

# HD 950 CD Player

## SERVICE MANUAL



**harman/kardon®**

Power for the Digital Revolution®

# harman/kardon®

## HD 950

CD text support  
MP3 playback with ID3 support  
24 bit/176 kHz SRC  
CD-R/CD-RW playback



## HD 950

Single disc CD player with CD Text

Music the way it was meant to be heard. That's the task assigned to the HD 950, and its performance is brilliant with signal-to-noise specs mirroring those of the mixing consoles through which the recordings were made. The HD 950's no compromise, audio-centric design focuses on purity, adding neither artifacts or veils to the one thing that matters most: your music.

## Specifications

- Supported Data: PCM 16 to 24 bit, 30 to 96 kHz; D/A Conversion: Multibit Delta-Sigma
  - Frequency Response: 20Hz – 20kHz, +0dB/–0.5dB; "A"-Weighted S/N Ratio: >110dB; THD: <0.0009% @ 1kHz; Dynamic Range: >100dB; Channel Separation: >100dB
  - General – Dimensions (H x W x D): 63mm x 440mm x 332mm; Weight: 3.8kg
- [NOTE: Depth measurement includes knobs, buttons and terminal connections; height measurement includes feet and chassis.]

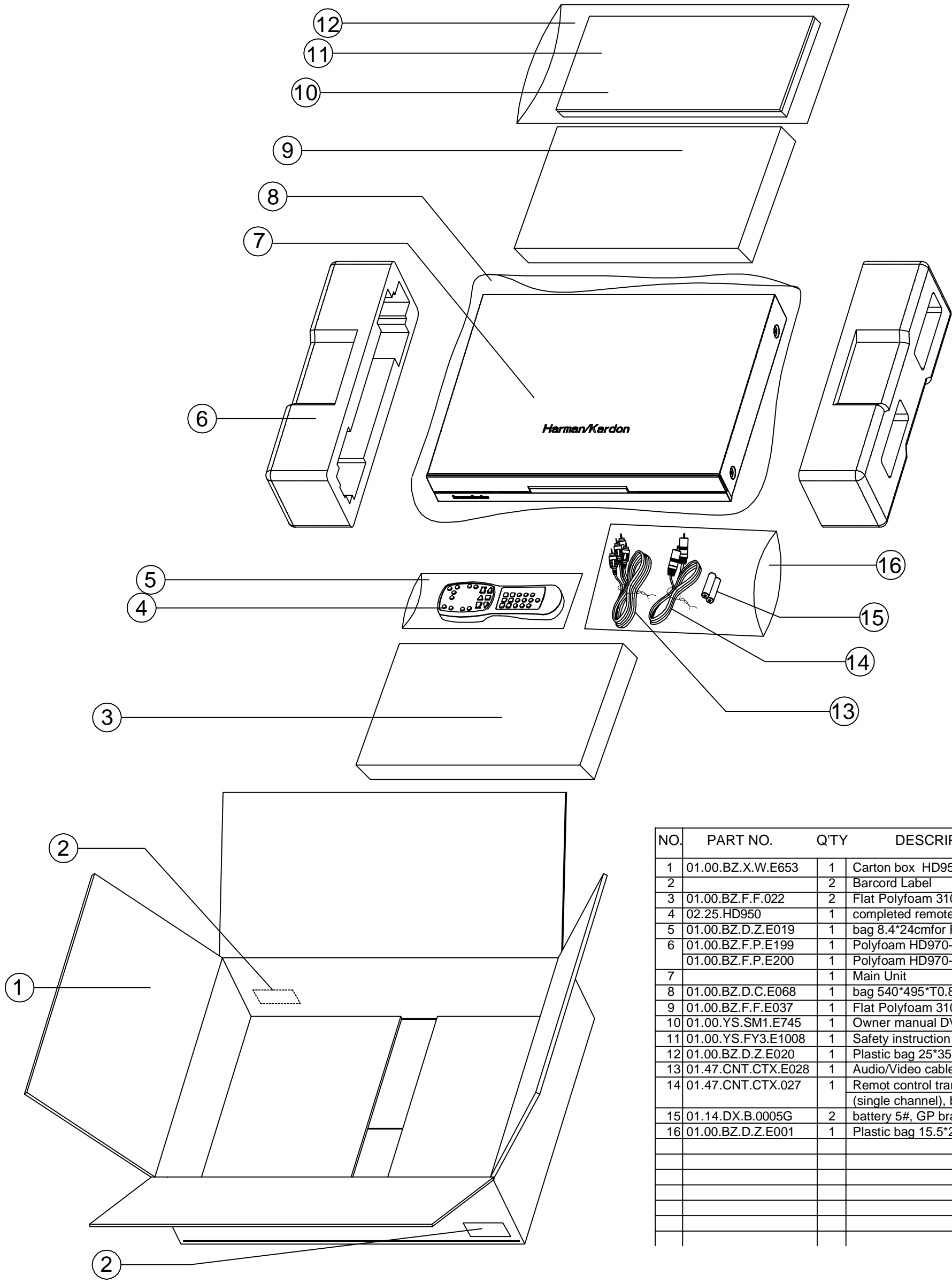
## Features

- 24 bit/176 kHz Sample Rate Converter (SRC)
- 24 bits Resolution Enhancer for Lowest Possible Noise Level and Inter-Modulation Distortion (IMD)
- High Grade Wolfson® WM8740 D/A Converter, Capable of Highlighting the Outstanding Performance of the SRC
- CD Playback with CD Text Functionality, MP3 Playback with ID3 Tag Information
- Playback Compatibility with CD-R/RW Recordable Discs
- 99 Programmable Tracks, Random Play, Repeats Entire Disc, Track, or All Discs
- Direct Entry of Discs and Tracks from Remote Control, Forward and Reverse Disc Skip
- Display of Time Elapsed and Time Remaining of Current Track or Time Remaining of Programmed Tracks
- DOT Matrix Display

All features and specifications are subject to change without notice.

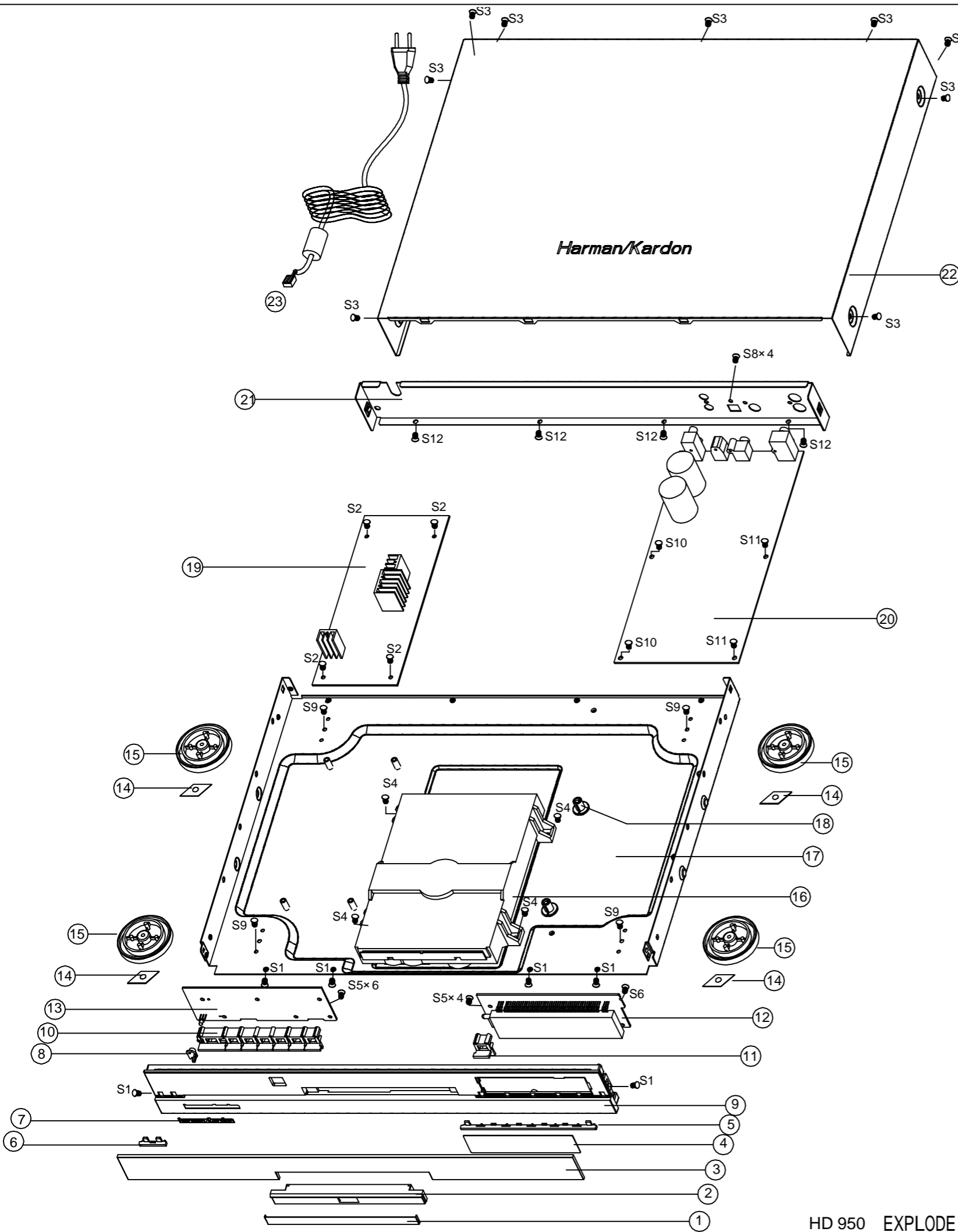
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NO.	PART NO.	QTY	DESCRIPTION
1	01.00.BZ.X.W.E653	1	Carton box HD950
2		2	Barcord Label
3	01.00.BZ.F.F.022	2	Flat Polyfoam 310*168*28mm
4	02.25.HD950	1	completed remote control HD950
5	01.00.BZ.D.Z.E019	1	bag 8.4*24cm for Remote control
6	01.00.BZ.F.P.E199	1	Polyfoam HD970- left
	01.00.BZ.F.P.E200	1	Polyfoam HD970- right
7		1	Main Unit
8	01.00.BZ.D.C.E068	1	bag 540*495*T0.8mm for Main Unit
9	01.00.BZ.F.F.E037	1	Flat Polyfoam 310*168*20MM
10	01.00.YS.SM1.E745	1	Owner manual DVD23 EU
11	01.00.YS.FY3.E1008	1	Safety instruction manual HD950
12	01.00.BZ.D.Z.E020	1	Plastic bag 25*35cm for owner manual
13	01.47.CNT.CTX.E028	1	Audio/Video cable Yellow White Red, 1.2m
14	01.47.CNT.CTX.027	1	Remot control transmission cable $\phi$ 3.5+ $\phi$ 3.5 (single channel), black, 1.2m
15	01.14.DX.B.0005G	2	battery 5#, GP brand
16	01.00.BZ.D.Z.E001	1	Plastic bag 15.5*23cm for AV cable

HD 950 Packing instruction



NO.	PART NO.	Q'TY	DESCRIPTION
1	01.00.WJ.LM.E054	1	Aluminum ally wrap for disc tray HD970
2	01.00.SJ.HD970.E002	1	HD970-Disc tray door
3	01.00.SJ.HD950.E002	1	HD950-len on front panel
4	01.00.SJ.QT.E001	1	VFD filter 105.7mm*24.3mm*0.5
5	01.00.SJ.HD970.E007	1	HD970-Long decorate strip
6	01.00.SJ.HD970.E001	1	HD970-Short decorate strip
7	01.00.SB.E034	1	harman/kardon logo silver/blue color
8	01.00.SJ.HD970.E011	1	HD970-Power Indicator Cover
9	01.00.SJ.HD970.E010	1	HD970-front panel
10	01.00.SJ.HD970.E003	1	HD970-functional button
11	01.00.SJ.HD970.E008	1	HD970-open button
12	02.15.HCD06K3566C01	1	Front panel board ass'y HCD06K-3566C01
13	02.15.HCD06K3566C01	1	Front panel board ass'y HCD06K-3566C01
14	01.00.DP.HM.E158	4	Pedestal underlay 16.2* Φ8*2.5mm
15	01.00.SJ.DVD22.E010	4	DVD22-Pedestal
16	01.15.JX.EDV345	1	loader DV345 (HD65G+DVD-M06BW)
17	01.00.WJ.TJ.HD950.E001	1	HD950-chassis
18	01.00.SJ.HD970.E013	2	PCB plastic frame φ8*10
19	02.19.HCD06P1254C01	1	SMPS board ass'y 1254C
20	02.11.HCD06M3565C01	1	Mainboard ass'y HCD06M-3565C01
21	01.00.WJ.TJ.HD950.E002	1	HD950-rear panel (EU)
22	01.00.WJ.TJ.E556	1	HD970-top cover
23	01.47.CNT.ACX.E138	1	Power cord with 500mm fixture EU
S1	01.00.WJ.JG.E328	6	Screw ST 3*6KBTTO
S2	01.00.WJ.JG.E451	4	Screw ST 3*6PWMHC W=7
S3	01.00.WJ.JG.E543	9	Screw ST 3*6PWBTTNI W=7
S4	01.00.WJ.JG.E619	4	Screw ST 3*8PWBTTTC
S5	01.00.WJ.JG.E142	4	Screw ST 3*6PAHC
S6	01.00.WJ.JG.E166	6	Screw ST 3*8PAHC
S7	01.00.WJ.JG.E089	1	Screw ST 3*6PWAHC
S8	01.00.WJ.JG.E321	4	Screw ST 3*8PAHO
S9	01.00.WJ.JG.E329	4	Screw ST 4*8RTHO
S10	01.00.WJ.JG.E091	2	Screw PMO 3*6PWBTTTC
S11	01.00.WJ.JG.E327	2	Screw ST 3*15PWMTTC
S12	01.00.WJ.JG.E717	4	Screw ST 3*4PWBTTNI
N1	01.00.WJ.JG.E119	2	Nut M3

HD 950 EXPLODE VIEW

## HD950 Component List for Main Board(3565C)

Location.No.	Description	Specification	P/N	Qty	Note
R89 R96 R104 R105 R112 R115 R121 R145 R163 R164 R165 R169 R170	Resistor, chip	0805-0Ω ±5%	01.57.R.3.E000J	13	
R135 R136 R161 R162	Resistor, chip	0805-1Ω±5%	01.57.R.3.E1R0J	4	
R65 R110 R118	Resistor, chip	0805-22Ω±5%	01.57.R.3.E220J	3	
R106 R94	Resistor, chip	0805-33Ω±5%	01.57.R.3.E330J	2	
R19 R23 R62 R63 R64 R66 R67 R68 R69 R70 R71 R150 R151 R153 R154 R155 R166 R168	Resistor, chip	0805-100Ω±5%	01.57.R.3.E101J	18	
R171 R172 R174	Resistor, chip	0805-240Ω±5%	01.57.R.3.E241J	3	
R12	Resistor, chip	0805-270Ω±5%	01.57.R.3.E271J	1	
R22	Resistor, chip	0805-300Ω±5%	01.57.R.3.E301J	1	
R13 R173	Resistor, chip	0805-390Ω±5%	01.57.R.3.E391J	2	
R35	Resistor, chip	0805-470Ω±5%	01.57.R.3.E471J	1	
R83 R149 R152	Resistor, chip	0805-560Ω±5%	01.57.R.3.E561J	3	
R28 R48 R58 R87 R88	Resistor, chip	0805-1KΩ±5%	01.57.R.3.E102J	5	
R141 R157	Resistor, chip	0805-1.5K±5%	01.57.R.3.E152J	2	
R107 R108	Resistor, chip	0805-2KΩ±5%	01.57.R.3.E202J	2	
R129 R130 R131 R132	Resistor, chip	0805-2.2KΩ±5%	01.57.R.3.E222J	4	
R11 R14 R75 R77 R78 R79 R80 R81 R82 R86 R147 R156	Resistor, chip	0805-4.7KΩ±5%	01.57.R.3.E472J	12	
R133	Resistor, chip	0805-5.1K±5%	01.57.R.3.E512J	1	
R111	Resistor, chip	0805-6.2KΩ±1%	01.57.R.3.E622F	1	
R137 R138	Resistor, chip	0805-8.2K ±1%	01.57.R.3.E822F	2	
R1 R4 R5 R8 R18 R33 R34 R57 R59 R61 R72 R73 R74 R76 R92 R93 R98 R100 R101 R102 R120 R123 R125 R126 R127 R128 R144 R160	Resistor, chip	0805-10KΩ±5%	01.57.R.3.E103J	28	
R114 R109	Resistor, chip	0805-11.8KΩ±1%	01.57.R.3.E1182F	2	
R2 R3 R142 R158	Resistor, chip	0805-22K±5%	01.57.R.3.E223J	4	
R117 R116	Resistor, chip	0805-33KΩ±5%	01.57.R.3.E333J	2	
R6 R146 R148	Resistor, chip	0805-47KΩ±5%	01.57.R.3.E473J	3	
R119 R122 R124 R167	Resistor, chip	0805-100KΩ±5%	01.57.R.3.E104J	4	
R143 R159	Resistor, chip	0805-1MΩ±5%	01.57.R.3.E105J	2	

## HD950 Component List for Main Board(3565C)

Location.No.	Description	Specification	P/N	Qty	Note
R29 R30 R31 R32	Resistor, chip	1206-680Ω 1%	01.57.R.4.E681F	4	
R49 R52 R53 R56	Resistor, chip	1206-2KΩ±1%	01.57.R.4.E202F	4	
R50 R51 R54 R55	Resistor, chip	1206-2.7KΩ 1%	01.57.R.4.E272F	4	
R39 R45 R134 R139 R140	Resistor, chip	1206-15KΩ 1%	01.57.R.4.E153F	5	
R9 R10	Resistor, chip	1206-47KΩ 1%	01.57.R.4.E473F	2	
R7	Resistor, chip	1206-4.7MΩ±5%	01.57.R.4.E475J	1	
RN1 RN2 RN3 RN4 RN5 RN6 RN7 RN8	Resistor, thick film chip network	33Ω*4 ±5%	01.57.R.8.EP3304	8	
C77 C78 C79 C81	Capacitor, multilayer ceramic, chip	0805-10P NPO±5%/50V	01.54.CS.3.E100N	4	
C119 C120	Capacitor, multilayer ceramic, chip	0805-15P NPO±5%/50V	01.54.CS.3.E150N	2	
C21 C19	Capacitor, multilayer ceramic, chip	0805-22P NPO±5%/50V	01.54.CS.3.E220N	2	
C103	Capacitor, multilayer ceramic, chip	0805-47P NPO±5%/50V	01.54.CS.3.E470N	1	
C145 C144	Capacitor, multilayer ceramic, chip	0805-100P NPO±5%/50V	01.54.CS.3.E101N	2	
C99	Capacitor, multilayer ceramic, chip	0805-120P NPO±5%/50V	01.54.CS.3.E121N	1	
C104	Capacitor, multilayer ceramic, chip	0805-200P NPO±5%/50V	01.54.CS.3.E201N	1	
C146 C147	Capacitor, multilayer ceramic, chip	0805-390P NPO±5%/50V	01.54.CS.3.E391N	2	
C141 C155	Capacitor, multilayer ceramic, chip	0805-470P NPO±5%/50V	01.54.CS.3.E471N	2	
C138	Capacitor, multilayer ceramic, chip	0805-680P NPO±5%/50V	01.54.CS.3.E681N	1	
C96 C116	Capacitor, multilayer ceramic, chip	0805-102 X7R ±10%/50V	01.54.CS.3.E102X	2	
C105 C109 C117	Capacitor, multilayer ceramic, chip	0805-332 X7R±10%/50V	01.54.CS.3.E332X	3	
C115	Capacitor, multilayer ceramic, chip	0805-392 X7R±10%/50V	01.54.CS.3.E392X	1	
C97 C129 C135 C153	Capacitor, multilayer ceramic, chip	0805-103 X7R±10%/50V	01.54.CS.3.E103X	4	

## HD950 Component List for Main Board(3565C)

Location.No.	Description	Specification	P/N	Qty	Note
C1 C3 C4 C8 C13 C15 C18 C20 C24 C32 C33 C34 C37 C38 C43 C44 C46 C48 C49 C50 C51 C52 C53 C55 C58 C59 C60 C62 C63 C67 C68 C72 C73 C76 C82 C85 C86 C87 C88 C89 C90 C91 C92 C93 C94 C95 C98 C100 C101 C102 C106 C108 C110 C118 C122 C123 C127 C136 C140 C142 C143 C154 C156 C157 C162	Capacitor, multilayer ceramic, chip	0805-104 Y5V+80-20%/50V	01.54.CS.3.E104Y	65	
C107 C113 C114 C121 C128	Capacitor, multilayer ceramic, chip	0805-105 Y5V-20+80%/16V	01.54.CS.3.E105Y	5	
C111 C126	Capacitor, multilayer ceramic, chip	0805-475 Y5V+80-20%/16V	0154CS3E475/16V	2	
C26 C27 C30 C31	Capacitor, multilayer ceramic, chip	1206-680P NPO±5%/50V	01.54.CS.4.E681N	4	
C5 C6	Capacitor, multilayer ceramic, chip	1206-222 X7R±10%/50V	01.54.CS.4.E222X	2	
C74	Capacitor, AL.electrolytic	CD110-10UF/16V 5*11	0134CLDE10U16VC	1	
C2 C7 C9 C10 C11 C12 C14 C16 C17 C25 C41	Capacitor, AL.electrolytic	CD110-47UF/25V 5*11	0134CLDE47U25VC1	11	
C130 C131 C132 C133 C134 C148 C149 C150 C151 C158 C159	Capacitor, AL.electrolytic	CD110-47UF/50V 6.3*12	0134CLDE47U50VCD	11	
C22 C23 C28 C29 C36 C39 C42 C45 C57 C61 C69 C70 C71 C75 C83 C84 C124 C125 C137 C161	Capacitor, AL.electrolytic	CD110-100UF/10V 5*12	0134CLDE100U10VD	20	
C35 C40 C47 C54 C56	Capacitor, AL.electrolytic	CD110-220UF/10V 5*12	0134CLDE220U10VD	5	
L1 L2	Inductor, multilayer ceramic, chip	0805-10UH	01.13.L.L.S.E007	2	
T1	Pulse transformer,Coilcraft	WB1010-1,DIP6	01.13.L.L.D.E081	1	
D2	Diode	30BQ040 SMD	0141DPSE30BQ040	1	Schottky diode 3A International Rectifier

## HD950 Component List for Main Board(3565C)

Location.No.	Description	Specification	P/N	Qty	Note
DZ1	Zener Diode	ZENER 6.2V 0.4W, In-line Package	01.41.D.WS.E6V2	1	
Q23 Q1	Transistor, Philips or DIODES	BSS123, SOT-23	01.42.Q.S.E123	2	
Q2 Q3 Q6 Q7 Q9 Q14 Q15 Q16 Q20 Q21 Q22	Transistor, Panasonic	2SA1035, SOT23	01.42.Q.S.E1035	11	
Q4 Q5	Transistor, ROHM	DTC343TKT146, SOT-23	01.42.Q.S.EDTC343	2	
Q8 Q10 Q11 Q12 Q13 Q17 Q18 Q19	Transistor, Panasonic	2SC2406, SOT23	01.42.Q.S.E2406	8	
Q25 Q24	Transistor, ROHM	2SB1132, MPT3	01.42.Q.S.E1132	2	
Q27 Q29	Transistor, ROHM	2SD1664T100R, MPT3	01.42.Q.S.E1664T	2	
Q26 Q28	Mosfet, ROHM	2SK3018T106, UMT3	01.42.Q.S.E3018	2	
Q31 Q30	Transistor	KTC8050-C/P, TO-92	01.42.Q.D.E8050	2	
Q32 Q33	Transistor	KTC8550-C/P, TO-92	01.42.Q.D.E8550	2	
X1	Fundamental. Oscillator	33.8688MHZ-49S-20P	01.00.JZ.E33868	1	
Y1	Oscillator	22.5792MHz Oscillator /3.3V	01.00.JZ.E225792	1	
U11	IC, ADI, Blackin DSP	ADSP-BF532SBST-C50 REV0.5 LQFP176	0144ICSEBF532S	1	
U19	IC, Via, Servo chip	VT7208, LQFP216	01.46.IC.E7208G	1	
U12	IC, KH, Flash Memory	KH29LV040CQC-70G, PLCC32	0146ICEKH29LV040	1	firmware burn-in
U18	IC, AMIC, Flash memory	AMIC A290011TL-70, PLCC32	01.46.IC.E290011	1	firmware burn-in
U14	IC, ISSI, SDRAM	IS42S16400B-7TL, TSOP54	0146ICE16400B7TL	1	
U20	IC, EliteMT, DRAM	M11B416256A, SOJ40	0146ICEM11B416256A	1	
U24	IC, Rohm, Actuator driver	BA5888FP, HSOP-28	01.44.IC.S.E5888	1	
U22	IC, TI, TTL input buffer	SN74HCT245PWR, TSSOP20	0146ICE74HCT245	1	
U2	IC, Sharp, Photoelectric Coupler	PC817, DIP4	0144ICDEPC817C	1	
U8	IC, AAC, LDO	AZ1117H-5.0, SOT-223	01.44.IC.S.E1117H	1	
U13 U17	IC, AAC, LDO	AZ1117H-ADJ, SOT-223	01.44.IC.S.E1117	2	
U16	IC, AAC, LDO	AZ1117H-3.3, SOT-223	0144ICSEA11173V3	1	
U23	IC, ST, Comparator	LM393, SOP8	01.44.IC.S.ELM393	1	
U4	IC, Fairchild, Voltage Regulator	L7912, TO-220	01.44.IC.D.E7912	1	
U5	IC, ST, Voltage Regulator	L7812, TO-220	01.44.IC.D.E7812	1	
U3	IC, AKM, SPDIF transmitter	AK4103AVF, VSOP24	01.44.IC.S.E4103	1	
U6 U7	IC, JRC, Operational amplifier	NJM5534M, DMP8	01.46.IC.NJM5534	2	
U9	IC, Wolfsonw, DA converter	WM8740SEDS, SSOP-28	01.44.IC.S.E8740	1	



## HD950 Component List for Main Board(3565C)

Location.No.	Description	Specification	P/N	Qty	Note
U1	Jack, Sharp, Fiber optic output jack with shutter	GP1FA513TZ, In-line Package	01.43.E005	1	Optical transmitter
J1	Jack, IR in/out jack	SCJ351P00XS0B00 (BLACK), In-line Package	0140CONDCZE121	1	
J2	Jack, YuanChang, Coaxial output jack	AV1-8.4-6G, In-line Package	0140CONDCZE123	1	Antiflaming, Orange
J3	Jack, GuanLong, Audio output jack	AV2-8.4-1G, In-line Package	0140CONDCZE122	1	Antiflaming, Down red & up white
J8	Connector	PH-5A	0140CONDPHE024	1	Antiflaming
J7	Connector	PH-6A	0140CONDPHE028	1	Antiflaming
J4	Connector	PH-13A	0140CONDPHE047	1	Antiflaming
J6	FPC connector	FPC-0.5-24P with upward touch	0140CONS05E007	1	SMD
J9	FPC connector	FPC-1.25-14P	0140CONS13FPC2E002	1	Vertical Type

## HD950 Component List for Front panel board(3566C)

Location.No.	Description	Specification	P/N	Qty	Note
R405 R413	Resistor, chip	0805-100Ω±5%	01.57.R.3.E101J	2	
R404 R414	Resistor, chip	0805-470Ω±5%	01.57.R.3.E471J	2	
R407	Resistor, chip	0805-1KΩ±5%	01.57.R.3.E102J	1	
R401 R403 R406 R408 R409 R410 R411 R412	Resistor, chip	0805-4.7KΩ±5%	01.57.R.3.E472J	8	
R402	Resistor, chip	0805-15KΩ±5%	01.57.R.3.E153J	1	
R419 R420 R421 R422 R418	Resistor, chip	1206-0Ω ±5%	01.57.R.4.E000J	5	
C402 C403	Capacitor, multilayer ceramic, chip	0805-22P NPO±5%/50V	01.54.CS.3.E220N	2	
C404 C405 C406	Capacitor, multilayer ceramic, chip	0805-104 Y5V+80-20%/50V	01.54.CS.3.E104Y	3	
C401	Capacitor, multilayer ceramic, chip	0805-225 Y5V-20+80%/16V	01.54.CS.3.E225Y	1	
EC401	Capacitor, AL.electrolytic	CD11X-47UF/10V 4*7	01.34.CL.D.E47U10V2B	1	
EC402	Capacitor, AL.electrolytic	CD11X-100UF/10V 5*7	01.34.CL.D.E100U10VB	1	
D401	Diode	LL4148,DO213AA	01.41.D.PS.ELL4148	1	
LED401	Diode, color is blue&amber	HFT503CPBO, Φ3, 3P, In-line Package	01.41.D.FD.EHFT503	1	
Q403	Transistor	KTC8050,SOT-23	01.42.Q.S.E8050	1	
Q401 Q402	Transistor	KTC8550,SOT-23	01.42.Q.S.EC8550	2	
Y401	Fundamental. Oscillator	4.000MHZ-49S-22P	01.00.JZ.E04000	1	
U401	IC, ELAN, MCU	EM78P156ELM-G, SOIC18	01.46.IC.E78P156G	1	firmware burn-in

**HD950 Component List for Front panel board(3566C)**

Location.No.	Description	Specification	P/N	Qty	Note
IR401	IR receiver	HS0038B, In-line Package	01.44.IC.D.E0038B	1	
K401 K403 K404 K405 K406 K407 K408	Touch switch	6*6*5	01.39.SW.QC.ED665	7	
CN403	FPC connector	FPC-1.25-7P	01.40.CON.S13.FPC2.E001	1	Horizontal Type
JMP1□JMP2	Jumper	7.5mm	01.00.FZ.ZZ.E002	2	

**HD950 Component List for Front panel board(3567C)**

Location.No.	Description	Specification	P/N	Qty	Note
R416	Resistor, chip	0805-10KΩ±5%	01.57.R.3.E103J	1	
R415	Resistor, chip	0805-20KΩ±5%	01.57.R.3.E203J	1	
C411	Capacitor, multilayer ceramic, chip	0805-30P NPO±5%/50V	01.54.CS.3.E300N	1	
C407 C415	Capacitor, multilayer ceramic, chip	0805-473 X7R±10%/50V	01.54.CS.3.E473X	2	
C408 C409	Capacitor, multilayer ceramic, chip	0805-104 Y5V+80-20%/50V	01.54.CS.3.E104Y	2	
C410	Capacitor, multilayer ceramic, chip	0805-225 Y5V-20+80%/16V	01.54.CS.3.E225Y	1	
EC403	Capacitor, AL.electrolytic	CD11X-47UF/10V 4*7	01.34.CL.D.E47U10V2B	1	
D402	Diode	LL4148,DO213AA	01.41.D.PS.ELL4148	1	
U402	IC, SANYO, VFD Driver	LC75711NE,QFP64E	01.44.IC.S.E75711	1	
VFD401	VFD	VFD22-1302FA	01.16.E1302FA	1	
K402	Touch switch	6*6*5	01.39.SW.QC.ED665	1	
CN402	FPC connector	FPC-1.25-7P	01.40.CON.S13.FPC2.E001	1	Horizontal Type
CN401	FPC connector	FPC-1.25-14P	01.40.CON.S13.FPC2.E002	1	Vertical Type

**HD950 Component List for SMPS Board(1254C)**

Location.No.	Description	Specification	P/N	Qty	Note
R4,R6	FIXED CARBON FILM	RT1/4W-10Ω	01.57.R.C.ED100	2	
R21	FIXED CARBON FILM	RT1/4W-47Ω	01.57.R.C.ED470	1	
R16	FIXED CARBON FILM	RT1/4W-100Ω	01.57.R.C.ED101	1	
R13,R19,R20	FIXED CARBON FILM	RT1/4W-220Ω	01.57.R.C.ED221	3	
R14	FIXED CARBON FILM	RT1/4W-680Ω	01.57.R.C.ED681	1	
R26	FIXED CARBON FILM	RT1/4W-1KΩ	01.57.R.C.ED102	1	
R17,R18,R22	FIXED CARBON FILM	RT1/4W-2.2KΩ	01.57.R.C.ED222	3	

## HD950 Component List for SMPS Board(1254C)

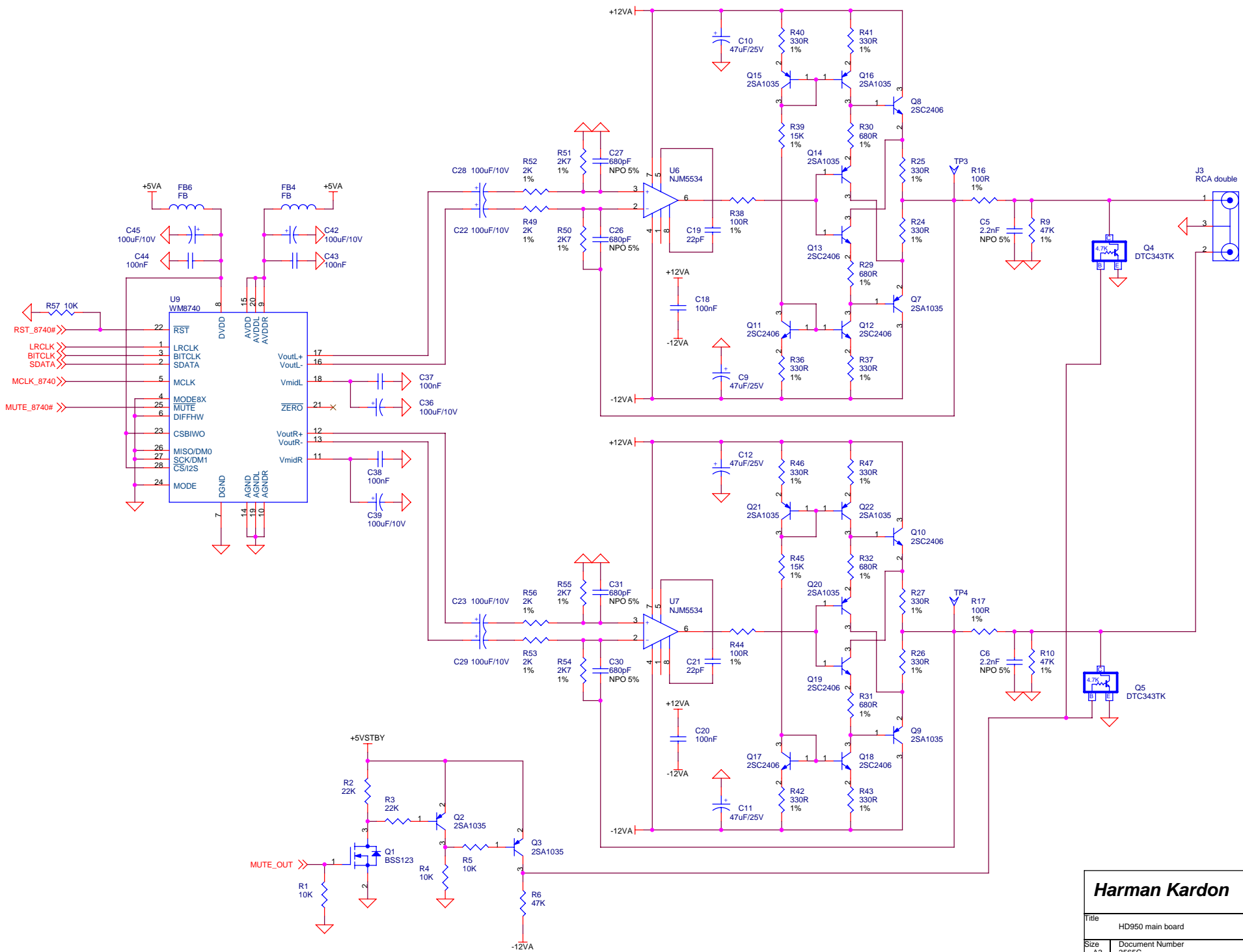
Location.No.	Description	Specification	P/N	Qty	Note
R23,R24,R25	FIXED CARBON FILM	RT1/4W-5.1KΩ	01.57.R.C.ED512	3	
R15	FIXED CARBON FILM	RT1/4W-10KΩ	01.57.R.C.ED103	1	
R5	FIXED CARBON FILM	RT1/4W-47KΩ	01.57.R.C.ED473	1	
R2	FIXED CARBON FILM	RT1W-68KΩ 5%	01.57.R.C.EF683	1	
R3	FIXED CARBON FILM	RT1W-360KΩ	01.57.R.C.EF364	1	
R1	FIXED CARBON FILM	RT1/4W-1MΩ	01.57.R.C.ED105	1	
NTC	Thermistor	NTC-5D-9	01.57.R.R.E5D9	1	
RV1	Varistor	10K.471	01.57.R.Y.E10K	1	
CX1	High-voltage metallized polyester film	104/275V X2(lead pitch: 15mm)	01.00.CD.GY.E104275V	1	
CY1,CY2	High-voltage metallized polyester film	471/400V Y1(lead pitch:10mm)	01.00.CD.GY.E471400V	2	
CY3	High-voltage metallized polyester film	102/400V Y1(lead pitch:10mm)	01.00.CD.GY.E102400V	1	
C1	High-voltage metallized polyester film	103/1KV(lead pitch:7.5mm)	01.00.CD.CP.E1031KV	1	
C2,C13	RADIAL LEADS MLCC	473/50V X7R±10% (lead pitch:5.08mm)	01.00.CD.DS.E473/50V	2	
C3	RADIAL LEADS MLCC	683/50V X7R±10% (lead pitch:5.08mm)	01.00.CD.DS.E683	1	
C10 C11 C12 C14 C15 C16	RADIAL LEADS MLCC	104/50V X7R±10% (lead pitch:5.08mm)	01.00.CD.DS.E10450V	6	
EC3	CAPACITOR,AL.ELECTROLYTIC	CD288H-4.7UF/160V 8*12	01.34.CL.D.E4U7160VD	1	CAPXON KF4R7M160F115A
EC22	CAPACITOR,AL.ELECTROLYTIC	CD288H-2.2UF/50V 5*11	01.34.CL.D.EH2U250VC	1	CAPXON GF2R2M050C110A
EC17,EC18	CAPACITOR,AL.ELECTROLYTIC	CD288H-47UF/25V 5*12	01.34.CL.D.EH47U25VD	2	CAPXON GF470M025C110A
EC2	CAPACITOR,AL.ELECTROLYTIC	CD288H-47UF/50V 6.3*12	01.34.CL.D.EH47U50VD	1	CAPXON GF470M050E110A
EC1	CAPACITOR,AL.ELECTROLYTIC	CD288H-47UF/400V 18*20	01.34.CL.D.E47U400VG	1	CAPXON KM470M400K210A
EC11,EC12	CAPACITOR,AL.ELECTROLYTIC	CD288H-100UF/25V 6.3*12	01.34.CL.D.E288100U25VD	2	CAPXON GF101M025E110A
EC5,EC6,EC16,EC21	CAPACITOR,AL.ELECTROLYTIC	CD288H-220UF/16V 6.3*12	01.34.CL.D.E288220U16VD	4	CAPXON GF221M016E110A
EC9,EC10,EC14,EC15	CAPACITOR,AL.ELECTROLYTIC	CD288H-220UF/25V 8*12	01.34.CL.D.E288220U25VD	4	CAPXON GF221M025F115A

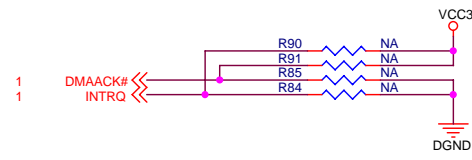
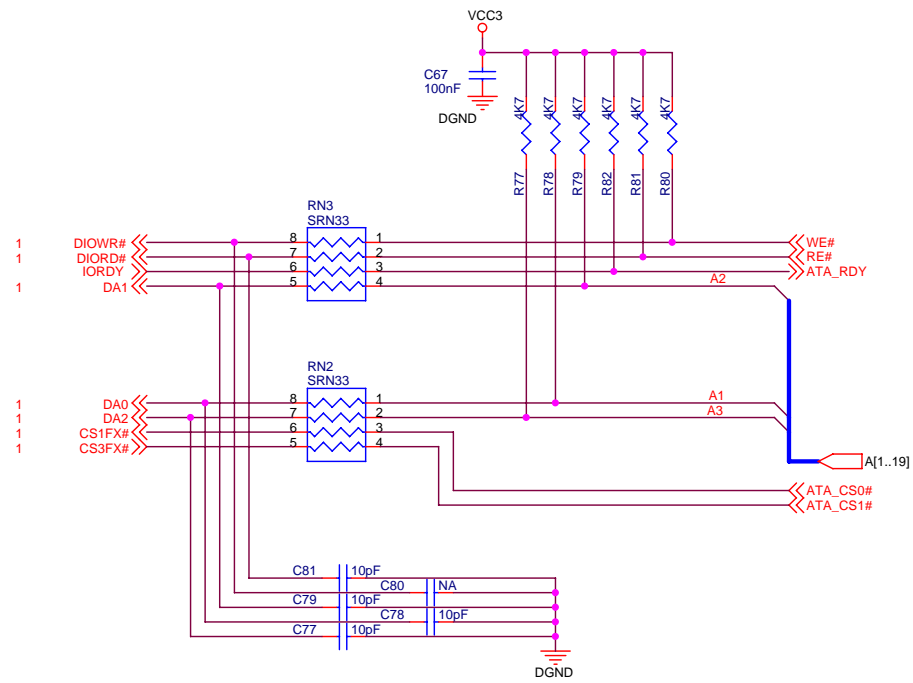
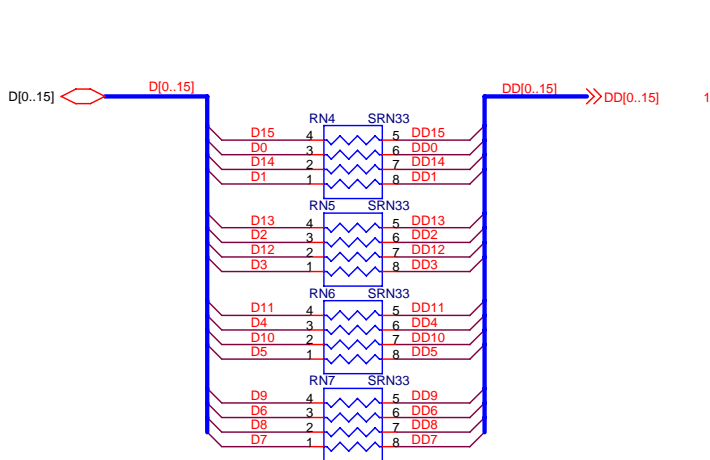
## HD950 Component List for SMPS Board(1254C)

Location.No.	Description	Specification	P/N	Qty	Note
EC4	CAPACITOR,AL.ELECTROLYTIC	CD288H-470UF/16V 8*12	01.34.CL.D.EH470U16VD	1	CAPXON GF471M016F115A
EC19,EC20	CAPACITOR,AL.ELECTROLYTIC	CD288H-1000UF/16V 10*20	01.34.CL.D.E1000U16VG	2	CAPXON GF102M015G160A
L7	Pulse transformer,Coilcraft	L520-10UH	01.13.L.L.D.E090	1	
L6	Bead, leaded fixed	LH0810-20UH	01.13.L.L.D.E005	1	
L3,L4,L5,L8	Bead, leaded fixed	LH0608-22UH	01.13.L.L.D.E051	4	
LF1	Common Mode Choke	LCL- ET20-010(50MH)	01.13.L.L.D.E086	1	
D17	Diode	IN4001,SOD81	01.41.D.PD.EIN4001	1	
D1,D2,D3,D4	Diode	IN4007,SOD81	01.41.D.PD.EIN4007	4	
D6,D8,D10,D11,D13	Diode	FR104, In-line Package	01.41.D.PD.EFR104	5	
D7	Diode	FR107, In-line Package	01.41.D.PD.EFR107	1	
D14,D16,D18	Diode	IN4148,DO-35	01.41.D.PD.EIN4148	3	
D12	Diode	21DQ10, In-line Package	01.41.D.PD.E21DQ10	1	
D15	Diode	31DQ06, In-line Package	01.41.D.PD.E31DQ06	1	
D5	Diode	1U08 , In-line Package	01.41.D.PD.E1U08	1	
ZD1	Zener Diode	16V, In-line Package	01.41.D.WD.E16V	1	
ZD2	Zener Diode	18V, In-line Package	01.41.D.WD.E18V	1	
Q1	Transistor	2N5551,TO-92	01.42.Q.D.E5551	1	
Q3	Transistor	KTC8550-C/P,TO-92	01.42.Q.D.E8550	1	
Q2	Transistor	C9014,TO-92	01.42.Q.D.E9014	1	
SC1	Silicon Controlled Rectifiers	MCR100-6,TO-92	01.44.IC.D.EMCR100	1	
IC1	IC, FAIRCHILD, FPS	KA5M02659R, DIP8	01.44.IC.D.E2659R	1	
IC2	IC, AAC, Adjustable Shunt Regulator	AZ431AZ-AE1TR, TO-92	01.44.IC.D.EAZ431AZ	1	
IC6	IC, ROHM, Dropout Voltage Regulator	BA33BCO,TO-220	01.44.IC.D.EBA33	1	
IC5	IC, NS, Positive Adjustable Regulator	LM317T, TO-220	01.44.IC.D.ELM317T	1	
IC3	IC, ST, Voltage Regulator	L7805, TO-220	01.44.IC.D.EL7805	1	
PH1	IC, Sharp, Photoelectric Coupler	PC817, DIP4	01.44.IC.D.EPC817C	1	
FU1	Fuse Holder	BLX-2A	01.40.CON.DCZ.E131	1	Antiflaming
FU1	Fuse	T1A/250V	01.38.FUSE.D.E1A250V	1	
JP1	Connector	Vertical VH three holes two pins(white)	01.40.CON.DCZ.E129	2	Antiflaming
TR1	Switching Power Transformer	BCK-EC2802	01.13.L.R.E059	1	

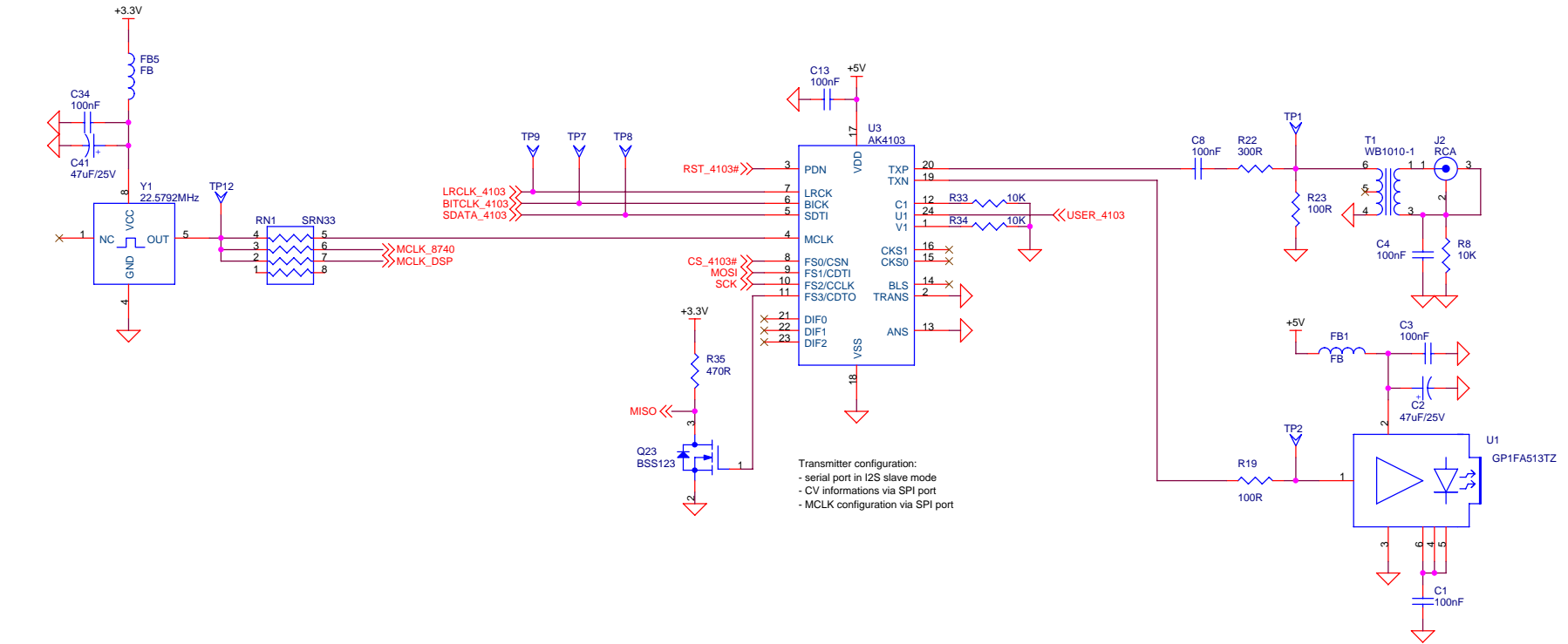
**HD950 Component List for SMPS Board(1254C)**

<b>Location.No.</b>	<b>Description</b>	<b>Specification</b>	<b>P/N</b>	<b>Qty</b>	<b>Note</b>
CN1	Connector	TJC3-3A	01.40.CON.DTJ.E024	1	Antiflaming
CN2	Connector	TJC3-13A	01.40.CON.DTJ.E002	1	Antiflaming
for IC3	Radiator	12*16*23mm	01.00.WJ.TJ.E496	1	Antiflaming
G1,G2,G3,G4	3pins grounding piece	M4	01.00.WJ.QT.E041	4	

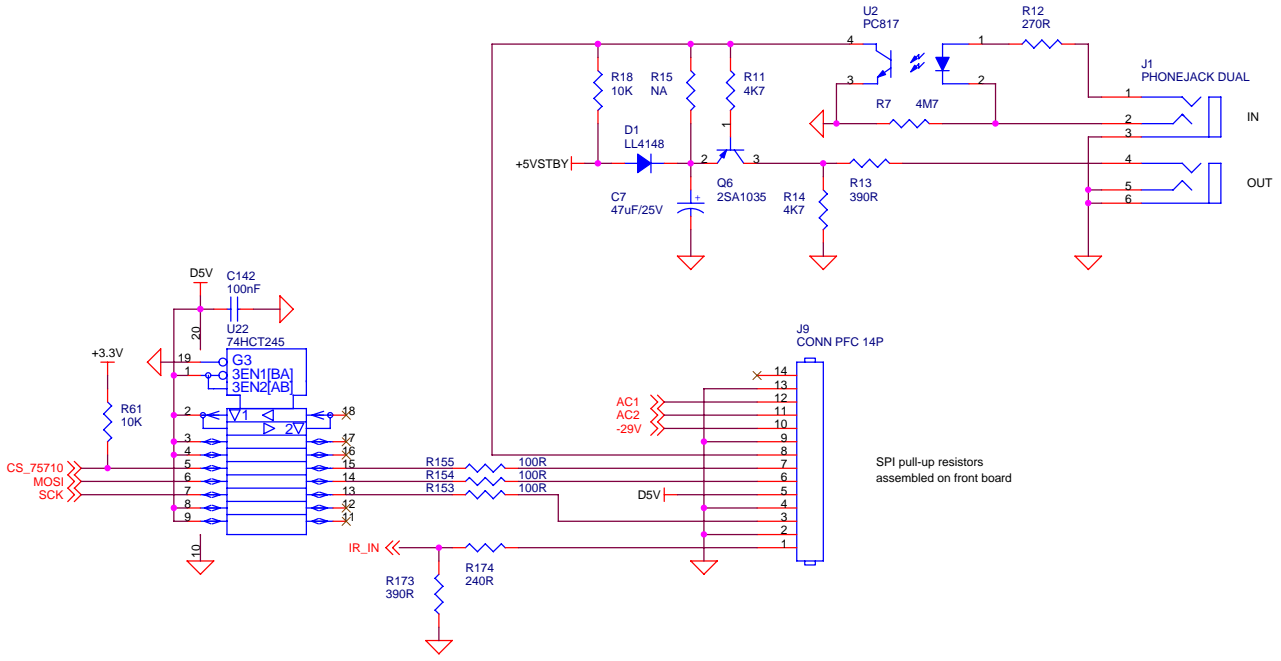




<b>Harman Kardon</b>		drawn by	ABC PCB S
			Ch. du Saux 17
			CH-1131 Tolochenaz
Title			
HD950 main board			
Size	Document Number	Rev	
B	3565C	1.3	
Date:	Tuesday, September 26, 2006	Sheet	3 of 10



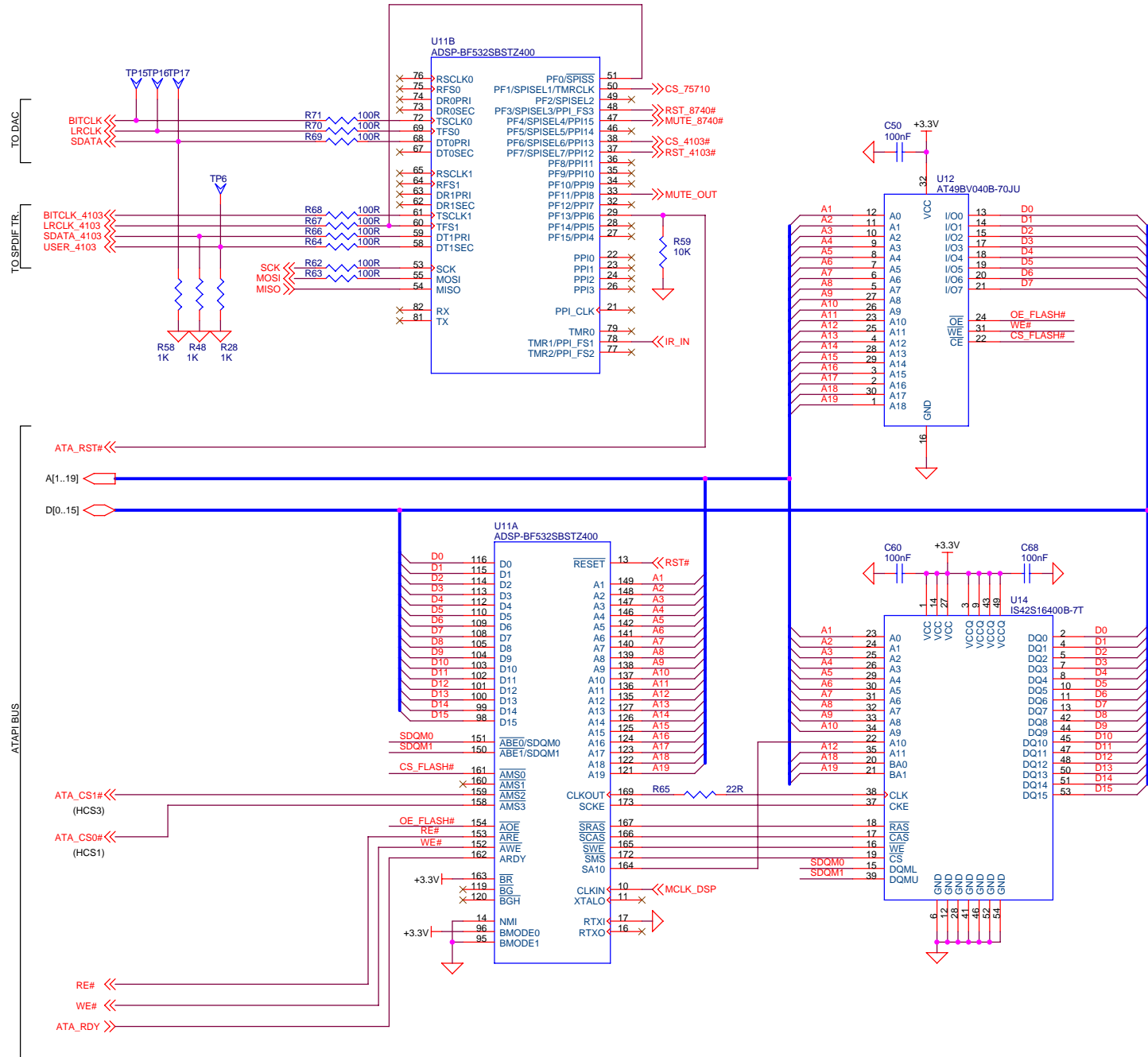
Transmitter configuration:  
 - serial port in I2S slave mode  
 - CV informations via SPI port  
 - MCLK configuration via SPI port

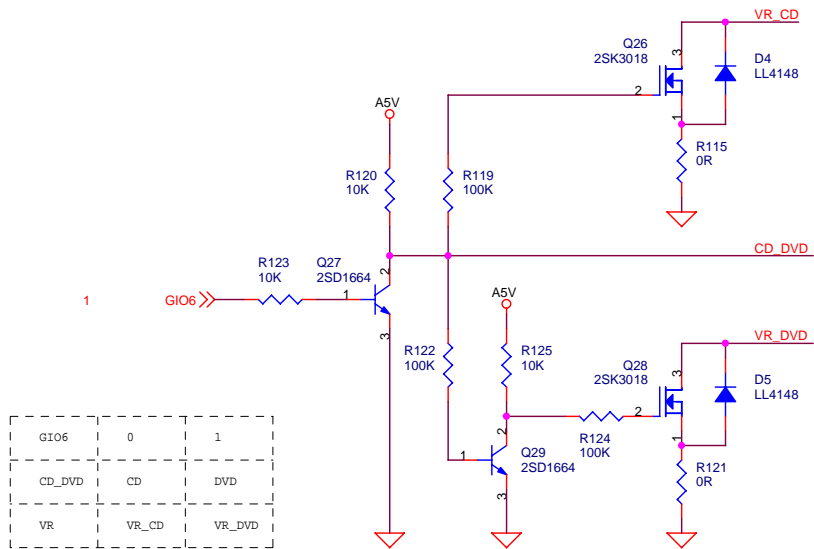


SPI pull-up resistors  
 assembled on front board

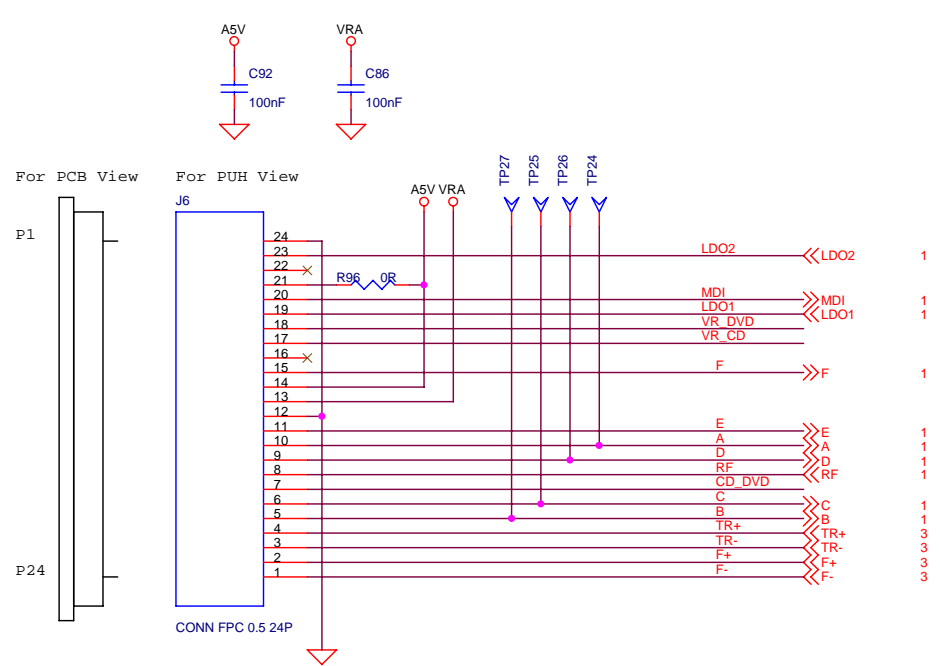
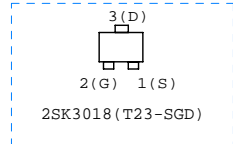
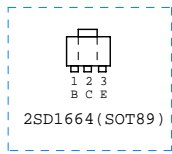
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		Size: A3 Document Number: 3565C	Rev: 1.3
Date: Tuesday, September 26, 2006		Sheet: 4 of 10	





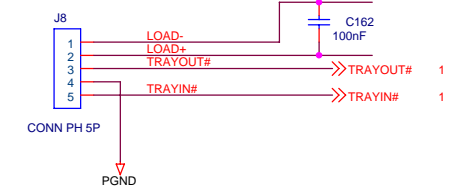
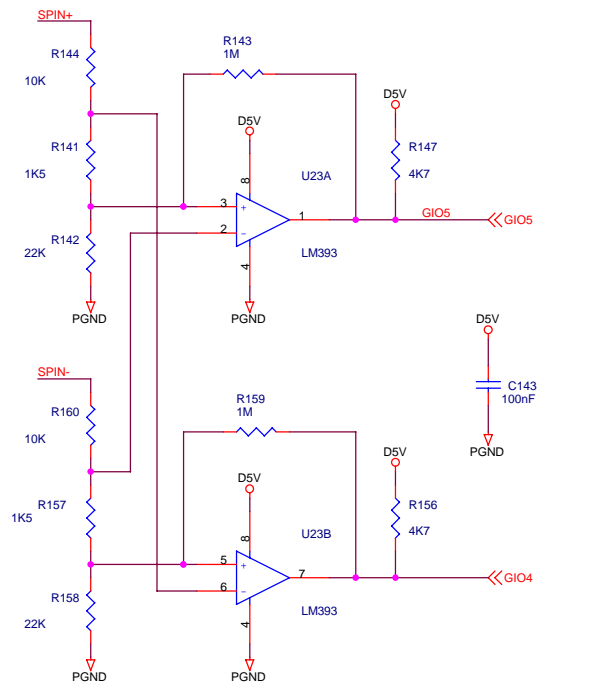
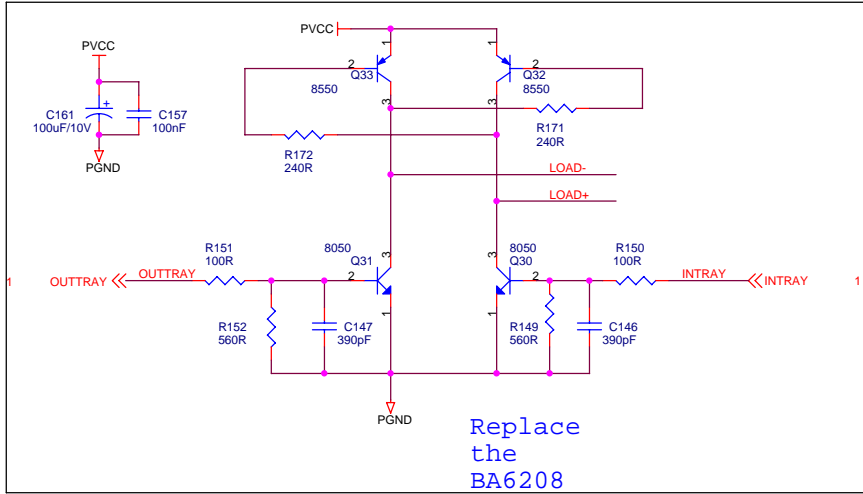


GI06	0	1
CD_DVD	CD	DVD
VR	VR_CD	VR_DVD

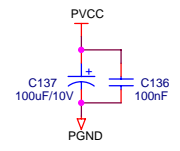
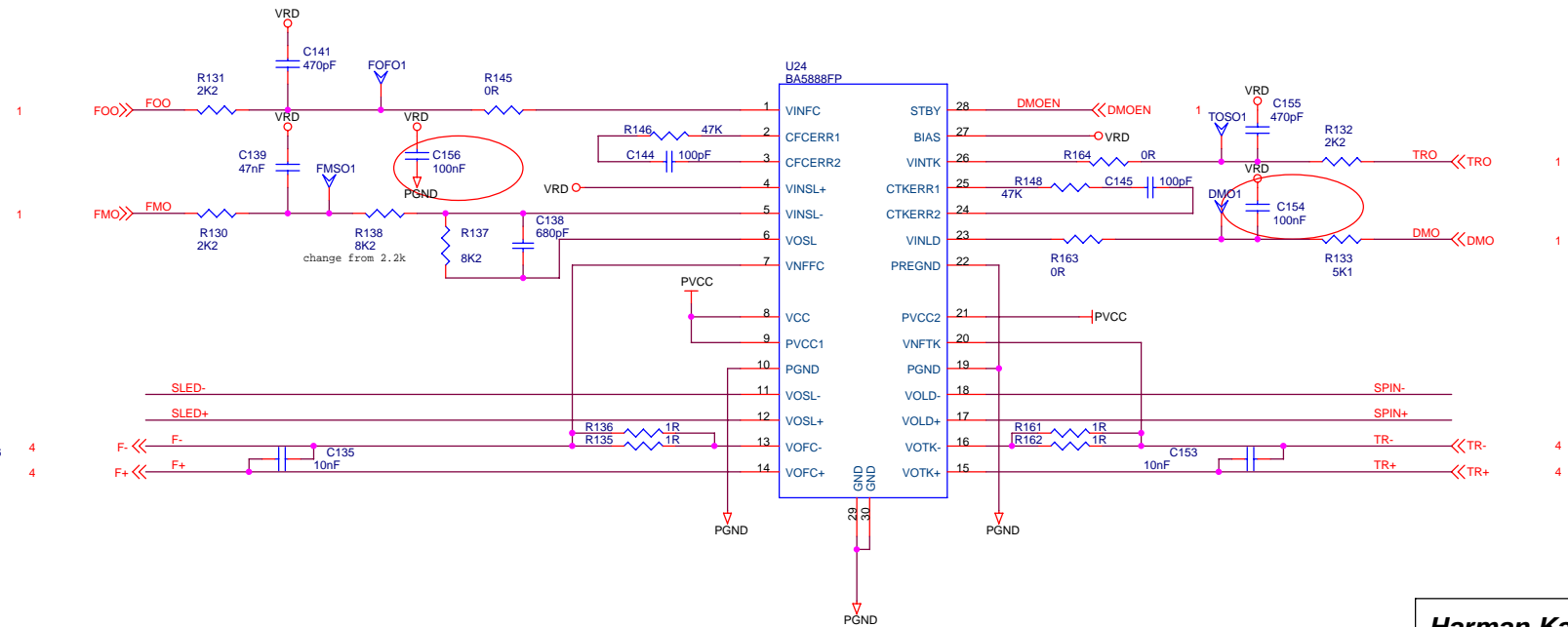
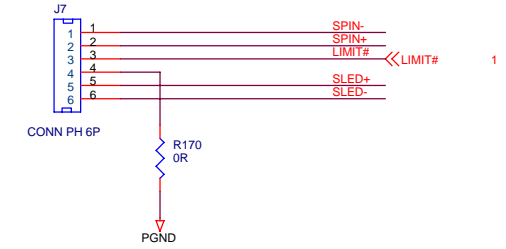


This connector support HD65

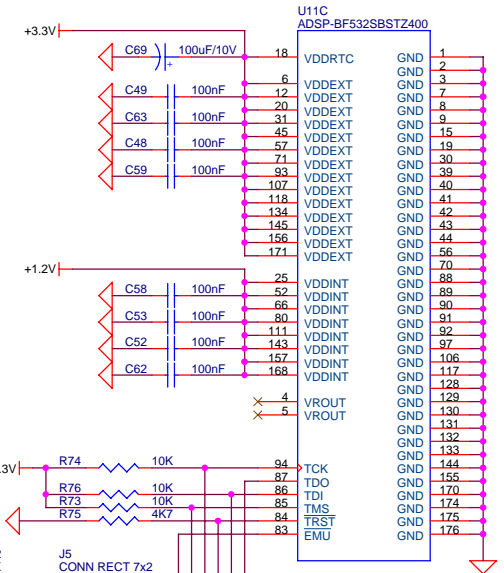
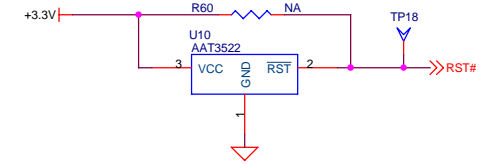
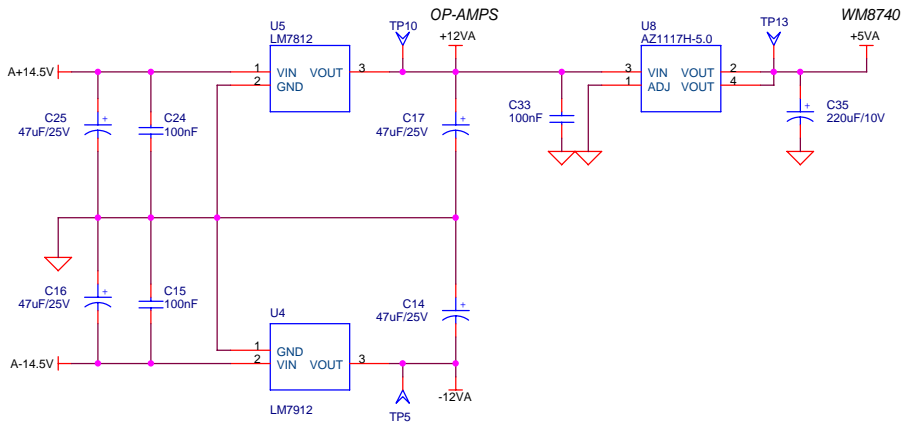
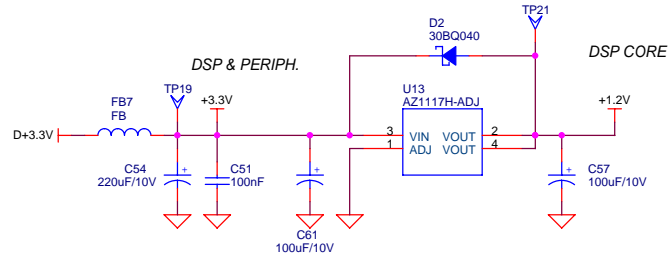
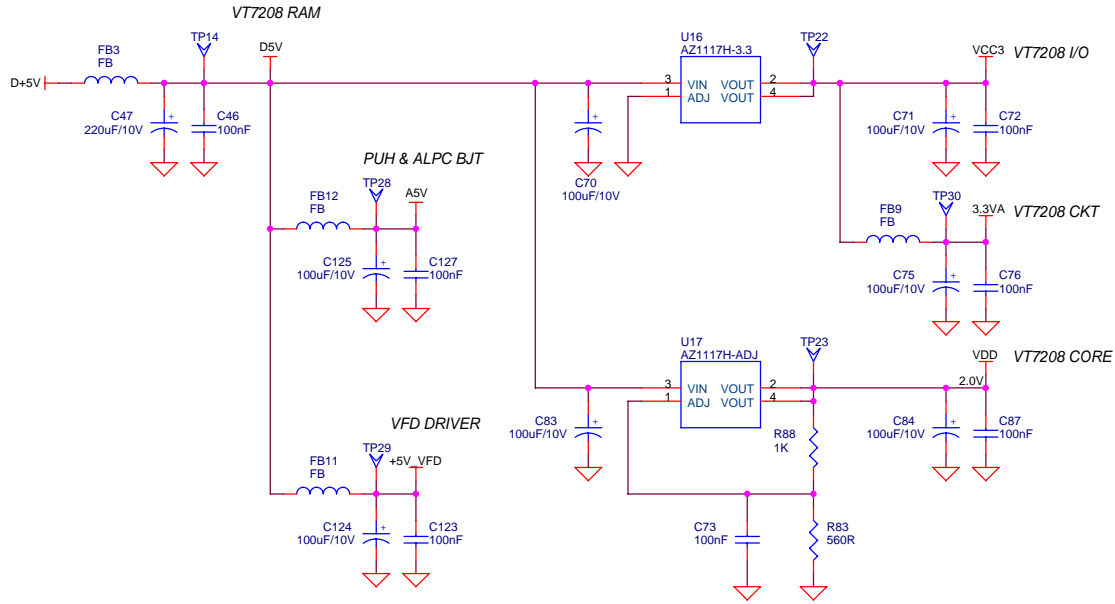
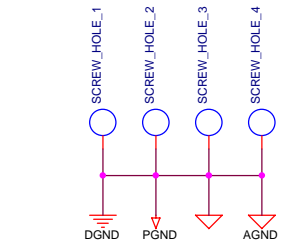
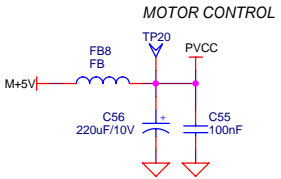
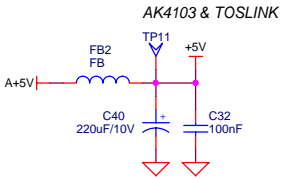
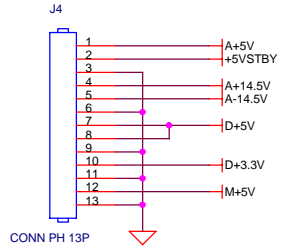
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Title HD950 main board			
Size B	Document Number 3565C	Rev 1.3	
Date:	Tuesday, September 26, 2006	Sheet	6 of 10



This connector support HD65



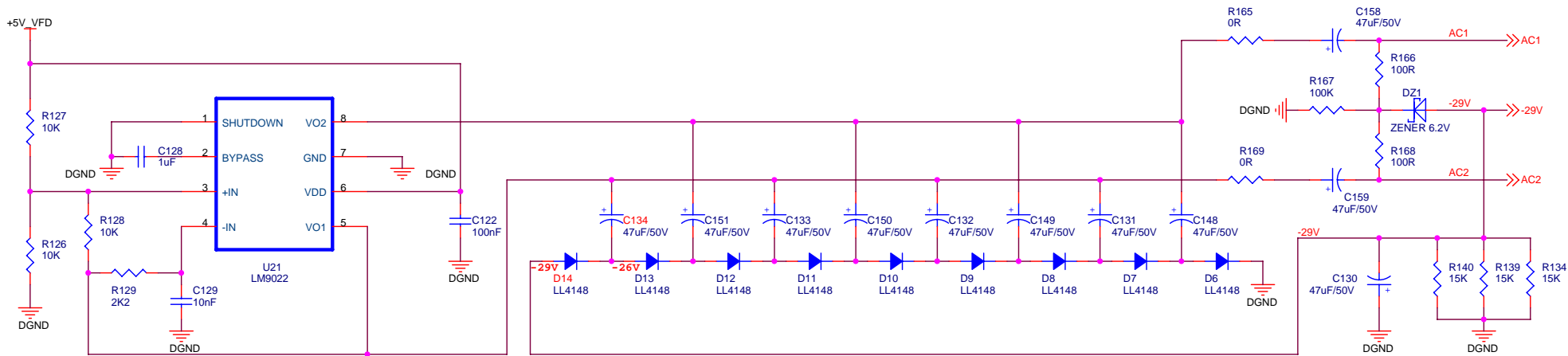
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Title HD950 main board			
Size A3	Document Number 3565C	Rev 1.3	
Date: Tuesday, September 26, 2006	Sheet 7	of 10	



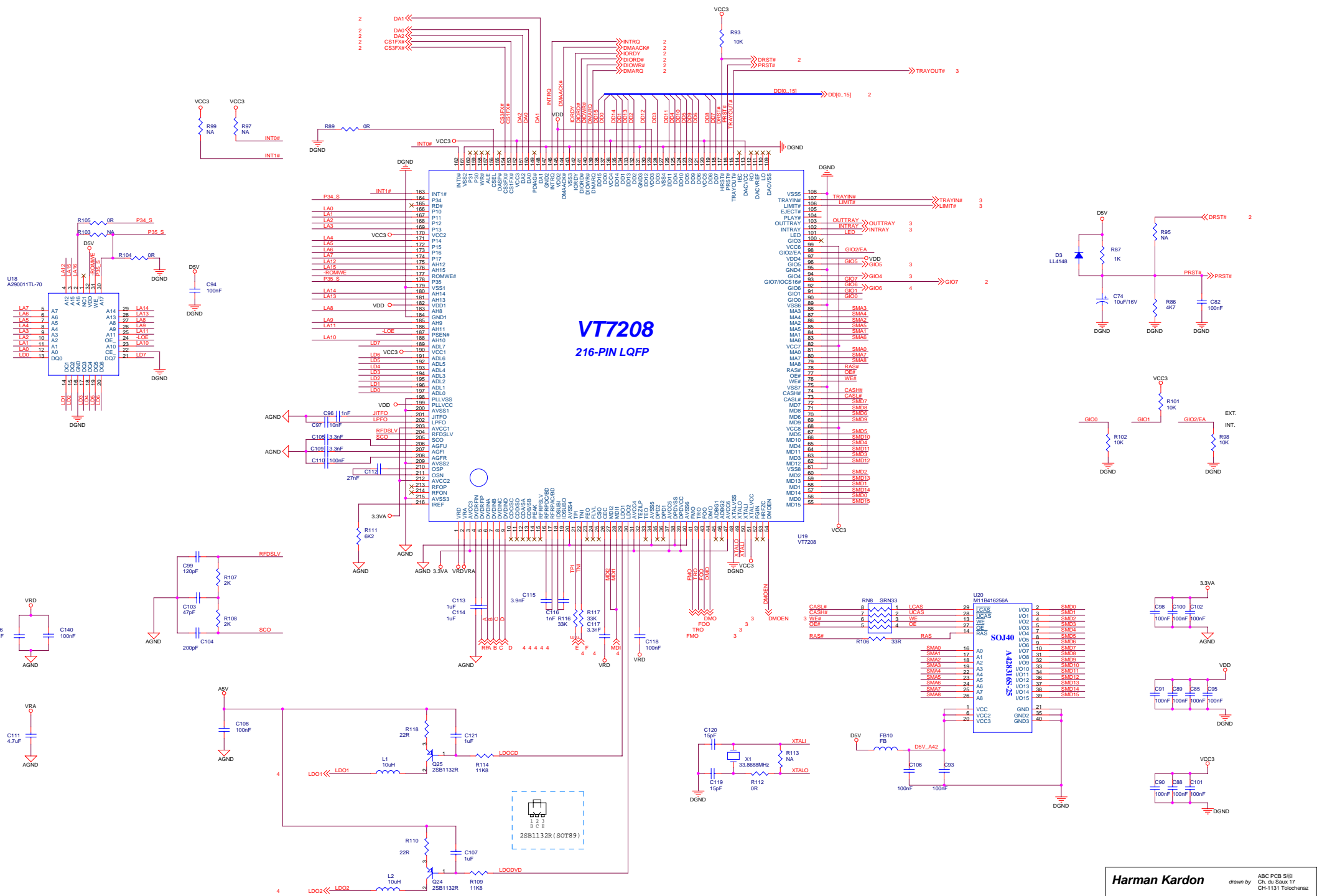
**Harman Kardon** drawn by ABC PCB SIII  
 Ch. du Saux 17  
 CH-1131 Tolochenaz

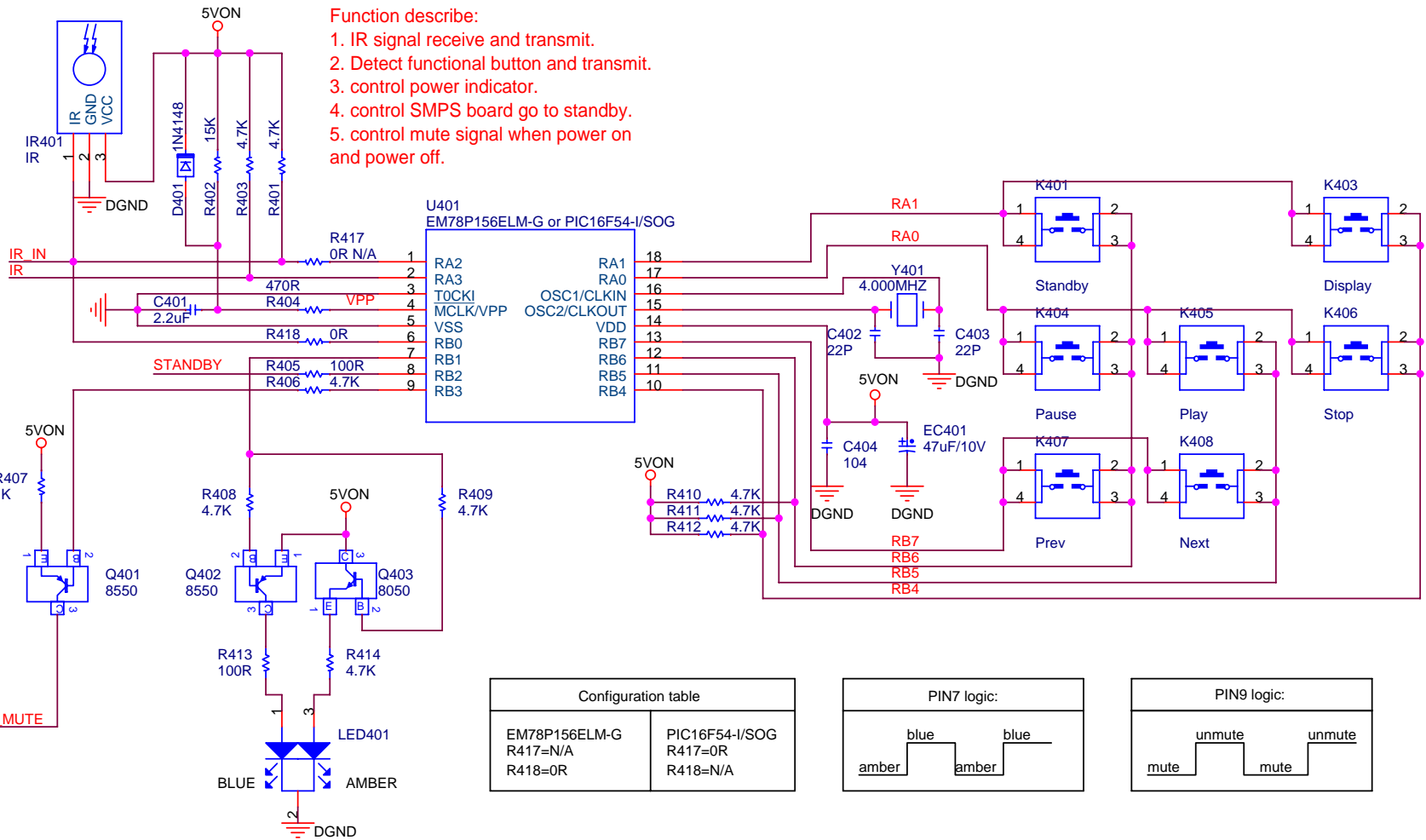
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 Size: A3  
 Date: Tuesday, September 26, 2006

Document Number: 3565C  
 Sheet: 8 of 10  
 Rev: 1.3



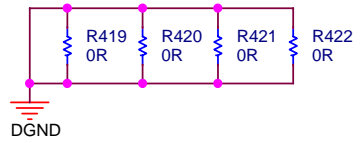
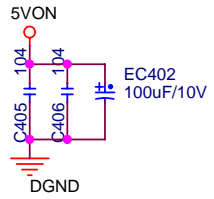
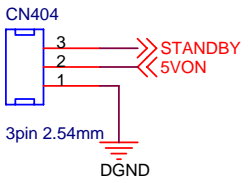
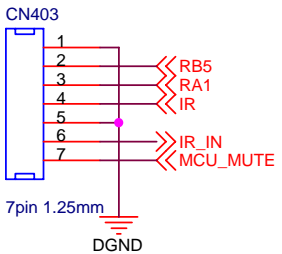
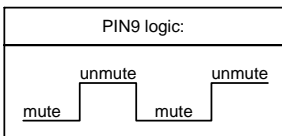
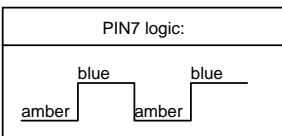
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Title HD950 main board			
Size B	Document Number 3565C	Rev 1.3	
Date:	Tuesday, September 26, 2006	Sheet	9 of 10



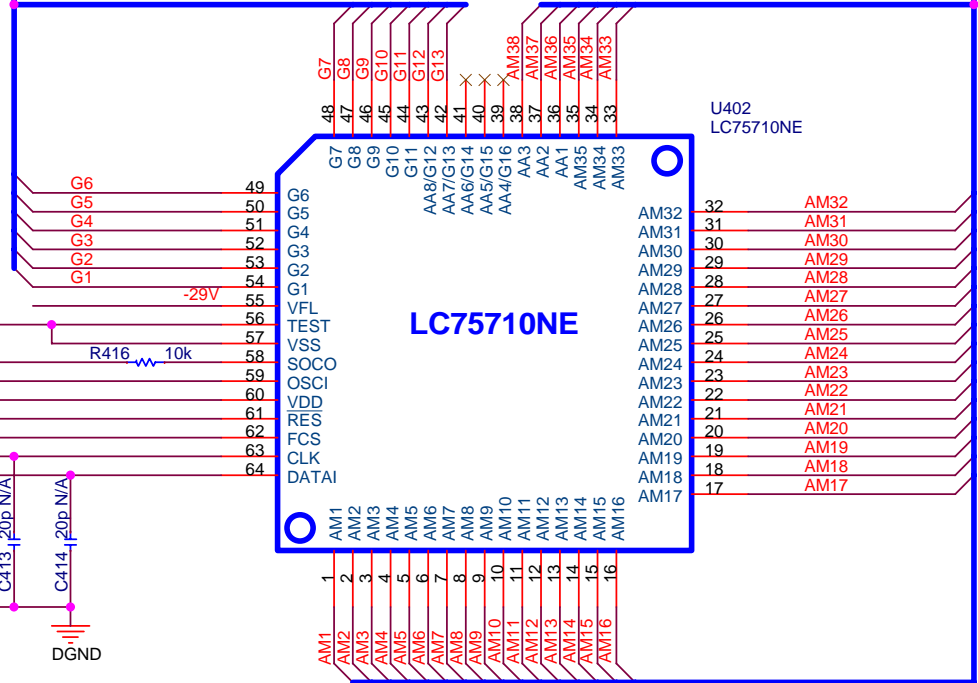
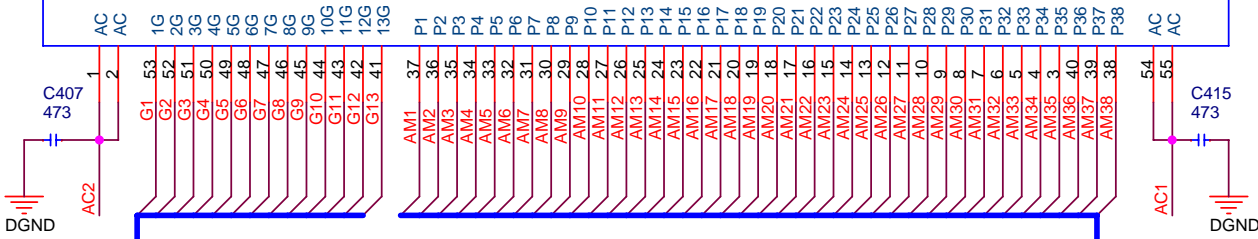
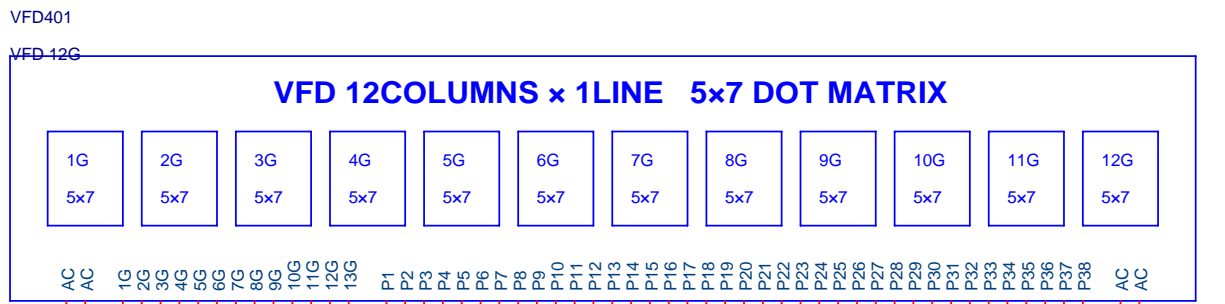
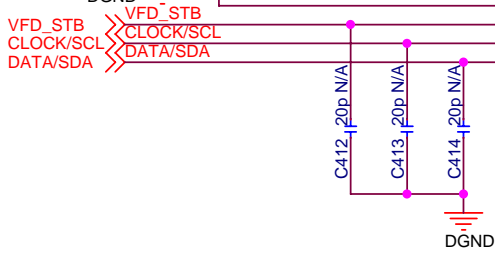
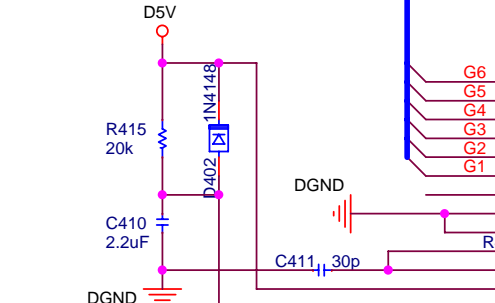
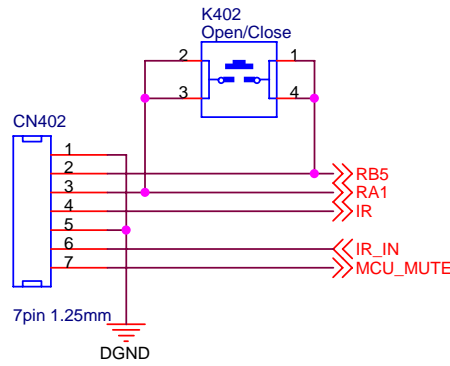
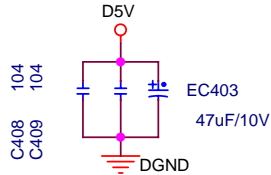
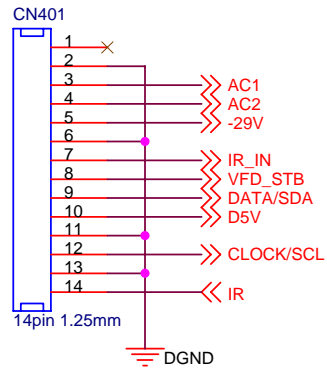


- Function describe:
1. IR signal receive and transmit.
  2. Detect functional button and transmit.
  3. control power indicator.
  4. control SMPS board go to standby.
  5. control mute signal when power on and power off.

Configuration table	
EM78P156ELM-G	PIC16F54-I/SOG
R417=N/A	R417=0R
R418=0R	R418=N/A

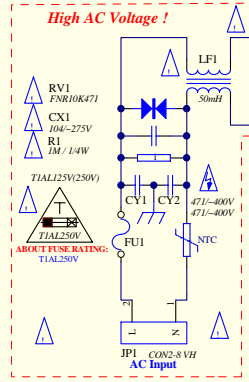


Title		
HD950 FRONT PANEL: Button board 060921		
Size	Document Number	Rev
A4	3566C	1.2
Date:	Friday, September 22, 2006	Sheet 1 of 2



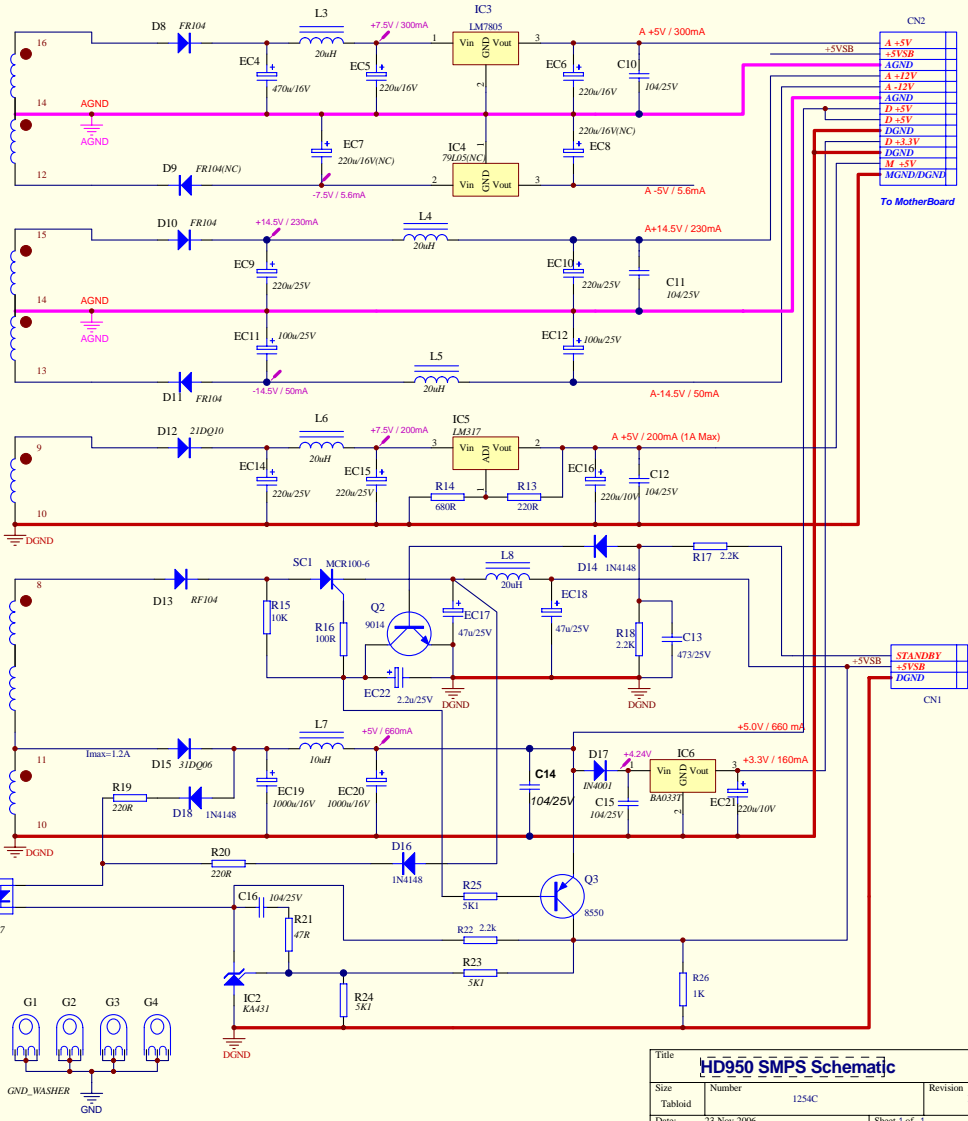
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Size	A4	Document Number	3567C		Rev
Date:	Thursday, September 21, 2006		Sheet	2	of 2
					1.2





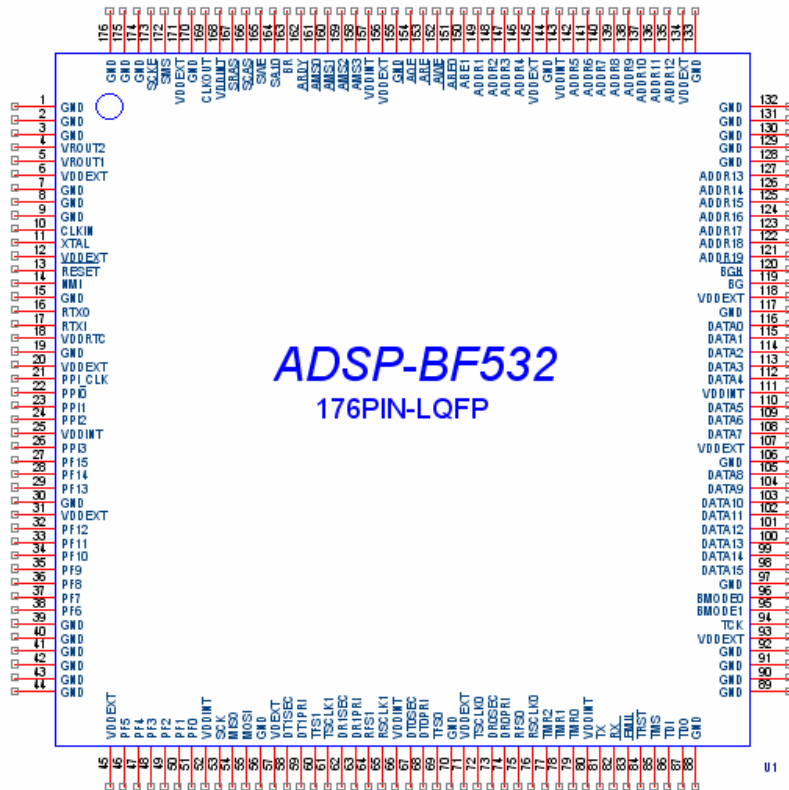
**CAUTION:**  
**RISK OF ELECTRIC SHOCK !**

← Note: The Test Data Was Got By Playing a Commonly DVD Disk,  
 And It Was Only Provided For Reference.

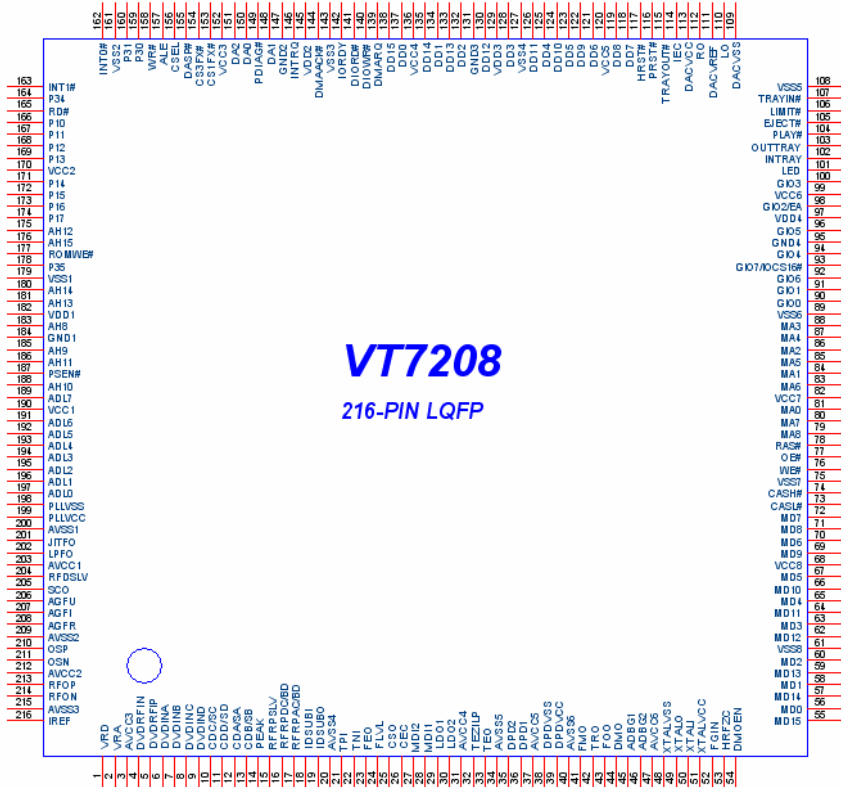


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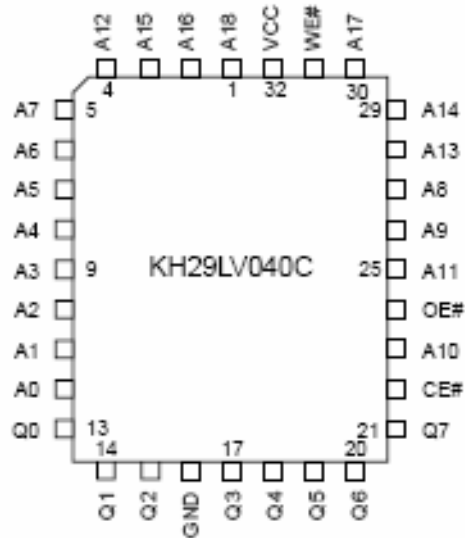


# VT7208



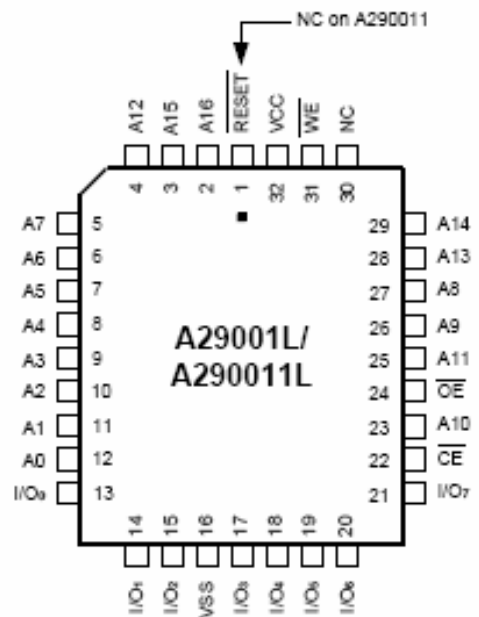
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PLCC-32



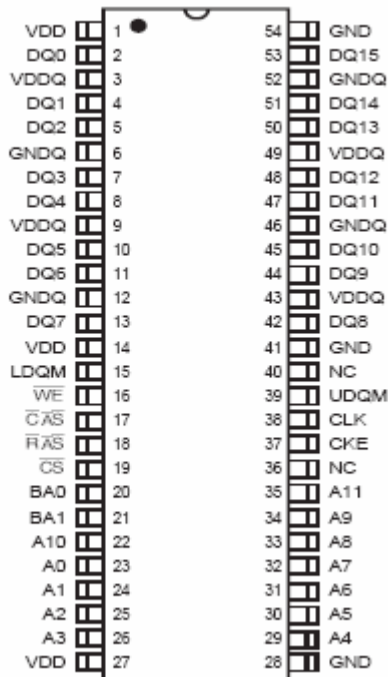
# A290011TL-70

PLCC-32



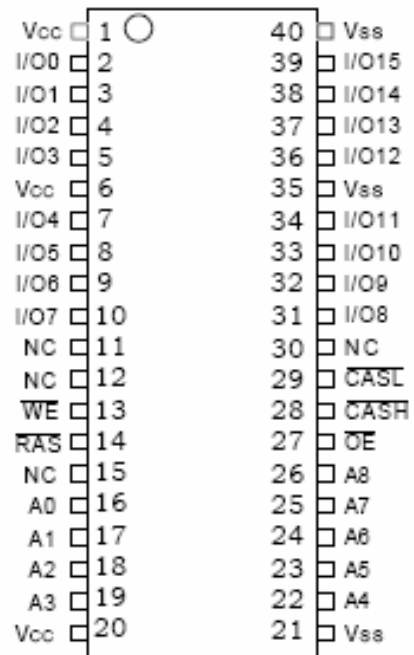
# IS42S16400B-7TL

TSSOP-54



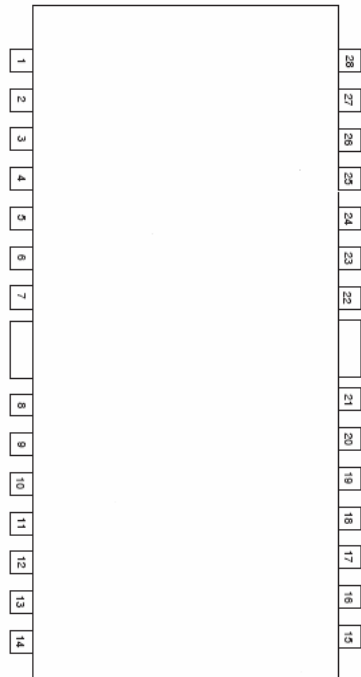
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SOJ-40



# BA5888FP

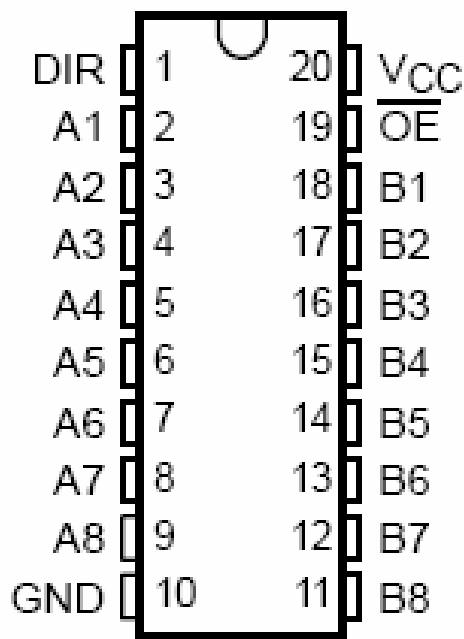
HSOP-28



No	Symbol	No	Symbol
1	VINFC	15	VOTK+
2	CFCerr1	16	VOTK-
3	CFCerr2	17	VOLD+
4	VINSL+	18	VOLD-
5	VINSL-	19	PGND
6	VOSL	20	VNFJK
7	VNFJC	21	PVcc2
8	Vcc	22	PreGND
9	PVcc1	23	VINLD
10	PGND	24	CTKerr2
11	VOSL-	25	CTKerr1
12	VOSL+	26	VINIK
13	VOFC-	27	BIAS
14	VOFC+	28	STBY

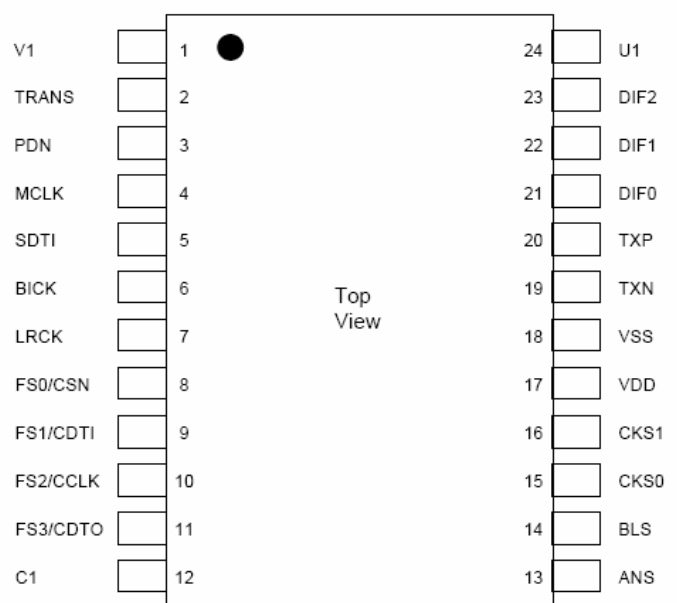
# SN74HCT245PWR

TSSOP-20



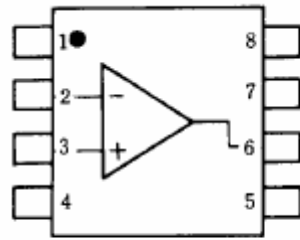
# AK4103AVF

VSOP24



# NJM5534M

DMP8



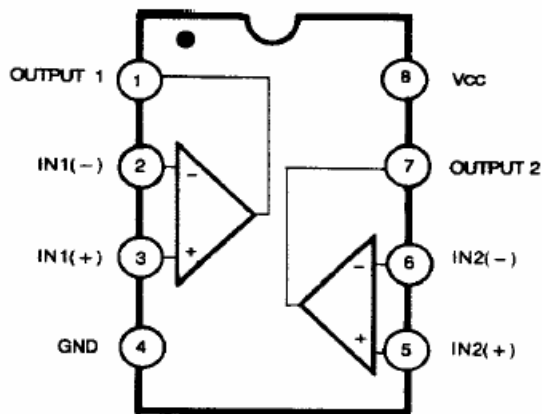
NJM5534M

## PIN FUNCTION

- 1. BALANCE
- 2. -INPUT
- 3. +INPUT
- 4. V<sup>-</sup>
- 5. COMPENSATION
- 6. OUTPUT
- 7. V<sup>+</sup>
- 8. BALANCE/COMPENSATION

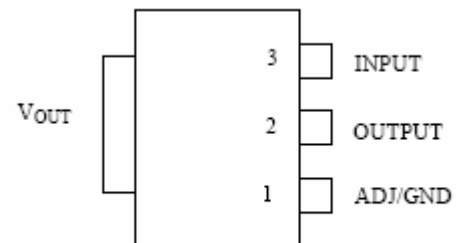
# LM393

SOP8



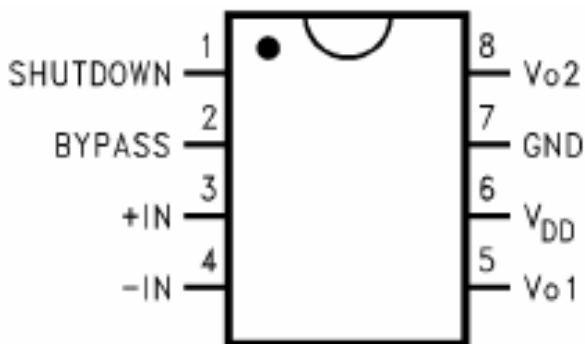
# AZ1117-ADJ

/3.3V/5V SOT-223



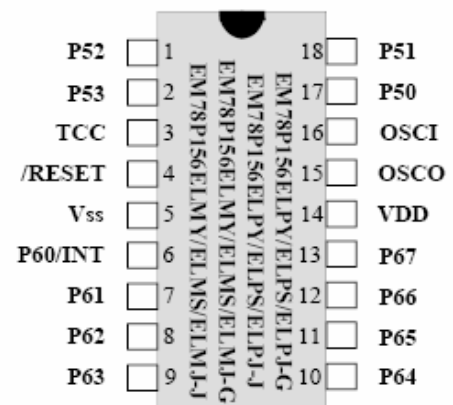
# LM9022

SOP8



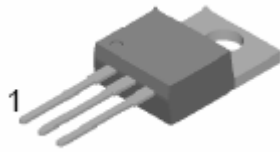
# EM78P156ELM-G

SOIC18



# L7805/L7812

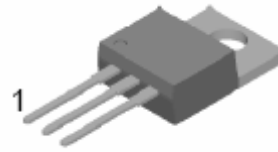
TO-220



1. Input 2. GND 3. Output

# L7912

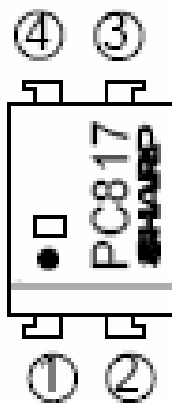
TO-220



1. GND 2. Input 3. Output

# PC817

DIP4



- ① Anode
- ② Cathode
- ③ Emitter
- ④ Collector

# AAT3522IGY-3.08

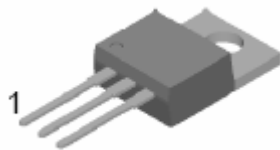
-200-T1

SOT-23



# BA33BCO

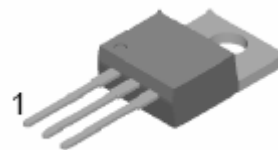
TO-220



1. Vcc 2. GND 3. Output

# LM317T

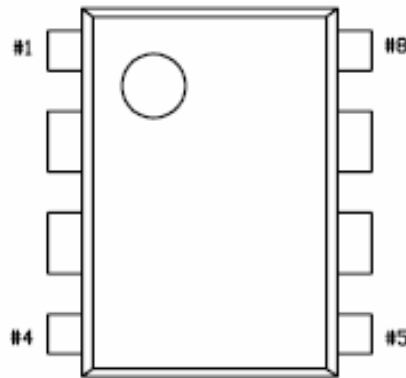
TO-220



1. Adj 2. Output 3. Input

# KA5M02659R

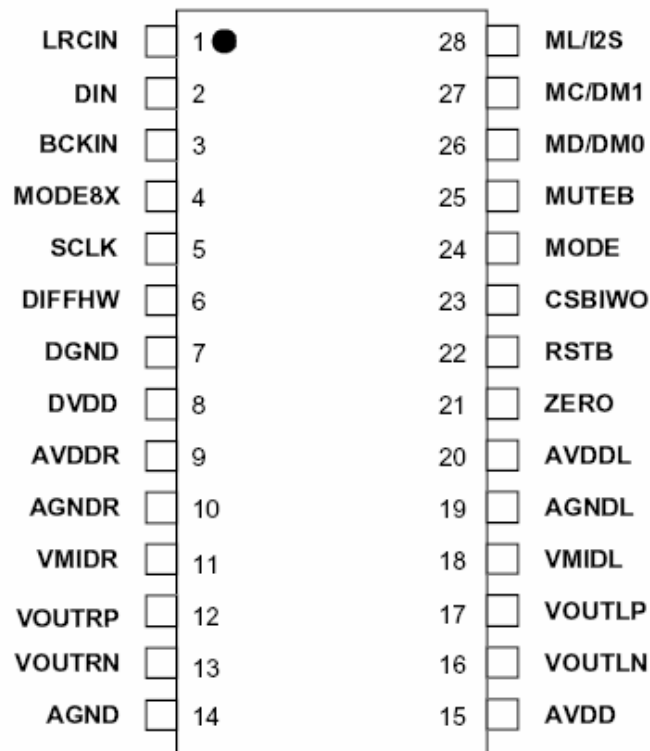
DIP8



- 1.6.7.8. Drain
- 2. GND
- 3. Vcc
- 4. FB
- 5. NC

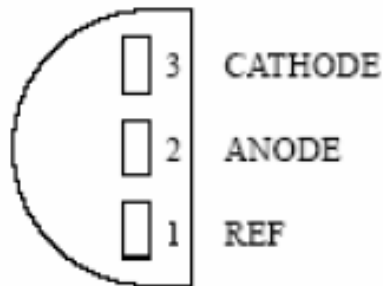
# WM8740SEDS

SSOP-28



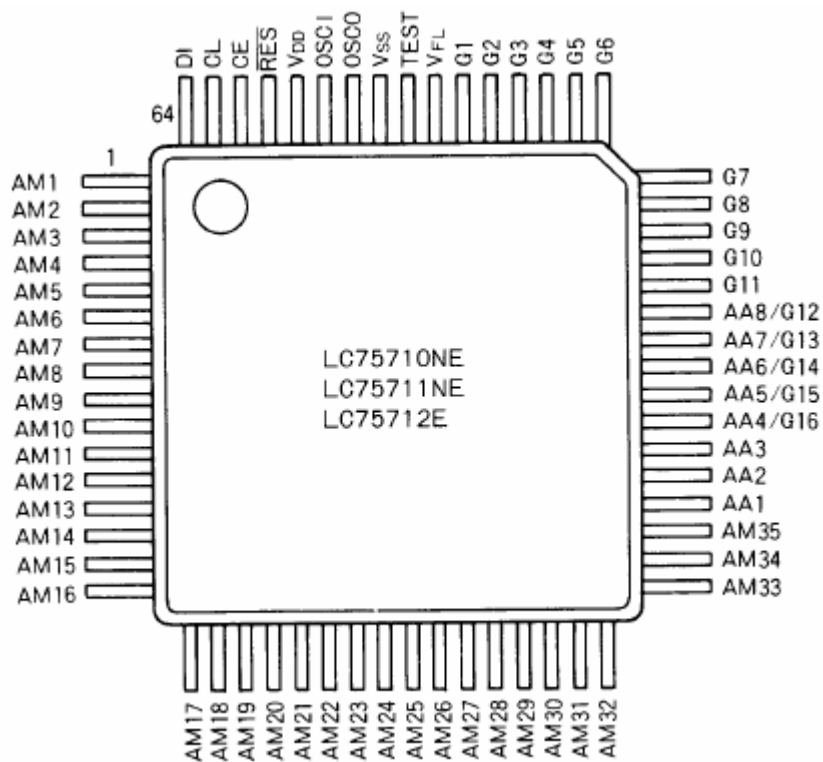
# AZ431AZ-ATRE1

TO-92



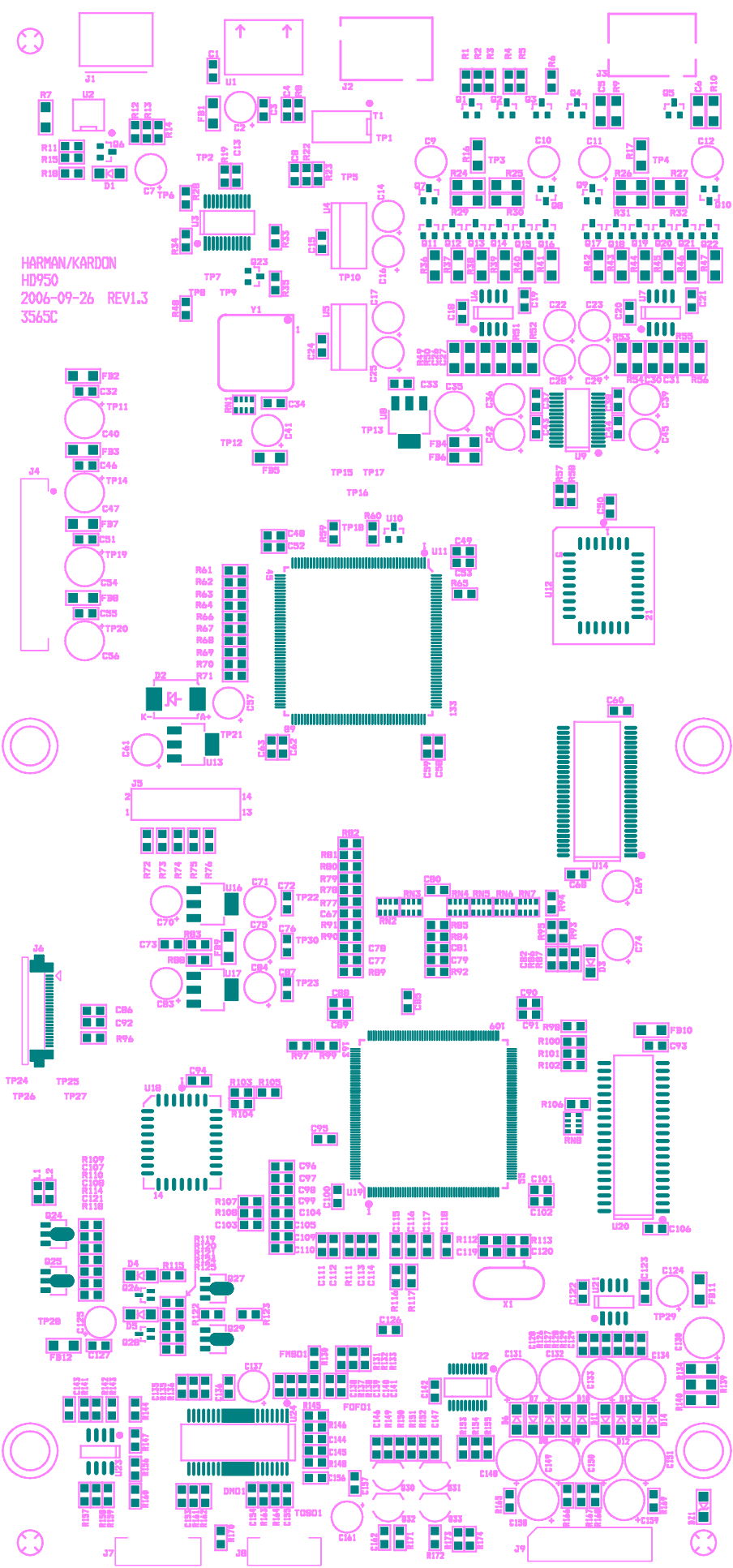
# LC75711NE

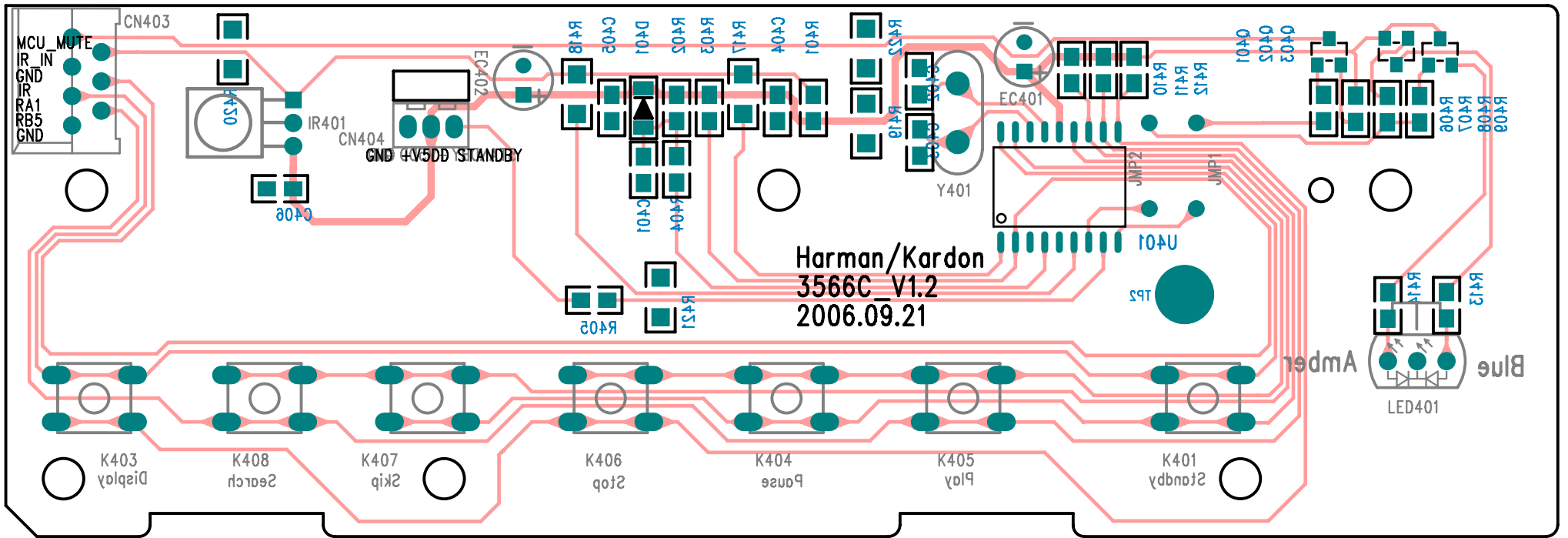
QFP64E

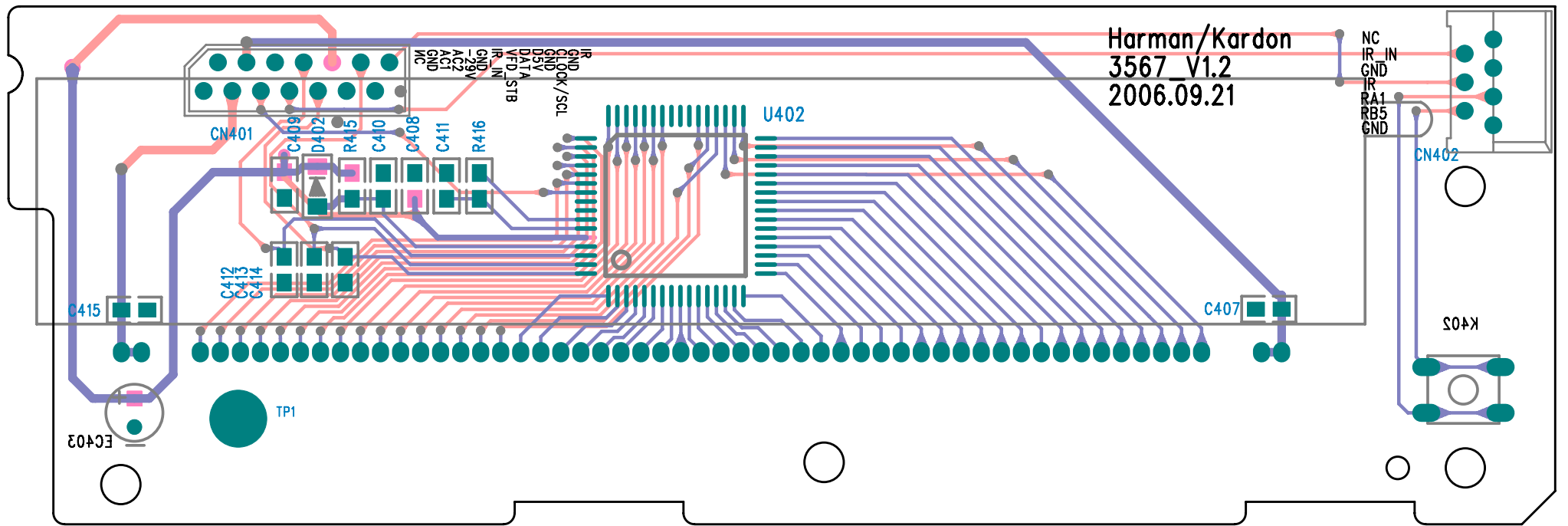




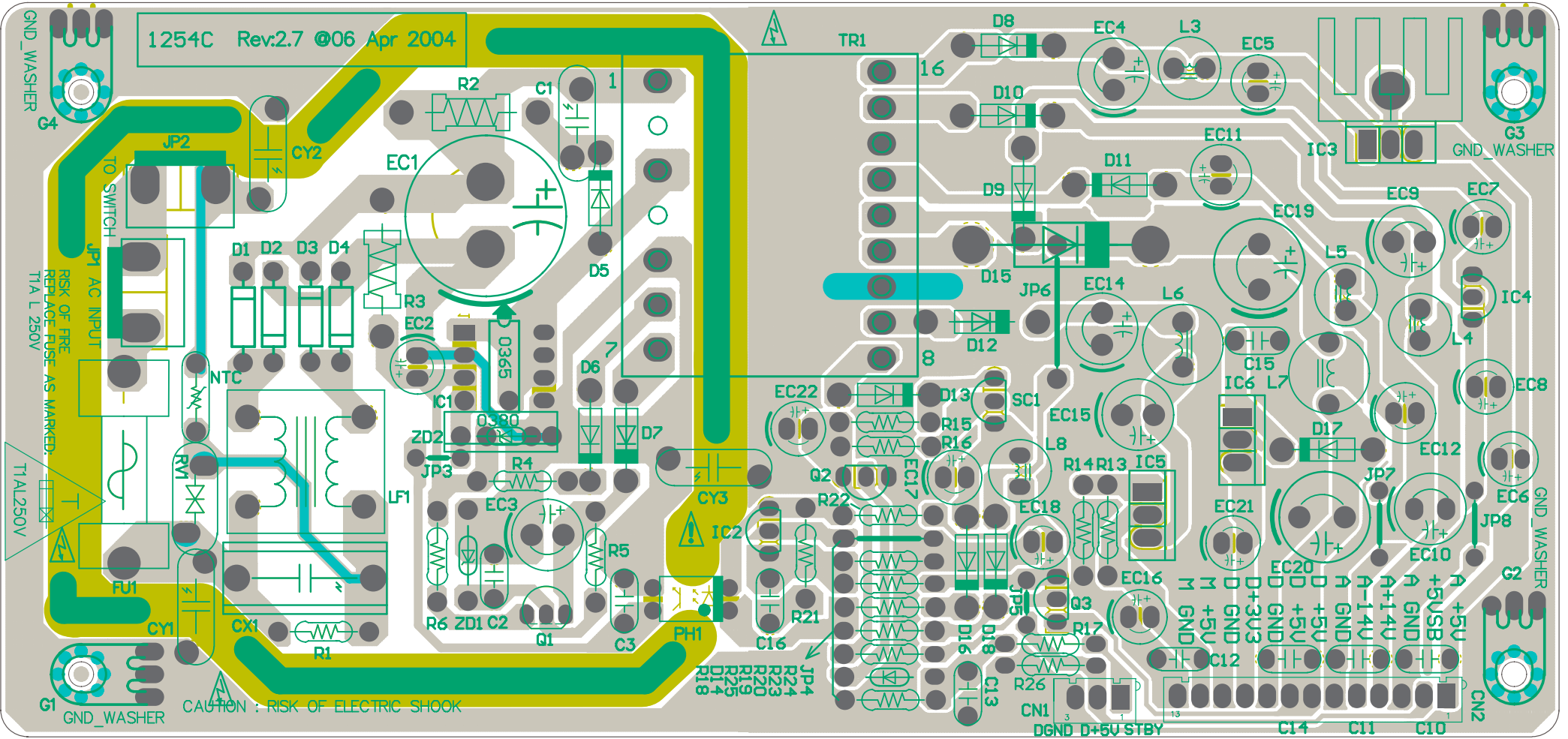
HARMAN/KARDON  
HD950  
2006-09-26 REV1.3  
3565C







1254C Rev:2.7 ©06 Apr 2004



CAUTION : RISK OF ELECTRIC SHOCK

GND\_WASHER

GND\_WASHER

RISK OF FIRE  
REPLACE FUSE AS MARKED.  
T1A L 250V

T1A L 250V

GND\_WASHER

GND\_WASHER

G1

G2

G3

DGND D+5V STBY

C14 C11 C10