AzureWave Technologies, Inc.

AW-CU300AV3-USB

IoT Connectivity Evaluation Board for AWS IoT Core

Datasheet

Rev. A

DF

(For Standard)

Features

Wi-Fi

- Support 802.11 b/g/n
- Single stream 802.11n with 20 MHz
  Up to MCS7 data rates (72.2 Mbps)
- 4M Byte QSPI flash integrated.

MCU

- ARM Cortex-M4F, 32-bit, 200MHz main bus clock
- 128KB ROM, 512KB RAM

Revision History

Document NO: R2-2474-DST-02

Version	Revision Date	DCN NO.	Description	Initials	Approved
A	2020/10/22		● Initial Version	Renton Tao	N.C Chen

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1. Introduction

1.1 Product Overview

AzureWave presents **AW-CU300AV3-USB** Wi-Fi Microcontroller Smart Energy Platform Solution provides a highly cost-effective, flexible and easy to-use hardware/software platform to build a new generation of connected, smart devices. These smart-connected devices enable device to deliver a broad-range of services to consumers including energy-management, demand-response, home automation and remote access. This allows a user to manage comfort and convenience, also run diagnostics and receive alerts and notifications, in addition to managing and controlling the device. Developers can leverage the rich connectivity features of these new smart devices to create a new generation of innovative new applications and services

The platform builds upon the success of NXP's first-generation Wi-Fi microcontroller platform using the NXP 88MW320 Wi-Fi System-on-Chip (SoC), a 4MByte QSPI flash memory and NXP Easy Connect software.

The **AW-CU300AV3-USB** is powered by production quality, field-tested NXP Easy Connect software that includes a rich set of software components that work together to support the development of Smart Energy devices, and enable these devices to connect to mobile clients such as smart-phones, Internet-based Cloud and Smart-Grid services. The feature-rich software stack enables OEMs to focus on application-specific software functionality, thus enabling rapid development and reduced software development costs and risks.

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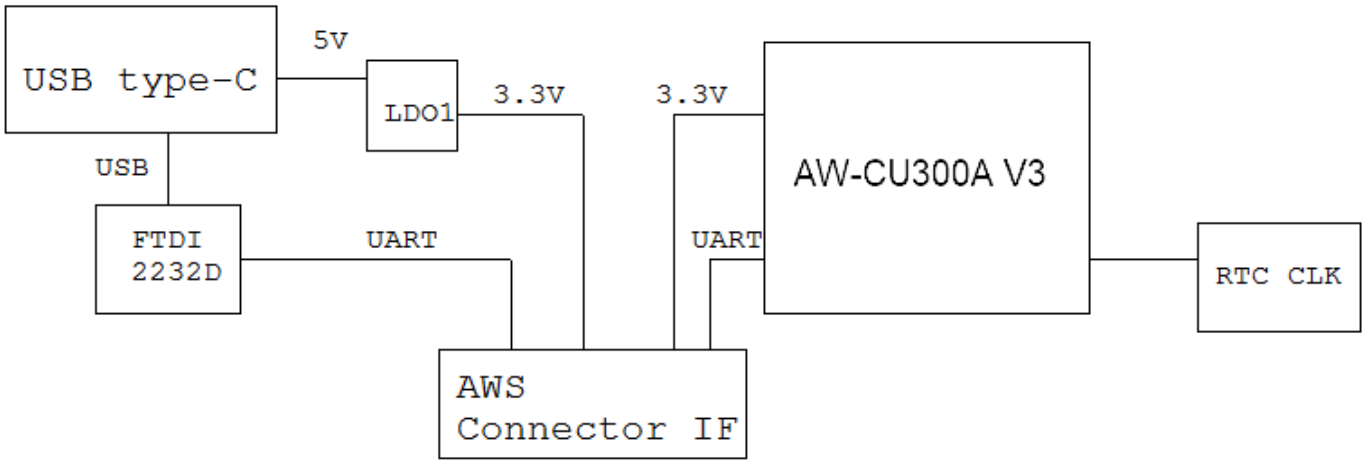
1.2 Block Diagram



1.3 Specifications Table

1.3.1 General

Features	Description
Product Description	IoT Connectivity Evaluation Board for AWS IoT Core
Major Chipset	NXP 88MW320 + QSPI flash
Host Interface	UART/USB
Dimension	75.11mm(L) x 20mm(W) x 10.85mm(H)
Package	USB 2.0 dongle with type C connector
Antenna	Internal Printed antenna
Weight	9g

1.3.2 WLAN

Features	Description
WLAN Standard	IEEE 802.11b/g/n, Wi-Fi compliant
Frequency Rage	WLAN: 2.4 GHz Band
Modulation	DSSS DBPSK(1Mbps), DQPSK(2Mbps), CCK(11/5.5Mbps) OFDM BPSK(9/6Mbps), QPSK(18/12Mbps), DBPSK(1Mbps), DQPSK(2Mbps), CCK(11/5.5Mbps), 16-QAM(36/24Mbps), 64-QAM (72.2/54/48Mbps)
Number of Channels	802.11b: ● USA, Canada and Taiwan – 1 ~ 11 ● Most European Countries – 1 ~ 13 ● Japan – 1 ~ 13 802.11g: ● USA and Canada – 1 ~ 11 ● Most European Countries – 1 ~ 13 802.11n: ● USA and Canada – 1 ~ 11

	● Most European Countries – 1 ~ 13
Data Rate	802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0~7 HT20
Security	● WPA™- and WPA2™- (Personal) support for powerful encryption and authentication ● WPA3 ● AES and TKIP acceleration hardware for faster data encryption and 802.11i compatibility ● WEP ● WAPI

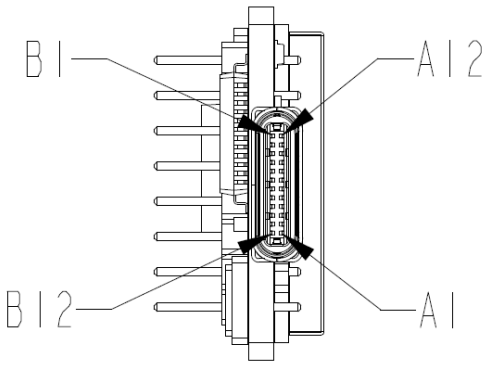
1.3.3 Operating Conditions

Features	Description
Operating Conditions	
Voltage	VDD_33 for AW-CU300A V3: 3.3V VBUS from USB:5V
Operating Temperature	0~50 °C
Operating Humidity	less than 85% R.H.
Storage Temperature	-10~60°C
Storage Humidity	less than 60% R.H.
ESD Protection	
Human Body Model	TBD
Changed Device Model	TBD

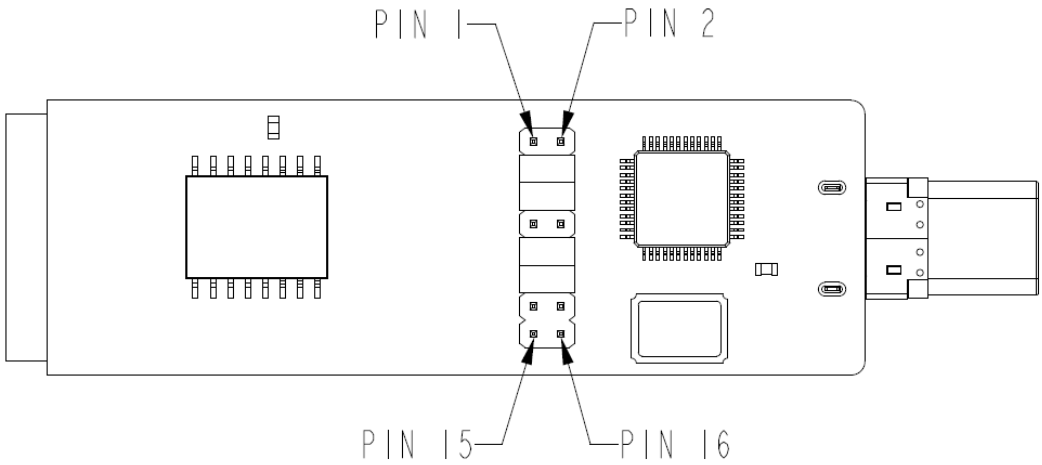
2. Pin Definition

2.1 Pin Map

2.1.1 USB Connector



2.1.2 Pin Header Connector



2.2 Pin Table

2.2.1 USB Connector

Pin No	Definition	Basic Description	Voltage	Type
A1	GND_A1	Ground.		GND
A2	SSTXP1	Floating Pin, No connect to anything.		Floating
A3	SSTXN1	Floating Pin, No connect to anything.		Floating
A4	VBUS1	5V VBUS power input	5V	PWR
A5	CC1	Configuration channel. Pulled low with a 5.1K ohms resistor on the module		I
A6	DP1	USB 2.0 differential pair, position 1, positive. This pin is connected to pin B6 on the module		I/O
A7	DN1	USB 2.0 differential pair, position 1, negative. This pin is connected to pin B7 on the module		I/O
A8	SBU1	Floating Pin, No connect to anything.		Floating
A9	VBUS2	5V VBUS power input	5V	PWR
A10	SSRXN2	Floating Pin, No connect to anything.		Floating
A11	SSRXP2	Floating Pin, No connect to anything.		Floating
A12	GND_A12	Ground.		GND
B1	GND_B1	Ground.		GND
B2	SSTXP2	Floating Pin, No connect to anything.		Floating
B3	SSTXN2	Floating Pin, No connect to anything.		Floating
B4	VBUS4	5V VBUS power input	5V	PWR
B5	CC2	Floating Pin, No connect to anything.		Floating
B6	DP2	USB 2.0 differential pair, position 2, positive. This pin is connected to pin A6 on the module		I/O
B7	DN2	USB 2.0 differential pair, position 2, negative. This pin is connected to pin A7 on the module		I/O

B8	SBU2	Floating Pin, No connect to anything.		Floating
B9	VBUS3	5V VBUS power input	5V	PWR
B10	SSRXN1	Floating Pin, No connect to anything.		Floating
B11	SSRXP1	Floating Pin, No connect to anything.		Floating
B12	GND_B12	Ground.		GND

2.2.2 Pin Header Connector

Pin No	Definition	Basic Description	Voltage	Type
1	RESETn	External reset I/O pin(pulled up by a 100K ohms resistor internally)(active low)	VDD_33	I
3	GPIO_48	GPIO_48, programmed as UART TXD for AICC by default	VDD_33	O
5	GPIO_49	GPIO_49, programmed as UART RXD for AICC by default	VDD_33	I
7	GPIO_4	GPIO_4, programmed as EN pin for AICC by default	VDD_33	I
9	GND_9	Ground		GND
11	VDD_33	Power supply input for AW-CU300A V3	3.3V	PWR
13	GPIO_5	GPIO_5, programmed as INT pin for AICC by default	VDD_33	O
15	GPIO_10	GPIO_10, programmed as MSG pin for AICC by default	VDD_33	I
2	NC_2	Floating Pin, No connect to anything.		Floating
4	FT_UART_RXD	FTDI FT2232D UART Rx	3.3V	I
6	FT_UART_TXD	FTDI FT2232D UART Tx	3.3V	O
8	NC_8	Floating Pin, No connect to anything.		Floating
10	GND_10	Ground.		GND
12	VDD_33_USB	Power supply output from the internal LDO	3.3V	PWR

14	**NC_14**	**Floating Pin, No connect to anything.**		**Floating**
16	**NC_16**	**Floating Pin, No connect to anything.**		**Floating**

3. Electrical Characteristics

3.1 Absolute Maximum Ratings

Symbol	Parameter	Minimum	Typical	Maximum	Unit
VDD_33	Power supply for AW-CU300A V3	-0.5		3.6	V
VBUS	Power Supply from USB	-0.3		6	

3.2 Recommended Operating Conditions

Symbol	Parameter	Minimum	Typical	Maximum	Unit
VDD_33	Power supply for AW-CU300A V3		3.3		V
VBUS	Power Supply from USB		5		V

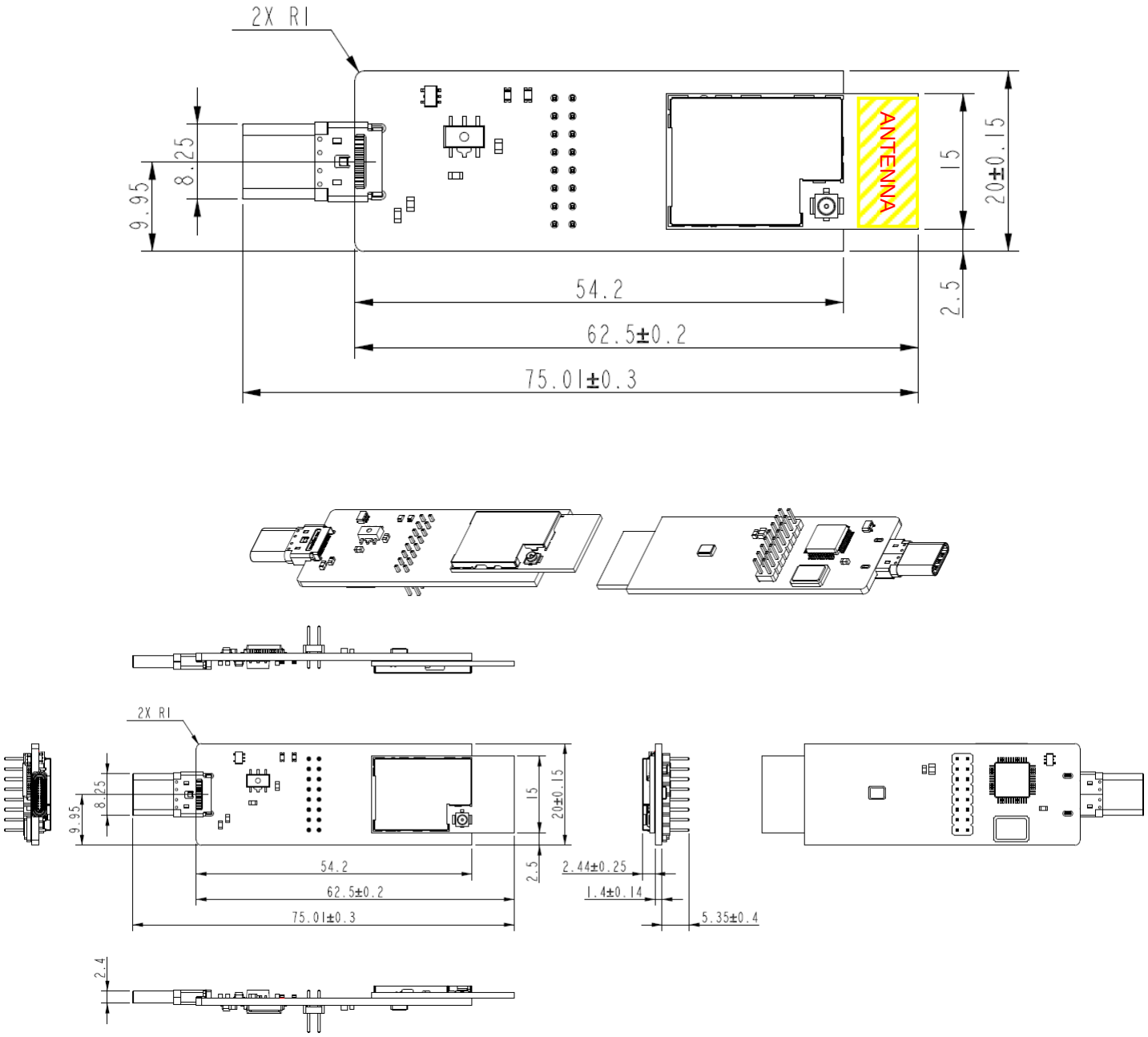
3.3 Digital IO Pin DC Characteristics

Symbol	Parameter	Minimum	Typical	Maximum	Unit
V_{IH}	Input high voltage	0.7* M_3V3	-	M_3V3+0.4	V
V_{IL}	Input low voltage	-0.4	-	0.3* M_3V3	
V_{OH}	Output High Voltage	M_3V3-0.4	-	-	
V_{OL}	Output Low Voltage	-	-	0.4	
V_{HYS}	Input Hysteresis	100			mV

4. Mechanical Information

4.1 Mechanical Drawing

**Keep out distance of the antenna is > 10mm for non-conductive materials & 20mm for conductive materials.*



5. Additional Information

The AW-CU300AV3-USB is designed for **Engineering Evaluation Purpose** Only as opposed to an end product. Thus, it may not comply with directives such as WEEE, CE and FCC. The dongle is not completely enclosed with a shielding case. User must take whatever measures to prevent ESD and minimize interference generated by the dongle. **For preventing any damage on this dongle, please plug it into USB female port horizontally**.