

FFM51010

Product Summary

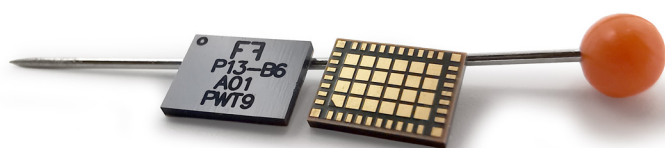
Every mobile and IoT device powered by wireless RF currently relies on fixed radio hardware, locked to specific frequency bands and communications protocols. While billions depend on this legacy architecture, at its core it remains deeply inflexible and fundamentally unscalable for the future of connected devices. Foretune™ technology overcomes these challenges by replacing incumbent front-end hardware with a dynamically configurable and programmable multiband solution, optimised for high-volume, space constrained systems.

Product Description

FFM51010 is a multiband mobile radio front-end module based on the company's proprietary Foretune™ technology. The module comprises:

- Multi-mode power amplifier
- Low noise amplifier
- Bi-directional coupler
- Tunable duplexer

A milestone in RF signal processing advancement, FFM51010 is the only Front-End Module (FEM) that supports all major low bands in the 612-960MHz range, without the need for integrated or external SAW duplexers and switches. The FEM uses Adaptive Passive Cancellation to form the tunable duplexer. Comparable to the way noise cancelling headphones improve noise rejection, Foretune™ dynamically cancels transmitter leakage by adding inverted versions of those signals. Aimed at 4G and 5G user equipment, the FEM enables significant size reductions in mobile radio front-ends whilst increasing the number of supported frequency bands, dramatically simplifying their overall architecture. Moreover, the greater the number of bands needed, the greater the space saving.



Product Features

- Supports bands; 5, 8, 12, 13, 14, 17, 18, 19, 20, 26, 28, 71, 85, 105
- No external duplexers required
- LGA-Type module of 6.0×4.5×0.75mm max
- Single MIPI RFFE v3.0
- Integrated antenna-port bi-directional RF Coupler
- Supports APT (Average Power Tracking) and ET (Envelope Tracking) to increase system efficiency

Key Benefits

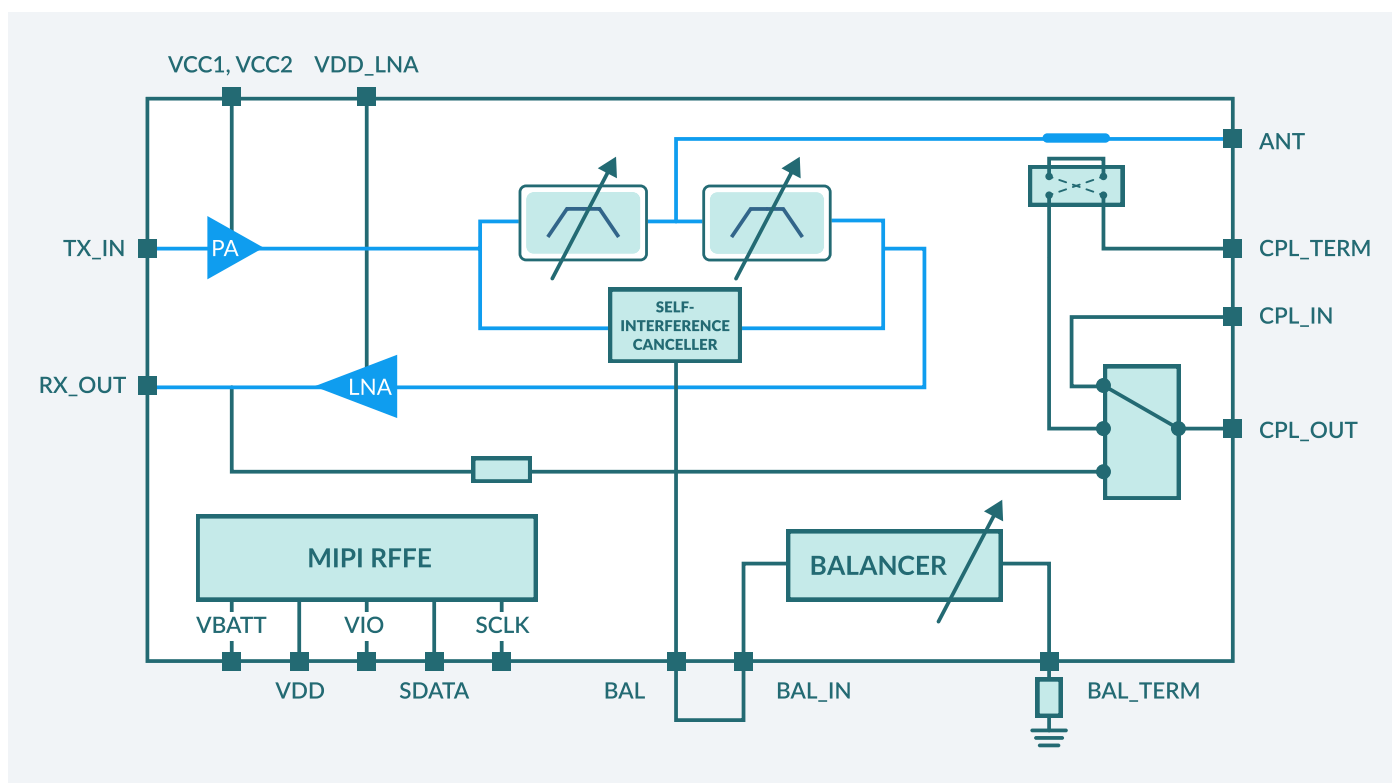
- **Simplified mobile radio front-end designs:** Reducing RFFE architecture complexity to increase performance and reliability
- **Less PCB space:** competitive differentiation -all low band RF functions in a single module
- **Streamlined supply chain:** Fewer components = less waste and reduced costs
- **Reduced manufacturing costs:** By mitigating the need for multiple product variants
- **Sustainable:** Fewer components reduces unnecessary waste
- **Multiband capabilities:** Supports all RF bands in the low band category

Applications

The FFM51010 is suitable for the following wireless enabled devices comprising a single antenna

- 4G, 5G
- 5G RedCap
- Wearables
- LTE Cat-1bis, NB-IoT & LTE-M

Functional Block Diagram



Tunable Duplexer Characteristics

Unless otherwise stated: all unused RF ports terminated in 50Ω, input and output = 50 Ω, temp = 25°C, VDD = 1.8V, VBATT = 3.8V.

Parameter	Conditions	Min	Typ	Max	Unit
Frequency Range	Receive	612		960	MHz
	Transmit	663		915	MHz
Supported Channel Bandwidth Note: higher channel bandwidth under development	Receive	1.4		20	MHz
	Transmit	1.4		20	MHz
Tunable Duplex Spacing		-46		55	MHz
Antenna Port VSWR			2:1		

Important Notice

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