

COM-4102 2.4 GHz TRANSCEIVER 25 dBm Power / 3.5 dB Noise Figure

Key Features

- Transmit / Receive module for half-duplex communications.
- Output power $P_{sat} = 25$ dBm, $P_{1dB} = TBD$
- Noise figure: $NF = 3.5$ dB
- Receive frequency range: 2400-2484 MHz
- Transmit frequency range: 2400-2484 MHz
- 25 ns Tx/Rx switch
- Single 5V supply
- Connectorized 3"x 3" module for ease of prototyping. SMA connectors.

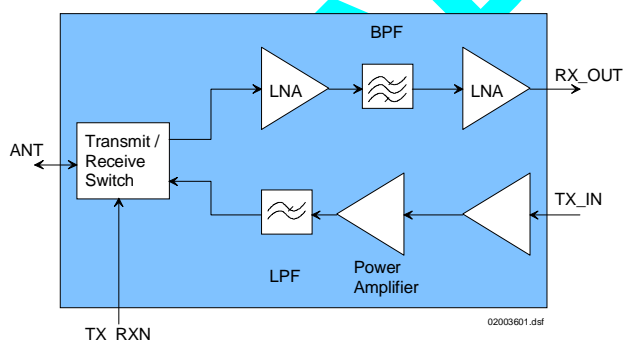


For the latest data sheet, please refer to the **ComBlock** web site: www.comblock.com/download/com4102.pdf. These specifications are subject to change without notice.

For an up-to-date list of **ComBlock** modules, please refer to www.comblock.com/product_list.htm.

Electrical Interface

Block Diagram



Inputs / Outputs

Module Interface	Definition
TX_IN	RF transmitter input signal. SMA connector.
ANT	Antenna port. SMA connector.
RX_OUT	RF receiver output signal. SMA connector.
TX_RXN	Switch control: 0 for receive, 1 for transmit. LVTTL.
Power Interface	4.75 – 5.25VDC. Terminal block. Power consumption is 550mA typ while transmitting, 200 mA while receiving.

Absolute Maximum Ratings

TX_IN input	+10 dBm
ANT input	+15 dBm
DC voltage	+16V / -400VDC

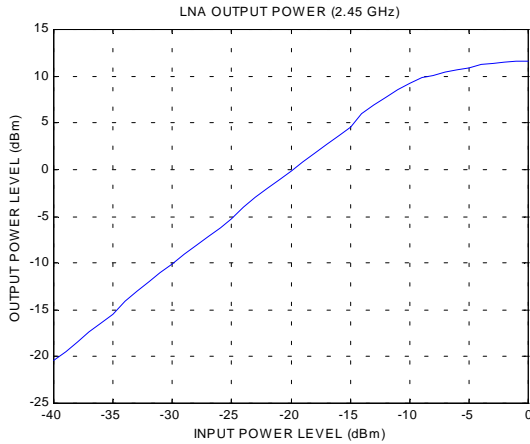
Performances

Receiver

Noise Figure: 3.5 dB typ.

Gain: 19 dB

Gain flatness: +/- 1 dB over range [2.4-2.5GHz]

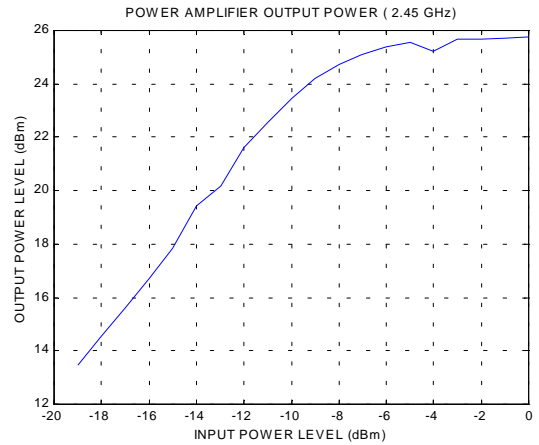


Transmitter

Output power at antenna port (saturation):

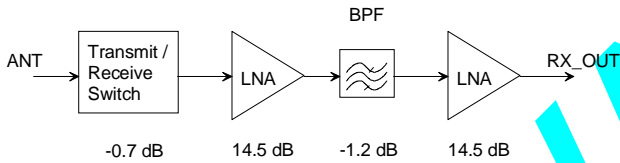
25 dBm typ.

Output compression: see measurement below

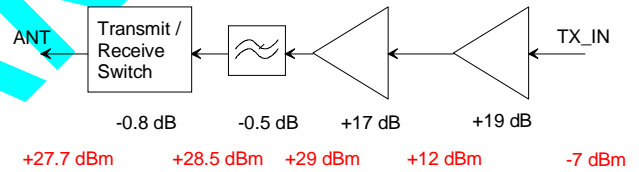


Gain flatness: +/- 0.3 dB over range [2.4-2.5GHz]

Receiver gain

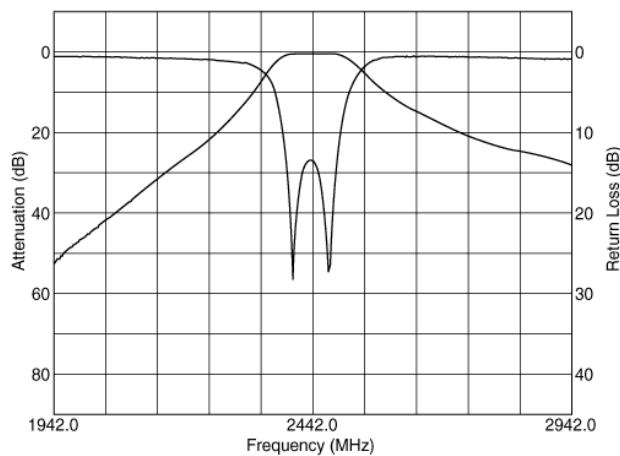


Transmitter gain & level



Receiver bandpass filter

A ceramic filter is placed between the two LNA amplifiers. The frequency response is plotted below:



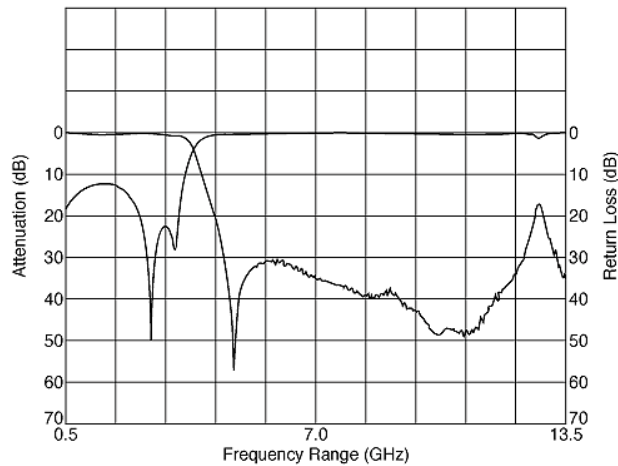
The gain & level diagram above assumes a 2 dB output backoff at the power amplifier as a tradeoff between linear operations (to keep the modulation sidelobes reasonably low) and maximum output power.

Tx/Rx Switch

Switch time: 25 ns.

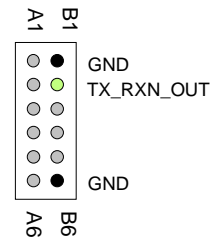
Harmonics rejection

An LC filter is placed after the power amplifier to reject the second and third harmonics. The frequency response is as follows:



Output Connector Jx

12-pin (2 rows x 6) 2mm male connector.



I/O Compatibility List

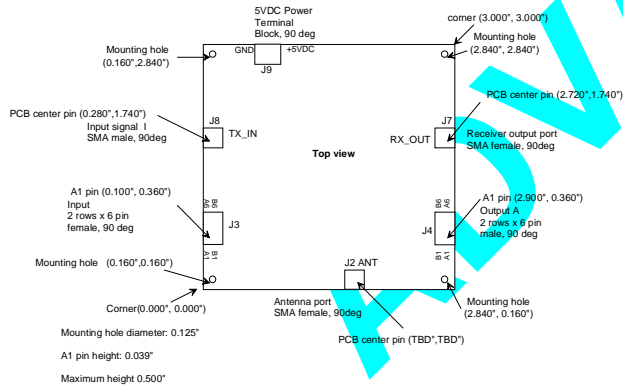
(not an exhaustive list)

Input	Output
COM-4001 Dual-band 915 MHz / 2.4 GHz modulator	COM-3001 Dual-band 915 MHz / 2.4 GHz receiver

Maximum 2nd harmonics at Pout = 25 dBm: TBD dBm.

Maximum 3rd harmonics at Pout = 25 dBm: TBD dBm.

Mechanical Interface



ComBlock Ordering Information

COM-4102 2.4 GHz TRANSCEIVER,
25 dBm power, 3.5 dB noise figure

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Pinout

Input Connector Jx

12-pin (2 rows x 6) 2mm female connector.

