

Arcam rCube Service manual



Overview

The rCube in its simplest form can be thought of as a high performance iPod docking station with more than a few unique features these include.

Wireless transmission from either iPod transmitter (Arcam Wand) or USB (Arcam Wave) these are both optional extras.

rCubes can transmit to each other from a docked iPod or external source wired source.

Internal battery power supply.

Easily replaceable iPod header (covered latter in manual).

Access

Although very compact the rCube is designed to be serviceable with access gained from underneath to all electronic circuits (remove the four rubber feet) you will see four Philips screws, once these are removed the base plate can be lifted away exposing the main circuit board. The main speaker array is not considered a serviceable part but will be available as a complete assembly. Please see detailed exploded view.

Circuit description

PSU and charge

The 19V D.C PSU for the rCube is derived from either an **external** regulated PSU or if not present from the **internal** lithium ion battery packs the following is a description of the PSU selection.

The **external** 19V power supply is connected to Con600 and is internally fused by the 4A fuse at location FS600 the rear panel switch can be seen at location SW600(a), D600 is used to prevent reverse bias, D602 and TR600 from a D.C sense circuit this line goes to the main micro at location U301 pin 7.

PSU selection is control by the MAX1873 Switch mode Li charge controller at location IC603 the external 19v source can be seen to arrive at pin 15 (DCin) and when present simply by-passes the chip whilst being monitored by pins 1/2 (current sense) and can be seen to form the 19v source net on the diagram. The **internal** battery source can be seen connected to CON602 and again travels thru the 2nd pole of switches available on SW600(b) D605 and TR603 are used to form simple logic to indicate to micro U301 that battery power is present, D606 allows a path to the main 19v net whilst preventing reverse bias, the Mosfet (M601) is used to enable charge if necessary when power is present – the entire circuit is overseen by the main micro U301 via

PSU and charge *continued*

the feedback given by IC602 allowing for intelligent charging with charge enable provided from the micro via M602 on the control line labeled as charge_enable making a provision for extended cell life.

Multiple regulators are used to supply the (low) voltage areas of the design these are 1.4A step down adjustable regulators, REG600 receives a 19v source at pin one the output voltage is set by R601 and R640, Mosfet M600 allows for the PSU disable with the 3V standby supply being tapped of prior to the switch.

REG602 and REG603 operate in a similar fashion although utilize the chips own PSU shutdown control option at pin 2 (SD) under control of micro U301, a more conventional regulator is used at location REG601 to provide the 1.8v core supply to U301.

IC601 provides a logic switched (EN_iPod_PWR) current limited +5v supply to the iPod to whilst also preventing an over current situation at the rear panel USB input +3v1 this is reported to the main micro via the USB_PWR_FAULT line.

REG604 (LDO) provides a 3v1 supply to the Klear and R.F circuits and is sourced from the +5v supply.

IC600 is a charge pump convertor on the +5VA power supply rail.

Micro

The Micro is shown in two halves on the diagram shown as IC301(a) detailing port allocation and IC301(b) detailing power supply requirements and programming header with reset provided by IC303.

PSU requirements include 3V3 STBY and V1.8 (internally generated by the ATMEL)

The below table details the IC301 pin allocations and functions

Pin number	Description	Associated circuit(s)
6	AMP_TEMP_COM	Pin 32 of power amps and locations IC504 IC505 IC506
7	DC_PWR_PRESENT	From TR600 (sheet 6)
9	V_IOUT_POT	From IC603 via IC602 MAX1873 (sheet 6)
10	BATT_PWR_PRESENT	From TR603 (sheet 6)
11	POS_SW	SW301 Rear Panel Bass select switch
12	DSP_12C_SDA	DSP at location IC400
13	DSP_12C_SDL	DSP at Location IC400

IC301 pin allocations and functions *continued*

Pin number	Description	Associated circuit(s)
14	INT_DISPLAY	To top plate display via iPod header board
16	STBY_LED	To top plate display via iPod header board
24	ACC_POWER	From iPod header
25	IPOD_DETECT	From iPod Header
26	VID_CABLE_0	From multi pin video connector at location SKT200
27	PSU_DISABLE	Regulators RG602 and RG603
28	I2C_SDI	Apple authentication chip at location IC300
29	I2C_SDA	Apple authentication chip at location IC300
30	UC595_CLK	8 bit shift register at location IC302(A)
31	UC595_DATA	8 bit shift register at location IC302(A)
33	PROGRAM_SW	No Fit
34	HOST_SPI_DATA_OUT	IC405 and debug
35	HOST_SPI_CLK	IC405 and debug
36	HOST_SPI_CS*	IC405 and debug
37	UC595_LATCH	8 bit shift register at location IC301(A)
38	USB_PWR_FAULT	From IC601
41	SPI_MODE0	Receive / Transmit toggle via IC403
42	SPI_MODE1	Receive / Transmit toggle via IC403
43	VID_CABLE_1	From multi pin video connector at location SKT200
44	IR_EYE	From iPod header interface
45	CHARGE_DISABLE	To IC603 via Mosfet M602
46	ATMEL_OE	
47	UART_UC_TO_KLEER	Kleer interface data
54	VOL_CLK	To IC501 / IC502 volume controls
55	VOL_DAT	To IC501 / IC502 volume controls
57	IPOD_TO_UC_RS232	iPod interface Data
58	UC_TO_IPOD_RS232	iPod interface Data
59	UART_KLEER_TO_UC	Kleer interface data
60	HOST_SPI_DATA_IN	IC405 and debug
61	AMP_SHDN*	To power amp packages IC504, IC504, IC506
62	AMP_MUTE*	To power amp packages IC504, IC504, IC506
50	USB_D+_UC	USB stick via ESD protection package IC304
51	USB_D-_UC	USB stick via ESD protection package IC304
52	+5V(USB)_STICK	+5V USB stick PSU

Audio in / Video out

iPod audio can be seen as IPOD_AUDIO_L and IPOD_AUDIO_R this is driven thru the NJM2114 op-amp at IC201(A/B) before arriving at the DG413 analogue cmos chip at location IC200 (A/B) this switch allows for the routing of either audio from a docked iPod or from the external path via 3.5mm rear panel stereo jack at location SK202 again coming in via a NJN2114 at location IC202 (A/B) also present on this page is the YUV and Composite video outputs these signals are derived directly from the source device and can be seen on circuit as

SVID-C COMP-Y

SVID-Y COMP-PR

CVBS COMP-PB

Default output is Composite with YUV switched when an "Arcam" YUV cable is inserted and the sense on VID_CABLE_0 and VID_CABLE_1 are triggered.

KLEER and DSP

All audio signals are routed thru the Analog Devices DSP chip at location IC400 allowing for not only the High/Low pass filtering of channels for the power amp stage but also bespoke audio manipulation, the analogue audio from either docked iPod or Aux L + R in appearing at pins 78/79 – a Wolfson WM8805 running from a ref 11.2896Mhz clock is used primarily for Jitter reduction for the Klear input chip at Location IC407 – it is important to note that the Klear Chip is a receiver or transmitter the Klear chip is under control of the micro at position U301 the receive / transmit circuit can be seen on the R.F amp circuit. Data for transmission from a docked or external source can be seen coming from the DSP as SDATA_DSP_OUT. The E2PROMS at locations IC405 and IC406 are used to store transmit / receive lock history.

RF AMP

Think of this stage as a transceiver i.e it will both send and receive information from the external target the stage uses toggle switches to effectively switch the between the transmit and receive stages.

RF AMP continue

The RF stage is both Receive or Transmit (transceiver) allowing Cubes to be linked for docked iPod source and external analogue inputs hence you will see two spate paths that are switched R.F switches seen as IC701 IC702 IC703 two separate Antenna are used and the rCube has the ability to select the most stable aerial at any given time the audio path into/out of the Kleer chip is seen as KL3012 regardless of status – when in receive mode the RF power amp is bypassed by IC701, IC702 in transmission mode both switches are toggled to bring the Saw filter FL700 and Low RF Pass filter FL701 with Power Amp IC704 back in line, The two antenna are connected to the surface mount sockets at SKT700 an SKT701.

DAC Filters and Amplifiers

Audio arrive the DAC filters and Amplifiers circuit from the DSP as 4 separate channels these being TWEET_L/ TWEET_R/ WOOF_L/ WOOF_R each channel travel thru an identical filter circuit TWEET_L channel will be described.

TWEET_R audio arrive at capacitor C508 before traveling into the filter based around the NJM2114 at location IC500 the audio is further filtered by the network of capacitors based around C326 and C327 in combination with C510 – audio then passes into the Volume control IC at location IC501 on pin 1 and can be seen to exit (volume adjusted) on pin 14 – the volume control is under control of the main micro at position U302 via line VOL_CLK / VOL_DAT the line will know be known as TWEET_VOL_R and travels into the Power amp chip at location IC507 (shared with TWEET_VOL_L) this package is driven from the +19v_amp supply and is thermally protect to trigger at 100c / standby and mute control comes from the main micro and temp status of the power amp can be reported to back to the micro.

The WOOF_VOL_L and WOOF_VOL_R audio paths use a bridged power amp each seen at locations IC504 and IC05.

Display and keyboard

The display board is connected to the main board via the iPod header board and it's primary link on the main board is main micro U301.

The board is built around the IC1 a AT42QT1060 6-channel sensor IC this allows for capacitive sensors as keys and also perform the role of driving the top plate LED's with exception of Standby LED status red (this comes directly from U301) the chip is supplied by the 3V14 STBY power supply, the reset circuit shown on the circuit was not required by the final design.

All LEDs are driven from the +5_DIS rail apart from standby (red) as this is on the 3V14(STBY) rail.

Modes indicated by the standby LED

Mode	Illumination
Standby	Red
Power on	Blue
Power on charge	Violet
Program mode (standby held +5 secs)	Flashing red
Receiving software	Fast (strobe)red

Modes indicated by input LED

Mode	Illumination
Syncing to docked iPod	Flashing green
Sync complete	Solid green

Mode indicated by wireless LED

Mode	Illumination
No available lock	Red
Lock present	Green
Searching for link (hold wireless key +5 secs)	Flashing red

Mode indicated by Vol + / - LEDS

Mode	Illumination
Mute	Both LEDS on green

The IR sensor at location RX1 is connected directly to U301 and runs from the 3V14 supply

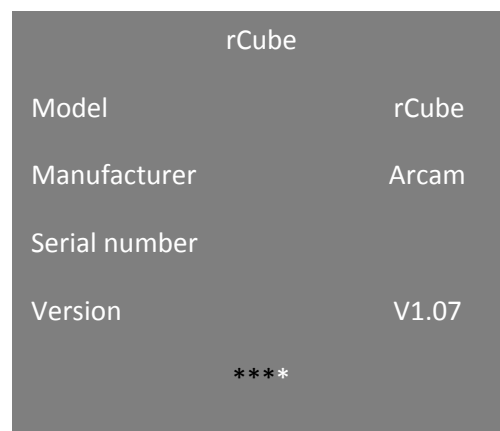
Check software version

Please note – instructions are based on an 80GB iPod classic – the route path is common to all variants.

Place an iPod / iPhone in the rCubes docking receptacle

- Navigate to settings (click)
- Navigate to about (click)

You will now see information regarding the iPods capacity/memory usage navigate to screen four as indicated by the dots at the bottom of the screen and you should see the below or similar.



In this instance we can see that the Software version is V1.07.

To update software

Download the latest SW version available from support@arcam.co.uk or local distributor.

Load this onto a USB memory stick (this needs to be a standard memory stick not on that carries a boot loader such a Cruzors).

- With the cube in standby
- Press and hold the top plate standby button for +5 seconds
- Standby LED should start to flash with a frequency of 2 time a second
- Place memory stick in rear panel port
- LED will now strobe very quickly and the rCube will reset after 15 seconds
- Remove USB stick
- Power cycle rCube (rear panel switch) Check that software version is as expected using iPod as in previously explained procedure.

Accidental software mode initialization

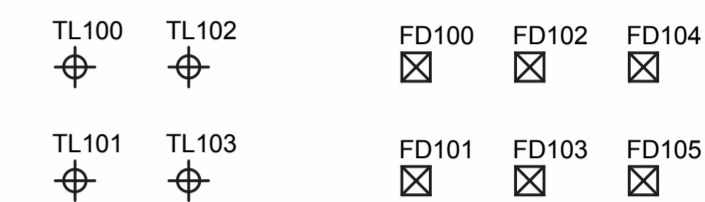
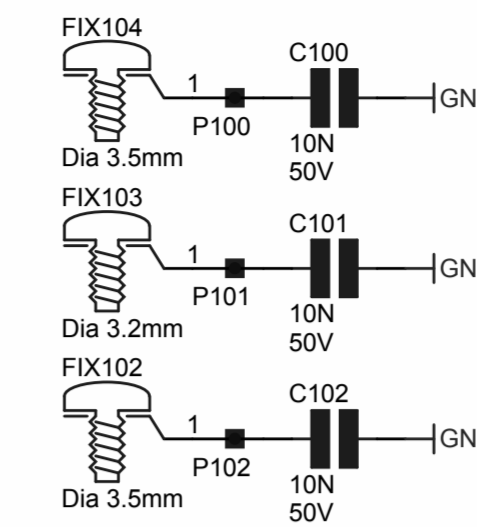
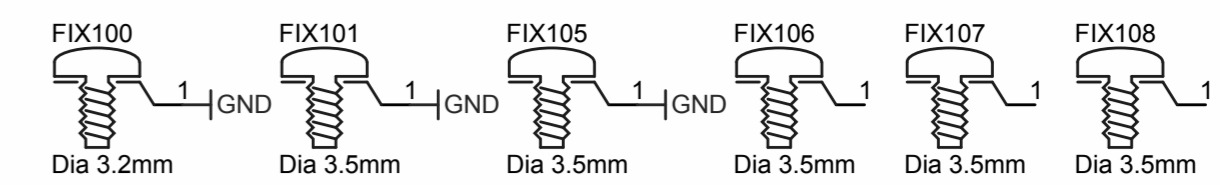
If the rCube is accidentally put into program / update mode – simply power cycle to rCube to return to normal operation.

Notes for mac users

The USB update should be stick should be formatted to FAT32 standard and the only file present on the stick should be the software update – i.e no indexing files such as DS_Store files, thumbs.db files use a software such Cleanmymac available at

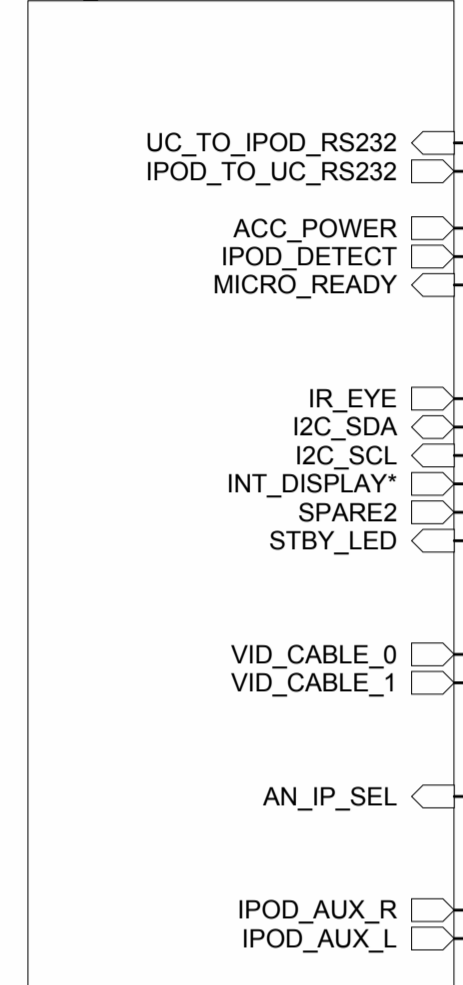
<http://www.macpaw.com/uk/cleanmymac/features>

You are interested in the Device Cleanup feature.



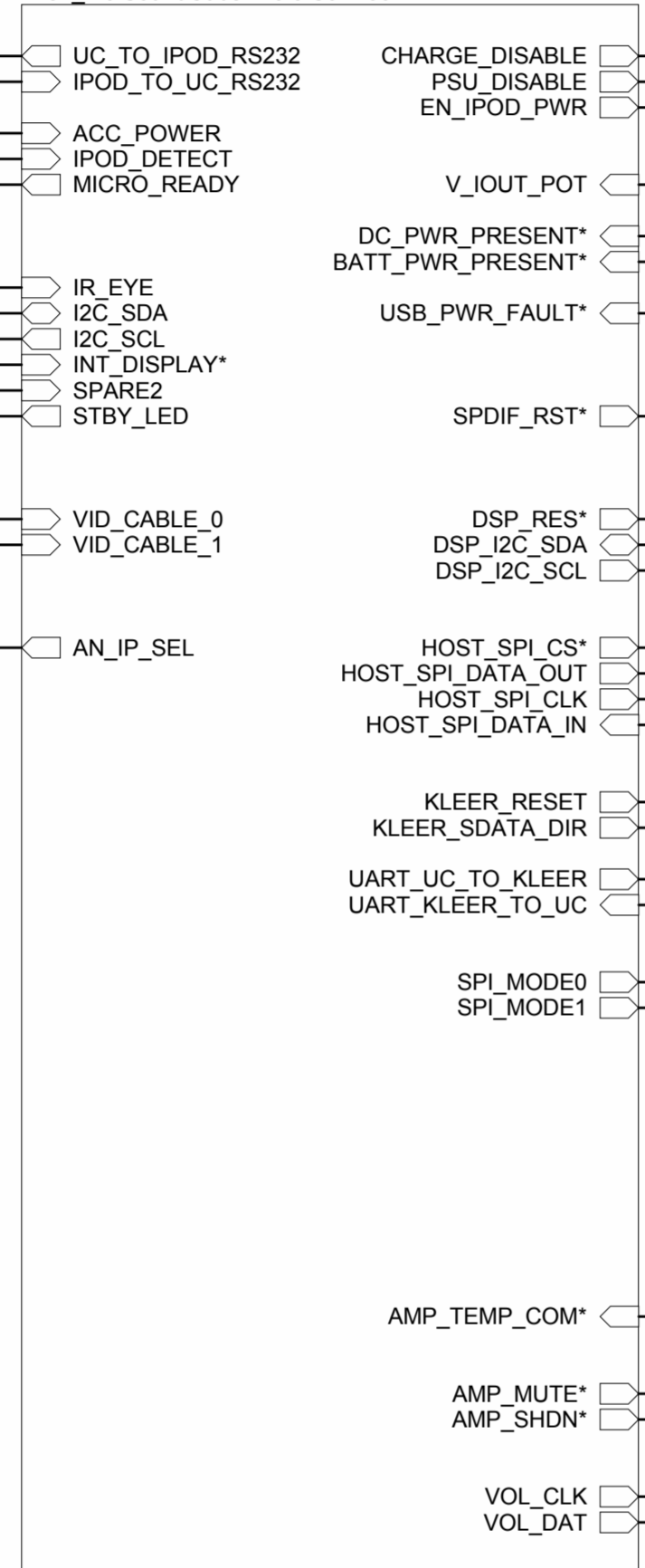
Audio in - Video out
(Incl. conns to iPod board and display)

U_L182_1
L182_1.0 SoundCube audio in video out.SchDoc



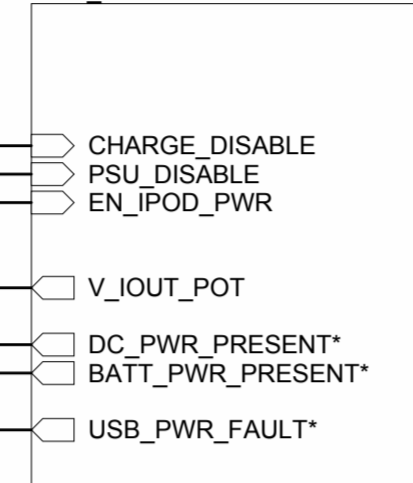
Host Micro

U_L182_1
L182_1.0 SoundCube Micro.SchDoc



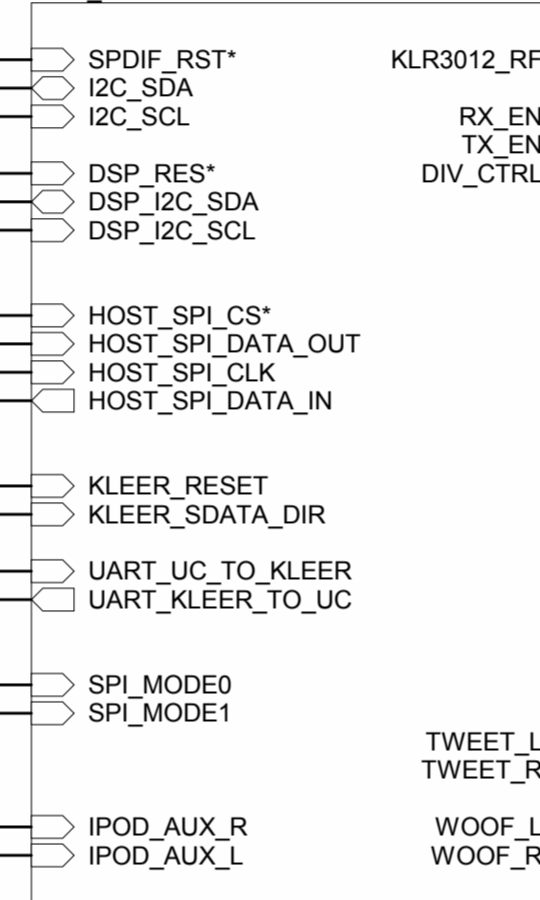
PSU + Battery charger

U_L182_1
L182_1.0 SoundCube PSU + charge.SchDoc



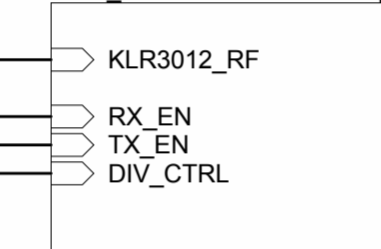
Kleer module + DSP (ADC/DAC)

U_L182_1
L182_1.0 SoundCube kleer + DSP.SchDoc



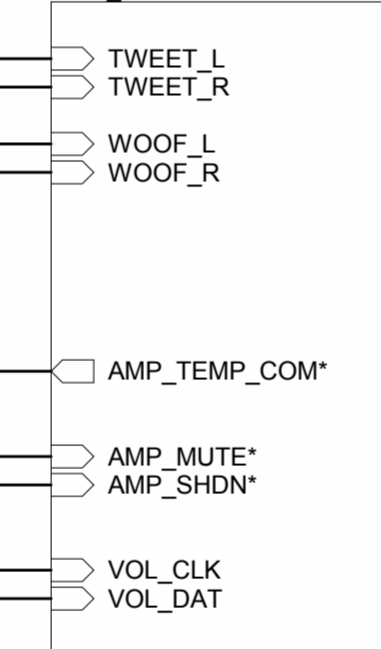
RF Amp + Diversity

U_L182_1
L182_1.0 SoundCube RF amp.SchDoc



Audio Amp and DAC filters

U_L182_1
L182_1.0 SoundCube filters + amps.SchDoc



ITEM	QTY	PART No.	DESCRIPTION	NOTES
PCB100	1	L182PB	Blank PCB SoundCube Main	
DRAWING TITLE				
SoundCube - Top Level				
ARCAM		Filename: L182_1.0 SoundCube Top level.SchDoc	10_E136	PK
A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB25 9QR		Notes:	10_E074	PK
Contact Engineer: Mark Tweedale mark@arcam.co.uk		01223 203210 Contact Tel Reception: 01223 203200	09/09/11	PK
Printed: 28/09/2010		Sheet 1 of 7	A2	DRAWING NO. L182CT

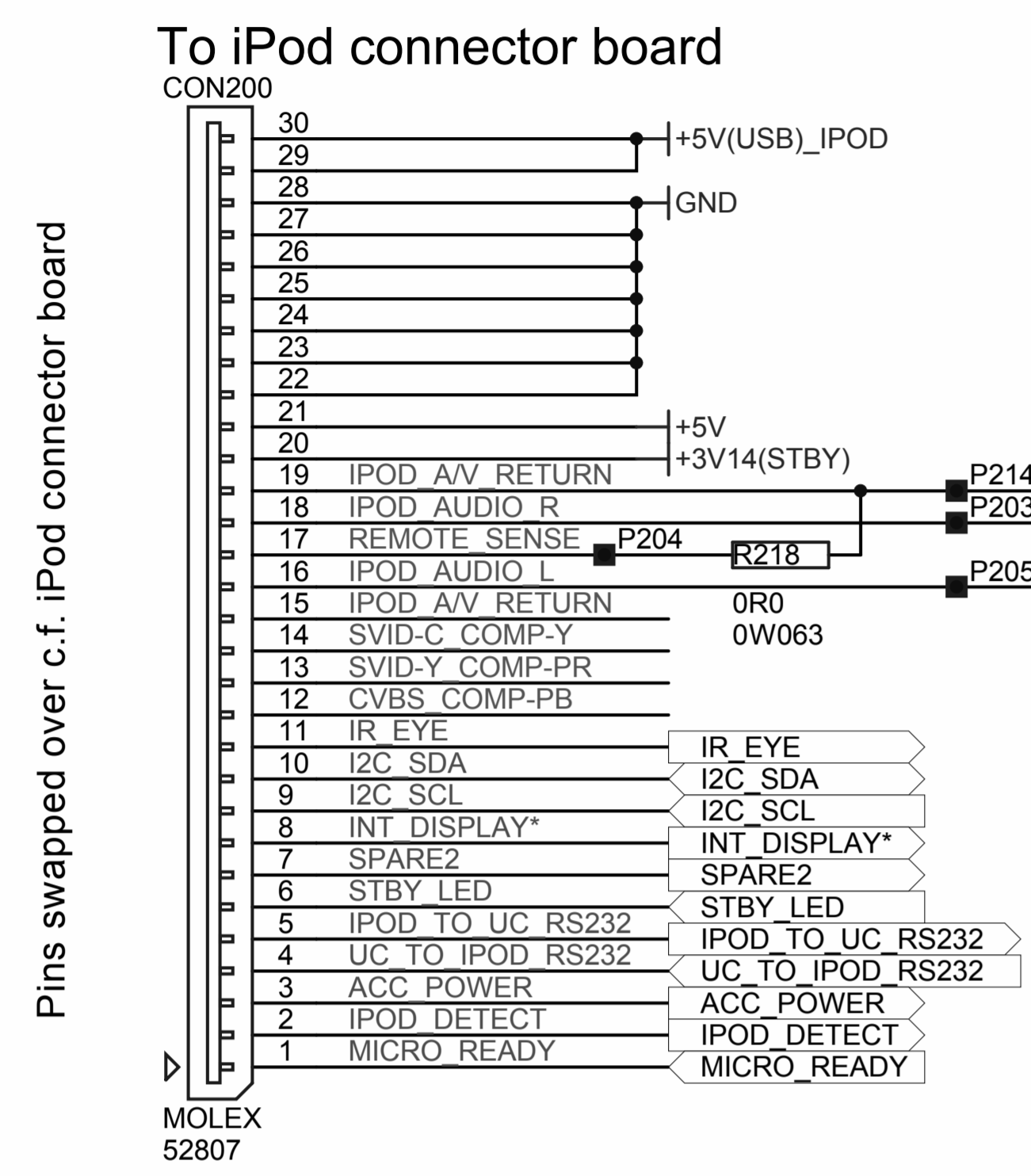
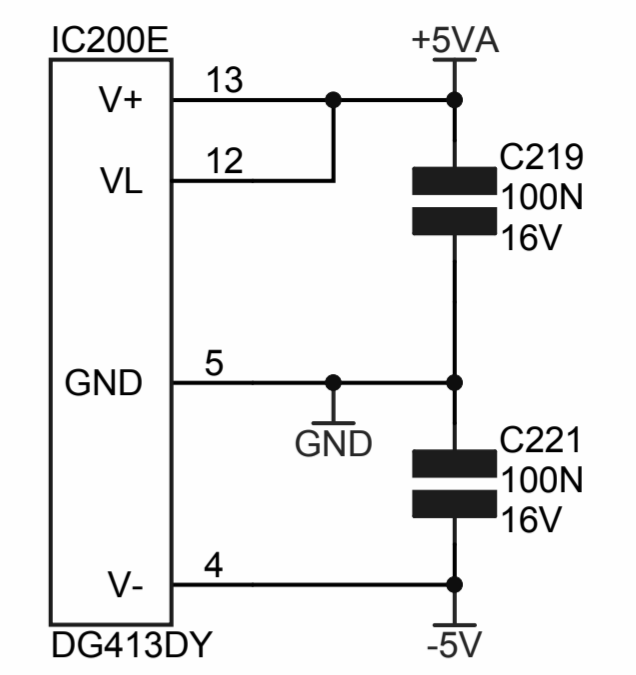
Video breakout cable detection:

VID_CABLE_0	VID_CABLE_1	
0	0	Reserved
0	1	Composite / S-Video cable attached
1	0	Component (3-wire video) cable attached
1	1	No cable - Default to Composite (CVBS)

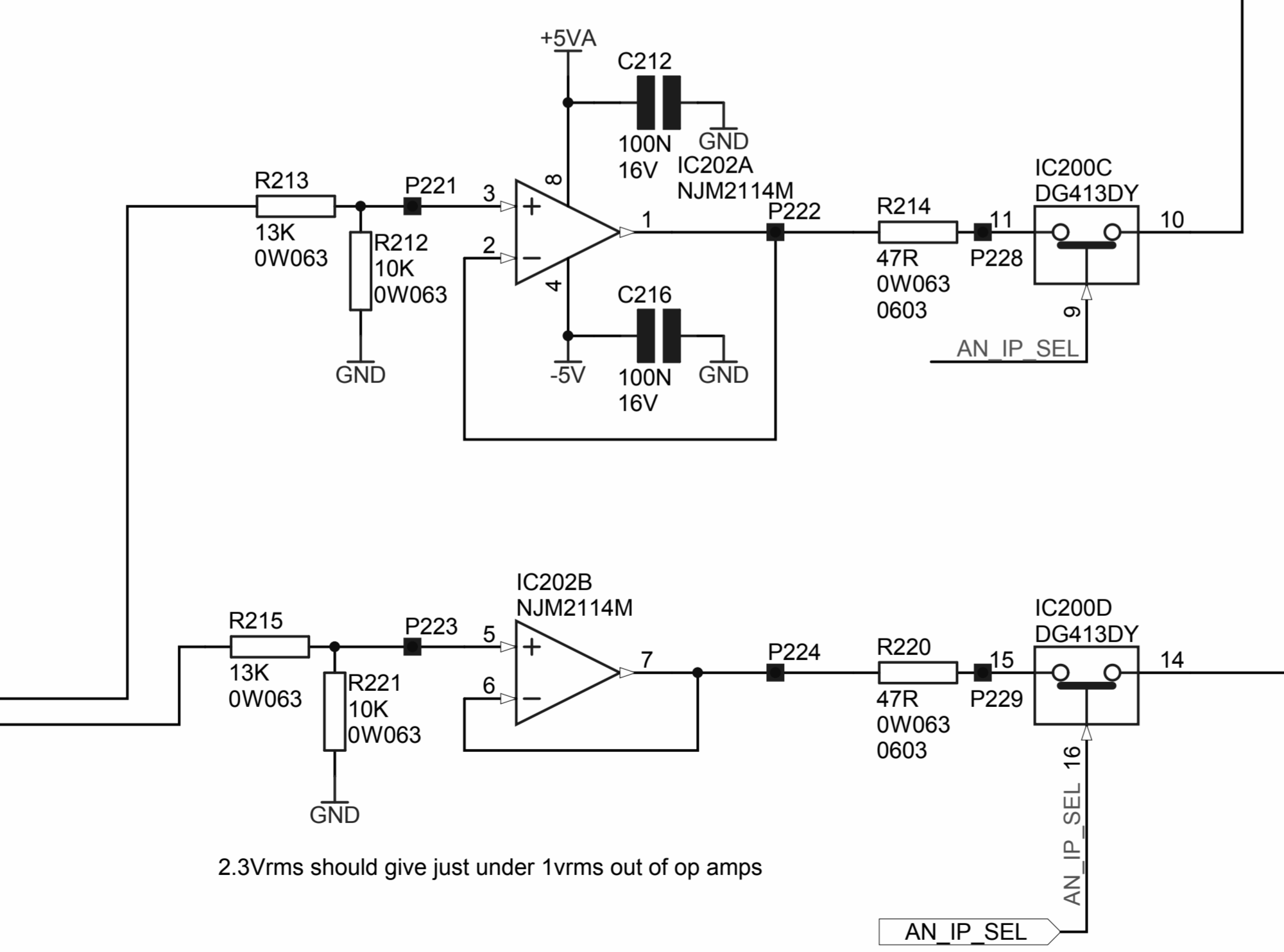
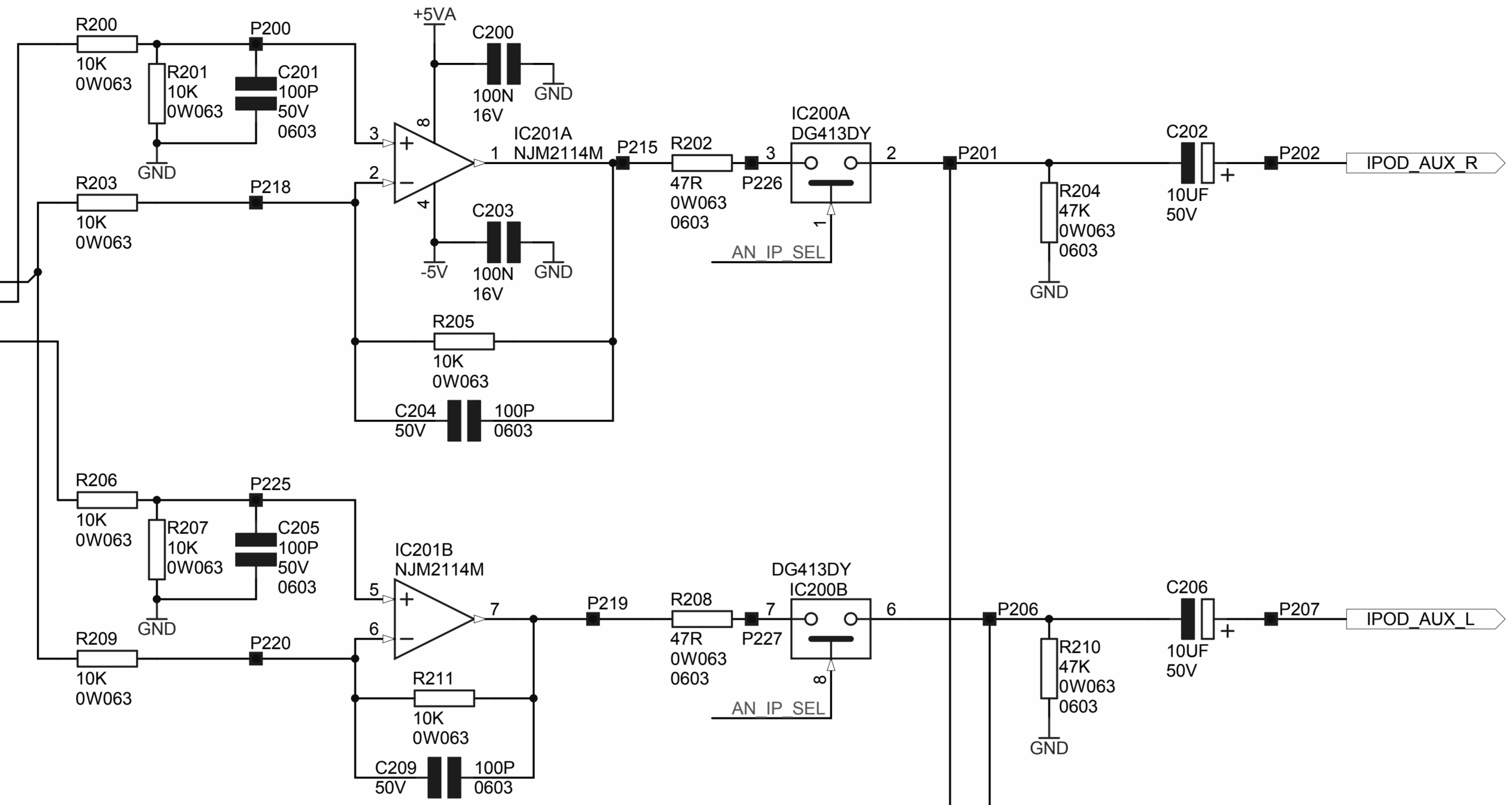
Analogue input selection table:

AN_IP_SEL	
0	= iPod
1	= Aux

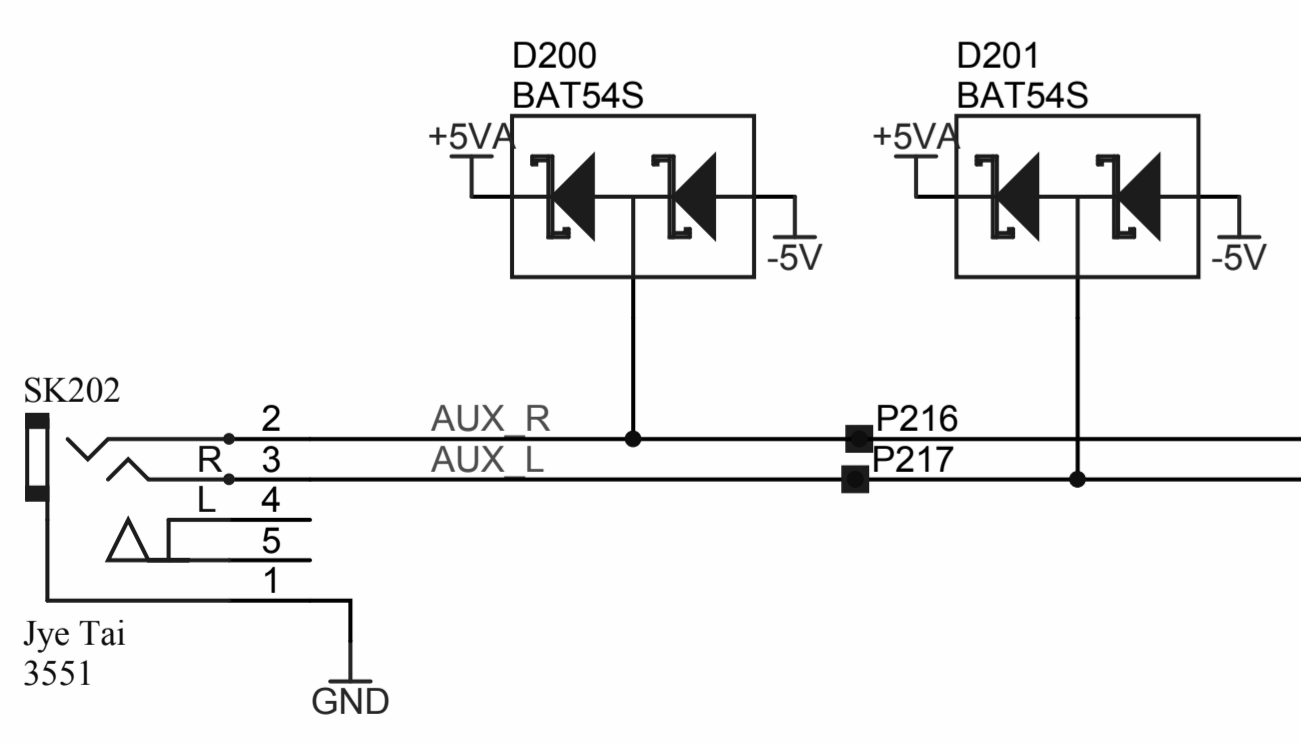
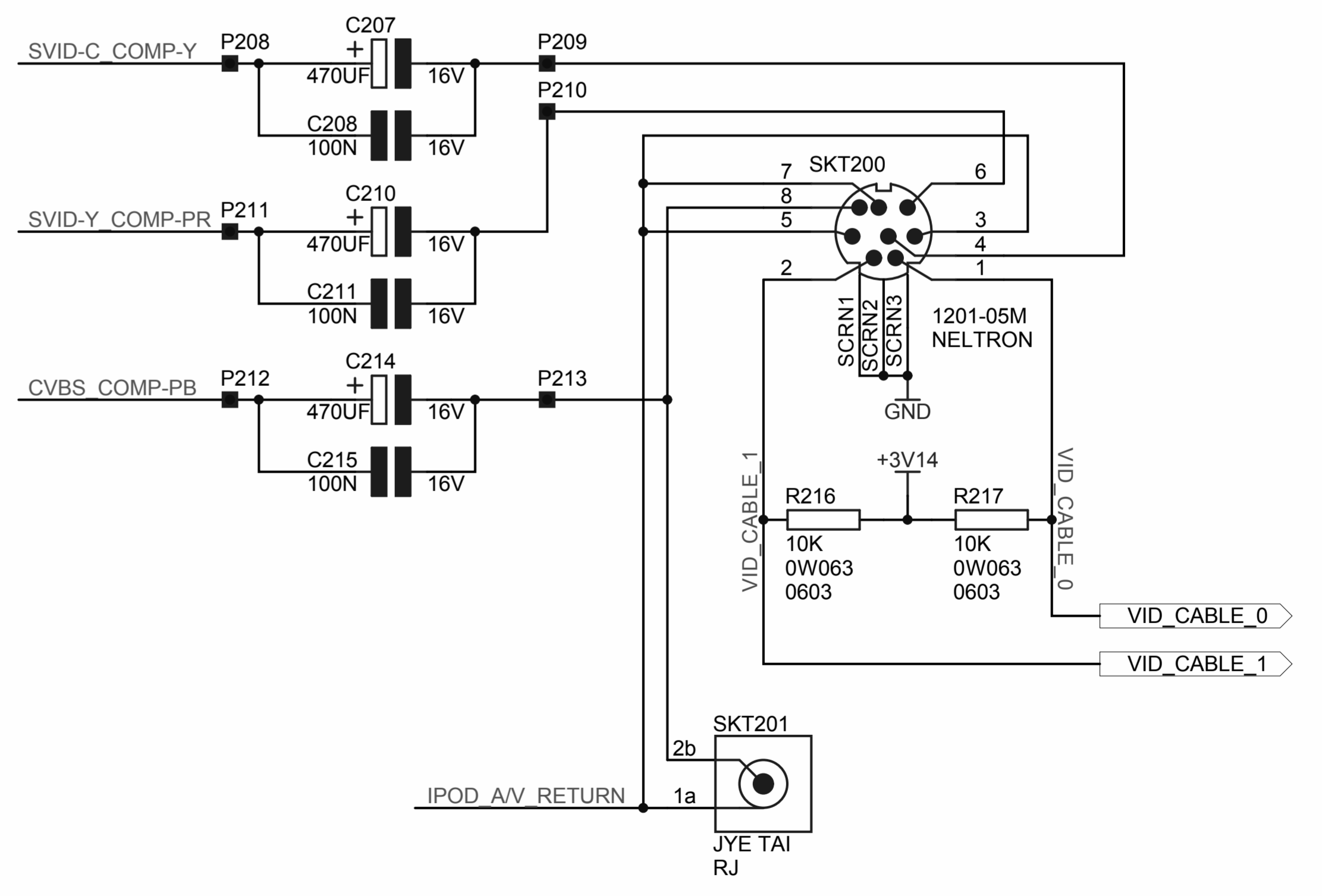
1mA current thru diode



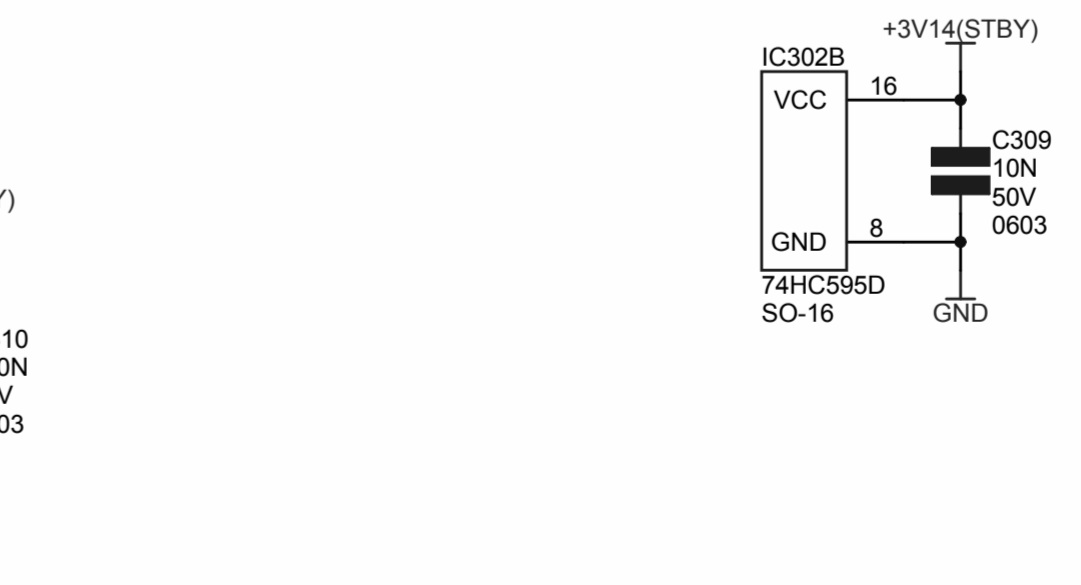
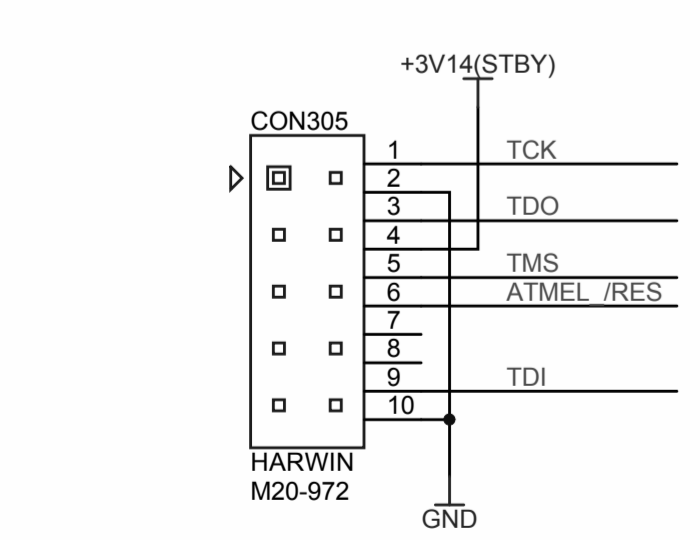
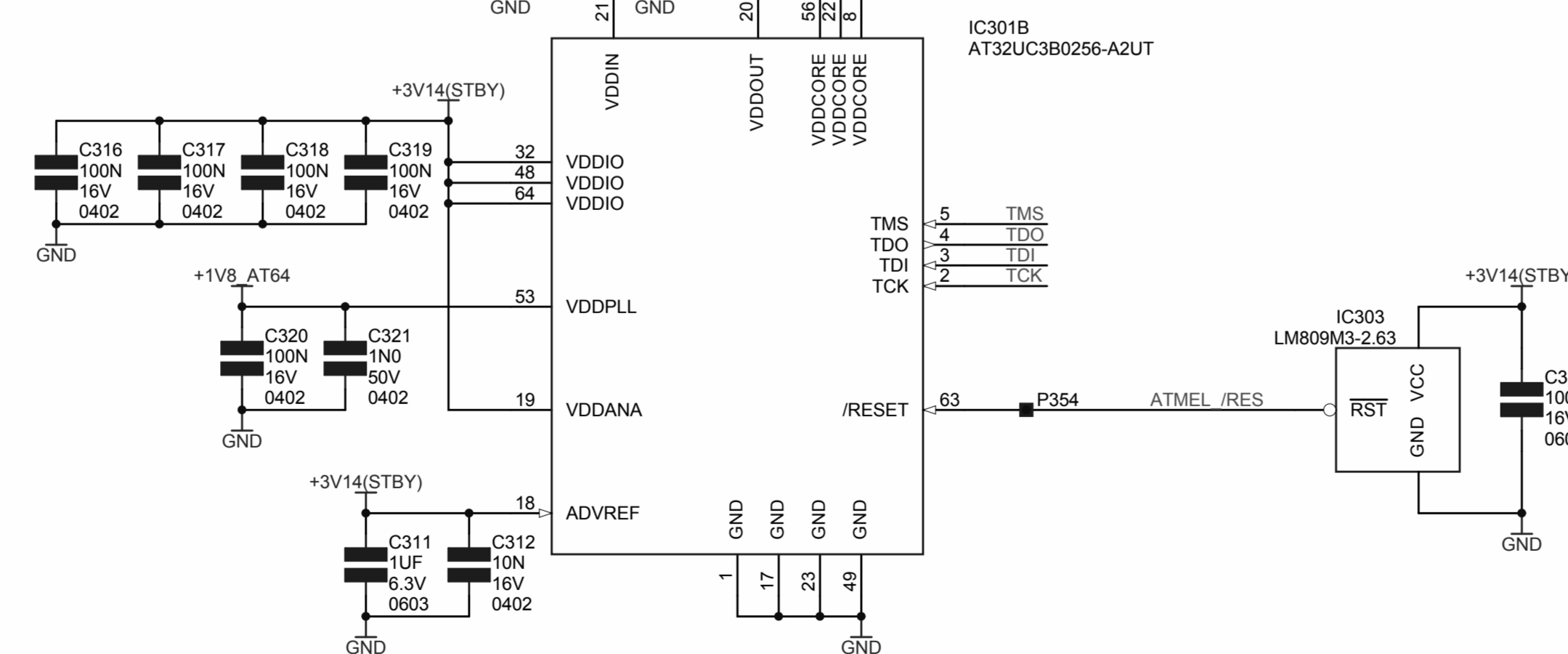
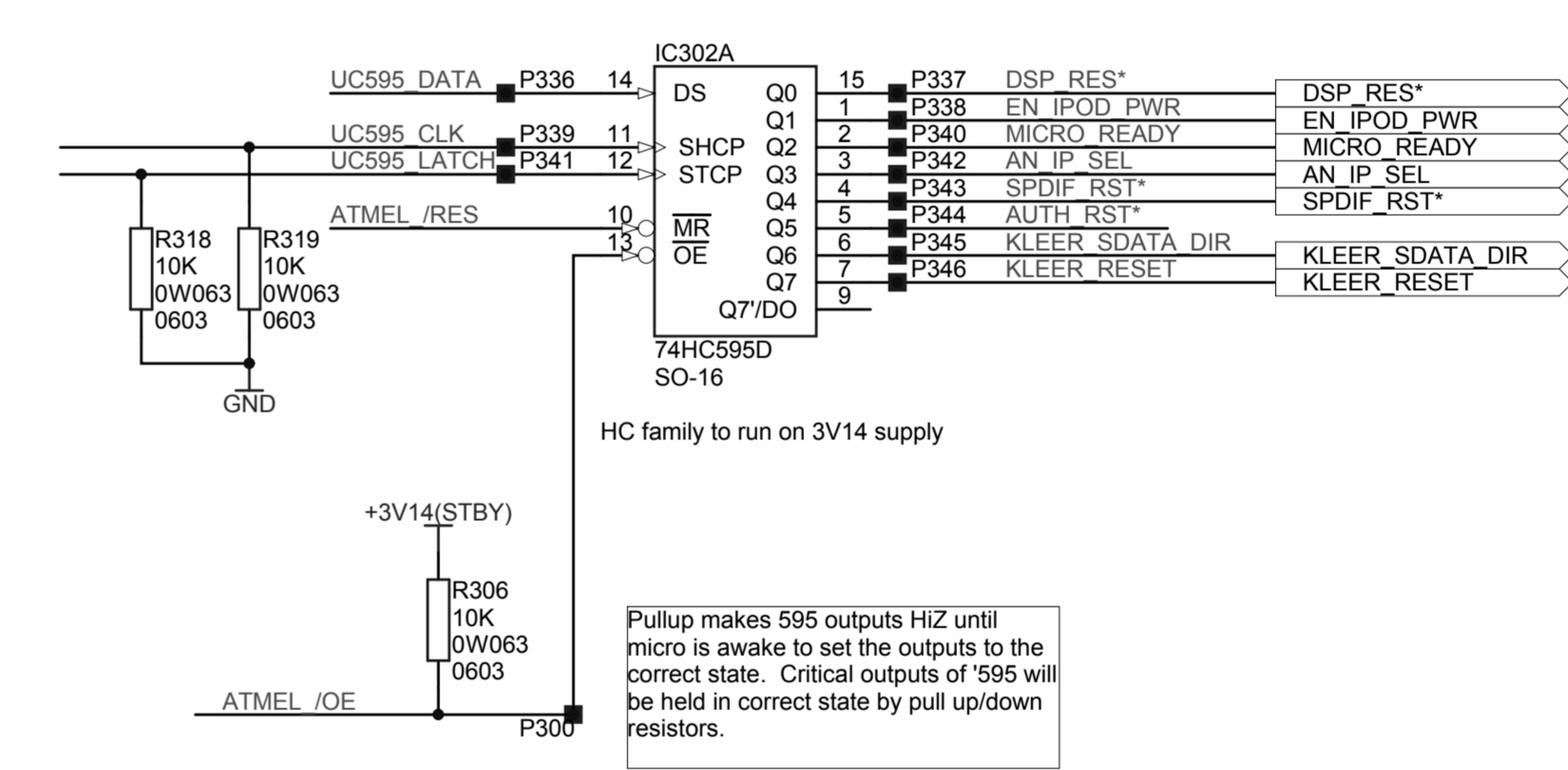
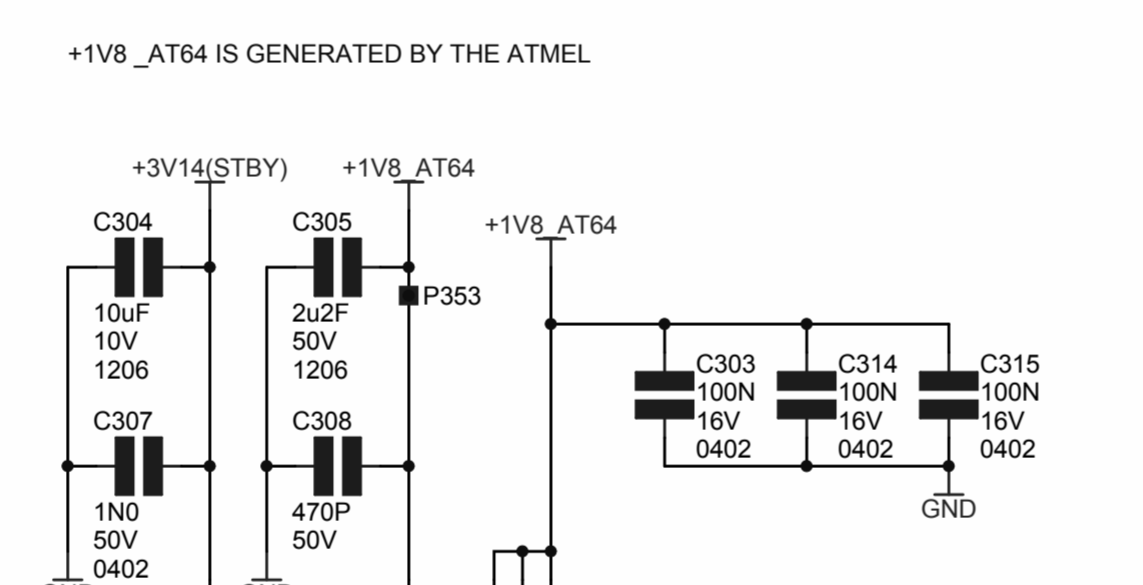
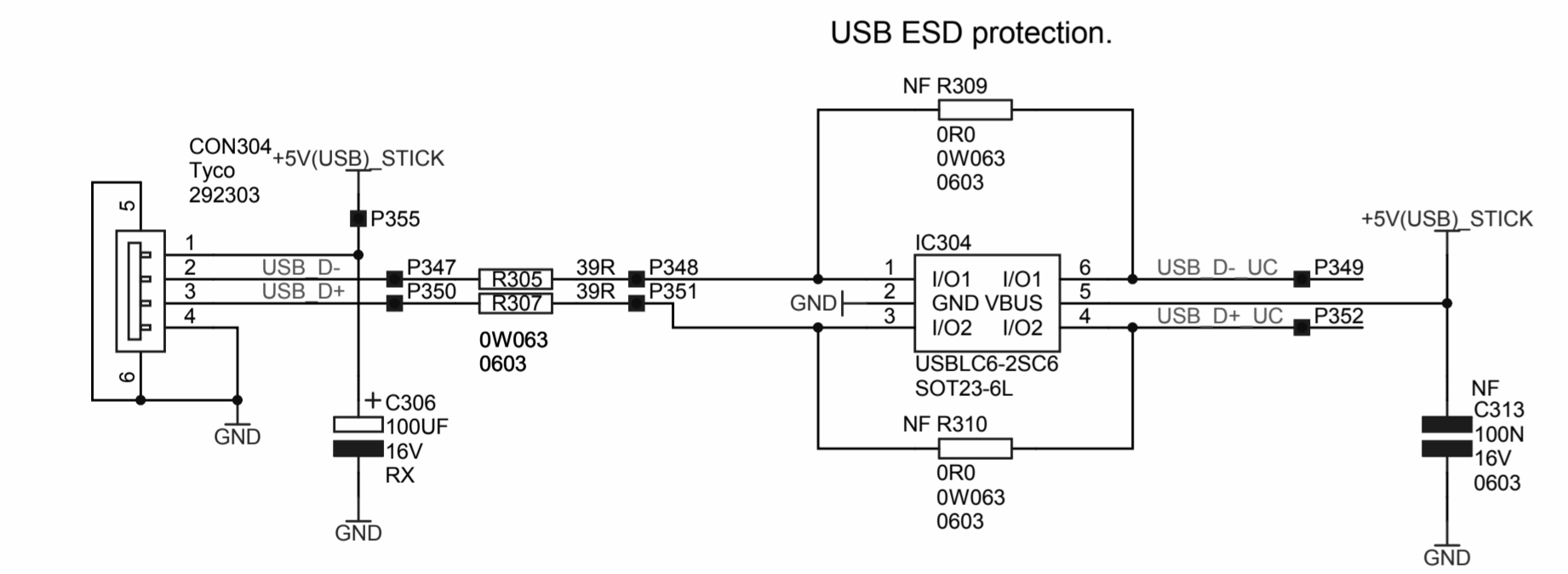
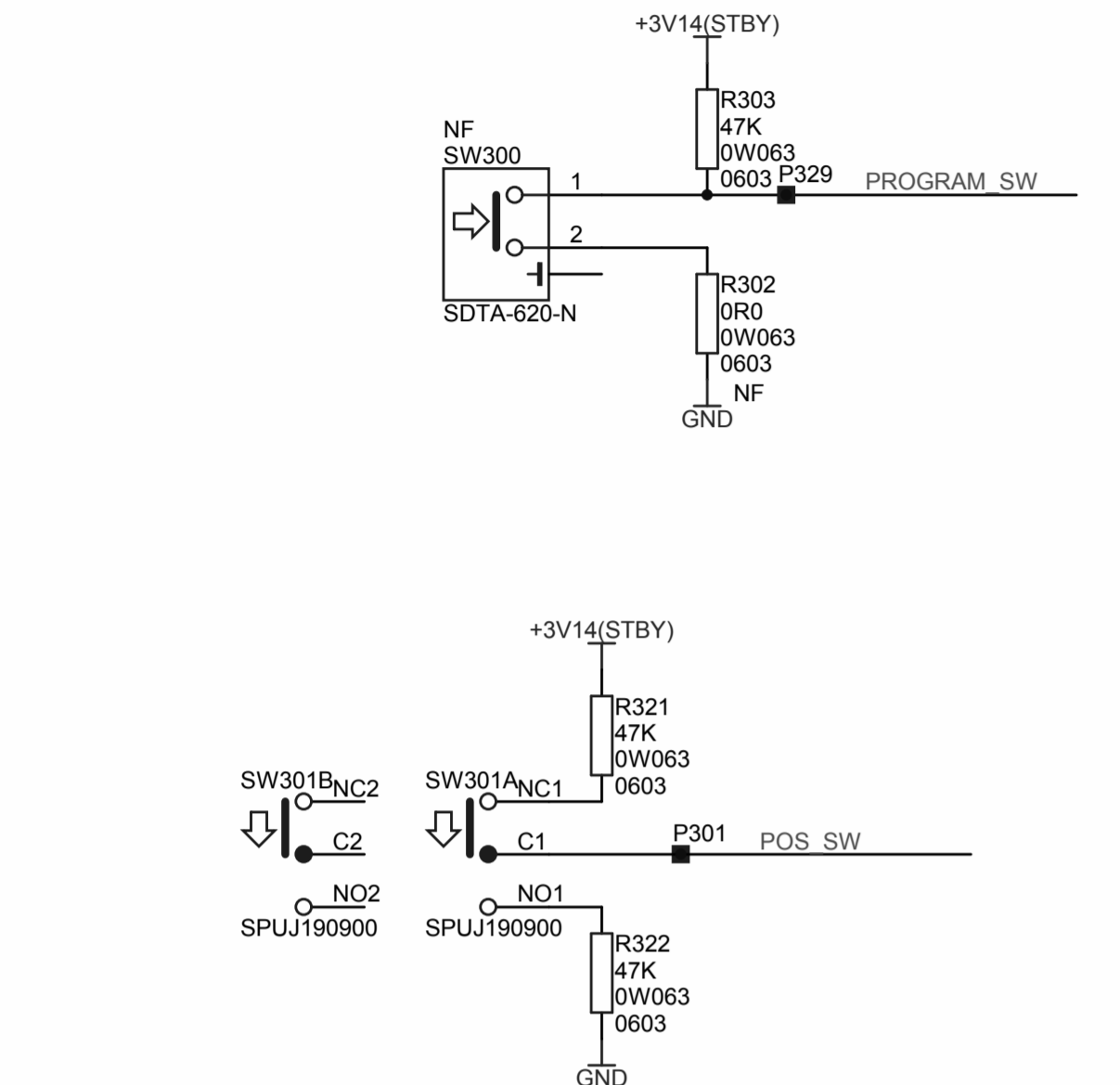
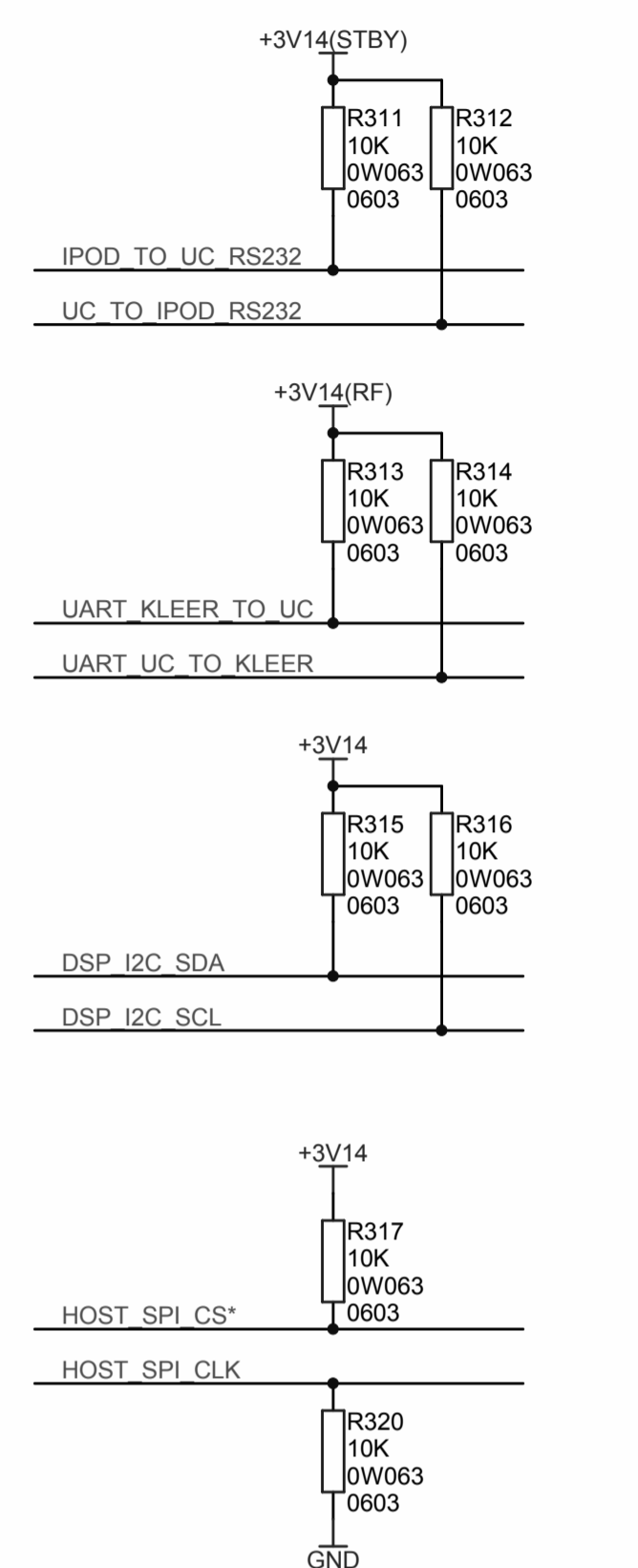
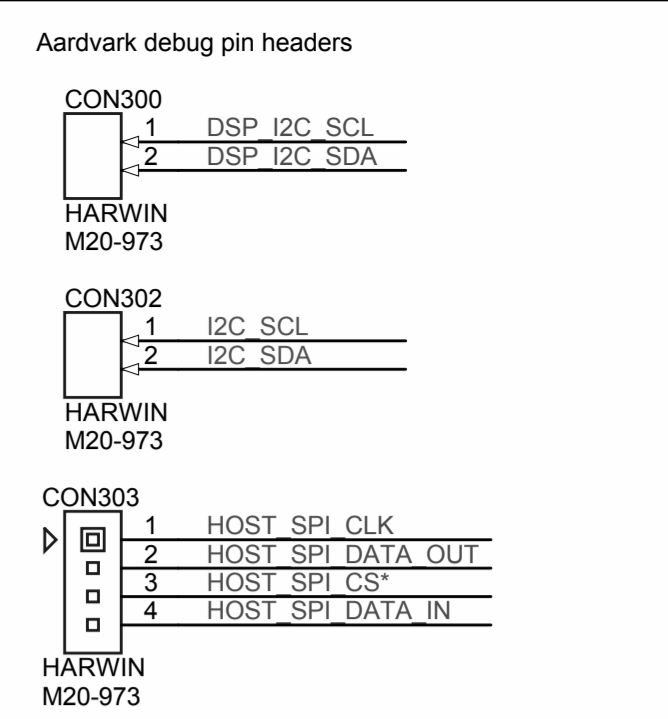
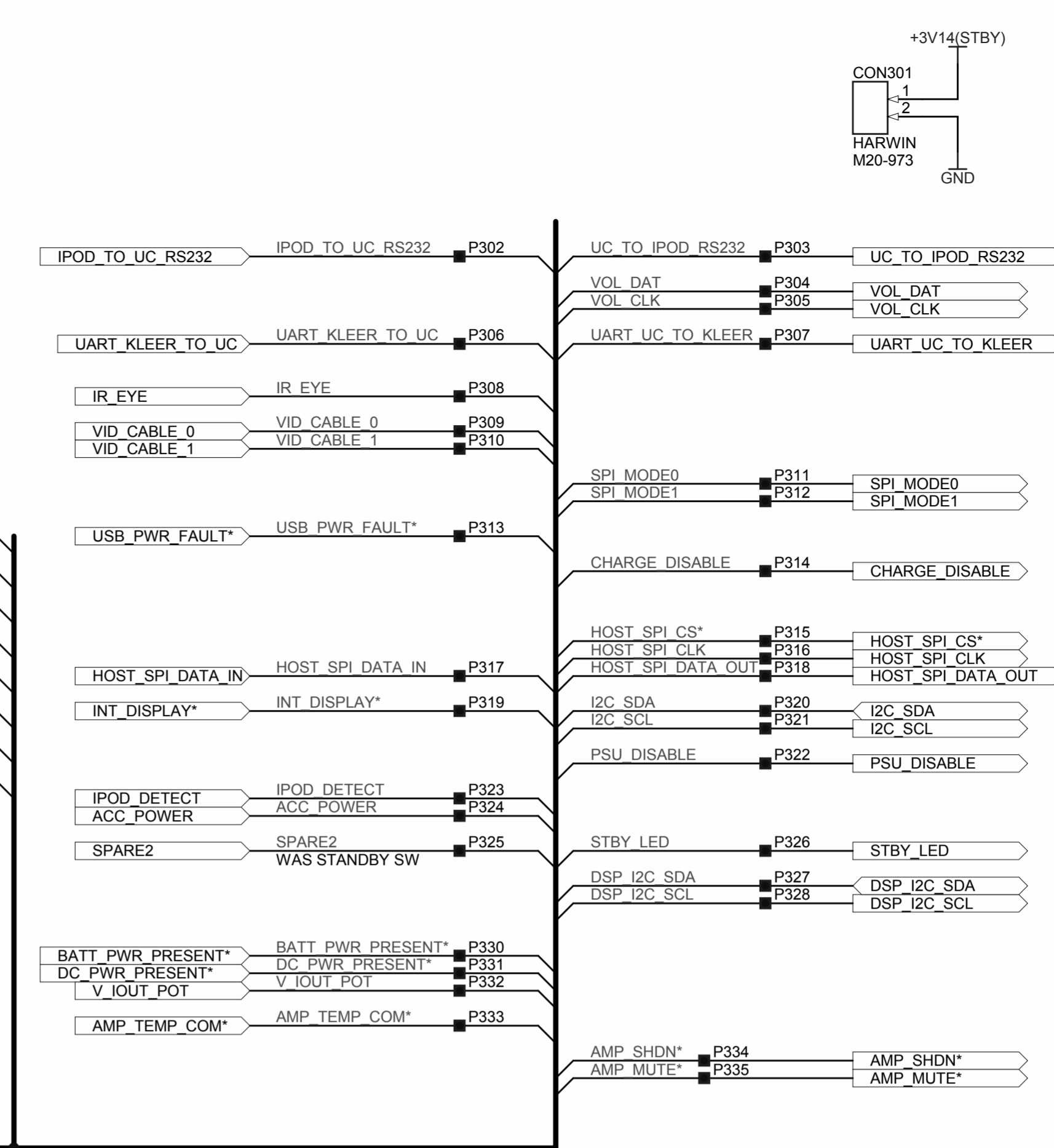
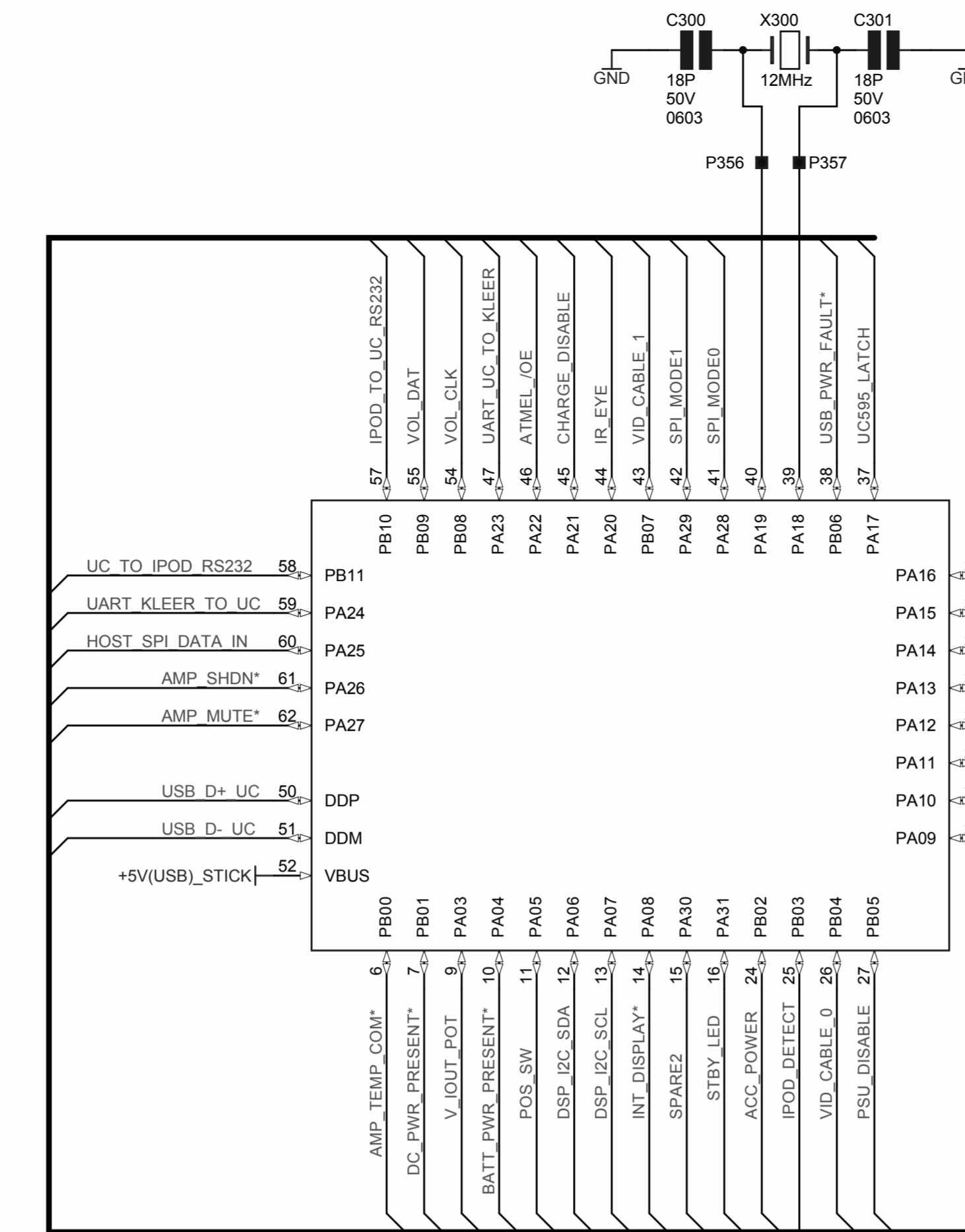
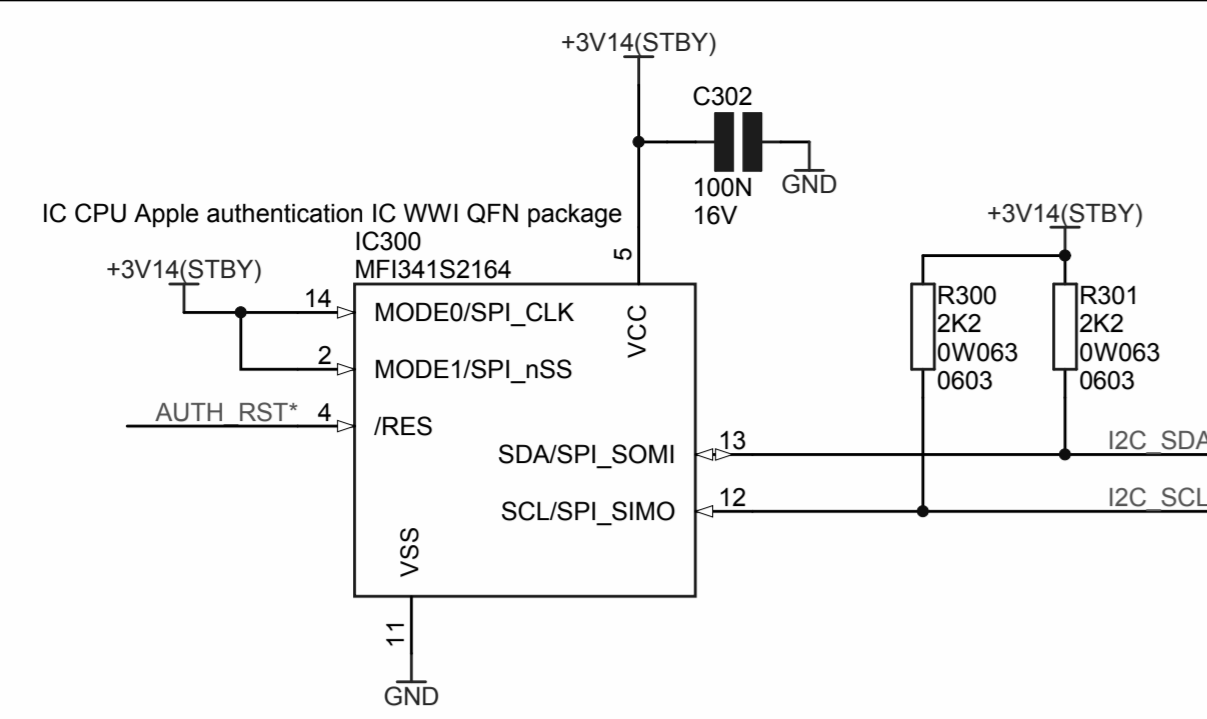
Connect remote sense to av return at ffc



2.3Vrms should give just under 1vrms out of op amps

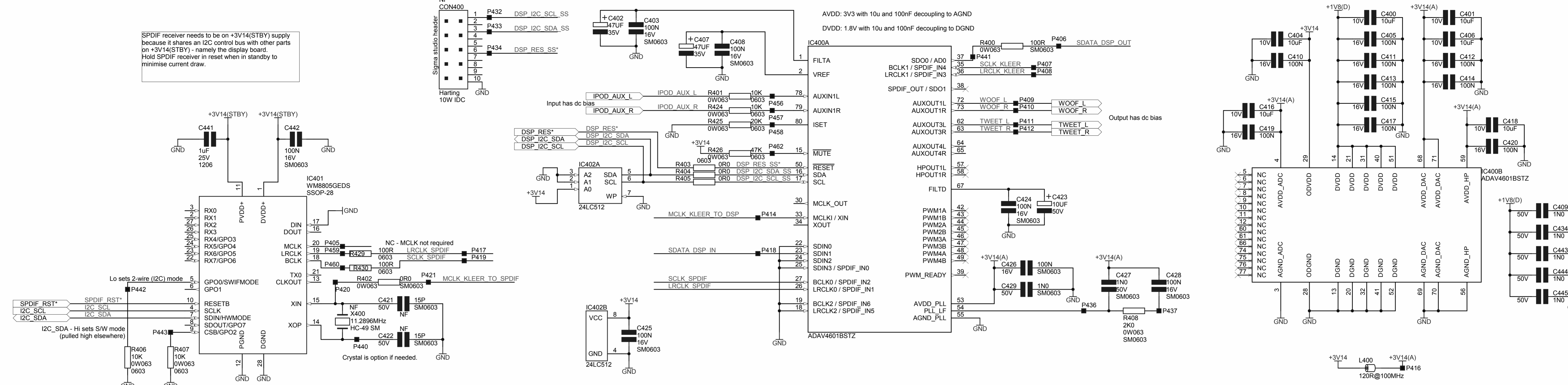


DRAWING TITLE							
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ARCAM A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB25 9QR	Filename:	L182_1.0 SoundCube audio in video out.SchDoc	10_E074	PK	30/03/10	Correct grounding scheme for video connectors Correct -ve input to input op amps	C.0
	Notes:		10_E001	PK	05-01-10	Change op amps to unity gain single ended	B.0
			09_E142	PK	08-07-09	Prototype release	A.0
			ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE	ISSUE
Contact Engineer:	Mark Tweedale markt@arcam.co.uk	Contact Tel Direct:	01223 203210	Contact Tel Reception:	01223 203200	Printed:	28/09/2010
		Sheet 2 of 7		A3	DRAWING NO. L182CT		

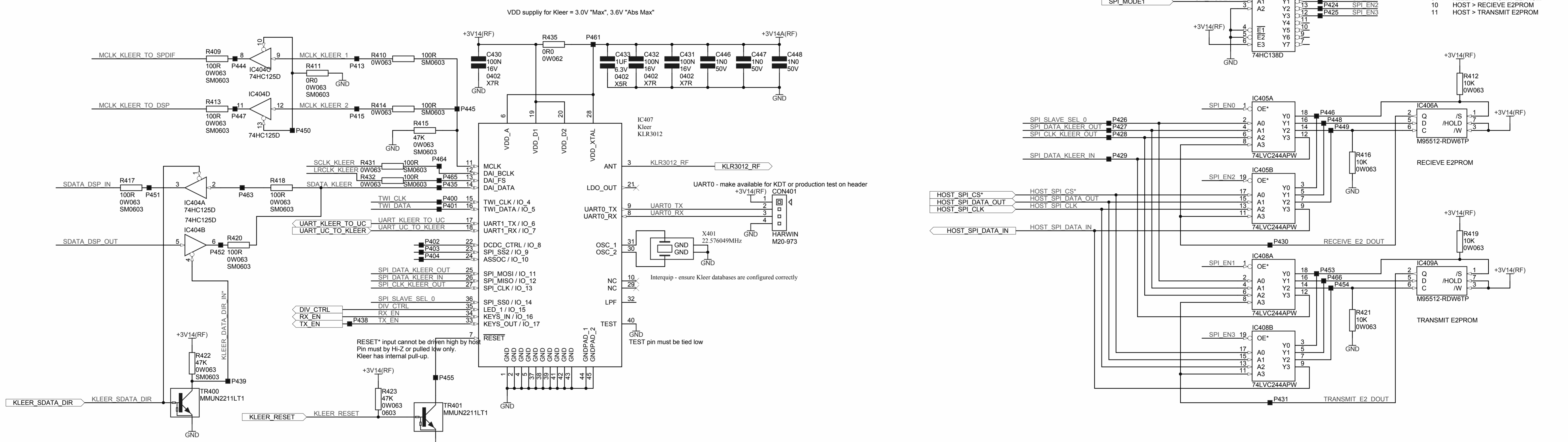


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A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB25 9QR		10_E001	PK	05-01-10	12MHz crystal, authentication IC package change Program line pulled high, debug header changed		B.0
Contact Engineer: Mark Tweedale markt@arcam.co.uk		09_E142	PK	08-07-09	Prototype release		A.0
Contact Tel Direct: 01223 203210 Contact Tel Reception: 01223 203200		ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE		ISSUE
Printed: 28/09/2010		Sheet 3 of 7		A2	DRAWING NO. L182CT		

SPDIF receiver needs to be on +3V14(STBY) supply because it shares an I2C control bus with other parts on +3V14(STBY) - namely the display board. Hold SPDIF receiver in reset when in standby to minimise current draw.



Pin 7 - SDIN/HWMODE needs to be pulled up during device reset to put the device into software control mode on un-reset. However the I2C_SDA line already has a pullup elsewhere (by IC300) so one is not needed here.



DRAWING TITLE		SoundCube - Kleer + DSP	
10_E136	PK	09/09/11	Add test points
10_E074	PK	30/03/10	None to this sheet
10_E001	PK	05-01-10	SPDIF input to 8805 / DSP removed
09_E142	PK	08-07-09	Prototype release
ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE
10		28/09/2010	Sheet 4 of 7
A2		DRAWING NO. L182CT	

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

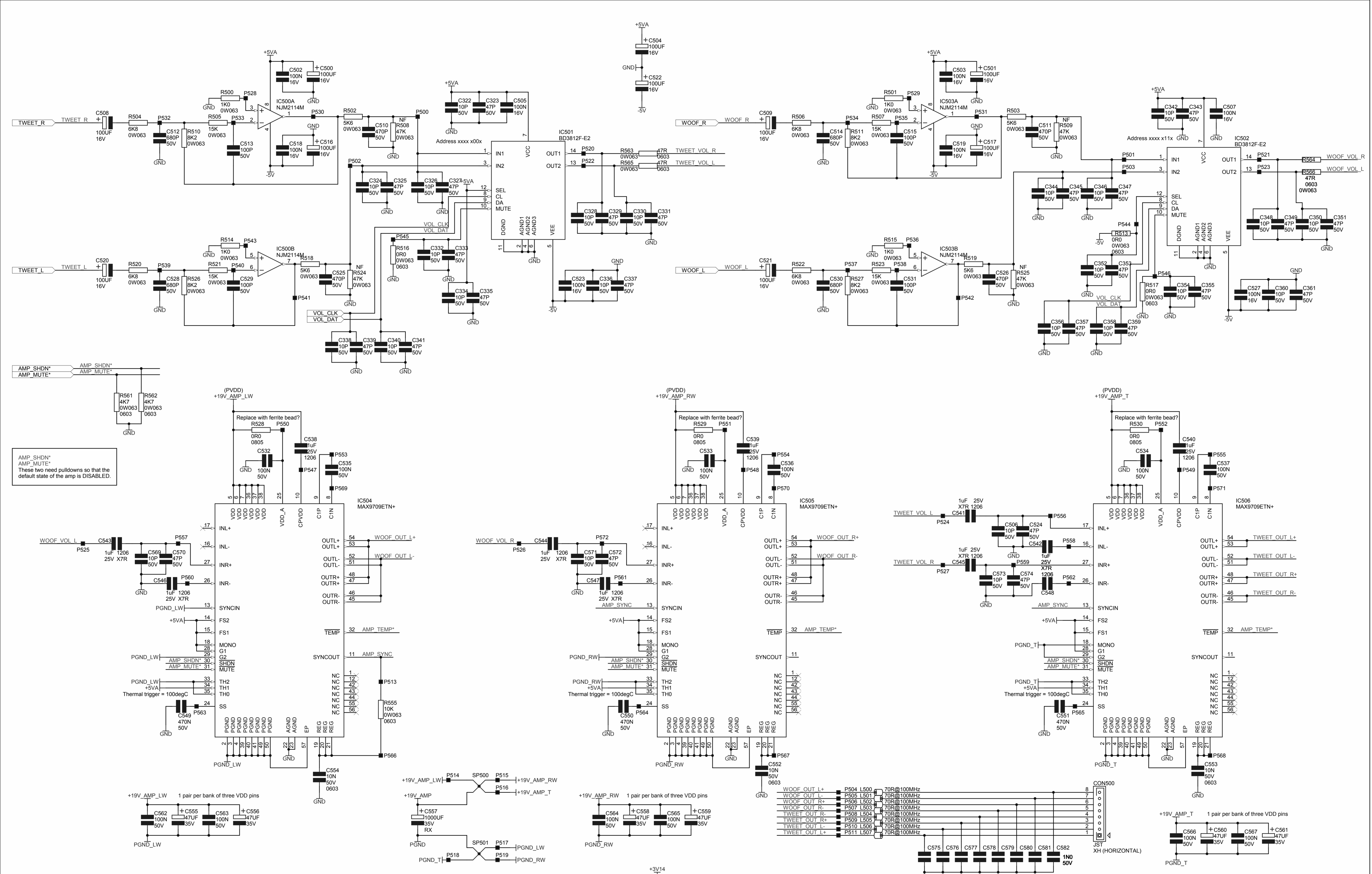
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Notes:

Printed: 28/09/2010

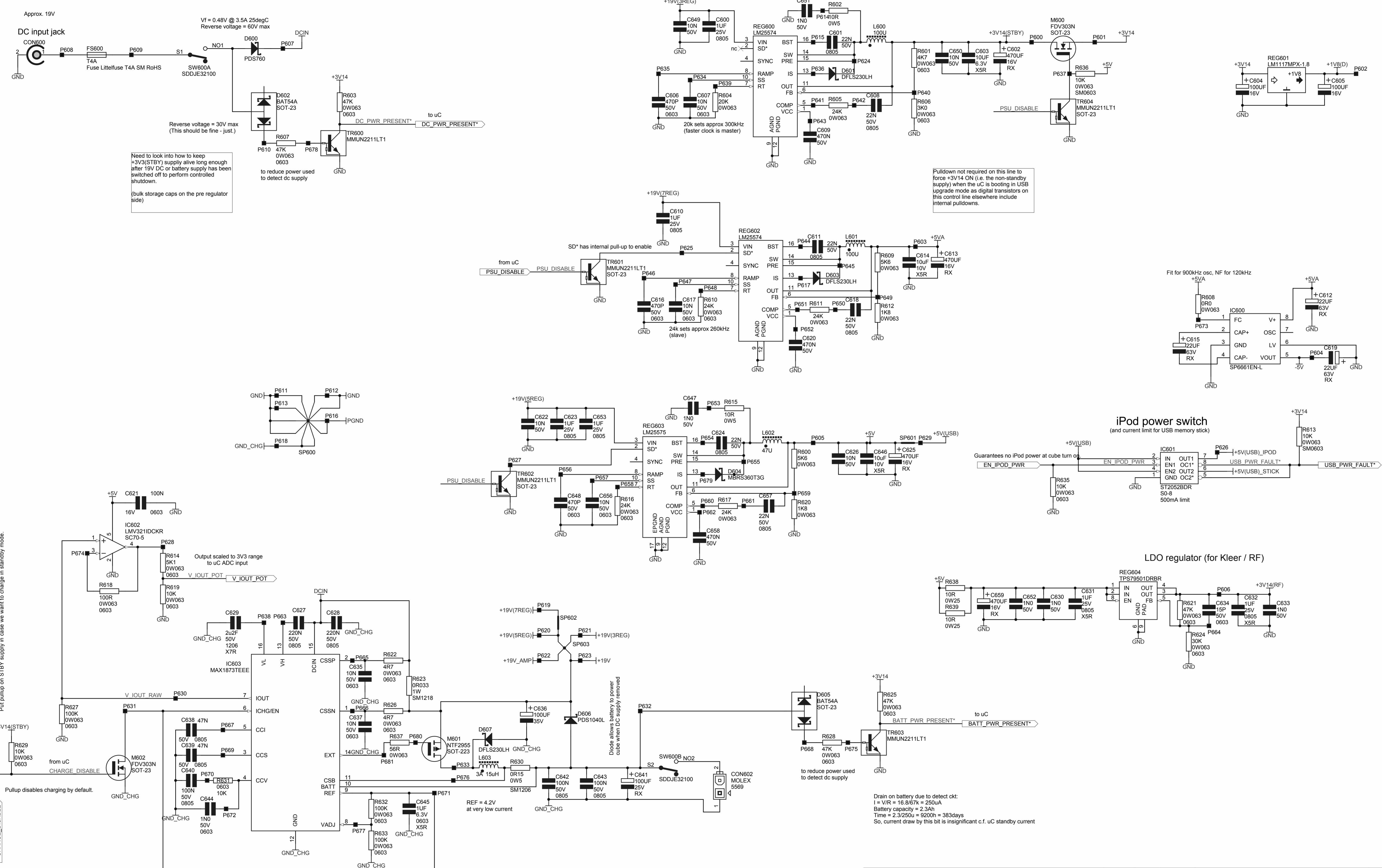
Sheet 4 of 7

DRAWING NO. L182CT



AMP_SHDN*
AMP_MUTE*
These two need pulldowns so that the default state of the amp is DISABLED.

DRAWING TITLE							
SoundCube - DAC filters + amplifiers		10_E136	PK	09/09/11	Add test points		1.0
ARCAM		10_E074	PK	30/03/10	Add WWI caps to power amp +ve input pins Add amp output filter, remove option resistors		C.0
A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB25 9QR		10_E001	PK	05-01-10	Added WWI caps to all volume control IC pins		B.0
Contact Engineer: Mark Tweedale mark@arcam.co.uk		09_E142	PK	08-07-09	Prototype release		A.0
Contact Tel Direct: 01223 203210 Contact Tel Reception: 01223 203200		ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE		ISSUE
				28/09/2010	Sheet 5 of 7	A2	DRAWING NO. L182CT



Need to look into how to keep +3V3(STBY) supply alive long enough after 19V DC or battery supply has been switched off to perform controlled shutdown.
(bulk storage caps on the pre regulator side)

Pulldown not required on this line to force +3V14 ON (i.e. the non-standby supply) when the uC is booting in USB upgrade mode as digital transistors on this control line elsewhere include internal pulldowns.

Put pullup on STBY supply in case we want to charge in standby mode.

Output scaled to 3V3 range to uC ADC input

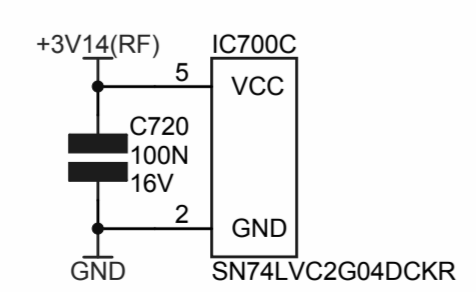
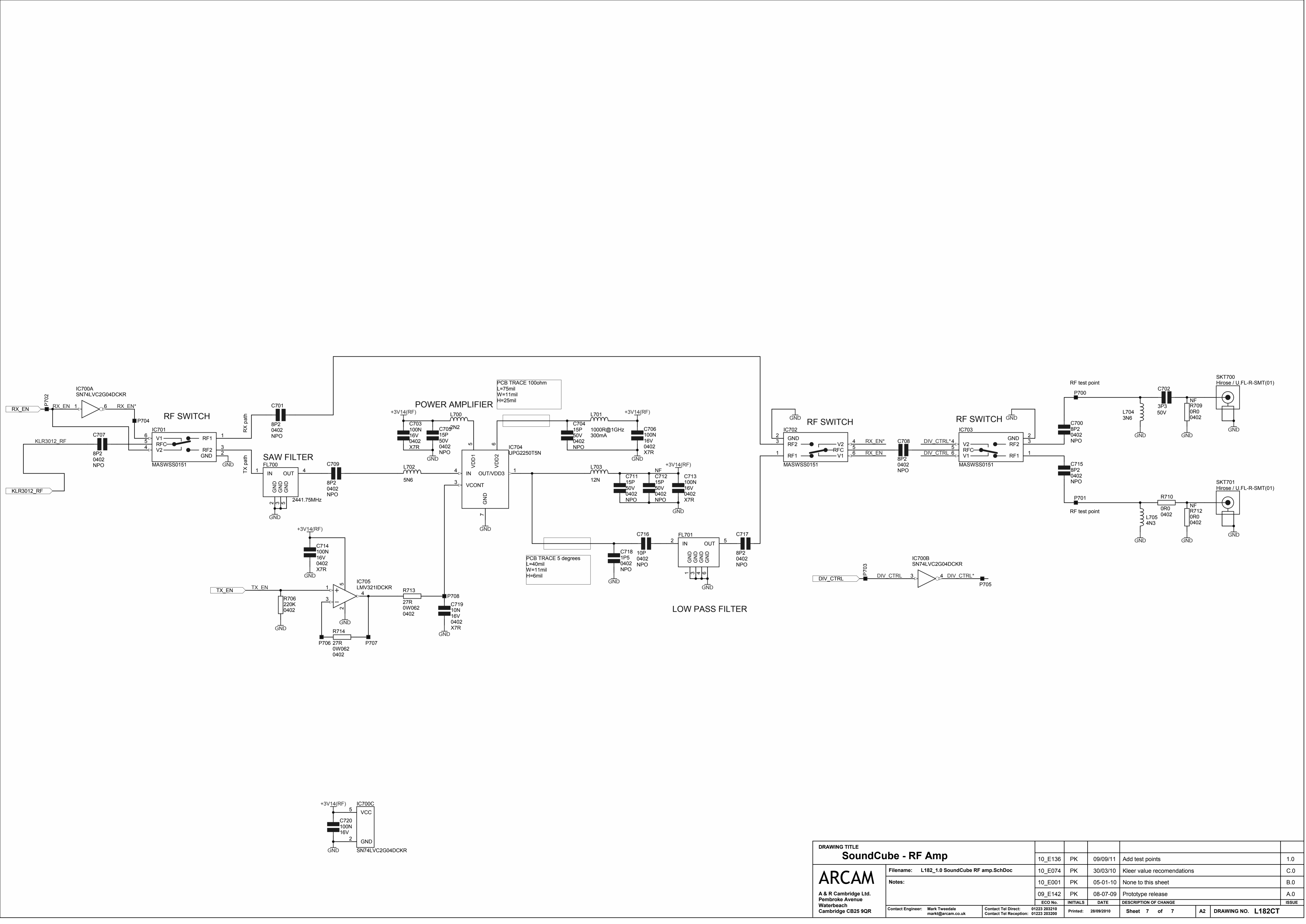
Pullup disables charging by default.

Diode allows battery to power cube when DC supply removed

REF = 4.2V at very low current

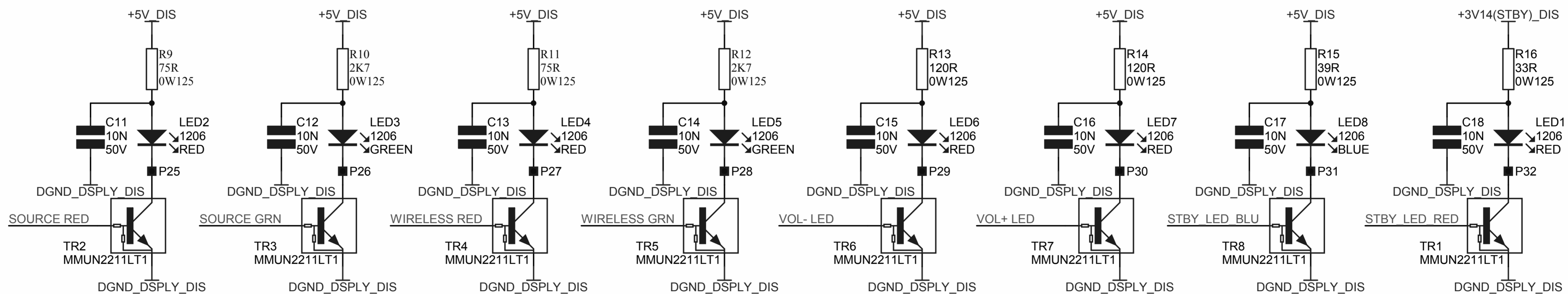
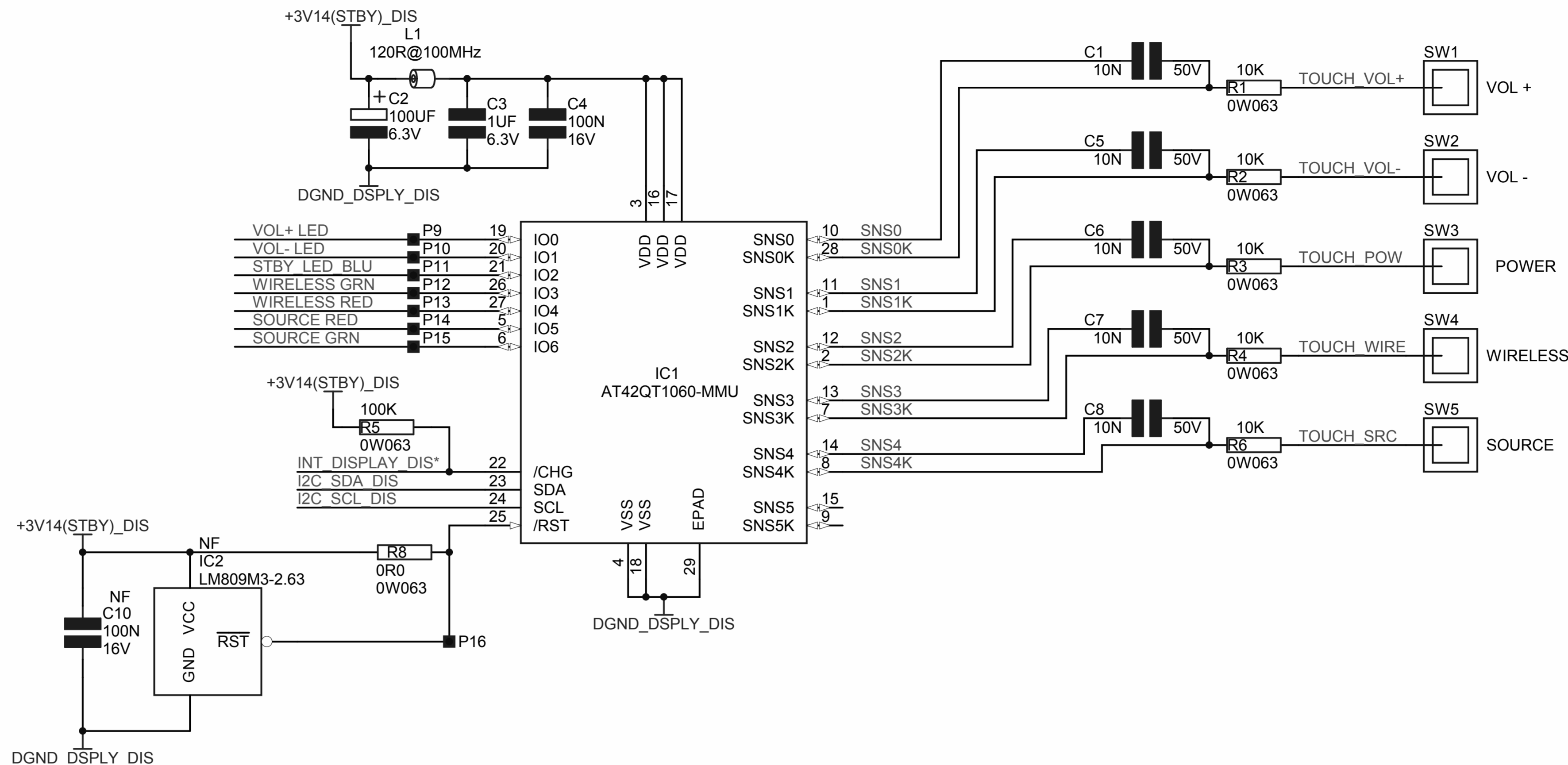
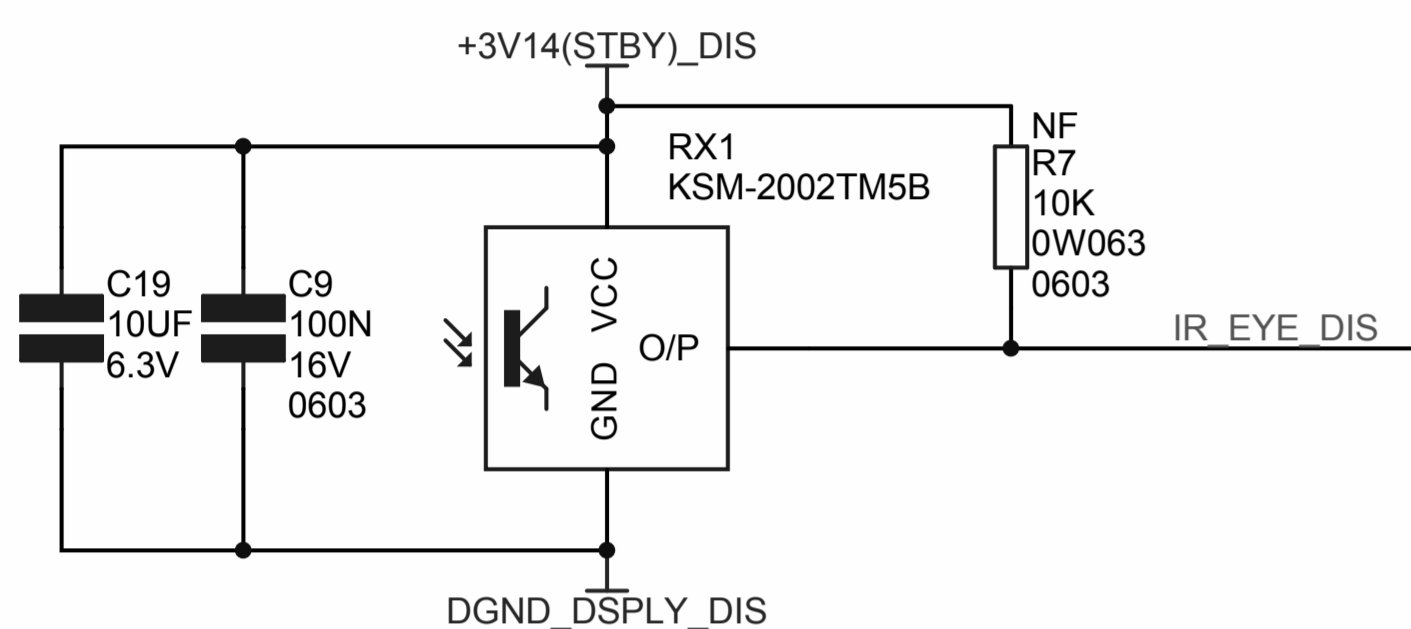
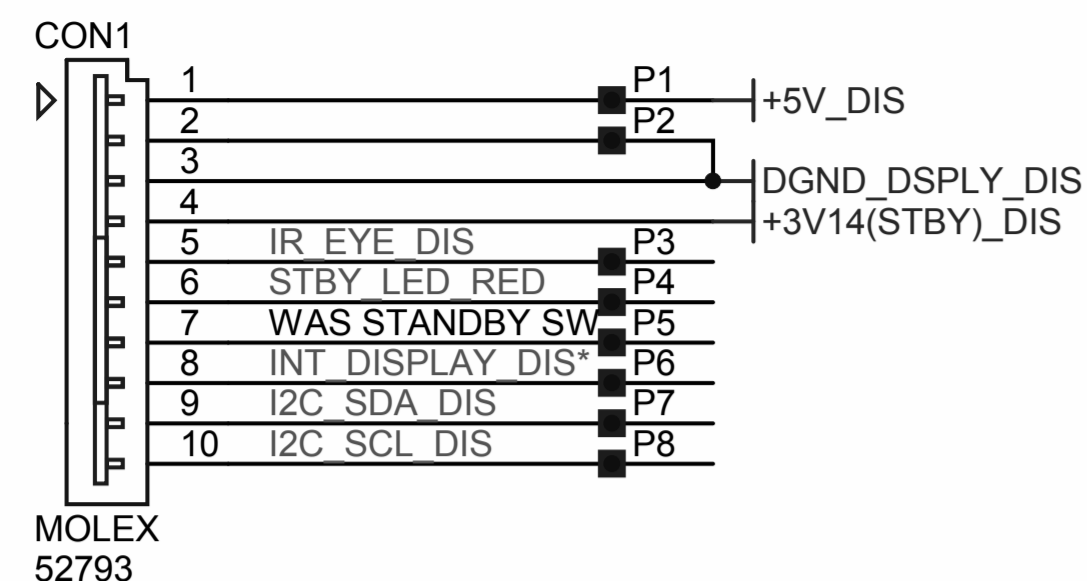
Drain on battery due to detect ckt:
 $I = V/R = 16.8/67k = 250\mu A$
 Battery capacity = 2.3Ah
 $Time = 2.3/250 = 9200h = 383days$
 So, current draw by this bit is insignificant c.f. uC standby current

DRAWING TITLE							
SoundCube - PSU + charge		10_E136	PK	09/09/11	Add test points		1.0
ARCAM		10_E074	PK	30/03/10	Remove sense star and av return from star point Change 5V regulator, remove additional grounds		C.0
A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB25 9QR		10_E001	PK	05-01-10	M600 changed to N type and footprint corrected R612 changed to 1k8, CON602 pin out change to put on bottom of PCB		B.0
Contact Engineer: Mark Tweedale mark@arcam.co.uk		09_E142	PK	08-07-09	Prototype release		A.0
Contact Tel Direct: 01223 203210 Contact Tel Reception: 01223 203200		ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE		ISSUE
				28/09/2010			
		Printed:	28/09/2010	Sheet 6 of 7	A2	DRAWING NO. L182CT	



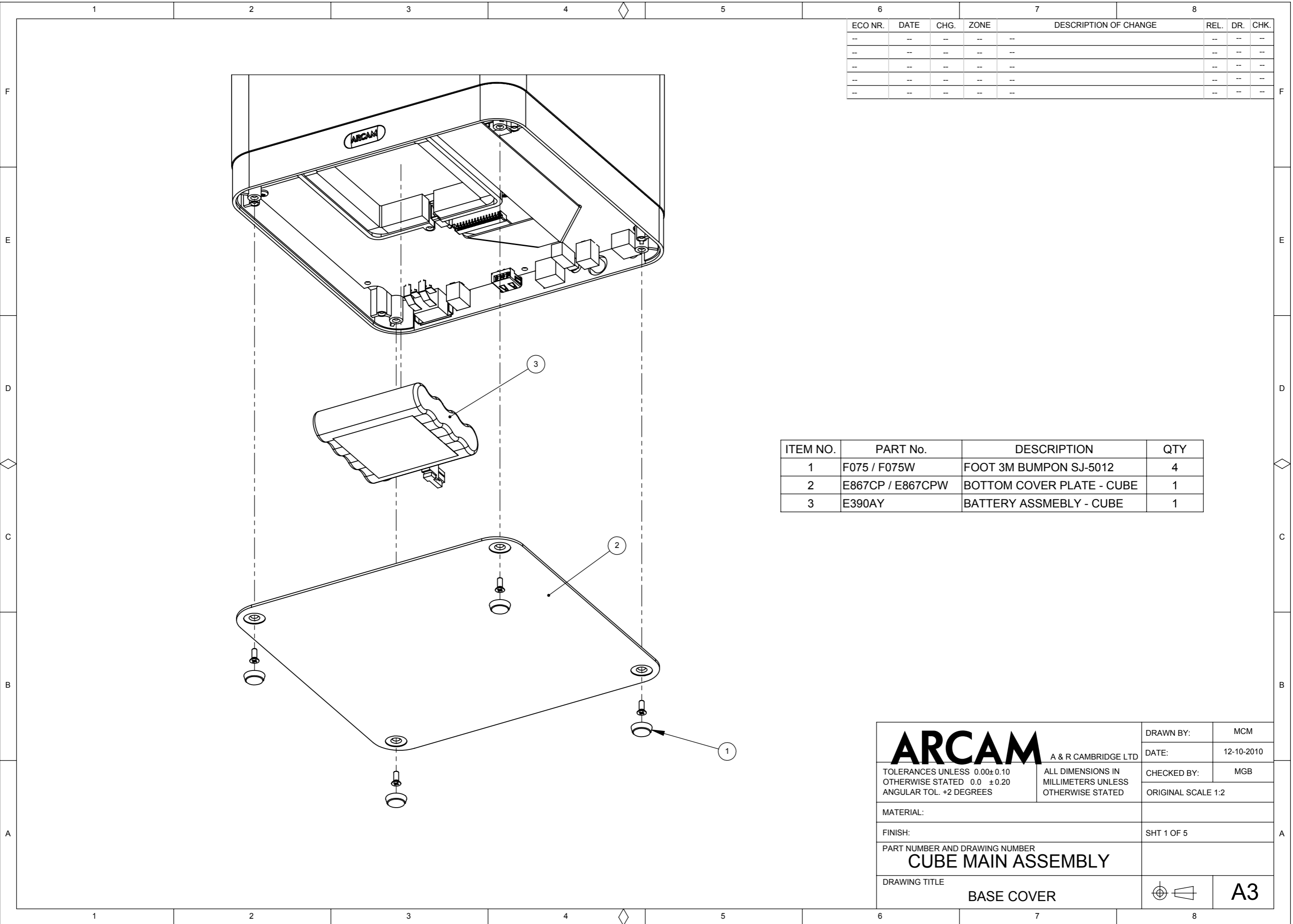
DRAWING TITLE									
SoundCube - RF Amp		10_E136	PK	09/09/11	Add test points			1.0	
Filename: L182_1.0 SoundCube RF amp.SchDoc		10_E074	PK	30/03/10	Kleer value recommendations			C.0	
Notes:		10_E001	PK	05-01-10	None to this sheet			B.0	
		09_E142	PK	08-07-09	Prototype release			A.0	
		ECO No.	INITIALS	DATE	DESCRIPTION OF CHANGE			ISSUE	
Contact Engineer: Mark Tweedale mark@arcam.co.uk	Contact Tel Direct: 01223 203210 Contact Tel Reception: 01223 203200	Printed: 28/09/2010	Sheet 7 of 7	A2	DRAWING NO. L182CT				

Connections swapped over of conn on iPod board



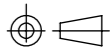
ITEM	QTY	PART No.	DESCRIPTION	NOTES
PCB1	1	L194PB	Blank PCB SoundCube Display	

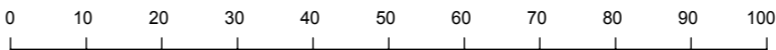
DRAWING TITLE										
SoundCube - Display										
ARCAM A & R Cambridge Ltd. Pembroke Avenue Waterbeach Cambridge CB25 9QR	Filename:	L194_C.1 SoundCube Display.SchDoc	10_E118	NC	19/8/10	Change R10/R12 to 2k7 Change R9/R11 to 75R	C.1			
	Notes:		10_E074	PK	04/03/10	Change IR rx footprint to correct pin reversal Green LED drive resistors changed	C.0			
			10_E001	PK	17/12/09	Change to touch sensitive buttons	B.0			
			09_E140	PK	08-07-09	Prototype release	A.0			
Contact Engineer:	Mark Tweedale markt@arcam.co.uk	Contact Tel Direct:	01223 203210	Contact Tel Reception:	01223 203200	Printed:	19/08/2010	Sheet 1 of 1	A3	DRAWING NO. L194CT

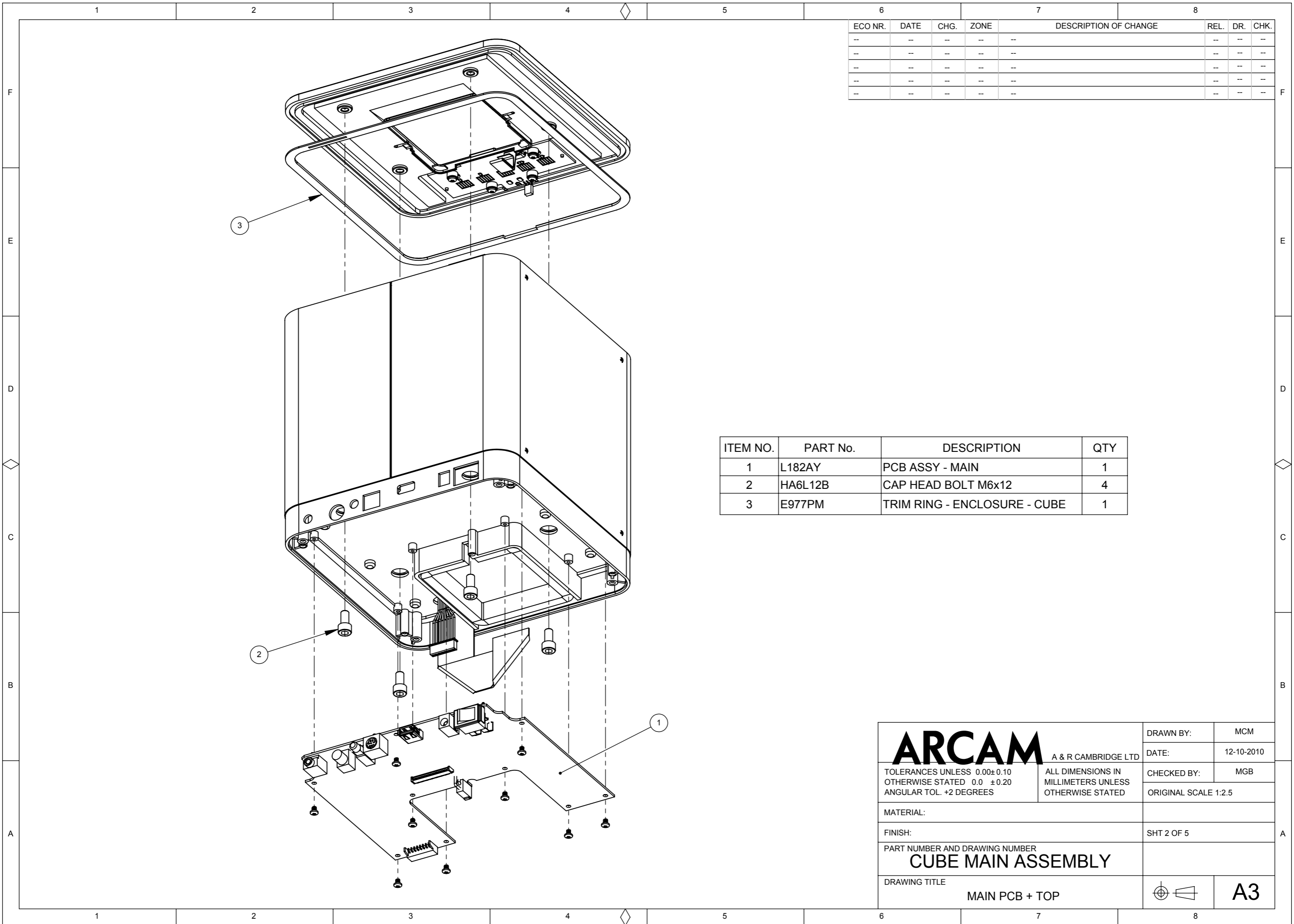


ECO NR.	DATE	CHG.	ZONE	DESCRIPTION OF CHANGE	REL.	DR.	CHK.
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ITEM NO.	PART No.	DESCRIPTION	QTY
1	F075 / F075W	FOOT 3M BUMPON SJ-5012	4
2	E867CP / E867CPW	BOTTOM COVER PLATE - CUBE	1
3	E390AY	BATTERY ASSMEBLY - CUBE	1

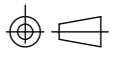
ARCAM A & R CAMBRIDGE LTD	DRAWN BY:	MCM
	DATE:	12-10-2010
TOLERANCES UNLESS 0.00±0.10 OTHERWISE STATED 0.0 ±0.20 ANGULAR TOL. +2 DEGREES	CHECKED BY:	MGB
	ORIGINAL SCALE 1:2	
MATERIAL:		
FINISH:	SHT 1 OF 5	
PART NUMBER AND DRAWING NUMBER CUBE MAIN ASSEMBLY		
DRAWING TITLE BASE COVER		 A3

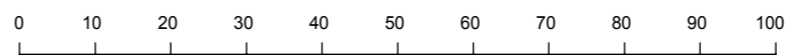


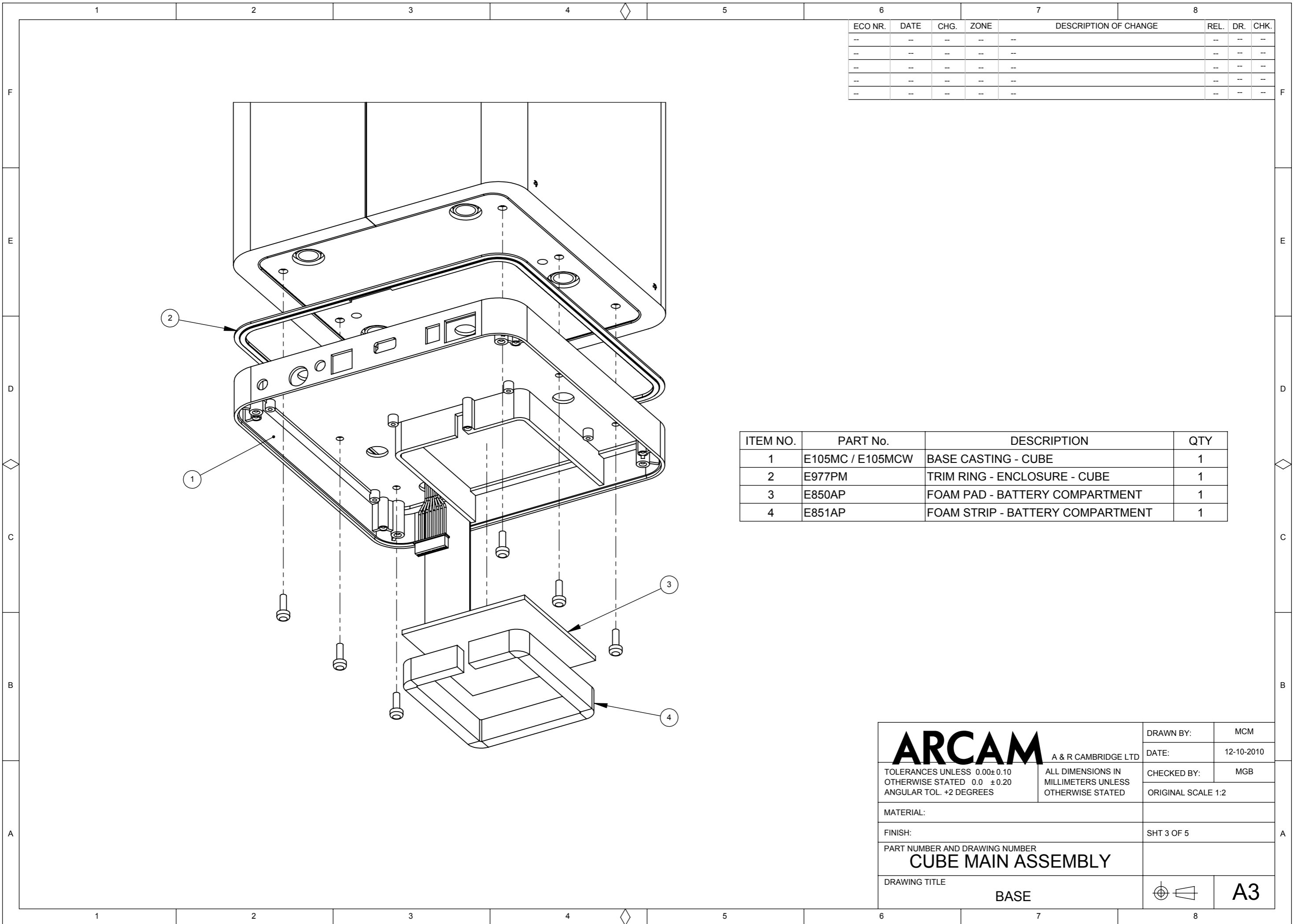


ECO NR.	DATE	CHG.	ZONE	DESCRIPTION OF CHANGE	REL.	DR.	CHK.
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ITEM NO.	PART No.	DESCRIPTION	QTY
1	L182AY	PCB ASSY - MAIN	1
2	HA6L12B	CAP HEAD BOLT M6x12	4
3	E977PM	TRIM RING - ENCLOSURE - CUBE	1

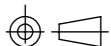
ARCAM A & R CAMBRIDGE LTD	DRAWN BY:	MCM
	DATE:	12-10-2010
TOLERANCES UNLESS OTHERWISE STATED 0.00±0.10 0.0 ±0.20 ANGULAR TOL. +2 DEGREES	CHECKED BY:	MGB
	ORIGINAL SCALE 1:2.5	
MATERIAL:		
FINISH:	SHT 2 OF 5	
PART NUMBER AND DRAWING NUMBER CUBE MAIN ASSEMBLY		
DRAWING TITLE MAIN PCB + TOP		 A3

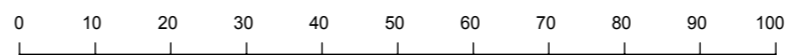


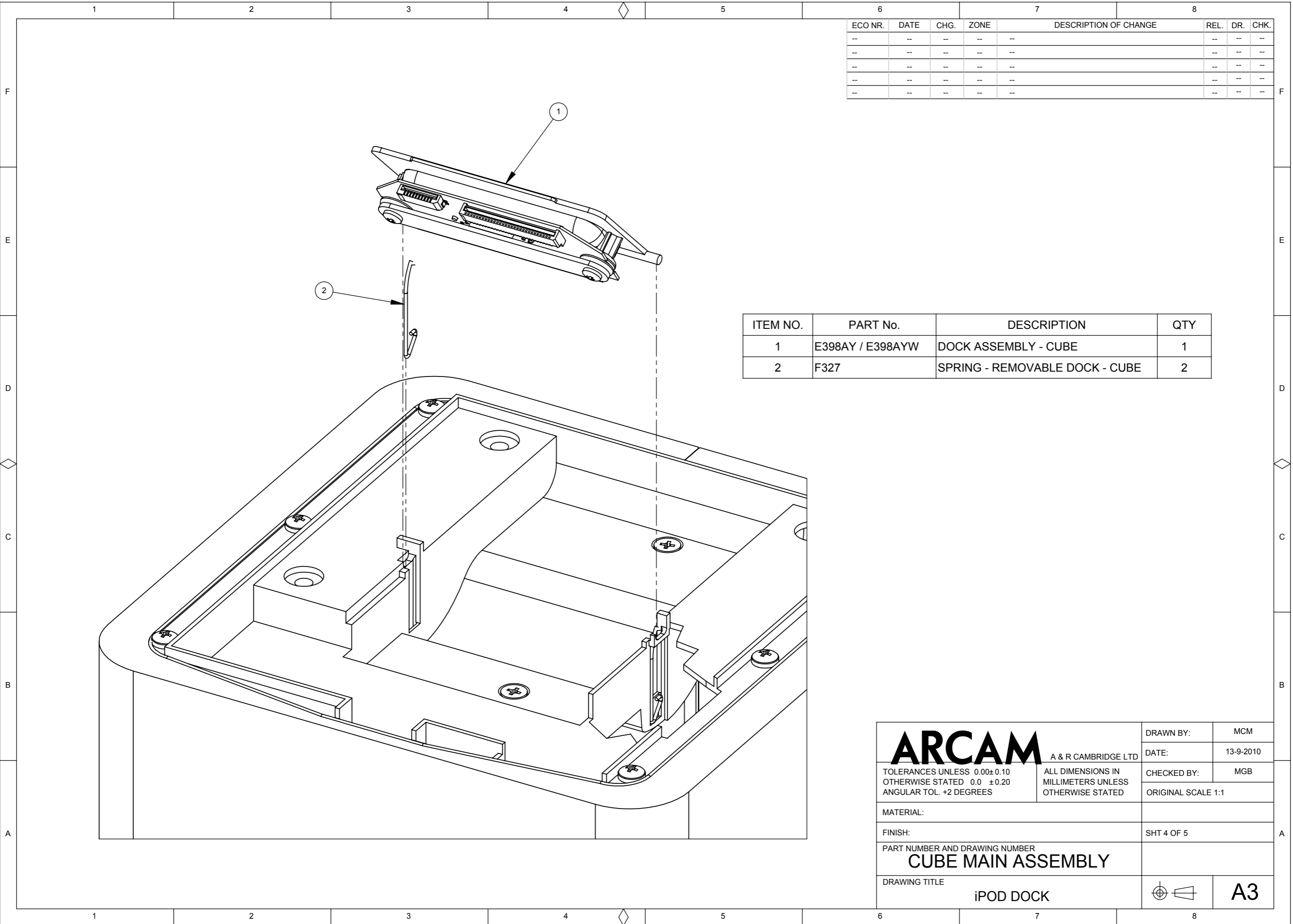


ECO NR.	DATE	CHG.	ZONE	DESCRIPTION OF CHANGE	REL.	DR.	CHK.
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ITEM NO.	PART No.	DESCRIPTION	QTY
1	E105MC / E105MCW	BASE CASTING - CUBE	1
2	E977PM	TRIM RING - ENCLOSURE - CUBE	1
3	E850AP	FOAM PAD - BATTERY COMPARTMENT	1
4	E851AP	FOAM STRIP - BATTERY COMPARTMENT	1

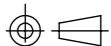
ARCAM A & R CAMBRIDGE LTD	DRAWN BY:	MCM
	DATE:	12-10-2010
TOLERANCES UNLESS 0.00±0.10 OTHERWISE STATED 0.0 ±0.20 ANGULAR TOL. +2 DEGREES	CHECKED BY:	MGB
	ORIGINAL SCALE 1:2	
MATERIAL:		
FINISH:	SHT 3 OF 5	
PART NUMBER AND DRAWING NUMBER CUBE MAIN ASSEMBLY		
DRAWING TITLE BASE		 A3

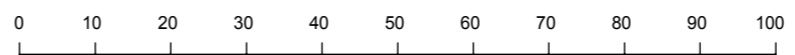


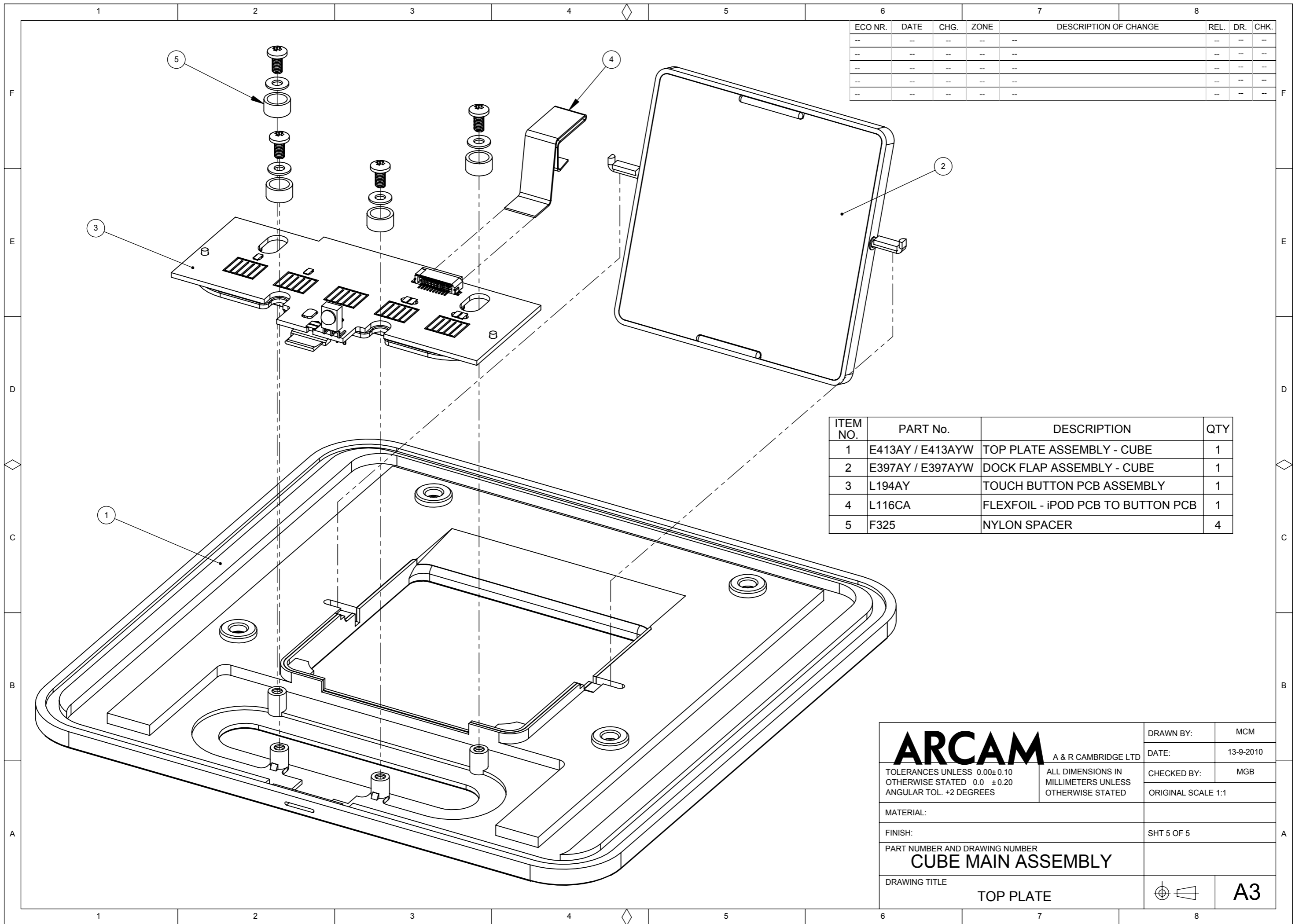


ECO NR.	DATE	CHG.	ZONE	DESCRIPTION OF CHANGE	REL.	DR.	CHK.
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ITEM NO.	PART No.	DESCRIPTION	QTY
1	E398AY / E398AYW	DOCK ASSEMBLY - CUBE	1
2	F327	SPRING - REMOVABLE DOCK - CUBE	2

ARCAM A & R CAMBRIDGE LTD	DRAWN BY:	MCM
	DATE:	13-9-2010
TOLERANCES UNLESS 0.00±0.10 OTHERWISE STATED 0.0 ±0.20 ANGULAR TOL. +2 DEGREES	CHECKED BY:	MGB
	ORIGINAL SCALE 1:1	
MATERIAL:		
FINISH:		SHT 4 OF 5
PART NUMBER AND DRAWING NUMBER CUBE MAIN ASSEMBLY		
DRAWING TITLE iPOD DOCK		 A3

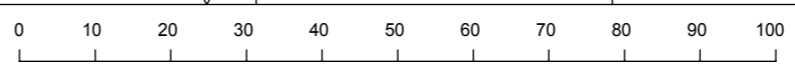




ECO NR.	DATE	CHG.	ZONE	DESCRIPTION OF CHANGE	REL.	DR.	CHK.
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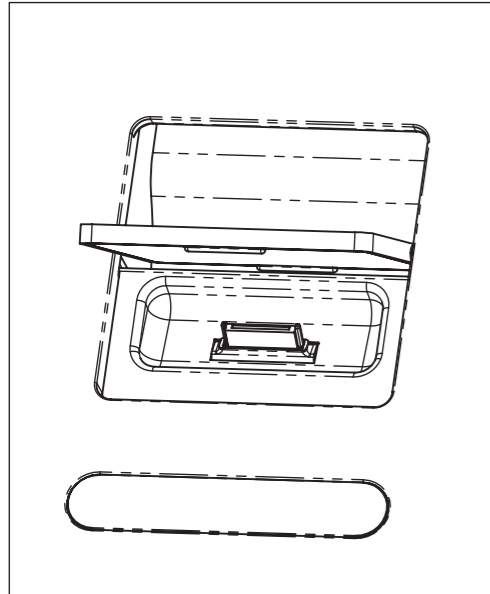
ITEM NO.	PART No.	DESCRIPTION	QTY
1	E413AY / E413AYW	TOP PLATE ASSEMBLY - CUBE	1
2	E397AY / E397AYW	DOCK FLAP ASSEMBLY - CUBE	1
3	L194AY	TOUCH BUTTON PCB ASSEMBLY	1
4	L116CA	FLEXFOIL - IPOD PCB TO BUTTON PCB	1
5	F325	NYLON SPACER	4

ARCAM A & R CAMBRIDGE LTD	DRAWN BY:	MCM
	DATE:	13-9-2010
TOLERANCES UNLESS OTHERWISE STATED 0.00±0.10 0.0 ±0.20 ANGULAR TOL. +2 DEGREES	CHECKED BY:	MGB
	ORIGINAL SCALE 1:1	
MATERIAL:		
FINISH:	SHT 5 OF 5	
PART NUMBER AND DRAWING NUMBER CUBE MAIN ASSEMBLY		
DRAWING TITLE TOP PLATE		A3

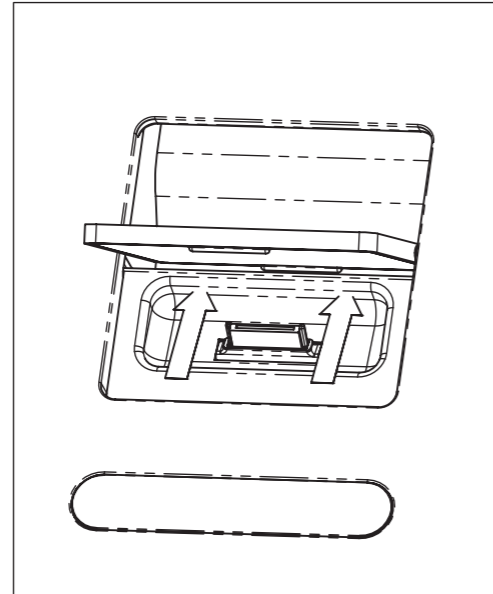


TO REPLACE IPOD PCB

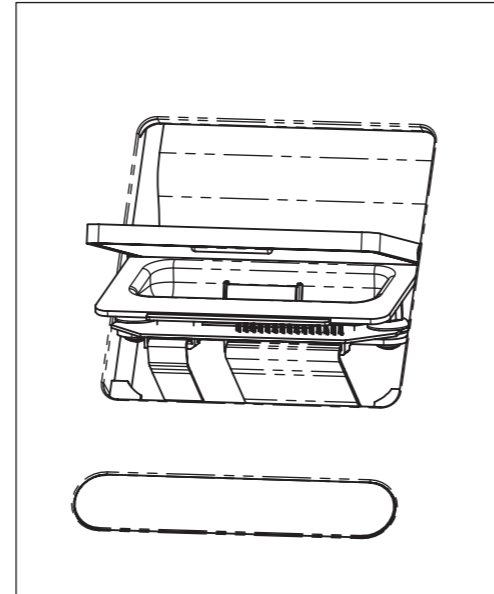
!! ANTI-STATIC PRECAUTIONS MUST BE TAKEN TO AVOID DAMAGE TO ELECTRONIC COMPONENTS !!



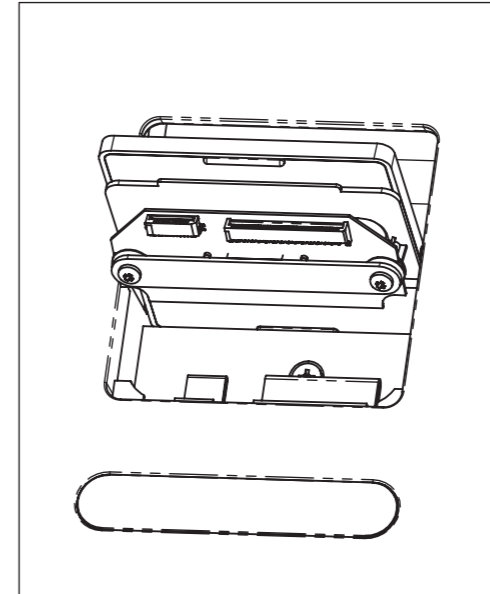
1. PARTLY OPEN DOCK FLAP



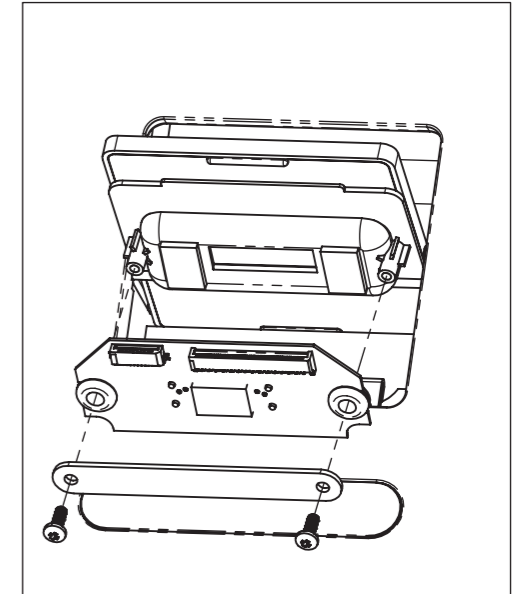
2. SLIDE DOCK REARWARDS AGAINST SPRING PRESSURE



3. HINGE DOCK UPWARDS TO REVEAL FLEXFOIL CABLES



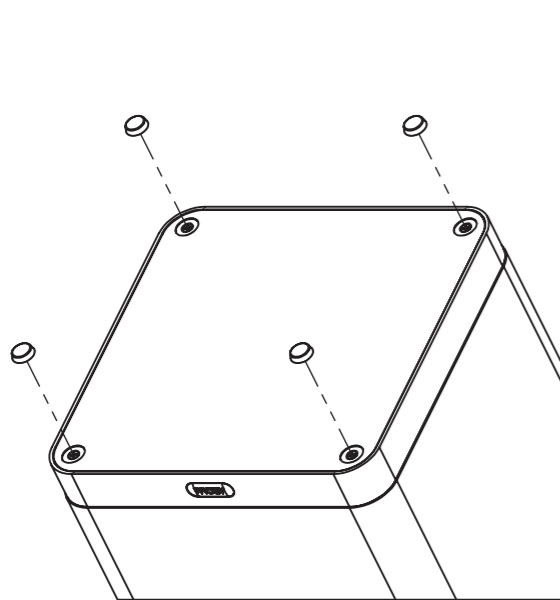
4. DISCONNECT FLEXFOILS & HINGE DOCK FULLY UPWARDS



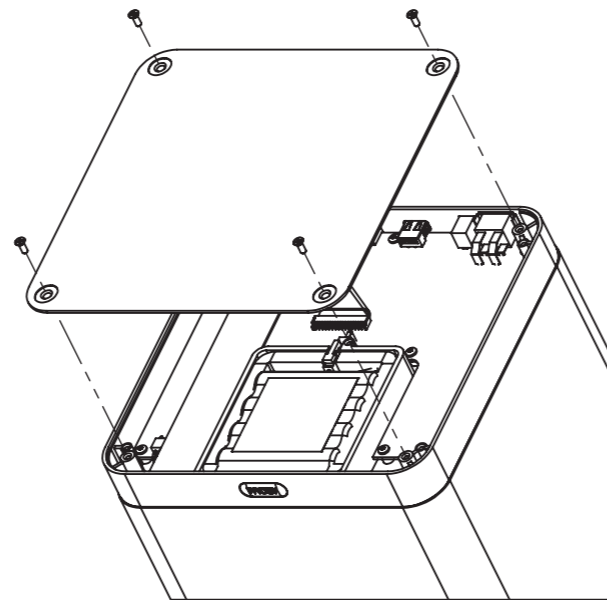
5. UNDO IPOD PCB SCREWS & REMOVE RETAINING BAR, GROMMETS & PCB

6. FIT GROMMETS TO NEW PCB & REVERSE REMOVAL INSTRUCTIONS...

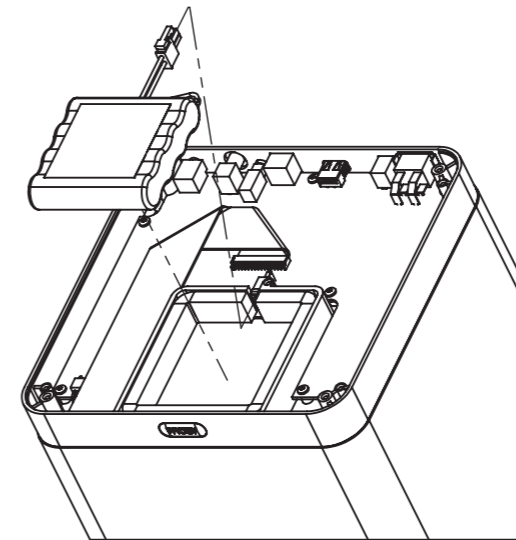
TO REPLACE BATTERY



1. REMOVE RUBBER FEET FROM BASE OF UNIT



2. REMOVE SCREWS & BASE COVER



3. REMOVE BATTERY & RELEASE CONNECTOR

4. FIT NEW BATTERY & CONNECTOR & REVERSE REMOVAL INSTRUCTIONS
FIT NEW SELF-ADHESIVE FEET SUPPLIED



CAUTION

DANGER OF EXPLOSION
IF BATTERY IS
INCORRECTLY
REPLACED.
REPLACE ONLY WITH
THE SAME OR
EQUIVALENT TYPE.

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