

# SRF-M75PM

## SERVICE MANUAL

Ver 1.0 1999.04



*US Model  
Canadian Model  
AEP Model  
E Model  
Australian Model*

### SPECIFICATIONS

#### Time display

12-hour system

#### Frequency range

Frequency	Channel step	
FM: 87.5 – 108 MHz	0.1 MHz	(US, Canadian, and)
AM: 530 – 1,710 kHz	10 kHz	E models)
FM: 87.5 – 108 MHz	0.05* MHz	(AEP,
AM: 531 – 1,710 kHz	9 kHz	Australian models)

\* The frequency display is raised or lowered by steps of 0.1 MHz. (Example: Frequency 88.05 MHz is displayed as "88.0 MHz".)

#### Output

⌀ jack (stereo minijack), load impedance 16 ohms

#### Power output

20 mW + 20 mW (at 10 % harmonic distortion)

#### Power requirements

3 V DC, two size AAA (R03) batteries

#### Dimensions

Approx. 140.5 x 41 x 60.5 mm (w/h/d)  
(4 1/8 x 1 5/8 x 2 1/2 inches) incl. projecting parts and controls

#### Mass

Approx. 103 g (3.6 oz.) not incl. battery

#### Accessories Supplied

Stereo headphones (1)

Belt holder (1)

Hand strap (1)

Design and specifications are subject to change without notice.

## FM STEREO/AM PLL SYNTHESIZED RADIO



# SONY®

# SECTION 1

## SERVICING NOTES

### TABLE OF CONTENTS

<b>1. SERVICING NOTES</b> .....	2
<b>2. GENERAL</b> .....	3
<b>3. DISASSEMBLY</b> .....	4
<b>4. ELECTRICAL ADJUSTMENTS</b>	
TUNER Section .....	6
PULSE MONITOR Section .....	8
<b>5. DIAGRAMS</b>	
5-1. Block Diagram .....	9
5-2. Printed Wiring Boards .....	12
5-3. Schematic Diagram .....	15
5-4. IC Pin Function Description .....	20
<b>6. EXPLODED VIEW</b> .....	21
<b>7. ELECTRICAL PARTS LIST</b> .....	22

#### Forced Reset

The system microprocessor can be reset in the following procedure.

Use these procedure when the unit cannot be worked normally due to the overrunning of the microprocessor, etc.

#### Procedure:

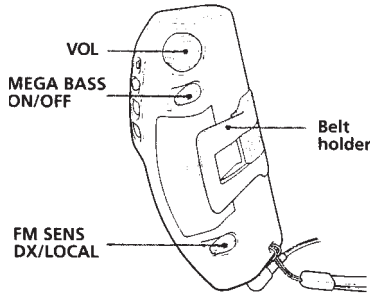
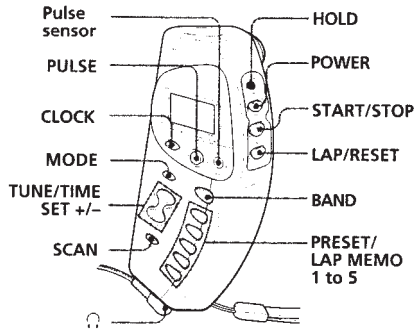
1. Set to radio OFF.
2. While pressing the **SCAN** button, press two buttons of **START/STOP** and **BAND** simultaneously for 5 seconds.
3. The unit is reset, and display blinking "AM 12:00".

#### Notes on chip component replacement

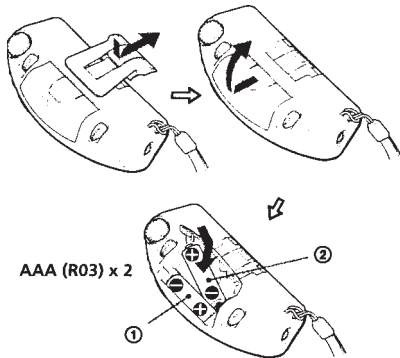
- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

## SECTION 2 GENERAL

This section is extracted from instruction manual.



**A**



**C**



### Features

- Built-in Pulse Monitor
- FM stereo/AM PLL (Phase Locked Loop) Synthesized radio
- Up to 15 stations (10 for FM, 5 for AM) can be preset for one-touch tuning
- Auto Station Scan tuning for speedy locating of stations
- Built-in digital clock and stopwatch
- Water-resistant for all-weather use
- Countdown timer
- Hand strap and belt holder supplied
- MEGA BASS for dynamic bass sound

### Notes on AM tuning step

The AM tuning step differs depending on areas. The channel step is factory-set to 10 kHz.

### Installing the Batteries

(See Fig. A)

- 1 Remove the belt holder.
- 2 Slide and open the lid at the rear of the unit.
- 3 Insert two size AAA(R03) batteries (not supplied) with correct polarity. Insert the batteries from the negative (-) terminal to prevent a short-circuit, and in the order from ① to ② as shown in the illustration.

### Battery life

Using Sony AAA(R03) batteries

FM :	Approx. 12 hours
AM:	Approx. 17 hours

### When to replace the batteries

When the batteries become weak, the battery "⊖" indication will flash in the display. Replace the batteries with new ones. The unit will switch to the clock mode from any other mode.

### Note

- The battery "⊖" indication in the display does not show the remaining power of the battery.

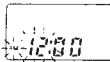
### Notes on battery

- Insert the batteries with correct polarity.
- Do not mix new and used batteries.
- The batteries can not be charged.
- Remove the batteries when the unit is not to be used for a long time.
- Should any battery leakage occur, wipe the battery case well and install new batteries.

### Setting the Clock

The display will flash "12:00" when the batteries are first inserted.

- 1 Hold down **CLOCK** for more than 2 seconds. The hour flashes in the display.

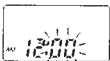


- 2 Press **TUNE/TIME SET +** or **-** until the correct hour appears in the display.

Each press changes the digit(s) by one. When you keep the button pressed, the digit(s) change rapidly.

- 3 Press **CLOCK**.

The minute starts to flash.



Repeat steps 2 and 3 to set the minute. After setting the minute, press **CLOCK** again. The clock starts from 0 seconds.

- 12-hour system: "AM 12:00" = midnight  
"PM 12:00" = noon

### Changing AM Channel Step

The channel step of this unit is factory-set to 10 kHz. When needed, change the channel step before listening to the radio.

Area	Channel step
US, Canadian, and E models	10 kHz
AEP, Australian models	9 kHz

- 1 Press **POWER** to turn off the power.
- 2 While holding down **SCAN**, keep pressing **BAND** for more than 5 seconds.

The channel step appears in the display for a few seconds.

To go back to the original channel step, repeat step 2.

### Note

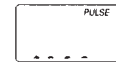
- When the AM channel step is changed, the clock time and the lap time will be kept but the preset stations will be erased.

### Using Pulse Monitor

You can check your pulse rate after exercise (running, etc.) using the pulse monitor.

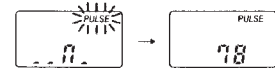
- 1 Press **PULSE** (the red button) to enter pulse monitor mode.

The "PULSE" indication appears in the display.



- 2 Lay your fingertip flat across the pulse sensor (so that the sensor is covered) for a few seconds as shown in the illustration (See Fig. C).

The "PULSE" indication flashes and the segments in the display flow from left to right while first counting pulse. After a few seconds, your pulse rate will be shown in the display.



The pulse monitor continues measurement as long as your finger is kept placed on the sensor. Your pulse rate will be renewed every few seconds.

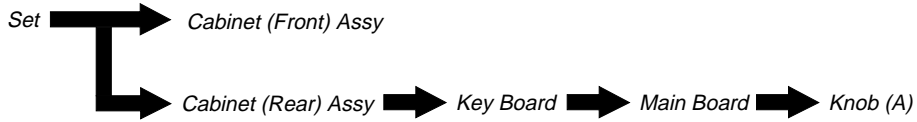
- You can listen to the radio even when the pulse monitor is running.
- The stopwatch and the countdown timer continue to count even while the pulse monitor is running.
- The unit will exit pulse monitor mode automatically in about 2 minutes.
- To exit the pulse monitor mode manually, press **PULSE** again.

### Note

- If you have difficulty measuring your pulse rate, refer to the supplied card with supplementary notes and explanation.

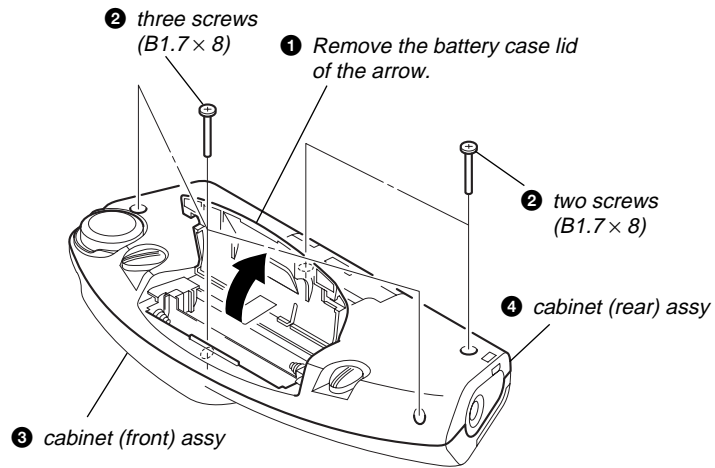
## SECTION 3 DISASSEMBLY

· This set can be disassembled in the order shown below.

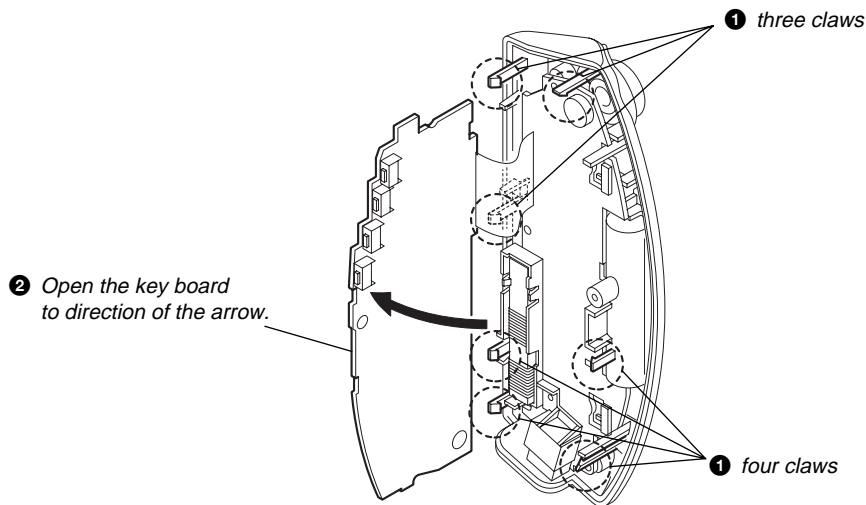


**Note:** Follow the disassembly procedure in the numerical order given.

### CABINET (FRONT)/(REAR) ASSY

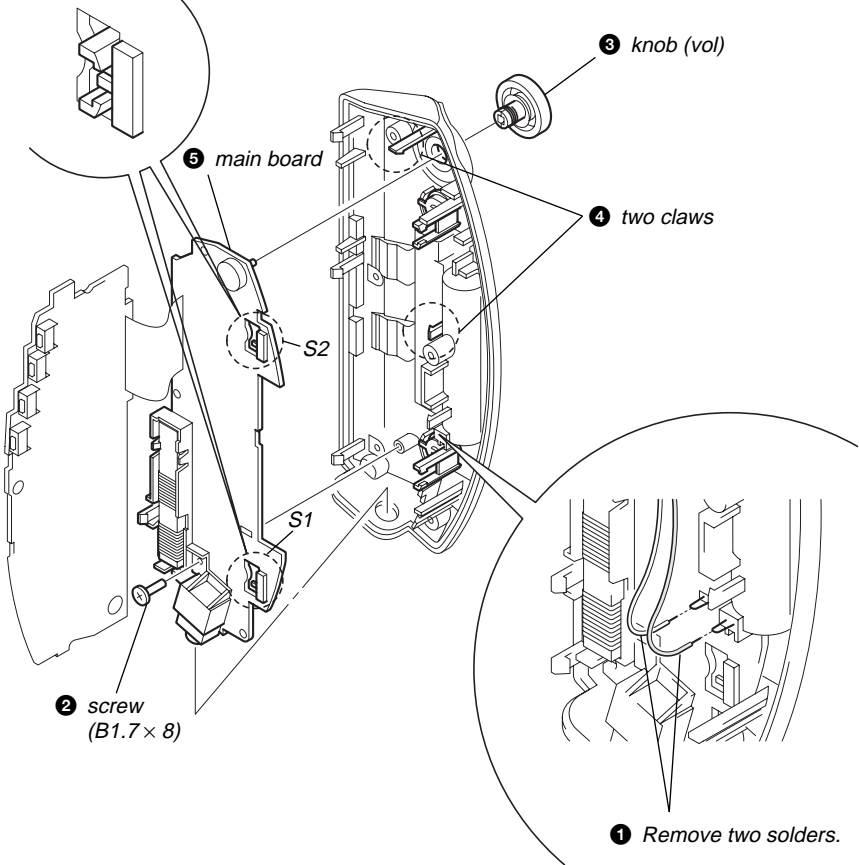


### KEY BOARD

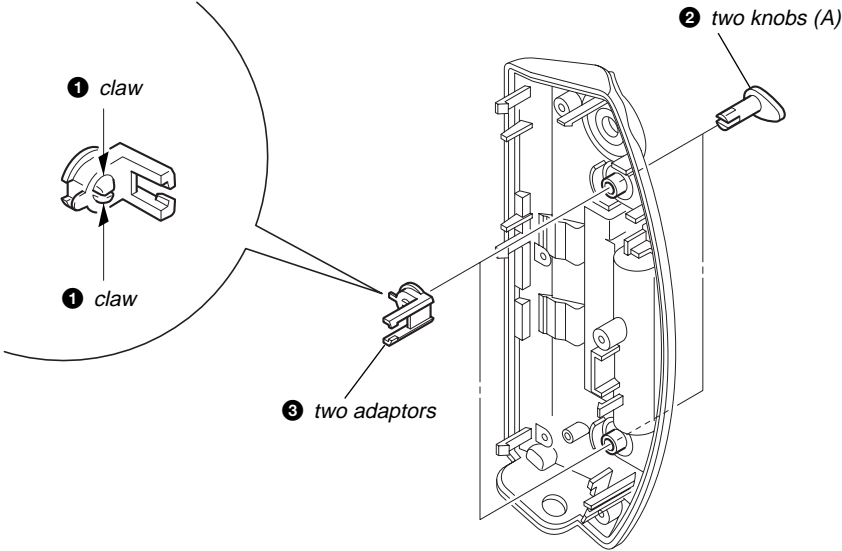


**MAIN BOARD**

**Note:** Check that two switch (S1, S2) is latched with two adaptors when carrying out installation.



**KNOB (A)**



# SECTION 4 ELECTRICAL ADJUSTMENTS

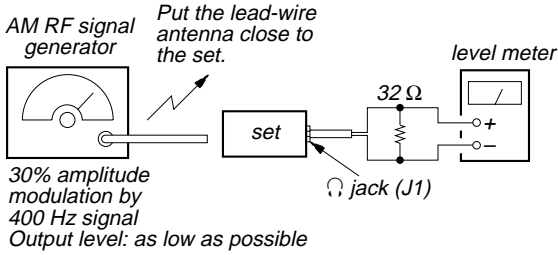
## TUNER SECTION

0 dB=1  $\mu$ V

### [AM]

#### Setting:

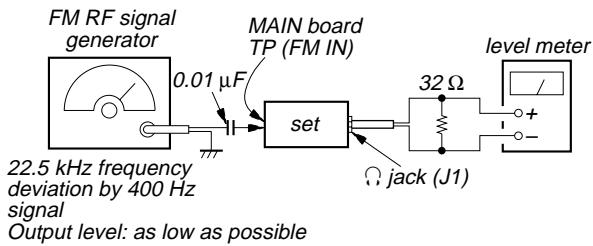
Band switch: AM



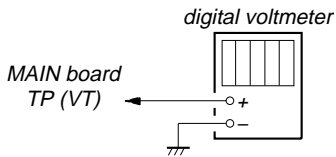
### [FM]

#### Setting:

Band switch: FM



- Repeat the procedures in each adjustment several times, and the tracking adjustments should be finally done by the trimmer capacitors.



**Adjustment Location:** Main Board (See page 7)

AM IF ADJUSTMENT	
Adjust for a maximum reading on level meter	
T1	450 kHz

AM VCO VOLTAGE ADJUSTMENT		
Adjustment Part	Frequency Display	Reading on Digital Voltmeter
L4	530 kHz (531 kHz)	$3 \pm 0.1$ V
Confirmation	1710 kHz (1602 kHz)	$9 \pm 1$ V ( $8.5 \pm 1$ )

AM TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter	
L1	580 kHz (621 kHz)
CT1	1,490 kHz (1,395 kHz)

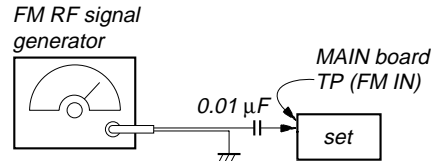
FM VCO VOLTAGE CONFIRMATION	
Frequency Display	Reading on Digital Voltmeter
87.5 MHz	$3 \pm 0.3$ V
108 MHz	Less than $11 \pm 1$ V

FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on level meter	
L2	87.5 MHz
CT2	108 MHz

( ): Except US model

### FM Free-Run Adjustment

#### Setting:

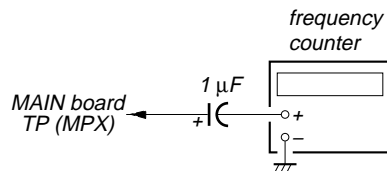


Carrier frequency : 98 MHz  
Modulation : no modulation  
Output level : 0.1 V (100 dB)

#### Procedure:

- Connect the frequency counter to TP (MPX) as shown the figure below.
- Tune the set to 98 MHz.
- Adjust RT1 for 76 kHz reading on the frequency counter.

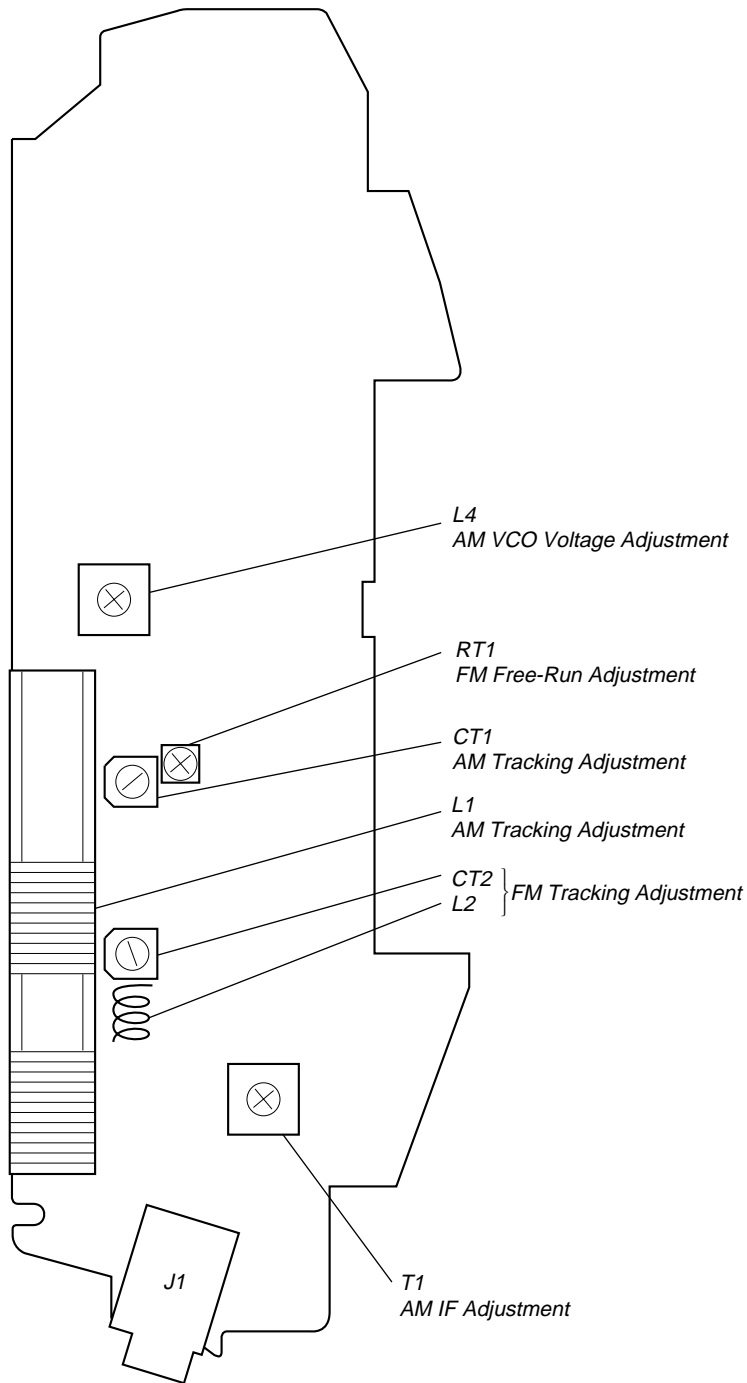
**Specification:** 75.8 to 76.2 kHz



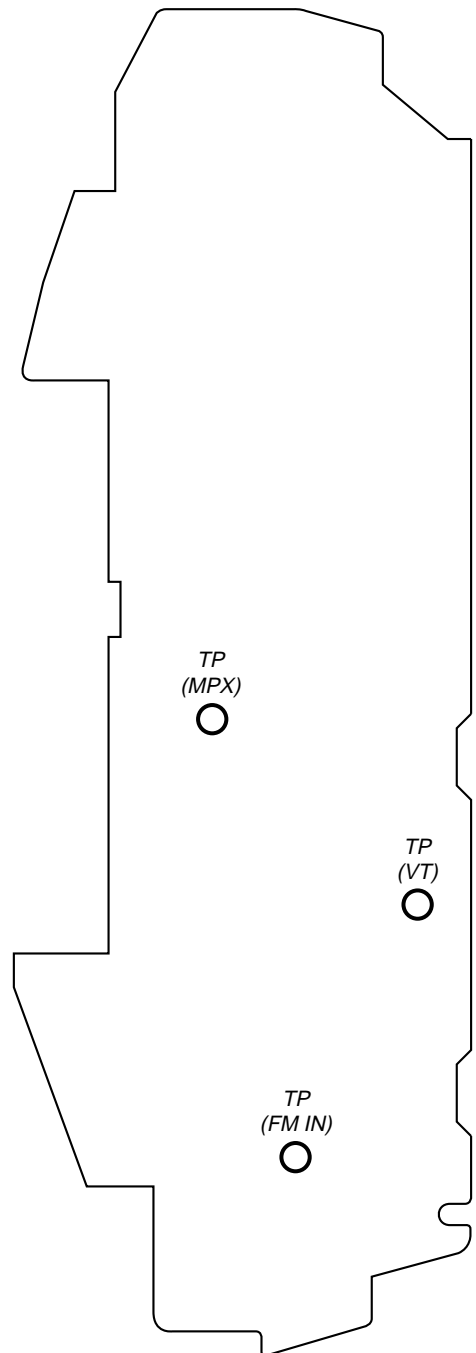
**Adjustment Location:** MAIN board (See page 7)

**Adjustment Location:**

– MAIN BOARD (Component Side) –

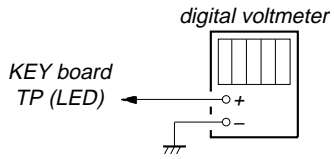


– MAIN BOARD (Conductor Side) –



## PULSE MONITOR SECTION

### Luminance Adjustment



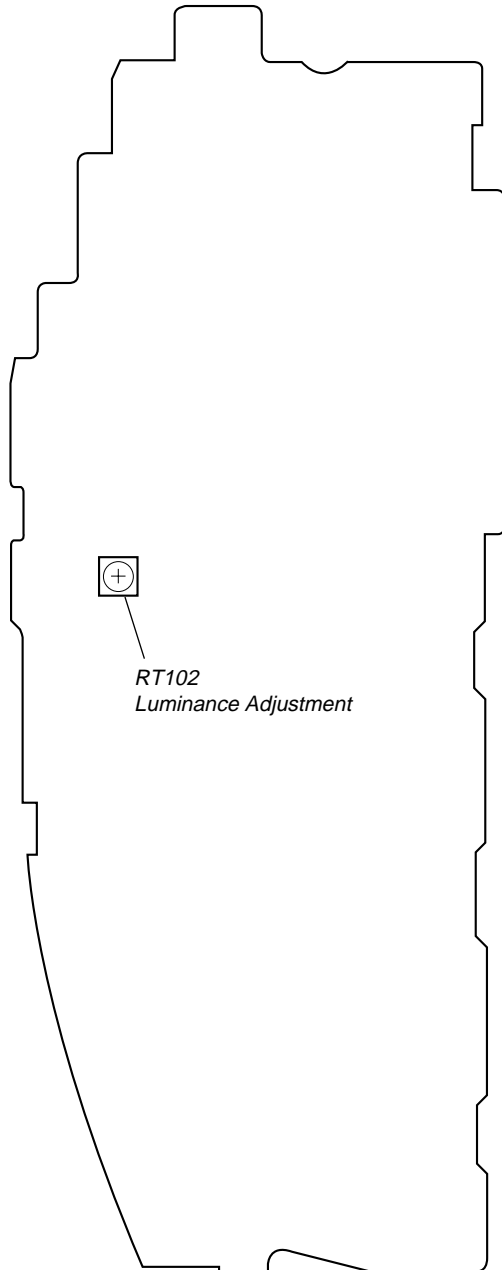
#### Procedure:

1. Connect the digital voltmeter to TP (LED) on the KEY board.
2. Press the **PULSE** button (S112) to enter pulse monitor mode.
3. Adjust RT102 for 0.24 V reading on the digital voltmeter.

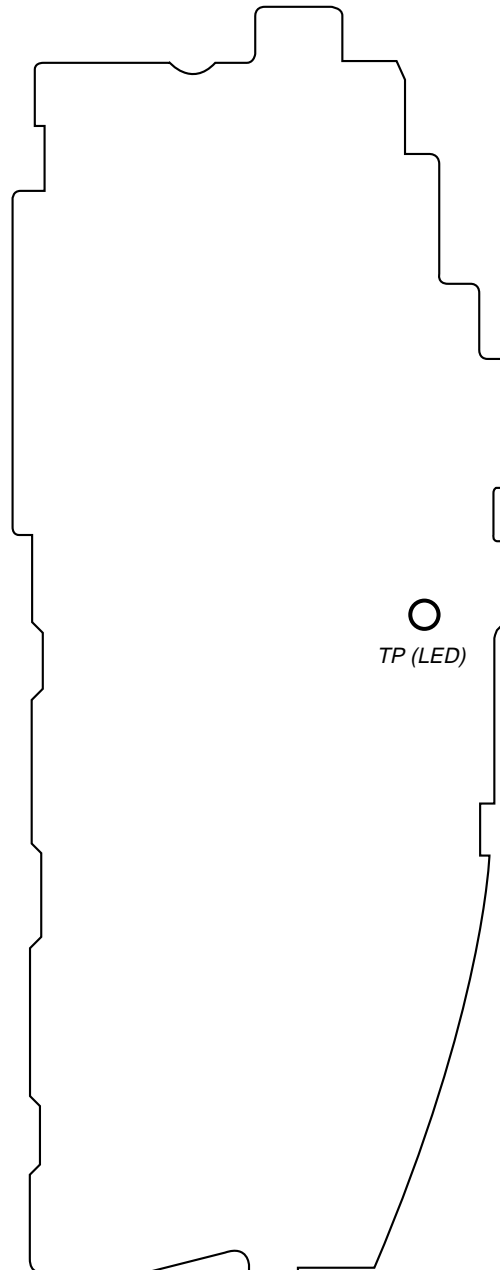
**Specification:** 0.22 to 0.26 V

#### Adjustment Location:

– **KEY BOARD** (Component Side) –

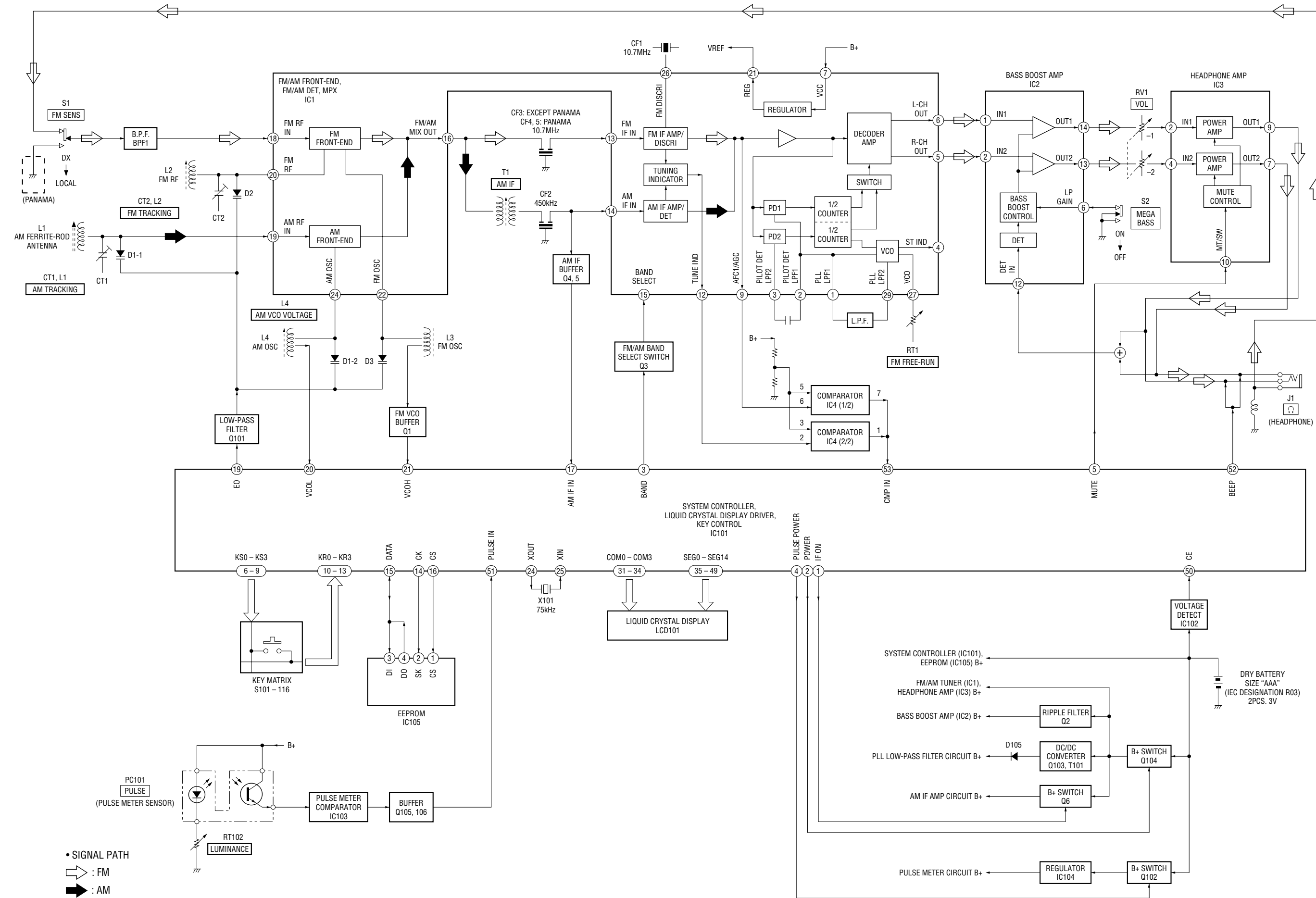


– **KEY BOARD** (Conductor Side) –



SECTION 5  
DIAGRAMS

5-1. BLOCK DIAGRAM



• Semiconductor Location

Ref. No.	Location
D1	F-17
D2	I-17
D3	G-17
D101	F-3
D102	F-1
D105	B-8
D106	B-7
IC1	G-16
IC2	E-16
IC3	C-16
IC4	E-12
IC101	D-7
IC102	C-4
IC103	F-2
IC104	F-3
IC105	E-2
PC101	E-1
Q1	H-12
Q2	D-12
Q3	H-13
Q4	H-12
Q5	H-12
Q6	D-17
Q101	D-3
Q102	D-4
Q103	B-6
Q104	B-4
Q105	E-3
Q106	E-2

**Note on Printed Wiring Boards:**

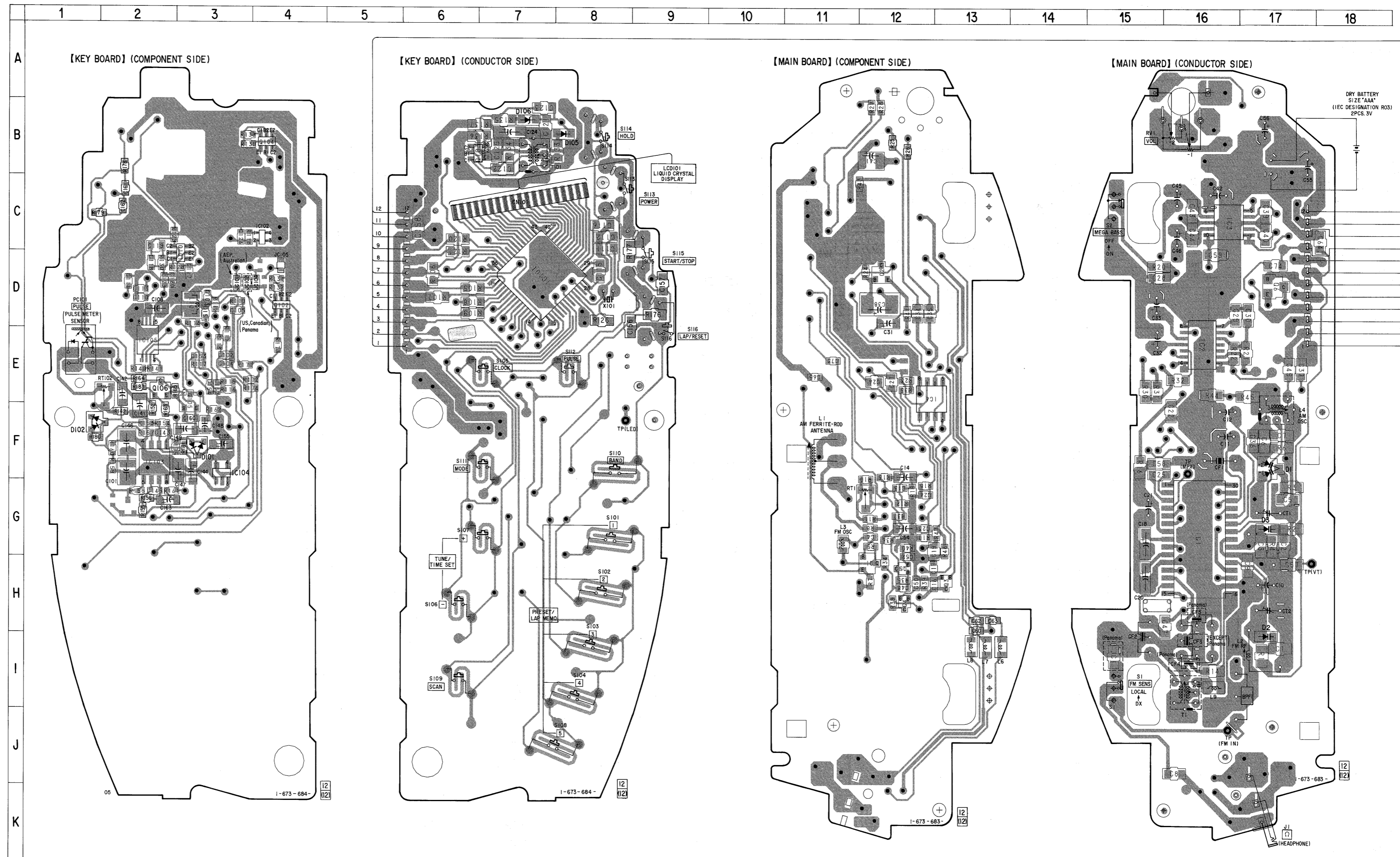
- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : indicates side identified with part number.
- : Through hole.
- △ : internal component.
- ▨ : Pattern from the side which enables seeing.
- ▨ : Carbon pattern.

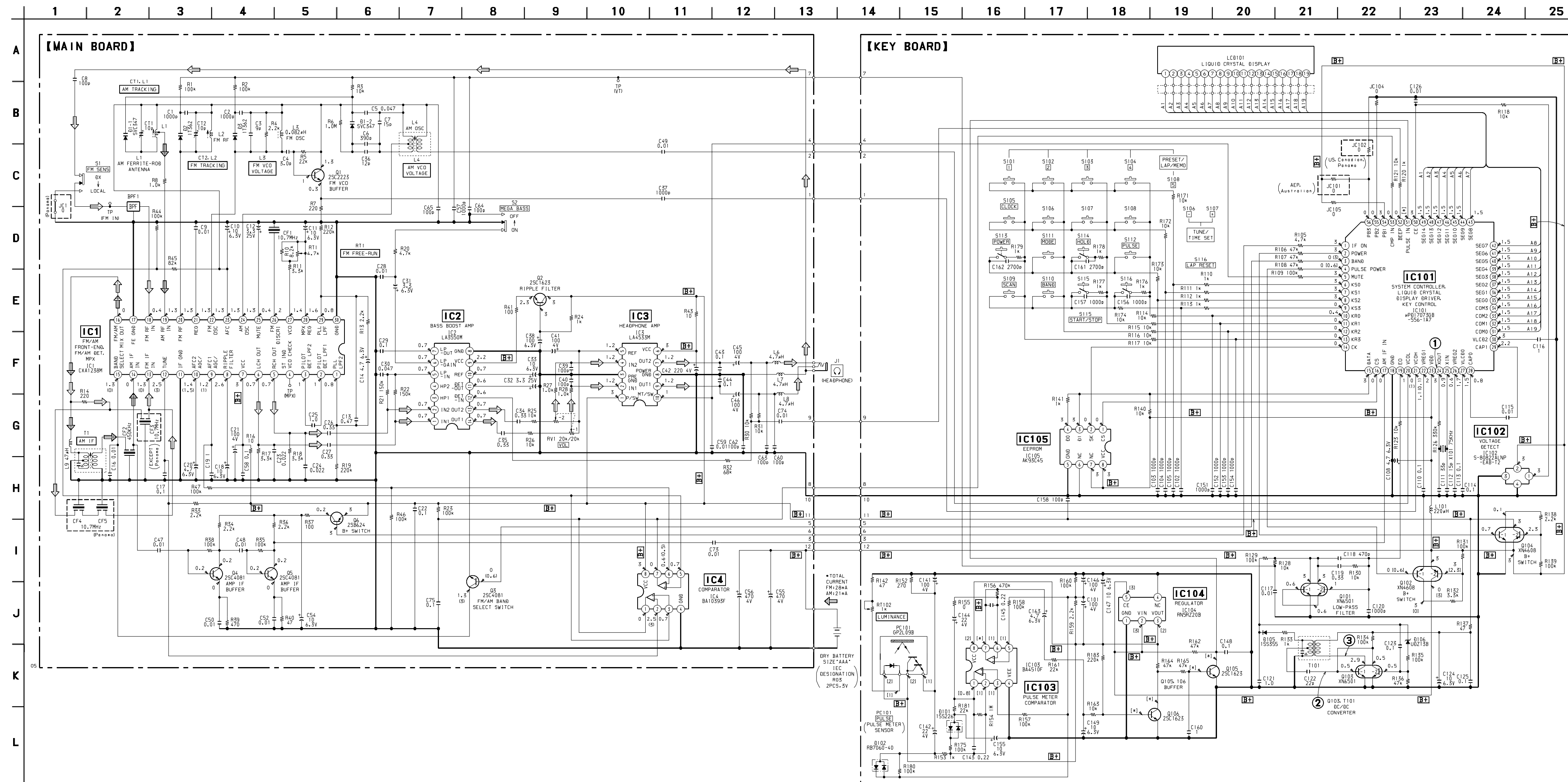
(The other layers' patterns are not indicated.)

**Caution:**

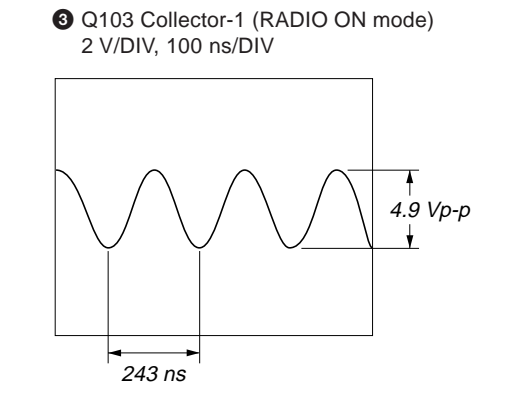
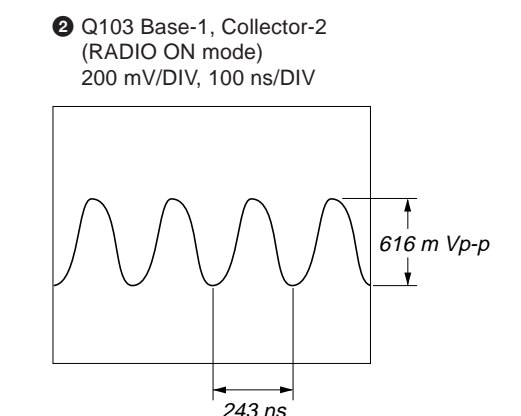
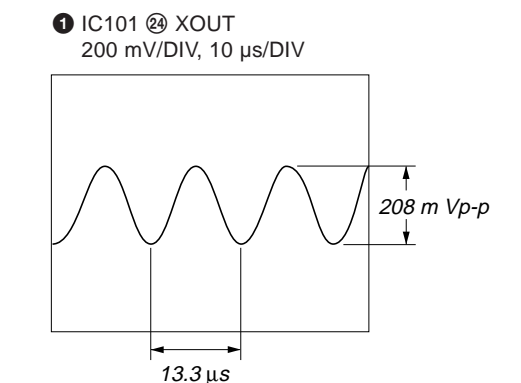
Pattern face side: Parts on the pattern face side seen from the pattern face are indicated.  
 (Conductor Side)

Parts face side: Parts on the parts face side seen from the parts face are indicated.  
 (Component Side)





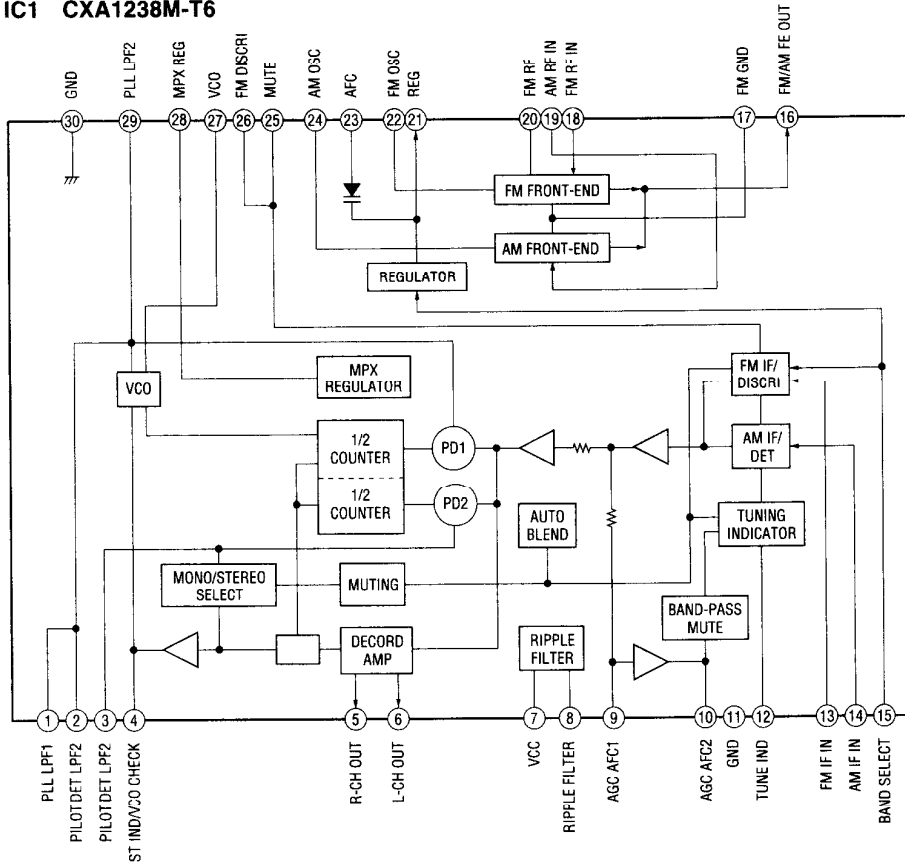
• Waveforms  
- KEY Board -



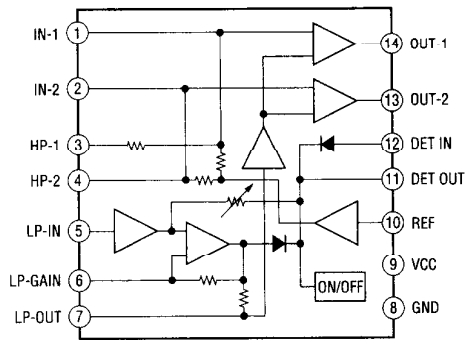
- Note on Schematic Diagram:**
- All capacitors are in μF unless otherwise noted. pF: μF/100
  - All resistors are in Ω and 1/4 W or less unless otherwise specified.
  - Δ : internal component.
  - □ : panel designation.
  - B+ : B+ Line.
  - □ : adjustment for repair.
  - Power voltage is dc 3 V and fed with regulated dc power supply from battery terminal.
  - Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
  - no mark : FM
  - ( ) : AM
  - [ ] : PULSE
  - \* : Impossible to measure
  - Voltages are taken with a VOM (Input impedance 10 MΩ). Voltage variations may be noted due to normal production tolerances.
  - Waveforms are taken with an oscilloscope. Voltage variations may be noted due to normal production tolerances.
  - Circled numbers refer to waveforms.
  - Signal path.
  - ◀ : FM
  - ▶ : AM

• IC Block Diagrams  
- MAIN Board -

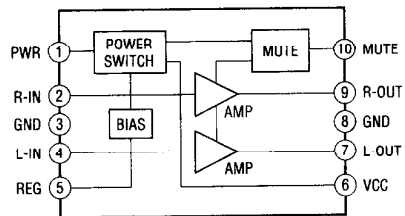
IC1 CXA1238M-T6



IC2 LA3550MTP-1



IC3 LA4533M



#### 5-4. IC PIN FUNCTION DESCRIPTION

##### • KEY BOARD IC101 $\mu$ PD17073GB-556-1A7

##### (SYSTEM CONTROLLER, LIQUID CRYSTAL DISPLAY DRIVER, KEY CONTROL)

Pin No.	Pin Name	I/O	Description
1	IF ON	O	Power on/off control signal output for the AM IF amplifier circuit "L": power on "L" is output when AM scan mode
2	POWER	O	Power on/off control signal output for the radio system power supply "H": power on
3	BAND	O	FM/AM band selection signal output terminal "L": AM, "H": FM
4	PULSE POWER	O	Power on/off control signal output for the pulse meter circuit "H": power on
5	MUTE	O	Muting on/off control signal output to the headphone amplifier (IC3) "L": muting on
6 to 9	KS0 to KS3	O	Key scan signal output for the key matrix
10 to 13	KR0 to KR3	I	Key return signal input for the key matrix
14	CK	O	Serial clock signal output to the EEPROM (IC105)
15	DATA	I/O	Two-way data bus with the EEPROM (IC105)
16	CS	O	Chip select signal output to the EEPROM (IC105)
17	AM IF IN	I	AM intermediate frequency detect signal input terminal
18	GND	—	Ground terminal
19	EO	O	PLL error signal output terminal
20	VCOL	I	AM VCO input terminal
21	VCOH	I	FM VCO input terminal
22	VREG1	—	Power supply terminal (connected to the coupling capacitor)
23	VDD	—	Power supply terminal (+3V)
24	XOUT	O	System clock output terminal (75 kHz)
25	XIN	I	System clock input terminal (75 kHz)
26	VREG2	—	Power supply terminal (connected to the coupling capacitor)
27	VLCD0	—	Terminal for doubler circuit capacitor connection to develop liquid crystal display drive voltage
28	CAP0	—	
29	CAP1	—	
30	VLCD2	—	
31 to 34	COM0 to COM3	O	Common drive signal output to the liquid crystal display (LCD101)
35 to 49	SEG0 to SEG14	O	Segment drive signal output to the liquid crystal display (LCD101)
50	CE	I	Power failure detection signal input from the voltage detect (IC102) Normally: "H"
51	PULSE IN	I	Pulse meter input terminal (detecting a falling edge)
52	BEEP	O	Beep sound drive signal output terminal
53	CMP IN	I	Scan stop detect signal input terminal
54	PB1	I	Initialize signal input for the destination select (fixed at "H" in this set)
55	PB2	I	Initialize signal input for the destination select (fixed at "L" in this set)
56	PB3	I	Initialize signal input for the destination select (US, Canadian, E models: fixed at "L", AEP, Australian models: fixed at "H")



**KEY**

**SECTION 7  
ELECTRICAL PARTS LIST**

**NOTE:**

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- **RESISTORS**  
All resistors are in ohms  
METAL: Metal-film resistor.  
METAL OXIDE: Metal oxide-film resistor.  
F: nonflammable

- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- **SEMICONDUCTORS**  
In each case, u:  $\mu$ , for example:  
uA. . . :  $\mu$ A. . .      uPA. . . :  $\mu$ PA. . .  
uPB. . . :  $\mu$ PB. . .    uPC. . . :  $\mu$ PC. . .  
uPD. . . :  $\mu$ PD. . .
- **CAPACITORS**  
uF:  $\mu$ F
- **COILS**  
uH:  $\mu$ H

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
*	A-3663-282-A	KEY BOARD, COMPLETE (US, Canadian, Panama)		C155	1-135-259-11	TANTALUM CHIP 10uF 20%	6.3V
*	A-3663-285-A	KEY BOARD, COMPLETE (AEP, Australian) *****		C156	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
	3-033-936-01	HOLDER (LCD)		C157	1-163-009-11	CERAMIC CHIP 0.001uF 10%	50V
	3-036-200-01	SHEET, SHIELD		C158	1-163-251-11	CERAMIC CHIP 100PF 5%	50V
		<CAPACITOR>		C160	1-164-346-11	CERAMIC CHIP 1uF	16V
C101	1-127-569-91	TANTALUM CHIP 100uF 20%	4V	C161	1-162-979-11	CERAMIC CHIP 0.0027uF 10%	50V
C102	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	C162	1-162-979-11	CERAMIC CHIP 0.0027uF 10%	50V
C103	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	C163	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
C104	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V			<CONNECTOR>	
C105	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V	CN101	1-694-532-11	CONDUCTIVE BOARD, CONNECTION	
C108	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V			<DIODE>	
C110	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V	D101	8-719-800-76	DIODE 1SS226	
C111	1-163-239-11	CERAMIC CHIP 33PF 5%	50V	D102	8-719-054-23	DIODE RB706D-40-T146	
C112	1-163-231-11	CERAMIC CHIP 15PF 5%	50V	D105	8-719-988-61	DIODE 1SS355TE-17	
C113	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V	D106	8-719-977-40	DIODE DTZ-TT11-13	
C114	1-107-826-11	CERAMIC CHIP 0.1uF 10%	16V			<IC>	
C115	1-163-021-11	CERAMIC CHIP 0.01uF 10%	50V	IC101	8-759-581-97	IC uPD17073GB-556-1A7	
C116	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V	IC102	8-759-491-99	IC S-80822ALNP-EAB-T2	
C117	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	IC103	8-759-298-70	IC BA4510F-T1	
C118	1-162-962-11	CERAMIC CHIP 470PF 10%	50V	IC104	8-759-577-33	IC RN5RZ208A-TR	
C119	1-110-501-11	CERAMIC CHIP 0.33uF 10%	16V	IC105	8-759-457-68	IC AK93C45AV-L	
C120	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V			<SHORT>	
C121	1-164-346-11	CERAMIC CHIP 1uF	16V	JC101	1-216-864-11	METAL CHIP 0 5% 1/16W	(AEP, Australian)
C122	1-163-235-11	CERAMIC CHIP 22PF 5%	50V	JC102	1-216-864-11	METAL CHIP 0 5% 1/16W	(US, Canadian, Panama)
C123	1-163-038-00	CERAMIC CHIP 0.1uF	25V	JC104	1-216-864-11	METAL CHIP 0 5% 1/16W	
C124	1-135-259-11	TANTALUM CHIP 10uF 20%	6.3V	JC105	1-216-864-11	METAL CHIP 0 5% 1/16W	
C125	1-163-038-00	CERAMIC CHIP 0.1uF	25V			<COIL>	
C126	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	L101	1-410-658-31	INDUCTOR CHIP 220uH	
C141	1-127-569-91	TANTALUM CHIP 100uF 20%	4V			<LIQUIDCRYSTALDISPLAY >	
C142	1-104-847-11	TANTALUM CHIP 22uF 20%	4V	LCD101	1-803-534-11	DISPLAY PANEL, LIQUID CRYSTAL	
C143	1-164-489-11	CERAMIC CHIP 0.22uF 10%	16V			<PHOTOINTERRUPTER >	
C144	1-104-847-11	TANTALUM CHIP 22uF 20%	4V	PC101	8-749-015-82	PHOTO INTERRUPTER GP2L09B (PULSE) (PULSE METER SENSOR)	
C145	1-115-467-11	CERAMIC CHIP 0.22uF 10%	10V				
C146	1-127-569-91	TANTALUM CHIP 100uF 20%	4V				
C147	1-135-259-11	TANTALUM CHIP 10uF 20%	6.3V				
C148	1-164-004-11	CERAMIC CHIP 0.1uF 10%	25V				
C149	1-135-259-11	TANTALUM CHIP 10uF 20%	6.3V				
C151	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V				
C152	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V				
C153	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V				
C154	1-162-964-11	CERAMIC CHIP 0.001uF 10%	50V				

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
		<TRANSISTOR>		R172	1-216-833-11	RES, CHIP 10K 5%	1/16W
Q101	8-729-402-19	TRANSISTOR XN6501		R173	1-216-833-11	RES, CHIP 10K 5%	1/16W
Q102	8-729-402-16	TRANSISTOR XN4608		R174	1-216-833-11	RES, CHIP 10K 5%	1/16W
Q103	8-729-402-19	TRANSISTOR XN6501		R175	1-216-845-11	METAL CHIP 100K 5%	1/16W
Q104	8-729-402-16	TRANSISTOR XN4608		R176	1-216-049-11	RES, CHIP 1K 5%	1/10W
Q105	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R177	1-216-049-11	RES, CHIP 1K 5%	1/10W
Q106	8-729-120-28	TRANSISTOR 2SC1623-L5L6		R178	1-216-821-11	METAL CHIP 1K 5%	1/16W
		<RESISTOR>		R179	1-216-821-11	METAL CHIP 1K 5%	1/16W
R105	1-216-065-00	RES, CHIP 4.7K 5%	1/10W	R180	1-216-845-11	METAL CHIP 100K 5%	1/16W
R106	1-216-089-00	RES, CHIP 47K 5%	1/10W	R181	1-216-837-11	METAL CHIP 22K 5%	1/16W
R107	1-216-089-00	RES, CHIP 47K 5%	1/10W	R183	1-216-849-11	METAL CHIP 220K 5%	1/16W
R108	1-216-089-00	RES, CHIP 47K 5%	1/10W			<VARIABLE RESISTOR >	
R109	1-216-097-00	RES, CHIP 100K 5%	1/10W	RT102	1-223-581-11	RES, ADJ, CARBON 220	
R110	1-216-821-11	METAL CHIP 1K 5%	1/16W			<SWITCH>	
R111	1-216-821-11	METAL CHIP 1K 5%	1/16W	S113	1-572-499-11	SWITCH, TACTIL (POWER)	
R112	1-216-821-11	METAL CHIP 1K 5%	1/16W	S114	1-572-499-11	SWITCH, TACTIL (HOLD)	
R113	1-216-821-11	METAL CHIP 1K 5%	1/16W	S115	1-572-499-11	SWITCH, TACTIL (START/STOP)	
R114	1-216-833-11	RES, CHIP 10K 5%	1/16W	S116	1-572-499-11	SWITCH, TACTIL (LAP/RESET)	
R115	1-216-833-11	RES, CHIP 10K 5%	1/16W			<TRANSFORMER>	
R116	1-216-833-11	RES, CHIP 10K 5%	1/16W	T101	1-449-138-71	TRANSFORMER, DC-DC CONVERTER	
R117	1-216-833-11	RES, CHIP 10K 5%	1/16W			<VIBRATOR>	
R118	1-216-833-11	RES, CHIP 10K 5%	1/16W	X101	1-767-517-11	VIBRATOR, CRYSTAL (75kHz)	
R120	1-216-049-11	RES, CHIP 1K 5%	1/10W			*****	
R121	1-216-073-00	METAL CHIP 10K 5%	1/16W	*	A-3663-262-A	MAIN BOARD, COMPLETE (EXCEPT Panama)	
R123	1-216-833-11	RES, CHIP 10K 5%	1/16W	*	A-3663-288-A	MAIN BOARD, COMPLETE (Panama)	
R126	1-216-109-00	METAL CHIP 330K 5%	1/10W			*****	
R128	1-216-833-11	RES, CHIP 10K 5%	1/16W			3-033-937-01	HOLDER (BAR ANT)
R129	1-216-845-11	METAL CHIP 100K 5%	1/16W			< BAND PASS FILTER >	
R130	1-216-833-11	RES, CHIP 10K 5%	1/16W	BPF1	1-235-171-00	FILTER, BAND PASS	
R131	1-216-845-11	METAL CHIP 100K 5%	1/16W			< CAPACITOR >	
R132	1-216-827-11	METAL CHIP 3.3K 5%	1/16W	C1	1-163-141-00	CERAMIC CHIP 0.001uF 5%	50V
R133	1-216-049-11	RES, CHIP 1K 5%	1/10W	C2	1-163-141-00	CERAMIC CHIP 0.001uF 5%	50V
R134	1-216-097-00	RES, CHIP 100K 5%	1/10W	C3	1-163-092-00	CERAMIC CHIP 9PF 0.25PF	50V
R135	1-216-097-00	RES, CHIP 100K 5%	1/10W	C4	1-162-908-11	CERAMIC CHIP 3PF 0.25PF	50V
R136	1-216-089-00	RES, CHIP 47K 5%	1/10W	C5	1-163-809-11	CERAMIC CHIP 0.047uF 10%	25V
R137	1-216-017-00	RES, CHIP 47 5%	1/10W	C6	1-163-131-00	CERAMIC CHIP 390PF 5%	50V
R138	1-216-825-11	METAL CHIP 2.2K 5%	1/16W	C7	1-163-231-11	CERAMIC CHIP 15PF 5%	50V
R139	1-216-845-11	METAL CHIP 100K 5%	1/16W	C8	1-163-251-11	CERAMIC CHIP 100PF 5%	50V
R140	1-216-833-11	RES, CHIP 10K 5%	1/16W	C9	1-163-021-11	CERAMIC CHIP 0.01uF 10%	50V
R141	1-216-821-11	METAL CHIP 1K 5%	1/16W	C10	1-126-157-11	ELECT 10uF 20%	16V
R142	1-216-805-11	METAL CHIP 47 5%	1/16W	C11	1-126-157-11	ELECT 10uF 20%	16V
R152	1-216-814-11	METAL CHIP 270 5%	1/16W	C12	1-126-162-11	ELECT 3.3uF 20%	50V
R153	1-216-821-11	METAL CHIP 1K 5%	1/16W	C13	1-113-619-11	CERAMIC CHIP 0.47uF	10V
R154	1-216-857-11	METAL CHIP 1M 5%	1/16W	C14	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
R155	1-216-864-11	METAL CHIP 0 5%	1/16W	C16	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
R156	1-216-853-11	METAL CHIP 470K 5%	1/16W	C17	1-164-156-11	CERAMIC CHIP 0.1uF	25V
R157	1-216-845-11	METAL CHIP 100K 5%	1/16W	C18	1-135-259-11	TANTALUM CHIP 10uF 20%	6.3V
R158	1-216-845-11	METAL CHIP 100K 5%	1/16W	C19	1-164-346-11	CERAMIC CHIP 1uF	16V
R159	1-216-825-11	METAL CHIP 2.2K 5%	1/16W	C20	1-135-181-21	TANTALUM CHIP 4.7uF 20%	6.3V
R160	1-216-825-11	METAL CHIP 2.2K 5%	1/16W	C21	1-124-584-00	ELECT 100uF 20%	10V
R161	1-216-837-11	METAL CHIP 22K 5%	1/16W				
R162	1-216-841-11	METAL CHIP 47K 5%	1/16W				
R163	1-216-833-11	RES, CHIP 10K 5%	1/16W				
R164	1-216-841-11	METAL CHIP 47K 5%	1/16W				
R165	1-216-841-11	METAL CHIP 47K 5%	1/16W				
R171	1-216-833-11	RES, CHIP 10K 5%	1/16W				

# MAIN

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C22	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V			< DIODE >	
C23	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V	D1	8-719-072-59	DIODE SVC347S-TL	
C24	1-164-227-11	CERAMIC CHIP	0.022uF 10% 25V	D2	8-713-100-11	DIODE 1T362	
C25	1-164-346-11	CERAMIC CHIP	1uF 16V	D3	8-713-100-11	DIODE 1T362	
C26	1-164-336-11	CERAMIC CHIP	0.33uF 25V			< IC >	
C27	1-164-336-11	CERAMIC CHIP	0.33uF 25V	IC1	8-752-062-48	IC CXA1238M-T6	
C28	1-163-021-11	CERAMIC CHIP	0.01uF 10% 50V	IC2	8-759-380-15	IC LA3550MTP-1	
C29	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V	IC3	8-759-802-75	IC LA4533M	
C30	1-163-809-11	CERAMIC CHIP	0.047uF 10% 25V	IC4	8-759-510-73	IC BA10393F-E2	
C31	1-104-912-11	TANTALUM CHIP	3.3uF 20% 6.3V			< JACK >	
C32	1-126-162-11	ELECT	3.3uF 20% 50V			< SHORT >	
C33	1-126-157-11	ELECT	10uF 20% 16V	J1	1-563-298-11	JACK (SMALL TYPE) (DIA. 3.5) (☹)	
C34	1-164-336-11	CERAMIC CHIP	0.33uF 25V			< COIL >	
C35	1-164-336-11	CERAMIC CHIP	0.33uF 25V	JC1	1-216-295-00	SHORT 0 (Panama)	
C36	1-163-229-11	CERAMIC CHIP	12PF 5% 50V			< TRANSISTOR >	
C37	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V	Q1	8-729-102-07	TRANSISTOR 2SC2223-F13	
C38	1-111-253-11	TANTALUM CHIP	100uF 20% 6.3V	Q2	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
C39	1-163-251-11	CERAMIC CHIP	100PF 5% 50V	Q3	8-729-905-35	TRANSISTOR 2SC4081-R	
C40	1-163-251-11	CERAMIC CHIP	100PF 5% 50V	Q4	8-729-905-35	TRANSISTOR 2SC4081-R	
C41	1-127-569-91	TANTALUM CHIP	100uF 20% 4V	Q5	8-729-905-35	TRANSISTOR 2SC4081-R	
C42	1-124-434-00	ELECT	220uF 20% 4V	Q6	8-729-141-48	TRANSISTOR 2SB624-BV345	
C43	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V			< RESISTOR >	
C44	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V	R1	1-216-097-00	RES, CHIP 100K 5% 1/10W	
C45	1-124-584-00	ELECT	100uF 20% 10V	R2	1-216-097-00	RES, CHIP 100K 5% 1/10W	
C46	1-124-584-00	ELECT	100uF 20% 10V	R3	1-216-073-00	METAL CHIP 10K 5% 1/10W	
C47	1-163-021-11	CERAMIC CHIP	0.01uF 10% 50V	R4	1-216-057-00	METAL CHIP 2.2K 5% 1/10W	
C48	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	R5	1-216-837-11	METAL CHIP 22K 5% 1/16W	
C49	1-163-021-11	CERAMIC CHIP	0.01uF 10% 50V	R6	1-216-121-00	RES, CHIP 1M 5% 1/10W	
C50	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	R7	1-216-813-11	METAL CHIP 220 5% 1/16W	
C52	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	R8	1-216-821-11	METAL CHIP 1K 5% 1/16W	
C54	1-135-259-11	TANTALUM CHIP	10uF 20% 6.3V	R10	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
C55	1-126-518-11	ELECT	470uF 20% 4V	R11	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
C56	1-126-518-11	ELECT	470uF 20% 4V	R12	1-216-849-11	METAL CHIP 220K 5% 1/16W	
C57	1-163-009-11	CERAMIC CHIP	0.001uF 10% 50V	R13	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
C58	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V	R14	1-216-033-00	METAL CHIP 220 5% 1/10W	
C59	1-163-021-11	CERAMIC CHIP	0.01uF 10% 50V	R16	1-216-001-00	METAL CHIP 10 5% 1/10W	
C60	1-162-927-11	CERAMIC CHIP	100PF 5% 50V	R17	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
C62	1-162-927-11	CERAMIC CHIP	100PF 5% 50V	R18	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
C63	1-162-927-11	CERAMIC CHIP	100PF 5% 50V	R19	1-216-849-11	METAL CHIP 220K 5% 1/16W	
C64	1-163-251-11	CERAMIC CHIP	100PF 5% 50V	R20	1-216-065-00	RES, CHIP 4.7K 5% 1/10W	
C65	1-162-927-11	CERAMIC CHIP	100PF 5% 50V	R21	1-216-101-00	METAL CHIP 150K 5% 1/10W	
C73	1-162-970-11	CERAMIC CHIP	0.01uF 10% 25V	R22	1-216-101-00	METAL CHIP 150K 5% 1/10W	
C74	1-163-021-11	CERAMIC CHIP	0.01uF 10% 50V			< FILTER >	
C75	1-164-004-11	CERAMIC CHIP	0.1uF 10% 25V	CF1	1-760-237-11	FILTER, CERAMIC	
				CF2	1-579-638-11	FILTER, CERAMIC	
				CF3	1-760-237-11	FILTER, CERAMIC (EXCEPT Panama)	
				CF4	1-760-237-11	FILTER, CERAMIC (Panama)	
				CF5	1-760-233-71	FILTER, CERAMIC (Panama)	
						< TRIMMER >	
CT1	1-141-298-11	CAP, TRIMMER 10PF					
CT2	1-141-298-11	CAP, TRIMMER 10PF					

Ref. No.	Part No.	Description			Remark
R23	1-216-845-11	METAL CHIP	100K	5%	1/16W
R24	1-216-821-11	METAL CHIP	1K	5%	1/16W
R25	1-216-833-11	RES, CHIP	10K	5%	1/16W
R26	1-216-833-11	RES, CHIP	10K	5%	1/16W
R27	1-216-821-11	METAL CHIP	1K	5%	1/16W
R28	1-216-821-11	METAL CHIP	1K	5%	1/16W
R30	1-216-073-00	METAL CHIP	10K	5%	1/10W
R31	1-216-073-00	METAL CHIP	10K	5%	1/10W
R32	1-216-093-00	RES, CHIP	68K	5%	1/10W
R33	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R34	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R35	1-216-845-11	METAL CHIP	100K	5%	1/16W
R36	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R37	1-216-809-11	METAL CHIP	100	5%	1/16W
R38	1-216-845-11	METAL CHIP	100K	5%	1/16W
R39	1-216-817-11	METAL CHIP	470	5%	1/16W
R40	1-216-805-11	METAL CHIP	47	5%	1/16W
R41	1-216-809-11	METAL CHIP	100	5%	1/16W
R43	1-216-797-11	METAL CHIP	10	5%	1/16W
R44	1-216-097-00	RES, CHIP	100K	5%	1/10W
R45	1-216-095-00	METAL CHIP	82K	5%	1/10W
R46	1-216-845-11	METAL CHIP	100K	5%	1/16W
R47	1-216-845-11	METAL CHIP	100K	5%	1/16W

< VARIABLE RESISTOR >

RT1	1-238-663-11	RES, ADJ, CARBON 4.7K			
RV1	1-237-352-21	RES, BAR, CARBON 20K/20K (VOL)			

< SWITCH >

S1	1-570-675-11	SWITCH, SLIDE (FM SENS)			
S2	1-570-675-11	SWITCH, SLIDE (MEGA BASS)			

< TRANSFORMER >

T1	1-404-444-31	TRANSFORMER, IF			
----	--------------	-----------------	--	--	--

\*\*\*\*\*

MISCELLANEOUS

\*\*\*\*\*

2	1-771-677-11	SWITCH, RUBBER KEY			
---	--------------	--------------------	--	--	--

\*\*\*\*\*

ACCESSORIES & PACKING MATERIALS

\*\*\*\*\*

3-035-159-01	STRAP, HAND				
3-866-486-11	MANUAL, INSTRUCTION	(ENGLISH, FRENCH, GERMAN, SPANISH)			
		(Canadian, AEP, Panama, Australian)			
3-866-486-21	MANUAL, INSTRUCTION (ENGLISH) (US)				
3-866-486-31	MANUAL, INSTRUCTION (ITALIAN, DUTCH,				
	FINNISH, SWEDISH) (AEP)				
8-953-142-90	HEADPHONE MDR-W14G//K SET				

