Cat. No. 19-1110 A

OWNER'S MANUAL

Please read before using this equipment.

HTX-10

10-Meter Transceiver

RadioShack®

FEATURES

Your RadioShack HTX-10 10-Meter Transceiver is ideal for use in your vehicle. Its 25-watt SSB/FM and 7-watt AM output provides the power you need to communicate, and its tuner covers the entire 10-meter Amateur Radio band (including the 28.3 to 28.5 MHz Novice band). You can connect a DC power supply and base station antenna to your transceiver to set up a base station in your home. The transceiver's crystal-controlled circuitry provides accurate and stable channel selection, making it an ideal choice for your amateur communications needs.

Your transceiver has these advanced features:

Large, Illuminated, Digital Display — clearly shows the frequency, functions, and incoming signal strength.

1 kHz Frequency Resolution — lets you fine tune frequencies for optimum transmission and reception.

Scan — the transceiver scans its frequency range for transmissions.

MIC and RF Gain Control — lets you adjust the microphone and receiver gain to match the strength of the received signal.

Switchable Noise Blanker — reduces interference from ignition systems, motors, and other electrical equipment.

Squelch Circuit — compensates for signal fading and eliminates signal chopping.

Automatic Gain Control — maintains a constant volume level, regardless of the signal strength.

Built-In Automatic Modulation Control — ensures a constant RF modulation level.

Universal Mounting Bracket — lets you mount your transceiver securely in your vehicle or on a shelf in your home.

Important: You must have a Technician Class or higher Amateur Radio Operator's License, and a call sign issued by the FCC, to legally transmit using this transceiver. Transmitting without a license carries heavy penalties. Getting a license is easier than ever. See "Introduction to Amateur Radio" on Page 6 for more information.

We recommend you record your transceiver's serial number here. The number is on the transceiver's back panel.

Serial Number _____

MANUAL CONVENTIONS

Your transceiver's buttons perform multiple functions. The abbreviation or symbol for a function is printed on, below, or above each button.

To activate certain transceiver features, you must press **PUSH FUNC** (function) then another button.

Button names are printed in this manual in small, bold, capital letters (such as **PUSH FUNC** or **SCAN**). Words, symbols, and numbers that appear on the display are printed using a distinctive typeface (such as `28.300` or `BUSY`).

FCC INFORMATION

This device complies with Part 15 of the *FCC Rules*. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with the limits for a Class B digital device as specified in Part 15 of *FCC Rules*. These limits provide reasonable protection against radio and TV interference in a residential area. However, your equipment might cause TV or radio interference even when it is operating properly. To eliminate interference, you can try one or more of the following corrective measures:

- reorient or relocate the receiving antenna
- increase the distance between the equipment and the radio or TV

Consult your local RadioShack store if the problem still exists.

You must use shielded interface cables with this equipment.

CONTENTS

INTRODUCTION TO AMATEUR RADIO

This transceiver is a great intermediate-level tool for the experienced amateur radio operator. The transceiver opens a door for you to the world from almost anywhere! All you need is an Amateur Radio Operator's License (Novice Class, or Technician Plus, or higher) issued by the Federal Communications Commission (FCC). If you do not have a license, it is easier than ever to get one and help from licensed operators is available. Here are a few tips to help you get started.

You can turn on your transceiver and scan the entire band to hear what is going on; **however, do not attempt to transmit until you get your license**. If you transmit without a license, you are in violation of federal law. That violation can lead to severe penalties. Note that ham operators take the FCC rules very seriously and want nothing to do with "bootleggers" — their term for people who operate without a license.

Find out if there is a ham radio club in your area. Most clubs welcome newcomers and are glad to help you get your license. There are thousands of clubs across the country, so there is probably one in or near your own community. Often, the staff at your local RadioShack store can help you locate a club.

If you do not hear anyone talking about a local club in your area as you listen to local transmissions, write to the American Radio Relay League (ARRL) at the following address, to find out how to contact a local affiliate. The ARRL is the national organization representing amateur radio in the United States. The league has more than 150,000 members. Most are ham operators, or members in the process of obtaining their license.

The American Radio Relay League
225 Main Street
Newington, CT 06111

http://www.arrl.org

Start studying for the license exams. Do not be intimidated by the word "study," for most people can go from knowing absolutely nothing about amateur radio to passing the Novice and Technician written exams in less than a month.

The exams test your knowledge of basic radio regulations and elementary radio theory. Many clubs hold license classes, which can be a fun and easy way to learn about amateur radio. There are good books, cassette tapes, computer programs, and many other study aids available. Your local RadioShack store sells *FCC License Preparation* study guides for amateur radio operator licenses. While you are no longer required to learn Morse code for a Technician Class license, we encourage you to learn it anyway so you can advance to higher levels of operating privileges.

The examiners for a Novice license test can be any two ham operators who hold a general or higher class license and who are at least 18 years old and are not related to you. There is no fee to take the Novice exam. As soon as you pass the Novice exam, you can immediately take the Technician exam. There is a small fee required for taking the Technician exam, and the test must be administered by a three-member Volunteer Examiner Team. Contact the ARRL for a schedule of exam opportunities in your area.

A Novice Class or Technician Plus (or higher) license lets you use the HTX-10 to communicate directly with other operators.

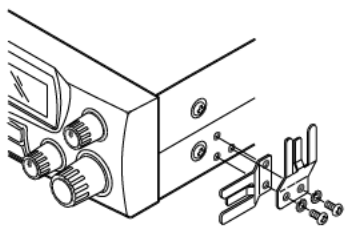
Amateur radio is a great hobby that has enriched the lives of millions of people all over the world. The ARRL would be glad to hear from you if you need more information or would like to join!

PREPARATION

ATTACHING THE MICROPHONE HOLDER

You can connect the microphone holder horizontally or vertically to either side of the transceiver or to another location in your vehicle.

Use the supplied screws and lock washers to secure the holder to the side of the transceiver.



Or, follow these steps to attach the holder to another location in the vehicle (such as the dashboard).

1. Using the holder as a template, mark the positions for the mounting screw holes at the desired location.
2. At each marked position, drill a hole slightly smaller than the supplied mounting screws.

   Caution: Be careful not to drill into anything behind the mounting surface.
3. Attach the holder at the mounting location using the supplied machine screws and lock washers.

MOUNTING THE TRANSCEIVER

The most common mounting location for this transceiver is under a vehicle's dashboard. If you use the HTX-10 as a base station, however, you can place it on a desk, shelf, or table (see “Using the Transceiver as a Base Station” on Page 14).

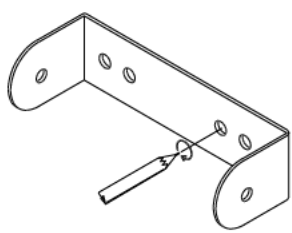
If you are mounting the transceiver in a vehicle, choose a location where:

- you can easily reach the transceiver.
- wires and cables are clear of the vehicle's pedals or other moving parts.
- the transceiver is not directly in front of heating vents.
- all wires and cables can reach their connection points.

Warning: If you use the transceiver in a vehicle, mount it securely to avoid damage to the transceiver or vehicle, and to avoid injury to anyone in the vehicle during sudden starts or stops.

Follow these steps to mount the transceiver using the supplied hardware.

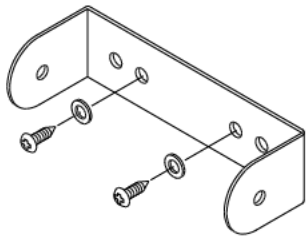
1. Using the mounting bracket as a template, mark the positions for the screw holes on the mounting surface.



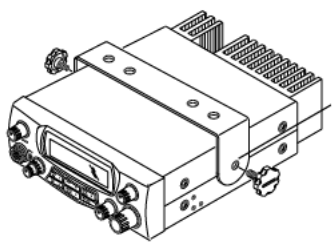
2. In each marked location, drill a hole slightly smaller than the supplied mounting screws.

   Caution: Be careful not to drill into objects behind the mounting surface.

3. Using a Phillips screwdriver, attach the mounting bracket to the mounting surface with the supplied mounting screws and flat washers.



4. Attach the transceiver to the mounting bracket using the supplied rubber washers and mounting knobs.



CONNECTING AN ANTENNA

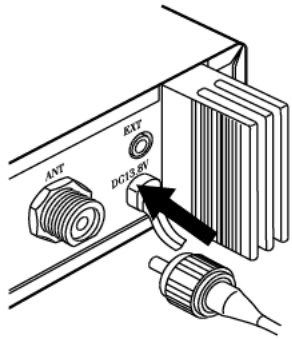
There are many different types of transceiver antennas for mobile transceivers. Each antenna type has its own benefits, so choose the one that best meets your needs. Your local RadioShack store sells a wide variety of antennas.

Note: If you are using this transceiver as a base station, see "Using the Transceiver as a Base Station" on Page 14.

When you choose an antenna, keep in mind that for the best performance you should mount the antenna:

- as high as possible on the vehicle
- as far as possible from sources of electrical noise
- vertically

Once you choose an antenna, follow its mounting instructions. Then route the cable to the transceiver and connect the cable to the **ANT** jack on the back of the transceiver.



Cautions:

- Avoid routing the cable next to sharp edges or moving parts, which might damage the cable.
- Do not run the cable next to power cables or other radio antenna cables.
- Do not run the cable through the engine compartment or other areas that produce extreme heat.

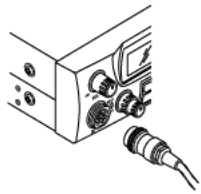
To achieve your radio's maximum range, adjust the antenna's Standing Wave Ratio (SWR). You can use an SWR meter (not supplied) to adjust the SWR for your antenna.

Follow the instructions supplied with the SWR meter and antenna to adjust your antenna's SWR to the lowest possible value. SWR values of 2.0:1 are generally acceptable, with readings of 1.5:1 or lower being more desirable.

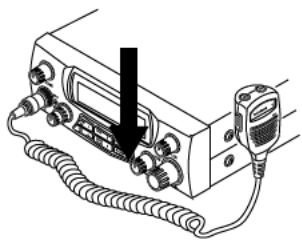
Caution: You might damage your transceiver if you use it at a high SWR value.

CONNECTING THE MICROPHONE

1. Align the slot on the bottom of the microphone's plug with the ridge inside the **MIC** jack. Then fully insert the plug into the jack.
2. Turn the plug's locking nut clockwise to tighten it.
3. Slide the microphone onto the microphone holder.



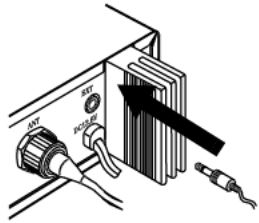
To disconnect the microphone, unscrew the locking nut and gently pull out the microphone plug. Never pull on the microphone cable to disconnect the microphone.



CONNECTING AN OPTIONAL EXTERNAL SPEAKER

You can connect an external speaker to the transceiver. The external speaker you use with the transceiver should have an impedance of 8 ohms and be able to handle 3 to 10 watts of power. The speaker's cable must have a 1/8-inch (3.5–mm) plug. Both accessories are available at your local RadioShack store.

To connect the external speaker to the transceiver, insert the speaker's plug into the **EXT** jack on the back of the transceiver

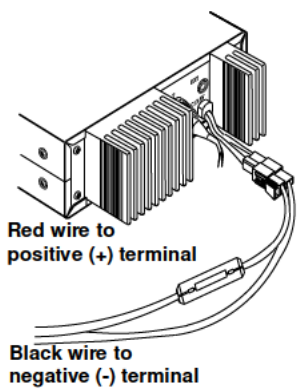


Note: Connecting an external speaker disconnects the transceiver's internal speaker.

USING VEHICLE BATTERY POWER

Follow these steps to connect the transceiver to your vehicle's battery power.

1. Connect the red wire (with in-line fuse holder) from the back of the transceiver to a point in your vehicle's fuse block that has power only when the ignition is in the ACC (accessory) or ON position.
2. Connect the black wire to a metal part of the vehicle's frame (chassis ground).



Caution: Do not connect the black wire to a non-metallic (plastic) part, or to any part insulated from the vehicle's chassis by a non-metallic part.

3. Connect the single connector end of the power cord to the connector on the back of the transceiver.

USING THE TRANSCEIVER AS A BASE STATION

Although this transceiver is designed mainly for mobile use, you can also use it as a base station with an AC power source. For base station installation, you need these items.

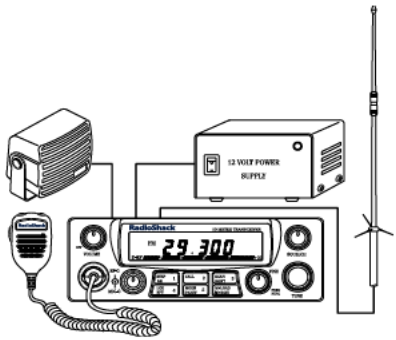
- a 12-volt DC power supply that can supply at least 7 amps

  Caution: Most 12-volt DC power supplies plug into a standard AC outlet to produce DC power. Before connecting your transceiver to a 12-volt DC power supply, read and follow the instructions included with the power supply.

- base station antenna
- coaxial antenna cable and connectors
- external 8-ohm speaker

  Note: Your local RadioShack store carries everything you need to use the transceiver as a base station.

Follow these steps to install the transceiver as a base station.



1. Mount the base station antenna as described in its owner's manual.

   Warning: Use extreme caution when you install or remove a base station antenna. If the antenna starts to fall, let it go! It could contact overheard power lines. If the antenna touches a power line, contact with the antenna, mast, cable, or guy wires can cause electrocution and death. Call the power company to remove the antenna. DO NOT attempt to do so yourself.

2. Connect the antenna to the **ANT** jack on the back of the transceiver.

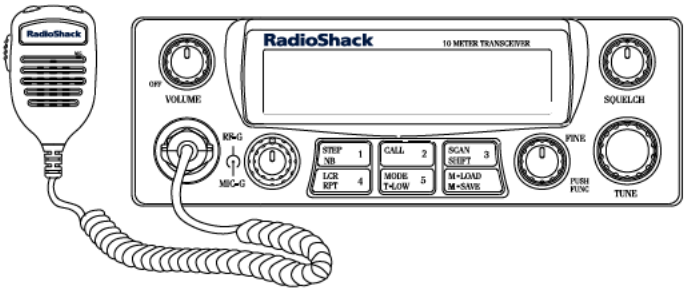
3. Connect the transceiver's black power wire to the negative (–) terminal on the DC power supply.

4. Connect the transceiver's red wire (with in-line fuse holders) to the positive (+) terminal on the DC power supply.

5. Connect the single–connector end of the power cord to the connector on the back of the transceiver.

6. Connect the DC power supply to a standard AC outlet.

A QUICK LOOK AT THE CONTROLS



OFF/VOLUME — turns the radio on/off; adjusts the volume

RF-G/MIC-G — attenuates strong signals; reduces the microphone's gain and SSB transmitting power

STEP/NB/1 — selects the frequency tuning step; turns the noise blanker on/off; selects memory Channel 1

CALL/2 — quickly recalls a frequency in memory Channel 2; selects memory Channel 2

SCAN/SHIFT/3 — starts/stops scanning; selects the frequency shift; selects memory Channel 3

LCR/4 — recalls the last tuned channel; selects memory Channel 4

MODE/T-LOW/5 — selects the operation band, AM/FM/USB/LSB; turns hi-cut filter on/off; selects memory Channel 5

M-LOAD/M-SAVE — loads from/saves to a memory location

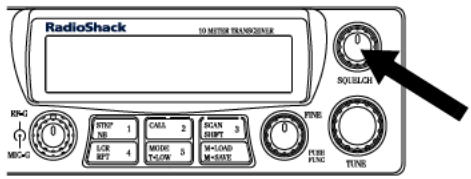
FINE/PUSH FUNC — adjusts fine tuning; activates second function

SQUELCH — sets the squelch level to block weak signals

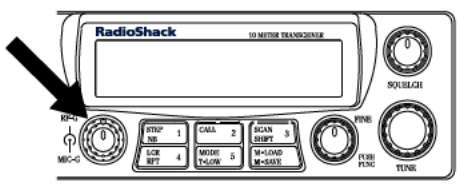
TUNE — selects a frequency

SETTING SQUELCH AND RECEIVING

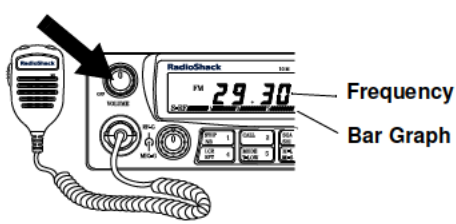
1. Rotate **SQUELCH** fully counterclockwise.



2. Rotate **RF-G** fully clockwise.



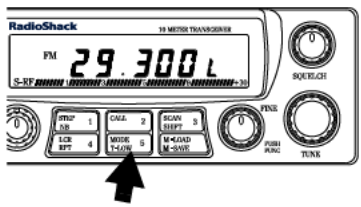
3. To turn on the transceiver, rotate **OFF/VOLUME** clockwise until it clicks. The display lights and the frequency appears. A bar graph also appears which shows the received signal's strength.



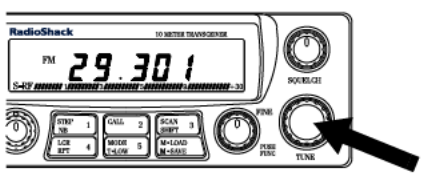
4. Set **OFF/VOLUME** to a comfortable listening level.
5. Rotate **SQUELCH** clockwise until you hear a hissing sound. Then slowly rotate **SQUELCH** counterclockwise just until the noise stops.

Note: If the transceiver picks up unwanted weak transmissions, rotate **RF-G** slightly counterclockwise to decrease the transceiver's sensitivity to signals. The transceiver blocks the weak transmissions.

6. Repeatedly press **MODE** to select the desired band (FM, AM, USB (upper sideband), or LSB (lower sideband)).



7. Rotate **TUNE** or press **UP** or **DN** on the top of the microphone to select a frequency.



8. To turn off the transceiver, rotate **OFF/VOLUME** counterclockwise until it clicks.

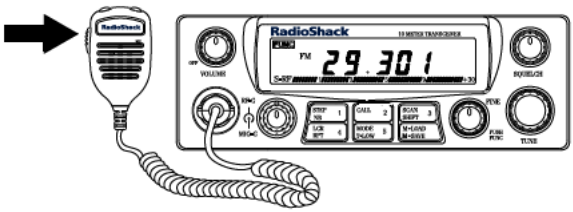
TRANSMITTING

Notes:

- Do not attempt to transmit unless you possess a valid amateur radio license.
- We recommend you try receiving before you transmit.

1. Follow Steps 1–7 in "Setting Squelch and Receiving" on Page 17.
2. Turn **MIC-G** fully clockwise.

3. To transmit, hold down the push-to-talk button on the microphone, hold the microphone 2–3 inches from your mouth, and speak in a normal tone of voice. **TX** appears along with a bar graph which shows the strength of your transmission.



4. When you finish transmitting, release the PTT button. **TX** and the signal strength bars disappear.
5. To turn off the transceiver, rotate **OFF/VOLUME** counterclockwise until it clicks.

NOTES ON SSB RECEPTION

- If the voice sounds distorted, slowly rotate **FINE** to bring the signal into its natural voice tonal range.
- An SSB signal produces a fluttering, unintelligible sound when received in the AM mode. Set the mode switch to either LSB or USB, and adjust **FINE**. If the voice is still not intelligible, it might be an SSB signal operating on the other sideband — try the other SSB mode.

SPECIAL FEATURES

USING THE SPECIAL FEATURES

Your transceiver has several advanced features that give you additional control and convenience while using it.

This list provides additional information about your transceiver's special features.

Feature	See:
Step — let's you change the increment you set to tune frequencies in the 10-meter band.	Page 21
Call — recalls a specific frequency in memory channel 2.	Page 22
Scan — scans incoming signals.	Page 22
Last Channel Recall — returns to the last channel that was transmitted.	Page 23
M-LOAD — recalls frequencies stored in memory Channels 1–5.	Page 23
NB (Noise Blanker) — reduces electrical noise.	Page 23
Shift — lets you set the frequency shift direction and offset frequency.	Page 24
T-LOW (Tone Low) — turns the high-cut filter on or off.	Page 24
M-SAVE (Memory Save) — saves up to five frequencies into memory channels.	Page 25
FINE (Clarifier) — tunes in stations or tunes out interference broadcast using an SSB signal.	Page 25

Feature	See:
RF-G (RF Gain) — attenuates strong signals.	Page 26
MIC-G (Microphone Gain) — reduces the microphone gain and SSB transmitting power,	Page 26

Using STEP

Repeatedly press **STEP** to select the frequency step your transceiver displays when it shows a frequency. As you press **STEP**, one of the three frequency digits flashes for about 2 seconds to show which digit is selected. The increment that the selected digit displays is:

- the rightmost digit: 1 kHz
- the second digit from the right: 10 kHz
- the third digit from the right: 100 kHz

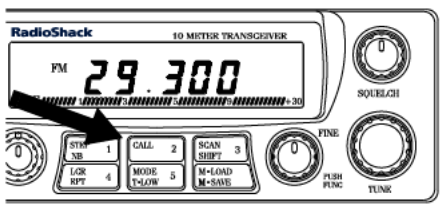
Using CALL

The transceiver's call memory lets you quickly recall a specific frequency in memory Channel 2.

Note: See "Using M-SAVE (Memory Save)" on Page 25 for more information about storing a frequency in memory channel 2.

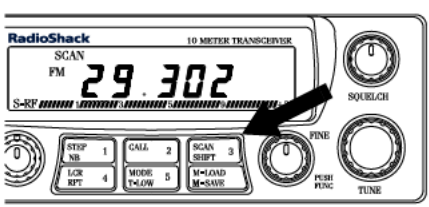
Press **CALL** to recall the stored frequency at any time. The frequency flashes.

Press **CALL** again and the last selected frequency appears.



Using SCAN

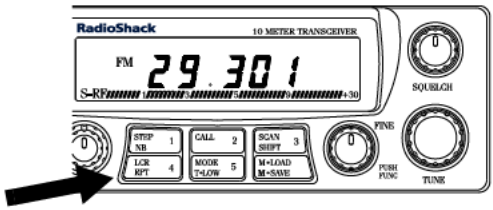
Press **SCAN** to scan incoming signals. **SCAN** appears and the transceiver stops for 5 seconds on each channel when it detects a signal.



To stop scanning, press **SCAN** or the PTT button on the microphone. **SCAN** disappears.

Using LCR (Last Channel Recall)

Press **LCR** to return to the last channel you selected.



Using M-LOAD

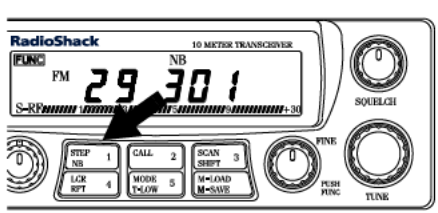
You can recall frequencies stored in memory Channels 1–5.

Note: See "Using M-SAVE (Memory Save)" on Page 25 for more information about storing frequencies in memory channels.

To recall a memory channel, press **M-LOAD** so **L** appears, then, press the desired memory channel number.

Using NB (Noise Blanker)

If the transceiver's reception is disturbed by interference from electrical noise (such as ignition noise), you can reduce the noise by using the transmitter's noise blanker feature. To turn on or off the noise blanker, press **PUSH FUNC** then **NB**. **NB** appears while the noise blanker is on.

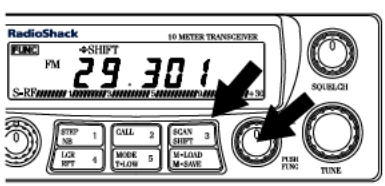


Using SHIFT

The transceiver's shift function lets you set the transmit frequency shift from the receive frequency in either direction within the range of 0.0 Hz to 990 kHz.

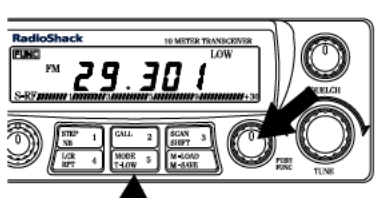
Follow these steps to set the frequency shift direction and offset frequency.

1. To set the frequency shift direction to **+**, press **PUSH FUNC** then press **SHIFT** while **FUNC** appears. **+SHIFT** appears. Press **PUSH FUNC** and **SHIFT** again while **FUNC** appears to set the frequency shift direction to **–**. **–SHIFT** appears.
2. Press **PUSH FUNC** then **SHIFT** for about 3 seconds. **000** appears.
3. Rotate **TUNE** to set the offset frequency to any frequency from 0 to 990 kHz.
4. To exit, hold down **PUSH FUNC** and **SHIFT** together for about 3 seconds.



Using T-LOW (Tone-Low)

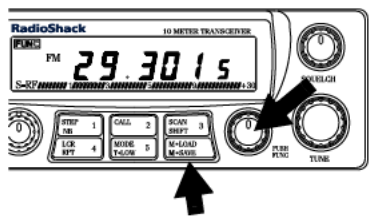
Press **PUSH FUNC** then **T-LOW** to turn the high-cut filter on or off. **LOW** appears when the high-cut filter is on.



Using M-SAVE (Memory Save)

Follow these steps to save up to five frequencies into memory channels.

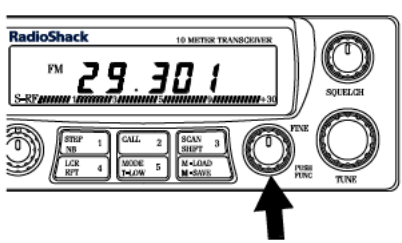
1. Select the desired frequency.
2. Press **PUSH FUNC** then **M-SAVE**. **S** appears.



3. While **S** appears, press the desired memory channel number. The transceiver stores the frequency you selected into the memory channel you selected.
4. To recall a frequency you stored, see “Using M-LOAD” on Page 23.

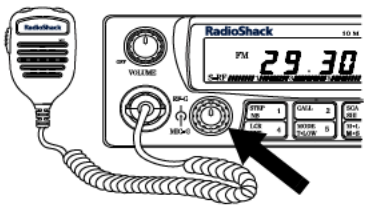
Using FINE (Clarifier)

When you listen to an SSB signal, rotate **FINE** to tune in slightly off-frequency stations or to tune out interference from adjacent channels.



Using RF-G (RF Gain)

When you receive an extremely strong signal, rotate **RF-G** counterclockwise to attenuate the signal.



Using MIC-G (Microphone Gain)

Rotate **MIC-G** to adjust the transmitter's microphone gain and SSB transmitting power for the best audio quality.

TURNING THE KEY TONE ON AND OFF

The transceiver is preset to sound a tone each time you press a key. To turn the transceiver's key tone on or off, turn on the transceiver while holding down the push-to-talk button on the microphone.

CARE AND MAINTENANCE

Your HTX-10 10-Meter Transceiver is an example of superior design and craftsmanship. The following suggestions will help you care for your transceiver so you can enjoy it for years.

Keep the transceiver dry. If it gets wet, wipe it dry immediately. Liquids might contain minerals that can corrode the electronic circuits.

Use and store the transceiver only in normal temperature environments. Temperature extremes can shorten the life of electronic devices and distort or melt plastic parts.

Keep the transceiver away from dust and dirt, which can cause premature wear of parts.

Handle the transceiver gently and carefully. Dropping it can damage circuit boards and cases and can cause the transceiver to work improperly.

Wipe the transceiver with a damp cloth occasionally to keep it looking new. Do not use harsh chemicals, cleaning solvents, or strong detergents to clean the transceiver.

Modifying or tampering with the transceiver's internal components can cause a malfunction and might invalidate its warranty and void your FCC authorization to operate it. If your transceiver is not performing as it should, take it to your local RadioShack store for assistance.

TROUBLESHOOTING

If your transceiver is not working as it should, these suggestions might help you eliminate the problem. If the transceiver still does not operate properly, take it to your local RadioShack store for assistance.

Problem	Possible Causes	Remedies
Trouble with reception.	The squelch might need to be adjusted.	Adjust the squelch.
	The transmitter might not be set to an operating frequency.	Tune the transceiver to an operating frequency.
	The microphone might not be connected.	Make sure the microphone is connected.
	The antenna might not be connected.	Make sure the antenna is connected.
	The receive mode might not be properly set.	Set the receive mode to FM, AM, LSB, or USB.
Trouble with transmission.	The antenna might not be connected.	Make sure the antenna is connected.
	The microphone might not be connected.	Make sure the microphone is connected.
	The microphone's push–to–talk button might not be fully pressed in.	Press the microphone's button in fully.

Problem	Possible Causes	Remedies
Trouble with transmission (continued)	The microphone's gain might not be properly set.	Adjust **MIC-G**.
Transceiver does not work at all.	The power cord might not be connected.	Make sure the power cord is connected.
	The power cord's fuse might be blown.	Replace the fuse (see "Replacing the Fuse" on Page 30).

The transceiver should be serviced only by a qualified radio technician. If you still have problems, take your transceiver to a local RadioShack store for assistance.

NOISE REDUCTION

Because your transceiver is exceptionally quiet, any noise you hear is probably from an external source in your vehicle such as your vehicle's alternator, radio, or spark plugs.

To solve the problem, you must go to the noise's source. You can determine the noise's source by turning off the engine and operating the transceiver with your vehicle's ignition set to ACC. If the noise decreases, the problem is in your vehicle's ignition or electrical system.

Here are a few hints to help you reduce or eliminate such noise:

- Make all transceiver power and antenna wires as short as possible.
- Route the power wires away from the antenna wires.

- Be sure that the chassis ground connection is secure.
- Replace old ignition wires with new, high-voltage, noise suppression wires.
- Install noise suppressors on your spark plugs, or install new spark plugs that have built in noise suppressors.
- If problems persist, check your alternator/generator and regulator gauges. You can reduce the noise from these sources by using bypass capacitors at the various output voltage points.

Your local RadioShack store has a wide selection of noise suppression accessories.

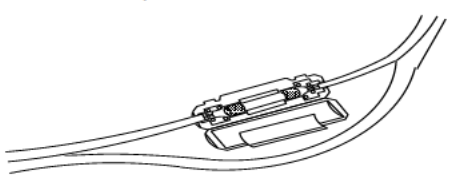
REPLACING THE FUSE

If the HTX-10 stops operating, you might need to replace the red power wire's fuse with the supplied spare fuse.

Caution: Do not use a fuse with ratings other than those specified here. Doing so might damage your transceiver.

Follow these steps to replace your transceiver's fuse.

1. Make sure the power source and transceiver are both off.
2. Pull the latches apart on the fuse holder until it opens.



3. If the fuse is blown, replace it. Use only a standard $1^{1}/_{4} \times {}^{1}/_{4}$ inch fast-acting fuse with the proper rating. The fuse must be 10 amps.

Caution: The supplied fuse has the proper ratings. Make sure you replace a fuse only with another fuse of the same rating.

4. Reassemble the fuse holder by squeezing it together until it snaps shut.

SPECIFICATIONS

GENERAL

Frequency Range ..... 28.000 MHz to 29.699 MHz
Tuning Step ..... 1 kHz/10 kHz/100 kHz (selectable)
Frequency Generation ..... Digital PLL Synthesizer
Antenna Connector ..... 50 ohm coaxial connector
Microphone ..... Electret condenser type
Operating Temperature ..... –4° to 122°F (–10° to 55°C)
Power Source ..... 12–16V DC, negative or positive ground
Speaker ..... 8 ohm, 2 watt
Impedance ..... 50 ohm
Dimensions (HWD) ..... $6^{1}/_{16} \times 2^{3}/_{64} \times 9^{41}/_{64}$ inches (154 × 52 × 248 mm)
Weight (without batteries) ..... 2.65 lb (1.2 kg)
Accessories ..... Microphone, Microphone Holder, Mounting Hardware, Mounting Bracket, DC Power Cord, Spare Fuse

RECEIVER

Sensitivity ..... 0.5 µV for 10 dB S/N
Audio Output @ 10% THD (External) ..... 2.5 W at 8 ohm
Selectivity ..... 50 dB min
Intermodulation ..... 60 dB min
Distortion ..... 10% max
S/N Ratio ..... 40 dB min
IF Rejection ..... 70 dB or better

TRANSMITTER

Power Output ..... 7w (AM), 25w (FM/SSB)
Distortion 5%
Deviation ..... ±2 kHz
S/N Ratio..... 40 dB
Spurious Emission ..... –65 dB or better
Battery Drain:
At max output power ..... AM Less than 3.0 A, FM Less than 5.0 A, SSB 5.0 A
At no modulation ..... AM Less than 3.0 A, FM Less than 5.0 A, SSB 1.0 A

Specifications are typical; individual units might vary. Specifications are subject to change and improvement without notice.

NOTES

Limited Ninety-Day Warranty

This product is warranted by RadioShack against manufacturing defects in material and workmanship under normal use for ninety (90) days from the date of purchase from RadioShack company-owned stores and authorized RadioShack franchisees and dealers. EXCEPT AS PROVIDED HEREIN, RadioShack MAKES NO EXPRESS WARRANTIES AND ANY IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO THE DURATION OF THE WRITTEN LIMITED WARRANTIES CONTAINED HEREIN. EXCEPT AS PROVIDED HEREIN, RadioShack SHALL HAVE NO LIABILITY OR RESPONSIBILITY TO CUSTOMER OR ANY OTHER PERSON OR ENTITY WITH RESPECT TO ANY LIABILITY, LOSS OR DAMAGE CAUSED DIRECTLY OR INDIRECTLY BY USE OR PERFORMANCE OF THE PRODUCT OR ARISING OUT OF ANY BREACH OF THIS WARRANTY, INCLUDING, BUT NOT LIMITED TO, ANY DAMAGES RESULTING FROM INCONVENIENCE, LOSS OF TIME, DATA, PROPERTY, REVENUE, OR PROFIT OR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, EVEN IF RadioShack HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

In the event of a product defect during the warranty period, take the product and the RadioShack sales receipt as proof of purchase date to any RadioShack store. RadioShack will, at its option, unless otherwise provided by law: (a) correct the defect by product repair without charge for parts and labor; (b) replace the product with one of the same or similar design; or (c) refund the purchase price. All replaced parts and products, and products on which a refund is made, become the property of RadioShack. New or reconditioned parts and products may be used in the performance of warranty service. Repaired or replaced parts and products are warranted for the remainder of the original warranty period. You will be charged for repair or replacement of the product made after the expiration of the warranty period.

This warranty does not cover: (a) damage or failure caused by or attributable to acts of God, abuse, accident, misuse, improper or abnormal usage, failure to follow instructions, improper installation or maintenance, alteration, lightning or other incidence of excess voltage or current; (b) any repairs other than those provided by a RadioShack Authorized Service Facility; (c) consumables such as fuses or batteries; (d) cosmetic damage; (e) transportation, shipping or insurance costs; or (f) costs of product removal, installation, set-up service adjustment or reinstallation.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

RadioShack Customer Relations, 200 Taylor Street, 6th Floor, Fort Worth, TX 76102

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RadioShack®

Service Manual

19-1110

HTX-10
10-METER TRANSCEIVER
Catalog Number : 19-1110

CONTENTS

SPECIFICATIONS

General

Frequency Resolution ..... AM/FM/SSB 100KHz,10KHz,1KHz STEP
Frequency Range ..... 28.000 MHz to 29.699 MHz
Semiconductors ..... 69 Transistors, 75 Diodes, 9 ICs
Crystals ..... 3 Crystals
Microphone ..... Built-in Electric Condenser Type with FET Amplifier
Speaker ..... 8 ohm 2W
Antenna Connector ..... M Type
Dimensions(WHD) ..... 6-1/16"x 2-3/64"x 8-85/100"Inches (154 x 52 x 225)mm
Accessories ..... DC Power Cord With in-line fuse, Microphone Hanger, Mounting Bracket
Weight ..... 2 lbs 10 ozs (1.18kg)

Measurement Conditions (90% Population)

Power Source ..... 13.8V (DC)
Antenna Impedance ..... 50 ohm
Test Temperature ..... 77°F (25°C)
AM Modulation Frequency 1kHz
SSB Modulation Frequency, Transmit
  Two Tones ..... 500 Hz & 2400 Hz
  Single Tone ..... 1 kHz
Min. Signal Input Level 1000uV
Reference Audio Output Power 0.5W
Reference AM Modulation Percentage ..... 1 kHz 30%
Reference FM Modulation ..... 1 KHz/1 KHz Deviation
Audio Frequency, SSB Receive ..... 1 kHz
Audio Output Load ..... 8 ohm resistive

Transmitter Section

Items		Unit	Nominal	Limit
Frequency Tolerance at 77°F	AM	%	±0.0005	±0.003
(25℃) at (5 Minutes after switch)	FM	%	±0.0005	±0.003
	SSB	%	±0.0005	±0.003
Carrier Power at No Modulation	AM	W	7	6-8
	FM	W	25	23-30
	SSB	W PEP	25	23-30
PEP Power, Single Tones,				
Modulation Distortion at 1kHz,	AM	%	3	6
50% Modulation	FM	%	3	6
1.2kHz Deviation				
Spurious Harmonic Suppression	AM	dB	-70	-60
	FM	dB	-70	-60
	SSB	dB	-70	-60
Carrier Suppression	SSB	dB	40	-38
Current Drain at No Modulation	AM	mA	4000	4500
	FM	mA	6000	6500
	SSB	mA	800	1000
Current Drain				
AM: Max Mod		mA	4000	4500
FM: Max Mod		mA	6000	6500
SSB: Max Watt PEP, Single Tones		mA	6000	6500
Modulation Frequency Response				
(1kHz, 0dB Reference)				
Lower Frequency	AM	Hz	450	250-650
	FM	Hz	450	250-650
	SSB	Hz	450	250-650
Upper Frequency	AM	Hz	2500	1500-4000
	FM	Hz	2500	1500-4000
	SSB	Hz	3500	1500-5000
Carrier Power Uniformity, CH to CH				
at No Modulation	AM	W	±1	±2
	FM	W	±3	±4
Microphone Sensitivity				
AM: For 50% Mod.		mV	1.5	6
FM: For 1kHz DEV.		mV	1.5	6
SSB: For 10W PEP.		mV	1.5	6
AMC Range				
AM: 50-100% Mod.		dB	40	30
FM: 1.5-2.5kHz DEV.		dB	40	30
SSB: 10-30Watts PEP		dB	40	30
Modulation Capability	AM	%	95	80-100
RPT Modulation Capability	FM	kHz	0.7	0.4-1.0
RF Meter (S+3) Indication	SSB	W	5	4-6
1kHz Single Tone				

Receiver Section

Item		Unit	Nominal	Limit
Exterior Maximum Audio	AM	W	2.5	2
Output Power	FM	W	2.5	2
	SSB	W	2.5	2
Interior Maximum audio	AM	W	1	2
Output Power	FM	W	1	2
	SSB	W	1	2
Exterior Audio Output Power	AM	W	1.5	1
at 10% THD	FM	W	1.5	1
	SSB	W	1.5	1
Interior Audio Output Power	AM	W	1	2
at 10% THD	FM	W	1	2
	SSB	W	1	2
THD at 500mW Audio Output				
AM: 1mV Input, 30%		%	3	10
80%		%	5	10
FM: 1mV Input, 1kHz DEV		%	5	10
SSB: 1mV Input, 1kHz		%	3	10
Single Tone RF Gain	AM	dB	60	50-75
Control Range at Max	FM	dB	60	50-75
Sensitivity Level	SSB	dB	60	50-75
S/N Ratio at Input 1mV	AM	dB	40	34
	FM	dB	40	34
	SSB	dB	40	34
Squelch Sensitivity at	AM	uV	0.6	1
Threshold	FM	uV	0.6	1
	SSB	uV	0.6	1
Squelch Sensitivity at Tight	AM	uV	1000	320-3200
	FM	uV	1000	320-3200
	SSB	uV	1000	320-3200
Skirt Rejection (±20kHz)	AM	dB	70	60
	FM	dB	70	60
	SSB	dB	70	60
S Meter Sensitivity at "S-9"	AM	uV	100	30-320
(No Modulation AM)	FM	uV	100	30-320
	SSB	uV	100	30-320
Image Rejection Ratio	AM	dB	76	60
fo-(2 x 10.695)	FM	dB	76	60
	SSB	dB	76	60
1/2 IF Rejection Ratio	AM	dB	70	60
fo-(10.695 MHz/2)	FM	dB	70	60
	SSB	dB	70	60
Oscillator Dropout Voltage	AM	V	9	11
	FM	V	9	11
	SSB	V	9	11
Current Drain at No Signal	AM	mA	400	500
	FM	mA	400	500
	SSB	mA	400	500
Current Drain at Maximum	AM	mA	600	1000
Audio Output Power	FM	mA	600	1000
	SSB	mA	600	1000
FINE Range	AM	kHz	±1.5	±0.8-±3.0
	FM	kHz	±1.5	±0.8-±3.0
	SSB	kHz	±1.5	±0.8-±3.0

Items		Unit	Nominal	Limit
Desensitization	AM	dB	50	40
(3dB Desensitivity) at 100uV	FM	dB	50	40
	SSB	dB	50	40
(ANC & Noise Blanker Switch	AM	uV	0.5	1
Off) Max sensitivity	FM	uV	0.25	0.5
	SSB	uV	0.25	0.5
Sensitivity for 10dB S/N	AM	uV	0.5	1
	FM	uV	0.16	0.25
	SSB	uV	0.16	0.25
AGC Figure of Merit 100mV				
for 10dB Change in	AM	dB	90	80
Audio Output	SSB	dB	90	80
Overload AGC Characteristics	AM	dB	±3	±6
from 100mV to 1000mV	SSB	dB	±3	±6
Overall Audio Fidelity at 6dB				
Down Upper Frequency	AM	Hz	2000	1500-3000
	FM	Hz	2000	1500-3000
	SSB	Hz	3500	2500-5000
Lower Frequency	AM	Hz	400	300-600
	FM	Hz	400	300-600
	SSB	Hz	450	250-650
Cross Modulations,RS Standard	AM	dB	60	50
	FM	dB	60	50
Adjacent Channel Selectivity	AM	dB	60	50
±10kHz	FM	dB	60	50
IF Rejection Ratio	AM	dB	70	60
	FM	dB	70	60
	SSB	dB	70	60

DISASSEMBLY INSTRUCTIONS

■ **To remove the Top and Bottom cover (Figure 1).**
- Remove two mounting screws Ⓐ.
- Remove four screws Ⓑ from each side of the top and bottom covers.

■ **To remove the Front panel Assembly (Figures 2, 3 and 4).**
- Remove ring nut Ⓒ.
- Remove six knobs Ⓓ.
- Remove four screws Ⓔ from each side. Pull the front panel.

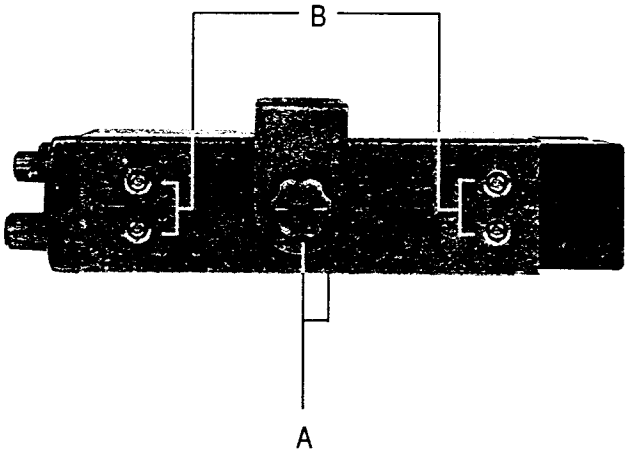


Figure 1

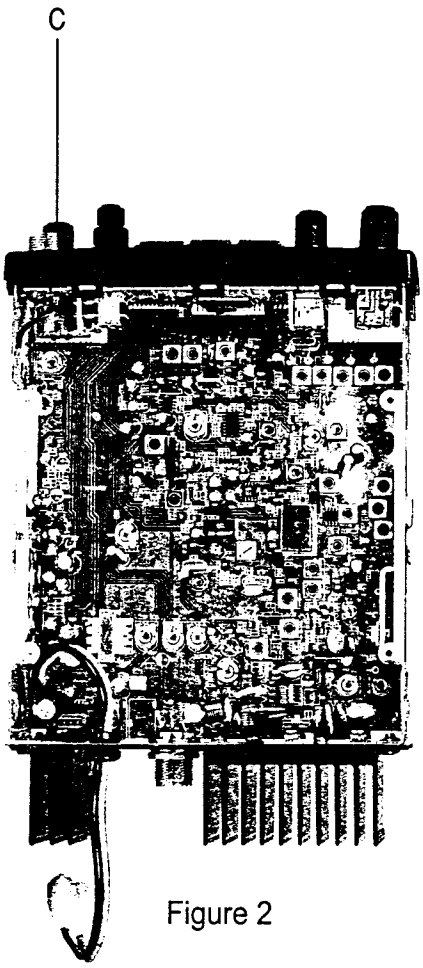


Figure 2

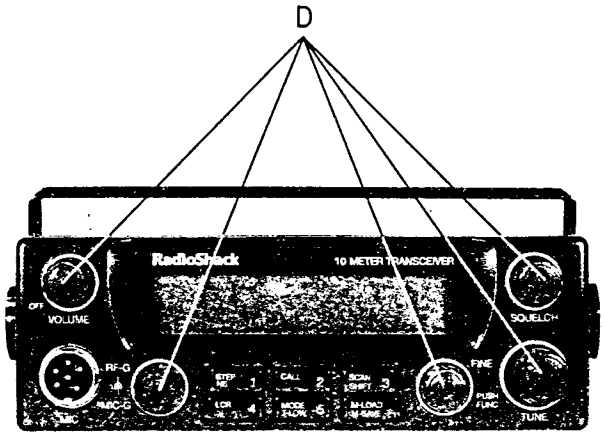


Figure 3

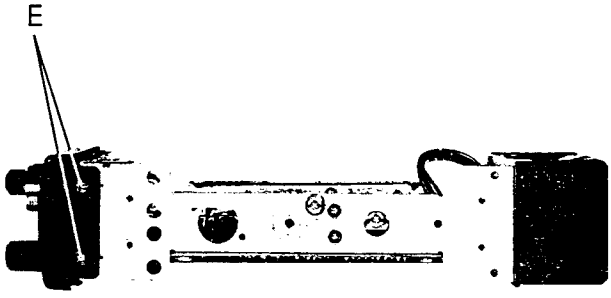
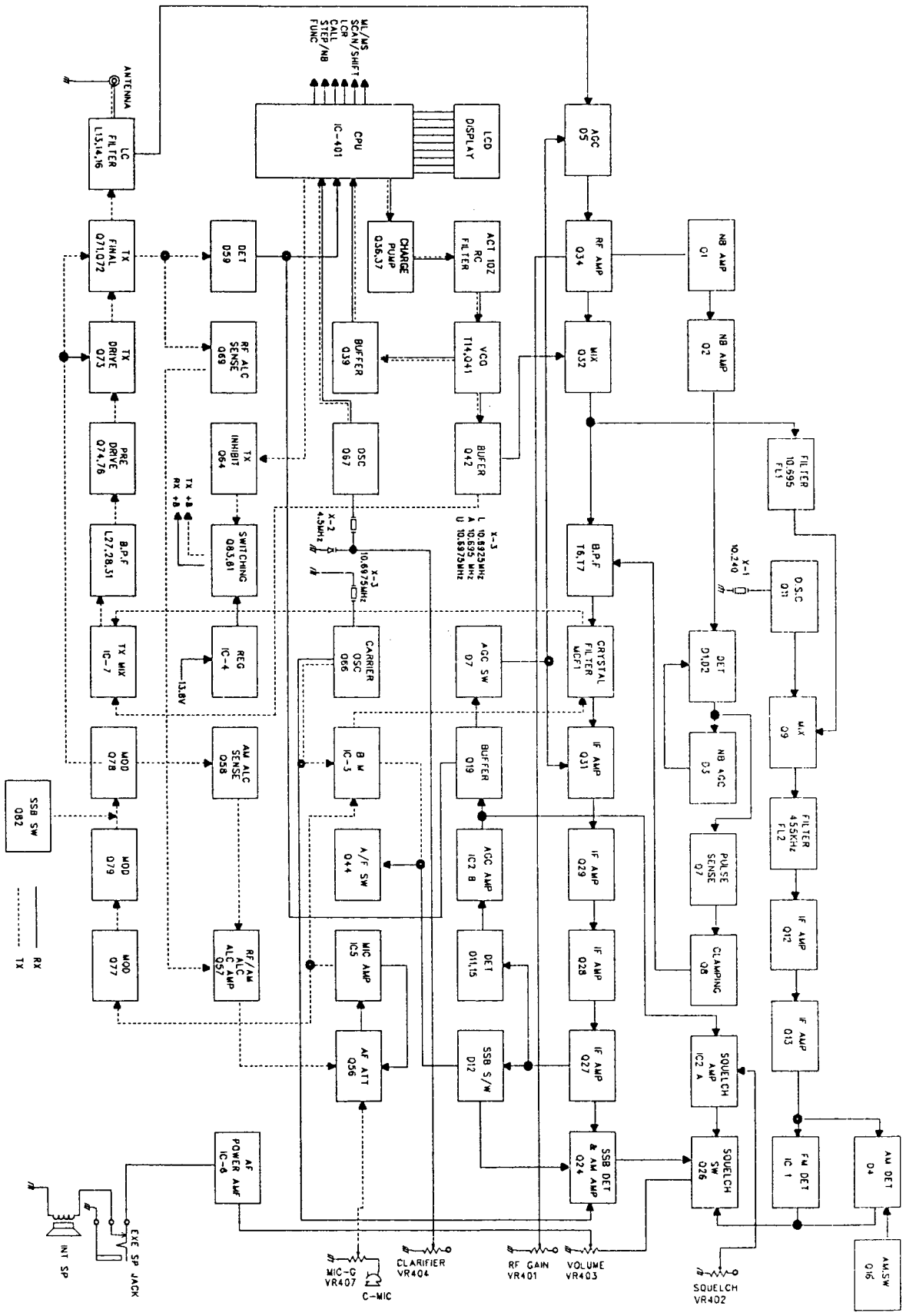
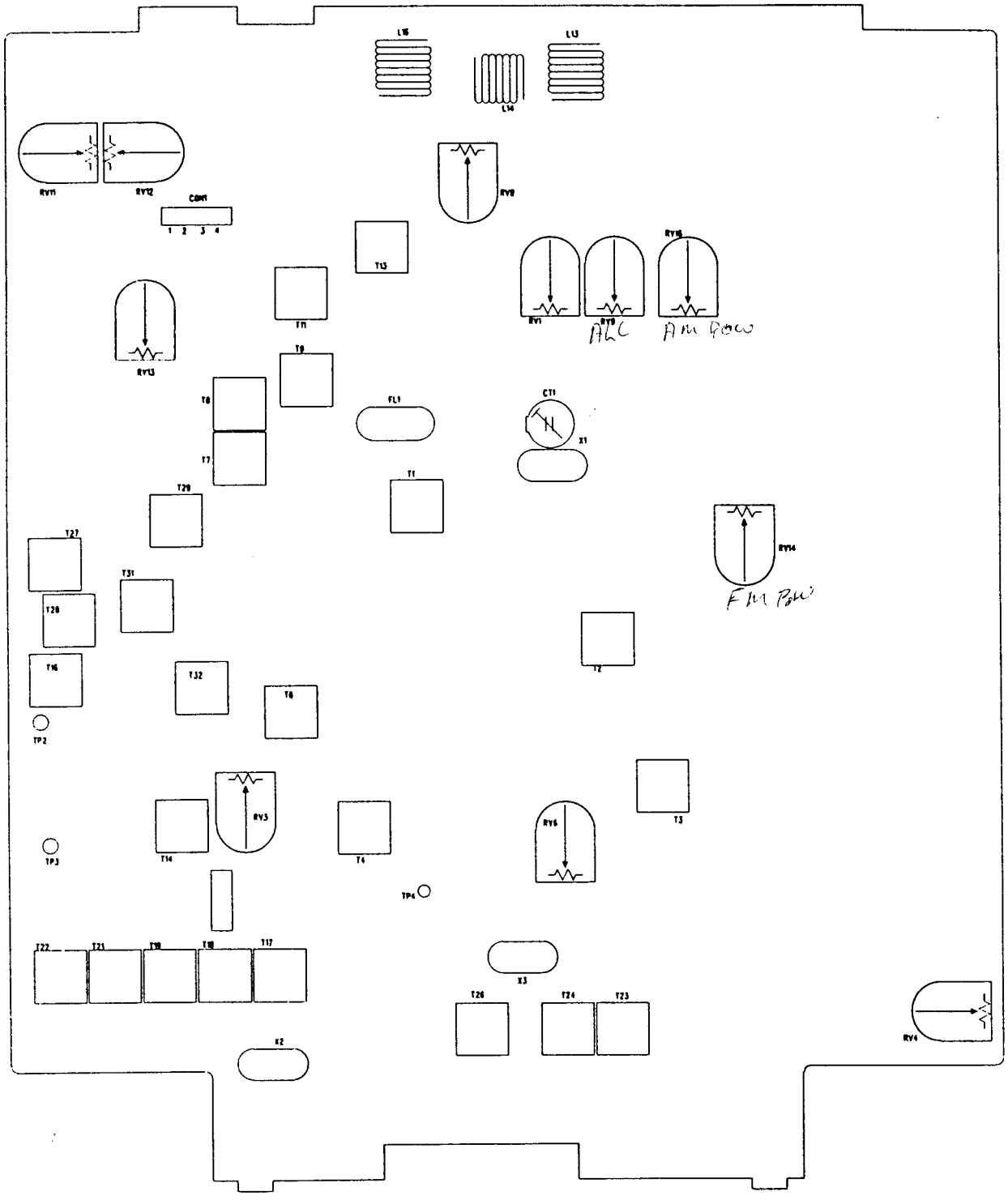


Figure 4

BLOCK DIAGRAM



ALIGNMENT AND ADJUSTMENT



Alignment Parts Locations

PLL Selection

■ **Test Equipment Required:**
- Oscilloscope (DC-50 MHz)
- Frequency Counter (0-30 MHz)
- DC Power Supply
- DC Voltmeter

■ **Test Equipment Connection**

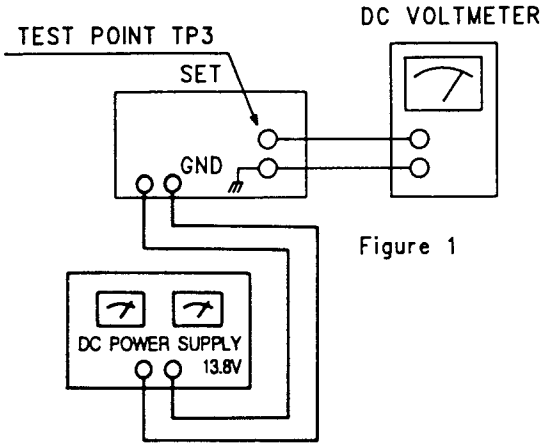


Figure 1

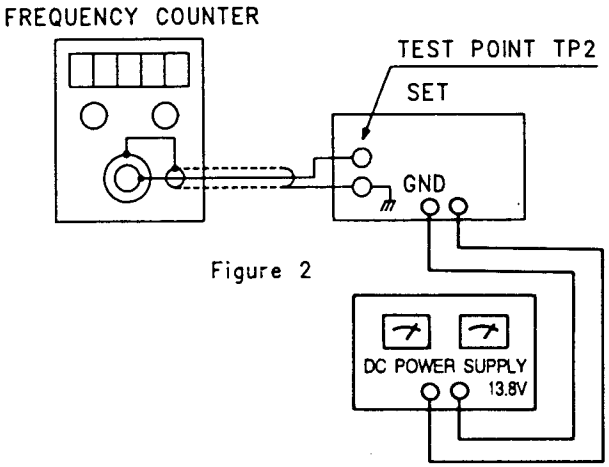


Figure 2

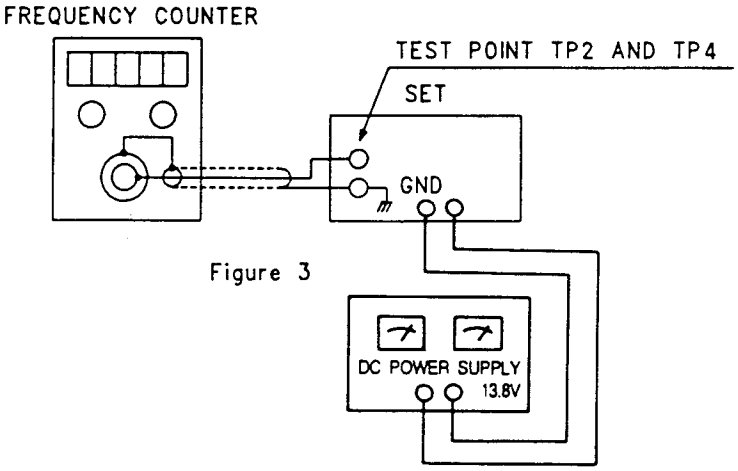


Figure 3

Alignment Procedure

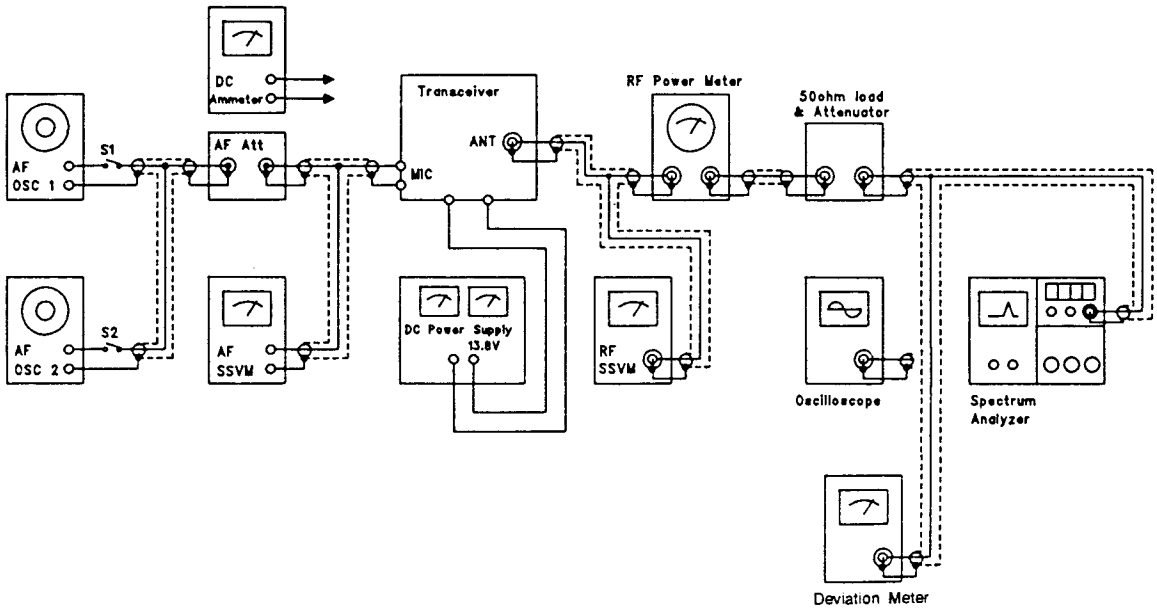
Step	Preset to	Connection	Adjustment
1	Frequency: 28.000MHz AM, RX Clarifier in Center	TP3 Figure1	Adjust T14 for 4V DC reading on DC Voltmeter.
2	Same as step 1. Frequency: 29.699MHz	TP3 Figure1	Check that the voltage is more than 6.5V DC on DC Voltmeter.
3	Same as step 1. Frequency: 28.000 MHz 28.001 MHz 28.002 MHz 28.003 MHz 28.004 MHz	TP2 Figure2	Adjust T17 for 38.695 MHz ±20 Hz. Adjust T18 for 38.696 MHz ±20 Hz. Adjust T19 for 38.697 MHz ±20 Hz. Adjust T21 for 38.698 MHz ±20 Hz. Adjust T22 for 38.699 MHz ±20 Hz.
4	Same as step 1. Frequency:28.000 MHz LSB,RX	TP4 Figure3	Adjust T24 for 10.6925 MHz ±20 Hz.
5	Same as step 1. Frequency:28.000 MHz USB,RX	TP4 Figure3	Adjust T26 for 10.6975 MHz ±20 Hz.
6	Same as step 1. Frequency:28.000 MHz TX,AM Disconnect MINI JUMPER 1,2 and 3,4 (CON1)	TP4 Figure3	Adjust T23 for 10.6950 MHz ±5 Hz.

Transmitter Section

■ Equipment Required

- AF Oscillator (two required)
- AF SSVM (Full scale: 1V DC with RF probe)
- DC Ampare meter
- RF Power Meter
- 50 ohm load and Attenuator
- Oscilloscope
- RF SSVM
- Monitor Receiver or Spectrum Analyzer
- DC Power Supply (13.8V / 10Amp.)
- Deviation meter

■ Test Equipment Connection



Alignment Procedure

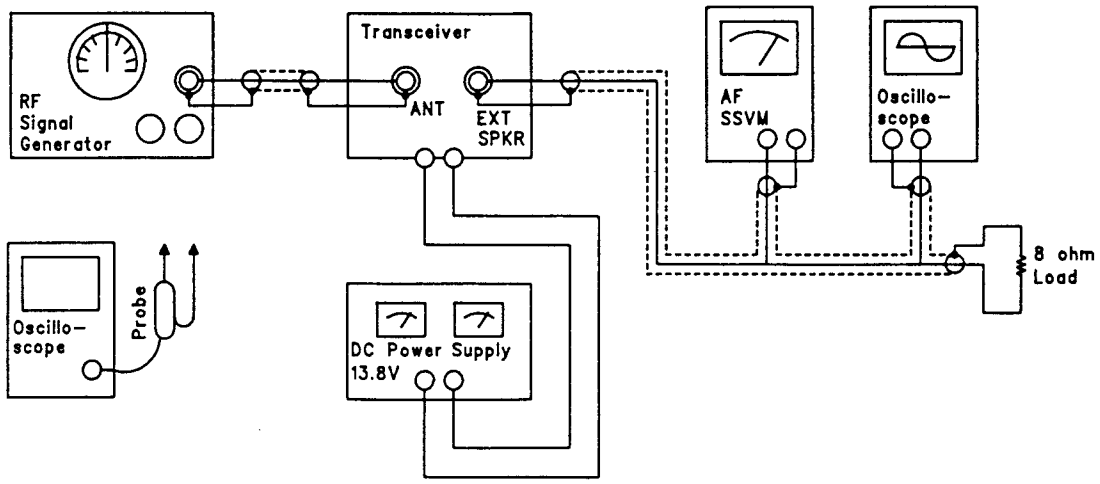
Step	Preset to	Adjustment	Procedure
1	Frequency : 28.000 MHz MODE : TX, USB MOD. : NO MOD. S1 and S2 : OFF	RV13	Break circuit at two mini jumpers. Place DC mA meter in series at (CON1) pin No.2(+LEAD) and pin No.1(-LEAD) and Adjust for 70mA with RV13. (See page 8 alignment parts locations to find mini jumper location ; con1)
2	Same as Step 1.	RV11 RV12	Place DC mA meter in series at (CON1) No.4(+LEAD) and pin No.3 (-LEAD). Set RV12 to counter clock wise maximum position. Adjust for 60 mA.with RV11 and 120mA with RV12.
After steps 1 and 2, restore two mini jumpers.			
3	Same as step 1. OSC1 : 500 Hz OSC2 : 2400 Hz S1,S2 : ON MODE : TX,LSB	T27,28,16, 29,31and T32	Set RV9 to full clockwise rotation (ALC"off"condition). Keep the AF ATT for approx. 28V reading on RF SSVM. Then adjust coils for max reading. Repeat this adjustment several times and reducing the AF input level to the microphone circuit for each adjustment.
4	Same as step 3	T27,28 and T16	Adjust Coils for max. reading on RF SSVM. Check the power difference between 28.000 and 29.699 MHz. If it is over 2V on RF SSVM,readjust coils to obtain within 2V.
5	Same as step 3 OSC1 : 1 KHz S1: ON, S2: OFF	RV9	Adjust oscillator 1 for 5mV reading on AF SSVM, then adjust RV9 for 35V reading on RF SSVM.
6	AM mode S1, S2 : OFF	RV16	Adjust for 7.0W reading on RF Power meter.
7	MODE : FM, TX S1, S2 : OFF	RV14	Adjust for 25 watts reading on RF power meter
8	Same as step AM MODE S1, S2: OFF	RV8	Adjust RV8 so that 5 full bar light on the Transceiver meter.
9	Same as step 5	RV4	Adjust output of oscillator 1 for 200mV reading on AF SSVM, then adjust RV4 for 90 to 95% modulation on Scope.
10	MODE : FM	RV3	Adjust output of oscillator 1 for 200mV reading on AF SSVM, then adjust RV3 for 2KHz deviation on deviation meter

Receiver Section

■ Equipment Required:

- RF Signal Generator (27 MHz Band, 50 ohm output impedance)
- AF SSVM
- Oscilloscope
- DC Power Supply
- 8 ohm load

■ Test Equipment Connection



Alignment Procedure

Note: SG = Signal Generator

Step	Preset to	Adjustment	Procedure
1	Frequency : 29.300 MHz Clarifier : center Volume : fully clockwise RF GAIN : fully clockwise Squelch : fully counter-clockwise NB : off Mode : AM		Set the SG on channel 28.8000 MHz with 1 kHz, 30% modulation.
2	Same as Step 1. MODE: USB, LSB MOD: OFF (SSG)	T13,11,9,6, 7,4	Adjust T13, T11, T9, T7, T6, T4 for max. reading on AF SSVM. Check the sensitivity difference between 28.800MHz and 29.699MHz If it is over 1 dB, re-adjust T13, T11, T9, T7, T6, T4 to obtain within 1dB.
3	Same as step 1. MODE: AM MOD: 30% (SSG)	T1, 2 CT1	Adjust the level of SG to obtain 2V reading on AF SSVM. Then adjust coils for maximum reading on AF SSVM. Repeat this step reducing the SG output.
4	Same as step 1 MODE: FM MOD: 1K (SSG)	T3	Adjust T3 maximum reading on AF SSVM.
5	Same as step 1 except squelch Squelch : fully clockwise.	RV402	Set the level of SG to 1000uV. Then adjust RV402 so that the AF signal just appear on Oscilloscope
6	Same as step 1.	RV1	Set the level of SG to 100uV. Then adjust RV1 for "S-9" reading on Transceiver meter.

TROUBLESHOOTING

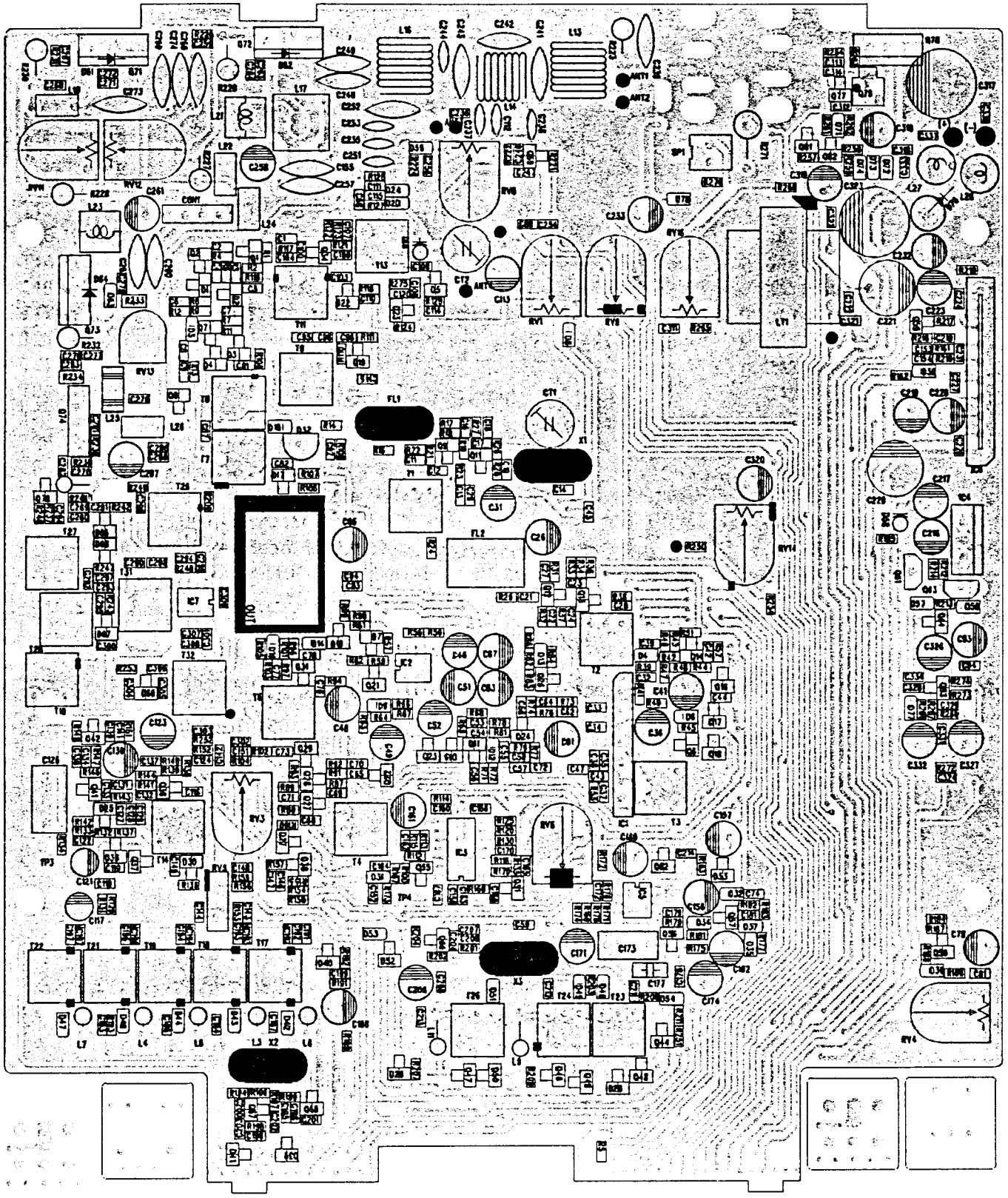
Symptom	Cause and Remedy
Unit Will Not Turn On	· Broken/defective DC Power Card · Blown fuse. Be sure you check for the cause. · Defective power switch. · Defective wires or poor soldering in power supply circuit.
No Sound Received:	· Defective RF circuit in receiver · Defective noise blanker · Defective audio power IC, IC6 Check Voltage at pin 10 of IC6; if approximately 6V, problem is not with this IC · Squelch is "ON" all the time. If voltage at Base of Q26 is approx OV with Squelch Control is set to fully counterclockwise position, problem is not in with squelch circuit. Defective Q26 · Check whether the transceiver signal strength meter indicates S9 when a signal (28.800 MHz carrier with 1 kHz, 30% modulation, 100uV level) is supplied to antenna (The metal indication would be as following A and B) A) The meter indicates "S-9". You can assume that antenna through IF stage is OK. No AM.... Checks should be made on Detector (D4) ANL circuit (Q14), Q26 and AF stage (VR402 and IC6). No SSB But AM OK.... Check frequency and level on emitter of Q66. If no signal, checking should be made on X-tals and Q66 No SSB... Checking should be made on Detector Q24, Q26 and AF stage, VR402 and IC6. B) No deflecting of meter. Checking should be made on RF stage Q34 and Q32, IF stage Q31, Q29, Q28 and AGC circuit D11, D15, IC2B. If not, then problem is in PLL circuit. Check frequency on TP2 whether it is listed as in the table (Page 9, Aligment procedure, step4) · Defective AGC circuit. · Defective PLL circuit. · Defective antenna connector.
No Noise	· Broken or bad contact in microphone connector or push-to-talk switch. · Defective RX power circuit. · Defective RX audio circuit. · Defective PLL circuit. · Defective squelch circuit · Defective PA-CB switch.

Symptom	Cause and Remedy
No Transmission	· Broken or bad contact in microphone connector or push-to-talk switch. · Broken or bad contact in antenna connector. · Defect in power supply. · Defect in PLL or Carrier Oscillator (Improper adjustment). · Inoperative microphone amplifier or balance modulator in SSB mode. · Check the frequency at emitter of Q66. If no carrier, check Q66, D48, 49, D51 and X3. · Carrier is OK, but no TX; check the frequency at TP3. If not same as listed in Frequency Table, PLL circuit is defective. If OK, check IC3, Q55, Q64 and Q61. · If no TX on SSB modes and no modulation on AM mode, Mic amplifier or ALC/AMC section is defective. Check Q56, 57, 58 and Q69
No Modulation	· Defective microphone. · Defective microphone connector. · Inoperative microphone amplifier (on both AM, FM and SSB modes.)
No Noise Blanker Operation	· With NB Switch ON, supply a 28.800MHz carrier signal to antenna and check DC voltage at Q7 base as varying the carrier signal from 1uV to 100uV. · Defective IC401, NB switch (SW407): Check pin 8, 29, 33 of IC401 · Defective noise-blanker circuit: Check Q1, 2, 3, 4, 7, 8 and D1, D2, D3
No Scan	· Defective IC401, SCAN switch (SW409): Check pin 31, 29, 32 of IC401 · Defective scan circuit: Check VR402, IC2A
No LCD Display	· Defective IC401, LCD, 4.5MHz oscillator: Check Q67, Q406, Q414, Q413, IC402 and pin 35~65, 18, 19 of IC401

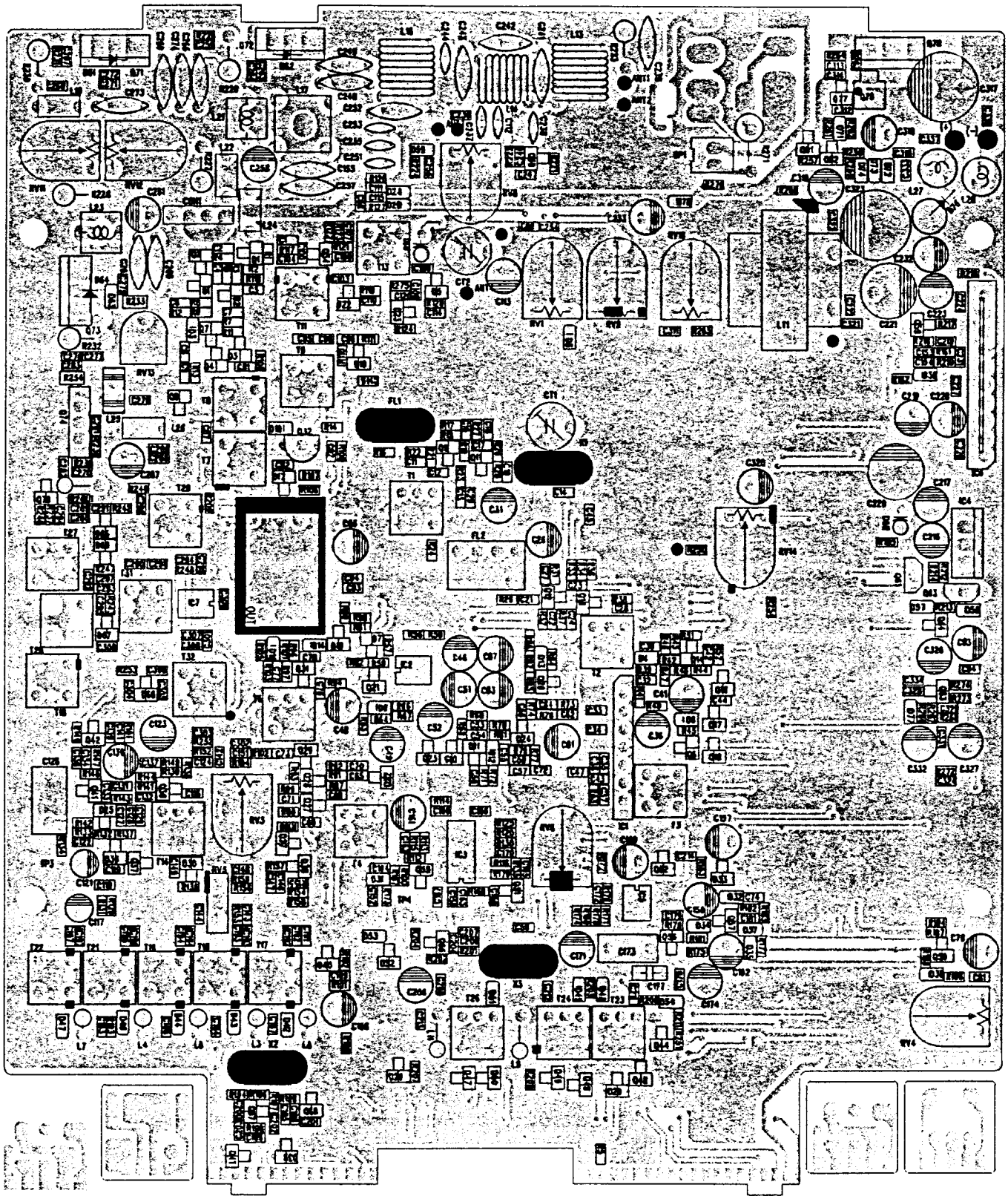
Note : For remedy, replace or repair the defective circuits or component(s).

PRINTED CIRCUIT BOARDS

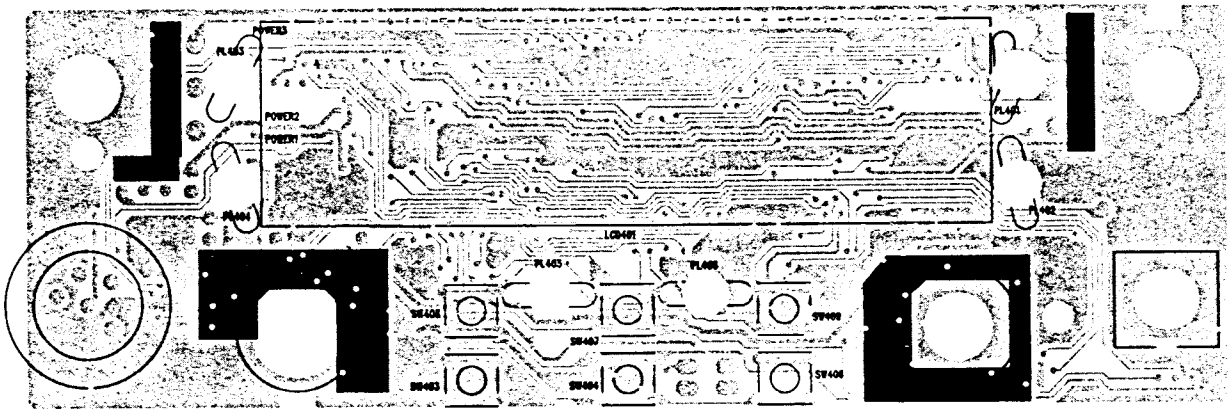
Main PCB (Top View)



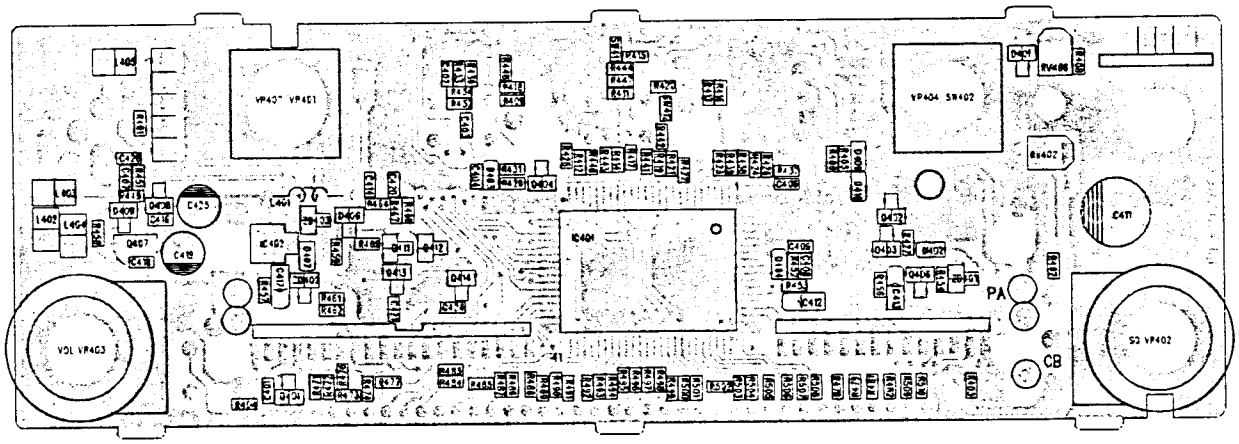
Main PCB (Bottom View)



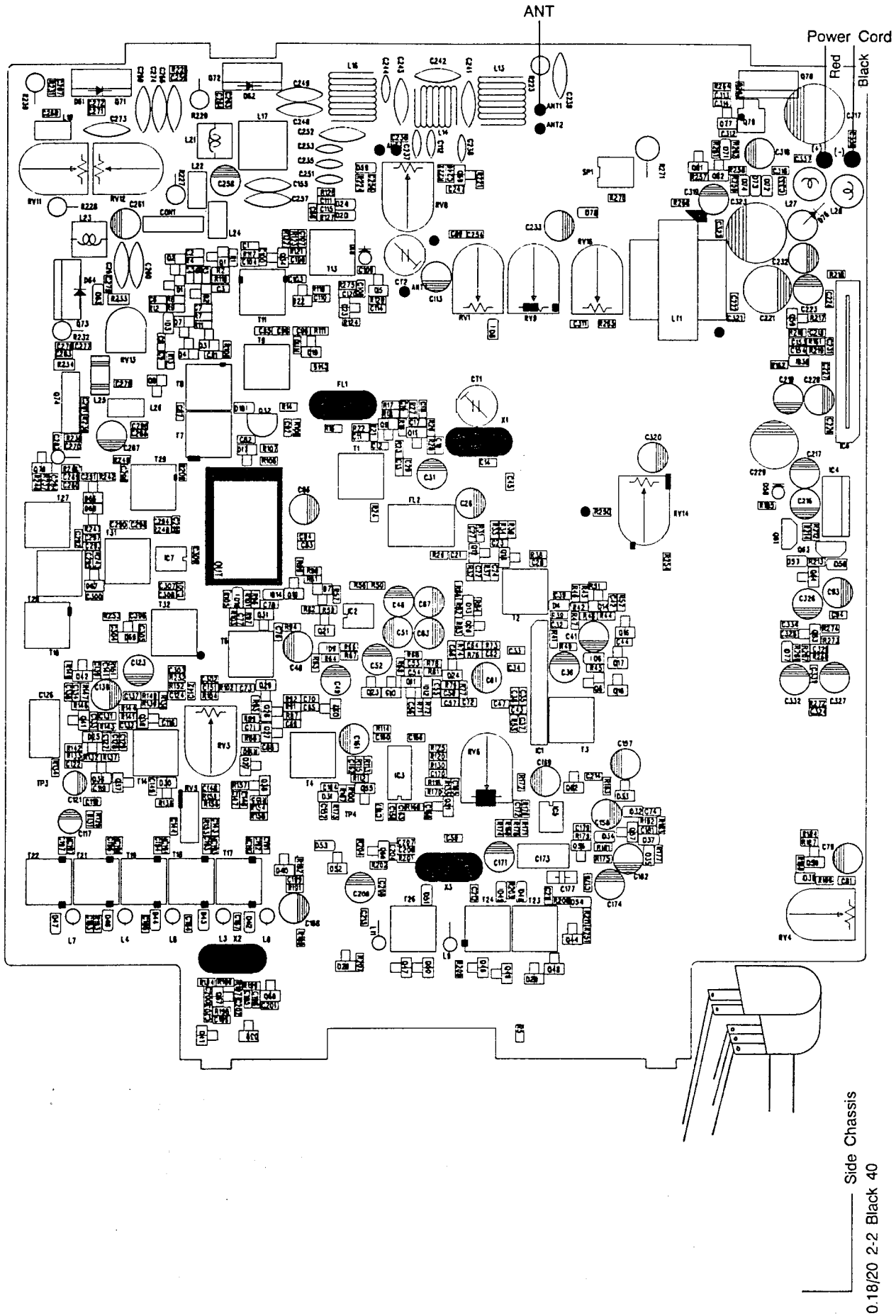
Control PCB (Top View)



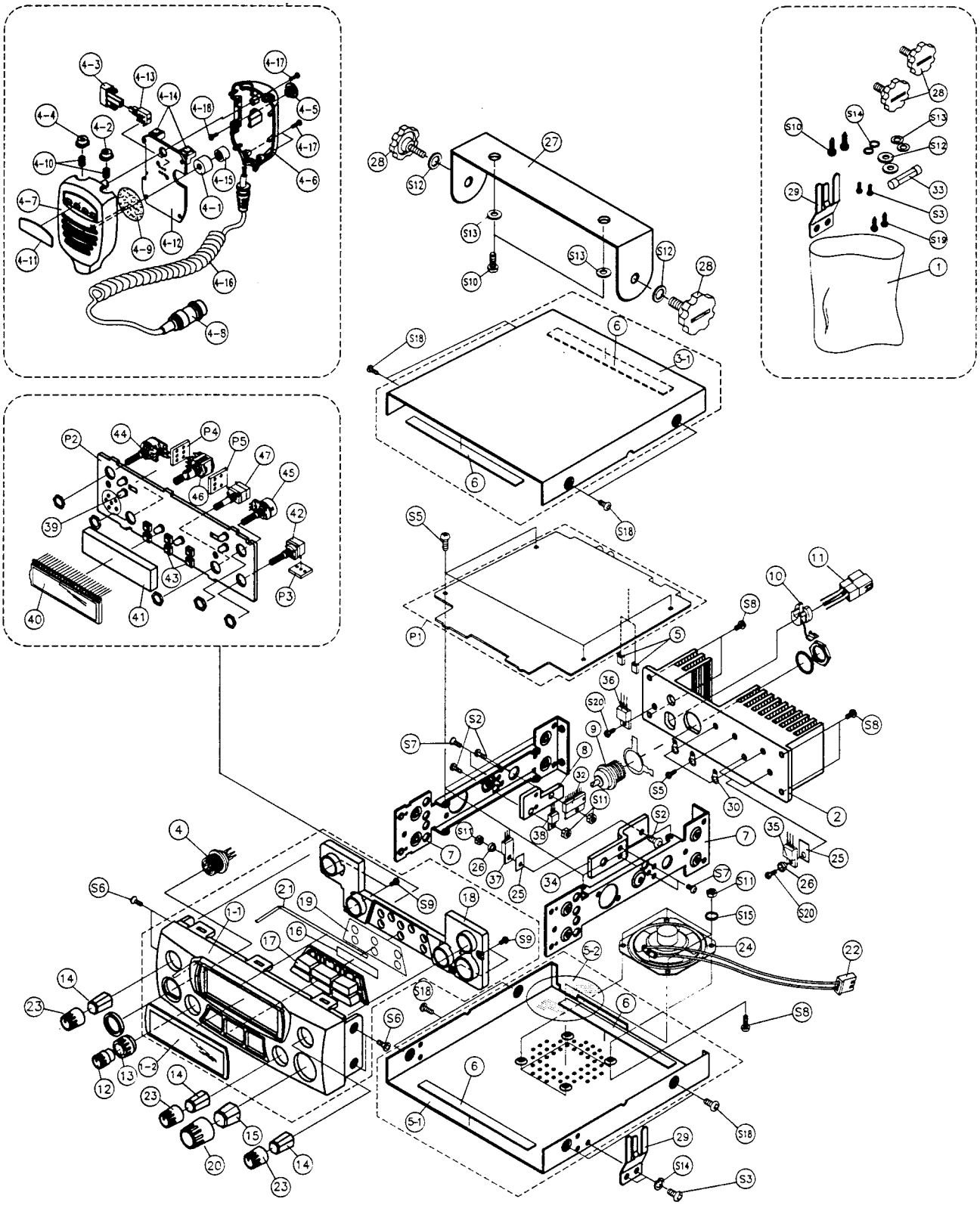
Control PCB (Bottom View)



WIRING DIAGRAM



EXPLODED VIEW



EXPLODED VIEW PARTS LIST

Ref. No.	Description	Mfr's Part No.
	ASS'Y-Panel, Front	GAF0HTX10
1-1	Panel, Front (Black), HTX-10/RadioShack	GAF09401B
1-2	Window, LCD HTX-10/RadioShack	GELCO3900
16	Sticker, Function Knob, 45x4x0.1t (Black)	GEKF001XX
17	Knob, Function HTX-10/RadioShack	GKFS485HY
18	Illumination, PC Milky(TRC-485)	GFIX001XX
19	Light, Cover Sheet, PVC 0.3t, Black (TRC-485)	GPRV001XX
21	Shield Plate (Bezel); 120x3x0.2t	GPHDHTXXX
S9	Screw, Pan Head, T/S-2S, 2x5(Zn)Y	GSPT2Z109
	ASS'Y-Cover, Top	GVPHHTX10
3-1	Cover, Top, HTX-10(Black)	GVPHTX10Y
6	Felt, Cover, 8x125x1t	GOFC8X125
	ASS'Y-Cover, Bottom	GVMHHTX10
5-1	Cover, Bottom, HTX-10(Black)	GVMHTX10Y
5-2	Felt, Speaker, 80piex0.3t	GOFS80X03
6	Felt, Cover, 8x125x1t	GOFC8X125
22	Wire, Harness(H), 2P, 120(2), 2-C	GWHA0212A
24	Speaker, PS-7711	JOPS7711X
S8	Screw, Bind Head, M3x6(Black/N-Cotting)	GSBM0BX06
S11	Nut, Hex M3(Zn)	GSNHOZX12
S15	Washer, Spring, M3(Zn)	GSWSOZX21
	Hardware Kit	GHARHTX10
S2	Screw, Bind Head, M3x10(Zn)	GSBMOZX39
S5	Screw, Bind Head, T/S-2S, 3x6(Zn)	GSBT2ZX06
S6	Screw, Flat Head, M3x5(Zn)	GSFMOZX57
S7	Flat, Head, T/S-2S, 3x6(Zn)	GSFT2ZX22
S8	Screw, Bind Head, M3x6(Black/N-Cotting)	GSBMOBX06
S9	Screw, Pan Head, T/S-2S, 2x5(Zn)Y	GSPT2Z109
S18	Screw, Tap Tight, BH 3x6(Black/N-Cotting)	GSABB0301
S20	Bind Head, T/S-2S, 3x8(Zn)	GSBT2ZX87
4-17	Screw, Pan Head, T/S-2S, 2.3x8(Black)	GSPT2B208
4-18	Screw, Pan Head, T/S-2S, 3x6(Zn)	GSPT2ZX42
	Parts Individual	
P1	ASS'Y, PCB, Main	JPMXHTX10
P2	ASS'Y, PCB, Front	JPFXHTX10
P3	ASS'Y, PCB, Channel	JPSCH0005
P4	ASS'Y, PCB, MIC-G, RF-G	JPSMA0008
P5	ASS'Y, PCB, Fine	JPSF10003
4	Socket, Mic, Sln-16-6(R/S3), W/NUT Ring	GNS166RS3
5	Jumper, Mini, 2.54mm	GWJM2.54X
12	Knob, In, SS-485(SF Black)	GKISS485Y
13	Knob, Out, SS-485(SF Black)	GKOSS485Y
14	Knob, VR Shaft, AE-4200N(Black)	GKV4200LX

15	Shaft, CH Knob, AE-5000(ABS Black)	GKC5000XX
20	CAP, Channel Knob, SI-Rubber(TRC-485) Black	GOKC001XX
23	CAP, Volume Knob, TRC-485, SI-Rubber(Black)	GOKV001XX
39	Pilot Lamp 3pie 30mA 10V	JL3X30X10
40	LCD KXN27730DAP	JLCK27730
41	LCD, Housing, TRC-485	GELH00601
42	Switch, Channel, YPS2101, 20SK, W/NUT	JSC2101XX
43	Tact, DT-1102	JST1105XX
44	SW/Single Round, CSPNS-1624B/20mm, 50KA, W/NUT	JV150KAPB
	Single Round, 161HB-20SK-B50K, W/NUT	
45	Volume, Double Round, 3B100K/15A5K, W/NUT	JV1250KBX
46	VR(Push SW), Single Round, TPHR1 20KC-3B 10K,	JV23B100X
47	W/NUT	JV120KCXX
	ASS'Y-Heat Sink, Back	GCHBHTX10
2	Heat Sink, Back, HTX-10(AL6063-75)	GCHBHTXXX
9	ANT, Connector, CH-239(SIN)	GNCAC239X
	(W/NUT) Spring, Washer, Terminal	
10	Cord, Stopper, SR-4P-4	GOMSR4P4X
11	DC, Power Cord(A), SY-550 Mail	GWPSY550X
25	T.R, Mica Sheet, SIL-Pad, 900-S	GOGTSILXX
26	TR, Insulation Bushing, OD6. 0xMD3.5xID3.2x2.3t	GOHS6X3X3
30	Terminal LUG, 3pie	GOT03PIEX
35	Transistor, 2SCI969, 2312	JTC1969XX
36	Transistor, KTB778	JTKT778XX
S5	Bind Head, T/S-2S, 3x6(Zn)	GSBT2ZX06
S20	Bind Head, T/S-2S, 3x8(Zn)	GSBT2ZX87
	ASS'Y-Chassis, Side	GCCSHTX10
7	Chassis, Side, TRC-485(EGI 1.0t)	GCCST485X
8	I.C, Heat Sink, TRC-485(ALP 4.0t)	GCHT485IX
25	T.R, Mica Sheet, SIL-PAD, 900-S	GOGTSILXX
26	TR, Insulation Bushing, OD6.0xMD3.5xID3.2x2.3t	GOHS6X3X3
32	IC, KIA7217, 6217K	JIIA7217X
34	T.R, Heat, Sink, HAM-485	GCHKH485X
37	Transistor, 2SC2166	JTC2166XX
38	IC, KIA78081A, 7808	JIL78081X
S2	Bind, Head, Screw, M3x10(Zn)	GSBMOZX39
S7	Flat, Head, T/S-2S, 3x6(Zn)	GSFT2ZX22
S11	Nut, Hex, M3(Zn)	GSNHOZX12
	Installation Kit	GINSHTX10
27	B.K.T, Mounting, CB-240AF(Black)	GDMB240AY
28	Screw, Mounting, M4x8(Black)	GSMSO4X8L
29	Hanger, MIC, All Model(Ni)	GMHALLMOD
33	Fuse, 250V, 10A(6Piex30L)	JZF250V17
S3	Screw, Bind Head, T/S-2S, 3x6(N-Cotting/Black)	GSBT2BX05
S10	Screw, Truss Head, T/S-1, 5x12(N-Cotting/Black)	GSTT1BX18
S12	Washer, Rubber, OD15xID5.0x2t	GSWRO5X15
S13	Washer, Flat, OD12xID5.2x0.5t(Black)	GSWFOBX18
S14	Washer, Spring, M3(Black)	GSWSOBX19
S19	Screw, Bind Head, T/S-1S, 3x10(Ni)	GSBT1NX20

	ASS'Y-Microphone	JPAMHTX10
4-1	Holder, CON MIC, Rubber(PRO-200)	GCOICONRU
4-2	Knob, MIC Down, HTX-10(Light Gray)	GMKDS550A
4-3	Button, Push Memory, 8012(ABS Black)	GMKKM8012
4-4	Knob, MIC UP, HTX-10(Light Gray)	GMKUS550A
4-5	Hanger, Back, 0.75g(Black)(UL94HB)	GMT075GBK
4-6	Cover, MIC Back, SY-550(ABS Black)	GMVBS550X
4-7	Cover, MIC Front, SY-550(ABS Black)	GMVFS550X
4-8	Plug, MIC, N-16-6(P)	GNP166PXX
4-9	Felt, Speaker, 35.5piex0.15t	GOFS355PX
4-10	Spring, Knob, STS304 0.2t	GRKX001XX
4-11	Plate, MIC, HTX-10/RadioShack	GPM041XXX
4-12	ASS'Y, PCB, Microphone	JPSMHTX10
4-13	Switch, Push, DP-2251N	JSP2262NX
4-14	Switch, Tack, DT-1104A	JST1236XX
4-15	MIC, Condenser, JS-80C(9.7pie)	JZDJS80CS
4-16	Cord, MIC 5C-1S(Black), KSK-56002 300mm/S:7mm	JZM5C1SBX
4-17	Screw, Pan Head, T/S-2S, 2.3x8(Black)	GSPT2B208
4-18	Screw, Pan Head, T/S-2S, 3x6(Zn)	GSPT2ZX42

ELECTRICAL PARTS LIST

Ref. No	Description	Mfr's Part No.
P1	ASS'Y, PCB, MAIN	JPMXHTX10
	Coils	
T1	IFT, ST404 7mm	JA404X7XX
T2	IFT, ST405 7mm	JA405X7XX
T3	IFT, ST435 7mm	JA435X7XX
T4	IFT, ST711A 7mm	JA711A7XX
T6	IFT, ST710 7mm	JA710X7XX
T7-8	IFT, ST706 7mm	JA706X7XX
T9	IFT, ST704B 7mm	JA704B7XX
T11	IFT, ST704B 7mm	JA704B7XX
T13	IFT, ST703M 7mm	JA703M7XX
T14	IFT, ST4304 7mm	JA43047XX
T16	IFT, LB344D 7mm	JALB344DX
T17-19	IFT, ST745 7mm	JA745X7XX
T21-22	IFT, ST745 7mm	JA745X7XX
T23-24	IFT, ST718 7mm	JA718X7XX
T26	IFT, ST718M 7mm	JA718M7XX
T27	IFT, ST735B 7mm	JA735B7XX
T28	IFT, ST735M 7mm	JA735M7XX
T29	IFT, ST706 7mm	JA706X7XX
T31	IFT, ST735M 7mm	JA735M7XX
T32	IFT, ST703M 7mm	JA703M7XX
L1	Core, Bead, BF03	JBOBBF03X
L3	Inductor, 100uH(LAL04NA)	JBII101KX
L4	Inductor, 470uH(LAL04NA)	JBII471XX
L6-9	Inductor, 470uH(LAL04NA)	JBII471XX
L11	Inductor, 470uH(LAL04NA)	JBII471XX
L13	Spring, ST096(0.8x6.0x8.5t)	JBIS096XX
L14	Spring, RF-103-B(0.8x6.0x6.5t)	JBISR103B
L16	Spring, RF-103-B(0.8x6.0x6.5t)	JBISR103B
L17	Spring, (B/F, Winding)	JBIS08653
L18	Inductor, 0.47uH(LAL02NA)	JBIIR47XX
L19-20	Core, Bead, BF03	JBOBBF03X
L22	Core, Bead, BF03	JBOBBF03X
L23	Spring, LE-215(0.8x3.0x4t)	JBISLE215
L24	Core, Bead, BF03	JBOBBF03X
L25	Ring, Core	JBORCCXXX
L26	Core, Bead, BF03	JBOBBF03X
	Capacitors	
C1	Ceramic(1608), 1.5P, 50V, CG, +/-0.25pF(Chip)	JCH1R5CCC
C2	Ceramic(1608), 220P, 50V, CG, +/-5%(Chip)	JCH221CJC
C3	Ceramic(1608), 0.022uF, 50V, B, +/-10%(Chip)	JCH223BKC
C4	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C6	Ceramic(1608), 0.0033uF, 50V, B. +/-10%(Chip)	JCH332BKC
C7	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C8	Ceramic(1608), 0.022uF, 50V, B, +/-10%(Chip)	JCH223BKC
C9	Ceramic(1608), 82P,50V, CG, +/-5%(Chip)	JCH820CJC

Ref. No.	Description	Mfr's Part No.
C11	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C13	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C14	Ceramic(1608), 5P, 50V, CG, +/-0.25pF(Chip)	JCH050CCC
C16	Ceramic(1608), 2P, 50V, CG, +/-0.25pF(Chip)	JCH020CCC
C17	Ceramic(1608), 470P, 50V, CG, +/-5%(Chip)	JCH471CJC
C18	Ceramic(1608), 100P, 50V, CG, +/-5%(Chip)	JCH101CJC
C19	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C21	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C22	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C23	Ceramic(1608), 0.001uF, 50V, B, +/-10%(Chip)	JCH102BKC
C24	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C26	Eelect, 50V, 5x11, 3.3uF, +/-20%	JCEFA3R3X
C27	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C28-29	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C31	Elect, 16V, 5x11, 22uF, +/-20%	JCECA22XX
C32	Ceramic(1608), 39P, 50V, CG, +/-5%(Chip)	JCH390CJC
C33	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C34	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C36	Elect, 16V, 5x11, 47uF, +/-20%	JCECB47XX
C37	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C38	Ceramic(1608), 15P, 50V, CG, +/-5%(Chip)	JCH150CJC
C39	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C41	Elect, 50V, 5x11, 1uF, +/-20%	JCEFA1XXX
C42-43	Ceramic(1608), 0.022uF, 50V, B, +/-10%(Chip)	JCH223BKC
C44	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C45	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C46	Elect, 50V 5x11 4.7uF, +/-20%	JCEFA4R7X
C47	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C48	Elect, 50V, 5x11, 2.2uF, +/-20%	JCEFA2R2X
C49	Elect, 16V, 5x11, 47uF, +/-20%	JCECB47XX
C51	Elect, 50V, 5x11, 0.47uF, +/-20%	JCEFAR47X
C53	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C54	Ceramic(1608), 220P, 50V, CG, +/-5%(Chip)	JCH221CJC
C55	Ceramic(1608), 56P, 50V, CG, +/-5%(Chip)	JCH560CJC
C56	Ceramic(1608), 10P, 50V, CG, +/-0.25%(Chip)	JCH100CCC
C57	Ceramic(1608), 47P, 50V, CG, +/-5%(Chip)	JCH470CJC
C58	Ceramic(1608), 0.001uF, 50V, B, +/-10%(Chip)	JCH102BKC
C59	Ceramic(1608), 100P, 50V, CG, +/-5%(Chip)	JCH101CJC
C61	Elect, 16V, 5x11, 47uF, +/-20%	JCECB47XX
C62	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C63	Elect, 16V, 5x11, 22uF, +/-20%	JCECA22XX
C64	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C65	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C66	Ceramic(1608), 0.001uF, 50V, B, +/-10%(Chip)	JCH102BKC
C67	Elect, 50V, 5x11, 4.7uF, +/-20%	JCEFA4R7X
C68-69	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C70	Ceramic(1608), 0.1uF, 25V, B, +/-10%(Chip)	JCH104BKC
C71-72	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C73	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C74	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C76-77	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C78	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC

Ref. No.	Description	Mfr's Part No.
C79	Elect, 16V, 5x11, 47uF, +/-20%	JCECB47XX
C81	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C82-83	Ceramic(1608), 0.0047uF, B, +/-10%(Chip)	JCH472BKC
C84	Ceramic(1608), 0.022uF, 50V, B, +/-10%(Chip)	JCH223BKC
C86	Elect, 16V, 5x11, 10uF, +/-20%	JCECA10XX
C87	Ceramic(1608), 3P, 50V, CG, +/-0.25%(Chip)	JCH030CCC
C88-89	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C91	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C92	Ceramic(1608), 0.001uF, 50V, B, +/-10%(Chip)	JCH102BKC
C93	Elect, 16V, 5x11, 10uF, +/-20%	JCECA10XX
C94	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C95	Ceramic(1608), 10P, 50V, CG, +/-0.25pF(Chip)	JCH100CCC
C98	Ceramic(1608), 5P, 50V, CG, +/-0.25pF(Chip)	JCH050CCC
C100	Ceramic(1608), 10P, 50V, CG, +/-0.25pF(Chip)	JCH100CCC
C104	Ceramic(1608), 0.0047uF, 50V, B, +/-10%(Chip)	JCH472BKC
C106-107	Ceramic(1608), 0.0047uF, 50V, B, +/-10%(Chip)	JCH472BKC
C108	Ceramic(1608), 100P, 50V, CG, +/-5%(Chip)	JCH820CJC
C109-111	Ceramic(1608), 0.0047uF, 50V, B, +/-10%(Chip)	JCH472BKC
C113	Elect, 16V, 5x11, 100uF, +/-20%	JCECC100X
C114-115	Ceramic(1608), 0.0047uF, 50V, B, +/-10%(Chip)	JCH472BKC
C116	Ceramic(1608), 100P, 50V, CG, +/-5%(Chip)	JCH101CJC
C117	Elect, 50V, 5x11, 2.2uF, +/-20%	JCEFA2R2X
C118	Ceramic(1608), 0.001uF, 50V, B, +/-10%(Chip)	JCH102BKC
C119	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C121	Elect, 50V, 5x11, 1uF, +/-20%	JCEFA1XXX
C122	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C123	Elect, 16V, 5x11, 100uF, +/-20%	JCECC100X
C124	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C126	Mylar*, 0.068uF, 50V, +/-10%(Small)	JCMU068XX
C128	Ceramic(1608), 68P, 50V, CG, +/-5%(Chip)	JCH680CJC
C129	Ceramic(1608), 5P, 50V, CG, +/-0.25%(Chip)	JCH050CCC
C131	Ceramic(1608), 1.5P, 50V, CG, +/-0.25%(Chip)	JCH1R5CCC
C132	Ceramic(1608), 47P, 50V, CG, +/-5%(Chip)	JCH470CJC
C133	Ceramic(1608), 270P, 50V, CG, +/-5%(Chip)	JCH271CJC
C134	Ceramic(1608), 100P, 50V, CG, +/-5%(Chip)	JCH101CJC
C136	Elect, 16V, 5x11, 100uF, +/-20%	JCECC100X
C137	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C138	Ceramic(1608), 3P, 50V, CG, +/-0.25pF(Chip)	JCH030CCC
C139	Ceramic(1608), 10P, 50V, CG, +/-0.25pF(Chip)	JCH100CCC
C141-143	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C144	Ceramic(1608), 0.022uF, 50V, B, +/-10%(Chip)	JCH223BKC
C145	Ceramic(1608), 0.0047uF, 50V, B, +/-10%(Chip)	JCH472BKC
C146	Ceramic(1608), 0.1uF, 25V, B, +/-10%(Chip)	JCH104BKC
C147	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C148	Ceramic(1608), 0.068uF, 25V, B, +/-10%(Chip)	JCH683BKC
C149	Ceramic(1608), 15P, 50V, CG, +/-5%(Chip)	JCH150CJC
C151-152	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C153	Ceramic(1608), 0.022uF, 50V, B, +/-10%(Chip)	JCH223BKC
C154	Ceramic(1608), 0.0047uF, 50V, B, +/-10%(Chip)	JCH472BKC
C155	Ceramic, 0.1uF, 50V, +80, -20%(Disk)	JCC104FZD
C156	Elect, 16V, 5x11, 100uF, +/-20%	JCECC100X

* Mylar is a registered trademark of E. I. DuPont de Nemours and company.

Ref. No.	Description	Mfr's Part No.
C157	Elect, 50V, 5x11, 1uF, +/-20%	JCEFA1XXX
C159	Ceramic(1608), 8P, 50V, CG, +/-0.25pF(Chip)	JCH080CCC
C160	Ceramic(1608), 0.1uF, 25V, B, +/-10%(Chip)	JCH104BKC
C161	Elect, 16V, 5x11, 47uF, +/-20%	JCECB47XX
C162	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C163	Ceramic(1608), 0.1uF, 25V, B, +/-10%(Chip)	JCH104BKC
C164	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C165-166	Ceramic(1608), 0.1uF, 25V, B, +/-10%(Chip)	JCH104BKC
C167	Ceramic(1608), 100P, CG, +/-5%(Chip)	JCH101CJC
C168	Ceramic(1608), 0.1uF, 25V, B, +/-10%(Chip)	JCH104BKC
C169	Elect, 50V, 5x11, 0.22uF, +/-20%	JCEFAR22X
C170	Ceramic(1608), 0.1uF, 25V, B, +/-10%(Chip)	JCH104BKC
C171	Elect, 50V, 5x11, 0.22uF, +/-20%	JCEFA1XXX
C172	Ceramic(1608), 470P, 50V, CG, +/-5%(Chip)	JCH471CJC
C173	Mylar, 0.1uF, 50V, +/-10%(Small)	JCMU0R1XX
C174	Elect, 16V, 5x11, 100uF, +/-20%	JCECC100X
C176	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C177	Mylar, 0.01uF, 50V, +/-10%(Small)	JCMU01XXX
C179	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C181	Ceramic(1608), 0.001uF, 50V, B, +/-10%(Chip)	JCH102BKC
C182	Elect, 50V, 5x11, 2.2uF, +/-20%	JCEFA2R2X
C183-184	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C186-187	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C188	Elect, 50V, 5x11, 0.1uF, +/-20%	JCEFA0R1X
C189	Ceramic(1608), 0.001uF, 50V, B, +/-10%(Chip)	JCH102BKC
C191	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C192	Ceramic(1608), 82P, 50V, CG, +/-5%(Chip)	JCH820CJC
C193	Ceramic(1608), 68P, 50V, CG, +/-5%(Chip)	JCH680CJC
C194	Ceramic(1608), 100P, 50V, CG, +/-5%(Chip)	JCH101CJC
C195	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C196	Ceramic(1608), 68P, 50V, CG, +/-5%(Chip)	JCH680CJC
C197	Ceramic(1608), 180P, 50V, CG, +/-5%(Chip)	JCH181CJC
C198	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C199	Ceramic(1608), 120P, 50V, CG, +/-5%(Chip)	JCH121CJC
C200	Ceramic(1608), 390P, 50V, CG, +/-5%(Chip)	JCH391CJC
C202	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C203	Ceramic(1608), 100P, 50V, CG, +/-5%(Chip)	JCH101CJC
C204	Ceramic(1608), 270P, 50V, CG, +/-5%(Chip)	JCH271CJC
C206	Ceramic(1608), 100P, 50V, CG, +/-5%(Chip)	JCH101CJC
C207	Ceramic(1608), 220P, 50V, CG, +/-5%(Chip)	JCH221CJC
C208	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C209	Elect, 16V, 5x11, 10uF, +/-20%	JCECA10XX
C211	Ceramic(1608), 270P, 50V, CG, +/-5%(Chip)	JCH270CJC
C212	Ceramic(1608), 68P, 50V, CG, +/-5%(Chip)	JCH680CJC
C213	Ceramic(1608), 12P, 50V, CG, +/-5%(Chip)	JCH120CJC
C214	Ceramic(1608), 0.1uF, 50V, 25V, B, +/-10%(Chip)	JCH104BKC
C216-217	Elect, 16V, 5x11, 10uF, +/-20%	JCECA10XX
C218	Elect, 16V, 5x11, 47uF, +/-20%	JCECB47XX
C219	Ceramic(1608), 0.001uF, 50V, B, +/-10%(Chip)	JCH102BKC
C221	Elect, 16V, 8x11.5, 470uF, +/-20%	JCECD470X
C222	Ceramic(1608), 0.0047uF, 50V, B, +/-10%(Chip)	JCH472BKC
C223	Elect, 50V, 5x11, 0.47uF, +/-20%	JCEFAR47X

Ref. No.	Description	Mfr's Part No.
C224	Ceramic(1608), 100P, 50V, CG, +/-5%(Chip)	JCH101CJC
C226	Ceramic(1608), 0.068uF, 25V, B, +/-10%(Chip)	JCH683BKC
C227	Ceramic(1608), 150P, 50V, CG, +/-5%(Chip)	JCH151CJC
C228	Elect, 16V, 5x11, 33uF, +/-20%	JCECA33XX
C229	Elect, 16V, 8x11.5, 470uF, +/-20%	JCECD470X
C231	Ceramic(1608), 0,022uF, 50V, B, +/-10%(Chip)	JCH222BKC
C232	Elect, 50V, 5x11.5, 4.7uF, +/-20%	JCEFA4R7X
C237	Ceramic, 1.5P, 50V, CH, +/-0.25pF(Disk)	JCC1R5CCD
C238	Ceramic, 18P, 50V, CH, +/-5%(Disk)	JCC180CJD
C239	Capacitor, Ceramic, 120P CH +/-5%(Disk)	JCC121CJD
C241	Ceramic, 150P, 50V, CH, +/-5%(Disk)	JCC151CJD
C242	Ceramic, 33P, 50V, CH, +/-5%(Disk)	JCC330CJD
C243	Ceramic, 180P, 50V, CH, +/-5%(Disk)	JCC181CJD
C244	Ceramic, 56P, 50V, CH, +/-5%(Disk)	JCC560CJD
C246	Ceramic(1608), 33P, 50V, CG, +/-5%(Chip)	JCH330CJC
C247	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C248	Ceramic, 470P, 50V, CH, +/-5%(Disk)	JCC471CJD
C249	Ceramic, 0.01uF, 50V, B, +/-10%(Disk)	JCC103BKD
C251	Ceramic, 1P, 50V, CH, +/-0.25pF(Disk)	JCC010CCD
C252	Ceramic, 470P, 50V, CH, +/-5%(Disk)	JCC471CJD
C254	Ceramic(1608), 0.022uF, 50V, B, +/-10%(Chip)	JCH223BKC
C256	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C257	Ceramic, 0.01uF, 50V, B, +/-10%(Disk)	JCC103BKD
C259	Ceramic(1608), 0,022uF, 50V, B, +/-10%(Chip)	JCH223BKC
C260	Ceramic, 0.01uF, 50V, B, +/-10%(Disk)	JCC103BKD
C261	Elect, 50V, 5x11, 2.2uF, +/-20%	JCEFA2R2X
C262	Ceramic, 0.047uF, 50V, F, +80%, -20%(Disk)	JCC473FZD
C266	Ceramic, 390P, 50V, CH, +/-5%(Disk)	JCC391CJD
C267	Ceramic(1608), 0.022uF, 50V, B, +/-10%(Chip)	JCH223BKC
C269	Ceramic, 220P, 50V, CH, +/-5%(Disk)	JCC221CJD
C270	Ceramic(1608), 33P, 50V, CG, +/-5%(Chip)	JCH330CJC
C273	Ceramic, 390P, 50V, CH, +/-5%(Disk)	JCC391CJD
C276	Ceramic(1608), 47P, 50V, CG, +/-5%(Chip)	JCH470CJC
C277	Ceramic(1608), 0.0022uF, 50V, B, +/-10%(Chip)	JCH222BKC
C278	Ceramic(1608), 0.1uF, 50V, B, +/-10%(Chip)	JCH104BKC
C279	Ceramic(1608), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C281	Ceramic(1608), 3P, 50V, CG, +/-0.25pF(Chip)	JCH030CCC
C282	Ceramic(1608), 47P, 50V, CG, +/-5%(Chip)	JCH470CJC
C283-284	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C286	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C287	Elect, 16V, 5x11, 22uF, +/-20%	JCECA22XX
C288	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C289	Ceramic(1608), 22P, 50V, CG, +/-5%(Chip)	JCH220CJC
C291	Ceramic(1608), 100P, 50V, CG, +/-5%(Chip)	JCH101CJC
C292	Ceramic(1608), 3P, 50V, CG, +/-0.25pF(Chip)	JCH030CCC
C293	Ceramic(1608), 1.5P, 50V, CG, +/-0.25pF(Chip)	JCH1R5CCC
C294	Ceramic(1608), 100P, 50V, CG, +/-5%(Chip)	JCH101CJC
C295	Ceramic(1608), 68P, 50V, CG, +/-5%(Chip)	JCH680CJC
C296	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C297	Ceramic(1608), 68P, 50V, CG, +/-5%(Chip)	JCH680CJC
C298	Ceramic(1608), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C299	Ceramic(1608), 0.001uF, 50V, B, +/-10%(Chip)	JCH102BKC

Ref. No	Description	Mfr's Part No.
C300	Ceramic(1680), 0.0047uF, 50V, B, +/-10%(Chip)	JCH472BKC
C301	Ceramic(1680), 0.001uF, 50V, B, +/-10%(Chip)	JCH102BKC
C302	Ceramic(1680), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C303	Ceramic(1680), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C304	Ceramic(1680), 18P, 50V, CG, +/-5%(Chip)	JCH180CJC
C306	Ceramic(1680), 39P, 50V, CG, +/-5%(Chip)	JCH390CJC
C307	Ceramic(1680), 330P, 50V, CG, +/-5%(Chip)	JCH331CJC
C308	Ceramic(1680), 82P, 50V, CG, +/-5%(Chip)	JCH820CJC
C309	Ceramic(1680), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C311	Ceramic(1680), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C312	Ceramic(1680), 0.0047uF, 50V, B, +/-10%(Chip)	JCH472BKC
C313	Ceramic(1680), 0.047uF, 25V, B, +/-10%(Chip)	JCH473BKC
C314	Ceramic(1680), 0.001uF, 50V, B, +/-10%(Chip)	JCH102BKC
C316	Ceramic(1680), 100P, 50V, CG, +/-5%(Chip)	JCH101CJC
C317	Elect, 16V, 10x15, 1000uF, +/-20%	JCECM1000
C318	Elect, 16V, 5x11, 33uF, +/-20%	JCECA33XX
C319	Elect, 50V, 5x11, 2.2uF, +/-20%	JCEFA2R2X
C320	Elect, 50V, 5x11, 1uF, +/-20%	JCEFA1XXX
C321-322	Ceramic(1680), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C323	Elect, 16V, 10x15, 1000uF, +/-20%	JCECM1000
C324	Ceramic(1680), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C327	Elect, 50V, 5x11, 0.22uF, +/-20%	JCEFAR22X
C333	Ceramic(1680), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C334	Ceramic(1680), 0.0047uF, 50V, B, +/-10%(Chip)	JCH472BKC
C336	Ceramic(1680), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
C337	Ceramic(1680), 0.01uF, 50V, B, +/-10%(Chip)	JCH103BKC
CT1	Trimmer, 6pie, 60pF	JCR6P60XX
	Diode	
D1-2	Schottky(Chip), SB01-05CP	JDSB0105C
D3-4	Switching(Chip), 1SS355	JD1SS355C
D5	RF Switching(Chip), KDV173	JDFKDV173
D6	Switching(Chip), 1SS355	JD1SS355C
D7	Switching(Chip), S226RTK(MMBD1203)	JDS226RTK
D8-9	Switching(Chip), 1SS355	JD1SS355C
D10	Band, Switching, 1SS135	JD1SS135X
D11	Schottky(Chip), SB01-05CP	JDSB0105C
D12	Switching(Chip), 1SS135	JD1SS355C
D14	Switching(Chip), 1SS135	JD1SS355C
D15	Switching(Chip), SB01-05CP	JDSB0105C
D16	Switching(Chip), 1SS355	JD1SS355C
D17	Switching(Chip), S184RTK(MMBD1204)	JDS184RTK
D18	Switching(Chip), 1SS355	JD1SS355C
D20	Switching(Chip), KDS114RTK	JDKDS114C
D23	Switching(Chip), KDV251S	JDKDV251S
D24	Switching(Chip), KDS114RTK	JDKDS114C
D25	Switching(Chip), KDV251S	JDKDV251S
D27	Switching(Chip), S181RTK(MMBD1205)	JDS181RTK
D28-29	Switching(Chip), S184RTK(MMBD1204)	JDS184RTK
D30	Switching(Chip), KDV251S	JDKDV251S
D31-32	Switching(Chip), 1SS355	JD1SS355C
D33	Switching(Chip), S226RTK(MMBD1203)	JDS226RTK

Ref. No.	Description	Mfr's Part No.
D34-38	Switching(Chip), 1SS355	JD1SS355C
D39	Switching(Chip), S184RTK(MMBD1204)	JDS184RTK
D40	Switching(Chip), KDV251S	JDKDV251S
D41	Switching(Chip), S184RTK(MMBD1204)	JDS184RTK
D42-44	Switching(Chip), KDS114RTK	JDKDS114C
D46-49	Switching(Chip), KDS114RTK	JDKDS114C
D51	Switching(Chip), KDS114RTK	JDKDS114C
D52	Switching(Chip), S184RTK(MMBD1204)	JDS184RTK
D53-54	Switching(Chip), 1SS355	JD1SS355C
D56-57	Switching(Chip), 1SS355	JD1SS355C
D58	Rectifier, IN4004	JD1N4004X
D59	Switching(Chip), 1SS355	JD1SS355C
D61-62	Rectifier, IN4001G(Glass)	JD1N4001G
D63	Switching(Chip), 1SS355	JD1SS355C
D64	Rectifier, IN4001G(Glass)	JD1N4001G
D66-69	Switching(Chip), KDV251S	JDKDV251S
D71-74	Switching(Chip), 1SS355	JD1SS355C
D76	Rectifier, IN5401	JD1N5401X
	Transformer	
LT1	Choke, E119mm, 2Pin	JECKE119X
	Filter	
FL1	X-TAL, HC-18/U, 10.695MHz	JGX10R695
FL2	Ceramic, KBF455CMF	JGC455XXX
MCF1	X-TAL, 10M04DSUNI, 10L04D	JGX10M04X
	Integrated Circuits	
IC1	BA403, Detector, FM	JIBA403XX
IC2	(Chip), BA728F, A. G. C.	JIBA728FC
IC3	NJM1496, Balance, Modulator	JINJ1496X
IC4	IC, KIA78081A, 7808	JIL78081X
IC5	(Chip), A4558F, MIC-AMP	JIA4558FX
IC6	IC, KIA7217, 6217K	JIIA7217X
IC7	(Chip), KIA6058F, Mixer	JII6058FX
	Resistors	
R1	Thick Film Chip(1680), 560 ohm, 1/10W, +/-5%	JRH560HCX
R2	Thick Film Chip(1680), 100 kohm, 1/10W, +/-5%	JRH100KCX
R3	Thick Film Chip(1680), 2.2 kohm, 1/10W, +/-5%	JRH2R2KCX
R4	Thick Film Chip(1680), 100 kohm, 1/10W, +/-5%	JRH100KCX
R5	Thick Film Chip(1680), 47 kohm, 1/10W, +/-5%	JRH047KCX
R6	Thick Film Chip(1680), 2.2 kohm, 1/10W, +/-5%	JRH2R2KCX
R7	Thick Film Chip(1680), 100 kohm, 1/10W, +/-5%	JRH100KCX
R8	Thick Film Chip(1680), 560 kohm, 1/10W, +/-5%	JRH560KCX
R9	Thick Film Chip(1680), 820 kohm, 1/10W, +/-5%	JRH820KCX
R11	Thick Film Chip(1680), 47 ohm, 1/10W, +/-5%	JRH047HCX
R12	Thick Film Chip(1680), 4.7 kohm, 1/10W, +/-5%	JRH4R7KCX
R13	Thick Film Chip(1680), 22 kohm, 1/10W, +/-5%	JRH022KCX
R14	Thick Film Chip(1680), 1.5 kohm, 1/10W, +/-5%	JRH1R5KCX
R16	Thick Film Chip(1680), 2.7 kohm, 1/10W, +/-5%	JRH2R7KCX

Ref. No.	Description	Mfr's Part No.
R17	Thick Film Chip(1608), 220 ohm, 1/10W, +/-5%	JRH220HCX
R18	Thick Film Chip(1608), 470 ohm, 1/10W, +/-5%	JRH470HCX
R19	Thick Film Chip(1608), 3.9 kohm, 1/10W, +/-5%	JRH3R9KCX
R21	Thick Film Chip(1608), 100 ohm, 1/10W, +/-5%	JRH100HCX
R22	Thick Film Chip(1608), 330 ohm, 1/10W, +/-5%	JRH330HCX
R23-24	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH110KCX
R26	Thick Film Chip(1608), 68 kohm, 1/10W, +/-5%	JRH068KCX
R27	Thick Film Chip(1608), 2.2 kohm, 1/10W, +/-5%	JRH2R2KCX
R28	Thick Film Chip(1608), 4.7 kohm, 1/10W, +/-5%	JRH4R7KCX
R29	Thick Film Chip(1608), 2.2 kohm, 1/10W, +/-5%	JRH2R2KCX
R31	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R32	Thick Film Chip(1608), 470 ohm, 1/10W, +/-5%	JRH470HCX
R33	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R34	Thick Film Chip(1608), 680 kohm, 1/10W, +/-5%	JRH680KCX
R36	Thick Film Chip(1608), 39 kohm, 1/10W, +/-5%	JRH039KCX
R37	Thick Film Chip(1608), 150 ohm, 1/10W, +/-5%	JRH150HCX
R38	Thick Film Chip(1608), 180 ohm, 1/10W, +/-5%	JRH180HCX
R39	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R41	Thick Film Chip(1608), 330 ohm, 1/10W, +/-5%	JRH330HCX
R42	Thick Film Chip(1608), 68 kohm, 1/10W, +/-5%	JRH068KCX
R43	Thick Film Chip(1608), 33 kohm, 1/10W, +/-5%	JRH033KCX
R44	Thick Film Chip(1608), 470 kohm, 1/10W, +/-5%	JRH470KCX
R45	Thick Film Chip(1608), 0 ohm, 1/10W, +/-5%	JRH000HCX
R46	Thick Film Chip(1608), 22 kohm, 1/10W, +/-5%	JRH022KCX
R47-48	Thick Film Chip(1608), 33 kohm, 1/10W, +/-5%	JRH033KCX
R49	Thick Film Chip(1608), 100 ohm, 1/10W, +/-5%	JRH100HCX
R50	Thick Film Chip(1608), 3.9 kohm, 1/10W, +/-5%	JRH3R9KCX
R51	Thick Film Chip(1608), 100 kohm, 1/10W, +/-5%	JRH100KCX
R52	Thick Film Chip(1608), 470 kohm, 1/10W, +/-5%	JRH470KCX
R53	Thick Film Chip(1608), 1.5 Mohm, 1/10W, +/-5%	JRH1R5MCX
R56	Thick Film Chip(1608), 4.7 Mohm, 1/10W, +/-5%	JRH4R7MCX
R57	Thick Film Chip(1608), 2.2 Mohm, 1/10W, +/-5%	JRH2R2MCX
R59	Thick Film Chip(1608), 82 kohm, 1/10W, +/-5%	JRH082KCX
R61	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R62	Thick Film Chip(1608), 39 kohm, 1/10W, +/-5%	JRH039KCX
R63	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R64	Thick Film Chip(1608), 3.9 kohm, 1/10W, +/-5%	JRH3R9KCX
R66	Thick Film Chip(1608), 330 kohm, 1/10W, +/-5%	JRH330KCX
R67	Thick Film Chip(1608), 100 kohm, 1/10W, +/-5%	JRH100KCX
R68	Thick Film Chip(1608), 330 kohm, 1/10W, +/-5%	JRH330KCX
R69	Thick Film Chip(1608), 470 kohm, 1/10W, +/-5%	JRH470KCX
R71	Thick Film Chip(1608), 12 kohm, 1/10W, +/-5%	JRH012KCX
R72	Thick Film Chip(1608), 3.3 kohm, 1/10W, +/-5%	JRH3R3KCX
R73-74	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R76	Thick Film Chip(1608), 3.3 kohm, 1/10W, +/-5%	JRH3R3KCX
R77-78	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R79	Thick Film Chip(1608), 120 kohm, 1/10W, +/-5%	JRH120KCX
R81	Thick Film Chip(1608), 33 kohm, 1/10W, +/-5%	JRH033KCX
R82	Thick Film Chip(1608), 470 ohm, 1/10W, +/-5%	JRH470HCX
R83	Thick Film Chip(1608), 2.2 kohm, 1/10W, +/-5%	JRH2R2KCX
R86	Thick Film Chip(1608), 3.3 kohm, 1/10W, +/-5%	JRH3R3KCX
R87	Thick Film Chip(1608), 68 ohm, 1/10W, +/-5%	JRH068HCX

Ref. No	Description	Mfr's Part
R88	Thick Film Chip(1608), 150 ohm, 1/10W, +/-5%	JRH150HCX
R89	Thick Film Chip(1608), 270 ohm, 1/10W, +/-5%	JRH270HCX
R91	Thick Film Chip(1608), 100 ohm, 1/10W, +/-5%	JRH100HCX
R92	Thick Film Chip(1608), 680 ohm, 1/10W, +/-5%	JRH680HCX
R93	Thick Film Chip(1608), 47 kohm, 1/10W, +/-5%	JRH047KCX
R94	Thick Film Chip(1608), 100 ohm, 1/10W, +/-5%	JRH100HCX
R96	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R97	Thick Film Chip(1608), 680 ohm, 1/10W, +/-5%	JRH680HCX
R98	Thick Film Chip(1608), 33 ohm, 1/10W, +/-5%	JRH033KCX
R99	Thick Film Chip(1608), 5.6 kohm, 1/10W, +/-5%	JRH5R6KCX
R100	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R101	Thick Film Chip(1608), 560 ohm, 1/10W, +/-5%	JRH560HCX
R102	Thick Film Chip(1608), 470 ohm, 1/10W, +/-5%	JRH470HCX
R103	Thick Film Chip(1608), 100 ohm, 1/10W, +/-5%	JRH100HCX
R104	Thick Film Chip(1608), 8.2 kohm, 1/10W, +/-5%	JRH8R2KCX
R105	Thick Film Chip(1608), 1.5 kohm, 1/10W, +/-5%	JRH1R5KCX
R106	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R107	Thick Film Chip(1608), 3.3 kohm, 1/10W, +/-5%	JRH3R3KCX
R108	Thick Film Chip(1608), 100 ohm, 1/10W, +/-5%	JRH100HCX
R109	Thick Film Chip(1608), 390 ohm, 1/10W, +/-5%	JRH390HCX
R112	Thick Film Chip(1608), 2.7 kohm, 1/10W, +/-5%	JRH2R7KCX
R113-114	Thick Film Chip(1608), 100 ohm, 1/10W, +/-5%	JRH100HCX
R115	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R116	Thick Film Chip(1608), 100 ohm, 1/10W, +/-5%	JRH100HCX
R117	Thick Film Chip(1608), 5.6 kohm, 1/10W, +/-5%	JRH5R6KCX
R119	Thick Film Chip(1608), 100 ohm, 1/10W, +/-5%	JRH100HCX
R120	Thick Film Chip(1608), 4.7 kohm, 1/10W, +/-5%	JRH4R7KCX
R121	Thick Film Chip(1608), 680 ohm, 1/10W, +/-5%	JRH680HCX
R122	Thick Film Chip(1608), 2.2 kohm, 1/10W, +/-5%	JRH2R2KCX
R123	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R124	Thick Film Chip(1608), 220 kohm, 1/10W, +/-5%	JRH220KCX
R125	Thick Film Chip(1608), 2.7 kohm, 1/10W, +/-5%	JRH2R7KCX
R126	Thick Film Chip(1608), 1.8 kohm, 1/10W, +/-5%	JRH1R8KCX
R127	Thick Film Chip(1608), 1.5 kohm, 1/10W, +/-5%	JRH1R5KCX
R128	Thick Film Chip(1608), 5.6 kohm, 1/10W, +/-5%	JRH5R6KCX
R129	Thick Film Chip(1608), 2.2 kohm, 1/10W, +/-5%	JRH2R2KCX
R130	Thick Film Chip(1608), 4.7 kohm, 1/10W, +/-5%	JRH4R7KCX
R131	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R132	Thick Film Chip(1608), 47 kohm, 1/10W, +/-5%	JRH047KCX
R133	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R134	Thick Film Chip(1608), 56 kohm, 1/10W, +/-5%	JRH056KCX
R135	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R136	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R137	Thick Film Chip(1608), 100 kohm, 1/10W, +/-5%	JRH100KCX
R138	Thick Film Chip(1608), 1.5 kohm, 1/10W, +/-5%	JRH1R5KCX
R139	Thick Film Chip(1608), 150 kohm, 1/10W, +/-5%	JRH150KCX
R141	Thick Film Chip(1608), 100 ohm, 1/10W, +/-5%	JRH100HCX
R142	Thick Film Chip(1608), 22 kohm, 1/10W, +/-5%	JRH022KCX
R143	Thick Film Chip(1608), 6.8 kohm, 1/10W, +/-5%	JRH6R8KCX
R144	Thick Film Chip(1608), 8.2 kohm, 1/10W, +/-5%	JRH8R2KCX
R146	Thick Film Chip(1608), 100 ohm, 1/10W, +/-5%	JRH100HCX
R147	Thick Film Chip(1608), 3.3 kohm, 1/10W, +/-5%	JRH3R3KCX
R148	Thick Film Chip(1608), 100 ohm, 1/10W, +/-5%	JRH100HCX

Ref. No.	Description	Mfr's Part No.
R149	Thick Film Chip(1608), 330 kohm, 1/10W, +/-5%	JRH330KCX
R151	Thick Film Chip(1608), 1.5 kohm, 1/10W, +/-5%	JRH1R5KCX
R152	Thick Film Chip(1608), 47 ohm, 1/10W, +/-5%	JRH047HCX
R153	Thick Film Chip(1608), 3.3 kohm, 1/10W, +/-5%	JRH3R3KCX
R154	Thick Film Chip(1608), 22 kohm, 1/10W, +/-5%	JRH022KCX
R156	Thick Film Chip(1608), 56 kohm, 1/10W, +/-5%	JRH056KCX
R157	Thick Film Chip(1608), 6.8 kohm, 1/10W, +/-5%	JRH6R8KCX
R158	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R159	Thick Film Chip(1608), 12 kohm, 1/10W, +/-5%	JRH012KCX
R161	Thick Film Thick Film Chip(1608), 2.2 kohm, 1/10W, +/-5%	JRH2R2KCX
R162	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R163	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R167	Thick Film Chip(1608), 100 ohm, 1/10W, +/-5%	JRH100HCX
R168	Thick Film Chip(1608), 330 kohm, 1/10W, +/-5%	JRH010KCX
R169	Thick Film Chip(1608), 12 kohm, 1/10W, +/-5%	JRH012KCX
R170-171	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R172	Thick Film Chip(1608), 22 kohm, 1/10W, +/-5%	JRH022KCX
R173	Thick Film Chip(1608), 4.7 kohm, 1/10W, +/-5%	JRH4R7KCX
R174	Thick Film Chip(1608), 220 ohm, 1/10W, +/-5%	JRH220HCX
R175	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R176	Thick Film Chip(1608), 150 kohm, 1/10W, +/-5%	JRH150KCX
R177	Thick Film Chip(1608), 100 ohm, 1/10W, +/-5%	JRH100HCX
R178	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R179	Thick Film Chip(1608), 4.7 kohm, 1/10W, +/-5%	JRH4R7KCX
R181	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R182	Thick Film Chip(1608), 3.3 kohm, 1/10W, +/-5%	JRH3R3KCX
R183	Thick Film Chip(1608), 15 kohm, 1/10W, +/-5%	JRH015KCX
R184	Thick Film Chip(1608), 220 kohm, 1/10W, +/-5%	JRH220KCX
R185	Thick Film Chip(1608), 0 ohm, 1/10W, +/-5%	JRH000HCX
R186	Thick Film Chip(1608), 2.7 kohm, 1/10W, +/-5%	JRH2R7KCX
R187	Thick Film Chip(1608), 8.2 kohm, 1/10W, +/-5%	JRH8R2KCX
R188	Thick Film Chip(1608), 6.8 kohm, 1/10W, +/-5%	JRH6R8KCX
R189	Thick Film Chip(1608), 4.7 kohm, 1/10W, +/-5%	JRH4R7KCX
R191	Thick Film Chip(1608), 39 kohm, 1/10W, +/-5%	JRH039KCX
R192	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R193	Thick Film Chip(1608), 3.9 kohm, 1/10W, +/-5%	JRH4R7KCX
R194	Thick Film Chip(1608), 6.8 kohm, 1/10W, +/-5%	JRH6R8KCX
R196	Thick Film Chip(1608), 4.7 kohm, 1/10W, +/-5%	JRH4R7KCX
R197	Thick Film Chip(1608), 47 ohm, 1/10W, +/-5%	JRH047HCX
R198	Thick Film Chip(1608), 1.2 kohm, 1/10W, +/-5%	JRH1R2KCX
R199	Thick Film Chip(1608), 2.2 kohm, 1/10W, +/-5%	JRH2R2KCX
R201	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R202	Thick Film Chip(1608), 180 kohm, 1/10W, +/-5%	JRH180KCX
R203	Thick Film Chip(1608), 2.2 kohm, 1/10W, +/-5%	JRH2R2KCX
R204	Thick Film Chip(1608), 220 ohm, 1/10W, +/-5%	JRH220HCX
R206-207	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R208	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R209	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R211	Thick Film Chip(1608), 3.3 kohm, 1/10W, +/-5%	JRH3R3KCX
R212	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R213	Thick Film Chip(1608), 1.5 kohm, 1/10W, +/-5%	JRH1R5KCX
R214	Thick Film Chip(1608), 4.7 kohm, 1/10W, +/-5%	JRH4R7KCX
R216	Thick Film Chip(1608), 1.5 kohm, 1/10W, +/-5%	JRH1R5KCX

Ref. No.	Description	Mfr's Part No.
R217	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R218	Thick Film Chip(1608), 56 ohm, 1/10W, +/-5%	JRH056HCX
R219	Thick Film Chip(1608), 56 kohm, 1/10W, +/-5%	JRH056KCX
R221-222	Thick Film Chip(1608), 470 ohm, 1/10W, +/-5%	JRH470HCX
R223	Thick Film Carbonfilm, 10 kohm, 1/2W(ST), +/-5%	JR0010KCS
R224	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R226	Thick Film Chip(1608), 47 ohm, 1/10W, +/-5%	JRH047HCX
R227-228	Carbonfilm, 180 ohm, 1/2W(ST), +/-5%	JR0180HCS
R229	Carbonfilm, 22 ohm, 1/2W(ST), +/-5%	JR0022HCS
R231	Thick Film Chip(1608), 47 ohm, 1/10W, +/-5%	JRH047HCX
R232	Carbonfilm, 22 ohm, 1/2W(ST), +/-5%	JR0022HCS
R233	Thick Film Chip(2012), 180 ohm, 1/8W, +/-5%	JRC180HCX
R234	Thick Film Chip(2012), 4.7 ohm, 1/8W, +/-5%	JRC4R7HCX
R237	Thick Film Chip(1608), 47 ohm, 1/10W, +/-5%	JRH047HCX
R236	Thick Film Chip(1608), 330 ohm, 1/10W, +/-5%	JRH330HCX
R238	Thick Film Chip(1608), 1.5 kohm, 1/10W, +/-5%	JRH1R5KCX
R239	Carbonfilm, 22 ohm, 1/2W(ST), +/-5%	JR0022HCS
R241	Thick Film Chip(1608), 1.5 kohm, 1/10W, +/-5%	JRH1R5KCX
R242-243	Thick Film Chip(1608), 220 kohm, 1/10W, +/-5%	JRH220KCX
R246	Thick Film Chip(1608), 330 ohm, 1/10W, +/-5%	JRH330HCX
R247	Thick Film Chip(1608), 220 kohm, 1/10W, +/-5%	JRH220KCX
R249	Thick Film Chip(1608), 100 ohm, 1/10W, +/-5%	JRH100HCX
R251	Thick Film Chip(1608), 22 kohm, 1/10W, +/-5%	JRH022KCX
R252	Thick Film Chip(1608), 100 ohm, 1/10W, +/-5%	JRH100HCX
R253	Thick Film Chip(1608), 220 kohm, 1/10W, +/-5%	JRH220KCX
R254	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH033KCX
R257	Thick Film Chip(1608), 2.2 kohm, 1/10W, +/-5%	JRH2R2KCX
R258-259	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R261	Thick Film Chip(1608), 560 ohm, 1/10W, +/-5%	JRH560HCX
R262	Thick Film Chip(1608), 10 ohm, 1/10W, +/-5%	JRH010HCX
R263	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R264	Thick Film Chip(1608), 560 ohm, 1/10W, +/-5%	JRH560HCX
R265-266	Thick Film Chip(1608), 5.6 ohm, 1/10W, +/-5%	JRH5R6KCX
R271	Metal, 10 ohm, 2W(ST), +/-5%	JR0010HES
R273	Thick Film Chip(1608), 1.5 kohm, 1/10W, +/-5%	JRH1R5KCX
	Transistor	
Q1-2	(Chip), KTC3879-Y, SOT-23	JTC3879YX
Q3	(Chip), KRA105S, SOT-23	JTA105SXX
Q4	(Chip), KRC114SRTK, SOT-23	JTC114SRT
Q7	(Chip), KTA1505SY, SOT-23	JTA1505SY
Q8-9	(Chip), KTC3879-Y, SOT-23	JTC3879YX
Q11	(Chip), KTC3879-Y, SOT-23	JTC3879YX
Q12-13	(Chip), KTC3879-O, SOT-23	JTC3879OX
Q14	(Chip), KTA1505SY, SOT-23	JTA1505SY
Q16	(Chip), KRC110SRTK, SOT-23	JTC110SRT
Q17	(Chip), KRA105S, SOT-23	JTA105SXX
Q18	(Chip), KRC114SRTK, SOT-23	JTC114SRT
Q19	(Chip), KTC3876SY(WY), SOT-23	JTC3876SY
Q21	(Chip), KRC104SRTK, SOT-23	JTC104SRT
Q22	(Chip), KRC104SRTK, SOT-23	JTC110SRT
Q24	(Chip), KTC3876SY(WY), SOT-23	JTC3876SY
Q26	(Chip), KTC3876SY(WY), SOT-23	JTC3876SY

Ref. No	Description	Mfr's Part No.
Q27-29	(Chip), KTC3879-Y, SOT-23	JTC3879YX
Q31	(Chip), KTC3879-Y, SOT-23	JTC3879YX
Q32	FET, K163	JFK163XXX
Q34	(Chip), 2SC3838, SOT-23	JT2SC3838
Q36-37	(Chip), KTC3875-GR, SOT-23	JTC3875GR
Q38	(Chip), KRC110SRTK, SOT-23	JTC110SRT
Q39	(Chip), KTC3880-SY, SOT-23	JTC3880SY
Q41-42	(Chip), KTC3880-SY, SOT-23	JTC3880SY
Q44	(Chip), KRA105S, SOT-23	JTA105SXX
Q46-47	(Chip), KRA105S, SOT-23	JTA105SXX
Q48-50	(Chip), KRC114SRTK, SOT-23	JTC114SRT
Q51	(Chip), KRC110SRTK, SOT-23	JTC110SRT
Q55-56	(Chip), KTC3876SY(WY), SOT-23	JTC3876SY
Q57	(Chip), KTA1505SY, SOT-23	JTA1505SY
Q58	(Chip), KTC3876SY(WY), SOT-23	JTC3876SY
Q59	(Chip), KRC114SRTK, SOT-23	JTC114SRT
Q61	KTA200-Y, 200, TO-92	JT200YXXX
Q62	(Chip), KRC111SRTK, SOT-23	JTC111SRT
Q63	KTC-200Y, 200, TO-92	JT-200YXX
Q64	(Chip), KRA110SRTK, SOT-23	JTA110SRT
Q66-67	(Chip), KTC3880-Y, SOT-23	JTC3880SY
Q68	(Chip), KRC114SRTK, SOT-23	JTC114SRT
Q69	(Chip), KTC3880-SY, SOT-23	JTC3880SY
Q71-72	Transistor, 2SC1969, 2312	JTC1969XX
Q73	Transistor, 2SC2166	JTC2166XX
Q74	2SC2314F	JTC2314XX
Q76	(Chip), KTC3876SY(WY), SOT-23	JTC3876SY
Q77	(Chip), KTC3876SY(WY), SOT-23	JTC3876SY
Q78	Transistor, KTB778	JTKT778XX
Q79	(Chip), KRA1001(KY), A1001YRTF, SOT-89	JTA1001YR
Q81	(Chip), KTC3880-SY, SOT-23	JTC3880SY
Q82	(Chip), KTC3876SY(WY), SOT-23	JTC3876SY
	Semifixed Resister	
RV1	100KB, 8H, 3P	JU100KBHB
RV3	20KB, 8H, 3P	JU20KBHBX
RV4	500B, 8H, 3P	JU500BHBX
RV5	100KB, 8V, 2P	JU100KBVA
RV6	10KB, 8H, 3P	JU10KBHBX
RV8	100KB, 8H, 3P	JU100KBHB
RV9	10KB, 8H, 3P	JU10KBHBX
RV11-12	100 ohm, 8H, 3P	JU100OHBX
RV13	1KB, 6H, 3P	JU1KB6H3X
RV14	100KB, 8H, 3P	JU100KBHB
RV16	5KB, 8H, 3P	JU5KBHBXX
	X-TAL	
X1	(HAM. SYC), 10.240MHz(32pF/20ppm)	JX10240XG
X2	(HAM. SYC), 4.5MHz(32pF/5ppm)	JX04500XH
X3	(HAM. SYC), 10.6975MHz(32pF/10ppm)	JX106975A

Ref. No.	Description	Mfr's Part No.
	Jack	
J2	Earphone, EJ3503(W/O NUT, PCB)	JZJE3R5PX
	Wafer	
CON1	Flat, Wafer, FW-0640-04	GWCONFW04
SP1	LOW, Profile, LOCK, Wafer, LWL-0640-02	GWCONLW02
	TIN, Jumper	
W/L19	TIN, Jumper, 6mm, W/L19(Core, Bead)	GWJ06XXXX
W/L22	TIN, Jumper, 6mm, W/L22(Core, Bead)	GWJ06XXXX
W/L24	TIN, Jumper, 6mm, W/L24(Core, Bead)	GWJ06XXXX
W/L26	TIN, Jumper, 6mm, W/L26(Core, Bead)	GWJ06XXXX
	End of ASS'Y-PCB, MAIN	
P2	ASS'Y, PCB, Front	JPFXHTX10
	Coil	
L401	Inductor, 0.47uH(LAL03NA)	JBIIR47WX
L402-L405	Inductor, Chip, 4.7uH(LEM2520)	JBII4R7CB
	Capacitor	
C411	Elect, 16V, 6.3x11, 220uF	JCECC220X
C401	Ceramic(1608), 0.01uF, B, +/-10%(Chip)	JCH103BKC
C402	Ceramic(1608), 0.047uF, B, +/-10%(Chip)	JCH473BKC
C403-404	Ceramic(1608), 0.1uF, B, +/-10%(Chip)	JCH104BKC
C406	Ceramic(1608), 470P, CG, +/-5%(Chip)	JCH471CJC
C407-409	Ceramic(1608), 0.01uF, B, +/-10%(Chip)	JCH103BKC
C412	Tantalum, Chip, 2.2uF, 16V(A)	JCTC2R216
C413	Tantalum, Chip, 0.47uF, 25V(A)	JCTC47100
C414	Ceramic(1608), 0.01uF, B, +/-10%(Chip)	JCH103BKC
C416	Ceramic(1608), 0.022uF, B, +/-10%(Chip)	JCH223BKC
C417	Tantalum, Chip, 1uF, 16V(A)	JCTC01016
C418	Ceramic(1608), 0.022uF, B, +/-10%(Chip)	JCH223BKC
C419	Elect, 16V, 5x11, 47uF	JCECB47XX
C420-421	Ceramic(1608), 0.047uF, B, +/-10%(Chip)	JCH473BKC
C424	Ceramic(1608), 0.047uF, B, +/-10%(Chip)	JCH473BKC
C425	Elect, 16V, 5x11, 47uF	JCECB47XX
C426	Ceramic(1608), 0.0047uF, B, +/-10%(Chip)	JCH472BKC
	Diode	
D401	Switching(Chip), S184RTK(MMBD1204)	JDS184RTK
D403-404	Switching(Chip), 1SS355	JD1SS355C
D406	Switching(Chip), S184RTK(MMBD1204)	JDS184RTK
D407	Switching(Chip), 1SS355	JD1SS355C
D408	Switching(Chip), S184RTK(MMBD1204)	JDS184RTK
D409-410	Switching(Chip), 1SS355	JD1SS355C
ZD401	Zener(Chip), BZX6V2	JDBZX6V2C
ZD403	Zener(Chip), BZX5V6, MTZ5.6B	JDBZX5V6C
ZD402	Zener(Chip), BZX84C10	JDBZX10VO

Ref. No.	Description	Mfr's Part No.
	Integrated Circuits	
IC401	IC, SY-205, LC72322N-9530, CPU	JISY205XX
IC402	IC, (Chip), KIA78L05F, Regulator	JII78L05F
	Pilot Lamp	
PL401-405	Pilot Lamp 3mm dia 30mA 10V	JL3X30X10
	L.C.D.	
LCD401	LCD KXN27730DAP	JLCK27730
	Resistor	
R401	Thick Film Chip(1608), 560 ohm, 1/10W, +/-5%	JRH560HCX
R402	Thick Film Chip(1608), 68 kohm, 1/10W, +/-5%	JRH068KCX
R403	Thick Film Chip(1608), 1.5 kohm, 1/10W, +/-5%	JRH1R5KCX
R404	Thick Film Chip(1608), 5.6 kohm, 1/10W, +/-5%	JRH5R6KCX
R405	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R413	Thick Film Chip(1608), 47 kohm, 1/10W, +/-5%	JRH047KCX
R415	Thick Film Chip(1608), 0 ohm, 1/10W, +/-5%	JRH000HCX
R416	Thick Film Chip(1608), 100 kohm, 1/10W, +/-5%	JRH100KCX
R419	Thick Film Chip(1608), 100 kohm, 1/10W, +/-5%	JRH100KCX
R20	Thick Film Chip(1608), 0 ohm, 1/10W, +/-5%	JRH000HCX
R421-423	Thick Film Chip(1608), 100 kohm, 1/10W, +/-5%	JRH100KCX
R426	Thick Film Chip(1608), 100 kohm, 1/10W, +/-5%	JRH100KCX
R428-429	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R431	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R432	Thick Film Chip(1608), 47 kohm, 1/10W, +/-5%	JRH047KCX
R433	Thick Film Chip(1608), 100 kohm, 1/10W, +/-5%	JRH100KCX
R434	Thick Film Chip(1608), 56 kohm, 1/10W, +/-5%	JRH056KCX
R436-439	Thick Film Chip(1608), 1 Mohm, 1/10W, +/-5%	JRH001MCX
R441-444	Thick Film Chip(1608), 1 Mohm, 1/10W, +/-5%	JRH001MCX
R446-448	Thick Film Chip(1608), 1 Mohm, 1/10W, +/-5%	JRH001MCX
R449	Thick Film Chip(1608), 2.2 kohm, 1/10W, +/-5%	JRH2R2KCX
R451	Thick Film Chip(1608), 47 kohm, 1/10W, +/-5%	JRH047KCX
R452	Thick Film Chip(1608), 12 kohm, 1/10W, +/-5%	JRH012KCX
R453	Thick Film Chip(1608), 100 kohm, 1/10W, +/-5%	JRH100KCX
R454	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R456-457	Thick Film Chip(1608), 1 kohm, 1/10W, +/-5%	JRH001KCX
R458	Thick Film Chip(1608), 4.7 kohm, 1/10W, +/-5%	JRH4R7KCX
R459	Thick Film Chip(1608), 470 kohm, 1/10W, +/-5%	JRH470KCX
R462	Thick Film Chip(1608), 0 ohm, 1/10W, +/-5%	JRH000HCX
R464	Thick Film Chip(1608), 10 kohm, 1/10W, +/-5%	JRH010KCX
R468	Thick Film Chip(1608), 47 kohm, 1/10W, +/-5%	JRH047KCX
R469	Thick Film Chip(1608), 56 kohm, 1/10W, +/-5%	JRH056KCX
R467	Thick Film Chip(1608), 82 kohm, 1/10W, +/-5%	JRH082KCX
R471-472	Thick Film Chip(1608), 100 kohm, 1/10W, +/-5%	JRH100KCX
R473	Thick Film Chip(1608), 0 ohm, 1/10W, +/-5%	JRH000HCX
R474	Thick Film Chip(1608), 470 kohm, 1/10W, +/-5%	JRH470KCX
R476	Thick Film Chip(1608), 470 kohm, 1/10W, +/-5%	JRH470KCX
R477	Thick Film Chip(1608), 0 ohm, 1/10W, +/-5%	JRH000HCX
R478	Thick Film Chip(1608), 100 kohm, 1/10W, +/-5%	JRH100KCX
R482-510	Thick Film Chip(1608), 100 kohm, 1/10W, +/-5%	JRH100KCX

Ref. No	Description	Mfr's Part No.
	Switch	
SW403-404 SW406-409	Tact, DT-1102 Tact, DT-1102	JST1105XX JST1105XX
	Transistor	
Q401 Q404 Q406 Q407 Q408 Q411 Q412 Q413-414	Thick Film (Chip), KRC110SRTK, SOT-23 Thick Film (Chip), KRC114SRTK, SOT-23 Thick Film (Chip), KTA1505SY, SOT-23 KTC-200Y, KTC-200, TO-92 Thick Film (Chip), KRA105S, SOT-23 Thick Film (Chip), KTC3876SY(WY), SOT-23 Thick Film (Chip), KTA1505SY, SOT-23 Thick Film (Chip), KRC114SRTK, SOT-23	JTC110SRT JTC114SRT JTA1505SY JT-200YXX JTA105SXX JTC3876SY JTA1505SY JTC114SRT
	Semifixed Resistor	
RV402	Thick Film (Chip), MVR32, HXBRN473	JU473MVRX
	Volume	
VR402 VR403	Single Round, 161HB-20SK-B50K, W/NUT SW/Single Round, CSPNS-1624B/20mm, 50KA, W/NUT	JV1250KBX JV150KAPB
P3 SW401	ASS'Y, PCB, Channel Switch, Channel. YPS2101, 20SK, W/NUT	JPSCH0005 JSC2101XX
P5 VR404/SW402	ASS'Y, PCB, Fine VR(PUSH SW), Single Round, TPHR1 20KC-3B 10K, W/NUT	JPSF10003 JV120KCXX
P4 VR401/407	ASS'Y, PCB, MIC-G, RF-G Volume, Double Round, 3B100K/15A5K, W/NUT	JPSFI0003 JV120KCXX
4-12 C601 C603 C604 R601-603 R602 R603 SW601 SW602-603 4-15 4-16	ASS'Y, PCB, Microphone Capacitor, Elect, 16V, 5x11, 10uF, +/-20% Capacitor, Ceramic, 0.001uF, B, +/-10%(AXIAL) Mylar, Capacitor, 0.1uF, 50V, +/-10%(SMALL) Resistor, Carbonfilm, 22 kohm, 1/16W(ST), +/-5% Resistor, Carbonfilm, 4.7 kohm, 1/16W(ST), +/-5% Resistor, Carbonfilm, 22 kohm, 1/16W(ST), +/-5% Switch, Push, DP-2251N Switch, Tack, DT-1104A MIC, Condenser, JS-80C(9.7pie) Cord, Mic 5C-1S(Black), KSK-56002 300mm/S:7mm	JPSMHTX10 JCECA10XX JCC102BKA JCMU0R1XX JR0022KAS JR04R7KAS JR0022KAS JSP2262NX JST1236XX JZDJS80CS JZM5C1SBX
	Cord	
48	Cord, DC Power(B), HTX-10, Femail(10A FUSE)	GWPHTX10X

VOLTAGE CHART

Measurement Conditions:

Power supply voltage : 13.8V DC
Test equipment : Digital Voltmeter (DM332)
Measurement channel : 19 CH
Unless otherwise specified, set controls are as follows:
MODE : AM SQ : MIN ANL/NB : OFF
RF GAIN : MAX CLARIFIER : CENTER

Symbol No.	Name	RX / TX	Base Gate	Collector Drain	Emitter Source
Q1	KTC3879-Y	RX	0.7	2.2	0
Q2	KTC3879-Y	RX	0.7	2.1	0
Q3	KRA105S	RX NB ON	0.1	7	7.1
Q4	KRA114S	RX NB ON	2.3	0.1	0
Q7	KTA1505	RX NB ON	6.5	0.3	7
Q8	KTC3879-Y	RX NB ON	0.3	0	0
Q9	KTC3879-Y	RX	0.85	7.5	0.22
Q11	KTC3879-Y	RX	2.82	3.3	2.2
Q12	KTC3879-O	RX	1.2	6.9	0.52
Q13	KTC3879-O	RX	1.0	7.6	0.2
Q14	KIA1505	RX	0.25	0.27	0.95
Q16	KRC110S	RX FM	7.93	0	0
Q17	KRA105S	RX FM	0.07	7.9	7.9
Q18	KRC114S	RX FM	4.77	0.07	0
Q19	KTC3876	RX	0.14	0.1	0.04
Q21	KRC104S	RX	0.07	0.45	0
Q22	KRC110S	RX	0	0	0
Q24	KTC3876	RX	1.27	4.1	0.84
Q26	KTC3876	RX	0	0	0

Symbol No.	Name	RX / TX	Base Gate	Collector Drain	Emitter Source
Q27	KTC3879-Y	RX	2.92	6.13	2.21
Q28	KTC3879-Y	RX	3.63	6.06	2.92
Q29	KTC3879-Y	RX	0.69	3.63	0
Q31	KTC3879-Y	RX	0.99	8.05	0.36
Q32	FET K163	RX	Gate	Source	Drain
			6.43	0	0.32
Q34	2SC3838	RX	2.0	6.7	1.32
Q36	KTC3875-GR	RX TX	1.0	5.65	0.58
Q37	KTC3875-GR	RX TX	0.58	5.65	0
Q38	KRC110S	TX FM	0.5	2.01	0
Q39	KTC3880	RX TX	0.73	3.65	0
Q41	KTC3880	RX TX	3.47	7.59	2.76
Q42	KTC3880	RX TX	0.73	5.27	0
Q44	KRA105S	RX TX(AM/FM)	0.07	8.04	8.1
Q46	KRA105S	RX TX(LSB)	0.07	8.06	8.1
Q47	KRA105S	RX TX(USB)	0.07	8.04	8.1
Q48	KRC114S	RX TX(AM/FM)	4.28	0.07	0
Q49	KRC114S	RX TX(LSB)	4.95	0.07	0
Q50	KRC114S	RX TX(USB)	4.95	0.07	0
Q51	KRC110S	RX TX(AM/FM)	7.99	0.01	0
Q55	KTC3876	TX SSB	3.9	6.6	3.3
Q56	KTC3876	TX	0.16	0	0.12
Q57	KTA1505	TX	7.2	0.17	8.15
Q58	KRC3876	TX	0.87	7.63	1.58
Q59	KRC114S	TX	7.28	0.01	0
Q61	KTA200	TX	7.35	8.3	8.01

Symbol No.	Name	RX / TX		Base Gate	Collector Drain	Emitter Source
Q62	KRC111S	TX FM		8.5	0	0
Q63	KTC200	RX		7.84	8.1	7.1
Q64	KTA110S	TX		0.13	0	1.06
Q66	KTC3880	RX	SSB	3.1	6.8	2.5
			AM/FM	0.5	0.3	0
		TX		3.1	6.8	2.6
Q67	KTC3880	RX TX		3.3	5.66	2.8
Q68	KRC114S	RX TX(STEP0)		0.2	4.06	0
Q69	KTC3880	TX SSB		0	7.56	0.8
Q71	2SC1969	TX AM		0.68	6.2	0
		TX FM		0.68	11.8	0
		TX SSB		0.68	13.3	0
Q72	2SC1969	TX AM		0.68	6.2	0
		TX FM		0.68	11.8	0
		TX SSB		0.68	13.3	0
Q73	2SC2166	TX AM		0.69	6.2	0
		TX FM		0.69	11.8	0
		TX SSB		0.69	13.3	0
Q74	2SC2314	TX		1.2	7.18	0.5
Q76	KTC3876	TX		1.4	7.2	0.7
Q77	KTC3876	TX AM		6.7	12.1	6.2
		TX FM		6.7	11.7	6.2
		TX SSB		12.3	12.6	12
Q78	KTB778	TX AM		12.7	6.2	13.5
		TX FM		12.4	11.8	13.3
		TX SSB		12.3	12.3	13.3

Symbol No.	Name	RX / TX	Base Gate	Collector Drain	Emitter Source
Q79	KRA1001	TX AM	12.1	6.2	12.7
		TX FM	11.7	11.8	12.4
		TX SSB	12.6	12.3	12.3
Q81	KTC3880	TX AM	0	6.2	0
		TX FM	0.9	0.6	0
		TX SSB	0	12.8	0
Q82	KTC3876	TX AM	0.3	12.1	2.3
		TX FM	0.4	11.7	4.9
		TX SSB	7.4	12.6	6.8
Q401	KRC110S	RX(TONE LOW)	4.9	0	0
Q404	KRC114S	TX FM	4.8	0.1	0
Q406	KTA1505	RX TX	7.3	0	5.66
Q407	KTC200	RX TX	10	13.8	9.36
Q408	KRA105S	TX	0.7	5.7	5.7
Q411	KTC3876	RX(P-P)	2.14	4.9	1.64
Q412	KTA1505	RX(P-P)	5.25	0	4.97
Q413	KRC114S	RX(SHIFT ON)	0	1.8	0
Q414	KRC114S	RX(SHIFT ON)	0	1.8	0

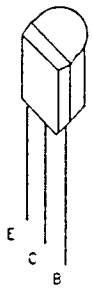
Symbol No.	RX / TX	Pin No.	Voltage	Symbol No.	RX / TX	Pin No.	Voltage
IC 1 (BA 403)	RX FM	1	2.03	IC 3 (NJM 1496)	TX	10	3.8
		2	2.03		TX	11	0.1
		3	6.07		TX AM FM	12	4.3
					TX SSB		3.9
		4	0		TX	13	0.1
		5	3.46		TX	14	0
		6	3.48	IC 4 (KIA 7808)	RX TX	1	13.2
		7	3.4			2	0
IC 2 (BA 728)	RX	1	0.1			3	8.2
		2	0.5	IC 5 (KIA 4558)	TX	1	4.2
		3	0.01			2	4.2
		4	0			3	4.3
		5	0.1			4	0
		6	0.45			5	3.4
		7	0			6	3.2
		8	7.12			7	7.5
IC 3 (NJM 1496)	TX AM FM	1	0.14			8	7.7
	TX SSB		3.4	IC 6 (KIA 7217)	RX TX	1	13.9
	TX AM FM	2	2.4		RX TX	2	12.7
	TX SSB		2.7		RX TX	3	4.1
	TX AM FM	3	2.4		RX	4	8.2
	TX SSB		2.7		TX		11.1
	TX	4	3.3		RX	5	1.5
	TX	5	1.3		TX		0.3
	TX	6	3.9		RX	6	3.4
	TX	7	0		TX		3.0
	TX	8	3.6		RX	7	3.4
	TX	9	0		TX		1.5

Symbol No.	RX / TX	Pin No.	Voltage
IC 6 (KIA 7217)	RX	8	1.2
	TX		0.1
	RX TX	9	0
	RX	10	7
	TX		10.4
IC 7 (KIA 6058)	TX	1	0.9
		2	1.6
		3	7.2
		4	1.6
		5	0
		6	7.1
		7	7.1
		8	7.2
IC 401 (SY-205)	RX TX	1	2.53
	RX TX	2	0
	TX	3	5.4
	RX TX	4	5
	RX TX	5	0
	RX TX	6	5
	RX BEEP ON	7	5 (P-P)
	RX TX	8	0
	RX TX	9	5.6
	RX	10	7.0
	TX		0
	RX TX	11	0
	RX TX	12	0
	RX TX	13	5
	RX TX	14	0

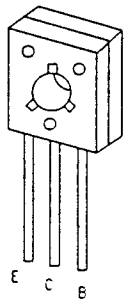
Symbol No.	RX / TX	Pin No.	Voltage
IC 401 (SY-205)	LSB	15	5
	USB	16	5
	AM	17	5
	FM	18	4.7
	+ SHIFT	19	0
	SHIFT OFF	20	5
	RX TX	21	5
	TONE LOW ON	22	5
	1KHz STEP	23	4.7
	2KHz STEP	24	4.7
	3KHz STEP	25	4.7
	4KHz STEP	26	4.7
	RX TX	27	5
	RX TX	28	5
	RX TX	29	5
	RX TX	30	5
	RX TX	31	5
	RX TX	32	0
	RX TX	33	1.65
	RX TX	34	0
	RX TX	35	0
	RX TX	36-65	5 (P-P)
	RX TX	66	5.6
	RX TX	67	5.6
	RX TX	68	5
	TX	69	4.1
	RX TX	70	2.6
	RX TX	71	2.6

Symbol No.	RX / TX	Pin No.	Voltage	Symbol No.	RX / TX	Pin No.	Voltage
IC 401 (SY-205)	RX TX	72	5	IC 402	RX TX	1	13.8
	RX TX	73	5		RX TX	2	0.6
	RX TX	74	0		RX TX	3	5.6
	RX TX	75	2.6				
	RX TX	76	0				
	RX TX	77	0				
	RX TX	78	1				
	RX TX	79	0				
	RX TX	80	2.7				

SEMICONDUCTOR LEAD IDENTIFICATION AND IC INTERNAL DIAGRAM



KTC3192
KTC200
KTA200
KTA200



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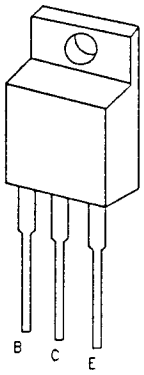

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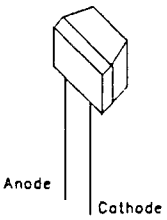

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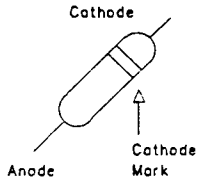

1N60
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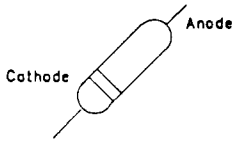
1SS135
1N4004
1N4001
1SS355
1N5401
1N4001-G



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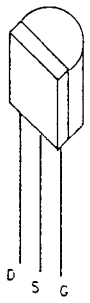

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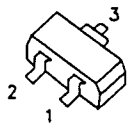
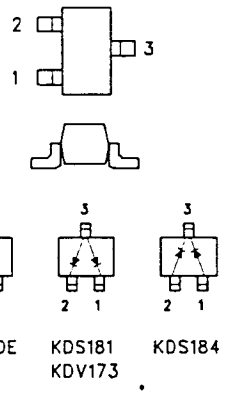


1. EMITTER
2. BASE
3. COLLECTOR

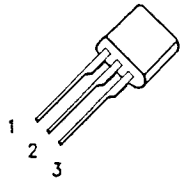
SOT-23

KTC3876 KTC3879
KTC3875 KTC3880
KRC110S KRA105S
KRA101S KRA1505
KRA1504
KRC114S
KRC104S
KRA110S
KRC111S



SOT-23

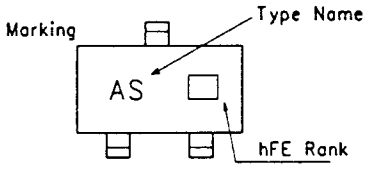
KDS196



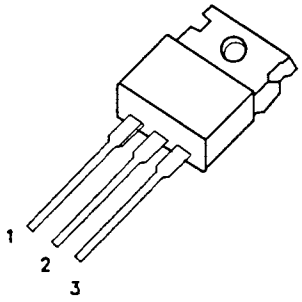
1. MEITTER
2. COLLECTOR
3. BASE

TO-92M

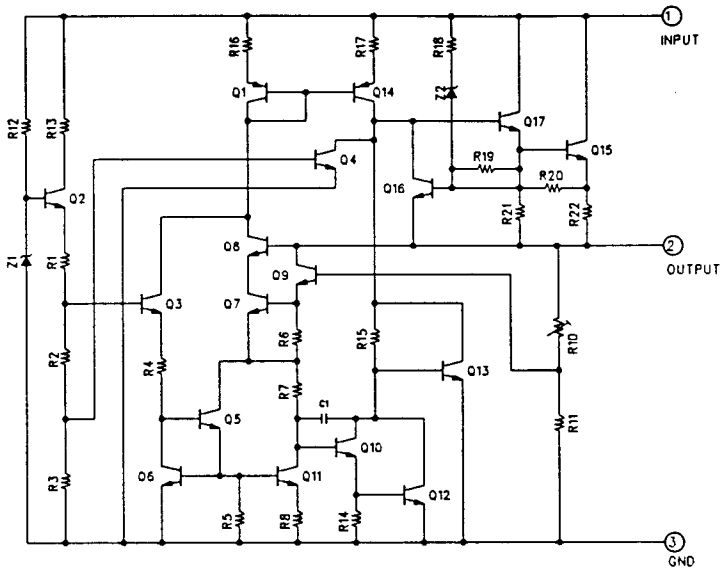
KTC200
KTA200



KIA7808P



1. INPUT
2. OUTPUT
3. GND (CASE)



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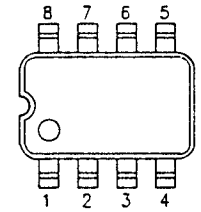
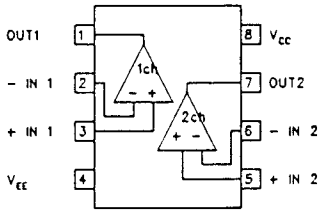
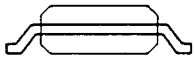
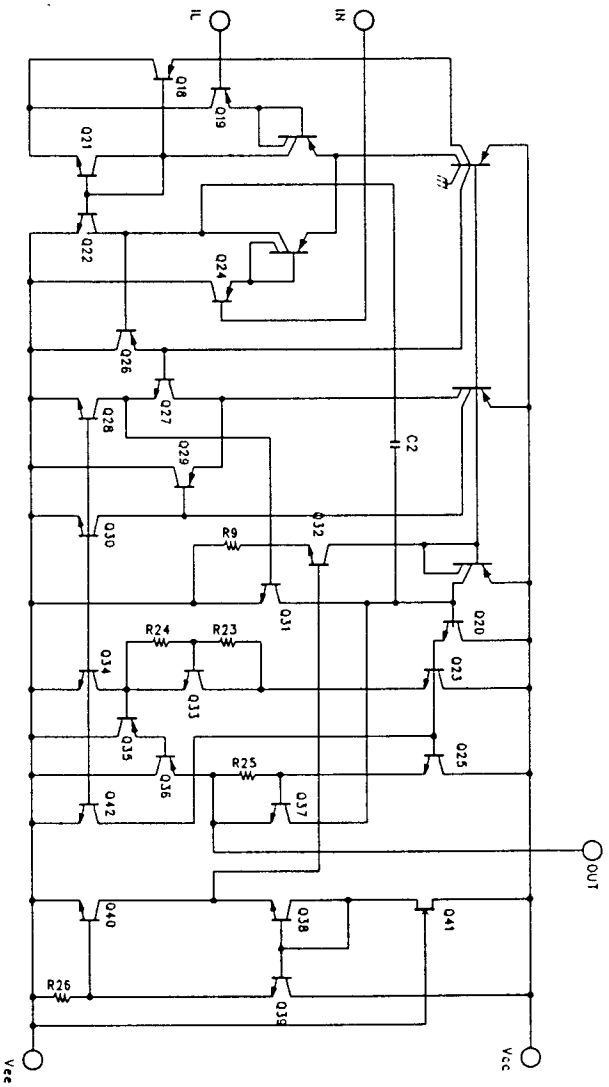
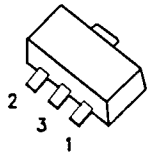






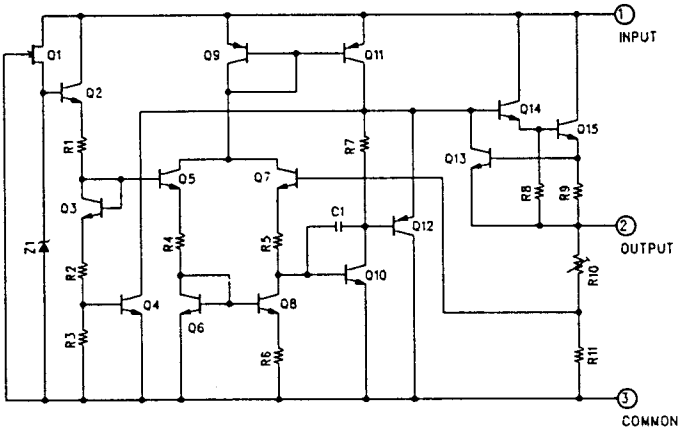


KIA78L05F

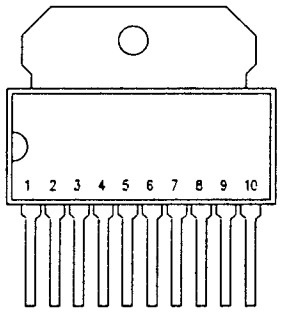


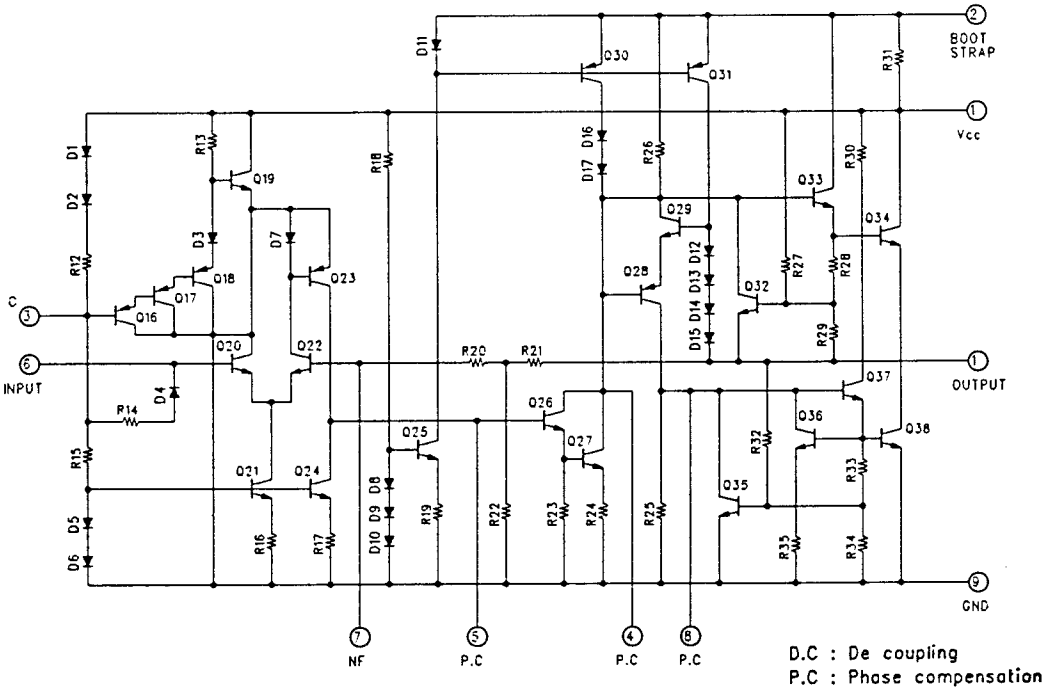
1. INPUT
2. OUTPUT
3. COMMON (CASE)

SOT-89



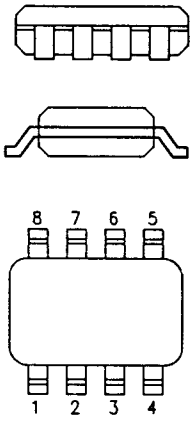
KIA7217AP

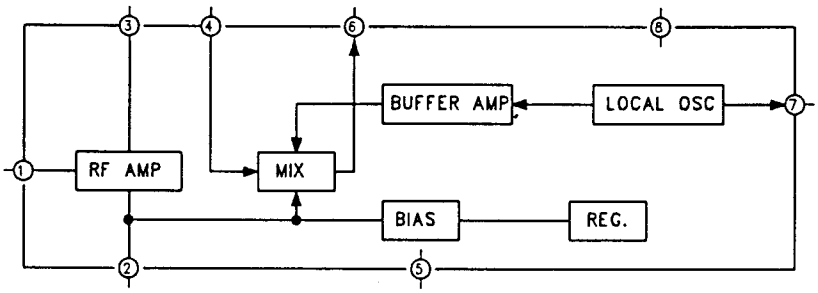




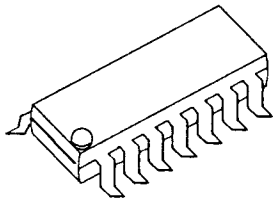
D.C : De coupling
P.C : Phase compensation

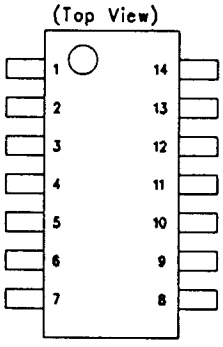
KIA6058F

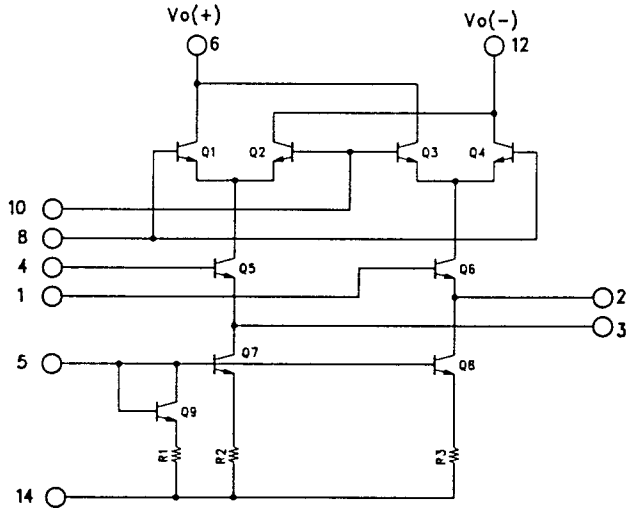




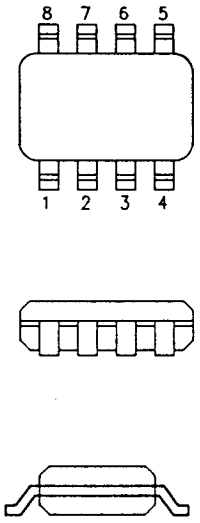
NJM1496

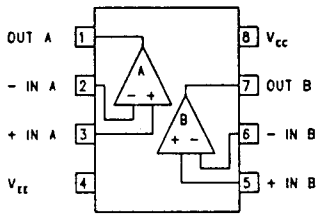




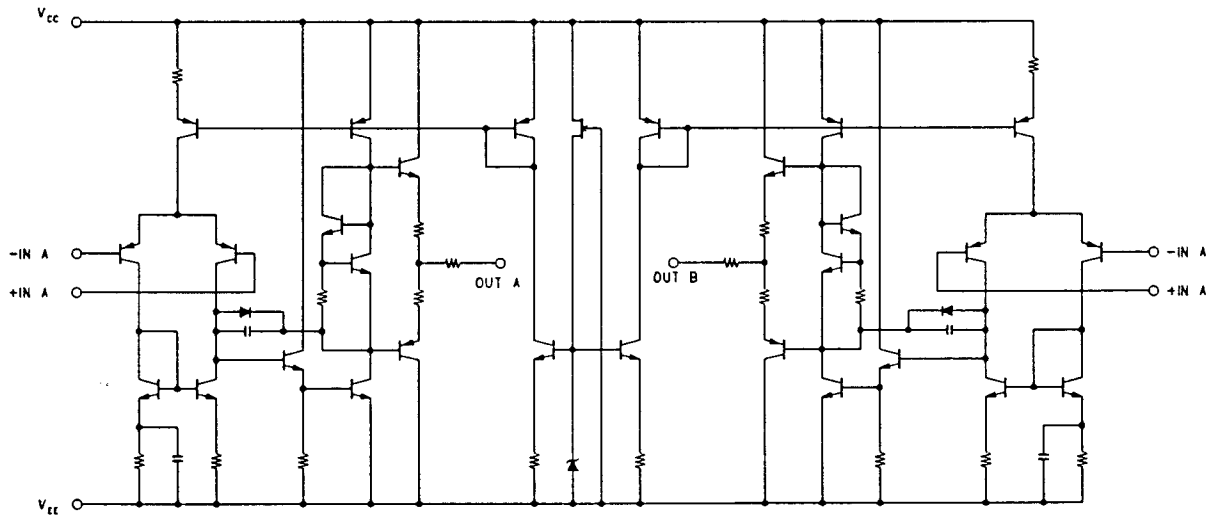


KIA4558F

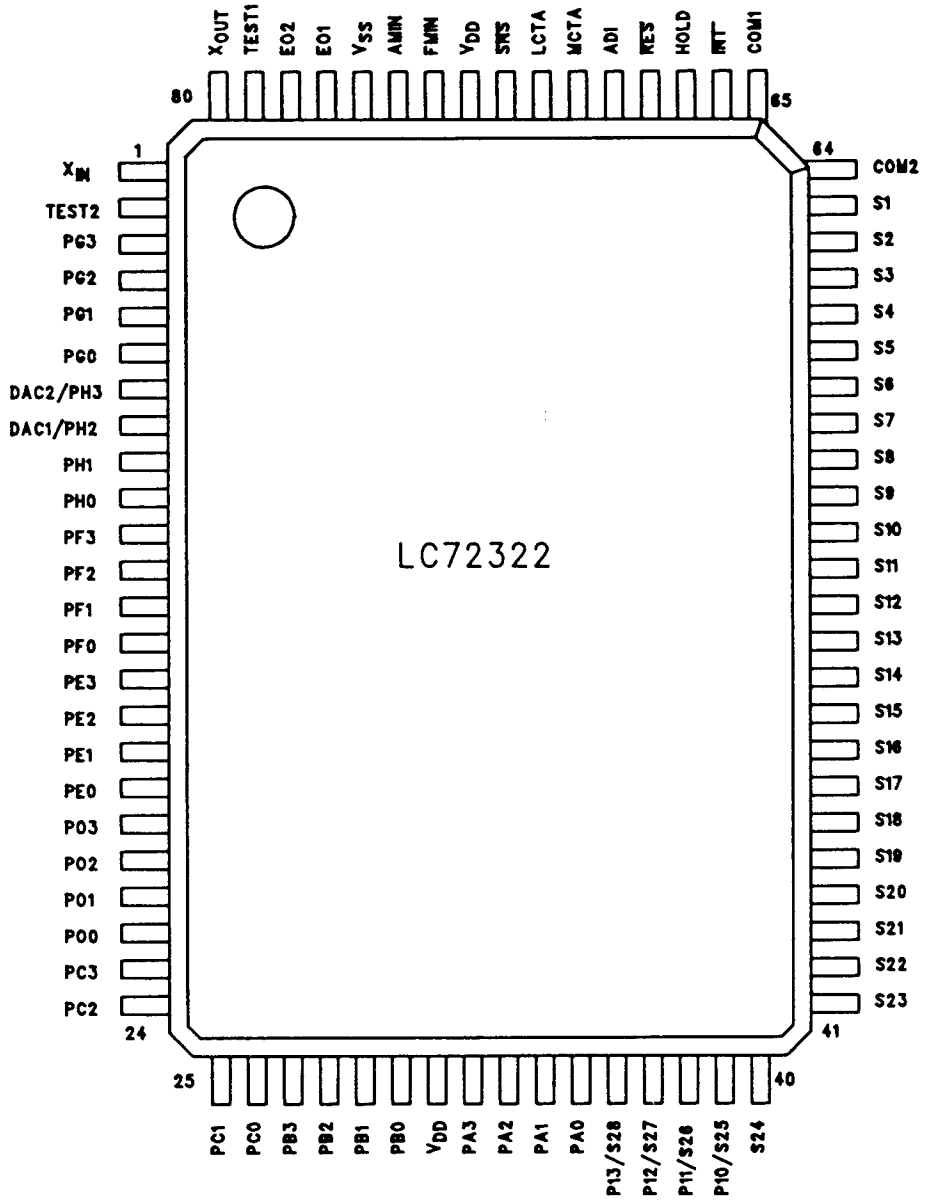




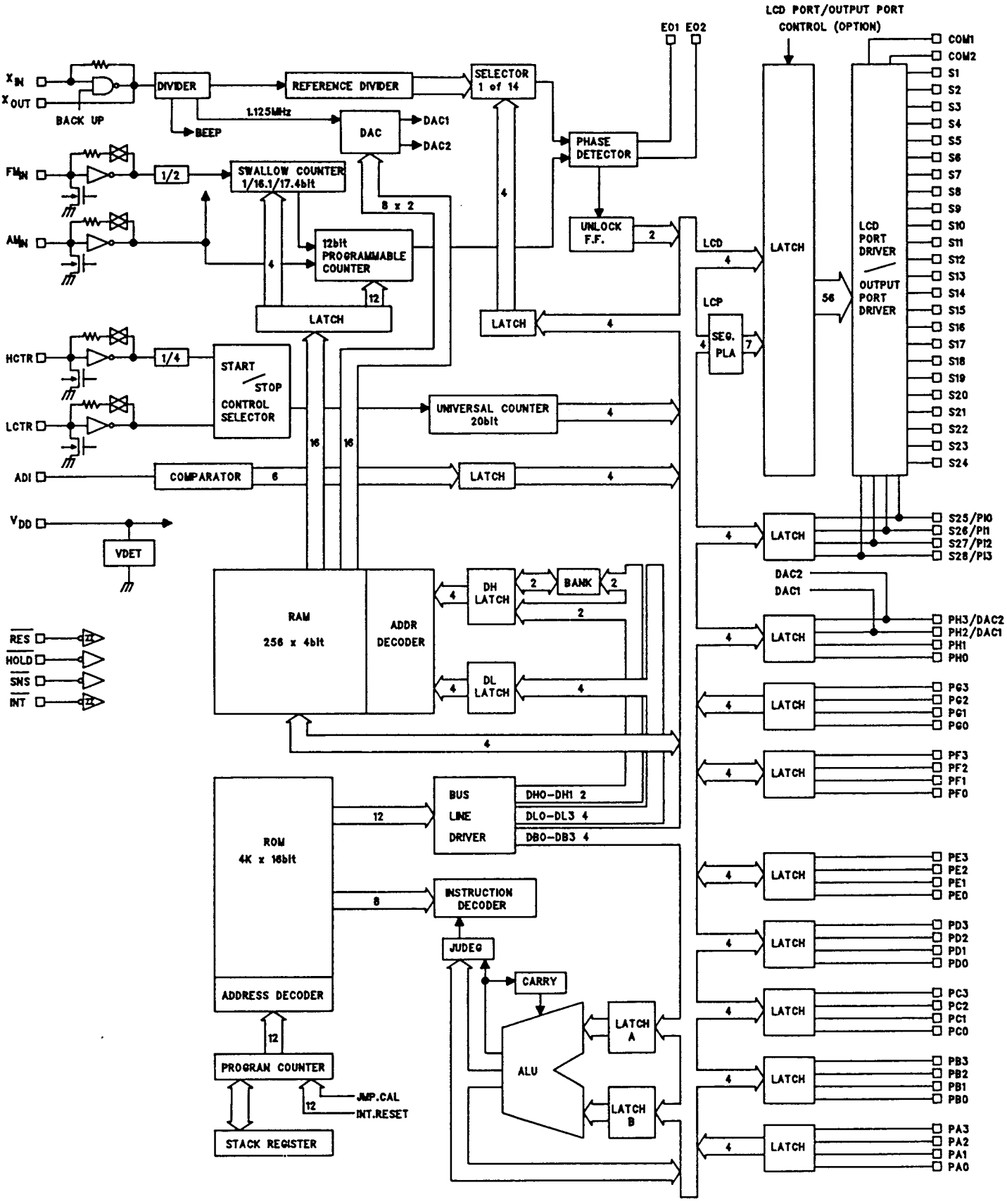
EQUIVALENT CIRCUIT

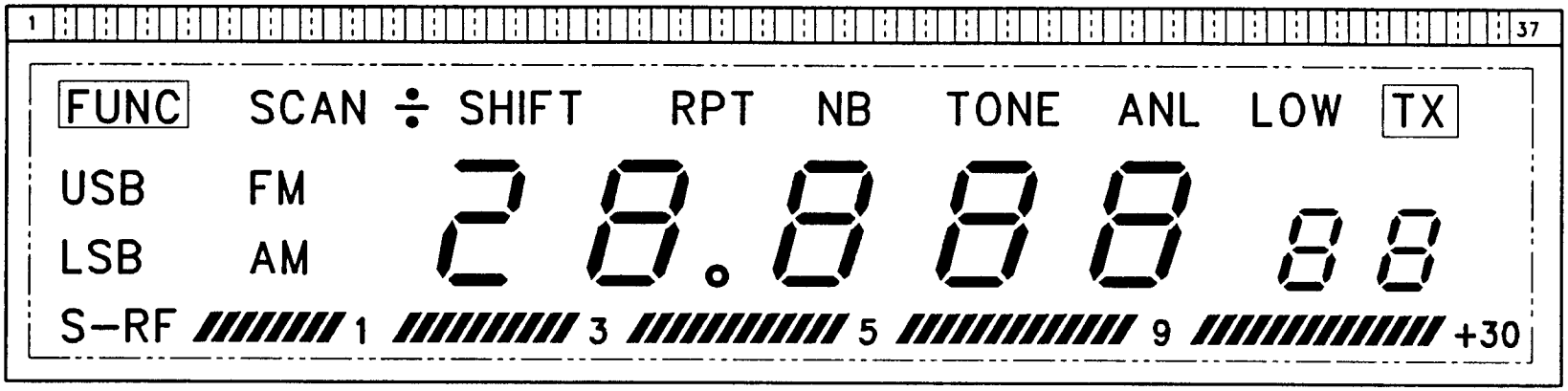


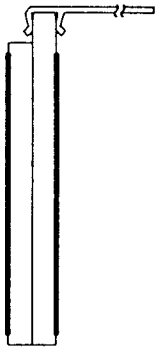
LC72322

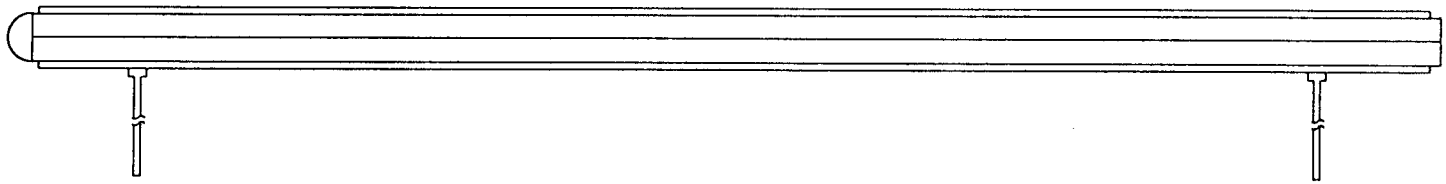

LC72322
80
65
64
1
24
25
40
41
X_{OUT}
TEST1
EO2
EO1
V_{SS}
AMIN
FMIN
V_{DD}
SNS
LCTA
MCTA
ADI
RES
HOLD
INT
COM1
X_{IN}
TEST2
PG3
PG2
PG1
PG0
DAC2/PH3
DAC1/PH2
PH1
PH0
PF3
PF2
PF1
PF0
PE3
PE2
PE1
PE0
PO3
PO2
PO1
PO0
PC3
PC2
COM2
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
S16
S17
S18
S19
S20
S21
S22
S23
PC1
PC0
PB3
PB2
PB1
PB0
V_{DD}
PA3
PA2
PA1
PA0
P13/S28
P12/S27
P11/S26
P10/S25
S24

LC72322


LCD PORT/OUTPUT PORT CONTROL (OPTION)
EO1 EO2
COM1
COM2
S1
S2
S3
S4
S5
S6
S7
S8
S9
S10
S11
S12
S13
S14
S15
S16
S17
S18
S19
S20
S21
S22
S23
S24
LCD PORT DRIVER
OUTPUT PORT DRIVER
56
LATCH
LCD
LCP
SEG. PLA
7
XIN
XOUT
BACK UP
DIVIDER
REFERENCE DIVIDER
SELECTOR 1 of 14
1.125MHz
BEEP
DAC
DAC1
DAC2
PHASE DETECTOR
FMIN
AMIN
1/2
SWALLOW COUNTER 1/16.1/17.4bit
8 x 2
UNLOCK F.F.
12bit PROGRAMMABLE COUNTER
HCTR
LCTR
1/4
START / STOP CONTROL SELECTOR
UNIVERSAL COUNTER 20bit
ADI
COMPARATOR
VDD
VDET
RES
HOLD
SNS
INT
RAM 256 x 4bit
ADDR DECODER
DH LATCH
DL LATCH
BANK
S25/PI0
S26/PI1
S27/PI2
S28/PI3
PH3/DAC2
PH2/DAC1
PH1
PH0
PG3
PG2
PG1
PG0
PF3
PF2
PF1
PF0
PE3
PE2
PE1
PE0
PD3
PD2
PD1
PD0
PC3
PC2
PC1
PC0
PB3
PB2
PB1
PB0
PA3
PA2
PA1
PA0
ROM 4K x 16bit
BUS LINE DRIVER
DH0-DH1 2
DL0-DL3 4
DB0-DB3 4
INSTRUCTION DECODER
JUDEG
CARRY
ALU
LATCH A
LATCH B
ADDRESS DECODER
PROGRAM COUNTER
JMP.CAL
INT.RESET
STACK REGISTER



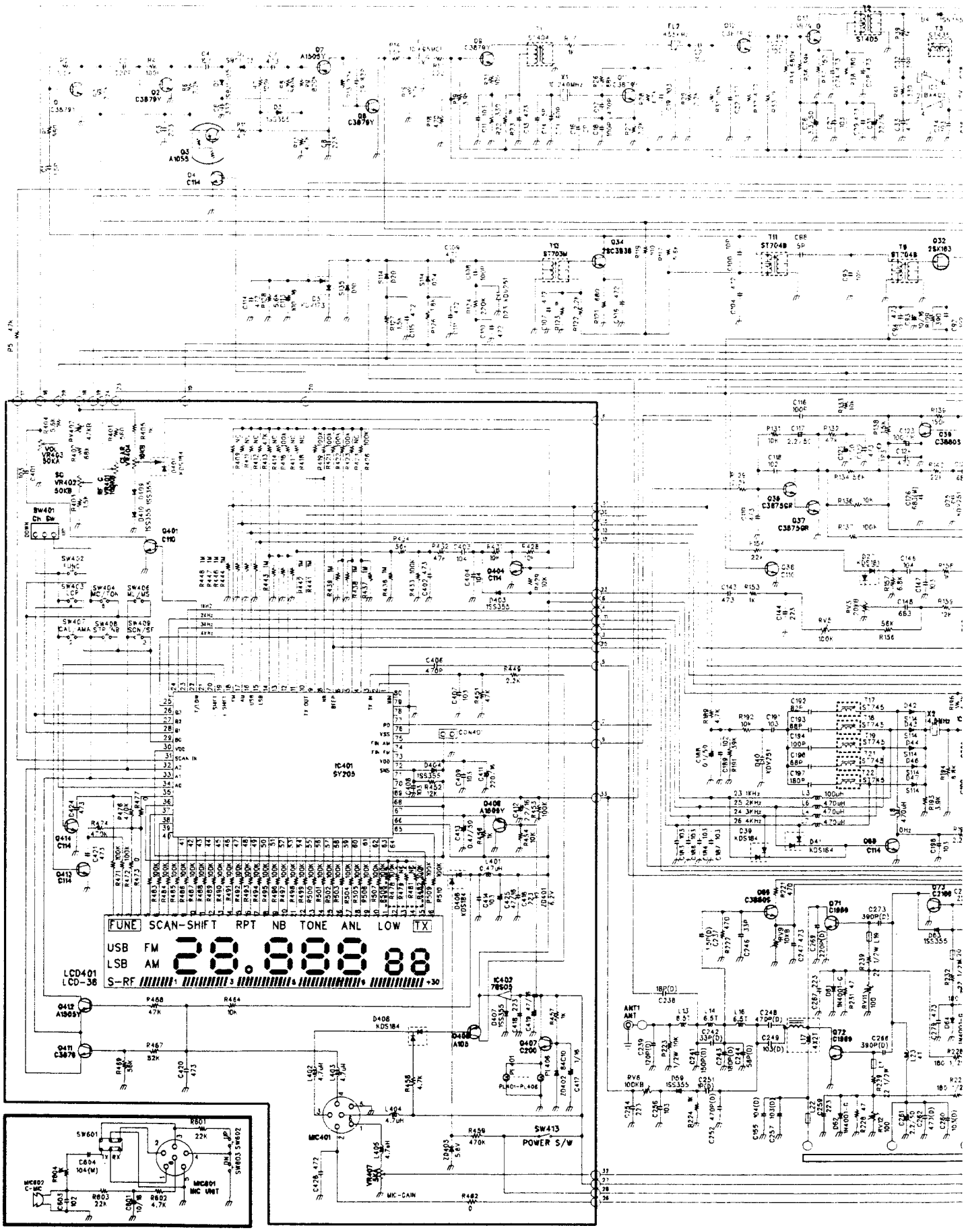




NOTE

1. C-MOS: LC 7232
2. 1/2 DUTY, 1/2 BIAS.
3. 5.0 VOP.
4. VIEWING DIRECTION 12:00
5. OPERATION TEMP.-30'C TO +80'C
6. STORAGE TEMP.-30'C TO +80'C
7. APPLICATION : CAR-CB
8. POSITIVE TYPE.
9. FRONT POL : T/M
   REAR POL : T/P

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
.	.	.	FUNC	USB	FM	SCAN	1D.G	1E	RPT	2A	2D	2E	2F	3A	3D	3E	3F	4A	4D	4E	4F	5A	5D	5E	5F	6A	6D	6E	6F	.	ANL	.	NB	.	COM1
K1	K2.SHIFT	S-RF	.	LSB	AM	S1	1A.C.F.P	1B	2	S2	2C	2G	2B	S3	3C	3G	3B	S4	4C	4G	4D	S5	5C	5G	5B	TX	6C	6G	6B	LOW	.	TONE	.	COM2	.


FUNC SCAN-SHIFT RPT NB TONE ANL LOW TX
USB FM
LSB AM
28.888 88
S-RF +30
LCD401
LCD-36
IC401
SV205
SW413
POWER S/W
MIC401
MIC UNIT
MIC-GAIN

GRAM (Cat. No. 19-1110)