

Ref Des	Part #	Description
R443	NOTPLACED	NOTPLACED
R450	0662057N15	RES. CHIP 47K 5% 20X40
R451	0662057M78	RES. CHIP 1500 5% 20X40
R452	0662057M42	RES. CHIP 47 5% 20X40
R453	0662057N11	RES. CHIP 33K 5% 20X40
R454	0662057M64	RES. CHIP 390 5% 20X40
R455	0662057M74	RES. CHIP 1000 5% 20X40
R461	NOTPLACED	NOTPLACED
R501	0662057M01	RES. CHIP 0 5% 20X40
R502	0662057M01	RES. CHIP 0 5% 20X40
R503	0662057M01	RES. CHIP 0 5% 20X40
R504	0662057N06	RES. CHIP 20K 5% 20X40
R505	0662057M98	RES. CHIP 10K 5% 20X40
R510	0662057M98	RES. CHIP 10K 5% 20X40
R511	NOTPLACED	NOTPLACED
R514	0662057N06	RES. CHIP 20K 5% 20X40
R515	0662057N06	RES. CHIP 20K 5% 20X40
R516	0662057M67	RES. CHIP 510 5% 20X40
R519	0662057M98	RES. CHIP 10K 5% 20X40
R520	0662057U84	RES CHIP 2K 1% 1/16W
R522	0662057N15	RES. CHIP 47K 5% 20X40
R523	0662057N15	RES. CHIP 47K 5% 20X40
R524	0662057N17	RES. CHIP 56K 5% 20X40
R525	0662057N11	RES. CHIP 33K 5% 20X40
R526	0662057V02	RES CHIP 10K 1% 1/16W
R527	0662057M74	RES. CHIP 1000 5% 20X40
R528	0662057M74	RES. CHIP 1000 5% 20X40
R531	0662057M64	RES. CHIP 390 5% 20X40
R533	0662057M82	RES. CHIP 2200 5% 20X40
R536	0662057N23	RES. CHIP 100K 5% 20X40
R537	0662057N17 0662057N10	RES. CHIP 56K 5% 20X40 (NNTN4563A) RES. CHIP 30K 5% 20X40 (NNTN4563B)

Ref Des	Part #	Description
R538	0662057M01	RES. CHIP 0 5% 20X40
R539	0662057M01	RES. CHIP 0 5% 20X40
R540	0662057M95	RES. CHIP 7500 5% 20X40
R545	0662057M98	RES. CHIP 10K 5% 20X40
R548	0662057N06	RES. CHIP 20K 5% 20X40
R549	0662057M98 0662057M96	RES. CHIP 10K 5% 20X40 (NNTN4563A) RES. CHIP 8.2K 5% 20X40 (NNTN4563B)
R550	0662057N17 0662057V25	RES. CHIP 56K 5% 20X40 (NNTN4563A) RES. CHIP 82K 5% 20X40 (NNTN4563B)
R551	0662057N06	RES. CHIP 20K 5% 20X40
R553	0662057M98 0662057M96	RES. CHIP 10K 5% 20X40 (NNTN4563A) RES. CHIP 8.2K 5% 20X40 (NNTN4563B)
R554	0662057N17 0662057V25	RES. CHIP 56K 5% 20X40 (NNTN4563A) RES. CHIP 82K 5% 20X40 (NNTN4563B)
R555	0662057M74	RES. CHIP 1000 5% 20X40
R556	0662057N06	RES. CHIP 20K 5% 20X40
R557	0662057M98	RES. CHIP 10K 5% 20X40
R558	0662057M94	RES. CHIP 6800 5% 20X40
R559	0662057M98	RES. CHIP 10K 5% 20X40
R560	0662057M01	RES. CHIP 0 5% 20X40
R561	0662057M74	RES. CHIP 1000 5% 20X40
R563	0662057M64	RES. CHIP 390 5% 20X40
R564	0662057M98	RES. CHIP 10K 5% 20X40
R565	0662057M82	RES. CHIP 2200 5% 20X40
R566	0662057M95	RES. CHIP 7500 5% 20X40
R567	0662057N15	RES. CHIP 47K 5% 20X40
R568	0662057N15	RES. CHIP 47K 5% 20X40
R569	0662057M90	RES. CHIP 4700 5% 20X40
R572	0662057M50	RES. CHIP 100 5% 20X40
R573	0662057N23	RES. CHIP 100K 5% 20X40

Ref Des	Part #	Description
R574	0662057N23	RES. CHIP 100K 5% 20X40
R575	0662057M98	RES. CHIP 10K 5% 20X40
R576	0662057N23	RES. CHIP 100K 5% 20X40
R577	0662057N15	RES. CHIP 47K 5% 20X40
R578	0662057N15	RES. CHIP 47K 5% 20X40
R579	NOTPLACED	NOTPLACED
R580	NOTPLACED	NOTPLACED
R581	0662057M01	RES. CHIP 0 5% 20X40
R582	0662057M90	RES. CHIP 4700 5% 20X40
R583	0662057M90	RES. CHIP 4700 5% 20X40
R584	0662057M98	RES. CHIP 10K 5% 20X40
R585	0662057M98	RES. CHIP 10K 5% 20X40
R586	0662057N39	RES. CHIP 470K 5% 20X40
R587	0662057M34	RES. CHIP 22 5% 20X40
R588	0662057M34	RES. CHIP 22 5% 20X40
R589	0662057M98	RES. CHIP 10K 5% 20X40
R590	NOTPLACED	NOTPLACED
R591	NOTPLACED	NOTPLACED
R595	0662057B47	RES. CHIP 0 5% 30X60 (NNTN4563B only)
S101	NOTPLACED	NOTPLACED
SCKA	NOTPLACED	NOTPLACED
SCKB	NOTPLACED	NOTPLACED
SH101	2685462E01	SHEILD PATRIOT
SH102	2685665E01	SHEILD FLIPPER
TCK	NOTPLACED	NOTPLACED
TDI	NOTPLACED	NOTPLACED
TDO	NOTPLACED	NOTPLACED
TMS	NOTPLACED	NOTPLACED
TP201	NOTPLACED	NOTPLACED
TP202	NOTPLACED	NOTPLACED
TP206	NOTPLACED	NOTPLACED
TP207	NOTPLACED	NOTPLACED

Ref Des	Part #	Description
TP208	NOTPLACED	NOTPLACED
TP209	NOTPLACED	NOTPLACED
TP210	NOTPLACED	NOTPLACED
TP211	NOTPLACED	NOTPLACED
TP212	NOTPLACED	NOTPLACED
TP213	NOTPLACED	NOTPLACED
TP214	NOTPLACED	NOTPLACED
TP215	NOTPLACED	NOTPLACED
TRST	NOTPLACED	NOTPLACED
U201	5109731C15	IC OP AMP SNGL OPA237 SOT23
U202	5109731C15	IC OP AMP SNGL OPA237 SOT23
U301	5185368C66	IC CUSTOM FLIPPER
U302	5105492X92	IC CMOS BILATERAL SWITCH
U303	5109522E53	IC SNGL BUF NC7S125P5X SC70
U401	5109841C69	IC 256 BGA 17X17 PACKAGE PATRIOT
U402	5199485A01	IC FLASH 8MBYTE BURST BGA
U403	5185368C82	IC 1.65 TO 2.2V, 70NS, 8MBIT SRAM
U404	5109522E53	IC SNGL BUF NC7S125P5X SC70
U405	5109522E53	IC SNGL BUF NC7S125P5X SC70
U406	5105492X03	IC SNG HI SPD L-MOS NOT GATE
U407	5105109Z31	IC QUAD 2:1 MUX/DEMUX
U501	5109879E58	IC 4.3 GCAPII SN104616DGGMR BG
U502	5109731C15	IC OP AMP SNGL OPA237 SOT23
U503	5102463J44	IC AUDIO PA (PHILIPS_20PIN)

Ref Des	Part #	Description
U504	5109731C15	IC OP AMP SNGL OPA237 SOT23
U505	5185353D13	IC MINI SO-8 HI PRECISION REG 5V
U507	5109731C15	IC OP AMP SNGL OPA237 SOT23
U509	5185353D35	IC DUAL EEPOT 256 TAP
U510	5105492X92	IC CMOS BILATERAL SWITCH
U511	5185353D56	IC 3.3V LINEAR REGULATOR MC78LC 33NTR
U512	NOTPLACED	NOTPLACED
VR201	4813832C72	TRANS SUP QUAD 12V
VR202	4813830A22	DIODE 9.1V 5% 225MW MMBZ5239B_
VR203	4813832C72	TRANS SUP QUAD 12V
VR204	4813830C26	DIODE 13V 'H3' MMSZ5243BT1
VR205	4805656W08	DIODE ZENER QUAD
VR206	4805656W08	DIODE ZENER QUAD
VR209	4813832C72	TRANS SUP QUAD 12V
VR220	4805656W03	DIODE DUAL 5.6V ZENER
VR221	4805656W03	DIODE DUAL 5.6V ZENER
VR501	4813830A15	DIODE 5.6V 5% 225MW MMBZ5232B_
Y301	4809995L05	XTAL QUARTZ 32.768KHZ CC4V-T1

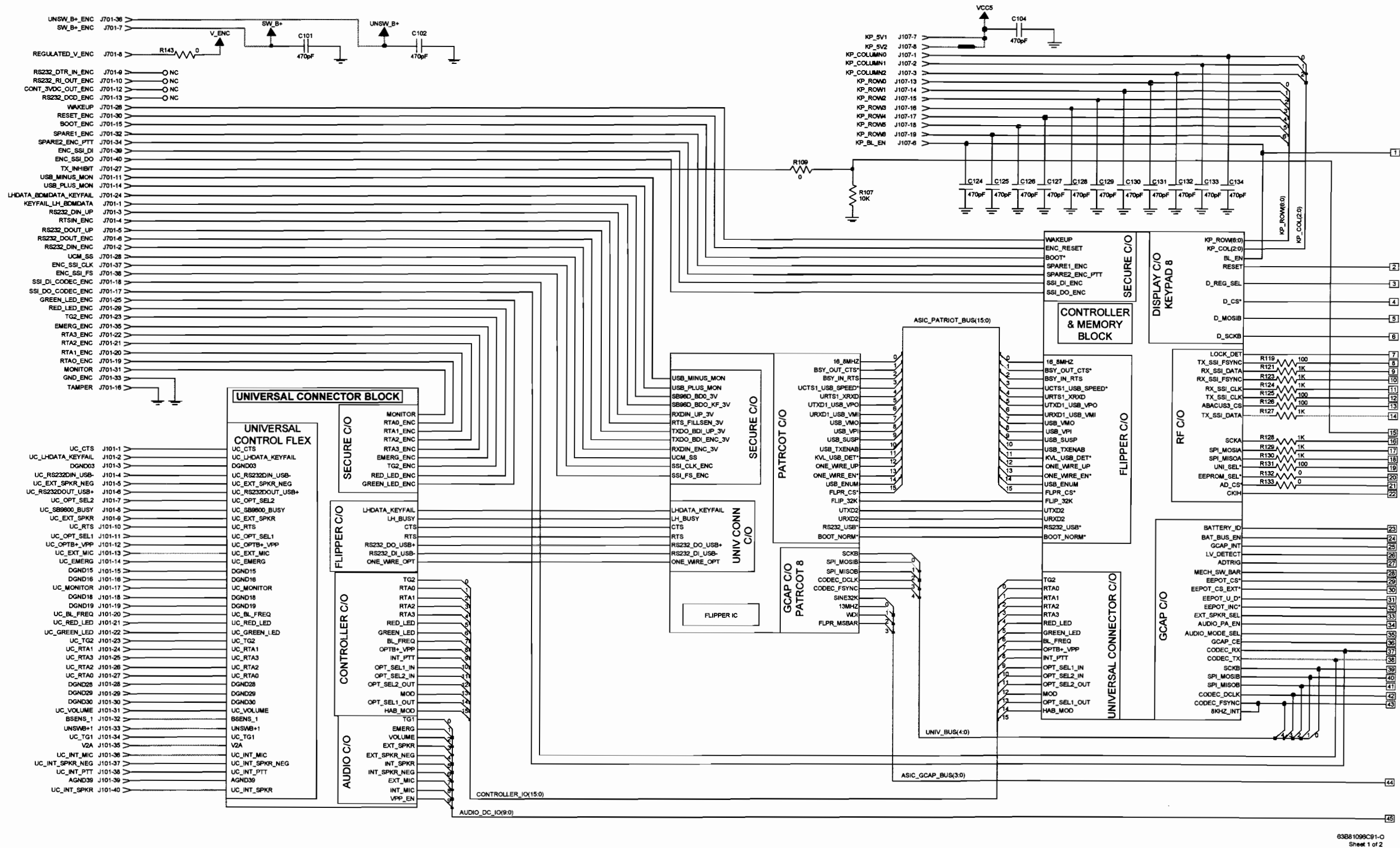


Figure 8-88. NNTN4819A VOCON Board Overall Schematic—Sheet 1 of 2

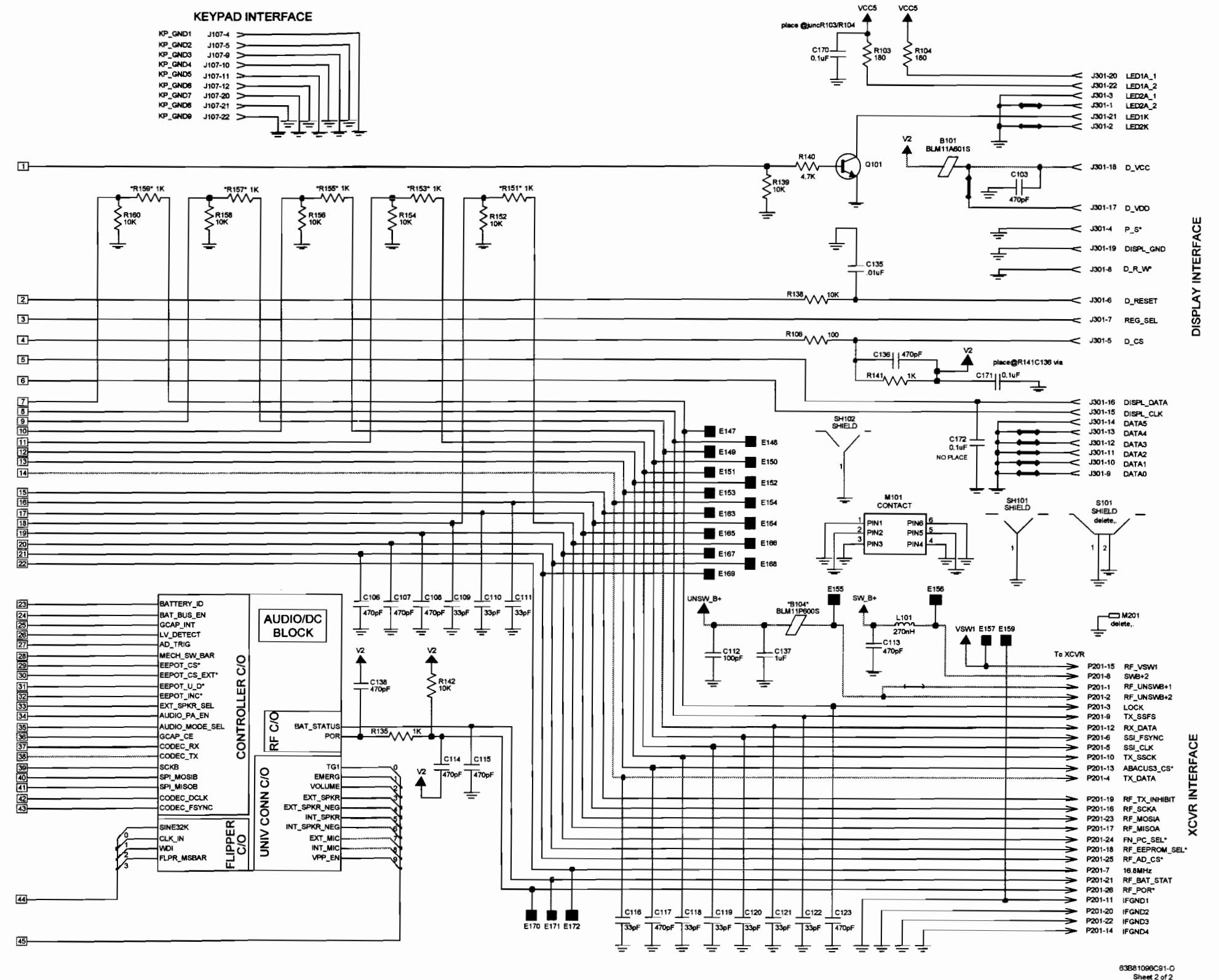


Figure 8-89. NNTN4819A VOCON Board Overall Schematic—Sheet 2 of 2

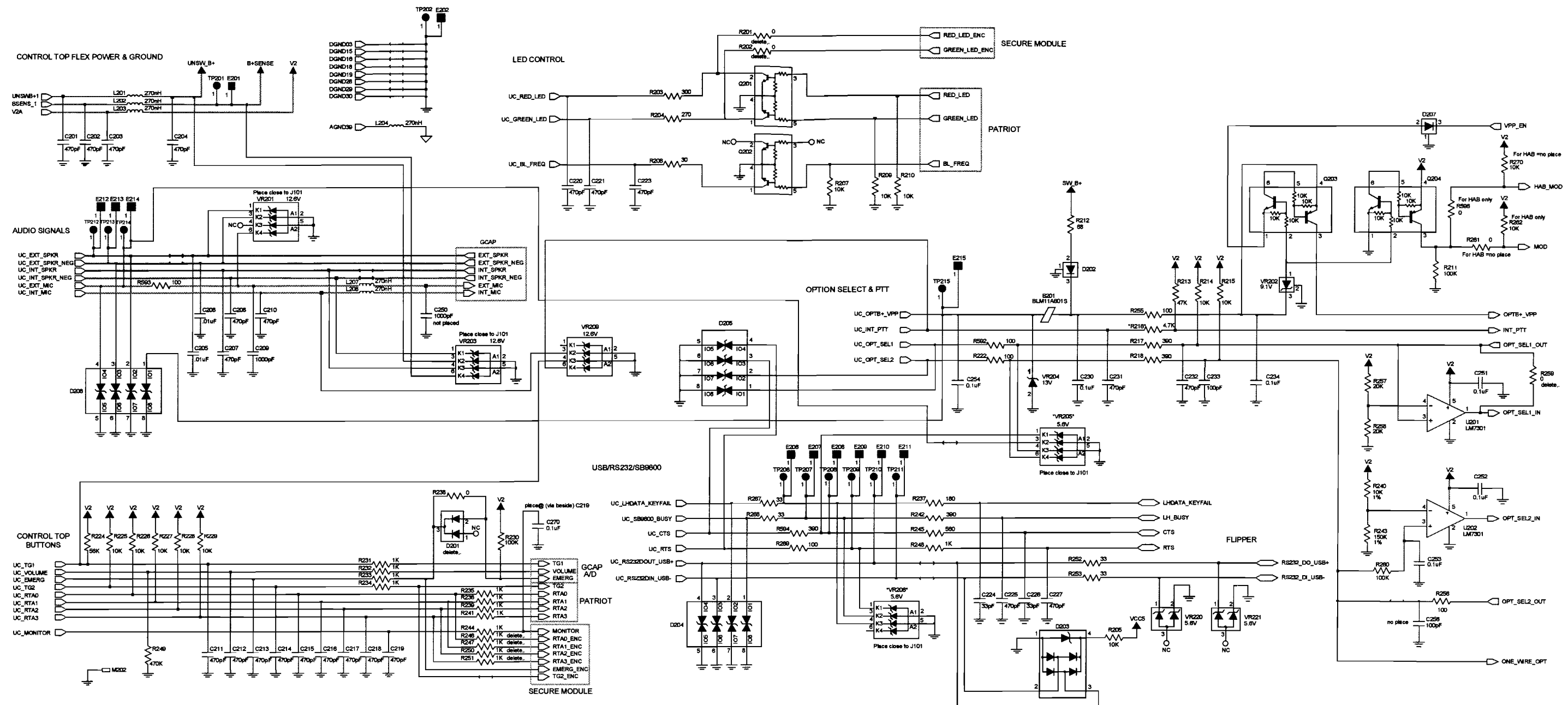


Figure 8-90. NNTN4819A VOCON Universal Connector and ESD Circuits

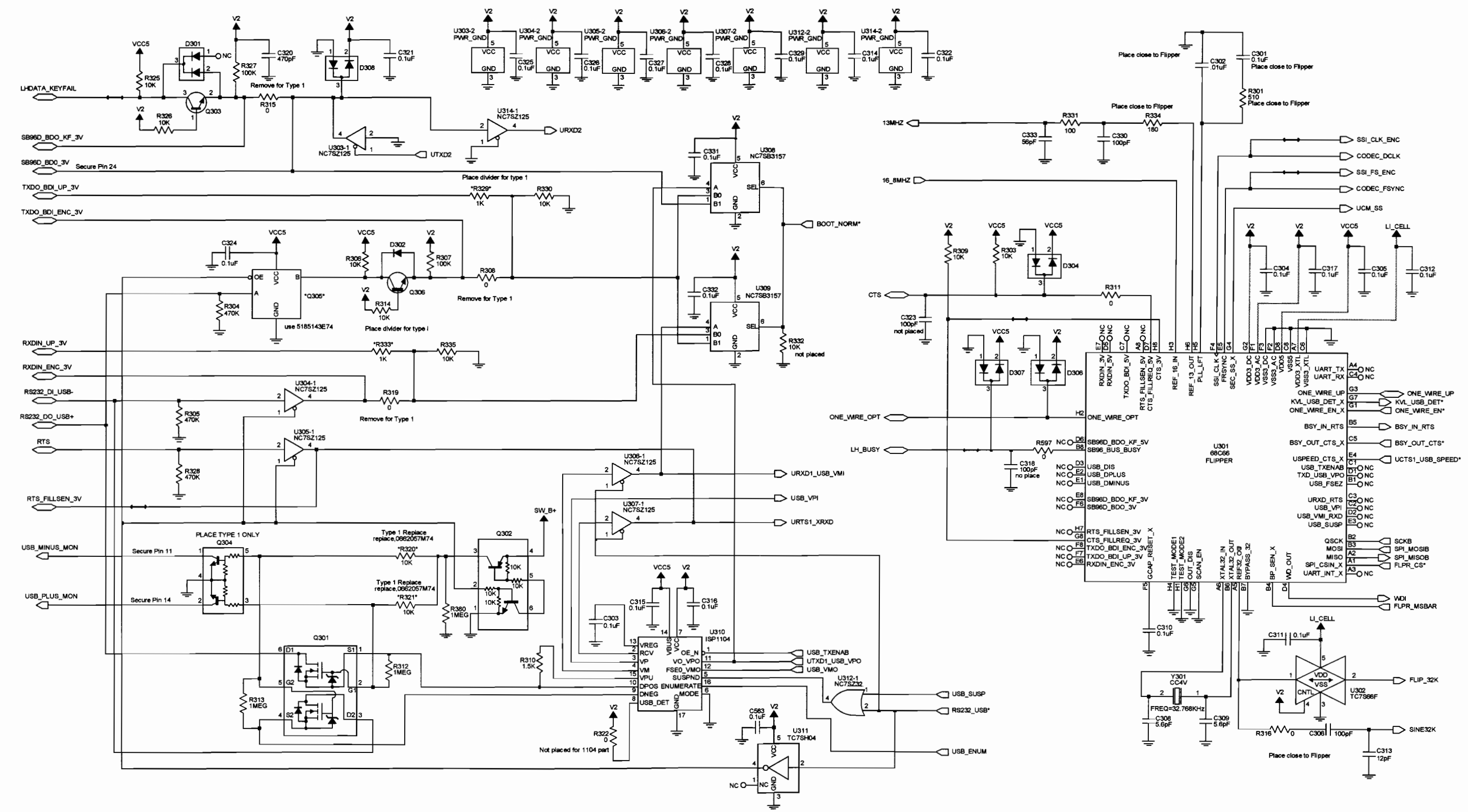
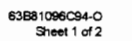


Figure 8-91. NNTN4819A VOCON Flipper Circuit



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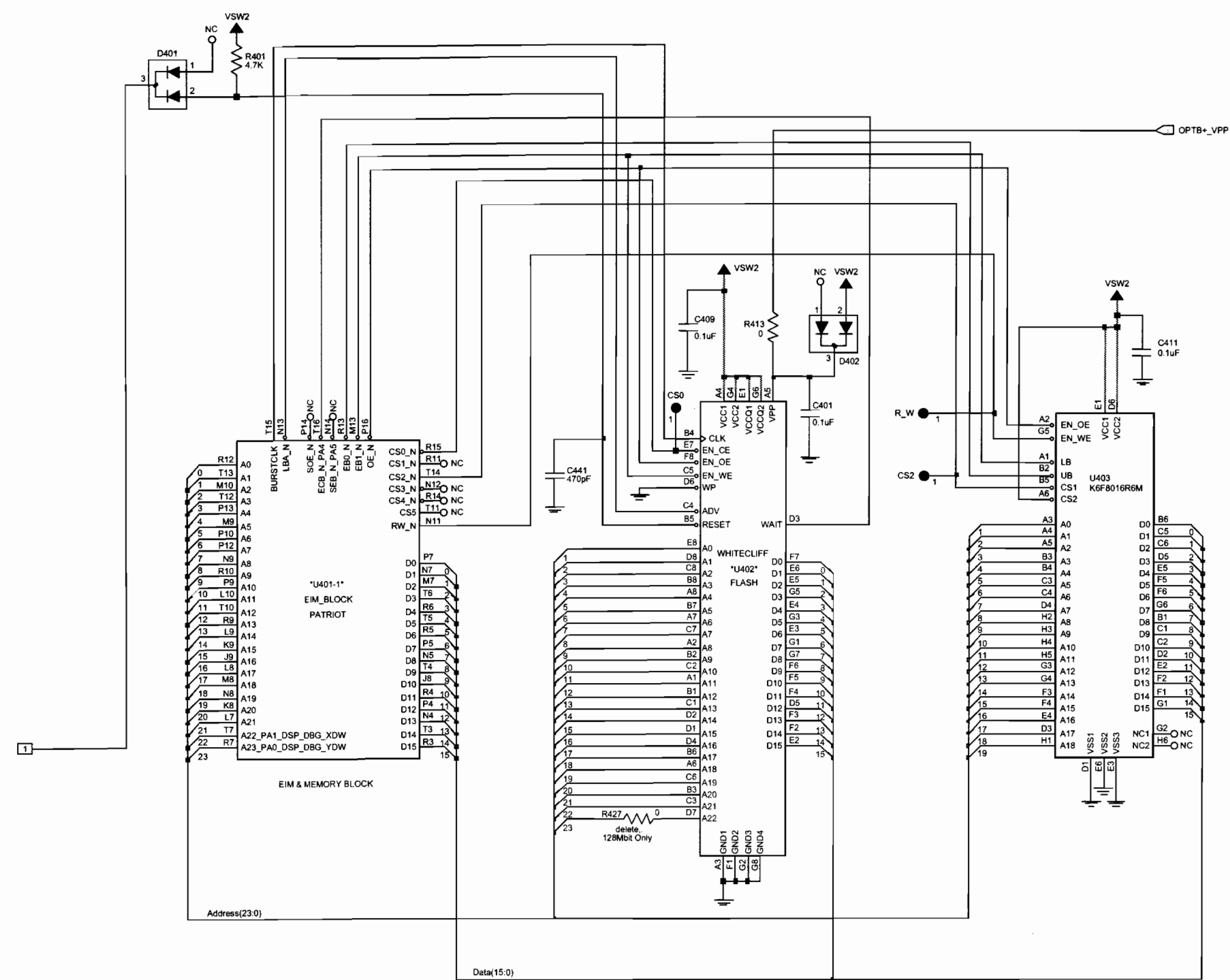


Figure 8-93. NNTN4819A VOCON Controller and Memory Circuits—Sheet 2 of 2

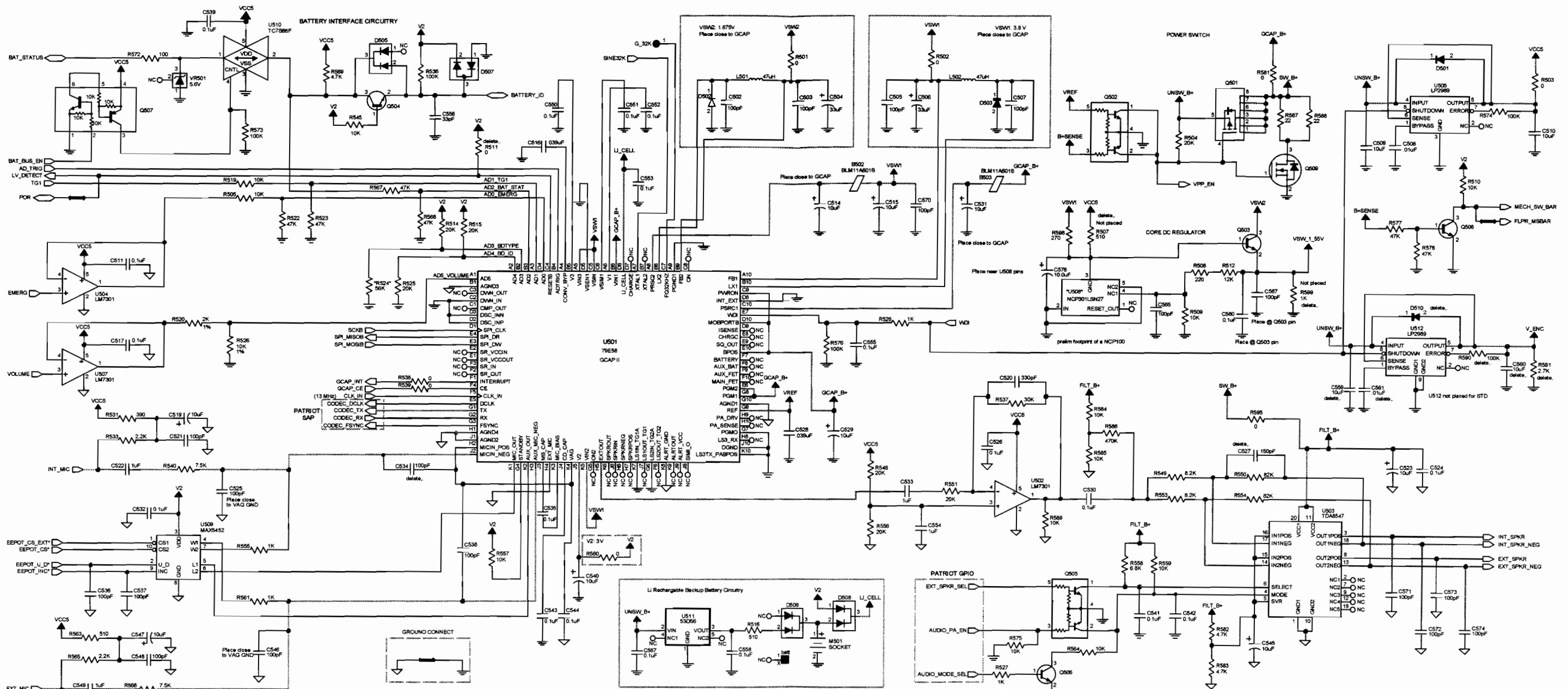


Figure 8-94. NNTN4819A VOCON Audio/DC Circuits

63B81096C95-0

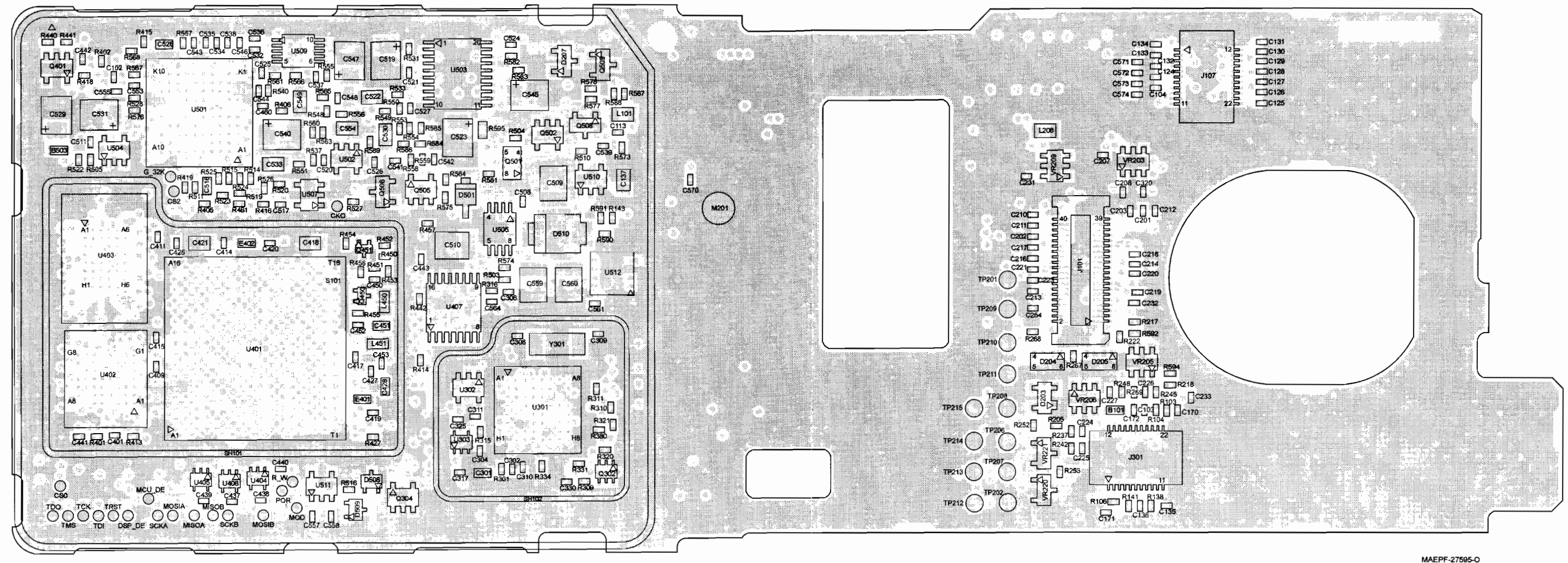
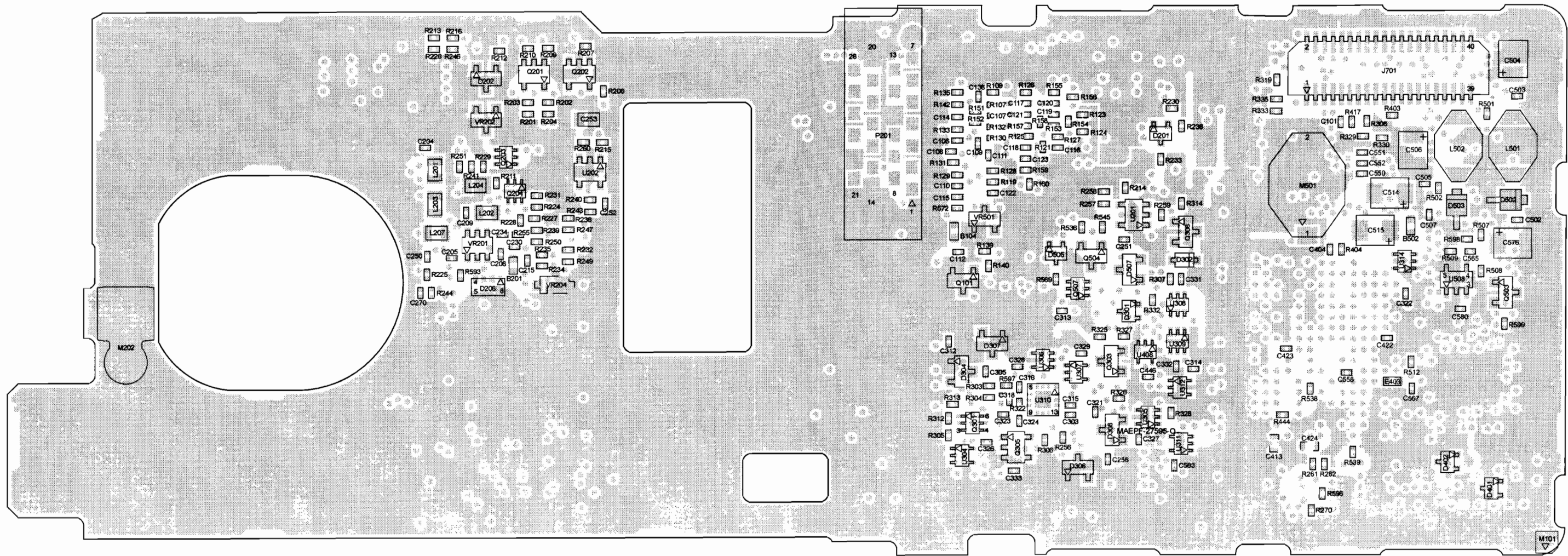


Figure 8-95. NNTN4819A VOCON Board Layout—Side 1



MAEPF-27596-O

Figure 8-96. NNTN4819A VOCON Board Layout—Side 2

NNTN4819A VOCON Board Parts List

Ref. Des.	Part Number	Description
B101	2480574F01	IND FERRITE CHIP 600 OHM 0603
B104	2462586G33	INDUCTOR CHIP FERRITE BEADS
B201	2480574F01	IND FERRITE CHIP 600 OHM 0603
B502	2480574F01	IND FERRITE CHIP 600 OHM 0603
B503	2480574F01	IND FERRITE CHIP 600 OHM 0603
BATT	6003710K08	BATT COIN 3.3V LIION
C101	2113743L09	CAP CHIP 470 PF 10% X7R
C102	2113743L09	CAP CHIP 470 PF 10% X7R
C103	2113743L09	CAP CHIP 470 PF 10% X7R
C104	2113743L09	CAP CHIP 470 PF 10% X7R
C106	2113743L09	CAP CHIP 470 PF 10% X7R
C107	2113743L09	CAP CHIP 470 PF 10% X7R
C108	2113743L09	CAP CHIP 470 PF 10% X7R
C109	2113743N38	CAP CHIP 33.0 PF 5% COG
C110	2113743N38	CAP CHIP 33.0 PF 5% COG
C111	2113743N38	CAP CHIP 33.0 PF 5% COG
C112	2113743N50	CAP CHIP 100 PF 5% COG
C113	2113743L09	CAP CHIP 470 PF 10% X7R
C114	2113743L09	CAP CHIP 470 PF 10% X7R
C115	2113743L09	CAP CHIP 470 PF 10% X7R
C116	2113743N38	CAP CHIP 33.0 PF 5% COG
C117	2113743L09	CAP CHIP 470 PF 10% X7R
C118	2113743N38	CAP CHIP 33.0 PF 5% COG
C119	2113743N38	CAP CHIP 33.0 PF 5% COG
C120	2113743N38	CAP CHIP 33.0 PF 5% COG
C121	2113743N38	CAP CHIP 33.0 PF 5% COG
C122	2113743N38	CAP CHIP 33.0 PF 5% COG
C123	2113743L09	CAP CHIP 470 PF 10% X7R
C124	2113743L09	CAP CHIP 470 PF 10% X7R
C125	2113743L09	CAP CHIP 470 PF 10% X7R
C126	2113743L09	CAP CHIP 470 PF 10% X7R
C127	2113743L09	CAP CHIP 470 PF 10% X7R
C128	2113743L09	CAP CHIP 470 PF 10% X7R
C129	2113743L09	CAP CHIP 470 PF 10% X7R

Ref. Des.	Part Number	Description
C130	2113743L09	CAP CHIP 470 PF 10% X7R
C131	2113743L09	CAP CHIP 470 PF 10% X7R
C132	2113743L09	CAP CHIP 470 PF 10% X7R
C133	2113743L09	CAP CHIP 470 PF 10% X7R
C134	2113743L09	CAP CHIP 470 PF 10% X7R
C135	2113743L41	CAP CHIP 10000 PF 10% X7R
C136	2113743L09	CAP CHIP 470 PF 10% X7R
C137	2113743A31	CAP CHIP 1.0UF 10% X7R
C138	2113743L09	CAP CHIP 470 PF 10% X7R
C170	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C171	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C172	NOTPLACED	NOTPLACED
C201	2113743L09	CAP CHIP 470 PF 10% X7R
C202	2113743L09	CAP CHIP 470 PF 10% X7R
C203	2113743L09	CAP CHIP 470 PF 10% X7R
C204	2113743L09	CAP CHIP 470 PF 10% X7R
C205	2113743L41	CAP CHIP 10000 PF 10% X7R
C206	2113743L41	CAP CHIP 10000 PF 10% X7R
C207	2113743L09	CAP CHIP 470 PF 10% X7R
C208	2113743L09	CAP CHIP 470 PF 10% X7R
C209	2113743L17	CAP CHIP 1000 PF 10% X7R
C210	2113743L09	CAP CHIP 470 PF 10% X7R
C211	2113743L09	CAP CHIP 470 PF 10% X7R
C212	2113743L09	CAP CHIP 470 PF 10% X7R
C213	2113743L09	CAP CHIP 470 PF 10% X7R
C214	2113743L09	CAP CHIP 470 PF 10% X7R
C215	2113743L09	CAP CHIP 470 PF 10% X7R
C216	2113743L09	CAP CHIP 470 PF 10% X7R
C217	2113743L09	CAP CHIP 470 PF 10% X7R
C218	2113743L09	CAP CHIP 470 PF 10% X7R
C219	2113743L09	CAP CHIP 470 PF 10% X7R
C220	2113743L09	CAP CHIP 470 PF 10% X7R
C221	2113743L09	CAP CHIP 470 PF 10% X7R
C223	2113743L09	CAP CHIP 470 PF 10% X7R
C224	2113743N38	CAP CHIP 33.0 PF 5% COG

Ref. Des.	Part Number	Description
C225	2113743L09	CAP CHIP 470 PF 10% X7R
C226	2113743N38	CAP CHIP 33.0 PF 5% COG
C227	2113743L09	CAP CHIP 470 PF 10% X7R
C230	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C231	2113743L09	CAP CHIP 470 PF 10% X7R
C232	2113743L09	CAP CHIP 470 PF 10% X7R
C233	2113743N50	CAP CHIP 100 PF 5% COG
C234	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C250	NOTPLACED	NOTPLACED
C251	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C252	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C253	2113743A19	CAP CHIP .100 UF 10% X7R
C254	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C256	NOTPLACED	NOTPLACED
C270	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C301	2113743E20	CAP CHIP .10 UF 10%
C302	2113743L41	CAP CHIP 10000 PF 10% X7R
C303	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C304	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C305	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C306	2113743N50	CAP CHIP 100 PF 5% COG
C308	2113743N20	CAP CHIP 5.6PF +-.5PF COG
C309	2113743N20	CAP CHIP 5.6PF +-.5PF COG
C310	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C311	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C312	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C313	2113743N28	CAP CHIP 12.0 PF 5% COG

Ref. Des.	Part Number	Description
C314	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C315	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C316	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C317	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C318	NOTPLACED	NOTPLACED
C320	2113743L09	CAP CHIP 470 PF 10% X7R
C321	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C322	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C323	NOTPLACED	NOTPLACED
C324	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C325	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C326	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C327	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C328	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C329	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C330	2113743N50	CAP CHIP 100 PF 5% COG
C331	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C332	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C333	2113743N44	CAP CHIP 56.0 PF 5% COG
C401	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C404	NOTPLACED	NOTPLACED
C409	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C411	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C413	2113743E04	CAP CER CHIP .016UF
C414	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C415	2113743M24	CAP CHIP 100000 PF +80-20% Y5V

Ref. Des.	Part Number	Description
C417	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C418	2113743A31	CAP CHIP 1.0UF 10% X7R
C419	2113743N50	CAP CHIP 100 PF 5% COG
C420	2113743N50	CAP CHIP 100 PF 5% COG
C421	2113743A31	CAP CHIP 1.0UF 10% X7R
C422	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C423	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C424	2113743E04	CAP CER CHIP .016UF
C425	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C427	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C428	2113743E04	CAP CER CHIP .016UF
C437	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C438	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C439	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C440	2113743N50	CAP CHIP 100 PF 5% COG
C441	2113743L09	CAP CHIP 470 PF 10% X7R
C442	NOTPLACED	NOTPLACED
C443	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C446	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C450	2113743N28	CAP CHIP 12.0 PF 5% COG
C451	2113743E20	CAP CHIP .10 UF 10%
C452	2113743L17	CAP CHIP 1000 PF 10% X7R
C453	NOTPLACED	NOTPLACED
C460	NOTPLACED	NOTPLACED
C502	2113743N50	CAP CHIP 100 PF 5% COG
C503	2113743N50	CAP CHIP 100 PF 5% COG
C504	2311049C52	CAP TANT CHIP 33UF 10% 10V
C505	2113743N50	CAP CHIP 100 PF 5% COG
C506	2311049C52	CAP TANT CHIP 33UF 10% 10V
C507	2113743N50	CAP CHIP 100 PF 5% COG

Ref. Des.	Part Number	Description
C508	2113743L41	CAP CHIP 10000 PF 10% X7R
C509	2113743T19	CAP 10UF 16V CER 3225 X5R
C510	2113743T19	CAP 10UF 16V CER 3225 X5R
C511	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C514	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C515	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C516	2113743E11	CAP CHIP .039 UF 10% X7R
C517	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C519	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C520	2113743L05	CAP CHIP 330 PF 10% X7R
C521	2113743N50	CAP CHIP 100 PF 5% COG
C522	2113743A31	CAP CHIP 1.0UF 10% X7R
C523	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C524	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C525	2113743N50	CAP CHIP 100 PF 5% COG
C526	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C527	NOTPLACED	NOTPLACED
C528	2113743E11	CAP CHIP .039 UF 10% X7R
C529	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C530	2113743A19	CAP CHIP .100 UF 10% X7R
C531	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C532	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C533	2113743A31	CAP CHIP 1.0UF 10% X7R
C534	NOTPLACED	NOTPLACED
C535	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C536	2113743N50	CAP CHIP 100 PF 5% COG

Ref. Des.	Part Number	Description
C537	2113743N50	CAP CHIP 100 PF 5% COG
C538	2113743N50	CAP CHIP 100 PF 5% COG
C539	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C540	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C541	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C542	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C543	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C544	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C545	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C546	2113743N50	CAP CHIP 100 PF 5% COG
C547	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C548	2113743N50	CAP CHIP 100 PF 5% COG
C549	2113743A31	CAP CHIP 1.0UF 10% X7R
C550	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C551	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C552	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C553	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C554	2113743A31	CAP CHIP 1.0UF 10% X7R
C555	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C556	2113743N38	CAP CHIP 33.0 PF 5% COG
C557	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C558	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C559	NOTPLACED	NOTPLACED
C560	NOTPLACED	NOTPLACED
C561	NOTPLACED	NOTPLACED
C563	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C564	2113743M24	CAP CHIP 100000 PF +80-20% Y5V

Ref. Des.	Part Number	Description
C565	NOTPLACED	NOTPLACED
C567	NOTPLACED	NOTPLACED
C570	2113743N50	CAP CHIP 100 PF 5% COG
C571	2113743N50	CAP CHIP 100 PF 5% COG
C572	2113743N50	CAP CHIP 100 PF 5% COG
C573	2113743N50	CAP CHIP 100 PF 5% COG
C574	2113743N50	CAP CHIP 100 PF 5% COG
C576	NOTPLACED	NOTPLACED
C580	NOTPLACED	NOTPLACED
D201	NOTPLACED	NOTPLACED
D202	4805129M90	DIODE SOT PKGD
D203	4802021P15	ZENER SR05
D204	4805656W39	QUAD ESD SUPPRESSOR ARRAY -41206ESDA
D205	4805656W39	QUAD ESD SUPPRESSOR ARRAY -41206ESDA
D206	4805656W39	QUAD ESD SUPPRESSOR ARRAY -41206ESDA
D207	4805129M90	DIODE SOT PKGD
D301	4805218N57	DIODE DUAL
D302	4805656W37	TSTR BAT54HT1
D304	4805129M06	DIODE MMBD7000
D306	4805129M06	DIODE MMBD7000
D307	4805129M06	DIODE MMBD7000
D308	4805129M06	DIODE MMBD7000
D401	4805218N57	DIODE DUAL
D402	4805218N57	DIODE DUAL
D501	4813833A20	DIODE SCHOTTKY 1A 40V PWRMITE
D502	4813833A20	DIODE SCHOTTKY 1A 40V PWRMITE
D503	4813833A20	DIODE SCHOTTKY 1A 40V PWRMITE
D505	4805218N57	DIODE DUAL
D507	4805129M06	DIODE MMBD7000
D508	4805218N57	DIODE DUAL
D509	4805218N57	DIODE DUAL
D510	NOTPLACED	NOTPLACED
E401	2480574F01	IND FERRITE CHIP 600 OHM 0603

Ref. Des.	Part Number	Description
E402	2480574F01	IND FERRITE CHIP 600 OHM 0603
E403	NOTPLACED	NOTPLACED
J101	0985185D01	CONN RECEP 0.5MM PITCH 40 CKTS
J107	0987817K01	RECP BTB 0.5P 1.5 STACK SMD
J301	0987817K01	RECP BTB 0.5P 1.5 STACK SMD
J701	0980423L02	40PIN ROBIN CONN 3MM
L101	2404574Z14	IND CHIP WW 270NH 2% 2012 SMD
L201	2404574Z14	IND CHIP WW 270NH 2% 2012 SMD
L202	2404574Z14	IND CHIP WW 270NH 2% 2012 SMD
L203	2404574Z14	IND CHIP WW 270NH 2% 2012 SMD
L204	2404574Z14	IND CHIP WW 270NH 2% 2012 SMD
L207	2404574Z14	IND CHIP WW 270NH 2% 2012 SMD
L208	2404574Z14	IND CHIP WW 270NH 2% 2012 SMD
L450	2462587Q20	IND CHIP 2,200 NH 20%
L451	0662057C01	CHIP RES 0 OHMS +.050 OHMS
L501	2486085A06	COIL 47UH SMT POWER INDUCTOR
L502	2486085A06	COIL 47UH SMT POWER INDUCTOR
M202	3985951A01	CONTACT ANTENNA GROUND
M501	0985888K02	SKT RTC BTTY LEAP
PCB	8485871E03	PCB XTS5000
Q101	4813824A10	TSTR NPN 40V .2A GEN PURP
Q201	4805921T09	XSTR DUAL ROHM FMG8
Q202	4805921T09	XSTR DUAL ROHM FMG8
Q203	4805723X03	TRANS DUAL NPN-PNP UMD3N ROHM
Q204	4805723X03	TRANS DUAL NPN-PNP UMD3N ROHM
Q301	4809579E35	TSTR FET DUAL N-CHAN FDG3601N

Ref. Des.	Part Number	Description
Q302	4805723X03	TRANS DUAL NPN-PNP UMD3N ROHM
Q303	4813824A10	TSTR NPN 40V .2A GEN PURP
Q304	NOTPLACED	NOTPLACED
Q305	5185143E74	IC SINGLE FET BUS SWITCH
Q306	4813824A10	TSTR NPN 40V .2A GEN PURP
Q401	NOTPLACED	NOTPLACED
Q450	4805793Y01	TRANS MINI SOT NPN LOW NOISE
Q451	4805793Y01	TRANS MINI SOT NPN LOW NOISE
Q501	4885844C01	XSTR FET
Q502	4805921T09	XSTR DUAL ROHM FMG8
Q503	NOTPLACED	NOTPLACED
Q504	4813824A10	TSTR NPN 40V .2A GEN PURP
Q505	4805921T09	XSTR DUAL ROHM FMG8
Q506	4813824A10	TSTR NPN 40V .2A GEN PURP
Q507	4805723X03	TRANS DUAL NPN-PNP UMD3N ROHM
Q508	4813824A10	TSTR NPN 40V .2A GEN PURP
Q509	4805218N11	XISTOR SOT RH BST82
R103	0662057M56	RES. CHIP 180 5% 20X40
R104	0662057M56	RES. CHIP 180 5% 20X40
R106	0662057M50	RES. CHIP 100 5% 20X40
R107	0662057M98	RES. CHIP 10K 5% 20X40
R109	0662057M01	RES. CHIP 0 5% 20X40
R119	0662057M50	RES. CHIP 100 5% 20X40
R121	0662057M74	RES. CHIP 1000 5% 20X40
R123	0662057M74	RES. CHIP 1000 5% 20X40
R124	0662057M74	RES. CHIP 1000 5% 20X40
R125	0662057M50	RES. CHIP 100 5% 20X40
R126	0662057M50	RES. CHIP 100 5% 20X40
R127	0662057M74	RES. CHIP 1000 5% 20X40
R128	0662057M74	RES. CHIP 1000 5% 20X40
R129	0662057M74	RES. CHIP 1000 5% 20X40
R130	0662057M74	RES. CHIP 1000 5% 20X40

Ref. Des.	Part Number	Description
R131	0662057M50	RES. CHIP 100 5% 20X40
R132	0662057M01	RES. CHIP 0 5% 20X40
R133	0662057M01	RES. CHIP 0 5% 20X40
R135	0662057M74	RES. CHIP 1000 5% 20X40
R138	0662057M98	RES. CHIP 10K 5% 20X40
R139	0662057M98	RES. CHIP 10K 5% 20X40
R140	0662057M90	RES. CHIP 4700 5% 20X40
R141	NOTPLACED	NOTPLACED
R142	0662057M98	RES. CHIP 10K 5% 20X40
R143	0662057M01	RES. CHIP 0 5% 20X40
R151	0662057M01	RES. CHIP 0 5% 20X40
R152	NOTPLACED	NOTPLACED
R153	0662057M01	RES. CHIP 0 5% 20X40
R154	NOTPLACED	NOTPLACED
R155	0662057M01	RES. CHIP 0 5% 20X40
R156	NOTPLACED	NOTPLACED
R157	0662057M01	RES. CHIP 0 5% 20X40
R158	NOTPLACED	NOTPLACED
R159	0662057M01	RES. CHIP 0 5% 20X40
R160	NOTPLACED	NOTPLACED
R201	NOTPLACED	NOTPLACED
R202	NOTPLACED	NOTPLACED
R203	0662057M61	RES. CHIP 300 5% 20X40
R204	0662057M60	RES. CHIP 270 5% 20X40
R205	0662057M98	RES. CHIP 10K 5% 20X40
R206	0662057M37	20X40 30 OMH 5% CHIP RESISTOR
R207	0662057M98	RES. CHIP 10K 5% 20X40
R209	0662057M98	RES. CHIP 10K 5% 20X40
R210	0662057M98	RES. CHIP 10K 5% 20X40
R211	0662057N23	RES. CHIP 100K 5% 20X40
R212	0662057M46	RES. CHIP 68 5% 20X40
R213	0662057N15	RES. CHIP 47K 5% 20X40
R214	0662057M98	RES. CHIP 10K 5% 20X40
R215	0662057M98	RES. CHIP 10K 5% 20X40
R216	0662057M90	RES. CHIP 4700 5% 20X40
R217	0662057M64	RES. CHIP 390 5% 20X40
R218	0662057M64	RES. CHIP 390 5% 20X40
R222	0662057M50	RES. CHIP 100 5% 20X40

Ref. Des.	Part Number	Description
R224	0662057N17	RES. CHIP 56K 5% 20X40
R225	0662057M98	RES. CHIP 10K 5% 20X40
R226	0662057M98	RES. CHIP 10K 5% 20X40
R227	0662057M98	RES. CHIP 10K 5% 20X40
R228	0662057M98	RES. CHIP 10K 5% 20X40
R229	0662057M98	RES. CHIP 10K 5% 20X40
R230	0662057N23	RES. CHIP 100K 5% 20X40
R231	0662057M74	RES. CHIP 1000 5% 20X40
R232	0662057M74	RES. CHIP 1000 5% 20X40
R233	0662057M74	RES. CHIP 1000 5% 20X40
R234	0662057M74	RES. CHIP 1000 5% 20X40
R235	0662057M74	RES. CHIP 1000 5% 20X40
R236	0662057M74	RES. CHIP 1000 5% 20X40
R237	0662057M56	RES. CHIP 180 5% 20X40
R238	0662057M01	RES. CHIP 0 5% 20X40
R239	0662057M74	RES. CHIP 1000 5% 20X40
R240	0662057V02	RES CHIP 10K 1% 1/16W
R241	0662057M74	RES. CHIP 1000 5% 20X40
R242	0662057M64	RES. CHIP 390 5% 20X40
R243	0662057V32	RESISTOR, 150 KOHM, 20X40, 1%
R244	0662057M74	RES. CHIP 1000 5% 20X40
R245	0662057M68	560 OHM TX LOOP FILTER
R246	NOTPLACED	NOTPLACED
R247	NOTPLACED	NOTPLACED
R248	0662057M74	RES. CHIP 1000 5% 20X40
R249	0662057N39	RES. CHIP 470K 5% 20X40
R250	NOTPLACED	NOTPLACED
R251	NOTPLACED	NOTPLACED
R252	0662057M38	RES. CHIP 33 5% 20X40
R253	0662057M38	RES. CHIP 33 5% 20X40
R255	0662057M50	RES. CHIP 100 5% 20X40
R256	0662057M50	RES. CHIP 100 5% 20X40
R257	0662057N06	RES. CHIP 20K 5% 20X40
R258	0662057N06	RES. CHIP 20K 5% 20X40
R259	NOTPLACED	NOTPLACED
R260	0662057N23	RES. CHIP 100K 5% 20X40
R261	0662057M01	RES. CHIP 0 5% 20X40
R262	NOTPLACED	NOTPLACED

Ref. Des.	Part Number	Description
R267	0662057M38	RES. CHIP 33 5% 20X40
R268	0662057M38	RES. CHIP 33 5% 20X40
R269	0662057M50	RES. CHIP 100 5% 20X40
R270	0662057M98	RES. CHIP 10K 5% 20X40
R301	0662057M67	RES. CHIP 510 5% 20X40
R303	0662057M98	RES. CHIP 10K 5% 20X40
R304	0662057N39	RES. CHIP 470K 5% 20X40
R305	0662057N39	RES. CHIP 470K 5% 20X40
R306	0662057M98	RES. CHIP 10K 5% 20X40
R307	0662057N23	RES. CHIP 100K 5% 20X40
R308	0662057M01	RES. CHIP 0 5% 20X40
R309	0662057M98	RES. CHIP 10K 5% 20X40
R310	0662057M78	RES. CHIP 1500 5% 20X40
R311	0662057M01	RES. CHIP 0 5% 20X40
R312	0662057N47	RES. CHIP 1.0 MEG 5% 20X40
R313	0662057N47	RES. CHIP 1.0 MEG 5% 20X40
R314	0662057M98	RES. CHIP 10K 5% 20X40
R315	0662057M01	RES. CHIP 0 5% 20X40
R316	0662057M01	RES. CHIP 0 5% 20X40
R319	0662057M01	RES. CHIP 0 5% 20X40
R320	0662057M98	RES. CHIP 10K 5% 20X40
R321	0662057M98	RES. CHIP 10K 5% 20X40
R322	NOTPLACED	NOTPLACED
R325	0662057M98	RES. CHIP 10K 5% 20X40
R326	0662057M98	RES. CHIP 10K 5% 20X40
R327	0662057N23	RES. CHIP 100K 5% 20X40
R328	0662057N39	RES. CHIP 470K 5% 20X40
R329	NOTPLACED	NOTPLACED
R330	NOTPLACED	NOTPLACED
R331	0662057M50	RES. CHIP 100 5% 20X40
R332	NOTPLACED	NOTPLACED
R333	NOTPLACED	NOTPLACED
R334	0662057M56	RES. CHIP 180 5% 20X40
R335	NOTPLACED	NOTPLACED
R380	0662057N47	RES. CHIP 1.0 MEG 5% 20X40
R401	0662057M90	RES. CHIP 4700 5% 20X40
R402	0662057M01	RES. CHIP 0 5% 20X40

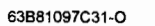
Ref. Des.	Part Number	Description
R403	0662057M01	RES. CHIP 0 5% 20X40
R404	0662057M01	RES. CHIP 0 5% 20X40
R405	0662057M01	RES. CHIP 0 5% 20X40
R406	0662057M01	RES. CHIP 0 5% 20X40
R413	0662057M01	RES. CHIP 0 5% 20X40
R414	0662057M98	RES. CHIP 10K 5% 20X40
R415	0662057M01	RES. CHIP 0 5% 20X40
R416	0662057M01	RES. CHIP 0 5% 20X40
R417	0662057M01	RES. CHIP 0 5% 20X40
R418	0662057M01	RES. CHIP 0 5% 20X40
R419	0662057M98	RES. CHIP 10K 5% 20X40
R427	NOTPLACED	NOTPLACED
R440	NOTPLACED	NOTPLACED
R441	NOTPLACED	NOTPLACED
R442	0662057M01	RES. CHIP 0 5% 20X40
R444	0662057M01	RES. CHIP 0 5% 20X40
R450	0662057N15	RES. CHIP 47K 5% 20X40
R451	0662057M78	RES. CHIP 1500 5% 20X40
R452	0662057M42	RES. CHIP 47 5% 20X40
R453	0662057N11	RES. CHIP 33K 5% 20X40
R454	0662057M64	RES. CHIP 390 5% 20X40
R455	0662057M74	RES. CHIP 1000 5% 20X40
R456	NOTPLACED	NOTPLACED
R457	0662057M90	RES. CHIP 4700 5% 20X40
R461	NOTPLACED	NOTPLACED
R501	0662057M01	RES. CHIP 0 5% 20X40
R502	0662057M01	RES. CHIP 0 5% 20X40
R503	0662057M01	RES. CHIP 0 5% 20X40
R504	0662057N06	RES. CHIP 20K 5% 20X40
R505	0662057M98	RES. CHIP 10K 5% 20X40
R507	NOTPLACED	NOTPLACED
R508	NOTPLACED	NOTPLACED
R509	NOTPLACED	NOTPLACED
R510	0662057M98	RES. CHIP 10K 5% 20X40
R511	NOTPLACED	NOTPLACED
R512	NOTPLACED	NOTPLACED
R514	0662057N06	RES. CHIP 20K 5% 20X40
R515	0662057N06	RES. CHIP 20K 5% 20X40
R516	0662057M67	RES. CHIP 510 5% 20X40

Ref. Des.	Part Number	Description
R519	0662057M98	RES. CHIP 10K 5% 20X40
R520	0662057U84	RES CHIP 2K 1% 1/16W
R522	0662057N15	RES. CHIP 47K 5% 20X40
R523	0662057N15	RES. CHIP 47K 5% 20X40
R524	0662057N17	RES. CHIP 56K 5% 20X40
R525	0662057N06	RES. CHIP 20K 5% 20X40
R526	0662057V02	RES CHIP 10K 1% 1/16W
R527	0662057M74	RES. CHIP 1000 5% 20X40
R528	0662057M74	RES. CHIP 1000 5% 20X40
R531	0662057M64	RES. CHIP 390 5% 20X40
R533	0662057M82	RES. CHIP 2200 5% 20X40
R536	0662057N23	RES. CHIP 100K 5% 20X40
R537	0662057N10	RES. CHIP 30K 5% 20X40
R538	0662057M01	RES. CHIP 0 5% 20X40
R539	0662057M01	RES. CHIP 0 5% 20X40
R540	0662057M95	RES. CHIP 7500 5% 20X40
R545	0662057M98	RES. CHIP 10K 5% 20X40
R548	0662057N06	RES. CHIP 20K 5% 20X40
R549	0662057M96	RES. CHIP 8200 5% 20X40
R550	0662057V25	RES CHIP 82K 1% 1/16
R551	0662057N06	RES. CHIP 20K 5% 20X40
R553	0662057M96	RES. CHIP 8200 5% 20X40
R554	0662057V25	RES CHIP 82K 1% 1/16
R555	0662057M74	RES. CHIP 1000 5% 20X40
R556	0662057N06	RES. CHIP 20K 5% 20X40
R557	0662057M98	RES. CHIP 10K 5% 20X40
R558	0662057M94	RES. CHIP 6800 5% 20X40
R559	0662057M98	RES. CHIP 10K 5% 20X40
R560	0662057M01	RES. CHIP 0 5% 20X40
R561	0662057M74	RES. CHIP 1000 5% 20X40
R563	0662057M67	RES. CHIP 510 5% 20X40
R564	0662057M98	RES. CHIP 10K 5% 20X40
R565	0662057M82	RES. CHIP 2200 5% 20X40
R566	0662057M95	RES. CHIP 7500 5% 20X40
R567	0662057N15	RES. CHIP 47K 5% 20X40
R568	0662057N15	RES. CHIP 47K 5% 20X40
R569	0662057M90	RES. CHIP 4700 5% 20X40
R572	0662057M50	RES. CHIP 100 5% 20X40
R573	0662057N23	RES. CHIP 100K 5% 20X40

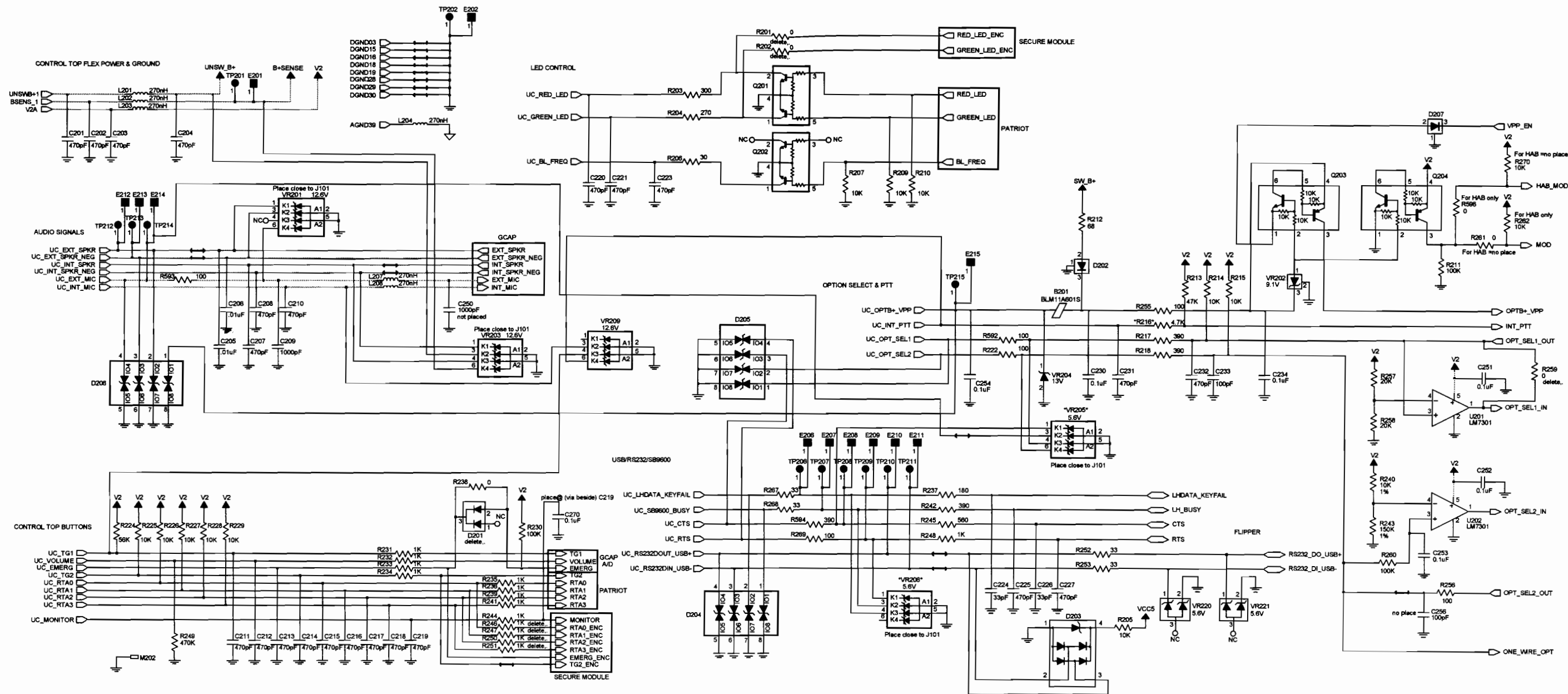
Ref. Des.	Part Number	Description
R574	0662057N23	RES. CHIP 100K 5% 20X40
R575	0662057M98	RES. CHIP 10K 5% 20X40
R576	0662057N23	RES. CHIP 100K 5% 20X40
R577	0662057N15	RES. CHIP 47K 5% 20X40
R578	0662057N15	RES. CHIP 47K 5% 20X40
R581	0662057M01	RES. CHIP 0 5% 20X40
R582	0662057M90	RES. CHIP 4700 5% 20X40
R583	0662057M90	RES. CHIP 4700 5% 20X40
R584	0662057M98	RES. CHIP 10K 5% 20X40
R585	0662057M98	RES. CHIP 10K 5% 20X40
R586	0662057N39	RES. CHIP 470K 5% 20X40
R587	0662057M34	RES. CHIP 22 5% 20X40
R588	0662057M34	RES. CHIP 22 5% 20X40
R589	0662057M98	RES. CHIP 10K 5% 20X40
R590	NOTPLACED	NOTPLACED
R591	NOTPLACED	NOTPLACED
R592	0662057M50	RES. CHIP 100 5% 20X40
R593	0662057M50	RES. CHIP 100 5% 20X40
R594	0662057M64	RES. CHIP 390 5% 20X40
R595	0662057B47	CHIP RES 0 OHMS +/- .050 OHMS
R596	NOTPLACED	NOTPLACED
R597	0662057M01	RES. CHIP 0 5% 20X40
R598	NOTPLACED	NOTPLACED
R599	NOTPLACED	NOTPLACED
SH101	2685462E01	SHEILD PATRIOT
SH102	2685665E01	SHEILD FLIPPER
U201	5109731C15	IC OP AMP SNGL OPA237 SOT23
U202	5109731C15	IC OP AMP SNGL OPA237 SOT23
U301	5185368C66	IC CUSTOM FLIPPER
U302	5105492X92	IC CMOS BILATERAL SWITCH
U303	5109522E53	IC SNGL BUF NC7S125P5X SC70
U304	5109522E53	IC SNGL BUF NC7S125P5X SC70
U305	5109522E53	IC SNGL BUF NC7S125P5X SC70

Ref. Des.	Part Number	Description
U306	5109522E53	IC SNGL BUF NC7S125P5X SC70
U307	5109522E53	IC SNGL BUF NC7S125P5X SC70
U308	5109817F62	IC SPDT SWITCH/ MULTIPLEXER
U309	5109817F62	IC SPDT SWITCH/ MULTIPLEXER
U310	5187970L15	IC USB TRANS FULL- SPEED
U311	5105492X03	IC SNG HI SPD L-MOS NOT GATE
U312	5185368C12	IC 1.8V SN LOGIC GATE
U314	5109522E53	IC SNGL BUF NC7S125P5X SC70
U401	5109841C69	IC 256 BGA 17X17 PACKAGE PATRIOT
U402	5185956E15	IC FLASH 64MB 1.8V 60NS
U403	5185368C82	IC 1.65 TO 2.2V, 70NS, 8MBIT SRAM
U404	5109522E53	IC SNGL BUF NC7S125P5X SC70
U405	5109522E53	IC SNGL BUF NC7S125P5X SC70
U406	5105492X03	IC SNG HI SPD L-MOS NOT GATE
U407	5105109Z31	IC QUAD 2:1 MUX/DEMUX
U408	5109522E53	IC SNGL BUF NC7S125P5X SC70
U501	5109879E58	IC 4.3 GCAPII SN104616DGGMR BG
U502	5109731C15	IC OP AMP SNGL OPA237 SOT23
U503	5102463J44	IC AUDIO PA (PHILIPS_20PIN)
U504	5109731C15	IC OP AMP SNGL OPA237 SOT23
U505	5185353D13	IC MINI SO-8 HI PRECISION REG 5V
U507	5109731C15	IC OP AMP SNGL OPA237 SOT23
U508	NOTPLACED	NOTPLACED
U509	5185353D35	IC DUAL EEPOT 256 TAP
U510	5105492X92	IC CMOS BILATERAL SWITCH

Ref. Des.	Part Number	Description
U511	5185353D56	IC 3.3V LINEAR REGULATOR MC78LC 33NTR
U512	NOTPLACED	NOTPLACED
VR201	4813832C72	TRANS SUP QUAD 12V
VR202	4813830A22	DIODE 9.1V 5% 225MW MMBZ5239B_
VR203	4813832C72	TRANS SUP QUAD 12V
VR204	4813830C26	DIODE 13V 'H3' MMSZ5243BT1
VR205	4805656W08	DIODE ZENER QUAD
VR206	4805656W08	DIODE ZENER QUAD
VR209	4813832C72	TRANS SUP QUAD 12V
VR220	4805656W03	DIODE DUAL 5.6V ZENER
VR221	4805656W03	DIODE DUAL 5.6V ZENER
VR501	4813830A15	DIODE 5.6V 5% 225MW MMBZ5232B_
Y301	4809995L05	XTAL QUARTZ 32.768KHZ CC4V-T1



6881094C31-D



63B81097C30-0

Figure 8-99. NNTN4717D VOCON Board Universal Connector Circuit Schematic

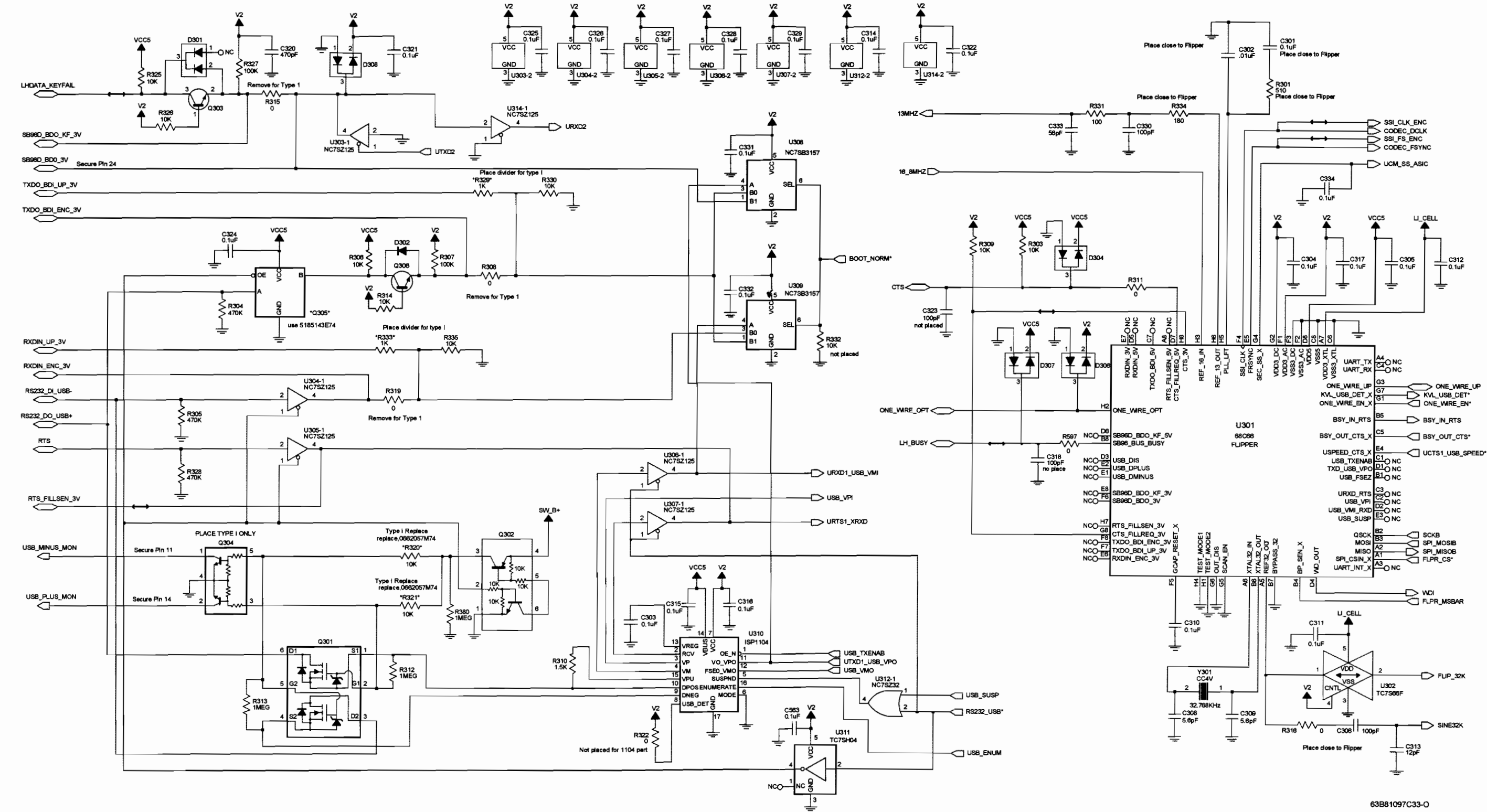
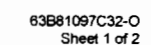
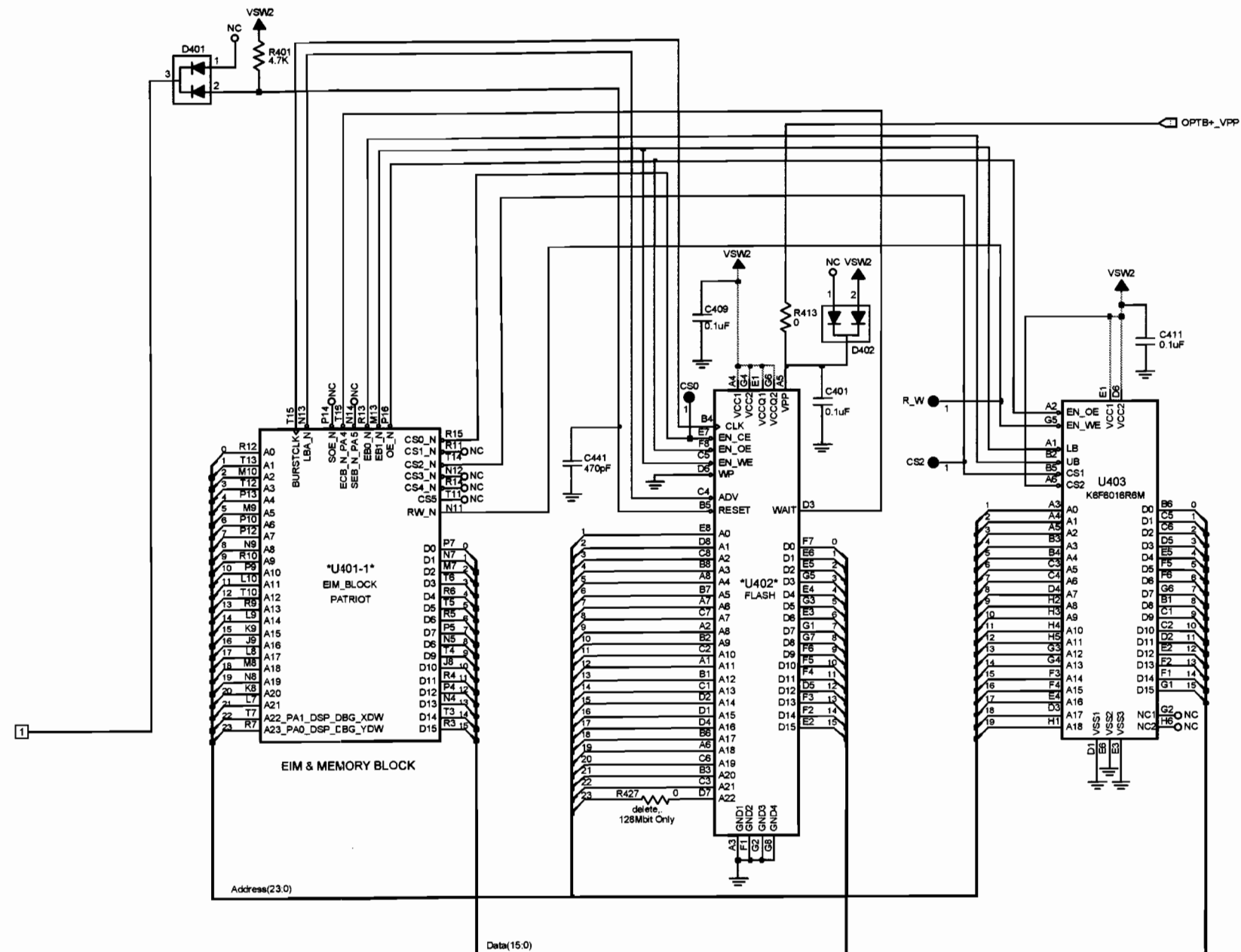


Figure 8-100. NNTN4717D VOCON Board Flipper Circuit

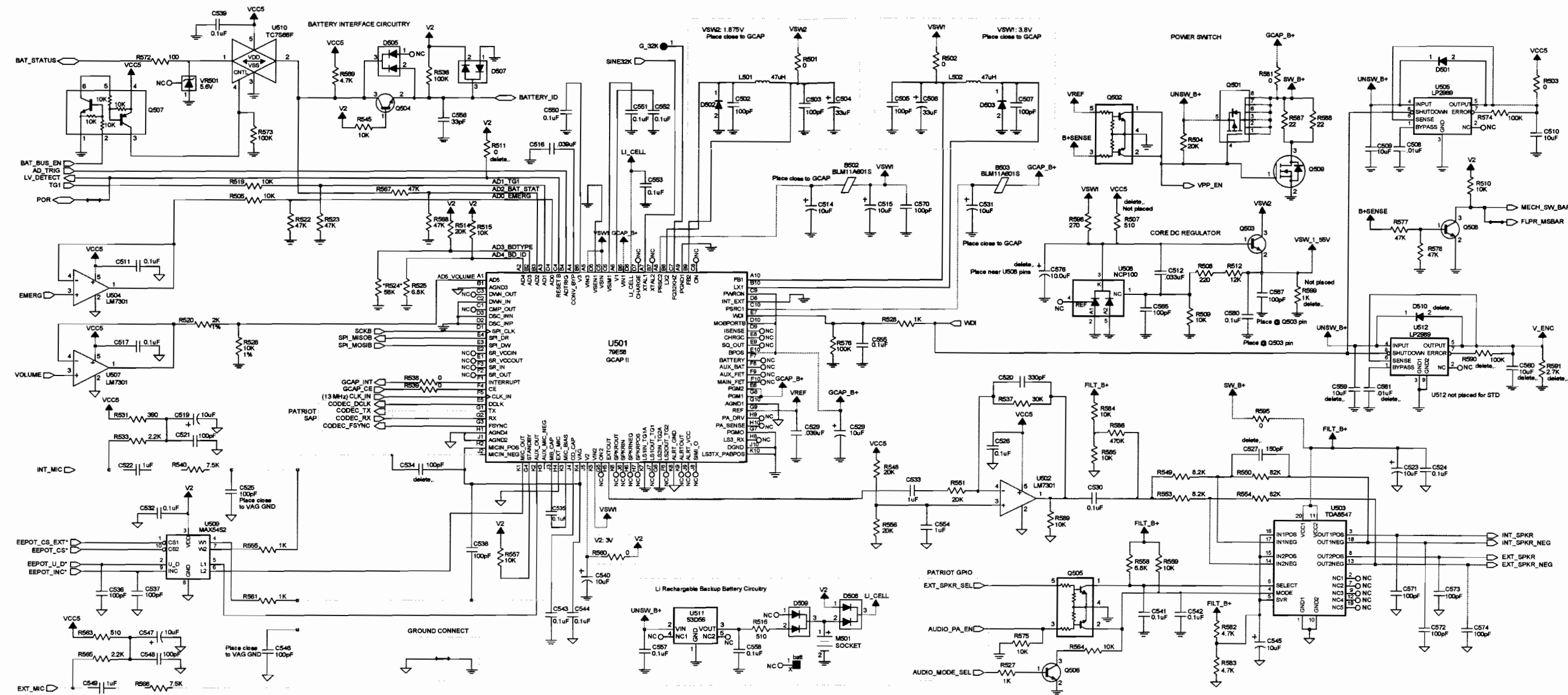


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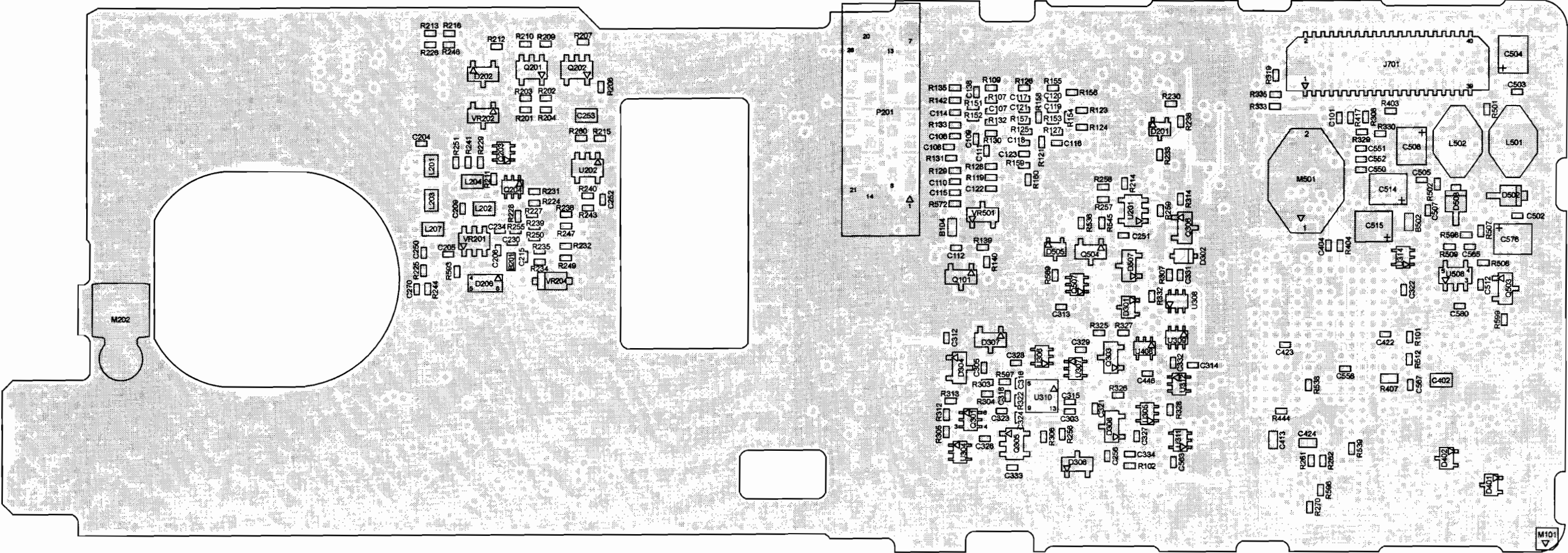
63B81097C32-0
Sheet 2 of 2

Figure 8-102. NNTN4717D VOCON Board Controller and Memory Circuits—Sheet 2 of 2



63B81097C34-O

Figure 8-103. NNTN4717D VOCON Board Audio/DC Circuits



MAEPF-27673-O

Figure 8-105. NNTN4717D VOCON Board Layout—Side 2

NNTN4717D VOCON Board Parts List

Ref. Des.	Part Number	Description
B104	2462586G33	INDUCTOR CHIP FERRITE BEADS
B101	2480574F01	IND FERRITE CHIP 600 OHM 0603
B201	2480574F01	IND FERRITE CHIP 600 OHM 0603
B502	2480574F01	IND FERRITE CHIP 600 OHM 0603
B503	2480574F01	IND FERRITE CHIP 600 OHM 0603
BATT	6003710K08	BAT,LI,3.3V,3MAH,,COINCE LL,RECHARGA
C101	2113743L09	CAP CHIP 470 PF 10% X7R
C102	2113743L09	CAP CHIP 470 PF 10% X7R
C103	2113743L09	CAP CHIP 470 PF 10% X7R
C104	2113743L09	CAP CHIP 470 PF 10% X7R
C106	2113743L09	CAP CHIP 470 PF 10% X7R
C107	2113743L09	CAP CHIP 470 PF 10% X7R
C108	2113743L09	CAP CHIP 470 PF 10% X7R
C109	2113743N38	CAP CHIP 33.0 PF 5% COG
C110	2113743N38	CAP CHIP 33.0 PF 5% COG
C111	2113743N38	CAP CHIP 33.0 PF 5% COG
C112	2113743N50	CAP CHIP 100 PF 5% COG
C113	2113743L09	CAP CHIP 470 PF 10% X7R
C114	2113743L09	CAP CHIP 470 PF 10% X7R
C115	2113743L09	CAP CHIP 470 PF 10% X7R
C116	2113743N38	CAP CHIP 33.0 PF 5% COG
C117	2113743L09	CAP CHIP 470 PF 10% X7R
C118	2113743N38	CAP CHIP 33.0 PF 5% COG
C119	2113743N38	CAP CHIP 33.0 PF 5% COG
C120	2113743N38	CAP CHIP 33.0 PF 5% COG
C121	2113743N38	CAP CHIP 33.0 PF 5% COG
C122	2113743N38	CAP CHIP 33.0 PF 5% COG
C123	2113743L09	CAP CHIP 470 PF 10% X7R
C124	2113743L09	CAP CHIP 470 PF 10% X7R
C125	2113743L09	CAP CHIP 470 PF 10% X7R
C126	2113743L09	CAP CHIP 470 PF 10% X7R
C127	2113743L09	CAP CHIP 470 PF 10% X7R
C128	2113743L09	CAP CHIP 470 PF 10% X7R

Ref. Des.	Part Number	Description
C129	2113743L09	CAP CHIP 470 PF 10% X7R
C130	2113743L09	CAP CHIP 470 PF 10% X7R
C131	2113743L09	CAP CHIP 470 PF 10% X7R
C132	2113743L09	CAP CHIP 470 PF 10% X7R
C133	2113743L09	CAP CHIP 470 PF 10% X7R
C134	2113743L09	CAP CHIP 470 PF 10% X7R
C135	2113743L41	CAP CHIP 10000 PF 10% X7R
C136	2113743L09	CAP CHIP 470 PF 10% X7R
C137	2113743A31	CAP CHIP 1.0 UF 10% X7R
C138	2113743L09	CAP CHIP 470 PF 10% X7R
C170	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C171	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C172	NOTPLACED	64AM DUMMY PART NUMBER
C201	2113743L09	CAP CHIP 470 PF 10% X7R
C202	2113743L09	CAP CHIP 470 PF 10% X7R
C203	2113743L09	CAP CHIP 470 PF 10% X7R
C204	2113743L09	CAP CHIP 470 PF 10% X7R
C205	2113743L41	CAP CHIP 10000 PF 10% X7R
C206	2113743L41	CAP CHIP 10000 PF 10% X7R
C207	2113743L09	CAP CHIP 470 PF 10% X7R
C208	2113743L09	CAP CHIP 470 PF 10% X7R
C209	2113743L17	CAP CHIP 1000 PF 10% X7R
C210	2113743L09	CAP CHIP 470 PF 10% X7R
C211	2113743L09	CAP CHIP 470 PF 10% X7R
C212	2113743L09	CAP CHIP 470 PF 10% X7R
C213	2113743L09	CAP CHIP 470 PF 10% X7R
C214	2113743L09	CAP CHIP 470 PF 10% X7R
C215	2113743L09	CAP CHIP 470 PF 10% X7R
C216	2113743L09	CAP CHIP 470 PF 10% X7R
C217	2113743L09	CAP CHIP 470 PF 10% X7R
C218	2113743L09	CAP CHIP 470 PF 10% X7R
C219	2113743L09	CAP CHIP 470 PF 10% X7R
C220	2113743L09	CAP CHIP 470 PF 10% X7R
C221	2113743L09	CAP CHIP 470 PF 10% X7R

Ref. Des.	Part Number	Description
C223	2113743L09	CAP CHIP 470 PF 10% X7R
C224	2113743N38	CAP CHIP 33.0 PF 5% COG
C225	2113743L09	CAP CHIP 470 PF 10% X7R
C226	2113743N38	CAP CHIP 33.0 PF 5% COG
C227	2113743L09	CAP CHIP 470 PF 10% X7R
C230	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C231	2113743L09	CAP CHIP 470 PF 10% X7R
C232	2113743L09	CAP CHIP 470 PF 10% X7R
C233	2113743N50	CAP CHIP 100 PF 5% COG
C234	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C250	NOTPLACED	64AM DUMMY PART NUMBER
C251	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C252	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C253	2113743A19	CAP CHIP .100 UF 10% X7R
C254	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C256	NOTPLACED	64AM DUMMY PART NUMBER
C270	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C301	2113743E20	CAP CHIP .10 UF 10%
C302	2113743L41	CAP CHIP 10000 PF 10% X7R
C303	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C304	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C305	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C306	2113743N50	CAP CHIP 100 PF 5% COG
C308	2113743N20	CAP CHIP 5.6 PF + .5PF COG
C309	2113743N20	CAP CHIP 5.6 PF + .5PF COG
C310	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C311	2113743M24	CAP CHIP 100000 PF +80-20% Y5V

Ref. Des.	Part Number	Description
C312	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C313	2113743N28	CAP CHIP 12.0 PF 5% COG
C314	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C315	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C316	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C317	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C318	NOTPLACED	64AM DUMMY PART NUMBER
C320	2113743L09	CAP CHIP 470 PF 10% X7R
C321	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C322	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C323	NOTPLACED	64AM DUMMY PART NUMBER
C324	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C325	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C326	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C327	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C328	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C329	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C330	2113743N50	CAP CHIP 100 PF 5% COG
C331	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C332	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C333	2113743N44	CAP CHIP 56.0 PF 5% COG
C334	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C401	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C402	2113928C04	CAP CER CHIP 4.7UF 6.3V10%0805

Ref. Des.	Part Number	Description
C404	NOTPLACED	64AM DUMMY PART NUMBER
C409	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C411	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C413	2113743E04	CER CHIP CAP .016UF
C414	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C415	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C417	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C418	2113743A31	CAP CHIP 1.0 UF 10% X7R
C419	2113743N50	CAP CHIP 100 PF 5% COG
C420	2113743N50	CAP CHIP 100 PF 5% COG
C421	2113743A31	CAP CHIP 1.0 UF 10% X7R
C422	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C423	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C424	2113743E04	CER CHIP CAP .016UF
C425	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C427	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C428	2113743E04	CER CHIP CAP .016UF
C437	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C438	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C439	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C440	2113743N50	CAP CHIP 100 PF 5% COG
C441	2113743L09	CAP CHIP 470 PF 10% X7R
C442	NOTPLACED	64AM DUMMY PART NUMBER
C443	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C446	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C450	2113743N28	CAP CHIP 12.0 PF 5% COG
C451	2113743E20	CAP CHIP .10 UF 10%

Ref. Des.	Part Number	Description
C452	2113743L17	CAP CHIP 1000 PF 10% X7R
C453	NOTPLACED	64AM DUMMY PART NUMBER
C460	NOTPLACED	64AM DUMMY PART NUMBER
C502	2113743N50	CAP CHIP 100 PF 5% COG
C503	2113743N50	CAP CHIP 100 PF 5% COG
C504	2311049C52	CAP TANT CHIP 33UF 10% 10V
C505	2113743N50	CAP CHIP 100 PF 5% COG
C506	2311049C52	CAP TANT CHIP 33UF 10% 10V
C507	2113743N50	CAP CHIP 100 PF 5% COG
C508	2113743L41	CAP CHIP 10000 PF 10% X7R
C509	2113743T19	CAP 10UF 16V CER 3225 X5R
C510	2113743T19	CAP 10UF 16V CER 3225 X5R
C511	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C512	2113743L50	CAP CHIP 33000 PF 10%
C514	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C515	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C516	2113743E11	CAP CHIP .039 UF 10% X7R
C517	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C519	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C520	2113743L05	CAP CHIP 330 PF 10% X7R
C521	2113743N50	CAP CHIP 100 PF 5% COG
C522	2113743A31	CAP CHIP 1.0 UF 10% X7R
C523	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C524	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C525	2113743N50	CAP CHIP 100 PF 5% COG
C526	2113743M24	CAP CHIP 100000 PF +80-20% Y5V

Ref. Des.	Part Number	Description
C527	NOTPLACED	64AM DUMMY PART NUMBER
C528	2113743E11	CAP CHIP .039 UF 10% X7R
C529	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C530	2113743A19	CAP CHIP .100 UF 10% X7R
C531	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C532	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C533	2113743A31	CAP CHIP 1.0 UF 10% X7R
C534	NOTPLACED	64AM DUMMY PART NUMBER
C535	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C536	2113743N50	CAP CHIP 100 PF 5% COG
C537	2113743N50	CAP CHIP 100 PF 5% COG
C538	2113743N50	CAP CHIP 100 PF 5% COG
C539	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C540	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C541	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C542	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C543	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C544	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C545	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C546	2113743N50	CAP CHIP 100 PF 5% COG
C547	2311049A57	CAP TANT CHIP A/P 10UF 10% 16V
C548	2113743N50	CAP CHIP 100 PF 5% COG
C549	2113743A31	CAP CHIP 1.0 UF 10% X7R
C550	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C551	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C552	2113743M24	CAP CHIP 100000 PF +80-20% Y5V

Ref. Des.	Part Number	Description
C553	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C554	2113743A31	CAP CHIP 1.0 UF 10% X7R
C555	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C556	2113743N38	CAP CHIP 33.0 PF 5% COG
C557	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C558	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C559	NOTPLACED	64AM DUMMY PART NUMBER
C560	NOTPLACED	64AM DUMMY PART NUMBER
C561	NOTPLACED	64AM DUMMY PART NUMBER
C563	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C564	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
C565	2113743N50	CAP CHIP 100 PF 5% COG
C567	2113743N50	CAP CHIP 100 PF 5% COG
C570	2113743N50	CAP CHIP 100 PF 5% COG
C571	2113743N50	CAP CHIP 100 PF 5% COG
C572	2113743N50	CAP CHIP 100 PF 5% COG
C573	2113743N50	CAP CHIP 100 PF 5% COG
C574	2113743N50	CAP CHIP 100 PF 5% COG
C576	NOTPLACED	64AM DUMMY PART NUMBER
C580	2113743M24	CAP CHIP 100000 PF +80-20% Y5V
D201	NOTPLACED	64AM DUMMY PART NUMBER
D202	4805129M90	DIODE SOT PKGD
D203	4802021P15	ZENER SR05
D204	4805656W39	QUAD ESD SUPPRESSOR ARRAY -41206ESD
D205	4805656W39	QUAD ESD SUPPRESSOR ARRAY -41206ESD
D206	4805656W39	QUAD ESD SUPPRESSOR ARRAY -41206ESD
D207	4805129M90	DIODE SOT PKGD
D301	4805218N57	DIODE DUAL

Ref. Des.	Part Number	Description
D302	4805656W37	TSTR BAT54HT1
D304	4805129M06	DIODE MMBD7000
D306	4805129M06	DIODE MMBD7000
D307	4805129M06	DIODE MMBD7000
D308	4805129M06	DIODE MMBD7000
D401	4805218N57	DIODE DUAL
D402	4805218N57	DIODE DUAL
D501	4813833A20	DIODE SCHOTTKY 1A 40V PWRMITE
D502	4813833A20	DIODE SCHOTTKY 1A 40V PWRMITE
D503	4813833A20	DIODE SCHOTTKY 1A 40V PWRMITE
D505	4805218N57	DIODE DUAL
D507	4805129M06	DIODE MMBD7000
D508	4805218N57	DIODE DUAL
D509	4805218N57	DIODE DUAL
D510	NOTPLACED	64AM DUMMY PART NUMBER
E401	2480574F01	IND FERRITE CHIP 600 OHM 0603
E402	2480574F01	IND FERRITE CHIP 600 OHM 0603
J101	0985185D01	CONN RECP 0.5MM PITCH 40 CKTS
J107	0987817K01	CONN,RCPT,M,22CONT,,G OLD/NICKEL,SM,
J301	0987817K01	CONN,RCPT,M,22CONT,,G OLD/NICKEL,SM,
J701	0980423L02	CONN 40 POS PAK-8
L101	2404574Z14	IND CHIP VWW 270NH 2% 2012 SMD
L201	2404574Z14	IND CHIP VWW 270NH 2% 2012 SMD
L202	2404574Z14	IND CHIP VWW 270NH 2% 2012 SMD
L203	2404574Z14	IND CHIP VWW 270NH 2% 2012 SMD
L204	2404574Z14	IND CHIP VWW 270NH 2% 2012 SMD
L207	2404574Z14	IND CHIP VWW 270NH 2% 2012 SMD
L208	2404574Z14	IND CHIP VWW 270NH 2% 2012 SMD

Ref. Des.	Part Number	Description
L450	2462587Q20	"IND CHIP 2,200 NH 20%"
L451	0662057C01	CHIP RES 0 OHMS +.050 OHMS
L501	2486085A06	COIL 47UH SMT POWER INDUCTOR
L502	2486085A06	COIL 47UH SMT POWER INDUCTOR
M202	3985951A01	CONTACT ANTENNA GROUND
M501	0985888K02	SKT RTC BTTY LEAP
PCB	8485871E04	PCB XTS5000
Q101	4813824A10	TSTR NPN 40V .2A GEN PURP
Q201	4805921T09	XSTR DUAL ROHM FMG8
Q202	4805921T09	XSTR DUAL ROHM FMG8
Q203	4805723X03	TRANS DUAL NPN-PNP UMD3N ROHM
Q204	4805723X03	TRANS DUAL NPN-PNP UMD3N ROHM
Q301	4809579E35	TSTR FET DUAL N-CHAN FDG3601N
Q302	4805723X03	TRANS DUAL NPN-PNP UMD3N ROHM
Q303	4813824A10	TSTR NPN 40V .2A GEN PURP
Q304	NOTPLACED	64AM DUMMY PART NUMBER
Q305	5185143E74	IC SINGLE FET BUS SWITCH
Q306	4813824A10	TSTR NPN 40V .2A GEN PURP
Q401	NOTPLACED	64AM DUMMY PART NUMBER
Q450	4805793Y01	TRANS MINI SOT NPN LOW NOISE
Q451	4805793Y01	TRANS MINI SOT NPN LOW NOISE
Q501	4885844C01	XSTR FET
Q502	4805921T09	XSTR DUAL ROHM FMG8
Q503	4813824A13	XSTR NPN 80V .5A DRIVER B=50
Q504	4813824A10	TSTR NPN 40V .2A GEN PURP
Q505	4805921T09	XSTR DUAL ROHM FMG8

Ref. Des.	Part Number	Description
Q506	4813824A10	TSTR NPN 40V .2A GEN PURP
Q507	4805723X03	TRANS DUAL NPN-PNP UMD3N ROHM
Q508	4813824A10	TSTR NPN 40V .2A GEN PURP
Q509	4805218N11	XISTOR SOT RH BST82
R101	0662057M01	RES. CHIP 0 5% 20X40
R102	NOTPLACED	64AM DUMMY PART NUMBER
R103	0662057M56	RES. CHIP 180 5% 20X40
R104	0662057M56	RES. CHIP 180 5% 20X40
R106	0662057M50	RES. CHIP 100 5% 20X40
R107	0662057M98	RES. CHIP 10K 5% 20X40
R109	0662057M01	RES. CHIP 0 5% 20X40
R119	0662057M50	RES. CHIP 100 5% 20X40
R121	0662057M74	RES. CHIP 1000 5% 20X40
R123	0662057M74	RES. CHIP 1000 5% 20X40
R124	0662057M74	RES. CHIP 1000 5% 20X40
R125	0662057M50	RES. CHIP 100 5% 20X40
R126	0662057M50	RES. CHIP 100 5% 20X40
R127	0662057M74	RES. CHIP 1000 5% 20X40
R128	0662057M74	RES. CHIP 1000 5% 20X40
R129	0662057M74	RES. CHIP 1000 5% 20X40
R130	0662057M74	RES. CHIP 1000 5% 20X40
R131	0662057M50	RES. CHIP 100 5% 20X40
R132	0662057M01	RES. CHIP 0 5% 20X40
R133	0662057M01	RES. CHIP 0 5% 20X40
R135	0662057M74	RES. CHIP 1000 5% 20X40
R138	0662057M98	RES. CHIP 10K 5% 20X40
R139	0662057M98	RES. CHIP 10K 5% 20X40
R140	0662057M90	RES. CHIP 4700 5% 20X40
R141	NOTPLACED	64AM DUMMY PART NUMBER
R142	0662057M98	RES. CHIP 10K 5% 20X40
R143	0662057M01	RES. CHIP 0 5% 20X40
R151	0662057M74	RES. CHIP 1000 5% 20X40
R152	0662057M98	RES. CHIP 10K 5% 20X40
R153	0662057M74	RES. CHIP 1000 5% 20X40
R154	0662057M98	RES. CHIP 10K 5% 20X40

Ref. Des.	Part Number	Description
R155	0662057M74	RES. CHIP 1000 5% 20X40
R156	0662057M98	RES. CHIP 10K 5% 20X40
R157	0662057M74	RES. CHIP 1000 5% 20X40
R158	0662057M98	RES. CHIP 10K 5% 20X40
R159	0662057M74	RES. CHIP 1000 5% 20X40
R160	0662057M98	RES. CHIP 10K 5% 20X40
R201	NOTPLACED	64AM DUMMY PART NUMBER
R202	NOTPLACED	64AM DUMMY PART NUMBER
R203	0662057M61	RES. CHIP 300 5% 20X40
R204	0662057M60	RES. CHIP 270 5% 20X40
R205	0662057M98	RES. CHIP 10K 5% 20X40
R206	0662057M37	20X40 30 OMH 5% CHIP RESISTOR
R207	0662057M98	RES. CHIP 10K 5% 20X40
R209	0662057M98	RES. CHIP 10K 5% 20X40
R210	0662057M98	RES. CHIP 10K 5% 20X40
R211	0662057N23	RES. CHIP 100K 5% 20X40
R212	0662057M46	RES. CHIP 68 5% 20X40
R213	0662057N15	RES. CHIP 47K 5% 20X40
R214	0662057M98	RES. CHIP 10K 5% 20X40
R215	0662057M98	RES. CHIP 10K 5% 20X40
R216	0662057M90	RES. CHIP 4700 5% 20X40
R217	0662057M64	RES. CHIP 390 5% 20X40
R218	0662057M64	RES. CHIP 390 5% 20X40
R222	0662057M50	RES. CHIP 100 5% 20X40
R224	0662057N17	RES. CHIP 56K 5% 20X40
R225	0662057M98	RES. CHIP 10K 5% 20X40
R226	0662057M98	RES. CHIP 10K 5% 20X40
R227	0662057M98	RES. CHIP 10K 5% 20X40
R228	0662057M98	RES. CHIP 10K 5% 20X40
R229	0662057M98	RES. CHIP 10K 5% 20X40
R230	0662057N23	RES. CHIP 100K 5% 20X40
R231	0662057M74	RES. CHIP 1000 5% 20X40
R232	0662057M74	RES. CHIP 1000 5% 20X40
R233	0662057M74	RES. CHIP 1000 5% 20X40
R234	0662057M74	RES. CHIP 1000 5% 20X40
R235	0662057M74	RES. CHIP 1000 5% 20X40
R236	0662057M74	RES. CHIP 1000 5% 20X40

Ref. Des.	Part Number	Description
R237	0662057M56	RES. CHIP 180 5% 20X40
R238	0662057M01	RES. CHIP 0 5% 20X40
R239	0662057M74	RES. CHIP 1000 5% 20X40
R240	0662057V02	RES CHIP 10K 1% 1/16W
R241	0662057M74	RES. CHIP 1000 5% 20X40
R242	0662057M64	RES. CHIP 390 5% 20X40
R243	0662057V32	RESISTOR, 150 KOHM, 20X40, 1%
R244	0662057M74	RES. CHIP 1000 5% 20X40
R245	0662057M68	RES CHIP 560 5% 20X40
R246	NOTPLACED	64AM DUMMY PART NUMBER
R247	NOTPLACED	64AM DUMMY PART NUMBER
R248	0662057M74	RES. CHIP 1000 5% 20X40
R249	0662057N39	RES. CHIP 470K 5% 20X40
R250	NOTPLACED	64AM DUMMY PART NUMBER
R251	NOTPLACED	64AM DUMMY PART NUMBER
R252	0662057M38	RES. CHIP 33 5% 20X40
R253	0662057M38	RES. CHIP 33 5% 20X40
R255	0662057M50	RES. CHIP 100 5% 20X40
R256	0662057M50	RES. CHIP 100 5% 20X40
R257	0662057N06	RES. CHIP 20K 5% 20X40
R258	0662057N06	RES. CHIP 20K 5% 20X40
R259	NOTPLACED	64AM DUMMY PART NUMBER
R260	0662057N23	RES. CHIP 100K 5% 20X40
R261	0662057M01	RES. CHIP 0 5% 20X40
R262	NOTPLACED	64AM DUMMY PART NUMBER
R267	0662057M38	RES. CHIP 33 5% 20X40
R268	0662057M38	RES. CHIP 33 5% 20X40
R269	0662057M50	RES. CHIP 100 5% 20X40
R270	0662057M98	RES. CHIP 10K 5% 20X40
R301	0662057M67	RES. CHIP 510 5% 20X40
R303	0662057M98	RES. CHIP 10K 5% 20X40
R304	0662057N39	RES. CHIP 470K 5% 20X40
R305	0662057N39	RES. CHIP 470K 5% 20X40
R306	0662057M98	RES. CHIP 10K 5% 20X40

Ref. Des.	Part Number	Description
R307	0662057N23	RES. CHIP 100K 5% 20X40
R308	0662057M01	RES. CHIP 0 5% 20X40
R309	0662057M98	RES. CHIP 10K 5% 20X40
R310	0662057M78	RES. CHIP 1500 5% 20X40
R311	0662057M01	RES. CHIP 0 5% 20X40
R312	0662057N47	RES. CHIP 1.0 MEG 5% 20X40
R313	0662057N47	RES. CHIP 1.0 MEG 5% 20X40
R314	0662057M98	RES. CHIP 10K 5% 20X40
R315	0662057M01	RES. CHIP 0 5% 20X40
R316	0662057M01	RES. CHIP 0 5% 20X40
R319	0662057M01	RES. CHIP 0 5% 20X40
R320	0662057M98	RES. CHIP 10K 5% 20X40
R321	0662057M98	RES. CHIP 10K 5% 20X40
R322	NOTPLACED	64AM DUMMY PART NUMBER
R325	0662057M98	RES. CHIP 10K 5% 20X40
R326	0662057M98	RES. CHIP 10K 5% 20X40
R327	0662057N23	RES. CHIP 100K 5% 20X40
R328	0662057N39	RES. CHIP 470K 5% 20X40
R329	0662057M74	RES. CHIP 1000 5% 20X40
R330	0662057M98	RES. CHIP 10K 5% 20X40
R331	0662057M50	RES. CHIP 100 5% 20X40
R332	NOTPLACED	64AM DUMMY PART NUMBER
R333	0662057M74	RES. CHIP 1000 5% 20X40
R334	0662057M56	RES. CHIP 180 5% 20X40
R335	0662057M98	RES. CHIP 10K 5% 20X40
R380	0662057N47	RES. CHIP 1.0 MEG 5% 20X40
R401	0662057M90	RES. CHIP 4700 5% 20X40
R402	0662057M01	RES. CHIP 0 5% 20X40
R403	0662057M01	RES. CHIP 0 5% 20X40
R404	0662057M01	RES. CHIP 0 5% 20X40
R405	0662057M01	RES. CHIP 0 5% 20X40
R406	0662057M01	RES. CHIP 0 5% 20X40
R407	0662057B47	CHIP RES 0 OHMS +/- .050 OHMS
R413	0662057M01	RES. CHIP 0 5% 20X40
R414	0662057M98	RES. CHIP 10K 5% 20X40

Ref. Des.	Part Number	Description
R415	0662057M01	RES. CHIP 0 5% 20X40
R416	0662057M01	RES. CHIP 0 5% 20X40
R417	0662057M01	RES. CHIP 0 5% 20X40
R418	0662057M01	RES. CHIP 0 5% 20X40
R419	0662057M98	RES. CHIP 10K 5% 20X40
R427	NOTPLACED	64AM DUMMY PART NUMBER
R440	NOTPLACED	64AM DUMMY PART NUMBER
R441	NOTPLACED	64AM DUMMY PART NUMBER
R442	0662057M01	RES. CHIP 0 5% 20X40
R444	NOTPLACED	64AM DUMMY PART NUMBER
R450	0662057N15	RES. CHIP 47K 5% 20X40
R451	0662057M78	RES. CHIP 1500 5% 20X40
R452	0662057M42	RES. CHIP 47 5% 20X40
R453	0662057N11	RES. CHIP 33K 5% 20X40
R454	0662057M64	RES. CHIP 390 5% 20X40
R455	0662057M74	RES. CHIP 1000 5% 20X40
R456	NOTPLACED	64AM DUMMY PART NUMBER
R457	0662057M90	RES. CHIP 4700 5% 20X40
R461	NOTPLACED	64AM DUMMY PART NUMBER
R501	0662057M01	RES. CHIP 0 5% 20X40
R502	0662057M01	RES. CHIP 0 5% 20X40
R503	0662057M01	RES. CHIP 0 5% 20X40
R504	0662057N06	RES. CHIP 20K 5% 20X40
R505	0662057M98	RES. CHIP 10K 5% 20X40
R507	NOTPLACED	64AM DUMMY PART NUMBER
R508	0662057U60	RES CHIP 220 1% 1/16w
R509	0662057V02	RES CHIP 10K 1% 1/16W
R510	0662057M98	RES. CHIP 10K 5% 20X40
R511	NOTPLACED	64AM DUMMY PART NUMBER
R512	0662057V04	RES CHIP 12K 1% 1/16W
R514	0662057N06	RES. CHIP 20K 5% 20X40
R515	0662057M98	RES. CHIP 10K 5% 20X40
R516	0662057M67	RES. CHIP 510 5% 20X40

Ref. Des.	Part Number	Description
R519	0662057M98	RES. CHIP 10K 5% 20X40
R520	0662057U84	RES CHIP 2K 1% 1/16W
R522	0662057N15	RES. CHIP 47K 5% 20X40
R523	0662057N15	RES. CHIP 47K 5% 20X40
R524	0662057N17	RES. CHIP 56K 5% 20X40
R525	0662057M94	RES. CHIP 6800 5% 20X40
R526	0662057V02	RES CHIP 10K 1% 1/16W
R527	0662057M74	RES. CHIP 1000 5% 20X40
R528	0662057M74	RES. CHIP 1000 5% 20X40
R531	0662057M64	RES. CHIP 390 5% 20X40
R533	0662057M82	RES. CHIP 2200 5% 20X40
R536	0662057N23	RES. CHIP 100K 5% 20X40
R537	0662057N10	RES. CHIP 30K 5% 20X40
R538	0662057M01	RES. CHIP 0 5% 20X40
R539	0662057M01	RES. CHIP 0 5% 20X40
R540	0662057M95	RES. CHIP 7500 5% 20X40
R545	0662057M98	RES. CHIP 10K 5% 20X40
R548	0662057N06	RES. CHIP 20K 5% 20X40
R549	0662057M96	RES. CHIP 8200 5% 20X40
R550	0662057V25	RES CHIP 82K 1% 1/16
R551	0662057N06	RES. CHIP 20K 5% 20X40
R553	0662057M96	RES. CHIP 8200 5% 20X40
R554	0662057V25	RES CHIP 82K 1% 1/16
R555	0662057M74	RES. CHIP 1000 5% 20X40
R556	0662057N06	RES. CHIP 20K 5% 20X40
R557	0662057M98	RES. CHIP 10K 5% 20X40
R558	0662057M94	RES. CHIP 6800 5% 20X40
R559	0662057M98	RES. CHIP 10K 5% 20X40
R560	0662057M01	RES. CHIP 0 5% 20X40
R561	0662057M74	RES. CHIP 1000 5% 20X40
R563	0662057M67	RES. CHIP 510 5% 20X40
R564	0662057M98	RES. CHIP 10K 5% 20X40
R565	0662057M82	RES. CHIP 2200 5% 20X40
R566	0662057M95	RES. CHIP 7500 5% 20X40
R567	0662057N15	RES. CHIP 47K 5% 20X40
R568	0662057N15	RES. CHIP 47K 5% 20X40
R569	0662057M90	RES. CHIP 4700 5% 20X40
R572	0662057M50	RES. CHIP 100 5% 20X40
R573	0662057N23	RES. CHIP 100K 5% 20X40

Ref. Des.	Part Number	Description
R574	0662057N23	RES. CHIP 100K 5% 20X40
R575	0662057M98	RES. CHIP 10K 5% 20X40
R576	0662057N23	RES. CHIP 100K 5% 20X40
R577	0662057N15	RES. CHIP 47K 5% 20X40
R578	0662057N15	RES. CHIP 47K 5% 20X40
R581	0662057M01	RES. CHIP 0 5% 20X40
R582	0662057M90	RES. CHIP 4700 5% 20X40
R583	0662057M90	RES. CHIP 4700 5% 20X40
R584	0662057M98	RES. CHIP 10K 5% 20X40
R585	0662057M98	RES. CHIP 10K 5% 20X40
R586	0662057N39	RES. CHIP 470K 5% 20X40
R587	0662057M34	RES. CHIP 22 5% 20X40
R588	0662057M34	RES. CHIP 22 5% 20X40
R589	0662057M98	RES. CHIP 10K 5% 20X40
R590	NOTPLACED	64AM DUMMY PART NUMBER
R591	NOTPLACED	64AM DUMMY PART NUMBER
R592	0662057M50	RES. CHIP 100 5% 20X40
R593	0662057M50	RES. CHIP 100 5% 20X40
R594	0662057M64	RES. CHIP 390 5% 20X40
R595	0662057B47	CHIP RES 0 OHMS +/- .050 OHMS
R596	NOTPLACED	64AM DUMMY PART NUMBER
R597	0662057M01	RES. CHIP 0 5% 20X40
R598	0662057M60	RES. CHIP 270 5% 20X40
R599	NOTPLACED	64AM DUMMY PART NUMBER
SH101	2685462E01	SHEILD PATRIOT
SH102	2685665E01	SHEILD FLIPPER
U201	5109731C15	IC OP AMP SNGL OPA237 SOT23
U202	5109731C15	IC OP AMP SNGL OPA237 SOT23
U301	5185368C66	IC CUSTOM FLIPPER
U302	5105492X92	IC CMOS BILATERAL SWITCH
U303	5109522E53	IC SNGL BUF NC7S125P5X SC70
U304	5109522E53	IC SNGL BUF NC7S125P5X SC70

Ref. Des.	Part Number	Description
U305	5109522E53	IC SNGL BUF NC7S125P5X SC70
U306	5109522E53	IC SNGL BUF NC7S125P5X SC70
U307	5109522E53	IC SNGL BUF NC7S125P5X SC70
U308	5109817F62	IC SPDT SWITCH/ MULTIPLEXER
U309	5109817F62	IC SPDT SWITCH/ MULTIPLEXER
U310	5187970L15	IC USB TRANS FULL-SPEED
U311	5105492X03	IC SNG HI SPD L-MOS NOT GATE
U312	5185368C12	IC 1.8V SN LOGIC GATE
U314	5109522E53	IC SNGL BUF NC7S125P5X SC70
U401	5185956E51	IC PATRIOT BRAVO 1.0.2
U402	5185956E15	IC FLASH 64MB 1.8V 60NS
U403	5185368C82	IC 1.65 TO 2.2V, 70NS, 8MBIT SRAM
U404	5109522E53	IC SNGL BUF NC7S125P5X SC70
U405	5109522E53	IC SNGL BUF NC7S125P5X SC70
U406	5105492X03	IC SNG HI SPD L-MOS NOT GATE
U407	5105109Z31	IC QUAD 2:1 MUX/DEMUX
U408	5109522E53	IC SNGL BUF NC7S125P5X SC70
U501	5109879E58	IC,COMP.,AUDIO AND POWER MANAGEMENT
U502	5109731C15	IC OP AMP SNGL OPA237 SOT23
U503	5102463J44	AUDIO AMPLIFIER TDA8547TS
U504	5109731C15	IC OP AMP SNGL OPA237 SOT23
U505	5185353D13	IC MINI SO-8 HI PRECISION REG 5V
U507	5109731C15	IC OP AMP SNGL OPA237 SOT23
U508	5113816A73	IC ADJUST 1.7% TOL SHUNT REG 20MA
U509	5185353D35	IC DUAL EEPOT 256 TAP

Ref. Des.	Part Number	Description
U510	5105492X92	IC CMOS BILATERAL SWITCH
U511	5185353D56	IC 3.3V LINEAR REGULATOR MC78LC 33N
U512	NOTPLACED	64AM DUMMY PART NUMBER
VR201	4813832C72	TRANS SUP QUAD 12V
VR202	4813830A22	DIODE 9.1V 5% 225MW MMBZ5239B_
VR203	4813832C72	TRANS SUP QUAD 12V
VR204	4813830C26	DIODE 13V 'H3' MMSZ5243BT1
VR205	4805656W08	DIODE ZENER QUAD
VR206	4805656W08	DIODE ZENER QUAD
VR209	4813832C72	TRANS SUP QUAD 12V
VR220	4805656W03	DIODE DUAL 5.6V ZENER
VR221	4805656W03	DIODE DUAL 5.6V ZENER
VR501	4813830A15	DIODE 5.6V 5% 225MW MMBZ5232B_
Y301	4809995L05	XTAL QUARTZ 32.768KHZ CC4V-T1

Glossary

This glossary contains an alphabetical listing of terms and their definitions that are applicable to ASTRO portable and mobile subscriber radio products. All terms do not necessarily apply to all radios, and some terms are merely generic in nature.

Term	Definition
A/D	<i>See analog-to-digital conversion.</i>
Abacus IC	A custom integrated circuit providing a digital receiver intermediate frequency (IF) backend.
ADC	<i>See analog-to-digital converter.</i>
ADDAG	<i>See Analog-to-Digital, Digital-to-Analog and Glue.</i>
ALC	<i>See automatic level control.</i>
analog	Refers to a continuously variable signal or a circuit or device designed to handle such signals. <i>See also digital.</i>
Analog-to-Digital, Digital-to-Analog and Glue	An integrated circuit designed to be an interface between the radio's DSP, which is digital, and the analog transmitter and receiver ICs.
analog-to-digital conversion	Conversion of an instantaneous dc voltage level to a corresponding digital value. <i>See also D/A.</i>
analog-to-digital converter	A device that converts analog signals into digital data. <i>See also DAC.</i>
automatic level control	A circuit in the transmit RF path that controls RF power amplifier output, provides leveling over frequency and voltage, and protects against high VSWR.
band	Frequencies allowed for a specific purpose.
BBP	<i>See baseband interface port.</i>
baseband interface port	Synchronous serial interface to the transceiver board used to transfer transmit and receive audio data.
BGA	<i>See ball grid array.</i>
ball grid array	A type of IC package characterized by solder balls arranged in a grid that are located on the underside of the package.
CODEC	<i>See coder/decoder.</i>

Term	Definition
codeplug	Firmware that contains the unique personality for a system or device. A codeplug is programmable and allows changes to system and unit parameters. <i>See also firmware.</i>
coder/decoder	A device that encodes or decodes a signal.
CPS	<i>See Customer Programming Software.</i>
Customer Programming Software	Software with a graphical user interface containing the feature set of an ASTRO radio. <i>See also RSS.</i>
D/A	<i>See digital-to-analog conversion.</i>
DAC	<i>See digital-to-analog converter.</i>
Data communication equipment	Definition for device (such as radio) data communications using the RS232 protocol. The correct data communication wiring requires the device's TX pins (output) to connect to the RX pins (input) and the RTS pins (output) to connect to the CTS pins (input). It is incorrect to attach device pins having the same name to to each other.
Data terminal equipment	Data terminal equipment; for example, a computer.
DCE	<i>See Data communication equipment.</i>
default	A pre-defined set of parameters.
digital	Refers to data that is stored or transmitted as a sequence of discrete symbols from a finite set; most commonly this means binary data represented using electronic or electromagnetic signals. <i>See also analog.</i>
digital-to-analog conversion	Conversion of a digital signal to a voltage that is proportional to the input value. <i>See also A/D.</i>
digital-to-analog converter	A device that converts digital data into analog signals. <i>See also ADC.</i>
Digital Private-Line	A type of digital communication that utilizes privacy call, as well as memory channel and busy channel lock-out to enhance communication efficiency.
digital signal processor	A microcontroller specifically designed for performing the mathematics involved in manipulating analog information, such as sound, that has been converted into a digital form. DSP also implies the use of a data compression technique.
digital signal processor code	Object code executed by the Digital Signal Processor in an ASTRO subscriber radio. The DSP is responsible for computation-intensive tasks, such as decoding ASTRO signaling.

Term	Definition
DPL	<i>See Digital Private-Line. See also PL.</i>
DSP	<i>See digital signal processor.</i>
DSP code	<i>See digital signal processor code.</i>
DTE	<i>See Data terminal equipment.</i>
DTMF	<i>See dual tone multi-frequency.</i>
dual tone multi-frequency	The system used by touch-tone telephones. DTMF assigns a specific frequency, or tone, to each key so that it can easily be identified by a microprocessor.
EEPOT	Electrically Programmable Digital Potentiometer.
EEPROM	<i>See Electrically Erasable Programmable Read-Only Memory.</i>
Electrically Erasable Programmable Read-Only Memory	A special type of PROM that can be erased by exposing it to an electrical charge. An EEPROM retains its contents even when the power is turned off.
FCC	Federal Communications Commission.
firmware	Code executed by an embedded processor such as the Host or DSP in a subscriber radio. This type of code is typically resident in non-volatile memory and as such is more difficult to change than code executed from RAM.
FGU	<i>See frequency generation unit.</i>
flash	A non-volatile memory device similar to an EEPROM. Flash memory can be erased and reprogrammed in blocks instead of one byte at a time.
FLASHcode	A 13-digit code which uniquely identifies the System Software Package and Software Revenue Options that are enabled in a particular subscriber radio. FLASHcodes are only applicable for radios which are upgradeable through the FLASHport process.
FLASHport	A Motorola term that describes the ability of a radio to change memory. Every FLASHport radio contains a FLASHport EEPROM memory chip that can be software written and rewritten to, again and again.
FMR	<i>See Florida Manual Revision.</i>
Florida Manual Revision	A document that provides interim updates to a publication until the entire publication can be updated and reissued.
frequency	Number of times a complete electromagnetic-wave cycle occurs in a fixed unit of time (usually one second).

Term	Definition
frequency generation unit	This unit generates ultra-stable, low-phase noise master clock and other derived synchronization clocks that are distributed throughout the communication network.
General-Purpose Input/Output	Pins whose function is programmable.
GPIO	<i>See General-Purpose Input/Output.</i>
host code	Object code executed by the host processor in an ASTRO subscriber radio. The host is responsible for control-oriented tasks such as decoding and responding to user inputs.
IC	<i>See integrated circuit.</i>
IF	Intermediate Frequency.
IMBE	A sub-band, voice-encoding algorithm used in ASTRO digital voice.
inbound signaling word	Data transmitted on the control channel from a subscriber unit to the central control unit.
integrated circuit	An assembly of interconnected components on a small semiconductor chip, usually made of silicon. One chip can contain millions of microscopic components and perform many functions.
ISW	<i>See inbound signaling word.</i>
keep-alive mode	A software-controlled operational mode in which power for the radio remains on after the On/Off/volume control knob is turned off to allow the microcontroller unit to complete its power-down sequence. Then, the radio completely powers off.
key-variable loader	A device used to load encryption keys into a radio.
kHz	<i>See kilohertz.</i>
kilohertz	One thousand cycles per second. Used especially as a radio-frequency unit.
KVL	<i>See key-variable loader.</i>
LCD	<i>See liquid-crystal display.</i>
LED	<i>See light emitting diode.</i>
light emitting diode	An electronic device that lights up when electricity is passed through it.
liquid-crystal display	An LCD uses two sheets of polarizing material with a liquid-crystal solution between them. An electric current passed through the liquid causes the crystals to align so that light cannot pass through them.
LO	Local oscillator.

Term	Definition
low-speed handshake	150-baud digital data sent to the radio during trunked operation while receiving audio.
LSH	<i>See low-speed handshake.</i>
Master In Slave Out	SPI data line from a peripheral to the MCU.
Master Out Slave In	SPI data line from the MCU to a peripheral.
MCU	<i>See microcontroller unit.</i>
MDC	Motorola Digital Communications.
MDI	MCU/DSP Interface internal to the Patriot IC.
MHz	<i>See Megahertz.</i>
Megahertz	One million cycles per second. Used especially as a radio-frequency unit.
microcontroller unit	Also written as μ C. A microprocessor that contains RAM and ROM components, as well as communications and programming components and peripherals.
MISO	<i>See Master In Slave Out.</i>
MOSI	<i>See Master Out Slave In.</i>
multiplexer	An electronic device that combines several signals for transmission on some shared medium (e.g., a telephone wire).
MUX	<i>See multiplexer.</i>
NiCd	Nickel-cadmium.
NiMH	Nickel-metal-hydride.
OMPAC	<i>See over-molded pad-array carrier.</i>
open architecture	A controller configuration that utilizes a microprocessor with extended ROM, RAM, and EEPROM.
oscillator	An electronic device that produces alternating electric current and commonly employs tuned circuits and amplifying components.
OSW	<i>See outbound signaling word.</i>
OTAR	<i>See over-the-air rekeying.</i>
outbound signaling word	Data transmitted on the control channel from the central controller to the subscriber unit.
over-molded pad-array carrier	A Motorola custom IC package, distinguished by the presence of solder balls on the bottom pads.

Term	Definition
over-the-air rekeying	Allows the dispatcher to remotely reprogram the encryption keys in the radio.
PA	Power amplifier.
paging	One-way communication that alerts the receiver to retrieve a message.
Patriot IC	A dual-core processor that contains an MCU and a DSP in one IC package.
PC Board	Printed Circuit Board. Also referred to as a PCB.
phase-locked loop	A circuit in which an oscillator is kept in phase with a reference, usually after passing through a frequency divider.
PL	<i>See private-line tone squelch.</i>
PLL	<i>See phase-locked loop.</i>
private-line tone squelch	A continuous sub-audible tone that is transmitted along with the carrier. <i>See also DPL.</i>
Programmable Read-Only Memory	A memory chip on which data can be written only once. Once data has been written onto a PROM, it remains there forever.
PROM	<i>See Programmable Read-Only Memory.</i>
PTT	<i>See Push-to-Talk.</i>
Push-to-Talk	The switch or button usually located on the left side of the radio which, when pressed, causes the radio to transmit. When the PTT is released, the unit returns to receive operation.
radio frequency	The portion of the electromagnetic spectrum between audio sound and infrared light (approximately 10 kHz to 10 GHz).
radio frequency power amplifier	Amplifier having one or more active devices to amplify radio signals.
Radio Interface Box	A service aid used to enable communications between a radio and the programming software.
Radio Service Software	DOS-based software containing the feature set of an ASTRO radio. <i>See also CPS.</i>
RAM	<i>See random access memory.</i>
random access memory	A type of computer memory that can be accessed randomly; that is, any byte of memory can be accessed without touching the preceding bytes.
read-only memory	A type of computer memory on which data has been prerecorded. Once data has been written onto a ROM chip, it cannot be removed and can only be read.

Term	Definition
real-time clock	A module that keeps track of elapsed time even when a computer is turned off.
receiver	Electronic device that amplifies RF signals. A receiver separates the audio signal from the RF carrier, amplifies it, and converts it back to the original sound waves.
registers	Short-term data-storage circuits within the microcontroller unit or programmable logic IC.
repeater	Remote transmit/receive facility that re-transmits received signals in order to improve communications range and coverage (conventional operation).
repeater/talkaround	A conventional radio feature that permits communication through a receive/transmit facility, which re-transmits received signals in order to improve communication range and coverage.
RESET	Reset line: an input to the microcontroller that restarts execution.
RF	<i>See radio frequency.</i>
RF PA	<i>See radio frequency power amplifier.</i>
RIB	<i>See Radio Interface Box.</i>
ROM	<i>See read-only memory.</i>
RPCIC	Regulator/power control IC.
RSS	<i>See Radio Service Software.</i>
RTC	<i>See real-time clock.</i>
RX	Receive.
RX DATA	Recovered digital data line.
SAP	<i>See Serial Audio CODEC Port.</i>
SCI IN	<i>See Serial Communication Interface Input Line.</i>
Serial Audio CODEC Port	SSI to and from the GCAP II IC CODEC used to transfer transmit and receive audio data.
Serial Communication Interface Input Line	A full-duplex (receiver/transmitter) asynchronous serial interface.
Serial Input/Output IC	An integrated circuit that provides SB9600 serial and power-control functions.
Serial Peripheral Interface	How the microcontroller communicates to modules and ICs through the CLOCK and DATA lines.

Term	Definition
signal	An electrically transmitted electromagnetic wave.
Signal Qualifier mode	An operating mode in which the radio is muted, but still continues to analyze receive data to determine RX signal type.
SIO IC	<i>See Serial Input/Output IC.</i>
Smart Radio Interface Box	A service aid containing microcontroller buffered RAM that enhances the speed and capability of programming a radio with programming software.
softpot	<i>See software potentiometer.</i>
software	Computer programs, procedures, rules, documentation, and data pertaining to the operation of a system.
software potentiometer	A computer-adjustable electronic attenuator.
spectrum	Frequency range within which radiation has specific characteristics.
SPI	<i>See Serial Peripheral Interface.</i>
squelch	Muting of audio circuits when received signal levels fall below a pre-determined value. With carrier squelch, all channel activity that exceeds the radio's preset squelch level can be heard.
SRAM	<i>See static RAM.</i>
SRIB	<i>See Smart Radio Interface Box.</i>
SSI	<i>See Synchronous Serial Interface.</i>
Standby mode	An operating mode in which the radio is muted but still continues to monitor data.
static RAM	A type of memory used for volatile, program/data memory that does not need to be refreshed.
Synchronous Serial Interface	DSP interface to peripherals that consists of a clock signal line, a frame synchronization signal line, and a data line.
system central controllers	Main control unit of the trunked dispatch system; handles ISW and OSW messages to and from subscriber units (<i>See ISW and OSW</i>).
system select	The act of selecting the desired operating system with the system-select switch (also, the name given to this switch).
talkaround	A conventional radio feature that lets you bypass the repeater and connect directly to another radio. The transmit and receive frequencies are the same.
thin small-outline package	A type of dynamic random-access memory (DRAM) package that is commonly used in memory applications.

Term	Definition
time-out timer	A timer that limits the length of a transmission.
TOT	<i>See time-out timer.</i>
transceiver	Transmitter-receiver. A device that both transmits and receives analog or digital signals. Also abbreviated as XCVR.
transmitter	Electronic equipment that generates and amplifies an RF carrier signal, modulates the signal, and then radiates it into space.
TSOP	<i>See thin small-outline package.</i>
TX	Transmit.
UART	<i>See also Universal Asynchronous Receiver Transmitter.</i>
UHF	Ultra-High Frequency.
Universal Asynchronous Receiver Transmitter	A microchip with programming that controls a computer's interface to its attached serial devices.
Universal Serial Bus	An external bus standard that supports data transfer rates of 12 Mbps.
USB	<i>See Universal Serial Bus.</i>
VCO	<i>See voltage-controlled oscillator.</i>
vector sum excited linear predictive coding	A voice-encoding technique used in ASTRO digital voice.
VHF	Very-High Frequency.
VIP	Vehicle Interface Port.
VOCON	<i>See vocoder/controller.</i>
vocoder	An electronic device for synthesizing speech by implementing a compression algorithm particular to voice. <i>See also voice encoder.</i>
vocoder/controller	A PC board that contains an ASTRO radio's microcontroller, DSP, memory, audio and power functions, and interface support circuitry.
voice encoder	The DSP-based system for digitally processing analog signals, and includes the capabilities of performing voice compression algorithms or voice encoding. <i>See also vocoder.</i>
voltage-controlled oscillator	An oscillator in which the frequency of oscillation can be varied by changing a control voltage.
VSELP	<i>See vector sum excited linear predictive coding.</i>

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