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TLV320AIC1106/1107EVM

User's Guide

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EVM WARNINGS AND RESTRICTIONS

It is important to operate this EVM within the input voltage range of 3.3 V described in the EVM User's Guide.

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 60°C. The EVM is designed to operate properly with certain components above 60°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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Preface

Read This First

About This Manual

This user's guide describes the operation and use of the TLV320AIC1106 / 1107 codec family. A complete circuit description as well as schematic diagram and bill of materials are also included.

How to Use This Manual

This document contains the following chapters:

- ☐ Chapter 1 – EVM Overview and Introduction
- ☐ Chapter 2 – Digital and Analog Interface
- ☐ Chapter 3 – EVM Bill of Materials and Schematic

Related Documentation From Texas Instruments

To obtain a copy of any of the following documents, call the Texas Instruments literature response center at (800) 477-8924 or the product information center (PIC) at (972) 644-5580. When ordering, please identify this booklet by its title and literature number. Updated documents can also be obtained through the TI website at www.ti.com.

Data Sheets:

TLV320AI1106
TLV320AIC1107

Literature Number:

SLAS357
SLAS360

Contents

FCC Warning

This equipment is intended for use in a laboratory test environment only. It generates, uses, and can radiate radio frequency energy and has not been tested for compliance with the limits of computing devices pursuant to subpart J of part 15 of FCC rules, which are designed to provide reasonable protection against radio frequency interference. Operation of this equipment in other environments may cause interference with radio communications, in which case the user at his own expense will be required to take whatever measures may be required to correct this interference.

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Chapter 1

EVM Overview

This chapter provides an overview of the TLV320AIC1106 / 1107 EVM.

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1.1 Introduction	1-2

Introduction

1.1 Introduction

This EVM and user's guide supports the following devices:

- ☐ TLV320AIC1106
- ☐ TLV320AIC1107

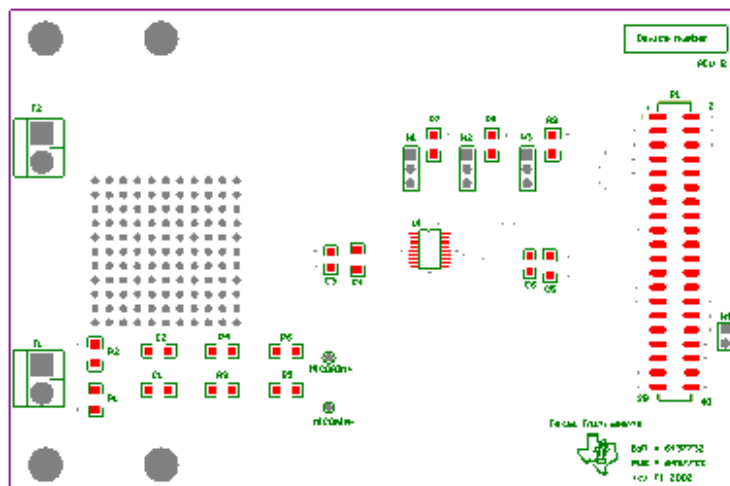
These devices are voice-band audio processors, designed to perform transmit-encoding analog-to-digital (A/D) conversion, receive-decoding digital-to-analog (D/A) conversion, and transmit and receive filtering for voice-band communications systems.

The EVM can operate with a DSP development platform to provide the necessary power requirements and a convenient way to interface with TI's range of starter kits via the 80-pin expansion connector located on the DSK. Alternatively, the EVM can operate without a DSP development platform. In this case the user is responsible for providing a suitable interface to the host system.

System-level features for the chip are managed via 3 jumpers.

Interfacing with the analog I/O is accomplished via 2 screw terminals.

Figure 1-1. TLV320AIC1106/1107 EVM



Chapter 2

Digital and Analog Interface

This chapter describes the digital and analog interface for the TLV320AIC1106 /1107 EVM.

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Description

2.1 Description

The digital signals required to operate this codec originate from the 40-pin connector—J3. There are two methods to drive the digital interface:

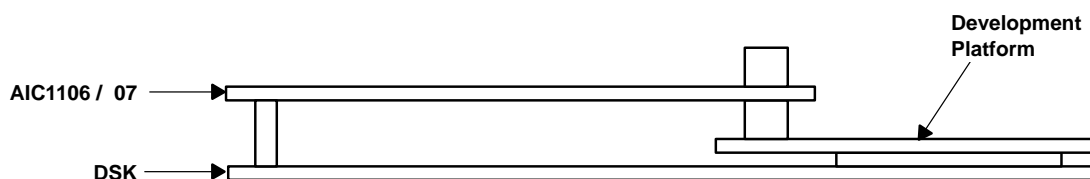
- ☐ Create a custom interface between the codec EVM and the host system.
- ☐ Alternatively, if a TI DSK (DSP Starter Kit) is the host system, a development platform is available from TI. This platform provides the additional functions that the codec requires in a convenient form factor.

2.2 Codec-to-Development Platform Interface

The EVM can mate with TI's DSP starter kit systems (DSKs) via the development platform.

The development platform mates with the DSK, through which all the necessary power is provided. $\overline{\text{RESET}}$ can be applied manually to the EVM via a switch on the development platform, or by the $\overline{\text{RESET}}$ signal on the DSK via the development platform.

Figure 2-1. Development Platform Mechanical Interface



Electrical interface to the development platform is via J3 on the TLV320AIC1106/1107 EVM. The 40-pin connector mates with the development platform connector (Samtec part number, TSM-120-01-T-DV-P). Consult Samtec at www.samtec.com or 1-800-SAMTEC-9 for more information.

The pinout for the 40-pin connector is given in Table 2-1.

Table 2-1. EVM J3 Connector Pinout

Pin Number	Signal	Description
J3.1	N/A	Reserved
J3.2	DGND	Digital ground
J3.3	SCLK	Serial data clock
J3.4	DGND	Digital ground
J3.5	DIN	Data in
J3.6	DGND	Digital ground
J3.7	DOUT	Data out
J3.8	N/A	Reserved
J3.9	FS	Frame sync
J3.10	N/A	Reserved
J3.11	N/A	Reserved
J3.12	N/A	Reserved
J3.13	N/A	Reserved
J3.14	N/A	Reserved
J3.15	N/A	Reserved
J3.16	N/A	Reserved
J3.17	RESET	Reset
J3.18	N/A	Reserved
J3.19	N/A	Reserved
J3.20	N/A	Reserved
J3.21	N/A	Reserved
J3.22	N/A	Reserved
J3.23	N/A	Reserved
J3.24	N/A	Reserved
J3.25	3.3V_D	Digital 3.3 V
J3.26	N/A	Reserved
J3.27	3.3V_D	Digital 3.3 V
J3.28	DGND	Digital ground
J3.29	N/A	Reserved
J3.30	DGND	Digital ground
J3.31	N/A	Reserved
J3.32	DGND	Digital ground
J3.33	N/A	Reserved
J3.34	AGND	Analog ground
J3.35	N/A	Reserved
J3.36	AGND	Analog ground
J3.37	3.3V_A	Analog 3.3 V
J3.38	AGND	Analog ground
J3.39	3.3V_A	Analog 3.3 V
J3.40	AGND	Analog ground

Jumper Options

The development platform supports a number of functions required by the codecs:

- ☐ Manual reset generation
- ☐ Power options
- ☐ Convenient mechanical interface to TI's DSK
- ☐ Refer to SLAU090 for details regarding the development platform.

2.3 Jumper Options

There are four jumpers on the EVM board that can be configured in various ways, depending upon the user's requirements. Their functions are briefly presented in the following tables.

Table 2-2. Jumper Options

Jumper	Function
W1	Mutes the microphone input
W2	Mutes the earphone output
W3	Selects conversion mode
W4	Connects AGND and DGND together

2.3.1 Microphone Mute

Table 2-3. Microphone—W1 Jumper Options

W1		
Description	1-2	2-3
Microphone is muted	Inserted	Not inserted
Microphone is not muted	Not inserted	Inserted

2.3.2 Earphone Mute

Table 2-4. Earphone—W2 Jumper Options

W2		
Description	1-2	2-3
Earphone is muted	Inserted	Not inserted
Earphone is not muted	Not inserted	Inserted

2.3.3 Conversion Select

Table 2-5. Conversion Select—W3 Jumper Options

W3		
Description	1-2	2-3
8-bit μ -law companding mode selected	Inserted	Not inserted
13-bit linear mode selected	Not inserted	Inserted

2.3.4 AGND/DGND Connect

If the EVM is part of a larger system, the facility exists to connect and disconnect analog ground and digital ground to minimize ground returns.

Table 2-6. AGND/DGND—W4 Jumper Options

W4	
Description	1-2
AGND and DGND connected	Inserted
AGND and DGND disconnected	Not inserted

2.4 Analog Interface

To make it as easy as possible to connect to a wide range of input and output devices, the analog interface features a simple screw-terminal, J1 for microphone input and J2 for earphone output.

Chapter 3

EVM Bill of Materials and Schematic

This chapter provides a bill of materials and schematic for the TLV3201106/1107 EVM.

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EVM Bill of Materials

3.1 EVM Bill of Materials

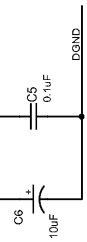
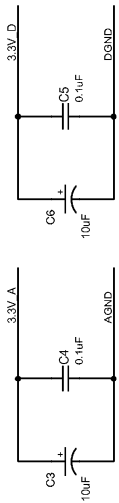
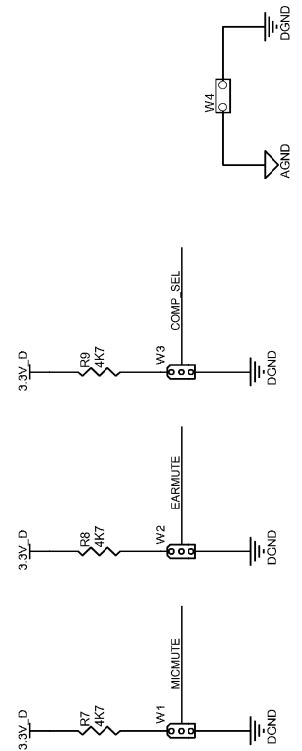
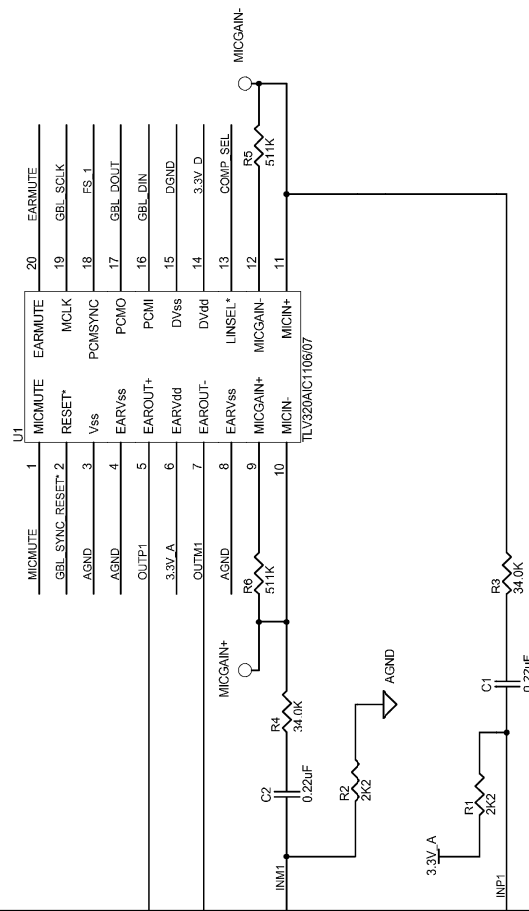
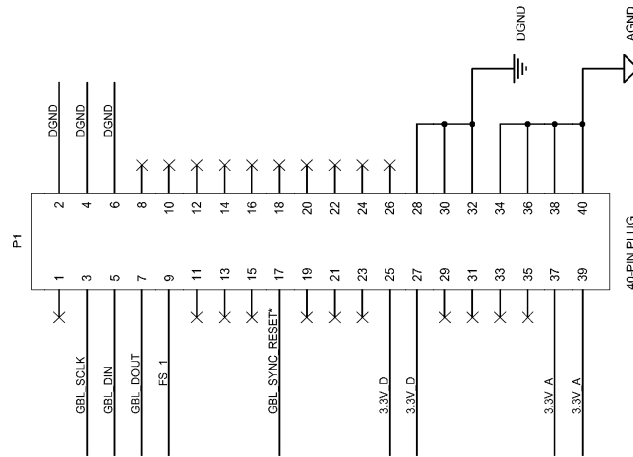
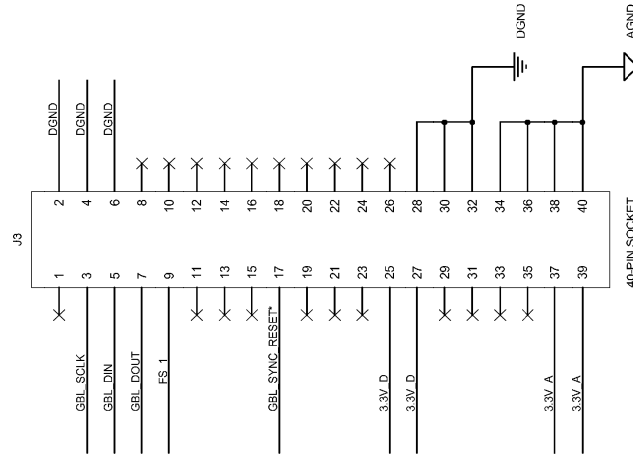
The following table contains a complete bill of materials for the TLV320AIC1106 and TLV320AIC1107 EVM. The schematic diagram is also provided for reference. For further information contact the product information center (PIC) or e-mail questions regarding this EVM to dataconvapps@list.ti.com.

Quantity	Reference	Description
2	C4, C5	Capacitor, 0.1 μ F 16 V ceramic X7R 1206
2	C1, C2	Capacitor, 0.22 μ F 16 V ceramic X7R 1206
2	C3, C6	Capacitor, 10 μ F 16 V tantalum TE series
2	R1, R2	Resistor, 2.2 k Ω 1/8 W 5% 1206 SMD
3	R7, R8, R9	Resistor, 4.7 k Ω 1/8W 5% 1206 SMD
2	R3, R4	Resistor, 34 k Ω 1/8W 1% 1206 SMD
2	R5, R6	Resistor, 511 k Ω 1/8W 1% 1206 SMD
1	U1	TLV320AIC1106 IC, PCM codec, Prog. MIC AMP 20TSSOP
	Alternate	TLV320AIC1107 IC
1		TLV320AIC1106 PWB
1	J3	40-Pin SMT socket
1	P1	40-Pin SMT plug
3	W1, W2, W3	3 Position jumper
1	W4	2 Position jumper
2	J1 J2	2 Terminal screw connector
2	See assembly drawing	1.000/4-40, nylon, hex thread, SP
2	See assembly drawing	4-40 \times 1/4, machine screw, panhead SS

3.2 TLV320AIC1106/1107 Schematic

The schematic is on the following page.

Revision History	
REV	ECN Number
	Approved



12500 TI Boulevard. Dallas, Texas 75243

Title: TLV320AIC1106 / 07 Schematic

Engineer: Joe Purvis

Drawn By: Joe Purvis

FILE: AIC1106

Title: TLV320AIC1106 / 07 Schematic

DOCUMENT CONTROL #	6A37734	REV
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