

FTH-2006

SERVICE MANUAL

For Service Manuals Contact
MAURITRON TECHNICAL SERVICES
8 Cherry Tree Rd, Chinnor
Oxon OX9 4QY
Tel:- 01844-351694 Fax:- 01844-352554
Email:- enquiries@mauritron.co.uk

This booklet contains supplemental technical information related to the FTH-2006 for use with the FTH-2006 Operating Manual. Service or repairs to the FTH-2006 transceiver should be performed by pualified technicians only.

YAESU MUSEN CO., LTD.

C.P.O.BOX 1500, TOKYO, JAPAN

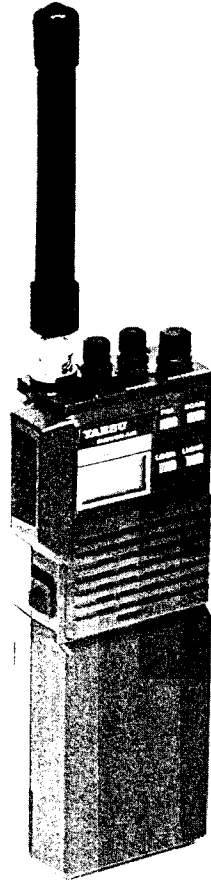
YAESU U.S.A.

17210 Edwards Rd. Cerritos, California, 90701 U.S.A.

YAESU EUROPE B.V.

Snipweg 3. 1118AA Schiphol The NETHERLANDS

FTH-2006 SERVICE MANUAL



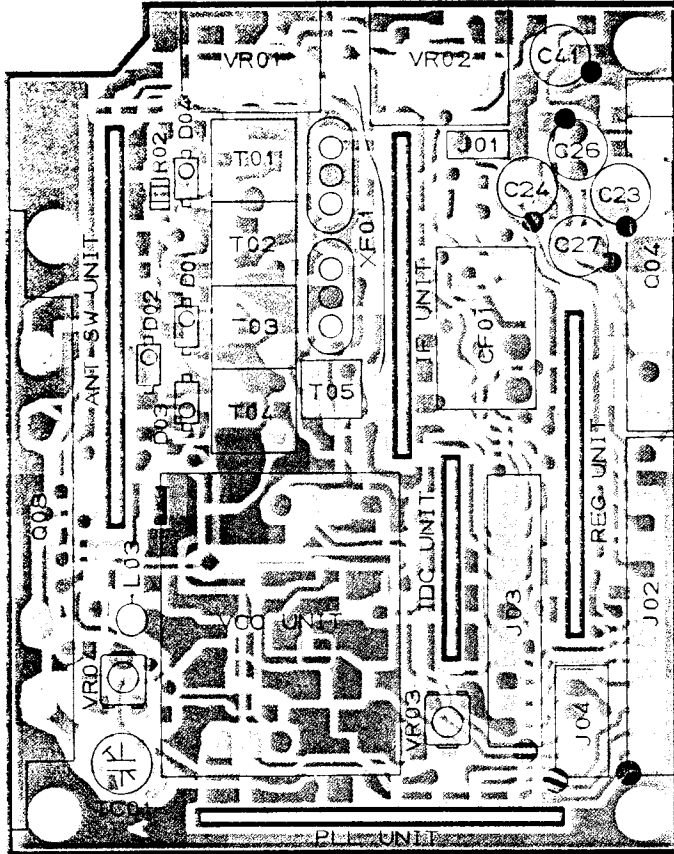
This manual is intended to serve as a supplement to the FTH-2006 Operating Manual. Detailed information regarding functions, specifications, options and operation has been provided in the Operating Manual, and is not reprinted herein. Therefore, this manual is not intended to serve as an independent reference, but to be used in conjunction with the information provided in the Operating Manual.

Because of the compactness and complexity of the double-sided glass-epoxy circuit boards used in the FTH-2006, four layout diagrams are provided for each board. 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. The two "obverse" views depict the board as it is seen when viewed directly with the eye, while the two "reverse" views depict the unseen side of the board as it would appear if one were to peer through the board from the other side without seeing the components and tracks on the near side.

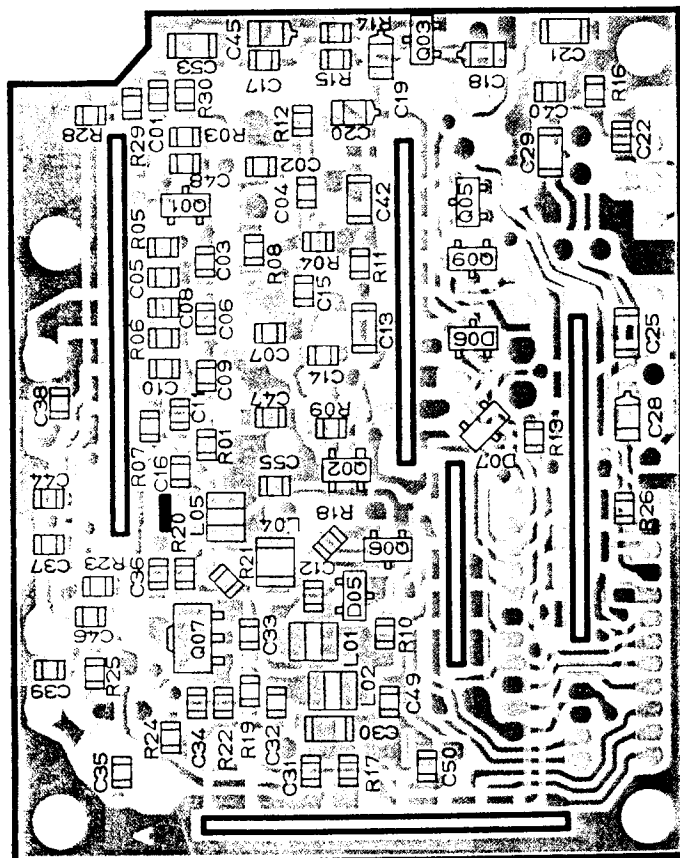
While we believe the technical information in this manual is correct, Yaesu assumes no liability for damage that may occur as a result of typographical or other errors that may be present. Your cooperation in pointing out any inconsistencies in the technical information would be appreciated.

Yaesu Musen reserves the right to make changes in the circuitry of this transceiver, in the interest of technological improvement, without notification of the owners.

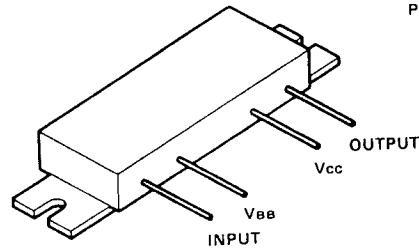
MOTHER BOARD



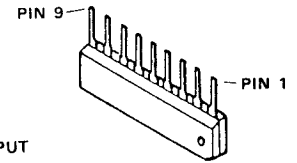
(Obverse view of "component" side)



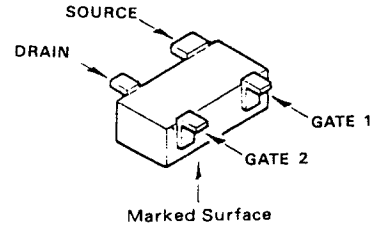
(Reverse view of "chip" side)



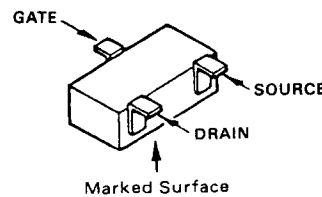
M57796(Q208)



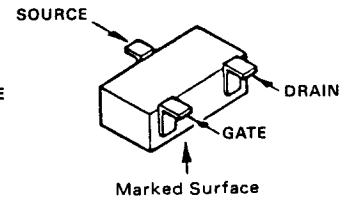
LA4147(Q204)



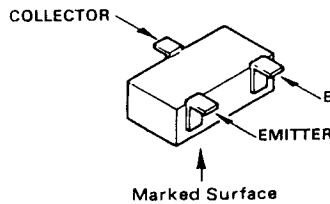
3SK151GR(UH)(Q202)



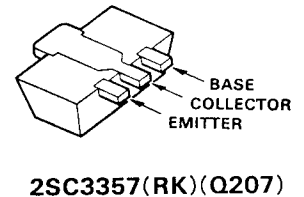
2SK160(K4)(Q203)



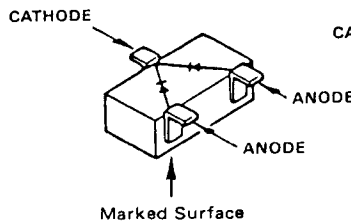
2SK302Y(TY)(Q201)



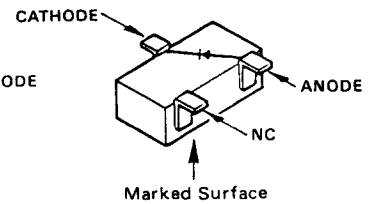
2SC3356(R22)(Q206)
FA1L4M(L31)(Q205,209)



2SC3357(RK)(Q207)

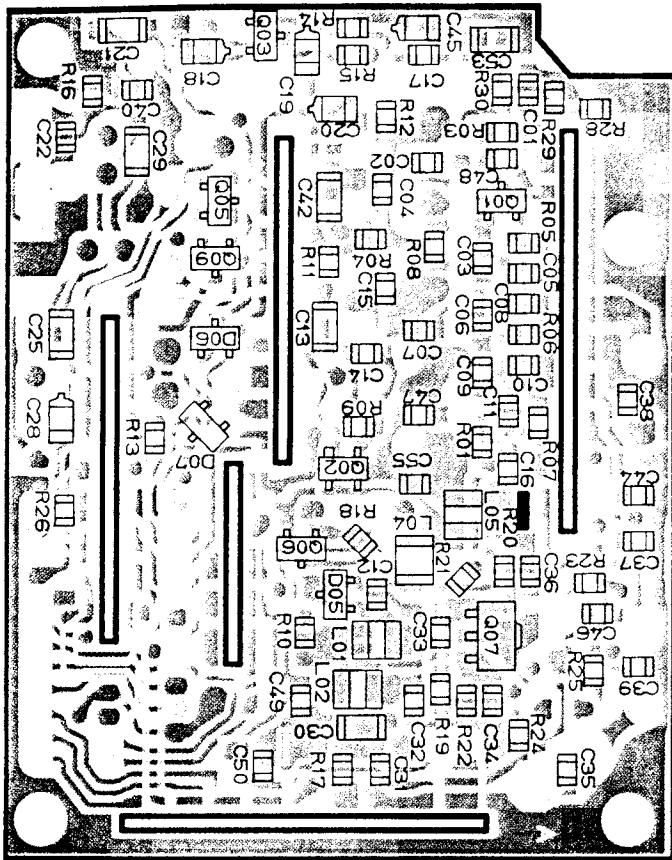


1SS184(B3)(D205,207)

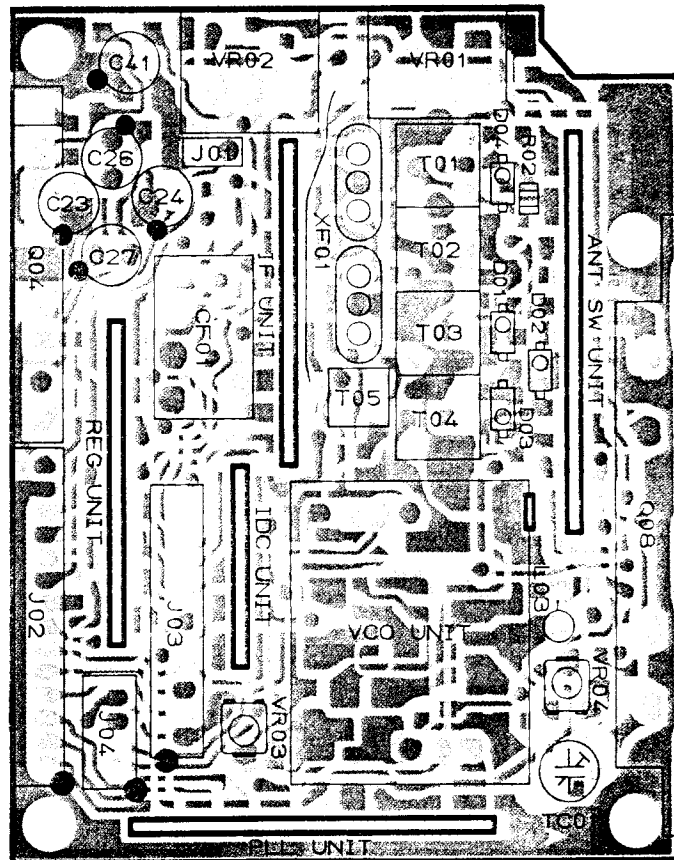


1SS193(F3)(D206)

MOTHER BOARD



(Obverse view of "chip" side)



(Reverse view of "component" side)

MOTHER BOARD VOLTAGE CHART (DC VOLTS)

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | REMARKS |
|------|-----|-------|------|-----|---|-----|-----|-----|-----|---------|
| Q204 | 0.7 | 0 | 0.6 | 4.4 | 0 | 3.9 | 7.4 | 7.4 | 7.4 | RX |
| Q208 | 0 | 0/4.9 | 12.0 | 0 | | | | | | RX/TX |

| | E (S) | C (D) | B (G1) | (G2) | REMARKS |
|------|-------|---------|--------|------|---------|
| Q201 | 0.3 | 4.7 | 0 | | |
| Q202 | 0 | 4.1 | 0 | 0 | |
| Q203 | 4.7 | 4.7 | 4.7 | | |
| Q205 | 0 | 4.3/0 | 0 | | RX/TX |
| Q206 | 0 | 3.1/7.4 | 0.7 | | RX/TX |
| Q207 | 0/0.7 | 0/10.7 | 0/1.0 | | RX/TX |
| Q209 | 0 | 0 | 4.4 | | |

| | 1 +B | 2 Vcc | REMARKS |
|------|------|-------|---------|
| J201 | 12.0 | 12.0 | |

| | 1 CLOCK | 2 DATA | 3 PLL STB | 4 BATT | 5 MONI | 6 MIC IN | 7 SCAN | 8 TONE STB | 9 T SQ | 10 TX | 11 SAVE | 12 CONT 5V | 13 GND | 14 SP | REMARKS |
|------|---------|--------|-----------|--------|--------|----------|--------|------------|--------|-------|---------|------------|--------|-------|---------|
| J202 | 0 | 0 | 0 | 3.2 | 0 | 5.0/2.8 | 4.3/0 | 0 | 4.4 | 4.4/0 | 0 | 5.0 | 0 | 0 | RX/TX |

| | 1 GND | 2 BATT | 3 RESET | 4 PTT CNTL | 5 TONE IN | 6 CONT 5V | 7 TX 5V | 8 DET OUT | 9 CALL | 10 ALERT TONE | 11 ALERT CNTL | REMARKS |
|------|-------|--------|---------|------------|-----------|-----------|---------|-----------|--------|---------------|---------------|---------|
| J203 | 0 | 3.2 | 0 | 5.0/2.8 | 0 | 5.0/0 | 0/4.8 | 1.2/0 | 0 | 0 | 4.7/0 | RX/TX |

| | 1 DTMF | 2 MUTE | 3 CONT 5V | 4 GND | REMARKS |
|------|--------|--------|-----------|-------|---------|
| J204 | 0/0.3 | 0/1.8 | 5.0 | 0 | RX/TX |

| | 1 TONE | 2 CONT 5V | 3 TONE STB | 4 DATA | 5 CLOCK | 6 DET OUT | 7 T SQ | 8 AF IN | 9 TX 5V | 10 GND | REMARKS |
|------|--------|-----------|------------|--------|---------|-----------|--------|---------|---------|--------|---------|
| P201 | 0 | 5.0 | 0 | 0 | 0 | 1.2/0 | 4.4 | 1.2/0 | 0/4.8 | 0 | RX/TX |

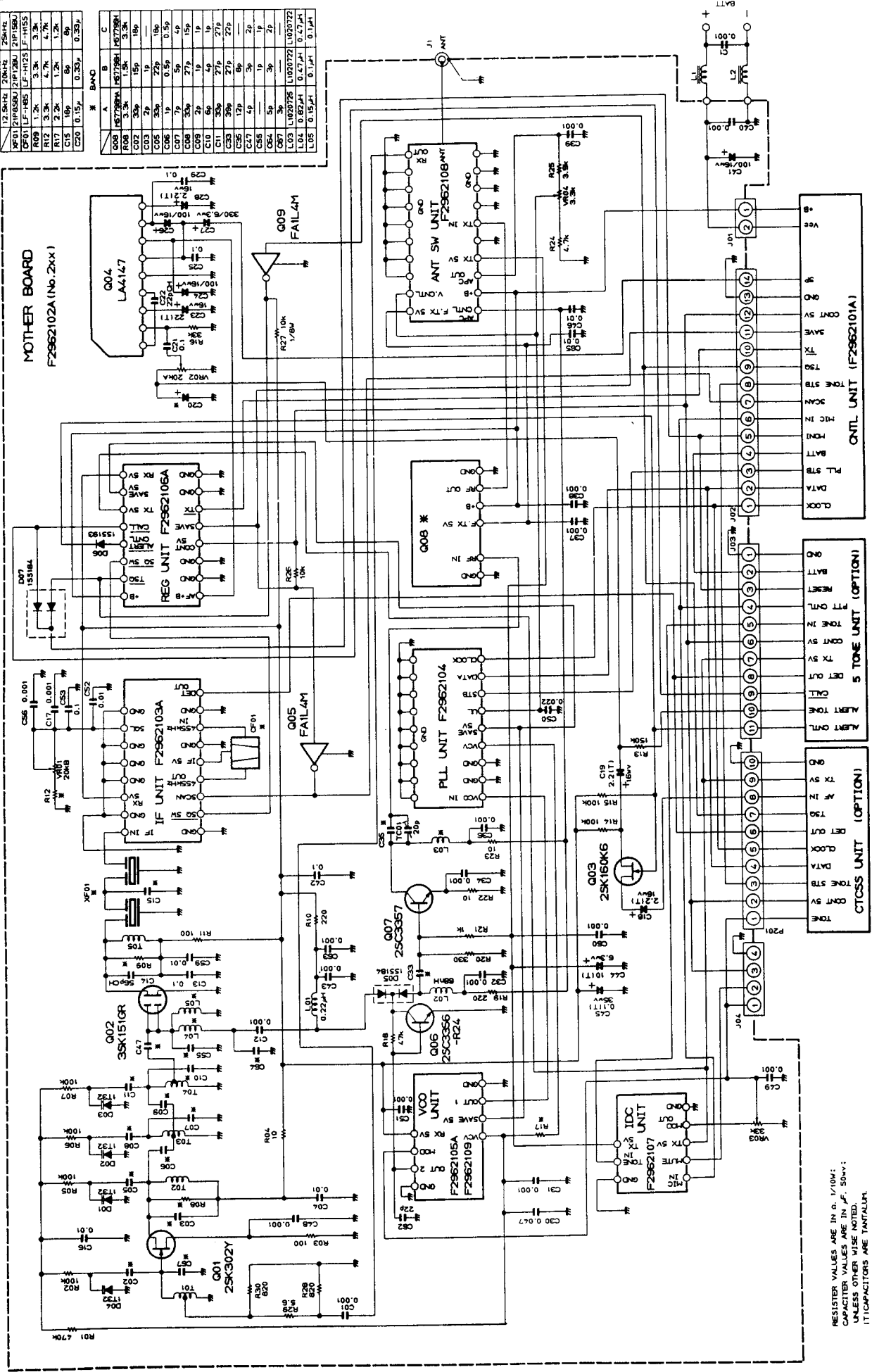
For Service Manuals Contact
MAURITRON TECHNICAL SERVICES
 8 Cherry Tree Rd, Chinnor
 Oxon OX9 4QY
 Tel: 01844-351694 Fax: 01844-352554
 Email: enquiries@mauritron.co.uk

MOTHER BOARD

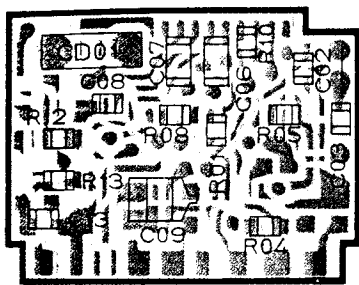
| SEPARATION | |
|------------|------------------------|
| XF01 | 21F85KJ 20KHZ 2P168U |
| CF01 | LF-H85 LF-H125 LF-H155 |
| R09 | 1.2K 3.3K 3.3K |
| R12 | 3.3K 4.7K 4.7K |
| R17 | 2.2K 1.2K 1.2K |
| C15 | 0.05 0.05 |
| C20 | 0.15P 0.35P |

| BAND | |
|------|-------------------------|
| Q08 | 1S7798A 1S7798A 1S7798A |
| R08 | 3.3K 1.5K 3.3K |
| C02 | 33P 15P 18P |
| C03 | 2P 1P |
| C05 | 25P 22P 18P |
| C06 | 1P 0.5P 0.5P |
| C08 | 33P 27P 15P |
| C09 | 2P 1P 1P |
| C10 | 6P 4P 1P |
| C11 | 35P 27P 27P |
| C13 | 35P 27P 27P |
| C15 | 12P 8P |
| C17 | 4P 3P 2P |
| C18 | 5P 3P 1P |
| C19 | 3P 1P 1P |
| C21 | 0.05 0.05 |
| C22 | 0.15P 0.15P |
| C23 | 0.15P 0.15P |

MOTHER BOARD F2962102A (No. 2xx.1)

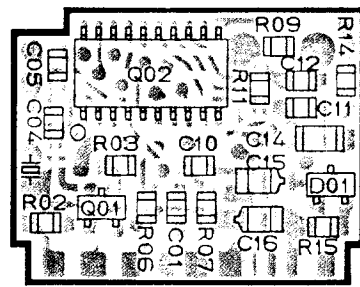


IF UNIT



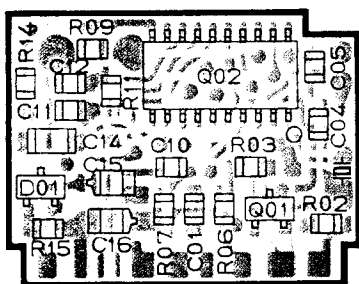
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

(Obverse view of "mixed-component" side)



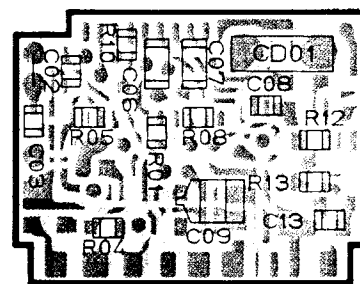
⑥ ⑤ ④ ③ ② ①

(Obverse view of "chip-only" side)



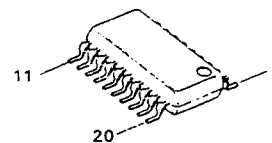
① ② ③ ④ ⑤ ⑥

(Reverse view of "chip-only" side)

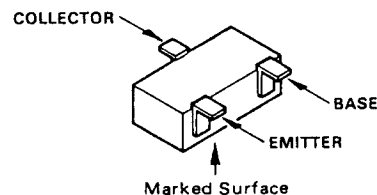


⑨ ⑧ ⑦ ⑥ ⑤ ④ ③ ② ①

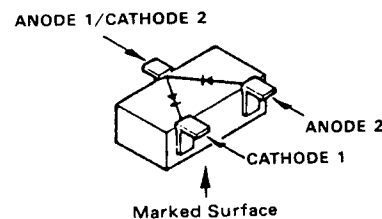
(Reverse view of "mixed-component" side)



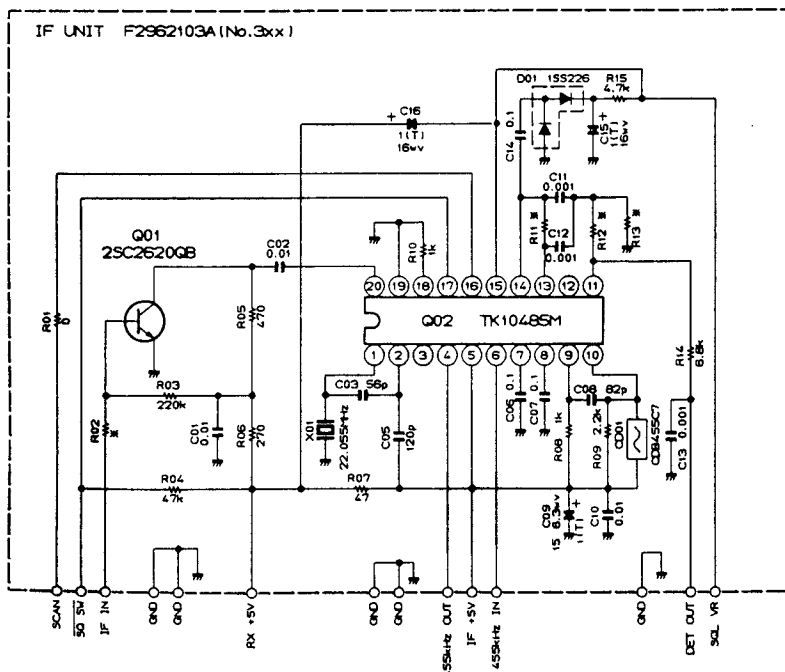
TK10485M(Q302)



2SC2620(QB)(Q301)



1SS226(C3)(D301)



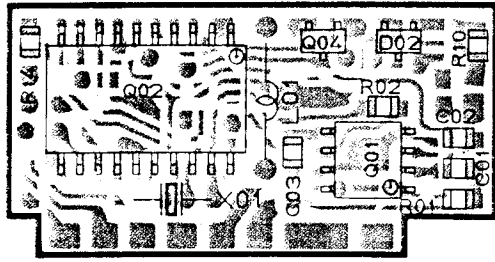
* SEPARATION

| | | |
|-----|-----------|---------|
| | 20k/25kHz | 12.5kHz |
| R02 | 1.5k | 1k |
| R11 | 470k | 330k |
| R12 | 22k | 15k |
| R13 | 1.2k | 3.3k |

RESISTOR VALUES ARE IN Ω, 1/10W;
CAPACITOR VALUES ARE IN μF, 50V;
UNLESS OTHERWISE NOTED.
(T) CAPACITORS ARE TANTALUM.

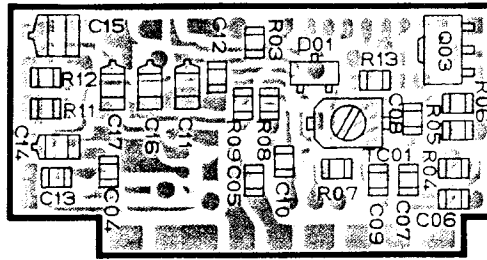
| Mixed-Component Side (DC VOLTS) | | | | | | | | | | | | | | | | | | |
|---------------------------------|---------|---|-----|---|-----------|---|-------|---|-------|---|------------|---------|-------|---|--------|---|-----|---------|
| 1 | DET OUT | 2 | GND | 3 | 455kHz IN | 4 | GND | 5 | IF 5V | 6 | 455kHz OUT | 7 | SCAN | 8 | SQL SW | 9 | GND | REMARKS |
| | 1.2/0 | | 0 | | 3.5/0 | | 0 | | 4.4/0 | | 4.1/0 | | 4.2/0 | | 0 | | 0 | RX/TX |
| Chip-Only Side (DC VOLTS) | | | | | | | | | | | | | | | | | | |
| 1 | GND | 2 | SQL | 3 | GND | 4 | RX 5V | 5 | GND | 6 | IF IN | REMARKS | | | | | | |
| | 0 | | 0 | | 0 | | 4.7/0 | | 0 | | 0.7/0 | RX/TX | | | | | | |

PLL UNIT

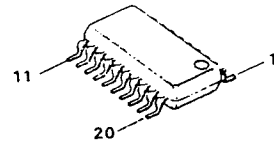


1 2 3 4 5 6 7 8

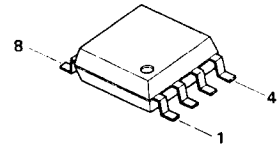
(Obverse view of "mixed-component" side)



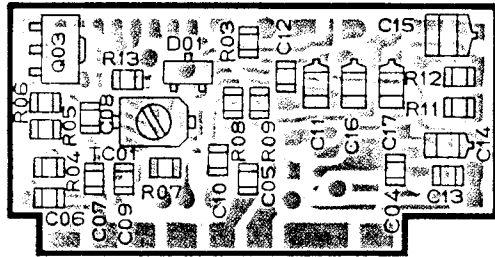
(Obverse view of "chip-only" side)



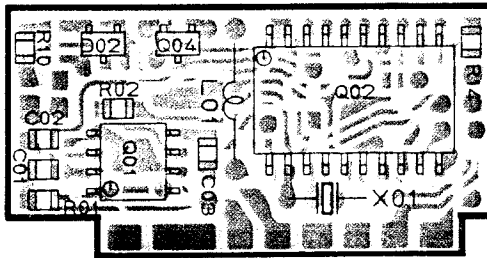
JLC1007P(Q02)



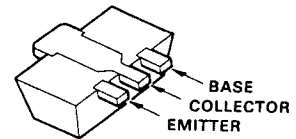
μPB569G(Q01)



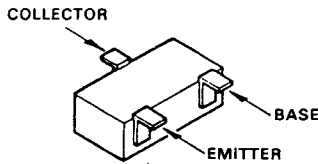
(Reverse view of "chip-only" side)



(Reverse view of "mixed-component" side)

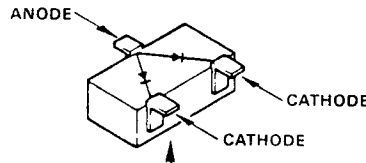


2SD1699(TR)(Q03)



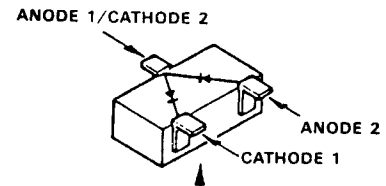
Marked Surface

FN1L4M(M31)(Q04)



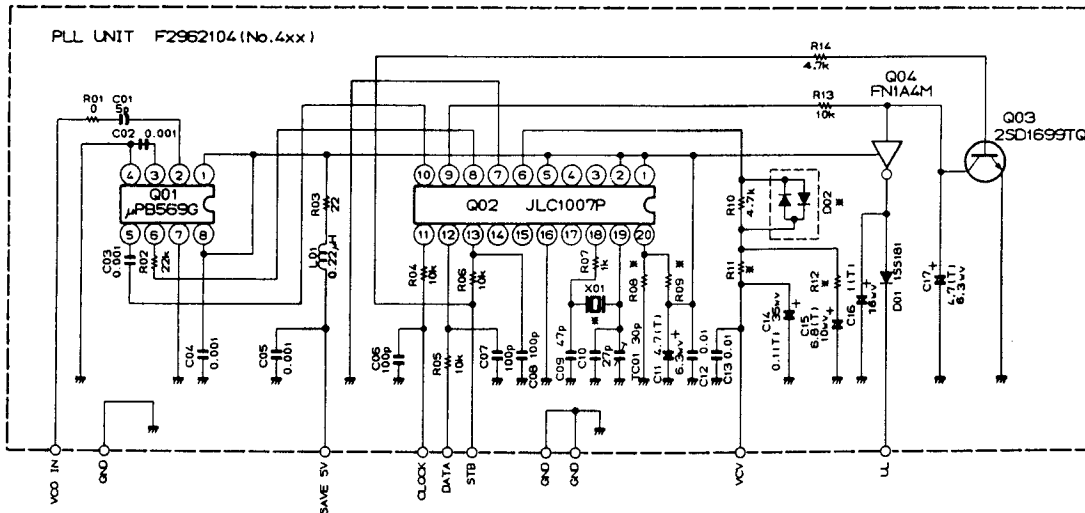
Marked Surface

1SS181(A3)(D401)



Marked Surface

1SS226(C3)(D402)

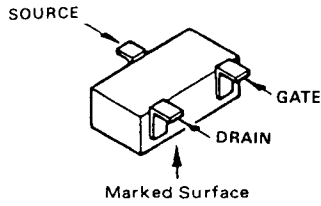


| * SEPARATION | |
|--------------|----------|
| 20k/25kHz | 12.5kHz |
| D02 | 1SS226 |
| X01 | 10.24kHz |
| R08 | 0 |
| R09 | 0 |
| R11 | 15k |
| R12 | 2.2k |

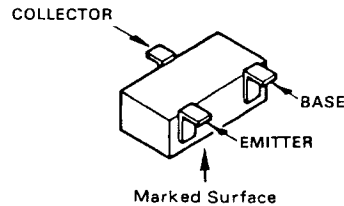
RESISTOR VALUES ARE IN Ω, 1/10W;
CAPACITOR VALUES ARE IN μF, 50V;
UNLESS OTHERWISE NOTED.
1T1CAPACITORS ARE TANTALUM.

| Mixed-Component Side (DC VOLTS) | | | | | | | | REMARKS |
|---------------------------------|------|-----|-------|---------|---------|-----|--------|---------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | |
| CLOCK | DATA | STB | UL | SAVE 5V | VCV | GND | VCO IN | RX/TX |
| 0 | 0 | 0 | 0/1.3 | 4.8 | 1.0~4.0 | 0 | 1.9 | |

VCO·VCO AMP UNIT

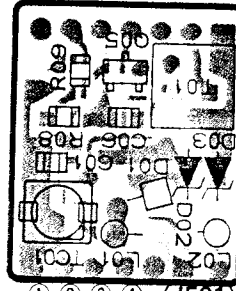


2SK238(K17)(Q501)



2SC2712GR(LG)(Q504)
2SC2759(U23)(Q503)
2SC3356(R24)(Q505)
FA1A4M(L33)(Q501)

(J502) ④ ③ ② ①

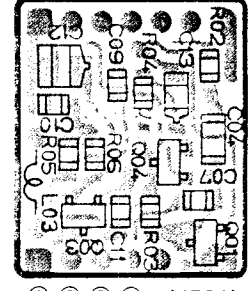


① ② ③ ④ (J501)

(VCO UNIT)

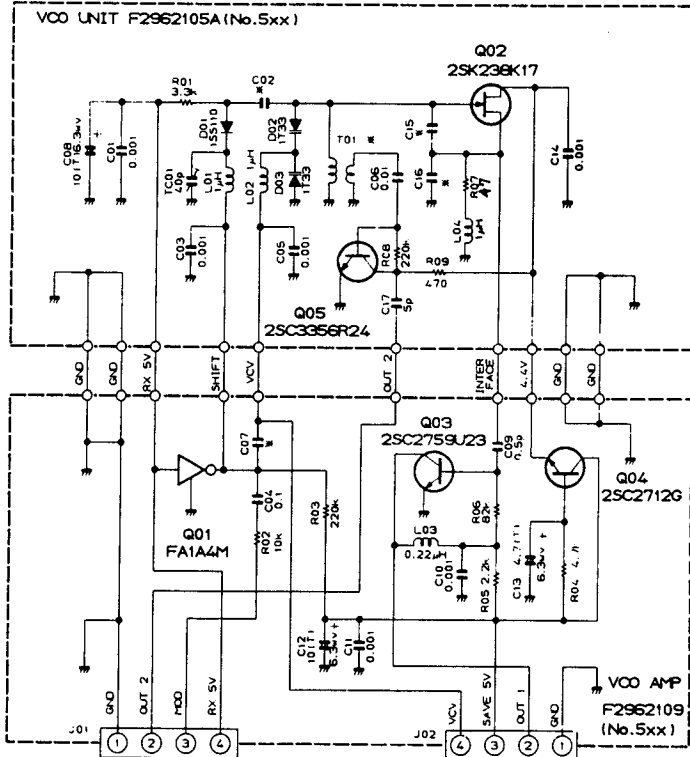
(Obverse view of "top" side)

(J502) ④ ③ ② ①



① ② ③ ④ (J501)

(VCO AMP UNIT)



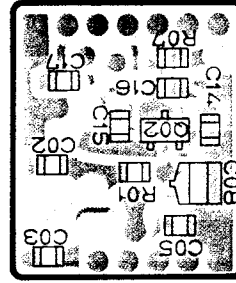
* BAND

| | A | B | C |
|-----|----------|-----------|-----------|
| C02 | 33p | 22p | 22p |
| C07 | 220p | 220p | 470p |
| C15 | 8p UJ | 10p UJ | 10p UJ |
| C16 | 8p UJ | 10p UJ | 10p UJ |
| T01 | L0021911 | L0021684A | L0021684A |

RESISTOR VALUES ARE IN Ω, 1/10Ω;
CAPACITOR VALUES ARE IN μF, 50μF;
UNLESS OTHERWISE NOTED,
①: CAPACITORS ARE TANTALUM.

| J501 (DC VOLTS) | | | | | | | | |
|-----------------|-----|---|-------|---|---------|---|---------|---------|
| 1 | GND | 2 | OUT 2 | 3 | MOD | 4 | RX 5V | REMARKS |
| | 0 | | 0.7 | | 0 | | 4.7/0 | RX/TX |
| J502 (DC VOLTS) | | | | | | | | |
| 1 | GND | 2 | OUT 1 | 3 | SAVE 5V | 4 | VCV | REMARKS |
| | 0 | | 1.9 | | 4.8 | | 1.0~4.0 | |

① ② ③ ④ (J502)

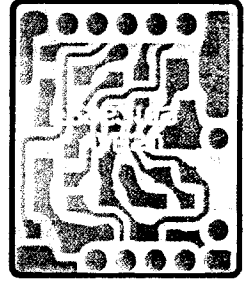


(J501) ④ ③ ② ①

(VCO UNIT)

(Obverse view of "bottom" side)

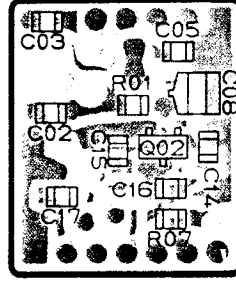
① ② ③ ④ (J502)



(J501) ④ ③ ② ①

(VCO AMP UNIT)

(J502) ④ ③ ② ①

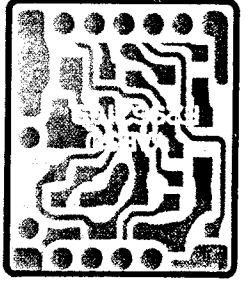


① ② ③ ④ (J501)

(VCO UNIT)

(Reverse view of "bottom" side)

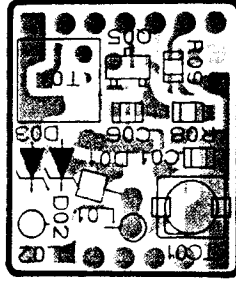
(J502) ④ ③ ② ①



① ② ③ ④ (J501)

(VCO AMP UNIT)

① ② ③ ④ (J502)

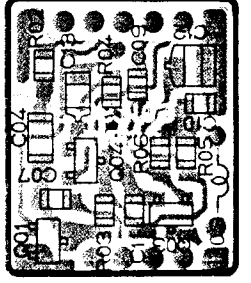


(J501) ④ ③ ② ①

(VCO UNIT)

(Reverse view of "top" side)

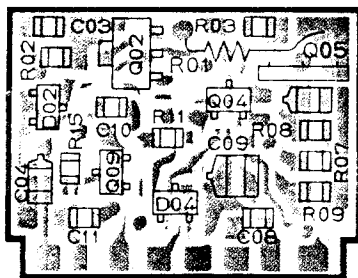
① ② ③ ④ (J502)



(J501) ④ ③ ② ①

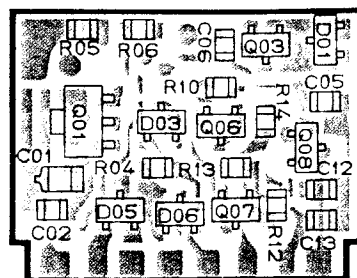
(VCO AMP UNIT)

REG UNIT



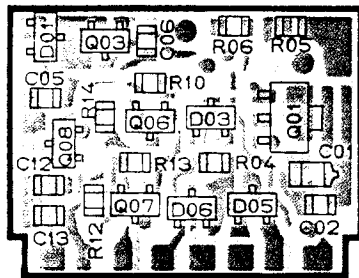
① ② ③ ④ ⑤ ⑥

(Obverse view of "mixed-component" side)



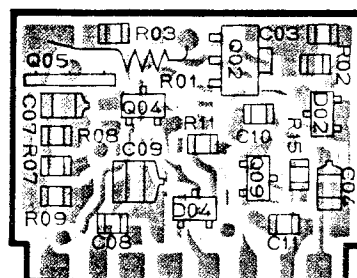
⑧ ⑦ ⑥ ⑤ ④ ③ ② ①

(Obverse view of "chip-only" side)



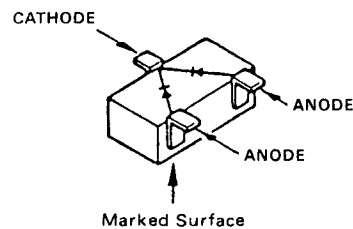
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

(Reverse view of "chip-only" side)

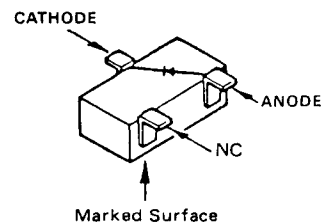


⑥ ⑤ ④ ③ ② ①

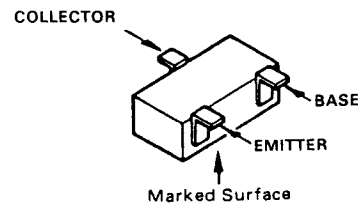
(Reverse view of "mixed-component" side)



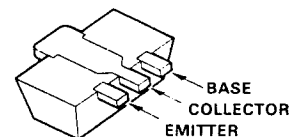
1SS184(B3)(D601,603,604,605,606)



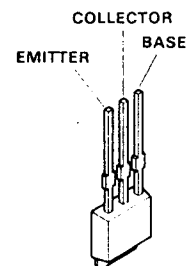
O2C28,2X(15)(D602)



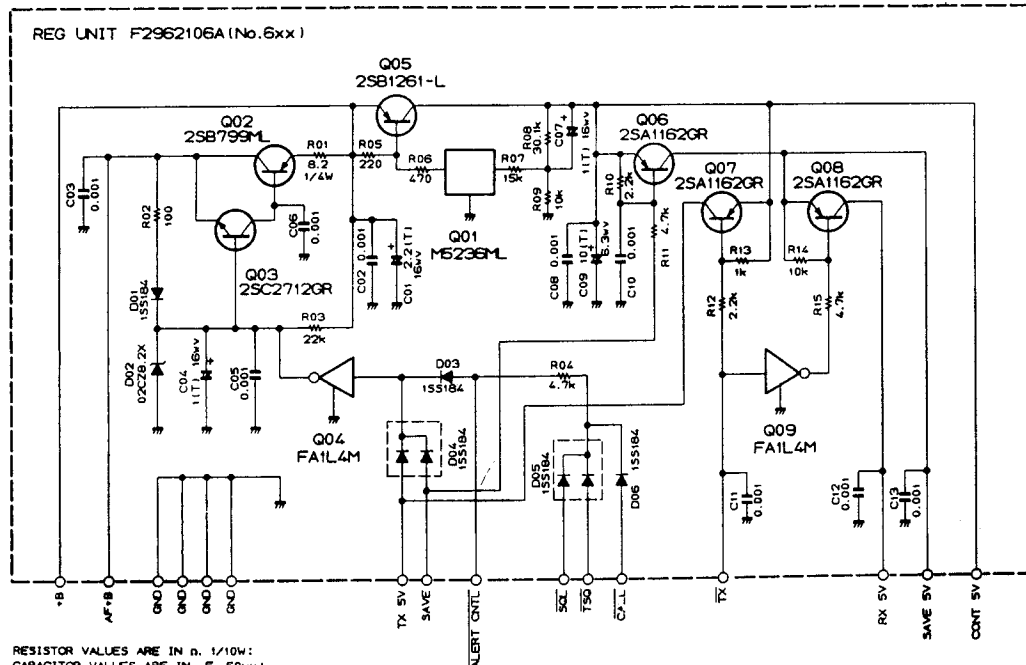
2SA1162GR(SG)
(Q006,607,608)
2SC2712GR(LG)
(Q003)
FA1L4M(L31)
(Q004,609)



2SB799(ML)(Q002)
M5236(ML)(Q001)



2SB1261(Q005)

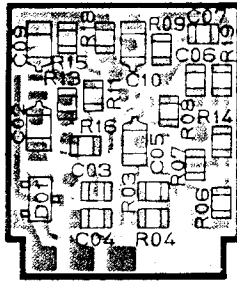


RESISTOR VALUES ARE IN Ω, 1/10Ω;
CAPACITOR VALUES ARE IN μF, 50V;
UNLESS OTHERWISE NOTED,
ITICAPACITORS ARE TANTALUM.

| Mixed-Component Side (DC VOLTS) | | | | | | |
|---------------------------------|-------|------|---------|-----|-------|---------|
| 1 | 2 | 3 | 4 | 5 | 6 | REMARKS |
| GND | TX | SAVE | CONT 5V | GND | AF+B | |
| 0 | 4.3/0 | 0 | 5.0 | 0 | 7.6/0 | RX/TX |

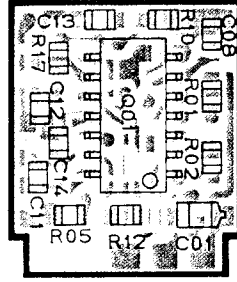
| Chip-Only Side (DC VOLTS) | | | | | | | | |
|---------------------------|---------|-------|------|------------|-------|-----|------|---------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | REMARKS |
| RX 5V | SAVE 5V | TX 5V | CALL | ALERT CNTL | SQ SW | TSQ | +B | |
| 4.7/0 | 4.8 | 0/4.8 | 0 | 0 | 0 | 0 | 12.0 | RX/TX |

IDC UNIT



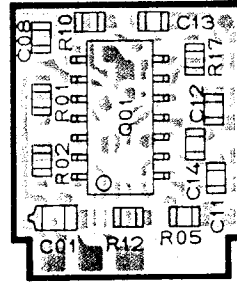
① ② ③

(Obverse view of "diode" side)



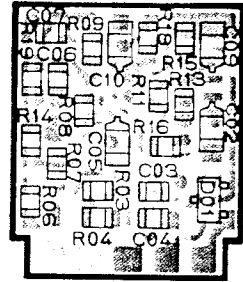
⑤ ④ ③ ② ①

(Obverse view of "IC" side)



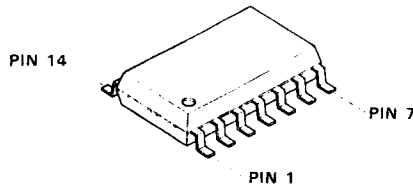
① ② ③ ④ ⑤

(Reverse view of "IC" side)

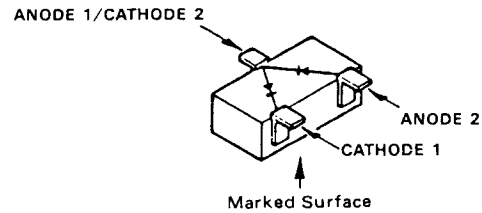


③ ② ①

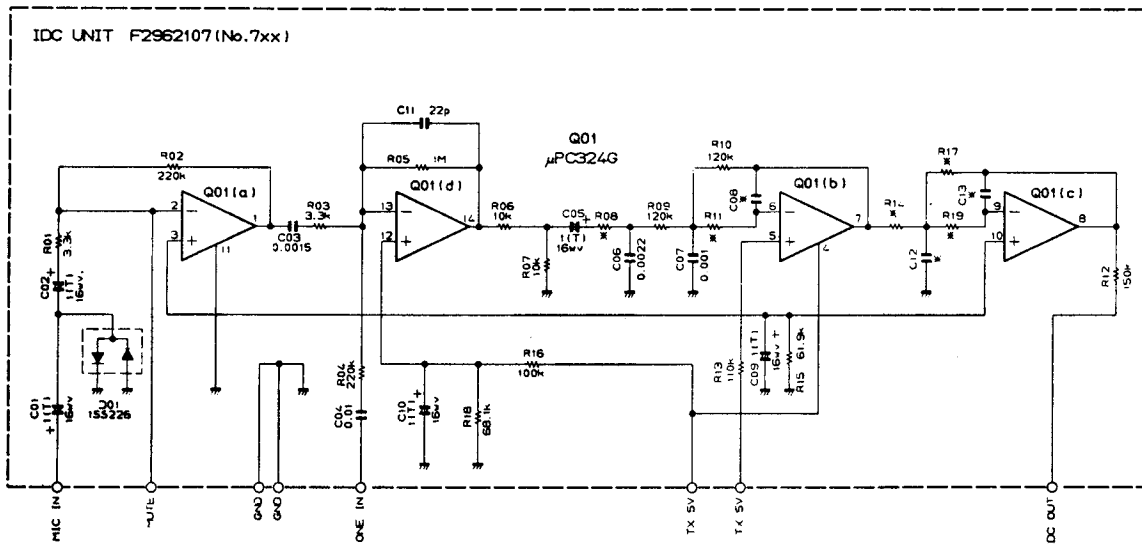
(Reverse view of "diode" side)



μPC324G(Q701)



1SS226(C3)(D701)



RESISTOR VALUES ARE IN Ω, 1/10W;
CAPACITOR VALUES ARE IN μF, 50V;
UNLESS OTHERWISE NOTED.
TTCAPACITORS ARE TANTALUM.

* SEPARATION

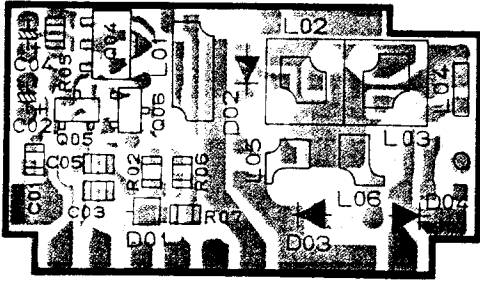
| | A/B | | C | |
|-----|---------|----------|---------|----------|
| | 12.5kHz | 20/25kHz | 12.5kHz | 20/25kHz |
| R05 | 22k | 22k | 33k | 27k |
| R11 | 150k | 180k | 150k | 180k |
| R14 | 120k | 150k | 120k | 150k |
| R17 | 120k | 150k | 120k | 150k |
| R19 | 150k | 0 | 150k | 0 |
| C08 | 150p | 100p | 150p | 100p |
| C12 | 0.001 | — | 0.001 | — |
| C13 | 150p | — | 150p | — |

| "DIODE" Side (DC VOLTS) | | | |
|-------------------------|---------|-------|---------|
| 1 | 2 | 3 | REMARKS |
| GND | TONE IN | TX 5V | |
| 0 | 0 | 0/4.9 | RX/TX |

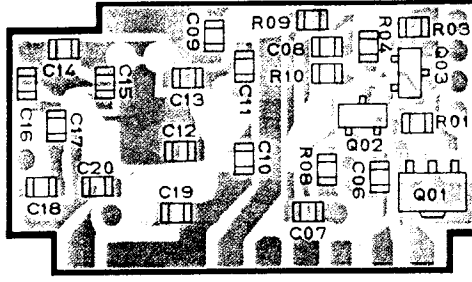
| "IC" Side (DC VOLTS) | | | | | REMARKS |
|----------------------|-------|-------|---------|-----|---------|
| 1 | 2 | 3 | 4 | 5 | |
| MIC IN | MUTE | TX 5V | MOD OUT | GND | |
| 5.0/2.8 | 0/1.8 | 0/4.9 | 0/0.3 | 0 | RX/TX |

For Service Manuals Contact
MAURITRON TECHNICAL SERVICES
 8 Cherry Tree Rd, Chinnor
 Oxon OX9 4QY
 Tel:- 01844-351694 Fax:- 01844-352554
 Email:- enquires@mauritron.co.uk

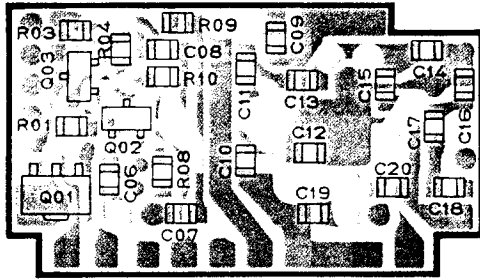
ANT SW UNIT



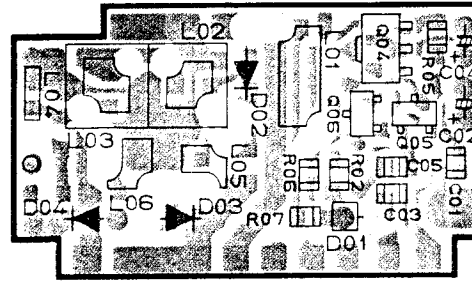
① ② ③ ④
(Obverse view of "mixed-component" side)



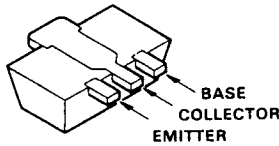
⑦ ⑥ ⑤ ④ ③ ② ①
(Obverse view of "chip-only" side)



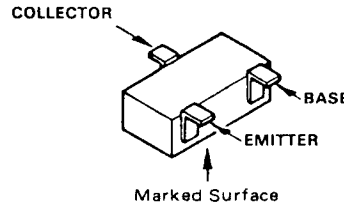
① ② ③ ④ ⑤ ⑥ ⑦
(Reverse view of "chip-only" side)



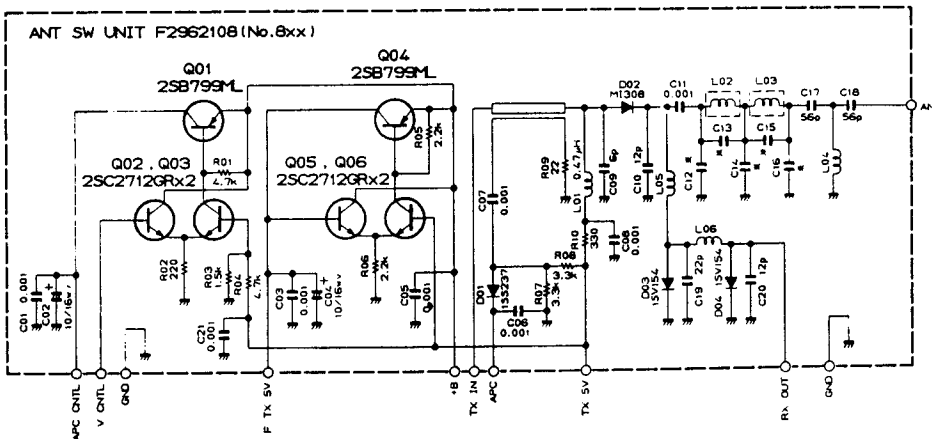
④ ③ ② ①
(Reverse view of "mixed-component" side)



2SB799(ML)
(Q801, Q804)



2SC2712GR(LG)
(Q802, 803, 805, 806)



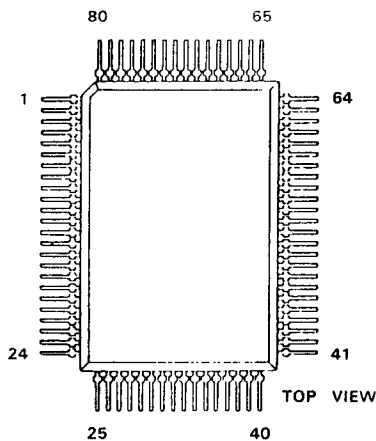
| | * BAND | | |
|-----|--------|-----|-----|
| | A | B | C |
| C12 | 15p | 12p | 10p |
| C13 | 9p | 10p | 9p |
| C14 | 27p | 18p | 18p |
| C15 | 9p | 10p | 9p |
| C16 | 15p | 12p | 10p |

RESISTOR VALUES ARE IN Ω, 1/10W;
CAPACITOR VALUES ARE IN μF, 50V;
UNLESS OTHERWISE NOTED.

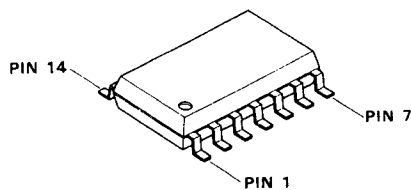
| Mixed-Component Side (DC VOLTS) | | | | |
|---------------------------------|--------|-----|--------|---------|
| 1 | 2 | 3 | 4 | REMARKS |
| F. TX 5V | V CNTL | GND | RX OUT | |
| 0/5.0 | 0/1.4 | 0 | 0/0.7 | RX/TX |

| Chip-Only Side (DC VOLTS) | | | | | | | |
|---------------------------|------|---------|-------|-----|-------|-----|---------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | REMARKS |
| APC CNTL | +B | APC OUT | TX 5V | GND | TX IN | GND | |
| 1.5/11.5 | 12.0 | 0/2.3 | 0/4.9 | 0 | 0 | 0 | RX/TX |

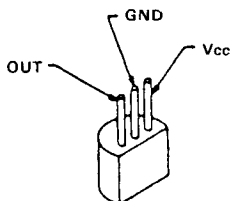
CNTL UNIT



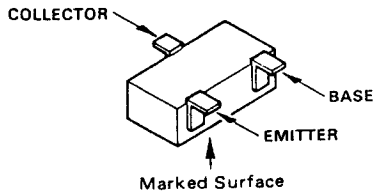
HD613901B29/B35(Q101)



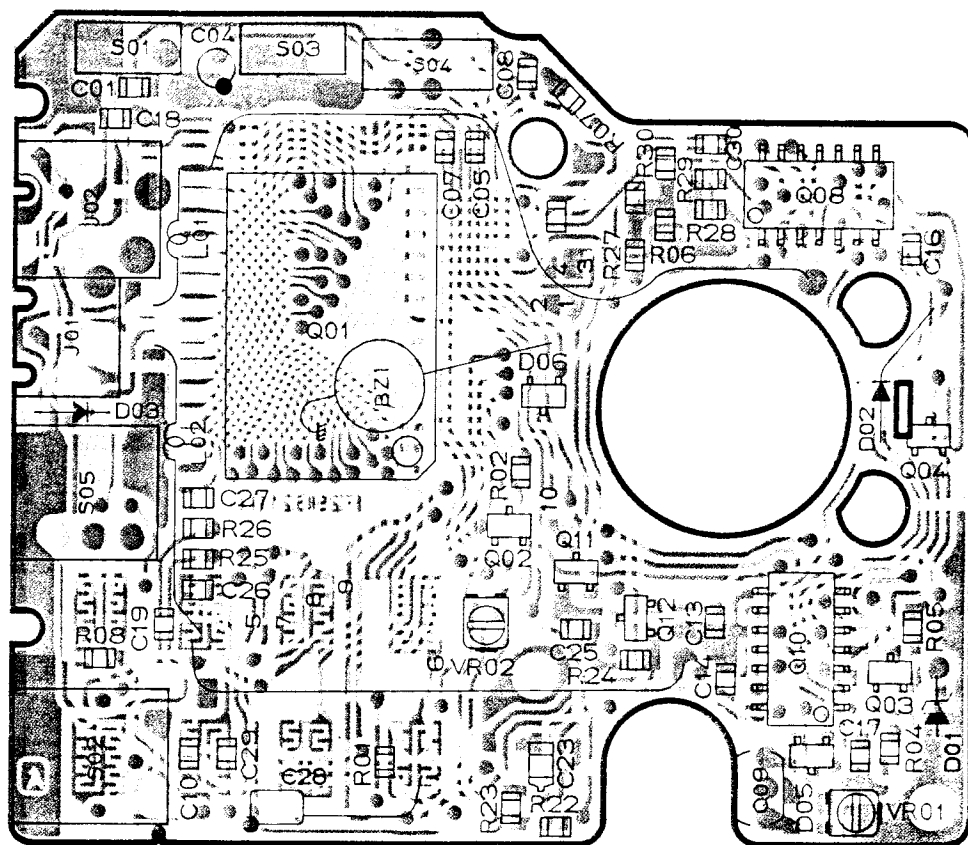
μPD4001BG(Q108)
μPD4066BG(Q110)



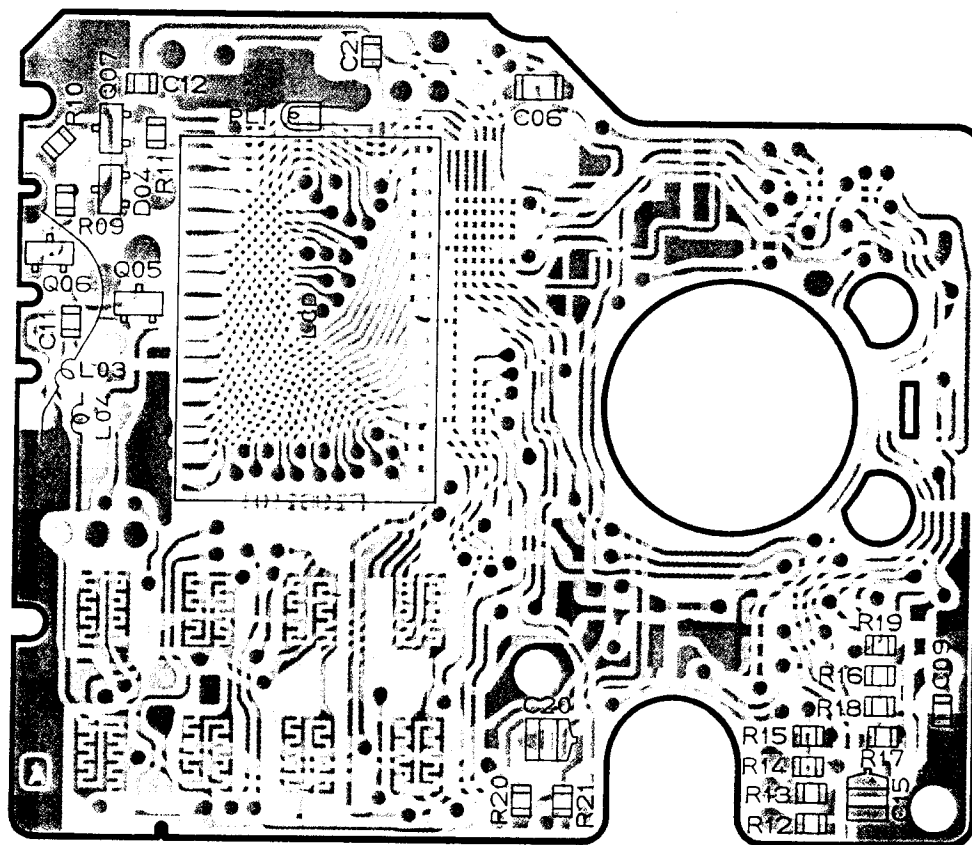
PST523C-2(Q109)



2SA1162GR(SG)(Q104,112)
2SC2712GR(LG)
(Q103,106,107)
FA1A4M(L33)(Q111)
FA1L4M(L31)(Q105)
FN1A4P(M34)(Q102)

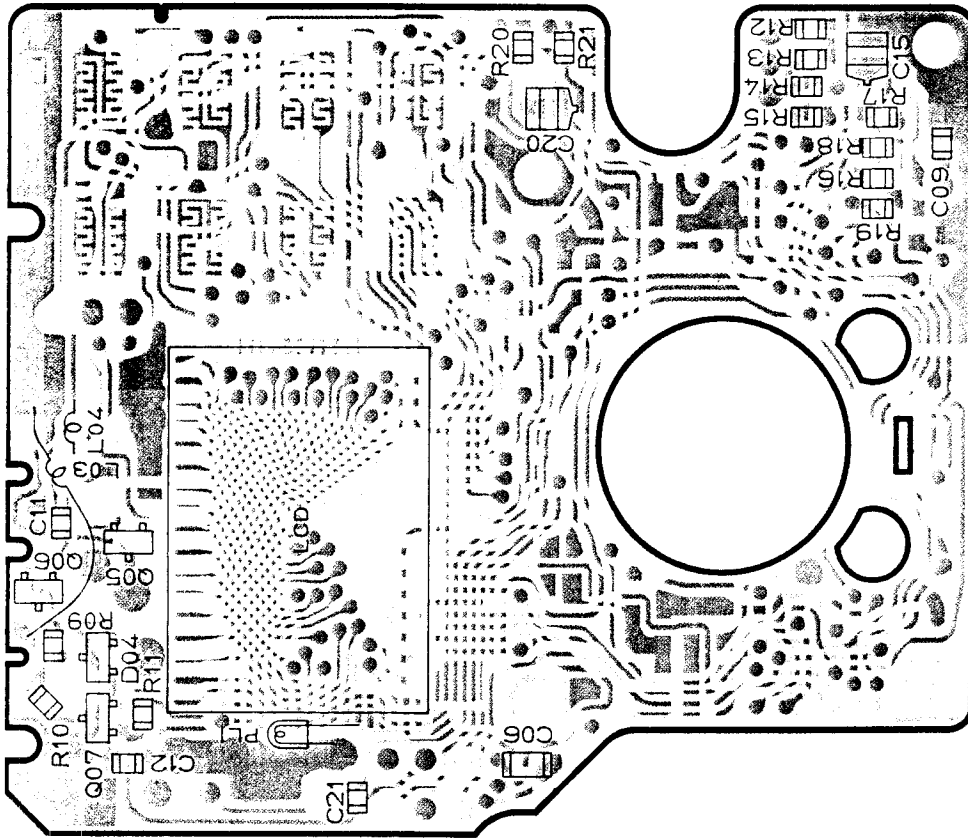


(Obverse view of "IC" side)

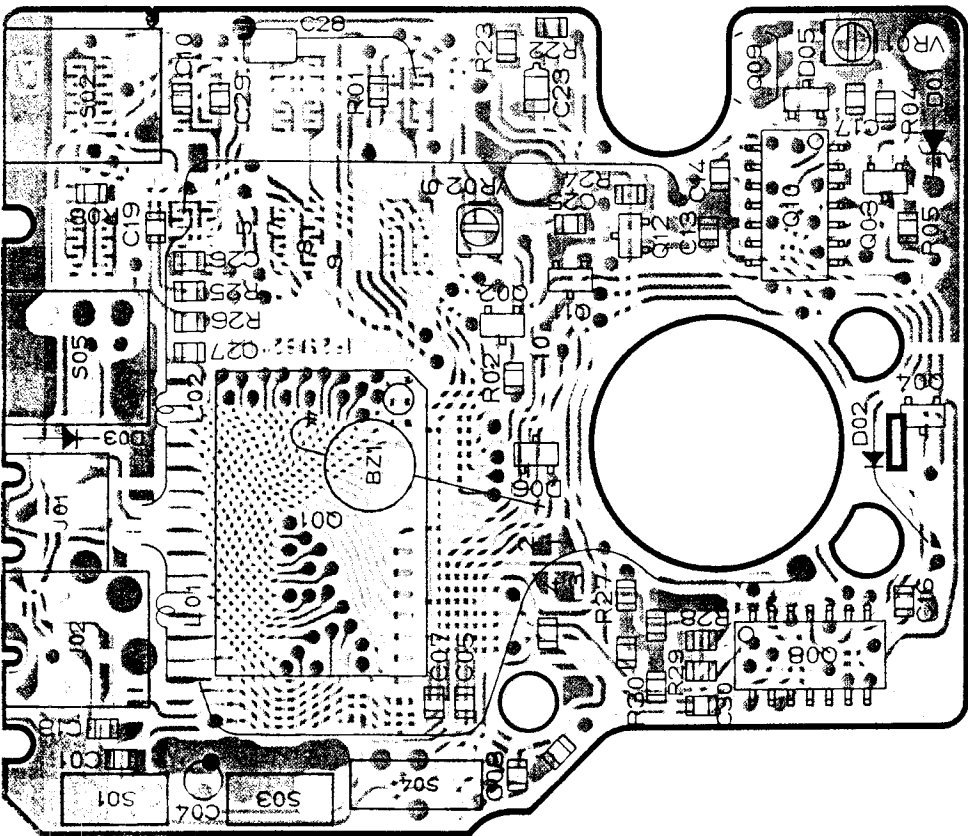


(Reverse view of "LCD" side)

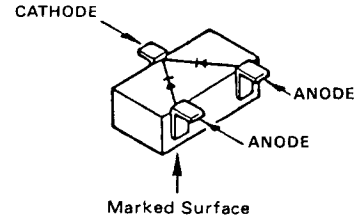
CNTL UNIT



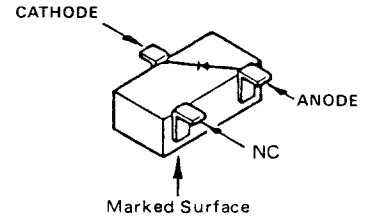
(Obverse view of "LCD" side)



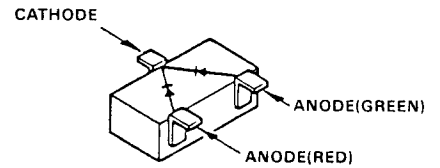
(Reverse view of "IC" side)



1SS184(B3)(D105)



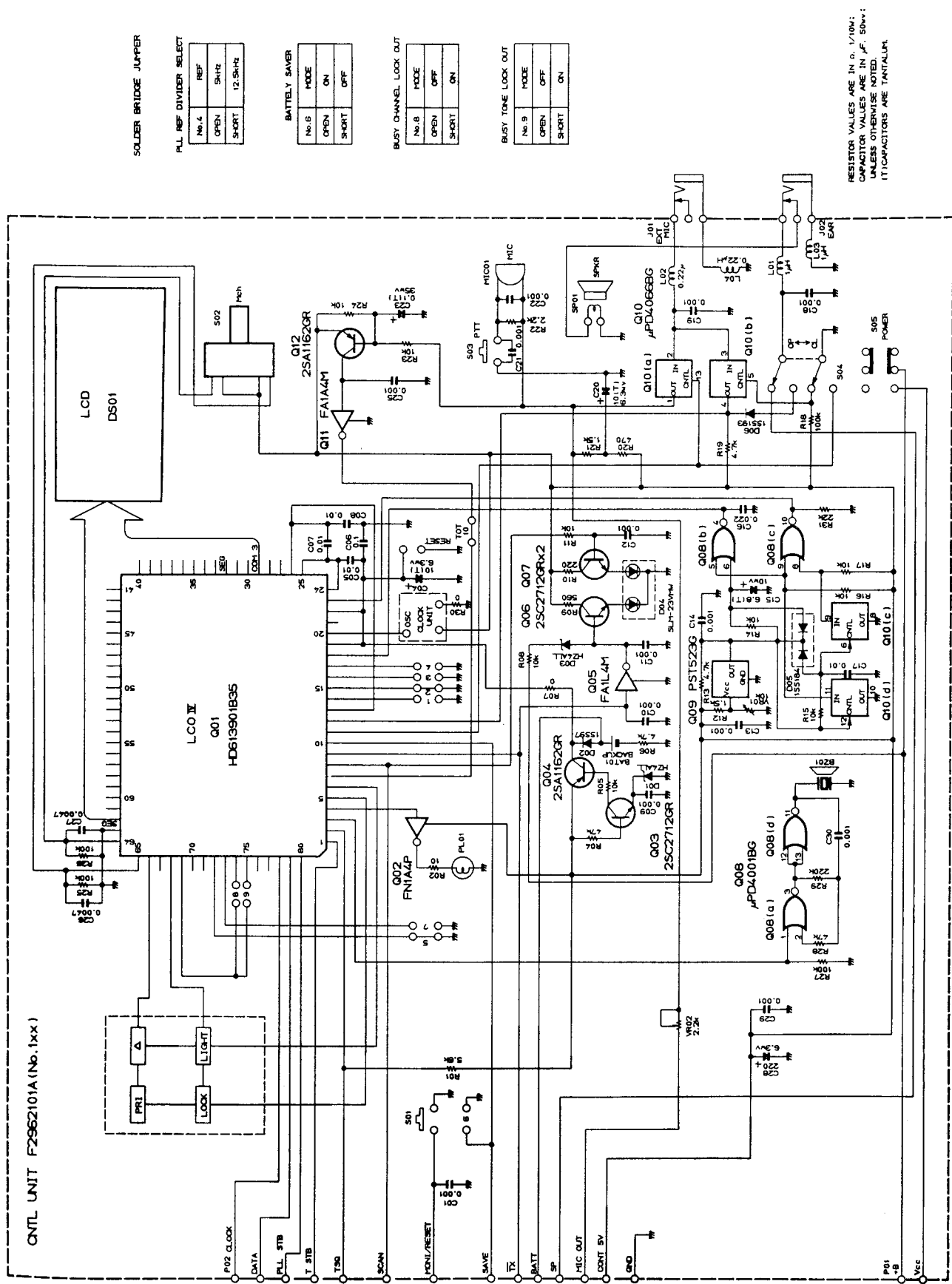
1SS193(F3)(D106)



SLM-23VMW(D104)

For Service Manuals Contact
MAURITRON TECHNICAL SERVICES
 8 Cherry Tree Rd, Chinnor
 Oxon OX9 4QY
 Tel:- 01844-351694 Fax:- 01844-352554
 Email:- enquiries@mauritron.co.uk

CNTL UNIT



CNTL UNIT F2962101A (No. 1xx)

SOLDER BRIDGE JUMPER

PLL REF DIVIDER SELECT

| | |
|-------|---------|
| No. 4 | REF |
| OPEN | 5MHz |
| SHORT | 12.5MHz |

BATTERY SAVER

| | |
|-------|------|
| No. 6 | MODE |
| OPEN | ON |
| SHORT | OFF |

BUSY CHANNEL LOCK OUT

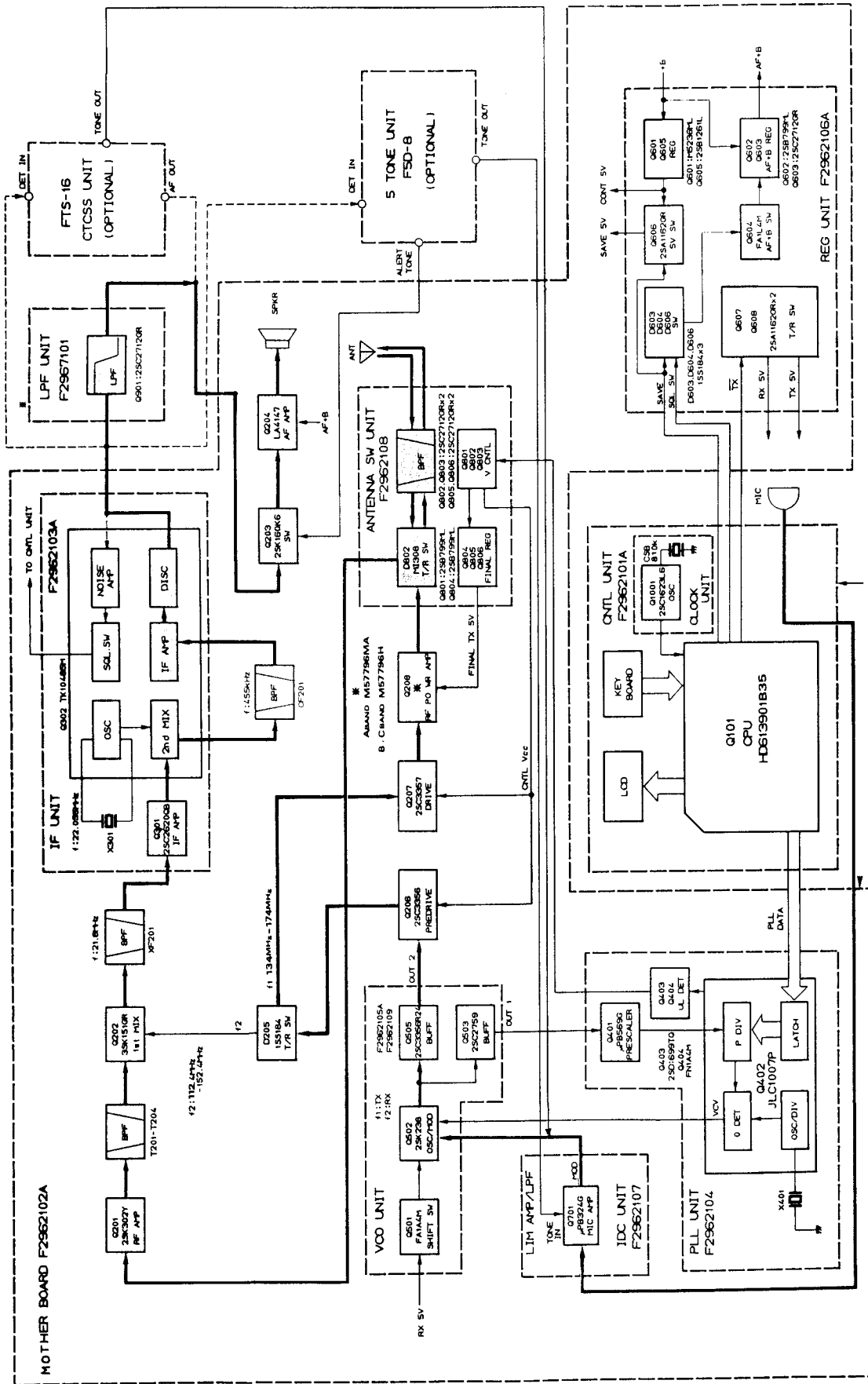
| | |
|-------|------|
| No. 8 | MODE |
| OPEN | OFF |
| SHORT | ON |

BUSY TONE LOCK OUT

| | |
|-------|------|
| No. 9 | MODE |
| OPEN | OFF |
| SHORT | ON |

RESISTOR VALUES ARE IN Ω , 1/10W;
CAPACITOR VALUES ARE IN μ F, 50V+;
UNLESS OTHERWISE NOTED.
††CAPACITORS ARE TANTALUM.

BLOCK DIAGRAM



FTH-2006
BLOCK DIAGRAM

* FTZ ONLY
 → RECEIVE
 → TRANSMIT
 - - - CONTROL

CIRCUIT DESCRIPTION

Refer to the block diagram on the facing page when reading this description. For finer details refer to the schematic diagrams.

Receiver

Incoming signals at the antenna are passed through a lowpass filter and t/r switching diode on the Ant Sw Unit before delivery to the front end circuitry on the Mother Board. Here, RF amplifier FET Q201 (2SK302Y) boosts the signal prior to filtering by a 3-stage varactor-tuned resonator, and application to first mixer FET Q202 (3SK151GR) along with the first local signal from Local Amplifier Q206 (2SC3356-R24).

The 21.6 MHz product from the first mixer is delivered through 4-pole monolithic crystal filter XF101 (± 7.5 kHz BW) on the Mother Board to first IF amplifier Q301 (2SC2620QB) on the IF Unit.

FM receiver sub-system IC Q302 (TK10485M) on the IF Unit includes local oscillator, mixer, IF limiter amplifier and FM detector circuits. The amplified first IF signal is applied to the mixer section, along with the second local signal internally generated via 22.055 MHz crystal X301. The 455 kHz product is then passed back to ceramic filter CF201 (± 6 kHz BW) on the Mother Board, and returned to Q302 for second IF amplification and limiting to remove amplitude variations before application to the discriminator.

The resulting audio output from Q302 is delivered from the IF Unit to the Tone Unit connector. If no tone unit is installed, the audio is de-emphasized by R904 (at the connector) and C220 near audio amplifier Q204 (LA4147) as it is passed through tone gate Q203 (2SK160K16) before passing through VOL potentiometer VR202 to the amplifier and speaker or earphone. If a Tone Squelch Unit is installed, resistance for the de-empha-

sis network is provided on that unit. If the F5D-8A 5-Tone Unit is installed and armed, Q203 keeps the receiver audio off until the preprogrammed 5-tone code is received and decoded.

When no signal is being received, high frequency noise is present at the output of the discriminator stage of Q302 on the IF Unit. This noise is sampled and band-pass filtered by R311-314, C311 and C312, and then amplified by a noise amplifier in Q302, the output of which is rectified by D301 to provide DC for squelch switching. This squelch control DC (the level of which is adjustable by the operator via Squelch control VR201) is amplified within Q302, providing a squelch gate control signal output at pin 17, which is passed to squelch gate Q604 (FA1L4M) on the Regulator Unit. Q604, along with Q602 (2SB799ML) and Q603 (2SC2712GR), turns off the supply voltage to AF amplifier Q204, disabling it when no signal is received. A sample of the squelch gate control signal also causes ON AIR/BUSY indicator LED D104 (SLM-23VMW, via Q107, 2SC2712GR, on the Control Unit) to glow green when the squelch is open.

Transmitter

When the push-to-talk switch is pressed, audio from the microphone is amplified by one section of microphone audio processing quad opamp IC Q701 (μ PC324G) on the IDC Unit. After pre-emphasis by C703 and R703, another section of Q701 serves as an IDC (instantaneous deviation control) amplifier to prevent overdeviation from excessive microphone levels, and the two remaining states provide lowpass filtering to suppress out-of-band modulation, and buffering.

Processed audio from the IDC Unit is delivered to the VCO Unit where it is applied to varactor diodes D502 and D503 (1T33 x 2) to

CIRCUIT DESCRIPTION

modulate VCO FET Q502 (2SK238K17), which oscillates at the transmit frequency. A sample of the VCO oscillating frequency is taken at T501 and buffered and amplified by Q206 (2SC3356) and driver Q207 (2SC3357) on the Mother Board before final amplification up to 1 watt by RF power module Q208 (M57796).

The transmit signal is passed through t/r switching diode D802 on the Ant Sw Unit, and then lowpass filtered by L802, L803 and C812-C816) to suppress harmonics before application to the antenna.

Transmitter output is controlled by Q804 (2SB799ML), Q805 and Q806 (2SC2712GR x 2) on the Ant Sw Unit. When the TX 5V line (from the Regulator Unit) is active, bias voltage is applied to the RF power module, turning it on. A sample of the RF output at the stripline is rectified by D801 and amplified by Q802 (2SC2712GR), Q801 (2SB799ML) and Q803 (2SC2712GR). The resulting Automatic Power Control voltage is fed back to Q206 and Q207 to regulate their amplification of the transmitting RF. This circuit is also used by the PLL to disable the transmitter when the PLL is unlocked.

PLL

The first local signal for the receiver (124.4-152.4 MHz), and the carrier for the transmitter (at the transmit frequency) are generated by the PLL. This circuit consists of a voltage-controlled oscillator (VCO), prescaler, programmable divider, reference oscillator, phase detector, charge pump and lowpass filter.

The VCO (on the VCO Unit) consists of Q502 and varactor diodes D502 and D503 (mentioned above). The oscillating frequency is controlled primarily by the level of DC voltage fed from the loop filter (lowpass filter) to the varactor diodes. The VCO output is buffered by Q503 (2SC2759U23), and then delivered to prescaler Q401 (uPB569G) on the PLL Unit, which divides the VCO frequency by 64 or 65 according to

a control signal from the prescaler control logic section of PLL subsystem IC Q402 (JLC1007P).

The divided signal from the prescaler is fed to the programmable divider section of Q402, where it is further divided down to 5 kHz according to data from microprocessor Q101 on the Control Unit. Meanwhile, the reference oscillator section of Q402 generates the reference frequency with crystal X401, which signal is divided by Q402.

The reference and the divided VCO signal are applied together to the phase detector section of Q402, from which any phase difference between the two signals results in a pulse train from the phase detector. The pulses are applied to the charge pump section of Q402 and then through a lowpass filter (R410-412 and C413-415), to produce a DC voltage at a level corresponding to the difference in phase between the reference and the divided VCO signal. This DC voltage is returned to the varactor diodes on the VCO Unit, locking the frequency of the VCO to the crystal reference oscillator.

Control Unit & Supply Buses

Microprocessor Q101 (HD613901B35) on the Control Unit contains programming in masked ROM to generate serial data to control the programmable divider in the PLL according to channel frequency data stored in externally programmable static RAM (backed up by lithium battery BAT101 when power is switched off). Q101 also includes programming and driver logic for the Liquid Crystal Display, and for channel frequency scanning. Jumpers are installed during manufacture to select channel steps and frequency range.

The microprocessor receives an indication of the condition of the noise squelch from the FM receiver subsystem IC on the IF Unit, by which scanning is activated or deactivated.

CIRCUIT DESCRIPTION

Q101 also controls the power saver function and transmit/receive switching by selecting the supply buses on the Regulator Unit: Q607, Q608 (2SA1162GR x 2) and Q609 (FA1L4M) select the TX or RX 5V bus from voltage regulators Q601 (M5236ML) and Q605 (2SB1261-L), and Q606 (2SA1162GR) disables the RX 5V bus when the power saver is active. Also on the Regulator Unit, the power saver disables the receiver audio amplifier as described previously for the squelch gate.

When the push-to-talk switch is pressed, the impedance change on the microphone line is detected by Q112 (2SA1162GR), and transformed into low impedance switching by Q111 (FA1A4M) for the microprocessor and control of other circuits. The microprocessor activates Q105 (FA1L4M) and Q106 (2SC2712GR) which causes LED indicator D104 to glow red (ON AIR).

Voltage comparator Q109 (PST523G), analog switch Q110 (uPD4066BG) and NAND gate Q108 (uPD4001BG) control power-up resetting of the microprocessor, external/internal microphone and speaker/earphone selection, and provide an oscillator for the beeper.

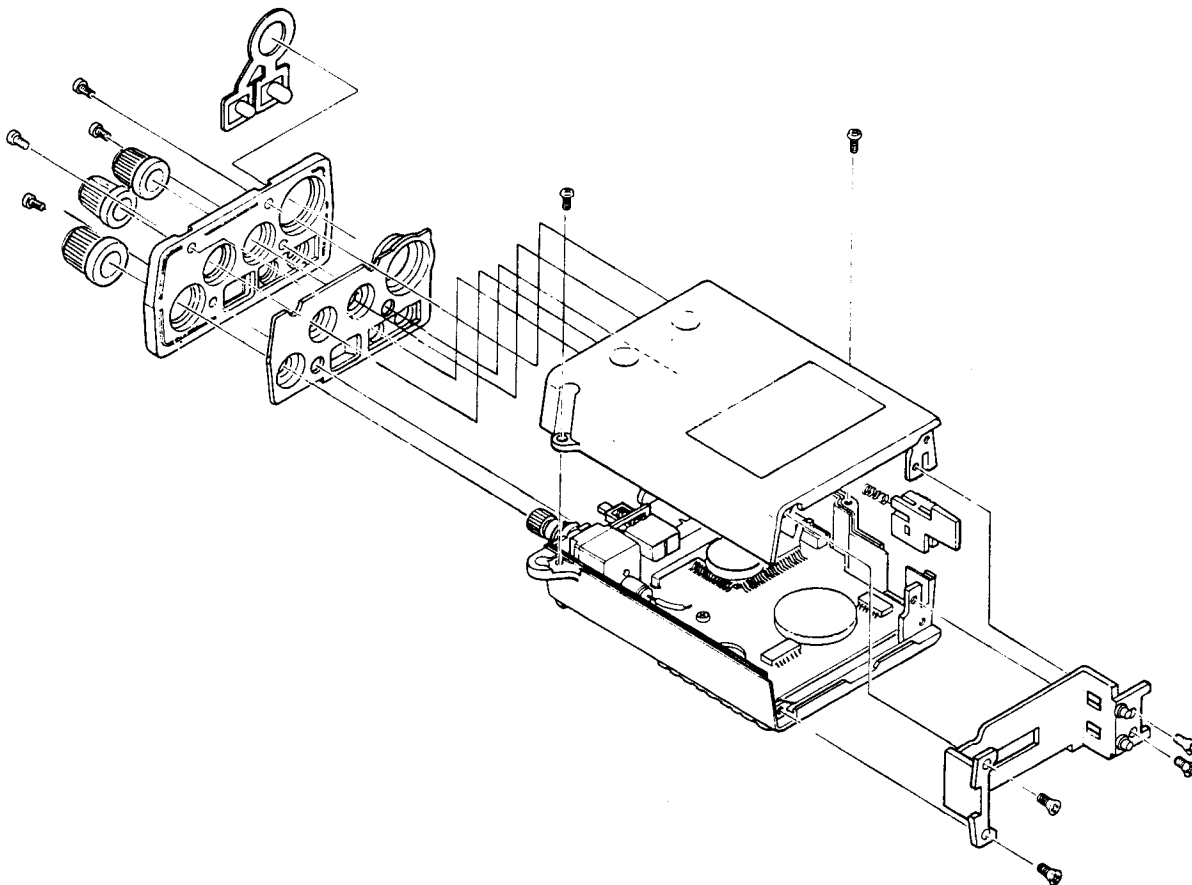
For Service Manuals Contact
MAURITRON TECHNICAL SERVICES
8 Cherry Tree Rd, Chinnor
Oxon OX9 4QY
Tel:- 01844-351694 Fax:- 01844-352554
Email:- enquiries@mauritron.co.uk

ALIGNMENT

The FTH-2006 has been aligned at the factory for the specified performance across the frequency range specified for each version. Realignment should therefore not be necessary except in the event of a component failure, or alteration of version. All component replacement and service should be performed only by an authorized Yaesu representative, or the warranty policy may be voided.

Case Disassembly

- (1) Make sure the transceiver is off. Remove the hard or soft protective case, if used, and remove the battery pack.
- (2) Remove the four screws affixing the battery spring plate on the bottom of the transceiver, and carefully remove the plate.
- (3) Pull off the top panel knobs, and then remove the four screws affixing the top panel, and carefully remove the panel and rubber gasket under it.
- (4) Remove the two screws affixing the front and rear halves of the case, and gently separate the halves, using care not to stress the interconnecting wires.



ALIGNMENT

Alignment Equipment

Yaesu FYG-5 PROM Writer
Frequency counter with accuracy of 0.1ppm to 200 MHz
DC voltmeter with at least 10-Megohm input impedance
AF millivoltmeter
DC ammeter ranging to 2A
RF in-line wattmeter with 5% accuracy to 200 MHz
Resistive dummy load, 50 ohms, 10W at 200 MHz
RF signal generator covering up to 200 MHz, with calibrated output levels from 5dBu to 100dBu
AF signal generator with calibrated output levels from 1mV to 25mV
AF amplifier and Loudspeaker
Phon meter
RF sampling coupler "T"
Deviation meter
External loudspeaker (8-ohm, 1W) or 8-ohm load resistor
Regulated DC power supply, 12V @ 2A

Alignment Precautions

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 and 30 °C (68 to 86 °F). When the transceiver is brought into the shop from hot or cold air,

it should be allowed some time for thermal equalization before alignment.

Alignments must only be made with oscillator shields and circuit boards firmly affixed in place. Also, the test equipment must be thoroughly warmed up before beginning.

Alignment values assume a DC supply voltage of 12.0V.

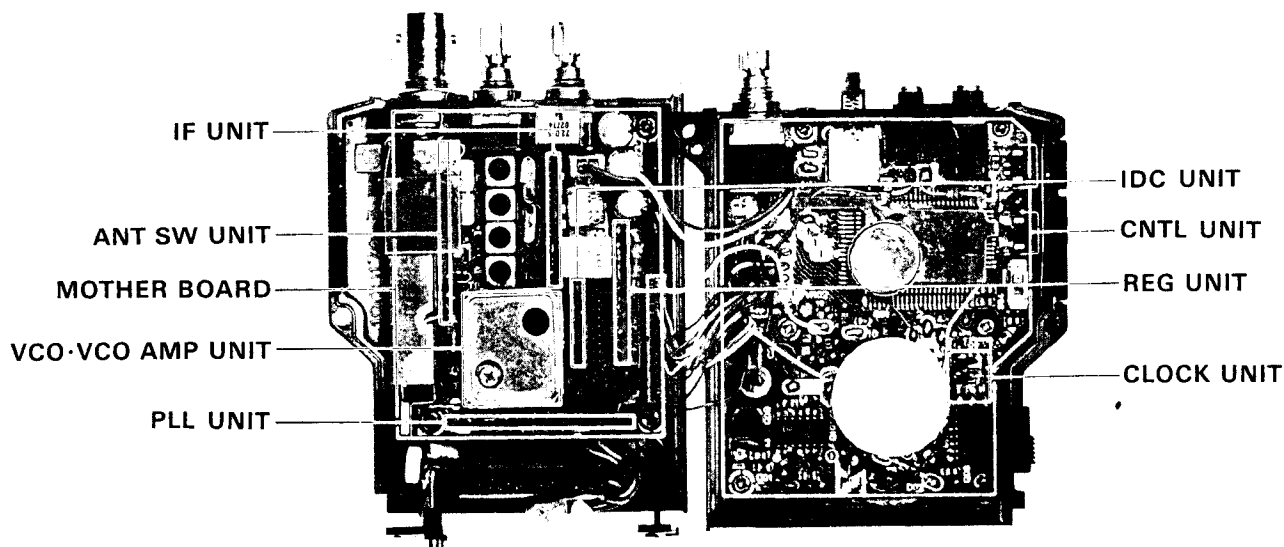
Note: Signal levels in dB referred to in the alignment procedure are based on 0dBu = 0.5uV.

Alignment Channel Frequencies

Before beginning alignment, make note of all channel frequencies used in the transceiver. Then use the FYG-5 to set the transceiver to the frequencies indicated below for the version being aligned.

Alignment Channels (MHz)

| <u>Version</u> | <u>Low Edge</u> | <u>Center</u> | <u>High Edge</u> |
|----------------|-----------------|---------------|------------------|
| A | 134 | 140 | 146 |
| B | 146 | 153 | 160 |
| C | 160 | 167 | 174 |
| AS1 | 140 | 146.5 | 153 |
| BS1 | 153 | 160 | 167 |
| BS2 | 156 | 163 | 170 |



BOARD LAYOUT

ALIGNMENT

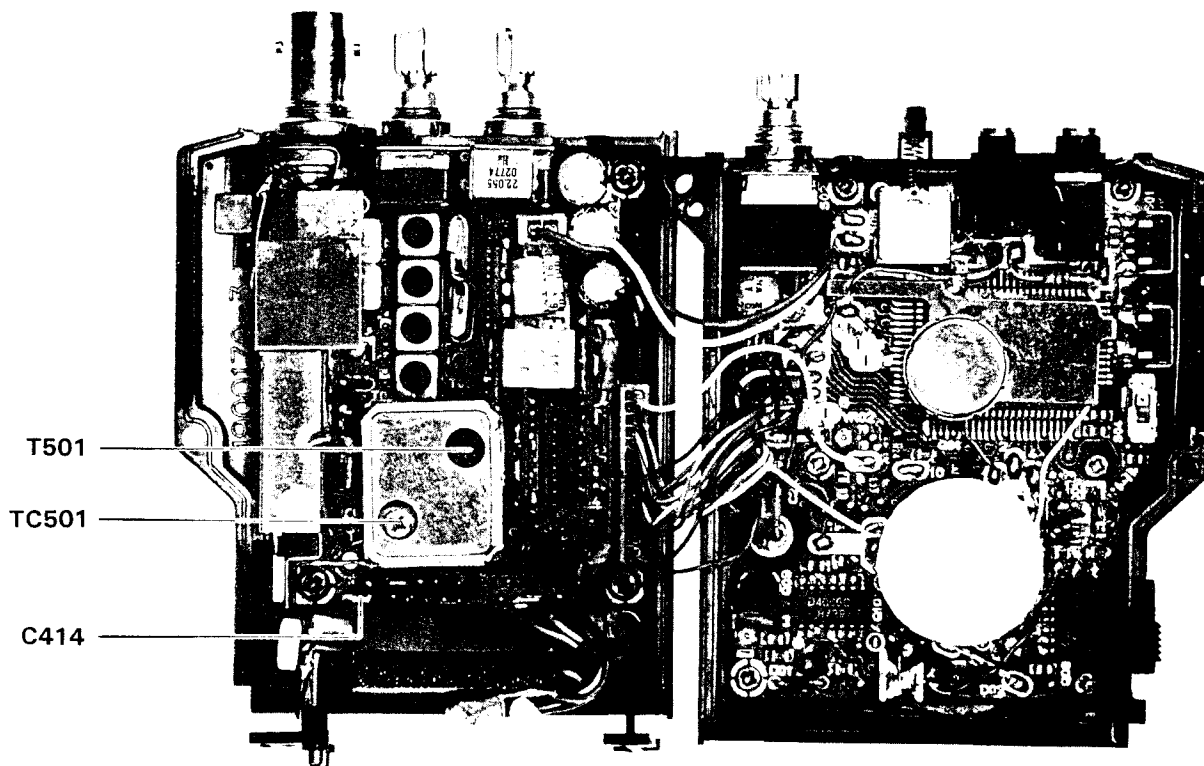
I. PLL

A. VCV (Varactor Control Voltage)

1. Connect the DC voltmeter between C414 on the PLL Unit and chassis ground.
2. Referring to the chart below, set the transceiver first to the Adjustment Frequency, close the PTT switch and adjust transformer T501 on the VCO Unit for the corresponding TX Adjustment Voltage on the voltmeter. Release the PTT switch.
3. Adjust trimmer TC501 on the VCO Unit for the corresponding RX Adjustment Voltage on the meter while receiving.
4. Finally, set the transceiver to the Check Frequency, close the PTT and confirm the corresponding TX Check Voltage; and then do the same for the RX Check Voltage while receiving.

PLL VCV ALIGNMENT CHART

| Version | Adjustment | | Check | | | |
|---------|-----------------|-----|-------|-----------------|------|------|
| | Frequency (MHz) | TX | RX | Frequency (MHz) | TX | RX |
| A | 134 | 1.0 | 0.8 | 146 | ≤4.0 | ≤4.0 |
| B | 146 | 1.0 | 0.8 | 160 | ≤4.0 | ≤4.0 |
| C | 160 | 1.5 | 0.8 | 174 | ≤4.0 | ≤4.0 |
| AS1 | 153 | 2.5 | 3.6 | 140 | ≥1.0 | ≥0.8 |
| BS1 | 167 | 2.5 | 3.6 | 167 | ≥1.0 | ≥0.8 |
| BS2 | 170 | 2.5 | 3.6 | 156 | ≥1.0 | ≥0.8 |



PLL SECTION ALIGNMENT POINTS

ALIGNMENT

II. TRANSMITTER

Set up the test equipment as shown at the right.

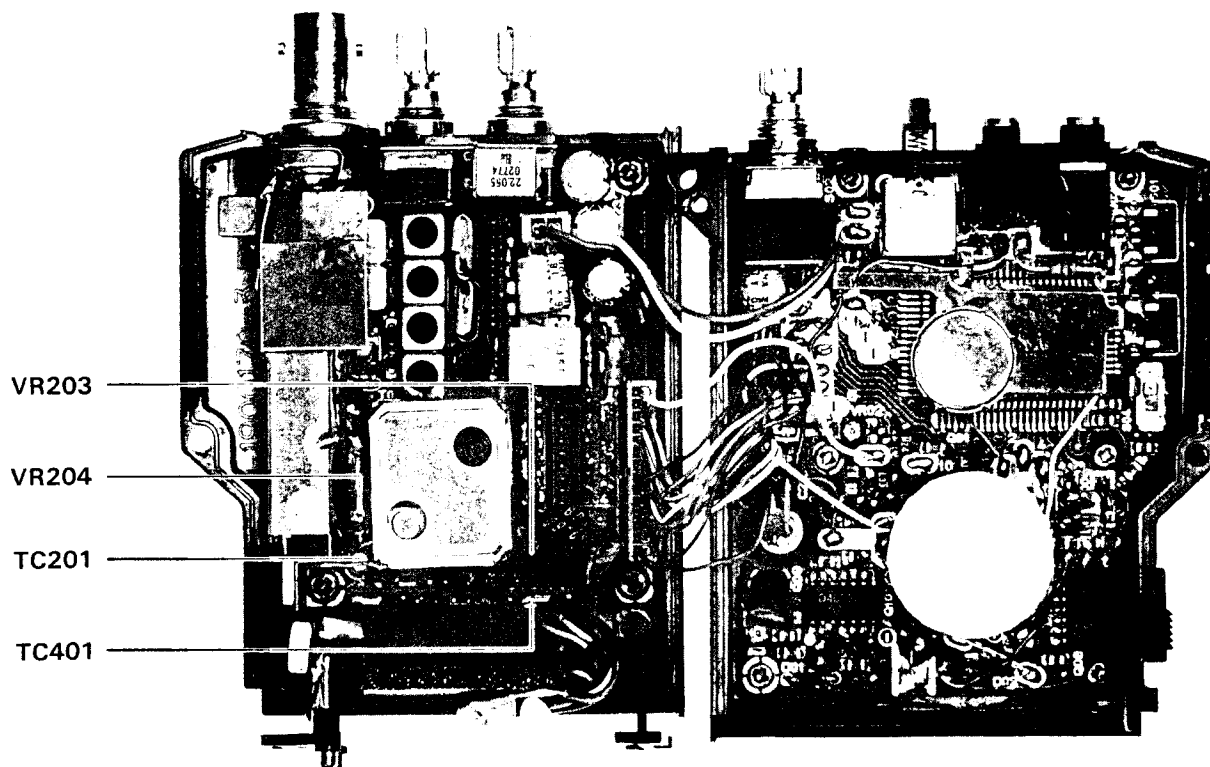
A. Output Power

1. Select the center channel and set the LOW power switch to the undepressed position.
2. Adjust TC201 on the Mother Board for peak output power on the watt-meter (at least 5W with less than 1.6A supply current).
3. Adjust VR204 on the Mother Board for 5.0W output.

B. Operating Frequency

1. With the center channel selected, adjust TC401 on the PLL Unit, if necessary, so the frequency counter matches that programmed in the center channel.

For Service Manuals Contact
MAURITRON TECHNICAL SERVICES
8 Cherry Tree Rd, Chinnor
Oxon OX9 4QY
Tel:- 01844-351694 Fax:- 01844-352554
Email:- enquiries@mauritron.co.uk



TRANSMITTER SECTION ALIGNMENT POINTS

ALIGNMENT

C. Modulation Level

If the FTS-16 is installed:

1. While set to the center of the band, set the CTCSS frequency to 151.4 Hz and the encoder ON.
2. Press the PTT switch and with no microphone input, adjust VR01 on the FTS-16 for the deviation corresponding to the minimum channel spacing of the version being aligned:

| <u>Min. Channel Spacing</u> | <u>Deviation</u> |
|-----------------------------|------------------|
| 25kHz | ± 0.5 kHz |
| 20kHz | ± 0.4 kHz |
| 12.5kHz | ± 0.35 kHz |

3. Keeping the encoder ON, perform the following steps (for the FTS-16 being NOT installed).
4. Repeat steps 2 and 3 several times.

If the FTS-16 Tone Squelch Unit is NOT installed:

1. While set to the center of the band, set the AF generator for 25mV injection at 1 kHz.
2. Press the PTT switch and adjust VR203 on the Mother Board for the deviation corresponding to the minimum channel spacing of the version being aligned:

| <u>Min. Channel Spacing</u> | <u>Deviation</u> |
|-----------------------------|------------------|
| 25kHz | ± 4.2 kHz |
| 20kHz | ± 3.4 kHz |
| 12.5kHz | ± 2.1 kHz |

D. Microphone Sensitivity

1. Connect the AF generator, set for 1 kHz, through an amplifier to a loudspeaker placed in front of the microphone on the front panel of the transceiver. Adjust the AF tone level for 95 phon (FTZ) or 94 phon (CCIR) on a phon meter placed 4 cm from the microphone during the following step.
2. Press the PTT switch and adjust VR203 for 80% ± 5% of the maximum deviation set in the preceding part (C).

ALIGNMENT

III. RECEIVER

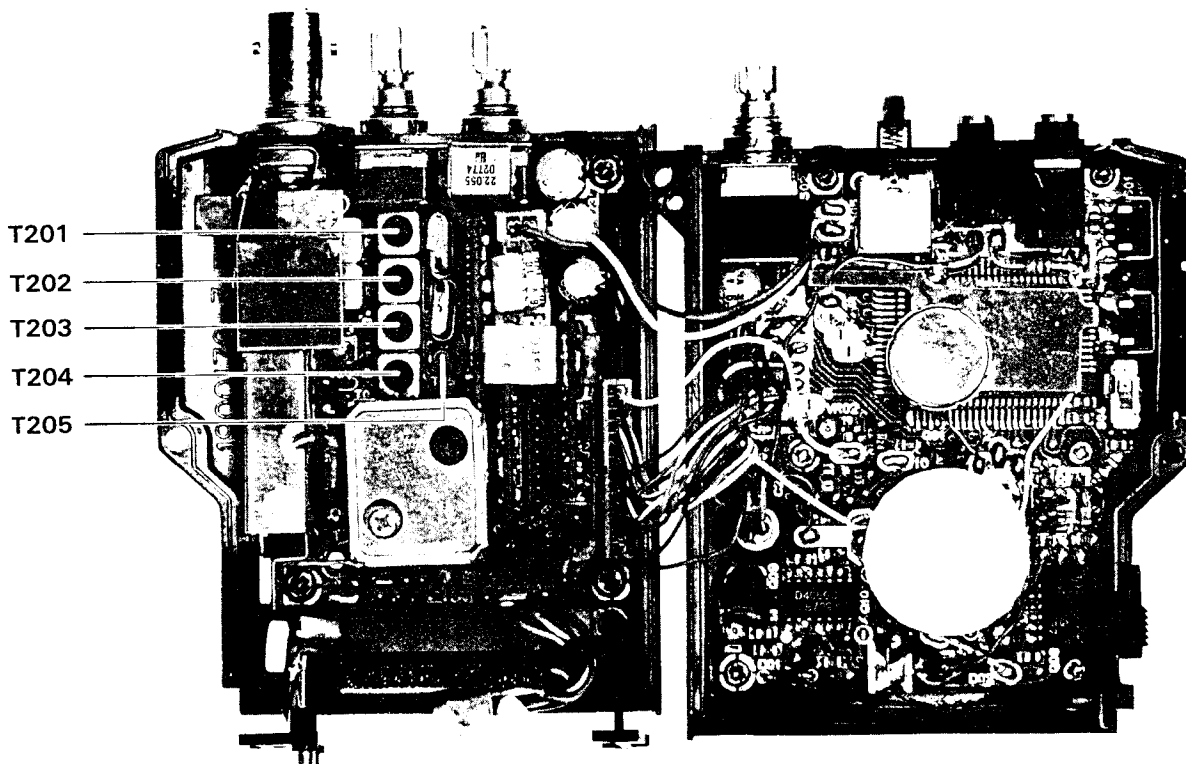
Assemble the test equipment as shown below.

A. Sensitivity

1. Set the transceiver and RF generator to the center channel frequency.
2. Set the RF generator output level to 40dBu with deviation of a 1 kHz modulating tone according to the minimum channel spacing of the version being aligned, as follows:

| <u>Ch. Spacing</u> | <u>Deviation</u> |
|--------------------|--------------------------------|
| 25kHz | ±1.5 kHz |
| 20kHz | ±2.4 kHz (or ±2.8 kHz for FTZ) |
| 12.5kHz | ±3 kHz |

3. Adjust T201 - T205 on the Mother Board for minimum deflection on the deviation meter.



RECEIVER SECTION ALIGNMENT POINTS

PARTS LIST

FTH-2006 PARTS LIST

| Q109 | G1090752 | IC | PST523C-2 | 1/10W | B |
|-------|-----------|---------------|------------------|-------|---|
| Q110 | G1090602 | IC | uPD4066BG | 1/10W | B |
| Q111 | G3070001 | Transistor | FA1A4M-T2B | 1/10W | B |
| Q112 | G3111627G | Transistor | 2SA1162GR TE85R | 1/10W | B |
| D101 | G2090334 | Diode | HZ4ALL | 1/10W | B |
| D102 | G2090118 | Diode | ISS97 | 1/10W | B |
| D103 | G2090334 | Diode | HZ4ALL | 1/10W | B |
| D104 | G2070096 | Diode | SLM-23VMWS T-97B | 1/10W | B |
| D105 | G2070009 | Diode | ISS184 TE85R | 1/10W | B |
| D106 | G2070052 | Diode | ISS193 TE85R | 1/10W | B |
| DS101 | G6090067 | LCD(Prod.1-4) | LR541-A | 1/10W | B |
| DS101 | G6090068 | LCD(Prod.5-) | FTD-8889 | 1/10W | B |
| R101 | J24205562 | Chip Res. | 5.6k Ohm | 1/10W | B |
| R102 | J24205100 | Chip Res. | 10 Ohm | 1/10W | B |
| R104 | J24205472 | Chip Res. | 4.7k Ohm | 1/10W | B |
| R105 | J24205103 | Chip Res. | 10k Ohm | 1/10W | B |
| R106 | J24205561 | Chip Res. | 560 Ohm | 1/10W | B |
| R107 | J24205000 | Chip Res. | 0 Ohm | 1/10W | B |
| R108 | J24205103 | Chip Res. | 10k Ohm | 1/10W | B |
| R109 | J24205561 | Chip Res. | 560 Ohm | 1/10W | B |
| R110 | J24205221 | Chip Res. | 220 Ohm | 1/10W | B |
| R111 | J24205103 | Chip Res. | 10k Ohm | 1/10W | B |
| R112 | J24205152 | Chip Res. | 1.5k Ohm | 1/10W | B |
| R113 | J24205472 | Chip Res. | 4.7k Ohm | 1/10W | B |
| R114 | J24205103 | Chip Res. | 10k Ohm | 1/10W | B |
| R115 | J24205103 | Chip Res. | 10k Ohm | 1/10W | B |
| R116 | J24205103 | Chip Res. | 10k Ohm | 1/10W | B |
| R117 | J24205103 | Chip Res. | 10k Ohm | 1/10W | B |
| R118 | J24205104 | Chip Res. | 100k Ohm | 1/10W | B |
| R119 | J24205472 | Chip Res. | 4.7k Ohm | 1/10W | B |
| R120 | J24205471 | Chip Res. | 470 Ohm | 1/10W | B |
| R121 | J24205152 | Chip Res. | 1.5k Ohm | 1/10W | B |
| R122 | J24205222 | Chip Res. | 2.2k Ohm | 1/10W | B |
| R123 | J24205103 | Chip Res. | 10k Ohm | 1/10W | B |
| R124 | J24205103 | Chip Res. | 10k Ohm | 1/10W | B |
| R125 | J24205104 | Chip Res. | 100k Ohm | 1/10W | B |
| R126 | J24205104 | Chip Res. | 100k Ohm | 1/10W | B |
| R127 | J24205104 | Chip Res. | 100k Ohm | 1/10W | B |
| R128 | J24205473 | Chip Res. | 47k Ohm | 1/10W | B |
| R129 | J24205224 | Chip Res. | 220k Ohm | 1/10W | B |
| R130 | J24205000 | Chip Res. | 0 Ohm | 1/10W | B |
| R131 | J24205223 | Chip Res. | 22k Ohm | 1/10W | B |
| VR101 | J51778103 | Potentiometer | 10k Ohm | 1/10W | B |
| VR102 | J51778222 | Potentiometer | 2.2k Ohm | 1/10W | B |
| C101 | K22170805 | Chip Cap. | 0.001uF | 50V | B |
| C104 | K70087106 | Tantalum Cap. | 10uF | 6.3V | B |
| C105 | K22170817 | Chip Cap. | 0.01uF | 50V | B |
| C106 | K22141809 | Chip Cap. | 0.1uF | 25V | B |
| C107 | K22170817 | Chip Cap. | 0.01uF | 50V | B |
| C108 | K22170817 | Chip Cap. | 0.01uF | 50V | B |
| C109 | K22170805 | Chip Cap. | 0.001uF | 50V | B |

FTH-2006 PARTS LIST

| *** MAIN CHASSIS *** | | 22k Ohm | 1/8W | 50V | B |
|----------------------|--------------------------------------|----------------------------|-----------------|-----|---|
| R1 | J00215223 | Carbon Film Res. | | | |
| C1 | K10176102 | Ceramic Cap. | 0.001uF | | |
| L1 | L0021869 | Toroidal Coil | | | |
| L2 | L0021870 | Toroidal Coil | | | |
| J1 | P1090623 | Connector | BNC-RM-1 | | |
| | R0123530A | Shield Plate | | | |
| | R3511490 | Top Panel | | | |
| | R4900201 | Front Panel | | | |
| | R4900172 | Rear Panel | | | |
| | R7124620 | Speaker Cloth | | | |
| | R7124630 | Microphone Cloth | | | |
| | R3508300 | Rubber Molding (PTT) | | | |
| | R3803650A | Rubber (Top Gasket) | | | |
| | R3507960 | Rubber (Ear & Mic Plug) | | | |
| | R3507930A | Window | | | |
| | R0126580 | Shield Plate | | | |
| | R3116620 | Knob (VOL & SQL) | | | |
| | R3116390 | Knob (CH) | | | |
| | R7118630 | Microphone Collar | | | |
| | R0125760 | Bevelled Spacer | | | |
| | R0116650B | Bevelled Spacer | | | |
| | R3508311 | Release Botton | | | |
| | R0117370 | Coil Spring | | | |
| | R0508000B | Insulator Assy | | | |
| | R0507951 | Battery Mount Spring Plate | | | |
| | R7120350 | Sheet | | | |
| | R0118930 | Plate | | | |
| | R0118940 | Plate | | | |
| | R7118670A | Rubber Sponge | | | |
| | R3511430 | Rubber Keypad | 4-Key Type | | |
| | R3511560 | Rubber Keypad | 8-Key Type | | |
| | R3511440 | Keypad Collar | 4-Key Type | | |
| | R3511531 | Keypad Collar | 8-Key Type | | |
| *** CNTL UNIT *** | | | | | |
| F2962101B | Printed Circuit Board | | | | |
| C029621AA | PCB with Components (w/o CLOCK Unit) | | | | |
| C029621AB | PCB with Components (w/CLOCK Unit) | | | | |
| Q101 | G1090886 | IC(Prod.1-6) | HD613901B29 | | |
| Q101 | G1090903 | IC(Prod.7-) | HD613901B35 | | |
| Q102 | G3070011 | Transistor | FN1A4P-T2B | | |
| Q103 | G3327127G | Transistor | 2SC2712GR TE85R | | |
| Q104 | G3111627G | Transistor | 2SA1162GR TE85R | | |
| Q105 | G3070013 | Transistor | FA1L4-T2B | | |
| Q106 | G3327127G | Transistor | 2SC2712GR TE85R | | |
| Q107 | G3327127G | Transistor | 2SC2712GR TE85R | | |
| Q108 | G1090601 | IC | uPD4001BG | | |

PARTS LIST

| FTH-2006 PARTS LIST | | FTH-2006 PARTS LIST | |
|---------------------------|-----------|-----------------------|----------------------|
| C110 | K22170805 | Chip Cap. | 50V |
| C111 | K22170805 | Chip Cap. | 50V |
| C112 | K22170805 | Chip Cap. | 50V |
| C113 | K22170805 | Chip Cap. | 50V |
| C114 | K22170805 | Chip Cap. | 50V |
| C115 | K78100003 | Tantalum Chip Cap. | 10V |
| C116 | K22140807 | Chip Cap. | 0.022uF |
| C117 | K22170817 | Chip Cap. | 0.01uF |
| C118 | K22170805 | Chip Cap. | 0.001uF |
| C119 | K22170805 | Chip Cap. | 0.001uF |
| C120 | K78080003 | Tantalum Chip Cap. | 6.3V |
| C121 | K22170805 | Chip Cap. | 0.001uF |
| C122 | K10176102 | Ceramic Cap. | 0.001uF |
| C123 | K78160001 | Tantalum Chip Cap. | 0.01uF |
| C125 | K22170805 | Chip Cap. | 0.001uF |
| C126 | K22170813 | Chip Cap. | 0.0047uF |
| C127 | K22170813 | Chip Cap. | 0.0047uF |
| C128 | K40089010 | Al Electro Cap. | 220uF |
| C129 | K22170805 | Chip Cap. | 0.001uF |
| C130 | K22170805 | Chip Cap. | 0.001uF |
| L101 | L1190283 | RFC | 1uH |
| L102 | L1190275 | RFC | 0.22uH |
| L103 | L1190283 | RFC | 1uH |
| L104 | L1190275 | RFC | 0.22uH |
| BZ101 | M4290005 | Buzzer | EFB-RE-25D07 |
| SP101 | M4090063 | Loudspeaker | 0.2W 7.2 Ohm |
| MC101 | M3290008 | Microphone | EM-78CYE |
| S101 | N5090018 | TACT Switch (MONI) | KHH15951 |
| S102 | N0190139 | Rotary Switch (M CH) | SRBM1L066 |
| S103 | N5090018 | TACT Switch (PTT) | KHH15951 |
| S104 | N6090057 | Slide Switch (Write) | SSSS22 |
| S105 | N4090088 | Push Switch (Power) | SPJ622N09 |
| J101 | P1090369 | Connector (EXT Mic) | HSJ0838-01-010 |
| J102 | P1090370 | Connector (Ear) | HSJ0836-01-010 |
| P101 | T9205675 | Wire Assy | |
| P102 | T9205674 | Wire Assy | |
| BT101 | Q9000366 | Lithium Battery | CR2025-T02 |
| PL101 | Q1000054 | Lamp | NO 7656 6V 35mA |
| | S6000142 | Diffusor | |
| | S2000104 | Rubber Conductor | |
| | R7118920 | Mylar Sheet | |
| | R0129300 | Shield Plate | |
| *** MOTHER BOARD UNIT *** | | | |
| F2962102B | | Printed Circuit Board | |
| | | PCB with Components | |
| | | w/units A,B,C,D,E,F | |
| | | Notes | |
| | | Band A (12.5kHz) | (Unit A IF Unit) |
| | | Band A (20kHz) | (Unit B PLL Unit) |
| | | Band A (25kHz) | (Unit C VCO Unit) |
| | | Band B (12.5kHz) | (Unit D IF Unit) |
| | | Band B (20kHz) | (Unit E IDC Unit) |
| | | Band C (12.5kHz) | (Unit F ANT SW Unit) |
| | | Band C (20kHz) | |
| | | Band C (25kHz) | |
| | | Band C (25kHz) | |
| Q201 | G3803027Y | FET | 2SK302Y TE85R |
| Q202 | G4801517G | FET | 3SK151GR TE85R |
| Q203 | G3801607F | FET | 2SK160-T2B |
| Q204 | G1090874 | IC | LA4147 |
| Q205 | G3070013 | Transistor | FAIL4-T2B |
| Q206 | G3333567D | Transistor | 2SC3356-T2B |
| Q207 | G3333577 | Transistor | 2SC3357-T2 |
| Q208 | | See Band Table | |
| Q209 | G3070013 | Transistor | FAIL4M-T2B |
| D201 | G2070035 | Diode | 1T32-T8 |
| D202 | G2070035 | Diode | 1T32-T8 |
| D203 | G2070035 | Diode | 1T32-T8 |
| D204 | G2070035 | Diode | 1T32-T8 |
| D205 | G2070009 | Diode | 1SS184 TE85R |
| D206 | G2070052 | Diode | 1SS193 TE85R |
| D207 | G2070009 | Diode | 1SS184 TE85R |
| XF201 | | See Band Table | |
| CF201 | | See Band Table | |
| R201 | J24205474 | Chip Res. | 470k Ohm 1/10W |
| R202 | J24205104 | Chip Res. | 100k Ohm 1/10W |
| R203 | J24205101 | Chip Res. | 100 Ohm 1/10W |
| R204 | J24205100 | Chip Res. | 10 Ohm 1/10W |
| R205 | J24205104 | Chip Res. | 100k Ohm 1/10W |
| R206 | J24205104 | Chip Res. | 100k Ohm 1/10W |
| R207 | J24205104 | Chip Res. | 100k Ohm 1/10W |
| R208 | | See Band Table | |
| R209 | | See Band Table | |
| R210 | J24205221 | Chip Res. | 220 Ohm 1/10W |
| R211 | J24205101 | Chip Res. | 100 Ohm 1/10W |
| R212 | | See Band Table | |
| R213 | J24205154 | Chip Res. | 150k Ohm 1/10W |
| R214 | J24205104 | Chip Res. | 100k Ohm 1/10W |
| R215 | J24205104 | Chip Res. | 100k Ohm 1/10W |
| R216 | J24205333 | Chip Res. | 3.3k Ohm 1/10W |
| R217 | | See Band Table | |
| R218 | J24205473 | Chip Res. | 47k Ohm 1/10W |

PARTS LIST

| FTH-2006 PARTS LIST | | FTH-2006 PARTS LIST | |
|---------------------|-----------|---------------------|--------|
| R219 | J24205221 | Chip Res. | 1/10W |
| R220 | J24205331 | Chip Res. | 1/10W |
| R221 | J24205102 | Chip Res. | 1/10W |
| R222 | J24205100 | Chip Res. | 1/10W |
| R223 | J24205100 | Chip Res. | 1/10W |
| R224 | J24205472 | Chip Res. | 1/10W |
| R225 | J24205392 | Chip Res. | 1/10W |
| R226 | J24205103 | Chip Res. | 1/10W |
| R227 | J24205103 | Chip Res. | 1/10W |
| R228 | J24205821 | Chip Res. | 1/10W |
| R229 | J24205569 | Chip Res. | 1/10W |
| R230 | J24205821 | Chip Res. | 1/10W |
| VR201 | J60800132 | Potentiometer | A |
| VR202 | J60800144 | Potentiometer | B |
| VR203 | J51778333 | Potentiometer | B |
| VR204 | J51778332 | Potentiometer | B |
| C201 | K22170805 | Chip Cap. | 50V B |
| C202 | | See Band Table | |
| C203 | | See Band Table | |
| C204 | K22170817 | Chip Cap. | 50V B |
| C205 | | See Band Table | |
| C206 | | See Band Table | |
| C207 | | See Band Table | |
| C208 | | See Band Table | |
| C209 | | See Band Table | |
| C210 | | See Band Table | |
| C211 | | See Band Table | |
| C212 | K22170805 | Chip Cap. | 50V B |
| C213 | K22141809 | Chip Cap. | 25V B |
| C214 | K22170229 | Chip Cap. | 50V CH |
| C215 | | See Band Table | |
| C216 | K22170817 | Chip Cap. | 50V B |
| C217 | K22170805 | Chip Cap. | 50V B |
| C218 | K78120002 | Tantalum Chip Cap. | 16V |
| C219 | K78120002 | Tantalum Chip Cap. | 16V |
| C220 | | See Band Table | |
| C221 | K22141809 | Chip Cap. | 25V B |
| C222 | K22170219 | Chip Cap. | 50V CH |
| C223 | K70127226 | Tantalum Chip Cap. | 16V CH |
| C224 | K40129038 | Al. Electro Cap. | 16V |
| C225 | K22141809 | Chip Cap. | 25V B |
| C226 | K40129038 | Al. Electro Cap. | 16V B |
| C227 | K40089019 | Al. Electro Cap. | 6.3V |
| C228 | K78120002 | Tantalum Chip Cap. | 16V |
| C229 | K22141809 | Chip Cap. | 25V B |
| C230 | K22141808 | Chip Cap. | 25V B |
| C231 | K22170805 | Chip Cap. | 50V B |
| C232 | K22170805 | Chip Cap. | 50V B |
| C233 | | See Band Table | |
| C234 | K22170805 | Chip Cap. | 50V B |
| C235 | | See Band Table | |
| C236 | K22170805 | Chip Cap. | 50V B |
| C237 | K22170805 | Chip Cap. | 50V B |
| C238 | K22170805 | Chip Cap. | 50V B |

| FTH-2006 PARTS LIST | | FTH-2006 PARTS LIST | |
|---------------------|-----------|-----------------------|------------------|
| C239 | K22170805 | Chip Cap. | 50V B |
| C240 | K22170805 | Chip Cap. | 50V B |
| C241 | K40129038 | Al. Electro Cap. | 16V |
| C242 | K22141809 | Chip Cap. | 25V B |
| C243 | K10176102 | Ceramic Cap. | 50V B |
| C244 | K78080003 | Tantalum Chip Cap. | 6.3V |
| C245 | K78160001 | Tantalum Chip Cap. | 35V |
| C246 | K22170817 | Chip Cap. | 50V B |
| C247 | | See Band Table | |
| C248 | K22170805 | Chip Cap. | 50V B |
| C249 | K22170805 | Chip Cap. | 50V B |
| C250 | K22170821 | Chip Cap. | 50V B |
| C251 | K22170805 | Chip Cap. | 50V B |
| C252 | K22170817 | Chip Cap. | 50V B |
| C253 | K22141809 | Chip Cap. | 25V B |
| C255 | | See Band Table | |
| C256 | K10176102 | Ceramic Cap. | 50V B |
| C259 | K22170817 | Chip Cap. | 50V B |
| C260 | K22170805 | Chip Cap. | 50V B |
| C262 | K22170219 | Chip Cap. | 50V CH |
| C263 | K10176102 | Ceramic Cap. | 50V B |
| C264 | | See Band Table | |
| C265 | K22170817 | Chip Cap. | 50V B |
| C267 | | See Band Table | |
| TC201 | K91000169 | Trimmer CAP. | 20pF |
| L201 | L1690003 | RFC | 0.22uH |
| L202 | L1690009 | RFC | 68nH |
| L203 | | See Band Table | |
| L204 | | See Band Table | |
| L205 | | See Band Table | |
| T201 | L0021887 | Coil | 145MHZ |
| T202 | L0021697 | Coil | 150MHZ |
| T203 | L0021697 | Coil | 150MHZ |
| T204 | L0021697 | Coil | 150MHZ |
| T205 | L0021867 | Coil | 21.6MHZ |
| J201 | P0090609 | Connector | SB20-02WS |
| J202 | P0090601 | Connector | IL-Y-14PS15T2-EF |
| J203 | P0090653 | Connector | IL-Y-11PS15T2-EF |
| J204 | P0090598 | Connector | IL-Y-4PS15T2-EF |
| P201 | T9205673 | Wire Assy | |
| R0128190 | | Spring Plate | |
| F2962103A | | Printed Circuit Board | |

*** IF UNIT ***

PARTS LIST

| FTH-2006 PARTS LIST | | FTH-2006 PARTS LIST | |
|--------------------------|-----------|---------------------------------|----------------------|
| Q401 | G1090870 | IC | uPB569G |
| Q402 | G1090582 | IC | JLC1007TP |
| Q403 | G3416997Q | Transistor | 2SD1699-T2B |
| Q404 | G3070012 | Transistor | FN1L4M-T2B |
| D401 | G2070001 | Diode | 1SS181 TE85R |
| D402 | | See Band Table | |
| X401 | | See Band Table | |
| R401 | J24205000 | Chip Res. | 0 Ohm |
| R402 | J24205223 | Chip Res. | 22k Ohm |
| R403 | J24205220 | Chip Res. | 22 Ohm |
| R404 | J24205103 | Chip Res. | 10k Ohm |
| R405 | J24205103 | Chip Res. | 10k Ohm |
| R406 | J24205103 | Chip Res. | 10k Ohm |
| R407 | J24205102 | Chip Res. | 1k Ohm |
| R408 | | See Band Table | |
| R409 | J24205472 | Chip Res. | 4.7k Ohm |
| R410 | | See Band Table | |
| R411 | | See Band Table | |
| R412 | | See Band Table | |
| R413 | J24205333 | Chip Res. | 33k Ohm |
| R414 | J24205472 | Chip Res. | 4.7k Ohm |
| C401 | K22170206 | Chip Cap. | 5pF |
| C402 | K22170805 | Chip Cap. | 0.001uF |
| C403 | K22170805 | Chip Cap. | 0.001uF |
| C404 | K22170805 | Chip Cap. | 0.001uF |
| C405 | K22170805 | Chip Cap. | 0.001uF |
| C406 | K22170235 | Chip Cap. | 100pF |
| C407 | K22170235 | Chip Cap. | 100pF |
| C408 | K22170235 | Chip Cap. | 100pF |
| C409 | K22170227 | Chip Cap. | 47pF |
| C410 | K22170221 | Chip Cap. | 27pF |
| C411 | K78080002 | Tantalum Chip Cap. | 4.7uF |
| C412 | K22170817 | Chip Cap. | 0.01uF |
| C413 | K22170817 | Chip Cap. | 0.01uF |
| C414 | K22141809 | Chip Cap. | 0.1uF |
| C415 | K78080010 | Tantalum Chip Cap. | 6.8uF |
| C416 | K78120013 | Tantalum Chip Cap. | 1uF |
| C417 | K78080002 | Tantalum Chip Cap. | 4.7uF |
| TC401 | K91000166 | Trimmer Cap. | 30pF |
| L401 | L1190275 | RFC | 0.22uH |
| L402 | L1190307 | RFC | 100uH |
| *** VCO/VCO AMP UNIT *** | | | |
| | F2962105A | Printed Circuit Board (VCO) | |
| | F2962109 | Printed Circuit Board (VCO-AMP) | |
| | C029625AG | PCB with Components | Band A VCO w/VCO Amp |

| FTH-2006 PARTS LIST | | FTH-2006 PARTS LIST | |
|---------------------|---------------------|-----------------------|----------------|
| C029623AA | PCB with Components | (12.5kHz) | |
| C029623AB | PCB with Components | (20kHz) | |
| C029623AC | PCB with Components | (25kHz) | |
| Q301 | G3326207B | Transistor | 2SC2620QBTR |
| Q302 | G1090808 | IC | TK10485M |
| D301 | G2070003 | Diode | 1SS226 TE85R |
| X301 | H0102774 | Crystal | UM-1 22.055MHz |
| CD301 | H7900180 | Ceramic Disc | CDB455C7 |
| R301 | J24205000 | Chip Res. | 0 Ohm |
| R302 | J24205224 | Chip Res. | 220k Ohm |
| R303 | J24205473 | Chip Res. | 47k Ohm |
| R304 | J24205471 | Chip Res. | 470 Ohm |
| R305 | J24205271 | Chip Res. | 270 Ohm |
| R306 | J24205470 | Chip Res. | 47 Ohm |
| R307 | J24205102 | Chip Res. | 1k Ohm |
| R308 | J24205222 | Chip Res. | 2.2k Ohm |
| R309 | J24205102 | Chip Res. | 1k Ohm |
| R310 | | See Band Table | |
| R311 | | See Band Table | |
| R312 | | See Band Table | |
| R313 | | See Band Table | |
| R314 | J24205682 | Chip Res. | 6.8k Ohm |
| R315 | J24205472 | Chip Res. | 4.7k Ohm |
| C301 | K22170817 | Chip Cap. | 0.01uF |
| C302 | K22170817 | Chip Cap. | 0.01uF |
| C303 | K22170229 | Chip Cap. | 56pF |
| C305 | K22170237 | Chip Cap. | 120pF |
| C306 | K22141809 | Chip Cap. | 0.1uF |
| C307 | K22141809 | Chip Cap. | 0.1uF |
| C308 | K22170233 | Chip Cap. | 82pF |
| C309 | K78080004 | Tantalum Chip Cap. | 15uF |
| C310 | K22170817 | Chip Cap. | 0.01uF |
| C311 | K22170805 | Chip Cap. | 0.001uF |
| C312 | K22170805 | Chip Cap. | 0.001uF |
| C313 | K22170805 | Chip Cap. | 0.001uF |
| C314 | K22141809 | Chip Cap. | 0.1uF |
| C315 | K78120013 | Tantalum Chip Cap. | 1uF |
| C316 | K78120013 | Tantalum Chip Cap. | 1uF |
| *** PLL UNIT *** | | | |
| | F2962104A | Printed Circuit Board | |
| | C029624AA | PCB with Components | (12.5kHz) |
| | C029624AB | PCB with Components | (20kHz) |
| | C029624AC | PCB with Components | (25kHz) |

PARTS LIST

| FTH-2006 PARTS LIST | | *** REG UNIT *** | |
|-----------------------|-----------|---------------------|-----------------|
| Printed Circuit Board | | PCB with Components | |
| | F2962106A | | |
| | C029626AA | | |
| Q601 | G1090873 | IC | M5236ML-T01-1 |
| Q602 | G3207997L | Transistor | 2SB799-T2B |
| Q603 | G3327127G | Transistor | 2SC2712GR TE85R |
| Q604 | G3070013 | Transistor | FAIL4M-T2B |
| Q605 | G3202610L | Transistor | 2SB1261-L |
| Q606 | G3111627G | Transistor | 2SA1162GR TE85R |
| Q607 | G3111627G | Transistor | 2SA1162GR TE85R |
| Q608 | G3111627G | Transistor | 2SA1162GR TE85R |
| Q609 | G3070013 | Transistor | FAIL4M-T2B |
| D601 | G2070009 | Diode | 1SS184 TE85R |
| D602 | G2070050 | Diode | 02C28-2X TE85R |
| D603 | G2070009 | Diode | 1SS184 TE85R |
| D604 | G2070009 | Diode | 1SS184 TE85R |
| D605 | G2070009 | Diode | 1SS184 TE85R |
| D606 | G2070009 | Diode | 1SS184 TE85R |
| R601 | J01245829 | Carbon Film Res. | 8.2 Ohm 1/4W |
| R602 | J24205101 | Chip Res. | 100 Ohm 1/10W |
| R603 | J24205223 | Chip Res. | 22k Ohm 1/10W |
| R604 | J24205472 | Chip Res. | 4.7k Ohm 1/10W |
| R605 | J24205221 | Chip Res. | 220 Ohm 1/10W |
| R606 | J24205471 | Chip Res. | 470 Ohm 1/10W |
| R607 | J24205153 | Chip Res. | 15k Ohm 1/10W |
| R608 | J24209006 | Chip Res. (1%) | 30.1k Ohm 1/10W |
| R609 | J24209005 | Chip Res. (1%) | 10k Ohm 1/10W |
| R610 | J24205222 | Chip Res. | 2.2k Ohm 1/10W |
| R611 | J24205472 | Chip Res. | 4.7k Ohm 1/10W |
| R612 | J24205222 | Chip Res. | 2.2k Ohm 1/10W |
| R613 | J24205102 | Chip Res. | 1k Ohm 1/10W |
| R614 | J24205103 | Chip Res. | 10k Ohm 1/10W |
| R615 | J24205472 | Chip Res. | 4.7k Ohm 1/10W |
| C601 | K78120002 | Tantalum Chip Cap. | 2.2uF 16V |
| C602 | K22170805 | Chip Cap. | 0.001uF 50V |
| C603 | K22170805 | Chip Cap. | 0.001uF 50V |
| C604 | K78120013 | Tantalum Chip Cap. | 1uF 16V |
| C605 | K22170805 | Chip Cap. | 0.001uF 50V |
| C606 | K22170805 | Chip Cap. | 0.001uF 50V |
| C607 | K78120013 | Tantalum Chip Cap. | 1uF 16V |
| C608 | K22170805 | Chip Cap. | 0.001uF 50V |
| C609 | K78080003 | Tantalum Chip Cap. | 10uF 6.3V |
| C610 | K22170805 | Chip Cap. | 0.001uF 50V |
| C611 | K22170805 | Chip Cap. | 0.001uF 50V |
| C612 | K22170805 | Chip Cap. | 0.001uF 50V |
| C613 | K22170805 | Chip Cap. | 0.001uF 50V |

| FTH-2006 PARTS LIST | | Band B VCO w/VCO Amp | |
|---------------------|---------------------|----------------------|-------|
| PCB with Components | | Band C VCO w/VCO Amp | |
| C029625AH | PCB with Components | FA1A4M-T2B | |
| C029625AJ | PCB with Components | 2SK238-K17T2 | |
| Q501 | Transistor | 2SC2712GR TE85R | |
| Q502 | FET | 2SC3356-T2B R24 | |
| Q503 | Transistor | 1SS110 | |
| Q504 | Transistor | 1T33 | |
| Q505 | Transistor | 1T33 | |
| D501 | Diode | 3.3k Ohm | 1/10W |
| D502 | Diode | 10k Ohm | 1/10W |
| D503 | Diode | 220k Ohm | 1/10W |
| R501 | Chip Res. | 4.7k Ohm | 1/10W |
| R502 | Chip Res. | 2.2k Ohm | 1/10W |
| R503 | Chip Res. | 82k Ohm | 1/10W |
| R504 | Chip Res. | 47 Ohm | 1/10W |
| R505 | Chip Res. | 220k Ohm | 1/10W |
| R506 | Chip Res. | 4.7k Ohm | 1/10W |
| R507 | Chip Res. | 0.001uF | 50V |
| R508 | Chip Res. | 0.001uF | 50V |
| R509 | Chip Res. | 0.001uF | 50V |
| C501 | Chip Cap. | 0.001uF | 50V |
| C502 | See Band Table | | |
| C503 | Chip Cap. | 0.001uF | 50V |
| C504 | Chip Cap. | 0.001uF | 50V |
| C505 | Chip Cap. | 0.001uF | 50V |
| C506 | Chip Cap. | 0.01uF | 50V |
| C507 | See Band Table | | |
| C508 | Tantalum Chip Cap. | 4.7uF | 6.3V |
| C509 | Chip Cap. | 0.5pF | 50V |
| C510 | Chip Cap. | 0.001uF | 50V |
| C511 | Chip Cap. | 0.001uF | 50V |
| C512 | Tantalum Chip Cap. | 10uF | 6.3V |
| C513 | Tantalum Chip Cap. | 4.7uF | 6.3V |
| C514 | Chip Cap. | 0.001uF | 50V |
| C515 | See Band Table | | |
| C516 | See Band Table | | |
| C517 | Chip Cap. | 5pF | 50V |
| TC501 | Trimmer Cap. | 40pF | |
| L501 | RFC | 1uH | |
| L502 | RFC | 1uH | |
| L503 | RFC | 0.22uH | |
| L504 | RFC | 1uH | |
| T501 | See Band Table | | |
| J501 | Connector | MSA-9210B-1-05-T | |
| J502 | Connector | MSA-9210B-1-07-T | |
| R0123010 | Shield Case | | |
| R0123020 | Shield Cover | | |
| R0123030A | Shield Rear | | |

PARTS LIST

| FTH-2006 PARTS LIST | | | *** IDC UNIT *** | | |
|---------------------|-----------------------|------------------|------------------|--|--|
| F2962107 | Printed Circuit Board | | | | |
| C029627AE | PCB with Components | Band A (12.5kHz) | | | |
| C029627AF | PCB with Components | Band A (20kHz) | | | |
| C029627AF | PCB with Components | Band A (25kHz) | | | |
| C029627AA | PCB with Components | Band B (12.5kHz) | | | |
| C029627AB | PCB with Components | Band B (20kHz) | | | |
| C029627AB | PCB with Components | Band B (25kHz) | | | |
| C029627AC | PCB with Components | Band C (12.5kHz) | | | |
| C029627AD | PCB with Components | Band C (20kHz) | | | |
| C029627AD | PCB with Components | Band C (25kHz) | | | |
| Q701 | IC | uPC4741G2 | | | |
| D701 | Diode | 1SS226 TE85R | | | |
| R701 | Chip Res. | 2.2k Ohm 1/10W | | | |
| R702 | Chip Res. | 390k Ohm 1/10W | | | |
| R703 | Chip Res. | 3.3k Ohm 1/10W | | | |
| R704 | Chip Res. | 220k Ohm 1/10W | | | |
| R705 | Chip Res. | 1M Ohm 1/10W | | | |
| R706 | See Band Table | | | | |
| R707 | See Band Table | | | | |
| R708 | See Band Table | | | | |
| R709 | Chip Res. | 120k Ohm 1/10W | | | |
| R710 | Chip Res. | 120k Ohm 1/10W | | | |
| R711 | See Band Table | | | | |
| R712 | Chip Res. | 47k Ohm 1/10W | | | |
| R713 | Chip Res. (1%) | 110k Ohm 1/10W | | | |
| R714 | See Band Table | | | | |
| R715 | Chip Res. (1%) | 150k Ohm 1/10W | | | |
| R716 | Chip Res. (1%) | 110k Ohm 1/10W | | | |
| R717 | See Band Table | | | | |
| R718 | Chip Res. (1%) | 133k Ohm 1/10W | | | |
| R719 | See Band Table | | | | |
| C701 | Tantalum Chip Cap. | 1uF 16V | | | |
| C702 | Tantalum Chip Cap. | 1uF 16V | | | |
| C703 | Chip Cap. | 560pF 50V B | | | |
| C704 | Chip Cap. | 0.0033uF 50V B | | | |
| C705 | Tantalum Chip Cap. | 1uF 16V | | | |
| C706 | Chip Cap. | 0.0022uF 50V B | | | |
| C707 | Chip Cap. | 0.001uF 50V B | | | |
| C708 | See Band Table | | | | |
| C709 | Tantalum Chip Cap. | 2.2uF 16V | | | |
| C710 | Tantalum Chip Cap. | 1uF 16V | | | |
| C711 | Chip Cap. | 22pF 50V CH | | | |
| C712 | See Band Table | | | | |
| C713 | See Band Table | | | | |

| FTH-2006 PARTS LIST | | | *** ANT SW UNIT *** | | |
|---------------------|-----------------------|-----------------|---------------------|--|--|
| F2962108 | Printed Circuit Board | | | | |
| C029628AC | PCB with Components | Band A | | | |
| C029628AA | PCB with Components | Band B | | | |
| C029628AB | PCB with Components | Band C | | | |
| Q801 | Transistor | 2SB799-T2ML | | | |
| Q802 | Transistor | 2SC2712GR TE85R | | | |
| Q803 | Transistor | 2SC2712GR TE85R | | | |
| Q804 | Transistor | 2SB799-T2ML | | | |
| Q805 | Transistor | 2SC2712GR TE85R | | | |
| Q806 | Transistor | 2SC2712GR TE85R | | | |
| D801 | Diode | 1SS237 | | | |
| D802 | Diode | MI308 | | | |
| D803 | Diode | 1SV154 | | | |
| D804 | Diode | 1SV154 | | | |
| R801 | Chip Res. | 4.7k Ohm 1/10W | | | |
| R802 | Chip Res. | 220 Ohm 1/10W | | | |
| R803 | Chip Res. | 1.5k Ohm 1/10W | | | |
| R804 | Chip Res. | 4.7k Ohm 1/10W | | | |
| R805 | Chip Res. | 2.2k Ohm 1/10W | | | |
| R806 | Chip Res. | 2.2k Ohm 1/10W | | | |
| R807 | Chip Res. | 3.3k Ohm 1/10W | | | |
| R808 | Chip Res. | 3.3k Ohm 1/10W | | | |
| R809 | Chip Res. | 22 Ohm 1/10W | | | |
| R810 | Chip Res. | 330 Ohm 1/10W | | | |
| R811 | Chip Res. | 4.7k Ohm 1/10W | | | |
| C802 | Al. Electro Cap. | 10uF 16V | | | |
| C803 | Chip Cap. | 0.001uF 50V B | | | |
| C804 | Al. Electro Cap. | 10uF 16V | | | |
| C805 | Chip Cap. | 0.001uF 50V B | | | |
| C806 | Chip Cap. | 0.001uF 50V B | | | |
| C807 | Chip Cap. | 0.001uF 50V B | | | |
| C808 | Chip Cap. | 0.001uF 50V B | | | |
| C809 | See Band Table | | | | |
| C810 | Chip Cap. | 12pF 50V CH | | | |
| C811 | Chip Cap. | 0.001uF 50V B | | | |
| C812 | See Band Table | | | | |
| C813 | See Band Table | | | | |
| C814 | See Band Table | | | | |
| C815 | See Band Table | | | | |
| C816 | See Band Table | | | | |
| C817 | See Band Table | | | | |
| C818 | See Band Table | | | | |
| C819 | See Band Table | | | | |
| C820 | Chip Cap. | 22pF 50V CH | | | |
| C821 | Chip Cap. | 12pF 50V CH | | | |
| | Chip Cap. | 0.001uF 50V B | | | |
| L801 | RFC | 0.47uH | | | |
| L802 | See Band Table | | | | |

PARTS LIST

| FTH-2006 PARTS LIST | | |
|------------------------------|--|-------------------|
| L803 L804 L805 L806 | See Band Table Coil Coil Coil Coil | |
| L9190054 Q5000082 | Coil Case Terminal Post | TP-N |
| *** LPF UNIT (FTZ) *** | | |
| F2967101 | Printed Circuit Board | |
| C029671AA | PCB with Components | |
| Q901 | Transistor | 2SC2712GR TE85R |
| R901 | Chip Res. | 6.8k Ohm |
| R902 | Chip Res. | 6.8k Ohm |
| R903 | Chip Res. | 1.5M Ohm |
| R904 | Chip Res. | 22k Ohm |
| R905 | Chip Res. | 10k Ohm |
| C901 | Chip Cap. | 0.1uF 25V B |
| C902 | Chip Cap. | 0.0068uF 50V B |
| C903 | Chip Cap. | 0.0022uF 50V B |
| C904 | Tantalum Chip Cap. | 4.7uF 6.3V |
| J901 | Connector | 1L-Y-10P-S15L2-EF |
| *** CLOCK UNIT *** | | |
| F2970101A | Printed Circuit Board | |
| C029701AA | PCB with Components | |
| Q1001 | Transistor | 2SC1623-T2BL6 |
| CO1001 | Ceramic Osc. | CSB800K |
| R1001 | Chip Res. | 1M Ohm 1/10W |
| R1002 | Chip Res. | 4.7k Ohm 1/10W |
| R1003 | Chip Res. | 4.7k Ohm 1/10W |
| C1001 | Chip Cap. | 68pF 50V CH |
| C1002 | Chip Cap. | 68pF 50V CH |
| C1003 | Ceramic Cap. | 0.01uF 16V |

For Service Manuals Contact
MAURITRON TECHNICAL SERVICES
 8 Cherry Tree Rd, Chinnor
 Oxon OX9 4QY
 Tel:- 01844-351694 Fax:- 01844-352554
 Email:- enquiries@mauritron.co.uk

PARTS LIST

BAND TABLE I

| | BAND 4 (174-186MHz) (12.5kHz) (20kHz) | BAND 5 (146-160MHz) (12.5kHz) (20kHz) | BAND C (160-174MHz) (12.5kHz) (20kHz) | BAND D51 (140-153MHz) (12.5kHz) (20kHz) | BAND B31 (155-167MHz) (12.5kHz) (20kHz) | BAND B32 (156-170MHz) (12.5kHz) (20kHz) | BAND B33 (157-171MHz) (12.5kHz) (20kHz) |
|-------|---|---|---|---|---|---|---|
| Q288 | G1090763 M57796H | G1090763 M57796H | G1090763 M57796H | G1090763 M57796H | G1090763 M57796H | G1090763 M57796H | G1090763 M57796H |
| XF201 | H1102138 21P128U-1 | H1102138 21P128U-1 | H1102138 21P128U-1 | H1102138 21P128U-1 | H1102138 21P128U-1 | H1102138 21P128U-1 | H1102138 21P128U-1 |
| CF201 | H3900387 LF-H12S | H3900387 LF-H12S | H3900387 LF-H12S | H3900387 LF-H12S | H3900387 LF-H12S | H3900387 LF-H12S | H3900387 LF-H12S |
| R208 | J24205332 3.3k Ohm | J24205332 3.3k Ohm | J24205332 3.3k Ohm | J24205332 3.3k Ohm | J24205332 3.3k Ohm | J24205332 3.3k Ohm | J24205332 3.3k Ohm |
| R209 | J24205122 1.2k Ohm | J24205122 1.2k Ohm | J24205122 1.2k Ohm | J24205122 1.2k Ohm | J24205122 1.2k Ohm | J24205122 1.2k Ohm | J24205122 1.2k Ohm |
| R212 | J24205472 4.7k Ohm | J24205472 4.7k Ohm | J24205472 4.7k Ohm | J24205472 4.7k Ohm | J24205472 4.7k Ohm | J24205472 4.7k Ohm | J24205472 4.7k Ohm |
| R217 | J24205122 2.2k Ohm | J24205122 2.2k Ohm | J24205122 2.2k Ohm | J24205122 2.2k Ohm | J24205122 2.2k Ohm | J24205122 2.2k Ohm | J24205122 2.2k Ohm |
| C202 | K22170223 CH 33pF | K22170223 CH 33pF | K22170221 CH 27pF | K22170221 CH 27pF | K22170221 CH 27pF | K22170221 CH 27pF | K22170217 CH 18pF |
| C203 | K22170203 CH 2pF | K22170203 CH 2pF | Not Used | K22170202 CH 1pF | K22170202 CH 1pF | K22170202 CH 1pF | Not Used |
| C205 | K22170223 CH 33pF | K22170219 CH 22pF | K22170219 CH 22pF | K22170219 CH 22pF | K22170219 CH 22pF | K22170219 CH 22pF | K22170217 CH 18pF |
| C206 | K22170202 CH 1pF | K22170202 CH 1pF | K22170201 CH 0.5pF | K22170201 CH 0.5pF | K22170201 CH 0.5pF | K22170201 CH 0.5pF | K22170201 CH 0.5pF |
| C207 | K22170208 CH 7pF | K22170208 CH 7pF | K22170208 CH 7pF | K22170208 CH 7pF | K22170208 CH 7pF | K22170207 CH 6pF | K22170205 CH 4pF |
| C208 | K22170223 CH 33pF | K22170223 CH 33pF | K22170221 CH 27pF | K22170221 CH 27pF | K22170221 CH 27pF | K22170221 CH 27pF | K22170215 CH 15pF |
| C209 | K22170203 CH 2pF | K22170203 CH 2pF | K22170202 CH 1pF | K22170202 CH 1pF | K22170202 CH 1pF | K22170202 CH 1pF | K22170202 CH 1pF |
| C210 | K22170207 CH 6pF | K22170207 CH 6pF | K22170205 CH 4pF | K22170205 CH 4pF | K22170205 CH 4pF | K22170205 CH 4pF | K22170202 CH 1pF |
| C211 | K22170223 CH 33pF | K22170223 CH 33pF | K22170221 CH 27pF | K22170221 CH 27pF | K22170221 CH 27pF | K22170221 CH 27pF | K22170221 CH 27pF |
| C215 | K22170209 CH 8pF | K22170209 CH 8pF | K22170209 CH 8pF | K22170209 CH 8pF | K22170209 CH 8pF | K22170209 CH 8pF | K22170209 CH 8pF |
| C220 | K78160002 0.33uF | K78160004 0.33uF | K78160004 0.33uF | K78160004 0.33uF | K78160004 0.33uF | K78160004 0.33uF | K78160004 0.33uF |
| C233 | K22170225 CH 39pF | K22170225 CH 39pF | K22170221 CH 27pF | K22170221 CH 27pF | K22170221 CH 27pF | K22170221 CH 27pF | K22170219 CH 22pF |
| C235 | K22170213 CH 12pF | K22170213 CH 12pF | K22170209 CH 8pF | K22170209 CH 8pF | K22170209 CH 8pF | K22170209 CH 8pF | Not Used |
| C247 | K22170205 CH 4pF | K22170205 CH 4pF | K22170204 CH 3pF | K22170204 CH 3pF | K22170204 CH 3pF | K22170204 CH 3pF | K22170203 CH 2pF |
| C255 | Not Used | Not Used | Not Used | Not Used | Not Used | Not Used | Not Used |
| C264 | K02172050 CH 5pF | K02172050 CH 5pF | K02172020 CH 2pF | K02172020 CH 2pF | K02172020 CH 2pF | K02172020 CH 2pF | K02172020 CH 2pF |

PARTS LIST

BAND TABLE II

| | BAND 4 (134-146MHz) (12.5kHz) | BAND B (146-150MHz) (20kHz) | BAND C (160-174MHz) (25kHz) | BAND D51 (140-153MHz) (25kHz) | BAND D52 (156-170MHz) (25kHz) |
|------|----------------------------------|--------------------------------|--------------------------------|----------------------------------|----------------------------------|
| C267 | K22170204 CH 3pF | K22170204 CH 3pF | K22170204 CH 3pF | K22170204 CH 3pF | K22170204 CH 3pF |
| L203 | L1020725 | L1020722 | L1020722 | L1020722 | L1020722 |
| L204 | L1690020 0.82uH | L1690020 0.47uH | L1690020 0.47uH | L1690020 0.47uH | L1690020 0.47uH |
| L205 | L1690011 0.1uH | L1690011 0.1uH | L1690011 0.1uH | L1690011 0.1uH | L1690011 0.1uH |
| R302 | J24205102 1k Ohm | J24205102 1k Ohm | J24205102 1k Ohm | J24205102 1k Ohm | J24205102 1k Ohm |
| R311 | J24205334 330k Ohm | J24205334 330k Ohm | J24205334 330k Ohm | J24205334 330k Ohm | J24205334 330k Ohm |
| R312 | J24205153 15k Ohm | J24205153 15k Ohm | J24205153 15k Ohm | J24205153 15k Ohm | J24205153 15k Ohm |
| R313 | J24205332 3.3k Ohm | J24205332 3.3k Ohm | J24205332 3.3k Ohm | J24205332 3.3k Ohm | J24205332 3.3k Ohm |
| D402 | Not Used | Not Used | Not Used | Not Used | Not Used |
| X401 | H0102799 12.9MHz | H0102800 10.24MHz | H0102800 10.24MHz | H0102800 10.24MHz | H0102800 10.24MHz |
| R400 | J24205000 0 Ohm | J24205000 0 Ohm | J24205000 0 Ohm | J24205000 0 Ohm | J24205000 0 Ohm |
| R409 | Not Used | Not Used | Not Used | Not Used | Not Used |
| R411 | J24205103 10k Ohm | J24205103 10k Ohm | J24205103 10k Ohm | J24205103 10k Ohm | J24205103 10k Ohm |
| R412 | J24205152 1.5k Ohm | J24205152 1.5k Ohm | J24205152 1.5k Ohm | J24205152 1.5k Ohm | J24205152 1.5k Ohm |
| C502 | K22170223 CH 33pF | K22170219 CH 22pF | K22170219 CH 22pF | K22170219 CH 22pF | K22170219 CH 22pF |
| C507 | K22170243 CH 220pF | K22170243 CH 220pF | K22170243 CH 220pF | K22170243 CH 220pF | K22170243 CH 220pF |
| C516 | UJ 6pF | UJ 6pF | UJ 10pF | UJ 10pF | UJ 10pF |
| T501 | L0021911 140MHz | L0021694A 150MHz | L0021694A 150MHz | L0021694A 150MHz | L0021694A 150MHz |

PARTS LIST

BAND TABLE III

| | BAND A (134-148MHz) (20KHz) (12.5KHz) | BAND B (146-160MHz) (20KHz) (12.5KHz) | BAND C (168-174MHz) (20KHz) (12.5KHz) | BAND DS1 (149-153MHz) (20KHz) (12.5KHz) | BAND DS1 (153-167MHz) (20KHz) (12.5KHz) | BAND BS2 (156-170MHz) (20KHz) (12.5KHz) |
|----------------|---|---|---|---|---|---|
| TH701 | Not Used | Not Used | Not Used | Not Used | Not Used | Not Used |
| TH701 (FTZ) | Not Used | Not Used | Not Used | Not Used | Not Used | Not Used |
| R706 | J24205103 10k Ohm | J24205103 10k Ohm | J24205103 10k Ohm | J24205103 10k Ohm | J24205103 10k Ohm | J24205103 10k Ohm |
| R706 (FTZ) | J24205392 3.9k Ohm | J24205392 3.9k Ohm | J24205392 3.9k Ohm | J24205392 3.9k Ohm | J24205392 3.9k Ohm | J24205392 3.9k Ohm |
| R707 | J24205103 10k Ohm | J24205103 10k Ohm | J24205103 10k Ohm | J24205103 10k Ohm | J24205103 10k Ohm | J24205103 10k Ohm |
| R707 (FTZ) | J24205471 470 Ohm | J24205471 470 Ohm | J24205471 470 Ohm | J24205471 470 Ohm | J24205471 470 Ohm | J24205471 470 Ohm |
| R708 | J24205223 22k Ohm | J24205223 22k Ohm | J24205333 33k Ohm | J24205223 22k Ohm | J24205223 22k Ohm | J24205333 33k Ohm |
| R708 (FTZ) | J24205193 18k Ohm | J24205193 18k Ohm | J24205193 18k Ohm | J24205193 18k Ohm | J24205193 18k Ohm | J24205193 18k Ohm |
| R711 | J24205154 150k Ohm | J24205184 180k Ohm | J24205184 180k Ohm | J24205154 150k Ohm | J24205184 180k Ohm | J24205184 180k Ohm |
| R711 (FTZ) | J24205184 180k Ohm | J24205184 180k Ohm | J24205184 180k Ohm | J24205184 180k Ohm | J24205184 180k Ohm | J24205184 180k Ohm |
| R714 | J24205124 120k Ohm | J24205154 150k Ohm | J24205154 150k Ohm | J24205124 120k Ohm | J24205154 150k Ohm | J24205154 150k Ohm |
| R714 (FTZ) | J24205154 150k Ohm | J24205154 150k Ohm | J24205154 150k Ohm | J24205154 150k Ohm | J24205154 150k Ohm | J24205154 150k Ohm |
| R717 | J24205124 120k Ohm | J24205154 150k Ohm | J24205154 150k Ohm | J24205124 120k Ohm | J24205154 150k Ohm | J24205154 150k Ohm |
| R717 (FTZ) | J24205154 150k Ohm | J24205154 150k Ohm | J24205154 150k Ohm | J24205154 150k Ohm | J24205154 150k Ohm | J24205154 150k Ohm |
| R719 | J24205154 150k Ohm | J24205000 0 Ohm | J24205000 0 Ohm | J24205154 150k Ohm | J24205000 0 Ohm | J24205000 0 Ohm |
| R719 (FTZ) | J24205000 0 Ohm | J24205000 0 Ohm | J24205000 0 Ohm | J24205000 0 Ohm | J24205000 0 Ohm | J24205000 0 Ohm |
| C708 | K22170239 CH 100pF | K22170235 CH 100pF | K22170235 CH 100pF | K22170239 CH 150pF | K22170235 CH 100pF | K22170235 CH 100pF |
| C708 (FTZ) | K22170235 CH 100pF | K22170235 CH 100pF | K22170235 CH 100pF | K22170235 CH 100pF | K22170235 CH 100pF | K22170235 CH 100pF |
| C712 | K22170805 8 0.001uF | Not Used | Not Used | Not Used | Not Used | Not Used |
| C712 (FTZ) | Not Used | Not Used | Not Used | Not Used | Not Used | Not Used |
| C713 | K22170239 CH 150pF | Not Used | Not Used | Not Used | Not Used | Not Used |
| C713 (FTZ) | Not Used | Not Used | Not Used | Not Used | Not Used | Not Used |
| C809 | K22170207 CH 6pF | K22170207 CH 6pF | K22170207 CH 6pF | K22170207 CH 6pF | K22170207 CH 6pF | K22170207 CH 6pF |
| C812 | K22170215 CH 15pF | K22170215 CH 12pF | K22170211 CH 10pF | K22170215 CH 15pF | K22170215 CH 12pF | K22170213 CH 12pF |

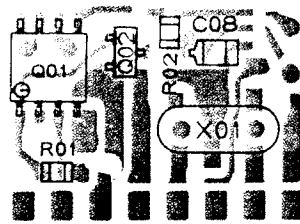
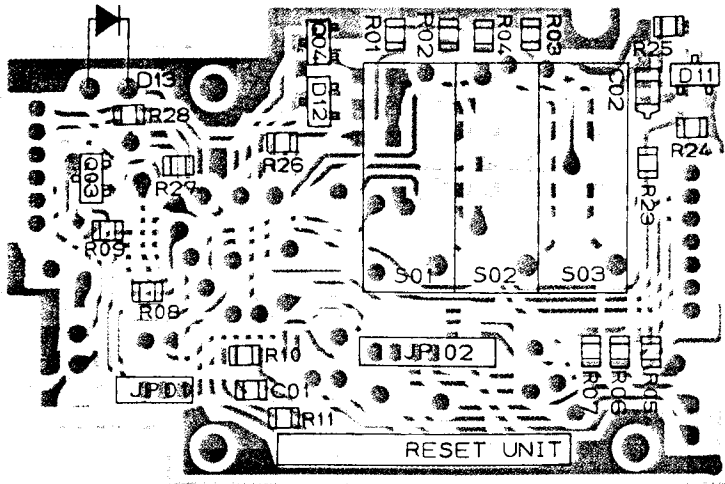
PARTS LIST

BAND TABLE IV

| | BAND H51 (148-153MHz) (20kHz) (25kHz) | BAND B51 (153-167MHz) (25kHz) | BAND B52 (166-170MHz) (20kHz) (25kHz) | BAND A (134-146MHz) (20kHz) (25kHz) | BAND B (146-160MHz) (20kHz) | BAND C (160-174MHz) (25kHz) |
|------|---|----------------------------------|---|---|--------------------------------|--------------------------------|
| C813 | K22170211 CH 10pF | K22170210 CH 9pF | K22170210 CH 9pF | K22170211 CH 10pF | K22170211 CH 10pF | K22170210 CH 9pF |
| C814 | K22170217 CH 18pF | K22170217 CH 22pF | K22170217 CH 22pF | K22170221 CH 27pF | K22170217 CH 19pF | K22170217 CH 18pF |
| C815 | K22170211 CH 10pF | K22170210 CH 9pF | K22170210 CH 9pF | K22170211 CH 10pF | K22170211 CH 10pF | K22170210 CH 9pF |
| C816 | K22170213 CH 12pF | K22170213 CH 12pF | K22170213 CH 12pF | K22170215 CH 15pF | K22170213 CH 12pF | K22170211 CH 10pF |
| C817 | K22170229 CH 56pF | K22170229 CH 56pF | K22170229 CH 56pF | K22170229 CH 56pF | K22170229 CH 56pF | K22170229 CH 56pF |
| C818 | K22170229 CH 56pF | K22170229 CH 56pF | K22170229 CH 56pF | K22170229 CH 56pF | K22170229 CH 56pF | K22170229 CH 56pF |
| L802 | L0021765 | L0020736 | L0021765 | L0020736 | L0021765 | L0021765 |
| L803 | L0021765 | L0020736 | L0021765 | L0020736 | L0021765 | L0021765 |

For Service Manuals Contact
MAURITRON TECHNICAL SERVICES
 8 Cherry Tree Rd, Chinnor
 Oxon OX9 4QY
 Tel: 01844-351694 Fax: 01844-352554
 Email: enquiries@mauritron.co.uk

F5D-8

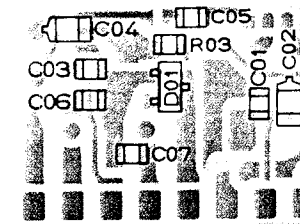
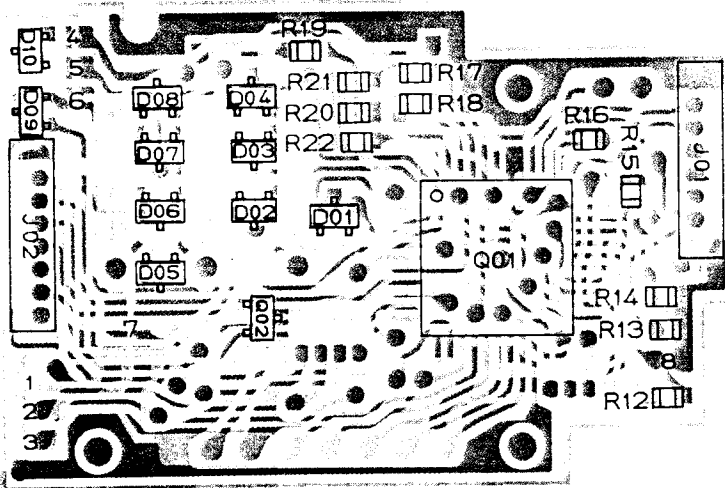


RESET UNIT

(Obverse view of "Xtal" side)

CNTL UNIT

(Obverse view of "switch" side)

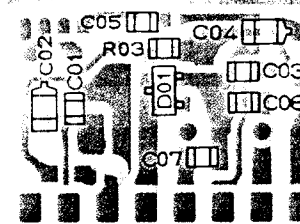
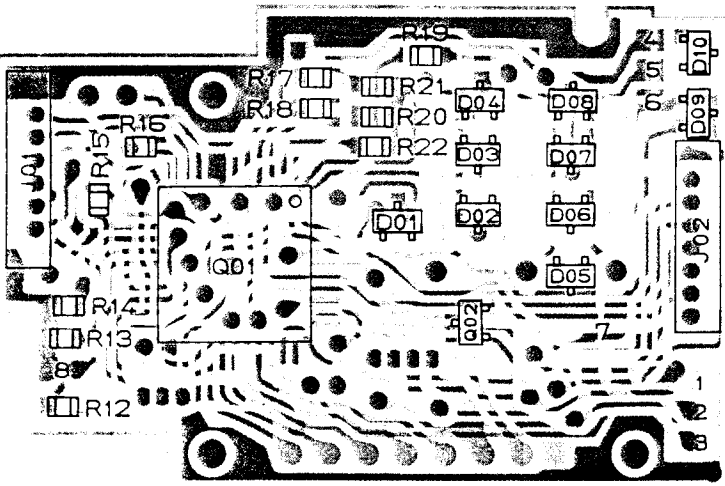


RESET UNIT

(Obverse view of "chip-only" side)

CNTL UNIT

(Obverse view of "IC" side)

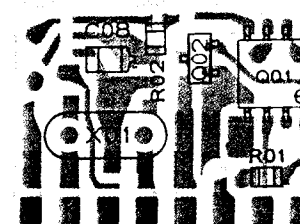
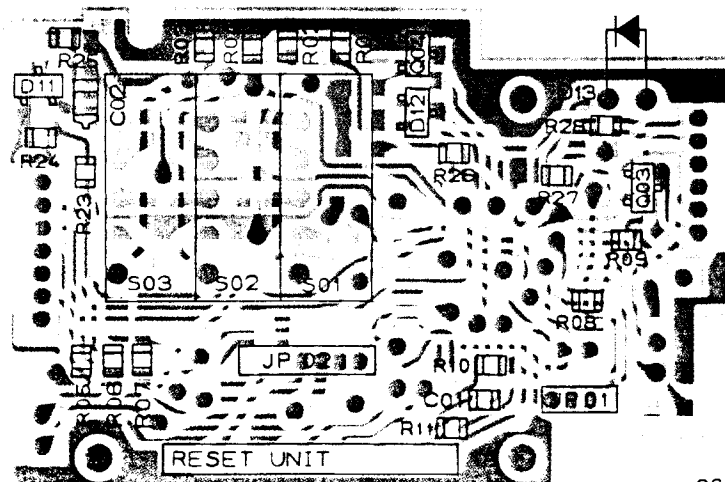


RESET UNIT

(Reverse view of "chip-only" side)

CNTL UNIT

(Reverse view of "IC" side)

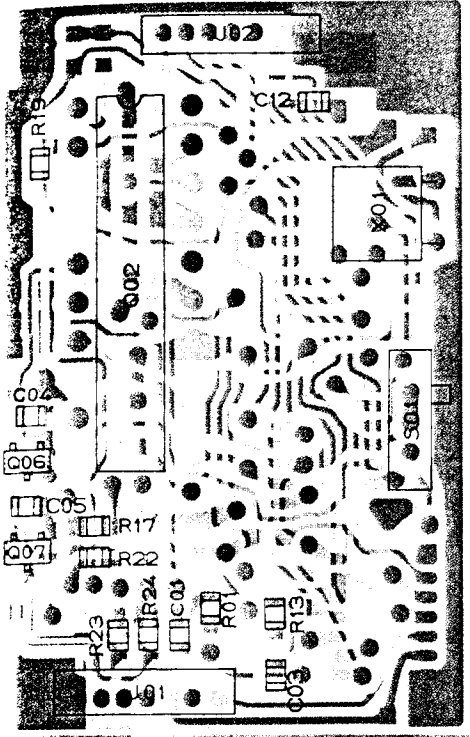


RESET UNIT

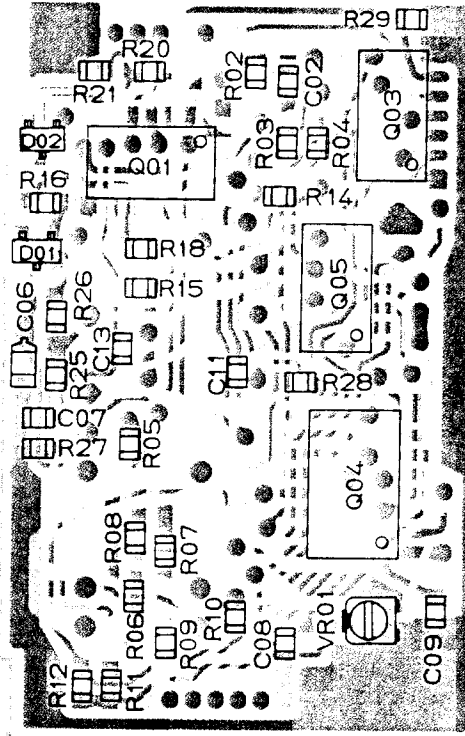
(Reverse view of "X'tal" side)

CNTL UNIT

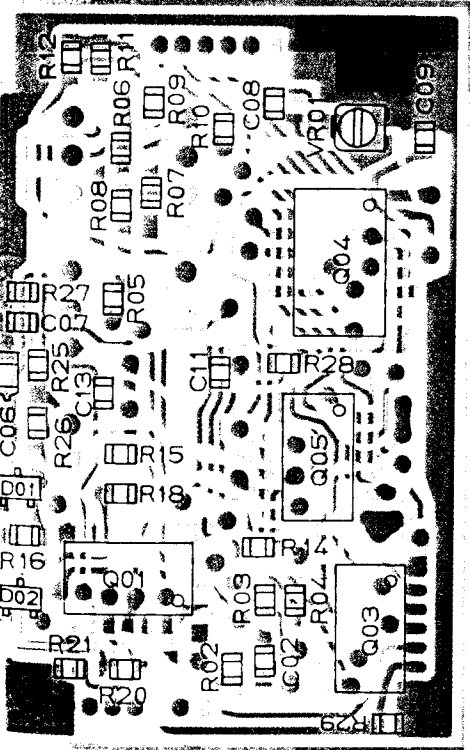
(Reverse view of "switch" side)



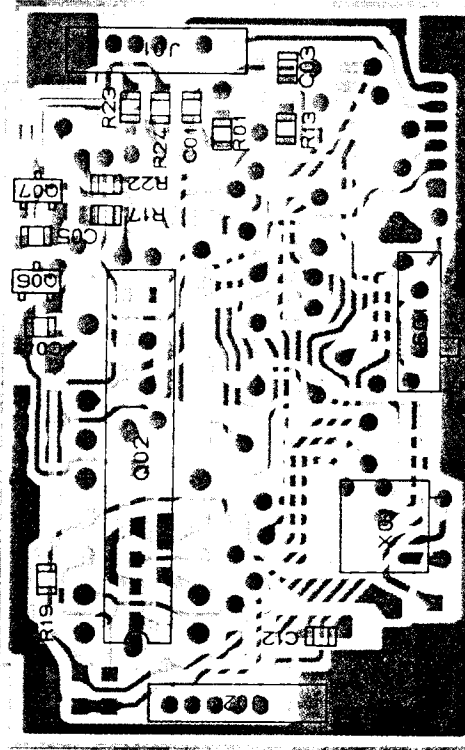
(Obverse view of "Xtal" side)



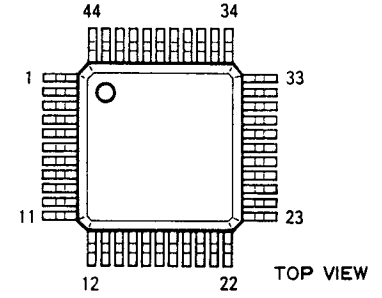
(Obverse view of "chip-only" side)



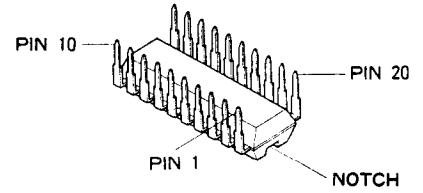
(Reverse view of "chip-only" side)



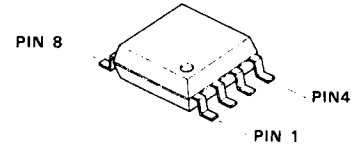
(Reverse view of "Xtal" side)



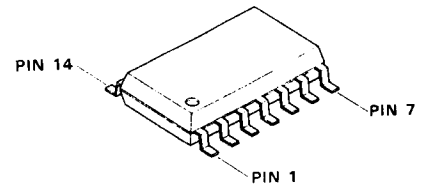
μPD7507HG(Q101)



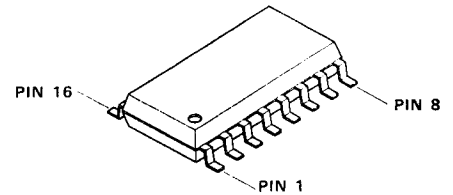
LTC1060ACN(Q302)



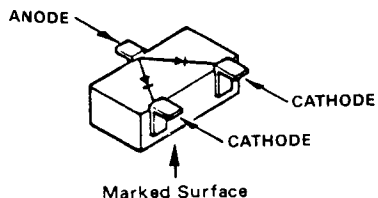
PST531A(Q201)



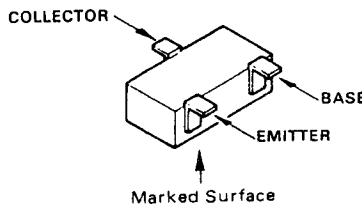
μPC324G(Q301)
μPD74HC74G(Q305)
μPD74HC4066G(Q303)



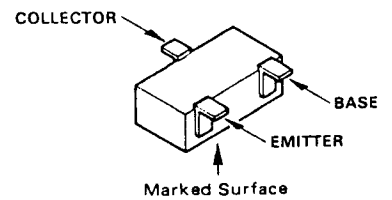
MB87006AFP(Q304)



1SS181(D109, 110, 302)
(A3)

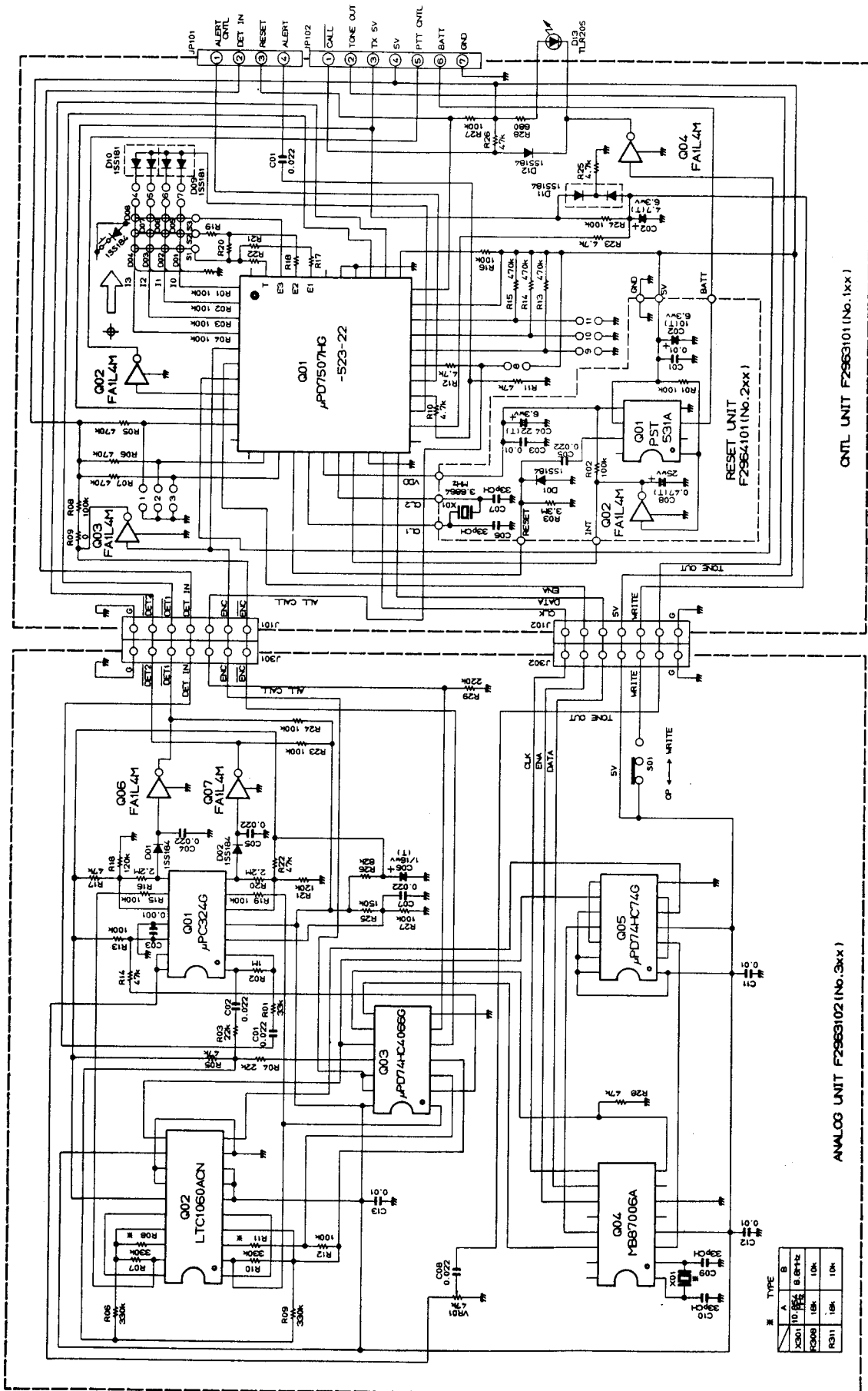


1SS184 (D101~108, 111)
(B3) (112, 201, 301)



FA1L4M(L31)
(Q102, 103, 104,
202, 306, 307)

F5D-8



F5D-8A/B
CIRCUIT DIAGRAM

RESISTOR VALUES ARE IN Ω, 1/10Ω;
CAPACITOR VALUES ARE IN μF, 50μV;
††† CAPACITORS ARE TANTALUM.

| * TYPE | A | B |
|--------|-----|-----|
| X5011 | 10 | 10 |
| F3009 | 10K | 10K |
| R3111 | 10K | 10K |

Decoder

Demodulated receiver audio is amplified and limited by one section of quad opamp Q301 (uPC324G) before filtering by dual SCF peak filter IC Q302 (LTC1060CN).

The center frequencies of the two peak filters (one for private calling tones and the other for the group tone) are controlled by programmable clock signals derived from 10.854 MHz crystal X301, divided by Q304 (MB87006A) and shaped by Q305 (uPD74HC-74G). Valid tone signals passing through Q302 are returned to two sections of Q301 for detection and signalling to the CNTL Unit via one of inverters Q306 or Q307 (FA1L4M x2).

When a valid tone has been received, microprocessor Q101 (uPD7507HG-523-22) on the CNTL Unit sends serial instructions to clock divider Q304 to change the filter clock frequency to match the next programmed tone.

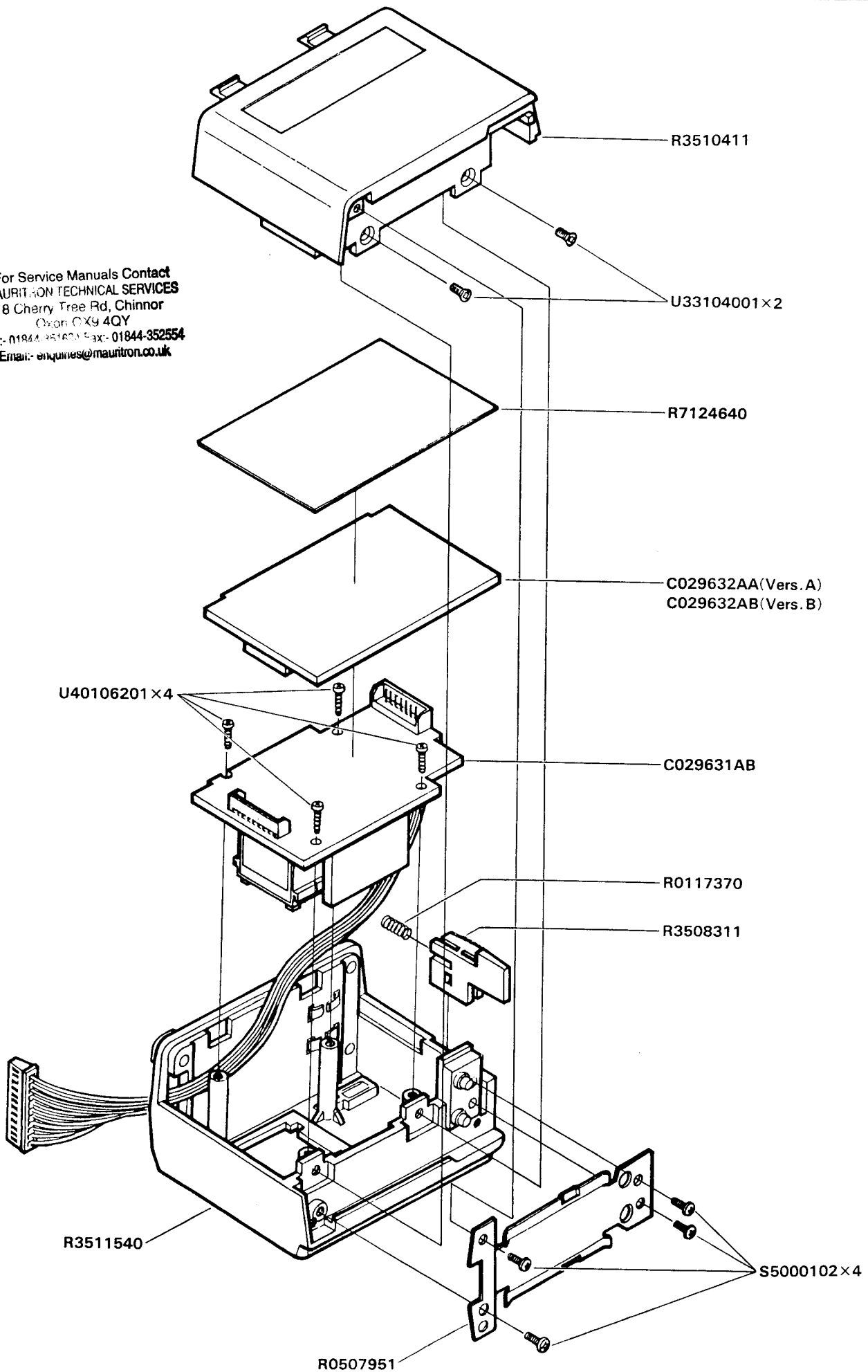
If five tones are received matching those programmed, an alerting tone is generated and passed to the receiver audio amplifier to signal the operator. The transpond tone is also generated when the transpond feature is activated.

Encoder

When the PTT switch is pressed to transmit, microprocessor Q101 instructs clock divider Q304 to generate pulses at twice the required tone frequency. Q305 then reshapes these pulses into a square wave at the required frequency, which is passed through encode/decode analog switch Q303 (uPD74HC4066G) and filtered by Q302 to form a sign wave. The resulting sign wave is amplified by one section of Q301 before delivered to the modulator.

F5D-8

For Service Manuals Contact
MAURITRON TECHNICAL SERVICES
8 Cherry Tree Rd, Chinnor
Oxon OX9 4QY
Tel: 01844-351600 Fax: 01844-352554
Email: enquiries@maurtron.co.uk

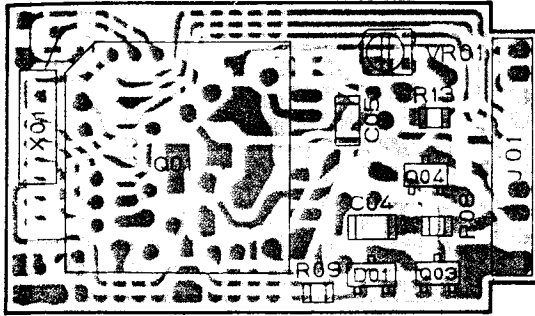


| *** CNTL UNIT *** | | *** RESET UNIT *** | |
|---------------------------------|-----------|-----------------------|----------------|
| Printed Circuit Board | | Printed Circuit Board | |
| F2963101 | | F2964101 | |
| PCB w/Components, w/ Reset unit | | PCB w/ Components | |
| PCB w/Components, w/ Reset unit | | PCB w/ Components | |
| J101 | S6000652 | Connector | 53022-0710 |
| J102 | S6000652 | Connector | 53022-0710 |
| J101 | T9205676 | Wire Assy | |
| Q101 | G1090866 | IC | LTC1060ACN |
| Q102 | G3070013 | Transistor | FAIL4M-T2B |
| Q103 | G3070013 | Transistor | FAIL4M-T2B |
| Q104 | G3070013 | Transistor | FAIL4M-T2B |
| D101 | G2070009 | Diode | ISS184 TE85R |
| D102 | G2070009 | Diode | ISS184 TE85R |
| D103 | G2070009 | Diode | ISS184 TE85R |
| D104 | G2070009 | Diode | ISS184 TE85R |
| D105 | G2070009 | Diode | ISS184 TE85R |
| D106 | G2070009 | Diode | ISS184 TE85R |
| D107 | G2070009 | Diode | ISS184 TE85R |
| D108 | G2070009 | Diode | ISS184 TE85R |
| D109 | G2070001 | Diode | ISS181 TE85R |
| D110 | G2070001 | Diode | ISS181 TE85R |
| D111 | G2070009 | Diode | ISS184 TE85R |
| D112 | G2070009 | Diode | ISS184 TE85R |
| D113 | G2090137 | Diode | TLR205 |
| R101 | J24205104 | Chip Res. | 100k Ohm 1/10W |
| R102 | J24205104 | Chip Res. | 100k Ohm 1/10W |
| R103 | J24205104 | Chip Res. | 100k Ohm 1/10W |
| R104 | J24205104 | Chip Res. | 100k Ohm 1/10W |
| R105 | J24205474 | Chip Res. | 470k Ohm 1/10W |
| R106 | J24205474 | Chip Res. | 470k Ohm 1/10W |
| R107 | J24205474 | Chip Res. | 470k Ohm 1/10W |
| R108 | J24205104 | Chip Res. | 100k Ohm 1/10W |
| R109 | J24205000 | Chip Res. | 0 Ohm 1/10W |
| R110 | J24205472 | Chip Res. | 4.7k Ohm 1/10W |
| R111 | J24205473 | Chip Res. | 47k Ohm 1/10W |
| R112 | J24205472 | Chip Res. | 4.7k Ohm 1/10W |
| R113 | J24205474 | Chip Res. | 470k Ohm 1/10W |
| R114 | J24205474 | Chip Res. | 470k Ohm 1/10W |
| R115 | J24205474 | Chip Res. | 470k Ohm 1/10W |
| R116 | J24205104 | Chip Res. | 100k Ohm 1/10W |
| R118 | J24205000 | Chip Res. | 0 Ohm 1/10W |
| R120 | J24205000 | Chip Res. | 0 Ohm 1/10W |
| R123 | J24205472 | Chip Res. | 4.7k Ohm 1/10W |
| R124 | J24205104 | Chip Res. | 100k Ohm 1/10W |
| R125 | J24205472 | Chip Res. | 4.7k Ohm 1/10W |
| R126 | J24205473 | Chip Res. | 47k Ohm 1/10W |
| R127 | J24205104 | Chip Res. | 100k Ohm 1/10W |
| R128 | J24205681 | Chip Res. | 680 Ohm 1/10W |
| C101 | K22140807 | Chip Cap. | 0.022uF 25V B |
| C102 | K78080002 | Tantalum Chip Cap. | 4.7uF 6.3V |
| S101 | N7090071 | Thumbwheel Switch | A7C-S106 |
| S102 | N7090071 | Thumbwheel Switch | A7C-S106 |
| S103 | N7090071 | Thumbwheel Switch | A7C-S106 |
| | S6000127 | Dummy Switch | A7C-1PC |

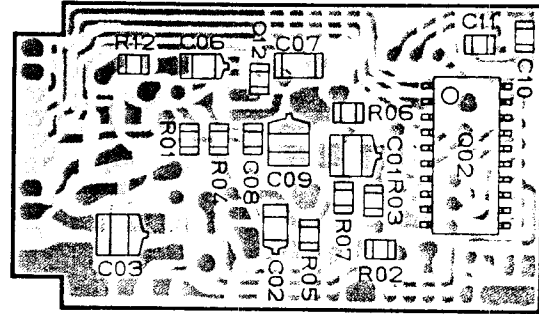
| *** CNTL UNIT *** | | *** RESET UNIT *** | |
|--------------------------------|----------|--------------------------------|------------------|
| Printed Circuit Board | | Printed Circuit Board | |
| F2963102 | | F2963102 | |
| PCB w/Components F5D-8A (ZVE1) | | PCB w/Components F5D-8A (ZVE1) | |
| PCB w/Components F5D-8B (CCIR) | | PCB w/Components F5D-8B (CCIR) | |
| Q301 | G1090603 | IC | uPC324G |
| Q302 | G1090889 | IC | LTC1060ACN |
| Q303 | G1090871 | IC | uPD74HC4066G |
| Q304 | G1090869 | IC | MB87006AFP-G-BND |
| Q305 | G1090872 | IC | uPD74HC74G |
| Q306 | G3070013 | Transistor | FAIL4M-T2B |
| Q307 | G3070013 | Transistor | FAIL4M-T2B |
| D301 | G2070009 | Diode | ISS184 TE85R |
| D302 | G2070001 | Diode | ISS181 TE85R |
| X301 | H0102880 | Crystal (F5D-8A) | UM-1 10.85-MHz |
| X301 | H0102881 | Crystal (F5D-8B) | UM-1 8.8MHz |

| | | | | | |
|-------|-----------|--------------------|------------|-------|----|
| R301 | J24205333 | Chip Res. | 33k Ohm | 1/10W | |
| R302 | J24205105 | Chip Res. | 1M Ohm | 1/10W | |
| R303 | J24205223 | Chip Res. | 22k Ohm | 1/10W | |
| R304 | J24205223 | Chip Res. | 22k Ohm | 1/10W | |
| R305 | J24205473 | Chip Res. | 47k Ohm | 1/10W | |
| R306 | J24205334 | Chip Res. | 330k Ohm | 1/10W | |
| R307 | J24205334 | Chip Res. | 330k Ohm | 1/10W | |
| R308 | J24205183 | Chip Res. (ZVEI) | 18k Ohm | 1/10W | |
| R309 | J24205103 | Chip Res. (CCIR) | 10k Ohm | 1/10W | |
| R310 | J24205334 | Chip Res. | 330k Ohm | 1/10W | |
| R311 | J24205183 | Chip Res. (ZVEI) | 18k Ohm | 1/10W | |
| R312 | J24205103 | Chip Res. (CCIR) | 10k Ohm | 1/10W | |
| R313 | J24205104 | Chip Res. | 100k Ohm | 1/10W | |
| R314 | J24205473 | Chip Res. | 100k Ohm | 1/10W | |
| R315 | J24205104 | Chip Res. | 47k Ohm | 1/10W | |
| R316 | J24205225 | Chip Res. | 100k Ohm | 1/10W | |
| R317 | J24205473 | Chip Res. | 2.2M Ohm | 1/10W | |
| R318 | J24205124 | Chip Res. | 47k Ohm | 1/10W | |
| R319 | J24205104 | Chip Res. | 120k Ohm | 1/10W | |
| R320 | J24205225 | Chip Res. | 100k Ohm | 1/10W | |
| R321 | J24205124 | Chip Res. | 2.2M Ohm | 1/10W | |
| R322 | J24205473 | Chip Res. | 120k Ohm | 1/10W | |
| R323 | J24205104 | Chip Res. | 47k Ohm | 1/10W | |
| R324 | J24205104 | Chip Res. | 100k Ohm | 1/10W | |
| R325 | J24205154 | Chip Res. | 100k Ohm | 1/10W | |
| R326 | J24205823 | Chip Res. | 150k Ohm | 1/10W | |
| R327 | J24205104 | Chip Res. | 82k Ohm | 1/10W | |
| R328 | J24205473 | Chip Res. | 100k Ohm | 1/10W | |
| R329 | J24205224 | Chip Res. | 47k Ohm | 1/10W | |
| VR301 | J51778473 | Potentiometer | 47k Ohm | 1/10W | |
| C301 | K22140807 | Chip Cap. | 0.022uF | 25V | B |
| C302 | K22140807 | Chip Cap. | 0.022uF | 25V | B |
| C303 | K22170805 | Chip Cap. | 0.001uF | 50V | B |
| C304 | K22140807 | Chip Cap. | 0.022uF | 25V | B |
| C304 | K22140807 | Chip Cap. | 0.022uF | 25V | B |
| C305 | K22140807 | Chip Cap. | 0.022uF | 25V | B |
| C306 | K78120013 | Tantalum Chip Cap. | 1uF | 16V | B |
| C307 | K22140807 | Chip Cap. | 0.022uF | 25V | B |
| C308 | K22140807 | Chip Cap. | 0.022uF | 25V | B |
| C309 | K22170223 | Chip Cap. | 33pF | 50V | CH |
| C310 | K22170223 | Chip Cap. | 33pF | 50V | CH |
| C311 | K22170817 | Chip Cap. | 0.01uF | 50V | B |
| C312 | K22170817 | Chip Cap. | 0.01uF | 50V | B |
| C313 | K22170817 | Chip Cap. | 0.01uF | 50V | B |
| S301 | N6090060 | Slide Switch | SSS71 | | |
| J301 | P1090604 | Connector | 55024-0710 | | |
| J302 | P1090604 | Connector | 55024-0710 | | |

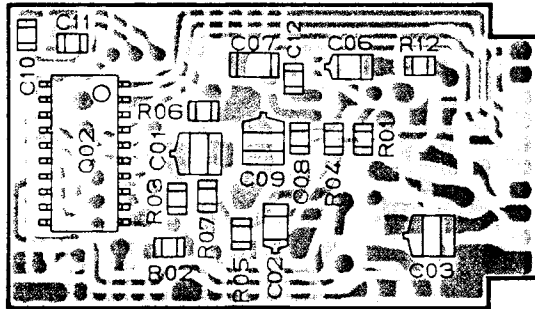
For Service Manuals Contact
MAURITRON TECHNICAL SERVICES
 8 Cherry Tree Rd, Chinnor
 Oxon OX9 4QY
 Tel:- 01844-351694 Fax:- 01844-352554
 Email:- enquiries@mauritron.co.uk



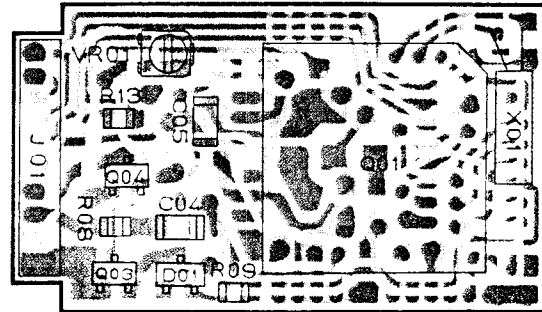
(Obverse view of "mixed-component" side)



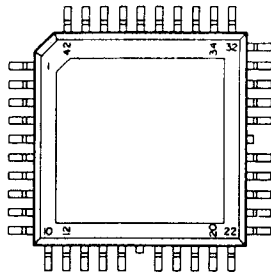
(Obverse view of "chip-only" side)



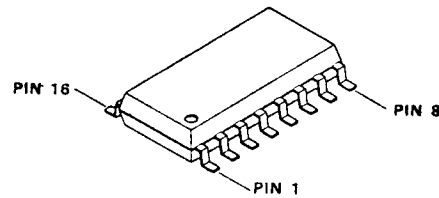
(Reverse view of "chip-only" side)



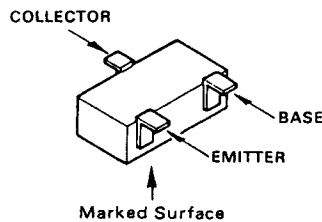
(Reverse view of "mixed-component" side)



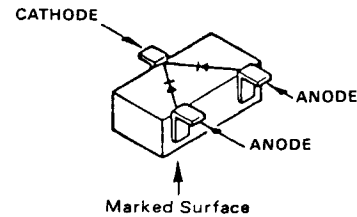
MN6520(Q01)



μPD4094BG(Q02)

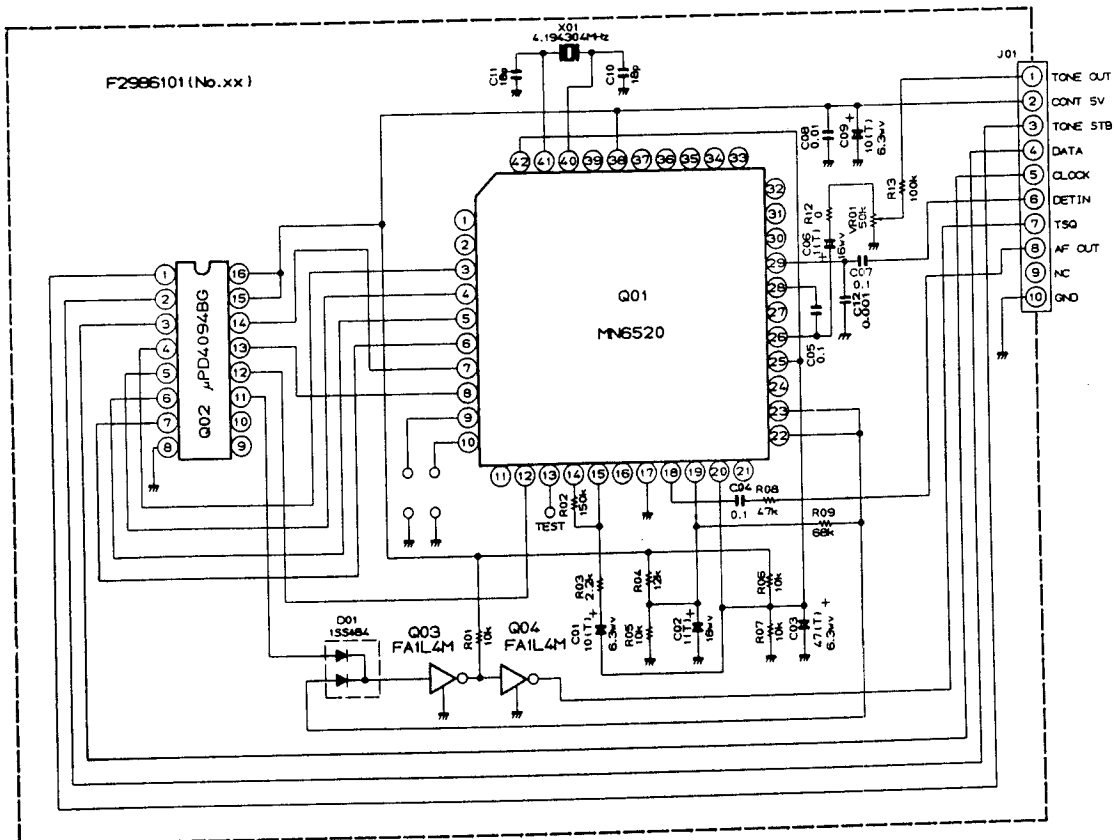


FA1L4M(L31)(Q03,04)



1SS184(B3)(D01)

| F2986101 | | Printed Circuit Board | |
|----------|-----------|-----------------------|------------------|
| Q01 | G1090577 | IC | MN6520 |
| Q02 | G1090696 | IC | uPD4094BG |
| Q03 | G3070013 | Transistor | FAIL4M-T2B |
| Q04 | G3070013 | Transistor | FAIL4M-T2B |
| D01 | G2070009 | Diode | 1SS184 TE85R |
| X01 | H0102571 | Crystal | MS41F 4.1943 MHz |
| R01 | J24205103 | Chip Res. | 10k Ohm 1/10W |
| R02 | J24205154 | Chip Res. | 150k Ohm 1/10W |
| R03 | J24205222 | Chip Res. | 2.2k Ohm 1/10W |
| R04 | J24205123 | Chip Res. | 12k Ohm 1/10W |
| R05 | J24205103 | Chip Res. | 10k Ohm 1/10W |
| R06 | J24205103 | Chip Res. | 10k Ohm 1/10W |
| R07 | J24205103 | Chip Res. | 10k Ohm 1/10W |
| R08 | J24205473 | Chip Res. | 47k Ohm 1/10W |
| R09 | J24205683 | Chip Res. | 68k Ohm 1/10W |
| R12 | J24205000 | Chip Res. | 0 Ohm 1/10W |
| R13 | J24205104 | Chip Res. | 100k Ohm 1/10W |
| VR01 | J51771503 | Potentiometer | 50k Ohm |
| C01 | K78080003 | Tantalum Chip Cap. | 10uF 6.3V |
| C02 | K78120013 | Tantalum Chip Cap. | 1uF 16V |
| C03 | K78080013 | Tantalum Chip Cap. | 47uF 6.3V |
| C04 | K22141809 | Chip Cap. | 0.1uF 25V B |
| C05 | K22141809 | Chip Cap. | 0.1uF 25V B |
| C06 | K78120013 | Tantalum Chip Cap. | 1uF 16V |
| C07 | K22141809 | Chip Cap. | 0.1uF 25V B |
| C08 | K22170817 | Chip Cap. | 0.01uF 50V B |
| C09 | K78080003 | Tantalum Chip Cap. | 10uF 6.3V |
| C10 | K22170217 | Chip Cap. | 18pF 50V CH |
| C11 | K22170217 | Chip Cap. | 18pF 50V CH |
| C12 | K22170805 | Chip Cap. | 0.001uF 50V B |
| J01 | P0090600 | Connector | IL-Y-10P-S15T2-E |



RESISTOR VALUES ARE IN Ω , 1/10W;
CAPACITOR VALUES ARE IN μ F, 50V, UNLESS OTHERWISE NOTED.

FTS-16
CIRCUIT DIAGRAM