



**Electrical Parts List, Controllers**

**NCN6147B, NCN6150B**

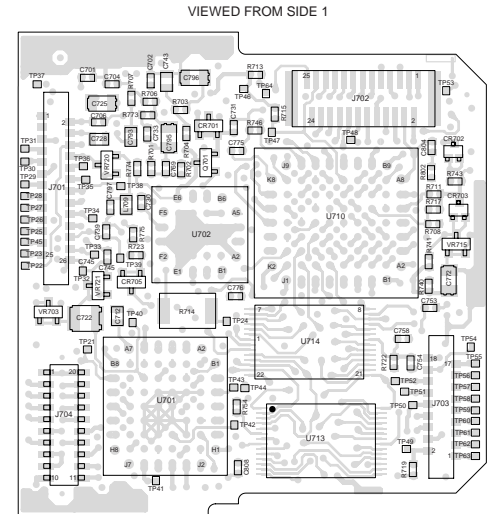
REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
		<b>CAPACITOR, Fixed; pF±5%; 50V unless stated</b>
C700 thru 708	2113741F17	470
C709	2113743A23	0.22µF
C710	2311049J11	4.7µF
C711	2311049A07	1µF
C712, 713	2113743A19	0.1µF
C714, 715	2113743K15	0.1µF
C716, 717	2113741F49	10nF
C718	2113743K15	0.1µF
C719	2311049A01	0.1µF
C720	2113741F49	10nF
C721	2113743K15	0.1µF
C722	2311049A09	2.2µF
C723	2113743A23	0.22µF
C724	2113740F44	51
C725	2311049A07	1µF
C726	2113743F12	0.33µF
C727	2311049A07	1µF
C728	2113743F12	0.33µF
C729	2311049A07	1µF
C730	2113741F41	4700
C731	2113743K15	0.1µF
C732	2311049A57	10µF
C733	2113743K15	0.1µF
C734	2311049J23	10µF
C735 thru 738	2113741F17	470
C739	2113740F39	33
C740 thru 742	2113741F17	470
C743	2113741A49	15nF
C744	2113741F49	10nF
C745	2113740F39	33
C746 thru 757	2113741F17	470
C758	2113743K15	0.1µF
C759 thru 761	2113741F17	470
C762	2113743K15	0.1µF
C763	2113740F36	24
C764	2113740F44	51
C765	2113743K15	0.1µF
C766	2311049A42	3.3µF
C767	2113743K15	0.1µF
C768	2113741F13	330
C769	2113741F17	470
C770	2311049J23	10µF
C771	2113743K15	0.1µF
C772	2311049A42	3.3µF
C773	-----	Not Placed
C774, 775	2113741F17	470
C776	2113743K15	0.1µF
C777	2311049A07	1µF
C778	2113743K15	0.1µF
C779	-----	Not Placed
C780 thru 786	2113741F17	470
C787	2113740F39	33
C788 thru 790	2113741F17	470
C791	2113741F20	620
C792	2113741F13	330
C793	2113743A19	0.1µF
C794	2113743K15	0.1µF
C795, 796	2311049A56	4.7µF
C797	2113740F51	100
C798	2311041F49	10nF
C799	2113740F39	33
C804	2113741F41	4700
C808	2113741F17	470
C810	2113740F46	62

CR811	2113741F17	470
CR701	4813825A05	Hot Carrier, 30V
CR702 thru 704	4805218N57	Dual
CR705	4813833C02	Dual
CR706	4805218N57	Dual
J701	0905257V04	Connector, 26-pin; to P701 on Front Cover Display Flex
J702	0913915A11	Connector, 25-pin (NCN6150B Not Used (NCN6147B))
J703	0905257V03	Connector, 18-pin; to P703 on Controls Flex
J704	0905461X03	Connector, 20 contacts; to P704 Strip Connector
L704	2462587Q40	270nH
L705	0660076A41	470Ω resistor (NCN6147B)
L709	2462587Q40	270nH (NCN6150B)
Q701	4805128M40	PNP
Q703	4880048M01	NPN
R700	0662057A65	4.7k
R701	0662057A56	2k
R702	0662057A81	22k
R703	0662057A56	2k
R704	0662057A41	470
R705	0662057R92	47.5k
R706	0662057A56	2k
R707	0662057A41	470
R708	0662057A56	2k
R709	0662057A41	470
R710	0662057A89	47k
R711	0662057A97	100k
R712	0662057A56	2k
R713	0662057A81	22k
R714	0683962T45	68
R715	0662057A97	100k
R716, 717	0662057A81	22k
R718	0662057A97	100k
R719	0662057B02	150k
R720 thru 722	0662057A89	47k
R723	0662057A49	1k
R724	0662057A89	48k
R725	0662057G07	75k
R726	0662057G08	82.5k
R727	0662057A81	22k
R728, 729	0662057A89	47k
R730, 731	0662057C55	150
R732	0662057A73	10k
R736	0662057A81	22k
R738	0662057A81	22k
R739	0662057A73	10k
R740, 741	0662057A81	22k
R743	0662057A73	10k
R746	0662057A97	100k
R747	0662057B02	150k
R749	0662057A73	10k
R750	0662057A97	100k
R753	-----	Not Placed
R754	0662057B47	0
R755	-----	Not Placed

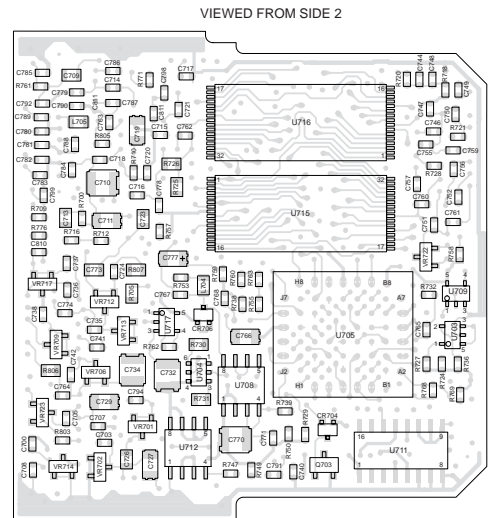
R757	0662057A81	22k
R758	0662057A97	100k
R759	0662057A81	22k
R760	0662057B47	0
R761	0662057A73	10k
R762	0662057B47	0
R763	-----	Not Placed
R768	0662057A81	22k (NCN6147B)
	-----	Not Placed (NCN6150B)
R769	0662057A81	22k (NCN6150B)
	-----	Not Placed (NCN6147B)
R771	0662057B47	0
R773, 774	0662057A41	470
R775	0662057A29	150
R776	-----	Not Placed
R802, 803	0662057A56	2k
R805	0662057A41	470
R806, 807	0662057A29	150
U701	5105835U45	Audio Signalling Filter
U702	5105835U49	Audio PA
U703	4805921T09	Dual Transistor
U704	4805921T07	Transistor, NPN
U705	5105835U47	Microcomputer
U708	5105469E65	SV Regulator
U709	5105750U28	Mux
U710	5185765B30	SLIC
U711	5113806A20	Multiplexer
U712	4805718V01	Transistor
U713	5105109Z22	EEPROM, 32 x 8
U714	5185748L01	SRAM, 32k x 8
U715	5105625U84	256 x 8 FLASH
U716	5105625U84	256 x 8 FLASH (NCN6150B)
	-----	Not Placed (NCN6147B)
U717	-----	Not Placed
VR701, 702	4813830A23	10V
VR703	4813830A18	6.8V
VR706	4813830A15	5.6V
VR709	4813830A15	5.6V
VR712	4813830A33	20V
VR713	4813830A23	10V
VR714	4813830A18	6.8V
VR715	4813830A14	5.1V
VR717	4813830A27	14V
VR720 thru 723	4805117Y01	6.2V
	8405940W40	<b>MISCELLANEOUS:</b> Board, PC

**Notes:**

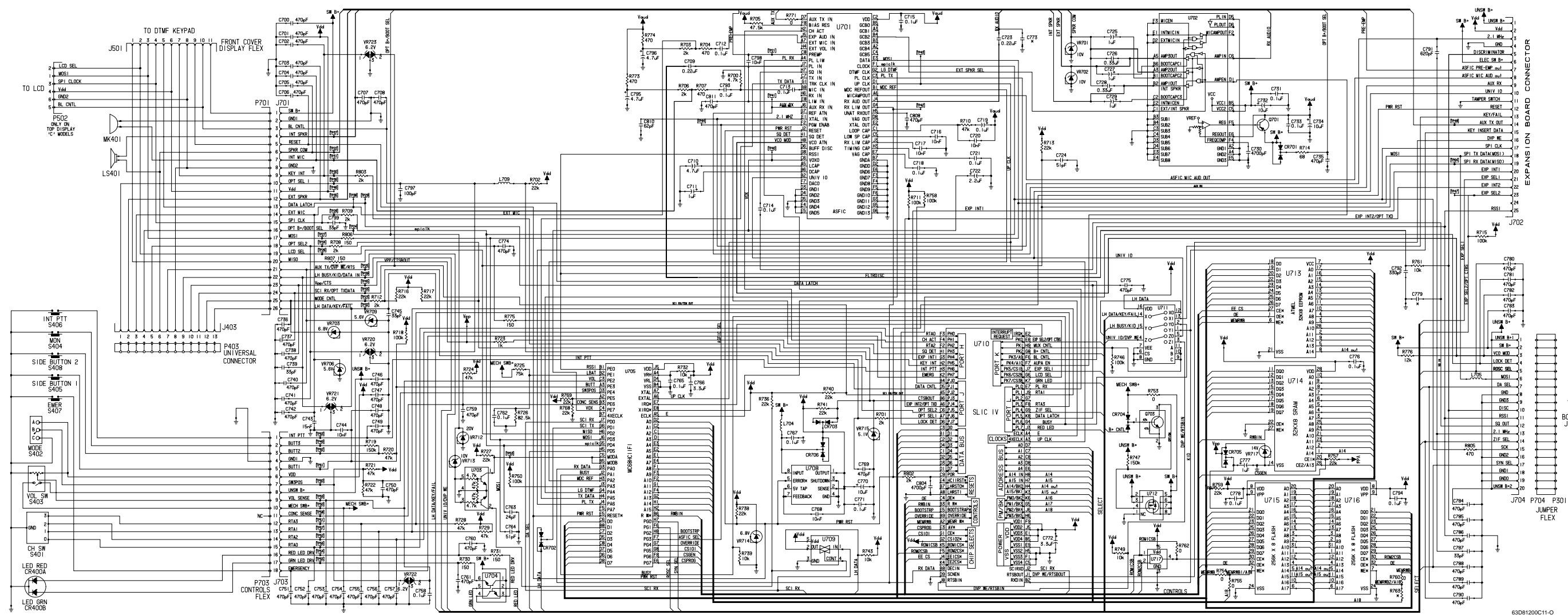
- For optimum performance, order replacement diodes, transistors, and circuit modules by Motorola part number only.
- When ordering crystals, specify carrier frequency, crystal frequency, crystal type number, and Motorola part number.
- "Not Placed" means that components are for future use, and are not placed on the circuit board at this time.



MAEPP-27149-D



MAEPP-27150-D



**Electrical Parts List, Controllers**

**NTN7512D Front Display VHF, UHF and 800MHz Radios**

**NTN7513D Front Display 900MHz Hear Clear Radios**

**NTN7857D Top/No Display VHF, UHF and 800MHz Radios**

**NTN7858D Top/No Display 900MHz Hear Clear Radios**

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
		<b>CAPACITOR, Fixed; pF±5%; 50V unless stated</b>
C601	2113743A19	0.1µF
C602, 603, 604	2113741A33	3.3nF
C605, 606	2113743K15	0.1µF
C607	2113743A23	0.22µF
C608	2113743A19	0.1µF
C609, 610	2311049A04	0.33µF
C611, 612	2311049A42	3.3µF
C613	2113741F17	470
C614	2113741F49	10nF
C615	2113741F17	470
C616	2113743K15	0.1µF
C617	2113741M53	.022µF
C618	2113743A19	0.1µF
C619	2113741F49	10nF
C620	2113741M53	.022µF
C621	2311049A07	1.0µF
C700 thru 708	2113741F17	470
C709	2113743A23	0.22µF
C710	2311049J11	4.7µF
C711	2311049A07	1.0µF
C712, 713	2113743A19	0.1µF
C714, 715	2113743K15	0.1µF
C716, 717	2113741F49	10nF
C718	2113743K15	0.1µF
C719	2311049A01	0.1µF
C720	2113741F49	10nF
C721	2113743K15	0.1µF
C722	2311049A09	2.2µF
C723	2113743A23	0.22µF
C724	2113740F36	24
C725	2311049A07	1µF
C726	2113743F12	0.33µF
C727	2311049A07	1µF
C728	2113743F12	0.33µF
C729	2311049A07	1µF
C730	2113741F41	4.7nF
C731	2113743K15	0.1µF
C732	2311049A57	10µF±10%; 16V
C733	2113743K15	0.1µF
C734	2311049J23	10µF
C735 thru 738	2113741F17	470
C739	2113740F39	33
C740, 741, 742	2113741F17	470
C743	2113741A49	15nF
C744	2113741F49	15nF
C745	2113740F39	33
C746 thru 757	2113741F17	470
C758	2113743K15	0.1µF
C759, 760, 761	2113741F17	470
C762	2113743K15	0.1µF
C763, 764	2113740F36	24
C765	2113743K15	0.1µF
C766	2311049A42	3.3µF
C767	2113743K15	0.1µF
C768	2113741F49	10nF
C769	2113741F17	470
C770	2311049J23	10µF
C771	2113743K15	0.1µF
C772	2311049A42	3.3µF
C773	2113743A19	0.1µF
C774, 775	2113741F17	470
C776	2113743K15	0.1µF
C778	2113743K15	0.1µF
C779	-----	Not Placed

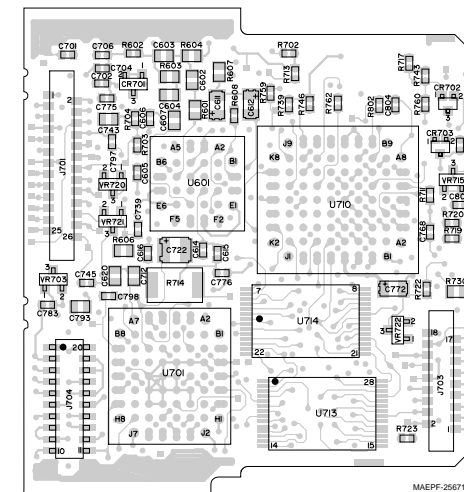
CR701	4880236E05	DIODE: Schottky
CR702, 703, 704	4805218N57	Dual
CR706	4805218N57	Dual
J701	0905257V04	Connector, 26-pin; to P701 on Front Cover Display Flex
J703	0905257V03	Connector, 18-pin; to P703 on Controls Flex
J704	0905461X02	Connector; 20 contacts; to P704 Strip Connector
L701	2462587Q20	2.2µH
L702 thru 705	2462587Q40	70 nH
Q701	4805128M40	PNP
Q703	4880048M01	NPN
R601	0662057G13	100k
R602	0662057A53	1.5k
R603	0662057R60	10k
R604	0662057R30	1k
R605	0662057A97	100k
R606	0662057R92	47.5k
R607	0662057G13	100k
R608	0662057A81	22k
R700	0662057A65	4.7k
R701	0662057A56	2k
R702	0662057A81	22k
R703	0662057A56	2k
R704	0662057A41	470
R705	0662057R92	47.5k
R706	0662057A56	2k
R707	0662057A41	470
R708	0662057A56	2k
R709	0662057A41	470
R710	0662057A89	47k
R711	0662057A97	100k
R712	0662057A56	2k
R713	0662057A81	22k
R714	0683962T45	68
R716, 717	0662057A81	22k
R718	0662057A97	100k
R719	0662057R02	150k
R720, 721, 722	0662057A89	47k
R723	0662057A49	1k
R724	0662057A89	47k
R725	0662057G07	75k
R726	0662057G08	82.5k
R727	0662057A81	22k
R728, 729	0662057A89	47k
R730, 731	0662057C55	150
R732	0662057A73	10k

R736	0662057A81	22k
R738	0662057A81	22k
R739	0662057A73	10k
R740, 741	0662057A81	22k
R743	0662057A73	10k
R746	0662057A97	100k
R747	0662057B02	150k
R749	0662057A89	47k
R750	0662057A97	100k
R751	0660257C01	0
R752	0660057A97	-----
R753	-----	Not Placed
R754	0662057A97	100k
R757	0662057A81	22k
R758	0662057A97	100k
R759	0662057A56	2k
R760	0660257A29	150
R761	0662057A73	10k
R762	0662057A56	2k
R802, 803	0660257A56	2k
R805	0662057A41	470
U601	5105835U50	MODULE: Hear Clear
U701	5105835U45	Audio Signalling Filter
U702	5105835U49	Audio PA
U703	4805921T09	Dual Transistor
U704	4805921T07	Transistor, NPN
U705	5105662U52	Microcomputer
U708	5105469G65	SV Regulator
U709	5105750U28	Mux
U710	5105835U80	SLIC IV
U712	4805718V01	Transistor Package
U713	5105625U98	EEPROM
U714	5185963A21	SCRAM
U715	5105318X01	256 X 8 Masked ROM (for all ke pad radios)
	5105318X02	256 X 8 Masked ROM (for no display and top display radios)
U716	-----	Not Placed
VR701, 702	4813830A23	DIODE, Zener: 10V
VR703	4813830A18	6.8V
VR706	4813830A15	5.6V
VR709	4813830A15	5.6V
VR712	4813830A33	20V
VR713	4813830A23	10V
VR714	4813830A18	6.8V
VR715	4813830A14	5.1V
VR720 thru 723	4805117Y01	Dual, 6.2V

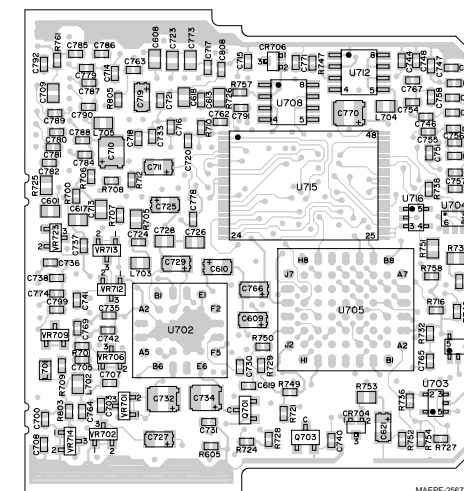
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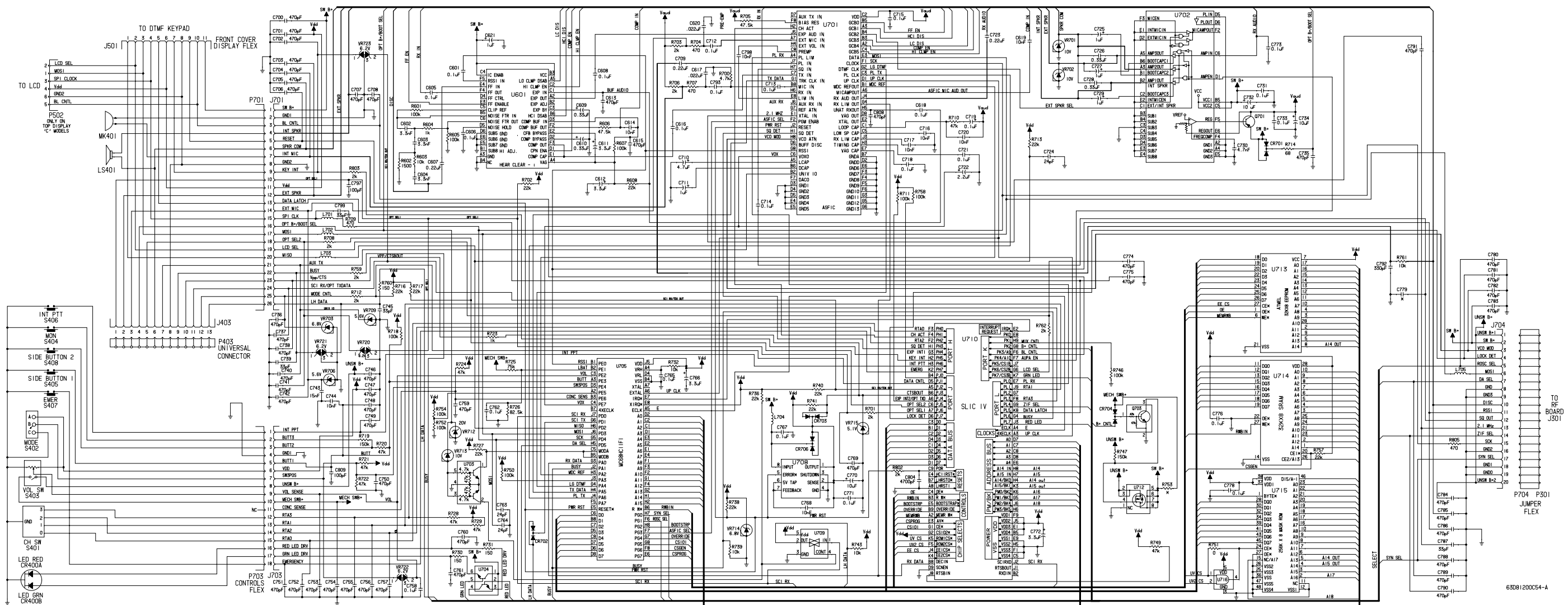
- 600 Series HearClear components are part of NTN7513D and NTN7858D.
- For optimum performance, order replacement diodes, transistors, and circuit modules by Motorola part number only.
- When ordering crystals, specify carrier frequency, crystal frequency, crystal type number, and Motorola part number.
- "Not Placed" means that components are for future use, and are not placed on the circuit board at this time.

VIEWS FROM SIDE 1



VIEWS FROM SIDE 2





NTN7512D, NTN7513D, NTN7857D, AND NTN7858D CONTROLLER BOARDS' SCHEMATIC DIAGRAM

**Electrical Parts List, Controller**  
**NCN6106C 1-Meg with HearClear Radios**  
**NCN6153A 1-Meg with HearClear Radios**

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
		<b>CAPACITOR, Fixed: pF ±5%;50V unless stated</b>
C601	2113743A19	0.1µF
C602, 603, 604	2113741A33	3.3nF
C605, 606	2113743K15	0.1µF
C607	2113743A23	0.22µF
C608	2113743A19	0.1µF
C609, 610	2311049A04	0.33µF
C611, 612	2311049A42	3.3µF
C613	2113741F17	470pF
C614	2113741F49	10nF
C615	2113741F17	470pF
C616	2113743K15	0.1µF
C617	2113741M53	0.022µF
C618	2113743A19	0.1µF
C619	2113741F49	10nF
C620	2113741M53	0.022µF
C621	2311049A07	1µF
C700 thru 708	2113741F17	470pF
C709	2113743A23	0.22µF
C710	2311049J11	4.7µF
C711	2311049A07	1µF
C712, 713	2113743A19	0.1µF
C714, 715	2113743K15	0.1µF
C716, 717	2113741A45	0.01µF
C718	2113743K15	0.1µF
C719	2311049A01	0.1µF
C720	2113741F49	10nF
C721	2113743K15	0.1µF
C722	2311049A09	2.2µF
C723	2113743A23	0.22µF
C724	2113740F36	24pF
C725	2311049A07	1µF
C726	2113743F12	0.33µF
C727	2311049A07	1µF
C728	2113743F12	0.33µF
C729	2311049A07	1µF
C730	2113741F41	4700pF
C731	2113743K15	0.1µF
C732	2311049A57	10.0µF
C733	2113743K15	0.1µF
C734	2311049J23	10µF
C735 thru 738	2113741F17	470pF
C739	2113740F39	33pF
C740, 741, 742	2113741F17	470pF
C743	2113741A49	15nF
C744	2113741F49	10nF
C745	2113740F39	33pF
C746 thru 757	2113741F17	470pF
C758	2113743K15	0.1µF
C759, 760, 761	2113741F17	470pF
C762	2113743K15	0.1µF
C763, 764	2113740F36	24pF
C765	2113743K15	0.1µF
C766	2311049A42	3.3µF
C767	2113743K15	0.1µF
C768	2113741F13	330
C769	2113741F17	470pF
C770	2311049J23	10µF
C771	2113743K15	0.1µF
C772	2311049A42	3.3µF
C773	2113743A19	0.1µF
C774, 775	2113741F17	470pF
C776	2113743K15	0.1µF
C777	2311049A07	1µF
C778	2113743K15	0.1µF

C779	-----	Not Placed
C780 thru 786	2113741F17	470pF
C787	2113740F39	33pF
C788 thru 791	2113741F17	470pF
C792	2113741F13	330pF
C793	2113743A19	0.1µF
C795	2113740F39	33pF
C797	2113740F51	100pF
C798	2113741F49	10nF
C804	2113741F41	4700pF
C808	2113741F17	470pF
CR701	4880236E05	Diode
CR702, 703, 704	4805218N57	Schottky
CR705	4813833C02	Dual
CR706	4805218N57	Dual
J701	0905257V04	Connector, 26-pin, to P701 on Front Cover Display Flex
J702	0913915A11	Connector, 25-pin
J703	0903257V03	Connector, 18-pin; to P703 on Controls Flex
J704	0905461X02	Connector, 20-pin; to P704 Strip Connector
L701 thru 705	2462587Q40	Inductor
L707	-----	Not Placed
L709	2462587Q40	Inductor
Q701	4805128M40	PNP
Q703	4880048M01	NPN
R601	0662057G13	100k
R602	0662057A53	1500
R603	0662057R60	10k
R604	0662057R30	1k
R605	0662057A97	100k
R606	0662057R92	47.5k
R607	0662057G13	100k
R608	0662057A81	22k
R700	0662057A65	4.7k
R701	0662057A56	2k
R702	0662057A81	22k
R703	0662057A56	2k
R704	0662057A41	470
R705	0662057R92	47.5k
R706	0662057A56	2k
R707	0662057A41	470
R708, 709	0662057A56	2k
R710	0662057A89	47k
R711	0662057A97	100k
R712	0662057A56	2k
R713	0662057A81	22k
R714	0683962I45	68
R715	0662057A97	100k
R716, 717	0662057A81	22k
R718	0662057A97	100k
R719	0662057B02	150k
R720, 721, 722	0662057A89	47k
R723	0662057A49	1k
R724	0662057A89	47k
R725	0662057G07	75k
R726	0662057G08	82.5k

R727	0662057A81	22k
R728, 729	0662057A89	47k
R730, 731	0662057C55	150
R732	0662057A73	10k
R736	0662057A81	22k
R738	0662057A81	22k
R739	0662057A73	10k
R740, 741	0662057A81	22k
R743	0662057A73	10k
R746	0662057A97	100k
R747	0662057B02	150k
R749	0662057A73	10k
R750	0662057A97	100k
R757	-----	Not Placed
R758	0662057A81	22k
R759	0662057A97	100k
R759	0662057A81	22k
R761	0662057A73	10k
R762	0662057B47	0
R775	0662057A56	2k
R776	0662057A75	12k
R802, 803	0662057A56	2k
R805	0660076A41	470
U601	5105835U50	HearClear
U701	5105835U45	Audio Signalling Filter
U702	5105835U49	Audio PA
U703	4805921T09	Dual Transistor
U704	4805921T07	Transistor, NPN
U705	5105835U47	Microcomputer
U708	5105469E65	5V Regulator
U709	5105750U28	Mux
U710	5105835U80	SLIC IV
U711	5113806A20	Multiplexer
U712	4805718V01	Transistor Package
U713	5105625U98	32KX8 EEPROM
U714	5185963A21	SCRAM
U715	5105625U22	1Meg. X 8 FLASH
U716	5105279V65	AND Gate
VR701, 702	4813830A23	10V
VR703	4813830A18	6.8V
VR706	4813830A15	5.6V
VR709	4813830A15	5.6V
VR712	4813830A33	20V
VR713	4813830A23	10V
VR714	4813830A18	6.8V
VR715	4813830A14	5.1V
VR717	4813830A27	14V
VR720 thru 723	4805117Y01	6.2V

**Notes:**

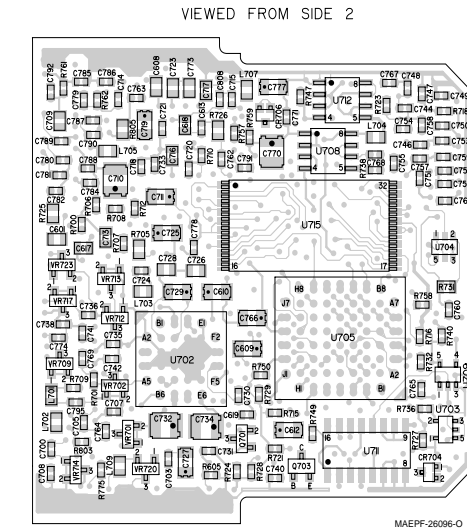
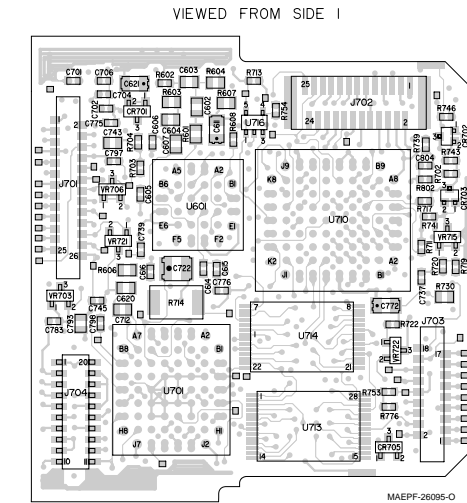
- 600 Series are HearClear components.
- For optimum performance, order replacement diodes, transistors, and circuit modules by Motorola part number only.
- When ordering crystals, specify carrier frequency, crystal frequency, crystal type number, and Motorola part number.
- "Not Placed" means that components are for future use, and are not placed on the circuit board at this time.

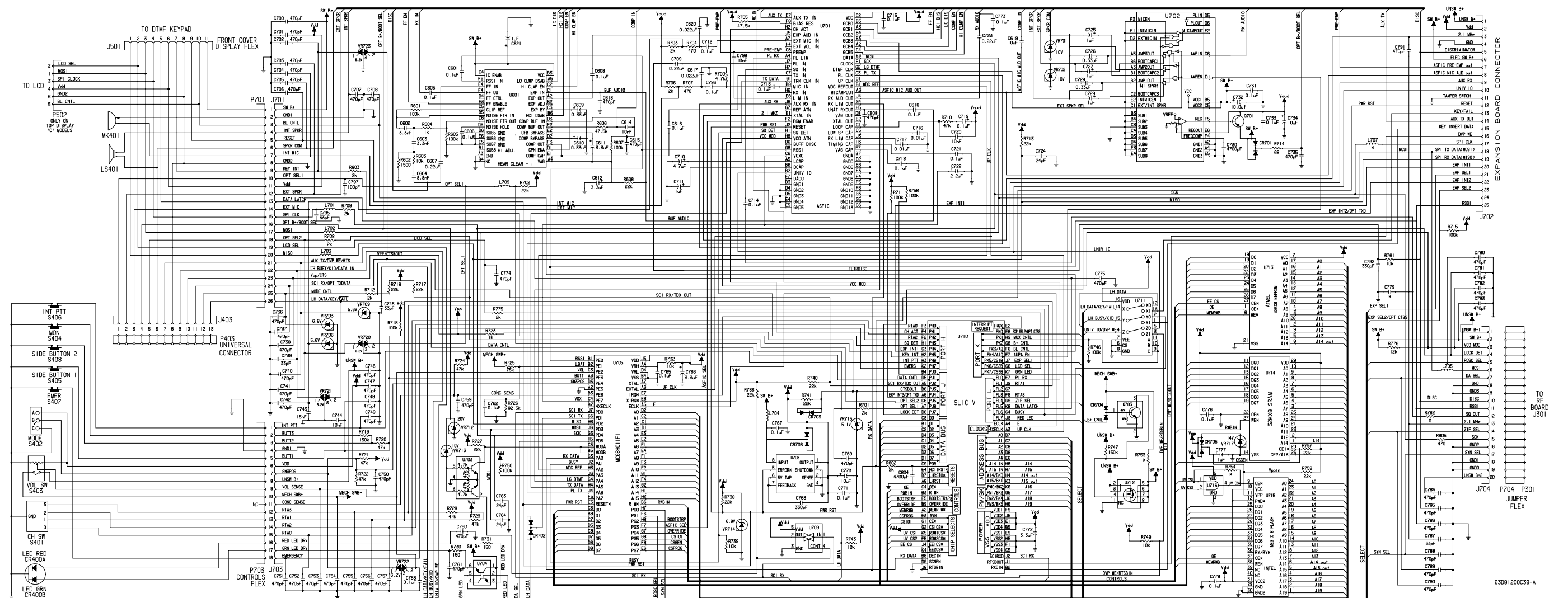
**INTEGRATED CIRCUIT MODULE:**

HearClear  
 Audio Signalling Filter  
 Audio PA  
 Dual Transistor  
 Transistor, NPN  
 Microcomputer  
 5V Regulator  
 Mux  
 SLIC IV  
 Multiplexer  
 Transistor Package  
 32KX8 EEPROM  
 SCRAM  
 1Meg. X 8 FLASH  
 AND Gate

**DIODE, Zener:**

10V  
 6.8V  
 5.6V  
 5.6V  
 20V  
 10V  
 6.8V  
 5.1V  
 14V  
 6.2V





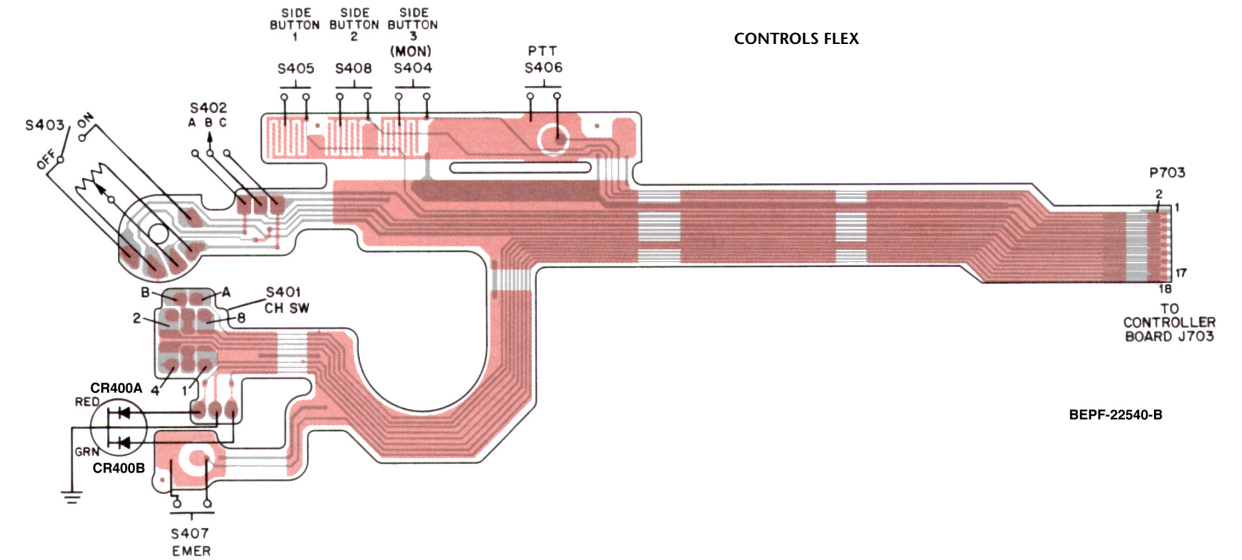
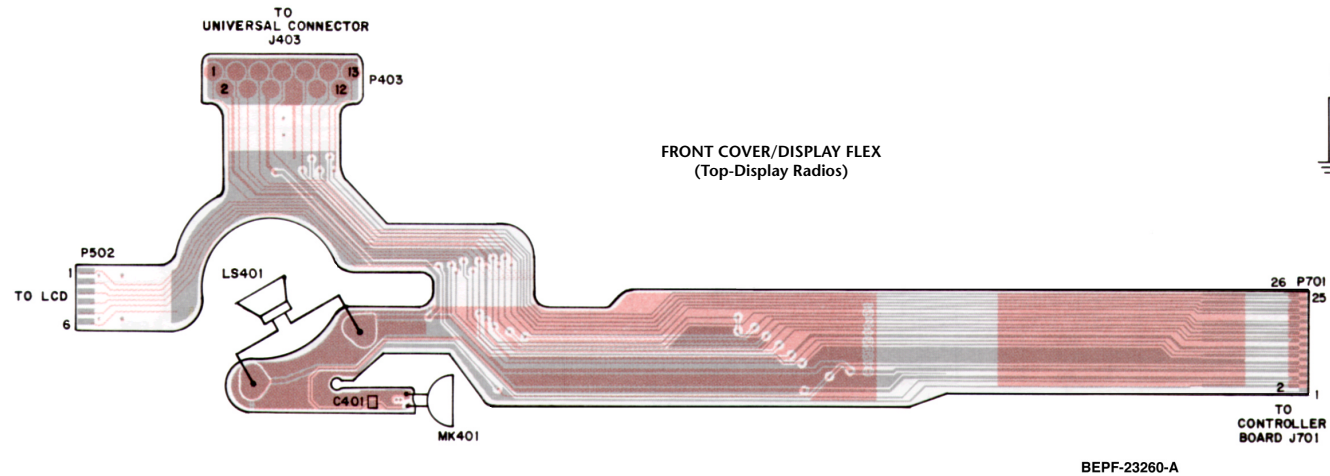
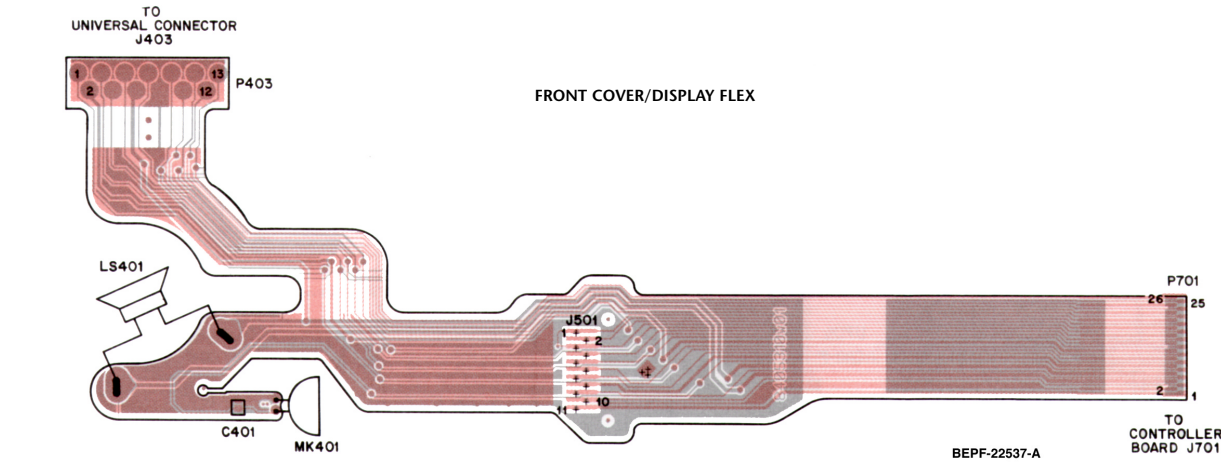
NCN6106C AND NCN6153A CONTROLLER BOARDS' SCHEMATIC DIAGRAM 101

Electrical Parts List, Miscellaneous

REFERENCE SYMBOL	MOTOROLA PART NO.	DESCRIPTION
C401	2113740F45	<b>CAPACITOR, Fixed:</b> 56pF ±5%; 50V
J403	-----	<b>JACK:</b> Circuit Plating, 13 contacts on Front Cover/Display Flex (to Universal Connector P403)
J501	-----	Circuit Plating, 11 contacts on Front Cover/Display Flex (to Expansion Board)
LS401	5005213W05	<b>SPEAKER:</b> 28-Ohm
MK401	5005227J07	<b>MICROPHONE:</b> Miniature Electret, Noise Cancelling
P301 (See Note)	2805680X01	<b>PLUG:</b> 20-pin; (double-plug) connector strip, includes P704
P403	-----	Universal Connector, 13 pins; not field repairable, order Front Cover
P501	-----	Circuit Plating, 6 contacts on Front Cover/Display Flex (to LCD)
P701	-----	Circuit Plating, 26 contacts on Front Cover/Display Flex (to J701 on Controller Board)
P703	-----	Circuit Plating, 18 contacts on Controls Flex (to J703 on Controller Board)
P704 (See Note)	2805680X01	20-pin; (double-plug) connector strip, includes P301
R401	1805629V01	<b>RESISTOR:</b> Potentiometer, 50k; Volume; includes S403
S401	4002622J03	<b>SWITCH:</b> Rotary, Frequency; 16-position
S402	4002622J04	Rotary, Frequency; Continuous
S403	4005572W01	Toggle, 3-position; Mode
S404	-----	On/Off, part of R401
S405	*	Monitor
S406	*	Side Button 1
S407	*	PTT
S408	*	Emergency
S408	*	Side Button 2

**Notes:**  
\* Push-actuated switch contact is made with mechanical parts and circuit plating. Refer to exploded view and exploded view parts list for part numbers and description.

Components P301 and P704 are physical pins, at either end (and part of) a strip connector. They plug into counterpart jacks (physical connectors) on the RF board and the controller board, J301 and J704 respectively.



BEPF-23260-A