
# NW-0101 Module Datasheet

Version 1.0

# 1. Description

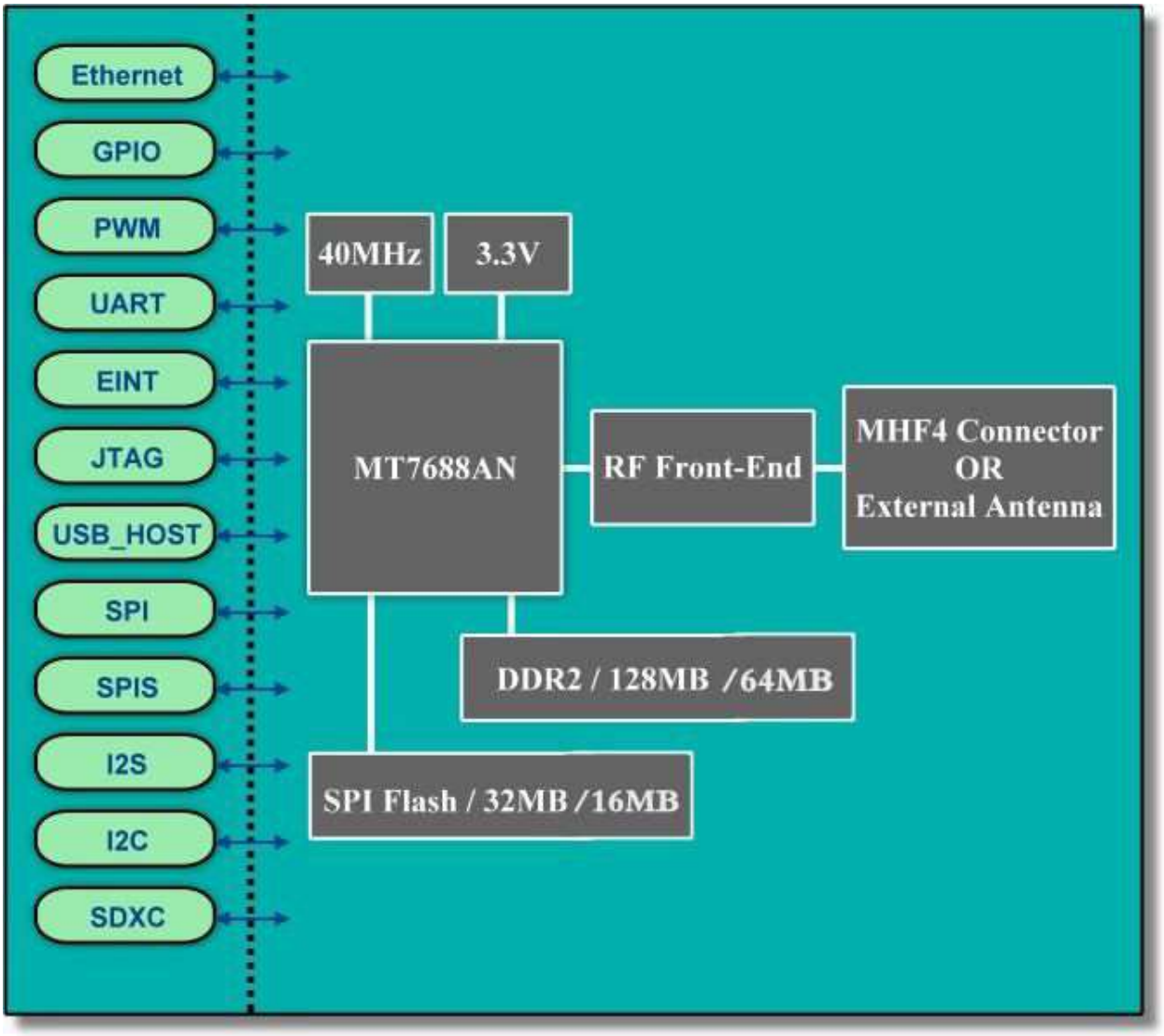
The NW0101 is a highly integrated module designed by RYSE Inc.. It utilizes the Mediatek MT7688AN System on a Chip (SoC) device which is based on the MIPs 24K CPU processor core. The SoC includes 802.11b/g/n Wi-Fi, making the Omega2 ideal for Internet of Things (IoT) applications and projects. In addition to the SoC, the module includes DDR2 DRAM, Flash memory, and all of the components necessary to allow this product to be a fully functional and complete device.

- Mechanical dimensions and footprint: 20mm x 34mm, 2.8mm high
- Greater quantity of I/O signals available to the user, 42 I/O.
- No SD Card slot on the bottom.
- No Wifi chip antenna. An external antenna must be connected.

# 2. Key features

- Embedded MIPS24KEc (580 MHz) with 64 KB I-Cache and 32 KB D-Cache
- 1T1R 2.4 GHz with 150 Mbps PHY data rate
- Legacy 802.11b/g and HT 802.11n modes
- 20/40 MHz channel bandwidth
- Green AP/STA - Intelligent Clock Scaling (exclusive) - DDRII: ODT off, Self-refresh mode
- 1-port 10/100 FE PHY
- x1 USB 2.0 Host
- SPI/SD-XC/eMMC
- SPI, I2C, I2S, PWM, PCIe, UART, GPIO
- An optimized PMU
- WEP64/128, AES, WPA, WPA2, WAPI
- LEDE Linux Operating System

## 3. Block Diagram



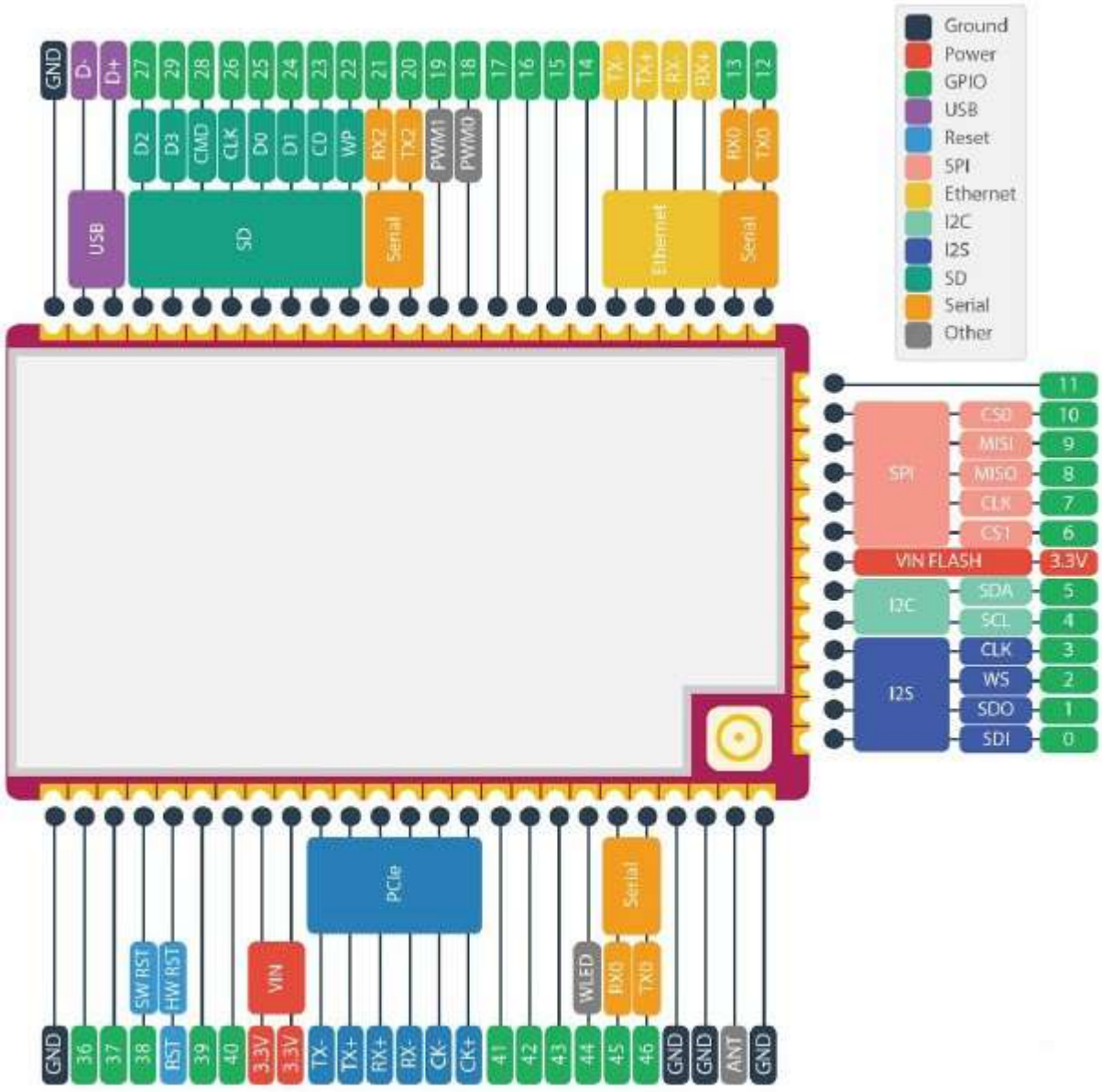
## 3.1 Specifications

4.

| Item | parameter |
|---|---|
| Chipset | MT7688AN |
| Core | MIPS24KEc |
| Clock Speed | 580MHz |
| Memory | |
| Flash | 16MB or 32MB |
| DDR2 DRAM | 64MB or 128MB |
| WIFI Protocol and Interface Standard | |
| WiFi protocol | IEEE 802.11 b/g/n |
| Ethernet | 1 10M/100M |
| USB 2.0 Host | 1 |
| SDIO/eMMC | 1 |
| SPI | 1 |
| I2C | 1 |
| I2S | 1 |
| PCIe | 1 |
| UART | 3 |
| PWM | 4 |
| GPIO | Up to 30 |
| Power Supply Requirement | |
| DC Input | 3.3V |
| No-load Running Current | 200±40mA |
| Supply Current Requirement | More than 800mA |
| Operation Conditions | |
| Ambient Temperature | -10°C ~ 55 °C |
| Storage Temperature | -20°C ~ 80° C |
| Operating Humidity | 10%-95%RH (Non-Condensing) |
| Storage Humidity | 5%-95%RH (Non-Condensing) |
| Dimension | |
| Size | 34*20*2.8mm |

## Pin-Out Information

## 4.1. PinOut Diagram




## 4.2 Pin Defanations

| No | PIN Name | Description |
|---|---|---|
| A1 | GPIO_0/I2S_SDI | General Purpose I/O / I2S Data Input |
| A2 | GPIO_1/I2S_SDO | General Purpose I/O / I2S Data Output |
| A3 | GPIO_2/I2S_WS | General Purpose I/O / I2S word select |
| A4 | GPIO_3/I2S_CLK | General Purpose I/O / I2S clock |
| A5 | GPIO_4/I2C_SCLK | General Purpose I/O / I2C clock |
| A6 | GPIO_5/I2C_SD | General Purpose I/O / I2C Data |
| A7 | VDD_FLASH | 3.3V FLASH Power Supply |
| A8 | SPI_CS1 | SPI chip select1 |
| A9 | SPI_CLK | SPI clock |
| A10 | SPI_MISO | SPI Master input/Slave output |
| A11 | SPI_MOSI | SPI Master output/Slave input |
| A12 | SPI_CS0 | SPI chip select 0 |
| A13 | GPIO_11 | General Purpose I/O |
| | | |
| B1 | GPIO_12 /UART_TXD0 | General Purpose I/O / UART0 Lite TXD |
| B2 | GPIO_13 /UART_RXD0 | General Purpose I/O / UART0 Lite RXD |
| B3 | RXI_P0 | 10/100 PHY Port #0 RXP |
| B4 | RXI_N0 | 10/100 PHY Port #0 RXN |
| B5 | TXO_P0 | 10/100 PHY Port #0 TXP |
| B6 | TXO_N0 | 10/100 PHY Port #0 TXN |
| B7 | GPIO_14 | General Purpose I/O |
| B8 | GPIO_15 | General Purpose I/O |
| B9 | GPIO_16 | General Purpose I/O |
| B10 | GPIO_17 | General Purpose I/O |
| B11 | GPIO_18/PWM_CH0 | General Purpose I/O / PWM Channel 0 |
| B12 | GPIO_19/PWM_CH1 | General Purpose I/O / PWM Channel 1 |

| | | |
|---|---|---|
| B13 | GPIO_20/PWM_CH2/UART_TXD2 | General Purpose I/O / PWM Channel 2/UART2 Lite TXD |
| B14 | GPIO_21/PWM_CH3/UART_RXD2 | General Purpose I/O / PWM Channel 3/UART2 Lite RXD |
| B15 | SD_WP | SD Write-protect, 1 : yes, 0 : no |
| B16 | SD_CD | Card Detection, 1 : No card ; 0 : Has a card |
| B17 | SD_D1 | SDIO Data 1 |
| B18 | SD_D0 | SDIO Data 0 |
| B19 | SD_CLK | SDIO Clock |
| B20 | SD_CMD | SDIO Command |
| B21 | SD_D3 | SDIO Data 3 |
| B22 | SD_D2 | SDIO Data 2 |
| B23 | USB_DP | USB Port0 data pin Data+ |
| B24 | USB_DM | USB Port0 data pin Data- |
| B25 | GND | Ground pin |
| | | |
| C1 | GND | Ground pin |
| C2 | WIFI_RF | RF output |
| C3 | GND | Ground pin |
| C4 | GND | Ground pin |
| C5 | GPIO_46/UART_RXD1 | General Purpose I/O / UART1 Lite RXD |
| C6 | GPIO_45/UART_TXD1 | General Purpose I/O / UART1 Lite TXD |
| C7 | WLED_N | WLAN Activity LED |
| C8 | GPIO_43 | General Purpose I/O |
| C9 | GPIO_42 | General Purpose I/O |
| C10 | GPIO_41 | General Purpose I/O |
| C11 | PCIE_CKP0 | External reference clock output (positive) |
| C12 | PCIE_CKN0 | External reference clock output (negative) |
| C13 | PCIE_RXN0 | PCIe0 differential receiver RX - |
| C14 | PCIE_RXP0 | PCIe0 differential receiver RX + |

| | | |
|---|---|---|
| C15 | PCIE_TXP0 | PCIe0 differential transmit TX + |
| C16 | PCIE_TXN0 | PCIe0 differential transmit TX - |
| C17 | 3.3V | 3.3V Power Supply |
| C18 | 3.3V | 3.3V Power Supply |
| C19 | GPIO_40/LINK3 | General Purpose I/O |
| C20 | GPIO_39/LINK4 | General Purpose I/O |
| C21 | CPURST_N | Power on reset |
| C22 | GPIO_38/WPS_RST_PBC | General Purpose I/O / Default User Button |
| C23 | GPIO_37/REFCLK | General Purpose I/O / Reference Clock Output |
| C24 | GPIO_36/PERST_N | General Purpose I/O / PCIe device reset |
| C25 | GND | Ground |

## 5. Mechanical Drawing and Specifications