

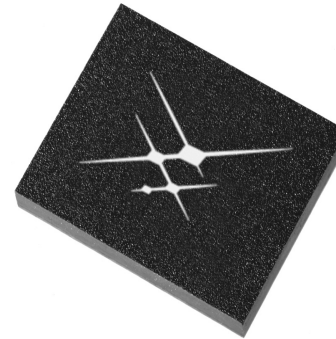
**PRELIMINARY DATA SHEET**

# SKY65200: WLAN 802.11a/b/g RF Front-End Module

## Features

- Single integrated RF module
- HBT PAs, BP and LP filters, diversity switch
- High linearity: 21 dBm (11b), 16 dBm (11g), 13 dBm (11a) to antenna
- High gain 31 dB (11b, g), 29 dB (11a)
- 3.3 V operation
- Balanced RF T<sub>X</sub>, R<sub>X</sub> I/Os
- Built-in dual power detection
- Low cost laminate-based plastic package
- Available on tape & reel

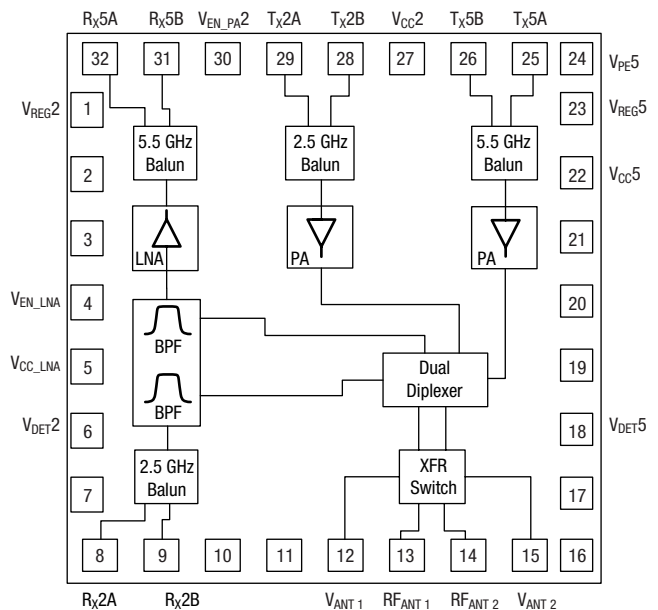
**15 x 15 x 1.7 mm**



## Description

The SKY65200 is an integrated RF front-end module for dual-band 802.11a/b/g WLAN applications. A single supply voltage and positive supply diversity switch control simplifies bias requirements. PA and LNA bias enable/disable functions provide for individual bias control. Power detection for both PAs built in. PA manufactured on advanced InGaP HBT process. Low loss GaAs diversity switch. All modules are screened at operating frequency prior to shipment for guaranteed performance. SKY65200 is targeted for high-volume WLAN applications.

## Pin Out (Top View)



**Electrical Specifications****802.11a Receive**

| Parameter                    | Condition                                               | Min. | Typ.     | Max. | Unit     |
|------------------------------|---------------------------------------------------------|------|----------|------|----------|
| Frequency band               |                                                         | 4.9  |          | 6.0  | GHz      |
| Noise figure                 |                                                         |      | 5.0      | 5.5  | dB       |
| Gain                         |                                                         |      | 10       |      | dB       |
| V <sub>CC</sub> bias current | R <sub>X</sub> 802.11a mode,<br>V <sub>CC</sub> = 3.3 V |      | 15       |      | mA       |
| Flatness                     |                                                         |      | 1.0      |      | dB       |
| Input IP3                    | At antenna port                                         |      |          |      |          |
| Harmonics                    | 2nd, 3rd, 4th                                           |      | -30      |      | dBc      |
| Rejection                    | DC 4.5 GHz<br>@ 11 GHz                                  |      | 40<br>25 |      | dB<br>dB |
| Output return loss           | 100 $\Omega$ differential outputs                       | 10   | 15       |      | dB       |
| Input return loss            | 50 $\Omega$ antenna<br>single-ended input               | 10   | 15       |      | dB       |
| LNA bias enable              | TTL enable/disable                                      |      |          |      |          |
| Diversity isolation          | Ant 1 to Ant 2                                          |      | 20       |      | dB       |
| Diversity switch bias        | 0 V <sub>LOW</sub> to 3.3 V <sub>HIGH</sub>             |      |          | 200  | $\mu$ A  |

**802.11b/g Receive**

| Parameter                    | Condition                                   | Min. | Typ.     | Max. | Unit     |
|------------------------------|---------------------------------------------|------|----------|------|----------|
| Frequency band               |                                             | 2.4  |          | 2.5  | GHz      |
| Insertion loss               |                                             |      | 4.0      | 4.5  | dB       |
| V <sub>CC</sub> bias current | R <sub>X</sub> 802.11b/g mode,<br>V = 3.3 V |      | 0        |      | mA       |
| Rejection                    | DC 1.9 GHz<br>@ 5.7 GHz                     |      | 40<br>45 | 35   | dB<br>dB |
| Output return loss           | 100 $\Omega$ differential outputs           | 10   | 15       |      | dB       |
| Input return loss            | 50 $\Omega$ antenna<br>single-ended input   | 10   | 15       |      | dB       |
| Diversity isolation          | Ant 1 to Ant 2                              |      | 20       |      | dB       |
| Diversity switch bias        | 0 V <sub>LOW</sub> to 3.3 V <sub>HIGH</sub> |      |          | 200  | $\mu$ A  |

**11a Transmit**

| Parameter                    | Condition                                               | Min. | Typ. | Max. | Unit |
|------------------------------|---------------------------------------------------------|------|------|------|------|
| Frequency band               |                                                         | 4.9  |      | 6.0  | GHz  |
| Linear P <sub>O</sub>        | 54 MB/s, 64 QAM, 5.4%                                   |      | 13   |      | dBm  |
| IP3                          |                                                         |      |      |      |      |
| P <sub>1</sub> dB            |                                                         |      |      |      |      |
| Gain                         |                                                         |      | 29   |      | dB   |
| Output return loss           | 50 $\Omega$ antenna<br>single-ended output              | 10   | 15   |      | dB   |
| Input return loss            | 100 $\Omega$ differential inputs                        | 10   | 15   |      | dB   |
| V <sub>CC</sub> bias current | T <sub>X</sub> 802.11a mode,<br>V <sub>CC</sub> = 3.3 V |      | 170  | 190  | mA   |
| Detected voltage range       | 802.11a (P <sub>O</sub> = 0-13 dBm)                     | 30   |      | 1000 | mV   |
| Detected voltage             | Full power, 54 Mbit/s,<br>OFDM, EVM < -25 dB            |      | 1000 |      | mV   |

**11b/g Transmit**

| Parameter                    | Condition                                                                  | Min.         | Typ.         | Max.        | Unit       |
|------------------------------|----------------------------------------------------------------------------|--------------|--------------|-------------|------------|
| Frequency band               |                                                                            | 2.4          |              | 2.5         | GHz        |
| Linear power out             | 802.11b compliant<br>802.11g compliant                                     | 20.0<br>15.5 | 21.0<br>16.5 |             | dBm<br>dBm |
| IP3                          |                                                                            |              | 38           |             | dBm        |
| P <sub>1</sub> dB            |                                                                            |              | 23           |             | dBm        |
| Gain                         |                                                                            | 28           | 29           | 30          | dB         |
| Output return loss           | 50 $\Omega$ antenna<br>single-ended output                                 | 10           | 15           |             | dB         |
| Input return loss            | 100 $\Omega$ differential inputs                                           | 10           | 15           |             | dB         |
| V <sub>CC</sub> bias current | 802.11b<br>802.11g                                                         |              | 225<br>135   | 230<br>145  | mA<br>mA   |
| Detected voltage range       | 802.11b (P <sub>O</sub> = 0 22 dBm)<br>802.11g (P <sub>O</sub> = 0 17 dBm) | 35<br>40     |              | 1750<br>910 | mV         |
| Detected voltage             | Mask compliant CCK-11<br>54 Mbit/s, OFDM,<br>EVM < -25 dB                  |              | 1200<br>850  |             | mV<br>mV   |

**DC Control Table**

| Mode                      | V <sub>ANT 1</sub> (V) | V <sub>ANT 2</sub> (V) | V <sub>CC5</sub> (V) | V <sub>REG5</sub> (V) | V <sub>PE5</sub> (V) | V <sub>CC2</sub> (V) | V <sub>REG2</sub> (V) | V <sub>PE2</sub> (V) | V <sub>LNA_EN</sub> (V) | V <sub>CC_LNA</sub> (V) |
|---------------------------|------------------------|------------------------|----------------------|-----------------------|----------------------|----------------------|-----------------------|----------------------|-------------------------|-------------------------|
| T <sub>X</sub> 2 to Ant 1 | 3.3                    | 0                      | 3.3                  | 3.3                   | 0                    | 3.3                  | 3.3                   | 3.3                  | 3.3                     | 3.3                     |
| T <sub>X</sub> 2 to Ant 2 | 0                      | 3.3                    | 3.3                  | 3.3                   | 0                    | 3.3                  | 3.3                   | 3.3                  | 3.3                     | 3.3                     |
| T <sub>X</sub> 5 to Ant 1 | 3.3                    | 0                      | 3.3                  | 3.3                   | 3.3                  | 3.3                  | 3.3                   | 0                    | 3.3                     | 3.3                     |
| T <sub>X</sub> 5 to Ant 2 | 0                      | 3.3                    | 3.3                  | 3.3                   | 3.3                  | 3.3                  | 3.3                   | 0                    | 3.3                     | 3.3                     |
| R <sub>X</sub> 2 to Ant 1 | 0                      | 3.3                    | 3.3                  | 3.3                   | 0                    | 3.3                  | 3.3                   | 0                    | 3.3                     | 3.3                     |
| R <sub>X</sub> 2 to Ant 2 | 3.3                    | 0                      | 3.3                  | 3.3                   | 0                    | 3.3                  | 3.3                   | 0                    | 3.3                     | 3.3                     |
| R <sub>X</sub> 5 to Ant 1 | 0                      | 3.3                    | 3.3                  | 3.3                   | 0                    | 3.3                  | 3.3                   | 0                    | 3.3                     | 0                       |
| R <sub>X</sub> 5 to Ant 2 | 3.3                    | 0                      | 3.3                  | 3.3                   | 0                    | 3.3                  | 3.3                   | 0                    | 3.3                     | 0                       |

**Test Board Diagram**