FFM72011

Product Summary

Today's connected products are becoming increasingly dependent on multiple wireless protocols working seamlessly within a single system. In IoT devices, smart-home hubs, smartphones, and smart wearables, technologies such as Wi-Fi, Bluetooth, Zigbee, Thread and various proprietary protocols all share the 2.4 GHz ISM band. Ensuring these radios can operate alongside one another without impairment makes RF coexistence a critical design consideration. Foretune™ supports concurrent radio operation through Adaptive Passive Cancellation, improving wireless performance by suppressing interference between co-located radios.

Product Description

FFM72011 is an RF coexistence module based on Forefront RF's proprietary Foretune™ technology. Designed to suppress self-interference between co-located wireless transceivers, the module features:

- Configurable RF signal cancellation
- Operation across the 2.4–2.5 GHz frequency range
- I²C control interface
- LGA-type module

Even when radios use non-overlapping channels, transmit signals and out-of-band noise/distortion can couple into a neighbouring receive paths. This reduces receiver sensitivity and communication range, increases packet loss and latency, and compromises product reliability and user experience.

FFM72011 is based upon Forefront RF's proprietary cancellation technology and suppresses interference between co-located radios. By reducing the unwanted signal coupling, FFM72011 preserves receiver sensitivity, reducing packet loss and ensuring a reliable wireless connection, even when co-located radios operate simultaneously.

Available in an LGA-type module format, FFM72011 is designed to support simultaneous radio operation while reducing reliance on antenna separation, complex filtering and time-based coexistence management.

Product Features

- Compatible with all 2.4GHz wireless standards and protocols
- I²C control interface
- Configurable cancellation
- Two independent RF paths
- 1.8 V supply operation
- 15-30 dB additional isolation
- Compact footprint: 2.5 x 2.5 x 0.7 mm

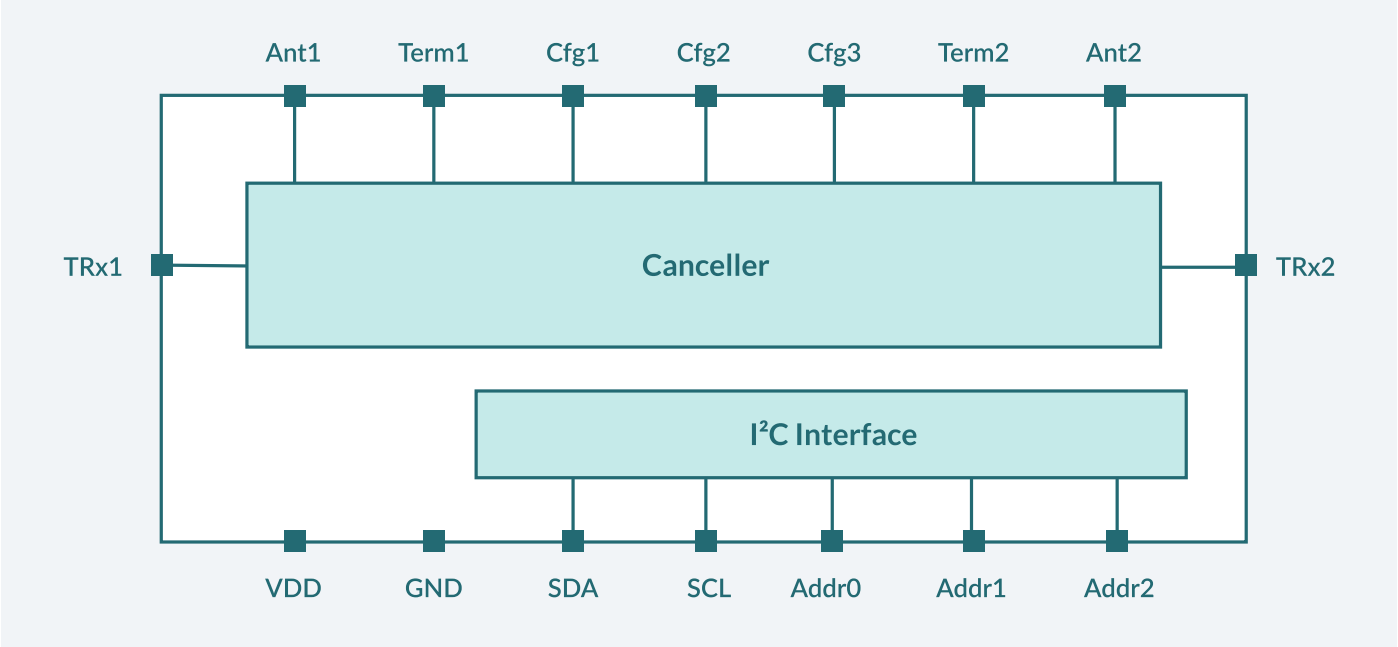
Key Benefits

- **Simultaneous radio operation**: Supports independent wireless transceivers operating concurrently and helps maintain stable wireless connections
- **Improved receiver isolation**: Suppresses transmitter leakage to help reduce receiver desensitisation
- **Greater integration flexibility**: Reduces reliance on antenna separation and complex filtering within compact products
- **Higher data throughput**: Reduces interference-related packet loss and retransmissions
- **Improved spectrum efficiency**: Enables more effective use of the crowded 2.4 GHz spectrum
- **Increases flexibility for product design**: Greater industrial design freedom due to reduced antenna isolation requirements

Applications

- IoT devices and gateways
- Smart-home hubs
- Security products
- Smartphones
- Smart wearables

Functional Block Diagram



Product Characteristics

Unless otherwise stated: All ports terminated with 50 Ohms; T=25C; VDD=1.8V.

Parameter	Conditions	Unit	Min	Typ	Max
Operating frequency range		MHz	2400		2500
Isolation	TRx1 to TRx2 Antennas connected at Ant1 and Ant2 Antenna pair conforms to Antenna Coupling Specification with Antenna Isolation >15dB; Application circuit configured for specific Antennas; Canceller settings configured for specific Antennas;	dB	35		45
Isolation	TRx1 to TRx2 Antennas connected at Ant1 and Ant2 Antenna pair conforms to Antenna Coupling Specification with Antenna Isolation >35dB; Application circuit configured for specific Antennas; Canceller settings configured for specific Antennas	dB	50	60	
Insertion loss	TRx1 to Ant1; TRx2 to Ant2	dB		1.8	2.0
Input return loss	Relative to 50 Ohms; applicable to all RF ports	dB	10		

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