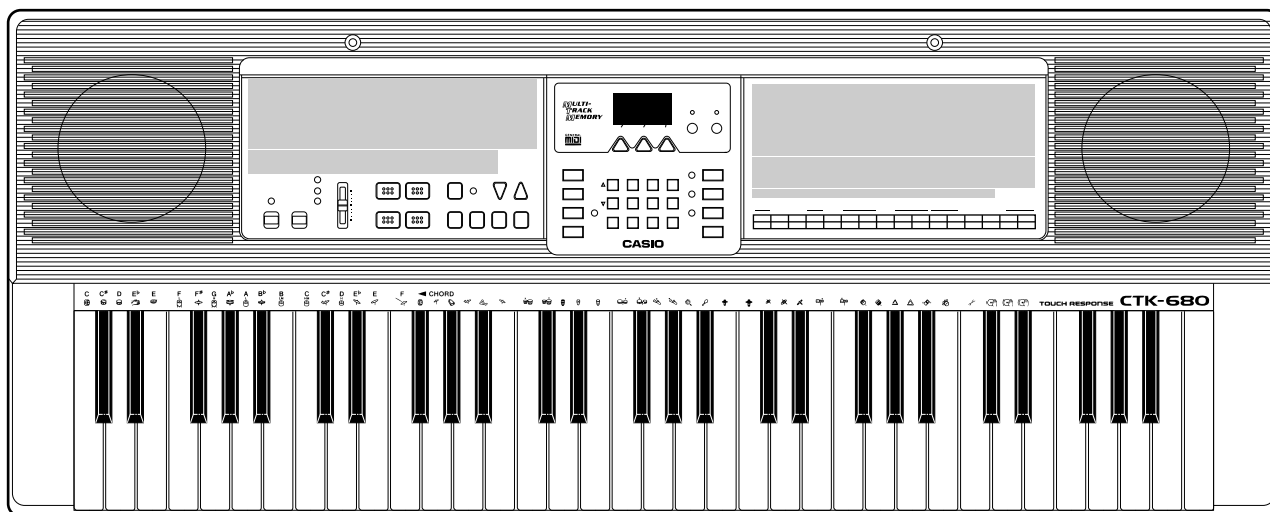


# CASIO®

# Service Manual

(without price)

## CTK-680



CTK-680

**GM SOUND KEYBOARD**

**INDEX**

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## SPECIFICATIONS

### GENERAL

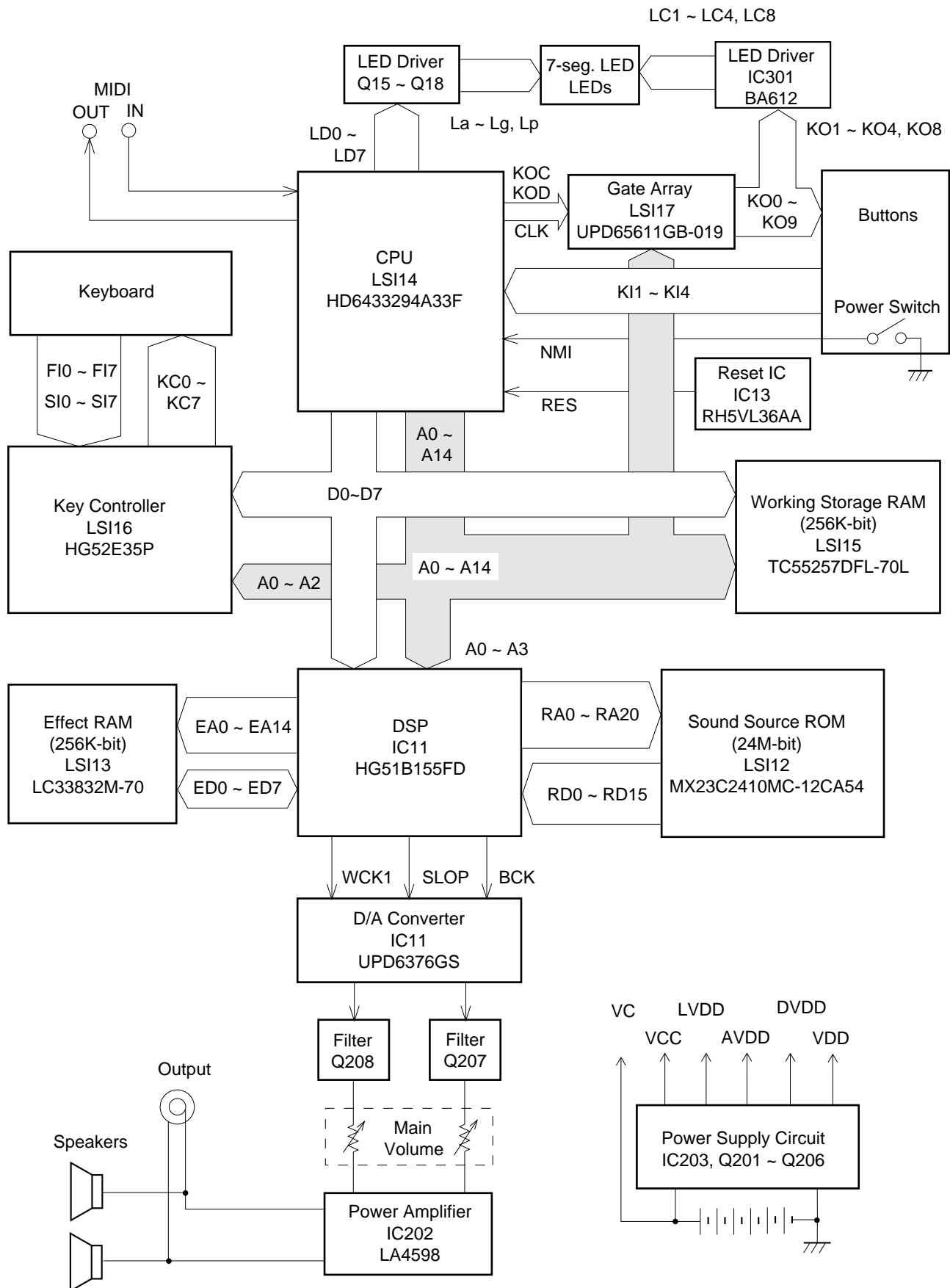
Model:	CASIO CTK-680
Keyboard:	61-key, 5-octave standard size keyboard with touch response (three sensitivity levels and OFF setting)
Tones:	128 tones (Conform with General MIDI level 1) + 8 drum sounds with split/layer features.
Polyphony:	32 notes maximum
Digital effects:	10 REVERB 1, REVERB 2, REVERB 3, CHORUS, TREMOLO, PHASE SHIFTER, ORGAN SPEAKER, ENHANCER, FLANGER, LOUDNESS
Musical pads:	120 (four pads × 30 sets) Phrases (22 sets), drums/percussion (7 sets), controller (1 set) Phrases matche chord
Demo tunes:	3, sequential repeat playback
Auto-accompaniment	
Rhythm patterns:	100
Tempo:	Adjustable (216 levels, ♩ = 40 to 255)
Chords:	3 types (CASIO Chords, Fingered, Full-Range Chords)
Parts:	Rhythm, bass, Chord 1, Chord 2, Chord 3 (adjustable on/off, tone, volume, pan, effect send, fine tune, coarse tune, expression settings)
Others:	Intro, Normal Fill-in, Variation Fill-in, Synchro/Ending
Magical presets:	50 types (Break Beat, Melodycomp, Shadow Drum, Free Session)
Registration memory:	10 Tone changes, tempo setting, auto-accompaniment volume setting, mode, layer on/off, Mixer settings, effect type, split on/off, rhythm type, auto-accompaniment rhythm assignment, pad type, chord fingering method, touch response setting, MIDI settings (including assignable jack settings), Magical Preset type
Mixer	
Number of channels:	16
Parameters:	TONE, VOLUME, PAN, EFFECT SEND, FINE TUNE, COARSE TUNE, EXPRESSION
Multi-track memory	
Number of songs:	2
Tracks:	6 (tone, volume, auto accompaniment, magical presets, pan, effect send, fine tune, coarse tune, expression)
Type:	Real-time
Capacity:	Approximately 5,200 notes

Other functions	
Transpose:	25 levels (1 octave lower C to 1 octave upper C)
Tuning:	Adjustable: A4 = 440 Hz ± 50 cents
Pitch Bender:	Adjustable range: ± 12 semitones (bend up, bend down, bend saw) using musical pads
Modulation:	Vibrato setting and performances are done by a Musical pad.
MIDI:	16-timbre multi-timbre receive (General MIDI Level 1)
Speakers:	12 cm diameter × 2 (output: 2.5 W + 2.5 W)
Input/Output Jacks	
Power supply:	9 V DC
Headphones:	Stereo mini jack
Output jacks:	Output impedance: 120 Ω Output voltage 4.2 V (RMS) MAX
Assignable Jack:	Standard jack (sustain, sostenuto, soft, rhythm start/stop)
MIDI terminals:	IN, OUT
Power supply:	2-way
Batteries:	Six D-size batteries
Battery life:	Approximately 5 hours on R20P (SUM-1) manganese batteries
AC adaptor:	AD-5 (optional)
Auto power off:	Approximately six minutes after last key operation under battery power (disabled when AC adaptor is connected).
Power consumption:	9 V --- 7.7 W
Dimensions:	94.2 × 36.7 × 13.5 cm (31-7/16 × 14-1/2 × 4-3/8 inches)
Weight:	5.2 kg (11.7 lbs) excluding batteries

## ELECTRICAL

Current drain with 9 V DC:	
No sound output	320 mA ± 20%
Maximum volume	
with 12 polyphonic notes in tone No. 022	960 mA ± 20%
Volume; maximum	
Phone output level (Vrms with 8 Ω load each channel):	Left channel 115 mV ± 20%
with key C6 pressed in tone No. 042	
Line output level (Vrms with 47 kΩ load each channel):	Left channel 1280 mV ± 20%
with key C5 pressed in tone No. 042	
Minimum operating voltage:	5.75 V

# BLOCK DIAGRAM

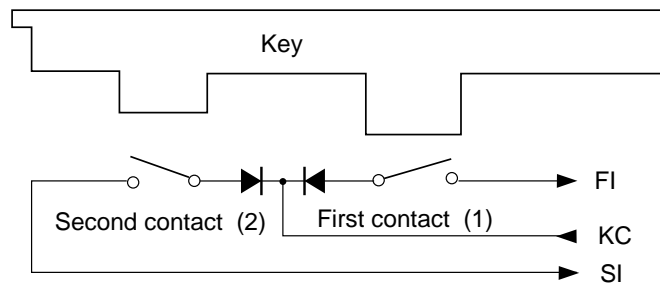


# CIRCUIT DESCRIPTION

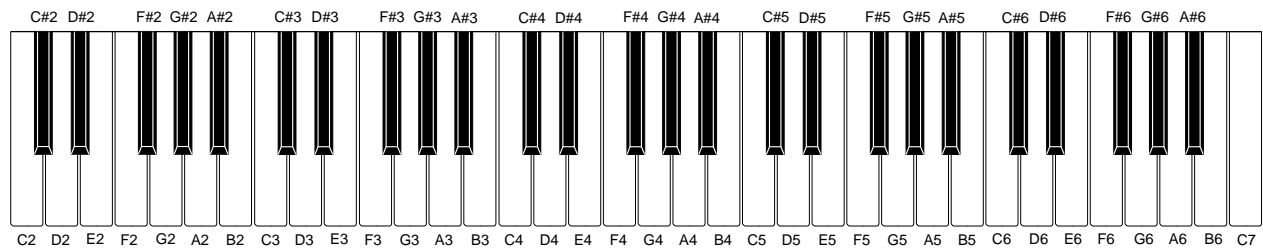
## KEY MATRIX

	KC0	KC1	KC2	KC3	KC4	KC5	KC6	KC7
<b>FI0</b>	C2 (1)	C#2 (1)	D2 (1)	D#2 (1)	E2 (1)	F2 (1)	F#2 (1)	G2 (1)
<b>SI0</b>	C2 (2)	C#2 (2)	D2 (2)	D#2 (2)	E2 (2)	F2 (2)	F#2 (2)	G2 (2)
<b>FI1</b>	G#2 (1)	A2 (1)	A#2 (1)	B2 (1)	C3 (1)	C#3 (1)	D3 (1)	D#3 (1)
<b>SI1</b>	G#2 (2)	A2 (2)	A#2 (2)	B2 (2)	C3 (2)	C#3 (2)	D3 (2)	D#3 (2)
<b>FI2</b>	E3 (1)	F3 (1)	F#3 (1)	G3 (1)	G#3 (1)	A3 (1)	A#3 (1)	B3 (1)
<b>SI2</b>	E3 (2)	F3 (2)	F#3 (2)	G3 (2)	G#3 (2)	A3 (2)	A#3 (2)	B3 (2)
<b>FI3</b>	C4 (1)	C#4 (1)	D4 (1)	D#4 (1)	E4 (1)	F4 (1)	F#4 (1)	G4 (1)
<b>SI3</b>	C4 (2)	C#4 (2)	D4 (2)	D#4 (2)	E4 (2)	F4 (2)	F#4 (2)	G4 (2)
<b>FI4</b>	G#4 (1)	A4 (1)	A#4 (1)	B4 (1)	C5 (1)	C#5 (1)	D5 (1)	D#5 (1)
<b>SI4</b>	G#4 (2)	A4 (2)	A#4 (2)	B4 (2)	C5 (2)	C#5 (2)	D5 (2)	D#5 (2)
<b>FI5</b>	E5 (1)	F5 (1)	F#5 (1)	G5 (1)	G#5 (1)	A5 (1)	A#5 (1)	B5 (1)
<b>SI5</b>	E5 (2)	F5 (2)	F#5 (2)	G5 (2)	G#5 (2)	A5 (2)	A#5 (2)	B5 (2)
<b>FI6</b>	C6 (1)	C#6 (1)	D6 (1)	D#6 (1)	E6 (1)	F6 (1)	F#6 (1)	G6 (1)
<b>SI6</b>	C6 (2)	C#6 (2)	D6 (2)	D#6 (2)	E6 (2)	F6 (2)	F#6 (2)	G6 (2)
<b>FI7</b>	G#6 (1)	A6 (1)	A#6 (1)	B6 (1)	C7 (1)			
<b>SI7</b>	G#6 (2)	A6 (2)	A#6 (2)	B6 (2)	C7 (2)			

Note: Each key has two contacts, the first contact (1) and second contact (2).



## NOMENCLATURE OF KEYS



## BUTTON MATRIX

	KI1	KI2	KI3	KI4
KO0	MODE	PAD A	PAD B	PAD D
KO1	TEMPO UP	TEMPO DOWN	START/STOP	PAD C
KO2			RHYTHM	TONE
KO3	MAGICAL PRESET	LAYER		SPLIT
KO4	DEMO	TOUCH RESPONSE	DIGITAL EFFECT	REGISTRATION
KO5	SYNCHRO/ENDING	VAR/FILL-IN	NORMAL/FILL-IN	INTRO
KO6	9	8	7	+
KO7	—	4	5	6
KO8	ACCOMP VOLUME	MULTI-TRACK MEMORY	TRANSCOPE/TUNE/MIDI	MIXER
KO9	0	1	2	3

## POWER SUPPLY CIRCUIT

The power supply circuit generates six voltages as shown in the following table. VDD voltage is always generated. The others are controlled by APO signal output from the CPU.

Name	Voltage	For operation of
VDD	+5.0 V	CPU, Reset IC, Working storage RAM, Gate array
DVDD	+5.2 V	DSP, Key controller, Sound source ROM, Effect RAM
AVDD	+5.0 V	DAC, Filter
LVDD	+5.0 V	LED Driver
VCC	+12 V	Pilot lamp
VC	+12 V	Power amplifier

## CPU (LSI14: HD6433294A33F)

The 16-bit CPU contains a 32k-bit ROM, a 1k-bit RAM, seven 8-bit I/O ports, an A/D convertor and MIDI interfaces. The CPU gains access to the working storage RAM, the DSP and the key controller. The CPU interprets MIDI message using the working storage RAM. The CPU also controls buttons and LEDs. The following table shows the pin functions of LSI14.

Pin No.	Terminal	In/Out	Function
1	P50/TXD	Out	MIDI signal output
2	P51/RXD	In	MIDI signal input
3	P52/SCK	Out	Reset signal output
4	-RESET	In	Reset signal input
5	-NMI	In	Power ON trigger signal input
6	VCC	In	+5 V source
7	-STBY	In	Standby signal input. Connected to +5 V.
8	VSS	In	Ground (0 V) source
9, 10	XTAL, EXTAL	In	16 MHz clock input
11, 12	MD1, MD0	In	Mode selection input
13	AVSS	In	Ground (0 V) source
14	P70	In	Analog input terminal for the pitch bend wheel
15 ~ 21	P71 ~ P77	Out	Input terminals from keys (KI1 ~ KI7)
22	AVCC	In	+5 V source
23 ~ 30	P60 ~ P67	Out	LED drive signal output
31	VCC	In	+5 V source
32 ~ 48	A0 ~ A15	Out	Address bus
40	VSS	In	Ground (0 V) source
49 ~ 56	D0 ~ D7	In/Out	Data bus
57	P40	Out	KO signal data
58	P41	Out	Clock for KO signal generator
59	P42	Out	APO signal output
60	P43	Out	Read enable signal output
61	P44	In	Write enable signal output
62	P45	—	Not used
63	P46	Out	16 MHz clock output
64	P47	—	Not used. Connected to +5 V source.

## DIGITAL SIGNAL PROCESSOR (LSI11: HG51B155FD-1)

Upon receipt of note numbers and their velocities, the DSP reads sound and velocity data from the sound source ROM in accordance with the selected tone; the DSP can read rhythm data simultaneously when a rhythm pattern is selected. Then it provides 16-bit serial signal containing data of the melody, chord, bass, and percussion to the DAC. When an effect is selected, the DSP adds the effect to the sound data using a 256k-bit RAM.

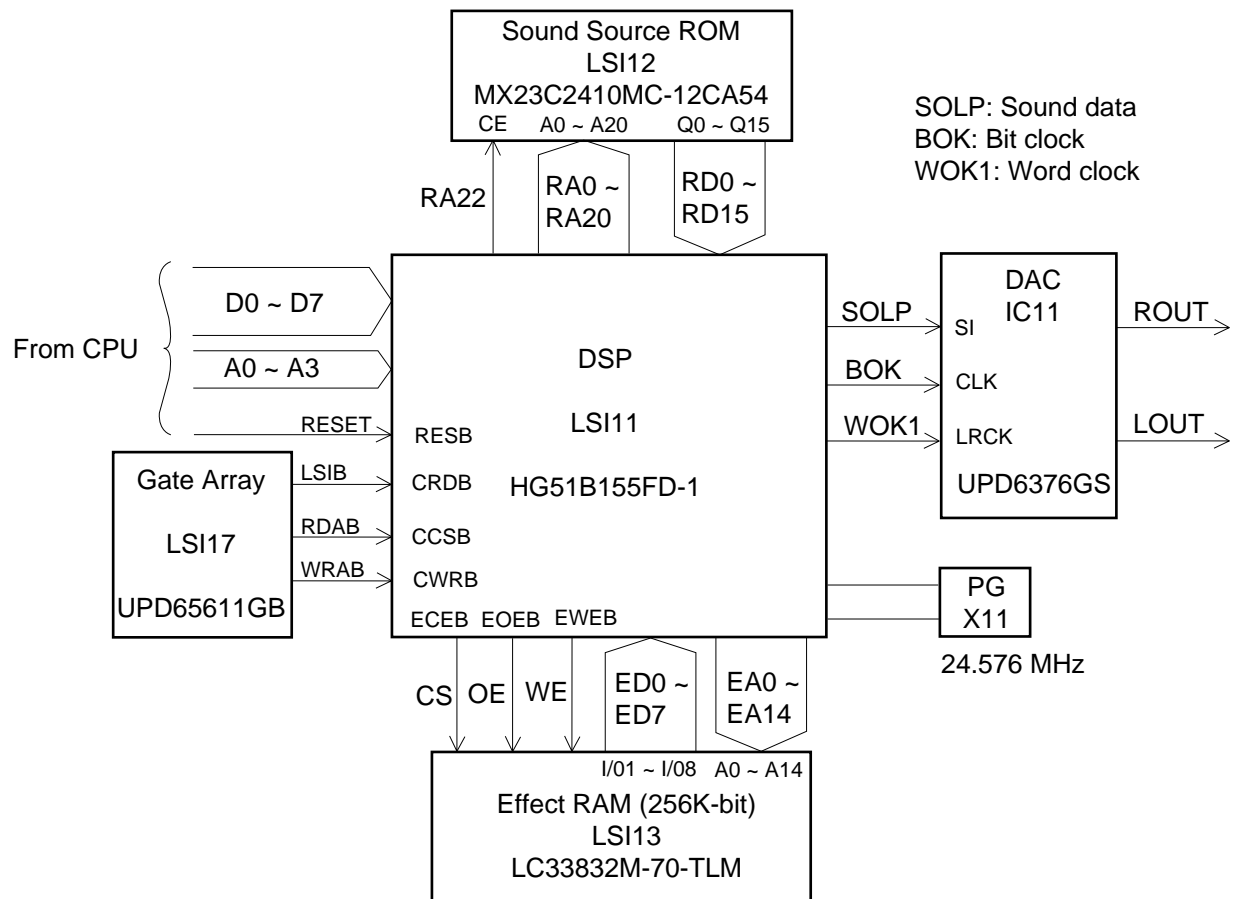
The following table shows the pin functions of LSI11.

Pin No.	Terminal	In/Out	Function
1 ~ 8	CD0 ~ CD7	In/Out	Data bus
9, 10	CE1, TRSB	—	Not used
11	GND7	In	Ground (0 V) source
12	CK16	Out	Terminal for 24.576 MHz clock check point
13	VCC6	In	+5 V source
14	CK0	In	Clock input. Connected to terminal CK16.
15	TCKB	—	Not used
16	VCC1	In	+5 V source
17	GND1	In	Ground (0 V) source
18, 19	XT0, XT1	In/Out	24.576 MHz clock input/output
20	SGL	In	System control terminal. Single chip system: Open
21	CCSB	In	Chip select signal input
22 ~ 25	CA0 ~ CA3	In	Address bus
26	CE0	In	Not used. Connected to ground.
27	CWRB	In	Write enable signal
28	CRDB	In	Read enable signal
29 ~ 32	—	—	Not used
33	RESB	In	Reset signal input
34	TESB	In	Not used. Connected to +5 V.
35 ~ 39	—	—	Not used
40 ~ 49 52 ~ 57	RD0 ~ RD15	In	Data bus for the sound source ROM
50	VCC2	In	+5 V source
51	GND2	In	Ground (0 V) source
58	RA23	Out	Not used
59	RA22	Out	Chip select signal for the sound source ROM
60	RA21	Out	Not used
61 ~ 73 75 ~ 82	RA0 ~ RA20	Out	Address bus for the sound source ROM
74	GND5	In	Ground (0 V) source
83	WOK2	Out	Not used
84	VCC3	In	+5 V source
85	GND3	In	Ground (0 V) source
86	WOK1	Out	Word clock for the DAC
87	SOLM	Out	Not used
88	SOLP	Out	Serial sound data output
89	BOK	Out	Bit clock output
90 ~ 92	—	—	Not used
93	VCC5	In	+5 V source
94, 95 97 ~ 105 107, 109 110, 112	EA0 ~ EA14	Out	Address bus for the effect RAM
96	EWEB	Out	Write enable signal for the effect RAM



Pin No.	Terminal	In/Out	Function
106	EOEB	Out	Read enable signal output for the effect RAM
108	VCC7	In	+5 V source
111	ECEB	Out	Chip select signal output for the effect RAM
113 ~ 117	ED11 ~ ED15	—	Not used
118	VCC4	In	+5 V source
119	GND4	In	Ground (0 V) source
120 ~ 122	ED8 ~ ED10	—	Not used
123 ~ 130	ED0 ~ ED7	In/Out	Data bus for the effect RAM
131	GND6	In	Ground (0 V) source
132 ~ 134	—	—	Not used. Connected to ground.
135, 136	—	—	Not used

### Block diagram of DSP and DAC circuit



## DAC (IC11: UPD6376GS)

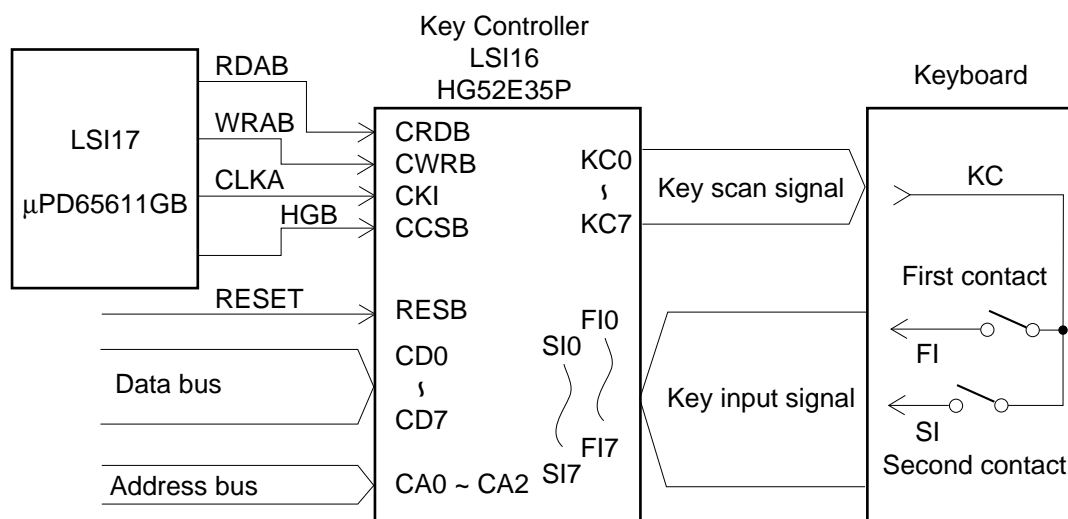
The DAC receives 16-bit serial data output from the DSP. The data contains digital sound data of the melody, chord, bass, and percussion for the right and left channels. The DAC converts the data into analog waveforms by each channel and output them separately.

The following table shows the pin functions of IC11.

Pin No.	Terminal	In/Out	Function
1	SEL	In	Mode selection terminal. Connected to ground.
2	D.GND	In	Ground (0 V) source for the internal digit circuit
3	NC	—	Not used
4	DVDD	In	+5 V source for the internal digital circuit
5	A.GND	In	Ground (0 V) source for the right channel
6	R.OUT	Out	Right channel sound waveform output
7, 8	A.VDD	In	+5 V source for the internal analog circuit
9	R.REF	In	Right channel reference voltage terminal
10	L.REF	In	Left channel reference voltage terminal
11	L.OUT	Out	Left channel sound waveform output
12	A.GND	In	Ground (0 V) source for the left channel
13	LRCK	In	Word clock input
14	LRSEL	In	Not used. Connected to ground.
15	SI	In	Sound data input
16	CLK	In	Bit clock input

## KEY CONTROLLER (LSI16: HG52E35P)

The key controller generates key scan signals and provides them to the keyboard. By counting the time between first-key input signal FI and second-key SI from the keyboard, the key controller detects key velocity. The note number and its velocity data are read at regular intervals by the CPU.

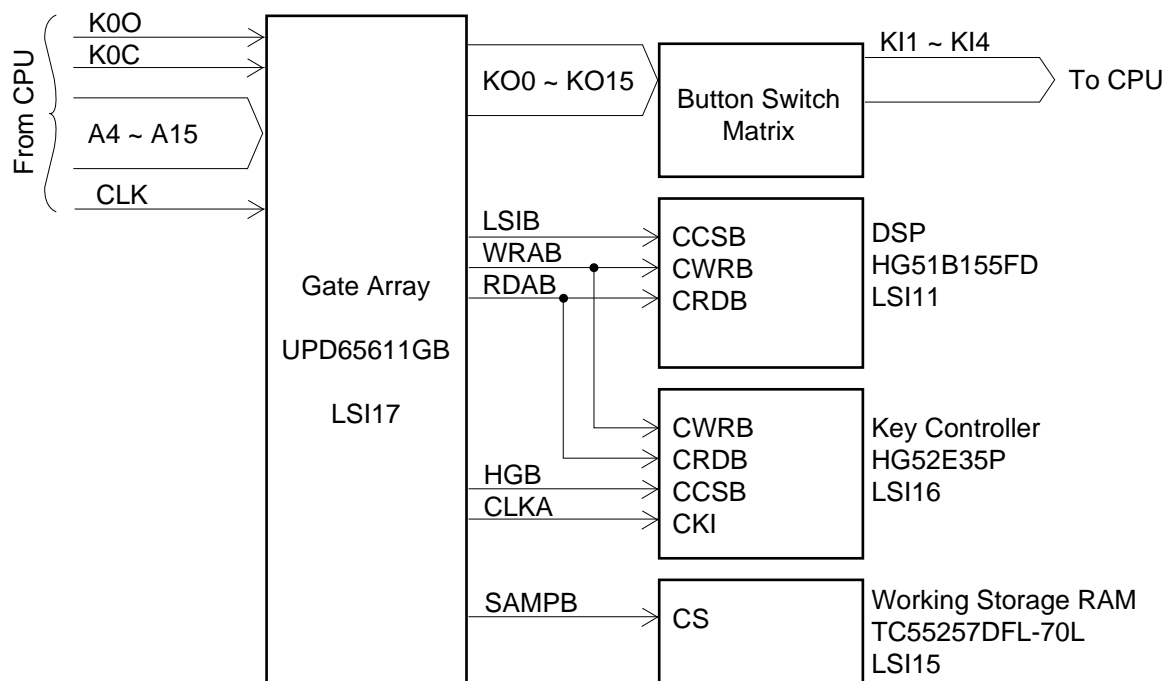


The following table shows the pin functions of LSI16.

Pin No.	Terminal	In/Out	Function
1	REQB	Out	Not used
2, 3, 60 ~ 63	FI8 ~ FI10, SI8 ~ SI10	In	Not used. Connected to +5 V.
4	VCC	In	+5 V source
5	CRDB	In	Read enable signal input
6	CWRB	In	Write enable signal input
7	CCSB	In	Chip select signal input
8, 9, 11	T, STBY, W	In	Not used. Connected to +5 V.
10	RESB	In	Reset signal input
12	CKI	In	16 MHz clock input
13, 14	TMD, TST	In	Not used. Connected to ground.
15	CKO	Out	Not used
16	GND	In	Ground (0 V) source
17	XIN	In	Not used. Connected to ground.
18	XOUT	Out	Not used
19	TRES	In	Not used. Connected to ground.
20 ~ 23, 25 ~ 28	CD0 ~ CD7	In/Out	Data bus
24	GND	In	Ground (0 V) source
29 ~ 31	CA0 ~ CA2	In	Address bus
32	VCC	In	+5 V source
33 ~ 39, 41 ~ 43, 53 ~ 55, 57 ~ 63	FI0 ~ FI9, SI0 ~ SI9	In	Key input signal input
40	VCC	In	+5 V source
44 ~ 47, 49 ~ 52	KC0 ~ KC7	Out	Key scan signal
48, 56	GND	In	Ground (0 V) source
64	VCC	In	+5 V source

## GATE ARRAY (LSI17: UPD65611GB)

The gate array provides chip enable signals for DSP, Key Controller, and Working Storage RAM. The LSI also generates scan signals of the button switches with K00 and K0C signals from the CPU.



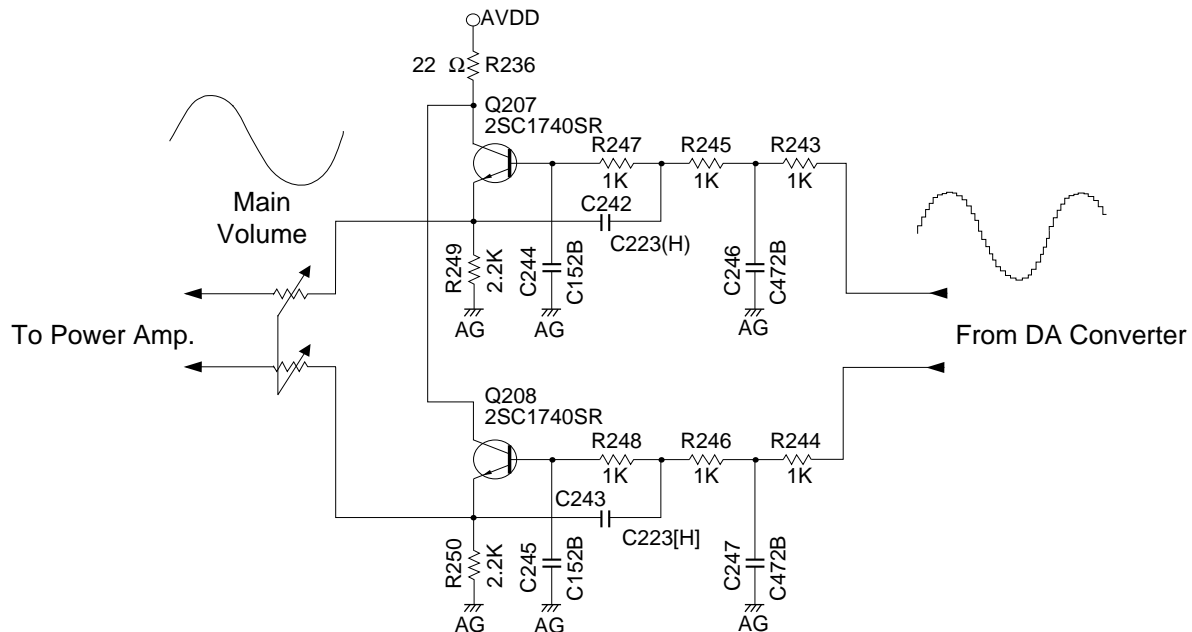
Each pin function of the LSI is listed below.

Pin No.	Terminal	In/Out	Function
1	K0C	In	Primary signal for K00 ~ K015
2	APOB	In	APO signal from CPU
3	RDB	In	Read enable signal from CPU
4	WRB	In	Write enable signal from CPU
5	WRAB	Out	Write enable signal for DSP and Key Controller
6	CLK	In	Clock pulse from CPU
7	LSIB	Out	DSP chip select signal
8	RDAB	Out	Read enable to DSP and Key Controller
9	RESET	Out	DSP and Key Controller reset signal
10	LED1	—	Not used
11	LED0	—	Not used
12 ~ 16, 18 ~ 22	K00 ~ K09	Out	Button switch scan signals
17	GND	In	Ground (0 V) source
23	NC	—	Not used
24	GND	In	Ground (0 V) source
25	CLKA	Out	16 MHz Clock pulse for Key Controller
26	GND	In	Ground (0 V) source
27	HGB	Out	Key Controller chip select signal

Pin No.	Terminal	In/Out	Function
28	SAMPB	Out	Working Storage RAM chip select signal
29, 30	D0, D1	In	Data bus
31 ~ 38, 40 ~ 43	A4 ~ A15	In	Address bus
44	K00	In	Clock pulse from CPU

## FILTER BLOCK

Since the sound signals from the DAC are stepped waveforms, the filter block is added to smooth the waveforms.

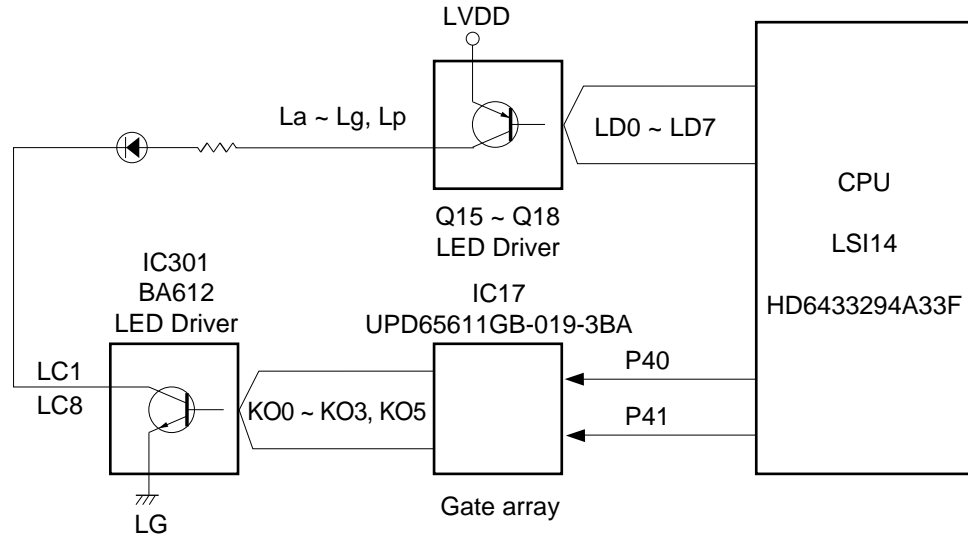


## POWER AMPLIFIER (IC202: LA4598)

The power amplifier is a two-channel amplifier with standby switch. The following table shows the pin function of IC202.

Pin No.	Terminal	In/Out	Function
1	Power GND	In	Ground (0 V) source
2	Ch1 B.S.	—	Terminal for a bootstrap capacitor
3	Ch1 OUT	Out	Channel 1 output
4	VCC	In	+9 V source
5	Ch1 N.F.	In	Negative feedback input
6	Ch1 IN	In	Channel 1 input
7	D.C.	—	Terminal for a decoupling capacitor
8	Pre GND	In	Ground (0 V) source
9	Stand by	In	Power control signal input. 0 V: Off, +9 V: On
10	Ch2 IN	In	Channel 2 input
11	Ch2 N.F.	In	Negative feedback input
12	Ch2 OUT	Out	Channel 2 output
13	Ch2 B.S.	—	Terminal for a bootstrap capacitor
14	NC	—	Not used

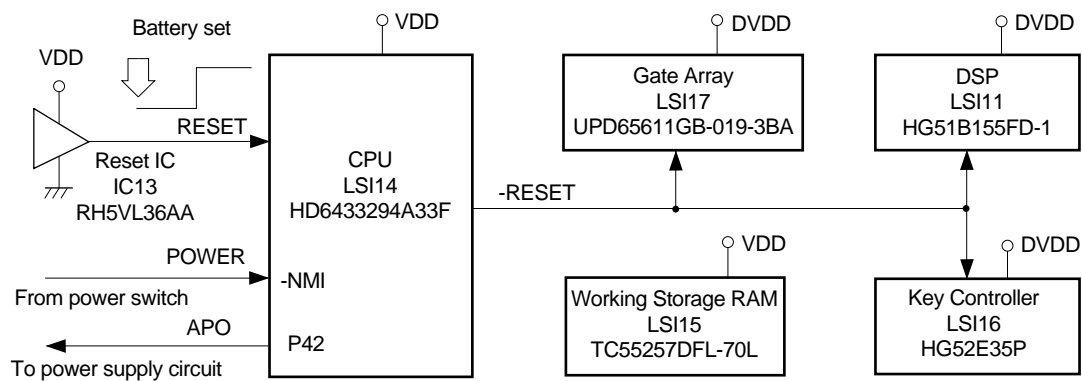
## LED DRIVING



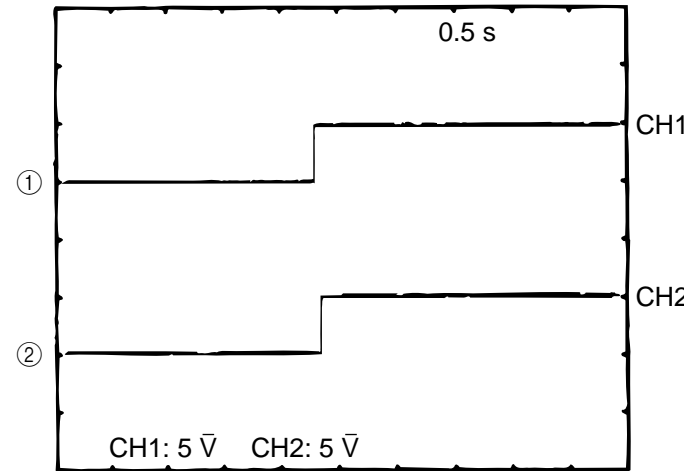
## RESET CIRCUIT

When batteries are set or an AC adapter is connected, the reset IC provides a low pulse to the CPU. The CPU then initializes its internal circuit.

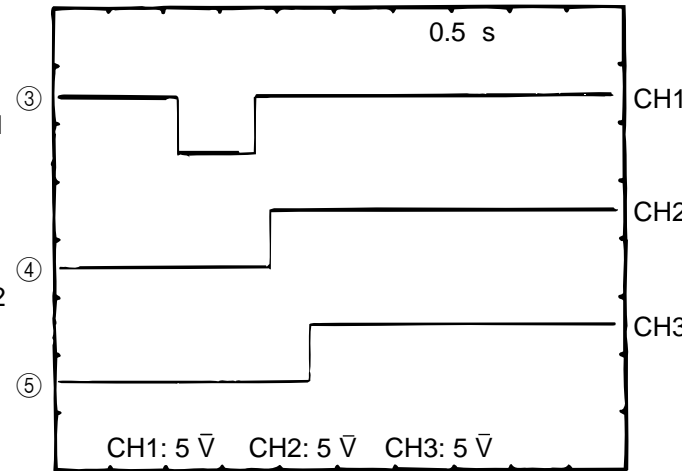
When the power switch is pressed, the CPU receives a low pulse of POWER signal. The CPU provides APO signal to the power supply circuit and raises RESET signal to +5 V to reset the DSP, the key controller and the gate array.



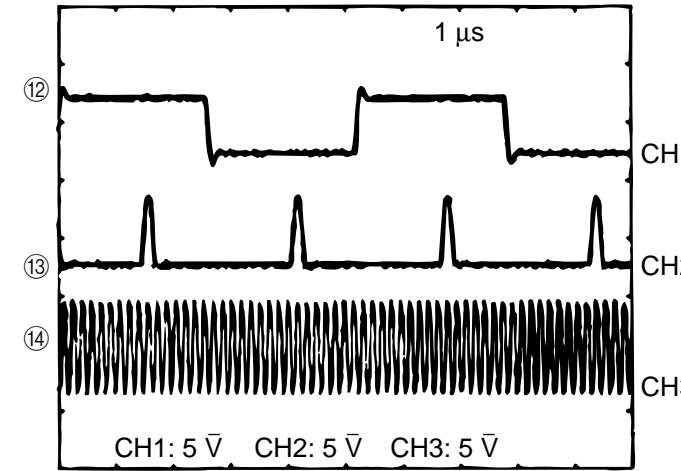
## MAJOR WAVEFORMS



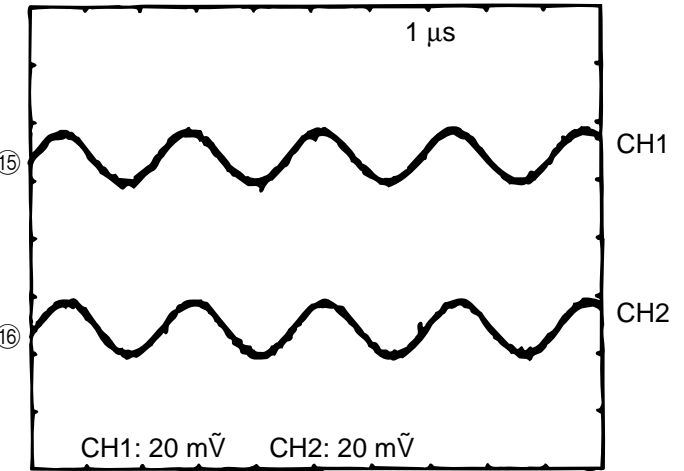
- ① Voltage VDD  
JG connector pin 8
- ② Initial reset signal  
RH5VL36A pin 1



- ③ Power ON signal NMI  
JF connector pin 4
- ④ APO signal  
JG connector pin 5
- ⑤ Reset signal  
UPD65611GB-019-38A pin 9

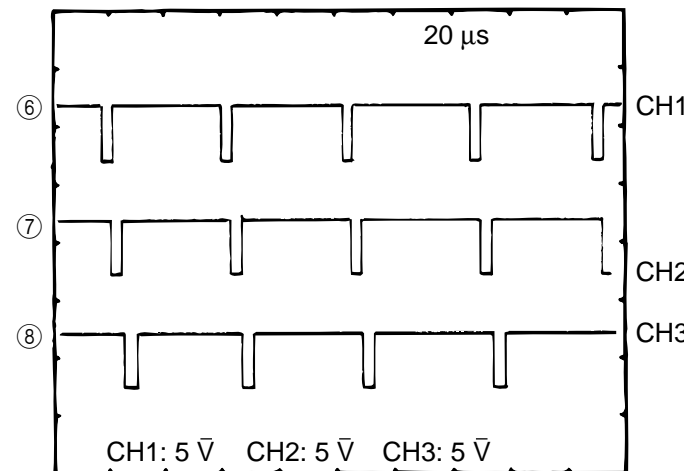


- ⑫ Word clock WOK1  
UPD6376GS pin 13
- ⑬ Data S1 (Note OFF)  
UPD6376GS pin 15
- ⑭ Bit clock BOK  
UPD6376GS pin 16

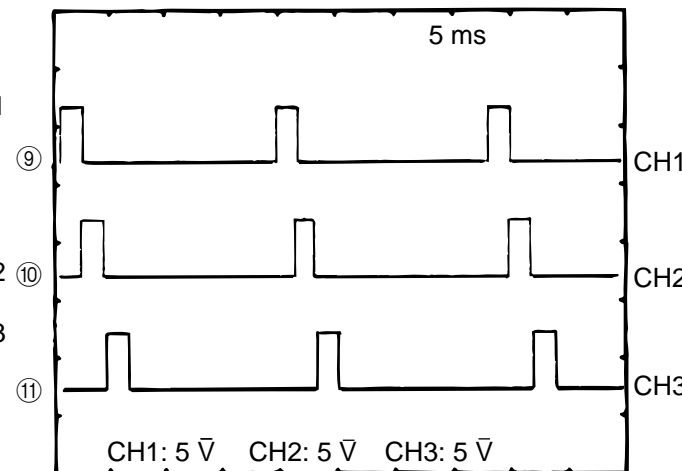


- ⑮ Sound waveform (L)  
JG connector pin 14
- ⑯ Sound waveform (R)  
JG connector pin 13

Tone: Whistle (No. 078)  
Key: A4  
Touch response: OFF



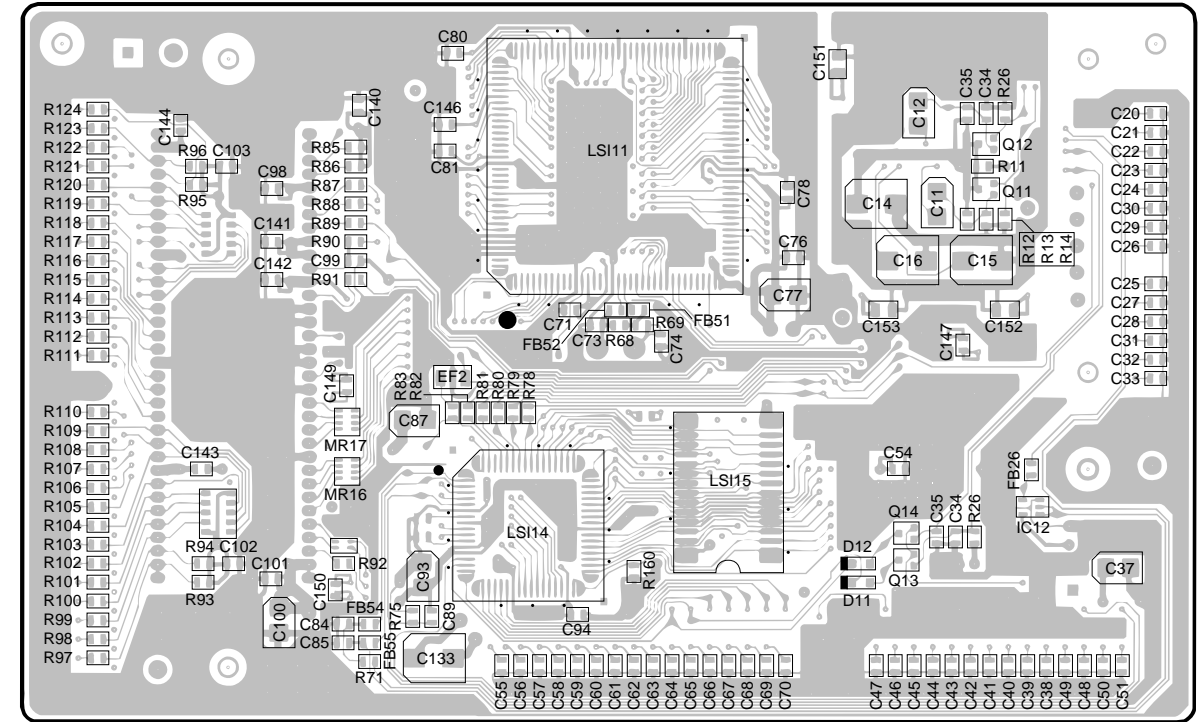
- ⑥ Key scan signal KC0  
HG52E35P pin 44
- ⑦ Key scan signal KC1  
HG52E35P pin 45
- ⑧ Key scan signal KC2  
HG52E35P pin 46



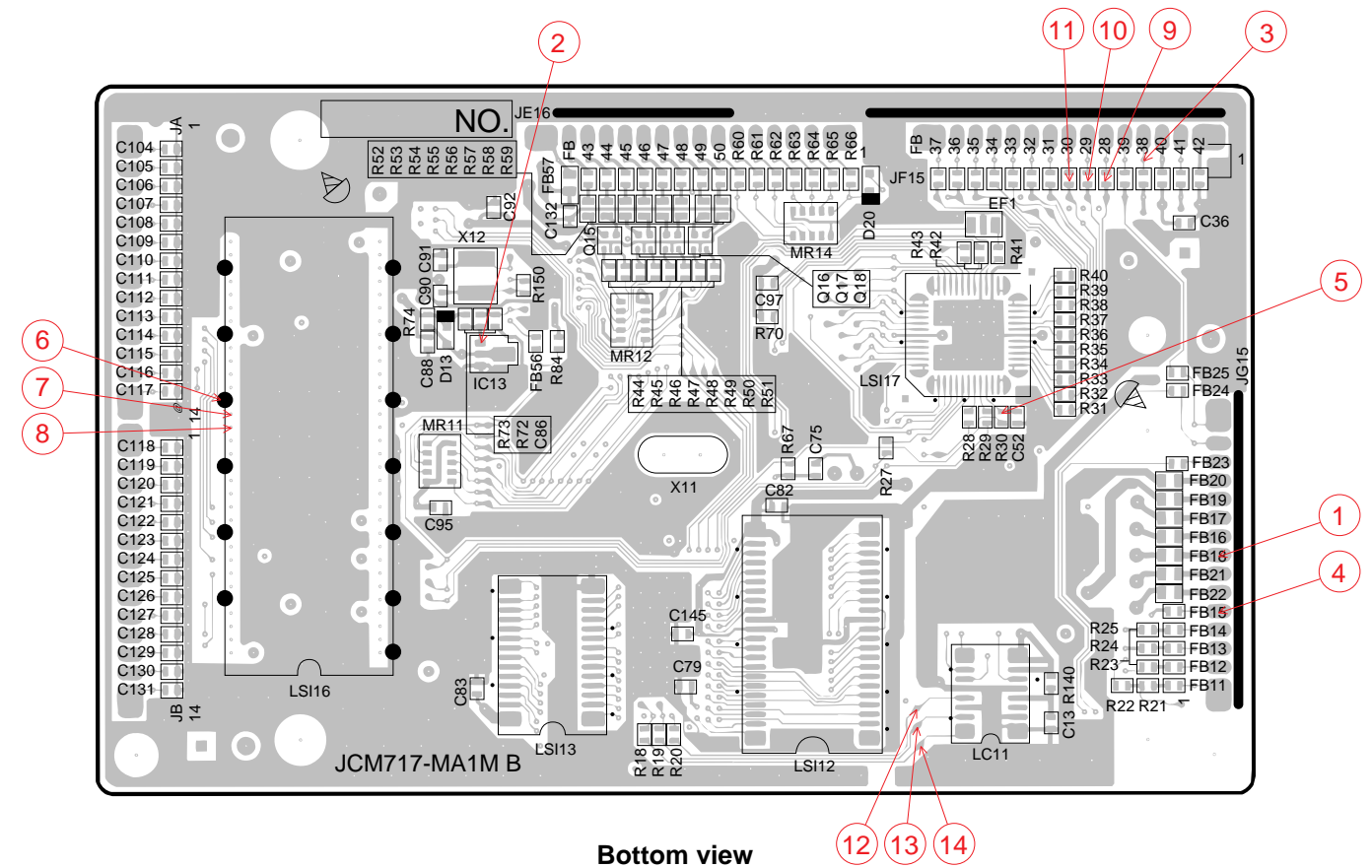
- ⑨ Button scan signal KO0  
JF connector pin 6
- ⑩ Button scan signal KO1  
JF connector pin 7
- ⑪ Button scan signal KO2  
JF connector pin 8

# PRINTED CIRCUIT BOARDS

## MAIN PCB JCM717-MA1M



Top view

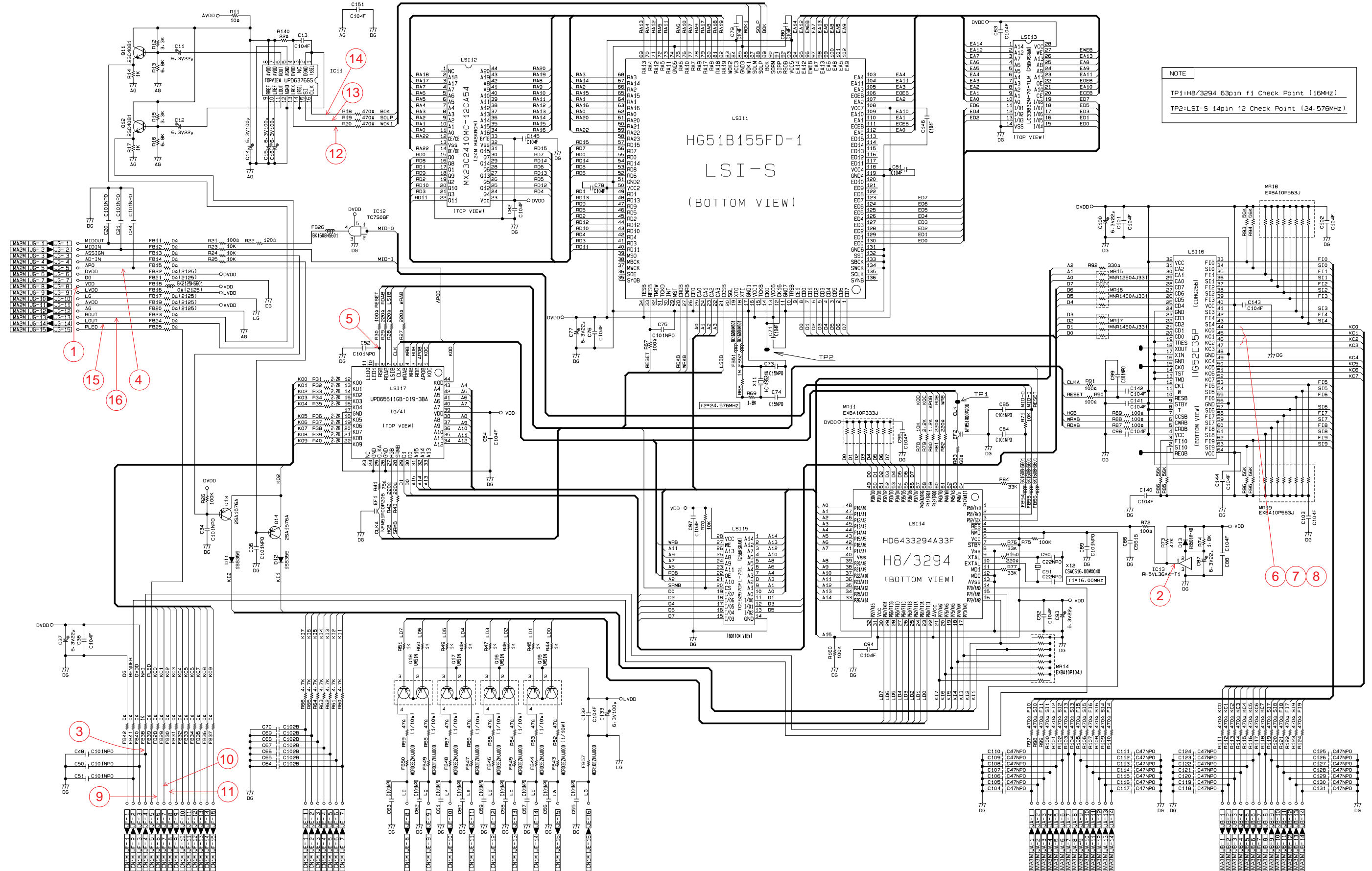


Bottom view

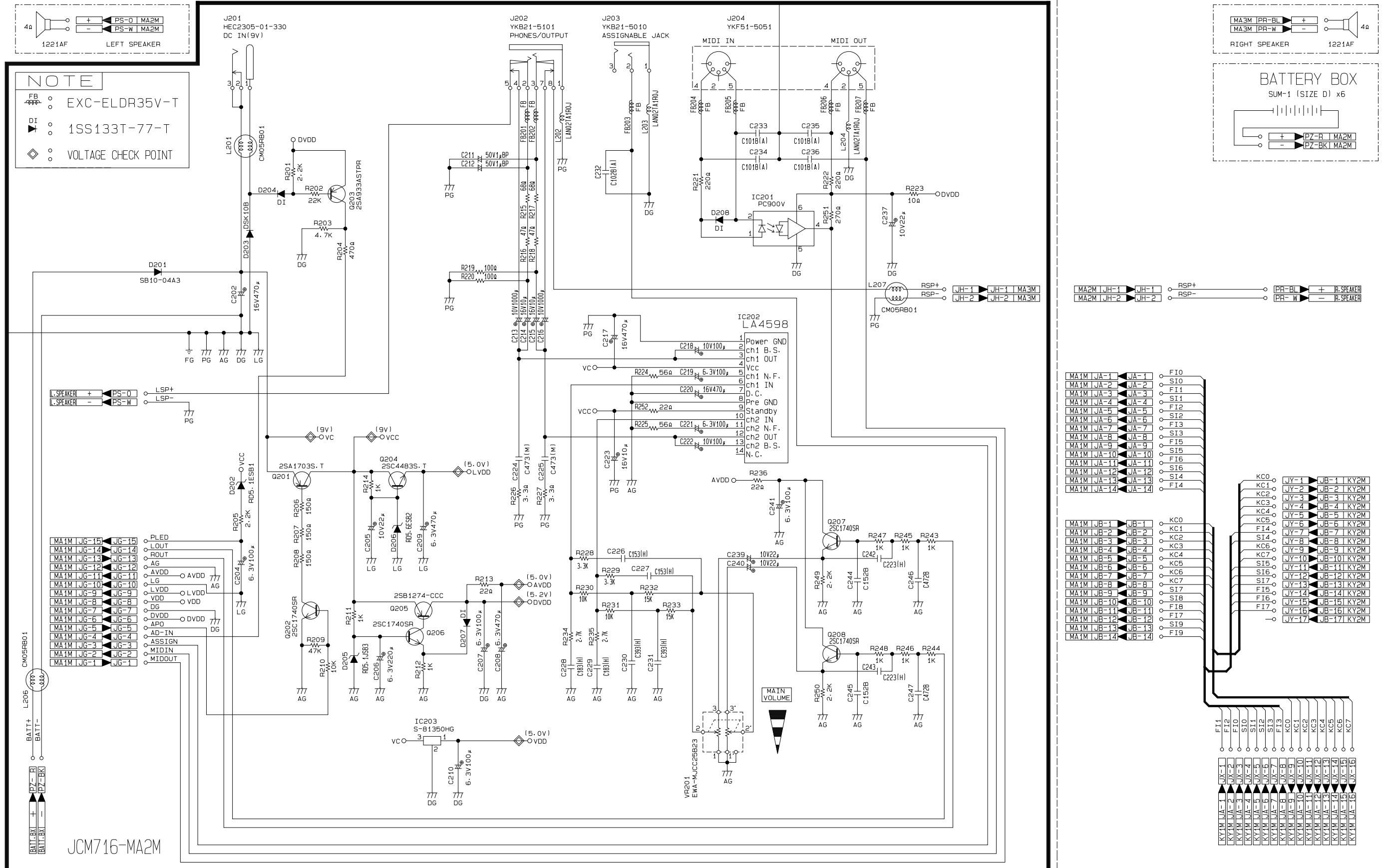


# SCHEMATIC DIAGRAMS

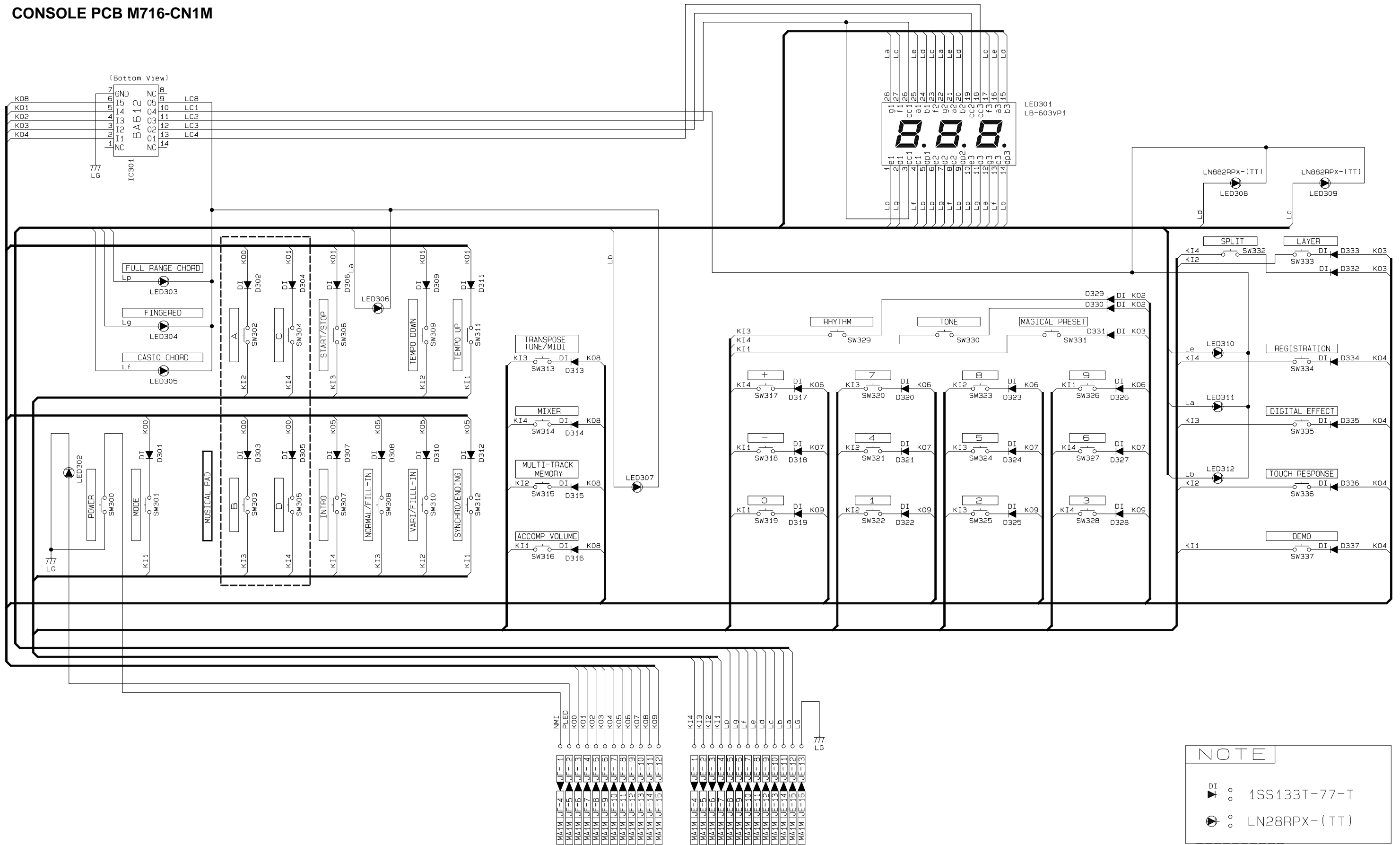
## MAIN PCB JCM717-MA1M



# SUB PCB JCM716-MA2M



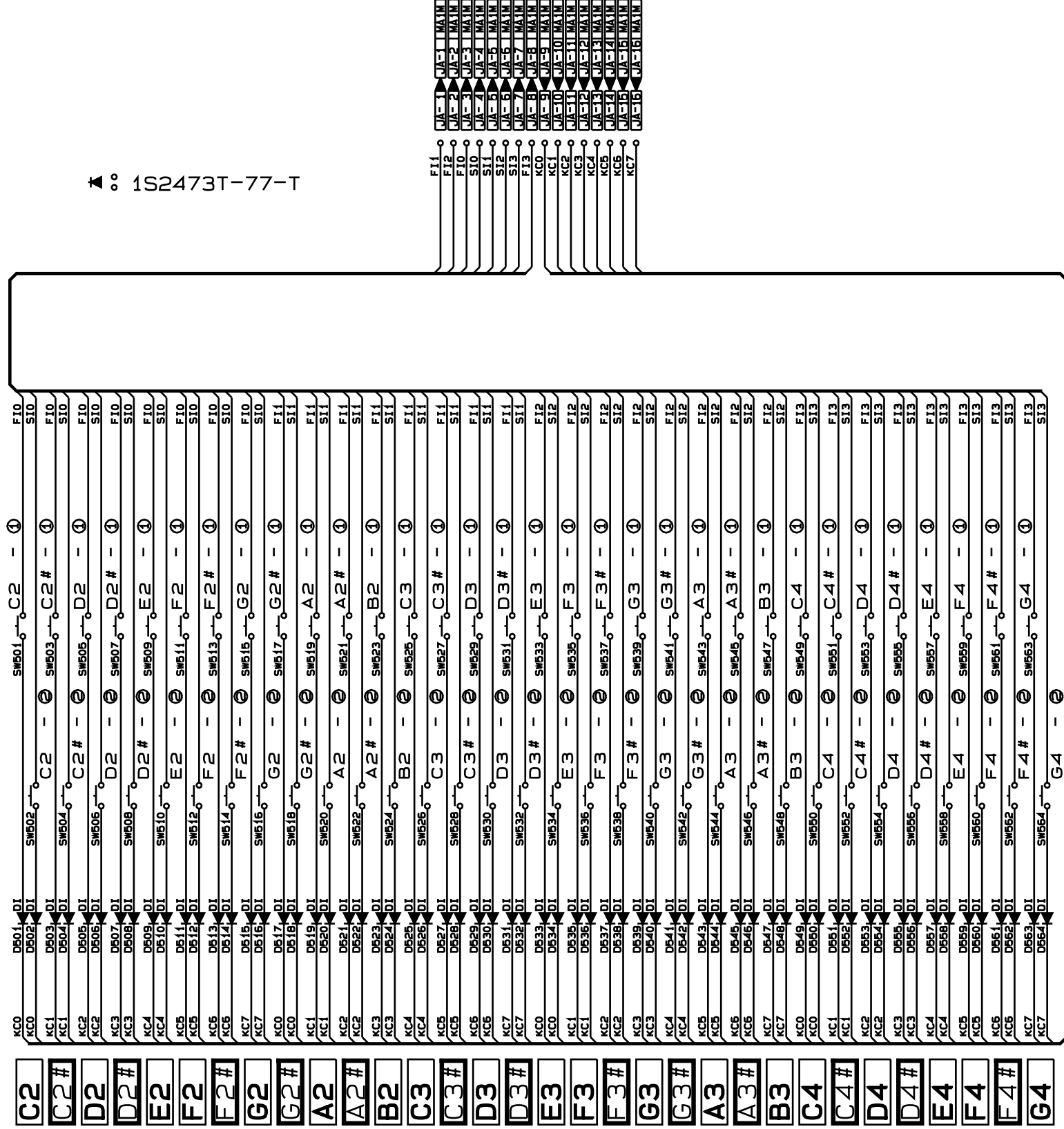
# CONSOLE PCB M716-CN1M



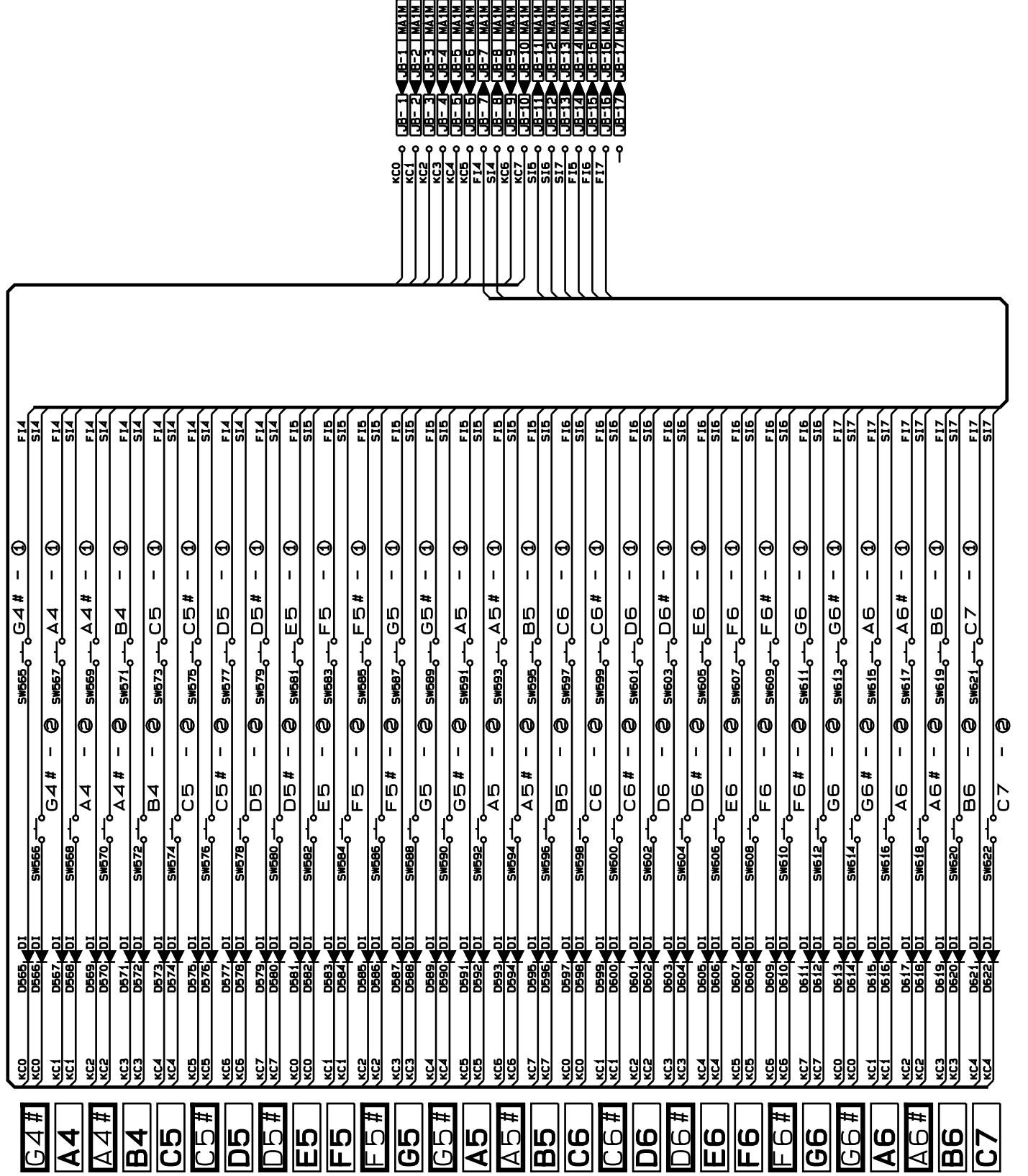
KEYBOARD PCBs JCM617T-KY1M/KY2M

JCM617T-KY1M

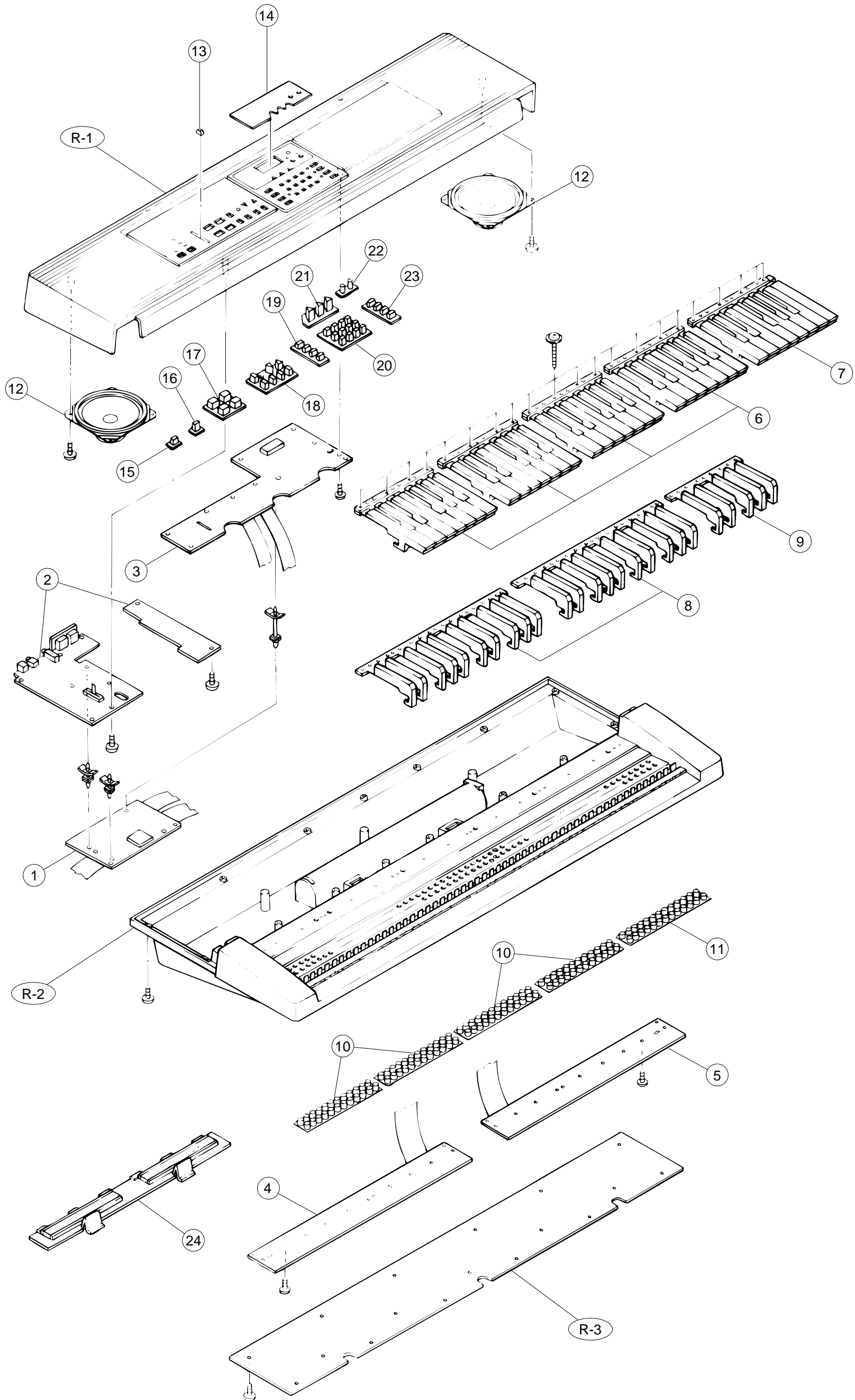
▲: 1S2473T-77-T



JCM617T-KY2M



# EXPLODED VIEW



# PARTS LIST

## CTK-680

Notes: This parts list does not include the cosmetic parts, which parts are marked with item No. "R-X" in the exploded view.

Contact our spare parts department if you need these parts for refurbish.

1. Prices and specifications are subject to change without prior notice.
2. As for spare parts order and supply, refer to the "GUIDEBOOK for Spare parts Supply", published separately.
3. The numbers in item column correspond to the same numbers in drawing.

Item	Code No.	Parts Name	Specification	Q	R
<b>Main PCB</b>					
1	6925 7090	Main PCB ass'y, M717-MA1M	M140443*2	1	B
LSI2	2012 5159	LSI, ROM	MX23C2410MC-12CA54	1	A
LSI3	2012 0777	LSI, RAM	LC33832M-70-TLM	1	A
LSI7	2012 4298	LSI,	UPD65611GB-019-3BA	1	A
LSI11	2012 1316	LSI, DSP	HG51B155FD-1	1	A
LSI14	2012 5152	LSI, CPU	HD6433294A33F	1	A
LSI15	2012 4291	LSI, RAM	HM62256BLFP-7T	1	A
LSI16	2011 5194	LSI, Key controller	HG52E35P	1	A
IC11	2114 4221	IC	UPD6376GS-E1	1	A
IC12	2105 1120	IC	TC7S08F-TE85R	1	A
IC13	2105 4536	IC	RH5VL36AA-T1	1	A
Q11, Q12	2252 1169	Transistor, Chip	2SC4081-T106S	2	B
Q13, Q14	2250 1169	Transistor, Chip	2SA1576AT106S	2	B
Q15 - Q18	2259 2562	Transistor, Chip	UMS1NTL	4	B
D11, D12	2390 1820	Diode, Chip	1SS355TE-17	2	C
D13	2390 2576	Diode, Chip, Schottky	RB501V-40TE-17	1	C
X11	2590 2107	Oscillator, Crystal	HC-49S24A	1	B
X12	2590 2079	Oscillator, Ceramic	CSACS16.00MX040-TC	1	B
<b>Sub PCB ass'y</b>					
2	6925 7120	Sub PCB ass'y M716-MA2,3M	M140487*1	1	B
IC201	2114 1421	IC, Photocoupler	PC900V	1	B
IC202	2114 2891	IC, Power amp.	LA4598	1	A
IC203	205 2114	IC, Voltage regulator	S-81350HG	1	A
Q201	2250 0742	Transistor	2SA1703S,T-AN-T	1	A
	2220 1409	Transistor	2SC1740SR-TP-T	4	A
Q203	2250 1577	Transistor	2SA933ASTPR	1	A
Q204	2250 1578	Transistor	2SC4483S,T-AN	1	A
Q205	2251 0651	Transistor	2SB1274-CCC	1	A
D201	2390 1323	Diode	RB100A-T32-T	1	B
D202	2360 1134	Diode	RD5.1ESB1-T1-T	1	B
D203	2390 0371	Diode	DSK10B-BT-T	1	B
	2390 1344	Diode	1SS133T-77-T	3	C
D205	2360 2261	Diode, Zener	RD5.1JSB3-T1-T	1	B
J201	3501 7049	Jack, Power	HEC2305-01-330	1	A
J202	3612 0711	Jack, Phone	YKB21-5101	1	B
J203	3612 0789	Jack	YKB21-5010	1	B
J204	3501 4816	Jack, DIN	YKF51-5051	1	B
VR201	2765 1344	Volume	EWA-MJCC25B23	1	B
<b>Console PCBs</b>					
3	6925 7130	PCB ass'y M716-CN1M	M140488*1	1	B
IC301	2114 3318	IC	BA612	1	B
D301 - D337	2390 1344	Diode	1SS133T-77-T	37	C
LED301	2370 0952	LED, 7-segment	LB-603VP1	1	B
	2370 0343	LED	LN28RPX-(TT)	9	C
LED308/390	2370 0959	LED	LN882RPX-(TT)	2	C
<b>Keyboard PCBs</b>					
4	6924 2580	PCB ass'y M617T-KY1M	M140211*5	1	B
	2301 0101	Diode	1S2473-T-77-T	64	C
5	6924 2590	PCB ass'y M617T-KY2M	M140212*5	1	B
	2301 0101	Diode	1S2473-T-77-T	58	C
<b>Keyboard unit</b>					
6	6922 2720	White key set, LT	M312118*1	4	A
7	6922 2730	White key set, LT	M312118*2	1	A

Notes: Q – Quantity per unit

R – Rank

Item	Code No.	Parts Name	Specification	Q	R
8	6922 2740	Black key set 10P	M111726-1	2	A
9	6922 2750	Black key set 5P	M111726-2	1	A
10	6922 2761	Key contact rubber LT-CB	M211704A-1	4	A
11	6922 2771	Key contact rubber LT-CS	M211705A-1	1	A
<b>Panel unit</b>					
12	3831 0357	Speaker	1221AF	2	B
13	6921 5040	Slide knob	M311860-1	1	B
14	6925 7210	Display plate	M312128-3	1	C
15	6923 4980	Rubber button 711A	M312122-2	1	B
16	6923 4990	Rubber button 711B	M312123-2	1	B
17	6925 7250	Rubber button 711C	M312124-3	1	B
18	6925 7260	Rubber button 711F	M211727-5	1	B
19	6925 7270	Rubber button 711D	M312125-6	1	B
20	6922 2660	Rubber button 710C	M312088-1	1	B
21	6925 7280	Rubber button 711E	M312126-4	1	B
22	6922 2680	Rubber button 710D	M312082-2	1	B
23	6925 7290	Rubber button 711D	M312125-5	1	B
24	6906 8416	Battery cover	M311164F*11	1	B
<b>Accessory</b>					
	6920 8691	Music stand	M311760A-1	1	B

Notes: Q – Quantity per unit  
R – Rank



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