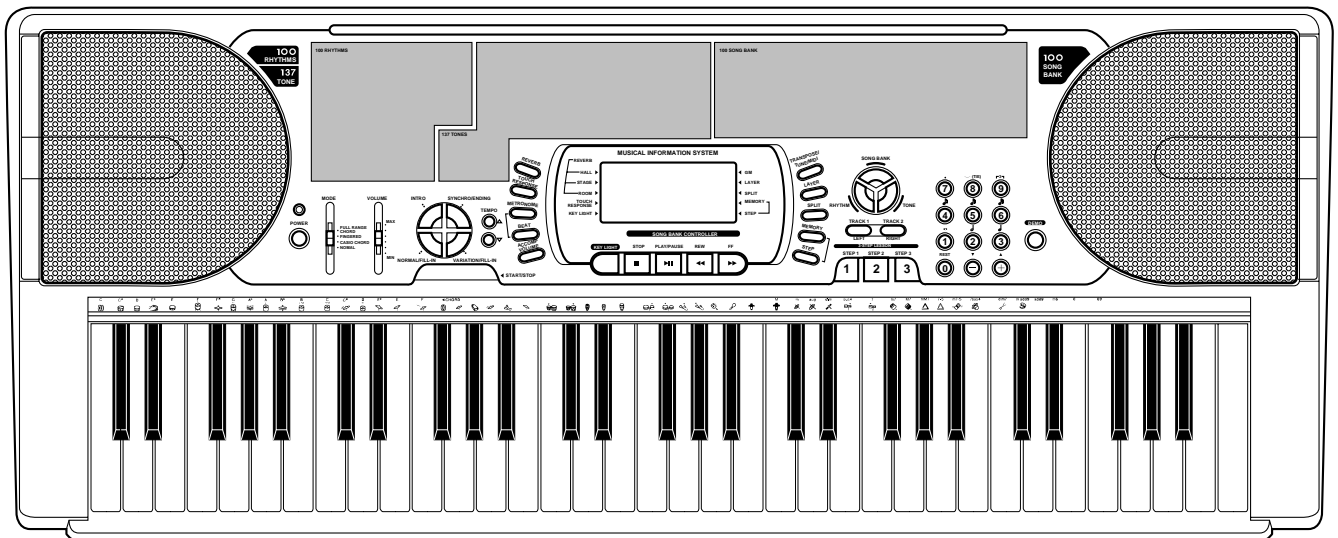


**CASIO®**

# Service Manual

(without price)

## CTK-620L



CTK-620L

**INDEX**

**ELECTRONIC KEYBOARD**

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## SPECIFICATIONS

### GENERAL

Keyboard:	61 standard-size keys, 5 octaves (with touch response on/off)
Key light system:	Can be turned on and off (up to 10 keys can be lit at the same time)
Tones:	137 (128 General MIDI tones + 9 drum tones); with layer and split
Rhythm instrument tones:	61
Polyphony:	24 notes maximum (12 for certain tones)
Digital effects:	3 reverb types (HALL, STAGE, ROOM)
Auto accompaniment	
Rhythm patterns:	100
Tempo:	Variable (216 steps, ♩ = 40 to 255)
Chords:	3 fingering methods (CASIO CHORD, FINGERED, FULL RANGE CHORD)
Rhythm controller:	START/STOP, INTRO, NORMAL/NORMARL FILL-IN, VARIATION/VARIATION FILL-IN, SYNCHRO/ENDING
Accomp volume:	0 to 127 (128 steps)
3-step lesson:	3 lessons (step 1, 2, 3)
Playback:	Repeat play of a single tune
Song bank	
Number of tunes:	100
Controllers:	PLAY/PAUSE, STOP, FF, REW, LEFT, RIGHT
Musical information function:	Tone, Auto Accompaniment, Song Bank numbers and names; staff notation, tempo, metronome, measure and beat number, step lesson display, chord name, dynamic mark, fingering, pedal operation
Metronome:	On/Off
Beat specification:	1 to 6
Memory	
Songs:	2
Recording tracks:	2
Recording methods:	Real-time, step
Memory capacity:	Approximately 5,200 notes (total for two songs)
MIDI:	16 multi-timbre receive, GM Level 1 standard
Other functions	
Transpose:	25 steps (-12 semitones to +12 semitones)
Tuning:	101 steps (A4 = approximately 440 Hz ± 50 cents)
Terminals	
MIDI terminals:	IN, OUT
Assignable jack:	Standard jack (sustain, sostenuto, soft, rhythm start/stop)
Headphone/output terminal:	Stereo standard jack
Output Impedance:	100 Ω
Output voltage:	4.5 V (RMS) MAX

Power jack	9 V DC
Power supply:	2-way
Batteries:	Six D-size batteries
Battery life:	Approximately 5 hours continuous operation on manganese batteries
AC adaptor:	AD-5
Auto power off:	Turns power off approximately six minutes after last key operation. Enabled under battery power only, can be disabled manually.
Speaker output:	2.5 W + 2.5 W
Power consumption:	9 V $\approx$ 7.7 W
Dimensions (HWD):	96.1 × 39.1 × 14.4 cm (37 7/8 × 15 3/8 × 5 11/16 inches)
Weight:	Approximately 6.0 kg (13.25 lbs) (without batteries)

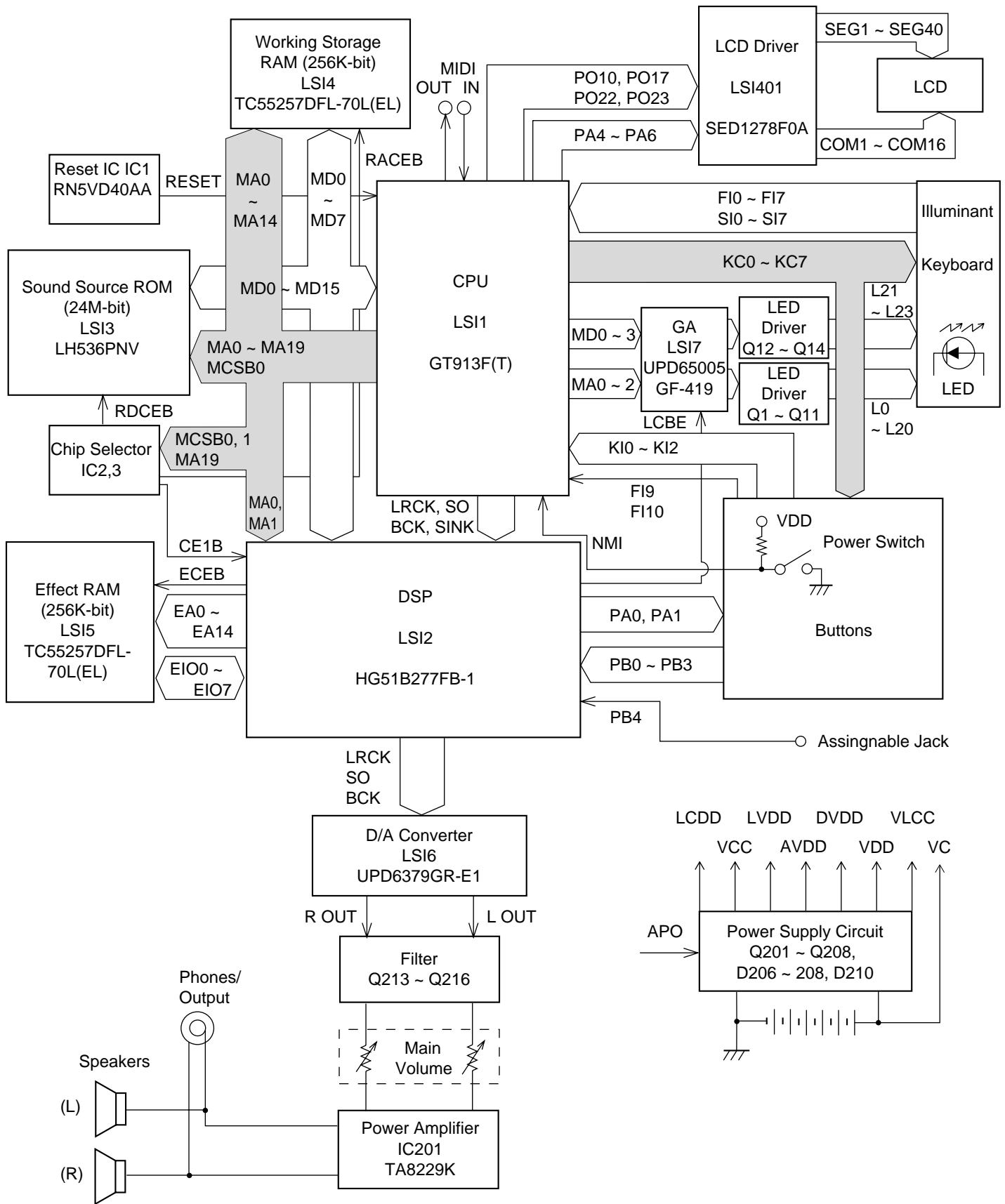
## ELECTRICAL

Current drain with 9 V DC:	
No sound output	200 mA ± 20 %
Maximum volume	1090 mA ± 20 %
with 10 keys from F1 to A2 pressed in French Horn	
Volume: maximum, Touch response: maximum	
Reverb: stage	
Speaker output level (Vrms with 4 Ω load each channel):	
with key C1 for R-ch, F1 for L-ch in French Horn	
Volume: maximum, Touch response: maximum	2300 mV ± 20 %
Reverb: stage	
Phone output level (Vrms with 8 Ω load each channel):	
with key C1 for R-ch, F1 for L-ch in French Horn	
Volume: maximum, Touch response: maximum	180 mV ± 20 %
Reverb: stage	
Output level (Vrms with 47 Ω load each channel):	
with key C1 for R-ch, F1 for L-ch in French Horn	
Volume: maximum, Touch response: maximum	2600 mV ± 20 %
Reverb: stage	
Minimum operating voltage:	6.3 V

### About General MIDI

General MIDI standardizes MIDI data for all sound source types, regardless of manufacturer. General MIDI specifies such factors as tone numbering, drum sounds, and available MIDI channels for all sound sources. This standard makes it possible for all MIDI equipment to reproduce the same nuances when playing General MIDI data, regardless of the manufacturer of the sound source. This keyboard supports General MIDI, so it can be used to play commercially available pre-recorded General MIDI data and General MIDI data sent to it from a personal computer.

# BLOCK DIAGRAM



## CIRCUIT DESCRIPTION

### KEY MATRIX

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

### BUTTON MATRIX

	KC0	KC1	KC2	KC3	KC4	KC5	KC6	KC7
KI0	MEMORY	STEP 2	3	TONE	5	TEMPO ▼	TEMPO ▲	SYNCHRO/ ENDING
KI1	STEP	STEP 3	—	7	6	ACC. VOL.	TIME	METRO
KI2	STEP 1	0	+	4	DEMO	TOUCH	REVERB	
FI9	LAYER	TRACK 1/ RIGHT	2	RHYTHM	9	PLAY/PAUSE ▶	STOP ■	KEYLIGHT
FI10	SPLIT	TRACK 1/ LEFT	1	SONG	8	FF ▷▷	REWIND ◀◀	TRANSPOSE/ TUNE/MIDI

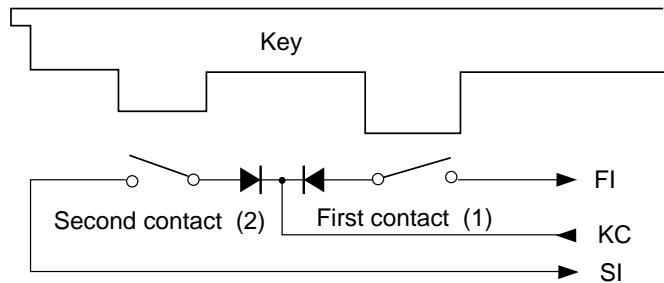
	PA0	PA1
PB0	INTRO	FULL RANGE CHORD
PB1	NORMAL FILL-IN	FINGERED
PB2	VARIATION FILL-IN	CASIO CHORD
PB3	START/ STOP	NORMAL

## LED MATRIX

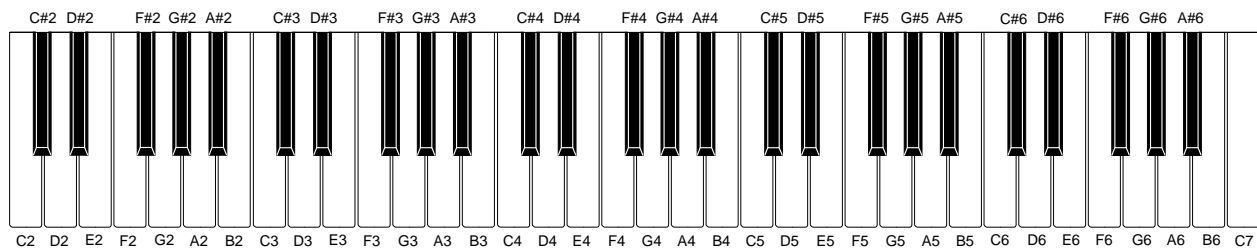
	L0	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
L21	A2#	F4	B4	E5	A5	D6	G6	C7	A6#	G6#	F6#
L22	G2#	E4	A4	D5	G5	C6	F6	B6	A5#	C6#	D6#
L23	C2	D4	G4	C5	F5	B5	E6	A6	G5#	F5#	D5#

	L11	L12	L13	L14	L15	L16	L17	L18	L19	L20
L21	C3#	D3#	F3#	G2	C3	F3	D4#	C4#	A3#	G3#
L22	F2#	D2#	C2#	F2	B2	E3	F4#	G4#	A4#	C5#
L23			D2	E2	A2	D3	G3	A3	B3	C4

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



## NOMENCLATURE OF KEYS



## POWER SUPPLY CIRCUIT

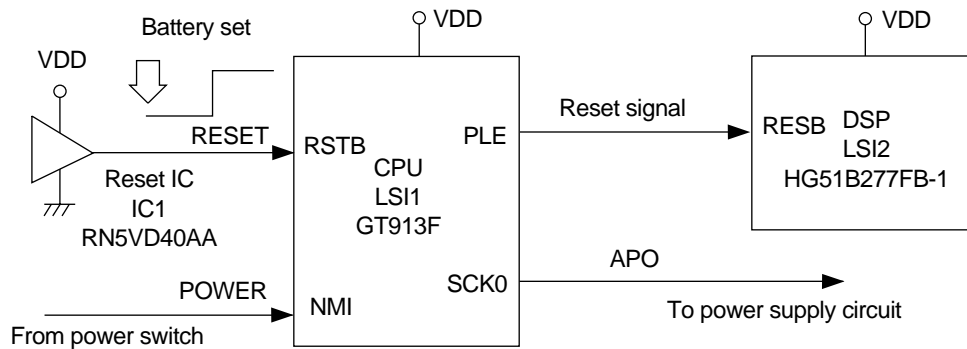
The power supply circuit generates seven voltages as shown in the following table. VDD voltage is always generated. The others are controlled by APO signal from the CPU.

Name	Voltage	For operation of
VDD	+5 V	CPU, Reset IC, DSP, Sound source ROM, Working storage RAM, Effect RAM, LED driver
DVDD	+5 V	CPU, Sustain jack, MIDI jack
AVDD	+5 V	DAC, Filter
LVDD	+5 V	GA
VCC	+9 V	Power amplifier
VLCC	+2 V	Pilot lamp
LCDD	+5.6 V	LCD driver

## 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, and clears the working storage RAM.

When the power switch is pressed, the CPU receives a low pulse of POWER signal. The CPU sends APO signal to the power supply circuit, also sends a reset signal to the DSP.



## CPU (LSI1: GT913F)

The 16-bit CPU contains a 1k-byte RAM, three 8-bit I/O ports, two timers, a key controller and serial interfaces. The CPU detects key velocity by counting the time between first-key input signal FI and second-key SI from the keyboard. The CPU reads sound data and velocity data from the sound source ROM in accordance with the selected tone; the CPU can read rhythm data simultaneously when a rhythm pattern is selected. Then the CPU provides 16-bit serial sound data to the DSP. The CPU also controls MIDI input/output and stores sequencer data into the working storage RAM.

The following table shows the pin functions of LSI1.

Pin No.	Terminal	In/Out	Function
1	TXD0	Out	Not used
2	RXD0	In	Not used
3	SCK0	Out	APO (Auto Power Off) signal output
4	TXD1	Out	MIDI signal output
5	RXD1	In	MIDI signal input
6	SCK1	Out	1 MHz synchronizing pulse output
7	AVCC	In	DVDD (+5 V) source
8	AN0	In	AC adaptor detection terminal. +5 V when the keyboard is powered by batteries and becomes 0 V to cancel the APO function when AC adaptor is connected.
9	AN1	—	Not used. Connected to ground.
10	AGND	In	Ground (0 V) source
11	BCK	Out	Bit clock output
12	SO	Out	Serial sound data output
13	LRCK	Out	Word clock output
14	GND	In	Ground (0 V) source
15, 16	XLT0, XLT1	In/Out	30 MHz clock input/output
17	VCC	In	+5 V source
18, 19	MD0, MD1	In	Mode selection terminal
20	RSTB	In	Reset signal input
21	NMI	In	Power ON signal input
22	INT/P10	In/Out	Data bus for the LCD driver
23 ~ 30	FI0 ~ FI3 SI0 ~ SI3	In	Terminal for key input signal
31 ~ 38	KC0 ~ KC7	Out	Terminal for key scan signal
39 ~ 46	FI4 ~ FI7 SI4 ~ SI7	In	Terminal for key input signal
47, 48	FI8, SI8	—	Not used
49	FI9	In	Terminal for button input signal
50	SI9	In	Data bus for LCD driver
51	FI10	In	Terminal for button input signal
52	SI10/P23	Out	Data bus for the LCD driver
53 ~ 55	KI0 ~ KI2	In	Terminal for button input signal
56	MWNB	Out	Write enable signal for the DSP



Pin No.	Terminal	In/Out	Function
57 ~ 76	MA0 ~ MA19	Out	Address bus
77, 78	MCSB0, MCSB1	Out	Chip enable signal output for the sound source ROM, working RAM and DSP
79	MCSB2	Out	Not used
80	VCC	In	+5 V source
81	GND	In	Ground (0 V) source
82	MRDB	Out	Read enable signal output for the sound source ROM
83 ~ 98	MD0 ~ MD15	In/Out	Data bus
99	PLE	Out	Reset signal output for the DSP
100	P17	In/Out	Data bus for the LCD driver

## DIGITAL SIGNAL PROCESSOR (LSI2: HG51B227FB-1)

The DSP receives 16-bit serial sound data output from the CPU and adds the selected effect to the sound data using the effect RAM. Then the DSP provides the sound data to the DAC. The DSP also controls button input/output and GA.

The following table shows the pin functions of LSI2.

Pin No.	Terminal	In/Out	Function
1 ~ 3, 80	PB0 ~ PB3	In	Button input terminals
4	PB4	In	ASSIGNABLE Jack input
5	SO	Out	Serial sound data output for the DAC
6	WCKO	Out	Word clock output for the DAC
7	VDD3	In	+5 V source
8	TEST	—	Not used
9	RESB	In	Reset signal input
10	VSS2	In	Ground (0 V) source
11, 12	XIN, XOUT	In/Out	20 MHz clock input/output
13	WCKI	In	Word clock input from the CPU
14	SI	In	Serial sound data input from the CPU
15	BCKI	In	Bit clock input from the CPU
16	SINC	In	1 MHz synchronizing pulse input
17	VDD2	In	+5 V source
18 ~ 25	IO0 ~ IO7	In/Out	Data bus
26	RCEB	Out	Chip enable signal output for the GA
27	VSS3	In	Ground (0 V) source
28	AD1	In	Address bus
29	OEB	Out	Output enable signal for working storage RAM
30	WEB	In	Write enable signal for working storage RAM
31	VDD3	In	+5 V source
32	CE2	In	Chip enable signal input. High active.
33	AD0	In	Address bus

Pin No.	Terminal	In/Out	Function
34	CE1B	In	Chip enable signal input. Low active.
35 ~ 41, 43	EIO0 ~ EIO7	In/Out	Data bus for the effect RAM
42, 44, 46 ~ 48, 51 ~ 59, 61	EA0 ~ EA14	Out	Address bus for the effect RAM
45	ECEB	Out	Chip enable signal output for the effect RAM
49	EOEB	Out	Output enable signal for the effect RAM
50	VSS3	In	Ground (0 V) source
60	BWEB	Out	Write enable signal output for the effect RAM
62, 66, 70, 74, 78	VSS2	In	Ground source
63, 67, 71, 75, 79	VDD2	In	+5 V source
64, 65	PA0, PA1	Out	Button scan signal output
68, 69, 77	PA2, PA3, PA7	—	Not used
72	PA4	Out	Data/command signal for LCD driver
73	PA5	Out	Read/write signal for LCD driver
76	PA6	Out	Chip enable signal for LCD driver

## LCD DRIVER (LSI401: SED1278F0A)

The LCD driver can drive a dot matrix LCD having 40 segment and 15 common lines. The LSI contains 240 graphic symbols in the built-in character generator ROM, and stores 80 characters in the built-in display data RAM. In accordance with command from the CPU, the LSI is capable of displaying up to 16 characters simultaneously. The following table shows the pin functions of LSI 401.

Pin No.	Terminal	In/Out	Function
1 ~ 22, 63 ~ 80	SEG1 ~ SEG40	Out	Segment signal output
23	VSS	—	GND (0 V) source
24, 25	OSC1, OSC2	In/Out	Terminals for the built-in clock pulse generator. The external resistor connected determines the oscillation frequency.
26 ~ 30	V1 ~ V5	In	LCD drive voltage input. Those voltages are used for generating the stepped pulse of the LCD drive signals.
31, 32	LP, XCLS	—	Not used
33	VDD	In	DVDD (+5 V) source
34, 35	FR, DO	—	Not used
36	RS	In	Data/command determination terminal. High: data, Low: command
37	R/W	In	Read/write terminal. High: read, Low: write
38	E	In	Chip enable signal. High: enable, the writing is done at fall edge. Low: disable
39 ~ 42	DB0 ~ DB3	—	Not used. Connected to GND (0 V)
43 ~ 46	DB4 ~ DB7	In/Out	Data bus
47 ~ 53, 55 ~ 62	COM1 ~ COM7 COM9 ~ COM16	Out	Common signal/output
54	COM8	—	Not used

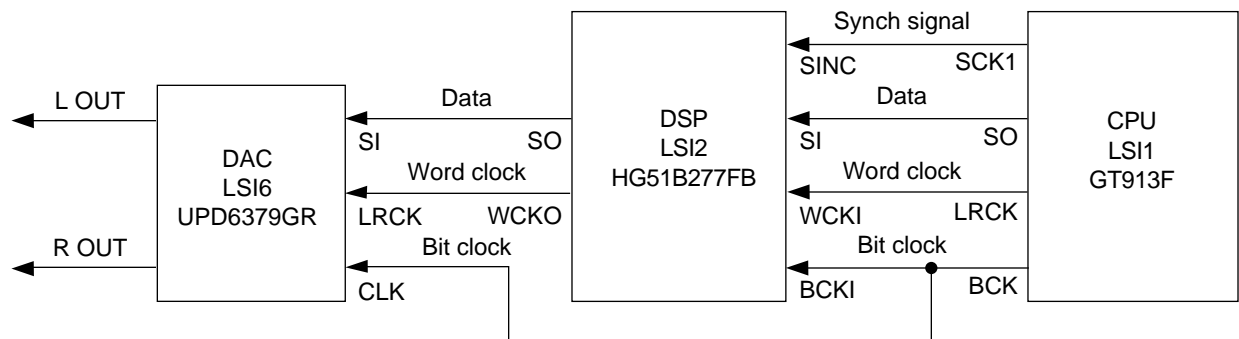
## GATE ARRAY (LSI7: UPD65005GF-419)

The gate array can control 63 LEDs of key illuminators. In accordance with the command from the CPU, the LSI is capable of controlling the illuminator LEDs. The following table shows the pin functions of LSI7.

Pin No.	Terminal	In/Out	Function
3 ~ 6	MI0, MI1, MO0, MO1	—	Not used
7, 26, 43, 58	GND	In	GND (0 V) source
8, 27, 44	VDD	In	LVDD (5 V) source
9 ~ 12	DB0 ~ DB3	In	Data bus
13 ~ 15	MA0 ~ MA2	In	Address bus
16	NCE	In	Chip enable signal
19	NWR	In	Write enable signal
20, 21	NRD, NRS	—	Not used
22 ~ 25, 28 ~ 32, 35 ~ 42, 45 ~ 48	L0 ~ L20	Out	LED drive signal output
50 ~ 52	L21 ~ L23	Out	LED common signal output
53 ~ 57, 59	L24 ~ L28, L29	—	Not used
60 ~ 63	I0 ~ I3	—	Not used
1, 2, 17, 18, 33, 34, 49, 64	NC	—	Not connected

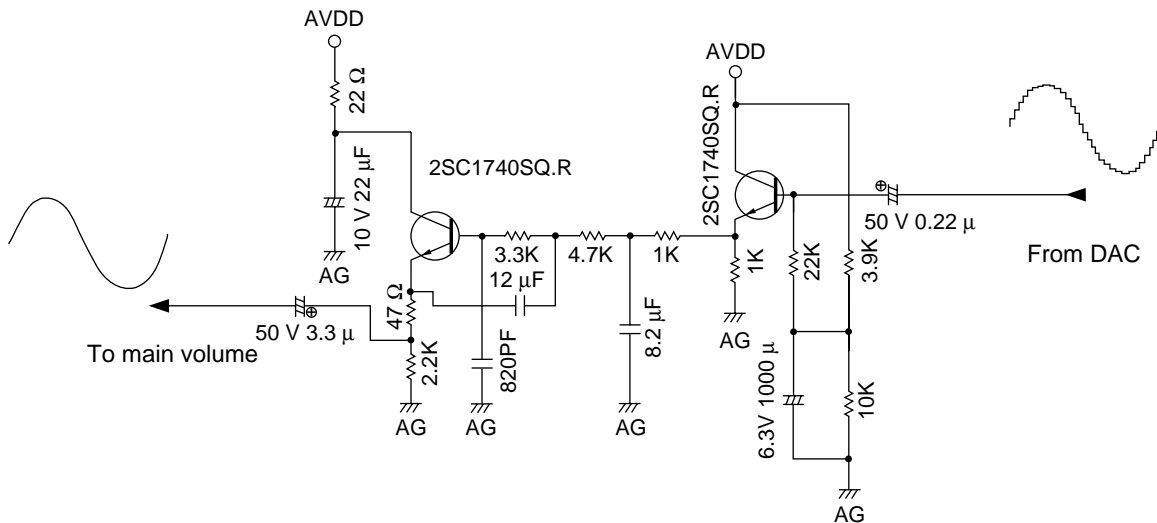
## DAC (LSI6: UPD6379GR)

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 and output them to each channel separately.



## FILTER BLOCK

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



## POWER AMPLIFIER (IC101: TA8248K)

The power amplifier is a two-channel amplifier with standby switch.

The following table shows the pin function of IC101.

Pin No.	Terminal	In/Out	Function
1	NC	—	Not used
2	B.S.2	—	Terminal for a bootstrap capacitor
3	OUT2	Out	Channel 2 output
4	VCC	In	+9 V source
5	OUT1	Out	Channel 1 output
6	B.S.1	—	Terminal for a bootstrap capacitor
7	Power GND	In	Ground (0 V) source
8	Stand by	In	Power control signal input. 0 V: Off, +9 V: On
9	DC	—	Terminal for a decoupling capacitor
10	NF1	In	Negative feedback input
11	IN1	In	Channel 1 input
12	IN2	In	Channel 2 input
13	NF2	In	Negative feedback input
14, 15	Pre GND	In	Ground (0 V) source

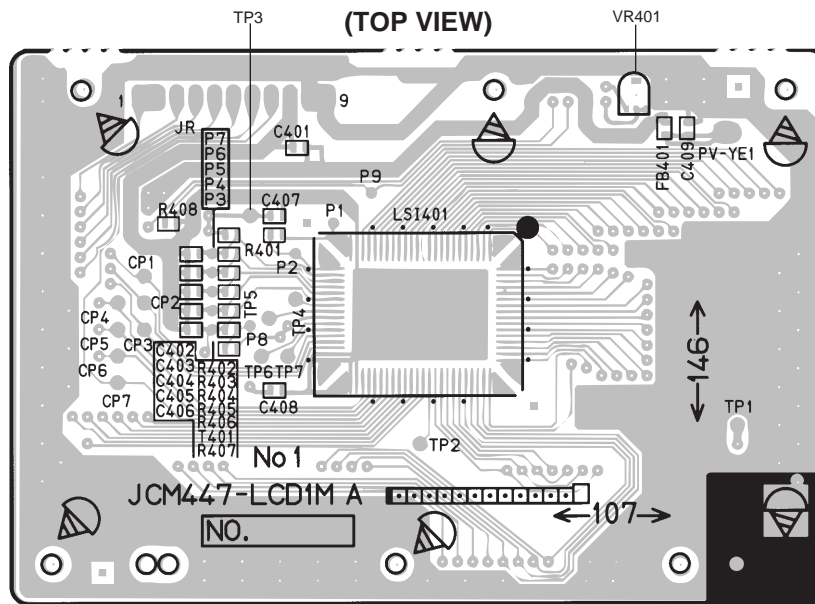
# ADJUSTMENT

## DISPLAY PCB

1) Items to be adjusted:

Item	Measuring Instrument
Vop voltage setting	Voltmeter

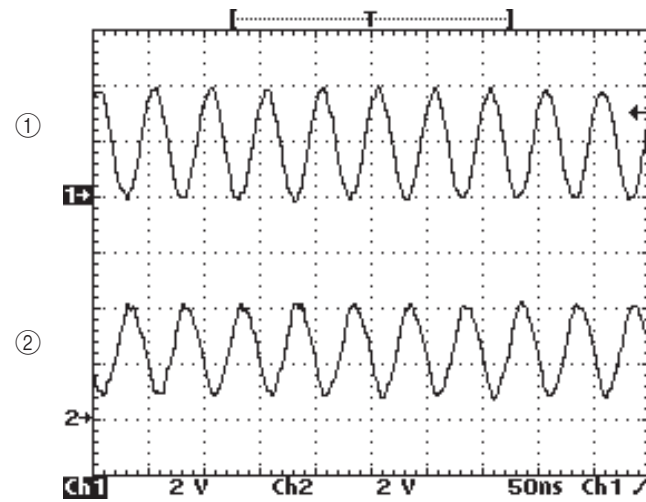
2) Adjustment and Test Point Locations



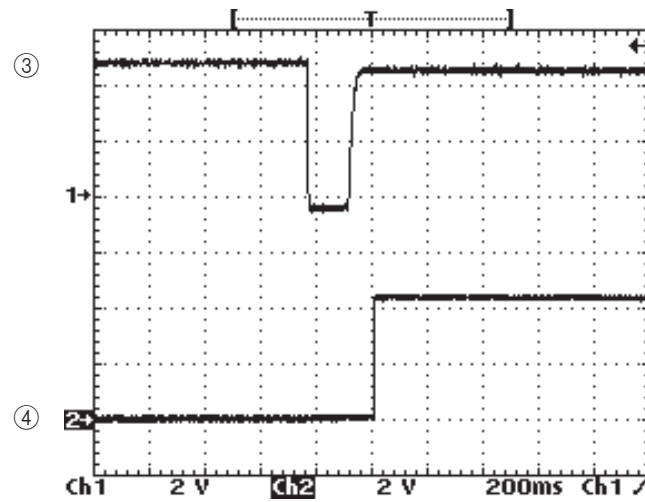
3) Equipment connection/Procedure

Vop voltage setting						
Input Connection	Input Point	Input Signal	Adjust	Output Connection	Output Point	Adjust for
—	—	—	VR401	Voltmeter	TP3	Adjust for 4.2 ~ 4.3 V reading on voltmeter under the temperature 20 ~ 25 °C. Make fine adjustment according to the next instruction.
<p>Watching the LCD at a 37.6° angle to the horizontal, adjust Vop voltage so that unenergized segments are seen dimly.</p>						

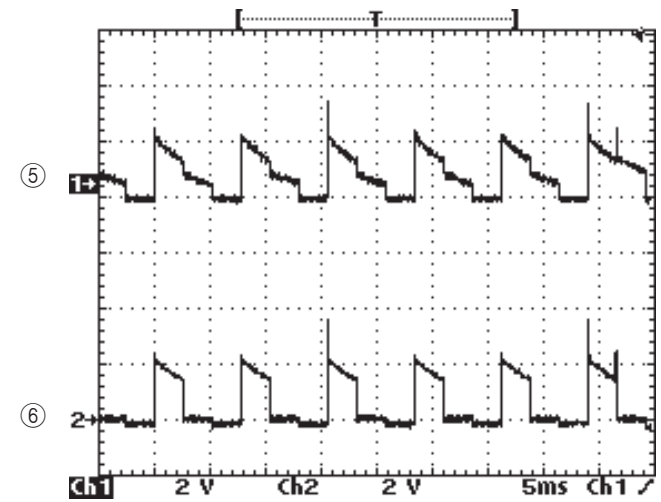
## MAJOR WAVEFORMS



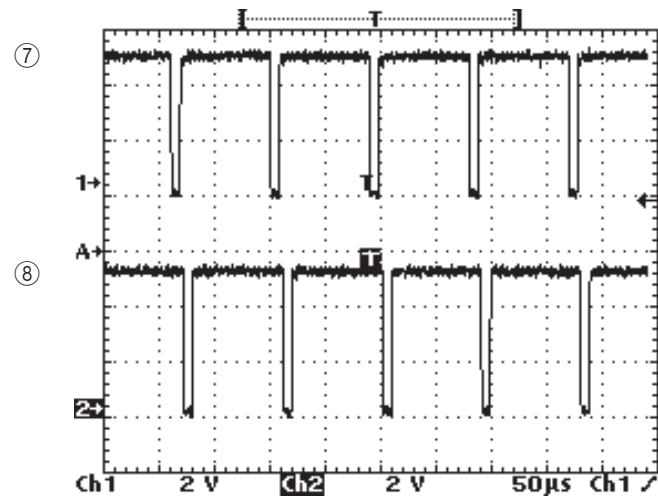
- ① Clock signal B1  
Test point T5
- ② Clock signal B2  
Test point T6



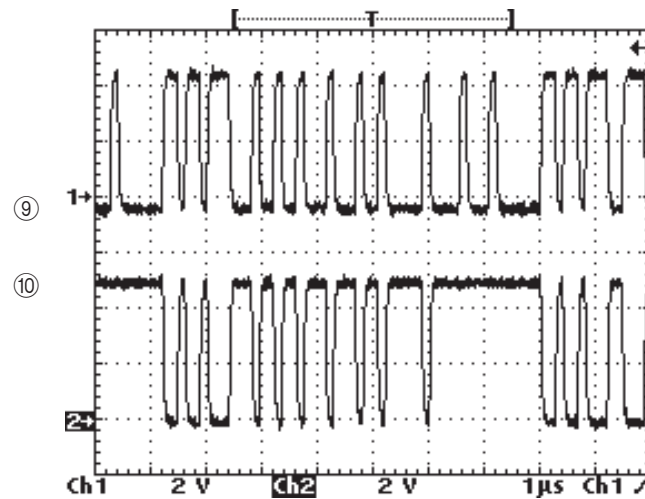
- ③ MNI signal  
JM connector pin 18
- ④ APOFF signal  
JS connector pin 12



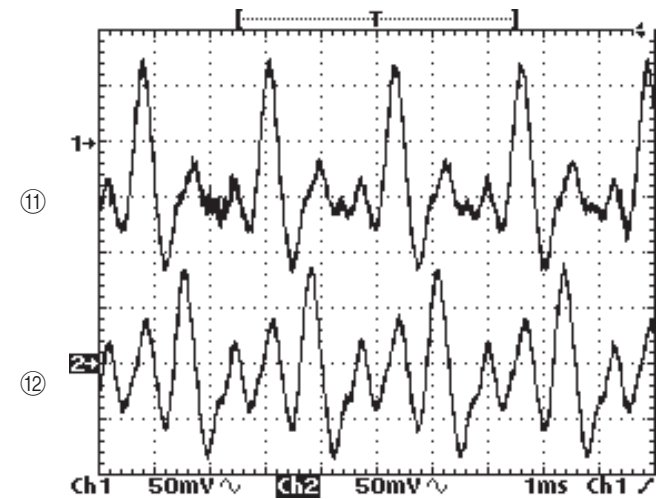
- ⑤ LED common signal L23  
JN connector pin 1
  - ⑥ LED common signal L22  
JN connector pin 2
- Key : C7



- ⑦ Key common signal KC0  
JM connector pin 9
- ⑧ Key common signal KC1  
JM connector pin 8



- ⑨  $\overline{CE}$  signal for ROM  
LSI3 LH536PNV pin 12
- ⑩  $\overline{CE}$  signal for working RAM  
LSI4 TC55257DFL pin 20

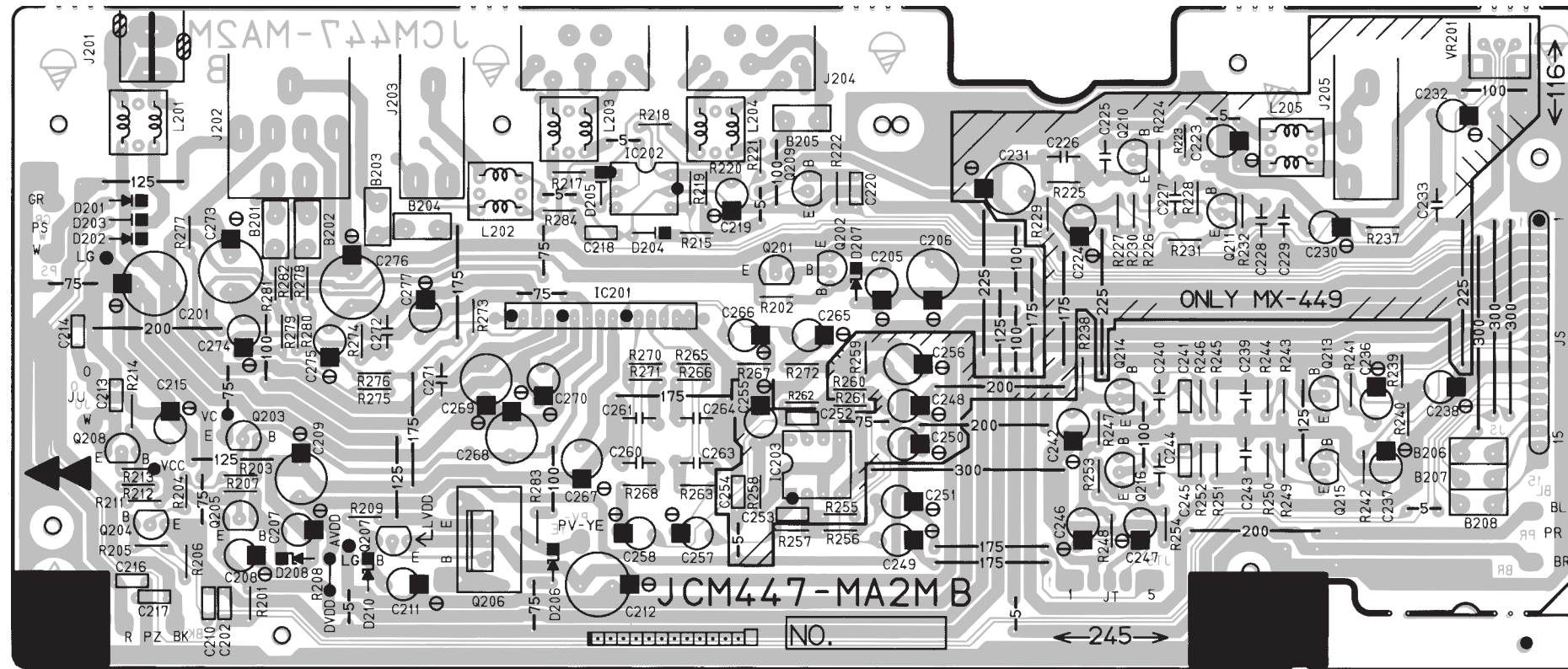


- ⑪ Sound signal (R)  
Test point T1
- ⑫ Sound signal (L)  
Test point T2

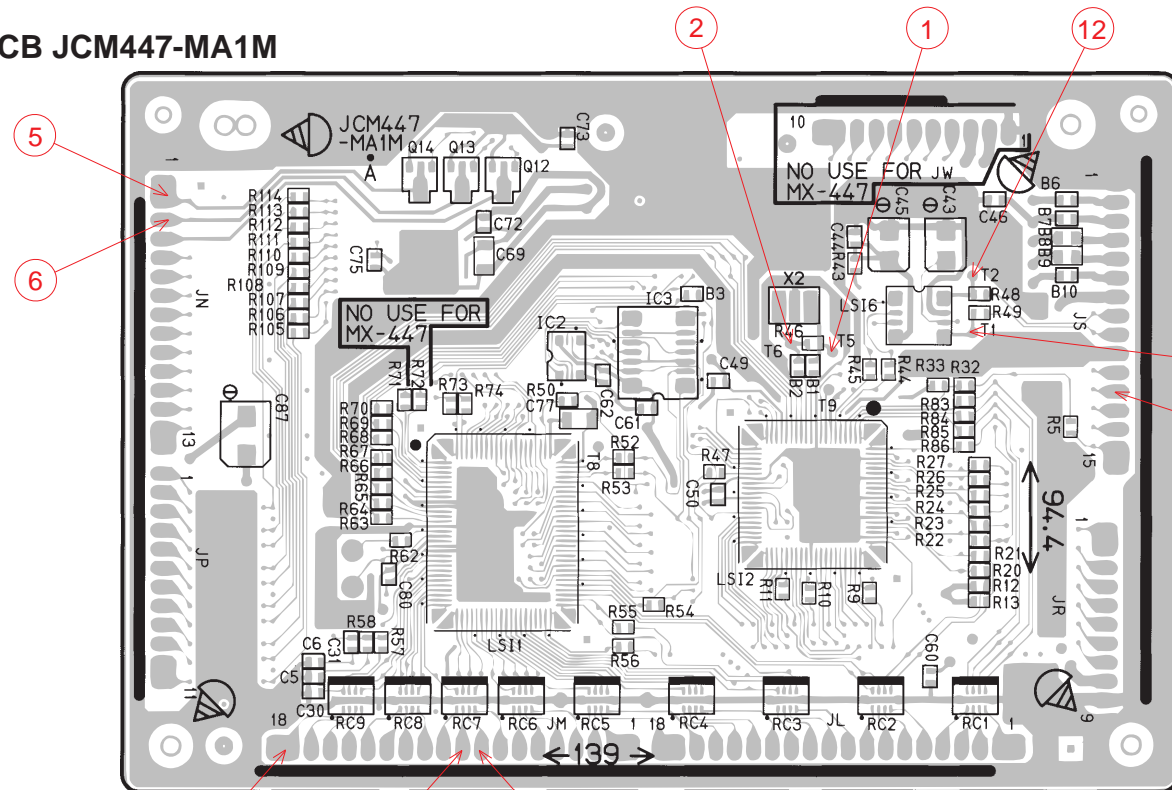
Tone : French horn, Volume : Maximum,  
Touch speed : Maximum, Reverb : Stage  
Key : A4

# PRINTED CIRCUIT BOARDS

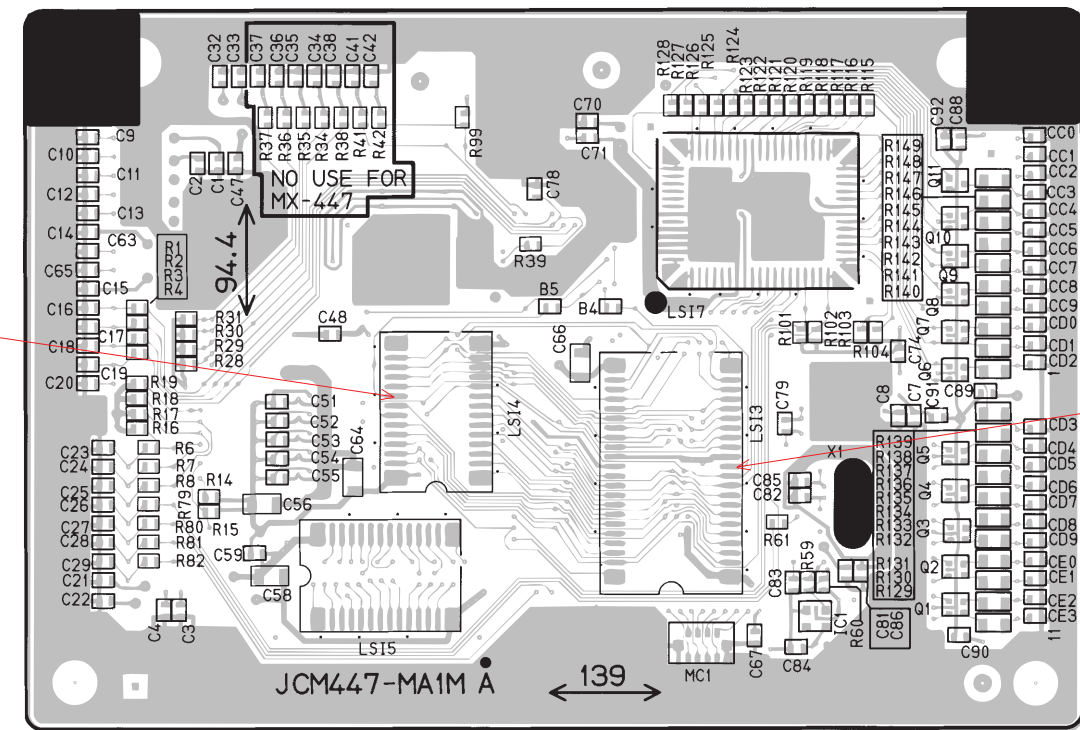
Sub PCB JCM447-MA2M



Main PCB JCM447-MA1M



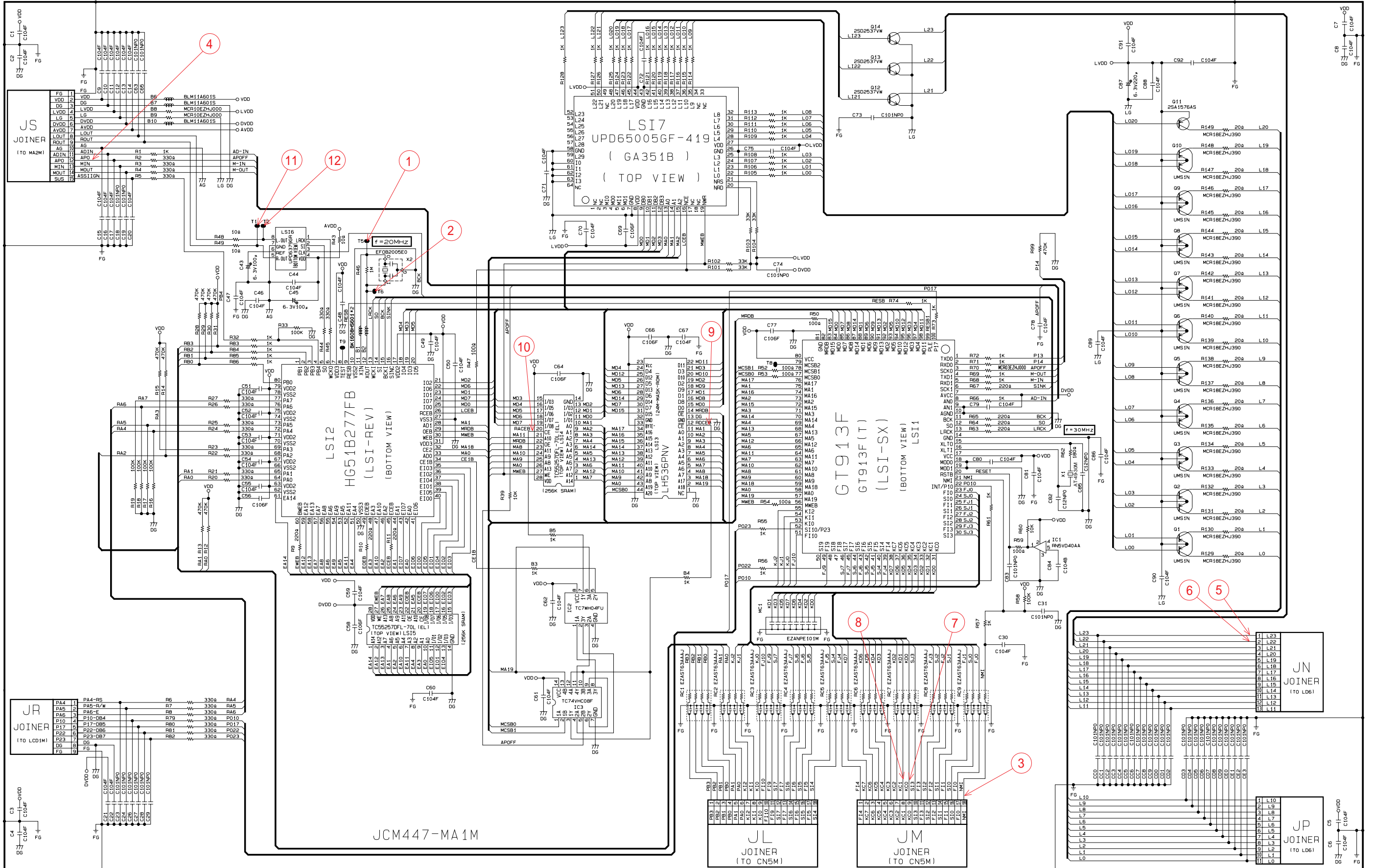
Top View



Bottom View

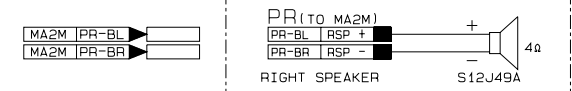
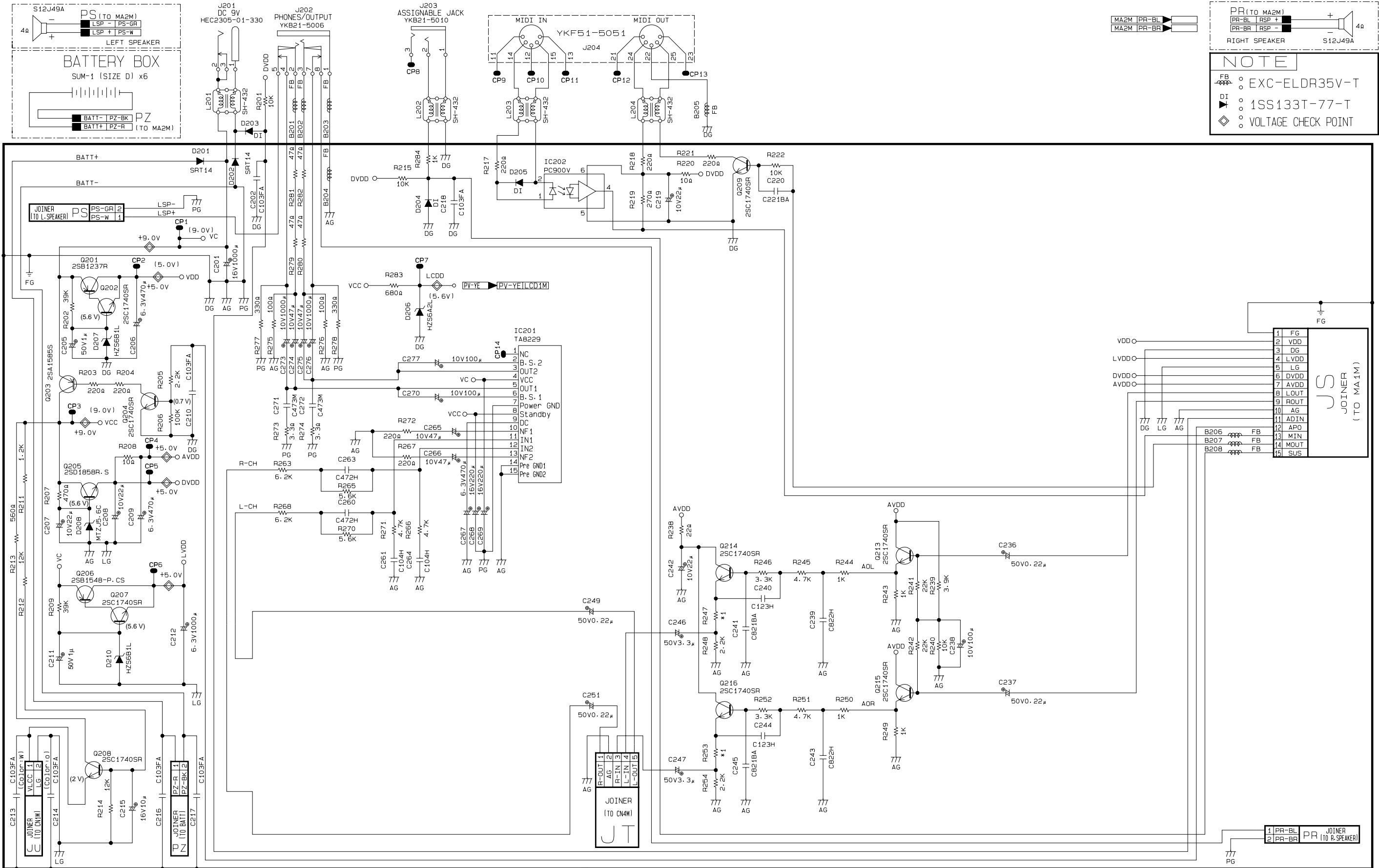
# SCHEMATIC DIAGRAMS

## Main PCB JCM447-MA1M





Sub PCB JCM447-MA2M



**NOTE**

- FB : EXC-ELDR35V-T
- DI : 1SS133T-77-T
- ◇ : VOLTAGE CHECK POINT

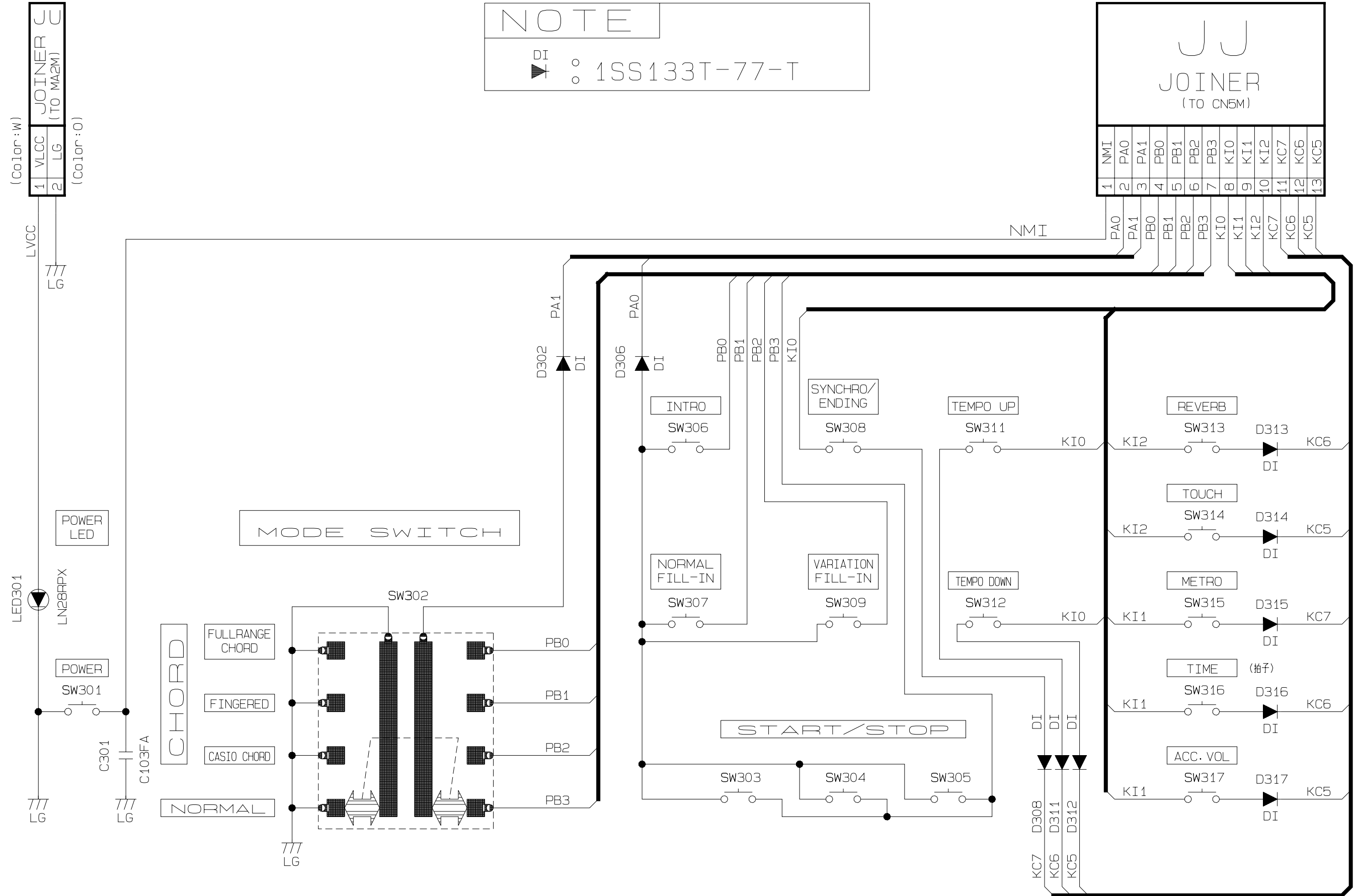
JOINER (TO MA1M)

1	FG
2	VDD
3	DG
4	LVDD
5	LG
6	DVDD
7	AVDD
8	ROUT
9	ROUT
10	AG
11	ADIN
12	APD
13	MIN
14	MOUT
15	SUS

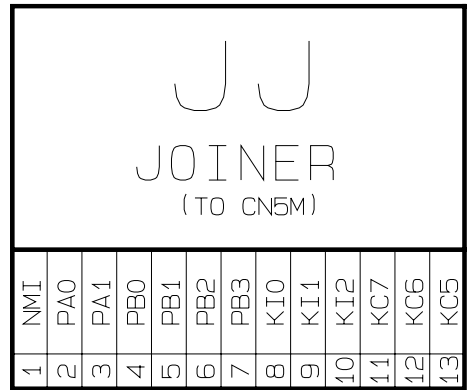
JOINER (TO R. SPEAKER)

1	PR-BL
2	PR-BR
PR	JOINER (TO R. SPEAKER)

Console PCB JCM447-CN1M




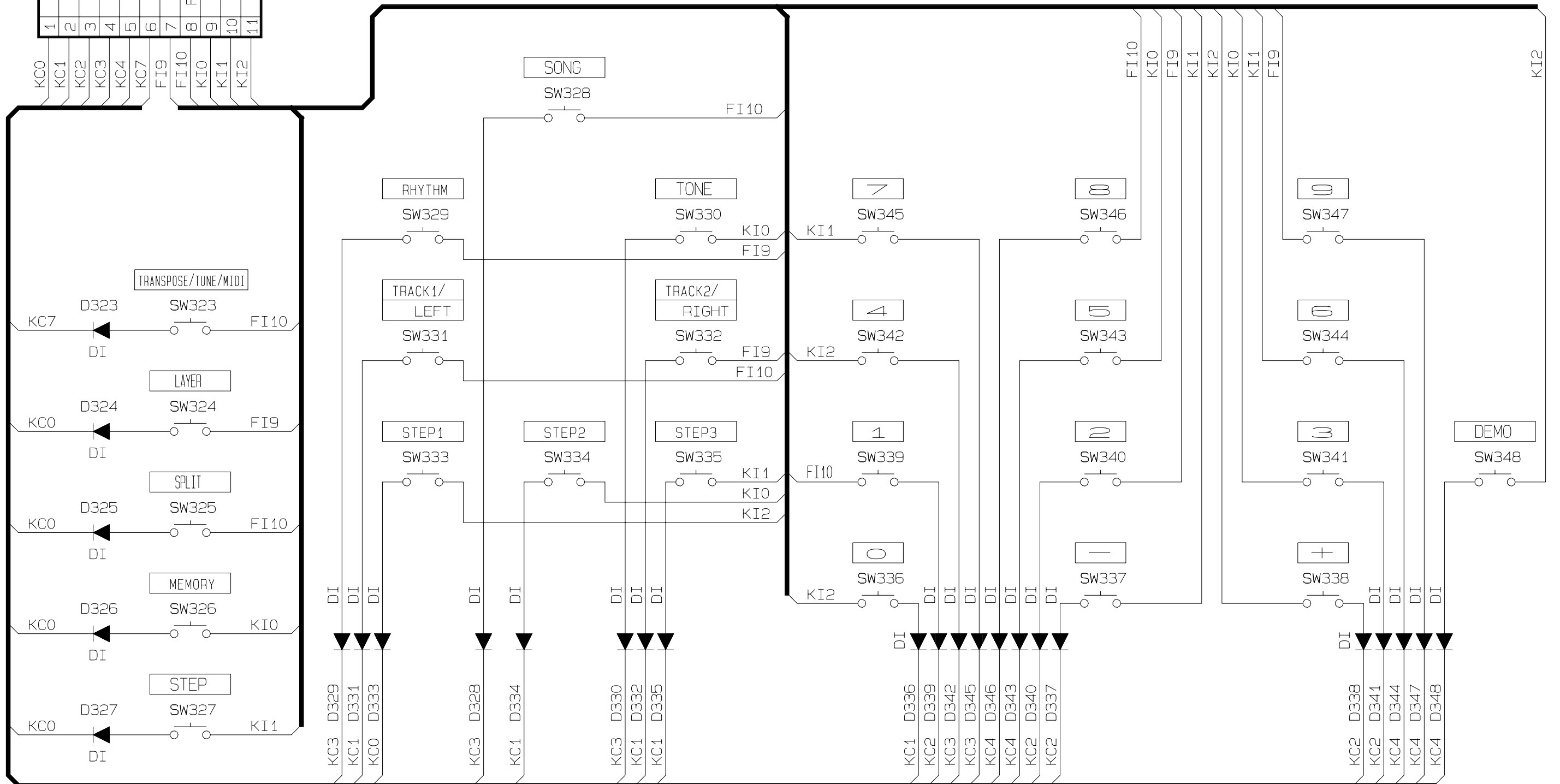
NOTE  
 DI : 1SS133T-77-T



Console PCB JCM447-CN2M

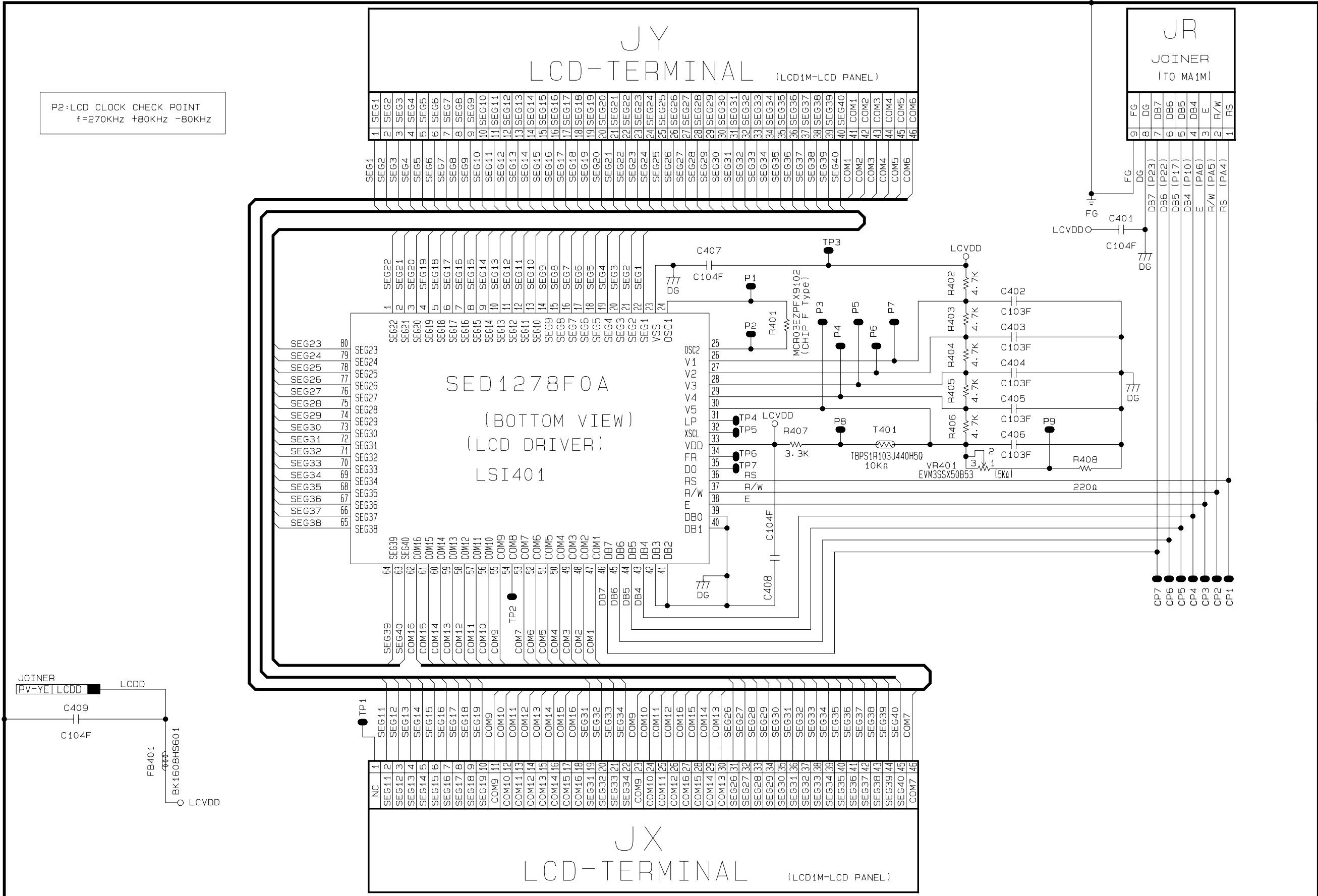
JK JOINER (TO CN5M)											
1	KC0	2	KC1	3	KC2	4	KC3	5	KC4	6	KC7
7	FI9	8	FI10	9	KI0	10	KI1	11	KI2	12	

NOTE  
 DI  : 1SS133T-77-T



Display PCB JCM447-LCD1M

P2:LCD CLOCK CHECK POINT  
f=270KHZ +80KHZ -80KHZ



Keyboard PCBs JCM618T-KY1M/KY2M

NOTE

PH  
 1S2473T-77-T  
 (1SS133T-77-T)

JCM618T-KY1M

JA  
 JOINER

1	FI1
2	FI2
3	FI0
4	SI0
5	SI1
6	SI2
7	SI3
8	FI3
9	KC0
10	KC1
11	KC2
12	KC3
13	KC4
14	KC5
15	KC6
16	KC7

KC0	D501	DI	SW501	C2	FI0
KC0	D502	DI	SW502	C	SI0
KC1	D503	DI	SW503	C2#	FI0
KC1	D504	DI	SW504	C	SI0
KC2	D505	DI	SW505	D2	FI0
KC2	D506	DI	SW506	C	SI0
KC3	D507	DI	SW507	D2#	FI0
KC3	D508	DI	SW508	C	SI0
KC4	D509	DI	SW509	E2	FI0
KC4	D510	DI	SW510	C	SI0
KC5	D511	DI	SW511	F2	FI0
KC5	D512	DI	SW512	C	SI0
KC6	D513	DI	SW513	F2#	FI0
KC6	D514	DI	SW514	C	SI0
KC7	D515	DI	SW515	G2	FI0
KC7	D516	DI	SW516	C	SI0
KC0	D517	DI	SW517	G2#	FI1
KC0	D518	DI	SW518	C	SI1
KC1	D519	DI	SW519	A2	FI1
KC1	D520	DI	SW520	C	SI1
KC2	D521	DI	SW521	A2#	FI1
KC2	D522	DI	SW522	C	SI1
KC3	D523	DI	SW523	B2	FI1
KC3	D524	DI	SW524	C	SI1
KC4	D525	DI	SW525	C3	FI1
KC4	D526	DI	SW526	C	SI1
KC5	D527	DI	SW527	C3#	FI1
KC5	D528	DI	SW528	C	SI1
KC6	D529	DI	SW529	D3	FI1
KC6	D530	DI	SW530	C	SI1
KC7	D531	DI	SW531	D3#	FI1
KC7	D532	DI	SW532	C	SI1
KC0	D533	DI	SW533	E3	FI2
KC0	D534	DI	SW534	C	SI2
KC1	D535	DI	SW535	F3	FI2
KC1	D536	DI	SW536	C	SI2
KC2	D537	DI	SW537	F3#	FI2
KC2	D538	DI	SW538	C	SI2
KC3	D539	DI	SW539	G3	FI2
KC3	D540	DI	SW540	C	SI2
KC4	D541	DI	SW541	G3#	FI2
KC4	D542	DI	SW542	C	SI2
KC5	D543	DI	SW543	A3	FI2
KC5	D544	DI	SW544	C	SI2
KC6	D545	DI	SW545	A3#	FI2
KC6	D546	DI	SW546	C	SI2
KC7	D547	DI	SW547	B3	FI2
KC7	D548	DI	SW548	C	SI2
KC0	D549	DI	SW549	C4	FI3
KC0	D550	DI	SW550	C	SI3
KC1	D551	DI	SW551	C4#	FI3
KC1	D552	DI	SW552	C	SI3
KC2	D553	DI	SW553	D4	FI3
KC2	D554	DI	SW554	C	SI3
KC3	D555	DI	SW555	D4#	FI3
KC3	D556	DI	SW556	C	SI3
KC4	D557	DI	SW557	E4	FI3
KC4	D558	DI	SW558	C	SI3
KC5	D559	DI	SW559	F4	FI3
KC5	D560	DI	SW560	C	SI3
KC6	D561	DI	SW561	F4#	FI3
KC6	D562	DI	SW562	C	SI3
KC7	D563	DI	SW563	G4	FI3
KC7	D564	DI	SW564	C	SI3

C2
C2#
D2
D2#
E2
F2
F2#
G2
G2#
A2
A2#
B2
C3
C3#
D3
D3#
E3
F3
F3#
G3
G3#
A3
A3#
B3
C4
C4#
D4
D4#
E4
F4
F4#
G4

JCM618T-KY2M

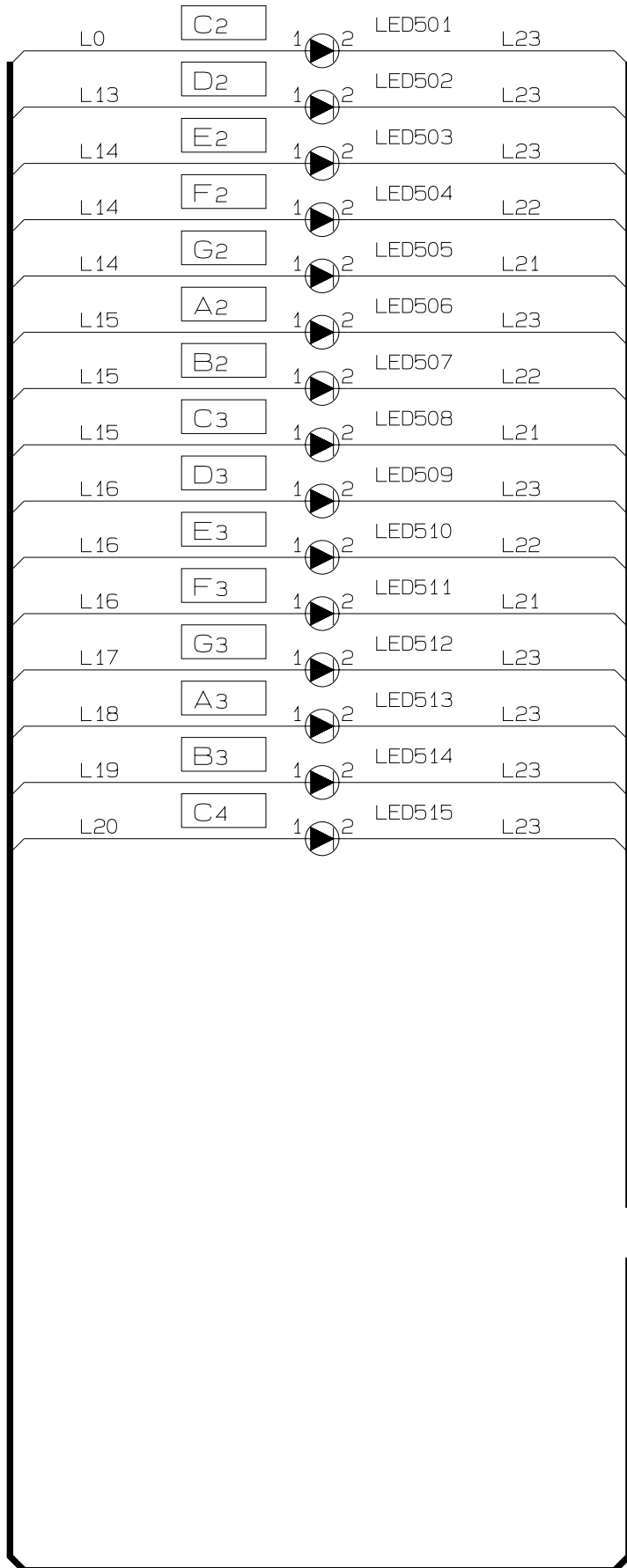
JB  
 JOINER

1	KC0
2	KC1
3	KC2
4	KC3
5	KC4
6	KC5
7	FI4
8	SI4
9	KC6
10	KC7
11	SI5
12	SI6
13	SI7
14	FI5
15	FI6
16	FI7
17	NC

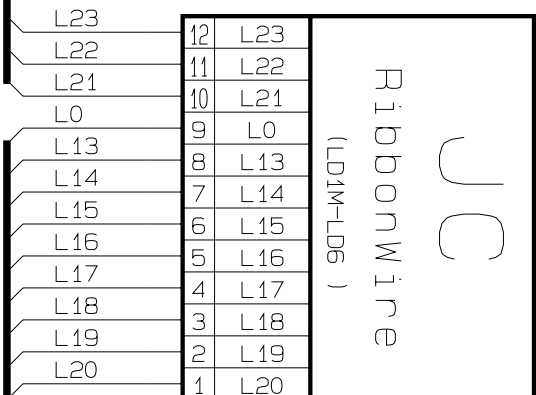
KC0	D565	DI	SW565	G4#	FI4
KC0	D566	DI	SW566	C	SI4
KC1	D567	DI	SW567	A4	FI4
KC1	D568	DI	SW568	C	SI4
KC2	D569	DI	SW569	A4#	FI4
KC2	D570	DI	SW570	C	SI4
KC3	D571	DI	SW571	B4	FI4
KC3	D572	DI	SW572	C	SI4
KC4	D573	DI	SW573	C5	FI4
KC4	D574	DI	SW574	C	SI4
KC5	D575	DI	SW575	C5#	FI4
KC5	D576	DI	SW576	C	SI4
KC6	D577	DI	SW577	D5	FI4
KC6	D578	DI	SW578	C	SI4
KC7	D579	DI	SW579	D5#	FI4
KC7	D580	DI	SW580	C	SI4
KC0	D581	DI	SW581	E5	FI5
KC0	D582	DI	SW582	C	SI5
KC1	D583	DI	SW583	F5	FI5
KC1	D584	DI	SW584	C	SI5
KC2	D585	DI	SW585	F5#	FI5
KC2	D586	DI	SW586	C	SI5
KC3	D587	DI	SW587	G5	FI5
KC3	D588	DI	SW588	C	SI5
KC4	D589	DI	SW589	G5#	FI5
KC4	D590	DI	SW590	C	SI5
KC5	D591	DI	SW591	A5	FI5
KC5	D592	DI	SW592	C	SI5
KC6	D593	DI	SW593	A5#	FI5
KC6	D594	DI	SW594	C	SI5
KC7	D595	DI	SW595	B5	FI5
KC7	D596	DI	SW596	C	SI5
KC0	D597	DI	SW597	C6	FI6
KC0	D598	DI	SW598	C	SI6
KC1	D599	DI	SW599	C6#	FI6
KC1	D600	DI	SW600	C	SI6
KC2	D601	DI	SW601	D6	FI6
KC2	D602	DI	SW602	C	SI6
KC3	D603	DI	SW603	D6#	FI6
KC3	D604	DI	SW604	C	SI6
KC4	D605	DI	SW605	E6	FI6
KC4	D606	DI	SW606	C	SI6
KC5	D607	DI	SW607	F6	FI6
KC5	D608	DI	SW608	C	SI6
KC6	D609	DI	SW609	F6#	FI6
KC6	D610	DI	SW610	C	SI6
KC7	D611	DI	SW611	G6	FI6
KC7	D612	DI	SW612	C	SI6
KC0	D613	DI	SW613	G6#	FI7
KC0	D614	DI	SW614	C	SI7
KC1	D615	DI	SW615	A6	FI7
KC1	D616	DI	SW616	C	SI7
KC2	D617	DI	SW617	A6#	FI7
KC2	D618	DI	SW618	C	SI7
KC3	D619	DI	SW619	B6	FI7
KC3	D620	DI	SW620	C	SI7
KC4	D621	DI	SW621	C7	FI7
KC4	D622	DI	SW622	C	SI7

G4#
A4
A4#
B4
C5
C5#
D5
D5#
E5
F5
F5#
G5
G5#
A5
A5#
B5
C6
C6#
D6
D6#
E6
F6
F6#
G6
G6#
A6
A6#
B6
C7

# LED PCB JCM447-LD1M



NOTE  
 H=14.5mm  
 S L R - 3 3 J T T J 2



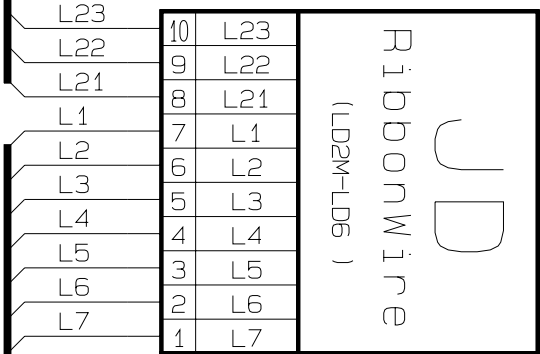
LED PCB JCM447-LD2M



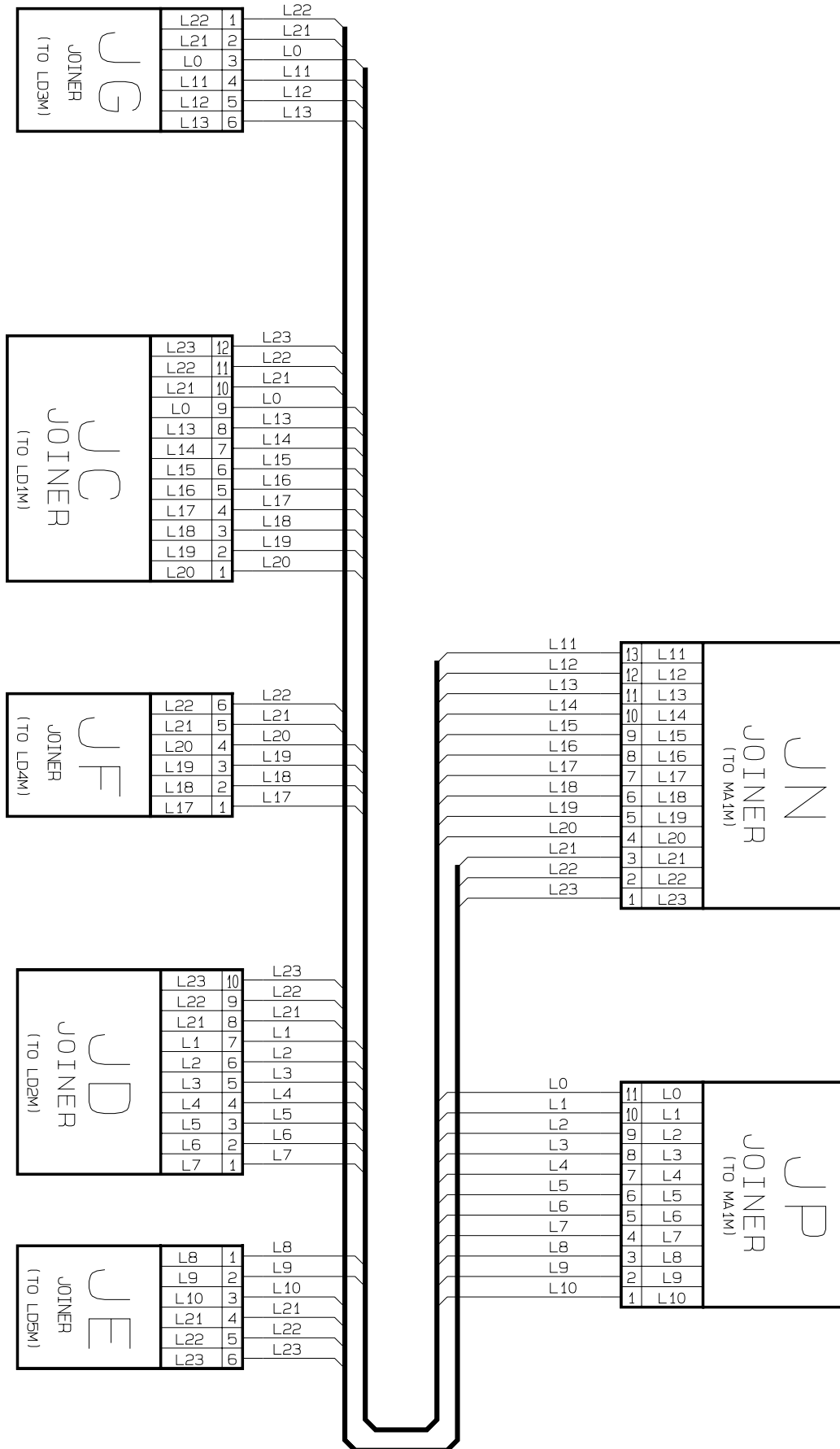
NOTE

H = 14.5mm

SLR-33JTJ2



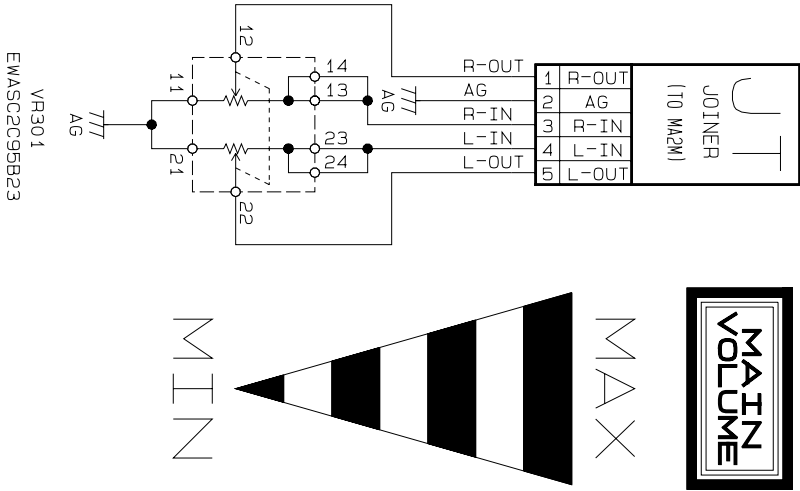
# LED PCB JCM447-LD6



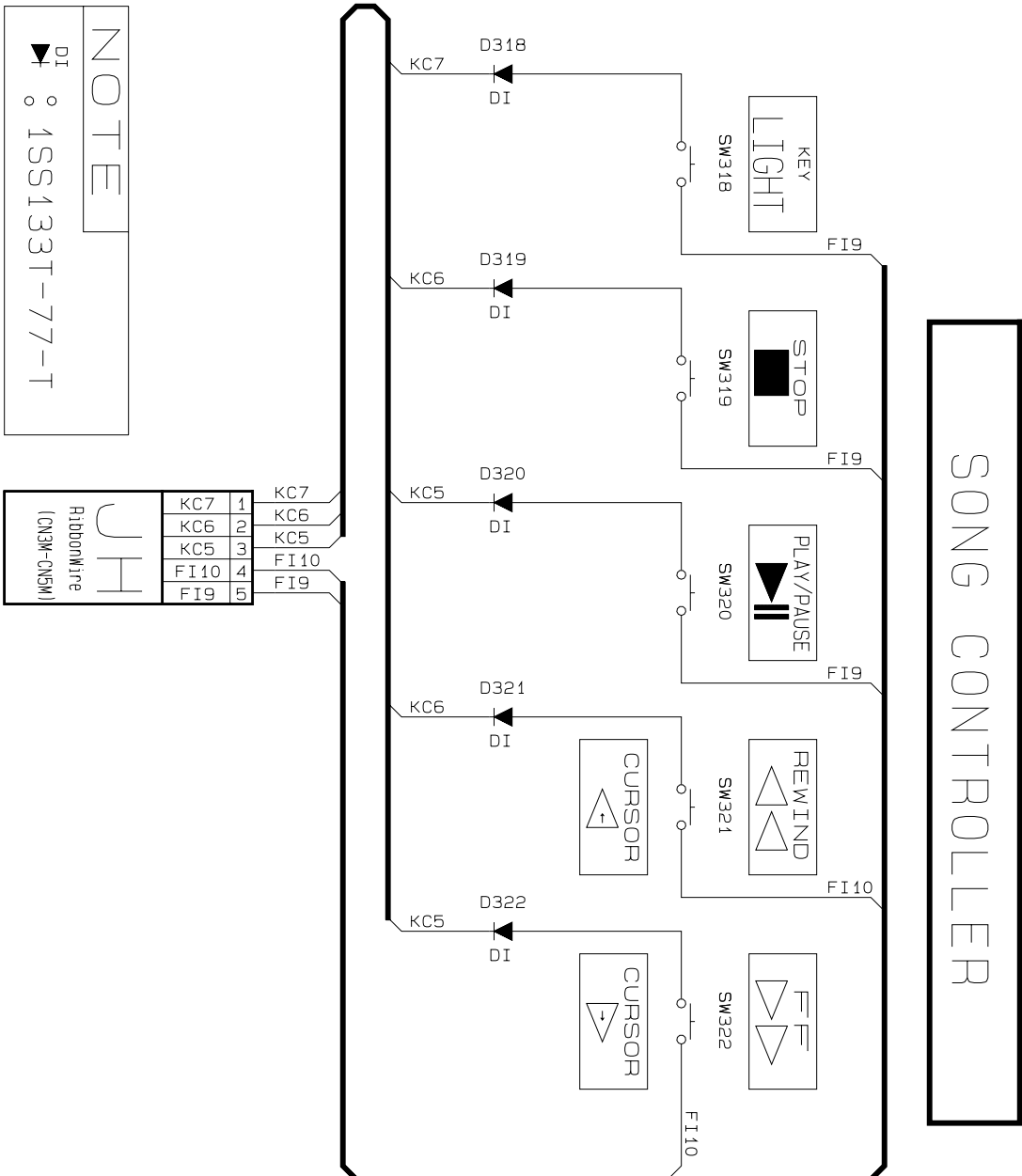


Console PCBs JCM447-CN3M/CN4M

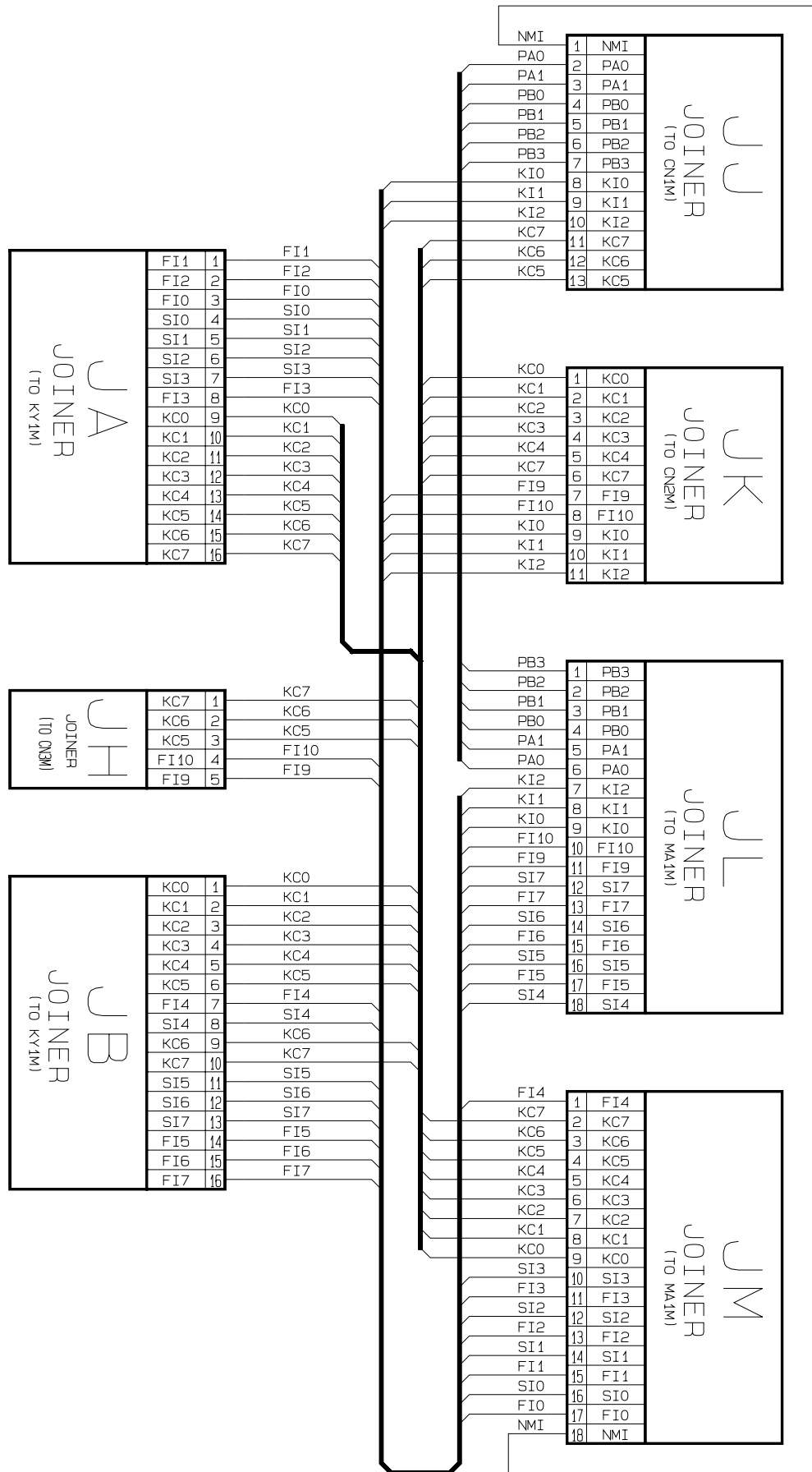
JCM447-CN4M




JCM447-CN3M

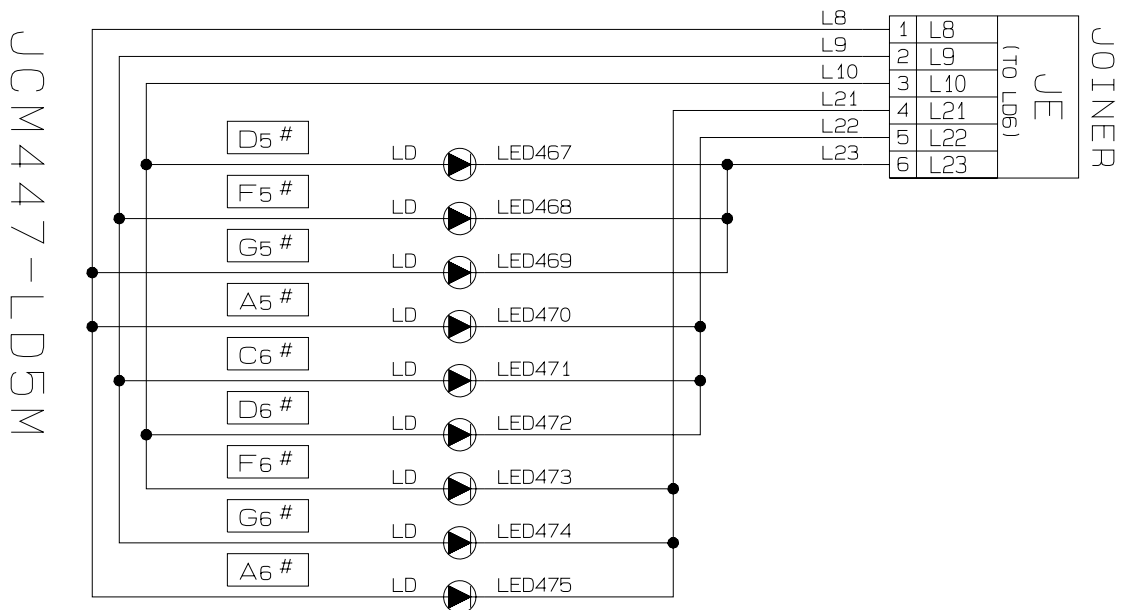
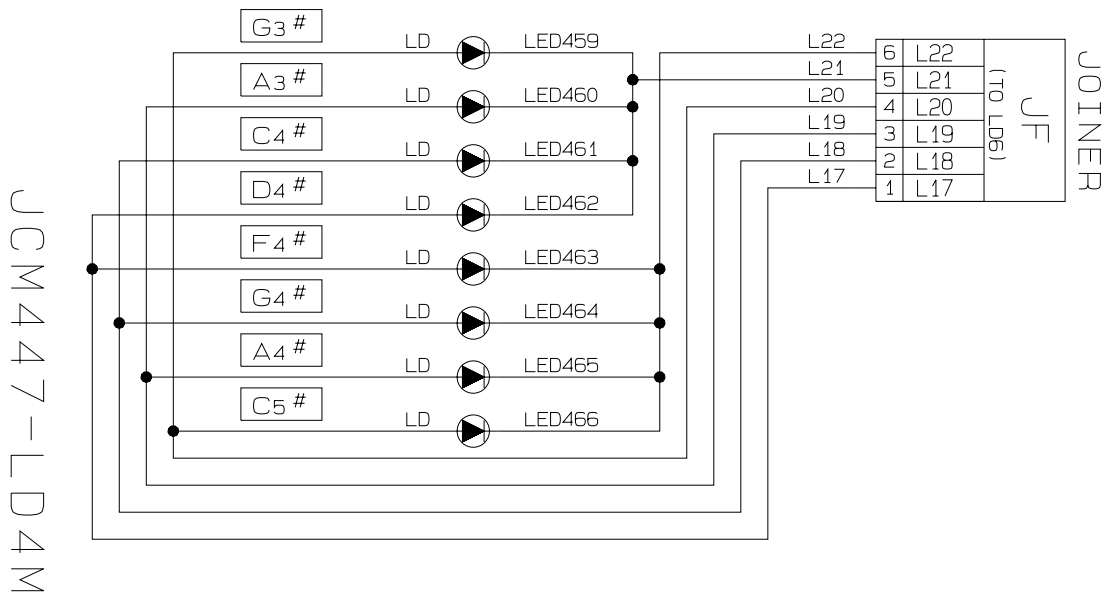


# Console PCB JCM447-CN5M

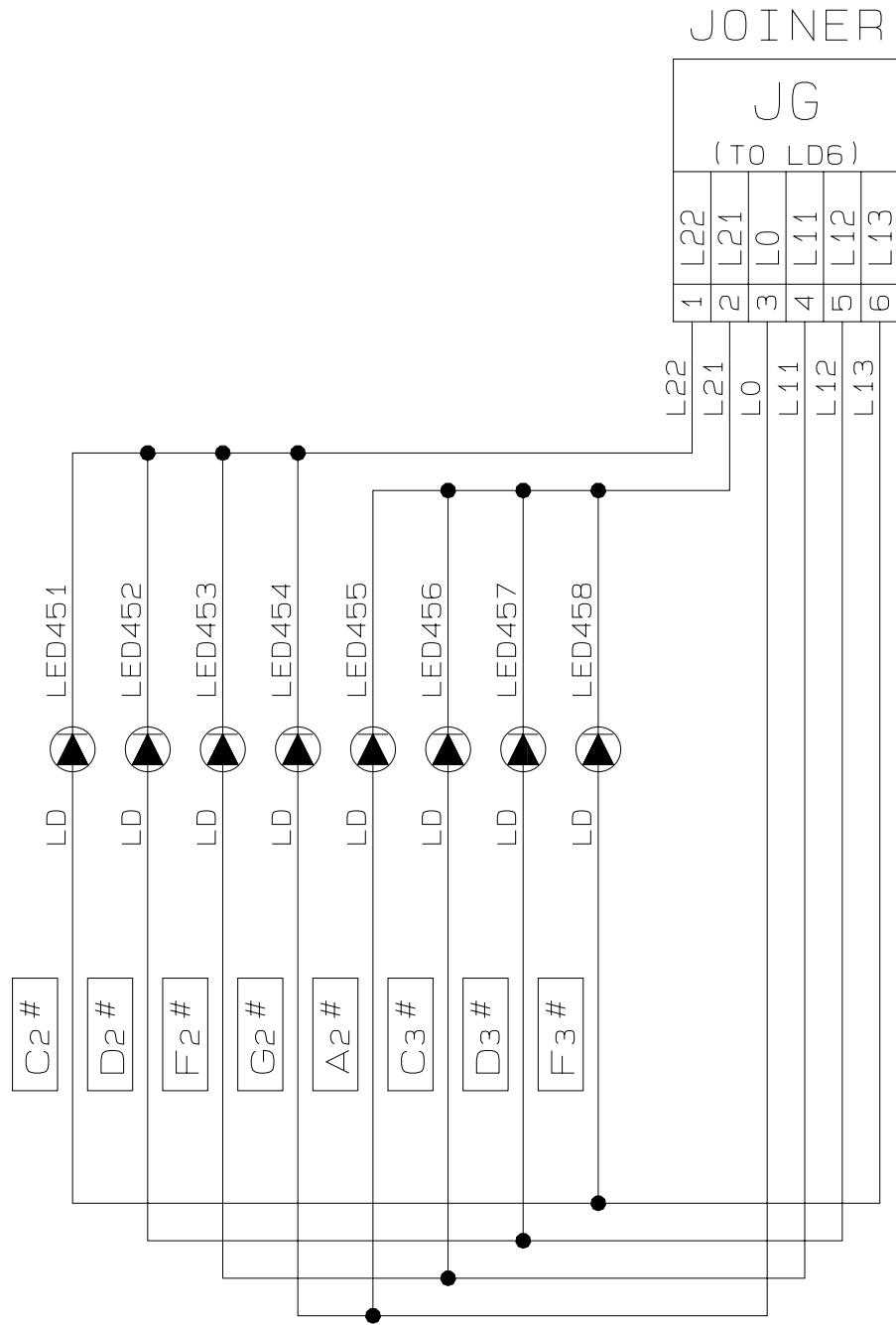


# LED PCBs JCM447-LD4M/LD5M


NOTE  
 SLR-33JT D7



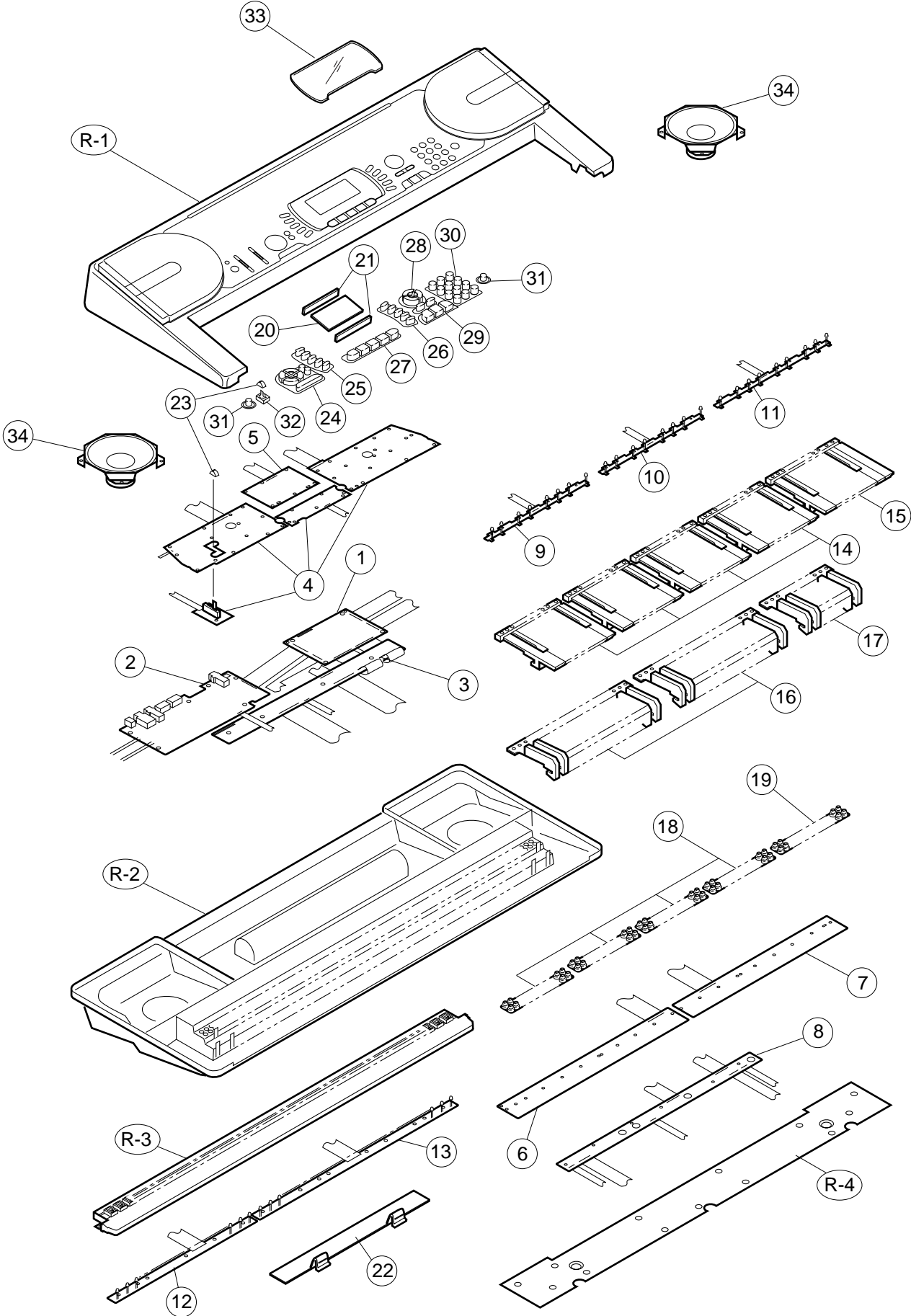
# LED PCB JCM447-LD3M



**NOTE**

LD  ∞ SLR-33JT7D7

# EXPLODED VIEW



# PARTS LIST

## CTK-620L

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>					
IC1	2012 1883	IC/MOS	RN5VD40AA-TR	1	B
IC2	2105 6427	IC/L-MOS	TC7WH04FUTE12L	1	B
IC3	2105 4935	IC/C-MOS	TC74VHV08F(TP1)	1	B
LSI1	2012 5005	LSI/MC	GT913F(T)	1	A
LSI2	2012 4494	LSI	HG51B277FB-1	1	A
LSI3	2012 5915	LSI	LH536PNV	1	A
LSI4/LSI5	2012 5572	LSI/S-RAM	T055257DFL-70L(EL)	2	A
LSI6	2105 4746	LSI/D-A CONVERTER	UPD6379GR-E1	1	A
LSI7	2011 0812	LSI/GATE ARRAY	UPD65005GF-419	1	A
Q1 - Q10	2259 2562	TRANSISTOR/DIGITAL	UMS1NTL	10	A
Q11	2250 1169	TRANSISTOR	2SA1576AT106S	1	A
Q12 - Q14	2259 2737	TRANSISTOR	2SD2537T100VW	3	A
X1	2590 2700	OSCILLATOR/CRYSTAL	AT-49-30M	1	B
X2	2590 2699	OSCILLATOR/CERAMIC	EF0B2005E0	1	B
1	6926 3820	M447-MA1M PCB ASSY2	M240791*2	1	A
<b>Sub PCBs</b>					
D201/D202	2390 3021	DIODE/SHOTTKY	SRT14	2	B
D206	2360 3056	DIODE/ZENER	HZS6A2LTD-T	1	A
D207/D210	2360 1085	DIODE/ZENER	HZS6B1LTD-T	2	A
D208	2360 1946	DIODE/ZENER	MTZJT-775.6C	1	A
IC201	2114 5784	IC/LINEAR	TA8229K	1	B
IC202	2114 1421	IC/PHOTO COUPLER	PC900V	1	B
IC203	2114 1799	IC/LINEAR	M5218APR	1	B
J201	3501 7049	JACK/DC	HEC2305-01-330	1	A
J202	3612 0665	JACK/PHONE	YKB21-5006	1	A
J203	3612 0789	JACK	YKB21-5010	1	A
J204	3501 4816	JACK/DIN	YKF51-5051	1	B
Q201	2250 1591	TRANSISTOR	2SB12371V2R	1	A
Q202,Q204 Q207 - Q209 Q213 - Q216	2250 1592	TRANSISTOR	2SC1740STPR	9	A
Q203	2250 1594	TRANSISTOR	2SA1585STPR	1	A
Q205	2250 1593	TRANSISTOR	2SD1858TV2R	1	A
Q206	2251 0672	TRANSISTOR	2SB1548-P.CS	1	A
2	6926 3000	M447-MA2M PCB ASSY	M140693*1	1	A
<b>Console PCBs</b>					
LED301	2370 0343	LED	LN28RPX-(TT)	1	B
VR301	2765 2178	POTENTIOMETER	EWASC2C95B23	1	A
3	6926 3060	M447-CN5M PCB ASSY	M240780*1	1	A
4	6926 3020	M447-CN1,2,3,4M PCB ASSY	M140690*1	1	A
<b>Display PCBs</b>					
LSI401	2012 5569	LSI/LCD DRIVER	SED1278F0A	1	A
T401	2590 2177	THERMISTOR	TBPS1R103J440H5Q	1	B
VR401	2775 3286	POTENTIOMETER	EVM3SSX50B53	1	A
5	6926 3050	M447-LCD1M PCB ASSY2	M240784*1	1	A
<b>Keyboard PCBs</b>					
LED451 - LED475	2370 1395	LED	SLR-33JT7D7	25	B
LED501 - LED536	2370 1394	LED	SLR-33JT7J2	36	B
6	6926 3090	M618T-KY1M PCB ASSY	M140687*1	1	B
7	6926 3100	M618T-KY2M PCB ASSY	M140688*1	1	B
8	6926 3110	M447-LD6 PCB ASSY	M240779*1	1	B
9	6926 3130	M446-LD3M PCB ASSY	M240428*2	1	B
10	6926 3140	M446-LD4M PCB ASSY	M240429*2	1	B

Notes: Q – Quantity per unit  
R – Rank

Item	Code No.	Part Name	Specification	Q	R
11	6926 3150	M446-LD5M PCB ASSY	M240430*2	1	B
12	6926 3160	M447-LD1M PCB ASSY	M240777*1	1	B
13	6926 3170	M447-LD2M PCB ASSY	M240778*1	1	B
<b>Keyboard unit</b>					
14	6925 1700	KEY SET/WHITE/LSK-CB	M340489*1	4	A
15	6925 1710	KEY SET/WHITE/LSK-CS	M340489*2	1	A
16	6925 1720	KEY SET/BLACK LSK10P	M140369-1	2	A
17	6925 1730	KEY SET/BLACK LSK5P	M140369-2	1	A
18	6922 2760	RUBBER/CONTACT LT-CB	M211704-1	4	A
19	6922 2770	RUBBER/CONTACT LT-CS	M211705-1	1	A
<b>Panel unit</b>					
20	3335 6616	LCD	LD-B10175A-1	1	A
21	6926 5570	CONNECTOR/FOR LCD	M440488-2	2	A
22	6918 1630	COVER/BATTERY	M311164*1	1	B
23	6921 5030	KNOB/SLIDE	M311859-1	2	B
24	6926 3880	BUTTON/RUBBER 447A	M140632-1	1	B
25	6926 3890	BUTTON/RUBBER 447B	M240693-1	1	B
26	6926 3900	BUTTON/RUBBER 447C	M240694-1	1	B
27	6926 3910	BUTTON/RUBBER 447D	M240695-1	1	B
28	6926 3920	BUTTON/RUBBER 447E	M240696-1	1	B
29	6926 3930	BUTTON/RUBBER 447F	M240697-1	1	B
30	6926 3940	BUTTON/RUBBER 447G	M240698-1	1	B
31	6926 3950	BUTTON/RUBBER 447H	M340681-1	2	B
32	6909 5890	CONTACT/SLIDE	CSB-12D	1	A
33	6926 5580	PLATE/DISPLAY	M340682-2	1	C
34	3831 0833	SPEAKER	S12J49A	2	B
<b>Accessory</b>					
	6926 4630	STAND/MUSIC	M340769*1	1	B

Notes: Q – Quantity per unit  
R – Rank



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Nov. 1997

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