

AW-NE238H

IEEE 802.11b/g/n Wi-Fi Half Mini Card

Datasheet

Version 0.1

AZUREWAVE CONFIDENTIAL

Revision History

Document Release	Date	Modification	Initials	Approved
Version 0.1	2012/06/01	First release	Johnny	Eric Lee

AZUREWAVE CONFIDENTIAL

1. Introduction

AzureWave Technologies, Inc. introduces the pioneer of the IEEE 802.11b/g/n Wi-Fi half mini card module ---**AW-NE238H**. The AW-NE238H IEEE 802.11 b/g/n PCIE WIFI module is a highly integrated wireless local area network (WLAN) solution to let users enjoy the digital content through the latest wireless technology without using the extra cables and cords. It enables a **high performance, cost effective, low power, compact solution** that easily fits onto two sides of the PCI Express half mini Card.

Compliant with the IEEE 802.11b/g/n standard, AW-NE238H uses Direct Sequence Spread Spectrum (**DSSS**), Orthogonal Frequency Division Multiplexing (**OFDM**), **BPSK, QPSK, CCK** and **QAM** baseband modulation technologies.

Compare to 802.11g technology, 802.11n standard makes big improvement on speed and range.

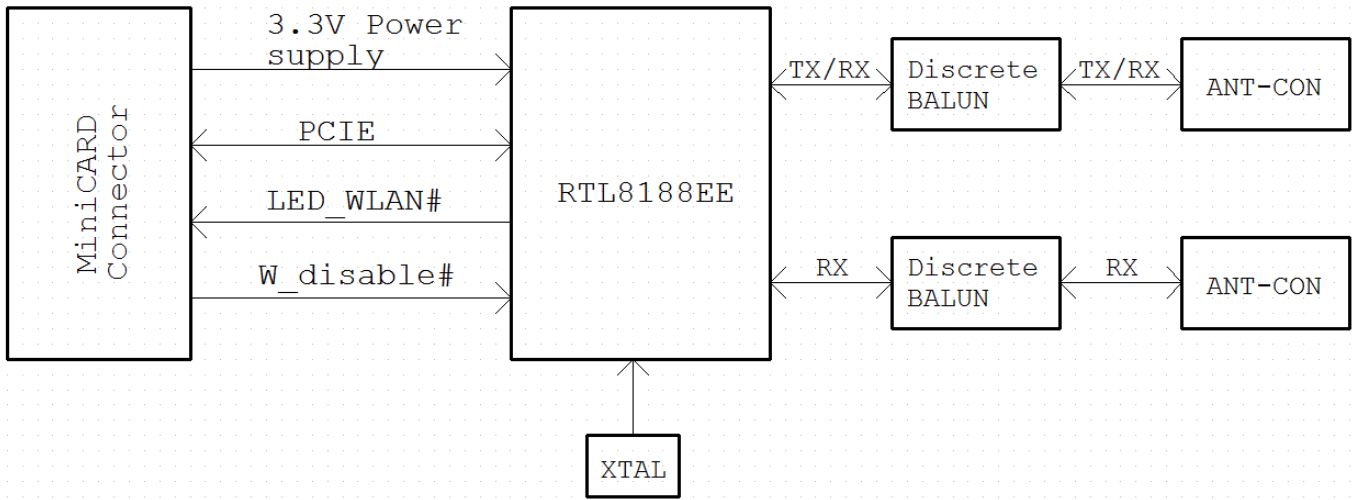
Faster Speed: WLAN up to 150Mbps data rate.

AW-NE238H module adopts Realtek **RTL8188EE** solution. The module design is based on the Realtek RTL8188EE solution

2. Features

- ◆ **High speed wireless connection up to 150 Mbps for Wi-Fi**
- ◆ **2 antennas to support 1(Transmit) × 1(Receive) diversity technology**
- ◆ **Low power consumption and high performance**
- ◆ **Enhanced wireless security**
- ◆ **Support Wake up on Wireless LAN**

3. Block Diagram



AZUREWAVE CONFIDENTIAL

4. General Specifications

Model Name	AW-NE238H
Product Description	IEEE 802.11 b/g/n Wi-Fi half mini card Module
Host Interface	PCI-E
Major Chipset	Realtek RTL8188EE
Dimension	26.65 mm X 29.85 mm x 3.15 mm
Weight	TBC
Antenna	Hirose* U.FL-R-SMT 1: Ant1 : Wi-Fi Tx/RX 2: Ant2 : Wi-Fi RX
Operating Conditions	
Voltage	3.3V +/- 5%
Temperature	0~80 °C
Storage temperature	-40~+85 °C
Electrical Specifications	
Frequency Range	2.4 GHz ISM Bands 2.412-2.472 GHz, 2.484 GHz /
Modulation	802.11g/n: OFDM 802.11b: CCK(11, 5.5Mbps), DQPSK(2Mbps), DBPSK(1Mbps)
Output Power	802.11b: TBC dBm +/-1.5dBm (11Mbps) 802.11g: TBC dBm +/-1.5dBm (54Mbps) 802.11n: TBC dBm +/-1.5dBm (HT20 MCS7) 802.11n: TBC dBm +/-1.5dBm (HT40 MCS7)
Receive Sensitivity	802.11b: less than -76 dBm (11Mbps) 802.11g: less than -65 dBm (54Mbps) 802.11n: less than -64 dBm at HT20 MCS7 less than -61 dBm at HT40 MCS7
Operating Range	TBC
Regulatory	FCC, CE...

AZU

4-1. Recommended Operating Conditions

Symbol	Parameter	Rating	Unit
V _{dd33}	I/O voltage	3.135~3.465	V

4-2. Logic Level Characteristics

V_{cc}=+3.3V +/- 5%

V_{IH} (min)= 2.0V (v)

V_{IL} (max)= 0.9V (v)

V_{IH}=input high Voltage

V_{IL}=input low Voltage

CONFIDENTIAL

4-3. LED mode behavior

State	Definition	Interpretation
OFF	The LED is emitting no light.	Radio is incapable of transmitting. This state is indicated when the card is not powered, the W_DISABLE# signal is asserted to disable the radio, or when the radio is disabled by software.
ON	The LED is emitting light.	Radio is capable of transmitting. The LED should remain ON even if the radio is not actually transmitting. For example, the LED remains ON during temporary radio disablements performed by the Mini Card of its own volition to do scanning, switching radios/bands, power-management, etc. If the card is in a state wherein it is possible that radio can begin transmitting without the system user performing any action, this LED should remain ON.

4-4. Power UP Sequencing

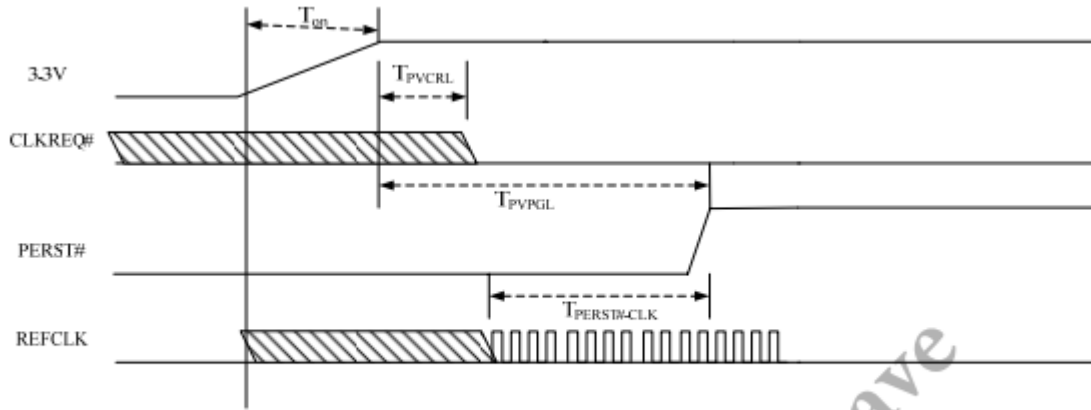


Figure 5. RTL8188EE PCIe Bus Power On Sequence

- T_{on}: The main power ramp up duration
- T_{PVCRL}: Power valid to CLKREQ# output active
- T_{PVPGI}: Power valid to PERST# input inactive
- T_{PERST#-CLK}: Reference clock stable before PERST# inactive

Table 11. The typical timing range

symbol	Unit	Min	Typical	Max
T _{on}	ms		1.5	5
T _{PVCRL}	us			100
T _{PVPGI}	ms	1		--
T _{PERST#-CLK}	us	100		--

4-5. Power Consumption

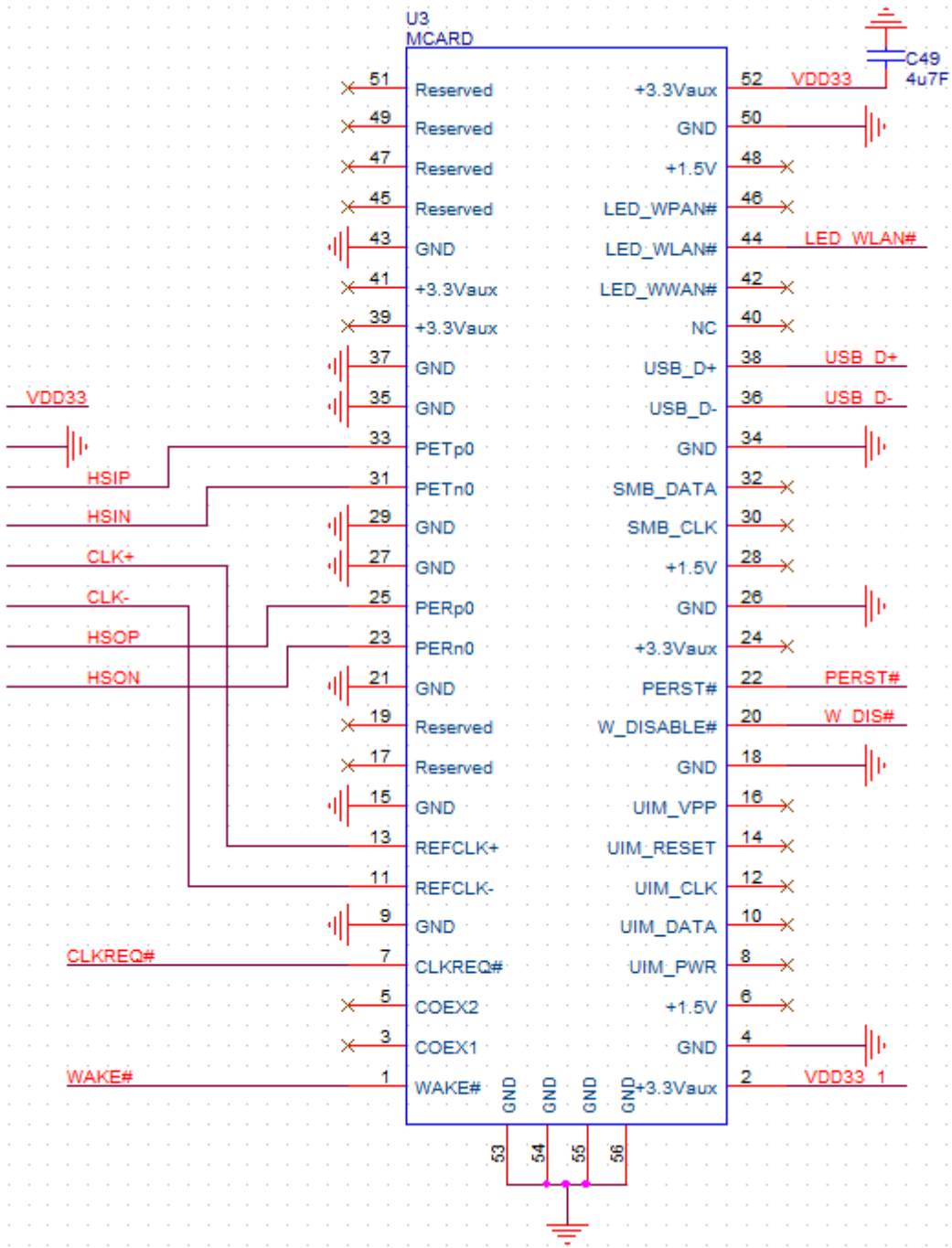
States	States	Current(mA)/3.3V
Max TX power Consumption	Cont Tx	TBC
Max RX power Consumption	Cont Rx	TBC

5. Connector Pin-out Definitions

Pin No.	Definition	Basic Description	Type
1	WAKE#	Power management event : open drain, active low Use to reactivate the PCI Express slot's main power rails and reference clocks. Connected internally to RTL8188EE. S/W not support. Not support the function.	O/D
2	3.3V	3.3V power supply.	VCC
3	NC	No connect. Should be left open.	
4	GND	Ground.	GND
5	NC	No connect. Should be left open.	
6	NC	No connect. Should be left open.	
7	CLKREQ_L	Reference clock request	Output
8	NC	No connect. Should be left open.	
9	GND	Ground.	GND
10	NC	No connect. Should be left open.	
11	REFCLK-	Differential reference clock.	Input
12	NC	No connect. Should be left open.	
13	REFCLK+	Differential reference clock.	Input
14	NC	No connect. Should be left open.	
15	GND	Ground.	GND
16	NC	No connect. Should be left open.	
17	NC	No connect. Should be left open.	
18	GND	Ground.	GND
19	NC	No connect. Should be left open.	
20	W_DISABLE_L	WLAN disable control.	Input
21	GND	Ground.	GND
22	PERST_L	PCI express fundamental reset.	Input
23	PERN0	Differential transmit.	Output
24	NC	No connect. Should be left open.	
25	PERP0	Differential transmit.	Output
26	GND	Ground.	GND
27	GND	Ground.	GND
28	NC	No connect. Should be left open.	
29	GND	Ground.	GND
30	NC	No connect. Should be left open.	
31	PETN0	Differential receive.	Input
32	NC	No connect. Should be left open.	
33	PETP0	Differential receive.	Input
34	GND	Ground.	GND
35	GND	Ground.	GND
36	NC	No connect. Should be left open.	

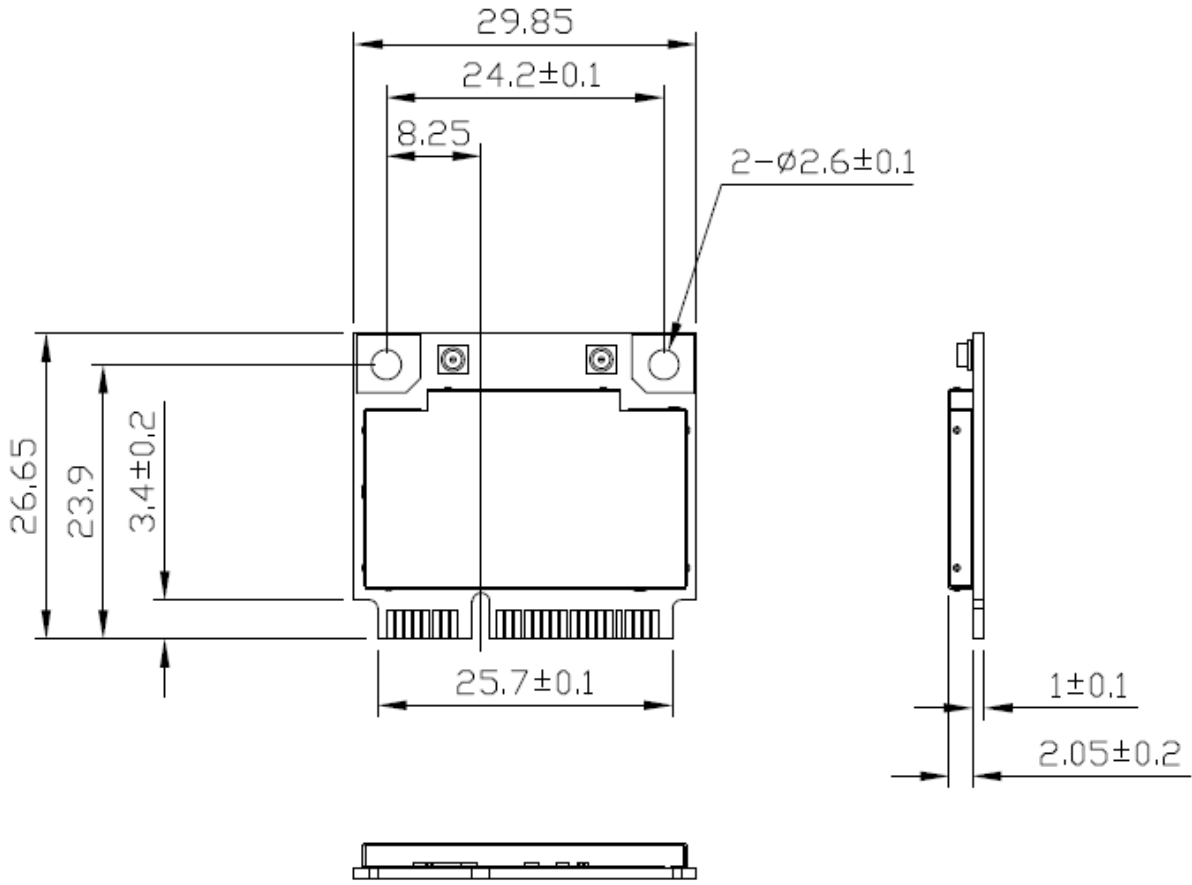
37	GND	Ground.	GND
38	NC	No connect. Should be left open.	
39	NC	No connect. Should be left open.	
40	NC	No connect. Should be left open.	
41	NC	No connect. Should be left open.	
42	NC	No connect. Should be left open.	
43	GND	Ground.	GND
44	LED_WLAN_L	Active low signal. The signal is used to provide status indicators via LED.	Output
45	NC	No connect. Should be left open.	
46	NC	No connect. Should be left open.	
47	NC	No connect. Should be left open.	
48	NC	No connect. Should be left open.	
49	NC	No connect. Should be left open.	
50	GND	Ground.	GND
51	NC	No connect. Should be left open.	
52	3.3V	3.3V power supply.	VCC

AZUREWAVE.COM



AZURA

6. Mechanical Dimensions



Tolerances unless otherwise specified : ±0.15mm

AZUREWA

7. Module Photo

TBC

AZUREWAVE CONFIDENTIAL