



Unlicensed 5G mmWave (57 – 71 GHz) 16T16R dual-polarized single-aperture beamforming RF module



Sivers Semiconductors presents the new, 5G mmWave (57 – 71 GHz) 16T16R beamforming RF module, BFM06018, which is optimized for high-performance FWA applications where a single aperture is needed for use with a lens or reflector. It is compliant with the IEEE 802.11ad standard and designed to interface with leading baseband modems.

The RF module architecture uses direct conversion in both transmit and receive mode, with a signal path optimized for the on-board 57-71 GHz patch antenna and seamless IQ connection with the baseband modem. It includes a fully autonomous AGC, optimizing the receive gain based on both wanted as well as out of band signal levels. It also includes autonomous ALC, limiting and optimizing the transmit power. The RFM to modem electrical interface is a solder-in castellated via.



FWA



5G MMWAVE



BACKHAUL

KEY FEATURES

- Wide-band single-aperture receive and transmit antenna array.
- 16 Receive and 16 Transmit Beamforming channels with the TX array having +45 deg diagonal polarization and the RX array having -45 deg diagonal polarization.
- Compliant with the IEEE 802.11ad standard, MCS0-12 modulation.
- Support for 64-QAM modulation.
- Support for half and quarter band channels.
- Excellent RF performance providing best in class EVM performance.
- Fixed cut-off analog Receive/Transmit IQ baseband filters.
- DC connection to the baseband modem.
- Easy to use with autonomous calibration routines and seamless baseband interface.
- Auxiliary ADC for temperature measurements.
- Small highly integrated form factor.
- EEPROM/temp sensor on the RFM, for settings storage and temp reference.

KEY SPECIFICATIONS

- Supported frequencies: 57-71GHz bandwidth.
- Beam steering in azimuth 90° and elevation 90°.
- Antenna gain 15 dBi supporting a combined output power of +34 dBm (EIRP) for the standalone module, typically higher with an attached lens or reflector.
- Power dissipation <5W, 50/50 duty cycle.
- Cost effective multilayer PCB.

APPLICATIONS

Fixed wireless access (FWA)
Backhaul (point-to-point)
Point-to-multipoint networks
WiGig (802.11ad)

The BFM06018 Beamforming RF Module (RFM) is optimized for high performance unlicensed 5G mmWave applications operating in the 57 to 71GHz frequency band. The module integrates Sivers Semiconductors high performance TRX BF/01 mm-wave beamforming transceiver IC, an antenna array, loop filter, decoupling capacitors and an EEPROM for storing device and calibration data.

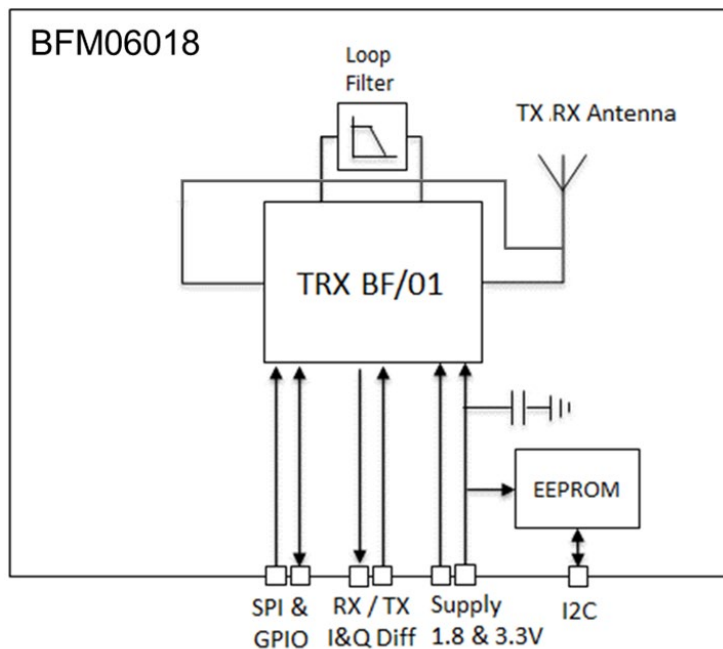


Figure 1: Block diagram of BFM06018

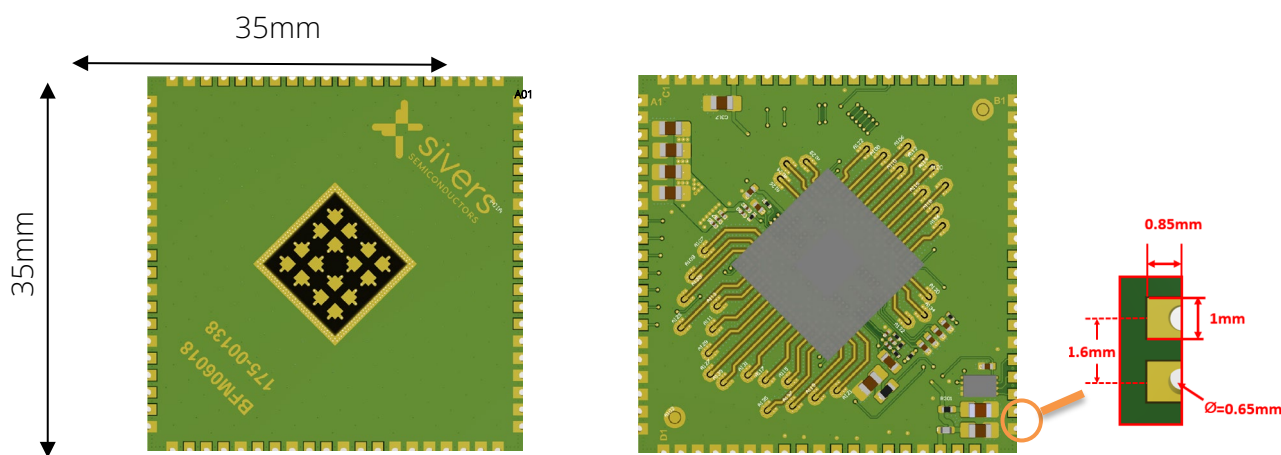


Figure 2: Antenna-side and Chip-side view of the module

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