

# TR-606 SERVICE NOTES

First Edition

## SPECIFICATIONS

### Memorized Rhythm Number

- 32 Basic Rhythms (16 x Pattern Group I & II)
- Step Number/1 measure 1 ~ 16 steps
- Rhythm Track 64 measures x 7 tracks 256 measures x 1 track (Continuous Maximum 256 measures)

### Sound Source

- Bass Drum (BD)
- Snare Drum (SD)
- Low Tom (LT)
- High Tom (HT)
- CYmbal (CY)
- Open Hi-Hat (OH)
- Closed Hi-Hat (CH)
- ACcent (AC)

### Control Switches, Buttons and Indicators

- MODE Selector (Pattern Write, Pattern Play, Track Write, Track Play)
- TRACK/INSTRUMENT Selector (AC1, BD2, SD3, LT4, 5HT, 6CY, 7OH, 8CH)
- TEMPO Control (J = 40 ~ 300)
- INSTRUMENT Mix Control (ACcent, Bass Drum, Snare Drum, L.H. Tom, CYmbal, O.C. Hihat)

### POWER Switch/VOLUME Control

- CLEAR/RESET button PATTERN CLEAR D.C. Setting bar reset
- RUN/STOP button
- BATTERY Check/RUN Indicator
- SCALE Selector (1, 2, 3, 4)
- FUNCTION button Last Step Setting Scale Setting Bar Number, (Be sure the bar number of -S-, D.C.)

- SELECTOR Switch x 16 RHYTHM Selector Designated Bar Number Switch DEL. INS switch Setting the Last Steps
- Indicators
- Pattern Group button Group Selector Setting the -S-
- Pattern Group Indicators
- TAP button Write/Next TAP Step Re-set D.S. button

### Connection Jacks

- DC 9V x 1 AC Adapter-jack (BOSS ACA Battery Eliminator)

- Output x 1 Regular-jack
- Output level (POWER Switch/VOLUME Control; MAX, Instrument Mix Control; Center) 2 Vp-p (ACcent; MIN) 6Vp-p (ACcent; MAX)
- Output Impedance 1 kΩ
- Headphone x 1
- Stereo-jack
- Conformity Impedance 8Ω ~ 30Ω
- TRIGGER OUT x 2 Mini-jack (HT, LT; +14V, 20 mSec pulse)
- Sync x 1 DIN-Connector (for CSQ-600, MC-4) 1: RUN/STOP, 2: GND, 3: CLOCK
- INPUT OUTPUT selector x 1
- RUN/STOP x 1 (DP-2)

### Power

- Battery 6V (UM-2 Size (C) R-14 or equal battery x 4) (AC Adapter: 9V)

### Consumption Current draw

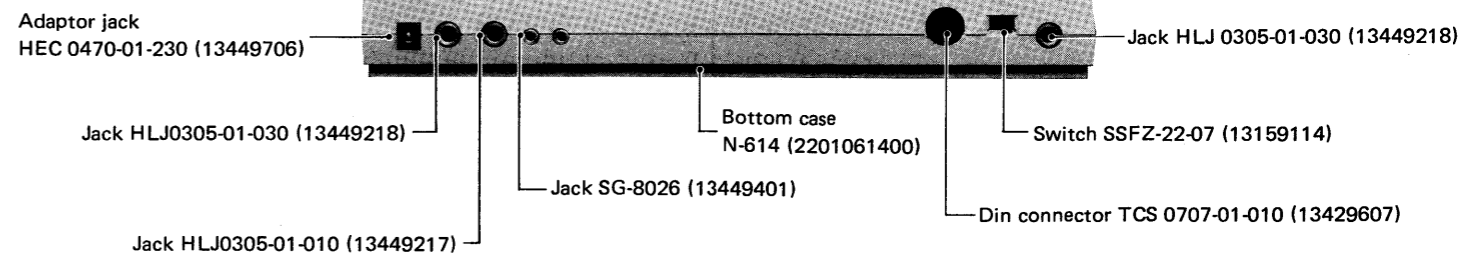
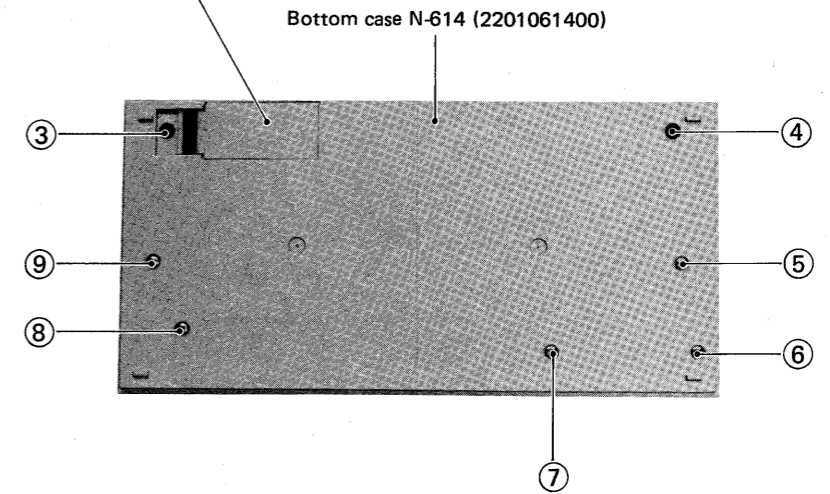
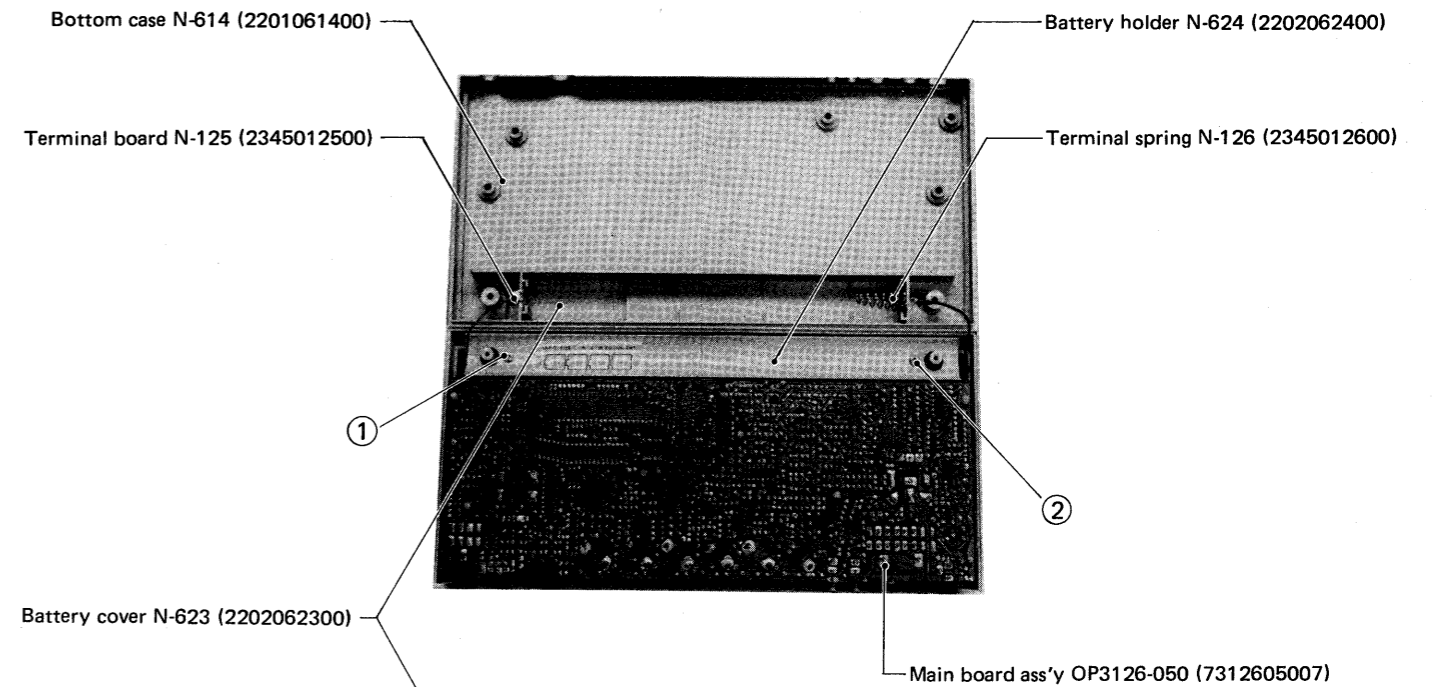
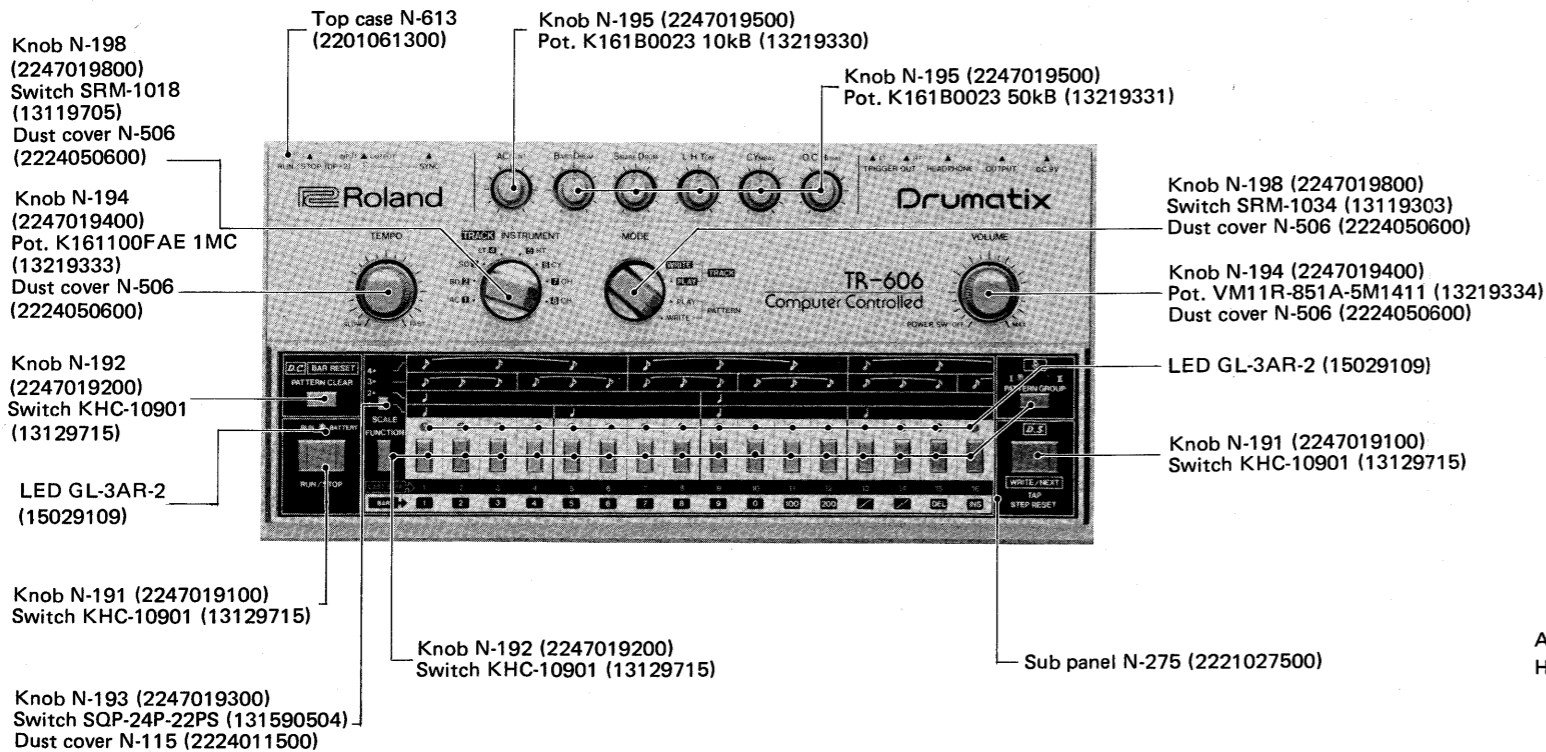
- 70mA (MIN) ~ 150mA (MAX)

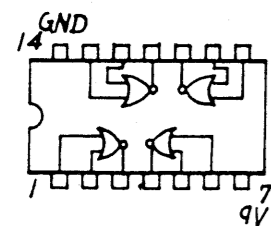
### Dimensions

- 300(W) x 146(D) x 55(H) mm

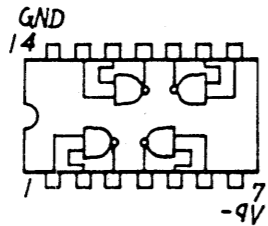
### Weight

- 1.2 kg

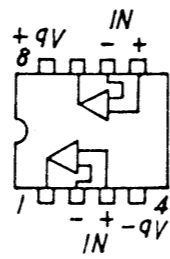




**MC14001B CP**  
Quad 2-input NOR Gate

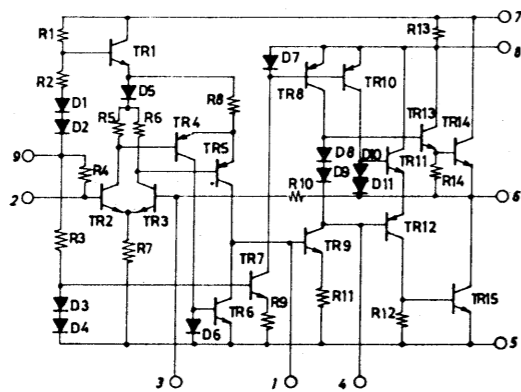


**TC4011BP**  
Quad 2-input NAND Gate

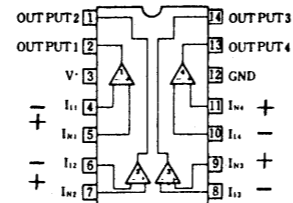


**μPC 4558 C**

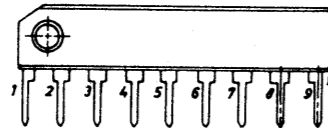
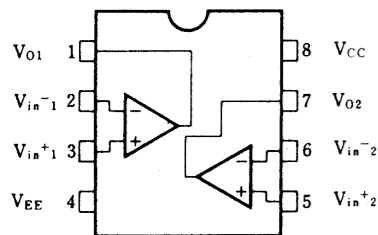
**LA4140**



**AN6912**  
Quad  
Comparator

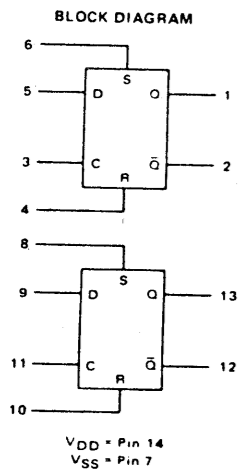


**NJM2904**



**MC14013B**

DUAL TYPE D FLIP-FLOP



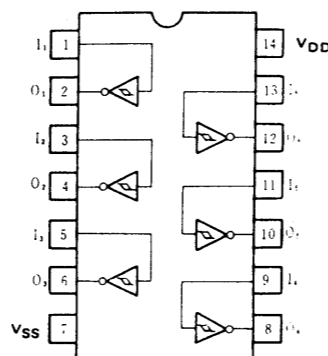
TRUTH TABLE

INPUTS				OUTPUTS		No Change
CLOCK <sup>†</sup>	DATA	RESET	SET	Q	$\bar{Q}$	
—	0	0	0	0	1	
—	1	0	0	1	0	
—	X	0	0	Q	$\bar{Q}$	
X	X	1	0	0	1	
X	X	0	1	1	0	
X	X	1	1	1	1	

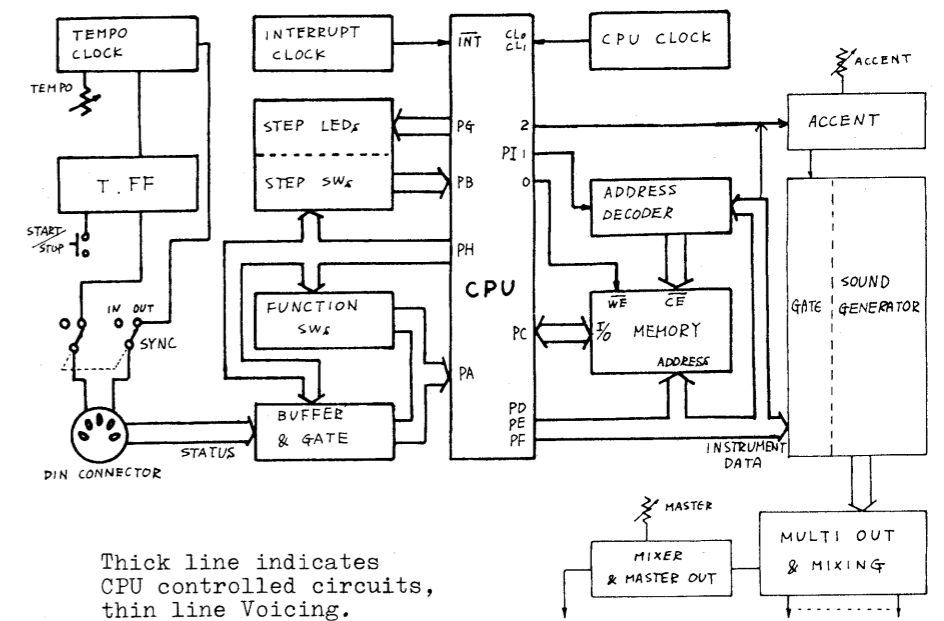
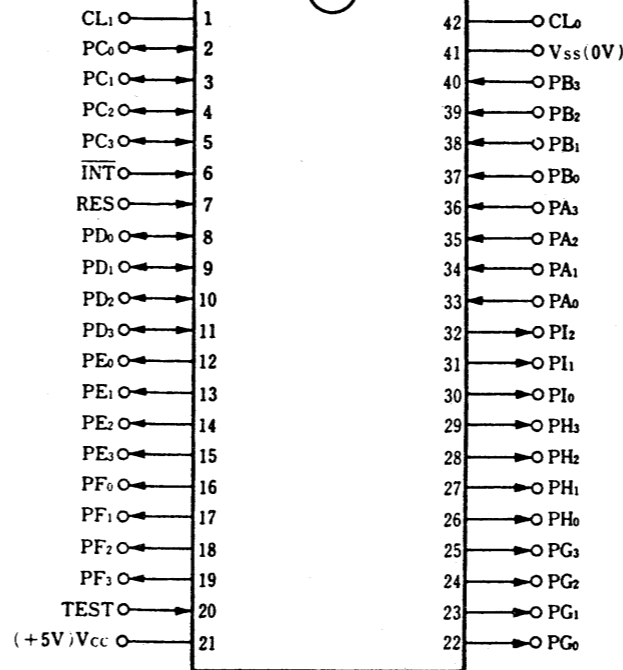
X = Don't Care  
† = Level Change

**HD14584B**

Hex Schmitt Trigger



**μPD650C**  
(Top View)



Thick line indicates CPU controlled circuits, thin line Voicing.

BLOCK DIAGRAM

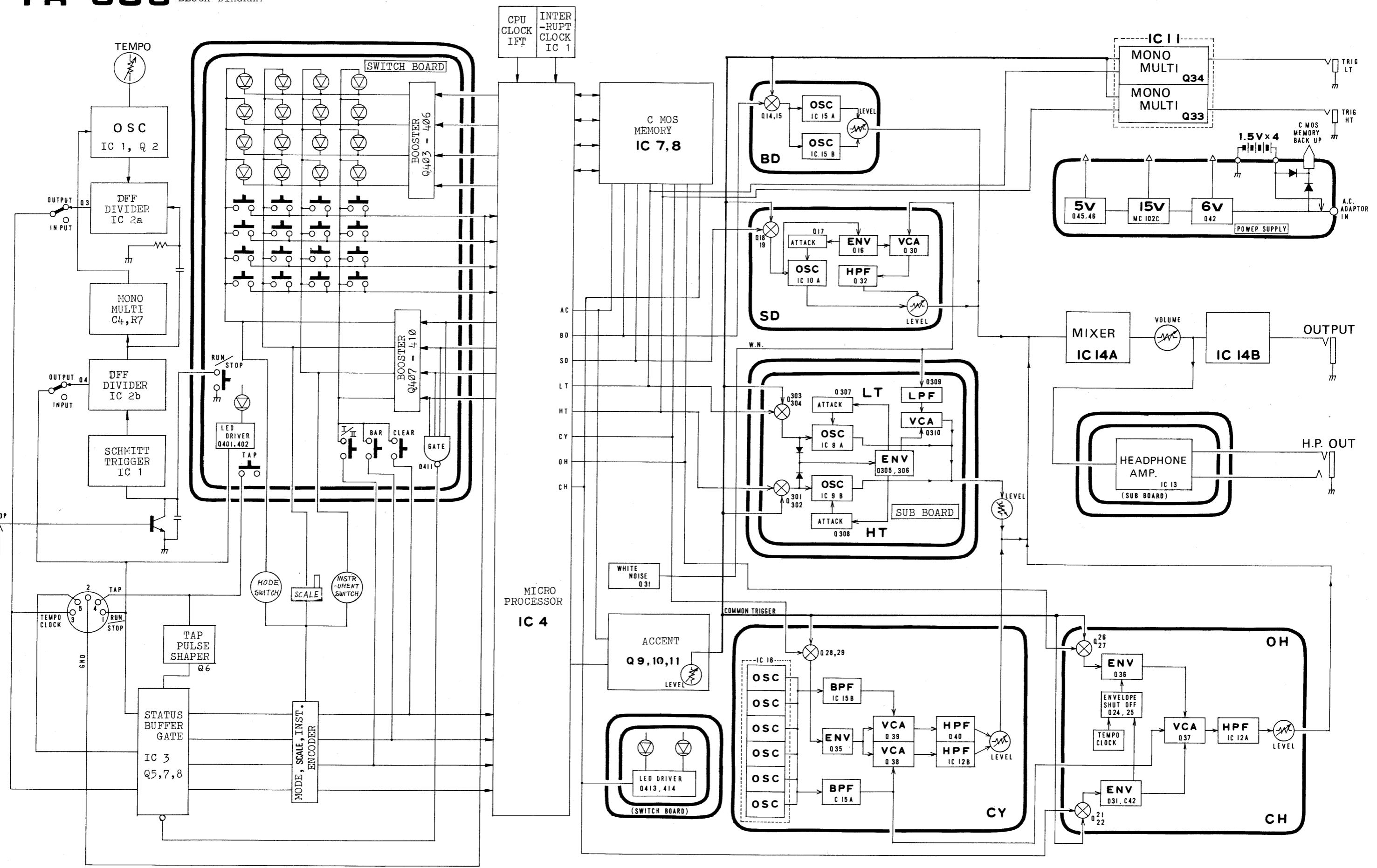
**μPD650C-085 FUNCTIONAL DESCRIPTION**

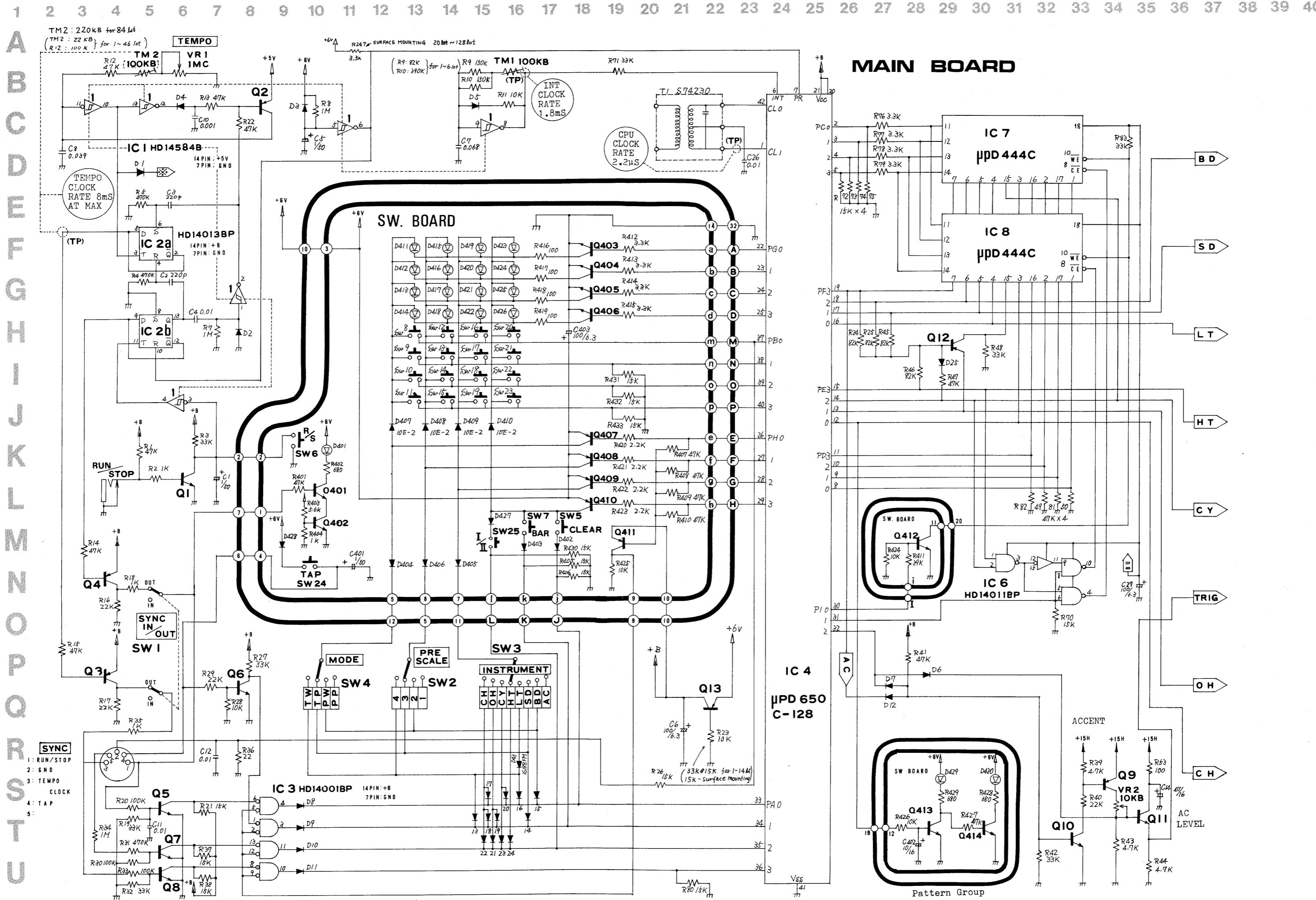
No.	No.	
PH (Port H)	0 26	Scanning signal outputs to switches Switching signal outputs to STATUS BUFFER & GATE
	1 27	
	2 28	
PA (Port A)	0 33	Switch scanning signal inputs STATUS (TEMPO CLOCK, START/STOP, TAP) inputs
	1 34	
	2 35	
PB (Port B)	0 37	Inputs from STEP Switches (RHYTHM SELECT Switches)
	1 38	
	2 39	
PG (Port G)	0 22	Drive signals to STEP LEDs
	1 23	
	2 24	
PE (Port E)	0 12	I/II Memory bank select
	1 13	
	2 14	
PD (Port D)	0 8	MEMORY ADDRESSES These pins use CE from ADDRESS Decoder to select cells in RAM to be accessed
	1 9	
	2 10	
PF (Port F)	0 16	INSTRUMENT DATA These data need COMMON TRIG to trigger Sound Generators being designated
	1 17	
	2 18	
PC (Port C)	0 2	LT SD BD AC
	1 3	
	2 4	
PI (Port I)	0 30	Data Inputs/Outputs
	1 31	
	2 32	

TR-606 BLOCK DIAGRAM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 4

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M  
N  
O  
P  
Q  
R  
S  
T  
U  
V

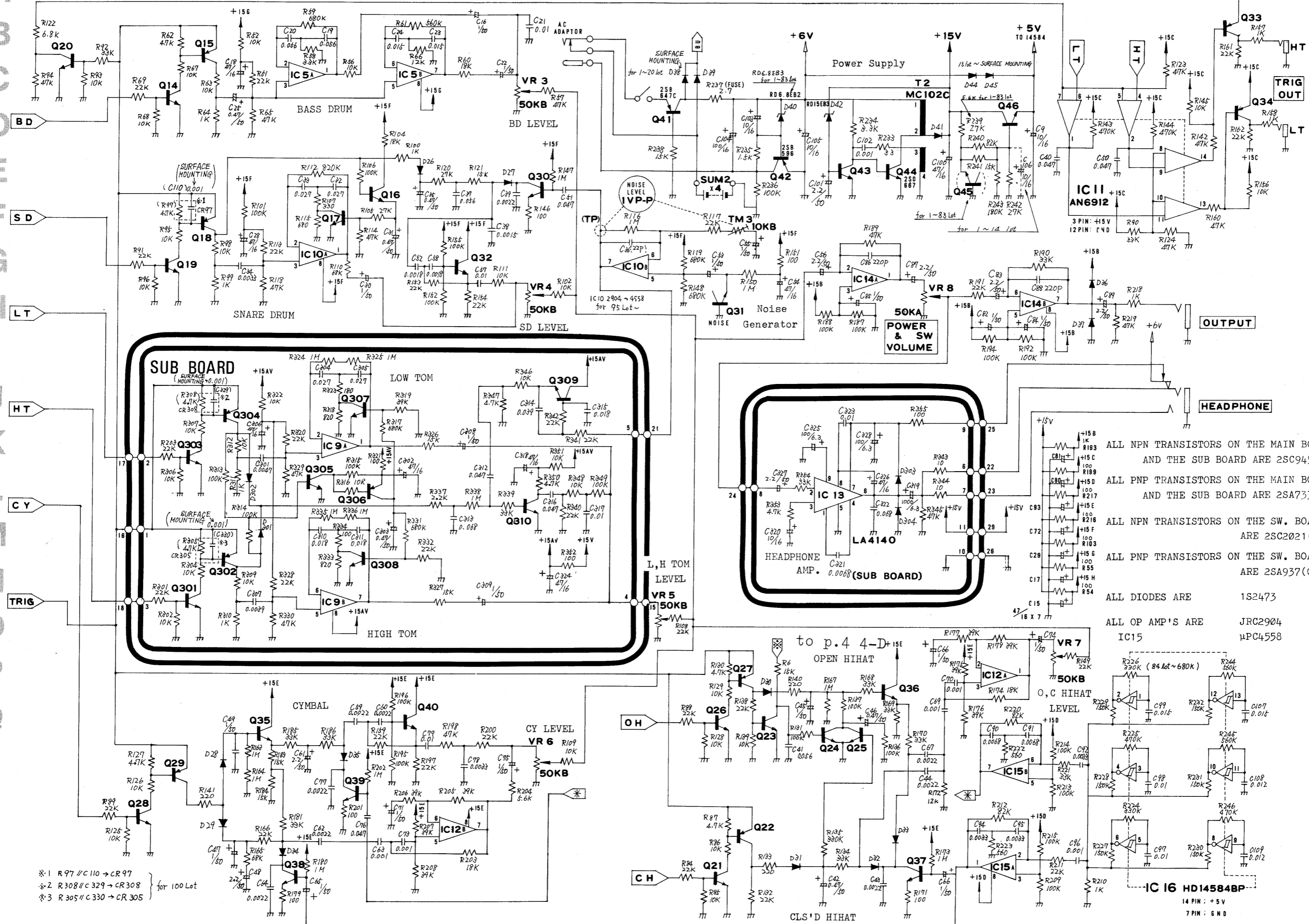




1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40

A B C D E F G H I J K L M N O P Q R S T U V

MAIN BOARD



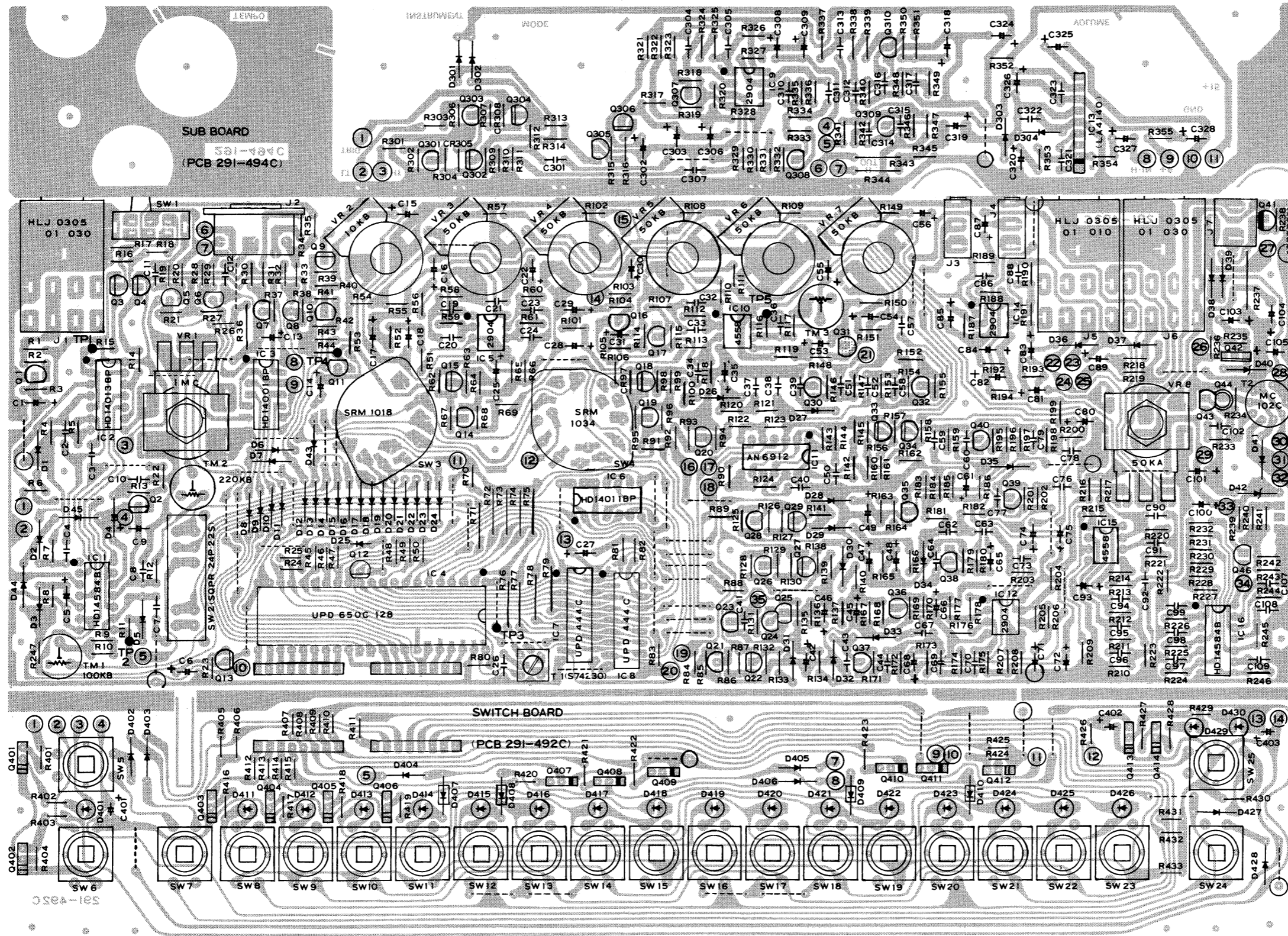
- ALL NPN TRANSISTORS ON THE MAIN BOARD AND THE SUB BOARD ARE 2SC945(P)
- ALL PNP TRANSISTORS ON THE MAIN BOARD AND THE SUB BOARD ARE 2SA733(P)
- ALL NPN TRANSISTORS ON THE SW. BOARD ARE 2SC2021(R)
- ALL PNP TRANSISTORS ON THE SW. BOARD ARE 2SA937(Q)
- ALL DIODES ARE 1S2473
- ALL OP AMP'S ARE JRC2904 IC15  $\mu$ PC4558

\*1 R97 // C110  $\rightarrow$  CR97  
 \*2 R308 // C329  $\rightarrow$  CR308  
 \*3 R305 // C330  $\rightarrow$  CR305

COMPONENT SIDE

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M  
N  
O  
P  
Q  
R  
S  
T



**SUB BOARD**  
**OP3126-060**  
**(7312606006)**  
**(pcb 291-494C)**

**MAIN BOARD**  
**OP3126-050**  
**(7312605017)**  
**(pcb 291-493C)**

R-C NETWORK  
 following RC pairs are  
 replaced by R-C network,  
 EXR-P 4.7k0.001  
 P/N 13910111  
 w/ Serial Number 161000

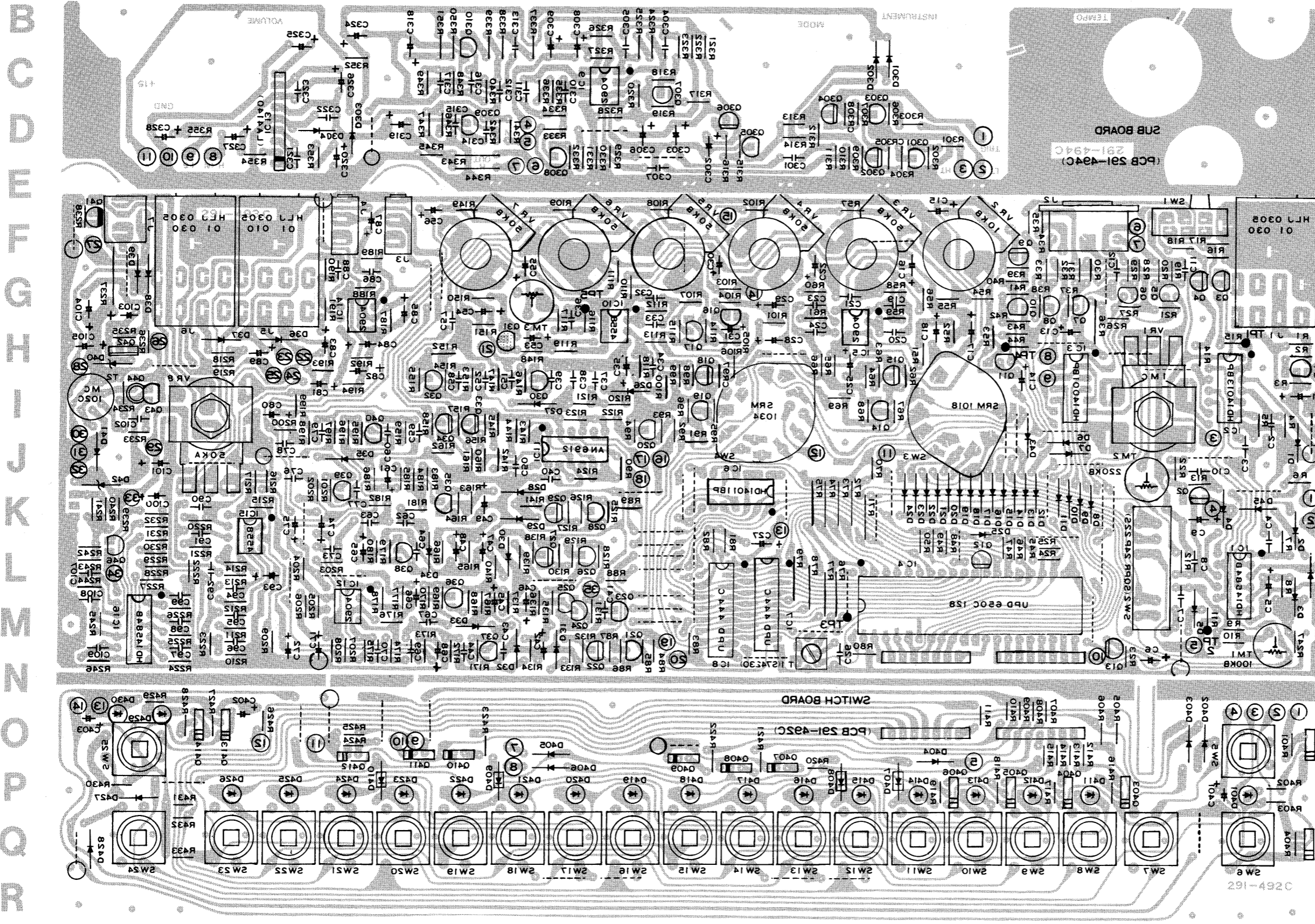
- R97, C110
- C329, C330
- R305, R308

**SWITCH BOARD**  
**OP3126-040**  
**(7312604003)**  
**(pcb 291-492C)**

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39

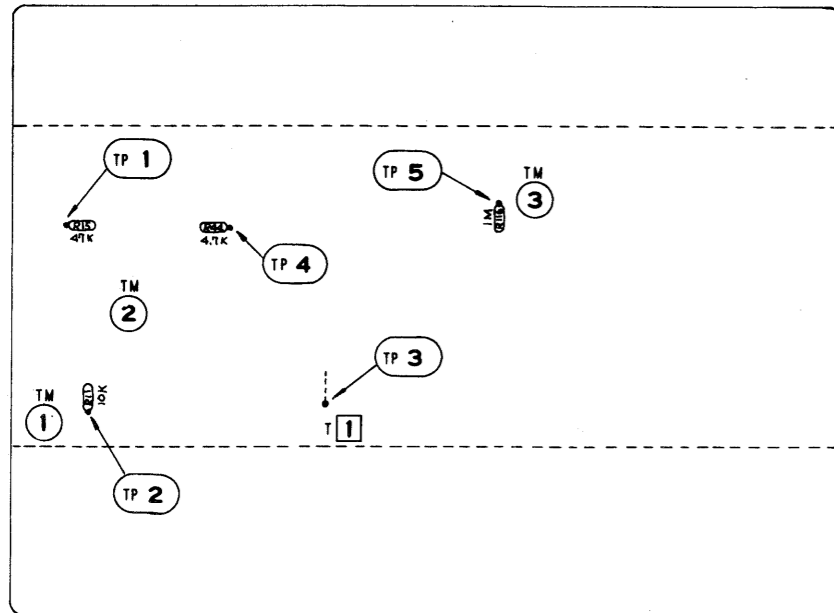
A

FOIL SIDE



	2SC536F
	2SA733P
	2SC2021LR
	2SA937Q

B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M  
N  
O  
P  
Q  
R  
S  
T  
U



**ADJUSTMENT**

**CPU CLOCK**

Connect scope to TP-1.  
Adjust IFT1 for 2.2μs/cycle.

**INT CLOCK**

Connect scope to TP-2.  
Adjust TM-1 for 1.8ms/cycle.

**TEMPO CLOCK**

Connect scope to TP-3.  
Set TEMPO knob at FAST.  
Adjust TM-2 for 8ms/cycle.  
Confirm that period of 1 cycle becomes 65ms when TEMPO is set at SLOW.

**NOISE GENERATOR**

Connect AC voltmeter to TP-4.  
Adjust TM-4 so that the reading is 130mV (rms).

**ENGINEERING CHANGES**

with S/N	what is changed	reason/purpose
087000	R9 82k to 150k R10 390k to 150k	to extend INC CLOCK adjustable range
091500	D44, D45 add (foil side) C106 omit R23 33k to 10k	to ensure POWER ON reset operation
092000	R247 add	
092100	D38 foil side to component side	PCB re-layout
114700	TM-2 22k to 100k R12 100k to 47k	to extend TEMPO CLOCK adjustable range
148400	HD14011BP to TC4011BP HD14013BP to MN4013B	availability of the ICs from supplier
	Q45 2SC536-F omit D40 RD6.8EB3-T to RD6.8EB2-T R239 5.6k to 27k	to ensure operation reliability on lower DC supply
	TM-2 100k to 220k	to extend TEMPO CLOCK adjustable range
	R226 330k to 680k	to shift the generator's frequency relative to others' for better CY sound
159500	IC10 NJM2904D to μPC4558C	for more NOISE gain margin (higher, distortion-free output) at the sacrifice of battery drain

**PARTS LIST**

**PANEL**

2201061300	Top case	N-613	top
2201061400	Bottom case	N-614	bottom
2202062300	Battery cover	N-623	
2202062400	Battery holder	N-624	
2221027500	Sub panel	N-275	

**SOCKET**

13429607	Din connector	TCS0707-01-010	Sync
13449218	Jack	HLJ0305-01-030	MONO
13449217	Jack	HLJ0305-01-010	STEREO
13449401	Jack	SG8026	MINI
13449706	Adaptor jack	HEC0470-01-230	AC adaptor

**TRANSFORMER COIL**

12449217	IFT coil	S74230 (yellow)	CPU clock
12449507		MC102C	DC-DC converter

**SWITCH**

13119705	SRM1018	rotary	TRACK, INSTRUMENT
13119303	SRM1034	rotary	MODE
13129715	KHC10901	push	All switches on the switch board
13159114	SSFZ-22-07	slide	SYNC in/out
13159504	SQP24P-22PS	slide	Pre-scale

**SEMICONDUCTOR**

<b>LSI</b>			
15179119	μPD650C-128	CMOS CPU	
15179305	μPD444C	CMOS RAM	
<b>IC</b>			
15159101H0	HD14001BP	Quad 2-input NOR gate	
15159104	HD14011BP or TC4011BP	Quad 2-input NAND gate	
15159105	HD14013BP or MN4013B	Dual type D flip-flop	
15159303H0	HD14584B	Hex Schmitt trigger	
15189113	AN6912	Quad comparator	
15189105	μPC4558C	Dual op amp	
15199509	LA4140	AF Power amp	
15189134	NJM2904D	Dual op amp	

**TRANSISTOR**

15119105	2SA733(P)	
15119121	2SA937(Q)	
15119602	2SB647(C)	
15119806	2SB596(O)	
15129102	2SC536(F)	
15129108A	2SC945(P)	Selected (NOISE)
15129602	2SD667(C)	
15129121	2SC2021(R)	

**LED**

15029109	GL3AR2
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**DIODE**

15019120	1S2473	Si diode
15019209	1OE-2	
15019122	1S-188FM	Ge diode
15019655	RD6.8EB-3 or 15019656 RD6.8EB2-T	
15019653	RD15EB-3	
15019126	1SS-133	Si diode

**POTENTIOMETER**

13219333	K161100FAE-IMC	master vol. & power switch
13219334	VM11R 851A-5M1411-50KA	tempo
13219330	K161B0023-10KB	AC level
13219331	K161B0023-50KB	BD, SD, L/HT, CY, O/C HI HAT level
13299114	H1051A013-10KB	SR 19R trimmer
13299117	H1051A019-100KB	SR 19R trimmer

**RESISTOR**

12559708	FRNB 2.7Ω	Fuse resistor
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**CIRCUIT BOARD ASSEMBLY**

7312605017	MAIN BOARD	OP3126-050	(PCB 291-493C)
7312604003	SWITCH BOARD	OP3126-040	(PCB 291-492C)
7312606006	SUB BOARD	OP3126-060	(PCB 291-494C)

**OTHERS**

12199503	PCB Holder	LCBS-12NS	
2219028700	Holder	N-287	Potentiometer for master vol. & tempo
2343097600	Flat cable		
2345012500	Terminal board		Battery + side
2345012600	Terminal spring		Battery - side
2224011500	Dust cover	N-115	slide switch
2224050600	Dust cover	N-506	master vol., tempo, rotary switch

**KNOB**

2247019300	Knob	N-193	pre scale
2247019400	Knob	N-194	master VR & TEMPO
2247019500	Knob	N-195	instrument level
2247019100	Knob	N-191	RUN/STOP, TAP
2247019200	Knob	N-192	step number
2247019800	Knob	N-198	rotary switch

**R-C NETWORK**

13910111	EXR-P (1000P.4.7K)
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