TAS5001-5122C2EVM Application Report

Jonas Svendsen *Digital Audio and Video Products*

The TAS5001-5122C2EVM PurePath Digital™ customer evaluation module demonstrates the integrated circuits TAS5001PFB and TAS5122DCA from Texas Instruments.

The TAS5001PFB is a 24-bit input stereo PurePath Digital™ pulse width modulator (PWM) based on Equibit™ technology for sample rates up to 96 kHz.

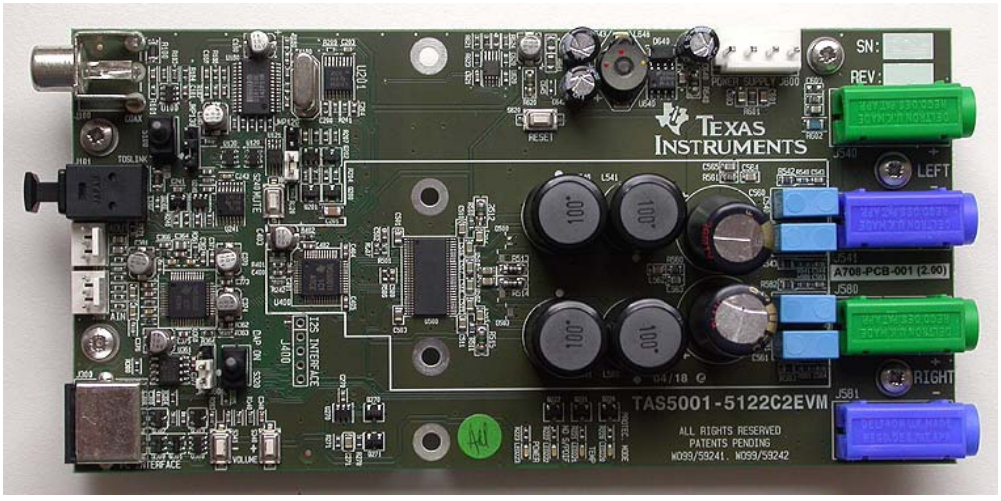
The TAS5122DCA is a high performance digital amplifier power stage designed to drive two 6-Ω loudspeakers up to 40 W (10%THD+N) in bridge tied load (BTL) configuration. It contains integrated gate-drivers, eight matched and electrically isolated enhancement-mode N-channel power DMOS transistors, and protection/fault reporting circuitry.

The DCA package has a PowerPad™ on the bottom side for heat transfer through the PCB. On the solder side of the PCB, a heatsink can be added depending the thermal environment. The EVM is delivered without a heatsink, but solutions that require maximum stereo power may need a heatsink or standoffs to chassis.

This EVM is a complete stereo digital audio amplifier system which includes digital input (S/PDIF), analog input/output, interface to PC, volume control, and failure protection.

This system is designed for home audio applications such as television sets, home theater in a box (HTIB), DVD receivers, or plasma display panels (PDP).

This document covers EVM specifications, audio performance and power efficiency measurements graphs, and design documentation that includes schematics, parts list, layout, and mechanical design.



For EVM setup and use, see the TAS5001-5122C2EVM user's guide.

For Gerber (layout) and parts list (MS Excel format) files, see the PurePath Digital™ CD-ROM or contact your local Texas Instruments representative for digital audio.

Contents

Figures

Tables

1 TAS5001-5122C2EVM Specification

Table 1. General Test Conditions

General Test Conditions	Typical Values	Notes
Output Stage Supply Voltage	23 V	Laboratory Power Supply (EA-PS 7065-10A)
System Supply Voltage	23 V	
Load Impedance	6 Ω	
Sampling Frequency	44.1 kHz	
PWM Processor	TAS5001	
Output Stage	TAS5122DCA	(Pad down version)
Digital Audio Processor	TAS3002	

Table 2. Electrical Data

Electrical Data	Typical Values	Notes/Conditions
Output Power 6 Ω	30 W/Channel	<0.15% THD+N, 1 kHz, T_A = 25°C
Output Power 6 Ω, 10% THD (see note)	40 W/Channel	10% THD+N, 1 kHz, T_A = 25°C
Output Power 8 Ω	20 W/Channel	<0.09% THD+N, 1 kHz, T_A = 25°C
Output Power 8 Ω, 10% THD (see note)	30 W/Channel	10% THD+N, 1 kHz, T_A = 25°C
Max Output Power Per Channel (see note)	30 W/Channel	2 ch at max power for 5 min, 1 kHz, preheated 1 hour at 1/3 max power, T_A = 25°C <0.15% THD+N
Output Stage Efficiency	90%	P_{OUT} = 2 x 30 W, 6 Ω, 1 kHz.
Total Board Idle Power Consumption	2.8 W	
Rated Load Impedance	6-8 Ω	
Damping Factor	17	1 kHz, 1 W, relative to 8-Ω load
Maximum Peak Current	>8 A	1-kHz burst, 1 Ω
Total Supply Current	130 mA	

NOTE: Max power may need heatsink or standoffs to chassis.

Table 3. Audio Performance

Audio Performance (S/PDIF input)	Typical Values	Notes/Conditions
THD+N, 1 W, 6 Ω	0.05%	1 kHz
THD+N, 10 W, 6 Ω	0.05%	1 kHz
THD+N, 30 W, 6 Ω	0.15%	1 kHz
THD+N, 1 W, 8 Ω	0.05%	1 kHz
THD+N, 10 W, 8 Ω	0.05%	1 kHz
THD+N, 20 W, 8 Ω	0.15%	1 kHz
Dynamic Range	>94 dB	Ref = rated power, A-weighted, AES17 filter
Noise Voltage	<270 μV_{RMS}	A-weighted, AES17 filter
Channel Separation	>60 dB	1 kHz, P_{OUT} = 30 W
Amplitude Response DC – 20 kHz	+0.75 / 0 dB	30 W unclipped, 6 Ω
Audio Performance (Analog input)		
THD+N, 1 W, 6 Ω	0.05%	1 kHz
THD+N, 10 W, 6 Ω	0.05%	1 kHz
THD+N, 30 W, 6 Ω	0.15%	1 kHz
THD+N, 1 W, 8 Ω	0.05%	1 kHz
THD+N, 10 W, 8 Ω	0.05%	1 kHz
THD+N, 20 W, 8 Ω	0.15%	1 kHz
Dynamic Range	>94 dB	Ref = rated power, A-weighted, AES17 filter
Noise Voltage	<270 μV_{RMS}	A-weighted, AES17 filter
Channel Separation	>60 dB	1 kHz, P_{OUT} = 30 W
Amplitude Response 20 – 20 kHz	+0.75 / 0 dB	30 W unclipped, 6 Ω
Sensitivity	2.3 V_{RMS}	30 W unclipped
Input Impedance	10 kΩ	1 kHz
Audio Performance (Analog output)		
Maximum Output Voltage	0.7 V_{RMS}	
Output Impedance	75 Ω	1 kHz

NOTE: All electrical and audio specifications are typical values.

Table 4. Thermal Specification

Thermal specification	$T_{HEATSINK}$	Notes/Conditions
Idle mode, both channels are switching	46°C	1 kHz, T_A = 25°C
2 x 1/3 power	68°C	1 kHz, 1 hour, T_A = 25°C
2 x 30 W (6 Ω)	87°C	1 kHz, 2 ch loaded, 5 min, T_A = 25°C

NOTE: Thermal measurements are done in free air.

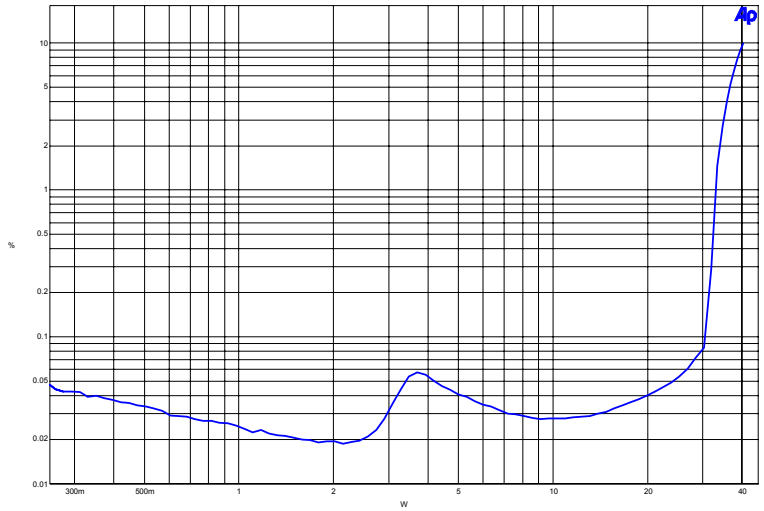
Table 5. Physical Specifications

Physical Specifications		Notes/Conditions
PCB Dimensions:	150 mm x 80 mm	Length x Width
Total Weight:	140 g	Components + PCB + Mechanics

NOTE: All electrical and audio specifications are typical values.

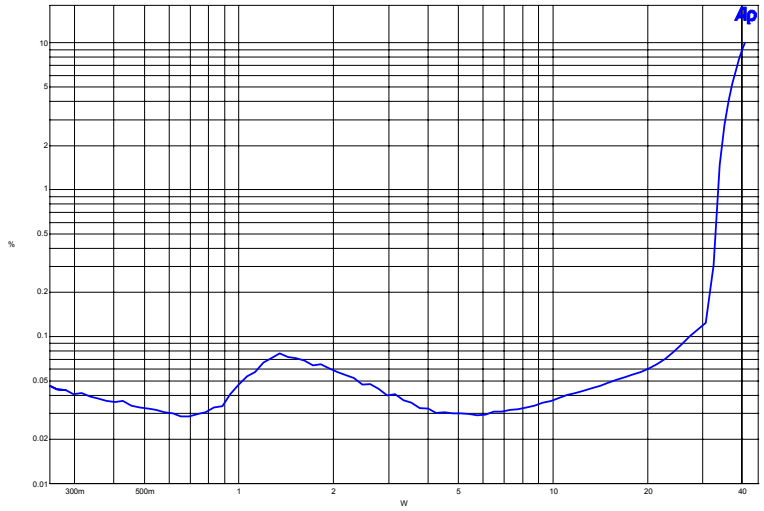
1.1 THD+N vs Power (6 Ω)

Left Channel



Comments:	Power supply = 23 V	Load = 6 Ω	Filter = AES17
	Input signal = 1 kHz	Sample frequency = 44.1 kHz	DAP enabled, S/PDIF coaxial input

Right Channel

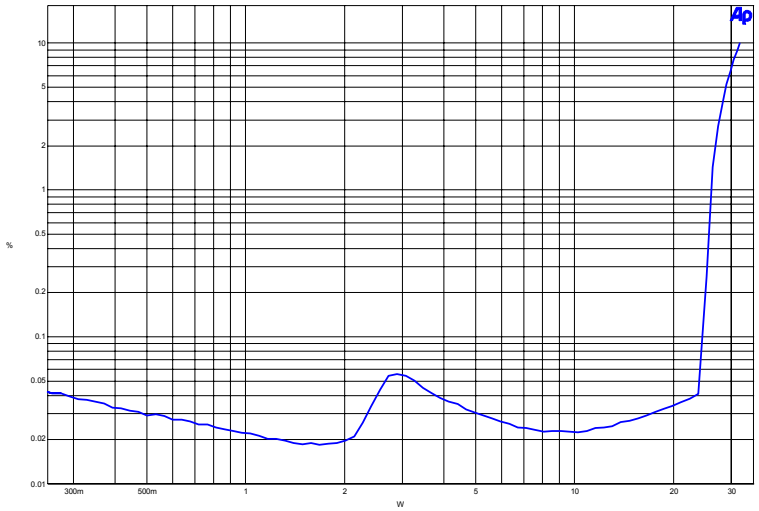


Comments:	Power supply = 23 V	Load = 6 Ω	Filter = AES17
	Input signal = 1 kHz	Sample frequency = 44.1 kHz	DAP enabled, S/PDIF coaxial input

Figure 1. THD+N vs Power (6 Ω)

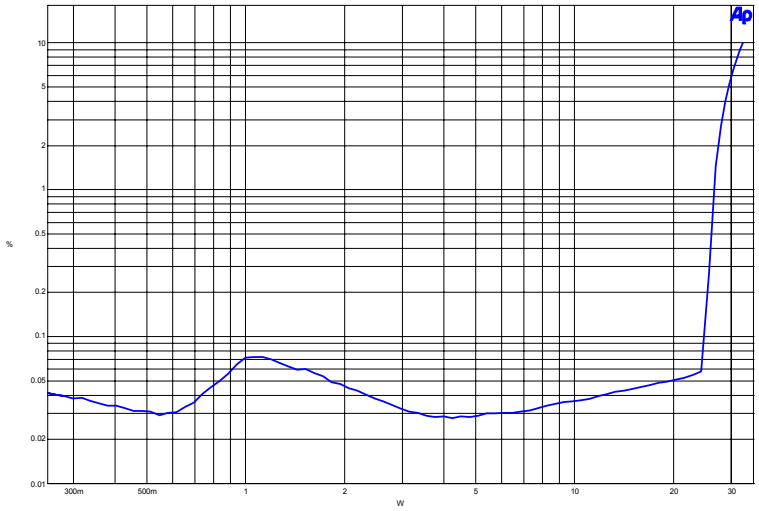
1.2 THD+N vs Power (8 Ω)

Left Channel



Comments:	Power supply = 23 V	Load = 8 Ω	Filter = AES17
	Input signal = 1 kHz	Sample frequency = 44.1 kHz	DAP enabled, S/PDIF coaxial input

Right Channel

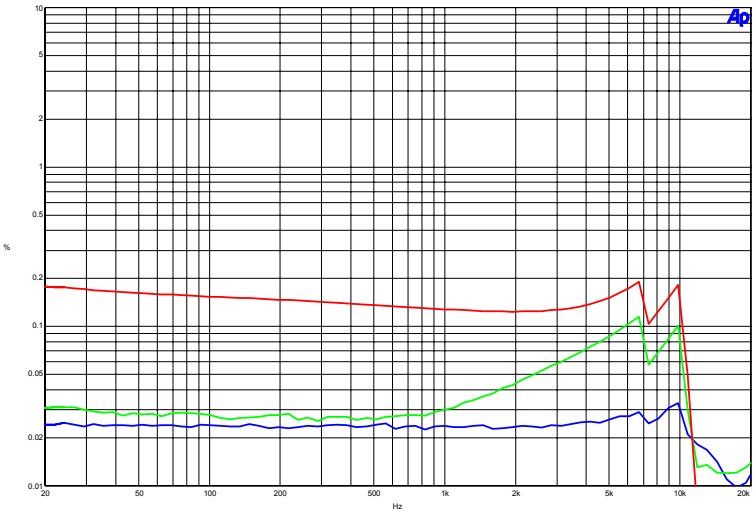


Comments:	Power supply = 23 V	Load = 8 Ω	Filter = AES17
	Input signal = 1 kHz	Sample frequency = 44.1 kHz	DAP enabled, S/PDIF coaxial input

Figure 2. THD+N vs Power (8 Ω)

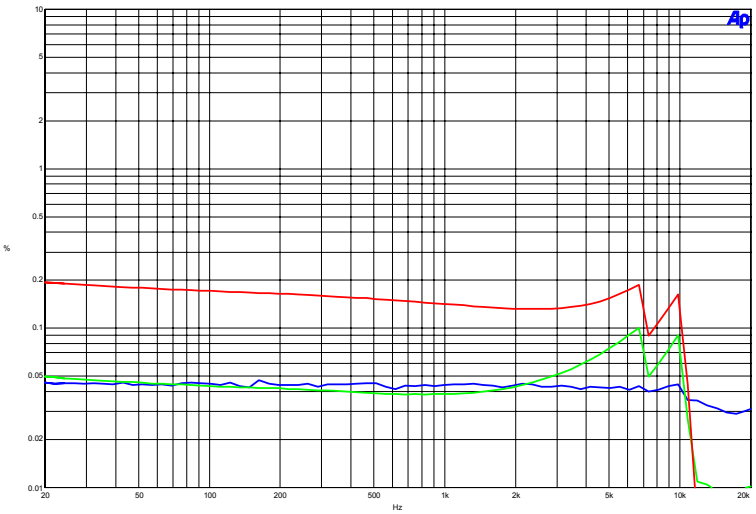
1.3 THD+N vs Frequency (6 Ω)

Left Channel



Comments:	**Blue = 1 W**	**Green = 10 W**	**Red = 30 W**	Sample frequency = 44.1 kHz
	Power supply = 23 V	Load = 6 Ω	Filter = AES17	DAP bypassed, S/PDIF coaxial input

Right Channel



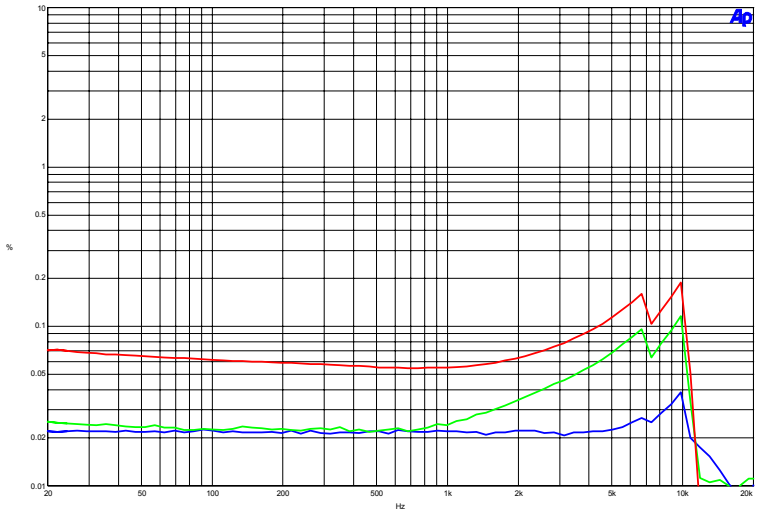
Comments:	**Blue = 1 W**	**Green = 10 W**	**Red = 30 W**	Sample frequency = 44.1 kHz
	Power supply = 23 V	Load = 6 Ω	Filter = AES17	DAP bypassed, S/PDIF coaxial input

NOTE: THD+N at high frequencies depends on the output-filter coil material.

Figure 3. THD+N vs Frequency (6 Ω)

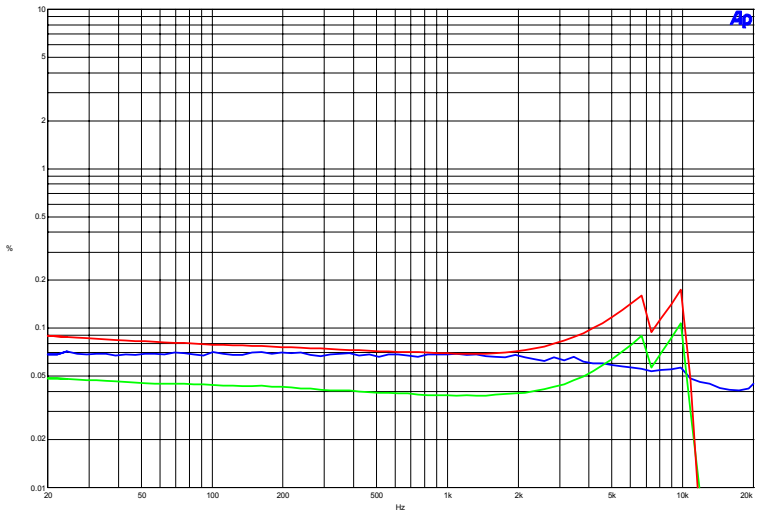
1.4 THD+N vs Frequency (8 Ω)

Left Channel



Comments:	**Blue = 1 W**	**Green = 10 W**	**Red = 20 W**	Sample frequency = 44.1 kHz
	Power supply = 23 V	Load = 8 Ω	Filter = AES17	DAP bypassed, S/PDIF coaxial input

Right Channel



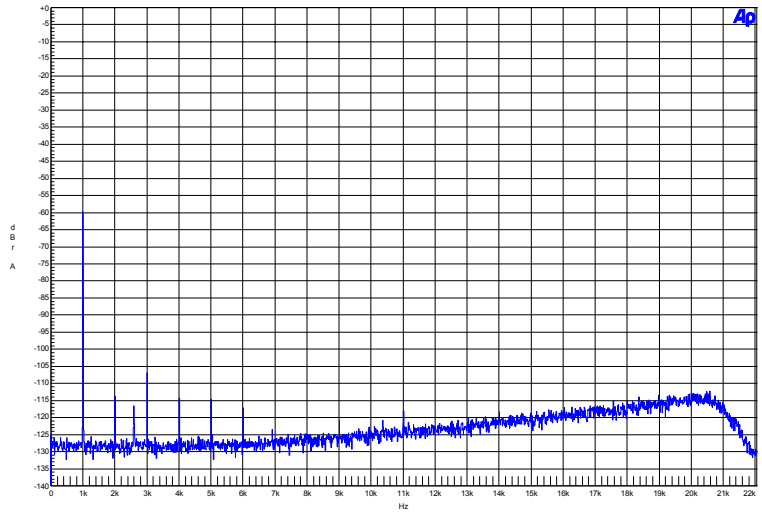
Comments:	**Blue = 1 W**	**Green = 10 W**	**Red = 20 W**	Sample frequency = 44.1 kHz
	Power supply = 23 V	Load = 8 Ω	Filter = AES17	DAP bypassed, S/PDIF coaxial input

NOTE: THD+N at high frequencies depends on the output-filter coil material.

Figure 4. THD+N vs Frequency (8 Ω)

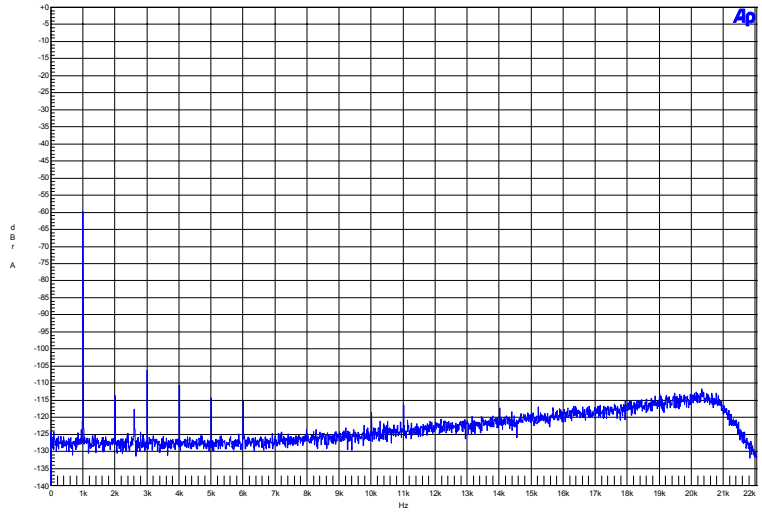
1.5 FFT With -60-dB Input Signal

Left Channel



Comments:	Power supply = 23 V	Load = 6 Ω	Filter = AES17	DAP bypassed, S/PDIF coaxial input
	Input signal = 1 kHz	Sample frequency = 44.1 kHz	FFT size = 16 k	Reference = 13.7 V = full scale

Right Channel

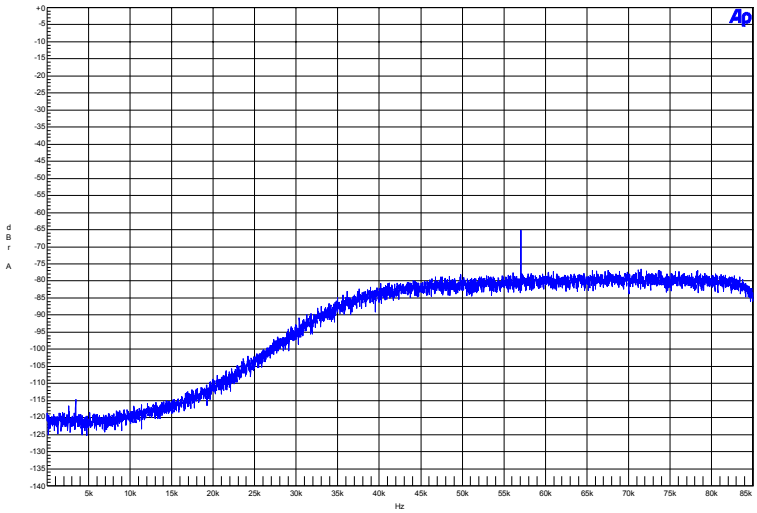


Comments:	Power supply = 23 V	Load = 6 Ω	Filter = AES17	DAP bypassed, S/PDIF coaxial input
	Input signal = 1 kHz	Sample frequency = 44.1 kHz	FFT size = 16 k	Reference = 13.7 V = full scale

Figure 5. FFT With -60-dB Input Signal

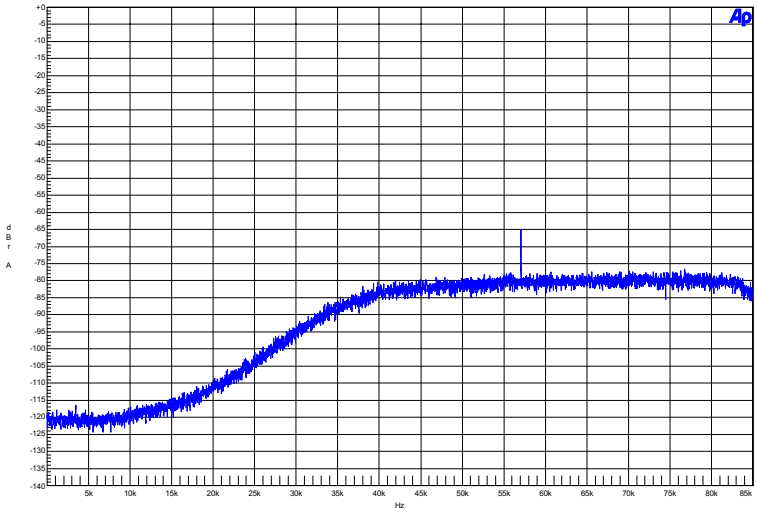
1.6 Noise Floor

Left Channel



Comments:	Power supply = 23 V Input signal = 0 Fs	Load = 6 Ω Sample frequency = 44.1 kHz	FFT size = 16 k	Reference = 13.7 V = full scale DAP bypassed, S/PDIF coaxial input

Right Channel

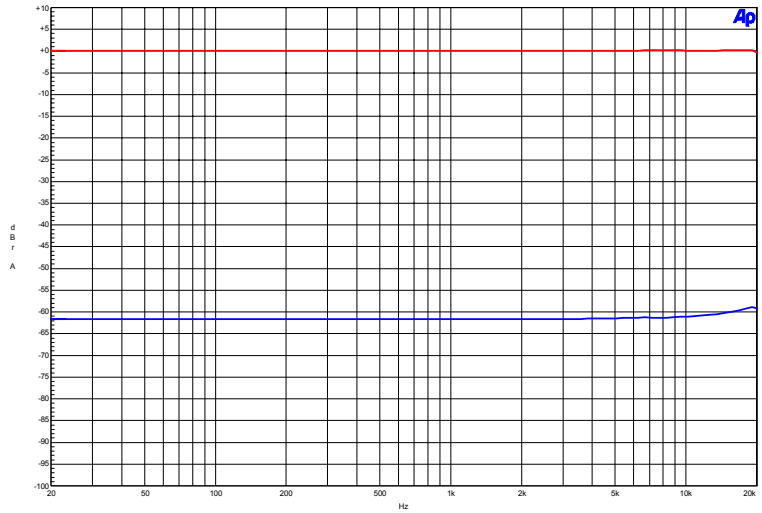


Comments:	Power supply = 23 V Input signal = 0 Fs	Load = 6 Ω Sample frequency = 44.1 kHz	FFT size = 16 k	Reference = 13.7 V = full scale DAP bypassed, S/PDIF coaxial input

Figure 6. Noise Floor

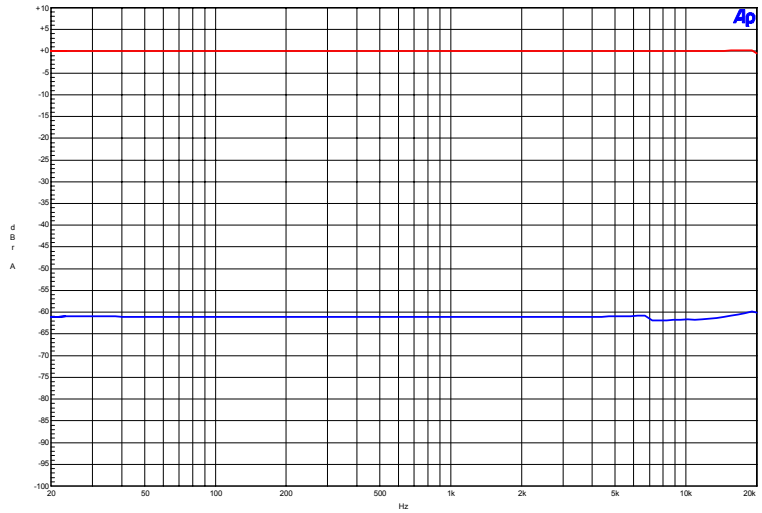
1.7 Channel Separation vs Frequency

Left Channel



Comments:	**Blue = Left output**	**Red=Right output**		
	Input left channel = 0 Fs	Load = 6 Ω	Sample frequency = 44.1 kHz	DAP bypassed, S/PDIF coaxial input
	Input right channel = 1 Fs	Filter = AES17	Power supply = 23 V	

Right Channel

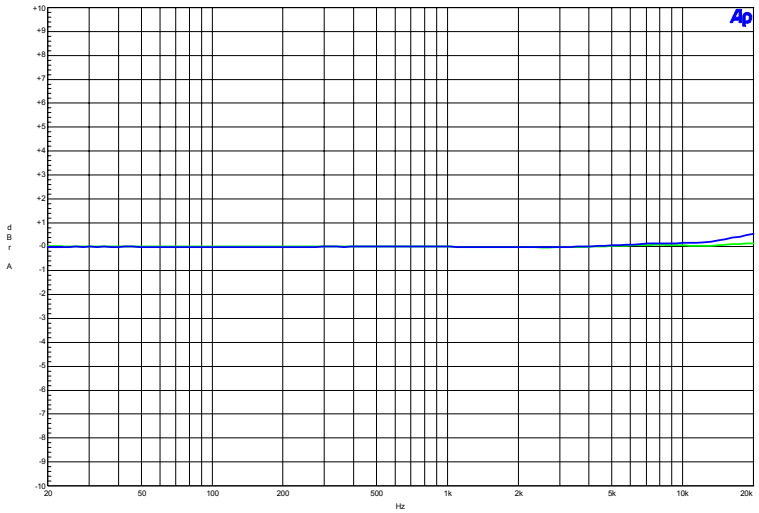


Comments:	**Blue = Right output**	**Red = Left output**		
	Input left channel = 1 Fs	Load = 6 Ω	Sample frequency = 44.1 kHz	DAP bypassed, S/PDIF coaxial input
	Input right channel = 0 Fs	Filter = AES17	Power supply = 23 V	

Figure 7. Channel Separation vs Frequency

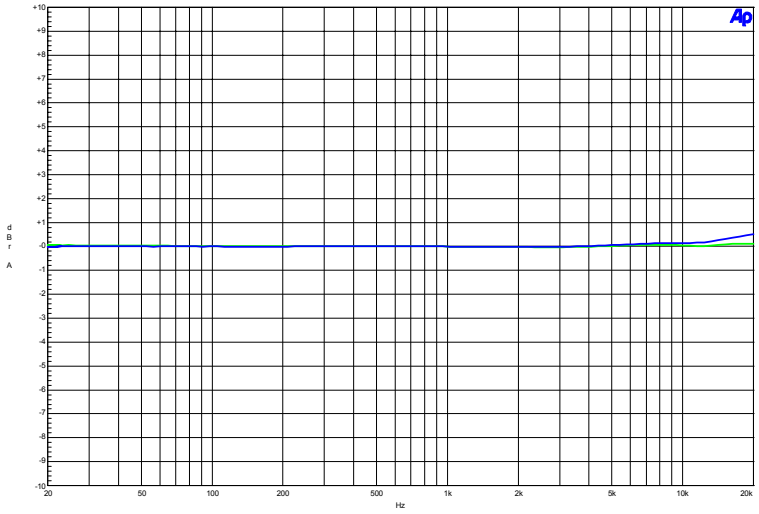
1.8 Frequency Response

Left Channel



Comments:	**Blue = 8 Ω**	**Green = 6 Ω**		DAP bypassed, S/PDIF coaxial input
	Input signal = 1 kHz	Sample frequency = 44.1 kHz	Power supply = 23 V	

Right Channel

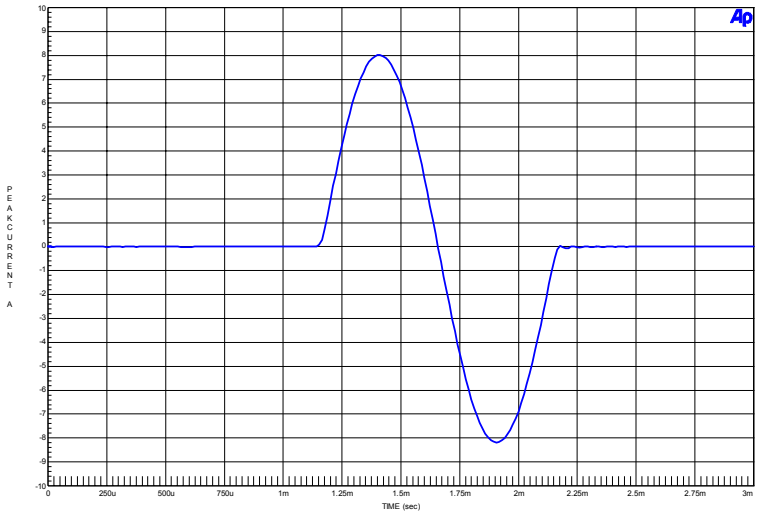


Comments:	**Blue = 8 Ω**	**Green = 6 Ω**		DAP bypassed, S/PDIF coaxial input
	Input signal = 1 kHz	Sample frequency = 44.1 kHz	Power supply = 23 V	

Figure 8. Frequency Response

1.9 Peak Current

Left Channel

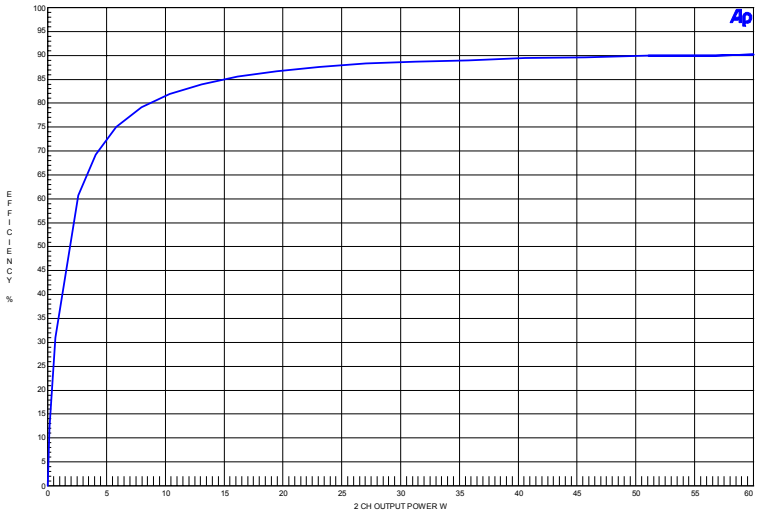


Comments:	Input signal = 1 kHz Load = 1 Ω	Sample frequency = 44.1 kHz Power supply = 23 V	DAP bypassed, S/PDIF coaxial input

Figure 9. Peak Current With a 1-Ω Load

1.10 Output Stage Efficiency

Amplifier Efficiency vs Total Delivered Power



Comments:	Input signal = 1 kHz	Sample frequency = 44.1 kHz	Loads = 6 Ω	Power supply = 23 V

Figure 10. Output Stage Efficiency

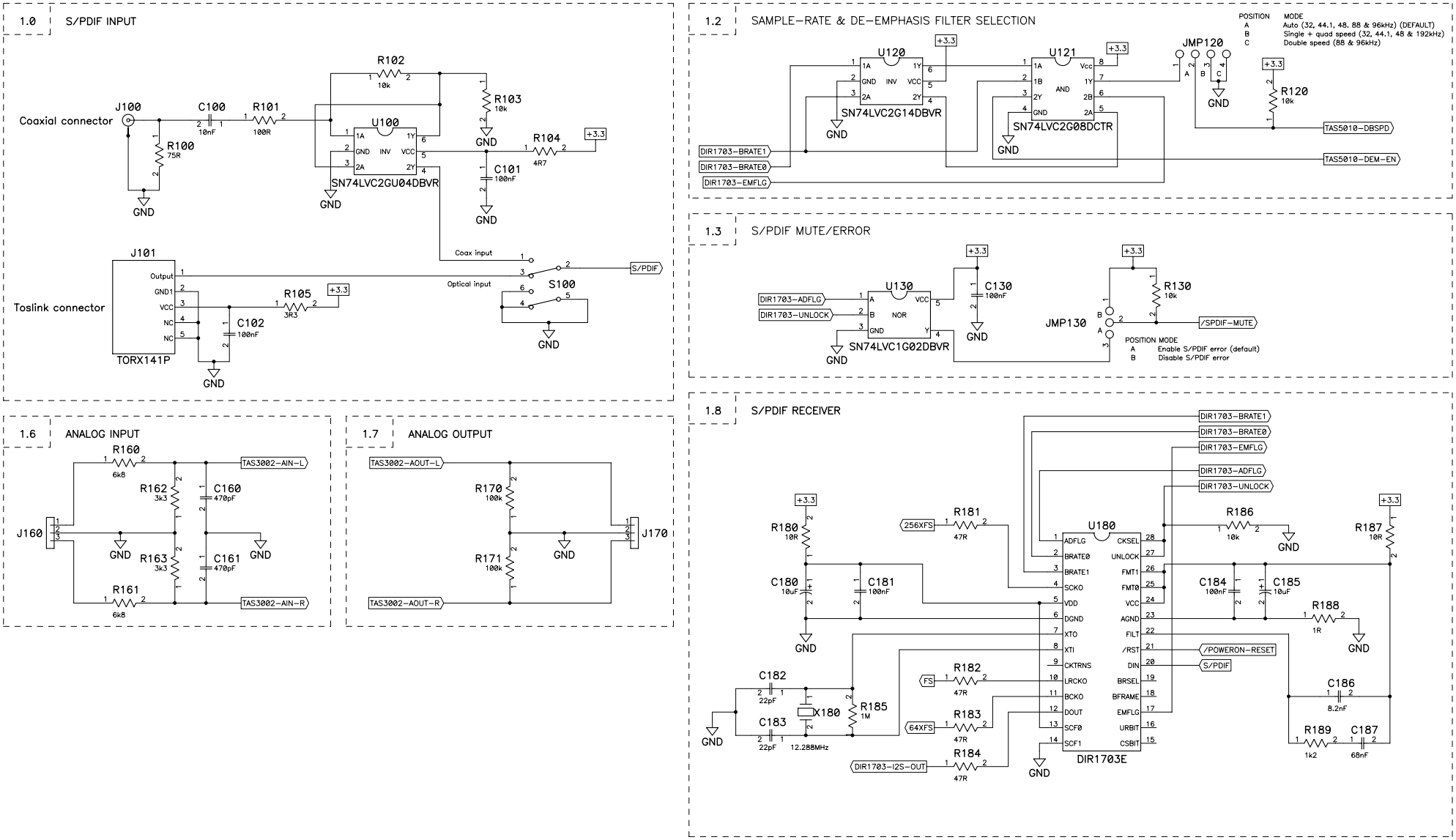
2 References

1. System Design Considerations for True Digital Audio Power Amplifiers Application Report (SLAA117)
2. Digital Audio Measurements Application Report (SLAA114)
3. Voltage Spike Measurement Technique and Specification Application Report (SLEA025)

Appendix A. Design Documents

TAS5001-5122C2EVM Schematic	Version 2.00	7 pages
TAS5001-5122C2EVM Parts List	Version 2.00	2 pages
TAS5001-5122C2EVM PCB Specification	Version 2.00	1 page
TAS5001-5122C2EVM PCB Layers	Version 2.00	3 pages
TAS5001-5122C2EVM Mechanical Design	Version 1.00	1 page
TAS5001-5122C2EVM ECO-003	Version 1.00	1 page

AUDIO INPUT SECTION



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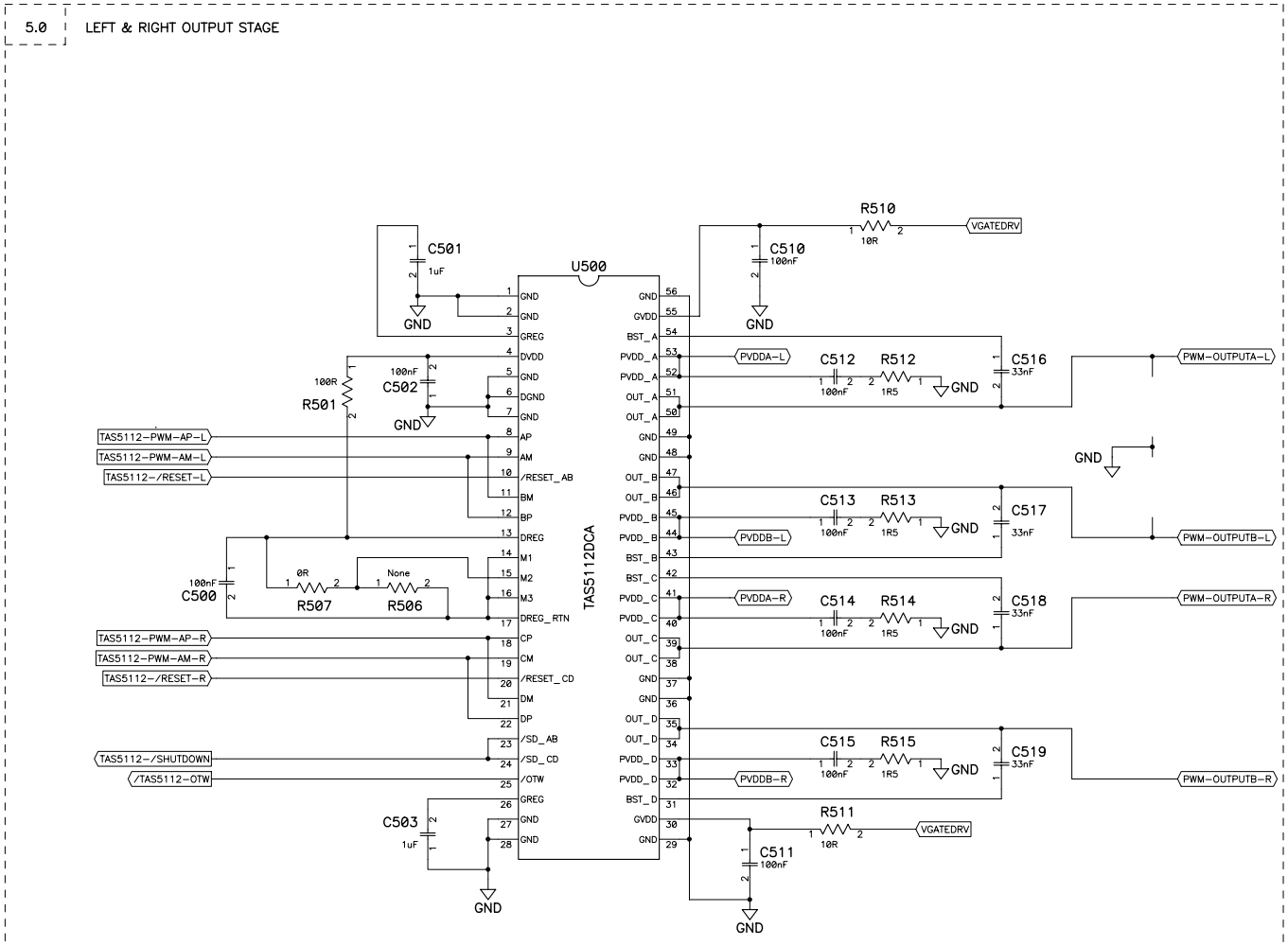
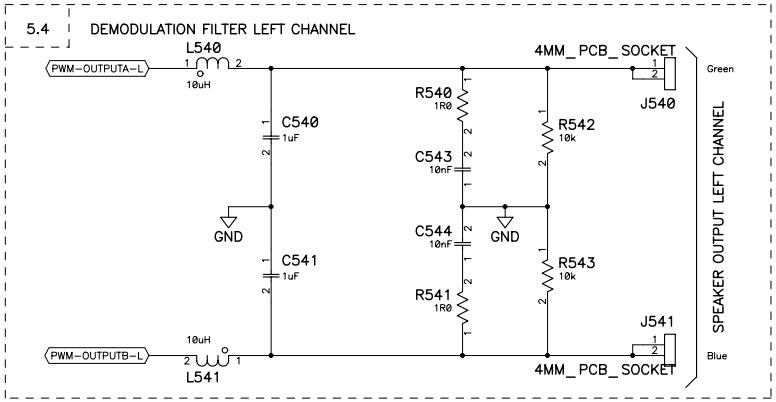
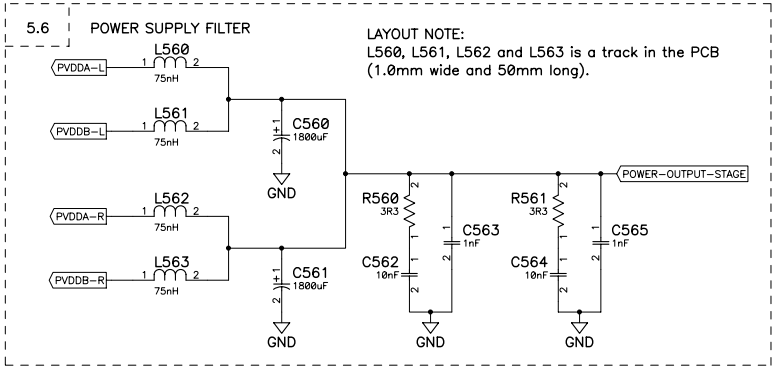
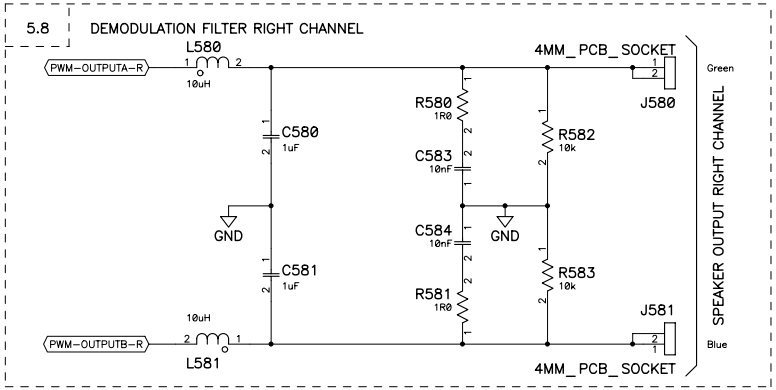
ALL RIGHTS RESERVED - PATENTS PENDING TEXAS INSTRUMENTS INCORPORATED			
Project:	TAS5001-5122C2EVM		
Size: A2	Page Title	AUDIO INPUT SECTION	
Engineers:	Claus Reckweg / Kim N Madsen		
Date: Wed May 19, 2004	Rev: 1	Mod: 0	Sheet: 1 of 7
Filename:	A708–SCH–001 (2.00).sch		Drawn by: CRW–KNM
File Location:			

OUTPUT STAGE SECTION









Patents pending in circuitry design and layout (WO99/59241 & WO99/59242).
This circuitry may only be used together with the integrated circuit TAS5112 from Texas Instruments Incorporated.

REFERENCE DESIGN PAGE 2 OF 2

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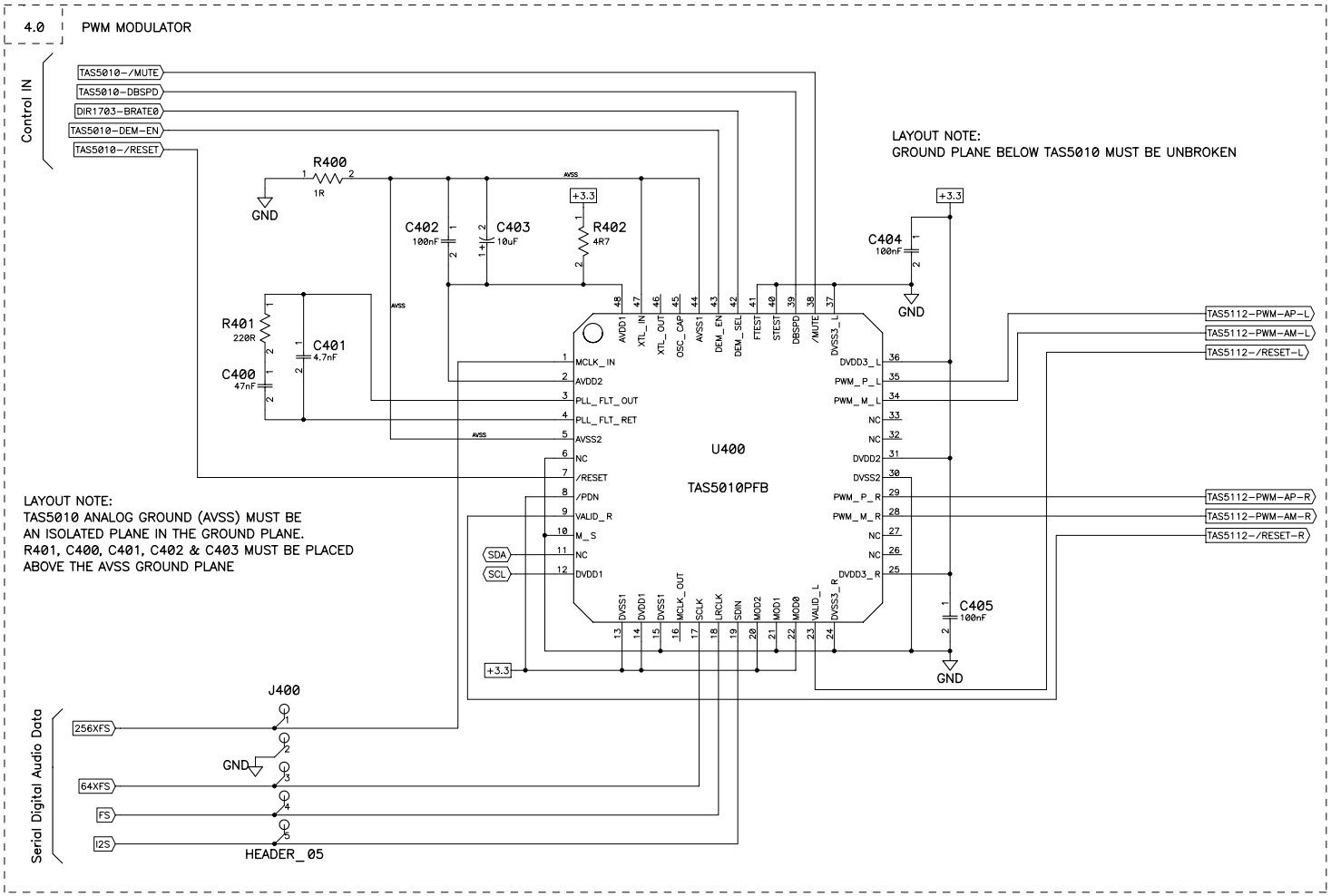
Size: A2	Page Title	OUTPUT STAGE SECTION		
Engineers:	Claus Reckweg / Kim N Madsen			
Date: Wed May 19, 2004	Rev: 1	Mod: 0	Sheet: 5 of 7	
Filename:	A708-SCH-001 (2.00).sch		Drawn by: KNM	
File Location:				

PCM TO PWM MODULATOR SECTION



Patents pending in circuitry design and layout (WO99/59241 & WO99/59242).
This circuitry may only be used together with the integrated circuit TAS5112 from Texas Instruments Incorporated.

REFERENCE DESIGN PAGE 1 OF 2

TEXAS INSTRUMENTS

DIGITAL AUDIO GROUP

Project:	TAS5001-5122C2EVM			
Size: A2	Page Title	PCM TO PWM MODULATOR SECTION		
Engineers:	Claus Reckweg / Kim N Madsen			
Date: Wed May 19, 2004	Rev: 1	Mod: 0	Sheet: 4 of 7	
Filename:	A708-SCH-001 (2.00).sch		Drawn by:	CRW-KNM
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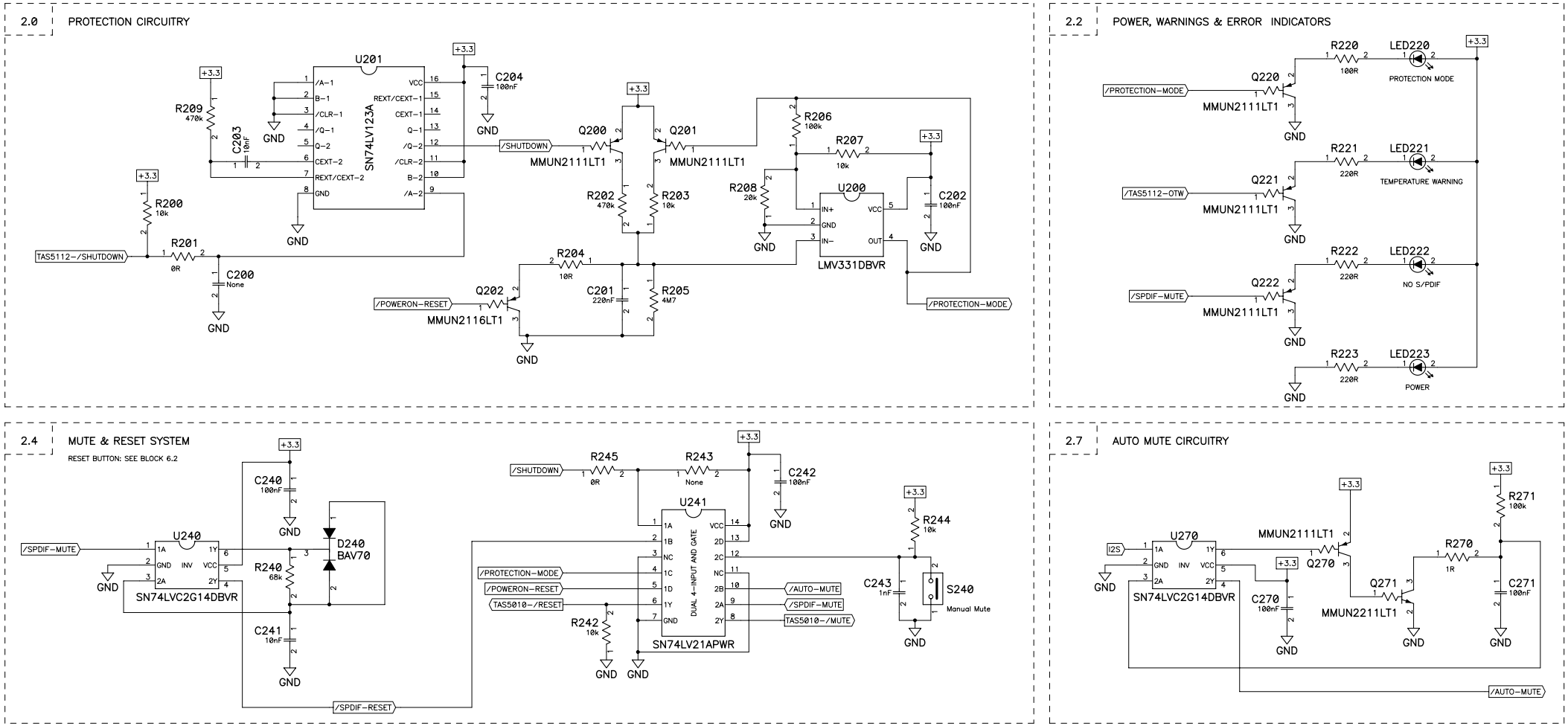

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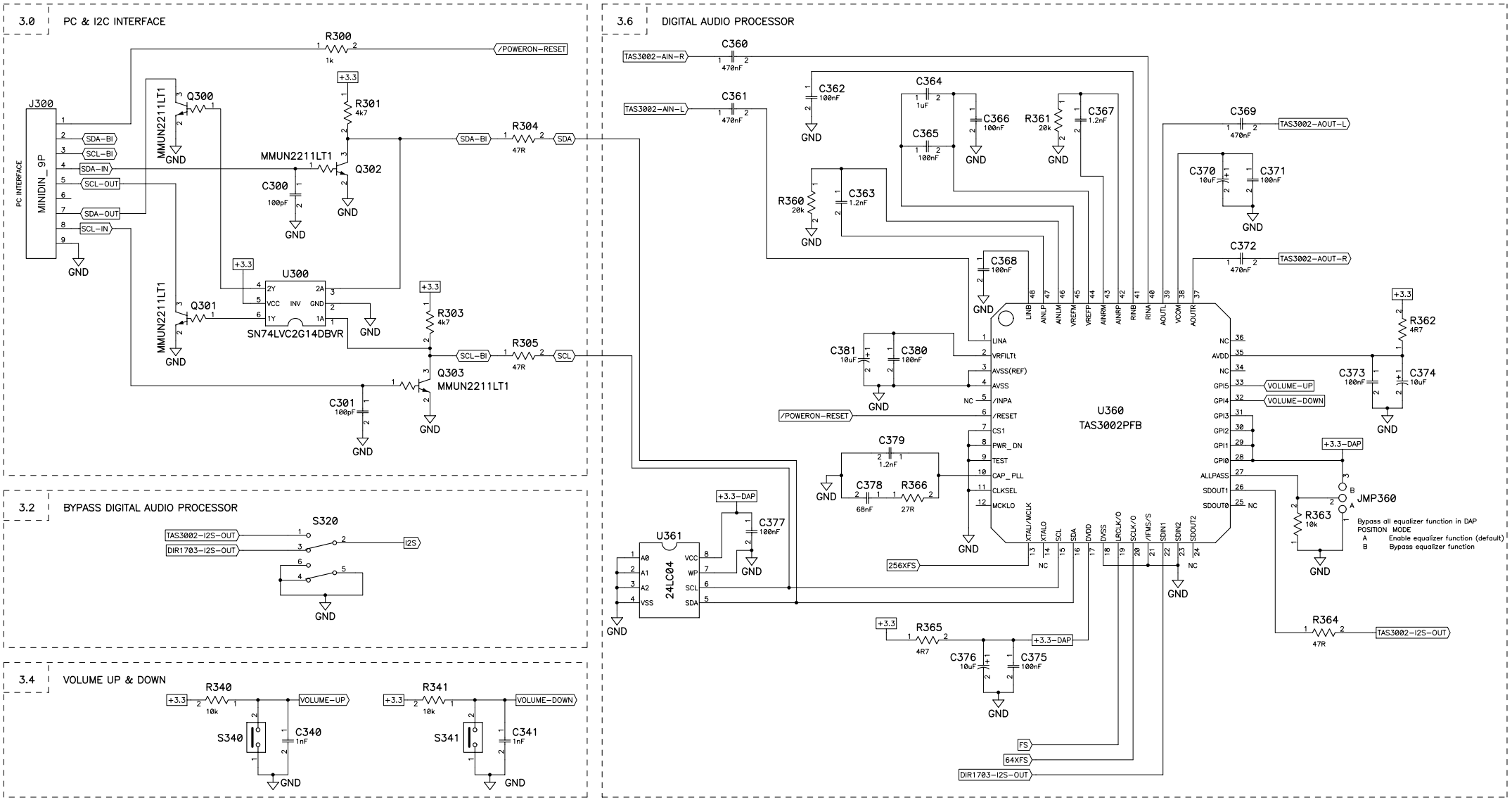
Size: A2 / Page Title	CONTROL SECTION
Engineers:	Claus Reckweg / Kim N Madsen
Date: Wed May 19, 2004 / Rev: 1 / Mod: 0	Sheet: 2 of 7
Filename:	A708-SCH-001 (2.00).sch
File Location:	Drawn by: CRW-KNM

DESIGN LOG

A708–SCH–001 (1.00):	Initial Schematic
A708–SCH–001 (2.00):	U201, pin 9 and 10 updated

Project:	TAS5001-5122C2EVM			
Size: A2	Page Title	DESIGN LOG		
Engineers:	Claus Reckweg / Kim N Madsen			
Date: Wed May 19, 2004	Rev: 1	Mod: 0	Sheet: 7 of 7	
Filename:	A708–SCH–001 (2.00).sch		Drawn by: CRW–KNM	
File Location:				

DIGITAL AUDIO PROCESSOR SECTION



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Engineers:	Claus Reckweg / Kim N Madsen			
Date: Wed May 19, 2004	Rev: 1	Mod: 0	Sheet: 3 of 7	
Filename:	A708-SCH-001 (2.00).sch		Drawn by: KRW-KNM	
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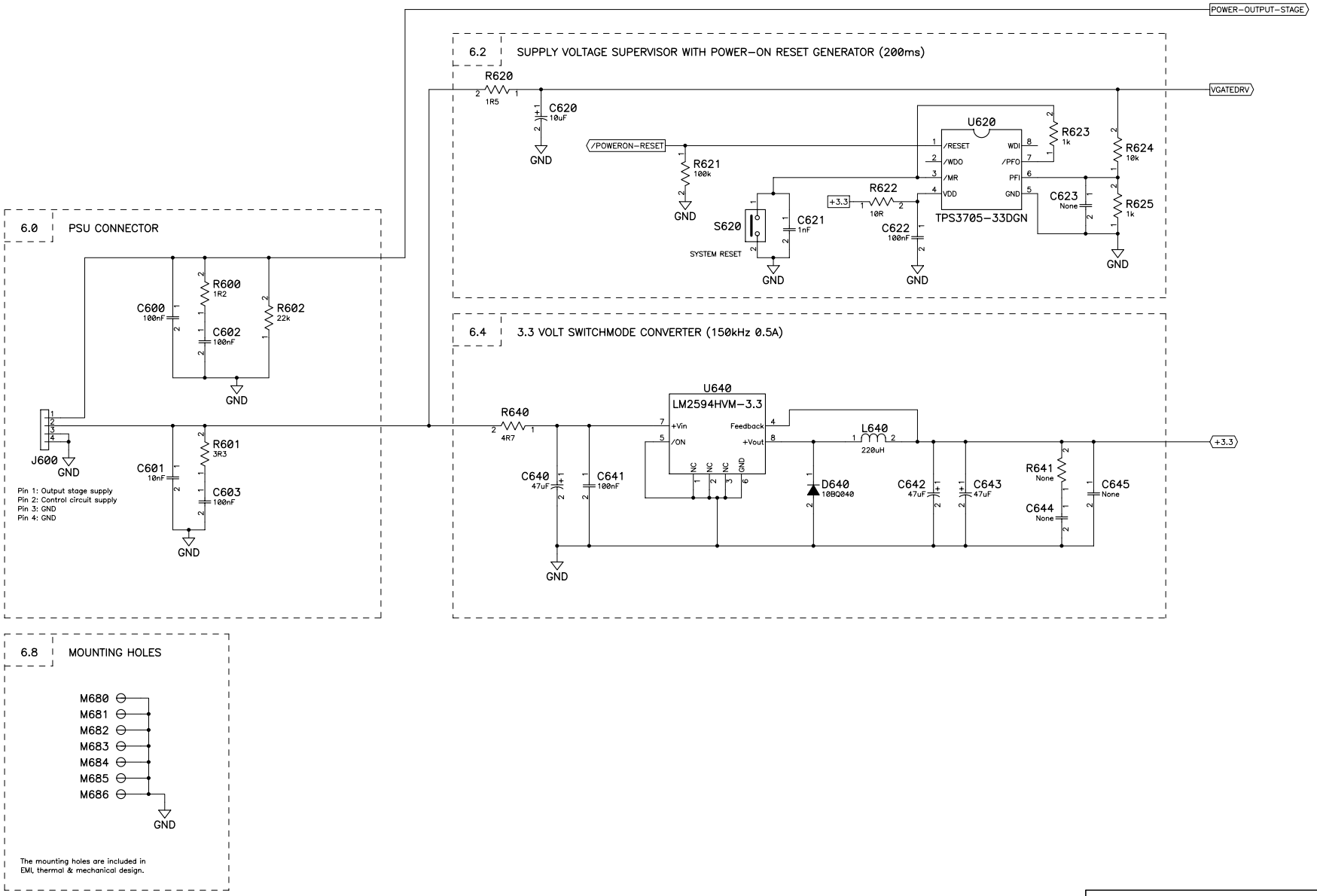
POWER SUPPLY SECTION



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Size: A2	Page Title	POWER SUPPLY SECTION	
Engineers:	Claus Reckweg / Kim N Madsen		
Date: Wed May 19, 2004	Rev: 1	Mod: 0	Sheet: 6 of 7
Filename:	A708-SCH-001 (2.00).sch		Drawn by: KRW-KNM
File Location:			

TAS5001-5122C2EVM Parts List (2.00).xls

Qty	Part Reference	Description	Housing	Manufacturer Name	Manufacturer p/n 1
1	R602	22k0 1% 100ppm 0.25W metalfilm	1206	Philips	2322 724 62203
1	R105	3R30 1% 100ppm 0.25W metalfilm	1206	Philips	2322 724 63308
1	R100	75R0 1% 100ppm 0.25W metalfilm	1206	Philips	2322 724 67509
4	R542 R543 R582 R583	10k0 1% 100ppm 125mW metalfilm	0805	Philips	2322 734 61003
4	R560 R561 R600 R601	3R30 1% 100ppm 125mW metalfilm	0805	Philips	2322 734 63308
10	R201 R245 R403 R404 R405 R406 R502 R503 R504 R507	0 ohm jumper	0603	BC Components	DCT 0603 jumper
3	R101 R220 R501	100R 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 - 00 5% PA 100R
3	R300 R623 R625	1k00 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 - 00 5% PA 1k00
14	R102 R103 R120 R130 R186 R200 R203 R207 R242 R244 R340 R341 R363 R624	10k0 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 - 00 5% PA 10k0
5	R170 R171 R206 R271 R621	100k 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 - 00 5% PA 100k
1	R185	1M 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 - 00 5% PA 1M00
7	R188 R270 R400 R540 R541 R580 R581	1R0 5% 300ppm 100mW metalfilm	0603	BC Components	DCT 0603 -00 5% PA 1R0
6	R180 R187 R204 R510 R511 R622	10R0 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 -00 5% PA 10R
1	R189	1k20 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 - 00 5% PA 1k20
3	R208 R360 R361	20k0 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 - 00 5% PA 20k0
4	R221 R222 R223 R401	220R 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 -00 5% PA 220R
1	R366	27R0 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 -00 5% PA 27R
2	R162 R163	3k30 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 -00 5% PA 3k30
2	R301 R303	4k70 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 -00 5% PA 4k70
2	R202 R209	470k 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 -00 5% PA 470k
1	R205	4M70 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 -00 5% PA 4M70
4	R104 R362 R365 R402	4R70 5% 300ppm 100mW metalfilm	0603	BC Components	DCT 0603 -00 5% PA 4R70
7	R181 R182 R183 R184 R304 R305 R364	47R0 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 -00 5% PA 47R0
2	R160 R161	6k80 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 -00 5% PA 6k80
1	R240	68k0 5% 200ppm 100mW metalfilm	0603	BC Components	DCT 0603 -00 5% PA 68k0
5	R512 R513 R514 R515 R620	1R50 5% 100ppm 250mW metalfilm	RC3715	Beychlag	MMA0204-100 5% BL 1R50
1	R640	4R70 1% 50ppm 250mW metalfilm	RC3715	Beychlag	MMA0204-50 1% BL 4R70
3	C562 C564 C601	10nF 50V 20% X7R	0805	Philips	2222 600 xxx36
10	C271 C510 C511 C512 C513 C514 C515 C602 C603 C641	100nF 50V 20% X7R	0805	Philips	2222 580 16741
3	C364 C501 C503	1uF 16V 20% X7R	0805	KEMET	C0805C105M4RAC
1	C201	220nF 20% 16V X7R	0805	KEMET	C0805C224M4RAC
4	C516 C517 C518 C519	33nF 50V 20% X7R	0805	Philips	2222 580 16634
4	C360 C361 C369 C372	470nF 16V 20% X7R	0805	Philips	2222 780 16758
2	C563 C565	1nF 50V 2% NP0	0805	Philips	2222 861 14102
8	C180 C185 C370 C374 C376 C381 C403 C620	10uF 16V 20% LYT	LY4x5SMD	Panasonic	ECE V 1C A 100 SR
7	C100 C203 C241 C543 C544 C583 C584	10nF 50V 20% X7R	0603	KEMET	C0603C103M5RAC
25	C101 C102 C130 C181 C184 C202 C204 C240 C242 C270 C362 C365 C366 C368 C371 C373 C375 C377 C380 C402 C404 C405 C500 C502 C622	100nF 16V 20% X7R	0603	KEMET	C0603C104M4RAC
3	C363 C367 C379	1.2nF 50V 10% X7R	0603	KEMET	C0603C122M5RAC
1	C401	4.7nF 50V 20% X7R	0603	KEMET	C0603C473M5RAC
1	C400	47nF 16V 20% X7R	0603	KEMET	C0603C473M2RAC
2	C187 C378	68nF 16V 20% X7R	0603	KEMET	C0603C683M2RAC
1	C186	8.2nF 50V 10% X7R	0603	KEMET	C0603C822M5RAC
2	C300 C301	100pF 50V 10% NP0	0603	KEMET	C0603C101K5GAC
4	C243 C340 C341 C621	1nF 10% 50V NP0	0603	KEMET	C0603C102K5GAC
2	C182 C183	22pF 10% 50V NP0	0603	KEMET	C0603C220K5GAC
2	C160 C161	470pF 10% 50V NP0	0603	KEMET	C0603C471K5GAC
2	C560 C561	1000uF 35V 20%		Panasonic	EEUFC1V102
3	C640 C642 C643	47uF 35V 20% low esr	C1PD2_5	RUBYCON	35YXF47MY0611
4	C540 C541 C580 C581	1uF 63V 10% polyester	C3B2	Wima	MKS4 1uF 63V 10% PCM7.5
1	L640	220uH 20% 0.5A 0.39R		CoilCraft	DT3316P-224
4	L540 L541 L580 L581	10uH 4.4A 20% 24mR		TAIYO YUDEN	LHFP13BB100M
1	D240	70V/250mA Small signal dual diode A-C-A	SOT-23	General Semiconductor	BAV70
1	D640	1A/40V Schottky diode	SMB	International Rectifier	10MQ040N
1	LED220	RED 10mA LED SMD	0603P	Toshiba	TLSU1008
1	LED223	GREEN 10mA LED SMD	0603P	Toshiba	TLGU1008
2	LED221 LED222	YELLOW 10mA LED SMD	0603P	Toshiba	TLYU1008
6	Q200 Q201 Q220 Q221 Q222 Q270	PNP 50V/0.1A Dig. Trans.(Rb=10k Rbe=10k)	SOT-23	ON Semiconductor / Motorola	MMUN2111LT1
1	Q202	PNP 50V/0.1A Dig. Trans.(Rb=4k7)	SOT-23	ON Semiconductor / Motorola	MMUN2116LT1
5	Q271 Q300 Q301 Q302 Q303	NPN 50V/0.1A Dig. Trans.(Rb=10k Rbe=10k)	SOT-23	ON Semiconductor / Motorola	MMUN2211LT1
1	U180	Digital Audio interface receiver	SSOP-28	Texas Instruments	DIR1703E

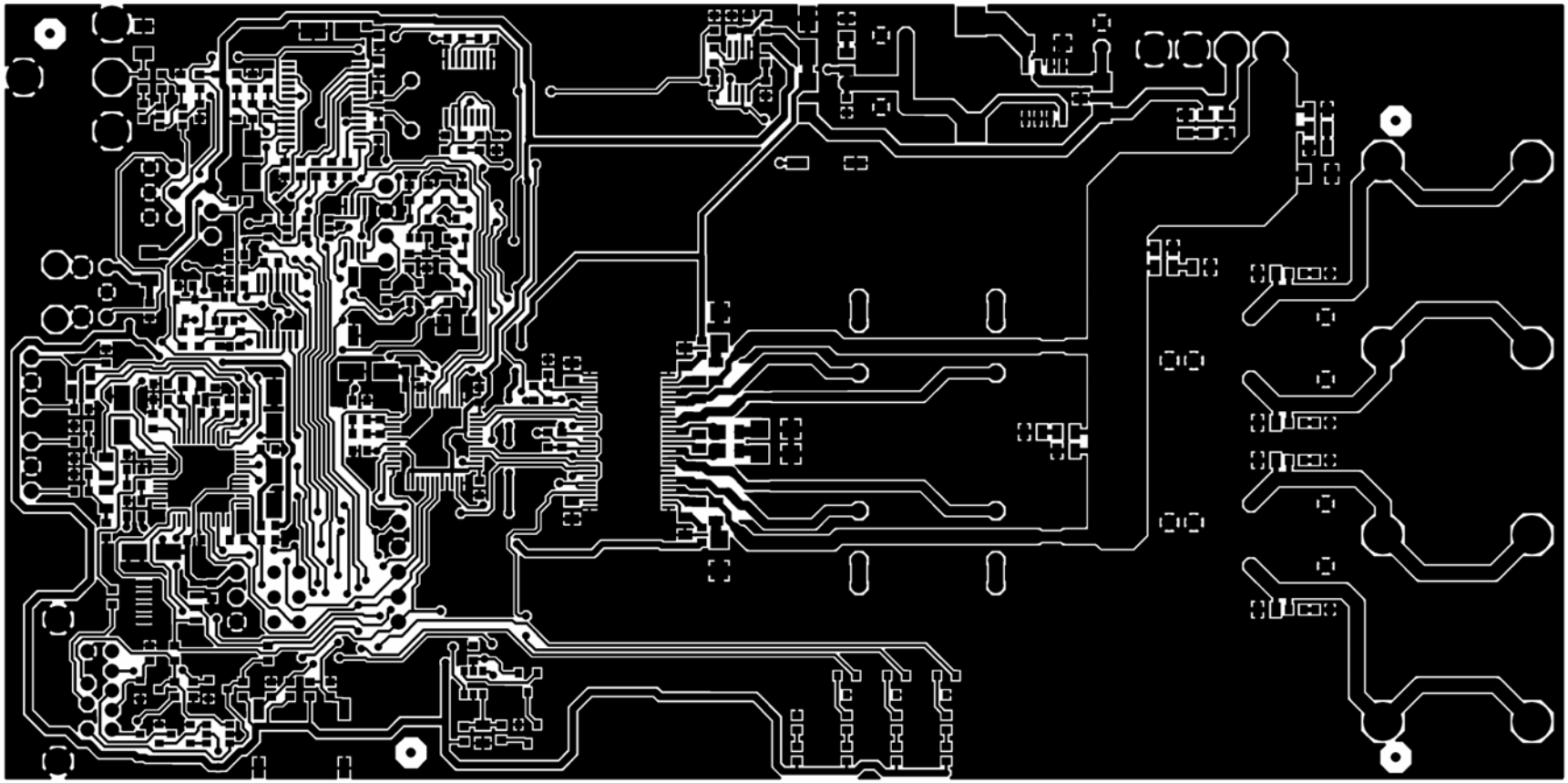
TAS5001-5122C2EVM Parts List (2.00).xls

1	U360	Codec DAP with ADC/DAC	S-PQFP-G38	Texas Instruments	TAS3002PFB
1	U400	PCM to PWM DAP 92dB DR	TQFP48	Texas Instruments	TAS5001PFB
1	U500	Stereo Digital Audio PWM Power Output Stage	HTSSOP56	Texas Instruments	TAS5122DCA
1	U200	Differential Comparator	SOT23-5	Texas Instruments	LMV331IDBVR
1	U130	Single 2-input NOR gate, LVC	SOT23-5	Texas Instruments	SN74LVC1G02DBVR
1	U100	Dual Inverter, LVC		Texas Instruments	SN74LVC2GU04DBVR
1	U121	Dual AND gate, LVC	MSOP8	Texas Instruments	SN74LVC2G08DCTR
4	U120 U240 U270 U300	Dual Schmitt-Trigger Inverter, LVC		Texas Instruments	SN74LVC2G14DBVR
1	U241	Dual 4-input AND gate, LV	TSSOP14	Texas Instruments	SN74LV21APWR
1	U201	Dual Retrig. Monostab. Multivib. LV	TSSOP16	Texas Instruments	SN74LV123APWR
1	U361	4K I2C serial EEPROM	SO8	Microchip	24LC04BSN
1	U620	3.3V Supp. Volt. Supervisor, 200ms Delay	MSOP8	Texas Instruments	TPS3705-33DGN
1	U640	3V3/0.5A Buck Converter	SO8	National Semiconductor	LM2594HVM-3.3V
1	J101	TOSLINK Receiver, 3.3V		Toshiba	TORX141P
5	SCREW01 SCREW02 SCREW03 SCREW04 SCREW05	M3x6, Pan head, Pozidriv, A2 screw		Bossard	BN 31108 M3x6
5	WASHER01 WASHER02 WASHER03 WASHER04 WASHER05	M3 stainless steel washer		Bossard	BN 670
5	STAND-OFF01 STAND-OFF02 STAND-OFF03 STAND-OFF04 STAND-OFF05	M3x10 aluminum stand offs		Ettinger	05.03.108
2	JMP130 JMP360	3 pin 2.54mm Pitch Header	MX3SI	Molex	90120-0123
2	J160 J170	3 pin 2.54mm Pitch Header, friction lock	MX3SI	Molex	22-27-2031
1	JMP120	4 pin 2.54mm Pitch Header	MX4SI	Molex	90120-0124
1	J600	4 Pin 3.96mm Pitch Header	MY4S	JST	B 4P-VH
1	J100	Phono RCA connector		MONACOR	T-709
2	J541 J581	4mm PCB mount socket blue		Deltron	571-0200
2	J540 J580	4mm PCB mount socket green		Deltron	571-0400
1	J300	9 pol mini din with shield		CUI STACK	MD-90SM
1	X180	12.288MHz Crystal HC49		C-MAG	12.288MHz HC49/4H
4	S240 S340 S341 S620	Tact switch, SPMT, 12V/50mA		Panasonic	EVQ-PPDA25
2	S100 S320	Switch DPDT on-on pcb mount - SUBMINI		NKK-Nikkai	G-22-AP
1	PCB	TAS5001-5122C2EVM Printed Cicuit Board (ver. 2.00)		Printline	A708-PCB-001(2.00)

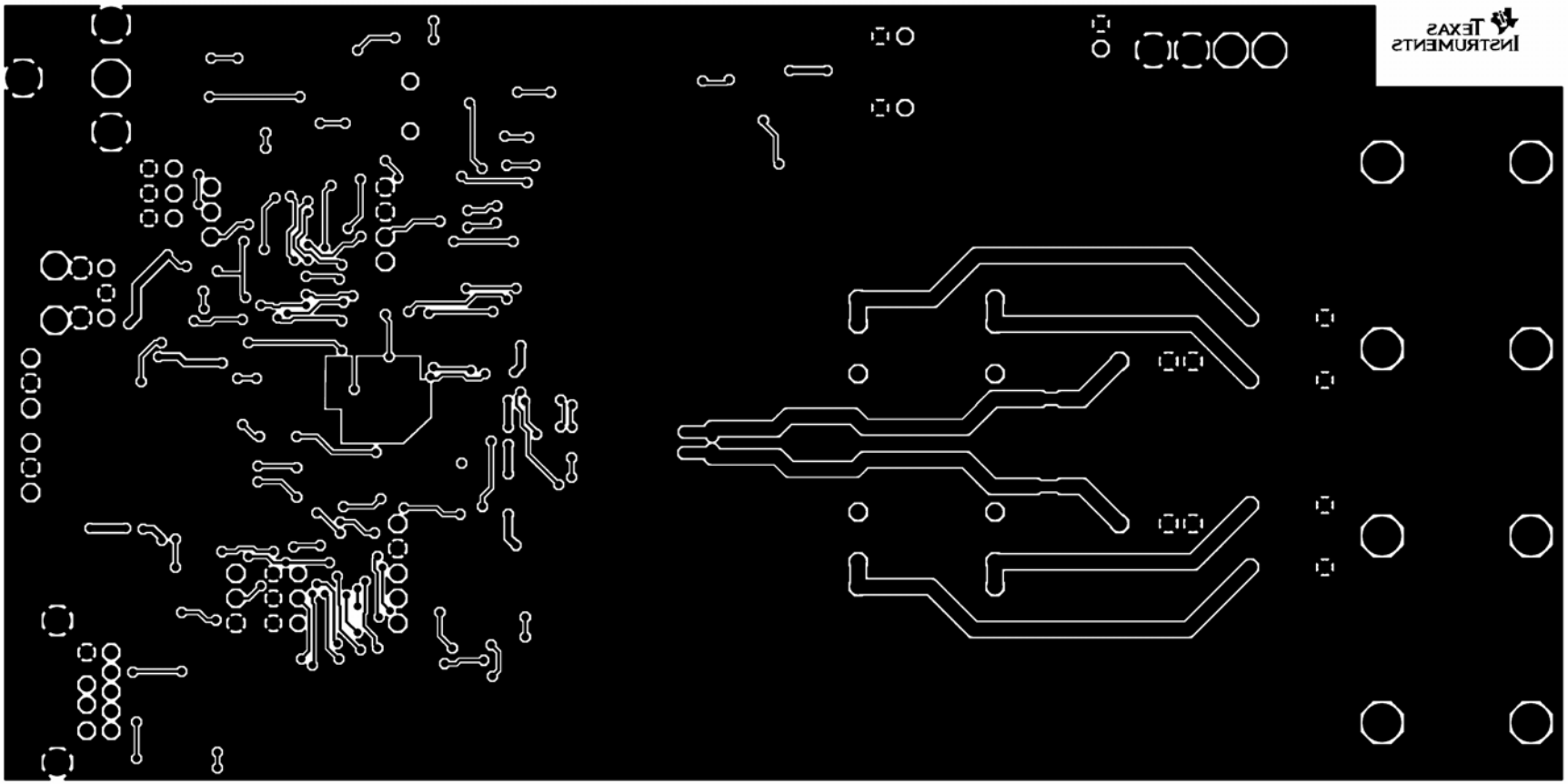
Jonas Svendsen

TAS5001-5122C2EVM BOARD (A708)
PCB SPECIFICATION
Version 2.00

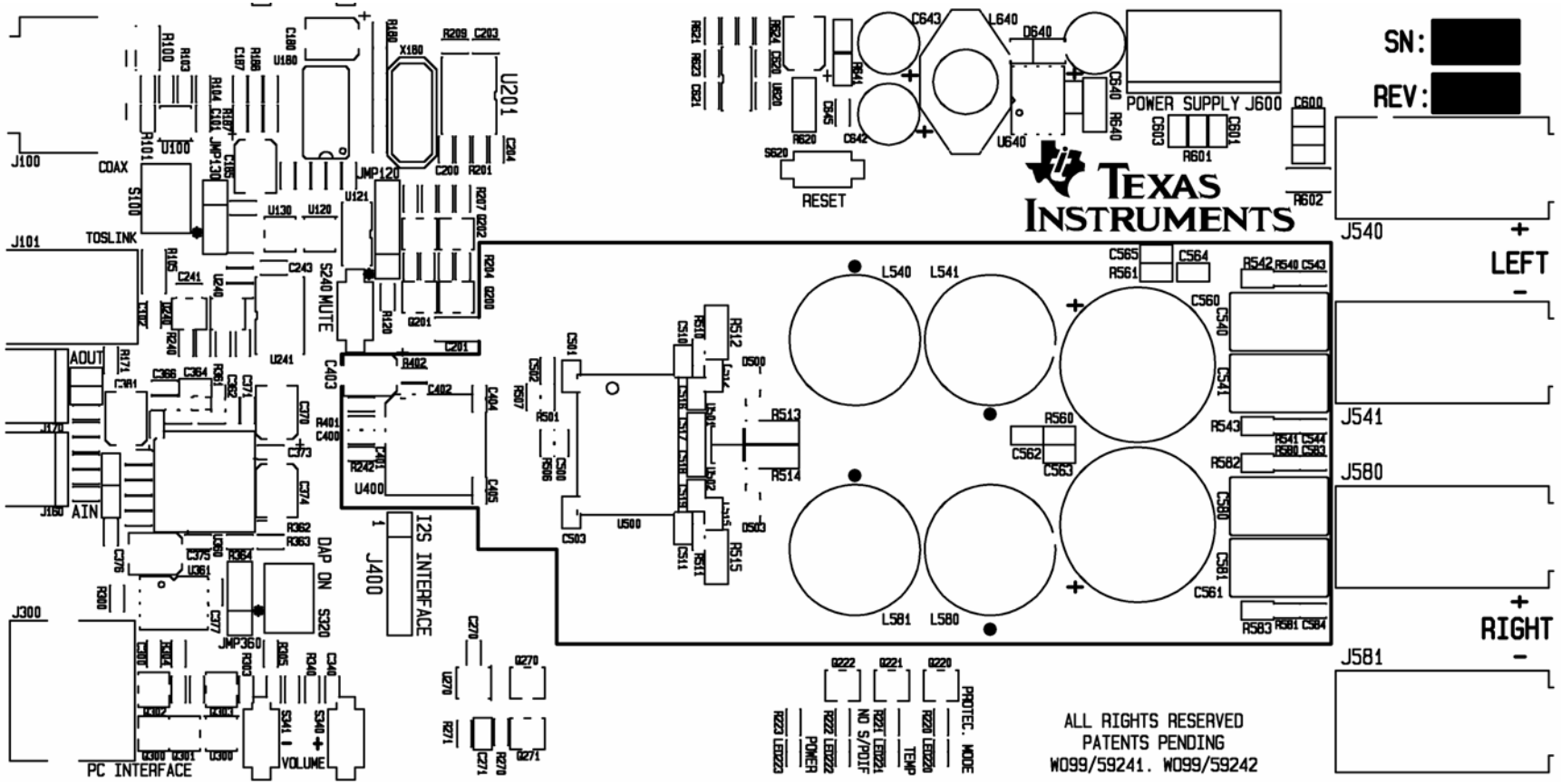
BOARD IDENTIFICATION:	A708-PCB-001 (2.00)
BOARD TYPE:	DOUBLE-SIDED PLATED-THROUGH BOARD
LAMINATE TYPE:	FR4
LAMINATE THICKNESS:	1.6 mm
COPPER THICKNESS:	70µm (INCL. PLATING EXTERIOR LAYER)
COPPER PLATING OF HOLES:	>25µm
MINIMUM HOLE DIAMETER	0.3 mm
SILKSCREEN COMPONENT SIDE:	WHITE - REMOVE SILKSCREEN FROM SOLDER AREA & PRE-TINNED AREAS
SILKSCREEN SOLDER SIDE:	None
SOLDER MASK COMPONENT SIDE:	GREEN
SOLDER MASK SOLDER SIDE:	GREEN
PROTECTIVE COATING:	SOLDER COATING AND CHEMICAL SILVER ON FREE COPPER
ELECTRICAL TEST:	PCB MUST BE ELECTRICAL TESTED
MANUFACTURED TO:	PERFAG 2E (www.perfag.dk)
APERTURE TABLE:	PERFAG 10A (www.perfag.dk)
BOARD SIZE:	80 x 160 mm
COMMENTS:	PLEASE BE CAREFUL WITH PCB VIAS AROUND U500



TOP-SIDE



BOTTOM-SIDE

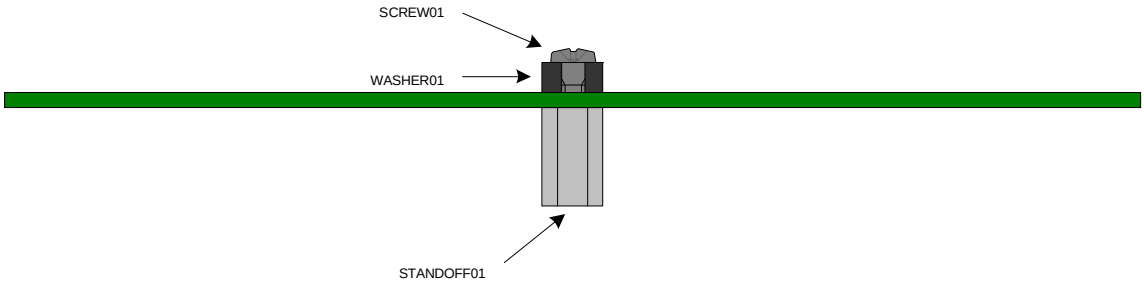

SN:
REV:
POWER SUPPLY J600
TEXAS INSTRUMENTS
RESET
J540
LEFT
J541
J580
RIGHT
J581
COAX
TOSLINK
AOUT
AIN
PC INTERFACE
VOLUME
S240 MUTE
DAP ON
I2S INTERFACE
PROTEC. MODE
TEMP
NO S/PDIF
POWER
ALL RIGHTS RESERVED
PATENTS PENDING
WO99/59241. WO99/59242

SILK-SCREEN

TAS5001-5122C2EVM
Mechanical Design

Jonas Svendsen

MOUNT STAND OFF'S IN CORNER HOLES OF THE PCB



Jens Kroyer, 2008-04-02

TAS5001-5122C2EVM
Engineering Change Order

Affected Documents

Board Revision: REV 3

Title	Document Number	Issue
Schematic	A708-SCH-001	2.00
Printed Circuit Board	A708-PCB-001	2.00
Bill Of Material	A708-LST-001	2.00

Part list changes from version

Type	Value	Part Reference	Old P/N	New P/N
Changed	-	S240 S340 S341 S620	Panasonic EVQ-PPDA25	Panasonic EVQ5PN04K

Please update board revision to “4”.

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