Wistron NeWeb Corporation

AVMD7300RX (SWA8)

Wireless Audio Module

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2011/3/20

VoiceMagic™ Module Datasheet

Point-to-Multipoint AVMD7300 Receiver for Wireless Audio Systems, based on Avnera's AV7300 IC

General Description

Every consumer wants to be free from wires, but system designers could never find a low-cost, high-quality, easy-to-use wireless audio solution for speakers, microphones, headphones and headsets on the market.

Avnera's proprietary wireless system changes the game by taking a new approach to wireless audio. The wireless protocol was designed from the ground up and delivers uncompressed stereo audio over the air without interference problems.

Avnera's wireless modules offer a low-touch, easy-to-integrate wireless audio solution and enable fast time to market by already solving the problem associated with FCC, antenna tuning and board optimization.

Avnera's AudioMagic technologies provide breakthrough wireless audio functionality with point-to-multipoint transport of uncompressed stereo PCM audio data from a single AVMD7300 or AVMD7300 sender and a total of up to four simultaneous AVMD7300 listeners.

Modules based upon Avnera's next generation AudioMagic silicon AV7300 incorporate enhanced error concealment, low audio jitter, low latency, reduced power consumption and digital audio interface for the receiver.

Applications

- ✓ Wireless audio transmitter for portable audio player
- ✓ Wireless speakers
  - o Rear/surround
  - o Subwoofer

Ordering Options

AVMD7300RX-DHNW: Digital audio-in, normal range, wire antennas

Features

- ✓ Uncompressed audio, point to multipoint capable (1 to 4)
- ✓ Digital Audio interface
- ✓ Digital audio path SNR: 106 dB (1 to 4) , 48 kHz sampling rate Dual Subcarrier Mode
- ✓ Sub 1 microsecond audio jitter end to end
- ✓ Less than 16 ms fixed audio latency
- ✓ 15m range
- ✓ Diversity antennas for multipath and fading mitigation
- ✓ Frequency range: 2.4 GHz ISM band, continuous dynamic frequency selection
- ✓ Forward error correction coding, error detection, and audio-specific error concealment
- ✓ Connector: 2mm header supports vertical or horizontal mounting (Contact Avnera for other options)
- ✓ Compatible with AVMD7300 modules
- ✓ Auto-search/synch and dynamic channel selection
- ✓ Sample rate converter: Support for 16, 20, 24, and 32 bit PCM words at 16, 22.05, 24, 32, 44.1, 48, and 96 kHz
- ✓ General purpose over-the-air (OTA) serial interface:
  - ✓ 2 kbps, bi-directional, full duplex
  - ✓ Support for meta-data and remote control commands

1 Table of Contents

2 Lists of Figures and Tables

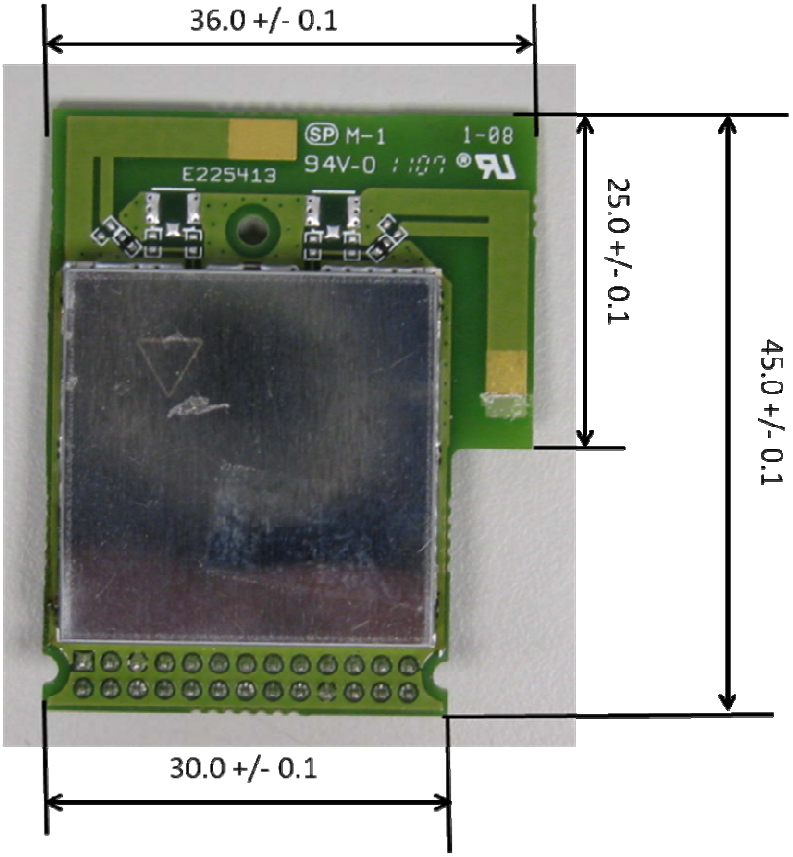
AVMD7300 Pin Information

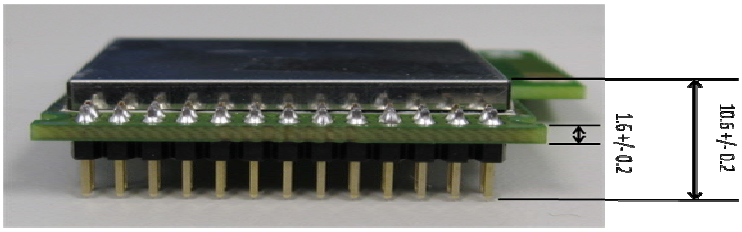
Table 1: AVMD7300RX Digital Input Pin Information (Standard 2mm Header)

Pin Number	Pin Name	Type	Pin Description
1	V3.3PA	Analog Power	Future option – no connect
2	AGND	Ground	Isolated ground for PA
3	V3.3	Power Input	Power input - (no connect if V5.0 is present)
4	V5.0	Power Input	Power input – (no connect if V3.3 is present)
5	GND	Ground	Ground
6	PWR_BTN	Power Button Input	Turn on chip power when pulled low. Connect to open drain output.
7	NC		No connect
8	NC		No connect
9	NC		No connect
10	NC		No connect
11	NC		No connect
12	RESET_N	Reset Input	Drive low to force the chip into the RESET state
13	BCLK PWM0 GPIO3	Multiplexed Digital	I2S bit clock PWM output for LED control GPIO
14	LRCLK PWM2 GPIO2	Multiplexed Digital	I2S word clock PWM output for LED control GPIO
15	ADINOUT1 PWM1 GPIO1	Multiplexed Digital	I2S data input/output PWM output for LED control GPIO
16	ADINOUT0 PWM0 GPIO0	Multiplexed Digital	I2S data input/output PWM output for LED control GPIO
17	PWM2 MCLK CFG_TESTMODE	Multiplexed Digital	PWM output for LED control Master clock output for I2S.
18	PWM0 ENC0_A ADINOUT2 GPIO6	Multiplexed Digital	PWM output for LED control Rotary Encoder port input A I2S data input/output GPIO
19	PWM1 ENC0_B GPIO7	Multiplexed Digital	PWM output for LED control Rotary Encoder port input B GPIO
20	GND	Ground	Ground
21	NC		No connect
22	NC		No connect
23	S_MOSI S_SCL GPIO12	Multiplexed Digital	SPI Slave MOSI (master out/slave in) data TWI Slave SCL GPIO
24	S_MISO S_SDA GPIO13	Multiplexed Digital	SPI Slave MISO (master in/slave out) data TWI Slave SDA GPIO
25	S_SCLK GPIO14 UART_RX	Multiplexed Digital	SPI Slave serial clock output GPIO UART RX pin
26	S_SSB	Multiplexed Digital	SPI Slave SSB output

	GPIO15		GPIO UART TX pin

3 AVMD7300 Mechanical Dimensions





4 Electrical Specifications

4.1 Absolute Maximum Ratings

Absolute Maximum Ratings (AMR) are stress ratings only. AMR corresponds to the maximum value that can be applied without leading to instantaneous or very short-term unrecoverable hard failure (destructive breakdown). Stresses beyond those listed under AMR may cause permanent damage to the device.

Functional operation of the device at these or any other conditions beyond those indicated under “Recommended Operating Range” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may adversely affect device reliability.

Device functional operating limits and guaranteed performance specifications are given under Electrical Characteristics at the test conditions specified.

CONDITION	MIN	MAX
CONDITION	MIN	MAX
V3.3 Supply Voltage Input	-0.3V	4.2V
V5.0 Supply Voltage Input	-0.3V	6.0V
Input Voltage Range – Digital Inputs	-0.3V	V_{VDDIO} + 0.3V
Operating Temperature	-40ºC	+85ºC
Storage Temperature	-40ºC	+100ºC
Static Discharge Voltage – HBM*	1000V	

*Terminology: HBM => ESD human body model

4.2 Recommended Operating Range

PARAMETER	MIN	TYP	MAX	UNIT
V3.3 pin voltage	3.0		3.6	V
V5.0	4.75		5.25	V
Ambient Temperature (T_A)	-20		40	ºC

4.3 Electrical Characteristics

Test Conditions: T_A=+25ºC

Table 2; AVMD7300RX Electrical Characteristics

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNIT
RF Frequency Range		2405		2477	MHz
Range (LOS)[1]	Normal range		15		m
Current consumption (normal range)	V3.3 (Active Audio Mode)		50		mA

5 Package Design

TBD

FCC Statement

Federal Communication Commission Interference Statement
This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

USERS MANUAL OF THE END PRODUCT:
The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. If the size of the end product is smaller than 8x10cm, then additional FCC part 15.19 statement is required to be available in the users manual: This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

LABEL OF THE END PRODUCT:
The final end product must be labeled in a visible area with the following " Contains TX FCC ID: NKR-SWA8 ". If the size of the end product is larger than 8x10cm, then the following FCC part 15.19 statement has to also be available on the label: This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

IC Statement

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B conforme á la norme NMB-003 du Canada.

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.
Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This device and its antenna(s) must not be co-located or operation in conjunction with any other antenna or transmitter.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

USERS MANUAL OF THE END PRODUCT:
In the users manual of the end product, the end user has to be informed that the IC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied. The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment. IC statement is required to be available in the users manual: This Class B digital apparatus complies with Canadian ICES-003. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

LABEL OF THE END PRODUCT:
The final end product must be labeled in a visible area with the following " Contains TX IC : 4441A-SWA8 ".