

MAINTENANCE MANUAL ORION™

UHF POWER AMPLIFIER UNITS

344A4573P1	20 WATT	403-440 MHz
344A4573P2	20 WATT	440-470 MHz
344A4573P3	40 WATT	403-440 MHz
344A4573P4	40 WATT	440-470 MHz
344A4573P5	35 WATT	470-512 MHz
344A4573P6	100 WATT	403-440 MHz
344A4573P7	100 WATT	440-470 MHz
344A4573P8	80 WATT	470-512 MHz

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DESCRIPTION

The **Radio Frequency (RF)** Power Amplifiers for the Ericsson GE UHF **ORION™** mobile radio are provided in three different frequency ranges and power levels designated as follows:

- 344A4573P1 (CAH-545EA) - 403-440 MHz, 20 WATT used in low power applications
344A4573P2 (CAH-545EB) - 440-470 MHz, 20 WATT used in low power applications
- 344A4573P3 (CAH-545LA) - 403-440 MHz, 35/40 WATT used in mid power applications
344A4573P4 (CAH-545LB) - 440-470 MHz, 35/40 WATT used in mid power applications
344A4573P5 (CAH-545LC) - 470-512 MHz, 35/40 WATT used in mid power applications
- 344A4573P6 (CAH-545HA) - 403-440 MHz, 80/100 WATT used in high power applications
344A4573P7 (CAH-545HB) - 440-470 MHz, 80/100 WATT used in high power applications
344A4573P8 (CAH-545HC) - 470-512 MHz, 80/100 WATT used in high power applications

The exciter for each of the three power amplifiers is located on Synthesizer/Receiver/Exciter board CMN-354-1. This exciter circuit provides approximately 500 milliwatt input to the PA (refer to Maintenance Manual LBI- 38905). The PA utilizes a single power amplifier module (HC1) as the driver unit. In the case of the 20 watt amplifier the power module is the only power amplifying unit (Refer to Figure 1). With the other two power levels the power module drives other power transistors to provide the power output required (Refer to Figures 2 and 3). Each power amplifier is provided with an antenna switch and limiter circuit to isolate the receive circuit from the transmit circuit, limiting the receiver input from being over driven due to large RF signals. Each power amplifier has a power detect circuit which controls an **Automatic Power Control (APC)** circuit to keep the power output constant. A low-pass filter is provided in the antenna circuit to reduce harmonic emissions. A keyed **Tx 9V** regulator is provided to power the APC circuits.

CIRCUIT ANALYSIS

20 WATT

The 20 Watt PA assembly uses one power module (HC1) to provide the output power.

Supply voltage for the power amplifier is connected from power leads on the System Interface Board to J3 (A+) and G (A-) on the PA Board. Diode CD7 is a surge protector to suppress pulses on the power leads. Diode CD8 will cause the fuse to blow if the polarity of the power leads is reversed.

The Exciter output is coupled through connector J151 on the Synthesizer/Receiver/Exciter Board to input connector J1 on the PA board. The 500 milliwatt RF input at J1 is coupled to power module HC1 through an attenuator pad consisting of resistors R1-R3. This pad attenuates the power to about 300 milliwatt and provides isolation between Exciter and PA. The power module (HC1) amplifies the 300 milliwatt input to 20 Watts.

The power module consists of a three-stage RF amplifier (Refer to **IC DATA**). The first stage power supply voltage is supplied by the power control circuit. The second and third stage power supply voltage is supplied by **SMOOTHING FILTER** transistor TR1. The second and third stage RF amplifiers operate as class C.

The 20 Watts output of HC1 is coupled to the **ANTENNA** and **ANTENNA SWITCH & LIMITER** circuits through 50 ohm stripline Z1.

Antenna Switch & Limiter

The Antenna Switch circuit consists of capacitor C25 and inductor L9 and takes the place of a quarter-wave micro strip line. When **TX9V** output goes high, bias current flows through switching diodes CD3 and CD4. A low impedance now exists at the anode of CD4 and a high impedance exists at the node connection of C25 and L9. This isolates the transmitter power from the receiver. Diode CD3 is now an RF short and along with capacitor C12, couples the power to the lowpass filter and on to the antenna.

The limiter circuit consists of transistors TR7, TR8 and diode package CD13. While receiving, if the received signal level exceeds +10 dBm, the rectified currents of CD13 provide forward bias to TR7, TR8 and PIN diode CD4 proportional to the received signal level. This causes a quarter-wave circuit (lumped constants C25 and L9) to turn on when the received signal exceeds +10 dBm and protects the receiver from excessively high receive signal levels.

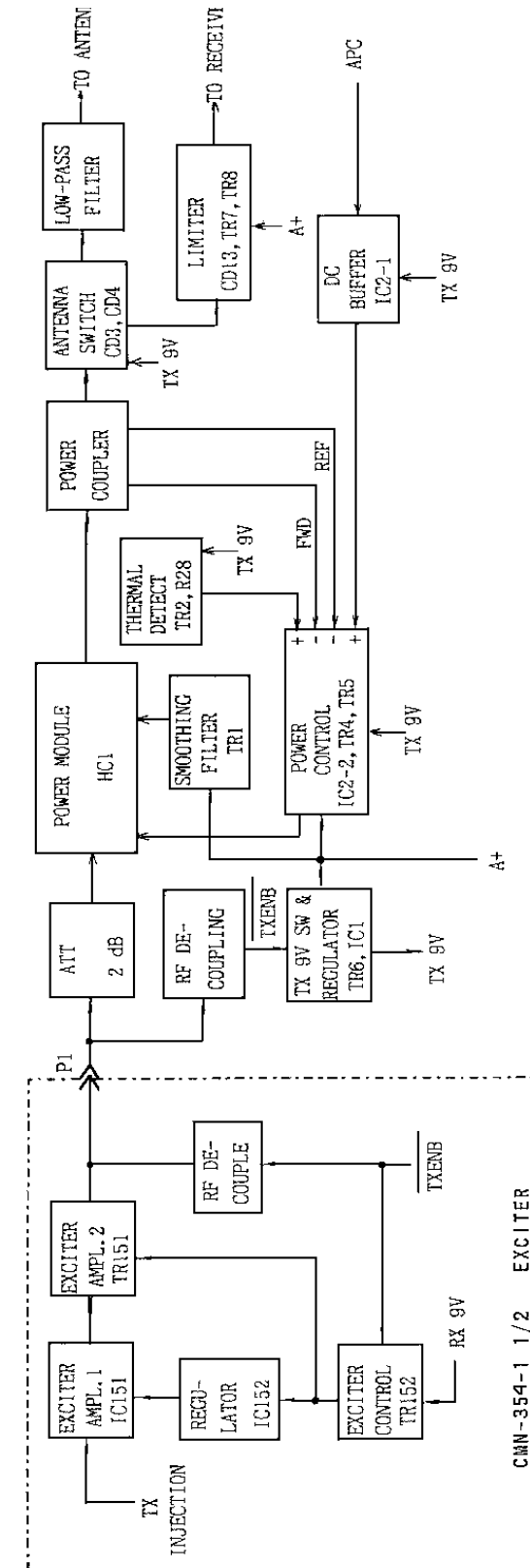


Figure 1 - 20-Watt Power Amplifier Block Diagram

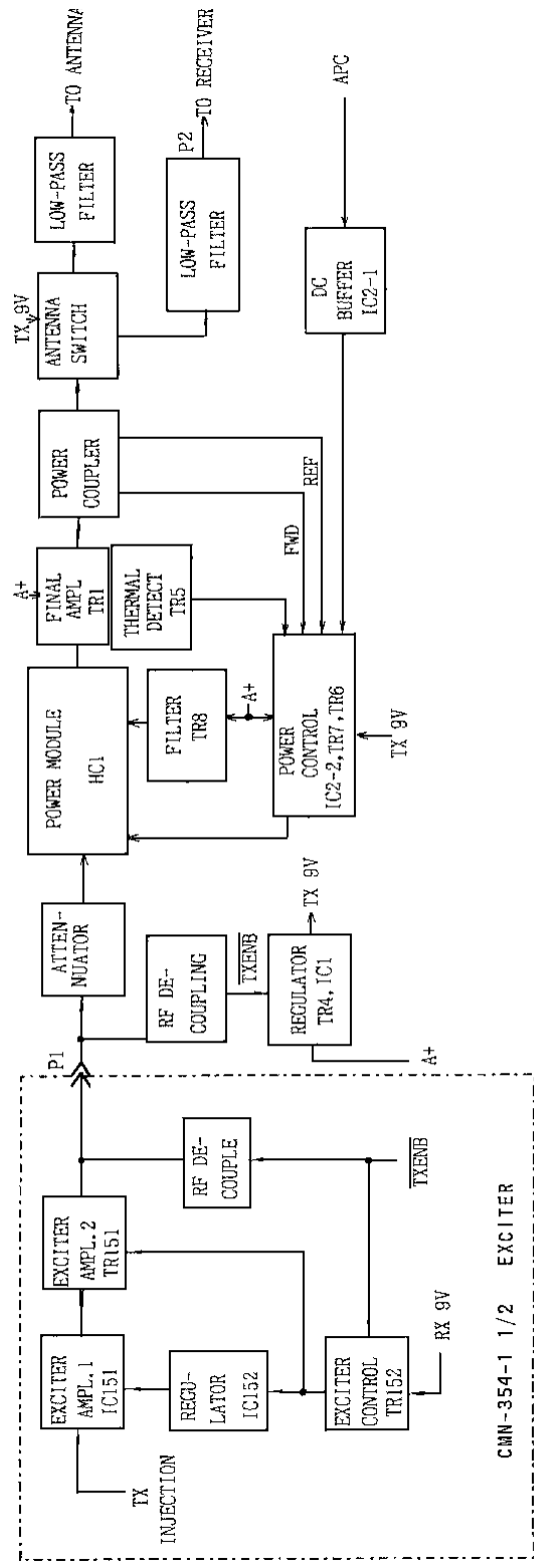


Figure 2 - 35/40-Watt Power Amplifier Block Diagram

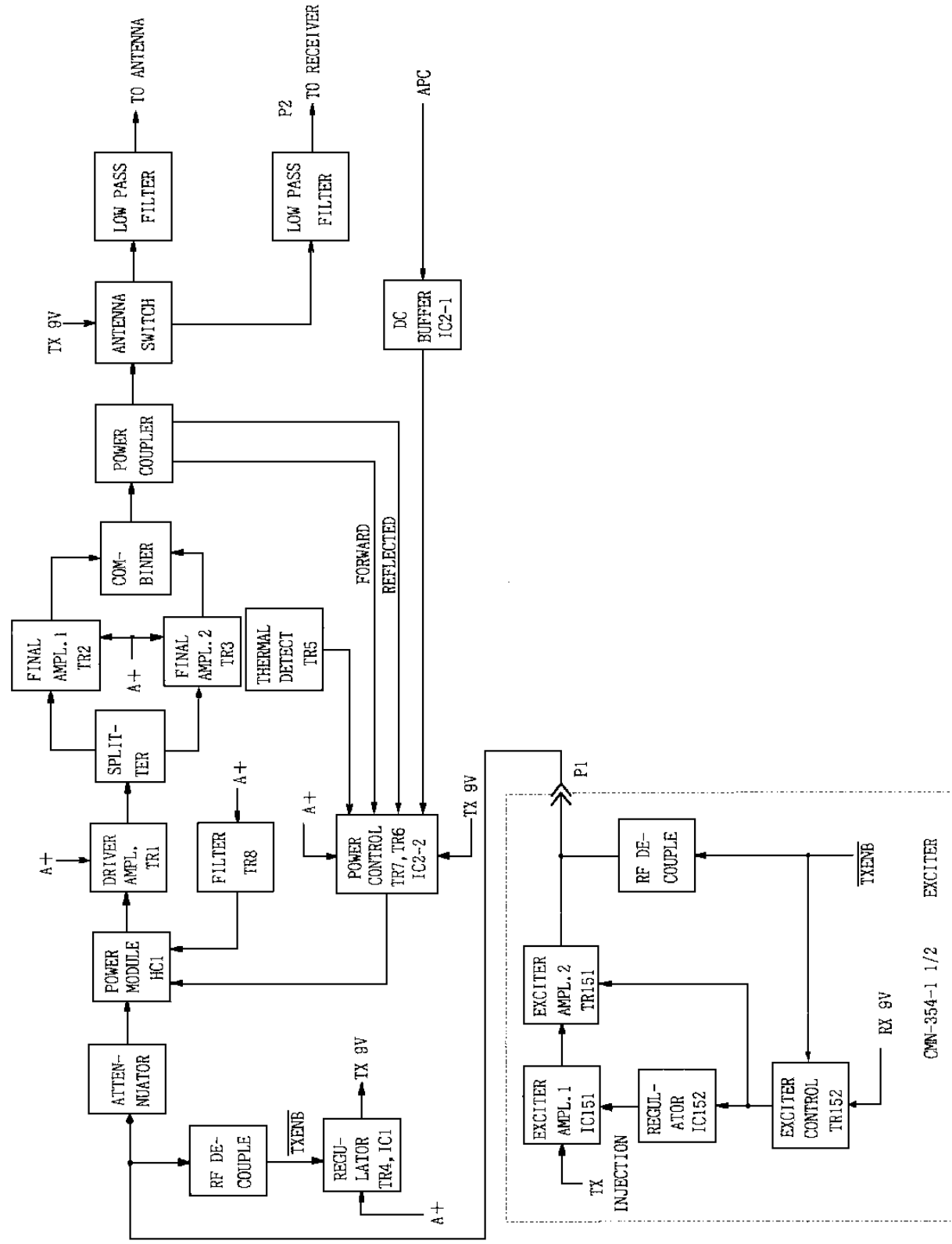


Figure 3 - 80/100 - Watt Power Amplifier Block Diagram

Tx 9V Switch

When the lead, located on the Synthesizer/Receiver/Exciter board, goes low, the DC voltage on J151 goes low. On the PA board, the DC voltage on J1 also goes low completing the circuit for diode CD9. With CD9 conducting TX 9V Switch transistor TR6 conducts applying A+ (13.32 V) to the input of +9 Volt Regulator IC1. The regulated +9 volts applies bias to operational amplifier IC2, transistor TR2 and switching diodes CD3 and CD4.

Power Control

The **Auto Power Control (APC)** circuit protects the transmitter PA from damage due to:

- a. excessive output power
 - b. excessive reflected power
- or
- c. excessive temperature

The output power control circuit allows the RF output power to be set at rated power by the APC voltage from the Logic/IF/Audio Board. If the output power of the PA increases, the detected voltage and the input to operational amplifier IC2-2 increases. The output voltage of operational amplifier IC2-2 decreases. This causes **DC DRIVER** transistor TR5 to conduct less. This increases the base voltage on PNP **DC PASS** transistor TR4, causing it to conduct less. This results in less voltage being applied to the first amplifier stage in RF Power Module HC1, reducing the output power of the PA in proportion to the increases in output power detected by the circuit.

To protect the PA against badly mismatched loads, a reverse power detector circuit (**VSWR**) consisting of diode CD2, transistor TR5, operational amplifier IC2-2 and pass transistor TR4 detects reverse (reflected) power. When sufficient power is detected by CD2 to cause it to conduct, the voltage at the output of IC2-2 decreases, causing the Power Module to lower the output power, protecting the PA. The reverse power level is set by resistor R8 connected in series with diode CD2.

The PA is protected against temperature increases by a thermal detector circuit. This circuit consists of resistor R28, **THERMAL DETECT** transistor TR2, **DC DRIVER** transistor TR5 and **DC AMPL** operational amplifier IC2-2. As temperature increases, the resistance to ground through thermal detector resistor R28 increases. This causes IC2-2 to conduct less, causing a decrease in PA output until the temperature level is reduced. The temperature level is set by resistor R28. When the heatsink temperature rises above 90 C, the resistance of R28 increases and the power output is reduced.

35/40 WATT

The 35/40 Watt PA assembly uses one power module (HC1) and one RF power transistor (TR1) to provide the output power.

Supply voltage for the power amplifier is connected from power leads on the System Interface Board to J3 (A+) and G (A-) on the PA Board. Diode CD2 is a surge protector to suppress pulses on the power leads. (Diode CD1001 in the PA UNIT will cause a fuse to blow if the voltage polarity is reversed. Refer to the PA INTERCONNECTION DIAGRAM)

Test Points (TP) are the printed board terminals for measuring control voltage as follows:

- TP1 A+ (13.42V)
- TP2 Control Voltage (4.72V)
- TP3 Forward Power Detect (2.64V)
- TP4 Tx 9V (9.12V)
- TP5 APC Voltage on output of DC AMPL IC2-1 (2.64V)
- TP6 Voltage to HC1, pins 3 &4 (12.5V)
- TP7 APC Voltage (3.5V)

The Exciter output is coupled through connector J151 on the Synthesizer/Receiver/Exciter Board to input Jack P1 on the PA board. The 500 milliwatt RF input at P1 is coupled to power module HC1 through an attenuator pad consisting of resistors R1-R4. This pad attenuates the 500 milliwatt to about 300 milliwatt and provides isolation between Exciter and PA. The power module (HC1) amplifies the 300 milliwatt input to 13 Watts.

The power module consists of a three-stage RF amplifier (Refer to IC DATA). The first stage power supply voltage is supplied by the power control circuit. The second and third stage power supply voltage is supplied by **SMOOTHING FILTER** transistor TR8. The second and third RF amplifiers operate as class C.

The 13 Watts output of HC1 is coupled to **POWER AMPL** transistor TR1 through impedance matching components consisting of capacitors C7, C9, C10 and inductor L2 through coupling capacitor C8. Transistor TR1 amplifies the 13 Watt level to 40 Watts. The output of TR1 is coupled to the **ANTENNA** and **ANTENNA SWITCH** through impedance matching components consisting of capacitors C11-C13, inductor L6 and impedance matching network Z2 through coupling capacitor C14 and 50 ohm stripline Z7.

Antenna Switch

The Antenna Switch circuit consists of capacitor C64 and inductor L23 and takes the place of a quarter-wave micro strip line. When **TX9V** output goes high, bias current flows through switching diodes CD5, CD7 and CD9. A low impedance now exists at the anode of CD7 and a high impedance exists at the connection of C64 and L23. This isolates the transmitter power from the receiver. Diode CD5 is now an RF short and along with capacitor C55 couples the power to the lowpass filter and on to the antenna.

Tx 9V Switch

When the **TX ENB** lead goes low, TX 9V switch transistor TR4 conducts applying A+ (13.32 V) to the input of +9 Volt Regulator IC1. The regulated +9 volts (**TX 9V**) applies bias to operational amplifier IC2, transistor TR5 and switching diodes CD5, CD7 and CD9.

Power Control

The **Auto Power Control (APC)** circuit protects the transmitter PA from damage due to:

- a. excessive output power
 - b. excessive reflected power
- or
- c. excessive temperature

The output power control circuit allows the RF output power to be set at rated power by the APC voltage from the Logic/IF/Audio Board. If the output power of the PA increases, the detected voltage and the input of operational amplifier IC2-2 increases. The output voltage of IC2-2 decreases. This causes **DC DRIVER** transistor TR6 to conduct less. This increases the base voltage on PNP **DC PASS** transistor TR7, causing it to conduct less. This results in less voltage being applied to the first amplifier stage in driver module (HC1), reducing the output power of the PA in proportion to the increases in output power detected by the circuit.

To protect the PA against badly mismatched loads, a reverse power detector circuit (**VSWR**) consisting of diode CD4, transistor TR6, operational amplifier IC2-2 and pass transistor TR7 detects reverse (reflected) power. When sufficient power is detected by CD4 to cause it to conduct, the voltage at the output of IC2-2 decreases, causing the driver module to lower the output power, protecting the PA. The re-

verse power level is set by resistor R15 connected in series with diode CD4.

The PA is protected against temperature increases by a thermal detector circuit. This circuit consists of resistor R49, transistors TR5, TR6, TR7 and operational amplifier IC2-2. As temperature increases, the resistance to ground through thermal detector resistor R49 increases. This causes IC2-2 to conduct less, causing a decrease in PA output until the temperature level is reduced. The temperature level is set by resistor R49. When the heatsink temperature rises above 90 C, the resistance of R49 increases and the power output is reduced.

80/100 WATT

The 80/100 Watt PA assembly uses one power module (HC1) and three RF power transistors (TR1, TR2 and TR3) to provide the output power.

Supply voltage for the power amplifier is connected from power leads on the System Interface Board to J3 (A+) and G (A-) on the PA Board. Capacitors C73 and C95 prevent RF from getting on the power leads. Diode CD1 causes a fuse to blow if the polarity of the power leads is reversed. Diode CD2 is a surge protector to suppress pulses on the power leads.

Test Points (TP) are the printed board terminals for measuring control voltage as follows:

- TP1 A+ (13.32V)
- TP2 Control Voltage (4.27V)
- TP3 Forward Power Detect (3.2V)
- TP4 Tx 9V (9.2V)
- TP5 APC Voltage on output of DC AMPL IC2-1 (2.66V)
- TP6 Voltage to HC1, pins 3 &4 (12.8V)
- TP7 APC Voltage (3.5V)

The exciter output is coupled through connector J102 on the Synthesizer/Receiver/Exciter Board to input Jack P1 on the PA board. The 500 milliwatt RF input at P1 is coupled to power module HC1 through an attenuator pad consisting of resistors R1 through R4. This pad attenuates the 500 milliwatt input to 300 milliwatt and provides isolation between the Exciter and PA. **POWER MODULE** HC1 amplifies the 300 milliwatt input to 12 Watts. The power module (HC1) consists of a three stage RF amplifier. The first stage of the module is controlled by the voltage from the power control circuit. The amplifier consist of a Class C driver amplifier and two Class C common-emitter amplifiers. The 12 watt

output is coupled to **DRIVER AMPL** transistor TR1 through impedance matching components consisting of capacitors C7, C9 C10, inductors L2 through L4 and coupling capacitor C8. The output of TR1 is coupled to the power **SPLITTER** through the impedance matching components consisting of capacitors C11 through C13, C15, C96, C97, inductor L6 and impedance matching network Z1 through coupling capacitor C14. Transistor TR1 amplifies the 12 watt input level to 40 watts. The power splitter consists of capacitors C18, C27, C36 and Inductors L7 and L11. Resistor R5 absorbs any unbalance in the drive to **POWER AMPL-1, AMPL-2** transistors TR2 and TR3. These power amplifier stages consist of two identical paralleled Class C power amplifiers. The output of the power splitter is coupled to transistors TR2 and TR3 through coupling capacitors C19 and C28 and the impedance matching components consisting of capacitors C20, C21, C29 and C30. The output of TR2 and TR3 is coupled to the power combiner through impedance matching components consisting of capacitors C22-C25, C31-C34 and impedance matching networks Z2 and Z3. The power **COMBINER** consists of capacitors C26, C35, C40, C41 and inductors L10, L14 and L15. Resistor R8 absorbs the difference in the output power of TR2 and TR3. Transistors TR2 and TR3 each amplify the input level from 20 watts to about one-half (1/2) of the rated output power. The output of the combiner is coupled to the **ANTENNA SWITCH** through 50 ohm stripline Z7.

Antenna Switch

The antenna switch circuit consists of capacitor C64 and inductor L23 and takes the place of a quarter-wave micro strip line. When **TX9V** output goes high, bias current flows through switching diodes CD6 through CD9. A low impedance now exists at the anode of CD7 and CD8 and high impedance exists at the connection of C64 and L23. This isolates the transmitter power from the receiver. Diode CD6 is now an RF short and along with capacitor C55 couples the power to the lowpass filter and on to the antenna.

Tx 9V Switch

When the **TX ENB** lead goes low, **TX 9V** switch transistor TR4 conducts applying A+ (13.32 V) to the input of +9 Volt Regulator IC1. The regulated +9 volts (**TX 9V**) applies bias to operational amplifier IC2, transistor TR5 and switching diodes CD6 through CD9.

Power Control

The Automatic Power Control (APC) circuit protects the transmitter PA from damage due to:

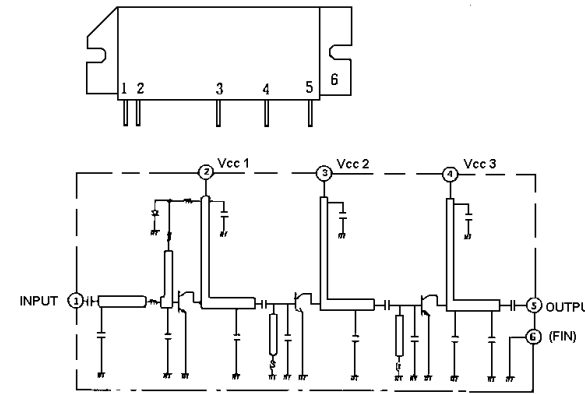
- excessive output power
 - excessive reflected power
- or
- excessive temperature

The output power control circuit allows the RF output power to be set at rated power by the APC voltage from the LOGIC/IF/AUDIO Board. If the output power of the PA increases, the detected voltage and the input of operational amplifier IC2-2 increases. The output voltage of operational amplifier IC2-2 decreases. This causes transistor TR6 to conduct less. This increases the base voltage on PNP pass transistor TR7, causing it to conduct less. This results in less voltage being applied to the first amplifier stage in driver module (HC1), reducing the output power of the exciter/ PA in proportion to the increases in output power detected by the circuit.

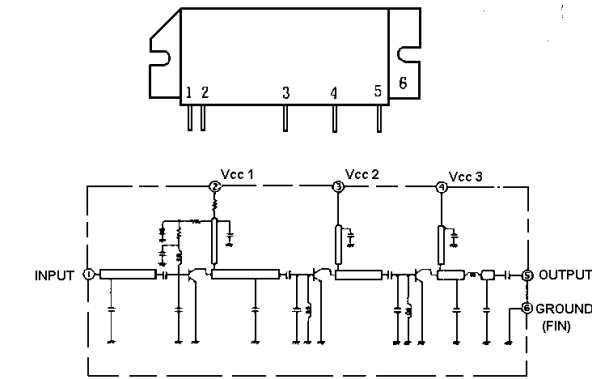
To protect the PA against badly mismatched loads, a reverse power detector circuit (VSWR) consisting of diode CD4, transistor TR6, operational amplifier IC2-2 and pass transistor TR7 detect reverse (reflected) power. When sufficient power is detected by CD4 to cause it to conduct, the voltage at the output of IC2-2 decreases, causing the driver module to lower the output power, protecting the PA. The reverse power level is set by resistor R15 connected in series with diode CD4.

The PA is protected against temperature increases by a thermal detector circuit. This circuit consists of resistor R49, transistors TR5, TR6, TR7 and operational amplifier IC2-2. As temperature increases, the resistance to ground through thermal detector resistor R49 increases. This causes IC2-2 to conduct less, causing a decrease in PA output until the temperature level is reduced. The temperature level is set by resistor R49. When the heatsink temperature rises above 90 C, the resistance of R49 increases and the power output is reduced.

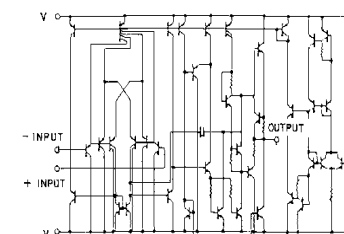
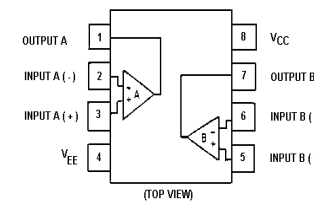
403-512 MHz, 20-WATT POWER MODULE HC1 B19/5DDAB00493 (M57788L-38) (Used in EA) B19/5DDAB00494 (M57788H-38) (Used in EB)



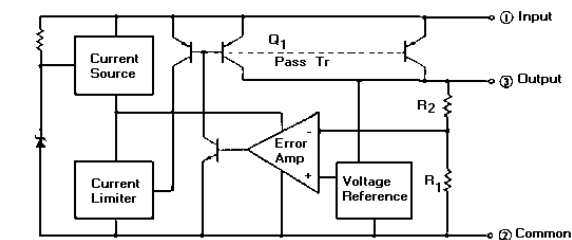
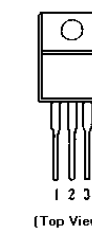
403-512 MHz, 35/40 -WATT POWER MODULE HC1 B19/5DDAB00495 (M57704M-38) (Used in LA, HA) B19/5DDAB00496 (M57704H-38) (Used in LB, HB) B19/5DDAB00497 (M57704SH-38) (Used in LC, HC)



9 VOLT REGULATOR IC1 B19/5DAAR00021 (AN6541)



OPERATIONAL AMPLIFIER IC2 B19/5DAAN00368 (NJM3404AM)



PA UNIT (EUROPEAN MODEL)
344A4573P1/JHM-471EA, 344A4573P2/JHM-471PEB

SYMBOL	PART NO.	DESCRIPTION
A1	B19/CAH-545EA	PA CIRCUIT CAH-545EA (Used in 344A4573P1).
A1	B19/CAH-545EB	PA CIRCUIT CAH-545EB (Used in 344A4573P2).
A2	B19/CMH-1231E	INTERFACE CMH-1231E.
-----CAPACITORS-----		
C1001 and C1002	B19/5NLAN0046	Ceramic: 1000 pF +50%, -20% 50 VDCW temp coef ±15%.
-----CONNECTORS-----		
J1001	B19/6JALD0000 5	H-6JALD00005.
TB1001	B19/5JTG0000	2 ALB-01A.
-----WIRE-----		
W1001	B19/226510023 4	250V-HV-19/0.18-(2)
-----COAXIAL CABLES-----		
ZC1002	B19/6JLD1712 5A	H-6JLD17125A.
ZC1003	B19/6JLD1709 0A	H-6JLD17090A.
ZC1004	B19/6ZCLD4106 0	H-6ZCLD41060.

PA UNIT (USA MODEL)

344A573P3/JHM-471PLA 344A573P4/JHM-471PLB
344A4573P5/JHM-471PLC 344A4573P6/JHM-471PHA
344A4573P7/JHM-471PHB 344A4573P8/JHM-471PHC

SYMBOL	PART NO.	DESCRIPTION
A1001	B19/CAH-545LA	PA CIRCUIT CAH-545LA (Used in 344A4573P3).
A1001	B19/CAH-545LB PA	CIRCUIT CAH-545LB (Used in 344A4573P4).
A1001	B19/CAH-545LC	PA CIRCUIT CAH-545LC (Used in 344A4573P5).
A1001	B19/CAH-545HA	PA CIRCUIT CAH-545HA (Used in 344A4573P6).
A1001	B19/CAH-545HB	PA CIRCUIT CAH-545HB (Used in 344A4573P7).
A1001	B19/CAH-545HC	PA CIRCUIT CAH-545HC (Used in 344A4573P8).
A1002	B19/CMH-1231UL	INTERFACE (Used in 344A4573P3,P4,P5).
A1002	B19/CMH-1231UH	INTERFACE (Used in 344A4573P6,P7,P8).
-----CAPACITORS-----		
C1001	B19/5CBAB02902	Ceramic: 1000 pF +200%,-0%, 50 VDCW temp coef +20%,-55%.
C1002	B19/5CBAB02902	Ceramic: 1000 pF +200%,-0%, 50 VDCW temp coef +20%,-55% (Used in P6,P7,P8).
C1004	B19/5NLAN00046	Ceramic: 1000pF +50-20% 50 VDCW.
-----DIODE-----		
CD1001	B19/5TXAM00019	Silicon fwd current 3A, 200 PIV ;sim to MOTOROLA MR751 (Used in 344A4573P3,P4,P5).
----- JACKS -----		
J1001	B19/5JAAE01064	Connector: TNC-R888.

SYMBOL	PART NO.	DESCRIPTION
J1002	B19/5JWAV00159	CCT9402-0501R.
J1004	B19/5JWAH01075	2-171822-4.
J1004-1 thru J1004-4	B19/5JWAH01087	170204-4.
----- WIRES -----		
W1001	B19/2265100134	250V-HV-19/0.18-(1).
W1002	B19/2265100931	250V-HV-19/0.18-(9).
W1003	B19/2265100234	250V-HV-19/0.18-(2).
W1004	B19/2265100034	250V-HV-19/0.18-(0).
-----COAXIAL CABLES-----		
ZC1002	B19/6ZCLD41060	H-6ZCLD41060.
ZC1003	B19/6ZCLD40111	H-6ZCLD40111 (Used in 344A4573P6,P7,P8).
ZC1003	B19/6ZCLD40009	H-6ZCLD40009 (Used in 344A4573P3,P4,P5).

POWER AMPLIFIER
CAH-545E - 20 WATT
CAH-545EA (Used in 344A4573P1)
CAH-545EB (Used in 344A4573P2)

SYMBOL	PART NO.	DESCRIPTION
----- CAPACITORS -----		
C1 and C2	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30 PPM.
C3	B19/5CBAA00184	Electrolytic: 33 μF ±20% 25 VDCW, temp coef ±20%.
C4	B19/5CRAA01230	Film: 0.1 μF ±10% 50 VDCW, temp coef ±15%.
C5	B19/5CAAD01385	Ceramic: 0.01 pF ±10% 50 VDCW, temp coef ±10%.
C6	B19/5CAAD01078	Ceramic: 0.1 μF +80%,-20% 25 VDCW, temp coef +30%,-80%.
C7	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30 PPM.
C8	B19/5CAAD00951	Ceramic: 7 pF ±0.5pF 50 VDCW, temp coef 0±30PPM. (Used in EA).
C8	B19/5CAAD00962	Ceramic: 6 pF ±0.5pF 50 VDCW, temp coef 0±30PPM. (Used in EB).
C11	B19/5CAAD00951	Ceramic: 7 pF ±0.5pF 50 VDCW, temp coef 0±30PPM. (Used in EA).
C11	B19/5CAAD00962	Ceramic: 6 pF ±0.5pF 50 VDCW, temp coef 0±30PPM. (Used in EB).
C12	B19/5CAAA03091	Ceramic: 100 pF ±5% 500 VDCW, temp coef 0±60 PPM.
C13 and C14	B19/5CAAA03139	Ceramic: 3 pF ±0.25pF 500 VDCW, temp coef 0±120 PPM.
C15	B19/5CAAA03138	Ceramic: 2 pF ±0.25 PF 500 VDCW, temp coef 0±250 PPM.
C16	B19/5CAAA03139	Ceramic: 3 pF ±0.25pF 500 VDCW, temp coef 0±120 PPM.
C17	B19/5CAAA03087	Ceramic: 5 pF ±0.25pF 500 VDCW, temp coef 0±60 PPM.
C19	B19/5CAAA03084	Ceramic: 6 pF ±0.5pF 500 VDCW, temp coef 0±60PPM.
C20	B19/5CAAA03138	Ceramic: 2 pF ±0.25 PF 500 VDCW, temp coef 0±250 PPM.
C21	B19/5CEAA01786	Electrolytic: 220 μF ±20% 25 VDCW, temp coef ±20%.

SYMBOL	PART NO.	DESCRIPTION
C22 thru C24	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30 PPM.
C25	B19/5CAAA03128	Ceramic: 4 pF ±0.25 pF 500 VDCW, temp coef 0±60 PPM.
C26	B19/5CAAD00961	Ceramic: 4 pF ±0.25 pF 50 VDCW, temp coef 0±30 PPM.
C27	B19/5CAAD00949	Ceramic: 2 pF ±0.25 pF 50 VDCW, temp coef 0±30 PPM.
C28	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30 PPM.
C30	B19/5CSAC01224	Tantalum: 4.7 μF ±20% 25 VDCW.
C31	B19/5CEAA02877	Electrolytic: 10 μF ±20% 25 VDCW, temp coef ±20%.
C32	B19/5CAAD01614	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30PPM.
C34	B19/5CEAA02877	Electrolytic: 10 μF ±20% 25 VDCW, temp coef ±20%.
C35	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30 PPM.
C36	B19/5CSAC01050	Tantalum: 1 uF ±20% 16 VDCW.
C37	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30 PPM.
C38	B19/5CAAD01078	Ceramic: 0.1 μF +80%,-20% 25 VDCW, temp coef +30%,-80%.
C39 and C40	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30 PPM.
C43	B19/5CAAA03084	Ceramic: 6 pF ±0.5 pF 500 VDCW, temp coef 0±60 PPM.
C44	B19/5CAAD00961	Ceramic: 4 pF ±0.25 pF 50 VDCW, temp coef 0±30PPM.
C60 thru C62	B19/5CAAD01614	Ceramic: 100 pF ±5% 500 VDCW, temp coef 0±60PPM.
----- DIODES -----		
CD1 and CD2	B19/5TZAT00135	Silicon: sim to PANASONIC MA741-TX.
CD3 and CD4	B19/6TXLD00001	PIN DIODE: sim to NIHONMEICOM H-6txld00001.
CD7	B19/5TZAT00084	VARIATOR: sim to PANASONIC ERZ-CF2MK220.
CD8	B19/5TXAM00019	Silicon: sim to MOTOROLA MR751.
CD9	B19/5TXAD00290	Silicon: fast recovery (2 diodes in cathode common): sim to TOSHIBA ISS184
CD13	B19/5TXAD00320	Silicon: fast recovery : sim to TOSHIBA ISS226.
-----INTEGRATED CIRCUITS-----		
HC1	B19/5DDAB00493	RF Power Amplifier: sim to MITSUBISHI M57788L-38 (Used in EA).
HC1	B19/5DDAB00494	RF Power Amplifier: sim to MITSUBISHI M57788H-38 (Used in EB).
IC1	B19/5DAAR00021	Linear: Positive Voltage Regulator; sim to PANASONIC AN6541.
IC2	B19/5DAAN00368	Linear: Dual OP Amp: sim to NEW JRC.
-----CONNECTORS-----		
J1 and J2	B19/5JAAA01450	Connector.
J3	B19/5ZZPU00004	Connector.

SYMBOL	PART NO.	DESCRIPTION
-----INDUCTORS-----		
L1	B19/5ALAH00025	Coil: 0.22 μH.
L2	B19/5LCAP00234	Coil: RF 0.22 μH.
L3 and L4	B19/5LCAP00252	Coil: 19 nH.
L5 thru L8	B19/6LALD12011	RF Coil: AIRWOUND.
L9 and L10	B19/5LCAP00252	Coil: RF 19 nH.
L11	B19/5LCAP00234	Coil: RF 0.22 μH.
----- RESISTORS -----		
R1	B19/5RDAC02471	Metal film: 470 ohms ±5%, 100 VDCW, 1/10W.
R2	B19/5REAG04134	Metal film: 12 ohms ±5%, 200 VDCW, 1/4W.
R3	B19/5RDAC02471	Metal film: 470 ohms ±5%, 100 VDCW, 1/10W.
R4 and R5	B19/5REAG04028	Metal film: 22 ohms ±5%, 200 VDCW, 1/2W.
R6	B19/5REAG03813	Metal film: 100 ohms ±5%, 250 VDCW, 1W.
R8	B19/5RDAC02447	Metal film: 100 ohms ±5%, 100 VDCW, 1/10W.
R9 and R10	B19/5RDAC02460	Metal film: 47 ohms ±5%, 100 VDCW, 1/10W.
R11	B19/5RDAC02134	Metal film: 47K ohms ±5%, 200 VDCW, 1/8W.
R14	B19/5RDAC02457	Metal film: 27K ohms ±5%, 100 VDCW, 1/10W.
R15	B19/5RDAC02476	Metal film: 2.7K ohms ±5%, 100 VDCW, 1/10W.
R16	B19/5REAG03488	Metal film: 390 ohms ±5%, 200 VDCW, 1/4W.
R17	B19/5REAG03113	Metal film: 470 ohms ±5%, 200 VDCW, 1/4W.
R18	B19/5RDAC02446	Metal film: 1K ohms ±5%, 100 VDCW, 1/10W.
R19 thru R21	B19/5RDAC02451	Metal film: 2.2K ohms ±5%, 200 VDCW, 1/10W.
R22	B19/5RDAC02449	Metal film: 100k ohms ±5%, 100 VDCW, 1/10W.
R23	B19/5RDAC02462	Metal film: 3.3K ohms ±5%, 100 VDCW, 1/10W.
R24	B19/5RDAC02478	Metal film: 4.7k ohms ±5%, 100 VDCW, 1/10W.
R25	B19/5RDAC02451	Metal film: 2.2K ohms ±5%, 100 VDCW, 1/10W.
R26	B19/5RDAC02439	Metal film: 47K ohms ±5%, 100 VDCW, 1/10W.
R27	B19/5RDAC02446	Metal film: 1K ohms ±5%, 100 VDCW, 1/10W.
R28	B19/5RXAE00087	Posistor: sim to MURATA PTH9M04BE222TS2F333.
R35	B19/5REAG03813	Metal film: 100 ohms ±5%, 250 VDCW, 1W.
R36	B19/5RDAC02445	Metal film: 10K ohms ±5%, 100 VDCW, 1/10W.
RV1	B19/5RMAG00053	Variable: 10K ohms.

*COMPONENTS, ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

(Continued)

SYMBOL	PART NO.	DESCRIPTION
----- TRANSISTORS -----		
TR1	B19/5TDAR00027	Silicon, NPN: sim to PANASONIC 2SD1445A.
TR2	B19/5TDAB00054	Silicon, NPN: sim to NEC 2SD596-T1B DV3.
TR4	B19/5TBAR00001	Silicon, PNP: sim to PANASONIC 2SB953A.
TR5	B19/5TDAB00054	Silicon, NPN: sim to NEC 2SD596-T1B DV3.
TR6	B19/5TBAB00055	Silicon, PNP: sim to NEC 2SB624-T1B BV3.
TR7	B19/5TDAB00054	Silicon, NPN: sim to NEC 2SD596-T1B DV3.
TR8	B19/5TBAB00055	Silicon, PNP: sim to NEC 2SB624-T1B BV3.

SYMBOL	PART NO.	DESCRIPTION
C12	B19/5CAAH00039	Metal mica: 33 pF ±5% 100 VDCW, (Used in CH).
C12	B19/5CAAH00038	Metal mica: 36 pF ±5% 100 VDCW (Used in LB,LC).
C13	B19/5CMAB01118	Mica: 30 pF ±5% 500 VDCW (Used in LA,HA).
C13	B19/5CMAB01504	Mica: 24 pF ±5% 500 VDCW (Used in HB).
C13	B19/5CMAB01206	Mica: 22 pF ±5% 500 VDCW (Used in LC).
C13	B19/5CMAB01155	Mica: 27 pF ±5% 500 VDCW (Used in LBI).
C14	B19/5CMAB01283	Mica: 90 pF ±5% 500 VDCW (Used in LA,LB,LC).
C14	B19/5CAA03091	Ceramic: 100 pF ±5% 500 VDCW, temp coef 0±60PPM (Used in HA, HB,HC).
C15	B19/5CAA03087	Ceramic: 5 pF ±0.25pF 500 VDCW, temp coef 0±60PPM (Used in HA,HB).
C15	B19/5CAA03128	Ceramic: 4 pF ±0.25 pF 500 VDCW, temp coef 0±60PPM (Used in HC).
C16	B19/5CAA03091	Ceramic: 100 pF ±5% 500 VDCW, temp coef 0±60PPM.
C17	B19/5CEAA00451	Electrolytic: 22 µF ±10% 40 VDCW, (Used in HA, HB,HC).
C18	B19/5CAA03094	Ceramic: 10 pF ±0.5pF 500 VDCW, temp coef 0±60PPM (Used in HA).
C18	B19/5CAA03415	Ceramic: 9 pF ±0.5pF 500 VDCW, temp coef 0±60PPM (Used in HB).
C18	B19/5CAA03103	Ceramic: 8 pF ±0.5pF 500 VDCW, temp coef 0±60PPM (Used in HC).
C19	B19/5CAA03091	Ceramic: 100 pF ±5% 500 VDCW, temp coef 0±60PPM (Used in HA,HB,HC).
C20	B19/5CMAB01431	Mica: 56 pF ±5% 500 VDCW (Used in HA).
C20	B19/5CMAB01252	Mica: 47 pF ±5% 500 VDCW (Used in HB).
C20	B19/5CMAB01442	Mica: 36 pF ±5% 500 VDCW (Used in HC).
C21	B19/5CMAB01252	Mica: 47 pF ±5% 500 VDCW (Used in HA).
C21	B19/5CMAB01430	Mica: 39 pF ±5% 500 VDCW (Used in HB).
C21	B19/5CMAB01442	Mica: 36 pF ±5% 500 VDCW (Used in HC).
C22	B19/5CAAH00036	Metal mica: 43 pF ±5% 100 VDCW (Used in HA).
C22	B19/5CAAH00038	Metal mica: 36 pF ±5% 100 VDCW (Used in HB,HC).
C23	B19/5CAAH00036	Metal mica: 43 pF ±5% 100 VDCW (Used in HA,HB).
C23	B19/5CAAH00039	Metal mica: 33 pF ±5% 100 VDCW (Used in HC).
C24	B19/5CAAH00042	Metal mica: 30 pF ±5% 100 VDCW (Used in HA).
C24	B19/5CAAH00043	Metal mica: 27 pF ±5% 100 VDCW (Used in HB).
C24	B19/5CAAH00033	Metal mica: 24 pF ±5% 100 VDCW (Used in HC).
C25	B19/5CMAB01283	Mica: 90 pF ±5% 500 VDCW (Used in HA,HB,HC).
C26	B19/5CAA03094	Ceramic: 10 pF ±0.5pF 500 VDCW, temp coef 0±60PPM (Used in HA,HB).
C26	B19/5CAA03103	Ceramic: 8 pF ±0.5pF 500 VDCW, temp coef 0±60PPM (Used in HC).
C27	B19/5CAA03094	Ceramic: 10 pF ±0.5pF 500 VDCW, temp coef 0±60PPM (Used in HA).
C27	B19/5CAA03415	Ceramic: 9 pF ±0.5pF 500 VDCW, temp coef 0±60PPM (Used in HB).

SYMBOL	PART NO.	DESCRIPTION
C29	B19/5CMAB01430	Mica: 39 pF ±5% 500 VDCW (Used in HB).
C29	B19/5CMAB01442	Mica: 36 pF ±5% 500 VDCW (Used in HC).
C30	B19/5CMAB01431	Mica: 56 pF ±5% 500 VDCW (Used in HA).
C30	B19/5CMAB01252	Mica: 47 pF ±5% 500 VDCW (Used in HB).
C30	B19/5CMAB01442	Mica: 36 pF ±5% 500 VDCW (Used in HC).
C31	B19/5CAAH00036	Metal mica: 43 pF ±5% 100 VDCW (Used in HA,HB).
C31	B19/5CAAH00039	Metal mica: 33 pF ±5% 100 VDCW (Used in HC).
C32	B19/5CAAH00036	Metal mica: 43 pF ±5% 100 VDCW (Used in HA).
C32	B19/5CAAH00038	Metal mica: 36 pF ±5% 100 VDCW (Used in HB,HC).
C33	B19/5CAAH00042	Metal mica: 30 pF ±5% 100 VDCW (Used in HA).
C33	B19/5CAAH00043	Metal mica: 27 pF ±5% 100 VDCW (Used in HB).
C33	B19/5CAAH00033	Metal mica: 24 pF ±5% 100 VDCW (Used in HC).
C34	B19/5CMAB01283	Mica: 90 pF ±5% 500 VDCW (Used in HA,HB,HC).
C35	B19/5CAA03094	Ceramic: 10 pF ±0.5pF 500 VDCW, temp coef 0±60PPM. (Used in HA,HB).
C35	B19/5CAA03103	Ceramic: 8 pF ±0.5pF 500 VDCW, temp coef 0±60PPM (Used in HC).
C36	B19/5CAA03084	Ceramic: 6 pF ±0.5pF 500 VDCW, temp coef 0±60PPM (Used in HA,HB,HC).
C37	B19/5CEAA00451	Electrolytic: 22 µF ±10% 40 VDCW (Used in HA,HB,HC).
C38	B19/5CAA03083	Ceramic: 0.1 µF +80%,-20% 50 VDCW, temp coef +30%,-80% (Used in HA,HB,HC).
C39	B19/5CAA03091	Ceramic: 100 pF ±5% 500 VDCW, temp coef 0±60PPM (Used in HA,HB,HC).
C40	B19/5CAA03103	Ceramic: 8 pF ±0.5pF 500 VDCW, temp coef 0±60PPM (Used in HA,HB,HC).
C41	B19/5CMAB01173	Mica: 8 pF ±0.5pF 500 VDCW (Used in HB).
C41	B19/5CMAB01330	Mica: 6 pF ±0.5pF 50 VDCW, (Used in HA,HB).
C41	B19/5CAA03089	Ceramic: 12 pF ±5% 500 VDCW, temp coef 0±60PPM (Used in LA,LB).
C41	B19/5CAA03094	Ceramic: 10 pF ±0.5pF 500 VDCW, temp coef 0±60PPM (Used in LC).
C44	B19/5CAAD00962	Ceramic: 6 pF ±0.5pF 50 VDCW, temp coef 0±30PPM (Used in HA).
C44	B19/5CAAD00956	Ceramic: 5 pF ±0.25pF 50 VDCW, temp coef 0±30PPM. (Used in HB,HC).
C44	B19/5CAAD00951	Ceramic: 7 pF ±0.5pF 50 VDCW, temp coef 0±30PPM. (Used in LA,LB,LC).
C45	B19/5CAAD00962	Ceramic: 6 pF ±0.5pF 50 VDCW, temp coef 0±30PPM (Used in HA).
C45	B19/5CAAD00956	Ceramic: 5 pF ±0.5pF 50 VDCW, temp coef 0±30PPM (Used in HB,HC).
C47 and C48	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30 PPM.
C49	B19/5CAAD00951	Ceramic: 7 pF ±0.5 pF, 50 VDCW, temp coef 0±30 PPM. (Used in HB).
C49	B19/5CAAD00965	Ceramic: ±0.5 pF ±0.25 pF, 50 VDCW, temp coef 0±30 PPM (Used in LC).
C50	B19/5CAAD00961	Ceramic: 4 pF ±0.25 pF, 50 VDCW, temp coef 0±30 PPM (Used in HC).
C50	B19/5CAAD00962	Ceramic: 6 pF ±0.5 pF, 50 VDCW, temp coef 0±30 PPM (Used in LA,LB,LC).

SYMBOL	PART NO.	DESCRIPTION
C51	B19/5CAAD00839	Ceramic: 100 pF ±5%, 50 VDCW, temp coef 0±30 PPM.
C52	B19/5CAAD00838	Ceramic: 1000 pF ±10% 50 VDCW, temp coef 0±15% ±15% (Used in HA,HB,HC).
C53	B19/5CAAD00780	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30PPM.
C54	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30 PPM.
C55	B19/5CAA03091	Ceramic: 100 pF ±5% 500 VDCW, temp coef 0±60 PPM.
C56	B19/5CAA03139	Ceramic: 3 pF ±0.25 pF 500 VDCW, temp coef 0±120 PPM (Used in HA,HB).
C56	B19/5CAA03128	Ceramic: 4 pF ±0.25 pF 500 VDCW, temp coef 0±60 PPM (Used in LA,LB,LC,HC).
C57	B19/5CAA03084	Ceramic: 6 pF ±0.5pF 500 VDCW, temp coef 0±60 PPM (Used in HC).
C57	B19/5CAA03087	Ceramic: 5 pF ±0.5pF 500 VDCW, temp coef 0±60 PPM (Used in HB).
C57	B19/5CAA03102	Ceramic: 7 pF ±0.5 pF 500 VDCW, temp coef 0±60 PPM (Used in LA,LB,LC,HA).
C58	B19/5CAA03139	Ceramic: 3 pF ±0.25 pF 500 VDCW, temp coef 0±120 PPM (Used in LA,HA,HB).
C58	B19/5CAA03138	Ceramic: 2 pF ±0.25 pF 500 VDCW, temp coef 0±60 PPM (Used in LB,LC,HC).
C59	B19/5CAA03138	Ceramic: 2 pF ±0.25pF 500 VDCW, temp coef 0±250 PPM (Used in HC).
C59	B19/5CAA03139	Ceramic: 3 pF ±0.25 pF 500 VDCW, temp coef 0±120 PPM (Used in HA,HB,LC).
C59	B19/5CAA03087	Ceramic: 5 pF ±0.25pF 500 VDCW, temp coef 0±60 PPM (Used in LA).
C59	B19/5CAA03128	Ceramic: 4 pF ±0.25 pF 500 VDCW, temp coef 0±60 PPM (Used in LB).
C60	B19/5CAA03128	Ceramic: 4 pF ±0.25 pF 500 VDCW, temp coef 0±60 PPM (Used in HA,HB,HC).
C60	B19/5CAA03139	Ceramic: 3 pF ±0.25 pF 500 VDCW, temp coef 0±120 PPM (Used in HA,HB).
C60	B19/5CAA03084	Ceramic: 6 pF ±0.25pF 500 VDCW, temp coef 0±60 PPM (Used in LA,LB).
C60	B19/5CAA03102	Ceramic: 7 pF ±0.5pF 500 VDCW, temp coef 0±60 PPM (Used in LC).
C61	B19/5CAA03138	Ceramic: 2 pF ±0.25 pF 500 VDCW, temp coef 0±60 PPM (Used in LA,HA,HB).
C61	B19/5CAA03137	Ceramic: 1 pF ±0.25 pF 500 VDCW, temp coef 0±60 PPM (Used in LB,LC,HC).
C62	B19/5CAA03102	Ceramic: 7 pF ±0.5 pF 500 VDCW, temp coef 0±60 PPM (Used in LA,LB,LC,HA).
C62	B19/5CAA03084	Ceramic: 6 pF ±0.5pF 500 VDCW, temp coef 0±60 PPM (Used in HB,HC).
C63	B19/5CAA03128	Ceramic: 4 pF ±0.25 pF 500 VDCW, temp coef 0±60 PPM (Used in LA,LB,LC,HA,HB).
C63	B19/5CAA03139	Ceramic: 3 pF ±0.25pF 500 VDCW, temp coef 0±120 PPM (Used in HC).
C64	B19/5CMAB01170	Mica: 2 pF ±0.25pF 500 VDCW (Used in HB).
C64	B19/5CMAB01123	Mica: 1.5 pF ±0.25pF 500 VDCW (Used in HC).
C64	B19/5CAA03087	Ceramic: 5 pF ±0.25pF 500 VDCW, temp coef 0±60 PPM (Used in LA).
C64	B19/5CAA03128	Ceramic: 4 pF ±0.25 pF 500 VDCW, temp coef 0±60 PPM (Used in LB).
C64	B19/5CAA03139	Ceramic: 3 pF ±0.25pF 500 VDCW, temp coef 0±120 PPM (Used in LC).
C64	B19/5CMAB01124	Mica: 3 pF ±0.25pF 500 VDCW (Used in HA).
C65	B19/5CAA03084	Ceramic: 6 pF ±0.5pF 500 VDCW, temp coef 0±60 PPM (Used in HA,HB).
C65	B19/5CAA03087	Ceramic: 5 pF ±0.5pF 500 VDCW, temp coef 0±60 PPM (Used in LA).

UHF POWER AMPLIFIER
CAH-545L - 35/40 WATT
CAH-545H - 80/100 WATT
CAH-545LA (Used in 344A4573P3), CAH-545LB (Used in 344A4573P4)
CAH-545LC (Used in 344A4573P5), CAH-545HA (Used in 344A4573P6)
CAH-545HB (Used in 344A4573P7), CAN-545HC (Used in 344A4573P8)

SYMBOL	PART NO.	DESCRIPTION
----- CAPACITORS -----		
C1 and C2	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30 PPM.
C3	B19/5CEAA02283	Electrolytic: 33 µF ±20% 25 VDCW, temp coef ±20%.
C5	B19/5CAAD01115	Ceramic: 0.01 µF ±10% 50 VDCW, temp coef 0±10%.
C6	B19/5CAAD01268	Ceramic: 0.1 µF +80%,-20% 50 VDCW, temp coef +30%,-80%.
C7	B19/5CAA03089	Ceramic: 12 pF ±5% 500 VDCW, temp coef 0±60PPM (Used in LA,LB,HA.).
C7	B19/5CAA03094	Ceramic: 10 pF ±0.5pF 500 VDCW, temp coef 0±60PPM (Used in LC,HB,HC).
C8	B19/5CAA03091	Ceramic: 100 pF ±5% 500 VDCW, temp coef 0±60PPM.
C9	B19/5CAA03095	Ceramic: 56 pF ±5% 500 VDCW, temp coef 0±60PPM (Used in LA, HA).
C9	B19/5CAA03080	Ceramic: 47 pF ±5% 500 VDCW, temp coef 0±60PPM (Used in LB,LC,HB,HC).
C10	B19/5CAA03095	Ceramic: 56 pF ±5% 500 VDCW, temp coef 0±60PPM (Used in LA,HA).
C10	B19/5CAA03828	Ceramic: 43 pF ±5% 500 VDCW, temp coef 0±60PPM (Used in HB).
C10	B19/5CAA03131	Ceramic: 36 pF ±5% 500 VDCW, temp coef 0±60PPM (Used in LC,HC).
C10	B19/5CAA03080	Ceramic: 47 pF ±5% 500 VDCW, temp coef 0±60PPM (Used in LB).
C11	B19/5CAAH00036	Metal mica: 43 pF ±5% 100 VDCW, (Used in LA, HA).
C11	B19/5CAAH00038	Metal mica: 36 pF ±5% 100 VDCW, (Used in HB).
C11	B19/5CAAH00039	Metal mica: 33 pF ±5% 100 VDCW, (Used in LB,HC).
C11	B19/5CAAH00037	Metal mica: 39 pF ±5% 100 VDCW, (Used in LC).
C12	B19/5CAAH00037	Metal mica: 39 pF ±5% 100 VDCW, (Used in LA).
C12	B19/5CAAH00036	Metal mica: 43 pF ±5% 100 VDCW, (Used in HA,HB).

*COMPONENTS, ADDED, DELETED OR CHANGED BY PRODUCTION CHANGES

PARTS LIST

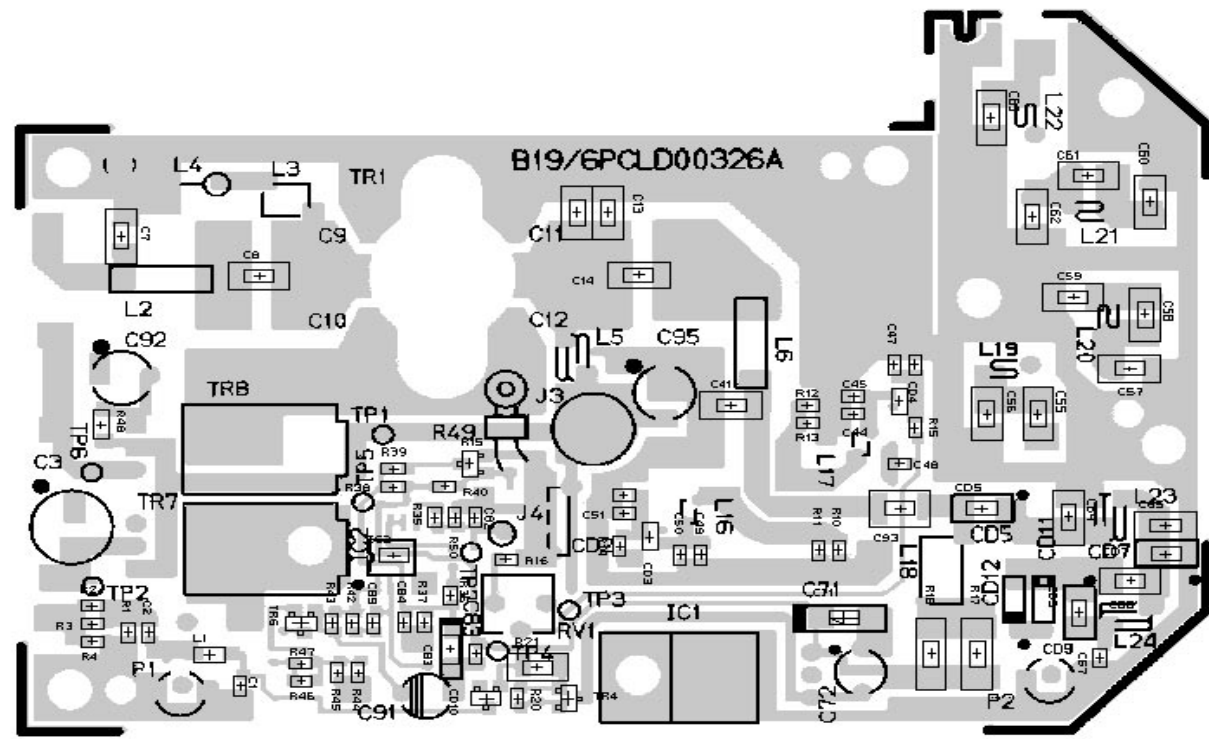
LBI-39034

SYMBOL	PART NO.	DESCRIPTION
C65	B19/5CAA03128	Ceramic: 4 pF ±0.25 pF 500 VDCW, temp coef 0±60 PPM (Used in LB,LC,HC)
C66	B19/5CAA03128	Ceramic: 4 pF ±0.25 pF 500 VDCW, temp coef 0±60 PPM (Used in LA,LB).
C66	B19/5CAA03102	Ceramic: 7 pF ±0.5 pF 500 VDCW, temp coef 0±60 PPM (Used in HB).
C66	B19/5CAA03139	Ceramic: 3 pF ±0.25pF 500 VDCW, temp coef 0±120 PPM (Used in LC).
C66	B19/5CAA03087	Ceramic: 5 pF ±0.25pF 500 VDCW, temp coef 0±60 PPM (Used in HC).
C67	B19/5CAAD00949	Ceramic: 2 pF ±0.25 pF 50 VDCW, temp coef 0±30 PPM (Used in AH,BH,CH).
C67	B19/5CAAD00853	Ceramic: 3 pF ±0.25 pF 50 VDCW, temp coef 0±30 PPM (Used in LA).
C68	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30 PPM.
C69	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30 PPM (Used in HA,HB,HC).
C71	B19/5CSAC00912	Tantalum: 10 µF ±20%,35 VDCW (Used in HA,HB,HC).
C71	B19/5CSAA00298	Tantalum: 10 µF ±20% 16 VDCW (Used in LA,LB,LC).
C72	B19/5CEAA01864	Electrolytic: 10 µF ±10%.
C73	B19/5CAA03091	Ceramic: 100 pF ±5% 500 VDCW, temp coef 0±60 PPM (Used in HA,HB,HC).
C82	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30 PPM.
C83	B19/5CEAA02249	Tantalum: 1 µF ±20% 16 VDCW,
C84 thru C88	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30 PPM.
C89	B19/5CAAD01078	Ceramic: 0.1 µF ±5% 25 VDCW,
C90	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30 PPM (Used in HA,HB,HC).
C91	B19/5CSAC01409	Tantalum: 4.7 µF ±10% 16 VDCW,
C92	B19/5CEAA01813	Electrolytic: 100 µF ±20% 50 VDCW,
C93	B19/5CMAB01425	Mica: 100 pF ±5% 500 VDCW,
C95	B19/5CEAA02283	Electrolytic: 33 µF ±10% 25 VDCW,
C96	B19/5CAA03101	Ceramic: 15 pF ±5% 500 VDCW, temp coef 0±60 PPM (Used in HA,HB,HC).
C97	B19/5CMAB01206	Mica: 22 pF ±5% 100 VDCW (Used in HC).
C98	B19/5CMAB01283	Mica: 90 pF ±5% 500 VDCW (Used in HA,HB,HC).
C99	B19/5CAAD00839	Ceramic: 100 pF ±5% 50 VDCW, temp coef 0±30 PPM (Used in LA,LB,LC).
----- DIODES -----		
CD1	B19/5TXAM00019	Silicon: fwd current 3A, 200 PIV; sim to MOTOROLA MR751 (Used in HA,HB,HC).
CD2	B19/5TZDL00012	Ceramic: Varistor; sim to HOKURIKU 22ZR-10D.
CD3 and CD4	B19/5TZAT00135	Diode: sim to PANASONIC MA741-TX.
CD5	B19/6TXLD00001	Diode.(Used in LA,LB,LC).
CD6	B19/6AZLD00001	Diode (Used in HA,HB,HC).
CD7	B19/6TXLD00001	Diode.
CD8	B19/6TXLD00001	Diode (Used in HA,HB,HC).
CD9	B19/6TXLD00001	Diode.
CD10	B19/5TXAD00290	Silicon: fast recovery (2 diodes in cathode common); sim to TOSHIBA 1S184 TE85L.
CD11 and CD12	B19/5TXAR00004	Silicon: fast recovery, (RF Switch); sim to MITSUBISHI MI301

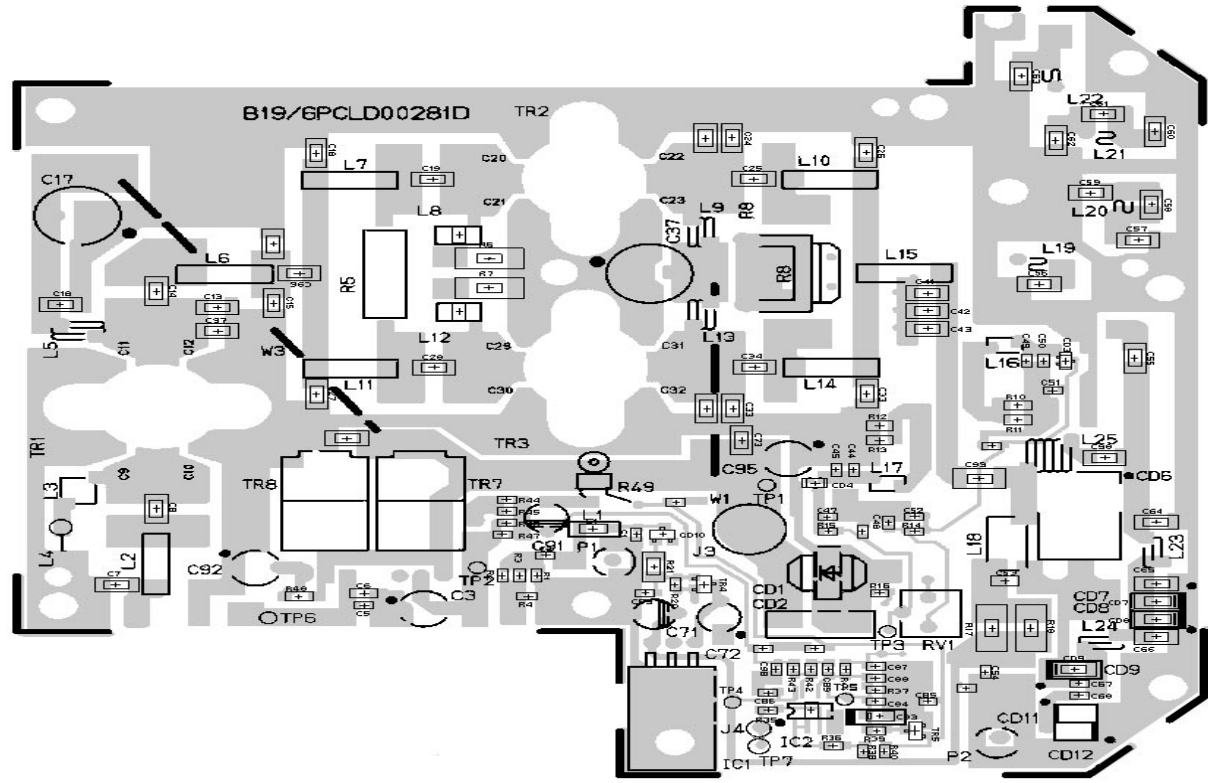
SYMBOL	PART NO.	DESCRIPTION
-----INTEGRATED CIRCUITS-----		
HC1	B19/5DDAB00495	RF Power Amplifier: sim to MITSUBISHI M57704M-38 (Used in LA,HA).
HC1	B19/5DDAB00496	RF Power Amplifier: sim to MITSUBISHI M57704H-38 (Used in LB,HB).
HC1	B19/5DDAB00497	RF Power Amplifier: sim to MITSUBISHI M57704SH-38 (Used in LC,HC).
IC1	B19/5DAAR00021	Linear: Positive Voltage Regulator; sim to PANASONIC AN6541.
IC2	B19/5DAAN00368	Linear, Dual OP Amp: sim to NEW JRC NJM3404AM.
J3	B19/5JTCW000±60	Connector.
J4	B19/5JTCD00197	Connector.
-----INDUCTORS-----		
L1	B19/5ALAH00025	Coil.
L2	B19/6LALD20855	Coil (Used in LA,HA,HB).
L2	B19/6LALD20850	Coil (Used in LB,LC,HC).
L3	B19/6LALD14064	Coil.
L4	B19/5LZAX00011	Coil.
L6	B19/6LALD20840	Coil (Used in HA,HB,HC).
L6	B19/6LALD20855	Coil (Used in LA).
L6	B19/6LALD20850	Coil (Used in LB,LC).
L7	B19/6LALD20850	Coil.(Used in HA,HB,HC).
L8	B19/6LALD00176	Coil (Used in HA,HB,HC).
L9	B19/6LALD12022	Coil (Used in HA,HB,HC).
L10	B19/6LALD20855	Coil (Used in HA,HB,HC).
L11	B19/6LALD20850	Coil (Used in HA,HB,HC).
L12	B19/6LALD00175	Coil (Used in HA,HB,HC).
L13	B19/6LALD13022	Coil (Used in HA,HB,HC).
L14	B19/6LALD20855	Coil (Used in HA,HB,HC).
L15	B19/6LALD20875	Coil (Used in HA,HB,HC).
L16	B19/6LALD	Coil.
L17	B19/6LALD15021	Coil.
L18	B19/6LALD16036	Coil.
L19	B19/6LALD13011	Coil (Used in HA,HB,HC).
L19	B19/6LALD12011	Coil (Used in LA,LB,LC).
L20 and L21	B19/6LALD13011	Coil.
L22	B19/6LALD12011	Coil.
L23 and L24	B19/6LALD12014	Coil (Used in HA,HB).
L23 and L24	B19/6LALD12013	Coil (Used in HC).
L23	B19/6LALD13022	Coil (Used in LA,LB,LC,).
L24	B19/6LALD12022	Coil (Used in LA,LB,LC,).
L25	B19/6LALD13049	Coil (Used in HA,HB,HC).
P1	B19/6JJLD16120	Coaxial cable with connector (Used in LA,LB,LC).
P1	B19/6JJLD16150	Coaxial cable with connector (Used in HA,HB,HC).
P2	B19/6JJLD19120	Coaxial cable with connector (Used in LA,LB,LC).
P2	B19/6JJLD19150	Coaxial cable with connector (Used in HA,HB,HC).

SYMBOL	PART NO.	DESCRIPTION
-----RESISTORS-----		
R1	B19/5RDAC02471	Metal film: 470 ohms ±5%, 100 VDCW, 1/10W.
R2 and R3	B19/5RDAC02465	Metal film: 22 ohms ±5%, 100 VDCW, 1/10W.
R4	B19/5RDAC02471	Metal film: 470 ohms ±5%, 100 VDCW, 1/10W.
R5	B19/5REAG03762	Metal film: 24 ohms ±5%, 350 VDCW, 3W (Used in HA,HB,HC,).
R6 and R7	B19/5REAG03909	Metal film: 3.3K ohms ±5%, 250 VDCW, 1W (Used in HA,HB,HC).
R8	B19/5READ01425	Metal film: 24 ohms ±1%, 500 VDCW, 1.5W (Used in HA,HB,HC,).
R10	B19/5RDAC02226	Metal film: 82 ohms ±5%, 100 VDCW, 1/8W (Used in HA,HB,HC,).
R10	B19/5RDAC02467	Metal film: 68 ohms ±5%, 100 VDCW, 1/10W (Used in LA,LB,LC,).
R11	B19/5RDAC02567	Metal film: 120 ohms ±5%, 200 VDCW, 1/8W (Used in HA,HB,HC).
R11 and R12	B19/5RDAC02582	Metal film: 82 ohms ±5%, 100 VDCW, 1/10W (Used in LA,LB,LC,).
R12 and R13	B19/5RDAC02226	Metal film: 82 ohms ±5%, 200 VDCW, 1/8W (Used in HA,HB,HC).
R13	B19/5RDAC02467	Metal film: 68 ohms ±5%, 100 VDCW, 1/10W (Used in LA,LB,LC,).
R14	B19/5RDAC02480	Metal film: 12k ohms ±5%, 100 VDCW, 1/10W (Used in HA).
R14	B19/5RDAC02482	Metal film: 18k ohms ±5%, 100 VDCW, 1/10W (Used in HB).
R14	B19/5RDAC02483	Metal film: 33k ohms ±5%, 100 VDCW, 1/10W (Used in CH).
R14	B19/5RDAC02476	Metal film: 2.7 ohms ±5%, 100 VDCW, 1/10W (Used in LA,LB,LC,).
R15	B19/5RDAC02447	Metal film: 100 ohms ±5%, 100 VDCW, 1/10W.
R16	B19/5RDAC02477	Metal film: 3.9K ohms ±5%, 100 VDCW, 1/10W (Used in HA,HB).
R16	B19/5RDAC02478	Metal film: 4.7K ohms ±5%, 100 VDCW, 1/10W (Used in HC).
R16	B19/5RDAC02458	Metal film: 6.8K ohms ±5%, 100 VDCW, 1/10W (Used in LA,LB,LC).
R17 and R18	B19/5REAG03812	Metal film: 120 ohms ±5%, 250 VDCW, 1W (Used in HA,HB,HC,).
R17 and R18	B19/5REAG03418	Metal film: 180 ohms ±5%, 250 VDCW, 1W (Used in LA,LB,LC).
R19	B19/5REAG03760	Metal film: 47K ohms ±5%, 200 VDCW, 1/4W.
R20	B19/5RDAC02478	Metal film: 4.7K ohms ±5%, 100 VDCW, 1/10W.
R21	B19/5REAG04114	Metal film: 680 ohms ±5%, 200 VDCW, 1/4W.
R35	B19/5RDAC02445	Metal film: 10K ohms ±5%, 100 VDCW, 1/10W.
R36	B19/5RDAC02462	Metal film: 3.3K ohms ±5%, 100 VDCW, 1/10W (Used in HA).
R36	B19/5RDAC02475	Metal film: 1.8K ohms ±5%, 100 VDCW, 1/10W (Used in HB,HC).
R36	B19/5RDAC02451	Metal film: 2.2K ohms ±5%, 100 VDCW, 1/10W. (Used in LA,LB,LC).
R37	B19/5RDAC02451	Metal film: 2.2K ohms ±5%, 100 VDCW, 1/10W.

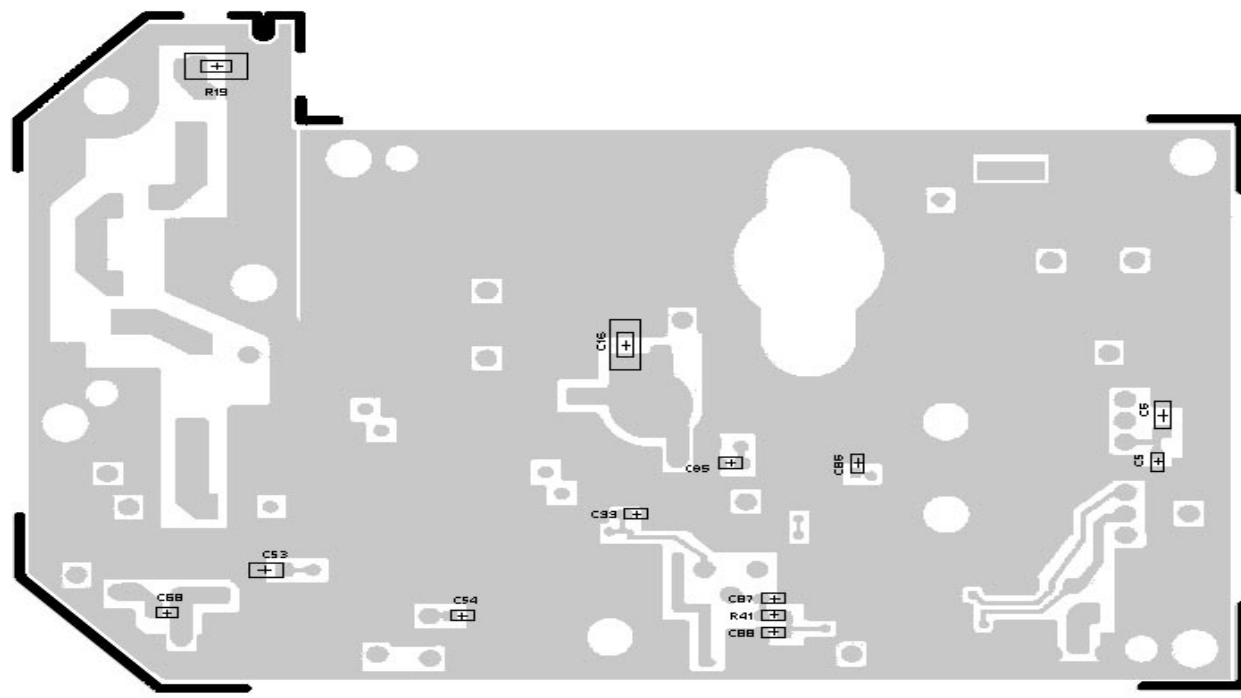
SYMBOL	PART NO.	DESCRIPTION
R38	B19/5RDAC02445	Metal film: 10K ohms ±5%, 100 VDCW, 1/10W. (Used in HA,HB,HC).
R38	B19/5RDAC02479	Metal film: 8.2K ohms ±5%, 100 VDCW, 1/10W (Used in LA,LB,LC).
R39	B19/5RDAC02476	Metal film: 2.7K ohms ±5%, 100 VDCW, 1/10W (Used in HA,HB,HC).
R39	B19/5RDAC02477	Metal film: 3.9K ohms ±5%, 100 VDCW, 1/10W (Used in LA,LB,LC).
R40	B19/5RDAC02457	Metal film: 27K ohms ±5%, 100 VDCW, 1/10W.
R41	B19/5RDAC02451	Metal film: 2.2K ohms ±5%, 100 VDCW, 1/10W.
R42	B19/5RDAC02439	Metal film: 47K ohms ±5%, 100 VDCW, 1/10W.
R43	B19/5RDAC02446	Metal film: 1K ohms ±5%, 100 VDCW, 1/10W.
R44 and R45	B19/5RDAC02542	Metal film: 820 ohms ±5%, 100 VDCW, 1/10W.
R46 and R47	B19/5RDAC02471	Metal film: 470 ohms ±5%, 100 VDCW, 1/10W.
R48	B19/5RDAC02141	Metal film: 10 ohms ±5%, 200 VDCW, 1/8W.
R49	B19/5RXAE00087	Polyester: sim to MURATA PTH9M04BE222TS2F333.
R50	B19/5RDAC02449	Metal film: 100K ohms ±5%, 100 VDCW, 1/10W.
RV1	B19/5RVAB00411	Variable.
----- TRANSISTOR -----		
TR1	B19/5TCAD00088	Silicon,NPN: sim to MITSUBISHI 2SC3102.
TR2 and TR3	B19/5TCAD00144	Silicon,NPN: sim to MITSUBISHI 2SC4989 (Used in HA,HB,HC).
TR4	B19/5TBAB00055	Silicon, PNP: sim to NEC 2SB624-T1B BV3.
TR5 and TR6	B19/5TDAB00054	Silicon, PNP: sim to NEC 2SB596-T1B DV3.
TR7	B19/5TBAR00001	Silicon PNP: sim to PANASONIC 2SB953A.
TR8	B19/5TDAR00012	Silicon NPN: sim to PANASONIC 2SD1271-Q.
-----WIRE-----		
W1	B19/6LALD18736	Jumper wire: (Used in HA,HB,HC).
W3	B19/6LALD18255	Jumper wire: (Used in HA,HB,HC).



(19B/6PCLD00326A, Component Side Layout)
 (19B6PCID00326A, Chip Components)
 (19B6PLCD00326A, Component Side)

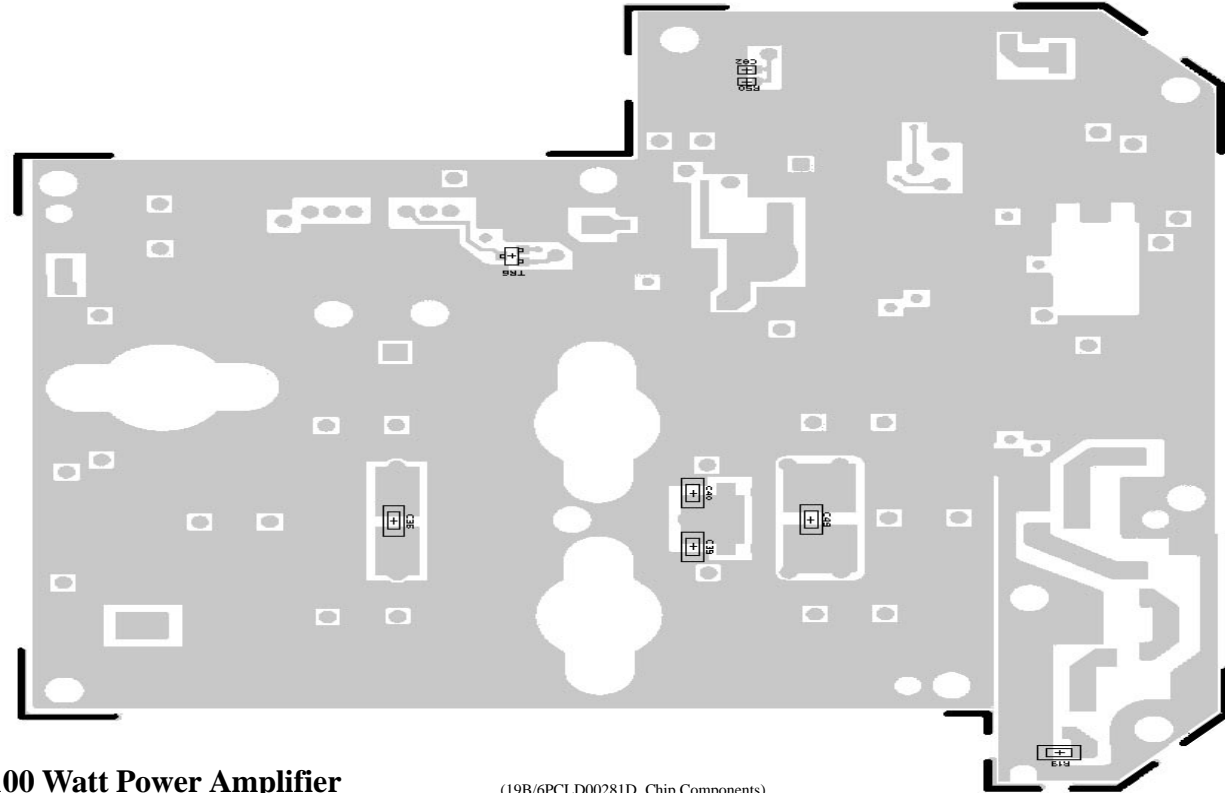


(19B/6PCLD00281D, Component Side Layout)
 (19B/6PCLD00281D, Chip Components)
 (19B/6PCLD00281D, Component Side)



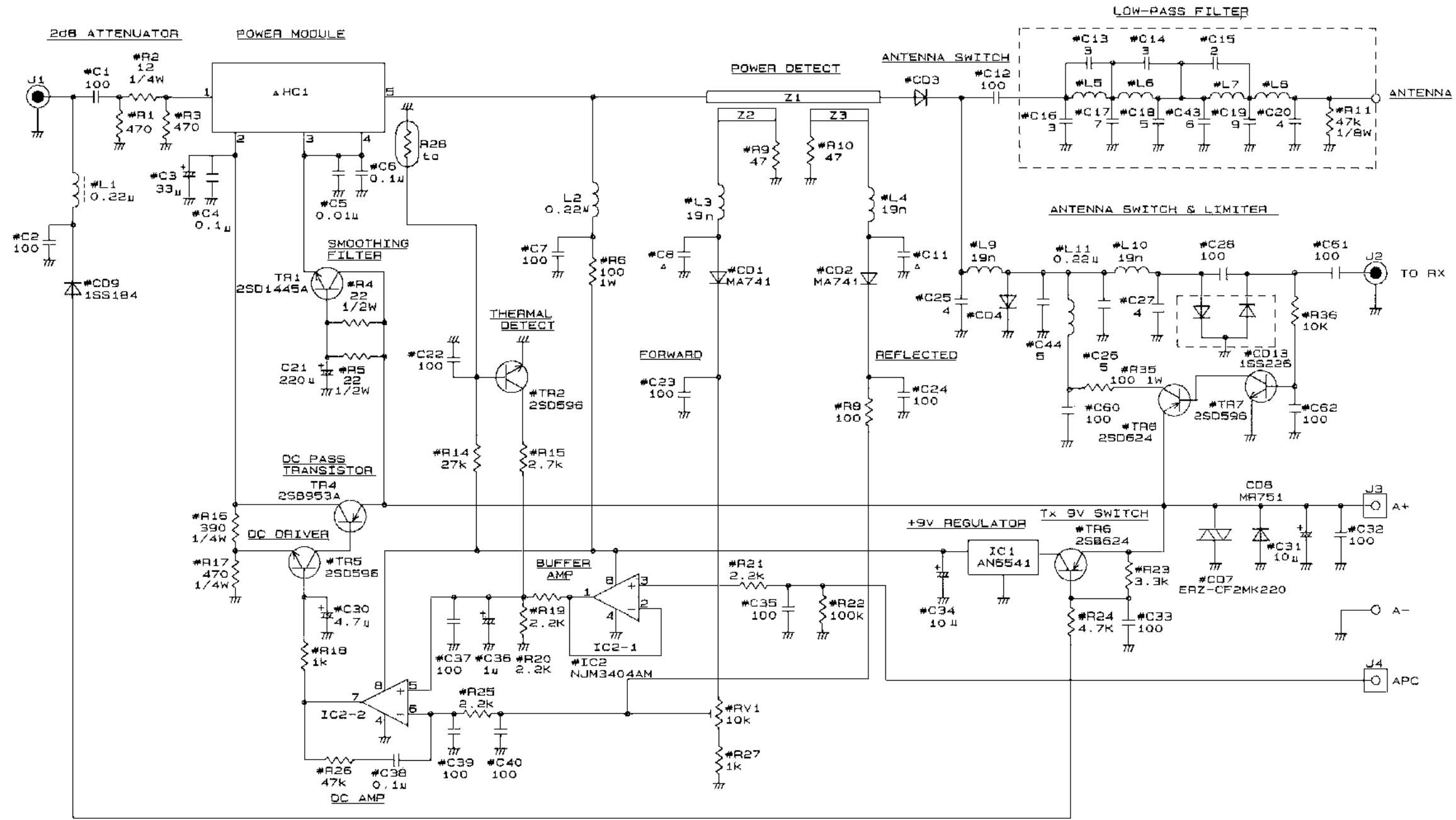
(19B/6PCLD00326A, Component Side Layout)
 (19B/6PCLD0032A, Chip Components)
 (19B/6PCLD00326A, Solder Side)

35/40 Watt Power Amplifier
 CAH-545L



(19B/6PCLD00281D, Chip Components)
 (19B/6PCLD00281D, Solder Side)

80/100 Watt Power Amplifier
 CAH-545H



NOTES:

1. "#" IDENTIFIES CHIP COMPONENTS (EXAMPLE #R12 OR R12#) WHICH ARE LOCATED ON THE COMPONENT SIDE OF THE BOARD.
2. Z1, Z2 AND Z3 ARE STRIPLINE PART OF PWB.
3. RV1 IS FACTORY TUNED AND DOES NOT REQUIRE FURTHER ADJUSTMENT.

ALL RESISTORS ARE 1/10 OR 1/8 WATT UNLESS OTHERWISE SPECIFIED.
 RESISTOR VALUES IN Ω UNLESS FOLLOWED BY MULTIPLIER K OR M.
 CAPACITOR VALUES IN P UNLESS FOLLOWED BY MULTIPLIER μ.
 INDUCTANCE VALUES IN H UNLESS FOLLOWED BY MULTIPLIER m OR μ.

DC VOLTAGE READINGS

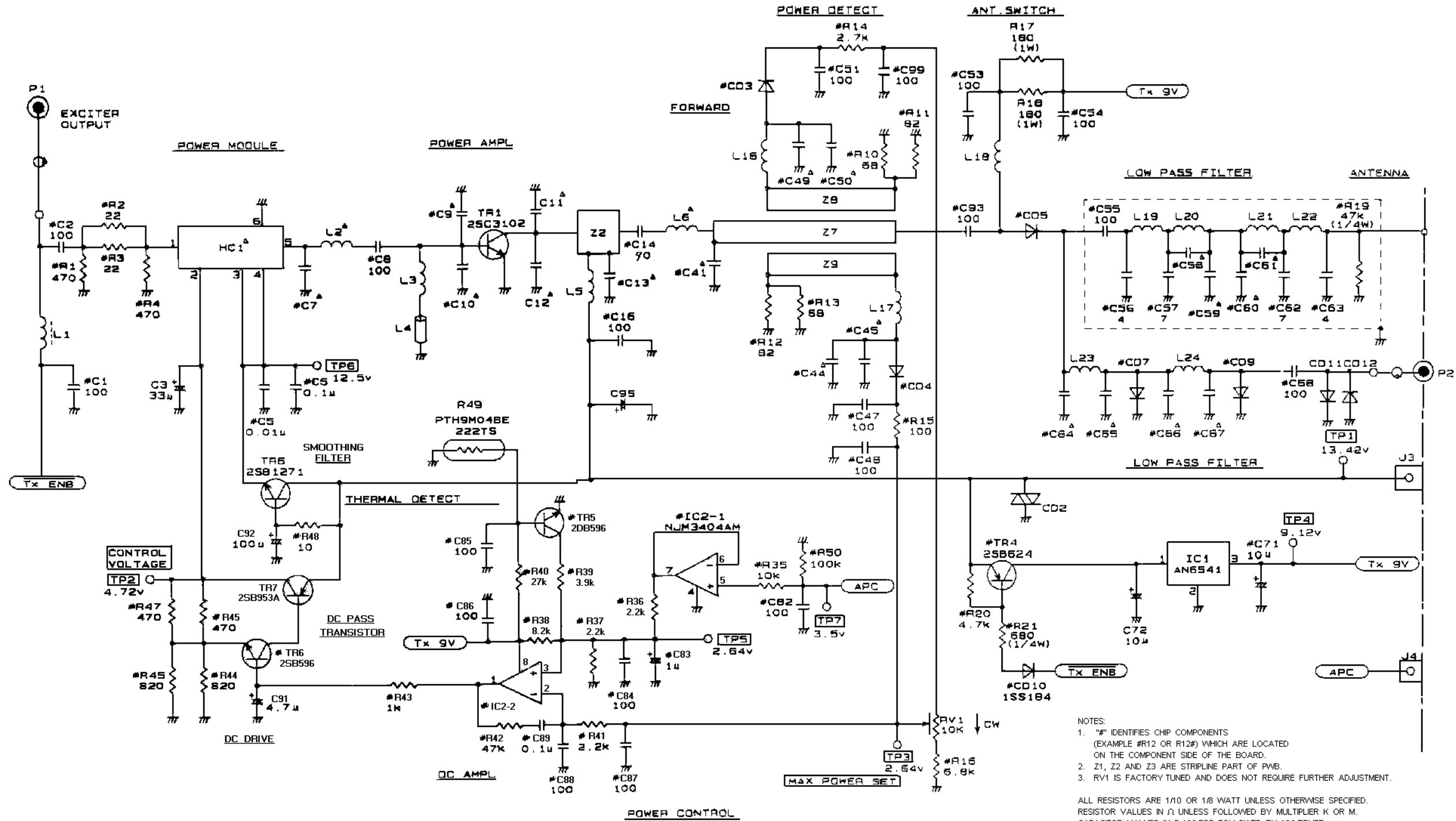
ALL VOLTAGES ARE TYPICAL. VOLTAGES ARE MEASURED WITH A 10Meg OHM PER VOLT METER. REFERENCE TO GROUND. VOLTAGE READINGS ARE TAKEN WITH THE TRANSMITTER UNKEYED/KEYED. EX .45 (UNKEYED)/.05 (KEYED).

COMPONENT IDENTIFICATION CHART

PART	SPLIT	378-415 (MHz)	403-440 (MHz)	440-470 (MHz)
C8			7pF	6pF
C11			7pF	6pF
HC1		M57788SL-38	M57788L-38	M57788H-38

20 Watt Power Amplifier
 CAH-545E

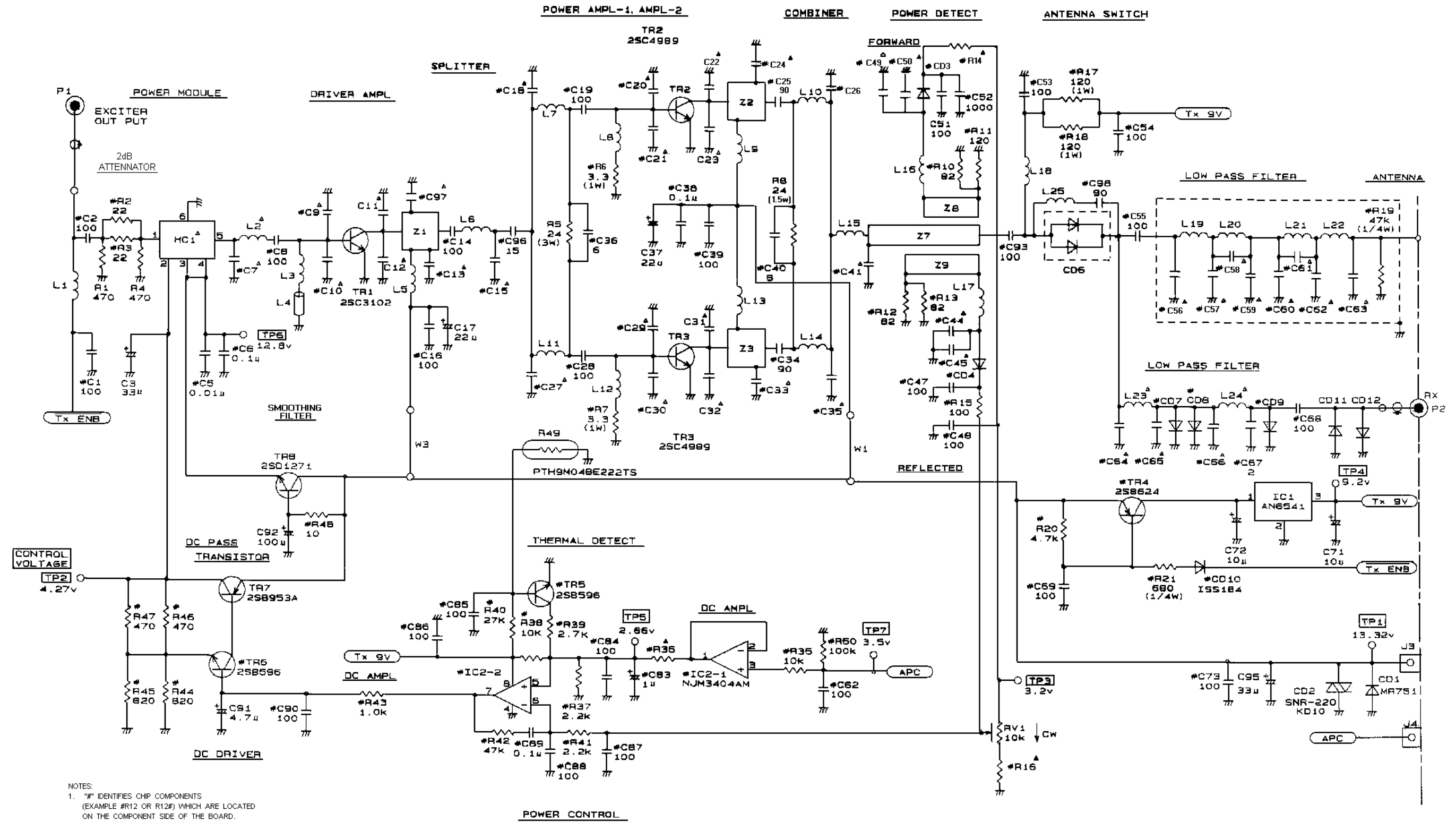
(DD00-CAH-545E)



35/40 Watt Power Amplifier

CAH-545L

(DD00-CAH-545L 1/2)



NOTES:
 1. "*" IDENTIFIES CHIP COMPONENTS (EXAMPLE #R12 OR R12#) WHICH ARE LOCATED ON THE COMPONENT SIDE OF THE BOARD.
 2. Z1, Z2 AND Z3 ARE STRIPLINE PART OF PWB.
 3. RV1 IS FACTORY TUNED AND DOES NOT REQUIRE FURTHER ADJUSTMENT.

ALL RESISTORS ARE 1/10 OR 1/8 WATT UNLESS OTHERWISE SPECIFIED.
 RESISTOR VALUES IN Ω UNLESS FOLLOWED BY MULTIPLIER K OR M.
 CAPACITOR VALUES IN P UNLESS FOLLOWED BY MULTIPLIER μ.
 INDUCTANCE VALUES IN H UNLESS FOLLOWED BY MULTIPLIER m OR μ.

80/100 Watt Power Amplifier
 CAH-545H

(DD00-CAH-545H 1/2)