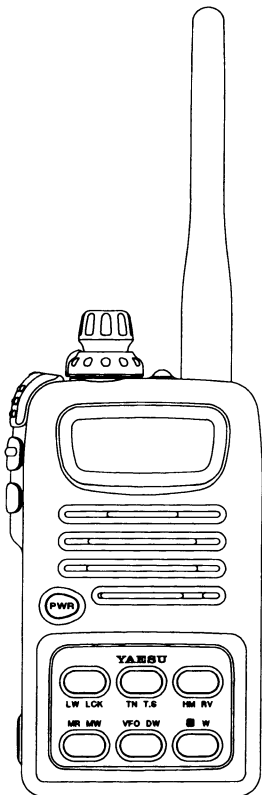


YAESU

FT-10R VHF Transceiver

Technical Supplement



YAESU MUSEN CO., LTD.

1-20-2 Shimomaruko, Ota-Ku, Tokyo 146, Japan

YAESU U.S.A.

17210 Edwards Rd., Cerritos, CA 90703, U.S.A

YAESU INTERNATIONAL SALES (Caribbean, Central & So. America)

7270 NW 12th St., Suite 320, Miami, FL 33126, U.S.A.

YAESU EUROPE B.V.

Snipweg 3, 1118DN Schiphol, The Netherlands

YAESU U.K. LTD.

Unit 2, Maple Grove Business Centre

Lawrence Rd., Hounslow, Middlesex, TW4 6DR, U.K.

YAESU GERMANY GmbH

Am Kronberger Hang 2, D-65824 Schwalbach, Germany

YAESU HK LTD.

11/Floor Tsim Sha Tsui Centre, 66 Mody Rd.,

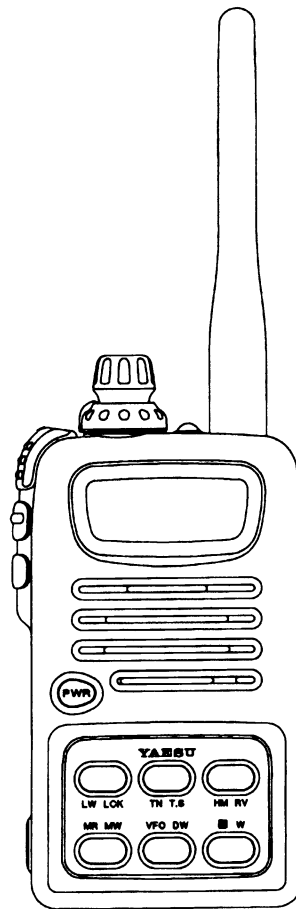
Tsim Sha Tsui East, Kowloon, Hong Kong

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FT - 10R
Technical Supplement



This manual provides technical information necessary for servicing the Yaesu FT-10R VHF transceiver. It does not include information on installation and operation, which are described in the FT-10R Operating Manual, provided with each transceiver, or on FT-10R accessories, which are described in manuals provided with each.

The FT-10R is carefully designed to allow the knowledgeable operator to make nearly all adjustments required for various station conditions, modes and operator preferences simply from the controls on the panels, without opening the case of the transceiver. The FT-10R Operating Manual describes these adjustments, plus certain internal settings.

Servicing this equipment requires expertise in handling surface mount chip components. Attempts by non-qualified persons to service this equipment may result in permanent damage not covered by warranty. For the major

circuit boards, each side of the board is identified by the type of the majority of components installed on that side. In most cases one side has only chip components, and the other has either a mixture of both chip and lead components (trimmers, coils, electrolytic capacitors, packaged ICs, etc.), or lead components only.

While we believe the technical information in this manual is correct, Yaesu assumes no liability for damage that may occur as a result of typographical or other errors that may be present. Your cooperation in pointing out any inconsistencies in the technical information would be appreciated. Yaesu Musen reserves the right to make changes in this transceiver and the alignment procedures, in the interest of technological improvement, without notification of the owners.

Specifications

General

Frequency range (MHz):	144 ~ 146 or 148
Channel steps:	5, 10, 12.5, 15, 20, 25 & 50 kHz
Repeater shift:	± 600 kHz (default, programmable in 50-kHz steps)
Emission type:	F2, F3
Supply voltage:	4.0 ~ 16.0 V DC
Current consumption:	150 µA Auto Power Off, 13 mA Standby (Saver on) 200 mA Rx @ 9.6 V, w/500 mW AF, 50 mA Rx @ 9.6 V, (squelched) 1.2 A Tx (@5 W)
Antenna (SMA jack):	YHA-56 rubber helical
Case size (WHD):	57 × 99 × 30 mm w/FNB-40
Weight (approx.):	325 grams with FNB-40, antenna, belt clip

Receiver

Circuit type:	Double-conversion superheterodyne
IFs:	17.7 MHz & 450 kHz
12-dB SINAD sensitivity:	< 0.16 µV
Adjacent ch. selectivity:	> 70 dB
Intermodulation:	> 65 dB
AF output:	0.5 W @ 8Ω (@9.6V, 10% THD)

Transmitter

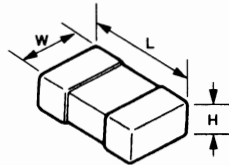
Power output (@9.6 V):	approx. 5.0, 2.8, 1 & 0.1 W
Frequency stability:	better than ± 10 ppm
Modulation system:	variable reactance
Maximum deviation:	± 5 kHz
FM Noise (@ 1 kHz):	better than -40 dB
Spurious emissions:	> 60 dB below carrier
AF distortion (@ 1 kHz):	< 5%, w/3.0 kHz deviation (USA version), 3.5 kHz deviation (other)
Microphone type:	2-kΩ condenser

Chip Component Information

Chip Component Information

The diagrams below indicate some of the distinguishing features of common chip components.

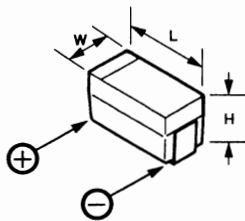
Capacitors



(Unit: mm)

Type	L	W	H
2125	2.0	1.25	0.35~0.50
1608	1.6	0.8	0.65~0.95
1005	1.0	0.5	0.45~0.55

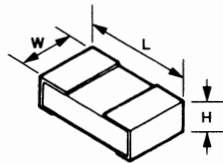
Tantalum Capacitors



(Unit: mm)

Type	L	W	H
P	2.0	1.25	1.2
A	3.2	1.6	1.6
B	3.4	2.8	1.9
C	5.8	3.2	2.3

Resistors



Marking* 100, 222, 473 ...

Indicated Letters

1 2 3 4
5 6 7 :
9 0 .

(Unit: mm)

Type	L	W	H
1/10	2.0	1.25	0.5
1/16	1.6	0.8	0.45
1/16S	1.0	0.5	0.35

473		
Ten unit	One unit	Multiplier code
0	0	10 ⁰
1	1	10 ¹
2	2	10 ²
3	3	10 ³
4	4	10 ⁴
5	5	10 ⁵
6	6	10 ⁶
7	7	10 ⁷
8	8	10 ⁸
9	9	10 ⁹

Examples:
 100 = 10 Ω
 222 = 2.2k Ω
 473 = 47k Ω

Chip Component Information

Replacing Chip Components

Chip components are installed at the factory by a series of robots. The first one places a small spot of adhesive resin at the location where each part is to be installed, and later robots handle and place parts using vacuum suction.

For single sided boards, solder paste is applied and the board is then baked to harden the resin and flow the solder. For double sided boards, no solder paste is applied, but the board is baked (or exposed to ultra-violet light) to cure the resin before dip soldering.

In our laboratories and service shops, small quantities of chip components are mounted manually by applying a spot of resin, placing with tweezers, and then soldering by very small dual streams of hot air (without physical contact during soldering). We remove parts by first removing solder using a vacuum suction iron, which applies a light steady vacuum at the iron tip, and then breaking the adhesive with tweezers.

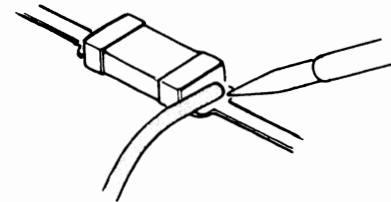
The special vacuum/desoldering equipment is recommended if you expect to do a lot of chip replacements. Otherwise, it is usually possible to remove and replace chip components with only a tapered, temperature-controlled soldering iron, a set of tweezers and braided copper solder wick. Soldering iron temperature should be below 280° C (536° F).

Precautions for Chip Replacement

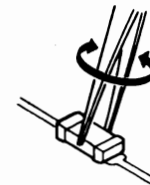
- Do not disconnect a chip forcefully, or the foil pattern may peel off the board.
- Never re-use a chip component. Dispose of all removed chip components immediately to avoid mixing with new parts.
- Limit soldering time to 3 seconds or less to avoid damaging the component and board.

Removing Chip Components

- Remove the solder at each joint, one joint at a time, using solder wick whetted with non-acidic fluxes as shown below. Avoid applying pressure, and do not attempt to remove tinning from the chip's electrode.



- Grasp the chip on both sides with tweezers, and gently twist the tweezers back and forth (to break the adhesive bond) while alternately heating each electrode. Be careful to avoid peeling the foil traces from the board. Dispose of the chip when removed.



- After removing the chip, use the copper braid and soldering iron to wick away any excess solder and smooth the land for installation of the replacement part.

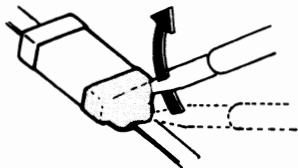
Installing a Replacement Chip

As the value of some chip components is not indicated on the body of the chip, be careful to get the right part for replacement.

- Apply a small amount of solder to the land on one side where the chip is to be installed. Avoid too much solder, which may cause bridging (shorting to other parts).



- Hold the chip with tweezers in the desired position, and apply the soldering iron with a motion line as indicated by the arrow in the diagram below. Do not apply heat for more than 3 seconds.



- Remove the tweezers and solder the electrode on the other side in the manner just described.

Case Removal and Unit Access

Case Removal

Before beginning, turn the radio off, remove the **VOL/SQL** knobs, and the battery pack.

- Lay the transceiver on a flat surface covered with a soft cloth to protect the front case from marring, then remove the two rear-panel case screws (Fig. 1).

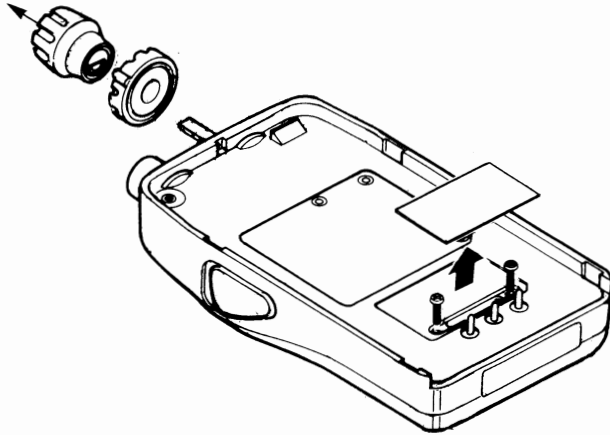


Figure 1.

- Remove the keypad unit from the front panel by using your fingernails to grasp both side of the unit and lift it free (Fig. 2).
- Disconnect the flat ribbon cable from its connector on the CNTL Unit by using two fingertips to slide out the cable release, then unplug the connector, as shown in Fig. 3.

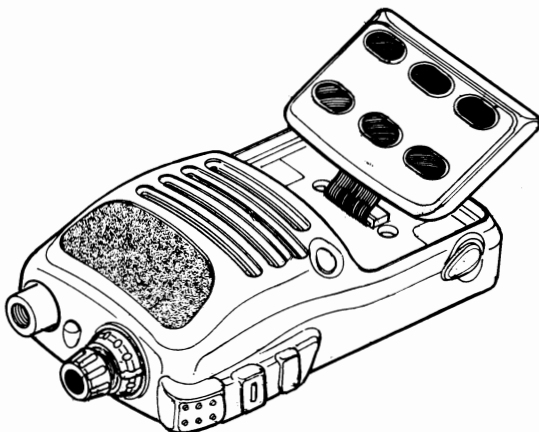


Figure 2.

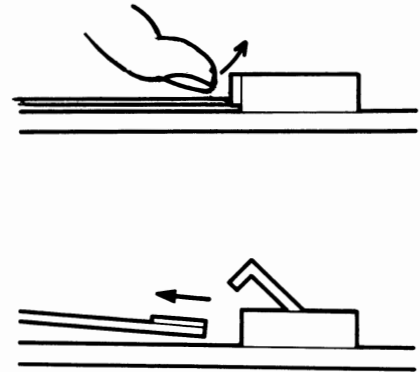


Figure 3.

- Grasp the transceiver with both hands, then gently remove the internal assembly from the case using by pressing on it gently with even pressure from both thumbs, then sliding out from the case at an angle (Fig. 4).

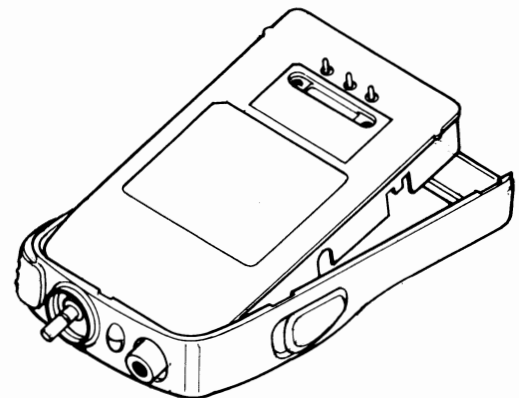


Figure 4.

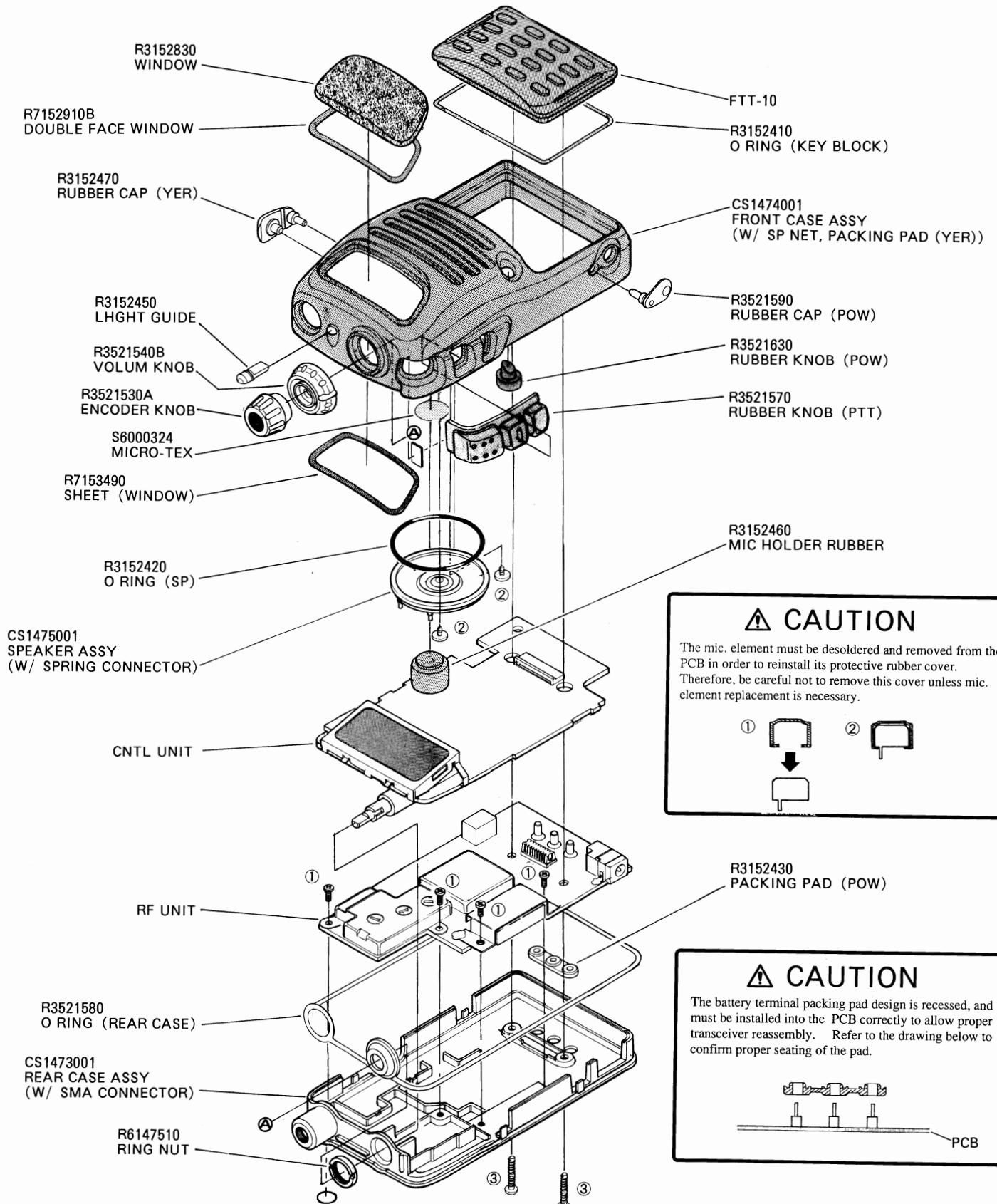
- Remove the small silicone LED lens from the case by pressing on it from the inside.

This provides access to all user-serviceable adjustments, further disassembly is not recommended. Refer repairs to your nearest Yaesu-authorized service center.

- Reassemble the unit in reverse order. When re-inserting the internal unit and keypad into the case, ensure their rubber gaskets are not pinched, and rest firmly within the ridge encircling their frame and transceiver case.
- Install the LED lens last by pressing it firmly into place.

Notes

Exploded View & Miscellaneous Parts



Non-designated parts are available only as part of a designated assembly.

Notes

Introduction

The FT-10R is carefully aligned at the factory for the specified performance across the amateur band. Realignment should therefore not be necessary except in the event of a component failure. All component replacement and service should be performed only by an authorized Yaesu representative, or the warranty policy may be void.

The following procedures cover the sometimes critical and tedious adjustments that are not normally required once the transceiver has left the factory. However, if damage occurs and some parts subsequently are replaced, realignment may be required. If a sudden problem occurs during normal operation, it is likely due to component failure; realignment should not be done until after the faulty component has been replaced.

We recommend that servicing be performed only by authorized Yaesu service technicians who are experienced with the circuitry and fully equipped for repair and alignment. Therefore, if a fault is suspected, contact the dealer from whom the transceiver was purchased for instructions regarding repair. Authorized Yaesu service technicians realign all circuits and make complete performance checks to ensure compliance with factory specifications after replacing any faulty components.

Those who do undertake any of the following alignments are cautioned to proceed at their own risk. Problems caused by unauthorized attempts at realignment are not covered by the warranty policy. Also, Yaesu reserves the right to change circuits and alignment procedures in the interest of improved performance, without notifying owners.

Under no circumstances should any alignment be attempted unless the normal function and operation of the transceiver are clearly understood, the cause of the malfunction has been clearly pinpointed and any faulty compo-

nents replaced, and realignment determined to be absolutely necessary.

The following test equipment (and thorough familiarity with its correct use) is necessary for complete realignment. Correction of problems caused by misalignment resulting from use of improper test equipment is not covered under the warranty policy. While most steps do not require all of the equipment listed, the interactions of some adjustments may require that more complex adjustments be performed afterwards.

Do not attempt to perform only a single step unless it is clearly isolated electrically from all other steps. Have all test equipment ready before beginning, and follow all of the steps in a section in the order presented.

Required Test Equipment

- RF Signal Generator with calibrated output level at 200 MHz
- Deviation Meter (linear detector)
- In-line Wattmeter with 5% accuracy at 200 MHz
- 50- Ω , 10-W RF Dummy Load
- 8- Ω AF Dummy Load
- Regulated DC Power Supply adjustable from 3 to 15 VDC, 2A
- Frequency Counter: ± 0.2 ppm accuracy at 200 MHz
- AF Signal Generator
- AC Voltmeter
- DC Voltmeter: high impedance
- VHF Sampling Coupler
- SINAD Meter

Alignment Preparation & Precautions

A 50- Ω dummy load and in-line wattmeter must be connected to the main antenna jack in all procedures that call for transmission, except where specified otherwise. Correct alignment is not possible with an antenna.

Alignment

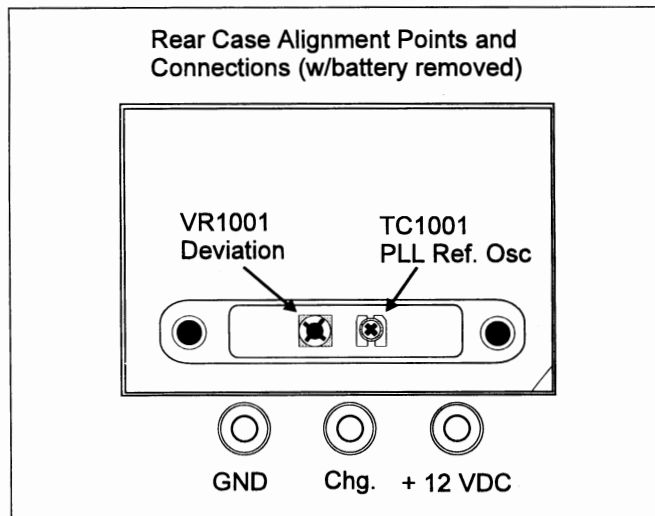
Correct alignment requires that the ambient temperature be the same as that of the transceiver and test equipment, and that this temperature be held constant between 20~30°C (68-86°F). When the transceiver is brought into the shop from hot or cold air, it should be allowed some time to come to room temperature before alignment. Whenever possible, alignments should be made with oscillator shields and circuit boards firmly affixed in place. Also, the test equipment must be thoroughly warmed up before beginning.

Note: Signal levels in dB referred to in the alignment procedure are based on 0dB μ =0.5 μ V.

Set up the test equipment as shown below for transceiver alignment, apply 12 VDC power to the transceiver. Refer to the drawings for Alignment Points.

PLL Reference Frequency

With the wattmeter, dummy load and frequency counter connected to the antenna jack, and while tuned to the center of the band, transmit and adjust TC1001 on the RF Unit, if necessary, so the counter frequency is within 100 Hz of the displayed frequency on the FT-10R.

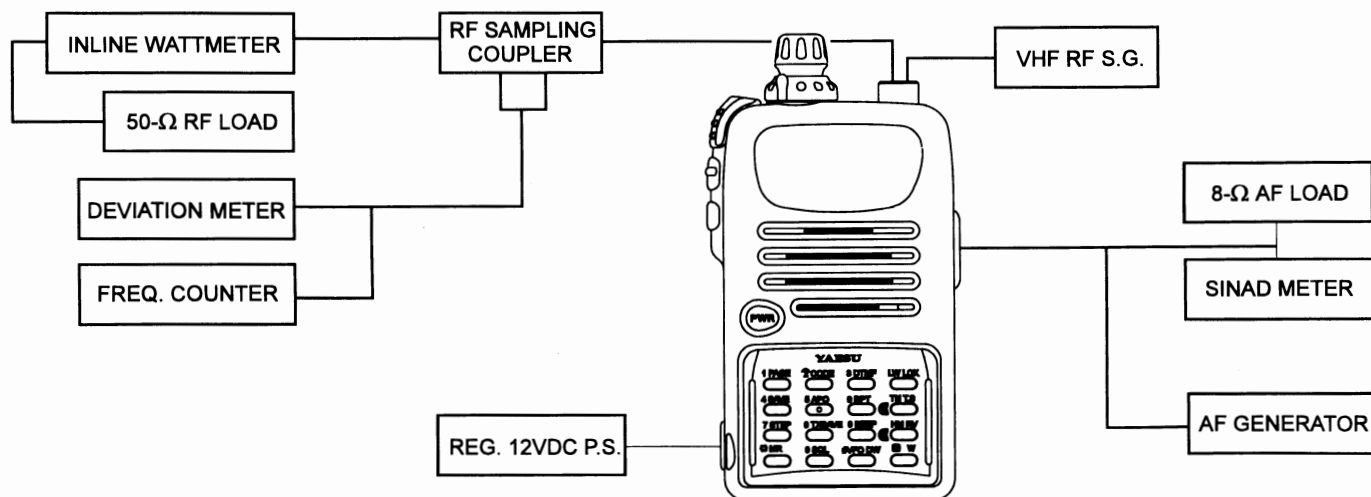


RF Unit TX Unit Alignment Points

Tx Deviation Adjustment

With the wattmeter, dummy load and frequency counter connected to the antenna jack, then adjust the AF generator attenuator level for 80 mVrms @ 1 kHz to the MIC jack.

- Transmit and adjust VR1001 to obtain 4.2-4.5 kHz indicated on the deviation meter (3.7-4.0 kHz for A1, A2 & A3 versions).



PLL & TX Alignment Setup

Internal System Alignment Routine

This uses a programmed routine in the transceiver which simplifies many previously complex discrete component settings and adjustments with digitally-controlled settings via front panel buttons and LCD indications. Transceiver adjustments include:

- Squelch Hysteresis
- Squelch Threshold & Tight Adjustment
- S-Meter Full Scale & S-1 Adjustment

Power Output Adjustment (Hi/L3/L2/L1)

- To begin, set the transceiver to the band center, then turn the transceiver off.
- Next, press and hold **DIAL** knob, **PTT** and **LAMP** together while powering the radio again. The display shows the first setting.

Note that the first two settings are not adjustable and are left as set from the factory.

In the alignment, each adjustment is selected by rotating the **DIAL** knob. Alignment is performed by pressing the **DIAL** knob, then injecting a signal of the required frequency and level.

- Pressing **DIAL** knob after a level setting or adjustment is made stores the entry. To exit the alignment routine, press **PWR**. After performing the system alignment in it's entirety, individual settings can be returned to and adjusted should the need arise.

Squelch Hysteresis Adjust (HSSQ)

- Select the squelch hysteresis level by **DIAL**.

Squelch Preset Threshold (THSQ)

- Inject a -13dB μ RF signal (3.5kHz deviation @ 1-kHz), then double press the **DIAL** knob and rotate the **DIAL** for the next setting.

Squelch Preset Tight (TISQ)

- Adjust the generator level for a -5dB μ signal, then double press the **DIAL** knob and rotate the **DIAL** for the next setting.

Low-Scale S-1 Adjustment (S1LV)

- Adjust the generator level to -5dB μ , then double press the **DIAL** knob and rotate it for the next setting.

S-Meter Full-Scale Adjust (S9LV)

- Adjust the generator level to +23dB μ , then double press the **DIAL** knob and rotate it for the next setting.

High TX Power Adjust (HIPO)

- Transmit and adjust the output power level for 5 W by **DIAL**.
- Press the **DIAL** knob to save the entry and move on.

L3 Tx Power Adjust (L3PO)

- Transmit and adjust the output power level for 2.8 W using the **DIAL**.
- Press the **DIAL** knob to save the entry and move on.

L2 Tx Power Adjust (L2PO)

- Transmit and adjust the output power level for 1 W by **DIAL**.
- Press the **DIAL** knob to save the entry and move on.

L1 Tx Power Adjust (L1PO)

- Transmit and adjust the output power level for 0.1 W using the **DIAL** knob. Press the **DIAL** knob to save the entry and move on.

This completes the internal alignment routine, to save all settings and exit, press the **DIAL** knob for more than 1/2 second.

Resetting the CPU

If you are unable to gain control of the transceiver (or if you want to clear all memories and settings to their defaults), press down and hold both the knob and the monitor button (the middle button on the left side) while also holding the **PWR** button for 1/2 second to turn the transceiver on.

Notes

Receive Signal Path

Incoming RF from the antenna jack is delivered to the RF Unit and passes through a low-pass filter and high-pass filter consisting of coils L1006, L1007, L1008, L1010, L1011 & L1012, capacitors C1029, C1046, C1048, C1049, C1050, C1054, C1064, C1076, C1077, C1081, & C1082 and antenna switching diodes D1006 and D1008 (RLS135) to the RF AMP.

Signals within the frequency range of the transceiver then enter a varactor-tuned band-pass filter consisting of coils L1015, L1016, & L1017 capacitors C1087, C1088, C1089, C1090, C1091, C1099, C1100, C1108, C1111, C1112, C1113, & C1158 diodes D1012, D1013, & D1014 (all MA376) and RF amplification by Q1019 (2SC5226).

Buffered output from the VCO is amplified by Q1001 (2SC5226) to provide a pure 1st local signal between 122.3 and 156.3 MHz for injection to the 1st mixer Q1026 (SGM2016M). The 17.7-MHz 1st mixer product then passes through monolithic crystal filter XF1001, XF1002 (17T122A 7.5 kHz BW) to strip away all but the desired signal, which is then amplified by Q1028 (2SC4215).

The amplified 1st IF signal is applied to FM IF subsystem IC Q1020 (TA31136FN), which contains the 2nd mixer, 2nd local oscillator, limiter amplifier, noise amplifier, S-meter amplifier.

A 2nd local signal is generated by PLL reference/2nd local oscillator Q1018 (2SC2620QB) from 17.25 MHz crystal X1001 to produce the 450 kHz 2nd IF when mixed with the 1st IF signal within Q1020. The 2nd IF then passes through ceramic filter CF1001 (CFWM450F), to strip away unwanted mixer products, and applied to the limiter amplifier in Q1020, which removes amplitude variations in the 450 kHz IF, before detection of the speech by ceramic discriminator CD1001 (CDBM450C7T). Detected audio from Q1020 is applied to one of the user selected KEY UNIT for de-emphasis and high-pass filtering (see KEY UNIT Circuit

Description), and then past audio muting gate Q2016 (DTC124TU) and the volume control to audio power amplifier Q2008 (NJM2070M) on the CONTROL UNIT, providing up to 0.5 Watts to the optional headphone jack or 8-ohm loudspeaker.

Squelch Control

The squelch circuitry consists of a noise amplifier & bandpass filter within Q1020, noise amplifier Q1029 (2SC4116GR), noise detector D1018 (DA221), squelch gates Q2011 (2SB1132Q), Q2012 (2SC4116GR) and control & A/D circuitry within Q2015 (M38257) on the Control Unit.

When no carrier is received, noise at the output of the detector stage in Q1020 is amplified and band-pass filtered by the noise amp section of Q1020 and the network between pins 7 and 8, and then rectified by D1018. The resulting DC squelch control voltage is passed to pin 5 of Main CPU Q2015.

While no carrier is received, pin 29 of Q2015 remains low, signaling pin 56 of Main CPU Q2015 to keep the green (Busy) half of the LED off, and holding the ACNT line low to block receiver audio while no signal is being received, and during transmission. When a carrier appears at the discriminator, noise is removed from the output, causing pin 5 of Q2015 to go high and microprocessor Q2015 to activate the BUSY LED.

The microprocessor then checks CTCSS chip, DTMF decoder chip on the KEY UNIT and CDCSS code for CTCSS or CDCSS or DTMF code squelch information, if include a unit or enabled, respectively. If not transmitting and tone squelch or CDCSS is not activated, or if the received tone or code matches that programmed, the microprocessor stops scanning, if active, and allows audio to pass through muting and amplifier IC Q2008 (NJM2070M) to the loudspeaker.

Circuit Description

Transmit Signal Path

Speech input from the microphone is delivered to the CONTROL UNIT, where it is amplified by Q2006-3 (NJM2902V), then applied to one of the user selected KEY UNIT for pre-emphasis, IDC (Instantaneous Deviation Control), splatter filtering (see KEY UNIT Circuit Description).

The processed audio is then mixed with a CTCSS tone generated by microprocessor Q2015 and level controlled by VR2001, if so programmed, and delivered to D1001 (1SS314) for frequency modulating the PLL carrier up to ± 5 kHz from the unmodulated carrier at the transmitting frequency. If an external microphone is used, PTT switching is controlled by Q2013 (UNZ2N), which signals the microprocessor when the impedance at the microphone jack drops. If a tone Burst is enabled for transmission, the tone is generated by microprocessor Q2015 and mixed with transmitter audio at the Q2006-3. If a CDCSS code is enabled for transmission, the code is generated by microprocessor Q2015 and delivered to D1016 (HVU202A) for CDCSS modulating.

The modulated signal from VCO Q1002 (2SC5231) is buffered by Q1003 (2SC5231) and amplified by Q1001 (2SC5226). The low-level transmit signal is then applied to the PA module Q1005 (S-AV28) for finally amplification up to 5 watts output power. The transmit signal then passes through antenna switch D1006 (RLS135) and is low-pass filtered to suppress away harmonic spurious radiation before delivery to the antenna.

Automatic Transmit Power Control

RF power output from the final amplifier is sampled by C1026 and C1027 is rectified by D1012 (1SS321). The resulting DC is fed back through Q1004 (NJM2904V) to the PA module, and thus the power output.

The microprocessor selects either high or one of three low power levels via Q2019 (MB88347LPFV).

Transmit Inhibit

When the transmit PLL is unlocked pin 2 of PLL chip Q1015 goes to a logic low. The resulting DC unlock control voltage is passed to pin 2 of Main CPU Q2015. While the transmit PLL is unlocked, pin 18 of Q2015 remains low. Which then turns off Automatic Power Controller Q1014 and Q1004 (UMC5N, NJM2904V) to disable the supply voltage to transmitter RF amplifiers Q1005, disabling the transmitter

Spurious Suppression

Generation of spurious products by the transmitter is minimized by the fundamental carrier frequency being equal to the final transmitting frequency, modulated directly in the transmit VCO. Additional harmonic suppression is provided by a low-pass filter consisting of L1006, L1007, L1008 and C1033, C1034, C1045, C1046, C1048, C1049 and C1050, resulting in more than 60 dB of harmonic suppression (for transmitting frequencies in the amateur band) prior to delivery to the antenna.

PLL Frequency Synthesizer

PLL circuitry on the Main Unit consists of VCO Q1002 (2SC5231) and VCO buffer Q1003, Q1001 (2SC5231, 2SC5226); PLL subsystem IC Q1015 (MC145192F), which contains a reference divider, serial-to-parallel data latch, programmable divider, phase comparator, charge pump, and a power saver circuit.

Stability is maintained by a regulated 3-V supply via Q1023 (TK11235AM) to Q1018 and temperature compensating thermistor and capacitors associated with the 17.25 MHz frequency reference crystal X1001.

While receiving, VCO Q1002 oscillates between 122.3 and 156.3 MHz according to the transceiver version and the programmed receiving frequency. The VCO output is buffered by Q1003, Q1001 and applied to the prescaler section of Q1015. There the VCO signal is divided by 64 or 65, according to a control signal from the data latch section of Q1015, before being applied to the programmable divider

section of Q1015. The data latch section of Q1015 also receives serial dividing data from the microprocessor Q2015 on the Control Unit, which causes the pre-divided VCO signal to be further divided in the programmable divider section, depending upon the desired receive frequency, so as to produce a 5-kHz or 6.25-kHz derivative of the current VCO frequency.

Meanwhile, the reference divider section of Q1015 divides the 17.25-MHz crystal reference from the reference oscillator Q1018, by 3450 (or 2760) to produce the 5-kHz (or 6.25-kHz) loop reference (respectively). The 5-kHz (or 6.25-kHz) signal from the programmable divider (derived from the VCO) and that derived from the reference oscillator are applied to the phase detector section of Q1015, which produces a pulsed output with pulse duration depending on the phase difference between the input signals. This pulse train is filtered to DC and returned to varactor D1003 (MA376).

Changes in the level of the DC voltage applied to the varactors affect the reactance in the tank circuit of the VCO, changing the oscillating frequency of the VCO according to the phase difference between the signals derived from the VCO and the crystal reference oscillator. The VCO is thus phase-locked to the crystal reference oscillator.

The output of VCO Q1002, after buffering by Q1003 and amplification by Q1001 (2SC5226) before application to the 1st mixer, as described previously.

For transmission, VCO Q1002 oscillates between 144 and 148 MHz according to the model version and programmed transmit frequency. The remainder of the PLL circuitry is shared with the receiver. However, the dividing data from the microprocessor is such that the VCO frequency is at the actual transmit frequency (rather than offset for IFs, as in the receiving case). Also, the VCO is modulated by the speech audio applied to D1001 (1SS314), as described previously.

Receive and transmit buses select which VCO is made active by Q1008 (DTC143ZE). FET Q1013 (2SK880GR) buffers the VCV line for application to the tracking band-pass filters in the receiver front end.

When the power saving feature is active, the microprocessor periodically signals the PLL IC to conserve power and shorten lock-up time.

Miscellaneous Circuits

Push-To-Talk Transmit Activation

The PTT switch on the microphone is connected to pin 41 of microprocessor Q2015, so that when the PTT switch is closed, pin 18 of Q2015 goes high. This signals microprocessor to activate TX/RX controller Q1024 (UMA5N), which then disables the receiver by disabling the 3-V supply bus at Q1021 (UN911H) to the front-end, IF, discriminator and receiver VCO circuitry. At the same time, Q1016 (XP1501), Q1017 (2SB1132Q) activates the transmit 3-V supply line to enable the transmitter.

KEYPAD

[6-Button Keypad]

The 6-Button Keypad circuit consists of de-emphasis, high-pass filter, IDC and splatter filter with Q3101 (NJM2902V). While receiving, detected audio from Q1020 is de-emphasized by R1076 on the RF UNIT, R3104 and C3103 on the keypad, and then high-pass filtered by Q3101-1. The processed receiver audio is then delivered to CONTROL UNIT.

- For transmission, speech audio from Q2006-3 is pre-emphasized by R3107 and C3108. Q3101-2 then provides IDC, and splatter filter Q3101-3 and 3101-4 filters the speech signal to remove any high frequency components that might result in over-deviation.

Circuit Description

[16-Button DTMF Keypad]

The 16-Button Keypad circuit consists of de-emphasis, high-pass filter, IDC, splatter filter with Q3401 (NJM2902V), DTMF encoder Q3404 (TC35218F) and key selector Q3406 (TC4053BFS).

While receiving, detected audio from Q1020 is de-emphasized by R1076 on the RF UNIT, R3404 and C3403 on the keypad, and then high-pass filtered by Q3401-4. The processed receiver audio is then delivered to CONTROL UNIT.

For transmission, speech audio from Q2006-3 is pre-emphasized by R3407 and C3408. Q3401-1 then provides IDC, and splatter filter Q3401-2 and 3401-3 filters the speech signal to remove any high frequency components that might result in over-deviation.

The DTMF tone is generated by Q3404 and mixed with transmitter audio at Q3401-1. Also, the tone is amplified for monitoring in the loudspeaker.

The key selector Q3406 selects the key which used for transmit (encoding DTMF tone) or receive (select receiver functions).

[16-Button DTMF Paging Keypad]

The 16-Button DTMF Paging Keypad circuit consists of de-emphasis, band-pass filter, IDC, splatter filter, audio mixer, CTCSS decoder with Q3302 (AK2343), DTMF decoder Q3303 (TC35305F-11), sub-CPU Q3301 (M38802) and EEPROMs Q3305, Q3306 (all BR93LC66RF).

While receiving, detected audio from Q1020 is de-emphasized and amplified by Q3302 de-emphasis amplifier section, and then band-pass filtered by Q3302 band-pass filter section. The processed receiver audio is then delivered to the CONTROL UNIT.

Detected audio from Q1020 is also delivered to the DTMF decoder Q3303. The sub-CPU checks CTCSS chip Q3302 and DTMF decoder chip Q3303 for CTCSS or DTMF code squelch information, respectively.

For transmission, speech audio from Q2006-3 is delivered to Q3302 pre-emphasis amplifier section for pre-emphasis and amplification then passes through IDC and splatter filter section within Q3302 for filtering the speech signal to remove any high frequency components that might result in over-deviation.

If DTMF is enabled for transmission, the tone is generated by sub-CPU Q3301, and applied to pre-emphasis amplifier section in place of speech audio. Also, the tone is amplified for monitoring in the loudspeaker. EEPROMs Q3305, Q3306 extend the memory channels from 30 to 99.

[16-Button Digital Voice Keypad]

The 16-Button Digital Voice Keypad circuit consists of de-emphasis, band-pass filter, IDC, splatter filter, audio mixer, CTCSS decoder with Q3302 (AK2343), DTMF decoder Q3303 (TC35305F-11), sub-CPU Q3301 (M38802), EEPROMs Q3305, Q3306 (all BR93LC66RF) and voice memory Q3307 (ISD1020AGL).

While receiving, detected audio from Q1020 is de-emphasized and amplified by Q3302 de-emphasis amplifier section, and then band-pass filtered by Q3302 band-pass filter section. The processed receiver audio is then delivered to the CONTROL UNIT.

Detected audio from Q1020 is also delivered to the DTMF decoder Q3303 and voice memory Q3307. The sub-CPU checks CTCSS chip Q3302 and DTMF decoder chip Q3303 for CTCSS or DTMF code squelch information, respectively.

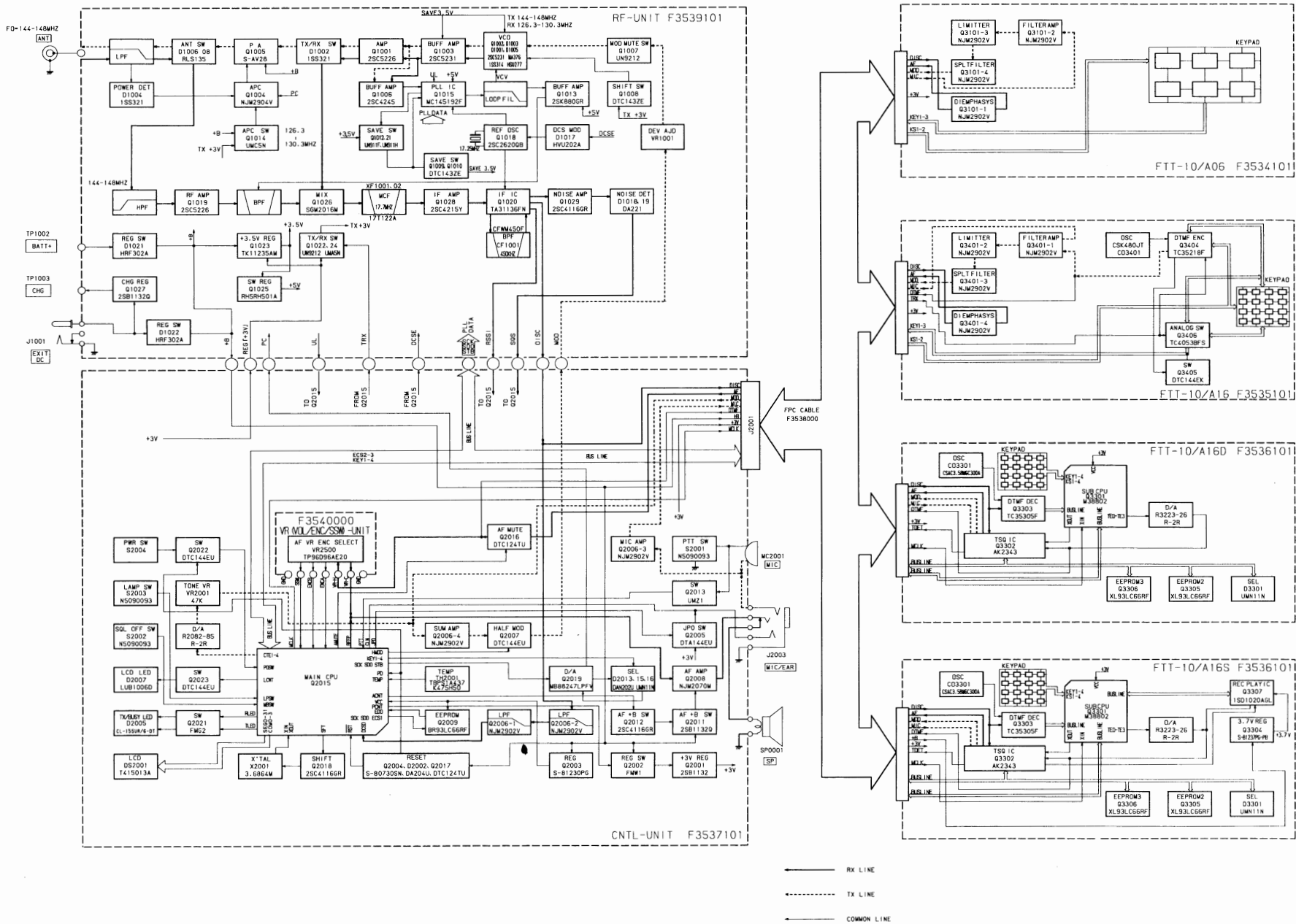
For transmission, speech audio from Q2006-3 is delivered to Q3302 pre-emphasis amplifier section for pre-emphasis and amplification then passes through IDC and splatter filter section within Q3302 for filtering the speech signal to remove any high frequency components that might result in over-deviation.

If DTMF is enabled for transmission, the tone is generated by sub-CPU Q3301, and

applied to pre-emphasis amplifier section in place of speech audio. Also, the tone is amplified for monitoring in the loudspeaker.

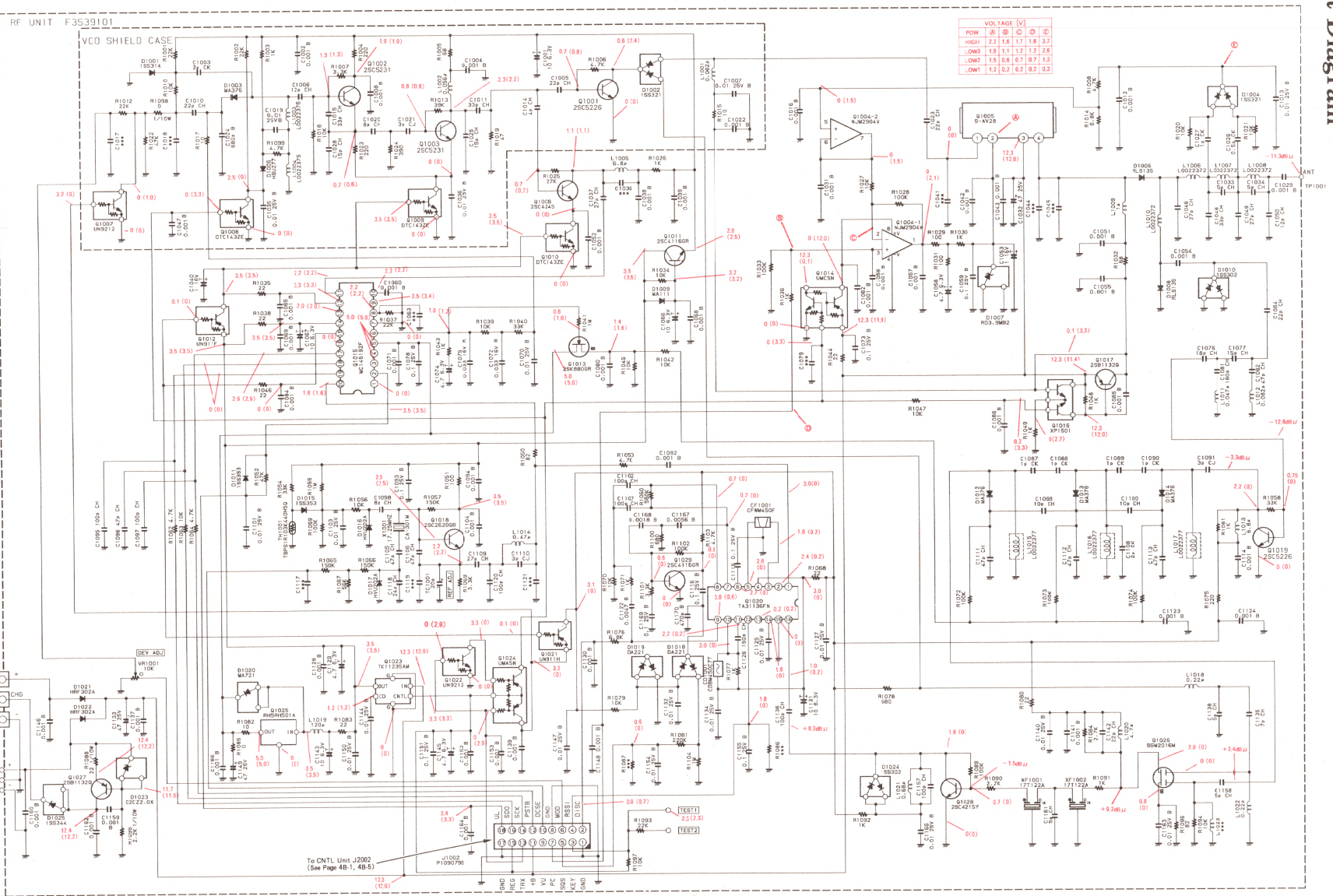
The voice memory chip Q3307 is memorized speech audio or receive audio from the CONTROL UNIT, which controlled by sub-CPU. EEPROMs Q3305, Q3306 extend the memory channels from 30 to 99.

Notes



Notes

Circuit Diagram



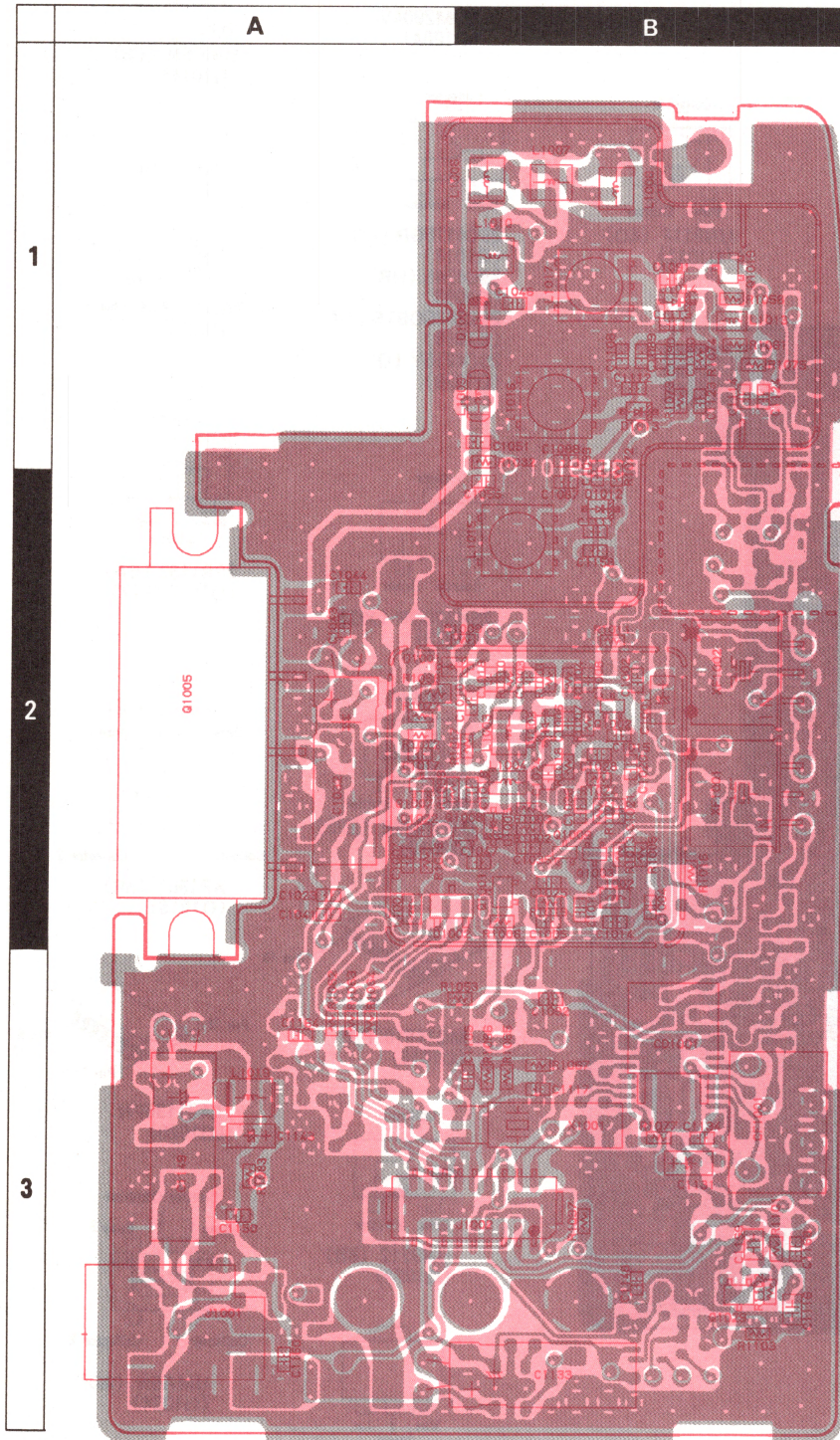
VOLTAGE (V)	①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
POW	0	0	0	0	0	0	0	0	0	0
HIGH	2.2	1.8	1.7	1.8	3.7					
LOW	1.8	1.1	1.7	1.7	2.6					
LOWI	1.7	0.7	0.7	0.7	0.3					

f: 145.02MHz
 RC: × × ×
 TX: (× × ×)
 DC VOL: 12.0V
 TX POW: HIGH
 SOL: OPEN

NOTE:
 RESISTOR VALUES ARE IN Ω, 1/10W;
 CAPACITOR VALUES ARE IN pF, 50V;
 TD CAPACITOR VALUES ARE TANTALUM;
 INDUCTOR VALUES ARE IN μH
 UNLESS OTHERWISE NOTED.

To CNTL Unit J2002
 (See Page 4b-1, 4b-5)

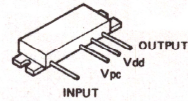
Parts Layout



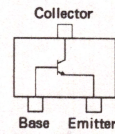
J1002
To CNTL Unit J2002
(See Page 4B-4, 4B-8)

17. GND	18. UL
15. REG	16. SDO
13. TRX	14. SOCK
11. +B	12. PSTB
9. VU	10. DCSE
7. PC	8. GND
5. SOS	6. MOD
3. KEY	4. RSSI
1. GND	2. DISC

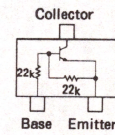
Component Side



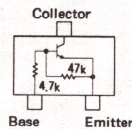
S-AV28
(Q1005)



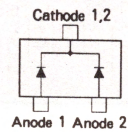
2SC4116GR (LG)
(Q1029)
2SC5226 (R22)
(Q1001,1019)
2SC5231 (C9)
(Q1002,1003)



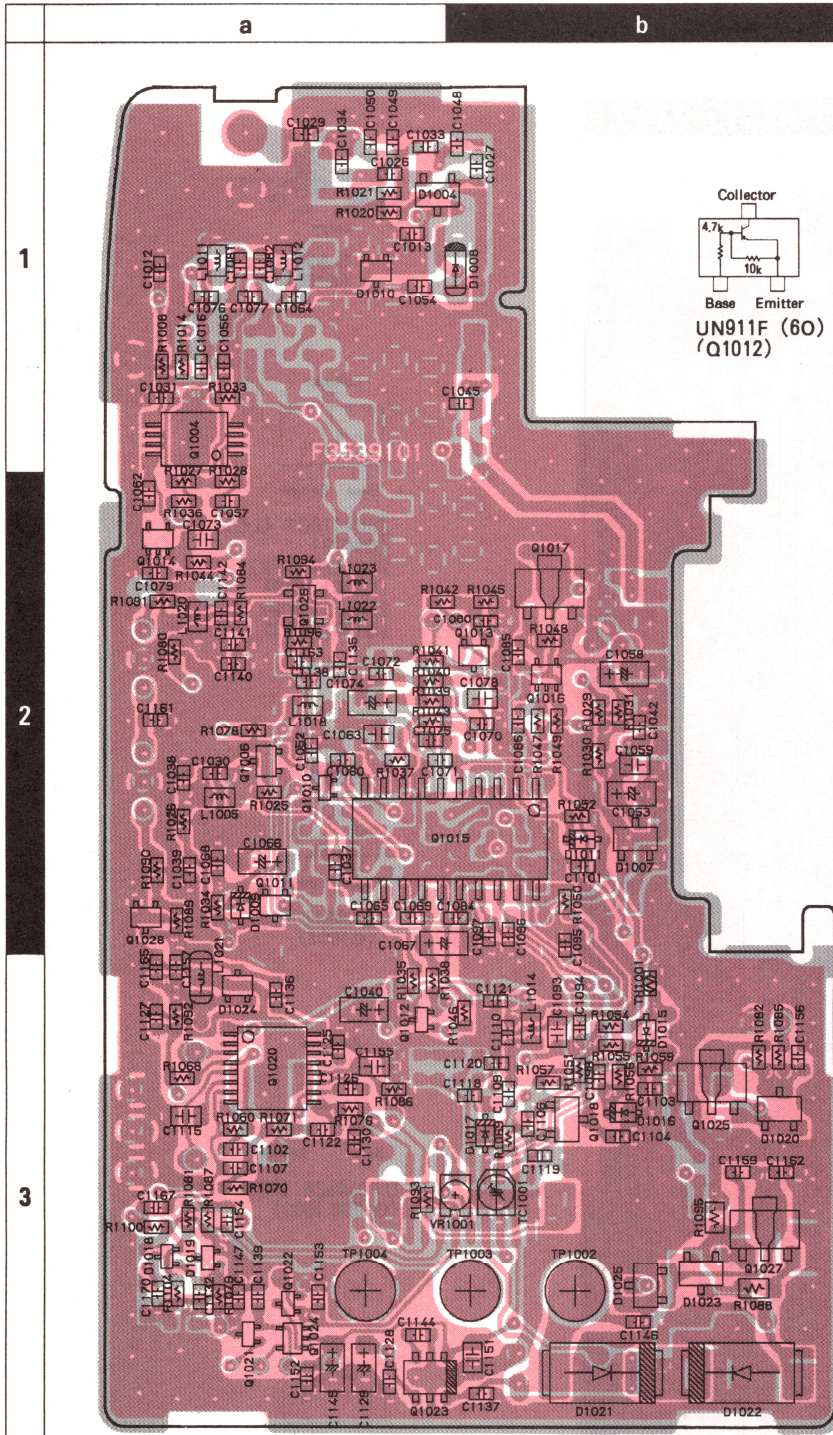
UN9212 (8B)
(Q1007)



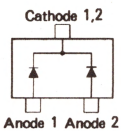
DTC143ZE (E23)
(Q1008,1009)



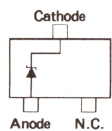
1SS321 (F9)
(D1002)



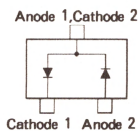
Chip Side



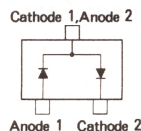
1SS321 (F9)
(D1004)



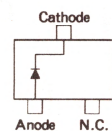
02CZ2.0X (2.0X)
(D1023)
RD3.9MB2
(D1007)



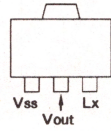
1SS302 (C3)
(D1010,1024)



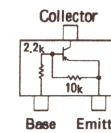
DA221 (K)
(D1018,1019)



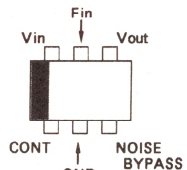
MA721 (M1M)
(D1020)
1SS344 (H9)
(D1025)



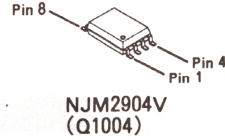
RH5RH501A
(Q1025)



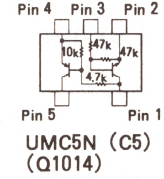
UN911H (6P)
(Q1021)



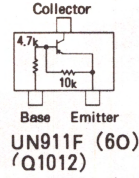
TK11235AMTL
(Q1023)



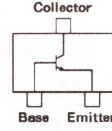
NJM2904V
(Q1004)



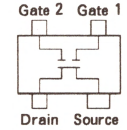
UMC5N (C5)
(Q1014)



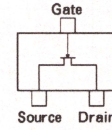
UN911F (6O)
(Q1012)



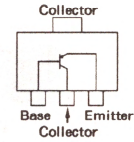
2SC4116GR (LG)
(Q1011)
2SC4245 (HB)
(Q1006)
2SC2620QBTR (QB)
(Q1018)
2SC4215Y (QY)
(Q1028)



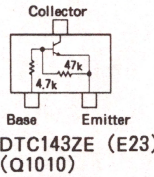
SGM2016M (M-)
(Q1026)



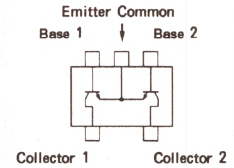
2SK880GR (XG)
(Q1013)



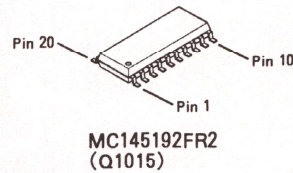
2SB1132 (BA)
(Q1017,1027)



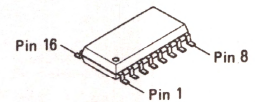
DTC143ZE (E23)
(Q1010)



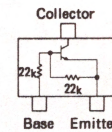
XP1501 (5R)
(Q1016)



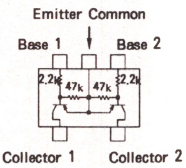
MC145192FR2
(Q1015)



TA31136FN
(Q1020)



UN9212 (8B)
(Q1022)



UMA5N (A5)
(Q1024)

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY	ADR
*** RF UNIT ***										
	PCB with Components					CA1365001				
	Printed Circuit Board					F3539101				
C 1001	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027				
C 1002	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1003	CHIP CAP.	2pF	50V	CK	GRM39CK020C50PT	K22174203				
C 1004	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1005	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219				
C 1006	CHIP CAP.	12pF	50V	CH	GRM39CH120J50PT	K22174213				
C 1007	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803				
C 1008	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1010	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219				
C 1011	CHIP CAP.	33pF	50V	CH	GRM39CH330J50PT	K22174223				
C 1012	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1013	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803				
C 1014	CHIP CAP.	4pF	50V	CH	GRM39CH040C50PT	K22174205				
C 1015	CHIP CAP.	33pF	50V	CH	GRM39CH330J50PT	K22174223				
C 1016	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1019	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803				
C 1020	CHIP CAP.	8pF	50V	CH	GRM39CH080D50PT	K22174209				
C 1021	CHIP CAP.	3pF	50V	CJ	GRM39CJ030C50PT	K22174204				
C 1022	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1023	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219				
C 1024	CHIP CAP.	680pF	50V	B	GRM39B681M50PT	K22174807				
C 1025	CHIP CAP.	15pF	50V	CH	GRM39CH150J50PT	K22174215				
C 1026	CHIP CAP.	0.5pF	50V	CK	GRM39CK0R5C50PT	K22174201				
C 1027	CHIP CAP.	1pF	50V	CK	GRM39CK010C50PT	K22174202				
C 1028	CHIP CAP.	15pF	50V	CH	GRM39CH150J50PT	K22174215				
C 1029	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1031	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1032	AL. ELECTRO. CAP.	47uF	25V		UVR1E470MDA6	K40149046				
C 1033	CHIP CAP.	5pF	50V	CH	GRM39CH050C50PT	K22174206				
C 1034	CHIP CAP.	5pF	50V	CH	GRM39CH050C50PT	K22174206				
C 1035	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803				
C 1036	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803				
C 1037	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221				
C 1038	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1039	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1040	TANTALUM CHIP CAP.	1uF	16V		TESVA1C105M1-8R	K78120009				
C 1042	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1043	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1046	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221				
C 1047	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1048	CHIP CAP.	33pF	50V	CH	GRM39CH330J50PT	K22174223				
C 1049	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221				
C 1050	CHIP CAP.	12pF	50V	CH	GRM39CH120J50PT	K22174213				
C 1051	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				

RF Unit

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
C 1052	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1053	TANTALUM CHIP CAP.	1uF	16V		TESVA1C105M1-8R	K78120009			
C 1054	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1055	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1056	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1057	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1058	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVA0J475M-8R	K78080017			
C 1059	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1060	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1062	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1064	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219			
C 1065	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1066	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027			
C 1067	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027			
C 1068	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1069	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1070	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 1071	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1072	CHIP CAP.	0.033uF	16V	R	GRM39R333K16PT	K22124801			
C 1073	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1074	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVA0J475M-8R	K78080017			
C 1075	CHIP CAP.	0.033uF	16V	R	GRM39R333K16PT	K22124801			
C 1076	CHIP CAP.	18pF	50V	CH	GRM39CH180J50PT	K22174217			
C 1077	CHIP CAP.	15pF	50V	CH	GRM39CH150J50PT	K22174215			
C 1078	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1080	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 1081	CHIP CAP.	150pF	50V	CH	GRM39CH151J50PT	K22174239			
C 1081	CHIP CAP.	180pF	50V	CH	GRM39CH181J50PT	K22174241			
C 1082	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227			
C 1084	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1085	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1086	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1087	CHIP CAP.	1pF	50V	CK	GRM39CK010C50PT	K22174202			
C 1088	CHIP CAP.	1pF	50V	CK	GRM39CK010C50PT	K22174202			
C 1089	CHIP CAP.	1pF	50V	CK	GRM39CK010C50PT	K22174202			
C 1090	CHIP CAP.	1pF	50V	CK	GRM39CK010C50PT	K22174202			
C 1091	CHIP CAP.	3pF	50V	CJ	GRM39CJ030C50PT	K22174204			
C 1092	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1093	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1094	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1095	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235			
C 1096	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227			
C 1097	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235			
C 1098	CHIP CAP.	8pF	50V	CH	GRM39CH080D50PT	K22174209			
C 1099	CHIP CAP.	10pF	50V	CH	GRM39CH100D50PT	K22174211			
C 1100	CHIP CAP.	10pF	50V	CH	GRM39CH100D50PT	K22174211			
C 1101	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 1102	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235			
C 1103	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 1104	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			

2-

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
C 1105	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227			
C 1106	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227			
C 1107	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235			
C 1108	CHIP CAP.	2pF	50V	CK	GRM39CK020C50PT	K22174203			
C 1109	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221			
C 1110	CHIP CAP.	3pF	50V	CJ	GRM39CJ030C50PT	K22174204			
C 1111	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227			
C 1112	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227			
C 1113	CHIP CAP.	47pF	50V	CH	GRM39CH470J50PT	K22174227			
C 1114	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1115	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1116	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1118	CHIP CAP.	27pF	50V	CH	GRM39CH270J50PT	K22174221			
C 1118	CHIP CAP.	24p	50V	CH	GRM39CH240J50PT	K22174220		2-	
C 1120	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235			
C 1122	CHIP CAP.	0.0047uF	50V	B	GRM39B472M50PT	K22174817			
C 1123	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1124	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1125	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 1126	CHIP CAP.	150pF	50V	CH	GRM39CH151J50PT	K22174239			
C 1127	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 1128	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1129	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVA0J475M-8R	K78080017			
C 1130	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1131	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027			
C 1132	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 1133	AL. ELECTRO. CAP.	47uF	25V		UVR1E470MDA6	K40149046			
C 1134	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 1135	CHIP CAP.	7pF	50V	CH	GRM39CH070D50PT	K22174208			
C 1136	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235			
C 1137	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1138	CHIP CAP.	5pF	50V	CH	GRM39CH050C50PT	K22174206			
C 1139	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1140	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 1141	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1142	CHIP CAP.	12pF	50V	CH	GRM39CH120J50PT	K22174213			
C 1142	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219		2-	
C 1143	TANTALUM CHIP CAP.	10uF	6.3V		TEMSVA0J106M-8R	K78080027			
C 1144	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 1145	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVA0J475M-8R	K78080017			
C 1146	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1147	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 1148	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1149	AL. ELECTRO. CAP.	47uF	25V		UVR1E470MDA6	K40149046			
C 1150	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 1151	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			
C 1152	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1153	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809			
C 1154	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 1155	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811			

RF Unit

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY	ADR
C 1156	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1157	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235				
C 1158	CHIP CAP.	7pF	50V	CH	GRM39CH070D50PT	K22174208				
C 1158	CHIP CAP.	5pF	50V	CH	GRM39CH050C50PT	K22174206		2-		
C 1159	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1160	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1161	CHIP CAP.	5pF	50V	CH	GRM39CH050C50PT	K22174206				
C 1162	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1163	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803				
C 1164	CHIP CAP.	0.001uF	50V	B	GRM39B102M50PT	K22174809				
C 1165	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803				
C 1167	CHIP CAP.	0.0056uF	50V	B	GRM39B562M50PT	K22174818				
C 1168	CHIP CAP.	0.0018uF	50V	B	GRM39B182M50PT	K22174812				
C 1169	CHIP CAP.	0.1uF	25V	B	GRM40B104M25PT	K22140811				
C 1170	CHIP CAP.	470pF	50V	B	GRM39B471M50PT	K22174805				
CD1001	CERAMIC DISC				CDBM450C7T	H7901070				
CF1001	CERAMIC FILTER				CFWM450F	H3900453				
D 1001	DIODE				1SS314 TPH3	G2070122				
D 1002	DIODE				1SS321 TE85R	G2070076				
D 1003	DIODE				MA376-(TX)	G2070414				
D 1004	DIODE				1SS321 TE85R	G2070076				
D 1005	DIODE				HSU277	G2070118				
D 1006	DIODE				RLS135 TE-11	G2070128				
D 1007	DIODE				RD3.9MB2-T2B	G2070106				
D 1008	DIODE				RLS135 TE-11	G2070128				
D 1009	DIODE				MA111-(TX)	G2070338				
D 1010	DIODE				1SS302 TE85R	G2070088				
D 1011	DIODE				1SS353 TE-17	G2070394				
D 1012	DIODE				MA376-(TX)	G2070414				
D 1013	DIODE				MA376-(TX)	G2070414				
D 1014	DIODE				MA376-(TX)	G2070414				
D 1015	DIODE				1SS353 TE-17	G2070394				
D 1016	DIODE				HVU202A-TR	G2070332				
D 1017	DIODE				HVU202A-TR	G2070332				
D 1018	DIODE				DA221 TL	G2070178				
D 1019	DIODE				DA221 TL	G2070178				
D 1020	DIODE				MA721(TX)	G2070298				
D 1021	DIODE				HRF302ATR	G2070407				
D 1022	DIODE				HRF302ATR	G2070407				
D 1023	DIODE				O2CZ2.0X TE85R	G2070124				
D 1024	DIODE				1SS302 TE85R	G2070088				
D 1025	DIODE				1SS344 TE85R	G2070422				
J 1001	CONNECTOR				LGP3131-0111	P0091072				
J 1002	CONNECTOR				CPB8518-0151	P1090795				
L 1001	M. RFC	0.082uH			HK2125 82NK-T	L1690388				

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY	ADR
L 1002	M. RFC	0.056uH			HK2125 56NK-T	L1690386				
L 1003	COIL				E2 0.3-1.7-8T-L	L0022376				
L 1004	COIL				E2 0.3-0.9-6T-R	L0022375				
L 1005	M. RFC	6.8uH			LK2125 6R8K-T	L1690329				
L 1006	COIL				E2 0.3-1.7-7T-L	L0022372				
L 1007	COIL				E2 0.3-1.7-7T-L	L0022372				
L 1008	COIL				E2 0.3-1.7-7T-L	L0022372				
L 1009	M. RFC	1uH			LER015T1ROM	L1690119				
L 1010	COIL				E2 0.3-1.7-7T-L	L0022372				
L 1011	M. RFC	0.047uH			HK2125 47NK-T	L1690385				
L 1012	M. RFC	0.082uH			HK2125 82NK-T	L1690388				
L 1013	M. RFC	6.8uH			LK2125 6R8K-T	L1690329				
L 1014	M. RFC	0.47uH			LK2125 R47K-T	L1690315				
L 1015	COIL	146MHz			146M	L0022377				
L 1016	COIL	146MHz			146M	L0022377				
L 1017	COIL	146MHz			146M	L0022377				
L 1018	M. RFC	0.22uH			LK2125 R22K-T	L1690311				
L 1019	M. RFC	120uH			FLC32T-121J	L1690228				
L 1020	M. RFC	4.7uH			LK2125 4R7K-T	L1690327				
L 1021	M. RFC	0.68uH			LER015TR68M	L1690117				
L 1022	M. RFC	0.12uH			LK2125 R12K-T	L1690308				
L 1022	M. RFC	0.22uH			LK2125 R22K-T	L1690311		2-		
Q 1001	TRANSISTOR				2SC4226	G3342267D				B-2
Q 1001	TRANSISTOR				2SC5226-4/5-TL	G3352268Z		3-		B-2
Q 1002	TRANSISTOR				2SC5006	G3350068				B-2
Q 1002	TRANSISTOR				2SC5231C8/C9-TL	G3352318Z		3-		B-2
Q 1003	TRANSISTOR				2SC5006	G3350068				B-2
Q 1003	TRANSISTOR				2SC5231C8/C9-TL	G3352318Z		3-		B-2
Q 1004	IC				NJM2904V-TE1	G1091677				a-1
Q 1005	IC				S-AV28(Y)	G1091662				A-2
Q 1006	TRANSISTOR				2SC4245 TE85R	G3342457				a-2
Q 1007	TRANSISTOR				UN9212-(TX)	G3070152				A-2
Q 1008	TRANSISTOR				DTC143ZE TL	G3070102				B-2
Q 1009	TRANSISTOR				DTC143ZE TL	G3070102				B-2
Q 1010	TRANSISTOR				DTC143ZE TL	G3070102				a-2
Q 1011	TRANSISTOR				2SC4116GR TE85R	G3341167G				a-2
Q 1012	TRANSISTOR				UN911F-(TX)	G3070150				a-3
Q 1013	FET				2SK880GR TE85R	G3808807G				b-2
Q 1014	TRANSISTOR				UMC5N TL	G3070137				a-2
Q 1015	IC				MC145192FR2	G1092017				b-2
Q 1016	TRANSISTOR				XP1501-(TX)	G3070143				b-2
Q 1017	TRANSISTOR				2SB1132 T100 Q	G3211327Q				b-2
Q 1018	TRANSISTOR				2SC2620QBTR	G3326207B				b-3
Q 1019	TRANSISTOR				2SC4226	G3342267D				B-1
Q 1019	TRANSISTOR				2SC5226-4/5-TL	G3352268Z		3-		B-1
Q 1020	IC				TA31136FN(EL)	G1091605				a-3
Q 1021	TRANSISTOR				UN911H-(TX)	G3070151				a-3
Q 1022	TRANSISTOR				UN9212-(TX)	G3070152				a-3
Q 1023	IC				TK11235AMTL	G1092086				a-3

RF Unit

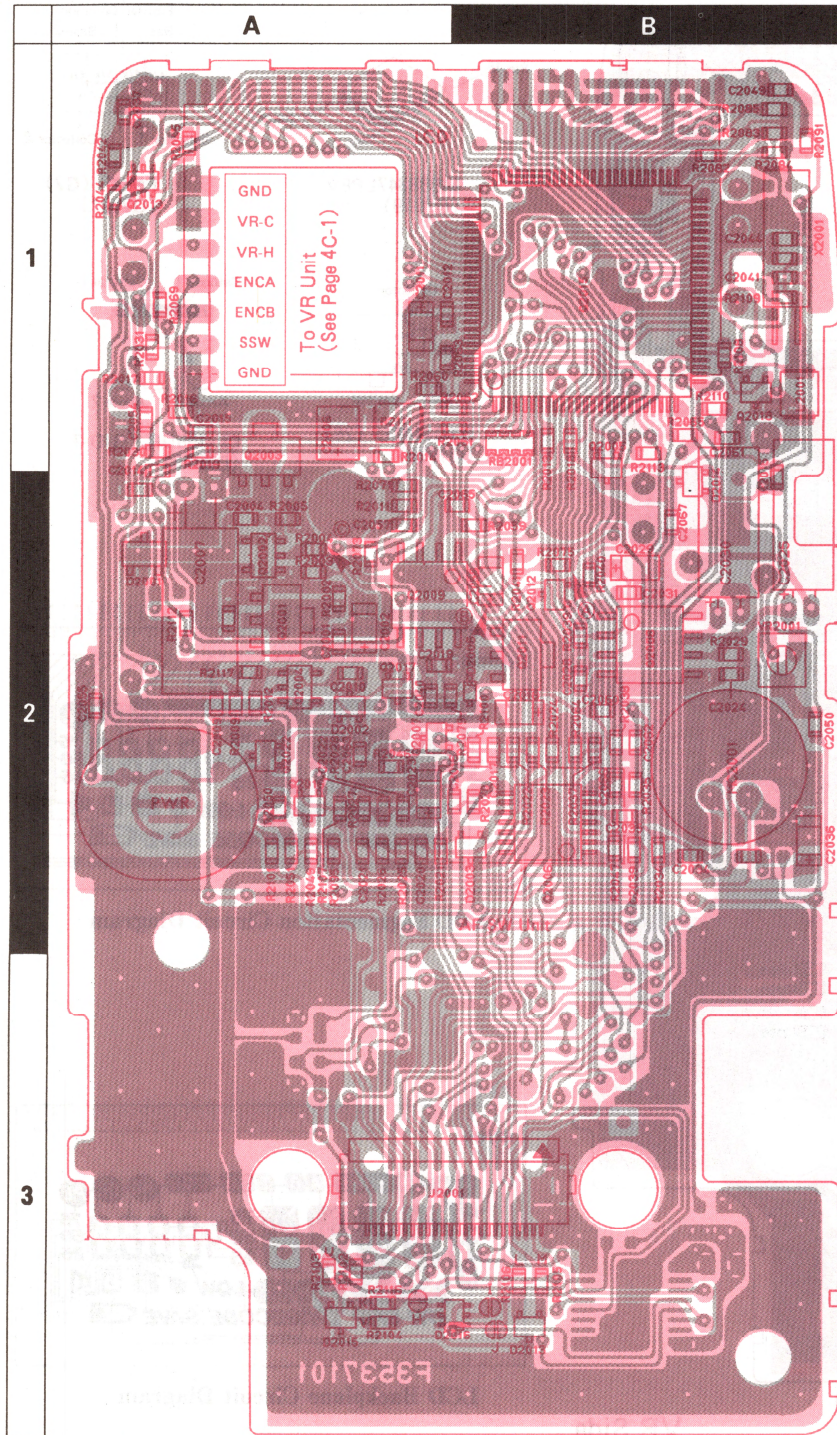
REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
Q 1024	TRANSISTOR				UMA5N TL	G3070138			a-3
Q 1025	IC				RH5RH501A-T1	G1091603			b-3
Q 1026	FET				SGM2016M-T8	G4070005			a-2
Q 1027	TRANSISTOR				2SB1132 T100 Q	G3211327Q			b-3
Q 1028	TRANSISTOR				2SC4215Y TE85R	G3342157Y			a-2
Q 1029	TRANSISTOR				2SC4116GR TE85R	G3341167G			B-3
R 1001	CHIP RES.	22K	1/16W	5%	RMC1/16 223JATP	J24185223			
R 1002	CHIP RES.	22K	1/16W	5%	RMC1/16 223JATP	J24185223			
R 1003	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102			
R 1004	CHIP RES.	220	1/16W	5%	RMC1/16 221JATP	J24185221			
R 1005	CHIP RES.	68	1/16W	5%	RMC1/16 680JATP	J24185680			
R 1006	CHIP RES.	4.7K	1/16W	5%	RMC1/16 472JATP	J24185472			
R 1007	CHIP RES.	3.3K	1/16W	5%	RMC1/16 332JATP	J24185332			
R 1008	CHIP RES.	6.8K	1/16W	5%	RMC1/16 682JATP	J24185682			
R 1008	CHIP RES.	4.7K	1/16W	5%	RMC1/16 472JATP	J24185472		2-	
R 1010	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 1012	CHIP RES.	22K	1/16W	5%	RMC1/16 223JATP	J24185223			
R 1013	CHIP RES.	39K	1/16W	5%	RMC1/16 393JATP	J24185393			
R 1014	CHIP RES.	4.7K	1/16W	5%	RMC1/16 472JATP	J24185472			
R 1014	CHIP RES.	6.8K	1/16W	5%	RMC1/16 682JATP	J24185682		2-	
R 1015	CHIP RES.	10	1/16W	5%	RMC1/16 100JATP	J24185100			
R 1017	CHIP RES.	10	1/16W	5%	RMC1/16 100JATP	J24185100			
R 1018	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 1019	CHIP RES.	47	1/16W	5%	RMC1/16 470JATP	J24185470			
R 1020	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 1021	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 1022	CHIP RES.	47K	1/16W	5%	RMC1/16 473JATP	J24185473			
R 1023	CHIP RES.	220	1/16W	5%	RMC1/16 221JATP	J24185221			
R 1024	CHIP RES.	390	1/16W	5%	RMC1/16 391JATP	J24185391			
R 1025	CHIP RES.	27K	1/16W	5%	RMC1/16 273JATP	J24185273			
R 1026	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102			
R 1027	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 1028	CHIP RES.	100K	1/16W	5%	RMC1/16 104JATP	J24185104			
R 1029	CHIP RES.	100	1/16W	5%	RMC1/16 101JATP	J24185101			
R 1030	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102			
R 1031	CHIP RES.	100	1/16W	5%	RMC1/16 101JATP	J24185101			
R 1032	CHIP RES.	68	1/16W	5%	RMC1/16 680JATP	J24185680			
R 1033	CHIP RES.	100K	1/16W	5%	RMC1/16 104JATP	J24185104			
R 1034	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 1035	CHIP RES.	22	1/16W	5%	RMC1/16 220JATP	J24185220			
R 1036	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102			
R 1037	CHIP RES.	22K	1/16W	5%	RMC1/16 223JATP	J24185223			
R 1038	CHIP RES.	22	1/16W	5%	RMC1/16 220JATP	J24185220			
R 1039	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 1040	CHIP RES.	33K	1/16W	5%	RMC1/16 333JATP	J24185333			
R 1041	CHIP RES.	1M	1/16W	5%	RMC1/16 105JATP	J24185105			
R 1042	CHIP RES.	100K	1/16W	5%	RMC1/16 104JATP	J24185104			
R 1043	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102			
R 1044	CHIP RES.	22	1/16W	5%	RMC1/16 220JATP	J24185220			

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
R 1045	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 1046	CHIP RES.	22	1/16W	5%	RMC1/16 220JATP	J24185220			
R 1047	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 1048	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102			
R 1049	CHIP RES.	1.8K	1/16W	5%	RMC1/16 182JATP	J24185182			
R 1049	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102		2-	
R 1050	CHIP RES.	68	1/16W	5%	RMC1/16 680JATP	J24185680			
R 1050	CHIP RES.	82	1/16W	5%	RMC1/16 820JATP	J24185820		2-	
R 1051	CHIP RES.	100	1/16W	5%	RMC1/16 101JATP	J24185101			
R 1052	CHIP RES.	47K	1/16W	5%	RMC1/16 473JATP	J24185473			
R 1053	CHIP RES.	4.7K	1/16W	5%	RMC1/16 472JATP	J24185472			
R 1054	CHIP RES.	33K	1/16W	5%	RMC1/16 333JATP	J24185333			
R 1055	CHIP RES.	1M	1/16W	5%	RMC1/16 105JATP	J24185105			
R 1056	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 1057	CHIP RES.	150K	1/16W	5%	RMC1/16 154JATP	J24185154			
R 1058	CHIP RES.	33K	1/16W	5%	RMC1/16 333JATP	J24185333			
R 1059	CHIP RES.	100K	1/16W	5%	RMC1/16 104JATP	J24185104			
R 1060	CHIP RES.	560K	1/16W	5%	RMC1/16 564JATP	J24185564			
R 1061	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102			
R 1062	CHIP RES.	4.7K	1/16W	5%	RMC1/16 472JATP	J24185472			
R 1063	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 1064	CHIP RES.	4.7K	1/16W	5%	RMC1/16 472JATP	J24185472			
R 1065	CHIP RES.	150K	1/16W	5%	RMC1/16 154JATP	J24185154			
R 1066	CHIP RES.	150K	1/16W	5%	RMC1/16 154JATP	J24185154			
R 1067	CHIP RES.	56K	1/16W	5%	RMC1/16 563JATP	J24185563			
R 1068	CHIP RES.	22	1/16W	5%	RMC1/16 220JATP	J24185220			
R 1069	CHIP RES.	3.3K	1/16W	5%	RMC1/16 332JATP	J24185332			
R 1070	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 1071	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102			
R 1072	CHIP RES.	100K	1/16W	5%	RMC1/16 104JATP	J24185104			
R 1073	CHIP RES.	100K	1/16W	5%	RMC1/16 104JATP	J24185104			
R 1074	CHIP RES.	100K	1/16W	5%	RMC1/16 104JATP	J24185104			
R 1075	CHIP RES.	220	1/16W	5%	RMC1/16 221JATP	J24185221			
R 1076	CHIP RES.	6.8K	1/16W	5%	RMC1/16 682JATP	J24185682			
R 1077	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102			
R 1078	CHIP RES.	680	1/16W	5%	RMC1/16 681JATP	J24185681			
R 1079	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 1080	CHIP RES.	22	1/16W	5%	RMC1/16 220JATP	J24185220			
R 1081	CHIP RES.	220K	1/16W	5%	RMC1/16 224JATP	J24185224			
R 1082	CHIP RES.	10	1/16W	5%	RMC1/16 100JATP	J24185100			
R 1083	CHIP RES.	22	1/16W	5%	RMC1/16 220JATP	J24185220			
R 1084	CHIP RES.	2.7K	1/16W	5%	RMC1/16 272JATP	J24185272			
R 1085	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000			
R 1088	CHIP RES.	22	1/10W	5%	RMC1/10T 220J	J24205220			
R 1089	CHIP RES.	100K	1/16W	5%	RMC1/16 104JATP	J24185104			
R 1090	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102			
R 1090	CHIP RES.	2.7K	1/16W	5%	RMC1/16 272JATP	J24185272		3-	
R 1091	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102			
R 1092	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102			
R 1093	CHIP RES.	22K	1/16W	5%	RMC1/16 223JATP	J24185223			

RF Unit

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY	ADR
R 1094	CHIP RES.	2.7K	1/16W	5%	RMC1/16 272JATP	J24185272				
R 1094	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103		2-		
R 1095	CHIP RES.	2.2K	1/10W	5%	RMC1/10T 222J	J24205222				
R 1096	CHIP RES.	82	1/16W	5%	RMC1/16 820JATP	J24185820				
R 1097	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103				
R 1098	CHIP RES.	0	1/10W	5%	RMC1/10T 000J	J24205000				
R 1099	CHIP RES.	4.7K	1/16W	5%	RMC1/16 472JATP	J24185472				
R 1100	CHIP RES.	680	1/16W	5%	RMC1/16 681JATP	J24185681				
R 1101	CHIP RES.	3.3K	1/16W	5%	RMC1/16 332JATP	J24185332				
R 1102	CHIP RES.	100K	1/16W	5%	RMC1/16 104JATP	J24185104				
R 1103	CHIP RES.	4.7K	1/16W	5%	RMC1/16 472JATP	J24185472				
R 1104	CHIP RES.	1M	1/16W	5%	RMC1/16 105JATP	J24185105				
TC1001	TRIMMER CAP.	20pF			CTZ2S-20C-W2-P	K91000216				
TH1001	THERMISTER				TBPS1R103K440H5Q	G9090067				
TP1002	SPRING CONNECTOR					R0152480				
TP1003	SPRING CONNECTOR					R0152480				
TP1004	SPRING CONNECTOR					R0152480				
VR1001	POT.	10K			MVR22HXBRN103	J51799103				
X 1001	XTAL	17.25MHz				H0103107				
XF1001	XTAL FILTER				17T122A	H1102263				
	SHIELD CASE (VCO)					R0152350				
	HOLDER PLATE (PM)					R0152370				
	PACKING PAD (POW)					R3152430				
	CONTACT PLATE (SMA)					R0152360				
	SHIELD CASE (F. END)					R0521550				

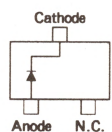
Parts Layout



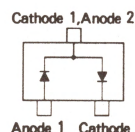
24. GND	21. KSV / SUBAST
23. GND	20. KEY3 / RxD
22. GND	19. KEY2 / RxD
21. KSV / SUBAST	18. KEY1 / TxD
20. KEY3 / RxD	17. MCLK
19. KEY2 / RxD	16. TRX
18. KEY1 / TxD	15. EC52
17. MCLK	14. EC53
16. TRX	13. SCK
15. EC52	12. SDO
14. EC53	11. EDO
13. SCK	10. ISTB
12. SDO	9. KEY4 / TDET
11. EDO	8. + B
10. ISTB	7. + 3V
9. KEY4 / TDET	6. DTMF
8. + B	5. MIC
7. + 3V	4. MOD
6. DTMF	3. AF
5. MIC	2. DISC
4. MOD	1. GND
3. AF	
2. DISC	
1. GND	

J2001
To FTT-10.
(See Page 5A-3, 5B-3, 5C-3, 5D-3)

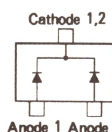
LCD Side



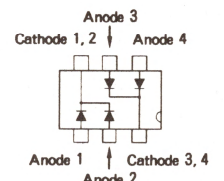
MA721 (M1M)
(D2001)



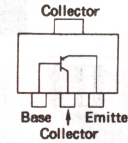
DA204U (K)
(D2002,2003,2014)



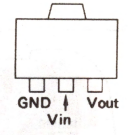
DAN202U (N)
(D2013,2015)



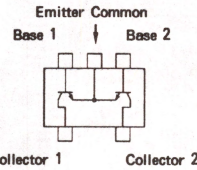
UMN11 (N11)
(D2016)



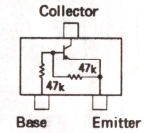
2SB1132 (BA)
(Q2001,2011)



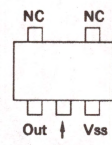
S-81230PG-PB-T1 (PB)
(Q2003)



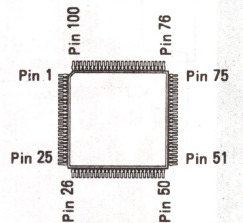
FMW1 (W1)
(Q2002)



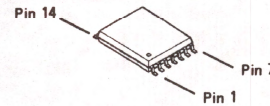
DTA144EU (16)
(Q2005)



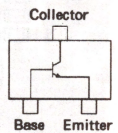
S-80730SN-DT-T1 (DT)
(Q2004)



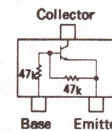
M38257M8
(Q2015)



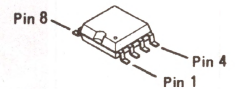
NJM2902V
(Q2006)



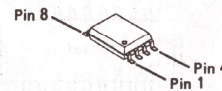
2SC4116GR (LG)
(Q2012,2018)



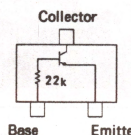
DTC144EU (26)
(Q2007,2022)



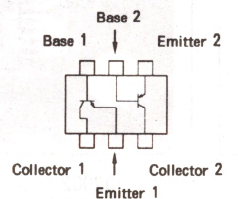
BR93LC66RF-T
(Q2009)



NJM2070M
(Q2008)

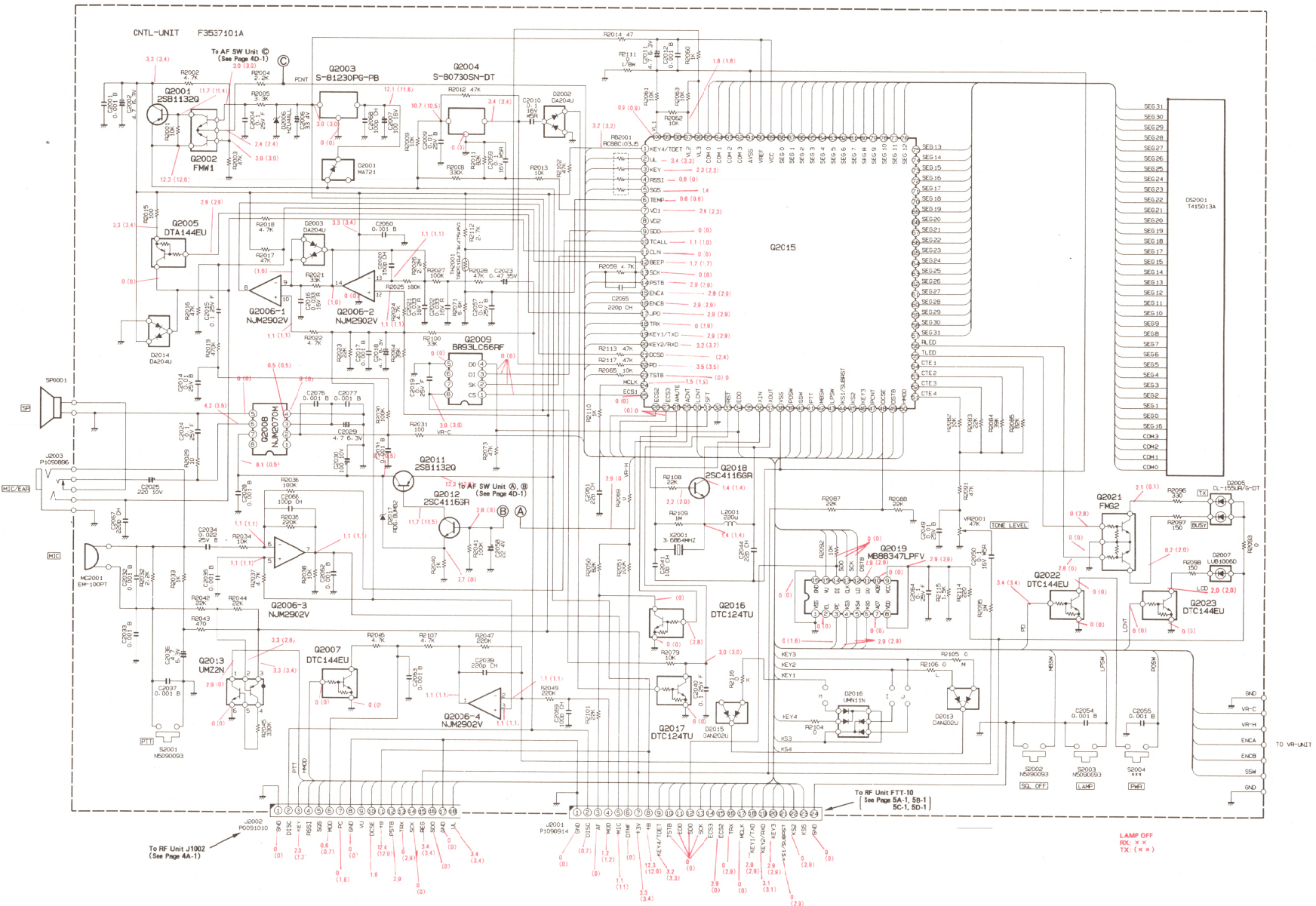


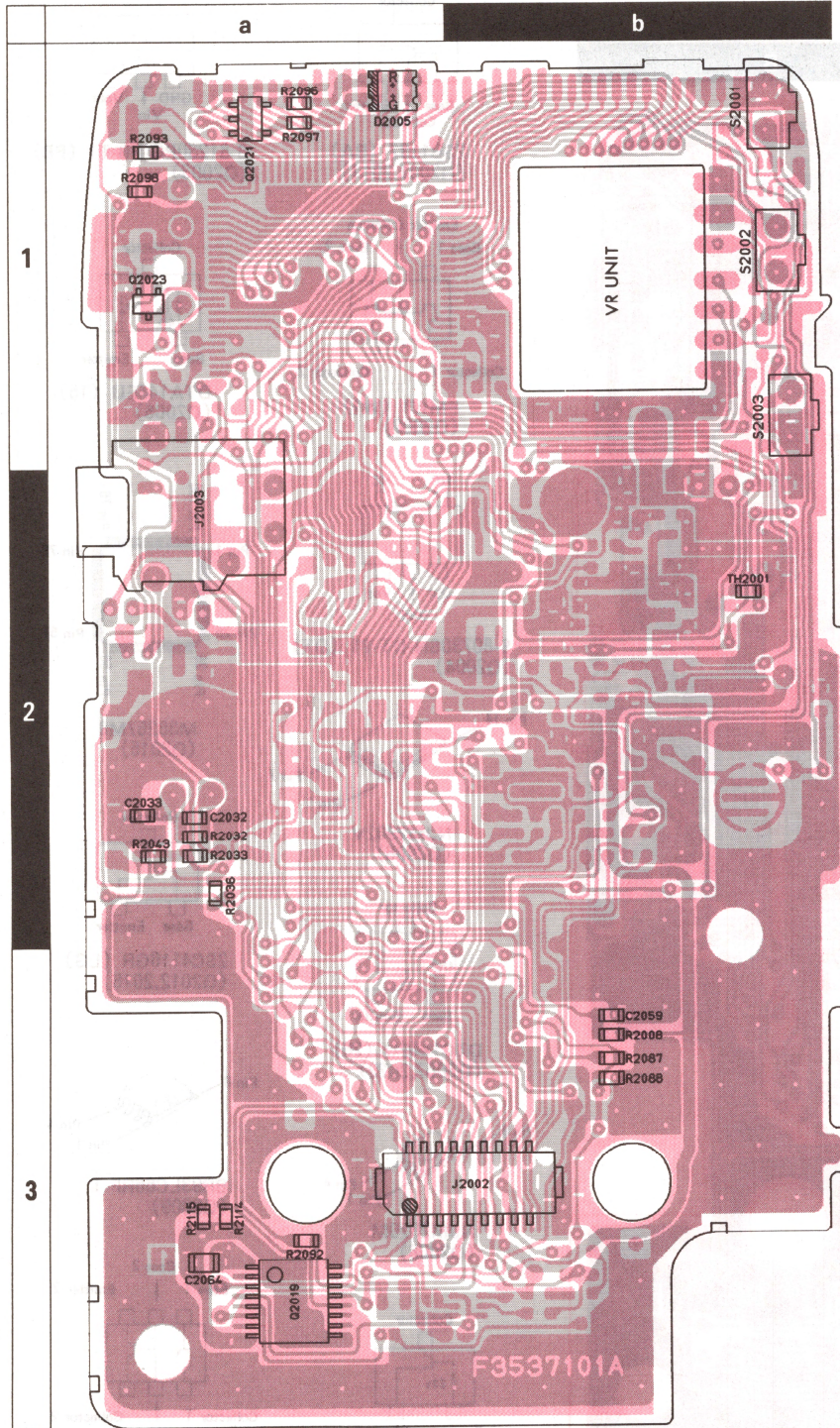
DTC124TU (05)
(Q2016,2017)



UMZ2N (1Z)
(Q2013)

Circuit Diagram

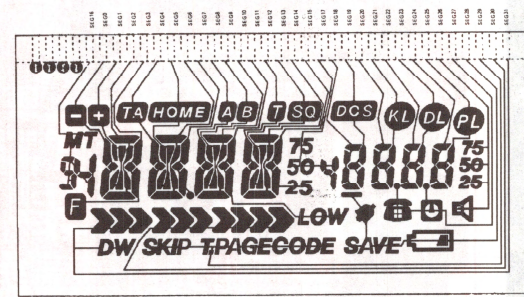
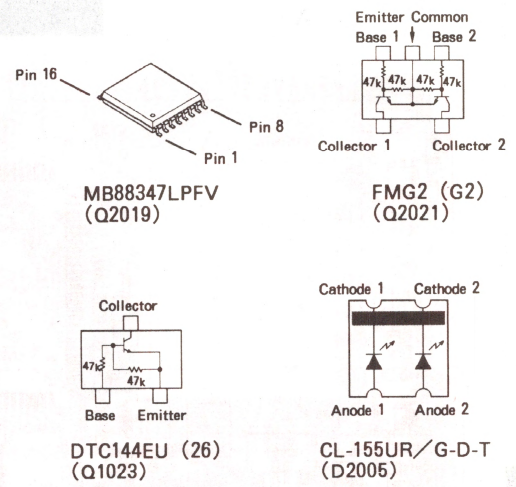




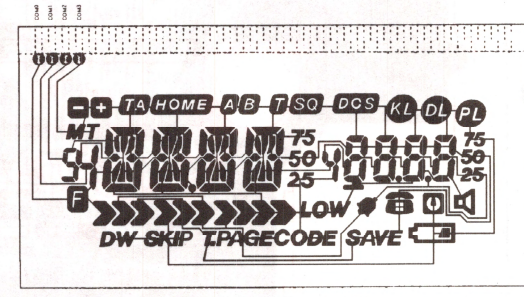
J2002
To RF Unit J1002
(See Page 4A-3)

- | | |
|---------|----------|
| 1. GND | 2. DISC |
| 3. KEY | 4. RSSI |
| 5. SOS | 6. MOD |
| 7. PC | 8. GND |
| 9. VU | 10. DCSE |
| 11. +B | 12. PSTB |
| 13. TRX | 14. SCK |
| 15. REG | 16. SDO |
| 17. GND | 18. UL |

VR Side



LCD Segmentation Circuit Diagram



LCD Backplane Circuit Diagram

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY	ADR
*** CNTL UNIT ***										
	PCB with Components(W/O LCD)			(DST USA)		CA1392002	TYP A2			
	PCB with Components(W/O LCD)					CA1392003	TYP A2			
	PCB with Components(W/O LCD)					CA1392004	TYP A3			
	PCB with Components(W/O LCD)					CA1392005	TYP B1			
	PCB with Components(W/O LCD)					CA1392006	TYP B3			
	PCB with Components(W/O LCD)					CA1392007	TYP H2			
	Printed Circuit Board					F3537101				
	Printed Circuit Board					F3537101A			3-	
C 2001	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821				
C 2002	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVAOJ475M-8R	K78080017				
C 2004	CHIP CAP.	0.1uF	25V	F	GRM39F104Z25PT	K22145001				
C 2006	TANTALUM CHIP CAP.	33uF	4V		SK4-0G336M-RB	K78060013				
C 2007	AL. ELECTRO. CAP.	100uF	16V		RE3-16V101M	K40129063				
C 2009	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803				
C 2010	CHIP CAP.	0.1uF	16V	W5R	CM105W5R104K16AT	K22124803				
C 2011	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVAOJ475M-8R	K78080017				
C 2012	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821				
C 2014	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803				
C 2015	CHIP CAP.	0.1uF	25V	F	GRM39F104Z25PT	K22145001				
C 2016	CHIP CAP.	0.033uF	16V	R	GRM39R333K16PT	K22124801				
C 2017	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821				
C 2018	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVAOJ475M-8R	K78080017				
C 2019	CHIP CAP.	0.1uF	25V	F	GRM39F104Z25PT	K22145001				
C 2020	CHIP CAP.	150pF	50V	CH	GRM39CH151J50PT	K22174239				
C 2021	CHIP CAP.	0.033uF	16V	R	GRM39R333K16PT	K22124801				
C 2022	CHIP CAP.	0.033uF	16V	R	GRM39R333K16PT	K22124801				
C 2023	TANTALUM CHIP CAP.	0.47uF	35V		TEMSVA1V474M-8R	K78160029				
C 2024	CHIP CAP.	0.1uF	25V	F	GRM39F104Z25PT	K22145001				
C 2025	AL. ELECTRO. CAP.	220uF	10V		CEDSM1A221M	K40109027				
C 2028	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821				
C 2029	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVAOJ475M-8R	K78080017				
C 2030	AL. ELECTRO. CAP.	100uF	10V		UVR1A101MDA6CY	K40109033				
C 2031	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821				
C 2032	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821				
C 2033	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821				
C 2034	CHIP CAP.	0.022uF	25V	B	GRM39B223M25PT	K22144808				
C 2035	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821				
C 2036	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVAOJ475M-8R	K78080017				
C 2037	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821				
C 2039	CHIP CAP.	220pF	50V	CH	GRM39CH221J50PT	K22174243				
C 2040	CHIP CAP.	0.1uF	25V	F	GRM39F104Z25PT	K22145001				
C 2041	CHIP CAP.	10pF	50V	CH	GRM39CH100C50PT	K22174248				
C 2044	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219				
C 2049	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803				
C 2050	CHIP CAP.	0.1uF	16V	W5R	CM105W5R104K16AT	K22124803				
C 2054	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821				

CNTL Unit

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY	ADR
C 2055	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821				
C 2057	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821				
C 2057	CHIP CAP.	0.01uF	25V	B	GRM39B103J25PT	K22144809		2-		
C 2057	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803		3-		
C 2058	TANTALUM CHIP CAP.	22uF	4V		TEMSVAOG226M-8R	K78060023				
C 2059	CHIP CAP.	0.1uF	16V	W5R	CM105W5R104K16AT	K22124803				
C 2060	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821				
C 2061	CHIP CAP.	22pF	50V	CH	GRM39CH220J50PT	K22174219				
C 2062	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821				
C 2063	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821				
C 2064	CHIP CAP.	0.1uF	25V	F	GRM40F104Z25PT	K22141005				
C 2065	CHIP CAP.	220pF	50V	CH	GRM39CH221J50PT	K22174243				
C 2066	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235				
C 2067	CHIP CAP.	220pF	50V	CH	GRM39CH221J50PT	K22174243				
C 2068	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		-2		
C 2069	CHIP CAP.	100pF	50V	CH	GRM39CH101J50PT	K22174235		-2		
C 2076	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820		3-		
C 2077	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820		3-		
D 2001	DIODE				MA721 (TX)	G2070298				
D 2002	DIODE				DA204U T106	G2070242				
D 2003	DIODE				DA204U T106	G2070242				
D 2005	LED				CL-155UR/G-D-T	G2070278				
D 2006	DIODE				HZU4ALL-TR	G2070428				
D 2007	LED				LUB1006D	G2090619				
D 2013	DIODE				DAN202U T106	G2070162				
D 2014	DIODE				DA204U T106	G2070242				
D 2015	DIODE				DAN202U T106	G2070162				
D 2016	DIODE				UMN11 TN	G2070198				
D 2017	DIODE				RD6.8UMB2-T1B	G2070438				
DS2001	LCD				T415013A	G6090113				
J 2001	CONNECTOR				FH12-24S-0.5SH	P1090914				
J 2002	CONNECTOR				CPB8618-0551	P0091010				
J 2003	CONNECTOR				HSJ1594-010055	P1090896				
L 2001	M. RFC	220uH			FLC32T-221J	L1690231				
MC2001	MIC ELEMENT				EM-100PT	M3290029				
Q 2001	TRANSISTOR				2SB1132 T100 Q	G3211327Q			A-2	
Q 2002	TRANSISTOR				FMW1 T98	G3070009			A-2	
Q 2003	IC				S-81230PG-PB-T1	G1092045			A-1	
Q 2004	IC				S-80730SN-DT-T1	G1091875			A-2	
Q 2005	TRANSISTOR				DTA144EU T106	G3070079			B-2	
Q 2006	IC				NJM2902V-TE1	G1091679			B-2	
Q 2007	TRANSISTOR				DTC144EU T107	G3070041			A-2	
Q 2008	IC				NJM2070M(T2)	G1091500			B-2	
Q 2009	IC				BR93LC66RF-T	G1092006			A-2	

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY	ADR
Q 2011	TRANSISTOR				2SB1132 T100 Q	G3211327Q				B-2
Q 2012	TRANSISTOR				2SC4116GR TE85R	G3341167G				B-2
Q 2013	TRANSISTOR				UMZ2N TR	G3070117				A-1
Q 2015	IC				M38257M8-104GP	G1092111				A-2
Q 2016	TRANSISTOR				DTC124TU T106	G3070065				A-2
Q 2017	TRANSISTOR				DTC124TU T106	G3070065				A-2
Q 2018	TRANSISTOR				2SC4116GR TE85R	G3341167G				A-2
Q 2019	IC				MB88347LPFV-G-BND	EG1092066				a-3
Q 2021	TRANSISTOR				FMG2 T99	G3070015				a-1
Q 2022	TRANSISTOR				DTC144EU T107	G3070041				A-2
Q 2023	TRANSISTOR				DTC144EU T107	G3070041				a-1
R 2001	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103				
R 2002	CHIP RES.	4. 7K	1/16W	5%	RMC1/16 472JATP	J24185472				
R 2003	CHIP RES.	47K	1/16W	5%	RMC1/16 473JATP	J24185473				
R 2004	CHIP RES.	2. 2K	1/16W	5%	RMC1/16 222JATP	J24185222				
R 2005	CHIP RES.	3. 3K	1/16W	5%	RMC1/16 332JATP	J24185332				
R 2008	CHIP RES.	330K	1/16W	5%	RMC1/16 334JATP	J24185334				
R 2009	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103				
R 2011	CHIP RES.	82K	1/16W	5%	RMC1/16 823JATP	J24185823				
R 2012	CHIP RES.	47K	1/16W	5%	RMC1/16 473JATP	J24185473				
R 2013	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103				
R 2014	CHIP RES.	47	1/16W	5%	RMC1/16 470JATP	J24185470				
R 2015	CHIP RES.	100	1/16W	5%	RMC1/16 101JATP	J24185101				
R 2016	CHIP RES.	47K	1/16W	5%	RMC1/16 473JATP	J24185473				
R 2017	CHIP RES.	47K	1/16W	5%	RMC1/16 473JATP	J24185473				
R 2018	CHIP RES.	4. 7K	1/16W	5%	RMC1/16 472JATP	J24185472				
R 2019	CHIP RES.	470K	1/16W	5%	RMC1/16 474JATP	J24185474				
R 2021	CHIP RES.	33K	1/16W	5%	RMC1/16 333JATP	J24185333				
R 2022	CHIP RES.	4. 7K	1/16W	5%	RMC1/16 472JATP	J24185472				
R 2023	CHIP RES.	22K	1/16W	5%	RMC1/16 223JATP	J24185223				
R 2024	CHIP RES.	4. 7K	1/16W	5%	RMC1/16 472JATP	J24185472				
R 2025	CHIP RES.	180K	1/16W	5%	RMC1/16 184JATP	J24185184				
R 2026	CHIP RES.	2. 2M	1/16W	5%	RMC1/16 225JATP	J24185225				
R 2027	CHIP RES.	100K	1/16W	5%	RMC1/16 104JATP	J24185104				
R 2028	CHIP RES.	47K	1/16W	5%	RMC1/16 473JATP	J24185473				
R 2029	CHIP RES.	10	1/16W	5%	RMC1/16 100JATP	J24185100				
R 2030	CHIP RES.	100K	1/16W	5%	RMC1/16 104JATP	J24185104				
R 2031	CHIP RES.	100	1/16W	5%	RMC1/16 101JATP	J24185101				
R 2032	CHIP RES.	2. 2K	1/16W	5%	RMC1/16 222JATP	J24185222				
R 2033	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102				
R 2034	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103				
R 2035	CHIP RES.	220K	1/16W	5%	RMC1/16 224JATP	J24185224				
R 2036	CHIP RES.	100K	1/16W	5%	RMC1/16 104JATP	J24185104				
R 2037	CHIP RES.	4. 7K	1/16W	5%	RMC1/16 472JATP	J24185472				
R 2038	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103				
R 2040	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102				
R 2041	CHIP RES.	100K	1/16W	5%	RMC1/16 104JATP	J24185104				
R 2042	CHIP RES.	22K	1/16W	5%	RMC1/16 223JATP	J24185223				
R 2043	CHIP RES.	470	1/16W	5%	RMC1/16 471JATP	J24185471				

CNTL Unit

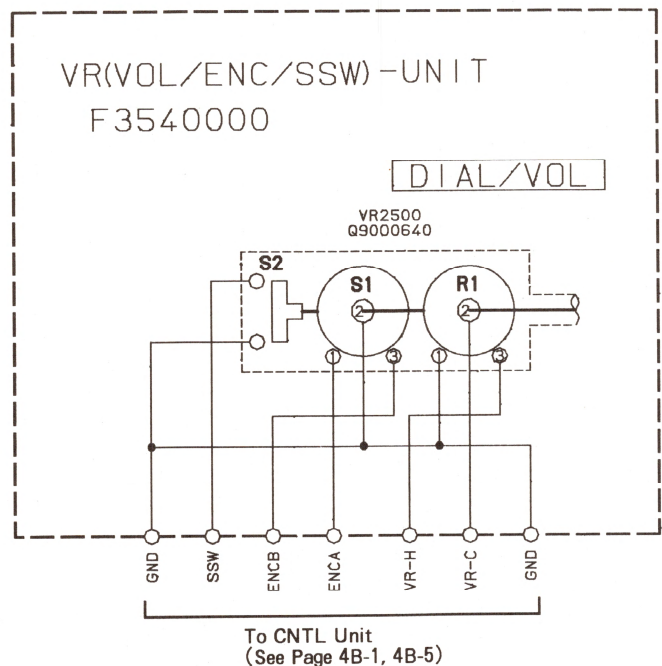
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R 2044	CHIP RES.	22K	1/16W	5%	RMC1/16 223JATP	J24185223				
R 2045	CHIP RES.	330K	1/16W	5%	RMC1/16 334JATP	J24185334				
R 2046	CHIP RES.	4. 7K	1/16W	5%	RMC1/16 472JATP	J24185472				
R 2047	CHIP RES.	220K	1/16W	5%	RMC1/16 224JATP	J24185224				
R 2049	CHIP RES.	220K	1/16W	5%	RMC1/16 224JATP	J24185224				
R 2050	CHIP RES.	82K	1/16W	5%	RMC1/16 823JATP	J24185823				
R 2051	CHIP RES.	100K	1/16W	5%	RMC1/16 104JATP	J24185104				
R 2059	CHIP RES.	4. 7K	1/16W	5%	RMC1/16 472JATP	J24185472				
R 2060	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102				
R 2061	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103				
R 2062	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103				
R 2063	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103				
R 2064	CHIP RES.	39K	1/16W	5%	RMC1/16 393JATP	J24185393				
R 2065	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103				
R 2069	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000				
R 2071	CHIP RES.	5. 6K	1/16W	5%	RMC1/16 562JATP	J24185562				
R 2073	CHIP RES.	47K	1/16W	5%	RMC1/16 473JATP	J24185473				
R 2079	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103				
R 2082	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103				
R 2083	CHIP RES.	22K	1/16W	5%	RMC1/16 223JATP	J24185223				
R 2084	CHIP RES.	39K	1/16W	5%	RMC1/16 393JATP	J24185393				
R 2085	CHIP RES.	82K	1/16W	5%	RMC1/16 823JATP	J24185823				
R 2087	CHIP RES.	22K	1/16W	5%	RMC1/16 223JATP	J24185223				
R 2088	CHIP RES.	22K	1/16W	5%	RMC1/16 223JATP	J24185223				
R 2091	CHIP RES.	47K	1/16W	5%	RMC1/16 473JATP	J24185473				
R 2092	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103				
R 2093	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000				
R 2095	CHIP RES.	1M	1/16W	5%	RMC1/16 105JATP	J24185105				
R 2096	CHIP RES.	330	1/16W	5%	RMC1/16 331JATP	J24185331				
R 2097	CHIP RES.	150	1/16W	5%	RMC1/16 151JATP	J24185151				
R 2098	CHIP RES.	150	1/16W	5%	RMC1/16 151JATP	J24185151				
R 2100	CHIP RES.	33K	1/16W	5%	RMC1/16 333JATP	J24185333				
R 2101	CHIP RES.	22K	1/16W	5%	RMC1/16 223JATP	J24185223				
R 2102	CHIP RES.	47K	1/16W	5%	RMC1/16 473JATP	J24185473				
R 2104	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000				
R 2105	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000	TYP	A1		
R 2105	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000	TYP	A2		
R 2105	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000	TYP	B1		
R 2105	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000	TYP	B2		
R 2105	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000	TYP	C1		
R 2105	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000	TYP	C2		
R 2106	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000	TYP	A1		
R 2106	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000	TYP	B1		
R 2106	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000	TYP	C1		
R 2106	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000	TYP	D1		
R 2106	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000	TYP	H1		
R 2107	CHIP RES.	4. 7K	1/16W	5%	RMC1/16 472JATP	J24185472				
R 2108	CHIP RES.	22K	1/16W	5%	RMC1/16 223JATP	J24185223				
R 2109	CHIP RES.	1M	1/16W	5%	RMC1/16 105JATP	J24185105				

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY	ADR
R 2110	CHIP RES.	1K	1/16W	5%	RMC1/16 102JATP	J24185102				
R 2111	CHIP RES.	0	1/8W	5%	RMC1/8T 000J	J24215000				
R 2112	CHIP RES.	2.7K	1/16W	5%	RMC1/16 272JATP	J24185272				
R 2113	CHIP RES.	47K	1/16W	5%	RMC1/16 473JATP	J24185473				
R 2114	CHIP RES.	220	1/16W	5%	RMC1/16 221JATP	J24185221				
R 2115	CHIP RES.	1.5K	1/16W	5%	RMC1/16 152JATP	J24185152				
R 2116	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000				
R 2117	CHIP RES.	47K	1/16W	5%	RMC1/16 473JATP	J24185473				
RB2001	BLOCK RES.				RCB8C103J5	J42900008				
S 2001	TACT SWITCH				JPM1990-0302	N5090093				
S 2002	TACT SWITCH				JPM1990-0302	N5090093				
S 2003	TACT SWITCH				JPM1990-0302	N5090093				
TH2001	THERMISTER				TBPS1R473K475H5Q	G9090068				
VR2001	POT.	47K			CVR-32A-473SW2	J51801473				
X 2001	XTAL	3.6864MHz				H0102988				
	MIC HOLDER RUBBER					R3152460				
	SHIELD SHEET					R0521660				
	SHIELD SHEET					R0521660A				

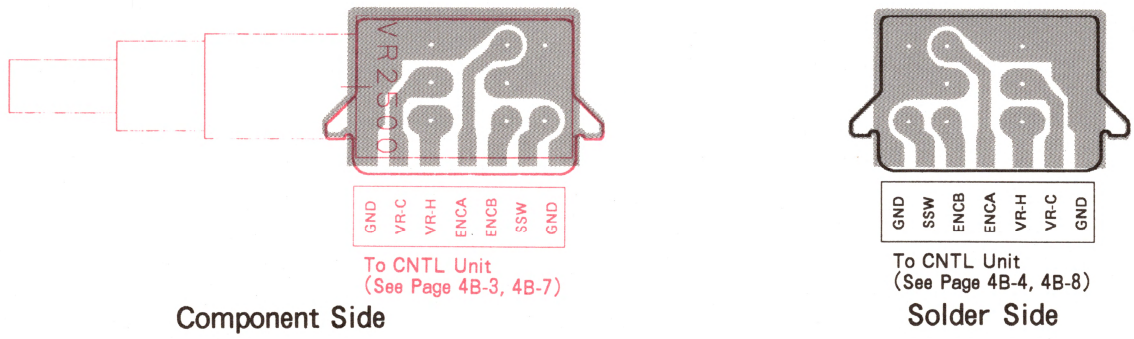
3-

Notes

Circuit Diagram



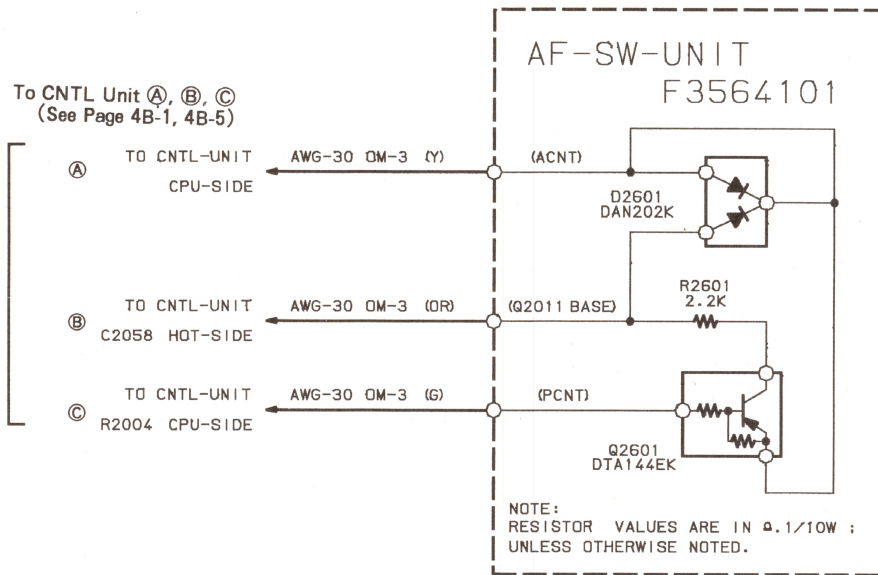
Parts Layout



Parts List

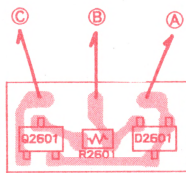
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*** VR UNIT ***										
	PCB with Components					CA1432001				
	Printed Circuit Board					F3540000				
	VR2500 ROTARY CODE S. W.				TP96D96AE20	Q9000640				

Circuit Diagram



Parts Layout

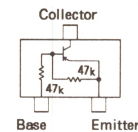
To CNTL Unit
(See Page 4B-3, 4B-7)



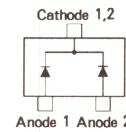
Component Side



Solder Side



DTA144EK (16)
(Q2601)

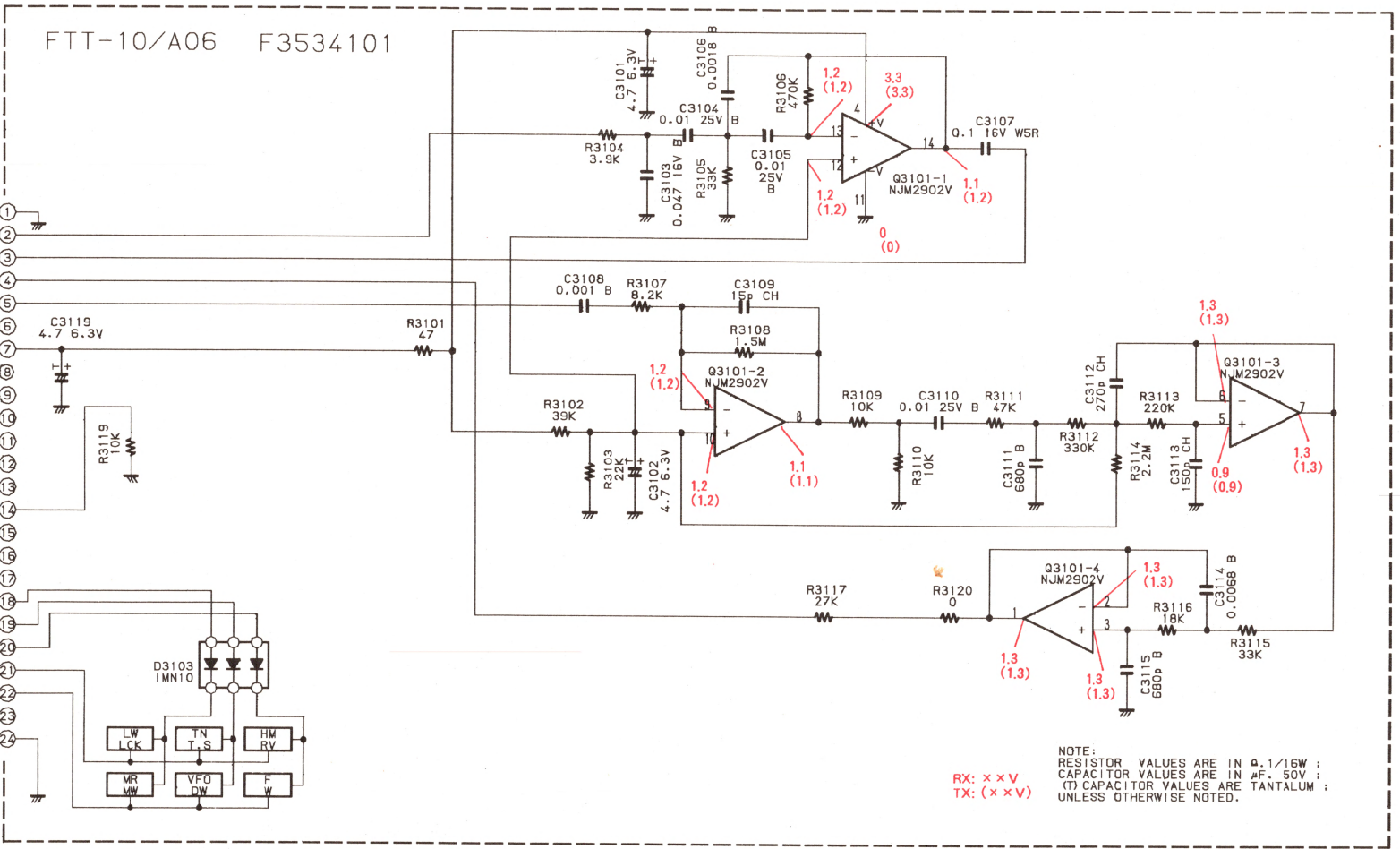


DAN202K (N)
(D2601)

Parts List

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY	ADR
*** AF SW UNIT ***										
	PCB with Components					CP5424001				
	Printed Circuit Board					F3564101				
D 2601	DIODE				DAN202K T146	G2070182				
Q 2601	TRANSISTOR				DTA144EK T146	G3070069				
R 2601	CHIP RES.	2.2K	1/10W	5%	RMC1/10T 222J	J24205222				

FTT-10/A06 6-Button Keypad



FTT-10/A06 6-Button Keypad

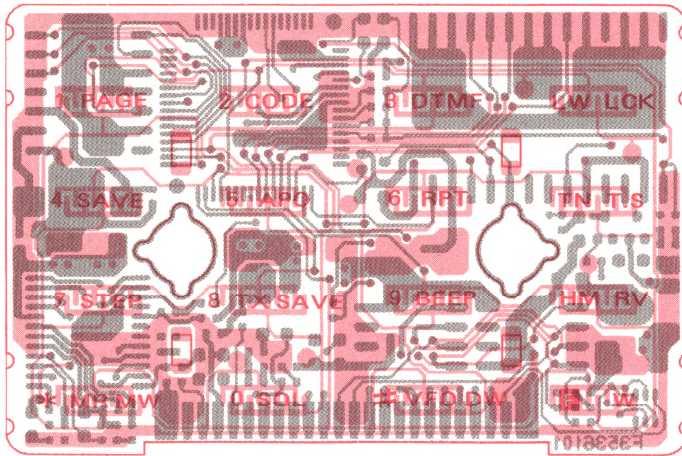
Parts List

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
*** FTT-10/A06 ***									
	Printed Circuit Board					F3534101			
	Flat Ribbon Cable					F3538000			
C 3101	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVA0J475M-8R	K78080017			
C 3102	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVA0J475M-8R	K78080017			
C 3103	CHIP CAP.	0.047uF	16V	B	GRM39B473K16PT	K22124804			
C 3104	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 3105	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 3106	CHIP CAP.	0.0018	50V	B	GRM39B182M50PT	K22174812			
C 3107	CHIP CAP.	0.1uF	16V	W5R	CM105W5R104K16AT	K22124803			
C 3108	CHIP CAP.	0.001uF	50V	B	GRM39B102K50PT	K22174821			
C 3109	CHIP CAP.	15pF	50V	CH	GRM39CH150J50PT	K22174215			
C 3110	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 3111	CHIP CAP.	680pF	50V	B	GRM39B681M50PT	K22174807			
C 3112	CHIP CAP.	270pF	50V	CH	GRM39CH271J50PT	K22174251			
C 3113	CHIP CAP.	150pF	50V	CH	GRM39CH151J50PT	K22174239			
C 3114	CHIP CAP.	0.0068uF	50V	B	GRM39B682M50PT	K22174819			
C 3115	CHIP CAP.	680pF	50V	B	GRM39B681M50PT	K22174807			
C 3119	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVA0J475M-8R	K78080017			
D 3103	DIODE				IMN10 T108	G2070078			
Q 3101	IC				NJM2902V-TE1	G1091679			
R 3101	CHIP RES.	47	1/16W	5%	RMC1/16 470JATP	J24185470			
R 3102	CHIP RES.	68K	1/16W	5%	RMC1/16 683JATP	J24185683			
R 3103	CHIP RES.	33K	1/16W	5%	RMC1/16 333JATP	J24185333			
R 3104	CHIP RES.	3.9K	1/16W	5%	RMC1/16 392JATP	J24185392			
R 3105	CHIP RES.	33K	1/16W	5%	RMC1/16 333JATP	J24185333			
R 3106	CHIP RES.	470K	1/16W	5%	RMC1/16 474JATP	J24185474			
R 3107	CHIP RES.	8.2K	1/16W	5%	RMC1/16 822JATP	J24185822			
R 3108	CHIP RES.	1.5M	1/16W	5%	RMC1/16 155JATP	J24185155			
R 3109	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 3110	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 3111	CHIP RES.	47K	1/16W	5%	RMC1/16 473JATP	J24185473			
R 3112	CHIP RES.	330K	1/16W	5%	RMC1/16 334JATP	J24185334			
R 3113	CHIP RES.	220K	1/16W	5%	RMC1/16 224JATP	J24185224			
R 3114	CHIP RES.	2.2M	1/16W	5%	RMC1/16 225JATP	J24185225			
R 3115	CHIP RES.	33K	1/16W	5%	RMC1/16 333JATP	J24185333			
R 3116	CHIP RES.	18K	1/16W	5%	RMC1/16 183JATP	J24185183			
R 3117	CHIP RES.	27K	1/16W	5%	RMC1/16 273JATP	J24185273			
R 3119	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103			
R 3120	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000			
	SUB PANEL(6N)					R3152740			
	RUBBER KNOB(6KEY)					R3521620			
	O RING(KEY BLOCK)					R3152410			
	SCREW DRIVER				#0	S5000184			

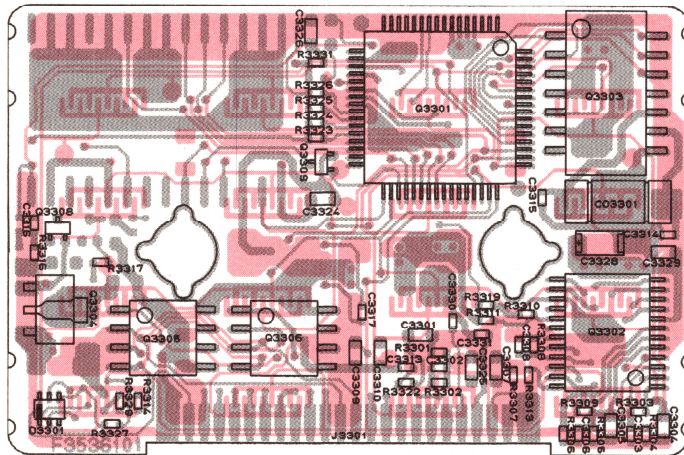
Notes

FTT-10/A16D 16-Button DTMF Paging Keypad

Parts Layout



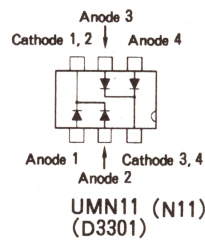
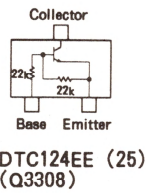
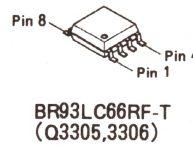
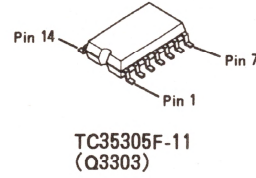
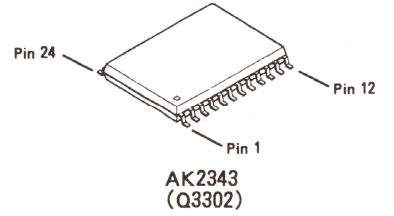
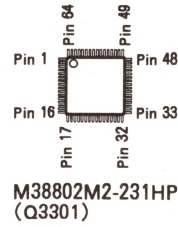
Keypad Side



24. GND	21. KS1/SUBAST	9. KEY4/TDET
23. KS6	20. KEY3	8. +B
22. KS2	19. KEY2/RXD	7. +3V
18. KEY1/TXD	18. KEY1/TXD	6. DTMF
17. MCLK	17. MCLK	5. MIC
16. TRX	16. TRX	4. MOD
15. ECS3	15. ECS3	3. AF
14. ECS2	14. ECS2	2. DISC
13. SCK	13. SCK	1. GND
12. SDO	12. SDO	
11. EDO	11. EDO	
10. TSTB	10. TSTB	
9. KEY4/TDET	9. KEY4/TDET	

To CNTL Unit J2001
(See Page 4B-3, 4B-7)

Chip Side



FTT-10/A16D 16-Button DTMF Paging Keypad

Parts List

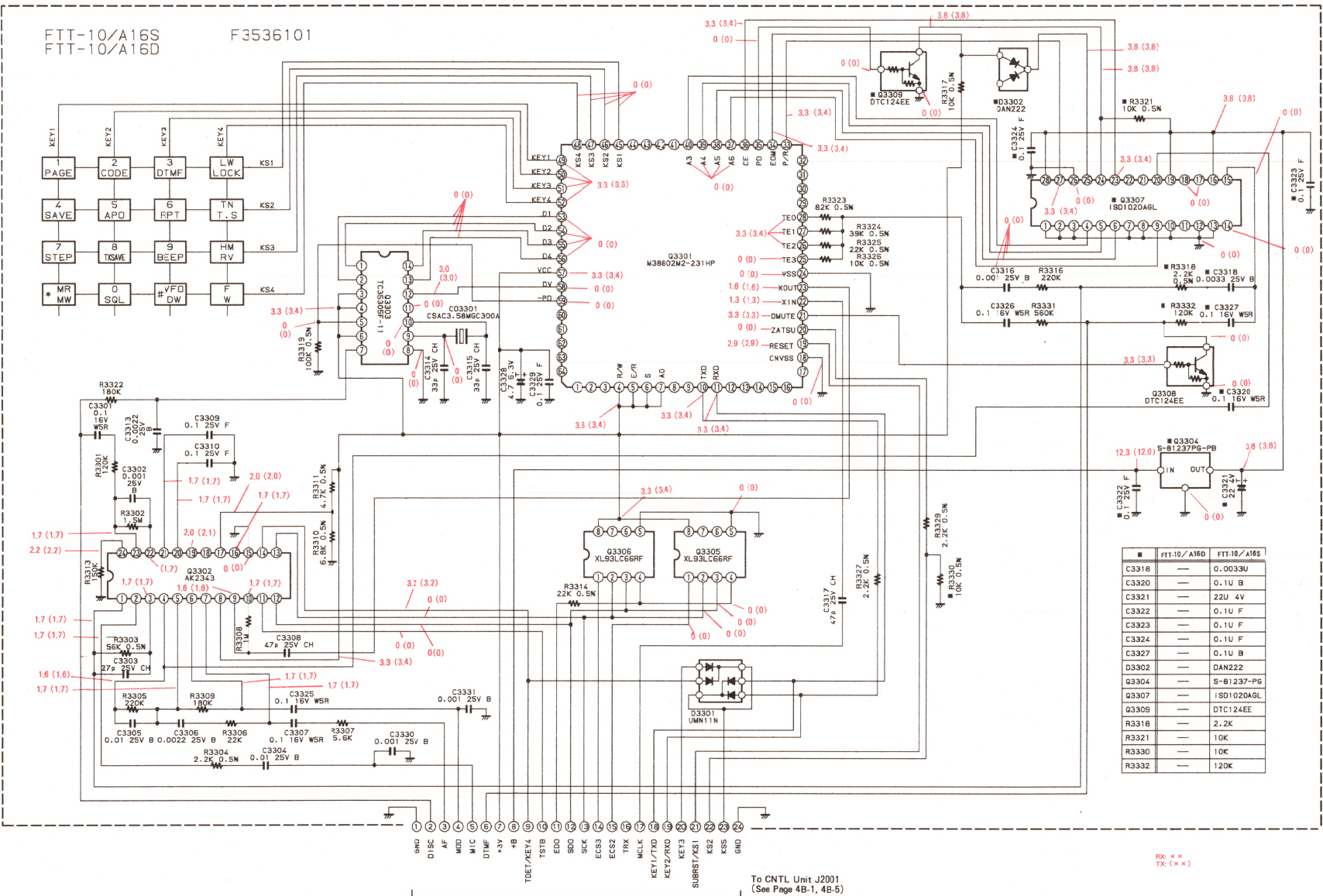
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*** FTT-10/16D ***									
	Printed Circuit Board					F3536101			
	Flat Ribbon Cable					F3538000			
C 3301	CHIP CAP.	0.1uF	16V	W5R	CM105W5R104K16AT	K22124803			
C 3302	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3303	CHIP CAP.	27pF	25V	CH	TMK105CH270J-F	K22148224			
C 3304	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 3305	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 3306	CHIP CAP.	0.0022uF	25V	B	TMK105B222K-F	K22148824			
C 3307	CHIP CAP.	0.1uF	16V	W5R	CM105W5R104K16AT	K22124803			
C 3308	CHIP CAP.	47pF	25V	CH	TMK105CH470J-F	K22148230			
C 3309	CHIP CAP.	0.1uF	25V	F	GRM39F104Z25PT	K22145001			
C 3310	CHIP CAP.	0.1uF	25V	F	GRM39F104Z25PT	K22145001			
C 3313	CHIP CAP.	0.0022uF	25V	B	TMK105B222K-F	K22148824			
C 3314	CHIP CAP.	33pF	25V	CH	TMK105CH330J-F	K22148226			
C 3315	CHIP CAP.	33pF	25V	CH	TMK105CH330J-F	K22148226			
C 3316	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3317	CHIP CAP.	47pF	25V	CH	TMK105CH470J-F	K22148230			
C 3325	CHIP CAP.	0.1uF	16V	W5R	CM105W5R104K16AT	K22124803			
C 3326	CHIP CAP.	0.1uF	16V	W5R	CM105W5R104K16AT	K22124803			
C 3328	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVA0J475M-8R	K78080017			
C 3329	CHIP CAP.	0.1uF	25V	F	GRM39F104Z25PT	K22145001			
C 3330	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3331	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
CO3301	CERAMIC OSC				CSAC3.58MGC300A-TC	H7900790			
D 3301	DIODE				UMN11 TN	G2070198			
Q 3301	IC				M38802M2-231HP	G1092089			
Q 3302	IC				AK2343	G1091908			
Q 3303	IC				TC35305F-11 TP2	G1091177			
Q 3305	IC				BR93LC66RF-T	G1092006			
Q 3306	IC				BR93LC66RF-T	G1092006			
Q 3308	TRANSISTOR				DTC124EE TL	G3070109			
R 3301	CHIP RES.	120K	1/16W	5%	RMC1/16S 124JTH	J24189050			
R 3302	CHIP RES.	1.5M	1/16W	5%	RMC1/16S 155JTH	J24189063			
R 3303	CHIP RES.	56K	1/16W	0.5%	RR0510R-563-D	J24189161			
R 3304	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127			
R 3305	CHIP RES.	220K	1/16W	5%	RMC1/16S 224JTH	J24189053			
R 3306	CHIP RES.	22K	1/16W	5%	RMC1/16S 223JTH	J24189041			
R 3307	CHIP RES.	5.6K	1/16W	5%	RMC1/16S 562JTH	J24189034			
R 3308	CHIP RES.	1M	1/16W	5%	RMC1/16S 105JTH	J24189061			
R 3309	CHIP RES.	180K	1/16W	5%	RMC1/16S 184JTH	J24189052			
R 3310	CHIP RES.	6.8K	1/16W	0.5%	RR0510P-682-D	J24189139			
R 3311	CHIP RES.	4.7K	1/16W	0.5%	RR0510P-472-D	J24189135			
R 3313	CHIP RES.	150K	1/16W	5%	RMC1/16S 154JTH	J24189051			

FTT-10/A16D 16-Button DTMF Paging Keypad

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY	ADR
R 3314	CHIP RES.	22K	1/16W	0.5%	RR0510R-223-D	J24189151				
R 3316	CHIP RES.	220K	1/16W	5%	RMC1/16S 224JTH	J24189053				
R 3317	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143				
R 3319	CHIP RES.	100K	1/16W	0.5%	RR0510R-104-D	J24189167				
R 3322	CHIP RES.	180K	1/16W	5%	RMC1/16S 184JTH	J24189052				
R 3323	CHIP RES.	82K	1/16W	0.5%	RR0510R-823-D	J24189165				
R 3324	CHIP RES.	39K	1/16W	0.5%	RR0510R-393-D	J24189157				
R 3325	CHIP RES.	22K	1/16W	0.5%	RR0510R-223-D	J24189151				
R 3326	CHIP RES.	10K	1/16W	0.5%	RR0510P-103-D	J24189143				
R 3327	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127				
R 3329	CHIP RES.	2.2K	1/16W	0.5%	RR0510P-222-D	J24189127				
R 3331	CHIP RES.	560K	1/16W	5%	RMC1/16S 564JTH	J24189058				
	SUB PANEL(16CDE)					R3152731				
	RUBBER KNOB(16P)					R3521611				
	O RING(KEY BLOCK)					R3152410				
	SHIELD PLATE(CPU)					R0152550				
	SCREW DRIVER				#0	S5000184				

FTT-10/A16S 16-Button Digital Voice Keypad

Circuit Diagram



RK: x x
TK: (x x)

FTT-10/A16S 16-Button Digital Voice Keypad

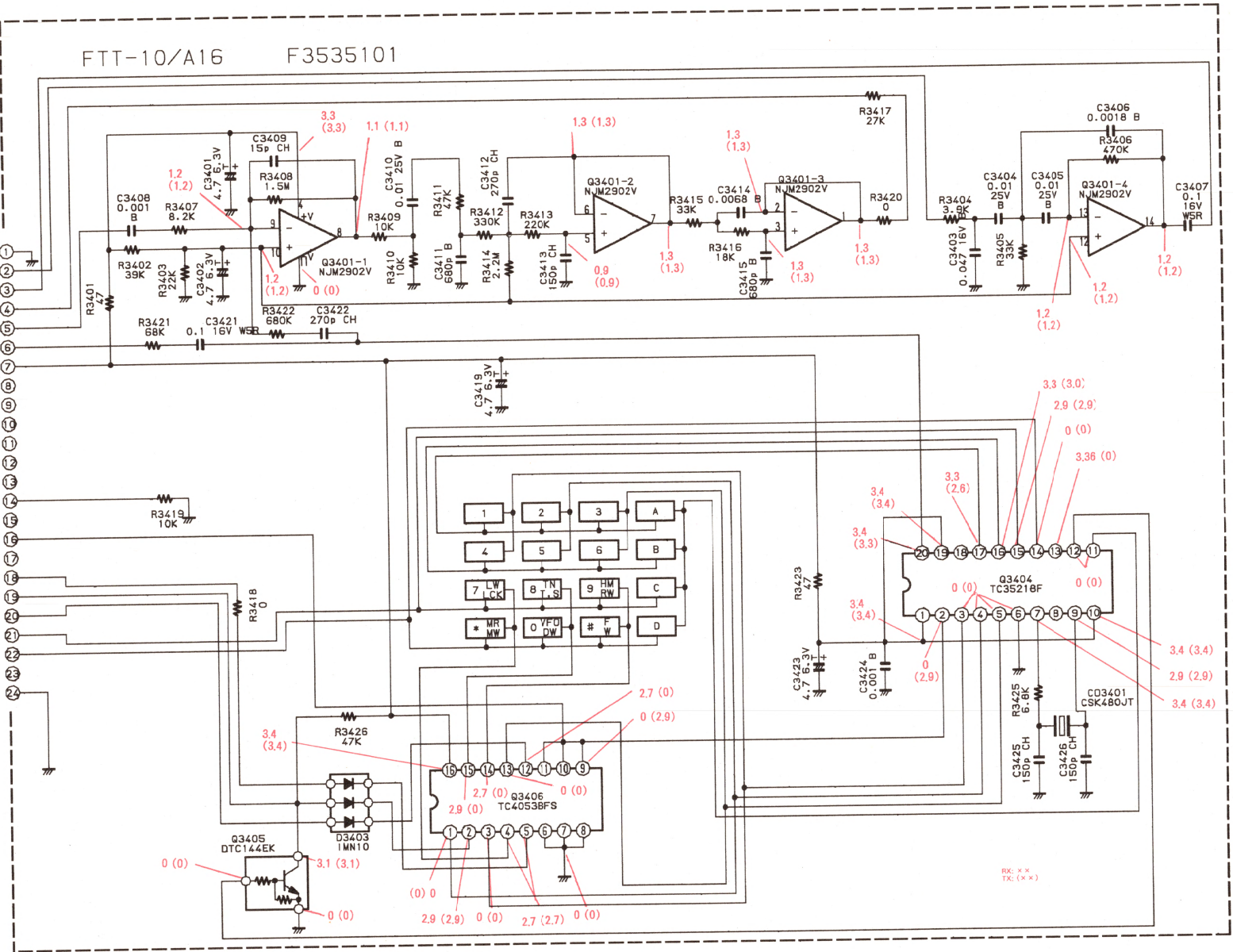
Parts List

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY ADR
*** FTT-10/16S ***									
	Printed Circuit Board					F3536101			
	Flat Ribbon Cable					F3538000			
C 3301	CHIP CAP.	0.1uF	16V	W5R	CM105W5R104K16AT	K22124803			
C 3302	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3303	CHIP CAP.	27pF	25V	CH	TMK105CH270J-F	K22148224			
C 3304	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 3305	CHIP CAP.	0.01uF	25V	B	GRM39B103K25PT	K22144803			
C 3306	CHIP CAP.	0.0022uF	25V	B	TMK105B222K-F	K22148824			
C 3307	CHIP CAP.	0.1uF	16V	W5R	CM105W5R104K16AT	K22124803			
C 3308	CHIP CAP.	47pF	25V	CH	TMK105CH470J-F	K22148230			
C 3309	CHIP CAP.	0.1uF	25V	F	GRM39F104Z25PT	K22145001			
C 3310	CHIP CAP.	0.1uF	25V	F	GRM39F104Z25PT	K22145001			
C 3313	CHIP CAP.	0.0022uF	25V	B	TMK105B222K-F	K22148824			
C 3314	CHIP CAP.	33pF	25V	CH	TMK105CH330J-F	K22148226			
C 3315	CHIP CAP.	33pF	25V	CH	TMK105CH330J-F	K22148226			
C 3316	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3317	CHIP CAP.	47pF	25V	CH	TMK105CH470J-F	K22148230			
C 3318	CHIP CAP.	0.0033uF	25V	B	TMK105B332K-F	K22148826			
C 3320	CHIP CAP.	0.1uF	16V	W5R	CM105W5R104K16AT	K22124803			
C 3321	TANTALUM CHIP CAP.	22uF	4V		TEMSVAOG226M-8R	K78060023			
C 3322	CHIP CAP.	0.1uF	25V	F	GRM39F104Z25PT	K22145001			
C 3323	CHIP CAP.	0.1uF	25V	F	GRM39F104Z25PT	K22145001			
C 3324	CHIP CAP.	0.1uF	25V	F	GRM39F104Z25PT	K22145001			
C 3325	CHIP CAP.	0.1uF	16V	W5R	CM105W5R104K16AT	K22124803			
C 3326	CHIP CAP.	0.1uF	16V	W5R	CM105W5R104K16AT	K22124803			
C 3327	CHIP CAP.	0.1uF	16V	W5R	CM105W5R104K16AT	K22124803			
C 3328	TANTALUM CHIP CAP.	4.7uF	6.3V		TEMSVAOJ475M-8R	K78080017			
C 3329	CHIP CAP.	0.1uF	25V	F	GRM39F104Z25PT	K22145001			
C 3330	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C 3331	CHIP CAP.	0.001uF	25V	B	TMK105B102K-F	K22148820			
C03301	CERAMIC OSC				CSAC3.58MGC300A-TC	H7900790			
D 3301	DIODE				UMN11 TN	G2070198			
D 3302	DIODE				DAN222 TL	G2070174			
Q 3301	IC				M38802M2-231HP	G1092089			
Q 3302	IC				AK2343	G1091908			
Q 3303	IC				TC35305F-11 TP2	G1091177			
Q 3304	IC				S-81237PG-PE-T1	G1092065			
Q 3305	IC				BR93LC66RF-T	G1092006			
Q 3306	IC				BR93LC66RF-T	G1092006			
Q 3307	IC				ISD1020AGL-R	G1092076			
Q 3308	TRANSISTOR				DTC124EE TL	G3070109			
Q 3309	TRANSISTOR				DTC124EE TL	G3070109			
R 3301	CHIP RES.	120K	1/16W	5%	RMC1/16S 124JTH	J24189050			

Notes

Circuit Diagram

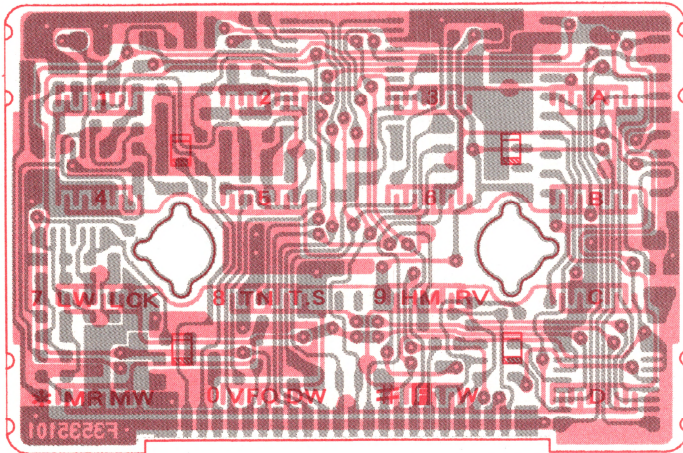
FTT-10/A16 16-Button DTMF Keypad



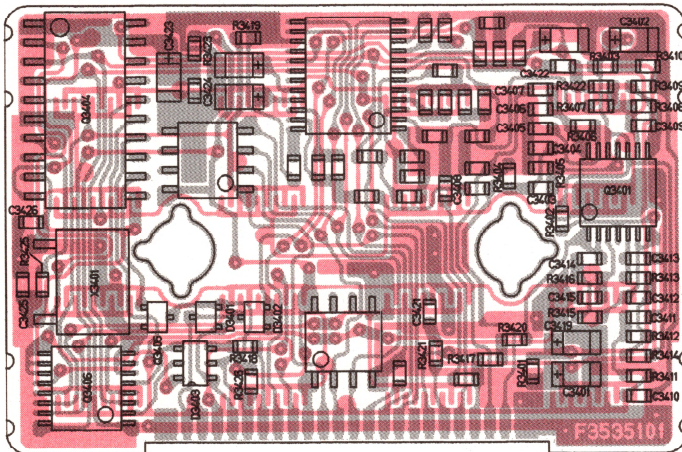
- ① GND
- ② DISC
- ③ AF
- ④ MOD
- ⑤ MIC
- ⑥ DTMF
- ⑦ +3V
- ⑧ +B
- ⑨ TDET/KEY4
- ⑩ TSTB
- ⑪ EDO
- ⑫ SDO
- ⑬ SCK
- ⑭ ESC3
- ⑮ ESC2
- ⑯ TRX
- ⑰ MCLK
- ⑱ KEY1/TXD
- ⑲ KEY2/RXD
- ⑲ KEY3
- ⑲ SUBRST/KS1
- ⑲ KS2
- ⑲ KS5
- ⑲ GND

FTT-10/A16 16-Button DTMF Keypad

Parts Layout



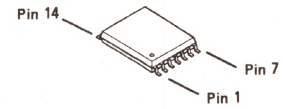
Keypad Side



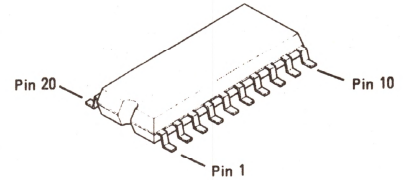
24. GND	10. TSTB	9. KEY4/TDET
23. KS5	8. +B	8. +B
22. KS2	7. +3V	7. +3V
21. KS1/SUBAST	6. DTMF	6. DTMF
20. KEY3	5. MIC	5. MIC
19. KEY2/RXD	4. MOD	4. MOD
18. KEY1/TXD	3. AF	3. AF
17. MCLK	2. DISC	2. DISC
16. TRX	1. GND	1. GND
15. ECS2		
14. ECS3		
13. SCK		
12. SDO		
11. EDO		

To CNTL Unit J2001
(See Page 4B-3, 4B-7)

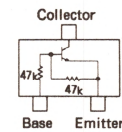
Chip Side



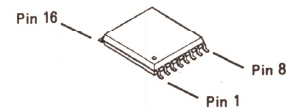
NJM2902V
(Q3401)



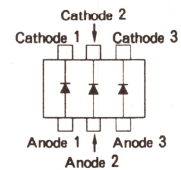
TC35218F
(Q3404)



DTC144EK
(Q3405)



BU4053BCFV-E1
(Q3406)



IMN10 (N10)
(D3403)

FTT-10/A16 16-Button DTMF Keypad

Parts List

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY	ADR
*** FTT-10/A16 ***										
	Printed Circuit Board					F3535101				
	Flat Ribbon Cable					F3538000				
C 3401	TANTALUM CHIP CAP.	4. 7uF	6. 3V		TEMSVAOJ475M-8R	K78080017				
C 3402	TANTALUM CHIP CAP.	4. 7uF	6. 3V		TEMSVAOJ475M-8R	K78080017				
C 3403	CHIP CAP.	0. 047uF	16V	B	GRM39B473K16PT	K22124804				
C 3404	CHIP CAP.	0. 01uF	25V	B	GRM39B103K25PT	K22144803				
C 3405	CHIP CAP.	0. 01uF	25V	B	GRM39B103K25PT	K22144803				
C 3406	CHIP CAP.	0. 0018	50V	B	GRM39B182M50PT	K22174812				
C 3407	CHIP CAP.	0. 1uF	16V	W5R	CM105W5R104K16AT	K22124803				
C 3408	CHIP CAP.	0. 001uF	50V	B	GRM39B102K50PT	K22174821				
C 3409	CHIP CAP.	15pF	50V	CH	GRM39CH150J50PT	K22174215				
C 3410	CHIP CAP.	0. 01uF	25V	B	GRM39B103K25PT	K22144803				
C 3411	CHIP CAP.	680pF	50V	B	GRM39B681M50PT	K22174807				
C 3412	CHIP CAP.	270pF	50V	CH	GRM39CH271J50PT	K22174251				
C 3413	CHIP CAP.	150pF	50V	CH	GRM39CH151J50PT	K22174239				
C 3414	CHIP CAP.	0. 0068uF	50V	B	GRM39B682M50PT	K22174819				
C 3415	CHIP CAP.	680pF	50V	B	GRM39B681M50PT	K22174807				
C 3419	TANTALUM CHIP CAP.	4. 7uF	6. 3V		TEMSVAOJ475M-8R	K78080017				
C 3421	CHIP CAP.	0. 1uF	16V	W5R	CM105W5R104K16AT	K22124803				
C 3422	CHIP CAP.	270pF	50V	CH	GRM39CH271J50PT	K22174251				
C 3423	TANTALUM CHIP CAP.	4. 7uF	6. 3V		TEMSVAOJ475M-8R	K78080017				
C 3424	CHIP CAP.	0. 001uF	50V	B	GRM39B102M50PT	K22174809				
C 3425	CHIP CAP.	150pF	50V	CH	GRM39CH151J50PT	K22174239				
C 3426	CHIP CAP.	150pF	50V	CH	GRM39CH151J50PT	K22174239				
C03401	CERAMIC OSC				CSK480JT	H7900960				
D 3403	DIODE				IMN10 T108	G2070078				
Q 3401	IC				NJM2902V-TE1	G1091679				
Q 3404	IC				TC35218F (TP1)	G1091744				
Q 3405	TRANSISTOR				DTC144EK T147	G3070033				
Q 3406	IC				BU4053BCFV-E1	G1092064				
R 3401	CHIP RES.	47	1/16W	5%	RMC1/16 470JATP	J24185470				
R 3402	CHIP RES.	68K	1/16W	5%	RMC1/16 683JATP	J24185683				
R 3403	CHIP RES.	33K	1/16W	5%	RMC1/16 333JATP	J24185333				
R 3404	CHIP RES.	3. 9K	1/16W	5%	RMC1/16 392JATP	J24185392				
R 3405	CHIP RES.	33K	1/16W	5%	RMC1/16 333JATP	J24185333				
R 3406	CHIP RES.	470K	1/16W	5%	RMC1/16 474JATP	J24185474				
R 3407	CHIP RES.	8. 2K	1/16W	5%	RMC1/16 822JATP	J24185822				
R 3408	CHIP RES.	1. 5M	1/16W	5%	RMC1/16 155JATP	J24185155				
R 3409	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103				
R 3410	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103				
R 3411	CHIP RES.	47K	1/16W	5%	RMC1/16 473JATP	J24185473				
R 3412	CHIP RES.	330K	1/16W	5%	RMC1/16 334JATP	J24185334				
R 3413	CHIP RES.	220K	1/16W	5%	RMC1/16 224JATP	J24185224				

FTT-10/A16 16-Button DTMF Keypad

REF.	DESCRIPTION	VALUE	WV	TOL.	MFGR'S DESIG	YAESU P/N	VERS.	LOT.	LAY	ADR
R 3414	CHIP RES.	2.2M	1/16W	5%	RMC1/16 225JATP	J24185225				
R 3415	CHIP RES.	33K	1/16W	5%	RMC1/16 333JATP	J24185333				
R 3416	CHIP RES.	18K	1/16W	5%	RMC1/16 183JATP	J24185183				
R 3417	CHIP RES.	27K	1/16W	5%	RMC1/16 273JATP	J24185273				
R 3418	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000				
R 3419	CHIP RES.	10K	1/16W	5%	RMC1/16 103JATP	J24185103				
R 3420	CHIP RES.	0	1/16W	5%	RMC1/16 000JATP	J24185000				
R 3421	CHIP RES.	68K	1/16W	5%	RMC1/16 683JATP	J24185683				
R 3422	CHIP RES.	680K	1/16W	5%	RMC1/16 684JATP	J24185684				
R 3423	CHIP RES.	47	1/16W	5%	RMC1/16 470JATP	J24185470				
R 3425	CHIP RES.	6.8K	1/16W	5%	RMC1/16 682JATP	J24185682				
R 3426	CHIP RES.	47K	1/16W	5%	RMC1/16 473JATP	J24185473				
	SUB PANEL(16P)					R3152733				
	RUBBER KNOB(16P)					R3521611				
	O RING(KEY BLOCK)					R3152410				
	SCREW DRIVER				#0	S5000184				

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