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Cobra 33 Plus Service Manual

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**SERVICE MANUAL
FOR MODEL
33 PLUS**

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FOR MODEL 33 PLUS**

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2. ALIGNMENT PROCEDURE

ALIGNMENT OF VCO PORTION

1. Test Equipment Required

Oscilloscope (0~50 MHz)

DC Power Supply (13.8 V)

DC Voltmeter (10 V maximum, 100 k Ω /V)

2. Alignment Procedure

Step	Preset to	Adjustment	Remarks
1	TX Mode CH : 40 No Modulation	L702	Connect DC Voltmeter to TP1 (Lead of R72). Adjust for approx. 4.0 V on DC Voltmeter.
2	RX Mode CH : 40 No Modulation	L701	Same as Step 1.

ALIGNMENT OF I.R. RECEIVER PORTION

1. Test Equipment Required

S.S.G. (50kHz \pm .3kHz)

VTVM

DC Power Supply (8 V)

DC Amperemeter

Dummy Load (1 K Ω)

2. Alignment Procedure

Step	Preset to	Adjustment	Remarks
1	S.S.G : 100 μ V	L401,402	Connect S.S.G. to ANT. Connect VTVM to TP1 (Pin7 of IC401). Adjust coils for maximum reading on VTVM.
2	S.S.G. : 50 mV	L403	Connect Oscilloscope to both ends of Dummy Load. Adjust L403 for maximum level of AF output. At the same time for minimum reading AF output distortion. Distortion of AF output is at the minimum.
3	S.S.G. : 100 mV	L401,402	Same as step 1.
4	S.S.G. : 50 mV	VR403	Connect Oscilloscope to both ends of Dummy Load. Adjust VR403 for 5 mVrms reading on Oscilloscope.
5	S.S.G. : 100 μ V	VR402	Turn clockwise VR402 and stop to turn it just when the waveform of AF output disappears. Turn VR402 counterclockwise and stop to turn it just when the waveform of AF output appear on Oscilloscope.
6	S.S.G. : 141 μ V	VR401	Ditto.

ALIGNMENT OF IR MIC. PORTION

1. Test Equipment Required

Oscilloscope (0~50 MHz)

DC Power Supply (4.8 V)

2. Alignment Procedure

Step	Preset to	Adjustment	Remarks
1		VR801	Connect Oscilloscope to Pin1 of IC803. Adjust VR801 for 50 kHz \pm 0.3 kHz reading on Oscilloscope.

ALIGNMENT OF CB TRANSMITTER PORTION

1. Test Equipment Required

RF VTVM (Full Scale : 1 V DC with RF Probe)	RF Power Meter
Field Strength Meter	Frequency Counter (0~30 MHz)
DC Power Supply (13.8V, 2A)	50Ω Dummy Load & Attenuator
Oscilloscope (0~30 MHz)	AF Oscillator

2. Alignment Procedure

Step	Preset to	Adjustment	Remarks
1	TX Mode CH : 19 1 kHz 80% Mod.	L11, 14	Connect RF Power Meter to ANT. Jack (J501). Adjust for maximum reading.
2	TX Mode CH : 19 No Mod.	L11	Adjust for 4.0 W on RF Power Meter.
3	Same as Step2	VR2	Preset VR2 so that 6th digit of LED meter of the unit lights up.
4	TX Mode CH : 19 1 kHz 3 mV input	VR4	Adjust VR4 for 95% modulation on output wave.

ALIGNMENT OF CB RECEIVER PORTION

1. Test Equipment Required

RF Signal Generator (27 MHz Band, 1000 Hz, 30% Modulation & Output Impedance 50 Ω)

AF VTVM

Oscilloscope (0~50 MHz)

Dummy Load (8 Ω , 5 watts, resistive)

DC Power Supply (13.8V, 2A)

DC Voltmeter

2. Alignment Procedure

Step	Preset to	Adjustment	Remarks
1	RX Mode NB : OFF Volume : Max. Squelch : Min. ANL : OFF CH : 19	L1,2,3,4,5, L6,7 and 8	Connect RF SSG to ANT Connector (J501) and set it 27.185 MHz. Connect AF VTVM to EXT. SPK. Jack (J3). Adjust coils for the maximum reading on AF VTVM.
2	Same as Step 1.	VR3	Set the RF Signal Generator to 100 μ V output level. Adjust for a reading of S-9 on the S-meter of the unit.
3	Same as Step1. Except SQL : Max.	VR1 (Squelch)	Set the RF Signal Generator to 1000 μ V output level. Adjust VR1 so that squelch just breaks.
4	Same as Step1. except NB : ON Ch : 18	L651	Connect DC Voltmeter to TP3 (Lead of R8). Set RF Signal Generator to 100 μ V output level. Adjust for the maximum reading on DC Voltmeter.

TROUBLESHOOTING HINTS

UNIT WILL NOT TURN ON

1. Fuse Blown Be sure you check the cause.
2. Defective Power Switch.
3. Defective Wires or poor soldering in Power supply circuit.
4. Broken DC Power cable.

NO SOUND RECEIVED

1. Defective external speaker jack.
2. Defective RF circuit in receiver.
3. Unlocked PLL circuit or improper alignment.
4. Broken antenna connector.

NO TRANSMISSION

1. Defective Battery poor in the Infrared microphone.
2. Defective PTT switch on Infrared microphone.
3. Unlocked PLL circuit or improper alignment.
4. Defective PA switch.
5. Broken or bad Infrared Emitting Diodes (D804, D805, D806, D807).

NO TX MODULATION

1. Defective Infrared microphone and/or circuit.
2. Defective in modulation circuit.

FOR MORE HINTS, SEE BELOW

NO TRANSMISSION

- A. Connect current meter in series with power cable. Check current reading for transmit mode :
If current reads more than 1 ampere (but less than 2 A.), the final output transistor is OK. Check for bad contacts or short circuits between PC Board and Antenna Connector. A current reading of less than 0.5 A indicates no drive to Final Transistor. Check drive or early RF stages.
- B. Defective PLL?
Check voltage at Pin 18 of IC2. If less than 5V, PLL is unlocked. If more than 5 V, PLL is OK.
- C. Short Circuit in Transmitter Circuit?
Voltage on collector of Q24 should be more than 7 V in TX mode, and should increase to less than 7 V in RX mode.
- D. If voltage reading is more than 7 V on Q24 collector, it is OK. If voltage of more than 2 V is measured at the D21 anode, check microphone circuit and Infrared Receiver PTT Circuit.
- E. No Voltage reading at Q19 and TR501 collector : check D16 or T-1.
- F. No Channel LED light : If one particular segment does not light, the LED is defective. If LED does not light in any channel position, check IC3.

CHANNEL UP/DOWN SWITCH INOPERATIVE

If channel not go up or down Channel Up/Down Switch is pressed, check IC2 and connection of Channel Up/Down Switch.

CHANNEL LED DOES NOT LIGHT

If one particular channel does not light, check molex, LED or Channel Up/Down Switch. If no channel lights, check IC3 or molex.

NO TX MODULATION

If receiver operates correctly, but there is no TX modulation, the problem should be in Q27, Q28, Q29, or a short circuit in the microphone circuit. Audio power IC4 is used both for TX and RX modes.

NO RECEPTION

Before troubleshooting, Check Control full CCW, RF Gain Control full CW, and microphone connected.

A) Connect Signal Generator to antenna. Check that Signal Strength Meter (S meter) LEDs light.

S meter LEDs light.

Antenna is OK through IF stage ; check circuit through ANL, Squelch and Audio amplifier. During the illumination of S meter, negative voltage should be present at anode of D3 diode if Defector circuit is normal.

S meter LEDs do not light.

To check PLL :

1. 16 MHz frequency should be present at TP2 (0.9Vp-p or more). (1st Local)
2. The frequencies shown in the frequency chart should be correct when the Channel Up-Down Switch is changed from CH 1 through CH40.
3. 10.2419 MHz frequency should be present at C14 (0.1 Vp-p or More). (2nd Local) If PLL is OK, check circuit through Q3, Q4, Q5, Q6 and Q8.

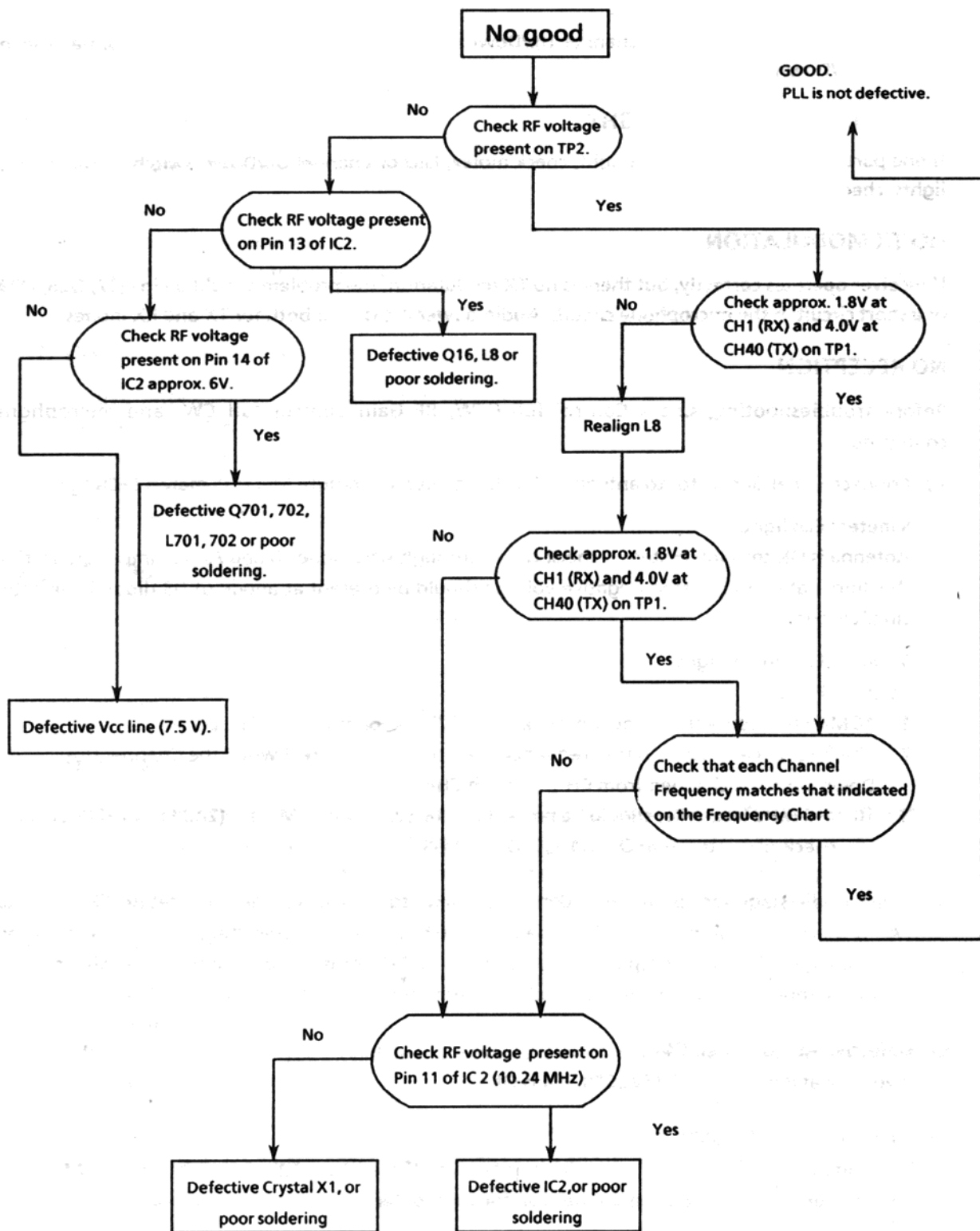
B) Check Audio stage for operation : Connect Speaker to PA Speaker Jack, and set PA-CB switch to PA. If there is an audible click when the PTT switch is pressed, Audio stage is OK. If there is no audible click, IC4 Audio Amplifier is defective, or T-1 transformer is bad. (Transformer DC resistance should be approximately 0.5 ohm for both primary and secondary windings.)

C) Defective Audio Power IC4

If voltage at Pin 8, 10 are 7V (VCC/2), IC4 is OK.

D) Squelch constantly "on".

If voltage at the base of TR9 is 0 V, D6 is defective. If reading is less than 0.7 V, check IC1 circuit and/or Squelch control ground Connection for cold solder.



Frequency Chart of Fvco and Divide Ratio N

Antenna Frequency (MHz)	Channel No.	For Transmit (R/T = H) Divide Ratio (N)	VCO Frequency (MHz)	For Receive (R/T = L) Divide Ratio (N)	VCO Frequency (MHz)
26.965	1	2696	26.965	1627	16.273
26.975	2	2697	26.975	1628	16.283
26.985	3	2698	26.985	1629	16.293
27.005	4	2700	27.005	1631	16.313
27.015	5	2701	27.015	1632	16.323
27.025	6	2702	27.025	1633	16.333
27.035	7	2703	27.035	1634	16.343
27.055	8	2705	27.055	1636	16.363
27.065	9	2706	27.065	1637	16.373
27.075	10	2707	27.075	1638	16.383
27.085	11	2708	27.085	1639	16.393
27.105	12	2710	27.105	1641	16.413
27.115	13	2711	27.115	1642	16.423
27.125	14	2712	27.125	1643	16.433
27.135	15	2713	27.135	1644	16.443
27.155	16	2715	27.155	1646	16.463
27.165	17	2716	27.165	1647	16.473
27.175	18	2717	27.175	1648	16.483
27.185	19	2718	27.185	1649	16.493
27.205	20	2720	27.205	1651	16.513
27.215	21	2721	27.215	1652	16.523
27.225	22	2722	27.225	1653	16.533
27.255	23	2725	27.255	1656	16.563
27.235	24	2723	27.235	1654	16.543
27.245	25	2724	27.245	1655	16.553
27.265	26	2726	27.265	1657	16.573
27.275	27	2727	27.275	1658	16.583
27.285	28	2728	27.285	1659	16.593
27.295	29	2729	27.295	1660	16.603
27.305	30	2730	27.305	1661	16.613
27.315	31	2731	27.315	1662	16.623
27.325	32	2732	27.325	1663	16.633
27.335	33	2733	27.335	1664	16.643
27.345	34	2734	27.345	1665	16.653
27.355	35	2735	27.355	1666	16.663
27.365	36	2736	27.365	1667	16.673
27.375	37	2737	27.375	1668	16.683
27.385	38	2738	27.385	1669	16.693
27.395	39	2739	27.395	1670	16.703
27.405	40	2740	27.405	1671	16.713

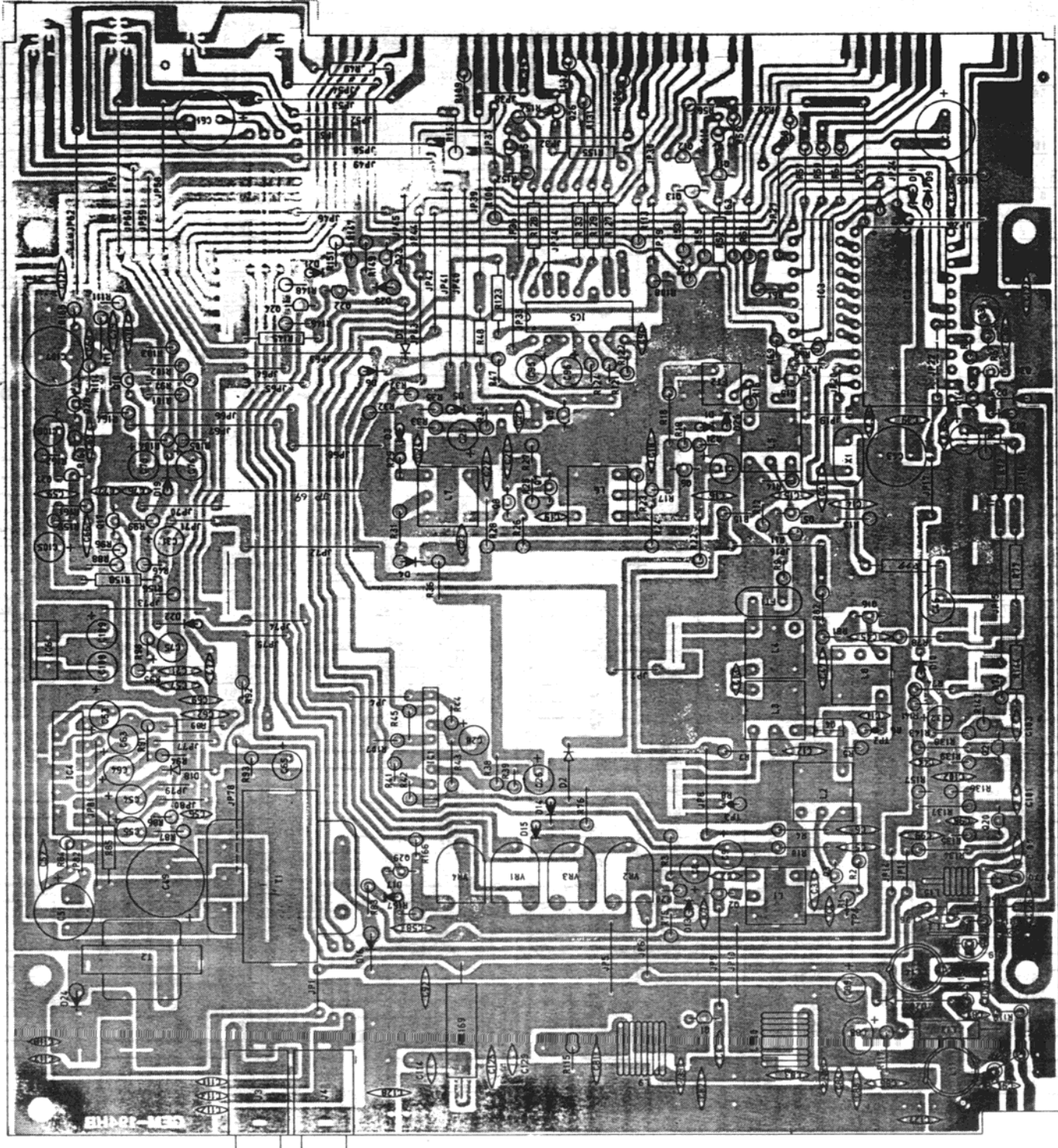
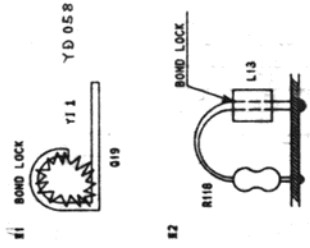
EXPLODED VIEW PARTS LIST

MECHANICAL PARTS LIST for 33 PLUS (UT-320Z)

Ref. No. in this Mechanical Parts List is harmonized with them in Exploded View

Ref.No.	Description	Part Code	Ref.No.	Description	Part Code	Ref.No.	Description	Part Code
1	Plate: Slide (Assy)	EETC419172Z	29	Cushion(C) : Rubber 15 x 30 x 10.5T (x 2)	LETCA0010Z	101	Hanger: ABS, Black, INST (x 1)	EN0Z18151Z
2			30			102	Mic Case : Front, ABS, Black, Silk (x 1)	GCHF19751Z
3			31			103	Mic Case : Rear, ABS, Black (x 1)	GCHR19752Z
4	Panel : Front, ABS, Black (x 1)	GCMF19698Z	32	Rail Side : AL, A60635, Alumite (x 2)	QHMS419171Z	104	Mic Case : Top, PMMA, PF-079 (x 1)	GCHT19753Z
5	Control Plate : ABS, CR, Silk, Black (x 1)	GCMZ19697Z	33	Cushion (A) : NEO, SPO, 15 x 20 x 6.5T (x 1)	RCUN42008Z	105	Cradle : Front, ABS, Black, Silk (x 1)	GCHZ19755Z
6	Window : PMMA, Gray, Smoke (x 1)	GCMZ319696Z	34	Cushion (B) : NEO, SPO, 15 x 25 x 10T (x 1)	RCUN42009Z	106	Cradle : Rear, ABS, Black, Silk (x 1)	GCHZ219756Z
7	Support : ABS, Black (x 1)	GCSZ417100Z	35			107	Holder : LED, ABS, White (x 1)	GHD1319760Z
8			36			108	Button : PTT, ABS, Black (x 1)	GMBP19754Z
9	Holder : Diode, ABS, Black (x 1)	GHD419759Z	37			109	Charge Terminal : CS210, 0.3T, MBN3 (x 2)	HPS419758Z
10	Screw : Mounting, ABS, Black (x 2)	GMS480317Z	38			110	Plate : PTT, CS191R, 0.4T (x 1)	HPS419807Z
11	Button : Push (PA), ABS, CR, Silk, Black (x 1)	GNBP419702Z	39	Wool-coated Paper : Wool Tack, Wool Paper, 10 x 150 x 0.3T (x 4)	RUTC03865Z	111	Terminal : CZ600, 0.5T, MBM3 (x 2)	HTML419757Z
12	Button : Push (D+), ABS, CR, Silk, Black (x 1)	GNBP419703Z	40	Insulation Plate : Mylar, 0.1T (x 1)	RZBA16622A	112	Plate : Blind, PVC, Black, 0.3T (x 1)	KDPF420789Z
13	Button : Push (Ch9), ABS, CR, Silk, Red (x 1)	GNBP419704Z	41	Screw : Flat Head +, M3 x 5, NI (x 4)	SSCW133005N	113	Plate : Reflective, PVC, White, 0.3T (x 1)	KDPF420792Z
14	Button : Push (Down), ABS, CR, Silk, Black (x 1)	GNBP419705Z	42	Screw : Flat Head +, M3 x 5, NI (x 6)	SSCW133006N	114	Holder : LED, EPT, Black (x 1)	LHDL480964Z
15	Button : Push (Up), ABS, CR, Silk, Black (x 1)	GNBP419706Z	43	Screw : Blind Head +, M3 x 8, BNI (x 4)	SSCW193008B	115	Label : Rear, Polyester Film, 0.1T (x 1)	PLBF419975Z
16	Button : Push (ANUNB) (x 1)	GNBP419744Z	44	Screw : Blind Head +, M3 x 8, NI (x 1)	SSCW193008N	116	Cushion : Maltiprene, 40 x 40 x 3T (x 1)	RCUM412114Z
17	Knob : ABS, CR (x 5)	GNBY419056Z	45	Screw : Tapping Round Head +, M3 x 12, NI (x 1)	SSCW193012N	117	Cushion : Neoprene (x 1)	RCUM417489Z
18	Mounting Bracket : SPCC, 1.6T, Black Paint (x 1)	HBC7319170Z	46	Screw : Tapping Round Head +, M3.5 x 12, NI (x 2)	SSCW27351Z	118	Screw : P Tight Pan Head +, D3.6 x 6, NI (x 1)	SSCW193005N
19	Cover : Bottom, Vinyltop, 38-K08, 1.0T, Black (x 1)	HC78319263Z	47	Screw : Tapping Round Head +, D3.5 x 8, NI (x 2)	SSCW293509Z	119	Screw : P Tight Pan Head +, D3.6 x 5, NI (x 1)	SSCW379606H
20	Cover : Top, Vinyltop, 38-K08, 1.0T, Black (x 1)	HCM7319068Z	48	Screw : Tapping Round Head +, M3 x 6, BNI (x 8)	SSCW290510N	120	Screw : P Tight Blind Head +, D3.6 x 5, NI (x 1)	SSCW80305N
21	Chassis : SPCC, 1.0T, MZN3 (x 1)	HCSY219749A	49	Screw : Taplight Blind Head +, M3 x 6, NI (x 4)	SSCW343006B	121	Screw : P Tight Blind Head +, D3 x 14, BNI (x 3)	SSCW803014B
22	Holder : IC, SECC, 1.0T (x 1)	HHDE419777Z	50	Screw : Taplight Blind Head +, M3 x 6, NI (x 4)	SSCW343006N	122	Screw : P Tight Blind Head +, D3 x 20, NI (x 1)	SSCW803020N
23	Holder : IC (A), ALP, 2T, Non OH (x 1)	HHDE481271Z	51	Hex Nut : M3.0, NI (x 1)	SSCW430030N			
24	Hanger : Microphone, SPCC, 1.0T, NI (x 1)	HMHG407919Z	52	Nut : Flange, M3, ZMC (x 4)	SSCW480030Z			
25	Shield Plate : SPT, 0.3T, Non OH (x 1)	HSDP416157Z	53	Washer : lock, D3.5, NI (x 2)	SSCW530035N			
26	Earth Plate : SPT, 0.3T (x 1)	HTML419062Z	54	Washer : Star, D5, NI (x 2)	SSCW540050N			
27	ID Plate : FCC, ALP, 0.3T (x 1)	JDPA419765Z	55	Screw : P Tight Blind Head +, D2 x 5, NI (x 1)	SSCW803005N			
28	Optical Filter : Nitro, NIBB1, 1.0T (x 1)	KDPC419990Z	56	Screw : P Tight Blind Head +, D3 x 8, NI (x 4)	SSCW803008N			
			57	Spring Plate : Knob, D6 (x 5)	TSTD0200096			
			58	Rivet : AL, ID Plate, D3.2 x 3.2 (x 2)	TSTD021321Z			

PARTS LAYOUT, MAIN PCB



PA-268A C

PARTS LAYOUT, MAIN PCB

C1	10P/UJ
C2	0.001/YD
C3	220P/SL
C4	47P/UJ
C5	0.01/YF
C6	0.01/YF
C7	0.0047/YF
C8	50V2.2
C9	16V10
C11	0.01(SR)
C12	0.01/YF
C13	100P/SL
C14	560P/SL
C15	0.11SR1
C16	0.047(SR)
C17	50V4.7
C18	0.047(SR)
C19	0.01(SR)
C21	0.047(SR)
C22	0.11SR1
C23	0.001/YD
C24	0.001/YB
C25	50V0.47
C26	50V1
C27	0.0033(SR)
C28	50V0.22
C29	0.0151SR1
C31	10V47
C32	10V1000
C33	0.0151SR1
C34	50V2.2 C-094
C35	0.001/YF
C36	0.11SR1
C38	12 P/CH
C39	0.047(SR)
C41	39P/CH
C42	50V4.7
C43	10V1000 C-095
C44	0.01(SR)
C45	0.0047/YD
C46	10V47
C47	0.01/YF
C49	25V1000 C-095
C51	25V470 C-156
C52	0.11SR1
C53	10V47
C54	16V47
C55	16V10
C56	0.0022(SR)
C57	0.022(SR)
C58	0.047/ZF
C59	120P/UJ
C61	25V470 C-156
C62	0.11SR1
C63	10V47
C64	50V4.7
C65	10V47
C66	560P/SL
C67	0.047(SR)
C68	0.01(SR)
C69	0.0022(SR)
C71	0.047(SR)
C72	0.047(SR)
C73	16V22
C74	10V100
C75	10V47
C76	0.022(SR)
C77	0.0047(SR)
C78	0.11SR1
C79	0.047(SR)
C81	150P/CH
C82	220P/CH
C83	27P/CH
C84	47P/CH
C85	100P/CH
C86	330P/UJ
C87	47P/CH
C88	50V0.22
C89	50V1
C91	56P/UJ
C92	0.01/YD
C93	220P/UJ
C94	0.001/YD
C95	50V1

C96	50V2.2
C97	470P/UJ
C98	0.01(SR)
C99	0.0047/YD
C101	470P/UJ
C102	0.01(SR)
C103	0.001/YD
C105	10V100
C106	16V22
C107	16V220 C-155
C108	16V10
C109	16V10
C111	0.001/YD
C112	0.001/YD
C113	0.001/YD
C114	0.001/YD
C117	0.001/YD
C118	0.001/YD
C121	0.01/YF
C122	0.047/ZF
C125	0.047/ZF
C126	0.047/ZF
C127	0.047/ZF
C128	0.047/ZF
C129	0.001/YD
C132	10V47
C133	0.01/YF
C134	0.0047/YD
C135	0.0047/YD
C136	33P/CH

Q1	25C1675L
Q2	25C1675L
Q3	25C1674L
Q4	25K192ABL
Q5	25C1675L
Q6	25C1675L
Q7	25C1675L
Q8	25C941TM(10)
Q9	25C945AQ
Q10	25B525C
Q11	25A733APB
Q12	25B525C
Q13	25C3242AE
Q14	25C945AQ
Q15	25C945AQ
Q16	25C1675L
Q17	25C945AQ
Q18	25C945AQ
Q19	25C2086D
Q20	25C941 TM(O)
Q21	25C1675L
Q22	25A733APB
Q23	25C945AQ
Q24	25A733APB
Q25	25C3242AE
Q26	25C945AQ
Q27	25C945AQ
Q28	25C945AQ
Q29	25A733APB
Q30	25C945AQ

R1	3.3K
R2	4.7K
R3	3.3K
R4	100
R5	2.2K
R6	1.5K
R7	100
R8	4.7M
R9	2.2K
R10	470
R11	1K
R12	5.6K
R13	100
R14	47K
R15	100
R16	2.2K
R17	39K
R18	2.2K
R19	6.8K
R20	2.2K
R21	1.5K
R22	1.2K
R23	33K
R24	100
R25	47K
R26	2.2K
R27	220
R28	47
R29	3.3K
R31	1K
R32	470K
R33	56K
R34	56K
R35	56K
R36	10K
R37	56K
R38	10K
R39	100K
R41	100K
R42	100K
R43	100K
R44	1.5M
R45	2.2M
R46	2.7K
R47	1.5K
R48	33K
R49	3.3K
R51	10K
R52	3.3K
R53	1.5K
R54	100
R55	4.7
R56	3.3K
R57	150
R58	150
R59	150
R61	150
R62	150
R63	150
R64	150
R65	3.3K
R66	5.6K
R67	4.7K
R68	100
R69	10K
R71	2.7K
R72	1K
R73	10K
R74	6.8K
R75	1K
R76	10K
R77	220
R78	560
R79	33
R81	390K
R82	1.5K
R83	3.3K
R84	1
R85	120K
R86	6.8K
R87	10
R88	22K
R89	1
R91	100K

R92	5.6K
R93	3.3K
R94	100
R95	27K
R96	100
R97	12K
R98	2.7K
R99	1M
R101	2.2K
R102	100K
R103	47K
R104	2.2K
R105	220
R106	1.5M
R107	10K
R108	10K
R109	2.2K
R111	3.3K
R112	3.3K
R113	680
R114	4.7K
R115	2.2K
R116	100
R117	2.2K
R118	15
R119	2.7
R121	10K
R122	100K
R123	820
R124	2.2K
R125	100
R126	220
R127	220
R128	220
R129	330
R131	330
R132	470
R133	470
R134	100
R135	56
R136	15K
R137	8.2K
R138	100
R139	100
R141	5.6K
R142	15K
R143	10K
R144	4.7
R145	10K
R146	3.3K 1/6W
R147	270
R148	47K
R149	100
R151	1.5K
R152	1.5K
R153	2.2K
R154	100
R155	33K
R156	1.5K
R157	1.5K
R158	1.5K
R159	3.3K
R161	100K
R162	2.2K
R163	47K
R164	2.7K
R165	10K
R166	2.2K
R167	39K
R168	10K
R169	100 2W
R170	3.9

JP1	7.5
JP4	10
JP5	12.5
JP6	10
JP7	7.5
JP8	15
JP9	17.5
JP10	12.5
JP13	7.5
JP14	7.5
JP15	22.5
JP16	15
JP17	10
JP18	10
JP19	7.5
JP20	5
JP21	5
JP22	12.5
JP23	12.5
JP24	10
JP25	20
JP26	12.5
JP27	17.5
JP29	10
JP30	12.5
JP32	17.5
JP34	15
JP35	12.5
JP36	12.5
JP37	10
JP38	7.5
JP39	27.5
JP40	30
JP41	30
JP42	20
JP43	17.5
JP44	7.5
JP45	12.5
JP46	15
JP49	22.5
JP50	22.5
JP51	10
JP52	25
JP53	22.5
JP54	15
JP58	25
JP59	12.5
JP60	15
JP61	25
JP62	27.5
JP63	22.5
JP64	7.5
JP65	10
JP66	22.5
JP67	25
JP68	15
JP69	30
JP70	12.5
JP71	7.5
JP72	22.5
JP73	17.5
JP74	10
JP75	7.5
JP77	10
JP78	22.5
JP79	5
JP80	7.5
JP81	25
JP82	5

IC1	MS223L
IC2	SMS1250
IC3	LB1710
IC4	TD42005R
IC5	LB1417
IC6	L7808ACY

D1	1N60AM
D2	1N60AM
D3	1N4148
D4	1N60P
D5	1S1555
D6	1S1555
D7	1S1555
D8	HZ6A3
D9	1S1555
D10	1S1555
D11	1S1555
D12	HZ6A3
D13	1S1555
D14	1S1555
D15	1S1555
D16	1N4003
D17	1S1555
D18	1S1555
D19	1S1555
D20	1S1555
D21	1S1555
D22	1S1555
D23	1S1555
D24	1N4003
D25	1N4003
D26	1N60AM

Y11	YD058
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L1	LA029
L2	LA260
L3	LA120
L4	LA277
L5	LA163
L6	LA163
L7	LA204
L8	LA166
L9	LE096
L10	LE096
L11	LC074
L12	LD168
L13	LD087
L14	LC072
L15	LE107

VR1	5KB
VR2	20KB
VR3	5KB
VR4	5KB

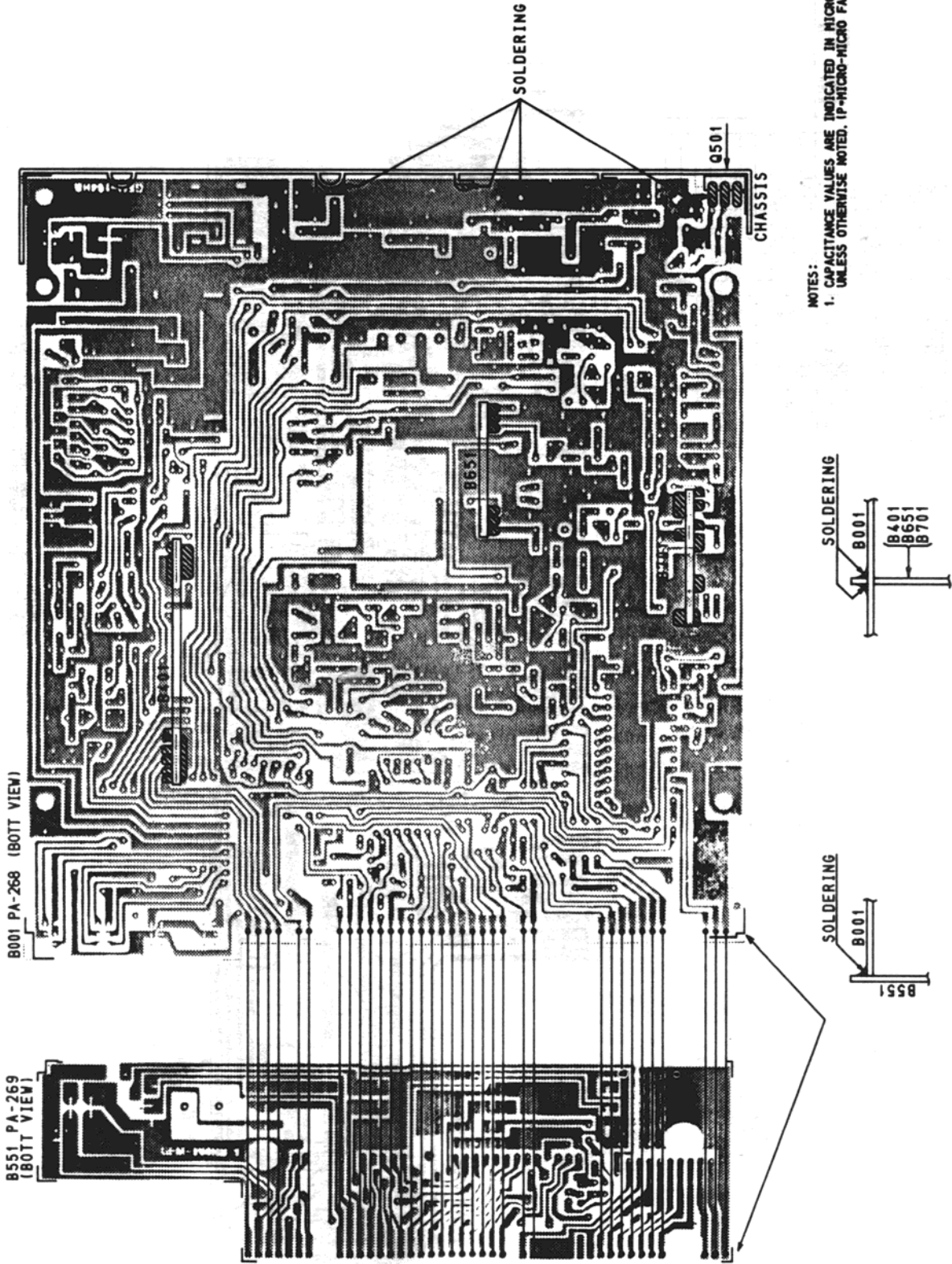
X1	10.2419MHz QX 250
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FT1	FL222
FT2	FL231

J3	JK089
J4	JK089

T1	TF177
T2	TF083

NOTES:
 1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. 1K-KILO OHM. M-MEG OHM!
 2. RESISTOR WATTAGES ARE 1/4 W UNLESS OTHERWISE NOTED.
 3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P-MICRO-MICRO FARAD)



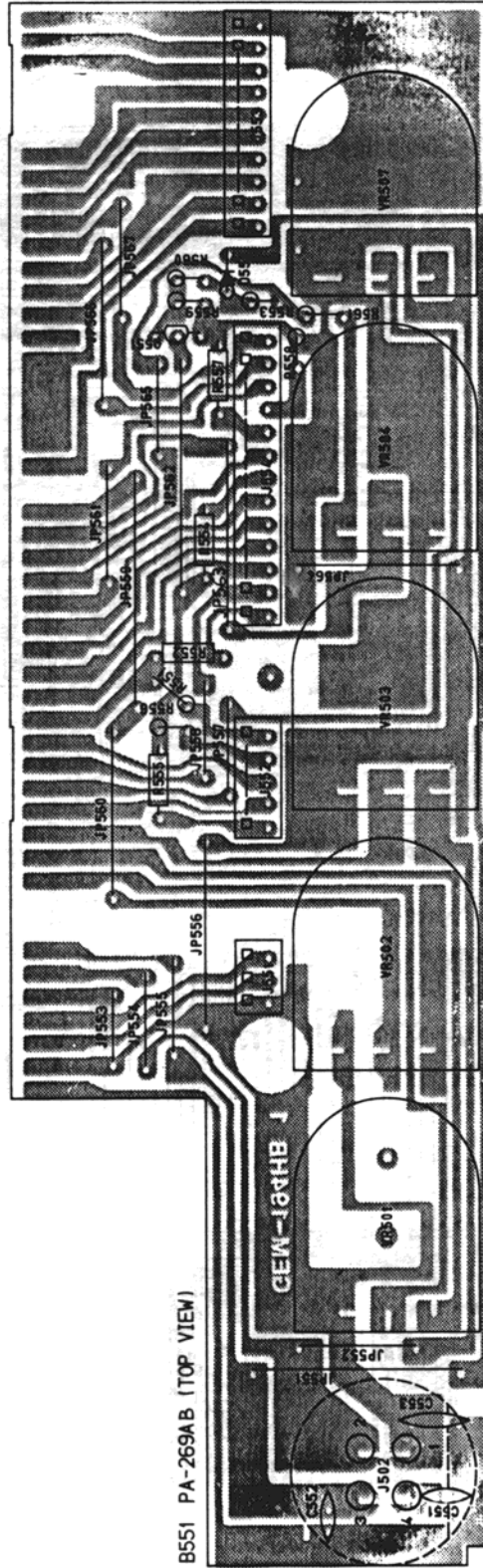
PARTS LAYOUT, FRONT PCB TOP VIEW

R551	330
R552	330
R553	4.7K
R554	220
R555	220
R556	220
R557	220
R558	220
R559	3.3K
R560	4.7K
R561	2.7K

JP551	122.51
JP552	12.51
JP553	17.51
JP554	101
JP555	101
JP556	201
JP557	101
JP558	101
JP559	251
JP560	17.51
JP561	12.51
JP562	251
JP563	201
JP564	17.51
JP565	101
JP566	17.51
JP567	12.51

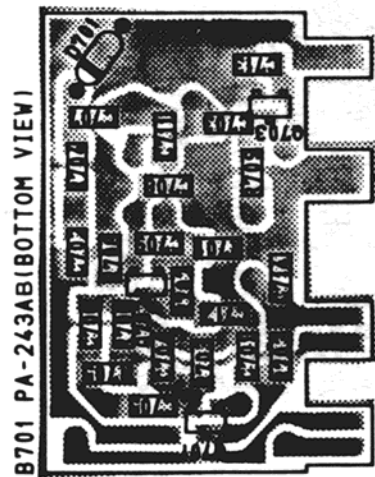
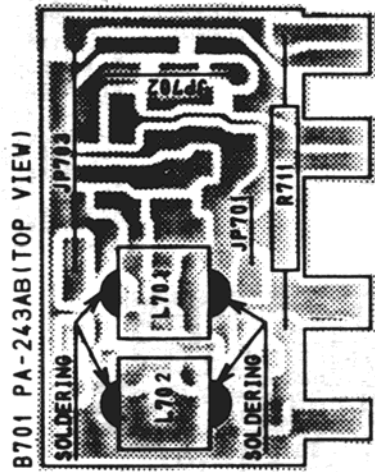
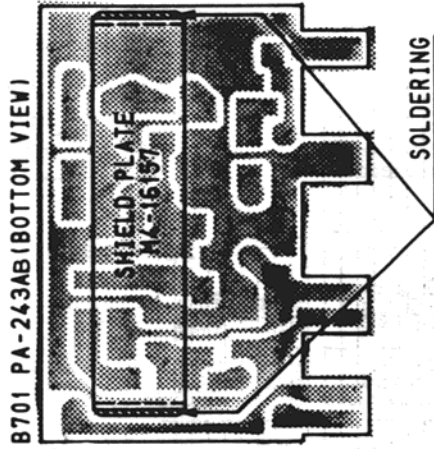
C551	0.0047/7F
C552	0.0047/7F
C553	0.0047/7D
D551	1S1555
J502	JK325
J551	JK221 3P
J552	JK221 5P
J553	JK221 10P
J554	JK221 13P
Q551	25C945A0

VR501	50K A RV616
VR502	5K B RV671
VR503	1K A RV614
VR504	1K B RV613
VR507	50K B RV615



B551 PA-269A B (TOP VIEW)

- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. IN OHMS ONLY IN OHMS ONLY.
 2. RESISTOR WATTAGES ARE 1/8W UNLESS OTHERWISE NOTED.
 3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P-MICRO-MICRO FARAD)



R711	1K

JP701	5
JP702	10
JP703	17.5
L701	LB724
L702	LB723

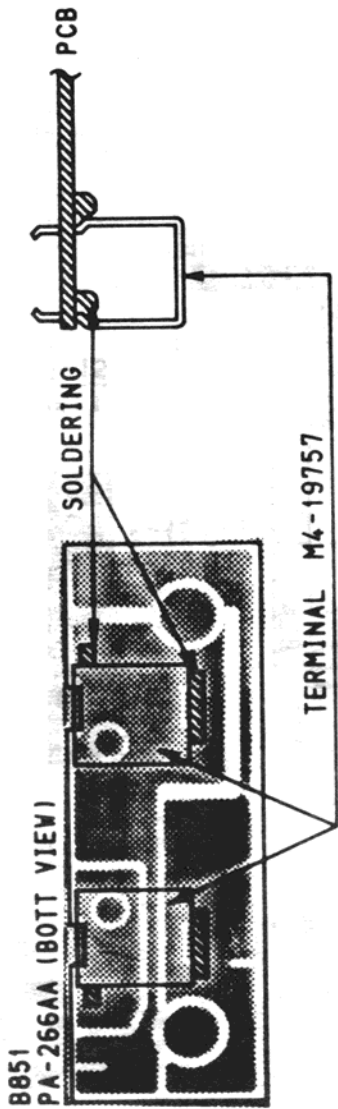
R701	33K
R702	100
R703	390
R704	10K
R705	39K
R706	100
R707	15K
R708	330
R709	56K

C701	39P/5L
C702	0.01/B
C703	0.01/B
C704	0.01/B
C705	39P/5L
C706	15P/CG
C707	47P/UJ
C708	100P/UJ
C709	330P/UJ
C711	39P/C G
C712	68P/5L
C713	0.01/B
C714	0.01/B

D701	15V73EB

C701	25C2814F5
C702	25C2814F5
C703	25C2814F5

- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K-KILO OHM, M-MEG OHM)
 2. RESISTOR WATTAGES ARE 1/8W UNLESS OTHERWISE NOTED.
 3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P-MICRO-MICRO FARAD)

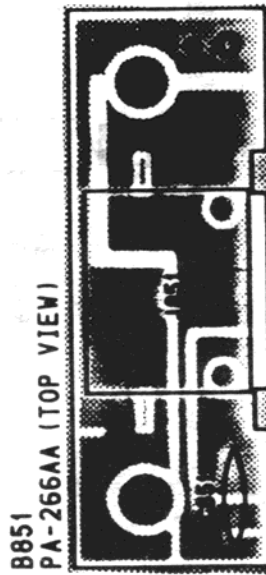


(TOP)

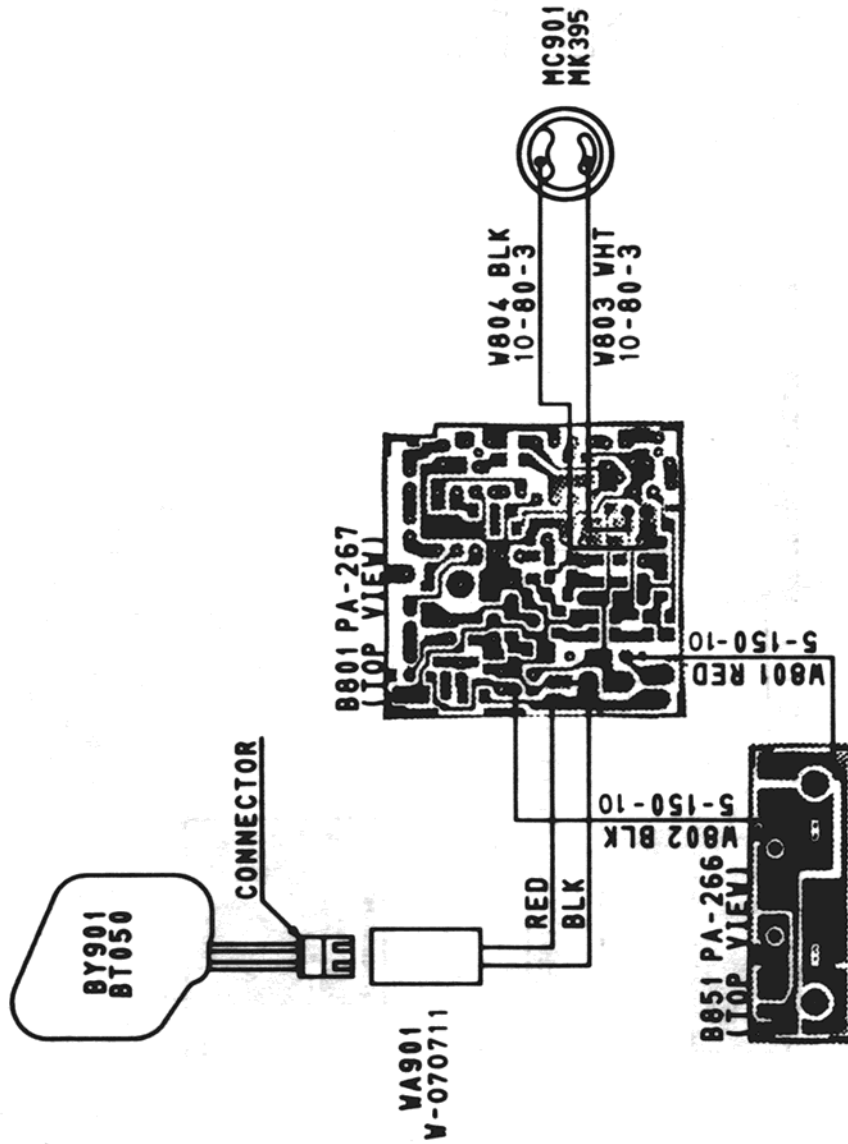
C851	0.0471SR1
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J851	JK410
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NOTES:
1. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS
UNLESS OTHERWISE NOTED. (P-MICRO-MICRO FARAD)



WIRING DIAGRAM, MIC. JACK PCB

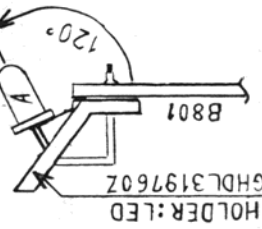


UT320/PA267 ::52:1

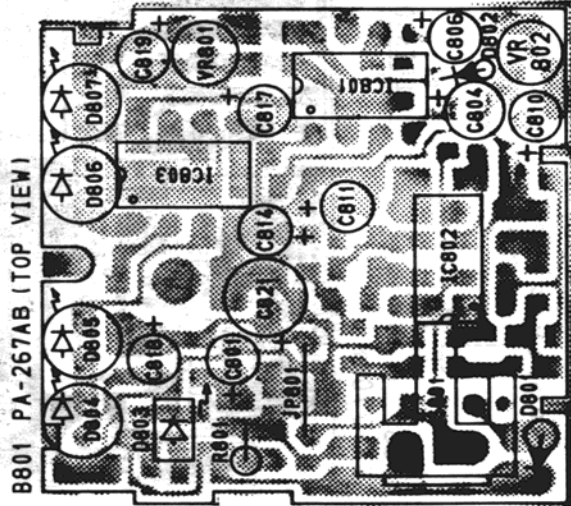
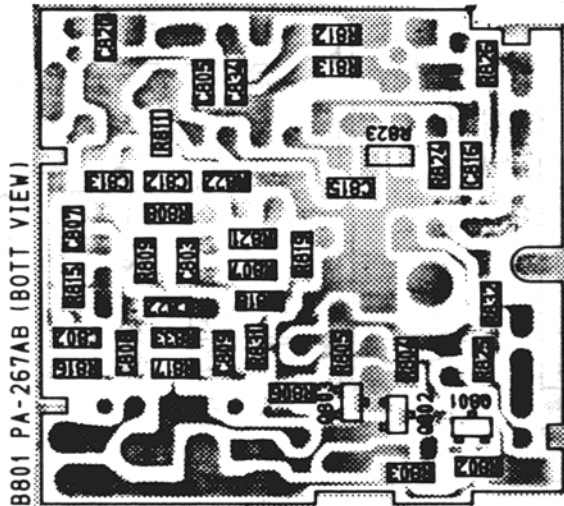
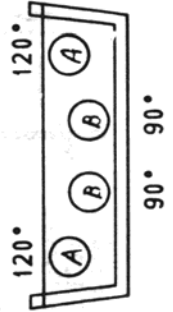
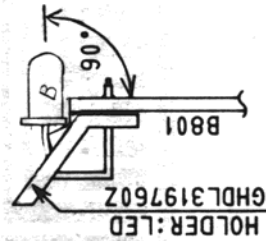
(TOP)

C801	16V 10
C804	50V 0.47
C806	50V 1
C810	35V 4.7
C811	35V 2.2(1T)
C814	35V 2.2(1T)
C817	35V 4.7
C818	50V 1
C819	50V 1
C821	10V 47

S_801	SW561
VR801	47K B RT527
VR802	47K B RT528



D804, D807-120°
D805, D806-90°



R802	1K
R803	1K
R804	10K
R805	56K
R806	10K
R807	120K
R808	10K
R809	1K
R811	100
R812	3.3K
R813	10K
R815	5.6K
R816	12K
R817	12K
R818	1.8K
R819	5.6K
R821	100
R822	15K
R823	27K
R824	10K
R825	22
R826	22
R831	RZ025
R832	RZ025
R833	RZ025
R834	RZ025

S_801	SW561
VR801	47K B RT527
VR802	47K B RT528

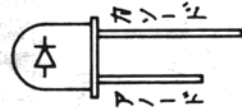
(BOTT)

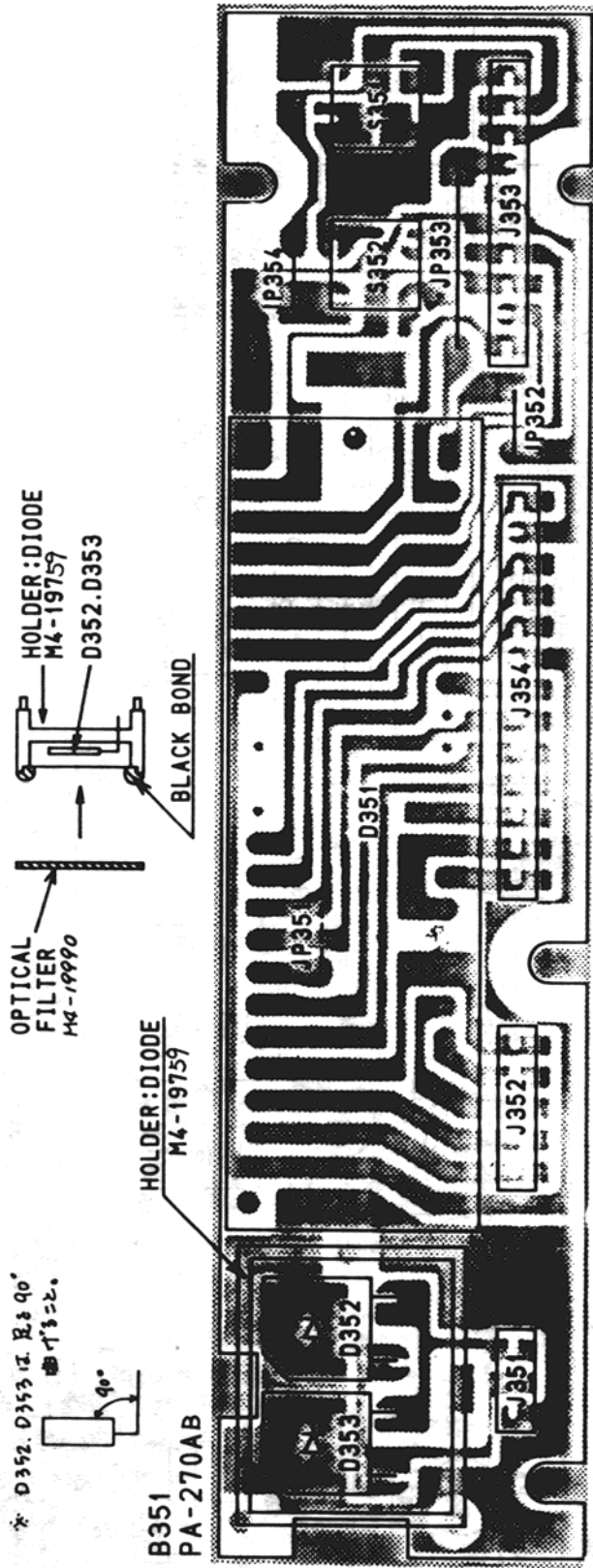
C802	0.047/B
C803	220P/B
C805	270P/CG
C807	390P/B
C808	0.0047/X
C809	0.039/C
C812	0.0047/C
C813	0.0047/X
C815	0.0047/X
C816	0.0047/X
C820	0.001/B
C822	0.047/C

Q801	25C2812L5
Q802	25C2812L5
Q803	25C2812L5

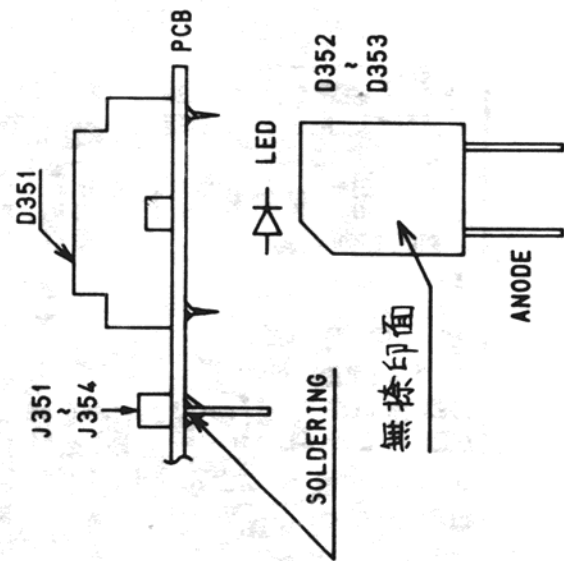
LED: NJL1120L

- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. 1K-KILO OHM, M-MEG OHM
 2. RESISTOR VATTAGES ARE 1/6W UNLESS OTHERWISE NOTED.
 3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P-MICRO-MICRO FARAD)





* D352, D353 is 2.8 x 90°
 90°

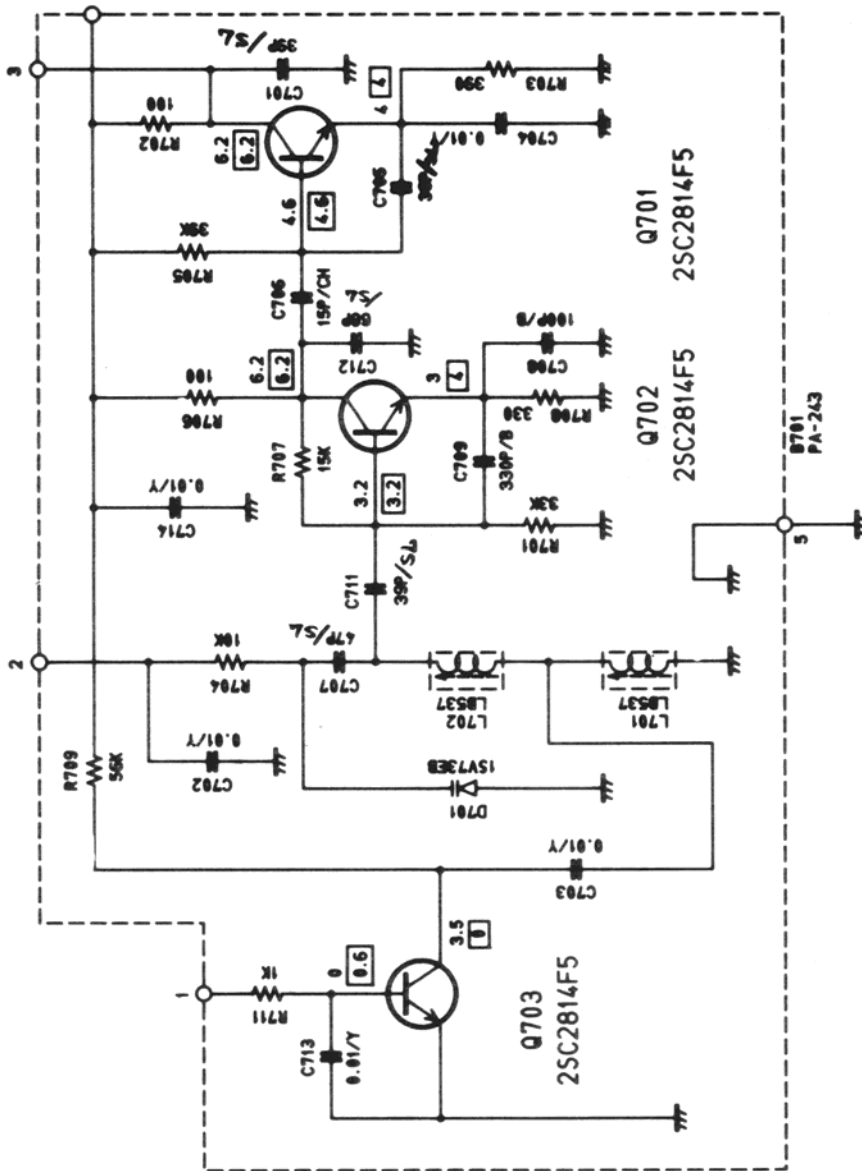


JP351	(51)
JP352	(51)
JP353	(151)
JP354	(51)

D351	LL2955
D352	PD49PI
D353	PD49PI

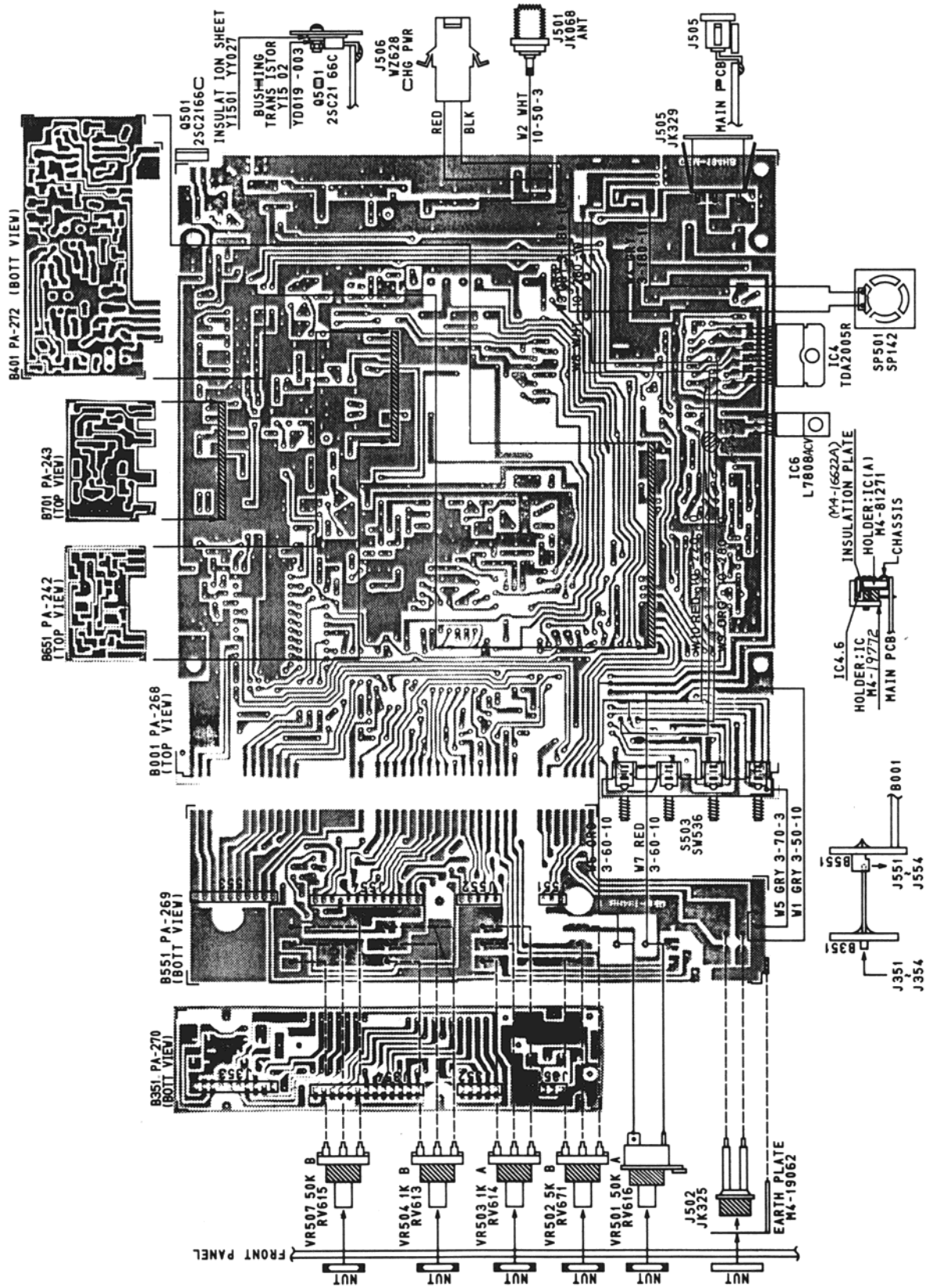
S351	SV539
S352	SV539

J351	JK328 3P
J352	JK328 5P
J353	JK328 10P
J354	JK328 15P



- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K-KILO OHM, M-MEG OHM)
 2. RESISTOR WATTAGES ARE 1/8W UNLESS OTHERWISE NOTED.
 3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P-MICRO-MICRO FARAD)

WIRING DIAGRAM, 33 PLUS

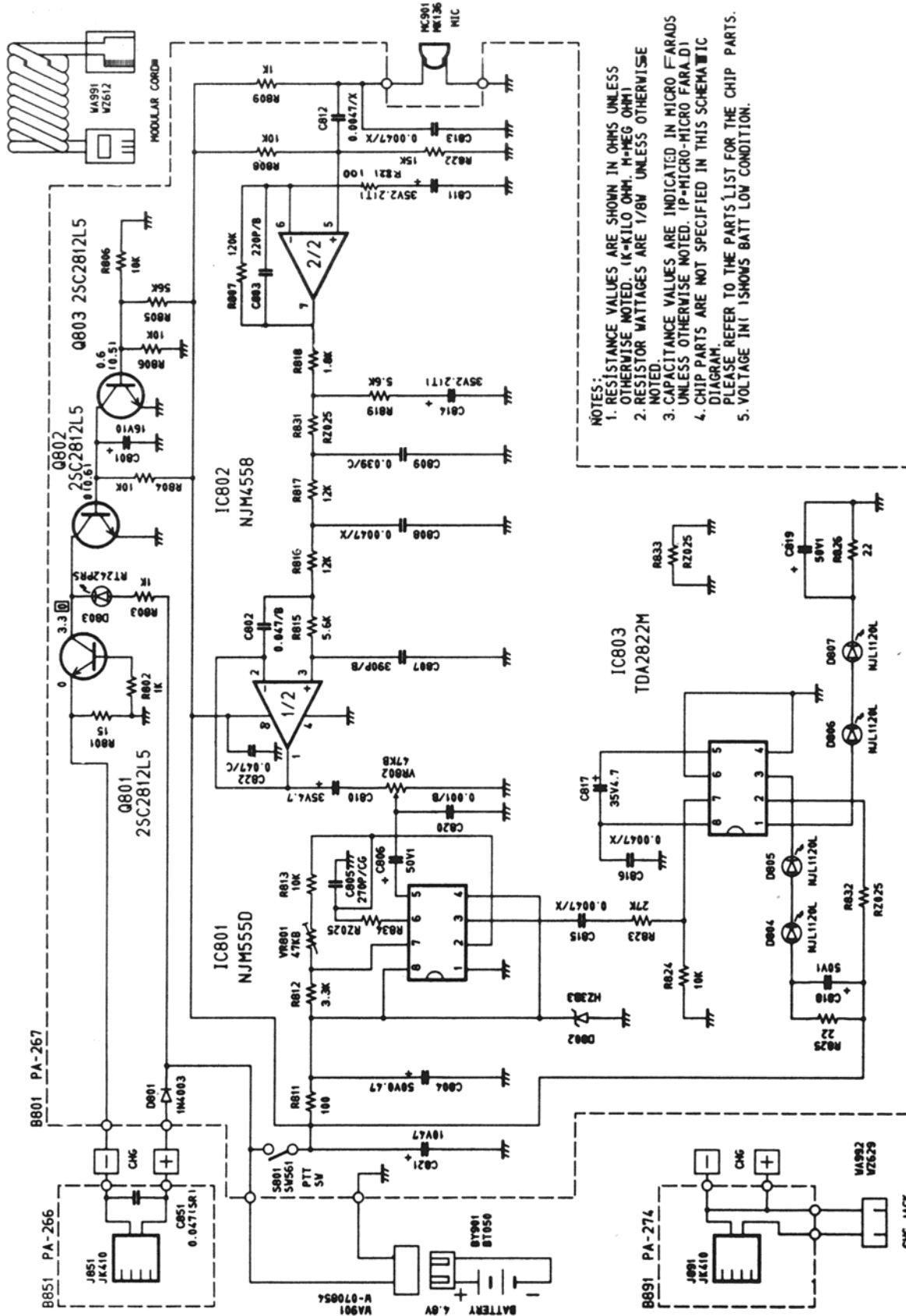


VOLTAGE CHART IC'S

IC NO.	IC NAME	PIN No.	RX (V)	TX (V)
403	NJM4558D	1	4.4	4.4
		2	4.4	4.4
		3	4.4	4.4
		4	0	0
		5	5.2	4.3
		6	4.7	4.3
		7	6.8	1.4
		8	8.0	8.0
801	NJM555D	1	0	0
		2	1.6	1.6
		3	1.3	1.3
		4	3.3	3.3
		5	2.2	2.2
		6	1.6	1.6
		7	1.6	1.6
		8	3.3	3.3
802	NJM4558	1	2.8	2.8
		2	2.8	2.8
		3	2.8	2.8
		4	0	0
		5	2.8	2.8
		6	2.8	2.8
		7	2.8	2.8
		8	4.7	4.7
803	TDA2822M	1	2.1	2.1
		2	4.7	4.7
		3	2.1	2.1
		4	0	0
		5	0.6	0.6
		6	0	0
		7	0	0
		8	0.6	0.6

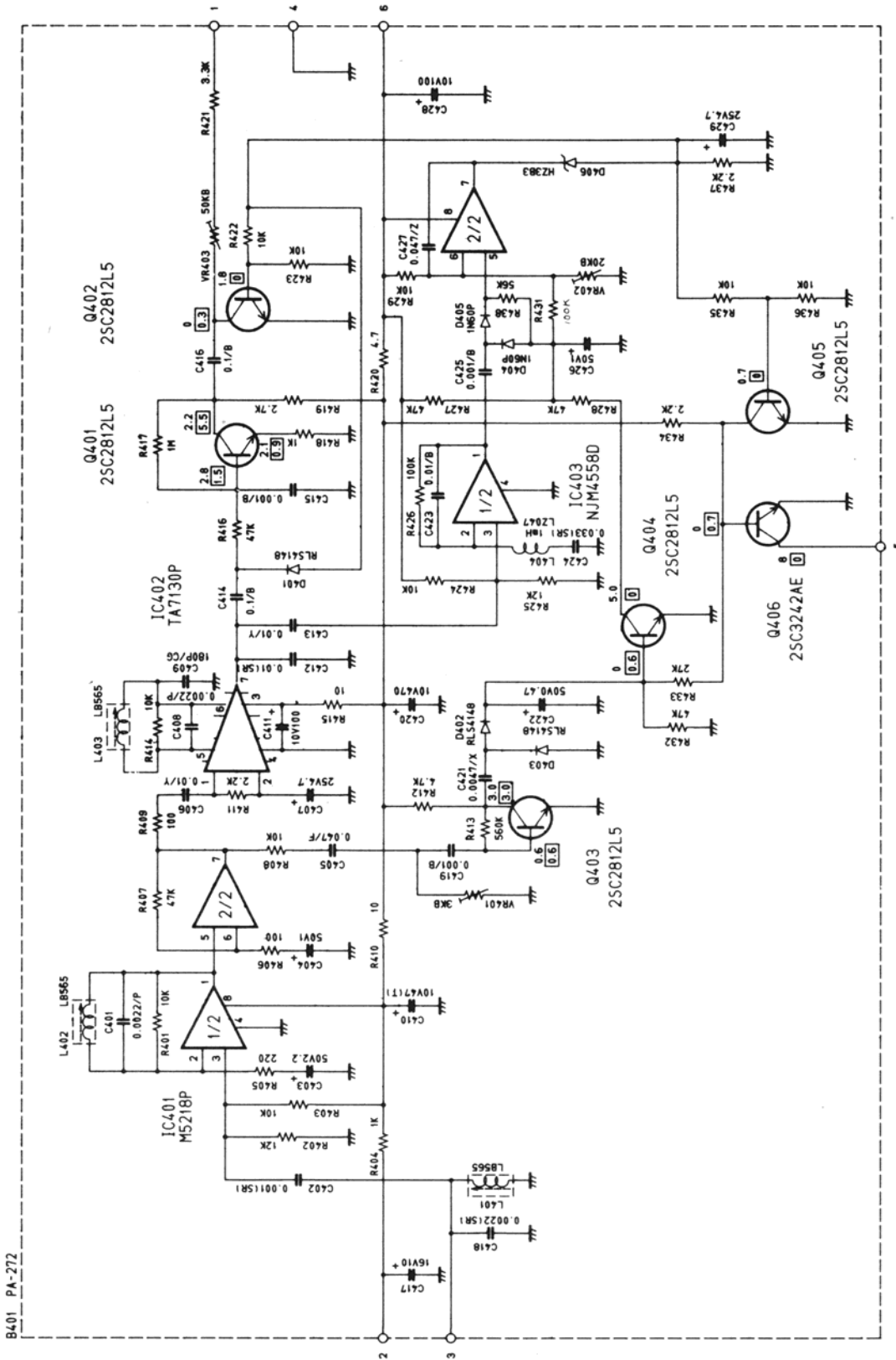
IC NO.	IC NAME	PIN No.	RX (V)	TX (V)
4	TDA2005R	1	1.3	1.3
		2	0.7	0.7
		3	8.3	8.0
		4	0.7	0.9
		5	1.3	1.3
		6	0	0
		7	13.3	12.9
		8	6.8	0.2
		9	13.6	13.2
		10	6.6	6.4
		11	13.3	12.8
5	LB1417	1	8.0	8.0
		2	2.8	2.8
		3	2.8	2.8
		4	0	0.3
		5	0	0.4
		6	0	3.4
		7	0	0
		8	5.5	0.6
		9	5.5	0.7
		10	5.5	0.5
		11	5.6	0.5
		12	5.5	0.2
		13	5.5	0.2
		14	5.5	0.3
6	T7808ACV	1	13.5	13.1
		2	0	0
		3	0.0	8.0
401	M5218P	1	4.3	4.3
		2	4.3	4.3
		3	4.3	4.3
		4	0	0
		5	4.3	4.3
		6	4.3	4.3
		7	4.3	4.3
		8	7.8	7.8
402	TAT130P	1	1.8	1.8
		2	1.8	1.8
		3	7.8	7.8
		4	0	0
		5	3.7	3.7
		6	3.7	3.7
		7	4.3	4.3

IC NO.	IC NAME	PIN No.	RX (V)	TX (V)
1	M5223L	1	0.02	0.5
		2	0.01	0.3
		3	0	0
		4	0	0
		5	0	0
		6	0.5	1.1
		7	0	0
		8	8.0	8.0
2	SM5125B (19ch)	1	2.9	2.9
		2	2.9	2.9
		3	0.2	0.2
		4	0.2	0.2
		5	2.9	2.9
		6	5.5	5.5
		7	2.9	2.9
		8	2.9	2.9
		9	0	0
		10	2.9	2.9
		11	2.8	2.8
		12	0	0
		13	2.6	2.6
		14	5.5	5.5
		15	0	0
		16	5.5	5.5
3	LB1710	1	2.9	2.9
		2	2.9	2.9
		3	5.5	5.5
		4	2.9	2.9
		5	0.2	0.2
		6	0.2	0.2
		7	2.9	2.9
		8	0	0
		9	5.5	5.5
		10	2.0	2.0
		11	0.7	0.7
		12	0.7	0.7
		13	2.0	2.0
		14	3.4	3.4
		15	2.0	2.0
		16	2.0	2.0



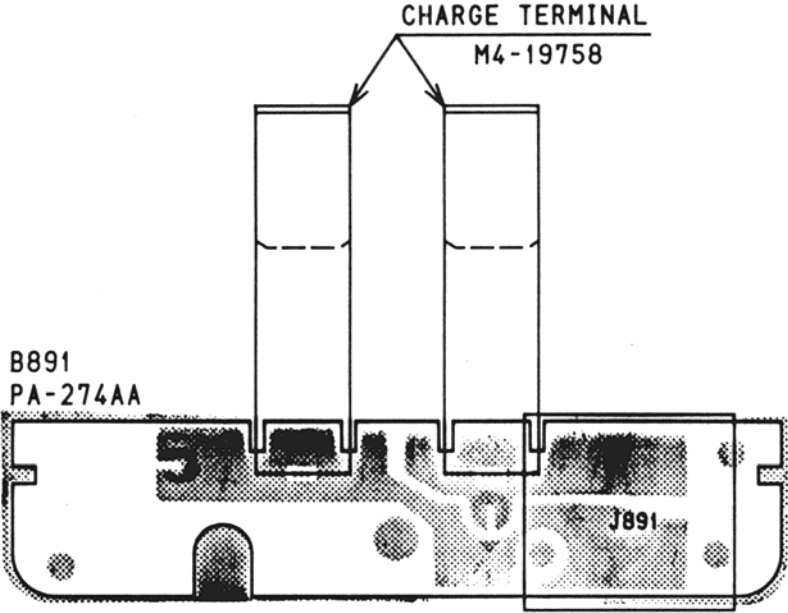
- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. 1K=KILO OHM. M=MEG OHM
 2. RESISTOR WATTAGES ARE 1/8W UNLESS OTHERWISE NOTED.
 3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P=PICO-MICRO FARAD)
 4. CHIP PARTS ARE NOT SPECIFIED IN THIS SCHEMATIC DIAGRAM.
 5. VOLTAGE IN I SHOWS BATT LOW CONDITION.

SCHEMATIC, I.R. RECEIVER



- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K-KILO OHM, M-MEG OHM)
 2. RESISTOR WATTAGES ARE 1/8W UNLESS OTHERWISE NOTED.
 3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P-MICRO-MICRO FARAD)
 4. CHIP PARTS ARE NOT SPECIFIED IN THIS SCHEMATIC DIAGRAM.
 5. PLEASE REFER TO THE PARTS LIST FOR THE CHIP PARTS.
 6. VOLTAGE IN SHOWS TX CONDITION.
 7. VOLTAGE IN SHOWS RX CONDITION.

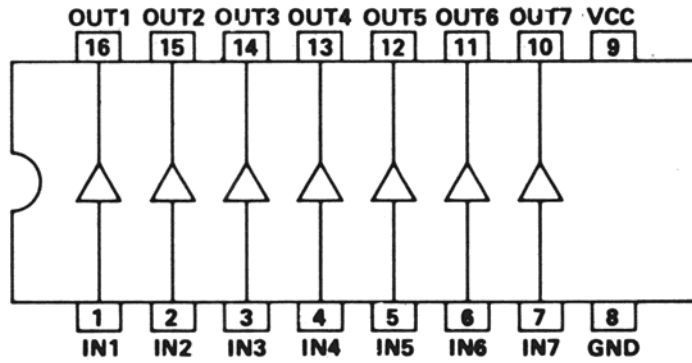
PARTS ASSEMBLY, CHARGE CRADLE PCB, TOP VIEW



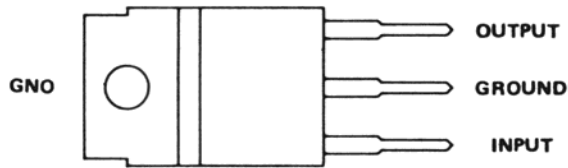
J891	JK410

IC DIAGRAMS 8-8071, L-7808CV, LL-7808CV

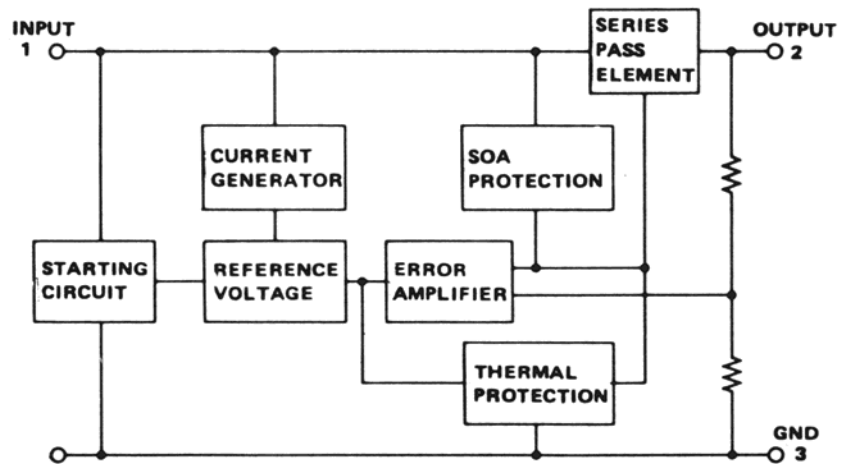
8-8071



L7808CV

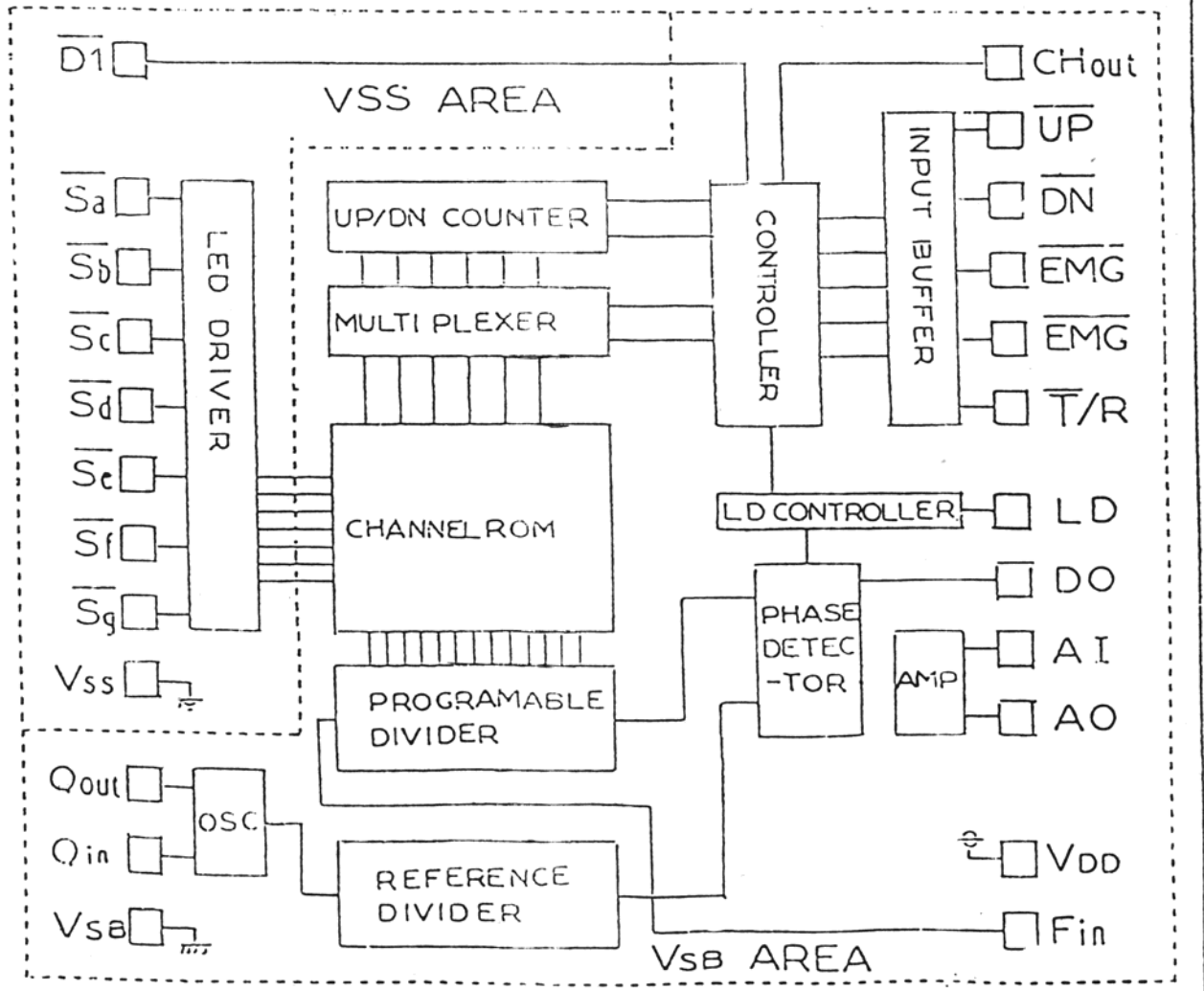
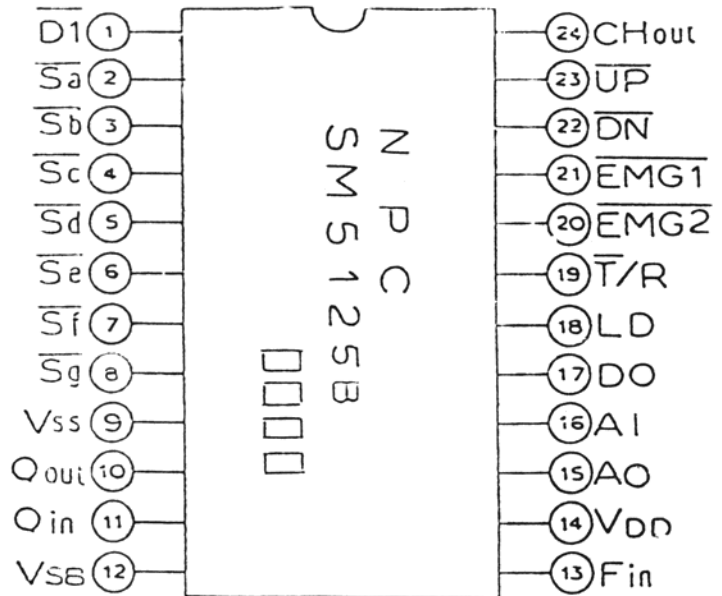


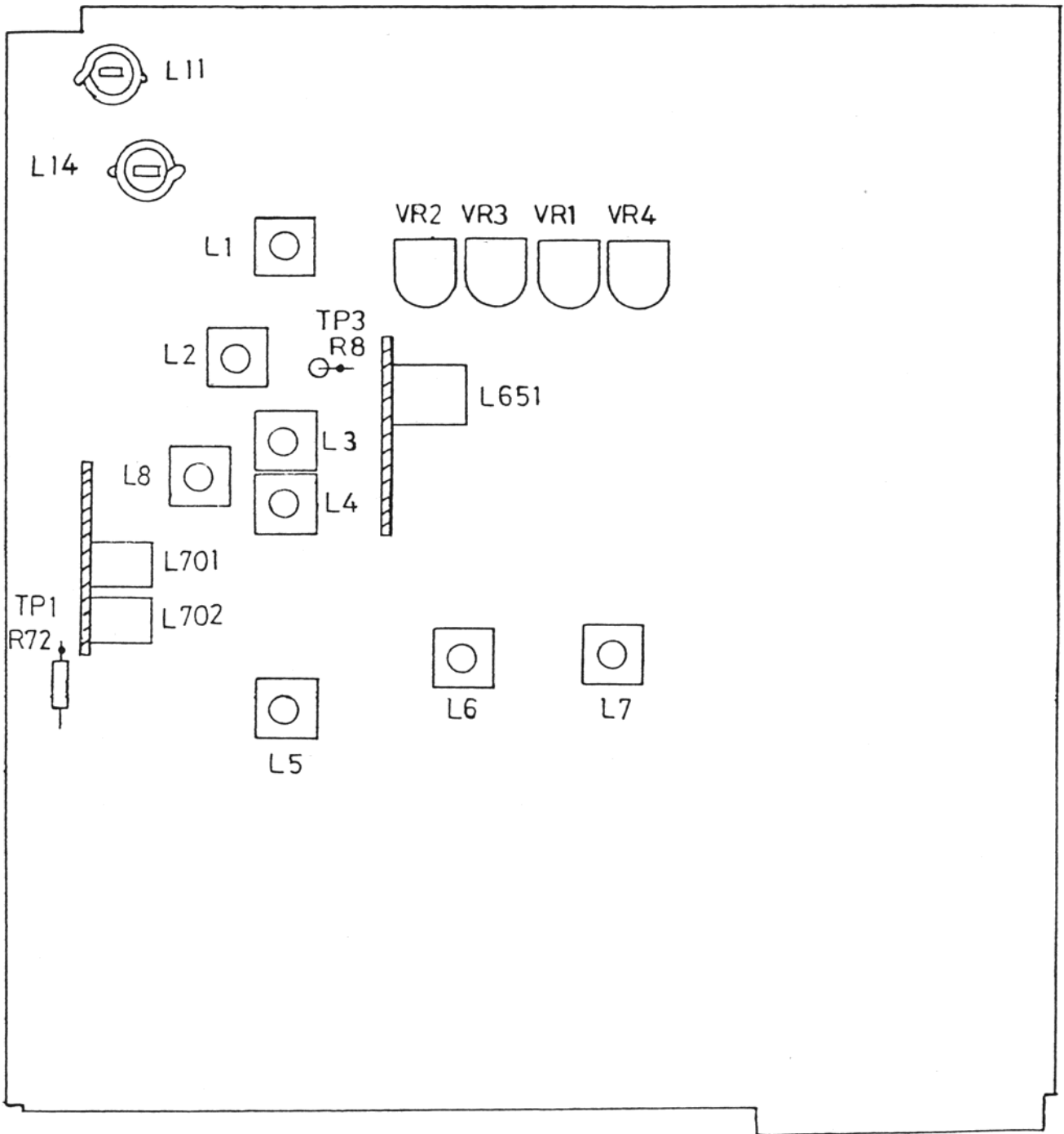
LL7808CV



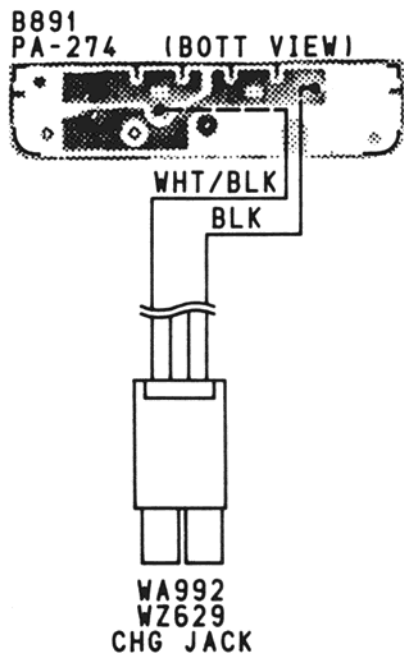
4. 端子接続及び
ブロック図

TOP VIEW

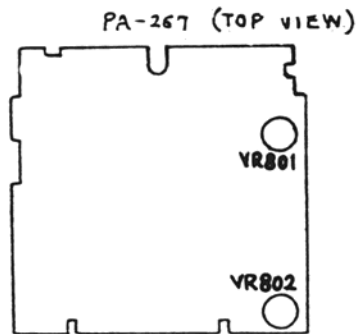




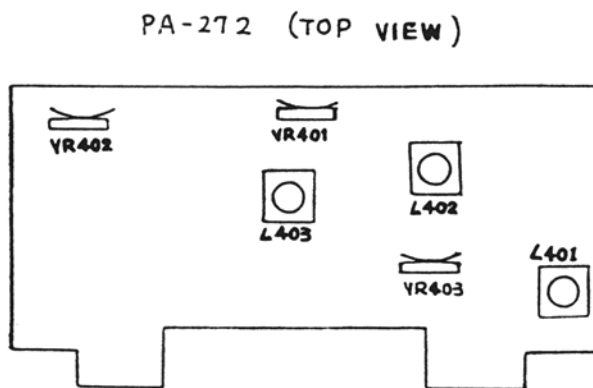
WIRING DIAGRAM, CHARGE CRADLE

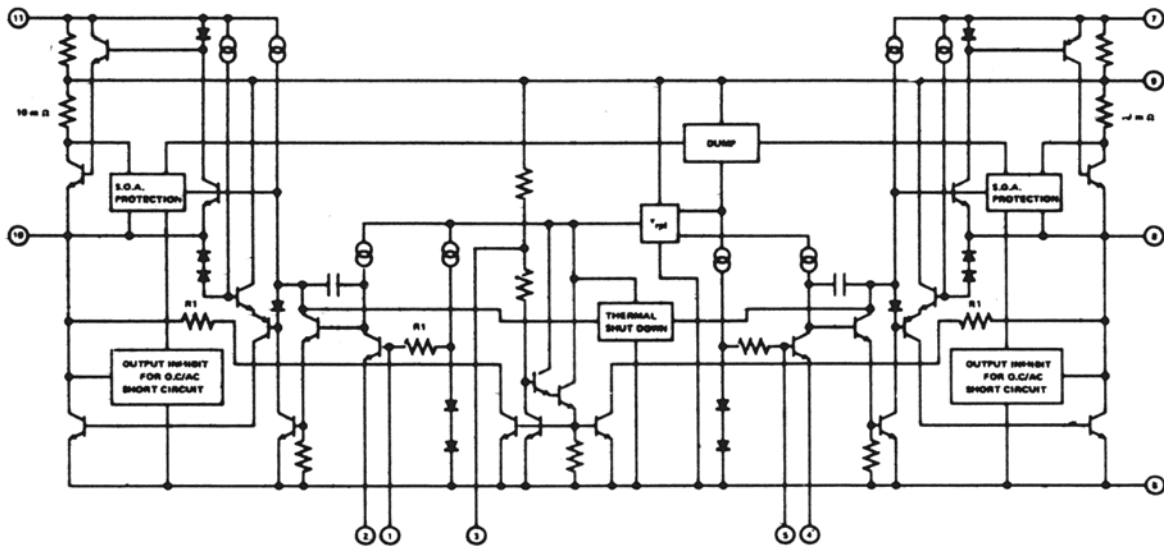
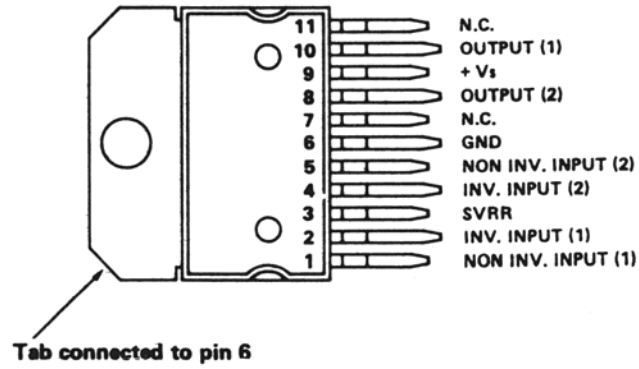


ALIGNMENT POINT OF I-R MIC PORTION



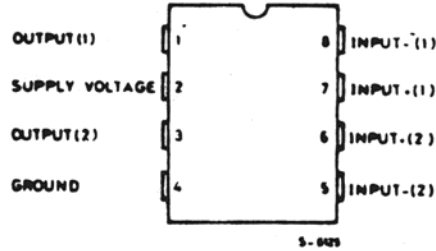
ALIGNMENT POINT OF I-R RCVR PORTION



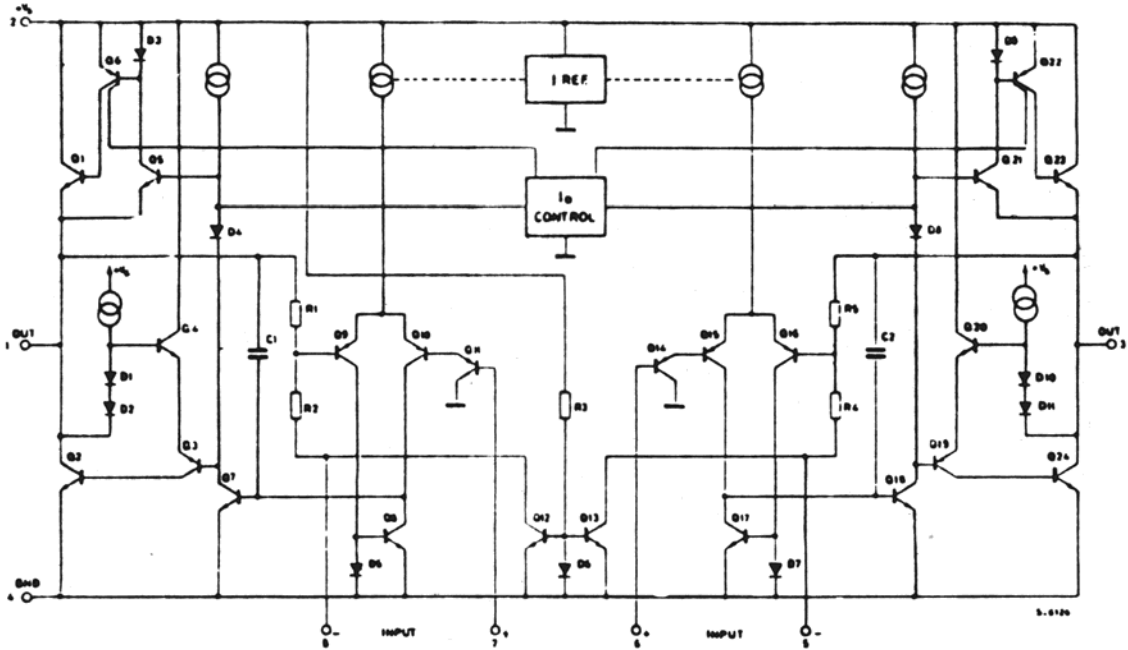


IC DIAGRAM TDA 2822 M

CONNECTION DIAGRAM
(top view)



SCHEMATIC DIAGRAM

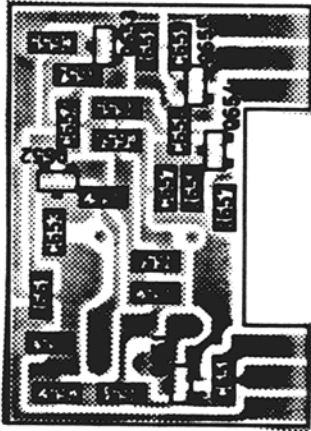


THERMAL DATA

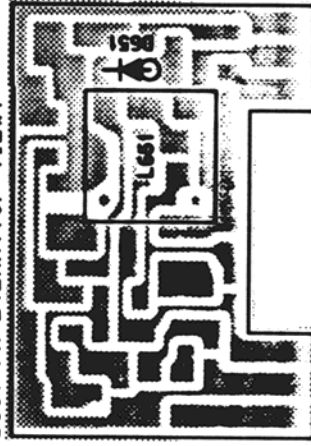
$R_{th j-amb}$	Thermal resistance junction-ambient	max 100 °C/W
$R_{th j-case}$	Thermal resistance junction-pin (4)	max 70 °C/W

PARTS LAYOUT, NB PCB 33 PLUS

B651 PA-242AA (BOTTOM VIEW)



B651 PA-242AA (TOP VIEW)



R-651	220K
R-652	2.2K
R-653	2.2K
R-654	2.2M
R-655	10K
R-656	1K
R-657	60K
R-658	47K
R-659	100K
R-661	R2025
R-662	R2025

C651	15P/CH
C652	0.01/Y
C653	0.01/Y
C654	220P/B
C655	220P/B
C656	0.01/Y
C657	600P/B
C658	0.01/Y
C659	0.01/Y

Q651	25C2814F5
Q652	25C2814F5
Q653	25C2812L5
Q654	2SA1179M6
Q655	25C2812L5

D651	1N60AM

L651	LA181

- NOTES:
1. RESISTANCE VALUES ARE SHOWN IN OHMS UNLESS OTHERWISE NOTED. (K-KILO OHM, M-MEG OHM)
 2. RESISTOR WATTAGES ARE 1/8W UNLESS OTHERWISE NOTED.
 3. CAPACITANCE VALUES ARE INDICATED IN MICRO FARADS UNLESS OTHERWISE NOTED. (P-MICRO-MICRO FARAD)

PARTS LIST 33 PLUS

PARTS LIST 33 PLUS

SYMBOL	DESCRIPTION	PART NO.	SYMBOL	DESCRIPTION	PART NO.
BY901	BAI I EHY B1-UBU 4N-500AA	213 016 9 001	J354	JACK JK-328 5551-13	777 083 9 002
D1, 2, 26, 651	DIODE 1N60 AM	150 014 9 001	J505	JACK JK-329	777 050 9 008
D4, 404, 405	DIODE 1N60 P	150 006 9 001	J851, 891	JACK: FCC MODULAR JK-410	777 083 9 003
D16, 24, 25, 801	DIODE 1N4003	151 083 9 001	L1	COIL LA-029 TKXN-22160BU	060 023 9 001
D5, 6, 7, 9, 10, 11, 13, 14, 15, 17, 18, 19, 20, 21, 22, 23, 551	DIODE 1S1555	151 030 9 001	L3	COIL LA-120 TKAC-24073F	046 037 9 001
	DIODE 1N4148	151 038 9 001	L5, 6	COIL LA-163 ROC-42066N	060 022 9 001
D701	DIODE 1SV73-EB	151 137 9 001	L8	COIL LA-166 TKXC-18501N	066 025 9 005
D3	DIODE 1N4148	151 038 9 001	L651	COIL LA-181 TKAC-19073N	060 024 9 002
D406, 802	DIODE: ZENER HZ383	152 183 9 001	L7	COIL LA-204 RMC-41997N	046 024 9 003
D8, 12	DIODE: ZENER HZ6A-3	152 156 9 001	L2	COIL LA-260 TKXC-25114N	060 030 9 014
D803	DIODE: LED RT-242 PRS	158 070 9 003	L4	COIL LA-277 TKAC-25365N	046 025 9 004
D352, 353	DIODE PD49P1	151 154 9 001	L701, 702	COIL LB-537 V113CN-6851BS	047 070 9 003
D351	DIODE: LED LL-2955	158 099 9 001	L401, 402, 403	COIL LB-565 126LNS-7372Z	047 072 9 001
D401, 402, 403	DIODE RLS4148 TAPING	151 038 9 001	L14	COIL LC-072	044 040 9 001
D804, 805, 806, 807	DIODE:INFRA RED EMITTING NJL1120L	158 099 9 002	L11	COIL LC-074	044 040 9 002
Q11, 22, 24, 29	TRANSISTOR DB-027 2SA733A-PB	177 107 9 001	L13	COIL LD-087 BF04-3*5*1	047 062 9 007
Q654	TRANSISTOR DB-048 2SA1179-M6	177 111 9 001	L12	COIL LD-168	047 046 9 001
Q10, 12	TRANSISTOR DB-106 2SB525-C	177 045 9 001	L9, 10	COIL LE-096 8 1/2T	047 044 9 001
Q8, 20	TRANSISTOR DB-301 2SC941TM-0	176 089 9 004	L15	COIL LE-187 D4.0 7T	041 128 9 002
Q9, 14, 15, 17, 18, 23, 26, 27, 28, 30, 551	TRANSISTOR DB-224 2SC945A-0	176 062 9 001	L404	INDUCTOR MOLDED LZ-047 1000UH	047 072 9 002
Q3	TRANSISTOR DB-295 2SC1674-L	176 081 9 002	MC901	MICROPHONE MK-136	565 001 9 001
Q1, 2, 5, 6, 7, 16, 21	TRANSISTOR DB-259 2SC1675-L	176 065 9 001	X1	CRYSTAL QX-250 10.2419M	135 078 9 001
Q19	TRANSISTOR DB-228 2SC2086-D	176 108 9 002	VR2	RES:SEMI-FIXED RT-182 TT24R 20KB	008 450 9 002
Q501	TRANSISTOR DB-331 2SC2166-C	176 108 9 001	VR1, 3, 4	RES:SEMI-FIXED RT-182 TT24R 5KB	008 455 9 003
Q401, 402, 403, 404, 405, 653, 655, 801, 802, 803	TRANSISTOR DB-743 2SC2812-L5 TAPING	176 219 9 001	VR504	RES:VARIABLE RV-613 RK1631120A3NA 1KB	008 843 9 003
Q651, 652, 701, 702, 703	TRANSISTOR DB-744 2SC2814-F5	176 219 9 002	VR503	RES:VARIABLE RV-614 RK1631120A3MA 1KA	008 843 9 004
Q13, 25, 406	TRANSISTOR DB-383 2SC3242A-E	176 191 9 001	VR507	RES:VARIABLE RV-615 RK1631120A3LA 50KB	008 843 9 005
Q4	FIELD EFFECT TRANSISTOR DC-019 2SK192A-BL	182 076 9 001	VR501	RES:VARIABLE RV-616 RK161121 50KA W/SW	008 843 9 006
IC403, 802	INTEGRATED CIRCUIT NJM4558D	307 333 9 001	VR502	RES:VARIABLE RV-671 RK163111R799-5KB	008 882 9 001
IC402	INTEGRATED CIRCUIT TA7130P	307 218 9 001	SP501	SPEAKER SP-142	580 091 9 001
IC801	INTEGRATED CIRCUIT NJM555D	308 065 9 001	S503	SWITCH:PUSH SW-536 PV1304-002	088 148 9 001
IC401	INTEGRATED CIRCUIT MS218P	307 462 9 001	S351, 352	SWITCH:TACT SW-539 M-6050	084 155 9 001
IC1	INTEGRATED CIRCUIT MS223L	307 459 9 001	S801	SWITCH:TACT SW-561 SKHCLA	088 179 9 001
IC3	INTEGRATED CIRCUIT LB1710	307 415 9 003	T2	TRANSFORMER:AF CHOKE TF-083	042 021 9 001
IC5	INTEGRATED CIRCUIT LB1417	307 415 9 005	T1	TRANSFORMER:OUTPUT TF-177	061 050 9 001
IC803	INTEGRATED CIRCUIT TDA2822M	307 462 9 002	WA951	CORD:DC POWER WZ-520 1500	426 107 9 001
IC2	INTEGRATED CIRCUIT SM5125B	308 406 9 001	WA991	CORD:FCC MODULAR WZ-612	428 179 9 001
IC4	INTEGRATED CIRCUIT TDA2005R	307 462 9 003		HANGER ABS, BLACK, INST	380 589 9 001
IC6	INTEGRATED CIRCUIT L7808ACV	307 462 9 004		PANEL:FRONT ABS, BLACK	255 263 9 001
FT1	FILTER FL-222 UMF-269 10.692	140 042 9 001		WINDOW PMMA, GRAY SMOKE	753 037 9 001
FT2	FILTER: CERAMIC FL-231 CFU450HT 450KHZ	140 042 9 002		BUTTON:PTT ABS, BLACK	384 112 9 001
J501	JACK JK-068 N-7512	772 036 9 001		BUTTON:PUSH(PA) ABS, CR, SILK BLACK	384 109 9 005
J3, 4	JACK JK-089 HSJ0615	773 086 9 001		BUTTON:PUSH (DIM) ABS, CR, SILK BLACK	384 109 9 006
J551	JACK JK-221 3P	777 081 9 001		BUTTON:PUSH (CH9) ABS, CR, SILK RED	384 109 9 007
J552	JACK JK-221 5P	777 081 9 002		BUTTON:PUSH (DOWN) ABS, CR, SILK BLACK	384 109 9 008
J553	JACK JK-221 10P	777 050 9 002		BUTTON:PUSH (UP) ABS, CR, SILK BLACK	384 109 9 009
J554	JACK JK-221 13P	777 083 9 001		BUTTON:PUSH (ANL/NB) **	384 112 9 002
J502	JACK JK-325 4S-L-D107	777 050 9 005		KNOB ABS, CR	251 335 9 001
J351	JACK JK-328-5551-03H 3P	777 081 9 004		MOUNTING BRACKET SPCC, 1.6T, BLACK PAINT	250 268 9 001
J352	JACK JK-328 5551-05H 5P	777 081 9 005		COVER: BOTTOM VINYPOT, SB-K08, 1.0T BLACK	271 435 9 001
J353	JACK JK-328 5551-10	777 050 9 007		COVER: TOP VINYPOT, SB-K08, 1.0T BLACK	271 435 9 003
				HANGER: MICROPHONE SPCC, 1.0T, NI	741 080 9 001
				OPTICAL FILTER NITTO NIR81, 1.0T	753 037 9 002