

# **TAS5701EVM PurePath Digital™ 2.1 Channel Evaluation Module**

This manual describes the operation of the TAS5701EVM evaluation module from Texas Instruments.

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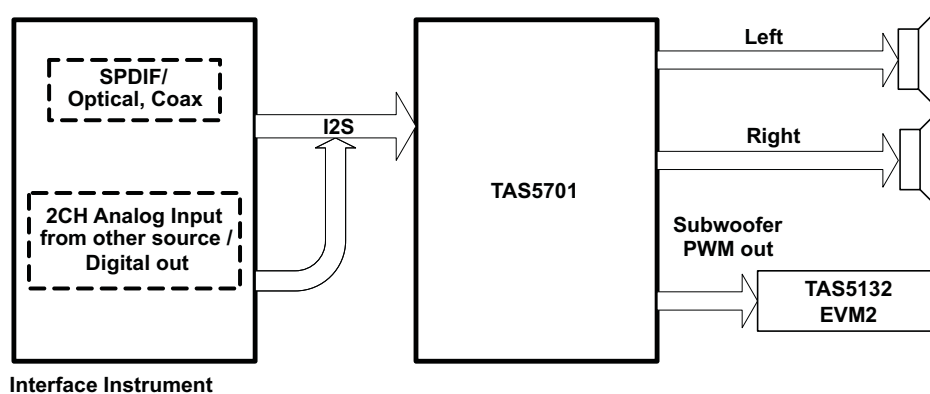
## 1 Overview

The TAS5701 PurePath Digital™ customer evaluation module (EVM) demonstrates the TAS5701 device from Texas Instruments (TI).

The TAS5701 is a high performance PWM processor with a class-D audio power amplifier. With an external subwoofer power stage, the TAS5701 is a 2.1 channel device with an I<sup>2</sup>S digital audio stream input and a line level PWM signal out that can be used to drive an external power stage like the TAS5132. The main two output channels use LC demodulation filters configured in BD mode to produce a high quality audio signal. The subwoofer PWM signal is provided to drive an external class-D power stage (TAS5132), which uses an LC demodulation filter to drive a subwoofer. For detailed information about the TAS5701 device, review the device data manual document ([SLOS559](#)). The PurePath Digital Pulse Width Modulator (PWM) is based on Equibit™ technology.

The TAS5701 device drives two 8-Ω loudspeakers up to 20 W per channel (10%THD+N) in BTL configuration, and provides PWM signals to an external power stage such as the TAS5132EVM2 to drive an external subwoofer. The TAS5701EVM provides PVDD and GVDD voltage levels to the TAS5132EVM2. Please review the board schematic, and TAS5132EVM2 documents for additional information and more specific application information on the subwoofer daughter card and connector.

The TAS5701EVM, together with other TI components on this board, is a complete 2.1-channel digital audio amplifier system, which includes digital input (SPDIF), analog inputs via ADC, and other features like mute function and power down.



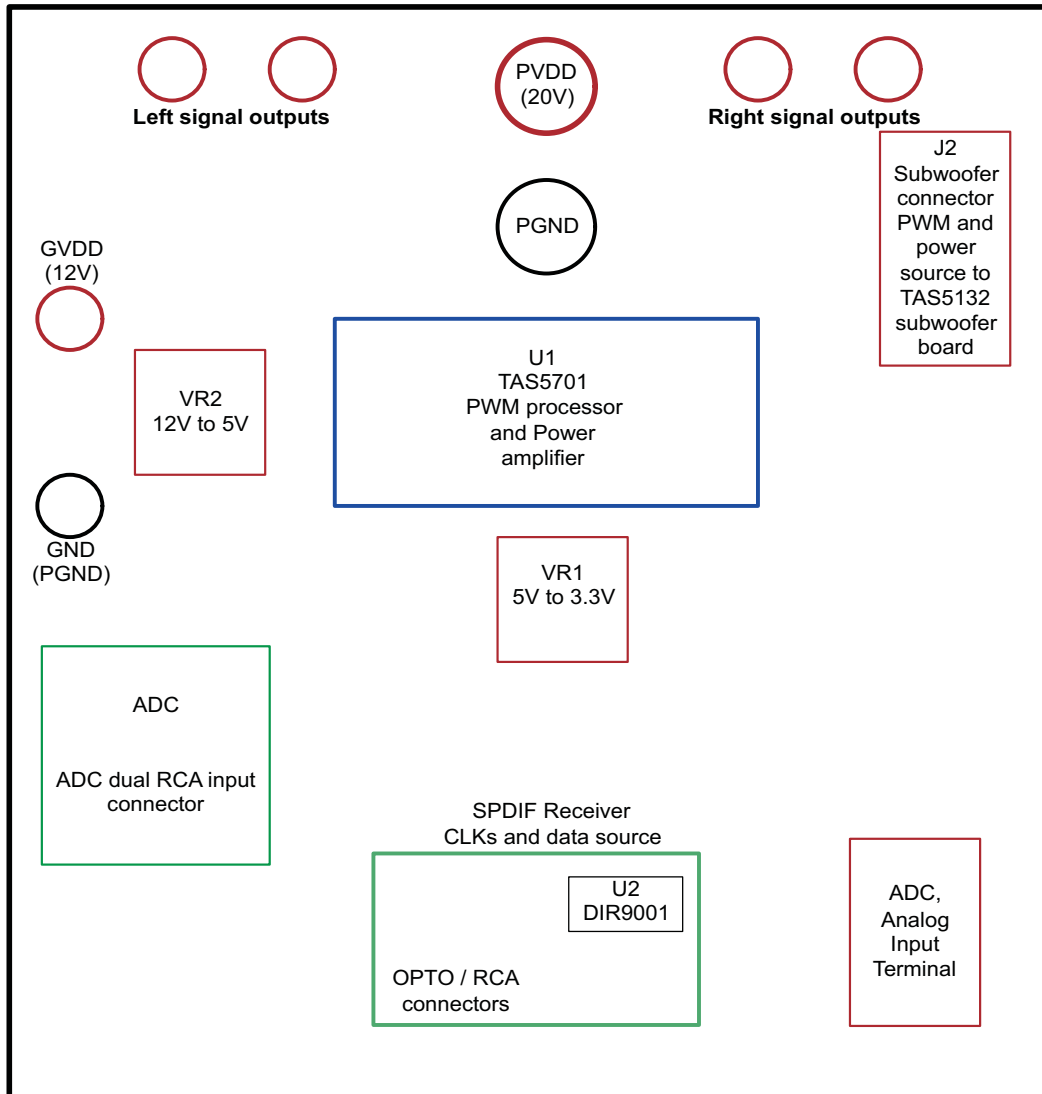
**Figure 1. Complete PurePath Digital System and EVM Signal Path Overview**

### 1.1 TAS5701EVM Features

- Channel PurePath Digital evaluation module design
- Self-contained protection systems and control pins
- Standard I<sup>2</sup>S data input using optical or RCA inputs
- Analog input through analog-to-digital converter
- Subwoofer connection—PWM terminal to provide signal and power to an external subwoofer board
- Double-sided plated-through PCB layout, 2-oz copper, 2 mm.
- Access to control signal gain and data format on the EVM board

## 1.2 PC Board Key Map

The general structure of the TAS5701EVM is illustrated in [Figure 2](#).



**Figure 2. Physical Structure and Component Location for the TAS5701EVM**

1.3 PC Board Photos

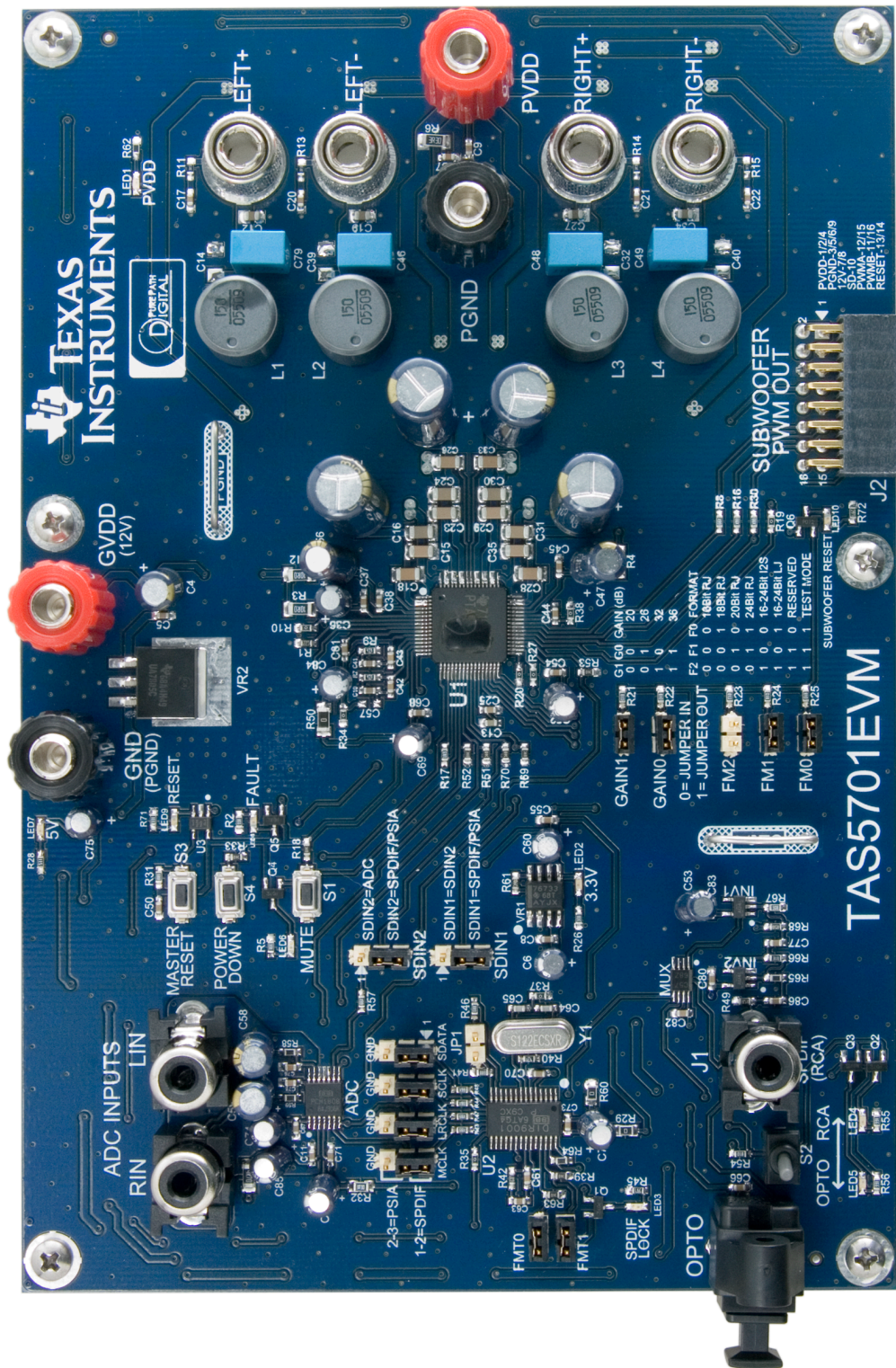
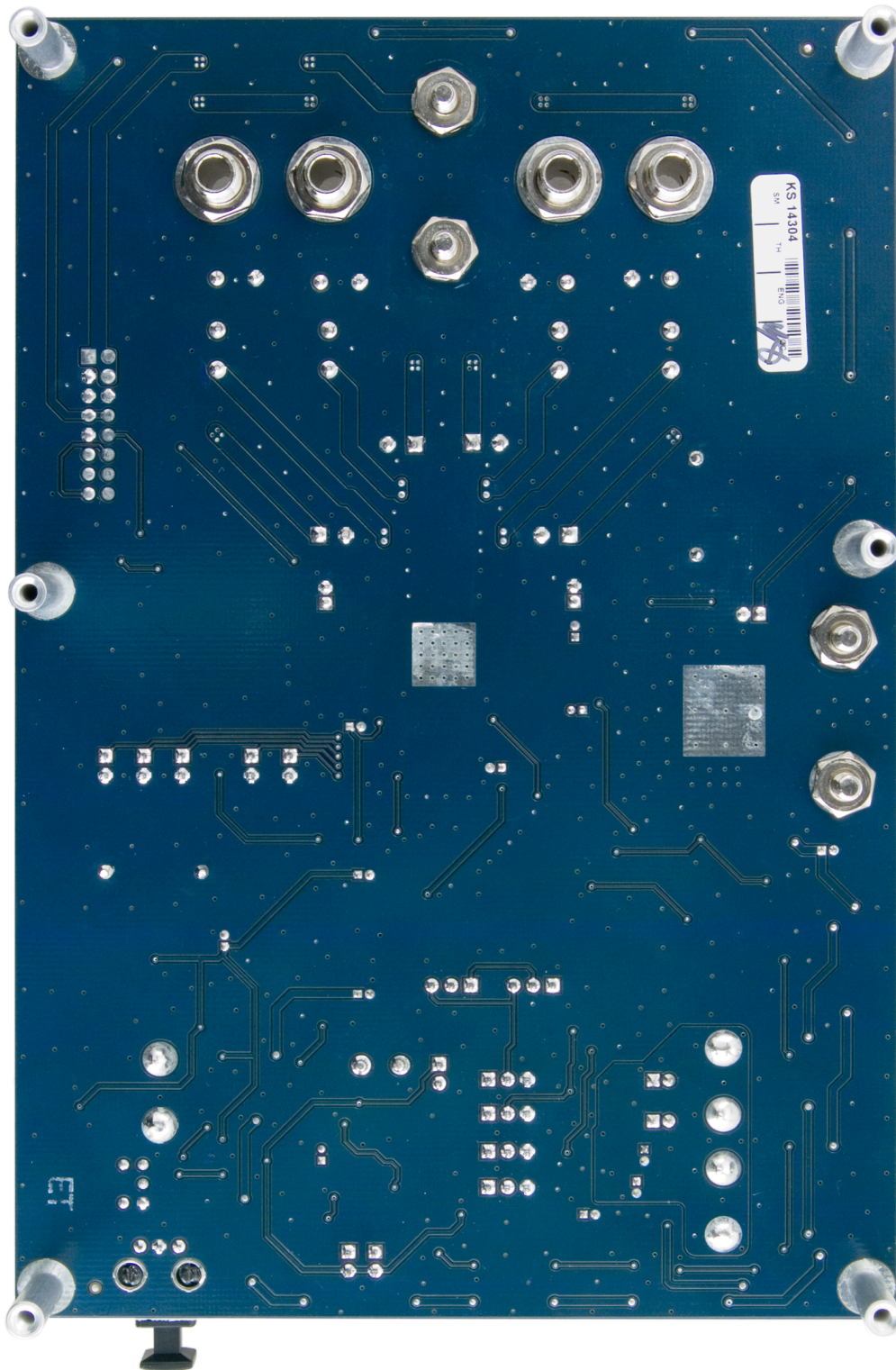


Figure 3. TAS5701EVM PC Board Top View



**Figure 4. TAS5701EVM PC Board Bottom View**

## 1.4 Basic Tools for Initial Board Power Up

- 12 V, 2 A Power supply (GVDD), 0–20 V, 6 A power supply (PVDD)
- Banana-plug cables for power supplies and speakers
- Optical or coaxial cable for SPDIF interface based on signal source
- Two 8Ω speakers or loads
- Optional: TAS5132EVM2 (for subwoofer)

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**Note:** Review [Section 2](#) for system interface and board operation

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## 2 System Interfaces

This section describes the TAS5701EVM board in regards to power supply (PSU) and system interfaces.

### 2.1 PSU Interface

The TAS5701EVM module requires two power supply sources. A 12 V (GVDD) power supply and a 0 V–20 V (PVCC) power supply. The 5 V and 3.3 V voltage levels are generated by on-board voltage regulators from the GVDD supply.

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**Note:** The length of power supply cable must be minimized. Increasing the power-supply cable length increases the amplifier distortion at high output levels and low frequencies.

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The maximum output-stage supply voltage depends on the speaker load resistance. Check the recommended maximum supply voltage in the TAS5701 data sheet.

**Table 1. Recommended Power Supplies**

Description	Voltage Limitations (8 Ω load)	Current Recommendations
System power supply	12 V	2 A
Output power stage supply	0–20 V	6 A <sup>(1)</sup>

<sup>(1)</sup> The rated current correspond to 2.1 channels full scale.

### 2.2 PSU Connector

- Connect the positive node of the 12 V (GVDD) power supply to the red binding post marked GVDD.
- Connect the GND node of the 12 V power supply to the black binding post marked GND.
- Connect the positive node of the high voltage power supply (PVDD) to the red binding post marked PVDD.
- Connect the negative node of the high voltage power supply (PGND) to the black binding post marked PGND.

**The TAS5701 has no specific power-up sequence, but TI recommends powering up the GVDD supply first while reset is kept low for 200 ms, and then powering up the PVDD supply.**

## 2.3 Loudspeaker and Subwoofer Connectors

### CAUTION

Both positive and negative speaker outputs are floating and may not be connected to ground (e.g., through an oscilloscope).

- Connect the positive (+) and negative (–) nodes of the left speaker to the corresponding metal binding post marked LEFT+ and LEFT– on TAS5701EVM board.
- Connect the positive (+) and negative (–) nodes of the right speaker to the corresponding metal binding post marked RIGHT+ and RIGHT– on TAS5701EVM board.
- The subwoofer is an option on this EVM, which is provided by connecting a TAS5132EVM2 to the TAS5701EVM using connector J4. Connector J4 provides the power and corresponding PWM signals to the TAS5132EVM2 (subwoofer amplifier). The TAS5132EVM2 is configured in PBT mode, and is able to provide 40 W to a 4-Ω speaker. Connect the subwoofer positive and negative nodes to the corresponding metal binding posts on the TAS5132EVM2.

## 2.4 Digital Audio Interface SPDIF (J1/OPTO)

The Digital Audio Interface contains digital audio signal data in I<sup>2</sup>S format. See the TAS5701 Data Manual for more information.

The RCA connector (J1) and OPTO connector are the two SPDIF interfaces. The switch S2 is used to toggle between OPTO and RCA connector based on the desired signal source. Once the RCA cable or optical cable is connected and the signal source is powered up, please verify that the SPDIF lock indicator (blue LED3) is illuminated, indicating that a viable signal is available to the device.

See the schematic of the TAS5701EVM and the DIR9001 device for detailed information on how the data and clocks are provided to TAS5701.

## 2.5 ADC Interface

In the absence of a digital signal source, an analog-to-digital converter (ADC) (PCM1808) may be used to convert an analog audio signal to a digital signal for the TAS5701. The DIR9001 provides clocks to the ADC in this process. The frequency of the oscillator selected for the DIR 9001 determines the sampling frequency in the absence of a digital signal. If the OSC is 24 MHz, the sampling frequency will be set at 96 kHz; if the OSC is selected to be 12 MHz, the sampling frequency will be defaulted to 48 kHz when there is no signal on the SPDIF input terminals. The ADC is an additional feature to this board to provide flexibility in sourcing audio signals to the TAS5701. Review the PCM1808 data sheet for a detailed description of the ADC on this EVM.

## 2.6 Board Power Up General Guidelines

After connecting the speakers (loads), power supply, and data line, power up the GVDD power supply. Then power up the PVDD power supply. It is recommended to set the PVDD level to 10 volts and then ramp it up to 20 volts to verify the cable connection functionalities. It is also recommended to set the gain to 0 dB at startup by having both GAIN jumpers inserted. Having jumpers FM0 and FM1 inserted and FM2 removed sets the data format for the device to the I<sup>2</sup>S format. It is important to note that a device reset needs to be applied after each gain or format configuration change.

### 3 Jumpers and Control Utilities

#### 3.1 Clock Frequency Change Jumper

JP1: In the presence of a valid digital signal input, when SPDIF lock occurs, the user may use JP1 to change LR clock and BIT clock. When shunt is inserted, SCKO = 256 Fs; when the shunt is removed, SCKO = 256 Fs.

In the absence of a valid digital signal, the DIR9001 clock outputs switch to the frequency of crystal (Y1). If the crystal is chosen to be 24 MHz, the LR clock will be 96 kHz; if the crystal is chosen to be 12 MHz, the LR clock will be 48 kHz.

#### 3.2 SPDIF/PSIA Selection Jumpers

The jumpers MCLK, LRCK, SCLK, and SDATA allow the user to switch between the internal clock and data sources and external clock and data sources, such as PSIA. The default configuration of these jumpers is SPDIF, as is marked on the EVM. PSIA outputs may be utilized using pins 2 and 3 of the jumpers. Please keep in mind that pin 3 of each jumper is connected to GND. Thus, the user must pay attention to the polarity of the PSIA output cables at the time of insertion.

#### 3.3 Data Routing Jumpers

Jumpers SDIN1, SDIN2: These jumpers enable the user to assign a data source to the TAS5701 SDIN1 and SDIN2 pins. Using these jumpers SDIN1 can be assigned to the SDIN1 and SDIN2 pins, or SDIN2 can be assigned to the SDIN1 and SDIN2 pins. Additionally, the data path can be changed so that both SDIN lines are sourced through the ADC. These jumpers are marked accordingly on the board and schematic for ease of use.

#### 3.4 GAIN Jumpers

The GAIN1 and GAIN2 jumpers enable the user to change the gain of the device. It is important to assert reset after each gain change in order for the device to recognize the new gain configuration. The truth table is shown in [Table 2](#).

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**Note:** The gain table marked on the EVM is NOT correct. See the data sheet or [Table 2](#) for the correct gain settings.

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**Table 2. TAS5701 Gain Configuration**

Jumper GAIN0 Shunt IN = 0	Jumper GAIN0 Shunt OUT = 0	GAIN (dB)
0	0	0
0	1	6
1	0	12
1	1	18



### 3.5 Data Format Jumpers

FM0, FM1, and FM2 are used to change the data format by which TAS5701 operates. The FMT0 and FMT1 jumpers associated with the DIR9001 in the SPDIF interface enables the user to change the data format of the DIR9001 so that the data format is in sync with the TAS5701 data format. Both the TAS5701 and the DIR9001 are set by default to operate with a 24-bit I<sup>2</sup>S format. It is important to assert reset after each format change in order for the device to recognize the format change. The truth tables below indicate the jumper configuration and the data format of the TAS5701 and the DIR9001 (SPDIF).

**Table 3. TAS5701 Data Format**

FM2 Shunt <sup>(1)</sup>	FM1	FM0	Data Format
0	0	0	16 BIT RJ
0	0	1	18 BIT RJ
0	1	0	20 BIT RJ
0	1	1	24 BIT RJ
1	0	0	16–24 BIT I <sup>2</sup> S (Default)
1	0	1	16–4 bit RJ
1	1	0	RESERVED
1	1	1	TEST MODE

<sup>(1)</sup> SHUNT IN = 0, SHUNT OUT = 1 (see schematics for details)

**Table 4. DIR9001 (SPDIF) Output Data Format<sup>(1)</sup>**

FMT1	FMT0	Data Format
1	1	24 BIT I <sup>2</sup> S (Default)
1	0	24 BIT LJ
0	1	24 BIT RJ
0	0	16 BIT

<sup>(1)</sup> SHUNT IN = 1, SHUNT OUT = 0 (see schematics for details)

### 3.6 Switches

Reset is an active-low function. Pressing the master reset switch (S3) resets the TAS5701 and the DIR9001. Releasing the switch takes the devices out of reset.

The power-down function is an active-low function. Pressing the power-down switch (S4) powers down the TAS5701. Releasing the switch takes the device out of power down.

Mute is an active-low function. Pressing the mute switch (S1) mutes the TAS5701. Releasing the switch takes the device out of mute.

4 Board Layout, Bill of Materials and Schematics

4.1 TAS5701EVM Board Layout

TEXAS INSTRUMENTS, INC. 2007  
 AUDIO AND IMAGING PRODUCTS GROUP  
 TOP SILKSCREEN: TAS5701EVM.SS1

TEXAS INSTRUMENTS, INC. 2007  
 AUDIO AND IMAGING PRODUCTS GROUP  
 COPPER LAYER 1: TAS5701EVM.CL1

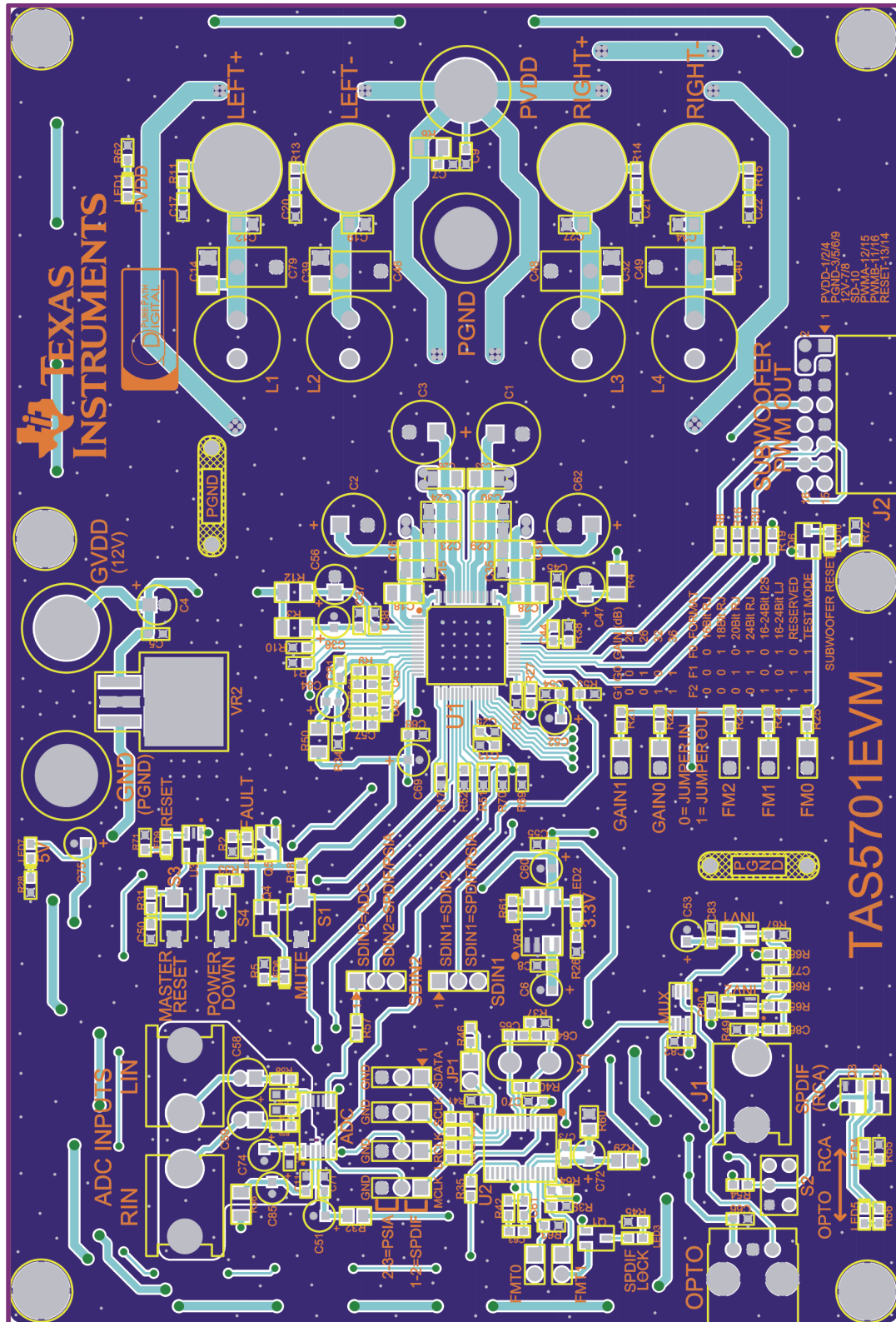


Figure 5. Top Layer Composite

TEXAS INSTRUMENTS, INC. 2007  
AUDIO AND IMAGING PRODUCTS GROUP  
COPPER LAYER 1: TAS5701EVM.CL1

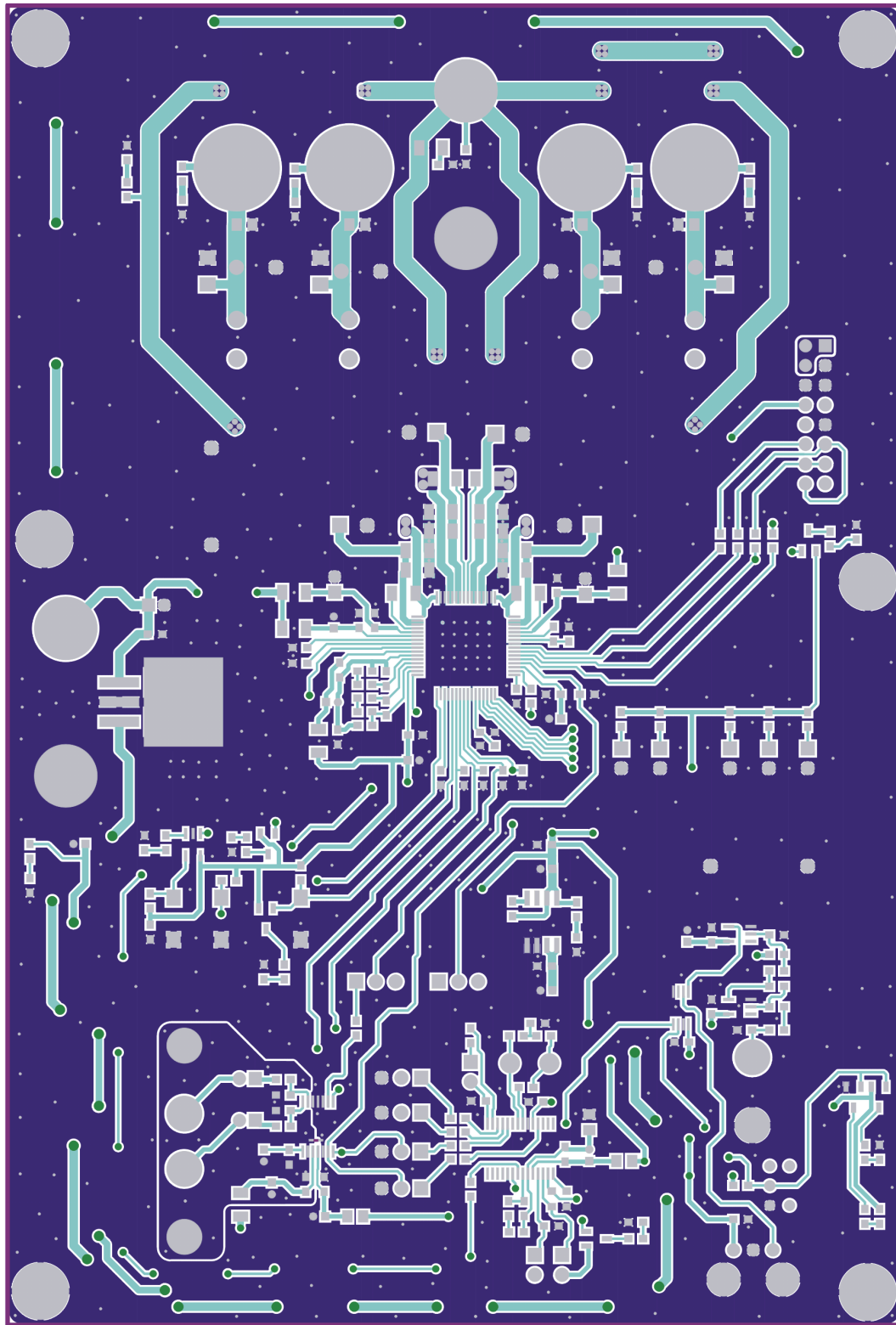


Figure 6. Top Layer View

TEXAS INSTRUMENTS, INC. 2007  
 AUDIO AND IMAGING PRODUCTS GROUP  
 COPPER LAYER 2: TAS5701EVM.CL2

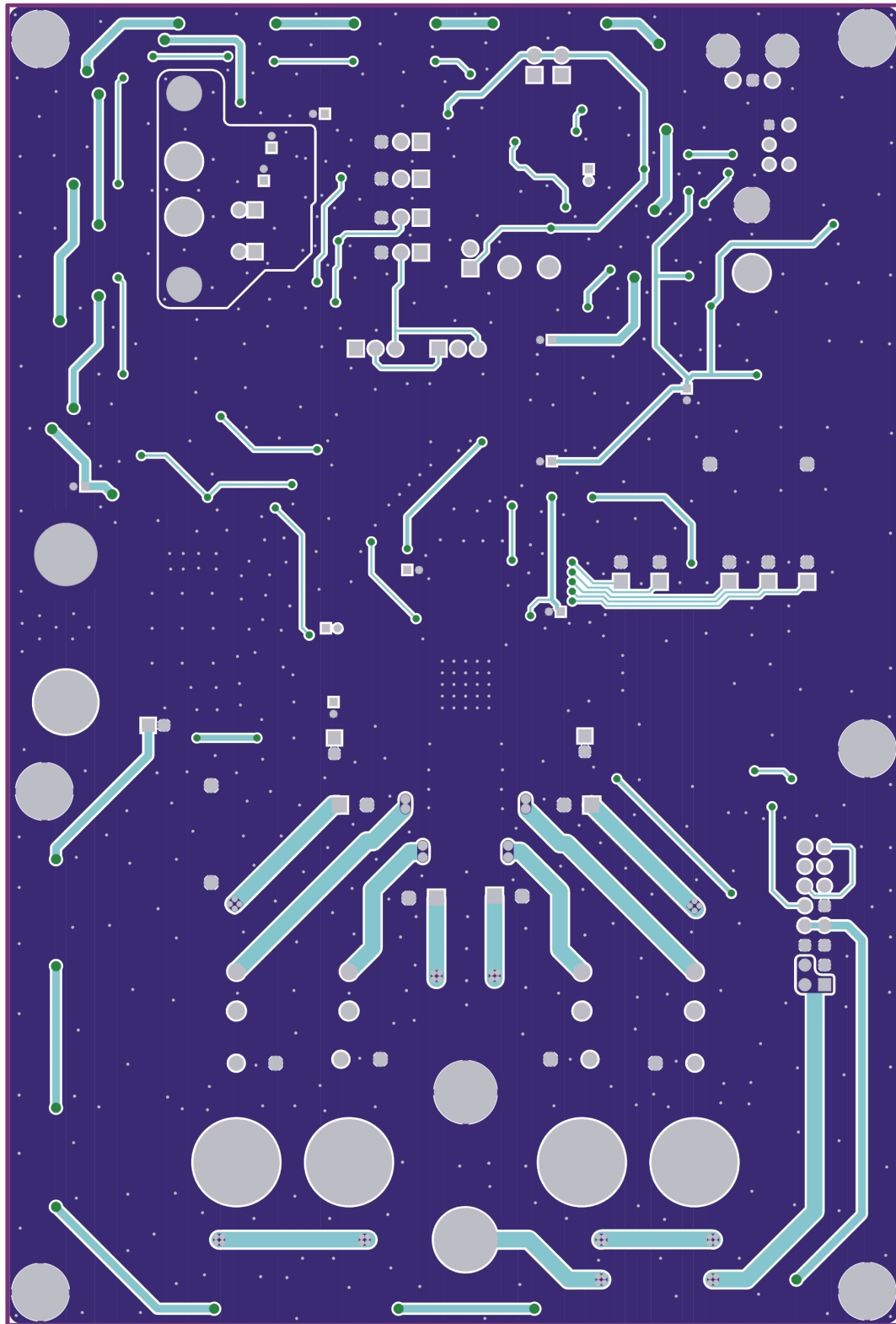


Figure 7. Bottom Layer View

## 4.2 Bill of Materials

**Table 5. Bill of Materials for TAS5701EVM**

Item	Description	RefDes	Qty	MFR	MFR:Part No.	Vendor	Vendor Part No.	ALT Part No.
<b>TI-SEMICONDUCTORS</b>								
1	Modulator/HBRIDGE TQFP64-PAP	U1	1	Texas Instruments	TAS5701PAP	Texas Instruments	TAS5701PAP	NONE
2	Single Inverter Gate, SOT23-DBV5	INV1, INV2	2	Texas Instruments	SN74AHC1GU04DBVR	Digi-Key	296-1095-2	296-1095-1
3	Single 2 MUX W/Common Stroibe, TSSOP8-DCT	MUX	1	Texas Instruments	SN74LVC2G157DCTR	Digi-Key	296-13266-2	296-13266-1
4	Processor Supervisor Circuit, 3.3V	U3	1	Texas Instruments	TPS3825-33DBVT	Digi-Key	296-2636-2	296-2636-1
5	Voltage Regulator, LDO Fast Trans. 3.3Vdc 1.0A, SOP8-D	VR1	1	Texas Instruments	TPS76733QD	Digi-Key	296-2738-5	NONE
6	Voltage regulator 5V 1.5A PFM-KTE	VR2	1	Texas Instruments	UA7805CKTER	Digi-Key	296-11108-2	296-11108-1
7	S-ended ANA-IN 24bit 96kHz Stereo ADC, TSSOP14-PW	ADC	1	Texas Instruments	PCM1808PW	Digi-Key	296-19773	NONE
8	DIG Audio Interface receiver TSSOP28-PW	U2	1	TI-Burr Brown	DIR9001PW	Digi-Key	DIR9001PW	NONE
<b>SEMICONDUCTORS</b>								
9	Optical receiver, 3.3V, PCB-RA, Panel mount	OPTO	1	TOSHIBA	TORX141	Digi-Key	TORX141	TORX141
10	Transistor NPN 50V PreBiased/4.7K 100mA SOT23-DBV3	Q3	1	Diodes, Inc.	DDTC143TCA-7	Digi-Key	DDTC143TCADITR	DDTC143TCADICT
11	Transistor PNP 50V PreBiased/4.7K 100mA SOT23-DBV3	Q1, Q2, Q4, Q5, Q6	5	Diodes, Inc.	DDTA143TCA-7	Digi-Key	DDTA143TCADITR	DDTA143TCADICT
<b>DO NOT SOLDER ITEM 12 DIRECTLY TO BOARD. INSERT ITEM 12 INTO SOCKETS OF ITEM 66 ONLY.</b>								
12	Crystal, 12.288MHz, HC49US	Y1	1	ECS	ECS-122.8-S-4	Digi-Key	X174	NONE
13	LED, Blue SMD0603	LED3	1	Lite-On Trading	LTST-C190CBKT	Digi-Key	160-1432-2	160-1432-1
14	LED, Green SMD0603	LED1, LED2, LED4, LED5, LED7	5	Lite-On Trading	SML-LX0603SUGW-TR	Digi-Key	67-1693-2	67-1693-1
15	LED, Orange SMD0603	LED6	1	Sharp Microelectronics	GM1JJ35200AE	Digi-Key	425-1811-2	425-1811-1
16	LED, Red SMD0603	LED8, LED9, LED10	3	Lite-On Trading	LTST-C190CKT	Digi-Key	160-1181-2	160-1181-1
<b>CAPACITORS</b>								
17	CAP 33 pF 50V Cerm 0603 NPO	C64, C65	2	Panasonic	ECJ-1VC1H330J	Digi-Key	PCC330ACVTR	PCC330ACVCT
18	CAP 4700pF 50V Cerm 0603 X7R	C42, C43, C61	3	Panasonic	ECJ-1VB1H472K	Digi-Key	PCC1780TR	PCC1780CT
19	CAP 0.01µF 16V Cerm 0603 X7R	C76, C78	2	Murata Electronics	GRM188R71C103KA01D	Digi-Key	490-1525-2	490-1525-1
20	CAP 0.01µF 50V Cerm 0603 X7R	C7, C17, C20, C21, C22	5	Panasonic	ECU-V1H103KBV	Digi-Key	PCC103BVTR	PCC103BVCT
21	CAP 0.047µF 16V Cerm 0603 X7R	C10, C41, C77, C86	4	Panasonic	ECJ-1VB1C473K	Digi-Key	PCC1758TR	PCC1758CT
22	CAP 0.068µF 16V Cerm 0603 X7R	C63	1	Panasonic	ECJ-1VB1C683K	Digi-Key	PCC1760TR	PCC1760CT
23	CAP 0.1µF 16V Cerm 0603 X7R	C5, C8, C11, C25, C37, C38, C44, C45, C50, C54, C55, C66, C67, C68, C70, C71, C73, C80, C81, C82, C83	21	Panasonic	ECJ-1VB1C104K	Digi-Key	PCC1762TR	PCC1762CT
24	CAP 0.1µF 50V Cerm 0603 X7R	C9	1	Murata	GRM188R71H104KA93D	Digi-Key	490-1519-2	490-1519-1
25	CAP 4.7µF 6.3V Cerm 0603 X5R	C13	1	TDK Corp.	C1608X5R0J475M	Digi-Key	445-1417-2	445-1417-1
26	CAP 0.1µF 50V Cerm 0805 X7R	C12, C19, C27, C34	4	Panasonic	ECJ-2YB1H104K	Digi-Key	PCC1840TR	PCC1840CT
27	CAP 0.033µF 50V Cerm 1206 X7R	C18, C26, C28, C33	4	Panasonic	ECU-V1H333KBW	Digi-Key	PCC333BTR	PCC333BCT
28	CAP 0.1µF 50V Cerm 1206 X7R	C15, C23, C29, C35	4	Panasonic	ECJ-3VB1H104K	Digi-Key	PCC104BTR	PCC104BCT
29	CAP 1.0µF 50V Cerm 1206 X7R	C16, C24, C30, C31	4	TDK Corp.	C3216X7R1H105K	Digi-Key	445-1423-2	445-1423-1
30	CAP 1.0µF 50V METAL POLYESTER FILM MKT	C46, C48, C49, C79	4	EPCOS	B32529C5105J	Digi-Key	495-1087	B32529C105J
31	CAP 1µF 50V RAD ALUM ELEC FC	C58, C59	2	Panasonic	EEU-FC1H1R0	Digi-Key	P10312	NONE
32	CAP 10µF 16V RAD ALUM ELEC KGA	C6, C36, C51, C52, C53, C60, C69, C72, C74, C75, C84, C85	12	Panasonic	ECE-A1CKG100	Digi-Key	P910	NONE

**Table 5. Bill of Materials for TAS5701EVM (continued)**

Item	Description	RefDes	Qty	MFR	MFR:Part No.	Vendor	Vendor Part No.	ALT Part No.
33	CAP 47 $\mu$ F 16V RAD ALUM ELEC FC	C4, C47, C56	3	Panasonic	EEU-FC1C470	Digi-Key	P11196	NONE
34	CAP 180 $\mu$ F 50V RAD ALUM ELEC FC ROHS	C1, C2, C3, C62	4	Panasonic	EEU-FC1H181L	Digi-Key	P10324	NONE
<b>RESISTORS</b>								
35	RES 0.0 $\Omega$ 1/16W 5% SMD 0603	R10, R19, R20, R27, R34, R35, R37, R38	8	Panasonic	ERJ-3GEY0R00V	Digi-Key	P0.0GTR	P0.0GCT
36	RES 3.3 $\Omega$ 1/16W 5% SMD 0603	R11, R13, R14, R15	4	Yageo	9C06031A3R30JLHFT	Digi-Key	311-3.3GTR	311-3.3GCT
37	RES 47 $\Omega$ 1/16W 5% SMD 0603	R8, R16, R30, R43, R44, R47, R48, R57	8	Yageo	9C06031A47R0JLHFT	Digi-Key	311-47GTR	311-47GCT
38	RES 75.0 $\Omega$ 1/16W 1% SMD 0603	R49	1	Panasonic	ERJ-3EKF75R0V	Digi-Key	P75.0HTR	P75.0HCT
39	RES 100 $\Omega$ 1/16W 5% SMD 0603	R58, R59, R64, R65	4	Yageo	9C06031A1000JLHFT	Digi-Key	311-100GTR	311-100GCT
40	RES 332 $\Omega$ 1/16W 1% SMD 0603	R2, R5, R26, R55, R56, R71	6	Panasonic	ERJ-3EKF3320V	Digi-Key	P332HTR	P332HCT
41	RES 392 $\Omega$ 1/10W 1% SMD 0603	R45, R72	2	Panasonic	ERJ-3EKF3920V	Digi-Key	P392HTR	P392HCT
42	RES 470 $\Omega$ 1/10W 5% SMD 0603	R7, R9, R40	3	Panasonic	ERJ-3GEYJ471V	Digi-Key	P470GTR	P470GCT
43	RES 510 $\Omega$ 1/10W 5% SMD 0603	R28	1	Yageo	9C06031A5100JLHFT	Digi-Key	311-510GTR	311-510GCT
44	RES 680 $\Omega$ 1/10W 5% SMD 0603	R42	1	Yageo	9C06031A6800JLHFT	Digi-Key	311-680GTR	311-680GCT
45	RES 1 k $\Omega$ 1/16W 5% SMD 0603	R21, R22, R23, R24, R25, R54	6	Yageo	9C06031A1001JLHFT	Digi-Key	311-1.0KGTR	311-1.0KGCT
46	RES 2.00 k $\Omega$ 1/16W 1% SMD 0603	R67	1	Panasonic	ERJ-3EKF2001V	Digi-Key	P2.00KHTR	P2.00KHCT
47	RES 2.49 k $\Omega$ 1/16W 1% SMD 0603	R62	1	Panasonic	ERJ-3EKF2491V	Digi-Key	P2.49KHTR	P2.49KHCT
48	RES 4.99 k $\Omega$ 1/16W 1% SMD 0603	R31, R41, R46	3	Panasonic	ERJ-3EKF4991V	Digi-Key	P4.99KHTR	P4.99KHCT
49	RES 7.50 k $\Omega$ 1/16W 1% SMD 0603	R68	1	Panasonic	ERJ-3EKF7501V	Digi-Key	P7.50KHTR	P7.50KHCT
50	RES 10 k $\Omega$ 1/16W 5% SMD 0603	R18, R33, R39, R51, R52, R53, R63, R69, R70	9	Panasonic	9C06031A1002JLHFT	Digi-Key	311-10KGTR	311-10KGCT
51	RES 18.2 k $\Omega$ 1/10W 1% SMD 0603	R17	1	Yageo	9C06031A1822FKHFT	Digi-Key	311-18.2KHTR	311-18.2KHCT
52	RES 22.1 k $\Omega$ 1/16W 1% SMD 0603	R1	1	Panasonic	ERJ-3EKF2212V	Digi-Key	P22.1KHTR	P22.1KHCT
53	RES 249 k $\Omega$ 1/16W 1% SMD 0603	R61	1	Panasonic	ERJ-3EKF2493V	Digi-Key	P249KHTR	P249KHCT
54	RES 1.00 M $\Omega$ 1/16W 1% SMD 0603	R66	1	Panasonic	ERJ-3EKF1004V	Digi-Key	P1.00MHTR	P1.00MHCT
55	RES 0.0 $\Omega$ 1/10W 5% SMD 0805	R29, R60	2	Panasonic	ERJ-GEY0R00V	Digi-Key	P0.0ATR	P0.0ACT
56	RES 3.3 $\Omega$ 1/10W 5% SMD 0805	R32	1	Panasonic	ERJ-6RQJ3R3V	Digi-Key	P3.3BTR	P3.3BCT
57	RES 0.0 $\Omega$ 1/8W 5% SMD 1206	R50	1	Panasonic	ERJ-8GEY0R00V	Digi-Key	P0.0ETR	P0.0ECT
58	RES 3.3 $\Omega$ 1/4W 5% SMD 1206	R6	1	Panasonic	ERJ-8RQJ3R3V	Digi-Key	P3.3PTR	P3.3PCT
59	RES 4.7 $\Omega$ 1/8W 5% SMD 1206	R36	1	Panasonic	ERJ-8RQJ4R7V	Digi-Key	P4.7PTR	P4.7PCT
60	RES 10 $\Omega$ 1/4W 5% SMD 1206	R3, R4, R12	3	Yageo	9C12063A10R0JLHFT	Digi-Key	311-10ETR	311-10ECT
<b>INDUCTORS</b>								
61	Inductor, series 11RHBP, 15UH	L1, L2, L3, L4	4	Toko America	A7503AY-150M	Toko America	A7503AY-150M	NONE
<b>HEADERS, JACKS AND CRYSTAL SOCKETS</b>								
62	Header, 2 Pin Male, Straight, Gold	JP1, FM0, FM1, FM2, FMT0, FMT1, GAIN0, GAIN1	8	Sullins	PZC02SAAN	Digi-Key	S1011-02	NONE
63	Header, 3 Pin Male, Straight, Gold	LRCLK, MCLK, SCLK, SDATA, SDIN1, SDIN2	6	Sullins	PZC03SAAN	Digi-Key	S1011-03	NONE
64	Socket header, 2x8 Pin Female gold PCB-RA	J2	1	Samtec	SSW-108-02-G-D-RA	Samtec	SSW-108-02-G-D-RA	NONE
65	Jack, RCA, PCB-Vertical, Black	J1, LIN, RIN	3	CUI STACK	RCJ-051	Digi-Key	CP-1424	NONE
<b>SOLDER ITEM 66 TO BOARD FIRST. THEN INSERT ITEM 12 INTO SOCKETS ITEM 66</b>								
66	Crystal Socket, For 0.015-0.025 Pins, 0.055 o.d.	Y1	2	Mil-Max	0667-0-15-01-3027100	Digi-Key	ED5044	NONE

**Table 5. Bill of Materials for TAS5701EVM (continued)**

Item	Description	RefDes	Qty	MFR	MFR:Part No.	Vendor	Vendor Part No.	ALT Part No.
<b>SHUNTS</b>								
67	Shunt, black AU Flash 0.100	FM0, FM1, FMT0, FMT1, GAIN0, GAIN1, MCLK(2-3), SDATA(2-3), SCLK(2-3), LRCLK(2-3), SDIN1(2-3), SDIN2(2-3)	12	Sullins	SPC02SYAN	Digi-Key	S9001	NONE
<b>TESTPOINTS AND SWITCHES</b>								
68	Switch, Momentary SMT-Short, Black Tab, 160g	S1, S3, S4	3	Panasonic	EVQ-PPBA25	Digi-Key	P8086STR	P8086SCT
69	Switch, SPST, VERT-PCB ROHS	S2	1	NKK Switches	G12AP-RO	Digi-Key	360-1758	360-1701
<b>BINDING POSTS</b>								
70	Binding post, 15A, Uninsulated	LEFTA, LEFTB, RIGHTA, RIGHTB	4	Johnson Components	111-2223-001	Digi-Key	J587	NONE
71	Binding post, black, 15A ECONO	GND, PGND	2	Keystone Electronics	7007	Digi-Key	7007K	NONE
72	Binding post, red, 15A ECONO	GVDD, PVDD	2	Keystone Electronics	7006	Digi-Key	7006K	NONE
<b>NON-INSULATED WIRE GROUND LOOPS</b>								
<b>BEND THE WIRE LENGTHS INTO A U SHAPE AND SOLDER TO THE BOARD. LEAVE A GAP OF AROUND 0.3 INCHES BETWEEN THE BOARD AND THE WIRE.</b>								
73	Non-insulated bus wire, 10 mm length, 18 AWG	PGND, PGND	2	Belden CDT	8019000100	Mouser	566-8019	NONE
<b>STANDOFFS AND HARDWARE</b>								
74	Standoff 4-40 Threaded M/F 1.50 in. ALUM-HEX	HW1, HW2, HW3, HW4, HW5, HW6	6	Keystone Electronics	8409	Digi-Key	8409K	NONE
75	LockWasher, #4 Internal-Tooth, Zinc/Steel	HW1, HW2, HW3, HW4, HW5, HW6	6	Building Fasteners	INT LWZ 004	Digi-Key	H236	NONE
76	Hex Nut, 4-40, Zinc/Steel	HW1, HW2, HW3, HW4, HW5, HW6	6	Building Fasteners	HNZ440	Digi-Key	H216	NONE

### 4.3 SPDIF Circuit Schematic

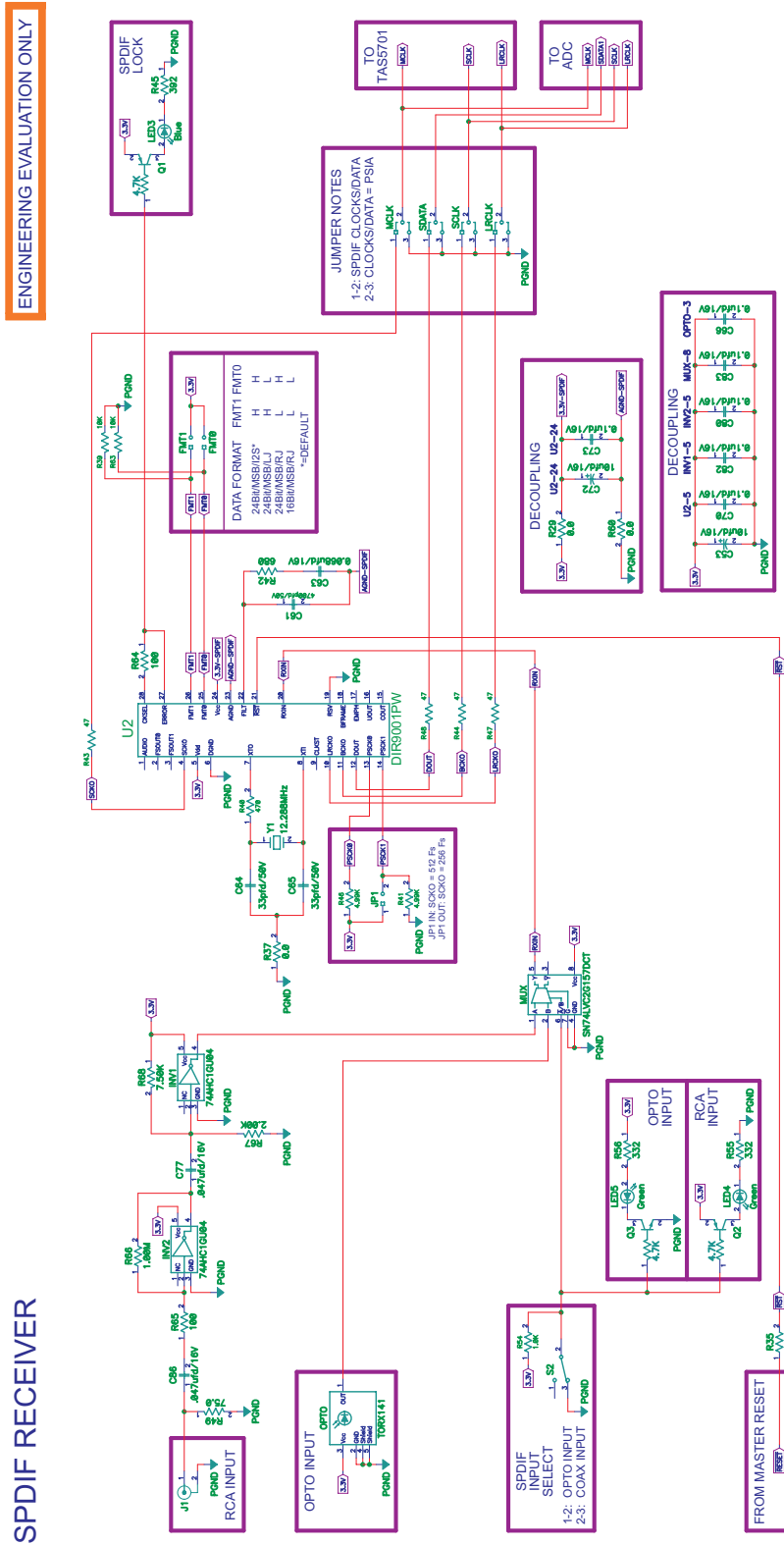


Figure 8. SPDIF Circuit Schematic







### 4.6 Power Supplies Circuit Schematic

ENGINEERING EVALUATION ONLY

SUBWOOFER CONNECTOR

POWER SUPPLIES

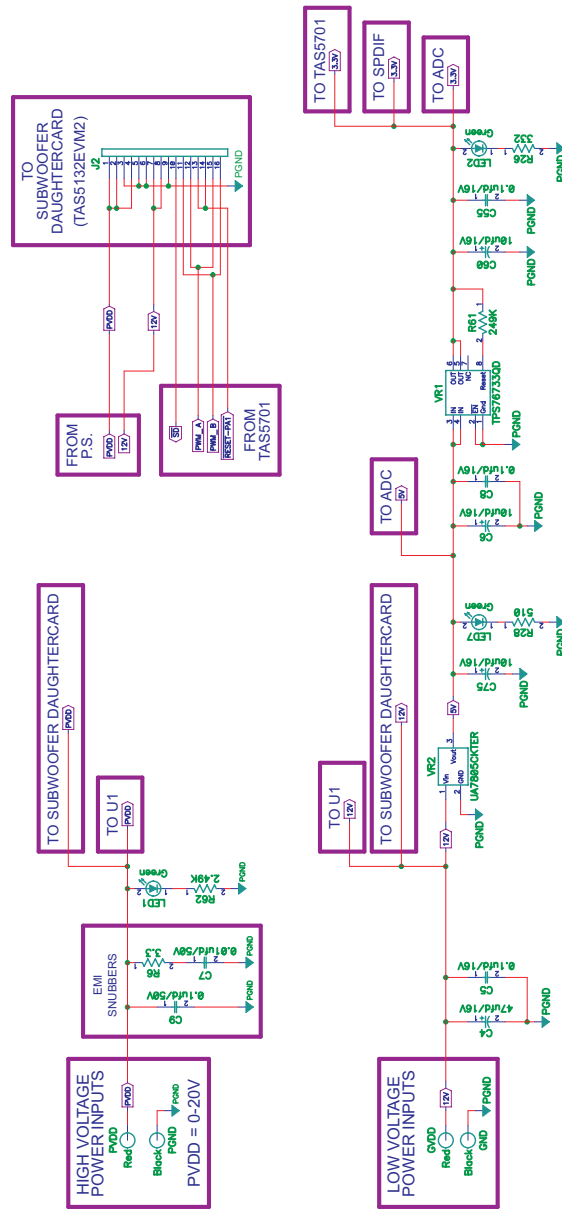


Figure 11. Power Supplies Circuit Schematic

## 5 Related Documentation from Texas Instruments

The following data manuals have detailed descriptions of the integrated circuits used in the design of the TAS5701EVM. The data manuals can be obtained at [www.ti.com](http://www.ti.com).

Part Number	Literature Number
TAS5701	<a href="#">SLOS559</a>
DIR9001PW	<a href="#">SLES198</a>
PCM1808PW	<a href="#">SLES177</a>
TPA6110A2DGN	<a href="#">SLOS314</a>
UA7805CKTER	<a href="#">SLVS056</a>
TPS76733QD	<a href="#">SLVS208</a>
TPS3825-33DBVT	<a href="#">SLVS165</a>
TAS5132	<a href="#">SLES190</a>
TAS5132EVM2	

### 5.1 Additional Documentation

- General Application Notes
- Review the TAS5132EVM2 schematic. This EVM is designed to work as TAS5701 subwoofer power stage.

## EVM WARNINGS AND RESTRICTIONS

It is important to operate this EVM within the input voltage range of 11.5 V to 12.5 V (GVDD), 0 V to 20 V (PVDD) and the output voltage range of 0 V to 20 V.

Exceeding the specified input range may cause unexpected operation and/or irreversible damage to the EVM. If there are questions concerning the input range, please contact a TI field representative prior to connecting the input power.

Applying loads outside of the specified output range may result in unintended operation and/or possible permanent damage to the EVM. Please consult the EVM User's Guide prior to connecting any load to the EVM output. If there is uncertainty as to the load specification, please contact a TI field representative.

During normal operation, some circuit components may have case temperatures greater than 85°C. The EVM is designed to operate properly with certain components above 85°C as long as the input and output ranges are maintained. These components include but are not limited to linear regulators, switching transistors, pass transistors, and current sense resistors. These types of devices can be identified using the EVM schematic located in the EVM User's Guide. When placing measurement probes near these devices during operation, please be aware that these devices may be very warm to the touch.

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