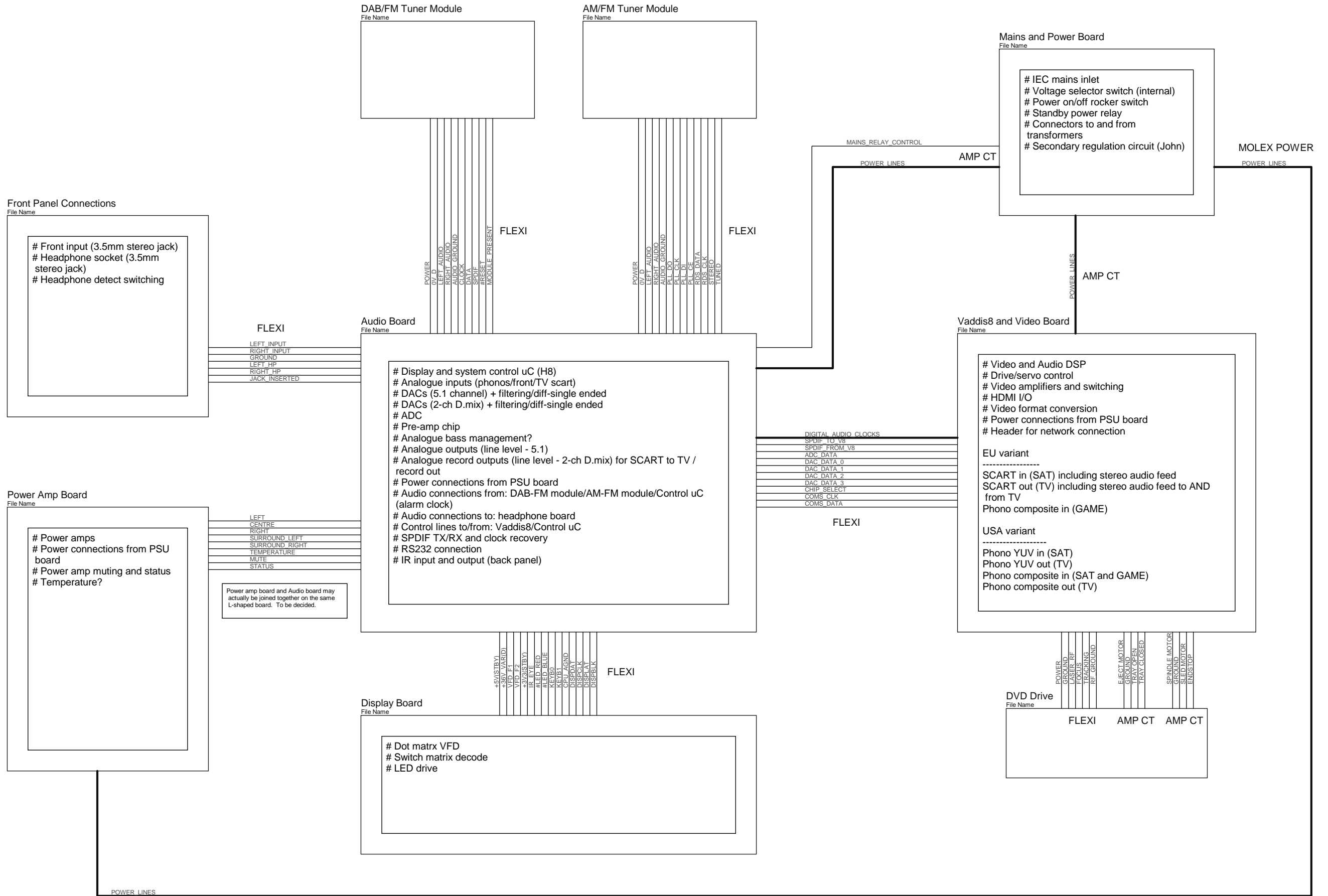
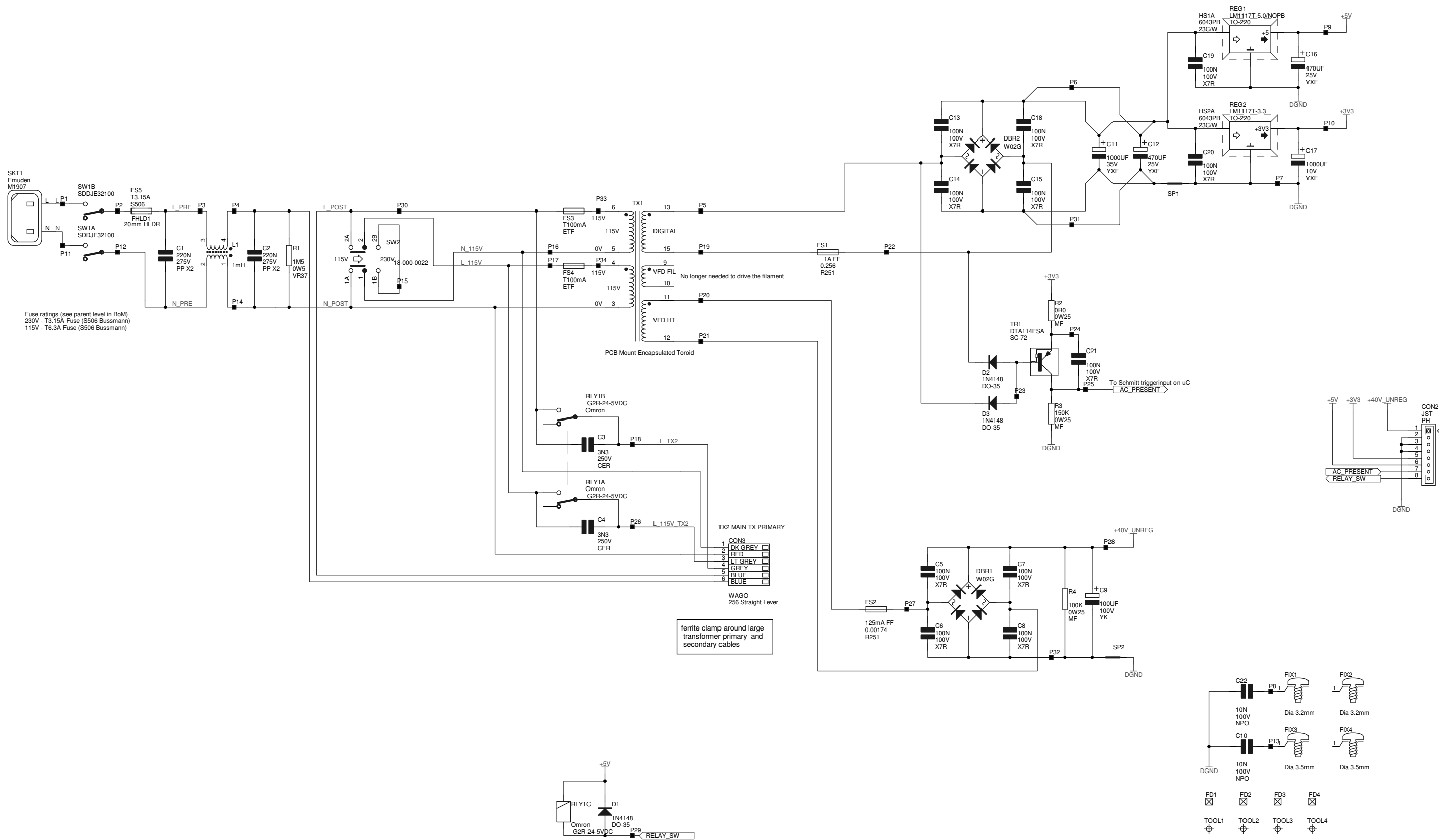


Only one module inserted at a time

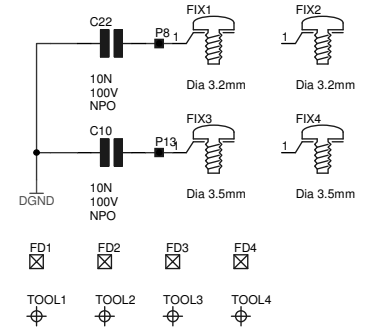
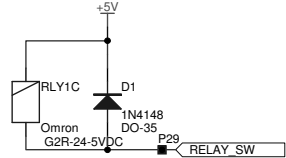


DRAWING TITLE		Solo5.1 Architecture							
ARCAM		Filename: _Solo5.1_audio_architecture.sch		Notes:		MJT		10/03/05	
A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB5 9QR		Contact Engineer: Mark Tweedale		Contact Tel: (01223) 203210		Printed: 28-Apr-2005		Sheet 1 of 1	
		ECO No.		INITIALS		DATE		DESCRIPTION OF CHANGE	
								Rough outline of Solo5.1 system	
								ISSUE	
								A2 DRAWING NO. LXXX_X_X	

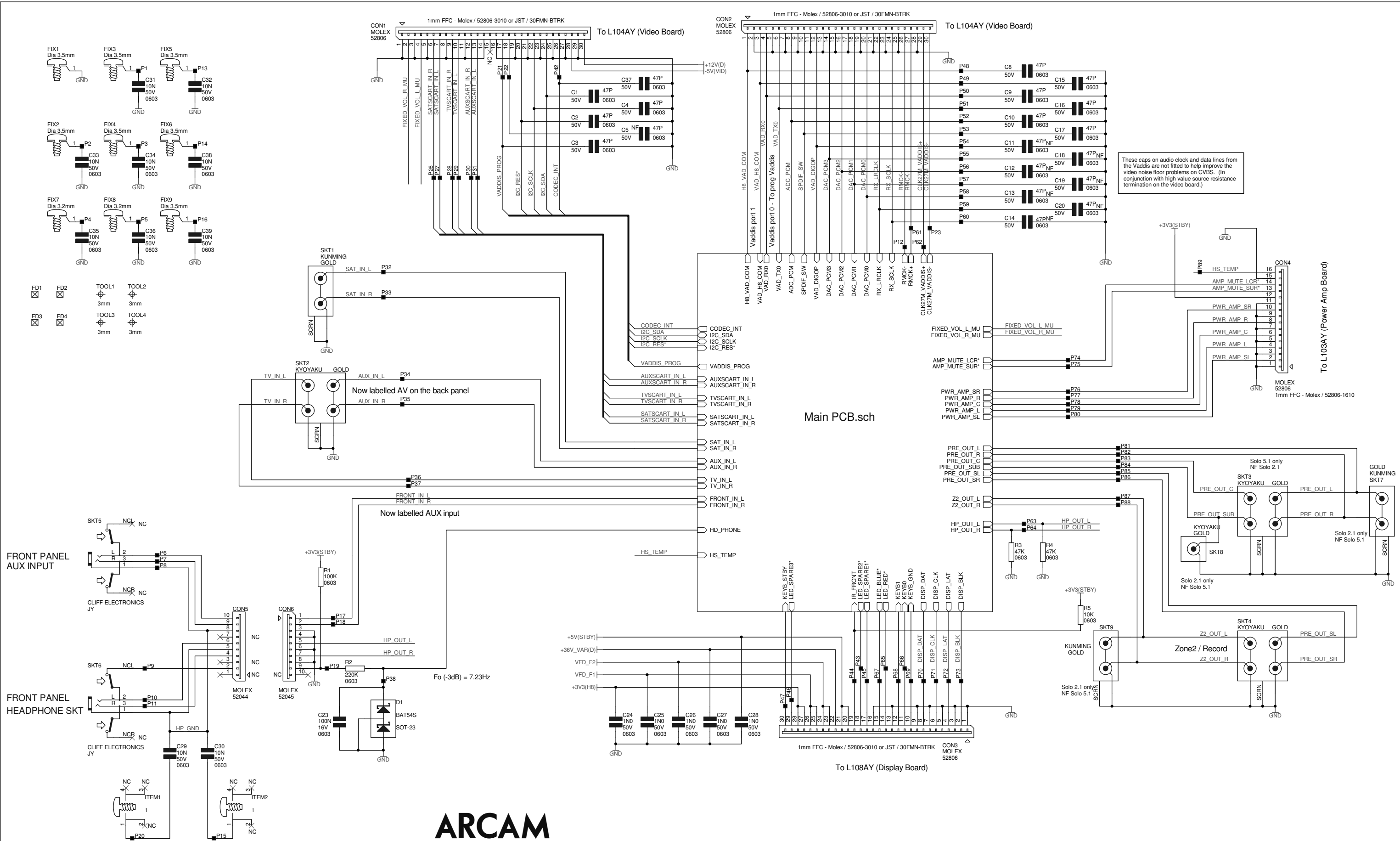


Fuse ratings (see parent level in BoM)  
 230V - T3.15A Fuse (S506 Bussmann)  
 115V - T6.3A Fuse (S506 Bussmann)

ferrite clamp around large transformer primary and secondary cables



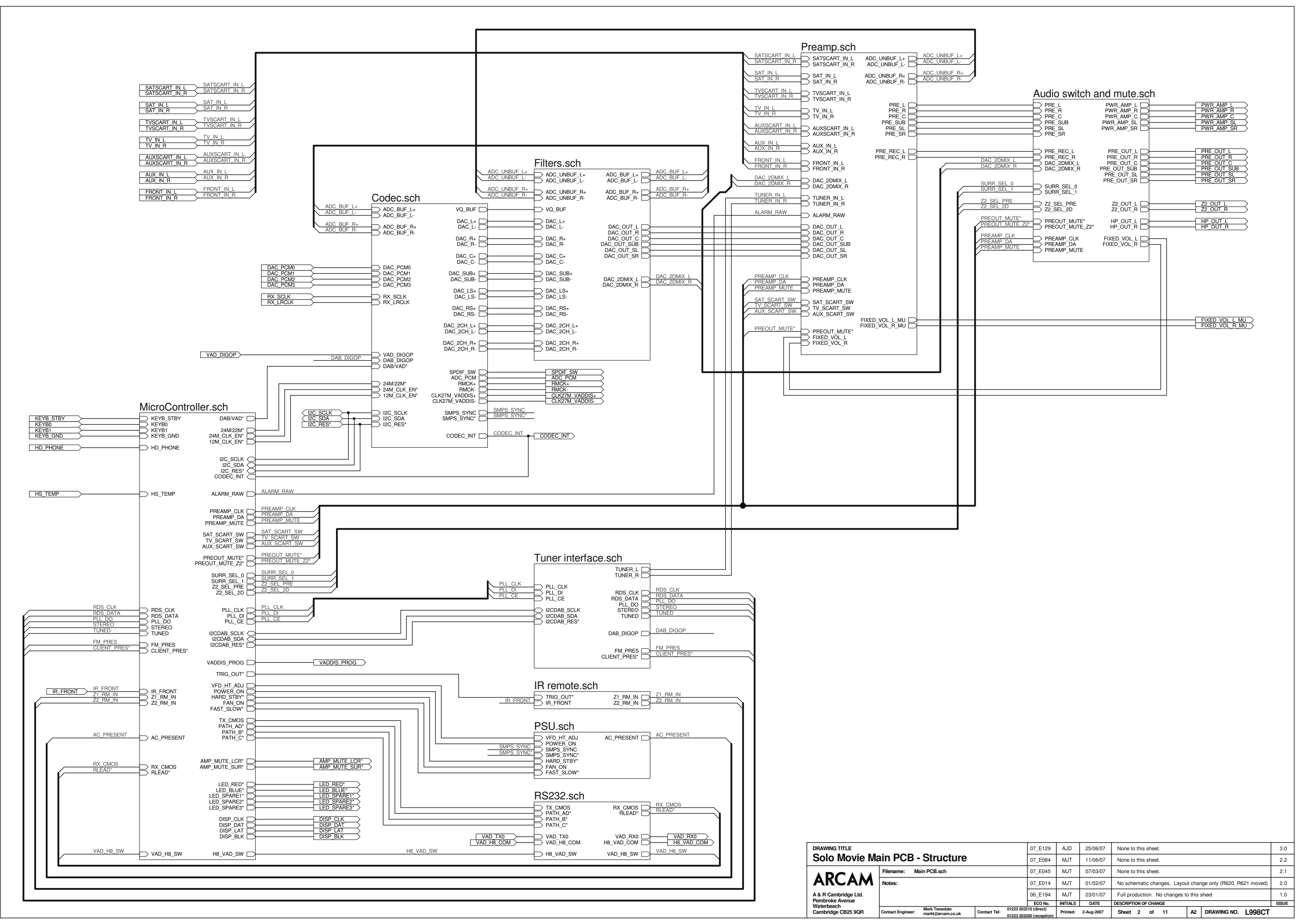
ITEM1	1	L107PB	Blank PCB Solo5.1 Mains																					
ITEM2	1	E827AP	Pad Damping 15x6x3MM Rubber	Fit to top of Relay RLY1																				
<b>DRAWING TITLE</b>																								
<b>Solo 5.1 Mains PSU</b>																								
<table border="1" style="width: 100%;"> <tr> <td>07_E019</td> <td>AJD</td> <td>9/02/07</td> <td>CAEs changed to 10s deg. Safety silk updates for fuses.</td> <td>1.0</td> </tr> <tr> <td>06_E177</td> <td>PK</td> <td>22/11/06</td> <td>FS1 &amp; FS2 corrected, C12 changed, added FS5</td> <td>B.1</td> </tr> <tr> <td>06_E033</td> <td>NM</td> <td>09/05/06</td> <td>Second prototype, added R4, re-tracked relay, selector overlay, wago order</td> <td>B.0</td> </tr> <tr> <td>ECO No.</td> <td>INITIALS</td> <td>DATE</td> <td>DESCRIPTION OF CHANGE</td> <td>ISSUE</td> </tr> </table>					07_E019	AJD	9/02/07	CAEs changed to 10s deg. Safety silk updates for fuses.	1.0	06_E177	PK	22/11/06	FS1 & FS2 corrected, C12 changed, added FS5	B.1	06_E033	NM	09/05/06	Second prototype, added R4, re-tracked relay, selector overlay, wago order	B.0	ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE
07_E019	AJD	9/02/07	CAEs changed to 10s deg. Safety silk updates for fuses.	1.0																				
06_E177	PK	22/11/06	FS1 & FS2 corrected, C12 changed, added FS5	B.1																				
06_E033	NM	09/05/06	Second prototype, added R4, re-tracked relay, selector overlay, wago order	B.0																				
ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE																				
<b>ARCAM</b>		A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB5 9QR																						
Contract Engineer: Scott Burr		Contact Tel: (01223) 203200		Printed: 13-Feb-2007																				
Sheet 1 of 1			A2	DRAWING NO. L107CT																				



# ARCAM

## L998CT - Solo Movie 5.1 Main/Audio PCB

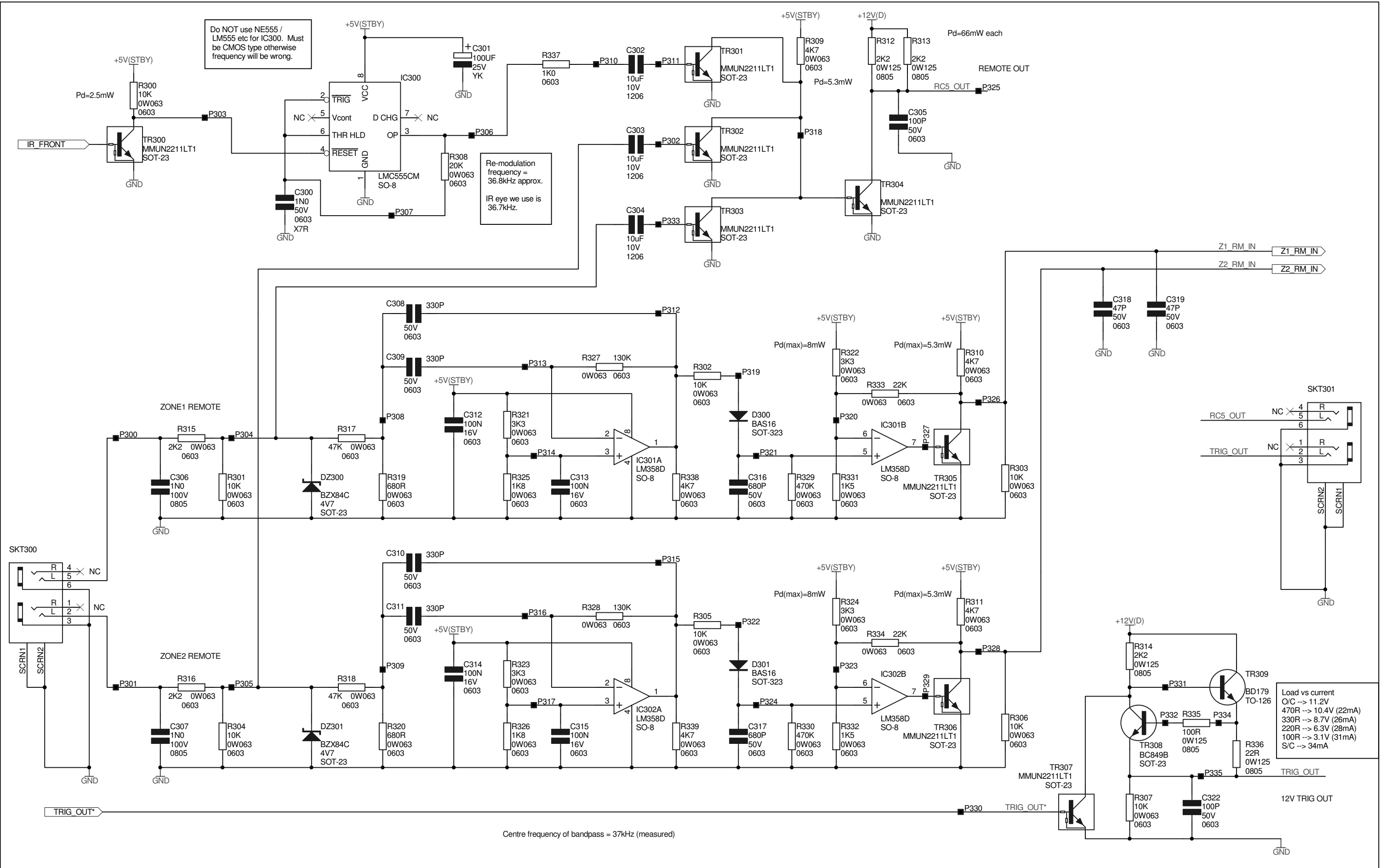
ITEM	QTY	PART No.	DESCRIPTION	NOTES
ITEM3	1	L998PB	Blank PCB Solo5.1 Main Board	
<b>DRAWING TITLE</b>				
<b>Solo Movie Main PCB - Top level</b>				
07_E129	AJD	25/06/07	Added connectors for Solo 2.1 options	3.0
07_E084	MJT	11/06/07	None to this sheet. Changed R442 - R445 for compatibility with revised VFD.	2.2
07_E045	MJT	07/03/07	None to this sheet. Changed C810, C851 to longer life parts due to heat.	2.1
07_E014	MJT	01/02/07	No schematic changes. Layout change only (R620, R621 moved)	2.0
06_E194	MJT	23/01/07	SKT500 changed to common GND/EMC type, R338, R339, R217, R647 added to PCB. Some caps on CON2 removed	1.0
ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE



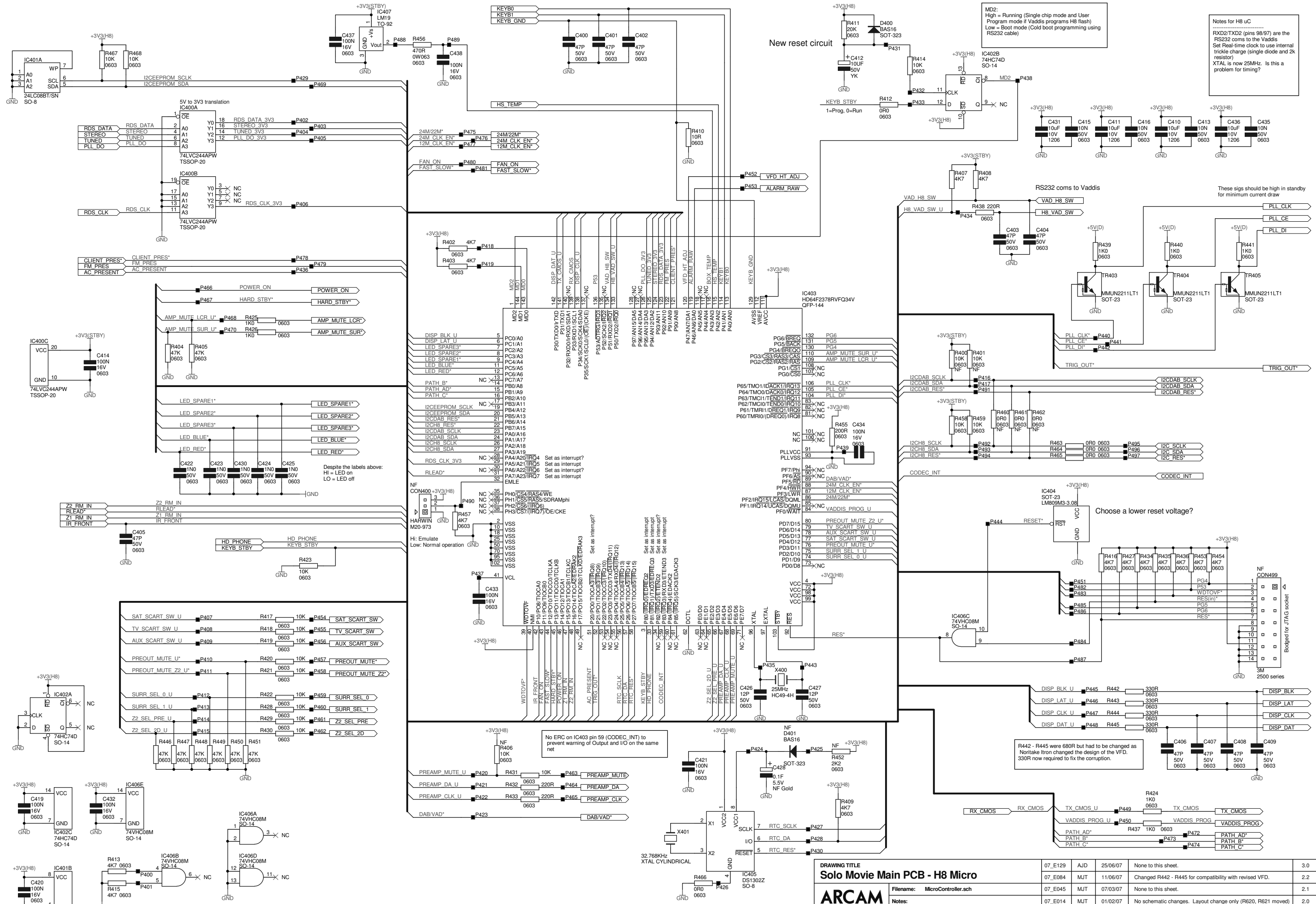
ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE
07_E129	AJD	25/06/07	None to this sheet.	3.0
07_E084	MJT	11/06/07	None to this sheet.	2.2
07_E045	MJT	07/03/07	None to this sheet.	2.1
07_E014	MJT	01/02/07	No schematic changes. Layout change only (R620, R621 moved)	2.0
06_E194	MJT	23/01/07	Full production. No changes to this sheet	1.0

<b>DRAWING TITLE</b> Solo Movie Main PCB - Structure		Filename: Main PCB.sch
<b>ARCAM</b> A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB25 9QR		Notes:
Contact Engineer: Mark Tweedale mark4@arcam.co.uk	Contact Tel: 01223 203210 (direct) 01223 203200 (reception)	Printed: 2-Aug-2007
Sheet 2 of 11	A2	DRAWING NO. L998CT



DRAWING TITLE		07_E129	AJD	25/06/07	None to this sheet.	3.0
Solo Movie Main PCB - IR Remote		07_E084	MJT	11/06/07	None to this sheet.	2.2
ARCAM		07_E045	MJT	07/03/07	None to this sheet.	2.1
A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB25 9QR		07_E014	MJT	01/02/07	No schematic changes. Layout change only (R620, R621 moved)	2.0
Filename: IR remote.sch		06_E194	MJT	23/01/07	Full production. R338, R339 added to PCB	1.0
Notes:		ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE
Contact Engineer: Mark Tweedale markt@arcam.co.uk		Contact Tel: 01223 203210 (direct) 01223 203200 (reception)		Printed: 2-Aug-2007	Sheet 3 of 11	A3 DRAWING NO. L998CT



Notes for H8 uC  
 High = Running (Single chip mode and User Program mode if Vaddis programs H8 flash)  
 Low = Boot mode (Cold boot programming using RS232 cable)

RXD2/TXD2 (pins 98/97) are the RS232 coms to the Vaddis  
 Set Real-time clock to use internal trickle charge (single diode and 2k resistor)  
 XTAL is now 25MHz. Is this a problem for timing?

RS232 coms to Vaddis  
 VAD H8 SW  
 H8 VAD SW

These sigs should be high in standby for minimum current draw

Choose a lower reset voltage?

R442 - R445 were 680R but had to be changed as Noritake Iron changed the design of the VFD. 330R now required to fix the corruption.

No ERC on IC403 pin 59 (CODEC\_INT) to prevent warning of Output and I/O on the same net

**DRAWING TITLE**  
**Solo Movie Main PCB - H8 Micro**

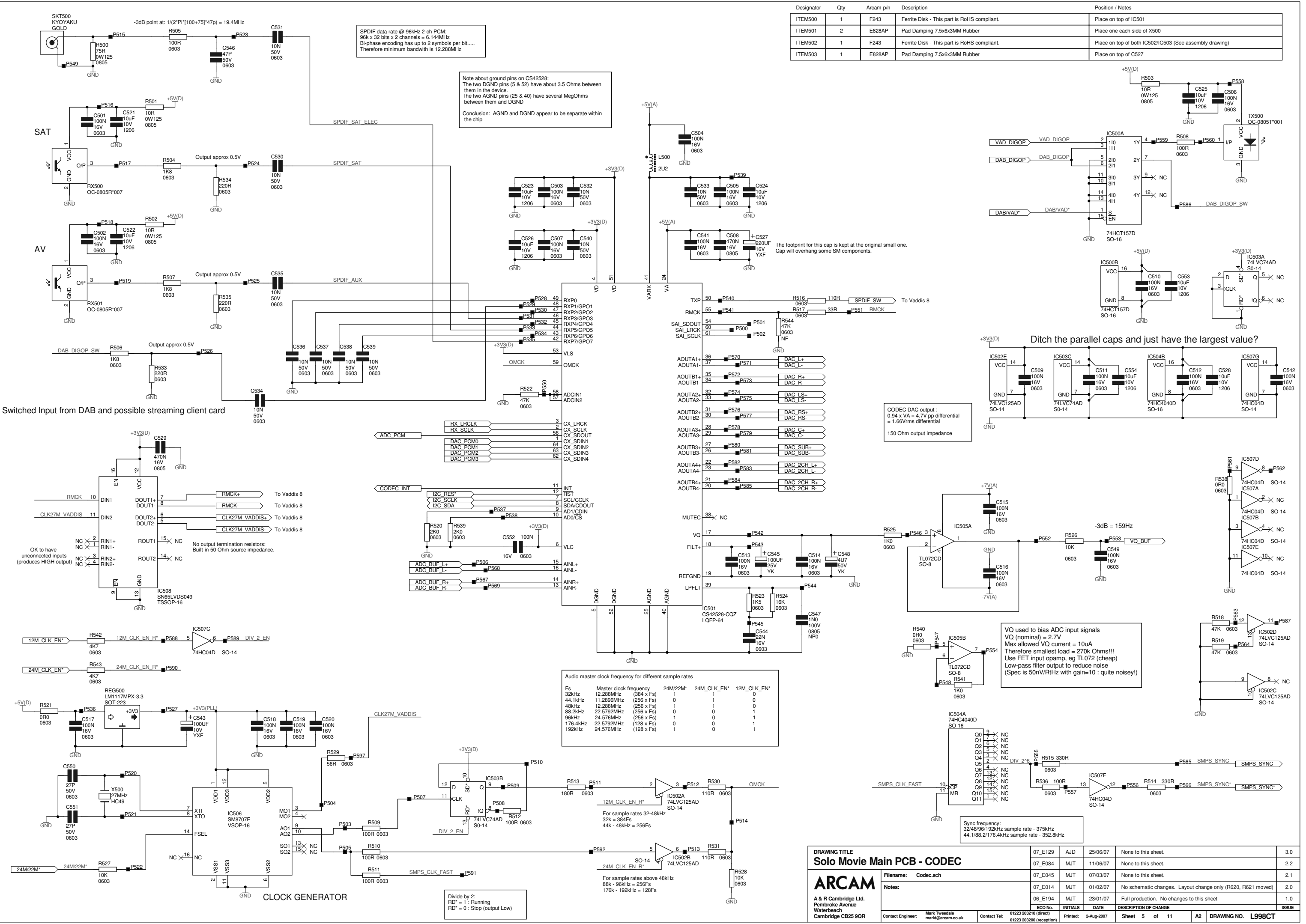
Filename: MicroController.sch

**ARCAM**  
 A & R Cambridge Ltd.  
 Pembroke Avenue  
 Waterbeach  
 Cambridge CB25 9QR

ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE
07_E129	AJD	25/06/07	None to this sheet.	3.0
07_E084	MJT	11/06/07	Changed R442 - R445 for compatibility with revised VFD.	2.2
07_E045	MJT	07/03/07	None to this sheet.	2.1
07_E014	MJT	01/02/07	No schematic changes. Layout change only (R620, R621 moved)	2.0
06_E194	MJT	23/01/07	Full production. No changes to this sheet	1.0

Printed: 2-Aug-2007 Sheet 4 of 11 A2 DRAWING NO. L998CT

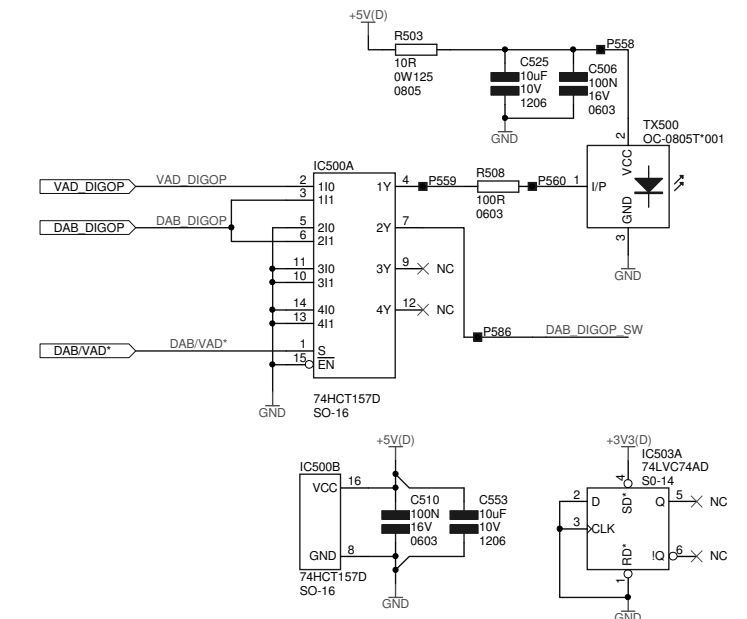
ITEM401	1	F242	Ferrite Plate - This part is RoHS compliant.	Place on top of IC403
ITEM400	1	NF	8K004 Con Jumper Socket 0.1IN Gold Blue	Place on CON400 between pins 1 & 2 (for normal (Non-emulation) operation)



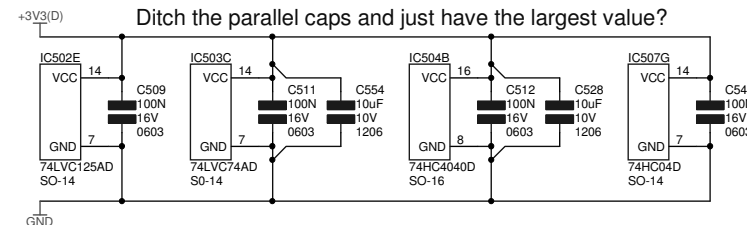
SPDIF data rate @ 96kHz 2-ch PCM:  
 $96k \times 32 \text{ bits} \times 2 \text{ channels} = 6.144\text{MHz}$   
 Bi-phase encoding has up to 2 symbols per bit.....  
 Therefore minimum bandwidth is 12.288MHz

Note about ground pins on CS42528:  
 The two DGND pins (5 & 52) have about 3.5 Ohms between them in the device.  
 The two AGND pins (25 & 40) have several MegOhms between them and DGND.  
 Conclusion: AGND and DGND appear to be separate within the chip

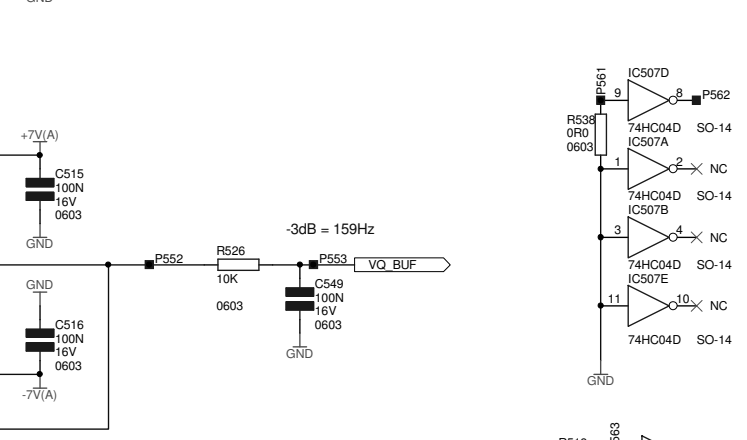
Designator	Qty	Arcam p/n	Description	Position / Notes
ITEM500	1	F243	Ferrite Disk - This part is RoHS compliant.	Place on top of IC501
ITEM501	2	E828AP	Pad Damping 7.5x6x3MM Rubber	Place one each side of X500
ITEM502	1	F243	Ferrite Disk - This part is RoHS compliant.	Place on top of both IC502/IC503 (See assembly drawing)
ITEM503	1	E828AP	Pad Damping 7.5x6x3MM Rubber	Place on top of CS27



The footprint for this cap is kept at the original small one. Cap will overhang some SM components.



CODEC DAC output :  
 $0.94 \times V_A = 4.7V$  pp differential  
 $= 1.66V_{rms}$  differential  
 150 Ohm output impedance



VQ used to bias ADC input signals  
 $V_Q$  (nominal) = 2.7V  
 Max allowed VQ current = 10uA  
 Therefore smallest load = 270k Ohms!!!  
 Use FET input opamp, eg TL072 (cheap)  
 Low-pass filter output to reduce noise  
 (Spec is 50nV/RTHz with gain=10 : quite noisy!)

Fs	Master clock frequency	24M/22M*	24M_CLK_EN*	12M_CLK_EN*
32kHz	12.288MHz (384 x Fs)	1	1	0
44.1kHz	11.2896MHz (256 x Fs)	0	1	0
48kHz	12.288MHz (256 x Fs)	1	1	0
88.2kHz	22.5792MHz (256 x Fs)	0	0	1
96kHz	24.576MHz (256 x Fs)	1	1	0
176.4kHz	22.5792MHz (128 x Fs)	0	0	1
192kHz	24.576MHz (128 x Fs)	1	0	1

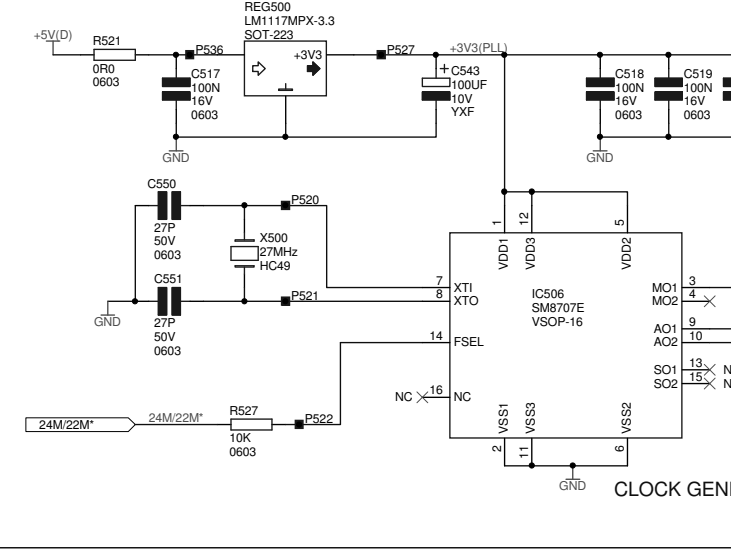
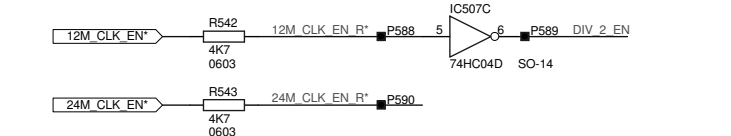
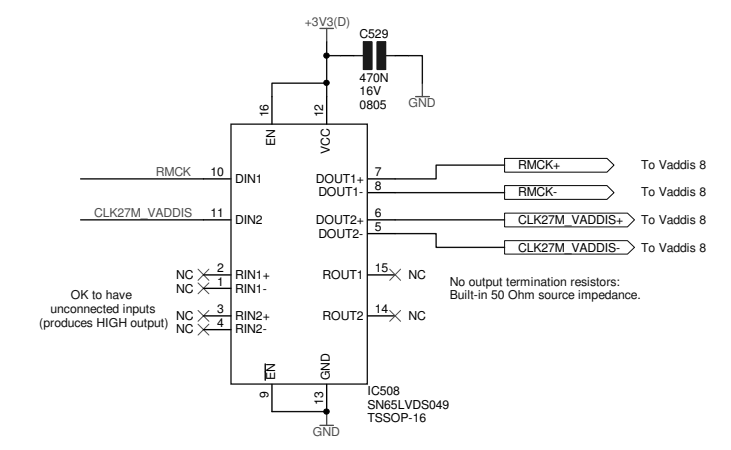
**DRAWING TITLE**  
**Solo Movie Main PCB - CODEC**

**ARCAM**  
 A & R Cambridge Ltd.  
 Pembroke Avenue  
 Waterbeach  
 Cambridge CB25 9QR

File name: Codec.sch  
 Notes:  
 Contact Engineer: Mark Tweedale mark4@arcam.co.uk  
 Contact Tel: 01223 203210 (direct) 01223 203200 (reception)  
 Printed: 2-Aug-2007  
 Sheet 5 of 11  
 A2 DRAWING NO. L998CT

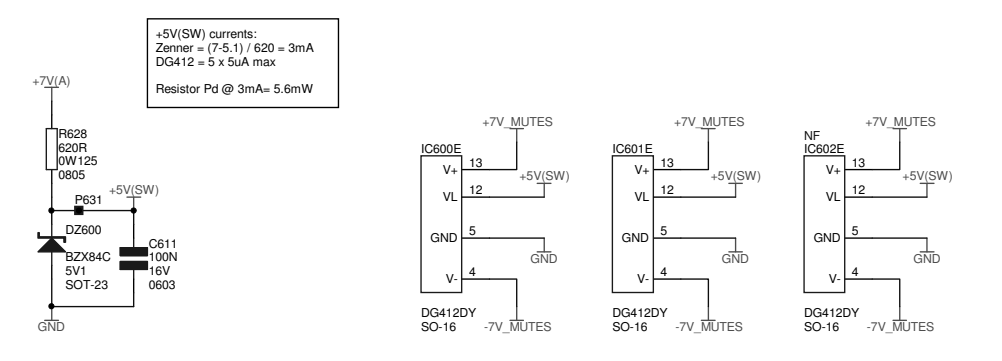
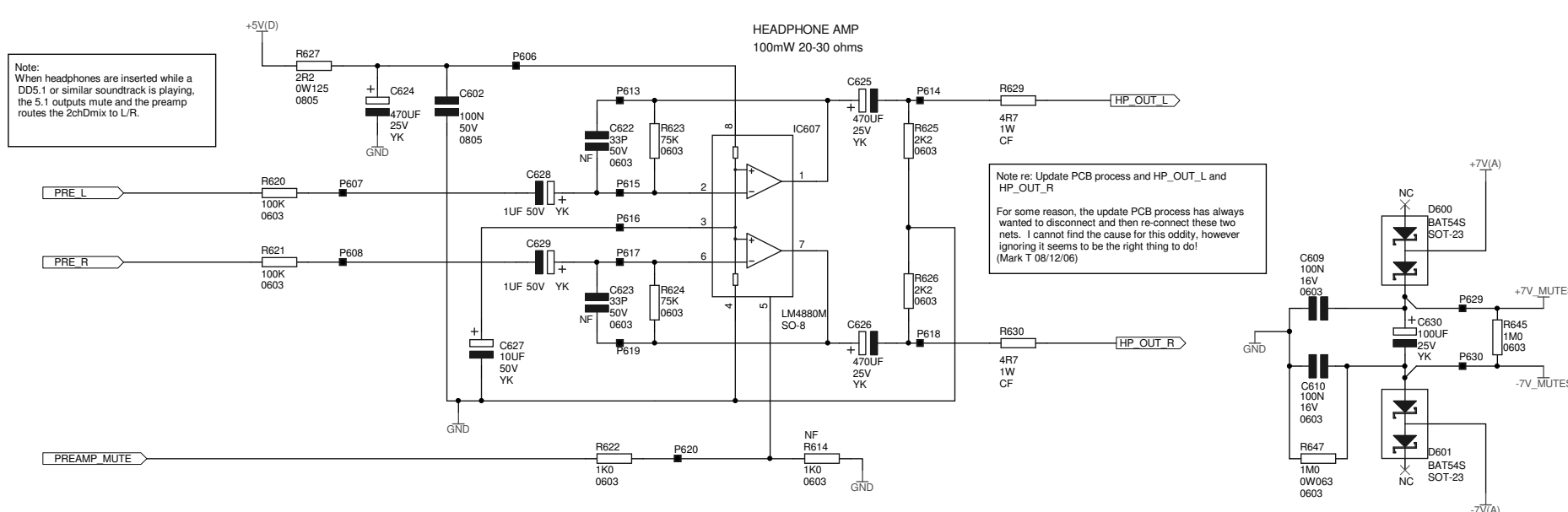
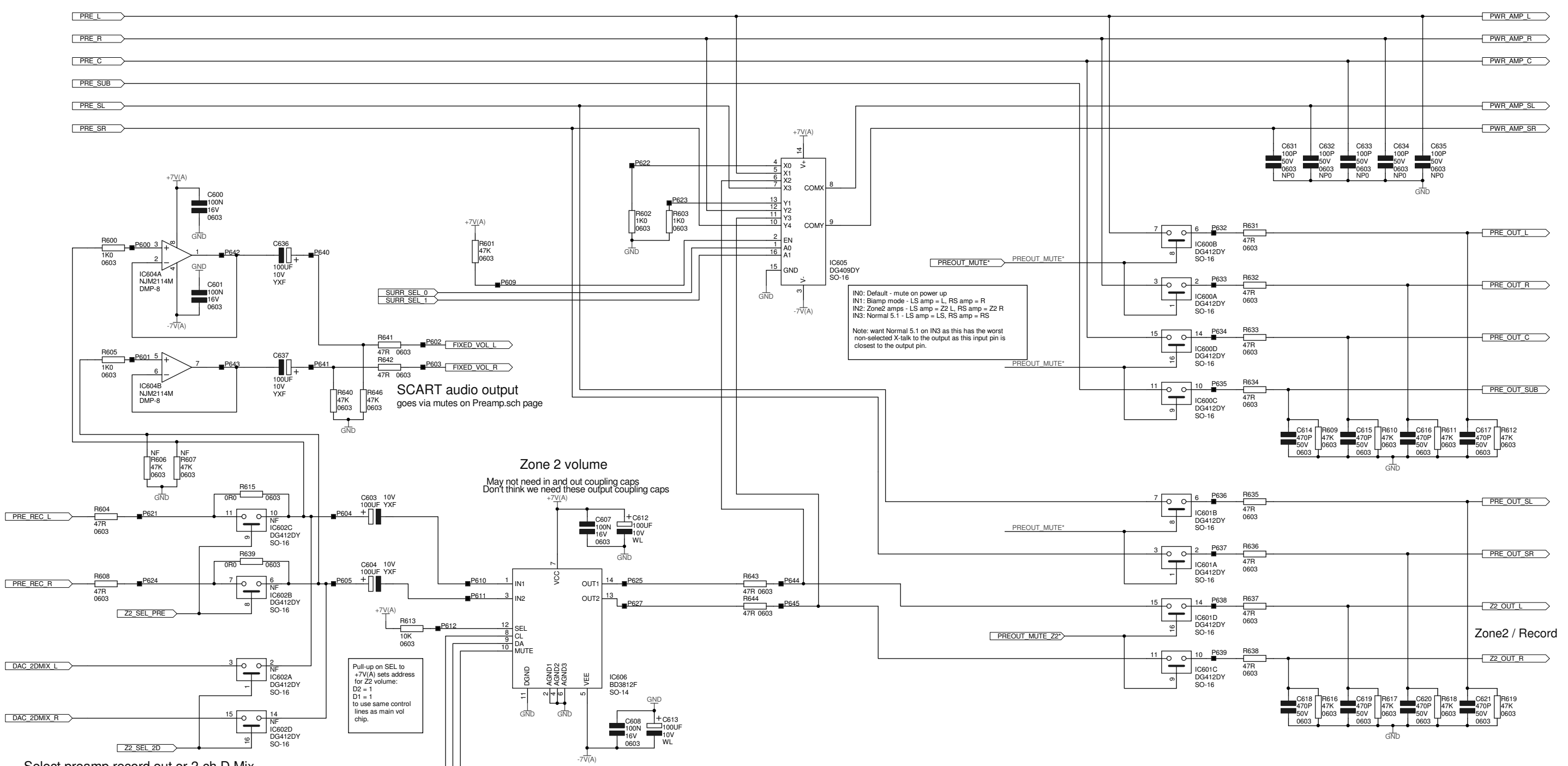
Rev	Initials	Date	Description of Change	Issue
07_E129	AJD	25/06/07	None to this sheet.	3.0
07_E084	MJT	11/06/07	None to this sheet.	2.2
07_E045	MJT	07/03/07	None to this sheet.	2.1
07_E014	MJT	01/02/07	No schematic changes. Layout change only (R620, R621 moved)	2.0
06_E194	MJT	23/01/07	Full production. No changes to this sheet	1.0

**Switched Input from DAB and possible streaming client card**



**CLOCK GENERATOR**

Divide by 2:  
 RD\* = 1 : Running  
 RD\* = 0 : Stop (output Low)



ITEM	QTY	PART No.	DESCRIPTION	NOTES
ITEM600	1	F275	4.1mm I/D, 7.3mm O/D O-Ring	Place over C630, halfway down.
<b>DRAWING TITLE</b>				
<b>Solo Movie Main PCB - Audio Switch &amp; Mute</b>				
Filename: Audio switch and mute.sch				
<b>Notes:</b>				
07_E129	AJD	25/06/07	None to this sheet.	3.0
07_E084	MJT	11/06/07	None to this sheet.	2.2
07_E045	MJT	07/03/07	None to this sheet.	2.1
07_E014	MJT	01/02/07	No schematic changes. Layout change only (R620, R621 moved)	2.0
06_E194	MJT	23/01/07	Full production. R647 added to PCB	1.0
ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE

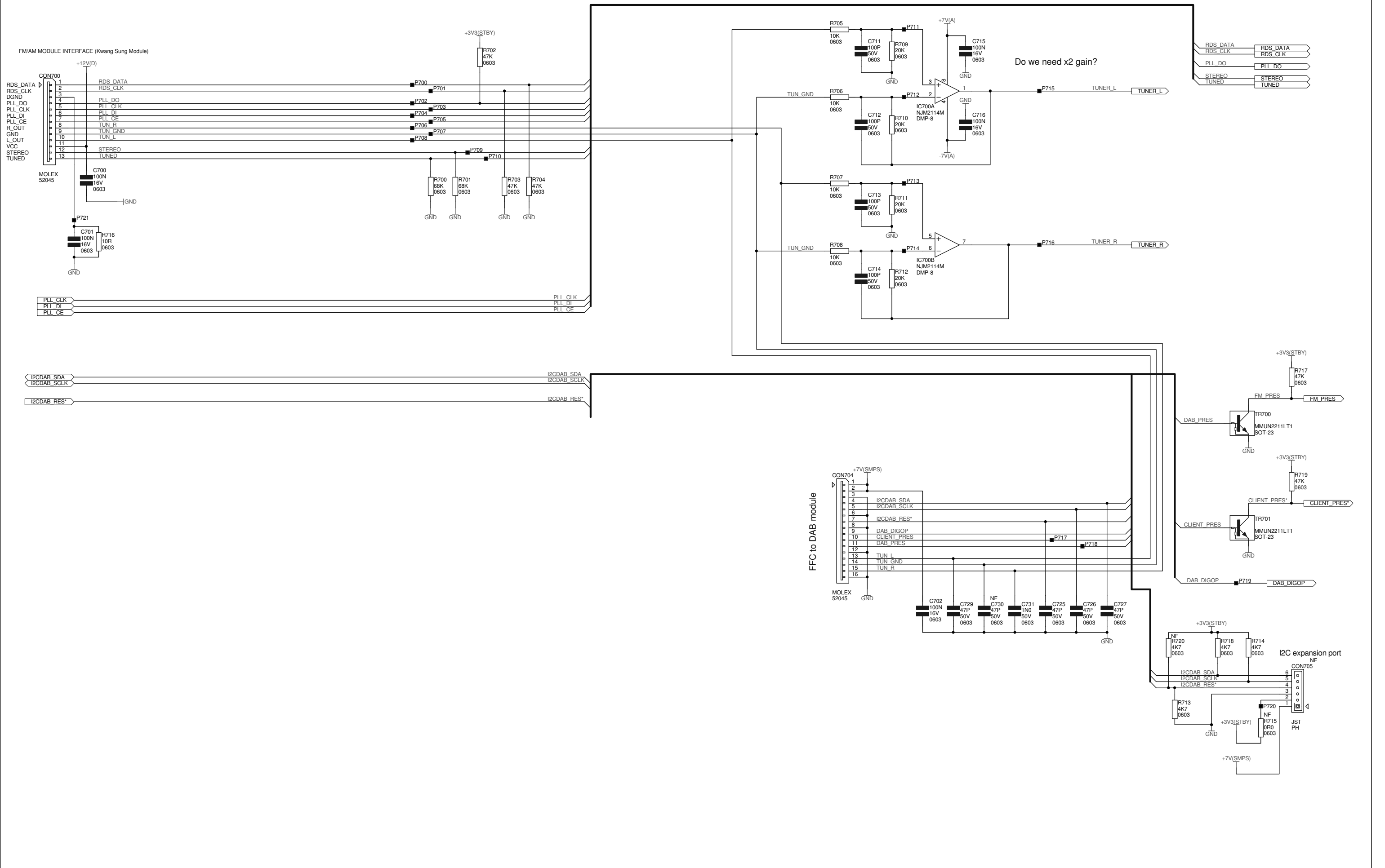
**ARCAM**  
A & R Cambridge Ltd.  
Pembroke Avenue  
Waterbeach  
Cambridge CB25 9QR

Mark Tweeddale  
mark4@arcam.co.uk

Contact Tel: 01223 203210 (direct)  
01223 203200 (reception)

Printed: 2-Aug-2007  
Sheet 6 of 11  
A2 DRAWING NO. L998CT

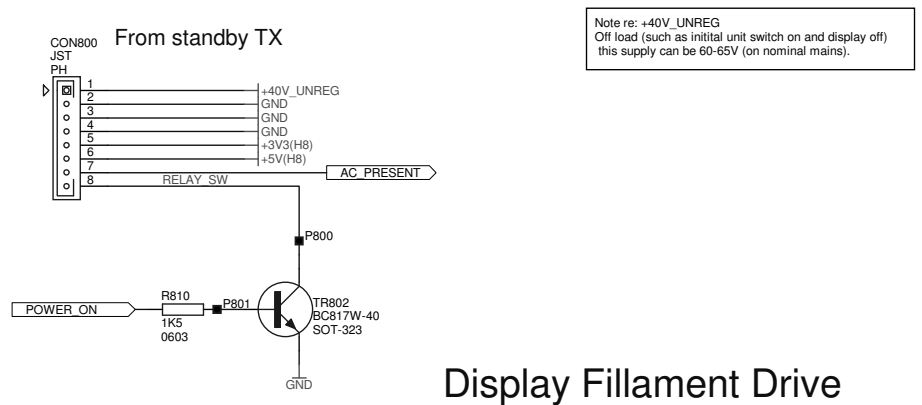




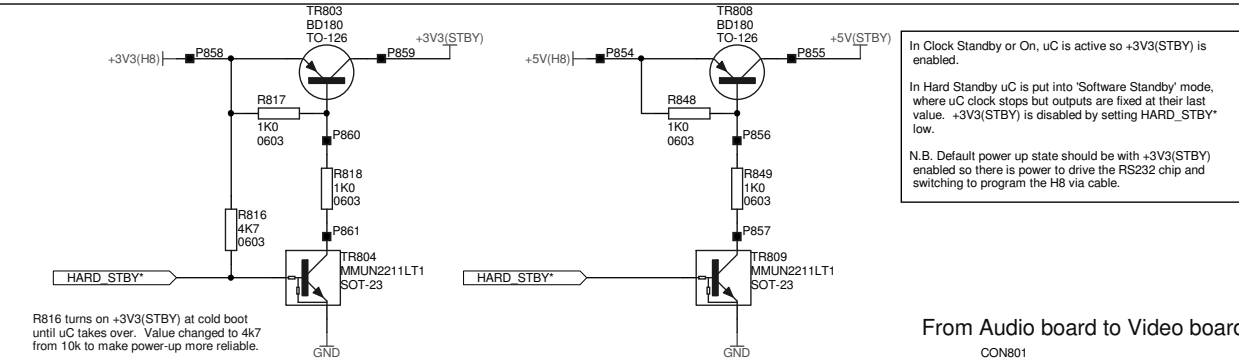
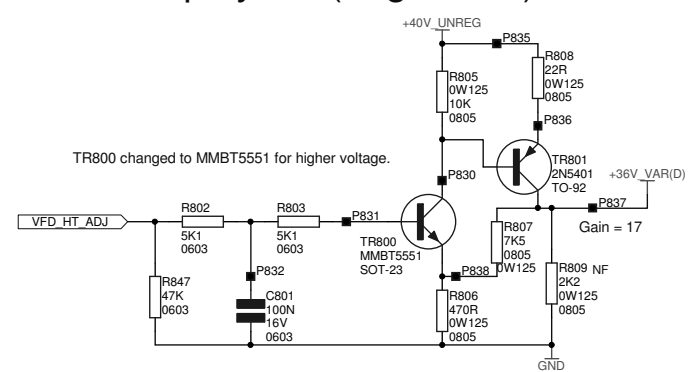
ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE
07_E129	AJD	25/06/07	None to this sheet.	3.0
07_E084	MJT	11/06/07	None to this sheet.	2.2
07_E045	MJT	07/03/07	None to this sheet.	2.1
07_E014	MJT	01/02/07	No schematic changes. Layout change only (R620, R621 moved)	2.0
06_E194	MJT	23/01/07	Full production. No changes to this sheet	1.0

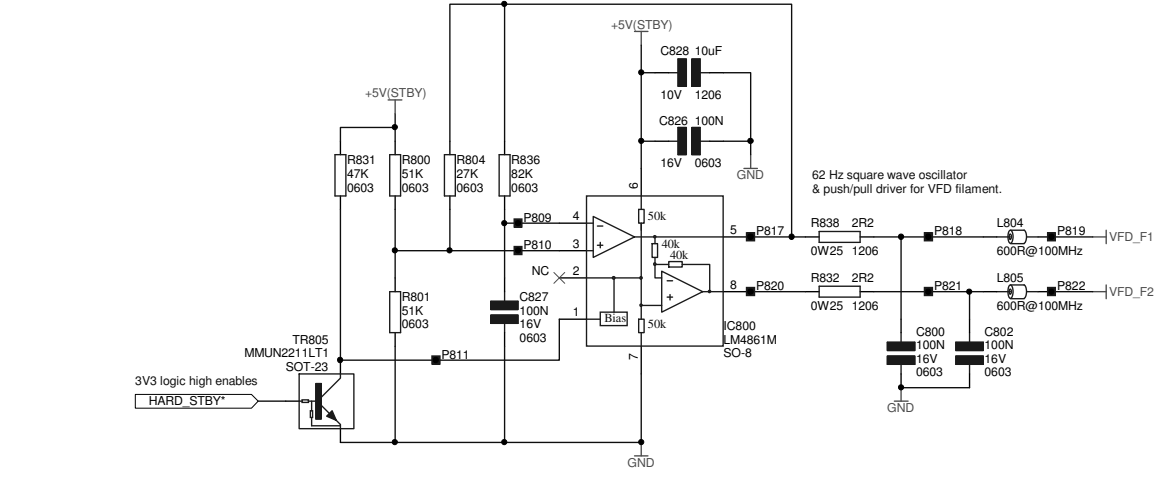
<b>DRAWING TITLE</b> <b>Solo Movie Main PCB - Tuner Interface</b>		<b>Filename:</b> Tuner interface.sch	
<b>Notes:</b>		<b>Notes:</b>	
<b>ARCAM</b> A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB25 9QR		Contact Engineer: Mark Tweedale mark4@arcam.co.uk	Contact Tel: 01223 203210 (direct) 01223 203200 (reception)
ESO No.	INITIALS	DATE	DESCRIPTION OF CHANGE
01223 203210 (direct)	mark4@arcam.co.uk	2-Aug-2007	Full production. No changes to this sheet



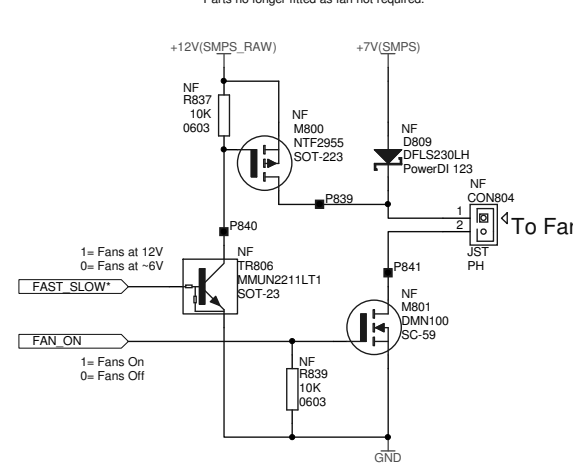
## Display HT (brightness) Control



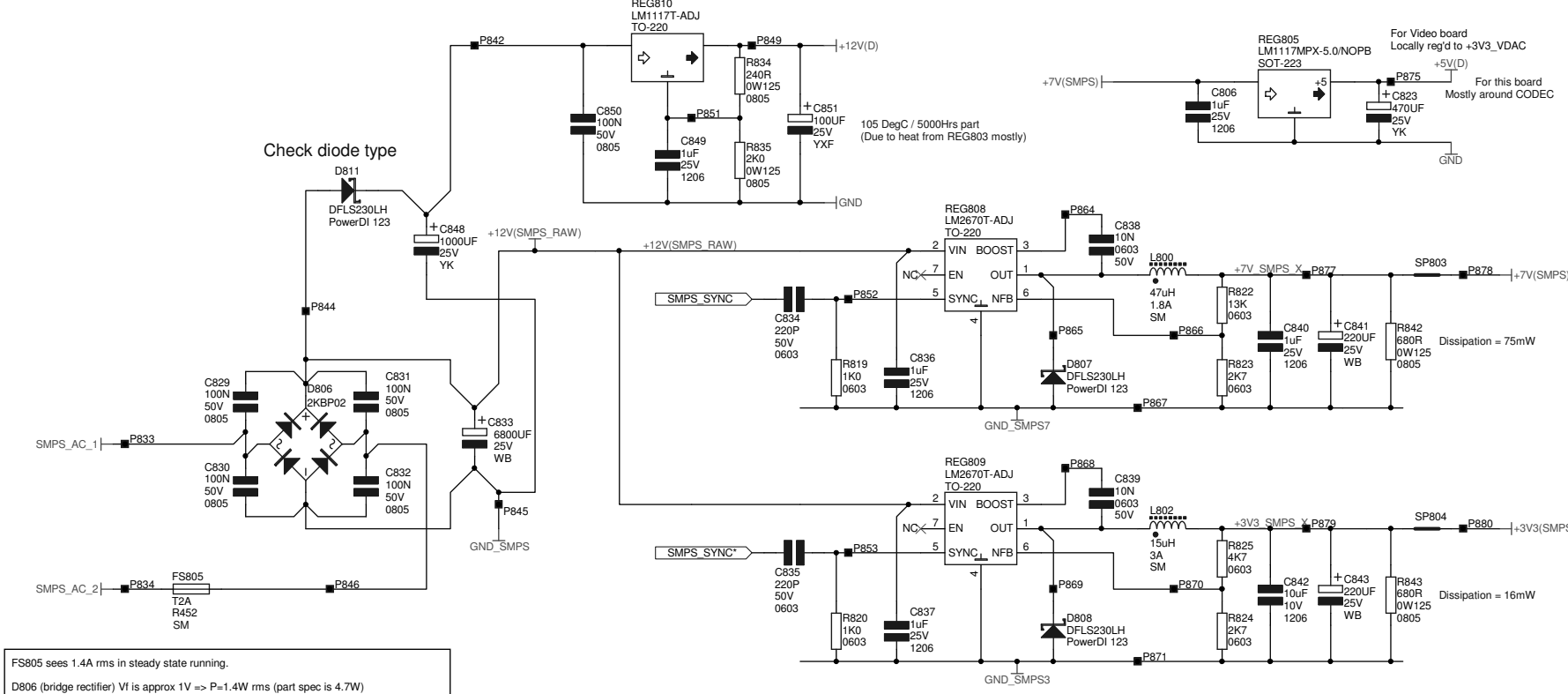
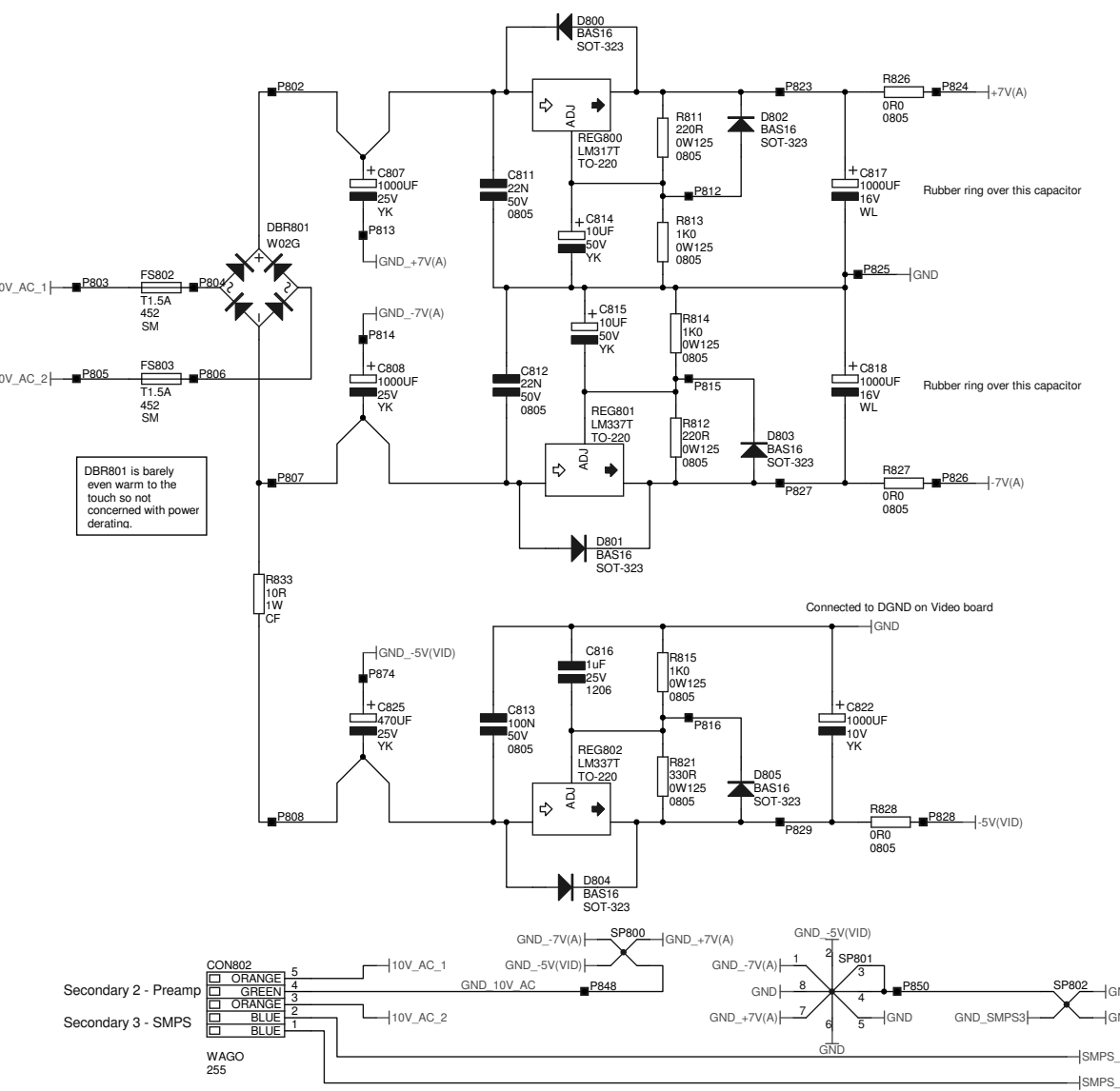
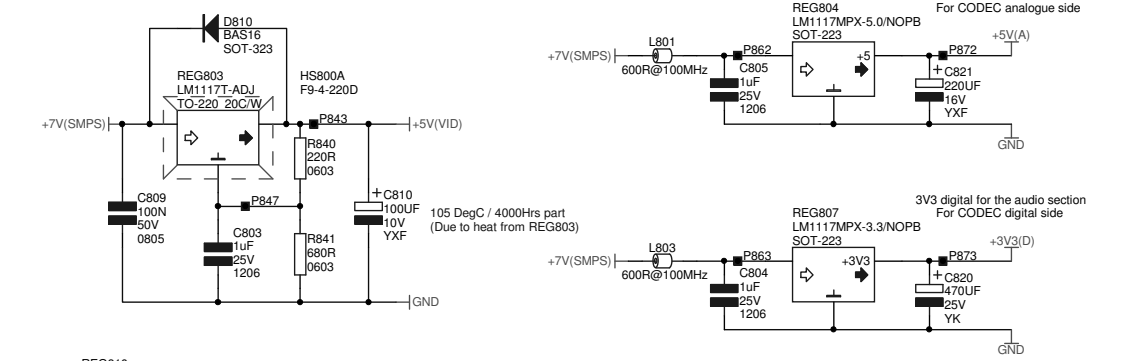
## Display Fillament Drive



## Fan Control



## Discharge Diode if > 1000uF?



ITEM	QTY	PART No.	DESCRIPTION	NOTES
ITEM800	1	F252	8.1mm I/D, 11.3mm O/D O-Ring	Place over C817, halfway down.
ITEM801	1	F252	8.1mm I/D, 11.3mm O/D O-Ring	Place over C818, halfway down.
ITEM802	1	U002	Component Adhesive - Dow Corning 744 Adhesive Sealant White - RoHS OK	Use "as required quantity" under C833 to stick capacitor to PCB.

**DRAWING TITLE**  
**Solo Movie Main PCB - PSU**

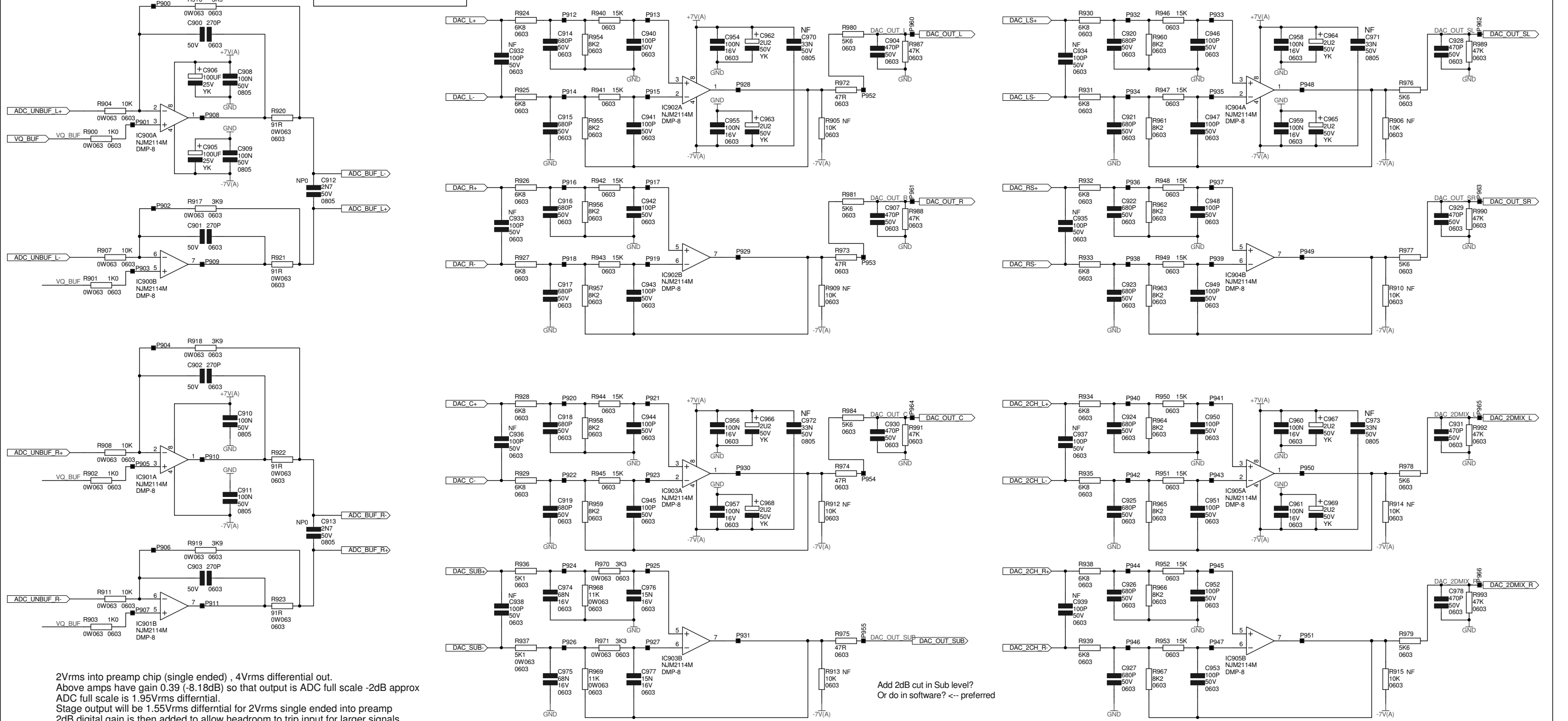
**ARCAM**  
A & R Cambridge Ltd.  
Pembroke Avenue  
Waterbeach  
Cambridge CB25 9QR

File Name: PSU.sch  
Notes:  
Mark Tweeddale  
mark@arcam.co.uk

ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE
07_E129	AJD	25/06/07	None to this sheet.	3.0
07_E084	MJT	11/06/07	None to this sheet.	2.2
07_E045	MJT	07/03/07	Changed C810, C851 to longer life parts due to heat.	2.1
07_E014	MJT	01/02/07	No schematic changes. Layout change only (R620, R621 moved)	2.0
06_E194	MJT	23/01/07	Full production. Added adhesive under C833. Changed R816.	1.0

Printed: 2-Aug-2007  
Sheet 8 of 11  
A2 DRAWING NO. L998CT

Note about ADC buffer feedback resistor:  
 47pF produces about 3dB peaking at 200kHz ish  
 220pF is 0.05dB peaking  
 270pF is peak free



2Vrms into preamp chip (single ended) , 4Vrms differential out.  
 Above amps have gain 0.39 (-8.18dB) so that output is ADC full scale -2dB approx  
 ADC full scale is 1.95Vrms differential.  
 Stage output will be 1.55Vrms differential for 2Vrms single ended into preamp  
 2dB digital gain is then added to allow headroom to trip input for larger signals

A 2.5Vrms single ended input to the preamp will produce full scale to the ADC inputs (differential)  
 Check this is actually compatible with Dolby Spec (Don't think it is!)  
 (Reason for doing this is that Arcam CD player output is 2.3Vrms at full scale)

Predicted theoretical ADC total input noise is approx 110dB SNR [see notebook 14/06/05]

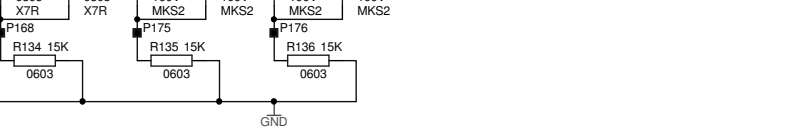
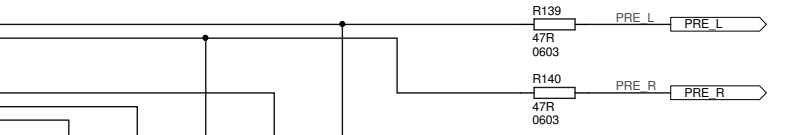
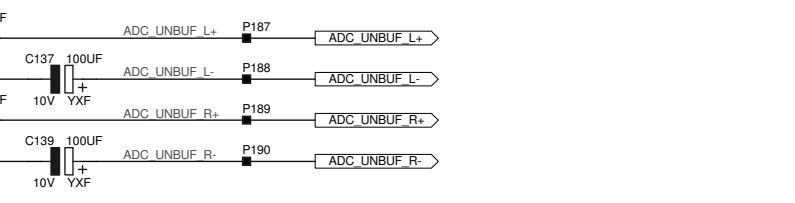
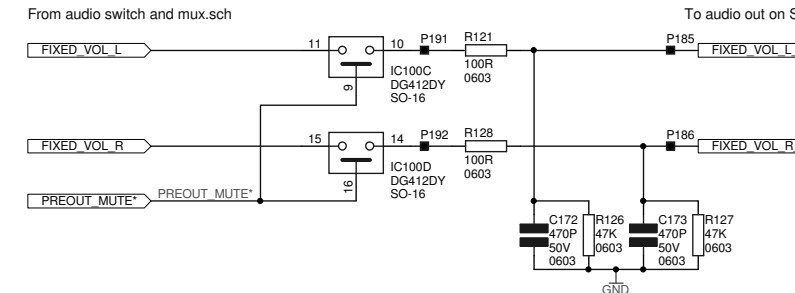
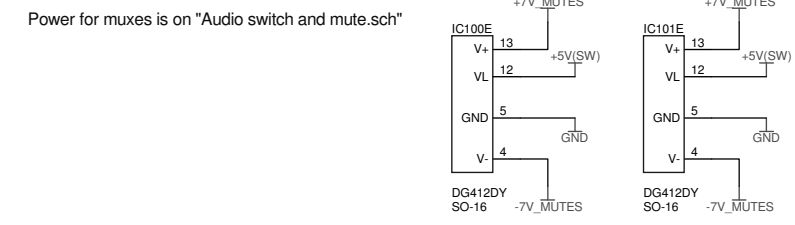
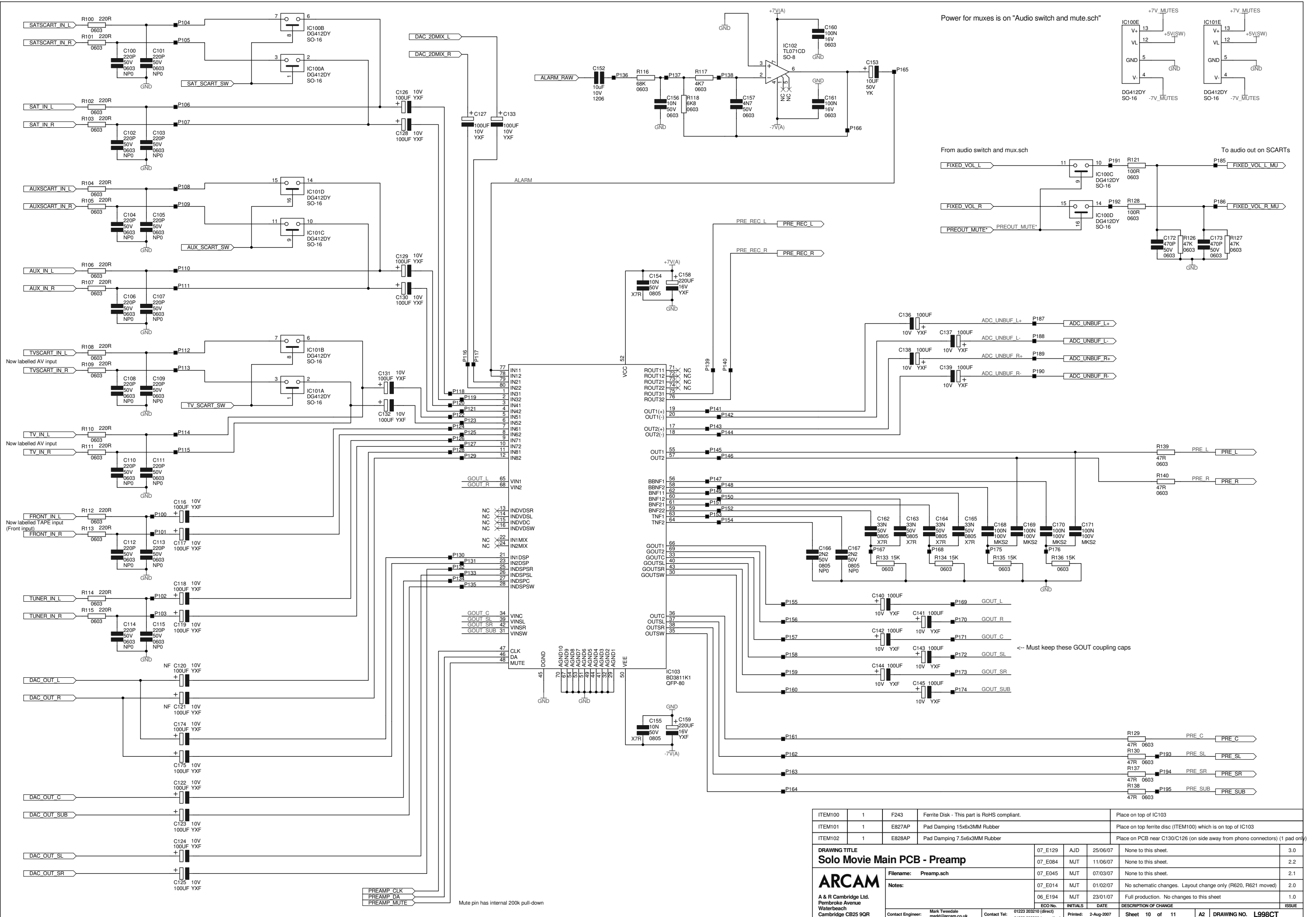
Circuit loosely based on CODEC datasheet and Cirrus Logic app note on ADC buffers.  
 Feedback capacitor value changed to 270pF after simulations of 47pF showed peaking in Group Delay

SUB caps are 0603 X7R dielectric

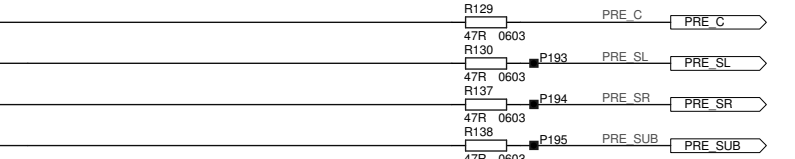
New main filter design spec: 3rd order Bessel, -3dB @ 40kHz, dc gain = x1.205 (+1.62dB) [to give 2Vrms out of active 2-pole stage at 0dB FS]  
 Passive 3rd pole into 23.5k load [47k in parallel with 47k] to produce overall 2dB level cut.  
 3rd order filter was required due to the large quantity of near-out-of-band noise above 25kHz. [1st noise lobe 25-383kHz, peak level at 99kHz, 344uVrms noise. Noise floor at 25kHz approx 1.5uVrms]  
 See Mark's log book notes on 10/03/06 for sketch of out of band noise as measured on fast spectrum analyser (not AP).

SUB filter design spec: 2nd order Bessel, -3dB @ 600Hz, dc gain = x2.14 (+6.62dB or 3.55Vrms) so that sub is 7dB (was 5dB) above main level (supplies not sufficient for +10dB)  
 Simulated results (using preferred values) including 150 ohm DAC source impedance & cap: dc gain = x2.10 (+6.42dB or 3.49Vrms), -3dB @ 690Hz, -0.11dB @ 150Hz

DRAWING TITLE		07_E129	AJD	25/06/07	None to this sheet.	3.0
Solo Movie Main PCB - Filters		07_E084	MJT	11/06/07	None to this sheet.	2.2
Filename: Filters.sch		07_E045	MJT	07/03/07	None to this sheet.	2.1
Notes:		07_E014	MJT	01/02/07	No schematic changes. Layout change only (R620, R621 moved)	2.0
A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB25 9QR		06_E194	MJT	23/01/07	Full production. No changes to this sheet	1.0
Contact Engineer: Mark Tweedale mark4@arcam.co.uk		ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE
Contact Tel: 01223 203210 (direct) 01223 203200 (reception)		Printed:	2-Aug-2007	Sheet 9 of 11	A2	DRAWING NO. L998CT



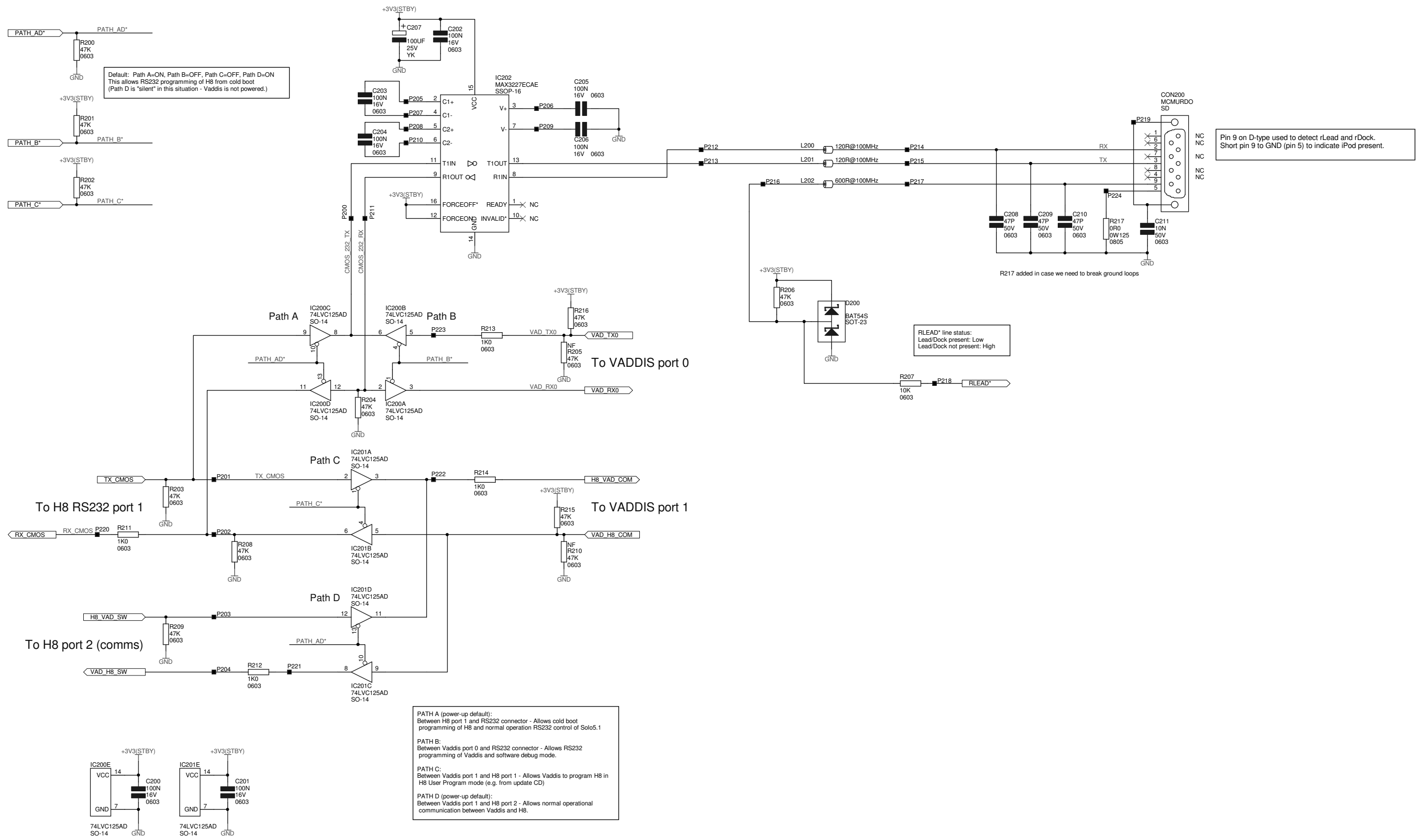
<- Must keep these GOUT coupling caps



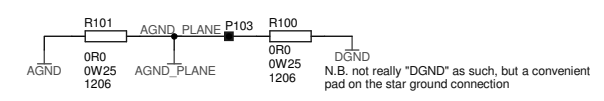
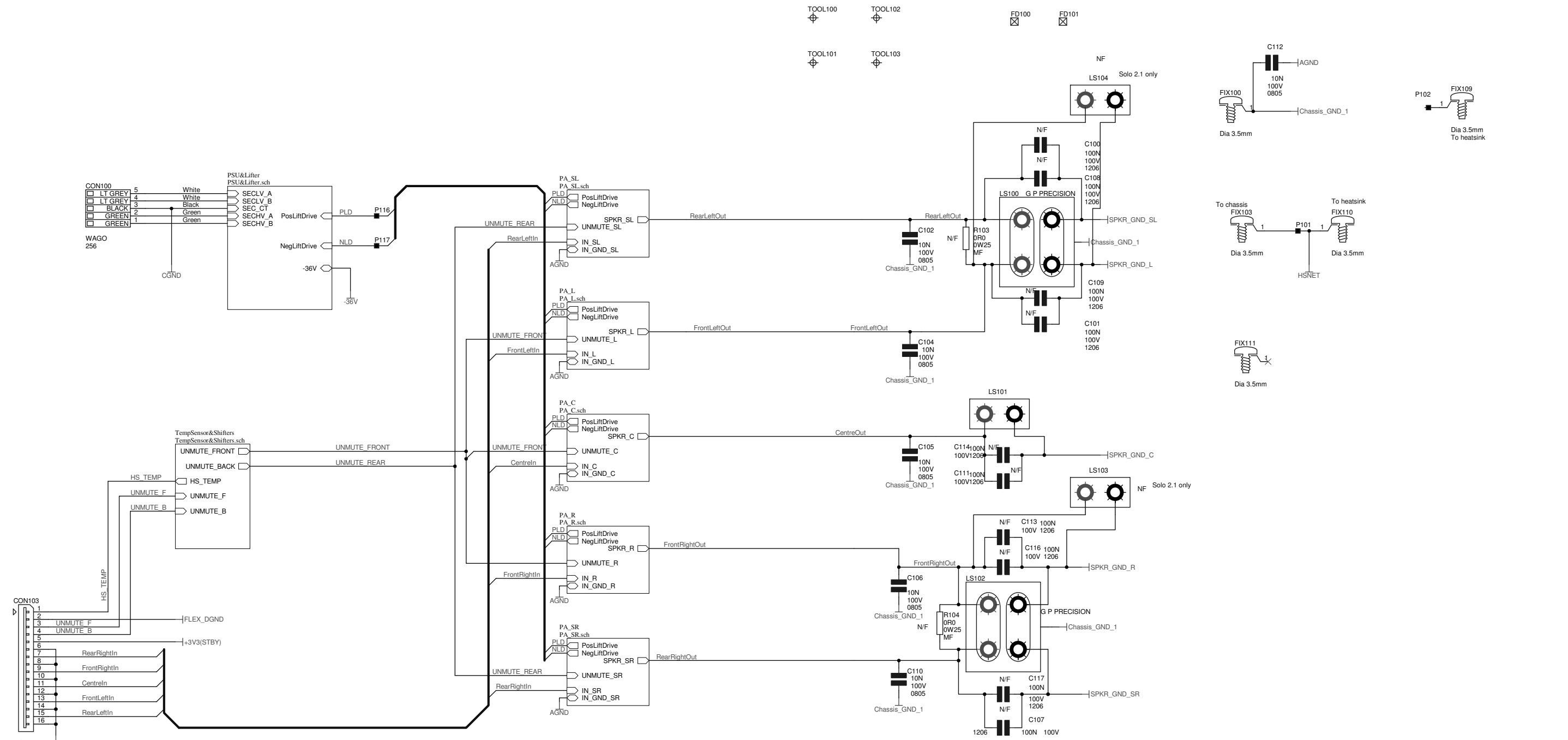
07_E129	AJD	25/06/07	None to this sheet.	3.0
07_E084	MJT	11/06/07	None to this sheet.	2.2
07_E045	MJT	07/03/07	None to this sheet.	2.1
07_E014	MJT	01/02/07	No schematic changes. Layout change only (R620, R621 moved)	2.0
06_E194	MJT	23/01/07	Full production. No changes to this sheet	1.0

**ARCAM**  
 A & R Cambridge Ltd.  
 Pembroke Avenue  
 Waterbeach  
 Cambridge CB25 9QR

Filename: Preamp.sch  
 Notes:  
 Contact Engineer: Mark Tweedale mark4@arcam.co.uk  
 Contact Tel: 01223 203210 (direct) 01223 203200 (reception)  
 Printed: 2-Aug-2007  
 Sheet 10 of 11  
 A2 DRAWING NO. L998CT



DRAWING TITLE		07_E129	AJD	25/06/07	None to this sheet.	3.0
Solo Movie Main PCB - RS232		07_E084	MJT	11/06/07	None to this sheet.	2.2
Filename: RS232.sch		07_E045	MJT	07/03/07	None to this sheet.	2.1
Notes:		07_E014	MJT	01/02/07	No schematic changes. Layout change only (R620, R621 moved)	2.0
A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB25 9QR		06_E194	MJT	23/01/07	Full production. R217 added to PCB	1.0
ESD No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE		
Contact Engineer: Mark Tweedale mark4@arcam.co.uk	Contact Tel: 01223 230219 (direct) 01223 203200 (reception)	Printed: 2-Aug-2007	Sheet 11 of 11	A2	DRAWING NO. L998CT	



Manual BOM edit to 0.01  
 Manual BOM edit to 0.01  
 Manual BOM edit to 0.01  
 Manual BOM edit to 0.01  
 Manual BOM edit to 0.01

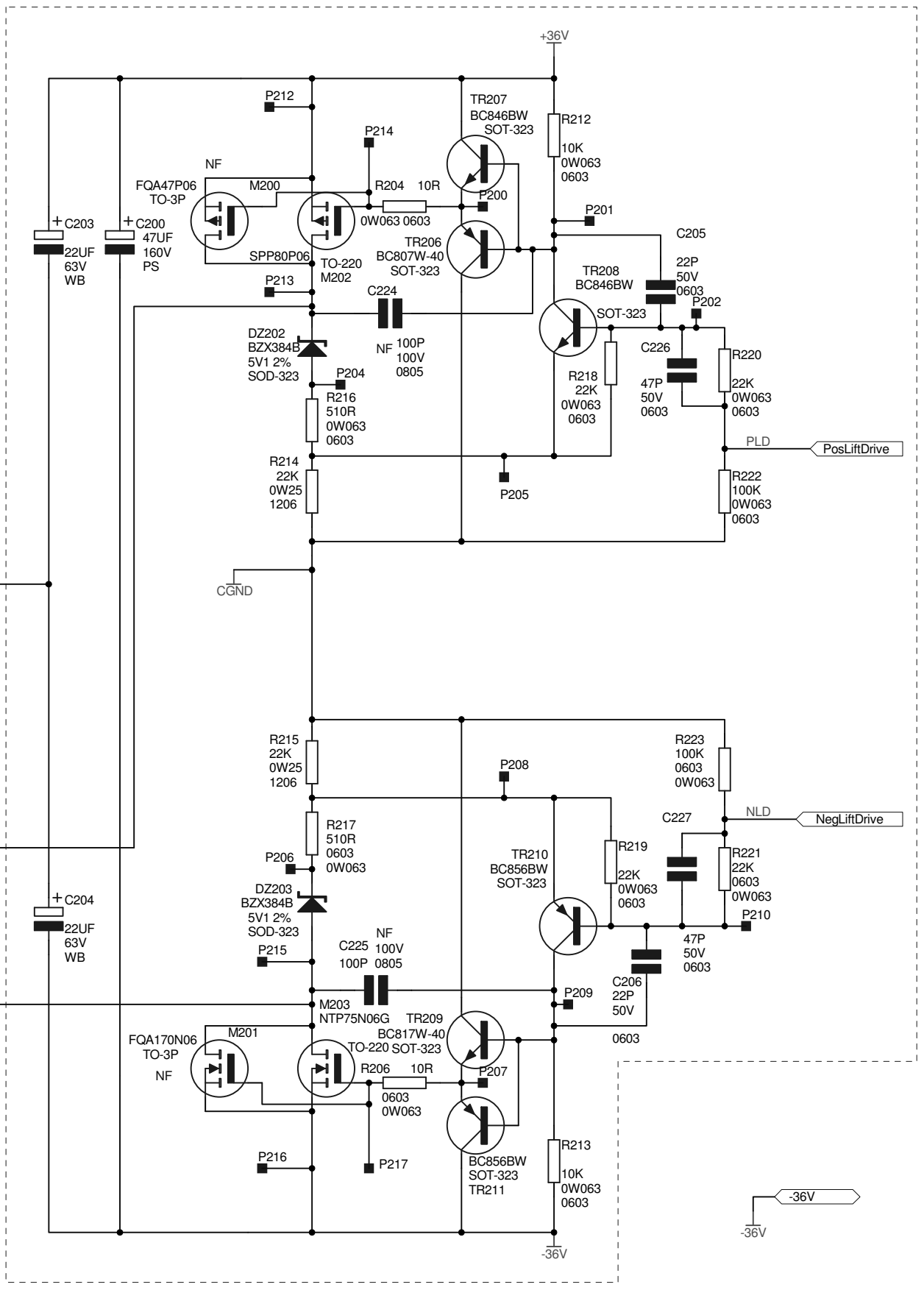
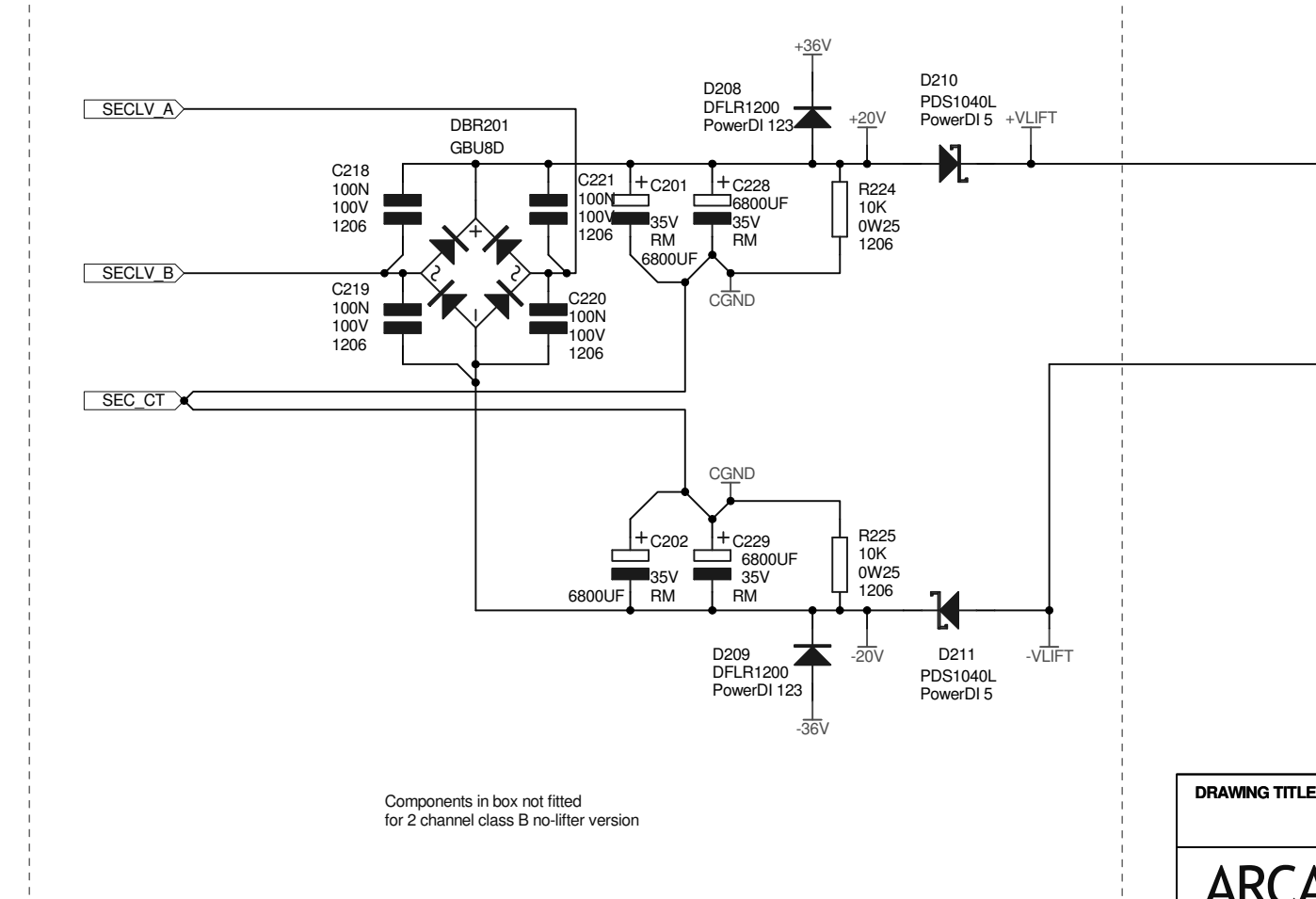
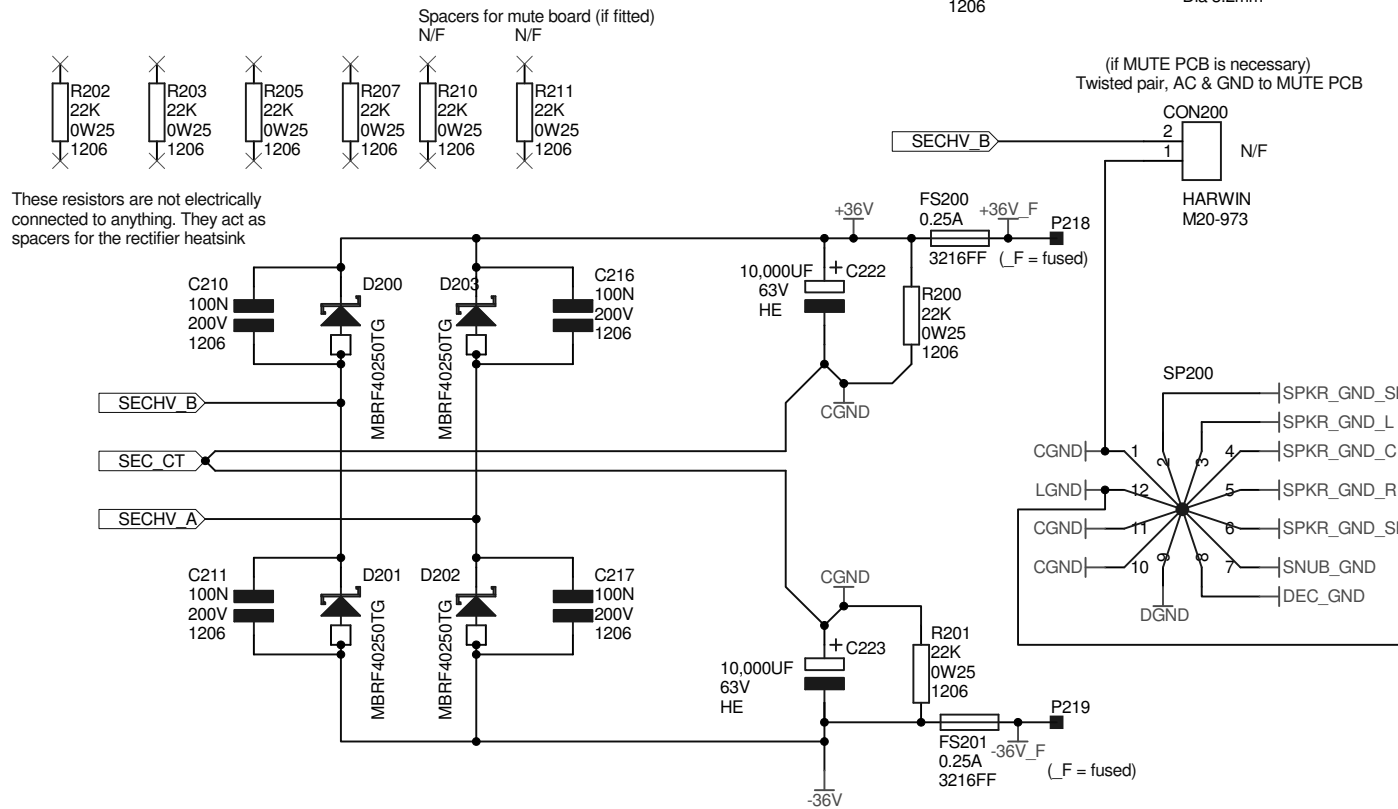
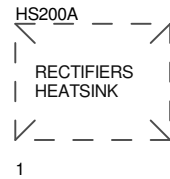
ITEM	U006	1	Threadlock Low Strength - RoHS OK	Apply to 7-off ITEM105 to lock screw thread into heatsink clip.
ITEM118	U004	1	Thermally Conductive Adhesive - For SMT heatsinks - RoHS OK	To bond heatsinks (ITEM113-1, ITEM113-2) to top of D210 & D212.
ITEM114	F294	5	6.1mm I/D, 9.3mm O/D O-Ring	Fit half way down C400, C500, C600, C700, C800.
ITEM115	F291	2	26.4mm I/D, 32.5mm O/D O-Ring	Fit half way down 222, C223.
ITEM116	E828AP	7	Pad Damping 7.5x6x3MM Rubber	Side of L402, L502, L602, L702, L802. Top of C201/202 and C228/C229. See assembly drawing for placement information.
ITEM113	F300	2	IC HSK SMD 6x8MM 71C/W	Fit on top of D210, D211 using ITEM118
ITEM107	U003	1	COMPONENT LEAD SLEVE	
ITEM102	U002	1	COMPONENT ADHESIVE	
ITEM100	L103PB	1	Blank PCB Solo 5.1 Power Amps	2oz copper, all layers
ITEM101	HJ3A00F	3	M3 HEX NUT NYLOC	
ITEM103	HF4V09B	3	SCREW TORX NO.4 X 9MM + WASHER BLK	
ITEM104	F271	7	HEATSINK CLIP UNIVERSAL TRANSISTOR RETAINING SPRING	Fischer Elektronik / THFMG1 (M4 Thread)
ITEM105	HA4V12S	7	SCREW M4X12MM STAINLESS STEEL	RS / 528-823
ITEM106	E920HK	1	HEATSINK SOLO 5.1	
ITEM108	HA3V12A	3	M SCREW TORX M3X12MM ST ZP	
ITEM109	E051MC	1	Insulator Long Solo 5.1 amp	BERGQUIST/ HIGH FLOW 300P 1mil ADHESIVE
ITEM110	E050MC	1	Insulator Short Solo 5.1 amp	BERGQUIST/ HIGH FLOW 300P 1mil ADHESIVE
ITEM111	E052MC	2	HEAT SHUNT SOLO 5.1	
ITEM112	U012	1	HEAT TRANSFER COMPOUND	RS 301 - 2826

**DRAWING TITLE**  
**Power Amps Top Level**

**ARCAM**  
 A & R Cambridge Ltd.  
 Pembroke Avenue  
 Waterbeach  
 Cambridge CB5 9QR

**Filename:** L103CT\_6.0 Top Level.sch  
**Notes:**

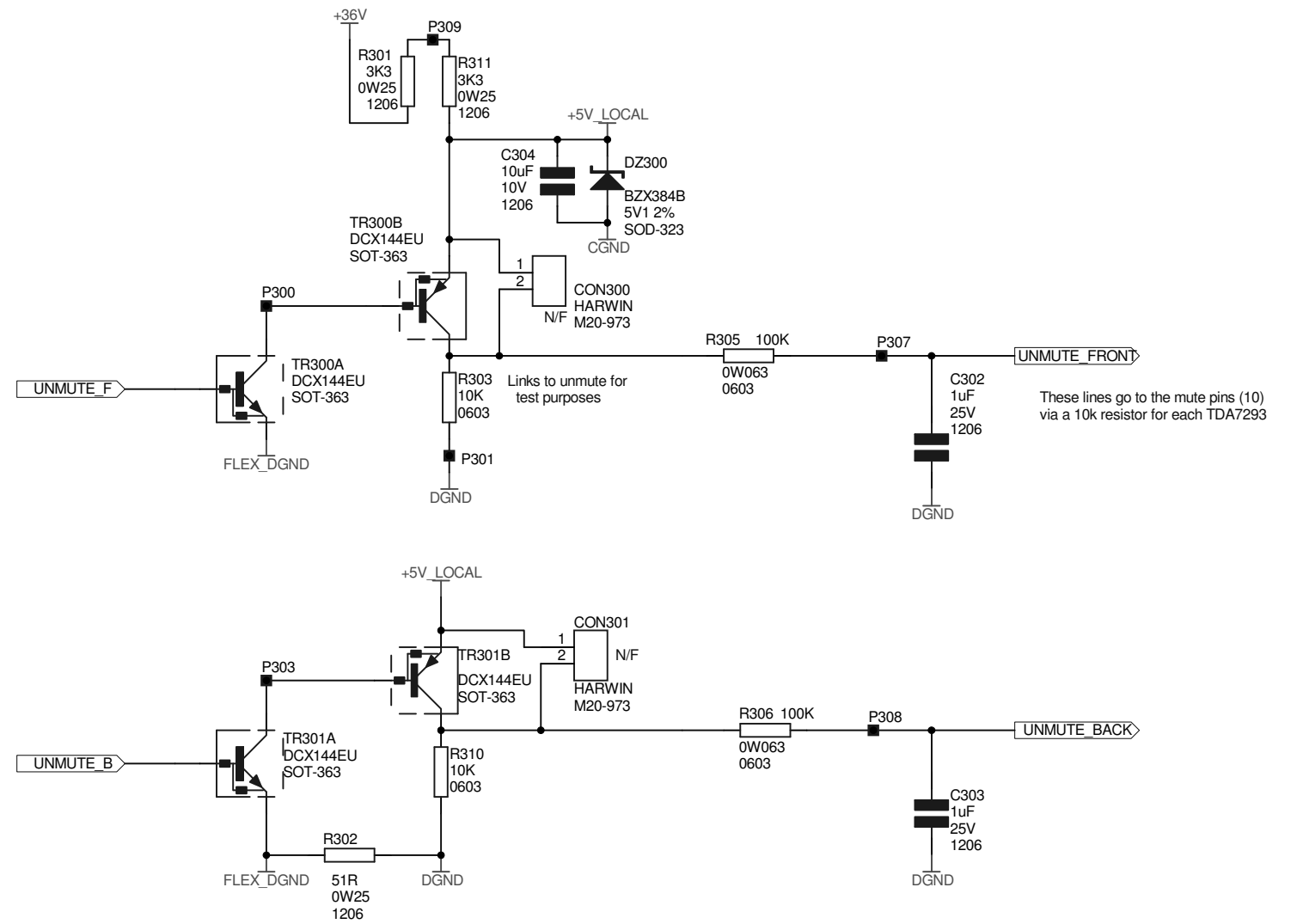
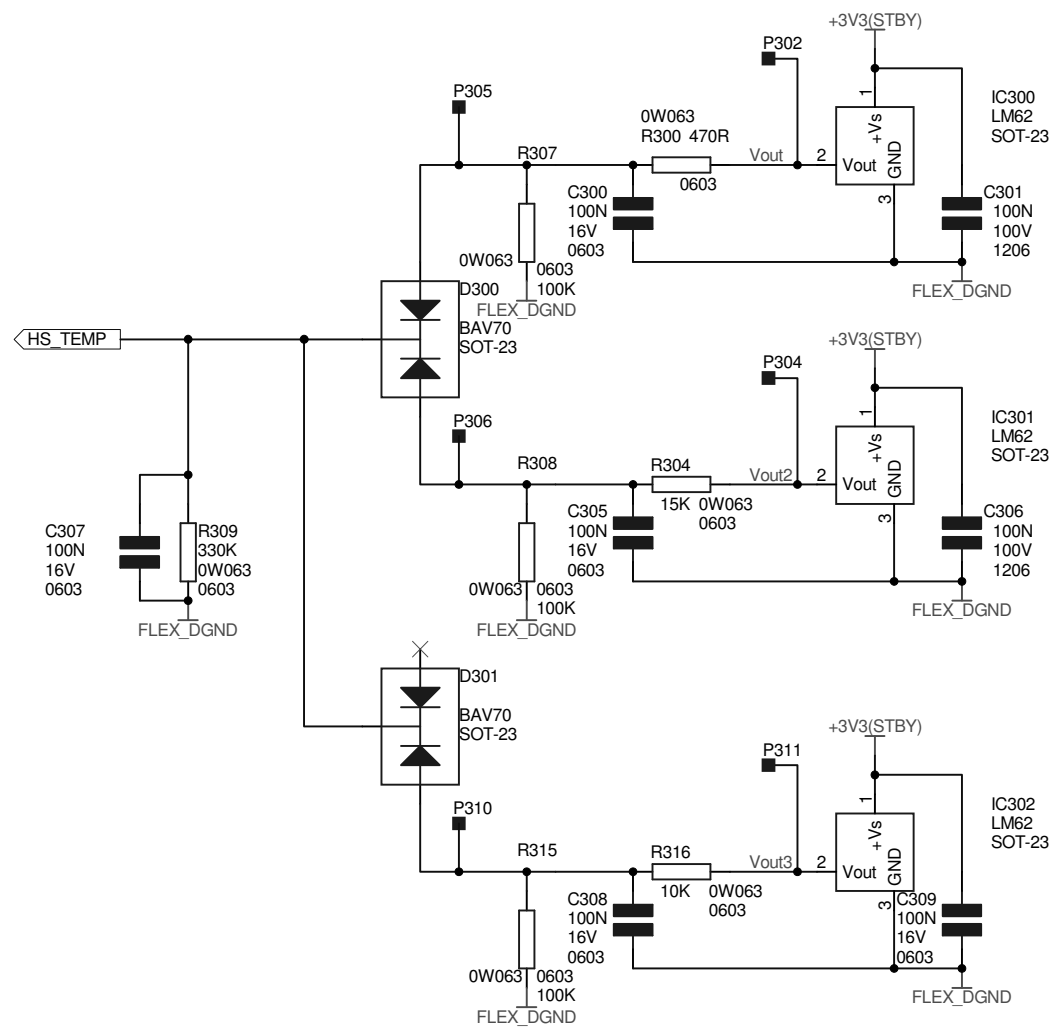
ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE
07_E079	AJD	23/05/07	Amp input isolation and lifter stability mods	6.0
07_E057	SWB	27/03/07	None to this sheet	5.4
07_E039	MJT	28/02/07	Update rubber pads on output inductors to small size for tuning.	5.3
07_E008	AJD	18/01/07	Add extra thermal sensor	5.0
07_E003	AJD	9/01/07	Updated Power amp Chip holes sizes	4.0
06_E201	AJD	9/12/06	Heat sink diodes Add extra lifters and heat sensor	3.0



Components in box not fitted for 2 channel class B no-lifter version

DRAWING TITLE		PSU & Class G Lifters			
<b>ARCAM</b> A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB5 9QR	Filename:	PSU&Lifter.sch			
	Notes:				
Contact Engineer:	Andrew Dutton	Contact Tel:	(01223) 203240	Printed:	16-Jul-2007
				Sheet	2 of 8
				A3	DRAWING NO. L103CT

ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE
07_E079	AJD	23/05/07	Amp input isolation and lifter stability mods	6.0
07_E057	SWB	27/03/07	Change C210,211,216,217 From 100V to 200V rating	5.4
07_E039	MJT	28/02/07	None to this sheet	5.3
07_E008	AJD	18/01/07	Add extra thermal sensor	5.0
07_E003	AJD	9/01/07	Updated Power amp Chip holes sizes	4.0
06_E201	AJD	9/12/06	Heat sink diodes Add extra lifters and heat sensor	3.0



**DRAWING TITLE**  
TempSensor & Level Shifters

**ARCAM**

A & R Cambridge Ltd.  
Pembroke Avenue  
Waterbeach  
Cambridge CB5 9QR

Filename: TempSensor&Shifters.sch

Notes:

Contact Engineer: Andrew Dutton

Contact Tel: (01223) 203240

ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE
07_E079	AJD	23/05/07	Amp input isolation and lifter stability mods	6.0
07_E057	SWB	27/03/07	None to this sheet	5.4
07_E039	MJT	28/02/07	None to this sheet	5.3
07_E008	AJD	18/01/07	Add extra thermal sensor	5.0
07_E003	AJD	9/01/07	Updated Power amp Chip holes sizes	4.0
06_E201	AJD	9/12/06	Heat sink diodes Add extra lifers and heat sensor	3.0

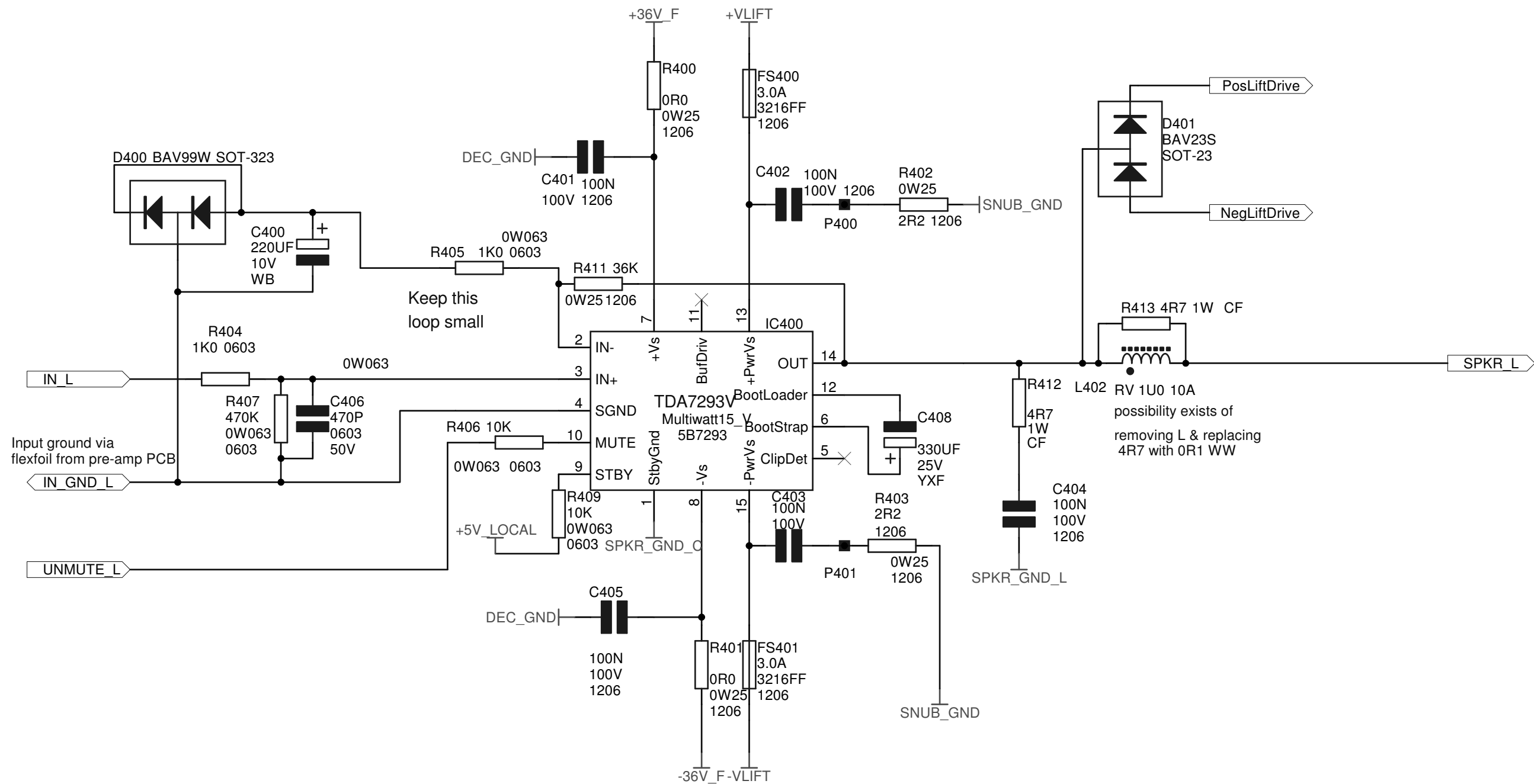
Printed: 16-Jul-2007

Sheet 3 of 8

A3

DRAWING NO. L103CT





**DRAWING TITLE**  
**Power Amp Left**

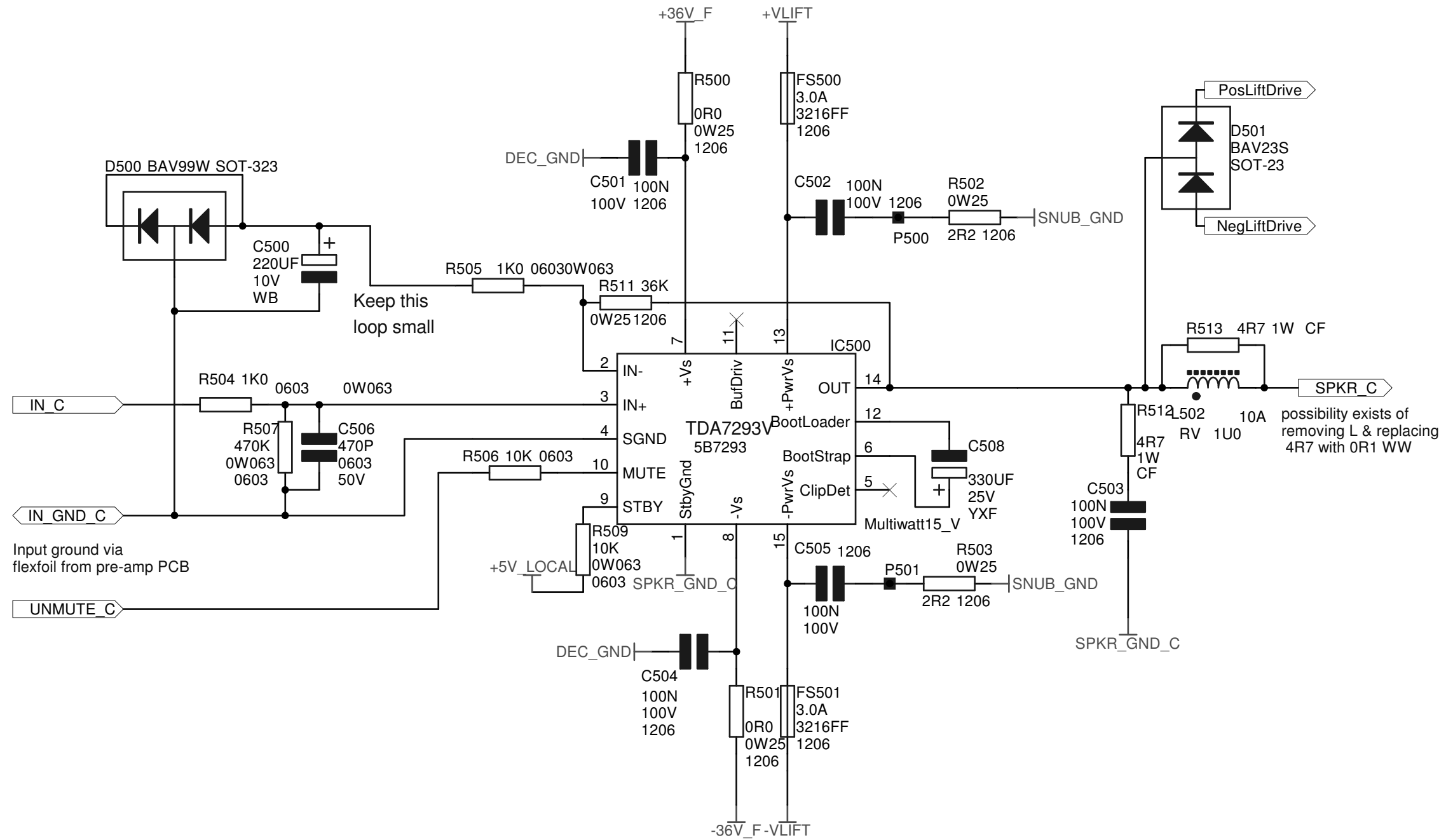
**ARCAM**  
 A & R Cambridge Ltd.  
 Pembroke Avenue  
 Waterbeach  
 Cambridge CB5 9QR

**Filename:** PA\_L.sch

**Notes:**  
 The net SPKR\_GND\_C on pin 1 of TDA7293 is a reference to a convenient point on the starground where all the StbyGnd pins are grounded.

**Contact Engineer:** Andrew Dutton  
**Contact Tel:** (01223) 203240

07_E079	AJD	23/05/07	Amp input isolation and lifter stability mods	6.0
07_E057	SWB	27/03/07	None to this sheet	5.4
07_E039	MJT	28/02/07	None to this sheet	5.3
07_E008	AJD	18/01/07	Add extra thermal sensor	5.0
07_E003	AJD	9/01/07	Updated Power amp Chip holes sizes	4.0
06_E201	AJD	9/12/06	Heat sink diodes Add extra lifers and heat sensor	3.0
<b>ECO No.</b>	<b>INITIALS</b>	<b>DATE</b>	<b>DESCRIPTION OF CHANGE</b>	<b>ISSUE</b>
<b>Contact Engineer:</b> Andrew Dutton		<b>Contact Tel:</b> (01223) 203240	<b>Printed:</b> 16-Jul-2007	<b>Sheet 4 of 8</b>
			<b>A4</b>	<b>DRAWING NO. L103CT</b>



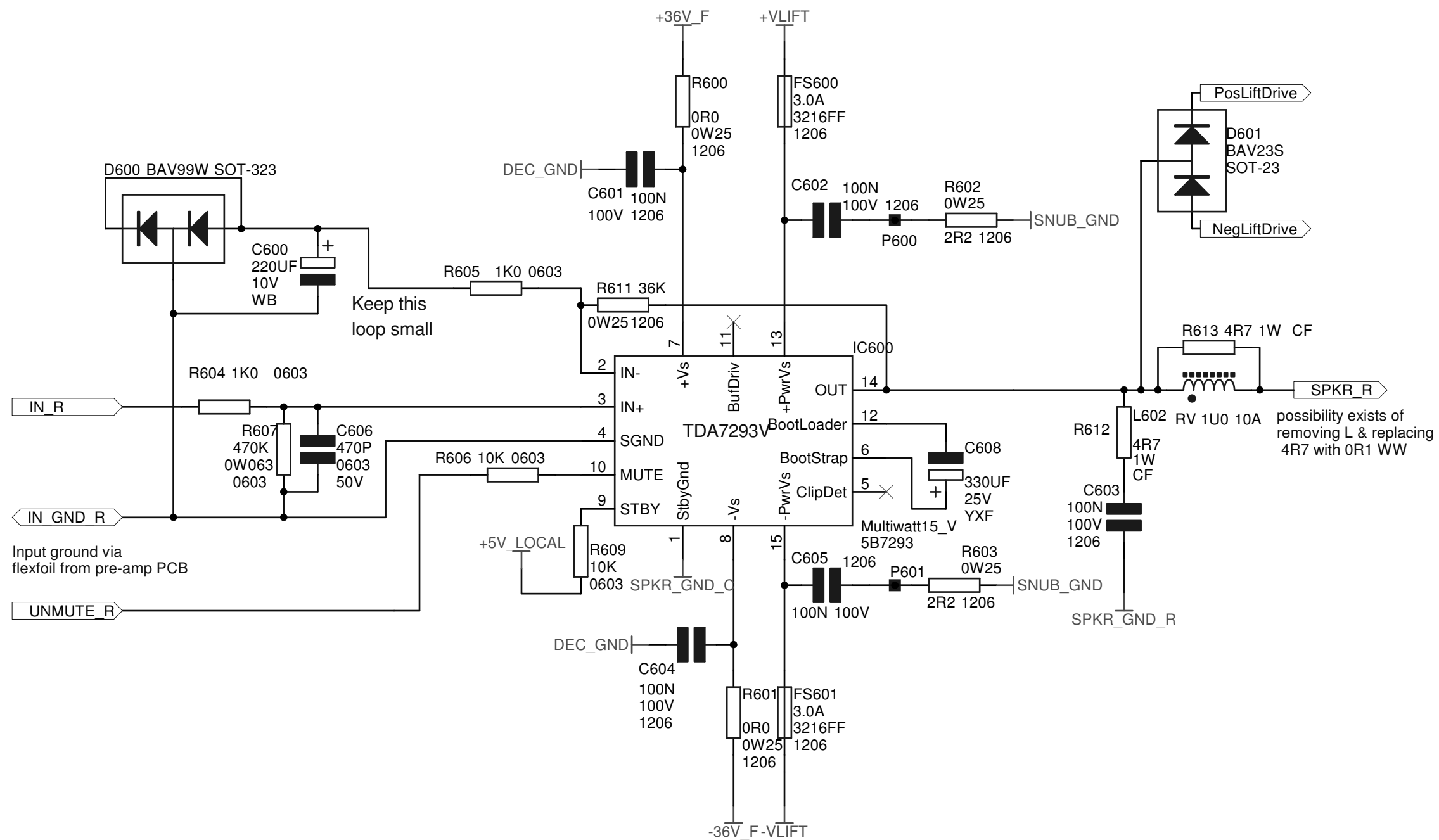
**DRAWING TITLE**  
**Power Amp Centre**

**ARCAM**  
 A & R Cambridge Ltd.  
 Pembroke Avenue  
 Waterbeach  
 Cambridge CB5 9QR

Filename: PA\_C.sch  
 Notes:  
 The net SPKR\_GND\_C on pin 1 of TDA7293 is a reference to a convenient point on the starground where all the StbyGnd pins are grounded.  
 Contact Engineer: Andrew Dutton  
 Contact Tel: (01223) 203240

ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE
07_E079	AJD	23/05/07	Amp input isolation and lifter stability mods	6.0
07_E057	SWB	27/03/07	None to this sheet	5.4
07_E039	MJT	28/02/07	None to this sheet	5.3
07_E008	AJD	18/01/07	Add extra thermal sensor	5.0
07_E003	AJD	9/01/07	Updated Power amp Chip holes sizes	4.0
06_E201	AJD	9/12/06	Heat sink diodes Add extra lifers and heat sensor	3.0

Printed: 16-Jul-2007  
 Sheet 5 of 8  
 A4 DRAWING NO. L103CT



**DRAWING TITLE**  
**Power Amp Right**

**ARCAM**

A & R Cambridge Ltd.  
 Pembroke Avenue  
 Waterbeach  
 Cambridge CB5 9QR

Filename: PA\_R.sch

**Notes:**

The net SPKR\_GND\_C on pin 1 of TDA7293 is a reference to a convenient point on the starground where all the StbyGnd pins are grounded.

Contact Engineer: Andrew Dutton

Contact Tel: (01223) 203240

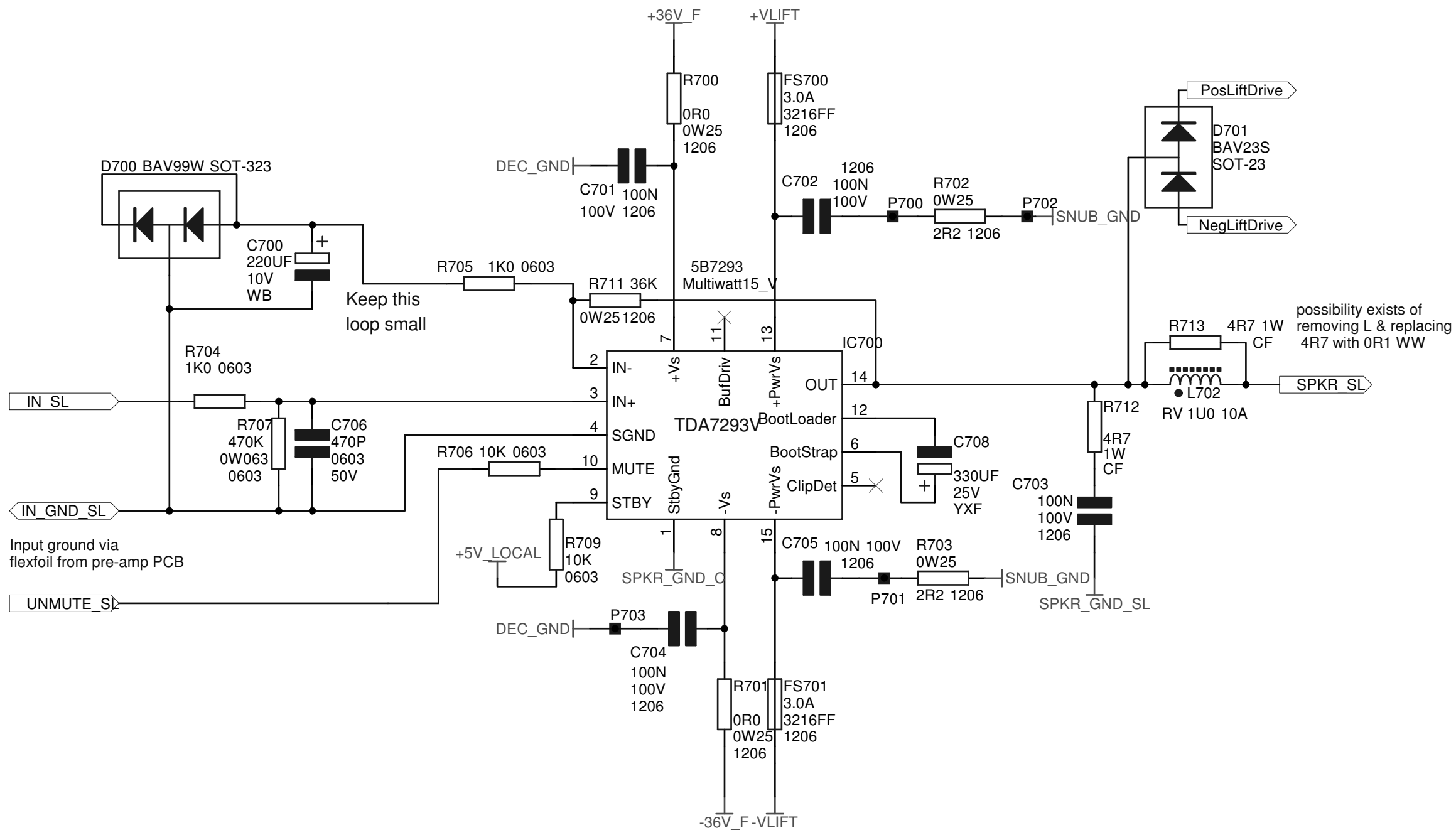
ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE
07_E079	AJD	23/05/07	Amp input isolation and lifter stability mods	6.0
07_E057	SWB	27/03/07	None to this sheet	5.4
07_E039	MJT	28/02/07	None to this sheet	5.3
07_E008	AJD	18/01/07	Add extra thermal sensor	5.0
07_E003	AJD	9/01/07	Updated Power amp Chip holes sizes	4.0
06_E201	AJD	9/12/06	Heat sink diodes Add extra lifers and heat sensor	3.0

Printed: 16-Jul-2007

Sheet 6 of 8

A4

DRAWING NO. L103CT

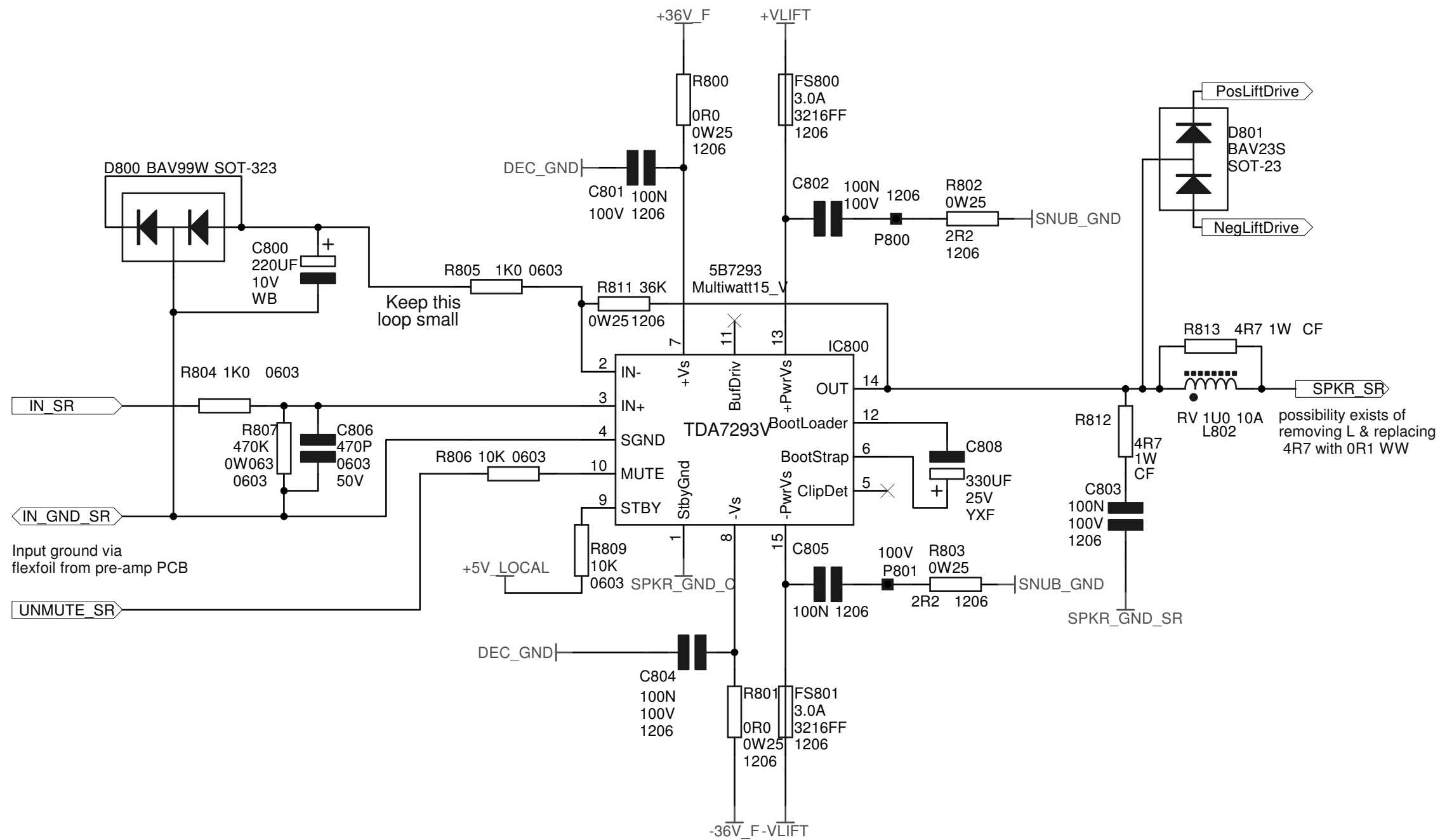


**DRAWING TITLE**  
**Power Amp Surround Left**

**ARCAM**  
 A & R Cambridge Ltd.  
 Pembroke Avenue  
 Waterbeach  
 Cambridge CB5 9QR

Filename: PA\_SL.sch  
 Notes:  
 The net SPKR\_GND\_C on pin 1 of TDA7293 is a reference to a convenient point on the starground where all the StbyGnd pins are grounded.

07_E079	AJD	23/05/07	Amp input isolation and lifter stability mods	6.0	
07_E057	SWB	27/03/07	None to this sheet	5.4	
07_E039	MJT	28/02/07	None to this sheet	5.3	
07_E008	AJD	18/01/07	Add extra thermal sensor	5.0	
07_E003	AJD	9/01/07	Updated Power amp Chip holes sizes	4.0	
06_E201	AJD	9/12/06	Heat sink diodes Add extra lifers and heat sensor	3.0	
ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE	
Contact Engineer: Andrew Dutton		Contact Tel: (01223) 203240	Printed: 16-Jul-2007	Sheet 7 of 8	A4
DRAWING NO. L103CT					



**DRAWING TITLE**  
**Power Amp Surround Right**

**ARCAM**

A & R Cambridge Ltd.  
 Pembroke Avenue  
 Waterbeach  
 Cambridge CB5 9QR

Filename: PA\_SR.sch

Notes: The net SPKR\_GND\_C on pin 1 of TDA7293 is a reference to a convenient point on the starground where all the StbyGnd pins are grounded.

Contact Engineer: Andrew Dutton

Contact Tel: (01223) 203240

ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE
07_E079	AJD	23/05/07	Amp input isolation and lifter stability mods	6.0
07_E057	SWB	27/03/07	None to this sheet	5.4
07_E039	MJT	28/02/07	None to this sheet	5.3
07_E008	AJD	18/01/07	Add extra thermal sensor	5.0
07_E003	AJD	9/01/07	Updated Power amp Chip holes sizes	4.0
06_E201	AJD	9/12/06	Heat sink diodes Add extra lifers and heat sensor	3.0

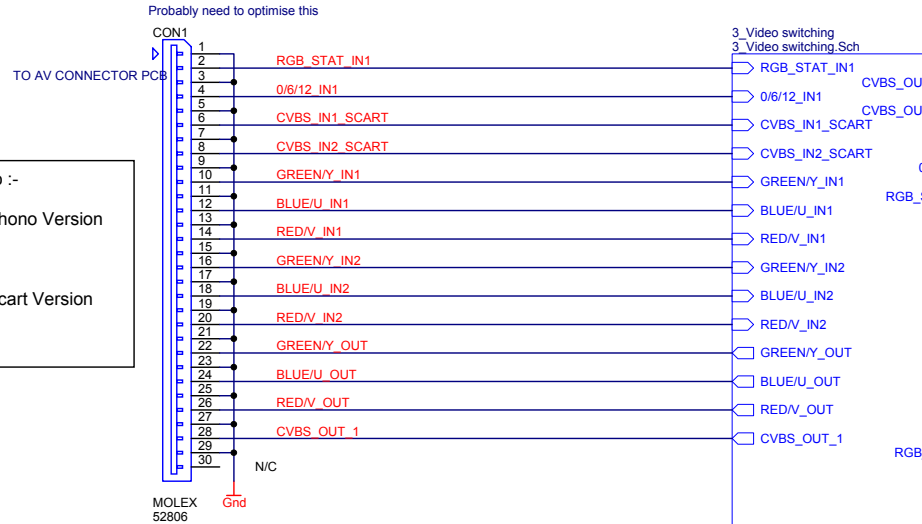
Printed: 16-Jul-2007

Sheet 8 of 8

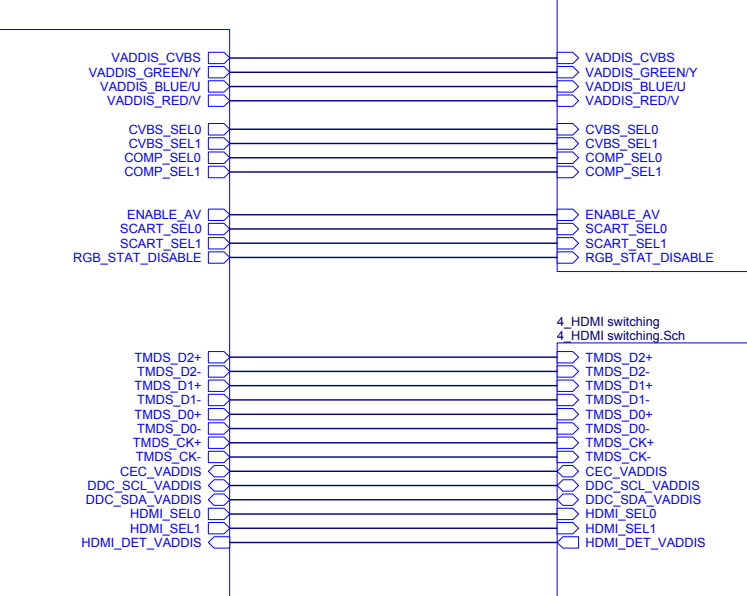
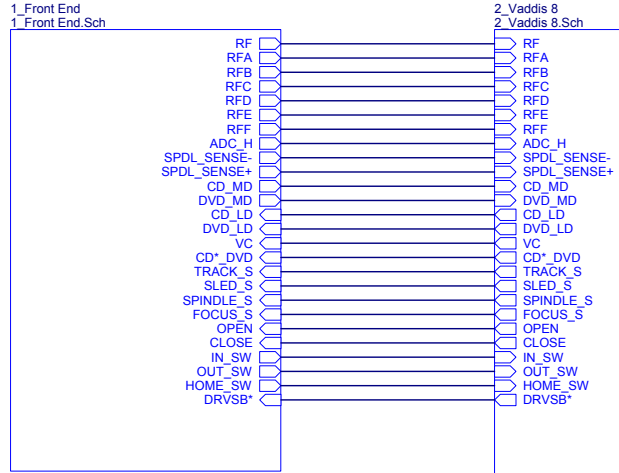
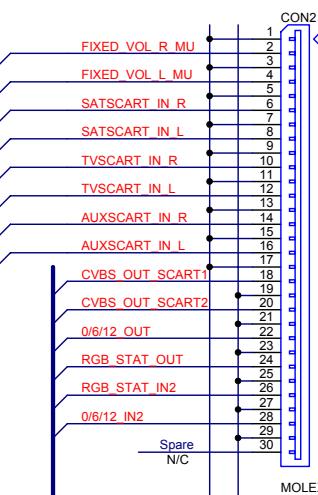
A4

DRAWING NO. L103CT

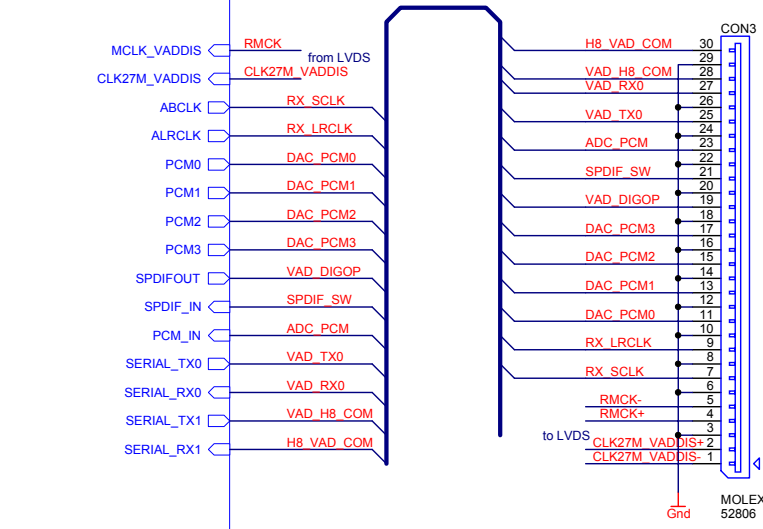
Flexi Cable to :-  
Con500 on Phono Version  
OR  
Con600 on Scart Version



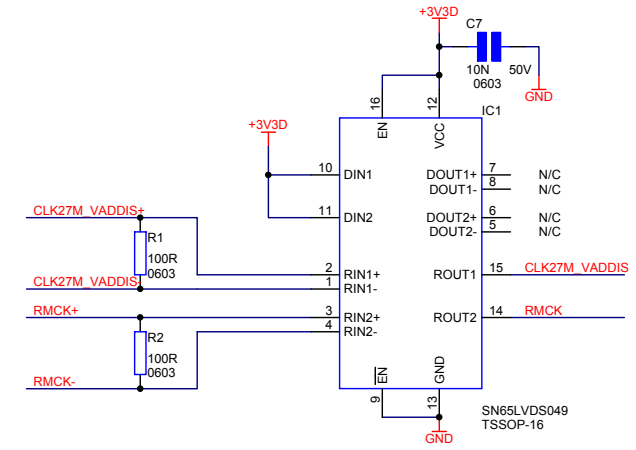
Flexi Cable to :-  
Not connected Phono Version  
OR  
Con601 on Scart Version



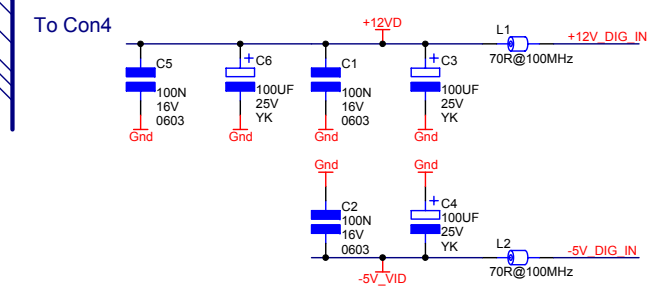
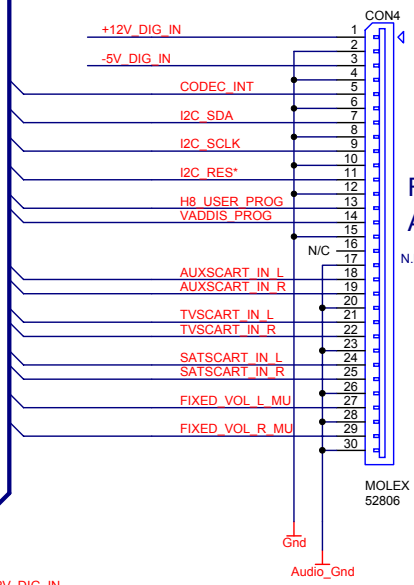
AUDIO BOARD  
Flexi to Con2  
N.B. Cable reverses pinout.



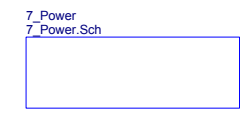
LVDS Translator



Flexi to Con1  
AUDIO BOARD  
N.B. Cable is not 1:1 but reverses pinout.

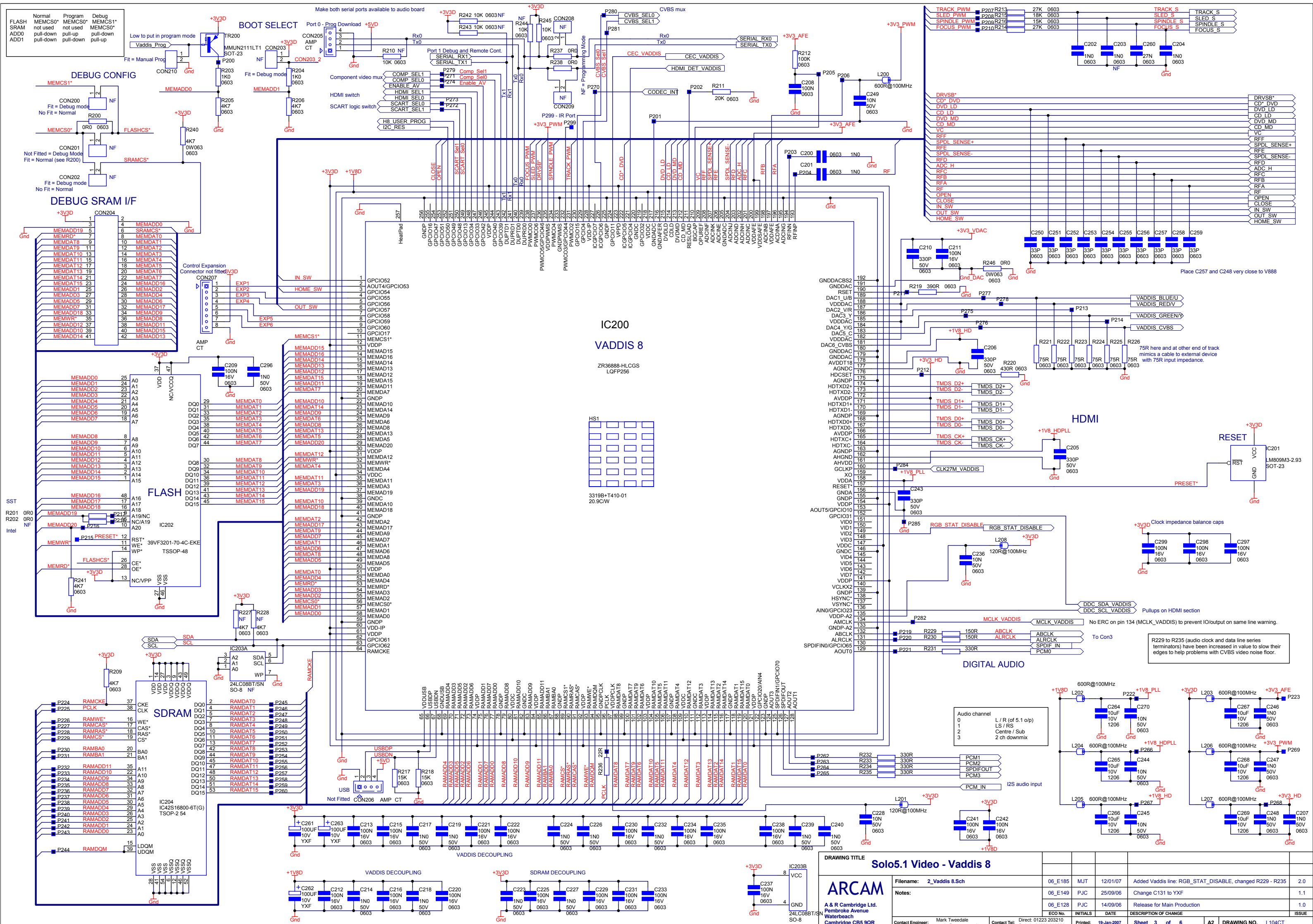


- FD1  FD2  FD3  FD4  Top fiducials
- FD5  FD6  FD7  FD8  Bottom fiducials
- FD9  FD10  Vaddis Chip Fiducials
- TOOL1  TOOL2  TOOL3  TOOL4  Tooling Holes

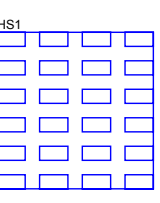


ITEM99	1	L104PB	Blank PCB Solo5.1 Video Board	
ITEM98	1	F243	Ferrite Disk - This part is RoHS compliant.	Place on top of IC204

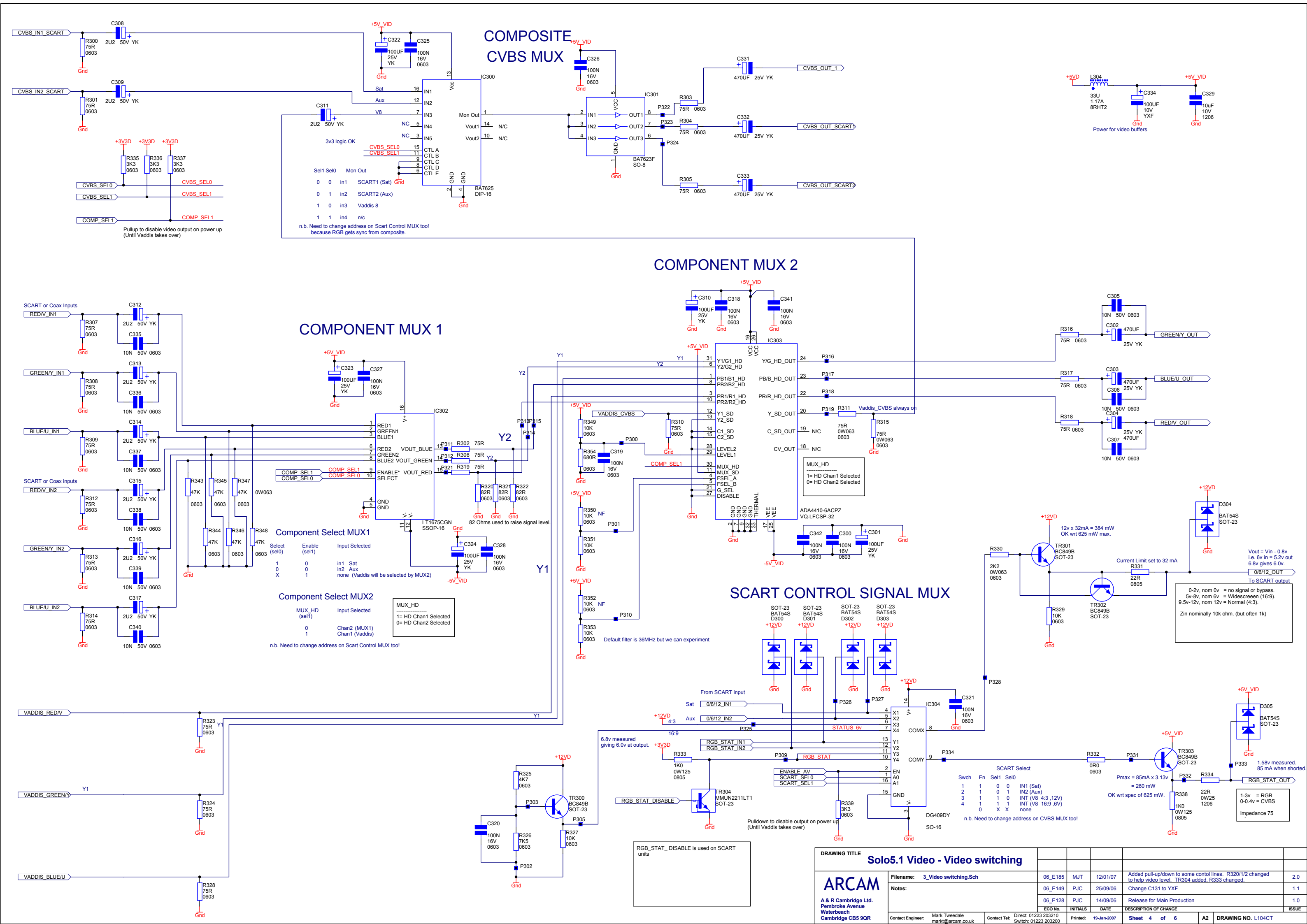
DRAWING TITLE						
<b>Solo5.1 Video - Top level</b>						
<b>ARCAM</b> A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB5 9QR	Filename: 0_Top level.Sch	06_E185	MJT	12/01/07	None to this sheet. Added pull-up/downs to control lines on sheet 4 to stop power up video break through. Component vid level	2.0
	Notes:	06_E149	PJC	25/09/06	Change C131 to YXF	1.1
		06_E128	PJC	14/09/06	Release for Main Production	1.0
	ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE	
Contact Engineer:	Mark Tweedale markt@arcam.co.uk	Contact Tel:	Direct: 01223 203210 Switch: 01223 203200	Printed:	19-Jan-2007	Sheet 1 of 6
					A2	DRAWING NO. L104CT



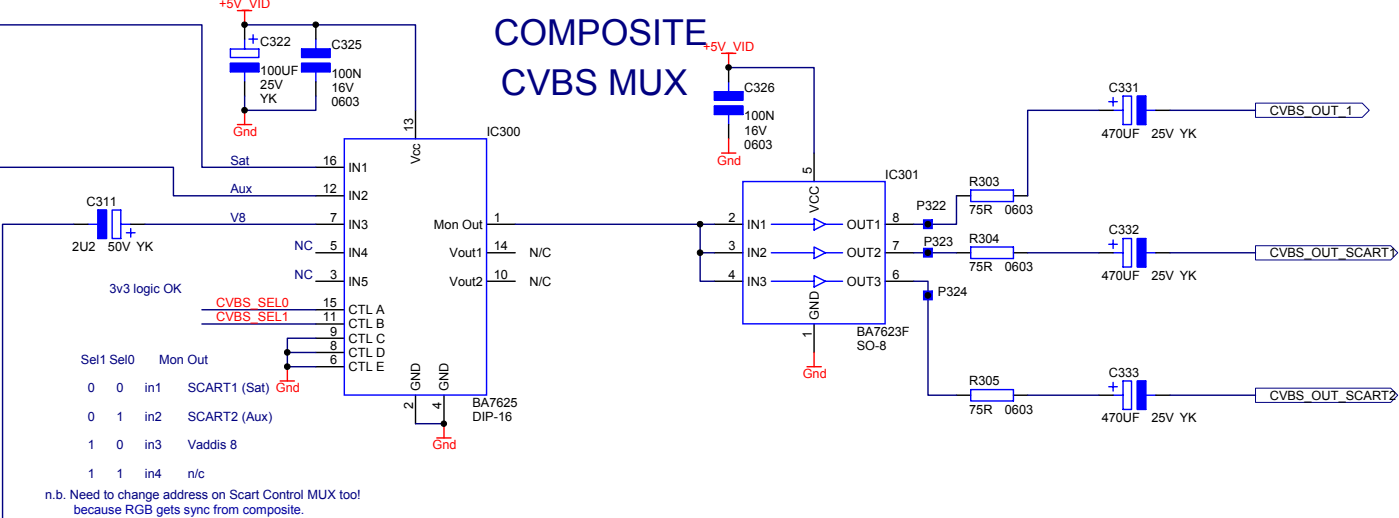
**IC200  
VADDIS 8**  
ZR36888-HLCS  
LQFP256



DRAWING TITLE				
<b>Solo5.1 Video - Vaddis 8</b>				
<b>ARCAM</b> A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB5 9QR				
Filename: 2_Vaddis 8.Sch Notes:	06_E185 MJT 12/01/07 Added Vaddis line: RGB_STAT_DISABLE, changed R229 - R235 06_E149 PJC 25/09/06 Change C131 to YXF 06_E128 PJC 14/09/06 Release for Main Production	2.0 1.1 1.0		
ECO No. INITIALS DATE DESCRIPTION OF CHANGE				
Contact Engineer: Mark Tweedale mark1@arcam.co.uk Contact Tel: Direct: 01223 203210 Switch: 01223 203200 Printed: 19-Jan-2007 Sheet 3 of 6 A2 DRAWING NO. L104CT				



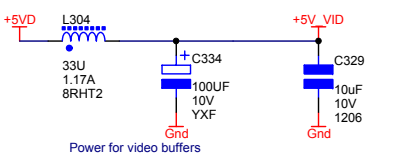
### COMPOSITE CVBS MUX



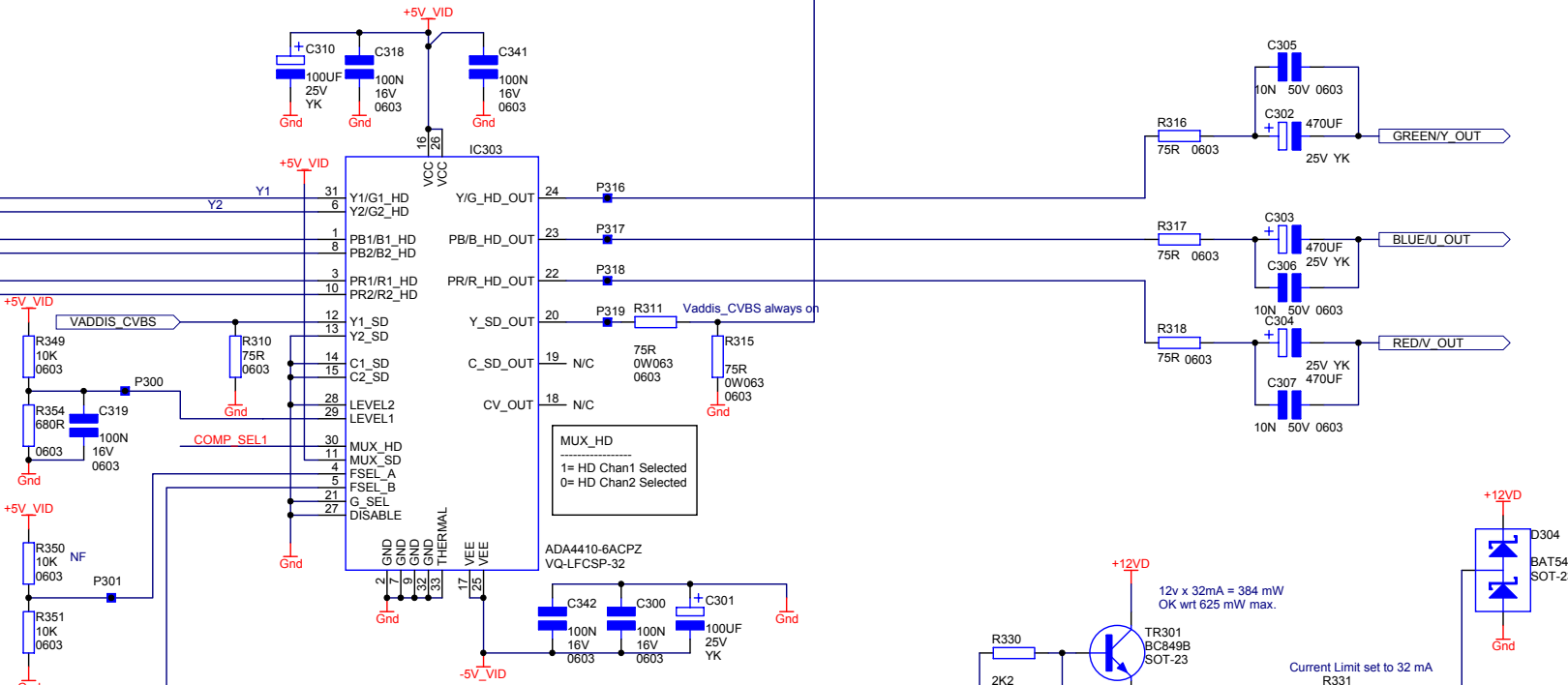
3v3 logic OK

Sel1	Sel0	Mon Out	Output
0	0	in1	SCART1 (Sat)
0	1	in2	SCART2 (Aux)
1	0	in3	Vaddis 8
1	1	in4	n/c

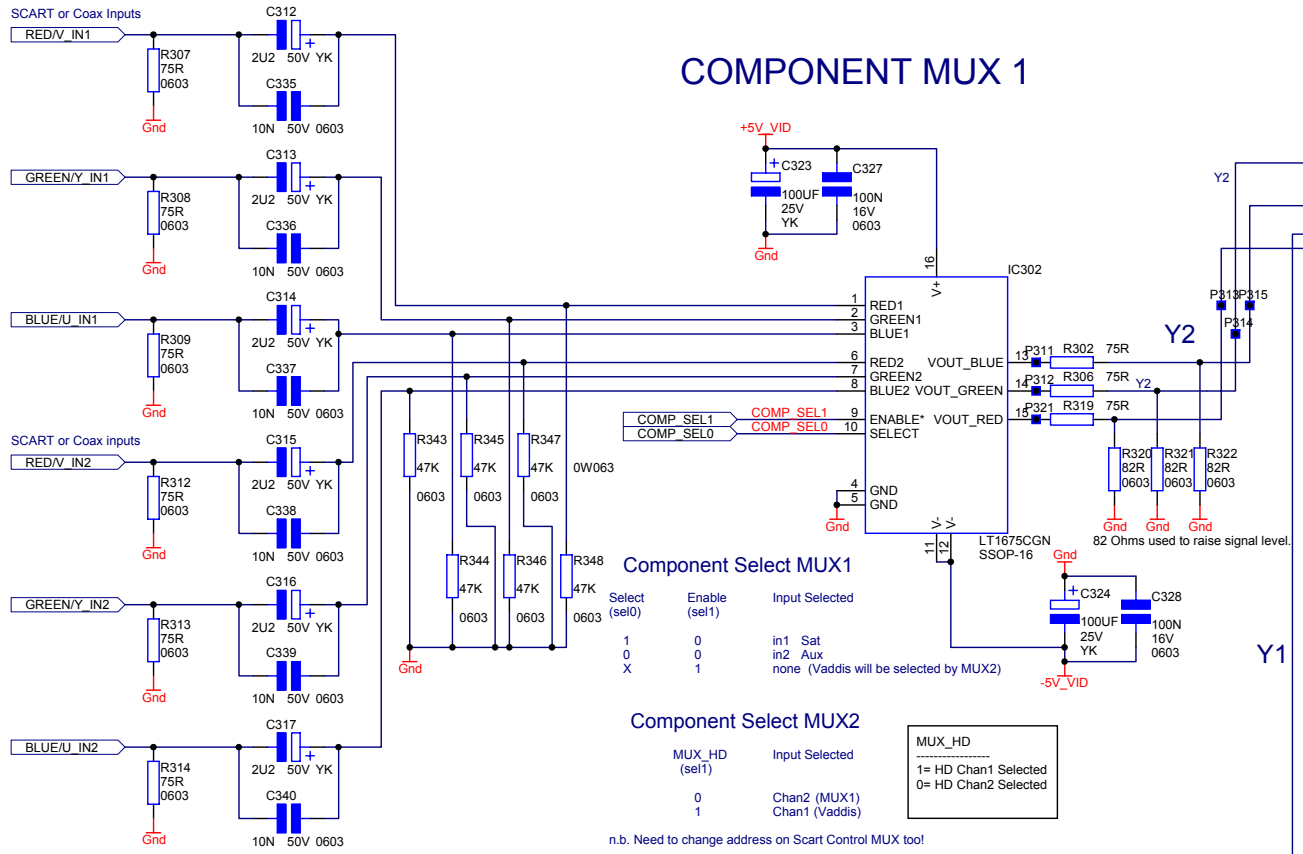
n.b. Need to change address on Scart Control MUX tool because RGB gets sync from composite.



### COMPONENT MUX 2



### COMPONENT MUX 1



Component Select MUX1

Select (sel0)	Enable (sel1)	Input Selected
1	0	in1 Sat
0	0	in2 Aux
X	1	none (Vaddis will be selected by MUX2)

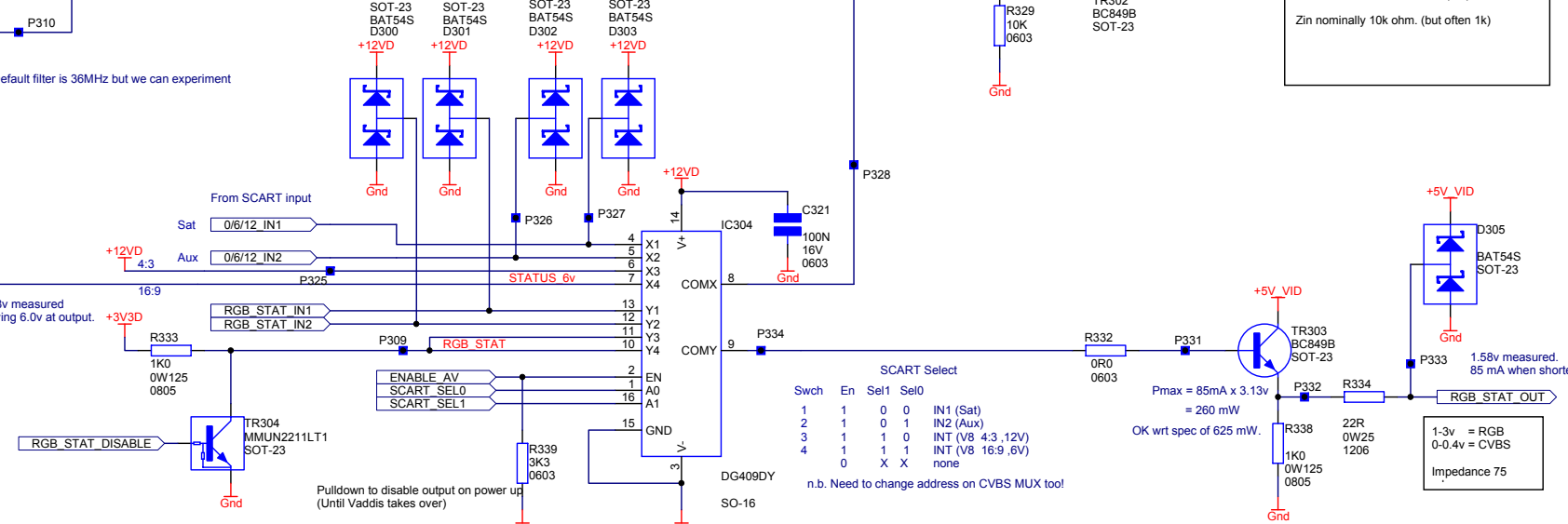
Component Select MUX2

MUX_HD (sel1)	Input Selected
0	Chan2 (MUX1)
1	Chan1 (Vaddis)

MUX\_HD  
1= HD Chan1 Selected  
0= HD Chan2 Selected

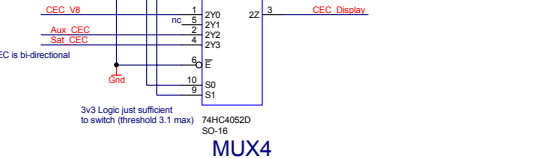
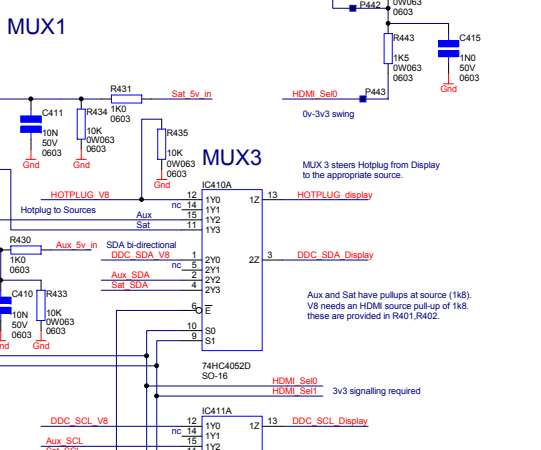
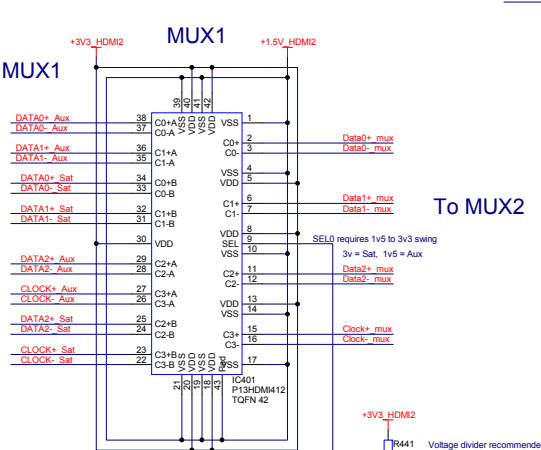
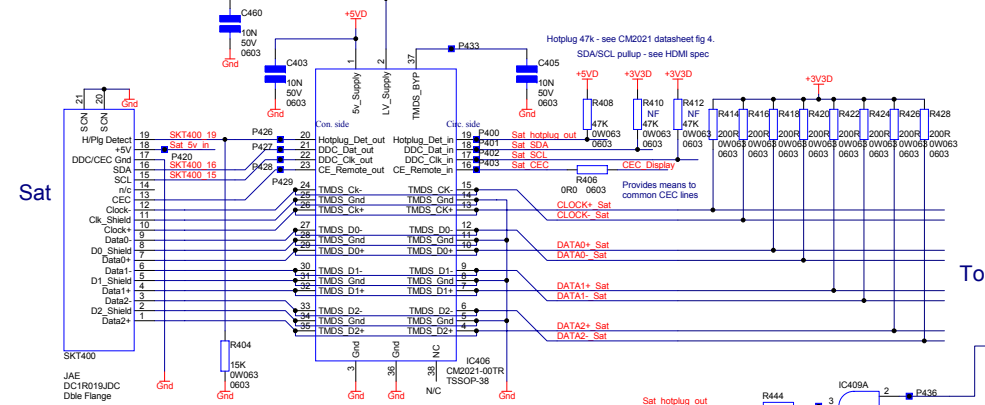
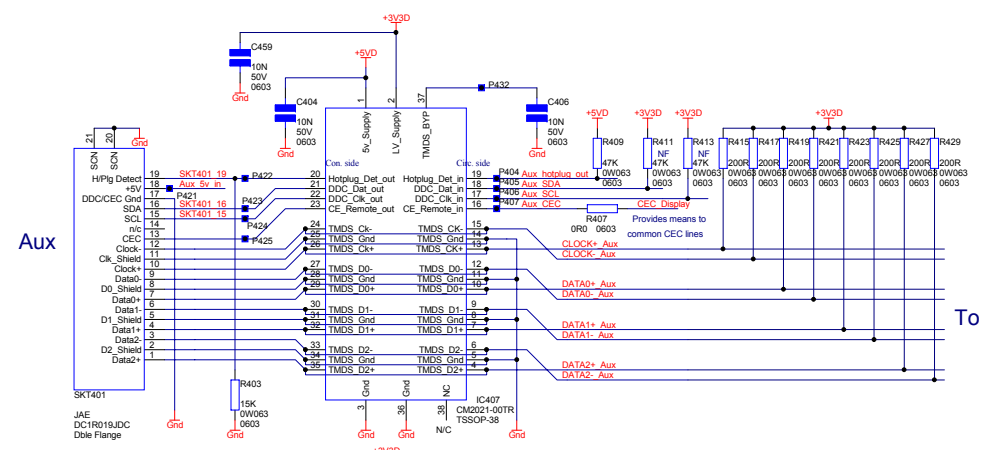
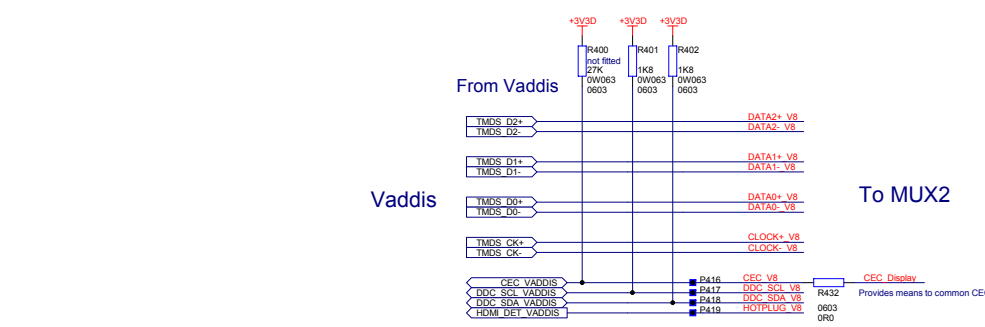
n.b. Need to change address on Scart Control MUX tool!

### SCART CONTROL SIGNAL MUX



DRAWING TITLE		Solo5.1 Video - Video switching					
<b>ARCAM</b> A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB5 9QR	Filename:	3_Video switching.Sch	06_E185	MJT	12/01/07	Added pull-up/down to some control lines. R320/1/2 changed to help video level. TR304 added. R333 changed.	2.0
	Notes:		06_E149	PJC	25/09/06	Change C131 to YXF	1.1
			06_E128	PJC	14/09/06	Release for Main Production	1.0
	ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE		
Contact Engineer: Mark Tweedale markt@arcam.co.uk	Contact Tel: Direct: 01223 203210 Switch: 01223 203200	Printed: 19-Jan-2007	Sheet 4 of 6	A2	DRAWING NO. L104CT		





To blank the display select Vaddis as input and use V8 software to output blank.

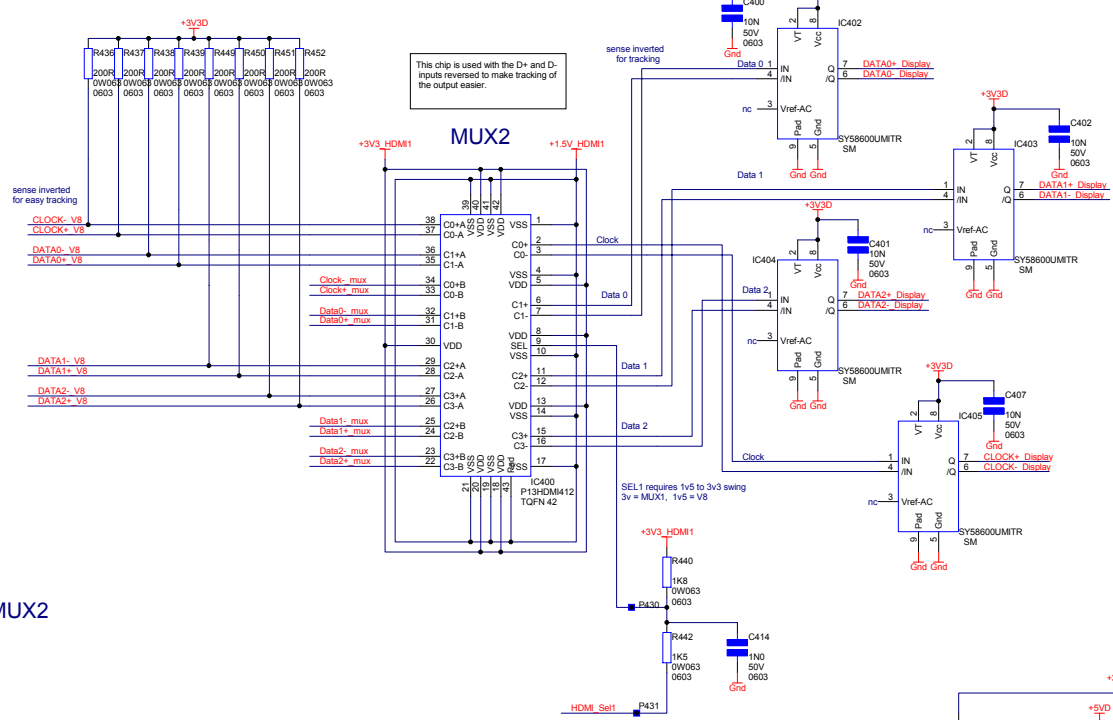
PERICOM HDMI SEL TRUTH TABLE

SEL0	SEL1	MUX1	MUX2	Final Output
0	0	Aux	Sat/Aux	Aux
0	1	Aux	V8	V8
1	0	Sat	Sat/Aux	Sat
1	1	Sat	V8	V8 - not used (DDC n/c)

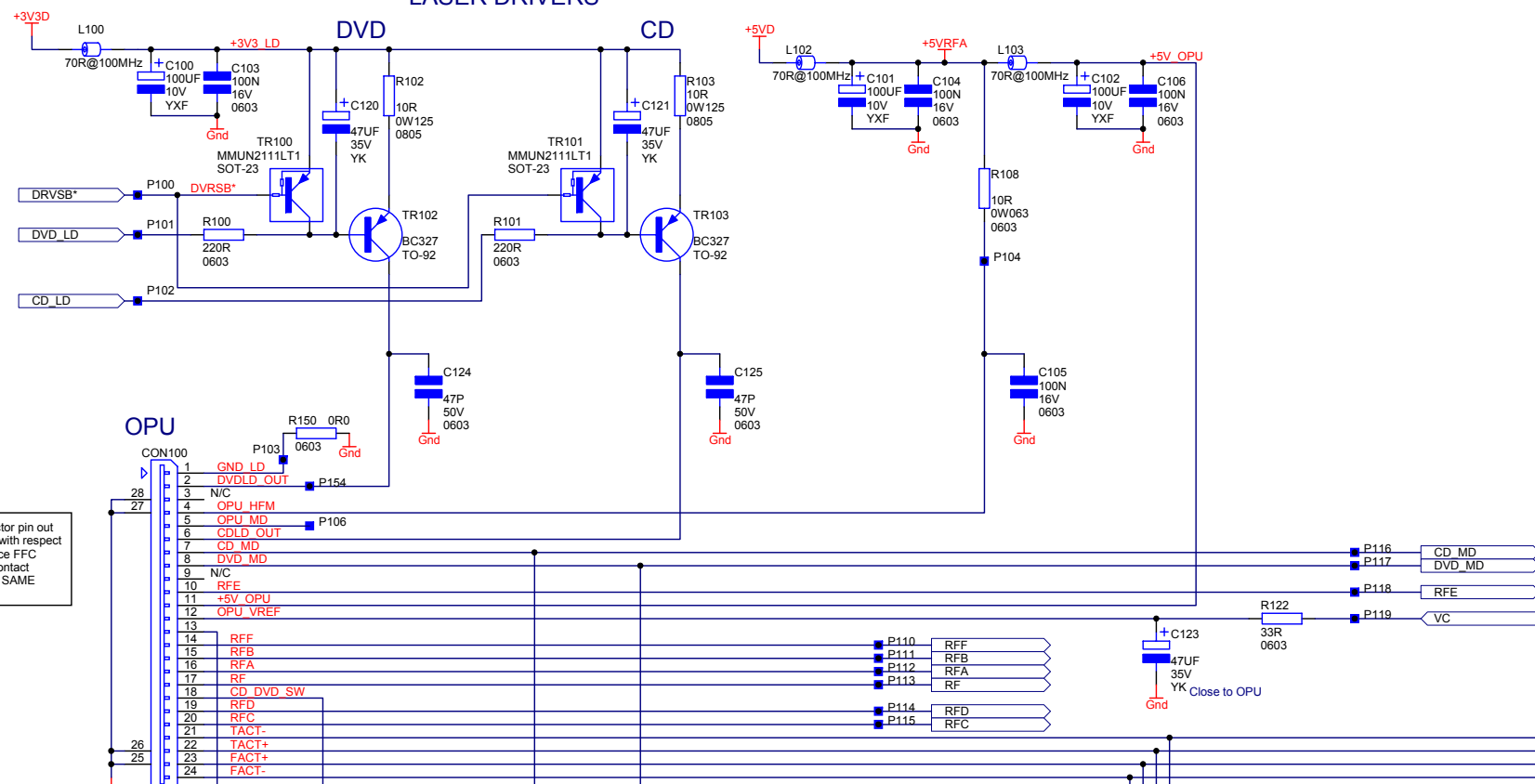
DDC SIGNALS MULTIPLEX

SEL0	SEL1	MUX3 & MUX4
Y0	0	Aux
Y2	0	V8
Y3	1	Sat
Y1	1	n/c

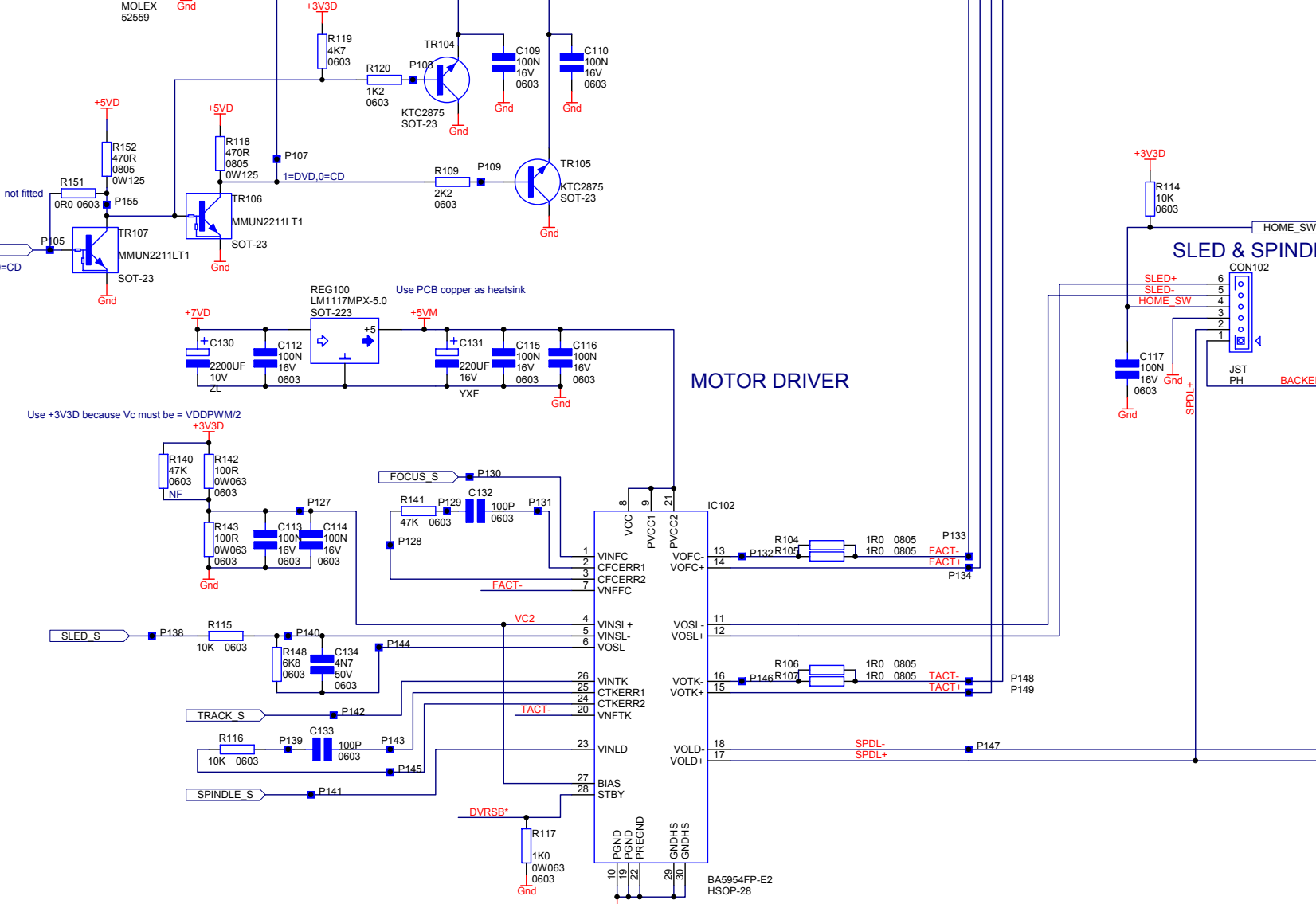
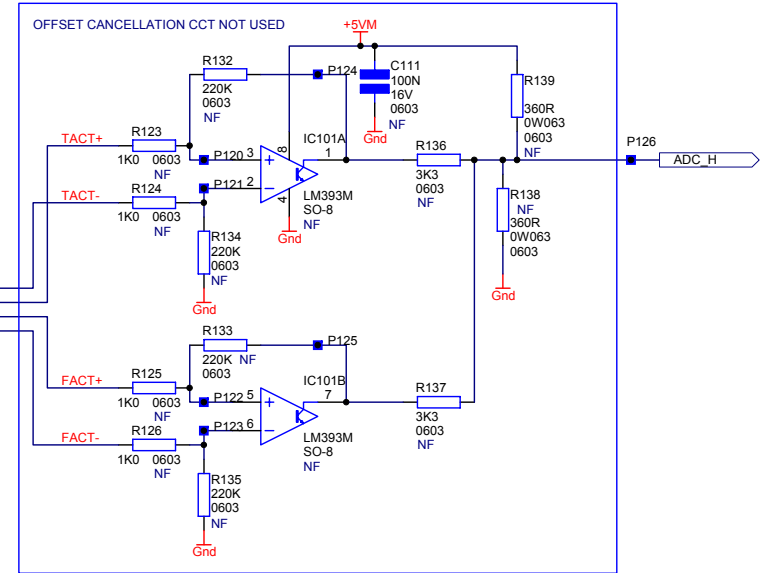
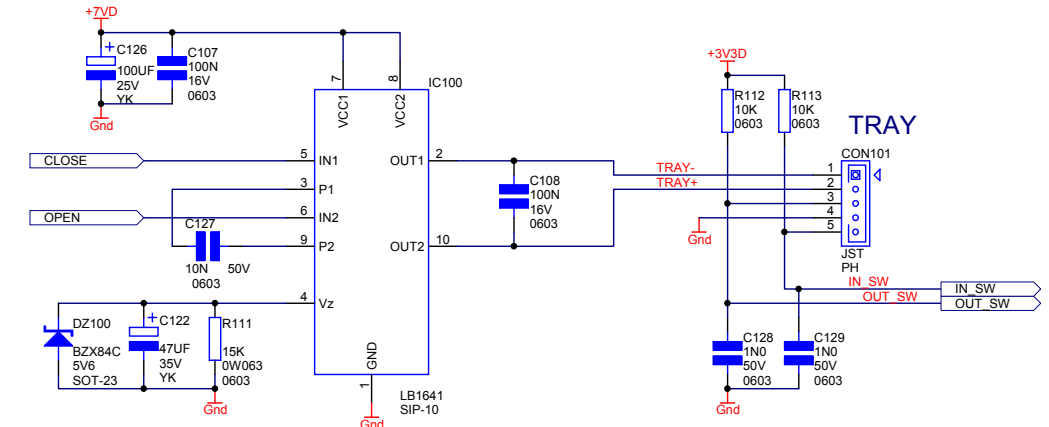
3v3 Logic just sufficient to switch (threshold 3.1 max)



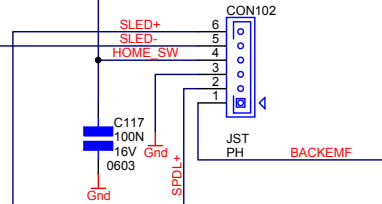
# LASER DRIVERS



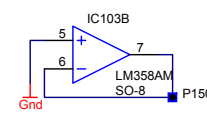
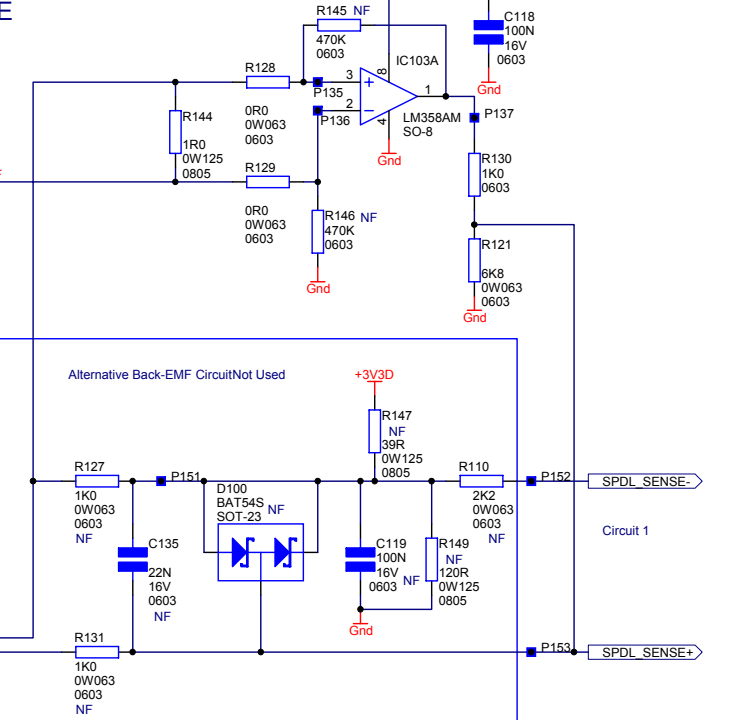
OPU connector pin out is reversed with respect to OPU, since FFC cable has contact surfaces on SAME SIDE.



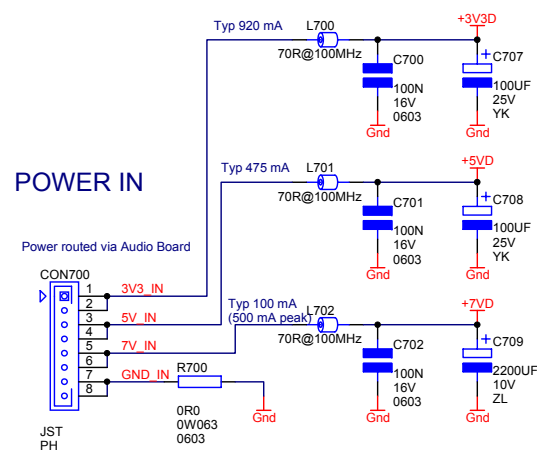
## SLED & SPINDLE



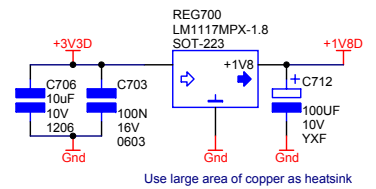
## BACK-EMF CIRCUIT



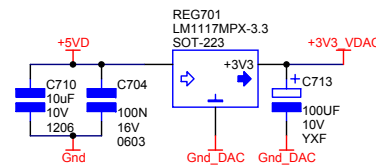
DRAWING TITLE		Solo5.1 Video - Front End					
<b>ARCAM</b> A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB5 9QR	Filename:	1_Front End.Sch	06_E185	MJT	12/01/07	None to this sheet	2.0
	Notes:		06_E149	PJC	25/09/06	Change C131 to YXF	1.1
			06_E128	PJC	14/09/06	Release for Main Production	1.0
	ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE		ISSUE	
Contact Engineer: Mark Tweedale markt@arcam.co.uk	Contact Tel: Direct: 01223 203210 Switch: 01223 203200	Printed: 19-Jan-2007	Sheet 2 of 6	A2	DRAWING NO. L104CT		



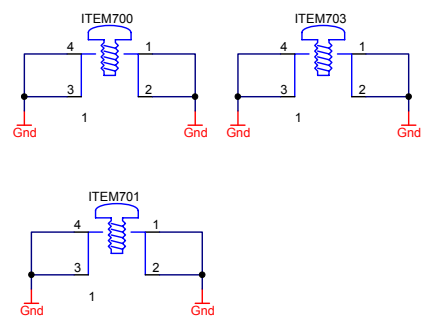
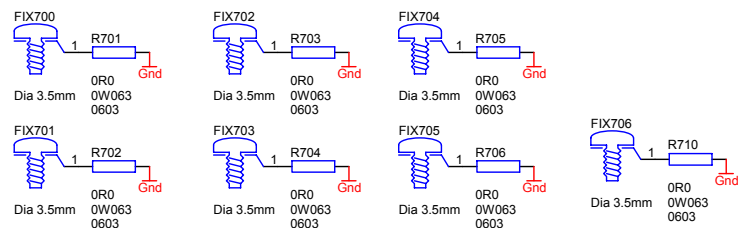
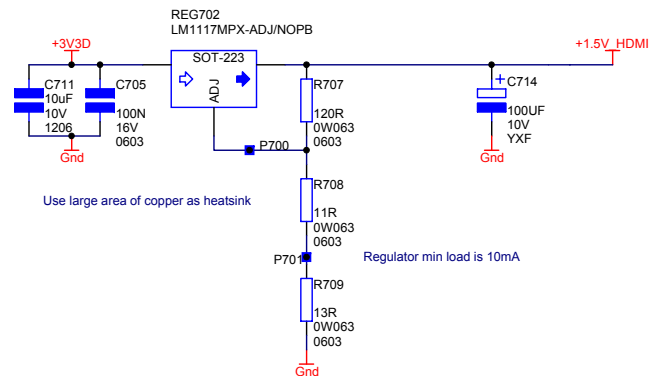
VADDIS +1.8V CORE SUPPLY



VADDIS +3.3V DAC SUPPLY

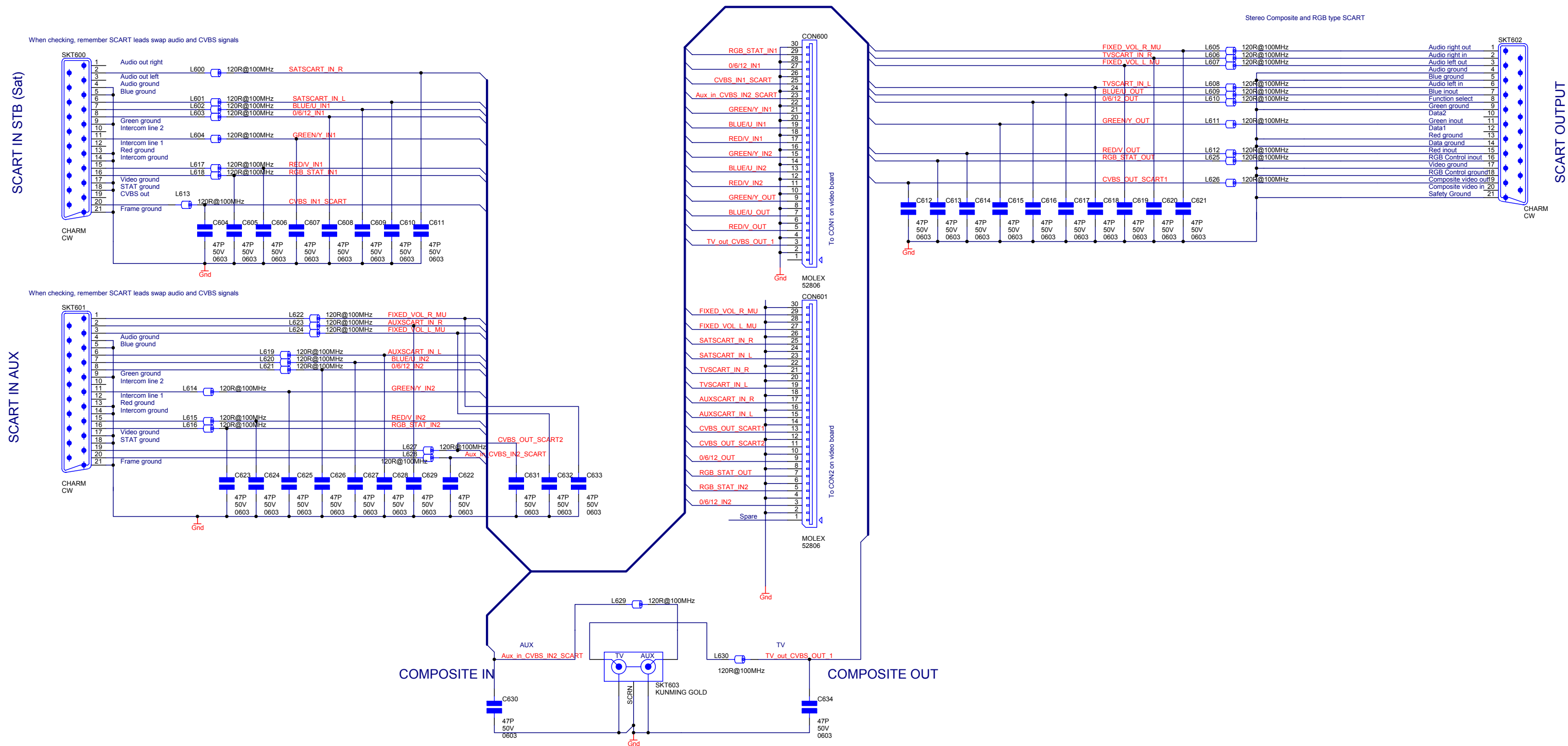


HDMI Switch 1.5v Supply



DRAWING TITLE		Solo5.1 Video - Power & RS232				
<b>ARCAM</b> A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB5 9QR	Filename: 7_Power.Sch	06_E185	MJT	12/01/07	None to this sheet	2.0
	Notes:	06_E149	PJC	25/09/06	Change C131 to YXF	1.1
		06_E128	PJC	14/09/06	Release for Main Production	1.0
	ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE		ISSUE
Contact Engineer: Mark Tweedale markt@arcam.co.uk	Contact Tel: Direct: 01223 203210 Switch: 01223 203200	Printed: 19-Jan-2007	Sheet 6 of 6	A2	DRAWING NO. L104CT	

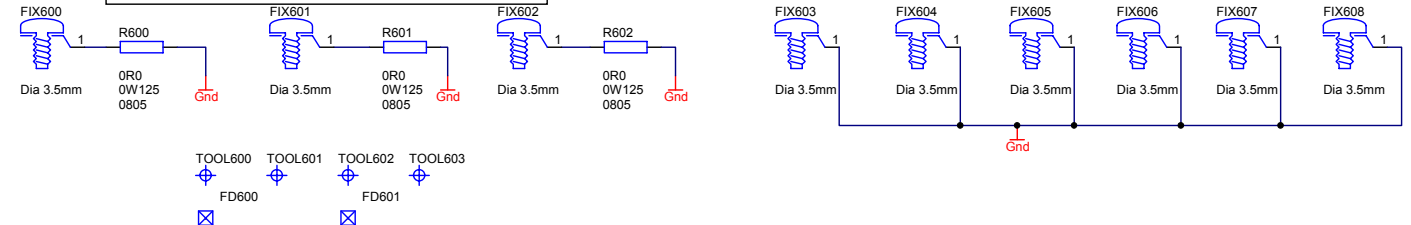
This board is fitted to EU version of Solo5.1.



When checking, remember SCART leads swap audio and CVBS signals

When checking, remember SCART leads swap audio and CVBS signals

If used, resistors R600, R601 and R602 should be moved to the bottom layer before production.

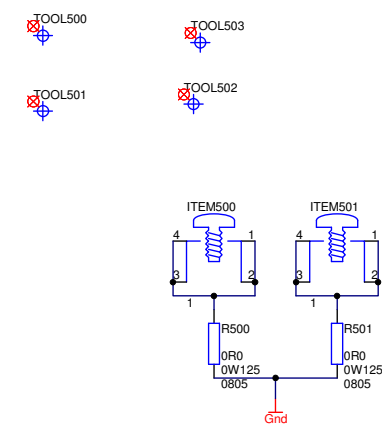
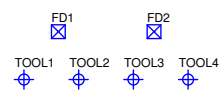
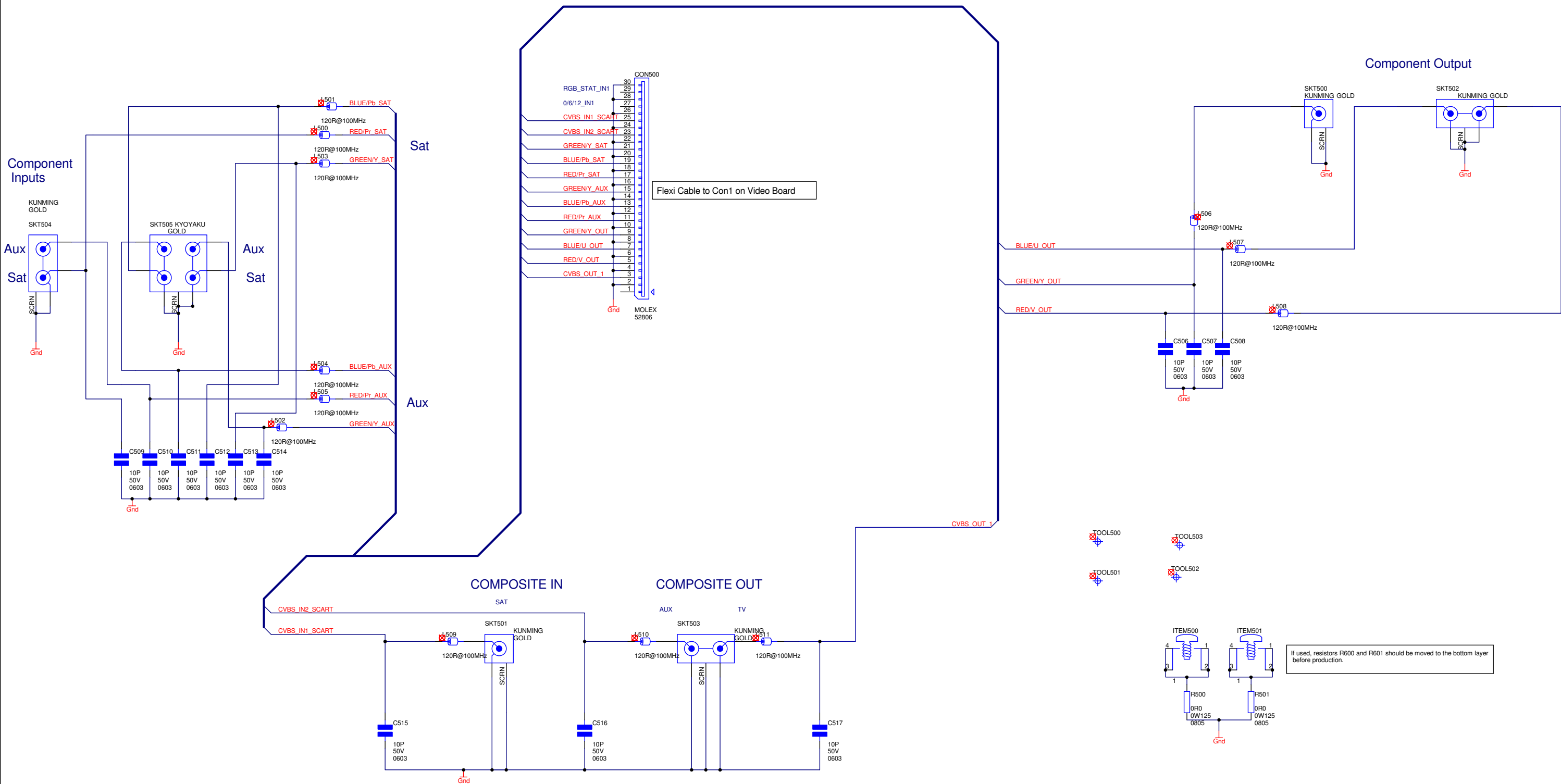


ITEM	QTY	PART No.	DESCRIPTION	NOTES
ITEM1	1	L105PB	Blank PCB Solo5.1 SCART Board	
ITEM2	6	E047MC	EARTH BRACKET	FITTED TO FIXING HOLES EITHER SIDE OF SKT601, SKT602 & SKT603

DRAWING TITLE				
<b>Solo5.1 SCART connector board</b>				
07_E047	MJT	07/03/07	No schematic change - modified assembly drawing only.	1.2
06_E150	MOC	28/09/06	Earth brackets added to BoM	1.1
06_E102	PJC	24/07/06	ADDED BLM FILTERS	1.0
06_E032	NM	15/03/06	Corrected order of AUX IN and TV OUT sockets	C.0
ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE
Contact Engineer: Andrew Dutton		Contact Tel: (01223) 203200	Printed: 6-Mar-2007	Sheet 7 of 8
DRAWING NO. L105CT				

**ARCAM**  
A & R Cambridge Ltd.  
Pembroke Avenue  
Waterbeach  
Cambridge CB5 9QR

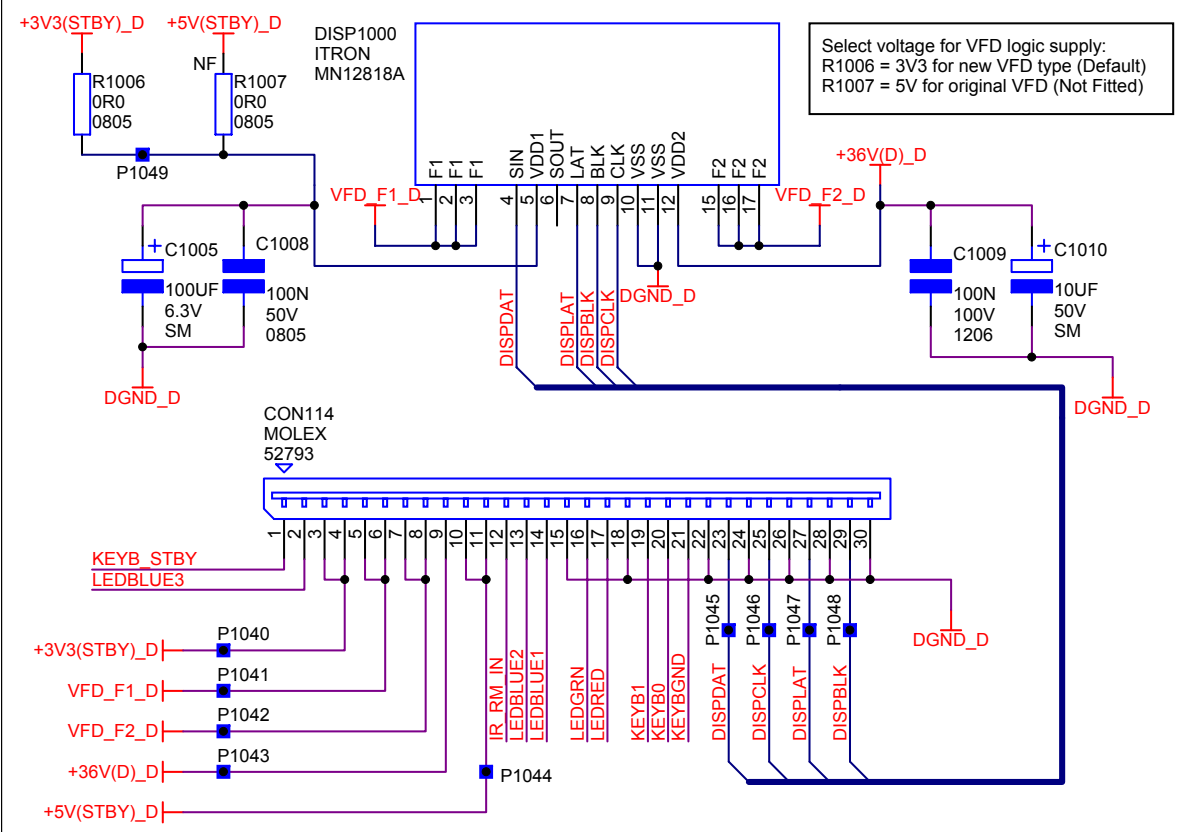
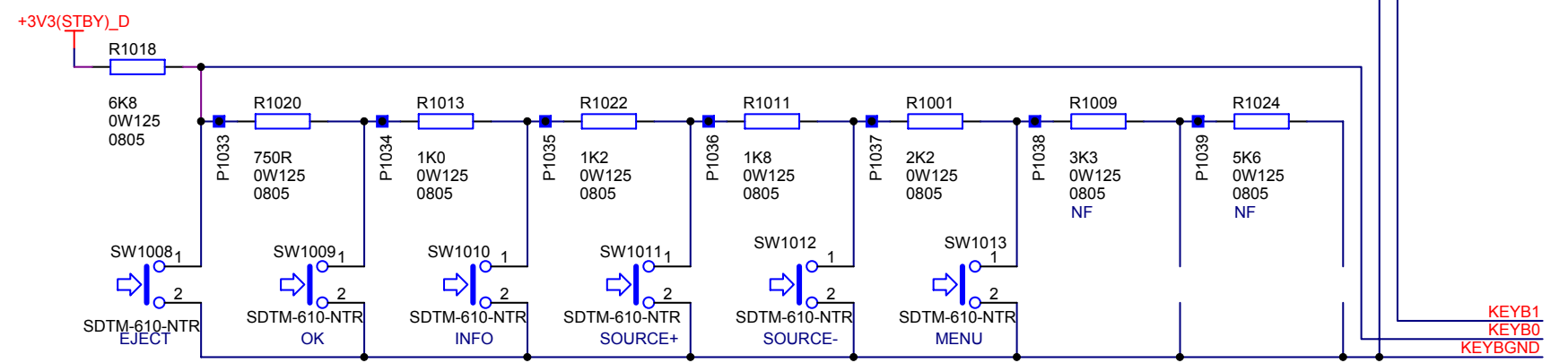
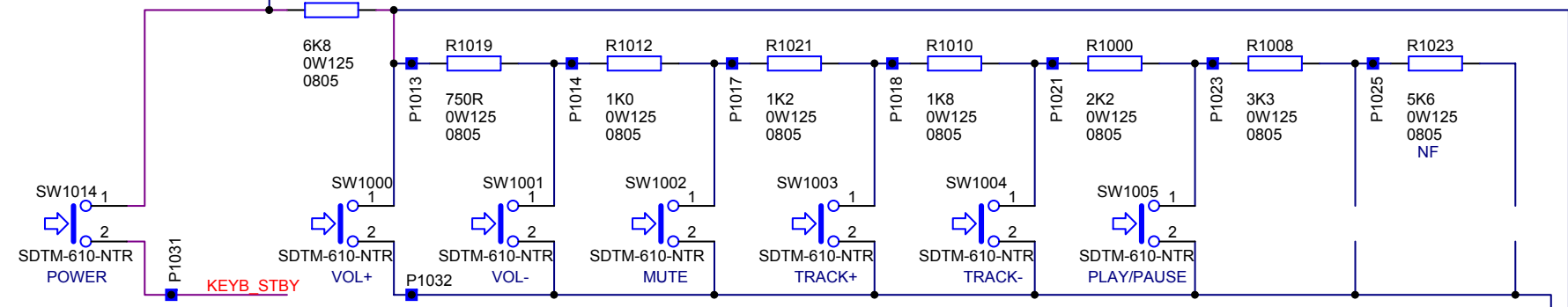
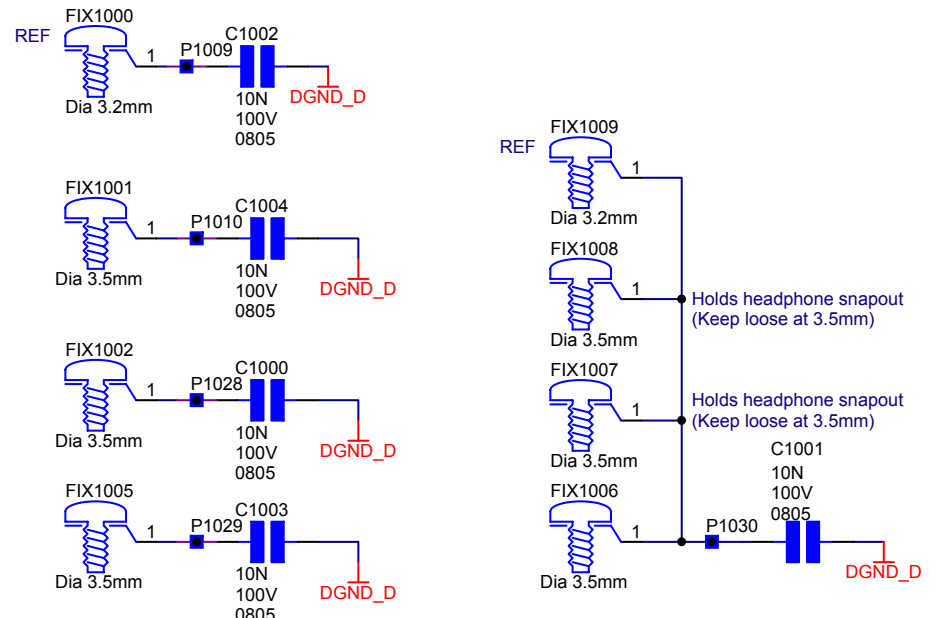
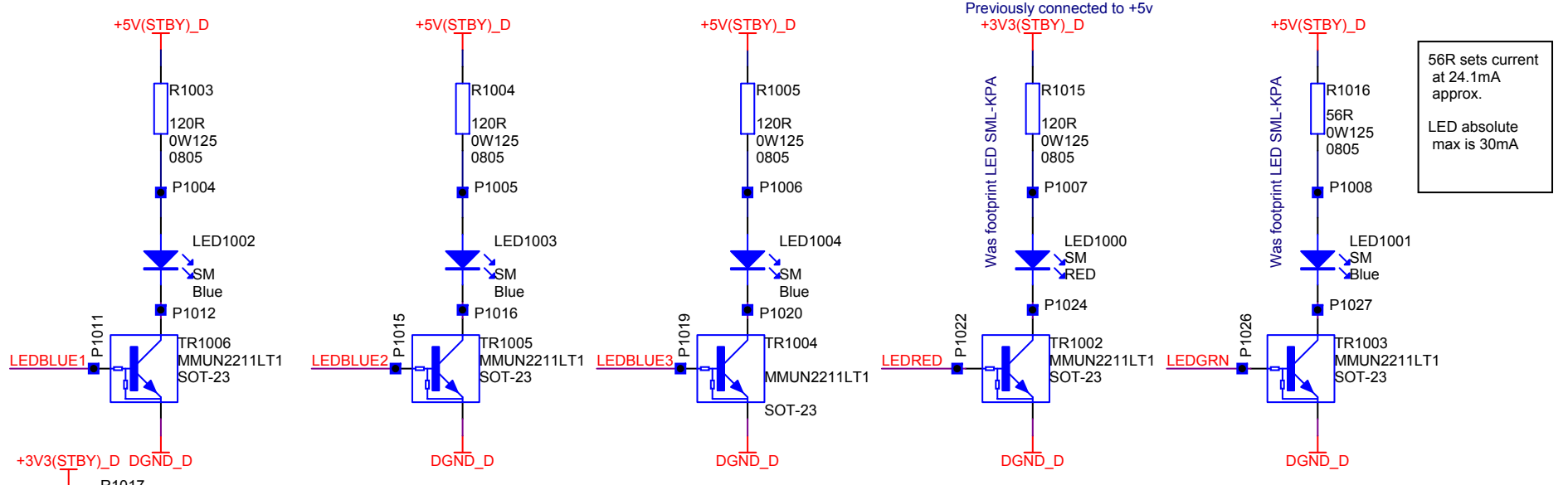
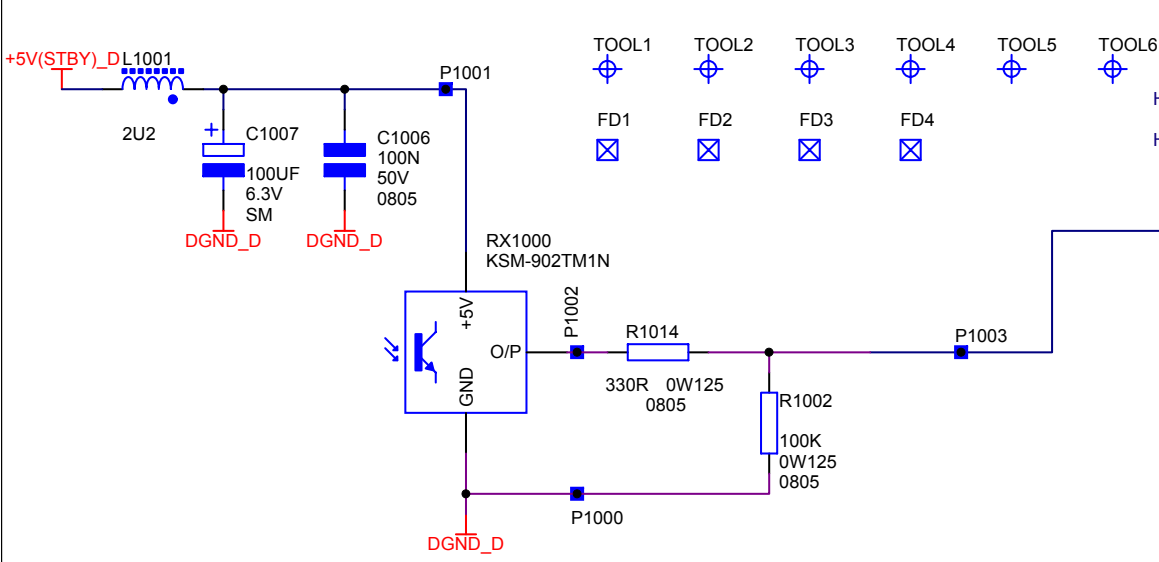
This board is fitted to US version of Solo5.1.



If used, resistors R600 and R601 should be moved to the bottom layer before production.

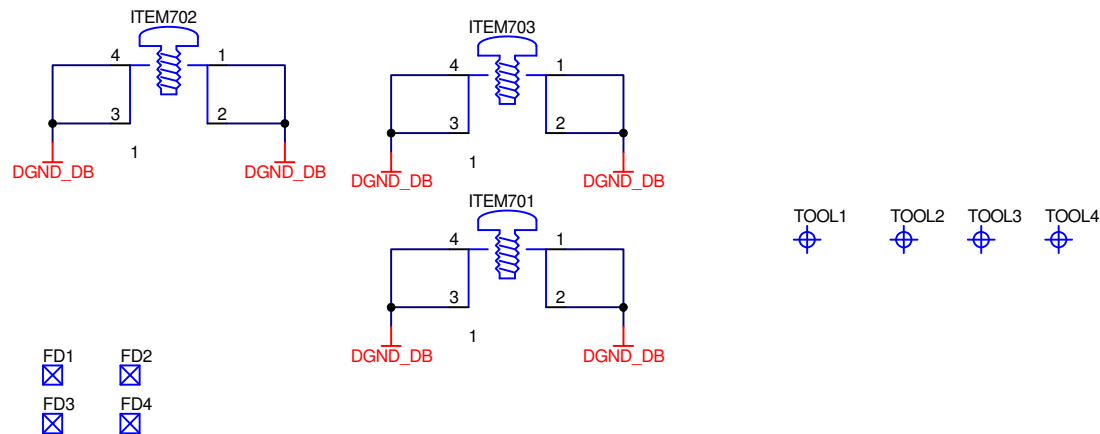
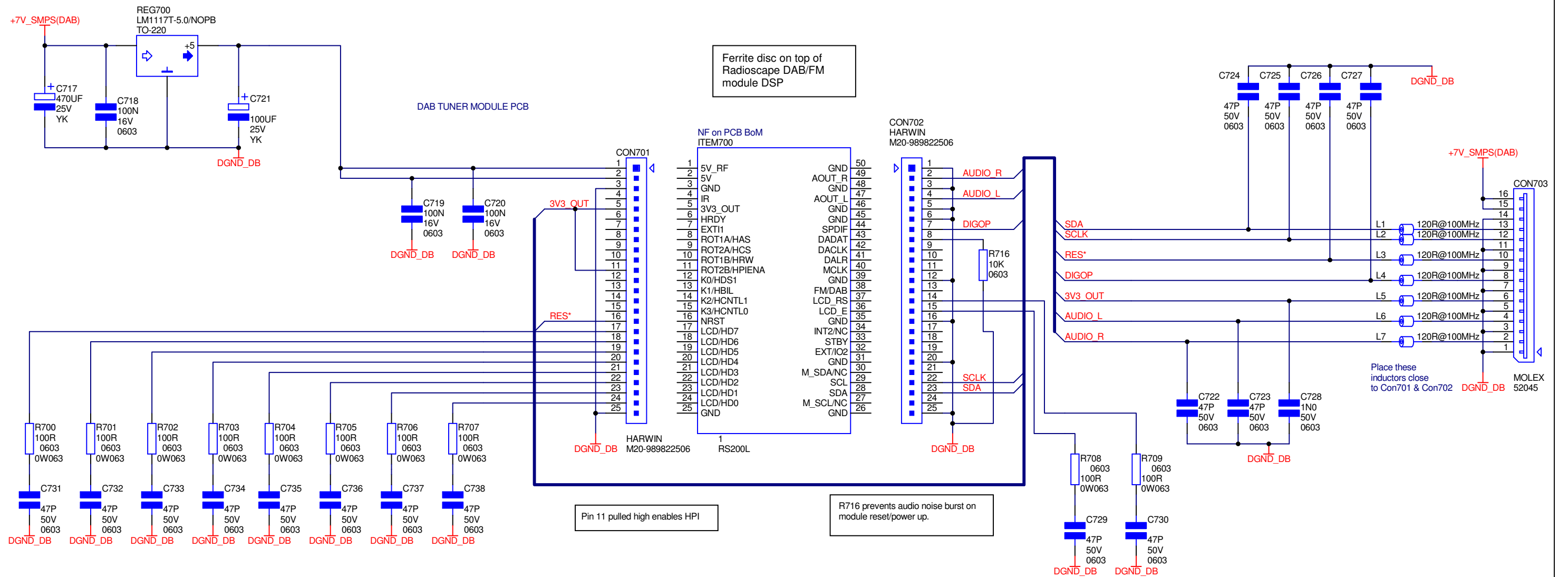
ITEM	QTY	PART No.	DESCRIPTION	NOTES
ITEM502	1	L106PB	Blank PCB Solo5.1 Component Connector Board	
<b>DRAWING TITLE</b>				
<b>Solo5.1 Component connector board</b>				
<b>Notes:</b>				
06_E102	PC	24/07/06	ADDING BLM FILTERS	1.0
06_E028	NM	14/03/06	Release of second prototype	B.0
05_E251	NM	04/01/06	Release of first prototype board	A.1
05_E194	PJC	20/10/05	Release of preliminary BOM	A.0
n/a	PJC	14/9/05	Circulation for initial review	A
ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE
Contact Engineer: Andrew Dutton		Contact Tel: (01223) 203200	Printed: 24-Jul-2006	Sheet 1 of 1
A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB5 9QR		DRAWING NO. L106CT		

ITEM	QTY	PART No.	DESCRIPTION	NOTES
ITEM106	1	L108PB	Blank PCB Solo 5.1 Display	
ITEM107	1	F238	Foam D/S ADH BK 3MM Thk 10MM Wide RA106 10M Reel	0.04m length to be placed under the VF display. Database needs to be manually adjusted to reflect this length!
ITEM108	1	F238	Foam D/S ADH BK 3MM Thk 10MM Wide RA106 10M Reel	0.04m length to be placed under the VF display. Database needs to be manually adjusted to reflect this length!
ITEM100	1	E822AP	Pad Adhesive Spacing - Diva Remote Sensor	Place behind IR eye (RX1000) to stand off from PCB.



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DRAWING TITLE		07_E095		06_E189		06_E176		06_E111	
<b>Solo Movie Display</b> <b>ARCAM</b> A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB5 9QR		MJT		MJT		MJT		MOC	
		02/07/07		04/12/06		22/11/06		22/08/06	
<b>Filename:</b> L108CT_2.0.sch <b>Notes:</b>		Change VFD logic supply to 3V3 (with option for old 5V) due to VFD part redesign by Itron		R1015 changed to make red LED brighter.		LED1000/1001 changed type, mounting holes now 3.2mm, added foam pad standoff behind IR eye.		CHANGED THROUGH HOLE LEDS WITH SM	
<b>Contact Engineer:</b> Mark Tweedale <b>Contact Tel:</b> (01223) 203200		<b>Printed:</b> 29-Jun-2007		<b>Sheet 1 of 1</b>		<b>A3</b>		<b>DRAWING NO. L108CT</b>	
<b>ECO No.</b>		<b>INITIALS</b>		<b>DATE</b>		<b>DESCRIPTION OF CHANGE</b>		<b>ISSUE</b>	



N.B. DGND will be connected to chassis via tuner module and 3 right angle brackets.

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ITEM	QTY	PART No.	DESCRIPTION	NOTES
ITEM1	1	L109PB	Blank PCB Solo5.1 DAB	
<b>DRAWING TITLE</b>				
<b>Solo 5.1 DAB carrier board</b>				
<b>ARCAM</b>		Filename: L109 Solo 5.1 DAB.SCH Notes:		
A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB5 9QR		06_E044 PJC/ NM 09-05-06	05_E237 SWB 19-01-06	Second Prototype, EMC mods, brackets replace upright. First Prototype
Contact Engineer: Scott Burr/Nick Minter Contact Tel: (01223) 203241/203207		ECO No. INITIALS DATE	DESCRIPTION OF CHANGE	B A ISSUE
Printed: 9-May-2006		Sheet 1 of 1		A3 DRAWING NO. L109