



Integrated 5G mmWave mobile FEMs/TRXs using 22FDX™ RF and 22FDX RF+

Optimize performance, power and area in a single chip

Crazy-fast downloads, buffer-free live streaming of ultra HD video, more immersive games and other user experiences not previously possible are on the horizon. All of these are made possible by more powerful, ever sleeker 5G mobile devices that fit in the palm of a hand or on a wrist.

22FDX™ RF and 22FDX RF+ solutions from GlobalFoundries® (GF®) enable the integration of critical front-end module (FEM) elements, including low noise amplifiers (LNAs), power amplifiers (PAs) and switches, with the transceiver (TRX). The result is a single-chip mmWave radio solution that delivers the superior RF power efficiency and performance levels revolutionary 5G devices demand.

22FDX RF and 22FDX RF+ at a glance

Platform	Solution	Key Features
22FDX	22FDX RF	<ul style="list-style-type: none"> • 22 nm FD-SOI with RF & LDMOS • Ultra-low power (0.4 V logic) • Superior f_{max} (> 350 GHz), using planar device structure • Device stacking
22FDX+	22FDX RF+	<ul style="list-style-type: none"> • Builds on 22FDX RF features, offering 30% better switch insertion loss and $R_{on} \cdot C_{off}$ performance, and up to 3 dBm better P_{sat} at the same PAE†

5G mmWave FEM design companies are designing with 22FDX RF.*

22FDX RF and 22FDX RF+ are the industry's only solutions enabling world-class power and performance benefits in a single-chip 5G mmWave SoC.

22FDX RF+ enhancements take PA and switch performance to new levels.


Save space:

22FDX RF and RF+ offer up to a 40% logic scaling advantage[‡] and are the industry's only solutions that enable fully integrated 5G mmWave SoCs with best-in-class performance and power benefits, so customers can leverage the saved space to add other advanced features.


Extend battery life:

22FDX RF and RF+ PAs present performance, power and thermal efficiency advantages for consumers to enjoy up to 10% longer battery life.[‡]


Boost range:

22FDX RF provides superior noise figure, $R_{on} * C_{off}$ and switch insertion loss (IL) performance, which boosts signal quality and extend signal reach up to 6% for reliable connections and better sounding calls.[◇] 22FDX RF+ extends GF 5G leadership by offering 30% better $R_{on} * C_{off}$ and IL performance.[‡]


Keep it cool:

22FDX RF and RF+ PAs generate less heat[‡] and can be fully integrated so that customers can design smaller devices without overheating issues. An optimized 22FDX RF+ PA device is designed to deliver even more power-handing capability while operating at a higher breakdown voltage.[‡]

LEARN MORE
GF 5G cellular radio solutions
22FDX™ RF

Superior performance with highest level of integration and up to 20 dBm P_{sat} (with power combiners) for premium 5G mmWave smartphones

22FDX RF+

Superior performance with digital and RF enhancements that deliver 30% better IL and $R_{on} * C_{off}$ [‡] for premium 5G mmWave smartphones

Contact Us

45RFSOI

Superior performance with high P_{sat} (up to 23 dBm) for premium 5G mmWave smartphones

7SW RF SOI

Great performance for entry & mid-tier 4G LTE and 5G sub-6 GHz smartphones, smart watches & other connected mobile devices

8SW RF SOI

Outstanding performance for premium & high-tier 5G sub-6 GHz smartphones

GF knows RF. Learn more about GF's extensive mobile solutions portfolio at gf.com/contact-us

* Current estimate based on design win pipeline.

† Compared to 22FDX RF.

‡ Compared to 28 nm bulk CMOS. Benefits will vary with chip/system design.

◇ Assumes 28 GHz band, TX and RX antenna gain of 20 dB, line of sight communication. Benefits will vary with chip/system design.

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