

IBM CMOS 7RF SOI. Integrated, affordable single-chip analog solutions just got one step closer



Paving the way for single-chip solutions

IBM Global Engineering Solutions extends its portfolio of RF CMOS offerings with the addition of CMOS 7RF silicon-on-insulator (SOI). CMOS 7RF SOI is a 180-nm IBM Foundry technology optimized for RF switch applications that leverages the inherent characteristics of SOI for isolating incoming and outgoing signals from noise, while maintaining signal power (minimizing insertion loss). These characteristics can help avoid issues such as dropped calls and loss of signal.

Highlights

- **180-nm IBM Foundry radio frequency (RF) CMOS technology, with transistors tailored for RF switch applications**
- **Lays the groundwork for single-chip RF solutions by enabling the integration of multiple functions for cost and area benefits**
- **Low-cost alternative to solutions based on gallium arsenide (GaAs), with equivalent insertion loss and noise isolation characteristics**
- **Targets applications in next-generation multiband, multi-mode mobile devices that require an RF switch, including GSM, WiFi, WLAN and WiMAX**

With insertion-loss and noise-isolation performance comparable to GaAs-based industry alternatives and significant cost advantages over GaAs, CMOS 7RF SOI is an excellent choice for next-generation mobile handsets. IBM is already working with many of the industry's leaders in these areas to develop and deliver solutions based on 7RF SOI and other IBM Foundry technologies.

CMOS 7RF SOI is intended to empower clients with the ability to integrate multiple RF/analog functions, such as the multimode and multiband RF switches, complex switch-biasing networks, and power controllers typically found in handsets, into single-chip solutions for tomorrow's mobile devices. The extensibility of CMOS 7RF SOI lends itself to additional integration opportunities that could eventually include filter, power amplifier, power management and receiver/transmitter functions—the types of comprehensive integration possibilities that can be cost-prohibitive or technically unfeasible in other technologies.

Key specifications

IBM's CMOS 7RF SOI foundry offering features a range of FETs and a full suite of passive devices.

Laying the groundwork for the future, on a stable base

IBM's CMOS 7RF SOI Foundry technology is intended to enable clients to take advantage of advanced features for integration and performance, while providing them with the assurance of a mature technology base and manufacturing stability founded on years of IBM experience in manufacturing CMOS, RF CMOS and silicon germanium technologies. With comprehensive, accurate design kits, expert IBM engineering support and additional value-added services available from IBM, CMOS 7RF SOI provides clients with a stable base for developing innovative, differentiated solutions for the future.



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CMOS 7RF SOI devices	
Device type	Description
1.5 V NFETs and PFETs	Thin oxide floating-body NFET/PFET
	Thin oxide body-contacted NFET/PFET
2.5 V NFETs and PFETs	Thick oxide floating-body NFET/PFET
	Thick oxide body-contacted NFET/PFET
	Multifinger RF switch optimized NFET
Resistors	RR resistor (1.7 K Ohms/sq.)
	P Poly (270 Ohms/sq.)
Capacitors	Single MIM (2 fF/μm ²)
	Thick oxide MOS capacitor
Diodes	ESD diodes
	Forward bias diode
Inductors	Transmission lines
	Symmetrical and spiral inductors