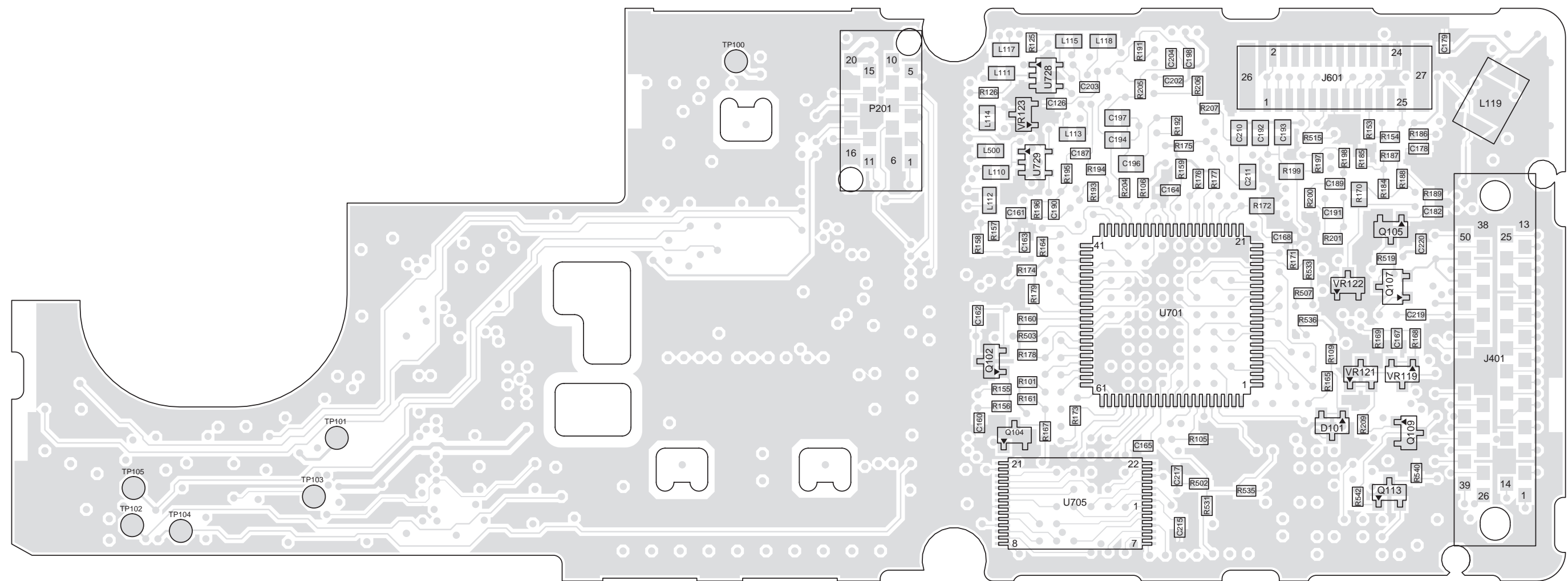


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VIEWED FROM SIDE 2



MAEPF-26330-O

NCN6167A Controller Board
Electrical Parts List

ITEM	MOTOROLA PART NUMBER	DESCRIPTION
		CAPACITOR, Fixed: unless otherwise stated
C100 thru 106	2113931F17	470 pF
C108	2113930F39	33 pF
C109 thru 111	2113931F17	470 pF
C112	2113930F39	33 pF
C113, 114	2113931F17	470 pF
C116	2113930F39	33 pF
C117	2113931F17	470 pF
C118	2113930F39	33 pF
C120, 121	2113930F39	33 pF
C122	2113931F17	470 pF
C123, 124	2113930F39	33 pF
C125 thru 138	2113931F17	470 pF
C140	2113931F17	470 pF
C142 thru 152	2113931F17	470 pF
C160	2113932K15	0.1 μF
C161	2113930F27	10 pF
C162	-----	Not Placed
C163	2113930F27	10 pF
C164, 165	2113932K15	0.1 μF
C167	2113931F17	470 pF
C168 thru 172	2113932K15	0.1 μF
C175	2311049C05	47 μF
C176	2113932K15	0.1 μF
C177	2113931F49	.01 μF
C178, 179	2113932K15	0.1 μF
C180	2311049C07	100 μF
C182	2113931F17	470 pF
C183 thru 186	2311049J12	4.7 μF
C187	2113743E20	0.1 μF
C188	2311049J12	4.7 μF
C189	2113743E20	0.1 μF
C190, 191	2113930F51	100 pF
C192	2113743A19	0.1 μF
C193 thru 195	2113743A23	.22 μF
C196, 197	0662057R60	Resistor, 10kΩ
C198	2113931F49	.01 μF
C199, 200	2113743A23	.22 μF
C201	2311049J12	4.7 μF
C202	2113931F41	4700 pF
C203, 204	2113932K15	0.1 μF
C205, 206	2113743F12	.33 μF
C207 thru 209	2311049A07	1 μF
C210	2113743A13	.047 μF
C211	2113743A23	.22 μF
C212, 213	2113932K15	0.1 μF
C214	2311049A05	.47 μF
C215 thru 217	2113932K15	0.1 μF
C219	2113932K15	0.1 μF
C220	0662057R54	Resistor, 6.8kΩ
C223	2113931F17	470 pF
C224	2113930F39	33 pF
C225, 226	2113931F17	470 pF
C227, 288	2113930F39	33 pF
		DIODE: See Note 1.
D100	4884939C35	Hot Carrier, 4V
D101	4884939C35	Hot Carrier, 4V
D104	4813833B09	Schottky, 30V
		JACK:

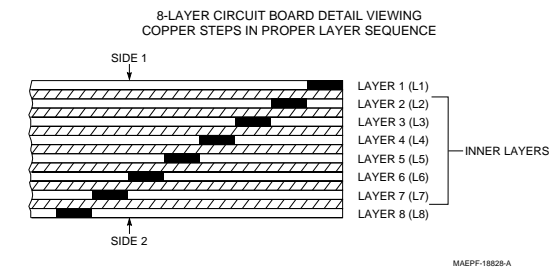
J101	0980423L02	Controls Flex Assembly Connector
J601	0913915A11	Encryption Board Connector
		COIL, RF: unless otherwise stated
L100 thru 113	2462587Q40	270 nH
L114	0662057C01	Resistor, 0Ω
L115	2462587Q40	270 nH
L117, 118	2462587Q40	270 nH
L119	2485853A01	68 uH
L120	2460578C43	33 uH
L500	2462587Q40	270 nH
L501	2405688Z01	Ferrite Bead
		TRANSISTOR: See Note 1.
Q102	4805128M12	NPN
Q104, 105	4805128M12	NPN
Q106	4805718V01	MOSFET Switch
Q107	4880048M01	NPN
Q108	-----	Not Placed
Q109	4805128M12	NPN
Q110	4805128M40	PNP
Q111, 112	4805921T09	Dual NPN
Q113	-----	Not Placed
		RESISTOR:
R100	0662057A65	4.7k
R101	0662057A89	47k
R102	0662057A36	300
R103	0662057A35	270
R105	0662057A62	3.6k
R106	0662057A97	100k
R108	0662057A97	100k
R109	0662057A73	10k
R110 thru 112	0662057A39	390
R114	0662057A49	1k
R115	0662057A39	390
R116 thru 118	0662057A97	100k
R119 thru 123	0662057A49	1k
R124	0662057A85	33k
R125, 126	0662057A97	100k
R127	0662057A49	1k
R128	0662057B47	0
R129 thru 133	0662057A49	1k
R135 thru 143	0662057A85	33k
R144 thru 152	0662057A49	1k
R153 thru 155	0662057A97	100k
R156	0662057A73	10k
R157	0662057B47	0
R158	0662057B22	1M
R159, 160	0662057A65	4.7k
R161	0662057A73	10k
R163	0683962T45	68
R164	0662057A73	10k
R165	0662057A57	2.2k
R167	0662057A97	100k
R168	0662057A65	4.7k
R169	0662057A97	100k
R170	0662057G08	82.5k
R171	0662057A97	100k
R172	0662057R92	47.5k
R173	0662057B47	0
R174, 175	0662057A73	10k
R176, 177	0662057A97	100k
R178	0662057A85	33k
R179	0662057A65	4.7k
R180	0662057A97	100k
R181	0662057B47	0

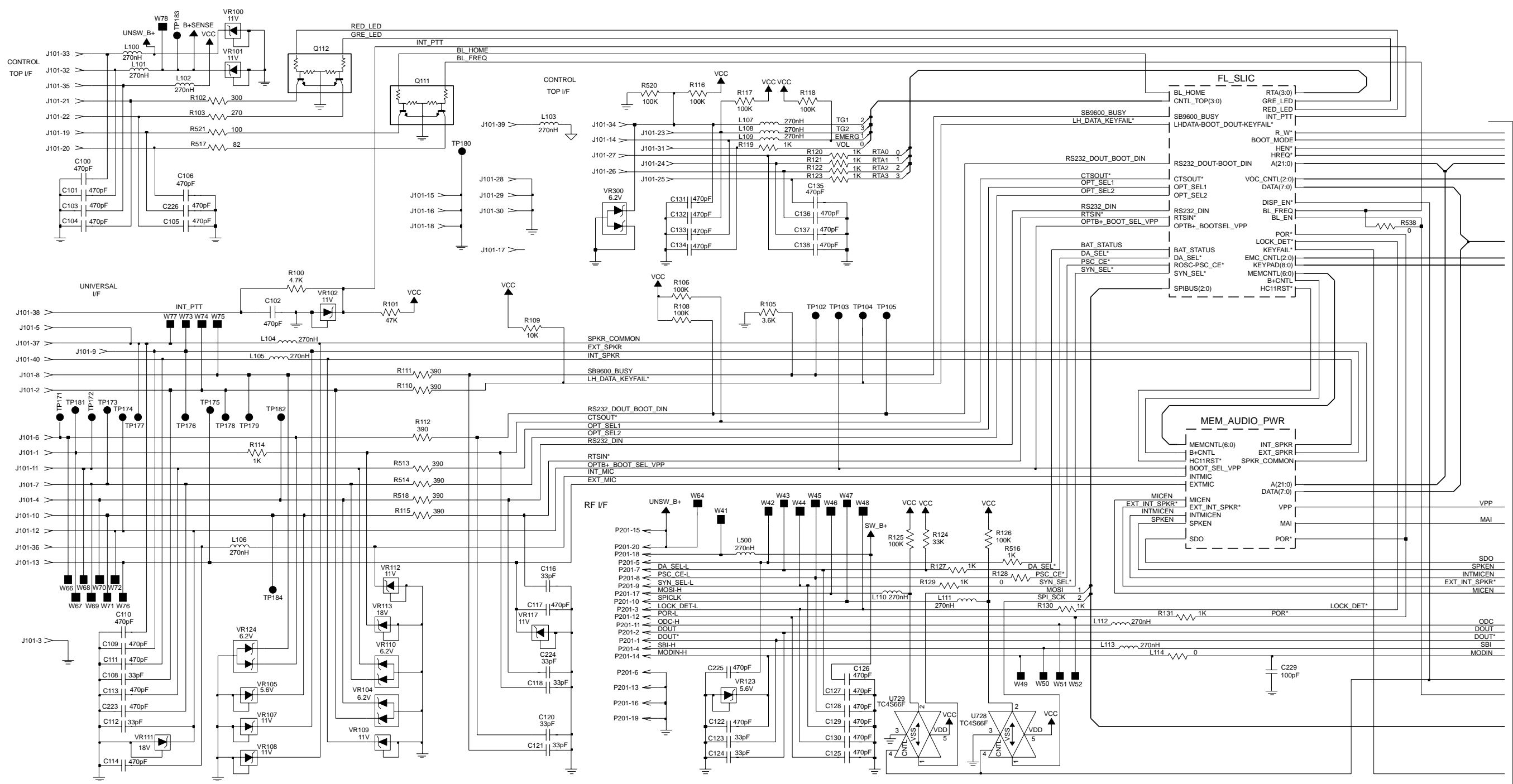
R182, 183	0662057A97	100k
R184, 185	0662057A73	10k
R186	0662057B14	470k
R187 thru 189	0662057A97	100k
R190	0662057A73	10k
R191	0662057A49	1k
R192	-----	Not Placed
R193	0662057A39	390
R194	0662057A65	4.7k
R195	0662057A81	22k
R196	0662057B02	150k
R197	0662057A39	390
R198	0662057A57	2.2k
R199	0662057G14	110k
R200	0662057A81	22k
R201	0662057B02	150k
R202	0662057G08	82.5k
R203 thru 204	0662057A73	10k
R205, 206	-----	Not Placed
R207	0662057A80	20k
R208	0662057A97	100k
R209	0662057A65	4.7k
R211 thru 212	0662057A73	10k
R213	-----	Not Placed
R214, 215	0662057B47	0
R216, 217	-----	Not Placed
R502	0662057A97	100k
R503	0662057A65	4.7k
R504	0662057A97	100k
R507, 208	0662057A97	100k
R509	0662057C03	1
R510	0662057B47	0
R513, 514	0662057A39	390
R515	0662057A97	100k
R516	0662057A49	1k
R517	0662057A23	82
R518	0662057A39	390
R519, 520	0662057A97	100k
R521	0662057A25	100
R529	0662057A97	100k
R531	-----	Not Placed
R533	-----	Not Placed
R535, 536	0662057A97	100k
R537	0662057C03	1
R538	-----	Not Placed
R539	0662057A73	10k
R540	-----	Not Placed
R541	0662057B47	0
R542	-----	Not Placed
		INTEGRATED CIRCUIT MODULE:
		See Note 1.
U701	5113802A33	HC11F1 MCU (QFP)
U702	5105835U80	SLIC 5 (OMPAC)
U704	5105750U28	CMOS Switch (MUX)
U705	5185963A21	32k X 8 SRAM
U706	5105109Z72	32k X 8 EEPROM
U708	5105279V65	AND GATE
U709	5105109Z36	5V Digital Switching Regulator
U710	5105625U41	5V Analog Regulator
U712, 713	5105750U28	CMOS Switch (MUX)
U714	5105364W01	DUAL OP-AMP
U717	5105750U28	CMOS Switch (MUX)
U718	5105457W68	AUDIO PA (QFP)
U725	5105279V65	AND GATE
U726	5105492X73	4.2V Voltage Detector
U727	5105109Z25	1M X 8 FLASH ROM

U728, 729	5105750U28	CMOS Switch (MUX)
		DIODE: See Note 1.
VR100 thru 102	4813830A24	Zener, 11V
VR104	4805117Y01	Dual Zener, 6.2V
VR105	4813830A15	Zener, 5.6V
VR107 thru 109	4813830A24	Zener, 11V
VR110	4805117Y01	Dual Zener, 6.2V
VR111	4813830A31	Zener, 18V
VR112	4813830A24	Zener, 11V
VR113	4813830A31	Zener, 18V
VR117	4813830A24	Zener, 11V
VR119	4813830A22	Zener, 9.1V
VR121	4813830A24	Zener, 11V
VR122, 123	4813830A15	Zener, 5.6V
VR124	4805117Y01	Dual Zener, 6.2V
VR300	4805117Y01	Dual Zener, 6.2V
		CRYSTAL: See Note 2
Y100	4805574W01	7.3728 MHz CRYSTAL
		MISCELLANEOUS:
	8405259Z03	PC Board

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.
- Part value notations:
 $p=10^{-12}$
 $n=10^{-9}$
 $\mu=10^{-6}$
 $m=10^{-3}$
 $k=10^3$
 $M=10^6$
- ITEM refers to the component reference designator. SIDE refers to the location of the component on the board; S1=Side 1, S2=Side 2.
- The NCN6167 Controller Bd Kit uses an 8-layer printed circuit board.

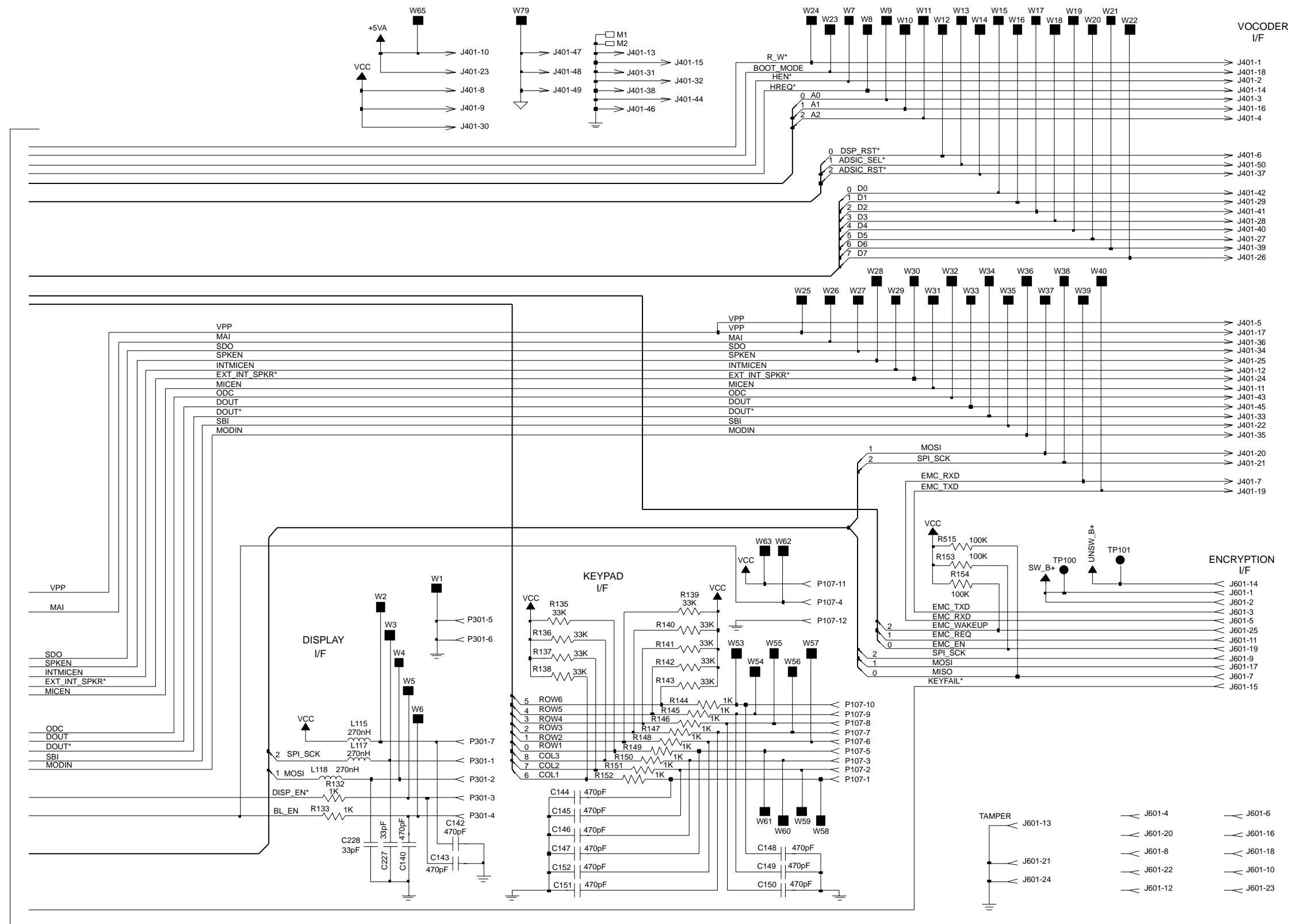




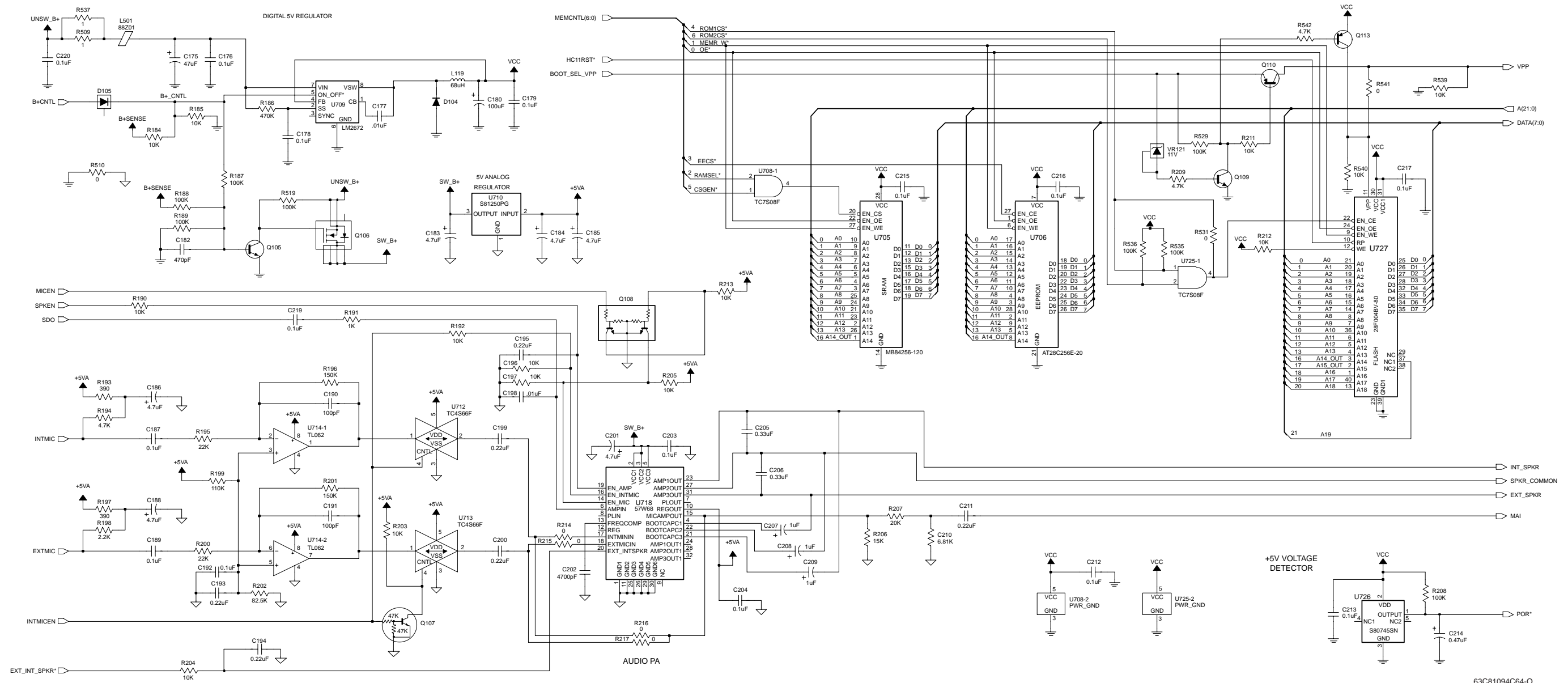
TO SHEET 2

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SHEET 1

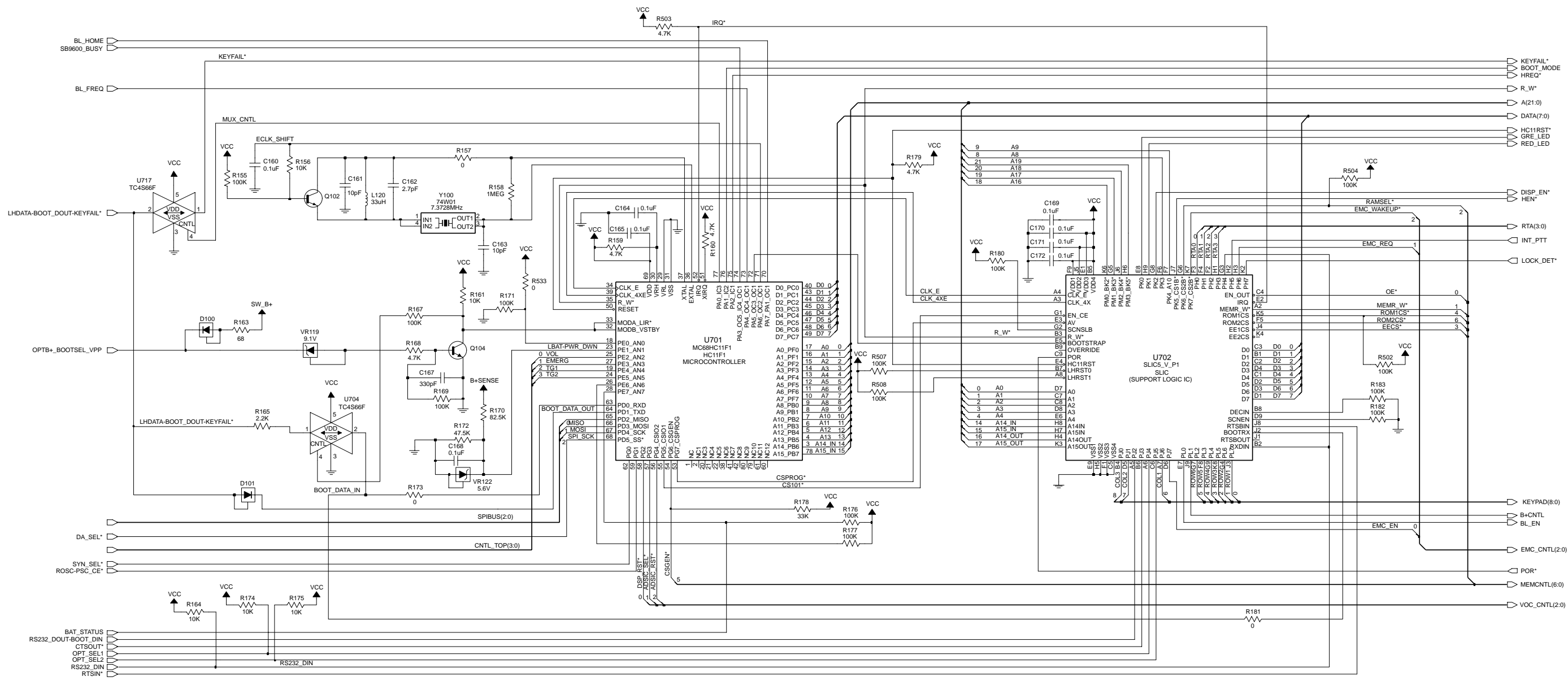
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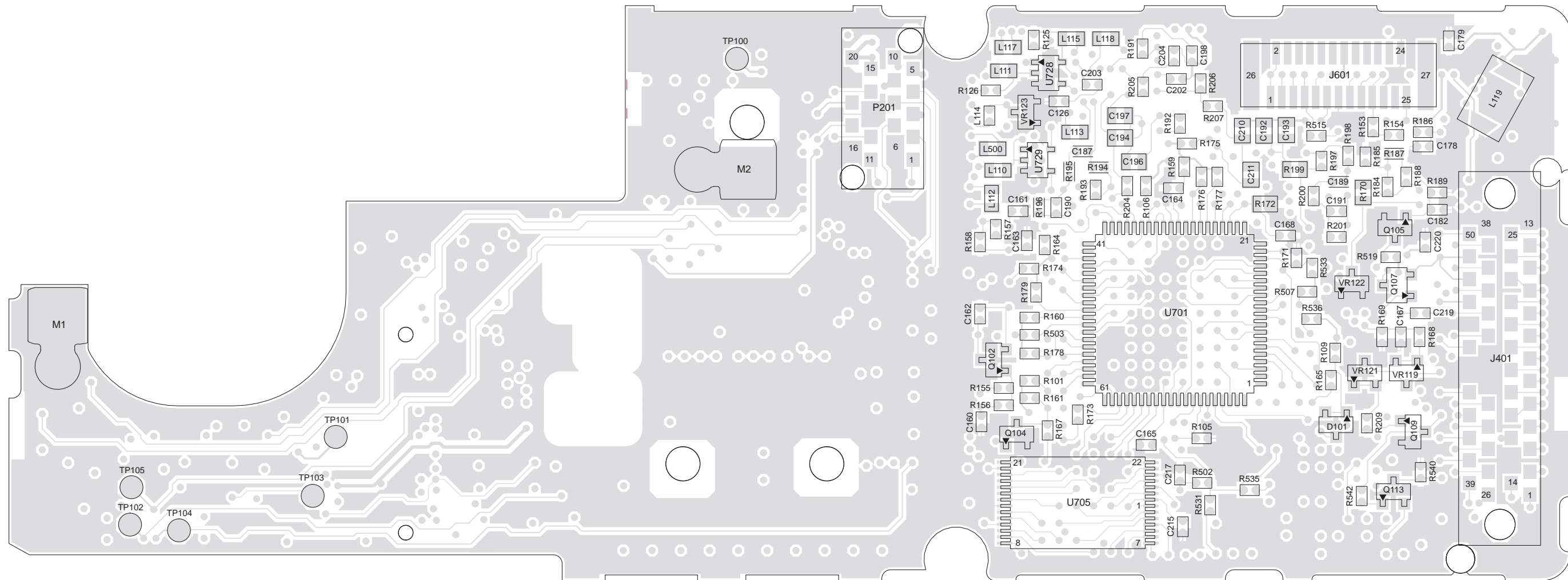
NCN6167C Controller Board Schematic Diagram, Sheet 3 of 4



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NCN6167C Controller Board Schematic Diagram, Sheet 4 of 4

VIEWED FROM SIDE 2



MAEPF-27134-O

NCN6167C Controller Board
Electrical Parts List

ITEM	MOTOROLA PART NUMBER	DESCRIPTION
		CAPACITOR, Fixed: pF ±5%; 50V Unless otherwise stated
C100 thru C106	2113931F17	470
C108	2113930F39	33
C109 thru C111	2113931F17	470
C112	2113930F39	33
C113, C114	2113931F17	470
C116	2113930F39	33
C117	2113931F17	470
C118	2113930F39	33
C120, C121	2113930F39	33
C122	2113931F17	470
C123, C124	2113930F39	33
C125 thru C138	2113931F17	470
C140	2113931F17	470
C142, C152	2113931F17	470
C160	2113932K15	0.1 µF +80/-20% 16V
C161	2113930F31	15
C162	-----	Not Placed
C163	2113930F31	15
C164, C165	2113932K15	0.1 µF +80/-20% 16V
C167	2113931F17	470
C168 thru C172	2113932K15	0.1 µF +80/-20% 16V
C175	2311049C05	47 µF
C176	2113932K15	0.1 µF +80/-20% 16V
C177	2113931F49	10 nF
C178	-----	Not Placed
C179	2113932K15	0.1 µF +80/-20% 16V
C180	2311049C07	100 µF 10V 10%
C182	2113931F17	470
C183 thru C186	2311049J12	4.7 µF
C187	2113932E20	0.1 µF 10% 16V
C188	2311049J12	4.7 µF
C189	2113932E20	0.1 µF 10% 16V
C190, C191	2113930F51	100
C191	2113930F51	100
C192	2113743A19	0.1 µF
C193, C195	2113743A23	0.22 µF
C196, C197	0662057R60	10k
C198	2113931F49	10 nF
C199, C200	2113743A23	0.22 µF
C201	2311049J12	4.7 µF
C202	2113931F41	4.7 nF
C203, C204	2113932K15	0.1 µF +80/-20% 16V
C205, C206	2113743F12	0.33 µF
C207 thru C209	2311049A07	1 µF
C210	0662057R54	6.81k
C211	2113743A23	0.22 µF
C212, C213	2113932K15	0.1 µF +80/-20% 16V
C214	2311049A05	0.47 µF
C215, C217	2113932K15	0.1 µF +80/-20% 16V
C219, C220	2113932K15	0.1 µF +80/-20% 16V
C223	2113931F17	470
C224	2113930F39	33
C225, C226	2113931F17	470
C227, C228	2113930F39	33
C229	2113931F17	470
		DIODE: See Note 1
D100, D101	4884939C35	Hot Carrier, 4V
D104	4813833B09	Schottky, 30V
D105	4884939C35	Hot Carrier, 4V
		JACK:

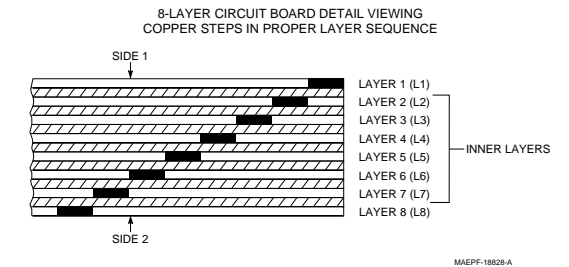
J101	0980423L02	Controls Flex Assembly Connector
J401	-----	Not Placed
J601	0913915A11	Encryption Board Connector
		COIL, RF: Unless otherwise stated
L100 thru L115	2462587Q40	270 nH
L117, L118	2462587Q40	270 nH
L119	2485853A01	68 µH
L120	2460578C43	33 µH
L500	2462587Q40	270 nH
L501	2405688Z01	Ferrite Bead
		CONTACT:
M1, M2	3985951A01	Antenna Ground
		PLUG:
P107	-----	Not Placed
P201	-----	Not Placed
P301	-----	Not Placed
		TRANSISTOR: See Note 1.
Q102	4805128M12	NPN
Q104, Q105	4805128M12	NPN
Q106	4805718V01	MOSFET Switch
Q107	4880048M01	NPN
Q108	-----	Not Placed
Q109	4805128M12	NPN
Q110	4805128M40	PNP
Q111, Q112	4805921T09	Dual NPN
Q113	-----	Not Placed
		RESISTOR, Fixed: Ω ±5%; 1/8W Unless otherwise stated
R100	0662057A65	4700
R101	0662057A89	47k
R102	0662057A36	300
R103	0662057A35	270
R105	0662057A62	3.6k
R106	0662057A97	100k
R108	0662057A97	100k
R109	0662057A73	10k
R110 thru R112	0662057A39	390
R114	0662057A49	1k
R115	0662057A39	390
R116 thru R118	0662057A97	100k
R119 thru R123	0662057A49	1k
R124	0662057A85	33k
R125, R126	0662057A97	100k
R127	0662057A49	1k
R128	0662057B47	0
R129, R133	0662057A49	1k
R135, thru R143	0662057A85	33k
R144 thru R152	0662057A49	1k
R153 thru R155	0662057A97	100k
R156	0662057A73	10k
R157	0662057B47	0
R158	0662057B22	1 M
R159, R160	0662057A65	4.7k
R161	0662057A73	10k
R163	0683962T45	68
R164	0662057A73	10k
R165	0662057A57	2.2k
R167	0662057A97	100k
R168	0662057A65	4.7k
R169	0662057A97	100k
R170	0662057G08	82.5k 1%
R171	0662057A97	100k
R172	0662057R92	47.5k 1%
R173	0662057B47	0
R174, R175	0662057A73	10k
R176, R177	0662057A97	100k
R178	0662057A85	33k
R179	0662057A65	4.7k

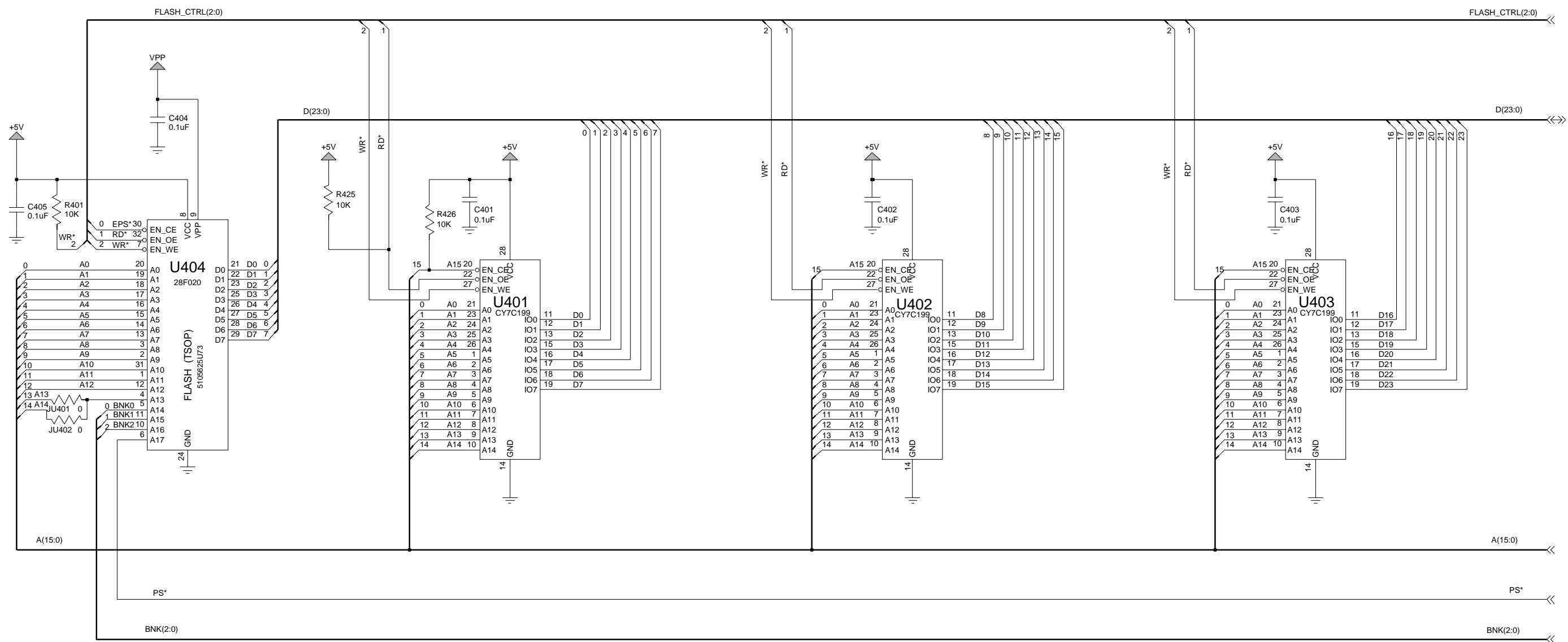
R180	0662057A97	100k
R181	0662057B47	0
R182, R183	0662057A97	100k
R184, R185	0662057A73	10k
R186	-----	Not Placed
R187 thru R189	0662057A97	100k
R190	0662057A73	10k
R191	0662057A49	1k
R192	-----	Not Placed
R193	0662057A39	390
R194	0662057A59	2.7k
R195	0662057A81	22k
R196	0662057B02	150k
R197	0662057A39	390
R198	0662057A57	2.2k
R199	0662057G14	1.1k
R200	0662057A81	22k
R201	0662057B02	150k
R202	0662057G08	82.5k
R203, R204	0662057A73	10k
R205, R206	-----	Not Placed
R207	0662057A80	20k
R208	0662057A97	100k
R209	0662057A65	4.7k
R211, R212	0662057A73	10k
R213 thru R215	-----	Not Placed
R216, R217	0662057B47	0
R502	0662057A97	100k
R503	0662057A65	4.7k
R504	0662057A97	100k
R507, R508	0662057A97	100k
R509	0662057C03	1
R510	0662057B47	0
R513, R514	0662057A39	390
R515	0662057A97	100k
R516	0662057A49	1k
R517	0662057A23	82
R518	0662057A39	390
R519, R520	0662057A97	100k
R521	0662057A25	100
R529	0662057A97	100k
R531	-----	Not Placed
R533	-----	Not Placed
R535, R536	0662057A97	100k
R537	0662057C03	1
R538	-----	Not Placed
R539	0662057A73	10k
R540	-----	Not Placed
R541	0662057B47	0
R542	-----	Not Placed
		INTEGRATED CIRCUIT MODULE: See Note 1.
U701	5113802A75	HC11F1 MCU (QFP)
U702	5185765B19	SSLIC (OMPAC)
U704	5105750U28	CMOS Switch (MUX)
U705	5185748L01	32k x8 SRAM
U706	5105109Z72	32k x 8 EEPROM
U708	5105279V65	AND GATE
U709	5105109Z36	5V Digital Switching Regulator
U710	5105625U41	5V Analog Regulator
U712, U713	5105750U28	CMOS Switch (MUX)
U714	5105364W01	DUAL OP-AMP
U717	5105750U28	CMOS Switch (MUX)
U718	5105457W68	Audio PA (QFP)
U725	5105279V65	AND GATE
U726	5105492X73	4.2V Voltage Detector
U727	5105109Z25	1M x 8 FLASH ROM
U728, U729	5105750U28	CMOS Switch (MUX)

VR100 thru	4813830A24	DIODE: See Note 1. Zener 11V
VR102		
VR104	4805117Y01	DUAL, 6.2V Zener
VR105	4813830A15	Zener, 5.6V
VR107 thru	4813830A24	Zener, 11V
VR109		
VR110	4805117Y01	DUAL, 6.2V Zener
VR111	4813830A31	Zener, 18V
VR112	4813830A24	Zener, 11V
VR113	4813830A31	Zener, 18V
VR117	4813830A24	Zener, 11V
VR119	4813830A22	Zener, 9.1V
VR121	4813830A24	Zener, 11V
VR122, VR123	4813830A15	Zener, 5.6V
VR124	4805117Y01	DUAL, 6.2V Zener
VR300	4805117Y01	DUAL, 6.2V Zener
		CRYSTAL: See Note 2.
Y100	4805574W01	7.3728 MHz

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.
- Part value notations:
p=10⁻¹²
n=10⁻⁹
µ=10⁻⁶
m=10⁻³
k=10³
M=10⁶
- ITEM refers to the component reference designator. SIDE refers to the location of the component on the board; S1=Side 1, S2=Side 2.
- The NCN6167 Controller Bd Kit uses an 8-layer printed circuit board.





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