

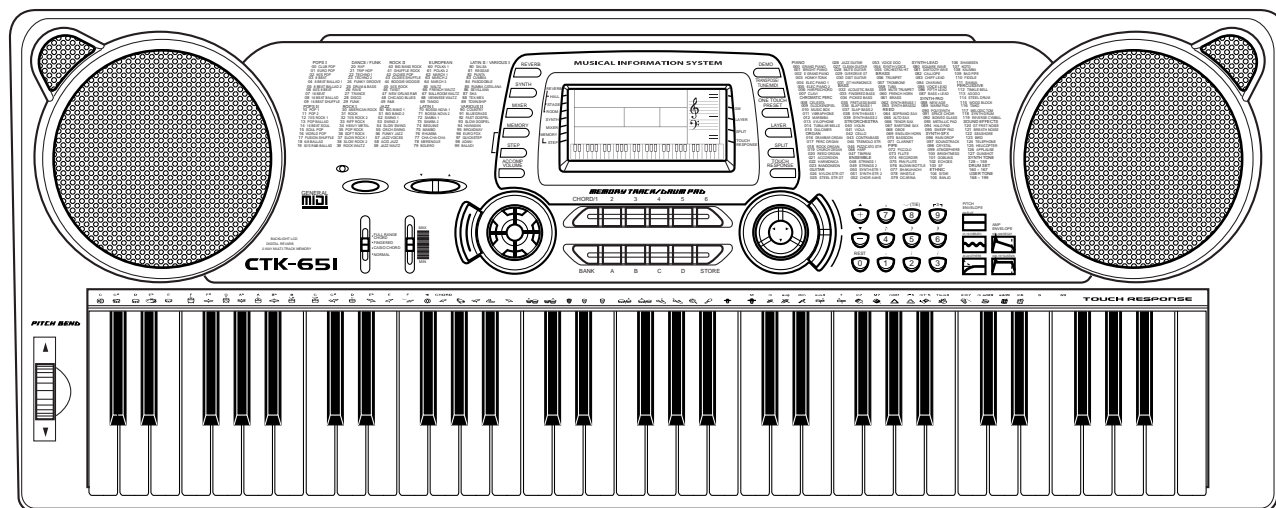
CASIO®

Service Manual

(without price)

CTK-651

FEB.2000



CTK-651

ELECTRONIC KEYBOARD

CONTENTS

Specifications	1
Block Diagram	3
Circuit Description	4
Adjustment	11
Major Waveforms	13
Printed Circuit Boards	14
Schematic Diagrams	17
Exploded View	24
Parts List	23

SPECIFICATIONS

GENERAL

Keyboard:	61 standard-size keys, 5 octaves (with touch response on/off)
Drum pads:	6
Tones:	200 (128 General MIDI, 32 synthesized, 8 drum, 32 user); 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:	4 fingering methods (NORMAL, CASIO CHORD, FINGERED, FULL RANGE CHORD)
Rhythm controller:	START/STOP, INTRO, NORMAL/NORMAL FILL-IN, VARIATION/VARIATION FILL-IN, SYNCHRO/ENDING
Accomp volume:	0 to 127 (128 steps)
Free session	
Number of patterns:	100 (auto-accompaniment in accordance with selected chord progression)
Memory function	
Songs:	2
Recording tracks:	6 (2 through 6 are melody tracks)
Recording methods:	Real-time, step
Memory capacity:	Approximately 4,900 notes (total for two songs)
Edit function:	Equipped
Demo tunes:	2
Synthesizer function	
Parameters:	PCM set, amp envelope set, attack rate, release rate, pitch envelope set, pitch, level, touch sense, pan
Mixer function	
Channels:	16
Parameters:	Program change number, volume, expression, pan, coarse tuning, fine tuning, on/off/solo
MIDI:	16 multi-timbre receive, GM Level 1 standard
Other functions	
Pitch bend range:	12 semitones upwards and downwards
Transpose:	25 steps (-12 semitones to +12 semitones)
Tuning:	Variable (A4 = approximately 440 Hz ± 50 cents)
Terminals	
MIDI terminals:	IN, OUT
Assignable terminal:	Standard jack (sustain, sostenuto, soft, rhythm start/stop)
Headphone/Output terminal:	Stereo standard jack Output Impedance: 150 Ω Output Voltage: 5.0 V (RMS) MAX
Power supply terminal:	9 V DC
Power supply:	Dual power supply system
Batteries:	6 D-size batteries
Battery life:	Approximately 4 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 ≐ 7.7 W
Dimensions (HWD):	96.0 × 37.6 × 15.2 cm (37 13/16 × 14 13/16 × 5 15/16 inches)
Weight:	Approximately 5.8 kg (12.8 lbs) (without batteries)

ELECTRICAL

Current drain with 9 V DC:

No sound output 412 mA \pm 20 %
Maximum volume 1165 mA \pm 20 %

with 12 keys from C3 to B3 pressed in Square wave tone
Volume: maximum, Touch response: maximum
Reverb: Hall

Phone output level (Vrms with 32 Ω load each channel): L-ch 615 mV \pm 20 %
with key A5 pressed in Bassoon tone R-ch 555 mV \pm 20 %

Volume: maximum, Touch response: maximum
Reverb: Hall

Speaker output level (Vrms with 4 Ω load each channel): L-ch 2780 mV \pm 20 %
with key A5 pressed in Bassoon tone R-ch 2570 mV \pm 20 %

Volume: maximum, Touch response: maximum
Reverb: Hall

Output level (Vrms with 47k Ω load each channel): L-ch 3070 mV \pm 20 %
with key A5 pressed in Bassoon tone R-ch 2750 mV \pm 20 %

Volume: maximum, Touch response: maximum
Reverb: Hall

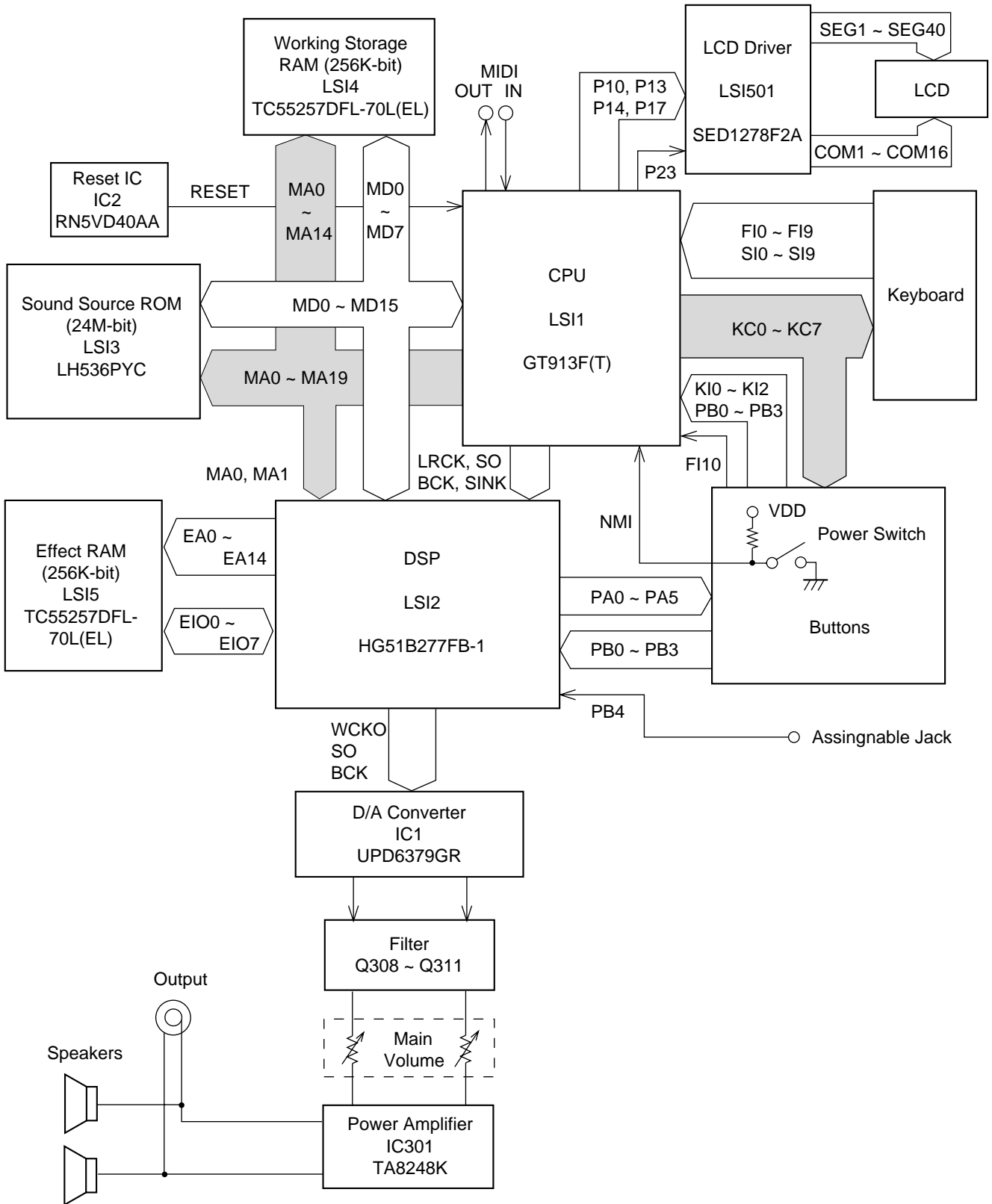
Minimum operating voltage: 6.3 V

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 send to it from a personal computer.

BLOCK DIAGRAM



CIRCUIT DESCRIPTION

KEY MATRIX

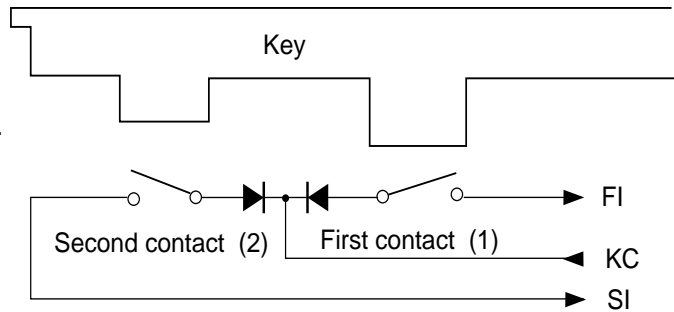
	KC0	KC1	KC2	KC3	KC4	KC	KC6	KC7
FI0	C2 (1)	C#2 (1)	D2 (1)	D#2 (1)	E2 (1)	F2 (1)	F#2 (1)	G2 (1)
SI0	C2(2)	C#2 (2)	D2 (2)	D#2 (2)	E2 (2)	F2 (2)	F#2 (2)	G2 (2)
FI1	G#2 (1)	A2 (1)	A#2 (1)	B2 (1)	C3 (1)	C#3 (1)	D3 (1)	D#3 (1)
SI1	G#2 (2)	A2 (2)	A#2 (2)	B2 (2)	C3 (2)	C#3 (2)	D3 (2)	D#3 (2)
FI2	E3 (1)	F3 (1)	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)	#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

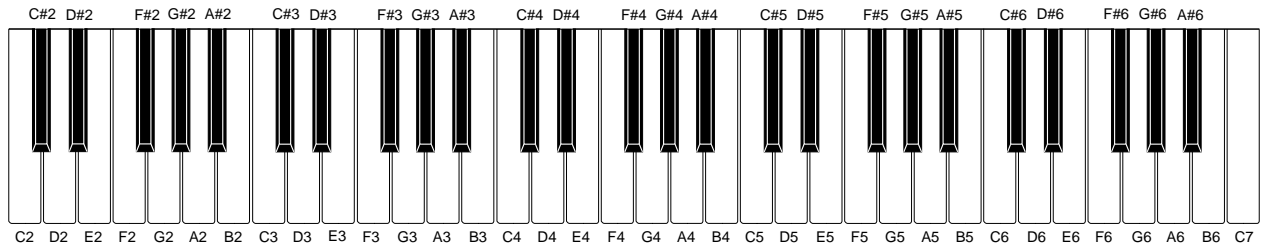
	KC0	KC1	KC2	KC3	KC4	KC5	KC6	KC7
FI10	Chord 3	Chord 1		▼	9	6	+	Tone
KI0	Chord 4	Chord 2		Start/ Stop	8	3	—	Rhythm
KI1	Chord 5	Intro	Tempo ▼	▶	7	2	0	Normal/ Fill-In
KI2	Chord 6	Synchro/ Ending	Tempo ▲	◀	4	5	1	Variation/ Fill-In

	PA0	PA1	PA2	PA3
PB0	Full Range Chord	Reverb	Mixer	Step
PB1	Fingered	Synth	Memory	Accomp Volume
PB2	Casio Chord	Demo	Free Session	Split
PB3	Normal	Transpose/ Tune/Midi	Layer	Touch Response

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



NOMENCLATURE OF KEYS



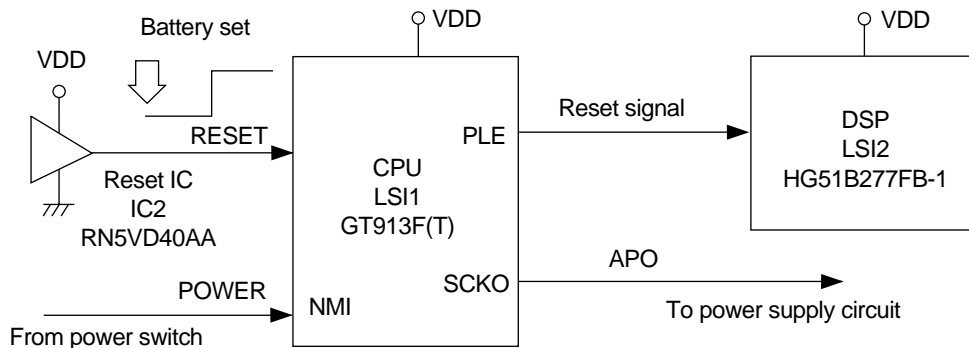
POWER SUPPLY CIRCUIT

The power supply circuit generates five 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
DVDD	+5 V	LCD driver, Power jack, Sustain jack, MIDI jack
AVDD	+5 V	DAC, Filter
LVDD	+5.6 V	LCD driver
VCC	+9 V	Power amplifier, Pilot lamp

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-(T))

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	MIDI signal output
2	RXD0	In	MIDI signal input
3	SCK0	Out	APO (Auto Power Off) signal output
4, 5	TXD1, RXD2	In/Out	Data bus for the LCD driver
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	20 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 ~ 50	FI8, FI9 SI8, SI9	—	Not used
51	FI10	In	Terminal for button input signal
52	SI10/P23	Out	Chip enable signal for the LCD driver
53 ~ 55	KI0 ~ KI2	In	Terminal for button input signal
56	MWNB	Out	Write enable signal for the DSP
57 ~ 76	MA0 ~ MA17	Out	Address bus
77	MCSB0	Out	Chip enable signal output for the sound source ROM
78	MCSB1	Out	Not used
79	MCSB2	Out	Chip enable signal output for the DSP

Pin No.	Terminal	In/Out	Function
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.

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 working storage RAM
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
31	VDD3	In	+5 V source
32	CE2	In	Chip enable signal input. High active.
33	AD0	In	Address bus
34	CE1B	In	Chip enable signal input. Low active.
35 ~ 41, 43	EIO0 ~ EIO7	In/Out	Data bus for the effect RAM

Pin No.	Terminal	In/Out	Function
42, 44, 46 ~ 48, 51 ~ 59, 61	EA0 ~ EA12	Out	Address bus for the effect RAM
45	ECEB	Out	Chip enable signal output for the effect RAM
49	EOEB	Out	Read enable signal output for the effect RAM
50	VSS3	In	Ground (0 V) source
60	EWEB	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, 68, 69, 72, 73	PA0 ~ PA5	Out	Button scan signal output
76, 77	PA6/7	Out	Not used

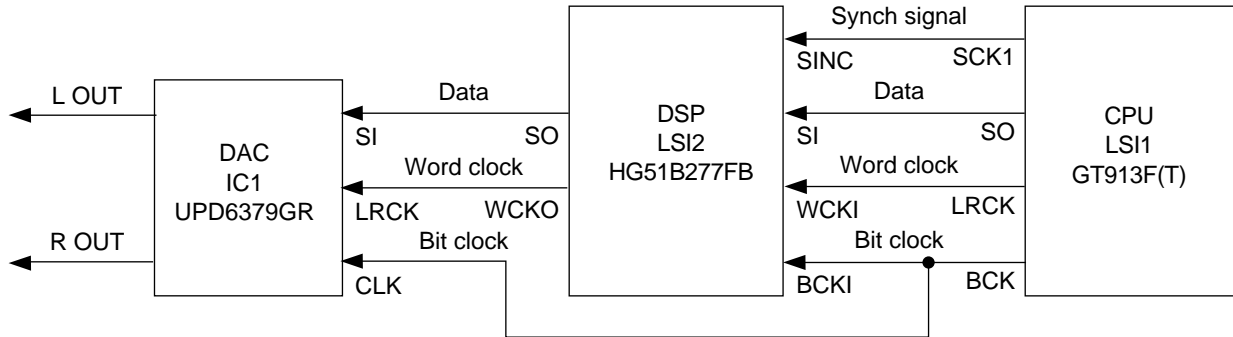
LCD DRIVER (LSI501: SED1278F2A)

The LCD driver can drive a dot matrix LCD having 40 segment and 16 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 501.

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: disenable
39 ~ 42	DB0 ~ DB3	—	Not used. Connected to GND (0 V)
43 ~ 46	DB4 ~ DB7	In/Out	Data bus
47 ~ 62	COM1 ~ COM16	Out	Common signal/output

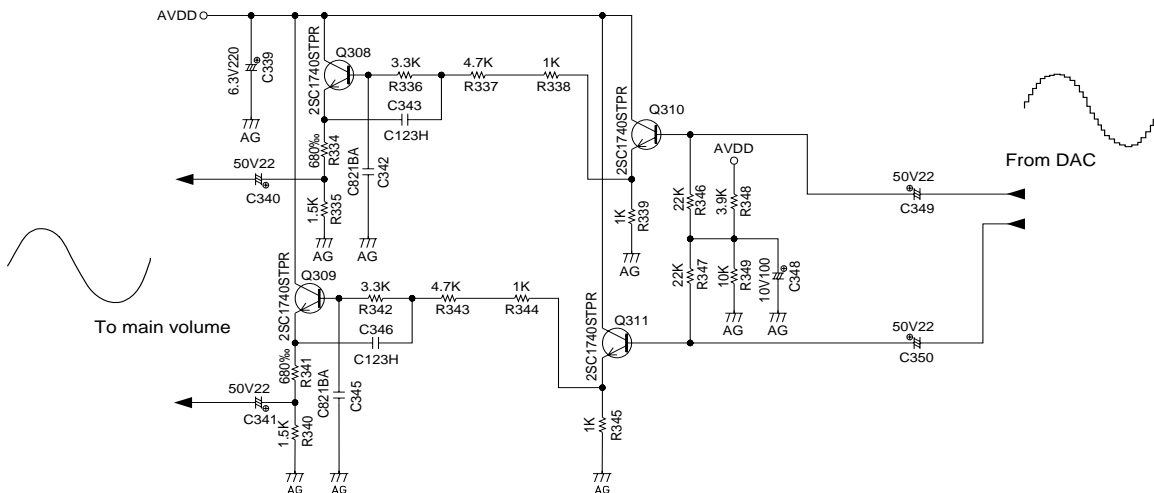
DAC (IC1: UPD6379GR)

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 (IC301: TA8248K)

The power amplifier is a two-channel amplifier with standby switch.
The following table shows the pin function of IC301.

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

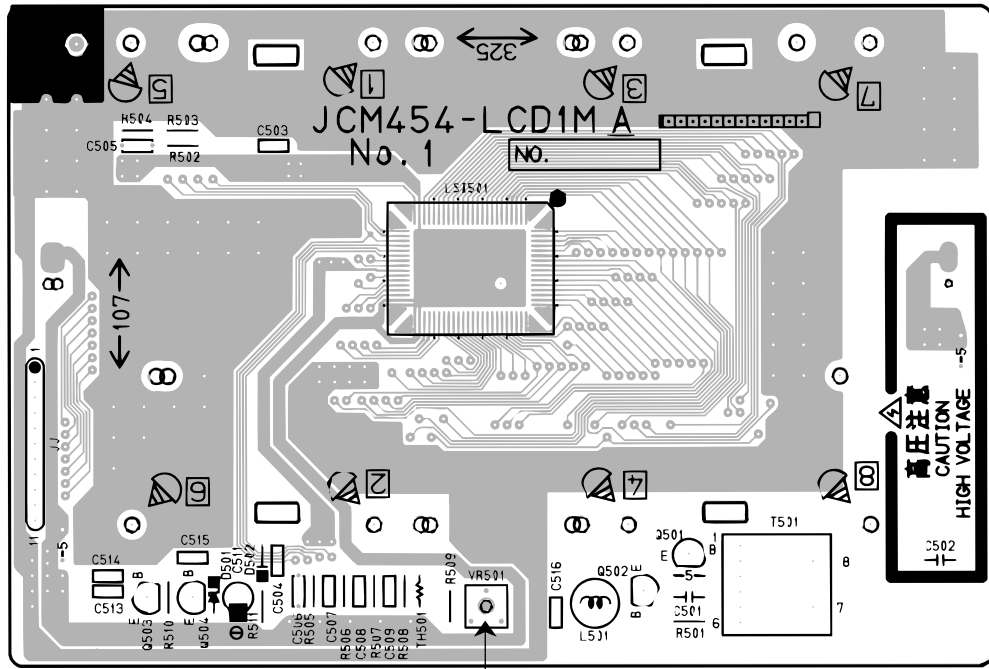
DISPLAY PCB

1) Items to be adjusted:

Item	Measuring Instrument
Vop voltage setting	Voltmeter

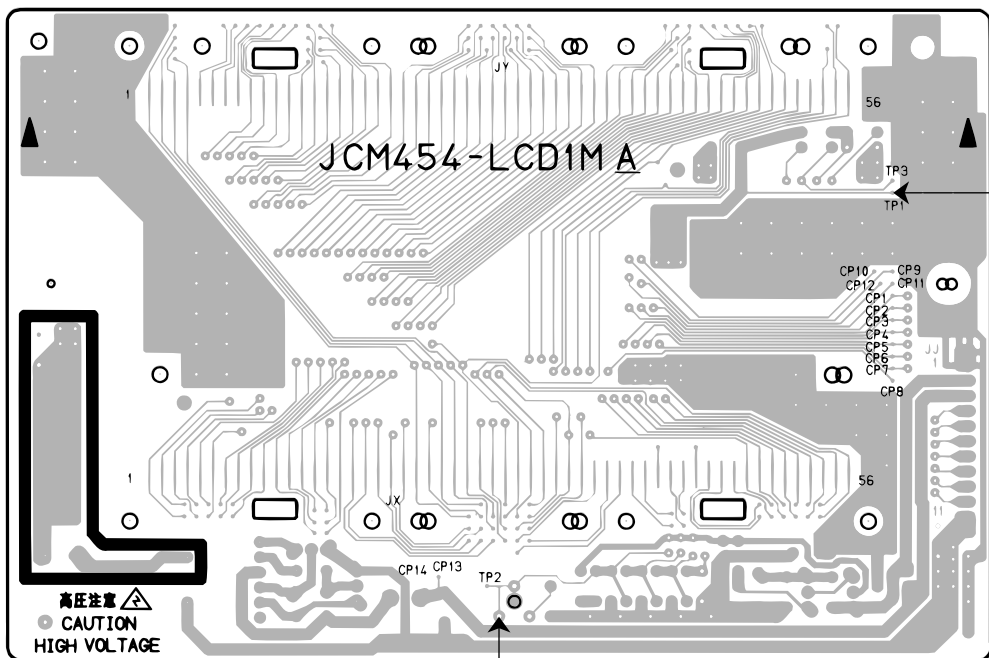
2) Adjustment and Test Point Locations

(TOP VIEW)



VR501

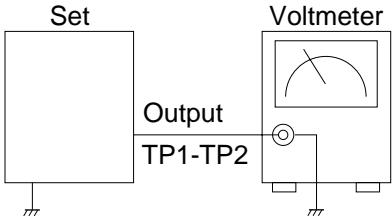
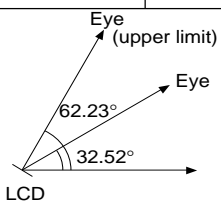
(BOTTOM VIEW)



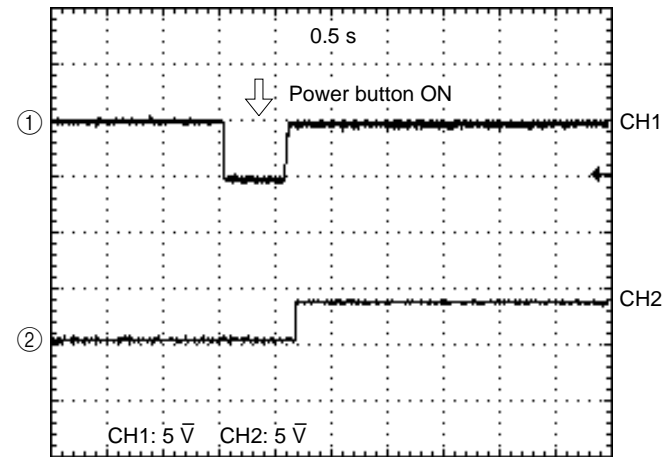
TP1

TP2
- 11 -

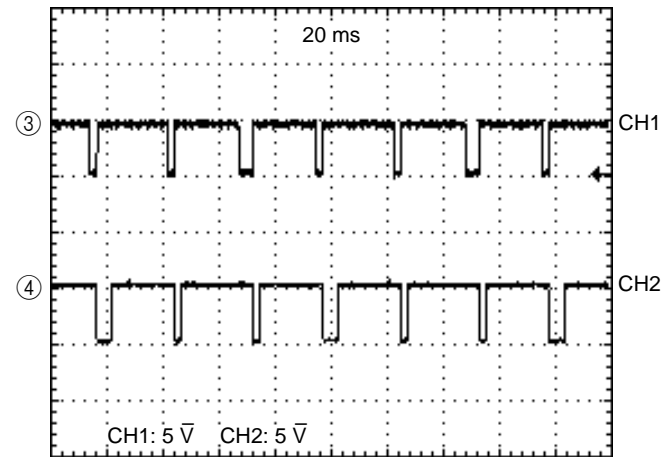
3) Equipment connection/Procedure

Vop voltage setting						
						
Input Connection	Input Point	Input Signal	Adjust	Output Connection	Output Point	Adjust for
			VR501	Voltmeter	TP1-TP2	Adjust for 4.2 to 4.3 V reading on voltmeter under the temperature 20 to 25 °C. Make fine adjustment according to the following instruction.
			<p>① Watching the LCD at 32.52° angle to the horizontal, adjust Vop voltage so that unenergized segments are seen dimly.</p> <p>② Watching the LCD at 62.23° (upper limit) angle, check to see the segments completely.</p>			

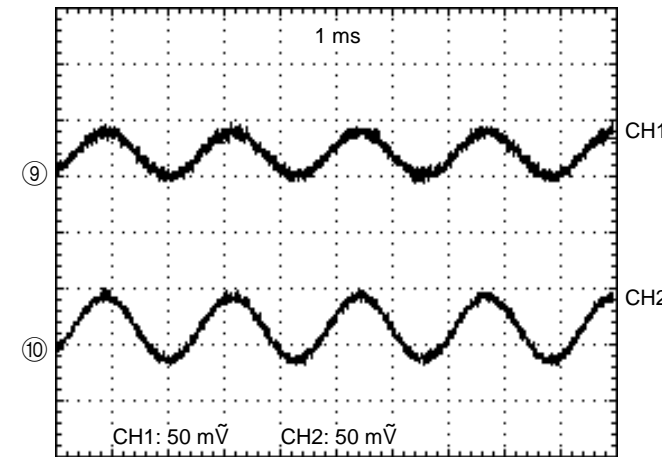
MAJOR WAVEFORMS



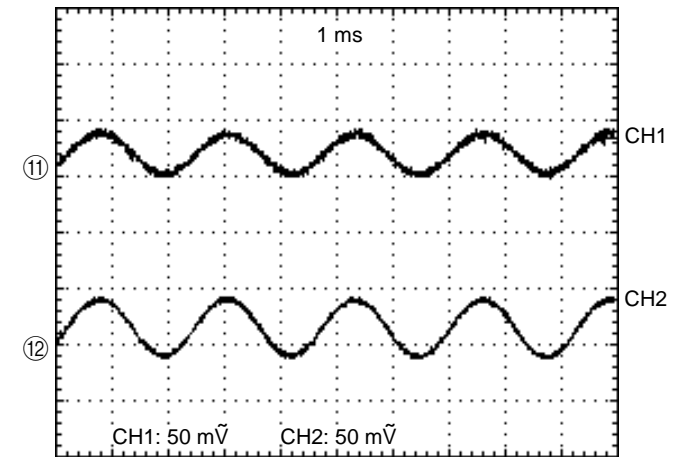
- ① NMI signal
JD connector pin 1
- ② APO signal
JH connector pin 6



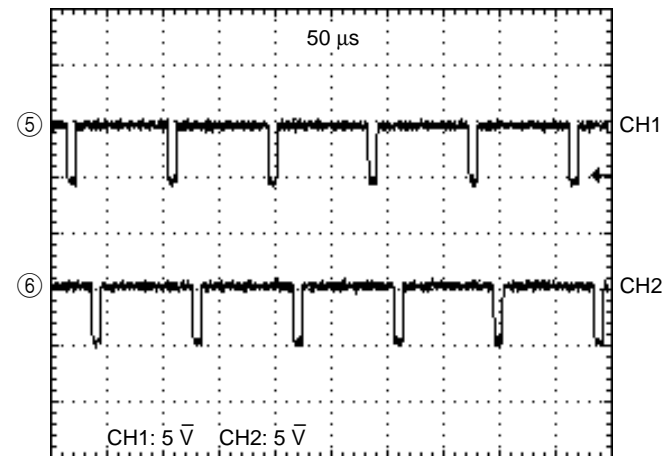
- ③ Button scan signal PA0
JD connector pin 9
- ④ Button scan signal PA1
JD connector pin 8



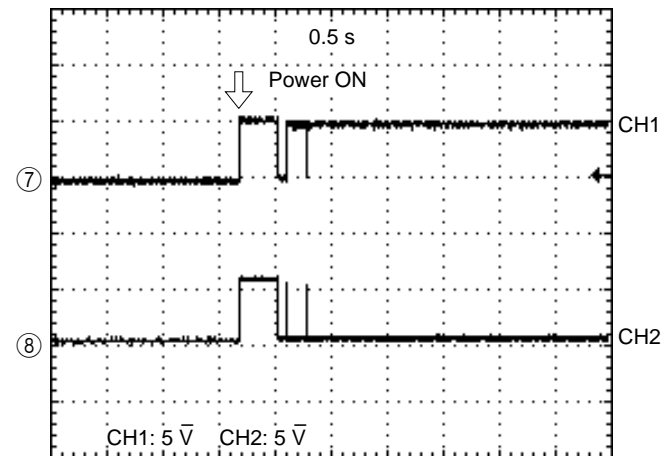
- ⑨ DAC output (L-ch)
JH connector pin 9
- ⑩ DAC output (R-ch)
JH connector pin 8



- ⑪ Sound signal (L-ch)
JK connector pin 4
- ⑫ Sound signal (R-ch)
JK connector pin 5



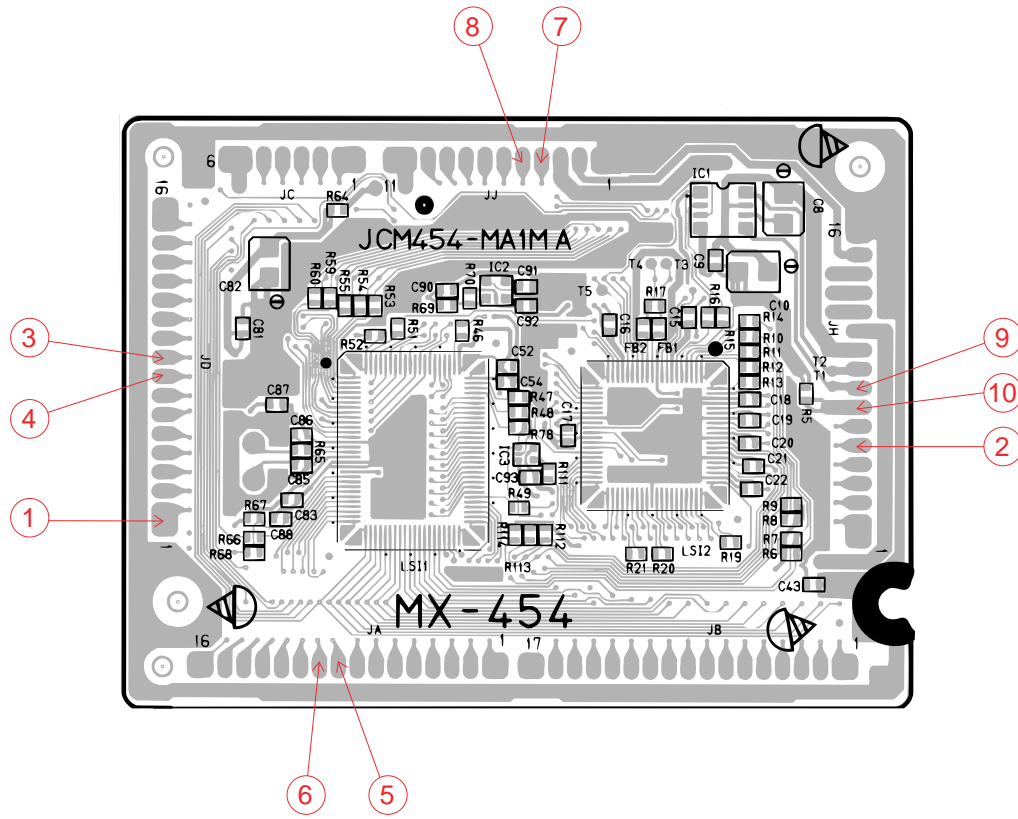
- ⑤ Key scan signal KC0
JA connector pin 9
- ⑥ Key scan signal KC1
JA connector pin 10



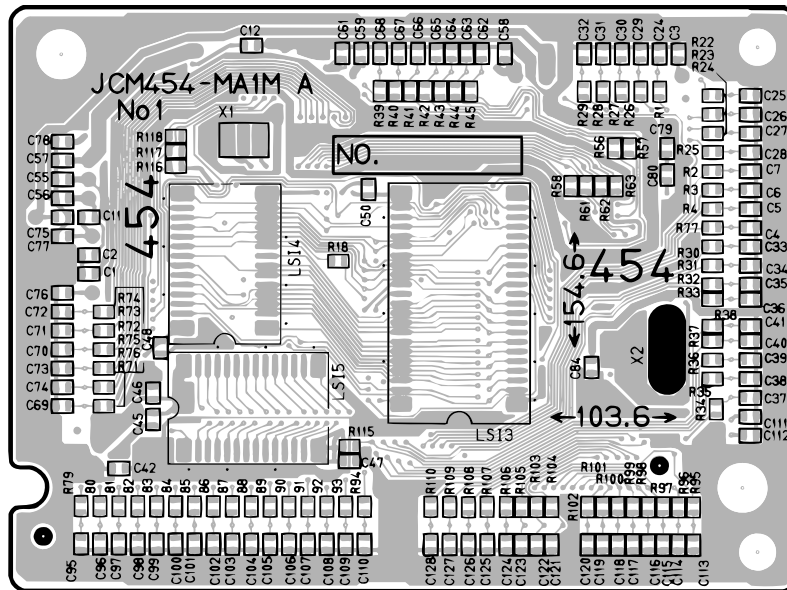
- ⑦ RS signal PA4
JJ connector pin 4
- ⑧ R/W signal PA5
JJ connector pin 5

PRINTED CIRCUIT BOARDS

Main PCB JCM454-MA1M

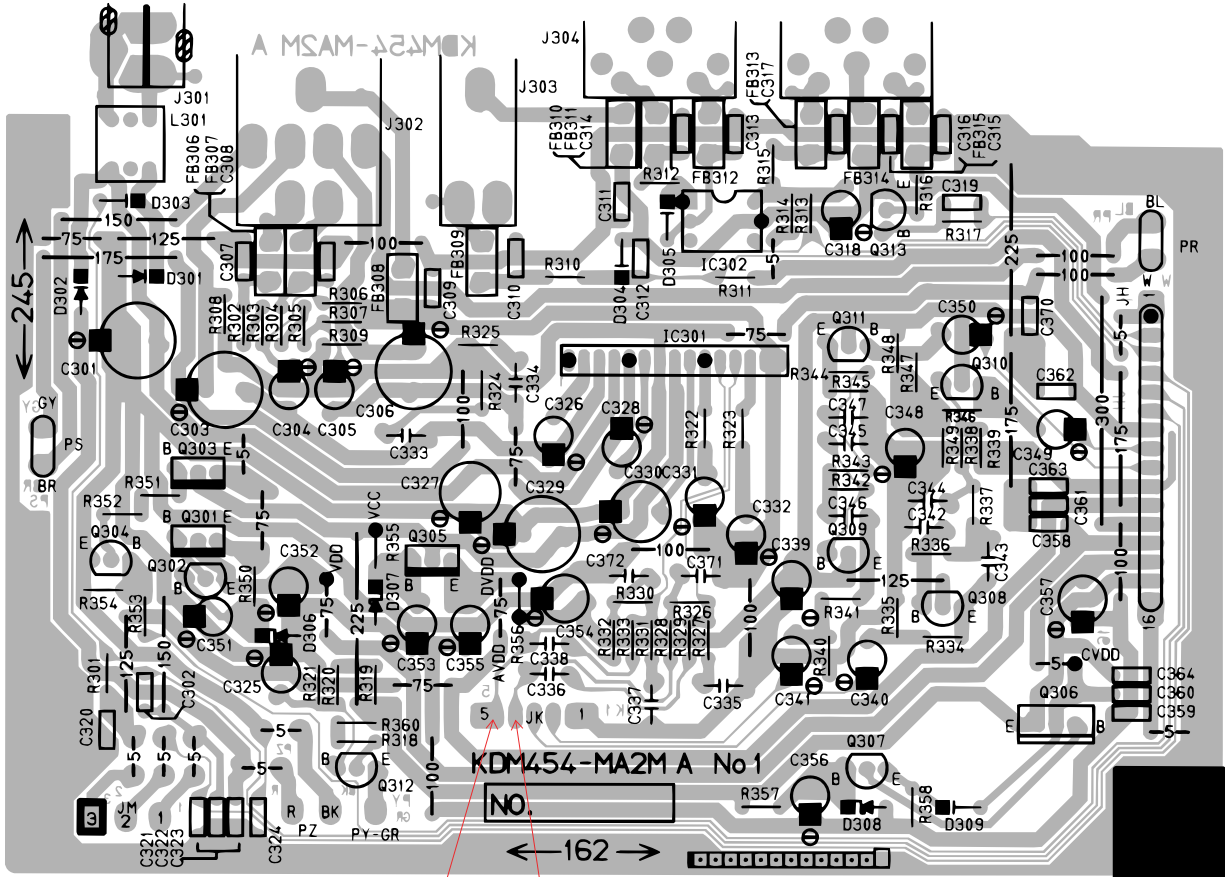


Top View



Bottom View

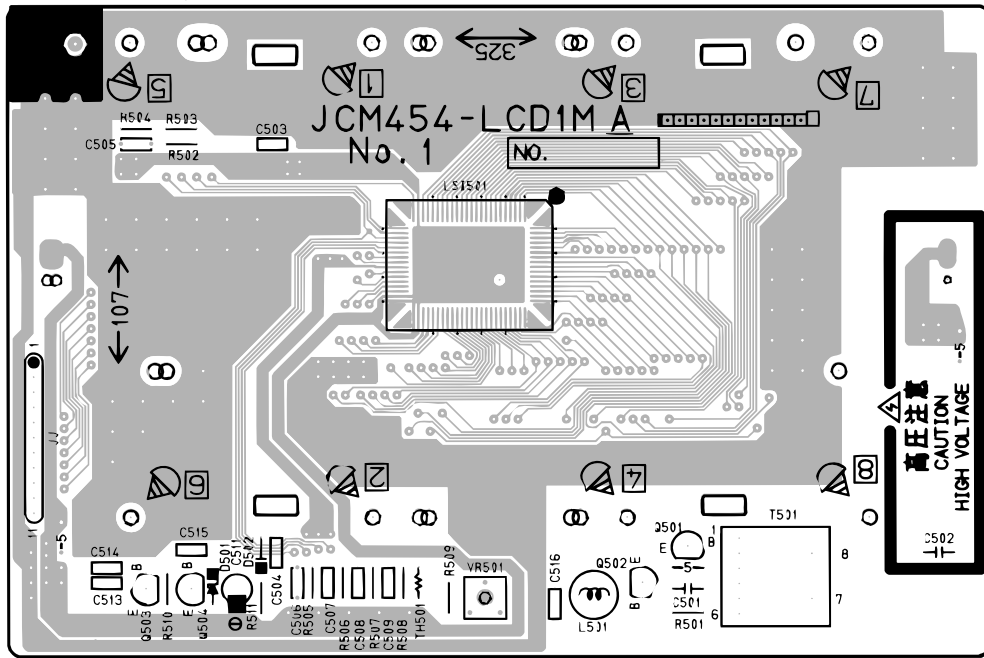
Sub PCB KDM454-MA2M



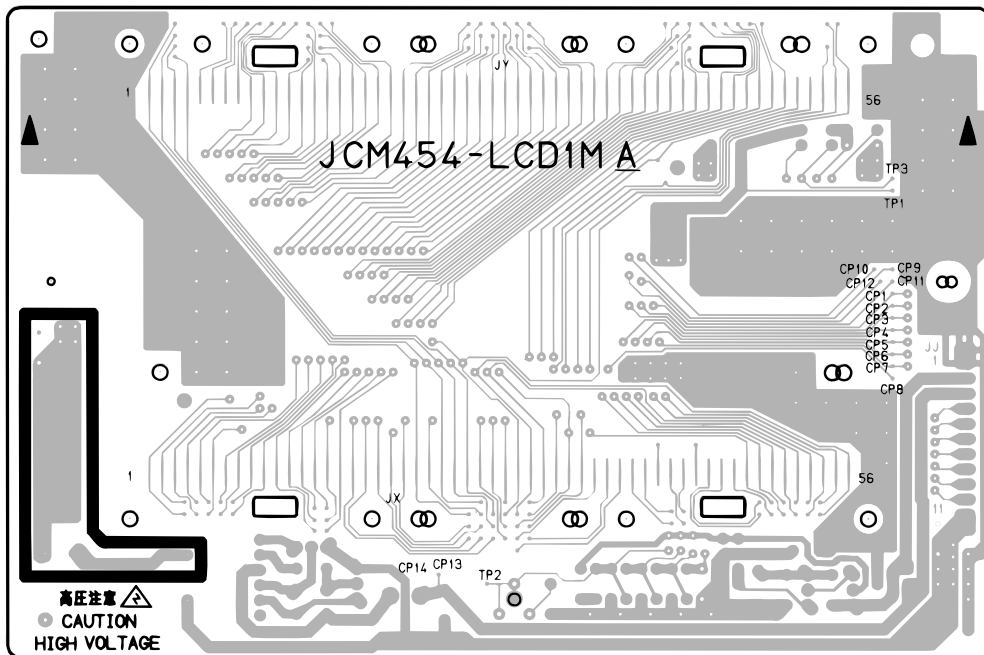
12

11

LCD PCB JCM454-LCD1M-A

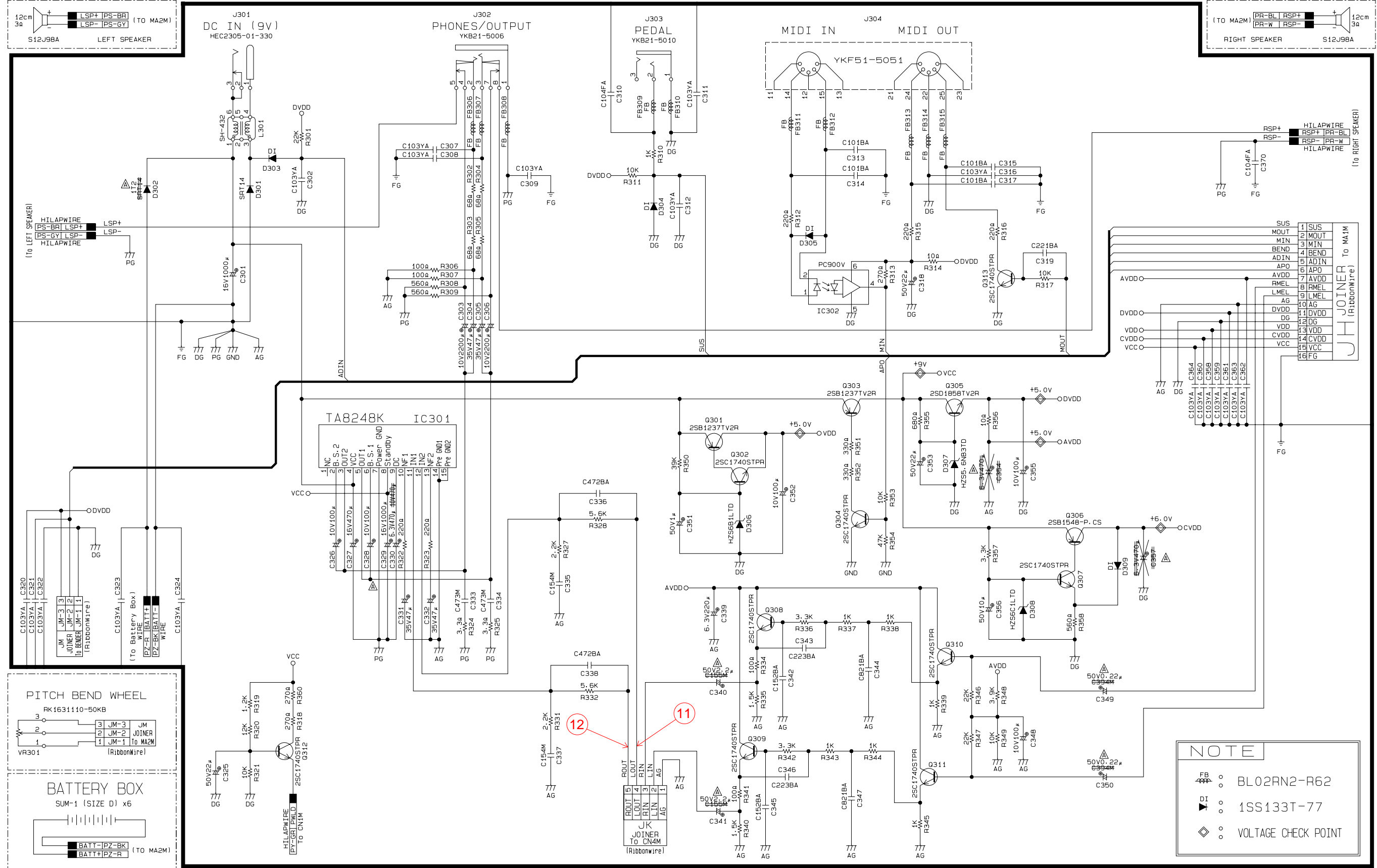


Top View



Bottom View

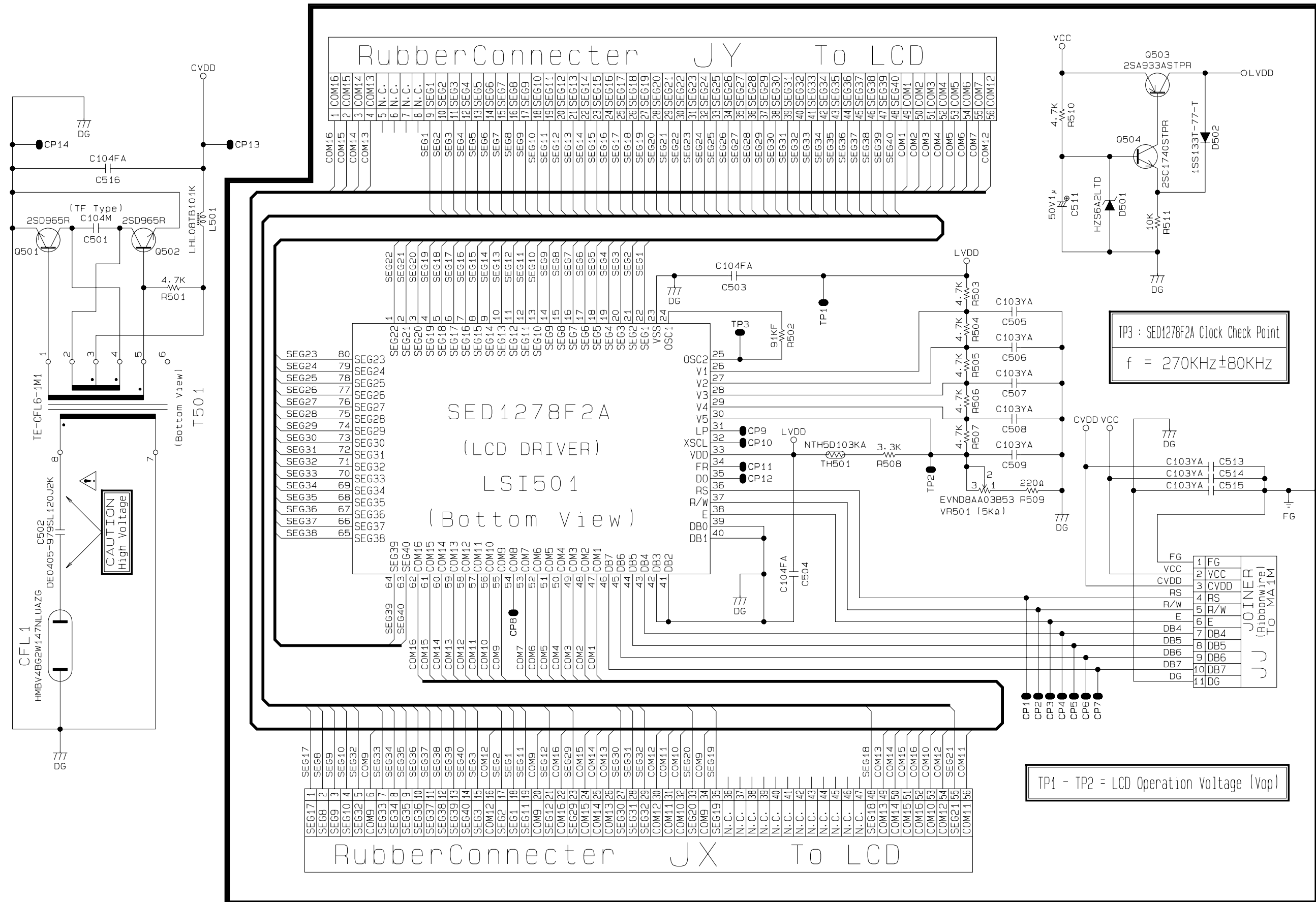
Sub PCB KDM454-MA2M



NOTE

- FB ○ BL02RN2-R62
- ▷ DI ○ 1SS133T-77
- ◇ ○ VOLTAGE CHECK POINT

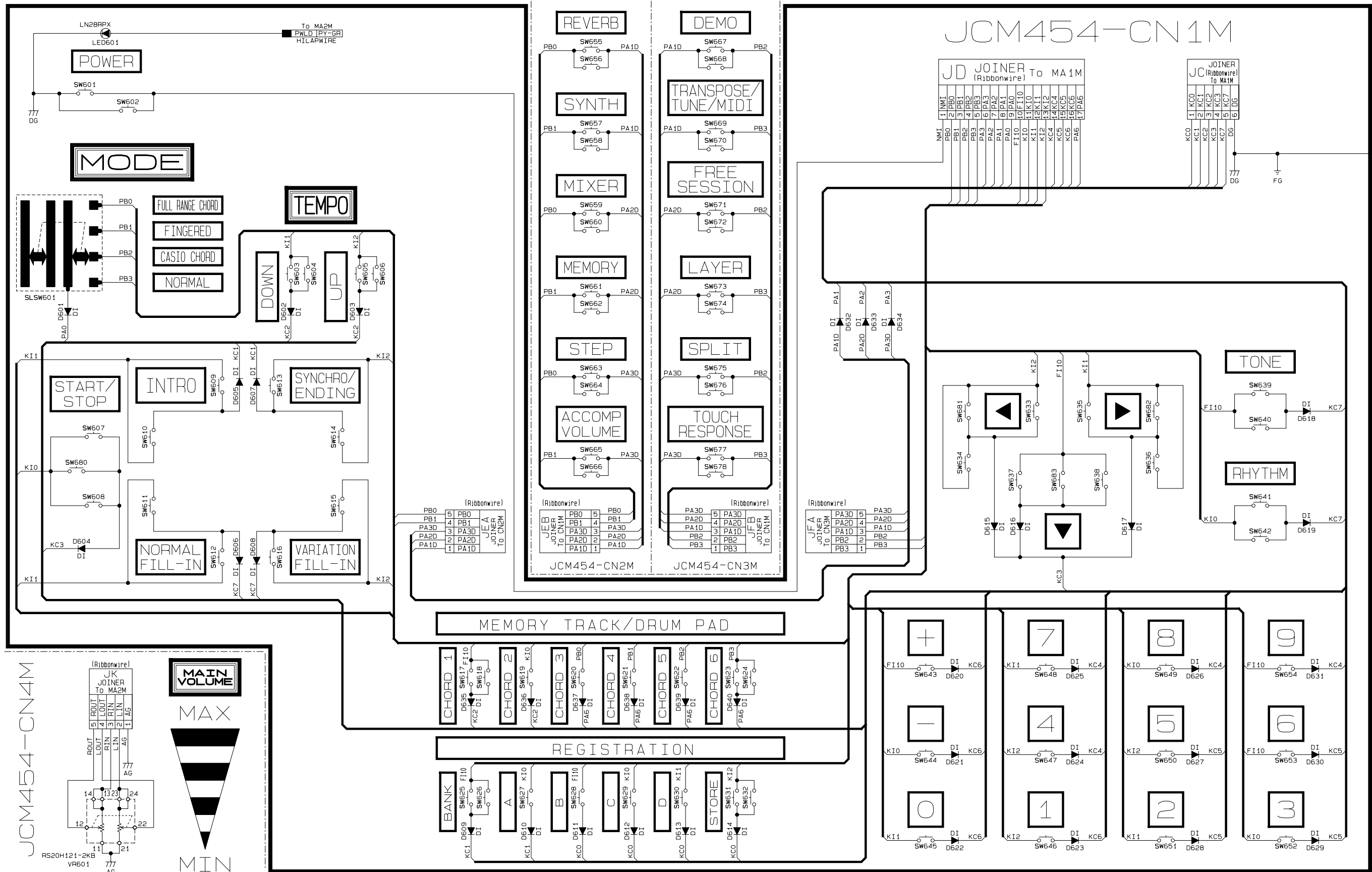
Display PCB JCM454-LCD1M



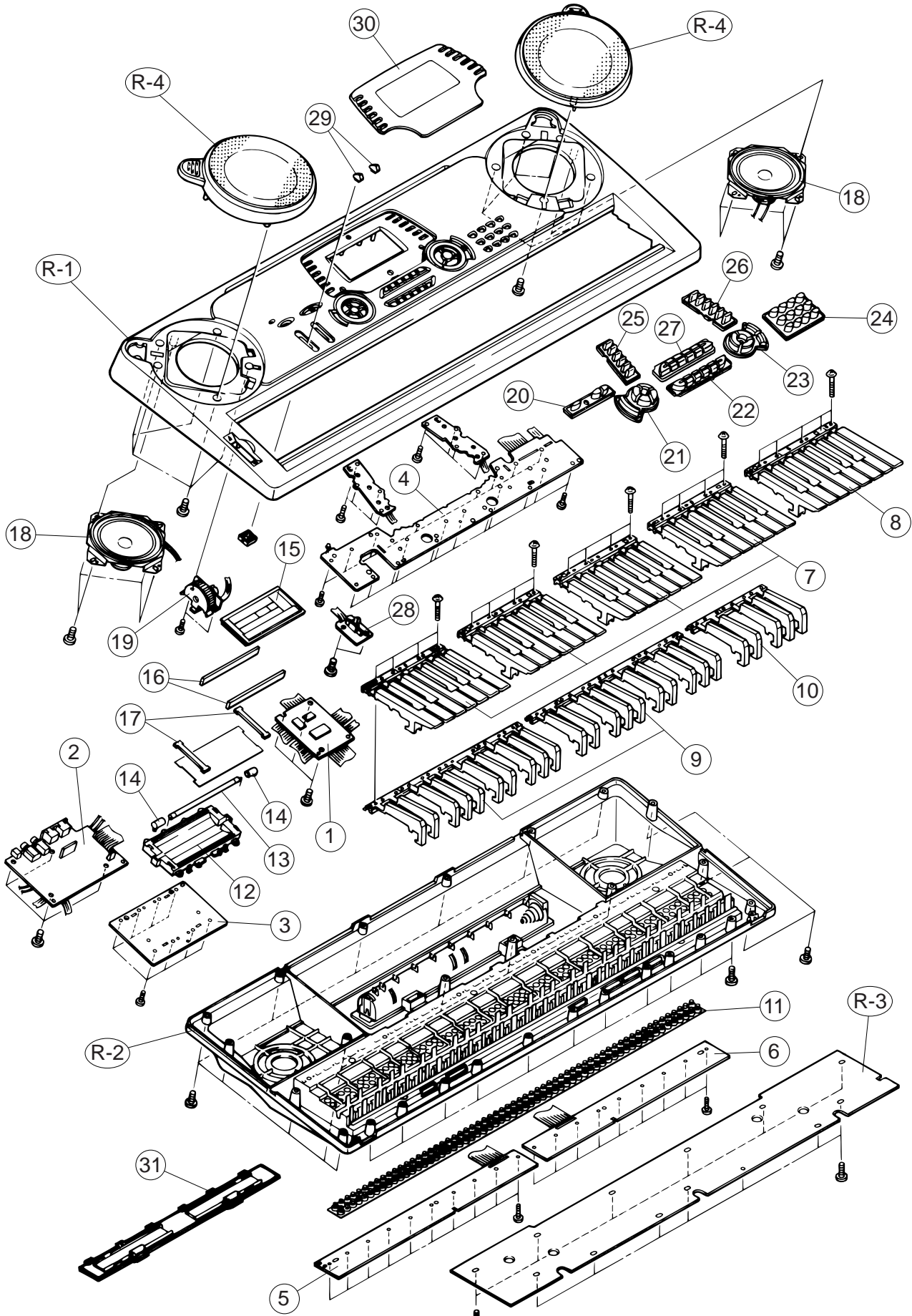
TP3 : SED1278F2A Clock Check Point
 $f = 270\text{KHz} \pm 80\text{KHz}$

TP1 - TP2 = LCD Operation Voltage (Vop)

PCBs JCM454-CN1M, JCM454-CN2M, JCM454-CN3M, JCM454-CN4M



EXPLODED VIEW



PARTS LIST

CTK-651

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.

PARTS PRICE LIST
CTK-651

N	ITEM	CODE NO.	PART NAME	SPECIFICATION	Q	PRICE CODE	R
MAIN PCB							
N	1	1001 4534	PCB/ASSY(MA1M)	M240991*2	1	DE	1
	LSI1	2012 5005	LSI/CPU	GT913F(T)	1	BO	A
	LSI2	2012 4494	LSI/DSP	HG51B277FB-1	1	BF	A
N	LSI3	10005766	LSI/ROM	LH536PYC	1	BG	A
	LSI4/LSI5	2012 5572	LSI/RAM	TC55257DFL-70L(EL)	2	AS	A
	IC1	2105 4746	IC	UPD6379GR-E1	1	AO	A
	IC2	2012 1883	IC	RN5VD40AA-TR	1	AE	A
	IC3	2105 3773	IC	TC7SH08FU(TE85L)	1	AD	A
	X1	2590 2699	OSCILLATOR/CRYSTAL	EF0B2005E0	1	AE	B
	X2	2590 2742	OSCILLATOR/CERAMIC	AT-49-30M	1	AG	B
SUB PCB ASSY							
N	2	1001 4535	PCB/ASSY(MA2M)	M240992*3	1	CK	B
	IC301	2114 5775	IC	TA8248K	1	BI	A
	IC302	2114 1421	IC/PHOTOCOUPLER	PC900V	1	AK	B
	Q301/Q303	2250 1591	TRANSISTOR	2SB1237TV2R	2	AB	A
	Q306	2251 0672	TRANSISTOR	2SB1548-P.CS	1	AD	A
	Q305	2250 1593	TRANSISTOR	2SD1858TV2R	1	AB	A
	D301/D302	2390 3021	DIODE	SRT14	2	AF	B
	Q302,304, Q307~Q313	2390 1344	TRANSISTOR	1SS133T-77	9	AA	A
	D306	2360 1085	DIODE/ZENER	HZS6B1LTD	1	AA	B
	D307	2360 3084	DIODE/ZENER	HZS5.6NB3TD	1	AA	A
	D308	2360 3086	DIODE/ZENER	HZS6C1LTD	1	AA	A
	J301	3501 7049	JACK/POWER	HEC2305-01-330	1	AC	A
	J302	3612 0665	JACK/PHONE	YKB21-5006	1	AG	B
	J303	3612 0789	JACK	YKB21-5010	1	AC	B
	J304	3501 4816	JACK/DIN	YKF51-5051	1	AH	B
DISPLAY PCB							
	3	6927 4380	PCB/ASSY(LCD1M)	M240993*1	1	DL	B
	LSI501	2012 6018	LSI/LCD DRIVER	SED1278F2A	1	AV	A
	D501	2360 3056	DIODE/ZENER	HZS6A2LTD	1	AA	A
	D502	2390 1344	DIODE	1SS133T-77	1	AA	A
	Q501/502	2253 0710	TRANSISTOR	2SD965-R(TA)	2	AB	A
	Q503	2250 1577	TRANSISTOR	2SA933ASTPR	1	AA	A
	Q504	2250 1592	TRANSISTOR	2SC1740STPR	1	AA	A
	T501	3012 1607	TRANSFORMER	TE-CFL6-1M1	1	AL	B
	VR501	2775 0994	VOLUME	EVND8AA03B53	1	AA	A
CONSOLE PCB							
N	4	10014533	PCB/ASSY(CN1234M)	M140856*2	1	BV	B
	D601~D640	2390 1344	DIODE	1SS133T-77	40	AA	B
	LED601	2370 1414	LED	MPR3338S-B149	1	AA	B
	VR601	2765 2213	VOLUME	RS20H121-2KB	1	AD	A
KEYBOARD PCB							
	5	6927 4400	PCB/ASSY(KY1M)	M140687*3	1	DA	B
	D501~D564	2301 0097	DIODE	1S2473	64	AA	B
	6	6927 4410	PCB/ASSY(KY2M)	M140688*3	1	DA	B
	D565~D622	2301 0097	DIODE		58	AA	B

N	ITEM	CODE NO.	PART NAME	SPECIFICATION	Q	PRICE CODE	R
KEYBOARD UNIT							
	7	6922 2720	WHITE KEY SET/LT	M312118*1	4	AP	A
	8	6922 2730	WHITE KEY SET/LT	M312118*2	1	AR	A
	9	6906 8481	BLACK KEY SET 10P	M140369-3	2	AL	A
	10	6906 8591	BLACK KEY SET 5P	M140369-4	1	AT	A
	11	6927 4260	RUBBER/CONTACT	M340985*1	1	AS	A
PANEL UNIT							
	12	6927 4690	RELECTOR	M240939-1	1	AN	B
	13	3122 3701	CFL	HMBV4BG2W147NLUAZG	1	AX	B
	14	6927 3420	HOLDER/CFL	M440758-1	2	AA	C
N	15	33356930	LCD	CG1812-TTP	1	CF	B
	16	6927 3070	INTERCONNECTOR	M440459-4	2	AO	B
	17	6927 3900	PACKING	M440760-1	2	AF	C
	18	3831 1096	SPEAKER	S12J89A	2	BH	B
N	19	1001 4532	BENDER ASSY	M312022*10	1	BC	
	20	6927 5090	RUBBER/BUTTON	M240971-1	1	AE	B
N	21	1001 4515	RUBBER/BUTTON	M240942-2	1	AN	B
	22	6927 4710	RUBBER/BUTTON	M240943-1	1	AP	B
N	23	1001 4517	RUBBER/BUTTON	M240944-2	1	AN	B
	24	6927 5100	RUBBER/BUTTON	M240945-1	1	AS	B
	25	6927 5110	RUBBER/BUTTON	M240946-1	1	AI	B
	26	6927 5120	RUBBER/BUTTON	M240947-1	1	AI	B
N	27	1001 1884	RUBBER/BUTTON	M241242-1	1	AO	B
	28	6927 0510	SWITCH/SLIDE KNOB	CSB-08D	1	AD	B
	29	6921 5030	KNOB/SLIDE	M311859-1	2	AA	B
N	30	10008164	PLATE/DISPLAY	M141061-1	1	BE	C
	31	6918 1630	COVER/BATTERY	M311164*1	1	AT	B
ACCESSORY							
		6926 9590	STAND/NOTE	M340876*1	1	BK	B

Notes: **N**-New parts
Q-Quantity used per unit
R-Rank

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