MAINTENANCE MANUAL
DUAL FORMAT PCS RADIO
REAR ASSEMBLY
19D902175G7

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ILLUSTRATIONS

ERICSSON

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DESCRIPTION

The Rear Assembly 19D902175G7 provides a metal housing for the RF Board 188D6460G1. The antenna connects to a BNC type connector that is mounted to the top of the Rear Assembly. The battery contacts and latch are on the bottom of the rear assembly. The RF board consists of the following circuits:

- A frequency synthesizer for generating the transmit carrier frequency and the first mixer injection frequency for the receive circuitry.
- The TX/RX switches along with all transmit and receive circuits.
- Two voltage regulator circuits.

Refer to Figure 1 for a block diagram of the synthesizer and Figure 2 for a block diagram of the Transmit/Receive circuits.

CIRCUIT ANALYSIS

The Schematic Diagram for the Transmit/Receive Board is broken into three sheets. Sheet 1 is for the Synthesizer circuits, sheet 2 is for the Transmitter circuits and sheet 3 is for the Receiver circuits. The following sections discuss these circuits in detail.

The frequency adjustment for the transmit circuit is accessible from the top side of the board. IF alignment, second oscillator and quadrature detector adjustment for the receive circuit are also accessible from the top of the board. Chip components on the bottom of the board along with carefully placed friction fit shields provide optimum RF performance.

Selected use of sealed modules permits small board size as well as RF and mechanical protection for sensitive circuitry. It is recommended not to repair but to place the following modules if they are determined to be damaged:

- Power Amplifier (PA) Module (U101)
- Prescaler Module (U201)
- Reference Oscillator Module (U202)
- VCO Module (U203)
- Loop Filter (A202)

SYNTHESIZER CIRCUIT

The microprocessor controlled frequency synthesizer circuit generates all transmit and receive RF frequencies for the Dual Format PCS radio. This circuit uses a Voltage Controlled Oscillator (VCO) operating on the actual transmit frequency of 806-824 (851-869 talk-around) during transmit and 45.3 MHz below the actual receive frequency during receive.

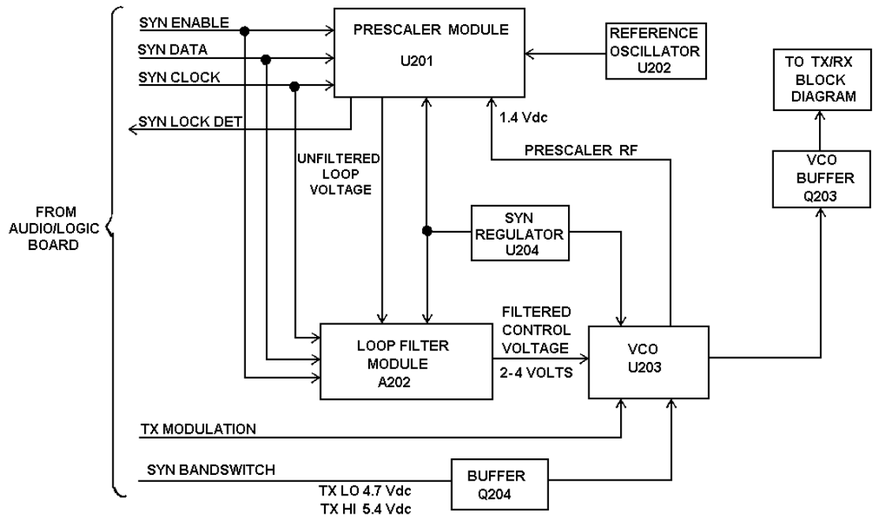


Figure 1 - Synthesizer Block Diagram

VCO (U203)

The Synthesizer output signal is generated directly by the VCO module U203 and fed through a bandpass filter and a RF switch on to the Local Oscillator buffer and the PA buffer. A control voltage from the Loop Filter is applied to pin 3 of the VCO module and is used to control VCO frequency output at U203-5. Transmitter modulation from the Audio Logic board is applied to pin 2 and summed with the control voltage within the module. A second output (pin 6) provides RF to the Prescaler RF input (U201-9). The **SYN BANDSWITCH** line from the Audio Logic board is applied to pin 1 via invertor Q204. The input at pin 1 is high for VCO frequencies of 806-824 MHz, and low for frequencies of 851-869 MHz.

Reference Oscillator (U202)

The synthesizer frequency output is set by the microprocessor on the Audio Logic Board. Frequency stability is maintained by a Temperature Compensated Crystal Controlled Oscillator (TCXO) module. The oscillator has a stability of ±1.5 PPM over the range of -30°C to 60°C and determines the overall frequency stability of the radio. U202 provides a 12.8 MHz reference frequency for the Prescaler Module.

Prescaler Module (U201)

The synthesizer IC and the prescaler IC are both contained in the Prescaler Module. See the schematic of the Prescaler Module.

The **PRESCALER RF** output from the VCO at U203-6 is used to feed the dual-modulus prescaler IC (U2) within the Prescaler Module. U2 divides the VCO signal by 128 or 129 according to the logic level of the modulus control. The prescaler output feeds the synthesizer IC (U1).

Within U1 the signal is further divided down by a programmable ratio which corresponds to the particular frequency being synthesized and compared with a reference signal. This reference signal originates from the Reference Oscillator U202, is fed to the Prescaler Module at pin 7 and divided down by divider circuits within U1. The divider circuits within U1 are programmed by three input from the microprocessor located on the Audio Logic Board. These inputs are labeled **SYN EN**, **SYN DATA**, **SYN CLK** and are fed to the Prescaler Module at pins 4, 3 and 2 respectively. The **SYN LOCK DET** output from the Prescaler Module is sent back to the Microprocessor to prevent transmissions when the Synthesizer is unlocked.

Loop Filter Module

The Loop Filter circuitry consists of the Loop Filter board, C204 and C205. See the schematic of the Loop Filter Module.

The Loop Voltage from the Prescaler Module is applied to the Loop Filter Module at pin 10. Within the Loop Filter Module the Loop Voltage is applied to Operational Amplifier U1.1. U1.1 is biased to produce gain variation with different Loop voltages. When the Loop voltage is below 2.2 volts, both diodes in diode package D1 are biased off. The operational amplifier gain is then one. As the Loop voltage rises above approximately 2.4 volts, one of the diodes in D1 is forward biased. This increases the operational amplifier gain to approximately 1.1. Further increases in the Loop voltage above approximately 3.0 volts turns both diode paths on, thus increasing the gain to about 1.2. Gain variation versus loop voltage compensates for decreasing VCO gain at higher control voltages. The net effect of this is to linearize the loop response across the frequency band to maintain relatively constant audio modulation.

The synthesizer enable line also drives bilateral switches U2.2 and U2.3 on the loop filter board. The pulse applied to these gates, when channel changes occur, turns the gates on which shorts out resistors R8 and R12. This allows rapid channel acquisition.

Synthesizer Regulator

The **5.4V REG** from Voltage Regulator U801 is divided in half by voltage divider R207/R208 and is used as a reference for the Synthesizer Regulator consisting of U204.1 and transistors Q201 and Q202. This provides additional filtering and stability for the 5.4 Vdc required by the Prescaler Module and the Loop Filter module.

TRANSMITTER CIRCUIT

The transmitter section consists of a PA buffer section, a Power Control circuit, a 3-watt Power Amplifier Module (U101), a Transmitter switch, a T/R switch and a low pass filter.

PA Buffer

Power Amplifier Buffer Q109 is driven by the VCO output **SYN RF** at a level approximately 0 dBm. Q109 drives Power Amplifier Module U101 at approximately +7 dBm. The Power Control circuit is used to control the power from the Power Module U101 by increasing or decreasing the module bias at pin 1. DC power is applied to the buffer only in the transmit mode.

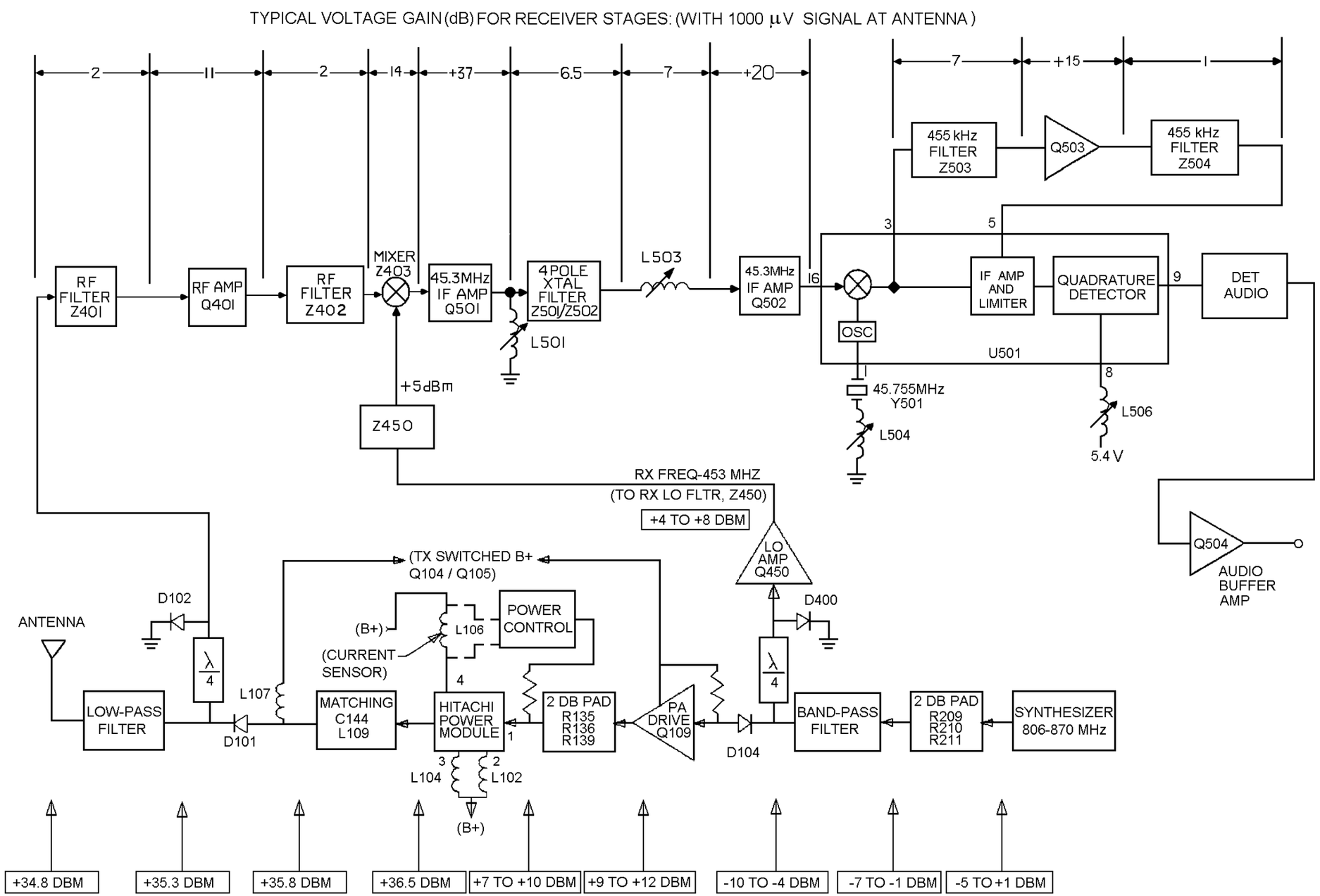


Figure 2 - Transmit And Receive Circuit Block Diagram

Power Control

The Power Control circuit allows the radio transmit power to be set between 1 Watt and 3 Watts. It keeps the output power close to the set value in spite of variations in transmit frequency, battery voltage, temperature and load.

To do this, the Power Control circuit senses the current supplied to the final stage of the Power Amplifier Module through current shunt L106 and uses a feedback control circuit to keep this current constant at a value which corresponds to the transmit power setting selected.

I SENSE and **B+** provide the input voltages to the Power Control circuit. The **I SENSE** input supplies a current sink consisting of R137, R121, Q103.2 and R108. The **B+** input supplies a similar current sink consisting of R104, Q103.1, R117 and R118. The voltages at pin 5 and 6 of Operational Amplifier U204 depend on the input voltages **B+** and **I SENSE** and on the base voltages supplied to Q103.1 and Q103.2.

Under normal conditions the positive and negative terminals of U204.2 are at the same voltage. If the power delivered by the Power Amplifier Module decreases for any reason, the current supplied to its final stage through L106 goes down causing the **I SENSE** voltage to go up. This unbalances the inputs to U204.2 making the positive input slightly higher than the negative one. This causes the output voltage on pin 7 to go up, increasing the bias on pin 1 of U101. This increase in bias causes increased gain in the Power Amplifier Module restoring its output power to the set value (by forcing the current in the final stage back to its original value).

If the power delivered by the Power Amplifier Module goes up, the loop responds in the opposite manner decreasing the bias to the Power Amplifier to restore the output power.

The power setting at which the control loop stabilizes can be changed by increasing or decreasing the current through Q103.1. This is done by supplying a power set voltage to the base of Q103.1 via the voltage divider consisting of R107 and R106. Resistor R105 serves to increase the current setting slightly with increasing battery voltage. This will compensate for changes in the power efficiency of the power amplifier U101.

Q103.1 and Q103.2 are contained within the same SOT package to reduce the temperature differential between the two parts. In receive mode the 5 volt **DPTT** voltage is supplied to Q103.1 through D103 and R109 to switch this transistor off. This assures that the transmitter Power Amplifier Module cannot come on in receive mode.

Power Amplifier Module (U101)

Power Module U101 is a three-stage broad band MOSFET power amplifier with internal matching. This module mounts to the rear casting for heat sinking. Output power is controlled by varying the Power Control Voltage to the module input pin, which varies the gain of the PA Module. All stages draw from B+. The final stage is fed through current shunt L106. The DC voltage drop across this shunt provides the sense voltage for the power control circuit.

Tx Switches

The transmit circuit is enabled by the **$\overline{\text{DPTT}}$** line from the Audio/Logic Board. When the PTT button is activated, the **$\overline{\text{DPTT}}$** line is pulled low. This allows transistors Q105 and Q104 to conduct supplying SW_B+ = (B+) -V_S at Q104 to the power control and Tx Buffers, both Tx/Rx switches and the Rx RF Amp and L.O. Buffer switch (Q402).

Tx/Rx Switches

The Tx/Rx Switches consist of series PIN diodes D101, D102, D104 and D400. D104 and D400 with C463 and L400 form an isolation switch and quarter-wave transformer. In Tx, D400 (on) isolates the L.O. path from the tranmit drive, reflecting a high impedance to the SYN RF. SYN RF is connected to the PA Buffer, Q109, through D104 (on). In Rx, D400 and D104 are off and SYN RF is connected to the L.O. Buffer and isolated from the PA Buffer.

D101 and D102 with C141, C130, C131, L111 form an isolation switch and quarter-wave transformer. This arrangement performs similarly to the above circuit to route RF from the PA to antenna (Tx) or antenna to Rx (Rx). C127, R140, C128 are provided to "tune out" the "off" capacitance of D101. (R140 and interconnecting run with C127 yield a net inductance at Rx frequencies).

Also in Tx, SW B+ turns off Q402 switch which interrupts bias current to Q401 and Q450. This prevents spurious Tx signals from feeding back through these amplifiers.

Low Pass Filter

A five-element low pass filter consisting of C132-C135, L110 and L112 is provided to prevent excessive transmitter harmonics from being transmitted. This filter in conjunction with the matching circuitry in the PA module limits the conducted harmonic energy to less than -30 dBm.

RECEIVER CIRCUIT

The dual conversion receive circuit consists of a receiver front end, a 45.3 MHz first IF, two 455 kHz bandpass filters to form the second IF and an FM detector. All audio processing and squelch functions are accomplished on the Audio/Logic Board.

Front End

RF is coupled from antenna jack J1 to the RF Board through antenna clip connector J101. The receive signal is then conducted through the Tx low pass filter and Tx/Rx Switch to receive preselector filter Z401. This is a non-tunable dielectric-resonator filter covering 851-869 MHz. Its output is matched by inductor strip W402 to the input of RF Amplifier transistor Q401. Q401 provides approximately 10 dB of gain for filter Z402. Both Z401 and Z402 are identical and have insertion losses of less than 2.2 dB in the 851-869 MHz passband with a minimum stopband attentuation of 35 dB. The filters have input and output impedances of 50 ohms. Z402 is connected between the RF amplifier and double balanced mixer Z403. The Local Oscillator (LO) port of the mixer Z403 is driven by LO buffer transistor Q450. The filtered synthesizer output drives this buffer. The output of Q450 drives non-tunable dielectric-resonator filter Z450, which couples the drive to the Mixer Z403 at about +4 dBm.

NOTE

The transistor circuits for the Local Oscillator Buffer Q450, the VCO Buffer Q203 and the RF Amplifier Q401 are connected in series to preserve battery current. The voltage ("A") at the emitter of Q450 (4.1 Vdc) is applied to the collector of Q203. The voltage ("B") at the emitter of Q203 (2 Vdc) is applied to the collector of Q401.

Mixer, IF Pre-Amp, And IF Amp

The mixer output is connected to transistor Q501. Q501 provides a low impedance input to match the mixer and high impedance output to drive the 45.3 MHz 4-pole cystal filter consisting of Z501 and Z502. The crystal filter output is amplified by bipolar IF Amp transistor Q502. This IF amplifier output drives the second Mixer circuit in Mixer/Limiter/Detector U501.

Mixer/Limiter/Detector U501

Crystal Y501 is an external crystal operating at 45.755 MHz and when coupled to the internal circuitry of U501 forms the second LO for the second mixer circuit. The frequency of the second LO is adjusted with inductor L504.

The second mixer output 455 kHz IF is filtered by 4-pole ceramic filters Z503 and Z504. This output is further amplified and limited by U501. A quadrature detector circuit provides an audio output from U501. The quadrature detector coil is L506. The audio output is filtered, buffered and connected to the Audio/Logic Board as **DET AUDIO**.

5.4 Volt Regulator

The 5.4 Volt Regulator U801 supplies a regulated 5.4 volts to all circuits requiring a stable reference voltage. B+ from the battery at P801-4 is fed to the input of U801 at pin 6. U801 generates a regulated +5.4 volts that is stable with both temperature and battery voltage.

REAR ASSEMBLY
19D902175G7
ISSUE 1

SYMBOL	PART NO.	DESCRIPTION
		- - - - - - - - - - ASSEMBLIES - - - - - - - - -
A1		**RF BOARD 188D6460G1**
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
3	19A702364P304	Machine screw, TORX drive, Pan Head.
7	19A705732P329	Machine Screw, Oval Head, TORX drive.
8	19A705732P333	Machine Screw, Oval Head, TORX drive.
10	19A705883P5	Crystal Cushion.
11	19B801657P1	Insulator.
12	19B801655P1	SHIELD.
14	19A703346P2	PAD.
18	19B801572G2	SHIELD, RF.
19	19D902174G2	COVER, Assembly.
20	19B801671P2	Connector Shield.
21	19B801492P4	CLIP.
22	19A702364P1305	Machine Screw.
		- - - - - - - - - - ASSEMBLIES - - - - - - - - -
A202		**LOOP FILTER BOARD 19C852174G1**
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C1 thru C3	19A149897P33	Ceramic: 56 pF + or -5%, 50 VDCW.
C4	19A149896P121	Ceramic: .01 uF + or -10%, 50 VDCW.
C5	19A149897P33	Ceramic: 56 pF + or -5%, 50 VDCW.
C6 and C7	19A149896P121	Ceramic: .01 uF + or -10%, 50 VDCW.
C8	19A149896P117	Ceramic: 4700 pF + or -10%, 50 VDCW.
C9	19A149896P121	Ceramic: .01 uF + or -10%, 50 VDCW.
		- - - - - - - - - - DIODES - - - - - - - - - -
D1	19A703561P2	Silicon, fast recovery (2 diodes in series).
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1	19A149818P154	Metal film: 150K ohms + or -5%, 1/16 w.
R2	19A149818P104	Metal film: 100K ohms + or -5%, 1/16 w.
R3 and R4	19A149818P683	Metal film: 68K ohms + or -5%, .063 watts at 70 'C.
R5	19A149818P101	Metal film: 100 ohms + or -5%, 1/16 w.
R6	19A149818P682	Metal film: 6.8K ohms + or -5%, 1/16 w.
R7	19A149818P104	Metal film: 100K ohms + or -5%, 1/16 w.
R8	19A149818P105	Metal film: 1M ohms + or -5%, 1/16 w.
R9	19A149818P684	Metal film: 680K ohms + or -5%, 1/16 w.
R10	19A149818P224	Metal film: 220K ohms + or -5%, 1/16 w.
R11	19A149818P123	Metal film: 12K ohms + or -5%, 1/16 w.
R12	19A149818P333	Metal film: 33K ohms + or -5%, 1/16 w.
R13	19A149818P104	Metal film: 100K ohms + or -5%, 1/16 w.
R14	19A149818P101	Metal film: 100 ohms + or -5%, 1/16 w.
R15	19A149818P684	Metal film: 680K ohms + or -5%, 1/16 w.

SYMBOL	PART NO.	DESCRIPTION
		- - - - - - - - INTEGRATED CIRCUITS - - - - - - -
U1	19A702293P3	Linear: Dual Op Amp; sim to LM358D.
U2	19A702705P4	Digital: Quad Analog Switch/Multiplexer.
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C204	19A700004P9	Metalized polyester: 0.47uF + or -10%, 63 VDCW.
C205	19A703902P4	Metal: 0.56 uF + or -10%, 50 VDCW.
		- - - - - - - - - - JACKS - - - - - - - - - -
J101	19B801491P2	Antenna clip.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L106	19B801566P11	Shield.
L501	19B801413P4	Coil, 39 MHz.
L503	19B801413P3	Coil, 39 MHz.
L504	19B801413P4	Coil, 39 MHz.
L506	19A703591P1	IF: sim to Toko America P5SVLC-A291EL.
		- - - - - - - - - - PLUGS - - - - - - - - - -
P801	19C851673P2	Connector, 12 position.
		- - - - - - - - - - TEST POINTS - - - - - - - - -
TP1	19B801566P12	Shield.
		- - - - - - - - INTEGRATED CIRCUITS - - - - - - -
U101	RYTUA90107/1	PA MODULE, PF1015D.
U201		**PRESCALER BOARD 19C852187G1**
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C1	19A149896P9	Ceramic: 1000 pF + or -5%, 50 VDCW.
C2	19A149897P47	Ceramic: 220 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C3	19A149896P121	Ceramic: .01 uF + or -10%, 50 VDCW.
C4	19A149896P9	Ceramic: 1000 pF + or -5%, 50 VDCW.
C5	19A149897P33	Ceramic: 56 pF + or -5%, 50 VDCW.
C6	19A149896P121	Ceramic: .01 uF + or -10%, 50 VDCW.
C7	19A149897P14	Ceramic: 8.2PF.
C8 thru C10	19A149897P33	Ceramic: 56 pF + or -5%, 50 VDCW.
C14 and C15		Ceramic: 56 pF + or -5%, 50 VDCW.
		- - - - - - - - - - DIODES - - - - - - - - - -
D1	19A700053P2	Silicon: 2 Diodes in Series; sim to BAV99.
		- - - - - - - - - - JACKS - - - - - - - - - -
J1 thru J9	19A703248P9	Contact, electrical.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L1	344A3289P1	Surface mount, coil, fixed: .01 uH + or -20%.

SYMBOL	PART NO.	DESCRIPTION
		- - - - - - - - - - TRANSISTORS - - - - - - - - -
Q1	19A704708P2	Silicon, NPN: sim to NEC 2SC3356.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1	19A149818P333	Metal film: 33K ohms + or -5%, 1/16 w.
R2	19A149818P220	Metal film: 22 ohms + or -5%, 1/16 w.
R3	19A149818P104	Metal film: 100K ohms + or -5%, 1/16 w.
R4	19A149818P222	Metal film: 2.2K ohms + or -5%, 1/16 w.
R5	19A149818P100	Metal film: 10 ohms + or -5%, 1/16 w.
R6	19A149818P471	Metal film: 470 ohms + or -5%, 1/16 w.
R7	19A149818P103	Metal film: 10K ohms + or -5%, 1/16 w.
R8	19A149818P562	Metal film: 5.6K ohms + or -5%, 1/16 w.
R9	19A149818P221	Metal film: 220 ohms + or -5%, 1/16 w.
		- - - - - - - - INTEGRATED CIRCUITS - - - - - - -
U1	19B800902P5	Synthesizer, custom: CMOS, serial input.
U2	19A149944P202	Prescaler; sim to Motorola MC12022SLA.
		- - - - - - - - - MISCELLANEOUS - - - - - - - - -
U202	19B801351P22	Crystal Oscillator, 12.8 MHz.
U203		**800 MHz VCO 19C852200G1**
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C1	19A149897P43	Ceramic: 150 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C2	19A702052P134	Ceramic: 0.1 uF + or - 5%, 25 VDCW.
C3	19A149897P43	Ceramic: 150 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C4	19A149897P4	Ceramic: 1.2 pF + or -.25 pF, 50 VDCW.
C5	19A149896P105	Ceramic: 470 pF + or -10%, 50 VDCW.
C6	19A149897P43	Ceramic: 150 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C7	19A149896P105	Ceramic: 470 pF + or -10%, 50 VDCW.
C8	19A705205P5	Tantalum: 6.8 uF, 10 VDCW; sim to Sprague 293D.
C9	19A149897P55	Ceramic: 470 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C10 and C11	19A149897P43	Ceramic: 150 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C12	19A149897P55	Ceramic: 470 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C13	19A149897P10	Ceramic: 3.9 pF + or -.25 pF, 50 VDCW.
C14	19A704350P101	Variable: 2-6 pF +50-0%.
C15	19A149897P208	Ceramic: 2.7 pF + or - .1 pF, 50 VDCW.
C16	19A149897P43	Ceramic: 150 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C17	19A149897P208	Ceramic: 2.7 pF + or - .1 pF, 50 VDCW.
C18	19A702236P23	Ceramic: 8.2 pF + or -.25 pF, 50 VDCW, temp or -30 PPM.
C19	19A149897P55	Ceramic: 470 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C20	19A149897P43	Ceramic: 150 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C21	T644ACP333K	Polyester: .033 uF + or -10%, 50 VDCW.
C22	19A149897P27	Ceramic: 33 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.

SYMBOL	PART NO.	DESCRIPTION
C23	19A149897P43	Ceramic: 150 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C24	19A149897P7	Ceramic: 2.2 pF + or -.25 pF, 50 VDCW.
C25	19A149897P43	Ceramic: 150 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C26	19A149897P25	Ceramic: 27 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C27	19A149897P4	Ceramic: 1.2 pF + or -.25 pF, 50 VDCW.
C29	19A149897P13	Ceramic: 6.8 pF + or -.25 pF, 50 VDCW.
C30	19A149897P211	Ceramic: 4.7 pF + or -.25 pF, 50 VDCW.
C31	19A149897P43	Ceramic: 150 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C32	19A149897P27	Ceramic: 33 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C33	19A149897P10	Ceramic: 3.9 pF + or -.25 pF, 50 VDCW.
C34	19A705205P12	Tantalum: .33 uF, 16 VDCW; sim to Sprague 293D.
		Ceramic: 0.1 uF + or - 5%, 25 VDCW.
C36	19A149897P5	Ceramic: 1.5 pF + or -.25 pF, 50 VDCW.
C37	19A700228P44	Ceramic: 27 pF + or -.25 pF, 50 VDCW.
C38 and C39	19A149897P208	Ceramic: 2.7 pF + or - .1 pF, 50 VDCW.
		- - - - - - - - - - DIODES - - - - - - - - - -
D1	19A700079P3	Silicon; sim to BBY 31.
	19A702525P2	Silicon, PIN: sim to MMBV3401.
	19A700085P2	Silicon; sim to MMBV109.
	19A705377P1	Silicon, Hot Carrier: sim to MMB0201.
		- - - - - - - - - - JACKS - - - - - - - - - -
J1 thru J6	19A703248P9	Contact, electrical.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L1	19A700021P3	Coil, fixed: 68 nH + or -10%.
L2	19B235531P22	Coil, molded, 2.5 turns: 38 nH.
L3	19A700021P10	Coil, RF: 270 nH.
L4 and L5	19A700021P17	Coil, fixed: 1 uH + or - 10%.
L6	344A4540P100	Inductor, surface mount: 10 nH + or -5%.
L7	19A705470P3	Coil, Fixed: 15 nH; sim to Toko 380NB-15nM.
L8	344A3289P3	Surface mount, coil, fixed: .018 uH + or -20%.
L9	344A4540P100	Inductor, surface mount: 10 nH + or -5%.
		- - - - - - - - - - TRANSISTORS - - - - - - - - -
Q1	19A702524P2	N-Type, field effect; sim to MMBFU310.
Q2 thru Q5	19A704708P2	Silicon, NPN: sim to NEC 2SC3356.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R1	19A149818P824	Metal film: 820K ohms + or -5%, 1/16 w.
R2	19A149818P333	Metal film: 33K ohms + or -5%, 1/16 w.
R3 and R4	19A149818P472	Metal film: 4.7K ohms + or -5%, 1/16 w.
R5	19A149818P473	Metal film: 47K ohms + or -5%, 1/16 w.

*COMPONENTS, ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

SYMBOL	PART NO.	DESCRIPTION
R6	19A149818P470	Metal film: 47 ohms + or -5%, 1/16 w.
R7	19A149818P103	Metal film: 10K ohms + or -5%, 1/16 w.
R8 and R9	19A149818P332	Metal film: 3.3K ohms + or -5%, 1/16 w.
R10	19A149818P102	Metal film: 1K ohms + or -5%, 1/16 w.
R11	19A149818P221	Metal film: 220 ohms + or -5%, 1/16 w.
R12	19A149818P102	Metal film: 1K ohms + or -5%, 1/16 w.
R13	19A149818P103	Metal film: 10K ohms + or -5%, 1/16 w.
R14 and R15	19A149818P222	Metal film: 2.2K ohms + or -5%, 1/16 w.
R16	19A149818P100	Metal film: 10 ohms + or -5%, 1/16 w.
R17	19A149818P470	Metal film: 47 ohms + or -5%, 1/16 w.
R18	19A149818P473	Metal film: 47K ohms + or -5%, 1/16 w.
R19	19A149818P474	Metal film: 470K ohms + or -5%, 1/16 w.
		- - - - - - - - - - CRYSTALS - - - - - - - - -
Y501	19B233066G18	Crystal, 800MHz.
		- - - - - - - - - - FILTER - - - - - - - - - -
Z401 and Z402	19A704888P1	Bandpass Filter, 851-871 MHz; sim to: Murata DFC3R861P020BTD.
Z403	19A705423P1	Mixer: Double (balanced); sim to Tele-Tech MT45.
Z450	19A704888P5	RF, bandpass, 806-825 MHz; sim to Murata DFC3R815P020BTD.
Z501	19A705613G34	Crystal pair.
Z502		Part of Z501.
Z503	19A702171P9	Bandpass: 455 kHz; sim to SFG455G.
Z504	19A702171P2	Bandpass, 455 kHz; sim to Murata CFU455F2.
		RF BOARD 188D6460 G1
		- - - - - - - - - - CAPACITORS - - - - - - - - -
C101	19A702236P44	Ceramic: 56 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.
C102	19A702052P7	Ceramic: 2200 pF + or - 10%, 50 VDCW.
C103 thru C107	19A702236P44	Ceramic: 56 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.
C108	19A702236P25	Ceramic: 10 pF + or -.5 pF, 50 VDCW, temp coef -30 PPM/°C.
C109	19A702236P10	Ceramic: 2.2 pF + or -2.5 pF, 50 VDCW, temp or -30 PPM/°C.
C111	19A702236P44	Ceramic: 56 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.
C112	19A702236P11	Ceramic: 2.7 pF + or -0.25 pF, 50 VDCW, temp or -30 PPM.
C113	19A702236P34	Ceramic: 22 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C114	19A702052P134	Ceramic: 0.1 uF + or - 5%, 25 VDCW.
C116	19A702236P44	Ceramic: 56 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.
C117	19A705205P2	Tantalum: 1 uF, 16 VDCW; sim to Sprague 293D.
C118	19A702052P134	Ceramic: 0.1 uF + or - 5%, 25 VDCW.
C121	19A702052P134	Ceramic: 0.1 uF + or - 5%, 25 VDCW.

SYMBOL	PART NO.	DESCRIPTION
C124	19A702236P7	Ceramic: 1.2 pF + or - .25 pF, 50 VDCW, temp or - 30 PPM.
C126 and C127	19A702236P44	Ceramic: 56 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.
C128	19A702236P19	Ceramic: 5.6 pF + or -.5 pF, 50 VDCW, temp coef -30 PPM/°C.
C130	19A702236P3	Ceramic: 0.7 pF + or -.1 pF, 50 VDCW, temp coef -30 PPM.
C131	19A702236P25	Ceramic: 10 pF + or -.5 pF, 50 VDCW, temp coef -30 PPM/°C.
C132	19A702236P13	Ceramic: 3.3 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C133	19A702236P7	Ceramic: 1.2 pF + or - .25 pF, 50 VDCW, temp or - 30 PPM.
C134	19A702236P23	Ceramic: 8.2 pF + or -.25 pF, 50 VDCW, temp or -30 PPM.
C135	19A702236P15	Ceramic: 3.9 pF + or -.25 pF, 50 VDCW, temp or -30 PPM/°C.
C141	19A702236P7	Ceramic: 1.2 pF + or - .25 pF, 50 VDCW, temp or - 30 PPM.
C144	19A702236P3	Ceramic: 0.7 pF + or -.1 pF, 50 VDCW, temp coef -30 PPM.
C147 thru C149	19A702236P44	Ceramic: 56 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.
C150	19A702052P14	Ceramic: 0.01 uF + or - 10%, 50 VDCW.
C151 thru C153	19A702236P44	Ceramic: 56 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.
C201	19A702052P5	Ceramic: 1000 pF + or -10%, 50 VDCW.
C202	19A702236P50	Ceramic: 100 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.
C203	19A702052P14	Ceramic: 0.01 uF + or - 10%, 50 VDCW.
C207 and C208	19A702236P44	Ceramic: 56 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.
C209 and C210	19A705205P2	Tantalum: 1 uF, 16 VDCW; sim to Sprague 293D.
C211	19A702236P7	Ceramic: 1.2 pF + or - .25 pF, 50 VDCW, temp or - 30 PPM.
C212	19A702236P3	Ceramic: 0.7 pF + or -.1 pF, 50 VDCW, temp coef -30 PPM.
C213	19A702236P1	Ceramic: 0.5 pF + or -.l pF, 50 VDCW, temp coef -30 PPM.
C214	19A705205P2	Tantalum: 1 uF, 16 VDCW; sim to Sprague 293D.
C215	19A702236P8	Ceramic: 1.5 pF + or -.25 pF, 50 VDCW.
C216	19A702236P3	Ceramic: 0.7 pF + or -.1 pF, 50 VDCW, temp coef -30 PPM.
C217 thru C224	19A702236P44	Ceramic: 56 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.
C401	19A702236P11	Ceramic: 2.7 pF + or -0.25 pF, 50 VDCW, temp or -30 PPM.
C402	19A702236P28	Ceramic: 12 pF + or - 5%, 50 VDCW, temp coef 0 + or -30 PPM.
C403	19A702236P44	Ceramic: 56 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.
C404	19A702236P14	Ceramic: 3.6 pF + or -.25 pF, 50 VDCW.
C406	19A702236P11	Ceramic: 2.7 pF + or -0.25 pF, 50 VDCW, temp or -30 PPM.
C407 and C408	19A702236P44	Ceramic: 56 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.
C452	19A702236P44	Ceramic: 56 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.

SYMBOL	PART NO.	DESCRIPTION
C453	19A702236P25	Ceramic: 10 pF + or -.5 pF, 50 VDCW, temp coef -30 PPM/°C.
C454	19A702236P7	Ceramic: 1.2 pF + or - .25 pF, 50 VDCW, temp or - 30 PPM.
C456 and C457	19A702236P6	Ceramic: 1.0 pF + or -.25 pF, 50 VDCW, temp or -30 PPM/°C.
C458 and C459	19A702236P54	Ceramic: 150 pF + or -5%, 500 VDCW, temp coef 0 + or -30 PPM/°C.
C462	19A702236P44	Ceramic: 56 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.
C463	19A702236P17	Ceramic: 4.7 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM.
C464	19A702236P44	Ceramic: 56 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.
C501	19A702052P5	Ceramic: 1000 pF + or -10%, 50 VDCW.
C502	19A702052P14	Ceramic: 0.01 uF + or - 10%, 50 VDCW.
C503	19A702236P23	Ceramic: 8.2 pF + or -.25 pF, 50 VDCW, temp or -30 PPM.
C504	19A702052P14	Ceramic: 0.01 uF + or - 10%, 50 VDCW.
C505	19A702236P11	Ceramic: 2.7 pF + or -0.25 pF, 50 VDCW, temp or -30 PPM.
C506	19A702236P25	Ceramic: 10 pF + or -.5 pF, 50 VDCW, temp coef -30 PPM/°C.
C507 thru C509	19A702052P14	Ceramic: 0.01 uF + or - 10%, 50 VDCW.
C510	19A702236P44	Ceramic: 56 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.
C511	19A702236P28	Ceramic: 12 pF + or - 5%, 50 VDCW, temp coef 0 + or -30 PPM.
C512	19A702236P21	Ceramic: 6.8 pF + or -0.5 pF, 50 VDCW, temp or -60 PPM.
C513 and C514	19A702052P134	Ceramic: 0.1 uF + or - 5%, 25 VDCW.
C515	19A705205P5	Tantalum: 6.8 uF, 10 VDCW; sim to Sprague 293D.
C516	19A702052P134	Ceramic: 0.1 uF + or - 5%, 25 VDCW.
C517	19A702052P5	Ceramic: 1000 pF + or -10%, 50 VDCW.
C518	19A702052P14	Ceramic: 0.01 uF + or - 10%, 50 VDCW.
C519	19A702236P6	Ceramic: 1.0 pF + or -.25 pF, 50 VDCW, temp or -30 PPM/°C.
C520	19A702236P7	Ceramic: 1.2 pF + or - .25 pF, 50 VDCW, temp or - 30 PPM.
C521	19A702236P25	Ceramic: 10 pF + or -.5 pF, 50 VDCW, temp coef -30 PPM/°C.
C802 thru C811	19A149897P33	Ceramic: 56 pF + or -5%, 50 VDCW.
C812	19A705205P2	Tantalum: 1 uF, 16 VDCW; sim to Sprague 293D.
C813	19A705205P5	Tantalum: 6.8 uF, 10 VDCW; sim to Sprague 293D.
C814	19A702236P44	Ceramic: 56 pF + or -5%, 50 VDCW, temp coef 0 + or -30 PPM/°C.
		- - - - - - - - - - DIODES - - - - - - - - - -
D101 and D102	RKZ123630/1	Silicon: BA592.
D103	19A700053P2	Silicon: 2 Diodes in Series; sim to BAV99.
D104 and D105	RKZ123630/1	Silicon: BA592.
D400 and D401	RKZ123630/1	Silicon: BA592.

SYMBOL	PART NO.	DESCRIPTION
D801	344A3326P1	Surface mount, rectifier.
D802	19A700053P2	Silicon: 2 Diodes in Series; sim to BAV99.
D803	19A702526P2	Silicon: Schottky Barrier; sim to BAT 17.
		- - - - - - - - - - INDUCTORS - - - - - - - - - -
L102	REG70608/1	Coil, Chip, SM.
L104	REG70608/1	Coil, Chip, SM.
L105	344A3289P1	Surface mount, coil, fixed: .01 uH + or -20%.
L107	344A3289P5	Coil, fixed: .033 uH + or -20%; sim to TDK NL252018T-033M.
L108	344A3289P1	Surface mount, coil, fixed: .01 uH + or -20%.
L109	344A4540P6R8	Inductor, Chip, SM.
L110 and L111	344A4540P4R7	Inductor, Chip, SM.
L112	344A4540P100	Inductor, surface mount: 10 nH + or -5%.
L201 and L202	344A4540P100	Inductor, surface mount: 10 nH + or -5%.
L400 and L401	344A3289P1	Surface mount, coil, fixed: .01 uH + or -20%.
L403	344A3289P1	Surface mount, coil, fixed: .01 uH + or -20%.
L453	344A3289P1	Surface mount, coil, fixed: .01 uH + or -20%.
L502	344A3289P21	Surface mount, coil, fixed: 2.2 uH + or -5%.
L505	344A3289P1	Surface mount, coil, fixed: .01 uH + or -20%.
		- - - - - - - - - - TRANSISTORS - - - - - - - - -
Q103	19A705945P2	Silicon, Dual NPN: sim to R OHM IMX3.
Q104	19A700059P2	Silicon, PNP: sim to MMBT3906, low profile.
Q105	19A700076P2	Silicon, NPN: sim to MMBT3904, low profile.
Q109	RYN1211619/1	NPN, RF.
Q201	19A700059P2	Silicon, PNP: sim to MMBT3906, low profile.
Q202	19A700076P2	Silicon, NPN: sim to MMBT3904, low profile.
Q204	19A700059P2	Silicon, PNP: sim to MMBT3906, low profile.
Q401	19A704708P2	Silicon, NPN: sim to NEC 2SC3356.
Q402	19A700059P2	Silicon, PNP: sim to MMBT3906, low profile.
Q450	RYN1211619/1	NPN, RF.
Q501 and Q502	19A704708P2	Silicon, NPN: sim to NEC 2SC3356.
Q503 and Q504	19A134739P2	Silicon, NPN.
		- - - - - - - - - - RESISTORS - - - - - - - - - -
R104	19A702931P313	Metal film: 13.3K ohms + or -1%, 200 VDCW, 1/8 w.
R105	19B801251P184	Metal film: 180K ohms + or -5%, 1/10 w.
R106	19B801251P222	Metal film: 2.2K ohms + or -5%, 1/10 w.
R107	19B801251P183	Metal film: 18K ohms + or -5%, 1/10 w.
R108	19A702931P334	Metal film: 22.1K ohms + or -1%, 200 VDCW, 1/8 w.
R109	19B801251P333	Metal film: 33K ohms + or -5%, 1/10 w.
R110	19B801251P104	Metal film: 100K ohms + or -5%, 1/10 w.
R111	19B801251P473	Metal film: 47K ohms + or -5%, 1/10 w.
R112	19B801251P104	Metal film: 100K ohms + or -5%, 1/10 w.

SYMBOL	PART NO.	DESCRIPTION
R113	19B801251P103	Metal film: 10K ohms + or -5%, 1/10 w.
R114	19B801251P822	Metal film: 8.2K ohms + or -5%, 1/10 w.
R116	19B801251P392	Metal film: 3.9K ohms + or -5%, 1/10 w.
R117	19A702931P334	Metal film: 22.1K ohms + or -1%, 200 VDCW, 1/8 w.
R118	19B801251P474	Metal film: 470K ohms + or -5%, 1/10 w.
R119	19B801251P682	Metal film: 6.8K ohms + or -5%, 1/10 w.
R120	19B801251P332	Metal film: 3.3K ohms + or -5%, 1/10 w.
R121 and R122	19B801251P100	Metal film: 10 ohms + or - 5%, 1/10 w.
R127	19B801251P272	Metal film: 2.7K ohms + or -5%, 1/10 w.
R128	19B801251P821	Metal film: 820 ohms + or -5%, 1/10 w.
R130	19B801251P152	Metal film: 1.5K ohms + or -5%, 1/10 w.
R131	19B801251P562	Metal film: 5.6K ohms + or -5%, 1/10 w.
R132 and R133	19B801251P561	Metal film: 560 ohms + or -5%, 1/10 w.
R135 and R136	19B801251P471	Metal film: 470 ohms + or -5%, 1/10 w.
R137	19A702931P313	Metal film: 13.3K ohms + or -1%, 200 VDCW, 1/8 w.
R139	19B801251P100	Metal film: 10 ohms + or - 5%, 1/10 w.
R140	19B800607P1	Metal film: Jumper.
R141	19B801251P391	Metal film: 390 ohms + or -5%, 1/10 w.
R201	19B801251P220	Metal film: 22 ohms + or -5%, 1/10 w.
R202	19B801251P153	Metal film: 15K ohms + or -5%, 1/10 w.
R203	19B801251P220	Metal film: 22 ohms + or -5%, 1/10 w.
R204 and R205	19B801251P104	Metal film: 100K ohms + or -5%, 1/10 w.
R206	19B801251P222	Metal film: 2.2K ohms + or -5%, 1/10 w.
R207 and R208	19B801251P103	Metal film: 10K ohms + or -5%, 1/10 w.
R209	19B801251P100	Metal film: 10 ohms + or - 5%, 1/10 w.
R210 and R211	19B801251P471	Metal film: 470 ohms + or -5%, 1/10 w.
R216	19B801251P104	Metal film: 100K ohms + or -5%, 1/10 w.
R402	19B801251P123	Metal film: 12K ohms + or -5%, 1/10 w.
R403	19B801251P822	Metal film: 8.2K ohms + or -5%, 1/10 w.
R453	19B801251P100	Metal film: 10 ohms + or - 5%, 1/10 w.
R454	19B801251P393	Metal film: 39K ohms + or -5%, 1/10 w.
R456 thru R458	19B801251P100	Metal film: 10 ohms + or - 5%, 1/10 w.
R459	19B801251P473	Metal film: 47K ohms + or -5%, 1/10 w.
R501	19B801251P471	Metal film: 470 ohms + or -5%, 1/10 w.
R502	19B801251P103	Metal film: 10K ohms + or -5%, 1/10 w.
R503	19B801251P223	Metal film: 22K ohms + or - 5%, 1/10 w.
R504	19B801251P562	Metal film: 5.6K ohms + or -5%, 1/10 w.
R505	19B801251P560	Metal film: 56 ohms + or -5%, 1/10 w.
R506	19B801251P273	Metal film: 27K ohms + or -5%, 1/10 w.
R507	19B801251P103	Metal film: 10K ohms + or -5%, 1/10 w.
R508	19B801251P151	Metal film: 150 ohms + or -5%, 1/10 w.
R509	19B801251P222	Metal film: 2.2K ohms + or -5%, 1/10 w.
R510	19B801251P472	Metal film: 4.7K ohms + or -5%, 1/10 w.
R511	19B801251P152	Metal film: 1.5K ohms + or -5%, 1/10 w.
R512	19B801251P682	Metal film: 6.8K ohms + or -5%, 1/10 w.
R513	19B801251P182	Metal film: 1.8K ohms + or -5%, 1/10 w.
R514	19B801251P270	Metal film: 27 ohms + or -5%, 1/10 w.
R515	19B801251P104	Metal film: 100K ohms + or -5%, 1/10 w.
R516	19B801251P821	Metal film: 820 ohms + or -5%, 1/10 w.
R517	19B801251P510	Metal film: 51 ohms + or -5%, 1/10 w.
R518	19B801251P103	Metal film: 10K ohms + or -5%, 1/10 w.
R519	19A149818P103	Metal film: 10K ohms + or -5%, 1/16 w.
R803 thru R811	19A149818P220	Metal film: 22 ohms + or -5%, 1/16 w.
R812	19A149818P473	Metal film: 47K ohms + or -5%, 1/16 w.
R813 thru R816	19A149818P220	Metal film: 22 ohms + or -5%, 1/16 w.
R818 thru R820	19A149818P220	Metal film: 22 ohms + or -5%, 1/16 w.
R821	19B801251P2R2	Metal film: 2.2 ohms + or -5%, 1/10 w.
		- - - - - - - - INTEGRATED CIRCUITS - - - - - - -
U204	19A705450P2	Dual Operational Amplifier, sim to MC34072.
U501	19A704619P2	Linear: Osc/Mixer/IF/Det/Amp; sim to MC3361D.
U801	344A3303P202	Linear: +5.5 Volt Regulator; sim to TK11455.
		- - - - - - - - - - CABLES - - - - - - - - - -
W201 and W202		**Part of printed wire board.**
W401 thru W403		**Part of printed wire board.**

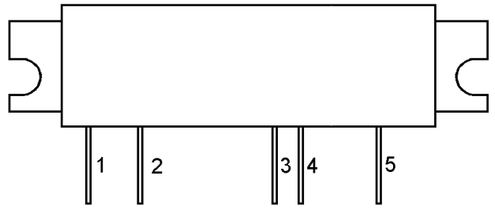
PRODUCTION CHANGES

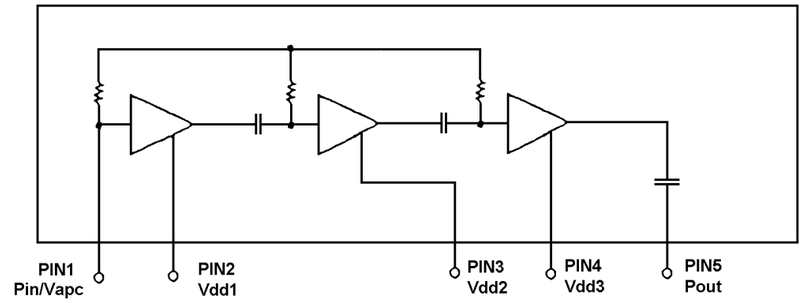
Changes in the equipment to improve or to simplify circuits are identified by a "Revision Letter", which is stamped after the model number of the unit. The revision stamped on the unit includes all previous revisions. Refer to the Parts List for descriptions of parts affected by these revisions.

REV. A - <u>RF BOARD 188D6460G1</u>

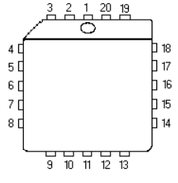
To reduce radiated and conducted receiver L.O., added C457, 1 pF and C814, 56 pF and added shield (19B801566P19) to VCO. D803 was 19A700053P2.

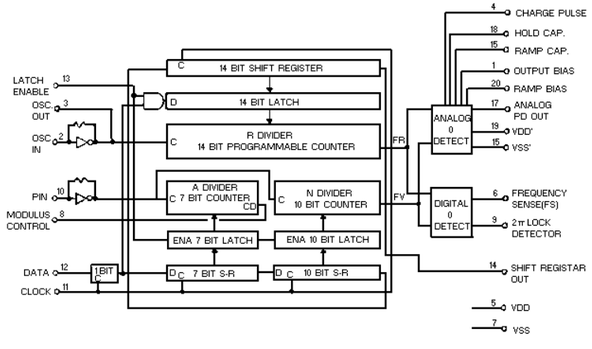
RF POWER AMPLIFIER MODULE
U101 RYT UA901 07/1
PA MODULE





SYNTHESIZER U1 (Part of U201)
19B800902P5

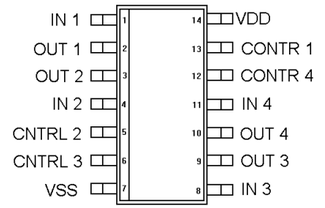




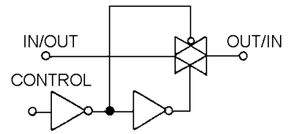
QUAD ANALOG SWITCH/
MULTIPLEXER U2 (Part of A202)
19A702705P4

QUAD ANALOG SWITCH MULTIPLEXER
19A702705P1, P4
(CMOS)

PIN CONFIGURATION



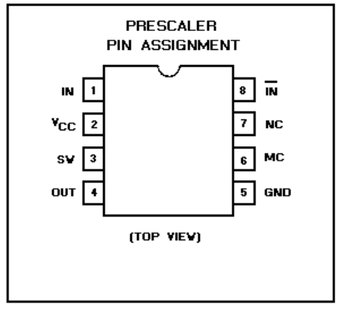
LOGIC DIAGRAM

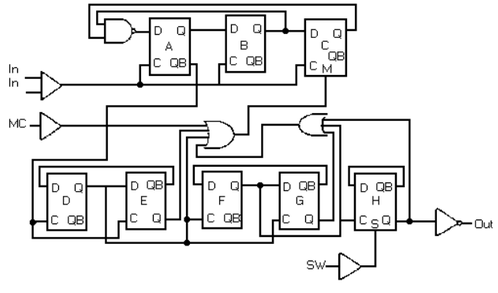


(1/4 OF DEVICE SHOWN)

CONTROL	SWITCH
0	OFF
1	ON

PRESCALER U2 (Part of U201)
19A149944P202

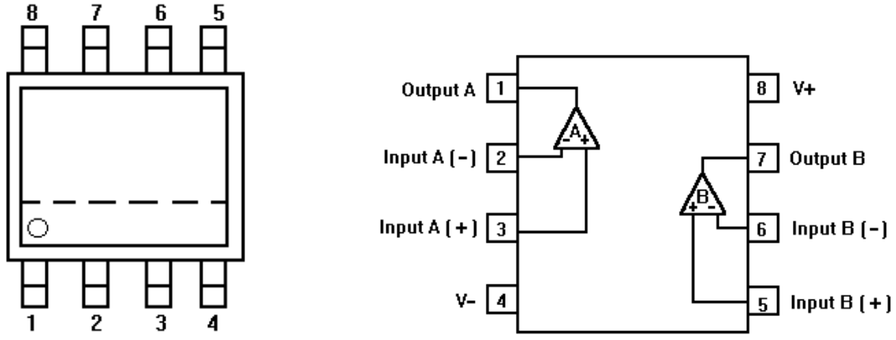




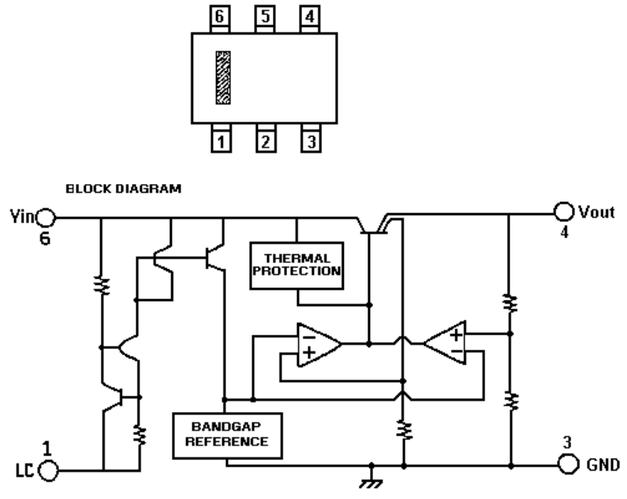
FUNCTION TABLE		
SW	MC	DIVIDE RATIO
H	H	64
H	L	65
L	H	128
L	L	129

SW: H = Vcc L = OPEN
MC: H = 2.0V TO Vcc
L = GND TO 0.8V

OPERATIONAL AMPLIFIER U204, U1
(Part of U201) 19A702293P3

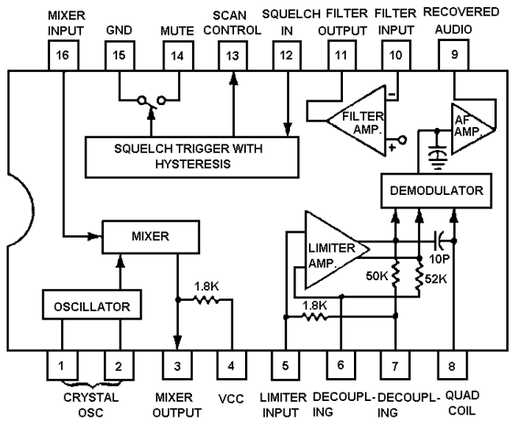


VOLTAGE REGULATOR U801
344A3303P202



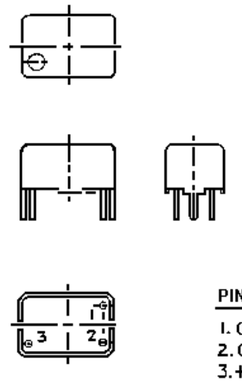
LINEAR OSC/MIXER/IF/DETECTOR/AMP U501
19A704619P2

LINEAR IF AMPL & DETECTOR
19A704619P2



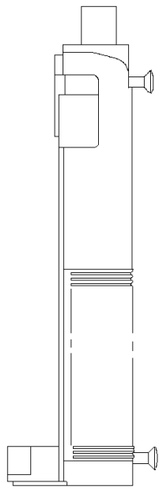
PIN IDENTIFICATION (TOP VIEW) AND FUNCTIONAL BLOCK DIAGRAM

CRYSTAL OSCILLATOR U202
19B801351P22



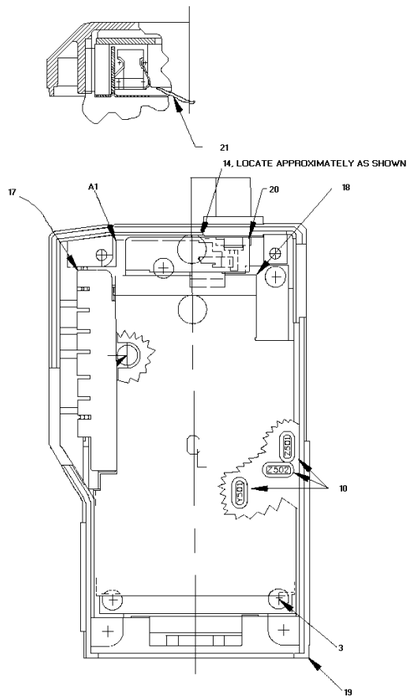
PIN CONNECTIONS

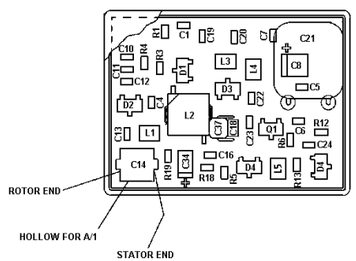
1. COMMON AND CASE
2. OUTPUT
3. + V_{CC}



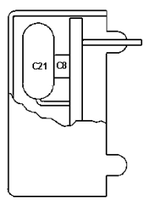
REAR ASSEMBLY
19D902175G7

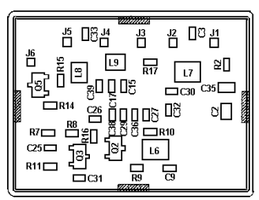
(19D902175, Rev. 9A)





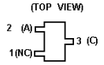
800 MHz VCO BOARD
19C852200G1



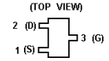


BACK VIEW OF BOARD

LEAD IDENTIFICATION FOR
D1 - D4
(SOT) DIODES
(TOP VIEW)

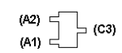


LEAD IDENTIFICATION FOR
Q1
(SOT) TRANSISTORS
(TOP VIEW)

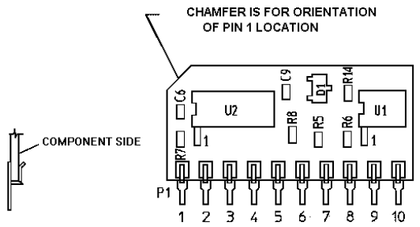


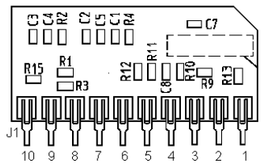
LEAD IDENTIFICATION FOR
Q2 - Q5
(SOT) TRANSISTORS
(TOP VIEW)

LEAD IDENTIFICATION FOR
D1
(SOT) DIODES
(TOP VIEW)



CHAMFER IS FOR ORIENTATION
OF PIN 1 LOCATION

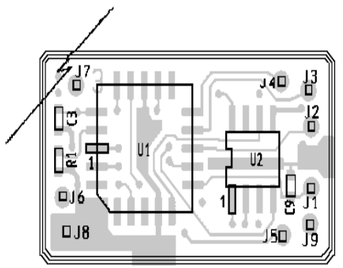


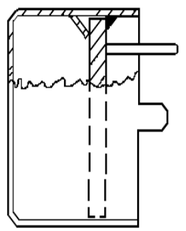


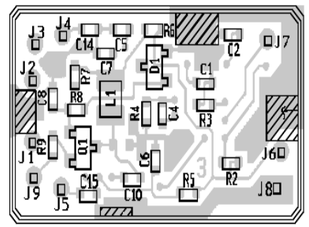
BACK VIEW OF BOARD

CAUTION
CONTENTS SUBJECT
TO DAMAGE BY
STATIC ELECTRICITY
DO NOT OPEN
EXCEPT AT APPROVED
STATIC FREE WORKSTATIONS

LOOP FILTER BOARD
19C851274G1





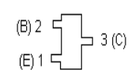


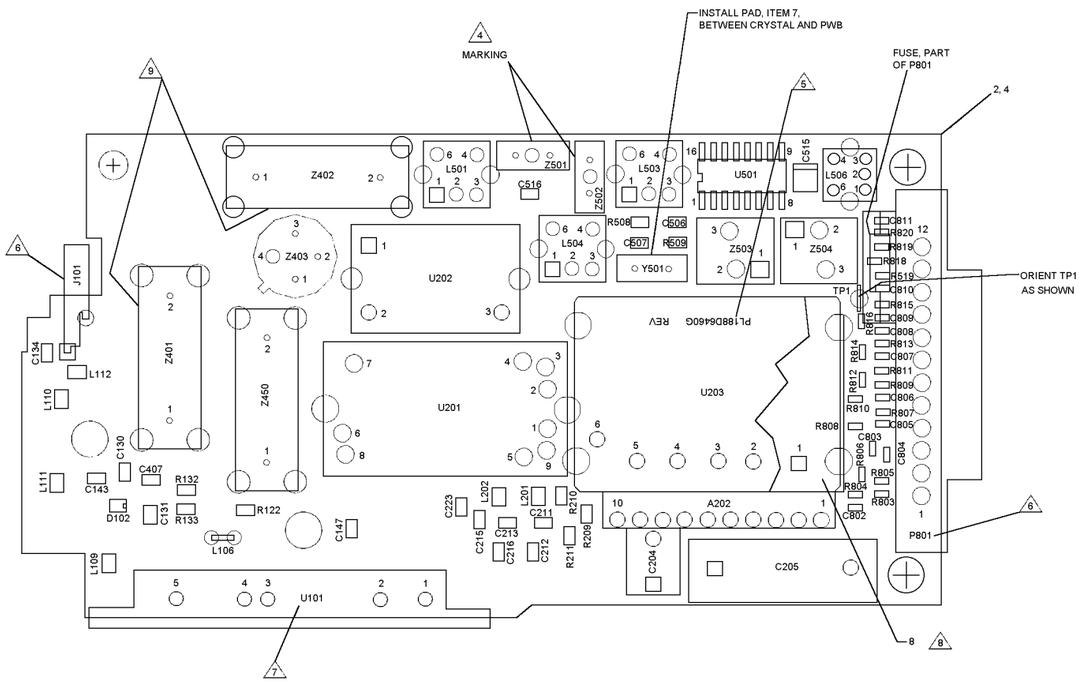
BACK VIEW OF BOARD

CAUTION
CONTENTS SUBJECT
TO DAMAGE BY
STATIC ELECTRICITY
DO NOT OPEN
EXCEPT AT APPROVED
STATIC FREE WORKSTAIONS

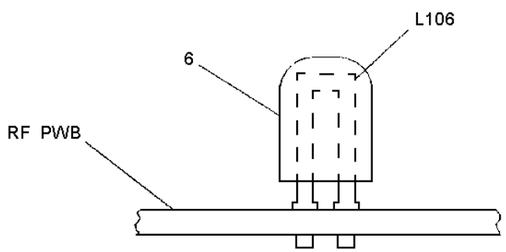
PRESCALER BOARD
19C852187G1

LEAD IDENTIFICATION FOR
Q1
(SOT) TRANSISTORS
(TOP VIEW)





(188D6460. Sh. 1, Rev. 0)



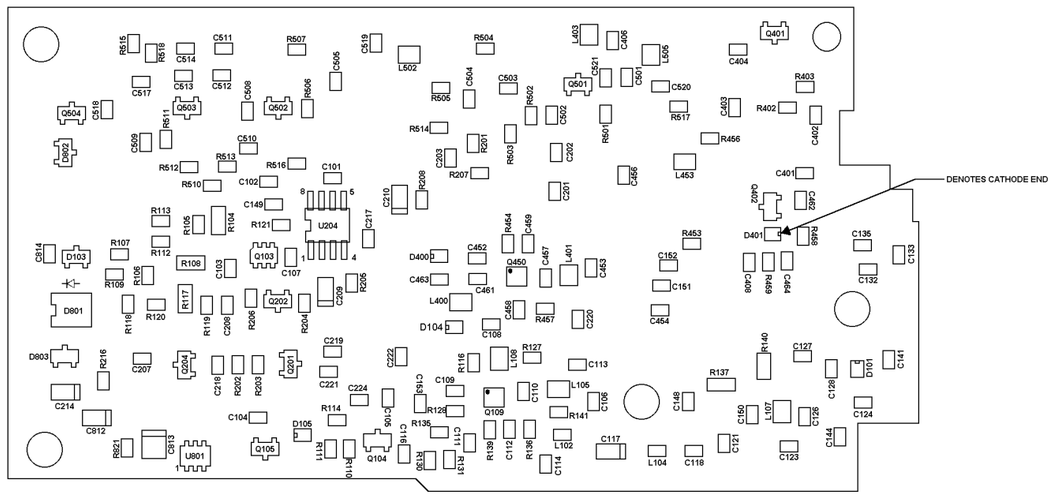
TRANSMIT/RECEIVE BOARD
188D6460G1

1

NOTES:

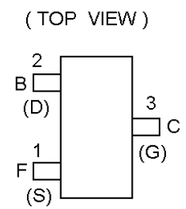
1. SOLDER ALL ELECTRICAL CONNECTIONS.
2. COMPONENT LEADS TO PROTRUDE .060 MAX. BELOW SOLDER SIDE OF BOARD.

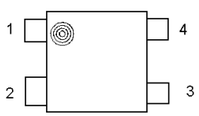
3. INDICATES FRONT OF COMPONENT AUTO - INSERTION MACHINES.
4. Z501 AND Z502 ARE A MATCHED PAIR OF CRYSTAL FILTERS. ORIENT MARKING AS SHOWN.
5. MARK GROUP # AND REVISION LETTER PER 19A700154P1. FOR LATEST REVISION LETTER SEE 19C851716.
6. BATTERY CONNECTOR P801 AND J101 SHALL BE SOLDERED FLUSH TO PWB WITHIN .010.
7. POWER AMPLIFIER U101 SHALL BE SOLDERED FLUSH TO PWB WITHIN .010 AND SHALL BE FIXTURED TO LOCATE MTG SURFACE TO FIT CASTING 19D901924.
8. HAND INSERT AND HAND SOLDER ITEM 8, SHIELD: DO NOT TRIM TABS.
9. REMOVE TAPE LABELS FROM SIDES NOTED OF Z401 & Z402 ENABLING CONTACT WITH ADJACENT RF SHIELDS.



(188D6460. Sh. 2, Rev. 0)

LEAD IDENTIFICATION FOR (SOT) TRANSISTORS

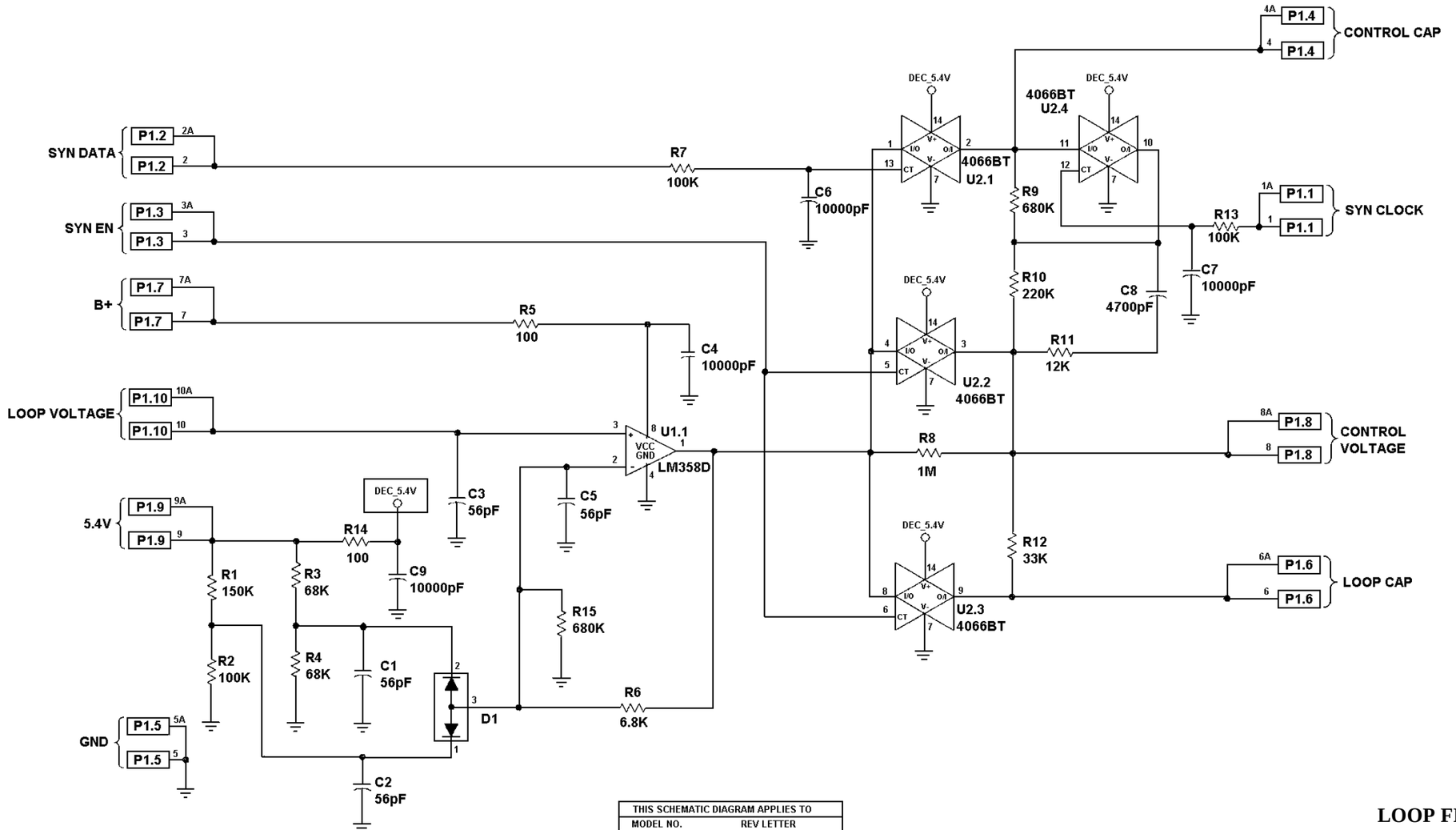




LEAD IDENTIFICATION FOR Q109 & Q450

CAUTION
OBSERVE PRECAUTIONS FOR HANDLING
ELECTROSTATIC SENSITIVE DEVICES

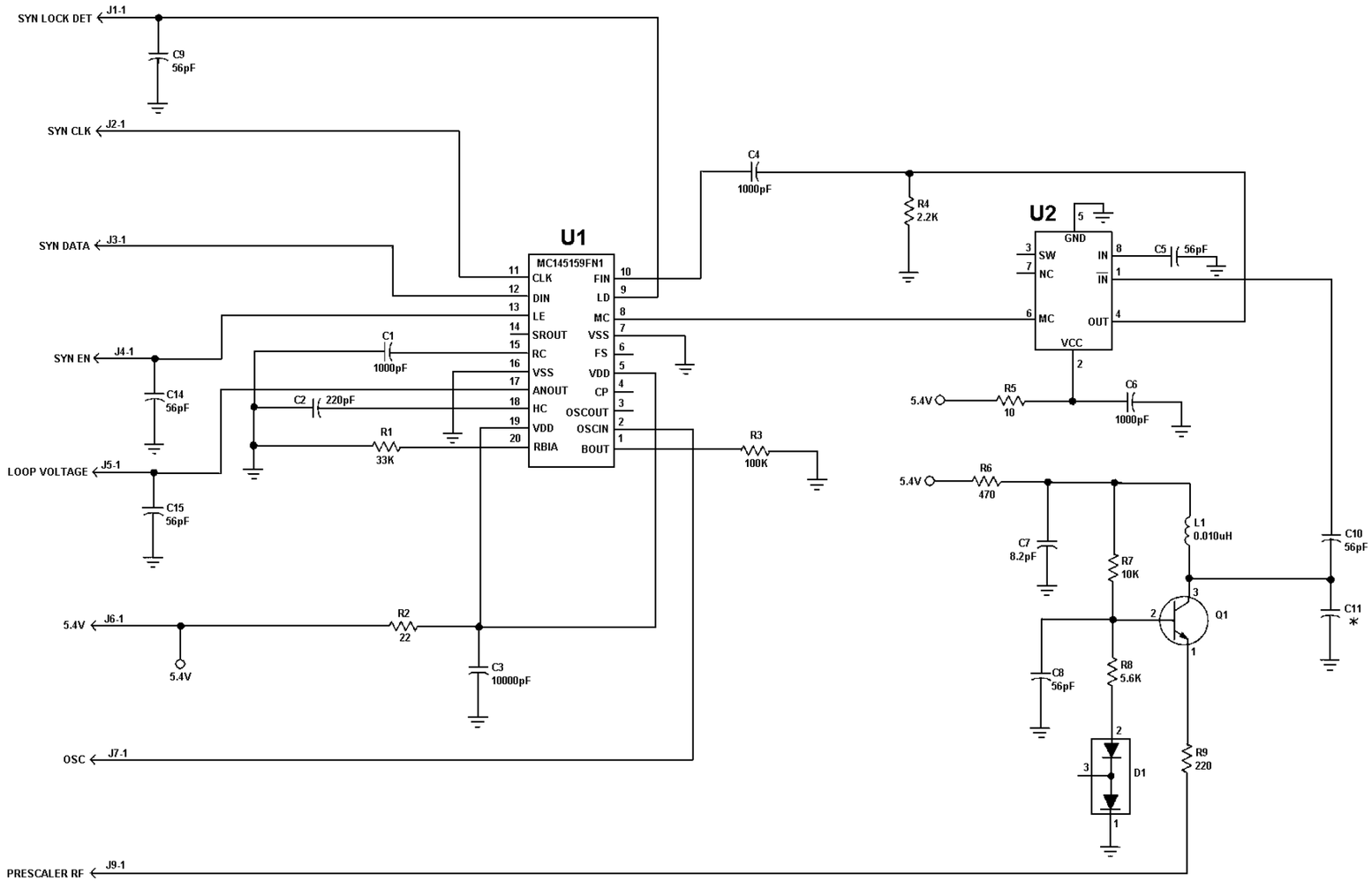
NOTES:
1. RESISTOR VALUES IN Ω UNLESS FOLLOWED BY MULTIPLIER K OR M.
2. ALL COMPONENTS ARE CHIP COMPONENTS.



THIS SCHEMATIC DIAGRAM APPLIES TO	
MODEL NO.	REV LETTER
PL19C852174G1	A

LOOP FILTER BOARD
19C852174G1

(19C852176, Rev. 3)



* THIS PART INTENTIONALLY OMITTED IN CURRENT BOARDS.

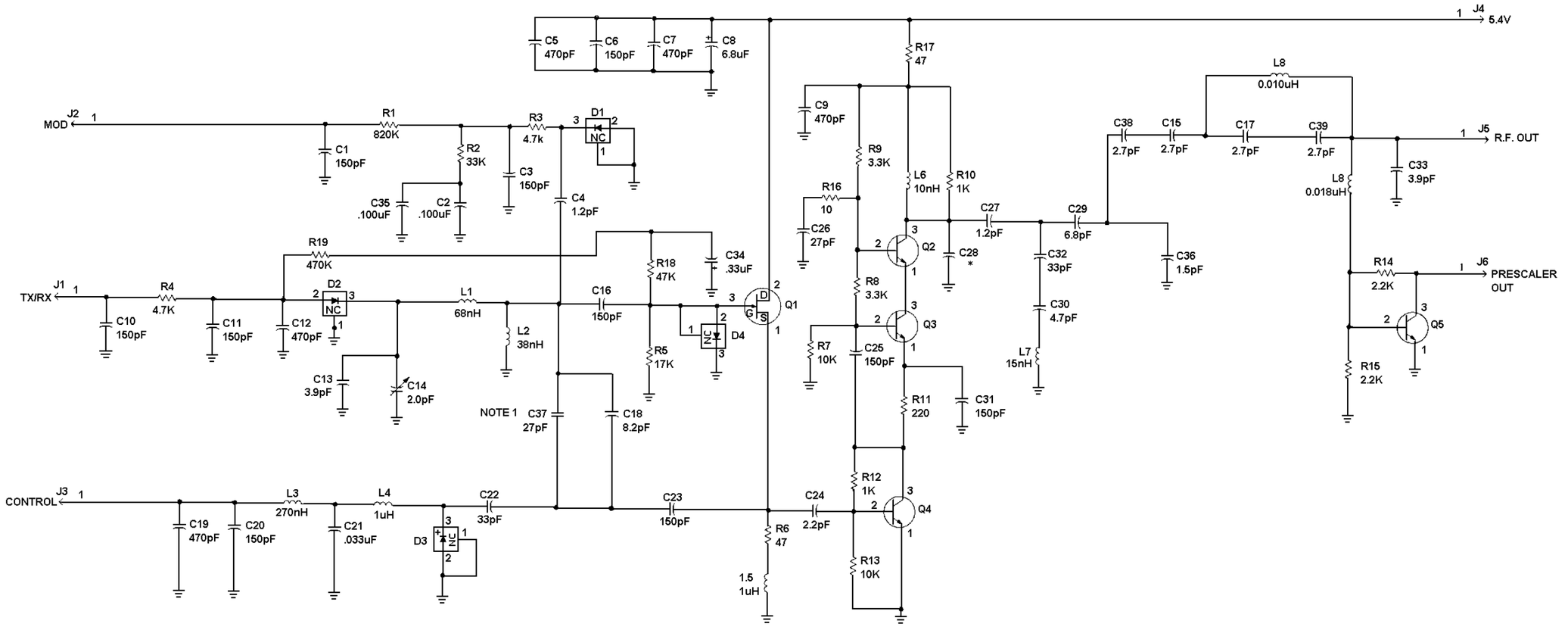
NOTES:

1. RESISTOR VALUES IN Ω UNLESS FOLLOWED BY MULTIPLIER K OR M.
2. ALL COMPONENTS ARE CHIP COMPONENTS.

THIS SCHEMATIC DIAGRAM APPLIES TO	
MODEL NO.	REV LETTER
PL19C852187G1	

PRESCALER BOARD
19C852187G1

(19C852189, Rev. 3)



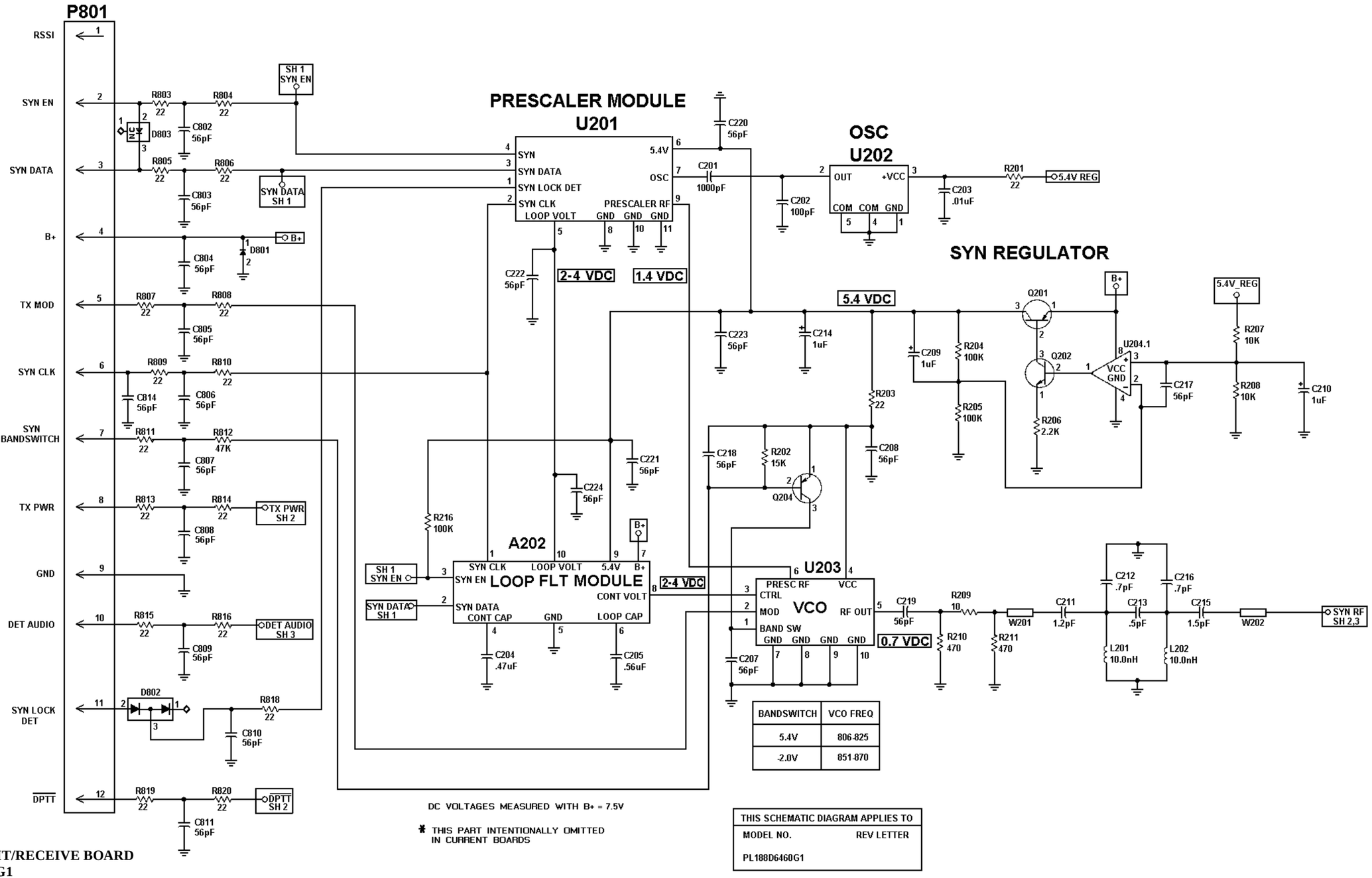
THIS SCHEMATIC DIAGRAM APPLIES TO	
MODEL NO.	REV LETTER
PL19C85200G1	B

* THIS PART INTENTIONALLY OMITTED ON CURRENT BOARDS.

NOTES:
1. C37 IS MANUALLY INSERTED OVER ON PWB AND IS DRAWN AS LINES ONLY.

800 MHz VCO BOARD
19C852200G1

(19D903832, Rev. 5)

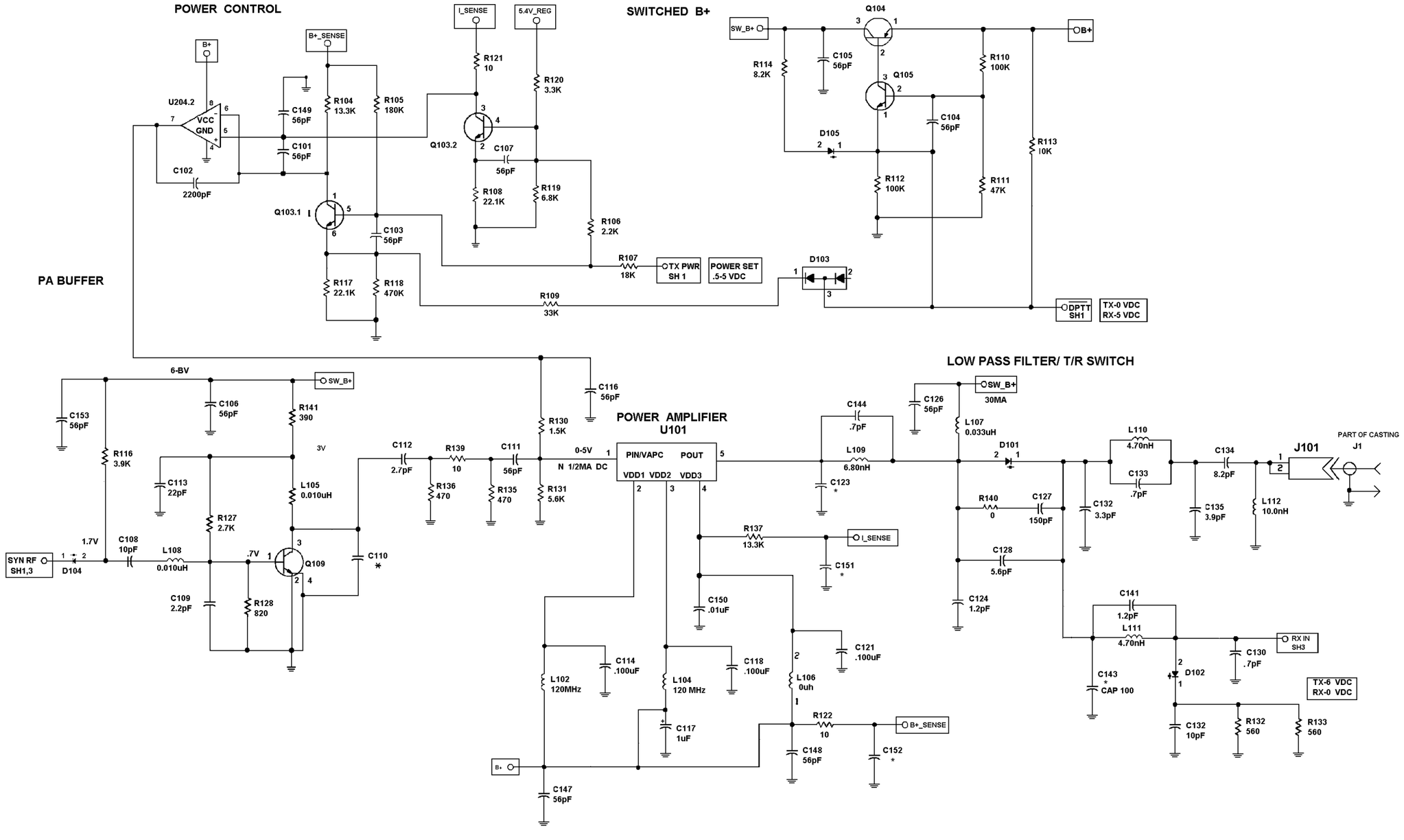


BANDSWITCH	VCO FREQ
5.4V	806-825
-2.0V	851-870

THIS SCHEMATIC DIAGRAM APPLIES TO	
MODEL NO.	REV LETTER
PL188D6460G1	

TRANSMIT/RECEIVE BOARD
188D6460G1

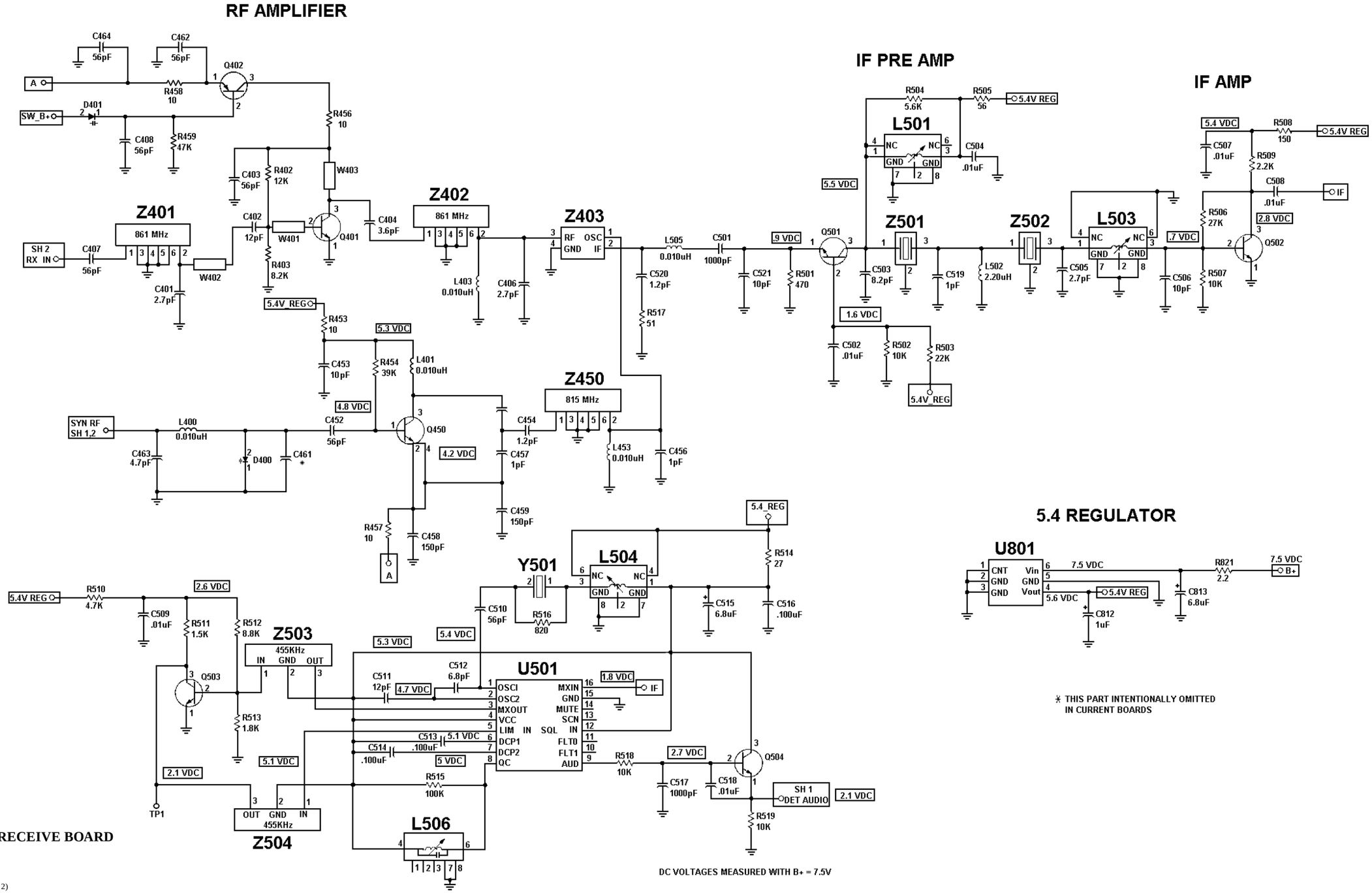
(188D6458, Sh. 1, Rev. 2)



DC VOLTAGES MEASURED WITH B+ - 7.5V
* THIS PART INTENTIONALLY OMITTED IN CURRENT BOARDS

TRANSMIT/RECEIVE BOARD
188D6460G1

(188D6458, Sh. 2, Rev. 2)



TRANSMIT/RECEIVE BOARD
188D6460G1

(188D6458, Sh. 3, Rev. 2)

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