TAS5717/19 10W/15W Digital Audio Power Amplifier with Integrated Capacitor-Free HP Amplifier

This manual describes the operation of the TAS5717/19EVM to evaluate the performance of the TAS5717/19 integrated digital audio power amplifiers. These EVMs will be collectively referred to as the TAS5717/19EVM in this document, except when explaining their differences. The main contents of this document are:

- How to properly connect a TAS5717/19 Evaluation Module (EVM) and the details of the EVM
- How to install and use the GUI to program the TAS5717/19EVM
- How to use the audio processing features such as EQ and Dynamic Range Control (DRC)
- Quick-Start Guide for the common modes in which TAS5717/19EVM can be used

Contents

1 Overview 2
1.1 TAS5717/19EVM and MC57xxPSIA Features 3
2 Installation 4
2.1 EVM Installation 4
2.2 Software Installation 6
3 Using the EVM Software 8
3.1 Connect the GUI to the EVM 8
3.2 I²C Memory Tool 8
3.3 Volume Function 9
3.4 Speaker/Headphone Selection 9
3.5 Biquad GUI 9
3.6 DRC GUI 10
4 Jumpers and Control Utilities on MC57xxPSIA board 12
4.1 RCA/OPTICAL Jumpers 12
4.2 Switches 12
4.3 LED Indicators 12
5 Board Layouts, Bill of Materials, and Schematic 13
5.1 TAS5717/19EVM and MC57xxPSIA Board Layouts 13
5.2 Bill of Materials 15
5.3 Schematics 17

List of Figures

1 TAS5717EVM Printed-Circuit Board 2
2 TAS5719EVM Printed-Circuit Board 3
3 Complete System and EVM Signal Path Overview 3
4 General Connection Picture 4
5 Connecting TAS5717/19EVM to MC57xxPSIA 4
6 BTL Connection 5
7 Process Structure 7
8 Main GUI Display 8
9 Memory Tool Window 8

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I²C is a trademark of Philips Corporation.

10 Volume Control 9
11 Speaker/Headphone Selection 9
12 Selecting Biquad GUI 9
13 Biquad GUI Window 10
14 DRC Options 10
15 Advanced DRC Options 11
16 TAS5717EVM Top Composite Assembly 13
17 TAS5719EVM Top Composite Assembly 13
18 MC57xxPSIA Top Composite Assembly 14

List of Tables

1 Recommended Power Supplies 5
2 Bill of Materials for TAS5717EVM 15
3 Bill of Materials for TAS5719EVM 16

1 Overview

The TAS5717/19EVM evaluation module demonstrates the TAS5717 and TAS5719 devices from Texas Instruments. The TAS5717/19 combines a high-performance PWM processor with a class-D audio power amplifier. This EVM can be configured with two bridge-tied loads (BTL) (2.0). For detailed information about the TAS5717 and TAS5719 devices, review the (device data sheet SLOS655). For the remainder of the User's Guide, these devices are referred to as the TAS5717/19EVM. The Pulse Width Modulator (PWM) is based on TI's Equibit™ technology. The TAS5717/19 has additional audio processing features like 3D, Bass Boost and 2-band DRC. The TAS5717/19 can also drive a headphone load through TI's DirectPath(TM) headphone amplifier.

The EVM software, with its graphic user interface (GUI), facilitates evaluation by providing access to the TAS5717/19EVM registers through a USB port. See the *Using the EVM Software* section for further details.

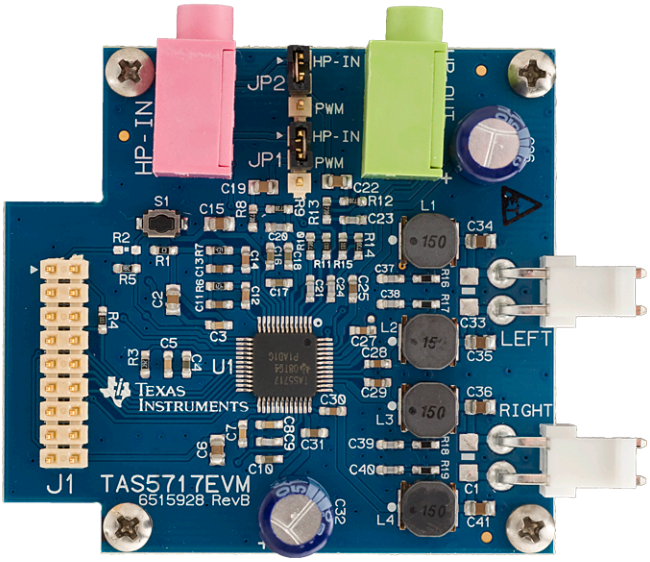


Figure 1. TAS5717EVM Printed-Circuit Board

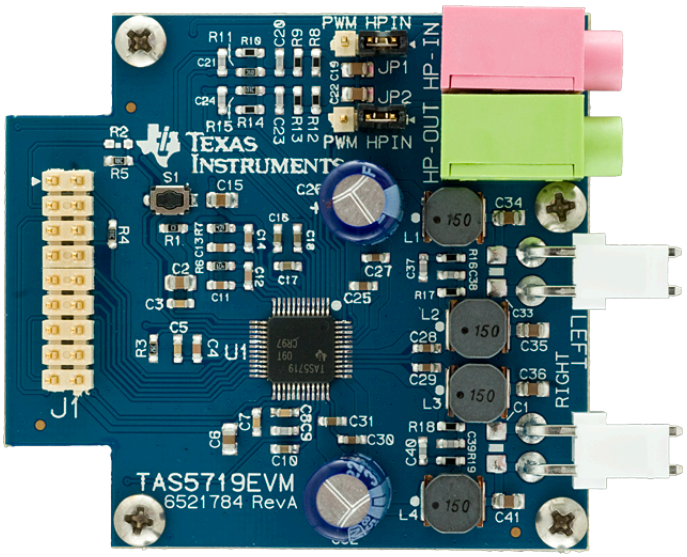


Figure 2. TAS5719EVM Printed-Circuit Board

The EVM together with other TI components on this board, is a complete 2.0-channel digital audio amplifier system. The MC57XXPSIA Controller board includes a USB interface, a digital input (SPDIF), analog inputs via the ADC, power inputs, and other features like a mute function and power down.

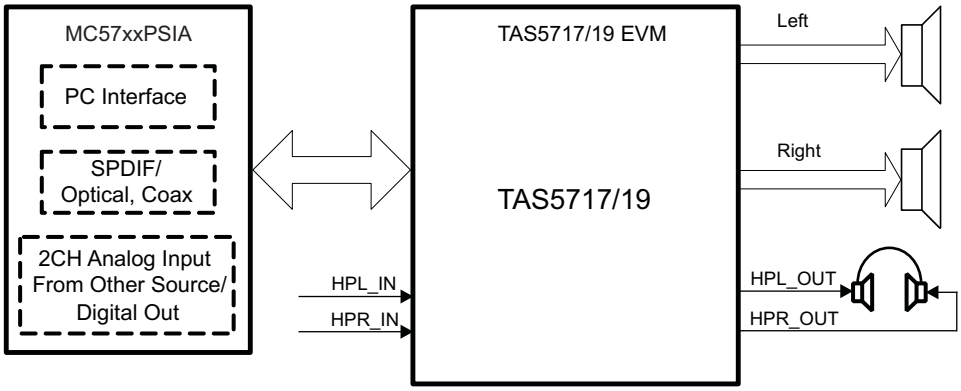


Figure 3. Complete System and EVM Signal Path Overview

1.1 TAS5717/19EVM and MC57xxPSIA Features

- Channel evaluation module design
- Self-contained protection systems and control pins
- USB interface
- Standard I^2S data input using optical or coaxial inputs
- Analog input through analog-to-digital converter
- Subwoofer connection—the PWM terminal provides the PWM signal and power to an external subwoofer board
- Double-sided, plated-through PCB, 1oz copper, 2mm
- Access to control signal gain and data format through EVM-software GUI

2 Installation

This section describes the EVM and software installation.

2.1 EVM Installation

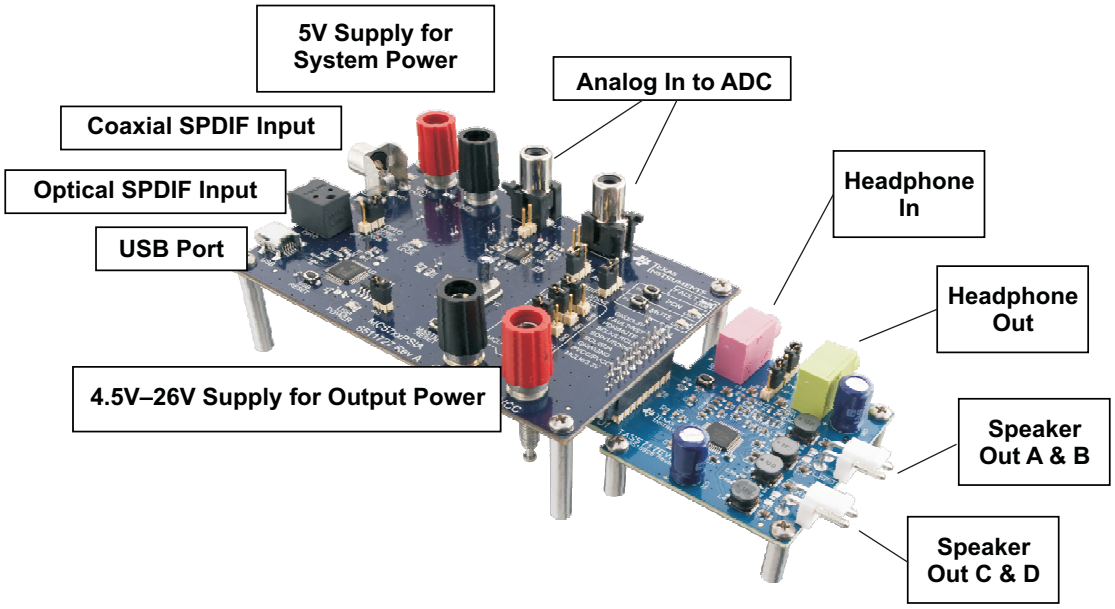


Figure 4. General Connection Picture

The following are the basic tools for the initial EVM power up.

- 5V, 1A power supply (VIN)
- 4.5–26V, 4A power supply (PVDD)
- Banana-plug test leads for power supplies and speakers
- Optical or coaxial cable for SPDIF interface based on signal source
- USB cable
- EVM software
- Two 8Ω speakers or loads

The following sections describe the TAS5717/19EVM board in regards to power supply (PSU) and system interfaces.

2.1.1 Connecting the TAS5717/19EVM to MC57xxPSIA

On the right side of the MC57xxPSIA is a terminal block and another on the left of the TAS5717/19EVM (labeled J1). Carefully place the MC57xxPSIA block above the TAS5717/19EVM block and gently push down.

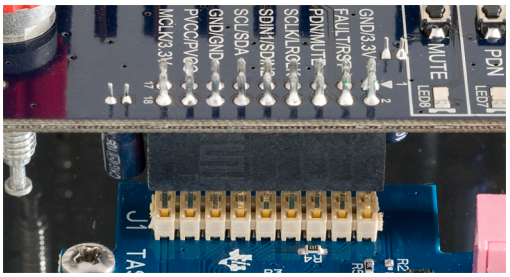


Figure 5. Connecting TAS5717/19EVM to MC57xxPSIA

2.1.2 PSU Interface

The TAS5717/19EVM is powered by two power supplies connected to the MC57xxPSIA controller board: a 5V power supply (VIN), and a 4.5V-to-26V (PVDD) power supply. The 3.3V level is generated from the 5V supply by an on-board voltage regulator.

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

The maximum output-stage supply voltage depends on the speaker load resistance. See the recommended maximum supply voltage in the TAS5717/19EVM data sheet.

Table 1. Recommended Power Supplies

Description	Voltage Limitations (8-Ω Load)	Current Recommendations
System power supply	5V	1A
Output power stage supply	4.5–26V	4A(1)

(1) The rated current corresponds to two channels, full scale.

2.1.3 Loudspeaker Connectors

CAUTION

All speaker outputs are biased at Vcc/2 and must not be connected to ground (e.g., through an oscilloscope ground).

Loudspeaker connections vary by device setup. When connecting a speaker in BTL mode, connect the speaker's two terminals (A and B or C and D) across two outputs on the TAS5717/19EVM.

Speakers or loads can be connected to the outputs A-D with clip leads, or cables can be made with female connectors (JST VHR-2N) that can mate to male connectors on the EVM board.

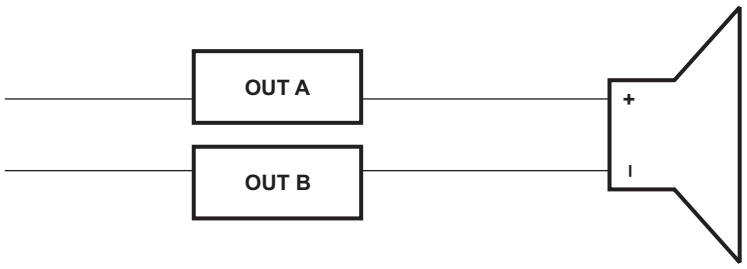


Figure 6. BTL Connection

2.1.4 USB Interface

The TAS5717/19 registers are accessed through I^2C™ bus lines SDA and SCL. The USB circuit and USB connector on the MC57xxPSIA board facilitates the connection between a host computer and the device. The EVM USB circuit is powered by the 5V USB line of the host PC and is independent of the power supplies available on the board. The USB device that is used is a TAS1020B from Texas Instruments.

2.1.5 Digital Audio Interface SPDIF

The Digital Audio Interface SPDIF (RCA/OPTO) accepts digital audio data using the I^2S protocol. See the TAS5717/19 data sheet for more information.

The RCA connector and the OPTO connector are the two SPDIF interfaces on the MC57xxPSIA board. The switch S3 toggles between the OPTO and RCA connector to accommodate the signal source. When the RCA cable or optical cable is connected and the signal source is powered up, verify that the SPDIF lock indicator (blue LED5) illuminates, confirming that a viable signal is available to the device. Install a jumper on JP4 across the middle pin and the pin marked SPDIF to connect the digital source to SDIN1. Install a jumper on JP5 to connect the digital source to SDIN2.

For detailed information on how the data and clocks are provided to the TAS5717/19, see the schematic appearing at the end of this document and the DIR9001 device data sheet (SLES198).

2.1.6 ADC Interface

In the absence of a digital signal source, the PCM1808 ADC can be used to convert an analog audio signal to a digital signal to the TAS5717/19. The DIR9001 still provides clock signals to the ADC in this process. A 12MHz crystal is installed on the MC57xxPSIA board. The ADC is an additional feature of this board to provide flexibility in sourcing an audio signal to the TAS5717/19. Review the PCM1808 data sheet (SLES177) for a detailed description of the ADC on this EVM. Install the jumper on JP4 across the middle pin and the pin marked ADC to select ADC as the source for SDIN1.

2.1.7 Board Power-Up General Guidelines

Connect the MC57xxPSIA and the TAS5717/19EVM boards by locating pin 1 on each board, indicated by a small white triangle. The MC57xxPSIA plugs down onto the TAS5717/19EVM board (i.e., the TAS5717/19EVM board fits underneath the MC57xxPSIA board). Pin 1 on each board must be connected to each other.

Install the EVM software on the PC before powering up the board. After connecting the loudspeakers or other loads, power supplies, and the data line, power up the 5V power supply first; then power up the PVDD power supply. It is recommended initially to set the PVDD level to 10V, then ramp it up to 20V to verify cable connections.

2.2 Software Installation

Download the TAS57X GUI from the TI Web site. The TI Web site always has the latest release and any updates to versions of the GUI.

Execute the GUI install program, Setup.exe. Once the program is installed, the program group and shortcut icon is created in Start → Program → Texas Instruments Inc → TAS57x → TAS57x GUI. The GUI launches as shown in Figure 8.

The TAS5717 tab opens when the GUI starts. Select Devices → TAS57XX → TAS5719 to open the TAS5719 tab. The TAS5717/19 tab has two subwindows. One shows the Process Flow window. From the Process Flow window, each of the signal-processing function tools can be selected by clicking on it. The Biquad GUI and the DRC GUI can be opened by right-clicking. This window also shows Input select, Mode select, Channel, and Master Volume. All functions are shown in the same order as in the device.

The other subwindow, the Properties window, has the properties that a user can update by selecting from the available options. The properties available depend on the device selected.

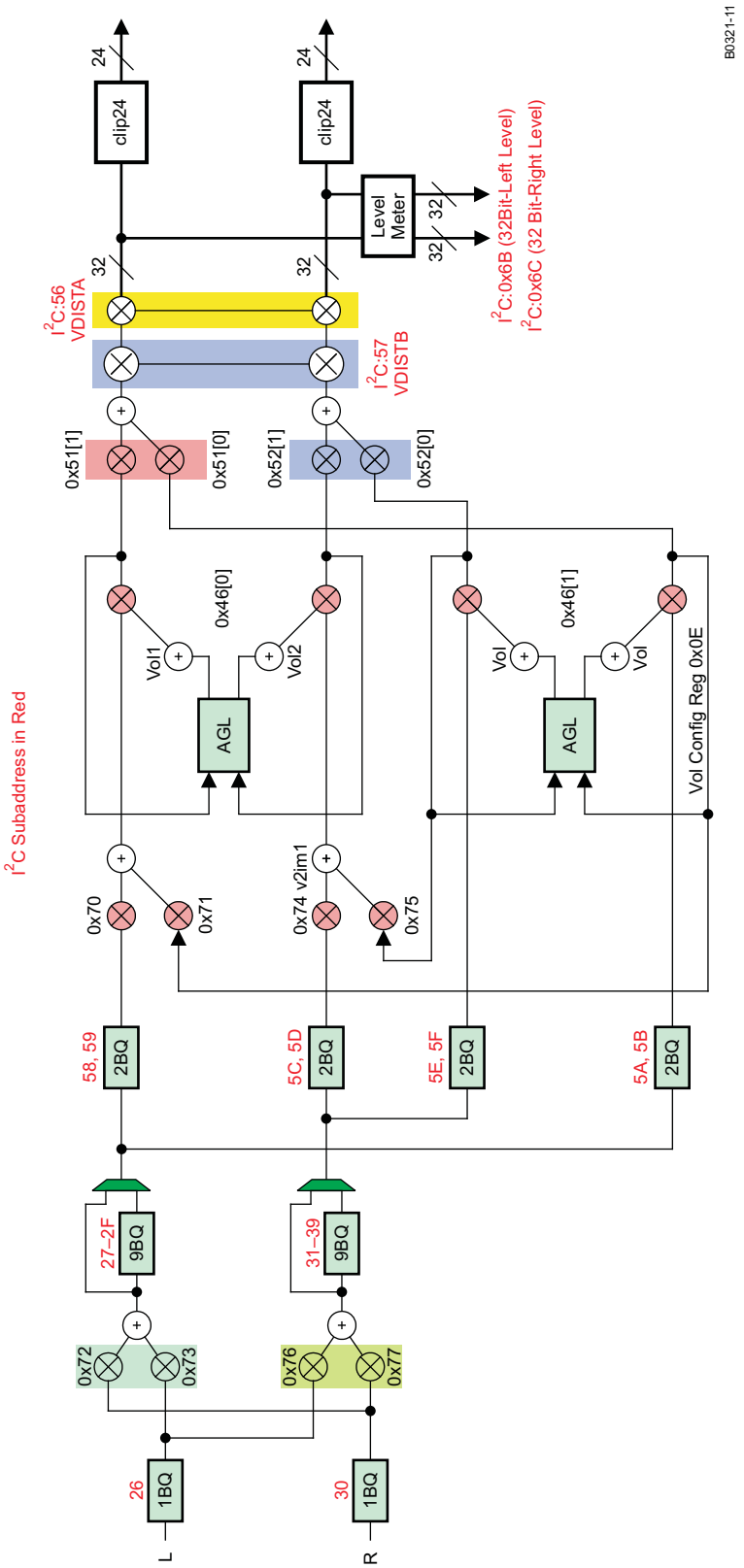


Figure 7. Process Structure

3 Using the EVM Software

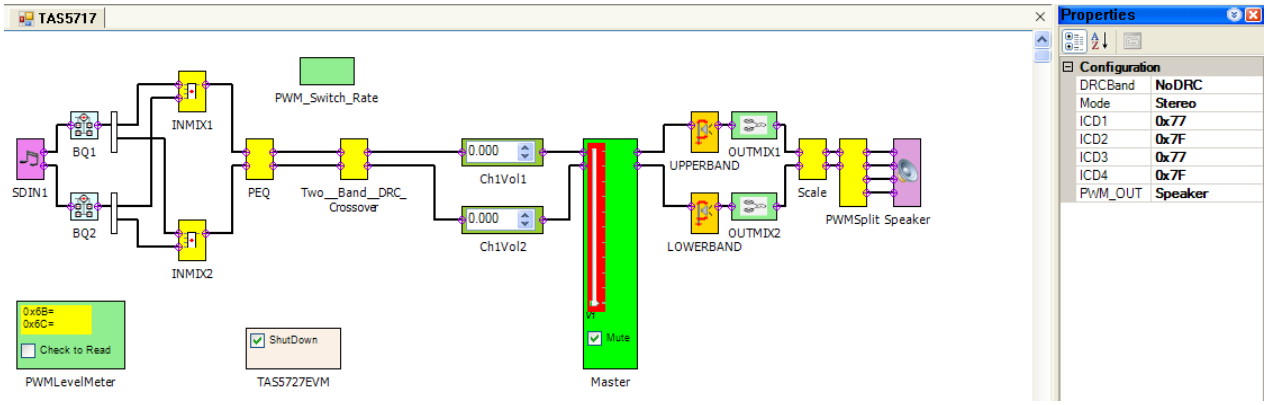


Figure 8. Main GUI Display

3.1 Connect the GUI to the EVM

Open the GUI by clicking Start → All Programs → Texas Instruments Inc → TAS57x → TAS57x GUI. Connect the MC57xxPSIA board (attached to the TAS5717EVM) to your PC with a USB cable. In the Properties window, select 1-band or 2-band DRC and select Stereo or Woofer. Stereo is selected for BTL and Woofer is selected for PBTL Mode. This sends the initialization commands to the device.

The master volume is muted by default. Select the master volume block. Type the required volume in the Properties window.

Connect the GUI to the EVM hardware by clicking Target → Connect. Un-check Shutdown and Mute. At this time, if connected properly, audio plays through the device. When the Connect command is issued, if an error appears indicating a USB problem, check the connections, and press the USB RESET button on the controller board. Then disconnect and re-connect from the Target menu.

3.2 I²C Memory Tool

This tool can be opened from GDE (Tools → I²C Memory Tool) or independent of GDE from Start → Program → Texas Instruments Inc → Memory Tool.

Select I²C as shown in Figure 9.

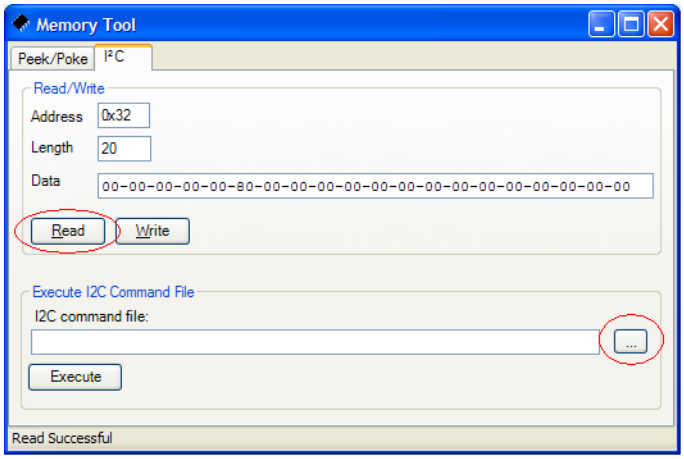


Figure 9. Memory Tool Window

I²C registers can be written or read using this tool. The I²C command file can be sent by selecting the command file and *Execute* command.

3.3 Volume Function

The Individual and Master volume can be selected, and the required volume value can be entered in the Properties window after selecting the function with the mouse. (See Figure 10.)

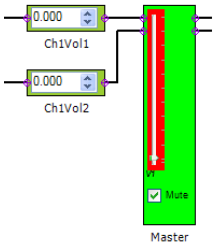


Figure 10. Volume Control

3.4 Speaker/Headphone Selection

The user can use the GUI to select whether the TAS5717/19EVM will drive a speaker load or a headphone load. To select a headphone output, click the PWM_OUT setting and select "Headphone" in the Properties window. (See Figure 11.)

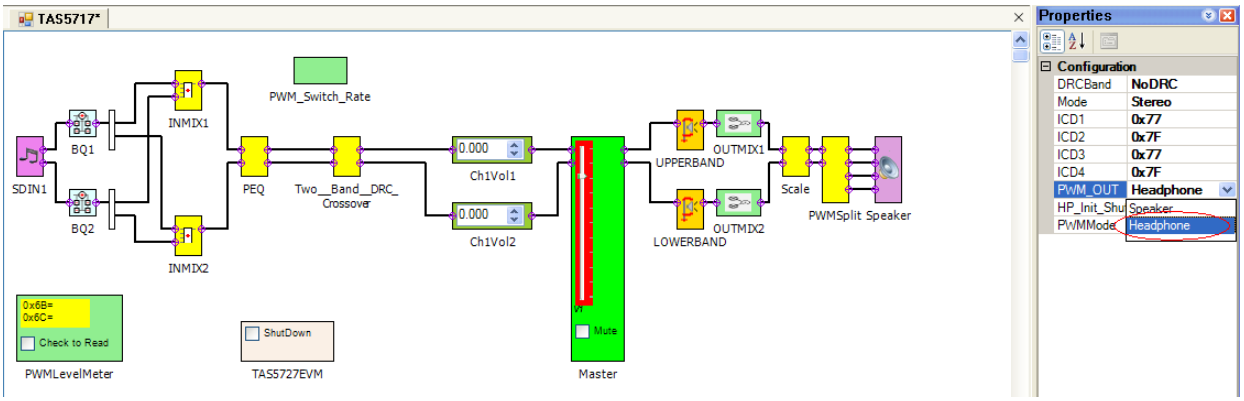


Figure 11. Speaker/Headphone Selection

3.5 Biquad GUI

Using the left mouse button, select the PEQ block. In the Properties window, change BiQuadSrc to BIQUAD GUI. Then double-click on the PEQ block. (See Figure 12.) The Biquad GUI window pops up (Figure 13).

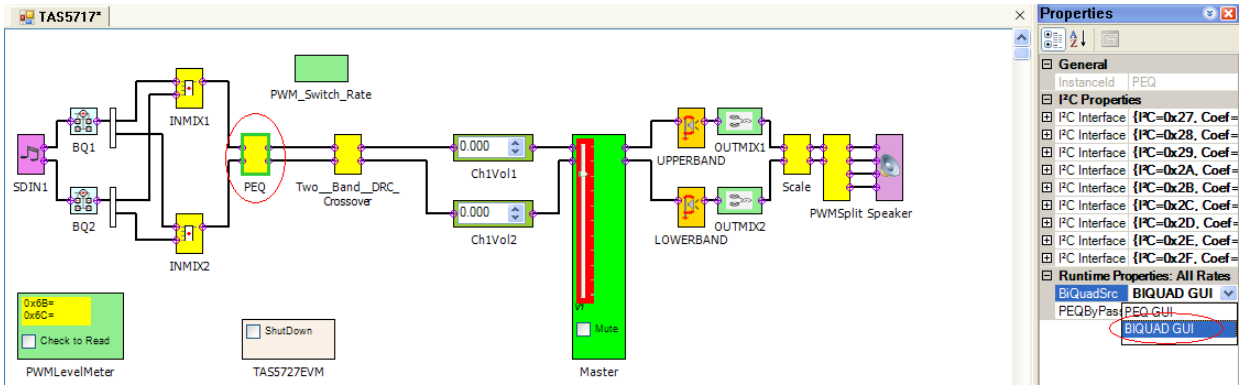


Figure 12. Selecting Biquad GUI

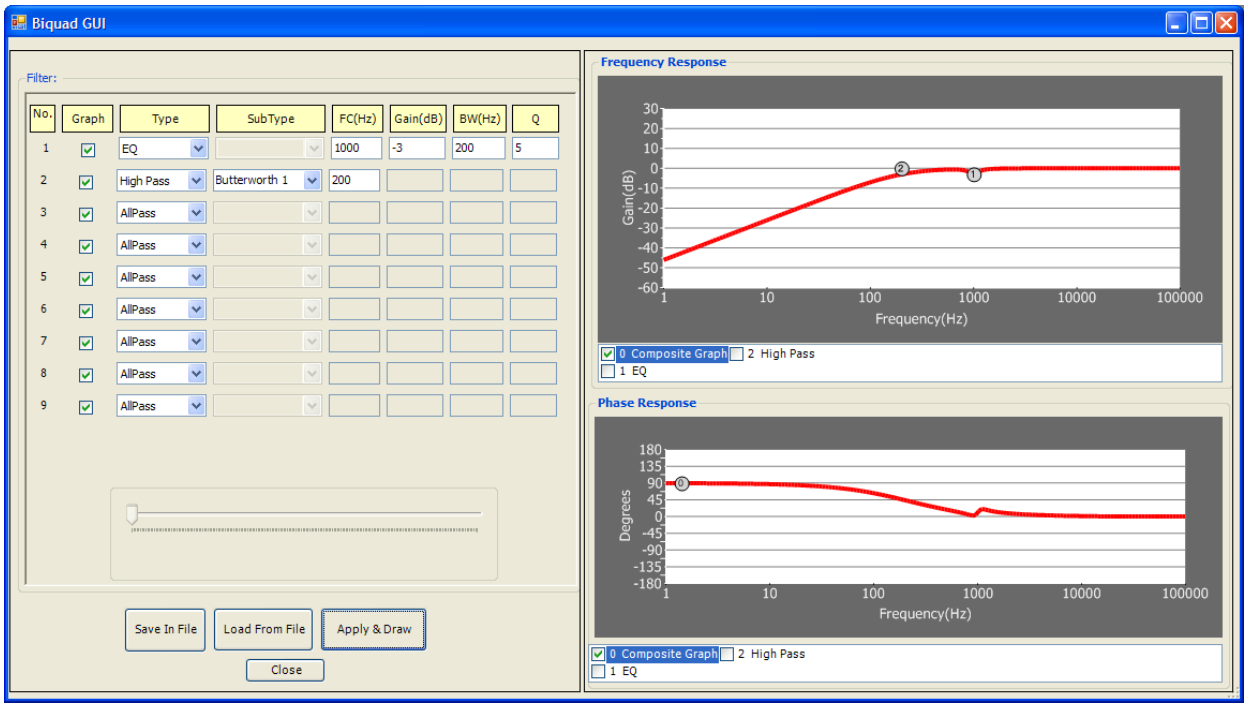


Figure 13. Biquad GUI Window

A check mark selects the Biquad. If not selected, the Biquad is in ALL PASS Mode.

The frequency response and phase response plots for the current settings can be viewed and adjusted in the Frequency Response and Phase Response areas of the Biquad GUI as shown in Figure 13. The individual Biquad gains must be within ±12db.

Clicking the **Apply & Draw** button sends all the three banks of coefficients to the Frequency Response and Phase response plots (providing auto bank is enabled).

3.6 DRC GUI

The TAS5717/19 supports 1-band and 2-band DRC. Select one of the DRC modes from the Properties window. Then set the DRC threshold for each band by double-clicking the UPPERBAND or LOWERBAND block and adjusting the sliders as shown in Figure 14.

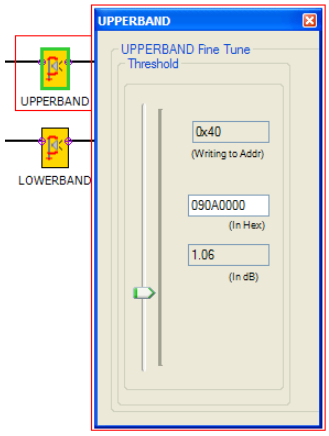


Figure 14. DRC Options

The crossover frequency for the 2-band DRC by default is 300Hz. This can be modified by entering a new value in the property window.

The DRC rates for the softening filter, attack, and release can also be adjusted. To set these rates, first click on the UPPERBAND or LOWERBAND block. Second, set the RateSliders property to On for that block. Third, double-click on the block to bring up an advanced DRC options window, as shown in Figure 15.

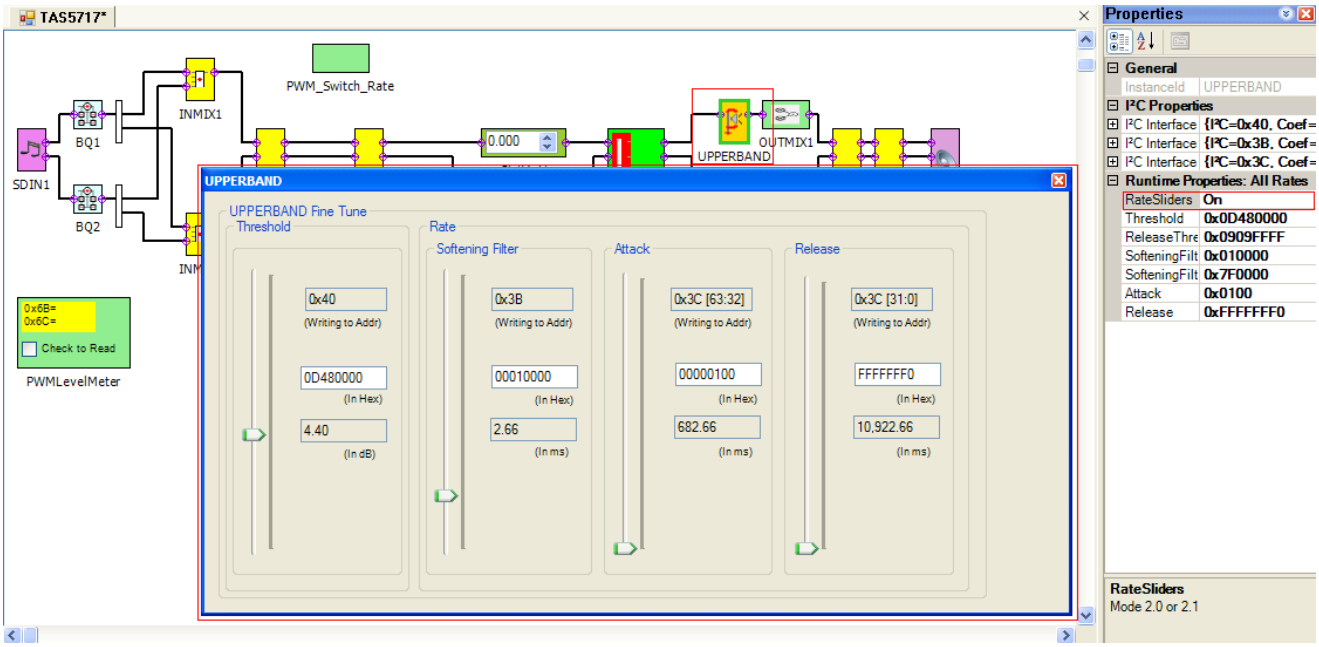


Figure 15. Advanced DRC Options

PBTL Mode: To run the device in PBTL Mode, the PBTL pin must be driven high. Then in the GUI, select woofer instead of stereo (stereo is the default value). The source for PBTL is selected as (L+R)/2, but that be changed by updating input mixer values.

3.6.1 MODULATION SCHEMES

Using The FAULT PIN As An Error Indicator:

The A_SEL_FAULTZ pin is the I^2C device address select by default. To re-define this pin as an output, write '1' to bit D1 of reg 0X05. Once re-programmed as output, this pin indicates a fault condition. Output will go low for Overcurrent (OC) or undervoltage (UVP) error or overtemperature error (OTE) or overvoltage error

Common Configurations:

1. 2 × BTL BD Mode
2. 2 × BTL AD Mode

Note:

AD: AD Modulation-Outputs are 180° out of phase

BD: BD Modulation

BTL: Bridge-Tied Load

3.6.1.1 2 X BTL BD (BD mode)

1. Set up the hardware.
2. Select the Input MUX from GDE. In the Properties window, select BD Mode.
3. GDE: **Target > Connect**.
4. Finally uncheck the **shutdown** box to bring the device out of Shutdown mode, and adjust the **Master Volume** as desired.

3.6.1.2 2 X BTL AD (Default: AD mode)

1. Set up the hardware.
2. Select the Input MUX from GDE. In the Properties window, select AD Mode.
3. GDE: **Target > Connect**.
4. Finally uncheck the **shutdown** box to bring the device out of Shutdown mode, and adjust the **Master Volume** as desired.

4 Jumpers and Control Utilities on MC57xxPSIA board

4.1 RCA/OPTICAL Jumpers

Select the jumper to reflect the source whether it is RCA or OPTICAL.

4.2 Switches

JP1 on the daughter card is for PBTL select. Jumper IN means non-PBTL mode. For PBTL, remove this jumper.

Reset is an active-low function. Pressing the master reset switch (S2) resets the TAS5717/19 device; USB RESET (S1) resets the USB bus. Pressing PDNZ (S4) powers down the TAS5717/19, and pressing MUTE (S5) mutes (volume mute) the TAS5717/19.

4.3 LED Indicators

LED1 : USB Power connector installed at J1

LED2 : 3.3V Power is valid

LED3: RCA connection made

LED4: Optical connection made

LED5: SPDIF signal locked

LED6: FAULT (**This LED should be ignored until FAULT is programmed to be an output via I^2C write to reg 0X05.**)

LED7: PDN switch (S4) is pressed (closed)

5 Board Layouts, Bill of Materials, and Schematic

5.1 TAS5717/19EVM and MC57xxPSIA Board Layouts

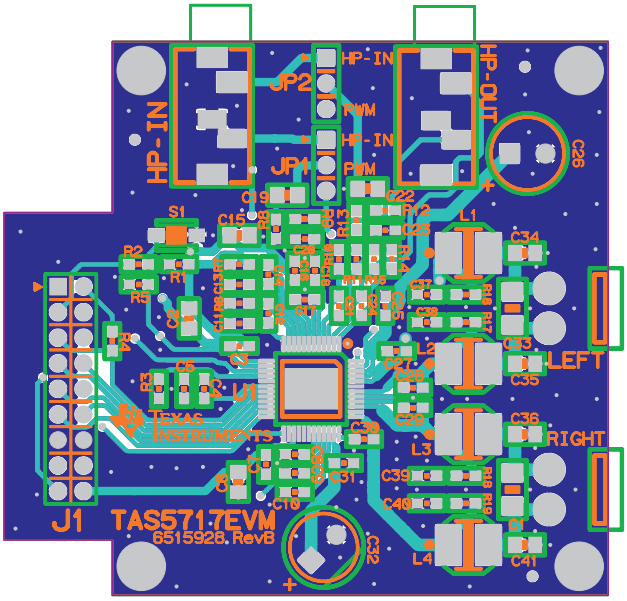


Figure 16. TAS5717EVM Top Composite Assembly

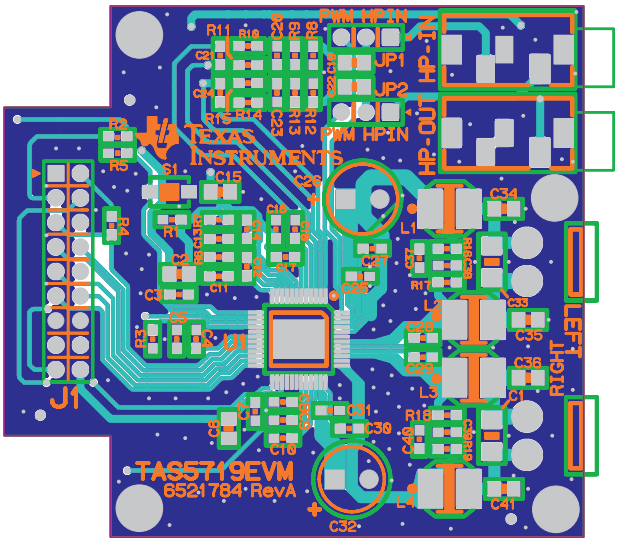


Figure 17. TAS5719EVM Top Composite Assembly

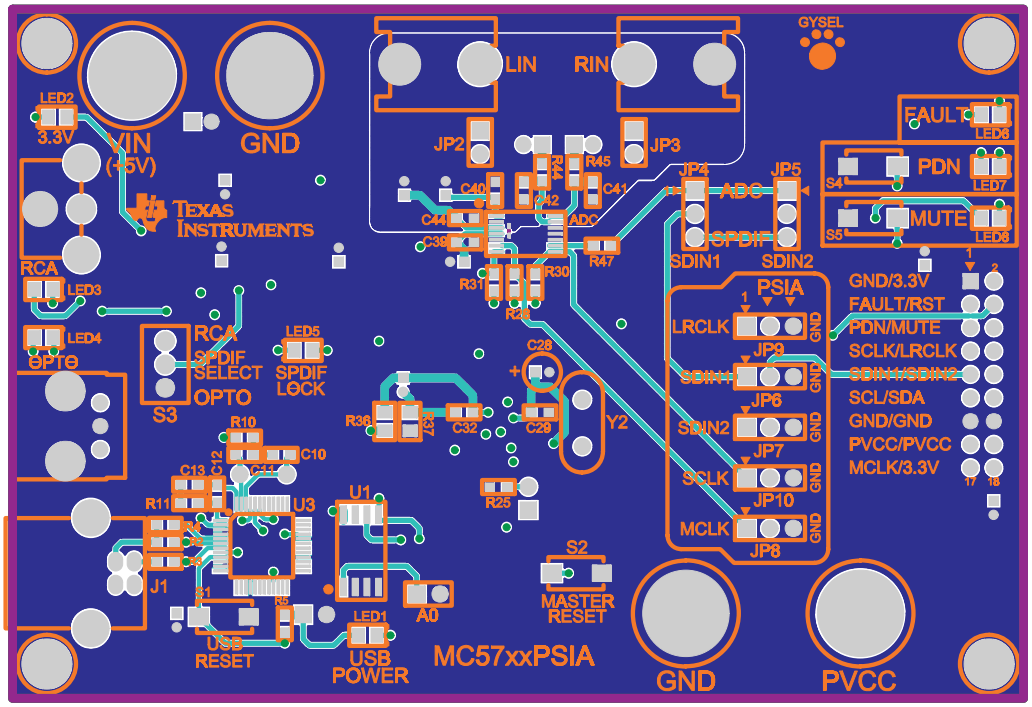


Figure 18. MC57xxPSIA Top Composite Assembly

5.2 Bill of Materials

Table 2. Bill of Materials for TAS5717EVM

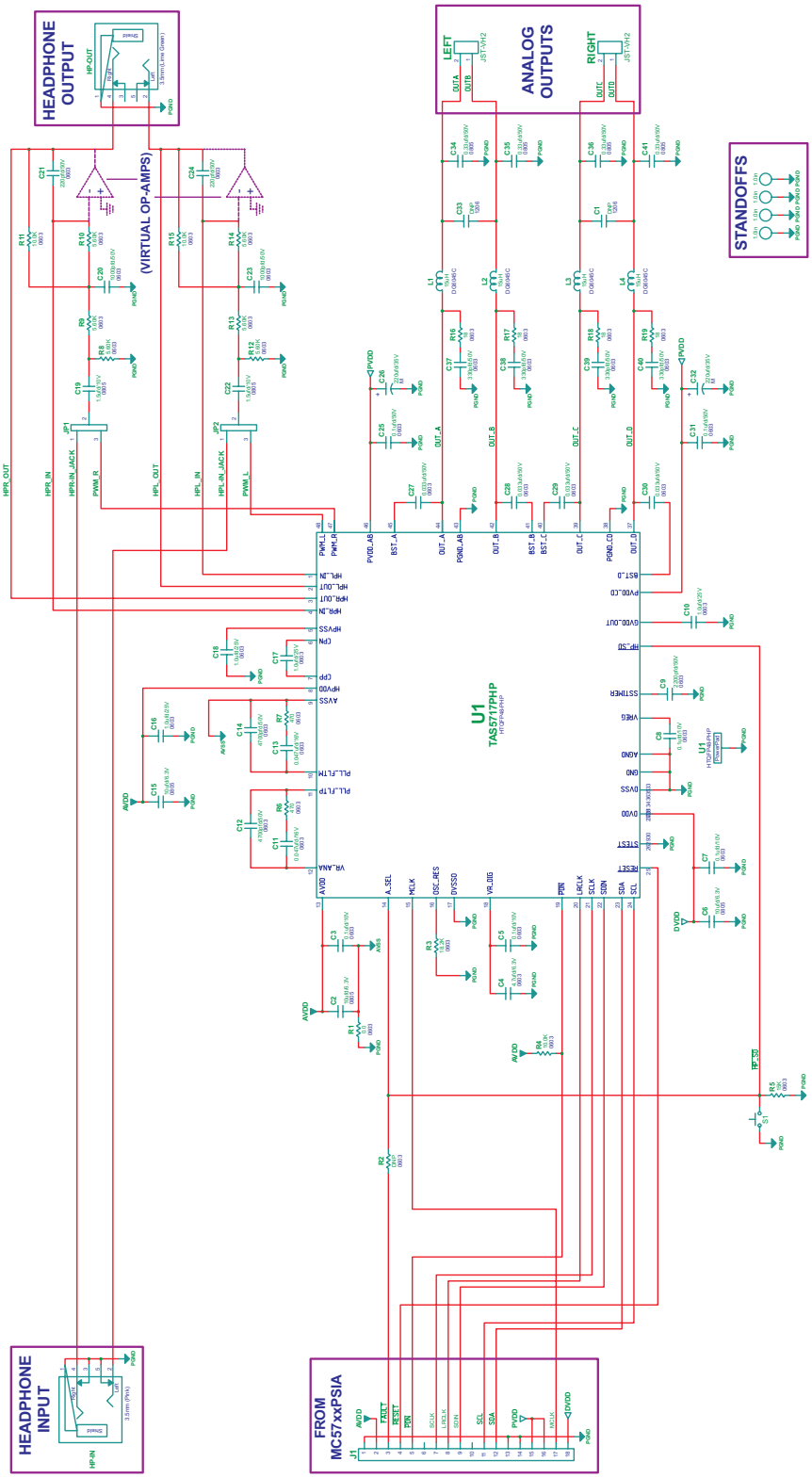
Manufacturer Part No.	Qty	Ref Des	Vendor Part No.	Description	Vendor	Manufacturer
TI-SEMICONDUCTORS						
TAS5717PHP	1	U1	TAS5717PHP	20W DIGAMP WITH DAP HTQFP48-PHP ROHS	TEXAS INSTRUMENTS	TEXAS INSTRUMENTS
CAPACITORS						
GRM1885C1H221JA01D	2	C21, C24	490-1435-1	CAP SMD0603 CERM 220PFD 50V 5% COG ROHS	DIGI-KEY	MURATA
GRM1885C1H331JA01D	4	C37, C38, C39, C40	490-1439-1	CAP SMD0603 CERM 330PFD 50V 5% COG ROHS	DIGI-KEY	MURATA
C1608C0G1H102J	2	C20, C23	445-1293-1	CAP SMD0603 CERM 1000PFD 50V 5% COG ROHS	DIGI-KEY	TDK
GRM188R71H222KA01D	1	C9	490-1500-1	CAP SMD0603 CERM 2200PFD 50V 10% X7R ROHS 1 C9 490-1500-1 CAP SMD0603 CERM 2200PFD 50V 10% X7R ROHS	DIGI-KEY	MURATA
GRM188R71H472KA01D	2	C12, C14	490-1506-1	CAP SMD0603 CERM 4700PFD 50V 10% X7R ROHS	DIGI-KEY	MURATA
GRM188R71H333KA61D	4	C27, C28, C29, C30	490-3286-1	CAP SMD0603 CERM 0.033UFD 50V 10% X7R ROHS	DIGI-KEY	MURATA
GRM188R71C473KA01D	2	C11, C13	490-1529-1	CAP SMD0603 CERM 0.047UFD 16V 10% ROHS	DIGI-KEY	MURATA
C0603C104K8RACTU	4	C3, C5, C7, C8	399-1095-1	CAP SMD0603 CERM 0.1UFD 10V 5% X7R ROHS	DIGI-KEY	KEMET
GRM188R71H104KA93D	2	C25, C31	490-1519-1	CAP SMD0603 CERM 0.1UFD 50V 10% X7R ROHS	DIGI-KEY	MURATA
GRM219R71H334KA88D	4	C34, C35, C36, C41	490-3327-1	CAP SMD0805 CERM 0.33UFD 50V 10% X7R ROHS	DIGI-KEY	MURATA
TMK107BJ105KA	4	C10, C16, C17, C18	587-1248-1	CAP SMD0603 CERM 1.0UFD 25V 10% X5R ROHS	DIGI-KEY	TAIYO YUDEN
C0805C155K8RACTU	2	C19, C22	399-4931-1	CAP SMD0805 CERM 1.5UFD 10V 10% X7R ROHS	DIGI-KEY	KEMET
C1608X5R0J475M	1	C4	445-1417-1	CAP SMD603 CERM 4.7UFD 6.3V 20% X5R ROHS	DIGI-KEY	TDK
08056C106KAT2A	3	C2, C6, C15	478-5322-1	CAP SMD0805 CERM 10UFD 6.3V X7R 10% ROHS	DIGI-KEY	AVX CORP
ECA-1VM221BJ	2	C26, C32	P10419TB	CAP ALUM ELEC M RADIAL 220UFD 35V 20% ROHS DIGI-KEY PANASONIC	DIGI-KEY	PANASONIC
RESISTORS						
RMCF0603ZT0R00	1	R1	RMCF0603ZT0R00CT	RESISTOR SMD0603 0.0 OHM 1/10W ROHS	DIGI-KEY	STACKPOLE ELECTRONICS
ERJ-3GEYJ180V	4	R16, R17, R18, R19	P18GCT	RESISTOR SMD0603 18 OHMS 5% 1/10W ROHS	DIGI-KEY	PANASONIC
ERJ-3GEYJ471V	2	R6, R7	P470GCT	RESISTOR SMD0603 470 OHMS 5% 1/10W ROHS	DIGI-KEY	PANASONIC
ERJ-3EKF5601V	6	R8, R9, R10, R12, R13, R14	P5.60KHCT	RESISTOR SMD0603 5.60K 1% THICK FILM 1/10W ROHS	DIGI-KEY	PANASONIC
ERJ-3EKF1002V	3	R4, R11, R15	P10.0KHCT	RESISTOR SMD0603 10.0K 1% THICK FILM 1/10W ROHS	DIGI-KEY	PANASONIC
ERJ-3GEYJ153V	1	R5	P15KGCT	RESISTOR SMD0603 15K OHMS 5% 1/10W ROHS	DIGI-KEY	PANASONIC
RC0603FR-0718K2L	1	R3	311-18.2KHRCT	RESISTOR SMD0603 THICK FILM 18.2K 1% 1/10W ROHS	DIGI-KEY	YAGEO
INDUCTORS						
DG6045C-150M	4	L1, L2, L3, L4	DG6045C-150M	INDUCTOR SMT 15uH X.XA X.X mOHMS 20% DG6045C ROHS	TOKO JAPAN	TOKO JAPAN
HEADERS AND JACKS						
PBC03SAAN	2	JP1, JP2	S1011E-03-ND	HEADER THRU MALE 3 PIN 100LS GOLD ROHS	DIGI-KEY	SULLINS
PBC09DAAN	1	J1	S2011E-09	HEADER THRU MALE 2X9 100LS GOLD ROHS	DIGI-KEY	SULLINS
B2PS-VH(LF)(SN)	3	LEFT, RIGHT	455-1648	JACK JST-VH RA 2-PIN 3.96mmLS ROHS	DIGI-KEY	JST
STX-3150-5N-577C	1	HP-OUT	806-STX-31505N577C	JACK MINI STEREO 3.5mm LIME GREEN W/SHUNTS ROHS	MOUSER	KYCON
STX-3150-5N-701C	1	HP-IN	806-STX-31505N701C	JACK MINI STEREO 3.5mm PINK W/SHUNTS ROHS	MOUSER	KYCON
SWITCHES						
TL1015AF160QG	1	S1	EG4344CT	SWITCH, MOM, 160G SMT 4X3MM ROHS	DIGI-KEY	E-SWITCH
SHUNTS						
SPC02SYAN	2	JP1(1-2), JP2(1-2)	S9001	SHUNT, BLACK AU FLASH 0.100LS	DIGI-KEY	SULLINS
STANDOFFS AND HARDWARE						
PMS 440 0025 PH	4	NA	H342	4-40 SCREW, STEEL 0.250 IN	DIGI-KEY	BUILDING FASTENERS
2029	4	NA	2029K	STANDOF ,4-40 0.75IN 3/16IN DIA ALUM RND F-F	DIGI-KEY	KEYSTONE ELECTRONICS
Component Count:	80					
COMPONENTS NOT ASSEMBLED						
C1, C33, R2						

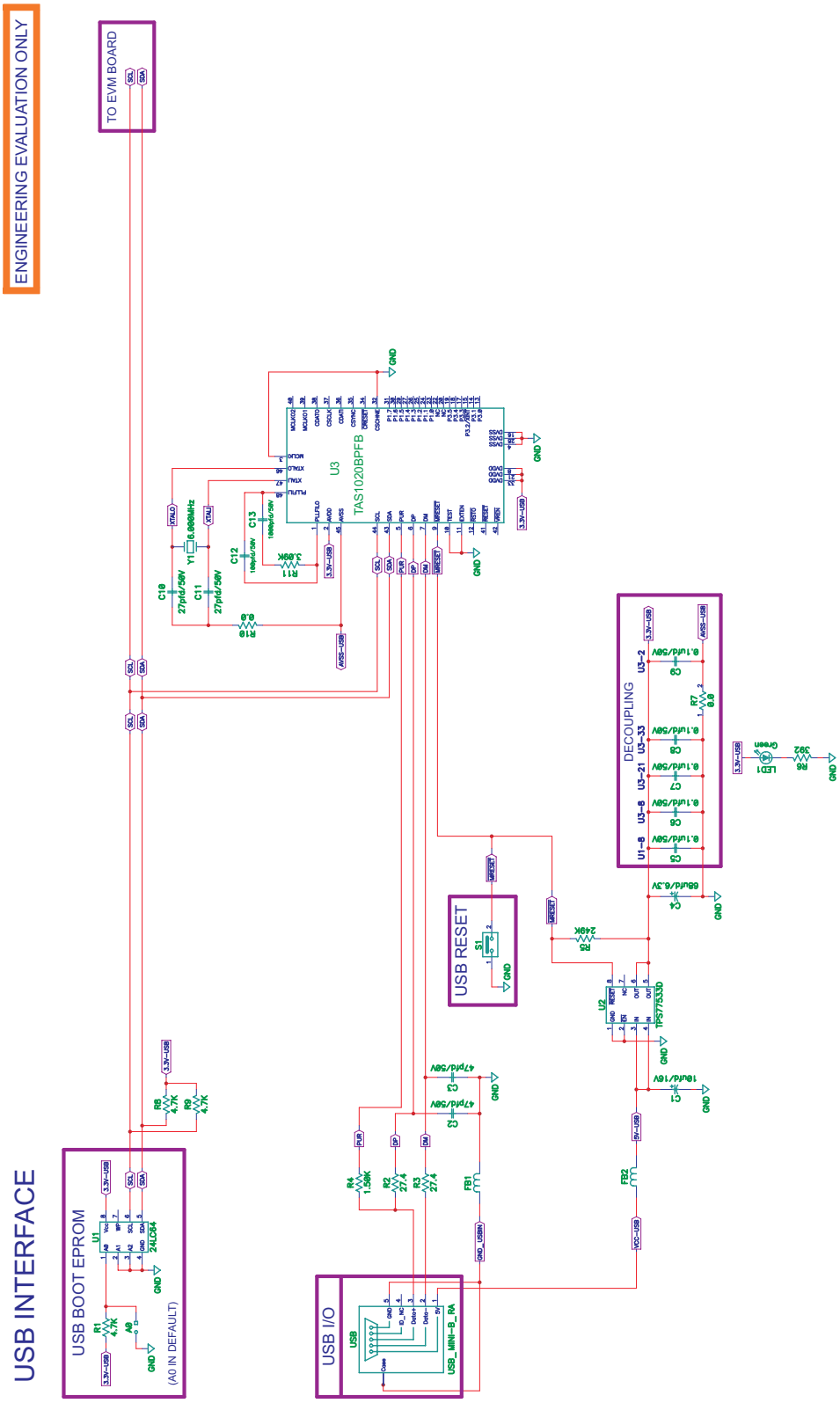
Table 3. Bill of Materials for TAS5719EVM

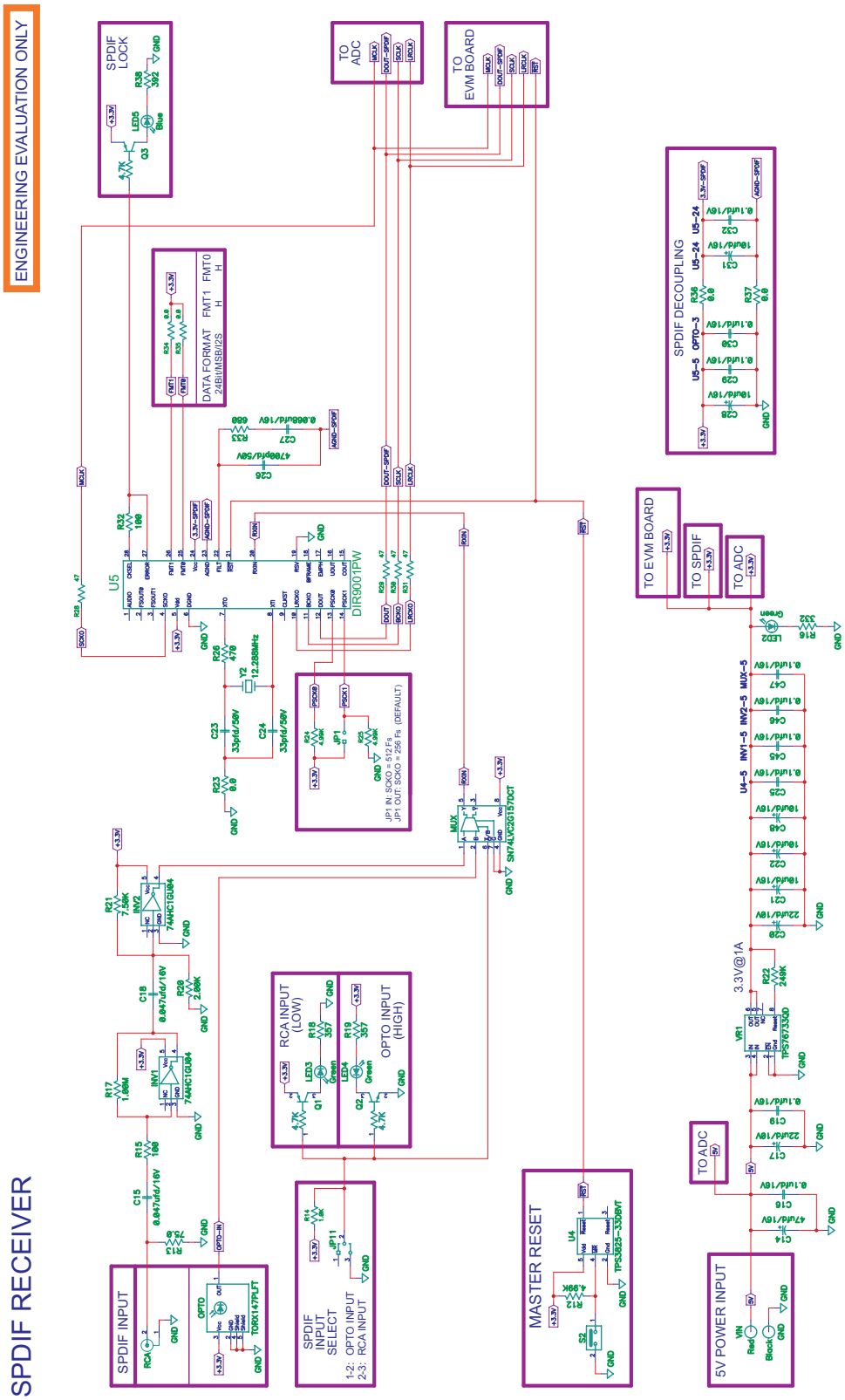
Manufacturer Part No.	Qty	Ref Des	Vendor Part No.	Description	Vendor	Manufacturer
TI-SEMICONDUCTORS						
TAS5719PHP	1	U1	TAS5719PHP	30W DIGAMP WITH DAP HTQFP48-PHP ROHS	TEXAS INSTRUMENTS	TEXAS INSTRUMENTS
CAPACITORS						
GRM1885C1H221JA01D	2	C21, C24	490-1435-1	CAP SMD0603 CERM 220PFD 50V 5% COG ROHS	DIGI-KEY	MURATA
GRM1885C1H331JA01D	4	C37, C38, C39, C40	490-1439-1	CAP SMD0603 CERM 330PFD 50V 5% COG ROHS	DIGI-KEY	MURATA
C1608C0G1H102J	2	C20, C23	445-1293-1	CAP SMD0603 CERM 1000PFD 50V 5% COG ROHS	DIGI-KEY	TDK
GRM188R71H222KA01D	1	C9	490-1500-1	CAP SMD0603 CERM 2200PFD 50V 10% X7R ROHS 1 C9 490-1500-1 CAP SMD0603 CERM 2200PFD 50V 10% X7R ROHS	DIGI-KEY	MURATA
GRM188R71H472KA01D	2	C12, C14	490-1506-1	CAP SMD0603 CERM 4700PFD 50V 10% X7R ROHS	DIGI-KEY	MURATA
GRM188R71H333KA61D	4	C27, C28, C29, C30	490-3286-1	CAP SMD0603 CERM 0.033UFD 50V 10% X7R ROHS	DIGI-KEY	MURATA
GRM188R71C473KA01D	2	C11, C13	490-1529-1	CAP SMD0603 CERM 0.047UFD 16V 10% ROHS	DIGI-KEY	MURATA
C0603C104K8RACTU	4	C3, C5, C7, C8	399-1095-1	CAP SMD0603 CERM 0.1UFD 10V 5% X7R ROHS	DIGI-KEY	KEMET
GRM188R71H104KA93D	2	C25, C31	490-1519-1	CAP SMD0603 CERM 0.1UFD 50V 10% X7R ROHS	DIGI-KEY	MURATA
GRM219R71H334KA88D	4	C34, C35, C36, C41	490-3327-1	CAP SMD0805 CERM 0.33UFD 50V 10% X7R ROHS	DIGI-KEY	MURATA
TMK107BJ105KA	4	C10, C16, C17, C18	587-1248-1	CAP SMD0603 CERM 1.0UFD 25V 10% X5R ROHS	DIGI-KEY	TAIYO YUDEN
C0805C155K8RACTU	2	C19, C22	399-4931-1	CAP SMD0805 CERM 1.5UFD 10V 10% X7R ROHS	DIGI-KEY	KEMET
C1608X5R0J475M	1	C4	445-1417-1	CAP SMD603 CERM 4.7UFD 6.3V 20% X5R ROHS	DIGI-KEY	TDK
08056C106KAT2A	3	C2, C6, C15	478-5322-1	CAP SMD0805 CERM 10UFD 6.3V X7R 10% ROHS	DIGI-KEY	AVX CORP
ECA-1VM221BJ	2	C26, C32	P10419TB	CAP ALUM ELEC M RADIAL 220UFD 35V 20% ROHS DIGI-KEY PANASONIC	DIGI-KEY	PANASONIC
RESISTORS						
RMCF0603ZT0R00	1	R1	RMCF0603ZT0R00CT	RESISTOR SMD0603 0.0 OHM 1/10W ROHS	DIGI-KEY	STACKPOLE ELECTRONICS
ERJ-3GEYJ180V	4	R16, R17, R18, R19	P18GCT	RESISTOR SMD0603 18 OHMS 5% 1/10W ROHS	DIGI-KEY	PANASONIC
ERJ-3GEYJ471V	2	R6, R7	P470GCT	RESISTOR SMD0603 470 OHMS 5% 1/10W ROHS	DIGI-KEY	PANASONIC
ERJ-3EKF5601V	6	R8, R9, R10, R12, R13, R14	P5.60KHCT	RESISTOR SMD0603 5.60K 1% THICK FILM 1/10W ROHS	DIGI-KEY	PANASONIC
ERJ-3EKF1002V	3	R4, R11, R15	P10.0KHCT	RESISTOR SMD0603 10.0K 1% THICK FILM 1/10W ROHS	DIGI-KEY	PANASONIC
ERJ-3GEYJ153V	1	R5	P15KGCT	RESISTOR SMD0603 15K OHMS 5% 1/10W ROHS	DIGI-KEY	PANASONIC
RC0603FR-0718K2L	1	R3	311-18.2KHRCT	RESISTOR SMD0603 THICK FILM 18.2K 1% 1/10W ROHS	DIGI-KEY	YAGEO
INDUCTORS						
DG6045C-150M	4	L1, L2, L3, L4	DG6045C-150M	INDUCTOR SMT 15uH X.XA X.X mOHMS 20% DG6045C ROHS	TOKO JAPAN	TOKO JAPAN
HEADERS AND JACKS						
PBC03SAAN	2	JP1, JP2	S1011E-03-ND	HEADER THRU MALE 3 PIN 100LS GOLD ROHS	DIGI-KEY	SULLINS
PBC09DAAN	1	J1	S2011E-09	HEADER THRU MALE 2X9 100LS GOLD ROHS	DIGI-KEY	SULLINS
B2PS-VH(LF)(SN)	3	LEFT, RIGHT	455-1648	JACK JST-VH RA 2-PIN 3.96mmLS ROHS	DIGI-KEY	JST
STX-3150-5N-577C	1	HP-OUT	806-STX-31505N577C	JACK MINI STEREO 3.5mm LIME GREEN W/SHUNTS ROHS	MOUSER	KYCON
STX-3150-5N-701C	1	HP-IN	806-STX-31505N701C	JACK MINI STEREO 3.5mm PINK W/SHUNTS ROHS	MOUSER	KYCON
SWITCHES						
TL1015AF160QG	1	S1	EG4344CT	SWITCH, MOM, 160G SMT 4X3MM ROHS	DIGI-KEY	E-SWITCH
SHUNTS						
SPC02SYAN	2	JP1(1-2), JP2(1-2)	S9001	SHUNT, BLACK AU FLASH 0.100LS	DIGI-KEY	SULLINS
STANDOFFS AND HARDWARE						
PMS 440 0025 PH	4	NA	H342	4-40 SCREW, STEEL 0.250 IN	DIGI-KEY	BUILDING FASTENERS
2029	4	NA	2031K	STANDOFF,4-40,1.0INx3/16IN,ALUM RND F-F	DIGI-KEY	KEYSTONE ELECTRONICS
Component Count:	80					
COMPONENTS NOT ASSEMBLED						
C1, C33, R2						

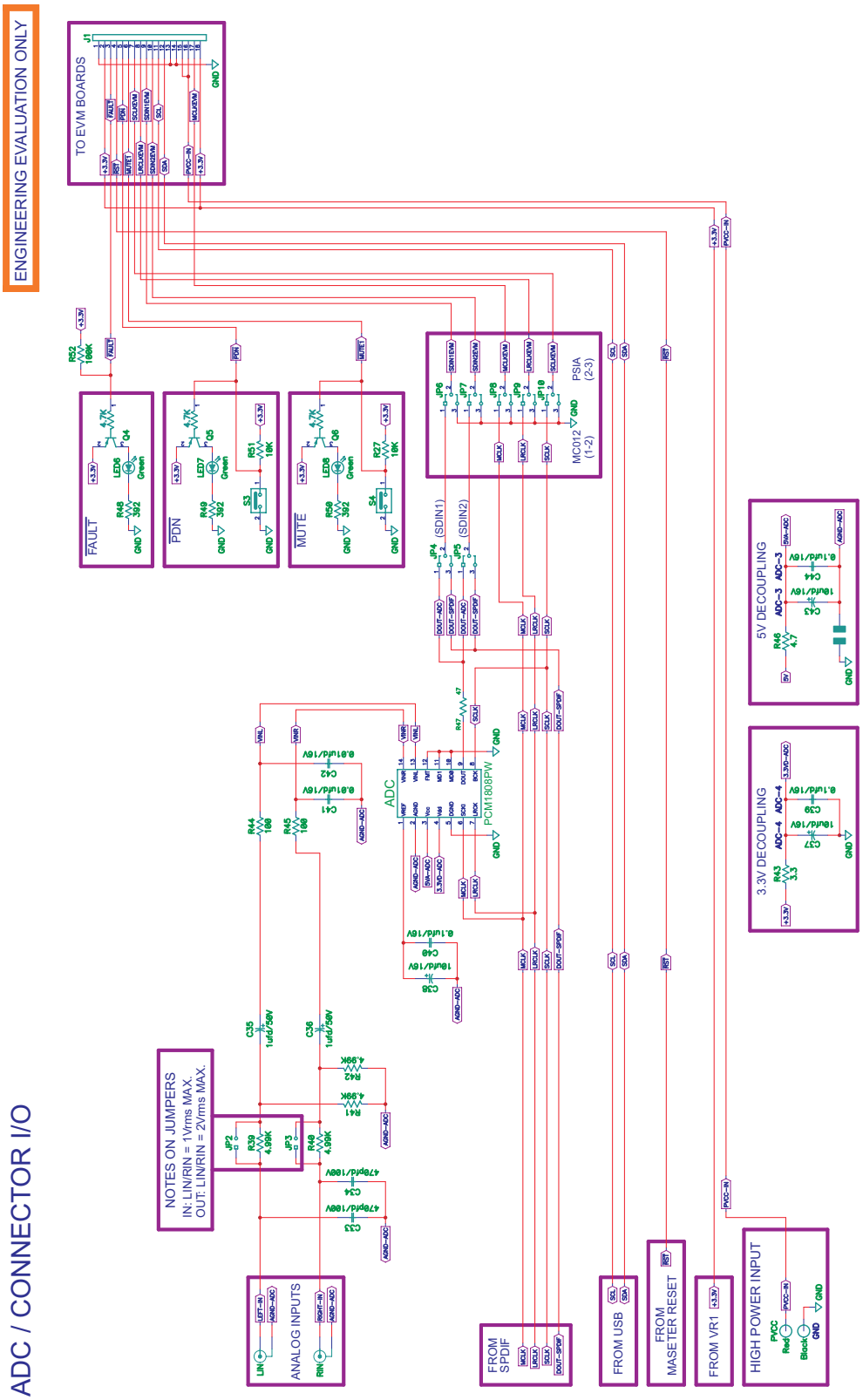
5.3 Schematics

The schematic for TAS5717/19EVM follows. The schematics for MC57xxPSIA appear on the following pages.









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It is important to operate this EVM within the input voltage range of -0.5V to 4.1V and the output voltage range of 26Vp-p.

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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