



# AKD2301

## AK2301 Evaluation Board Manual

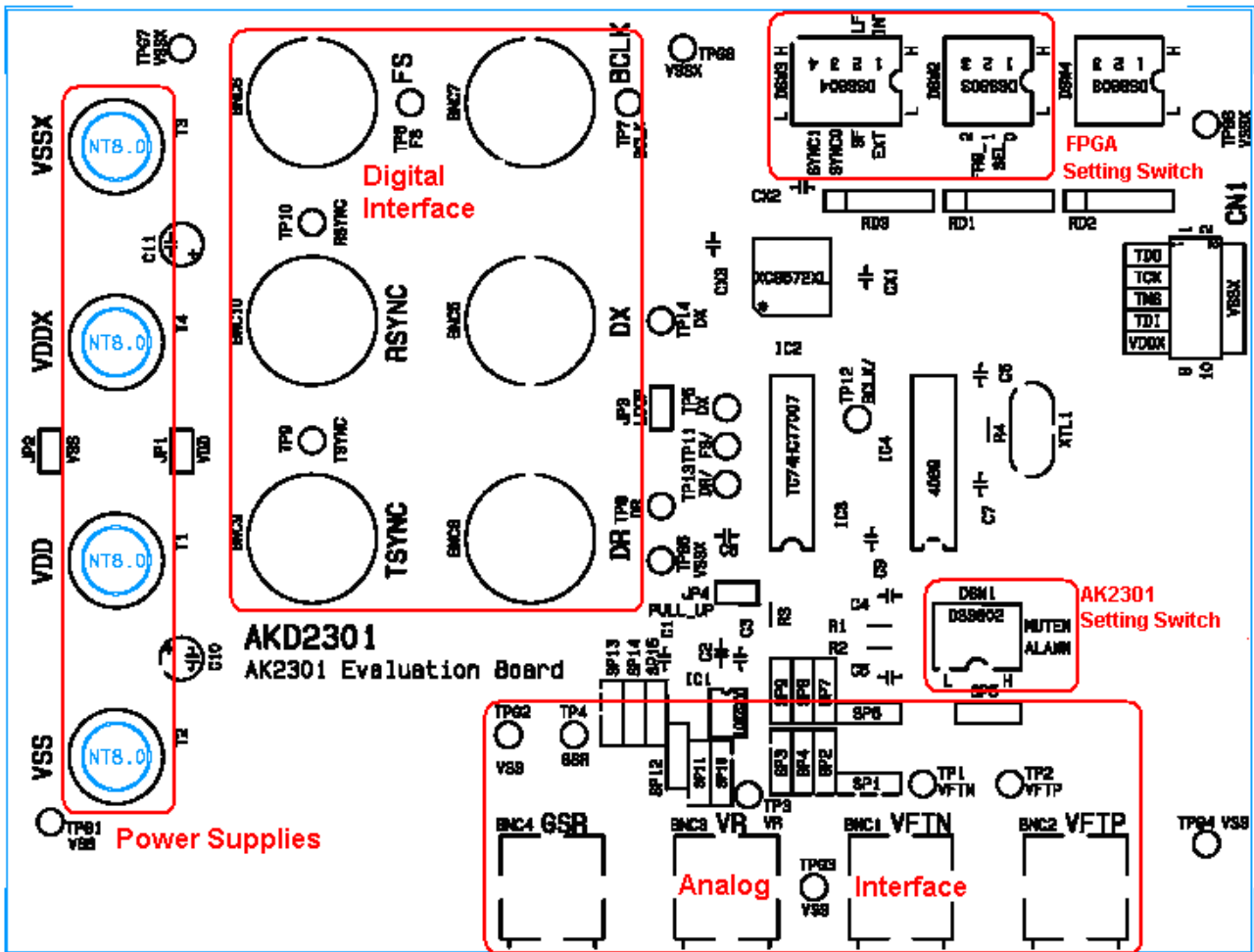
**FEATURES**

- 3.3V Single Power Supply
- External devices around In/Out put amplifier can be easily changed
- DIP Switch Settings
  - Clock Input <External Clock or On-board Clock >
  - PCM Interface <Short Frame or Long Frame>
  - BCLK Frequency <64k, 128k, 256k, 512k, 1024k, 2048kHz>
- SYNC Signal Output <TSYNC, RSYNC> \* Only when on-board clock is selected

**GENERAL DESCRIPTION**

The AKD2301 is an evaluation board for the AK2301. The AKD2301 has on-board (internal) clock generating function. DIP switch setting and 3.3V power supply are only what needed to start up the AKD2301. External resistances and capacitors of the I/O amplifier can be changed. Easy customization of the parameter is possible by it to meet user requirements.

**BOARD LAYOUT**



**POWER SUPPLY TERMINAL**

Power supply terminals are VDD, VSS, VDDX and VSSX. VDD and VSS are connected to the AK2301. VDDX and VSSX are connected to FPGA. Supply 3.3V to the VDD and VDDX, and connect the VSS and VSSX to GND. One power supply can cover the whole evaluation board by shorting VDD and VDDX by JP1, and VSS and VSSX by JP2. However, it has less noise without shorting power supply terminals.

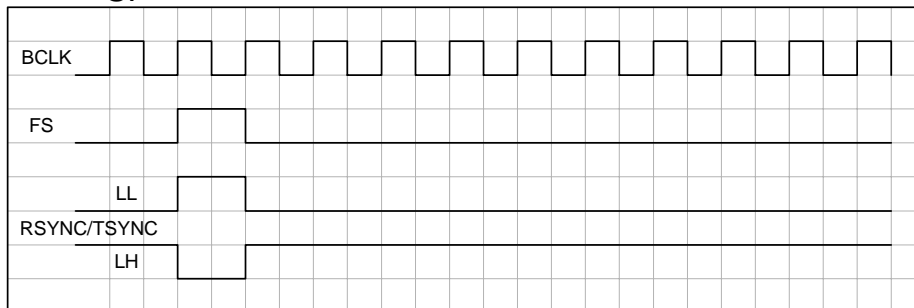
**FPGA SETTING SWITCH**

The DSW2 and DSW3 are switches for FPGA setting. \* The DSW4 is not used.  
The Functions of switches are shown below.

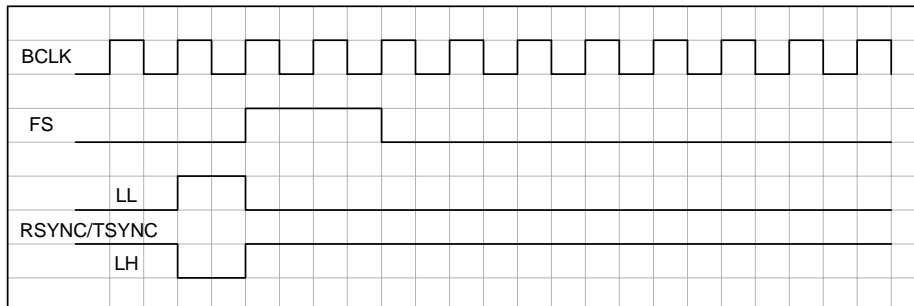
**DSW3**

Switch Name	Function
<b>SYNC1</b> <b>SYNC0</b>	<p><b>Mode Select</b> SYNC signals for external measuring instruments are output from the BNC connectors, which are TSYNC and RSYNC jacks, when the on-board clocks are used for FS and BCLK (the switch below; EXT/INT is set to INT).</p> <p>SYNC1   SYNC0</p> <p>L        L        See diagram below</p> <p>L        H        See diagram below</p> <p>H        ---      No output</p>
<b>SF/LF</b>	<p><b>PCM Interface Select</b> This switch selects PCM interface modes.</p> <p>SF: Short Frame</p> <p>LF: Long Frame</p>
<b>EXT/INT</b>	<p><b>BCLK, FS Clock Supply Mode Select</b> EXT: External clocks from the BNC connectors are used for BCLK and FS. INT: On-board clock is used for BCLK and FS.</p>

**SF**



**LF**



**DSW2**

Switch Name	Function
<b>FRQ_SEL</b>	<b>BCLK Frequency Select</b> Clock frequency which is supplied to the BCLK pin is selected.  bit2 bit1 bit0 L L L 64kHz L L H 128kHz L H L 256kHz L H H 512kHz H L L 1024kHz H L H 2048kHz H H --- No output

**DIGITAL INTERFACE**

The AKD2301 has six BNC connectors as digital interface.

Name	Function
<b>FS</b>	FS Input When using external clocks, FS should be input to this jack.
<b>BCLK</b>	BCLK Input When using external clocks, BCLK should be input to this jack.
<b>DR</b>	DR Data Input to the AK2301. When the JP3 is shorted, DX data is looped back to the DR pin.
<b>DX</b>	DX Data Output from the AK2301. When the JP3 is shorted, DX data is looped back to the DR pin.
<b>TSYNC</b>	Frame Synchronizing Signal Output for External Measuring Instruments These jacks output frame synchronizing signals for external measuring instruments. These are available when on-board clocks are used for FS and BCLK. The same signal is output from both TSYNC and RSYNC.
<b>RSYNC</b>	

**AK2301 SETTING SWITCH**

The DSW1 switch controls mute function of the AK2301 and A-law/ $\mu$ -law setting of the G711 CODEC.

**DSW1**

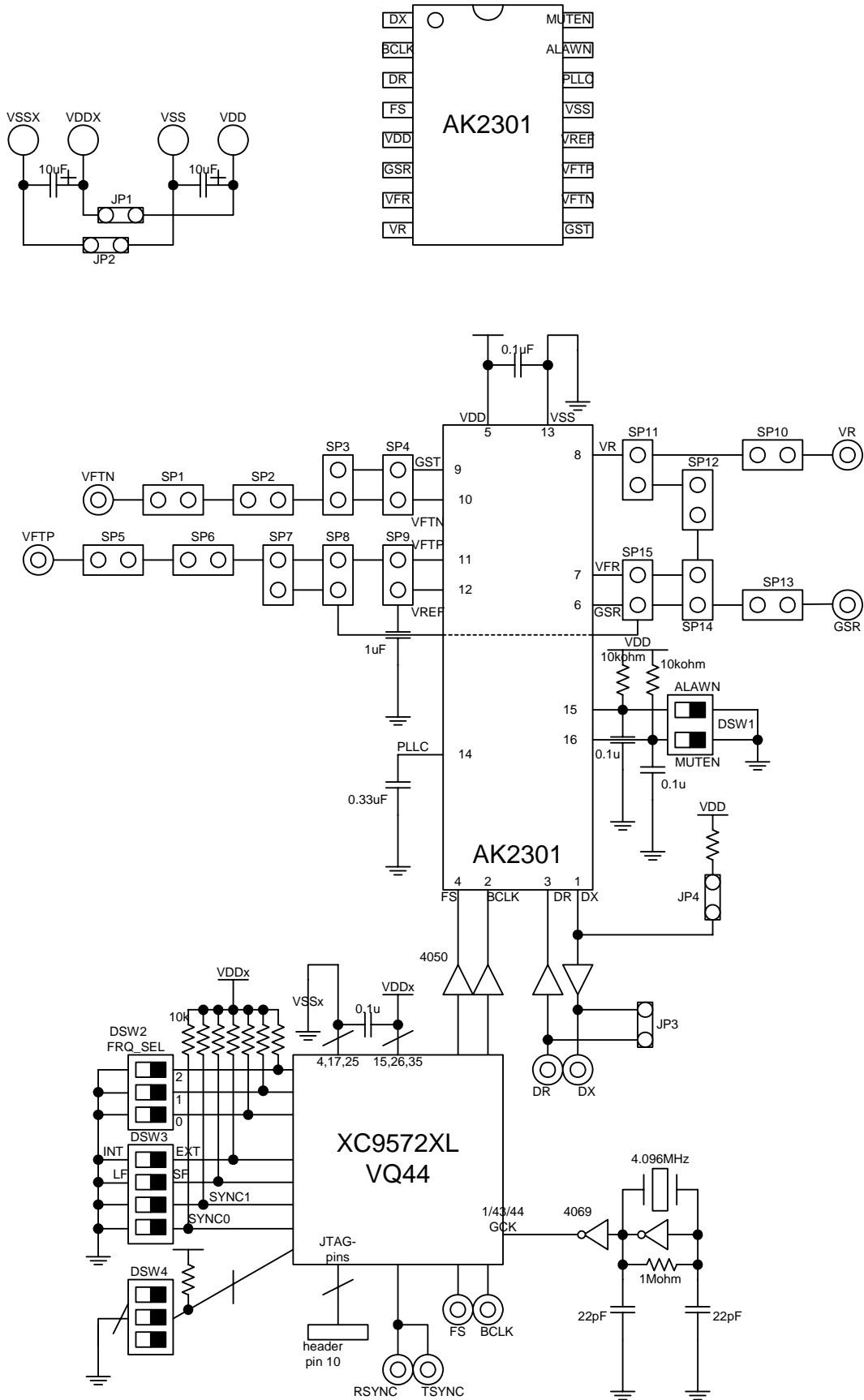
Switch Name	Function
<b>MUTEN</b>	H: Normal Operation L: Mute
<b>ALAWN</b>	H: $\mu$ -law L: A-law

**ANALOG INTERFACE**

The AKD2301 has two BNC connectors for transmitter amplifier input; VFTP and VFTN, and two BNC connectors for receiver amplifier outputs; GSR and VR. External resistors and capacitors for each amplifier are connected to socket so that easily changed to the required value. The default value of those resistors and capacitors are according to the recommended circuit example which is shown in AK2301's datasheet.

**BLOCK DIAGRAM**

The AKD2301 circuit construction is shown below.



<b>Revision History</b>
-------------------------

Date (yy/mm/dd)	Manual Revision	Board Revision	Reason	Page	Contents
10/01/12	KM102300	0	First edition		

IMPORTANT NOTICE

- These products and their specifications are subject to change without notice.  
When you consider any use or application of these products, please make inquiries the sales office of Asahi Kasei Microdevices Corporation (AKM) or authorized distributors as to current status of the products.
- AKM assumes no liability for infringement of any patent, intellectual property, or other rights in the application or use of any information contained herein.
- Any export of these products, or devices or systems containing them, may require an export license or other official approval under the law and regulations of the country of export pertaining to customs and tariffs, currency exchange, or strategic materials.
- AKM products are neither intended nor authorized for use as critical components<sup>Note1)</sup> in any safety, life support, or other hazard related device or system<sup>Note2)</sup>, and AKM assumes no responsibility for such use, except for the use approved with the express written consent by Representative Director of AKM. As used here:
  - Note1) A critical component is one whose failure to function or perform may reasonably be expected to result, whether directly or indirectly, in the loss of the safety or effectiveness of the device or system containing it, and which must therefore meet very high standards of performance and reliability.
  - Note2) A hazard related device or system is one designed or intended for life support or maintenance of safety or for applications in medicine, aerospace, nuclear energy, or other fields, in which its failure to function or perform may reasonably be expected to result in loss of life or in significant injury or damage to person or property.
- It is the responsibility of the buyer or distributor of AKM products, who distributes, disposes of, or otherwise places the product with a third party, to notify such third party in advance of the above content and conditions, and the buyer or distributor agrees to assume any and all responsibility and liability for and hold AKM harmless from any and all claims arising from the use of said product in the absence of such notification.