

PRELIMINARY
 some parametric limits are subject to change.

M62493FP

DIGITAL SOUND CONTROLLER

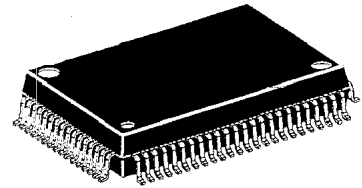
SINGLE CHIP ANALOG SOUND PROCESSOR

DESCRIPTION

Home Audio, Equipment, Radio-Cassette, Recorder, TV.

FEATURES

- 6-input selector
- Input ATT (-5dB) [ON / OFF]
- 5 band graphic equalizer ; 1 band (0,±3.8,±7.6,±13dB)
 4 band (0,±3,±6,±10dB)
- Electric volume 32 steps (.dB to -76dB,-)
- Treble, Bass boost [ON / OFF]
- Surround (Using external delay) [ON / OFF]
- Vocal cancel [ON / OFF]
- Multilingual record switching [ON / OFF]
- SW mode for control of DPL fields 2-lines for Rec output,
 1-line for mute output.
- Input / output of adapter supporting karaoke control.
- Ability fair a single power, ±power. (The outside COM power is necessary when uses single power.)
- Supper woofer output
- Output of spectrum analyzer (L+R)



Outline 80P6N

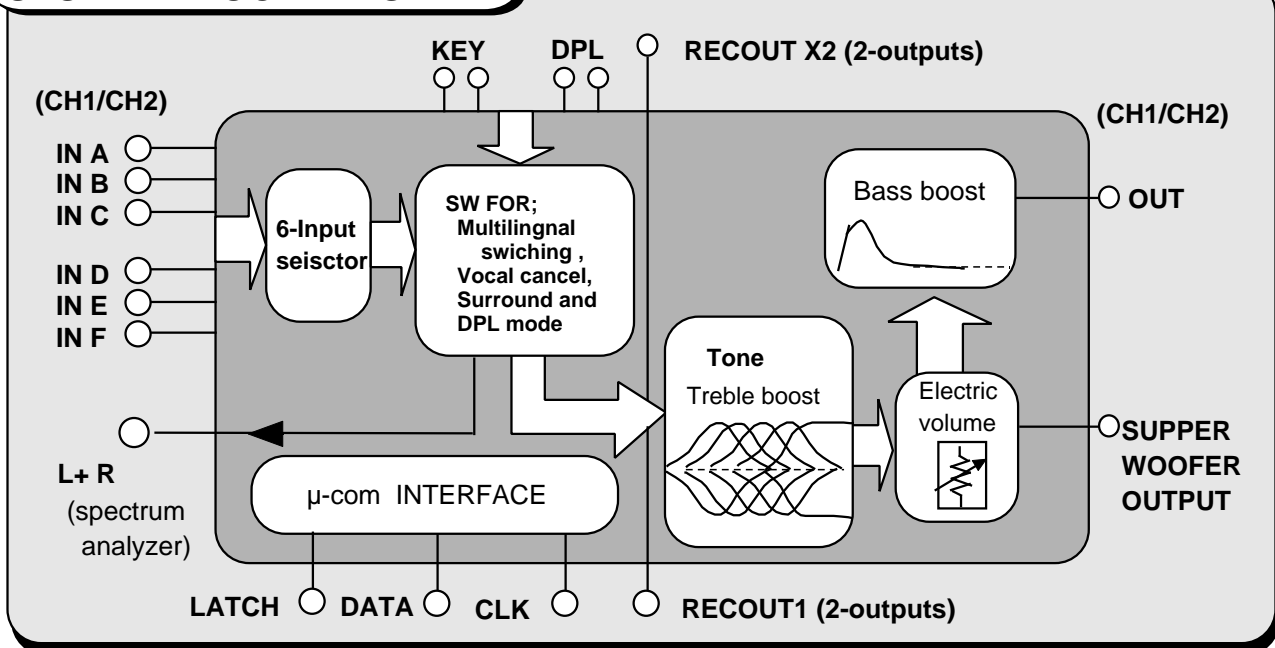
Pitch ; 0.8 mm

Size ; 20.0 mmX14.0mmX
 2.8mm

RECOMMENDED OPERATING CONDITION

Power voltage range ••• ±4.5V to ±7.5V [9V to 15V (When uses single power)]

SYSTEM BLOCK DIAGRAM

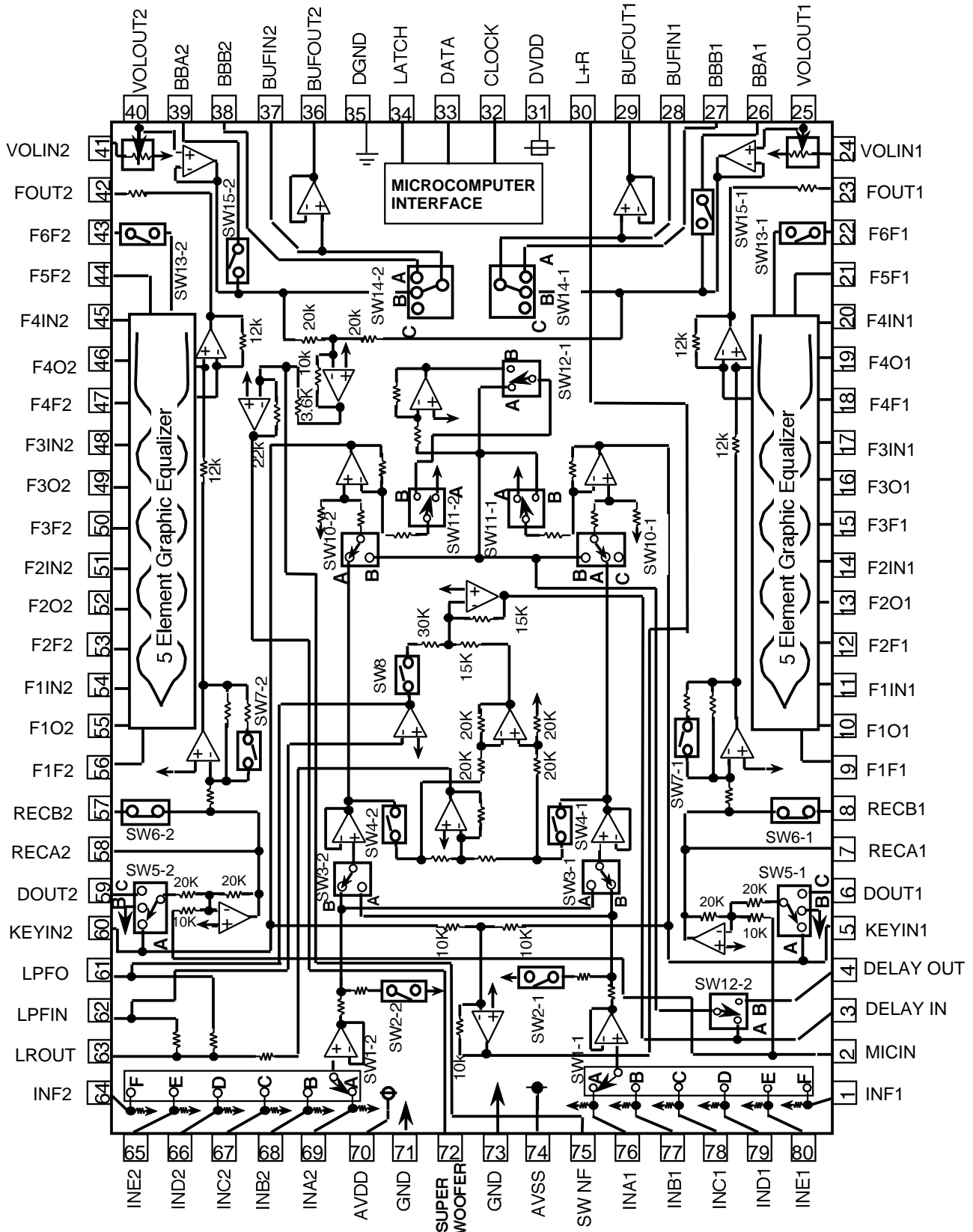


PRELIMINARY
 some parametric limits are subject to change.

M62493FP

DIGITAL SOUND CONTROLLER

PIN CONFIGURATION AND IC INTERNAL BLOCK DIAGRAM



PRELIMINARY
 some parametric limits are subject to change.

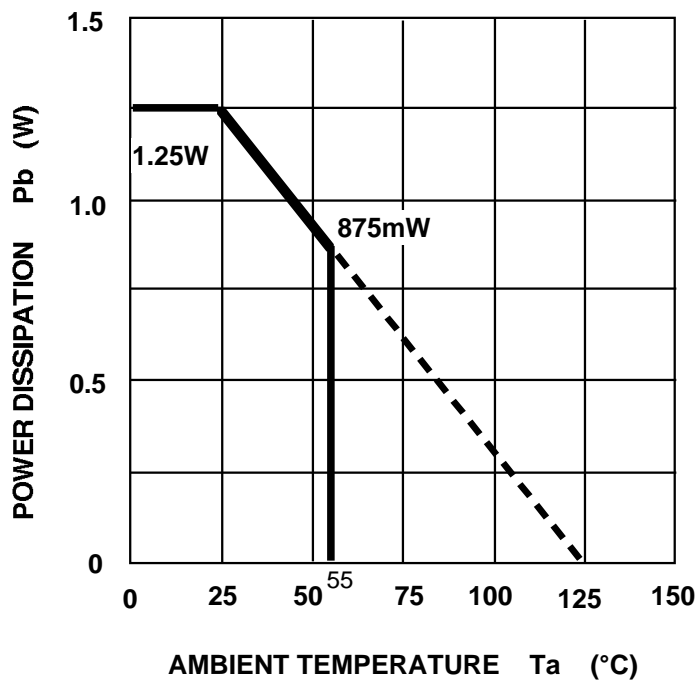
M62493FP

DIGITAL SOUND CONTROLLER

ABSOLUTE MAXIMUM RATINGS

| System | Parameter | Condition | Ratings | Unit |
|-----------|------------------------|---------------------------------|-------------|---------|
| AVDD,AVSS | Analog supply voltage | | ± 7.8 | V |
| DVDD | Digital supply voltage | | 6.0 | V |
| Pd | Power disipation | Ta 2°C | 1250 | mW |
| K | Thermal derating | Ta > 25°C Attached PC Board* | 12.5 | mW / °C |
| Topr | Operating temperature | | -20 to +55 | °C |
| Tstg | Storage temperature | | -40 to +125 | °C |

TYPICAL CHARACTERISTICS THERMAL DERATING



*Note ; PC Board

- PC Board Size
140mm X140mm
- PC Board Thickness
1.6mm
- PC Board Material
Epoxy
- Copper Film Thickness
18µm
- Copper Foil Size
0.25mm X50mm

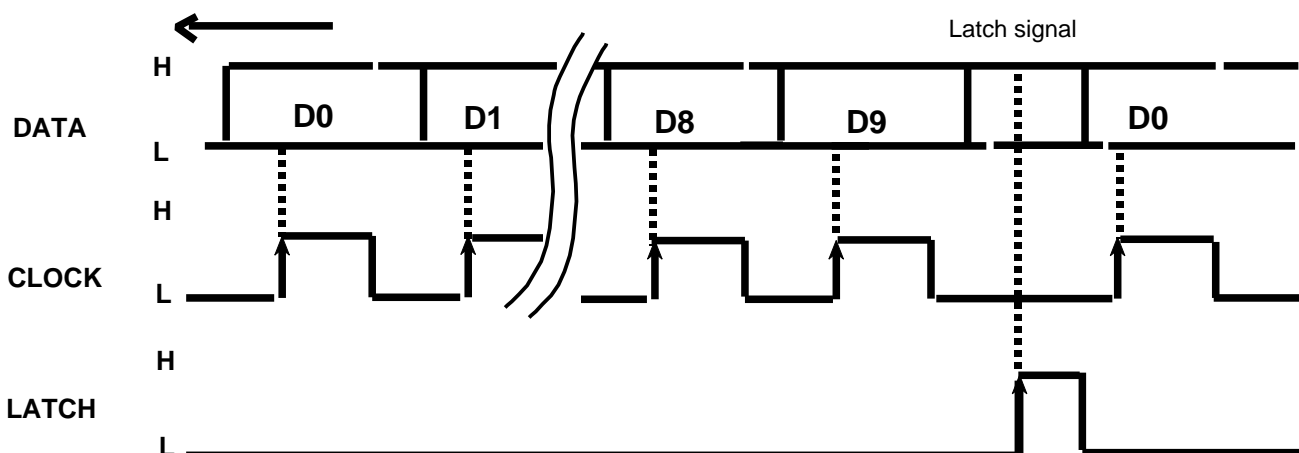
RECOMMENDED OPERATION CONDITION

(Ta = 25°C, unless otherwise noted)

| Parameter | Symbol | Condition | Limits | | | Unit |
|--|--------|-----------|----------|------|----------|------|
| | | | MIN | TYP | MAX | |
| Circuit current of analog positive power voltage | AVDD | Note.1 | 4.5 | 7.0 | 7.5 | V |
| Circuit current of analog negative power voltage | AVSS | Note.1 | -7.5 | -7.0 | -4.5 | V |
| Circuit current of digital power voltage | DVDD | DVDD AVDD | 4.5 | 5.0 | 5.5 | V |
| High-level Input voltage | VIH | | DVDD-0.7 | — | VDD | V |
| Low-level Input voltage | VIL | | 0 | — | DGND+0.7 | V |

Note 1 ; The sequence of the power supply is as follows.
AVDD → AVSS → DVDD

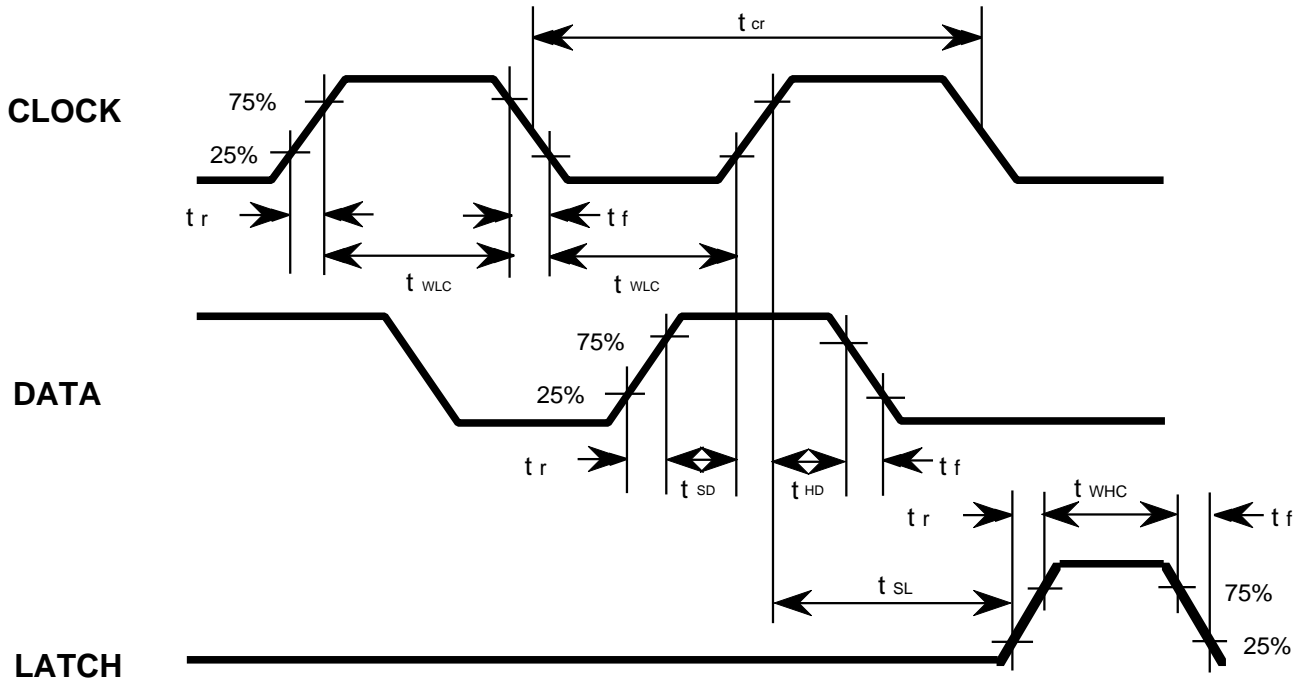
RELATIONSHIPS BETWEEN DATA AND CLOCK



DATA reading mode ;
The rising edge of the CLOCK signal.

LATCH reading mode ;
The rising edge of the LATCH signal.

CLOCK AND DATA TIMING



DIGITAL BLOCK TIMING REGULATION

| Symbol | Parameter | Limirs | | | Unit |
|-----------|------------------------------|--------|-----|-----|------|
| | | Min | typ | Max | |
| t_{cr} | CLOCK cycle time | 4 | - | - | μsec |
| t_{whc} | CLOCK pulse width ("H"level) | 1.6 | - | - | |
| t_{wlc} | CLOCK pulse width ("L"level) | 1.6 | - | - | |
| t_r | CLOCK,DATA,LATCH rise time | - | - | 0.4 | |
| t_f | CLOCK,DATA,LATCH fall time | - | - | 0.4 | |
| t_{sd} | DATA setup time | 0.8 | - | - | |
| t_{hd} | DATA hold time | 0.8 | - | - | |
| t_{sl} | LATCH setup time | 1 | - | - | |
| t_{whl} | LATCH pulse width | 1.6 | - | - | |

DATA INPUT FORMAT

5 kinds of input format option are available by changing slot setting of D5,D6,andD7.
(When the IC is powered up, the internal setting are not fixed.)

← **Input direction**

**SLOTS OF INPUT
FORMAT SELECTION**

**FIXATION BIT
OF ADDRESS**

| | DO1 | D11 | D21 | D31 | D41 | D51 | D6 | D7 | D8 | D9 |
|--------------|---|--|---|---|---|-----|----|----|----|----|
| (1) | Input ATT 1 : -5dB 0 : 0dB | Tone ATT 1 : -6dB 0 : 0dB | For the multiplex software cf. (8) Setting code | | For the function software cf. (11) Setting code | | 0 | 0 | 1 | 1 |
| (2) | For Input Selector cf. (10) Setting code | | LOW BOOST 1: ON sw15-1,2 : ON sw14-1,2: : A 0: OFF | HI BOOST 1: ON sw13-1,2 : ON 0: OFF | SW12-2 1 : B-SIDE 0 : A-SIDE | | 0 | 1 | 1 | 1 |
| (3) | For Tone Control cf. (5) Setting code | | For Tone Boost / cut cf. (6) Setting code | | | 1 | 0 | 1 | 1 | |
| (4-1) | For Master Volume cf. (7) Setting code | | | | | 0 | 1 | 1 | 1 | 1 |
| (4-2) | For REC Input Signal cf. (9) Setting code | | REC OUTPUT MUTE 1 : ON sw6-1,2 : OFF 0 : OFF | 0 | 0 | 1 | 1 | 1 | 1 | 1 |

**(5) Setting code
(Tone control)**

| | D03 | D13 | D23 |
|-------------|-----|-----|-----|
| Tone 1 (F1) | 0 | 0 | 1 |
| Tone 2 (F2) | 0 | 1 | 0 |
| Tone 3 (F3) | 0 | 1 | 1 |
| Tone 4 (F4) | 1 | 0 | 0 |
| Tone 5 (F5) | 1 | 0 | 1 |

**(6) Setting code
(Tone boost / cut and bass boost)**

| | F1 | F2 to F5 | D33 | D43 | D53 |
|--------------|---------|----------|-----|-----|-----|
| BOOST | +0 dB | +0 dB | 0 | 0 | 0 |
| | +3.8 dB | +3 dB | 0 | 0 | 1 |
| | +7.6 dB | +6 dB | 0 | 1 | 0 |
| | +13 dB | +10 dB | 0 | 1 | 1 |
| CUT | -0 dB | -0 dB | 1 | 0 | 0 |
| | -3.8 dB | -3 dB | 1 | 0 | 1 |
| | -7.6 dB | -6 dB | 1 | 1 | 0 |
| | -13 dB | -10 dB | 1 | 1 | 1 |

Note; Do not input other data than the above.

PRELIMINARY
some parametric limits are subject to change.

M62493FP

DIGITAL SOUND CONTROLLER

(7) SETTING CODE (MASTER VOLUME)

| ATT | D04 | D14 | D24 | D34 | D44 |
|----------|-----|-----|-----|-----|-----|
| - 0.0dB | 0 | 0 | 0 | 0 | 0 |
| - 2.0dB | 1 | 0 | 0 | 0 | 0 |
| - 4.0dB | 0 | 1 | 0 | 0 | 0 |
| - 6.0dB | 1 | 1 | 0 | 0 | 0 |
| - 8.0dB | 0 | 0 | 1 | 0 | 0 |
| - 10.0dB | 1 | 0 | 1 | 0 | 0 |
| - 12.0dB | 0 | 1 | 1 | 0 | 0 |
| - 14.0dB | 1 | 1 | 1 | 0 | 0 |
| - 16.0dB | 0 | 0 | 0 | 1 | 0 |
| - 18.0dB | 1 | 0 | 0 | 1 | 0 |
| - 20.0dB | 0 | 1 | 0 | 1 | 0 |
| - 22.0dB | 1 | 1 | 0 | 1 | 0 |
| - 24.0dB | 0 | 0 | 1 | 1 | 0 |
| - 26.0dB | 1 | 0 | 1 | 1 | 0 |
| - 28.0dB | 0 | 1 | 1 | 1 | 0 |
| - 30.0dB | 1 | 1 | 1 | 1 | 0 |
| - 32.0dB | 0 | 0 | 0 | 0 | 1 |
| - 34.0dB | 1 | 0 | 0 | 0 | 1 |
| - 36.0dB | 0 | 1 | 0 | 0 | 1 |
| - 38.0dB | 1 | 1 | 0 | 0 | 1 |
| - 40.0dB | 0 | 0 | 1 | 0 | 1 |
| - 42.0dB | 1 | 0 | 1 | 0 | 1 |
| - 44.0dB | 0 | 1 | 1 | 0 | 1 |
| - 48.0dB | 1 | 1 | 1 | 0 | 1 |
| - 52.0dB | 0 | 0 | 0 | 1 | 1 |
| - 56.0dB | 1 | 0 | 0 | 1 | 1 |
| - 60.0dB | 0 | 1 | 0 | 1 | 1 |
| - 64.0dB | 1 | 1 | 0 | 1 | 1 |
| - 68.0dB | 0 | 0 | 1 | 1 | 1 |
| - 72.0dB | 1 | 0 | 1 | 1 | 1 |
| - 76.0dB | 0 | 1 | 1 | 1 | 1 |
| - | 1 | 1 | 1 | 1 | 1 |

(8) MULTILINGUAL RECORD CODE

| | D21 | D31 | SW3-1 | SW3-2 |
|--------------------|-----|-----|-------|-------|
| NORMAL | 0 | 0 | B | B |
| CH1 only | 0 | 1 | B | A |
| CH2 only | 1 | 0 | A | B |
| CH1 / CH2 Exchange | 1 | 1 | A | A |

(9) REC INPUT SIGNAL CHANGE SETTING CODE

| INPUT SIGNAL | D04-2 | D14-2 | SW5-1 SW5-2 |
|--------------|-------|-------|----------------|
| THROUGH | 0 | 0 | A |
| DPL | 1 | 0 | C |
| GND | 0 | 1 | B |

(10) INPUT SELECTOR CODE

| SELECTOR | D02 | D12 | D22 |
|----------|-----|-----|-----|
| A | 0 | 0 | 0 |
| B | 0 | 0 | 1 |
| C | 0 | 1 | 0 |
| D | 0 | 1 | 1 |
| E | 1 | 0 | 0 |
| F | 1 | 0 | 1 |

(11) FUNCTION CODE

| INPUT SIGNAL | D41 | D51 | sw4-1 sw4-2 | sw8 | sw10-1 | sw10-2 | sw11-1 sw11-2 | sw12-1 |
|--------------------|-----|-----|----------------|-----|--------|--------|------------------|--------|
| NORMAL | 0 | 0 | OFF | OFF | A | A | A | A |
| VOCAL CANCELLATION | 0 | 1 | ON | ON | B | B | A | A |
| SURROUND | 1 | 0 | ON | OFF | A | A | B | B |

Note ; Do not input other data than the above.

ELECTRICAL CHARACTERISTICS

(Ta=25°C, AVdd=7V,AVss= -7V,DVdd=5V,f=1kHz,unless otherwise noted.
Tone control and boost are set to 0dB)

(1) POWER SUPPLY CHARACTERISTICS

| Parameter | Symbol | Test conditions | Limits | | | Unit |
|---------------------------|------------------|--|--------|-----|-----|------|
| | | | Min | typ | Max | |
| Circuit current (Analog+) | A _{Idd} | Current at pin 70 with AVdd=7.0V,AVss= -7.0V No signal | — | 50 | 58 | mA |
| Circuit current (Analog-) | A _{Iss} | Current at pin 74 with AVdd=7.0V,AVss= -7.0V No signal | -58 | -50 | — | mA |
| Circuit current (Digital) | D _{Idd} | Current at pin 31 with DVdd=5.0V No signal | — | 0.3 | 1.2 | mA |

(2) INPUT / OUTPUT CHARACTERISTICS

| Parameter | Symbol | Test conditions | Limits | | | Unit | |
|----------------------------|---------------------|---|-------------|------|------|------------------|-------------------|
| | | | Min | typ | Max | | |
| Input resistance | R _{in} | 76pin,69Pin | 30 | 60 | 120 | K | |
| Max. input voltage | V _{IM} | Input pin (76,64), Output pin (29,36) RL =10K , THD=1% | 3.0 | 4.0 | — | V _{rms} | |
| Output pin voltage | V _{odc} | 29pin,36pin, No signal | -0.4 | 0.0 | 0.4 | V | |
| | V _{recdc} | 7pin,58pin, No signal | -0.4 | 0.0 | 0.4 | V | |
| Pass gain | G _v | V _{in} =1V _{rms} ,FLAT,(76,69pin)-(29, 36pin)gains. | -2.0 | 0 | 2.0 | dB | |
| Max. attenuation | ATT | V _o =1V _{rms} ,29,36pin JIS-A filter | — | -85 | -77 | dB | |
| Output noise voltage | V _{ono} | JIS-A filter No signal,Rg=10K | (29,36)pin | — | 10.0 | 24 | μV _{rms} |
| | V _{recno} | FLAT condition | (7,58)pin | — | 10.0 | 20 | μV _{rms} |
| Distortion factor | THD | 29pin,36pin, BW=400 to 30kHz V _o =0.5V _{rms} , RL=10k | — | 0.01 | 0.05 | % | |
| | THD _{recA} | 7pin,58pin, BW=400 to 30kHz V _o =0.5V _{rms} , RL=30k | — | 0.01 | 0.05 | % | |
| | THD _{recB} | 8pin,57pin, BW=400 to 30kHz V _o =0.5V _{rms} , RL=51k | — | 0.01 | 0.05 | % | |
| Crosstalk between channels | CT | V _o =0.5V _{rms} , RL=10K ,JIS-A 29pin - 36pin gains Rg=10K 2pin GND | — | -70 | -55 | dB | |
| | CT _{rec} | V _o =0.5V _{rms} , RL=30K ,JIS-A 7pin - 58pin gains Rg=10K 2pin GND | — | -70 | -55 | dB | |

(3) TONE CONTROL CHARACTERISTICS

| Parameter | Symbol | | Test condition | Limits | | | Unit | |
|---------------------------------|---------|---------|---|---|-------|------|-------|----|
| | | | | Min | typ | Max | | |
| Voltage Gain (Tone control) | Gboost1 | F1 | 3.8dB | f=1kHz, Vo=1Vms Input pin (6,59) - Output pin(23,42) gains. | 2.3 | 3.8 | 5.3 | dB |
| | | F2 to 5 | 3 dB | | 1.5 | 3 | 4.5 | |
| | Gboost2 | F1 | 7.6dB | | 6.1 | 7.6 | 9.1 | dB |
| | | F2 to 5 | 6 dB | | 4.5 | 6 | 7.5 | |
| | Gboost3 | F1 | 13 dB | | 11.0 | 13 | 15.0 | dB |
| | | F2 to 5 | 10 dB | | 8.0 | 10 | 12.0 | |
| | Gcut1 | F1 | -3.8dB | | -5.3 | -3.8 | -2.3 | dB |
| | | F2 to 5 | -3 dB | | -4.5 | -3 | -1.5 | |
| | Gcut2 | F1 | -7.6dB | | -9.1 | -7.6 | -6.1 | dB |
| | | F2 to 5 | -6 dB | | -7.5 | -6 | -4.5 | |
| | Gcut3 | F1 | -13dB | | -15.0 | -13 | -11.0 | dB |
| | | F2 to 5 | -10 dB | | -12.0 | -10 | -8.0 | |
| Voltage Gain (HI Boost) | Hboost | | Input pin (6,59) - Output pin (23,42) gains. | 6.5 | 8 | 9.5 | dB | |
| Balance between channels | BALton | | Each of boost,+10,-10dB conditions. | -1.5 | 0 | +1.5 | dB | |

(4) CH1 / CH2 MIX SIGNAL

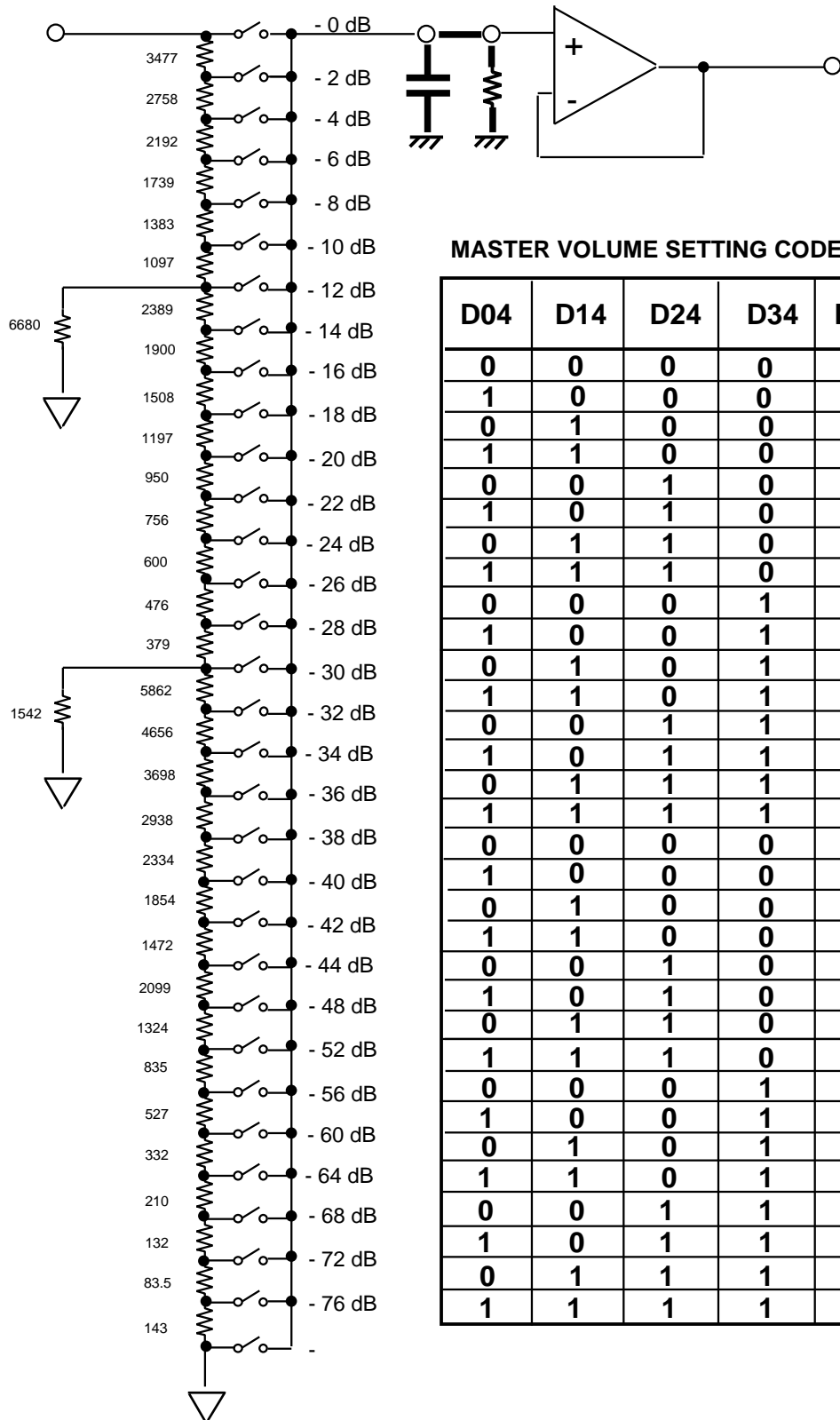
| Parameter | | Symbol | Test conditions | Limits | | | Unit |
|----------------------------|-------------------------|--------|---|--------|------|------|-------|
| | | | | Min | typ | Max | |
| Supper woofer output | Gain | GvSW | Condition same as Gv RL=30k | 8 | 10 | 12 | dB |
| | Distortion factor | THDSW | BW=400 to 30kHz Vo=0.5Vrms , RL=30K | — | 0.03 | 0.15 | % |
| | Output noise voltage | VnoSW | Condition same as Vono No signal, JIS-A filter | — | 70 | 170 | μVrms |
| L+R Output voltage | | GvLR | Condition same as Gv RL=51k | -2 | 0 | 2 | dB |

PRELIMINARY
 some parametric limits are subject to change.

M62493FP

DIGITAL SOUND CONTROLLER

MASTER VOLUME CIRCUIT



MASTER VOLUME SETTING CODE

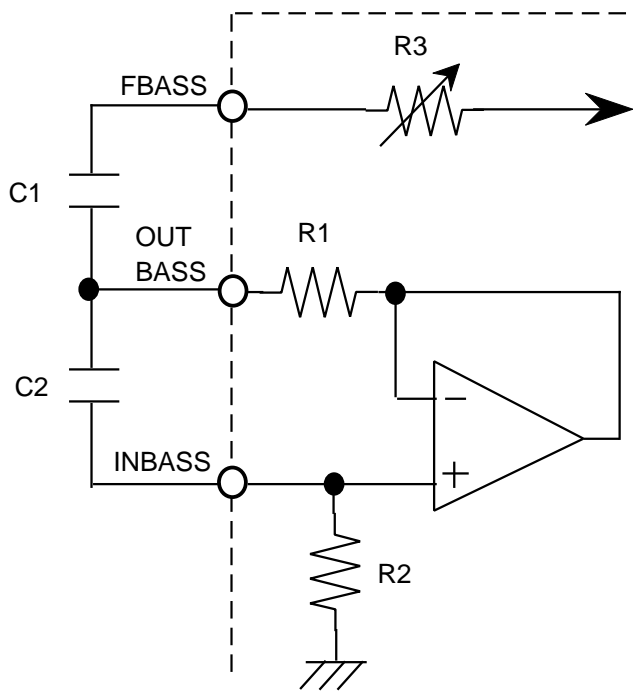
| D04 | D14 | D24 | D34 | D44 | ATT |
|-----|-----|-----|-----|-----|----------|
| 0 | 0 | 0 | 0 | 0 | - 0.0dB |
| 1 | 0 | 0 | 0 | 0 | - 2.0dB |
| 0 | 1 | 0 | 0 | 0 | - 4.0dB |
| 1 | 1 | 0 | 0 | 0 | - 6.0dB |
| 0 | 0 | 1 | 0 | 0 | - 8.0dB |
| 1 | 0 | 1 | 0 | 0 | - 10.0dB |
| 0 | 1 | 1 | 0 | 0 | - 12.0dB |
| 1 | 1 | 1 | 0 | 0 | - 14.0dB |
| 0 | 0 | 0 | 1 | 0 | - 16.0dB |
| 1 | 0 | 0 | 1 | 0 | - 18.0dB |
| 0 | 1 | 0 | 1 | 0 | - 20.0dB |
| 1 | 1 | 0 | 1 | 0 | - 22.0dB |
| 0 | 0 | 1 | 1 | 0 | - 24.0dB |
| 1 | 0 | 1 | 1 | 0 | - 26.0dB |
| 0 | 1 | 1 | 1 | 0 | - 28.0dB |
| 1 | 1 | 1 | 1 | 0 | - 30.0dB |
| 0 | 0 | 0 | 0 | 1 | - 32.0dB |
| 1 | 0 | 0 | 0 | 1 | - 34.0dB |
| 0 | 1 | 0 | 0 | 1 | - 36.0dB |
| 1 | 1 | 0 | 0 | 1 | - 38.0dB |
| 0 | 0 | 1 | 0 | 1 | - 40.0dB |
| 1 | 0 | 1 | 0 | 1 | - 42.0dB |
| 0 | 1 | 1 | 0 | 1 | - 44.0dB |
| 1 | 1 | 1 | 0 | 1 | - 48.0dB |
| 0 | 0 | 0 | 1 | 1 | - 52.0dB |
| 1 | 0 | 0 | 1 | 1 | - 56.0dB |
| 0 | 1 | 0 | 1 | 1 | - 60.0dB |
| 1 | 1 | 0 | 1 | 1 | - 64.0dB |
| 0 | 0 | 1 | 1 | 1 | - 68.0dB |
| 1 | 0 | 1 | 1 | 1 | - 72.0dB |
| 0 | 1 | 1 | 1 | 1 | - 76.0dB |
| 1 | 1 | 1 | 1 | 1 | - |

PRELIMINARY
 Notice ; This is not a final specification.
 some parametric limits are subject to change.

M62493FP

FUNCTION DESCRIPTION

(1) TONE CONTROLLER EQUIVALENT CIRCUIT



Center frequency

$$f_0 = 1 / 2 \sqrt{C1 \cdot C2 \cdot R1 \cdot R2} \text{ [Hz]}$$

$$Q = \sqrt{C2 (R1 \cdot R2) / C1 (R1 + R3)^2}$$

| | F1 | F2 | F3 | F4 | F5 |
|----|-------|-------|-------|-------|----|
| R1 | 1.49k | 1.49k | 1.49k | 1.49k | — |
| R2 | 306k | 306k | 306k | 306k | — |

Fig.1 ; The equivalent circuit of tone controller.

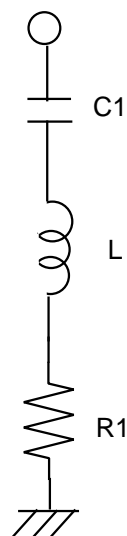


Fig.2 is equivalent to Fig.1.
 To convert component constants,
 the equation below is used.

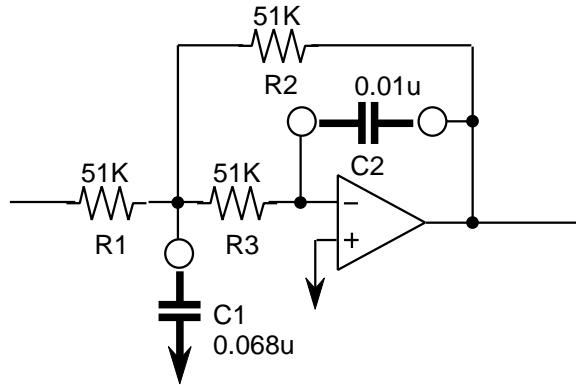
$$L = C2 \cdot R1 \cdot R2$$

Fig.2 ; The equivalent circuit using L

PRELIMINARY
 Notice ; This is not a final specification.
 some parametric limits are subject to change.

M62493FP

(2) VOCAL CUT L.P.F EQUIVALENT CIRCUIT



$$T(s) = \frac{A\omega_0^2}{s^2 + \frac{\omega_0}{Q}s + \omega_0^2}$$

$$Q = \frac{\sqrt{R_1 \cdot R_2 \cdot C_1 \cdot C_2}}{R_2 \cdot C_2 + R_1 \cdot C_2 + \frac{R_1 \cdot R_2}{R_3} C_2}$$

$$\left\{ \begin{array}{l} A = -\frac{R_1}{R_2} \\ \frac{\omega_0}{Q} = \frac{1}{C_1} \left(\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} \right) \\ \omega_0^2 = \frac{1}{R_1 \cdot R_2 \cdot C_1 \cdot C_2} \end{array} \right.$$

At the time of ; $R_1=R_2=R_3$,
 Become ; $A = -1$

$$f_c = \frac{1}{2 \sqrt{R_1 \cdot R_2 \cdot C_1 \cdot C_2}}$$

$$Q = \frac{1}{3} \sqrt{\frac{C_1}{C_2}} \quad (\text{Using } Q < Z)$$

At the time of ; $R_1=R_2=R_3=51k$,
 $C_1=0.068\mu F, C_2=0.01\mu F$
 Become ; $f_c \div 120\text{Hz}$
 $Q \div 0.87$

Pay attention to In-Output turning over, because using turnig over mode.

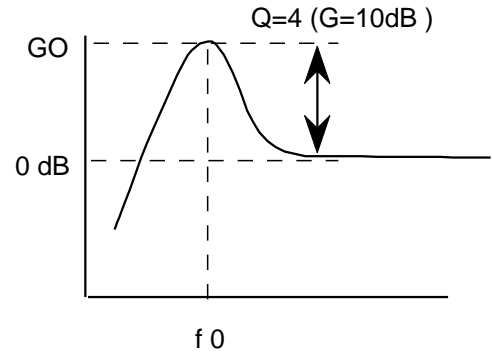
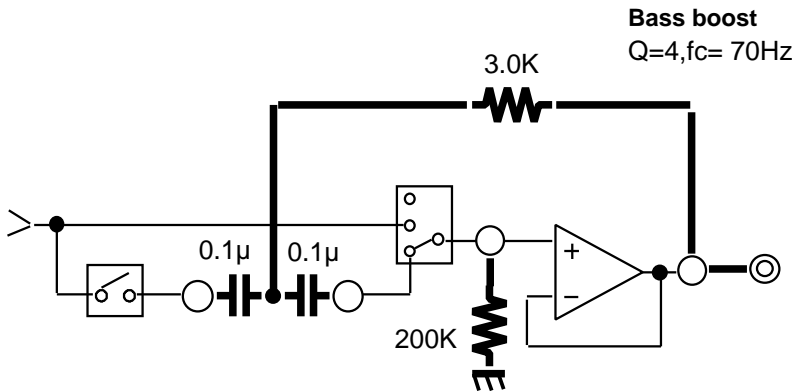
PRELIMINARY

Notice ; This is not a final specification.
some parametric limits are subject to change.

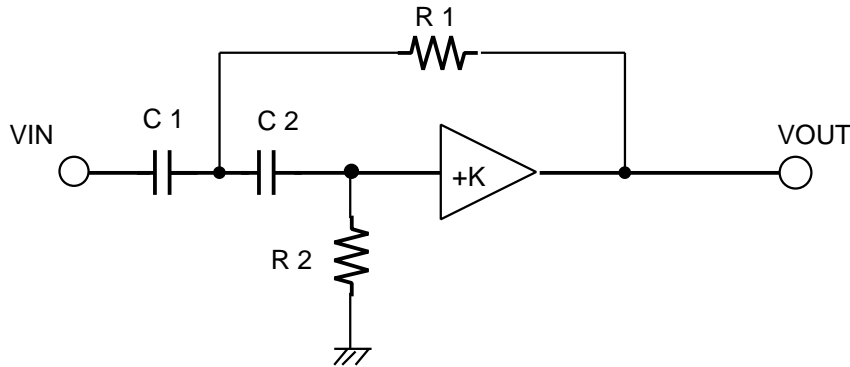
M62493FP

DIGITAL SOUND CONTROLLER

(3) BASS BOOST EQUIVALENT CIRCUIT



Original return type 2 dimensions HPF circuit of Bass boost.



Amplitude characteristic of HPF (Reference)

| Q | GO |
|----|-----------|
| 1 | 0 to 1 dB |
| 2 | 6 dB |
| 4 | 10 dB |
| 5 | 13 dB |
| 10 | 20 dB |

Communication function is ;

$$\frac{V_{OUT}}{V_{IN}} = \frac{Ks^2}{s^2 + s \left[\frac{1}{R_2C_1} + \frac{1}{R_2C_2} + (1-K) \frac{1}{R_1C_1} \right] + \frac{1}{R_1R_2C_1C_2}}$$

$$\omega_0^2 = \frac{1}{R_1R_2C_1C_2}$$

$$Q = \frac{1}{\sqrt{\frac{R_1C_1}{R_2C_2}} + \sqrt{\frac{R_1C_2}{R_2C_1}} + (1-K)\sqrt{\frac{R_2C_2}{R_1C_1}}}$$

Bass boost consists of original return type 2 dimensions HPF circuit of upper figure.

To the following showing an example of method of design calculation of Bass boost.

At the time of ;
 $C_1 = C_2 = C_f, K = +1$

The upper expression becomes ;
 $R_f = 1 / (\omega_0 C_f) \dots (1)$

$R_1 = R_f / 2Q \dots (2)$

$R_2 = 2Q R_f \dots (3)$

When cut off frequency is 70Hz ,
 $\omega_0 = 2\pi \times 70\text{Hz}, Q=4, \text{condition.}$

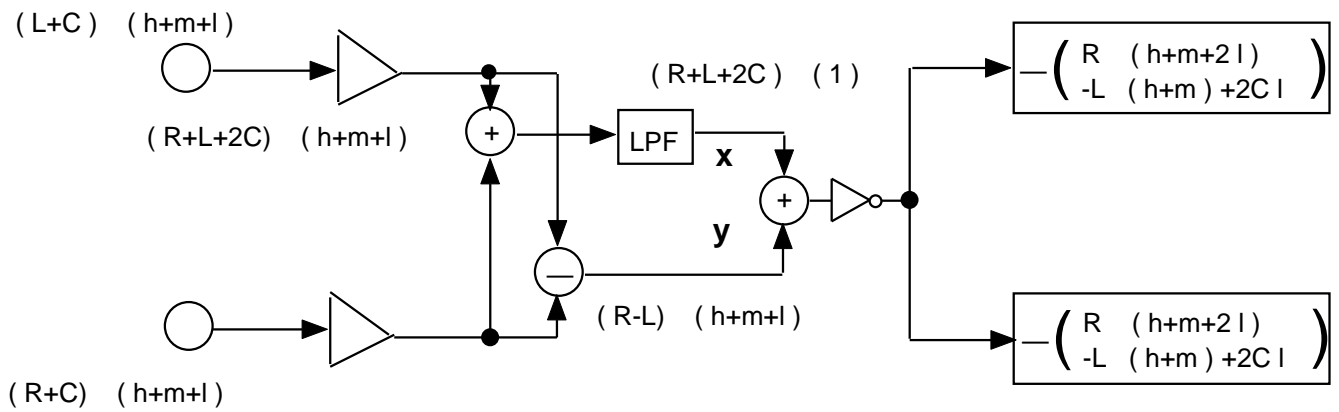
At the time of ; $C_1=C_2=C_f=0.1\mu\text{F}$
 From ; (1),(2),(3)
 Become ; $R_f=22.7\text{K}$
 $R_1 = 2.84\text{K}$
 $R_2 = 182\text{K}$

R_1, R_2 is about 3.0K , 200K

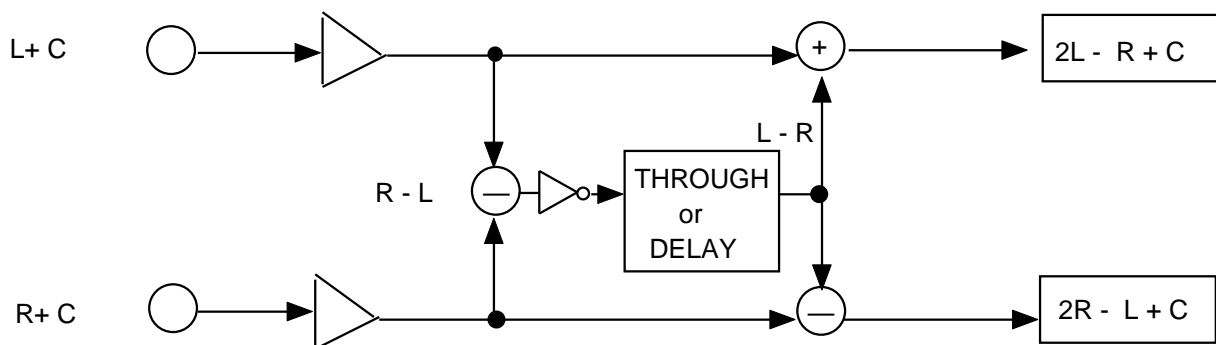
PRELIMINARY
 Notice ; This is not a final specification.
 some parametric limits are subject to change.

M62493FP

(4) VOCAL CANCELLATION EQUIVALENT CIRCUIT



(5) SURROUND EQUIVALENT CIRCUIT



PRELIMINARY

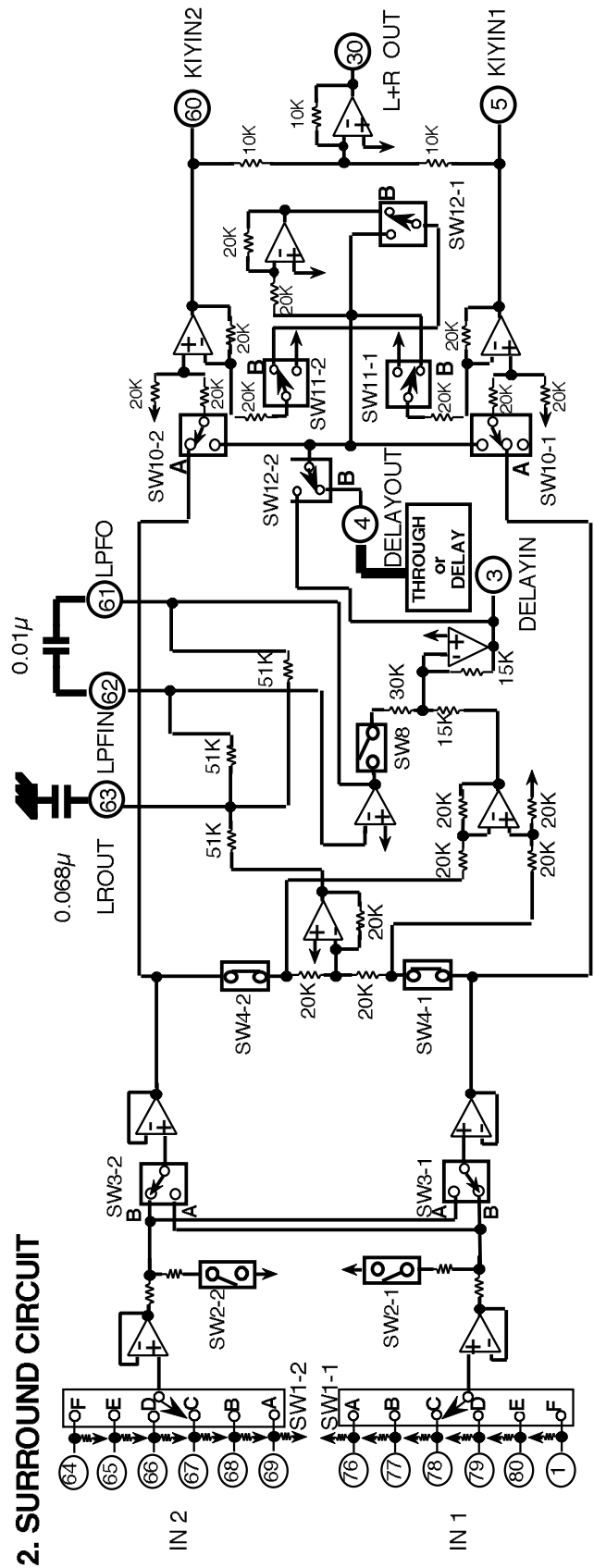
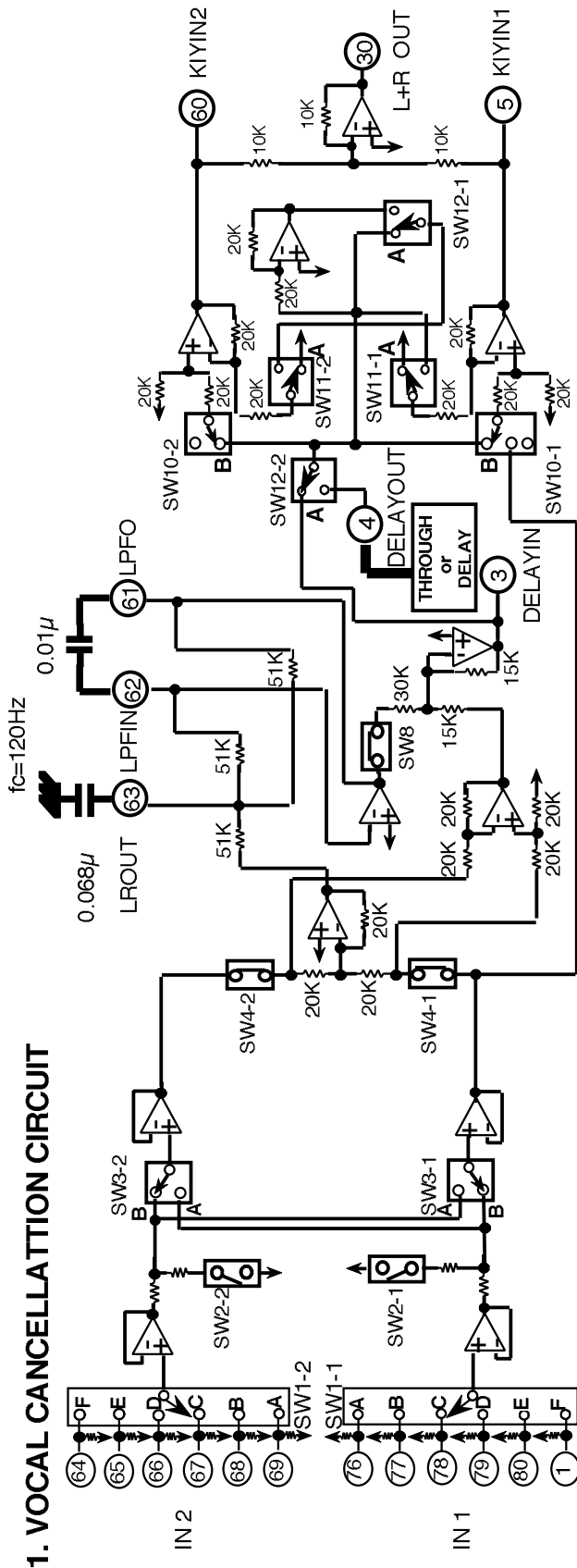
Notice ; This is not a final specification.
some parametric limits are subject to change.

MITSUBISHI SOUND PROCESSORS

M62493FP

DIGITAL SOUND CONTROLLER

SIGNAL COMMUNICATION BLOCK CIRCUIT (NO.1)



PRELIMINARY

Notice ; This is not a final specification.
some parametric limits are subject to change.

MITSUBISHI SOUND PROCESSORS

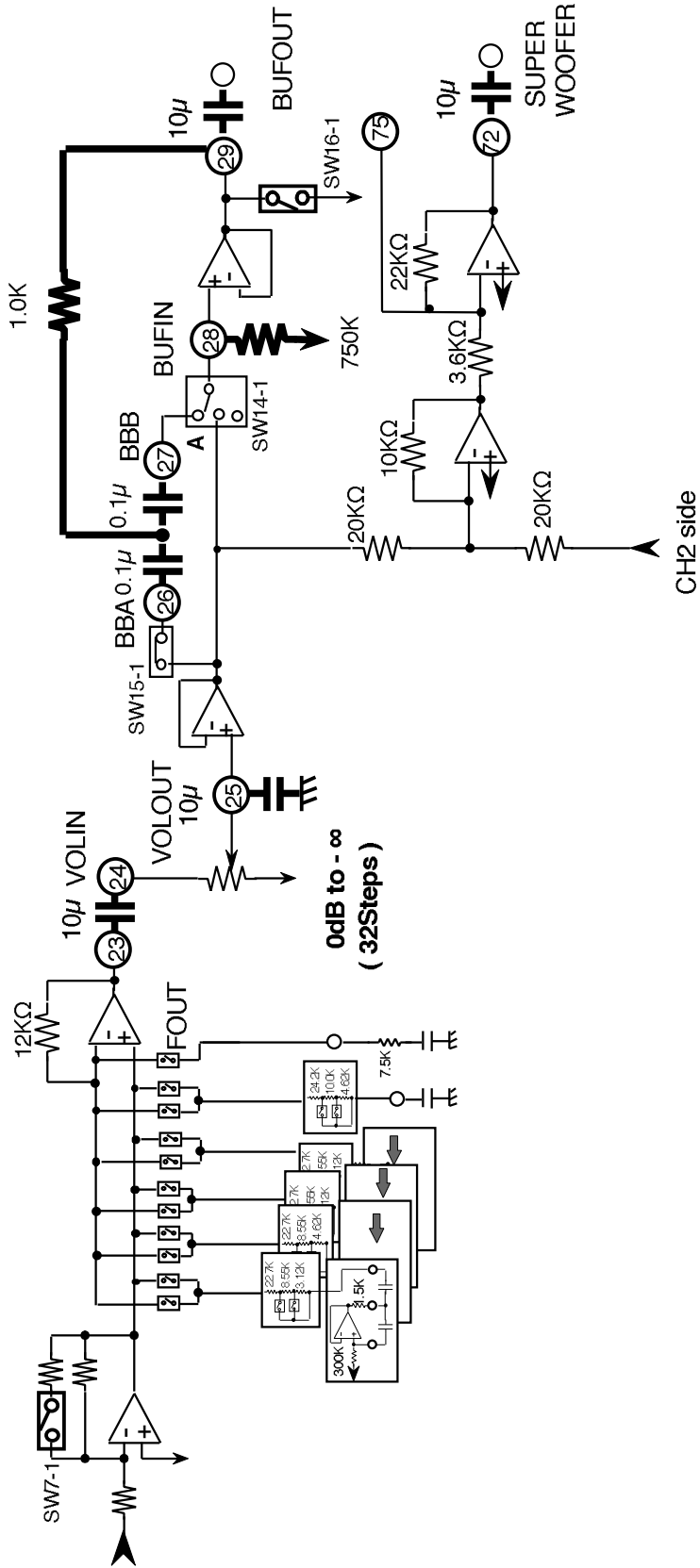
M62493FP

DIGITAL SOUND CONTROLLER

SIGNAL COMMUNICATION BLOCK CIRCUIT (No.2)

3. TONE CURCUIT (CH1)

Each of frequency +10dB to -10dB, change



PRELIMINARY
 Notice ; This is not a final specification.
 some parametric limits are subject to change.

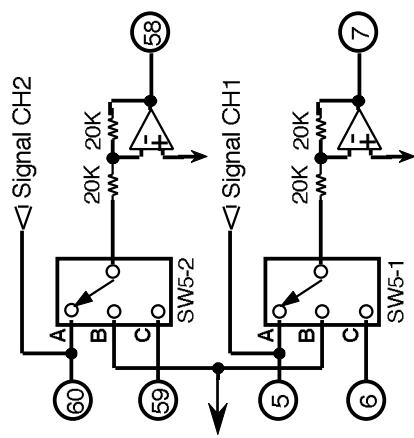
MITSUBISHI SOUND PROCESSORS

M62493FP

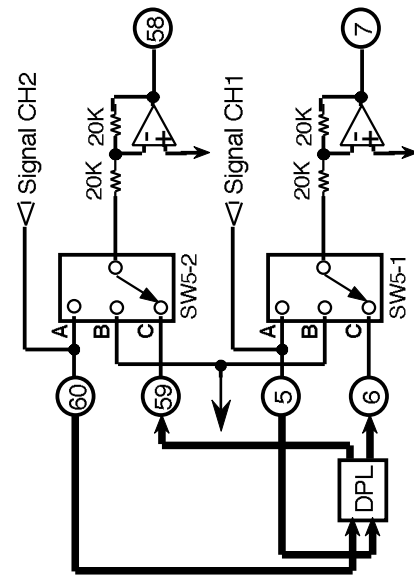
DIGITAL SOUND CONTROLLER

REC INPUT CHANGE CIRCUIT

(1) THROUGH MODE



(2) DPL MODE



PRELIMINARY

Notice ; This is not a final specification.
some parametric limits are subject to change.

MITSUBISHI SOUND PROCESSORS

M62493FP

DIGITAL SOUND CONTROLLER

APPLICATION CIRCUIT (±Power)

