

Overview

GLOBALFOUNDRIES RF silicon-on-insulator (SOI) foundry portfolio includes 7RF SOI and 7SW SOI. The two technologies are optimized to deliver the performance that mobile devices and Internet of Things endpoints need to stay ahead of evolving standards and growing complexity, while enabling your chip designers to pack more RF function into less space:

- High linearity, electrical isolation and low insertion loss over a wide frequency range enable you to develop front-end chip solutions that minimize interference and noise—while maintaining signal power
- An SOI technology base enables you to integrate multiple RF / analog functions—such as the RF switches, multimode / multiband power amplifiers, antenna tuners, and power controllers found in mobile phones—into fewer chips

Proven Technology Portfolio

GLOBALFOUNDRIES 7RF SOI and 7SW SOI have already been deployed in billions of chips for today's leading smartphones and other mobile devices. Ongoing device and technology roadmap enhancements build on this proven track record to give you added design flexibility so that you can strike the right balance of performance, area, and cost in tomorrow's RF solutions.

7RF SOI is GLOBALFOUNDRIES' initial RF SOI foundry offering. It includes LowD and NoBTQ options that enable you to optimize your RF design for performance, area, and value:

- Low distortion device (LowD) option: Boosts performance of the 7RF SOI offering and enables designers to further reduce insertion loss or chip area
- Fewer masks (NoBTQ) option: Value-optimized offering geared for potentially complicated RF switches, but in which performance is a secondary design consideration

7SW SOI is the newest member of the GLOBALFOUNDRIES RF SOI family. The technology offers up to 30% better performance and up to 30% smaller chip area compared to 7RF SOI.* Recent 7SW enhancements include:

- High threshold-voltage transistors (high V_t FETs), which can help you reduce logic circuit power consumption to help extend smartphone battery life
- A dual-oxide option, which enables improved LNA performance for better reception range and longer battery life in smartphones and other Wi-Fi enabled devices
- A trap rich substrate option, which can improve harmonic noise suppression for fewer dropped calls
- A switch feature addition that improves $R_{on} * C_{off}$ by 20%, with ample power handling to support a wide range of switching functions in smartphones

Reliable Supply and Comprehensive Enablement

Demand for RF SOI technologies is surging. GLOBALFOUNDRIES has qualified multiple fabs and expanded 7RF SOI and 7SW SOI manufacturing capacity and capabilities to help ensure that you can meet critical time-to-market windows. With the qualification of multiple wafer vendors, you can also have confidence in a dependable supply of high-quality, high-resistivity SOI substrates.

GLOBALFOUNDRIES 7RF SOI and 7SW SOI technologies build on its deep SOI expertise and extensive manufacturing experience. The technologies are complemented by world-class PDKs with ultra-accurate modeling to help you achieve predictable results and faster time-to-market.

Frequently scheduled, cost-effective MPW runs through MOSIS enable fast prototyping so you can see results in hardware early. Expert program management and technical support are also available, every step of the way, from concept to design to production.

* Actual performance and area improvements will vary with chip design.

Features and Specifications

Feature	7RF SOI	7SW SOI
Trap rich substrate option		✓
CMOS supply (V)	1.5, 2.5, 5.0	2.5
FETs:		
Reg V_t	✓	✓
High V_t		✓
5.0V	✓	
Thin oxide LNA	✓	✓
Thin oxide logic	✓	
Resistors:		
n+/p+ diffusion	✓	✓
n+/p+ poly	✓	✓
High res poly	✓	✓
Metal	✓	
Capacitors:		
Nitride MIM	✓	✓
High voltage MIM	✓	✓
High voltage VN cap	✓	✓
Inductors:		
Single spiral	✓	✓
Series/parallel spirals	✓	✓
Symmetrical	✓	✓
Varactors and diodes:		
MOS	✓	✓
Thick metals	✓	Both AM and DM (MA/E1)
Transmission lines:		
RF wire	✓	✓
Coupled wires	✓	✓
Electrical fuse (OTP memory/passive trimming)	✓	✓