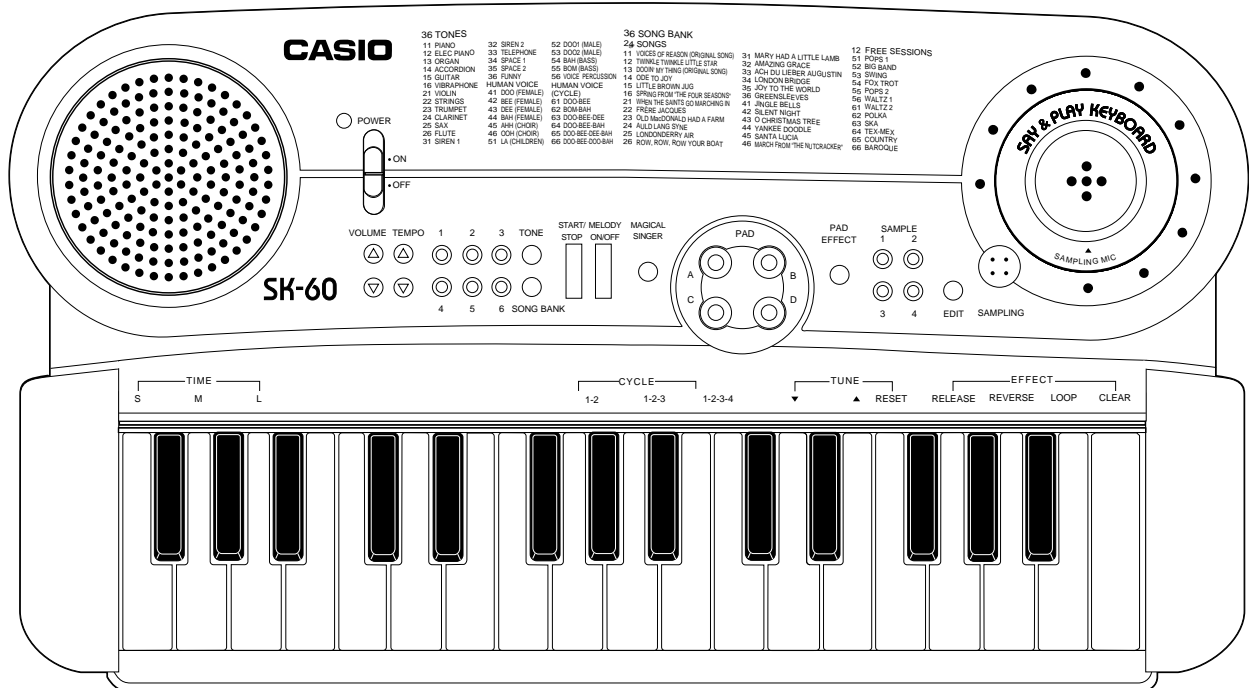


# CASIO®

# Service Manual

(without price)

## SK-60



SK-60

### ELECTRONIC KEYBOARD

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## SPECIFICATIONS

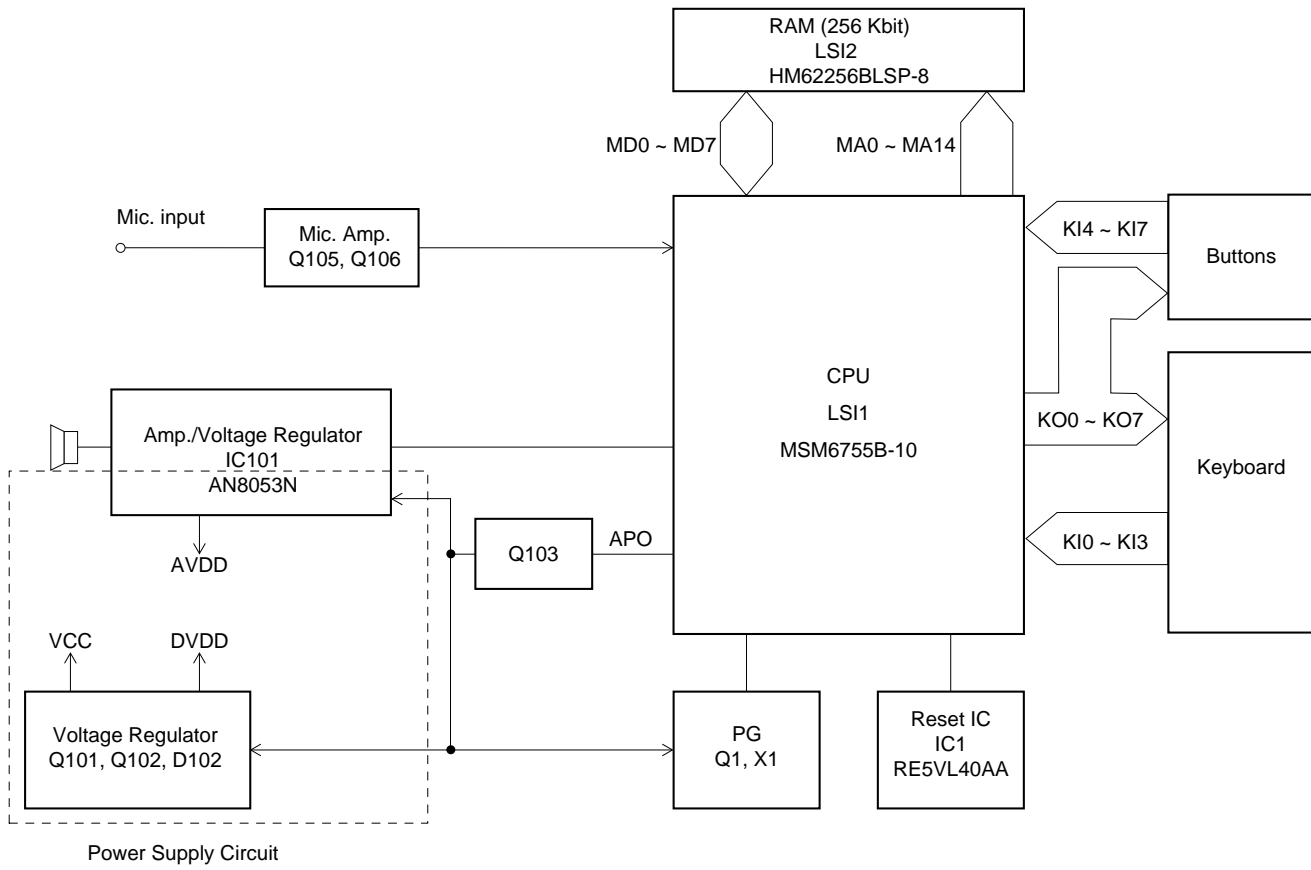
### GENERAL

Number of keys:	32
Polyphonic:	12-note
Preset tones:	18
Human voice tones:	12
Voice cycles:	6
Song bank:	24-tune
Free sessions:	12
Pads:	4
Pad settings:	Sampled sounds, effects, voice percussion
Sampling method:	8-bit Differential Pulse Coded Modulation (DPCM)
Sampling rate:	13,021 kHz
Sampling duration:	2.4 seconds maximum
Tuning control:	Approx. 440 Hz
Built-in speakers:	4 inch dia. 2 W input rating: 2 pcs
Terminals:	7.5 V DC
Power source:	2-way AC or DC source AC: AC adapter DC: 5 AA size dry batteries
Power consumption:	2.0 W
Dimensions(HWD):	416 × 222 × 530 mm (16-3/8 × 8-6/8 × 20-7/8 inches)
Weight:	1.0 kg (2.2 lbs) excluding batteries

### ELECTRICAL

Current drain with 7.5 V DC:	
No sound output	50 mA ± 20%
Maximum volume	200 mA ± 20%
with white keys F4 to C6 pressed in Bah tone (No. 44)	
Power off	80 μA (maximum)
Speaker output level (V <sub>rms</sub> with 4 Ω load):	
with key C4 pressed in Accordion tone	480 mV ± 20%
Volume: maximum	
Minimum operating voltage	5.8 V

## BLOCK DIAGRAM

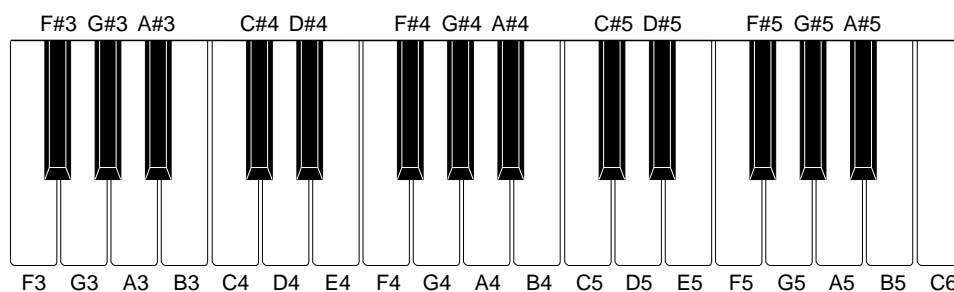


# CIRCUIT DESCRIPTION

## KEY MATRIX

	KI0	KI1	KI2	KI3	KI4	KI5	KI6	KI7
KO0 (SO0)	F3	C#4	A4	F5	A	1	1	Song
KO1 (SO1)	F#3	D4	A#4	F#5	B	2	2	Start/ Stop
KO2 (SO2)	G3	D#4	B4	G5	C	3	3	Melody On/Off
KO3 (SO3)	G#3	E4	C5	G#5	D	4	4	Tone
KO4 (SO4)	A3	F4	C#5	A5	Volume Up	Magical Singer	5	
KO5 (SO5)	A#3	F#4	D5	A#5	Volume Down	Sampling	6	
KO6 (SO6)	B3	G4	D#5	B5	Tempo Up	Edit	Effect	
KO7 (SO7)	C4	G#4	E5	C6	Tempo Down			

## NOMENCLATURE OF KEYS



## CPU (LSI1: MSM6755B-10)

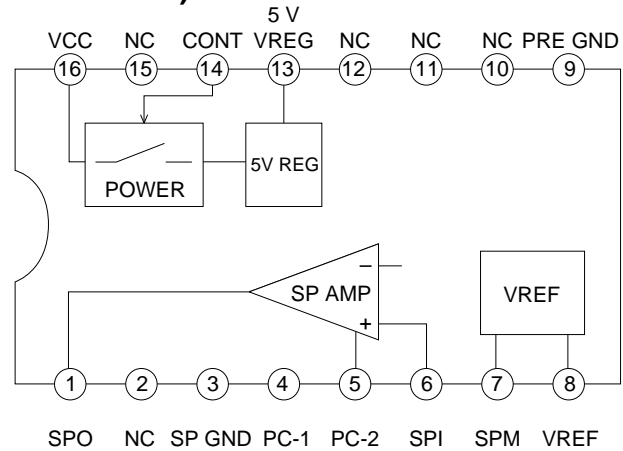
Containing a sound data ROM and a DAC (Digital to Analog Converter), the CPU provides sound waveform in accordance with the pressed key and the selected tone. The CPU also records the voice picked up the microphone, using the built-in ADC (Analog to Digital Converter) and the RAM.

The following table shows the pin functions of LSI1.

Pin No.	Terminal	In/Out	Function
1	MA14	Out	Address bus
2	MWEB	Out	Write enable signal output
3	NC0	—	Not used.
4 ~ 19	MA0 ~ MA13	Out	Address bus
13	MRDB	Out	Read enable signal output
17	MCSB	Out	Chip select signal for the RAM
20 ~ 27	MD0 ~ MD7	In/Out	Data bus
28, 29	NC1, NC2	—	Not used.
30	DGND	In	Ground source
31	DVCC	In	+5 V source
32, 33	XTL0, XTL1	In/Out	20 MHz clock input/output
34	NC3	—	Not used.
35	RSTB	In	Reset signal input
36	RXD	—	Not used. Connected to +5 V.
37	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 built-in DAC/ADC
42, 43	NC5, NC6	—	Not used.
44	DAOR	Out	Sound waveform output
45	NC7	—	Not used.
46	AVdac	In	+5 V source for the built-in DAC/ADC
47	DAOL	—	Not used.
48	REFL	Out	Terminal for the built-in DAC/ADC
49	AGdac	—	Not used.
50	AGadc	In	Ground source for the built-in ADC
51	ANI	In	Analog signal input
52	AVadc	In	+5 V source for the built-in ADC
53	NC8	—	Not used.
54	MOD0	In	Mode selection terminal
55, 56	MOD1, MOD2	In	Mode selection terminal
57	P40	In	APO cancellation signal input
58 ~ 65	KI0 ~ KI7	In	Terminals for key/button input signal
66 ~ 73	KO1 ~ KO8	Out	Terminals for key scan signal
74 ~ 78	—	—	Not used.
79	LVCC	In	+5 V source
80 ~ 95	—	—	Not used.
96	LGND	In	Ground source
97 ~ 100	—	—	Not used.

## AMPLIFIER/VOLTAGE REGULATOR (IC101: AN8053N)

The right figure shows the internal block of IC 101.

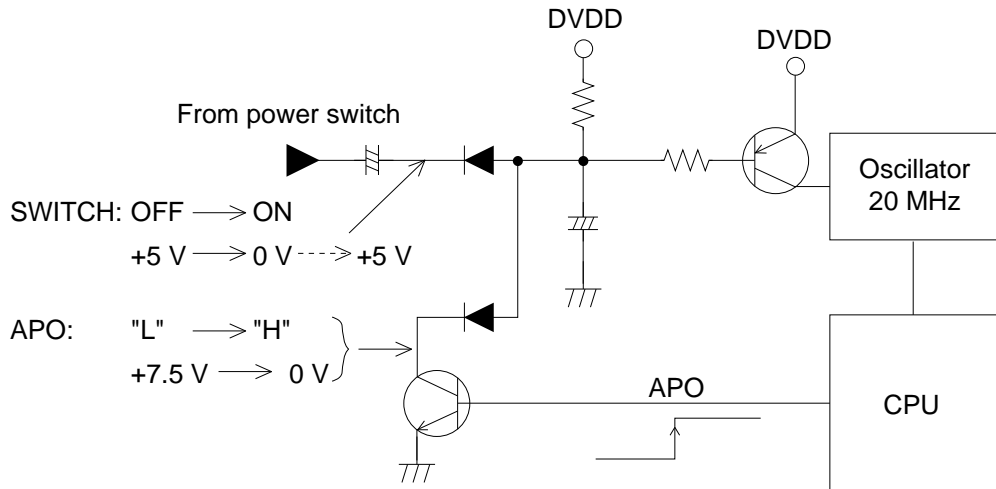


## POWER SUPPLY CIRCUIT

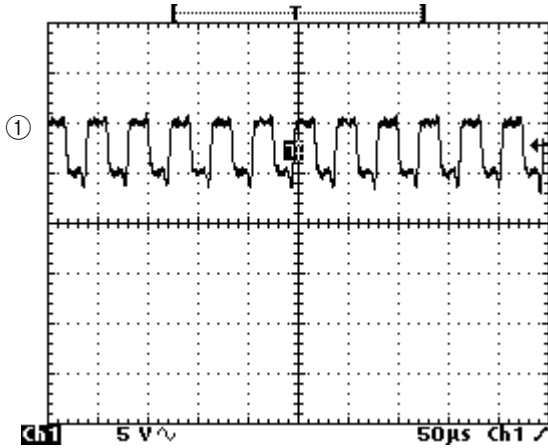
The power supply circuit generates two voltages DVDD (+5 V) and AVDD (+5 V). DVDD (+5 V) is always generated but AVDD (+5 V) is controlled by APO signal output from the CPU.

## OSCILLATOR

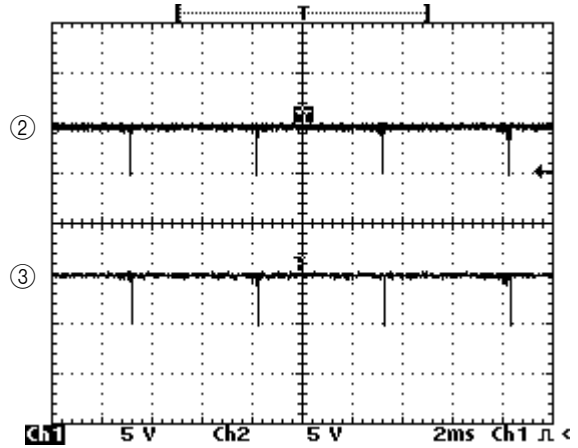
+5 V source of the oscillator is controlled by transistor Q107. When selecting the power switch at on position, transistor Q107 turns on to become 20 MHz oscillation on. To keep the oscillation on, the CPU provides "H" of APO signal.



## MAJOR WAVEFORMS

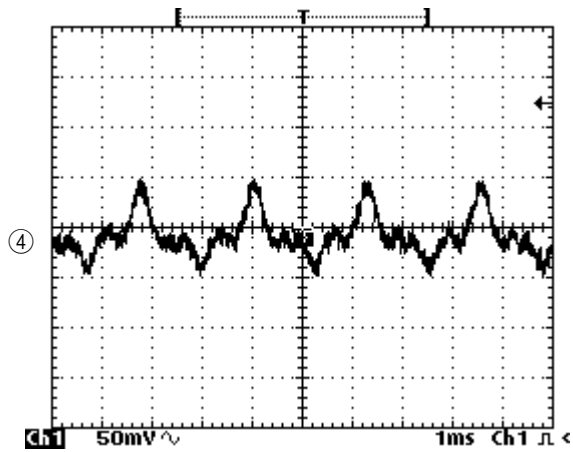


① Clock pulse  
MSM6755B-10 pin 32



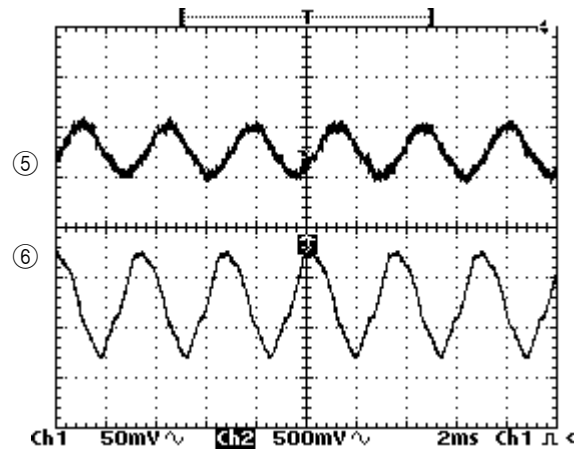
② Key scan signal KO6  
MSM6755B-10 pin 72

③ Key scan signal KO7  
MSM6755B-10 pin 73



④ Sound waveform  
MSM6755B-10 pin 44

Tone: No. 22  
Key: A4

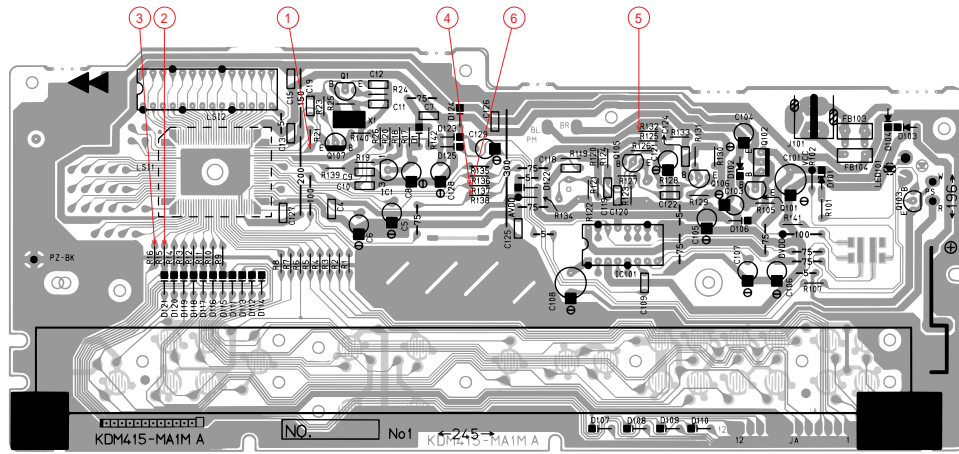


⑤ Mic. amp. input  
Terminal PM-BL

⑥ Mic. amp. output  
MSM6755B-10 pin 51

# PRINTED CIRCUIT BOARD

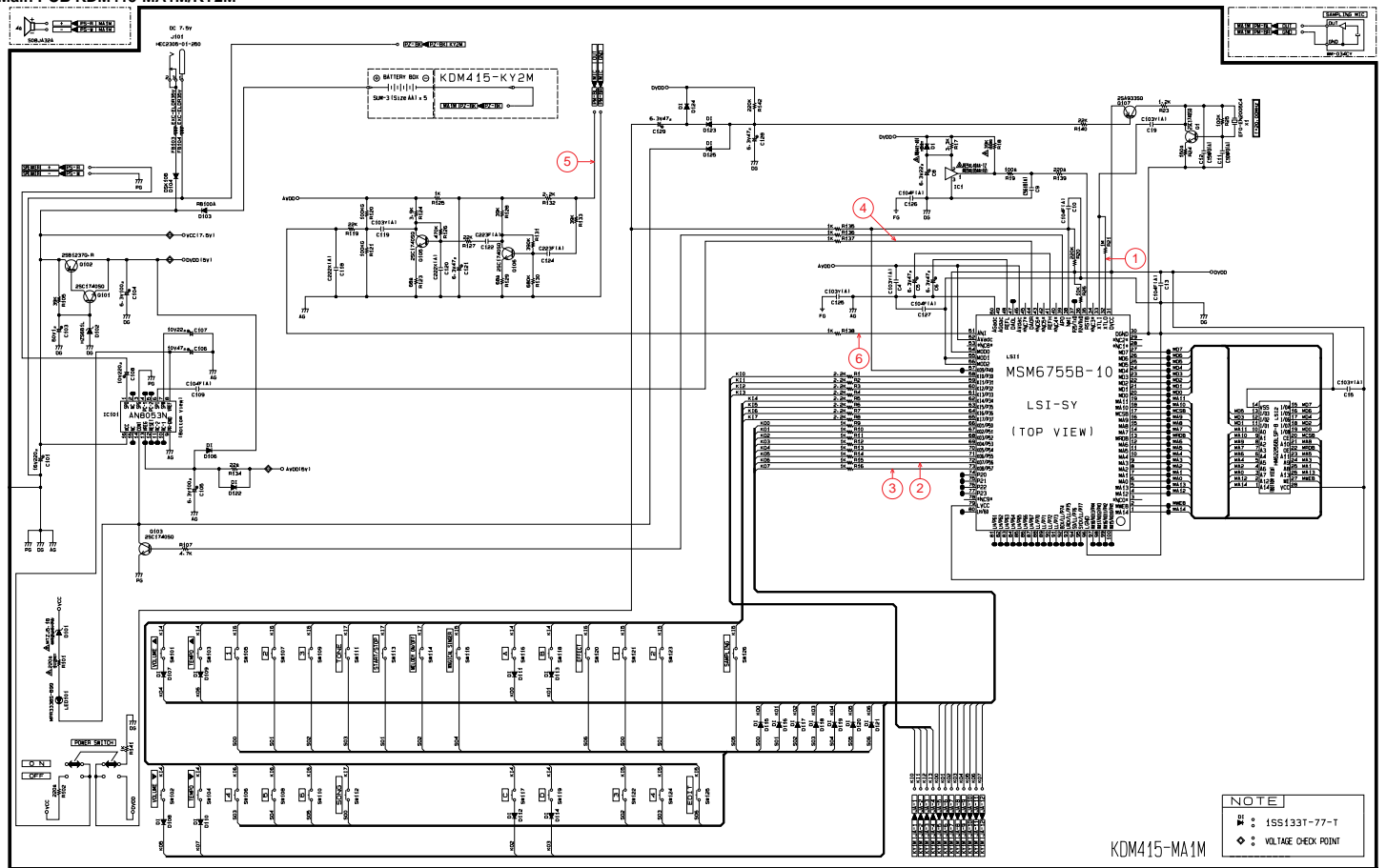
Main PCB KDM415-MA1M



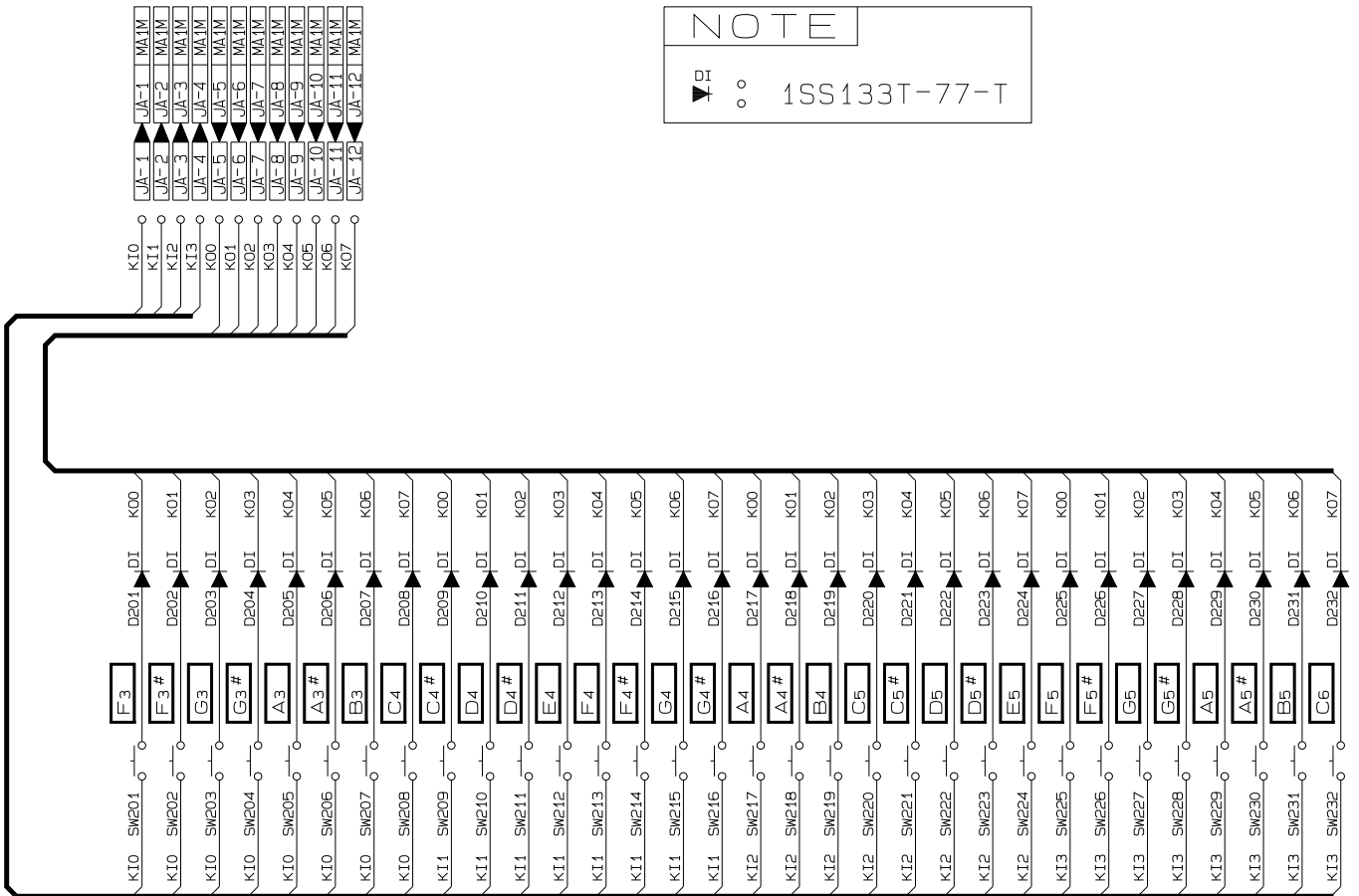


### SCHEMATIC DIAGRAMS

Main PCB KDM415-MA1M/KY2M

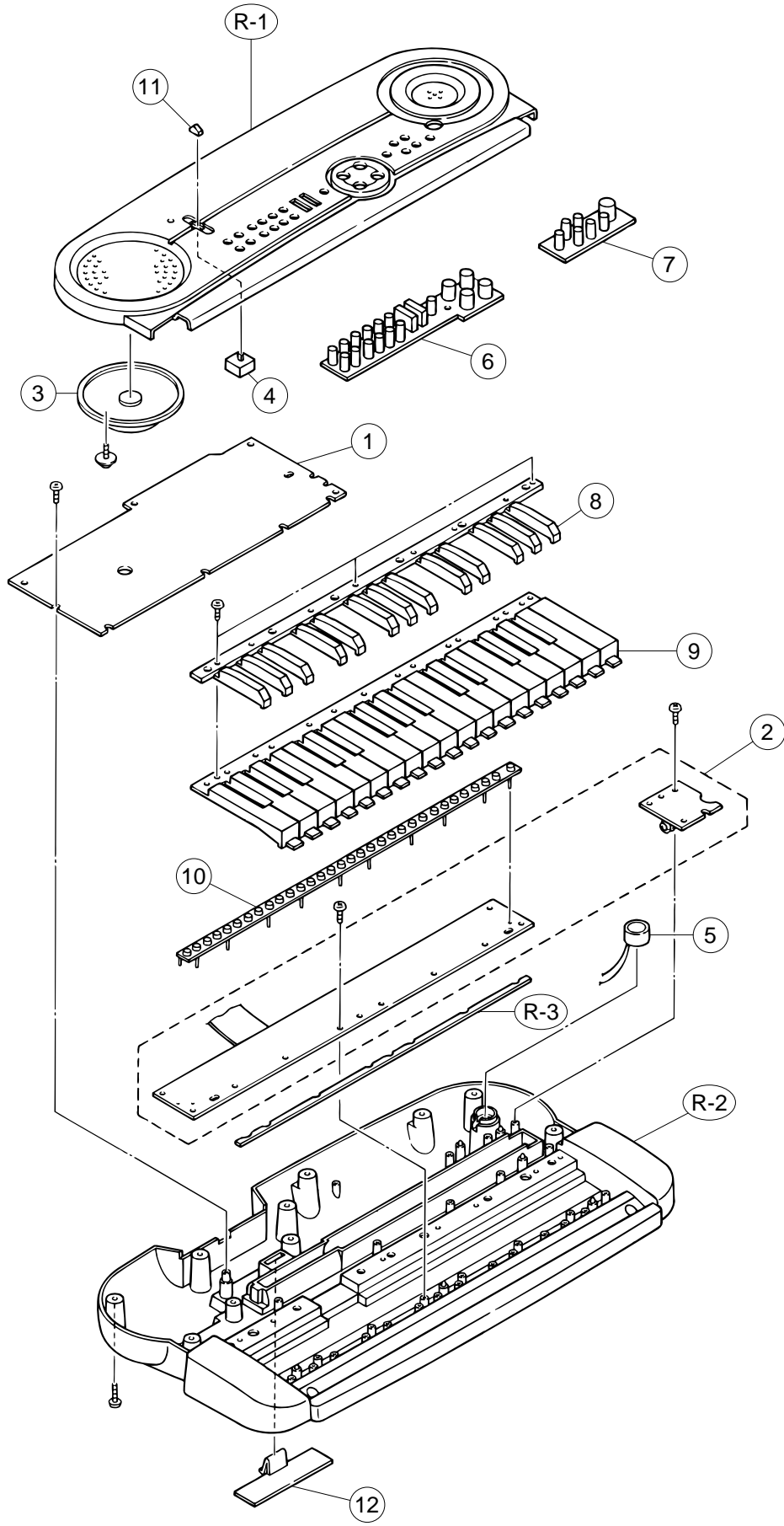


Keyboard PCB KDM415-KY1M



NOTE  
 ▼<sup>PR</sup> 0° 1SS133T-77-T

# EXPLODED VIEW



# PARTS LIST

## SK-60

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 4540	Main PCB ass'y M415-MA1M	M140426*1	1	B
LSI1	2012 3738	LSI, CPU	MSM6755B-10	1	A
LSI2	2012 3731	LSI, RAM	HM62256BLSP-8	1	A
IC1	2105 5922	IC	RE5VL40AA-TZ	1	A
IC101	2114 3269	IC	AN8053N	1	A
	2220 1387	Transistor	2SC1740SQ-TP-T	5	A
Q102	2251 0469	Transistor	2SB1237Q,R-TV6-T	1	A
Q107	2200 2449	Transistor	2SA933SQ-TP-T	1	A
D1	2390 2828	Diode	RB441Q-40T-77	1	B
D101	2360 1554	Diode, Zener	MTZJ5.1B-T77-T	1	B
D102	2360 1085	Diode, Zener	HZS6B1LTD-T	1	B
D103	2390 1323	Diode	RB100A-T32-T	1	C
D104	2390 0371	Diode	DSK10B-BT-T	1	C
	2390 1344	Diode	1SS133T-77-T	20	C
LED101	2370 1106	LED	MPR3338S-B99	1	C
X1	2590 1526	Creamic oscillator	EFO-EN2005C4	1	B
J101	3501 3780	Jack, Power	HEC2305-01-250	1	B
<b>Keyboard PCBs</b>					
2	6925 4550	Keyboard PCB ass'y, M415KY1,2M	M140427*1	1	B
	2390 1344	Diode	1SS133T-77-T	32	C
<b>Mechanical Parts</b>					
3	3831 1064	Speaker	S08JA32A	1	B
4	6909 5890	Slide contact	CSB-12D	1	B
5	3830 9021	Microphone	WM-034CY	1	B
6	6925 4560	Rubber button	M240409-1	1	B
7	6925 4570	Rubber button	M240410-1	1	B
8	6925 4580	Black key set, LNM32	M110553-4	1	A
9	6925 4590	White key set, NM32-B	M140416-1	1	A
10	6925 4600	Key contact rubber	M240448-1	1	A
11	6925 4610	Slide knob	M311360-3	1	B
12	6925 4620	Battery cover	M311200*13	1	B

Notes: Q – Used quantity  
R – Rank

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