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## Wireless Hi Sensitivity Receiver Module (RF ASK)

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### Version History

| Version | Date         | Changes                   |
|---------|--------------|---------------------------|
| V1.01   | Jan.29, 2000 | 1 <sup>st</sup> . Edition |

The RWS-A868 Module receiver is ideal for short-range wireless control and data applications where robust operation, small size, low power consumption and low cost are required. The RWS-A868 MODULE All critical RF functions are contained in the MODULE, simplifying and speeding design-in. The RWS-A868 is sensitive and stable. A wide dynamic range log detector, in combination with digital RSSI and a compound data slicer, provide robust performance in the presence of on-channel interference or noise. FCC 15.249 and similar regulations. CAUTION: Electrostatic Sensitive Device. Observe precautions when handling.

Notes:

1. OOK BER measured with no DS1 threshold (DS2 disabled), and data encoded for DC-balance with a run length limited to 4 bit periods.
2. ASK BER measured with a 25 mV DS1 threshold, DS2 threshold 6 dB below peak, and data encoded for DC-balance with a run length limited to 4 bit periods.
3. Sleep to receive recovery time is for the sleep period and signal level indicated, -40 to 60 C.Recovery time will increase at higher temperatures, for longer sleep intervals and lower signal levels.9600BSP to change 100KBPS cut capacitance a.b.c

- Frequency Range: 868.35 MHz
- Modulate Mode: ASK
- Circuit Shape: PLL
- Data Rate: 3K~100 K BPS
- Sensitivity: -112 dBm
- Channel Spacing: 200 KHZ
- Supply Voltage: 2.7~ 5.5 V
- High Sensitivity Passive Design.
- Simple To Apply with Low External Count.
- Designed for Short-Range Wireless Control and Data Communications
- Supports RF Data Transmission Rates Up to 200 kbps
- 2.4 V, Low Current Operation plus Sleep Mode
- Stable, Easy to Use, Low External Parts Count

### Absolute Maximum Rating

| Rating                                  | Value        | Unit |
|---|--------------|------|
| Power Supply and All Input /Output Pins | -0.3 to +4.0 | V    |
| Non-Operating Case Temperature          | -10 to +70   | °C   |
| Soldering Temperature(10 seconds)       | 230          | °C   |

**Electrical Characteristic, 200 kbps On-Off Keyed, Low-Current RX Mode**

| Characteristic                        | Sym  | Note | Min    | Type | Max    | Unit |
|---------------------------------------|------|------|--------|------|--------|------|
| Operating Frequency                   | fO   |      | 868.35 |      | 914.20 | MHz  |
| Receiver Performance (OOK @ 2.4 kbps) |      |      |        |      |        | ASK  |
| Input Current, 3.6 Vdc Supply         | IR   |      |        |      | 0.9    | mA   |
| Input Signal for 10 BER, 25 C         |      | 1    |        | -98  |        |      |
| Rejection, 30 MHz                     | RREJ |      | 55     |      |        | dB   |
| Sleep to Receive Switch Time (100 ms) | tSR  | 3    |        | 200  |        | us   |
| sleep, -85 dBm signal)                |      |      |        |      |        |      |
| Sleep Mode Current                    | IS   |      |        |      | 5      | uA   |
| Power Supply Voltage Range            | VCC  |      | 2.7    |      | 5      | Vdc  |
| Operating Ambient Temperature         | TA   |      | -10    |      | +70    | °C   |

**Electrical Characteristic, 19.2 kbps On-Off Keyed, High-Sensitivity RX Mode**

| Characteristic   | Sym  | Note | Min    | Type | Max    | Unit |
|--|------|------|--------|------|--------|------|
| Operating Frequency  |      | fO   | 868.35 |      | 914.20 | MHz  |
| Modulation Type  |      |      | OOK    |      |        |      |
| Data Rate  |      |      | 2.4    |      |        | kbps |
| Receiver Performance (OOK @ 2.4 kbps)<br>Input Current, 3 Vdc Supply<br>Input Signal for 10 BER, 25 C<br>Rejection, 30 MHz |      | IR   |        |      | 1.8    | mA   |
|  |      | 1    |        | -98  | dBm    |      |
|  | RREJ |      | 55     |      |        | dB   |

|   |     |   |     |     |     |     |
|---|-----|---|-----|-----|-----|-----|
| Sleep to Receive Switch Time (100 ms sleep, -85 dBm signal) | tSR | 3 |     | 200 |     | us  |
| Sleep Mode Current  | IS  |   |     |     | 5   | uA  |
| Power Supply Voltage Range                                  | VCC |   | 2.7 |     | 3.5 | Vdc |
| Operating Ambient Temperature                               | TA  |   | -10 |     | +70 | °C  |

**Electrical Characteristic, 115.2 kbps Amplitude-Shift Keyed, High-Sensitivity RX Mode**

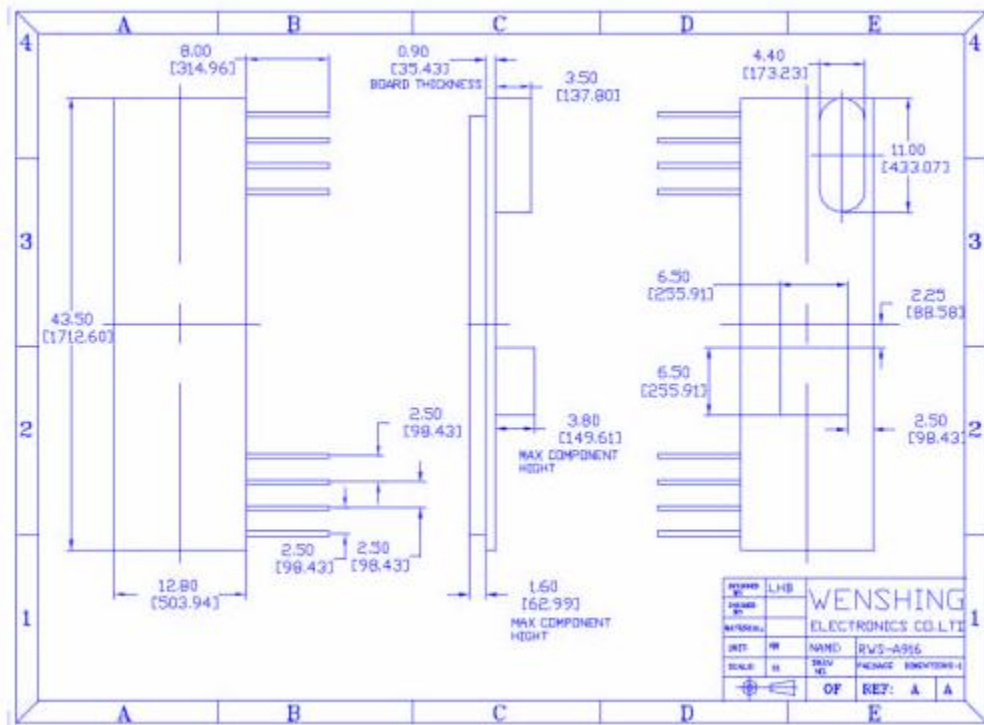
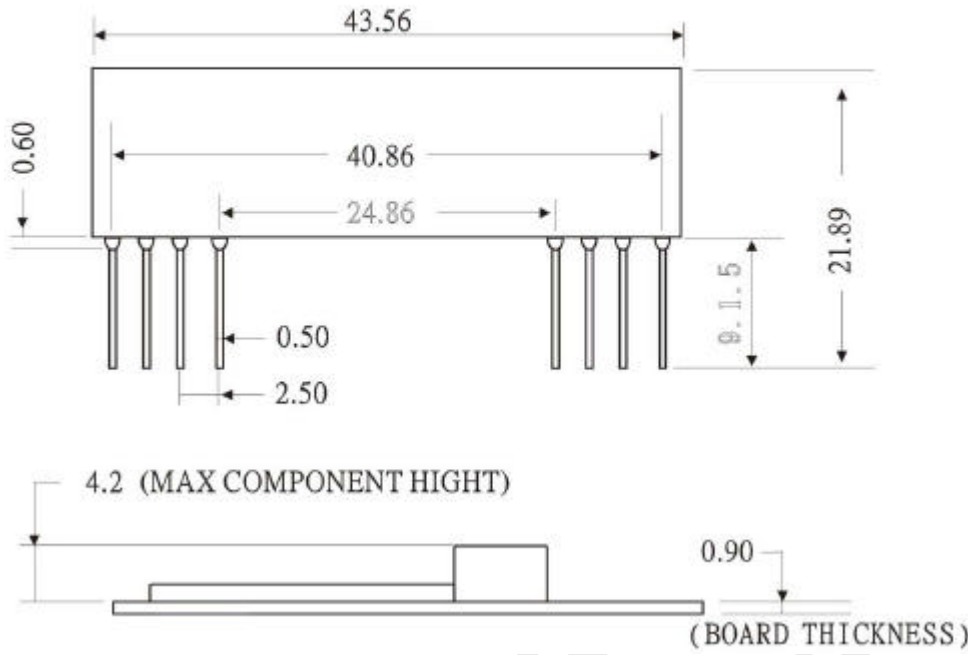
| Characteristic   | Sym  | Note | Min    | Type | Max    | Unit |
|--|------|------|--------|------|--------|------|
| Operating Frequency  |      | fO   | 868.35 |      | 914.20 | MHz  |
| Modulation Type  |      |      |        | OOK  |        |      |
| Data Rate  |      |      |        | 2.4  |        | kbps |
| Receiver Performance (OOK @ 2.4 kbps)<br>Input Current, 3 Vdc Supply<br>Input Signal for 10 BER, 25 C<br>Rejection, 30 MHz<br>Sleep to Receive Switch Time (100 mssleep, -85 dBm signal) |      | IR   |        |      | 1.8    | mA   |
|  |      |      | 1      |      | +98    | dBm  |
|  | RREJ |      | 55     |      |        | dB   |
|  | tSR  | 3    |        | 200  |        | u s  |
|  |      | IS   |        |      |        | 5    |
| Power Supply Voltage Range   | VCC  |      | 2.7    |      | 3.5    | Vdc  |
| Operating Ambient Temperature  | TA   |      | -10    |      | +70    | °C   |

### Receiver Set-Up, 3.0 Vdc, -10 to +70

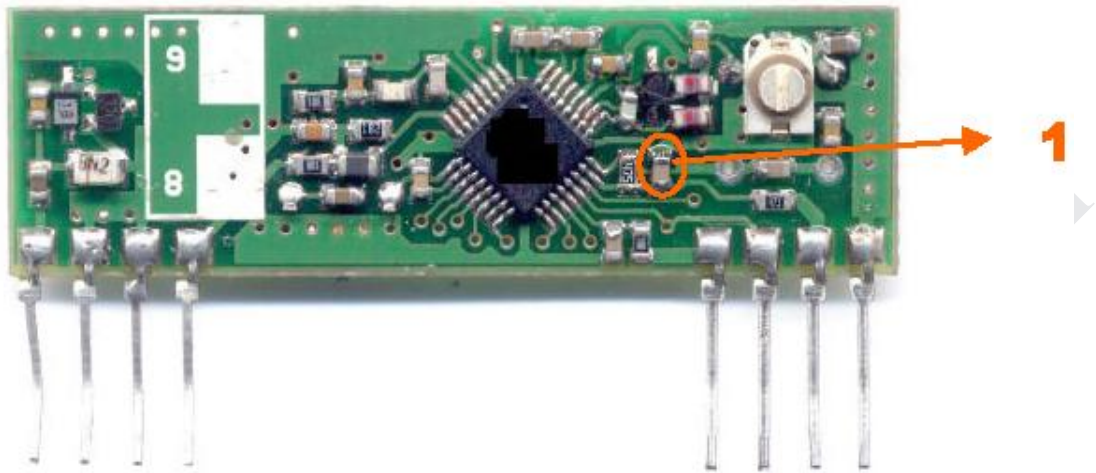
| Item                    | Symbol    | OOK     | OOK    | ASK    | Unit | Note                    |
|-------------------------|-----------|---------|--------|--------|------|-------------------------|
| Nominal NRZ Data Rate   | DRNO<br>M | 2.4     | 19.2   | 115.2  | kbps | see pages 1 & 2         |
| Minimum Signal Pulse    | SPMIN     | 416.67  | 52.08  | 8.68   | us   | single bit              |
| Maximum Signal Pulse    | SPMAX     | 1666.68 | 208.32 | 34.72  | us   | 4 bits of same value    |
| AGCCAP Capacitor        | CAGC      | -       | -      | 2200   | pF   | 10% ceramic             |
| PKDET Capacitor         | CPKD      | -       | -      | 0.001  | uF   | 10% ceramic             |
| BBOUT Capacitor         | CBBO      | 0.1     | 0.015  | 0.0027 | uF   | 10% ceramic             |
| LPFADJ Resistor         | RLPF      | 240     | 30     | 12     | K    | 5%                      |
| RREF Resistor           | RREF      | 100     | 100    | 100    | K    | 1%                      |
| THLD2 Resistor          | RTH2      | -       | -      | 100    | K    | 1%, for 6 dB below peak |
| THLD1 Resistor          | RTH1      | 10      | 27     | 100    | K    | 1%, typical values      |
| PRATE Resistor          | RPR       | 1100    | 330    | 160    | K    | 5%                      |
| PWIDTH Resistor         | RPW       | 270 to  | 270 to | 1000   | k    | 5%                      |
|                         |           | GND     | GND    | toVCC  |      |                         |
| DC Bypass Capacitor     | CDCB      | 10      | 10     | 10     | F    | tantalum                |
| RF Bypass Capacitor 1   | CRFB1     | 27      | 27     | 27     | pF   | 5% NPO                  |
| Antenna Tuning Inductor | LAT       | 10      | 10     | 10     | nH   | 50 ohm antenna          |
| Shunt Tuning/ESD        | LESD      | 100     | 100    | 100    | nH   | 50 ohm antenna          |

**Size**

UNIT:mm



## 提高速率方法說明



如果客戶需要自行提高，此型號的傳輸速率，只需更改1處電容(改為10P)

## Demo Circuit

