References

[1] Ludeman, L., C., “Fundamentals of Digital Signal Processing”, Harper & Row, 1986

[2] Oppenheim, A., V., Willsky, A., S., Young, I., T., “Signals and Systems”, Prentice-Hall, 1983

[3] Oppenheim, A., V., Schafer, R., W., “Digital Signal Processing”, Prentice-Hall, 1975

[4] Proakis, J., G., “Introduction to Digital Signal Processing”, Macmillan, 1988

[5] Jackson, L., B., “Digital Filters and Signal Processing”, Kluwer, 1986

[6] Candy, J., V., “Signal Processing, The Modern Approach”, McGraw-Hill, 1988

[7] Haykin, S., “Modern Filters”, MacMillan, 1989

[8] Haykin, S., “Adaptive Filter Theory”, Prentice-Hall, 1991

[9] Frerking, M., E., “Digital Signal Processing in Communication Systems”, Van Nostrand Reinhold, 1994

[10] Anderson, B., D., O., Moore, J., B., “Optimal Filtering”, Prentice-Hall, 1979

[11] Alexander, S., T., “Adaptive Signal Processing”, Springer-Verlag, 1986

[12] Carlson, A., B., “Communication Systems”, McGraw-Hill, 1986

[13] Lee, E., A., Messerschmitt, D., G., “Digital Communication”, Kluwer, 1990

[14] Bingham, J., A., C., “The Theory and Practice of Modem Design”, Wiley, 1988

[15] Proakis, J., G., “Digital Communications”, McGraw-Hill, 1983

[16] Van Trees, H., L., “Detection, estimation and modulation theory”, Wiley, 1968

[17] Åström, K., J., Wittenmark, B., “Computer-Controlled Systems”, Prentice-Hall, 1990

[18] Dorf, R., C., “Modern Control Systems”, Addison-Wesley, 1980

[19] Åström, K., J., Wittenmark, B., “Adaptive Control”, Addison-Wesley, 1989

[20] Ljung, L., “System Identification, theory for the user”, Prentice-Hall, 1987

[21] Hurewicz, W., “Filters and Servo Systems with Pulsed Data”, in Theory of Servomechanics, McGraw-Hill, 1947

[22] Ragazzini, J., R., Zadeh, L., A., “The Analysis of Sampled-Data Systems”, AIEE Trans., Vol. 71, November 1952, pp. 225–234

[23] Press, W., Flannery, B., Teukolsky, S., Vetterling, W., “Numerical Recipes in C”, Cambridge University Press, 1988

[24] Vidmar, M., “Digital Signal Processing Techniques for Radio Amateurs, Theoretical Part”, VHF Communications, No. 2, 1988, pp. 76–97

[25] Ohr, S., “Analog vs DSP: balancing speed and precision against cost”, Computer Design, May 1992, pp. 83–100

[26] Vaidyarathan, P., P., “Multirate Digital Filters, Filter Banks, Polyphase Networks, and Applications: A Tutorial”, Proc. of the IEEE, Vol. 78, No. 1, January 1987, pp. 56–93

[27] Reyer, S., E., “Using The LMS Algorithm For QRM and QRN Reduction”, QEX, September 1992, pp. 3–8

[28] Tierney, J., Rader, C., M., Gold, B., “A Digital Frequency Synthesizer”, IEEE Trans. Audio Electronics, vol. AU-19, Mar 1971, s. 48–58

[29] Chrysafis, A., “Digital Sine-Wave Synthesis Using the DSP56001”, Motorola Application Note APR1/D, 1988

[30] Stallings, W., “Data and Computer Communications”, MacMillan, 1988

[31] Chepponis, M., Karn, P., “The KISS TNC: A simple Host-to-TNC communications protocol”, Proceedings of the sixth ARRL computer networking conference, August 1987

[32] Garbee, B., “The KA9Q Internet Software Package”, TAPR Inc., 1989

[33] Travis, B., “Single-chip DSPs advance in speed and versatility”, EDN, 1989, October 12, pp. 125–134

[34] Shear, D., “EDN’s DSP Benchmarks”, EDN, 1988, September 29, pp. 126–148

[35] Stewart, L., Payne, A., Levergood, T., “Are DSP Chips Obsolete”, ICSPAT-92, pp. 178–187

[36] Shear, D., “EDN’s DSP-CHIP Directory”, EDN, 1993, September 30, pp. 57–109

[37] Child, J., “Higher level of integration come to DSPs”, Computer Design, May 1994, p. 91–99

[38] Kloker, K., L., “The Motorola DSP56000 Digital Signal Processor”, IEEE Micro, 1986, December, pp. 29–48

[39] “DSP56001 56-bit General Purpose Digital Signal Processor, Technical Data”, Motorola, 1991

[40] “DSP56000/DSP56001 Digital Signal Processor User’s Manual”, Motorola, 1990

[41] Chrysafis, A., Lansdowne, S., “Fractional and Integer Arithmetic Using the DSP56000 Family of General-Purpose Digital Signal Processors”, Motorola Application note APR3, 1988

[42] Vuori, J., “Design and construction of a packet radio modem with a digital signal processor” (in Finnish), Master’s Thesis, Helsinki University of Technology, 1990

[43] Miller, J., R., “The Shape of Bits to Come”, Oscar News, 1991, pp. 29–37

[44] Miller, J., R., “9600 Baud Packet Radio Modem PCB”, February 1989

[45] Josefsson, O., “Questions on noise in converters”, Analog Dialogue, Vol. 28, No. 2, 1994, p. 24–29

[46] Nelson, C., “LT1070 Design Manual”, Application Note 19, Linear Technology, 1986

[47] “MAXIM 1992 New Releases Data Book”, MAXIM, 1992

[48] “Atmel Flash 5-Volt Only CMOS PEROMs”, Atmel Corp., 1992

[49] “Crystal semiconductor audio databook”, Crystal Semiconductor Corporation, January 1994

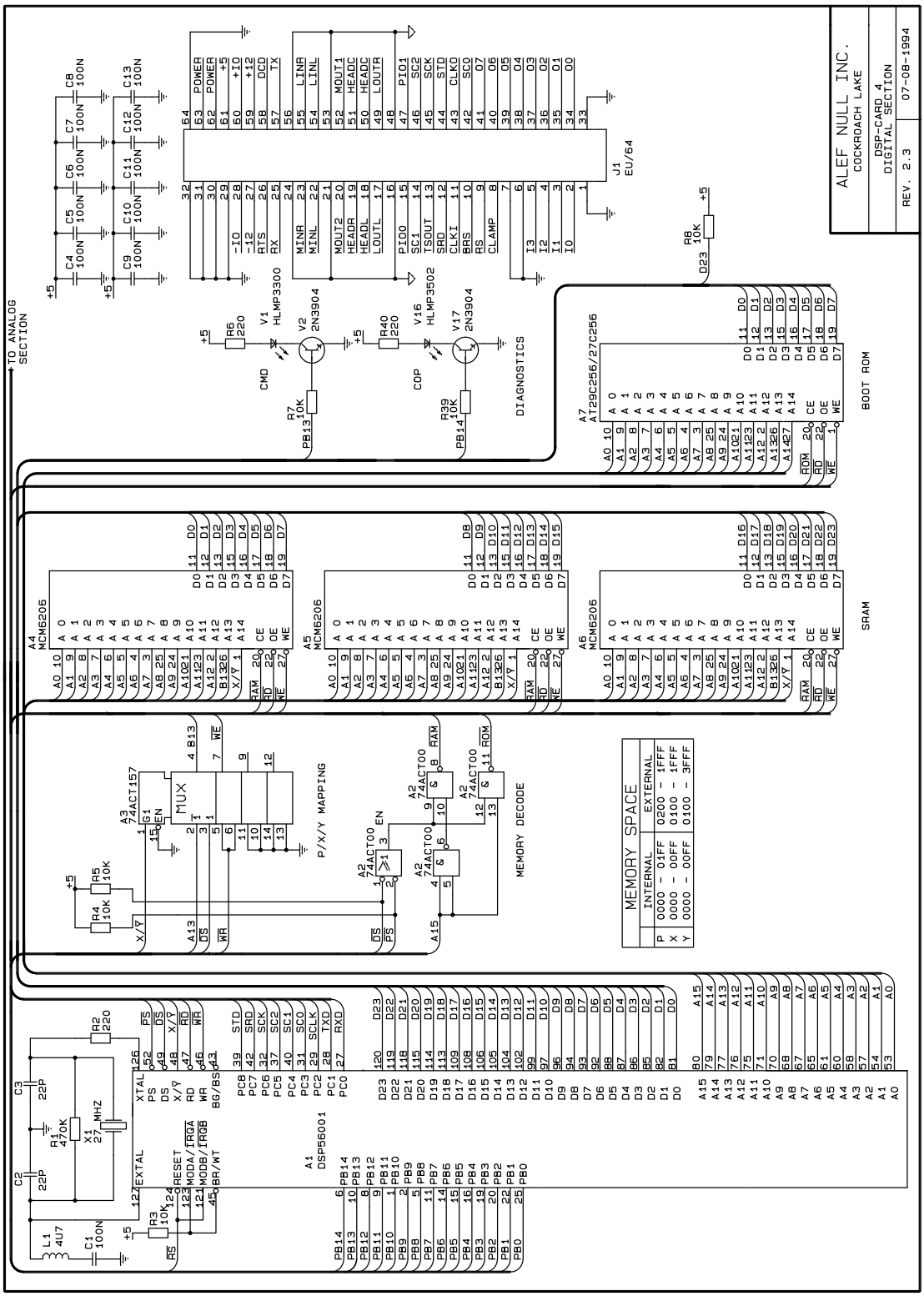
[50] Leonard, M., “Multimedia Codec Chip Adds Voice And Music”, Electronic Design, September 12, 1992, pp. 53–58

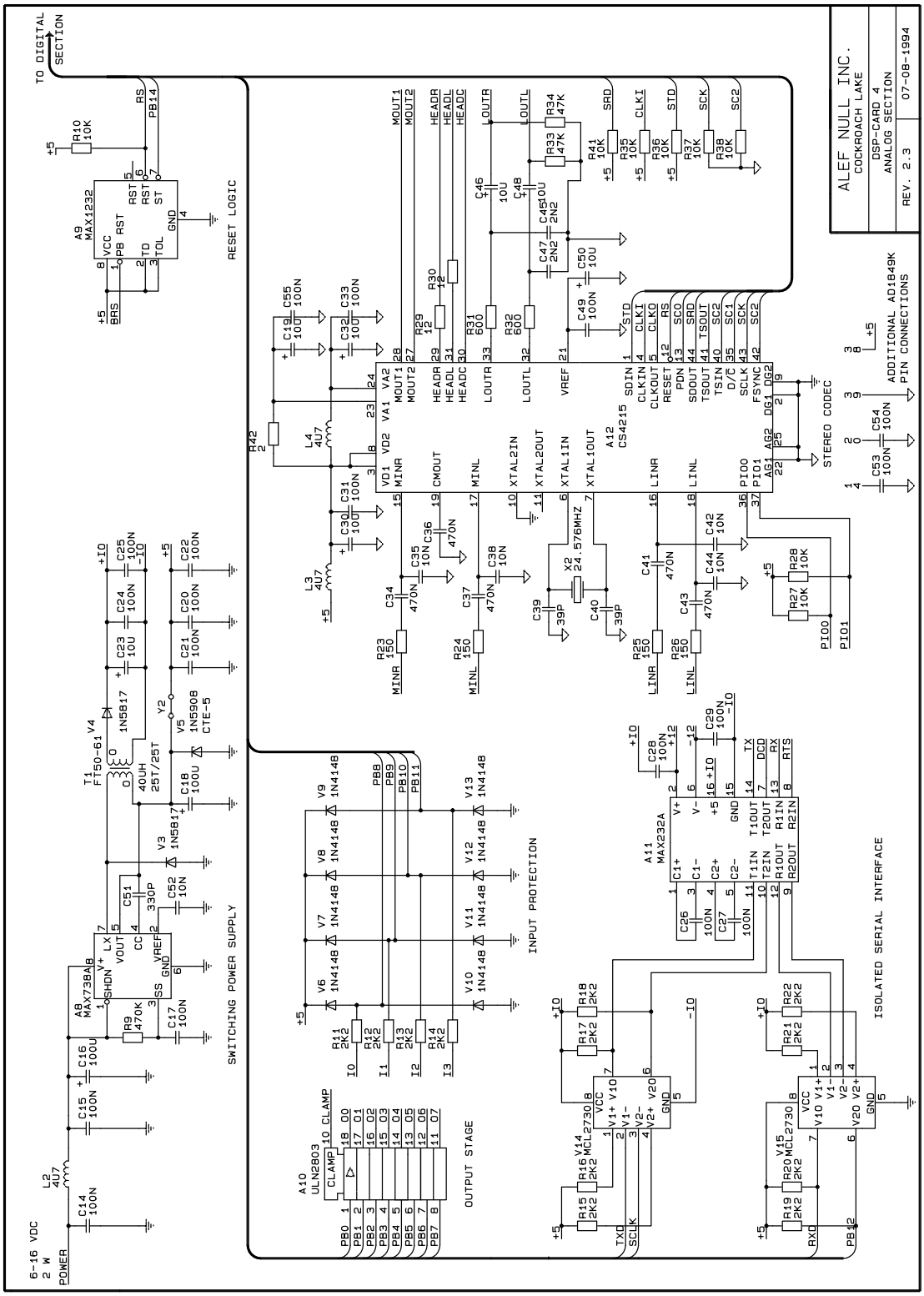
[51] “SPW™ Filter Design System, User’s Guide”, Comdisco Systems Inc., 1990

[52] Easton Ellis, B., “Less Than Zero”, 1985

[53] Jokinen, O., “Nollapiste”, 1965

Appendices


ALEF NULL INC.
COCKROACH LAKE
DSP-CARD 4
DIGITAL SECTION
REV. 2.3
07-08-1994
TO ANALOG SECTION
DIAGNOSTICS
BOOT ROM
SRAM
MEMORY DECODE
P/X/Y MAPPING
MEMORY SPACE
INTERNAL
EXTERNAL
P 0000 - 01FF 0200 - 1FFF
X 0000 - 00FF 0100 - 1FFF
Y 0000 - 00FF 0100 - 3FFF


ALEF NULL INC.
COCKROACH LAKE
DSP-CARD 4
ANALOG SECTION
REV. 2.3
07-08-1994
TO DIGITAL SECTION
RESET LOGIC
SWITCHING POWER SUPPLY
INPUT PROTECTION
OUTPUT STAGE
ISOLATED SERIAL INTERFACE
STEREO CODEC
ADDITIONAL AD1849K PIN CONNECTIONS
6-16 VDC 2 W POWER
A8 MAX738A
A9 MAX1232
A10 ULN2803
A11 MAX232A
A12 CS4215
T1 FT50-61
X2 24.576MHZ
Y2 CTE-5

ALEF NULL DSP CARD 4 Rev 2.3 PARTS LIST REPORT Sun Jan 11 12:31:00 1995

Part Type	Reference Designation					Description
DSP56001FC27	A1					27 MHz, CQFP PACKAGE DSP
DSP56001FE27	A1					27 MHz, PQFP PACKAGE DSP
74ACT00	A2					4 ACMOS NANDs
74ACT157	A3					ACMOS MUX
MCM6206	A4	A5	A6			300mils 256K 25ns SRAM
CXK58258AP-25	A4	A5	A6			300mils 256K 25ns SRAM
MT5C2568-25	A4	A5	A6			300mils 256K 25ns SRAM
27C256	A7					256K EPROM
AT29C256	A7					256K FLASH EPROM
MAX738A	A8					PWM REGULATOR
MAX1232	A9					MICROPROCESSOR MONITOR
ULN2803	A10					OCTAL DRIVER
MAX232A	A11					RS232 DRV/REC, 114 Kbit/s
MAX202A	A11					RS232 DRV/REC, 19.2 Kbit/s
CS4215	A12					16-BIT, 48kHz, CODEC
AD1849K	A12					16-BIT, 48kHz, CODEC
HLMP3300	V1					5mm, RED LED
2N3904	V2	V17				NPN TRANSISTOR
1N5817	V3	V4				HIGH SPEED SCHOTTKY DIODE
1N5908	V5					TRANSIENT SUPPRESSOR
1N4148	V6	V7	V8	V9		SMALL SIGNAL DIODE
	V10	V11	V12	V13		
HCPL2730	V14	V15				DUAL OPTOCOUPLER
HLMP3502	V16					5mm, GREEN LED
DXTAL	X1					27MHz CRYSTAL
DXTAL	X2					24.576MHz CRYSTAL
100N	C1	C4	C5	C6	C7	COUPLING CAP
	C12	C13	C14	C15		
	C17	C20	C21	C22	C24	
	C25	C26	C27	C28	C29	
	C31	C33	C49	C55		
100N	C53	C54				Needed only with AD1849K
20P	C2	C3				
100N	C8	C9	C10	C11		GENERIC 1206 SMD CAP
100U	C16	C18				ELYT, 25V
10U	C19	C23	C30	C32	C46	TANTAL, 10V
	C48	C50				
10N	C35	C38	C42	C44	C52	NP0
470N	C34	C36	C37	C41	C43	
40P	C39	C40				
2N2	C45	C47				
330P	C51					
470K	R1	R9				ALL RESISTORS ARE 1/8W
220	R2	R40	R6			
150	R23	R24	R25	R26		
10K	R3	R4	R5	R7	R8	
	R10	R27	R28	R35		
	R36	R37	R38	R39		
	R41					
2K2	R11	R12	R13	R14	R15	
	R16	R17	R18	R19	R20	
	R21	R22				
12	R29	R30				
47K	R33	R34				
600	R31	R32				
2	R42					
4U7	L1	L2	L3	L4		SMALL INDUCTOR
FT50-61	T1					AMIDON TOROIDAL CORE
EU/64	J1					64-PIN F EURO CONNECTOR
GNDLOOP	Y1					GND WIRE LOOP FOR PROBES
PRWLOOP	Y2					LOOP FOR POWER ISOLATION

All capacitors (except C16 and C18 which are 0.1") are 0.2". Resistors and diodes are 0.4".

Note that there are alternative parts listed for DSP, RAM and Codec. A2 and A3 can also be (but not recommended) ‘AC’ or ‘F’ types. V5 can be ordinary 5V1 Zener (BZV 55C 5V1 for example) if TransZorb is not available. A4, A5 and A6 can be higher speed versions also, e.g. CXK58258AP-20 or similar parts from other manufacturers.