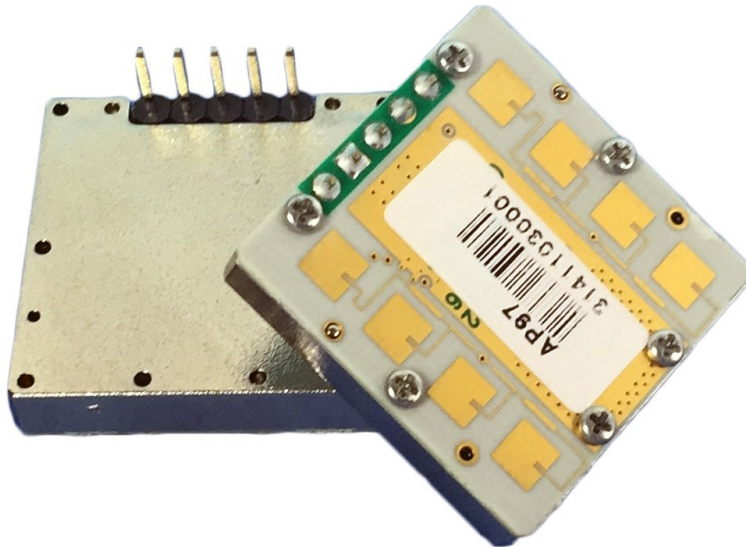


# AP97

## Dual Channel Miniature K-band Microwave Sensor



### Features:

- Motion direction discrimination
- Small and flat profile
- Light weight
- CW and pulse mode operation
- Low current consumption

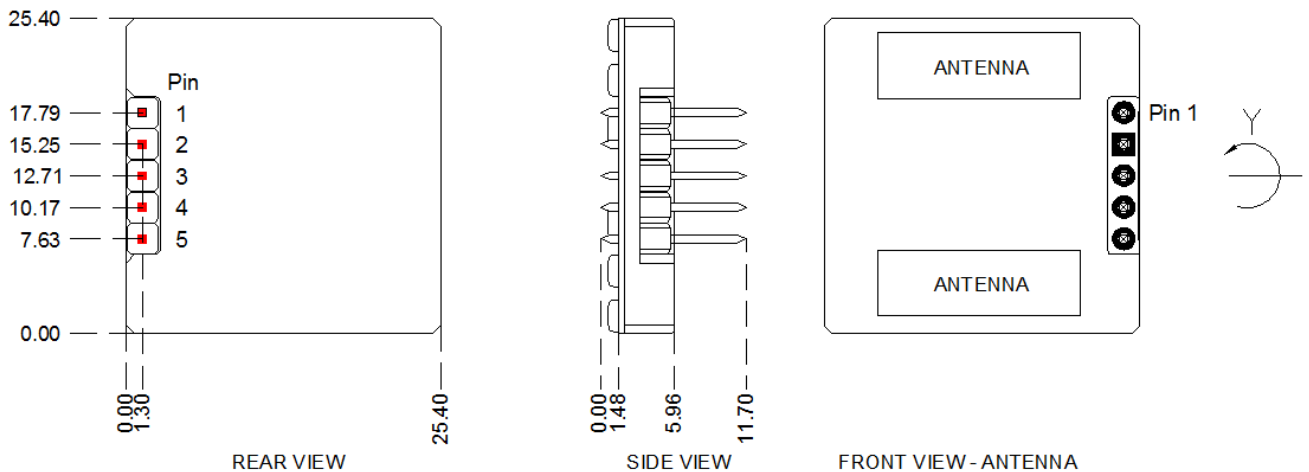
### Applications:

- Motion detection
- Lighting control
- Security alarm
- Automatic door control

The AP97 series K-band miniature sensor is a Doppler transceiver with a HEMT oscillator, two single balanced mixers and bi-static microstrip patch antenna arrays. It is suitable for applications in automatic access, security, lighting control and speed measurement. It also has I-Q outputs to discriminate motion direction.

Its lightweight, miniature size and slim profile offer the flexibility to OEMs in making trendy and slim products.

### Module Outline



All dimensions are in mm.

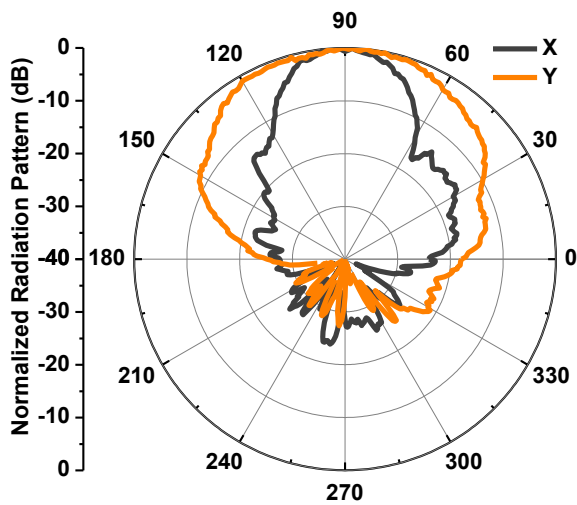
| Pin | Name | Description              |
|-----|------|--------------------------|
| 1   | NC   | Not connected            |
| 2   | +V   | Supply voltage, $V_{IN}$ |
| 3   | I    | Channel I                |
| 4   | GND  | Ground                   |
| 5   | Q    | Channel Q                |

**Note 1:** Complies with EN 300 440.

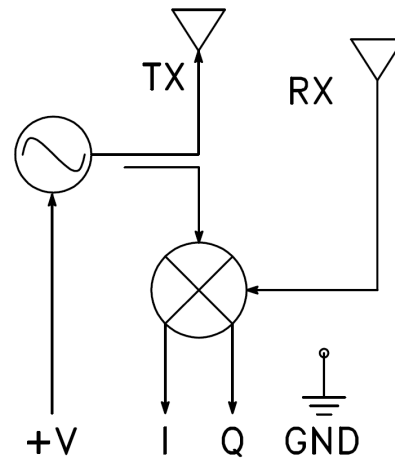
**Note 2:** Complies with FCC Part 15.245.

**Note 3:** **CAUTION: ELECTROSTATIC SENSITIVE DEVICE.**  
Observe precautions for handling and storage.

## Antenna Beam Pattern



## Block Diagram



## Technical Specifications

Unless noted otherwise, the specifications are measured in CW mode,  $V_{IN} = 5 V_{DC}$  and 12k ohm load at +25°C.

| Parameter                       | Remarks            | Min    | Typical        | Max    | Units    |
|---------------------------------|--------------------|--------|----------------|--------|----------|
| <b>Operating Conditions</b>     |                    |        |                |        |          |
| Supply voltage, $V_{IN}$        | AP97,AP97-1,AP97-2 | 4.75   | 5              | 5.25   | $V_{DC}$ |
|                                 | AP97-3             | 2.85   | 3              | 3.15   | $V_{DC}$ |
| Current consumption             |                    |        | 30             | 40     | mA       |
| Operating temperature           |                    | -20    |                | 60     | °C       |
| <b>Recommended Pulse Scheme</b> |                    |        |                |        |          |
| Pulse frequency                 | Pulse mode         |        | 2              |        | KHz      |
| Duty cycle                      | Pulse mode         |        | 2              |        | %        |
| <b>Transmitter</b>              |                    |        |                |        |          |
| Operating frequency             | AP97               | 24.000 | 24.125         | 24.250 | GHz      |
|                                 | AP97-1             | 24.075 | 24.125         | 24.175 | GHz      |
|                                 | AP97-2             | 24.150 | 24.200         | 24.250 | GHz      |
|                                 | AP97-3             | 24.000 | 24.125         | 24.250 | GHz      |
| Radiated power (EIRP)           |                    |        |                | 13     | dBm      |
| Spurious emission               |                    |        |                | -30    | dBm      |
| Frequency drift vs temperature  |                    |        | -1             |        | MHz/°C   |
| <b>Antenna</b>                  |                    |        |                |        |          |
| Antenna beam-width (3 dB) - X   |                    |        | 80             |        | °        |
| Antenna beam-width (3 dB) - Y   |                    |        | 32             |        | °        |
| Antenna sidelobe rejection      |                    |        | 15             |        | dB       |
| <b>Receiver</b>                 |                    |        |                |        |          |
| I&Q amplitude balance           |                    |        | 0.5            | 3      | dB       |
| I&Q phase difference            |                    | 70     | 90             | 110    | °        |
| <b>Physical Properties</b>      |                    |        |                |        |          |
| Dimensions                      |                    |        | 25.4×25.4×11.7 |        | mm       |
| Weight                          |                    |        | 3              |        | g        |