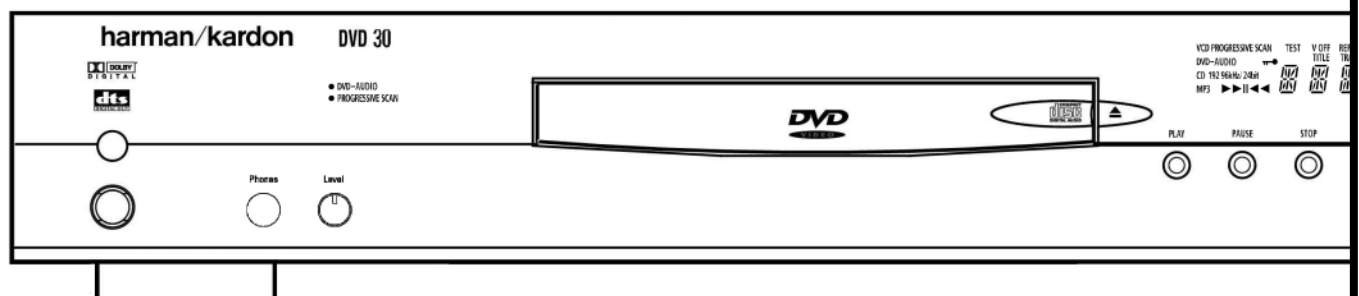


DVD 30 Digital Versatile Disc Player

SERVICE MANUAL



harman/kardon®

Power for the Digital Revolution™

Technical Specifications

Applicable Disc:	Disc formats: 5 inch (12 cm) or 3 inch (8 cm) DVD-Audio and Video, Standard conforming DVD+RW, DVD+R, DVD-R and DVD-RW, VCD, CD, CD-R, MP3, WMA, JPEG or CD-RW discs, Regio code: DVD Movie disc with Code 2 or 0 only. DVD-Layers: Single Side/Single Layer, Single Side/Dual Layer, Dual Side/Single Layer, Dual Side/Dual Layer Audio formats: DVD-Audio, Linear PCM, MPEG, MLP/CPM, Dolby Digital or DTS
Video Signal System:	PAL/NTSC
Composite Video Output:	1 V p-p/75 Ohms, sync negative polarity
S Video Output:	Y/Luminance: 1 V p-p/75 Ohms, sync negative polarity C/Chrominance: 0.286 V p-p
Component Video Output:	Y: 1Vp-p/75 Ohms, sync negative polarity Cr: 0.7Vp-p/75 Ohms Cb: 0.7Vp-p/75 Ohms
Analog Audio Output:	2 Vrms max
Frequency Response:	DVD-Audio (2-channel): 2 Hz - 96 kHz +0/-0.5 dB (5 channel): 2 Hz - 48 kHz +0/-0.5 dB DVD (Linear PCM): 2 Hz - 22 kHz +0/-0.5 dB (48 kHz sampling) 2 Hz - 44 kHz +0/-0.5 dB (96 kHz sampling) CD: 2 Hz - 20 kHz +0/-0.5 dB
Signal/Noise Ratio (SNR):	113 dB (A-weighted)
Dynamic Range:	DVD-Audio: 115 dB (24 Bit) DVD: 100 dB (18 Bit) / 105 dB (20 Bit) CD/DVD: 96 dB (16 Bit)
THD/1kHz:	DVD/CD: 0.0025 %
Wow & Flutter:	Below Measurable Limits
AC Power:	110 - 240 V/ 50 - 60 Hz
Power Consumption:	12 Watts (On) / 20 Watts (Max)
Dimensions (WxHxD):	440 x 87 x 305 mm
Weight:	4 Kg

Depth measurement includes knobs and connectors.

Height measurement includes feet and chassis.

All specifications subject to change without notice.

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Main board assy 909C-4 DVD30

Rference	Part	Parts No.
FB1 FB3 FB4 FB5 FB6 FB7 FB10 FB11 FB12 FB13 FB14 FB15 R28 R308 R316	0Ω(SMD0603)	WLD7.075.0
R256	10Ω(1%,SMD0603)	WLD7.075.100
L9	RT-1W-10Ω	WLD7.075.100
R1 R249 R250 R252 R253 R278 R282 R306	22Ω(SMD0603)	WLD7.075.220
R183	56Ω(1%,SMD0603)	WLD7.075.560
R3 R25 R26 R27 R184 R185 R186 R199 R200 R201 R202 R203 R204 R255 R257 R258 R313	75Ω(1%,SMD0603)	WLD7.075.750
R59	100Ω(SMD0603)	WLD7.075.101
R2 R4	110Ω(SMD0603)	WLD7.075.111
R259	110Ω(1%,SMD0603)	WLD7.075.111
R37	RT-1/4W-150Ω	WLD7.075.151
R64 R80 R91 R107 R117 R122 R136 R143 R151 R156 R170 R177	150Ω(1%,SMD0603)	WLD7.075.151
R207	270Ω(SMD0603)	WLD7.075.271
R71 R88 R98 R114 R129 R148 R163 R182	330Ω(SMD0603)	WLD7.075.331
R208	390Ω(SMD0603)	WLD7.075.391
R63 R66 R79 R82 R90 R93 R106 R109 R116 R119 R121 R124 R135 R138 R142 R145 R150R153 R155 R158 R169 R172 R176 R179	430Ω(1%,SMD0603)	WLD7.075.431
R277 R321	470Ω(SMD0603)	WLD7.075.471
R191 R192 R193 R194 R195 R196 R197 R198	510Ω(1%,SMD0603)	WLD7.075.511
R70 R87 R97 R113 R128 R147 R162 R181	680Ω(SMD0603)	WLD7.075.681
R31 R35	RT-1/4W-1K	WLD7.075.102
R61 R281	1KΩ(SMD0603)	WLD7.075.102
R67 R68 R72 R73 R74 R75 R76 R77 R83 R84R94 R95 R99 R100 R101 R102 R103 R104 R110 R111 R125 R126 R130 R131 R132 R133R139 R140 R159 R160 R164 R165 R166 R167 R173 R174	1KΩ(1%,SMD0603)	WLD7.075.102
R260	1.1KΩ(1%,SMD0603)	WLD7.075.112
R310	1.5KΩ(SMD0603)	WLD7.075.152

Main board assy 909C-4 DVD30

Rference	Part	Parts No.
R62 R65 R78 R81 R89 R92 R105 R108 R115 R118 R120 R123 R134 R137R141 R144 R149R152 R154 R157 R168 R171 R175 R178	1.5KΩ(1%,SMD0603)	WLD7.075.152
R12 R29 R30 R32 R33 R36 R251 R317 R279 R280	3.3KΩ(SMD0603)	WLD7.075.332
R209	4.7KΩ(SMD603)	WLD7.075.472
R11 R60 R69 R85 R86 R96 R112 R127 R146 R161 R180 R205 R206 R303 R307	10KΩ(SMD0603)	WLD7.075.103
R254	100KΩ(SMD0603)	WLD7.075.104
C105 C106 C107 C108 C117 C118 C119 C120 C125 C126	20P(C0G, 0603)	WLD7.075.20C
C27 C28 C33 C34 C37 C38 C43 C44 C51 C52 C59 C60 C67 C68 C75 C76 C238 C239	22P(5%,C0G,0805)	WLD7.075.22C
C46 C326	47P(C0G,0603)	WLD7.075.47C
C325	82P(C0G,0603)	WLD7.075.82C
C2 C3 C110 C111 C112 C236	100P(C0G,0603)	WLD7.075.101C
C102 C103 C104	150P(C0G,0603)	WLD7.075.151C
C85 C109 C329 C330 C331 C332	220P(C0G,0603)	WLD7.075.221C
C101	330P(C0G,0603)	WLD7.075.331C
C79 C80 C81 C82 C83 C84	680P(C0G,0603)	WLD7.075.681C
C25 C26 C31 C32 C35 C36 C41 C42 C47 C48 C49 C50 C57 C58 C61 C62 C63 C64 C65 C66 C73 C74 C77 C78	122(5%,C0G,0805)	WLD7.075.122C
C245	104(X7R,0805)	WLD7.075.104C
C1 C4 C29 C30 C39 C40 C45 C53 C54 C55C56 C69 C70 C71 C72 C127C128 C129 C130C131 C132 C134 C136 C137C178 C180 C206C207 C208 C209 C210 C211 C212 C213 C214C215 C216 C217 C218 C219 C220 C221 C222 C223 C224 C225 C226 C227 C228 C237 C241C242C246 C253 C254 C268 C269 C270 C272C273 C274 C275 C276 C277 C278 C279 C280 C281 C282 C283 C284 C285 C286 C287 C288C289 C290 C291 C292 C293 C294 C295 C296 C297 C298 C299 C300 C301 C302 C303 C304 C305 C306 C307 C308 C309 C310 C311 C312C313 C314 C315 C316 C317 C333 C334 C335	104(X7R,0603)	WLD7.075.104C
C187 C190 C193 C196 C199 C202 C240 C243 C244	10UF/16V	WLD7.075.10UF/16V

Main board assy 909C-4 DVD30

Rference	Part	Parts No.
C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 C16 C17 C89 C90 C93 C94 C95 C96 C97 C98 C188 C189 C191 C192 C194 C195 C197 C198 C200 C201 C203 C204 C252	47UF/16V	WLD7.075.47UF/16V
C18 C19 C20 C21C22 C99 C100 C133 C135 C176 C179 C205 C271 C318 C319	100UF/16V	WLD7.075.100UF/10V
C177 C247 C248	220UF/10V	WLD7.075.220UF/10V
C91 C92	220UF/25V	WLD7.075.220UF/25V
D3 D4 D5 D6 D7 D8 D9 D10 D11 D12 D13 D14	IN4148	WLD5.409.IN4148
Q1 Q2 Q3 Q4 Q5 Q8 Q9 Q10 Q11 Q12 Q13 Q14 Q17	DTC343TK (SMT3)	WLD5.419.DTC343TK
Q7	3906 (SMD)	WLD5.419.3906
Q15	DTA114YKA(SMT3)	WLD5.419.DTA114YKA
U2	74ACT257SC	WLD5.449. 74ACT257SC
U3 U4 U5 U6 U7 U8	LM837M	WLD5.449. LM837M
U9 U10	LMH6655MA	WLD5.449. LMH6655MA
U11	79L05	WLD5.449. 79L05
U12	78L05	WLD5.449. 78L05
U15	PC817 (photoelectric coupler)	WLD5.449. PC817
U17	SHARP 018EZ01	WLD5.449. 018EZ01
U20	BA05	WLD5.449. BA05
U21 U22 U23	WM8740	WLD5.449. WM8740
U25	ATMEL93C66	WLD5.449. ATMEL93C66
U26	LM809M3-2.63	WLD5.449. LM809M3-2.63
U29	64Mbit SDRAM(4X512X32bit)	WLD5.449. 64Mbit
U30	NDV8611	WLD5.449. NDV8611
U31 U32	74VHCT573A	WLD5.449. 74VHCT573A
U33 U34	HY29F800TG-90	WLD5.449. HY29F800TG-90
U36	74ACT125	WLD5.449. 74ACT125
Y1	27MHz(basic freq.)Oscillator	WLD5.557.27
L5 L6 L7	1UH((Coiling, SMD1210)	WLD5.757.1
L4	2.2UH((Coiling, SMD1210)	WLD5.757.2.2
L10	2.2UH(SMD1206)	WLD5.757.2.2
L11	4.7UH(SMD1206)	WLD5.757.4.7

Main board assy 909C-4 DVD30

Rference	Part	Parts No.
FB2 FB17 FB18 FB19 FB20 FB21	50Ω (SMD0603)	WLD5.777.50
J5	PH-13A	WLD6.609.13A
J1	PH-12A	WLD6.609.12A
J14	PH-10A	WLD6.609.10A
J2	29PIN1.0 (two lines of socket)	WLD6.609.29P
J6	SCART Connector	WLD6.609.J6
J7	Remote signal in/out socket SCJ351P00XS0B00 (Black)	WLD6.609.J7
J12	AV1-8.4-6G(Orange)	WLD6.609.6G
J8	AV3-8.4-13G(Green, blue, red)	WLD6.609.13G
J10	AV6-8.4-16G(Left White,Right Red)	WLD6.609.16G
J9	Video & S-Video CS-08 (Yellow)	WLD6.609.CS-08
J13	SHARP GP1FA550TZ	WLD6.609.GP1FA550TZ
909C-4	PCB (two-layer)	WLD7.820.909C-4

Power supply board assy 714C-2 DVD30

Rference	Part	Parts No.
R21	RT-1/6W-3.3Ω	WLD5. 630. 3. 3
R11	RT-1/6W-10Ω	WLD5. 630. 100
R3	RT-1/6W-100Ω	WLD5. 630. 101
R102	RT-1/6W-220Ω	WLD5. 630. 221
R2 R6 R14	RT-1/6W-330Ω	WLD5. 630. 331
R15	RT-1/6W-390Ω	WLD5.630.391
R9 R22 R23	RT-1/6W-470Ω	WLD5. 630. 471
R12	RT-1/6W-1KΩ	WLD5. 630. 102
R13	RT-1/6W-2.2KΩ	WLD5. 630. 222
R24	RT-1/6W-3.3KΩ	WLD5. 630. 332
R5 R7 R8 R10 R20	RT-1/6W-5.1KΩ	WLD5. 630. 512
R4	RT-1/6W-10KΩ	WLD5. 630. 103
R19	RT-1/4W-10KΩ	WLD5. 630. 103
R18	RT-1W-1Ω	WLD5. 630. 1
R16	RT-1W-68KΩ	WLD5. 630. 683
R17	RT-1W-130KΩ	WLD5. 630. 134

Power supply board assy 714C-2 DVD30

Rference	Part	Parts No.
R1	RT-1W-360K Ω	WLD5.630.364
RV1	Varistor FNR10K471	WLD5.630.471
R101	Fuse resistance 1/2W-0.33 Ω	WLD5.630.0.33
RF1	Fuse resistance 1/4W-4.7 Ω	WLD5.630.4.7
C6	CD295-450V-68uF	WLD5.610.68
C3 C4	Y-type 471/ $\sim$ 250V	WLD5.619.471
C5 C7	Y-type 102/ $\sim$ 400V	WLD5.619.102
C26	High voltage 103/ $\sim$ 1KV	WLD5.619.103
C1 C2	CBB X-Type 104/ $\sim$ 275V	WLD5.619.104
C35 C36 C37 C41	CT4-50V-471	WLD5.610.471
C31 C32 C34 C38 C40 C42 C50	CT4-50V-104	WLD5.610.104
C20	CT-100V-472	WLD5.610.472
C21 C23	CT-100V-682	WLD5.610.682
C22 C24 C27 C28	CT-100V-103	WLD5.610.103
C13 C14	CD-50V-10uF(105 $^{\circ}$ C)	WLD5.613.10UF/50V
C30	CD-50V-33uF(105 $^{\circ}$ C)	WLD5.613.33UF/16V
C39	CD-16V-47uF(105 $^{\circ}$ C)	WLD5.613.47UF/16V
C8 C16 C18 C29 C45 C49	CD-16V-220uF(105 $^{\circ}$ C)	WLD5.613.220UF/16V
C11 C15 C33 C44	CD-16V-470uF(105 $^{\circ}$ C)	WLD5.613.470UF/16V
C9 C10 C12	CD-16V-1000uF(105 $^{\circ}$ C)	WLD5.613.1000UF/16V
C25	N/A	WLD5.613.NC
L3	Magnetic bead 0.6uH	WLD5.777.0.6
L5	Magnetic bead 1.2uH	WLD5.757.1.2
L8	Magnetic bead L630(10uH)	WLD5.757.10
L6 L7 L9	Filter inductor 20uH	WLD5.757.20
L11	Color code inductor 33uH	WLD5.757.33
L1 L10	LCL ET20-010(50mH)	WLD5.757.50mH
ZD1	5.6 V Regulator Diode	WLD5.409.5.6V
D1 D3 D4 D7 D8	FR104	WLD5.409.FR104
D6	FR204	WLD5.409.FR204
D2	1U08	WLD5.409.1U08
D12	1N4148	WLD5.409.IN4148
D9	1N5393	WLD5.409.IN5393

[illegible][illegible]

Power switch board assy 787C-2 DVD30

Rference	Part	Parts No.
1SW1	Power switch PS4E-A-040	
1JP1	Horizontal VH three holes two pins	
1C1	High voltage 103 (~250V)	WLD5.619.103
787C-2	PCB	WLD7.820.787C-2

Front panel assy 912C-2 DVD30

Rference	Part	Parts No.
R9	RT-1/6W-47Ω	WLD7. 075. 47
R29 R30 R31 R32 R33 R34 R35 R36 R37 R39 R41 R42 R43 RR1	SMD0805-150Ω	WLD7. 075. 151
R38 R40	SMD0805-270Ω	WLD7. 075. 271
R7	RT-1/6W-200Ω	WLD7. 075. 201
R44 R10	RT-1/6W-560Ω	WLD7. 075. 561
R4 R6 R24 R25 R28 R50	RT-1/6W-10KΩ	WLD7. 075. 103
R16 R17 R18 R19 R20 R21 R22 R26 R27	RT-1/6W-33KΩ	WLD7. 075. 330
R23	RT-1/6W-47KΩ	
C1 C2 C9 C10	CT4-50V-104	WLD5.610.104
C3	CD-6.3V-100uF	WLD5.610.101
D4 D5 D6	IN4148	WLD5.409. IN4148
LD3 LD4 LD5 LD6 LD7 LD8 LD9 LD10 LD11 LD1 LD2 LD12 LD13 LD14 LD15 LD16	LED Φ3 (Green)	WLD5.419.001
Q12	8050	WLD5.419.8050
Q2 Q4 Q8	8550	WLD5.419.8550
U1	PT6311	WLD5.449.PT6311
IR1/IR2	Remote Incept tube HS0038B	
S2-S9	Touch switch 6×6	WLD6.618.001
CN1	PH-5A	WLD6. 609. 5A
VFD (Same as DVD25/21)	DVD30 VFD	WLD7.350.025
J2~J48 J2 J22 J55 J50	Short-line	
912C-2	PCB	WLD7.820.912C-2

Headphone assy 913C DVD30

Rference	Part	Parts No.
R5 R8	330Ω(SMD0603)	WLD7. 075. 331
R6 R9	680Ω(SMD0603)	WLD7. 075. 681
R11 R12 R13 R14	750Ω(1%,SMD0603)	WLD7. 075. 751
R7 R10	10KΩ(SMD0603)	WLD7. 075. 103
R1 R2 R3 R4	20KΩ(SMD0603)	WLD7. 075. 203
C11 C12 C17 C19	22P(5%,C0G,0805)	WLD7. 075. 20C
C4 C13 C14 C15	103(X7R,0603)	WLD7. 075. 103C
C2 C3	10UF/50V	WLD7. 075. 10UF/50V
C8 C9	47UF/16V	WLD7. 075. 47UF/16V
C5	100U/10V	WLD7. 075. 100U/10V
C1 C10 C16 C18	100U/16V	WLD7. 075. 100U/16V
C6 C7	220UF/16V	WLD7. 075. 220UF/16V
Q1 Q2	DTC343TK (SMT3)	WLD5.419.DTC343TK
L1	50Ω Magnetic bead(DIP)	WLD5.777.50
IC3	LM833	WLD5. 449. LM833
IC1	LM4880	WLD5. 449. LM4880
IC2	78L05	WLD5. 449. 78L05
W1	RA09G6-B50K-L20F	
CN1	PH-10A	WLD6. 609. 10A
HEADPHONE	CK3-6.35	WLD6. 609. CK3-6. 35

Remote control board assy 738C DVD30

Rference	Part	Parts No.
WLD7. 075. 0	R6	0805-0Ω
WLD7. 075. 1	R1	1206-1Ω (1/6W)
WLD7. 075. 2. 2	R5	0805-2.2Ω
WLD7. 075. 221	R2	0805-220Ω
WLD7. 075. 271	R4	0805-270Ω
WLD7. 075. 101	C3 C4	0805-100PF
WLD7. 075. 104	C2	0805-104
WLD5.610.100UF/10V	C1	CD-10V-100μF
	U1 (SMD)	IC piece
WLD5. 409. IN4148	D1 D2 D3 D4 D5 D6 D7 D8	Diode IN4148 (SMD)
WLD5.419.SMD0603	LD1 LD2 LD3 LD4 LD5 LD6 LD7 LD8 LD9 LD10 LD11 LD12 LD13 LD14 LD15 LD16 LD17 L18 L19	LED (SMD)(Green light)
WLD5.419.S8050	Q1 Q3	Triode S8050(SMD)
WLD5.419.S8550	Q2	Triode S8550(SMD)
WLD5.419.HIR305	LED	Transmitting Tube HIR305
WLD5. 557. Z455E	X1	Resonator Z455E
		Anode Spring
		Cathode Spring
		Double role spring
WLD7.820.738C	738C	PCB

Mechanical Component DVD30

Qty	Rference	Part	Parts No.
1		Chassis	WLD8.031.091
1		Top cover SG012	WLD8.404.014
1		Rear panel	WLD8.610.101
1		"harman/kardon" badge	WLD8.809.002
1		Fixed bracket for earphone board	WLD8.008.001
1		Front panel	WLD6.116.101
4		Foot SD005-1	WLD8.085.005-1
1		Volume adjust knob SX020	WLD8.337.049
1		Power button SA009	WLD8.337.024
1		Door SC010	WLD8.082.021
1		Filter	WLD7.370.001
4		Foot pad SD003	WLD8.085.007
4		Screw jacket	WLD8.634.001
1		Power switch insulation strip SJ001	WLD7.085.007
2		VFD cushion SD002	WLD8.088.008-1
1		Remote control sensor support SZ010	WLD8.070.007
1		飞机顶	WLD8.661.002
3		Strap	WLD8.661.003
1		RC case	WLD8.605.013~014
1		RC conductive rubber	WLD8.605.015
2		RC indication plate	WLD7.683.009
1		Lens on front panel	WLD8.804.009
1		Glue for lens	WLD7.370.002
2		Glue for Diffusion paper	WLD8.849.001
2		Diffusion paper	WLD8.849.002
1		Insulation paper 110x25mm	WLD8.849.003
5		Plastic bracket for PCB	WLD8.079.035
1	panel DVD	Progressive scan indicator leader	WLD8.079.035-1
1	Offwhite	Fixed clip	WLD8.078.001
2		Aluminum flake clip Φ3.5X40	WLD8.018.004
1	Mechanism (LOADER)	Sanyo single disc Mechanism DVD-KIT710	WLD5.018.024
1		Toroidal magnetic core Φ31x19x16	

Component DVD30

Qty	Rference	Part	Parts No.
1	Connect between power supply board & main board	11-core 240mm length double, one side spacing 2.0 and the other 2.54	
1	Connect between mechanism & power supply board	6-core 110mm length double, one side spacing 2.0 and the other 2.54	
1	Connect between front panel board & main board	12-core 400mm length single 2.0 spacing	
2	Connect between headphone board & main board	3-core 600mm length double 2.0 spacing	
1		4-core 600mm length double 2.0 spacing	
1	Connect between main board & mechanism	29-core 170mm length 1.0 spacing flat cable	
1	Power supply board	End clip length 70mm power cord with plug (big & small double pins)	
1	Connect between switch board & power supply board	2-core 330 length double VH-3Y (antiflaming) plugs (double insulated lines)	
1	Connect between big & small front panels	5-core 60mm length single 2.0 spacing	
1		Carton box	WLD8. 865. 210
2		Polyfoam pad PM027	WLD8. 870. 029
1		Packing bag for player	WLD8. 840. 043
2		Plastic bag for OM	WLD8. 840. 044
1		Plastic bag for AV cords	WLD8. 840. 045
1		Plane polyfoam pad PM011003	WLD8. 870. 029-1
1		User's manual SM151	WLD8.810.151
1		Product warranty card	
1		Certificate of eligibility	
3		AV cords	
1		S-Video cord	
1		RC transmission line	
2		5# batteries	
1		Packing list	
1		Pyrocondensation tube Φ6	
5		Pyrocondensation tube Φ8 20mm	
4		Pyrocondensation tube Φ1.5 20mm	
1		Main board assy 909C-4	WLD6. 672. 409
1		Headphone assy 913C	WLD6. 672. 410
1		Power switch board assy 787C-2	WLD6. 672. 229-2
1		Front panel assy 912C-2	WLD6. 672. 412
1		Small Front panel assy 912C-3	WLD6. 672. 413
1		Power supply board assy 714C-2	WLD6. 672. 223-2

Component DVD30

Qty	Rference	Part	Parts No.
1		Remote control board assy 738C	WLD6. 672. 230
9	Fix PCB to front panel	PAHC M2.5×8	
2	Fix front panel to bottom shell	PWBTTO M3×8	
2	Fix front panel to bottom shell from two sides	KBTTO M3×6	
3	Fix main board	PWMTTC M3×18	
2	Fix main board	PWBTTTC M3×6	
2	Fix power supply board	PWMTTC M3×18	
2	Fix power supply board	PWBTTTC M3×6	
4	Fix mechanism	PWMTTC M3×8	
4	Fix IC to radiator	RBTTTC M3×8	
1	Fix optical output jack	PAHO M3×8	
3	Fix rear panel to bottom shell	PWMTTO M3×6	
5	Fix coaxial jack	PAHO M3×8	
4	Fix foot to bottom shell	RTHO M4×8	
9	Fix top cover	PWBTTO M3×8	
4	Fix power switch board and small front panel	PAHC M3×8	
2	Fix SCART	PWMO M3×10	
2	Fix SCART	M3	
4	Fix little panel & ear panel to front panel	PAHC M3×10	

XIO ALLOCATION TABLE					
X-BUS CONN PIN	PIN NAME	I/O	SIGNAL NAME	APPLICATION	NOTES
77	PCS0-	OUT	FLASHCS0-	Chip select fo FLASH memory, first bank	
81	XIO1	OUT	FLDCS	Chip select for the Front Panel Microcontroller. Active HIGH.	
NC	XIO2	OUT		DVD AUDIO REMOTE CONTROL	
84	XIO3	OUT	AUDIOMUTE	Audio MUTE signal. Active HIGH. When HIGH, all audio outputs are muted simultaneously.	
85	XIO4	OUT		Scart Switch Control	
88	XIO5	OUT		Scart Switch Control	
89	XIO6	IN/OUT	SLVINT-	Dedicated signal for SLAVE mode development. This pin must NOT be used in the application.	
92	XIO7	IN	WKUP-	Not used	Do not use this pin.
93	XIO8	OUT	ML-I2S	Use to CONTROL SERIAL INTERFACE LOAD SIGNAL for WM8740	
96	XIO9	OUT	FERST-	Front End (Drive, Loader) Reset. SW controlled reset. The signal polarity depends on the drive used. On this board, the Panasonic drive requires an active low reset while the Sanyo drive requires an active high reset. There is a transistor inverter for the Sanyo drive only. It was added for translating the logic to CMOS 3.5V level. The FERST- is active low for both drives, since an inverter is added for the Sanyo one.	
97	XIO10	OUT	XIO10	Scart BLNK Control	
100	XIO11	OUT	EECS	Chip select for the EEPROM. Active HIGH.	
N/A	XIO12	IN	WAIT	Input to Pantera. This is the WAIT signal from the FE.	In a custom application, do not use these pins as a chip select since the FPGA development does not support it.
N/A	XIO13	OUT	REQ	Output from Pantera. This is TX_REQ- going to the FE.	
N/A	XIO14	IN	ENABLE	Input to Pantera. This is TX_ENABLE- from the FE.	
ADDITIONAL XIO PINS (MULTIPLEXED)					
NC	CTSO	OUT	DACRST-	Audio DAC reset, active low. This signal is used to reset the audio DAC or to hold it in reset continuously in order to lower the power consumption (to enter low power mode). When exiting the low power mode, the registers of the DAC must be reinitialized.	
NC	RTSO	IN/OUT	NOT USED	AVAILABLE	

Assembly Revision	Date	Description of Changes

National Semiconductor

The Sight & Sound of Information

NATIONAL SEMICONDUCTOR CORPORATION
DVD PRODUCT LINE

Tel: 1-510-668-4850 Fax: 1-510-668-4860
48430 Lakeview Blvd., Fremont, CA 94538 USA
<http://www.national.com/appinfo/dvd/>

PROJECT NAME: DVD30 Main Board

DESIGNED: H-Jacky DATE: 2003-FEB-6

DRAWN: H-Jacky DATE: 2003-FEB-6

CHECKED: L.J.L. DATE: 2003-FEB-6

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LAST MODIFIED: DOC #:

PAGE TITLE

GENERAL NOTES
XIO ALLOCATION

SCHEMATIC REV: 1.93

Sheet 12 OF 12

PRELIMINARY

NS-SAN-DVD30

PANTERA-2 NDV8611

MANUFACTURING KIT / REFERENCE DESIGN

SPECIAL NOTES

These schematics reflect the current state of product development. This design had NOT yet been fully tested at the time these schematics were generated.

Since this product is in development, the user of this document is strongly advised to check for the latest revision.

National Semiconductor reserves the right to make changes to this product.

ALL parts labeled "N/A" are NOT ASSEMBLED.

Print Instructions:

- To create a readable printout, we recommend to use A3 or 11x17" paper size.
- When printing from this PDF file, make sure to check the "Shrink to fit" box.

SYSTEM CONFIGURATION

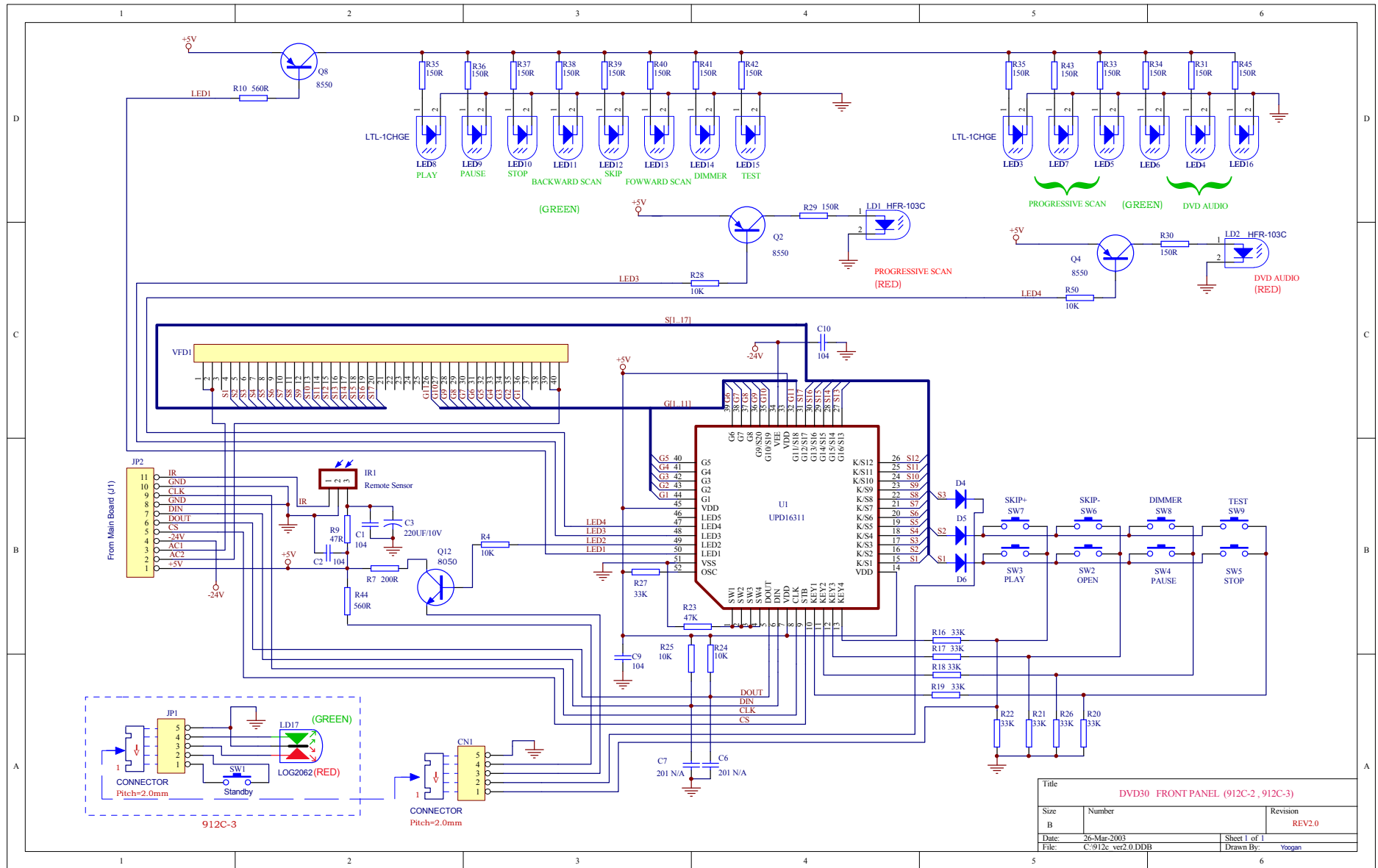
Module	Configuration	Description
AUDIO	6 channel	WM8740
	Electrical SPDIF Optical SPDIF	Connector on board Connector on board
VIDEO	CVBS and S-Video / Selection by software CVBS and YCrCb	Simple Passive PI Filter CVBS always active
SDRAM	64Mbit (x 32 Bits Wide)	Hyundai 57V653220BTC-8 or equivalent
FLASH	8 Mbit (x 16 Bits Wide)	SST 39VF160-70 or Equivalent
LOADER	AV Loader options:	Sanyo Chipset

CONFIDENTIAL

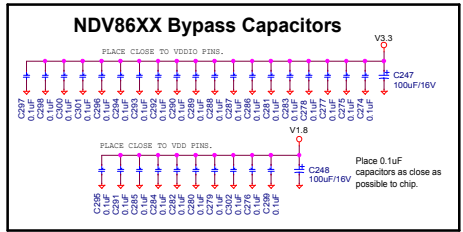
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PROJECT NAME: DVD30 Main Board		
DESIGNED: H-Jacky	DATE: 2003-FEB-6	LAYOUT JOB#:
DRAWN: H-Jacky	DATE: 2003-FEB-6	LAYOUT REV:
CHECKED: L.J.L.	DATE: 2003-FEB-6	ASSEMBLY REV:
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LAST MODIFIED: DOC #:		Sheet 1 OF 12

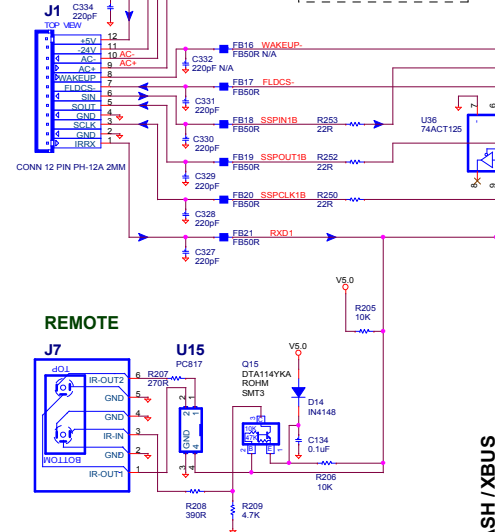
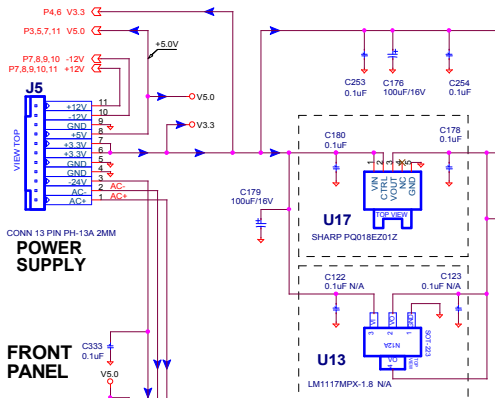


Title		
DVD30 FRONT PANEL (912C-2, 912C-3)		
Size	Number	Revision
B		REV2.0
Date:	26-Mar-2003	Sheet 1 of 1
File:	C:\912c ver2.0.DDB	Drawn By: Yoojan



$I_{OUT_FS} (mA) = \frac{32 \times V_{REF} (V)}{RSET (\Omega)}$

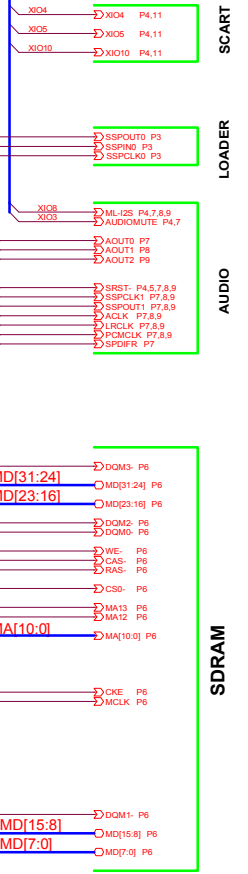
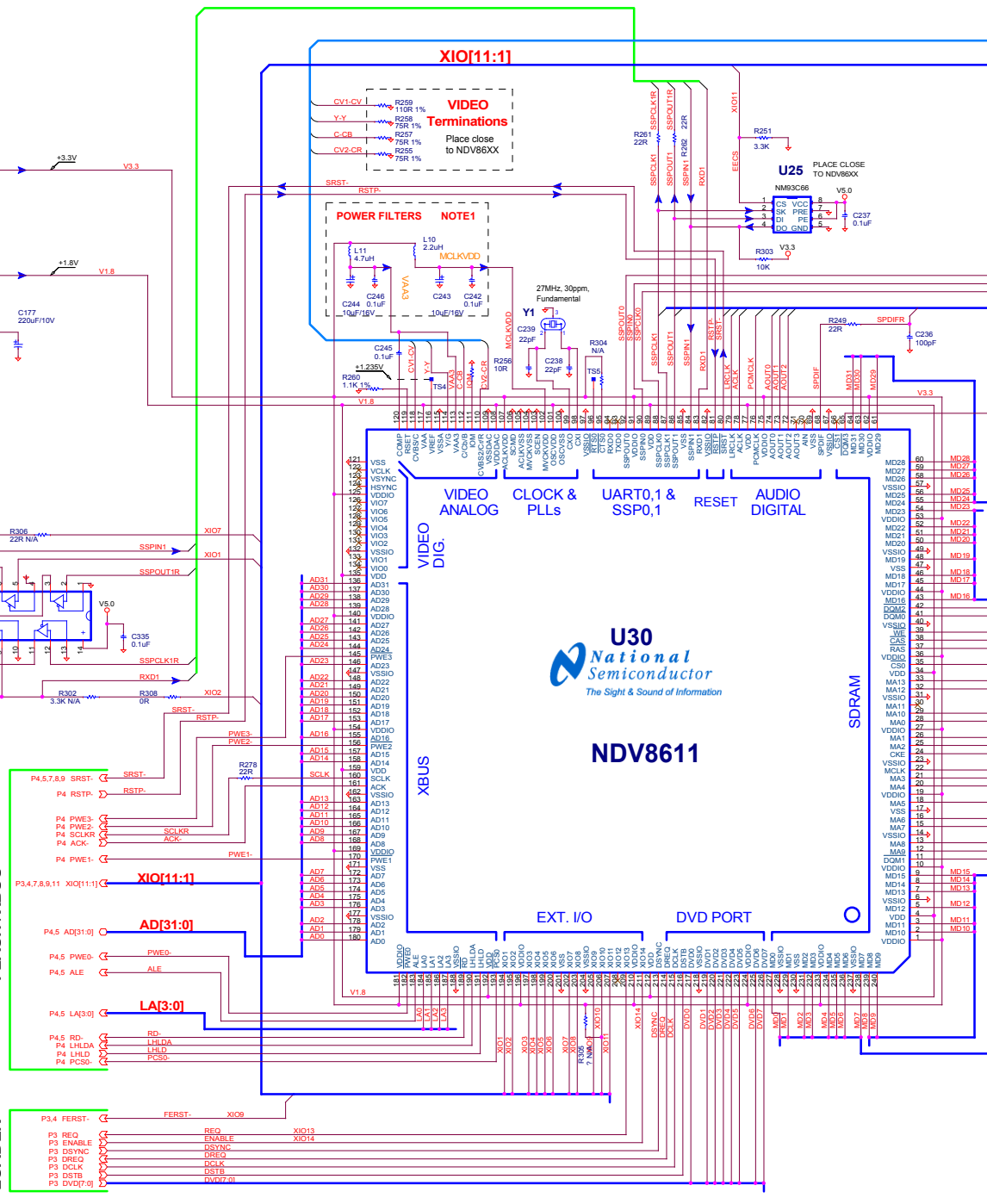
VIDEO OUTPUT	
MODE 1	MODE 2
2 X CVBS + S-VIDEO	CVBS + COMPONENT
CV1-CV P10	CVBS1 CVBS
Y-Y P10	Y Y
C-CB P10	C CB
CV2-CR P10	CVBS2 CR



DESIGN NOTES

NOTE1: The power filters shown in the schematics are recommended for best video and audio performance.

NOTE 2: The SSPIN1 input signal is configured as a wired-OR type. A pullup resistor of 10K is provided on board



PRELIMINARY

National Semiconductor
The Sight & Sound of Information

NATIONAL SEMICONDUCTOR CORPORATION
DVD PRODUCT LINE
NDV8611
POWER SUPPLY
EEPROM

PROJECT NAME: **DVD30 Main Board**

DESIGNED: H-Jack DATE: 2003-FEB-6

DRAWN: H-Jack DATE: 2003-FEB-6

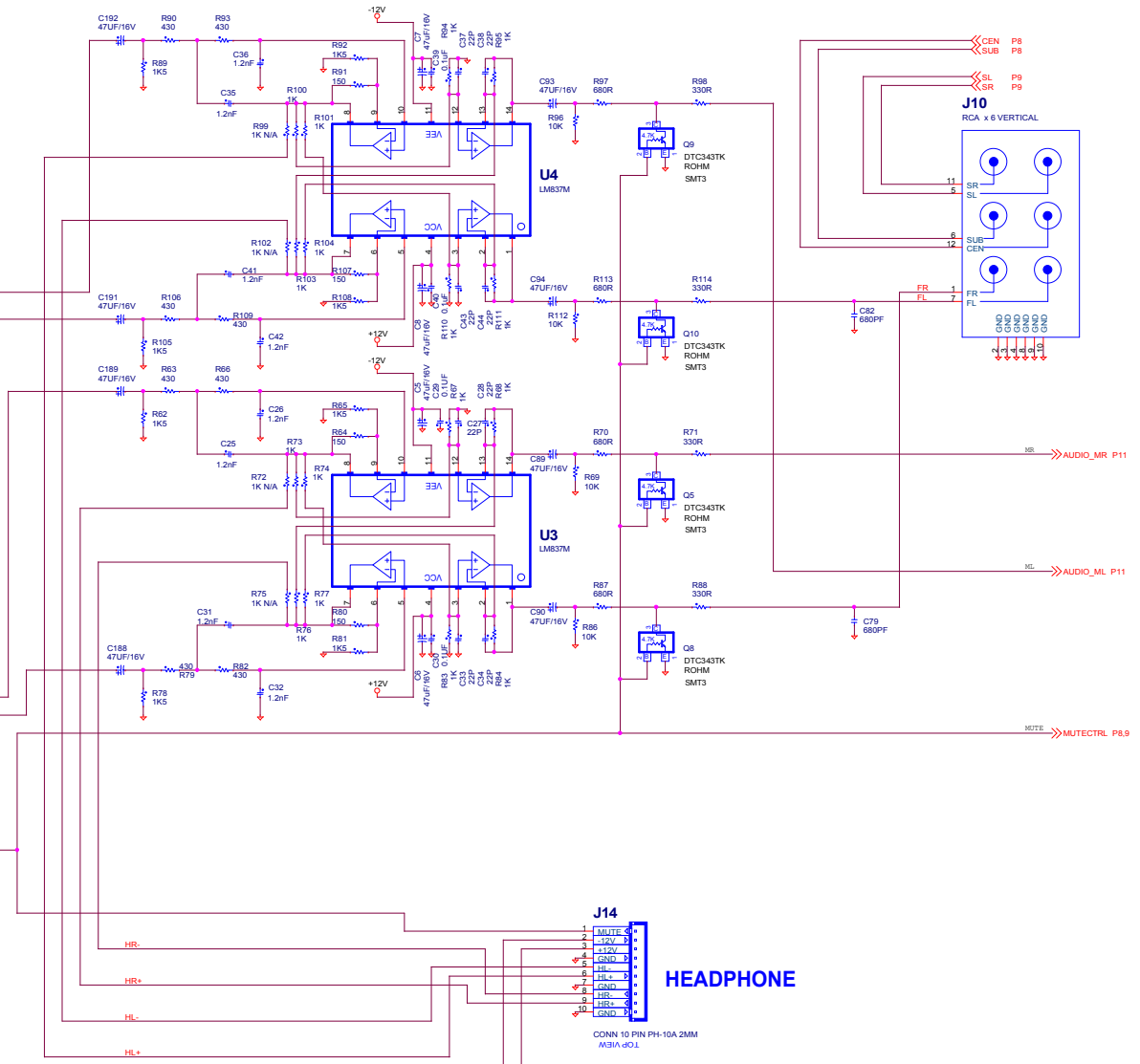
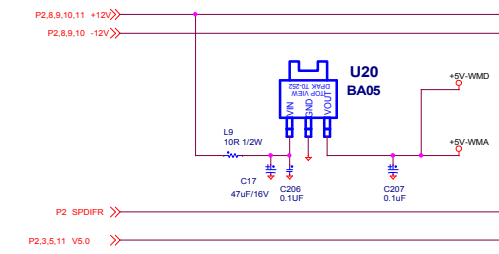
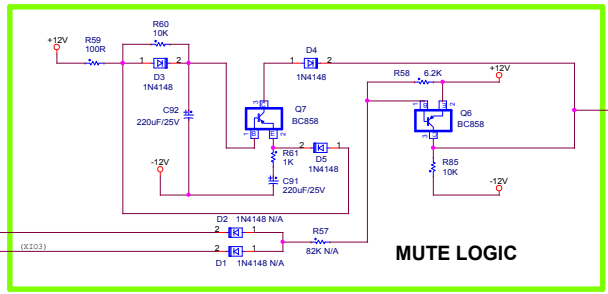
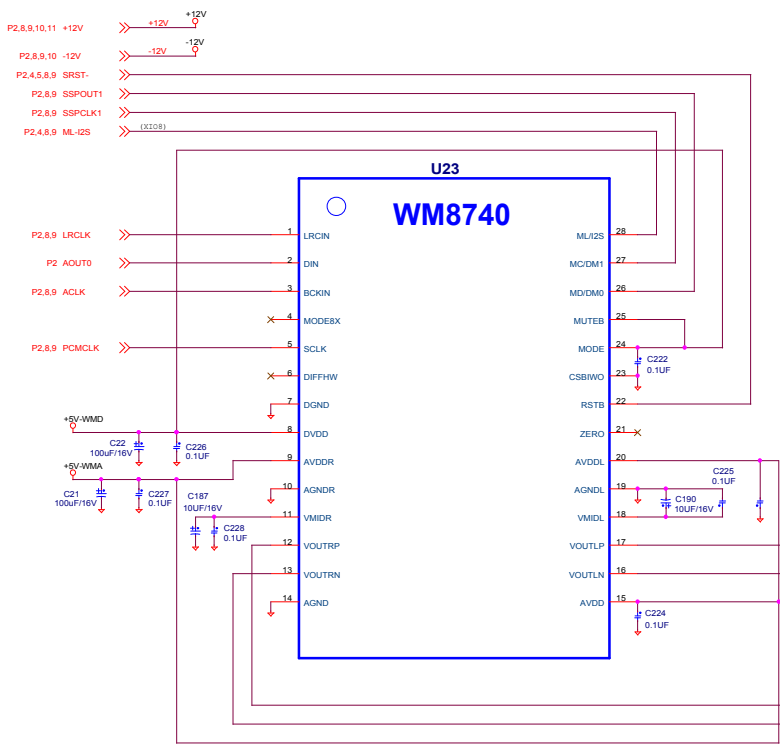
CHECKED: L-JL DATE: 2003-FEB-6

LAST MODIFIED: DOC #:

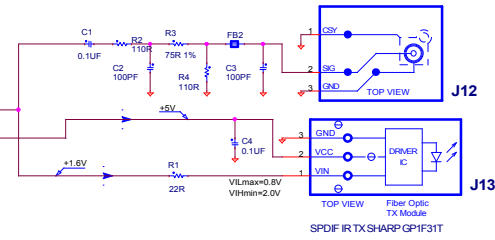
PAGE TITLE: NDV8611 POWER SUPPLY EEPROM

SCHEMATIC REV: 1.93

Sheet 2 OF 12

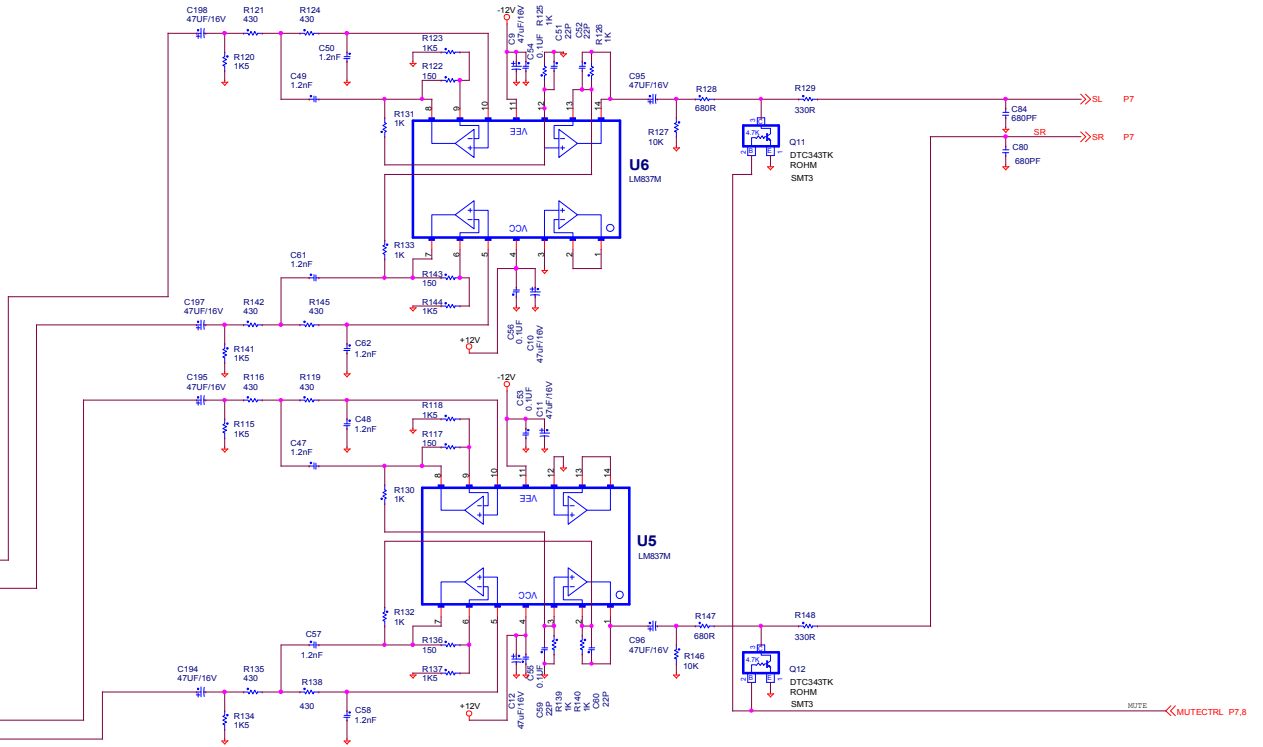
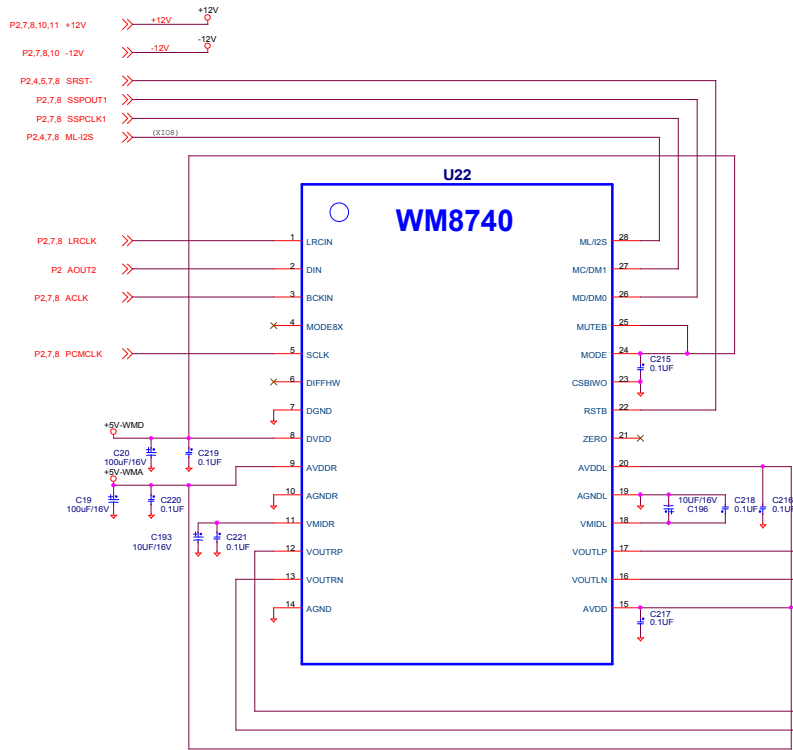


SPDIF Interface



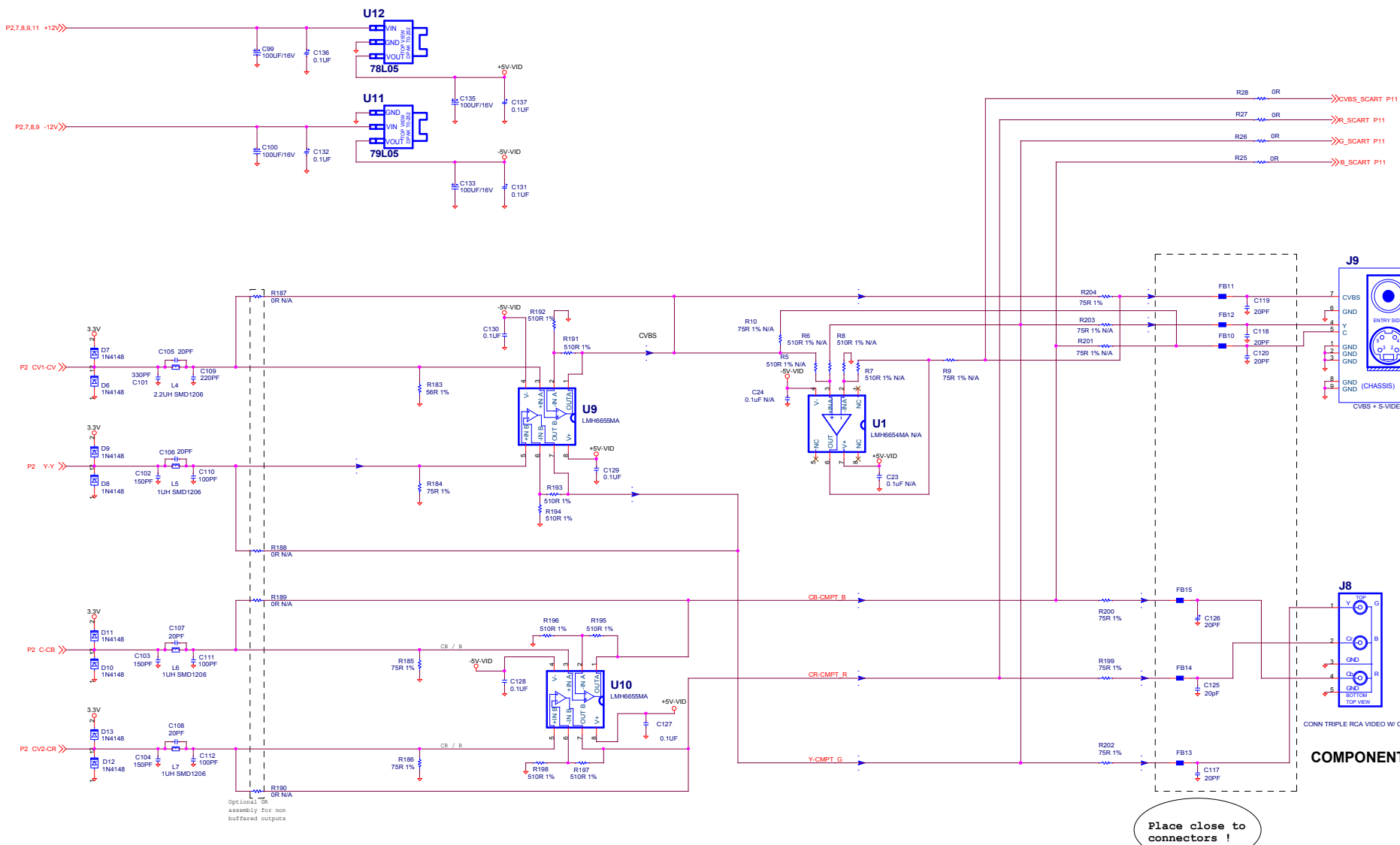
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PROJECT NAME:	DVD30 Main Board	PAGE TITLE	
DESIGNED:	H-Jacky	DATE:	2003-FEB-6
DRAWN:	H-Jacky	DATE:	2003-FEB-6
CHECKED:	L-JL	DATE:	2003-FEB-6
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PROJECT NAME:	DVD30 Main Board	PAGE TITLE	
DESIGNED:	H-Jacky	DATE:	2003-FEB-6
DRAWN:	H-Jacky	DATE:	2003-FEB-6
CHECKED:	L-JL	DATE:	2003-FEB-6
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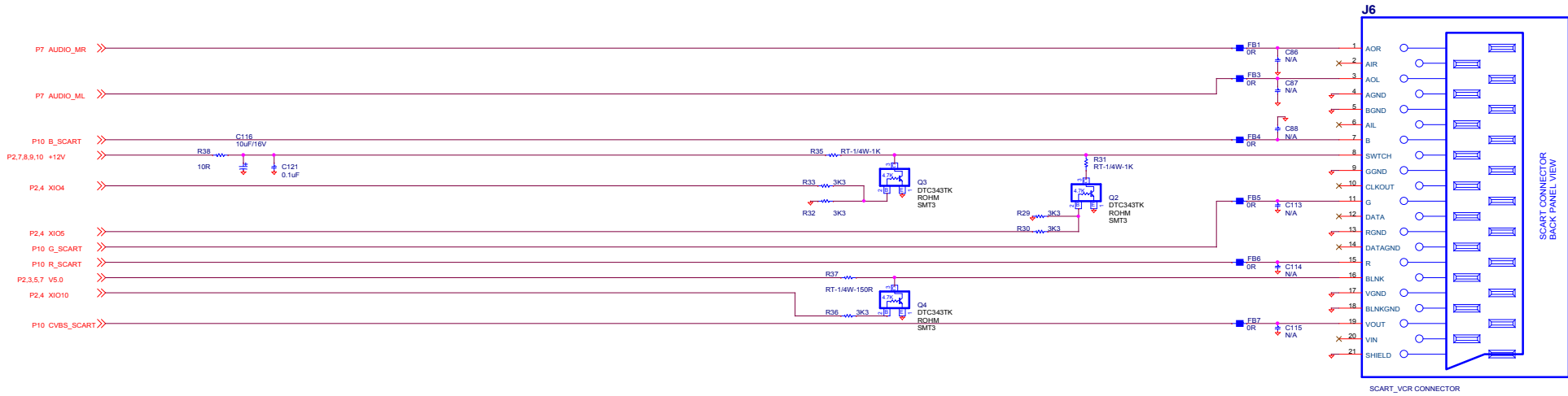
- NOTES**
- VIDEO signals should be impedance controlled to 75 Ohms (trace thickness and dielectric of PCB).
 - VIDEO signals are susceptible to noise and crosstalk. Careful layout is recommended.
 - Arrows ➡ indicate logical flow (not current flow).

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<http://www.national.com/apprfordvd/>

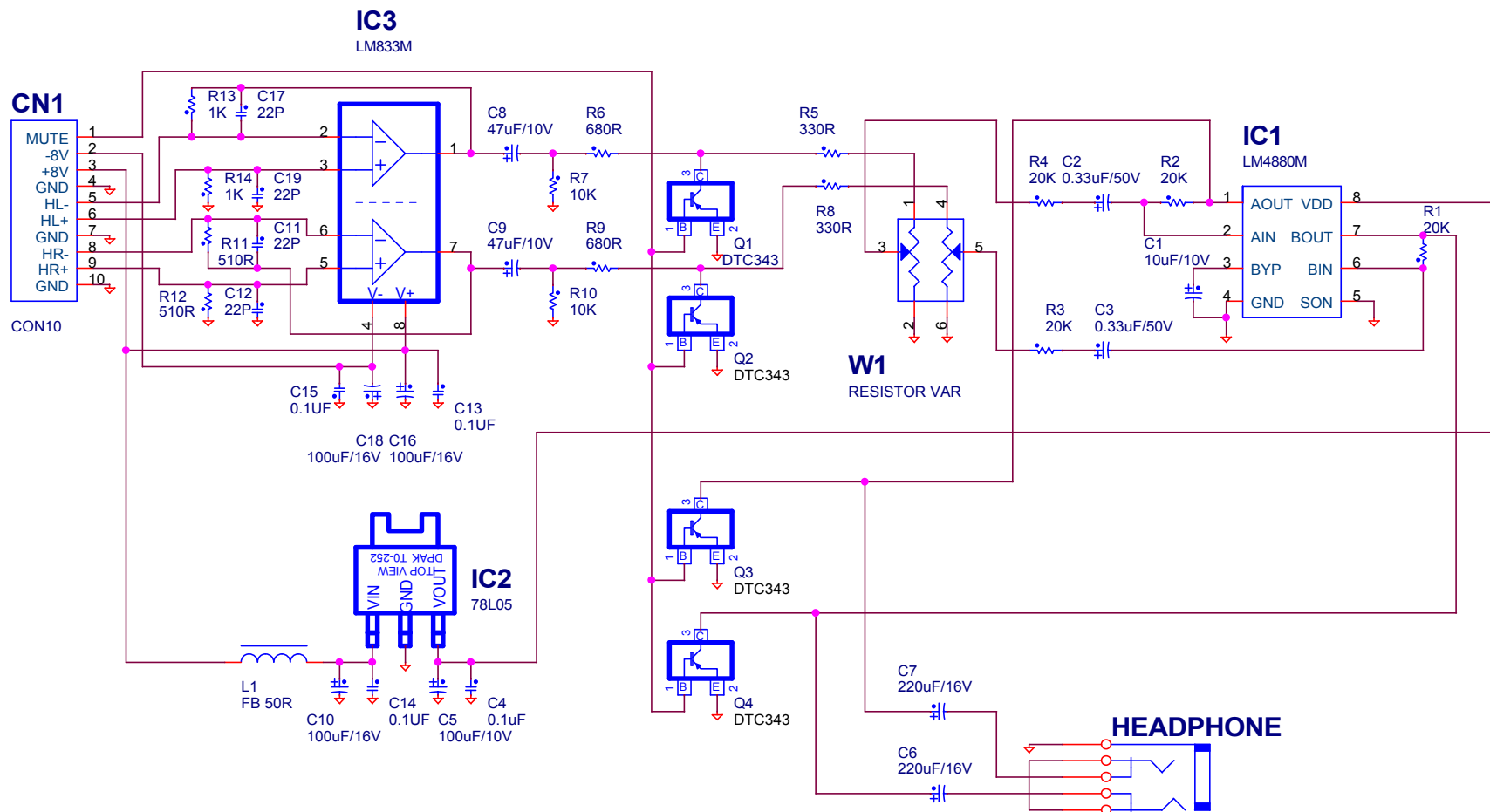
PROJECT NAME: DVD30 Main Board	PAGE TITLE: VIDEO BUFFER
DESIGNED: H-Jacky DATE: 2003-FEB-6	CVBS
DRAWN: H-Jacky DATE: 2003-FEB-6	S-VIDEO
CHECKED: L.J.L. DATE: 2003-FEB-6	COMPONENT
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PROJECT NAME: DVD30 Main Board		PAGE TITLE	
DESIGNED: H-Jacky	DATE: 2003-FEB-6	SCART-TV	
DRAWN: H-Jacky	DATE: 2003-FEB-6		
CHECKED: L.J.L.	DATE: 2003-FEB-6	SCHEMATIC REV: 1.93	
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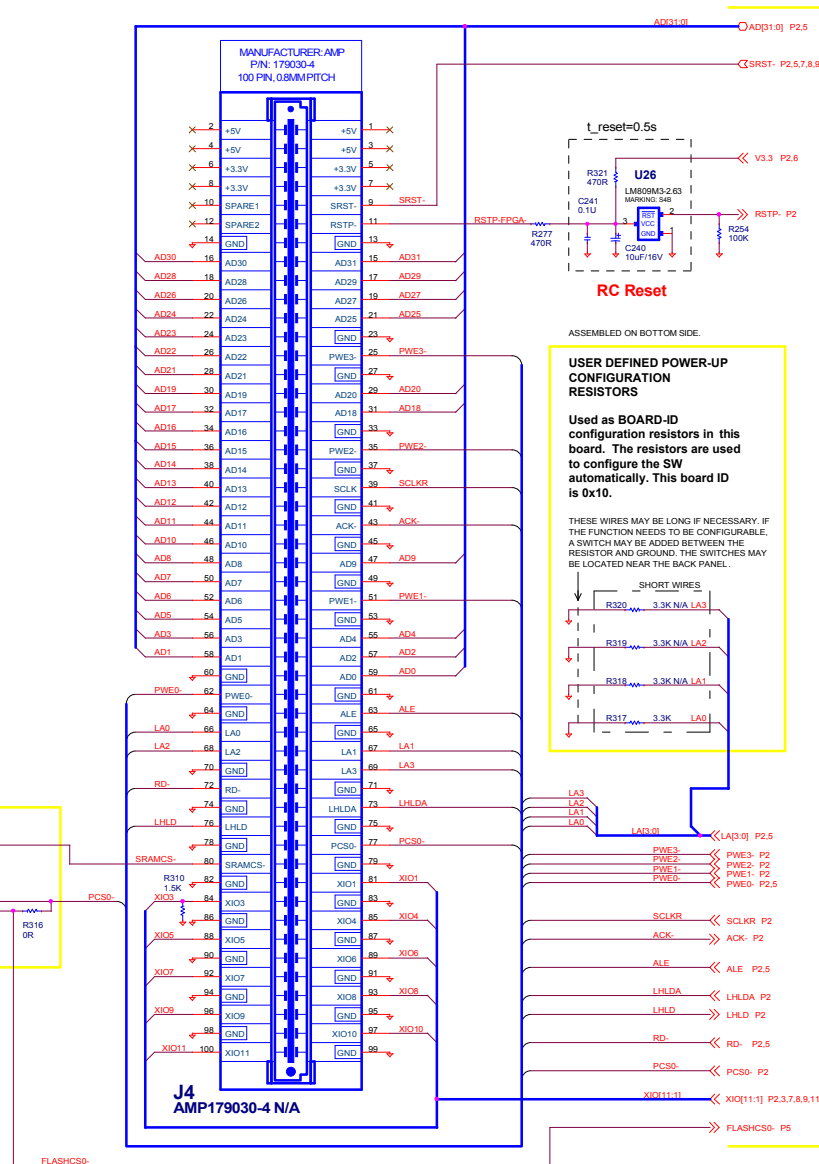
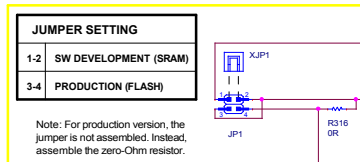


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PROJECT NAME: NS-PAN-MFK		PAGE TITLE GENERAL NOTES XIO ALLOCATION REVISION HISTORY	
DESIGNED: H-Jacky	DATE: 2002-JULY-05	SCHEMATIC REV: 1.80 Sheet 1 OF 1	
DRAWN: H-Jacky	DATE: 2002-JULY-05		
CHECKED: L.JL	DATE: 2002-JULY-05		
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**DO NOT DELETE ANY
COMPONENTS FROM
THIS PAGE !**

**XBUS Connector to be
Mounted On Bottom
Of PCB**

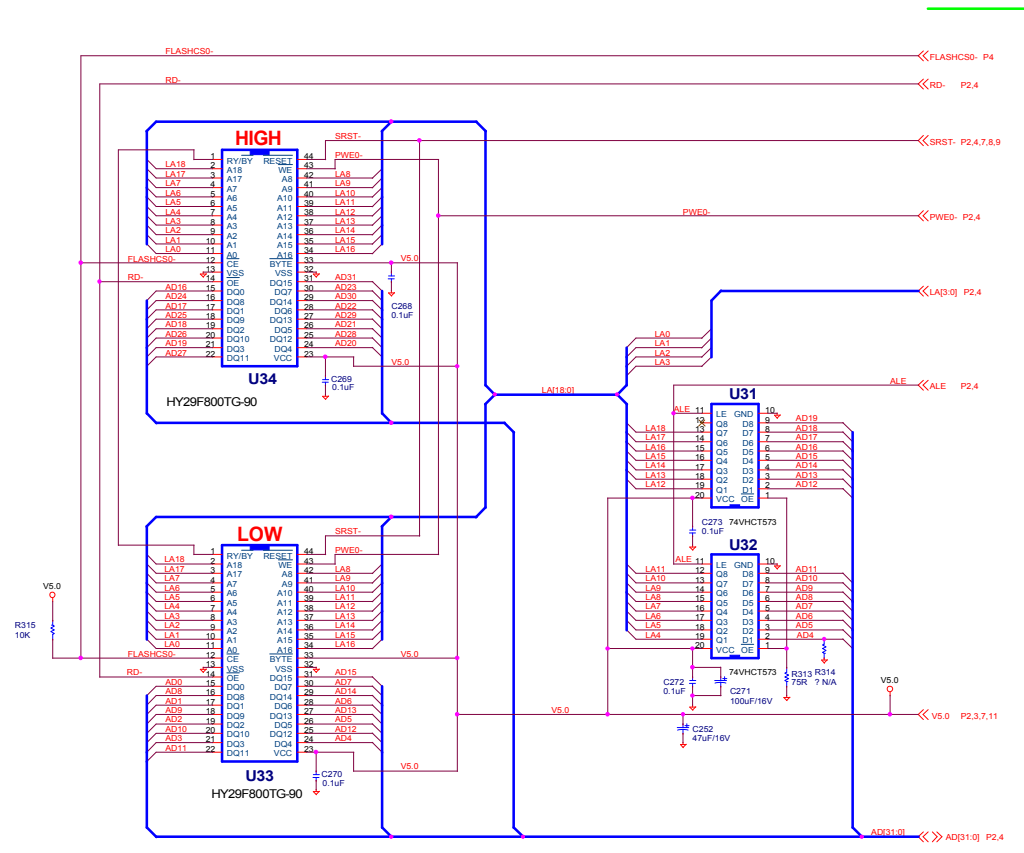


THIS CONNECTOR (XBUS) IS USED FOR SW DEVELOPMENT, FLASH PROGRAMMING, AND CONNECTING WITH OTHER HW DEVELOPMENT PLATFORMS AND LOGIC ANALYZER.

IMPORTANT NOTE !
THIS CONNECTOR IS MANDATORY ON THE FIRST REVISION OF THE BOARD TO ALLOW SW DEVELOPMENT. WITHOUT THIS CONNECTOR IT IS IMPOSSIBLE TO DEVELOP SW FOR THE CUSTOMER SPECIFIC APPLICATIONS. LATER, AFTER THE DESIGN IS FINALIZED, THE CONNECTOR MAY BE REMOVED.

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Notes:
Recommended FLASH speed grade is 90ns.

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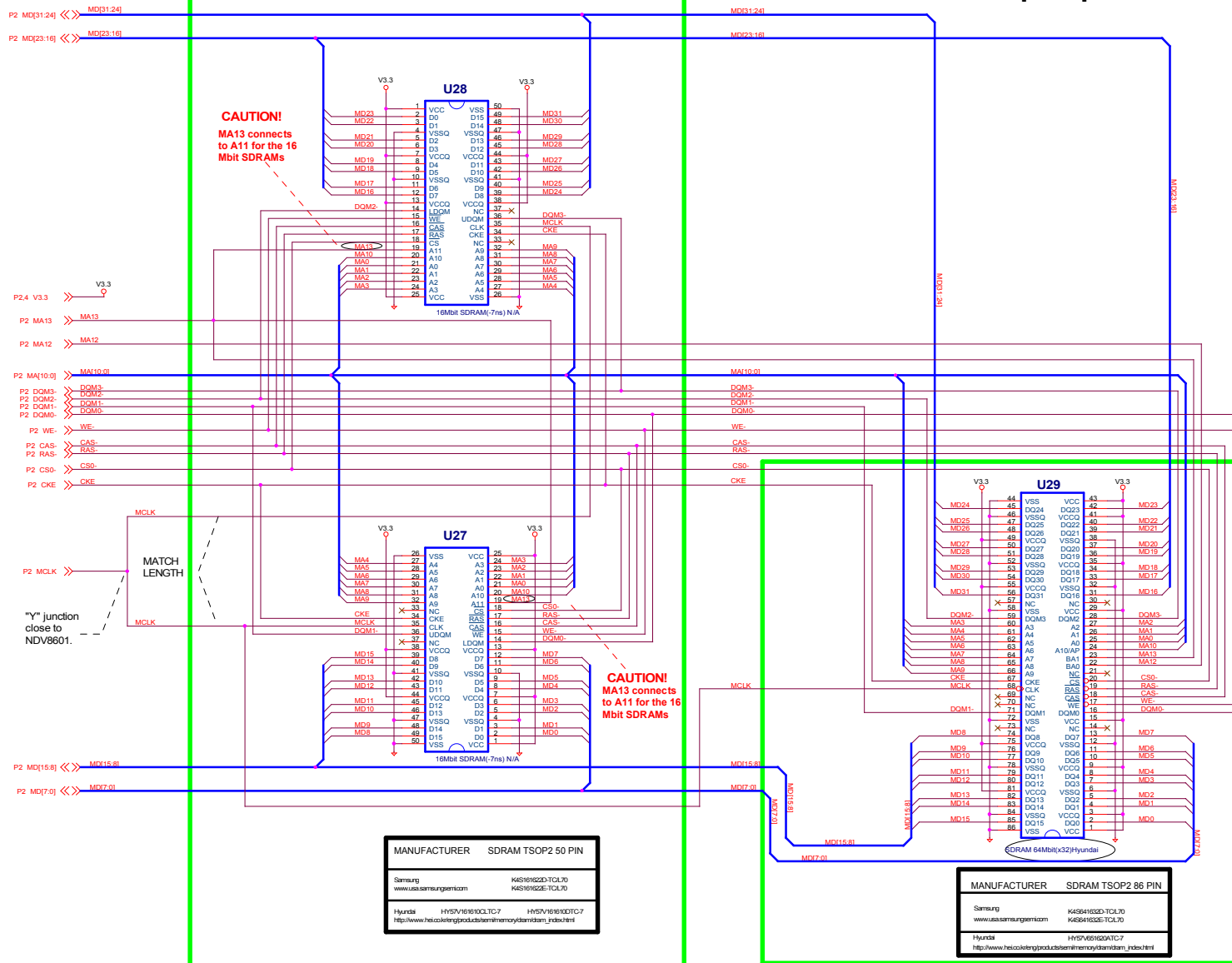
		NATIONAL SEMICONDUCTOR CORPORATION DVD PRODUCT LINE Tel: 1-510-668-4850 Fax: 1-510-668-4860 48430 Lakeview Blvd., Fremont, CA 94538 USA http://www.national.com/appinfo/dvd/	
PROJECT NAME: DVD30 Main Board		PAGE TITLE: FLASH MEMORY	
DESIGNED: H-Jacky DATE: 2003-FEB-6		CHECKED: L-JL DATE: 2003-FEB-6	
DRAWN: H-Jacky DATE: 2003-FEB-6		THIS DOCUMENT CONTAINS INFORMATION PROPRIETARY TO NATIONAL SEMICONDUCTOR CORPORATION. USE OR DISCLOSURE WITHOUT WRITTEN PERMISSION IS EXPRESSLY FORBIDDEN. COPYRIGHT 2001.	
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SHEET 5 OF 12		SCHEMATIC REV: 1.93	

OPTION A

2 pcs. of 16MBIT SDRAM -- The code boots and executes out of FLASH- uncompressed. Advantage is possible cost savings for 2 pcs. of 16Mbit vs. 1 pcs. of 64Mbit (depending on market) and faster boot up time.

2 x 4 banks x 512K x 16bit
[16 Mbit]

CAUTION!
MA13 connects to A11 for the 16 Mbit SDRAMs



OPTION B

1 pcs. of 64MBIT SDRAM -- the code boots from FLASH but executes out of SDRAM. The compressed code is downloaded from FLASH to SDRAM during boot up, which takes several seconds. Advantage is ability to fit inside 1MByte FLASH device (512Kx32). Disadvantage is minimal application is allowed to fit inside of 1MB with limited OSD.

4 banks x 512K x 32bit
[64 Mbit]

RECOMMENDED LAYOUT

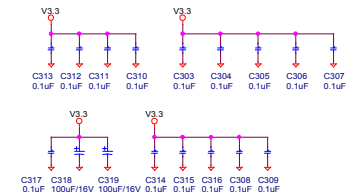
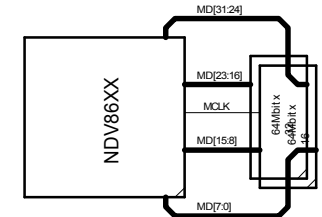
Place SDRAMs as close as possible to NDV86XX. Place SDRAMs on the same board side with NDV86XX.

Route all data lines (MD0..31) on top side only, with no vias, as shown in figure below.

Route MCLK to the two DRAM directly, as short as possible.

In this schematic, byte 1 is swapped to simplify layout (MD8..MD15)

In this schematic, byte 2 is swapped with byte 3 to simplify layout (MD16..23 <-> MD24..31)



The code can either boot and run from FLASH or run from SDRAM.

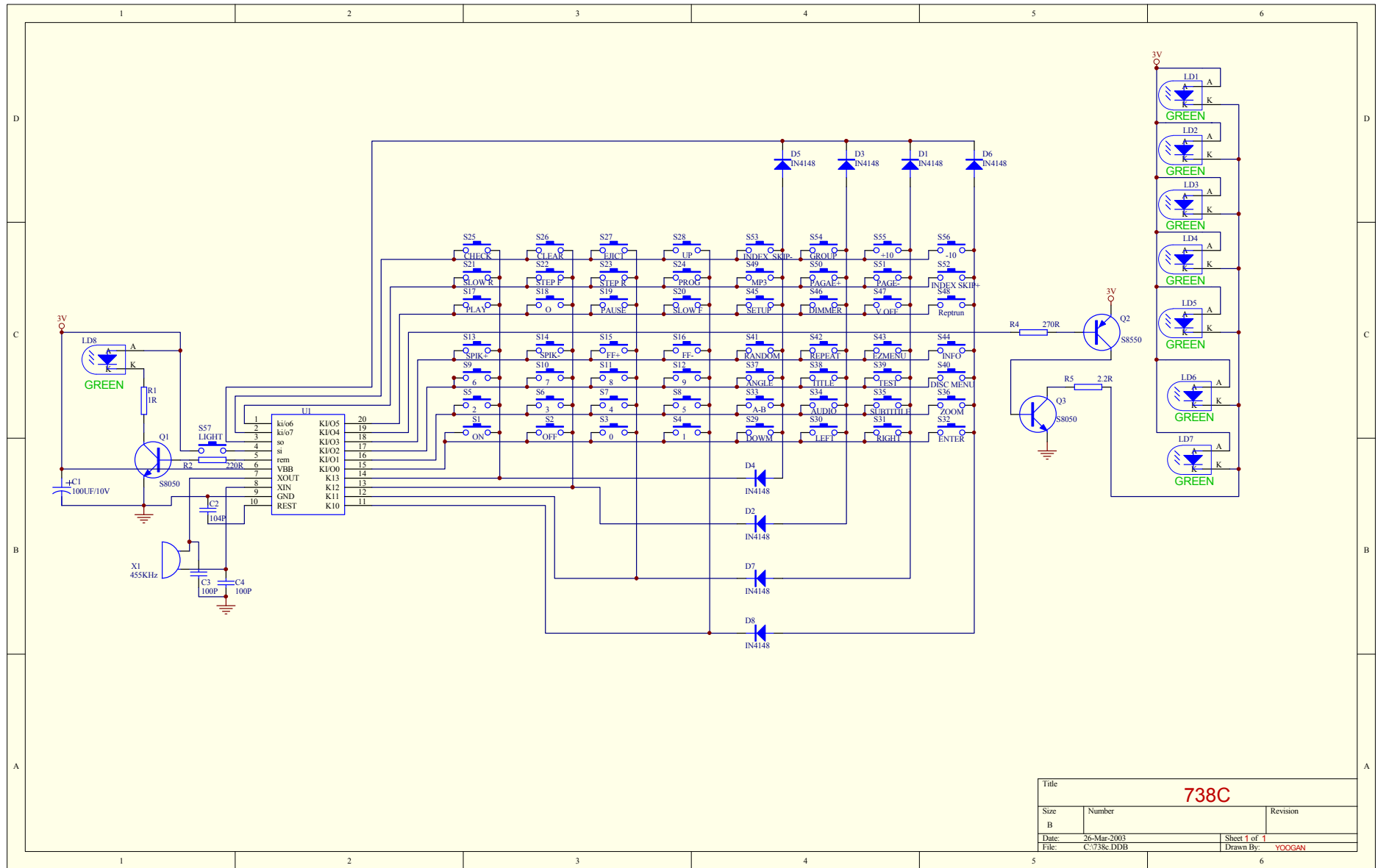
Code executing from FLASH: recommended for low end applications since the ROM bus width is 16. It also requires larger FLASH size than the compressed version.

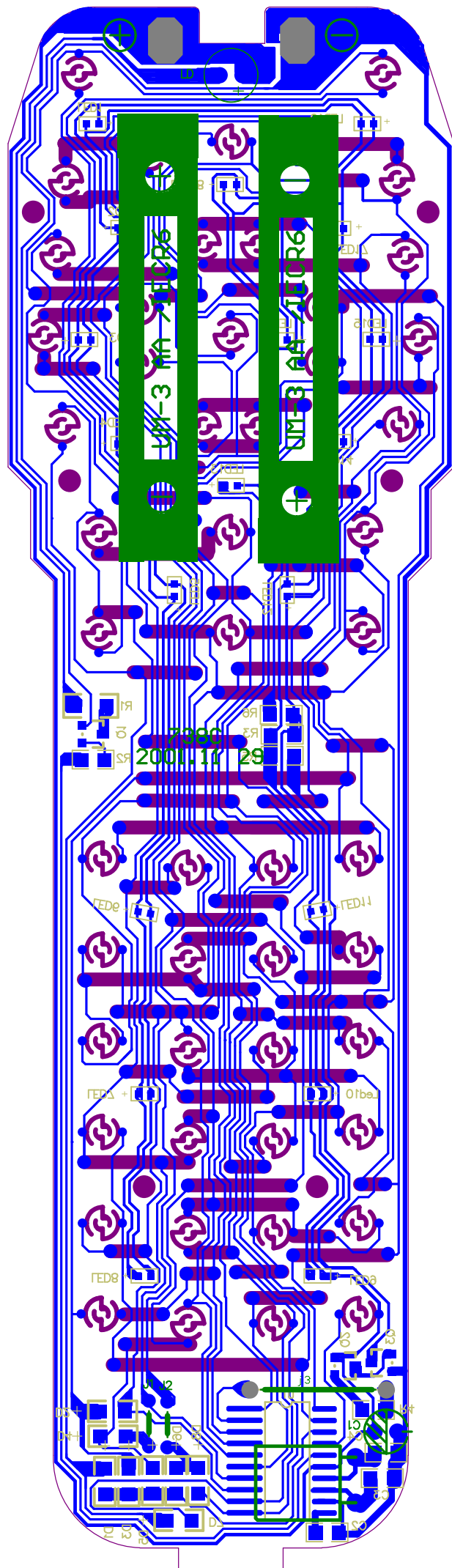
Code executing from SDRAM: recommended for high-end applications. The code is compressed in the FLASH. System boots and copies the code into the SDRAM. It reduces the necessary FLASH size. The code runs faster from SDRAM.

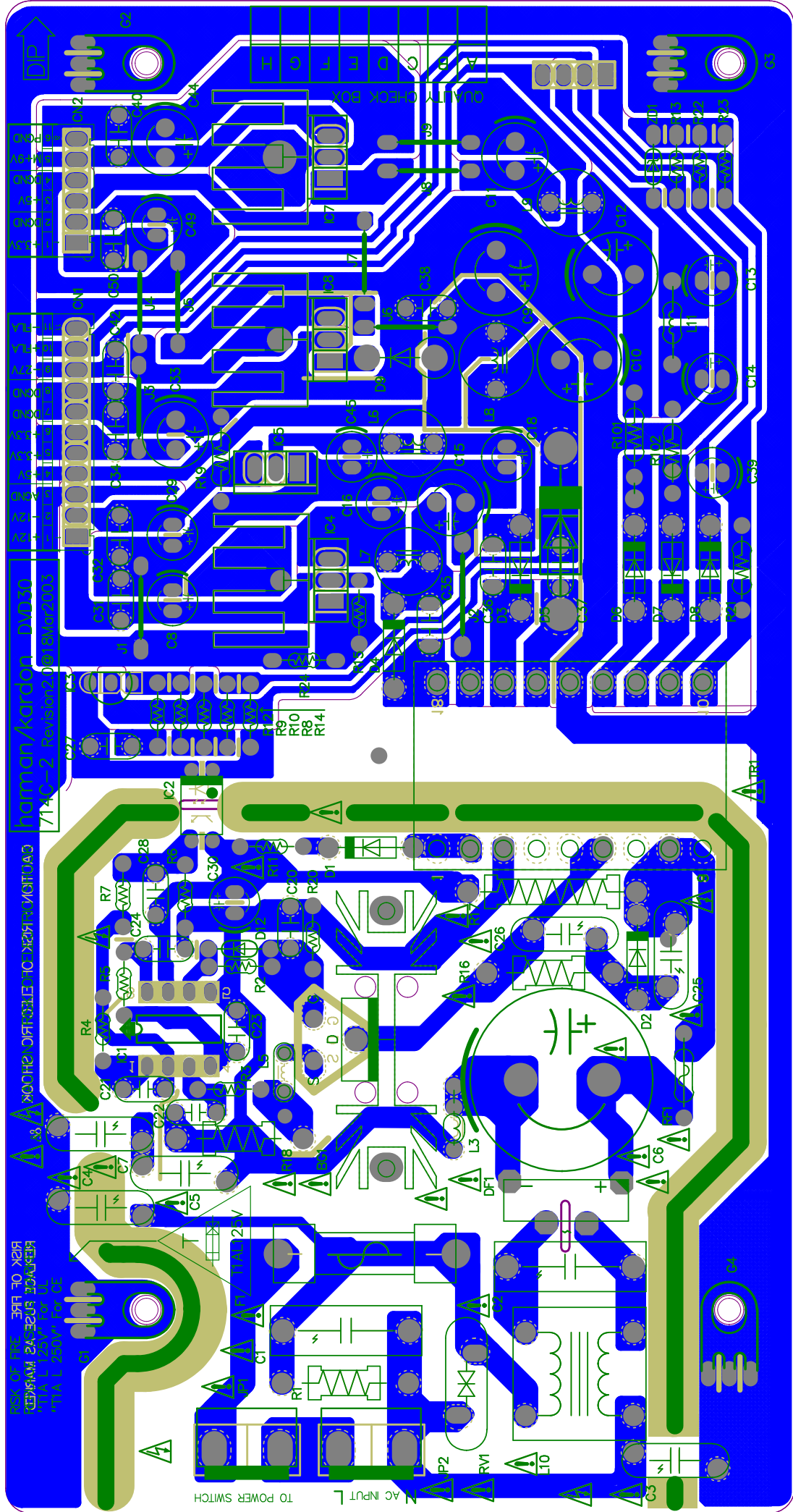
Place SDRAMs as close as possible to NDV86XX. Place SDRAMs on the sameboard side with NDV86XX.

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PROJECT NAME: DVD30 Main Board		PAGE TITLE: SDRAM MEMORY	
DESIGNED: THEODOR JACOB DATE: 2003-FEB-6		DATE: 2003-FEB-6	
DRAWN: THEODOR JACOB DATE: 2003-FEB-6		DATE: 2003-FEB-6	
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Sheet 6 OF 12		Sheet 6 OF 12	







RISK OF FIRE - SEE PAGE 100
REPAIRMAN: 24-25257 For UL
TYPE L 250V For CE

homon/kardon
714C-2
Revised 12/06/18/02/03

TO POWER SWITCH

AC INPUT L

