

6880902Z32-A



**MOTOROLA**

NOTE: All pages in this document are in the exact order as in the original manual. The manual revision sheets are filed just as they were in the original document.

# GM300

Mobile Radios

146-174 MHz  
403-433 MHz  
438-470 MHz  
465-495 MHz  
490-520 MHz

Service Manual

\$12.11



**Radius**<sup>TM</sup>  
A DIVISION OF MOTOROLA INC.

### GENERAL:

This revision outlines changes that have occurred since the printing of your instruction manual. Use this information to correct your manual.

### INSTRUCTION MANUAL REVISION AFFECTED:

MMR-076

For GM300 Service Manual

Part number 6880902Z32, issue A

### REVISION DETAILS:

This revision is being issued to change the item numbers shown for the 20/25/30 kHz RF board in the 136 - 162 MHz VHF radio.

1. On page 3 of MMR-076, in the **GM300, VHF Mobile Radio, 136 - 162 MHz, 10 - 25 Watts RF Power** model chart, change the following two ITEM numbers:

from HLD8029\_

to HLD8266A

from HLD8031\_

to HLD8265A

2. On page 13 of MMR-076, change the title description

from "Schematic Diagram for HLD8254A and HLD8266A VHF RF Boards, 136-162 MHz"

to "Schematic Diagram for HLD8265A and HLD8266A VHF RF Boards, 136-162 MHz"

NOTE: GM300 RSS MANUAL  
6880902Z36 \$28.00 ✓

## GENERAL:

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## INSTRUCTION MANUAL AFFECTED:

6880902Z32-A

GM300 Service Manual

## REVISION DETAILS:

Effective January, 1996, a new 2-Layer Masked Logic Board and a 4-Layer Expanded Logic Board with improved EMC performance have replaced the older versions:

HLN8074E 2-Layer Masked Logic Board replaces HLN8074D

HLN8070D 4-Layer Expanded Logic Board replaces HLN8070C

This supplement contains new circuit board details, schematics, and parts lists necessary for servicing this radio. Please refer to the attached pages and replace them in your manual.

In addition, the following components have changed on the Front Panel Filter Board 01-80704Y83:

C1401 through C1405, and C1411 through C1413, have changed from 21-13740B33 (22pF) to 21-13741B45 (.01uF)

Effective February 16, 1996, the following RF boards have been up-issued:

New Version	Replaces	Description
HLE8300B	HLE8300A	RF Board, 438-470 MHz, 25 kHz
HLE8301B	HLE8301A	RF Board, 438-470 MHz, 12.5 kHz

The new version boards contain minor component value changes, as follows:

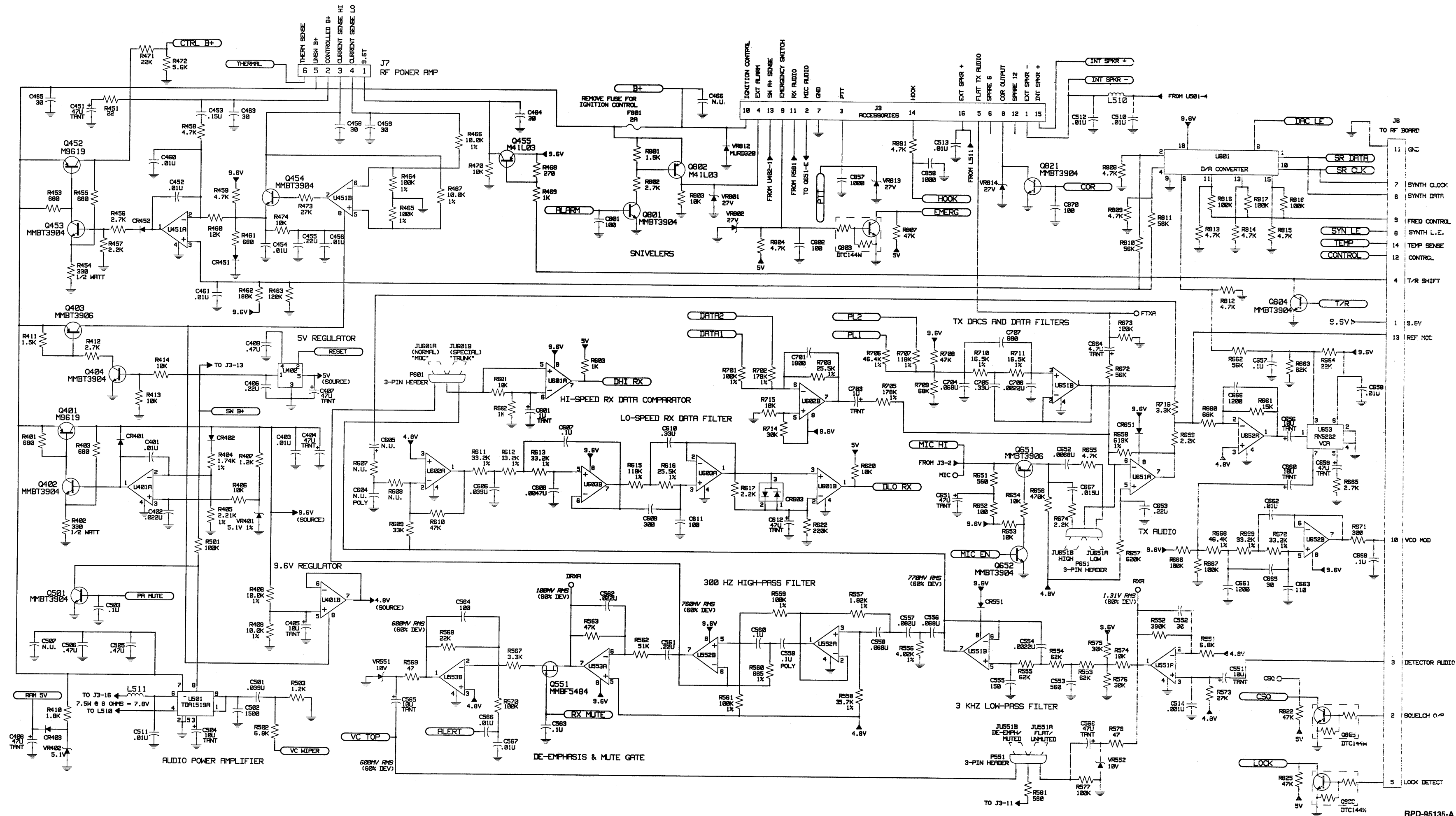
Reference No.	Old Part	New Part
L202	24-80148M02, leaded coil	24-80145S09, SMD coil
C207	21-13740B22, 7.5 pF	21-13740B21, 6.8 pF
C209	21-13740B17, 4.7pF	21-13740B07, 1.8 pF

The new board can be identified by the part number "65C05." The part number of the old board is "65C03."

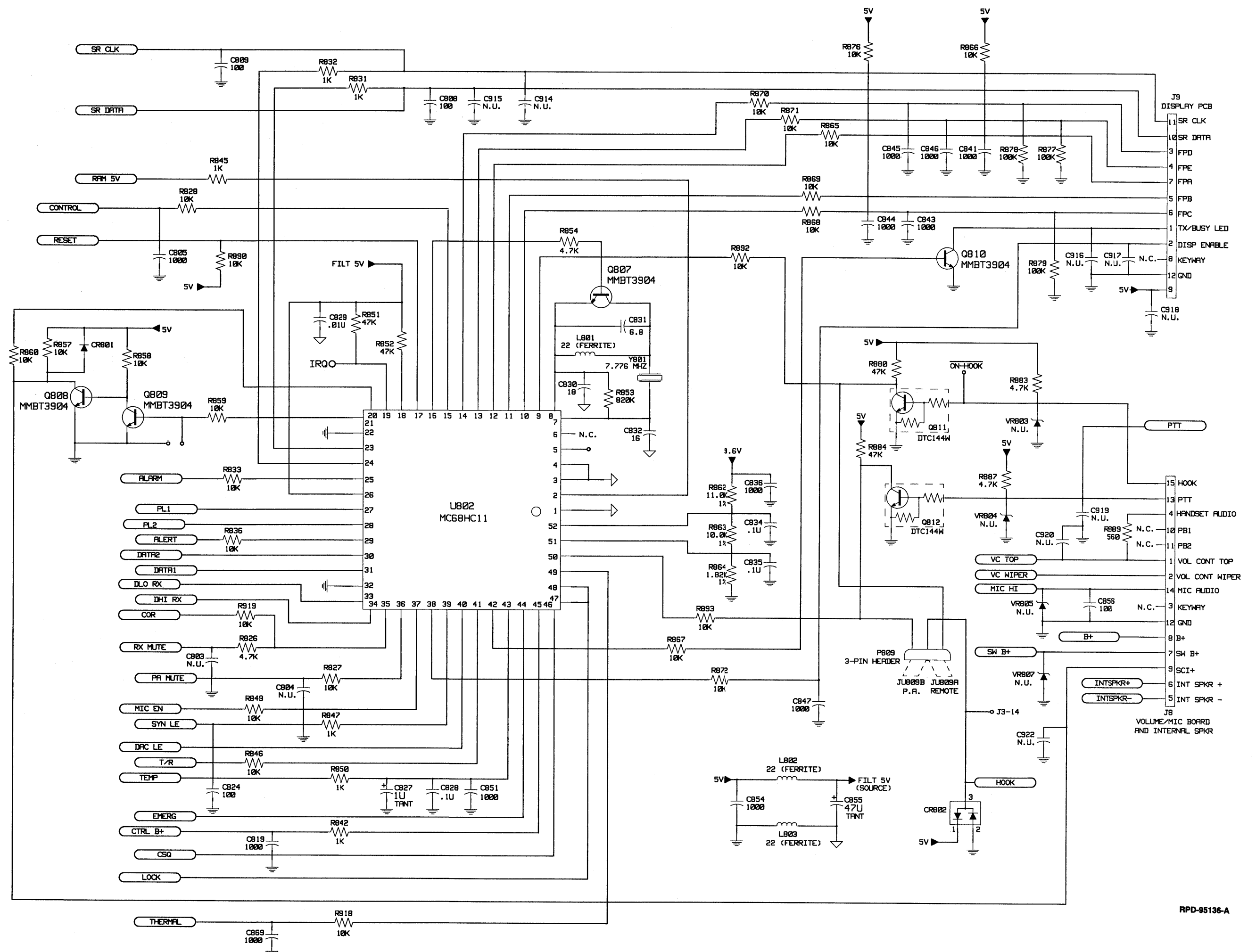
The component values of the two versions of boards are not interchangeable. If replacement is necessary, the component should be replaced with the same type as originally used.

## ATTACHMENTS

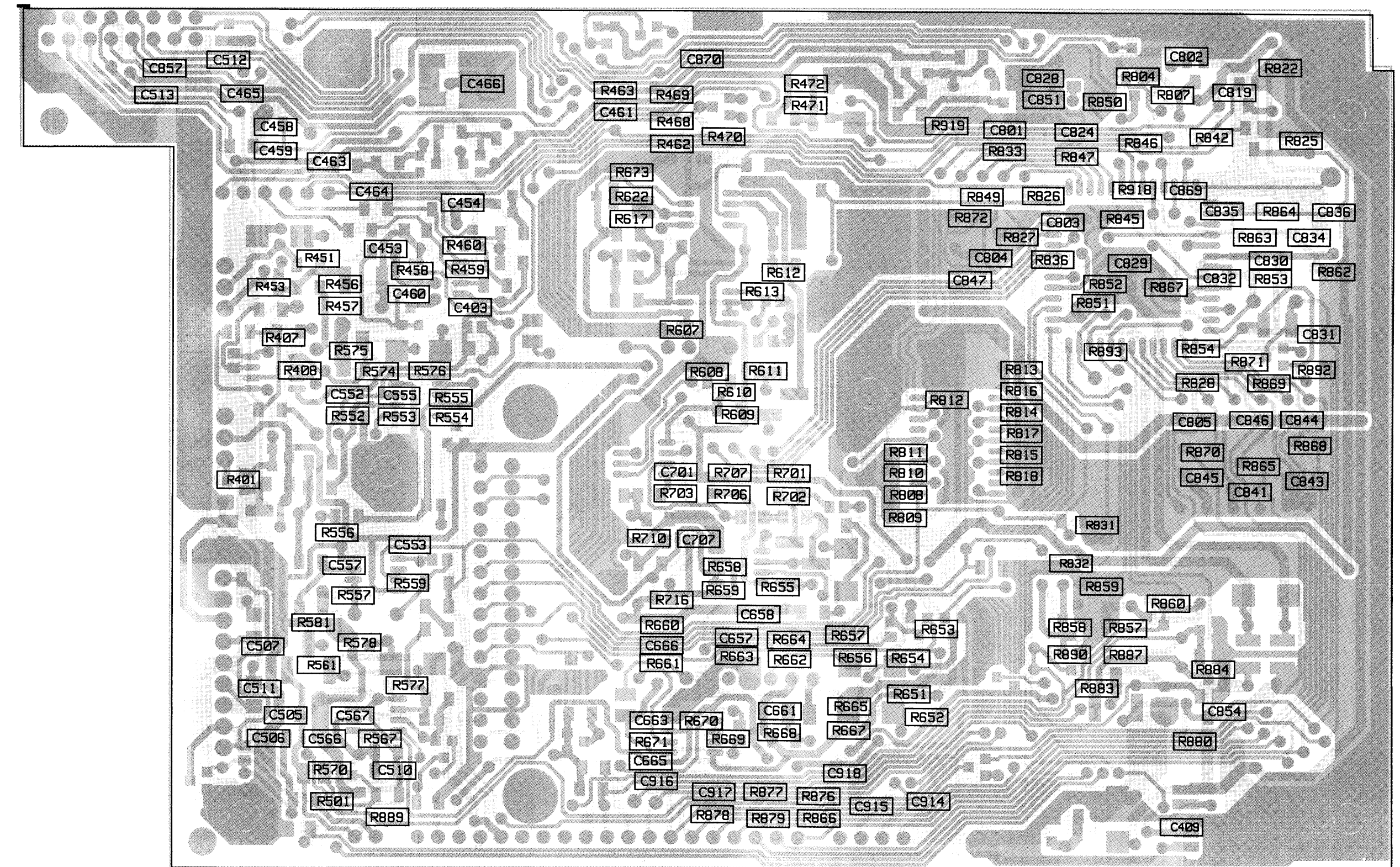
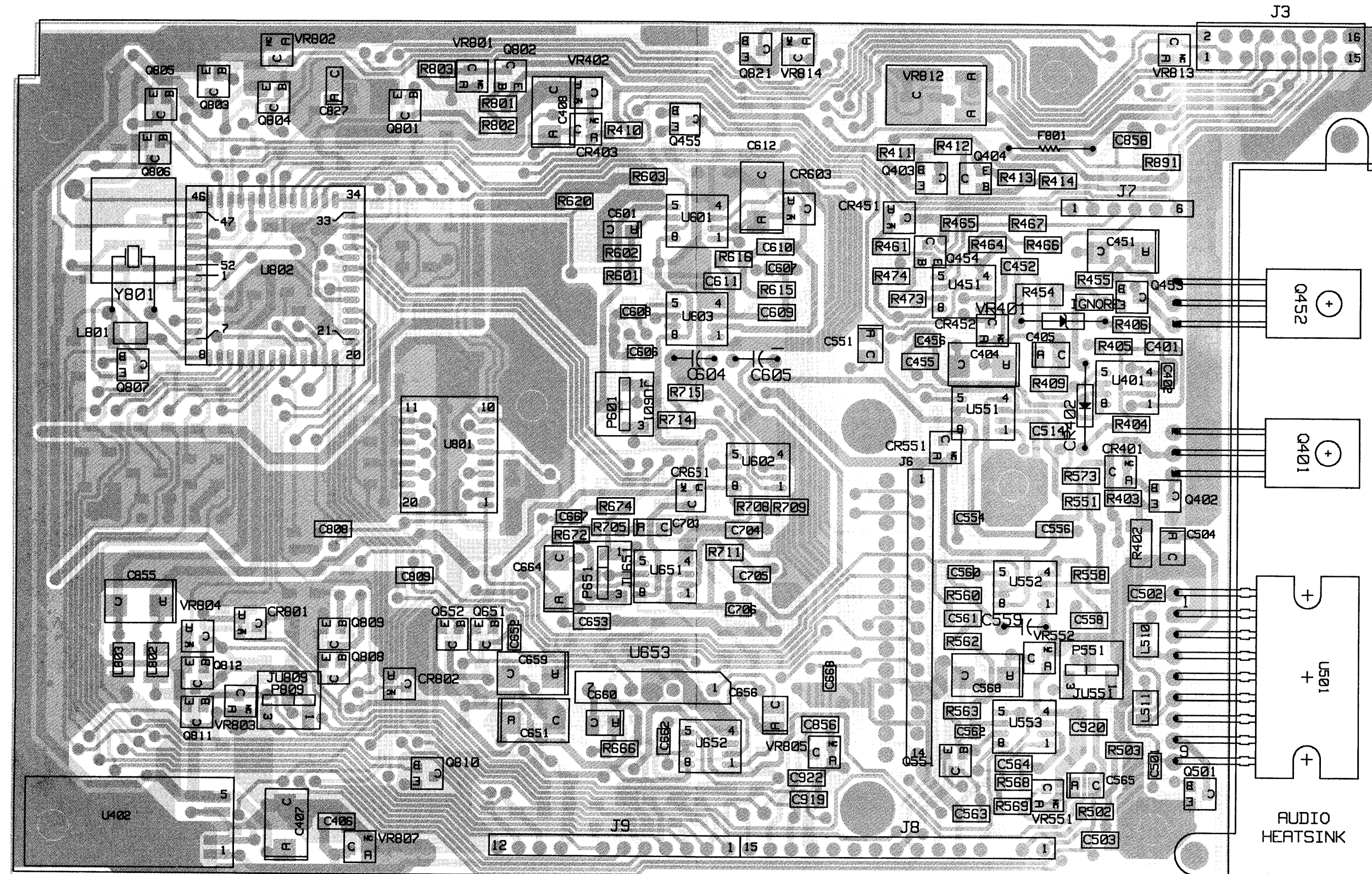
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Parts List for HLN8074E Masked Logic Board (2-Layer) .....	11
Parts List for HLN8070D Expanded Logic Board (4-Layer) .....	14

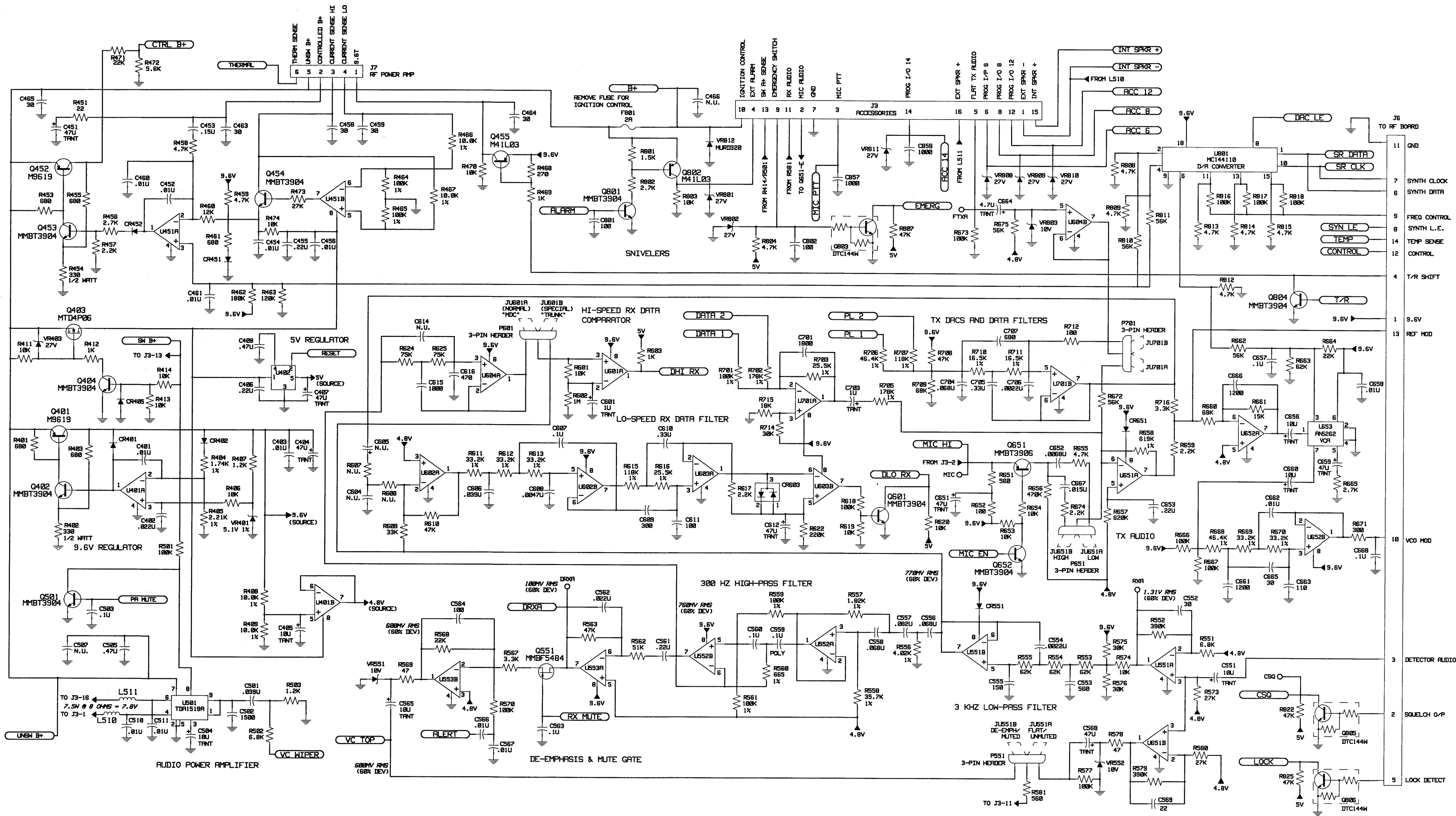


Schematic Diagram for HLN8074E  
Masked Logic Board (2-Layer)  
(Sheet 1 of 2)



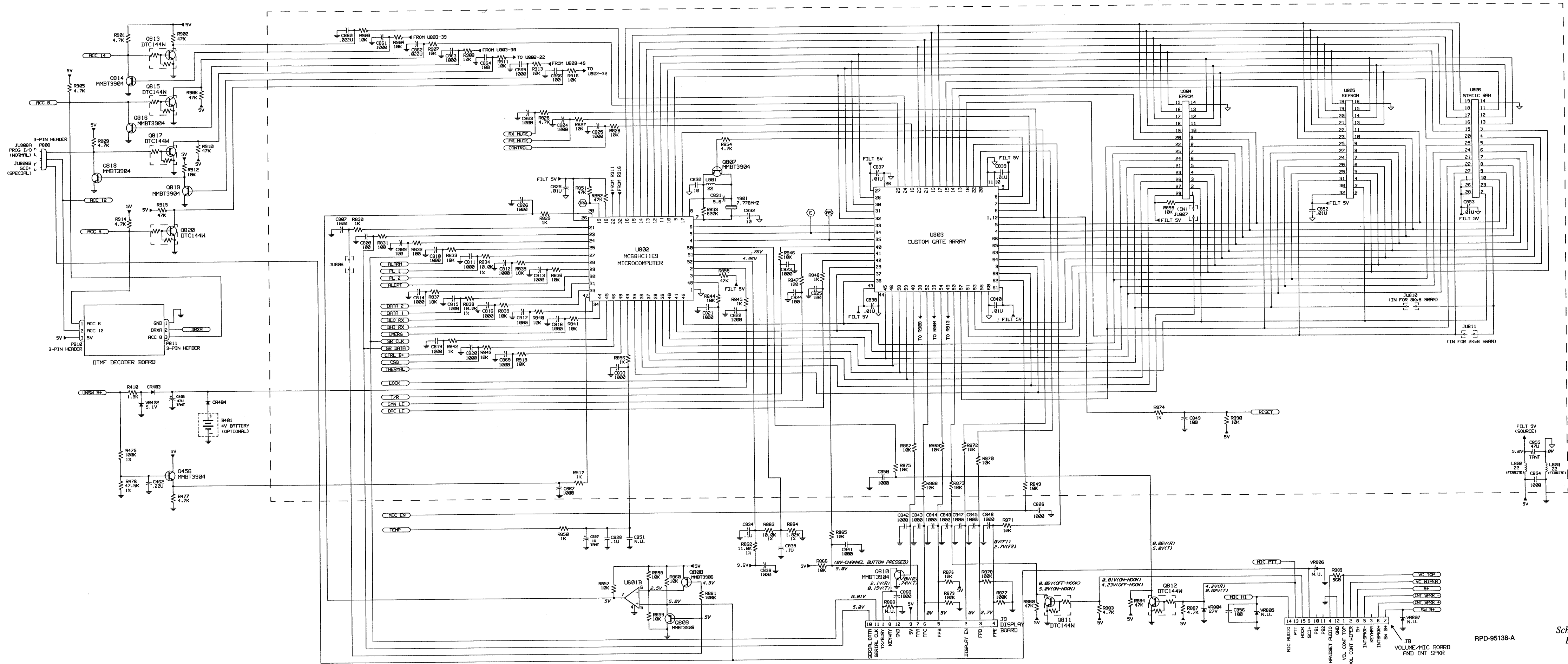
Schematic Diagram for HLN8074E  
Masked Logic Board (2-Layer)  
(Sheet 2 of 2)





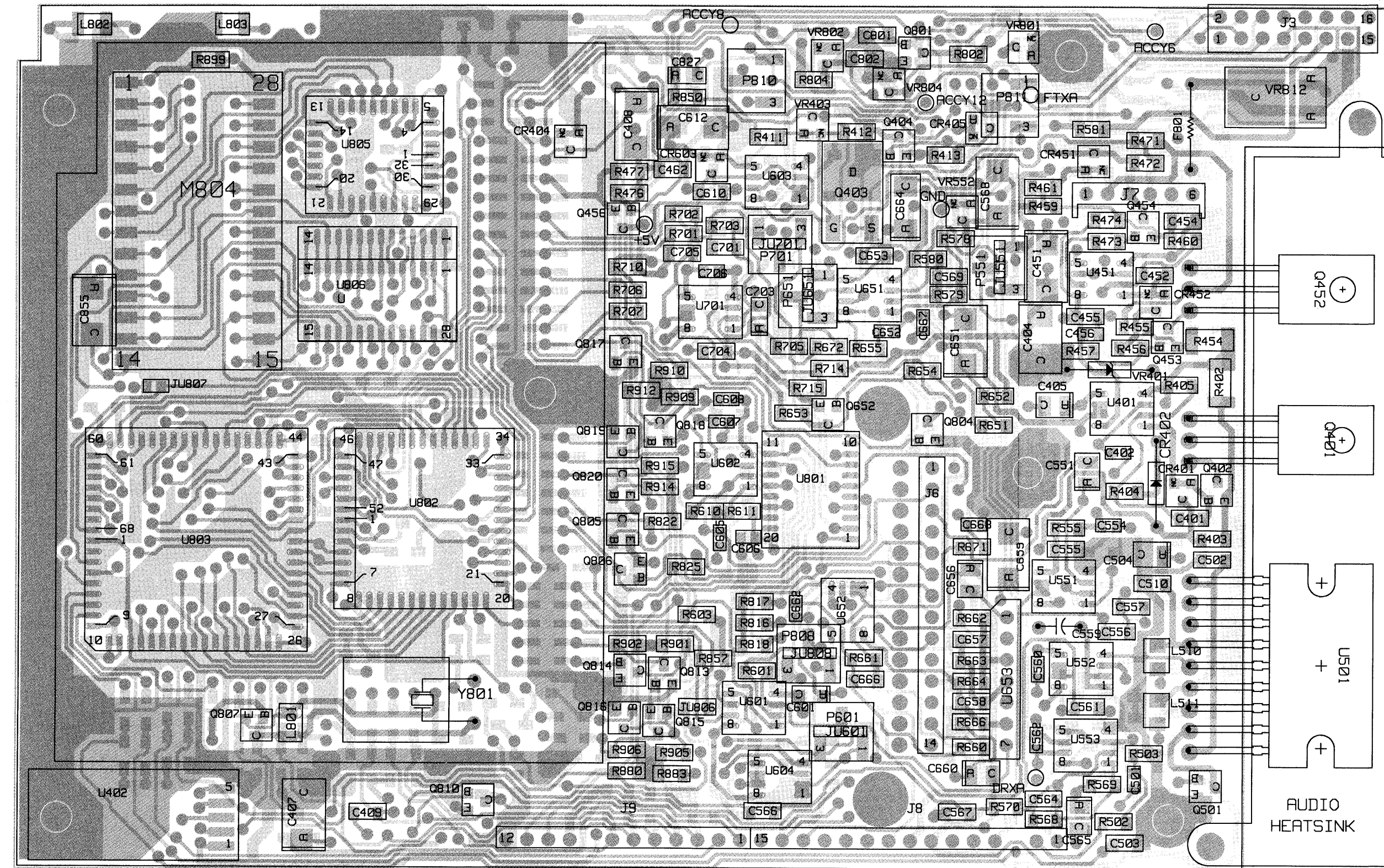
Schematic Diagram for HLN8070D  
Expanded Logic Board (4-Layer)  
(Sheet 1 of 2)  
(FMR-1801A-1)





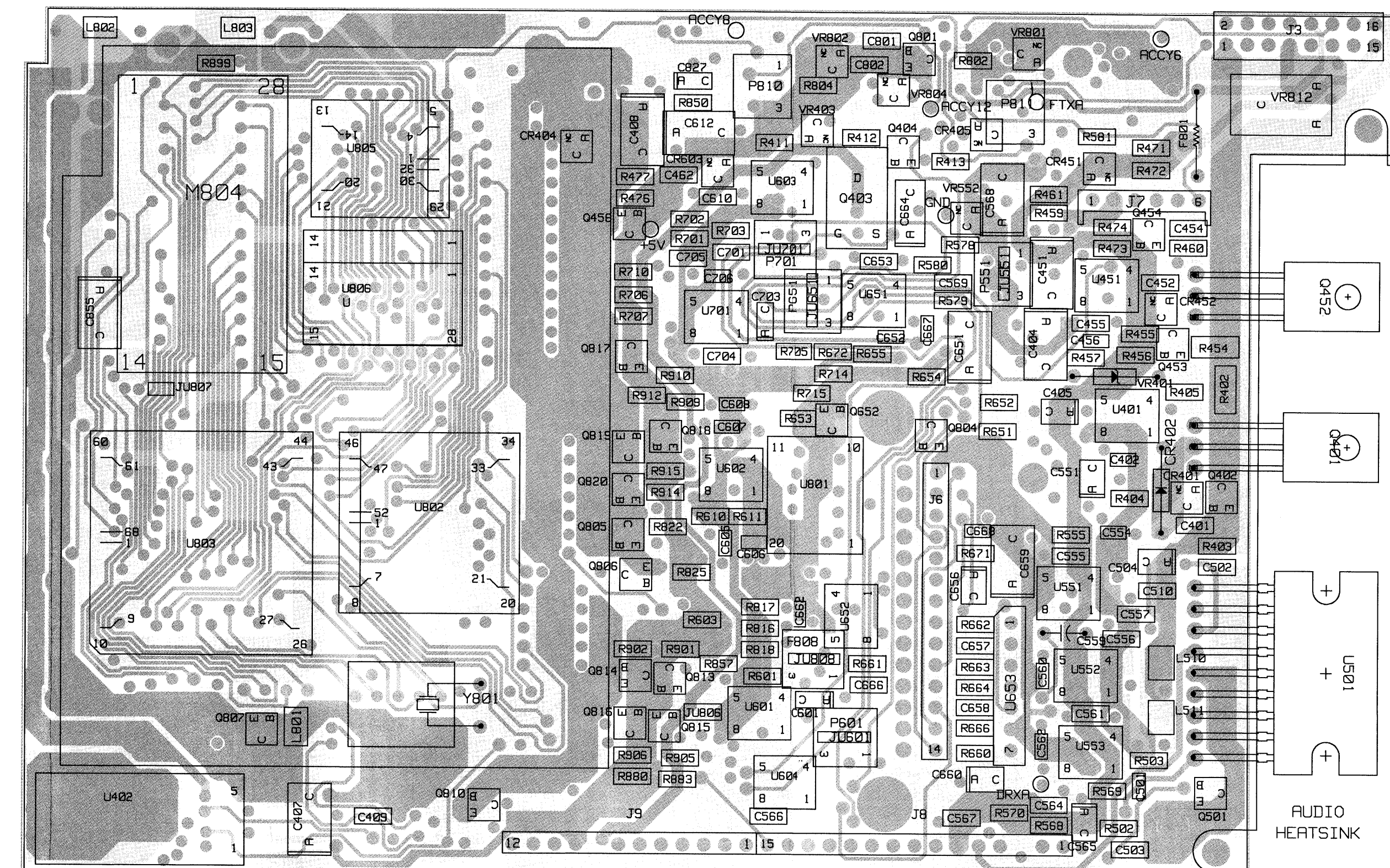
RPD-95138-A

Schematic Diagram for HLN8070D  
Expanded Logic Board (4-Layer)  
(Sheet 2 of 2)  
(FMR-1801A-1)



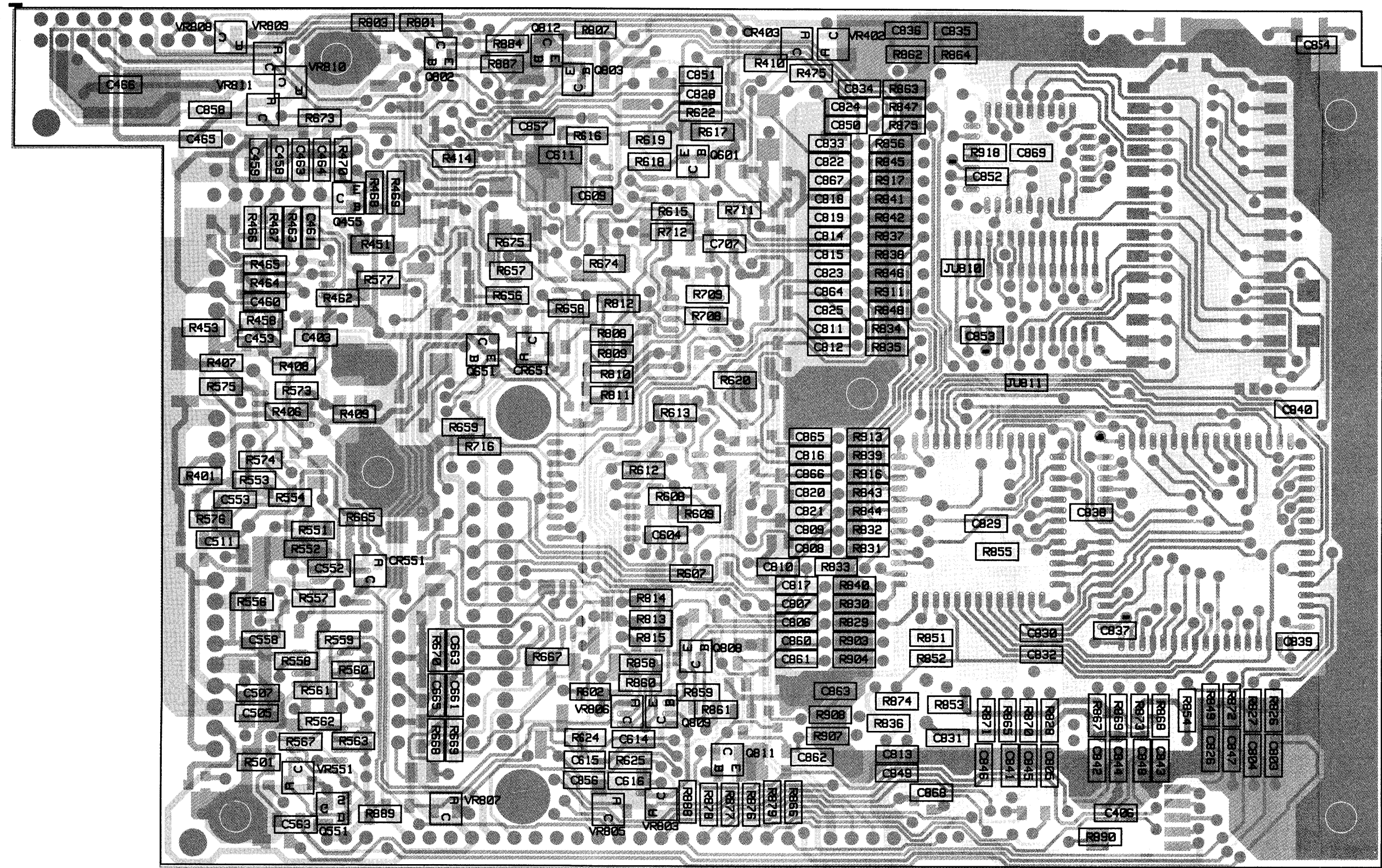
COMPONENT SIDE (GRAY) RCB-95157-A  
 SOLDER SIDE (PINK) RCB-95160-A  
 OVERLAY ----- RCB-95161-A

COMPONENT SIDE VIEW



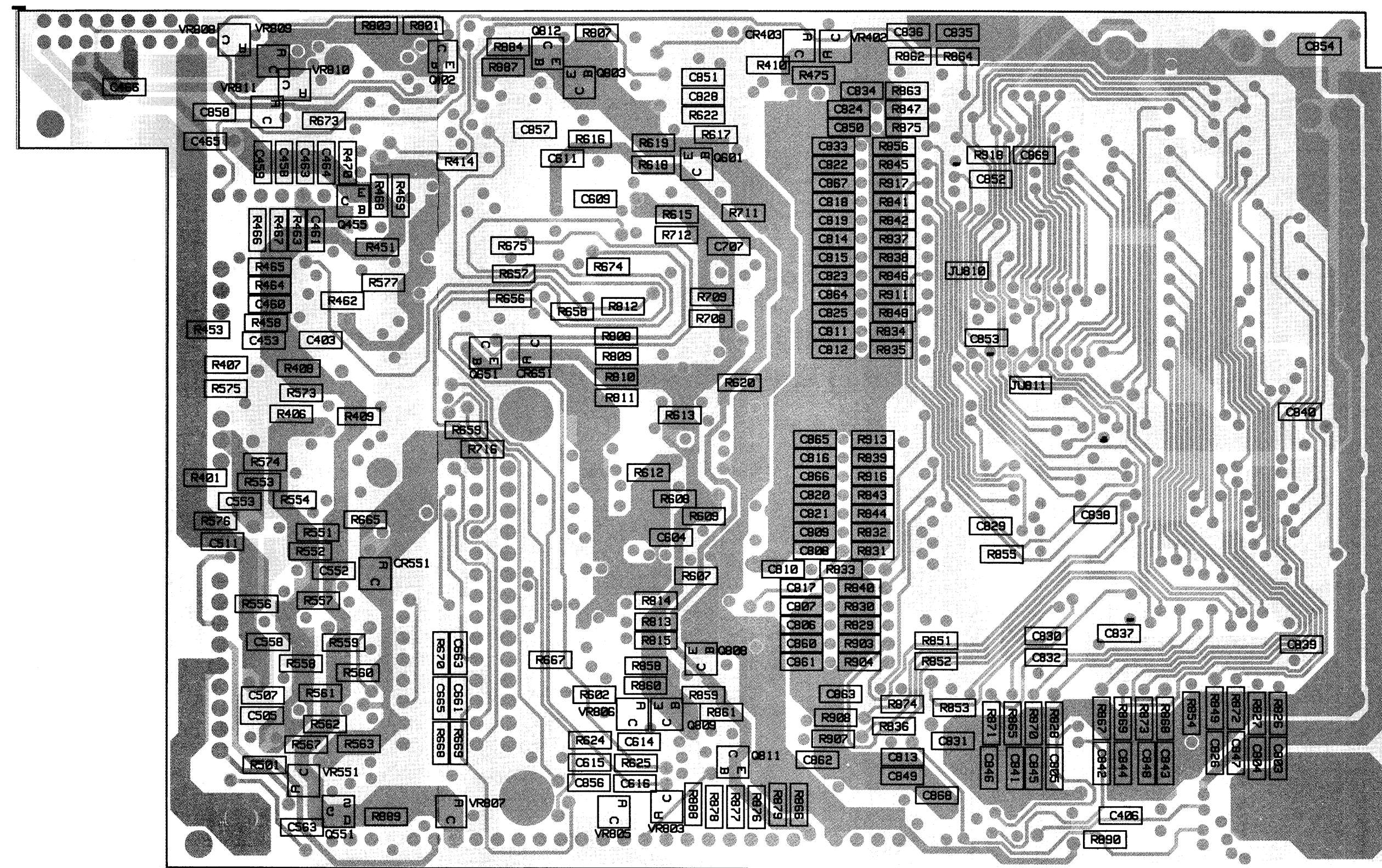
COMPONENT SIDE INNER LAYER (GRAY) RCB-95158-A  
 SOLDER SIDE INNER LAYER (PINK) RCB-95159-A  
 OVERLAY ----- RCB-95161-A

COMPONENT SIDE VIEW



COMPONENT SIDE (GRAY) RCB-95157-A (REV)  
 SOLDER SIDE (PINK) RCB-95160-A (REV)  
 OVERLAY ----- RCB-95162-A

SOLDER SIDE VIEW



COMPONENT SIDE INNER LAYER (GRAY) RCB-95158-A (REV)  
 SOLDER SIDE INNER LAYER (PINK) RCB-95159-A (REV)  
 OVERLAY ----- RCB-95162-A

SOLDER SIDE VIEW

(PAGE 10 IS BLANK)

HLN8074E Logic Board 2-Layer Masked, Leadless

REFERENCE NUMBER	MOTOROLA PART NO.	DESCRIPTION
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**Capacitor, chip, 5%, 50V unless otherwise indicated.**

C401	21-13741B45	.01 uF
C402	21-04554J12	.022 uF 10%
C403	21-13741B45	.01 uF
C404	23-11049C10	tantalum 47 uF 10% 16V
C405	23-11049A57	tantalum 10 uF 10% 16V
C406	21-04554J02	.22 uF 10%
C407	23-11049A92	tantalum 47 uF 10% 6V
C408	23-11049C10	tantalum 47 uF 10% 16V
C409	21-04554J01	.47 uF 10%
C451	23-11049C10	tantalum 47 uF 10% 16V
C452	21-13741B45	.01 uF
C453	21-11032B14	.15uF +80/-20%
C454	21-13741B45	.01 uF
C455	21-04554J02	.22 uF 10%
C456	21-04554J03	.01 uF 10%
C458	21-13740B36	30 pF
C459	21-13740B36	30 pF
C460	21-13741B45	.01 uF
C461	21-13741B45	.01 uF
C463	21-13740B36	30 pF
C464	21-13740B36	30 pF
C465	21-13740B36	30 pF
C466		not used
C501	21-04554J09	.039 uF 10%
C502	21-13740B76	1500 pF
C503	21-13741B69	.1 uF
C504	23-11049A57	tantalum 10 uF 10% 16V
C505	21-04554J01	.47 uF 10%
C506	21-04554J01	.47 uF 10%
C507		not used
C510	21-13741B45	.01 uF
C511	21-13741 B45	.01 uF
C512	21-13741B45	.01 uF
C513	21-13741B45	.01 uF
C514	21-13741B21	1000 pF
C551	23-11049A57	tantalum 10 uF 10% 16V
C552	21-13740B36	30 pF
C553	21-13740B67	560 pF
C554	21-04554J08	.0022 uF 10%
C555	21-13740B51	120 pF
C556	21-04554J06	.068 uF 10%
C557	21-13741B67	.082 uF
C558	21-04554J06	.068 uF 10%
C559	08-11051A13	poly .1 uF 63V
C560	21-04554J11	.1 uF 10%
C561	21-04554J02	.22 uF 10%
C562	21-04554J12	.022 uF 10%
C563	21-13741B69	.1 uF
C564	21-13740B49	100 pF
C565	23-11049A57	tantalum 10 uF 10% 16V
C566	21-13741B45	.01 uF
C567	21-13741B45	.01 uF
C568	23-11049C10	tantalum 47 uF 10% 16V
C601	23-11049A07	tantalum 1 uF 10% 16V
C604		not used
C605		not used
C606	21-04554J09	.039 uF 10%
C607	21-04554J11	.1 uF 10%
C608	21-04554J10	.0047 uF 10%
C609	21-13740B60	300 pF
C610	21-04554J07	.33 uF 10%
C611	21-13740B49	100 pF
C612	23-11049C10	tantalum 47 uF 10% 16V
C651	23-11049C10	tantalum 47 uF 10% 16V
C652	21-04554J04	.0068 uF 10%
C653	21-04554J02	.22 uF 10%
C656	23-11049A57	tantalum 10 uF 10% 16V

C657	21-13741B69	.1 uF
C658	21-13741B45	.01 uF
C659	23-11049A92	tantalum 47 uF 10% 6V
C660	23-11049A57	tantalum 10 uF 10% 16V
C661	21-13740B74	1200 pF
C662	21-44554J03	.01 uF 10%
C663	21-13740B50	110 pF
C664	23-11049A14	tantalum 4.7 uF 10% 20V
C665	21-13740B36	30 pF
C666	21-13740B74	1200 pF
C667	21-04554J05	.015 uF 10%
C668	21-04554J11	.1 uF 10%
C701	21-13740B78	1800 pF
C703	23-11049A07	tantalum 1 uF 10% 16V
C704	21-04554J06	.068 uF 10%
C705	21-04554J07	.33 uF 10%
C706	21-04554J08	.0022 uF 10%
C707	21-13740B69	680 pF
C801	21-13740B49	100 pF
C802	21-13740B49	100 pF
C803		not used
C804		not used
C805	21-13740B73	1000 pF
C808	21-13740B49	100 pF
C809	21-13740B49	100 pF
C819	21-13740B73	1000 pF
C824	21-13740B49	100 pF
C827	23-11049A07	tantalum 1 uF 10% 16V
C828	21-13741B69	.1 uF
C829	21-13741B45	.01 uF
C830	21-13740B31	18pF
C831	21-13740B21	6.8 +/- .25 pF
C832	21-13740B30	16 pF
C834	21-13741B69	.1 uF
C835	21-13741B69	.1 uF
C836	21-13740B73	1000 pF
C841	21-13740B73	1000 pF
C843	21-13740B73	1000 pF
C844	21-13740B73	1000 pF
C845	21-13740B73	1000 pF
C846	21-13740B73	1000 pF
C847	21-13740B73	1000 pF
C851	21-13740B73	1000 pF
C854	21-13740B73	1000 pF
C855	23-11049A92	tantalum 47 uF 10% 6V
C856	21-13740B49	100 pF
C857	21-13740B73	1000 pF
C858	21-13740B73	1000 pF
C869	21-13740B73	1000 pF
C870	21-13740B49	100 pF
C914		not used
C915		not used
C916		not used
C917		not used
C918		not used
C919		not used
C920		not used
C922		not used

**Diodes (see note)**

CR401	48-05129M76	silicon SOT
CR402	48-83654H02	silicon
CR403	48-05129M76	silicon SOT
CR451	48-05129M76	silicon SOT
CR452	48-05129M76	silicon SOT
CR551	48-05129M76	silicon SOT
CR603	48-84336R03	dual silicon SOT MMBD7000
CR651	48-05129M76	silicon SOT
CR801	48-05129M76	silicon SOT
CR802	48-84336R03	dual silicon SOT MMBD7000
CR803	48-83553T02	4A 200 PIV MUR420

(FMR-1801A-1)

## 2-LAYER LOGIC

<b>Fuse</b>			R455	06-11077A70	680
F801	65-05214E04	2 amp axial lead	R456	06-11077A84	2.7k
<b>Connector, receptacle</b>			R457	06-11077A82	2.2k
J3	28-80923V01	16-pin, accessories	R458	06-11077A90	4.7k
J6	09-80130M03	14-pin, RF board	R459	06-11077A90	4.7k
J7	28-80128M03	6 pin, RF power amplifier	R460	06-11077B01	12k
J8	28-80600B01	27-pin, includes J8 and J9	R461	06-11077A70	680
<b>Jumpers</b>			R462	06-11077B29	180k
JU551	09-80601B01	push4n jumper, 2-pin	R463	06-11077B25	120k
JU601	09-80601B01	push4n jumper, 2-pin	R464	06-11077G88	100k 1%
JU651	09-80601B01	push4n jumper, 2-pin	R465	06-11077G88	100k 1%
JU809	09-80601B01	push4n jumper, 2-pin	R466	06-11077F91	10.0k 1%
<b>Coils</b>			R467	06-11077F91	10.0k 1%
L510	2484657R01	ferrite bead	R468	06-11077A60	270
L511	2484657R01	ferrite bead	R469	06-11077A74	1k
L801	2411087A42	chip 22 uH ferrite	R470	06-11077A98	10k
L802	2411087A42	chip 22 uH ferrite	R471	06-11077B07	22k
L803	2411087A42	chip 22 uH ferrite	R472	06-11077A92	5.6k
<b>Connector, Plug</b>			R473	0S11077B09	27k
P551	28-04519J01	3-pin header	R474	06-11077A98	10k
P601	28-04519J01	3-pin header	R501	06-11077B23	100k
P651	28-04519J01	3-pin header	R502	06-11077A90	4.7k
P809	28-04519J01	3-pin header	R503	06-11077A78	1.5k
<b>Transistors (see note)</b>			R551	06-11077A94	6.8k
Q401	48-00869619	PNP; type M9619	R552	06-11077B37	390k
Q402	48-80214G02	NPN, type MMBT3904	R553	06-11077B18	62k
Q403	48-05128M67	PNP, type MMBT3906	R554	06-11077B18	62k
Q404	48-80214G02	NPN; type MMBT3904	R555	06-11077B18	62k
Q452	48-00869619	PNP; type M9619	R556	06-11077F53	4.02k 1%
Q453	48-80214G02	NPN; type MMBT3904	R557	06-11077F20	1.82k 1%
Q454	48-80214G02	NPN; type MMBT3904	R558	06-11077G45	35.7k 1%
Q455	48-80141L03	PNP; type M41L03	R559	06-11077G88	100k 1%
Q501	48-80214G02	NPN, type MMBT3904	R560	06-11077E77	665 1%
Q551	48-80949V01	field effect; type MMBF5484	R561	06-11077G88	100k 1%
Q651	48-05128M67	PNP; type MMBT3906	R562	06-11077B16	51k
Q652	48-80214G02	NPN; type MMBT3904	R563	06-11077B15	47k
Q801	48-80214G02	NPN; type MMBT3904	R567	06-11077A86	3.3k
Q802	48-80141L03	PNP, type M41L03	R568	06-11077B07	22k
Q803	48-80947V01	digital NPN; type DTC144W	R569	06-11077A42	47
Q804	48-80214G02	NPN, type MMBT3904	R570	06-11077B23	100k
Q805	48-80947V01	digital NPN; type DTC144W	R573	06-11077B09	27k
Q806	48-80947V01	digital NPN; type DTC144W	R574	06-11077A98	10k
Q807	48-80214G02	NPN; type MMBT3904	R575	06-11077B10	30k
Q808	48-80214G02	NPN; type MMBT3904	R576	06-11077B10	30k
Q809	48-80214G02	NPN, type MMBT3904	R577	06-11077B23	100k
Q810	48-80214G02	NPN, type MMBT3904	R578	06-11077A42	47
Q811	48-80947V01	digital NPN; type DTC144W	R581	06-11077A68	560
Q812	48-80947V01	digital NPN; type DTC144W	R601	06-11077A98	10k
Q821	48-80214G02	NPN; type MMBT3904	R602	06-11077B47	1 meg
<b>Resistors, chip, 5%, 1/10 watt, unless otherwise indicated.</b>			R603	06-11077A74	1k
R401	06-11077A70	680	R607		not used
R402	06-80195M37	330 1/2 watt	R608		not used
R403	06-11077A70	680	R609	06-11077B11	33k
R404	06-11077F18	1.74k 1%	R610	06-11077B15	47k
R405	06-11077F28	2.21k 1%	R611	06-11077G42	33.2k 1%
R406	06-11077A98	10k	R612	06-11077G42	33.2k 1%
R407	06-11077A76	1.2k	R613	06-11077G42	33.2k 1%
R408	06-11077F91	10.0k 1%	R615	06-11077G95	118k 1%
R409	06-11077F91	10.0k 1%	R616	06-11077G31	25.5k 1%
R410	06-11077A80	1.8k	R617	06-11077A82	2.2k
R411	06-11077A78	1.5k	R620	06-11077A98	10k
R412	06-11077A84	2.7k	R622	06-11077B31	220k
R413	06-11077A98	10k	R651	06-11077A68	560
R414	06-11077A98	10k	R652	06-11077A50	100
R451	06-11077A34	22	R653	06-11077A98	10k
R453	06-11077A70	680	R654	06-11077A98	10k
R454	06-80195M37	330 1/2 watt	R655	06-11077A90	4.7k
			R656	06-11077B39	470k
			R657	06-11077B42	620k
			R658	06-11077H65	619k 1%
			R659	06-11077A82	2.2k
			R660	06-11077B19	68k
			R661	06-11077B03	15k

R662	06-11077B17	56k
R663	06-11077B18	62k
R664	06-11077B07	22k
R665	06-11077A84	2.7k
R666	06-11077B23	100k
R667	06-11077B23	100k
R668	06-11077G56	46.4k 1%
R669	06-11077G42	33.2k 1%
R670	06-11077G42	33.2k 1%
R671	06-11077A61	300
R672	06-11077B17	56k
R673	06-11077B23	100k
R674	06-11077A82	2.2k
R701	06-11077G88	100k 1%
R702	06-11077H13	178k 1%
R703	06-11077G31	25.5k 1%
R705	06-11077H13	178k 1%
R706	06-11077G56	46.4k 1%
R707	06-11077G95	118k 1%
R708	06-11077B15	47k
R709	06-11077B19	68k
R710	06-11077G13	16.5k 1%
R711	06-11077G13	16.5k 1%
R714	06-11077B10	30k
R715	06-11077B05	18k
R716	06-11077A86	3.3k
R801	06-11077A78	1.5k
R802	06-11077A84	2.7k
R803	06-11077A98	10k
R804	06-11077A90	4.7k
R807	06-11077B15	47k
R808	06-11077A90	4.7k
R809	06-11077A90	4.7k
R810	06-11077B17	56k
R811	06-11077B17	56k
R812	06-11077A90	4.7k
R813	06-11077A90	4.7k
R814	06-11077A90	4.7k
R815	06-11077A90	4.7k
R816	06-11077B23	100k
R817	06-11077B23	100k
R818	06-11077B23	100k
R822	06-11077B15	47k
R825	06-11077B15	47k
R826	06-11077A90	4.7k
R827	06-11077A98	10k
R828	06-11077A98	10k
R831	06-11077A74	1k
R832	06-11077A74	1k
R833	06-11077A98	10k
R836	06-11077A98	10k
R842	06-11077A74	1k
R845	06-11077A74	1k
R846	06-11077A98	10k
R847	06-11077A74	1k
R849	06-11077A98	10k
R850	06-11077A74	1k
R851	06-11077B15	47k
R852	06-11077B15	47k
R853	06-11077B45	820k
R854	06-11077A90	4.7k
R857	06-11077A98	10k
R858	06-11077A98	10k
R859	06-11077A98	10k
R860	06-11077A98	10k
R862	06-11077F95	11.0k 1%
R863	06-11077F91	10.0k 1%
R864	06-11077F20	1.82k 1%
R865	06-11077A98	10k
R866	06-11077A98	10k
R867	06-11077A98	10k
R868	06-11077A98	10k
R869	06-11077A98	10k

R870	06-11077A98	10k
R871	06-11077A98	10k
R872	06-11077A98	10k
R876	06-11077A98	10k
R877	06-11077B23	100k
R878	06-11077B23	100k
R879	06-11077B23	100k
R880	06-11077B15	47k
R883	06-11077A90	4.7k
R884	06-11077B15	47k
R887	06-11077A90	4.7k
R889	06-11077A68	560
R890	06-11077A98	10k
R891	06-11077A90	4.7k
R892	06-11077A98	10k
R893	06-11077A98	10k
R918	06-11077A98	10k
R919	06-11077A98	10k

**Integrated circuits and modules (see note)**

U401	51-02198J22	dual op-amp 4558 SOIC
U402	51-80942T01	regulator, 5V with reset
U451	51-02198J22	dual op-amp 4558 SOIC
U501	51-80147R01	audio power amp TDA1519A
U551	51-02198J22	dual op-amp 4558 SOIC
U552	51-02198J22	dual op-amp 4558 SOIC
U553	51-02198J22	dual op-amp 4558 SOIC
U601	51-02198J23	dual comparator 2903 SOIC
U602	51-02198J22	dual op-amp 4558 SOIC
U603	51-02198J22	dual op-amp 4558 SOIC
U651	51-02198J22	dual op-amp 4558 SOIC
U652	51-02198J22	dual op-amp 4558 SOIC
U653	51-80059M01	voltage-controlled attenuator
U801	51-13811G01	D/A converter 6 bit 6 channel
U802	51-80649B02	microcomputer MC68HC11 E9

**Voltage regulators (see note)**

VR401	48-83461E40	zener diode 5.1V 1%
VR402	48-80140L06	zener diode 5.1V SOT
VR551	48-80140L15	zener diode 10V SOT
VR552	48-80140L15	zener diode 10V SOT
VR801	48-80948V01	zener diode 27V SOT
VR802	48-80948V01	zener diode 27V SOT
VR803		not used
VR804		not used
VR805		not used
VR807		not used
VR812	48-02245J30	silicon 3A 200V MURD320
VR813	48-80948V01	zener diode 27V SOT
VR814	48-80948V01	zener diode 27V SOT

**Crystals**

Y801	48-80173D09	7.776 MHz
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**Non-referenced items**

03-10943M04	screw M2.5 X 8 (2 used, for Q401 and Q452)
03-80271L01	screw (2 used for U501)
04-00136334	washer flat (2 used for U501)
14-83820M05	insulator (2 used, for Q401 and Q452)
26-80497B01	heatsink
01-80701Y58	connector assembly (mates with J3)

**Note: For optimum performance, diodes, transistors, and integrated circuits must be ordered by Motorola part numbers.**

# 4-LAYER LOGIC

HLN8070D Logic Board 4-Layer Expanded, Leadless

REFERENCE NUMBER	MOTOROLA PART NO.	DESCRIPTION
<b>Capacitor, chip, 5%, 50V unless otherwise indicated.</b>		
C401	21-13741B45	.01uF
C402	21-04554J12	.022uF 10%
C403	21-13741B45	.01 uF
C404	23-11049C10	tantalum 47uF 10% 16V
C405	23-11049A57	tantalum 10uF 10% 16V
C406	21-04554J02	.22uF 10%
C407	23-11049A92	tantalum 47uF 10% 6V
C408	23-11049C10	tantalum 47uF 10% 16V
C409	21-04554J01	.47uF 10%
C451	23-11049C10	tantalum 47uF 10% 16V
C452	21-13741B45	.01uF
C453	21-11032B14	.15uF +80/-20%
C454	21-13741B45	.01uF
C455	21-04554J02	.22uF 10%
C456	21-04554J03	.01uF 10%
C458	21-13740B36	30 pF
C459	21-13740B36	30 pF
C460	21-13741B45	.01 uF
C461	21-13741B45	.01 uF
C462	21-11032B15	.22 uF +80/-20%
C463	21-13740B36	30 pF
C464	21-13740B36	30 pF
C465	21-13740B36	30 pF
C466		not used
C501	21-04554J09	.039 uF 10%
C502	21-13740B76	1500 pF
C503	21-13741B69	.1uF
C504	23-11049A57	tantalum 10uF 10% 16V
C505	21-04554J01	.47uF 10%
C507		not used
C510	21-13741B45	.01 uF
C511	21-13741B45	.01 uF
C551	23-11049A57	tantalum 10 uF 10% 16V
C552	21-13740B36	30 pF
C553	21-13740B67	560 pF
C554	21-04554J08	.0022 uF 10%
C555	21-13740B51	120 pF
C556	21-04554J06	.068 uF 10%
C557	21-13741B67	.082 uF
C558	21-04554J06	.068 uF 10%
C559	08-11051A13	poly .1uF 63V
C560	21-04554J11	.1 uF 10%
C561	21-04554J02	.22 uF 10%
C562	21-04554J12	.022 uF 10%
C563	21-13741B69	.1 uF
C564	21-13740B49	100 pF
C565	23-11049A57	tantalum 10 uF 10% 16V
C566	21-13741B45	.01 uF
C567	21-13741B45	.01 uF
C568	23-11049C10	tantalum 47 uF 10% 16V
C569	21-13740B33	22 pF
C601	23-11049A07	tantalum 1uF 10% 16V
C604		not used
C605		not used
C606	21-04554J09	.039 uF 10%
C607	21-04554J11	.1 uF 10%
C608	21-04554J10	.0047 uF 10%
C609	21-13740B60	300 pF
C610	21-04554J07	.33 uF 10%
C611	21-13740B49	100 pF
C612	23-11049C10	tantalum 47 uF 10% 16V
C614		not used
C615	21-13740B73	1000 pF
C616	21-13740B65	470 pF
C651	23-11049C10	tantalum 47 uF 10% 16V
C652	21-04554J04	.0068 uF 10%
C653	21-04554J02	.22 uF 10%

C656	23-11049A57	tantalum 10 uF 10% 16V
C657	21-13741B69	.1 uF
C658	21-13741B45	.01 uF
C659	23-11049A92	tantalum 47 uF 10% 6V
C660	23-11049A57	tantalum 10 uF 10% 16V
C661	21-13740B74	1200 pF
C662	21-04554J03	.01uF 10%
C663	21-13740B50	110 pF
C664	23-11049A14	tantalum 4.7 uF 10% 20V
C665	21-13740B36	30 pF
C666	21-13740B74	1200 pF
C667	21-04554J05	.015 uF 10%
C668	21-04554J11	.1 uF 10%
C701	21-13740B78	1800 pF
C703	23-11049A07	tantalum 1 uF 10% 16V
C704	21-04554J06	.068 uF 10%
C705	21-04554J07	.33 uF 10%
C706	21-04554J08	.0022 uF 10%
C707	21-13740B69	680 pF
C801	21-13740B49	100 pF
C802	21-13740B49	100 pF
C803	21-13740B73	1000 pF
C804	21-13740B73	1000 pF
C805	21-13740B73	1000 pF
C806	21-13740B73	1000 pF
C807	21-13740B73	1000 pF
C808	21-13740B49	100 pF
C809	21-13740B49	100 pF
C810	21-13740B73	1000 pF
C811	21-13740B73	1000 pF
C812	21-13740B73	1000 pF
C813	21-13740B73	1000 pF
C814	21-13740B73	1000 pF
C815	21-13740B73	1000 pF
C816	21-13740B73	1000 pF
C817	21-13740B73	1000 pF
C818	21-13740B73	1000 pF
C819	21-13740B73	1000 pF
C820	21-13740B73	1000 pF
C821	21-13740B73	1000 pF
C822	21-13740B73	1000 pF
C823	21-13740B73	1000 pF
C824	21-13740B49	100 pF
C825	21-13740B49	100 pF
C826	21-13740B73	1000 pF
C827	23-11049A07	tantalum 1 uF 10% 16V
C828	21-13741B69	.1 uF
C829	21-13741B45	.01 uF
C830	21-13740B25	10 pF
C831	21-13740B19	5.6 +/- .25pF
C832	21-13740B25	10 pF
C833	21-13740B73	1000 pF
C834	21-13741B69	.1 uF
C835	21-13741B69	.1 uF
C836	21-13740B73	1000 pF
C837	21-13741B45	.01 uF
C838	21-13741B45	.01 uF
C839	21-13741B45	.01 uF
C840	21-13741B45	.01 uF
C841	21-13740B73	1000 pF
C842	21-13740B73	1000 pF
C843	21-13740B73	1000 pF
C844	21-13740B73	1000 pF
C845	21-13740B73	1000 pF
C846	21-13740B73	1000 pF
C847	21-13740B73	1000 pF
C848	21-13740B73	1000 pF
C849	21-13740B49	100 pF
C850	21-13740B73	1000 pF
C851		not used
C852	21-13741B45	.01 uF
C853	21-13741B45	.01 uF
C854	21-13740B73	1000 pF

C855	23-11049A92	tantalum 47 uF 10% 6V	Q454	48-80214G02	NPN; type MMBT3904
C856	21-13740B49	100 pF	Q455	48-80141L03	PNP; type M41L03
C857	21-13740B73	1000 pF	Q456	48-80214G02	NPN; type MMBT3904
C858	21-13740B73	1000 pF	Q501	48-80214G02	NPN, type MMBT3904
C860	21-13741B53	.022 uF	Q551	48-80949V01	field effect; type MMBF5484
C861	21-13740B73	1000 pF	Q601	48-80214G02	NPN; type MMBT3904
C862	21-13741B53	.022 uF	Q651	48-05128M67	PNP; type MMBT3906
C863	21-13740B73	1000 pF	Q652	48-80214G02	NPN; type MMBT3904
C864	21-13740B49	100 pF	Q801	48-80214G02	NPN; type MMBT3904
C865	21-13740B73	1000 pF	Q802	48-80141L03	PNP, type M41L03
C866	21-13740B49	100 pF	Q803	48-80947V01	digital NPN; type DTC144W
C867	21-13740B73	1000 pF	Q804	48-80214G02	NPN; type MMBT3904
C868	21-13740B73	1000 pF	Q805	48-80947V01	digital NPN; type DTC144W
C869	21-13740B73	1000 pF	Q806	48-80947V01	digital NPN; type DTC144W
<b>Diodes (see note)</b>			Q807	48-80214G02	NPN; type MMBT3904
CR401	48-05129M76	silicon SOT	Q808	48-05128M67	PNP; type MMBT3906
CR402	48-83654H02	silicon	Q809	48-05128M67	PNP; type MMBT3906
CR403	48-05129M76	silicon SOT	Q810	48-80214G02	NPN; type MMBT3904
CR404	48-05129M76	silicon SOT	Q811	48-80947V01	digital NPN; type DTC144W
CR405	48-05129M76	silicon SOT	Q812	48-80947V01	digital NPN; type DTC144W
CR451	48-05129M76	silicon SOT	Q813	48-80947V01	digital NPN; type DTC144W
CR452	48-05129M76	silicon SOT	Q814	48-80214G02	NPN; type MMBT3904
CR551	48-05129M76	silicon SOT	Q815	48-80947V01	digital NPN; type DTC144W
CR603	48-84336R03	dual silicon SOT MMBD7000	Q816	48-80214G02	NPN; type MMBT3904
CR651	48-05129M76	silicon SOT	Q817	48-80947V01	digital NPN; type DTC144W
<b>Fuse</b>			Q818	48-80214G02	NPN; type MMBT3904
F801	65-05214E04	2 amp axial lead	Q819	48-80214G02	NPN; type MMBT3904
<b>Connector, receptacle</b>			Q820	48-80947V01	digital NPN; type DTC144W
J3	28-80923V01	16-pin, accessories	<b>Resistors, chip, 5%, 1/10 watt, unless otherwise indicated.</b>		
J6	09-80130M03	14-pin, RF board	R401	06-11077A70	680
J7	28-80128M03	6 pin, RF power amplifier	R402	06-80195M37	330 1/2 watt
J8/J9	28-80600B01	27-pin, includes J8 and J9	R403	06-11077A70	680
<b>Jumpers</b>			R404	06-11077F18	1.74k 1%
JU551	09-80601B01	push-on jumper, 2-pin	R405	06-11077F28	2.21k 1%
JU601	09-80601B01	push-on jumper, 2-pin	R406	06-11077A98	10k
JU651	09-80601B01	push-on jumper, 2-pin	R407	06-11077A76	1.2k
JU701	09-80601B01	push-on jumper, 2-pin	R408	06-11077F91	10.0k 1%
JU802	06-11077A01	jumper	R409	06-11077F91	10.0k 1%
JU803		not used	R410	06-11077A80	1.8k
JU804	06-11077A01	jumper	R411	06-11077A98	10k
JU805		not used	R412	06-11077A74	1k
JU806	06-11077A01	jumper	R413	06-11077A98	10k
JU807	06-05021K01	jumper	R414	06-11077A98	10k
JU808	09-80601B01	push-on jumper, 2-pin	R451	06-11077A34	22
JU810		not used	R453	06-11077A70	680
JU811	06-11077A01	jumper	R454	06-80195M37	330 1/2 watt
<b>Coils</b>			R455	06-11077A70	680
L510	24-84657R01	ferrite bead	R456	06-11077A84	2.7k
L511	24-84657R01	ferrite bead	R457	06-11077A82	2.2k
L801	24-11087A42	chip 22 uH ferrite	R458	06-11077A90	4.7k
L802	24-11087A42	chip 22 uH ferrite	R459	06-11077A90	4.7k
L803	24-11087A42	chip 22 uH ferrite	R460	06-11077B01	12k
<b>Connector, Plug</b>			R461	06-11077A70	680
P551	28-04519J01	3-pin header	R462	06-11077B29	180k
P601	28-04519J01	3-pin header	R463	06-11077B25	120k
P651	28-04519J01	3-pin header	R464	06-11077G88	100k 1%
P701	28-04519J01	3-pin header	R465	06-11077G88	100k 1%
P808	28-04519J01	3-pin header	R466	06-11077F91	10.0k 1%
P810	28-04519J01	3-pin header	R467	06-11077F91	10.0k 1%
P811	28-04519J01	3-pin header	R468	06-11077A60	270
<b>Transistors (see note)</b>			R469	06-11077A74	1k
Q401	48-00869619	PNP; type M9619	R470	06-11077A98	10k
Q402	48-80214G02	NPN; type MMBT3904	R471	06-11077B07	22k
Q403	48-13821A14	P-channel TMOS; 5A 60V	R472	06-11077A92	5.6k
Q404	48-80214G02	NPN; type MMBT3904	R473	06-11077B09	27k
Q452	48-00869619	PNP- type M9619	R474	06-11077A98	10k
Q453	48-80214G02	NPN, type MMBT3904	R475	06-11077G88	100k 1%
			R476	06-11077G57	47.5k 1%
			R477	06-11077A90	4.7k
			R501	06-11077B23	100k
			R502	06-11077A90	4.7k
			R503	06-11077A78	1.5k



# 4-LAYER LOGIC

R551	06-11077A94	6.8k	R705	06-11077H13	178k 1%
R552	06-11077B37	390k	R706	06-11077G56	46.4k 1%
R553	06-11077B18	62k	R707	06-11077G95	118k 1%
R554	06-11077B18	62k	R708	06-11077B15	47k
R555	06-11077B18	62k	R709	06-11077B19	68k
R556	06-11077F53	4.02k 1%	R710	06-11077G13	16.5k 1%
R557	06-11077F20	1.82k 1%	R711	06-11077G13	16.5k 1%
R558	06-11077G45	35.7k 1%	R712	06-11077A50	100
R559	06-11077G88	100k 1%	R714	06-11077B10	30k
R560	06-11077E77	665 1%	R715	06-11077B05	18k
R561	06-11077G88	100k1%	R716	06-11077A86	3.3k
R562	06-11077B16	51k	R801	06-11077A78	1.5k
R563	06-11077B15	47k	R802	06-11077A84	2.7k
R567	06-11077A86	3.3k	R803	06-11077A98	10k
R568	06-11077B07	22k	R804	06-11077A90	4.7k
R569	06-11077A42	47	R807	06-11077B15	47k
R570	06-11077B23	100k	R808	06-11077A90	4.7k
R573	06-11077B09	27k	R809	06-11077A90	4.7k
R574	06-11077A98	10k	R810	06-11077B17	56k
R575	06-11077B10	30k	R811	06-11077B17	56k
R576	06-11077B10	30k	R812	06-11077A90	4.7k
R577	06-11077B23	100k	R813	06-11077A90	4.7k
R578	06-11077 M 2	47	R814	06-11077A90	4.7k
R579	06-11077B37	390k	R815	06-11077A90	4.7k
R580	06-11077B09	27k	R816	06-11077B23	100k
R581	06-11077A68	560	R817	06-11077B23	100k
R601	06-11077A98	10k	R818	06-11077B23	100k
R602	06-11077B47	1 meg	R822	06-11077B15	47k
R603	06-11077A74	1k	R825	06-11077B15	47k
R607		not used	R826	06-11077A90	4.7k
R608		not used	R827	06-11077A98	10k
R609	06-11077B11	33k	R828	06-11077A98	10k
R610	06-11077B15	47k	R829	06-11077A74	1k
R611	06-11077G42	33.2k 1%	R830	06-11077A74	1k
R612	06-11077G42	33.2k 1%	R831	06-11077A50	100
R613	06-11077G42	33.2k 1%	R832	06-11077A50	100
R615	06-11077G95	118k 1%	R833	06-11077A98	10k
R616	06-11077G31	25.5k 1%	R834	06-11077F91	10.0k 1%
R617	06-11077A82	2.2k	R835	06-11077B05	18k
R618	06-11077B23	100k	R836	06-11077A98	10k
R619	06-11077A98	10k	R837	06-11077B05	18k
R620	06-11077A98	10k	R838	06-11077F91	10.0k 1%
R622	06-11077B31	220k	R839	06-11077A98	10k
R624	06-11077B20	75k	R840	06-11077A98	10k
R625	06-11077B20	75k	R841	06-11077A98	10k
R651	06-11077A68	560	R842	06-11077A74	1k
R652	06-11077A50	100	R843	06-11077A98	10k
R653	06-11077A98	10k	R844	06-11077A98	10k
R654	06-11077A98	10k	R845	06-11077A74	1k
R655	06-11077A90	4.7k	R846	06-11077A98	10k
R656	06-11077B39	470k	R847	06-11077A50	100
R657	06-11077B42	620k	R848	06-11077A74	1k
R658	06-11077H65	619k 1%	R849	06-11077A98	10k
R659	06-11077A82	2.2k	R850	06-11077A74	1k
R660	06-11077B19	68k	R851	06-11077B15	47k
R661	06-11077B03	15k	R852	06-11077B15	47k
R662	06-11077B17	56k	R853	06-11077B45	820k
R663	06-11077B18	62k	R854	06-11077A90	4.7k
R664	06-11077B07	22k	R855	06-11077B15	47k
R665	06-11077A84	2.7k	R856	06-11077A74	1k
R666	06-11077B23	100k	R857	06-11077A98	10k
R667	06-11077B23	100k	R858	06-11077A98	10k
R668	06-11077G56	46.4k 1%	R859	06-11077A98	10k
R669	06-11077G42	33.2k 1%	R860	06-11077A98	10k
R670	06-11077G42	33.2k 1%	R861	06-11077B23	100k
R671	06-11077A61	300	R862	06-11077F95	11.0k 1%
R672	06-11077B17	56k	R863	06-11077F91	10.0k 1%
R673	06-11077B23	100k	R864	06-11077F20	1.82k 1%
R674	06-11077A82	2.2k	R865	06-11077A98	10k
R675	06-11077B17	56k	R866	06-11077A98	10k
R701	06-11077G88	100k 1%	R867	06-11077A98	10k
R702	06-11077H13	178k 1%	R868	06-11077A98	10k
R703	06-11077G31	25.5k 1%	R869	06-11077A98	10k

R870	06-11077A98	10k	VR808	48-80948V01	zener diode 27V SOT
R871	06-11077A98	10k	VR809	48-80948V01	zener diode 27V SOT
R872	06-11077A98	10k	VR810	48-80948V01	zener diode 27V SOT
R873	06-11077A98	10k	VR811	48-80948V01	zener diode 27V SOT
R874	06-11077A74	1k	VR812	48-02245J30	silicon 3A 200V MURD320
R875	06-11077A98	10k			
R876	06-11077A98	10k			
R877	06-11077B23	100k			
R878	06-11077B23	100k			
R879	06-11077B23	100k			
R880	06-11077B15	47k			
R883	06-11077A90	4.7k			
R884	06-11077B15	47k			
R887	06-11077A90	4.7k			
R888		not used			
R889	06-11077A68	560			
R890	06-11077A98	10k			
R899	06-11077A98	10k			
R901	06-11077A90	4.7k			
R902	06-11077B15	47k			
R903	06-11077A98	10k			
R904	06-11077A98	10k			
R905	06-11077A90	4.7k			
R906	06-11077B15	47k			
R907	06-11077A98	10k			
R908	06-11077A98	10k			
R909	06-11077A90	4.7k			
R910	06-11077B15	47k			
R911	06-11077A98	10k			
R912	06-11077A98	10k			
R913	06-11077A98	10k			
R914	06-11077A90	4.7k			
R915	06-11077B15	47k			
R916	06-11077A98	10k			
R917	06-11077A74	1k			
R918	06-11077A98	10k			

**Crystals**

Y801 48-80173D09 7.776 MHz

**Non-referenced items**

01-80701Y58	connector assembly (mates with J3)
03-10943M04	screw M2.5x0.45x8 (2 used, for Q401 and Q452)
03-10943M11	screw M3.0x0.5x10 (2 used for U501)
04-00136334	washer flat (4 used, for Q401, Q452, U501)
09-62116A04	28 pin socket (for U804)
14-80624C01	insulator (2 used, for Q401 and Q452)
26-80123M02	logic shield frame
26-80497B01	heatsink

**Note: For optimum performance, diodes, transistors, and integrated circuits must be ordered by Motorola part numbers.**

1/4/96

PL-951026-A

**Integrated circuits and modules (see note)**

U401	51-02198J22	dual op-amp 4558 SOIC
U402	51-80942T01	regulator, 5V with reset
U451	51-02198J22	dual op-amp 4558 SOIC
U501	51-80147R01	audio power amp TDA1519A
U551	51-02198J22	dual op-amp 4558 SOIC
U552	51-02198J22	dual op-amp 4558 SOIC
U553	51-02198J22	dual op-amp 4558 SOIC
U601	51-02198J23	dual comparator 2903 SOIC
U602	51-02198J22	dual op-amp 4558 SOIC
U603	51-02198J22	dual op-amp 4558 SOIC
U604	51-02198J22	dual op-amp 4558 SOIC
U651	51-02198J22	dual op-amp 4558 SOIC
U652	51-02198J22	dual op-amp 4558 SOIC
U653	51-80059M01	voltage-controlled attenuator
U701	51-02198J22	dual op-amp 4558 SOIC
U801	51-13811G01	D/A converter 6 bit 6 channel
U802	51-80960T01	microcomputer
U803	51-82862N09	gate array
U804	HLN8121A	ROM kit
U805	51-02463J18	EEPROM 2Kx8
U806	51-02463J17	static RAM 2Kx8

**Voltage regulators (see note)**

VR401	48-83461E40	zener diode 5.1V 1%
VR402	48-80140L06	zener diode 5.1V
VR403	48-80948V01	zener diode 27V SOT
VR551	48-80140L15	zener diode 10V SOT
VR552	48-80140L15	zener diode 10V SOT
VR801	48-80948V01	zener diode 27V SOT
VR802	48-80948V01	zener diode 27V SOT
VR803	48-80140L15	zener diode 10V SOT
VR804	48-80948V01	zener diode 27V SOT
VR805		not used
VR806		not used
VR807		not used



**GENERAL:**

This revision outlines changes that have occurred since the printing of your instruction manual. Use this information to correct your manual.

**INSTRUCTION MANUAL AFFECTED:**

6880902Z32-A

GM300 Service Manual

**REVISION DETAILS:**

A new radio model is available, which allows operation on frequencies not available in the standard GM300 model. It has the following characteristics:

- Model number M43GMR29C2A\_
- 146-174 MHz
- 20/25/30 kHz Channel Spacing
- 16 Frequency
- 25-45 Watts RF Power
- I-F Frequency 45.3 MHz

1. On page 5, add the new model M43GMR29C2A\_ to the model chart, using the same items as those used for model M43GMC29C2A\_, except:
  - The unified chassis number is HUD3123 instead of HUD3823.
  - The RF Board kit number is HLD9002 instead of HLD8031.
2. To program the new GM300 model M43GMR29C2A\_, follow the directions under "3. Programming" on page 18, however, RADIO SERVICE SOFTWARE package HVN8177 Version B04.03.00 (or later versions) must be used.
3. The parts list for the new RF board HLD9002 is identical to the parts list for RF board HLD8031 (PL-921009-A on pages 67-69), except for the following differences under "Crystals" on page 69:
 

Y51(W)	91-80022M04	filter 45.3 MHz 25 kHz
Y52	48-80908W04	44.845 MHz
4. The GM300 mobile radio is now available in the following frequency bands and power levels:
  - VHF 136-162 MHz, 10-25 Watts RF Power
  - UHF 403-433 MHz, 1-10 Watts RF Power

This supplement contains the appropriate new model charts, schematic diagrams, circuit board details, and parts lists necessary for servicing these radios.

**ATTACHMENT**

Model Chart for VHF Mobile Radio, 136-162 MHz, 10-25 Watts .....	3
Model Chart for UHF Mobile Radio, 403-433 MHz, 1-10 Watts .....	4
Parts List for HLD8266A and HLD8265, VHF RF Boards, 136-162 MHz .....	5
Parts List for HLD8293A PA Board, 136-162 MHz, 10-25 Watts .....	9
Parts Lists for 01-80704Y64 Feedthru Bracket and Cable Assembly, and HLN8295A PA Hardware Kit, 136-162 MHz, 10-25 Watts .....	10
Parts List for HLE8385A PA Board, 403-433 MHz, 1-10 Watts .....	11

Parts Lists for 01-80704Y64 Feedthru Bracket and Cable Assembly, and

HLN8386A PA Hardware Kit, 403-433 MHz, 1-10 Watts.....	12
Schematic Diagram for HLD8265A and HLD8266A, VHF RF Boards, 136-162 MHz .....	13
Circuit Board Details for HLD8265A and HLD8266A, VHF RF Boards, 136-162 MHz.....	14
Circuit Board Details and Schematic for HLD8293A VHF Power Amplifier, 136-162 MHz, 10-25 Watts.....	15
Circuit Board Details and Schematic for HLE8385A UHF Power Amplifier, 403-433 MHz, 1-10 Watts.....	16
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MODEL	FREQ.	DESCRIPTION
M33GMC00D1A_	8	GM300 12.5 kHz
M33GMC20D1A_	8	GM300 20/25/30 kHz
M33GMC09C1A_	16	GM300 12.5 kHz
M33GMC29C1A_	16	GM300 20/25/30 kHz
<b>GM300</b> <b>VHF Mobile Radio</b> <b>136 - 162 MHz</b> <b>10 - 25 Watts RF Power</b>		
ITEM	DESCRIPTION	
HLD8029_	RF Board 12.5 kHz	
HLD8031_	RF Board 20/25/30 kHz	
HLN8074_	Logic Board Masked	
HLN8070_	Logic Board, Expanded	
HLN8075_	Display Board 8/16 Frequency	
HLN8071_	Vol/Mic Board	
HLN8072_	Front Panel Hardware, 8/16 Freq	
HLD8293_	PA Board	
HLN8295_	PA Hardware	
HLN8076_	Chassis Hardware	

	Item	Description																		
X		HUD3834_	Chassis, 12.5 kHz (Masked)	X	X															X
	X	HUD3833_	Chassis, 20/25/30 kHz (Masked)		X	X														X
		X	HUD3832_	Chassis, 12.5 kHz (Expanded)	X		X													X
		X	HUD3831_	Chassis, 20/25/30 kHz (Expanded)		X	X													X
X	X	X	X	HLD3850_	PA Kit (part of chassis)															X
X	X	X	X	HCN3503_	Control Head, 8/16 Channel					X	X	X								
X	X			HLN8122_	Front Panel Lens, 8 Channel															
		X	X	HLN8123_	Front Panel Lens, 16 Channel															
X	X			HHN8073_	Housing Kit, masked															
		X	X	HHN8170_	Housing Kit, expanded															
X	X	X	X	HLN8120_	Nameplate															
		X	X	HLN8121_	ROM Kit															
X	X	X	X	HKN4137_	Power Cable															
X	X	X	X	HMN3413_	Microphone w/hangup clip															
X	X	X	X	HLN5189_	Installation Kit															
X	X	X	X	6880902Z09	Owners Manual GM300															
X	X			6880902Z26	Operator Card 8 Channel															
		X	X	6880902Z41	Operator Card 16 Channel															

MODEL	FREQ.	DESCRIPTION
M04GMC00D1A_	8	GM300 12.5 kHz
M04GMC20D1A_	8	GM300 20/25 kHz
M04GMC09C1A_	16	GM300 12.5 kHz
M04GMC29C1A_	16	GM300 20/25 kHz
<b>GM300</b> <b>UHF Mobile Radio</b> <b>403 - 433 MHz</b> <b>1 - 10 Watts RF Power</b>		
ITEM	DESCRIPTION	
HLE8301_	RF Board 12.5 kHz	
HLE8300_	RF Board 20/25 kHz	
HLN8074_	Logic Board Masked	
HLN8070_	Logic Board, Expanded	
HLN8075_	Display Board 8/16 Frequency	
HLN8071_	Vol/Mic Board	
HLN8072_	Front Panel Hardware, 8/16 Freq	
HLE8385_	PA Board	
HLN8386_	PA Hardware	
HLN8076_	Chassis Hardware	

	Item	Description																		
X	HUE3944_	Chassis, 12.5 kHz (Masked)	X	X																X
X	HUE3945_	Chassis, 20/25 kHz (Masked)		X	X															X
	X	HUE3946_	Chassis, 12.5 kHz (Expanded)	X		X														X
	X	HUE3947_	Chassis, 20/25 kHz (Expanded)		X	X														X
X	X	X	X	HLE3929_	PA Kit (part of chassis)												X	X		
X	X	X	X	HCN3503_	Control Head, 8/16 Channel				X	X	X									
X	X			HLN8122_	Front Panel Lens, 8 Channel															
		X	X	HLN8123_	Front Panel Lens, 16 Channel															
X	X			HHN8073_	Housing Kit, masked															
		X	X	HHN8170_	Housing Kit, expanded															
X	X	X	X	HLN8120_	Nameplate															
		X	X	HLN8121_	ROM Kit															
X	X	X	X	HKN4137_	Power Cable															
X	X	X	X	HMN3413_	Microphone w/hangup clip															
X	X	X	X	HLN5189_	Installation Kit															
X	X	X	X	6880902Z09	Owners Manual GM300															
X	X			6880902Z26	Operator Card 8 Channel															
		X	X	6880902Z41	Operator Card 16 Channel															

HLD8266A RF Board, 136-162 MHz, 12.5 kHz (N)  
HLD8265A RF Board, 136-162 MHz, 25 kHz (W)

REFERENCE NUMBER	MOTOROLA PART NO.	DESCRIPTION
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Capacitor, chip, 5%, 50V unless otherwise indicated.

C1	21-13740B35	27 pF
C2	21-13740B38	36 pF
C3	21-13740B42	51 pF
C4	21-13740B31	18 pF
C5		not used
C6	21-13740B14	3.6 +/- .25 pF
C7		not used
C8	21-13740B31	18 pF
C9	21-13740B43	56 pF
C10	21-13740B40	43 pF
C11	21-13740B31	18 pF
C12	21-13740B65	470 pF
C13	21-13740B31	18 pF
C14	21-13740B46	75 pF
C15	21-13740B44	62 pF
C16	21-13740B35	27 pF
C17	21-13740B43	56 pF
C18	21-13740B28	13 pF
C19	21-13740B65	470 pF
C20	21-11032B15	.22 uF +80/-20%
C21	21-11032B15	.22 uF +80/-20%
C22	21-13741B45	.01 uF
C23	21-13741B45	.01 uF
C24	21-13740B38	36 pF (see note)
C51	21-13740B35	27 pF
C52	21-13740B35	27 pF
C53	21-13740B18	5.1 +/- .25 pF
C54	21-13740B47	82 pF
C55	21-13741B45	.01 uF
C56	21-13741B45	.01 uF
C57	21-13740B29	15 pF
C58	21-13740B25	10 pF
C59	21-13740B29	15 pF
C60	21-13741B45	.01 uF
C61	21-13741B45	.01 uF
C65	21-11032B15	.22 uF +80/-20%
C66	21-13741B45	.01 uF
C67	23-13749C39	tantalum 10 uF 10% 20V
C68	21-13740B29	15 pF
C69	21-13740B39	39 pF
C70	21-13740B29	15 pF
C71	21-11032B15	.22 uF +80/-20%
C72	21-11032B15	.22 uF +80/-20%
C73	23-13749C39	tantalum 10 uF 10% 20V
C74	23-11048B13	lytic 10 uF 20% 16V
C75	21-13741B69	.1 uF
C76	23-11048B05	lytic 1 uF 20% 50V
C77	21-11032B15	.22 uF +80/-20%
C78	21-11032B15	.22 uF +80/-20%
C79	21-13741B29	.0022 uF
C80	21-11032B15	.22 uF +80/-20%
C81	21-13740B55	180 pF
C82	21-11032B15	.22 uF +80/-20%
C83	21-11032B15	.22 uF +80/-20%
C84	21-13740B09	2.2 +/- .25 pF
C85	21-13740B25	10 pF
C86		not used
C87	21-13741B45	.01 uF
C88	21-11032B15	.22 uF +80/-20%
C89		not used
C101	23-11048B13	lytic 10 uF 20% 16V
C102	08-11051A13	poly .1 uF 63V
C103	21-13741B45	.01 uF
C104	21-13741B45	.01 uF
C105	23-11048B13	lytic 10 uF 20% 16V
C106	21-13740B29	15 pF
C107	21-13741B69	.1 uF
C108	21-13741B69	.1 uF
C109	08-11051A13	poly .1 uF 63V
C110	08-11051A19	poly 1 uF 63V
C111		
C112		
C113	21-13741B69	
C114	21-13740B73	1000 pF
C115	21-13741B45	.01 uF
C116	21-13740B73	1000 pF
C117	21-13740B73	1000 pF
C118	21-13740B31	18 pF
C119	21-13740B73	1000 pF
C120	21-13740B73	1000 pF
C121	21-13740B29	15 pF
C122	21-13740B49	100 pF
C127		not used
C151	21-13740B73	1000 pF
C152	21-13740B47	82 pF
C153	21-13740B25	10 pF
C154	21-13741B45	.01 uF
C155	21-13740B55	180 pF
C156	21-13740B55	180 pF
C157	21-13741B45	.01 uF
C158	08-11051A15	poly .22 uF 63V
C159	21-13740B35	27 pF
C160	21-13740B29	15 pF
C161	21-13740B73	1000 pF
C162	23-11048B13	lytic 10 uF 20% 16V
C163	08-11051A17	poly .47 uF 63V
C164	21-13741B69	.1 uF
C165	21-13740B73	1000 pF
C166	21-13740B49	100 pF
C167	21-13740B49	100 pF
C168	21-13740B49	100 pF
C169		not used
C176	21-13740B73	1000 pF
C177	21-13741B69	.1 uF
C201	23-11048B13	lytic 10 uF 20% 16V
C205	21-13740B73	1000 pF
C206	21-13740B32	20 pF
C207	21-13740B29	15 pF
C208	21-13740B27	12 pF
C209	21-13740B23	8.2 +/- .25 pF
C210	21-13740B73	1000 pF
C211	21-13740B73	1000 pF
C212	21-13740B73	1000 pF
C213	21-13740B19	5.6 +/- .25 pF
C214	21-13740B13	3.3 +/- .25 pF
C215	21-13740B73	1000 pF
C216	21-13740B47	82 pF
C217		not used
C218	21-13741B45	.01 uF
C219	21-13740B13	3.3 +/- .25 pF
C220	21-13740B73	1000 pF
C221	21-13740B05	1.5 +/- .25 pF
C222	21-13741B45	.01 uF
C223	21-13740B13	3.3 +/- .25 pF
C224	21-13740B73	1000 pF
C225	21-13740B73	1000 pF
C228	21-13740B80	2200 pF
C229	21-13740B05	1.5 +/- .25 pF
C230	21-13740B05	1.5 +/- .25 pF
C231	21-13740B38	36 pF
C232		not used
C233	21-13740B49	100 pF
C234	21-13740B32	20 pF
C235	21-13740B23	8.2 +/- .25 pF
C236	21-13740B23	8.2 +/- .25 pF
C237	21-13740B73	1000 pF
C238	21-13740B73	1000 pF
C239	21-13740B73	1000 pF
C240	21-13740B13	3.3 +/- .25 pF
C241	21-13740B19	5.6 +/- .25 pF
C242	21-13740B73	1000 pF
C243	21-13740B47	82 pF
C244		not used
C245	21-13740B73	1000 pF
C246	21-13740B25	10 pF
C247	21-13740B73	1000 pF
C248	21-13740B01	1 +/- .25 pF
C249	21-13741B45	.01 uF

C250	21-13740B17	4.7 +/- .25 pF
C251	21-13740B73	1000 pF
C252	21-13740B73	1000 pF
C253		not used
C256	21-13741B45	.01 uF
C258	08-11051A08	poly .015 uF 63V
C274	21-13740B49	100 pF
C276	21-13741B45	.01 uF
C277	23-11048B19	lytic 47 uF 20% 16V
C278	23-11048B19	lytic 47 uF 20% 16V
C301	21-13741B45	.01 uF
C302		not used
C303	21-13740B65	470 pF
C304		not used
C305		not used
C306		not used
C307		not used
C308		not used
C309		not used
C310		not used
C311		not used
C312		not used
C313		not used

Diodes (see note)

CR2	48-80154K03	dual Schottky SOT
CR5	48-80142L01	silicon PIN SOT MMBV3401
CR51	48-05129M76	silicon SOT
CR52	48-05129M76	silicon SOT
CR101	48-05129M76	silicon SOT
CR102	48-05129M76	silicon SOT
CR151	48-80006E10	silicon varactor SOT
CR152	48-80006E10	silicon varactor SOT
CR153	48-84336R03	dual silicon SOT MMBD7000
CR202	48-80006E11	silicon varactor SOT
CR203	48-80006E11	silicon varactor SOT
CR204	48-80006E11	silicon varactor SOT
CR205	48-80006E11	silicon varactor SOT
CR206	48-80154K03	dual Schottky SOT
CR209	48-80006E10	silicon varactor SOT
CR210	48-80006E11	silicon varactor SOT
CR211	48-80006E11	silicon varactor SOT
CR212	48-80006E11	silicon varactor SOT
CR213	48-80006E11	silicon varactor SOT
CR214	48-80154K03	dual Schottky SOT

Filters

FL51(N)	91-80097D04	455 kHz 6F
FL51(W)	91-80097D06	455 kHz 6D
FL52(N)	91-80098D04	455 kHz 4F
FL52(W)	91-80098D06	455 kHz 4D

Connector, receptacle

J4	09-80135M01	coaxial (RX)
J5	09-80135M01	coaxial (TX)
J6	09-80130M03	14-pin, RF board

Jumpers

JU201		not used
JU202		not used

Coils

L1	24-62587N51	chip 68 nH 5%
L2	24-62587N51	chip 68 nH 5%
L3	24-62587N51	chip 68 nH 5%
L4	24-62587N51	chip 68 nH 5%
L5	24-62587N51	chip 68 nH 5%
L6	24-62587N51	chip 68 nH 5%
L7	24-62587N51	chip 68 nH 5%
L8	24-62587N69	chip 1.2 uH 5%
L10	24-62587N69	chip 1.2 uH 5%
L11	24-62587N51	chip 68 nH 5%
L51	24-62587N61	chip .47 uH 5%

L52	24-62587N61	chip .47 uH 5%
L53	24-62587N61	chip .47 uH 5%
L54	24-62587N76	chip 4.7 uH 5%
L55	24-80164M02	tunable .7 uH E715
L56	24-80164M01	tunable .7 uH E713
L57	24-80164M04	tunable .7 uH E714
L58	24-62587N76	chip 4.7 uH 5%
L59	24-80164M03	tunable .7 uH E716
L60	24-62587N69	chip 1.2 uH 5%
L61	25-80000E01	tunable 455 kHz with cap
L101	24-62587N69	chip 1.2 uH 5%
L102	24-62587N47	chip 33 nH 5%
L103	24-62587N76	chip 4.7 uH 5%
L151	24-80299D01	tunable 17-3/4 turns
L152	24-11087A35	chip 5.6 uH 10%
L202	24-80148M05	tunable 3-1/2 turns
L203	24-62587N69	chip 1.2 uH 5%
L204	24-62587N50	chip 56 nH 5%
L205	24-62587N69	chip 1.2 uH 5%
L206	24-62587N69	chip 1.2 uH 5%
L207	24-62587N69	chip 1.2 uH 5%
L208	24-62587N47	chip 33 nH 5%
L209	24-62587N56	chip .18 uH 5%
L210	24-62587N52	chip 82 nH 5%
L211	24-62587N69	chip 1.2 uH 5%
L213	24-80148M08	tunable 4-1/2 turns
L214	24-62587N69	chip 1.2 uH 5%
L215	24-62587N54	chip .12 uH 5%
L216	24-62587N69	chip 1.2 uH 5%
L217	24-62587N69	chip 1.2 uH 5%
L218	24-62587N69	chip 1.2 uH 5%
L219	24-62587N47	chip 33 nH 5%
L220	24-62587N56	chip .18 uH 5%
L221	24-62587N54	chip .12 uH 5%
L222	24-62587N69	chip 1.2 uH 5%
L301	24-84657R01	ferrite bead

Transistors (see note)

Q1	48-80950X01	NPN; type M50X01
Q2	48-05128M67	PNP; type MMBT3906
Q5	48-05128M67	PNP; type MMBT3906
Q6	48-80214G02	NPN; type MMBT3904
Q51	48-05128M66	field effect; type MMBFU310
Q52	48-05128M66	field effect; type MMBFU310
Q53	48-80214G02	NPN; type MMBT3904
Q101	48-05128M67	PNP; type MMBT3906
Q102	48-80182D20	NPN; type M82D20/M9987
Q103	48-80182D20	NPN; type M82D20/M9987
Q104	48-05128M67	PNP; type MMBT3906
Q105	48-80214G02	NPN; type MMBT3904
Q106	48-80214G02	NPN; type MMBT3904
Q107	48-11043C19	NPN; type M43C19/M9658
Q151	48-11043C19	NPN; type M43C19/M9658
Q152	48-11043C06	PNP; type M43C06/M9643
Q203	48-05128M66	field effect; type MMBFU310
Q204	48-11043C19	NPN; type M43C19/M9658
Q205	48-11043C19	NPN; type M43C19/M9658
Q206	48-05128M66	field effect; type MMBFU310
Q207	48-11043C19	NPN; type M43C19/M9658
Q208	48-11043C19	NPN; type M43C19/M9658
Q276	48-80214G02	NPN; type MMBT3904
Q277	48-05128M67	PNP; type MMBT3906
Q278	48-05128M67	PNP; type MMBT3906
Q279	48-05128M67	PNP; type MMBT3906

Resistors, chip, 5%, 1/10 watt, unless otherwise indicated.

R1	06-11077A30	15
R3	06-11077A66	470
R4	06-11077A84	2.7k
R5	06-11077A56	180
R6	06-11077A98	10k
R7	06-11077A96	8.2k
R8	06-11077A98	10k
R9	06-11077A90	4.7k
R10	06-11077B07	22k
R11	06-11077B15	47k



R12	06-11077A50	100
R13	06-11077A68	560
R51	06-11077A43	51
R52	06-11077A54	150
R53	06-11077A88	3.9k
R54	06-11077A54	150
R56	06-11077B45	820k
R57	06-11077A72	820
R58	06-11077B23	100k
R59	06-11077B27	150k
R60	18-05500L08	variable 22k
R61(N)	06-11077B07	22k
R61(W)	06-11077B19	68k
R62(N)	06-11077A26	10
R62(W)	06-11077B09	27k
R63	06-11077B21	82k
R102	06-11077A62	330
R103	06-11077A98	10k
R104	06-11077A98	10k
R105	06-11077B11	33k
R106	06-11077A74	1k
R107	06-11077A78	1.5k
R108	06-11077A26	10
R109	06-11077A26	10
R110	06-11077B03	15k
R111	06-11077A72	820
R112	06-11077A86	3.3k
R113	06-11077A74	1k
R114	06-11077A72	820
R115	06-11077A70	680
R116	06-11077A92	5.6k
R118	06-11077A70	680
R119	06-11077A90	4.7k
R120	06-11077A88	3.9k
R121	06-11077A88	3.9k
R122	06-11077A43	51
R123	06-11077A50	100
R124	06-11077A84	2.7k
R125	06-11077A72	820
R151	06-11077B15	47k
R152	06-11077B11	33k
R153	06-11077B15	47k
R154	06-11077A34	22
R155	06-11077A98	10k
R156	06-11077B03	15k
R157	06-11077A78	1.5k
R158	06-11077A74	1k
R159	06-11077A74	1k
R160		not used
R161	06-11077A98	10k
R162		not used
R163(N)	06-11077B11	33k
R163(W)	06-11077A50	100
R164	18-05500L08	variable 22k
R165(N)	06-11077A98	10k
R165(W)	06-11077B03	15k
R176	06-11077G26	22.6k 1%
R177	06-11077G18	18.7k 1%
R178	06-11077F91	10.0k 1%
R179	06-11077F91	10.0k 1%
R180	06-11077G52	42.2k 1%
R181	06-11077F91	10.0k 1%
R182	06-11077G28	23.7k 1%
R207	06-11077A44	56
R208	06-11077A44	56
R209	06-11077A50	100
R210	06-11077A84	2.7k
R211	06-11077A98	10k
R212	06-11077A84	2.7k
R213	06-11077A72	820
R214	06-11077A50	100
R215	06-11077A84	2.7k
R216	06-11077A72	820
R217	06-11077A42	47
R218	06-11077A54	150
R219	06-11077A40	39
R220	06-11077A54	150
R222	06-11077A88	3.9k

R223(N)	06-11077A92	5.6k
R223(W)	06-11077A66	470
R224	06-11077B23	100k
R225(N)	06-11077A92	5.6k
R225(W)	06-11077B01	12k
R226	06-11077A44	56
R227	06-11077A44	56
R228	06-11077A50	100
R229	06-11077A84	2.7k
R230	06-11077A98	10k
R231	06-11077A84	2.7k
R232	06-11077A72	820
R233	06-11077A50	100
R234	06-11077A84	2.7k
R235	06-11077A72	820
R236	06-11077A42	47
R237	06-11077A62	330
R238	06-11077A32	18
R239	06-11077A62	330
R241	06-11077B23	100k
R276	06-11077A98	10k
R277	06-11077A60	270
R278	06-11077A26	10
R279	06-11077A90	4.7k
R280	06-11077A98	10k
R281	06-11077A90	4.7k
R301	06-11077A74	1k
R302	18-05500L08	variable 22k
R303	06-11077B01	12k

## Transformers

T1	25-80163M02	balun
T2	25-80163M02	balun

## Integrated circuits and modules (see note)

U1	48-80174R01	quad Schottky ring SOIC
U51	51-05479G05	receiver system
U101	51-84704M75	synthesizer
U102	51-84810F66	prescaler
U176	51-80932W01	dual op-amp

## Voltage regulators (see note)

VR176	48-82256C11	zener diode 10V 5%
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## Crystals

Y51(N)	91-80022M03	filter 45.1 MHz 12.5 kHz
Y51(W)	91-80022M02	filter 45.1 MHz 25 kHz
Y52	48-80008K02	44.645 MHz
Y151	48-80174D05	14.4 MHz

## Non-referenced items

26-80097M01	shield coil can (for L151)
26-80098M01	shield coil can (10 used)
26-80228L01	shield can (2 used, for J4 and J5)
26-80229L03	shield VCO frame
75-05295B02	insulator (for Y151)
75-05295B07	insulator (3 used, for Y51A/B, Y52)

Note: For optimum performance, diodes, transistors, and integrated circuits must be ordered by Motorola part numbers.

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PL-931006-O

Note: C24 is mounted in the location for R2 on the pc board.

HLD8293A PA Board, 136-162 MHz, 10-25 Watts

REFERENCE NUMBER	MOTOROLA PART NO.	DESCRIPTION
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Capacitor, chip, 5%, 50V unless otherwise indicated.

C2308		not used
C2309		not used
C2310	21-13740B65	470 pF
C2311	21-13740B27	12 pF
C2312	21-13740B65	470 pF
C2313	21-13740B65	470 pF
C2314	21-13741B69	.1 uF
C2315	21-13740B51	120 pF
C2316	21-13740B65	470 pF
C2317	21-13740B41	47 pF
C2318	21-13740B50	110 pF
C2319	21-13740B65	470 pF
C2320	21-13740B65	470 pF
C2321	21-11032B15	.22 uF +80/-20%
C2322	21-13741B69	.1 uF
C2323	21-13740B65	470 pF
C2324	21-13740B34	24 pF
C2325	21-13740B38	36 pF
C2326	21-13740B44	62 pF
C2327	21-13740B65	470 pF
C2330	21-13740B45	68 pF
C2331	21-13740B52	130 pF
C2332		not used
C2334		not used
C2336	21-80060M43	100 pF 100V
C2337	21-11078B38	68 pF 100V
C2338	21-80060M29	27 pF 500V
C2339	21-11032B15	.22 uF +80/-20%
C2340	21-80060M03	2 +/- .25 pF 500V
C2341	21-13740B53	150 pF
C2342		not used
C2343	21-80060M45	120 pF 100V
C2351	21-13740B29	15 pF
C2352	21-13740B55	180 pF
C2353	21-13740B59	270 pF
C2354	21-13740B65	470 pF
C2360	21-80060M32	36 pF 500V
C2361	21-80060M32	36 pF 500V
C2362	21-80060M31	33 pF 500V
C2363	21-80060M30	30 pF 500V
C2364	21-80060M28	24 pF 500V
C2365	21-13740B73	1000 pF
C2370	21-13740B65	470 pF
C2371	21-13741B69	.1 uF
C2372	21-13740B51	120 pF
C2373	21-13740B65	470 pF
C2374	21-13740B65	470 pF
C2375	21-13740B65	470 pF
C2376	21-13741B69	.1 uF
C2378	23-11048A17	lytic 33 uF 20% 25V
C2379	21-13740B65	470 pF
C2380	21-13740B65	470 pF

Diodes (see note)

CR2350	48-80010E01	silicon PIN UM9401
CR2351	48-80010E01	silicon PIN UM9401
CR2370	48-80236E07	transient suppressor

Ferrite Beads

E2370	76-83960B01	ferrite bead
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Coils

L2310	24-11030D04	5 turns GRN
L2311	24-11030B07	3-1/2 turns WHT
L2312	24-11030E01	1/2 turn BRN
L2313	24-11030B15	10-1/2 turns WHT
L2321	24-80036A01	ferrite bead 1/2 turn
L2322	24-11030B07	3-1/2 turns WHT

L2323	24-80036A01	ferrite bead 1/2 turn
L2324	24-82723H46	.2 uH
L2325	24-11030B04	1-1/2 turns YEL
L2330	24-11030E04	1/2 turn YEL
L2331	24-11030B07	3-1/2 turns WHT
L2332	24-80036A01	ferrite bead 1/2 turn
L2333	24-11030D04	5 turns GRN
L2334	24-11030D01	2 turns RED
L2335	24-11030D02	3 turns ORG
L2336	24-11030D03	4 turns YEL
L2350	24-82723H49	1.2 uH
L2351	24-11030B10	5-1/2 turns RED
L2352	24-82723H44	39 nH
L2353	24-82723H49	1.2 uH
L2360	24-11030D05	6 turns BLU
L2361	24-11030B12	7-1/2 turns YEL
L2362	24-11030B12	7-1/2 turns YEL
L2363	24-11030D05	6 turns BLU
L2364	24-11030B15	10-1/2 turns WHT
L2370	24-84346A02	.23 uH

Transistors (see note)

Q2310	48-82233P39	NPN; type 33P39
Q2320	48-80225C23	NPN; type MRF237

Resistors, chip, 5%, 1/10 watt, unless otherwise indicated.

R2307	06-11077A62	330
R2310	06-11077A46	68
R2311	06-11077A58	220
R2312	06-11077A60	270
R2313	06-11077A26	10
R2314	06-11077A26	10
R2320	06-11077A26	10
R2321	06-11077A50	100
R2329		not used
R2331	06-80279M01	metal film 82 3 watt
R2332	06-11077A26	10
R2350	06-11009A39	390 1/4 watt FCF
R2351	06-11077A66	470
R2352	06-11077A66	470
R2353	06-11077A50	100
R2370	06-11077A38	33
R2371	06-80147M01	metal plate .05 2 watt
R2372	06-05621T02	thermistor 50k
R2373	06-11077B11	33k
R2374	06-11077A74	1k

Non-referenced items

26-80158L01	heat sink (for Q2320)
26-80275M01	heat sink, diode (2 used for CR2350 and CR2351)
29-80014A03	clip coax terminal (2 used)

Note: For optimum performance, diodes, transistors, and integrated circuits must be ordered by Motorola part numbers.

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PL-931007-O

# PA 136-162 MHz (10-25W)

## 01-80704Y64 Feedthru Bracket and Cable Assembly

REFERENCE NUMBER	MOTOROLA PART NO.	DESCRIPTION
Non-referenced items		
	01-80556B01	6-wire cable assembly (includes P7)
	01-80634B01	feedthru bracket assembly (includes C2301 through C2306, 470 pF feedthru capacitors, 6 used)

## HLN8295A PA Hardware Kit, 136-162 MHz, 10-25 Watts

REFERENCE NUMBER	MOTOROLA PART NO.	DESCRIPTION
Capacitors, chip		
C2329		not used
C2333	21-11078B52	240 pF 100V
C2335	21-11078B36	56 pF 100V
Connector, receptacle		
J1	09-80131M01	mini UHF coax
J2	09-80255E01	power (includes feedthru)
Connector, plug		
P4	30-80138M08	coaxial cable 200 mm with plug
P5	30-80138M07	coaxial cable 150 mm with plug
Transistors		
Q2330	48-80225C22	NPN; type MRF1946
Non-referenced items		
	02-00007003	nut 8-32x5/16x1/8 (for J1)
	03-10943M10	screw M3x.5x8 (8 used)
	03-10943M11	screw M3x.5x10 (2 used for J2)
	04-00131974	washer (2 used for J2)
	04-05587G01	washer nylon (for J2)
	04-80943V01	lockwasher (for J1)
	26-80124L01	heat sink
	26-80223M07	PA shield
	32-80014N03	gasket, accessory connector
	38-80014N01	plug button
	42-80281L01	ground clip (2 used for Q2330)
	42-80520B01	ground clip, pc board (2 used)

Note: For optimum performance, diodes, transistors, and integrated circuits must be ordered by Motorola part numbers.

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PL-931008-O

## HLE8385A PA Board, 403-433 MHz, 1-10 Watts

REFERENCE NUMBER	MOTOROLA PART NO.	DESCRIPTION
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Capacitor, chip, 5%, 50V unless otherwise indicated.

C2510	21-13740B49	100 pF
C2511	21-13740B27	12 pF
C2512	21-13740B29	15 pF
C2513	21-13740B73	1000 pF
C2514	21-13740B73	1000 pF
C2515	21-13740B25	10 pF
C2516	21-13741B69	.1 uF
C2517	21-13740B36	30 pF
C2518	21-13740B49	100 pF
C2519	21-13740B73	1000 pF
C2520	21-13740B31	18 pF
C2521	21-13740B34	24 pF
C2522		not used
C2523		not used
C2526	21-13740B49	100 pF
C2527	21-13740B73	1000 pF
C2528	21-11032B15	.22 uF + 80/-20%
C2529	21-13740B36	30 pF
C2530	21-13740B36	30 pF
C2531	21-13740B34	24 pF
C2532	21-13740B34	24 pF
C2536	21-13740B49	100 pF
C2537	21-13740B73	1000 pF
C2538	21-13741B69	.1 uF
C2539		not used
C2540		not used
C2541	21-13740B33	22 pF
C2542	21-13740B23	8.2 +/- .25 pF
C2543	21-13740B32	20 pF
C2547	21-13740B49	100 pF
C2548	21-11032B15	.22 uF + 80/-20%
C2549	21-13740B49	100 pF
C2550		not used
C2551	21-13740B31	18 pF
C2552		not used
C2553	21-13740B31	18 pF
C2554	21-13740B15	3.9 +/- .25 pF
C2555	21-13740B49	100 pF
C2556		not used
C2557	21-13740B49	100 pF
C2559	21-13740B22	7.5 +/- .25 pF
C2560		not used
C2561	21-13740B24	9.1 +/- .25 pF
C2562	21-13740B25	10 pF
C2563	21-13740B21	6.8 +/- .25 pF
C2564	21-13740B49	100 pF
C2570	21-13740B36	30 pF
C2574	21-13740B36	30 pF
C2575	08-11051A17	poly .47 uF 63V
C2576	21-13740B49	100 pF
C2577	21-13740B73	1000 pF
C2578	21-13741B69	.1 uF
C2579	21-13740B36	30 pF
C2580	21-13740B49	100 pF

## Diodes (see note)

CR2550	48-80010E01	silicon PIN UM9401
CR2551	48-80010E01	silicon PIN UM9401
CR2570	48-80236E07	transient suppressor

## Ferrite Beads

E2520	76-83960B01	ferrite bead
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## Coils

L2510	24-11030E02	1/2 turn RED
L2511	24-11030B04	1-1/2 turns YEL
L2512	24-11030E04	1/2 turn YEL
L2513	24-11030B01	1-1/2 turns BRN

L2515	24-80036A01	ferrite bead 1/2 turn
L2520	24-11030E02	1/2 turn RED
L2522	24-82723H44	39 nH
L2530	24-11030B03	1-1/2 turns ORN
L2531	24-80036A01	ferrite bead 1/2 turn
L2532	24-11030B03	1-1/2 turns ORN
L2540	24-11030E03	1/2 turn ORN
L2550	24-82723H40	.29 uH
L2551	24-11030B04	1-1/2 turns YEL
L2552	24-82723H40	.29 uH
L2553	24-11030A06	7 turns VIO
L2560	24-11030B06	2-1/2 turns BLU
L2561	24-11030B07	3-1/2 turns WHT
L2562	24-11030B06	2-1/2 turns BLU
L2563	24-11030B11	6-1/2 turns ORN
L2570	24-80036A01	ferrite bead 1/2 turn

## Transistors (see note)

Q2510	48-82233P39	NPN; type MRF559
Q2520	48-80225C09	NPN; type MRF630
Q2530	48-80225C19	NPN; type MRF654

Resistors, chip, 5%, 1/10 watt, unless otherwise indicated.

R2510	06-11077A58	220
R2511	06-11077A60	270
R2512	06-11077A52	120
R2513	06-11077A38	33
R2514	06-11077A38	33
R2520	06-11077A26	10
R2550	06-11086C33	82 2 watt FMO
R2570	06-11086D01	0.2 2 watt FMO
R2571	06-11077A47	75
R2572	06-05621T02	thermistor 50k
R2573	06-11077B11	33k
R2574	06-11077A80	1.8k
R2575	06-11077A26	10

## Non-referenced items

26-80158L01	heat sink (for Q2520)
29-80014A03	clip coax terminal (2 used)

Note: For optimum performance, diodes, transistors, and integrated circuits must be ordered by Motorola part numbers.

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PL-931002-O

# PA 403-433 MHz (1-10W)

## 01-80704Y64 Feedthru Bracket and Cable Assembly

REFERENCE NUMBER	MOTOROLA PART NO.	DESCRIPTION
Non-referenced items		
	01-80556B01	6-wire cable assembly (includes P7)
	01-80634B01	feedthru bracket assembly (includes C2501 through C2506, 470 pF feedthru capacitors, 6 used)

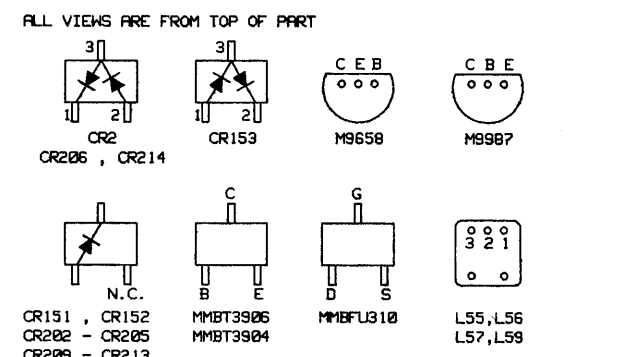
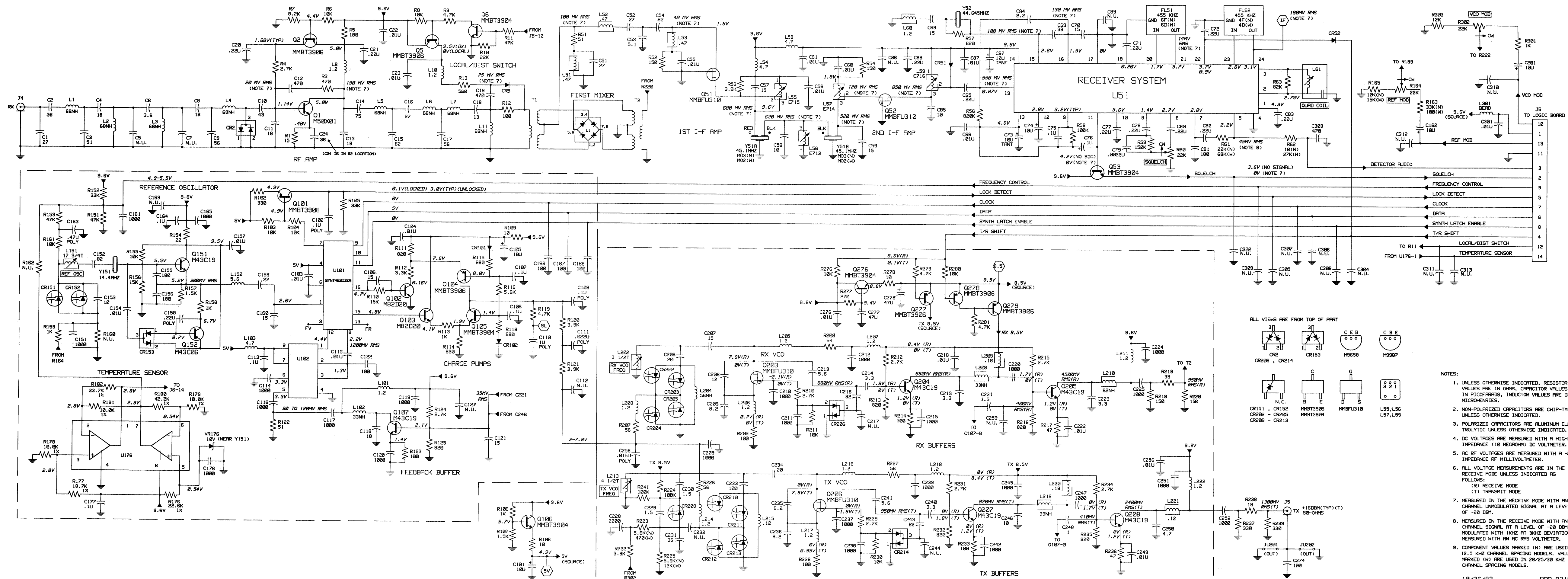
## HLN8386A PA Hardware Kit, 403-433 MHz, 1-10 Watts

REFERENCE NUMBER	MOTOROLA PART NO.	DESCRIPTION
Capacitors, chip, 5%, 50V		
C2533	21-13740B31	18 pF
C2534	21-13740B31	18 pF
C2544	21-13740B18	5.1 +/- .25 pF
C2545	21-13740B18	5.1 +/- .25 pF
Connector, receptacle		
J1	09-80131M01	mini UHF coax
J2	09-80255E01	power (includes feedthru)
Connector, plug		
P4	30-80138M08	coaxial cable 200 mm with plug
P5	30-80138M07	coaxial cable 150 mm with plug
Non-referenced items		
	02-00007003	nut 8-32x5/16x1/8 (for J1)
	03-10943M10	screw M3x.5x8 (6 used)
	03-10943M11	screw M3x.5x10 (2 used for J2)
	04-00131974	washer (2 used for J2)
	04-05587G01	washer nylon (for J2)
	04-80943V01	lockwasher (for J1)
	26-80124L01	heat sink
	26-80223M07	PA shield
	26-80514C01	filter shield
	26-80551C01	antenna connector shield
	32-80014N03	gasket, accessory connector

Note: For optimum performance, diodes, transistors, and integrated circuits must be ordered by Motorola part numbers.

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PL-931003-O



- NOTES:
1. UNLESS OTHERWISE INDICATED, RESISTOR VALUES ARE IN OHMS, CAPACITOR VALUES ARE IN PICOFARADS, INDUCTOR VALUES ARE IN MICROHENRIES.
  2. NON-POLARIZED CAPACITORS ARE CHIP-TYPE UNLESS OTHERWISE INDICATED.
  3. POLARIZED CAPACITORS ARE ALUMINUM ELECTROLYTIC UNLESS OTHERWISE INDICATED.
  4. DC VOLTAGES ARE MEASURED WITH A HIGH IMPEDANCE (10 MEGOHM) DC VOLTMETER.
  5. AC RF VOLTAGES ARE MEASURED WITH A HIGH IMPEDANCE RF MILLIVOLTMETER.
  6. ALL VOLTAGE MEASUREMENTS ARE IN THE RECEIVE MODE UNLESS INDICATED AS FOLLOWS:  
(R) RECEIVE MODE  
(T) TRANSMIT MODE
  7. MEASURED IN THE RECEIVE MODE WITH AN ON-CHANNEL UNMODULATED SIGNAL AT A LEVEL OF -20 DBM.
  8. MEASURED IN THE RECEIVE MODE WITH AN ON-CHANNEL SIGNAL AT A LEVEL OF -20 DBM, MODULATED WITH 1KHZ AT 30KZ DEVIATION. MEASURED WITH AN AC RMS VOLTMETER.
  9. COMPONENT VALUES MARKED (N) ARE USED IN 12.5 KHZ CHANNEL SPACING MODELS. VALUES MARKED (H) ARE USED IN 20/25/30 KHZ CHANNEL SPACING MODELS.

Schematic Diagram for HLD8254A and HLD8266A VHF RF Boards, 136-162 MHz