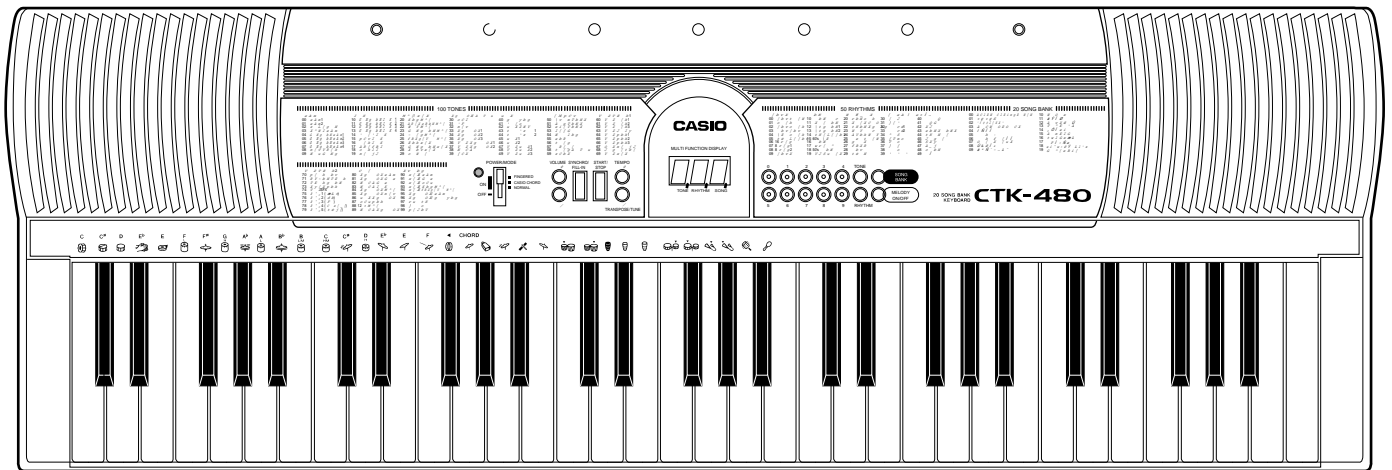


CASIO®

Service Manual

(without price)

CTK-480



CTK-480

ELECTRONIC KEYBOARD

INDEX

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SPECIFICATIONS

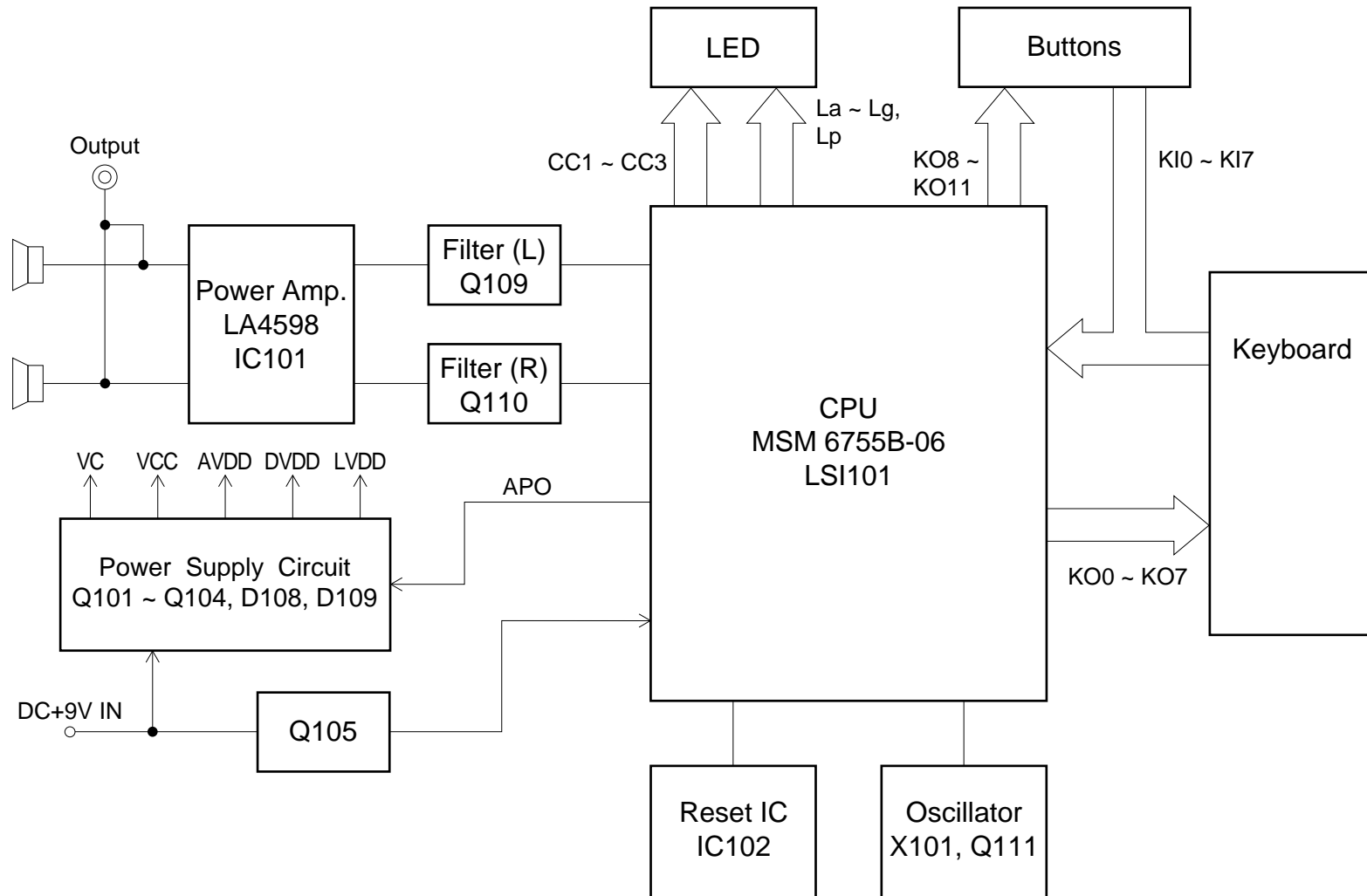
GENERAL

Number of keys:	61
Polyphonic:	12-note
Preset tones:	100
Auto-rhythms:	50, Tempo control: 40 to 255
Accompaniment:	CONCERT Chord, Fingered
Song bank:	20-tune
Tuning control:	440 Hz \pm 50 cents
Built-in speakers:	4 inch dia. 1 W input rating: 2 pcs
Terminals:	Headphone Jack (Output impedance: 50 ohm, Output voltage: 4.6 V (rms) MAX)
Power source:	2-way AC or DC source AC: AC adapter DC: 6D size dry batteries, Vehicle battery with DC adapter
Power consumption:	7.7 W
Dimensions(HWD):	90 \times 910 \times 322 mm (3-1/2 \times 36-3/16 \times 12-11/16 inches)
Weight:	3.9 kg (8 lbs) excluding batteries

ELECTRICAL

Current drain with 9 V DC:	
No sound output	120 mA \pm 30%
Maximum volume	650 mA \pm 30%
with white keys C1 to G2 pressed in Synth-Lead 1	
Volume: 9	
Phone output Level (Vrms with 8 ohm load each channel):	
with key E3 pressed in Synth-Lead 1	80 mV \pm 30%
Sound Pressure (at 10 cm away from speaker):	
with key E3 pressed in Synth-Lead 1	100 dB \pm 10 dB
Minimum operating voltage:	6.0 V

BLOCK DIAGRAM

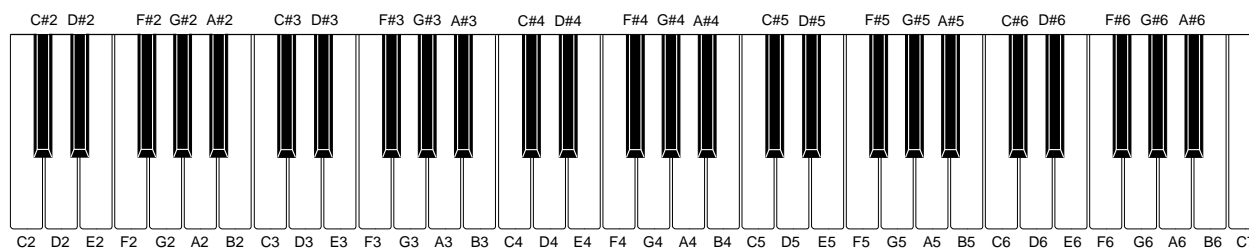


CIRCUIT DESCRIPTION

KEY MATRIX

	KI0	KI1	KI2	KI3	KI4	KI5	KI6	KI7
KO0	C1	G#1	E2	C3	G#3	E4	C5	G#5
KO1	C#1	A1	F2	C#3	A3	F4	C#5	A5
KO2	D1	A#1	F#2	D3	A#3	F#4	D5	A#5
KO3	D#1	B1	G2	D#3	B3	G4	D#5	B5
KO4	E1	C2	G#2	E3	C4	G#4	E5	C6
KO5	F1	C#2	A2	F3	C#4	A4	F5	
KO6	F#1	D2	A#2	F#3	D4	A#4	F#5	
KO7	G1	D#2	B2	G3	D#4	B4	G5	
KO8	0	1	2	3	4	Start/Stop	Tempo Up	Volume Up
KO9	5	6	7	8	9	Tempo Down	Volume Down	Synchro/ Fill-In
K10	Tone	Rhythm	Song Bank	Melody On/Off				
K11					Fingered	CONCERT Chord	Normal	Power Off

NOMENCLATURE OF KEYS



CPU (LSI101: MSM6755B-06)

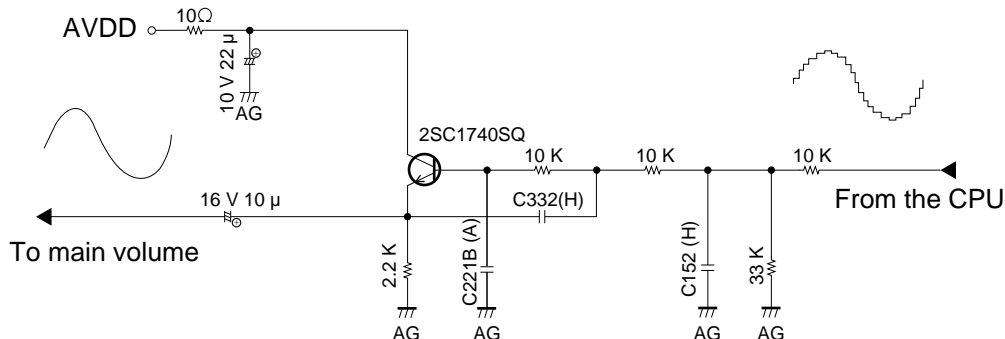
The CPU contains a sound data ROM and a DAC (Digital to Analog Converter), and it provides left and right channel sound waveforms in accordance with the pressed key and the selected tone.

The following table shows the pin functions of LSI101.

Pin No.	Terminal	In/Out	Function
1 ~ 29	MA14 ~ NC2	—	Not used.
30	DGND	In	Ground (0V) source
31	DVCC	In	+5V source
32, 33	XTLO, XTLI	In/Out	20MHz clock input/output
34	NC3	—	Not used. Connected to ground.
35	RSTB	In	Reset signal input
36	P24/RXD	—	Not used. Connected to +5V.
37	P25/TXD	—	Not used.
38	NMI	In	Power on signal input
39	APO	Out	APO (Auto Power Off) signal output
40	NC4	—	Not used.
41	REFH	Out	Terminal for the internal DAC
42, 43	NC5, NC6	—	Not used.
44	DAOR	Out	Right channel sound waveform output
45	NC7	—	Not used.
46	AVdac	In	+5V source for the internal DAC and ADC
47	DAOL	Out	Left channel sound waveform output
48	REFL	Out	Terminal for the internal DAC and ADC
49	AGdac	In	Ground source for the internal DAC
50	AGadc	In	Ground source for the internal ADC
51	ANI	—	Not used. Connected to ground.
52	AVadc	In	+5V source for the internal ADC
53	NC8	—	Not used. Connected to +5V.
54	MOD0	In	Mode selection terminal
55, 56	MOD1, MOD2	In	Mode selection terminal
57	KO9/P40	In	Power source detection signal input
58 ~ 65	KI0/P30 ~ KI7/P37	In	Terminals for key/button input signal
66 ~ 73	KO1/P50 ~ KO8/P57	Out	Terminals for key scan signal
74 ~ 77	P20 ~ P23	Out	Terminals for button input signal
78	NC9	—	Not used.
79	LVCC	In	+5V source
80 ~ 82	CC1 ~ CC3	Out	LED common signal output
83 ~ 87	—	—	Not used.
88 ~ 95	La ~ Lg, Lp	Out	Not used.
96	LGND	In	Ground (0V) source
97 ~ 100	—	—	Not used.

FILTER BLOCK

Since the sound signal from the CPU is a stepped waveform, the filter block is added to smooth the waveform.

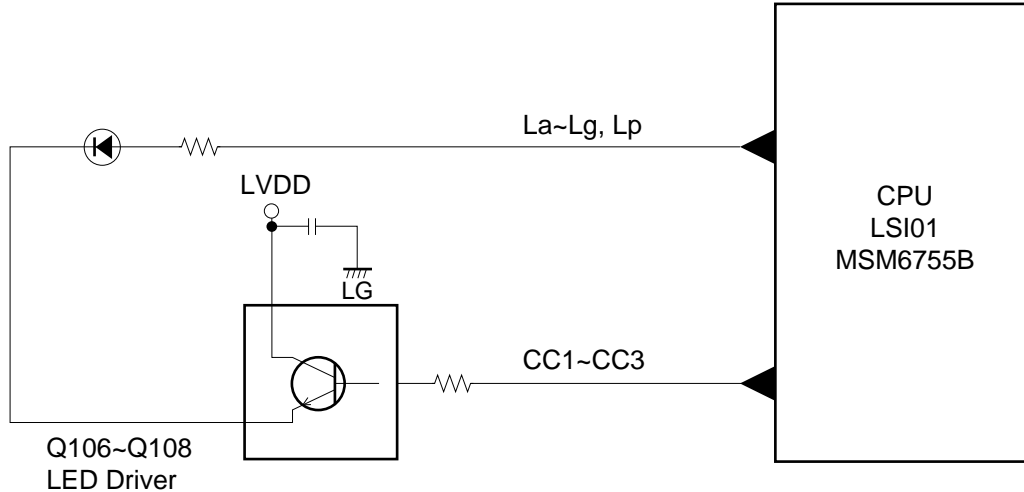


POWER AMPLIFIER (IC101: LA4598)

The power amplifier is a two-channel amplifier with standby switch. The following table shows the pin function of IC101.

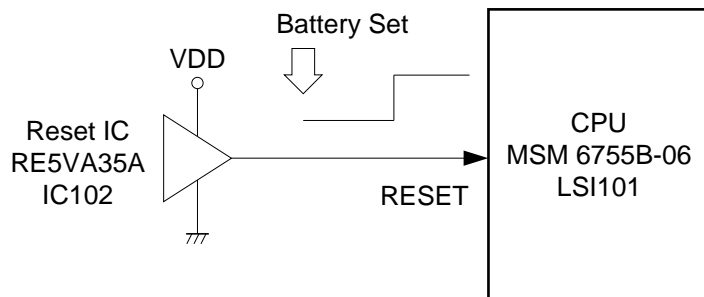
Pin No.	Terminal	In/Out	Function
1	Power GND	In	Ground (0V) source
2	Ch1 B.S.	—	Terminal for a bootstrap capacitor
3	Ch1 OUT	Out	Channel 1 output
4	VCC	In	+9V source
5	Ch1 N.F.	In	Negative feedback input
6	Ch1 IN	In	Channel 1 input
7	D.C.	—	Terminal for a decoupling capacitor
8	Pre GND	In	Ground (0V) 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



INITIAL RESET CIRCUIT

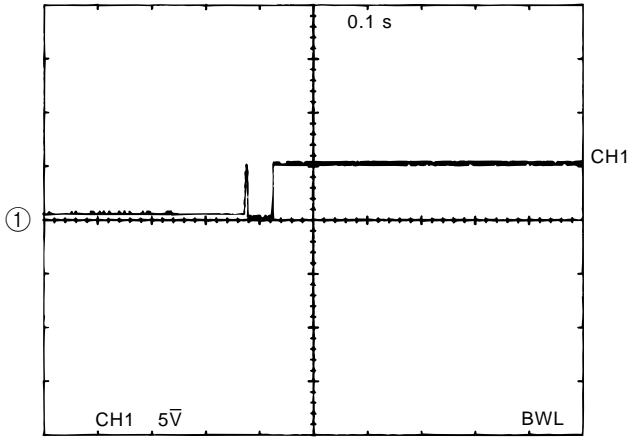
When batteries are set or an AC adapter is connected, the reset IC provides a low pulse to the CPU. The CPU then initializes its internal circuit.



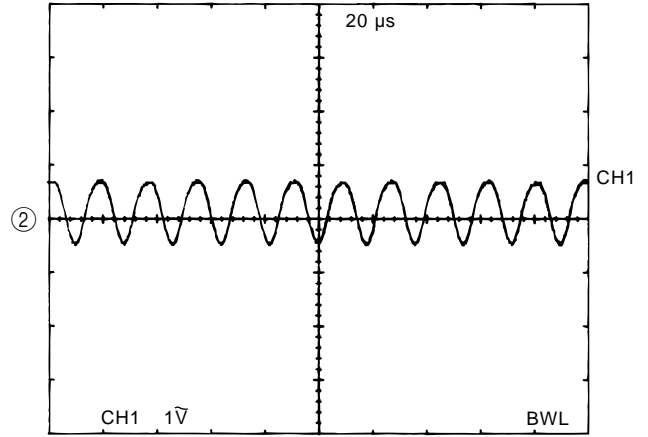
TROUBLESHOOTING

Nature of Trouble	Faulty Block	Cause/Remedy
No power	Power supply circuit	Faulty IC101. Replace IC101.
		Faulty D106 ~ D109. Replace D106 ~ D109.
		Faulty Q101 ~ Q104. Replace Q101 ~ Q104.
	Power switch	Poor contact. Clean the contacts.
	Power jack (J101)	Open J101 or poor soldering. Replace J101 or resolder.
No sound at all	Power Amp (IC101: LA4596)	Open or shorted IC101. Replace IC101.
	CPU (LSI101: MSM6755B-06)	Faulty LSI101. Replace LSI101.
	Oscillator	Faulty Q111. Replace Q111.
		Open X101. Replace X101.
Certain keys or switches do not function	Key and switch matrix	Open circuit on KO or KI line. Replace keyboard PCB assembly.
	CPU (LSI101: MSM6755B-06)	Faulty LSI101. Replace LSI101.
A certain key or switch does not function	Key and switch matrix	Dust on the contact.

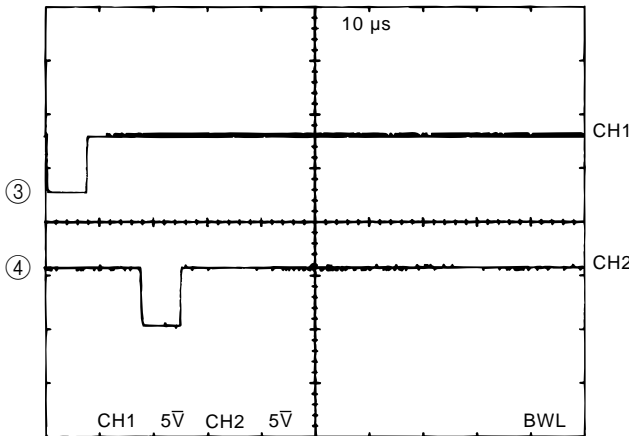
MAJOR WAVEFORMS



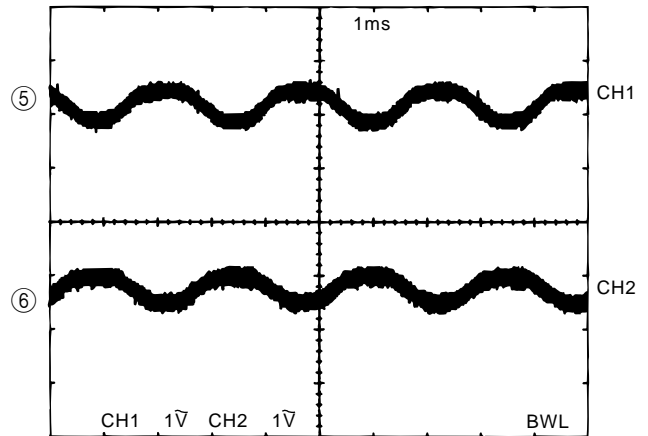
① RESET signal
IC102 pin 1



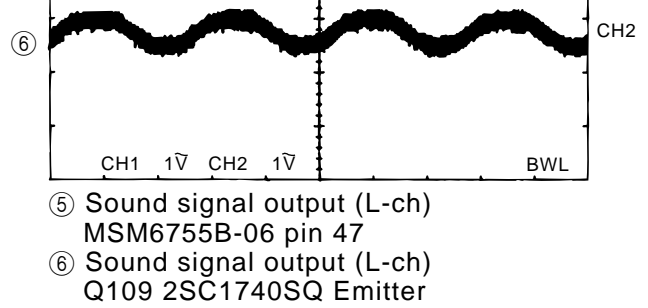
② Main clock pulse
MSM6755B-06 pin 32



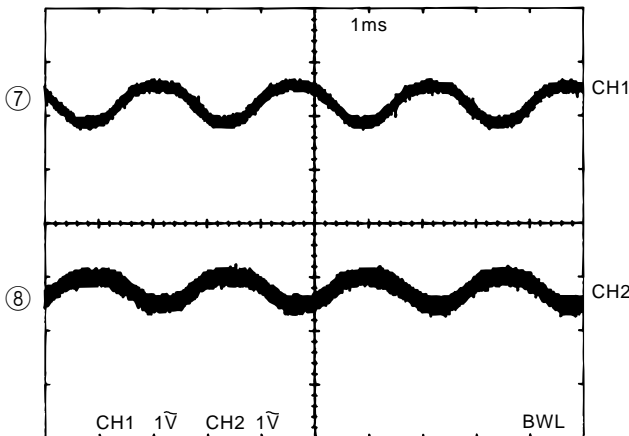
③ Key scan signal KO10
MSM6755B-06 pin 76
④ Key scan signal KO11
MSM6755B-06 pin 77



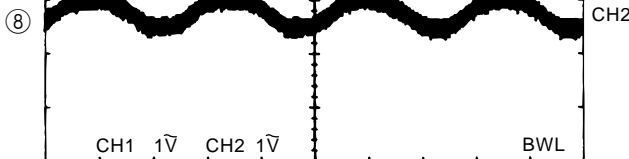
⑤ Sound signal output (L-ch)
MSM6755B-06 pin 47



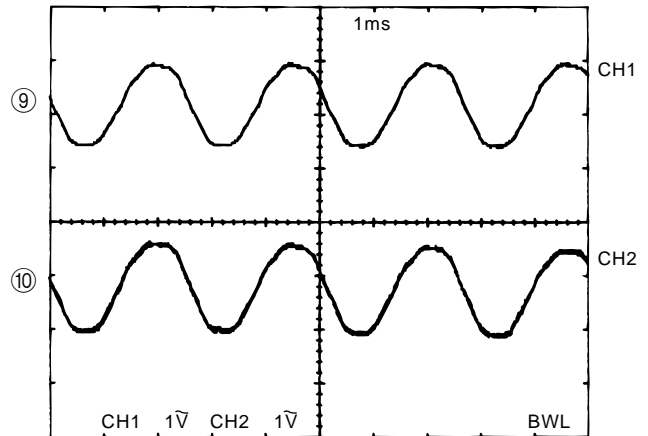
⑥ Sound signal output (L-ch)
Q109 2SC1740SQ Emitter



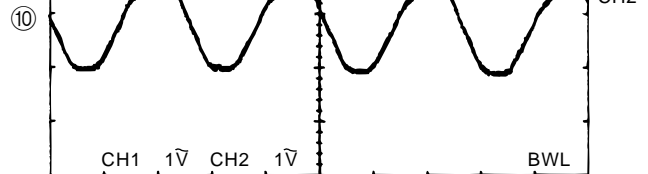
⑦ Sound signal output (R-ch)
MSM6755B-06 pin 45



⑧ Sound signal output (R-ch)
Q110 2SC1740SQ Emitter



⑨ Sound signal output (R-ch)
LA4598 pin 3

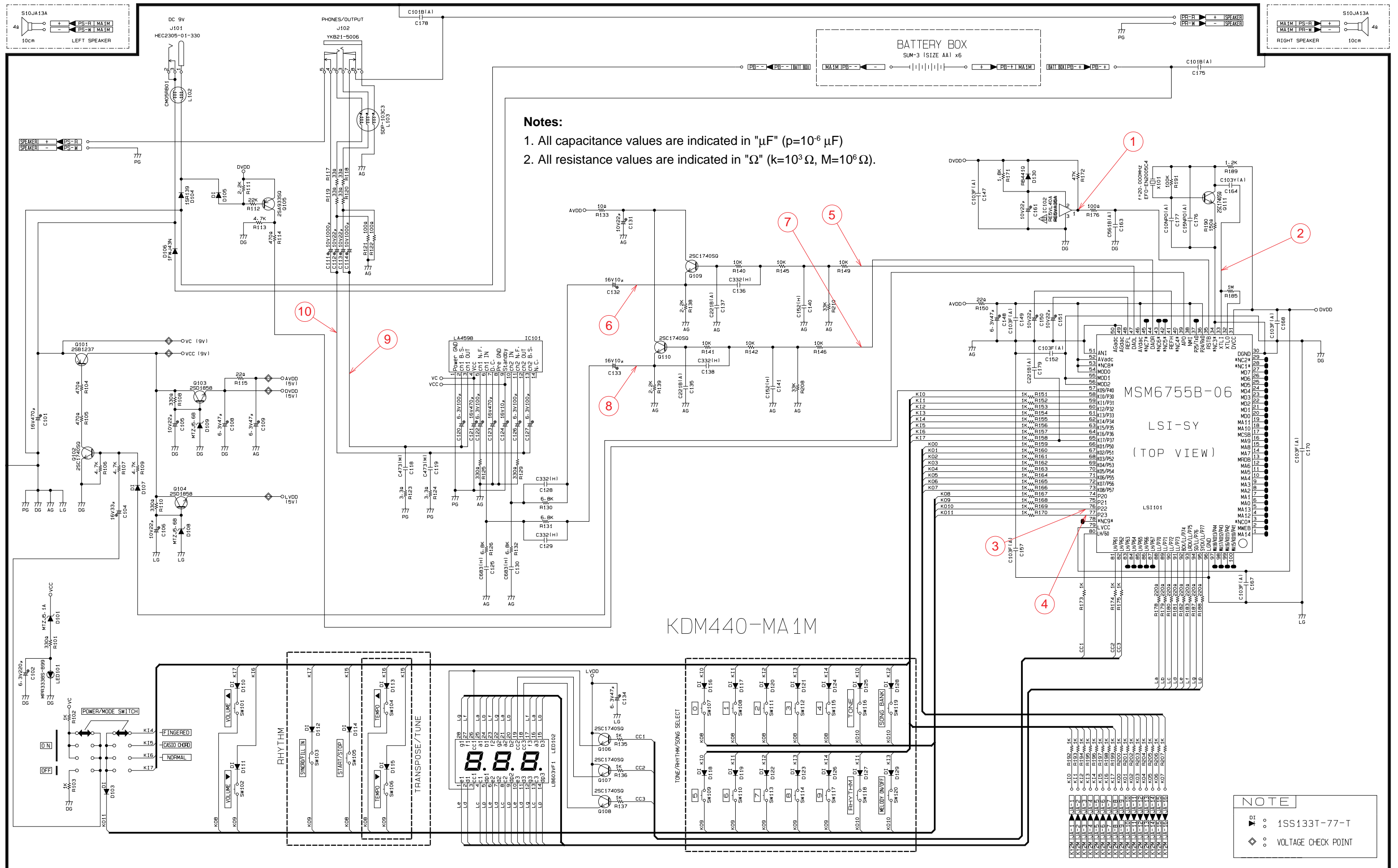


⑩ Sound signal output (L-ch)
LA4598 pin 12

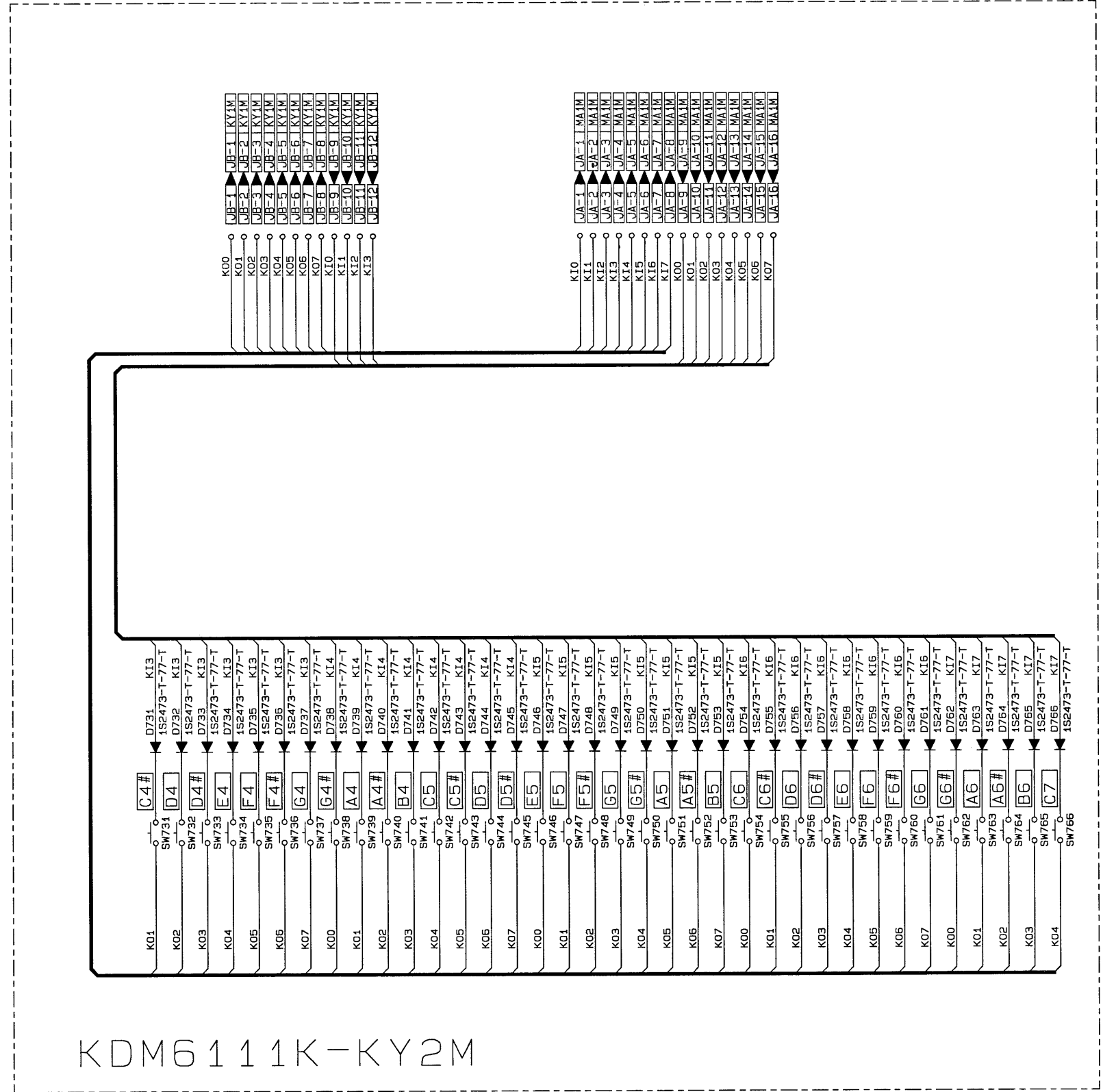
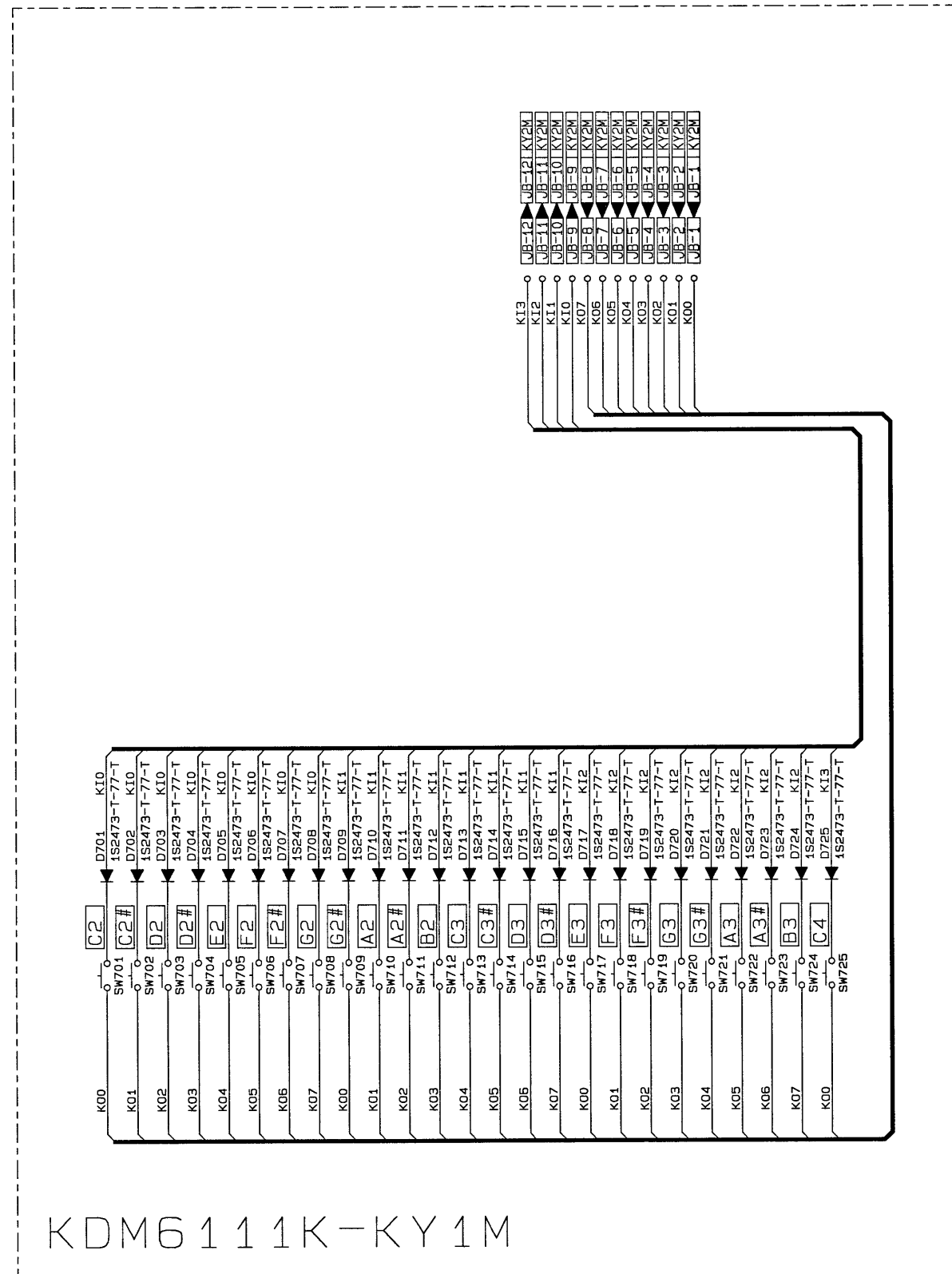
Tone: Flute Ensemble (58)
Key: A3
Volume: 7

SCHEMATIC DIAGRAMS

Main PCB KDM440-MA1M



Keyboard PCBs KDM6111K-KY1M/KY2M

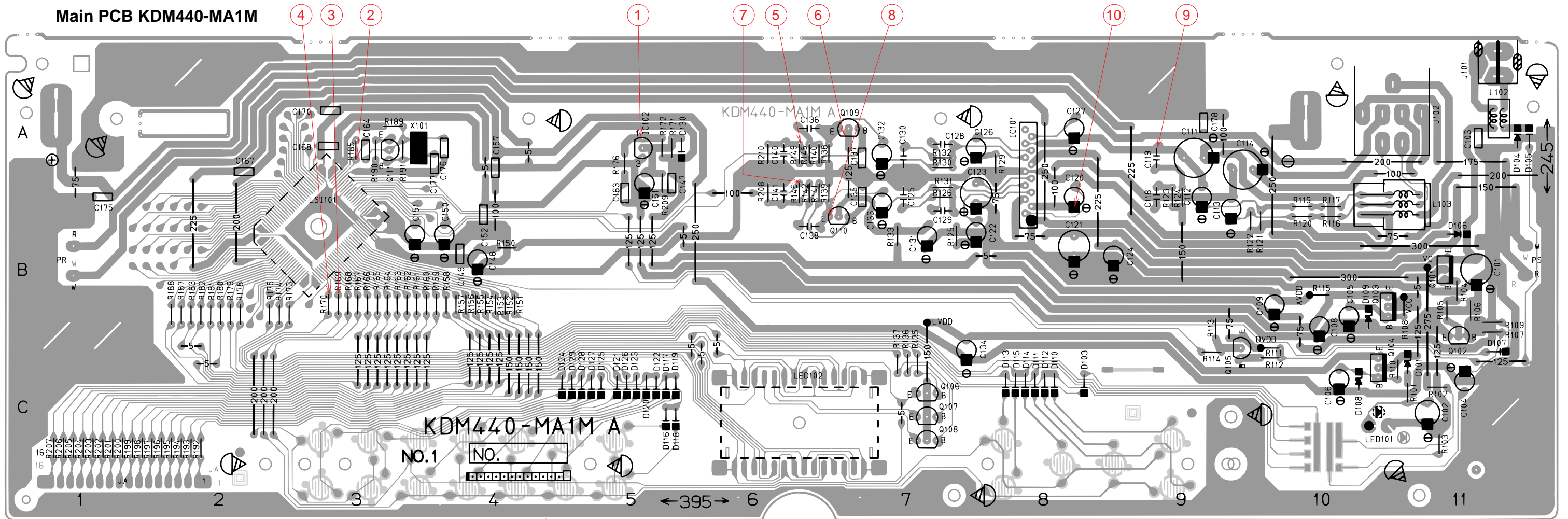


Notes:

1. All capacitance values are indicated in "μF" ($p=10^{-6} \mu F$)
2. All resistance values are indicated in "Ω" ($k=10^3 \Omega$, $M=10^6 \Omega$).

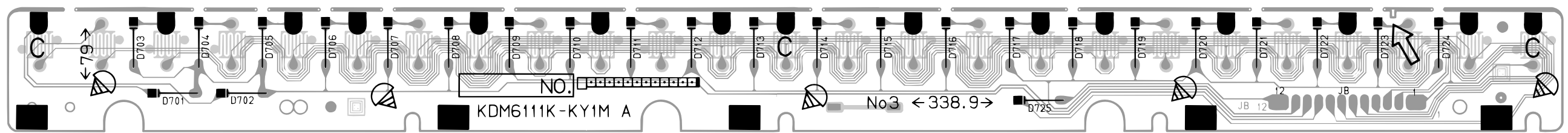
PRINTED CIRCUIT BOARDS

Main PCB KDM440-MA1M



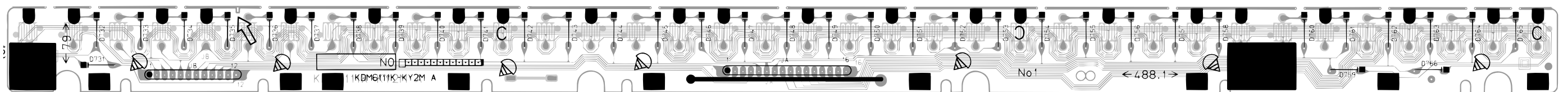
Top View

Console PCB KDM6111K-KY1M



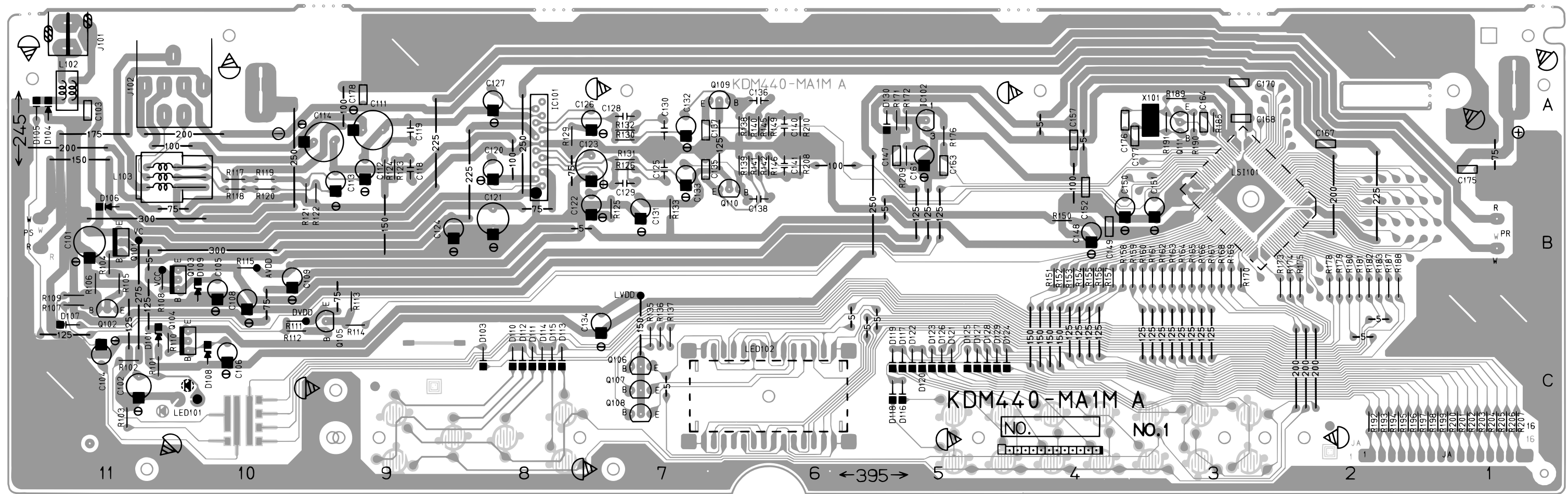
Top View

Console PCB KDM6111K-KY2M



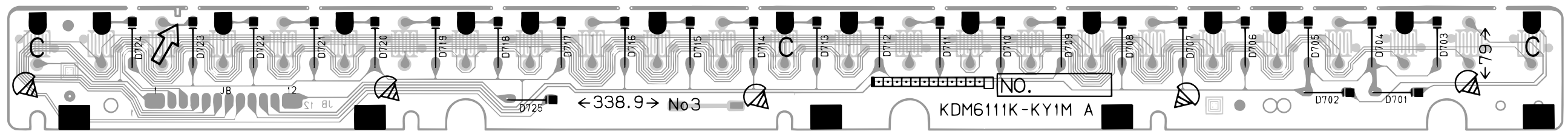
Top View

Main PCB KDM440-MA1M



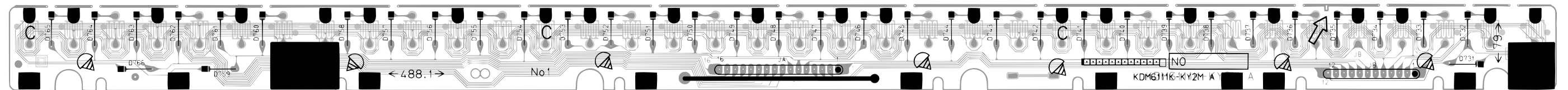
Bottom View

Console PCB KDM6111K-KY1M



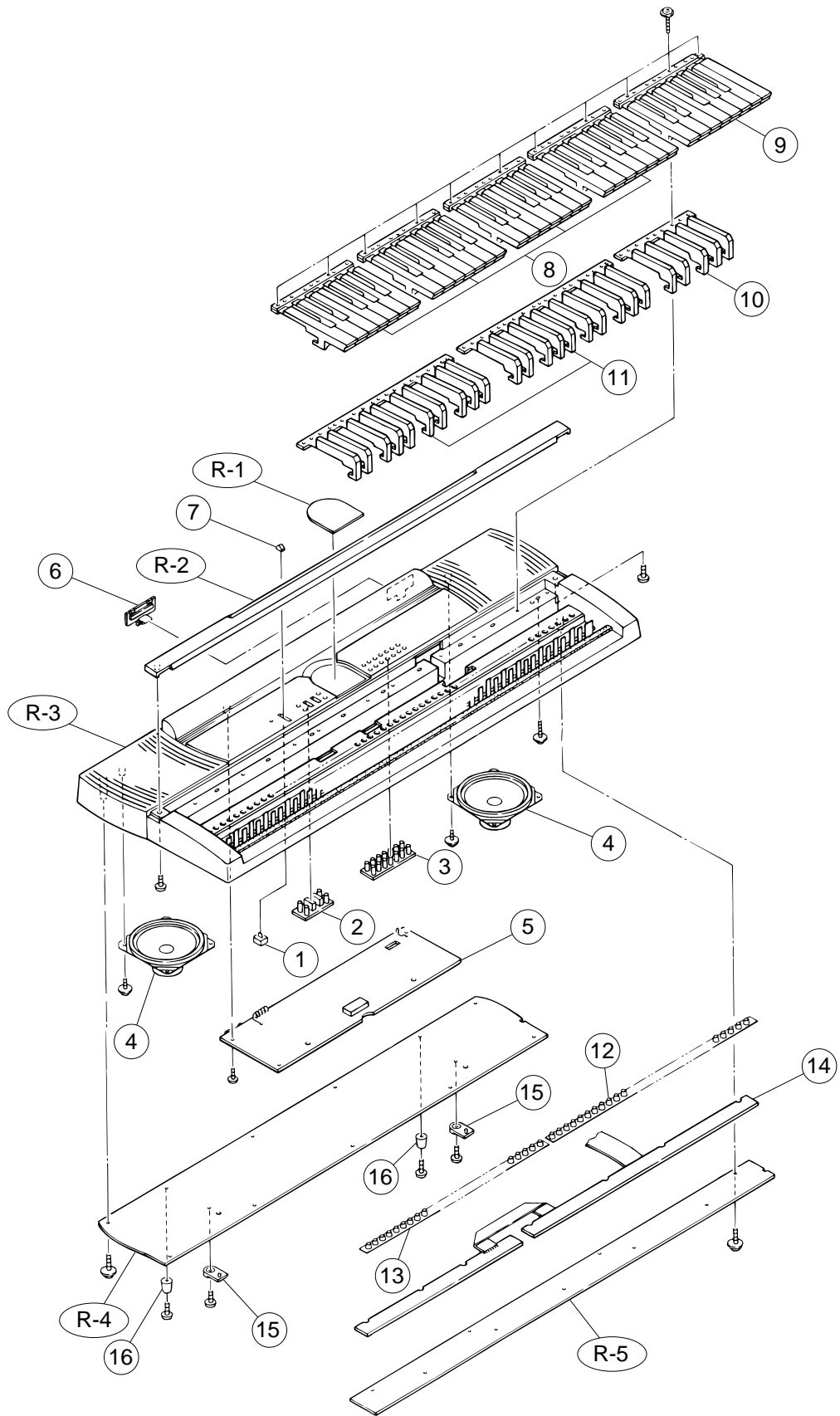
Bottom View

Console PCB KDM6111K-KY2M



Bottom View

EXPLODED VIEW



PARTS LIST

CTK-480

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.

N	Item	Code No.	Parts Name	Specification	Q	FOB Japan N.R.Yen Unit Price	R
MAIN PCB ASSEMBLY							
	IC101	2114 2891	Monolithic IC	LA4598	1		A
	IC102	2105 5922	IC	RE5VL40AA-TZ	1		A
	LSI101	2012 3486	LSI, CPU	MSM6755B-06	1		A
	Q101	2251 0469	Transistor	2SB1237Q	1		B
	Q102	2220 1387	Transistor	2SC1740Q	1		B
	Q103/104	2253 0448	Transistor	2SD1858Q	2		B
	Q105	2200 2449	Transistor	2SA933SQ	1		B
	Q106 - 111	2220 1387	Transistor	2SC1740Q	6		B
	D101	2360 1729	Zener diode	MTZJ5.1A	1		B
	D103	2390 2828	Diode	RB441Q-40T	1		B
	D105	2390 2828	Diode	RB441Q-40T	1		B
	D106	2390 2408	Zener diode	1FW143N	1		B
	D107	2390 2828	Diode	RB441Q-40T	1		B
	D108	2360 2002	Zener diode	MTZJ5.6BT	1		B
	D109	2360 2002	Zener diode	MTZJ5.6BT	1		B
	D110 - 129	2390 2828	Diode	RB441Q-40T	20		B
	D130	2390 2828	Diode	RB441Q-40T	1		B
	LED101	2370 1106	LED	MPR3338S-B99	1		B
	LED102	2370 1309	LED	LB603VF1	1		B
	X101	2590 1526	Ceramic oscillator	EFO-EN2005C4	1		B
	J101	3501 7046	Power jack	HEC2305-01-330	1		A
	J102	3612 0665	Phones jack	YKB21-5006	1		C
CONSOLE PCB ASSEMBLY							
	D701 - 725	2301 0101	Diode	1SS2473	25		B
	D731 - 766	2301 0101	Diode	1SS2473	36		B
MECHANICAL PARTS							
	1	6909 5890	Slide contact	CSB-12D	1		B
	2	6925 1560	Key contact rubber, 6-contact	M340418-1	1		B
	3	6925 1630	Key contact rubber, 14-contact	M340417-1	1		B
	4	3831 0770	Speaker	S10JA13A	2		B
	5	6925 1260	PCB ass'y, MA1M 6925 1260	M140403*1	1		B
	6	6925 1890	Battery cover	M340485*1	1		B
	7	6921 5030	Slide knob	M311859-1	1		B
	8	6922 2720	White key set, 7-Key	M312118*1	4		A
	9	6922 2730	White key set, 8-Key	M312118*2	1		A
	10	6922 2750	Black key set, 5-Key	M111726-2	1		A
	11	6922 2740	Black key set, 10-Key	M111726-1	2		A
	12	6922 4000	Key contact rubber, 31-contact	M111765-1	1		B
	13	6922 3990	Key contact rubber, 30-contact	M111764-1	1		B
	14	6925 1310	PCB ass'y, KY	M140402*1	1		B
	15	6925 1600	Plastic foot	M440346-1	2		B
	16	6925 1620	Rubber foot	M440366-1	2		B

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