



RF SOI Technologies

7RF SOI and 7SW RF SOI

Highlights

- Multiple options for design flexibility to meet performance, area, integration and budget goals
- Proven, partially-depleted RF SOI technologies already deployed in billions of chips
- Ongoing device and technology roadmap enhancements
- Complete services and supply chain support:
 - + Regularly scheduled MPWs
 - + Packaging and RF test services

Enabling Any Time, Anywhere RF Connectivity

The GLOBALFOUNDRIES RF silicon-on-insulator (SOI) foundry portfolio includes 7RF SOI and 7SW RF SOI. The technologies are optimized to deliver the performance needed to keep pace with evolving standards and growing complexity:

- 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 in smart phones—into fewer chips

GF 7RF SOI and 7SW RF SOI technologies have been deployed in billions of chips for leading smartphones and mobile devices. Ongoing device and technology roadmap enhancements give you added design flexibility to strike the right balance of performance, area and cost in next-generation RF connectivity solutions.

7RF SOI	7SW RF SOI
<p>Initial GF RF SOI offering. Options include:</p> <ul style="list-style-type: none"> • Low distortion device (LowD): Boosts performance and enables designers to further reduce insertion loss or chip area • Fewer masks (NoBTQ): Value-optimized offering for potentially complicated RF switches where performance is a secondary design goal • 300 mm substrate (12-inch wafer): Roadmap to enhanced productivity / costs 	<p>Up to 30% better performance and 30% smaller chip area compared to 7RF SOI*. Enhancements include:</p> <ul style="list-style-type: none"> • High V_t FETs, which can help reduce logic circuit power consumption to extend battery life • Dual-oxide option, which enables improved LNA performance for better reception range and battery life • Trap rich substrate option, which can improve harmonic noise suppression for fewer dropped calls • Switch feature that improves $R_{on} \cdot C_{off}$ by 20%*, with ample power handling to support a wide range of switching functions

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

Supply and Enablement You Can Rely On

GF has expanded 7RF SOI and 7SW RF SOI manufacturing capabilities and capacity, with multiple fabs qualified to help you meet critical time-to-market windows. Similarly, GF's qualification of multiple substrate vendors helps ensure a reliable supply of high-quality, high-resistivity SOI substrates.

GF 7RF SOI and 7SW RF SOI technologies are complemented by end-to-end support and comprehensive PDKs featuring accurate modeling to help you achieve predictable results and faster time-to-market. Frequent, cost-effective MPW runs enable fast prototyping so you can see results in hardware early.

7RF SOI and 7SW RF SOI at a Glance

Feature	7RF SOI	7SW RF SOI
Trap rich substrate option		✓
300 mm substrate option (12-inch wafer)	✓	
CMOS supply (V)	1.5, 2.5, 5.0	2.5
FETs:		
Reg V_t	✓	✓
High V_t		✓
5.0 V	✓	
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)	✓	✓

Refer to the latest PDK release for the current feature set.



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