15	E2
C12	C14	D4
C13	C16	D6
C14	C17	D7
C15	B14	E4
C16	A15	E5
C17	B16	E6
C18	B17	E7
C20	B18	E7
C24	B3	F3
C25	B2	F2
C26	C3	F3
C27	C3	F4
C28	C3	F4
C29	C4	F6
C30	C5	F6
C31	C4	F6
C32	C12	G2
C35	C8	H3
C36	C9	G4
C37	C8	H4
C38	E8	H5
C39	E9	G6
C40	E8	H6
C45	C7	H3
C46	C7	I3
C47	C7	H4
C48	E7	H5
C49	E7	E5
C50	E7	H6
C55	D7	J3
C56	C5	J4
C57	C6	I4

COMP.	S.D.	P.B.
C58	E6	I5
C59	D6	J4
C60	F6	J5
C61	E5	J5
C62	F7	J6
C63	G3	J7
C68	D7	L3
C69	F7	L5
C70	E3	M5
C71	E4	M5
C72	E4	M6
C83	C12	E7
C84	B18	F7
C85	G16	F7
C86	G14	F7
C87	C9	G7
C88	F9	G7
C89	E10	G7
C90	E10	G7
C91	D10	G7
C92	D10	I7
C93	C10	I7
C94	F10	I7
C95	D10	I7
C96	D10	I7
C97	E9	I7
C98	H5	K7
C99	H4	L7
C101	G4	K7
C102	E3	L3
C103	H8	J2
C104	H10	J2
C105	H7	I1
C106	H9	I1
C107	H7	H1
C108	H12	H1
C109	F13	H2
C110	E11	G3
C111	C11	G3
D1	B17	D7
D2	B17	E7
D4	G13	G1
D5	A18	E7
D6	D8	L3
D7	F8	L5
VR1	C15	D3
VR2	B15	E3
T1	B19	C7
T2	C4	F5
T3	C5	F6
T6	C9	H4
T7	E9	G6
T8	C8	H4
T9	E8	H6
T12	D7	L3
T13	D8	L3
T14	D8	L4
T15	F8	L4
T16	F7	L5
T17	F8	L5
T18	F8	L6
T19	F8	L6
T20	G15	F7
T21	G15	F7
T22	E3	M3
IC1	G18	C4
IC2	B15	E4
IC3	C16	E6
IC4	C13	E7
IC5	C2	G2
IC6	C6	I3
IC7	E6	I6
IC8	C6	J3
IC9	E6	J6
IC10	E2	M5
IC11	E4	M6
IC13	D10	H7

Model : ER33
Sheet No. 5a

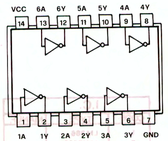


I. C.		
CODE	TYPE	MANUF.
1	27128	
2	5565-6264	
3	68B50	
4	68B09	
5	74LS161	
6	74S04	
7	74LS139	
8	74LS138	
9 - 10	4053	
11-13-15	G1	
19-22-25		
14-17-20	TL084	
24-26		
12-16-18	D1	
21-23-27		

CODE	TYPE	TRANS.
T1	NPN	BC173C

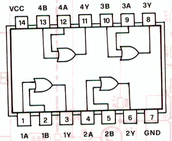
Model ER33

Sheet No 4



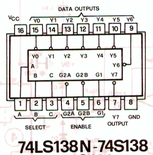
7404-74S04-74LS04

HEX INVERTERS



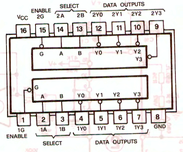
74S32

QUADRUPLE POSITIVE-OR



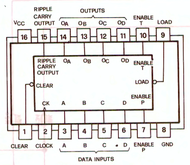
74LS138N-74S138
74HC138

3-TO-8 LINE DECODERS/MULTIPLEXERS



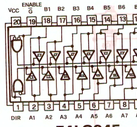
74LS139

DUAL 2-TO-4 LINE DECODERS/ MULTIPLEXERS



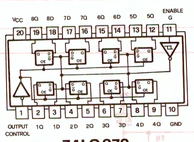
74LS161

SYNCHRONOUS 4 BIT CONTERS



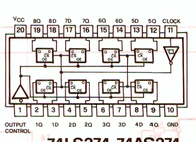
74LS245

OCTAL BUS TRANCEIVERS



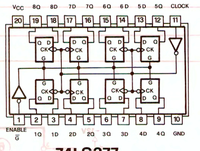
74LS373

OCTAL D-TYPE LATCHES



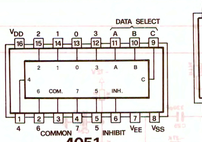
74LS374-74AS374

OCTAL D-TYPE FLIP-FLOPS



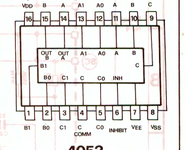
74LS377

OCTAL D-TYPE FLIP-FLOPS



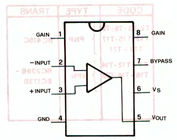
4051

SINGLE 8-CHANNEL MULTIPLEXER/ DEMULTIPLEXER



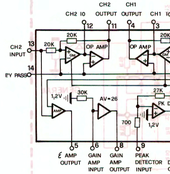
4053

TRIPLE 2 CHAN. ANALOG MULTIPLEXER/ DE MULTIPLEXER



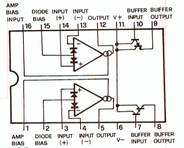
LM386

LOW VOLTAGE AUDIO POWER AMPLIFIER



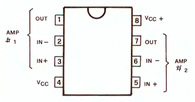
LM1894

DINAMIC NOISE REDUCTION SYSTEM DNR



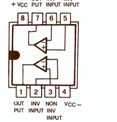
13600

DUAL OPERATIONAL TRANSCONDUTTANCE AMPLIFIERS WITH LINEARIZING DIODES AND BUFFERS



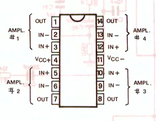
TL062

D, GR, OR P DUAL-IN-LINE PACKAGE



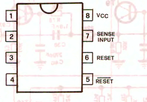
TL082

JFET-INPUT OPERATIONAL AMPLIFIER



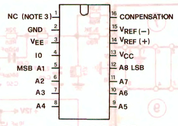
TL084

JFET-INPUT OPERATIONAL AMPLIFIERS



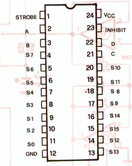
TL7705

D OR P DUAL-IN-LINE PACKAGE



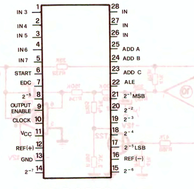
DAC0808

8 BIT D/A CONVERTERS



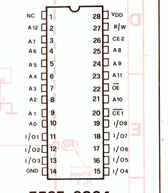
HC4514

4-TO-16 LINE DECODER/LATCH



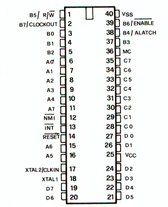
ADC0809

8-BIT μ P COMPATIBLE A/D CONVERTERS WITH 8-CHANNEL MULTIPEXER



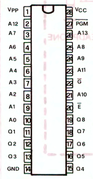
5565-6264

8, 192 WORD x 8 BIT CMOS STATIC RAM



TMS7001

8-BIT MICROCOMPUTER



27128

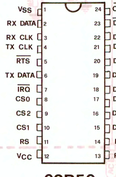
16K x 8 BYTES EPROM

27256

256K (32K x 8) UV ERASABLE PROM

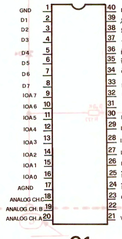
68B09

8-BIT MICROPROCESSOR



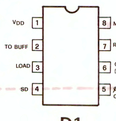
68B50

ASYNCHRONOUS COMMUNICATIONS INTERFACE ADAPTER



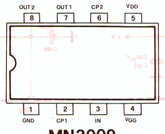
G1

SOUND GENERATIONS



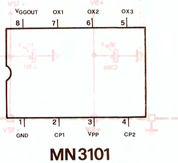
D1

DIGITAL ANALOGIC



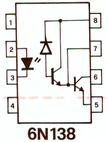
MN3009

TERMINAL ASSIGNMENTS



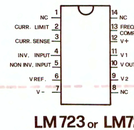
MN3101

CLOCK GENERATOR DRIVER



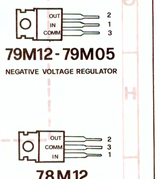
6N138

SPLIT DARLINGTON OPTOISOLATORS



LM723 or LM723C

VOLTAGE REGULATORS



79M12-79M05

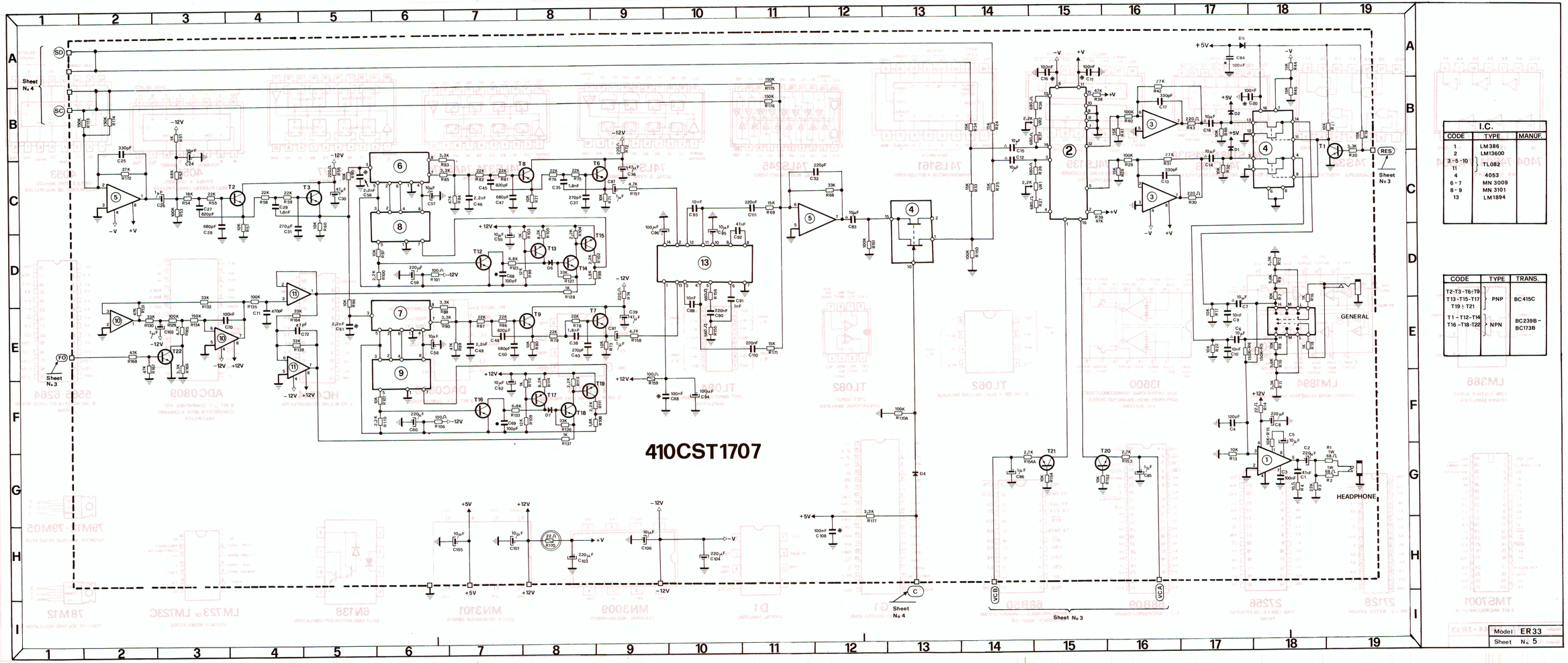
NEGATIVE VOLTAGE REGULATOR

78M12

POSITIVE VOLTAGE REGULATOR

Model EK44 - EM44 - ER33

Sheet No. 6a



I.C.		
CODE	TYPE	MANUF.
1	LM386	
2	LM13600	
3-5-10-11	TL082	
4	4053	
6 - 7	MN 3009	
8 - 9	MN 3101	
13	LM1894	

CODE	TYPE	TRANS.
T2-T3-T6-T9 T13-T15-T17 T19 ÷ T21	PNP	BC415C
T1 - T12-T14 T16 - T18-T22	NPN	BC239B - BC173B

Model: ER33
Sheet N. 5